

firearms  
**SOLUTIONS**

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

HIT YOUR  
**TARGET**

*solutions to increase tool life  
in material-specific challenges*



Increase productivity



Maximize performance



Hunt for solutions no longer



**GEN3SYS<sup>®</sup> XT PRO**

Need more from your tool? Get a *PRO*.



**ALLIED MACHINE  
& ENGINEERING**

Allied Machine offers a wide range of drilling, boring, reaming, burnishing, and threading tools to lower your **cost per hole**.



# firearms **SOLUTIONS**

**No matter the type of holmaking,  
Allied is here to help you.**



Whether you're a production facility producing thousands of parts for one customer or a job shop making a handful of parts for a thousand customers, we're here to make sure the job gets done. Our precision holmaking and finishing solutions are backed by our experienced staff of knowledgeable engineers who are standing by.

Don't hesitate to call us. Let us know what problems you're having and we'll find the solution. Machining is what we do, and we don't mind showing off what we know.

All you have to do is ask.

## **ORDERING**

The solutions listed in this guide represent general standard products and/or special product designs. To order items specific to your application, please contact your local Allied Field Sales Engineer or a member of Allied's Application Engineering Team.

### **Application Engineering Department**

1.330.343.4283 ext.7611

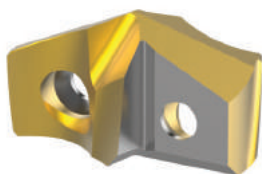
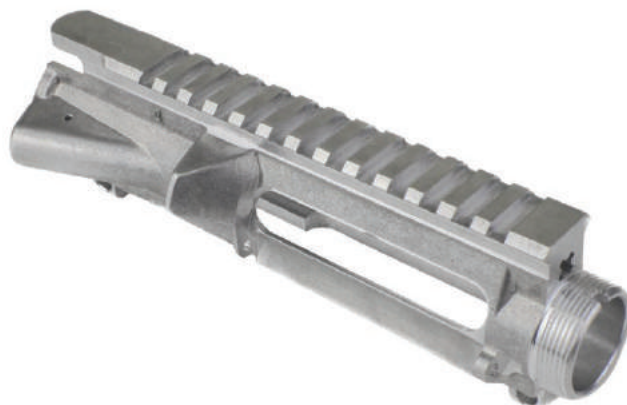
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Holmaking Solutions for Today's Manufacturing



# AR UPPER RECEIVERS



HIGH PENETRATION DRILLS

## GEN3SYS® XT PRO

- ▶ Coolant through capabilities allow for better chip evacuation and faster processing
- ▶ Non-ferrous (N) geometry provides good chip control
- ▶ Improves cycle time and produces a high quality hole



REPLACEABLE HEAD REAMERS BY S.C.A.M.I.®

## ALVAN® REAMERS

- ▶ Decreased cycle time from previous reamer
- ▶ The replaceable head with fixed diameter and helical teeth provides easy set up and use
- ▶ Chip control allows for consistent hole processing

# AR UPPER RECEIVERS

52%  
cost per hole savings

## 233% TOOL LIFE INCREASE

GEN3SYS® XT Pro

CUSTOMER'S OBJECTIVE: IMPROVE TOOL LIFE	
PREVIOUS TOOL LIFE	NEW TOOL LIFE
2700 INCHES	9000 INCHES

### Use a tool that lasts.

The customer is manufacturing AR upper receiver castings for the firearms industry. The parts are made from cast aluminum. Previously, the customer was using a solid carbide twist drill to perform the operation. The twist drill achieved a tool life of 2700 linear inches (68.58 M). The customer needs to increase tool life without sacrificing hole quality.

Allied's GEN3SYS XT Pro drilling system with non-ferrous geometry insert achieved 9000 linear inches (228.6 M) of tool life, a 233% increase over the twist drill. The parameters were kept the same to create a level test, which resulted in the same cycle time for both tools. But with the XT Pro drilling over 3x more linear inches, the customer was pleased with the increase in tool life.

