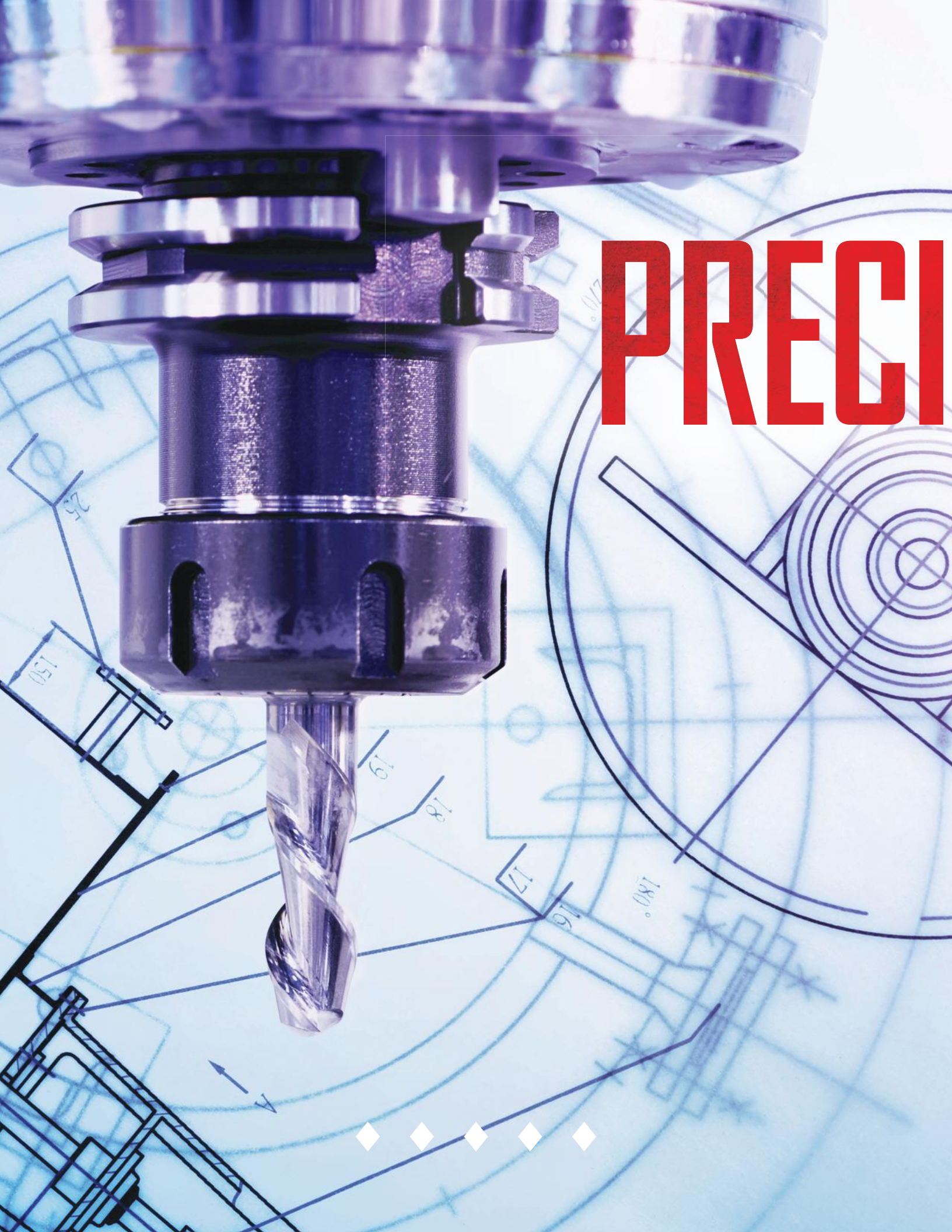
MITSUBISHI MATERIALS

AEROSPACE SOLUTIONS



PRECISION TOOLING FOR ENGINES,
FRAME AND LANDING GEAR


PRECI

WHEN THERE'S NO ROOM FOR ERROR
SION MATTERS

How do you calibrate a perfect fit when it comes to parts for Aerospace Industry? Use cutting tools that are absolutely precise — every time.

