



# ALLIED MACHINE & ENGINEERING

Holemaking Solutions for Today's Manufacturing



Boring



Reaming



Burnishing



Threading



Specials



## T-A<sup>®</sup> Drilling System

► **DRILLING**

Replaceable Insert Drilling System

## North America

**Allied Machine**  
120 Deeds Drive  
Dover, OH 44622  
United States

**Allied Machine**  
485 West 3rd Street  
Dover, OH 44622  
United States

### **ThreadMills USA™**

4185 Crosstowne Ct #B  
Evans, GA 30809  
United States

### **Superion™**

1285 S Patton St.  
Xenia, OH 45385  
United States

## Europe

### **Allied Machine Europe**

93 Vantage Point  
Pensnett Estate  
Kingswinford  
West Midlands  
DY6 7FR, United Kingdom

### **Wohlhaupter® GmbH**

Maybachstrasse 4  
Postfach 1264  
72636 Frickenhausen  
Germany

## Asia

### **Wohlhaupter® India**

B-23, 2nd Floor  
B Block Community Centre  
Janakpuri, New Delhi - 110058  
India



Allied Machine & Engineering is a worldwide leader in holmaking and finishing solutions. We are committed to providing practical and dependable solutions to our customers through innovative designs and superior customer and technical support.

We continue to expand our product offering in order to provide new and different solutions. With Field Sales Engineers located around the world, we position ourselves to provide technical support on site, right at your spindle.



**ALLIED MACHINE  
& ENGINEERING**

[www.alliedmachine.com](http://www.alliedmachine.com)



# ALLIED MACHINE & ENGINEERING

Holemaking Solutions for Today's Manufacturing

## T-A® Drilling System

### The Foundation

Since 1941, Allied Machine & Engineering has provided dependable and practical holemaking solutions to the world. What was once a small job shop in Ohio is now a worldwide leader in cutting tool technology. With three manufacturing facilities in Ohio, one in Georgia, another in Germany, and headquarters in both the United States and Europe, Allied Machine is positioned to bring innovative solutions and technical expertise directly to the customers' hands.



### The Beginning

Harold E. Stokey founded Allied Machine & Engineering to aid the war effort, manufacturing taper bearing lock nuts for the production of M1 tanks. Years later, after a sales meeting gone wrong, Stokey possessed a warehouse stocked with spade drill inserts. He set forth into the industry that would become Allied Machine's thriving identity: holemaking.



### The T-A®

When Harold's son, William H. Stokey, became the president and CEO, he developed the Throw Away, or T-A, spade drill insert system. The T-A revolutionized the holemaking industry, launching Allied Machine ahead of the competition. Since then, numerous innovations and advancements have been created from the T-A's inspiration.



### The Innovation

Since the development of the T-A, Allied Machine has expanded its product offering to support a vast range of customer applications, including large diameter and deep hole drilling, boring, reaming, burnishing, porting, and threading.

### The People

Allied Machine understands that high quality products are only one facet of success. Our customer support is crucial to what we do, and that's why we make sure the best engineers and customer service associates are in place to assist our customers around the world.

### The Future

With over 75 years of experience, Allied Machine has encountered the challenges of growth and success. By investing in cutting edge technology and the brightest and sharpest minds, our knowledge and capabilities continue to expand and grow every day.



**Steve Stokey**  
Executive Vice President

**William H. Stokey**  
President and CEO

**Mike Stokey**  
Executive Vice President



**WOHLHAUPTER®**



**SUPERION™**

**CRITERION™**



## Replaceable Insert Drills

- Reduce costs by decreasing set-up time and utilizing a single holder for the lives of multiple inserts
- Provide flexibility to quickly switch between inserts with different geometries
- Products:
  - GEN3SYS® XT | GEN3SYS® XT Pro
  - Original T-A® | GEN2 T-A®
  - High Performance | Universal



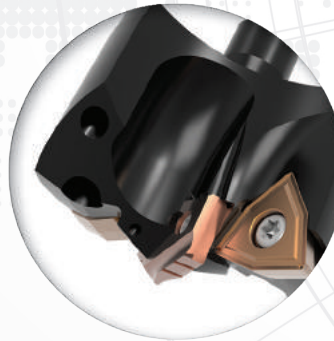
## Indexable Insert Drills

- Protect your investment and reduce your inventory with replaceable cartridges that allow the same holder to be used repeatedly
- Indexable inserts increase productivity and tool life while reducing costs
- Products:
  - 4TEX™ Drill
  - Revolution Drill®
  - Opening Drill®



## Replaceable / Indexable Insert Drills

- Allow for higher spindle speeds and take advantage of the power curve on modern CNC machines
- Achieve maximum penetration rates in deep hole drilling applications
- Holders cover a range of sizes with the replaceable heads determining the cutting diameter
- Products:
  - APX Drill



## Solid Carbide Drills

- Offer greater strength and stability when drilling tougher materials
- Available in diameters from 3mm - 20mm
- Can be made-to-order specifically for your application (Superion™ quoted specials)
  - ASC 320®
  - Superion™





## Structural Steel Solutions

- Deliver outstanding performance and durability in structural steel applications
- Designed to produce optimal results in difficult-to-machine materials
- Available in multiple lengths and diameters
- T-A® style drills have different insert geometry options to improve performance depending on material
- Products:
  - Original T-A® | GEN2 T-A®
  - GEN3SYS® XT Pro



## BTA (STS) Machining Solutions

- The internal ejection system flushes chips and debris from the hole with no interference to the cutting process
- Utilizes the advantages of the T-A® drill insert
- Designed to significantly increase penetration rates over brazed heads and traditional gun drills
- Products:
  - BT-A Drill



## Hydraulic Port Contour Cutters

- Save significant time and money by performing four processes in one step
- Replaceable insert design reduces costs, inventory, and set-up times
- Available in 4 industry specifications:
  - Imperial: SAE J-1926
  - Metric: ISO 6149-1:2006
  - Military: SAE AS5202
  - John Deere: JDS-G173.1
- Products:
  - AccuPort 432®



## Enhanced Special Drilling Capabilities

- Allied Machine Engineers are available to meet with you to evaluate your application and recommend the best solution for you
- Special drilling solutions can incorporate advanced features such as adjustable diameter locations, multiple steps, additional coolant designs, special lengths and diameters, and more
- Special drills can drastically reduce your cost-per-hole and increase your overall productivity by eliminating multiple processes and increasing tool life



## WOHLHAUPTER®

### High Precision Boring Systems

- Designs available for high volume applications that increase rigidity to improve performance
- Versatile boring heads that are flexible with changing applications while maintaining excellent performance
- Provides high precision with absolute repeatability to ensure every part is held to tolerance
- Offers an industry leading modular shank connection that maintains rigidity and reduces inventory on your boring system
- Available with both digital and analog settings
- Products:
  - Wohlhaupter® Boring Tools



## CRITERION™

### Modular Boring Systems

- The modular capabilities are ideal for use across multiple different projects
- Offers versatile boring heads suitable for all job shops and tooling rooms
- Provides an economical solution for low volume and/or short-term production applications
- Offers both rough and finish boring solutions
- Products:
  - Criterion™ Boring Tools

## S.C.A.M.I.®

### Expandable Reaming Solutions

- Expandable cutting diameters accommodate for wear, which extends tool life
- Replaceable cutting heads and rings reduce waste and improve production time versus solid high speed steel and carbide reamers
- Hold tight tolerances to ensure processes are performed to accurate specifications
- Reduce tooling costs because many items are available for recondition
- Products:
  - ALVAN® Reamers



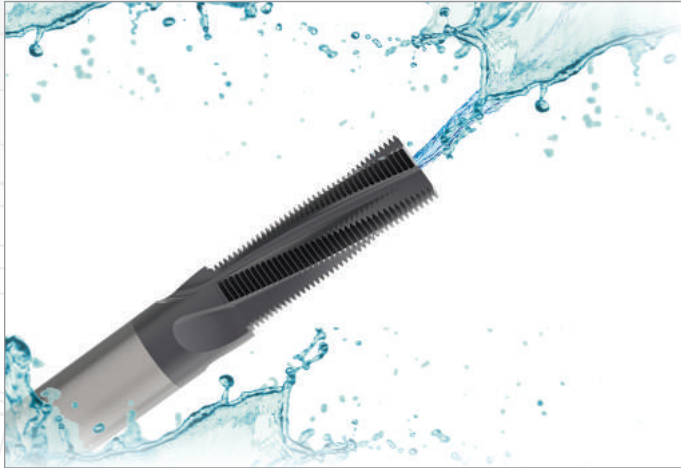
## S.C.A.M.I.®

### Roller Burnishing Solutions

- Produce excellent surface finishes
- Provide accurate size control
- Increase surface hardness
- Solutions for both through hole and blind hole applications
- Products:
  - S.C.A.M.I.® Roller Burnishing Tools







## Solid Carbide Thread Mills

- Available with coolant through options
- Cover a wide range of thread forms
- Provide optimal solutions for both high production projects and short-run applications
- Products
  - AccuThread™ 856
  - AccuThread™ T3
  - ThreadMills USA



## Replaceable Insert Thread Mills

- 3 insert lengths are available that cover a wide range of thread forms
- Holders can utilize inserts with different pitches and thread forms
- Repeatability is achieved by both the bolt-in style and the pin style locking systems
- Increase tool life by 25 - 50% with Allied Machine's AM210® coating
- Products
  - AccuThread™ 856: Bolt-in Style
  - AccuThread™ 856: Pin Style



## SPECIAL CAPABILITIES

When it comes to designing and developing special solutions for customers, Allied Machine is the top choice. If your application requires special tooling, give us a call. Our engineered specials are developed by the brightest engineers in the industry. Most of our standard tooling can be altered as specials, or we can create entirely new concepts for particularly unique applications.

One special tooling solution is Insta-Quote™, the online system that allows you to design your own special tooling 24/7. Receive a quote and drawings within minutes just by following the steps.

And with the addition of Superion™ technology and capabilities, we can customize made-to-order solid carbide tools to achieve optimal results for your applications.

Whatever your application, Allied Machine has the answer.



Insta-Quote™ 



 **SUPERION™**





# T-A® Drilling System

Replaceable Insert Drilling System | GEN2 T-A® | Original T-A®

► **Diameter Range:** 0.374" - 4.507" (9.50mm - 114.48mm)



## This is Not Yesterday's Spade Drill

The T-A drilling system is an innovation inspired by the Universal replaceable spade insert drilling system. However, with the development of the GEN2 T-A insert, along with the countless geometry options for the Original T-A, this drilling system provides benefits and performance that spade blade inserts of the past never could.

With constant innovations in holder designs, insert geometries and coatings, and coolant dispersion, the T-A drilling system continues to evolve and become much more productive and powerful than ever before.

|                                |                           |                                          |
|--------------------------------|---------------------------|------------------------------------------|
| Excellent hole size and finish | Optimizes chip evacuation | Wide range of geometry options available |
|--------------------------------|---------------------------|------------------------------------------|

## Applicable Industries



Aerospace



Agriculture



Automotive



Firearms



General  
Machining



Oil & Gas



Renewable  
Energy

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury.

When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words.

### **WARNING**

**WARNING** (shown above) means that failure to follow the precautions in this message could result in tool failure and serious injury.

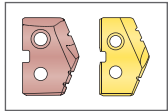
**NOTICE** means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

**NOTE** and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit [www.alliedmachine.com](http://www.alliedmachine.com) for the most up-to-date information and procedures.

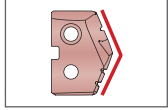
## Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



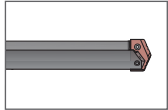
### T-A Inserts

Refers to the range of inserts that connect with the corresponding holders



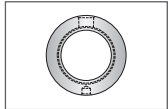
### Available Insert Geometries

Details for the different geometry options available for each T-A insert style



### T-A Holders

Refers to the range of holders that connect with the corresponding inserts



### Rotary Coolant Adapter (RCA) Information

Detailed instructions and information regarding the corresponding part(s)



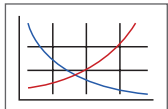
### T-ACR Chamfer Rings

Refers to the range of T-ACR chamfer rings available for the corresponding holders



### Technical Information

Detailed instructions and information regarding the corresponding part(s)



### Recommended Cutting Data

Speed and feed recommendations for optimum and safe drilling

| Series   | Diameter Range  |                 |
|----------|-----------------|-----------------|
|          | Imperial (inch) | Metric (mm)     |
| <b>Y</b> | 0.374 - 0.436   | 9.50 - 11.07    |
| <b>Z</b> | 0.437 - 0.510   | 11.10 - 12.95   |
| <b>0</b> | 0.511 - 0.695   | 12.98 - 17.65   |
| <b>1</b> | 0.690 - 0.960   | 17.53 - 24.38   |
| <b>2</b> | 0.961 - 1.380   | 24.41 - 35.05   |
| <b>3</b> | 1.353 - 1.882   | 34.36 - 47.80   |
| <b>4</b> | 1.850 - 2.570   | 46.99 - 65.28   |
| <b>5</b> | 2.456 - 3.000   | 62.38 - 76.20   |
| <b>6</b> | 3.001 - 3.507   | 76.22 - 89.08   |
| <b>7</b> | 3.508 - 4.000   | 89.10 - 101.60  |
| <b>8</b> | 4.001 - 4.507   | 101.63 - 114.48 |

## Introduction Information

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## T-A Drilling System Overview | Drill Inserts

| Series              | Y Series                                                                          | Z Series                                                                          | 0 Series                                                                          | 1 Series                                                                          | 2 Series                                                                            | 3 Series                                                                            | 4 Series                                                                            |
|---------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| GEN2 T-A            |  |  |  |  |   |  |  |
| D <sub>1</sub> inch | 0.374 - 0.436                                                                     | 0.437 - 0.510                                                                     | 0.511 - 0.695                                                                     | 0.690 - 0.960                                                                     | 0.961 - 1.380                                                                       | 1.353 - 1.882                                                                       | 1.850 - 2.570                                                                       |
| D <sub>1</sub> mm   | 9.5 - 11.07                                                                       | 11.10 - 12.95                                                                     | 12.98 - 17.65                                                                     | 17.53 - 24.38                                                                     | 24.41 - 35.05                                                                       | 34.36 - 47.80                                                                       | 46.99 - 65.28                                                                       |
| Half Series Option* |  |  |  |  |  |  |  |
| HSS Substrates      | Super Cobalt                                                                      | Super Cobalt                                                                      | Super Cobalt                                                                      | Super Cobalt                                                                      | Super Cobalt                                                                        | HSS<br>Super Cobalt<br>Premium Cobalt                                               | HSS<br>Super Cobalt                                                                 |
| Carbide Substrates  | C1 (K35)<br>C2 (K20)                                                              | C1 (K35)<br>C2 (K20)                                                              | C1 (K35)<br>C2 (K20)                                                              | C1 (K35)<br>C2 (K20)                                                              | C1 (K35)<br>C2 (K20)                                                                | –                                                                                   | –                                                                                   |
| Coatings            | AM200®<br>AM300®                                                                  | AM200®<br>AM300®                                                                  | AM200®<br>AM300®                                                                  | AM200®<br>AM300®                                                                  | AM200®<br>AM300®                                                                    | AM200®<br>TiN                                                                       | AM200®<br>TiN                                                                       |

\*See page A30: 7 for more information regarding half series options

| Series              | Y Series                                                                            | Z Series                                                                            | 0 Series                                                                            | 1 Series                                                                            | 2 Series                                                                              | 3 Series                                                                              | 4 Series                                                                              |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Original T-A        |   |   |   |   |    |   |   |
| D <sub>1</sub> inch | 0.374 - 0.436                                                                       | 0.437 - 0.510                                                                       | 0.511 - 0.695                                                                       | 0.690 - 0.960                                                                       | 0.961 - 1.380                                                                         | 1.353 - 1.882                                                                         | 1.850 - 2.570                                                                         |
| D <sub>1</sub> mm   | 9.5 - 11.07                                                                         | 11.10 - 12.95                                                                       | 12.98 - 17.65                                                                       | 17.53 - 24.38                                                                       | 24.41 - 35.05                                                                         | 34.36 - 47.80                                                                         | 46.99 - 65.28                                                                         |
| Half Series Option* |  |  |  |  |  |  |  |
| HSS Substrates      | Super Cobalt<br>Premium Cobalt                                                      | Super Cobalt<br>Premium Cobalt                                                      | Super Cobalt<br>Premium Cobalt                                                      | HSS<br>Super Cobalt<br>Premium Cobalt                                               | HSS<br>Super Cobalt<br>Premium Cobalt                                                 | Super Cobalt                                                                          | Super Cobalt                                                                          |
| Carbide Substrates  | C2 (K20)<br>C3 (K10)<br>C5 (P40)<br>N2                                              | C2 (K20)<br>C3 (K10)<br>C5 (P40)<br>N2                                              | C2 (K20)<br>C3 (K10)<br>C5 (P40)<br>N2                                              | C2 (K20)<br>C3 (K10)<br>C5 (P40)<br>N2                                              | C2 (K20)<br>C3 (K10)<br>C5 (P40)<br>N2                                                | C2 (K20)<br><br>C5 (P40)                                                              | –                                                                                     |
| Coatings            | TiN<br>TiAlN<br>TiCN                                                                | TiN<br>TiAlN<br>TiCN                                                                | TiN<br>TiAlN<br>TiCN                                                                | TiN<br>TiAlN<br>TiCN                                                                | TiN<br>TiAlN<br>TiCN                                                                  | TiN                                                                                   | TiN                                                                                   |

\*See page A30: 7 for more information regarding half series options

| Drill Insert Coatings                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>AM300®</b></p> <ul style="list-style-type: none"> <li>Increased heat resistance over AM200® coating</li> <li>Up to 20% increased tool life over AM200 coating</li> <li>Provides superior tool life at high penetration rates</li> <li>Color: copper/orange</li> </ul> |  <p><b>AM200®</b></p> <ul style="list-style-type: none"> <li>First choice for increased heat resistance over TiN, TiCN, and TiAlN with improved wear capabilities</li> <li>Allows for improved tool life and higher penetration rates</li> <li>Over 20% increase in tool life compared to TiAlN coating</li> <li>Color: copper/bronze</li> </ul> |  <p><b>TiN</b></p> <ul style="list-style-type: none"> <li>General purpose coating</li> <li>Improved tool life over non-coated inserts</li> <li>Excellent choice for aluminum</li> <li>Color: gold/yellow</li> </ul> |  <p><b>TiAlN</b></p> <ul style="list-style-type: none"> <li>Excellent choice for wear resistance over high surface speeds</li> <li>Excellent oxidation resistance</li> <li>Maximum working temperature 800°C</li> <li>Color: violet/gray</li> </ul> |  <p><b>TiCN</b></p> <ul style="list-style-type: none"> <li>Excellent choice for wear resistance over low surface speeds</li> <li>High hardness/wear resistance</li> <li>Maximum working temperature 400°C</li> <li>Color: blue/gray</li> </ul> |

A

DRILLING

| 5 Series                                                                          | 6 Series                                                                          | 7 Series                                                                           | 8 Series                                                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| 2.456 - 3.000                                                                     | 3.001 - 3.507                                                                     | 3.508 - 4.000                                                                      | 4.001 - 4.507                                                                       |
| 62.38 - 76.20                                                                     | 76.22 - 89.08                                                                     | 89.10 - 101.60                                                                     | 101.63 - 114.48                                                                     |
|  |  |   |  |
| HSS<br>Super Cobalt                                                               | HSS<br>Super Cobalt                                                               | HSS<br>Super Cobalt                                                                | HSS<br>Super Cobalt                                                                 |
| –                                                                                 | –                                                                                 | –                                                                                  | –                                                                                   |
| AM200®<br>TiN                                                                     | AM200®<br>TiN                                                                     | AM200®<br>TiN                                                                      | AM200®<br>TiN                                                                       |

B

BORING

| 5 Series                                                                            | 6 Series                                                                            | 7 Series                                                                            | 8 Series                                                                              |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   |   |  |   |
| 2.456 - 3.000                                                                       | 3.001 - 3.507                                                                       | 3.508 - 4.000                                                                       | 4.001 - 4.507                                                                         |
| 62.38 - 76.20                                                                       | 76.22 - 89.08                                                                       | 89.10 - 101.60                                                                      | 101.63 - 114.48                                                                       |
|  |  |  |  |
| HSS<br>Super Cobalt                                                                 | HSS<br>Super Cobalt                                                                 | HSS<br>Super Cobalt                                                                 | HSS<br>Super Cobalt                                                                   |
| –                                                                                   | –                                                                                   | –                                                                                   | –                                                                                     |
| TiN                                                                                 | TiN                                                                                 | TiN                                                                                 | TiN                                                                                   |

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

| Drill Insert Grades                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HSS (Original / GEN2)</b><br>First choice for general purpose use. Suited for difficult machining applications with low rigidity, as well as deep hole drilling. Recommended for drilling most steels, cast irons, and aluminum alloys up to 275 BHN 96. | <b>HSS Super Cobalt (Original / GEN2)</b><br>Suited for good-to-rigid machining applications, used for drilling exotic and high alloy materials, or general use when surface speed needs to be increased. For use in material hardness up to 350 BHN 121. | <b>HSS Premium Cobalt (Original / GEN2)</b><br>Suited for rigid machining applications, used for drilling exotic and high alloy materials, or general use when surface speed needs to be increased. For material hardness up to 400 BHN 139. | <b>Carbide C5 (P40) (Original only)</b><br>Excellent for drilling free machining steel, low/medium carbon steels, alloy steels, high strength steels, tool steels, and hardened steels.                                      |
| <b>Carbide C3 (K10) (Original only)</b><br>Designed for drilling grey/white cast irons. The special geometry offers substantial increase in penetration rates and provides exceptional edge strength and tool life.                                         | <b>Carbide C2 (K20) (Original / GEN2)</b><br>Excellent for drilling high temperature alloys, titanium alloys, cast aluminum, SG/Nodular cast iron, grey/white iron, aluminum bronze, brass, copper, and certain stainless steels.                         | <b>Carbide C1 (K35) (Original / GEN2)</b><br>Excellent for drilling free machining steel, low/medium carbon steels, alloy steels, high strength steels, tool steels, and hardened steels.                                                    | <b>Carbide N2 (Original only)</b><br>Allied's N2 carbide is used with CVD diamond coating. This improves the insert's hardness, durability, and performance, which extends tool life between 30 - 50x over uncoated carbide. |

## Insert Geometries

### There's a Geometry for That

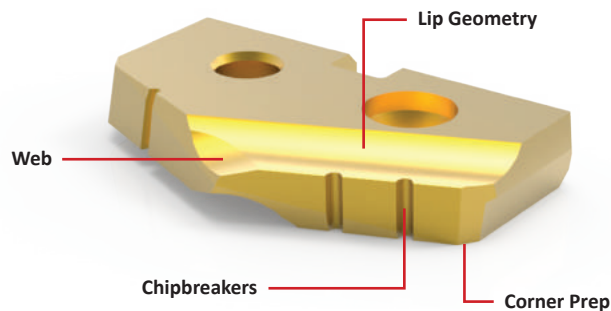
Allied Machine knows there isn't a one-size-fits-all solution when it comes to holmaking. To better accommodate the countless holes our customers drill, we have developed multiple geometry options, with new geometries in development at all times.

If you're unsure which geometry would be best for your application, give our Application Engineers a call. They're standing by, ready to point you in the right direction.

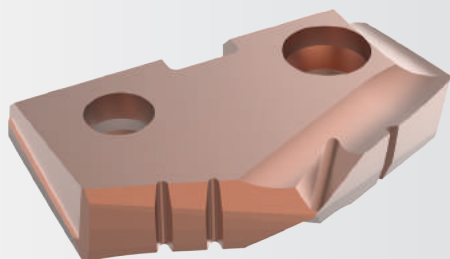
☎ 1.330.343.4283

☎ 1.800.321.5537 (toll free United States and Canada)

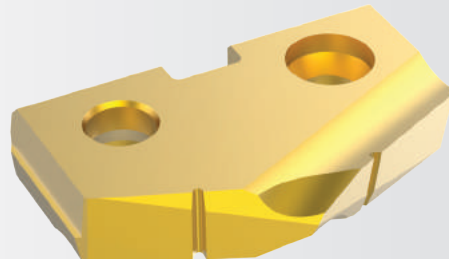
✉ [appeng@alliedmachine.com](mailto:appeng@alliedmachine.com)



GEN2 T-A Drill Inserts

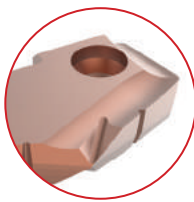


Original T-A Drill Inserts



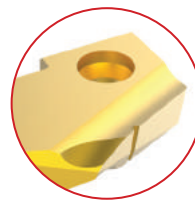
#### Standard

- Offers substantial increases in penetration rates and tool life
- Improves centering, drill stability, chip formation, and lowers drill forces
- Provides smoother break-out on through hole applications



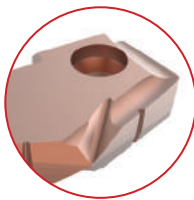
#### Standard

- Offers excellent penetration rates and tool life
- Smooth break-out on through holes
- Increases drill stability and chip formation
- Ideally suited for low-to-high rigidity machining applications



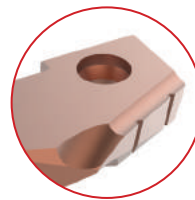
#### High Efficiency (-HE)

- Excellent chip formation in materials with very high elasticity/ductility and poor chip forming conditions
- Effective in lower powered machines
- Material example: low carbon steel (not suitable for stainless steel)



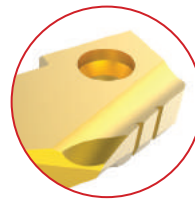
#### Tiny Chip (-TC)

- Unique lip and point design for excellent chip control
- Improves drilling capabilities in long-chipping materials
- Enhanced performance in lower-powered machines



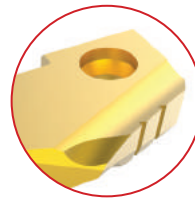
#### Corner Radius (-CR)

- Improves exit burrs
- Excellent surface finish in most applications
- Improves heat dispersion and tool life
- Can be used in addition to other geometries (as a special)



#### Special Corner Preparation (-SK)

- Ideal for machining cast iron materials
- Larger than a standard corner clip
- Improves heat resistance
- Standard feature on CI, HI, and HR geometries

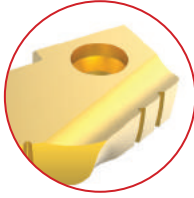


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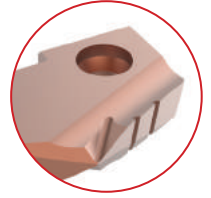
### Cam Point (-CP)

- Helical cam ground point
- Improves drill stability and centering characteristics
- Reduces bell mouthing when using longer holders
- Target materials: steels, cast/forged steels, cast iron



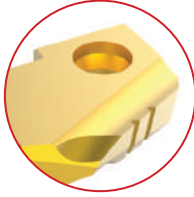
### Notch Point® (-NP)

- Reduces bell mouth and lead-off
- Increases stability in deep hole applications
- Reduces thrust
- Can be used in addition to other geometries like Cast Iron, High Rake, and High Impact



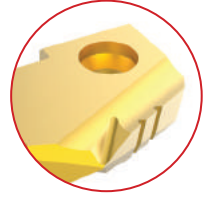
### High Impact (-HI)

- Designed for materials with hardness > 200 BHN (700 N/mm²)
- Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics
- SK corner clip improves tool life
- Target materials: structural/cast and forged steels (not suitable for stainless steel)



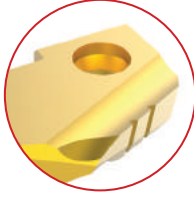
### High Impact Notch Point® (-IN)

- Combination of High Impact and Notch Point geometries
- Increases stability in deep hole applications
- Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics



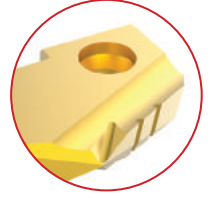
### High Rake (-HR)

- Designed for materials with hardness < 200 BHN (700 N/mm²)
- Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness
- SK corner clip improves tool life
- Target materials: soft steels, steel castings and forgings (not suitable for stainless steel)



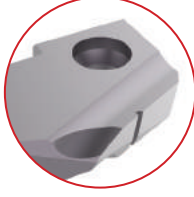
### High Rake Notch Point® (-RN)

- Combination of High Rake and Notch Point geometries
- Reduces bell mouth and lead-off
- Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness



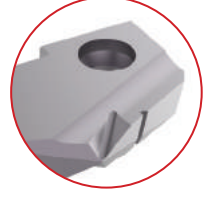
### Cast Iron (-CI)

- Specifically designed for use in grey and white cast irons
- Exceptional edge strength
- SK2 corner preparation for improved tool life
- Standard geometry on C3 (K10) carbide inserts



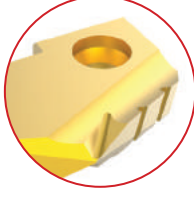
### Cast Iron Notch Point® (-CN)

- Combination of Cast Iron and Notch Point geometries
- Increases stability in deep hole applications
- Specifically designed for use in grey and white cast irons



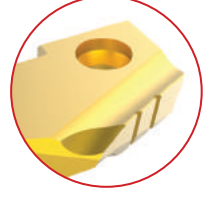
### Aluminum (-AN)

- First choice for machining aluminum
- Enhanced geometry improves chip formation and hole quality
- TiN coating improves heat resistance and extends tool life



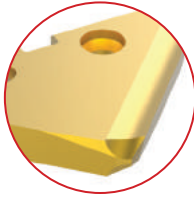
### Brass (-BR)

- Improves tool life due to the specialized geometry and edge preparation
- Reduces self-feed tendency



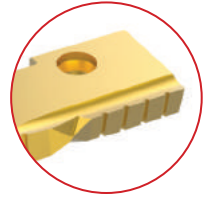
### 90° Spot and Chamfer (-SP)

- Center cutting web design improves stability and strength
- Eliminates the need for a secondary chamfering operation
- Available with chipbreakers (see -SW below)



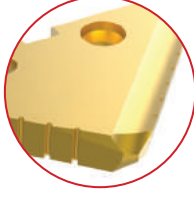
### Flat Bottom (-FB)

- Ideal for flattening or squaring the bottom of pre-existing holes with high rigidity
- Includes small 10° point on the nose of the insert
- Available without chipbreakers (see -FN below)



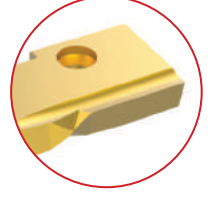
### 90° Spot and Chamfer (-SW)

- Center cutting web design improves stability and strength
- Eliminates the need for a secondary chamfering operation
- With added chipbreakers



### Flat Bottom (-FN)

- Ideal for flattening or squaring the bottom of pre-existing holes with high rigidity
- Includes small 10° point on the nose of the insert
- Available with chipbreakers (see -FB above)



## Available Standard Insert Geometries

The following table shows which geometries are available as a standard item (based on insert type and series). If you need a geometry on your insert, but it is not listed as available, please call the Application Engineering department to discuss quoting your insert as a special to include the desired geometry.

Additional lead time and process fees may apply.

| Available Additional Geometries |                            | GEN2 T-A     |              |              | Original T-A |          |          |              |                 |              |          |
|---------------------------------|----------------------------|--------------|--------------|--------------|--------------|----------|----------|--------------|-----------------|--------------|----------|
|                                 |                            | Y - 2 Series | 3 - 4 Series | 5 - 8 Series | HSS Inserts  |          |          |              | Carbide Inserts |              |          |
|                                 |                            |              |              |              | Y - 2 Series | 3 Series | 4 Series | 5 - 8 Series | Y - Z Series    | 0 - 2 Series | 3 Series |
| -AN                             | Aluminum                   |              |              |              | ●            |          |          |              | ●               | ●            |          |
| -BT                             | BT-A Specific              |              |              |              |              |          |          |              |                 | ●            | ●        |
| -BR                             | Brass                      |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -CI                             | Cast Iron                  |              | ●            |              | ●            | ●        | ●        |              | ●               | ●            | ●        |
| -CN                             | Notch Point® Cast Iron     |              |              |              | ●            |          |          |              | ●               | ●            | ●        |
| -CP                             | Cam Point                  |              |              |              | ●            |          |          |              | ●               | ●            |          |
| -CR                             | Corner Radius              |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -FB                             | Flat Bottom                |              |              |              | ●            | ●        | ●        |              |                 |              |          |
| -HE                             | High Elasticity            | ●            | ●            |              |              |          |          |              |                 |              |          |
| -HI                             | High Impact                |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -HR                             | High Rake                  |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -IN                             | Notch Point® High Impact   |              |              |              | ●            |          |          |              | ●               | ●            | ●        |
| -NC                             | No Chipbreaker             |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -NP                             | Notch Point®               |              |              |              | ●            |          |          |              | ●               | ●            | ●        |
| -RN                             | Notch Point® High Rake     |              |              |              | ●            |          |          |              | ●               | ●            | ●        |
| -SK                             | Special Corner Preparation |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |
| -SP                             | 90° Spot and Chamfer       |              |              |              | ●            | ●        |          |              |                 |              |          |
| -SS                             | 150° Structural Steel      |              |              |              | ●            | ●        |          |              |                 |              |          |
| -TC                             | Tiny Chip                  |              |              |              | ●            |          |          |              | ●               | ●            |          |
| -TW                             | Thin Wall                  |              |              |              | ●            | ●        |          |              |                 |              |          |
| -WC                             | No Corner Clips            |              | ●            | ●            | ●            | ●        | ●        | ●            | ●               | ●            | ●        |

# Drill Holders

## Holder Length Options (for use with both GEN2 and Original T-A inserts)



**Stub Length** | Series: Y - 3 (straight flute flanged shank only)



**Short Length** | Series: ALL



**Intermediate Length** | Series: ALL



**Standard Length** | Series: ALL



**Standard Plus Length** | Series: Y - 2 (helical flute flanged shank only)



**Extended Length** | Series: 0 - 3



**Long Length** | Series: 0 - 2



**Long Plus Length** | Series: 0



**XL Length** | Series: ALL



**3XL Length** | Series: ALL

## Holder Shank Options



**ER Collet Shank**  
Series: Y, Z, 0



**Straight Shank**  
Series: ALL



**Morse Taper Shank**  
Series: ALL



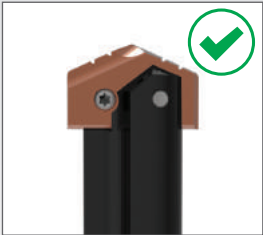
**Flanged Shank**  
Series: ALL

### Half Series Holders (0.5, 1.5, 2.5)

Half series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified half series inserts should be used with half series holders.



Standard Series Insert +  
Standard Series Holder



Half Series Insert +  
Standard Series Holder



Half Series Insert +  
Half Series Holder



Standard Series Insert +  
Half Series Holder

**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

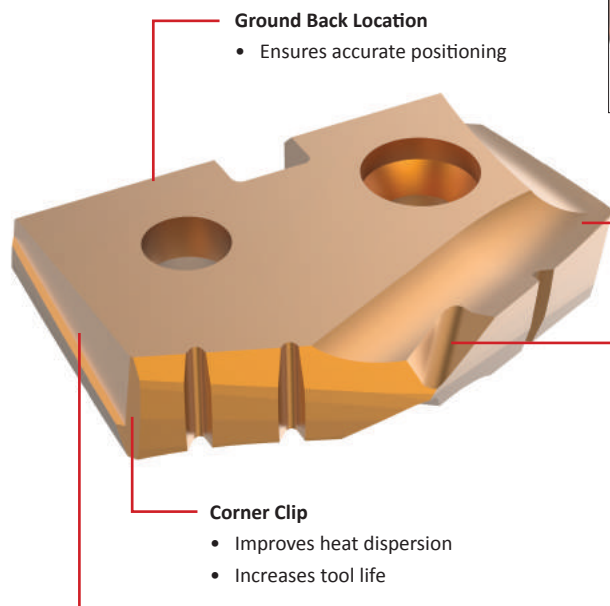


## Technical Information

### Next Level Solutions: GEN2 T-A

What takes a solution to the next level? When you make innovative designs and enhancements to a product that already achieves high performance results, you push the boundaries of what is known. And when you push the known boundaries, the unknown becomes the next level.

After all, everything begins as unknown.



**Helical Margin** (not all series)

- Increases drill stability

### Improving Chip Formation

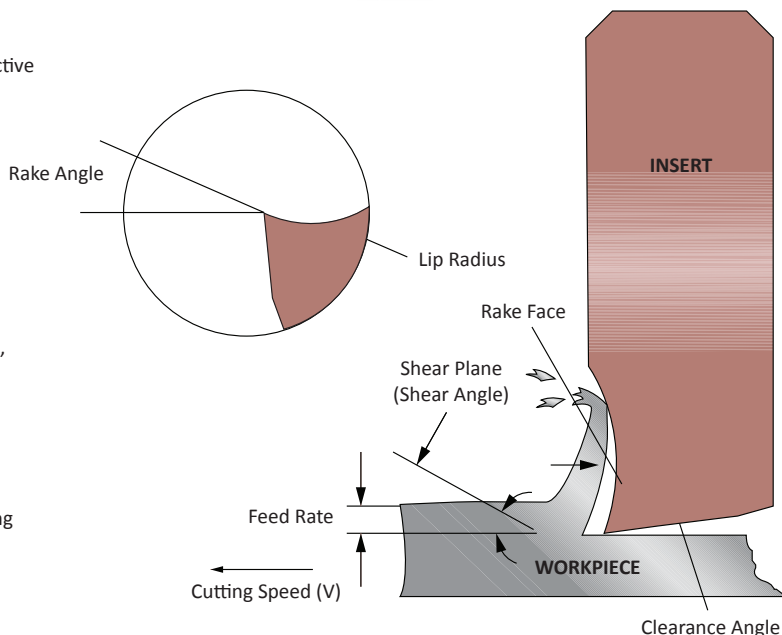
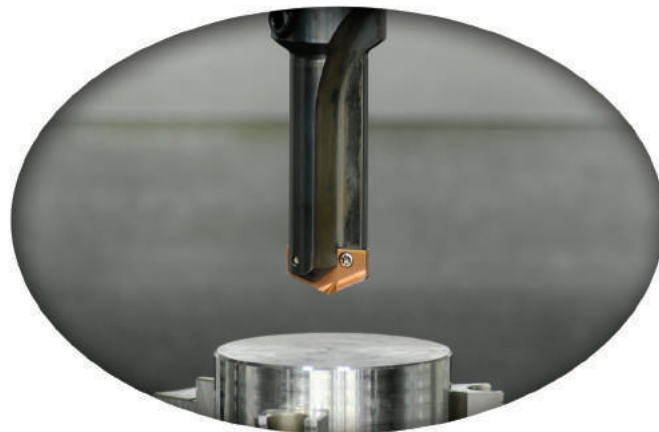
Achieving optimal chip formation is crucial. The quality of the chips being produced directly affects everything in the entire process: the cycle time, the tool life, the scrap rate, and the quality and condition of the final machined hole.

We know how important chip formation is. That's why we constantly improve and develop new geometries to create a better, more productive T-A product.

### Setting Up New Applications

- Check coolant flows adequately through the tool before beginning
- Drill a short hole 1xD deep initially
- The chips produced should be short in length and material colored, not straw or blue
- Measure the hole produced to check that it is within the desired tolerance
- If all is correct, continue to machine the remainder of the hole
- Ensure the drilling process is quiet and smooth with no chip packing

|  |                                                                                                                                                                                                                                                                                           |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>AM300® Coating</b></p> <ul style="list-style-type: none"> <li><b>Provides superior tool life</b> at high penetration rates</li> <li><b>Improves heat resistance</b> over AM200® coating</li> <li><b>Increases tool life</b> up to 20% over AM200 coating</li> </ul>                 |
|  | <p><b>AM200® Coating</b></p> <ul style="list-style-type: none"> <li><b>Improves heat resistance</b> over TiN, TiCN, and TiAlN with improved wear capabilities</li> <li><b>Increases penetration rates</b></li> <li><b>Increases tool life</b> more than 20% over TiAlN coating</li> </ul> |



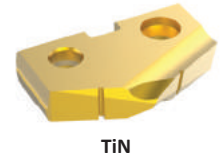
## Wear vs Toughness

When selecting a grade of cutting tool material for your application, both wear resistance and grade toughness should be considered. The greater the wear resistance a cutting tool material exhibits, the more likely chipping or fracture is to occur. This requires more rigid machining conditions.

On the other hand, to effectively machine some materials, cobalt or carbide grades of cutting tool material may be required. The graph will aid you in the selection of a cutting tool material with the right combination of wear resistance and toughness to make your application both efficient and cost effective.



AM200°



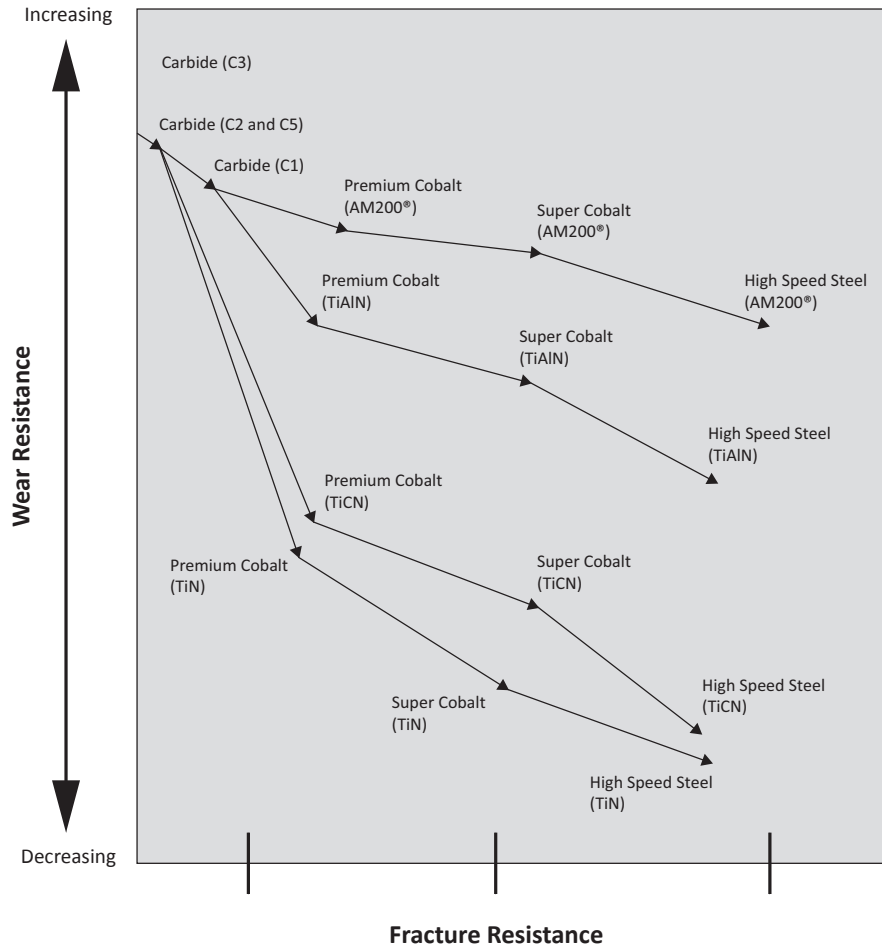
TiN



TiAlN



TiCN



## T-A System Guidelines for Use

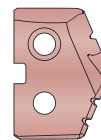
- Select the shortest holder possible for the application
- Ensure the T-A holder is held securely and is within 0.003" (0.08mm) of center line
- The T-A insert should be installed in the slot of the holder using the TORX Plus screws provided. These should be tightened to the values listed on the T-A holder pages
- The holder slot should be clean from dirt or debris
- Check that the insert outer diameter is a minimum of 0.012" (0.30mm) larger than the holder body diameter
- Use the recommended cutting data section for guidance when selecting correct insert grades, along with speeds and feeds
- **NOTE:** These cutting parameters are starting conditions only and make no allowance for machine or component rigidity



## Product Nomenclature

### T-A Drill Inserts

|          |          |          |          |   |             |
|----------|----------|----------|----------|---|-------------|
| <b>4</b> | <b>5</b> | <b>3</b> | <b>H</b> | – | <b>0115</b> |
| 1        | 2        | 3        | 4        |   | 5           |



| 1. Insert                        | 2. Material                                                                                                                                           | 3. Series                                                                                                                                                                    | 4. Coating                                                   | 5. Diameter                                  |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------|
| 1 = Original T-A<br>4 = GEN2 T-A | 3 = HSS<br>5 = Super cobalt<br>8 = Premium cobalt<br>C1 = C1 (K35) carbide<br>C2 = C2 (K20) carbide<br>C3 = C3 (K10) carbide<br>C5 = C5 (P40) carbide | Y = Y series<br>Z = Z series<br>0 = 0 series<br>1 = 1 series<br>2 = 2 series<br>3 = 3 series<br>4 = 4 series<br>5 = 5 series<br>6 = 6 series<br>7 = 7 series<br>8 = 8 series | P = AM300®<br>H = AM200®<br>A = TiAlN<br>N = TiCN<br>T = TiN | 0017 = Inch<br>.515 = Decimal<br>13 = Metric |

### Ordering Instructions

#### ► Standard Items:

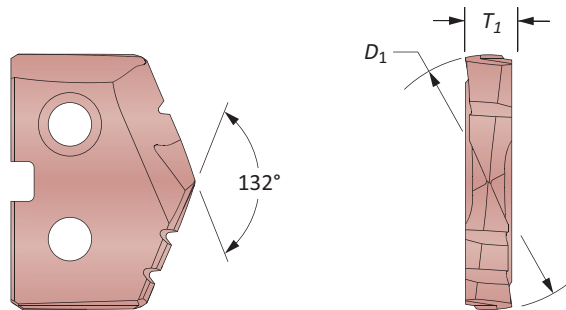
All orders are processed through Allied Machine's computerized order entry and invoicing system. Please specify the correct catalog number as well as a full description of the desired item(s) so we can process your order accurately and efficiently. Incorrect item numbers and/or descriptions will cause unnecessary delays and possible returns that are subject to a 10% restocking charge. Your assistance is critical if we are to achieve our goal of processing orders and shipping in-stock items error free within 24 hours.

#### ► Non-Standard Sizes and Geometries:

|                                             |                                                                                                                                                                                                                 |                                                                                                               |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Non-standard diameter                       | Substitute the required diameter in place of the standard diameter.<br>Ex: Standard item number<br>Non-standard diameter with standard geometry (inch)<br>Non-standard diameter with standard geometry (metric) | <b>132T-0101</b><br><b>132T-1.0200</b> (Note: 4 decimal places)<br><b>132T-34.20</b> (Note: 2 decimal places) |
| Special geometry                            | Add the special geometry code at the end of the standard item number (see pages A30: 4 - 6 for geometry options).<br>Ex: Standard item number<br>Standard diameter with special geometry (inch)                 | <b>132T-0101</b><br><b>132T-0101-SK</b>                                                                       |
| Non-standard diameter with special geometry | Replace the standard diameter and add the special geometry code.<br>Ex: Standard item number<br>Non-standard diameter with special geometry (inch)                                                              | <b>132T-0101</b><br><b>132T-1.0200-SK</b> (Note: 4 decimal places)                                            |

### Reference Key

| Symbol | Attribute        |
|--------|------------------|
| $D_1$  | Insert diameter  |
| $T_1$  | Insert thickness |

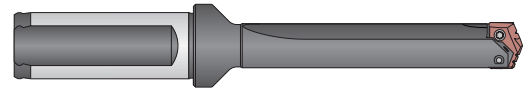




## Product Nomenclature

### T-A Drill Holders

|          |           |           |          |   |            |          |
|----------|-----------|-----------|----------|---|------------|----------|
| <b>2</b> | <b>30</b> | <b>20</b> | <b>S</b> | — | <b>004</b> | <b>I</b> |
| 1        | 2         | 3         | 4        |   | 5          | 6        |

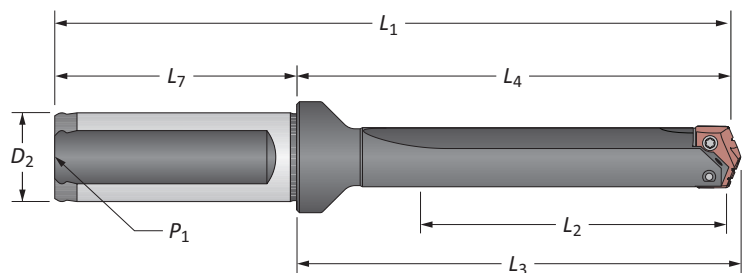


|                       |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                    |                                           |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>1. Holder</b>      | <b>2. Length</b>                                                                                                                                                                                                                 | <b>3. Series</b>                                                                                                                                                                                                                                                                                   | <b>4. Flute</b>                           |
| <b>2</b> = T-A holder | <b>10</b> = Stub<br><b>20</b> = Short<br><b>30</b> = Intermediate<br><b>40</b> = Standard<br><b>45</b> = Standard Plus<br><b>50</b> = Extended<br><b>60</b> = Long<br><b>65</b> = Long Plus<br><b>70</b> = XL<br><b>90</b> = 3XL | <b>Y0</b> = Y series<br><b>Z0</b> = Z series<br><b>00</b> = 0 series<br><b>05</b> = 0.5 series<br><b>10</b> = 1 series<br><b>15</b> = 1.5 series<br><b>20</b> = 2 series<br><b>25</b> = 2.5 series<br><b>30</b> = 3 series<br><b>40</b> = 4 series<br><b>50</b> = 5 series<br><b>70</b> = 7 series | <b>S</b> = Straight<br><b>H</b> = Helical |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                  |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------|---------------|------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|-----------------|------------------|------------------|---------------------|------------------|--|---------------------|------------------|--|---------------------|------------------|--|-----------------|--|--|-----------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>5. Shank Designator</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>6. Shank Code</b> |                  |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
| <table><tr><td><b>Morse Taper</b></td><td><b>Imperial</b></td><td><b>Metric</b></td></tr><tr><td><b>002</b> = 2MT</td><td><b>063</b> = 5/8"</td><td><b>16</b> = 16mm</td></tr><tr><td><b>003</b> = 3MT</td><td><b>075</b> = 3/4"</td><td><b>20</b> = 20mm</td></tr><tr><td><b>004</b> = 4MT</td><td><b>100</b> = 1"</td><td><b>25</b> = 25mm</td></tr><tr><td><b>005</b> = 5MT</td><td><b>125</b> = 1-1/4"</td><td><b>32</b> = 32mm</td></tr><tr><td></td><td><b>150</b> = 1-1/2"</td><td><b>40</b> = 40mm</td></tr><tr><td></td><td><b>175</b> = 1-3/4"</td><td><b>50</b> = 50mm</td></tr><tr><td></td><td><b>200</b> = 2"</td><td></td></tr><tr><td></td><td><b>300</b> = 3"</td><td></td></tr></table> | <b>Morse Taper</b>   | <b>Imperial</b>  | <b>Metric</b> | <b>002</b> = 2MT | <b>063</b> = 5/8" | <b>16</b> = 16mm | <b>003</b> = 3MT | <b>075</b> = 3/4" | <b>20</b> = 20mm | <b>004</b> = 4MT | <b>100</b> = 1" | <b>25</b> = 25mm | <b>005</b> = 5MT | <b>125</b> = 1-1/4" | <b>32</b> = 32mm |  | <b>150</b> = 1-1/2" | <b>40</b> = 40mm |  | <b>175</b> = 1-3/4" | <b>50</b> = 50mm |  | <b>200</b> = 2" |  |  | <b>300</b> = 3" |  | <b>I</b> = Imperial Morse taper<br><b>M</b> = Metric Morse taper<br><b>L</b> = Lathe shank<br><b>F</b> = Flanged shank<br><b>FM</b> = Flanged metric shank |  |
| <b>Morse Taper</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Imperial</b>      | <b>Metric</b>    |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
| <b>002</b> = 2MT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>063</b> = 5/8"    | <b>16</b> = 16mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
| <b>003</b> = 3MT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>075</b> = 3/4"    | <b>20</b> = 20mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
| <b>004</b> = 4MT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>100</b> = 1"      | <b>25</b> = 25mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
| <b>005</b> = 5MT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>125</b> = 1-1/4"  | <b>32</b> = 32mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>150</b> = 1-1/2"  | <b>40</b> = 40mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>175</b> = 1-3/4"  | <b>50</b> = 50mm |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>200</b> = 2"      |                  |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>300</b> = 3"      |                  |               |                  |                   |                  |                  |                   |                  |                  |                 |                  |                  |                     |                  |  |                     |                  |  |                     |                  |  |                 |  |  |                 |  |                                                                                                                                                            |  |

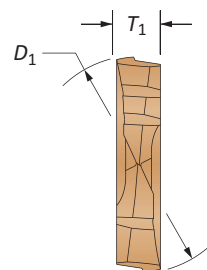
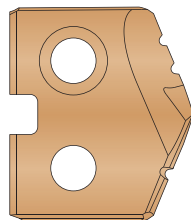
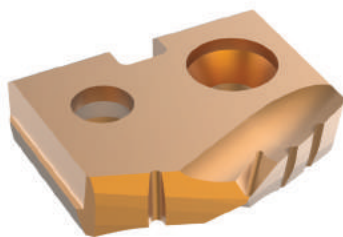
### Reference Key

| Symbol     | Attribute                     |
|------------|-------------------------------|
| $D_2$      | Shank diameter                |
| $L_1$      | Overall length                |
| $L_2$      | Drill depth                   |
| $L_3$      | Holder reference length       |
| $L_4$      | Holder length                 |
| $L_7$      | Shank length                  |
| $P_1$      | Rear pipe tap                 |
| $P_2$      | Side pipe tap                 |
| <b>RCA</b> | Corresponding RCA item number |
| <b>MT</b>  | Morse taper size              |
| <b>ER</b>  | ER collet size                |



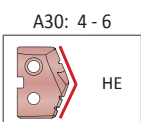
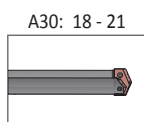
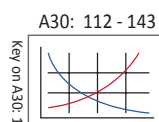
## GEN2 T-A Drill Inserts

Y Series | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



HSS Inserts – Super Cobalt • Carbide Inserts – C2 (K20) | C1 (K35)

| Fractional Equivalent | Insert     |          |       | HSS Part No.                                                                                                 | Carbide Part No.                                                                                          |                                                                                                           |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>AM200®<br>Super Cobalt | <br>AM300®<br>C2 (K20) | <br>AM300®<br>C1 (K35) |
| –                     | 0.3740     | 9.50     | 3/32  | 45YH-9.5                                                                                                     | 4C2YP-9.5                                                                                                 | 4C1YP-9.5                                                                                                 |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 45YH-0012                                                                                                    | 4C2YP-0012                                                                                                | 4C1YP-0012                                                                                                |
| W                     | 0.3860     | 9.80     | 3/32  | 45YH-.386                                                                                                    | 4C2YP-.386                                                                                                | 4C1YP-.386                                                                                                |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 45YH-.390                                                                                                    | 4C2YP-.390                                                                                                | 4C1YP-.390                                                                                                |
| –                     | 0.3937     | 10.00    | 3/32  | 45YH-10                                                                                                      | 4C2YP-10                                                                                                  | 4C1YP-10                                                                                                  |
| –                     | 0.4016     | 10.20    | 3/32  | 45YH-10.2                                                                                                    | 4C2YP-10.2                                                                                                | 4C1YP-10.2                                                                                                |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 45YH-0013                                                                                                    | 4C2YP-0013                                                                                                | 4C1YP-0013                                                                                                |
| –                     | 0.4134     | 10.50    | 3/32  | 45YH-10.5                                                                                                    | 4C2YP-10.5                                                                                                | 4C1YP-10.5                                                                                                |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 45YH-.421                                                                                                    | 4C2YP-.421                                                                                                | 4C1YP-.421                                                                                                |
| –                     | 0.4252     | 10.80    | 3/32  | 45YH-10.8                                                                                                    | 4C2YP-10.8                                                                                                | 4C1YP-10.8                                                                                                |
| –                     | 0.4331     | 11.00    | 3/32  | 45YH-11                                                                                                      | 4C2YP-11                                                                                                  | 4C1YP-11                                                                                                  |



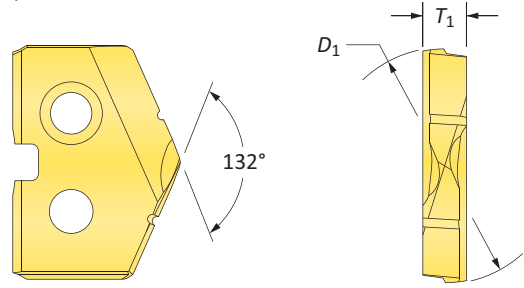
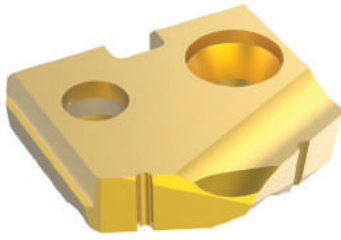
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. ➔

|                  |                    |
|------------------|--------------------|
| TiN = 45YT-XXXX  | TiAlN = 45YA-XXXX  |
| TiCN = 45YN-XXXX | AM200® = 45YH-XXXX |

Inserts sold in quantities of 2

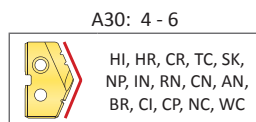
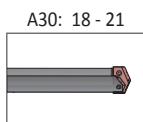
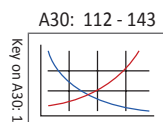
## Original T-A Drill Inserts

Y Series | HSS | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



### HSS Inserts – Premium Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| –                     | 0.3740     | 9.50     | 3/32  | 18YT-9.5                                                                               | 18YA-9.5                                                                                  | 18YN-9.5                                                                                 |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 18YT-0012                                                                              | 18YA-0012                                                                                 | 18YN-0012                                                                                |
| W                     | 0.3860     | 9.80     | 3/32  | 18YT-.386                                                                              | 18YA-.386                                                                                 | 18YN-.386                                                                                |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 18YT-.390                                                                              | 18YA-.390                                                                                 | 18YN-.390                                                                                |
| –                     | 0.3937     | 10.00    | 3/32  | 18YT-10                                                                                | 18YA-10                                                                                   | 18YN-10                                                                                  |
| –                     | 0.4016     | 10.20    | 3/32  | 18YT-10.2                                                                              | 18YA-10.2                                                                                 | 18YN-10.2                                                                                |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 18YT-0013                                                                              | 18YA-0013                                                                                 | 18YN-0013                                                                                |
| –                     | 0.4134     | 10.50    | 3/32  | 18YT-10.5                                                                              | 18YA-10.5                                                                                 | 18YN-10.5                                                                                |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 18YT-.421                                                                              | 18YA-.421                                                                                 | 18YN-.421                                                                                |
| –                     | 0.4252     | 10.80    | 3/32  | 18YT-10.8                                                                              | 18YA-10.8                                                                                 | 18YN-10.8                                                                                |
| –                     | 0.4331     | 11.00    | 3/32  | 18YT-11                                                                                | 18YA-11                                                                                   | 18YN-11                                                                                  |



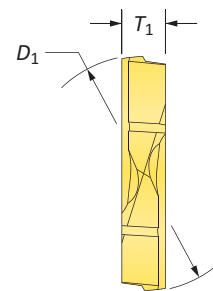
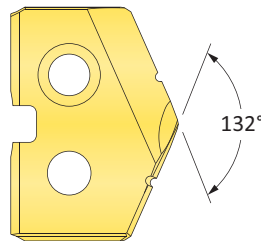
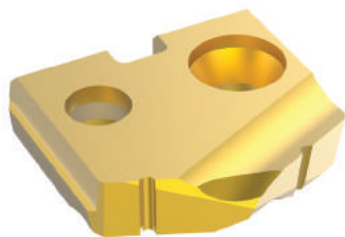
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 2

|                  |                    |
|------------------|--------------------|
| TiN = 18YT-XXXX  | TiAlN = 18YA-XXXX  |
| TiCN = 18YN-XXXX | AM200® = 18YH-XXXX |

## Original T-A Drill Inserts

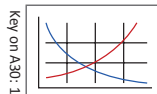
Y Series | HSS | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



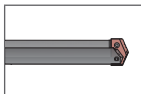
## HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                  |                                                                                              |                                                                                             |
|-----------------------|------------|----------|-------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiAlN | <br>TiCN |
| –                     | 0.3740     | 9.50     | 3/32  | 15YT-9.5                                                                                  | 15YA-9.5                                                                                     | 15YN-9.5                                                                                    |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 15YT-0012                                                                                 | 15YA-0012                                                                                    | 15YN-0012                                                                                   |
| W                     | 0.3860     | 9.80     | 3/32  | 15YT-.386                                                                                 | 15YA-.386                                                                                    | 15YN-.386                                                                                   |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 15YT-.390                                                                                 | 15YA-.390                                                                                    | 15YN-.390                                                                                   |
| –                     | 0.3937     | 10.00    | 3/32  | 15YT-10                                                                                   | 15YA-10                                                                                      | 15YN-10                                                                                     |
| –                     | 0.4016     | 10.20    | 3/32  | 15YT-10.2                                                                                 | 15YA-10.2                                                                                    | 15YN-10.2                                                                                   |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 15YT-0013                                                                                 | 15YA-0013                                                                                    | 15YN-0013                                                                                   |
| –                     | 0.4134     | 10.50    | 3/32  | 15YT-10.5                                                                                 | 15YA-10.5                                                                                    | 15YN-10.5                                                                                   |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 15YT-.421                                                                                 | 15YA-.421                                                                                    | 15YN-.421                                                                                   |
| –                     | 0.4252     | 10.80    | 3/32  | 15YT-10.8                                                                                 | 15YA-10.8                                                                                    | 15YN-10.8                                                                                   |
| –                     | 0.4331     | 11.00    | 3/32  | 15YT-11                                                                                   | 15YA-11                                                                                      | 15YN-11                                                                                     |

A30: 112 - 143



A30: 18 - 21



A30: 4 - 6



HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 2

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TiAlN = 15YA-XXXX

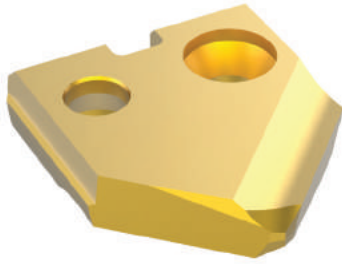
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AM200® = 15YH-XXXX

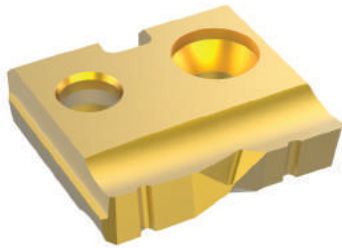
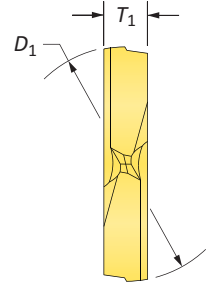
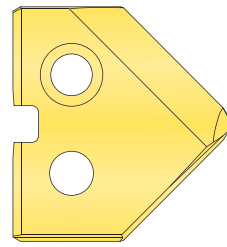


## Original T-A Drill Inserts

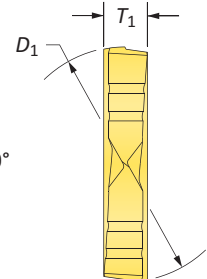
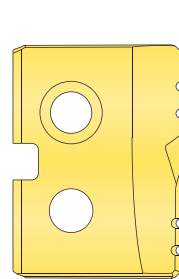
Y Series | HSS | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



90° Spot &amp; Chamfer

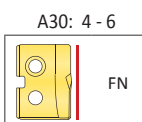
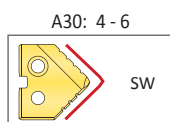
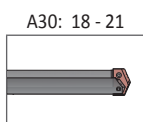
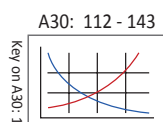


Flat Bottom



### HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | 90° Spot & Chamfer Part No. |              |              | Flat Bottom Part No. |
|-----------------------|------------|----------|-------|-----------------------------|--------------|--------------|----------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | TiN                         | TiAlN        | TiCN         | TiN                  |
| –                     | 0.3740     | 9.50     | 3/32  | 15YT-9.5-SP                 | 15YA-9.5-SP  | 15YN-9.5-SP  | 15YT-9.5-FB          |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 15YT-0012-SP                | 15YA-0012-SP | 15YN-0012-SP | 15YT-0012-FB         |
| W                     | 0.3860     | 9.80     | 3/32  | 15YT-.386-SP                | 15YA-.386-SP | 15YN-.386-SP | 15YT-.386-FB         |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 15YT-.390-SP                | 15YA-.390-SP | 15YN-.390-SP | 15YT-.390-FB         |
| –                     | 0.3937     | 10.00    | 3/32  | 15YT-10-SP                  | 15YA-10-SP   | 15YN-10-SP   | 15YT-10-FB           |
| –                     | 0.4016     | 10.20    | 3/32  | 15YT-10.2-SP                | 15YA-10.2-SP | 15YN-10.2-SP | 15YT-10.2-FB         |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 15YT-0013-SP                | 15YA-0013-SP | 15YN-0013-SP | 15YT-0013-FB         |
| –                     | 0.4134     | 10.50    | 3/32  | 15YT-10.5-SP                | 15YA-10.5-SP | 15YN-10.5-SP | 15YT-10.5-FB         |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 15YT-.421-SP                | 15YA-.421-SP | 15YN-.421-SP | 15YT-.421-FB         |
| –                     | 0.4252     | 10.80    | 3/32  | 15YT-10.8-SP                | 15YA-10.8-SP | 15YN-10.8-SP | 15YT-10.8-FB         |
| –                     | 0.4331     | 11.00    | 3/32  | 15YT-11-SP                  | 15YA-11-SP   | 15YN-11-SP   | 15YT-11-FB           |



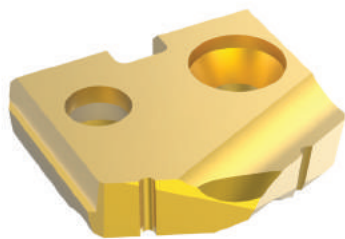
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 2

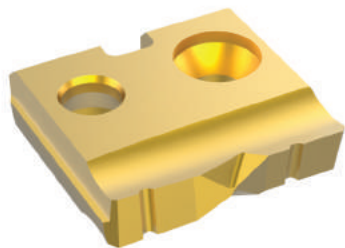
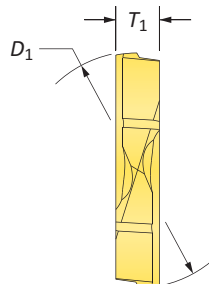
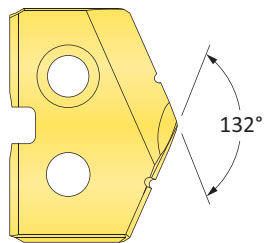
|                  |                    |
|------------------|--------------------|
| TiN = 15YT-XXXX  | TiAlN = 15YA-XXXX  |
| TiCN = 15YN-XXXX | AM200® = 15YH-XXXX |

## Original T-A Drill Inserts

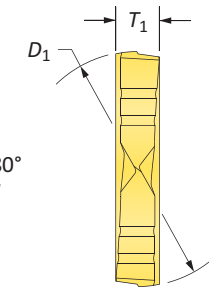
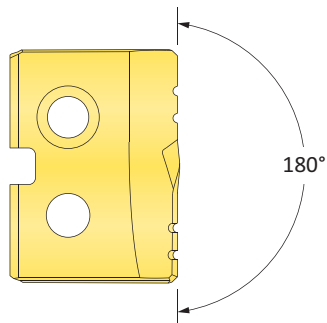
Y Series | Carbide | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



Standard

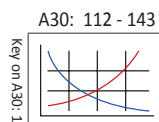


Flat Bottom

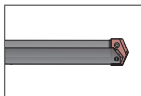


## Carbide Inserts – C2 (K20)

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                  |                                                                                               | Flat Bottom Part No.                                                                        |
|-----------------------|------------|----------|-------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiAlN | <br>TiN |
| –                     | 0.3740     | 9.50     | 3/32  | 1C2YT-9.5                                                                                 | 1C2YA-9.5                                                                                     | 1C2YT-9.5-FB                                                                                |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 1C2YT-0012                                                                                | 1C2YA-0012                                                                                    | 1C2YT-0012-FB                                                                               |
| W                     | 0.3860     | 9.80     | 3/32  | 1C2YT-.386                                                                                | 1C2YA-.386                                                                                    | 1C2YT-.386-FB                                                                               |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 1C2YT-.390                                                                                | 1C2YA-.390                                                                                    | 1C2YT-.390-FB                                                                               |
| –                     | 0.3937     | 10.00    | 3/32  | 1C2YT-10                                                                                  | 1C2YA-10                                                                                      | 1C2YT-10-FB                                                                                 |
| –                     | 0.4016     | 10.20    | 3/32  | 1C2YT-10.2                                                                                | 1C2YA-10.2                                                                                    | 1C2YT-10.2-FB                                                                               |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 1C2YT-0013                                                                                | 1C2YA-0013                                                                                    | 1C2YT-0013-FB                                                                               |
| –                     | 0.4134     | 10.50    | 3/32  | 1C2YT-10.5                                                                                | 1C2YA-10.5                                                                                    | 1C2YT-10.5-FB                                                                               |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 1C2YT-.421                                                                                | 1C2YA-.421                                                                                    | 1C2YT-.421-FB                                                                               |
| –                     | 0.4252     | 10.80    | 3/32  | 1C2YT-10.8                                                                                | 1C2YA-10.8                                                                                    | 1C2YT-10.8-FB                                                                               |
| –                     | 0.4331     | 11.00    | 3/32  | 1C2YT-11                                                                                  | 1C2YA-11                                                                                      | 1C2YT-11-FB                                                                                 |



A30: 18 - 21

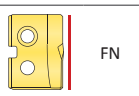


A30: 4 - 6



HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

A30: 4 - 6



FN

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

TiN = 1C2YT-XXXX

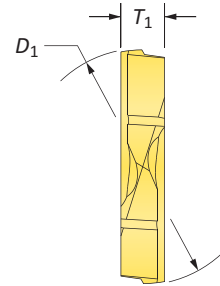
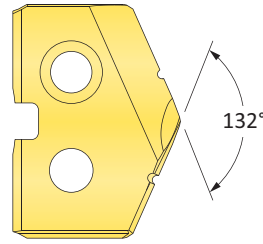
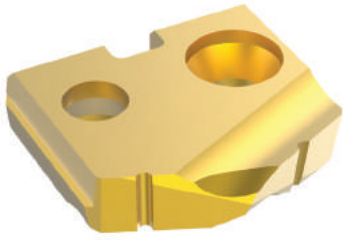
TiAlN = 1C2YA-XXXX

TiCN = 1C2YN-XXXX

AM200® = 1C2YH-XXXX

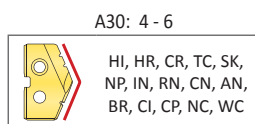
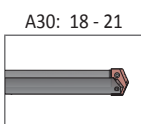
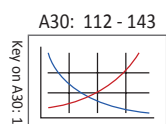
## Original T-A Drill Inserts

Y Series | Carbide | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



Carbide Inserts – C5 (P40) | C3 (K10) | N2

| Fractional Equivalent | Insert     |          |       | C5 Part No.                                                                              |                                                                                            | C3 Part No.                                                                                              | N2 Part No.                                                                                         |
|-----------------------|------------|----------|-------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiAlN | <br>TiAlN (Cast Iron) | <br>Diamond Film |
| –                     | 0.3740     | 9.50     | 3/32  | 1C5YT-9.5                                                                                | 1C5YA-9.5                                                                                  | 1C3YA-9.5-CI                                                                                             | 1N2YD-9.5                                                                                           |
| 3/8                   | 0.3750     | 9.53     | 3/32  | 1C5YT-0012                                                                               | 1C5YA-0012                                                                                 | 1C3YA-0012-CI                                                                                            | 1N2YD-0012                                                                                          |
| W                     | 0.3860     | 9.80     | 3/32  | 1C5YT-.386                                                                               | 1C5YA-.386                                                                                 | 1C3YA-.386-CI                                                                                            | 1N2YD-.386                                                                                          |
| 25/64                 | 0.3906     | 9.92     | 3/32  | 1C5YT-.390                                                                               | 1C5YA-.390                                                                                 | 1C3YA-.390-CI                                                                                            | 1N2YD-.390                                                                                          |
| –                     | 0.3937     | 10.00    | 3/32  | 1C5YT-10                                                                                 | 1C5YA-10                                                                                   | 1C3YA-10-CI                                                                                              | 1N2YD-10                                                                                            |
| –                     | 0.4016     | 10.20    | 3/32  | 1C5YT-10.2                                                                               | 1C5YA-10.2                                                                                 | 1C3YA-10.2-CI                                                                                            | 1N2YD-10.2                                                                                          |
| 13/32                 | 0.4063     | 10.32    | 3/32  | 1C5YT-0013                                                                               | 1C5YA-0013                                                                                 | 1C3YA-0013-CI                                                                                            | 1N2YD-0013                                                                                          |
| –                     | 0.4134     | 10.50    | 3/32  | 1C5YT-10.5                                                                               | 1C5YA-10.5                                                                                 | 1C3YA-10.5-CI                                                                                            | 1N2YD-10.5                                                                                          |
| 27/64                 | 0.4219     | 10.72    | 3/32  | 1C5YT-.421                                                                               | 1C5YA-.421                                                                                 | 1C3YA-.421-CI                                                                                            | 1N2YD-.421                                                                                          |
| –                     | 0.4252     | 10.80    | 3/32  | 1C5YT-10.8                                                                               | 1C5YA-10.8                                                                                 | 1C3YA-10.8-CI                                                                                            | 1N2YD-10.8                                                                                          |
| –                     | 0.4331     | 11.00    | 3/32  | 1C5YT-11                                                                                 | 1C5YA-11                                                                                   | 1C3YA-11-CI                                                                                              | 1N2YD-11                                                                                            |



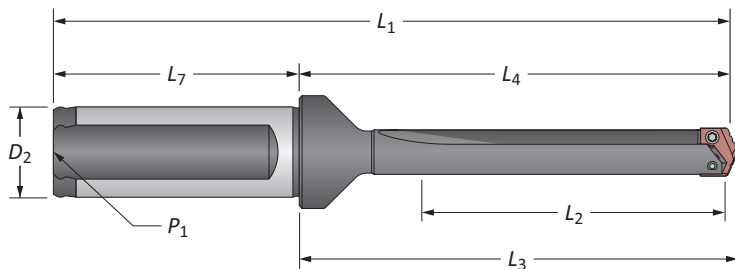
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 1

|                   |                     |
|-------------------|---------------------|
| TiN = 1C5YT-XXXX  | TiAlN = 1C5YA-XXXX  |
| TiCN = 1C5YN-XXXX | AM200® = 1C5YH-XXXX |

## T-A Drill Insert Holders

Y Series | Flange Shank | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)

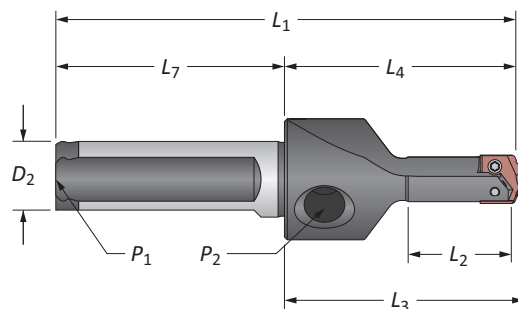


### Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short    | 1-1/4          | 2-13/32        | 2-1/2          | 4-7/16         | 3/4            | 2-1/32         | 1/8            | 220Y0S-075F |
|        | Standard | 2-3/8          | 3-17/32        | 3-5/8          | 5-9/16         | 3/4            | 2-1/32         | 1/8            | 240Y0S-075F |
|        | Extended | 4-3/8          | 5-17/32        | 5-5/8          | 7-9/16         | 3/4            | 2-1/32         | 1/8            | 250Y0S-075F |
| m      | Short    | 31.8           | 61.1           | 63.5           | 111.1          | 20.0           | 50.0           | 1/8*           | 220Y0S-20FM |
|        | XL       | 222            | 251.7          | 254.1          | 301.7          | 20.0           | 50.0           | 1/8*           | 270Y0S-20FM |
|        | 3XL      | 290            | 319.9          | 322.3          | 369.9          | 20.0           | 50.0           | 1/8*           | 290Y0S-20FM |

\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)



### Straight Flute (Stub Length)

|        |      | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |      | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Stub | 3/4            | 1-7/8          | 1-31/32        | 3-3/4          | 5/8            | 1-7/8          | 1/16           | 210Y0S-063F |
| m      | Stub | 19.1           | 47.6           | 50.0           | 95.6           | 16.0           | 48.0           | 1/16*          | 210Y0S-16FM |

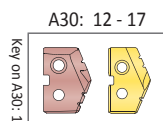
\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 724-IP7-1     | 724N-IP7-1           | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

Screws sold in quantities of 10

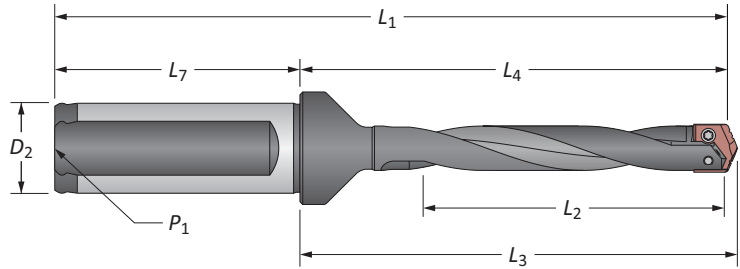
**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.