		Measure	Competitor	GEN3SYS XT Pro
<b>Product:</b>	GEN3SYS XT Pro			
<b>Objectives:</b>	Improve tool life	RPM	5000	5000
<b>Industry:</b>	Firearms	Speed	1300 SFM (396.24 M/min)	1300 SFM (396.24 M/min)
<b>Part:</b>	AR upper receiver	Feed Rate	110 IPM (2794 mm/min)	110 IPM (2794 mm/min)
<b>Material:</b>	Cast aluminum	Cycle Time	2.46 sec	2.45 sec
<b>Hole Ø:</b>	0.998" (25.349 mm)	Tool Life	2700 inches (68.58 M)	9000 inches (228.6 M)
<b>Hole Depth:</b>	4.500" (114.3 mm)	The XT Pro Drill offered <b>52.09%</b> cost per hole savings over the competitor tooling.		

- ▶ GEN3SYS XT Pro insert (N) Non-ferrous geometry  
Item No. XTN24-25.3
- ▶ GEN3SYS XT Pro insert holder  
Item No. HXT1024S-100F

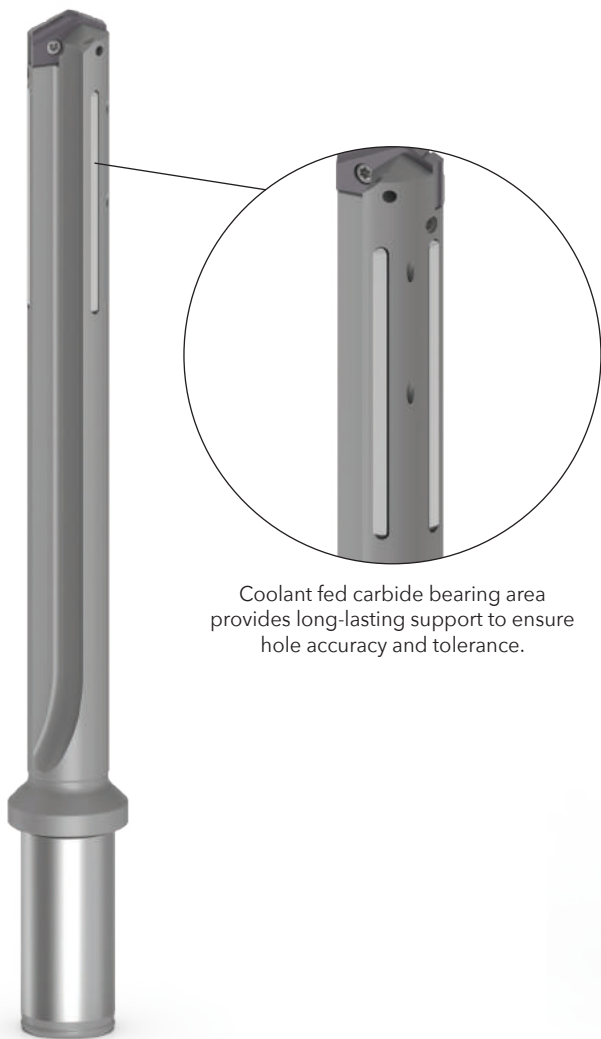


### The GEN3SYS XT Pro provided:

- ✓ Increased tool life
- ✓ Decreased cycle time
- ✓ Decreased cost per hole



# AR UPPER RECEIVERS



Coolant fed carbide bearing area provides long-lasting support to ensure hole accuracy and tolerance.



