

# Special Tooling Solutions

Superion™ | Insta-Quote™ | Engineered Specials



## Specialty is Our Specialty

It's true. When it comes to designing and developing special solutions for customers, Allied Machine is the top choice. Our engineers see applications in ways many others don't, and that ability allows us to win situations that haven't been won before.

If you have a particularly unique or difficult application, give us a call. Most of our tooling can be tweaked as specials, and we can create entirely new concepts if alterations to standard product won't do the trick.

After all, everyone deserves some special attention.



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.

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A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

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THREADING

X

SPECIALS

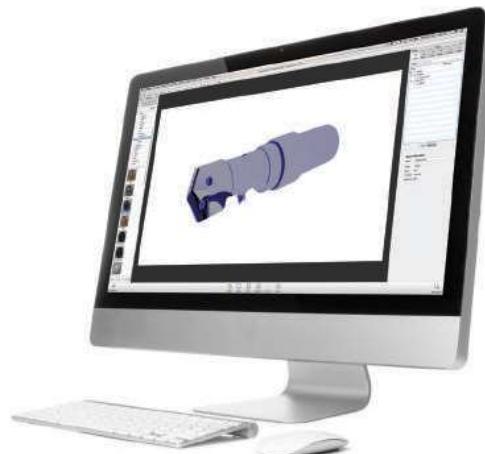
## Special Tooling Options

### Special Tooling is Our Specialty

Allied Machine offers three methods for obtaining special tooling to solve any application problem you encounter: Superion™, Insta-Quote™, and Engineered Specials. We know standard tooling can't be the answer for everyone, and that's why we specialize in developing unique tooling to fit your needs.

Many of our products can be altered as specials. In fact, many of our standard items are results of frequently requested special features. Many times, one special design can end up solving problems for multiple customers across a variety of industries. Our specials capabilities truly sets us apart from our competition.

Our Application Engineering team and Field Sales Engineers are trained and highly skilled to develop unique solutions that you won't find anywhere else. If you need special tooling, give us a call. Let us be the ones to tell you it can't be done. But don't expect us to.



## SUPERION™

Solid Carbide Specials

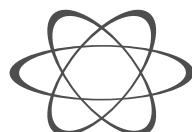


### Advanced Capabilities

With the addition of the Superion™ solid carbide products, Allied Machine can now provide made-to-order special tooling to better help customers achieve optimal performance and productivity in their holemaking applications. Give us a call today and see the new solutions we can provide.

### Made-to-Order Solid Carbide Specials

- PCD Tooling
- Burnishing Drills
- Solid Carbide Drills
- Step Drills / PCD Step Reamers



## Insta-Quote™

Insta-Quote is an online custom tool designer. The program is available 24/7 and guides you through the steps as you create a special tool designed to meet the requirements of your application.

### Products Available:

- T-A® Inserts
- T-A® Holders
- GEN3SYS® XT Holders
- ALVAN® Reamers



See pages X: 6 - 13



## Engineered Specials

When the requirements of your application fall outside the limitations of Insta-Quote, your special tooling becomes an Engineered Special. These are tool designs that our engineers get to create and develop specifically for you.

### Reasons to Call:

- Many standard products can be specially engineered
- Allied Machine specials can save you time and increase tool life
- Our engineers have the skills and knowledge to create designs that meet the challenge



See pages X: 18 - 19

## Industry Solutions

### Every Industry Needs Some Special Attention

Many specific industry applications can be tricky, and processes can change drastically from one sector to the next. Allied's Field Sales Engineers and Application Engineers work together to develop breakthrough solutions that help customers master processes that before seemed impossible to improve.

You know your parts. You know your materials. You know what works and what doesn't. All you need to do is let us know what you're dealing with, and we'll take it from there. Whether you're machining the wings of an airplane or the engine block in a new car, we'll develop the right design to solve the problem you're facing.

For more industry examples, see Allied Machine's Case Studies and Success Stories at [www.alliedmachine.com/RealLifeResults](http://www.alliedmachine.com/RealLifeResults).



Automotive  
Engine Block



Aerospace  
Central Fuselage Wing Box



Heavy Machinery  
Track Links



Oil and Gas  
Heat Exchanger

### COMPLEX SOLUTIONS



### INNOVATIVE SOLUTIONS



### LONG SOLUTIONS



EVERY PROBLEM  
HAS A  
**SOLUTION**

A  
DRILLING

B  
BORING

C  
REAMING

D  
BURNISHING

E  
THREADING

X  
SPECIALS

**Superion™**

Solid Carbide and PCD Tooling Solutions



Solid Carbide / PCD Solutions

**WHAT IS SUPERION?**

Superion capabilities provide cutting edge solutions in both solid carbide and PCD tooling.

**WHY SHOULD YOU USE SUPERION?**

- State of the art manufacturing automation allows for high repeatability and consistency, regardless of the quantity you need.
- Superion provides application-specific solutions tailored to meet your toughest demands.
- Superion tooling excels in difficult and unique material applications.
- Our goal is to provide you a quality solution to exceed your need on a schedule that satisfies.

**WHEN SHOULD YOU USE SUPERION?**

- When finish is critical and tolerances are tight, Superion can maintain your tolerances.
- When regrinds and re-manufacturability are critical for tooling budgets, Superion tackles your needs.
- If you're dealing with CFRP or other unique materials, Superion tooling is the right solution.

**SOLID CARBIDE  
TOOLING**

- Ø 3 - 20mm
- Designs with up to 3 steps
- Lengths up to 20xD
- Coolant through options
- Different geometry options to optimize your specific application
- Regrinds are available

**SOLID CARBIDE  
*PCD* TOOLING**

- Ø 3 - 20mm
- Brazed wafer to carbide body
- Ideal for CFRP and other unique materials
- Nib-style drills, end mills, and reamers
- Regrinds and PCD remanufactures are available

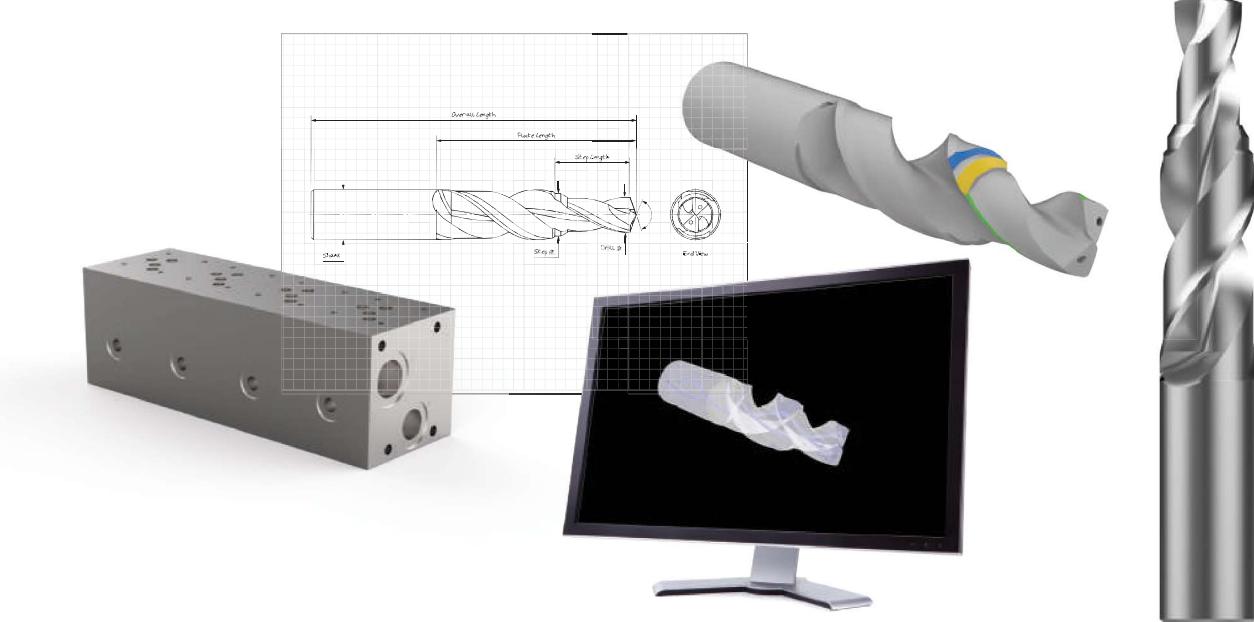


**Superion™**

Solid Carbide and PCD Tooling Solutions

**From Concept to Reality**

Allied's team of engineers is ready to assist you with your tooling design. We'll gather all the information we need about your application and turn your concept into reality. Give us a call today and watch as we collaborate with you and listen to the need, formulate a concept, develop the model, and build the solution.

**The Challenge of CFRP Materials**

Carbon fiber material is ideal for industries that require components with high strength and rigidity without increasing weight. In other words, these products need to be really strong and sturdy but also really light. For example, the aerospace industry revolves around aerodynamics, which is why carbon fiber is utilized to increase the quality of aerospace components without increasing the weight.

Many other metals are composed of uniform properties that are the same in every direction. Carbon fiber, on the other hand, is made of fabrics that are specifically positioned in different directions. This configuration increases the strength and rigidity of the material, but it also makes carbon fiber much more difficult to drill.

**Results When Drilling Aerospace-Grade Carbon Fiber**

Holes drilled with CVD drill insert



Holes drilled with PCD tooling

**Just Look at That!**

These images tell the whole story. Check out the holes drilled by the PCD tooling versus the CVD insert. Notice the excessive delamination on the first group of holes. The PCD tooling avoids most delamination, resulting in an excellent hole in the difficult-to-drill carbon fiber material.

Carbon fiber has high strength that causes:

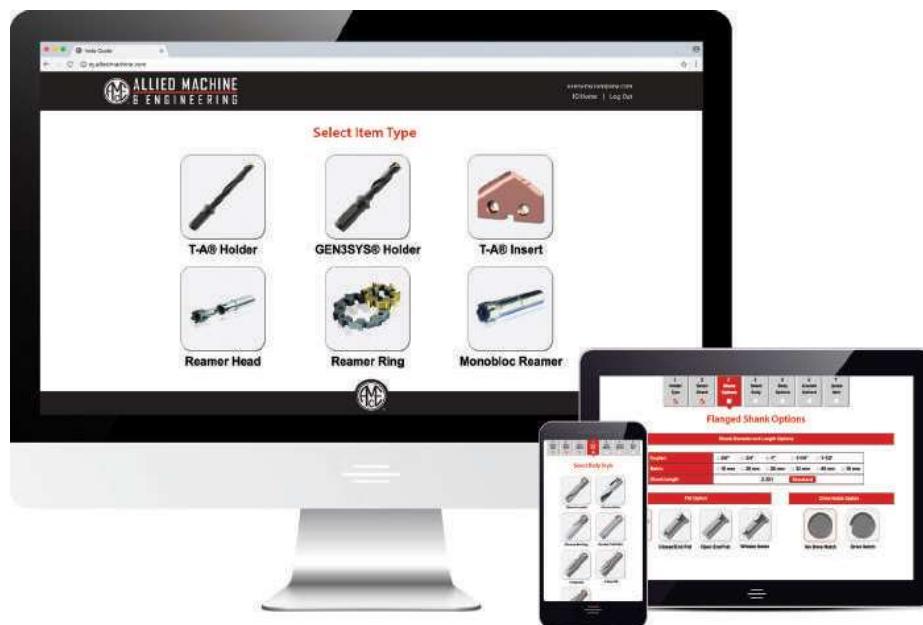
- Wear on the cutting tool
- Splintering/fraying of the hole

As you can see, the first test experienced these problems. The PCD tooling, however, successfully drilled clean holes.