## T-A Drill Insert Holders

Y Series | Flange Shank | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



### Helical Flute

|   |               | Body           |                |                |                | Shank          |                |                | Part No.      |
|---|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|   | Length        | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i | Standard      | 2-3/8          | 3-17/32        | 3-5/8          | 5-9/16         | 3/4            | 2-1/32         | 1/8            | 240Y0H-075F   |
|   | Standard Plus | 3-3/8          | 4-35/64        | 4-41/64        | 6-43/64        | 3/4            | 2-1/32         | 1/8            | ⚠ 245Y0H-075F |
|   | Extended      | 4-3/8          | 5-17/32        | 5-5/8          | 7-9/16         | 3/4            | 2-1/32         | 1/8            | ⚠ 250Y0H-075F |
| m | Standard      | 60.3           | 89.7           | 92.1           | 139.7          | 20.0           | 50.0           | 1/8*           | 240Y0H-20FM   |
|   | Standard Plus | 86.0           | 115.4          | 117.8          | 165.4          | 20.0           | 50.0           | 1/8*           | ⚠ 245Y0H-20FM |
|   | Extended      | 111.1          | 140.5          | 142.9          | 190.5          | 20.0           | 50.0           | 1/8*           | ⚠ 250Y0H-20FM |

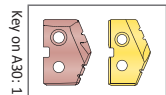
\*Metric thread to BSP and ISO 7-1

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 724-IP7-1     | 724N-IP7-1           | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

A30: 12 - 17



i = Imperial (in)

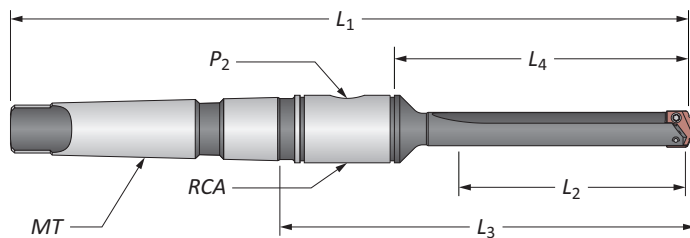
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

Y Series | Taper Shank | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)

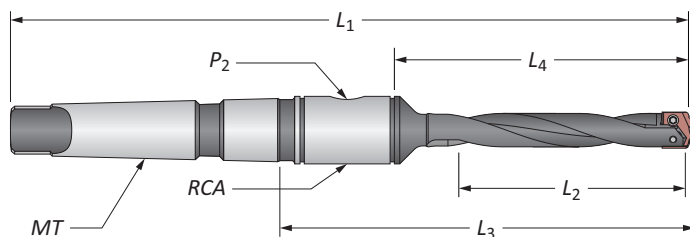


### Straight Flute

|        |          | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i      | Short    | 1-1/4          | 2-1/32         | 3-15/32        | 6-5/16         | #2    | 1/16           | 2T-2SR  | 220Y0S-002I |
|        | Standard | 2-3/8          | 3-5/32         | 4-19/32        | 7-7/16         | #2    | 1/16           | 2T-2SR  | 240Y0S-002I |
|        | Extended | 4-3/8          | 5-5/32         | 6-19/32        | 9-7/16         | #2    | 1/16           | 2T-2SR  | 250Y0S-002I |
|        |          |                |                |                |                |       |                |         |             |
| m      | Short    | 31.8           | 51.5           | 88.0           | 160.3          | #2**  | 1/16*          | 2T-2SRM | 220Y0S-002M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



### Helical Flute

|        |          | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i      | Standard | 2-3/8          | 3-5/32         | 4-19/32        | 7-7/16         | #2    | 1/16           | 2T-2SR  | 240Y0H-002I |
|        | Extended | 4-3/8          | 5-5/32         | 6-19/32        | 9-7/16         | #2    | 1/16           | 2T-2SR  | 250Y0H-002I |
|        |          |                |                |                |                |       |                |         |             |
| m      | Standard | 60.3           | 80.2           | 116.7          | 188.9          | #2**  | 1/16*          | 2T-2SRM | 240Y0H-002M |
|        | Extended | 111.1          | 130.9          | 167.4          | 239.7          | #2**  | 1/16*          | 2T-2SRM | 250Y0H-002M |

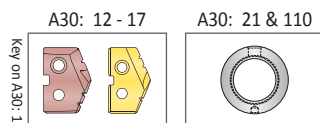
\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 724-IP7-1     | 724N-IP7-1           | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

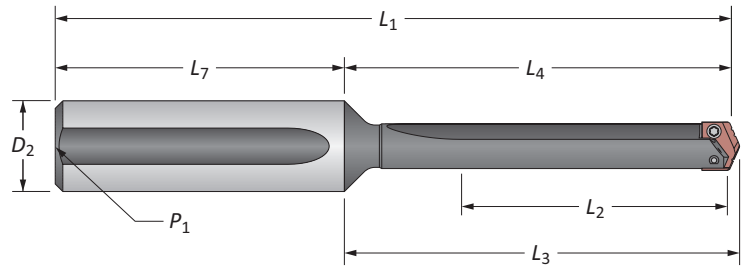
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



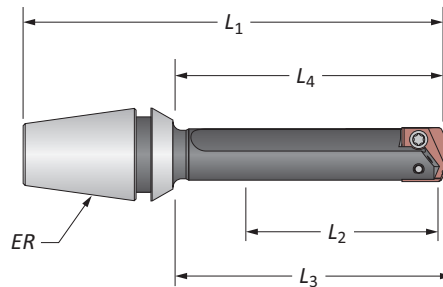
## T-A Drill Insert Holders

Y Series | Straight Shank | ER Collet | Diameter Range: 0.374" - 0.436" (9.5mm - 11.07mm)



### Straight Flute

|   | Length   | Body           |                |                |                | Shank          |                |                | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|   |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i | Short    | 1-1/4          | 2-1/32         | 2-1/8          | 4-13/32        | 3/4            | 2-3/8          | 1/8            | 220Y0S-075L |
|   | Standard | 2-3/8          | 3-5/32         | 3-1/4          | 5-17/32        | 3/4            | 2-3/8          | 1/8            | 240Y0S-075L |
|   | Extended | 4-3/8          | 5-5/32         | 5-1/4          | 7-17/32        | 3/4            | 2-3/8          | 1/8            | 250Y0S-075L |
|   | XL       | 8-3/4          | 9-17/32        | 9-5/8          | 11-29/32       | 3/4            | 2-3/8          | 1/8            | 270Y0S-075L |
|   | 3XL      | 11-7/16        | 12-7/32        | 12-5/16        | 14-19/32       | 3/4            | 2-3/8          | 1/8            | 290Y0S-075L |



### ER Collet Holder

|   | Body           |                |                |                |       | Part No.    | Collet Nut without Retaining Ring |
|---|----------------|----------------|----------------|----------------|-------|-------------|-----------------------------------|
|   | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | ER    |             |                                   |
| i | 1-3/8          | 1-29/32        | 2              | 3-5/64         | ER-16 | 210Y0S-16ER | ER-16N                            |
|   | 1-3/8          | 1-29/32        | 2              | 3-15/64        | ER-20 | 210Y0S-20ER | ER-20N                            |

## T-A Drill Accessories

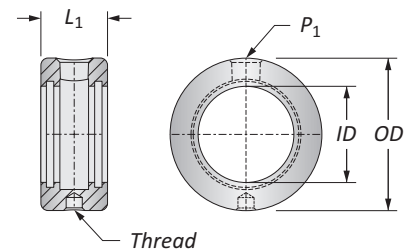
Y Series | Rotary Coolant Adapters | Torx® Plus Screws

### Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No. | RCA O-Rings    |              |
|---|-------|-------|----------------|--------------------|----------------|----------|----------------|--------------|
|   |       |       |                |                    |                |          | Kit Part No.** | Replacements |
| i | 3/4   | 1-3/4 | 7/8            | 5/16-18            | 1/8            | 2T-2SR   | 2T1-2SR        | 2T1-2OR-10   |
| m | 19.05 | 44.45 | 22.23          | M8 x 1.25          | 1/8*           | 2T-2SRM  | 2T1-2SR        | 2T1-2OR-10   |

\*Thread to BSP and ISO 7-1 | \*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

Refer to page A30: 110 for proper RCA assembly and safety information



### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 724-IP7-1     | 724N-IP7-1           | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

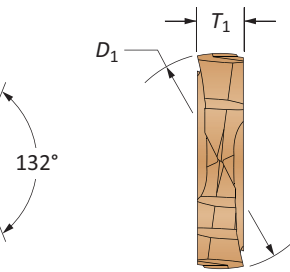
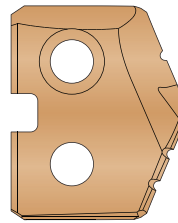
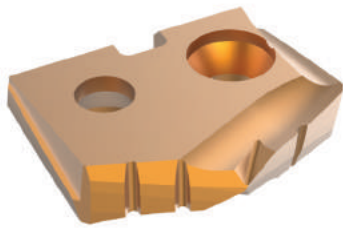
i = Imperial (in)

m = Metric (mm)

Screws sold in packs of 10  
O-rings sold in packs of 10

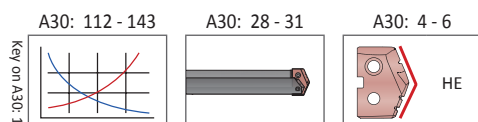
## GEN2 T-A Drill Inserts

Z Series | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



HSS Inserts – Super Cobalt • Carbide Inserts – C2 (K20) | C1 (K35)

| Fractional Equivalent | Insert     |          |       | HSS Part No.                                                                                                 | Carbide Part No.                                                                                          |                                                                                                           |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>AM200®<br>Super Cobalt | <br>AM300®<br>C2 (K20) | <br>AM300®<br>C1 (K35) |
| 7/16                  | 0.4375     | 11.11    | 3/32  | 45ZH-0014                                                                                                    | 4C2ZP-0014                                                                                                | 4C1ZP-0014                                                                                                |
| –                     | 0.4510     | 11.46    | 3/32  | 45ZH-.451                                                                                                    | 4C2ZP-.451                                                                                                | 4C1ZP-.451                                                                                                |
| –                     | 0.4528     | 11.50    | 3/32  | 45ZH-11.5                                                                                                    | 4C2ZP-11.5                                                                                                | 4C1ZP-11.5                                                                                                |
| 29/64                 | 0.4531     | 11.51    | 3/32  | 45ZH-.453                                                                                                    | 4C2ZP-.453                                                                                                | 4C1ZP-.453                                                                                                |
| 15/32                 | 0.4688     | 11.91    | 3/32  | 45ZH-0015                                                                                                    | 4C2ZP-0015                                                                                                | 4C1ZP-0015                                                                                                |
| –                     | 0.4724     | 12.00    | 3/32  | 45ZH-12                                                                                                      | 4C2ZP-12                                                                                                  | 4C1ZP-12                                                                                                  |
| 31/64                 | 0.4844     | 12.30    | 3/32  | 45ZH-.484                                                                                                    | 4C2ZP-.484                                                                                                | 4C1ZP-.484                                                                                                |
| –                     | 0.4921     | 12.50    | 3/32  | 45ZH-12.5                                                                                                    | 4C2ZP-12.5                                                                                                | 4C1ZP-12.5                                                                                                |
| 1/2                   | 0.5000     | 12.70    | 3/32  | 45ZH-0016                                                                                                    | 4C2ZP-0016                                                                                                | 4C1ZP-0016                                                                                                |
| –                     | 0.5060     | 12.85    | 3/32  | 45ZH-.506                                                                                                    | 4C2ZP-.506                                                                                                | 4C1ZP-.506                                                                                                |
| –                     | 0.5100     | 12.95    | 3/32  | 45ZH-.510                                                                                                    | 4C2ZP-.510                                                                                                | 4C1ZP-.510                                                                                                |



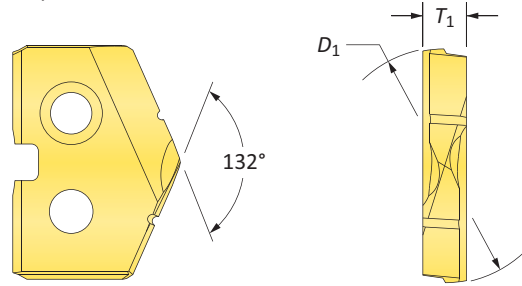
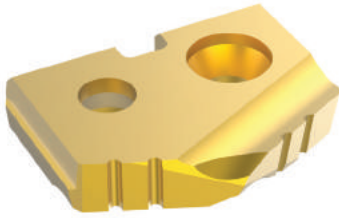
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 45ZT-XXXX  | TiAlN = 45ZA-XXXX  |
| TiCN = 45ZN-XXXX | AM200® = 45ZH-XXXX |

Inserts sold in quantities of 2

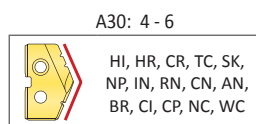
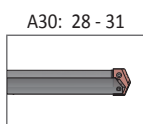
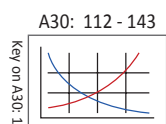
## Original T-A Drill Inserts

Z Series | HSS | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



### HSS Inserts – Premium Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 7/16                  | 0.4375     | 11.11    | 3/32  | 18ZT-0014                                                                              | 18ZA-0014                                                                                 | 18ZN-0014                                                                                |
| –                     | 0.4510     | 11.46    | 3/32  | 18ZT-.451                                                                              | 18ZA-.451                                                                                 | 18ZN-.451                                                                                |
| –                     | 0.4528     | 11.50    | 3/32  | 18ZT-11.5                                                                              | 18ZA-11.5                                                                                 | 18ZN-11.5                                                                                |
| 29/64                 | 0.4531     | 11.51    | 3/32  | 18ZT-.453                                                                              | 18ZA-.453                                                                                 | 18ZN-.453                                                                                |
| 15/32                 | 0.4688     | 11.91    | 3/32  | 18ZT-0015                                                                              | 18ZA-0015                                                                                 | 18ZN-0015                                                                                |
| –                     | 0.4724     | 12.00    | 3/32  | 18ZT-12                                                                                | 18ZA-12                                                                                   | 18ZN-12                                                                                  |
| 31/64                 | 0.4844     | 12.30    | 3/32  | 18ZT-.484                                                                              | 18ZA-.484                                                                                 | 18ZN-.484                                                                                |
| –                     | 0.4921     | 12.50    | 3/32  | 18ZT-12.5                                                                              | 18ZA-12.5                                                                                 | 18ZN-12.5                                                                                |
| 1/2                   | 0.5000     | 12.70    | 3/32  | 18ZT-0016                                                                              | 18ZA-0016                                                                                 | 18ZN-0016                                                                                |
| –                     | 0.5060     | 12.85    | 3/32  | 18ZT-.506                                                                              | 18ZA-.506                                                                                 | 18ZN-.506                                                                                |
| –                     | 0.5100     | 12.95    | 3/32  | 18ZT-.510                                                                              | 18ZA-.510                                                                                 | 18ZN-.510                                                                                |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

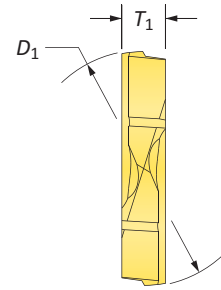
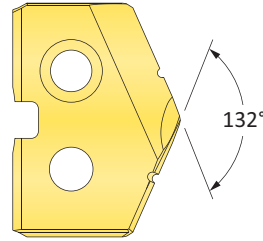
Inserts sold in quantities of 2

|                  |                    |
|------------------|--------------------|
| TiN = 18ZT-XXXX  | TiAlN = 18ZA-XXXX  |
| TiCN = 18ZN-XXXX | AM200® = 18ZH-XXXX |



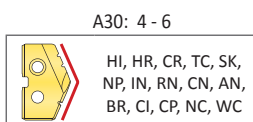
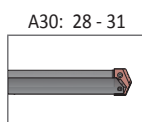
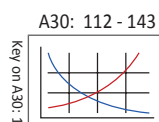
## Original T-A Drill Inserts

Z Series | HSS | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



### HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 7/16                  | 0.4375     | 11.11    | 3/32  | 15ZT-0014                                                                              | 15ZA-0014                                                                                 | 15ZN-0014                                                                                |
| –                     | 0.4510     | 11.46    | 3/32  | 15ZT-.451                                                                              | 15ZA-.451                                                                                 | 15ZN-.451                                                                                |
| –                     | 0.4528     | 11.50    | 3/32  | 15ZT-11.5                                                                              | 15ZA-11.5                                                                                 | 15ZN-11.5                                                                                |
| 29/64                 | 0.4531     | 11.51    | 3/32  | 15ZT-.453                                                                              | 15ZA-.453                                                                                 | 15ZN-.453                                                                                |
| 15/32                 | 0.4688     | 11.91    | 3/32  | 15ZT-0015                                                                              | 15ZA-0015                                                                                 | 15ZN-0015                                                                                |
| –                     | 0.4724     | 12.00    | 3/32  | 15ZT-12                                                                                | 15ZA-12                                                                                   | 15ZN-12                                                                                  |
| 31/64                 | 0.4844     | 12.30    | 3/32  | 15ZT-.484                                                                              | 15ZA-.484                                                                                 | 15ZN-.484                                                                                |
| –                     | 0.4921     | 12.50    | 3/32  | 15ZT-12.5                                                                              | 15ZA-12.5                                                                                 | 15ZN-12.5                                                                                |
| 1/2                   | 0.5000     | 12.70    | 3/32  | 15ZT-0016                                                                              | 15ZA-0016                                                                                 | 15ZN-0016                                                                                |
| –                     | 0.5060     | 12.85    | 3/32  | 15ZT-.506                                                                              | 15ZA-.506                                                                                 | 15ZN-.506                                                                                |
| –                     | 0.5100     | 12.95    | 3/32  | 15ZT-.510                                                                              | 15ZA-.510                                                                                 | 15ZN-.510                                                                                |



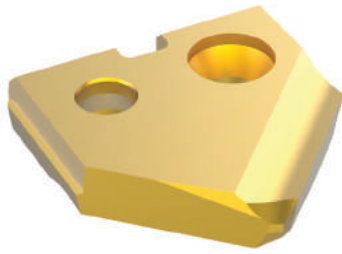
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 2

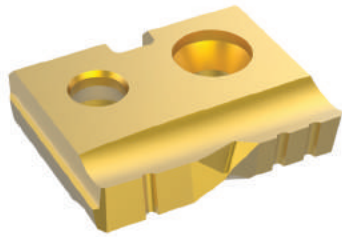
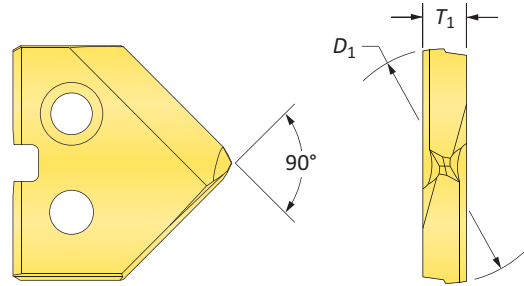
|                  |                    |
|------------------|--------------------|
| TiN = 15ZT-XXXX  | TiAlN = 15ZA-XXXX  |
| TiCN = 15ZN-XXXX | AM200® = 15ZH-XXXX |

## Original T-A Drill Inserts

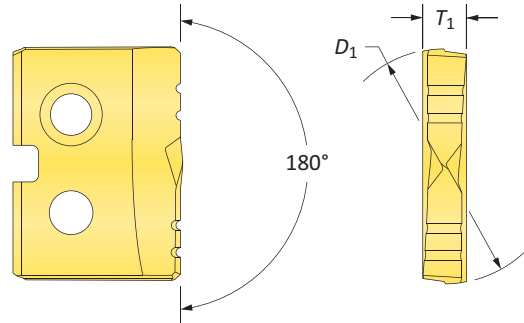
Z Series | HSS | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



90° Spot & Chamfer

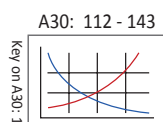


Flat Bottom

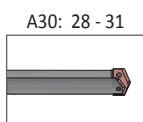


### HSS Inserts – Super Cobalt

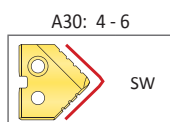
| Fractional Equivalent | Insert     |          |       | 90° Spot & Chamfer Part No. |              |              | Flat Bottom Part No. |
|-----------------------|------------|----------|-------|-----------------------------|--------------|--------------|----------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | TiN                         | TiAlN        | TiCN         | TiN                  |
| 7/16                  | 0.4375     | 11.11    | 3/32  | 15ZT-0014-SP                | 15ZA-0014-SP | 15ZN-0014-SP | 15ZT-0014-FB         |
| –                     | 0.4510     | 11.46    | 3/32  | 15ZT-.451-SP                | 15ZA-.451-SP | 15ZN-.451-SP | 15ZT-.451-FB         |
| –                     | 0.4528     | 11.50    | 3/32  | 15ZT-11.5-SP                | 15ZA-11.5-SP | 15ZN-11.5-SP | 15ZT-11.5-FB         |
| 29/64                 | 0.4531     | 11.51    | 3/32  | 15ZT-.453-SP                | 15ZA-.453-SP | 15ZN-.453-SP | 15ZT-.453-FB         |
| 15/32                 | 0.4688     | 11.91    | 3/32  | 15ZT-0015-SP                | 15ZA-0015-SP | 15ZN-0015-SP | 15ZT-0015-FB         |
| –                     | 0.4724     | 12.00    | 3/32  | 15ZT-12-SP                  | 15ZA-12-SP   | 15ZN-12-SP   | 15ZT-12-FB           |
| 31/64                 | 0.4844     | 12.30    | 3/32  | 15ZT-.484-SP                | 15ZA-.484-SP | 15ZN-.484-SP | 15ZT-.484-FB         |
| –                     | 0.4921     | 12.50    | 3/32  | 15ZT-12.5-SP                | 15ZA-12.5-SP | 15ZN-12.5-SP | 15ZT-12.5-FB         |
| 1/2                   | 0.5000     | 12.70    | 3/32  | 15ZT-0016-SP                | 15ZA-0016-SP | 15ZN-0016-SP | 15ZT-0016-FB         |
| –                     | 0.5060     | 12.85    | 3/32  | 15ZT-.506-SP                | 15ZA-.506-SP | 15ZN-.506-SP | 15ZT-.506-FB         |
| –                     | 0.5100     | 12.95    | 3/32  | 15ZT-.510-SP                | 15ZA-.510-SP | 15ZN-.510-SP | 15ZT-.510-FB         |



A30: 112 - 143

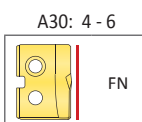


A30: 28 - 31



A30: 4 - 6

SW



A30: 4 - 6

FN

Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 2

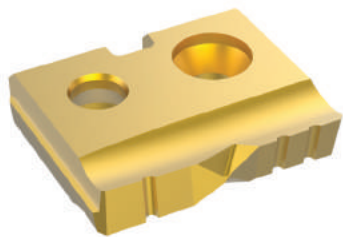
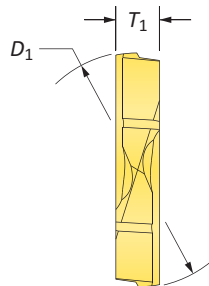
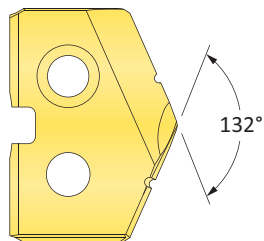
|                  |                    |
|------------------|--------------------|
| TiN = 15ZT-XXXX  | TiAlN = 15ZA-XXXX  |
| TiCN = 15ZN-XXXX | AM200® = 15ZH-XXXX |

## Original T-A Drill Inserts

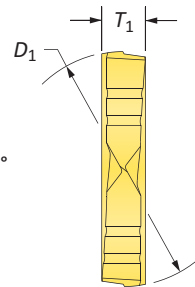
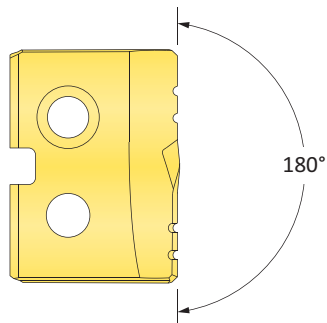
Z Series | Carbide | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



Standard

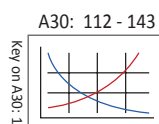


Flat Bottom

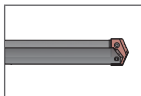


## Carbide Inserts – C2 (K20)

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                  |                                                                                               | Flat Bottom Part No.                                                                        |
|-----------------------|------------|----------|-------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiAlN | <br>TiN |
| 7/16                  | 0.4375     | 11.11    | 3/32  | <b>1C2ZT-0014</b>                                                                         | <b>1C2ZA-0014</b>                                                                             | <b>1C2ZT-0014-FB</b>                                                                        |
| –                     | 0.4510     | 11.46    | 3/32  | <b>1C2ZT-.451</b>                                                                         | <b>1C2ZA-.451</b>                                                                             | <b>1C2ZT-.451-FB</b>                                                                        |
| –                     | 0.4528     | 11.50    | 3/32  | <b>1C2ZT-11.5</b>                                                                         | <b>1C2ZA-11.5</b>                                                                             | <b>1C2ZT-11.5-FB</b>                                                                        |
| 29/64                 | 0.4531     | 11.51    | 3/32  | <b>1C2ZT-.453</b>                                                                         | <b>1C2ZA-.453</b>                                                                             | <b>1C2ZT-.453-FB</b>                                                                        |
| 15/32                 | 0.4688     | 11.91    | 3/32  | <b>1C2ZT-0015</b>                                                                         | <b>1C2ZA-0015</b>                                                                             | <b>1C2ZT-0015-FB</b>                                                                        |
| –                     | 0.4724     | 12.00    | 3/32  | <b>1C2ZT-12</b>                                                                           | <b>1C2ZA-12</b>                                                                               | <b>1C2ZT-12-FB</b>                                                                          |
| 31/64                 | 0.4844     | 12.30    | 3/32  | <b>1C2ZT-.484</b>                                                                         | <b>1C2ZA-.484</b>                                                                             | <b>1C2ZT-.484-FB</b>                                                                        |
| –                     | 0.4921     | 12.50    | 3/32  | <b>1C2ZT-12.5</b>                                                                         | <b>1C2ZA-12.5</b>                                                                             | <b>1C2ZT-12.5-FB</b>                                                                        |
| 1/2                   | 0.5000     | 12.70    | 3/32  | <b>1C2ZT-0016</b>                                                                         | <b>1C2ZA-0016</b>                                                                             | <b>1C2ZT-0016-FB</b>                                                                        |
| –                     | 0.5060     | 12.85    | 3/32  | <b>1C2ZT-.506</b>                                                                         | <b>1C2ZA-.506</b>                                                                             | <b>1C2ZT-.506-FB</b>                                                                        |
| –                     | 0.5100     | 12.95    | 3/32  | <b>1C2ZT-.510</b>                                                                         | <b>1C2ZA-.510</b>                                                                             | <b>1C2ZT-.510-FB</b>                                                                        |



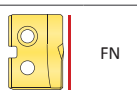
A30: 28 - 31



A30: 4 - 6


 HI, HR, CR, TC, SK,  
 NP, IN, RN, CN, AN,  
 BR, CI, CP, NC, WC

A30: 4 - 6



FN

 Coatings not listed above  
 can be supplied as  
 non-stocked standards.  
 Process fees apply. →

Inserts sold in quantities of 1

TiN = 1C2ZT-XXXX

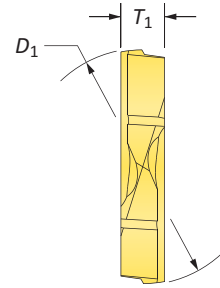
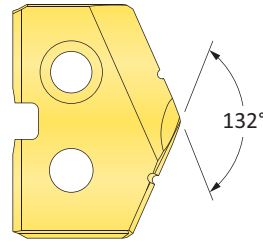
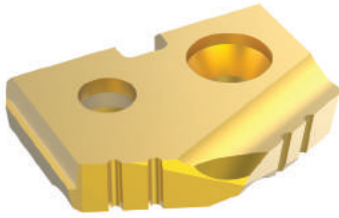
TiAlN = 1C2ZA-XXXX

TiCN = 1C2ZN-XXXX

AM200® = 1C2ZH-XXXX

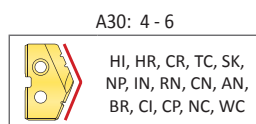
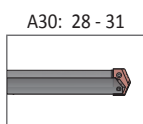
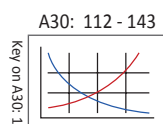
## Original T-A Drill Inserts

Z Series | Carbide | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



Carbide Inserts – C5 (P40) | C3 (K10) | N2

| Fractional Equivalent | Insert     |          |       | C5 Part No.                                                                              |                                                                                            | C3 Part No.                                                                                              | N2 Part No.                                                                                         |
|-----------------------|------------|----------|-------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiAlN | <br>TiAlN (Cast Iron) | <br>Diamond Film |
| 7/16                  | 0.4375     | 11.11    | 3/32  | 1C5ZT-0014                                                                               | 1C5ZA-0014                                                                                 | 1C3ZA-0014-CI                                                                                            | 1N2ZD-0014                                                                                          |
| –                     | 0.4510     | 11.46    | 3/32  | 1C5ZT-.451                                                                               | 1C5ZA-.451                                                                                 | 1C3ZA-.451-CI                                                                                            | 1N2ZD-.451                                                                                          |
| –                     | 0.4528     | 11.50    | 3/32  | 1C5ZT-11.5                                                                               | 1C5ZA-11.5                                                                                 | 1C3ZA-11.5-CI                                                                                            | 1N2ZD-11.5                                                                                          |
| 29/64                 | 0.4531     | 11.51    | 3/32  | 1C5ZT-.453                                                                               | 1C5ZA-.453                                                                                 | 1C3ZA-.453-CI                                                                                            | 1N2ZD-.453                                                                                          |
| 15/32                 | 0.4688     | 11.91    | 3/32  | 1C5ZT-0015                                                                               | 1C5ZA-0015                                                                                 | 1C3ZA-0015-CI                                                                                            | 1N2ZD-0015                                                                                          |
| –                     | 0.4724     | 12.00    | 3/32  | 1C5ZT-12                                                                                 | 1C5ZA-12                                                                                   | 1C3ZA-12-CI                                                                                              | 1N2ZD-12                                                                                            |
| 31/64                 | 0.4844     | 12.30    | 3/32  | 1C5ZT-.484                                                                               | 1C5ZA-.484                                                                                 | 1C3ZA-.484-CI                                                                                            | 1N2ZD-.484                                                                                          |
| –                     | 0.4921     | 12.50    | 3/32  | 1C5ZT-12.5                                                                               | 1C5ZA-12.5                                                                                 | 1C3ZA-12.5-CI                                                                                            | 1N2ZD-12.5                                                                                          |
| 1/2                   | 0.5000     | 12.70    | 3/32  | 1C5ZT-0016                                                                               | 1C5ZA-0016                                                                                 | 1C3ZA-0016-CI                                                                                            | 1N2ZD-0016                                                                                          |
| –                     | 0.5060     | 12.85    | 3/32  | 1C5ZT-.506                                                                               | 1C5ZA-.506                                                                                 | 1C3ZA-.506-CI                                                                                            | 1N2ZD-.506                                                                                          |
| –                     | 0.5100     | 12.95    | 3/32  | 1C5ZT-.510                                                                               | 1C5ZA-.510                                                                                 | 1C3ZA-.510-CI                                                                                            | 1N2ZD-.510                                                                                          |



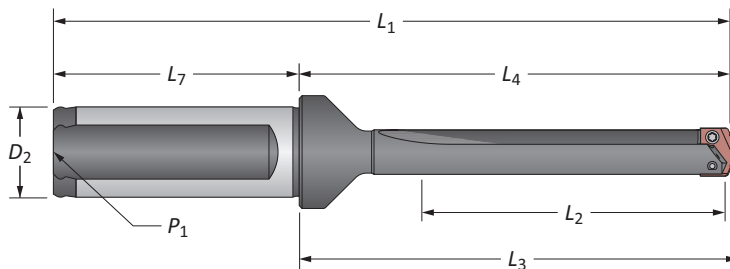
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 1

|                   |                     |
|-------------------|---------------------|
| TiN = 1C5ZT-XXXX  | TiAlN = 1C5ZA-XXXX  |
| TiCN = 1C5ZN-XXXX | AM200® = 1C5ZH-XXXX |

## T-A Drill Insert Holders

Z Series | Flange Shank | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)

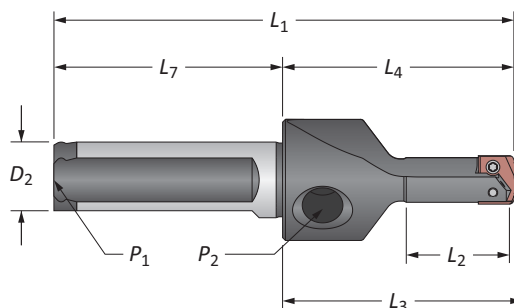


### Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short    | 1-1/4          | 2-13/32        | 2-1/2          | 4-7/16         | 3/4            | 2-1/32         | 1/8            | 220Z0S-075F |
|        | Standard | 2-3/8          | 3-17/32        | 3-5/8          | 5-9/16         | 3/4            | 2-1/32         | 1/8            | 240Z0S-075F |
|        | Extended | 4-3/8          | 5-17/32        | 5-5/8          | 7-9/16         | 3/4            | 2-1/32         | 1/8            | 250Z0S-075F |
| m      | Short    | 31.8           | 61.1           | 63.5           | 111.1          | 20.0           | 50.0           | 1/8*           | 220Z0S-20FM |
|        | XL       | 222.3          | 251.7          | 254.1          | 301.7          | 20.0           | 50.0           | 1/8*           | 270Z0S-20FM |
|        | 3XL      | 290.5          | 319.9          | 322.3          | 369.9          | 20.0           | 50.0           | 1/8*           | 290Z0S-20FM |

\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)



### Straight Flute (Stub Length)

|        |      | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |      | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Stub | 3/4            | 1-7/8          | 1-31/32        | 3-3/4          | 5/8            | 1-7/8          | 1/16           | 210Z0S-063F |
| m      | Stub | 19.1           | 47.6           | 50.0           | 95.6           | 16.0           | 48.0           | 1/16*          | 210Z0S-16FM |

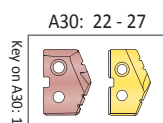
\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7247-IP7-1    | 7247N-IP7-1          | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

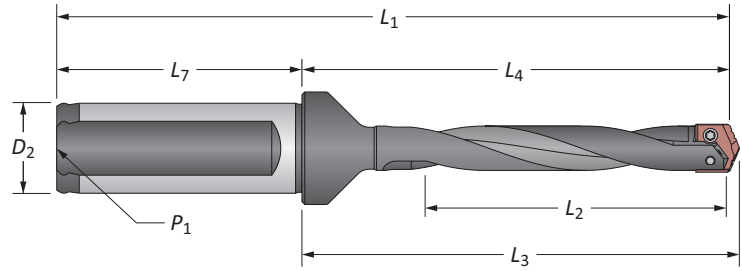
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

Z Series | Flange Shank | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



### Helical Flute

|   |               | Body           |                |                |                | Shank          |                |                | Part No.      |
|---|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|   | Length        | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i | Standard      | 2-3/8          | 3-17/32        | 3-5/8          | 5-9/16         | 3/4            | 2-1/32         | 1/8            | 240Z0H-075F   |
|   | Standard Plus | 3-3/8          | 4-35/64        | 4-41/64        | 6-43/64        | 3/4            | 2-1/32         | 1/8            | 245Z0H-075F   |
|   | Extended      | 4-3/8          | 5-17/32        | 5-5/8          | 7-9/16         | 3/4            | 2-1/32         | 1/8            | ⚠ 250Z0H-075F |
|   | Long          | 7-1/16         | 8-1/4          | 8-11/32        | 10-3/8         | 3/4            | 2-1/32         | 1/8            | ⚠ 260Z0H-075F |
| m | Standard      | 60.3           | 89.7           | 92.1           | 139.7          | 20.0           | 50.0           | 1/8*           | 240Z0H-20FM   |
|   | Standard Plus | 86.0           | 115.4          | 117.8          | 165.4          | 20.0           | 50.0           | 1/8*           | 245Z0H-20FM   |
|   | Extended      | 111.1          | 140.5          | 142.9          | 190.5          | 20.0           | 50.0           | 1/8*           | ⚠ 250Z0H-20FM |
|   | Long          | 180.0          | 209.4          | 211.8          | 259.4          | 20.0           | 50.0           | 1/8*           | ⚠ 260Z0H-20FM |

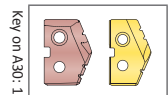
\*Metric thread to BSP and ISO 7-1

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7247-IP7-1    | 7247N-IP7-1          | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

A30: 22 - 27



i = Imperial (in)

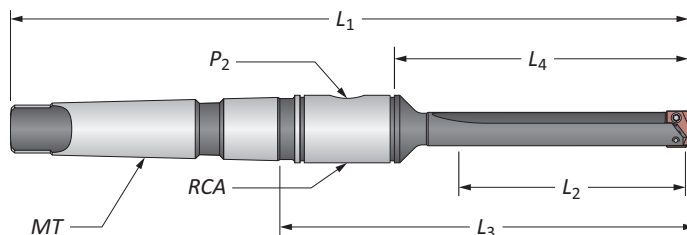
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

Z Series | Taper Shank | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)

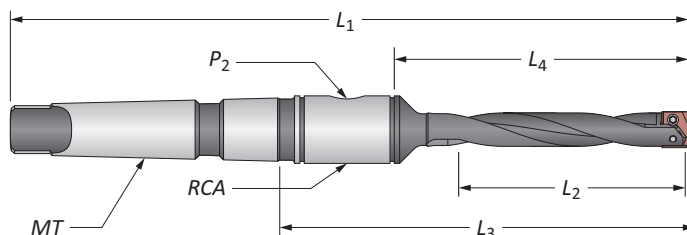


### Straight Flute

| Length |          | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|        |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i      | Short    | 1-1/4          | 2-1/32         | 3-15/32        | 6-5/16         | #2    | 1/16           | 2T-2SR  | 220Z0S-002I |
|        | Standard | 2-3/8          | 3-5/32         | 4-19/32        | 7-7/16         | #2    | 1/16           | 2T-2SR  | 240Z0S-002I |
|        | Extended | 4-3/8          | 5-5/32         | 6-19/32        | 9-7/16         | #2    | 1/16           | 2T-2SR  | 250Z0S-002I |
| m      | Short    | 31.8           | 51.5           | 88.0           | 160.3          | #2**  | 1/16*          | 2T-2SRM | 220Z0S-002M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



### Helical Flute

|        |          | Body  |        |         |        | Shank |       |         |                                                                                                   |
|--------|----------|-------|--------|---------|--------|-------|-------|---------|---------------------------------------------------------------------------------------------------|
| Length |          | $L_2$ | $L_4$  | $L_3$   | $L_1$  | $MT$  | $P_2$ | RCA     | Part No.                                                                                          |
| i      | Standard | 2-3/8 | 3-5/32 | 4-19/32 | 7-7/16 | #2    | 1/16  | 2T-2SR  | 240Z0H-002I                                                                                       |
|        | Extended | 4-3/8 | 5-5/32 | 6-19/32 | 9-7/16 | #2    | 1/16  | 2T-2SR  |  250Z0H-002I |
|        |          |       |        |         |        |       |       |         |                                                                                                   |
| m      | Standard | 60.3  | 80.2   | 116.7   | 188.9  | #2**  | 1/16* | 2T-2SRM | 240Z0H-002M                                                                                       |
|        | Extended | 111.1 | 130.9  | 167.4   | 239.7  | #2**  | 1/16* | 2T-2SRM |  250Z0H-002M |

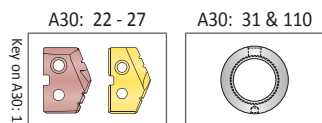
\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7247-IP7-1    | 7247N-IP7-1          | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

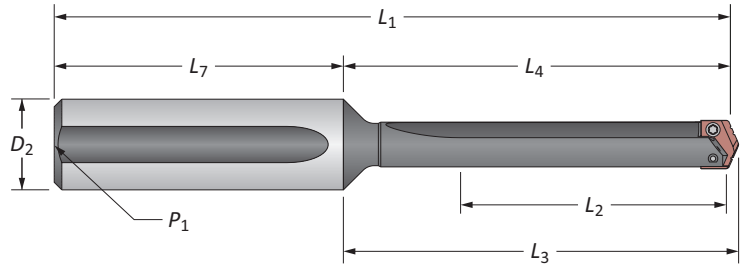
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



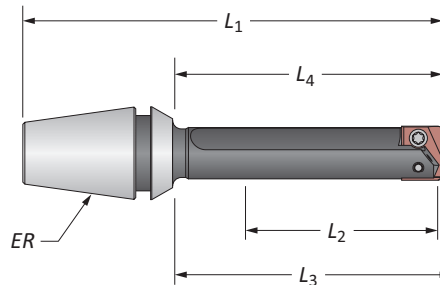
## T-A Drill Insert Holders

Z Series | Straight Shank | ER Collet | Diameter Range: 0.437" - 0.510" (11.10mm - 12.95mm)



### Straight Flute

|   | Length   | Body           |                |                |                | Shank          |                |                | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|   |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i | Short    | 1-1/4          | 2-1/32         | 2-1/8          | 4-13/32        | 3/4            | 2-3/8          | 1/8            | 220Z0S-075L |
|   | Standard | 2-3/8          | 3-5/32         | 3-1/4          | 5-17/32        | 3/4            | 2-3/8          | 1/8            | 240Z0S-075L |
|   | Extended | 4-3/8          | 5-5/32         | 5-1/4          | 7-17/32        | 3/4            | 2-3/8          | 1/8            | 250Z0S-075L |
|   | XL       | 8-3/4          | 9-17/32        | 9-5/8          | 11-29/32       | 3/4            | 2-3/8          | 1/8            | 270Z0S-075L |
|   | 3XL      | 11-7/16        | 12-7/32        | 12-5/16        | 14-19/32       | 3/4            | 2-3/8          | 1/8            | 290Z0S-075L |



### ER Collet Holder

|   | Body           |                |                |                |       | Part No.    | Collet Nut without Retaining Ring |
|---|----------------|----------------|----------------|----------------|-------|-------------|-----------------------------------|
|   | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | ER    |             |                                   |
| i | 1-3/8          | 1-29/32        | 2              | 3-5/64         | ER-16 | 210Z0S-16ER | ER-16N                            |
|   | 1-3/8          | 1-29/32        | 2              | 3-15/64        | ER-20 | 210Z0S-20ER | ER-20N                            |

## T-A Drill Accessories

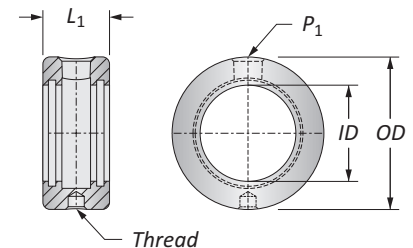
Z Series | Rotary Coolant Adapters | Torx® Plus Screws

### Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | RCA O-Rings |                |              |
|---|-------|-------|----------------|--------------------|----------------|-------------|----------------|--------------|
|   |       |       |                |                    |                | Part No.    | Kit Part No.** | Replacements |
| i | 3/4   | 1-3/4 | 7/8            | 5/16-18            | 1/8            | 2T-2SR      | 2T1-2SR        | 2T1-2OR-10   |
| m | 19.05 | 44.45 | 22.23          | M8 x 1.25          | 1/8*           | 2T-2SRM     | 2T1-2SR        | 2T1-2OR-10   |

\*Thread to BSP and ISO 7-1 | \*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

Refer to page A30: 110 for proper RCA assembly and safety information



### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7247-IP7-1    | 7247N-IP7-1          | 8IP-7         | 8IP-7TL                   | 8IP-7B           | 7.4 in-lbs (84 N-cm)          |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

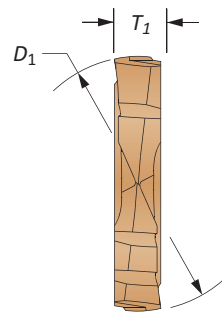
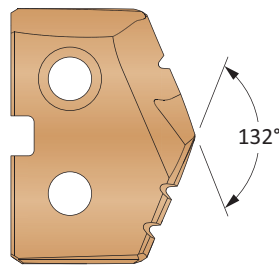
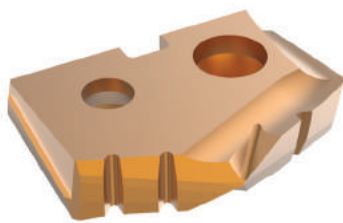
i = Imperial (in)

m = Metric (mm)

Screws sold in packs of 10  
O-rings sold in packs of 10

## GEN2 T-A Drill Inserts

0 Series | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)

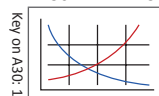


HSS Inserts – Super Cobalt • Carbide Inserts – C2 (K20) | C1 (K35)

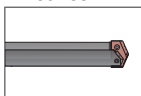
| Series | Insert                |            |          |       | HSS Part No.                                                                                                 | Carbide Part No.                                                                                          |                                                                                                           |
|--------|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | $D_1$ inch | $D_1$ mm | $T_1$ | <br>AM200®<br>Super Cobalt | <br>AM300®<br>C2 (K20) | <br>AM300®<br>C1 (K35) |
| 0      | –                     | 0.5118     | 13.00    | 1/8   | 450H-13                                                                                                      | 4C20P-13                                                                                                  | 4C10P-13                                                                                                  |
|        | 33/64                 | 0.5156     | 13.10    | 1/8   | 450H-.515                                                                                                    | 4C20P-.515                                                                                                | 4C10P-.515                                                                                                |
|        | 17/32                 | 0.5313     | 13.49    | 1/8   | 450H-0017                                                                                                    | 4C20P-0017                                                                                                | 4C10P-0017                                                                                                |
|        | –                     | 0.5315     | 13.50    | 1/8   | 450H-13.5                                                                                                    | 4C20P-13.5                                                                                                | 4C10P-13.5                                                                                                |
|        | 35/64                 | 0.5469     | 13.89    | 1/8   | 450H-.546                                                                                                    | 4C20P-.546                                                                                                | 4C10P-.546                                                                                                |
|        | –                     | 0.5512     | 14.00    | 1/8   | 450H-14                                                                                                      | 4C20P-14                                                                                                  | 4C10P-14                                                                                                  |
|        | 9/16                  | 0.5625     | 14.29    | 1/8   | 450H-0018                                                                                                    | 4C20P-0018                                                                                                | 4C10P-0018                                                                                                |
|        | –                     | 0.5709     | 14.50    | 1/8   | 450H-14.5                                                                                                    | 4C20P-14.5                                                                                                | 4C10P-14.5                                                                                                |
|        | 37/64                 | 0.5781     | 14.68    | 1/8   | 450H-.578                                                                                                    | 4C20P-.578                                                                                                | 4C10P-.578                                                                                                |
|        | –                     | 0.5906     | 15.00    | 1/8   | 450H-15                                                                                                      | 4C20P-15                                                                                                  | 4C10P-15                                                                                                  |
| 0.5    | 19/32                 | 0.5938     | 15.08    | 1/8   | 450H-0019                                                                                                    | 4C20P-0019                                                                                                | 4C10P-0019                                                                                                |
|        | 39/64                 | 0.6094     | 15.48    | 1/8   | 450H-.609                                                                                                    | 4C20P-.609                                                                                                | 4C10P-.609                                                                                                |
|        | –                     | 0.6102     | 15.50    | 1/8   | 450H-15.5                                                                                                    | 4C20P-15.5                                                                                                | 4C10P-15.5                                                                                                |
|        | 5/8                   | 0.6250     | 15.88    | 1/8   | 450H-0020                                                                                                    | 4C20P-0020                                                                                                | 4C10P-0020                                                                                                |
|        | –                     | 0.6299     | 16.00    | 1/8   | 450H-16                                                                                                      | 4C20P-16                                                                                                  | 4C10P-16                                                                                                  |
|        | 41/64                 | 0.6406     | 16.27    | 1/8   | 450H-.640                                                                                                    | 4C20P-.640                                                                                                | 4C10P-.640                                                                                                |
|        | –                     | 0.6496     | 16.50    | 1/8   | 450H-16.5                                                                                                    | 4C20P-16.5                                                                                                | 4C10P-16.5                                                                                                |
|        | 21/32                 | 0.6563     | 16.67    | 1/8   | 450H-0021                                                                                                    | 4C20P-0021                                                                                                | 4C10P-0021                                                                                                |
|        | –                     | 0.6693     | 17.00    | 1/8   | 450H-17                                                                                                      | 4C20P-17                                                                                                  | 4C10P-17                                                                                                  |
|        | 43/64                 | 0.6719     | 17.07    | 1/8   | 450H-.671                                                                                                    | 4C20P-.671                                                                                                | 4C10P-.671                                                                                                |
|        | 11/16                 | 0.6875     | 17.46    | 1/8   | 450H-0022                                                                                                    | 4C20P-0022                                                                                                | 4C10P-0022                                                                                                |
|        | –                     | 0.6890     | 17.50    | 1/8   | 450H-17.5                                                                                                    | 4C20P-17.5                                                                                                | 4C10P-17.5                                                                                                |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 112 - 143



A30: 38 - 42



A30: 4 - 6



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. ➔

TiN = 450T-XXXX

TiAlN = 450A-XXXX

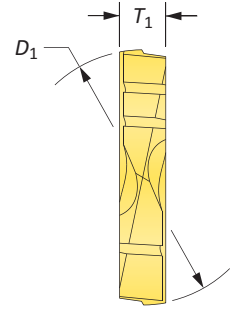
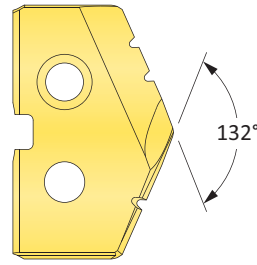
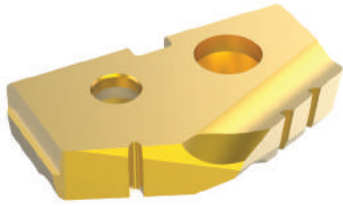
TiCN = 450N-XXXX

AM200® = 450H-XXXX

Inserts sold in quantities of 2

## Original T-A Drill Inserts

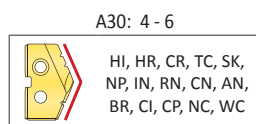
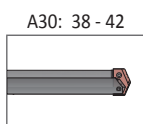
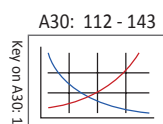
0 Series | HSS | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



### HSS Inserts – Premium Cobalt

| Series | Insert                |                     |                   |                | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|---------------------|-------------------|----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiCN |
| 0      | –                     | 0.5118              | 13.00             | 1/8            | <b>180T-13</b>                                                                         | <b>180A-13</b>                                                                            | <b>180N-13</b>                                                                           |
|        | 33/64                 | 0.5156              | 13.10             | 1/8            | <b>180T-.515</b>                                                                       | <b>180A-.515</b>                                                                          | <b>180N-.515</b>                                                                         |
|        | 17/32                 | 0.5313              | 13.49             | 1/8            | <b>180T-0017</b>                                                                       | <b>180A-0017</b>                                                                          | <b>180N-0017</b>                                                                         |
|        | –                     | 0.5315              | 13.50             | 1/8            | <b>180T-13.5</b>                                                                       | <b>180A-13.5</b>                                                                          | <b>180N-13.5</b>                                                                         |
|        | 35/64                 | 0.5469              | 13.89             | 1/8            | <b>180T-.546</b>                                                                       | <b>180A-.546</b>                                                                          | <b>180N-.546</b>                                                                         |
|        | –                     | 0.5512              | 14.00             | 1/8            | <b>180T-14</b>                                                                         | <b>180A-14</b>                                                                            | <b>180N-14</b>                                                                           |
|        | 9/16                  | 0.5625              | 14.29             | 1/8            | <b>180T-0018</b>                                                                       | <b>180A-0018</b>                                                                          | <b>180N-0018</b>                                                                         |
|        | –                     | 0.5709              | 14.50             | 1/8            | <b>180T-14.5</b>                                                                       | <b>180A-14.5</b>                                                                          | <b>180N-14.5</b>                                                                         |
|        | 37/64                 | 0.5781              | 14.68             | 1/8            | <b>180T-.578</b>                                                                       | <b>180A-.578</b>                                                                          | <b>180N-.578</b>                                                                         |
|        | –                     | 0.5906              | 15.00             | 1/8            | <b>180T-15</b>                                                                         | <b>180A-15</b>                                                                            | <b>180N-15</b>                                                                           |
| 0.5    | 19/32                 | 0.5938              | 15.08             | 1/8            | <b>180T-0019</b>                                                                       | <b>180A-0019</b>                                                                          | <b>180N-0019</b>                                                                         |
|        | 39/64                 | 0.6094              | 15.48             | 1/8            | <b>180T-.609</b>                                                                       | <b>180A-.609</b>                                                                          | <b>180N-.609</b>                                                                         |
|        | –                     | 0.6102              | 15.50             | 1/8            | <b>180T-15.5</b>                                                                       | <b>180A-15.5</b>                                                                          | <b>180N-15.5</b>                                                                         |
|        | 5/8                   | 0.6250              | 15.88             | 1/8            | <b>180T-0020</b>                                                                       | <b>180A-0020</b>                                                                          | <b>180N-0020</b>                                                                         |
|        | –                     | 0.6299              | 16.00             | 1/8            | <b>180T-16</b>                                                                         | <b>180A-16</b>                                                                            | <b>180N-16</b>                                                                           |
|        | 41/64                 | 0.6406              | 16.27             | 1/8            | <b>180T-.640</b>                                                                       | <b>180A-.640</b>                                                                          | <b>180N-.640</b>                                                                         |
|        | –                     | 0.6496              | 16.50             | 1/8            | <b>180T-16.5</b>                                                                       | <b>180A-16.5</b>                                                                          | <b>180N-16.5</b>                                                                         |
|        | 21/32                 | 0.6563              | 16.67             | 1/8            | <b>180T-0021</b>                                                                       | <b>180A-0021</b>                                                                          | <b>180N-0021</b>                                                                         |
|        | –                     | 0.6693              | 17.00             | 1/8            | <b>180T-17</b>                                                                         | <b>180A-17</b>                                                                            | <b>180N-17</b>                                                                           |
|        | 43/64                 | 0.6719              | 17.07             | 1/8            | <b>180T-.671</b>                                                                       | <b>180A-.671</b>                                                                          | <b>180N-.671</b>                                                                         |
|        | 11/16                 | 0.6875              | 17.46             | 1/8            | <b>180T-0022</b>                                                                       | <b>180A-0022</b>                                                                          | <b>180N-0022</b>                                                                         |
|        | –                     | 0.6890              | 17.50             | 1/8            | <b>180T-17.5</b>                                                                       | <b>180A-17.5</b>                                                                          | <b>180N-17.5</b>                                                                         |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

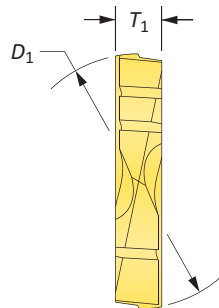
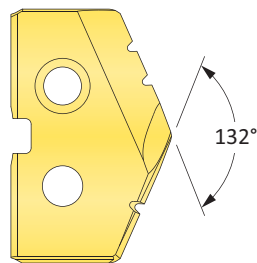
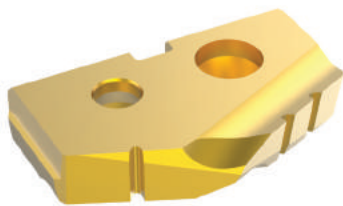
Inserts sold in quantities of 2

|                         |                           |
|-------------------------|---------------------------|
| <b>TiN</b> = 180T-XXXX  | <b>TiAlN</b> = 180A-XXXX  |
| <b>TiCN</b> = 180N-XXXX | <b>AM200®</b> = 180H-XXXX |



## Original T-A Drill Inserts

0 Series | HSS | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)

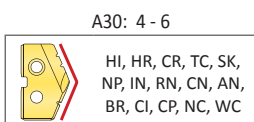
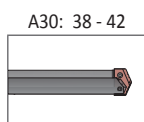
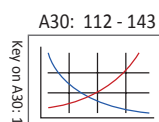


## HSS Inserts – Super Cobalt

| Series | Fractional Equivalent | Insert     |          |       | <br>TiN   | <br>TiAlN | <br>TiCN  |
|--------|-----------------------|------------|----------|-------|-----------|-----------|-----------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |           |           |           |
| 0      | –                     | 0.5118     | 13.00    | 1/8   | 150T-13   | 150A-13   | 150N-13   |
|        | 33/64                 | 0.5156     | 13.10    | 1/8   | 150T-.515 | 150A-.515 | 150N-.515 |
|        | 17/32                 | 0.5313     | 13.49    | 1/8   | 150T-0017 | 150A-0017 | 150N-0017 |
|        | –                     | 0.5315     | 13.50    | 1/8   | 150T-13.5 | 150A-13.5 | 150N-13.5 |
|        | 35/64                 | 0.5469     | 13.89    | 1/8   | 150T-.546 | 150A-.546 | 150N-.546 |
|        | –                     | 0.5512     | 14.00    | 1/8   | 150T-14   | 150A-14   | 150N-14   |
|        | 9/16                  | 0.5625     | 14.29    | 1/8   | 150T-0018 | 150A-0018 | 150N-0018 |
|        | –                     | 0.5709     | 14.50    | 1/8   | 150T-14.5 | 150A-14.5 | 150N-14.5 |
|        | 37/64                 | 0.5781     | 14.68    | 1/8   | 150T-.578 | 150A-.578 | 150N-.578 |
|        | –                     | 0.5906     | 15.00    | 1/8   | 150T-15   | 150A-15   | 150N-15   |
| 0.5    | 19/32                 | 0.5938     | 15.08    | 1/8   | 150T-0019 | 150A-0019 | 150N-0019 |
|        | 39/64                 | 0.6094     | 15.48    | 1/8   | 150T-.609 | 150A-.609 | 150N-.609 |
|        | –                     | 0.6102     | 15.50    | 1/8   | 150T-15.5 | 150A-15.5 | 150N-15.5 |
|        | 5/8                   | 0.6250     | 15.88    | 1/8   | 150T-0020 | 150A-0020 | 150N-0020 |
|        | –                     | 0.6299     | 16.00    | 1/8   | 150T-16   | 150A-16   | 150N-16   |
|        | 41/64                 | 0.6406     | 16.27    | 1/8   | 150T-.640 | 150A-.640 | 150N-.640 |
|        | –                     | 0.6496     | 16.50    | 1/8   | 150T-16.5 | 150A-16.5 | 150N-16.5 |
|        | 21/32                 | 0.6563     | 16.67    | 1/8   | 150T-0021 | 150A-0021 | 150N-0021 |
|        | –                     | 0.6693     | 17.00    | 1/8   | 150T-17   | 150A-17   | 150N-17   |
|        | 43/64                 | 0.6719     | 17.07    | 1/8   | 150T-.671 | 150A-.671 | 150N-.671 |
|        | 11/16                 | 0.6875     | 17.46    | 1/8   | 150T-0022 | 150A-0022 | 150N-0022 |
|        | –                     | 0.6890     | 17.50    | 1/8   | 150T-17.5 | 150A-17.5 | 150N-17.5 |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2

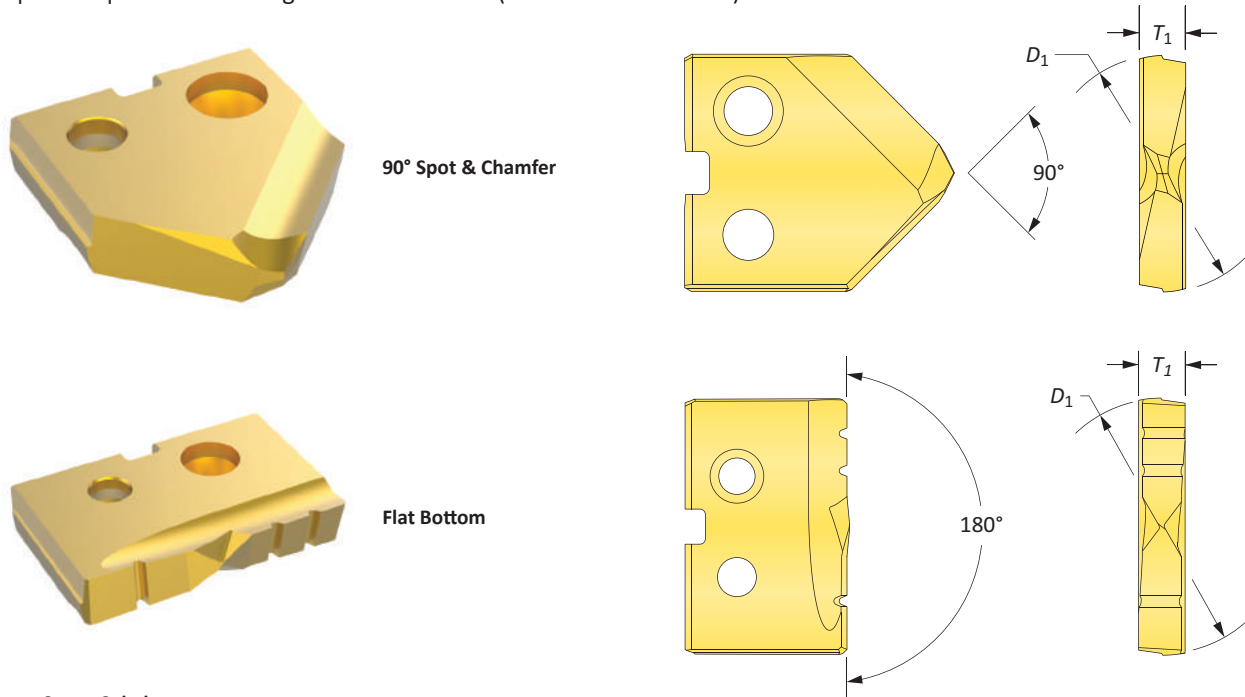


Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 150T-XXXX  | TiAlN = 150A-XXXX  |
| TiCN = 150N-XXXX | AM200® = 150H-XXXX |

## Original T-A Drill Inserts

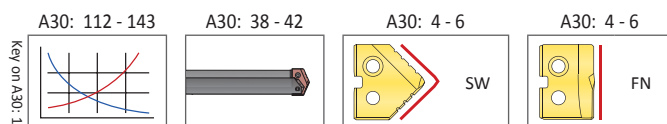
0 Series | HSS | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



### HSS Inserts – Super Cobalt

| Series | Insert                |                     |                   |                | 90° Spot & Chamfer Part No. |              |              | Flat Bottom Part No. |
|--------|-----------------------|---------------------|-------------------|----------------|-----------------------------|--------------|--------------|----------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> | TiN                         | TiAlN        | TiCN         | TiN                  |
| 0      | –                     | 0.5118              | 13.00             | 1/8            | 150T-13-SP                  | 150A-13-SP   | 150N-13-SP   | 150T-13-FB           |
|        | 33/64                 | 0.5156              | 13.10             | 1/8            | 150T-515-SP                 | 150A-515-SP  | 150N-515-SP  | 150T-515-FB          |
|        | 17/32                 | 0.5313              | 13.49             | 1/8            | 150T-0017-SP                | 150A-0017-SP | 150N-0017-SP | 150T-0017-FB         |
|        | –                     | 0.5315              | 13.50             | 1/8            | 150T-13.5-SP                | 150A-13.5-SP | 150N-13.5-SP | 150T-13.5-FB         |
|        | 35/64                 | 0.5469              | 13.89             | 1/8            | 150T-546-SP                 | 150A-546-SP  | 150N-546-SP  | 150T-546-FB          |
|        | –                     | 0.5512              | 14.00             | 1/8            | 150T-14-SP                  | 150A-14-SP   | 150N-14-SP   | 150T-14-FB           |
|        | 9/16                  | 0.5625              | 14.29             | 1/8            | 150T-0018-SP                | 150A-0018-SP | 150N-0018-SP | 150T-0018-FB         |
|        | –                     | 0.5709              | 14.50             | 1/8            | 150T-14.5-SP                | 150A-14.5-SP | 150N-14.5-SP | 150T-14.5-FB         |
|        | 37/64                 | 0.5781              | 14.68             | 1/8            | 150T-578-SP                 | 150A-578-SP  | 150N-578-SP  | 150T-578-FB          |
| 0.5    | –                     | 0.5906              | 15.00             | 1/8            | 150T-15-SP                  | 150A-15-SP   | 150N-15-SP   | 150T-15-FB           |
|        | 19/32                 | 0.5938              | 15.08             | 1/8            | 150T-0019-SP                | 150A-0019-SP | 150N-0019-SP | 150T-0019-FB         |
|        | 39/64                 | 0.6094              | 15.48             | 1/8            | 150T-609-SP                 | 150A-609-SP  | 150N-609-SP  | 150T-609-FB          |
|        | –                     | 0.6102              | 15.50             | 1/8            | 150T-15.5-SP                | 150A-15.5-SP | 150N-15.5-SP | 150T-15.5-FB         |
|        | 5/8                   | 0.6250              | 15.88             | 1/8            | 150T-0020-SP                | 150A-0020-SP | 150N-0020-SP | 150T-0020-FB         |
|        | –                     | 0.6299              | 16.00             | 1/8            | 150T-16-SP                  | 150A-16-SP   | 150N-16-SP   | 150T-16-FB           |
|        | 41/64                 | 0.6406              | 16.27             | 1/8            | 150T-640-SP                 | 150A-640-SP  | 150N-640-SP  | 150T-640-FB          |
|        | –                     | 0.6496              | 16.50             | 1/8            | 150T-16.5-SP                | 150A-16.5-SP | 150N-16.5-SP | 150T-16.5-FB         |
|        | 21/32                 | 0.6563              | 16.67             | 1/8            | 150T-0021-SP                | 150A-0021-SP | 150N-0021-SP | 150T-0021-FB         |
|        | –                     | 0.6693              | 17.00             | 1/8            | 150T-17-SP                  | 150A-17-SP   | 150N-17-SP   | 150T-17-FB           |
|        | 43/64                 | 0.6719              | 17.07             | 1/8            | 150T-671-SP                 | 150A-671-SP  | 150N-671-SP  | 150T-671-FB          |
|        | 11/16                 | 0.6875              | 17.46             | 1/8            | 150T-0022-SP                | 150A-0022-SP | 150N-0022-SP | 150T-0022-FB         |
|        | –                     | 0.6890              | 17.50             | 1/8            | 150T-17.5-SP                | 150A-17.5-SP | 150N-17.5-SP | 150T-17.5-FB         |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.



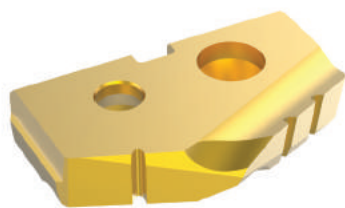
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 2

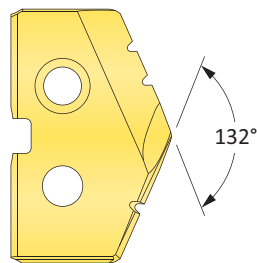
|                  |                    |
|------------------|--------------------|
| TiN = 150T-XXXX  | TiAlN = 150A-XXXX  |
| TiCN = 150N-XXXX | AM200® = 150H-XXXX |

## Original T-A Drill Inserts

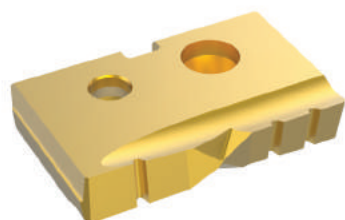
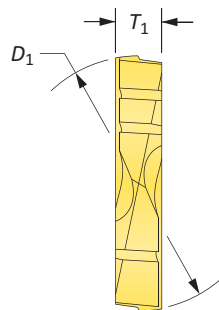
0 Series | Carbide | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



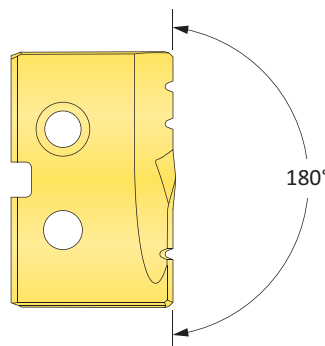
Standard



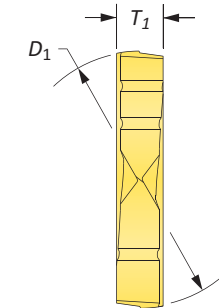
132°



Flat Bottom



180°

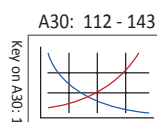


## Carbide Inserts – C2 (K20)

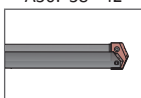
| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                            | Flat Bottom Part No.                                                                     |
|--------|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiN |
| 0      | –                     | 0.5118     | 13.00    | 1/8   | 1C20T-13                                                                               | 1C20A-13                                                                                   | 1C20T-13-FB                                                                              |
|        | 33/64                 | 0.5156     | 13.10    | 1/8   | 1C20T-.515                                                                             | 1C20A-.515                                                                                 | 1C20T-.515-FB                                                                            |
|        | 17/32                 | 0.5313     | 13.49    | 1/8   | 1C20T-0017                                                                             | 1C20A-0017                                                                                 | 1C20T-0017-FB                                                                            |
|        | –                     | 0.5315     | 13.50    | 1/8   | 1C20T-13.5                                                                             | 1C20A-13.5                                                                                 | 1C20T-13.5-FB                                                                            |
|        | 35/64                 | 0.5469     | 13.89    | 1/8   | 1C20T-.546                                                                             | 1C20A-.546                                                                                 | 1C20T-.546-FB                                                                            |
|        | –                     | 0.5512     | 14.00    | 1/8   | 1C20T-14                                                                               | 1C20A-14                                                                                   | 1C20T-14-FB                                                                              |
|        | 9/16                  | 0.5625     | 14.29    | 1/8   | 1C20T-0018                                                                             | 1C20A-0018                                                                                 | 1C20T-0018-FB                                                                            |
|        | –                     | 0.5709     | 14.50    | 1/8   | 1C20T-14.5                                                                             | 1C20A-14.5                                                                                 | 1C20T-14.5-FB                                                                            |
|        | 37/64                 | 0.5781     | 14.68    | 1/8   | 1C20T-.578                                                                             | 1C20A-.578                                                                                 | 1C20T-.578-FB                                                                            |
| 0.5    | –                     | 0.5906     | 15.00    | 1/8   | 1C20T-15                                                                               | 1C20A-15                                                                                   | 1C20T-15-FB                                                                              |
|        | 19/32                 | 0.5938     | 15.08    | 1/8   | 1C20T-0019                                                                             | 1C20A-0019                                                                                 | 1C20T-0019-FB                                                                            |
|        | 39/64                 | 0.6094     | 15.48    | 1/8   | 1C20T-.609                                                                             | 1C20A-.609                                                                                 | 1C20T-.609-FB                                                                            |
|        | –                     | 0.6102     | 15.50    | 1/8   | 1C20T-15.5                                                                             | 1C20A-15.5                                                                                 | 1C20T-15.5-FB                                                                            |
|        | 5/8                   | 0.6250     | 15.88    | 1/8   | 1C20T-0020                                                                             | 1C20A-0020                                                                                 | 1C20T-0020-FB                                                                            |
|        | –                     | 0.6299     | 16.00    | 1/8   | 1C20T-16                                                                               | 1C20A-16                                                                                   | 1C20T-16-FB                                                                              |
|        | 41/64                 | 0.6406     | 16.27    | 1/8   | 1C20T-.640                                                                             | 1C20A-.640                                                                                 | 1C20T-.640-FB                                                                            |
|        | –                     | 0.6496     | 16.50    | 1/8   | 1C20T-16.5                                                                             | 1C20A-16.5                                                                                 | 1C20T-16.5-FB                                                                            |
|        | 21/32                 | 0.6563     | 16.67    | 1/8   | 1C20T-0021                                                                             | 1C20A-0021                                                                                 | 1C20T-0021-FB                                                                            |
|        | –                     | 0.6693     | 17.00    | 1/8   | 1C20T-17                                                                               | 1C20A-17                                                                                   | 1C20T-17-FB                                                                              |
|        | 43/64                 | 0.6719     | 17.07    | 1/8   | 1C20T-.671                                                                             | 1C20A-.671                                                                                 | 1C20T-.671-FB                                                                            |
|        | 11/16                 | 0.6875     | 17.46    | 1/8   | 1C20T-0022                                                                             | 1C20A-0022                                                                                 | 1C20T-0022-FB                                                                            |
|        | –                     | 0.6890     | 17.50    | 1/8   | 1C20T-17.5                                                                             | 1C20A-17.5                                                                                 | 1C20T-17.5-FB                                                                            |

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 1



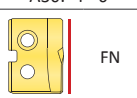
A30: 38 - 42



A30: 4 - 6

HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

A30: 4 - 6



FN

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

TiN = 1C20T-XXXX

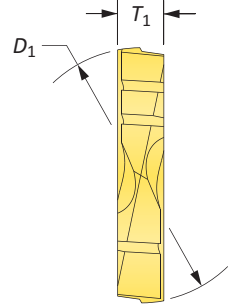
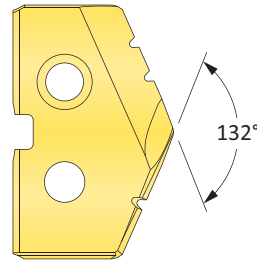
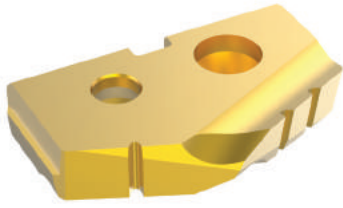
TiAlN = 1C20A-XXXX

TiCN = 1C20N-XXXX

AM200® = 1C20H-XXXX

## Original T-A Drill Inserts

0 Series | Carbide | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)

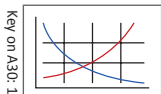


Carbide Inserts – C5 (P40) | C3 (K10) | N2

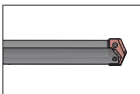
| Series | Insert                |                     |                   |                | C5 Part No.       |                   | C3 Part No.          | N2 Part No.       |
|--------|-----------------------|---------------------|-------------------|----------------|-------------------|-------------------|----------------------|-------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> | TiN               | TiAlN             | TiAlN (Cast Iron)    | Diamond Film      |
| 0      | –                     | 0.5118              | 13.00             | 1/8            | <b>1C50T-13</b>   | <b>1C50A-13</b>   | <b>1C30A-13-CI</b>   | <b>1N20D-13</b>   |
|        | 33/64                 | 0.5156              | 13.10             | 1/8            | <b>1C50T-.515</b> | <b>1C50A-.515</b> | <b>1C30A-.515-CI</b> | <b>1N20D-.515</b> |
|        | 17/32                 | 0.5313              | 13.49             | 1/8            | <b>1C50T-0017</b> | <b>1C50A-0017</b> | <b>1C30A-0017-CI</b> | <b>1N20D-0017</b> |
|        | –                     | 0.5315              | 13.50             | 1/8            | <b>1C50T-13.5</b> | <b>1C50A-13.5</b> | <b>1C30A-13.5-CI</b> | <b>1N20D-13.5</b> |
|        | 35/64                 | 0.5469              | 13.89             | 1/8            | <b>1C50T-.546</b> | <b>1C50A-.546</b> | <b>1C30A-.546-CI</b> | <b>1N20D-.546</b> |
|        | –                     | 0.5512              | 14.00             | 1/8            | <b>1C50T-14</b>   | <b>1C50A-14</b>   | <b>1C30A-14-CI</b>   | <b>1N20D-14</b>   |
|        | 9/16                  | 0.5625              | 14.29             | 1/8            | <b>1C50T-0018</b> | <b>1C50A-0018</b> | <b>1C30A-0018-CI</b> | <b>1N20D-0018</b> |
|        | –                     | 0.5709              | 14.50             | 1/8            | <b>1C50T-14.5</b> | <b>1C50A-14.5</b> | <b>1C30A-14.5-CI</b> | <b>1N20D-14.5</b> |
|        | 37/64                 | 0.5781              | 14.68             | 1/8            | <b>1C50T-.578</b> | <b>1C50A-.578</b> | <b>1C30A-.578-CI</b> | <b>1N20D-.578</b> |
|        | –                     | 0.5906              | 15.00             | 1/8            | <b>1C50T-15</b>   | <b>1C50A-15</b>   | <b>1C30A-15-CI</b>   | <b>1N20D-15</b>   |
| 0.5    | 19/32                 | 0.5938              | 15.08             | 1/8            | <b>1C50T-0019</b> | <b>1C50A-0019</b> | <b>1C30A-0019-CI</b> | <b>1N20D-0019</b> |
|        | 39/64                 | 0.6094              | 15.48             | 1/8            | <b>1C50T-.609</b> | <b>1C50A-.609</b> | <b>1C30A-.609-CI</b> | <b>1N20D-.609</b> |
|        | –                     | 0.6102              | 15.50             | 1/8            | <b>1C50T-15.5</b> | <b>1C50A-15.5</b> | <b>1C30A-15.5-CI</b> | <b>1N20D-15.5</b> |
|        | 5/8                   | 0.6250              | 15.88             | 1/8            | <b>1C50T-0020</b> | <b>1C50A-0020</b> | <b>1C30A-0020-CI</b> | <b>1N20D-0020</b> |
|        | –                     | 0.6299              | 16.00             | 1/8            | <b>1C50T-16</b>   | <b>1C50A-16</b>   | <b>1C30A-16-CI</b>   | <b>1N20D-16</b>   |
|        | 41/64                 | 0.6406              | 16.27             | 1/8            | <b>1C50T-.640</b> | <b>1C50A-.640</b> | <b>1C30A-.640-CI</b> | <b>1N20D-.640</b> |
|        | –                     | 0.6496              | 16.50             | 1/8            | <b>1C50T-16.5</b> | <b>1C50A-16.5</b> | <b>1C30A-16.5-CI</b> | <b>1N20D-16.5</b> |
|        | 21/32                 | 0.6563              | 16.67             | 1/8            | <b>1C50T-0021</b> | <b>1C50A-0021</b> | <b>1C30A-0021-CI</b> | <b>1N20D-0021</b> |
|        | –                     | 0.6693              | 17.00             | 1/8            | <b>1C50T-17</b>   | <b>1C50A-17</b>   | <b>1C30A-17-CI</b>   | <b>1N20D-17</b>   |
|        | 43/64                 | 0.6719              | 17.07             | 1/8            | <b>1C50T-.671</b> | <b>1C50A-.671</b> | <b>1C30A-.671-CI</b> | <b>1N20D-.671</b> |
|        | 11/16                 | 0.6875              | 17.46             | 1/8            | <b>1C50T-0022</b> | <b>1C50A-0022</b> | <b>1C30A-0022-CI</b> | <b>1N20D-0022</b> |
|        | –                     | 0.6890              | 17.50             | 1/8            | <b>1C50T-17.5</b> | <b>1C50A-17.5</b> | <b>1C30A-17.5-CI</b> | <b>1N20D-17.5</b> |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

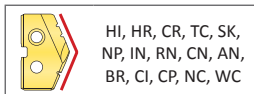
A30: 112 - 143



A30: 38 - 42



A30: 4 - 6

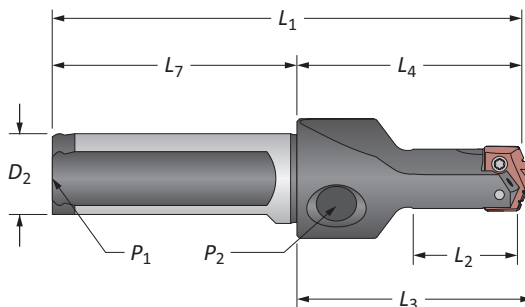
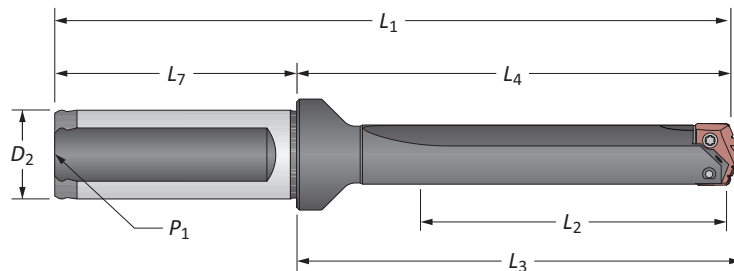
HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WCCoatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

|                          |                            |
|--------------------------|----------------------------|
| <b>TiN = 1C50T-XXXX</b>  | <b>TiAlN = 1C50A-XXXX</b>  |
| <b>TiCN = 1C50N-XXXX</b> | <b>AM200® = 1C50H-XXXX</b> |

## T-A Drill Insert Holders

0 Series | Flange Shank | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



Stub Length

### Straight Flute

| Series |     | Length   | Body           |                |                |                | Shank          |                |                | Part No.      |
|--------|-----|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|        |     |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i      | 0   | Stub     | 7/8            | 1-7/8          | 1-63/64        | 3-29/32        | 3/4            | 2-1/32         | 1/8            | 21000S-075F   |
|        |     | Short    | 1-3/8          | 2-1/2          | 2-39/64        | 4-17/32        | 3/4            | 2-1/32         | 1/8            | 22000S-075F   |
|        |     | Standard | 2-1/2          | 3-5/8          | 3-47/64        | 5-21/32        | 3/4            | 2-1/32         | 1/8            | 24000S-075F   |
|        |     | Extended | 4-1/2          | 5-5/8          | 5-47/64        | 7-21/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 25000S-075F |
|        | 0.5 | Stub     | 7/8            | 1-7/8          | 1-63/64        | 3-29/32        | 3/4            | 2-1/32         | 1/8            | 21005S-075F   |
|        |     | Short    | 1-3/8          | 2-1/2          | 2-39/64        | 4-17/32        | 3/4            | 2-1/32         | 1/8            | 22005S-075F   |
|        |     | Standard | 2-1/2          | 3-5/8          | 3-47/64        | 5-21/32        | 3/4            | 2-1/32         | 1/8            | 24005S-075F   |
|        |     | Extended | 4-1/2          | 5-5/8          | 5-47/64        | 7-21/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 25005S-075F |
|        |     |          |                |                |                |                |                |                |                |               |
| m      | 0   | Stub     | 22.2           | 47.6           | 50.4           | 97.6           | 20.0           | 50.0           | 1/8*           | 21000S-20FM   |
|        |     | Short    | 34.9           | 63.5           | 66.3           | 113.5          | 20.0           | 50.0           | 1/8*           | 22000S-20FM   |
|        |     | XL       | 295.0          | 323.9          | 326.7          | 373.9          | 20.0           | 50.0           | 1/8*           | ⚠ 27000S-20FM |
|        |     | 3XL      | 387.0          | 416.0          | 418.8          | 466.0          | 20.0           | 50.0           | 1/8*           | ⚠ 29000S-20FM |
|        | 0.5 | Stub     | 22.2           | 47.6           | 50.4           | 97.6           | 20.0           | 50.0           | 1/8*           | 21005S-20FM   |
|        |     | Short    | 34.9           | 63.5           | 66.3           | 113.5          | 20.0           | 50.0           | 1/8*           | 22005S-20FM   |

\*Metric thread to BSP and ISO 7-1

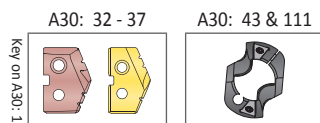
**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

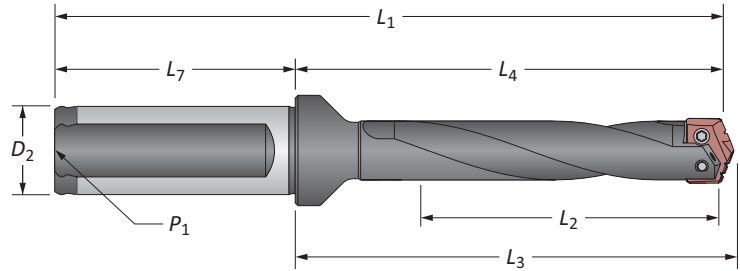
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**T-A Drill Insert Holders**

0 Series | Flange Shank | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)

**Helical Flute**

| Series |     | Length        | Body           |                |                |                | Shank          |                |                | Part No.      |
|--------|-----|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|        |     |               | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i      | 0   | Standard      | 2-1/2          | 3-5/8          | 3-47/64        | 5-21/32        | 3/4            | 2-1/32         | 1/8            | 24000H-075F   |
|        |     | Standard Plus | 3-1/2          | 4-5/8          | 4-37/64        | 6-39/64        | 3/4            | 2-1/32         | 1/8            | 24500H-075F   |
|        |     | Extended      | 4-1/2          | 5-5/8          | 5-47/64        | 7-21/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 25000H-075F |
|        |     | Long          | 7              | 8-1/8          | 8-15/64        | 10-5/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 26000H-075F |
|        |     | Long Plus     | 9-7/16         | 10-37/64       | 10-11/16       | 12-23/32       | 3/4            | 2-1/32         | 1/8            | ⚠ 26500H-075F |
|        | 0.5 | Standard      | 2-1/2          | 3-5/8          | 3-47/64        | 5-21/32        | 3/4            | 2-1/32         | 1/8            | 24005H-075F   |
|        |     | Extended      | 4-1/2          | 5-5/8          | 5-47/64        | 7-21/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 25005H-075F |
|        |     | Long          | 7              | 8-1/8          | 8-15/64        | 10-5/32        | 3/4            | 2-1/32         | 1/8            | ⚠ 26005H-075F |
|        |     |               |                |                |                |                |                |                |                |               |
| m      | 0   | Standard      | 63.5           | 92.1           | 94.9           | 142.1          | 20.0           | 50.0           | 1/8*           | 24000H-20FM   |
|        |     | Standard Plus | 89.0           | 117.6          | 120.4          | 167.6          | 20.0           | 50.0           | 1/8*           | 24500H-20FM   |
|        |     | Extended      | 114.3          | 142.9          | 145.7          | 192.9          | 20.0           | 50.0           | 1/8*           | ⚠ 25000H-20FM |
|        |     | Long          | 177.8          | 206.4          | 209.1          | 256.4          | 20.0           | 50.0           | 1/8*           | ⚠ 26000H-20FM |
|        |     | Long Plus     | 240.0          | 268.6          | 271.4          | 318.6          | 20.0           | 50.0           | 1/8*           | ⚠ 26500H-20FM |
|        | 0.5 | Standard      | 63.5           | 92.1           | 94.9           | 142.1          | 20.0           | 50.0           | 1/8*           | 24005H-20FM   |
|        |     | Extended      | 114.3          | 142.9          | 145.7          | 192.9          | 20.0           | 50.0           | 1/8*           | ⚠ 25005H-20FM |
|        |     | Long          | 177.8          | 206.4          | 209.1          | 256.4          | 20.0           | 50.0           | 1/8*           | ⚠ 26005H-20FM |

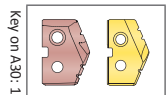
\*Metric thread to BSP and ISO 7-1NTE: 0.5 hold)

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.**Connection Accessories**

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

A30: 32 - 37



i = Imperial (in)

m = Metric (mm)

Screws sold in quantities of 10

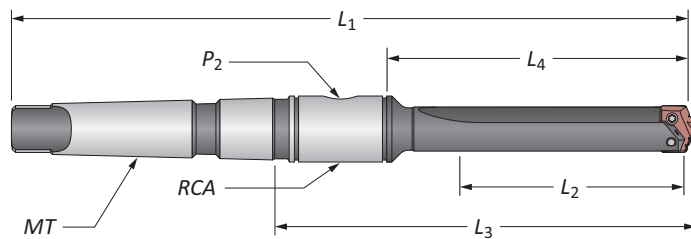
**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.