Spur Point

Step Insert

Flat Bottom

## REPLACEABLE INSERT DRILLS

### GUIDED T-A DRILL

- ▶ Premium solution for hardened steel receivers
- ▶ Diameter specific holders maximize performance and rigidity
- ▶ Specialized coolant configuration improves chip evacuation at high penetration rates

## REPLACEABLE INSERT DRILLS

### T-A<sup>®</sup> SPECIAL INSERTS

- ▶ Special form insert designed to reduce or eliminate additional operations
- ▶ Allows for ease of replaceability due to utilizing the T-A drilling system
- ▶ Available in a variety of coating and substrates to optimize tool life

# 100% TOOL LIFE INCREASE

4TEX® Drill

CUSTOMER'S OBJECTIVE: IMPROVE TOOL LIFE

PREVIOUS TOOL LIFE	NEW TOOL LIFE
160 HOLES PER INSERT	320 HOLES PER INSERT

## Do you need performance in extreme machining conditions?

Tooling is only a sliver of the pie when it comes to productivity. It doesn't matter what your tooling is capable of if your machine conditions restrict those capabilities. Our customer, who drills holes for machine gun bolt switches, utilizes a machine with oil coolant that creates more extreme drilling conditions than water-based coolant.

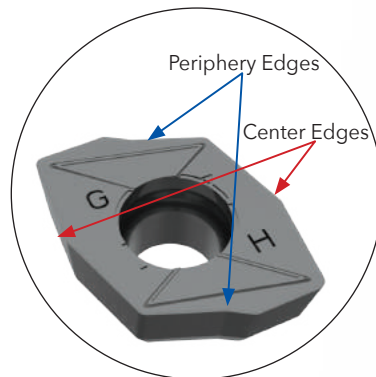
Because oil coolant doesn't dissipate heat fast enough, our customer's tooling only lasted for 160 holes per insert, and the tool experienced sporadic failure. They also needed to run a peck cycle for chip control.

Our customer decided to test the 4TEX Indexable Carbide Drill using the "P" geometry with AM480 coating designed specifically for wear-resistance in steel material applications. The 4TEX "P" geometry allowed for the speed and feed to be altered and accommodated the machine's oil coolant. The 4TEX penetration rate was able to decrease cycle time and also double the tool life to 320 holes per insert. The 4TEX geometry also improved chip formation and eliminated the peck cycle.

The 4TEX provided the stable and repeatable process our customer was looking for while increasing tool life by 100%. With all their objectives met, our customer was thrilled with the solution that optimized their machine's limitations. Are you using the solution that best optimizes your machine's limitations? Give us a call, and we'd be happy to assist you.

*43.75%  
cycle time decrease*

# BOLT SWITCH



Each insert has 2 inner cutting edges and 2 outer cutting edges increasing tool life.



## INDEXABLE CARBIDE DRILLS

### 4TEX® DRILL

- ▶ The robust design allows for reliability in interrupted cuts even when the material is difficult to machine
- ▶ The single effective cutting on light-duty machines increases penetration rates
- ▶ Strengthened core and increased coolant volume improve the hole size and chip evacuation

# AR15 BOLT CARRIERS



SOLID CARBIDE DRILLS

## SUPERION® STEP DRILLS & REAMER

- ▶ Improved hole straightness and finish
- ▶ Created consistency by removing random tool failures
- ▶ Reduced scrapped parts

HIGH PENETRATION DRILLS

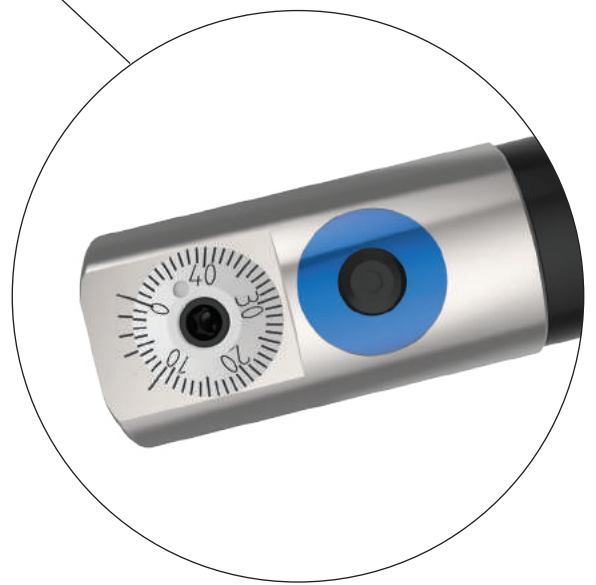
## GEN3SYS® XT PRO

- ▶ The through coolant design helps to evacuate chips and keep the cutting tool cool
- ▶ Utilizing replaceable inserts increases your productivity by reducing setups and down times