Our cutting tools are expertly crafted by Mitsubishi Materials for unparalleled performance and control. Our exacting standards deliver well-designed and finely manufactured tools of the trade for highly specialized industries like yours.

Our promise is to deliver high-quality precision cutting tools that enable you to manufacture precisely perfect products every day.



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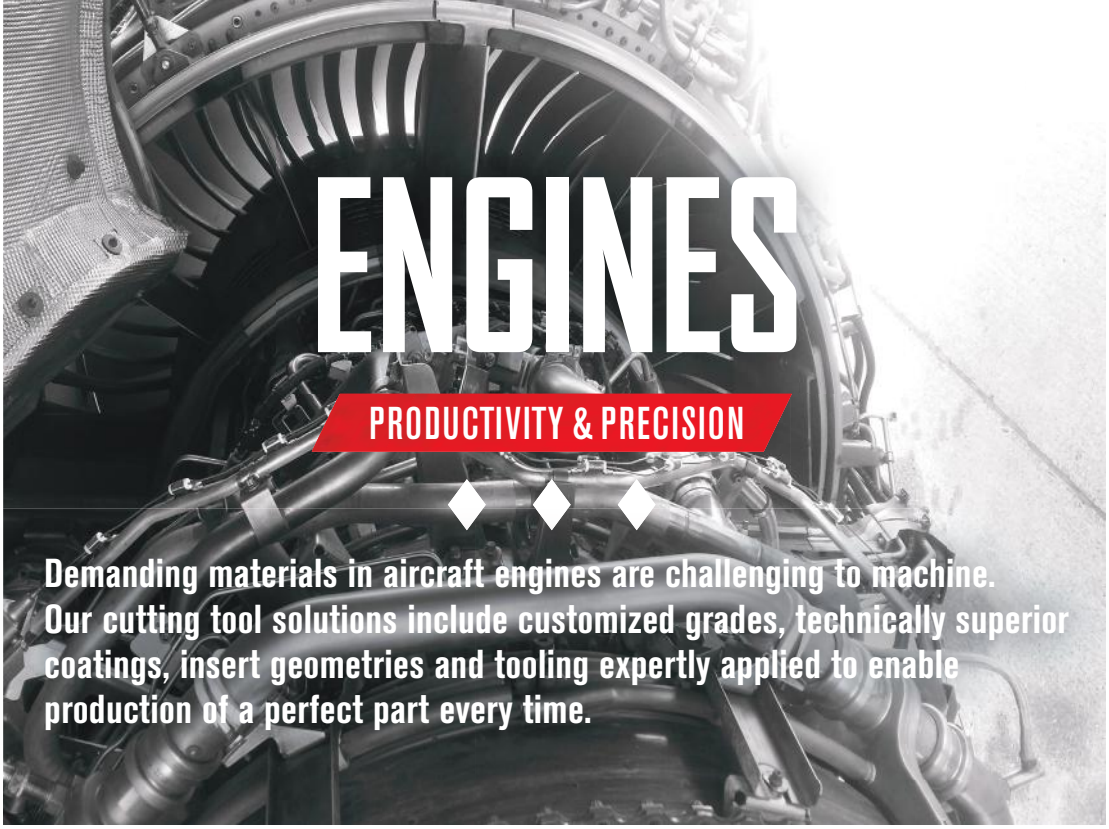
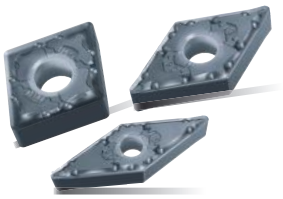


ENGINES

PRODUCTIVITY & PRECISION

Demanding materials in aircraft engines are challenging to machine. Our cutting tool solutions include customized grades, technically superior coatings, insert geometries and tooling expertly applied to enable production of a perfect part every time.

TURNING



MP9005/MP9015/MT9015

Sharp edge line with positive geometry must be able to resist cratering.

- 9000 series grade & LS/MS/RS geometries designed for superalloys with high (Al, Ti) single layer coating.

PROGRAM

Negative shapes: C,D,S,T,V,W
Nose radii: 0.008 - 0.047 in.