**Insta-Quote™**

Design Your Custom Tooling

# Insta-Quote™

Design your custom tooling and receive a drawing and quote...all within *minutes*.[iq.alliedmachine.com](http://iq.alliedmachine.com)**Design Your Own Solutions**

Insta-Quote is an online program that allows you to design and quote your own tooling in a matter of minutes. After you log in, Insta-Quote will guide you through the steps to gather all the necessary information and generate the solution you need. Within the system, you can choose from the following tools to design:

- T-A® Inserts
- T-A® Holders
- GEN3SYS® XT Holders

Along with designing these products as specials, Insta-Quote can also help you create your item number for ALVAN® Reamers. Because reamer item numbers do not follow the same method as Allied Machine's standard products, you must build your reamer item numbers. Insta-Quote can do that for you.

- Replaceable Head Style
- Monobloc Style
- Cutting Ring Style



Design anytime from anywhere.

Available online 24/7.

## Insta-Quote™

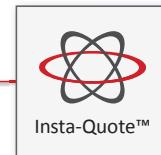
### User Guide



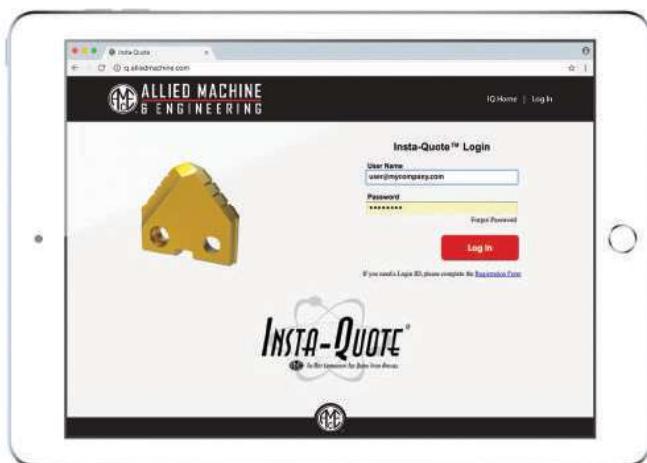
#### Where Do I Find Insta-Quote?

There are two ways to get to the Insta-Quote program. You can visit the Allied Machine homepage ([www.alliedmachine.com](http://www.alliedmachine.com)) and click on the Insta-Quote icon under the quick links menu (⋮)

Or, you can simply go to [iq.alliedmachine.com](http://iq.alliedmachine.com) to access Insta-Quote directly.

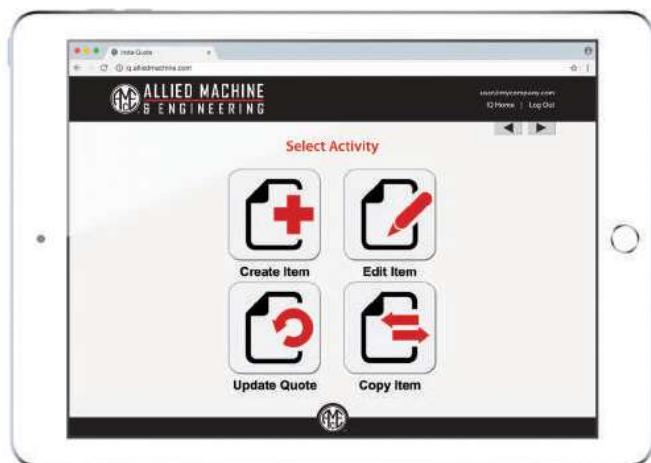


OR [iq.alliedmachine.com](http://iq.alliedmachine.com)



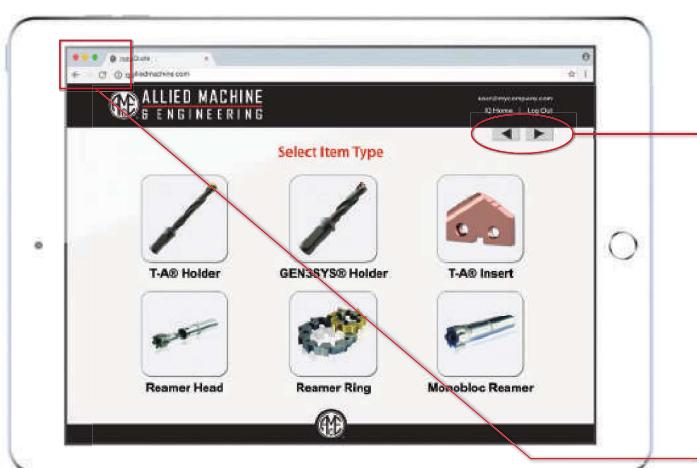
#### 1 Log In

Fill in "User Name" and "Password" and click the login button. If you do not have a login, just click the "Registration Form" option beneath the log in button and submit your registration.



#### 2 Select Activity

On this screen, you can choose to create a new tool, edit a previous tool, update your quote, or copy a previous item.



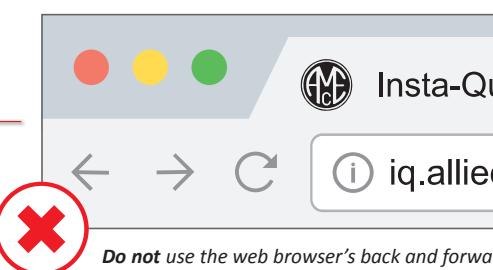
#### 3 Select Tool Type

Choose the type of special tool you would like to create. The options include T-A® inserts, T-A® holders, GEN3SYS® holders, replaceable head reamers, monobloc reamers, and cutting ring reamers.



#### IMPORTANT:

The right and left arrows will navigate you through each step. **DO NOT** use the web browser's back and forward buttons; doing so may result in loss of progress.



***Do not use the web browser's back and forward arrows***



A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

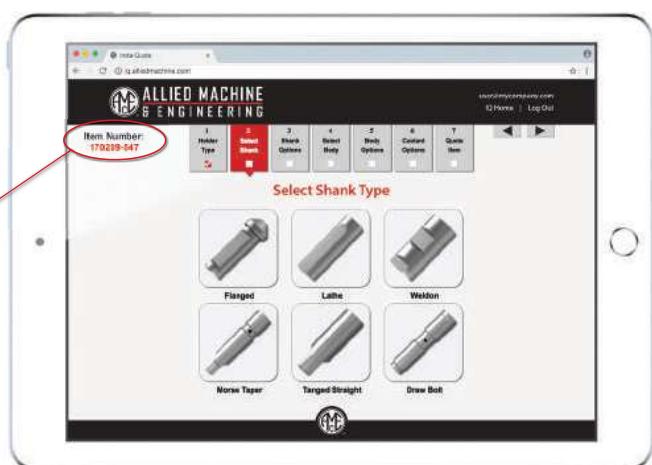
SPECIALS

**What is My Item Number?**

As soon as you select the type of product you want to design, Insta-Quote automatically generates the item number for your tool. The item number will appear at the top left-hand side of your screen.

# 170209-547

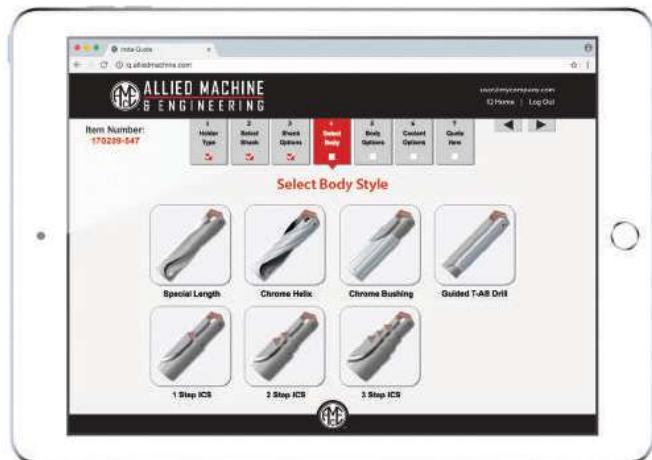
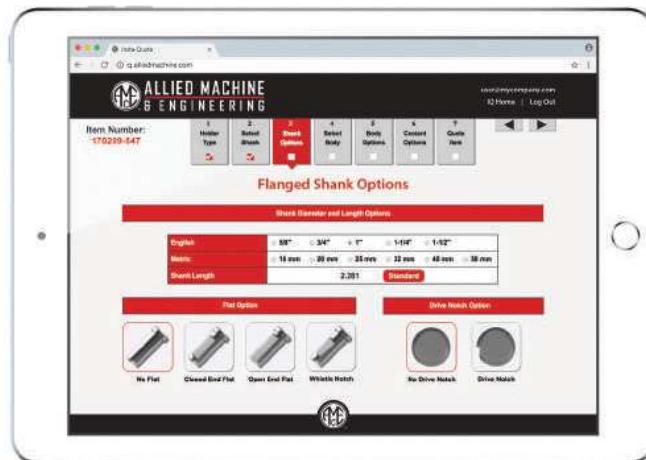
Year      Month      Day      Reference No.

**First Part of the Item Number:**

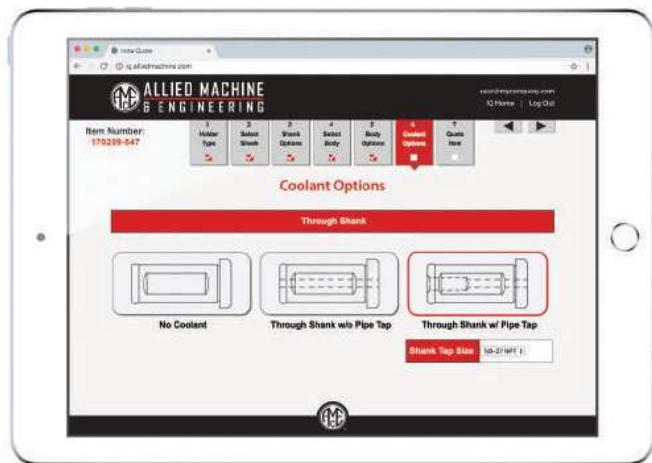
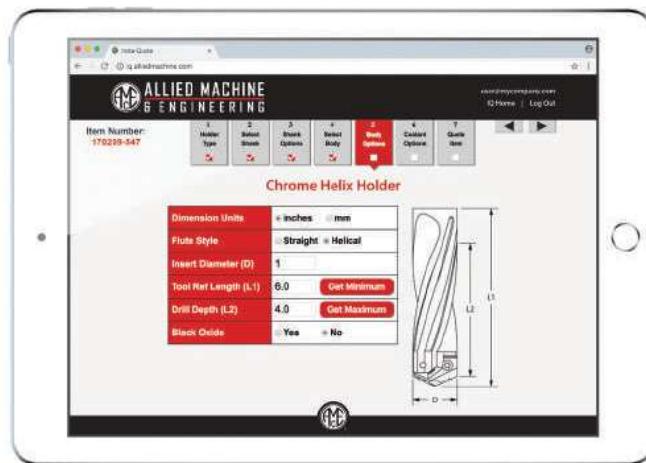
This represents the date you began designing your tool (ex. 170209 = February 9, 2017).

**Second Part of the Item Number:**

This is the reference number for that specific item. If you begin designing another tool on the same day, the first part of the new item number would be the same, but the reference number would be unique to that new item.