## T-A Drill Insert Holders

0 Series | Taper Shank | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



### Straight Flute

| Series |     | Length   | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|-----|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|        |     |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i      | 0   | Short    | 1-3/8          | 2-3/16         | 3-41/64        | 6-15/32        | #2    | 1/16           | 2T-2SR  | 22000S-002I |
|        |     | Standard | 2-1/2          | 3-5/16         | 4-49/64        | 7-19/32        | #2    | 1/16           | 2T-2SR  | 24000S-002I |
|        |     | Extended | 4-1/2          | 5-5/16         | 6-49/64        | 9-19/32        | #2    | 1/16           | 2T-2SR  | 25000S-002I |
|        | 0.5 | Short    | 1-3/8          | 2-3/16         | 3-41/64        | 6-15/32        | #2    | 1/16           | 2T-2SR  | 22005S-002I |
|        |     | Standard | 2-1/2          | 3-5/16         | 4-49/64        | 7-19/32        | #2    | 1/16           | 2T-2SR  | 24005S-002I |
|        |     | Extended | 4-1/2          | 5-5/16         | 6-49/64        | 9-19/32        | #2    | 1/16           | 2T-2SR  | 25005S-002I |
| m      | 0   | Short    | 35.0           | 55.5           | 92.4           | 164.3          | #2**  | 1/16*          | 2T-2SRM | 22000S-002M |
|        | 0.5 | Short    | 35.0           | 55.5           | 92.4           | 164.3          | #2**  | 1/16*          | 2T-2SRM | 22005S-002M |

\*Metric thread to BSP and ISO 7-1

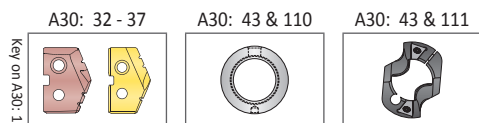
\*\*Per ISO 296 type BEK

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

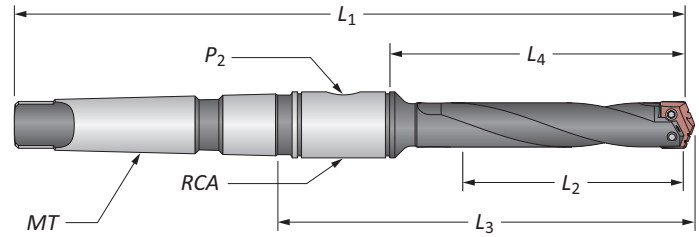
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**T-A Drill Insert Holders**

0 Series | Taper Shank | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)

**Helical Flute**

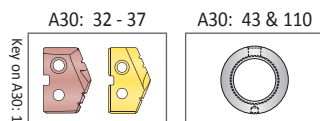
| Series |     | Length   | Body           |                |                |                | Shank |                |         | Part No.      |
|--------|-----|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|---------------|
|        |     |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |               |
| i      | 0   | Standard | 2-1/2          | 3-5/16         | 4-49/64        | 7-19/32        | #2    | 1/16           | 2T-2SR  | 24000H-002I   |
|        |     | Extended | 4-1/2          | 5-5/16         | 6-49/64        | 9-19/32        | #2    | 1/16           | 2T-2SR  | ⚠ 25000H-002I |
|        |     | Long     | 7              | 7-13/16        | 8-17/64        | 12-3/32        | #2    | 1/16           | 2T-2SR  | ⚠ 26000H-002I |
|        | 0.5 | Standard | 2-1/2          | 3-5/16         | 4-49/64        | 7-19/32        | #2    | 1/16           | 2T-2SR  | 24005H-002I   |
|        |     | Extended | 4-1/2          | 5-5/16         | 6-49/64        | 9-19/32        | #2    | 1/16           | 2T-2SR  | ⚠ 25005H-002I |
|        |     | Long     | 7              | 7-13/16        | 8-17/64        | 12-3/32        | #2    | 1/16           | 2T-2SR  | ⚠ 26005H-002I |
|        |     |          |                |                |                |                |       |                |         |               |
| m      | 0   | Standard | 63.5           | 84.1           | 121.0          | 192.9          | #2**  | 1/16*          | 2T-2SRM | 24000H-002M   |
|        |     | Extended | 114.3          | 135.0          | 171.8          | 243.7          | #2**  | 1/16*          | 2T-2SRM | ⚠ 25000H-002M |
|        |     | Long     | 177.8          | 198.5          | 235.3          | 307.2          | #2**  | 1/16*          | 2T-2SRM | ⚠ 26000H-002M |
|        | 0.5 | Standard | 63.5           | 84.1           | 121.0          | 192.9          | #2**  | 1/16*          | 2T-2SRM | 24005H-002M   |
|        |     | Extended | 114.3          | 135.0          | 171.8          | 243.7          | #2**  | 1/16*          | 2T-2SRM | ⚠ 25005H-002M |
|        |     | Long     | 177.8          | 198.5          | 235.3          | 307.2          | #2**  | 1/16*          | 2T-2SRM | ⚠ 26005H-002M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.**Connection Accessories**

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength**i** = Imperial (in)**m** = Metric (mm)

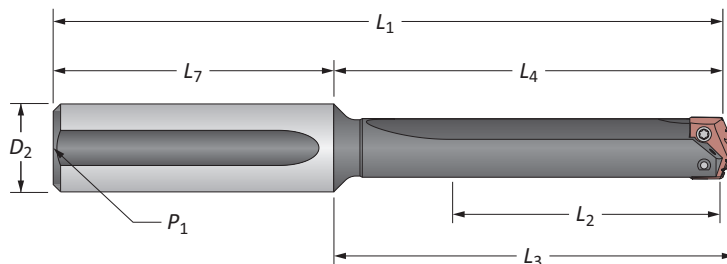
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

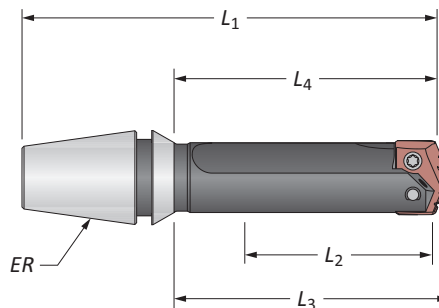
0 Series | Straight Shank | ER Collet | Diameter Range: 0.511" - 0.695" (12.98mm - 17.65mm)



### Straight Flute

| Series | Length   | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|        |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| 0      | Short    | 1-3/8          | 2-3/16         | 2-19/64        | 4-9/16         | 3/4            | 2-3/8          | 1/8            | 22000S-075L |
|        | Standard | 2-1/2          | 3-5/16         | 3-27/64        | 5-11/16        | 3/4            | 2-3/8          | 1/8            | 24000S-075L |
|        | Extended | 4-1/2          | 5-5/16         | 5-27/64        | 7-11/16        | 3/4            | 2-3/8          | 1/8            | 25000S-075L |
|        | Long     | 7              | 7-13/16        | 7-59/64        | 10-3/16        | 3/4            | 2-3/8          | 1/8            | 26000S-075L |
|        | 3XL      | 11-5/8         | 12-7/16        | 12-35/64       | 14-13/16       | 3/4            | 2-3/8          | 1/8            | 27000S-075L |
| 0.5    | Short    | 1-3/8          | 2-3/16         | 2-19/64        | 4-9/16         | 3/4            | 2-3/8          | 1/8*           | 22005S-075L |
|        | Standard | 2-1/2          | 3-5/16         | 3-27/64        | 5-11/16        | 3/4            | 2-3/8          | 1/8*           | 24005S-075L |
|        | Extended | 4-1/2          | 5-5/16         | 5-27/64        | 7-11/16        | 3/4            | 2-3/8          | 1/8*           | 25005S-075L |
|        | Long     | 7              | 7-13/16        | 7-59/64        | 10-3/16        | 3/4            | 2-3/8          | 1/8*           | 26005S-075L |

**NOTE:** 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.



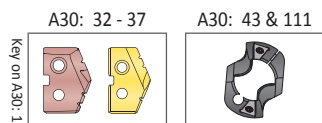
### ER Collet Holder

| Series | Body           |                |                |                | ER    | Part No.    | Collet Nut without Retaining Ring |
|--------|----------------|----------------|----------------|----------------|-------|-------------|-----------------------------------|
|        | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> |       |             |                                   |
| 0      | 1-3/8          | 1-57/64        | 2              | 3-5/64         | ER-16 | 21000S-16ER | ER-16N                            |
|        | 1-3/8          | 1-57/64        | 2              | 3-15/64        | ER-20 | 21000S-20ER | ER-20N                            |

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

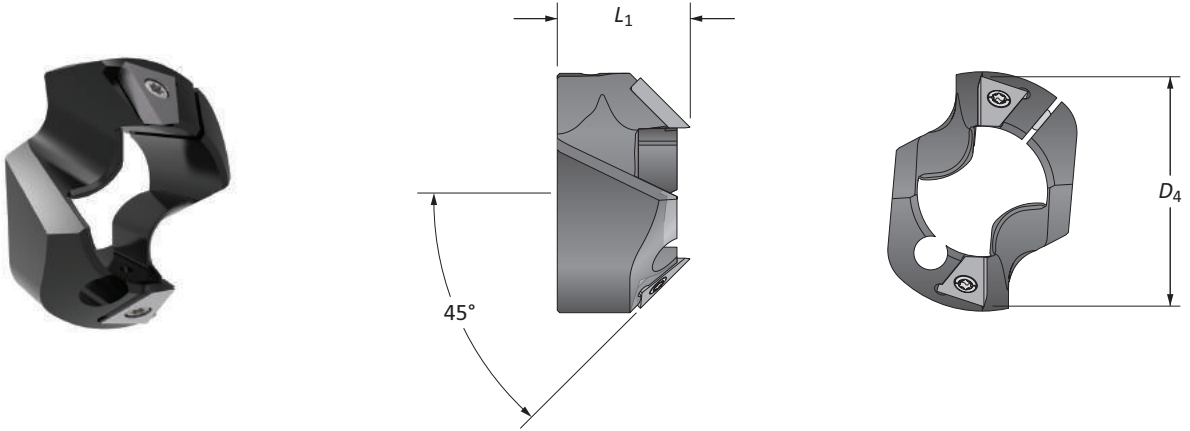
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Accessories

0 Series | Chamfer Rings | Rotary Coolant Adapters | Torx® Plus Screws



T-ACR 45 Chamfer Ring

| Holder Series | D <sub>1</sub> Range | Chamfer Ring   |                | Part No.          | Insert Part No. | Insert Screw | Insert Driver | Clamping Screw | Insert Driver |
|---------------|----------------------|----------------|----------------|-------------------|-----------------|--------------|---------------|----------------|---------------|
|               |                      | D <sub>4</sub> | L <sub>1</sub> |                   |                 |              |               |                |               |
| 0             | 0.5118 - 0.6890      | 13/16          | 0.676          | <b>T-ACR-45-0</b> | T-ACRI-45-B-C5A | 7255-IP8-1   | 8IP-8         | 7375-IP9-1     | 8IP-9         |

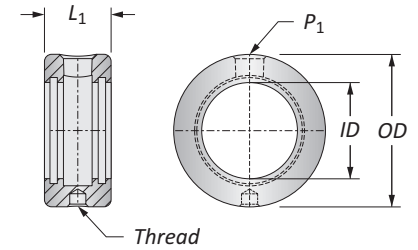
### Rotary Coolant Adapter (RCA) and Accessories

| ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No.       | RCA O-Rings    |              |
|-------|-------|----------------|--------------------|----------------|----------------|----------------|--------------|
|       |       |                |                    |                |                | Kit Part No.** | Replacements |
| 3/4   | 1-3/4 | 7/8            | 5/16-18            | 1/8            | <b>2T-2SR</b>  | 2T1-2SR        | 2T1-2OR-10   |
| 19.05 | 44.45 | 22.23          | M8 x 1.25          | 1/8*           | <b>2T-2SRM</b> | 2T1-2SR        | 2T1-2OR-10   |

\*Thread to BSP and ISO 7-1

\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

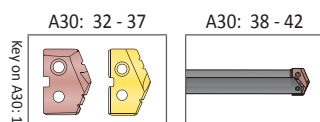
Refer to page A30: 110 for proper RCA assembly and safety information



### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 0      | 72556-IP8-1   | 72556N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |
| 0.5    | 72567-IP8-1   | 72567N-IP8-1         | 8IP-8         | 8IP-8TL                   | 8IP-8B           | 15.5 in-lbs (175 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



= Imperial (in)

= Metric (mm)

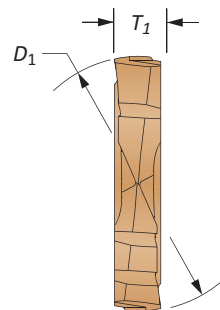
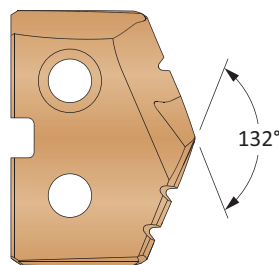
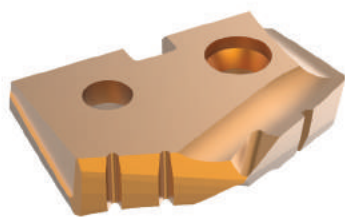
Chamfer Ring Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

**WARNING** RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.



## GEN2 T-A Drill Inserts

1 Series | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



HSS Inserts – Super Cobalt • Carbide Inserts – C2 (K20) | C1 (K35)

| Series | Insert                |                     |                   |                | HSS Part No.                                                                                                 | Carbide Part No.                                                                                          |                                                                                                           |
|--------|-----------------------|---------------------|-------------------|----------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> | <br>AM200®<br>Super Cobalt | <br>AM300®<br>C2 (K20) | <br>AM300®<br>C1 (K35) |
| 1      | 45/64                 | 0.7031              | 17.86             | 5/32           | 451H-.703                                                                                                    | 4C21P-.703                                                                                                | 4C11P-.703                                                                                                |
|        | –                     | 0.7087              | 18.00             | 5/32           | 451H-18                                                                                                      | 4C21P-18                                                                                                  | 4C11P-18                                                                                                  |
|        | 23/32                 | 0.7188              | 18.26             | 5/32           | 451H-0023                                                                                                    | 4C21P-0023                                                                                                | 4C11P-0023                                                                                                |
|        | –                     | 0.7283              | 18.50             | 5/32           | 451H-18.5                                                                                                    | 4C21P-18.5                                                                                                | 4C11P-18.5                                                                                                |
|        | 47/64                 | 0.7344              | 18.65             | 5/32           | 451H-.734                                                                                                    | 4C21P-.734                                                                                                | 4C11P-.734                                                                                                |
|        | –                     | 0.7480              | 19.00             | 5/32           | 451H-19                                                                                                      | 4C21P-19                                                                                                  | 4C11P-19                                                                                                  |
|        | 3/4                   | 0.7500              | 19.05             | 5/32           | 451H-0024                                                                                                    | 4C21P-0024                                                                                                | 4C11P-0024                                                                                                |
|        | 49/64                 | 0.7656              | 19.45             | 5/32           | 451H-.765                                                                                                    | 4C21P-.765                                                                                                | 4C11P-.765                                                                                                |
|        | –                     | 0.7677              | 19.50             | 5/32           | 451H-19.5                                                                                                    | 4C21P-19.5                                                                                                | 4C11P-19.5                                                                                                |
|        | 25/32                 | 0.7813              | 19.84             | 5/32           | 451H-0025                                                                                                    | 4C21P-0025                                                                                                | 4C11P-0025                                                                                                |
|        | –                     | 0.7874              | 20.00             | 5/32           | 451H-20                                                                                                      | 4C21P-20                                                                                                  | 4C11P-20                                                                                                  |
|        | 51/64                 | 0.7969              | 20.24             | 5/32           | 451H-.796                                                                                                    | 4C21P-.796                                                                                                | 4C11P-.796                                                                                                |
|        | –                     | 0.8010              | 20.34             | 5/32           | 451H-.801                                                                                                    | 4C21P-.801                                                                                                | 4C11P-.801                                                                                                |
|        | –                     | 0.8071              | 20.50             | 5/32           | 451H-20.5                                                                                                    | 4C21P-20.5                                                                                                | 4C11P-20.5                                                                                                |
|        | 13/16                 | 0.8125              | 20.64             | 5/32           | 451H-0026                                                                                                    | 4C21P-0026                                                                                                | 4C11P-0026                                                                                                |
|        | –                     | 0.8268              | 21.00             | 5/32           | 451H-21                                                                                                      | 4C21P-21                                                                                                  | 4C11P-21                                                                                                  |
| 1.5    | 27/32                 | 0.8438              | 21.43             | 5/32           | 451H-0027                                                                                                    | 4C21P-0027                                                                                                | 4C11P-0027                                                                                                |
|        | –                     | 0.8465              | 21.50             | 5/32           | 451H-21.5                                                                                                    | 4C21P-21.5                                                                                                | 4C11P-21.5                                                                                                |
|        | 55/64                 | 0.8594              | 21.83             | 5/32           | 451H-.859                                                                                                    | 4C21P-.859                                                                                                | 4C11P-.859                                                                                                |
|        | –                     | 0.8661              | 22.00             | 5/32           | 451H-22                                                                                                      | 4C21P-22                                                                                                  | 4C11P-22                                                                                                  |
|        | 7/8                   | 0.8750              | 22.23             | 5/32           | 451H-0028                                                                                                    | 4C21P-0028                                                                                                | 4C11P-0028                                                                                                |
|        | –                     | 0.8858              | 22.50             | 5/32           | 451H-22.5                                                                                                    | 4C21P-22.5                                                                                                | 4C11P-22.5                                                                                                |
|        | 57/64                 | 0.8906              | 22.62             | 5/32           | 451H-.890                                                                                                    | 4C21P-.890                                                                                                | 4C11P-.890                                                                                                |
|        | –                     | 0.9055              | 23.00             | 5/32           | 451H-23                                                                                                      | 4C21P-23                                                                                                  | 4C11P-23                                                                                                  |
|        | 29/32                 | 0.9063              | 23.02             | 5/32           | 451H-0029                                                                                                    | 4C21P-0029                                                                                                | 4C11P-0029                                                                                                |
|        | 59/64                 | 0.9219              | 23.42             | 5/32           | 451H-.921                                                                                                    | 4C21P-.921                                                                                                | 4C11P-.921                                                                                                |
|        | –                     | 0.9252              | 23.50             | 5/32           | 451H-23.5                                                                                                    | 4C21P-23.5                                                                                                | 4C11P-23.5                                                                                                |
|        | 15/16                 | 0.9375              | 23.81             | 5/32           | 451H-0030                                                                                                    | 4C21P-0030                                                                                                | 4C11P-0030                                                                                                |
|        | –                     | 0.9449              | 24.00             | 5/32           | 451H-24                                                                                                      | 4C21P-24                                                                                                  | 4C11P-24                                                                                                  |

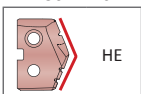
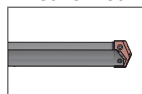
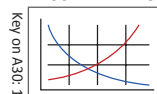
**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2

A30: 112 - 143

A30: 52 - 56

A30: 4 - 6



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

TiN = 451T-XXXX

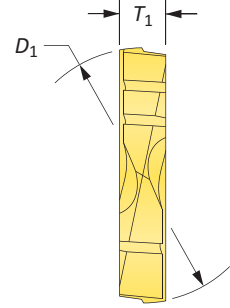
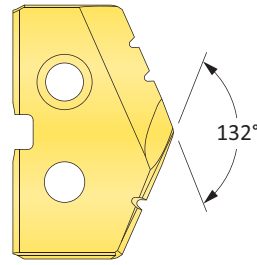
TiAlN = 451A-XXXX

TiCN = 451N-XXXX

AM200® = 451H-XXXX

## Original T-A Drill Inserts

1 Series | HSS | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)

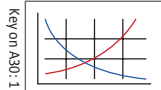


## HSS Inserts – Premium Cobalt

| Series | Insert                |                     |                   |                | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|---------------------|-------------------|----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiCN |
| 1      | 45/64                 | 0.7031              | 17.86             | 5/32           | <b>181T-.703</b>                                                                       | <b>181A-.703</b>                                                                          | <b>181N-.703</b>                                                                         |
|        | –                     | 0.7087              | 18.00             | 5/32           | <b>181T-18</b>                                                                         | <b>181A-18</b>                                                                            | <b>181N-18</b>                                                                           |
|        | 23/32                 | 0.7188              | 18.26             | 5/32           | <b>181T-0023</b>                                                                       | <b>181A-0023</b>                                                                          | <b>181N-0023</b>                                                                         |
|        | –                     | 0.7283              | 18.50             | 5/32           | <b>181T-18.5</b>                                                                       | <b>181A-18.5</b>                                                                          | <b>181N-18.5</b>                                                                         |
|        | 47/64                 | 0.7344              | 18.65             | 5/32           | <b>181T-.734</b>                                                                       | <b>181A-.734</b>                                                                          | <b>181N-.734</b>                                                                         |
|        | –                     | 0.7480              | 19.00             | 5/32           | <b>181T-19</b>                                                                         | <b>181A-19</b>                                                                            | <b>181N-19</b>                                                                           |
|        | 3/4                   | 0.7500              | 19.05             | 5/32           | <b>181T-0024</b>                                                                       | <b>181A-0024</b>                                                                          | <b>181N-0024</b>                                                                         |
|        | 49/64                 | 0.7656              | 19.45             | 5/32           | <b>181T-.765</b>                                                                       | <b>181A-.765</b>                                                                          | <b>181N-.765</b>                                                                         |
|        | –                     | 0.7677              | 19.50             | 5/32           | <b>181T-19.5</b>                                                                       | <b>181A-19.5</b>                                                                          | <b>181N-19.5</b>                                                                         |
|        | 25/32                 | 0.7813              | 19.84             | 5/32           | <b>181T-0025</b>                                                                       | <b>181A-0025</b>                                                                          | <b>181N-0025</b>                                                                         |
|        | –                     | 0.7874              | 20.00             | 5/32           | <b>181T-20</b>                                                                         | <b>181A-20</b>                                                                            | <b>181N-20</b>                                                                           |
|        | 51/64                 | 0.7969              | 20.24             | 5/32           | <b>181T-.796</b>                                                                       | <b>181A-.796</b>                                                                          | <b>181N-.796</b>                                                                         |
|        | –                     | 0.8010              | 20.34             | 5/32           | <b>181T-.801</b>                                                                       | <b>181A-.801</b>                                                                          | <b>181N-.801</b>                                                                         |
|        | –                     | 0.8071              | 20.50             | 5/32           | <b>181T-20.5</b>                                                                       | <b>181A-20.5</b>                                                                          | <b>181N-20.5</b>                                                                         |
|        | 13/16                 | 0.8125              | 20.64             | 5/32           | <b>181T-0026</b>                                                                       | <b>181A-0026</b>                                                                          | <b>181N-0026</b>                                                                         |
|        | –                     | 0.8268              | 21.00             | 5/32           | <b>181T-21</b>                                                                         | <b>181A-21</b>                                                                            | <b>181N-21</b>                                                                           |
| 1.5    | 27/32                 | 0.8438              | 21.43             | 5/32           | <b>181T-0027</b>                                                                       | <b>181A-0027</b>                                                                          | <b>181N-0027</b>                                                                         |
|        | –                     | 0.8465              | 21.50             | 5/32           | <b>181T-21.5</b>                                                                       | <b>181A-21.5</b>                                                                          | <b>181N-21.5</b>                                                                         |
|        | 55/64                 | 0.8594              | 21.83             | 5/32           | <b>181T-.859</b>                                                                       | <b>181A-.859</b>                                                                          | <b>181N-.859</b>                                                                         |
|        | –                     | 0.8661              | 22.00             | 5/32           | <b>181T-22</b>                                                                         | <b>181A-22</b>                                                                            | <b>181N-22</b>                                                                           |
|        | 7/8                   | 0.8750              | 22.23             | 5/32           | <b>181T-0028</b>                                                                       | <b>181A-0028</b>                                                                          | <b>181N-0028</b>                                                                         |
|        | –                     | 0.8858              | 22.50             | 5/32           | <b>181T-22.5</b>                                                                       | <b>181A-22.5</b>                                                                          | <b>181N-22.5</b>                                                                         |
|        | 57/64                 | 0.8906              | 22.62             | 5/32           | <b>181T-.890</b>                                                                       | <b>181A-.890</b>                                                                          | <b>181N-.890</b>                                                                         |
|        | –                     | 0.9055              | 23.00             | 5/32           | <b>181T-23</b>                                                                         | <b>181A-23</b>                                                                            | <b>181N-23</b>                                                                           |
|        | 29/32                 | 0.9063              | 23.02             | 5/32           | <b>181T-0029</b>                                                                       | <b>181A-0029</b>                                                                          | <b>181N-0029</b>                                                                         |
|        | 59/64                 | 0.9219              | 23.42             | 5/32           | <b>181T-.921</b>                                                                       | <b>181A-.921</b>                                                                          | <b>181N-.921</b>                                                                         |
|        | –                     | 0.9252              | 23.50             | 5/32           | <b>181T-23.5</b>                                                                       | <b>181A-23.5</b>                                                                          | <b>181N-23.5</b>                                                                         |
|        | 15/16                 | 0.9375              | 23.81             | 5/32           | <b>181T-0030</b>                                                                       | <b>181A-0030</b>                                                                          | <b>181N-0030</b>                                                                         |
|        | –                     | 0.9449              | 24.00             | 5/32           | <b>181T-24</b>                                                                         | <b>181A-24</b>                                                                            | <b>181N-24</b>                                                                           |

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

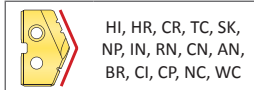
A30: 112 - 143



A30: 52 - 56



A30: 4 - 6



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. ➔

Inserts sold in quantities of 2

TiN = 181T-XXXX

TiAlN = 181A-XXXX

TiCN = 181N-XXXX

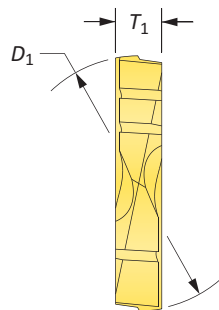
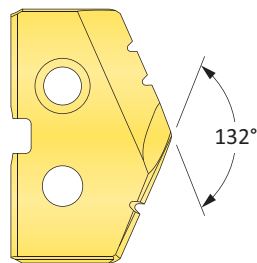
AM200® = 181H-XXXX





## Original T-A Drill Inserts

1 Series | HSS | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)

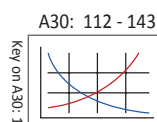


### HSS Inserts – Super Cobalt

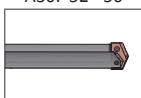
| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 1      | 45/64                 | 0.7031     | 17.86    | 5/32  | 151T-.703                                                                              | 151A-.703                                                                                 | 151N-.703                                                                                |
|        | –                     | 0.7087     | 18.00    | 5/32  | 151T-18                                                                                | 151A-18                                                                                   | 151N-18                                                                                  |
|        | 23/32                 | 0.7188     | 18.26    | 5/32  | 151T-0023                                                                              | 151A-0023                                                                                 | 151N-0023                                                                                |
|        | –                     | 0.7283     | 18.50    | 5/32  | 151T-18.5                                                                              | 151A-18.5                                                                                 | 151N-18.5                                                                                |
|        | 47/64                 | 0.7344     | 18.65    | 5/32  | 151T-.734                                                                              | 151A-.734                                                                                 | 151N-.734                                                                                |
|        | –                     | 0.7480     | 19.00    | 5/32  | 151T-19                                                                                | 151A-19                                                                                   | 151N-19                                                                                  |
|        | 3/4                   | 0.7500     | 19.05    | 5/32  | 151T-0024                                                                              | 151A-0024                                                                                 | 151N-0024                                                                                |
|        | 49/64                 | 0.7656     | 19.45    | 5/32  | 151T-.765                                                                              | 151A-.765                                                                                 | 151N-.765                                                                                |
|        | –                     | 0.7677     | 19.50    | 5/32  | 151T-19.5                                                                              | 151A-19.5                                                                                 | 151N-19.5                                                                                |
|        | 25/32                 | 0.7813     | 19.84    | 5/32  | 151T-0025                                                                              | 151A-0025                                                                                 | 151N-0025                                                                                |
|        | –                     | 0.7874     | 20.00    | 5/32  | 151T-20                                                                                | 151A-20                                                                                   | 151N-20                                                                                  |
|        | 51/64                 | 0.7969     | 20.24    | 5/32  | 151T-.796                                                                              | 151A-.796                                                                                 | 151N-.796                                                                                |
|        | –                     | 0.8010     | 20.34    | 5/32  | 151T-.801                                                                              | 151A-.801                                                                                 | 151N-.801                                                                                |
|        | –                     | 0.8071     | 20.50    | 5/32  | 151T-20.5                                                                              | 151A-20.5                                                                                 | 151N-20.5                                                                                |
|        | 13/16                 | 0.8125     | 20.64    | 5/32  | 151T-0026                                                                              | 151A-0026                                                                                 | 151N-0026                                                                                |
|        | –                     | 0.8268     | 21.00    | 5/32  | 151T-21                                                                                | 151A-21                                                                                   | 151N-21                                                                                  |
| 1.5    | 27/32                 | 0.8438     | 21.43    | 5/32  | 151T-0027                                                                              | 151A-0027                                                                                 | 151N-0027                                                                                |
|        | –                     | 0.8465     | 21.50    | 5/32  | 151T-21.5                                                                              | 151A-21.5                                                                                 | 151N-21.5                                                                                |
|        | 55/64                 | 0.8594     | 21.83    | 5/32  | 151T-.859                                                                              | 151A-.859                                                                                 | 151N-.859                                                                                |
|        | –                     | 0.8661     | 22.00    | 5/32  | 151T-22                                                                                | 151A-22                                                                                   | 151N-22                                                                                  |
|        | 7/8                   | 0.8750     | 22.23    | 5/32  | 151T-0028                                                                              | 151A-0028                                                                                 | 151N-0028                                                                                |
|        | –                     | 0.8858     | 22.50    | 5/32  | 151T-22.5                                                                              | 151A-22.5                                                                                 | 151N-22.5                                                                                |
|        | 57/64                 | 0.8906     | 22.62    | 5/32  | 151T-.890                                                                              | 151A-.890                                                                                 | 151N-.890                                                                                |
|        | –                     | 0.9055     | 23.00    | 5/32  | 151T-23                                                                                | 151A-23                                                                                   | 151N-23                                                                                  |
|        | 29/32                 | 0.9063     | 23.02    | 5/32  | 151T-0029                                                                              | 151A-0029                                                                                 | 151N-0029                                                                                |
|        | 59/64                 | 0.9219     | 23.42    | 5/32  | 151T-.921                                                                              | 151A-.921                                                                                 | 151N-.921                                                                                |
|        | –                     | 0.9252     | 23.50    | 5/32  | 151T-23.5                                                                              | 151A-23.5                                                                                 | 151N-23.5                                                                                |
|        | 15/16                 | 0.9375     | 23.81    | 5/32  | 151T-0030                                                                              | 151A-0030                                                                                 | 151N-0030                                                                                |
|        | –                     | 0.9449     | 24.00    | 5/32  | 151T-24                                                                                | 151A-24                                                                                   | 151N-24                                                                                  |

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2



A30: 52 - 56



A30: 4 - 6



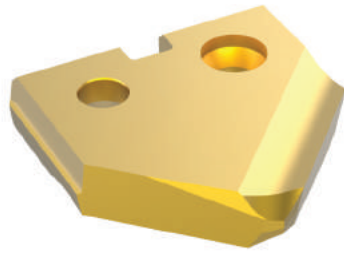
HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

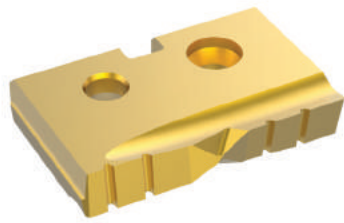
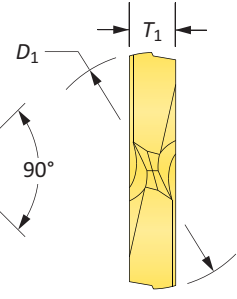
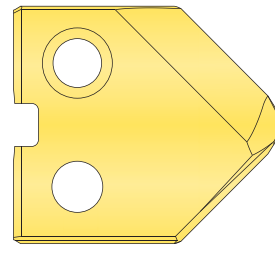
|                  |                    |
|------------------|--------------------|
| TiN = 151T-XXXX  | TiAlN = 151A-XXXX  |
| TiCN = 151N-XXXX | AM200® = 151H-XXXX |

## Original T-A Drill Inserts

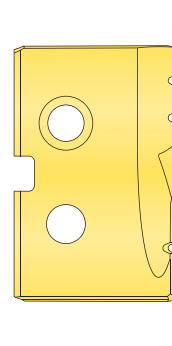
1 Series | HSS | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



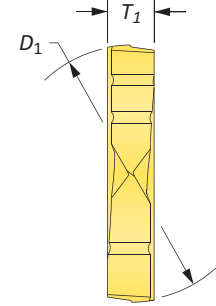
90° Spot &amp; Chamfer



Flat Bottom



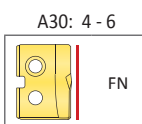
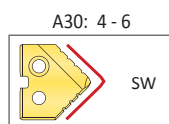
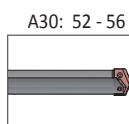
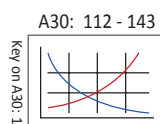
180°



## HSS Inserts – Super Cobalt

| Series | Fractional Equivalent | Insert     |          |       | 90° Spot & Chamfer Part No.                                                           |                                                                                          |                                                                                          | Flat Bottom Part No.                                                                    |
|--------|-----------------------|------------|----------|-------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |  TiN |
| 1      | 45/64                 | 0.7031     | 17.86    | 5/32  | 151T-.703-SP                                                                          | 151A-.703-SP                                                                             | 151N-.703-SP                                                                             | 151T-.703-FB                                                                            |
|        | –                     | 0.7087     | 18.00    | 5/32  | 151T-18-SP                                                                            | 151A-18-SP                                                                               | 151N-18-SP                                                                               | 151T-18-FB                                                                              |
|        | 23/32                 | 0.7188     | 18.26    | 5/32  | 151T-0023-SP                                                                          | 151A-0023-SP                                                                             | 151N-0023-SP                                                                             | 151T-0023-FB                                                                            |
|        | –                     | 0.7283     | 18.50    | 5/32  | 151T-18.5-SP                                                                          | 151A-18.5-SP                                                                             | 151N-18.5-SP                                                                             | 151T-18.5-FB                                                                            |
|        | 47/64                 | 0.7344     | 18.65    | 5/32  | 151T-.734-SP                                                                          | 151A-.734-SP                                                                             | 151N-.734-SP                                                                             | 151T-.734-FB                                                                            |
|        | –                     | 0.7480     | 19.00    | 5/32  | 151T-19-SP                                                                            | 151A-19-SP                                                                               | 151N-19-SP                                                                               | 151T-19-FB                                                                              |
|        | 3/4                   | 0.7500     | 19.05    | 5/32  | 151T-0024-SP                                                                          | 151A-0024-SP                                                                             | 151N-0024-SP                                                                             | 151T-0024-FB                                                                            |
|        | 49/64                 | 0.7656     | 19.45    | 5/32  | 151T-.765-SP                                                                          | 151A-.765-SP                                                                             | 151N-.765-SP                                                                             | 151T-.765-FB                                                                            |
|        | –                     | 0.7677     | 19.50    | 5/32  | 151T-19.5-SP                                                                          | 151A-19.5-SP                                                                             | 151N-19.5-SP                                                                             | 151T-19.5-FB                                                                            |
|        | 25/32                 | 0.7813     | 19.84    | 5/32  | 151T-0025-SP                                                                          | 151A-0025-SP                                                                             | 151N-0025-SP                                                                             | 151T-0025-FB                                                                            |
|        | –                     | 0.7874     | 20.00    | 5/32  | 151T-20-SP                                                                            | 151A-20-SP                                                                               | 151N-20-SP                                                                               | 151T-20-FB                                                                              |
|        | 51/64                 | 0.7969     | 20.24    | 5/32  | 151T-.796-SP                                                                          | 151A-.796-SP                                                                             | 151N-.796-SP                                                                             | 151T-.796-FB                                                                            |
|        | –                     | 0.8010     | 20.34    | 5/32  | 151T-.801-SP                                                                          | 151A-.801-SP                                                                             | 151N-.801-SP                                                                             | 151T-.801-FB                                                                            |
|        | –                     | 0.8071     | 20.50    | 5/32  | 151T-20.5-SP                                                                          | 151A-20.5-SP                                                                             | 151N-20.5-SP                                                                             | 151T-20.5-FB                                                                            |
|        | 13/16                 | 0.8125     | 20.64    | 5/32  | 151T-0026-SP                                                                          | 151A-0026-SP                                                                             | 151N-0026-SP                                                                             | 151T-0026-FB                                                                            |
|        | –                     | 0.8268     | 21.00    | 5/32  | 151T-21-SP                                                                            | 151A-21-SP                                                                               | 151N-21-SP                                                                               | 151T-21-FB                                                                              |
| 1.5    | 27/32                 | 0.8438     | 21.43    | 5/32  | 151T-0027-SP                                                                          | 151A-0027-SP                                                                             | 151N-0027-SP                                                                             | 151T-0027-FB                                                                            |
|        | –                     | 0.8465     | 21.50    | 5/32  | 151T-21.5-SP                                                                          | 151A-21.5-SP                                                                             | 151N-21.5-SP                                                                             | 151T-21.5-FB                                                                            |
|        | 55/64                 | 0.8594     | 21.83    | 5/32  | 151T-.859-SP                                                                          | 151A-.859-SP                                                                             | 151N-.859-SP                                                                             | 151T-.859-FB                                                                            |
|        | –                     | 0.8661     | 22.00    | 5/32  | 151T-22-SP                                                                            | 151A-22-SP                                                                               | 151N-22-SP                                                                               | 151T-22-FB                                                                              |
|        | 7/8                   | 0.8750     | 22.23    | 5/32  | 151T-0028-SP                                                                          | 151A-0028-SP                                                                             | 151N-0028-SP                                                                             | 151T-0028-FB                                                                            |
|        | –                     | 0.8858     | 22.50    | 5/32  | 151T-22.5-SP                                                                          | 151A-22.5-SP                                                                             | 151N-22.5-SP                                                                             | 151T-22.5-FB                                                                            |
|        | 57/64                 | 0.8906     | 22.62    | 5/32  | 151T-.890-SP                                                                          | 151A-.890-SP                                                                             | 151N-.890-SP                                                                             | 151T-.890-FB                                                                            |
|        | –                     | 0.9055     | 23.00    | 5/32  | 151T-23-SP                                                                            | 151A-23-SP                                                                               | 151N-23-SP                                                                               | 151T-23-FB                                                                              |
|        | 29/32                 | 0.9063     | 23.02    | 5/32  | 151T-0029-SP                                                                          | 151A-0029-SP                                                                             | 151N-0029-SP                                                                             | 151T-0029-FB                                                                            |
|        | 59/64                 | 0.9219     | 23.42    | 5/32  | 151T-.921-SP                                                                          | 151A-.921-SP                                                                             | 151N-.921-SP                                                                             | 151T-.921-FB                                                                            |
|        | –                     | 0.9252     | 23.50    | 5/32  | 151T-23.5-SP                                                                          | 151A-23.5-SP                                                                             | 151N-23.5-SP                                                                             | 151T-23.5-FB                                                                            |
|        | 15/16                 | 0.9375     | 23.81    | 5/32  | 151T-0030-SP                                                                          | 151A-0030-SP                                                                             | 151N-0030-SP                                                                             | 151T-0030-FB                                                                            |
|        | –                     | 0.9449     | 24.00    | 5/32  | 151T-24-SP                                                                            | 151A-24-SP                                                                               | 151N-24-SP                                                                               | 151T-24-FB                                                                              |

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

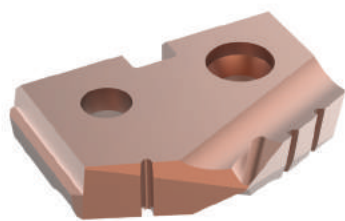
Inserts sold in quantities of 2

|                  |                    |
|------------------|--------------------|
| TiN = 151T-XXXX  | TiAlN = 151A-XXXX  |
| TiCN = 151N-XXXX | AM200® = 151H-XXXX |

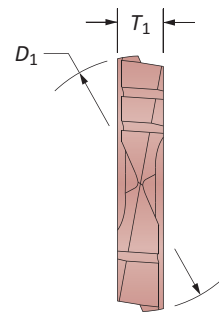
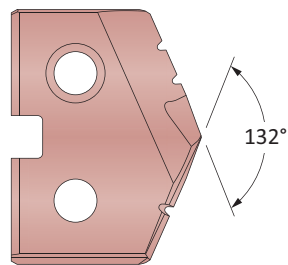


## Original T-A Drill Inserts

1 Series | HSS | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)

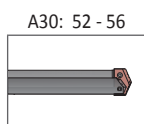
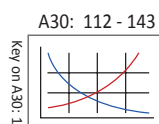


Tube Sheet



HSS Inserts – Super Cobalt | HSS

| Series | Insert                |            |          |       | Part No.                                                                                         |                                                                                         |
|--------|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|        | Fractional Equivalent | $D_1$ inch | $D_1$ mm | $T_1$ |  Super Cobalt |  HSS |
| 1      | –                     | 0.7580     | 19.25    | 5/32  | <b>151H-.7580-IN</b>                                                                             | <b>131H-.7580-IN</b>                                                                    |
|        | 49/64                 | 0.7656     | 19.45    | 5/32  | <b>151H-.765-IN</b>                                                                              | <b>131H-.765-IN</b>                                                                     |
|        | 25/32                 | 0.7813     | 19.85    | 5/32  | <b>151H-0025-IN</b>                                                                              | <b>131H-0025-IN</b>                                                                     |



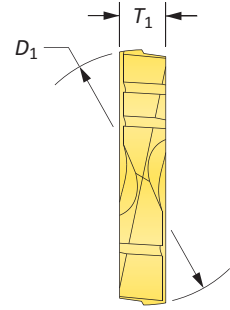
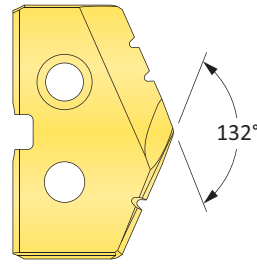
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                         |                           |
|-------------------------|---------------------------|
| <b>TiN</b> = 151T-XXXX  | <b>TiAlN</b> = 151A-XXXX  |
| <b>TiCN</b> = 151N-XXXX | <b>AM200®</b> = 151H-XXXX |

Inserts sold in quantities of 2

## Original T-A Drill Inserts

1 Series | HSS | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)

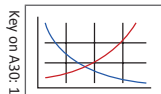


## HSS Inserts – HSS

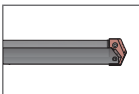
| Series | Insert                |                     |                   |                | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|---------------------|-------------------|----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiCN |
| 1      | 45/64                 | 0.7031              | 17.86             | 5/32           | 131T-.703                                                                              | 131A-.703                                                                                 | 131N-.703                                                                                |
|        | –                     | 0.7087              | 18.00             | 5/32           | 131T-18                                                                                | 131A-18                                                                                   | 131N-18                                                                                  |
|        | 23/32                 | 0.7188              | 18.26             | 5/32           | 131T-0023                                                                              | 131A-0023                                                                                 | 131N-0023                                                                                |
|        | –                     | 0.7283              | 18.50             | 5/32           | 131T-18.5                                                                              | 131A-18.5                                                                                 | 131N-18.5                                                                                |
|        | 47/64                 | 0.7344              | 18.65             | 5/32           | 131T-.734                                                                              | 131A-.734                                                                                 | 131N-.734                                                                                |
|        | –                     | 0.7480              | 19.00             | 5/32           | 131T-19                                                                                | 131A-19                                                                                   | 131N-19                                                                                  |
|        | 3/4                   | 0.7500              | 19.05             | 5/32           | 131T-0024                                                                              | 131A-0024                                                                                 | 131N-0024                                                                                |
|        | 49/64                 | 0.7656              | 19.45             | 5/32           | 131T-.765                                                                              | 131A-.765                                                                                 | 131N-.765                                                                                |
|        | –                     | 0.7677              | 19.50             | 5/32           | 131T-19.5                                                                              | 131A-19.5                                                                                 | 131N-19.5                                                                                |
|        | 25/32                 | 0.7813              | 19.84             | 5/32           | 131T-0025                                                                              | 131A-0025                                                                                 | 131N-0025                                                                                |
|        | –                     | 0.7874              | 20.00             | 5/32           | 131T-20                                                                                | 131A-20                                                                                   | 131N-20                                                                                  |
|        | 51/64                 | 0.7969              | 20.24             | 5/32           | 131T-.796                                                                              | 131A-.796                                                                                 | 131N-.796                                                                                |
|        | –                     | 0.8010              | 20.34             | 5/32           | 131T-.801                                                                              | 131A-.801                                                                                 | 131N-.801                                                                                |
|        | –                     | 0.8071              | 20.50             | 5/32           | 131T-20.5                                                                              | 131A-20.5                                                                                 | 131N-20.5                                                                                |
|        | 13/16                 | 0.8125              | 20.64             | 5/32           | 131T-0026                                                                              | 131A-0026                                                                                 | 131N-0026                                                                                |
| 1.5    | –                     | 0.8268              | 21.00             | 5/32           | 131T-21                                                                                | 131A-21                                                                                   | 131N-21                                                                                  |
|        | 27/32                 | 0.8438              | 21.43             | 5/32           | 131T-0027                                                                              | 131A-0027                                                                                 | 131N-0027                                                                                |
|        | –                     | 0.8465              | 21.50             | 5/32           | 131T-21.5                                                                              | 131A-21.5                                                                                 | 131N-21.5                                                                                |
|        | 55/64                 | 0.8594              | 21.83             | 5/32           | 131T-.859                                                                              | 131A-.859                                                                                 | 131N-.859                                                                                |
|        | –                     | 0.8661              | 22.00             | 5/32           | 131T-22                                                                                | 131A-22                                                                                   | 131N-22                                                                                  |
|        | 7/8                   | 0.8750              | 22.23             | 5/32           | 131T-0028                                                                              | 131A-0028                                                                                 | 131N-0028                                                                                |
|        | –                     | 0.8858              | 22.50             | 5/32           | 131T-22.5                                                                              | 131A-22.5                                                                                 | 131N-22.5                                                                                |
|        | 57/64                 | 0.8906              | 22.62             | 5/32           | 131T-.890                                                                              | 131A-.890                                                                                 | 131N-.890                                                                                |
|        | –                     | 0.9055              | 23.00             | 5/32           | 131T-23                                                                                | 131A-23                                                                                   | 131N-23                                                                                  |
|        | 29/32                 | 0.9063              | 23.02             | 5/32           | 131T-0029                                                                              | 131A-0029                                                                                 | 131N-0029                                                                                |
|        | 59/64                 | 0.9219              | 23.42             | 5/32           | 131T-.921                                                                              | 131A-.921                                                                                 | 131N-.921                                                                                |
|        | –                     | 0.9252              | 23.50             | 5/32           | 131T-23.5                                                                              | 131A-23.5                                                                                 | 131N-23.5                                                                                |
|        | 15/16                 | 0.9375              | 23.81             | 5/32           | 131T-0030                                                                              | 131A-0030                                                                                 | 131N-0030                                                                                |
|        | –                     | 0.9449              | 24.00             | 5/32           | 131T-24                                                                                | 131A-24                                                                                   | 131N-24                                                                                  |

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 112 - 143



A30: 52 - 56



A30: 4 - 6



HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 2

TiN = 131T-XXXX

TiAlN = 131A-XXXX

TiCN = 131N-XXXX

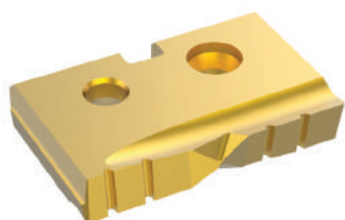
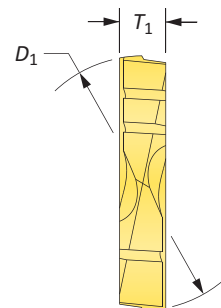
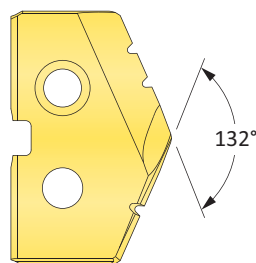
AM200® = 131H-XXXX

## Original T-A Drill Inserts

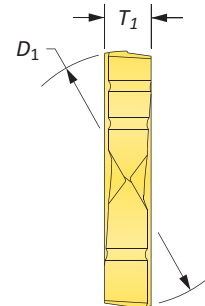
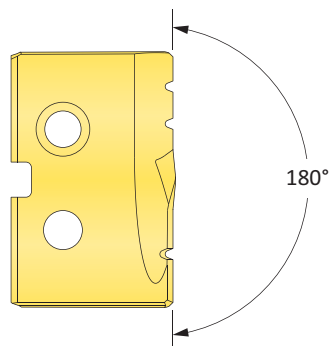
1 Series | Carbide | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



Standard



Flat Bottom

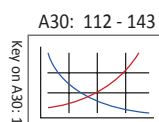


## Carbide Inserts – C2 (K20)

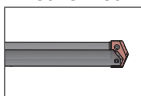
| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                              |                                                                                           | Flat Bottom Part No.                                                                    |
|--------|-----------------------|------------|----------|-------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiN |
| 1      | 45/64                 | 0.7031     | 17.86    | 5/32  | 1C21T-.703                                                                            | 1C21A-.703                                                                                | 1C21T-.703-FB                                                                           |
|        | –                     | 0.7087     | 18.00    | 5/32  | 1C21T-18                                                                              | 1C21A-18                                                                                  | 1C21T-18-FB                                                                             |
|        | 23/32                 | 0.7188     | 18.26    | 5/32  | 1C21T-0023                                                                            | 1C21A-0023                                                                                | 1C21T-0023-FB                                                                           |
|        | –                     | 0.7283     | 18.50    | 5/32  | 1C21T-18.5                                                                            | 1C21A-18.5                                                                                | 1C21T-18.5-FB                                                                           |
|        | 47/64                 | 0.7344     | 18.65    | 5/32  | 1C21T-.734                                                                            | 1C21A-.734                                                                                | 1C21T-.734-FB                                                                           |
|        | –                     | 0.7480     | 19.00    | 5/32  | 1C21T-19                                                                              | 1C21A-19                                                                                  | 1C21T-19-FB                                                                             |
|        | 3/4                   | 0.7500     | 19.05    | 5/32  | 1C21T-0024                                                                            | 1C21A-0024                                                                                | 1C21T-0024-FB                                                                           |
|        | 49/64                 | 0.7656     | 19.45    | 5/32  | 1C21T-.765                                                                            | 1C21A-.765                                                                                | 1C21T-.765-FB                                                                           |
|        | –                     | 0.7677     | 19.50    | 5/32  | 1C21T-19.5                                                                            | 1C21A-19.5                                                                                | 1C21T-19.5-FB                                                                           |
|        | 25/32                 | 0.7813     | 19.84    | 5/32  | 1C21T-0025                                                                            | 1C21A-0025                                                                                | 1C21T-0025-FB                                                                           |
|        | –                     | 0.7874     | 20.00    | 5/32  | 1C21T-20                                                                              | 1C21A-20                                                                                  | 1C21T-20-FB                                                                             |
|        | 51/64                 | 0.7969     | 20.24    | 5/32  | 1C21T-.796                                                                            | 1C21A-.796                                                                                | 1C21T-.796-FB                                                                           |
|        | –                     | 0.8010     | 20.34    | 5/32  | 1C21T-.801                                                                            | 1C21A-.801                                                                                | 1C21T-.801-FB                                                                           |
|        | –                     | 0.8071     | 20.50    | 5/32  | 1C21T-20.5                                                                            | 1C21A-20.5                                                                                | 1C21T-20.5-FB                                                                           |
|        | 13/16                 | 0.8125     | 20.64    | 5/32  | 1C21T-0026                                                                            | 1C21A-0026                                                                                | 1C21T-0026-FB                                                                           |
|        | –                     | 0.8268     | 21.00    | 5/32  | 1C21T-21                                                                              | 1C21A-21                                                                                  | 1C21T-21-FB                                                                             |
|        | 27/32                 | 0.8438     | 21.43    | 5/32  | 1C21T-0027                                                                            | 1C21A-0027                                                                                | 1C21T-0027-FB                                                                           |
|        | –                     | 0.8465     | 21.50    | 5/32  | 1C21T-21.5                                                                            | 1C21A-21.5                                                                                | 1C21T-21.5-FB                                                                           |
| 1.5    | 55/64                 | 0.8594     | 21.83    | 5/32  | 1C21T-.859                                                                            | 1C21A-.859                                                                                | 1C21T-.859-FB                                                                           |
|        | –                     | 0.8661     | 22.00    | 5/32  | 1C21T-22                                                                              | 1C21A-22                                                                                  | 1C21T-22-FB                                                                             |
|        | 7/8                   | 0.8750     | 22.23    | 5/32  | 1C21T-0028                                                                            | 1C21A-0028                                                                                | 1C21T-0028-FB                                                                           |
|        | –                     | 0.8858     | 22.50    | 5/32  | 1C21T-22.5                                                                            | 1C21A-22.5                                                                                | 1C21T-22.5-FB                                                                           |
|        | 57/64                 | 0.8906     | 22.62    | 5/32  | 1C21T-.890                                                                            | 1C21A-.890                                                                                | 1C21T-.890-FB                                                                           |
|        | –                     | 0.9055     | 23.00    | 5/32  | 1C21T-23                                                                              | 1C21A-23                                                                                  | 1C21T-23-FB                                                                             |
|        | 29/32                 | 0.9063     | 23.02    | 5/32  | 1C21T-0029                                                                            | 1C21A-0029                                                                                | 1C21T-0029-FB                                                                           |
|        | 59/64                 | 0.9219     | 23.42    | 5/32  | 1C21T-.921                                                                            | 1C21A-.921                                                                                | 1C21T-.921-FB                                                                           |
|        | –                     | 0.9252     | 23.50    | 5/32  | 1C21T-23.5                                                                            | 1C21A-23.5                                                                                | 1C21T-23.5-FB                                                                           |
|        | 15/16                 | 0.9375     | 23.81    | 5/32  | 1C21T-0030                                                                            | 1C21A-0030                                                                                | 1C21T-0030-FB                                                                           |
|        | –                     | 0.9449     | 24.00    | 5/32  | 1C21T-24                                                                              | 1C21A-24                                                                                  | 1C21T-24-FB                                                                             |

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 1



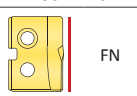
A30: 52 - 56



A30: 4 - 6

HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

A30: 4 - 6



FN

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

TiN = 1C21T-XXXX

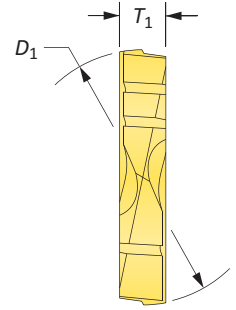
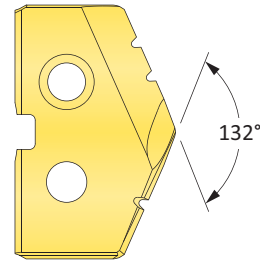
TiAlN = 1C21A-XXXX

TiCN = 1C21N-XXXX

AM200® = 1C21H-XXXX

## Original T-A Drill Inserts

1 Series | Carbide | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)

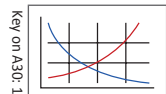


Carbide Inserts – C5 (P40) | C3 (K10) | N2

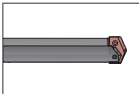
| Series | Insert                |                     |                   |                | C5 Part No.                                                                           |                                                                                          | C3 Part No.                                                                                           | N2 Part No.                                                                                      |
|--------|-----------------------|---------------------|-------------------|----------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiAlN (Cast Iron) |  Diamond Film |
| 1      | 45/64                 | 0.7031              | 17.86             | 5/32           | 1C51T-.703                                                                            | 1C51A-.703                                                                               | 1C31A-.703-CI                                                                                         | 1N21D-.703                                                                                       |
|        | –                     | 0.7087              | 18.00             | 5/32           | 1C51T-18                                                                              | 1C51A-18                                                                                 | 1C31A-18-CI                                                                                           | 1N21D-18                                                                                         |
|        | 23/32                 | 0.7188              | 18.26             | 5/32           | 1C51T-0023                                                                            | 1C51A-0023                                                                               | 1C31A-0023-CI                                                                                         | 1N21D-0023                                                                                       |
|        | –                     | 0.7283              | 18.50             | 5/32           | 1C51T-18.5                                                                            | 1C51A-18.5                                                                               | 1C31A-18.5-CI                                                                                         | 1N21D-18.5                                                                                       |
|        | 47/64                 | 0.7344              | 18.65             | 5/32           | 1C51T-.734                                                                            | 1C51A-.734                                                                               | 1C31A-.734-CI                                                                                         | 1N21D-.734                                                                                       |
|        | –                     | 0.7480              | 19.00             | 5/32           | 1C51T-19                                                                              | 1C51A-19                                                                                 | 1C31A-19-CI                                                                                           | 1N21D-19                                                                                         |
|        | 3/4                   | 0.7500              | 19.05             | 5/32           | 1C51T-0024                                                                            | 1C51A-0024                                                                               | 1C31A-0024-CI                                                                                         | 1N21D-0024                                                                                       |
|        | 49/64                 | 0.7656              | 19.45             | 5/32           | 1C51T-.765                                                                            | 1C51A-.765                                                                               | 1C31A-.765-CI                                                                                         | 1N21D-.765                                                                                       |
|        | –                     | 0.7677              | 19.50             | 5/32           | 1C51T-19.5                                                                            | 1C51A-19.5                                                                               | 1C31A-19.5-CI                                                                                         | 1N21D-19.5                                                                                       |
|        | 25/32                 | 0.7813              | 19.84             | 5/32           | 1C51T-0025                                                                            | 1C51A-0025                                                                               | 1C31A-0025-CI                                                                                         | 1N21D-0025                                                                                       |
|        | –                     | 0.7874              | 20.00             | 5/32           | 1C51T-20                                                                              | 1C51A-20                                                                                 | 1C31A-20-CI                                                                                           | 1N21D-20                                                                                         |
|        | 51/64                 | 0.7969              | 20.24             | 5/32           | 1C51T-.796                                                                            | 1C51A-.796                                                                               | 1C31A-.796-CI                                                                                         | 1N21D-.796                                                                                       |
|        | –                     | 0.8010              | 20.34             | 5/32           | 1C51T-.801                                                                            | 1C51A-.801                                                                               | 1C31A-.801-CI                                                                                         | 1N21D-.801                                                                                       |
|        | –                     | 0.8071              | 20.50             | 5/32           | 1C51T-20.5                                                                            | 1C51A-20.5                                                                               | 1C31A-20.5-CI                                                                                         | 1N21D-20.5                                                                                       |
|        | 13/16                 | 0.8125              | 20.64             | 5/32           | 1C51T-0026                                                                            | 1C51A-0026                                                                               | 1C31A-0026-CI                                                                                         | 1N21D-0026                                                                                       |
|        | –                     | 0.8268              | 21.00             | 5/32           | 1C51T-21                                                                              | 1C51A-21                                                                                 | 1C31A-21-CI                                                                                           | 1N21D-21                                                                                         |
| 1.5    | 27/32                 | 0.8438              | 21.43             | 5/32           | 1C51T-0027                                                                            | 1C51A-0027                                                                               | 1C31A-0027-CI                                                                                         | 1N21D-0027                                                                                       |
|        | –                     | 0.8465              | 21.50             | 5/32           | 1C51T-21.5                                                                            | 1C51A-21.5                                                                               | 1C31A-21.5-CI                                                                                         | 1N21D-21.5                                                                                       |
|        | 55/64                 | 0.8594              | 21.83             | 5/32           | 1C51T-.859                                                                            | 1C51A-.859                                                                               | 1C31A-.859-CI                                                                                         | 1N21D-.859                                                                                       |
|        | –                     | 0.8661              | 22.00             | 5/32           | 1C51T-22                                                                              | 1C51A-22                                                                                 | 1C31A-22-CI                                                                                           | 1N21D-22                                                                                         |
|        | 7/8                   | 0.8750              | 22.23             | 5/32           | 1C51T-0028                                                                            | 1C51A-0028                                                                               | 1C31A-0028-CI                                                                                         | 1N21D-0028                                                                                       |
|        | –                     | 0.8858              | 22.50             | 5/32           | 1C51T-22.5                                                                            | 1C51A-22.5                                                                               | 1C31A-22.5-CI                                                                                         | 1N21D-22.5                                                                                       |
|        | 57/64                 | 0.8906              | 22.62             | 5/32           | 1C51T-.890                                                                            | 1C51A-.890                                                                               | 1C31A-.890-CI                                                                                         | 1N21D-.890                                                                                       |
|        | –                     | 0.9055              | 23.00             | 5/32           | 1C51T-23                                                                              | 1C51A-23                                                                                 | 1C31A-23-CI                                                                                           | 1N21D-23                                                                                         |
|        | 29/32                 | 0.9063              | 23.02             | 5/32           | 1C51T-0029                                                                            | 1C51A-0029                                                                               | 1C31A-0029-CI                                                                                         | 1N21D-0029                                                                                       |
|        | 59/64                 | 0.9219              | 23.42             | 5/32           | 1C51T-.921                                                                            | 1C51A-.921                                                                               | 1C31A-.921-CI                                                                                         | 1N21D-.921                                                                                       |
|        | –                     | 0.9252              | 23.50             | 5/32           | 1C51T-23.5                                                                            | 1C51A-23.5                                                                               | 1C31A-23.5-CI                                                                                         | 1N21D-23.5                                                                                       |
|        | 15/16                 | 0.9375              | 23.81             | 5/32           | 1C51T-0030                                                                            | 1C51A-0030                                                                               | 1C31A-0030-CI                                                                                         | 1N21D-0030                                                                                       |
|        | –                     | 0.9449              | 24.00             | 5/32           | 1C51T-24                                                                              | 1C51A-24                                                                                 | 1C31A-24-CI                                                                                           | 1N21D-24                                                                                         |

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 112 - 143



A30: 52 - 56



A30: 4 - 6

HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WCCoatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

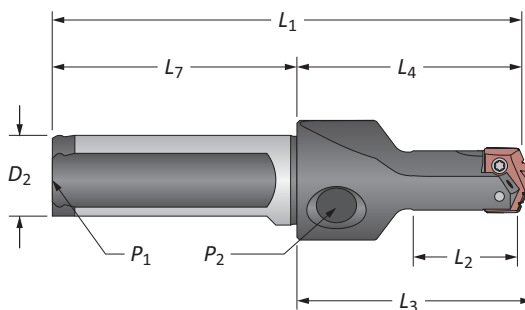
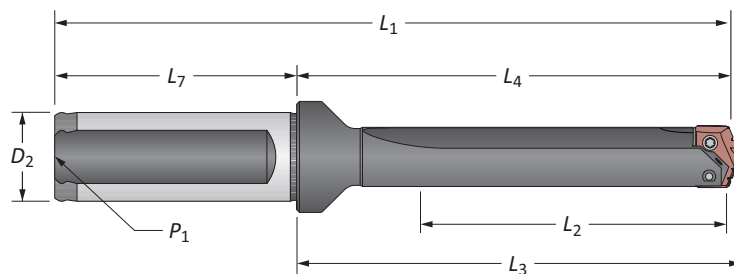
|                   |                     |
|-------------------|---------------------|
| TiN = 1C51T-XXXX  | TiAlN = 1C51A-XXXX  |
| TiCN = 1C51N-XXXX | AM200® = 1C51H-XXXX |





## T-A Drill Insert Holders

1 Series | Flange Shank | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



Stub Length

### Straight Flute

|        |        | Body           |                |                |                | Shank          |                |                |          |               |
|--------|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------|---------------|
| Series | Length | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> | Part No. |               |
| i      | 1      | Stub           | 1-7/8          | 2-63/64        | 3-1/8          | 5-17/64        | 1              | 2-9/32         | 1/8      | 21010S-100F   |
|        |        | Short          | 2-5/8          | 4-7/32         | 4-23/64        | 6-1/2          | 1              | 2-9/32         | 1/8      | 22010S-100F   |
|        |        | Intermediate   | 4-5/8          | 6-3/32         | 6-15/64        | 8-3/8          | 1              | 2-9/32         | 1/8      | 23010S-100F   |
|        |        | Standard       | 6-5/8          | 8-3/32         | 8-15/64        | 10-3/8         | 1              | 2-9/32         | 1/8      | 24010S-100F   |
|        |        | Extended       | 10-5/8         | 12-3/32        | 12-15/64       | 14-3/8         | 1              | 2-9/32         | 1/8      | ⚠ 25010S-100F |
|        | 1.5    | Stub           | 2-1/4          | 3-31/64        | 3-5/8          | 5-49/64        | 1              | 2-9/32         | 1/8      | 21015S-100F   |
|        |        | Short          | 2-5/8          | 4-7/32         | 4-23/64        | 6-1/2          | 1              | 2-9/32         | 1/8      | 22015S-100F   |
|        |        | Intermediate   | 4-5/8          | 6-3/32         | 6-15/64        | 8-3/8          | 1              | 2-9/32         | 1/8      | 23015S-100F   |
|        |        | Standard       | 6-5/8          | 8-3/32         | 8-15/64        | 10-3/8         | 1              | 2-9/32         | 1/8      | 24015S-100F   |
|        |        | Extended       | 10-5/8         | 12-3/32        | 12-15/64       | 14-3/8         | 1              | 2-9/32         | 1/8      | ⚠ 25015S-100F |
|        |        |                |                |                |                |                |                |                |          |               |
| m      | 1      | Stub           | 47.6           | 75.8           | 79.4           | 131.8          | 25.0           | 56.0           | 1/8*     | 21010S-25FM   |
|        |        | Short          | 66.7           | 107.2          | 110.7          | 163.2          | 25.0           | 56.0           | 1/8*     | 22010S-25FM   |
|        |        | XL             | 457.0          | 494.5          | 498.1          | 550.5          | 25.0           | 56.0           | 1/8*     | ⚠ 27010S-25FM |
|        |        | 3XL            | 569.0          | 602.5          | 606.1          | 658.5          | 25.0           | 56.0           | 1/8*     | ⚠ 29010S-25FM |
|        | 1.5    | Stub           | 57.2           | 88.5           | 92.1           | 144.5          | 25.0           | 56.0           | 1/8*     | 21015S-25FM   |
|        |        | Short          | 66.7           | 107.2          | 110.7          | 163.2          | 25.0           | 56.0           | 1/8*     | 22015S-25FM   |

\*Metric thread to BSP and ISO 7-1

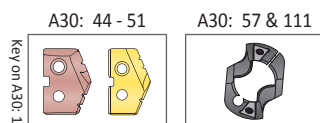
**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

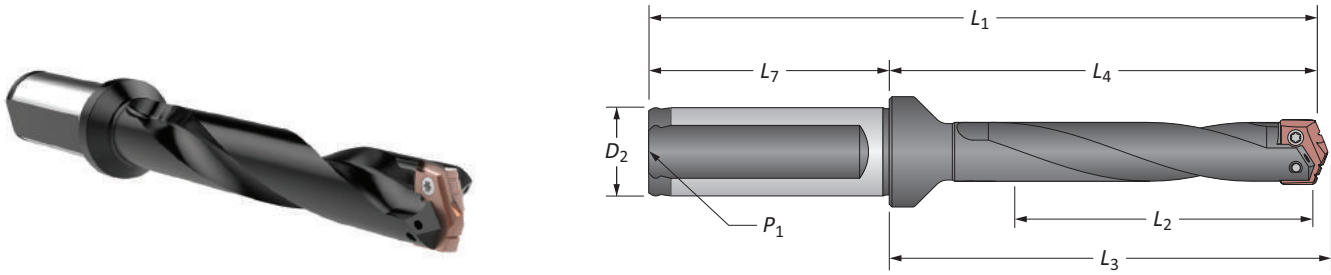
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

1 Series | Flange Shank | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



## Helical Flute

| Series |     | Length        | Body           |                |                |                | Shank          |                |                | Part No.      |
|--------|-----|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|        |     |               | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i      | 1   | Intermediate  | 4-5/8          | 6-3/32         | 6-15/64        | 8-3/8          | 1              | 2-9/32         | 1/8            | 23010H-100F   |
|        |     | Standard      | 6-5/8          | 8-3/32         | 8-15/64        | 10-3/8         | 1              | 2-9/32         | 1/8            | 24010H-100F   |
|        |     | Standard Plus | 8-5/8          | 10-3/32        | 10-15/64       | 12-33/64       | 1              | 2-9/32         | 1/8            | ⚠ 24510H-100F |
|        |     | Extended      | 10-5/8         | 12-3/32        | 12-15/64       | 14-3/8         | 1              | 2-9/32         | 1/8            | ⚠ 25010H-100F |
|        |     | Long          | 14-3/8         | 15-27/32       | 15-63/64       | 18-17/64       | 1              | 2-9/32         | 1/8            | ⚠ 26010H-100F |
|        | 1.5 | Intermediate  | 4-5/8          | 6-3/32         | 6-15/64        | 8-3/8          | 1              | 2-9/32         | 1/8            | 23015H-100F   |
|        |     | Standard      | 6-5/8          | 8-3/32         | 8-15/64        | 10-3/8         | 1              | 2-9/32         | 1/8            | 24015H-100F   |
|        |     | Extended      | 10-5/8         | 12-3/32        | 12-15/64       | 14-3/8         | 1              | 2-9/32         | 1/8            | ⚠ 25015H-100F |
|        |     |               |                |                |                |                |                |                |                |               |
| m      | 1   | Intermediate  | 117.5          | 154.8          | 158.4          | 210.8          | 25.0           | 56.0           | 1/8*           | 23010H-25FM   |
|        |     | Standard      | 168.3          | 205.6          | 209.2          | 261.6          | 25.0           | 56.0           | 1/8*           | 24010H-25FM   |
|        |     | Standard Plus | 219.0          | 256.3          | 259.9          | 312.3          | 25.0           | 56.0           | 1/8*           | ⚠ 24510H-25FM |
|        |     | Extended      | 269.9          | 307.2          | 310.8          | 363.2          | 25.0           | 56.0           | 1/8*           | ⚠ 25010H-25FM |
|        |     | Long          | 365.0          | 402.3          | 405.9          | 458.3          | 25.0           | 56.0           | 1/8*           | ⚠ 26010H-25FM |
|        | 1.5 | Intermediate  | 117.5          | 154.8          | 158.4          | 210.8          | 25.0           | 56.0           | 1/8*           | 23015H-25FM   |
|        |     | Standard      | 168.3          | 205.6          | 209.2          | 261.6          | 25.0           | 56.0           | 1/8*           | 24015H-25FM   |
|        |     | Extended      | 269.9          | 307.2          | 310.8          | 363.2          | 25.0           | 56.0           | 1/8*           | ⚠ 25015H-25FM |

\*Metric thread to BSP and ISO 7-1

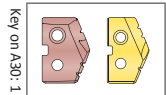
**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

## Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

A30: 44 - 51



i = Imperial (in)

m = Metric (mm)

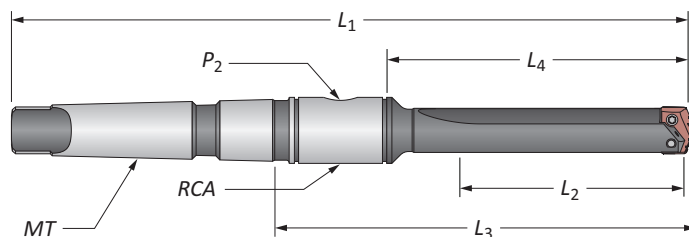
Screws sold in quantities of 10

**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

1 Series | Taper Shank | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



### Straight Flute

| Series |     | Length       | Body           |                |                |                | Shank |                |         | Part No.      |
|--------|-----|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|---------------|
|        |     |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |               |
| i      | 1   | Short        | 2-3/4          | 3-7/8          | 5-39/64        | 9-5/32         | #3    | 1/8            | 2T-3SR  | 22010S-003I   |
|        |     | Short        | 2-3/4          | 3-7/8          | 5-39/64        | 10-5/32        | #4    | 1/8            | 2T-3SR  | 22010S-004I   |
|        |     | Intermediate | 4-3/4          | 5-7/8          | 7-39/64        | 11-5/32        | #3    | 1/8            | 2T-3SR  | 23010S-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 13-5/32        | #3    | 1/8            | 2T-3SR  | 24010S-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 14-5/32        | #4    | 1/8            | 2T-3SR  | 24010S-004I   |
|        |     | Extended     | 10-3/4         | 11-7/8         | 13-39/64       | 17-5/32        | #3    | 1/8            | 2T-3SR  | ⚠ 25010S-003I |
|        | 1.5 | Short        | 2-3/4          | 3-7/8          | 5-39/64        | 9-5/32         | #3    | 1/8            | 2T-3SR  | 22015S-003I   |
|        |     | Short        | 2-3/4          | 3-7/8          | 5-39/64        | 10-5/32        | #4    | 1/8            | 2T-3SR  | 22015S-004I   |
|        |     | Intermediate | 4-3/4          | 5-7/8          | 7-39/64        | 11-5/32        | #3    | 1/8            | 2T-3SR  | 23015S-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 13-5/32        | #3    | 1/8            | 2T-3SR  | 24015S-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 14-5/32        | #4    | 1/8            | 2T-3SR  | 24015S-004I   |
|        |     | Extended     | 10-3/4         | 11-7/8         | 13-39/64       | 17-5/32        | #3    | 1/8            | 2T-3SR  | ⚠ 25015S-003I |
|        |     |              |                |                |                |                |       |                |         |               |
| m      | 1   | Short        | 69.8           | 98.4           | 142.5          | 232.5          | #3**  | 1/8*           | 2T-3SRM | 22010S-003M   |
|        | 1.5 | Short        | 69.8           | 98.4           | 142.5          | 232.5          | #3**  | 1/8*           | 2T-3SRM | 22015S-003M   |

\*Metric thread to BSP and ISO 7-1

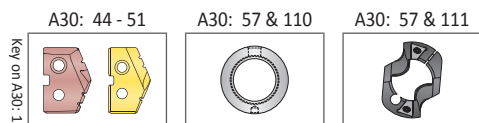
\*\*Per ISO 296 type BEK

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

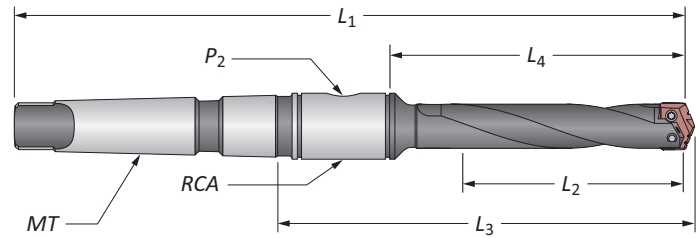
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

1 Series | Taper Shank | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



## Helical Flute

|        |     |              | Body           |                |                |                | Shank |                |         |               |
|--------|-----|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|---------------|
| Series |     | Length       | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     | Part No.      |
| i      | 1   | Intermediate | 4-3/4          | 5-7/8          | 7-39/64        | 11-5/32        | #3    | 1/8            | 2T-3SR  | 23010H-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 13-5/32        | #3    | 1/8            | 2T-3SR  | 24010H-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-43/64        | 14-5/32        | #4    | 1/8            | 2T-3SR  | 24010H-004I   |
|        |     | Extended     | 10-3/4         | 11-7/8         | 13-39/64       | 17-5/32        | #3    | 1/8            | 2T-3SR  | ⚠ 25010H-003I |
|        | 1.5 | Intermediate | 4-3/4          | 5-7/8          | 7-39/64        | 11-5/32        | #3    | 1/8            | 2T-3SR  | 23015H-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-39/64        | 13-5/32        | #3    | 1/8            | 2T-3SR  | 24015H-003I   |
|        |     | Standard     | 6-3/4          | 7-7/8          | 9-43/64        | 14-5/32        | #4    | 1/8            | 2T-3SR  | 24015H-004I   |
|        |     | Extended     | 10-3/4         | 11-7/8         | 13-39/64       | 17-5/32        | #3    | 1/8            | 2T-3SR  | ⚠ 25015H-003I |
|        |     |              |                |                |                |                |       |                |         |               |
| m      | 1   | Intermediate | 120.7          | 149.2          | 193.3          | 283.3          | #3**  | 1/8*           | 2T-3SRM | 23010H-003M   |
|        |     | Standard     | 171.5          | 200.0          | 244.1          | 334.2          | #3**  | 1/8*           | 2T-3SRM | 24010H-003M   |
|        |     | Extended     | 273.1          | 301.6          | 345.7          | 435.8          | #3**  | 1/8*           | 2T-3SRM | ⚠ 25010H-003M |
|        | 1.5 | Intermediate | 120.7          | 149.2          | 193.3          | 283.3          | #3**  | 1/8*           | 2T-3SRM | 23015H-003M   |
|        |     | Standard     | 171.5          | 200.0          | 244.1          | 334.2          | #3**  | 1/8*           | 2T-3SRM | 24015H-003M   |
|        |     | Extended     | 273.1          | 301.6          | 345.7          | 435.8          | #3**  | 1/8*           | 2T-3SRM | ⚠ 25015H-003M |

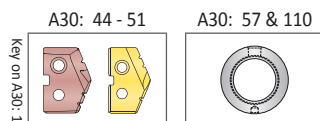
\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

## Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

m = Metric (mm)

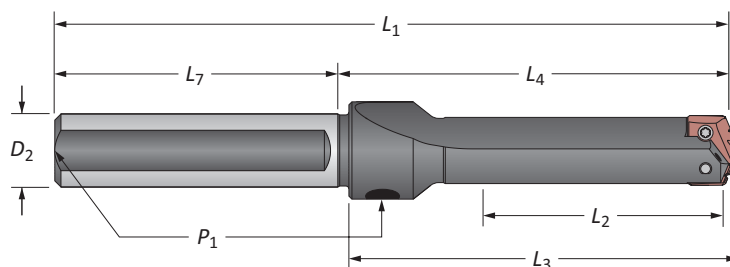
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

1 Series | Straight Shank | Diameter Range: 0.690" - 0.960" (17.53mm - 24.38mm)



### Straight Flute

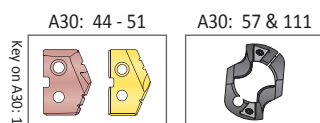
| Series | Length       | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|        |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| 1      | Short        | 2-5/8          | 3-7/8          | 4-1/64         | 6-7/8          | 3/4            | 3              | 1/8            | 22010S-075L |
|        | Short        | 2-5/8          | 3-7/8          | 4-1/64         | 6-7/8          | 1              | 3              | 1/8            | 22010S-100L |
|        | Intermediate | 4-5/8          | 5-7/8          | 6-1/64         | 8-7/8          | 1              | 3              | 1/8            | 23010S-100L |
|        | Standard     | 6-5/8          | 7-7/8          | 8-1/64         | 10-7/8         | 3/4            | 3              | 1/8            | 24010S-075L |
|        | Standard     | 6-5/8          | 7-7/8          | 8-1/64         | 10-7/8         | 1              | 3              | 1/8            | 24010S-100L |
|        | Extended     | 10-5/8         | 11-7/8         | 12-1/64        | 14-7/8         | 1              | 3              | 1/8            | 25010S-100L |
|        | XL           | 18             | 19-1/4         | 19-25/64       | 22-1/4         | 1              | 3              | 1/8            | 27010S-100L |
| 1.5    | 3XL          | 22-1/4         | 23-1/2         | 23-41/64       | 26-1/2         | 1              | 3              | 1/8            | 29010S-100L |
|        | Short        | 2-5/8          | 3-7/8          | 4-1/64         | 6-7/8          | 3/4            | 3              | 1/8*           | 22015S-075L |
|        | Short        | 2-5/8          | 3-7/8          | 4-1/64         | 6-7/8          | 1              | 3              | 1/8*           | 22015S-100L |
|        | Intermediate | 4-5/8          | 5-7/8          | 6-1/64         | 8-7/8          | 1              | 3              | 1/8*           | 23015S-100L |
|        | Standard     | 6-5/8          | 7-7/8          | 8-1/64         | 10-7/8         | 3/4            | 3              | 1/8*           | 24015S-075L |
|        | Standard     | 6-5/8          | 7-7/8          | 8-1/64         | 10-7/8         | 1              | 3              | 1/8*           | 24015S-100L |
|        | Extended     | 10-5/8         | 11-7/8         | 12-1/64        | 14-7/8         | 1              | 3              | 1/8*           | 25015S-100L |

**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

### Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



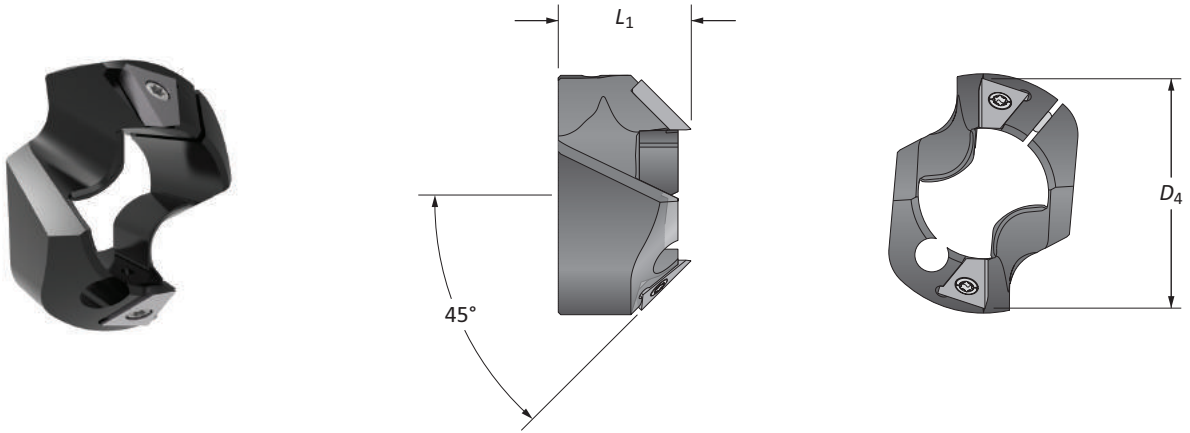
i = Imperial (in)  
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Accessories

1 Series | Chamfer Rings | Rotary Coolant Adapters | Torx® Plus Screws |



T-ACR 45 Chamfer Ring

| Holder Series | D <sub>1</sub> Range | Chamfer Ring   |                | Part No.            | Insert Part No. | Insert Screw | Insert Driver | Clamping Screw | Insert Driver |
|---------------|----------------------|----------------|----------------|---------------------|-----------------|--------------|---------------|----------------|---------------|
|               |                      | D <sub>4</sub> | L <sub>1</sub> |                     |                 |              |               |                |               |
| 1             | 0.6900 - 0.9600      | 1-3/64         | 51/64          | <b>T-ACR-45-1</b>   | T-ACRI-45-B-C5A | 7255-IP8-1   | 8IP-8         | 7495-IP15-1    | 8IP-15        |
| 1.5           | 0.8540 - 0.9600      | 1-1/8          | 57/64          | <b>T-ACR-45-1.5</b> | T-ACRI-45-B-C5A | 7255-IP8-1   | 8IP-8         | 7495-IP15-1    | 8IP-15        |

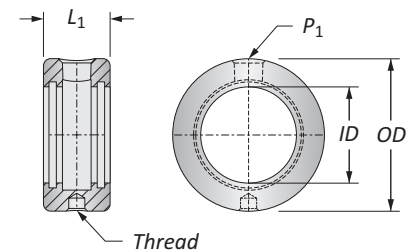
Rotary Coolant Adapter (RCA) and Accessories

| ID             | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No.       | RCA O-Rings    |              |
|----------------|-------|----------------|--------------------|----------------|----------------|----------------|--------------|
|                |       |                |                    |                |                | Kit Part No.** | Replacements |
| <b>i</b> 1     | 2-1/8 | 1-1/8          | 5/16-18            | 1/8            | <b>2T-3SR</b>  | 2T1-3SR        | 2T1-3OR-10   |
| <b>m</b> 25.40 | 53.97 | 28.57          | M8 x 1.25          | 1/8*           | <b>2T-3SRM</b> | 2T1-3SR        | 2T1-3OR-10   |

\*Thread to BSP and ISO 7-1

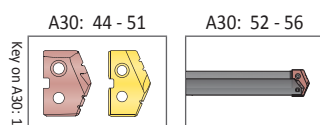
\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

▲ Refer to page A30: 110 for proper RCA assembly and safety information



Connection Accessories

| Series | Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|--------|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 1      | 7375-IP9-1    | 7375N-IP9-1          | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |
| 1.5    | 739-IP9-1     | 739N-IP9-1           | 8IP-9         | 8IP-9TL                   | 8IP-9B           | 27.0 in-lbs (305 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength**i** = Imperial (in)**m** = Metric (mm)Chamfer Ring Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

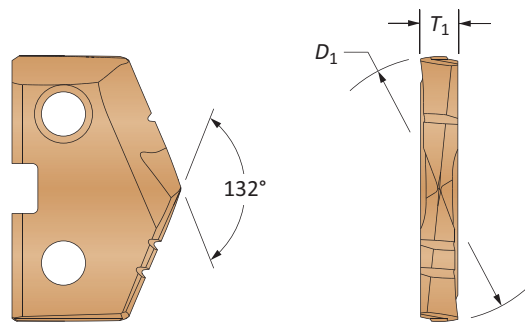
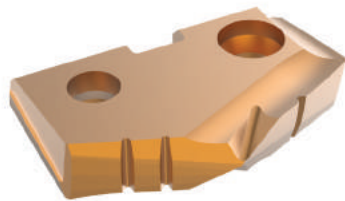
**WARNING** RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.