HSK

Common machine coupling particularly for high RPM applications

- Our HSK-T type is compatible with HSK-A, but has a closer tolerance between the spindle key and tool holder keyway.

PROGRAM

Turning, Copying, Grooving, Boring bars, Threading



GY

Demanding grooving and plunge turn applications with many large radius forms in deep shoulder & grooves.

- GY has the strong, flexible, economical Tri Lock blade system with reliable insert clamping design.

PROGRAM

Grades for Super Alloys and geometries for grooving, plus full nose in inch radii



MP9025

High strength, work hardening & adhesion hardening properties create notch wear at depth of cut & are extremely abrasive.

- New MP9025 designed for heat resistant materials to handle interrupted cuts & notching.

PROGRAM

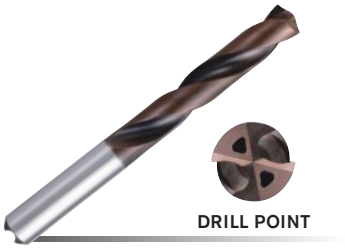
Negative shapes C,D,S,T,V,W
Nose radii 0.008 - 0.047 in.



AIRCRAFT ENGINE PARTS

Nickel-based alloys belong to the group of hard-to-machine materials. Their low specific heat and thermal conductivity as compared to steels, their pronounced tendency to built-up edge formation and strain hardening, and the abrasive effect of carbides and intermetallic phases, result in exceptionally high mechanical and thermal stresses on the cutting edge during machining.

DRILLING



MMS

Small diameter drill that can handle uneven surfaces.

- MMS has a sharper drill point and smaller margin designed for super alloys & stainless steels

PROGRAM

DC 3.0 - 20.0 mm
DC 1/8 - 25/32 in.

MILLING



iMX

Economical, versatile face milling, shoulder and contour milling

- Exchangeable head solid carbide bar and solid carbide head with 20+ head options

PROGRAM

Metric, inch, square, radius, round, chamfer and ball nose heads available



VQT6UR

Difficult contours for profile milling of blades with depths of cut varying, usually producing vibrations.

- VQT6UR has nose radius designed for both fillet milling and tangential form radius blade surface machining.

PROGRAM

DC 8, 10, 12 mm



ARP/ARX

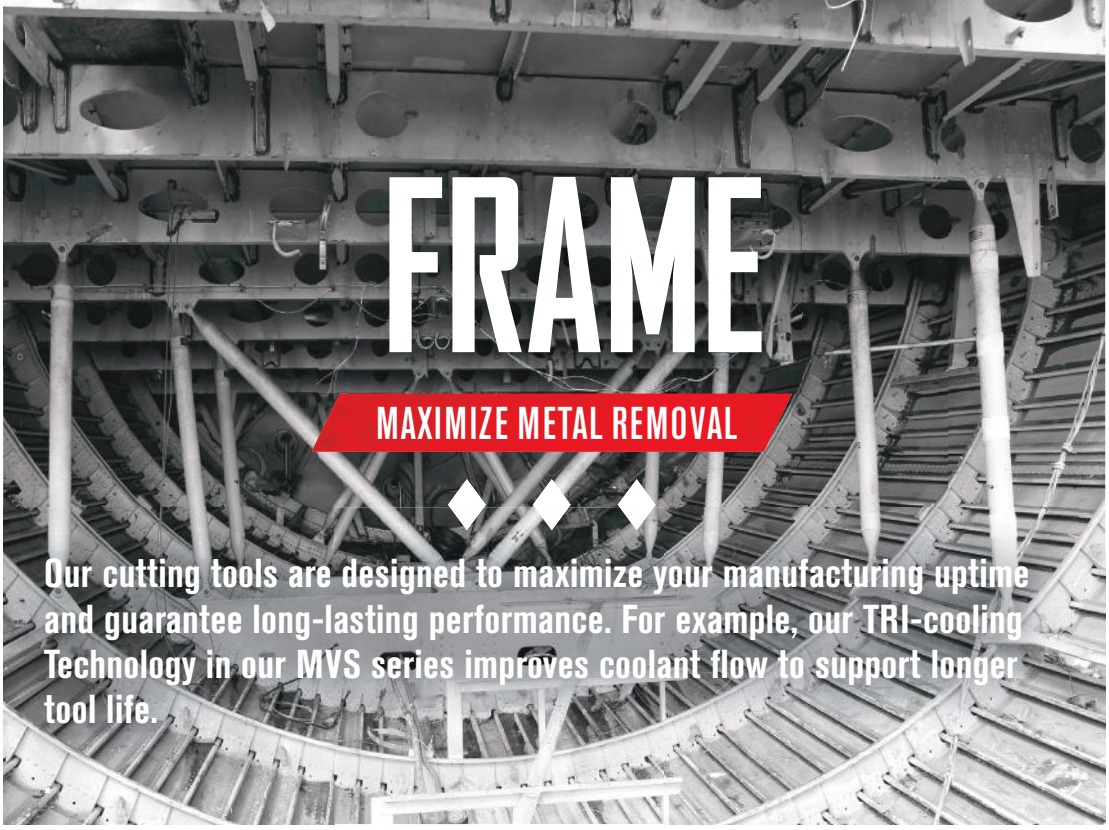
High metal removal rates for contoured parts and high ramp angles