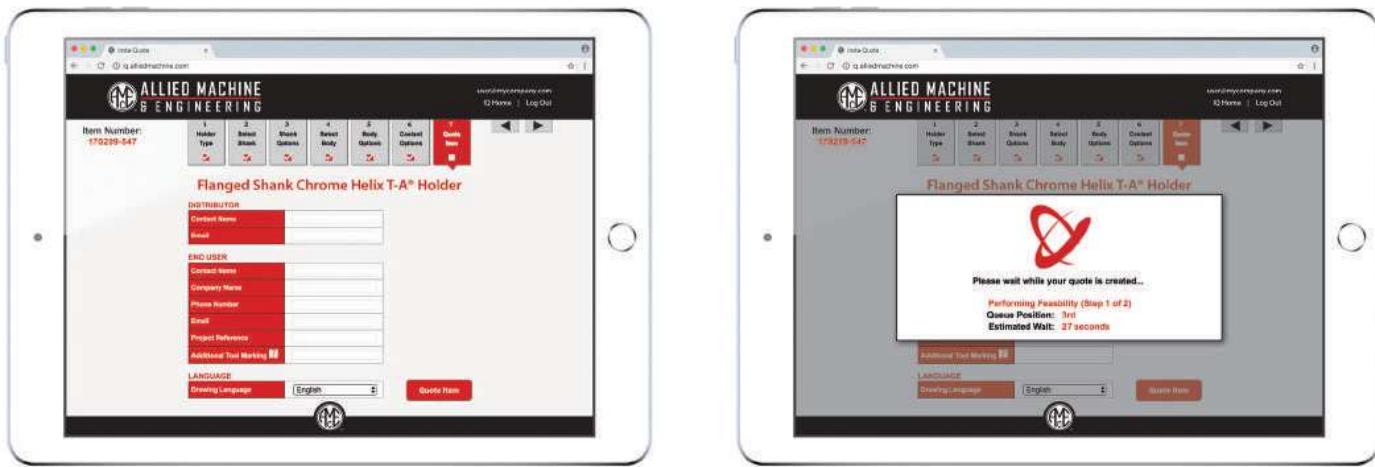
**Shank Options****5**

After choosing the shank type, you will be provided with additional shank options (if applicable). Once your selections are made, click the right arrow button ► to proceed.

**Body Options****7**

After choosing the holder style, you will be provided with additional holder options (if applicable). Once your selections are made, click the right arrow button ► to proceed.

**Coolant Options****8**



## 9 Contact Information

Complete the contact details and select a language for the drawing. Click the "Quote Item" button to proceed.

## 10

### Quote Your Item

Once you have selected "Quote Item," a box will appear to let you know the estimated time remaining before your quote and drawing are created (typical wait time is less than 1 minute).

**NOTE:** Your pop-up blocker must be disabled in order to view the downloaded files.

<p>120 Deeds Drive Dover, OH 44622 P: +1.330.343.4283 F: +1.330.602.3400 <a href="http://www.alliedmachine.com">www.alliedmachine.com</a></p> <p>Customer Name: Joe Thomas Customer Contact: Joe Thomas Customer Item Reference N/A Email: joe@mycompany.com Phone: 330303300</p> <p>Attn: Joe Thomas Customer Account 123 Holesmaking Pkwy Suite 1000 Dover OH 44622 Phone: 330-343-4283 Fax: 330-602-3400 AMEC Rep: Harold Stoye</p>		<p>Date: 02/09/2017</p> <p>Quotation Number: N-012345-678910 Please reference the above number when placing an order</p> <p>This quotation is being offered based on the information that has been provided to AMEC. The price and manufacturability is subject to change based on the final design of the item.</p> <p>DESCRIPTION QTY LIST PRICE EACH (U.S. \$)</p> <table border="1"> <tr> <td>H2 Series T-A® Chrome Helix Holder With 1.000" Drill Diameter, 5.860" Helical Flute, 4.00" Drill Depth, 1.000" Dia. By 2.281" Long Flanged Shank With No Flat With Through Shank Coolant</td> <td>1</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>2</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>3</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>4.5</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>6.9</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>10-14</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>15-24</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>25-49</td> <td>\$ 0.00</td> </tr> <tr> <td></td> <td>50+</td> <td>\$ 0.00</td> </tr> </table> <p>DEVIATIONS WITH APPROVAL BY THE CUSTOMER</p> <p><b>WARNING! For Deep Hole Drilling</b></p> <p>Tool failure can cause severe injury. To prevent tool failure when drilling deep holes (greater than 5x Shank length) without support bearing, use a shank length holder to extend the shank length by 2.5 times the depth of the hole. When using this technique, make sure that the tool is supported at least every 2.5 times the shank length. Do not rotate tool faster than 100 RPM unless it is engaged with workpiece or fixture. Follow the Deep Hole Drilling Guidelines in technical reference section of catalog for best practices for deep hole drilling. Use a sharp, honed, and balanced tool to calculate proper feed rates and speeds. In certain cases, customers may need to consult with their supplier to calculate proper coolant recommendations. Use <a href="http://www.alliedmachine.com/deep-hole-drilling">www.alliedmachine.com/deep-hole-drilling</a> for more information. Please contact technical assistance if any questions arise.</p>	H2 Series T-A® Chrome Helix Holder With 1.000" Drill Diameter, 5.860" Helical Flute, 4.00" Drill Depth, 1.000" Dia. By 2.281" Long Flanged Shank With No Flat With Through Shank Coolant	1	\$ 0.00		2	\$ 0.00		3	\$ 0.00		4.5	\$ 0.00		6.9	\$ 0.00		10-14	\$ 0.00		15-24	\$ 0.00		25-49	\$ 0.00		50+	\$ 0.00													
H2 Series T-A® Chrome Helix Holder With 1.000" Drill Diameter, 5.860" Helical Flute, 4.00" Drill Depth, 1.000" Dia. By 2.281" Long Flanged Shank With No Flat With Through Shank Coolant	1	\$ 0.00																																								
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<p>ALLOWABLE QUANTITY VARIANCE SHIPMENT TABLE</p> <table border="1"> <thead> <tr> <th>Order Quantity</th> <th>Variance Amount</th> <th>Order Quantity</th> <th>Variance Amount</th> </tr> </thead> <tbody> <tr> <td>1-9</td> <td>+0/-0</td> <td>150-299</td> <td>+0/-3</td> </tr> <tr> <td>10-49</td> <td>+0/-1</td> <td>300-499</td> <td>+0/-5</td> </tr> <tr> <td>50-149</td> <td>+0/-2</td> <td>500+</td> <td>+0/-10</td> </tr> </tbody> </table> <p>NOTES : T. MARK : 170209-523 REV. : 0</p> <p>2. ALL DIMENSIONS NOT SPECIFIED ARE ALIED MACHINE AND ENGINEERING CORP. STANDARDS.</p> <p>THIS DRAWING IS PROVIDED TO ILLUSTRATE CONCEPT AND DIMENSIONS SHOULD NOT BE USED EXCEPT AS SPECIFIED. FOR ANY MANUFACTURER'S RESPONSIBILITY OR WARRANTY, REFER TO THE SPECIFICATIONS SHOWN, REGARDLESS OF WHERE THEY WERE ORIGINATED.</p> <p>DEVELOPED FOR DISTRIBUTOR : ABC Company CONTACT : Joe Thomas DATE : 02/10/2017 DO NOT SCALE FOR DRAWINGS</p> <p>GENERAL TOLERANCES</p> <table border="1"> <tr> <td>DIM</td> <td>X</td> <td>Y</td> <td>Z</td> <td>XXX</td> <td>XXXX</td> </tr> <tr> <td>CRC</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> </tr> <tr> <td>LOC</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> <td>.0000</td> </tr> <tr> <td>ANG</td> <td>.5°</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>THIS DRAWING IS THE PROPERTY OF ALLIED MACHINE &amp; ENGINEERING CORP. IT MAY NOT BE COPIED OR TRANSFERRED IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION OF ALLIED MACHINE &amp; ENGINEERING CORP.</p> <p>DWG. NO. : 170209-547</p> <p>DATE : 02/10/2017</p> <p>SHEET : 1 OF 1</p> <p>REV. : 0</p>			Order Quantity	Variance Amount	Order Quantity	Variance Amount	1-9	+0/-0	150-299	+0/-3	10-49	+0/-1	300-499	+0/-5	50-149	+0/-2	500+	+0/-10	DIM	X	Y	Z	XXX	XXXX	CRC	.0000	.0000	.0000	.0000	.0000	LOC	.0000	.0000	.0000	.0000	.0000	ANG	.5°				
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LOC	.0000	.0000	.0000	.0000	.0000																																					
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This Document will serve as our official response. Please notify us if additional copies should be mailed.

\*This quote is valid until 12/31/2018 unless you are sent a specific notification to the contrary.  
\*Scheduled lead time is based on availability of material at time of order. You will be notified within 3 business days of receipt of order, if a lead time change is required.  
\*Scheduled lead time starts upon receipt of order as well as customer approved AMEC drawing when appropriate.

\*All special order cancellations are subject to a minimum of 10% cancellation charge. AMEC reserves the right to increase the cancellation charge as deemed necessary to cover costs associated with items being cancelled.

ALLIED MACHINE & ENGINEERING CORP.  
This quote prepared by: Insta-Quote

The drawing contains all relevant dimensions. It must be signed before manufacturing can begin.

**NOTE:** The drawing is a generic representation and is not to scale.

# Insta-Quote™

Design Your Custom Tooling



## Insta-Quote™ Custom Tooling

### T-A® Inserts



Special Angle



Double Angle



Spur Point



Spot and Chamfer



Step Insert

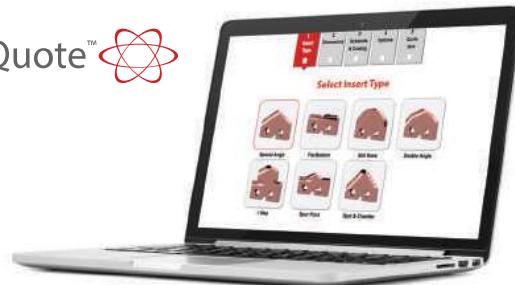


Flat Bottom



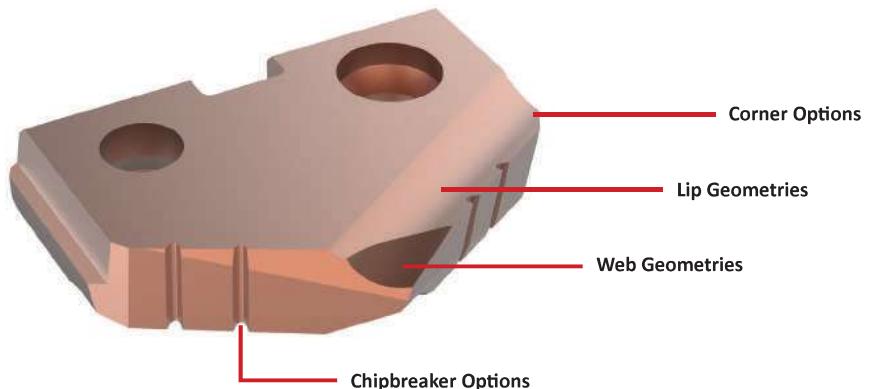
Ball Nose

Insta-Quote™



### Additional Features

Insta-Quote provides multiple options to enhance different areas of the insert. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