## GEN2 T-A Drill Inserts

2 Series | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)

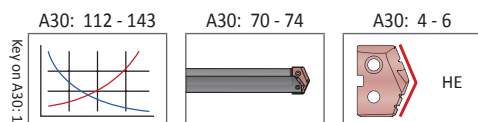


HSS Inserts – Super Cobalt • Carbide Inserts – C2 (K20) | C1 (K35)

| Series | Insert                |                     |                   |                | HSS Part No.           | Carbide Part No.   |                    |
|--------|-----------------------|---------------------|-------------------|----------------|------------------------|--------------------|--------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> | AM200®<br>Super Cobalt | AM300®<br>C2 (K20) | AM300®<br>C1 (K35) |
| 2      | –                     | 0.9646              | 24.50             | 3/16           | 452H-24.5              | 4C22P-24.5         | 4C12P-24.5         |
|        | 31/32                 | 0.9688              | 24.61             | 3/16           | 452H-0031              | 4C22P-0031         | 4C12P-0031         |
|        | –                     | 0.9760              | 24.79             | 3/16           | 452H-.976              | 4C22P-.976         | 4C12P-.976         |
|        | 63/64                 | 0.9843              | 25.00             | 3/16           | 452H-25                | 4C22P-25           | 4C12P-25           |
|        | 1                     | 1.0000              | 25.40             | 3/16           | 452H-0100              | 4C22P-0100         | 4C12P-0100         |
|        | –                     | 1.0039              | 25.50             | 3/16           | 452H-25.5              | 4C22P-25.5         | 4C12P-25.5         |
|        | 1-1/64                | 1.0156              | 25.80             | 3/16           | 452H-1.015             | 4C22P-1.015        | 4C12P-1.015        |
|        | –                     | 1.0236              | 26.00             | 3/16           | 452H-26                | 4C22P-26           | 4C12P-26           |
|        | 1-1/32                | 1.0313              | 26.19             | 3/16           | 452H-0101              | 4C22P-0101         | 4C12P-0101         |
|        | –                     | 1.0433              | 26.50             | 3/16           | 452H-26.5              | 4C22P-26.5         | 4C12P-26.5         |
|        | 1-3/64                | 1.0469              | 26.59             | 3/16           | 452H-1.046             | 4C22P-1.046        | 4C12P-1.046        |
|        | 1-1/16                | 1.0625              | 26.99             | 3/16           | 452H-0102              | 4C22P-0102         | 4C12P-0102         |
|        | –                     | 1.0630              | 27.00             | 3/16           | 452H-27                | 4C22P-27           | 4C12P-27           |
|        | –                     | 1.0827              | 27.50             | 3/16           | 452H-27.5              | 4C22P-27.5         | 4C12P-27.5         |
|        | 1-3/32                | 1.0938              | 27.78             | 3/16           | 452H-0103              | 4C22P-0103         | 4C12P-0103         |
|        | –                     | 1.1024              | 28.00             | 3/16           | 452H-28                | 4C22P-28           | 4C12P-28           |
|        | 1-7/64                | 1.1094              | 28.18             | 3/16           | 452H-1.109             | 4C22P-1.109        | 4C12P-1.109        |
|        | –                     | 1.1220              | 28.50             | 3/16           | 452H-28.5              | 4C22P-28.5         | 4C12P-28.5         |
|        | 1-1/8                 | 1.1250              | 28.58             | 3/16           | 452H-0104              | 4C22P-0104         | 4C12P-0104         |
|        | –                     | 1.1417              | 29.00             | 3/16           | 452H-29                | 4C22P-29           | 4C12P-29           |
| 2.5    | 1-5/32                | 1.1563              | 29.37             | 3/16           | 452H-0105              | 4C22P-0105         | 4C12P-0105         |
|        | –                     | 1.1614              | 29.50             | 3/16           | 452H-29.5              | 4C22P-29.5         | 4C12P-29.5         |
|        | –                     | 1.1811              | 30.00             | 3/16           | 452H-30                | 4C22P-30           | 4C12P-30           |
|        | 1-3/16                | 1.1875              | 30.16             | 3/16           | 452H-0106              | 4C22P-0106         | 4C12P-0106         |
|        | –                     | 1.2008              | 30.50             | 3/16           | 452H-30.5              | 4C22P-30.5         | 4C12P-30.5         |
|        | 1-7/32                | 1.2188              | 30.96             | 3/16           | 452H-0107              | 4C22P-0107         | 4C12P-0107         |
|        | –                     | 1.2205              | 31.00             | 3/16           | 452H-31                | 4C22P-31           | 4C12P-31           |
|        | –                     | 1.2260              | 31.14             | 3/16           | 452H-1.226             | 4C22P-1.226        | 4C12P-1.226        |
|        | –                     | 1.2310              | 31.26             | 3/16           | 452H-1.231             | 4C22P-1.231        | 4C12P-1.231        |
|        | –                     | 1.2340              | 31.34             | 3/16           | 452H-1.234             | 4C22P-1.234        | 4C12P-1.234        |
|        | –                     | 1.2402              | 31.50             | 3/16           | 452H-31.5              | 4C22P-31.5         | 4C12P-31.5         |
|        | 1-1/4                 | 1.2500              | 31.75             | 3/16           | 452H-0108              | 4C22P-0108         | 4C12P-0108         |
|        | –                     | 1.2598              | 32.00             | 3/16           | 452H-32                | 4C22P-32           | 4C12P-32           |
|        | –                     | 1.2795              | 32.50             | 3/16           | 452H-32.5              | 4C22P-32.5         | 4C12P-32.5         |
|        | 1-9/32                | 1.2813              | 32.54             | 3/16           | 452H-0109              | 4C22P-0109         | 4C12P-0109         |
|        | –                     | 1.2992              | 33.00             | 3/16           | 452H-33                | 4C22P-33           | 4C12P-33           |
|        | 1-5/16                | 1.3125              | 33.34             | 3/16           | 452H-0110              | 4C22P-0110         | 4C12P-0110         |
|        | –                     | 1.3189              | 33.50             | 3/16           | 452H-33.5              | 4C22P-33.5         | 4C12P-33.5         |
|        | –                     | 1.3386              | 34.00             | 3/16           | 452H-34                | 4C22P-34           | 4C12P-34           |
|        | 1-11/32               | 1.3438              | 34.13             | 3/16           | 452H-0111              | 4C22P-0111         | 4C12P-0111         |
| X      | –                     | 1.3582              | 34.50             | 3/16           | 452H-34.5              | 4C22P-34.5         | 4C12P-34.5         |
|        | 1-3/8                 | 1.3750              | 34.93             | 3/16           | 452H-0112              | 4C22P-0112         | 4C12P-0112         |
|        | –                     | 1.3780              | 35.00             | 3/16           | 452H-35                | 4C22P-35           | 4C12P-35           |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2

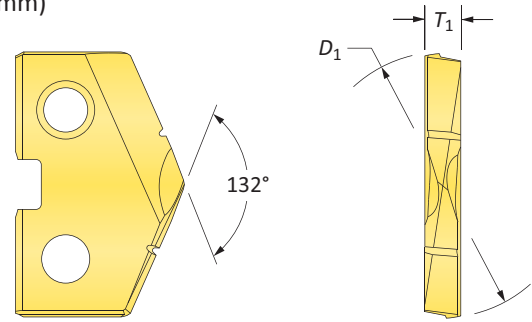


Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. ➔

|                  |                    |
|------------------|--------------------|
| TiN = 452T-XXXX  | TiAlN = 452A-XXXX  |
| TiCN = 452N-XXXX | AM200® = 452H-XXXX |

## Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)

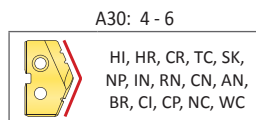
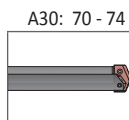
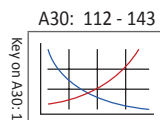


## HSS Inserts – Premium Cobalt

| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 2      | –                     | 0.9646     | 24.50    | 3/16  | 182T-24.5                                                                              | 182A-24.5                                                                                 | 182N-24.5                                                                                |
|        | 31/32                 | 0.9688     | 24.61    | 3/16  | 182T-0031                                                                              | 182A-0031                                                                                 | 182N-0031                                                                                |
|        | –                     | 0.9760     | 24.79    | 3/16  | 182T-.976                                                                              | 182A-.976                                                                                 | 182N-.976                                                                                |
|        | 63/64                 | 0.9843     | 25.00    | 3/16  | 182T-25                                                                                | 182A-25                                                                                   | 182N-25                                                                                  |
|        | 1                     | 1.0000     | 25.40    | 3/16  | 182T-0100                                                                              | 182A-0100                                                                                 | 182N-0100                                                                                |
|        | –                     | 1.0039     | 25.50    | 3/16  | 182T-25.5                                                                              | 182A-25.5                                                                                 | 182N-25.5                                                                                |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | 182T-1.015                                                                             | 182A-1.015                                                                                | 182N-1.015                                                                               |
|        | –                     | 1.0236     | 26.00    | 3/16  | 182T-26                                                                                | 182A-26                                                                                   | 182N-26                                                                                  |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | 182T-0101                                                                              | 182A-0101                                                                                 | 182N-0101                                                                                |
|        | –                     | 1.0433     | 26.50    | 3/16  | 182T-26.5                                                                              | 182A-26.5                                                                                 | 182N-26.5                                                                                |
|        | 1-3/64                | 1.0469     | 26.59    | 3/16  | 182T-1.046                                                                             | 182A-1.046                                                                                | 182N-1.046                                                                               |
|        | 1-1/16                | 1.0625     | 26.99    | 3/16  | 182T-0102                                                                              | 182A-0102                                                                                 | 182N-0102                                                                                |
|        | –                     | 1.0630     | 27.00    | 3/16  | 182T-27                                                                                | 182A-27                                                                                   | 182N-27                                                                                  |
|        | –                     | 1.0827     | 27.50    | 3/16  | 182T-27.5                                                                              | 182A-27.5                                                                                 | 182N-27.5                                                                                |
|        | 1-3/32                | 1.0938     | 27.78    | 3/16  | 182T-0103                                                                              | 182A-0103                                                                                 | 182N-0103                                                                                |
|        | –                     | 1.1024     | 28.00    | 3/16  | 182T-28                                                                                | 182A-28                                                                                   | 182N-28                                                                                  |
|        | 1-7/64                | 1.1094     | 28.18    | 3/16  | 182T-1.109                                                                             | 182A-1.109                                                                                | 182N-1.109                                                                               |
|        | –                     | 1.1220     | 28.50    | 3/16  | 182T-28.5                                                                              | 182A-28.5                                                                                 | 182N-28.5                                                                                |
|        | 1-1/8                 | 1.1250     | 28.58    | 3/16  | 182T-0104                                                                              | 182A-0104                                                                                 | 182N-0104                                                                                |
|        | –                     | 1.1417     | 29.00    | 3/16  | 182T-29                                                                                | 182A-29                                                                                   | 182N-29                                                                                  |
| 2.5    | 1-5/32                | 1.1563     | 29.37    | 3/16  | 182T-0105                                                                              | 182A-0105                                                                                 | 182N-0105                                                                                |
|        | –                     | 1.1614     | 29.50    | 3/16  | 182T-29.5                                                                              | 182A-29.5                                                                                 | 182N-29.5                                                                                |
|        | –                     | 1.1811     | 30.00    | 3/16  | 182T-30                                                                                | 182A-30                                                                                   | 182N-30                                                                                  |
|        | 1-3/16                | 1.1875     | 30.16    | 3/16  | 182T-0106                                                                              | 182A-0106                                                                                 | 182N-0106                                                                                |
|        | –                     | 1.2008     | 30.50    | 3/16  | 182T-30.5                                                                              | 182A-30.5                                                                                 | 182N-30.5                                                                                |
|        | 1-7/32                | 1.2188     | 30.96    | 3/16  | 182T-0107                                                                              | 182A-0107                                                                                 | 182N-0107                                                                                |
|        | –                     | 1.2205     | 31.00    | 3/16  | 182T-31                                                                                | 182A-31                                                                                   | 182N-31                                                                                  |
|        | –                     | 1.2260     | 31.14    | 3/16  | 182T-1.226                                                                             | 182A-1.226                                                                                | 182N-1.226                                                                               |
|        | –                     | 1.2310     | 31.26    | 3/16  | 182T-1.231                                                                             | 182A-1.231                                                                                | 182N-1.231                                                                               |
|        | –                     | 1.2340     | 31.34    | 3/16  | 182T-1.234                                                                             | 182A-1.234                                                                                | 182N-1.234                                                                               |
|        | –                     | 1.2402     | 31.50    | 3/16  | 182T-31.5                                                                              | 182A-31.5                                                                                 | 182N-31.5                                                                                |
|        | 1-1/4                 | 1.2500     | 31.75    | 3/16  | 182T-0108                                                                              | 182A-0108                                                                                 | 182N-0108                                                                                |
|        | –                     | 1.2598     | 32.00    | 3/16  | 182T-32                                                                                | 182A-32                                                                                   | 182N-32                                                                                  |
|        | –                     | 1.2795     | 32.50    | 3/16  | 182T-32.5                                                                              | 182A-32.5                                                                                 | 182N-32.5                                                                                |
|        | 1-9/32                | 1.2813     | 32.54    | 3/16  | 182T-0109                                                                              | 182A-0109                                                                                 | 182N-0109                                                                                |
|        | –                     | 1.2992     | 33.00    | 3/16  | 182T-33                                                                                | 182A-33                                                                                   | 182N-33                                                                                  |
|        | 1-5/16                | 1.3125     | 33.34    | 3/16  | 182T-0110                                                                              | 182A-0110                                                                                 | 182N-0110                                                                                |
|        | –                     | 1.3189     | 33.50    | 3/16  | 182T-33.5                                                                              | 182A-33.5                                                                                 | 182N-33.5                                                                                |
|        | –                     | 1.3386     | 34.00    | 3/16  | 182T-34                                                                                | 182A-34                                                                                   | 182N-34                                                                                  |
|        | 1-11/32               | 1.3438     | 34.13    | 3/16  | 182T-0111                                                                              | 182A-0111                                                                                 | 182N-0111                                                                                |
|        | –                     | 1.3582     | 34.50    | 3/16  | 182T-34.5                                                                              | 182A-34.5                                                                                 | 182N-34.5                                                                                |
|        | 1-3/8                 | 1.3750     | 34.93    | 3/16  | 182T-0112                                                                              | 182A-0112                                                                                 | 182N-0112                                                                                |
|        | –                     | 1.3780     | 35.00    | 3/16  | 182T-35                                                                                | 182A-35                                                                                   | 182N-35                                                                                  |

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2

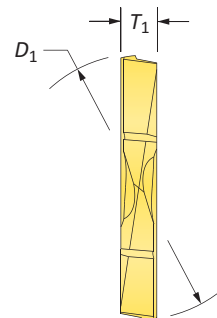
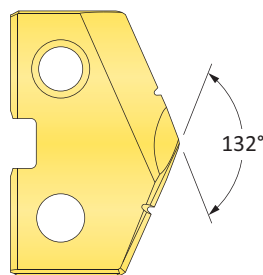
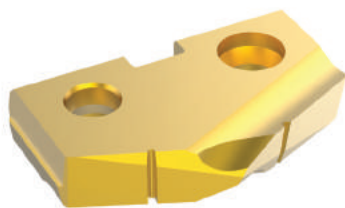
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 182T-XXXX  | TiAlN = 182A-XXXX  |
| TiCN = 182N-XXXX | AM200® = 182H-XXXX |



## Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)

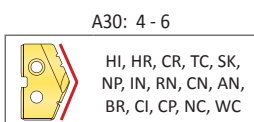
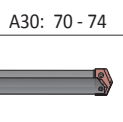
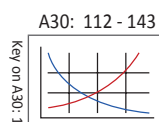


### HSS Inserts – Super Cobalt

| Series | Insert                |                     |                   |                | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|---------------------|-------------------|----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiCN |
| 2      | –                     | 0.9646              | 24.50             | 3/16           | 152T-24.5                                                                              | 152A-24.5                                                                                 | 152N-24.5                                                                                |
|        | 31/32                 | 0.9688              | 24.61             | 3/16           | 152T-0031                                                                              | 152A-0031                                                                                 | 152N-0031                                                                                |
|        | –                     | 0.9760              | 24.79             | 3/16           | 152T-.976                                                                              | 152A-.976                                                                                 | 152N-.976                                                                                |
|        | 63/64                 | 0.9843              | 25.00             | 3/16           | 152T-25                                                                                | 152A-25                                                                                   | 152N-25                                                                                  |
|        | 1                     | 1.0000              | 25.40             | 3/16           | 152T-0100                                                                              | 152A-0100                                                                                 | 152N-0100                                                                                |
|        | –                     | 1.0039              | 25.50             | 3/16           | 152T-25.5                                                                              | 152A-25.5                                                                                 | 152N-25.5                                                                                |
|        | 1-1/64                | 1.0156              | 25.80             | 3/16           | 152T-1.015                                                                             | 152A-1.015                                                                                | 152N-1.015                                                                               |
|        | –                     | 1.0236              | 26.00             | 3/16           | 152T-26                                                                                | 152A-26                                                                                   | 152N-26                                                                                  |
|        | 1-1/32                | 1.0313              | 26.19             | 3/16           | 152T-0101                                                                              | 152A-0101                                                                                 | 152N-0101                                                                                |
|        | –                     | 1.0433              | 26.50             | 3/16           | 152T-26.5                                                                              | 152A-26.5                                                                                 | 152N-26.5                                                                                |
|        | 1-3/64                | 1.0469              | 26.59             | 3/16           | 152T-1.046                                                                             | 152A-1.046                                                                                | 152N-1.046                                                                               |
|        | 1-1/16                | 1.0625              | 26.99             | 3/16           | 152T-0102                                                                              | 152A-0102                                                                                 | 152N-0102                                                                                |
|        | –                     | 1.0630              | 27.00             | 3/16           | 152T-27                                                                                | 152A-27                                                                                   | 152N-27                                                                                  |
|        | –                     | 1.0827              | 27.50             | 3/16           | 152T-27.5                                                                              | 152A-27.5                                                                                 | 152N-27.5                                                                                |
|        | 1-3/32                | 1.0938              | 27.78             | 3/16           | 152T-0103                                                                              | 152A-0103                                                                                 | 152N-0103                                                                                |
|        | –                     | 1.1024              | 28.00             | 3/16           | 152T-28                                                                                | 152A-28                                                                                   | 152N-28                                                                                  |
|        | 1-7/64                | 1.1094              | 28.18             | 3/16           | 152T-1.109                                                                             | 152A-1.109                                                                                | 152N-1.109                                                                               |
|        | –                     | 1.1220              | 28.50             | 3/16           | 152T-28.5                                                                              | 152A-28.5                                                                                 | 152N-28.5                                                                                |
|        | 1-1/8                 | 1.1250              | 28.58             | 3/16           | 152T-0104                                                                              | 152A-0104                                                                                 | 152N-0104                                                                                |
|        | –                     | 1.1417              | 29.00             | 3/16           | 152T-29                                                                                | 152A-29                                                                                   | 152N-29                                                                                  |
| 2.5    | 1-5/32                | 1.1563              | 29.37             | 3/16           | 152T-0105                                                                              | 152A-0105                                                                                 | 152N-0105                                                                                |
|        | –                     | 1.1614              | 29.50             | 3/16           | 152T-29.5                                                                              | 152A-29.5                                                                                 | 152N-29.5                                                                                |
|        | –                     | 1.1811              | 30.00             | 3/16           | 152T-30                                                                                | 152A-30                                                                                   | 152N-30                                                                                  |
|        | 1-3/16                | 1.1875              | 30.16             | 3/16           | 152T-0106                                                                              | 152A-0106                                                                                 | 152N-0106                                                                                |
|        | –                     | 1.2008              | 30.50             | 3/16           | 152T-30.5                                                                              | 152A-30.5                                                                                 | 152N-30.5                                                                                |
|        | 1-7/32                | 1.2188              | 30.96             | 3/16           | 152T-0107                                                                              | 152A-0107                                                                                 | 152N-0107                                                                                |
|        | –                     | 1.2205              | 31.00             | 3/16           | 152T-31                                                                                | 152A-31                                                                                   | 152N-31                                                                                  |
|        | –                     | 1.2260              | 31.14             | 3/16           | 152T-1.226                                                                             | 152A-1.226                                                                                | 152N-1.226                                                                               |
|        | –                     | 1.2310              | 31.26             | 3/16           | 152T-1.231                                                                             | 152A-1.231                                                                                | 152N-1.231                                                                               |
|        | –                     | 1.2340              | 31.34             | 3/16           | 152T-1.234                                                                             | 152A-1.234                                                                                | 152N-1.234                                                                               |
|        | –                     | 1.2402              | 31.50             | 3/16           | 152T-31.5                                                                              | 152A-31.5                                                                                 | 152N-31.5                                                                                |
|        | 1-1/4                 | 1.2500              | 31.75             | 3/16           | 152T-0108                                                                              | 152A-0108                                                                                 | 152N-0108                                                                                |
|        | –                     | 1.2598              | 32.00             | 3/16           | 152T-32                                                                                | 152A-32                                                                                   | 152N-32                                                                                  |
|        | –                     | 1.2795              | 32.50             | 3/16           | 152T-32.5                                                                              | 152A-32.5                                                                                 | 152N-32.5                                                                                |
|        | 1-9/32                | 1.2813              | 32.54             | 3/16           | 152T-0109                                                                              | 152A-0109                                                                                 | 152N-0109                                                                                |
|        | –                     | 1.2992              | 33.00             | 3/16           | 152T-33                                                                                | 152A-33                                                                                   | 152N-33                                                                                  |
|        | 1-5/16                | 1.3125              | 33.34             | 3/16           | 152T-0110                                                                              | 152A-0110                                                                                 | 152N-0110                                                                                |
|        | –                     | 1.3189              | 33.50             | 3/16           | 152T-33.5                                                                              | 152A-33.5                                                                                 | 152N-33.5                                                                                |
|        | –                     | 1.3386              | 34.00             | 3/16           | 152T-34                                                                                | 152A-34                                                                                   | 152N-34                                                                                  |
|        | 1-11/32               | 1.3438              | 34.13             | 3/16           | 152T-0111                                                                              | 152A-0111                                                                                 | 152N-0111                                                                                |
| 2.5    | –                     | 1.3582              | 34.50             | 3/16           | 152T-34.5                                                                              | 152A-34.5                                                                                 | 152N-34.5                                                                                |
|        | 1-3/8                 | 1.3750              | 34.93             | 3/16           | 152T-0112                                                                              | 152A-0112                                                                                 | 152N-0112                                                                                |
|        | –                     | 1.3780              | 35.00             | 3/16           | 152T-35                                                                                | 152A-35                                                                                   | 152N-35                                                                                  |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

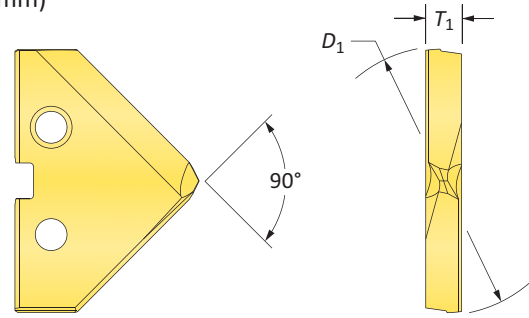
|                  |                    |
|------------------|--------------------|
| TiN = 152T-XXXX  | TiAlN = 152A-XXXX  |
| TiCN = 152N-XXXX | AM200® = 152H-XXXX |

## Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



90° Spot &amp; Chamfer



## HSS Inserts – Super Cobalt

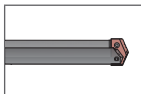
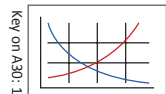
| Series | Fractional Equivalent | Insert     |          |       | 90° Spot & Chamfer Part No.                                                             |                                                                                           |                                                                                          |
|--------|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 2      | –                     | 0.9646     | 24.50    | 3/16  | 152T-24.5-SP                                                                            | 152A-24.5-SP                                                                              | 152N-24.5-SP                                                                             |
|        | 31/32                 | 0.9688     | 24.61    | 3/16  | 152T-0031-SP                                                                            | 152A-0031-SP                                                                              | 152N-0031-SP                                                                             |
|        | –                     | 0.9760     | 24.79    | 3/16  | 152T-.976-SP                                                                            | 152A-.976-SP                                                                              | 152N-.976-SP                                                                             |
|        | 63/64                 | 0.9843     | 25.00    | 3/16  | 152T-25-SP                                                                              | 152A-25-SP                                                                                | 152N-25-SP                                                                               |
|        | 1                     | 1.0000     | 25.40    | 3/16  | 152T-0100-SP                                                                            | 152A-0100-SP                                                                              | 152N-0100-SP                                                                             |
|        | –                     | 1.0039     | 25.50    | 3/16  | 152T-25.5-SP                                                                            | 152A-25.5-SP                                                                              | 152N-25.5-SP                                                                             |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | 152T-1.015-SP                                                                           | 152A-1.015-SP                                                                             | 152N-1.015-SP                                                                            |
|        | –                     | 1.0236     | 26.00    | 3/16  | 152T-26-SP                                                                              | 152A-26-SP                                                                                | 152N-26-SP                                                                               |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | 152T-0101-SP                                                                            | 152A-0101-SP                                                                              | 152N-0101-SP                                                                             |
|        | –                     | 1.0433     | 26.50    | 3/16  | 152T-26.5-SP                                                                            | 152A-26.5-SP                                                                              | 152N-26.5-SP                                                                             |
|        | 1-3/64                | 1.0469     | 26.59    | 3/16  | 152T-1.046-SP                                                                           | 152A-1.046-SP                                                                             | 152N-1.046-SP                                                                            |
|        | 1-1/16                | 1.0625     | 26.99    | 3/16  | 152T-0102-SP                                                                            | 152A-0102-SP                                                                              | 152N-0102-SP                                                                             |
|        | –                     | 1.0630     | 27.00    | 3/16  | 152T-27-SP                                                                              | 152A-27-SP                                                                                | 152N-27-SP                                                                               |
|        | –                     | 1.0827     | 27.50    | 3/16  | 152T-27.5-SP                                                                            | 152A-27.5-SP                                                                              | 152N-27.5-SP                                                                             |
|        | 1-3/32                | 1.0938     | 27.78    | 3/16  | 152T-0103-SP                                                                            | 152A-0103-SP                                                                              | 152N-0103-SP                                                                             |
|        | –                     | 1.1024     | 28.00    | 3/16  | 152T-28-SP                                                                              | 152A-28-SP                                                                                | 152N-28-SP                                                                               |
|        | 1-7/64                | 1.1094     | 28.18    | 3/16  | 152T-1.109-SP                                                                           | 152A-1.109-SP                                                                             | 152N-1.109-SP                                                                            |
|        | –                     | 1.1220     | 28.50    | 3/16  | 152T-28.5-SP                                                                            | 152A-28.5-SP                                                                              | 152N-28.5-SP                                                                             |
|        | 1-1/8                 | 1.1250     | 28.58    | 3/16  | 152T-0104-SP                                                                            | 152A-0104-SP                                                                              | 152N-0104-SP                                                                             |
|        | –                     | 1.1417     | 29.00    | 3/16  | 152T-29-SP                                                                              | 152A-29-SP                                                                                | 152N-29-SP                                                                               |
| 2.5    | 1-5/32                | 1.1563     | 29.37    | 3/16  | 152T-0105-SP                                                                            | 152A-0105-SP                                                                              | 152N-0105-SP                                                                             |
|        | –                     | 1.1614     | 29.50    | 3/16  | 152T-29.5-SP                                                                            | 152A-29.5-SP                                                                              | 152N-29.5-SP                                                                             |
|        | –                     | 1.1811     | 30.00    | 3/16  | 152T-30-SP                                                                              | 152A-30-SP                                                                                | 152N-30-SP                                                                               |
|        | 1-3/16                | 1.1875     | 30.16    | 3/16  | 152T-0106-SP                                                                            | 152A-0106-SP                                                                              | 152N-0106-SP                                                                             |
|        | –                     | 1.2008     | 30.50    | 3/16  | 152T-30.5-SP                                                                            | 152A-30.5-SP                                                                              | 152N-30.5-SP                                                                             |
|        | 1-7/32                | 1.2188     | 30.96    | 3/16  | 152T-0107-SP                                                                            | 152A-0107-SP                                                                              | 152N-0107-SP                                                                             |
|        | –                     | 1.2205     | 31.00    | 3/16  | 152T-31-SP                                                                              | 152A-31-SP                                                                                | 152N-31-SP                                                                               |
|        | –                     | 1.2260     | 31.14    | 3/16  | 152T-1.226-SP                                                                           | 152A-1.226-SP                                                                             | 152N-1.226-SP                                                                            |
|        | –                     | 1.2310     | 31.26    | 3/16  | 152T-1.231-SP                                                                           | 152A-1.231-SP                                                                             | 152N-1.231-SP                                                                            |
|        | –                     | 1.2340     | 31.34    | 3/16  | 152T-1.234-SP                                                                           | 152A-1.234-SP                                                                             | 152N-1.234-SP                                                                            |
|        | –                     | 1.2402     | 31.50    | 3/16  | 152T-31.5-SP                                                                            | 152A-31.5-SP                                                                              | 152N-31.5-SP                                                                             |
|        | 1-1/4                 | 1.2500     | 31.75    | 3/16  | 152T-0108-SP                                                                            | 152A-0108-SP                                                                              | 152N-0108-SP                                                                             |
|        | –                     | 1.2598     | 32.00    | 3/16  | 152T-32-SP                                                                              | 152A-32-SP                                                                                | 152N-32-SP                                                                               |
|        | –                     | 1.2795     | 32.50    | 3/16  | 152T-32.5-SP                                                                            | 152A-32.5-SP                                                                              | 152N-32.5-SP                                                                             |
|        | 1-9/32                | 1.2813     | 32.54    | 3/16  | 152T-0109-SP                                                                            | 152A-0109-SP                                                                              | 152N-0109-SP                                                                             |
|        | –                     | 1.2992     | 33.00    | 3/16  | 152T-33-SP                                                                              | 152A-33-SP                                                                                | 152N-33-SP                                                                               |
|        | 1-5/16                | 1.3125     | 33.34    | 3/16  | 152T-0110-SP                                                                            | 152A-0110-SP                                                                              | 152N-0110-SP                                                                             |
|        | –                     | 1.3189     | 33.50    | 3/16  | 152T-33.5-SP                                                                            | 152A-33.5-SP                                                                              | 152N-33.5-SP                                                                             |
|        | –                     | 1.3386     | 34.00    | 3/16  | 152T-34-SP                                                                              | 152A-34-SP                                                                                | 152N-34-SP                                                                               |
|        | 1-11/32               | 1.3438     | 34.13    | 3/16  | 152T-0111-SP                                                                            | 152A-0111-SP                                                                              | 152N-0111-SP                                                                             |
|        | –                     | 1.3582     | 34.50    | 3/16  | 152T-34.5-SP                                                                            | 152A-34.5-SP                                                                              | 152N-34.5-SP                                                                             |
|        | 1-3/8                 | 1.3750     | 34.93    | 3/16  | 152T-0112-SP                                                                            | 152A-0112-SP                                                                              | 152N-0112-SP                                                                             |
|        | –                     | 1.3780     | 35.00    | 3/16  | 152T-35-SP                                                                              | 152A-35-SP                                                                                | 152N-35-SP                                                                               |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 112 - 143

A30: 70 - 74

A30: 4 - 6



SW

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 2

TiN = 152T-XXXX

TiAlN = 152A-XXXX

TiCN = 152N-XXXX

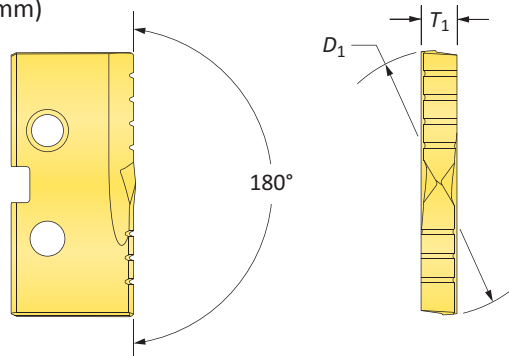
AM200® = 152H-XXXX

## Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



Flat Bottom

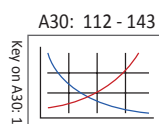


## HSS Inserts – Super Cobalt

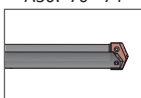
| Series | Fractional Equivalent | Insert     |          |       | Flat Bottom Part No. |
|--------|-----------------------|------------|----------|-------|----------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ | TiN                  |
| 2      | –                     | 0.9646     | 24.50    | 3/16  | 152T-24.5-FB         |
|        | 31/32                 | 0.9688     | 24.61    | 3/16  | 152T-0031-FB         |
|        | –                     | 0.9760     | 24.79    | 3/16  | 152T-.976-FB         |
|        | 63/64                 | 0.9843     | 25.00    | 3/16  | 152T-25-FB           |
|        | 1                     | 1.0000     | 25.40    | 3/16  | 152T-0100-FB         |
|        | –                     | 1.0039     | 25.50    | 3/16  | 152T-25.5-FB         |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | 152T-1.015-FB        |
|        | –                     | 1.0236     | 26.00    | 3/16  | 152T-26-FB           |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | 152T-0101-FB         |
|        | –                     | 1.0433     | 26.50    | 3/16  | 152T-26.5-FB         |
|        | 1-3/64                | 1.0469     | 26.59    | 3/16  | 152T-1.046-FB        |
|        | 1-1/16                | 1.0625     | 26.99    | 3/16  | 152T-0102-FB         |
|        | –                     | 1.0630     | 27.00    | 3/16  | 152T-27-FB           |
|        | –                     | 1.0827     | 27.50    | 3/16  | 152T-27.5-FB         |
|        | 1-3/32                | 1.0938     | 27.78    | 3/16  | 152T-0103-FB         |
|        | –                     | 1.1024     | 28.00    | 3/16  | 152T-28-FB           |
|        | 1-7/64                | 1.1094     | 28.18    | 3/16  | 152T-1.109-FB        |
|        | –                     | 1.1220     | 28.50    | 3/16  | 152T-28.5-FB         |
|        | 1-1/8                 | 1.1250     | 28.58    | 3/16  | 152T-0104-FB         |
|        | –                     | 1.1417     | 29.00    | 3/16  | 152T-29-FB           |
| 2.5    | 1-5/32                | 1.1563     | 29.37    | 3/16  | 152T-0105-FB         |
|        | –                     | 1.1614     | 29.50    | 3/16  | 152T-29.5-FB         |
|        | –                     | 1.1811     | 30.00    | 3/16  | 152T-30-FB           |
|        | 1-3/16                | 1.1875     | 30.16    | 3/16  | 152T-0106-FB         |
|        | –                     | 1.2008     | 30.50    | 3/16  | 152T-30.5-FB         |
|        | 1-7/32                | 1.2188     | 30.96    | 3/16  | 152T-0107-FB         |
|        | –                     | 1.2205     | 31.00    | 3/16  | 152T-31-FB           |
|        | –                     | 1.2260     | 31.14    | 3/16  | 152T-1.226-FB        |
|        | –                     | 1.2310     | 31.26    | 3/16  | 152T-1.231-FB        |
|        | –                     | 1.2340     | 31.34    | 3/16  | 152T-1.234-FB        |
|        | –                     | 1.2402     | 31.50    | 3/16  | 152T-31.5-FB         |
|        | 1-1/4                 | 1.2500     | 31.75    | 3/16  | 152T-0108-FB         |
|        | –                     | 1.2598     | 32.00    | 3/16  | 152T-32-FB           |
|        | –                     | 1.2795     | 32.50    | 3/16  | 152T-32.5-FB         |
|        | 1-9/32                | 1.2813     | 32.54    | 3/16  | 152T-0109-FB         |
|        | –                     | 1.2992     | 33.00    | 3/16  | 152T-33-FB           |
|        | 1-5/16                | 1.3125     | 33.34    | 3/16  | 152T-0110-FB         |
|        | –                     | 1.3189     | 33.50    | 3/16  | 152T-33.5-FB         |
|        | –                     | 1.3386     | 34.00    | 3/16  | 152T-34-FB           |
|        | 1-11/32               | 1.3438     | 34.13    | 3/16  | 152T-0111-FB         |
|        | –                     | 1.3582     | 34.50    | 3/16  | 152T-34.5-FB         |
|        | 1-3/8                 | 1.3750     | 34.93    | 3/16  | 152T-0112-FB         |
|        | –                     | 1.3780     | 35.00    | 3/16  | 152T-35-FB           |

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

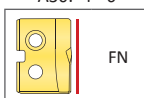
Inserts sold in quantities of 2



A30: 70 - 74



A30: 4 - 6

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

TiN = 152T-XXXX

TiAlN = 152A-XXXX

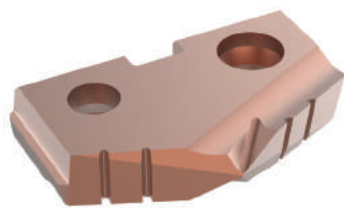
TiCN = 152N-XXXX

AM200® = 152H-XXXX

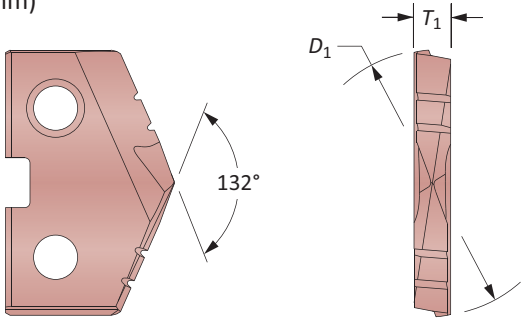


Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



Tube Sheet



HSS Inserts – Super Cobalt | HSS

| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                                         |                                                                                         |
|--------|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  Super Cobalt |  HSS |
| 2      | –                     | 1.0080     | 25.60    | 3/16  | <b>152H-1.0080-IN</b>                                                                            | <b>132H-1.0080-IN</b>                                                                   |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | <b>152H-1.015-IN</b>                                                                             | <b>132H-1.015-IN</b>                                                                    |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | <b>152H-0101-IN</b>                                                                              | <b>132H-0101-IN</b>                                                                     |

A

DRILLING

B

BORING

C

REAMING

D

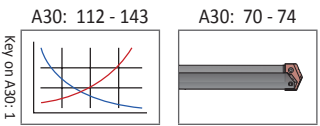
BURNISHING

E

THREADING

X

SPECIALS



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. ➔

|                         |                           |
|-------------------------|---------------------------|
| <b>TiN</b> = 152T-XXXX  | <b>TiAlN</b> = 152A-XXXX  |
| <b>TiCN</b> = 152N-XXXX | <b>AM200®</b> = 152H-XXXX |

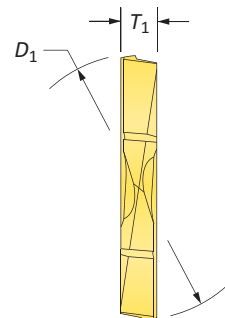
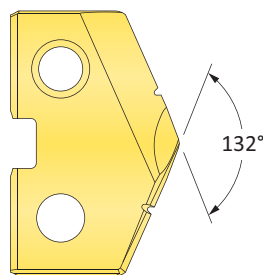
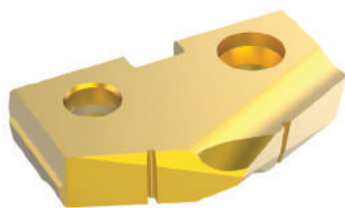
Inserts sold in quantities of 2





## Original T-A Drill Inserts

2 Series | HSS | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)

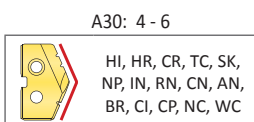
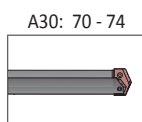
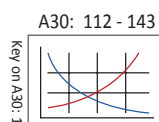


### HSS Inserts – HSS

| Series | Insert                |                     |                   |                | Part No.                                                                               |                                                                                           |                                                                                          |
|--------|-----------------------|---------------------|-------------------|----------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> |  TiN |  TiAlN |  TiCN |
| 2      | –                     | 0.9646              | 24.50             | 3/16           | 132T-24.5                                                                              | 132A-24.5                                                                                 | 132N-24.5                                                                                |
|        | 31/32                 | 0.9688              | 24.61             | 3/16           | 132T-0031                                                                              | 132A-0031                                                                                 | 132N-0031                                                                                |
|        | –                     | 0.9760              | 24.79             | 3/16           | 132T-.976                                                                              | 132A-.976                                                                                 | 132N-.976                                                                                |
|        | 63/64                 | 0.9843              | 25.00             | 3/16           | 132T-25                                                                                | 132A-25                                                                                   | 132N-25                                                                                  |
|        | 1                     | 1.0000              | 25.40             | 3/16           | 132T-0100                                                                              | 132A-0100                                                                                 | 132N-0100                                                                                |
|        | –                     | 1.0039              | 25.50             | 3/16           | 132T-25.5                                                                              | 132A-25.5                                                                                 | 132N-25.5                                                                                |
|        | 1-1/64                | 1.0156              | 25.80             | 3/16           | 132T-1.015                                                                             | 132A-1.015                                                                                | 132N-1.015                                                                               |
|        | –                     | 1.0236              | 26.00             | 3/16           | 132T-26                                                                                | 132A-26                                                                                   | 132N-26                                                                                  |
|        | 1-1/32                | 1.0313              | 26.19             | 3/16           | 132T-0101                                                                              | 132A-0101                                                                                 | 132N-0101                                                                                |
|        | –                     | 1.0433              | 26.50             | 3/16           | 132T-26.5                                                                              | 132A-26.5                                                                                 | 132N-26.5                                                                                |
|        | 1-3/64                | 1.0469              | 26.59             | 3/16           | 132T-1.046                                                                             | 132A-1.046                                                                                | 132N-1.046                                                                               |
|        | 1-1/16                | 1.0625              | 26.99             | 3/16           | 132T-0102                                                                              | 132A-0102                                                                                 | 132N-0102                                                                                |
|        | –                     | 1.0630              | 27.00             | 3/16           | 132T-27                                                                                | 132A-27                                                                                   | 132N-27                                                                                  |
|        | –                     | 1.0827              | 27.50             | 3/16           | 132T-27.5                                                                              | 132A-27.5                                                                                 | 132N-27.5                                                                                |
|        | 1-3/32                | 1.0938              | 27.78             | 3/16           | 132T-0103                                                                              | 132A-0103                                                                                 | 132N-0103                                                                                |
|        | –                     | 1.1024              | 28.00             | 3/16           | 132T-28                                                                                | 132A-28                                                                                   | 132N-28                                                                                  |
|        | 1-7/64                | 1.1094              | 28.18             | 3/16           | 132T-1.109                                                                             | 132A-1.109                                                                                | 132N-1.109                                                                               |
|        | –                     | 1.1220              | 28.50             | 3/16           | 132T-28.5                                                                              | 132A-28.5                                                                                 | 132N-28.5                                                                                |
|        | 1-1/8                 | 1.1250              | 28.58             | 3/16           | 132T-0104                                                                              | 132A-0104                                                                                 | 132N-0104                                                                                |
|        | –                     | 1.1417              | 29.00             | 3/16           | 132T-29                                                                                | 132A-29                                                                                   | 132N-29                                                                                  |
| 2.5    | 1-5/32                | 1.1563              | 29.37             | 3/16           | 132T-0105                                                                              | 132A-0105                                                                                 | 132N-0105                                                                                |
|        | –                     | 1.1614              | 29.50             | 3/16           | 132T-29.5                                                                              | 132A-29.5                                                                                 | 132N-29.5                                                                                |
|        | –                     | 1.1811              | 30.00             | 3/16           | 132T-30                                                                                | 132A-30                                                                                   | 132N-30                                                                                  |
|        | 1-3/16                | 1.1875              | 30.16             | 3/16           | 132T-0106                                                                              | 132A-0106                                                                                 | 132N-0106                                                                                |
|        | –                     | 1.2008              | 30.50             | 3/16           | 132T-30.5                                                                              | 132A-30.5                                                                                 | 132N-30.5                                                                                |
|        | 1-7/32                | 1.2188              | 30.96             | 3/16           | 132T-0107                                                                              | 132A-0107                                                                                 | 132N-0107                                                                                |
|        | –                     | 1.2205              | 31.00             | 3/16           | 132T-31                                                                                | 132A-31                                                                                   | 132N-31                                                                                  |
|        | –                     | 1.2260              | 31.14             | 3/16           | 132T-1.226                                                                             | 132A-1.226                                                                                | 132N-1.226                                                                               |
|        | –                     | 1.2310              | 31.26             | 3/16           | 132T-1.231                                                                             | 132A-1.231                                                                                | 132N-1.231                                                                               |
|        | –                     | 1.2340              | 31.34             | 3/16           | 132T-1.234                                                                             | 132A-1.234                                                                                | 132N-1.234                                                                               |
|        | –                     | 1.2402              | 31.50             | 3/16           | 132T-31.5                                                                              | 132A-31.5                                                                                 | 132N-31.5                                                                                |
|        | 1-1/4                 | 1.2500              | 31.75             | 3/16           | 132T-0108                                                                              | 132A-0108                                                                                 | 132N-0108                                                                                |
|        | –                     | 1.2598              | 32.00             | 3/16           | 132T-32                                                                                | 132A-32                                                                                   | 132N-32                                                                                  |
|        | –                     | 1.2795              | 32.50             | 3/16           | 132T-32.5                                                                              | 132A-32.5                                                                                 | 132N-32.5                                                                                |
|        | 1-9/32                | 1.2813              | 32.54             | 3/16           | 132T-0109                                                                              | 132A-0109                                                                                 | 132N-0109                                                                                |
|        | –                     | 1.2992              | 33.00             | 3/16           | 132T-33                                                                                | 132A-33                                                                                   | 132N-33                                                                                  |
|        | 1-5/16                | 1.3125              | 33.34             | 3/16           | 132T-0110                                                                              | 132A-0110                                                                                 | 132N-0110                                                                                |
|        | –                     | 1.3189              | 33.50             | 3/16           | 132T-33.5                                                                              | 132A-33.5                                                                                 | 132N-33.5                                                                                |
|        | –                     | 1.3386              | 34.00             | 3/16           | 132T-34                                                                                | 132A-34                                                                                   | 132N-34                                                                                  |
|        | 1-11/32               | 1.3438              | 34.13             | 3/16           | 132T-0111                                                                              | 132A-0111                                                                                 | 132N-0111                                                                                |
|        | –                     | 1.3582              | 34.50             | 3/16           | 132T-34.5                                                                              | 132A-34.5                                                                                 | 132N-34.5                                                                                |
|        | 1-3/8                 | 1.3750              | 34.93             | 3/16           | 132T-0112                                                                              | 132A-0112                                                                                 | 132N-0112                                                                                |
|        | –                     | 1.3780              | 35.00             | 3/16           | 132T-35                                                                                | 132A-35                                                                                   | 132N-35                                                                                  |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 2



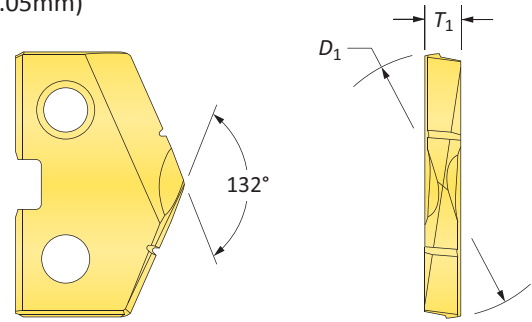
HI, HR, CR, TC, SK,  
NP, IN, RN, CN, AN,  
BR, CI, CP, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 132T-XXXX  | TiAlN = 132A-XXXX  |
| TiCN = 132N-XXXX | AM200® = 132H-XXXX |

## Original T-A Drill Inserts

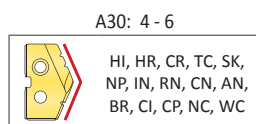
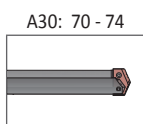
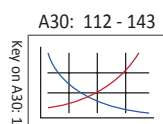
2 Series | Carbide | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



## Carbide Inserts – C2 (K20)

| Series | Fractional Equivalent | Insert     |          |       | Part No.                                                                                |                                                                                           |
|--------|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |
| 2      | –                     | 0.9646     | 24.50    | 3/16  | 1C22T-24.5                                                                              | 1C22A-24.5                                                                                |
|        | 31/32                 | 0.9688     | 24.61    | 3/16  | 1C22T-0031                                                                              | 1C22A-0031                                                                                |
|        | –                     | 0.9760     | 24.79    | 3/16  | 1C22T-.976                                                                              | 1C22A-.976                                                                                |
|        | 63/64                 | 0.9843     | 25.00    | 3/16  | 1C22T-25                                                                                | 1C22A-25                                                                                  |
|        | 1                     | 1.0000     | 25.40    | 3/16  | 1C22T-0100                                                                              | 1C22A-0100                                                                                |
|        | –                     | 1.0039     | 25.50    | 3/16  | 1C22T-25.5                                                                              | 1C22A-25.5                                                                                |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | 1C22T-1.015                                                                             | 1C22A-1.015                                                                               |
|        | –                     | 1.0236     | 26.00    | 3/16  | 1C22T-26                                                                                | 1C22A-26                                                                                  |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | 1C22T-0101                                                                              | 1C22A-0101                                                                                |
|        | –                     | 1.0433     | 26.50    | 3/16  | 1C22T-26.5                                                                              | 1C22A-26.5                                                                                |
|        | 1-3/64                | 1.0469     | 26.59    | 3/16  | 1C22T-1.046                                                                             | 1C22A-1.046                                                                               |
|        | 1-1/16                | 1.0625     | 26.99    | 3/16  | 1C22T-0102                                                                              | 1C22A-0102                                                                                |
|        | –                     | 1.0630     | 27.00    | 3/16  | 1C22T-27                                                                                | 1C22A-27                                                                                  |
|        | –                     | 1.0827     | 27.50    | 3/16  | 1C22T-27.5                                                                              | 1C22A-27.5                                                                                |
|        | 1-3/32                | 1.0938     | 27.78    | 3/16  | 1C22T-0103                                                                              | 1C22A-0103                                                                                |
|        | –                     | 1.1024     | 28.00    | 3/16  | 1C22T-28                                                                                | 1C22A-28                                                                                  |
|        | 1-7/64                | 1.1094     | 28.18    | 3/16  | 1C22T-1.109                                                                             | 1C22A-1.109                                                                               |
|        | –                     | 1.1220     | 28.50    | 3/16  | 1C22T-28.5                                                                              | 1C22A-28.5                                                                                |
|        | 1-1/8                 | 1.1250     | 28.58    | 3/16  | 1C22T-0104                                                                              | 1C22A-0104                                                                                |
|        | –                     | 1.1417     | 29.00    | 3/16  | 1C22T-29                                                                                | 1C22A-29                                                                                  |
| 2.5    | 1-5/32                | 1.1563     | 29.37    | 3/16  | 1C22T-0105                                                                              | 1C22A-0105                                                                                |
|        | –                     | 1.1614     | 29.50    | 3/16  | 1C22T-29.5                                                                              | 1C22A-29.5                                                                                |
|        | –                     | 1.1811     | 30.00    | 3/16  | 1C22T-30                                                                                | 1C22A-30                                                                                  |
|        | 1-3/16                | 1.1875     | 30.16    | 3/16  | 1C22T-0106                                                                              | 1C22A-0106                                                                                |
|        | –                     | 1.2008     | 30.50    | 3/16  | 1C22T-30.5                                                                              | 1C22A-30.5                                                                                |
|        | 1-7/32                | 1.2188     | 30.96    | 3/16  | 1C22T-0107                                                                              | 1C22A-0107                                                                                |
|        | –                     | 1.2205     | 31.00    | 3/16  | 1C22T-31                                                                                | 1C22A-31                                                                                  |
|        | –                     | 1.2260     | 31.14    | 3/16  | 1C22T-1.226                                                                             | 1C22A-1.226                                                                               |
|        | –                     | 1.2310     | 31.26    | 3/16  | 1C22T-1.231                                                                             | 1C22A-1.231                                                                               |
|        | –                     | 1.2340     | 31.34    | 3/16  | 1C22T-1.234                                                                             | 1C22A-1.234                                                                               |
|        | –                     | 1.2402     | 31.50    | 3/16  | 1C22T-31.5                                                                              | 1C22A-31.5                                                                                |
|        | 1-1/4                 | 1.2500     | 31.75    | 3/16  | 1C22T-0108                                                                              | 1C22A-0108                                                                                |
|        | –                     | 1.2598     | 32.00    | 3/16  | 1C22T-32                                                                                | 1C22A-32                                                                                  |
|        | –                     | 1.2795     | 32.50    | 3/16  | 1C22T-32.5                                                                              | 1C22A-32.5                                                                                |
|        | 1-9/32                | 1.2813     | 32.54    | 3/16  | 1C22T-0109                                                                              | 1C22A-0109                                                                                |
|        | –                     | 1.2992     | 33.00    | 3/16  | 1C22T-33                                                                                | 1C22A-33                                                                                  |
|        | 1-5/16                | 1.3125     | 33.34    | 3/16  | 1C22T-0110                                                                              | 1C22A-0110                                                                                |
|        | –                     | 1.3189     | 33.50    | 3/16  | 1C22T-33.5                                                                              | 1C22A-33.5                                                                                |
|        | –                     | 1.3386     | 34.00    | 3/16  | 1C22T-34                                                                                | 1C22A-34                                                                                  |
|        | 1-11/32               | 1.3438     | 34.13    | 3/16  | 1C22T-0111                                                                              | 1C22A-0111                                                                                |
|        | –                     | 1.3582     | 34.50    | 3/16  | 1C22T-34.5                                                                              | 1C22A-34.5                                                                                |
|        | 1-3/8                 | 1.3750     | 34.93    | 3/16  | 1C22T-0112                                                                              | 1C22A-0112                                                                                |
|        | –                     | 1.3780     | 35.00    | 3/16  | 1C22T-35                                                                                | 1C22A-35                                                                                  |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

|                   |                     |
|-------------------|---------------------|
| TiN = 1C22T-XXXX  | TiAlN = 1C22A-XXXX  |
| TiCN = 1C22N-XXXX | AM200® = 1C22H-XXXX |

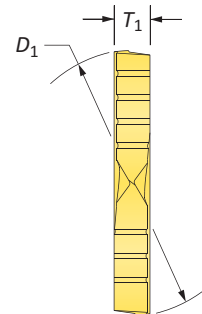
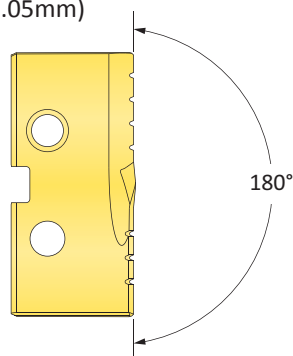


## Original T-A Drill Inserts

2 Series | Carbide | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



Flat Bottom

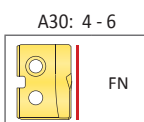
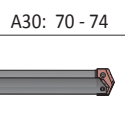
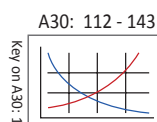


### Carbide Inserts – C2 (K20)

| Series | Fractional Equivalent | Insert     |          |       | Flat Bottom Part No. |
|--------|-----------------------|------------|----------|-------|----------------------|
|        |                       | $D_1$ inch | $D_1$ mm | $T_1$ |                      |
| 2      | –                     | 0.9646     | 24.50    | 3/16  | 1C22T-24.5-FB        |
|        | 31/32                 | 0.9688     | 24.61    | 3/16  | 1C22T-0031-FB        |
|        | –                     | 0.9760     | 24.79    | 3/16  | 1C22T-.976-FB        |
|        | 63/64                 | 0.9843     | 25.00    | 3/16  | 1C22T-25-FB          |
|        | 1                     | 1.0000     | 25.40    | 3/16  | 1C22T-0100-FB        |
|        | –                     | 1.0039     | 25.50    | 3/16  | 1C22T-25.5-FB        |
|        | 1-1/64                | 1.0156     | 25.80    | 3/16  | 1C22T-1.015-FB       |
|        | –                     | 1.0236     | 26.00    | 3/16  | 1C22T-26-FB          |
|        | 1-1/32                | 1.0313     | 26.19    | 3/16  | 1C22T-0101-FB        |
|        | –                     | 1.0433     | 26.50    | 3/16  | 1C22T-26.5-FB        |
|        | 1-3/64                | 1.0469     | 26.59    | 3/16  | 1C22T-1.046-FB       |
|        | 1-1/16                | 1.0625     | 26.99    | 3/16  | 1C22T-0102-FB        |
|        | –                     | 1.0630     | 27.00    | 3/16  | 1C22T-27-FB          |
|        | –                     | 1.0827     | 27.50    | 3/16  | 1C22T-27.5-FB        |
|        | 1-3/32                | 1.0938     | 27.78    | 3/16  | 1C22T-0103-FB        |
|        | –                     | 1.1024     | 28.00    | 3/16  | 1C22T-28-FB          |
|        | 1-7/64                | 1.1094     | 28.18    | 3/16  | 1C22T-1.109-FB       |
|        | –                     | 1.1220     | 28.50    | 3/16  | 1C22T-28.5-FB        |
|        | 1-1/8                 | 1.1250     | 28.58    | 3/16  | 1C22T-0104-FB        |
|        | –                     | 1.1417     | 29.00    | 3/16  | 1C22T-29-FB          |
| 2.5    | 1-5/32                | 1.1563     | 29.37    | 3/16  | 1C22T-0105-FB        |
|        | –                     | 1.1614     | 29.50    | 3/16  | 1C22T-29.5-FB        |
|        | –                     | 1.1811     | 30.00    | 3/16  | 1C22T-30-FB          |
|        | 1-3/16                | 1.1875     | 30.16    | 3/16  | 1C22T-0106-FB        |
|        | –                     | 1.2008     | 30.50    | 3/16  | 1C22T-30.5-FB        |
|        | 1-7/32                | 1.2188     | 30.96    | 3/16  | 1C22T-0107-FB        |
|        | –                     | 1.2205     | 31.00    | 3/16  | 1C22T-31-FB          |
|        | –                     | 1.2260     | 31.14    | 3/16  | 1C22T-1.226-FB       |
|        | –                     | 1.2310     | 31.26    | 3/16  | 1C22T-1.231-FB       |
|        | –                     | 1.2340     | 31.34    | 3/16  | 1C22T-1.234-FB       |
|        | –                     | 1.2402     | 31.50    | 3/16  | 1C22T-31.5-FB        |
|        | 1-1/4                 | 1.2500     | 31.75    | 3/16  | 1C22T-0108-FB        |
|        | –                     | 1.2598     | 32.00    | 3/16  | 1C22T-32-FB          |
|        | –                     | 1.2795     | 32.50    | 3/16  | 1C22T-32.5-FB        |
|        | 1-9/32                | 1.2813     | 32.54    | 3/16  | 1C22T-0109-FB        |
|        | –                     | 1.2992     | 33.00    | 3/16  | 1C22T-33-FB          |
|        | 1-5/16                | 1.3125     | 33.34    | 3/16  | 1C22T-0110-FB        |
|        | –                     | 1.3189     | 33.50    | 3/16  | 1C22T-33.5-FB        |
|        | –                     | 1.3386     | 34.00    | 3/16  | 1C22T-34-FB          |
|        | 1-11/32               | 1.3438     | 34.13    | 3/16  | 1C22T-0111-FB        |
|        | –                     | 1.3582     | 34.50    | 3/16  | 1C22T-34.5-FB        |
|        | 1-3/8                 | 1.3750     | 34.93    | 3/16  | 1C22T-0112-FB        |
|        | –                     | 1.3780     | 35.00    | 3/16  | 1C22T-35-FB          |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Inserts sold in quantities of 1

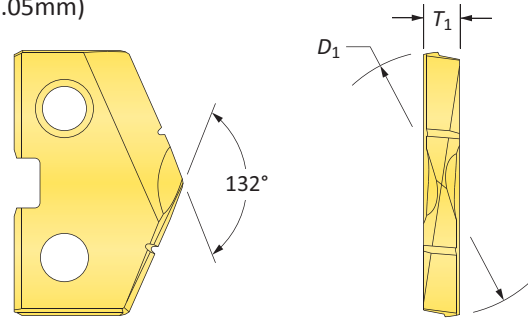


Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                   |                     |
|-------------------|---------------------|
| TiN = 1C22T-XXXX  | TiAlN = 1C22A-XXXX  |
| TiCN = 1C22N-XXXX | AM200® = 1C22H-XXXX |

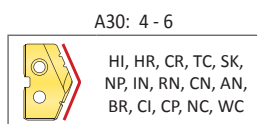
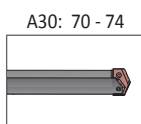
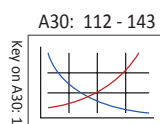
## Original T-A Drill Inserts

2 Series | Carbide | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



Carbide Inserts – C5 (P40) | C3 (K10) | N2

| Series | Insert                |                     |                   |                | C5 Part No. |             | C3 Part No.       | N2 Part No.  |
|--------|-----------------------|---------------------|-------------------|----------------|-------------|-------------|-------------------|--------------|
|        | Fractional Equivalent | D <sub>1</sub> inch | D <sub>1</sub> mm | T <sub>1</sub> | TiN         | TiAlN       | TiAlN (Cast Iron) | Diamond Film |
| 2      | –                     | 0.9646              | 24.50             | 3/16           | 1C52T-24.5  | 1C52A-24.5  | 1C32A-24.5-CI     | 1N22D-24.5   |
|        | 31/32                 | 0.9688              | 24.61             | 3/16           | 1C52T-0031  | 1C52A-0031  | 1C32A-0031-CI     | 1N22D-0031   |
|        | –                     | 0.9760              | 24.79             | 3/16           | 1C52T-.976  | 1C52A-.976  | 1C32A-.976-CI     | 1N22D-.976   |
|        | 63/64                 | 0.9843              | 25.00             | 3/16           | 1C52T-25    | 1C52A-25    | 1C32A-25-CI       | 1N22D-25     |
|        | 1                     | 1.0000              | 25.40             | 3/16           | 1C52T-0100  | 1C52A-0100  | 1C32A-0100-CI     | 1N22D-0100   |
|        | –                     | 1.0039              | 25.50             | 3/16           | 1C52T-25.5  | 1C52A-25.5  | 1C32A-25.5-CI     | 1N22D-25.5   |
|        | 1-1/64                | 1.0156              | 25.80             | 3/16           | 1C52T-1.015 | 1C52A-1.015 | 1C32A-1.015-CI    | 1N22D-1.015  |
|        | –                     | 1.0236              | 26.00             | 3/16           | 1C52T-26    | 1C52A-26    | 1C32A-26-CI       | 1N22D-26     |
|        | 1-1/32                | 1.0313              | 26.19             | 3/16           | 1C52T-0101  | 1C52A-0101  | 1C32A-0101-CI     | 1N22D-0101   |
|        | –                     | 1.0433              | 26.50             | 3/16           | 1C52T-26.5  | 1C52A-26.5  | 1C32A-26.5-CI     | 1N22D-26.5   |
|        | 1-3/64                | 1.0469              | 26.59             | 3/16           | 1C52T-1.046 | 1C52A-1.046 | 1C32A-1.046-CI    | 1N22D-1.046  |
|        | 1-1/16                | 1.0625              | 26.99             | 3/16           | 1C52T-0102  | 1C52A-0102  | 1C32A-0102-CI     | 1N22D-0102   |
|        | –                     | 1.0630              | 27.00             | 3/16           | 1C52T-27    | 1C52A-27    | 1C32A-27-CI       | 1N22D-27     |
|        | –                     | 1.0827              | 27.50             | 3/16           | 1C52T-27.5  | 1C52A-27.5  | 1C32A-27.5-CI     | 1N22D-27.5   |
|        | 1-3/32                | 1.0938              | 27.78             | 3/16           | 1C52T-0103  | 1C52A-0103  | 1C32A-0103-CI     | 1N22D-0103   |
|        | –                     | 1.1024              | 28.00             | 3/16           | 1C52T-28    | 1C52A-28    | 1C32A-28-CI       | 1N22D-28     |
|        | 1-7/64                | 1.1094              | 28.18             | 3/16           | 1C52T-1.109 | 1C52A-1.109 | 1C32A-1.109-CI    | 1N22D-1.109  |
|        | –                     | 1.1220              | 28.50             | 3/16           | 1C52T-28.5  | 1C52A-28.5  | 1C32A-28.5-CI     | 1N22D-28.5   |
|        | 1-1/8                 | 1.1250              | 28.58             | 3/16           | 1C52T-0104  | 1C52A-0104  | 1C32A-0104-CI     | 1N22D-0104   |
|        | –                     | 1.1417              | 29.00             | 3/16           | 1C52T-29    | 1C52A-29    | 1C32A-29-CI       | 1N22D-29     |
|        | 1-5/32                | 1.1563              | 29.37             | 3/16           | 1C52T-0105  | 1C52A-0105  | 1C32A-0105-CI     | 1N22D-0105   |
| 2.5    | –                     | 1.1614              | 29.50             | 3/16           | 1C52T-29.5  | 1C52A-29.5  | 1C32A-29.5-CI     | 1N22D-29.5   |
|        | –                     | 1.1811              | 30.00             | 3/16           | 1C52T-30    | 1C52A-30    | 1C32A-30-CI       | 1N22D-30     |
|        | 1-3/16                | 1.1875              | 30.16             | 3/16           | 1C52T-0106  | 1C52A-0106  | 1C32A-0106-CI     | 1N22D-0106   |
|        | –                     | 1.2008              | 30.50             | 3/16           | 1C52T-30.5  | 1C52A-30.5  | 1C32A-30.5-CI     | 1N22D-30.5   |
|        | 1-7/32                | 1.2188              | 30.96             | 3/16           | 1C52T-0107  | 1C52A-0107  | 1C32A-0107-CI     | 1N22D-0107   |
|        | –                     | 1.2205              | 31.00             | 3/16           | 1C52T-31    | 1C52A-31    | 1C32A-31-CI       | 1N22D-31     |
|        | –                     | 1.2260              | 31.14             | 3/16           | 1C52T-1.226 | 1C52A-1.226 | 1C32A-1.226-CI    | 1N22D-1.226  |
|        | –                     | 1.2310              | 31.26             | 3/16           | 1C52T-1.231 | 1C52A-1.231 | 1C32A-1.231-CI    | 1N22D-1.231  |
|        | –                     | 1.2340              | 31.34             | 3/16           | 1C52T-1.234 | 1C52A-1.234 | 1C32A-1.234-CI    | 1N22D-1.234  |
|        | –                     | 1.2402              | 31.50             | 3/16           | 1C52T-31.5  | 1C52A-31.5  | 1C32A-31.5-CI     | 1N22D-31.5   |
|        | 1-1/4                 | 1.2500              | 31.75             | 3/16           | 1C52T-0108  | 1C52A-0108  | 1C32A-0108-CI     | 1N22D-0108   |
|        | –                     | 1.2598              | 32.00             | 3/16           | 1C52T-32    | 1C52A-32    | 1C32A-32-CI       | 1N22D-32     |
|        | –                     | 1.2795              | 32.50             | 3/16           | 1C52T-32.5  | 1C52A-32.5  | 1C32A-32.5-CI     | 1N22D-32.5   |
|        | 1-9/32                | 1.2813              | 32.54             | 3/16           | 1C52T-0109  | 1C52A-0109  | 1C32A-0109-CI     | 1N22D-0109   |
|        | –                     | 1.2992              | 33.00             | 3/16           | 1C52T-33    | 1C52A-33    | 1C32A-33-CI       | 1N22D-33     |
|        | 1-5/16                | 1.3125              | 33.34             | 3/16           | 1C52T-0110  | 1C52A-0110  | 1C32A-0110-CI     | 1N22D-0110   |
|        | –                     | 1.3189              | 33.50             | 3/16           | 1C52T-33.5  | 1C52A-33.5  | 1C32A-33.5-CI     | 1N22D-33.5   |
|        | –                     | 1.3386              | 34.00             | 3/16           | 1C52T-34    | 1C52A-34    | 1C32A-34-CI       | 1N22D-34     |
|        | 1-11/32               | 1.3438              | 34.13             | 3/16           | 1C52T-0111  | 1C52A-0111  | 1C32A-0111-CI     | 1N22D-0111   |
|        | –                     | 1.3582              | 34.50             | 3/16           | 1C52T-34.5  | 1C52A-34.5  | 1C32A-34.5-CI     | 1N22D-34.5   |
|        | 1-3/8                 | 1.3750              | 34.93             | 3/16           | 1C52T-0112  | 1C52A-0112  | 1C32A-0112-CI     | 1N22D-0112   |
|        | –                     | 1.3780              | 35.00             | 3/16           | 1C52T-35    | 1C52A-35    | 1C32A-35-CI       | 1N22D-35     |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

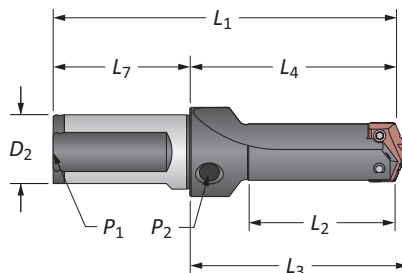
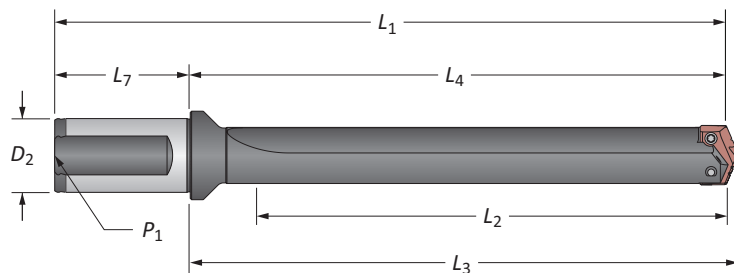
Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

Inserts sold in quantities of 1

|                   |                     |
|-------------------|---------------------|
| TiN = 1C52T-XXXX  | TiAlN = 1C52A-XXXX  |
| TiCN = 1C52N-XXXX | AM200® = 1C52H-XXXX |

## T-A Drill Insert Holders

2 Series | Flange Shank | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



Stub Length

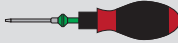
### Straight Flute

| Series | Length       | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|        |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| 2      | Stub         | 2-1/4          | 3-31/64        | 3-5/8          | 5-49/64        | 1-1/4          | 2-9/32         | 1/4            | 21020S-125F |
|        | Short        | 3-5/8          | 5-1/16         | 5-13/64        | 7-11/32        | 1-1/4          | 2-9/32         | 1/4            | 22020S-125F |
|        | Intermediate | 5-3/8          | 7-1/16         | 7-13/64        | 9-11/32        | 1-1/4          | 2-9/32         | 1/4            | 23020S-125F |
|        | Standard     | 7-3/8          | 9-1/16         | 9-13/64        | 11-11/32       | 1-1/4          | 2-9/32         | 1/4            | 24020S-125F |
|        | Extended     | 11-3/8         | 13-1-16        | 13-13/64       | 15-11/32       | 1-1/4          | 2-9/32         | 1/4            | 25020S-125F |
| 2.5    | Stub         | 3-5/8          | 4-55/64        | 5              | 7-9/64         | 1-1/4          | 2-9/32         | 1/4            | 21025S-125F |
|        | Short        | 3-5/8          | 5-1/16         | 5-13/64        | 7-11/32        | 1-1/4          | 2-9/32         | 1/4            | 22025S-125F |
|        | Intermediate | 5-3/8          | 7-1/16         | 7-13/64        | 9-11/32        | 1-1/4          | 2-9/32         | 1/4            | 23025S-125F |
|        | Standard     | 7-3/8          | 9-1/16         | 9-13/64        | 11-11/32       | 1-1/4          | 2-9/32         | 1/4            | 24025S-125F |
|        | Extended     | 11-3/8         | 13-1-16        | 13-13/64       | 15-11/32       | 1-1/4          | 2-9/32         | 1/4            | 25025S-125F |
| m      | Stub         | 57.2           | 88.5           | 92.1           | 148.5          | 32.0           | 60.0           | 1/4*           | 21020S-32FM |
|        | Short        | 85.7           | 128.6          | 132.2          | 188.6          | 32.0           | 60.0           | 1/4*           | 22020S-32FM |
|        | XL           | 511.0          | 554.1          | 557.7          | 614.1          | 32.0           | 60.0           | 1/4*           | 27020S-32FM |
|        | 3XL          | 692.0          | 735.1          | 738.7          | 795.1          | 32.0           | 60.0           | 1/4*           | 29020S-32FM |
|        | Stub         | 92.1           | 123.4          | 127.0          | 183.4          | 32.0           | 60.0           | 1/4*           | 21025S-32FM |
|        | Short        | 85.7           | 128.6          | 132.2          | 188.6          | 32.0           | 60.0           | 1/4*           | 22025S-32FM |

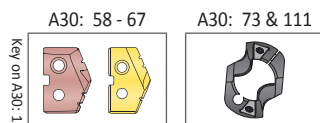
\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/8" side pipe tap (P<sub>2</sub>)

### Connection Accessories

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------|
|  |  |  |  |  | <b>Admissible Tightening Torque*</b> |
| 7495-IP15-1                                                                         | 7495N-IP15-1                                                                        | 8IP-15                                                                              | 8IP-15TL                                                                            | 8IP-15B                                                                               | 61.0 in-lbs (690 N-cm)               |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

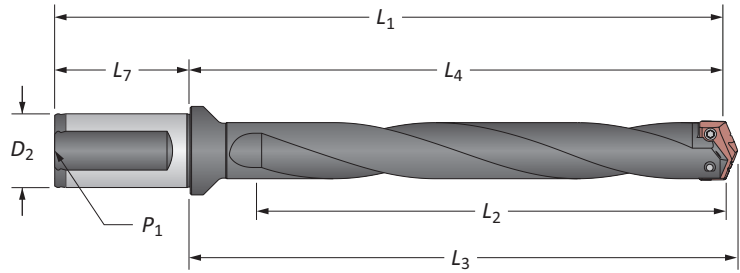
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

2 Series | Flange Shank | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



## Helical Flute

|        |     |               | Body           |                |                |                | Shank          |                |                |               |
|--------|-----|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Series |     | Length        | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> | Part No.      |
| i      | 2   | Intermediate  | 5-3/8          | 7-1/16         | 7-13/64        | 9-11/32        | 1-1/4          | 2-9/32         | 1/4            | 23020H-125F   |
|        |     | Standard      | 7-3/8          | 9-1/16         | 9-13/64        | 11-11/32       | 1-1/4          | 2-9/32         | 1/4            | 24020H-125F   |
|        |     | Standard Plus | 9-3/8          | 11-1/16        | 11-13/64       | 13-31/64       | 1-1/4          | 2-9/32         | 1/4            | 24520H-125F   |
|        |     | Extended      | 11-3/8         | 13-1/16        | 13-13/64       | 15-11/32       | 1-1/4          | 2-9/32         | 1/4            | ⚠ 25020H-125F |
|        |     | Long          | 16-1/8         | 17-53/64       | 7-31/32        | 20-1/4         | 1-1/4          | 2-9/32         | 1/4            | ⚠ 26020H-125F |
|        | 2.5 | Intermediate  | 5-3/8          | 7-1/16         | 7-13/64        | 9-11/32        | 1-1/4          | 2-9/32         | 1/4            | 23025H-125F   |
|        |     | Standard      | 7-3/8          | 9-1/16         | 9-13/64        | 11-11/32       | 1-1/4          | 2-9/32         | 1/4            | 24025H-125F   |
|        |     | Extended      | 11-3/8         | 13-1/16        | 13-13/64       | 15-11/32       | 1-1/4          | 2-9/32         | 1/4            | ⚠ 25025H-125F |
|        |     |               |                |                |                |                |                |                |                |               |
| m      | 2   | Intermediate  | 136.5          | 179.4          | 183.0          | 239.4          | 32.0           | 60.0           | 1/4*           | 23020H-32FM   |
|        |     | Standard      | 187.3          | 230.2          | 233.8          | 290.2          | 32.0           | 60.0           | 1/4*           | 24020H-32FM   |
|        |     | Standard Plus | 238.0          | 280.9          | 284.5          | 340.9          | 32.0           | 60.0           | 1/4*           | 24520H-32FM   |
|        |     | Extended      | 288.9          | 331.8          | 335.4          | 391.8          | 32.0           | 60.0           | 1/4*           | ⚠ 25020H-32FM |
|        |     | Long          | 410.0          | 452.9          | 456.5          | 512.9          | 32.0           | 60.0           | 1/4*           | ⚠ 26020H-32FM |
|        | 2.5 | Intermediate  | 136.5          | 179.4          | 183.0          | 239.4          | 32.0           | 60.0           | 1/4*           | 23025H-32FM   |
|        |     | Standard      | 187.3          | 230.2          | 233.8          | 290.2          | 32.0           | 60.0           | 1/4*           | 24025H-32FM   |
|        |     | Extended      | 288.9          | 331.8          | 335.4          | 391.8          | 32.0           | 60.0           | 1/4*           | ⚠ 25025H-32FM |

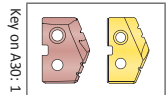
\*Metric thread to BSP and ISO 7-1

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7495-IP15-1   | 7495N-IP15-1         | 8IP-15        | 8IP-15TL                  | 8IP-15B          | 61.0 in-lbs (690 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

A30: 58 - 67



i = Imperial (in)

m = Metric (mm)

Screws sold in quantities of 10

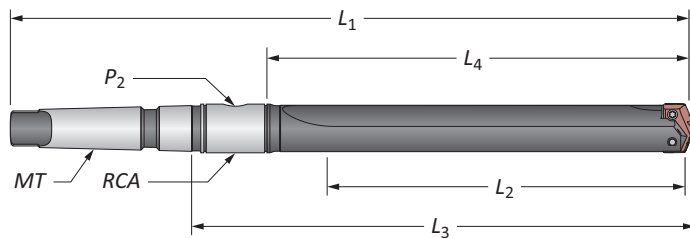
**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.





## T-A Drill Insert Holders

2 Series | Taper Shank | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



### Straight Flute

| Series | Length       | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|        |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| 2      | Short        | 3-3/8          | 4-1/2          | 6-15/64        | 9-25/32        | #3    | 1/8            | 2T-3SR  | 22020S-003I |
|        | Short        | 3-3/8          | 4-1/2          | 6-19/64        | 10-25/32       | #4    | 1/8            | 2T-3SR  | 22020S-004I |
|        | Intermediate | 5-3/8          | 6-1/2          | 8-19/64        | 12-25/32       | #4    | 1/8            | 2T-3SR  | 23020S-004I |
|        | Standard     | 7-3/8          | 8-1/2          | 10-15/64       | 13-25/32       | #3    | 1/8            | 2T-3SR  | 24020S-003I |
|        | Standard     | 7-3/8          | 8-1/2          | 10-19/64       | 14-25/32       | #4    | 1/8            | 2T-3SR  | 24020S-004I |
| 2.5    | Extended     | 11-3/8         | 12-1/2         | 14-15/64       | 18-25/32       | #4    | 1/4            | 2T-3SR  | 25020S-004I |
|        | Short        | 3-3/8          | 4-1/2          | 6-15/64        | 9-25/32        | #3    | 1/8            | 2T-3SR  | 22025S-003I |
|        | Short        | 3-3/8          | 4-1/2          | 6-37/64        | 11-1/16        | #4    | 1/4            | 2T-4SR  | 22025S-004I |
|        | Intermediate | 5-3/8          | 6-1/2          | 8-37/64        | 13-1/16        | #4    | 1/4            | 2T-4SR  | 23025S-004I |
|        | Standard     | 7-3/8          | 8-1/2          | 10-15/64       | 13-25/32       | #3    | 1/8            | 2T-3SR  | 24025S-003I |
| m      | Standard     | 7-3/8          | 8-1/2          | 10-37/64       | 15-1/16        | #4    | 1/8            | 2T-4SR  | 24025S-004I |
|        | Extended     | 11-3/8         | 12-1/2         | 14-37/64       | 19-1/16        | #4    | 1/4            | 2T-4SR  | 25025S-004I |
|        | Short        | 69.8           | 98.4           | 142.5          | 232.5          | #4**  | 1/8*           | 2T-3SRM | 22020S-004M |
| m      | Short        | 69.8           | 98.4           | 142.5          | 232.5          | #4**  | 1/8*           | 2T-4SRM | 22025S-004M |

\*Metric thread to BSP and ISO 7-1

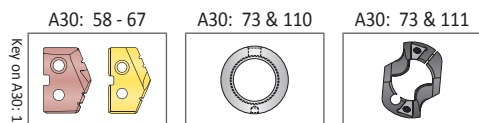
\*\*Per ISO 296 type BEK

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7495-IP15-1   | 7495N-IP15-1         | 8IP-15        | 8IP-15TL                  | 8IP-15B          | 61.0 in-lbs (690 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

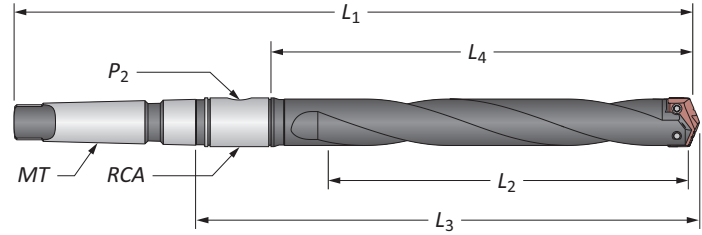
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

2 Series | Taper Shank | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



## Helical Flute

| Series |     | Length       | Body           |                |                |                | Shank |                |         | Part No.      |
|--------|-----|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|---------------|
|        |     |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |               |
| i      | 2   | Intermediate | 5-3/8          | 6-1/2          | 8-19/64        | 12-25/32       | #4    | 1/8            | 2T-3SR  | 23020H-004I   |
|        |     | Standard     | 7-3/8          | 8-1/2          | 10-15/64       | 13-25/32       | #3    | 1/8            | 2T-3SR  | 24020H-003I   |
|        |     | Standard     | 7-3/8          | 8-1/2          | 10-19/64       | 14-25/32       | #4    | 1/8            | 2T-3SR  | 24020H-004I   |
|        |     | Extended     | 11-3/8         | 12-1/2         | 14-15/64       | 18-25/32       | #4    | 1/8            | 2T-3SR  | ⚠ 25020H-004I |
|        | 2.5 | Intermediate | 5-3/8          | 6-1/2          | 8-37/64        | 13-1/16        | #4    | 1/4            | 2T-4SR  | 23025H-004I   |
|        |     | Standard     | 7-3/8          | 8-1/2          | 10-15/64       | 13-25/32       | #3    | 1/8            | 2T-3SR  | 24025H-003I   |
|        |     | Standard     | 7-3/8          | 8-1/2          | 10-37/64       | 15-1/6         | #4    | 1/4            | 2T-4SR  | 24025H-004I   |
|        |     | Extended     | 11-3/8         | 12-1/2         | 14-37/64       | 19-1/16        | #4    | 1/4            | 2T-4SR  | ⚠ 25025H-004I |
| m      | 2   | Intermediate | 136.5          | 165.1          | 211.2          | 324.6          | #4**  | 1/8*           | 2T-3SRM | 23020H-004M   |
|        |     | Standard     | 187.3          | 215.9          | 262.0          | 375.4          | #4**  | 1/8*           | 2T-3SRM | 24020H-004M   |
|        |     | Extended     | 289.0          | 317.5          | 363.6          | 477.0          | #4**  | 1/8*           | 2T-3SRM | ⚠ 25020H-004M |
|        | 2.5 | Intermediate | 136.5          | 165.1          | 218.4          | 331.8          | #4**  | 1/4*           | 2T-4SRM | 23025H-004M   |
|        |     | Standard     | 187.3          | 215.9          | 269.2          | 382.6          | #4**  | 1/4*           | 2T-4SRM | 24025H-004M   |
|        |     | Extended     | 289.0          | 317.5          | 370.8          | 484.2          | #4**  | 1/4*           | 2T-4SRM | ⚠ 25025H-004M |

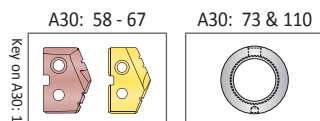
\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7495-IP15-1   | 7495N-IP15-1         | 8IP-15        | 8IP-15TL                  | 8IP-15B          | 61.0 in-lbs (690 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

m = Metric (mm)

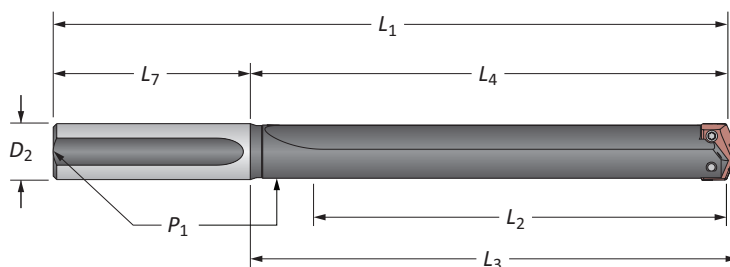
Screws sold in quantities of 10

**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

2 Series | Straight Shank | Diameter Range: 0.961" - 1.380" (24.41mm - 35.05mm)



### Straight Flute

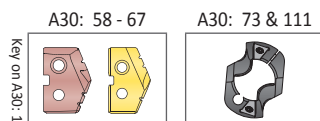
| Series | Length       | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|        |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| 2      | Short        | 3-3/8          | 4-1/2          | 4-41/64        | 8              | 1              | 3-1/2          | 1/8            | 22020S-100L |
|        | Short        | 3-3/8          | 4-1/2          | 4-41/64        | 8              | 1-1/4          | 3-1/2          | 1/8            | 22020S-125L |
|        | Intermediate | 5-3/8          | 6-1/2          | 6-41/64        | 10             | 1-1/4          | 3-1/2          | 1/8            | 23020S-125L |
|        | Standard     | 7-3/8          | 8-1/2          | 8-41/64        | 12             | 1              | 3-1/2          | 1/8            | 24020S-100L |
|        | Standard     | 7-3/8          | 8-1/2          | 8-41/64        | 12             | 1-1/4          | 3-1/2          | 1/8            | 24020S-125L |
|        | Extended     | 11-3/8         | 12-1/2         | 12-41/64       | 16             | 1-1/4          | 3-1/2          | 1/8            | 25020S-125L |
|        | XL           | 20-1/8         | 21-1/4         | 21-25/64       | 24-3/4         | 1-1/4          | 3-1/2          | 1/8            | 27020S-125L |
| 2.5    | 3XL          | 27-1/4         | 28-3/8         | 28-33/64       | 31-7/8         | 1-1/4          | 3-1/2          | 1/8            | 29020S-125L |
|        | Short        | 3-3/8          | 4-1/2          | 4-41/64        | 8              | 1              | 3-1/2          | 1/8*           | 22025S-100L |
|        | Short        | 3-3/8          | 4-1/2          | 4-41/64        | 8              | 1-1/4          | 3-1/2          | 1/8*           | 22025S-125L |
|        | Intermediate | 5-3/8          | 6-1/2          | 6-41/64        | 10             | 1-1/4          | 3-1/2          | 1/8*           | 23025S-125L |
|        | Standard     | 7-3/8          | 8-1/2          | 8-41/64        | 12             | 1              | 3-1/2          | 1/8*           | 24025S-100L |
|        | Standard     | 7-3/8          | 8-1/2          | 8-41/64        | 12             | 1-1/4          | 3-1/2          | 1/8*           | 24025S-125L |
|        | Extended     | 11-3/8         | 12-1/2         | 12-41/64       | 16             | 1-1/4          | 3-1/2          | 1/8*           | 25025S-125L |

**NOTE:** 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7495-IP15-1   | 7495N-IP15-1         | 8IP-15        | 8IP-15TL                  | 8IP-15B          | 61.0 in-lbs (690 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



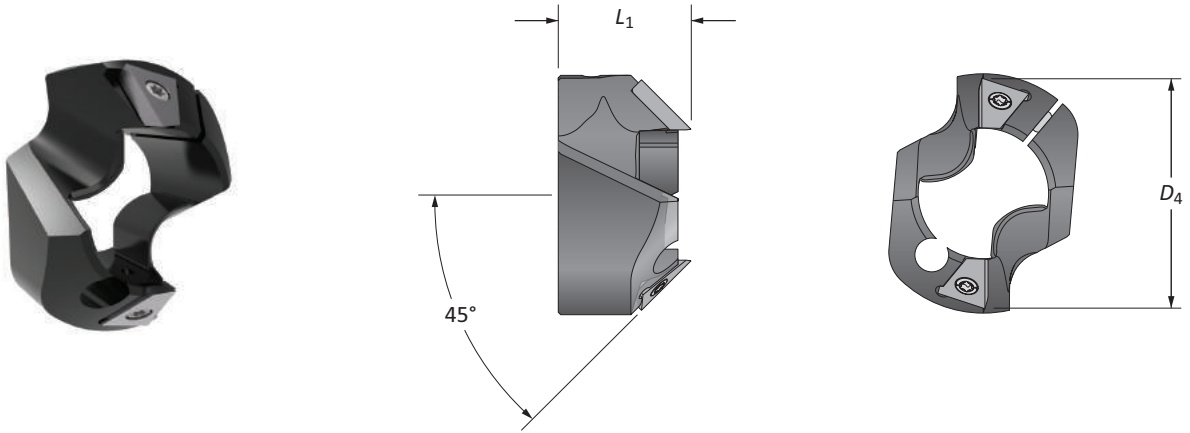
i = Imperial (in)  
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Accessories

2 Series | Chamfer Rings | Rotary Coolant Adapters | Torx® Plus Screws

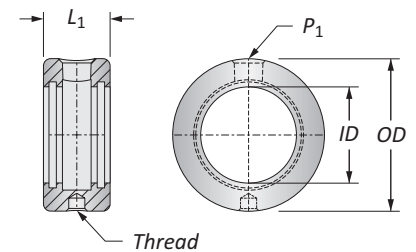


T-ACR 45 Chamfer Ring

| Holder Series | D <sub>1</sub> Range | Chamfer Ring   |                | Part No.          | Insert Part No. | Insert Screw | Insert Driver | Clamping Screw | Insert Driver |
|---------------|----------------------|----------------|----------------|-------------------|-----------------|--------------|---------------|----------------|---------------|
|               |                      | D <sub>4</sub> | L <sub>1</sub> |                   |                 |              |               |                |               |
| 2             | 0.9610 - 1.3800      | 1-9/16         | 1              | <b>T-ACR-45-2</b> | T-ACRI-45-B-C5A | 7255-IP8-1   | 8IP-8         | 7514-IP20-1    | 8IP-20        |

## Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No.       | RCA O-Rings    |              |
|---|-------|-------|----------------|--------------------|----------------|----------------|----------------|--------------|
|   |       |       |                |                    |                |                | Kit Part No.** | Replacements |
| i | 1     | 2-1/8 | 1-1/8          | 5/16-18            | 1/8            | <b>2T-3SR</b>  | 2T1-3SR        | 2T1-3OR-10   |
|   | 1-1/4 | 2-1/2 | 1-3/8          | 3/8-16             | 1/4            | <b>2T-4SR</b>  | 2T1-4SR        | 2T1-4OR-10   |
| m | 25.40 | 53.97 | 28.57          | M8 x 1.25          | 1/8*           | <b>2T-3SRM</b> | 2T1-3SR        | 2T1-3OR-10   |
|   | 31.75 | 63.50 | 34.92          | M10 x 1.50         | 1/4*           | <b>2T-4SRM</b> | 2T1-4SR        | 2T1-4OR-10   |



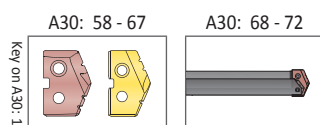
\*Thread to BSP and ISO 7-1

\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

▲ Refer to page A30: 110 for proper RCA assembly and safety information

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7495-IP15-1   | 7495N-IP15-1         | 8IP-15        | 8IP-15TL                  | 8IP-15B          | 61.0 in-lbs (690 N-cm)        |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

m = Metric (mm)

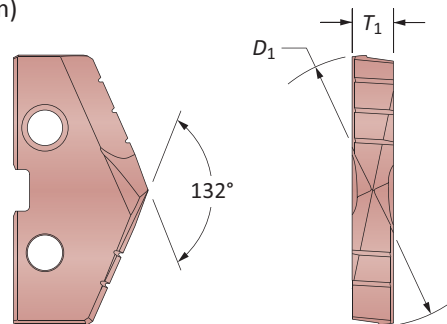
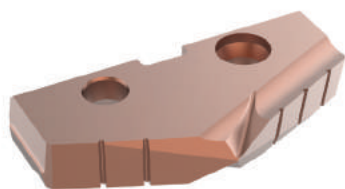
Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

**WARNING** RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.

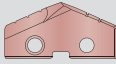


## GEN2 T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



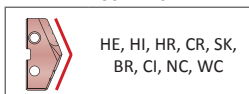
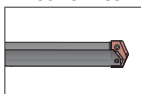
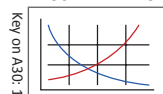
### HSS Inserts – Premium Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                   |                                                                                         |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  AM200® |  TiN |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 483H-0113                                                                                  | 483T-0113                                                                               |
| –                     | 1.4173     | 36.00    | 1/4   | 483H-36                                                                                    | 483T-36                                                                                 |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 483H-0114                                                                                  | 483T-0114                                                                               |
| –                     | 1.4567     | 37.00    | 1/4   | 483H-37                                                                                    | 483T-37                                                                                 |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 483H-0115                                                                                  | 483T-0115                                                                               |
| –                     | 1.4961     | 38.00    | 1/4   | 483H-38                                                                                    | 483T-38                                                                                 |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 483H-0116                                                                                  | 483T-0116                                                                               |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 483H-0117                                                                                  | 483T-0117                                                                               |
| –                     | 1.5354     | 39.00    | 1/4   | 483H-39                                                                                    | 483T-39                                                                                 |
| –                     | 1.5470     | 39.29    | 1/4   | 483H-1.547                                                                                 | 483T-1.547                                                                              |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 483H-0118                                                                                  | 483T-0118                                                                               |
| –                     | 1.5748     | 40.00    | 1/4   | 483H-40                                                                                    | 483T-40                                                                                 |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 483H-0119                                                                                  | 483T-0119                                                                               |
| –                     | 1.6142     | 41.00    | 1/4   | 483H-41                                                                                    | 483T-41                                                                                 |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 483H-0120                                                                                  | 483T-0120                                                                               |
| –                     | 1.6535     | 42.00    | 1/4   | 483H-42                                                                                    | 483T-42                                                                                 |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 483H-0121                                                                                  | 483T-0121                                                                               |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 483H-0122                                                                                  | 483T-0122                                                                               |
| –                     | 1.6929     | 43.00    | 1/4   | 483H-43                                                                                    | 483T-43                                                                                 |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 483H-0123                                                                                  | 483T-0123                                                                               |
| –                     | 1.7323     | 44.00    | 1/4   | 483H-44                                                                                    | 483T-44                                                                                 |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 483H-0124                                                                                  | 483T-0124                                                                               |
| –                     | 1.7717     | 45.00    | 1/4   | 483H-45                                                                                    | 483T-45                                                                                 |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 483H-0125                                                                                  | 483T-0125                                                                               |
| –                     | 1.7913     | 45.50    | 1/4   | 483H-45.5                                                                                  | 483T-45.5                                                                               |
| –                     | 1.7970     | 45.64    | 1/4   | 483H-1.797                                                                                 | 483T-1.797                                                                              |
| –                     | 1.8110     | 46.00    | 1/4   | 483H-46                                                                                    | 483T-46                                                                                 |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 483H-0126                                                                                  | 483T-0126                                                                               |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 483H-0127                                                                                  | 483T-0127                                                                               |
| –                     | 1.8504     | 47.00    | 1/4   | 483H-47                                                                                    | 483T-47                                                                                 |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 483H-0128                                                                                  | 483T-0128                                                                               |