# AR15 BUFFER TUBE



Vernier dial adjustment of 0.0001" (0.002mm)

WOHLHAUPTER™ FINE BORING HEAD

## 365 (364) BALANCE BORING HEAD

- ▶ Reduced tool weight with aluminum body
- ▶ Internal balancing improves tool life and surface finish
- ▶ Available for use with triangle or 80 degree diamond inserts

# TANK – CANNON COMPONENT



97.39%  
cost per hole savings

## 100% TOOL LIFE INCREASE

4TEX® DRILL

CUSTOMER'S OBJECTIVE: SUCCESSFUL INTERRUPTED CUT

PREVIOUS TOOL LIFE

NEW TOOL LIFE

400 HOLES

800 HOLES

### Cutting on a curved surface?

Every application has its challenges, and some are more unusual than others. Our customer is generating a 3.1" (78.74 mm) x 3.1" (78.74 mm) square opening from solid in a 5/8" (15.875 mm) thick wall of a cylindrical tube.

This application posed many challenges with tooling for our customer, and no drill had worked for them previously. Adding to the challenge of drilling into a curved surface, the entry is at a 45° angle; our customer was previously using an endmill followed by a finishing endmill.

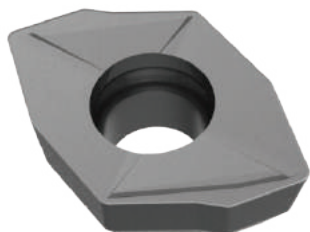
The customer decided to test the **4TEX Indexable Carbide Drill** using the "N" geometry with TiCN coating designed specifically for excellent chip formation in non-ferrous applications. The 4TEX accomplished this task by drilling several full diameter holes followed by "step over" passes to create a rough opening. The square opening is then cleaned up and finished by an endmill pass. Allied was able to double the tool life to 800 holes per insert and had substantially less stock removal than the previous operation when followed by the finishing endmill.

The 4TEX proved successful in this application, leaving the manufacturing engineer saying, "This is the best drill I've ever seen." Tool life increased by 100% while cycle time was decreased by 2 minutes.

		Measure	Competitor Endmill	4TEX® Drill
<b>Product:</b>	4TEX Drill			
<b>Objectives:</b>	Successful interrupted cut			
<b>Industry:</b>	Firearms			
<b>Part:</b>	Tank – Cannon component			
<b>Material:</b>	AMS-QQ-A-250/11 aluminum alloy, 6061-T651			
<b>Hole Ø:</b>	1.0" (25.4 mm)			
<b>Hole Depth:</b>	0.625" (15.875 mm)			
		RPM	2037	6112
		Speed Rate	400 SFM (121.920 M/min)	1600 SFM (487.68 M/min)
		Feed Rate	0.015 IPR (0.381 mm/rev)	0.006 IPR (0.152 mm/rev)
		Penetration Rate	30.56 IPM (776.224 mm/min)	36.6 IPM (929.64 mm/min)
		Tool Life	400 holes	800 holes

▶ 4TEX Drill holder  
3xD length  
Item No. D3071000I-100F

▶ 4TEX Drill inserts  
N geometry (non-ferrous)  
Item No. 4T-070305-N



The 4-sided indexable inserts with wear-resistant coating provided:

- ✓ Successful interrupted cut
- ✓ Increased tool life
- ✓ Worry-free machining

## Warranty Information



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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