Substrate Options
HSS: HSS, Super Cobalt, Premium Cobalt
Carbide: C1, C2, C3, C5

Coating Options			
AM200®	TiN	TiAIN	TiCN

**Insta-Quote™ Custom Tooling**

## T-A® Holders



Chrome Helix



Chrome Bushing



⚠ Guided Holder



One Step ICS



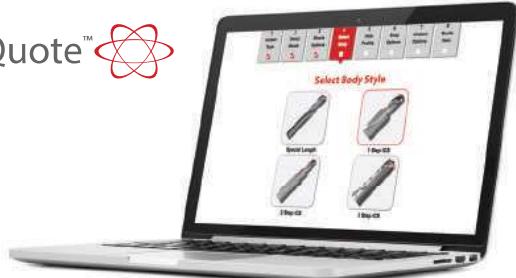
Two Step ICS



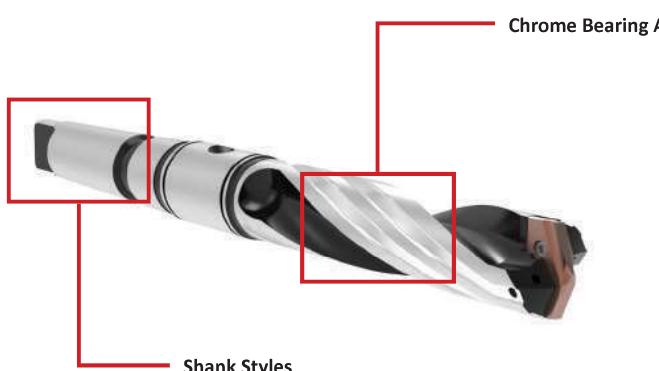
Three Step ICS



⚠ Special Length

Insta-Quote™ **Additional Features**

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



**⚠ WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X: 26 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.



## Insta-Quote™ Custom Tooling

### GEN3SYS® XT Holders



Chrome Helix



Chrome Bushing



⚠ Special Length



One Step ICS

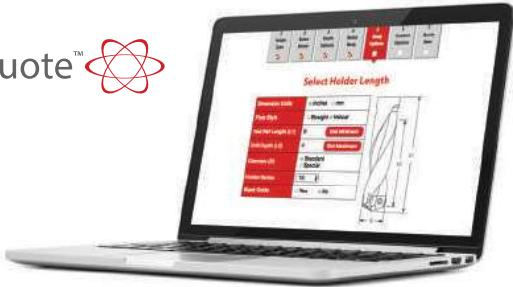


Two Step ICS



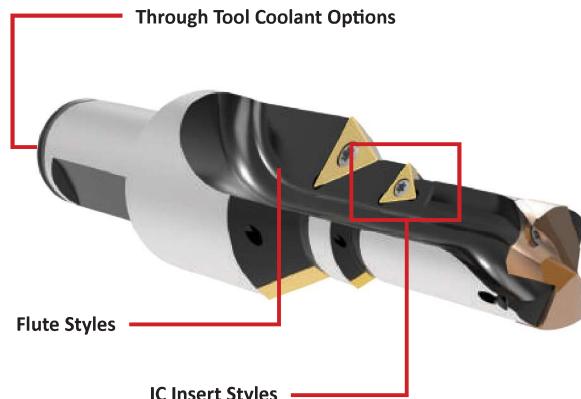
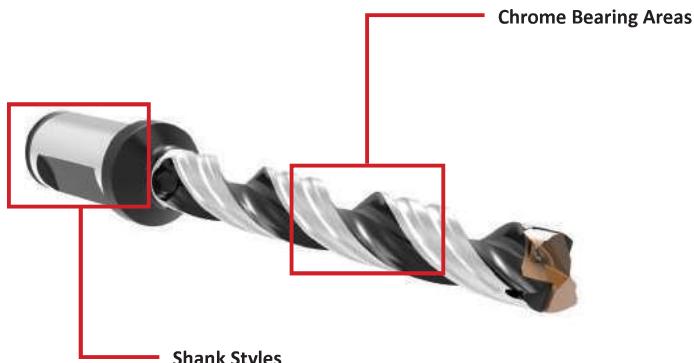
Three Step ICS

Insta-Quote™



#### Additional Features

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



#### Where are the Inserts?

Though Insta-Quote incorporates special designs for GEN3SYS XT holders, it does not include options for designing special GEN3SYS XT inserts. GEN3SYS XT holders utilize standard GEN3SYS XT inserts, which can be found in Section A20 of the product catalog.

If you need a special insert, or would simply like to discuss options for designing one to fit your application, please contact us and we can create a special design as an engineered special.



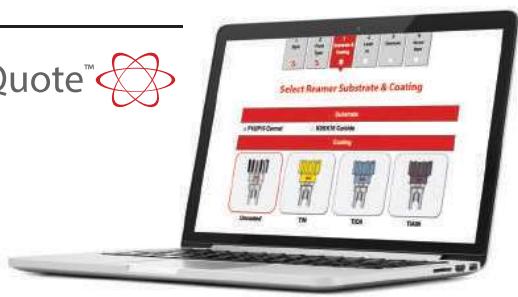
**Engineered Special**  
GEN3SYS XT insert designed for  
specific aerospace application

**WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X: 26 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.

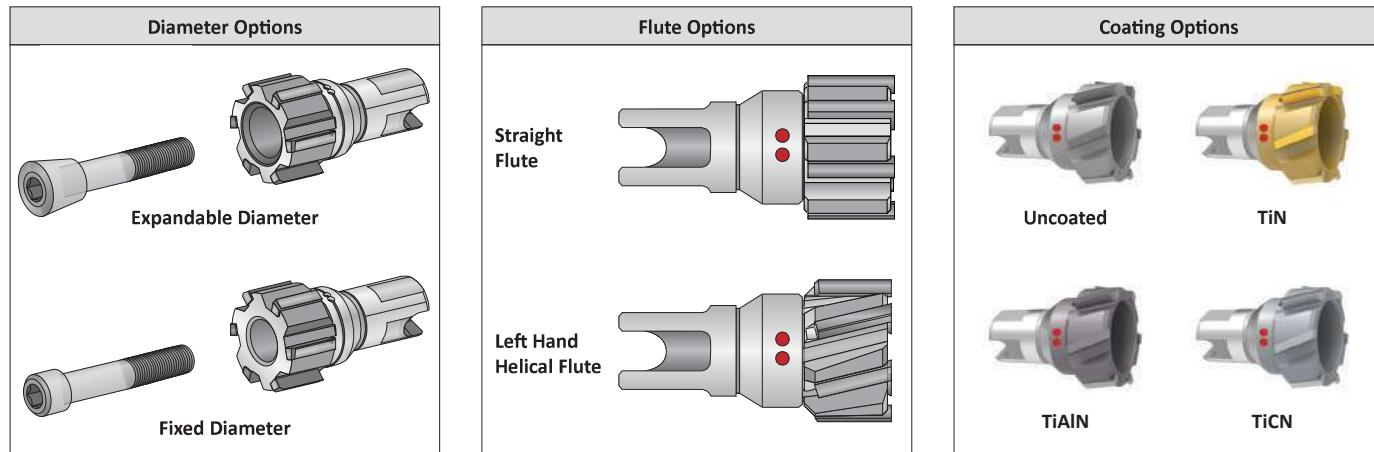
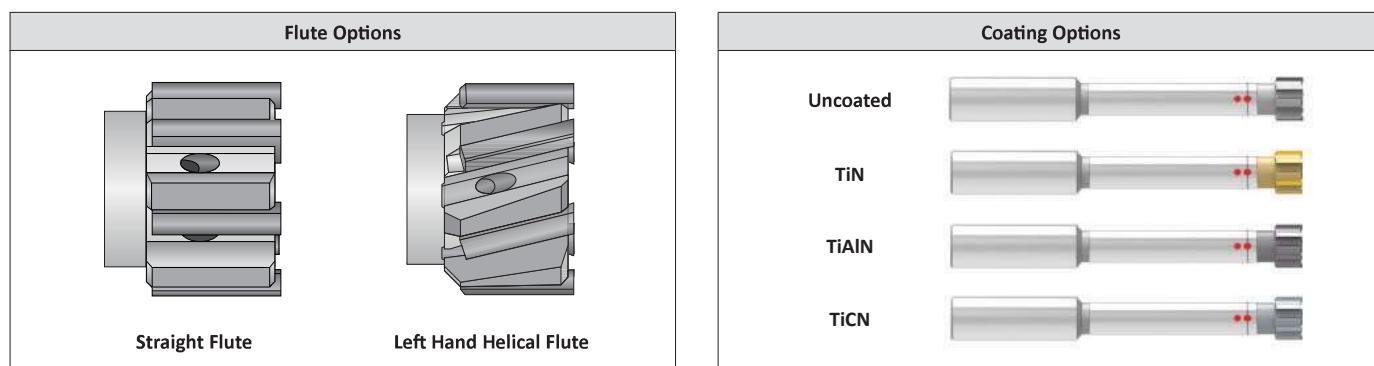
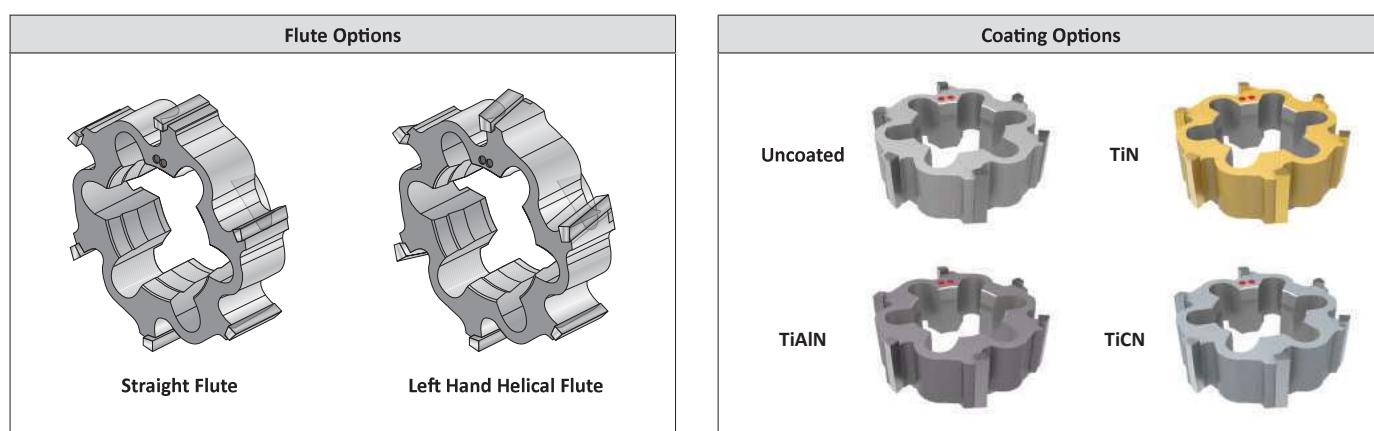
**Insta-Quote™ Custom Tooling**

ALVAN® Reamers

Use Insta-Quote to Build Your Part Numbers

**Insta-Quote™**

Insta-Quote can help you find or build the ALVAN® Reamer item numbers you need along with the price and delivery of the items. It can also give you the recondition item and delivery. Just follow the steps, and Insta-Quote will guide you through the process.