A30: 112 - 143

A30: 82 - 85

A30: 4 - 6



HE, HI, HR, CR, SK,  
BR, CI, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

TiN = 483T-XXXX

TiAlN = 483A-XXXX

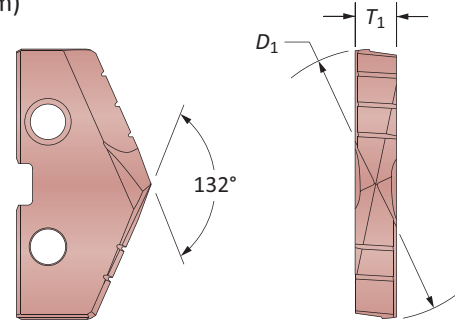
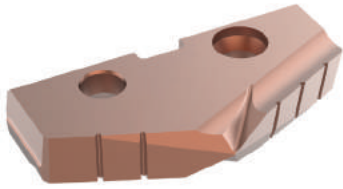
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AM200® = 483H-XXXX

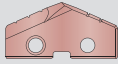
Inserts sold in quantities of 1

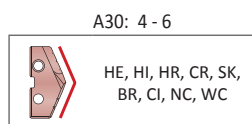
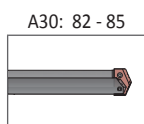
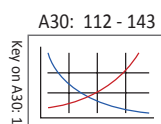
## GEN2 T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



## HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                   |                                                                                         |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  AM200® |  TiN |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 453H-0113                                                                                  | 453T-0113                                                                               |
| –                     | 1.4173     | 36.00    | 1/4   | 453H-36                                                                                    | 453T-36                                                                                 |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 453H-0114                                                                                  | 453T-0114                                                                               |
| –                     | 1.4567     | 37.00    | 1/4   | 453H-37                                                                                    | 453T-37                                                                                 |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 453H-0115                                                                                  | 453T-0115                                                                               |
| –                     | 1.4961     | 38.00    | 1/4   | 453H-38                                                                                    | 453T-38                                                                                 |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 453H-0116                                                                                  | 453T-0116                                                                               |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 453H-0117                                                                                  | 453T-0117                                                                               |
| –                     | 1.5354     | 39.00    | 1/4   | 453H-39                                                                                    | 453T-39                                                                                 |
| –                     | 1.5470     | 39.29    | 1/4   | 453H-1.547                                                                                 | 453T-1.547                                                                              |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 453H-0118                                                                                  | 453T-0118                                                                               |
| –                     | 1.5748     | 40.00    | 1/4   | 453H-40                                                                                    | 453T-40                                                                                 |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 453H-0119                                                                                  | 453T-0119                                                                               |
| –                     | 1.6142     | 41.00    | 1/4   | 453H-41                                                                                    | 453T-41                                                                                 |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 453H-0120                                                                                  | 453T-0120                                                                               |
| –                     | 1.6535     | 42.00    | 1/4   | 453H-42                                                                                    | 453T-42                                                                                 |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 453H-0121                                                                                  | 453T-0121                                                                               |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 453H-0122                                                                                  | 453T-0122                                                                               |
| –                     | 1.6929     | 43.00    | 1/4   | 453H-43                                                                                    | 453T-43                                                                                 |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 453H-0123                                                                                  | 453T-0123                                                                               |
| –                     | 1.7323     | 44.00    | 1/4   | 453H-44                                                                                    | 453T-44                                                                                 |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 453H-0124                                                                                  | 453T-0124                                                                               |
| –                     | 1.7717     | 45.00    | 1/4   | 453H-45                                                                                    | 453T-45                                                                                 |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 453H-0125                                                                                  | 453T-0125                                                                               |
| –                     | 1.7913     | 45.50    | 1/4   | 453H-45.5                                                                                  | 453T-45.5                                                                               |
| –                     | 1.7970     | 45.64    | 1/4   | 453H-1.797                                                                                 | 453T-1.797                                                                              |
| –                     | 1.8110     | 46.00    | 1/4   | 453H-46                                                                                    | 453T-46                                                                                 |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 453H-0126                                                                                  | 453T-0126                                                                               |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 453H-0127                                                                                  | 453T-0127                                                                               |
| –                     | 1.8504     | 47.00    | 1/4   | 453H-47                                                                                    | 453T-47                                                                                 |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 453H-0128                                                                                  | 453T-0128                                                                               |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

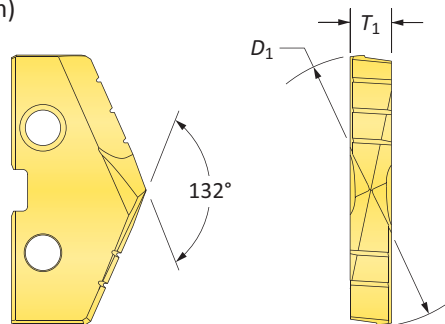
Inserts sold in quantities of 1

|                  |                    |
|------------------|--------------------|
| TiN = 453T-XXXX  | TiAlN = 453A-XXXX  |
| TiCN = 453N-XXXX | AM200® = 453H-XXXX |



## GEN2 T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



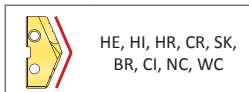
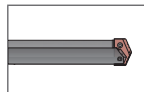
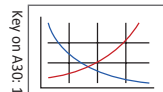
### HSS Inserts – HSS

| Fractional Equivalent | Insert     |          |       | Part No.   |
|-----------------------|------------|----------|-------|------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |            |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 433T-0113  |
| –                     | 1.4173     | 36.00    | 1/4   | 433T-36    |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 433T-0114  |
| –                     | 1.4567     | 37.00    | 1/4   | 433T-37    |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 433T-0115  |
| –                     | 1.4961     | 38.00    | 1/4   | 433T-38    |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 433T-0116  |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 433T-0117  |
| –                     | 1.5354     | 39.00    | 1/4   | 433T-39    |
| –                     | 1.5470     | 39.29    | 1/4   | 433T-1.547 |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 433T-0118  |
| –                     | 1.5748     | 40.00    | 1/4   | 433T-40    |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 433T-0119  |
| –                     | 1.6142     | 41.00    | 1/4   | 433T-41    |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 433T-0120  |
| –                     | 1.6535     | 42.00    | 1/4   | 433T-42    |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 433T-0121  |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 433T-0122  |
| –                     | 1.6929     | 43.00    | 1/4   | 433T-43    |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 433T-0123  |
| –                     | 1.7323     | 44.00    | 1/4   | 433T-44    |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 433T-0124  |
| –                     | 1.7717     | 45.00    | 1/4   | 433T-45    |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 433T-0125  |
| –                     | 1.7913     | 45.50    | 1/4   | 433T-45.5  |
| –                     | 1.7970     | 45.64    | 1/4   | 433T-1.797 |
| –                     | 1.8110     | 46.00    | 1/4   | 433T-46    |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 433T-0126  |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 433T-0127  |
| –                     | 1.8504     | 47.00    | 1/4   | 433T-47    |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 433T-0128  |

A30: 112 - 143

A30: 82 - 85

A30: 4 - 6



HE, HI, HR, CR, SK,  
BR, CI, NC, WC

Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. ➔

Inserts sold in quantities of 1

TiN = 433T-XXXX

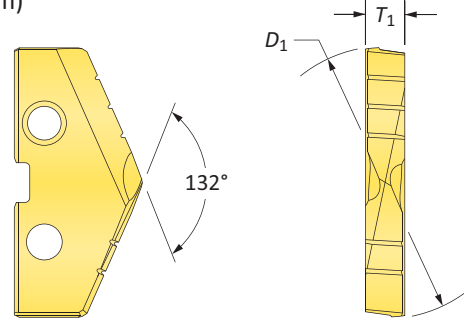
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TiCN = 433N-XXXX

AM200® = 433H-XXXX

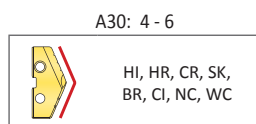
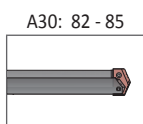
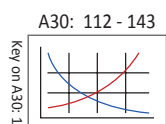
## Original T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



### HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.   |
|-----------------------|------------|----------|-------|------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |            |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 153T-0113  |
| –                     | 1.4173     | 36.00    | 1/4   | 153T-36    |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 153T-0114  |
| –                     | 1.4567     | 37.00    | 1/4   | 153T-37    |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 153T-0115  |
| –                     | 1.4961     | 38.00    | 1/4   | 153T-38    |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 153T-0116  |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 153T-0117  |
| –                     | 1.5354     | 39.00    | 1/4   | 153T-39    |
| –                     | 1.5470     | 39.29    | 1/4   | 153T-1.547 |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 153T-0118  |
| –                     | 1.5748     | 40.00    | 1/4   | 153T-40    |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 153T-0119  |
| –                     | 1.6142     | 41.00    | 1/4   | 153T-41    |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 153T-0120  |
| –                     | 1.6535     | 42.00    | 1/4   | 153T-42    |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 153T-0121  |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 153T-0122  |
| –                     | 1.6929     | 43.00    | 1/4   | 153T-43    |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 153T-0123  |
| –                     | 1.7323     | 44.00    | 1/4   | 153T-44    |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 153T-0124  |
| –                     | 1.7717     | 45.00    | 1/4   | 153T-45    |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 153T-0125  |
| –                     | 1.7913     | 45.50    | 1/4   | 153T-45.5  |
| –                     | 1.7970     | 45.64    | 1/4   | 153T-1.797 |
| –                     | 1.8110     | 46.00    | 1/4   | 153T-46    |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 153T-0126  |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 153T-0127  |
| –                     | 1.8504     | 47.00    | 1/4   | 153T-47    |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 153T-0128  |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

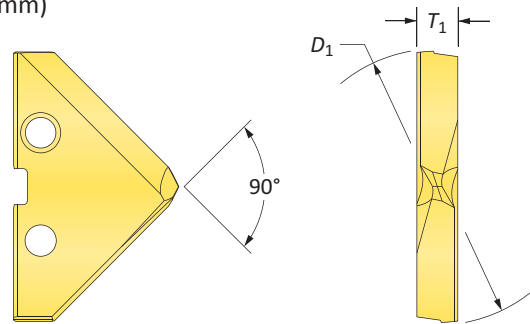
|                  |                    |
|------------------|--------------------|
| TiN = 153T-XXXX  | TiAlN = 153A-XXXX  |
| TiCN = 153N-XXXX | AM200® = 153H-XXXX |

## Original T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)

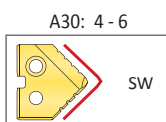
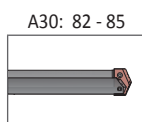
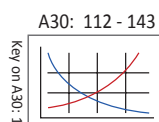


90° Spot &amp; Chamfer



## HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                               |                                                                                           |                                                                                          |
|-----------------------|------------|----------|-------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |  TiCN |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 153T-0113-SP                                                                           | 153A-0113-SP                                                                              | 153N-0113-SP                                                                             |
| –                     | 1.4173     | 36.00    | 1/4   | 153T-36-SP                                                                             | 153A-36-SP                                                                                | 153N-36-SP                                                                               |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 153T-0114-SP                                                                           | 153A-0114-SP                                                                              | 153N-0114-SP                                                                             |
| –                     | 1.4567     | 37.00    | 1/4   | 153T-37-SP                                                                             | 153A-37-SP                                                                                | 153N-37-SP                                                                               |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 153T-0115-SP                                                                           | 153A-0115-SP                                                                              | 153N-0115-SP                                                                             |
| –                     | 1.4961     | 38.00    | 1/4   | 153T-38-SP                                                                             | 153A-38-SP                                                                                | 153N-38-SP                                                                               |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 153T-0116-SP                                                                           | 153A-0116-SP                                                                              | 153N-0116-SP                                                                             |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 153T-0117-SP                                                                           | 153A-0117-SP                                                                              | 153N-0117-SP                                                                             |
| –                     | 1.5354     | 39.00    | 1/4   | 153T-39-SP                                                                             | 153A-39-SP                                                                                | 153N-39-SP                                                                               |
| –                     | 1.5470     | 39.29    | 1/4   | 153T-1.547-SP                                                                          | 153A-1.547-SP                                                                             | 153N-1.547-SP                                                                            |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 153T-0118-SP                                                                           | 153A-0118-SP                                                                              | 153N-0118-SP                                                                             |
| –                     | 1.5748     | 40.00    | 1/4   | 153T-40-SP                                                                             | 153A-40-SP                                                                                | 153N-40-SP                                                                               |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 153T-0119-SP                                                                           | 153A-0119-SP                                                                              | 153N-0119-SP                                                                             |
| –                     | 1.6142     | 41.00    | 1/4   | 153T-41-SP                                                                             | 153A-41-SP                                                                                | 153N-41-SP                                                                               |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 153T-0120-SP                                                                           | 153A-0120-SP                                                                              | 153N-0120-SP                                                                             |
| –                     | 1.6535     | 42.00    | 1/4   | 153T-42-SP                                                                             | 153A-42-SP                                                                                | 153N-42-SP                                                                               |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 153T-0121-SP                                                                           | 153A-0121-SP                                                                              | 153N-0121-SP                                                                             |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 153T-0122-SP                                                                           | 153A-0122-SP                                                                              | 153N-0122-SP                                                                             |
| –                     | 1.6929     | 43.00    | 1/4   | 153T-43-SP                                                                             | 153A-43-SP                                                                                | 153N-43-SP                                                                               |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 153T-0123-SP                                                                           | 153A-0123-SP                                                                              | 153N-0123-SP                                                                             |
| –                     | 1.7323     | 44.00    | 1/4   | 153T-44-SP                                                                             | 153A-44-SP                                                                                | 153N-44-SP                                                                               |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 153T-0124-SP                                                                           | 153A-0124-SP                                                                              | 153N-0124-SP                                                                             |
| –                     | 1.7717     | 45.00    | 1/4   | 153T-45-SP                                                                             | 153A-45-SP                                                                                | 153N-45-SP                                                                               |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 153T-0125-SP                                                                           | 153A-0125-SP                                                                              | 153N-0125-SP                                                                             |
| –                     | 1.7913     | 45.50    | 1/4   | 153T-45.5-SP                                                                           | 153A-45.5-SP                                                                              | 153N-45.5-SP                                                                             |
| –                     | 1.7970     | 45.64    | 1/4   | 153T-1.797-SP                                                                          | 153A-1.797-SP                                                                             | 153N-1.797-SP                                                                            |
| –                     | 1.8110     | 46.00    | 1/4   | 153T-46-SP                                                                             | 153A-46-SP                                                                                | 153N-46-SP                                                                               |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 153T-0126-SP                                                                           | 153A-0126-SP                                                                              | 153N-0126-SP                                                                             |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 153T-0127-SP                                                                           | 153A-0127-SP                                                                              | 153N-0127-SP                                                                             |
| –                     | 1.8504     | 47.00    | 1/4   | 153T-47-SP                                                                             | 153A-47-SP                                                                                | 153N-47-SP                                                                               |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 153T-0128-SP                                                                           | 153A-0128-SP                                                                              | 153N-0128-SP                                                                             |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 153T-XXXX  | TiAlN = 153A-XXXX  |
| TiCN = 153N-XXXX | AM200® = 153H-XXXX |

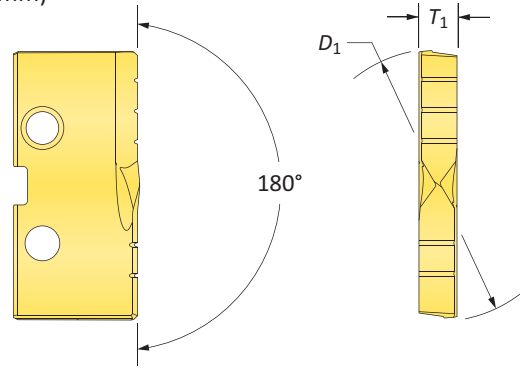
Inserts sold in quantities of 1

## Original T-A Drill Inserts

3 Series | HSS | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)

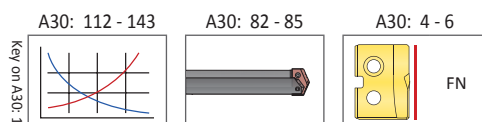


Flat Bottom



## HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.      |
|-----------------------|------------|----------|-------|---------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | TiN           |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 153T-0113-FB  |
| –                     | 1.4173     | 36.00    | 1/4   | 153T-36-FB    |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 153T-0114-FB  |
| –                     | 1.4567     | 37.00    | 1/4   | 153T-37-FB    |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 153T-0115-FB  |
| –                     | 1.4961     | 38.00    | 1/4   | 153T-38-FB    |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 153T-0116-FB  |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 153T-0117-FB  |
| –                     | 1.5354     | 39.00    | 1/4   | 153T-39-FB    |
| –                     | 1.5470     | 39.29    | 1/4   | 153T-1.547-FB |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 153T-0118-FB  |
| –                     | 1.5748     | 40.00    | 1/4   | 153T-40-FB    |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 153T-0119-FB  |
| –                     | 1.6142     | 41.00    | 1/4   | 153T-41-FB    |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 153T-0120-FB  |
| –                     | 1.6535     | 42.00    | 1/4   | 153T-42-FB    |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 153T-0121-FB  |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 153T-0122-FB  |
| –                     | 1.6929     | 43.00    | 1/4   | 153T-43-FB    |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 153T-0123-FB  |
| –                     | 1.7323     | 44.00    | 1/4   | 153T-44-FB    |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 153T-0124-FB  |
| –                     | 1.7717     | 45.00    | 1/4   | 153T-45-FB    |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 153T-0125-FB  |
| –                     | 1.7913     | 45.50    | 1/4   | 153T-45.5-FB  |
| –                     | 1.7970     | 45.64    | 1/4   | 153T-1.797-FB |
| –                     | 1.8110     | 46.00    | 1/4   | 153T-46-FB    |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 153T-0126-FB  |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 153T-0127-FB  |
| –                     | 1.8504     | 47.00    | 1/4   | 153T-47-FB    |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 153T-0128-FB  |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

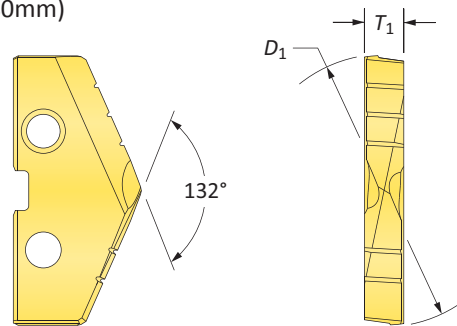
Inserts sold in quantities of 1

|                  |                    |
|------------------|--------------------|
| TiN = 153T-XXXX  | TiAlN = 153A-XXXX  |
| TiCN = 153N-XXXX | AM200® = 153H-XXXX |

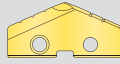
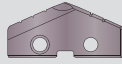


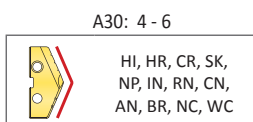
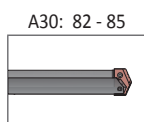
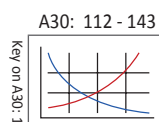
## Original T-A Drill Inserts

3 Series | Carbide | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



## Carbide Inserts – C2 (K20)

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                |                                                                                           |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiAlN |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 1C23T-0113                                                                              | 1C23A-0113                                                                                |
| –                     | 1.4173     | 36.00    | 1/4   | 1C23T-36                                                                                | 1C23A-36                                                                                  |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 1C23T-0114                                                                              | 1C23A-0114                                                                                |
| –                     | 1.4567     | 37.00    | 1/4   | 1C23T-37                                                                                | 1C23A-37                                                                                  |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 1C23T-0115                                                                              | 1C23A-0115                                                                                |
| –                     | 1.4961     | 38.00    | 1/4   | 1C23T-38                                                                                | 1C23A-38                                                                                  |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 1C23T-0116                                                                              | 1C23A-0116                                                                                |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 1C23T-0117                                                                              | 1C23A-0117                                                                                |
| –                     | 1.5354     | 39.00    | 1/4   | 1C23T-39                                                                                | 1C23A-39                                                                                  |
| –                     | 1.5470     | 39.29    | 1/4   | 1C23T-1.547                                                                             | 1C23A-1.547                                                                               |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 1C23T-0118                                                                              | 1C23A-0118                                                                                |
| –                     | 1.5748     | 40.00    | 1/4   | 1C23T-40                                                                                | 1C23A-40                                                                                  |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 1C23T-0119                                                                              | 1C23A-0119                                                                                |
| –                     | 1.6142     | 41.00    | 1/4   | 1C23T-41                                                                                | 1C23A-41                                                                                  |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 1C23T-0120                                                                              | 1C23A-0120                                                                                |
| –                     | 1.6535     | 42.00    | 1/4   | 1C23T-42                                                                                | 1C23A-42                                                                                  |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 1C23T-0121                                                                              | 1C23A-0121                                                                                |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 1C23T-0122                                                                              | 1C23A-0122                                                                                |
| –                     | 1.6929     | 43.00    | 1/4   | 1C23T-43                                                                                | 1C23A-43                                                                                  |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 1C23T-0123                                                                              | 1C23A-0123                                                                                |
| –                     | 1.7323     | 44.00    | 1/4   | 1C23T-44                                                                                | 1C23A-44                                                                                  |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 1C23T-0124                                                                              | 1C23A-0124                                                                                |
| –                     | 1.7717     | 45.00    | 1/4   | 1C23T-45                                                                                | 1C23A-45                                                                                  |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 1C23T-0125                                                                              | 1C23A-0125                                                                                |
| –                     | 1.7913     | 45.50    | 1/4   | 1C23T-45.5                                                                              | 1C23A-45.5                                                                                |
| –                     | 1.7970     | 45.64    | 1/4   | 1C23T-1.797                                                                             | 1C23A-1.797                                                                               |
| –                     | 1.8110     | 46.00    | 1/4   | 1C23T-46                                                                                | 1C23A-46                                                                                  |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 1C23T-0126                                                                              | 1C23A-0126                                                                                |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 1C23T-0127                                                                              | 1C23A-0127                                                                                |
| –                     | 1.8504     | 47.00    | 1/4   | 1C23T-47                                                                                | 1C23A-47                                                                                  |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 1C23T-0128                                                                              | 1C23A-0128                                                                                |



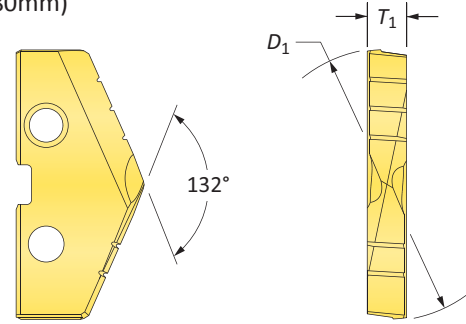
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                   |                     |
|-------------------|---------------------|
| TiN = 1C23T-XXXX  | TiAlN = 1C23A-XXXX  |
| TiCN = 1C23N-XXXX | AM200® = 1C23H-XXXX |

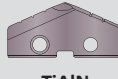
Inserts sold in quantities of 1

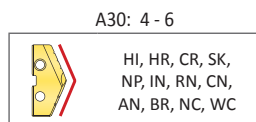
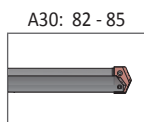
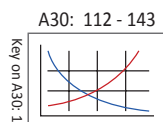
## Original T-A Drill Inserts

3 Series | Carbide | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



## Carbide Inserts – C5 (P40)

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                |                                                                                           |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TIN |  TiAlN |
| 1-13/32               | 1.4063     | 35.72    | 1/4   | 1C53T-0113                                                                              | 1C53A-0113                                                                                |
| –                     | 1.4173     | 36.00    | 1/4   | 1C53T-36                                                                                | 1C53A-36                                                                                  |
| 1-7/16                | 1.4375     | 36.51    | 1/4   | 1C53T-0114                                                                              | 1C53A-0114                                                                                |
| –                     | 1.4567     | 37.00    | 1/4   | 1C53T-37                                                                                | 1C53A-37                                                                                  |
| 1-15/32               | 1.4688     | 37.31    | 1/4   | 1C53T-0115                                                                              | 1C53A-0115                                                                                |
| –                     | 1.4961     | 38.00    | 1/4   | 1C53T-38                                                                                | 1C53A-38                                                                                  |
| 1-1/2                 | 1.5000     | 38.10    | 1/4   | 1C53T-0116                                                                              | 1C53A-0116                                                                                |
| 1-17/32               | 1.5313     | 38.89    | 1/4   | 1C53T-0117                                                                              | 1C53A-0117                                                                                |
| –                     | 1.5354     | 39.00    | 1/4   | 1C53T-39                                                                                | 1C53A-39                                                                                  |
| –                     | 1.5470     | 39.29    | 1/4   | 1C53T-1.547                                                                             | 1C53A-1.547                                                                               |
| 1-9/16                | 1.5625     | 39.69    | 1/4   | 1C53T-0118                                                                              | 1C53A-0118                                                                                |
| –                     | 1.5748     | 40.00    | 1/4   | 1C53T-40                                                                                | 1C53A-40                                                                                  |
| 1-19/32               | 1.5938     | 40.48    | 1/4   | 1C53T-0119                                                                              | 1C53A-0119                                                                                |
| –                     | 1.6142     | 41.00    | 1/4   | 1C53T-41                                                                                | 1C53A-41                                                                                  |
| 1-5/8                 | 1.6250     | 41.28    | 1/4   | 1C53T-0120                                                                              | 1C53A-0120                                                                                |
| –                     | 1.6535     | 42.00    | 1/4   | 1C53T-42                                                                                | 1C53A-42                                                                                  |
| 1-21/32               | 1.6563     | 42.07    | 1/4   | 1C53T-0121                                                                              | 1C53A-0121                                                                                |
| 1-11/16               | 1.6875     | 42.86    | 1/4   | 1C53T-0122                                                                              | 1C53A-0122                                                                                |
| –                     | 1.6929     | 43.00    | 1/4   | 1C53T-43                                                                                | 1C53A-43                                                                                  |
| 1-23/32               | 1.7188     | 43.66    | 1/4   | 1C53T-0123                                                                              | 1C53A-0123                                                                                |
| –                     | 1.7323     | 44.00    | 1/4   | 1C53T-44                                                                                | 1C53A-44                                                                                  |
| 1-3/4                 | 1.7500     | 44.45    | 1/4   | 1C53T-0124                                                                              | 1C53A-0124                                                                                |
| –                     | 1.7717     | 45.00    | 1/4   | 1C53T-45                                                                                | 1C53A-45                                                                                  |
| 1-25/32               | 1.7813     | 45.24    | 1/4   | 1C53T-0125                                                                              | 1C53A-0125                                                                                |
| –                     | 1.7913     | 45.50    | 1/4   | 1C53T-45.5                                                                              | 1C53A-45.5                                                                                |
| –                     | 1.7970     | 45.64    | 1/4   | 1C53T-1.797                                                                             | 1C53A-1.797                                                                               |
| –                     | 1.8110     | 46.00    | 1/4   | 1C53T-46                                                                                | 1C53A-46                                                                                  |
| 1-13/16               | 1.8125     | 46.04    | 1/4   | 1C53T-0126                                                                              | 1C53A-0126                                                                                |
| 1-27/32               | 1.8438     | 46.83    | 1/4   | 1C53T-0127                                                                              | 1C53A-0127                                                                                |
| –                     | 1.8504     | 47.00    | 1/4   | 1C53T-47                                                                                | 1C53A-47                                                                                  |
| 1-7/8                 | 1.8750     | 47.63    | 1/4   | 1C53T-0128                                                                              | 1C53A-0128                                                                                |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

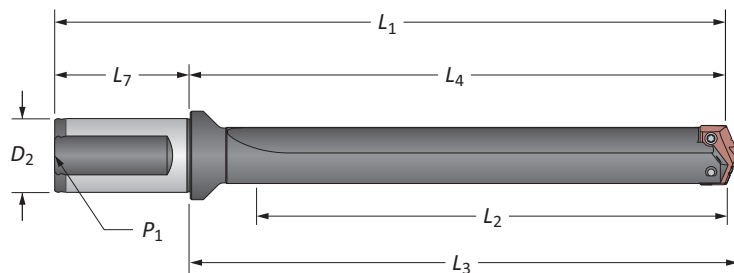
Inserts sold in quantities of 1

|                   |                     |
|-------------------|---------------------|
| TiN = 1C53T-XXXX  | TiAlN = 1C53A-XXXX  |
| TiCN = 1C53N-XXXX | AM200® = 1C53H-XXXX |



## T-A Drill Insert Holders

3 Series | Flange Shank | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)

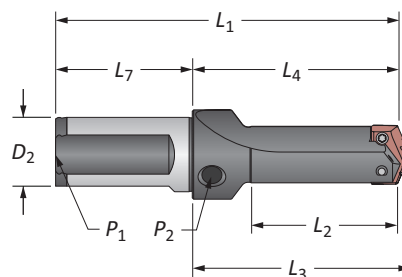


### Straight Flute

|        |              | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short        | 4-3/4          | 6-13/16        | 7              | 9-1/2          | 1-1/2          | 2-11/16        | 1/4            | 22030S-150F |
|        | Intermediate | 6-1/2          | 8-9/16         | 8-3/4          | 11-1/4         | 1-1/2          | 2-11/16        | 1/4            | 23030S-150F |
|        | Standard     | 8-1/4          | 10-5/16        | 10-1/2         | 13             | 1-1/2          | 2-11/16        | 1/4            | 24030S-150F |
| m      | Short        | 120.7          | 173.0          | 177.8          | 243.0          | 40.0           | 70.0           | 1/4*           | 22030S-40FM |
|        | Extended     | 349.3          | 401.6          | 406.4          | 471.6          | 40.0           | 70.0           | 1/4*           | 25030S-40FM |
|        | XL           | 558.8          | 611.1          | 615.9          | 681.1          | 40.0           | 70.0           | 1/4*           | 27030S-40FM |
|        | 3XL          | 787.4          | 839.7          | 844.5          | 909.7          | 40.0           | 70.0           | 1/4*           | 29030S-40FM |

\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/4" side pipe tap (P<sub>2</sub>)



### Straight Flute (Stub Length)

|        |      | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |      | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Stub | 3              | 4-59/64        | 5-7/64         | 7-39-64        | 1-1/2          | 2-11/16        | 1/4            | 21030S-150F |
| m      | Stub | 76.2           | 125.0          | 129.8          | 195.0          | 40.0           | 70.0           | 1/4*           | 21030S-40FM |

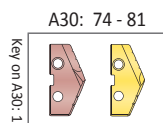
\*Metric thread to BSP and ISO 7-1

**NOTE:** Stub length holders have a 1/4" side pipe tap (P<sub>2</sub>)

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

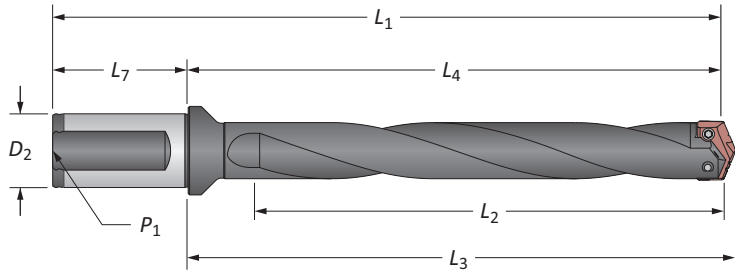
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



# T-A Drill Insert Holders

3 Series | Flange Shank | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



## Helical Flute

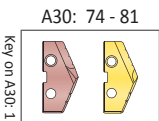
|        |              | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Intermediate | 6-1/2          | 8-9/16         | 8-3/4          | 11-1/4         | 1-1/2          | 2-11/16        | 1/4            | 23030H-150F |
|        | Standard     | 8-1/4          | 10-5/16        | 10-1/2         | 13             | 1-1/2          | 2-11/16        | 1/4            | 24030H-150F |
| m      | Intermediate | 165.1          | 217.5          | 222.3          | 287.5          | 40.0           | 70.0           | 1/4*           | 23030H-40FM |
|        | Standard     | 209.6          | 261.9          | 266.7          | 331.9          | 40.0           | 70.0           | 1/4*           | 24030H-40FM |

\*Metric thread to BSP and ISO 7-1

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



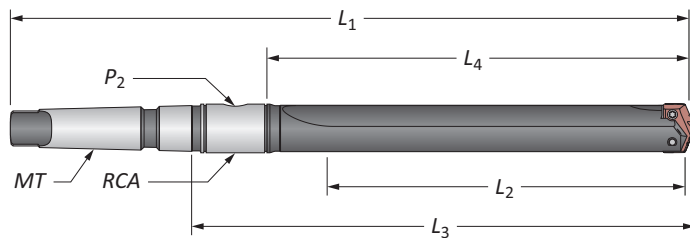
i = Imperial (in)  
m = Metric (mm)

Screws sold in quantities of 10



## T-A Drill Insert Holders

3 Series | Taper Shank | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)

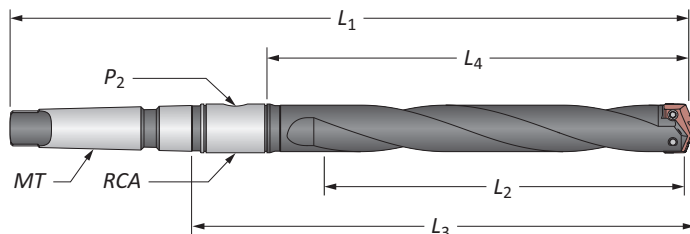


### Straight Flute

|   | Length       | Body           |                |                |                | Shank |                |         | Part No.    |
|---|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i | Short        | 4-3/4          | 6              | 8-1/8          | 12-9/16        | #4    | 1/4            | 2T-4SR  | 22030S-004I |
|   | Short        | 4-3/4          | 6              | 8-1/8          | 13-13/16       | #5    | 1/4            | 2T-5SR  | 22030S-005I |
|   | Intermediate | 6-1/2          | 7-3/4          | 9-7/8          | 14-5/16        | #4    | 1/4            | 2T-4SR  | 23030S-004I |
|   | Standard     | 8-1/4          | 9-1/2          | 11-5/8         | 16-1/16        | #4    | 1/4            | 2T-4SR  | 24030S-004I |
|   | Standard     | 8-1/4          | 9-1/2          | 11-5/8         | 17-5/16        | #5    | 1/4            | 2T-5SR  | 24030S-005I |
|   | Extended     | 13-3/4         | 15             | 17-1/8         | 21-9/16        | #4    | 1/4            | 2T-4SR  | 25030S-004I |
|   | XL           | 22             | 22-1/4         | 25-3/8         | 29-13/16       | #4    | 1/4            | 2T-4SR  | 27030S-004I |
| m | 3XL          | 31             | 32-1/4         | 34-3/8         | 38-13/16       | #4    | 1/4            | 2T-4SR  | 29030S-004I |
|   | Short        | 120.6          | 152.4          | 206.4          | 319.1          | #4**  | 1/4*           | 2T-4SRM | 22030S-004M |
|   | Extended     | 349.3          | 381.0          | 435.0          | 547.7          | #4**  | 1/4*           | 2T-4SRM | 25030S-004M |
|   | XL           | 558.8          | 590.6          | 644.6          | 757.2          | #4**  | 1/4*           | 2T-4SRM | 27030S-004M |
|   | 3XL          | 787.4          | 819.2          | 873.2          | 985.8          | #4**  | 1/4*           | 2T-4SRM | 29030S-004M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



### Helical Flute

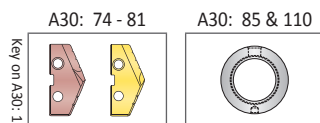
|   | Length       | Body           |                |                |                | Shank |                |         | Part No.    |
|---|--------------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| m | Intermediate | 165.1          | 196.9          | 250.9          | 363.6          | #4**  | 1/4*           | 2T-4SRM | 23030H-004M |
|   | Standard     | 209.5          | 241.3          | 295.3          | 408.0          | #4**  | 1/4*           | 2T-4SRM | 24030H-004M |

\*Metric thread to BSP and ISO 7-1 | \*\*Per ISO 296 type BEK

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

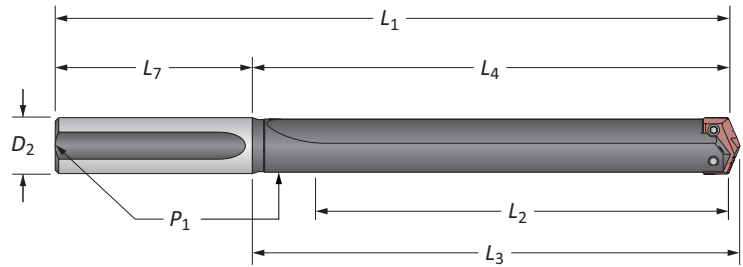
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

3 Series | Straight Shank | Diameter Range: 1.353" - 1.882" (34.36mm - 47.80mm)



### Straight Flute

|   | Length       | Body           |                |                |                | Shank          |                |                | Part No.    |
|---|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
|   |              | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i | Short        | 4-3/4          | 6              | 6-3/16         | 10             | 1-1/4          | 4              | 1/4            | 22030S-125L |
|   | Short        | 4-3/4          | 6              | 6-3/16         | 10             | 1-1/2          | 4              | 1/4            | 22030S-150L |
|   | Intermediate | 6-1/2          | 7-3/4          | 7-15/16        | 11-3/4         | 1-1/2          | 4              | 1/4            | 23030S-150L |
|   | Standard     | 8-1/4          | 9-1/2          | 9-11/16        | 13-1/2         | 1-1/4          | 4              | 1/4            | 24030S-125L |
|   | Standard     | 8-1/4          | 9-1/2          | 9-11/16        | 13-1/2         | 1-1/2          | 4              | 1/4            | 24030S-150L |
|   | Extended     | 13-3/4         | 15-3/16        | 15-3/16        | 19             | 1-1/4          | 4              | 1/4            | 25030S-125L |
|   | XL           | 22             | 23-7/16        | 23-7/16        | 27-1/4         | 1-1/2          | 4              | 1/4            | 27030S-150L |
|   | 3XL          | 31             | 32-7/16        | 32-7/16        | 36-1/4         | 1-1/2          | 4              | 1/4            | 29030S-150L |

## T-A Drill Accessories

3 Series | Rotary Coolant Adapters | Torx® Plus Screws

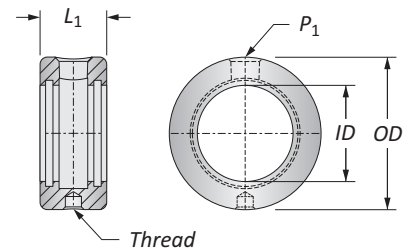
### Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No. | RCA O-Rings    |              |
|---|-------|-------|----------------|--------------------|----------------|----------|----------------|--------------|
|   |       |       |                |                    |                |          | Kit Part No.** | Replacements |
| i | 1-1/4 | 2-1/2 | 1-3/8          | 3/8-16             | 1/4            | 2T-4SR   | 2T1-4SR        | 2T1-4OR-10   |
|   | 1-3/4 | 3     | 1-3/8          | 3/8-16             | 1/4            | 2T-5SR   | 2T1-5SR        | 2T1-5OR-10   |
| m | 31.75 | 63.50 | 34.92          | M10 x 1.50         | 1/4*           | 2T-4SRM  | 2T1-4SR        | 2T1-4OR-10   |
|   | 44.45 | 76.20 | 34.92          | M10 x 1.50         | 1/4*           | 2T-5SRM  | 2T1-5SR        | 2T1-5OR-10   |

\*Thread to BSP and ISO 7-1

\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

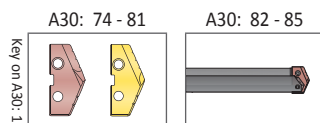
Refer to page A30: 110 for proper RCA assembly and safety information



### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

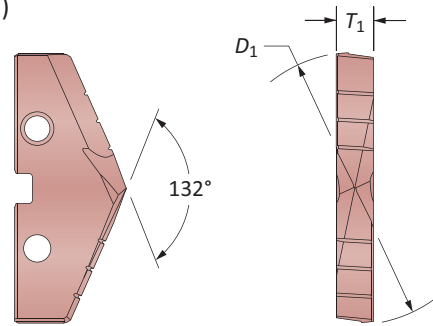
Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

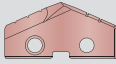


## GEN2 T-A Drill Inserts

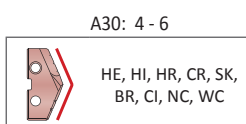
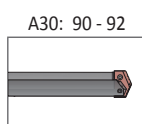
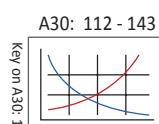
4 Series | HSS | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)



### HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                   |                                                                                         |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  AM200® |  TiN |
| –                     | 1.8898     | 48.00    | 5/16  | 454H-48                                                                                    | 454T-48                                                                                 |
| 1-29/32               | 1.9063     | 48.42    | 5/16  | 454H-0129                                                                                  | 454T-0129                                                                               |
| –                     | 1.9291     | 49.00    | 5/16  | 454H-49                                                                                    | 454T-49                                                                                 |
| 1-15/16               | 1.9375     | 49.21    | 5/16  | 454H-0130                                                                                  | 454T-0130                                                                               |
| –                     | 1.9685     | 50.00    | 5/16  | 454H-50                                                                                    | 454T-50                                                                                 |
| 1-31/32               | 1.9688     | 50.01    | 5/16  | 454H-0131                                                                                  | 454T-0131                                                                               |
| 2                     | 2.0000     | 50.80    | 5/16  | 454H-0200                                                                                  | 454T-0200                                                                               |
| –                     | 2.0079     | 51.00    | 5/16  | 454H-51                                                                                    | 454T-51                                                                                 |
| 2-1/32                | 2.0313     | 51.59    | 5/16  | 454H-0201                                                                                  | 454T-0201                                                                               |
| 2-3/64                | 2.0472     | 52.00    | 5/16  | 454H-52                                                                                    | 454T-52                                                                                 |
| 2-1/16                | 2.0625     | 52.39    | 5/16  | 454H-0202                                                                                  | 454T-0202                                                                               |
| –                     | 2.0866     | 53.00    | 5/16  | 454H-53                                                                                    | 454T-53                                                                                 |
| 2-3/32                | 2.0938     | 53.18    | 5/16  | 454H-0203                                                                                  | 454T-0203                                                                               |
| 2-1/8                 | 2.1250     | 53.98    | 5/16  | 454H-0204                                                                                  | 454T-0204                                                                               |
| –                     | 2.1260     | 54.00    | 5/16  | 454H-54                                                                                    | 454T-54                                                                                 |
| 2-5/32                | 2.1563     | 54.77    | 5/16  | 454H-0205                                                                                  | 454T-0205                                                                               |
| –                     | 2.1654     | 55.00    | 5/16  | 454H-55                                                                                    | 454T-55                                                                                 |
| 2-3/16                | 2.1875     | 55.56    | 5/16  | 454H-0206                                                                                  | 454T-0206                                                                               |
| –                     | 2.2047     | 56.00    | 5/16  | 454H-56                                                                                    | 454T-56                                                                                 |
| 2-7/32                | 2.2188     | 56.36    | 5/16  | 454H-0207                                                                                  | 454T-0207                                                                               |
| –                     | 2.2441     | 57.00    | 5/16  | 454H-57                                                                                    | 454T-57                                                                                 |
| 2-1/4                 | 2.2500     | 57.15    | 5/16  | 454H-0208                                                                                  | 454T-0208                                                                               |
| 2-9/32                | 2.2813     | 57.94    | 5/16  | 454H-0209                                                                                  | 454T-0209                                                                               |
| –                     | 2.2835     | 58.00    | 5/16  | 454H-58                                                                                    | 454T-58                                                                                 |
| 2-5/16                | 2.3125     | 58.74    | 5/16  | 454H-0210                                                                                  | 454T-0210                                                                               |
| –                     | 2.3228     | 59.00    | 5/16  | 454H-59                                                                                    | 454T-59                                                                                 |
| 2-11/32               | 2.3438     | 59.53    | 5/16  | 454H-0211                                                                                  | 454T-0211                                                                               |
| –                     | 2.3622     | 60.00    | 5/16  | 454H-60                                                                                    | 454T-60                                                                                 |
| 2-3/8                 | 2.3750     | 60.33    | 5/16  | 454H-0212                                                                                  | 454T-0212                                                                               |
| –                     | 2.4016     | 61.00    | 5/16  | 454H-61                                                                                    | 454T-61                                                                                 |
| 2-13/32               | 2.4063     | 61.12    | 5/16  | 454H-0213                                                                                  | 454T-0213                                                                               |
| 2-7/16                | 2.4375     | 61.91    | 5/16  | 454H-0214                                                                                  | 454T-0214                                                                               |
| –                     | 2.4409     | 62.00    | 5/16  | 454H-62                                                                                    | 454T-62                                                                                 |
| 2-15/32               | 2.4688     | 62.71    | 5/16  | 454H-0215                                                                                  | 454T-0215                                                                               |
| –                     | 2.4803     | 63.00    | 5/16  | 454H-63                                                                                    | 454T-63                                                                                 |
| 2-1/2                 | 2.5000     | 63.50    | 5/16  | 454H-0216                                                                                  | 454T-0216                                                                               |
| –                     | 2.5197     | 64.00    | 5/16  | 454H-64                                                                                    | 454T-64                                                                                 |
| 2-17/32               | 2.5313     | 64.29    | 5/16  | 454H-0217                                                                                  | 454T-0217                                                                               |
| –                     | 2.5591     | 65.00    | 5/16  | 454H-65                                                                                    | 454T-65                                                                                 |
| 2-9/16                | 2.5625     | 65.09    | 5/16  | 454H-0218                                                                                  | 454T-0218                                                                               |

Inserts sold in quantities of 1

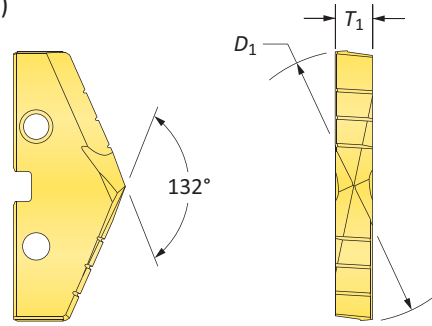


Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 454T-XXXX  | TiAlN = 454A-XXXX  |
| TiCN = 454N-XXXX | AM200® = 454H-XXXX |

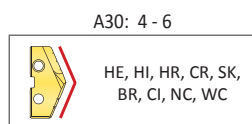
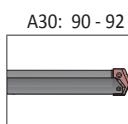
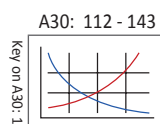
## GEN2 T-A Drill Inserts

4 Series | HSS | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)



## HSS Inserts – HSS

| Fractional Equivalent | Insert     |          |       | Part No.                                                                                   |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN |
| –                     | 1.8898     | 48.00    | 5/16  | 434T-48                                                                                    |
| 1-29/32               | 1.9063     | 48.42    | 5/16  | 434T-0129                                                                                  |
| –                     | 1.9291     | 49.00    | 5/16  | 434T-49                                                                                    |
| 1-15/16               | 1.9375     | 49.21    | 5/16  | 434T-0130                                                                                  |
| –                     | 1.9685     | 50.00    | 5/16  | 434T-50                                                                                    |
| 1-31/32               | 1.9688     | 50.01    | 5/16  | 434T-0131                                                                                  |
| 2                     | 2.0000     | 50.80    | 5/16  | 434T-0200                                                                                  |
| –                     | 2.0079     | 51.00    | 5/16  | 434T-51                                                                                    |
| 2-1/32                | 2.0313     | 51.59    | 5/16  | 434T-0201                                                                                  |
| 2-3/64                | 2.0472     | 52.00    | 5/16  | 434T-52                                                                                    |
| 2-1/16                | 2.0625     | 52.39    | 5/16  | 434T-0202                                                                                  |
| –                     | 2.0866     | 53.00    | 5/16  | 434T-53                                                                                    |
| 2-3/32                | 2.0938     | 53.18    | 5/16  | 434T-0203                                                                                  |
| 2-1/8                 | 2.1250     | 53.98    | 5/16  | 434T-0204                                                                                  |
| –                     | 2.1260     | 54.00    | 5/16  | 434T-54                                                                                    |
| 2-5/32                | 2.1563     | 54.77    | 5/16  | 434T-0205                                                                                  |
| –                     | 2.1654     | 55.00    | 5/16  | 434T-55                                                                                    |
| 2-3/16                | 2.1875     | 55.56    | 5/16  | 434T-0206                                                                                  |
| –                     | 2.2047     | 56.00    | 5/16  | 434T-56                                                                                    |
| 2-7/32                | 2.2188     | 56.36    | 5/16  | 434T-0207                                                                                  |
| –                     | 2.2441     | 57.00    | 5/16  | 434T-57                                                                                    |
| 2-1/4                 | 2.2500     | 57.15    | 5/16  | 434T-0208                                                                                  |
| 2-9/32                | 2.2813     | 57.94    | 5/16  | 434T-0209                                                                                  |
| –                     | 2.2835     | 58.00    | 5/16  | 434T-58                                                                                    |
| 2-5/16                | 2.3125     | 58.74    | 5/16  | 434T-0210                                                                                  |
| –                     | 2.3228     | 59.00    | 5/16  | 434T-59                                                                                    |
| 2-11/32               | 2.3438     | 59.53    | 5/16  | 434T-0211                                                                                  |
| –                     | 2.3622     | 60.00    | 5/16  | 434T-60                                                                                    |
| 2-3/8                 | 2.3750     | 60.33    | 5/16  | 434T-0212                                                                                  |
| –                     | 2.4016     | 61.00    | 5/16  | 434T-61                                                                                    |
| 2-13/32               | 2.4063     | 61.12    | 5/16  | 434T-0213                                                                                  |
| 2-7/16                | 2.4375     | 61.91    | 5/16  | 434T-0214                                                                                  |
| –                     | 2.4409     | 62.00    | 5/16  | 434T-62                                                                                    |
| 2-15/32               | 2.4688     | 62.71    | 5/16  | 434T-0215                                                                                  |
| –                     | 2.4803     | 63.00    | 5/16  | 434T-63                                                                                    |
| 2-1/2                 | 2.5000     | 63.50    | 5/16  | 434T-0216                                                                                  |
| –                     | 2.5197     | 64.00    | 5/16  | 434T-64                                                                                    |
| 2-17/32               | 2.5313     | 64.29    | 5/16  | 434T-0217                                                                                  |
| –                     | 2.5591     | 65.00    | 5/16  | 434T-65                                                                                    |
| 2-9/16                | 2.5625     | 65.09    | 5/16  | 434T-0218                                                                                  |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

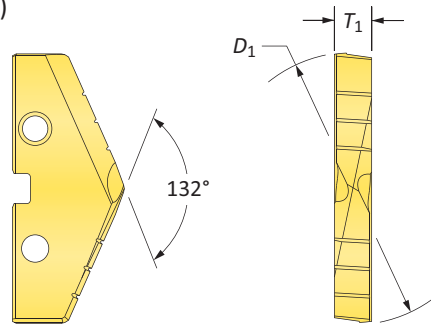
|                  |                    |
|------------------|--------------------|
| TiN = 434T-XXXX  | TiAlN = 434A-XXXX  |
| TiCN = 434N-XXXX | AM200® = 434H-XXXX |





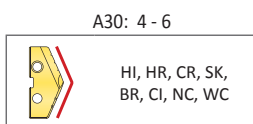
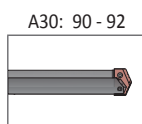
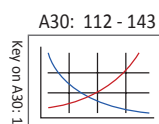
## Original T-A Drill Inserts

4 Series | HSS | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)



## HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.  |
|-----------------------|------------|----------|-------|-----------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |           |
| –                     | 1.8898     | 48.00    | 5/16  | 154T-48   |
| 1-29/32               | 1.9063     | 48.42    | 5/16  | 154T-0129 |
| –                     | 1.9291     | 49.00    | 5/16  | 154T-49   |
| 1-15/16               | 1.9375     | 49.21    | 5/16  | 154T-0130 |
| –                     | 1.9685     | 50.00    | 5/16  | 154T-50   |
| 1-31/32               | 1.9688     | 50.01    | 5/16  | 154T-0131 |
| 2                     | 2.0000     | 50.80    | 5/16  | 154T-0200 |
| –                     | 2.0079     | 51.00    | 5/16  | 154T-51   |
| 2-1/32                | 2.0313     | 51.59    | 5/16  | 154T-0201 |
| 2-3/64                | 2.0472     | 52.00    | 5/16  | 154T-52   |
| 2-1/16                | 2.0625     | 52.39    | 5/16  | 154T-0202 |
| –                     | 2.0866     | 53.00    | 5/16  | 154T-53   |
| 2-3/32                | 2.0938     | 53.18    | 5/16  | 154T-0203 |
| 2-1/8                 | 2.1250     | 53.98    | 5/16  | 154T-0204 |
| –                     | 2.1260     | 54.00    | 5/16  | 154T-54   |
| 2-5/32                | 2.1563     | 54.77    | 5/16  | 154T-0205 |
| –                     | 2.1654     | 55.00    | 5/16  | 154T-55   |
| 2-3/16                | 2.1875     | 55.56    | 5/16  | 154T-0206 |
| –                     | 2.2047     | 56.00    | 5/16  | 154T-56   |
| 2-7/32                | 2.2188     | 56.36    | 5/16  | 154T-0207 |
| –                     | 2.2441     | 57.00    | 5/16  | 154T-57   |
| 2-1/4                 | 2.2500     | 57.15    | 5/16  | 154T-0208 |
| 2-9/32                | 2.2813     | 57.94    | 5/16  | 154T-0209 |
| –                     | 2.2835     | 58.00    | 5/16  | 154T-58   |
| 2-5/16                | 2.3125     | 58.74    | 5/16  | 154T-0210 |
| –                     | 2.3228     | 59.00    | 5/16  | 154T-59   |
| 2-11/32               | 2.3438     | 59.53    | 5/16  | 154T-0211 |
| –                     | 2.3622     | 60.00    | 5/16  | 154T-60   |
| 2-3/8                 | 2.3750     | 60.33    | 5/16  | 154T-0212 |
| –                     | 2.4016     | 61.00    | 5/16  | 154T-61   |
| 2-13/32               | 2.4063     | 61.12    | 5/16  | 154T-0213 |
| 2-7/16                | 2.4375     | 61.91    | 5/16  | 154T-0214 |
| –                     | 2.4409     | 62.00    | 5/16  | 154T-62   |
| 2-15/32               | 2.4688     | 62.71    | 5/16  | 154T-0215 |
| –                     | 2.4803     | 63.00    | 5/16  | 154T-63   |
| 2-1/2                 | 2.5000     | 63.50    | 5/16  | 154T-0216 |
| –                     | 2.5197     | 64.00    | 5/16  | 154T-64   |
| 2-17/32               | 2.5313     | 64.29    | 5/16  | 154T-0217 |
| –                     | 2.5591     | 65.00    | 5/16  | 154T-65   |
| 2-9/16                | 2.5625     | 65.09    | 5/16  | 154T-0218 |



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. ➔

|                  |                    |
|------------------|--------------------|
| TiN = 154T-XXXX  | TiAlN = 154A-XXXX  |
| TiCN = 154N-XXXX | AM200® = 154H-XXXX |

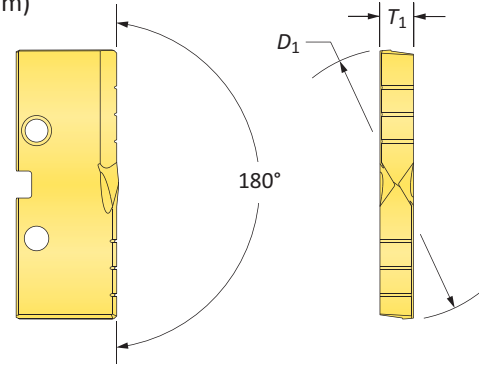
Inserts sold in quantities of 1

## Original T-A Drill Inserts

4 Series | HSS | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)

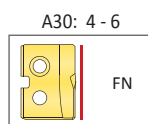
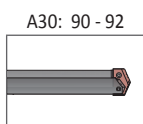
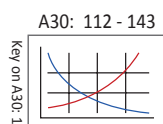


Flat Bottom



### HSS Inserts – Super Cobalt

| Fractional Equivalent | Insert     |          |       | Part No.     |
|-----------------------|------------|----------|-------|--------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |              |
| –                     | 1.8898     | 48.00    | 5/16  | 154T-48-FB   |
| 1-29/32               | 1.9063     | 48.42    | 5/16  | 154T-0129-FB |
| –                     | 1.9291     | 49.00    | 5/16  | 154T-49-FB   |
| 1-15/16               | 1.9375     | 49.21    | 5/16  | 154T-0130-FB |
| –                     | 1.9685     | 50.00    | 5/16  | 154T-50-FB   |
| 1-31/32               | 1.9688     | 50.01    | 5/16  | 154T-0131-FB |
| 2                     | 2.0000     | 50.80    | 5/16  | 154T-0200-FB |
| –                     | 2.0079     | 51.00    | 5/16  | 154T-51-FB   |
| 2-1/32                | 2.0313     | 51.59    | 5/16  | 154T-0201-FB |
| 2-3/64                | 2.0472     | 52.00    | 5/16  | 154T-52-FB   |
| 2-1/16                | 2.0625     | 52.39    | 5/16  | 154T-0202-FB |
| –                     | 2.0866     | 53.00    | 5/16  | 154T-53-FB   |
| 2-3/32                | 2.0938     | 53.18    | 5/16  | 154T-0203-FB |
| 2-1/8                 | 2.1250     | 53.98    | 5/16  | 154T-0204-FB |
| –                     | 2.1260     | 54.00    | 5/16  | 154T-54-FB   |
| 2-5/32                | 2.1563     | 54.77    | 5/16  | 154T-0205-FB |
| –                     | 2.1654     | 55.00    | 5/16  | 154T-55-FB   |
| 2-3/16                | 2.1875     | 55.56    | 5/16  | 154T-0206-FB |
| –                     | 2.2047     | 56.00    | 5/16  | 154T-56-FB   |
| 2-7/32                | 2.2188     | 56.36    | 5/16  | 154T-0207-FB |
| –                     | 2.2441     | 57.00    | 5/16  | 154T-57-FB   |
| 2-1/4                 | 2.2500     | 57.15    | 5/16  | 154T-0208-FB |
| 2-9/32                | 2.2813     | 57.94    | 5/16  | 154T-0209-FB |
| –                     | 2.2835     | 58.00    | 5/16  | 154T-58-FB   |
| 2-5/16                | 2.3125     | 58.74    | 5/16  | 154T-0210-FB |
| –                     | 2.3228     | 59.00    | 5/16  | 154T-59-FB   |
| 2-11/32               | 2.3438     | 59.53    | 5/16  | 154T-0211-FB |
| –                     | 2.3622     | 60.00    | 5/16  | 154T-60-FB   |
| 2-3/8                 | 2.3750     | 60.33    | 5/16  | 154T-0212-FB |
| –                     | 2.4016     | 61.00    | 5/16  | 154T-61-FB   |
| 2-13/32               | 2.4063     | 61.12    | 5/16  | 154T-0213-FB |
| 2-7/16                | 2.4375     | 61.91    | 5/16  | 154T-0214-FB |
| –                     | 2.4409     | 62.00    | 5/16  | 154T-62-FB   |
| 2-15/32               | 2.4688     | 62.71    | 5/16  | 154T-0215-FB |
| –                     | 2.4803     | 63.00    | 5/16  | 154T-63-FB   |
| 2-1/2                 | 2.5000     | 63.50    | 5/16  | 154T-0216-FB |
| –                     | 2.5197     | 64.00    | 5/16  | 154T-64-FB   |
| 2-17/32               | 2.5313     | 64.29    | 5/16  | 154T-0217-FB |
| –                     | 2.5591     | 65.00    | 5/16  | 154T-65-FB   |
| 2-9/16                | 2.5625     | 65.09    | 5/16  | 154T-0218-FB |



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

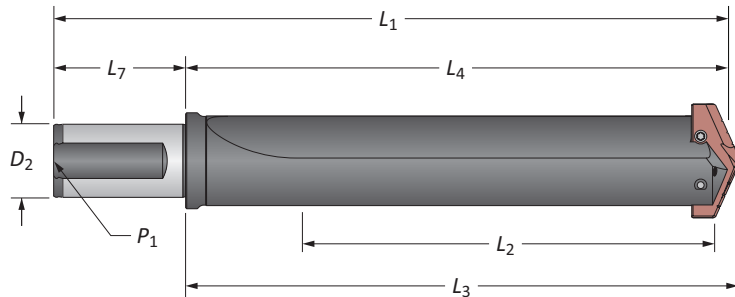
Inserts sold in quantities of 1

|                  |                    |
|------------------|--------------------|
| TiN = 154T-XXXX  | TiAlN = 154A-XXXX  |
| TiCN = 154N-XXXX | AM200® = 154H-XXXX |



## T-A Drill Insert Holders

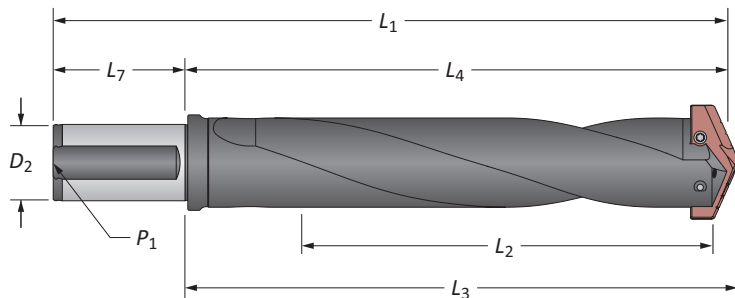
4 Series | Flange Shank | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)



### Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short    | 5-1/8          | 7-1/6          | 7-1/4          | 9-3/4          | 1-1/2          | 2-11/16        | 1/4            | 22040S-150F |
|        | Standard | 9-1/8          | 11-1/16        | 11-1/4         | 13-3/4         | 1-1/2          | 2-11/16        | 1/4            | 24040S-150F |
| m      | Short    | 130.2          | 179.4          | 184.0          | 249.4          | 40.0           | 70.0           | 1/4*           | 22040S-40FM |
|        | Extended | 422.3          | 471.5          | 476.0          | 541.5          | 40.0           | 70.0           | 1/4*           | 25040S-40FM |
|        | XL       | 625.0          | 674.7          | 679.0          | 744.7          | 40.0           | 70.0           | 1/4*           | 27040S-40FM |
|        | 3XL      | 879.0          | 928.7          | 933.0          | 998.7          | 40.0           | 70.0           | 1/4*           | 29040S-40FM |

\*Metric thread to BSP and ISO 7-1



### Helical Flute

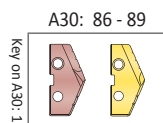
|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Standard | 9-1/8          | 11-1/16        | 11-1/4         | 13-3/4         | 1-1/2          | 2-11/16        | 1/4            | 24040H-150F |
| m      | Standard | 231.8          | 281.0          | 285.8          | 351.0          | 40.0           | 70.0           | 1/4*           | 24040H-40FM |

\*Metric thread to BSP and ISO 7-1

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

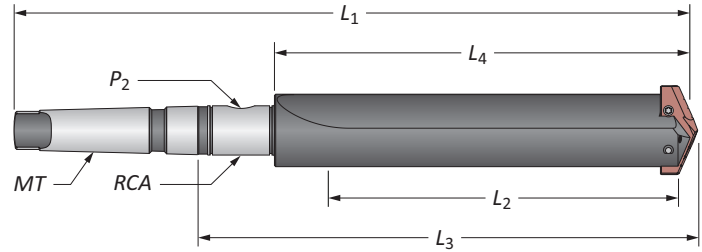
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

4 Series | Taper Shank | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)

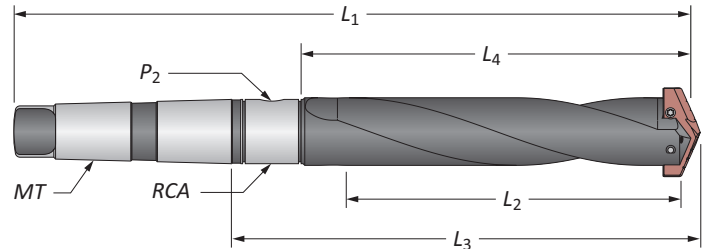


### Straight Flute

|   | Length   | Body           |                |                |                | Shank |                |         | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i | Short    | 5-1/8          | 6-1/2          | 8-5/8          | 13-1/16        | #4    | 1/4            | 2T-4SR  | 22040S-004I |
|   | Short    | 5-1/8          | 6-1/2          | 8-5/8          | 14-5/16        | #5    | 1/4            | 2T-5SR  | 22040S-005I |
|   | Standard | 9-1/8          | 10-1/2         | 12-5/8         | 17-1/16        | #4    | 1/4            | 2T-4SR  | 24040S-004I |
|   | Standard | 9-1/8          | 10-1/2         | 12-5/8         | 18-5/16        | #5    | 1/4            | 2T-5SR  | 24040S-005I |
|   | Extended | 16-5/8         | 18             | 20-1/8         | 25-13/16       | #5    | 1/4            | 2T-5SR  | 25040S-005I |
|   | XL       | 24-5/8         | 26             | 28-1/8         | 33-13/16       | #5    | 1/4            | 2T-5SR  | 27040S-005I |
| m | 3XL      | 34-5/8         | 36             | 38-1/8         | 43-13/16       | #5    | 1/4            | 2T-5SR  | 29040S-005I |
|   | Short    | 130.1          | 165.1          | 219.1          | 363.5          | #5**  | 1/4*           | 2T-5SRM | 22040S-005M |
|   | Extended | 422.3          | 457.2          | 511.2          | 655.6          | #5**  | 1/4*           | 2T-5SRM | 25040S-005M |
|   | XL       | 625.0          | 660.4          | 714.4          | 858.8          | #5**  | 1/4*           | 2T-5SRM | 27040S-005M |
|   | 3XL      | 879.0          | 914.4          | 968.4          | 1112.8         | #5**  | 1/4*           | 2T-5SRM | 29040S-005M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



### Helical Flute

|   | Length   | Body           |                |                |                | Shank |                |         | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| m | Standard | 231.8          | 266.7          | 320.7          | 465.1          | #5**  | 1/4*           | 2T-5SRM | 24040H-005M |

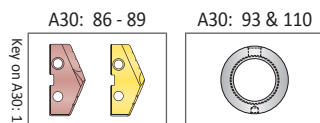
\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

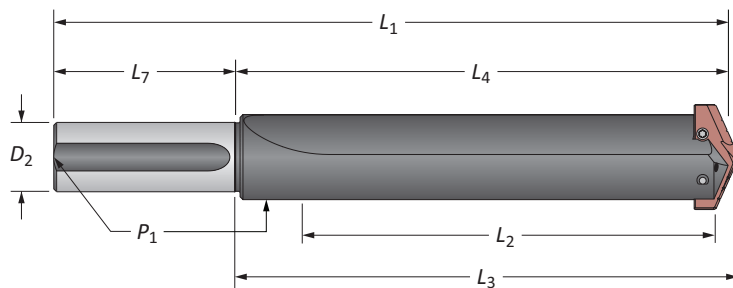
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Insert Holders

4 Series | Straight Shank | Diameter Range: 1.850" - 2.570" (46.99mm - 65.28mm)



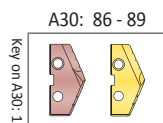
### Straight Flute

|   | Length   | Body           |                |                |                | Shank          |                |                | Part No.      |
|---|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
|   |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i | Short    | 5-1/8          | 6-1/2          | 6-11/16        | 10-1/2         | 1-1/2          | 4              | 1/4            | 22040S-150L   |
|   | Short    | 5-1/8          | 6-1/2          | 6-11/16        | 10-1/2         | 1-3/4          | 4              | 1/4            | 22040S-175L   |
|   | Standard | 9-1/8          | 10-1/2         | 10-11/16       | 14-1/2         | 1-1/2          | 4              | 1/4            | 24040S-150L   |
|   | Standard | 9-1/8          | 10-1/2         | 10-11/16       | 14-1/2         | 1-3/4          | 4              | 1/4            | 24040S-175L   |
|   | Extended | 16-5/8         | 18             | 18-3/16        | 22             | 1-1/2          | 4              | 1/4            | ⚠ 25040S-150L |
|   | XL       | 24-5/8         | 26             | 26-3/16        | 30             | 1-1/2          | 4              | 1/4            | ⚠ 27040S-150L |
|   | 3XL      | 34-5/8         | 36             | 36-3/16        | 40             | 1-1/2          | 4              | 1/4            | ⚠ 29040S-150L |

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7514-IP20-1   | 7514N-IP20-1         | 8IP-20        | —                         | —                | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

Screws sold in quantities of 10

**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Accessories

4 Series | Rotary Coolant Adapters | Torx® Plus Screws

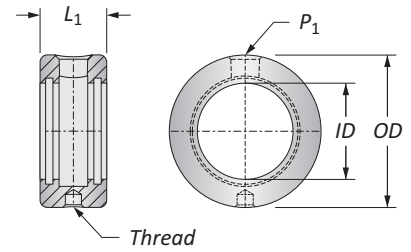
## Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No.  | RCA O-Rings    |              |
|---|-------|-------|----------------|--------------------|----------------|-----------|----------------|--------------|
|   |       |       |                |                    |                |           | Kit Part No.** | Replacements |
| i | 1-1/4 | 2-1/2 | 1-3/8          | 3/8-16             | 1/4            | ⚠ 2T-4SR  | 2T1-4SR        | 2T1-4OR-10   |
|   | 1-3/4 | 3     | 1-3/8          | 3/8-16             | 1/4            | ⚠ 2T-5SR  | 2T1-5SR        | 2T1-5OR-10   |
| m | 31.75 | 63.50 | 34.92          | M10 x 1.50         | 1/4*           | ⚠ 2T-4SRM | 2T1-4SR        | 2T1-4OR-10   |
|   | 44.45 | 76.20 | 34.92          | M10 x 1.50         | 1/4*           | ⚠ 2T-5SRM | 2T1-5SR        | 2T1-5OR-10   |

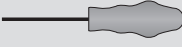
\*Thread to BSP and ISO 7-1

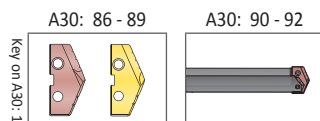
\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

⚠ Refer to page A30: 110 for proper RCA assembly and safety information



## Connection Accessories

|  |  |  |  |  | Admissible Tightening Torque* |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------|
| Insert Screws                                                                     | Nylon Locking Screws                                                              | Insert Driver                                                                     | Preset Torque Hand Driver                                                          | Replacement Tips                                                                    |                               |
| 7514-IP20-1                                                                       | 7514N-IP20-1                                                                      | 8IP-20                                                                            | —                                                                                  | —                                                                                   | 121.3 in-lbs (1370 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

m = Metric (mm)

Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

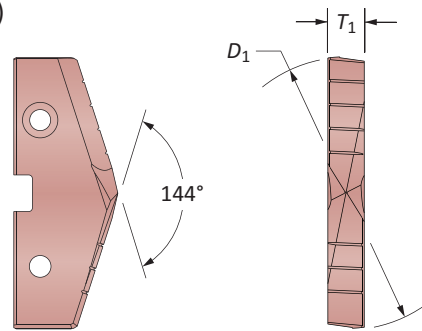
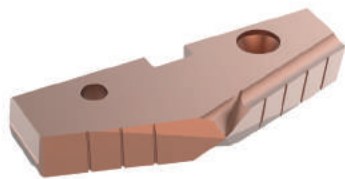
**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



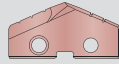


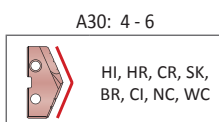
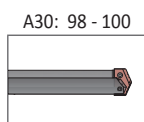
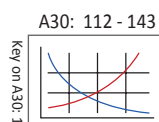
## GEN2 T-A Drill Inserts

5 Series | HSS | Diameter Range: 2.456" - 3.000" (62.38mm - 76.20mm)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.                                                                      | HSS Part No.                                                                            |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  AM200® |  TiN |
| 2-1/2                 | 2.5000     | 63.50    | 7/16  | 455H-0216                                                                                  | 435T-0216                                                                               |
| –                     | 2.5197     | 64.00    | 7/16  | 455H-64                                                                                    | 435T-64                                                                                 |
| 2-17/32               | 2.5313     | 64.29    | 7/16  | 455H-0217                                                                                  | 435T-0217                                                                               |
| 2-9/16                | 2.5625     | 65.09    | 7/16  | 455H-0218                                                                                  | 435T-0218                                                                               |
| 2-19/32               | 2.5938     | 65.88    | 7/16  | 455H-0219                                                                                  | 435T-0219                                                                               |
| –                     | 2.5984     | 66.00    | 7/16  | 455H-66                                                                                    | 435T-66                                                                                 |
| 2-5/8                 | 2.6250     | 66.68    | 7/16  | 455H-0220                                                                                  | 435T-0220                                                                               |
| 2-21/32               | 2.6563     | 67.47    | 7/16  | 455H-0221                                                                                  | 435T-0221                                                                               |
| –                     | 2.6772     | 68.00    | 7/16  | 455H-68                                                                                    | 435T-68                                                                                 |
| 2-11/16               | 2.6875     | 68.26    | 7/16  | 455H-0222                                                                                  | 435T-0222                                                                               |
| 2-23/32               | 2.7188     | 69.05    | 7/16  | 455H-0223                                                                                  | 435T-0223                                                                               |
| 2-3/4                 | 2.7500     | 69.85    | 7/16  | 455H-0224                                                                                  | 435T-0224                                                                               |
| –                     | 2.7559     | 70.00    | 7/16  | 455H-70                                                                                    | 435T-70                                                                                 |
| 2-25/32               | 2.7813     | 70.64    | 7/16  | 455H-0225                                                                                  | 435T-0225                                                                               |
| 2-13/16               | 2.8125     | 71.44    | 7/16  | 455H-0226                                                                                  | 435T-0226                                                                               |
| –                     | 2.8346     | 72.00    | 7/16  | 455H-72                                                                                    | 435T-72                                                                                 |
| 2-27/32               | 2.8438     | 72.23    | 7/16  | 455H-0227                                                                                  | 435T-0227                                                                               |
| 2-7/8                 | 2.8750     | 73.03    | 7/16  | 455H-0228                                                                                  | 435T-0228                                                                               |
| 2-29/32               | 2.9063     | 73.82    | 7/16  | 455H-0229                                                                                  | 435T-0229                                                                               |
| –                     | 2.9134     | 74.00    | 7/16  | 455H-74                                                                                    | 435T-74                                                                                 |
| 2-15/16               | 2.9375     | 74.41    | 7/16  | 455H-0230                                                                                  | 435T-0230                                                                               |
| 2-31/32               | 2.9688     | 75.61    | 7/16  | 455H-0231                                                                                  | 435T-0231                                                                               |
| –                     | 2.9921     | 76.00    | 7/16  | 455H-76                                                                                    | 435T-76                                                                                 |
| 3                     | 3.0000     | 76.20    | 7/16  | 455H-0300                                                                                  | 435T-0300                                                                               |



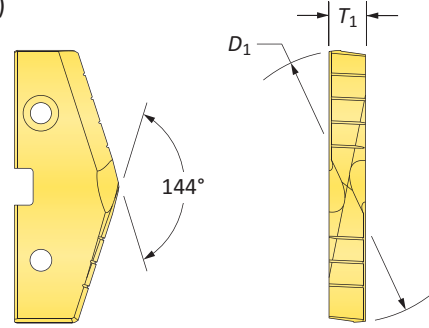
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 455T-XXXX  | TiAlN = 455A-XXXX  |
| TiCN = 455N-XXXX | AM200® = 455H-XXXX |

Inserts sold in quantities of 1

## Original T-A Drill Inserts

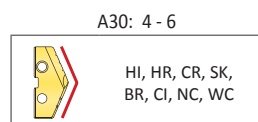
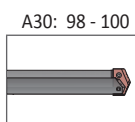
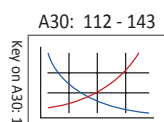
5 Series | HSS | Diameter Range: 2.456" - 3.000" (62.38mm - 76.20mm)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.*                                                                  | HSS Part No.                                                                            |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiN |
| 2-1/2                 | 2.5000     | 63.50    | 7/16  | 155T-0216                                                                               | 135T-0216                                                                               |
| –                     | 2.5197     | 64.00    | 7/16  | 155T-64                                                                                 | 135T-64                                                                                 |
| 2-17/32               | 2.5313     | 64.29    | 7/16  | 155T-0217                                                                               | 135T-0217                                                                               |
| 2-9/16                | 2.5625     | 65.09    | 7/16  | 155T-0218                                                                               | 135T-0218                                                                               |
| 2-19/32               | 2.5938     | 65.88    | 7/16  | 155T-0219                                                                               | 135T-0219                                                                               |
| –                     | 2.5984     | 66.00    | 7/16  | 155T-66                                                                                 | 135T-66                                                                                 |
| 2-5/8                 | 2.6250     | 66.68    | 7/16  | 155T-0220                                                                               | 135T-0220                                                                               |
| 2-21/32               | 2.6563     | 67.47    | 7/16  | 155T-0221                                                                               | 135T-0221                                                                               |
| –                     | 2.6772     | 68.00    | 7/16  | 155T-68                                                                                 | 135T-68                                                                                 |
| 2-11/16               | 2.6875     | 68.26    | 7/16  | 155T-0222                                                                               | 135T-0222                                                                               |
| 2-23/32               | 2.7188     | 69.05    | 7/16  | 155T-0223                                                                               | 135T-0223                                                                               |
| 2-3/4                 | 2.7500     | 69.85    | 7/16  | 155T-0224                                                                               | 135T-0224                                                                               |
| –                     | 2.7559     | 70.00    | 7/16  | 155T-70                                                                                 | 135T-70                                                                                 |
| 2-25/32               | 2.7813     | 70.64    | 7/16  | 155T-0225                                                                               | 135T-0225                                                                               |
| 2-13/16               | 2.8125     | 71.44    | 7/16  | 155T-0226                                                                               | 135T-0226                                                                               |
| –                     | 2.8346     | 72.00    | 7/16  | 155T-72                                                                                 | 135T-72                                                                                 |
| 2-27/32               | 2.8438     | 72.23    | 7/16  | 155T-0227                                                                               | 135T-0227                                                                               |
| 2-7/8                 | 2.8750     | 73.03    | 7/16  | 155T-0228                                                                               | 135T-0228                                                                               |
| 2-29/32               | 2.9063     | 73.82    | 7/16  | 155T-0229                                                                               | 135T-0229                                                                               |
| –                     | 2.9134     | 74.00    | 7/16  | 155T-74                                                                                 | 135T-74                                                                                 |
| 2-15/16               | 2.9375     | 74.41    | 7/16  | 155T-0230                                                                               | 135T-0230                                                                               |
| 2-31/32               | 2.9688     | 75.61    | 7/16  | 155T-0231                                                                               | 135T-0231                                                                               |
| –                     | 2.9921     | 76.00    | 7/16  | 155T-76                                                                                 | 135T-76                                                                                 |
| 3                     | 3.0000     | 76.20    | 7/16  | 155T-0300                                                                               | 135T-0300                                                                               |

\*Available as non-stocked standard



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

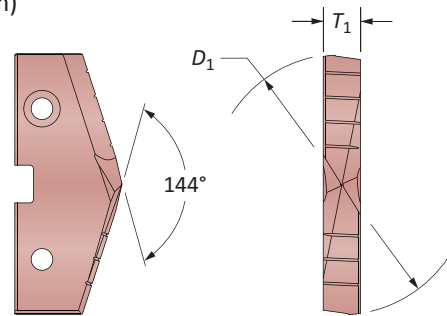
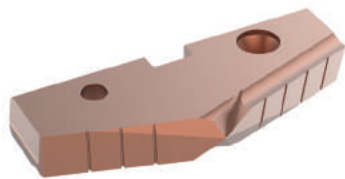
|                  |                    |
|------------------|--------------------|
| TiN = 155T-XXXX  | TiAlN = 155A-XXXX  |
| TiCN = 155N-XXXX | AM200® = 155H-XXXX |



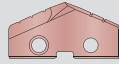
## GEN2 T-A Drill Inserts

6 Series | HSS | Diameter Range: 3.001" - 3.507" (76.22mm - 89.08mm)

(for use with 5 series holders)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.                                                                         | HSS Part No.                                                                               |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | AM200®<br> | TiN<br> |
| 3-1/32                | 3.0313     | 76.99    | 7/16  | 456H-0301                                                                                     | 436T-0301                                                                                  |
| 3-1/16                | 3.0625     | 77.79    | 7/16  | 456H-0302                                                                                     | 436T-0302                                                                                  |
| –                     | 3.0709     | 78.00    | 7/16  | 456H-78                                                                                       | 436T-78                                                                                    |
| 3-3/32                | 3.0938     | 78.58    | 7/16  | 456H-0303                                                                                     | 436T-0303                                                                                  |
| 3-1/8                 | 3.1250     | 79.38    | 7/16  | 456H-0304                                                                                     | 436T-0304                                                                                  |
| –                     | 3.1496     | 80.00    | 7/16  | 456H-80                                                                                       | 436T-80                                                                                    |
| 3-5/32                | 3.1563     | 80.17    | 7/16  | 456H-0305                                                                                     | 436T-0305                                                                                  |
| 3-3/16                | 3.1875     | 80.96    | 7/16  | 456H-0306                                                                                     | 436T-0306                                                                                  |
| 3-7/32                | 3.2188     | 81.76    | 7/16  | 456H-0307                                                                                     | 436T-0307                                                                                  |
| –                     | 3.2283     | 82.00    | 7/16  | 456H-82                                                                                       | 436T-82                                                                                    |
| 3-1/4                 | 3.2500     | 82.55    | 7/16  | 456H-0308                                                                                     | 436T-0308                                                                                  |
| 3-9/32                | 3.2813     | 83.34    | 7/16  | 456H-0309                                                                                     | 436T-0309                                                                                  |
| –                     | 3.3071     | 84.00    | 7/16  | 456H-84                                                                                       | 436T-84                                                                                    |
| 3-5/16                | 3.3125     | 84.14    | 7/16  | 456H-0310                                                                                     | 436T-0310                                                                                  |
| 3-11/32               | 3.3438     | 84.93    | 7/16  | 456H-0311                                                                                     | 436T-0311                                                                                  |
| 3-3/8                 | 3.3750     | 85.73    | 7/16  | 456H-0312                                                                                     | 436T-0312                                                                                  |
| –                     | 3.3858     | 86.00    | 7/16  | 456H-86                                                                                       | 436T-86                                                                                    |
| 3-13/32               | 3.4063     | 86.52    | 7/16  | 456H-0313                                                                                     | 436T-0313                                                                                  |
| 3-7/16                | 3.4375     | 87.31    | 7/16  | 456H-0314                                                                                     | 436T-0314                                                                                  |
| –                     | 3.4646     | 88.00    | 7/16  | 456H-88                                                                                       | 436T-88                                                                                    |
| 3-15/32               | 3.4688     | 88.11    | 7/16  | 456H-0315                                                                                     | 436T-0315                                                                                  |
| 3-1/2                 | 3.5000     | 88.90    | 7/16  | 456H-0316                                                                                     | 436T-0316                                                                                  |

D

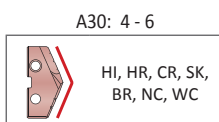
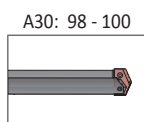
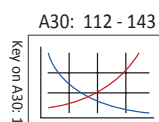
BURNISHING

E

THREADING

X

SPECIALS



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

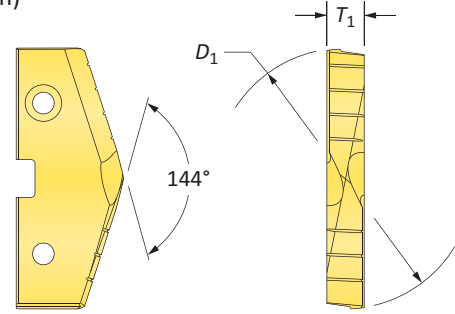
|                  |                    |
|------------------|--------------------|
| TiN = 456T-XXXX  | TiAlN = 456A-XXXX  |
| TiCN = 456N-XXXX | AM200® = 456H-XXXX |

Inserts sold in quantities of 1

**Original T-A Drill Inserts**

6 Series | HSS | Diameter Range: 3.001" - 3.507" (76.22mm - 89.08mm)

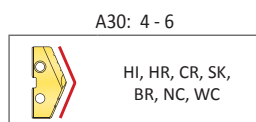
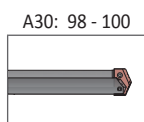
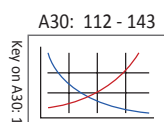
(for use with 5 series holders)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.*                                                                     | HSS Part No.                                                                               |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiN |
| 3-1/32                | 3.0313     | 76.99    | 7/16  | 156T-0301                                                                                  | 136T-0301                                                                                  |
| 3-1/16                | 3.0625     | 77.79    | 7/16  | 156T-0302                                                                                  | 136T-0302                                                                                  |
| –                     | 3.0709     | 78.00    | 7/16  | 156T-78                                                                                    | 136T-78                                                                                    |
| 3-3/32                | 3.0938     | 78.58    | 7/16  | 156T-0303                                                                                  | 136T-0303                                                                                  |
| 3-1/8                 | 3.1250     | 79.38    | 7/16  | 156T-0304                                                                                  | 136T-0304                                                                                  |
| –                     | 3.1496     | 80.00    | 7/16  | 156T-80                                                                                    | 136T-80                                                                                    |
| 3-5/32                | 3.1563     | 80.17    | 7/16  | 156T-0305                                                                                  | 136T-0305                                                                                  |
| 3-3/16                | 3.1875     | 80.96    | 7/16  | 156T-0306                                                                                  | 136T-0306                                                                                  |
| 3-7/32                | 3.2188     | 81.76    | 7/16  | 156T-0307                                                                                  | 136T-0307                                                                                  |
| –                     | 3.2283     | 82.00    | 7/16  | 156T-82                                                                                    | 136T-82                                                                                    |
| 3-1/4                 | 3.2500     | 82.55    | 7/16  | 156T-0308                                                                                  | 136T-0308                                                                                  |
| 3-9/32                | 3.2813     | 83.34    | 7/16  | 156T-0309                                                                                  | 136T-0309                                                                                  |
| –                     | 3.3071     | 84.00    | 7/16  | 156T-84                                                                                    | 136T-84                                                                                    |
| 3-5/16                | 3.3125     | 84.14    | 7/16  | 156T-0310                                                                                  | 136T-0310                                                                                  |
| 3-11/32               | 3.3438     | 84.93    | 7/16  | 156T-0311                                                                                  | 136T-0311                                                                                  |
| 3-3/8                 | 3.3750     | 85.73    | 7/16  | 156T-0312                                                                                  | 136T-0312                                                                                  |
| –                     | 3.3858     | 86.00    | 7/16  | 156T-86                                                                                    | 136T-86                                                                                    |
| 3-13/32               | 3.4063     | 86.52    | 7/16  | 156T-0313                                                                                  | 136T-0313                                                                                  |
| 3-7/16                | 3.4375     | 87.31    | 7/16  | 156T-0314                                                                                  | 136T-0314                                                                                  |
| –                     | 3.4646     | 88.00    | 7/16  | 156T-88                                                                                    | 136T-88                                                                                    |
| 3-15/32               | 3.4688     | 88.11    | 7/16  | 156T-0315                                                                                  | 136T-0315                                                                                  |
| 3-1/2                 | 3.5000     | 88.90    | 7/16  | 156T-0316                                                                                  | 136T-0316                                                                                  |

\*Available as non-stocked standard



Coatings not listed above can be supplied as non-stocked standards. Process fees apply. →

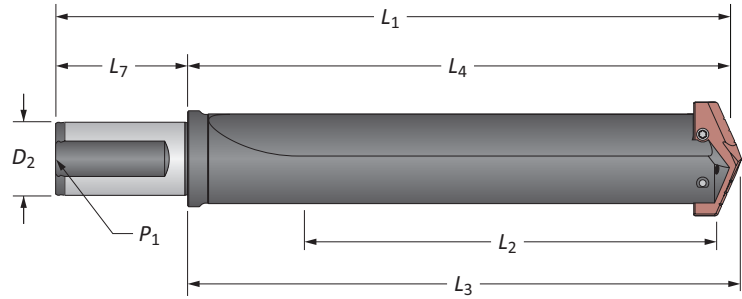
Inserts sold in quantities of 1

|                  |                    |
|------------------|--------------------|
| TiN = 156T-XXXX  | TiAlN = 156A-XXXX  |
| TiCN = 156N-XXXX | AM200® = 156H-XXXX |



## T-A Drill Insert Holders

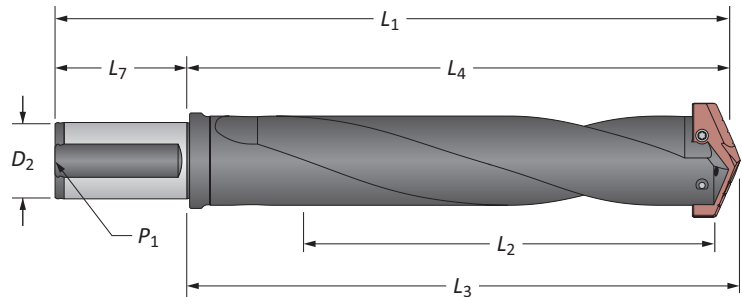
5 Series | Flange Shank | Diameter Range: 2.456" - 3.507" (62.38mm - 89.08mm)



### Straight Flute

|        |          | Body     |       |        |        | Shank |       |       | Part No.    |
|--------|----------|----------|-------|--------|--------|-------|-------|-------|-------------|
| Length |          | $L_2$    | $L_4$ | $L_3$  | $L_1$  | $D_2$ | $L_7$ | $P_1$ |             |
| i      | Short    | 6-49/64  | 8-1/2 | 8-3/4  | 13-1/4 | 2     | 4-1/2 | 1/2   | 22050S-200F |
|        | Extended | 18-17/64 | 20    | 20-1/4 | 24-3/4 | 2     | 4-1/2 | 1/2   | 25050S-200F |
| m      | Short    | 172      | 215.9 | 222.3  | 302.3  | 50.0  | 80.0  | 1/2*  | 22050S-50FM |
|        | Extended | 464      | 508   | 514.4  | 594.4  | 50.0  | 80.0  | 1/2*  | 25050S-50FM |

\*Metric thread to BSP and ISO 7-1



### Helical Flute

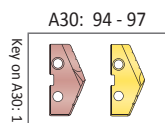
|        |          | Body   |        |        |        | Shank |       |       | Part No.    |
|--------|----------|--------|--------|--------|--------|-------|-------|-------|-------------|
| Length |          | $L_2$  | $L_4$  | $L_3$  | $L_1$  | $D_2$ | $L_7$ | $P_1$ |             |
| i      | Standard | 10-3/4 | 12-1/2 | 12-3/4 | 17-1/4 | 2     | 4-1/2 | 1/2   | 24050H-200F |
|        | Standard | 273    | 317.5  | 323.9  | 403.9  | 50.0  | 80.0  | 1/2*  | 24050H-50FM |

\*Metric thread to BSP and ISO 7-1

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

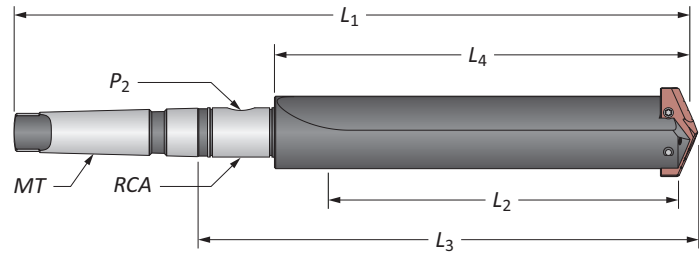
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

5 Series | Taper Shank | Diameter Range: 22.456" - 3.507" (62.38mm - 89.08mm)

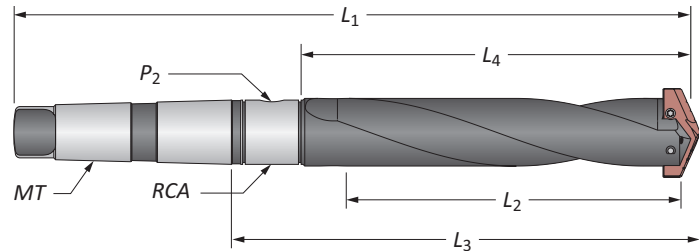


## Straight Flute

|        |          | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i      | Short    | 6-3/4          | 8-1/2          | 11-5/16        | 16-15/16       | #5    | 1/2            | 2T-6SR  | 22050S-005I |
|        | Standard | 10-3/4         | 12-1/2         | 15-5/16        | 20-15/16       | #5    | 1/2            | 2T-6SR  | 24050S-005I |
|        | Extended | 18-1/4         | 20             | 22-13/16       | 28-7/16        | #5    | 1/2            | 2T-6SR  | 25050S-005I |
|        | XL       | 26             | 27-3/4         | 30-9/16        | 36-3/16        | #5    | 1/2            | 2T-6SR  | 27050S-005I |
|        | 3XL      | 35             | 36-3/4         | 39-9/16        | 45-3/16        | #5    | 1/2            | 2T-6SR  | 29050S-005I |
| m      | Short    | 171.5          | 215.9          | 287.3          | 430.2          | #5**  | 1/2*           | 2T-6SRM | 22050S-005M |
|        | Extended | 463.6          | 508.0          | 579.4          | 722.3          | #5**  | 1/2*           | 2T-6SRM | 25050S-005M |
|        | XL       | 660.0          | 704.8          | 776.2          | 919.1          | #5**  | 1/2*           | 2T-6SRM | 27050S-005M |
|        | 3XL      | 889.0          | 933.4          | 1004.8         | 1147.7         | #5**  | 1/2*           | 2T-6SRM | 29050S-005M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



## Helical Flute

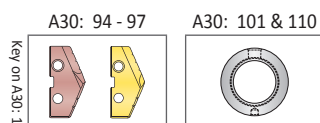
|        |          | Body           |                |                |                | Shank |                |         | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| m      | Standard | 273.1          | 317.5          | 388.9          | 531.8          | #5**  | 1/2*           | 2T-6SRM | 24050H-005M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

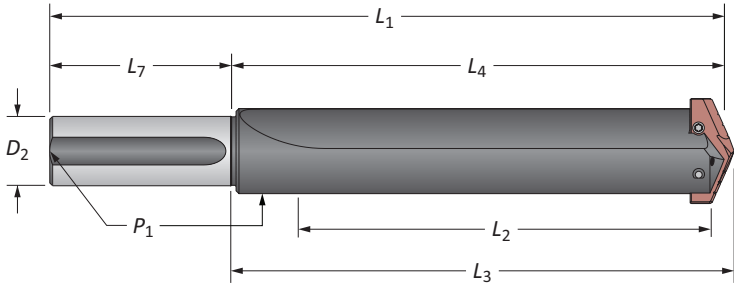
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

T-A Drill Insert Holders

5 Series | Straight Shank | Diameter Range: 2.456" - 3.507" (62.38mm - 89.08mm)



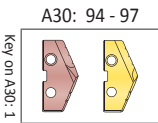
Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short    | 6-3/4          | 8-1/2          | 8-3/4          | 12-1/2         | 2              | 4              | 1/2            | 22050S-200L |
|        | Standard | 10-3/4         | 12-1/2         | 12-3/4         | 16-1/2         | 2              | 4              | 1/2            | 24050S-200L |
|        | Extended | 18-1/4         | 20             | 20-1/4         | 24             | 2              | 4              | 1/2            | 25050S-200L |
|        | XL       | 26             | 27-3/4         | 28             | 31-3/4         | 2              | 4              | 1/2            | 27050S-200L |
|        | 3XL      | 35             | 36-3/4         | 37             | 40-3/4         | 2              | 4              | 1/2            | 29050S-200L |

Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)  
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



## T-A Drill Accessories

5/6 Series | Rotary Coolant Adapters | Torx® Plus Screws

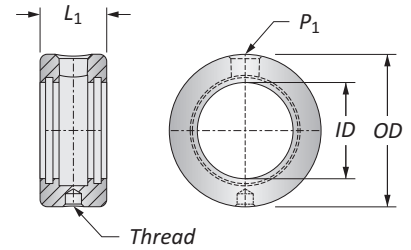
### Rotary Coolant Adapter (RCA) and Accessories

|   | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No. | RCA O-Rings    |              |
|---|-------|-------|----------------|--------------------|----------------|----------|----------------|--------------|
|   |       |       |                |                    |                |          | Kit Part No.** | Replacements |
| i | 2-1/4 | 3-3/4 | 1-3/4          | 1/2-13             | 1/2            | 2T-6SR   | 2T1-6SR        | 2T1-6OR-10   |
| m | 57.15 | 95.27 | 44.45          | M12 x 1.75         | 1/2*           | 2T-6SRM  | 2T1-6SR        | 2T1-6OR-10   |

\*Thread to BSP and ISO 7-1

\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

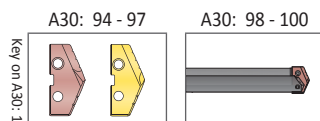
▲ Refer to page A30: 110 for proper RCA assembly and safety information



### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

m = Metric (mm)

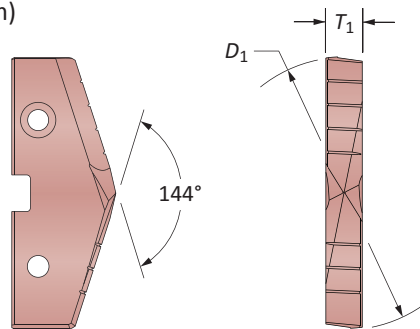
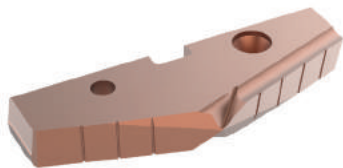
Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

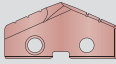


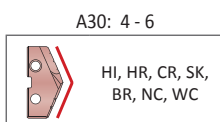
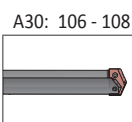
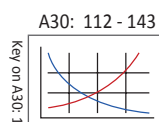
## GEN2 T-A Drill Inserts

7 Series | HSS | Diameter Range: 3.508" - 4.000" (89.10mm - 101.60mm)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.                                                                         | HSS Part No.                                                                               |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>AM200® | <br>TiN |
| 3-17/32               | 3.5313     | 89.69    | 7/16  | 457H-0317                                                                                     | 437T-0317                                                                                  |
| –                     | 3.5433     | 90.00    | 7/16  | 457H-90                                                                                       | 437T-90                                                                                    |
| 3-9/16                | 3.5625     | 90.49    | 7/16  | 457H-0318                                                                                     | 437T-0318                                                                                  |
| 3-19/32               | 3.5938     | 91.28    | 7/16  | 457H-0319                                                                                     | 437T-0319                                                                                  |
| –                     | 3.6221     | 92.00    | 7/16  | 457H-92                                                                                       | 437T-92                                                                                    |
| 3-5/8                 | 3.6250     | 92.08    | 7/16  | 457H-0320                                                                                     | 437T-0320                                                                                  |
| 3-21/32               | 3.6563     | 92.87    | 7/16  | 457H-0321                                                                                     | 437T-0321                                                                                  |
| 3-11/16               | 3.6875     | 93.66    | 7/16  | 457H-0322                                                                                     | 437T-0322                                                                                  |
| –                     | 3.7008     | 94.00    | 7/16  | 457H-94                                                                                       | 437T-94                                                                                    |
| 3-23/32               | 3.7188     | 94.46    | 7/16  | 457H-0323                                                                                     | 437T-0323                                                                                  |
| 3-3/4                 | 3.7500     | 95.25    | 7/16  | 457H-0324                                                                                     | 437T-0324                                                                                  |
| –                     | 3.7795     | 96.00    | 7/16  | 457H-96                                                                                       | 437T-96                                                                                    |
| 3-25/32               | 3.7813     | 96.04    | 7/16  | 457H-0325                                                                                     | 437T-0325                                                                                  |
| 3-13/16               | 3.8125     | 96.84    | 7/16  | 457H-0326                                                                                     | 437T-0326                                                                                  |
| 3-27/32               | 3.8438     | 97.63    | 7/16  | 457H-0327                                                                                     | 437T-0327                                                                                  |
| –                     | 3.8583     | 98.00    | 7/16  | 457H-98                                                                                       | 437T-98                                                                                    |
| 3-7/8                 | 3.8750     | 98.43    | 7/16  | 457H-0328                                                                                     | 437T-0328                                                                                  |
| 3-29/32               | 3.9063     | 99.22    | 7/16  | 457H-0329                                                                                     | 437T-0329                                                                                  |
| –                     | 3.9370     | 100.00   | 7/16  | 457H-100                                                                                      | 437T-100                                                                                   |
| 3-15/16               | 3.9375     | 100.01   | 7/16  | 457H-0330                                                                                     | 437T-0330                                                                                  |
| 3-31/32               | 3.9688     | 100.81   | 7/16  | 457H-0331                                                                                     | 437T-0331                                                                                  |
| 4                     | 4.0000     | 101.60   | 7/16  | 457H-0400                                                                                     | 437T-0400                                                                                  |



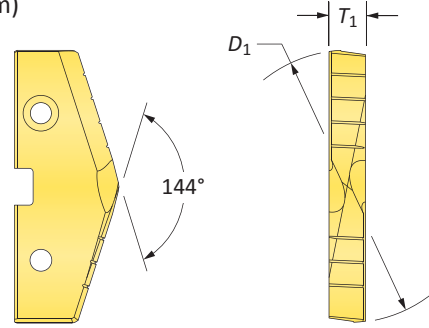
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

|                  |                    |
|------------------|--------------------|
| TiN = 457T-XXXX  | TiAlN = 457A-XXXX  |
| TiCN = 457N-XXXX | AM200® = 457H-XXXX |

Inserts sold in quantities of 1

## Original T-A Drill Inserts

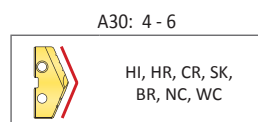
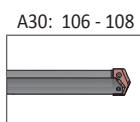
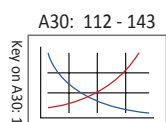
7 Series | HSS | Diameter Range: 3.508" - 4.000" (89.10mm - 101.60mm)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.*                                                                  | HSS Part No.                                                                            |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ |  TiN |  TiN |
| 3-17/32               | 3.5313     | 89.69    | 7/16  | 157T-0317                                                                               | 137T-0317                                                                               |
| –                     | 3.5433     | 90.00    | 7/16  | 157T-90                                                                                 | 137T-90                                                                                 |
| 3-9/16                | 3.5625     | 90.49    | 7/16  | 157T-0318                                                                               | 137T-0318                                                                               |
| 3-19/32               | 3.5938     | 91.28    | 7/16  | 157T-0319                                                                               | 137T-0319                                                                               |
| –                     | 3.6221     | 92.00    | 7/16  | 157T-92                                                                                 | 137T-92                                                                                 |
| 3-5/8                 | 3.6250     | 92.08    | 7/16  | 157T-0320                                                                               | 137T-0320                                                                               |
| 3-21/32               | 3.6563     | 92.87    | 7/16  | 157T-0321                                                                               | 137T-0321                                                                               |
| 3-11/16               | 3.6875     | 93.66    | 7/16  | 157T-0322                                                                               | 137T-0322                                                                               |
| –                     | 3.7008     | 94.00    | 7/16  | 157T-94                                                                                 | 137T-94                                                                                 |
| 3-23/32               | 3.7188     | 94.46    | 7/16  | 157T-0323                                                                               | 137T-0323                                                                               |
| 3-3/4                 | 3.7500     | 95.25    | 7/16  | 157T-0324                                                                               | 137T-0324                                                                               |
| –                     | 3.7795     | 96.00    | 7/16  | 157T-96                                                                                 | 137T-96                                                                                 |
| 3-25/32               | 3.7813     | 96.04    | 7/16  | 157T-0325                                                                               | 137T-0325                                                                               |
| 3-13/16               | 3.8125     | 96.84    | 7/16  | 157T-0326                                                                               | 137T-0326                                                                               |
| 3-27/32               | 3.8438     | 97.63    | 7/16  | 157T-0327                                                                               | 137T-0327                                                                               |
| –                     | 3.8583     | 98.00    | 7/16  | 157T-98                                                                                 | 137T-98                                                                                 |
| 3-7/8                 | 3.8750     | 98.43    | 7/16  | 157T-0328                                                                               | 137T-0328                                                                               |
| 3-29/32               | 3.9063     | 99.22    | 7/16  | 157T-0329                                                                               | 137T-0329                                                                               |
| –                     | 3.9370     | 100.00   | 7/16  | 157T-100                                                                                | 137T-100                                                                                |
| 3-15/16               | 3.9375     | 100.01   | 7/16  | 157T-0330                                                                               | 137T-0330                                                                               |
| 3-31/32               | 3.9688     | 100.81   | 7/16  | 157T-0331                                                                               | 137T-0331                                                                               |
| 4                     | 4.0000     | 101.60   | 7/16  | 157T-0400                                                                               | 137T-0400                                                                               |

\*Available as non-stocked standard



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

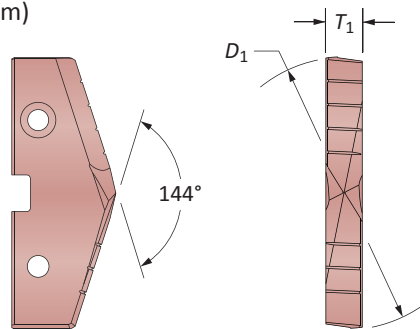
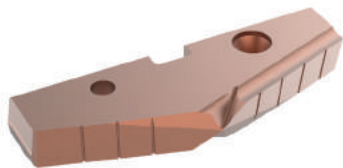
|                  |                    |
|------------------|--------------------|
| TiN = 157T-XXXX  | TiAlN = 157A-XXXX  |
| TiCN = 157N-XXXX | AM200® = 157H-XXXX |



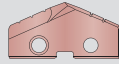
## GEN2 T-A Drill Inserts

8 Series | HSS | Diameter Range: 4.001" - 4.507" (101.63mm - 114.48mm)

(for use with 7 series holders)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.                                                                         | HSS Part No.                                                                               |
|-----------------------|------------|----------|-------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>AM200® | <br>TiN |
| 4-1/64                | 4.0157     | 102.00   | 7/16  | 458H-102                                                                                      | 438T-102                                                                                   |
| 4-1/16                | 4.0625     | 103.19   | 7/16  | 458H-0402                                                                                     | 438T-0402                                                                                  |
| 4-3/32                | 4.0945     | 104.00   | 7/16  | 458H-104                                                                                      | 438T-104                                                                                   |
| 4-1/8                 | 4.1250     | 104.75   | 7/16  | 458H-0404                                                                                     | 438T-0404                                                                                  |
| –                     | 4.1732     | 106.00   | 7/16  | 458H-106                                                                                      | 438T-106                                                                                   |
| 4-3/16                | 4.1875     | 106.36   | 7/16  | 458H-0406                                                                                     | 438T-0406                                                                                  |
| 4-1/4                 | 4.2500     | 107.95   | 7/16  | 458H-0408                                                                                     | 438T-0408                                                                                  |
| –                     | 4.2520     | 108.00   | 7/16  | 458H-108                                                                                      | 438T-108                                                                                   |
| 4-5/16                | 4.3125     | 109.54   | 7/16  | 458H-0410                                                                                     | 438T-0410                                                                                  |
| –                     | 4.3307     | 110.00   | 7/16  | 458H-110                                                                                      | 438T-110                                                                                   |
| 4-3/8                 | 4.3750     | 111.13   | 7/16  | 458H-0412                                                                                     | 438T-0412                                                                                  |
| –                     | 4.4094     | 112.00   | 7/16  | 458H-112                                                                                      | 438T-112                                                                                   |
| 4-7/16                | 4.4375     | 112.71   | 7/16  | 458H-0414                                                                                     | 438T-0414                                                                                  |
| –                     | 4.4882     | 114.00   | 7/16  | 458H-114                                                                                      | 438T-114                                                                                   |
| 4-1/2                 | 4.5000     | 114.30   | 7/16  | 458H-0416                                                                                     | 438T-0416                                                                                  |

D

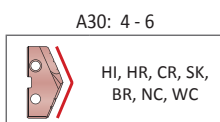
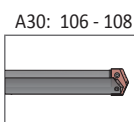
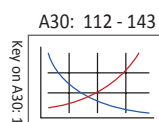
BURNISHING

E

THREADING

X

SPECIALS



Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

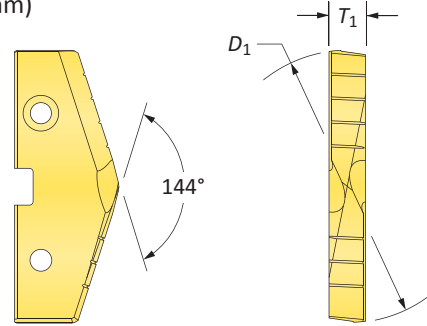
|                  |                    |
|------------------|--------------------|
| TiN = 458T-XXXX  | TiAlN = 458A-XXXX  |
| TiCN = 458N-XXXX | AM200® = 458H-XXXX |

Inserts sold in quantities of 1

## Original T-A Drill Inserts

8 Series | HSS | Diameter Range: 4.001" - 4.507" (101.63mm - 114.48mm)

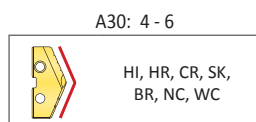
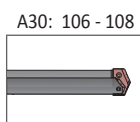
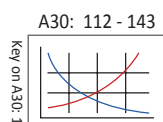
(for use with 7 series holders)



HSS Inserts – Super Cobalt | HSS

| Fractional Equivalent | Insert     |          |       | Super Cobalt Part No.*                                                                     | HSS Part No.                                                                               |
|-----------------------|------------|----------|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|                       | $D_1$ inch | $D_1$ mm | $T_1$ | <br>TiN | <br>TiN |
| 4-1/64                | 4.0157     | 102.00   | 7/16  | 158T-102                                                                                   | 138T-102                                                                                   |
| 4-1/16                | 4.0625     | 103.19   | 7/16  | 158T-0402                                                                                  | 138T-0402                                                                                  |
| 4-3/32                | 4.0945     | 104.00   | 7/16  | 158T-104                                                                                   | 138T-104                                                                                   |
| 4-1/8                 | 4.1250     | 104.75   | 7/16  | 158T-0404                                                                                  | 138T-0404                                                                                  |
| –                     | 4.1732     | 106.00   | 7/16  | 158T-106                                                                                   | 138T-106                                                                                   |
| 4-3/16                | 4.1875     | 106.36   | 7/16  | 158T-0406                                                                                  | 138T-0406                                                                                  |
| 4-1/4                 | 4.2500     | 107.95   | 7/16  | 158T-0408                                                                                  | 138T-0408                                                                                  |
| –                     | 4.2520     | 108.00   | 7/16  | 158T-108                                                                                   | 138T-108                                                                                   |
| 4-5/16                | 4.3125     | 109.54   | 7/16  | 158T-0410                                                                                  | 138T-0410                                                                                  |
| –                     | 4.3307     | 110.00   | 7/16  | 158T-110                                                                                   | 138T-110                                                                                   |
| 4-3/8                 | 4.3750     | 111.13   | 7/16  | 158T-0412                                                                                  | 138T-0412                                                                                  |
| –                     | 4.4094     | 112.00   | 7/16  | 158T-112                                                                                   | 138T-112                                                                                   |
| 4-7/16                | 4.4375     | 112.71   | 7/16  | 158T-0414                                                                                  | 138T-0414                                                                                  |
| –                     | 4.4882     | 114.00   | 7/16  | 158T-114                                                                                   | 138T-114                                                                                   |
| 4-1/2                 | 4.5000     | 114.30   | 7/16  | 158T-0416                                                                                  | 138T-0416                                                                                  |

\*Available as non-stocked standard



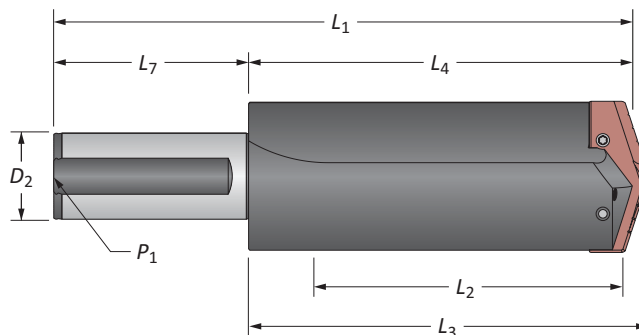
Coatings not listed above  
can be supplied as  
non-stocked standards.  
Process fees apply. →

Inserts sold in quantities of 1

|                  |                    |
|------------------|--------------------|
| TiN = 158T-XXXX  | TiAlN = 158A-XXXX  |
| TiCN = 158N-XXXX | AM200® = 158H-XXXX |

## T-A Drill Insert Holders

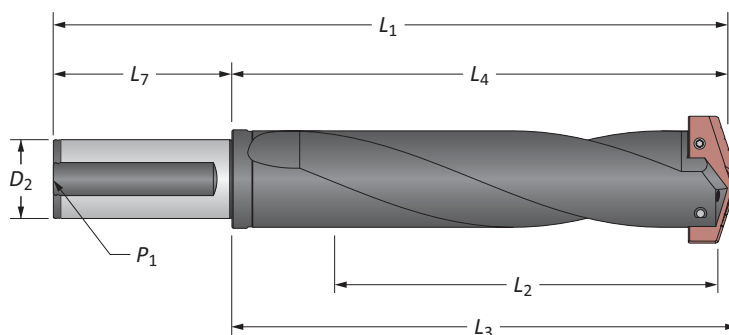
7 Series | Flange Shank | Diameter Range: 3.508" - 4.507" (89.10mm - 101.60mm)



### Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.      |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |               |
| i      | Short    | 6-49/64        | 8-7/8          | 9-1/8          | 13-5/8         | 2              | 4-1/2          | 1/2            | 22070S-200F   |
|        | Extended | 21-57/64       | 23-57/64       | 24-1/4         | 27-3/4         | 2              | 4-1/2          | 1/2            | ⚠ 25070S-200F |
| m      | Short    | 172            | 225.4          | 231.8          | 311.8          | 50.0           | 80.0           | 1/2*           | 22070S-50FM   |
|        | Extended | 556            | 606.9          | 616            | 696            | 50.0           | 80.0           | 1/2*           | ⚠ 25070S-50FM |

\*Metric thread to BSP and ISO 7-1



### Helical Flute

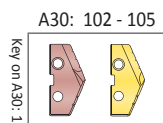
|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Standard | 10-3/4         | 12-7/8         | 13-1/8         | 17-5/8         | 2              | 4-1/2          | 1/2            | 24070H-200F |
| m      | Standard | 273            | 327            | 333.4          | 413.4          | 50.0           | 80.0           | 1/2*           | 24070H-50FM |

\*Metric thread to BSP and ISO 7-1

### Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)

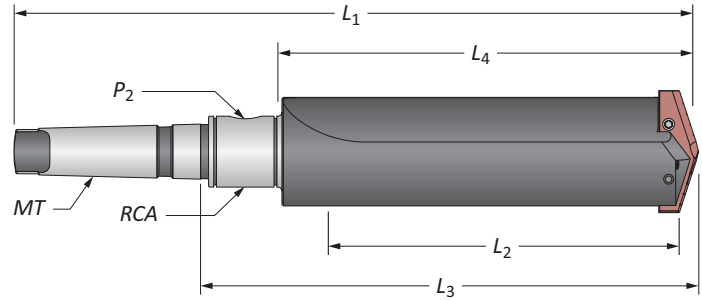
m = Metric (mm)

Screws sold in quantities of 10

**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Insert Holders

7 Series | Taper Shank | Diameter Range: 3.508" - 4.507" (89.10mm - 101.60mm)

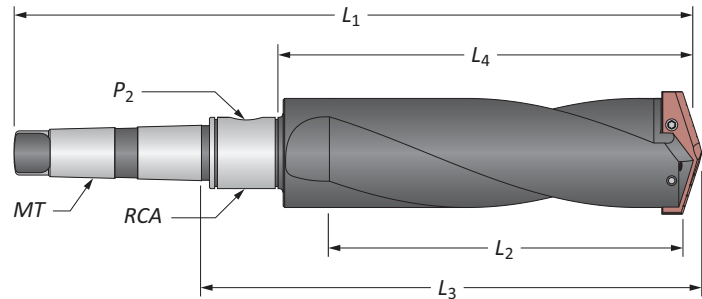


## Straight Flute

|   |          | Body           |                |                |                | Shank |                |         | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   | Length   | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| i | Short    | 6-3/4          | 8-7/8          | 11-11/16       | 17-5/16        | #5    | 1/2            | 2T-6SR  | 22070S-005I |
|   | Standard | 10-3/4         | 12-7/8         | 15-11/16       | 21-5/16        | #5    | 1/2            | 2T-6SR  | 24070S-005I |
|   | Extended | 21-7/8         | 24             | 26-13/16       | 32-7/16        | #5    | 1/2            | 2T-6SR  | 25070S-005I |
|   | XL       | 27             | 29-1/8         | 31-15/16       | 37-9/16        | #5    | 1/2            | 2T-6SR  | 27070S-005I |
|   | 3XL      | 37             | 39-1/8         | 41-5/16        | 47-9/16        | #5    | 1/2            | 2T-6SR  | 29070S-005I |
| m | Short    | 171.5          | 225.4          | 296.8          | 439.7          | #5**  | 1/2*           | 2T-6SRM | 22070S-005M |
|   | Extended | 555.6          | 609.6          | 681.1          | 823.9          | #5**  | 1/2*           | 2T-6SRM | 25070S-005M |
|   | XL       | 685.0          | 739.7          | 811.2          | 954.0          | #5**  | 1/2*           | 2T-6SRM | 27070S-005M |
|   | 3XL      | 939.0          | 993.7          | 1065.2         | 1208.0         | #5**  | 1/2*           | 2T-6SRM | 29070S-005M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK



## Helical Flute

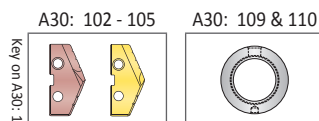
|   |          | Body           |                |                |                | Shank |                |         | Part No.    |
|---|----------|----------------|----------------|----------------|----------------|-------|----------------|---------|-------------|
|   | Length   | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | MT    | P <sub>2</sub> | RCA     |             |
| m | Standard | 273.1          | 327.0          | 398.5          | 541.3          | #5**  | 1/2*           | 2T-6SRM | 24070H-005M |

\*Metric thread to BSP and ISO 7-1

\*\*Per ISO 296 type BEK

## Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

i = Imperial (in)

m = Metric (mm)

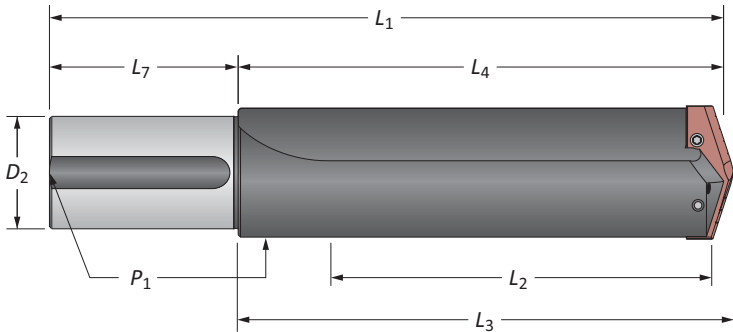
Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



T-A Drill Insert Holders

7 Series | Straight Shank | Diameter Range: 3.508" - 4.507" (89.10mm - 101.60mm)



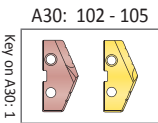
Straight Flute

|        |          | Body           |                |                |                | Shank          |                |                | Part No.    |
|--------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| Length |          | L <sub>2</sub> | L <sub>4</sub> | L <sub>3</sub> | L <sub>1</sub> | D <sub>2</sub> | L <sub>7</sub> | P <sub>1</sub> |             |
| i      | Short    | 6-3/4          | 8-7/8          | 9-1/8          | 13-7/8         | 3              | 5              | 1/2            | 22070S-300L |
|        | Standard | 10-3/4         | 12-7/8         | 13-1/8         | 17-7/8         | 3              | 5              | 1/2            | 24070S-300L |
|        | Extended | 21-7/8         | 24             | 24-1/4         | 29             | 3              | 5              | 1/2            | 25070S-300L |
|        | XL       | 27             | 29-1/8         | 29-3/8         | 34-1/8         | 3              | 5              | 1/2            | 27070S-300L |
|        | 3XL      | 37             | 39-1/8         | 39-3/8         | 44-1/8         | 3              | 5              | 1/2            | 29070S-300L |

Connection Accessories

| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength



i = Imperial (in)  
m = Metric (mm)

Screws sold in quantities of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## T-A Drill Accessories

7/8 Series | Rotary Coolant Adapters | Torx® Plus Screws

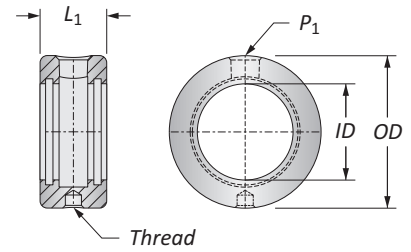
## Rotary Coolant Adapter (RCA) and Accessories

|  | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No. | RCA O-Rings    |              |
|--|-------|-------|----------------|--------------------|----------------|----------|----------------|--------------|
|  |       |       |                |                    |                |          | Kit Part No.** | Replacements |
|  | 2-1/4 | 3-3/4 | 1-3/4          | 1/2-13             | 1/2            | 2T-6SR   | 2T1-6SR        | 2T1-6OR-10   |
|  | 57.15 | 95.27 | 44.45          | M12 x 1.75         | 1/2*           | 2T-6SRM  | 2T1-6SR        | 2T1-6OR-10   |

\*Thread to BSP and ISO 7-1

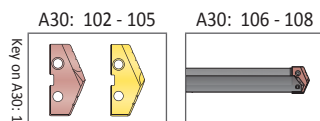
\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

Refer to page A30: 110 for proper RCA assembly and safety information



## Connection Accessories

|               |                      |               |                           |                  | Admissible Tightening Torque* |
|---------------|----------------------|---------------|---------------------------|------------------|-------------------------------|
| Insert Screws | Nylon Locking Screws | Insert Driver | Preset Torque Hand Driver | Replacement Tips |                               |
| 7619-IP25-1   | —                    | 8IP-25        | —                         | —                | 155.0 in-lbs (1750 N-cm)      |

\*Tightening torques are calculated with a friction coefficient of  $\mu = 0.14$  and develop 90% of ultimate yield strength

Key on A30: 1

= Imperial (in)

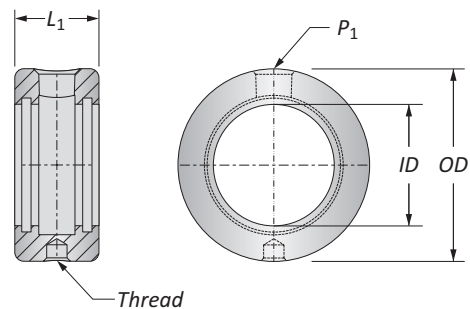
= Metric (mm)

Inserts sold separately  
Screws sold in packs of 10  
O-rings sold in packs of 10

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## Rotary Coolant Adapters (RCA)

Morse Taper Shanks



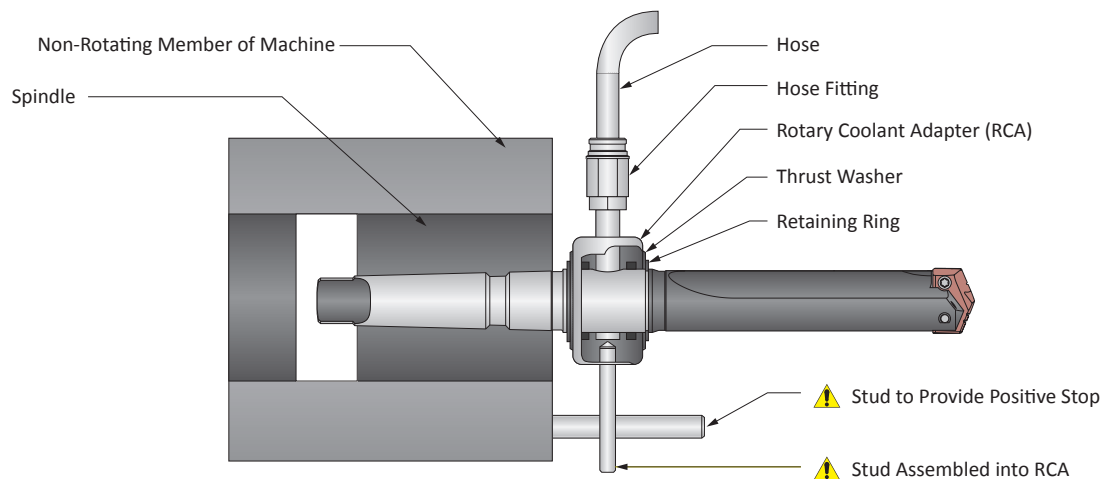
|   | Holder Series | ID    | OD    | L <sub>1</sub> | Driving Rod Thread | P <sub>1</sub> | Part No.  | Max Recommended RPM | RCA O-Rings    |              |
|---|---------------|-------|-------|----------------|--------------------|----------------|-----------|---------------------|----------------|--------------|
|   |               |       |       |                |                    |                |           |                     | Kit Part No.** | Replacements |
| i | Y, Z, 0       | 3/4   | 1-3/4 | 7/8            | 5/16 - 18          | 1/8            | ⚠ 2T-2SR  | 3500                | 2T1-2SR        | 2T1-2OR-10   |
|   | 1, 2          | 1     | 2-1/8 | 1-1/8          | 5/16 - 18          | 1/8            | ⚠ 2T-3SR  | 2500                | 2T1-3SR        | 2T1-3OR-10   |
|   | 2, 3, 4       | 1-1/4 | 2-1/2 | 1-3/8          | 3/8 - 16           | 1/4            | ⚠ 2T-4SR  | 2000                | 2T1-4SR        | 2T1-4OR-10   |
|   | 3, 4          | 1-3/4 | 3     | 1-3/8          | 3/8 - 16           | 1/4            | ⚠ 2T-5SR  | 1500                | 2T1-5SR        | 2T1-5OR-10   |
|   | 5, 7          | 2-1/4 | 3-3/4 | 1-3/4          | 1/2 - 13           | 1/2            | ⚠ 2T-6SR  | 1100                | 2T1-6SR        | 2T1-6OR-10   |
| m | Y, Z, 0       | 19.05 | 44.45 | 22.23          | M8 x 1.25          | 1/8*           | ⚠ 2T-2SRM | 3500                | 2T1-2SR        | 2T1-2OR-10   |
|   | 1, 2          | 25.40 | 53.97 | 28.57          | M8 x 1.25          | 1/8*           | ⚠ 2T-3SRM | 2500                | 2T1-3SR        | 2T1-3OR-10   |
|   | 2, 3, 4       | 31.75 | 63.50 | 34.92          | M10 x 1.50         | 1/4*           | ⚠ 2T-4SRM | 2000                | 2T1-4SR        | 2T1-4OR-10   |
|   | 3, 4          | 44.45 | 76.20 | 34.92          | M10 x 1.50         | 1/4*           | ⚠ 2T-5SRM | 1500                | 2T1-5SR        | 2T1-5OR-10   |
|   | 5, 7          | 57.15 | 95.27 | 44.45          | M12 x 1.75         | 1/2*           | ⚠ 2T-6SRM | 1100                | 2T1-6SR        | 2T1-6OR-10   |

\*Thread to BSP and ISO 7-1

\*\*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers

**NOTE:** Max recommended pressure is 600 PSI (42 bar)

**NOTE:** Recommendations above are based on water and oil based coolants



i = Imperial (in)

m = Metric (mm)

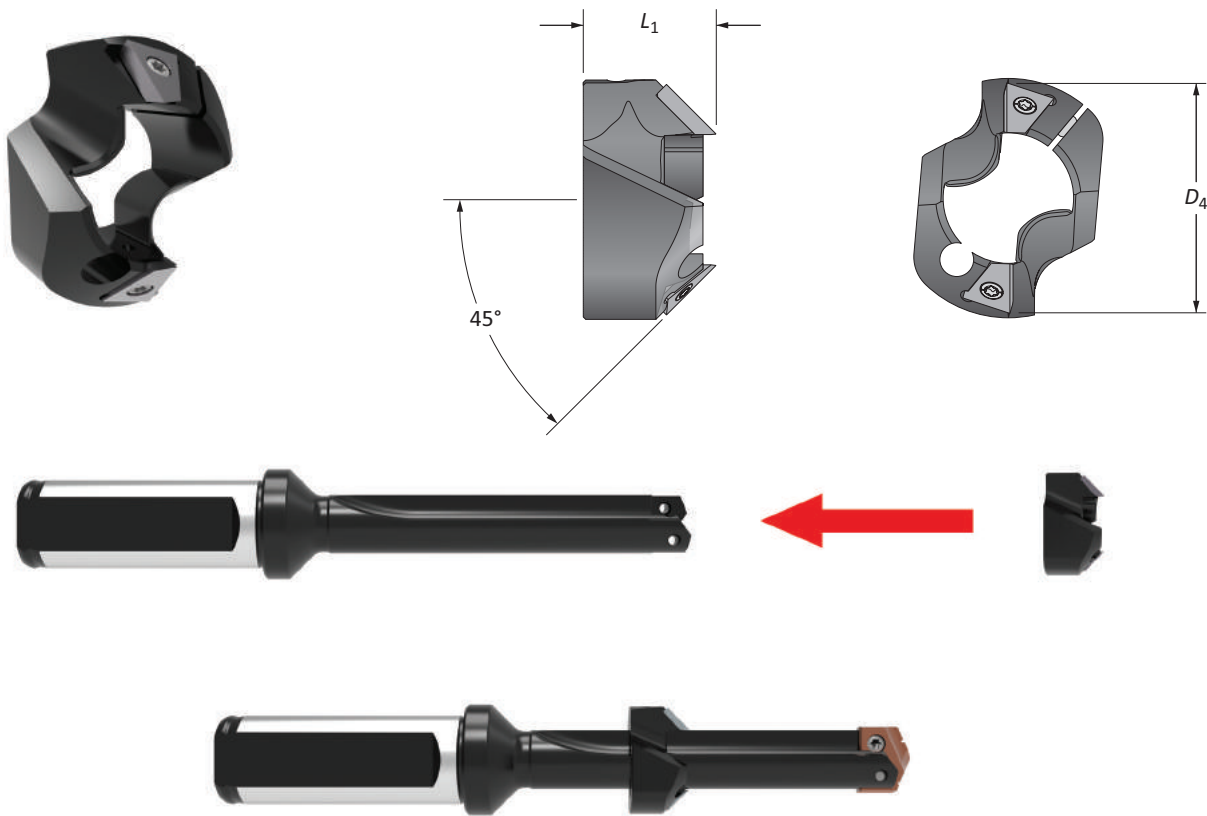
O-rings sold in packs of 10

**⚠ WARNING** RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.



T-ACR 45 Chamfer Rings

Straight Flute Holders



| Holder Series | D <sub>1</sub> Range | Chamfer Ring   |                | Part No.            |  Insert Part No. |  Insert Screw | Insert Driver |  Clamping Screw | Insert Driver |
|---------------|----------------------|----------------|----------------|---------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------|---------------|
|               |                      | D <sub>4</sub> | L <sub>1</sub> |                     |                                                                                                     |                                                                                                    |               |                                                                                                      |               |
| 0             | 0.5118 - 0.6890      | 13/16          | 0.676          | <b>T-ACR-45-0</b>   | T-ACRI-45-B-C5A                                                                                     | 7255-IP8-1                                                                                         | 8IP-8         | 7375-IP9-1                                                                                           | 8IP-9         |
| 1             | 0.6900 - 0.9600      | 1-3/64         | 51/64          | <b>T-ACR-45-1</b>   | T-ACRI-45-B-C5A                                                                                     | 7255-IP8-1                                                                                         | 8IP-8         | 7495-IP15-1                                                                                          | 8IP-15        |
| 1.5           | 0.8540 - 0.9600      | 1-1/8          | 57/64          | <b>T-ACR-45-1.5</b> | T-ACRI-45-B-C5A                                                                                     | 7255-IP8-1                                                                                         | 8IP-8         | 7495-IP15-1                                                                                          | 8IP-15        |
| 2             | 0.9610 - 1.3800      | 1-9/16         | 1              | <b>T-ACR-45-2</b>   | T-ACRI-45-B-C5A                                                                                     | 7255-IP8-1                                                                                         | 8IP-8         | 7514-IP20-1                                                                                          | 8IP-20        |

Highlights and Other Information

- Produces a 45° chamfer only
- Clamping screw allows for setting at any length along the flute
- Double effective cutting with face mounted inserts provides increased feed rates and greater insert strength
- The ring is balanced to match the holder center of gravity to ensure stability
- Inserts only available in C5 carbide and TiAlN coating
- Ideal for short-run or time sensitive jobs that require quick delivery

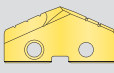
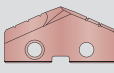


**IMPORTANT:** T-A chamfer rings can only be used with straight flute T-A holders

Inserts sold in quantities of 2  
Screws sold in quantities of 10

## GEN2 T-A Recommended Drilling Data | Imperial (inch)

### HSS Inserts

| ISO | Material                                                        | Hardness (BHN) | HSS Grade | SFM                                                                                   |                                                                                            | Feed Rate (IPR) by Diameter |               |
|-----|-----------------------------------------------------------------|----------------|-----------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------|---------------|
|     |                                                                 |                |           |  TiN |  AM200® | 3/8 - 1/2                   | 33/64 - 11/16 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150      | HSS       | 200                                                                                   | 325                                                                                        | 0.008                       | 0.012         |
|     |                                                                 | 150 - 200      | HSS       | 180                                                                                   | 300                                                                                        | 0.007                       | 0.011         |
|     |                                                                 | 200 - 250      | HSS       | 160                                                                                   | 280                                                                                        | 0.006                       | 0.010         |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125       | HSS       | 170                                                                                   | 290                                                                                        | 0.008 ❖                     | 0.010         |
|     |                                                                 | 125 - 175      | HSS       | 160                                                                                   | 275                                                                                        | 0.007 ❖                     | 0.010         |
|     |                                                                 | 175 - 225      | HSS       | 150                                                                                   | 260                                                                                        | 0.006 ❖                     | 0.009         |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 225 - 275      | HSS       | 140                                                                                   | 240                                                                                        | 0.005 ❖                     | 0.009         |
|     |                                                                 | 125 - 175      | HSS       | 160                                                                                   | 275                                                                                        | 0.007                       | 0.010         |
|     |                                                                 | 175 - 225      | HSS       | 150                                                                                   | 260                                                                                        | 0.006                       | 0.009         |
|     |                                                                 | 225 - 275      | HSS       | 140                                                                                   | 240                                                                                        | 0.006                       | 0.009         |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 275 - 325      | SC        | 130                                                                                   | 225                                                                                        | 0.005                       | 0.008         |
|     |                                                                 | 125 - 175      | HSS       | 150                                                                                   | 240                                                                                        | 0.007                       | 0.010         |
|     |                                                                 | 175 - 225      | HSS       | 140                                                                                   | 225                                                                                        | 0.006                       | 0.009         |
|     |                                                                 | 225 - 275      | HSS       | 130                                                                                   | 210                                                                                        | 0.006                       | 0.009         |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 275 - 325      | SC        | 120                                                                                   | 195                                                                                        | 0.005                       | 0.008         |
|     |                                                                 | 325 - 375      | SC        | 110                                                                                   | 180                                                                                        | 0.004                       | 0.007         |
|     |                                                                 | 225 - 300      | SC        | 80                                                                                    | 125                                                                                        | 0.006 ❖                     | 0.009         |
|     |                                                                 | 300 - 350      | SC        | 60                                                                                    | 100                                                                                        | 0.005 ❖                     | 0.008         |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 350 - 400      | SC        | 50                                                                                    | 80                                                                                         | 0.004 ❖                     | 0.007         |
|     |                                                                 | 100 - 150      | HSS       | 140                                                                                   | 235                                                                                        | 0.008 ❖                     | 0.011         |
|     |                                                                 | 150 - 250      | HSS       | 120                                                                                   | 190                                                                                        | 0.006 ❖                     | 0.010         |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 250 - 350      | SC        | 100                                                                                   | 160                                                                                        | 0.005 ❖                     | 0.009         |
|     |                                                                 | 150 - 200      | SC        | 80                                                                                    | 125                                                                                        | 0.004                       | 0.007         |
|     |                                                                 | 200 - 250      | SC        | 60                                                                                    | 105                                                                                        | 0.004                       | 0.007         |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220      | SC        | 30                                                                                    | 45                                                                                         | 0.004 ❖                     | 0.007         |
|     |                                                                 | 220 - 310      | SC        | 25                                                                                    | 40                                                                                         | 0.004 ❖                     | 0.006         |
|     | Titanium Alloy                                                  | 140 - 220      | SC        | 35                                                                                    | 55                                                                                         | 0.004 ❖                     | 0.007         |
|     |                                                                 | 220 - 310      | SC        | 30                                                                                    | 50                                                                                         | 0.003 ❖                     | 0.006         |
|     | Aerospace Alloy<br>S82                                          | 185 - 275      | SC        | 75                                                                                    | 110                                                                                        | 0.006 ❖                     | 0.008         |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 275 - 350      | SC        | 60                                                                                    | 100                                                                                        | 0.005 ❖                     | 0.007         |
|     |                                                                 | 185 - 275      | SC        | 75                                                                                    | 110                                                                                        | 0.003 ❖                     | 0.007         |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185      | SC        | 75                                                                                    | 110                                                                                        | 0.003 ❖                     | 0.007         |
|     |                                                                 | 185 - 275      | SC        | 60                                                                                    | 100                                                                                        | 0.003 ❖                     | 0.006         |
|     | Super Duplex Stainless Steel                                    | 135 - 185      | SC        | 60                                                                                    | 85                                                                                         | 0.003 ❖                     | 0.007         |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 185 - 275      | SC        | 50                                                                                    | 70                                                                                         | 0.003 ❖                     | 0.006         |
|     |                                                                 | 400            | SC        | 45                                                                                    | 70                                                                                         | 0.003 ❖                     | 0.006         |
|     |                                                                 | 500            | SC        | 35                                                                                    | 45                                                                                         | 0.002 ❖                     | 0.005         |
|     | Hardened Steel                                                  | 600            | —         | —                                                                                     | —                                                                                          | 0.004 ❖                     | 0.006         |
|     |                                                                 | 300 - 400      | SC        | 50                                                                                    | 95                                                                                         | —                           | —             |
| K   | Nodular, Grey, Ductile Cast Iron                                | 400 - 500      | SC        | 35                                                                                    | 45                                                                                         | 0.002 ❖                     | 0.005         |
|     |                                                                 | 120 - 150      | HSS       | 170                                                                                   | 290                                                                                        | 0.008                       | 0.012         |
|     |                                                                 | 150 - 200      | HSS       | 150                                                                                   | 260                                                                                        | 0.007                       | 0.011         |
|     |                                                                 | 200 - 220      | HSS       | 130                                                                                   | 225                                                                                        | 0.006                       | 0.009         |
|     |                                                                 | 220 - 260      | SC        | 110                                                                                   | 190                                                                                        | 0.005                       | 0.008         |
| N   | Cast Aluminum                                                   | 260 - 320      | SC        | 90                                                                                    | 155                                                                                        | 0.005                       | 0.007         |
|     |                                                                 | 30             | HSS       | 600                                                                                   | —                                                                                          | 0.009                       | 0.015         |
|     | Wrought Aluminum                                                | 180            | HSS       | 300                                                                                   | —                                                                                          | 0.008                       | 0.013         |
|     |                                                                 | 30             | HSS       | 600                                                                                   | 900                                                                                        | 0.005                       | 0.013         |
|     | Aluminum Bronze                                                 | 180            | HSS       | 300                                                                                   | 650                                                                                        | 0.005                       | 0.007         |
|     |                                                                 | 100 - 200      | SC        | 170                                                                                   | 270                                                                                        | 0.006                       | 0.009         |
|     | Brass                                                           | 200 - 250      | SC        | 130                                                                                   | 210                                                                                        | 0.005                       | 0.007         |
|     |                                                                 | 100            | HSS       | 300                                                                                   | 470                                                                                        | 0.007                       | 0.011         |
| X   | Copper                                                          | 60             | SC        | 130                                                                                   | 190                                                                                        | 0.003 ❖                     | 0.004         |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.

### Feed Rate (IPR) by Diameter

| 45/64 -<br>15/16 | 31/32 -<br>1-3/8 | 1-13/32 -<br>1-7/8 | 1-29/32 -<br>2-9/16 | 2-19/32 -<br>4-1/2 |
|------------------|------------------|--------------------|---------------------|--------------------|
| 0.016            | 0.019            | 0.020              | 0.023               | 0.028              |
| 0.015            | 0.017            | 0.020              | 0.023               | 0.028              |
| 0.014            | 0.016            | 0.020              | 0.023               | 0.028              |
| 0.014            | 0.018            | 0.019              | 0.023               | 0.027              |
| 0.014            | 0.017            | 0.019              | 0.023               | 0.027              |
| 0.013            | 0.016            | 0.018              | 0.021               | 0.024              |
| 0.013            | 0.016            | 0.018              | 0.021               | 0.024              |
| 0.014            | 0.017            | 0.019              | 0.023               | 0.027              |
| 0.013            | 0.016            | 0.018              | 0.021               | 0.024              |
| 0.013            | 0.016            | 0.018              | 0.021               | 0.024              |
| 0.012            | 0.015            | 0.016              | 0.019               | 0.022              |
| 0.014            | 0.017            | 0.017              | 0.019               | 0.022              |
| 0.013            | 0.016            | 0.017              | 0.019               | 0.022              |
| 0.013            | 0.016            | 0.017              | 0.019               | 0.022              |
| 0.012            | 0.015            | 0.015              | 0.017               | 0.020              |
| 0.011            | 0.014            | 0.015              | 0.017               | 0.020              |
| 0.011            | 0.013            | 0.014              | 0.017               | 0.020              |
| 0.010            | 0.012            | 0.014              | 0.017               | 0.020              |
| 0.009            | 0.011            | 0.012              | 0.015               | 0.018              |
| 0.015            | 0.017            | 0.018              | 0.021               | 0.026              |
| 0.013            | 0.015            | 0.016              | 0.019               | 0.024              |
| 0.012            | 0.013            | 0.014              | 0.017               | 0.020              |
| 0.010            | 0.012            | 0.012              | 0.015               | 0.017              |
| 0.010            | 0.012            | 0.012              | 0.015               | 0.017              |
| 0.009            | 0.011            | 0.012              | 0.015               | 0.017              |
| 0.008            | 0.010            | 0.010              | 0.012               | 0.014              |
| 0.008            | 0.010            | 0.012              | 0.015               | 0.017              |
| 0.007            | 0.009            | 0.010              | 0.012               | 0.014              |
| 0.009            | 0.011            | 0.014              | 0.016               | 0.020              |
| 0.008            | 0.010            | 0.012              | 0.014               | 0.018              |
| 0.009            | 0.011            | 0.014              | 0.016               | 0.020              |
| 0.008            | 0.010            | 0.012              | 0.014               | 0.018              |
| 0.009            | 0.011            | 0.014              | 0.016               | 0.020              |
| 0.008            | 0.010            | 0.012              | 0.014               | 0.018              |
| 0.008            | 0.009            | 0.012              | 0.016               | 0.018              |
| 0.007            | 0.008            | 0.010              | 0.012               | 0.016              |
| 0.009            | 0.011            | 0.012              | 0.016               | 0.018              |
| -                | -                | -                  | -                   | -                  |
| 0.007            | 0.009            | 0.010              | 0.012               | 0.016              |
| 0.016            | 0.020            | 0.024              | 0.027               | 0.030              |
| 0.015            | 0.019            | 0.022              | 0.025               | 0.028              |
| 0.013            | 0.017            | 0.018              | 0.021               | 0.024              |
| 0.011            | 0.014            | 0.014              | 0.017               | 0.020              |
| 0.010            | 0.012            | 0.012              | 0.014               | 0.016              |
| 0.018            | 0.023            | 0.022              | 0.025               | 0.025              |
| 0.016            | 0.020            | 0.022              | 0.025               | 0.025              |
| 0.016            | 0.020            | 0.022              | 0.025               | 0.025              |
| 0.012            | 0.014            | 0.022              | 0.025               | 0.025              |
| 0.012            | 0.015            | 0.017              | 0.019               | 0.021              |
| 0.009            | 0.011            | 0.014              | 0.016               | 0.018              |
| 0.013            | 0.018            | 0.019              | 0.021               | 0.023              |
| 0.007            | 0.010            | 0.009              | 0.011               | 0.012              |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | -             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

### Formulas

$$1. \text{ RPM } = (3.82 \cdot \text{SFM}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

SFM = speed (ft/min)

DIA = diameter of drill (inch)

$$2. \text{ IPM } = \text{RPM} \cdot \text{IPR}$$

where:

IPM = inches per minute (in/min)

RPM = revolutions per minute (rev/min)

IPR = feed rate (in/rev)

$$3. \text{ SFM } = \text{RPM} \cdot 0.262 \cdot \text{DIA}$$

where:

SFM = speed (ft/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (inch)

### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## GEN2 T-A Recommended Drilling Data | Imperial (inch)

### Carbide Inserts

| ISO | Material                                                                  | Hardness<br>(BHN) | Carbide<br>Grade | SFM<br><br>AM300® | Feed Rate (IPR) by Diameter |                  |                  |                  |
|-----|---------------------------------------------------------------------------|-------------------|------------------|----------------------------------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------|
|     |                                                                           |                   |                  |                                                                                                    | 3/8 -<br>1/2                | 33/64 -<br>11/16 | 45/64 -<br>15/16 | 31/32 -<br>1-3/8 |
| P   | <b>Free Machining Steel</b><br>1118, 1215, 12L14, etc.                    | 100 - 150         | C1               | 480                                                                                                | 0.008                       | 0.012            | 0.016            | 0.019            |
|     |                                                                           | 150 - 200         | C1               | 415                                                                                                | 0.007                       | 0.011            | 0.015            | 0.017            |
|     |                                                                           | 200 - 250         | C1               | 390                                                                                                | 0.006                       | 0.010            | 0.014            | 0.016            |
|     | <b>Low Carbon Steel</b><br>1010, 1020, 1025, 1522,<br>1144, etc.          | 85 - 125          | C1               | 450                                                                                                | 0.008 ❖                     | 0.010            | 0.014            | 0.018            |
|     |                                                                           | 125 - 175         | C1               | 390                                                                                                | 0.007 ❖                     | 0.010            | 0.014            | 0.017            |
|     |                                                                           | 175 - 225         | C1               | 355                                                                                                | 0.006 ❖                     | 0.009            | 0.013            | 0.016            |
|     |                                                                           | 225 - 275         | C1               | 310                                                                                                | 0.005 ❖                     | 0.009            | 0.013            | 0.016            |
|     | <b>Medium Carbon Steel</b><br>1030, 1040, 1050, 1527,<br>1140, 1151, etc. | 125 - 175         | C1               | 390                                                                                                | 0.007                       | 0.010            | 0.014            | 0.017            |
|     |                                                                           | 175 - 225         | C1               | 355                                                                                                | 0.006                       | 0.009            | 0.013            | 0.016            |
|     |                                                                           | 225 - 275         | C1               | 310                                                                                                | 0.006                       | 0.009            | 0.013            | 0.016            |
|     |                                                                           | 275 - 325         | C1               | 265                                                                                                | 0.005                       | 0.008            | 0.012            | 0.015            |
|     | <b>Alloy Steel</b><br>4140, 5140, 8640, etc.                              | 125 - 175         | C1               | 375                                                                                                | 0.007                       | 0.010            | 0.014            | 0.017            |
|     |                                                                           | 175 - 225         | C1               | 345                                                                                                | 0.006                       | 0.009            | 0.013            | 0.016            |
|     |                                                                           | 225 - 275         | C1               | 310                                                                                                | 0.006                       | 0.009            | 0.013            | 0.016            |
|     |                                                                           | 275 - 325         | C1               | 285                                                                                                | 0.005                       | 0.008            | 0.012            | 0.015            |
|     |                                                                           | 325 - 375         | C1               | 255                                                                                                | 0.004                       | 0.007            | 0.011            | 0.014            |
|     | <b>High Strength Alloy</b><br>4340, 4330V, 300M, etc.                     | 225 - 300         | C1               | 230                                                                                                | 0.006 ❖                     | 0.009            | 0.011            | 0.013            |
|     |                                                                           | 300 - 350         | C1               | 205                                                                                                | 0.005 ❖                     | 0.008            | 0.010            | 0.012            |
|     |                                                                           | 350 - 400         | C1               | 185                                                                                                | 0.004 ❖                     | 0.007            | 0.009            | 0.011            |
|     | <b>Structural Steel</b><br>A36, A285, A516, etc.                          | 100 - 150         | C1               | 355                                                                                                | 0.008 ❖                     | 0.011            | 0.015            | 0.017            |
|     |                                                                           | 150 - 250         | C1               | 285                                                                                                | 0.006 ❖                     | 0.010            | 0.013            | 0.015            |
|     |                                                                           | 250 - 350         | C1               | 265                                                                                                | 0.005 ❖                     | 0.009            | 0.012            | 0.013            |
|     | <b>Tool Steel</b><br>H-13, H-21, A-4, O-2, S-3, etc.                      | 150 - 200         | C1               | 255                                                                                                | 0.007                       | 0.007            | 0.010            | 0.012            |
|     |                                                                           | 200 - 250         | C1               | 195                                                                                                | 0.007                       | 0.007            | 0.010            | 0.012            |
| S   | <b>High Temp Alloy</b><br>Hastelloy B, Inconel 600, etc.                  | 140 - 220         | C2               | 120                                                                                                | 0.004 ❖                     | 0.007            | 0.009            | 0.011            |
|     |                                                                           | 220 - 310         | C2               | 95                                                                                                 | 0.004 ❖                     | 0.006            | 0.008            | 0.010            |
|     | <b>Titanium Alloy</b>                                                     | 140 - 220         | C2               | 140                                                                                                | 0.004 ❖                     | 0.007            | 0.008            | 0.011            |
|     |                                                                           | 220 - 310         | C2               | 110                                                                                                | 0.003 ❖                     | 0.006            | 0.007            | 0.009            |
|     | <b>Aerospace Alloy</b><br>S82                                             | 185 - 275         | C2               | 240                                                                                                | 0.005 ❖                     | 0.006            | 0.007            | 0.009            |
|     |                                                                           | 275 - 350         | C2               | 180                                                                                                | 0.004 ❖                     | 0.005            | 0.006            | 0.008            |
| M   | <b>Stainless Steel 400 Series</b><br>416, 420, etc.                       | 185 - 275         | C2               | 240                                                                                                | 0.007 ❖                     | 0.009            | 0.012            | 0.014            |
|     |                                                                           | 275 - 350         | C2               | 180                                                                                                | 0.006 ❖                     | 0.008            | 0.011            | 0.012            |
|     | <b>Stainless Steel 300 Series</b><br>304, 316, 17-4PH, etc.               | 135 - 185         | C2               | 240                                                                                                | 0.006 ❖                     | 0.007            | 0.009            | 0.012            |
|     |                                                                           | 185 - 275         | C2               | 180                                                                                                | 0.005 ❖                     | 0.006            | 0.008            | 0.009            |
|     | <b>Super Duplex Stainless Steel</b>                                       | 135 - 185         | C2               | 125                                                                                                | 0.005 ❖                     | 0.007            | 0.008            | 0.010            |
|     |                                                                           | 185 - 275         | C2               | 100                                                                                                | 0.004 ❖                     | 0.006            | 0.007            | 0.009            |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | SFM<br><br>AM300® | Feed Rate (IPR) by Diameter |                  |                  |                  |
|-----|----------------------------------------|-------------------|------------------|----------------------------------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------|
|     |                                        |                   |                  |                                                                                                    | 3/8 -<br>1/2                | 33/64 -<br>11/16 | 45/64 -<br>15/16 | 31/32 -<br>1-3/8 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C2               | 150                                                                                                | 0.003 ❖                     | 0.005            | 0.008            | 0.010            |
|     |                                        | 500               | C2               | 120                                                                                                | 0.002 ❖                     | 0.004            | 0.006            | 0.008            |
|     |                                        | 600               | C2               | 100                                                                                                | 0.001 ❖                     | 0.003            | 0.005            | 0.006            |
|     | Hardened Steel                         | 300 - 400         | C1               | 150                                                                                                | 0.004 ❖                     | 0.006            | 0.009            | 0.011            |
|     |                                        | 400 - 500         | C1               | 120                                                                                                | 0.003 ❖                     | 0.005            | 0.008            | 0.010            |
| K   | Nodular, Grey, Ductile Cast Iron       | 120 - 150         | C2               | 500                                                                                                | 0.008                       | 0.012            | 0.015            | 0.019            |
|     |                                        | 150 - 200         | C2               | 480                                                                                                | 0.007                       | 0.011            | 0.013            | 0.017            |
|     |                                        | 200 - 220         | C2               | 430                                                                                                | 0.006                       | 0.009            | 0.012            | 0.015            |
|     |                                        | 220 - 260         | C2               | 370                                                                                                | 0.005                       | 0.008            | 0.011            | 0.013            |
|     |                                        | 260 - 320         | C2               | 335                                                                                                | 0.005                       | 0.007            | 0.010            | 0.011            |
| N   | Cast Aluminum                          | 30                | C2               | 975                                                                                                | 0.009                       | 0.015            | 0.018            | 0.023            |
|     |                                        | 180               | C2               | 730                                                                                                | 0.008                       | 0.013            | 0.016            | 0.020            |
|     | Wrought Aluminum                       | 30                | C2               | 1385                                                                                               | 0.005                       | 0.013            | 0.016            | 0.020            |
|     |                                        | 180               | C2               | 975                                                                                                | 0.005                       | 0.007            | 0.012            | 0.014            |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 360                                                                                                | 0.006                       | 0.009            | 0.012            | 0.015            |
|     |                                        | 200 - 250         | C2               | 300                                                                                                | 0.005                       | 0.007            | 0.009            | 0.011            |
|     | Brass                                  | 100               | C2               | 650                                                                                                | 0.007                       | 0.011            | 0.013            | 0.018            |
|     | Copper                                 | 60                | C2               | 420                                                                                                | 0.003 ❖                     | 0.004            | 0.007            | 0.010            |

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#### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

#### Formulas

|                                                                                                                                                                      |                                                                                                                                                                   |                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{RPM} = (3.82 \cdot \text{SFM}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>SFM = speed (ft/min)<br>DIA = diameter of drill (inch) | 2. $\text{IPM} = \text{RPM} \cdot \text{IPR}$<br>where:<br>IPM = inches per minute (in/min)<br>RPM = revolutions per minute (rev/min)<br>IPR = feed rate (in/rev) | 3. $\text{SFM} = \text{RPM} \cdot 0.262 \cdot \text{DIA}$<br>where:<br>SFM = speed (ft/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (inch) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

 **WARNING** Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## Original T-A Recommended Drilling Data | Imperial (inch)

### HSS Inserts

| ISO | Material                                                        | Hardness<br>(BHN) | HSS<br>Grade | SFM                                                                                   |                                                                                          |                                                                                          | Feed Rate (IPR) by Diameter |                  |
|-----|-----------------------------------------------------------------|-------------------|--------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------|------------------|
|     |                                                                 |                   |              |  TiN |  TiAlN |  TiCN | 3/8 -<br>1/2                | 33/64 -<br>11/16 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150         | HSS          | 200                                                                                   | 280                                                                                      | 260                                                                                      | 0.007                       | 0.010            |
|     |                                                                 | 150 - 200         | HSS          | 180                                                                                   | 260                                                                                      | 235                                                                                      | 0.007                       | 0.010            |
|     |                                                                 | 200 - 250         | HSS          | 160                                                                                   | 240                                                                                      | 210                                                                                      | 0.006                       | 0.010            |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125          | HSS          | 170                                                                                   | 250                                                                                      | 220                                                                                      | 0.006 ❖                     | 0.009            |
|     |                                                                 | 125 - 175         | HSS          | 160                                                                                   | 240                                                                                      | 210                                                                                      | 0.006 ❖                     | 0.009            |
|     |                                                                 | 175 - 225         | HSS          | 150                                                                                   | 225                                                                                      | 195                                                                                      | 0.005 ❖                     | 0.008            |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 225 - 275         | HSS          | 140                                                                                   | 210                                                                                      | 180                                                                                      | 0.005 ❖                     | 0.008            |
|     |                                                                 | 125 - 175         | HSS          | 160                                                                                   | 240                                                                                      | 210                                                                                      | 0.006                       | 0.009            |
|     |                                                                 | 175 - 225         | HSS          | 150                                                                                   | 225                                                                                      | 195                                                                                      | 0.005                       | 0.008            |
|     |                                                                 | 225 - 275         | HSS          | 140                                                                                   | 210                                                                                      | 180                                                                                      | 0.005                       | 0.008            |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 275 - 325         | SC, PC       | 130                                                                                   | 195                                                                                      | 170                                                                                      | 0.004                       | 0.007            |
|     |                                                                 | 125 - 175         | HSS          | 150                                                                                   | 210                                                                                      | 195                                                                                      | 0.006                       | 0.008            |
|     |                                                                 | 175 - 225         | HSS          | 140                                                                                   | 195                                                                                      | 180                                                                                      | 0.005                       | 0.008            |
|     |                                                                 | 225 - 275         | HSS          | 130                                                                                   | 180                                                                                      | 170                                                                                      | 0.005                       | 0.007            |
|     |                                                                 | 275 - 325         | SC, PC       | 120                                                                                   | 170                                                                                      | 155                                                                                      | 0.004                       | 0.006            |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 325 - 375         | SC, PC       | 110                                                                                   | 155                                                                                      | 145                                                                                      | 0.003                       | 0.006            |
|     |                                                                 | 225 - 300         | SC, PC       | 80                                                                                    | 110                                                                                      | 100                                                                                      | 0.005 ❖                     | 0.007            |
|     |                                                                 | 300 - 350         | SC, PC       | 60                                                                                    | 85                                                                                       | 80                                                                                       | 0.004 ❖                     | 0.007            |
|     |                                                                 | 350 - 400         | PC           | 50                                                                                    | 70                                                                                       | 65                                                                                       | 0.003 ❖                     | 0.006            |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 100 - 150         | HSS          | 140                                                                                   | 200                                                                                      | 180                                                                                      | 0.006 ❖                     | 0.010            |
|     |                                                                 | 150 - 250         | HSS          | 120                                                                                   | 170                                                                                      | 155                                                                                      | 0.005 ❖                     | 0.009            |
|     |                                                                 | 250 - 350         | SC, PC       | 100                                                                                   | 140                                                                                      | 130                                                                                      | 0.003 ❖                     | 0.008            |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 150 - 200         | SC           | 80                                                                                    | 110                                                                                      | 105                                                                                      | 0.004                       | 0.006            |
|     |                                                                 | 200 - 250         | SC, PC       | 60                                                                                    | 90                                                                                       | 85                                                                                       | 0.004                       | 0.006            |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220         | SC, PC       | 30                                                                                    | 40                                                                                       | 35                                                                                       | 0.003 ❖                     | 0.007            |
|     |                                                                 | 220 - 310         | PC           | 25                                                                                    | 35                                                                                       | 30                                                                                       | 0.003 ❖                     | 0.006            |
|     | Titanium Alloy                                                  | 140 - 220         | SC, PC       | 35                                                                                    | 50                                                                                       | 45                                                                                       | 0.003 ❖                     | 0.007            |
|     |                                                                 | 220 - 310         | PC           | 30                                                                                    | 45                                                                                       | 35                                                                                       | 0.003 ❖                     | 0.006            |
|     | Aerospace Alloy<br>S82                                          | 185 - 275         | SC, PC       | 75                                                                                    | 105                                                                                      | 95                                                                                       | 0.006 ❖                     | 0.008            |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 275 - 350         | SC, PC       | 60                                                                                    | 90                                                                                       | 80                                                                                       | 0.008                       | 0.009            |
|     |                                                                 | 135 - 185         | SC, PC       | 75                                                                                    | 105                                                                                      | 95                                                                                       | 0.007                       | 0.007            |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 185 - 275         | SC, PC       | 60                                                                                    | 90                                                                                       | 80                                                                                       | 0.006                       | 0.006            |
|     |                                                                 | 135 - 185         | SC, PC       | 60                                                                                    | 80                                                                                       | 70                                                                                       | 0.005                       | 0.005            |
|     | Super Duplex Stainless Steel                                    | 185 - 275         | SC, PC       | 50                                                                                    | 65                                                                                       | 60                                                                                       | 0.004                       | 0.005            |
|     |                                                                 | 135 - 185         | SC, PC       | 60                                                                                    | 80                                                                                       | 70                                                                                       | 0.005                       | 0.005            |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 400               | SC, PC       | 45                                                                                    | 70                                                                                       | 55                                                                                       | 0.003 ❖                     | 0.006            |
|     |                                                                 | 500               | PC           | 35                                                                                    | 45                                                                                       | 40                                                                                       | 0.002 ❖                     | 0.005            |
|     |                                                                 | 600               | N/A          | –                                                                                     | –                                                                                        | –                                                                                        | –                           | –                |
|     | Hardened Steel                                                  | 300 - 400         | PC           | 50                                                                                    | 95                                                                                       | 70                                                                                       | 0.003 ❖                     | 0.006            |
|     |                                                                 | 400 - 500         | PC           | 35                                                                                    | 45                                                                                       | 40                                                                                       | 0.002 ❖                     | 0.005            |
| K   | Nodular, Grey, Ductile Cast Iron                                | 120 - 150         | HSS          | 170                                                                                   | 250                                                                                      | 220                                                                                      | 0.007                       | 0.012            |
|     |                                                                 | 150 - 200         | HSS          | 150                                                                                   | 225                                                                                      | 195                                                                                      | 0.006                       | 0.011            |
|     |                                                                 | 200 - 220         | HSS          | 130                                                                                   | 195                                                                                      | 170                                                                                      | 0.006                       | 0.009            |
|     |                                                                 | 220 - 260         | SC, PC       | 110                                                                                   | 165                                                                                      | 145                                                                                      | 0.005                       | 0.007            |
|     |                                                                 | 260 - 320         | SC, PC       | 90                                                                                    | 135                                                                                      | 120                                                                                      | 0.004                       | 0.006            |
| N   | Cast Aluminum                                                   | 30                | HSS          | 600                                                                                   | 850                                                                                      | 750                                                                                      | 0.008                       | 0.013            |
|     |                                                                 | 180               | HSS          | 300                                                                                   | 450                                                                                      | 400                                                                                      | 0.008                       | 0.013            |
|     | Wrought Aluminum                                                | 30                | HSS          | 600                                                                                   | 850                                                                                      | 750                                                                                      | 0.004                       | 0.006            |
|     |                                                                 | 180               | HSS          | 300                                                                                   | 450                                                                                      | 400                                                                                      | 0.008                       | 0.013            |
|     | Aluminum Bronze                                                 | 100 - 200         | SC           | 170                                                                                   | 250                                                                                      | 220                                                                                      | 0.006                       | 0.011            |
|     |                                                                 | 200 - 250         | SC           | 130                                                                                   | 190                                                                                      | 170                                                                                      | 0.005                       | 0.007            |
|     | Brass                                                           | 100               | HSS          | 300                                                                                   | 445                                                                                      | 400                                                                                      | 0.007                       | 0.012            |
|     | Copper                                                          | 60                | SC           | 130                                                                                   | 165                                                                                      | 150                                                                                      | 0.002 ❖                     | 0.003            |

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**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.