**Replaceable Head Style****Monobloc Style****Cutting Ring Style**



A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

## Engineered Specials

### Insert Designs

#### OUR SOLUTION

##### T-A® PCD Drill Insert



- C3 carbide substrate increases tool life
- PCD tip is specifically designed for carbon reinforced polymer (CFRP) material
- Notch Point® geometry, special corner clip, and drill point angle help minimize delamination upon exiting the hole

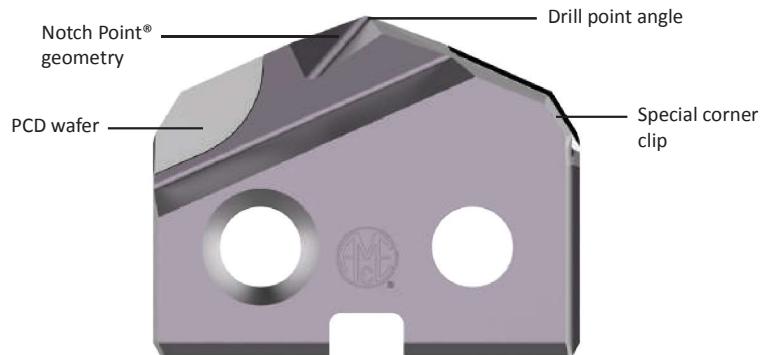
#### YOUR ADVANTAGE

Take control of carbon fiber reinforced polymer applications. The T-A PCD drill insert can provide the hole quality you need to produce successful quality parts and reduce scrap.

#### Polycrystalline Diamond Insert

What allows the polycrystalline diamond (PCD) insert to generate such high success in aerospace carbon fiber is the sharp cutting edge that provides clearance cutting and reduces delamination. The PCD wafers improve the wear resistance.

While other tools encounter massive tearing when exiting the hole in carbon fiber, the PCD insert geometry, along with precise OD corner prep and Notch Point® technology, encounters minimal delamination. This produces a near-perfect, tight tolerance and smooth hole (see the images below).



#### The Proof is in the Numbers

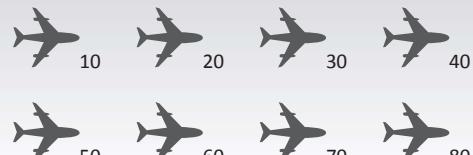
See the following results from a customer who was experiencing difficulty when drilling CFRP material:

**INCREASED** tool life by **80%**

##### Number of Holes Drilled: ONE Competing Insert



##### Number of Holes Drilled: ONE PCD Tipped T-A Insert



#### Infinite Solutions

Though Insta-Quote™ and i-Form are incredible special tooling systems, some applications require a deeper level of engineering to accomplish the optimal results. No matter what the application may be, Allied Machine engineers have the knowledge, experience, and expertise to design and develop a special product to exceed your expectations.

Engineered Specials are not limited to T-A® or GEN3SYS® XT products. In fact, Engineered Specials can be created for most products offered by Allied Machine, including APX Drill, Opening Drill®, ASC 320®, AccuThread™ 856, Wohlhaupter® boring products, and many other product families.



Back Chamfer  
without Chip Breakers



Back Chamfer  
with Chip Breakers



Non-Center Cutting  
and Chamfer



Special Inverted  
Coring Geometry



Flat Fottom with Pilot,  
Corner Radius, and Chamfer



Multiple Step



Special Step



Special Point



Special Counter-bore Step



Special Corner Radius

## Engineered Specials

Featured Design | GEN3SYS® XT Vacuum Drill



The GEN3SYS XT® Vacuum Drill allows you to reap the productivity benefits of the GEN3SYS® XT outside of a fixed-position machine tool. The Vacuum Drill technology attaches to a hose to remove material that flows up through the internal flute of the drill. This versatile ability allows the drilling process to move from location to location, performing operations on large components.

The design of the GEN3SYS® XT insert increases penetration rates, which can lower your production time and decrease operation costs. Available in multiple material-specific geometries, the GEN3SYS® XT has a solution for most applications.

### -- OUR **SOLUTION**

#### GEN3SYS® XT Vacuum Drill

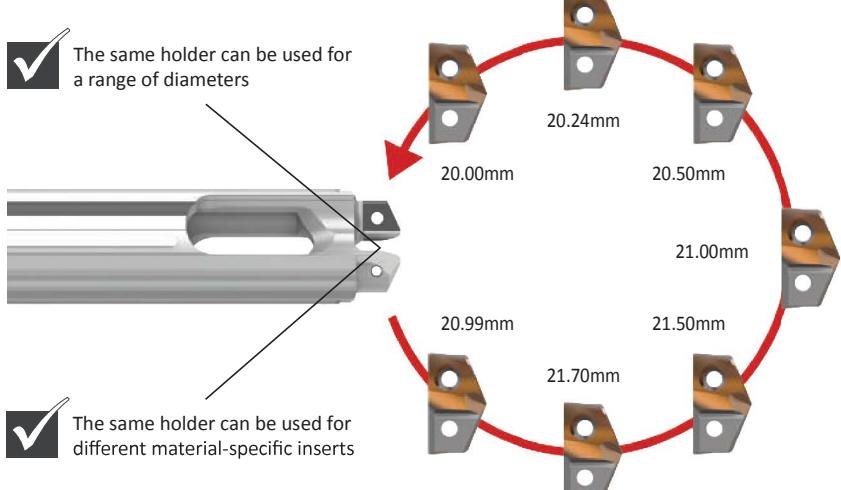


- Spent coolant and chips are evacuated through an internal flute
- Guided body diameter to run through a drill bushing
- Replaceable tip for quick and easy insert change

### ► YOUR **ADVANTAGE**

The sealed vacuum system lets you move your drilling operations outside the confines of a machine, allowing you to increase productivity on massive components.

 The same holder can be used for a range of diameters



 The same holder can be used for different material-specific inserts

### MATERIAL TIPS

#### Drilling in CFRP (Carbon Fiber Reinforced Polymer)

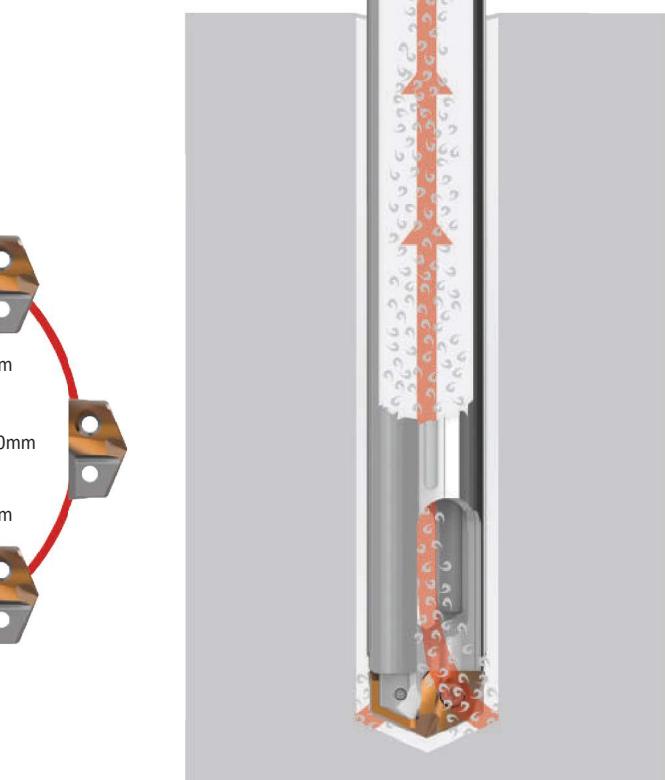
- These applications are run with the vacuum only (no coolant)
- Can be run with or without a micro peck cycle

#### Drilling in Metal

- These applications are run with the vacuum and coolant or mist
- Recommended to be run with a micro peck cycle



Materials remain contained in a sealed vacuum system





A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

## Engineered Specials

Featured Design | T-A® Stealth Drill



### T-A Stealth Drill Highlights

- 2 adjustable Torx® PLUS screw pins allow for diameter adjustment to reduce TIR
- Provides improved tool life and hole finish
- Guided wear pads improve hole straightness
- Coolant through design with multiple coolant outlets along the drill holder provides stability in deep hole drilling applications and also improves chip evacuation



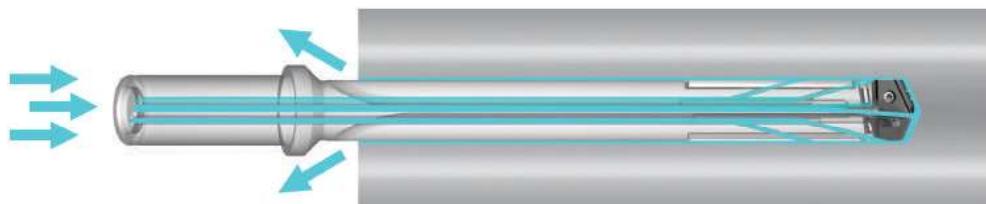
Industry Application  
Automotive



Industry Application  
Aerospace

### Triple Coolant Outlets

- Additional coolant outlets help keep the holder straight and precise
- Longer holders experience and maintain increased stability in deeper holes



Locate the 2 adjustable Torx® PLUS screws (one on each side).



Loosen each screw.



Adjust insert position.



Tighten each screw.

### The Proof is in the Numbers

The following results came from a real-life application that utilized the T-A Stealth Drill. The customer was experiencing a high scrap rate and needed to find a solution to eliminate the problem.



Number of Holes Drilled: ONE Competing Insert & Holder			
	80		160
	240		320

In this application, Allied Machine:

- Eliminated \$240,000 in scrap per year
- Optimized the chip formation
- Enhanced the chip evacuation
- Provided excellent surface finish

**INCREASED** tool life by  
**280%**

Number of Holes Drilled: ONE Allied Machine Special Insert & Holder			
	80		160
	240		320
	480		400
	720		560
	960		640
	1220		880
	1040		1120

## Engineered Specials

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### Success Stories

#### Real-Life Results

Below are five brief success stories. Each one provides an overview of specific situations when our special tooling achieved top-quality performance for our customers. For more success stories, or to read full in-depth case studies, go to [www.alliedmachine.com/RealLifeResults](http://www.alliedmachine.com/RealLifeResults).



Industry Application  
**Oil & Gas**

**Special AccuPort 432® Port Contour Cutter**

*Hydraulic Manifolds*

- Eliminated multiple tools in the process
- Eliminated regrinds
- Improved performance in cross hole applications



Industry Application  
**Heavy Equipment**

**Special T-A® Holder & Insert**

*Axle Shafts*

- 100% increase in tool life
- \$7,500 reduction in set-up costs
- Eliminated scrap that was caused by set-up issues



Industry Application  
**Firearms**

**i-Form Drill**

*Barrel Nut*

- Eliminated three tools in the process
- Reduced cycle time by 25%
- Improved chip formation



Industry Application  
**Automotive**

**T-A® Rim Drill**

*Aluminum Wheels*

- 50% increase in penetration rates
- 50% increase in tool life
- Eliminated regrinds



Industry Application  
**Aerospace**

**Special Carbide Clad T-A® Holder with Diamond Coated Insert**

*Carbon Fiber Landing Arm*

- Eliminated delamination of carbon fiber
- 7x more tool life
- Special shank threads directly into drill unit for easy tool change





A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS

## Engineered Specials

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### i-Form Custom Indexable Drill / Form Tool System

#### Any Way You Want It

What if you could utilize complex forms that only seem to be available as brazed or solid carbide tools? Allied Machine's i-Form custom indexable drill/form tool system allows for complex designs with a replaceable cutting edge. This will reduce set-up times and eliminate regrinds, allowing you to increase your productivity and reduce costs. Don't settle for being good when the possibility of being great is right in front of you.

This is just a small sample of what you can do.



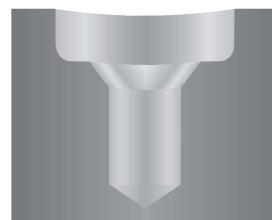
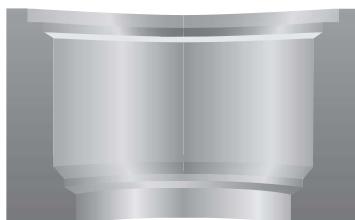
i-Form Holder  
with i-Form Inserts



Lug Hole T-A® Drill  
with i-Form Inserts



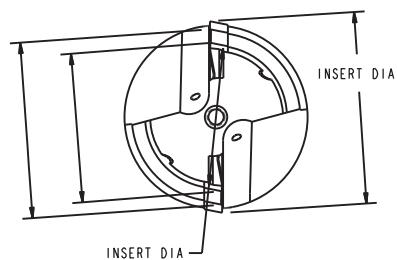
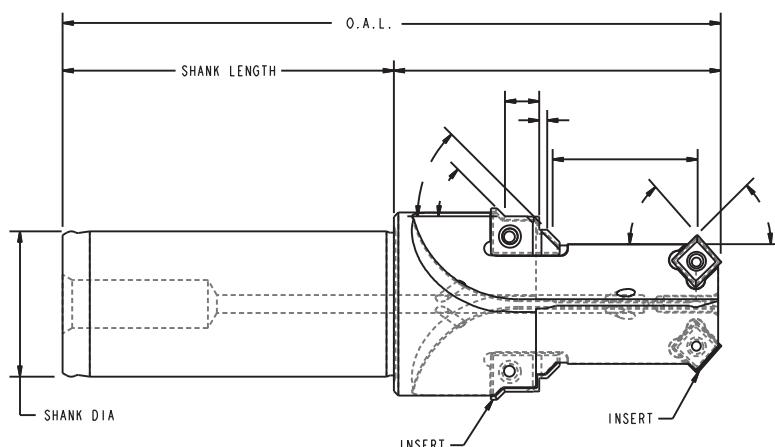
i-Form Drill for Facing Operations  
with ID-OD Chamfer



#### Design Complex Forms for ANY Hole Style

i-Form allows you to design complex forms for any style hole with increased productivity. The i-Form product line - both pilot inserts and form inserts - creates custom engineered forms that provide complex designs with replaceable cutting edges and improved consistency, all while outperforming brazed and solid carbide tooling. i-Form tools will increase your productivity, minimize set-up times, and eliminate regrind tool float and inconsistency.

- Holders have coolant through capabilities
- Holders can utilize standard inserts, Insta-Quote™ inserts, and/or special insert designs



## Engineered Specials

i-Form Custom Indexable Drill / Form Tool System



GEN3SYS® XT Pilot Insert  
with i-Form Inserts



GEN3SYS® XT Pilot Insert  
with i-Form Inserts



GEN3SYS® XT Back Chamfer Insert  
with i-Form Inserts



T-A® Flat Bottom Form Drill  
with i-Form Inserts



T-A® ICS Drill  
with i-Form Inserts



T-A® Pilot Insert  
with i-Form Inserts



Square QDSI 34® Inserts  
with i-Form Inserts



3 Flute IC Drill  
with i-Form Inserts



i-Form Holder  
with i-Form Inserts



AccuPort 432® Drill  
with Special T-A® Form Insert



T-A 2 Step IC Drill  
with i-Form Inserts



Special Core Drill  
with i-Form Inserts

A

DRILLING

B

BORING

C

REAMING

D

BURNISHING

E

THREADING

X

SPECIALS



## Engineered Specials

Special Designs | T-A® Products



T-A IC Drill  
with Back Chamfer Insert



T-A 1 Step Stub Length



T-A IC Drill



T-A 2 Step IC Drill



T-A Counter Bore Tool  
with Micro Adjustable Cartridge



T-A Form Drill  
with Adjustable Cartridge



T-A Multiple Step Drill  
with Adjustable Cartridge



T-A Large Diameter  
Multiple Step IC Drill



T-A Deburr Drill



T-A IC Drill  
with Customer Defined Shank



T-A Deep Hole Drill  
with Customer Defined Design



T-A Chrome Bearing Drill  
with Customer Defined Shank



T-A 1 Step IC Drill  
with Flat Bottom Insert



T-A Form Drill



T-A Drill  
with Special Holder and Insert Design

## Engineered Specials

Special Designs | Other Products



Special BT-A Drill  
with Internal Thread



Special BT-A Drill



Special BT-A Drill



APX Drill  
with Carbide Clad Guides



APX Drill  
with 1 Step Design



APX Drill  
with HSK Shank



Opening Drill®  
with Special Diameter



Special Core Drill  
with 2 Step Design



ICS Drill  
with Adjustable Cartridge



Superion™ Solid Carbide  
with AM200® Coating



AccuThread™ 856  
with Through Coolant



AccuPort 432®  
Special Length



ALVAN® Ring Style Reamer  
with Special Length



GEN3SYS® XT  
with Morse Taper Shank



GEN3SYS® XT  
with IC Inserts and Special Body

A  
DRILLING

B  
BORING

C  
REAMING

D  
BURNISHING

E  
THREADING

X  
SPECIALS



A

DRILLING

B

BORING

C REAMING

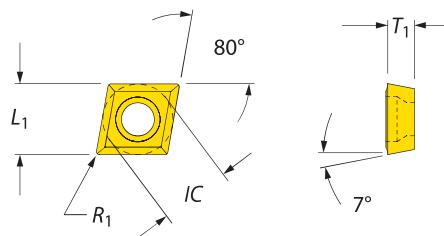
D BURNISHING

E THREADING

X SPECIALS

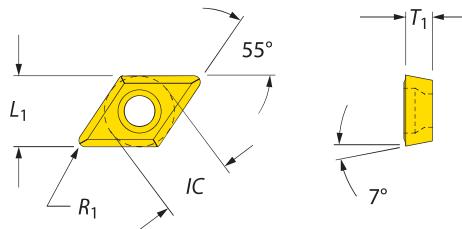
**QDSI 34® Inserts**

80° Diamond | 55° Diamond

**80° Diamond Inserts**

Imperial (inch)				Metric (mm)				Part No.	ANSI Designation	Torx Screw	Torx Driver
IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>	IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>				
0.250	0.249	0.094	0.008	6.35	6.32	2.39	0.20	CCGT-060202	CCGT 2(1.5)0.5	7256-IP8-1	8IP-8
0.250	0.247	0.094	0.016	6.35	6.28	2.39	0.40	CCMT-060204	CCMT 2(1.5)1	7256-IP8-1	8IP-8
0.250	0.244	0.094	0.031	6.35	6.21	2.39	0.79	CCMT-060208	CCMT 2(1.5)2	7256-IP8-1	8IP-8
0.250	0.244	0.156	0.031	6.35	6.21	3.96	0.79	CCGT-06T308	CCGT 2(2.5)2	7256-IP8-1	8IP-8
0.375	0.374	0.156	0.008	9.53	9.49	3.96	0.20	CCGT-09T302	CCGT 3(2.5)0.5	7359-IP15-1	8IP-15
0.375	0.372	0.156	0.016	9.53	9.46	3.96	0.40	CCMT-09T304	CCMT 3(2.5)1	7359-IP15-1	8IP-15
0.375	0.369	0.156	0.031	9.53	9.39	3.96	0.79	CCMT-09T308	CCMT 3(2.5)2	7359-IP15-1	8IP-15
0.500	0.497	0.188	0.016	12.70	12.63	4.76	0.40	CCMT-120404	CCMT 431	745105-IP20-1	8IP-20
0.500	0.494	0.188	0.031	12.70	12.56	4.76	0.79	CCMT-120408	CCMT 432	745105-IP20-1	8IP-20

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

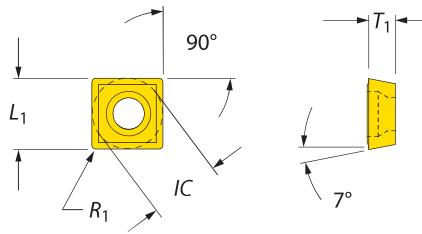
**55° Diamond Inserts**

Imperial (inch)				Metric (mm)				Part No.	ANSI Designation	Torx Screw	Torx Driver
IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>	IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>				
0.250	0.243	0.094	0.008	6.35	6.18	2.39	0.008	DCGT-070202	DCGT 2(1.5)0.5	7256-IP8-1	8IP-8
0.250	0.237	0.094	0.016	6.35	6.01	2.39	0.016	DCMT-070204	DCMT 2(1.5)1	7256-IP8-1	8IP-8
0.250	0.223	0.094	0.031	6.35	5.67	2.39	0.031	DCMT-070208	DCMT 2(1.5)2	7256-IP8-1	8IP-8
0.375	0.362	0.156	0.016	9.53	9.19	3.96	0.016	DCMT-11T304	DCMT 3(2.5)1	7359-IP15-1	8IP-15
0.375	0.348	0.156	0.031	9.53	8.85	3.96	0.031	DCMT-11T308	DCMT 3(2.5)2	7359-IP15-1	8IP-15

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

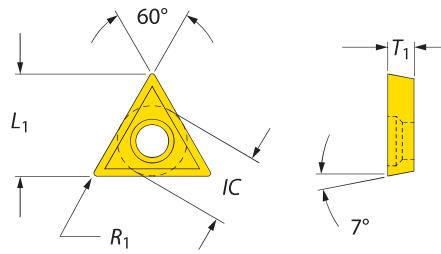
**QDSI 34® Inserts**

Square | 60° Triangle

**Square Inserts**

Imperial (inch)				Metric (mm)				Part No.	ANSI Designation	Torx Screw	Torx Driver
IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>	IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>				
0.375	0.375	0.156	0.016	9.53	9.53	3.96	0.40	SCMT-09T304	SCMT 3(2.5)1	7359-IP15-1	8IP-15

**NOTE:** QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

**60° Triangle Inserts**

Imperial (inch)				Metric (mm)				Part No.	ANSI Designation	Torx Screw	Torx Driver
IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>	IC	L <sub>1</sub>	T <sub>1</sub>	R <sub>1</sub>				
0.156	0.259	0.078	0.008	3.97	6.58	1.98	0.20	TCGT-06T102	TCGT 1.2(1.2)0.5	724-IP6-1	8IP-6
0.156	0.248	0.078	0.016	3.97	6.29	1.98	0.40	TCGT-06T104	TCGT 1.2(1.2)1	724-IP6-1	8IP-6
0.156	0.225	0.078	0.031	3.97	5.71	1.98	0.79	TCGT-06T108	TCGT 1.2(1.2)2	724-IP6-1	8IP-6
0.219	0.367	0.094	0.008	5.65	9.33	2.39	0.20	TCGT-090202	TCGT 1.8(1.5)0.5	7225-IP7-1	8IP-7
0.219	0.356	0.094	0.016	5.65	9.04	2.39	0.40	TCGT-090204	TCGT 1.8(1.5)1	7225-IP7-1	8IP-7
0.219	0.333	0.094	0.031	5.65	8.46	2.39	0.79	TCGT-090208	TCGT 1.8(1.5)2	7225-IP7-1	8IP-7
0.250	0.422	0.094	0.008	6.35	10.71	2.39	0.20	TCGT-110202	TCGT 2(1.5)0.5	7256-IP8-1	8IP-8
0.250	0.410	0.094	0.016	6.35	10.42	2.39	0.40	TCMT-110204	TCMT 2(1.5)1	7256-IP8-1	8IP-8
0.250	0.387	0.094	0.031	6.35	9.84	2.39	0.79	TCMT-110208	TCMT 2(1.5)2	7256-IP8-1	8IP-8
0.375	0.627	0.156	0.016	9.53	15.92	3.96	0.40	TCMT-16T304	TCMT 3(2.5)1	7359-IP15-1	8IP-15
0.375	0.604	0.156	0.031	9.53	15.34	3.96	0.79	TCMT-16T308	TCMT 3(2.5)2	7359-IP15-1	8IP-15
0.500	0.820	0.188	0.031	12.70	20.83	4.76	0.79	TCGT-220408	TCGT 432	745105-IP20-1	8IP-20

**NOTE:** QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.



A

DRILLING

## Special Tooling

### Complete Your Design

#### Show Us What You Need

These pages have been included so you can assist us with defining your special tooling requirements.