### Feed Rate (IPR) by Diameter

| 45/64 -<br>15/16 | 31/32 -<br>1-3/8 | 1-13/32 -<br>1-7/8 | 1-29/32 -<br>2-9/16 | 2-19/32 -<br>4-1/2 |
|------------------|------------------|--------------------|---------------------|--------------------|
| 0.013            | 0.016            | 0.020              | 0.023               | 0.028              |
| 0.013            | 0.016            | 0.020              | 0.023               | 0.028              |
| 0.013            | 0.016            | 0.020              | 0.023               | 0.028              |
| 0.012            | 0.015            | 0.019              | 0.023               | 0.027              |
| 0.012            | 0.015            | 0.019              | 0.023               | 0.027              |
| 0.010            | 0.014            | 0.018              | 0.021               | 0.024              |
| 0.010            | 0.014            | 0.018              | 0.021               | 0.024              |
| 0.012            | 0.015            | 0.019              | 0.023               | 0.027              |
| 0.010            | 0.014            | 0.018              | 0.021               | 0.024              |
| 0.010            | 0.014            | 0.018              | 0.021               | 0.024              |
| 0.009            | 0.012            | 0.016              | 0.019               | 0.022              |
| 0.010            | 0.014            | 0.017              | 0.019               | 0.022              |
| 0.010            | 0.014            | 0.017              | 0.019               | 0.022              |
| 0.010            | 0.014            | 0.017              | 0.019               | 0.022              |
| 0.009            | 0.012            | 0.015              | 0.017               | 0.020              |
| 0.009            | 0.012            | 0.015              | 0.017               | 0.020              |
| 0.009            | 0.010            | 0.014              | 0.017               | 0.020              |
| 0.009            | 0.010            | 0.014              | 0.017               | 0.020              |
| 0.008            | 0.009            | 0.012              | 0.015               | 0.018              |
| 0.012            | 0.014            | 0.018              | 0.021               | 0.026              |
| 0.010            | 0.012            | 0.016              | 0.019               | 0.024              |
| 0.009            | 0.010            | 0.014              | 0.017               | 0.020              |
| 0.008            | 0.010            | 0.012              | 0.015               | 0.017              |
| 0.008            | 0.010            | 0.012              | 0.015               | 0.017              |
| 0.008            | 0.010            | 0.012              | 0.015               | —                  |
| 0.007            | 0.008            | 0.010              | 0.012               | —                  |
| 0.008            | 0.010            | 0.012              | 0.015               | —                  |
| 0.007            | 0.008            | 0.010              | 0.012               | —                  |
| 0.009            | 0.010            | 0.014              | 0.016               | 0.020              |
| 0.008            | 0.008            | 0.012              | 0.014               | 0.018              |
| 0.011            | 0.012            | 0.013              | 0.014               | 0.015              |
| 0.010            | 0.011            | 0.012              | 0.013               | 0.014              |
| 0.008            | 0.008            | 0.009              | 0.009               | 0.010              |
| 0.007            | 0.007            | 0.008              | 0.008               | 0.009              |
| 0.006            | 0.006            | 0.007              | 0.008               | 0.008              |
| 0.005            | 0.006            | 0.006              | 0.007               | 0.007              |
| 0.008            | 0.009            | 0.012              | 0.016               | 0.018              |
| 0.007            | 0.008            | 0.010              | 0.012               | 0.016              |
| —                | —                | —                  | —                   | —                  |
| 0.008            | 0.009            | 0.012              | 0.016               | 0.018              |
| 0.007            | 0.008            | 0.010              | 0.012               | 0.016              |
| 0.016            | 0.020            | 0.024              | 0.027               | 0.030              |
| 0.014            | 0.018            | 0.022              | 0.025               | 0.028              |
| 0.012            | 0.016            | 0.018              | 0.021               | 0.024              |
| 0.009            | 0.012            | 0.014              | 0.017               | 0.020              |
| 0.007            | 0.009            | 0.012              | 0.014               | 0.016              |
| 0.016            | 0.020            | 0.022              | 0.025               | 0.025              |
| 0.016            | 0.018            | 0.022              | 0.025               | 0.025              |
| 0.010            | 0.012            | 0.022              | 0.025               | 0.025              |
| 0.016            | 0.018            | 0.022              | 0.025               | 0.025              |
| 0.014            | 0.018            | 0.022              | 0.026               | 0.028              |
| 0.009            | 0.012            | 0.014              | 0.017               | 0.020              |
| 0.016            | 0.020            | 0.024              | 0.028               | 0.030              |
| 0.006            | 0.008            | 0.012              | 0.014               | 0.016              |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | —             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

### Formulas

$$1. \text{ RPM } = (3.82 \cdot \text{SFM}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

SFM = speed (ft/min)

DIA = diameter of drill (inch)

$$2. \text{ IPM } = \text{RPM} \cdot \text{IPR}$$

where:

IPM = inches per minute (in/min)

RPM = revolutions per minute (rev/min)

IPR = feed rate (in/rev)

$$3. \text{ SFM } = \text{RPM} \cdot 0.262 \cdot \text{DIA}$$

where:

SFM = speed (ft/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (inch)

### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## Original T-A Recommended Drilling Data | Imperial (inch)

### Carbide Inserts

| ISO | Material                                                           | Hardness<br>(BHN) | Carbide<br>Grade | SFM                                                                               |                                                                                   |                                                                                   | Feed Rate (IPR) by Diameter |                  |                  |                  |                    |
|-----|--------------------------------------------------------------------|-------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------|--------------------|
|     |                                                                    |                   |                  |  |  |  | 3/8 -<br>1/2                | 33/64 -<br>11/16 | 45/64 -<br>15/16 | 31/32 -<br>1-3/8 | 1-13/32 -<br>1-7/8 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                    | 100 - 150         | C5               | 320                                                                               | 420                                                                               | 375                                                                               | 0.008                       | 0.012            | 0.015            | 0.018            | 0.021              |
|     |                                                                    | 150 - 200         | C5               | 280                                                                               | 360                                                                               | 325                                                                               | 0.007                       | 0.011            | 0.014            | 0.016            | 0.019              |
|     |                                                                    | 200 - 250         | C5               | 260                                                                               | 340                                                                               | 295                                                                               | 0.006                       | 0.010            | 0.013            | 0.015            | 0.017              |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522,<br>1144, etc.          | 85 - 125          | C5               | 300                                                                               | 390                                                                               | 360                                                                               | 0.008 ❖                     | 0.010            | 0.013            | 0.017            | 0.019              |
|     |                                                                    | 125 - 175         | C5               | 260                                                                               | 340                                                                               | 295                                                                               | 0.007 ❖                     | 0.010            | 0.013            | 0.016            | 0.018              |
|     |                                                                    | 175 - 225         | C5               | 240                                                                               | 310                                                                               | 270                                                                               | 0.006 ❖                     | 0.009            | 0.012            | 0.015            | 0.017              |
|     |                                                                    | 225 - 275         | C5               | 210                                                                               | 270                                                                               | 245                                                                               | 0.005 ❖                     | 0.009            | 0.012            | 0.015            | 0.017              |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527,<br>1140, 1151, etc. | 125 - 175         | C5               | 260                                                                               | 340                                                                               | 295                                                                               | 0.007                       | 0.010            | 0.013            | 0.016            | 0.018              |
|     |                                                                    | 175 - 225         | C5               | 240                                                                               | 310                                                                               | 275                                                                               | 0.006                       | 0.009            | 0.012            | 0.015            | 0.017              |
|     |                                                                    | 225 - 275         | C5               | 210                                                                               | 270                                                                               | 235                                                                               | 0.006                       | 0.009            | 0.012            | 0.015            | 0.017              |
|     |                                                                    | 275 - 325         | C5               | 180                                                                               | 230                                                                               | 205                                                                               | 0.005                       | 0.008            | 0.011            | 0.014            | 0.016              |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                              | 125 - 175         | C5               | 250                                                                               | 325                                                                               | 285                                                                               | 0.007                       | 0.010            | 0.013            | 0.016            | 0.018              |
|     |                                                                    | 175 - 225         | C5               | 230                                                                               | 300                                                                               | 260                                                                               | 0.006                       | 0.009            | 0.012            | 0.015            | 0.017              |
|     |                                                                    | 225 - 275         | C5               | 210                                                                               | 270                                                                               | 235                                                                               | 0.006                       | 0.009            | 0.012            | 0.015            | 0.017              |
|     |                                                                    | 275 - 325         | C5               | 200                                                                               | 250                                                                               | 225                                                                               | 0.005                       | 0.008            | 0.011            | 0.014            | 0.016              |
|     |                                                                    | 325 - 375         | C5               | 170                                                                               | 220                                                                               | 195                                                                               | 0.004                       | 0.007            | 0.010            | 0.013            | 0.015              |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                     | 225 - 300         | C5               | 160                                                                               | 200                                                                               | 180                                                                               | 0.006 ❖                     | 0.009            | 0.010            | 0.012            | 0.015              |
|     |                                                                    | 300 - 350         | C5               | 140                                                                               | 180                                                                               | 160                                                                               | 0.005 ❖                     | 0.008            | 0.009            | 0.011            | 0.014              |
|     |                                                                    | 350 - 400         | C5               | 120                                                                               | 160                                                                               | 140                                                                               | 0.004 ❖                     | 0.007            | 0.008            | 0.010            | 0.012              |
|     | Structural Steel<br>A36, A285, A516, etc.                          | 100 - 150         | C5               | 240                                                                               | 310                                                                               | 275                                                                               | 0.008 ❖                     | 0.011            | 0.014            | 0.016            | 0.018              |
|     |                                                                    | 150 - 250         | C5               | 200                                                                               | 250                                                                               | 225                                                                               | 0.006 ❖                     | 0.010            | 0.012            | 0.014            | 0.016              |
|     |                                                                    | 250 - 350         | C5               | 180                                                                               | 230                                                                               | 205                                                                               | 0.005 ❖                     | 0.009            | 0.011            | 0.012            | 0.014              |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                      | 150 - 200         | C5               | 160                                                                               | 220                                                                               | 190                                                                               | 0.004                       | 0.007            | 0.009            | 0.011            | 0.013              |
|     |                                                                    | 200 - 250         | C5               | 120                                                                               | 170                                                                               | 145                                                                               | 0.004                       | 0.007            | 0.009            | 0.011            | 0.013              |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.                  | 140 - 220         | C2               | 80                                                                                | 105                                                                               | 90                                                                                | 0.004 ❖                     | 0.007            | 0.009            | 0.011            | 0.013              |
|     |                                                                    | 220 - 310         | C2               | 60                                                                                | 85                                                                                | 70                                                                                | 0.004 ❖                     | 0.006            | 0.008            | 0.010            | 0.012              |
|     | Titanium Alloy                                                     | 140 - 220         | C2               | 100                                                                               | 125                                                                               | 105                                                                               | 0.004 ❖                     | 0.007            | 0.009            | 0.011            | 0.013              |
|     |                                                                    | 220 - 310         | C2               | 80                                                                                | 110                                                                               | 90                                                                                | 0.004 ❖                     | 0.006            | 0.008            | 0.010            | 0.012              |
|     | Aerospace Alloy<br>S82                                             | 185 - 275         | C2               | 160                                                                               | 210                                                                               | 185                                                                               | 0.007 ❖                     | 0.006            | 0.011            | 0.014            | 0.016              |
|     |                                                                    | 275 - 350         | C2               | 120                                                                               | 160                                                                               | 140                                                                               | 0.006 ❖                     | 0.008            | 0.010            | 0.012            | 0.014              |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                       | 185 - 275         | C2               | 160                                                                               | 210                                                                               | 185                                                                               | 0.007 ❖                     | 0.008            | 0.011            | 0.014            | 0.016              |
|     |                                                                    | 275 - 350         | C2               | 120                                                                               | 160                                                                               | 140                                                                               | 0.006 ❖                     | 0.007            | 0.010            | 0.012            | 0.014              |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.               | 135 - 185         | C2               | 160                                                                               | 210                                                                               | 185                                                                               | 0.005 ❖                     | 0.007            | 0.009            | 0.010            | 0.012              |
|     |                                                                    | 185 - 275         | C2               | 120                                                                               | 160                                                                               | 140                                                                               | 0.004 ❖                     | 0.006            | 0.008            | 0.009            | 0.010              |
|     | Super Duplex Stainless Steel                                       | 135 - 185         | C2               | 80                                                                                | 110                                                                               | 95                                                                                | 0.004 ❖                     | 0.007            | 0.008            | 0.009            | 0.011              |
|     |                                                                    | 185 - 275         | C2               | 60                                                                                | 80                                                                                | 70                                                                                | 0.003 ❖                     | 0.006            | 0.007            | 0.008            | 0.009              |

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**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | SFM  |       |      | Feed Rate (IPR) by Diameter |                  |                  |                  |                    |
|-----|----------------------------------------|-------------------|------------------|------|-------|------|-----------------------------|------------------|------------------|------------------|--------------------|
|     |                                        |                   |                  | TiN  | TiAlN | TiCN | 3/8 -<br>1/2                | 33/64 -<br>11/16 | 45/64 -<br>15/16 | 31/32 -<br>1-3/8 | 1-13/32 -<br>1-7/8 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C5               | 75   | 115   | 100  | 0.003 ❖                     | 0.006            | 0.008            | 0.010            | 0.012              |
|     |                                        | 500               | C5               | 50   | 85    | 70   | 0.002 ❖                     | 0.005            | 0.006            | 0.008            | 0.010              |
|     |                                        | 600               | C5               | 35   | 75    | 55   | 0.001 ❖                     | 0.004            | 0.005            | 0.006            | 0.008              |
|     | Hardened Steel                         | 300 - 400         | C5               | 110  | 140   | 130  | 0.004 ❖                     | 0.006            | 0.009            | 0.011            | 0.013              |
|     |                                        | 400 - 500         | C5               | 65   | 85    | 75   | 0.003 ❖                     | 0.005            | 0.008            | 0.009            | 0.011              |
| K   | Nodular, Grey,<br>Ductile Cast Iron    | 120 - 150         | C2, C3           | 320  | 460   | 415  | 0.008                       | 0.012            | 0.015            | 0.019            | 0.023              |
|     |                                        | 150 - 200         | C2, C3           | 270  | 400   | 335  | 0.007                       | 0.011            | 0.013            | 0.017            | 0.021              |
|     |                                        | 200 - 220         | C2, C3           | 240  | 360   | 305  | 0.006                       | 0.009            | 0.012            | 0.015            | 0.018              |
|     |                                        | 220 - 260         | C2, C3           | 210  | 310   | 260  | 0.005                       | 0.008            | 0.011            | 0.013            | 0.015              |
|     |                                        | 260 - 320         | C2, C3           | 180  | 270   | 225  | 0.005                       | 0.007            | 0.010            | 0.011            | 0.013              |
| N   | Cast Aluminum                          | 30                | C2               | 1200 | 1500  | 1330 | 0.010                       | 0.013            | 0.018            | 0.020            | 0.022              |
|     |                                        | 180               | C2               | 800  | 1000  | 900  | 0.009                       | 0.013            | 0.016            | 0.018            | 0.020              |
|     | Wrought Aluminum                       | 30                | C2               | 1200 | 1500  | 1330 | 0.004                       | 0.006            | 0.010            | 0.012            | 0.014              |
|     |                                        | 180               | C2               | 800  | 1000  | 900  | 0.008                       | 0.013            | 0.014            | 0.018            | 0.020              |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 275  | 360   | 325  | 0.005                       | 0.008            | 0.010            | 0.014            | 0.017              |
|     |                                        | 200 - 250         | C2               | 210  | 305   | 260  | 0.004                       | 0.007            | 0.007            | 0.010            | 0.013              |
|     | Brass                                  | 100               | C2               | 425  | 600   | 520  | 0.006                       | 0.009            | 0.011            | 0.015            | 0.018              |
|     | Copper                                 | 60                | C2               | 260  | 390   | 325  | 0.002 ❖                     | 0.003            | 0.004            | 0.006            | 0.010              |

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#### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

#### Formulas

|                                                                                                                                                                      |                                                                                                                                                                   |                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{RPM} = (3.82 \cdot \text{SFM}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>SFM = speed (ft/min)<br>DIA = diameter of drill (inch) | 2. $\text{IPM} = \text{RPM} \cdot \text{IPR}$<br>where:<br>IPM = inches per minute (in/min)<br>RPM = revolutions per minute (rev/min)<br>IPR = feed rate (in/rev) | 3. $\text{SFM} = \text{RPM} \cdot 0.262 \cdot \text{DIA}$<br>where:<br>SFM = speed (ft/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (inch) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## Original T-A Recommended Drilling Data | Imperial (inch)

HSS Inserts | Flat Bottom Geometry

| ISO | Material                                                        | Hardness<br>(BHN) | HSS<br>Grade | SFM                                                                                   |                                                                                          |                                                                                          |                                                                                            |
|-----|-----------------------------------------------------------------|-------------------|--------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|     |                                                                 |                   |              |  TiN |  TiAlN |  TiCN |  AM200® |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150         | HSS          | 170                                                                                   | 250                                                                                      | 230                                                                                      | 290                                                                                        |
|     |                                                                 | 150 - 200         | HSS          | 155                                                                                   | 230                                                                                      | 205                                                                                      | 265                                                                                        |
|     |                                                                 | 200 - 250         | HSS          | 140                                                                                   | 210                                                                                      | 185                                                                                      | 245                                                                                        |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125          | HSS          | 150                                                                                   | 220                                                                                      | 195                                                                                      | 255                                                                                        |
|     |                                                                 | 125 - 175         | HSS          | 140                                                                                   | 210                                                                                      | 185                                                                                      | 245                                                                                        |
|     |                                                                 | 175 - 225         | HSS          | 130                                                                                   | 195                                                                                      | 175                                                                                      | 225                                                                                        |
|     |                                                                 | 225 - 275         | HSS          | 120                                                                                   | 185                                                                                      | 155                                                                                      | 215                                                                                        |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 125 - 175         | HSS          | 140                                                                                   | 210                                                                                      | 185                                                                                      | 245                                                                                        |
|     |                                                                 | 175 - 225         | HSS          | 130                                                                                   | 195                                                                                      | 175                                                                                      | 225                                                                                        |
|     |                                                                 | 225 - 275         | HSS          | 120                                                                                   | 185                                                                                      | 155                                                                                      | 215                                                                                        |
|     |                                                                 | 275 - 325         | SC           | 110                                                                                   | 175                                                                                      | 150                                                                                      | 205                                                                                        |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 125 - 175         | HSS          | 130                                                                                   | 185                                                                                      | 175                                                                                      | 215                                                                                        |
|     |                                                                 | 175 - 225         | HSS          | 120                                                                                   | 175                                                                                      | 155                                                                                      | 205                                                                                        |
|     |                                                                 | 225 - 275         | HSS          | 110                                                                                   | 155                                                                                      | 145                                                                                      | 180                                                                                        |
|     |                                                                 | 275 - 325         | SC           | 105                                                                                   | 145                                                                                      | 135                                                                                      | 170                                                                                        |
|     |                                                                 | 325 - 375         | SC           | 95                                                                                    | 135                                                                                      | 125                                                                                      | 155                                                                                        |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 225 - 300         | SC           | 70                                                                                    | 95                                                                                       | 85                                                                                       | 110                                                                                        |
|     |                                                                 | 300 - 350         | SC           | 50                                                                                    | 75                                                                                       | 70                                                                                       | 90                                                                                         |
|     |                                                                 | 350 - 400         | SC           | 45                                                                                    | 65                                                                                       | 60                                                                                       | 75                                                                                         |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 100 - 150         | HSS          | 120                                                                                   | 170                                                                                      | 155                                                                                      | 195                                                                                        |
|     |                                                                 | 150 - 250         | HSS          | 105                                                                                   | 145                                                                                      | 135                                                                                      | 170                                                                                        |
|     |                                                                 | 250 - 350         | SC           | 85                                                                                    | 120                                                                                      | 110                                                                                      | 140                                                                                        |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 150 - 200         | SC           | 70                                                                                    | 95                                                                                       | 90                                                                                       | 110                                                                                        |
|     |                                                                 | 200 - 250         | SC           | 50                                                                                    | 80                                                                                       | 75                                                                                       | 95                                                                                         |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220         | SC           | 25                                                                                    | 35                                                                                       | 30                                                                                       | 40                                                                                         |
|     |                                                                 | 220 - 310         | SC           | 20                                                                                    | 30                                                                                       | 25                                                                                       | 35                                                                                         |
|     | Titanium Alloy                                                  | 140 - 220         | SC           | 35                                                                                    | 45                                                                                       | 40                                                                                       | 50                                                                                         |
|     |                                                                 | 220 - 310         | SC           | 26                                                                                    | 40                                                                                       | 35                                                                                       | 45                                                                                         |
|     | Aerospace Alloy<br>S82                                          | 185 - 275         | SC           | 65                                                                                    | 90                                                                                       | 85                                                                                       | 110                                                                                        |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 185 - 275         | SC           | 65                                                                                    | 90                                                                                       | 85                                                                                       | 110                                                                                        |
|     |                                                                 | 275 - 350         | SC           | 50                                                                                    | 80                                                                                       | 70                                                                                       | 90                                                                                         |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185         | SC           | 65                                                                                    | 90                                                                                       | 85                                                                                       | 110                                                                                        |
|     |                                                                 | 185 - 275         | SC           | 50                                                                                    | 80                                                                                       | 70                                                                                       | 90                                                                                         |
|     | Super Duplex Stainless Steel                                    | 135 - 185         | SC           | 65                                                                                    | 90                                                                                       | 85                                                                                       | 110                                                                                        |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 400               | SC           | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     |                                                                 | 500               | SC           | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     |                                                                 | 600               | N/A          | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     | Hardened Steel                                                  | 300 - 400         | SC           | 45                                                                                    | 65                                                                                       | 60                                                                                       | 80                                                                                         |
|     |                                                                 | 400 - 500         | SC           | 25                                                                                    | 40                                                                                       | 35                                                                                       | 45                                                                                         |
| K   | Nodular, Grey, Ductile Cast Iron                                | 120 - 150         | HSS          | 150                                                                                   | 220                                                                                      | 195                                                                                      | 255                                                                                        |
|     |                                                                 | 150 - 200         | HSS          | 130                                                                                   | 195                                                                                      | 175                                                                                      | 225                                                                                        |
|     |                                                                 | 200 - 220         | HSS          | 110                                                                                   | 175                                                                                      | 150                                                                                      | 205                                                                                        |
|     |                                                                 | 220 - 260         | SC           | 95                                                                                    | 150                                                                                      | 125                                                                                      | 175                                                                                        |
|     |                                                                 | 260 - 320         | SC           | 80                                                                                    | 120                                                                                      | 105                                                                                      | 140                                                                                        |
| N   | Cast Aluminum                                                   | 30                | HSS          | 520                                                                                   | 750                                                                                      | 650                                                                                      | –                                                                                          |
|     |                                                                 | 180               | HSS          | 260                                                                                   | 400                                                                                      | 350                                                                                      | –                                                                                          |
|     | Wrought Aluminum                                                | 30                | HSS          | 520                                                                                   | 750                                                                                      | 650                                                                                      | 850                                                                                        |
|     |                                                                 | 180               | HSS          | 260                                                                                   | 400                                                                                      | 350                                                                                      | 450                                                                                        |
|     | Aluminum Bronze                                                 | 100 - 200         | SC           | 130                                                                                   | 190                                                                                      | 175                                                                                      | 230                                                                                        |
|     |                                                                 | 200 - 250         | SC           | 95                                                                                    | 150                                                                                      | 125                                                                                      | 165                                                                                        |
|     | Brass                                                           | 100               | HSS          | 150                                                                                   | 220                                                                                      | 190                                                                                      | 250                                                                                        |
|     | Copper                                                          | 60                | SC           | 115                                                                                   | 150                                                                                      | 130                                                                                      | 170                                                                                        |

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**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.

| Feed Rate (IPR) by Diameter |               |               |               |                 |                  |
|-----------------------------|---------------|---------------|---------------|-----------------|------------------|
| 3/8 - 1/2                   | 33/64 - 11/16 | 45/64 - 15/16 | 31/32 - 1-3/8 | 1-13/32 - 1-7/8 | 1-29/32 - 2-9/16 |
| 0.006                       | 0.009         | 0.011         | 0.014         | 0.016           | 0.018            |
| 0.006                       | 0.009         | 0.011         | 0.014         | 0.016           | 0.018            |
| 0.005                       | 0.009         | 0.011         | 0.014         | 0.015           | 0.017            |
| 0.005 ❖                     | 0.008         | 0.010         | 0.013         | 0.015           | 0.017            |
| 0.005 ❖                     | 0.008         | 0.010         | 0.013         | 0.015           | 0.016            |
| 0.004 ❖                     | 0.007         | 0.009         | 0.012         | 0.014           | 0.016            |
| 0.004 ❖                     | 0.007         | 0.009         | 0.012         | 0.014           | 0.015            |
| 0.005                       | 0.008         | 0.010         | 0.013         | 0.015           | 0.018            |
| 0.004                       | 0.007         | 0.009         | 0.012         | 0.014           | 0.017            |
| 0.004                       | 0.007         | 0.009         | 0.012         | 0.014           | 0.017            |
| 0.004                       | 0.006         | 0.008         | 0.010         | 0.013           | 0.015            |
| 0.005                       | 0.007         | 0.009         | 0.012         | 0.013           | 0.016            |
| 0.004                       | 0.007         | 0.009         | 0.012         | 0.013           | 0.016            |
| 0.004                       | 0.006         | 0.009         | 0.012         | 0.013           | 0.016            |
| 0.004                       | 0.005         | 0.008         | 0.010         | 0.012           | 0.015            |
| 0.003                       | 0.005         | 0.008         | 0.010         | 0.012           | 0.014            |
| 0.004 ❖                     | 0.006         | 0.008         | 0.009         | 0.010           | 0.012            |
| 0.003 ❖                     | 0.006         | 0.008         | 0.009         | 0.010           | 0.012            |
| 0.003 ❖                     | 0.005         | 0.007         | 0.008         | 0.009           | 0.011            |
| 0.005 ❖                     | 0.009         | 0.010         | 0.012         | 0.015           | 0.017            |
| 0.004 ❖                     | 0.008         | 0.009         | 0.010         | 0.013           | 0.016            |
| 0.004 ❖                     | 0.007         | 0.008         | 0.009         | 0.012           | 0.015            |
| 0.004                       | 0.005         | 0.007         | 0.009         | 0.010           | 0.012            |
| 0.004                       | 0.005         | 0.007         | 0.009         | 0.009           | 0.011            |
| 0.003 ❖                     | 0.006         | 0.007         | 0.009         | 0.010           | 0.012            |
| 0.003 ❖                     | 0.005         | 0.006         | 0.007         | 0.008           | 0.010            |
| 0.003 ❖                     | 0.006         | 0.007         | 0.009         | 0.010           | 0.012            |
| 0.003 ❖                     | 0.005         | 0.006         | 0.007         | 0.008           | 0.010            |
| 0.005 ❖                     | 0.007         | 0.008         | 0.010         | 0.012           | 0.015            |
| 0.004 ❖                     | 0.006         | 0.007         | 0.009         | 0.010           | 0.012            |
| 0.005 ❖                     | 0.007         | 0.008         | 0.010         | 0.012           | 0.014            |
| 0.004 ❖                     | 0.006         | 0.007         | 0.009         | 0.010           | 0.011            |
| 0.005 ❖                     | 0.007         | 0.008         | 0.010         | 0.012           | 0.014            |
| 0.004 ❖                     | 0.006         | 0.007         | 0.009         | 0.010           | 0.011            |
| -                           | -             | -             | -             | -               | -                |
| -                           | -             | -             | -             | -               | -                |
| -                           | -             | -             | -             | -               | -                |
| 0.003 ❖                     | 0.005         | 0.007         | 0.008         | 0.011           | 0.015            |
| 0.002 ❖                     | 0.004         | 0.006         | 0.007         | 0.009           | 0.011            |
| 0.007                       | 0.012         | 0.016         | 0.020         | 0.024           | 0.027            |
| 0.006                       | 0.011         | 0.014         | 0.018         | 0.022           | 0.025            |
| 0.006                       | 0.009         | 0.012         | 0.016         | 0.018           | 0.021            |
| 0.005                       | 0.007         | 0.009         | 0.012         | 0.014           | 0.017            |
| 0.004                       | 0.006         | 0.007         | 0.009         | 0.012           | 0.014            |
| 0.007                       | 0.011         | 0.014         | 0.017         | 0.018           | 0.019            |
| 0.007                       | 0.011         | 0.014         | 0.016         | 0.017           | 0.019            |
| 0.007                       | 0.011         | 0.014         | 0.016         | 0.017           | 0.019            |
| 0.005                       | 0.009         | 0.012         | 0.016         | 0.020           | 0.024            |
| 0.004                       | 0.006         | 0.008         | 0.010         | 0.012           | 0.015            |
| 0.006                       | 0.010         | 0.014         | 0.017         | 0.021           | 0.025            |
| 0.002 ❖                     | 0.003         | 0.006         | 0.008         | 0.010           | 0.014            |

# ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | -             | 0.95 | 0.90      | 0.90 | 0.90 |

## Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

## Formulas

$$1. \text{ RPM } = (3.82 \cdot \text{SFM}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

SFM = speed (ft/min)

DIA = diameter of drill (inch)

$$2. \text{ IPM } = \text{RPM} \cdot \text{IPR}$$

where:

IPM = inches per minute (in/min)

RPM = revolutions per minute (rev/min)

IPR = feed rate (in/rev)

$$3. \text{ SFM } = \text{RPM} \cdot 0.262 \cdot \text{DIA}$$

where:

SFM = speed (ft/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (inch)



## Original T-A Recommended Drilling Data | Imperial (inch)

Carbide Inserts | Flat Bottom Geometry

| ISO | Material                                                        | Hardness (BHN) | Carbide Grade | SFM                                                                                   |                                                                                         |                                                                                        |                                                                                           | Feed Rate (IPR) by Diameter |               |               |               |
|-----|-----------------------------------------------------------------|----------------|---------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------|---------------|---------------|---------------|
|     |                                                                 |                |               |  TiN |  TiAlN |  TiCN |  AM200® | 3/8 - 1/2                   | 33/64 - 11/16 | 45/64 - 15/16 | 13/32 - 1-7/8 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150      | C2            | 270                                                                                   | 380                                                                                     | 325                                                                                    | 425                                                                                       | 0.007                       | 0.010         | 0.013         | 0.015         |
|     |                                                                 | 150 - 200      | C2            | 240                                                                                   | 320                                                                                     | 280                                                                                    | 375                                                                                       | 0.006                       | 0.009         | 0.012         | 0.014         |
|     |                                                                 | 200 - 250      | C2            | 220                                                                                   | 300                                                                                     | 260                                                                                    | 350                                                                                       | 0.005                       | 0.009         | 0.011         | 0.013         |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125       | C2            | 260                                                                                   | 345                                                                                     | 315                                                                                    | 410                                                                                       | 0.007 ❖                     | 0.009         | 0.011         | 0.014         |
|     |                                                                 | 125 - 175      | C2            | 220                                                                                   | 300                                                                                     | 260                                                                                    | 350                                                                                       | 0.006 ❖                     | 0.009         | 0.011         | 0.014         |
|     |                                                                 | 175 - 225      | C2            | 200                                                                                   | 280                                                                                     | 235                                                                                    | 320                                                                                       | 0.005 ❖                     | 0.008         | 0.010         | 0.013         |
|     |                                                                 | 225 - 275      | C2            | 180                                                                                   | 240                                                                                     | 215                                                                                    | 285                                                                                       | 0.004 ❖                     | 0.008         | 0.010         | 0.013         |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 125 - 175      | C2            | 220                                                                                   | 300                                                                                     | 260                                                                                    | 350                                                                                       | 0.006                       | 0.009         | 0.011         | 0.014         |
|     |                                                                 | 175 - 225      | C2            | 200                                                                                   | 280                                                                                     | 240                                                                                    | 320                                                                                       | 0.005                       | 0.008         | 0.010         | 0.013         |
|     |                                                                 | 225 - 275      | C2            | 180                                                                                   | 240                                                                                     | 210                                                                                    | 285                                                                                       | 0.005                       | 0.008         | 0.010         | 0.013         |
|     |                                                                 | 275 - 325      | C2            | 150                                                                                   | 210                                                                                     | 180                                                                                    | 240                                                                                       | 0.004                       | 0.007         | 0.009         | 0.012         |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 125 - 175      | C2            | 215                                                                                   | 290                                                                                     | 250                                                                                    | 340                                                                                       | 0.006                       | 0.009         | 0.011         | 0.014         |
|     |                                                                 | 175 - 225      | C2            | 200                                                                                   | 270                                                                                     | 230                                                                                    | 320                                                                                       | 0.005                       | 0.008         | 0.010         | 0.013         |
|     |                                                                 | 225 - 275      | C2            | 180                                                                                   | 230                                                                                     | 205                                                                                    | 290                                                                                       | 0.005                       | 0.008         | 0.010         | 0.013         |
|     |                                                                 | 275 - 325      | C2            | 175                                                                                   | 215                                                                                     | 190                                                                                    | 280                                                                                       | 0.004                       | 0.007         | 0.009         | 0.012         |
|     |                                                                 | 325 - 375      | C2            | 145                                                                                   | 190                                                                                     | 170                                                                                    | 230                                                                                       | 0.003                       | 0.006         | 0.009         | 0.011         |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 225 - 300      | C2            | 140                                                                                   | 170                                                                                     | 160                                                                                    | 220                                                                                       | 0.005 ❖                     | 0.008         | 0.009         | 0.010         |
|     |                                                                 | 300 - 350      | C2            | 120                                                                                   | 160                                                                                     | 140                                                                                    | 190                                                                                       | 0.004 ❖                     | 0.007         | 0.008         | 0.009         |
|     |                                                                 | 350 - 400      | C2            | 100                                                                                   | 145                                                                                     | 120                                                                                    | 160                                                                                       | 0.003 ❖                     | 0.006         | 0.007         | 0.009         |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 100 - 150      | C2            | 205                                                                                   | 265                                                                                     | 240                                                                                    | 325                                                                                       | 0.007 ❖                     | 0.009         | 0.012         | 0.014         |
|     |                                                                 | 150 - 250      | C2            | 170                                                                                   | 215                                                                                     | 200                                                                                    | 270                                                                                       | 0.005 ❖                     | 0.009         | 0.010         | 0.012         |
|     |                                                                 | 250 - 350      | C2            | 155                                                                                   | 200                                                                                     | 180                                                                                    | 240                                                                                       | 0.004 ❖                     | 0.008         | 0.009         | 0.010         |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 150 - 200      | C2            | 140                                                                                   | 190                                                                                     | 160                                                                                    | 220                                                                                       | 0.003                       | 0.006         | 0.008         | 0.009         |
|     |                                                                 | 200 - 250      | C2            | 100                                                                                   | 150                                                                                     | 120                                                                                    | 160                                                                                       | 0.003                       | 0.006         | 0.008         | 0.009         |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220      | C2            | 70                                                                                    | 90                                                                                      | 80                                                                                     | 110                                                                                       | 0.003 ❖                     | 0.006         | 0.008         | 0.009         |
|     |                                                                 | 220 - 310      | C2            | 50                                                                                    | 70                                                                                      | 60                                                                                     | 80                                                                                        | 0.003 ❖                     | 0.005         | 0.007         | 0.009         |
|     | Titanium Alloy                                                  | 140 - 220      | C2            | 85                                                                                    | 110                                                                                     | 90                                                                                     | 130                                                                                       | 0.003 ❖                     | 0.005         | 0.006         | 0.008         |
|     |                                                                 | 220 - 310      | C2            | 70                                                                                    | 95                                                                                      | 80                                                                                     | 100                                                                                       | 0.003 ❖                     | 0.004         | 0.005         | 0.007         |
|     | Aerospace Alloy<br>S82                                          | 185 - 275      | C2            | 140                                                                                   | 120                                                                                     | 165                                                                                    | 130                                                                                       | 0.006 ❖                     | 0.006         | 0.010         | 0.012         |
|     |                                                                 | 275 - 350      | C2            | 110                                                                                   | 90                                                                                      | 125                                                                                    | 105                                                                                       | 0.005 ❖                     | 0.005         | 0.009         | 0.010         |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 185 - 275      | C2            | 140                                                                                   | 180                                                                                     | 165                                                                                    | 210                                                                                       | 0.006 ❖                     | 0.008         | 0.010         | 0.012         |
|     |                                                                 | 275 - 350      | C2            | 110                                                                                   | 140                                                                                     | 125                                                                                    | 160                                                                                       | 0.005 ❖                     | 0.007         | 0.009         | 0.010         |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185      | C2            | 90                                                                                    | 120                                                                                     | 110                                                                                    | 130                                                                                       | 0.005 ❖                     | 0.007         | 0.008         | 0.010         |
|     |                                                                 | 185 - 275      | C2            | 70                                                                                    | 90                                                                                      | 80                                                                                     | 105                                                                                       | 0.004 ❖                     | 0.006         | 0.007         | 0.009         |
|     | Super Duplex Stainless Steel                                    | 135 - 185      | C2            | 70                                                                                    | 95                                                                                      | 85                                                                                     | 110                                                                                       | 0.004 ❖                     | 0.006         | 0.007         | 0.008         |
|     |                                                                 | 185 - 275      | C2            | 55                                                                                    | 70                                                                                      | 60                                                                                     | 85                                                                                        | 0.003 ❖                     | 0.005         | 0.006         | 0.007         |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.

| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | SFM                                                                                   |                                                                                         |                                                                                        |                                                                                           | Feed Rate (IPR) by Diameter |                  |                  |                  |
|-----|----------------------------------------|-------------------|------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------|------------------|------------------|------------------|
|     |                                        |                   |                  |  TiN |  TiAlN |  TiCN |  AM200® | 3/8 -<br>1/2                | 33/64 -<br>11/16 | 45/64 -<br>15/16 | 13/32 -<br>1-7/8 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C2               | 65                                                                                    | 100                                                                                     | 85                                                                                     | 130                                                                                       | 0.003 ❖                     | 0.004            | 0.006            | 0.008            |
|     |                                        | 500               | C2               | 45                                                                                    | 75                                                                                      | 60                                                                                     | 100                                                                                       | 0.002 ❖                     | 0.003            | 0.005            | 0.006            |
|     |                                        | 600               | C2               | 35                                                                                    | 65                                                                                      | 45                                                                                     | 80                                                                                        | 0.001 ❖                     | 0.002            | 0.004            | 0.005            |
|     | Hardened Steel                         | 300 - 400         | C2               | 100                                                                                   | 125                                                                                     | 110                                                                                    | 135                                                                                       | 0.004 ❖                     | 0.006            | 0.007            | 0.009            |
|     |                                        | 400 - 500         | C2               | 60                                                                                    | 75                                                                                      | 65                                                                                     | 110                                                                                       | 0.003 ❖                     | 0.005            | 0.06             | 0.007            |
| K   | Nodular, Grey,<br>Ductile Cast Iron    | 120 - 150         | C2               | 270                                                                                   | 405                                                                                     | 360                                                                                    | 450                                                                                       | 0.007                       | 0.010            | 0.013            | 0.016            |
|     |                                        | 150 - 200         | C2               | 230                                                                                   | 350                                                                                     | 290                                                                                    | 390                                                                                       | 0.006                       | 0.009            | 0.011            | 0.014            |
|     |                                        | 200 - 220         | C2               | 200                                                                                   | 320                                                                                     | 260                                                                                    | 350                                                                                       | 0.005                       | 0.008            | 0.010            | 0.013            |
|     |                                        | 220 - 260         | C2               | 180                                                                                   | 270                                                                                     | 220                                                                                    | 300                                                                                       | 0.004                       | 0.007            | 0.009            | 0.011            |
|     |                                        | 260 - 320         | C2               | 160                                                                                   | 240                                                                                     | 200                                                                                    | 265                                                                                       | 0.004                       | 0.006            | 0.009            | 0.009            |
| N   | Cast Aluminum                          | 30                | C2               | 520                                                                                   | 750                                                                                     | 650                                                                                    | —                                                                                         | 0.009                       | 0.013            | 0.016            | 0.017            |
|     |                                        | 180               | C2               | 260                                                                                   | 400                                                                                     | 350                                                                                    | —                                                                                         | 0.008                       | 0.012            | 0.014            | 0.015            |
|     | Wrought Aluminum                       | 30                | C2               | 950                                                                                   | 1200                                                                                    | 1070                                                                                   | 1270                                                                                      | 0.005                       | 0.007            | 0.009            | 0.010            |
|     |                                        | 180               | C2               | 630                                                                                   | 800                                                                                     | 715                                                                                    | 850                                                                                       | 0.004                       | 0.006            | 0.008            | 0.009            |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 240                                                                                   | 310                                                                                     | 280                                                                                    | 340                                                                                       | 0.004                       | 0.006            | 0.008            | 0.011            |
|     |                                        | 200 - 250         | C2               | 180                                                                                   | 265                                                                                     | 220                                                                                    | 285                                                                                       | 0.003                       | 0.005            | 0.006            | 0.008            |
|     | Brass                                  | 100               | C2               | 370                                                                                   | 520                                                                                     | 450                                                                                    | 600                                                                                       | 0.005                       | 0.006            | 0.008            | 0.012            |
|     | Copper                                 | 60                | C2               | 220                                                                                   | 345                                                                                     | 280                                                                                    | 380                                                                                       | 0.002 ❖                     | 0.002            | 0.003            | 0.005            |

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#### Deep Hole Drilling Speed and Feed Adjustment

|       | ⚠ Holder Length |      |           |      |      |
|-------|-----------------|------|-----------|------|------|
|       | Extended        | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90            | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | —               | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

#### Formulas

|                                                                                                                                                                      |                                                                                                                                                                   |                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. <b>RPM</b> = $(3.82 \cdot \text{SFM}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>SFM = speed (ft/min)<br>DIA = diameter of drill (inch) | 2. <b>IPM</b> = $\text{RPM} \cdot \text{IPR}$<br>where:<br>IPM = inches per minute (in/min)<br>RPM = revolutions per minute (rev/min)<br>IPR = feed rate (in/rev) | 3. <b>SFM</b> = $\text{RPM} \cdot 0.262 \cdot \text{DIA}$<br>where:<br>SFM = speed (ft/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (inch) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**⚠ WARNING** Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## Original T-A Recommended Drilling Data | Imperial (inch)

Carbide Inserts | Diamond Coating

|                 | Material               | Carbide Grade | SFM<br><br>Diamond Coating | Feed Rate (IPR) by Diameter |               |               |               |
|-----------------|------------------------|---------------|-------------------------------------------------------------------------------------------------------------|-----------------------------|---------------|---------------|---------------|
|                 |                        |               |                                                                                                             | 3/8 - 1/2                   | 33/64 - 11/16 | 45/64 - 15/16 | 31/32 - 1-3/8 |
| B<br>BORING     | Carbon (hard)          | N2            | 1000 - 1500                                                                                                 | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Carbon Fiber           | N2            | 1000 - 1500                                                                                                 | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Carbon / Glass Fiber   | N2            | 1000 - 1500                                                                                                 | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Fiberglass             | N2            | 1000 - 1500                                                                                                 | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Graphite               | N2            | 1000 - 1500                                                                                                 | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Plastics               | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Epoxy Resin            | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Bismaleimide Resin     | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Polyester Resin        | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Phenolic Resin         | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Rubber                 | N2            | 250 - 1000                                                                                                  | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
| C<br>REAMING    | Aluminum               | N2            | 1000                                                                                                        | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | Si < 10%               | N2            | 1000                                                                                                        | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | 10% < Si < 15%         | N2            | 850 - 1000                                                                                                  | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | 15% < Si < 20%         | N2            | 650 - 850                                                                                                   | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | 20% < Si < 25%         | N2            | 500 - 650                                                                                                   | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | 25% < Si               | N2            | 200 - 500                                                                                                   | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | Brass                  | N2            | 250 - 500                                                                                                   | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | Bronze                 | N2            | 250 - 500                                                                                                   | 0.008                       | 0.013         | 0.016         | 0.020         |
|                 | Copper                 | N2            | 100 - 250                                                                                                   | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Copper Alloys          | N2            | 100 - 250                                                                                                   | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Lead Alloys            | N2            | 100 - 250                                                                                                   | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Magnesium Alloys       | N2            | 100 - 250                                                                                                   | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Precious Metals        | N2            | 100 - 250                                                                                                   | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
| D<br>BURNISHING | Carbide (green)        | N2            | 50 - 250                                                                                                    | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Ceramic (green)        | N2            | 50 - 250                                                                                                    | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |
|                 | Ceramic (pre-sintered) | N2            | 50 - 250                                                                                                    | 0.004 - 0.006               | 0.008 - 0.010 | 0.010 - 0.012 | 0.012 - 0.014 |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | —             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \cdot 0.75 = 150 \text{ SFM}$$

$$0.008 \cdot 0.90 = 0.007 \text{ IPR}$$

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



# Tap Drill Information and Formulas | Imperial (inch)

## American - Unified Inch Screw Thread

| Tap Size   | Tap Drill Size | Decimal Equivalent | * Theo % Thread | Probable Mean Oversize | Probable Hole Size | ** Probable % Thread |
|------------|----------------|--------------------|-----------------|------------------------|--------------------|----------------------|
| 7/16 - 20  | W              | 0.3860             | 79%             | 0.003"                 | 0.3890"            | 75%                  |
| 7/16 - 20  | 25/64"         | 0.3906             | 72%             | 0.003"                 | 0.3936"            | 68%                  |
| 1/2 - 13   | 10.5mm         | 0.4134             | 87%             | 0.003"                 | 0.4164"            | 84%                  |
| 1/2 - 13   | 27/64"         | 0.4219             | 78%             | 0.003"                 | 0.4249"            | 75%                  |
| 1/2 - 13   | 7/16"          | 0.4375             | 63%             | 0.003"                 | 0.4405"            | 60%                  |
| 1/2 - 20   | 29/64"         | 0.4531             | 72%             | 0.003"                 | 0.4561"            | 68%                  |
| 9/16 - 12  | 15/32"         | 0.4688             | 87%             | 0.003"                 | 0.4718"            | 84%                  |
| 9/16 - 12  | 12.0mm         | 0.4724             | 72%             | 0.003"                 | 0.4874"            | 69%                  |
| 9/16 - 12  | 31/64"         | 0.4844             | 83%             | 0.003"                 | 0.4754"            | 80%                  |
| 9/16 - 18  | 1/2"           | 0.5000"            | 87%             | 0.003"                 | 0.5030"            | 82%                  |
| 9/16 - 18  | 13.0mm         | 0.5118"            | 70%             | 0.003"                 | 0.5148"            | 66%                  |
| 9/16 - 18  | 31/64"         | 0.5156"            | 65%             | 0.003"                 | 0.5186"            | 61%                  |
| 5/8 - 11   | 17/32"         | 0.5313"            | 79%             | 0.003"                 | 0.5343"            | 77%                  |
| 5/8 - 12   | 35/64"         | 0.5469"            | 72%             | 0.003"                 | 0.5499"            | 69%                  |
| 5/8 - 18   | 9/16"          | 0.5625"            | 87%             | 0.003"                 | 0.5655"            | 82%                  |
| 5/8 - 18   | 14.5mm         | 0.5709"            | 75%             | 0.003"                 | 0.5739"            | 75%                  |
| 5/8 - 18   | 37/64"         | 0.5781"            | 65%             | 0.003"                 | 0.5811"            | 70%                  |
| 11/16 - 12 | 39/64"         | 0.6094"            | 72%             | 0.003"                 | 0.6124"            | 69%                  |
| 3/4 - 10   | 41/64"         | 0.6406"            | 84%             | 0.003"                 | 0.6436"            | 82%                  |
| 3/4 - 10   | 16.5mm         | 0.6496"            | 77%             | 0.003"                 | 0.6526"            | 75%                  |
| 3/4 - 10   | 21/32"         | 0.6563"            | 72%             | 0.003"                 | 0.6593"            | 70%                  |
| 3/4 - 12   | 43/64"         | 0.6719"            | 72%             | 0.003"                 | 0.6749"            | 69%                  |
| 3/4 - 16   | 11/16"         | 0.6875"            | 77%             | 0.003"                 | 0.6905"            | 73%                  |
| 3/4 - 16   | 17.5mm         | 0.6890"            | 75%             | 0.003"                 | 0.6920"            | 71%                  |
| 7/8 - 9    | 49/64"         | 0.7656"            | 76%             | 0.003"                 | 0.7686"            | 74%                  |
| 7/8 - 9    | 25/32"         | 0.7813"            | 65%             | 0.003"                 | 0.7843"            | 63%                  |
| 7/8 - 14   | 51/64"         | 0.7969"            | 84%             | 0.003"                 | 0.7999"            | 81%                  |
| 7/8 - 14   | 13/16"         | 0.8125"            | 67%             | 0.003"                 | 0.8155"            | 64%                  |
| 15/16 - 12 | 55/64"         | 0.8594"            | 72%             | 0.003"                 | 0.8624"            | 69%                  |
| 15/16 - 20 | 57/64"         | 0.8906"            | 72%             | 0.003"                 | 0.8936"            | 68%                  |
| 1 - 8      | 22.0mm         | 0.8661"            | 82%             | 0.003"                 | 0.8691"            | 81%                  |
| 1 - 8      | 7/8"           | 0.8750"            | 77%             | 0.003"                 | 0.8780"            | 75%                  |
| 1 - 8      | 57/64"         | 0.8906"            | 67%             | 0.003"                 | 0.8936"            | 65%                  |
| 1 - 12     | 29/32"         | 0.9063"            | 87%             | 0.003"                 | 0.9093"            | 84%                  |
| 1 - 12     | 59/64"         | 0.9219"            | 72%             | 0.003"                 | 0.9249"            | 69%                  |
| 1 - 14     | 15/16"         | 0.9375"            | 67%             | 0.003"                 | 0.9405"            | 64%                  |
| 1-1/8 - 12 | 1-1/32"        | 1.0313"            | 87%             | 0.003"                 | 1.0343"            | 84%                  |
| 1-1/8 - 12 | 1-3/64"        | 1.0469"            | 72%             | 0.003"                 | 1.0499"            | 69%                  |
| 1-1/4 - 7  | 1-7/64"        | 1.1094"            | 76%             | 0.003"                 | 1.1124"            | 74%                  |
| 24 x 2     | 7/8"           | 0.8750"            | 68%             | 0.075mm                | 22.30mm            | 65%                  |
| 27 x 3     | 24.0mm         | 0.9449"            | 77%             | 0.075mm                | 24.08mm            | 75%                  |

## Taper Pipe Thread (NPT)

| Tap Size | Tap Drill Size | Decimal Equivalent | Theo % Thread* | Probable Mean Oversize | Probable Hole Size | Probable % Thread** |
|----------|----------------|--------------------|----------------|------------------------|--------------------|---------------------|
| 1/4 - 18 | 7/16           | 0.4375             | —              | 0.003                  | 0.4405             | —                   |
| 3/8 - 18 | 9/16           | 0.5625             | —              | 0.003                  | 0.5655             | —                   |
| 1/2 - 14 | 45/64          | 0.7031             | —              | 0.003                  | 0.7061             | —                   |
| 3/4 - 14 | 29/32          | 0.9063             | —              | 0.003                  | 0.9093             | —                   |

\* Based on nominal tap drill diameter

\*\* Based on .003" probable mean oversize

To calculate the percent of full thread for a given hole diameter:

$$\% \text{ Thread} = \# \text{ of Thread per Inch} \left[ \frac{\text{Basic Major Diameter of Thread} - \text{Drill Hole Size}}{0.0130} \right]$$

## Notes

- The above tap drill information represents probable thread percentages for the standard tap drills stocked at Allied Machine. Special insert diameters may be required in order to meet a user specific percentage of thread requirements.
- The .003 probable mean oversize hole condition is based on optimum cutting conditions. Probable percent of full thread may vary based on less ideal cutting conditions.
- The table and equations on this page are found in the *Machinery's Handbook*. Permission to simplify and print the equations is granted by the Editor of the *Machinery's Handbook*.

## Formulas

|    |                   |                                                              |
|----|-------------------|--------------------------------------------------------------|
| 1. | <b>RPM</b>        | <b>= (3.82 • SFM) / DIA</b>                                  |
|    | where:            |                                                              |
|    | RPM               | = revolutions per minute (rev/min)                           |
|    | SFM               | = speed (ft/min)                                             |
|    | DIA               | = diameter of drill (inch)                                   |
| 2. | <b>IPM</b>        | <b>= RPM • IPR</b>                                           |
|    | where:            |                                                              |
|    | IPM               | = inches per minute (in/min)                                 |
|    | RPM               | = revolutions per minute (rev/min)                           |
|    | IPR               | = feed rate (in/rev)                                         |
| 3. | <b>SFM</b>        | <b>= RPM • 0.262 • DIA</b>                                   |
|    | where:            |                                                              |
|    | SFM               | = speed (ft/min)                                             |
|    | RPM               | = revolutions per minute (rev/min)                           |
|    | DIA               | = diameter of drill (inch)                                   |
| 4. | <b>Thrust</b>     | <b>= 153,700 • IPR • DIA • K<sub>m</sub></b>                 |
|    | where:            |                                                              |
|    | Thrust            | = axial thrust (lbs)                                         |
|    | IPR               | = feed rate (in/rev)                                         |
|    | DIA               | = diameter of drill (inch)                                   |
|    | K <sub>m</sub>    | = specific cutting energy (lbs/in <sup>2</sup> )             |
| 5. | <b>Tool Power</b> | <b>= .6283 • IPR • RPM • K<sub>m</sub> • DIA<sup>2</sup></b> |
|    | where:            |                                                              |
|    | Tool Power        | = tool power (HP)                                            |
|    | IPR               | = feed rate (in/rev)                                         |
|    | RPM               | = revolutions per minute (rev/min)                           |
|    | K <sub>m</sub>    | = specific cutting energy (lbs/in <sup>2</sup> )             |
|    | DIA               | = diameter of drill (inch)                                   |

## Material Constants

| Type of Material             | Hardness      | K <sub>m</sub> (lbs/in <sup>2</sup> ) |
|------------------------------|---------------|---------------------------------------|
| Plain Carbon and Alloy Steel | 85 - 200 BHN  | 0.79                                  |
|                              | 200 - 275 BHN | 0.94                                  |
|                              | 275 - 375 BHN | 1.00                                  |
|                              | 375 - 425 BHN | 1.15                                  |
| High Temperature Alloys      | —             | 1.44                                  |
| Stainless Steels             | 135 - 275 BHN | 0.94                                  |
|                              | 30 - 45 RC    | 1.08                                  |
| Cast Iron                    | 100 - 200 BHN | 0.50                                  |
|                              | 200 - 300 BHN | 1.08                                  |
| Copper Alloy                 | 20 - 80 RB    | 0.43                                  |
|                              | 80 - 100 RB   | 0.72                                  |
| Titanium Alloy               | —             | 0.72                                  |
| Aluminum Alloy               | —             | 0.22                                  |
| Magnesium Alloy              | —             | 0.16                                  |



## Coolant Recommendations | Imperial (inch)

## HSS Drill Inserts

| ISO | Material                                                               | Pressure or Flow Rate | 3/8 - 1/2 | 33/64 - 11/16 | 23/32 - 1 | 1 - 1-1/4 | 1-1/4 - 2 | 2 - 3   | 3 - 4   |
|-----|------------------------------------------------------------------------|-----------------------|-----------|---------------|-----------|-----------|-----------|---------|---------|
| P   | <b>Free Machining Steel</b><br>1118, 1215, 12L14, etc.                 | PSI                   | 175 - 185 | 100 - 120     | 105 - 140 | 80 - 115  | 75 - 100  | 40 - 50 | 65 - 90 |
|     |                                                                        | GPM                   | 2.5 - 2.6 | 2.8 - 3.0     | 4.4 - 5.2 | 7 - 8     | 12 - 14   | 30 - 33 | 38 - 44 |
|     | <b>Low Carbon Steel</b><br>1010, 1020, 1025, 1522, 1144, etc.          | PSI                   | 165 - 170 | 75 - 90       | 75 - 95   | 60 - 80   | 55 - 75   | 30 - 40 | 50 - 65 |
|     |                                                                        | GPM                   | 2.4 - 2.5 | 2.4 - 2.6     | 3.7 - 4.2 | 6 - 7     | 11 - 12   | 26 - 30 | 33 - 38 |
|     | <b>Medium Carbon Steel</b><br>1030, 1040, 1050, 1527, 1140, 1151, etc. | PSI                   | 160 - 165 | 70 - 85       | 70 - 90   | 55 - 75   | 50 - 70   | 30 - 40 | 50 - 65 |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.3 - 2.6     | 3.7 - 4.2 | 5 - 6     | 10 - 12   | 26 - 30 | 33 - 38 |
|     | <b>Alloy Steel</b><br>4140, 5140, 8640, etc.                           | PSI                   | 160 - 165 | 65 - 75       | 65 - 80   | 50 - 70   | 45 - 60   | 30 - 35 | 40 - 50 |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.2 - 2.4     | 3.5 - 3.9 | 5 - 6     | 10 - 11   | 26 - 28 | 30 - 33 |
|     | <b>High Strength Alloy</b><br>4340, 4330V, 300M, etc.                  | PSI                   | 150 - 155 | 55 - 60       | 45 - 50   | 25 - 30   | 25 - 30   | 20 - 25 | 40 - 50 |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.1 - 2.2     | 2.9 - 3.1 | 4 - 5     | 7 - 8     | 21 - 23 | 23 - 26 |
|     | <b>Structural Steel</b><br>A36, A285, A516, etc.                       | PSI                   | 160 - 165 | 75 - 85       | 65 - 80   | 40 - 55   | 40 - 50   | 25 - 30 | 40 - 50 |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.4 - 2.6     | 3.5 - 3.9 | 5 - 6     | 9 - 10    | 23 - 26 | 30 - 33 |
|     | <b>Tool Steel</b><br>H-13, H-21, A-4, O-2, S-3, etc.                   | PSI                   | 150 - 155 | 55 - 60       | 45 - 50   | 25 - 30   | 25 - 30   | 20 - 25 | 25 - 30 |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.1 - 2.2     | 2.9 - 3.1 | 4 - 5     | 7 - 8     | 21 - 23 | 23 - 26 |
| S   | <b>High Temp Alloy</b><br>Hastelloy B, Inconel 600, etc.               | PSI                   | 150 - 155 | 60 - 65       | 50 - 55   | 30 - 35   | 25 - 30   | 25 - 30 | 44      |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.2 - 2.3     | 3.1 - 3.2 | 4 - 5     | 7 - 8     | 23 - 26 | 33      |
|     | <b>Titanium Alloy</b>                                                  | PSI                   | 150 - 155 | 60 - 65       | 50 - 55   | 30 - 35   | 25 - 30   | 25 - 30 | 44      |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.2 - 2.3     | 3.1 - 3.2 | 4 - 5     | 7 - 8     | 23 - 26 | 33      |
| M   | <b>Aerospace Alloy</b><br>S82                                          | PSI                   | 150 - 155 | 60 - 65       | 50 - 55   | 30 - 35   | 25 - 30   | 25 - 30 | 44      |
|     |                                                                        | GPM                   | 2.3 - 2.4 | 2.2 - 2.3     | 3.1 - 3.2 | 4 - 5     | 7 - 8     | 23 - 26 | 33      |
|     | <b>Stainless Steel 400 Series</b><br>416, 420, etc.                    | PSI                   | 171       | 86            | 75        | 55        | 51        | 29      | 45      |
|     |                                                                        | GPM                   | 3         | 3             | 4         | 6         | 10        | 26      | 31      |
| H   | <b>Stainless Steel 300 Series</b><br>304, 316, 17-4PH, etc.            | PSI                   | 171       | 86            | 75        | 55        | 51        | 29      | 45      |
|     |                                                                        | GPM                   | 3         | 3             | 4         | 6         | 10        | 26      | 31      |
|     | <b>Super Duplex Stainless Steel</b>                                    | PSI                   | 171       | 86            | 75        | 55        | 51        | 29      | 45      |
|     |                                                                        | GPM                   | 3         | 3             | 4         | 6         | 10        | 26      | 31      |
| K   | <b>Wear Plate</b><br>Hardox, AR400, T-1, etc.                          | PSI                   | 155       | 61            | 51        | 29        | 29        | 25      | 29      |
|     |                                                                        | GPM                   | 2         | 2             | 3         | 5         | 8         | 23      | 26      |
|     | <b>Hardened Steel</b>                                                  | PSI                   | 155       | 61            | 51        | 29        | 29        | 25      | 29      |
|     |                                                                        | GPM                   | 2         | 2             | 3         | 5         | 8         | 23      | 26      |
| N   | <b>SG / Nodular Cast Iron</b>                                          | PSI                   | 160       | 65            | 61        | 41        | 35        | 29      | 35      |
|     |                                                                        | GPM                   | 2         | 2             | 3         | 5         | 9         | 26      | 28      |
|     | <b>Grey / White Iron</b>                                               | PSI                   | 160       | 65            | 61        | 41        | 35        | 29      | 35      |
|     |                                                                        | GPM                   | 2         | 2             | 3         | 5         | 9         | 26      | 28      |
| F   | <b>Cast Aluminum</b>                                                   | PSI                   | 210       | 180           | 230       | 159       | 125       | 51      | 80      |
|     |                                                                        | GPM                   | 3         | 4             | 6         | 9         | 16        | 33      | 42      |
|     | <b>Wrought Aluminum</b>                                                | PSI                   | 210       | 180           | 230       | 159       | 125       | 51      | 80      |
|     |                                                                        | GPM                   | 3         | 4             | 6         | 9         | 16        | 33      | 42      |
|     | <b>Aluminum Bronze</b>                                                 | PSI                   | 186       | 120           | 140       | 115       | 100       | 51      | 90      |
|     |                                                                        | GPM                   | 2.5       | 3             | 5         | 8         | 14        | 33      | 44      |
|     | <b>Brass</b>                                                           | PSI                   | 159       | 65            | 61        | 41        | 35        | 29      | 35      |
|     |                                                                        | GPM                   | 2         | 2             | 3         | 5         | 9         | 26      | 28      |
|     | <b>Copper</b>                                                          | PSI                   | 186       | 120           | 140       | 115       | 100       | 51      | 90      |
|     |                                                                        | GPM                   | 2.5       | 3             | 5         | 8         | 14        | 33      | 44      |

## Deep Hole Drilling Coolant Adjustment

|                   | Holder Length |      |           |    |     |
|-------------------|---------------|------|-----------|----|-----|
|                   | Extended      | Long | Long Plus | XL | 3XL |
| Pressure and Flow | 1.3           | 1.5  | 2         | 2  | 3   |

## Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

$$150 \cdot 3 = 450 \text{ PSI}$$

$$2.4 \cdot 3 = 7.2 \text{ GPM}$$

## ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**IMPORTANT:** The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.



## Coolant Recommendations | Imperial (inch)

### Carbide Drill Inserts

| ISO | Material                                                        | Pressure or Flow Rate | 3/8 - 1/2 | 33/64 - 11/16 | 23/32 - 1 | 1 - 1-3/8 | 1-13/32 - 1-7/8 |
|-----|-----------------------------------------------------------------|-----------------------|-----------|---------------|-----------|-----------|-----------------|
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | PSI                   | 195       | 140           | 160       | 140       | 155             |
|     |                                                                 | GPM                   | 2.6       | 3.3           | 5.5       | 9         | 18              |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | PSI                   | 180       | 105           | 105       | 110       | 115             |
|     |                                                                 | GPM                   | 2.5       | 2.9           | 4.4       | 8         | 15              |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | PSI                   | 175       | 100           | 90        | 70        | 75              |
|     |                                                                 | GPM                   | 2.5       | 2.8           | 4.1       | 7         | 13              |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | PSI                   | 165       | 85            | 100       | 75        | 70              |
|     |                                                                 | GPM                   | 2.4       | 2.6           | 4.3       | 6         | 12              |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | PSI                   | 175       | 115           | 105       | 75        | 70              |
|     |                                                                 | GPM                   | 2.4       | 2.3           | 3.2       | 5         | 8               |
| S   | Structural Steel<br>A36, A285, A516, etc.                       | PSI                   | 175       | 115           | 105       | 75        | 70              |
|     |                                                                 | GPM                   | 2.5       | 3.0           | 4.4       | 6         | 12              |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | PSI                   | 155       | 60            | 55        | 40        | 35              |
|     |                                                                 | GPM                   | 2.4       | 2.2           | 3.2       | 5         | 8               |
|     | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | PSI                   | 247       | 160           | 174       | 160       | 130             |
|     |                                                                 | GPM                   | 3         | 4             | 6         | 9         | 16              |
|     | Titanium Alloy                                                  | PSI                   | 247       | 160           | 174       | 160       | 130             |
|     |                                                                 | GPM                   | 3         | 4             | 6         | 9         | 16              |
|     | Aerospace Alloy<br>S82                                          | PSI                   | 247       | 160           | 174       | 160       | 130             |
|     |                                                                 | GPM                   | 3         | 4             | 6         | 9         | 16              |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | PSI                   | 329       | 239           | 260       | 250       | 190             |
|     |                                                                 | GPM                   | 3         | 4             | 7         | 12        | 20              |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | PSI                   | 329       | 239           | 260       | 250       | 190             |
|     |                                                                 | GPM                   | 3         | 4             | 7         | 12        | 20              |
|     | Super Duplex Stainless Steel                                    | PSI                   | 329       | 239           | 260       | 250       | 190             |
|     |                                                                 | GPM                   | 3         | 4             | 7         | 12        | 20              |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | PSI                   | 210       | 75            | 70        | 49        | 45              |
|     |                                                                 | GPM                   | 3         | 2             | 4         | 5         | 10              |
|     | Hardened Steel                                                  | PSI                   | 210       | 75            | 70        | 49        | 45              |
|     |                                                                 | GPM                   | 3         | 2             | 4         | 5         | 10              |
| K   | SG / Nodular Cast Iron                                          | PSI                   | 225       | 104           | 90        | 90        | 80              |
|     |                                                                 | GPM                   | 3         | 3             | 4         | 7         | 13              |
|     | Grey / White Iron                                               | PSI                   | 225       | 104           | 90        | 90        | 80              |
|     |                                                                 | GPM                   | 3         | 3             | 4         | 7         | 13              |
| N   | Cast Aluminum                                                   | PSI                   | 350       | 319           | 315       | 284       | 200             |
|     |                                                                 | GPM                   | 4         | 5             | 8         | 12        | 20              |
|     | Wrought Aluminum                                                | PSI                   | 350       | 319           | 315       | 284       | 200             |
|     |                                                                 | GPM                   | 4         | 5             | 8         | 12        | 20              |
|     | Aluminum Bronze                                                 | PSI                   | 290       | 239           | 239       | 220       | 174             |
|     |                                                                 | GPM                   | 3         | 4             | 7         | 11        | 19              |
|     | Brass                                                           | PSI                   | 350       | 319           | 315       | 284       | 200             |
|     |                                                                 | GPM                   | 4         | 5             | 7         | 12        | 20              |
|     | Copper                                                          | PSI                   | 290       | 239           | 239       | 220       | 174             |
|     |                                                                 | GPM                   | 3         | 4             | 7         | 11        | 19              |

#### Deep Hole Drilling Coolant Adjustment

|                   | Holder Length |      |           |    |     |
|-------------------|---------------|------|-----------|----|-----|
|                   | Extended      | Long | Long Plus | XL | 3XL |
| Pressure and Flow | 1.3           | 1.5  | 2         | 2  | 3   |

#### Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

$$150 \times 3 = 450 \text{ PSI}$$

$$2.4 \times 3 = 7.2 \text{ GPM}$$

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

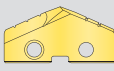
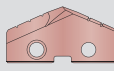
- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**IMPORTANT:** The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

## GEN2 T-A Recommended Drilling Data | Metric (mm)

### HSS Inserts

| ISO | Material                                                        | Hardness (BHN) | HSS Grade | M/min                                                                                 |                                                                                            | Feed Rate (mm/rev) by Diameter |               |
|-----|-----------------------------------------------------------------|----------------|-----------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------|---------------|
|     |                                                                 |                |           |  TiN |  AM200® | 9.50 - 12.95                   | 12.98 - 17.52 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150      | HSS       | 61                                                                                    | 99                                                                                         | 0.20                           | 0.30          |
|     |                                                                 | 150 - 200      | HSS       | 55                                                                                    | 91                                                                                         | 0.18                           | 0.28          |
|     |                                                                 | 200 - 250      | HSS       | 49                                                                                    | 85                                                                                         | 0.15                           | 0.25          |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125       | HSS       | 52                                                                                    | 88                                                                                         | 0.20 ❖                         | 0.25          |
|     |                                                                 | 125 - 175      | HSS       | 49                                                                                    | 83                                                                                         | 0.18 ❖                         | 0.25          |
|     |                                                                 | 175 - 225      | HSS       | 46                                                                                    | 79                                                                                         | 0.15 ❖                         | 0.23          |
|     |                                                                 | 225 - 275      | HSS       | 43                                                                                    | 73                                                                                         | 0.13 ❖                         | 0.23          |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 125 - 175      | HSS       | 49                                                                                    | 83                                                                                         | 0.18                           | 0.25          |
|     |                                                                 | 175 - 225      | HSS       | 46                                                                                    | 79                                                                                         | 0.15                           | 0.23          |
|     |                                                                 | 225 - 275      | HSS       | 43                                                                                    | 73                                                                                         | 0.15                           | 0.23          |
|     |                                                                 | 275 - 325      | SC, PC    | 40                                                                                    | 68                                                                                         | 0.13                           | 0.20          |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 125 - 175      | HSS       | 46                                                                                    | 73                                                                                         | 0.18                           | 0.25          |
|     |                                                                 | 175 - 225      | HSS       | 43                                                                                    | 68                                                                                         | 0.15                           | 0.23          |
|     |                                                                 | 225 - 275      | HSS       | 40                                                                                    | 64                                                                                         | 0.15                           | 0.23          |
|     |                                                                 | 275 - 325      | SC, PC    | 37                                                                                    | 59                                                                                         | 0.13                           | 0.20          |
|     |                                                                 | 325 - 375      | SC, PC    | 34                                                                                    | 54                                                                                         | 0.10                           | 0.18          |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 225 - 300      | SC, PC    | 24                                                                                    | 38                                                                                         | 0.15 ❖                         | 0.23          |
|     |                                                                 | 300 - 350      | SC, PC    | 18                                                                                    | 30                                                                                         | 0.13 ❖                         | 0.20          |
|     |                                                                 | 350 - 400      | PC        | 15                                                                                    | 24                                                                                         | 0.10 ❖                         | 0.18          |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 100 - 150      | HSS       | 43                                                                                    | 71                                                                                         | 0.20 ❖                         | 0.28          |
|     |                                                                 | 150 - 250      | HSS       | 37                                                                                    | 57                                                                                         | 0.15 ❖                         | 0.25          |
|     |                                                                 | 250 - 350      | SC, PC    | 30                                                                                    | 48                                                                                         | 0.13 ❖                         | 0.23          |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 150 - 200      | SC        | 24                                                                                    | 38                                                                                         | 0.10                           | 0.18          |
|     |                                                                 | 200 - 250      | SC, PC    | 18                                                                                    | 32                                                                                         | 0.10                           | 0.18          |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220      | SC, PC    | 9                                                                                     | 13                                                                                         | 0.10 ❖                         | 0.18          |
|     |                                                                 | 220 - 310      | PC        | 8                                                                                     | 12                                                                                         | 0.10 ❖                         | 0.15          |
|     | Titanium Alloy                                                  | 140 - 220      | SC, PC    | 11                                                                                    | 16                                                                                         | 0.10 ❖                         | 0.18          |
|     |                                                                 | 220 - 310      | PC        | 10                                                                                    | 15                                                                                         | 0.08 ❖                         | 0.15          |
|     | Aerospace Alloy<br>S82                                          | 185 - 275      | SC, PC    | 23                                                                                    | 35                                                                                         | 0.15 ❖                         | 0.20          |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 185 - 275      | SC, PC    | 23                                                                                    | 35                                                                                         | 0.15 ❖                         | 0.20          |
|     |                                                                 | 275 - 350      | SC, PC    | 18                                                                                    | 31                                                                                         | 0.13 ❖                         | 0.18          |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185      | SC, PC    | 23                                                                                    | 35                                                                                         | 0.08 ❖                         | 0.18          |
|     |                                                                 | 185 - 275      | SC, PC    | 18                                                                                    | 31                                                                                         | 0.08 ❖                         | 0.15          |
|     | Super Duplex Stainless Steel                                    | 135 - 185      | SC, PC    | 18                                                                                    | 26                                                                                         | 0.08 ❖                         | 0.18          |
|     |                                                                 | 185 - 275      | SC, PC    | 15                                                                                    | 22                                                                                         | 0.08 ❖                         | 0.15          |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 400            | SC, PC    | 14                                                                                    | 21                                                                                         | 0.08 ❖                         | 0.15          |
|     |                                                                 | 500            | PC        | 10                                                                                    | 14                                                                                         | 0.05 ❖                         | 0.12          |
|     |                                                                 | 600            | N/A       | —                                                                                     | —                                                                                          | —                              | —             |
|     | Hardened Steel                                                  | 300 - 400      | PC        | 15                                                                                    | 29                                                                                         | 0.10 ❖                         | 0.15          |
|     |                                                                 | 400 - 500      | PC        | 10                                                                                    | 14                                                                                         | 0.06 ❖                         | 0.12          |
| K   | Nodular, Grey, Ductile Cast Iron                                | 120 - 150      | HSS       | 52                                                                                    | 84                                                                                         | 0.20                           | 0.30          |
|     |                                                                 | 150 - 200      | HSS       | 46                                                                                    | 79                                                                                         | 0.18                           | 0.28          |
|     |                                                                 | 200 - 220      | HSS       | 40                                                                                    | 68                                                                                         | 0.15                           | 0.23          |
|     |                                                                 | 220 - 260      | SC, PC    | 34                                                                                    | 57                                                                                         | 0.13                           | 0.20          |
|     |                                                                 | 260 - 320      | SC, PC    | 27                                                                                    | 47                                                                                         | 0.13                           | 0.18          |
| N   | Cast Aluminum                                                   | 30             | HSS       | 183                                                                                   | —                                                                                          | 0.23                           | 0.38          |
|     |                                                                 | 180            | HSS       | 91                                                                                    | —                                                                                          | 0.20                           | 0.33          |
|     | Wrought Aluminum                                                | 30             | HSS       | 183                                                                                   | 280                                                                                        | 0.12                           | 0.33          |
|     |                                                                 | 180            | HSS       | 91                                                                                    | 200                                                                                        | 0.12                           | 0.18          |
|     | Aluminum Bronze                                                 | 100 - 200      | SC        | 52                                                                                    | 82                                                                                         | 0.15                           | 0.24          |
|     |                                                                 | 200 - 250      | SC        | 40                                                                                    | 65                                                                                         | 0.12                           | 0.18          |
|     | Brass                                                           | 100            | HSS       | 91                                                                                    | 144                                                                                        | 0.18                           | 0.27          |
|     | Copper                                                          | 60             | SC        | 40                                                                                    | 58                                                                                         | 0.07 ❖                         | 0.10          |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.





### Feed Rate (mm/rev) by Diameter

| 17.53 - 24.38 | 24.41 - 35.00 | 35.01 - 47.80 | 47.85 - 65.99 | 66.00 - 114.48 |
|---------------|---------------|---------------|---------------|----------------|
| 0.41          | 0.48          | 0.51          | 0.58          | 0.71           |
| 0.38          | 0.43          | 0.51          | 0.58          | 0.71           |
| 0.36          | 0.41          | 0.51          | 0.58          | 0.71           |
| 0.36          | 0.46          | 0.48          | 0.58          | 0.69           |
| 0.36          | 0.43          | 0.48          | 0.58          | 0.69           |
| 0.33          | 0.41          | 0.46          | 0.53          | 0.61           |
| 0.33          | 0.41          | 0.46          | 0.53          | 0.61           |
| 0.36          | 0.43          | 0.48          | 0.58          | 0.69           |
| 0.33          | 0.41          | 0.46          | 0.53          | 0.61           |
| 0.33          | 0.41          | 0.46          | 0.53          | 0.61           |
| 0.30          | 0.38          | 0.41          | 0.48          | 0.56           |
| 0.36          | 0.43          | 0.43          | 0.48          | 0.56           |
| 0.33          | 0.41          | 0.43          | 0.48          | 0.56           |
| 0.33          | 0.41          | 0.43          | 0.48          | 0.56           |
| 0.30          | 0.38          | 0.38          | 0.43          | 0.51           |
| 0.28          | 0.36          | 0.38          | 0.43          | 0.51           |
| 0.28          | 0.33          | 0.36          | 0.43          | 0.51           |
| 0.25          | 0.30          | 0.36          | 0.43          | 0.51           |
| 0.23          | 0.28          | 0.30          | 0.41          | 0.46           |
| 0.38          | 0.43          | 0.46          | 0.53          | 0.66           |
| 0.33          | 0.38          | 0.41          | 0.48          | 0.61           |
| 0.30          | 0.33          | 0.36          | 0.43          | 0.51           |
| 0.25          | 0.30          | 0.30          | 0.38          | 0.43           |
| 0.25          | 0.30          | 0.30          | 0.38          | 0.43           |
| 0.23          | 0.28          | 0.30          | 0.38          | –              |
| 0.20          | 0.25          | 0.25          | 0.30          | –              |
| 0.21          | 0.27          | 0.30          | 0.38          | –              |
| 0.18          | 0.23          | 0.25          | 0.30          | –              |
| 0.23          | 0.28          | 0.36          | 0.41          | 0.51           |
| 0.20          | 0.25          | 0.30          | 0.36          | 0.46           |
| 0.23          | 0.28          | 0.36          | 0.41          | 0.51           |
| 0.20          | 0.25          | 0.30          | 0.36          | 0.46           |
| 0.23          | 0.28          | 0.36          | 0.41          | 0.51           |
| 0.20          | 0.25          | 0.30          | 0.36          | 0.46           |
| 0.20          | 0.23          | 0.30          | 0.41          | 0.46           |
| 0.18          | 0.20          | 0.25          | 0.30          | 0.40           |
| –             | –             | –             | –             | –              |
| 0.23          | 0.27          | 0.30          | 0.41          | 0.46           |
| 0.18          | 0.24          | 0.25          | 0.30          | 0.40           |
| 0.41          | 0.51          | 0.61          | 0.69          | 0.76           |
| 0.38          | 0.48          | 0.56          | 0.64          | 0.71           |
| 0.33          | 0.43          | 0.46          | 0.53          | 0.61           |
| 0.28          | 0.36          | 0.36          | 0.43          | 0.51           |
| 0.25          | 0.28          | 0.28          | 0.36          | 0.41           |
| 0.46          | 0.58          | 0.56          | 0.64          | 0.64           |
| 0.40          | 0.50          | 0.56          | 0.64          | 0.64           |
| 0.40          | 0.50          | 0.56          | 0.64          | 0.64           |
| 0.30          | 0.35          | 0.56          | 0.64          | 0.64           |
| 0.30          | 0.38          | 0.43          | 0.48          | 0.53           |
| 0.23          | 0.28          | 0.36          | 0.40          | 0.46           |
| 0.33          | 0.45          | 0.47          | 0.53          | 0.58           |
| 0.18          | 0.26          | 0.23          | 0.27          | 0.31           |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

### Formulas

$$1. \text{ RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

M/min = speed (M/min)

DIA = diameter of drill (mm)

$$2. \text{ mm/min} = \text{RPM} \cdot \text{mm/rev}$$

where:

mm/min = mm per minute (mm/min)

RPM = revolutions per minute (rev/min)

mm/rev = feed rate (mm/rev)

$$3. \text{ M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$$

where:

M/min = speed (M/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (mm)

### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## GEN2 T-A Recommended Drilling Data | Metric (mm)

### Carbide Inserts

| ISO | Material                                                           | Hardness<br>(BHN) | Carbide<br>Grade | M/min<br><br>AM300® | Feed Rate (mm/rev) by Diameter |               |               |               |
|-----|--------------------------------------------------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------|--------------------------------|---------------|---------------|---------------|
|     |                                                                    |                   |                  |                                                                                                      | 9.50 - 12.95                   | 12.98 - 17.53 | 17.54 - 24.38 | 24.41 - 35.00 |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                    | 100 - 150         | C1               | 146                                                                                                  | 0.20                           | 0.30          | 0.41          | 0.48          |
|     |                                                                    | 150 - 200         | C1               | 126                                                                                                  | 0.18                           | 0.28          | 0.38          | 0.43          |
|     |                                                                    | 200 - 250         | C1               | 119                                                                                                  | 0.15                           | 0.25          | 0.36          | 0.41          |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522,<br>1144, etc.          | 85 - 125          | C1               | 137                                                                                                  | 0.20 ❖                         | 0.25          | 0.36          | 0.46          |
|     |                                                                    | 125 - 175         | C1               | 119                                                                                                  | 0.18 ❖                         | 0.25          | 0.36          | 0.43          |
|     |                                                                    | 175 - 225         | C1               | 108                                                                                                  | 0.15 ❖                         | 0.23          | 0.33          | 0.41          |
|     |                                                                    | 225 - 275         | C1               | 95                                                                                                   | 0.13 ❖                         | 0.23          | 0.33          | 0.41          |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527,<br>1140, 1151, etc. | 125 - 175         | C1               | 119                                                                                                  | 0.18                           | 0.25          | 0.36          | 0.43          |
|     |                                                                    | 175 - 225         | C1               | 108                                                                                                  | 0.15                           | 0.23          | 0.33          | 0.41          |
|     |                                                                    | 225 - 275         | C1               | 95                                                                                                   | 0.15                           | 0.23          | 0.33          | 0.41          |
|     |                                                                    | 275 - 325         | C1               | 80                                                                                                   | 0.13                           | 0.20          | 0.30          | 0.38          |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                              | 125 - 175         | C1               | 115                                                                                                  | 0.18                           | 0.25          | 0.36          | 0.43          |
|     |                                                                    | 175 - 225         | C1               | 105                                                                                                  | 0.15                           | 0.23          | 0.33          | 0.43          |
|     |                                                                    | 225 - 275         | C1               | 95                                                                                                   | 0.15                           | 0.23          | 0.33          | 0.41          |
|     |                                                                    | 275 - 325         | C1               | 87                                                                                                   | 0.13                           | 0.20          | 0.30          | 0.38          |
|     |                                                                    | 325 - 375         | C1               | 78                                                                                                   | 0.10                           | 0.18          | 0.28          | 0.36          |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.                  | 225 - 300         | C1               | 70                                                                                                   | 0.15 ❖                         | 0.23          | 0.28          | 0.33          |
|     |                                                                    | 300 - 350         | C1               | 63                                                                                                   | 0.13 ❖                         | 0.20          | 0.25          | 0.30          |
|     | Titanium Alloy                                                     | 350 - 400         | C1               | 56                                                                                                   | 0.10 ❖                         | 0.18          | 0.23          | 0.28          |
|     |                                                                    | 100 - 150         | C1               | 108                                                                                                  | 0.20 ❖                         | 0.28          | 0.38          | 0.43          |
|     | Aerospace Alloy<br>S82                                             | 150 - 250         | C1               | 87                                                                                                   | 0.15 ❖                         | 0.25          | 0.33          | 0.38          |
|     |                                                                    | 250 - 350         | C1               | 80                                                                                                   | 0.13 ❖                         | 0.23          | 0.30          | 0.33          |
| M   | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                      | 150 - 200         | C1               | 78                                                                                                   | 0.10                           | 0.18          | 0.25          | 0.30          |
|     |                                                                    | 200 - 250         | C1               | 59                                                                                                   | 0.10                           | 0.18          | 0.25          | 0.30          |
|     | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.                  | 140 - 220         | C2               | 37                                                                                                   | 0.10 ❖                         | 0.18          | 0.23          | 0.28          |
|     |                                                                    | 220 - 310         | C2               | 29                                                                                                   | 0.10 ❖                         | 0.15          | 0.20          | 0.25          |
|     | Titanium Alloy                                                     | 140 - 220         | C2               | 42                                                                                                   | 0.10 ❖                         | 0.18          | 0.21          | 0.27          |
|     |                                                                    | 220 - 310         | C2               | 33                                                                                                   | 0.08 ❖                         | 0.15          | 0.18          | 0.23          |
| X   | Stainless Steel 400 Series<br>416, 420, etc.                       | 185 - 275         | C2               | 73                                                                                                   | 0.12 ❖                         | 0.16          | 0.18          | 0.22          |
|     |                                                                    | 275 - 350         | C2               | 56                                                                                                   | 0.10 ❖                         | 0.14          | 0.16          | 0.19          |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.               | 135 - 185         | C2               | 38                                                                                                   | 0.12 ❖                         | 0.17          | 0.22          | 0.26          |
|     |                                                                    | 185 - 275         | C2               | 30                                                                                                   | 0.10 ❖                         | 0.15          | 0.18          | 0.22          |
|     | Super Duplex Stainless Steel                                       | 135 - 185         | C2               | 38                                                                                                   | 0.12 ❖                         | 0.17          | 0.22          | 0.26          |
|     |                                                                    | 185 - 275         | C2               | 30                                                                                                   | 0.10 ❖                         | 0.15          | 0.18          | 0.22          |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.

| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | M/min<br><br>AM300® | Feed Rate (mm/rev) by Diameter |               |               |               |
|-----|----------------------------------------|-------------------|------------------|------------------------------------------------------------------------------------------------------|--------------------------------|---------------|---------------|---------------|
|     |                                        |                   |                  |                                                                                                      | 9.50 - 12.95                   | 12.98 - 17.53 | 17.54 - 24.38 | 24.41 - 35.00 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C2               | 45                                                                                                   | 0.07 ❖                         | 0.12          | 0.20          | 0.25          |
|     |                                        | 500               | C2               | 37                                                                                                   | 0.05 ❖                         | 0.10          | 0.15          | 0.20          |
|     |                                        | 600               | C2               | 30                                                                                                   | 0.04 ❖                         | 0.08          | 0.12          | 0.16          |
|     | Hardened Steel                         | 300 - 400         | C1               | 47                                                                                                   | 0.10 ❖                         | 0.18          | 0.23          | 0.27          |
|     |                                        | 400 - 500         | C1               | 37                                                                                                   | 0.06 ❖                         | 0.12          | 0.18          | 0.24          |
| K   | Nodular, Grey, Ductile Cast Iron       | 120 - 150         | C2               | 152                                                                                                  | 0.20                           | 0.30          | 0.38          | 0.48          |
|     |                                        | 150 - 200         | C2               | 146                                                                                                  | 0.18                           | 0.28          | 0.33          | 0.43          |
|     |                                        | 200 - 220         | C2               | 131                                                                                                  | 0.15                           | 0.23          | 0.30          | 0.38          |
|     |                                        | 220 - 260         | C2               | 113                                                                                                  | 0.13                           | 0.20          | 0.28          | 0.33          |
|     |                                        | 260 - 320         | C2               | 102                                                                                                  | 0.13                           | 0.18          | 0.25          | 0.28          |
| N   | Cast Aluminum                          | 30                | C2               | 300                                                                                                  | 0.23                           | 0.38          | 0.46          | 0.58          |
|     |                                        | 180               | C2               | 225                                                                                                  | 0.20                           | 0.33          | 0.40          | 0.50          |
|     | Wrought Aluminum                       | 30                | C2               | 426                                                                                                  | 0.12                           | 0.33          | 0.40          | 0.50          |
|     |                                        | 180               | C2               | 300                                                                                                  | 0.12                           | 0.18          | 0.30          | 0.35          |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 110                                                                                                  | 0.15                           | 0.24          | 0.30          | 0.38          |
|     |                                        | 200 - 250         | C2               | 90                                                                                                   | 0.12                           | 0.18          | 0.23          | 0.28          |
|     | Brass                                  | 100               | C2               | 200                                                                                                  | 0.18                           | 0.27          | 0.33          | 0.45          |
|     | Copper                                 | 60                | C2               | 130                                                                                                  | 0.07 ❖                         | 0.10          | 0.18          | 0.26          |

❖ Contact our Application Engineering department for assistance when machining these materials

#### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

#### Formulas

|                                                                                                                                                                         |                                                                                                                                                                           |                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>M/min = speed (M/min)<br>DIA = diameter of drill (mm) | 2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$<br>where:<br>mm/min = mm per minute (mm/min)<br>RPM = revolutions per minute (rev/min)<br>mm/rev = feed rate (mm/rev) | 3. $\text{M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$<br>where:<br>M/min = speed (M/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (mm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## Original T-A Recommended Drilling Data | Metric (mm)

### HSS Inserts

| ISO Material           |                                                                 | Hardness (BHN)                                    | HSS Grade | M/min                                                                                 |                                                                                          |                                                                                          | Feed Rate (mm/rev) by Diameter |               |      |
|------------------------|-----------------------------------------------------------------|---------------------------------------------------|-----------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------|---------------|------|
|                        |                                                                 |                                                   |           |  TiN |  TiAlN |  TiCN | 9.50 - 12.95                   | 12.98 - 17.52 |      |
| P                      | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150                                         | HSS       | 61                                                                                    | 85                                                                                       | 79                                                                                       | 0.18                           | 0.25          |      |
|                        |                                                                 | 150 - 200                                         | HSS       | 55                                                                                    | 79                                                                                       | 72                                                                                       | 0.18                           | 0.25          |      |
|                        |                                                                 | 200 - 250                                         | HSS       | 49                                                                                    | 73                                                                                       | 64                                                                                       | 0.15                           | 0.25          |      |
|                        | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125                                          | HSS       | 52                                                                                    | 76                                                                                       | 67                                                                                       | 0.15 ❖                         | 0.23          |      |
|                        |                                                                 | 125 - 175                                         | HSS       | 49                                                                                    | 73                                                                                       | 64                                                                                       | 0.15 ❖                         | 0.23          |      |
|                        |                                                                 | 175 - 225                                         | HSS       | 46                                                                                    | 69                                                                                       | 59                                                                                       | 0.13 ❖                         | 0.20          |      |
|                        | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 225 - 275                                         | HSS       | 43                                                                                    | 64                                                                                       | 55                                                                                       | 0.13 ❖                         | 0.20          |      |
|                        |                                                                 | 125 - 175                                         | HSS       | 49                                                                                    | 73                                                                                       | 64                                                                                       | 0.15                           | 0.23          |      |
|                        |                                                                 | 175 - 225                                         | HSS       | 46                                                                                    | 69                                                                                       | 59                                                                                       | 0.13                           | 0.20          |      |
|                        |                                                                 | 225 - 275                                         | HSS       | 43                                                                                    | 64                                                                                       | 55                                                                                       | 0.13                           | 0.20          |      |
|                        | Alloy Steel<br>4140, 5140, 8640, etc.                           | 275 - 325                                         | SC, PC    | 40                                                                                    | 59                                                                                       | 52                                                                                       | 0.10                           | 0.18          |      |
|                        |                                                                 | 125 - 175                                         | HSS       | 46                                                                                    | 64                                                                                       | 59                                                                                       | 0.15                           | 0.20          |      |
|                        |                                                                 | 175 - 225                                         | HSS       | 43                                                                                    | 59                                                                                       | 55                                                                                       | 0.13                           | 0.20          |      |
|                        |                                                                 | 225 - 275                                         | HSS       | 40                                                                                    | 55                                                                                       | 52                                                                                       | 0.13                           | 0.18          |      |
|                        |                                                                 | 275 - 325                                         | SC, PC    | 37                                                                                    | 52                                                                                       | 47                                                                                       | 0.10                           | 0.15          |      |
|                        | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 325 - 375                                         | SC, PC    | 34                                                                                    | 47                                                                                       | 44                                                                                       | 0.08                           | 0.15          |      |
|                        |                                                                 | 225 - 300                                         | SC, PC    | 24                                                                                    | 34                                                                                       | 30                                                                                       | 0.13 ❖                         | 0.18          |      |
|                        |                                                                 | 300 - 350                                         | SC, PC    | 18                                                                                    | 26                                                                                       | 24                                                                                       | 0.10 ❖                         | 0.18          |      |
|                        | Structural Steel<br>A36, A285, A516, etc.                       | 350 - 400                                         | PC        | 15                                                                                    | 21                                                                                       | 20                                                                                       | 0.08 ❖                         | 0.15          |      |
|                        |                                                                 | 100 - 150                                         | HSS       | 43                                                                                    | 61                                                                                       | 55                                                                                       | 0.15 ❖                         | 0.25          |      |
|                        |                                                                 | 150 - 250                                         | HSS       | 37                                                                                    | 52                                                                                       | 47                                                                                       | 0.13 ❖                         | 0.23          |      |
|                        | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 250 - 350                                         | SC, PC    | 30                                                                                    | 43                                                                                       | 40                                                                                       | 0.10 ❖                         | 0.20          |      |
|                        |                                                                 | 150 - 200                                         | SC        | 24                                                                                    | 34                                                                                       | 32                                                                                       | 0.10                           | 0.15          |      |
|                        |                                                                 | 200 - 250                                         | SC, PC    | 18                                                                                    | 27                                                                                       | 26                                                                                       | 0.10                           | 0.15          |      |
|                        | S                                                               | High Temp Alloy<br>Hastelloy B, Inconel 600, etc. | 140 - 220 | SC, PC                                                                                | 9                                                                                        | 12                                                                                       | 11                             | 0.08 ❖        | 0.18 |
|                        |                                                                 |                                                   | 220 - 310 | PC                                                                                    | 8                                                                                        | 11                                                                                       | 9                              | 0.08 ❖        | 0.15 |
|                        |                                                                 | Titanium Alloy                                    | 140 - 220 | SC, PC                                                                                | 11                                                                                       | 15                                                                                       | 14                             | 0.08 ❖        | 0.18 |
|                        |                                                                 |                                                   | 220 - 310 | PC                                                                                    | 9                                                                                        | 14                                                                                       | 11                             | 0.08 ❖        | 0.15 |
| Aerospace Alloy<br>S82 |                                                                 | 185 - 275                                         | SC, PC    | 23                                                                                    | 32                                                                                       | 29                                                                                       | 0.15 ❖                         | 0.20          |      |
|                        | 275 - 350                                                       | SC, PC                                            | 18        | 27                                                                                    | 24                                                                                       | 0.13 ❖                                                                                   | 0.18                           |               |      |
| M                      | Stainless Steel 400 Series<br>416, 420, etc.                    | 185 - 275                                         | SC, PC    | 23                                                                                    | 32                                                                                       | 29                                                                                       | 0.15 ❖                         | 0.20          |      |
|                        |                                                                 | 275 - 350                                         | SC, PC    | 18                                                                                    | 27                                                                                       | 24                                                                                       | 0.13 ❖                         | 0.18          |      |
|                        | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185                                         | SC, PC    | 23                                                                                    | 32                                                                                       | 29                                                                                       | 0.08 ❖                         | 0.18          |      |
|                        |                                                                 | 185 - 275                                         | SC, PC    | 18                                                                                    | 27                                                                                       | 24                                                                                       | 0.08 ❖                         | 0.15          |      |
|                        | Super Duplex Stainless Steel                                    | 135 - 185                                         | SC, PC    | 18                                                                                    | 24                                                                                       | 21                                                                                       | 0.08 ❖                         | 0.18          |      |
|                        |                                                                 | 185 - 275                                         | SC, PC    | 15                                                                                    | 20                                                                                       | 18                                                                                       | 0.08 ❖                         | 0.15          |      |
| H                      | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 400                                               | SC, PC    | 14                                                                                    | 21                                                                                       | 17                                                                                       | 0.08 ❖                         | 0.15          |      |
|                        |                                                                 | 500                                               | PC        | 11                                                                                    | 14                                                                                       | 12                                                                                       | 0.05 ❖                         | 0.13          |      |
|                        |                                                                 | 600                                               | N/A       | –                                                                                     | –                                                                                        | –                                                                                        | –                              | –             |      |
|                        | Hardened Steel                                                  | 300 - 400                                         | PC        | 15                                                                                    | 29                                                                                       | 21                                                                                       | 0.08 ❖                         | 0.15          |      |
| 400 - 500              |                                                                 | PC                                                | 11        | 14                                                                                    | 12                                                                                       | 0.05 ❖                                                                                   | 0.13                           |               |      |
| K                      | Nodular, Grey, Ductile Cast Iron                                | 120 - 150                                         | HSS       | 52                                                                                    | 76                                                                                       | 67                                                                                       | 0.18                           | 0.30          |      |
|                        |                                                                 | 150 - 200                                         | HSS       | 46                                                                                    | 69                                                                                       | 59                                                                                       | 0.15                           | 0.28          |      |
|                        |                                                                 | 200 - 220                                         | HSS       | 40                                                                                    | 59                                                                                       | 52                                                                                       | 0.15                           | 0.23          |      |
|                        |                                                                 | 220 - 260                                         | SC, PC    | 34                                                                                    | 50                                                                                       | 44                                                                                       | 0.13                           | 0.18          |      |
|                        |                                                                 | 260 - 320                                         | SC, PC    | 27                                                                                    | 41                                                                                       | 37                                                                                       | 0.10                           | 0.15          |      |
| N                      | Cast Aluminum                                                   | 30                                                | HSS       | 183                                                                                   | 259                                                                                      | 229                                                                                      | 0.20                           | 0.33          |      |
|                        |                                                                 | 180                                               | HSS       | 91                                                                                    | 137                                                                                      | 122                                                                                      | 0.20                           | 0.33          |      |
|                        | Wrought Aluminum                                                | 30                                                | HSS       | 183                                                                                   | 259                                                                                      | 229                                                                                      | 0.10                           | 0.15          |      |
|                        |                                                                 | 180                                               | HSS       | 91                                                                                    | 137                                                                                      | 122                                                                                      | 0.20                           | 0.33          |      |
|                        | Aluminum Bronze                                                 | 100 - 200                                         | SC        | 52                                                                                    | 76                                                                                       | 67                                                                                       | 0.15                           | 0.28          |      |
|                        |                                                                 | 200 - 250                                         | SC        | 40                                                                                    | 58                                                                                       | 52                                                                                       | 0.13                           | 0.18          |      |
|                        | Brass                                                           | 100                                               | HSS       | 91                                                                                    | 136                                                                                      | 122                                                                                      | 0.18                           | 0.30          |      |
| Copper                 | 60                                                              | SC                                                | 40        | 50                                                                                    | 46                                                                                       | 0.05 ❖                                                                                   | 0.08                           |               |      |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