- Select a Shank (1 - 6), or define Shank 7
- Indicate if the shank will be used with or without a Rotary Coolant Adapter (RCA)

We ask that you define your hole profile and offer an example of a tool form to help us with the design process. Tools 1 - 5 cover only a small portion of our capabilities, so feel free to use your imagination. Please scan these pages, record your information in the boxes on the next page, and email the information for our quickest response.

B

BORING

C

REAMING

D

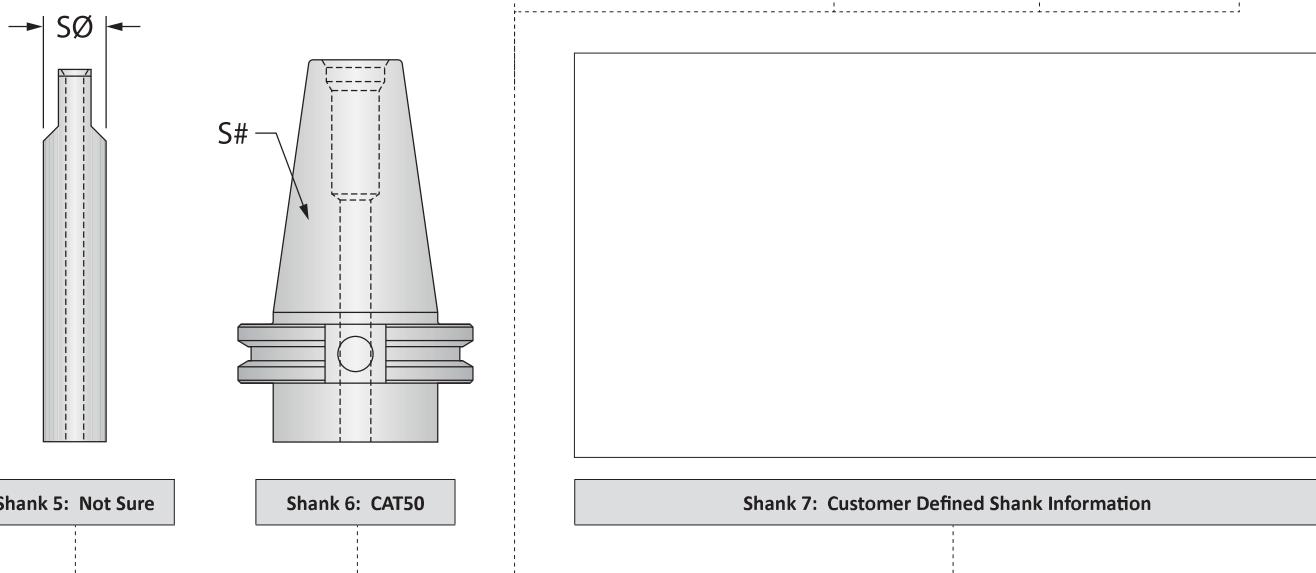
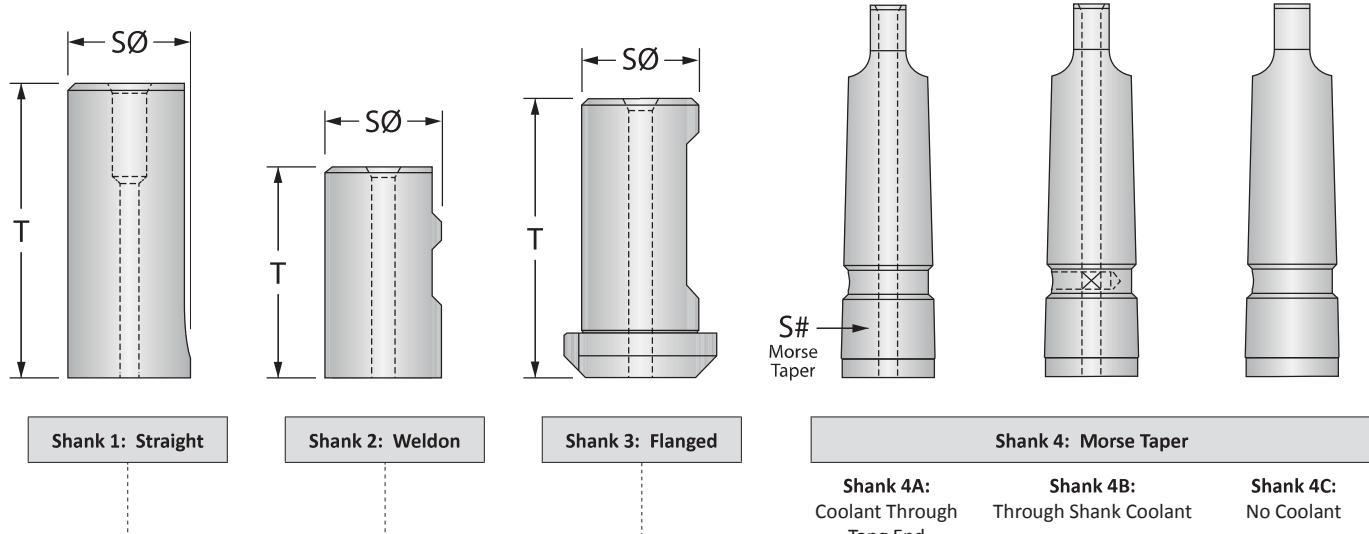
BURNISHING

E

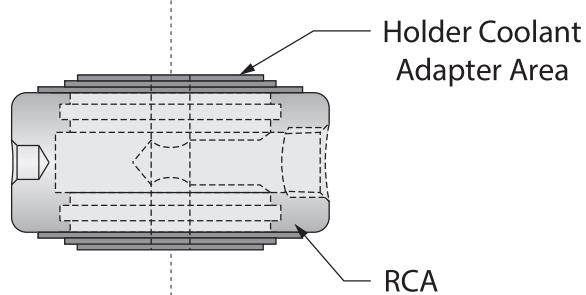
THREADING

X

SPECIALS



Shank	SØ	S#	T	RCA
4A (EXAMPLE)	-	4MT	-	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
				YES / NO
				YES / NO
				YES / NO

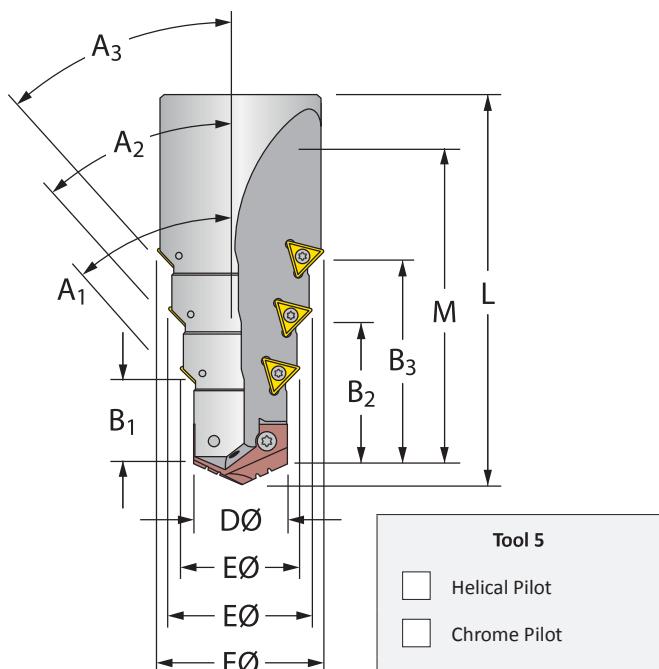
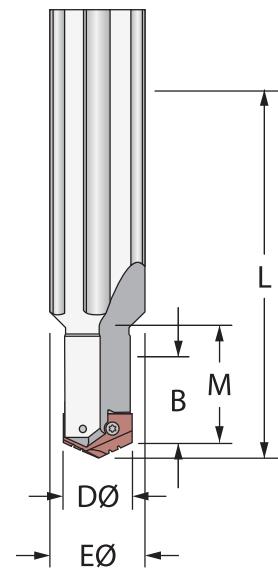
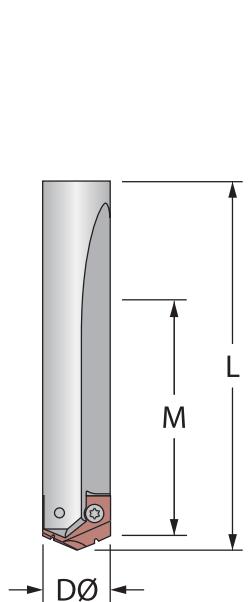
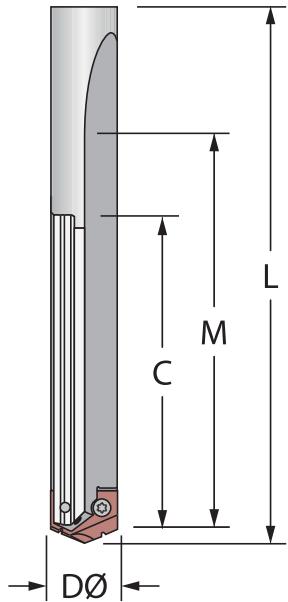
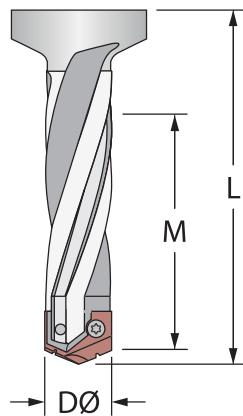


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<input type="checkbox"/>	Helical Flute
<input type="checkbox"/>	Straight Flute

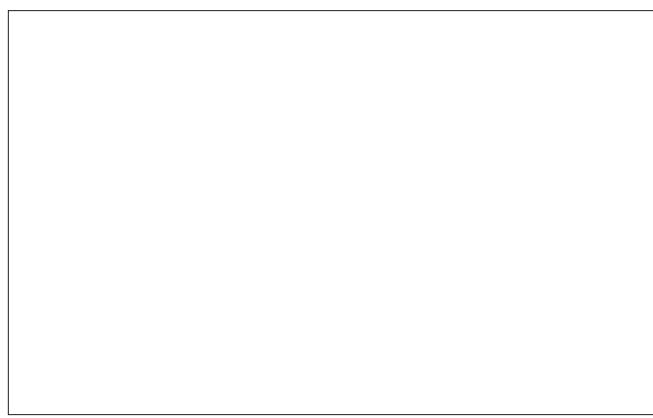
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Tool 3	
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<input type="checkbox"/>	Straight Flute

Tool 4	
<input type="checkbox"/>	Helical Pilot
<input type="checkbox"/>	Chrome Pilot



Tool 5	
<input type="checkbox"/>	Helical Pilot
<input type="checkbox"/>	Chrome Pilot



Hole Profile

Please email or fax your design to:  
 Application Engineering Department  
 P: 800.321.5537  
 F: 330.343.7666  
 E: aesupport@alliedmachine.com

Item	Tool	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	C	D Ø	E Ø	F Ø	G	L	M
EXAMPLE	5	30°	-	-	1.00	-	-	0.25	0.620	1.25	-	-	4.50	3.00

Customer Signature:

Date:

Please be sure to include shank and coolant information from the previous page when sending tool designs



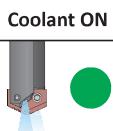
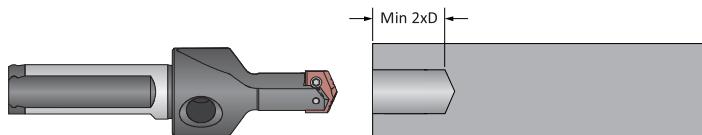
## Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (including Extended, Long, XL, 3XL, and Special Length)

### 1. Pilot Hole

100 % RPM  
100% IPR (mm/rev)

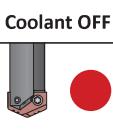
Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum.  
Utilize a pilot drill with the same or larger included point angle.