Feed Rate (mm/rev) by Diameter

| 17.53 - 24.38 | 24.41 - 35.00 | 35.01 - 47.80 | 47.85 - 65.99 | 66.00 - 114.48 |
|---------------|---------------|---------------|---------------|----------------|
| 0.33          | 0.41          | 0.51          | 0.58          | 0.71           |
| 0.33          | 0.41          | 0.51          | 0.58          | 0.71           |
| 0.33          | 0.41          | 0.51          | 0.58          | 0.71           |
| 0.30          | 0.38          | 0.48          | 0.58          | 0.69           |
| 0.30          | 0.38          | 0.48          | 0.58          | 0.69           |
| 0.25          | 0.36          | 0.46          | 0.53          | 0.61           |
| 0.25          | 0.36          | 0.46          | 0.53          | 0.61           |
| 0.30          | 0.38          | 0.48          | 0.58          | 0.69           |
| 0.25          | 0.36          | 0.46          | 0.53          | 0.61           |
| 0.25          | 0.36          | 0.46          | 0.53          | 0.61           |
| 0.23          | 0.30          | 0.41          | 0.48          | 0.56           |
| 0.25          | 0.36          | 0.43          | 0.48          | 0.56           |
| 0.25          | 0.36          | 0.43          | 0.48          | 0.56           |
| 0.25          | 0.36          | 0.43          | 0.48          | 0.56           |
| 0.23          | 0.30          | 0.38          | 0.43          | 0.51           |
| 0.23          | 0.30          | 0.38          | 0.43          | 0.51           |
| 0.23          | 0.25          | 0.36          | 0.43          | 0.51           |
| 0.23          | 0.25          | 0.36          | 0.43          | 0.51           |
| 0.20          | 0.23          | 0.30          | 0.38          | 0.46           |
| 0.30          | 0.36          | 0.46          | 0.53          | 0.66           |
| 0.25          | 0.30          | 0.41          | 0.48          | 0.61           |
| 0.23          | 0.25          | 0.36          | 0.43          | 0.51           |
| 0.20          | 0.25          | 0.30          | 0.38          | 0.43           |
| 0.20          | 0.25          | 0.30          | 0.38          | 0.43           |
| 0.20          | 0.25          | 0.30          | 0.38          | –              |
| 0.18          | 0.20          | 0.25          | 0.30          | –              |
| 0.20          | 0.25          | 0.30          | 0.38          | –              |
| 0.18          | 0.20          | 0.25          | 0.30          | –              |
| 0.23          | 0.25          | 0.36          | 0.41          | 0.51           |
| 0.20          | 0.20          | 0.30          | 0.36          | 0.46           |
| 0.23          | 0.25          | 0.36          | 0.41          | 0.51           |
| 0.20          | 0.20          | 0.30          | 0.36          | 0.46           |
| 0.20          | 0.20          | 0.30          | 0.36          | 0.46           |
| 0.20          | 0.23          | 0.30          | 0.41          | 0.46           |
| 0.18          | 0.20          | 0.25          | 0.30          | 0.41           |
| –             | –             | –             | –             | –              |
| 0.20          | 0.23          | 0.30          | 0.41          | 0.46           |
| 0.18          | 0.20          | 0.25          | 0.30          | 0.41           |
| 0.41          | 0.51          | 0.61          | 0.69          | 0.76           |
| 0.36          | 0.46          | 0.56          | 0.64          | 0.71           |
| 0.30          | 0.41          | 0.46          | 0.53          | 0.61           |
| 0.23          | 0.30          | 0.36          | 0.43          | 0.51           |
| 0.18          | 0.23          | 0.30          | 0.36          | 0.41           |
| 0.41          | 0.51          | 0.56          | 0.64          | 0.64           |
| 0.41          | 0.46          | 0.56          | 0.64          | 0.64           |
| 0.25          | 0.30          | 0.56          | 0.64          | 0.64           |
| 0.41          | 0.46          | 0.56          | 0.64          | 0.64           |
| 0.36          | 0.46          | 0.56          | 0.66          | 0.71           |
| 0.23          | 0.30          | 0.36          | 0.43          | 0.51           |
| 0.41          | 0.51          | 0.61          | 0.71          | 0.76           |
| 0.15          | 0.20          | 0.30          | 0.36          | 0.41           |

## Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

## Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

## Formulas

$$1. \text{ RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

M/min = speed (M/min)

DIA = diameter of drill (mm)

$$2. \text{ mm/min} = \text{RPM} \cdot \text{mm/rev}$$

where:

mm/min = mm per minute (mm/min)

RPM = revolutions per minute (rev/min)

mm/rev = feed rate (mm/rev)

$$3. \text{ M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$$

where:

M/min = speed (M/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (mm)

## ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

## Original T-A Recommended Drilling Data | Metric (mm)

### Carbide Inserts

| ISO    Material |                                                                    | Hardness<br>(BHN) | Carbide<br>Grade | M/min                                                                             |                                                                                   |                                                                                   | Feed Rate (mm/rev) by Diameter |                  |                  |                  |                  |
|-----------------|--------------------------------------------------------------------|-------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------|------------------|------------------|------------------|------------------|
|                 |                                                                    |                   |                  |  |  |  | 9.50 -<br>12.95                | 12.98 -<br>17.52 | 17.53 -<br>24.38 | 24.41 -<br>35.00 | 35.01 -<br>47.80 |
| P               | Free Machining Steel<br>1118, 1215, 12L14, etc.                    | 100 - 150         | C5               | 96                                                                                | 128                                                                               | 115                                                                               | 0.20                           | 0.30             | 0.38             | 0.45             | 0.53             |
|                 |                                                                    | 150 - 200         | C5               | 85                                                                                | 110                                                                               | 100                                                                               | 0.18                           | 0.28             | 0.35             | 0.40             | 0.48             |
|                 |                                                                    | 200 - 250         | C5               | 79                                                                                | 104                                                                               | 90                                                                                | 0.15                           | 0.25             | 0.33             | 0.38             | 0.43             |
|                 | Low Carbon Steel<br>1010, 1020, 1025, 1522,<br>1144, etc.          | 85 - 125          | C5               | 91                                                                                | 119                                                                               | 110                                                                               | 0.20 ❖                         | 0.25             | 0.33             | 0.43             | 0.48             |
|                 |                                                                    | 125 - 175         | C5               | 79                                                                                | 104                                                                               | 90                                                                                | 0.18 ❖                         | 0.25             | 0.33             | 0.40             | 0.45             |
|                 |                                                                    | 175 - 225         | C5               | 73                                                                                | 95                                                                                | 82                                                                                | 0.15 ❖                         | 0.23             | 0.30             | 0.38             | 0.43             |
|                 |                                                                    | 225 - 275         | C5               | 64                                                                                | 83                                                                                | 75                                                                                | 0.13 ❖                         | 0.23             | 0.30             | 0.38             | 0.43             |
|                 | Medium Carbon Steel<br>1030, 1040, 1050, 1527,<br>1140, 1151, etc. | 125 - 175         | C5               | 79                                                                                | 104                                                                               | 90                                                                                | 0.18                           | 0.25             | 0.33             | 0.40             | 0.45             |
|                 |                                                                    | 175 - 225         | C5               | 73                                                                                | 95                                                                                | 84                                                                                | 0.15                           | 0.23             | 0.30             | 0.38             | 0.43             |
|                 |                                                                    | 225 - 275         | C5               | 67                                                                                | 83                                                                                | 72                                                                                | 0.15                           | 0.23             | 0.30             | 0.38             | 0.43             |
|                 |                                                                    | 275 - 325         | C5               | 55                                                                                | 70                                                                                | 62                                                                                | 0.13                           | 0.20             | 0.28             | 0.35             | 0.40             |
|                 | Alloy Steel<br>4140, 5140, 8640, etc.                              | 125 - 175         | C5               | 76                                                                                | 99                                                                                | 87                                                                                | 0.18                           | 0.25             | 0.33             | 0.40             | 0.45             |
|                 |                                                                    | 175 - 225         | C5               | 70                                                                                | 92                                                                                | 80                                                                                | 0.15                           | 0.23             | 0.30             | 0.38             | 0.43             |
|                 |                                                                    | 225 - 275         | C5               | 64                                                                                | 83                                                                                | 72                                                                                | 0.15                           | 0.23             | 0.30             | 0.38             | 0.43             |
|                 |                                                                    | 275 - 325         | C5               | 61                                                                                | 76                                                                                | 68                                                                                | 0.13                           | 0.20             | 0.28             | 0.35             | 0.40             |
|                 |                                                                    | 325 - 375         | C5               | 52                                                                                | 67                                                                                | 60                                                                                | 0.10                           | 0.18             | 0.25             | 0.33             | 0.38             |
|                 | High Strength Alloy<br>4340, 4330V, 300M, etc.                     | 225 - 300         | C5               | 49                                                                                | 61                                                                                | 55                                                                                | 0.15 ❖                         | 0.23             | 0.25             | 0.30             | 0.38             |
|                 |                                                                    | 300 - 350         | C5               | 43                                                                                | 55                                                                                | 49                                                                                | 0.13 ❖                         | 0.20             | 0.23             | 0.28             | 0.35             |
|                 |                                                                    | 350 - 400         | C5               | 37                                                                                | 49                                                                                | 43                                                                                | 0.10 ❖                         | 0.18             | 0.20             | 0.25             | 0.30             |
|                 | Structural Steel<br>A36, A285, A516, etc.                          | 100 - 150         | C5               | 73                                                                                | 95                                                                                | 84                                                                                | 0.20 ❖                         | 0.28             | 0.35             | 0.40             | 0.45             |
|                 |                                                                    | 150 - 250         | C5               | 61                                                                                | 76                                                                                | 68                                                                                | 0.15 ❖                         | 0.25             | 0.30             | 0.35             | 0.40             |
|                 |                                                                    | 250 - 350         | C5               | 55                                                                                | 70                                                                                | 62                                                                                | 0.13 ❖                         | 0.23             | 0.28             | 0.30             | 0.35             |
|                 | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                      | 150 - 200         | C5               | 49                                                                                | 67                                                                                | 58                                                                                | 0.10                           | 0.18             | 0.23             | 0.28             | 0.33             |
|                 |                                                                    | 200 - 250         | C5               | 37                                                                                | 52                                                                                | 45                                                                                | 0.10                           | 0.18             | 0.23             | 0.28             | 0.33             |
| S               | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.                  | 140 - 220         | C2               | 24                                                                                | 32                                                                                | 28                                                                                | 0.10 ❖                         | 0.18             | 0.23             | 0.28             | 0.33             |
|                 |                                                                    | 220 - 310         | C2               | 18                                                                                | 26                                                                                | 22                                                                                | 0.10 ❖                         | 0.15             | 0.20             | 0.25             | 0.30             |
|                 | Titanium Alloy                                                     | 140 - 220         | C2               | 30                                                                                | 38                                                                                | 32                                                                                | 0.10 ❖                         | 0.18             | 0.23             | 0.28             | 0.33             |
|                 |                                                                    | 220 - 310         | C2               | 24                                                                                | 33                                                                                | 28                                                                                | 0.10 ❖                         | 0.15             | 0.20             | 0.25             | 0.30             |
|                 | Aerospace Alloy<br>S82                                             | 185 - 275         | C2               | 49                                                                                | 64                                                                                | 57                                                                                | 0.17 ❖                         | 0.22             | 0.29             | 0.35             | 0.40             |
|                 |                                                                    | 275 - 350         | C2               | 37                                                                                | 49                                                                                | 43                                                                                | 0.14 ❖                         | 0.19             | 0.27             | 0.30             | 0.35             |
| M               | Stainless Steel 400 Series<br>416, 420, etc.                       | 185 - 275         | C2               | 49                                                                                | 64                                                                                | 57                                                                                | 0.17 ❖                         | 0.22             | 0.29             | 0.35             | 0.40             |
|                 |                                                                    | 275 - 350         | C2               | 37                                                                                | 49                                                                                | 43                                                                                | 0.14 ❖                         | 0.19             | 0.27             | 0.30             | 0.35             |
|                 | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.               | 135 - 185         | C2               | 49                                                                                | 64                                                                                | 57                                                                                | 0.13 ❖                         | 0.17             | 0.22             | 0.26             | 0.30             |
|                 |                                                                    | 185 - 275         | C2               | 37                                                                                | 49                                                                                | 43                                                                                | 0.11 ❖                         | 0.14             | 0.20             | 0.22             | 0.25             |
|                 | Super Duplex Stainless Steel                                       | 135 - 185         | C2               | 25                                                                                | 33                                                                                | 29                                                                                | 0.11 ❖                         | 0.15             | 0.19             | 0.23             | 0.27             |
|                 | 185 - 275                                                          | C2                | 19               | 25                                                                                | 22                                                                                | 0.09 ❖                                                                            | 0.13                           | 0.18             | 0.20             | 0.23             |                  |

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**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | M/min                                                                                 |                                                                                         |                                                                                        | Feed Rate (mm/rev) by Diameter |                  |                  |                  |                  |
|-----|----------------------------------------|-------------------|------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------|------------------|------------------|------------------|------------------|
|     |                                        |                   |                  |  TiN |  TiAlN |  TiCN | 9.50 -<br>12.95                | 12.98 -<br>17.52 | 17.53 -<br>24.38 | 24.41 -<br>35.00 | 35.01 -<br>47.80 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C5               | 23                                                                                    | 35                                                                                      | 30                                                                                     | 0.07                           | 0.12             | 0.20             | 0.25             | 0.30             |
|     |                                        | 500               | C5               | 15                                                                                    | 26                                                                                      | 21                                                                                     | 0.05                           | 0.10             | 0.15             | 0.20             | 0.25             |
|     |                                        | 600               | C5               | 11                                                                                    | 22                                                                                      | 16                                                                                     | 0.04                           | 0.08             | 0.12             | 0.16             | 0.20             |
|     | Hardened Steel                         | 300 - 400         | C5               | 34                                                                                    | 43                                                                                      | 39                                                                                     | 0.10 ❖                         | 0.18             | 0.23             | 0.28             | 0.33             |
|     |                                        | 400 - 500         | C5               | 20                                                                                    | 25                                                                                      | 23                                                                                     | 0.08 ❖                         | 0.15             | 0.20             | 0.23             | 0.28             |
| K   | Nodular, Grey,<br>Ductile Cast Iron    | 120 - 150         | C2, C3           | 98                                                                                    | 141                                                                                     | 127                                                                                    | 0.20                           | 0.30             | 0.38             | 0.48             | 0.58             |
|     |                                        | 150 - 200         | C2, C3           | 82                                                                                    | 122                                                                                     | 102                                                                                    | 0.18                           | 0.28             | 0.33             | 0.43             | 0.53             |
|     |                                        | 200 - 220         | C2, C3           | 73                                                                                    | 110                                                                                     | 93                                                                                     | 0.15                           | 0.23             | 0.30             | 0.38             | 0.45             |
|     |                                        | 220 - 260         | C2, C3           | 64                                                                                    | 95                                                                                      | 79                                                                                     | 0.13                           | 0.20             | 0.28             | 0.33             | 0.38             |
|     |                                        | 260 - 320         | C2, C3           | 55                                                                                    | 83                                                                                      | 69                                                                                     | 0.13                           | 0.18             | 0.25             | 0.28             | 0.33             |
| N   | Cast Aluminum                          | 30                | C2               | 366                                                                                   | 460                                                                                     | 410                                                                                    | 0.25                           | 0.38             | 0.45             | 0.50             | 0.55             |
|     |                                        | 180               | C2               | 244                                                                                   | 306                                                                                     | 275                                                                                    | 0.23                           | 0.33             | 0.40             | 0.45             | 0.50             |
|     | Wrought Aluminum                       | 30                | C2               | 366                                                                                   | 460                                                                                     | 410                                                                                    | 0.10                           | 0.15             | 0.25             | 0.30             | 0.36             |
|     |                                        | 180               | C2               | 244                                                                                   | 306                                                                                     | 275                                                                                    | 0.20                           | 0.28             | 0.36             | 0.45             | 0.50             |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 85                                                                                    | 110                                                                                     | 100                                                                                    | 0.13                           | 0.20             | 0.25             | 0.36             | 0.42             |
|     |                                        | 200 - 250         | C2               | 64                                                                                    | 94                                                                                      | 79                                                                                     | 0.10                           | 0.15             | 0.18             | 0.25             | 0.33             |
|     | Brass                                  | 100               | C2               | 130                                                                                   | 184                                                                                     | 160                                                                                    | 0.15                           | 0.23             | 0.28             | 0.38             | 0.45             |
|     | Copper                                 | 60                | C2               | 80                                                                                    | 120                                                                                     | 100                                                                                    | 0.05 ❖                         | 0.08             | 0.10             | 0.15             | 0.25             |

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#### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | –             | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

#### Formulas

|                                                                                                                                                                         |                                                                                                                                                                           |                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>M/min = speed (M/min)<br>DIA = diameter of drill (mm) | 2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$<br>where:<br>mm/min = mm per minute (mm/min)<br>RPM = revolutions per minute (rev/min)<br>mm/rev = feed rate (mm/rev) | 3. $\text{M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$<br>where:<br>M/min = speed (M/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (mm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>⚠ WARNING</b> Tool failure can cause serious injury. To prevent:<br>- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.<br>- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.<br>Visit <a href="http://www.alliedmachine.com/DeepHoleGuidelines">www.alliedmachine.com/DeepHoleGuidelines</a> for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## Original T-A Recommended Drilling Data | Metric (mm)

HSS Inserts | Flat Bottom Geometry

| ISO | Material                                                        | Hardness<br>(BHN) | HSS<br>Grade | M/min                                                                                 |                                                                                          |                                                                                          |                                                                                            |
|-----|-----------------------------------------------------------------|-------------------|--------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|     |                                                                 |                   |              |  TiN |  TiAlN |  TiCN |  AM200® |
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | 100 - 150         | HSS          | 52                                                                                    | 76                                                                                       | 70                                                                                       | 88                                                                                         |
|     |                                                                 | 150 - 200         | HSS          | 47                                                                                    | 70                                                                                       | 62                                                                                       | 81                                                                                         |
|     |                                                                 | 200 - 250         | HSS          | 43                                                                                    | 64                                                                                       | 56                                                                                       | 74                                                                                         |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | 85 - 125          | HSS          | 46                                                                                    | 67                                                                                       | 59                                                                                       | 77                                                                                         |
|     |                                                                 | 125 - 175         | HSS          | 43                                                                                    | 64                                                                                       | 56                                                                                       | 74                                                                                         |
|     |                                                                 | 175 - 225         | HSS          | 40                                                                                    | 59                                                                                       | 53                                                                                       | 68                                                                                         |
|     |                                                                 | 225 - 275         | HSS          | 37                                                                                    | 56                                                                                       | 47                                                                                       | 65                                                                                         |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | 125 - 175         | HSS          | 43                                                                                    | 64                                                                                       | 56                                                                                       | 74                                                                                         |
|     |                                                                 | 175 - 225         | HSS          | 40                                                                                    | 59                                                                                       | 53                                                                                       | 68                                                                                         |
|     |                                                                 | 225 - 275         | HSS          | 37                                                                                    | 56                                                                                       | 47                                                                                       | 65                                                                                         |
|     |                                                                 | 275 - 325         | SC           | 34                                                                                    | 53                                                                                       | 46                                                                                       | 61                                                                                         |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | 125 - 175         | HSS          | 40                                                                                    | 56                                                                                       | 53                                                                                       | 65                                                                                         |
|     |                                                                 | 175 - 225         | HSS          | 37                                                                                    | 53                                                                                       | 47                                                                                       | 61                                                                                         |
|     |                                                                 | 225 - 275         | HSS          | 34                                                                                    | 47                                                                                       | 44                                                                                       | 54                                                                                         |
|     |                                                                 | 275 - 325         | SC           | 32                                                                                    | 44                                                                                       | 41                                                                                       | 51                                                                                         |
|     |                                                                 | 325 - 375         | SC           | 29                                                                                    | 41                                                                                       | 38                                                                                       | 47                                                                                         |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | 225 - 300         | SC           | 21                                                                                    | 29                                                                                       | 26                                                                                       | 33                                                                                         |
|     |                                                                 | 300 - 350         | SC           | 15                                                                                    | 23                                                                                       | 21                                                                                       | 27                                                                                         |
|     |                                                                 | 350 - 400         | SC           | 13                                                                                    | 20                                                                                       | 18                                                                                       | 23                                                                                         |
|     | Structural Steel<br>A36, A285, A516, etc.                       | 100 - 150         | HSS          | 36                                                                                    | 52                                                                                       | 47                                                                                       | 60                                                                                         |
|     |                                                                 | 150 - 250         | HSS          | 32                                                                                    | 44                                                                                       | 41                                                                                       | 51                                                                                         |
|     |                                                                 | 250 - 350         | SC           | 26                                                                                    | 37                                                                                       | 34                                                                                       | 43                                                                                         |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | 150 - 200         | SC           | 21                                                                                    | 29                                                                                       | 27                                                                                       | 33                                                                                         |
|     |                                                                 | 200 - 250         | SC           | 15                                                                                    | 24                                                                                       | 23                                                                                       | 28                                                                                         |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | 140 - 220         | SC           | 7                                                                                     | 10                                                                                       | 9                                                                                        | 13                                                                                         |
|     |                                                                 | 220 - 310         | SC           | 6                                                                                     | 9                                                                                        | 7                                                                                        | 10                                                                                         |
|     | Titanium Alloy                                                  | 140 - 220         | SC           | 10                                                                                    | 14                                                                                       | 12                                                                                       | 16                                                                                         |
|     |                                                                 | 220 - 310         | SC           | 8                                                                                     | 12                                                                                       | 11                                                                                       | 14                                                                                         |
|     | Aerospace Alloy<br>S82                                          | 185 - 275         | SC           | 20                                                                                    | 27                                                                                       | 26                                                                                       | 34                                                                                         |
|     |                                                                 | 275 - 350         | SC           | 15                                                                                    | 24                                                                                       | 21                                                                                       | 28                                                                                         |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | 185 - 275         | SC           | 20                                                                                    | 27                                                                                       | 26                                                                                       | 34                                                                                         |
|     |                                                                 | 275 - 350         | SC           | 15                                                                                    | 24                                                                                       | 21                                                                                       | 28                                                                                         |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | 135 - 185         | SC           | 20                                                                                    | 27                                                                                       | 26                                                                                       | 34                                                                                         |
|     |                                                                 | 185 - 275         | SC           | 15                                                                                    | 24                                                                                       | 21                                                                                       | 28                                                                                         |
|     | Super Duplex Stainless Steel                                    | 135 - 185         | SC           | 20                                                                                    | 27                                                                                       | 26                                                                                       | 34                                                                                         |
|     |                                                                 | 185 - 275         | SC           | 15                                                                                    | 24                                                                                       | 21                                                                                       | 28                                                                                         |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | 400               | SC           | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     |                                                                 | 500               | SC           | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     |                                                                 | 600               | N/A          | –                                                                                     | –                                                                                        | –                                                                                        | –                                                                                          |
|     | Hardened Steel                                                  | 300 - 400         | SC           | 13                                                                                    | 20                                                                                       | 18                                                                                       | 24                                                                                         |
|     |                                                                 | 400 - 500         | SC           | 8                                                                                     | 12                                                                                       | 10                                                                                       | 13                                                                                         |
| K   | Nodular, Grey, Ductile Cast Iron                                | 120 - 150         | HSS          | 46                                                                                    | 67                                                                                       | 59                                                                                       | 77                                                                                         |
|     |                                                                 | 150 - 200         | HSS          | 40                                                                                    | 59                                                                                       | 53                                                                                       | 68                                                                                         |
|     |                                                                 | 200 - 220         | HSS          | 34                                                                                    | 53                                                                                       | 46                                                                                       | 61                                                                                         |
|     |                                                                 | 220 - 260         | SC           | 29                                                                                    | 46                                                                                       | 38                                                                                       | 53                                                                                         |
|     |                                                                 | 260 - 320         | SC           | 24                                                                                    | 37                                                                                       | 32                                                                                       | 43                                                                                         |
| N   | Cast Aluminum                                                   | 30                | HSS          | 160                                                                                   | 228                                                                                      | 198                                                                                      | –                                                                                          |
|     |                                                                 | 180               | HSS          | 79                                                                                    | 122                                                                                      | 107                                                                                      | –                                                                                          |
|     | Wrought Aluminum                                                | 30                | HSS          | 160                                                                                   | 228                                                                                      | 198                                                                                      | 261                                                                                        |
|     |                                                                 | 180               | HSS          | 79                                                                                    | 122                                                                                      | 107                                                                                      | 141                                                                                        |
|     | Aluminum Bronze                                                 | 100 - 200         | SC           | 40                                                                                    | 59                                                                                       | 53                                                                                       | 70                                                                                         |
|     |                                                                 | 200 - 250         | SC           | 29                                                                                    | 46                                                                                       | 38                                                                                       | 50                                                                                         |
|     | Brass                                                           | 100               | HSS          | 46                                                                                    | 67                                                                                       | 59                                                                                       | 78                                                                                         |
|     | Copper                                                          | 60                | SC           | 35                                                                                    | 45                                                                                       | 40                                                                                       | 53                                                                                         |

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Feed Rate (mm/rev) by Diameter

| 9.50 -<br>12.95 | 12.98 -<br>17.53 | 17.53 -<br>24.38 | 24.21 -<br>35.00 | 35.01 -<br>47.80 | 47.85 -<br>65.99 |
|-----------------|------------------|------------------|------------------|------------------|------------------|
| 0.15            | 0.23             | 0.28             | 0.35             | 0.41             | 0.46             |
| 0.15            | 0.23             | 0.28             | 0.35             | 0.41             | 0.46             |
| 0.13            | 0.23             | 0.28             | 0.35             | 0.38             | 0.43             |
| 0.13 ❖          | 0.20             | 0.25             | 0.33             | 0.38             | 0.43             |
| 0.13 ❖          | 0.20             | 0.25             | 0.33             | 0.38             | 0.41             |
| 0.10 ❖          | 0.18             | 0.23             | 0.30             | 0.36             | 0.41             |
| 0.10 ❖          | 0.18             | 0.23             | 0.30             | 0.36             | 0.38             |
| 0.13            | 0.20             | 0.25             | 0.33             | 0.38             | 0.46             |
| 0.10            | 0.18             | 0.23             | 0.30             | 0.36             | 0.43             |
| 0.10            | 0.18             | 0.23             | 0.30             | 0.36             | 0.43             |
| 0.10            | 0.15             | 0.20             | 0.25             | 0.33             | 0.38             |
| 0.13            | 0.18             | 0.23             | 0.30             | 0.33             | 0.41             |
| 0.10            | 0.18             | 0.23             | 0.30             | 0.33             | 0.41             |
| 0.10            | 0.15             | 0.23             | 0.30             | 0.33             | 0.41             |
| 0.10            | 0.13             | 0.20             | 0.25             | 0.30             | 0.38             |
| 0.08            | 0.13             | 0.20             | 0.25             | 0.30             | 0.36             |
| 0.10 ❖          | 0.15             | 0.20             | 0.23             | 0.25             | 0.30             |
| 0.08 ❖          | 0.15             | 0.20             | 0.23             | 0.25             | 0.30             |
| 0.08 ❖          | 0.13             | 0.18             | 0.20             | 0.23             | 0.28             |
| 0.13 ❖          | 0.23             | 0.25             | 0.30             | 0.38             | 0.43             |
| 0.10 ❖          | 0.20             | 0.23             | 0.25             | 0.33             | 0.41             |
| 0.10 ❖          | 0.18             | 0.20             | 0.23             | 0.30             | 0.38             |
| 0.10            | 0.13             | 0.18             | 0.23             | 0.25             | 0.30             |
| 0.10            | 0.13             | 0.18             | 0.23             | 0.23             | 0.28             |
| 0.08 ❖          | 0.15             | 0.18             | 0.23             | 0.25             | 0.30             |
| 0.08 ❖          | 0.13             | 0.15             | 0.18             | 0.20             | 0.25             |
| 0.08 ❖          | 0.15             | 0.18             | 0.23             | 0.25             | 0.30             |
| 0.08 ❖          | 0.13             | 0.15             | 0.18             | 0.20             | 0.25             |
| 0.13 ❖          | 0.18             | 0.20             | 0.25             | 0.30             | 0.38             |
| 0.10 ❖          | 0.15             | 0.18             | 0.23             | 0.25             | 0.30             |
| 0.13 ❖          | 0.18             | 0.20             | 0.25             | 0.30             | 0.36             |
| 0.10 ❖          | 0.15             | 0.18             | 0.23             | 0.25             | 0.28             |
| 0.13 ❖          | 0.18             | 0.20             | 0.25             | 0.30             | 0.36             |
| 0.10 ❖          | 0.15             | 0.18             | 0.23             | 0.25             | 0.28             |
| -               | -                | -                | -                | -                | -                |
| -               | -                | -                | -                | -                | -                |
| -               | -                | -                | -                | -                | -                |
| 0.08 ❖          | 0.13             | 0.18             | 0.20             | 0.27             | 0.38             |
| 0.06 ❖          | 0.10             | 0.15             | 0.18             | 0.23             | 0.28             |
| 0.15            | 0.25             | 0.36             | 0.43             | 0.48             | 0.51             |
| 0.13            | 0.23             | 0.30             | 0.41             | 0.46             | 0.48             |
| 0.13            | 0.20             | 0.25             | 0.36             | 0.41             | 0.43             |
| 0.10            | 0.15             | 0.20             | 0.25             | 0.33             | 0.33             |
| 0.10            | 0.13             | 0.15             | 0.20             | 0.25             | 0.25             |
| 0.18            | 0.28             | 0.36             | 0.43             | 0.46             | 0.48             |
| 0.18            | 0.28             | 0.36             | 0.43             | 0.43             | 0.48             |
| 0.18            | 0.28             | 0.36             | 0.43             | 0.46             | 0.48             |
| 0.18            | 0.28             | 0.36             | 0.41             | 0.43             | 0.48             |
| 0.13            | 0.23             | 0.30             | 0.41             | 0.51             | 0.61             |
| 0.10            | 0.15             | 0.20             | 0.25             | 0.31             | 0.38             |
| 0.15            | 0.25             | 0.36             | 0.43             | 0.53             | 0.63             |
| 0.05 ❖          | 0.08             | 0.15             | 0.20             | 0.25             | 0.35             |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | -             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

### Formulas

$$1. \text{ RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$$

where:

RPM = revolutions per minute (rev/min)

M/min = speed (M/min)

DIA = diameter of drill (mm)

$$2. \text{ mm/min} = \text{RPM} \cdot \text{mm/rev}$$

where:

mm/min = mm per minute (mm/min)

RPM = revolutions per minute (rev/min)

mm/rev = feed rate (mm/rev)

$$3. \text{ M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$$

where:

M/min = speed (M/min)

RPM = revolutions per minute (rev/min)

DIA = diameter of drill (mm)

### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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## Original T-A Recommended Drilling Data | Metric (mm)

Carbide Inserts | Flat Bottom Geometry

| ISO    Material |                                                                    | Hardness<br>(BHN) | Carbide<br>Grade | M/min                                                                                 |                                                                                         |                                                                                        |                                                                                           | Feed Rate (mm/rev) by Diameter |                  |                  |                  |
|-----------------|--------------------------------------------------------------------|-------------------|------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|------------------|------------------|------------------|
|                 |                                                                    |                   |                  |  TiN |  TiAlN |  TiCN |  AM200® | 9.50 -<br>12.95                | 12.98 -<br>17.53 | 17.54 -<br>24.38 | 24.41 -<br>35.00 |
| P               | Free Machining Steel<br>1118, 1215, 12L14, etc.                    | 100 - 150         | C2               | 82                                                                                    | 110                                                                                     | 98                                                                                     | 126                                                                                       | 0.17                           | 0.26             | 0.32             | 0.39             |
|                 |                                                                    | 150 - 200         | C2               | 73                                                                                    | 94                                                                                      | 85                                                                                     | 110                                                                                       | 0.15                           | 0.24             | 0.30             | 0.35             |
|                 |                                                                    | 200 - 250         | C2               | 67                                                                                    | 88                                                                                      | 76                                                                                     | 102                                                                                       | 0.13                           | 0.22             | 0.28             | 0.32             |
|                 | Low Carbon Steel<br>1010, 1020, 1025, 1522,<br>1144, etc.          | 85 - 125          | C2               | 79                                                                                    | 102                                                                                     | 94                                                                                     | 117                                                                                       | 0.17 ❖                         | 0.22             | 0.28             | 0.37             |
|                 |                                                                    | 125 - 175         | C2               | 67                                                                                    | 88                                                                                      | 76                                                                                     | 102                                                                                       | 0.15 ❖                         | 0.22             | 0.28             | 0.35             |
|                 |                                                                    | 175 - 225         | C2               | 61                                                                                    | 81                                                                                      | 70                                                                                     | 93                                                                                        | 0.13 ❖                         | 0.19             | 0.26             | 0.32             |
|                 |                                                                    | 225 - 275         | C2               | 55                                                                                    | 70                                                                                      | 64                                                                                     | 81                                                                                        | 0.11 ❖                         | 0.19             | 0.26             | 0.32             |
|                 | Medium Carbon Steel<br>1030, 1040, 1050, 1527,<br>1140, 1151, etc. | 125 - 175         | C2               | 67                                                                                    | 88                                                                                      | 76                                                                                     | 102                                                                                       | 0.15                           | 0.22             | 0.28             | 0.35             |
|                 |                                                                    | 175 - 225         | C2               | 61                                                                                    | 81                                                                                      | 72                                                                                     | 93                                                                                        | 0.13                           | 0.19             | 0.26             | 0.32             |
|                 |                                                                    | 225 - 275         | C2               | 55                                                                                    | 70                                                                                      | 61                                                                                     | 81                                                                                        | 0.13                           | 0.19             | 0.26             | 0.32             |
|                 |                                                                    | 275 - 325         | C2               | 46                                                                                    | 61                                                                                      | 53                                                                                     | 70                                                                                        | 0.11                           | 0.17             | 0.24             | 0.30             |
|                 | Alloy Steel<br>4140, 5140, 8640, etc.                              | 125 - 175         | C2               | 64                                                                                    | 85                                                                                      | 75                                                                                     | 99                                                                                        | 0.15                           | 0.22             | 0.28             | 0.35             |
|                 |                                                                    | 175 - 225         | C2               | 59                                                                                    | 79                                                                                      | 67                                                                                     | 91                                                                                        | 0.13                           | 0.19             | 0.26             | 0.32             |
|                 |                                                                    | 225 - 275         | C2               | 55                                                                                    | 70                                                                                      | 61                                                                                     | 81                                                                                        | 0.13                           | 0.19             | 0.26             | 0.32             |
|                 |                                                                    | 275 - 325         | C2               | 52                                                                                    | 66                                                                                      | 58                                                                                     | 76                                                                                        | 0.11                           | 0.17             | 0.24             | 0.30             |
|                 |                                                                    | 325 - 375         | C2               | 44                                                                                    | 58                                                                                      | 50                                                                                     | 67                                                                                        | 0.09                           | 0.15             | 0.22             | 0.28             |
|                 | High Strength Alloy<br>4340, 4330V, 300M, etc.                     | 225 - 300         | C2               | 41                                                                                    | 52                                                                                      | 47                                                                                     | 59                                                                                        | 0.13 ❖                         | 0.19             | 0.22             | 0.26             |
|                 |                                                                    | 300 - 350         | C2               | 37                                                                                    | 47                                                                                      | 41                                                                                     | 55                                                                                        | 0.11 ❖                         | 0.17             | 0.19             | 0.24             |
|                 |                                                                    | 350 - 400         | C2               | 30                                                                                    | 41                                                                                      | 37                                                                                     | 47                                                                                        | 0.09 ❖                         | 0.15             | 0.17             | 0.22             |
|                 | Structural Steel<br>A36, A285, A516, etc.                          | 100 - 150         | C2               | 62                                                                                    | 81                                                                                      | 72                                                                                     | 93                                                                                        | 0.17 ❖                         | 0.24             | 0.30             | 0.35             |
|                 |                                                                    | 150 - 250         | C2               | 52                                                                                    | 66                                                                                      | 58                                                                                     | 76                                                                                        | 0.13 ❖                         | 0.22             | 0.28             | 0.30             |
|                 |                                                                    | 250 - 350         | C2               | 47                                                                                    | 61                                                                                      | 53                                                                                     | 70                                                                                        | 0.11 ❖                         | 0.19             | 0.25             | 0.26             |
|                 | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                      | 150 - 200         | C2               | 41                                                                                    | 58                                                                                      | 49                                                                                     | 67                                                                                        | 0.09                           | 0.15             | 0.19             | 0.24             |
|                 |                                                                    | 200 - 250         | C2               | 30                                                                                    | 44                                                                                      | 37                                                                                     | 50                                                                                        | 0.09                           | 0.15             | 0.19             | 0.24             |
| S               | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.                  | 140 - 220         | C2               | 21                                                                                    | 27                                                                                      | 23                                                                                     | 32                                                                                        | 0.09 ❖                         | 0.15             | 0.19             | 0.24             |
|                 |                                                                    | 220 - 310         | C2               | 15                                                                                    | 21                                                                                      | 18                                                                                     | 24                                                                                        | 0.09 ❖                         | 0.13             | 0.17             | 0.22             |
|                 | Titanium Alloy                                                     | 140 - 220         | C2               | 26                                                                                    | 33                                                                                      | 28                                                                                     | 40                                                                                        | 0.08 ❖                         | 0.14             | 0.17             | 0.20             |
|                 |                                                                    | 220 - 310         | C2               | 21                                                                                    | 29                                                                                      | 25                                                                                     | 30                                                                                        | 0.08 ❖                         | 0.12             | 0.15             | 0.18             |
|                 | Aerospace Alloy<br>S82                                             | 185 - 275         | C2               | 43                                                                                    | 37                                                                                      | 50                                                                                     | 40                                                                                        | 0.15 ❖                         | 0.17             | 0.25             | 0.30             |
|                 |                                                                    | 275 - 350         | C2               | 33                                                                                    | 28                                                                                      | 38                                                                                     | 32                                                                                        | 0.13 ❖                         | 0.15             | 0.23             | 0.25             |
| M               | Stainless Steel 400 Series<br>416, 420, etc.                       | 185 - 275         | C2               | 43                                                                                    | 56                                                                                      | 50                                                                                     | 64                                                                                        | 0.15 ❖                         | 0.20             | 0.25             | 0.30             |
|                 |                                                                    | 275 - 350         | C2               | 33                                                                                    | 43                                                                                      | 38                                                                                     | 49                                                                                        | 0.13 ❖                         | 0.18             | 0.23             | 0.25             |
|                 | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.               | 135 - 185         | C2               | 28                                                                                    | 37                                                                                      | 33                                                                                     | 40                                                                                        | 0.13 ❖                         | 0.17             | 0.21             | 0.25             |
|                 |                                                                    | 185 - 275         | C2               | 21                                                                                    | 28                                                                                      | 25                                                                                     | 32                                                                                        | 0.11 ❖                         | 0.15             | 0.19             | 0.21             |
|                 | Super Duplex Stainless Steel                                       | 135 - 185         | C2               | 22                                                                                    | 29                                                                                      | 26                                                                                     | 33                                                                                        | 0.10 ❖                         | 0.14             | 0.17             | 0.20             |
|                 |                                                                    | 185 - 275         | C2               | 17                                                                                    | 22                                                                                      | 19                                                                                     | 26                                                                                        | 0.08 ❖                         | 0.12             | 0.15             | 0.17             |

❖ Contact our Application Engineering department for assistance when machining these materials

**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



| ISO | Material                               | Hardness<br>(BHN) | Carbide<br>Grade | M/min                                                                                 |                                                                                         |                                                                                        |                                                                                           | Feed Rate (mm/rev) by Diameter |                  |                  |                  |
|-----|----------------------------------------|-------------------|------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|------------------|------------------|------------------|
|     |                                        |                   |                  |  TiN |  TiAlN |  TiCN |  AM200® | 9.50 -<br>12.95                | 12.98 -<br>17.53 | 17.54 -<br>24.38 | 24.41 -<br>35.00 |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc. | 400               | C2               | 20                                                                                    | 31                                                                                      | 26                                                                                     | 39                                                                                        | 0.06 ❖                         | 0.10             | 0.16             | 0.20             |
|     |                                        | 500               | C2               | 13                                                                                    | 23                                                                                      | 18                                                                                     | 31                                                                                        | 0.04 ❖                         | 0.08             | 0.12             | 0.16             |
|     |                                        | 600               | C2               | 10                                                                                    | 19                                                                                      | 14                                                                                     | 25                                                                                        | 0.03 ❖                         | 0.06             | 0.10             | 0.13             |
|     | Hardened Steel                         | 300 - 400         | C2               | 30                                                                                    | 38                                                                                      | 34                                                                                     | 41                                                                                        | 0.08 ❖                         | 0.14             | 0.18             | 0.22             |
|     |                                        | 400 - 500         | C2               | 18                                                                                    | 22                                                                                      | 20                                                                                     | 33                                                                                        | 0.06 ❖                         | 0.12             | 0.16             | 0.18             |
| K   | Nodular, Grey,<br>Ductile Cast Iron    | 120 - 150         | C2               | 82                                                                                    | 120                                                                                     | 108                                                                                    | 137                                                                                       | 0.17                           | 0.26             | 0.32             | 0.41             |
|     |                                        | 150 - 200         | C2               | 70                                                                                    | 104                                                                                     | 87                                                                                     | 119                                                                                       | 0.15                           | 0.24             | 0.28             | 0.38             |
|     |                                        | 200 - 220         | C2               | 61                                                                                    | 94                                                                                      | 79                                                                                     | 108                                                                                       | 0.13                           | 0.19             | 0.26             | 0.32             |
|     |                                        | 220 - 260         | C2               | 55                                                                                    | 81                                                                                      | 67                                                                                     | 93                                                                                        | 0.11                           | 0.17             | 0.24             | 0.28             |
|     |                                        | 260 - 320         | C2               | 47                                                                                    | 70                                                                                      | 58                                                                                     | 81                                                                                        | 0.11                           | 0.15             | 0.22             | 0.24             |
| N   | Cast Aluminum                          | 30                | C2               | 160                                                                                   | 228                                                                                     | 198                                                                                    | —                                                                                         | 0.22                           | 0.32             | 0.41             | 0.43             |
|     |                                        | 180               | C2               | 79                                                                                    | 122                                                                                     | 107                                                                                    | —                                                                                         | 0.19                           | 0.28             | 0.35             | 0.39             |
|     | Wrought Aluminum                       | 30                | C2               | 292                                                                                   | 368                                                                                     | 328                                                                                    | 390                                                                                       | 0.12                           | 0.18             | 0.23             | 0.25             |
|     |                                        | 180               | C2               | 195                                                                                   | 245                                                                                     | 220                                                                                    | 260                                                                                       | 0.10                           | 0.16             | 0.20             | 0.22             |
|     | Aluminum Bronze                        | 100 - 200         | C2               | 73                                                                                    | 95                                                                                      | 85                                                                                     | 105                                                                                       | 0.10                           | 0.16             | 0.20             | 0.29             |
|     |                                        | 200 - 250         | C2               | 55                                                                                    | 81                                                                                      | 68                                                                                     | 87                                                                                        | 0.08                           | 0.12             | 0.14             | 0.20             |
|     | Brass                                  | 100               | C2               | 112                                                                                   | 160                                                                                     | 138                                                                                    | 185                                                                                       | 0.12                           | 0.18             | 0.22             | 0.30             |
|     | Copper                                 | 60                | C2               | 68                                                                                    | 105                                                                                     | 85                                                                                     | 117                                                                                       | 0.04 ❖                         | 0.06             | 0.08             | 0.12             |

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#### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | —             | 0.95 | 0.90      | 0.90 | 0.90 |

#### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

#### Formulas

|                                                                                                                                                                         |                                                                                                                                                                           |                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. $\text{RPM} = (318.47 \cdot \text{M/min}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>M/min = speed (M/min)<br>DIA = diameter of drill (mm) | 2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$<br>where:<br>mm/min = mm per minute (mm/min)<br>RPM = revolutions per minute (rev/min)<br>mm/rev = feed rate (mm/rev) | 3. $\text{M/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$<br>where:<br>M/min = speed (M/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (mm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>⚠ WARNING</b> Tool failure can cause serious injury. To prevent:<br>- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.<br>- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.<br>Visit <a href="http://www.alliedmachine.com/DeepHoleGuidelines">www.alliedmachine.com/DeepHoleGuidelines</a> for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Original T-A Recommended Drilling Data | Metric (mm)

Carbide Inserts | Diamond Coating

|               | Material               | Carbide Grade | M/min<br><br>Diamond Coating | Feed Rate (mm/rev) by Diameter |             |             |             |
|---------------|------------------------|---------------|---------------------------------------------------------------------------------------------------------------|--------------------------------|-------------|-------------|-------------|
|               |                        |               |                                                                                                               | 9.5 - 12.5                     | 13 - 17.5   | 18 - 24     | 25 - 35     |
| A<br>DRILLING | Carbon (hard)          | N2            | 305 - 450                                                                                                     | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Carbon Fiber           | N2            | 305 - 450                                                                                                     | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Carbon / Glass Fiber   | N2            | 305 - 450                                                                                                     | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Fiberglass             | N2            | 305 - 450                                                                                                     | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Graphite               | N2            | 305 - 450                                                                                                     | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Plastics               | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Epoxy Resin            | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Bismaleimide Resin     | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Polyester Resin        | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Phenolic Resin         | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Rubber                 | N2            | 76 - 305                                                                                                      | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
| B<br>BORING   | Aluminum               | N2            | 305                                                                                                           | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | Si < 10%               | N2            | 305                                                                                                           | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | 10% < Si < 15%         | N2            | 259 - 305                                                                                                     | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | 15% < Si < 20%         | N2            | 198 - 259                                                                                                     | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | 20% < Si < 25%         | N2            | 152 - 198                                                                                                     | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | 25% < Si               | N2            | 61 - 152                                                                                                      | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | Brass                  | N2            | 76 - 152                                                                                                      | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | Bronze                 | N2            | 76 - 152                                                                                                      | 0.20                           | 0.33        | 0.41        | 0.51        |
|               | Copper                 | N2            | 30 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Copper Alloys          | N2            | 30 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Lead Alloys            | N2            | 30 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Magnesium Alloys       | N2            | 30 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Precious Metals        | N2            | 30 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
| C<br>REAMING  | Carbide (green)        | N2            | 15 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Ceramic (green)        | N2            | 15 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |
|               | Ceramic (pre-sintered) | N2            | 15 - 76                                                                                                       | 0.10 - 0.15                    | 0.20 - 0.25 | 0.25 - 0.30 | 0.30 - 0.36 |

### Deep Hole Drilling Speed and Feed Adjustment

|       | Holder Length |      |           |      |      |
|-------|---------------|------|-----------|------|------|
|       | Extended      | Long | Long Plus | XL   | 3XL  |
| Speed | 0.90          | 0.85 | 0.80      | 0.80 | 0.75 |
| Feed  | —             | 0.95 | 0.90      | 0.90 | 0.90 |

### Recommended Speed and Feed Example

If the recommended speed and feed is 50 M/min and 0.20 mm/rev for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 37.5 M/min and 0.18 mm/rev.

$$50 \cdot 0.75 = 37.5 \text{ M/min}$$

$$0.20 \cdot 0.90 = 0.18 \text{ mm/rev}$$

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

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**IMPORTANT:** The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples on the following page.



## Tap Drill Information and Formulas | Metric (mm)

### Metric Profile Screw Thread

| Tap Size  | Tap Drill Size | Decimal Equivalent | * Theo % Thread | Probable Mean Oversize | Probable Hole Size | ** Probable % Thread |
|-----------|----------------|--------------------|-----------------|------------------------|--------------------|----------------------|
| 12 x 1.75 | 10.2mm         | 0.4016"            | 79%             | 0.075mm                | 10.28mm            | 76%                  |
| 12 x 1.75 | 13/32"         | 0.4063"            | 74%             | 0.075mm                | 10.40mm            | 71%                  |
| 12 x 1.25 | 27/64"         | 0.4219"            | 79%             | 0.075mm                | 10.79mm            | 74%                  |
| 12 x 1.25 | 10.8mm         | 0.4252"            | 74%             | 0.075mm                | 10.88mm            | 69%                  |
| 14 x 20   | 15/32"         | 0.4688"            | 81%             | 0.075mm                | 11.98mm            | 78%                  |
| 14 x 20   | 12.0mm         | 0.4724"            | 77%             | 0.075mm                | 12.08mm            | 74%                  |
| 14 x 1.5  | 12.5mm         | 0.4921"            | 77%             | 0.075mm                | 12.58mm            | 73%                  |
| 16 x 2.0  | 14.0mm         | 0.5512"            | 77%             | 0.075mm                | 14.08mm            | 74%                  |
| 16 x 1.5  | 14.5mm         | 0.5709"            | 77%             | 0.075mm                | 14.58mm            | 73%                  |
| 16 x 1.5  | 37/64"         | 0.5781"            | 68%             | 0.075mm                | 14.76mm            | 64%                  |
| 18 x 2.5  | 15.5mm         | 0.6102"            | 77%             | 0.075mm                | 15.58mm            | 75%                  |
| 18 x 1.5  | 16.5mm         | 0.6496"            | 77%             | 0.075mm                | 16.58mm            | 73%                  |
| 18 x 1.5  | 21/32"         | 0.6563"            | 68%             | 0.075mm                | 16.75mm            | 64%                  |
| 20 x 2.5  | 11/16"         | 0.6875"            | 78%             | 0.075mm                | 17.54mm            | 76%                  |
| 20 x 2.5  | 17.5mm         | 0.6890"            | 77%             | 0.075mm                | 17.58mm            | 74%                  |
| 20 x 1.5  | 18.5mm         | 0.7283"            | 77%             | 0.075mm                | 18.58mm            | 73%                  |
| 20 x 1.5  | 47/64"         | 0.7344"            | 69%             | 0.075mm                | 18.66mm            | 65%                  |
| 22 x 2.5  | 49/64"         | 0.7656"            | 79%             | 0.075mm                | 19.52mm            | 76%                  |
| 22 x 2.5  | 19.5mm         | 0.7677"            | 77%             | 0.075mm                | 19.58mm            | 75%                  |
| 22 x 1.5  | 20.5mm         | 0.8071"            | 77%             | 0.075mm                | 20.58mm            | 73%                  |
| 22 x 1.5  | 13/16"         | 0.8125"            | 70%             | 0.075mm                | 20.71mm            | 66%                  |
| 24 x 3    | 13/16"         | 0.8125"            | 86%             | 0.075mm                | 20.71mm            | 84%                  |
| 24 x 3    | 21.0mm         | 0.8268"            | 76%             | 0.075mm                | 21.08mm            | 75%                  |
| 24 x 2    | 22.0mm         | 0.8661"            | 77%             | 0.075mm                | 22.08mm            | 74%                  |
| 24 x 2    | 7/8"           | 0.8750"            | 68%             | 0.075mm                | 22.30mm            | 65%                  |
| 27 x 3    | 24.0mm         | 0.9449"            | 77%             | 0.075mm                | 24.08mm            | 75%                  |

### Taper Pipe Thread (NPT)

| Tap Size | Tap Drill Size | Decimal Equivalent | Theo % Thread* | Probable Mean Oversize | Probable Hole Size | Probable % Thread** |
|----------|----------------|--------------------|----------------|------------------------|--------------------|---------------------|
| 1/4 - 18 | 7/16           | 0.4375             | —              | 0.075mm                | 11.19mm            | —                   |
| 3/8 - 18 | 9/16           | 0.5625             | —              | 0.075mm                | 14.76mm            | —                   |
| 1/2 - 14 | 45/64          | 0.7031             | —              | 0.075mm                | 18.33mm            | —                   |
| 3/4 - 14 | 29/32          | 0.9063             | —              | 0.075mm                | 23.89mm            | —                   |

\* Based on nominal tap drill diameter

\*\* Based on .003" probable mean oversize

To calculate the percent of full thread for a given hole diameter:

$$\% \text{ Thread} = \left[ \frac{76.93}{\text{Pitch (mm)}} \right] \left[ \text{Basic Major Diameter of Thread (mm)} - \text{Drill Hole Size (mm)} \right]$$

### Notes

- The above tap drill information represents probable thread percentages for the standard tap drills stocked at Allied Machine. Special insert diameters may be required in order to meet a user specific percentage of thread requirements.
- The .003 probable mean oversize hole condition is based on optimum cutting conditions. Probable percent of full thread may vary based on less ideal cutting conditions.
- The table and equations on this page are found in the *Machinery's Handbook*. Permission to simplify and print the equations is granted by the Editor of the *Machinery's Handbook*.

### Formulas

|    |                                                                                                                                                                                                                                                                                              |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>RPM</b> = $(318.47 \cdot M/\text{min}) / \text{DIA}$<br>where:<br>RPM = revolutions per minute (rev/min)<br>M/min = speed (M/min)<br>DIA = diameter of drill (mm)                                                                                                                         |
| 2. | <b>mm/min</b> = $\text{RPM} \cdot \text{mm/rev}$<br>where:<br>mm/min = mm per minute (mm/min)<br>RPM = revolutions per minute (rev/min)<br>mm/rev = feed rate (mm/rev)                                                                                                                       |
| 3. | <b>M/min</b> = $\text{RPM} \cdot 0.003 \cdot \text{DIA}$<br>where:<br>M/min = speed (M/min)<br>RPM = revolutions per minute (rev/min)<br>DIA = diameter of drill (mm)                                                                                                                        |
| 4. | <b>Thrust</b> = $154 \cdot (\text{mm/rev}) \cdot \text{DIA} \cdot K_m$<br>where:<br>Thrust = axial thrust (N)<br>mm/rev = feed rate (mm/rev)<br>DIA = diameter of drill (mm)<br>$K_m$ = specific cutting energy (bar)                                                                        |
| 5. | <b>Tool Power</b> = $((\text{mm/rev}) \cdot \text{RPM} \cdot K_m \cdot \text{DIA}^2) / 210604.8$<br>where:<br>Tool Power = tool power (HP)<br>mm/rev = feed rate (mm/rev)<br>RPM = revolutions per minute (rev/min)<br>$K_m$ = specific cutting energy (bar)<br>DIA = diameter of drill (mm) |

### Material Constants

| Type of Material             | Hardness      | $K_m$ (kPa) |
|------------------------------|---------------|-------------|
| Plain Carbon and Alloy Steel | 85 - 200 BHN  | 5.45        |
|                              | 200 - 275 BHN | 6.48        |
|                              | 275 - 375 BHN | 6.89        |
|                              | 375 - 425 BHN | 7.93        |
| High Temperature Alloys      | —             | 9.93        |
| Stainless Steels             | 135 - 275 BHN | 6.48        |
|                              | 30 - 45 RC    | 7.45        |
| Cast Iron                    | 100 - 200 BHN | 3.45        |
|                              | 200 - 300 BHN | 7.45        |
| Copper Alloy                 | 20 - 80 RB    | 2.96        |
|                              | 80 - 100 RB   | 4.96        |
| Titanium Alloy               | —             | 4.96        |
| Aluminum Alloy               | —             | 1.52        |
| Magnesium Alloy              | —             | 1.10        |

## Coolant Recommendations | Metric (mm)

### HSS Drill Inserts

| ISO | Material                                                        | Pressure or Flow Rate | 9.5 - 12.5 | 13 - 17     | 18 - 24     | 25 - 35     | 36 - 50     | 51 - 76   | 76 - 102  |
|-----|-----------------------------------------------------------------|-----------------------|------------|-------------|-------------|-------------|-------------|-----------|-----------|
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | BAR                   | 12 - 13    | 7 - 8       | 7 - 10      | 6 - 8       | 5 - 7       | 4         | 5 - 6     |
|     |                                                                 | LPM                   | 9.5 - 9.8  | 10.6 - 11.4 | 16.7 - 19.7 | 26.5 - 30.3 | 45.4 - 53.0 | 114 - 125 | 144 - 167 |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | BAR                   | 11 - 12    | 5 - 6       | 5 - 7       | 4 - 6       | 4 - 5       | 2 - 3     | 3 - 5     |
|     |                                                                 | LPM                   | 9.1 - 9.5  | 9.1 - 9.8   | 14.0 - 15.9 | 22.7 - 26.5 | 41.6 - 45.4 | 98 - 114  | 125 - 144 |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | BAR                   | 11         | 5 - 6       | 5 - 6       | 4 - 5       | 3 - 5       | 2 - 3     | 3 - 5     |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 8.7 - 9.8   | 13.6 - 15.5 | 18.9 - 22.7 | 37.9 - 45.4 | 98 - 114  | 125 - 144 |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | BAR                   | 11         | 5           | 5 - 6       | 3 - 5       | 3 - 4       | 2         | 3         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 8.3 - 9.1   | 13.2 - 14.8 | 18.9 - 22.7 | 31.9 - 41.6 | 98 - 106  | 114 - 125 |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | BAR                   | 10 - 11    | 4           | 3           | 2           | 2           | 1 - 2     | 2         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 7.9 - 8.3   | 11.0 - 11.7 | 15.1 - 18.9 | 26.5 - 30.3 | 79 - 87   | 87 - 98   |
|     | Structural Steel<br>A36, A285, A516, etc.                       | BAR                   | 11         | 5 - 6       | 5 - 6       | 3 - 4       | 3           | 2         | 3         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 9.1 - 9.8   | 13.2 - 14.8 | 18.9 - 22.7 | 34.1 - 37.9 | 87 - 98   | 114 - 125 |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | BAR                   | 10 - 11    | 4           | 3           | 2           | 2           | 1 - 2     | 2         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 7.9 - 8.3   | 11.0 - 11.7 | 15.1 - 18.9 | 26.5 - 30.3 | 79 - 87   | 87 - 98   |
| S   | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | BAR                   | 10 - 11    | 4 - 5       | 3 - 4       | 2           | 2           | 2         | 3         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 8.3 - 8.7   | 11.7 - 12.1 | 15.1 - 18.9 | 26.5 - 30.3 | 87 - 98   | 125       |
|     | Titanium Alloy                                                  | BAR                   | 10 - 11    | 4 - 5       | 3 - 4       | 2           | 2           | 2         | 3         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 8.3 - 8.7   | 11.7 - 12.1 | 15.1 - 18.9 | 26.5 - 30.3 | 87 - 98   | 125       |
| M   | Aerospace Alloy<br>S82                                          | BAR                   | 10 - 11    | 4 - 5       | 3 - 4       | 2           | 2           | 2         | 3         |
|     |                                                                 | LPM                   | 8.7 - 9.1  | 8.3 - 8.7   | 11.7 - 12.1 | 15.1 - 18.9 | 26.5 - 30.3 | 87 - 98   | 125       |
|     | Stainless Steel 400 Series<br>416, 420, etc.                    | BAR                   | 11.8       | 5.9         | 5.2         | 3.8         | 3.5         | 2         | 3.1       |
|     |                                                                 | LPM                   | 9.5        | 9.8         | 14          | 23          | 38          | 98        | 117       |
| H   | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | BAR                   | 11.8       | 5.9         | 5.2         | 3.8         | 3.5         | 2         | 3.1       |
|     |                                                                 | LPM                   | 9.5        | 9.8         | 14          | 23          | 38          | 98        | 117       |
|     | Super Duplex Stainless Steel                                    | BAR                   | 11.8       | 5.9         | 5.2         | 3.8         | 3.5         | 2         | 3.1       |
|     |                                                                 | LPM                   | 9.5        | 9.8         | 14          | 23          | 38          | 98        | 117       |
| K   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | BAR                   | 10.7       | 4.2         | 3.5         | 2           | 2           | 1.7       | 2         |
|     |                                                                 | LPM                   | 9.1        | 8.3         | 11.7        | 19          | 30          | 87        | 98        |
|     | Hardened Steel                                                  | BAR                   | 10.7       | 4.2         | 3.5         | 2           | 2           | 1.7       | 2         |
|     |                                                                 | LPM                   | 9.1        | 8.3         | 11.7        | 19          | 30          | 87        | 98        |
| N   | SG / Nodular Cast Iron                                          | BAR                   | 11         | 4.5         | 4.2         | 2.8         | 2.4         | 2         | 2.4       |
|     |                                                                 | LPM                   | 9.1        | 8.7         | 12.5        | 19          | 34          | 98        | 106       |
|     | Grey / White Iron                                               | BAR                   | 11         | 4.5         | 4.2         | 2.8         | 2.4         | 2         | 2.4       |
|     |                                                                 | LPM                   | 9.1        | 8.7         | 12.5        | 19          | 34          | 98        | 106       |
| F   | Cast Aluminum                                                   | BAR                   | 14.5       | 12.4        | 15.8        | 11          | 8.6         | 3.5       | 5.5       |
|     |                                                                 | LPM                   | 10         | 14          | 23          | 34          | 61          | 125       | 159       |
|     | Wrought Aluminum                                                | BAR                   | 14.5       | 12.4        | 15.8        | 11          | 8.6         | 3.5       | 5.5       |
|     |                                                                 | LPM                   | 10         | 14          | 23          | 34          | 61          | 125       | 159       |
|     | Aluminum Bronze                                                 | BAR                   | 12.8       | 8.3         | 9.65        | 7.95        | 6.9         | 3.5       | 6.2       |
|     |                                                                 | LPM                   | 9.6        | 11.4        | 19.7        | 30.3        | 53          | 125       | 167       |
|     | Brass                                                           | BAR                   | 11         | 4.5         | 4.2         | 2.8         | 2.4         | 2         | 2.4       |
|     |                                                                 | LPM                   | 9.1        | 8.7         | 12.5        | 19          | 34          | 98        | 106       |
|     | Copper                                                          | BAR                   | 12.8       | 8.3         | 9.65        | 7.95        | 6.9         | 3.5       | 6.2       |
|     |                                                                 | LPM                   | 9.6        | 11.4        | 19.7        | 30.3        | 53          | 125       | 167       |

### Deep Hole Drilling Coolant Adjustment

|                   | Holder Length |      |           |    |     |
|-------------------|---------------|------|-----------|----|-----|
|                   | Extended      | Long | Long Plus | XL | 3XL |
| Pressure and Flow | 1.3           | 1.5  | 2         | 2  | 3   |

### Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

$$12 \cdot 3 = 36 \text{ bar}$$

$$22 \cdot 3 = 66 \text{ LPM}$$

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**IMPORTANT:** The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.



## Coolant Recommendations | Metric (mm)

### Carbide Drill Inserts

| ISO | Material                                                        | Pressure or Flow Rate | 9.5 - 12.5 | 13 - 17 | 18 - 24 | 25 - 35 | 36 - 47 |
|-----|-----------------------------------------------------------------|-----------------------|------------|---------|---------|---------|---------|
| P   | Free Machining Steel<br>1118, 1215, 12L14, etc.                 | BAR                   | 17 - 20    | 17      | 15      | 15      | 20      |
|     |                                                                 | LPM                   | 12.2       | 16.3    | 25.2    | 41.5    | 71.9    |
|     | Low Carbon Steel<br>1010, 1020, 1025, 1522, 1144, etc.          | BAR                   | 18         | 11      | 11      | 12      | 9       |
|     |                                                                 | LPM                   | 11.4       | 13.3    | 20.6    | 36.5    | 62.0    |
|     | Medium Carbon Steel<br>1030, 1040, 1050, 1527, 1140, 1151, etc. | BAR                   | 17         | 10      | 10      | 10      | 8       |
|     |                                                                 | LPM                   | 11.3       | 12.5    | 20.0    | 33.8    | 57.0    |
|     | Alloy Steel<br>4140, 5140, 8640, etc.                           | BAR                   | 17         | 9       | 10      | 8       | 7       |
|     |                                                                 | LPM                   | 11.1       | 12.3    | 19.3    | 30.0    | 55.8    |
|     | High Strength Alloy<br>4340, 4330V, 300M, etc.                  | BAR                   | 15         | 5       | 4       | 3       | 3       |
|     |                                                                 | LPM                   | 10.4       | 9.1     | 12.6    | 18.8    | 33.6    |
| S   | Structural Steel<br>A36, A285, A516, etc.                       | BAR                   | 16         | 9       | 8       | 7       | 5       |
|     |                                                                 | LPM                   | 10.8       | 12.0    | 17.5    | 27.8    | 47.1    |
|     | Tool Steel<br>H-13, H-21, A-4, O-2, S-3, etc.                   | BAR                   | 15         | 5       | 5       | 3       | 3       |
|     |                                                                 | LPM                   | 10.4       | 9.1     | 13.6    | 19.7    | 36.5    |
|     | High Temp Alloy<br>Hastelloy B, Inconel 600, etc.               | BAR                   | 17         | 11      | 12      | 11      | 9       |
|     |                                                                 | LPM                   | 11.1       | 13.5    | 21.9    | 35.4    | 62.0    |
|     | Titanium Alloy                                                  | BAR                   | 17         | 11      | 12      | 11      | 9       |
|     |                                                                 | LPM                   | 11.1       | 13.5    | 21.9    | 35.4    | 62.0    |
|     | Aerospace Alloy<br>S82                                          | BAR                   | 17         | 11      | 12      | 11      | 9       |
|     |                                                                 | LPM                   | 11.1       | 13.5    | 21.9    | 35.4    | 62.0    |
| M   | Stainless Steel 400 Series<br>416, 420, etc.                    | BAR                   | 22.7       | 16.5    | 17.9    | 17.2    | 13.1    |
|     |                                                                 | LPM                   | 13         | 16.3    | 26.3    | 44.2    | 75      |
|     | Stainless Steel 300 Series<br>304, 316, 17-4PH, etc.            | BAR                   | 22.7       | 16.5    | 17.9    | 17.2    | 13.1    |
|     |                                                                 | LPM                   | 13         | 16.3    | 26.3    | 44.2    | 75      |
|     | Super Duplex Stainless Steel                                    | BAR                   | 22.7       | 16.5    | 17.9    | 17.2    | 13.1    |
|     |                                                                 | LPM                   | 13         | 16.3    | 26.3    | 44.2    | 75      |
| H   | Wear Plate<br>Hardox, AR400, T-1, etc.                          | BAR                   | 14.5       | 5.2     | 4.8     | 3.4     | 3.1     |
|     |                                                                 | LPM                   | 10.4       | 9.1     | 13.6    | 19.7    | 36.5    |
|     | Hardened Steel                                                  | BAR                   | 14.5       | 5.2     | 4.8     | 3.4     | 3.1     |
|     |                                                                 | LPM                   | 10.4       | 9.1     | 13.6    | 19.7    | 36.5    |
| K   | SG / Nodular Cast Iron                                          | BAR                   | 15.5       | 7.2     | 6.2     | 6.2     | 5.5     |
|     |                                                                 | LPM                   | 10.7       | 10.8    | 15.4    | 26.5    | 48.7    |
|     | Grey / White Iron                                               | BAR                   | 15.5       | 7.2     | 6.2     | 6.2     | 5.5     |
|     |                                                                 | LPM                   | 10.7       | 10.8    | 15.4    | 26.5    | 48.7    |
| N   | Cast Aluminum                                                   | BAR                   | 24.1       | 22      | 21.7    | 19.6    | 13.8    |
|     |                                                                 | LPM                   | 13.4       | 18.8    | 29      | 47.2    | 77      |
|     | Wrought Aluminum                                                | BAR                   | 24.1       | 22      | 21.7    | 19.6    | 13.8    |
|     |                                                                 | LPM                   | 13.4       | 18.8    | 29      | 47.2    | 77      |
|     | Aluminum Bronze                                                 | BAR                   | 20         | 16.5    | 16.5    | 15.2    | 12      |
|     |                                                                 | LPM                   | 12.2       | 16.3    | 25.2    | 41.5    | 71.9    |
|     | Brass                                                           | BAR                   | 24.1       | 22      | 21.7    | 19.6    | 13.8    |
|     |                                                                 | LPM                   | 13.4       | 18.8    | 29      | 47.2    | 77      |
|     | Copper                                                          | BAR                   | 20         | 16.5    | 16.5    | 15.2    | 12      |
|     |                                                                 | LPM                   | 12.2       | 16.3    | 25.2    | 41.5    | 71.9    |

#### Deep Hole Drilling Coolant Adjustment

|                   | Holder Length |      |           |    |     |
|-------------------|---------------|------|-----------|----|-----|
|                   | Extended      | Long | Long Plus | XL | 3XL |
| Pressure and Flow | 1.3           | 1.5  | 2         | 2  | 3   |

#### Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

$$12 \times 3 = 36 \text{ bar}$$

$$22 \times 3 = 66 \text{ LPM}$$

#### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**IMPORTANT:** The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

## Troubleshooting Guide

|                                                                                                                                               | Potential Problem       |             |                 |                 |            |                     |         |              |                   |                         |                       |                 |               |                      |                   |                    |               |                  |                |                           |                |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|-----------------|-----------------|------------|---------------------|---------|--------------|-------------------|-------------------------|-----------------------|-----------------|---------------|----------------------|-------------------|--------------------|---------------|------------------|----------------|---------------------------|----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                               | Accelerated corner wear | Barber pole | Bell mouth hole | Insert chipping | Blue chips | Build Up Edge (BUE) | Chatter | Chip packing | Chipping of point | Damaged or broken tools | Excessive margin wear | High flank wear | Hole lead off | Hole out of position | Hole out of round | Notching of insert | Oversize hole | Poor hole finish | Poor tool life | Power spikes - Load meter | Retract spiral | Step burned on insert |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Setup Condition                                                                                                                               | 1                       | 2           | 3               | 4               | 5          | 6                   | 7       | 8            | 9                 | 10                      | 11                    | 12              | 13            | 14                   | 15                | 16                 | 17            | 18               | 19             | 20                        | 21             | 22                    | Possible Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>⚠ Use of Standard, Standard Plus, Extended, Long, Long Plus, XL, and 3XL holders.</p> <p>See page 8 for Deep Hole Drilling guidelines.</p> |                         | 2           | 3               |                 |            |                     | 7       |              | 9                 |                         |                       |                 | 13            | 14                   |                   |                    | 17            |                  |                |                           | 21             |                       | <ul style="list-style-type: none"> <li>Start with short holder and drill a minimum depth equal to 2xD (see page A30: 146 for instructions).</li> <li>Spot hole with stub tool of same or greater included angle as T-A® drill insert.</li> <li>Decrease feed a minimum of 50% until establishing full diameter.</li> <li>Use special holder with wear pads or chrome bearing area to work with drill bushings.</li> </ul>                                                           |
| Starting on an inclined surface.                                                                                                              |                         |             |                 |                 |            |                     | 7       |              | 9                 | 10                      | 11                    |                 | 13            |                      | 15                |                    |               |                  |                |                           | 21             |                       | <ul style="list-style-type: none"> <li>Spot face surface to provide a flat entry surface.</li> <li>Spot hole with stub tool of same or greater included angle as T-A® drill insert.</li> <li>Decrease feed a minimum of 50% until establishing full diameter.</li> <li>Use special holder with wear pads or chrome bearing area to work with drill bushings.</li> </ul>                                                                                                             |
| Worn or misaligned spindle (lathe, screw machine, chucker).                                                                                   | 1                       |             | 3               |                 |            |                     | 7       |              | 9                 | 10                      | 11                    |                 | 13            |                      |                   |                    | 17            | 18               |                |                           | 21             |                       | <ul style="list-style-type: none"> <li>Align spindle and turret or tailstock.</li> <li>Repair spindle.</li> <li>Spot hole with stub tool of same or greater included angle as T-A® drill insert.</li> </ul>                                                                                                                                                                                                                                                                         |
| Use of low rigidity machine tools (radial drills, multi-spindle drill press, etc.).                                                           |                         | 2           | 3               | 4               |            |                     | 7       |              | 9                 | 10                      |                       |                 | 13            | 14                   |                   |                    |               |                  |                |                           | 21             |                       | <ul style="list-style-type: none"> <li>Spot hole with stub tool of same or greater included angle as T-A® drill insert.</li> <li>Reduce penetration rate to fall within the physical limits of the machine or setup (<b>NOTICE:</b> Do not reduce feed below threshold of good chip formation).</li> <li>Use special holder with wear pads or chrome bearing area to work with drill bushings.</li> <li>Use tougher tool steel grades with high wear resistant coatings.</li> </ul> |
| Poor work piece support.                                                                                                                      |                         | 2           |                 | 4               |            |                     | 7       |              |                   | 10                      | 11                    |                 |               |                      | 15                |                    |               |                  | 18             |                           | 21             |                       | <ul style="list-style-type: none"> <li>Provide additional support for the work piece.Reduce penetration rate to fall within the physical limits of the machine or setup (<b>NOTICE:</b> Do not reduce feed below threshold of good chip formation).</li> <li>Use tougher tool steel grades with high wear resistant coatings.</li> </ul>                                                                                                                                            |
| Flood coolant, low coolant pressure or low coolant volume.                                                                                    | 1                       |             |                 |                 | 5          | 6                   |         | 8            |                   | 10                      |                       | 12              |               |                      |                   |                    | 17            | 18               | 19             | 20                        |                | 22                    | <ul style="list-style-type: none"> <li>Run coolant through tool holder when drilling greater than one times diameter.</li> <li>Increase coolant pressure and volume through the tool holder.</li> <li>Reduce penetration rate to fall within the coolant limitations (<b>NOTICE:</b> Do not reduce feed below threshold of good chip formation).</li> <li>Add a peck cycle to help clear chips.</li> </ul>                                                                          |

### ⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A® holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holder more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit [www.alliedmachine.com/DeepHoleGuidelines](http://www.alliedmachine.com/DeepHoleGuidelines) for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

|                                                                                                                                                                                | Potential Problem       |             |                 |                 |            |                     |         |              |                   |                         |                       |                 |               |                      |                   |                    |               |                  |                |                           |                |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|-----------------|-----------------|------------|---------------------|---------|--------------|-------------------|-------------------------|-----------------------|-----------------|---------------|----------------------|-------------------|--------------------|---------------|------------------|----------------|---------------------------|----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                | Accelerated corner wear | Barber pole | Bell mouth hole | Insert chipping | Blue chips | Build Up Edge (BUE) | Chatter | Chip packing | Chipping of point | Damaged or broken tools | Excessive margin wear | High flank wear | Hole lead off | Hole out of position | Hole out of round | Notching of insert | Oversize hole | Poor hole finish | Poor tool life | Power spikes - Load meter | Retract spiral | Step burned on insert |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Setup Condition                                                                                                                                                                | 1                       | 2           | 3               | 4               | 5          | 6                   | 7       | 8            | 9                 | 10                      | 11                    | 12              | 13            | 14                   | 15                | 16                 | 17            | 18               | 19             | 20                        | 21             | 22                    | Possible Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, stepped surfaces, cross holes, and cast or forged surfaces).                 |                         |             |                 | 4               |            |                     | 7       |              | 9                 | 10                      | 11                    |                 | 13            | 14                   | 15                |                    | 17            | 18               | 19             |                           |                |                       | <ul style="list-style-type: none"> <li>Pre-mill (spot face) entry or exit surface to remove interruption.</li> <li>Spot hole with stub tool of same or greater included angle as T-A® drill insert.</li> <li>Decrease feed as much as 50% through entry or exit interruption.</li> <li>Use short holders in low impact entry cuts.</li> </ul>                                                                                                                                                                                                               |
| Material harder than expected or running tools beyond recommended speeds.                                                                                                      | 1                       |             |                 |                 | 5          | 6                   |         |              |                   | 10                      |                       | 12              |               |                      |                   |                    |               |                  | 19             |                           |                | 22                    | <ul style="list-style-type: none"> <li>Reduce speed if a step is worn in the insert, calculate SFM at the worn diameter. Reduce this value by 10% and apply this new value to the original tool diameter.</li> <li>Increase coolant pressure and volume.</li> <li>Improve coolant condition by use of quality products and regular maintenance.</li> <li>Select an insert grade (premium, super cobalt, or carbide) or coating (TiAlN, TiCN, or AM200®) that is more wear and heat resistant.</li> </ul>                                                    |
| Poor material micro-structure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts and sand casting). |                         |             |                 | 4               |            | 6                   |         |              |                   | 10                      |                       | 12              | 13            |                      |                   | 16                 |               |                  | 19             |                           |                |                       | <ul style="list-style-type: none"> <li>Compare performance of other tools for similar wear problems, which may indicate poor micro-structure. Anneal or normalize parts to improve micro-structure for machining.</li> <li>To improve tool life in materials with poor micro-structure, try carbide grades.</li> <li>For hard spots or inclusions, use the tougher insert steel grade with high wear resistant coatings (TiAlN, TiCN, AM200®).</li> <li>Reduce feeds (<b>NOTICE:</b> Do not reduce feed below threshold of good chip formation).</li> </ul> |
| Poor chip control.                                                                                                                                                             |                         |             |                 |                 |            |                     |         | 8            |                   | 10                      | 11                    |                 | 13            |                      |                   |                    | 17            | 18               | 19             | 20                        |                |                       | <ul style="list-style-type: none"> <li>Increase feed to recommended levels. Contact Allied Application Engineering team for technical recommendations.</li> <li>Increase coolant pressure and volume.</li> <li>Improve coolant condition by use of quality products and regular maintenance.</li> <li>See pages A30: 4 - 5 for special purpose geometries.</li> </ul>                                                                                                                                                                                       |
| Spot drilled holes with included angle less than that matching T-A® or cored holes.                                                                                            | 1                       |             |                 | 4               |            |                     | 7       |              |                   |                         |                       |                 | 13            |                      |                   | 16                 |               |                  | 19             |                           |                |                       | <ul style="list-style-type: none"> <li>Spot hole with short tool of same or greater included angle as T-A® drill insert.</li> <li>Reduce feed (<b>NOTICE:</b> Do not reduce feed below threshold of good chip formation)</li> <li>If possible, drill from solid.</li> </ul>                                                                                                                                                                                                                                                                                 |
| Use of high wear resistant insert grades.                                                                                                                                      |                         |             |                 | 4               |            |                     |         |              |                   | 10                      |                       |                 |               |                      |                   |                    |               |                  |                |                           |                |                       | <ul style="list-style-type: none"> <li>Use tougher grade of T-A® (from carbide to cobalt to HSS). See wear versus toughness chart on page A30: 9.</li> <li>Increase rigidity of setup.</li> </ul>                                                                                                                                                                                                                                                                                                                                                           |

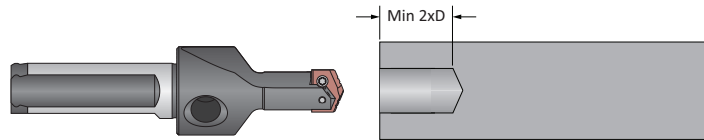
## Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (including Extended, Long, XL, 3XL, and Special Length)

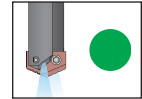
### 1. Pilot Hole

100 % RPM  
100% IPR (mm/rev)

Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.



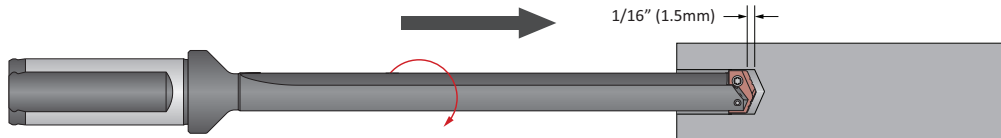
Coolant ON



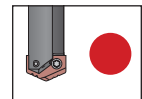
### 2. Feed-in

50 RPM max  
12 IPM (300 mm/min)

Feed the longer drill within 1/16" (1.5mm) short of the established pilot hole bottom at a **maximum of 50 RPM** and 12 IPM (300 mm/min) feed rate.



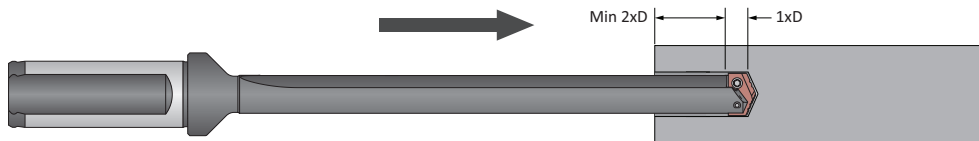
Coolant OFF



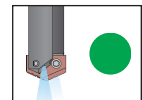
### 3. Deep Hole Transition Drilling

50 % RPM  
75% IPR (mm/rev)

Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of 1 second dwell is required to meet full speed before feeding.



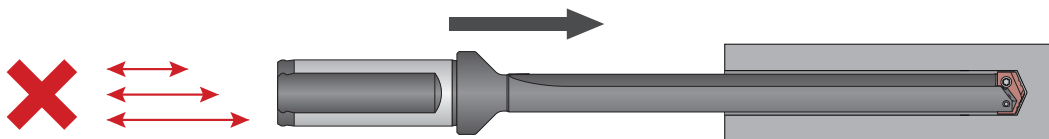
Coolant ON



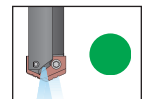
### 4. Deep Hole Drilling - Blind

100% RPM  
100% IPR (mm/rev)

Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. **No peck cycle recommended.**



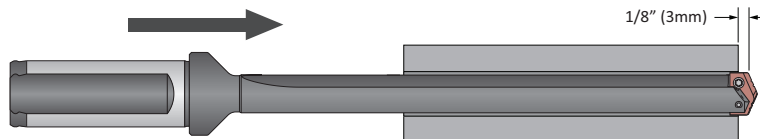
Coolant ON



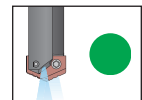
### 5. Deep Hole Drilling - at Breakout

50% RPM  
75% IPR (mm/rev)

**For through holes only:**  
Reduce speed by 50% and feed by 25% prior to breakout. Do not breakout more than 1/8" (3mm) past the full diameter of the drill.



Coolant ON



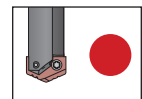
### 6. Drill Retract

50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



Coolant OFF



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# Guaranteed Test / Demo Application Form

Distributor PO #

The following must be filled out completely before your test will be considered

## Distributor Information

Company Name: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Account Number: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

## End User Information

Company Name: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Industry: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

**Current Process** List all tooling, coatings, substrates, speeds and feeds, tool life, and any problems you are experiencing

**Test Objective** List what would make this a successful test (i.e. penetration rate, finish, tool life, hole size, etc.)

## Application Information

Hole Diameter: \_\_\_\_\_ in/mm Tolerance: \_\_\_\_\_ Material: \_\_\_\_\_  
(4150 / A36 / Cast Iron / etc.)  
Pre-existing Diameter: \_\_\_\_\_ in/mm Depth of Cut: \_\_\_\_\_ in/mm Hardness: \_\_\_\_\_  
(BHN / Rc)  
Required Finish: \_\_\_\_\_ RMS State: \_\_\_\_\_  
(Casting / Hot rolled / Forging)

## Machine Information

Machine Type: \_\_\_\_\_ Builder: \_\_\_\_\_ Model #: \_\_\_\_\_  
(Lathe / Screw machine / Machine center / etc.) (Haas, Mori Seiki, etc.)  
Shank Required: \_\_\_\_\_ Power: \_\_\_\_\_ HP/KW  
(CAT50 / Morse taper, etc.)  
Rigidity: Orientation: Tool Rotating: Thrust: \_\_\_\_\_ lbs/N  
☐ Excellent ☐ Vertical ☐ Yes  
☐ Good ☐ Horizontal ☐ No  
☐ Poor

## Coolant Information

Coolant Delivery: \_\_\_\_\_ Coolant Pressure: \_\_\_\_\_ PSI / bar  
(Through tool / Flood)  
Coolant Type: \_\_\_\_\_ Coolant Volume: \_\_\_\_\_ GPM / LPM  
(Air mist, oil, synthetic, water soluble, etc.)

## Requested Tooling

| QTY | Item Number |
|-----|-------------|
|     |             |
|     |             |
|     |             |
|     |             |
|     |             |

| QTY | Item Number |
|-----|-------------|
|     |             |
|     |             |
|     |             |
|     |             |
|     |             |



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Allied Machine & Engineering warrants to original equipment manufacturers, distributors, industrial and commercial users of its products that each new product manufactured or supplied by Allied Machine shall be free from defects in material and workmanship.

Allied Machine's obligation under this warranty is limited to furnishing without additional charge a replacement or, at its option repairing or issuing credit for any product which shall within one year from the date of sale be returned freight prepaid to the plant designated by an Allied Machine representative and which upon inspection is determined by Allied Machine to be defective in materials or workmanship.

Complete information as to operating conditions, machine, set-up, and application of cutting fluid should accompany any product returned for inspection. The provisions of this warranty shall not apply to any Allied Machine products which have been subjected to misuse, improper operating conditions, machine set-up or application of cutting fluid or which have been repaired or altered if such repair or alteration in the judgment of Allied Machine would adversely affect performance of the product.

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Available Online Only: A30-TAS  
Publish Date: August 2018