### 2. Feed-in

50 RPM max  
12 IPM (300 mm/min)

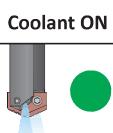
Feed the longer drill within 1/16" (1.5mm) short of the established pilot hole bottom at a **maximum of 50 RPM** and 12 IPM (300 mm/min) feed rate.



### 3. Deep Hole Transition Drilling

50 % RPM  
75% IPR (mm/rev)

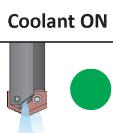
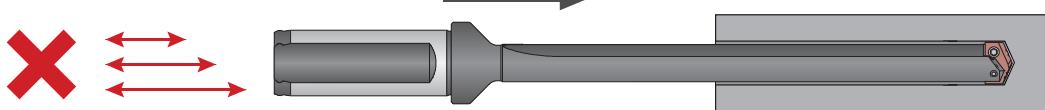
Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed.  
Minimum of 1 second dwell is required to meet full speed before feeding.



### 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.**

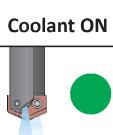
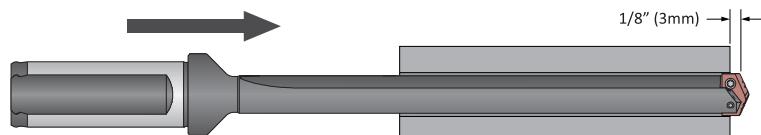


### 5. Deep Hole Drilling - at Breakout

50% RPM  
75% IPR (mm/rev)

#### For through holes only:

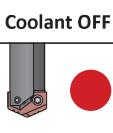
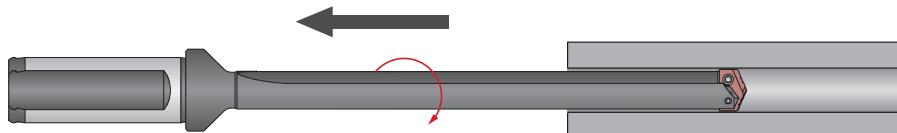
Reduce speed by 50% and feed by 25% prior to breakout.  
Do not break out more than 1/8" (3mm) past the full diameter of the drill.



### 6. Drill Retract

50 RPM max

Reduce speed to a **maximum of 50 RPM** before retracting from the hole.



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

- When using holders without support bushing, use a short holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders 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.



## Notes

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

x: 27

**A** DRILLING      **B** BORING      **C** REAMING      **D** BURNISHING      **E** THREADING      **X** SPECIALS



 SPECIALS | Special Tooling Solutions

## Notes

A

DRILLING

B

BORING

C

REAMING

D

## BURNISHING

E

THREADING

X

SPECIALS

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TMBKxBSPP...	E: 11	TSN...	E: 49	W5110H...	A50: 13	XTP14...	A20: 24
TMBKxBSPT...	E: 10	TSR...	E: 49	W5703H...	A50: 15	XTP15...	A20: 28
TMxBSP...	E: 11	V		W5705H...	A50: 15	XTP16...	A20: 32
TMxBSPT...	E: 10	V3300D...	A50: 6	W5708H...	A50: 15	XTP17...	A20: 36
TMxBSW...	E: 8, E: 9	V3301D...	A50: 6	W5710H...	A50: 15	XTP18...	A20: 40
TMMK...	E: 26, E: 28	V3316D...	A50: 6	W6303H...	A50: 17	XTP20...	A20: 44
TMNKxNPT...	E: 12	V3318D...	A50: 6	W6305H...	A50: 17	XTP22...	A20: 48
TMNKxNPTF...	E: 14	V3320D...	A50: 6	W6308H...	A50: 17	XTP24...	A20: 52
TMxNPS...	E: 16	V3800D...	A50: 8	W6310H...	A50: 17	XTP26...	A20: 56
TMxNPSF...	E: 17	V3801D...	A50: 8	W7003H...	A50: 19	XTP29...	A20: 60
TMxNPT...	E: 12, E: 13	V3815D...	A50: 8	W7005H...	A50: 19	XTP32...	A20: 64
TMxNPTF...	E: 14, E: 15	V3817D...	A50: 8	W7008H...	A50: 19	XTST12...	A91: 6
TMT-0750...	B20: 22, B20: 23	V3818D...	A50: 8	W7010H...	A50: 19	XTST13...	A91: 7
TMT0750...	B20: 23	V3820D...	A50: 8	W7603H...	A50: 21	XTST14...	A91: 8
TMT-1000...	B20: 22, B20: 23	V4401D...	A50: 10	W7605H...	A50: 21	XTST15...	A91: 9
TMT1000...	B20: 23	V4417D...	A50: 10	W7608H...	A50: 21	XTST16...	A91: 10
TMUK...	E: 18, E: 19, E: 20, E: 21	V4418D...	A50: 10	W8303H...	A50: 23	XTST17...	A91: 11
TN100K-FA...	E: 43	V4422D...	A50: 10	W8305H...	A50: 23	XTST18...	A91: 12
TN100K-UN...	E: 44, E: 45	V5101D...	A50: 12	W8903H...	A50: 25	XTST20...	A91: 13
TN100K-UNJ...	E: 46	V5118D...	A50: 12	W8905H...	A50: 25	XTST22...	A91: 14
TN150K-AP...	E: 43	V5120D...	A50: 12	W8908H...	A50: 25	XTST24...	A91: 15
TN150K-BSPP...	E: 43	V5122D...	A50: 12	W9503H...	A50: 27	XTST26...	A91: 16
TN150K-BSPT...	E: 42	V5701D...	A50: 14	W9505H...	A50: 27	XTST29...	A91: 17
TN150K-FA...	E: 43	V5702D...	A50: 14	W9508H...	A50: 27	XTST32...	A91: 18
TN150K-M...	E: 47	V5722D...	A50: 14	WCMT...	B20: 67, B20: 68, B20: 69		
TN150K-NPT...	E: 42	V5724D...	A50: 14	WP...	A50: 18, A50: 20, A50: 22, A50: 24, A50: 26		
TN150K-NPTF...	E: 42	V5726D...	A50: 14	X			
TN150K-UN...	E: 44, E: 45	V6302D...	A50: 16	X1926...	A92: 10, A92: 11		
TN150K-UNJ...	E: 46	V6326D...	A50: 16	XTK11...	A20: 12		
TNR...	E: 48	V6329D...	A50: 16	XTK12...	A20: 16		
TP075K-BSPP...	E: 37	V6332D...	A50: 16	XTK13...	A20: 20		
TP075K-BSPT...	E: 37	V7002S...	A50: 18	XTK14...	A20: 24		
TP075K-M...	E: 40	V7029S...	A50: 18	XTK15...	A20: 28		
TP075K-NPT...	E: 36	V7602S...	A50: 20	XTK16...	A20: 32		
		V7629S...	A50: 20	XTK17...	A20: 36		
		V8302S...	A50: 22	XTK18...	A20: 40		
		V8332S...	A50: 22	XTK20...	A20: 44		
		V8902S...	A50: 24	XTK22...	A20: 48		
		V8929S...	A50: 24	XTK24...	A20: 52		
		V9502S...	A50: 26	XTK26...	A20: 56		
		V9532S...	A50: 26	XTK29...	A20: 60		
				XTK32...	A20: 64		
				XTN11...	A20: 12		
				XTN12...	A20: 16		
				XTN13...	A20: 20		
				XTN14...	A20: 24		
				XTN15...	A20: 28		
				XTN16...	A20: 32		
				XTN17...	A20: 36		
				XTN18...	A20: 40		

# Guaranteed Test / Demo Application Form

Distributor PO #

The following must be filled out completely before your test will be considered

**IMPORTANT:** For processing, send Purchase Order to your Allied Field Sales Engineer (FSE). Please clearly mark the paperwork as "Test Order."

## 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: _____	Hardness: _____ (BHN / Rc)
Required Finish: _____	RMS		State: _____ (Casting / Hot rolled / Forging)

## Machine Information

Machine Type: _____ (Lathe / Screw machine / Machine center / etc.)	Builder: _____ (Haas, Mori Seiki, etc.)	Model #: _____
Shank Required: _____ (CAT50 / Morse taper, etc.)		Power: _____ HP/KW
Rigidity: _____	Orientation: _____	Tool Rotating: _____
<input type="checkbox"/> Excellent	<input type="checkbox"/> Vertical	<input type="checkbox"/> Yes
<input type="checkbox"/> Good	<input type="checkbox"/> Horizontal	<input type="checkbox"/> No
<input type="checkbox"/> Poor		

## Coolant Information

Coolant Delivery: _____ (Through tool / Flood)	Coolant Pressure: _____ PSI / bar
Coolant Type: _____ (Air mist, oil, synthetic, water soluble, etc.)	Coolant Volume: _____ GPM / LPM

## Requested Tooling

QTY	Item Number

QTY	Item Number



**ALLIED MACHINE  
& ENGINEERING**

Allied Machine & Engineering  
120 Deeds Drive  
Dover, OH 44622

Telephone: (330) 343-4283

Toll Free USA & Canada: (800) 321-5537

Fax: (330) 602-3400

Email: info@alliedmachine.com



**ALLIED MACHINE  
& ENGINEERING**

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Allied Machine & Engineering  
Registered to ISO 9001  
10001329

## United States

**Allied Machine & Engineering**  
120 Deeds Drive  
Dover OH 44622  
United States

**Phone:**  
+1.330.343.4283  
  
**Fax:**  
+1.330.602.3400

**Toll Free USA and Canada:**  
800.321.5537

**Toll Free USA and Canada:**  
800.223.5140

**Allied Machine & Engineering**  
485 W Third Street  
Dover OH 44622  
United States

**Phone:**  
+1.330.343.4283  
  
**Fax:**  
+1.330.364.7666  
(Engineering Dept.)

**Toll Free USA and Canada:**  
800.321.5537

## Europe

**Allied Machine & Engineering Co. (Europe) Ltd.**  
93 Vantage Point  
Pensnett Estate  
Kingswinford  
West Midlands  
DY6 7FR England

**Phone:**  
+44 (0) 1384.400900

**Wohlhaupper GmbH**  
Maybachstrasse 4  
Postfach 1264  
72636 Frickenhausen  
Germany

**Phone:**  
+49 (0) 7022.408.0  
  
**Fax:**  
+49 (0) 7022.408.212

## Asia

**Wohlhaupper India Pvt. Ltd.**  
B-23, 2nd Floor  
B Block Community Centre  
Janakpuri, New Delhi - 110058  
India

**Phone:**  
+91 (0) 11.41827044

Your local Allied Machine representative:



**ALLIED MACHINE  
& ENGINEERING**

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

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