- ARP designed for low cutting resistance, internal coolant and MP9130 for heat resistant & superalloys with nickel.

PROGRAM

Arbor, exchangeable head, Weldon and cylindrical mount.

DC 1.0 - 4.0 in.
DC 25 - 100 mm



FRAME

MAXIMIZE METAL REMOVAL

Our cutting tools are designed to maximize your manufacturing uptime and guarantee long-lasting performance. For example, our TRI-cooling Technology in our MVS series improves coolant flow to support longer tool life.

MILLING



WJX

Heavy roughing for first stage machining and ramping to start contours

- WJX is a high feed milling solution capable of large depths of cut and ramping up to 4 degrees with feed rates up to 0.080 ipt.

PROGRAM

Inch & metric
Cylindrical, arbor
DC 60 - 100 mm
DC 2-1/2 - 6 in.



CE4SRB/CE6SRB

Nickel based difficult-to-cut alloys soften at temperatures above 800° degree Celsius.

- Ceramic endmill with strong negative flute & special rake edge withstands high temperatures and loads.

PROGRAM

DC 6, 8 10, 12 MM
4 OR 6 FLUTES



VQ Smart Miracle

Difficult machining with depths of cut varying, usually produces vibrations

- VQ has irregular flute helix design which reduces vibrations plus a corner radius for edge line security

PROGRAM

DC 2.0 - 20.0 mm



iMX

Economical, versatile face milling, shoulder and contour milling

- Exchangeable head solid carbide bar and solid carbide head with 20+ head options

PROGRAM

Metric, inch, square, radius, round, chamfer and ball nose heads available



RIB MANUFACTURING

Pure aluminum is soft and has limited strength. Small amounts of elements such as copper, magnesium and/or zinc are added to increase strength. These additives make the aluminum very abrasive, yet gummy, so the tooling challenge is to have sharp edges, sometimes polished uncoated inserts, while maintaining long tool life during high run times.

MLLING



BXD/AXD

Pocketing milling solution with superior wall finish and large depths of cut.

- BXD/AXD are balanced to 10000 RPMs to G6.3 with depth of cut to 0.827" with ramping, pocketing capabilities

PROGRAM

DC 1.25 - 4.0 in
Insert radii
0.016 - 0.197 in.



APX

Many pockets, shoulders from solid, so ideal to have a rough milling solution that can leave a good finish too

- APX is a proven design of high positive geometry, coolant through with deep pocketing capabilities leaving a great finish

PROGRAM

Arbor, exchangeable head, weldon and cylindrical mount up to 9.0 in. long.
Now long edge.

DRILLING



MVS

Drills in small diameters designed for titanium and super alloys in uneven surfaces

- Stronger edge with double margin plus optimized flute shape

PROGRAM

DC 1.0 - 2.9 mm
DC 1/16,3/32,7/64 in.



MCC

Abrasive carbon fiber material wears, the sharp edges of drills, which causes breakout problems.

- A 90 degree cutting angle minimizes thrust, plus rake grooves controls delamination to maintain hole quality.

PROGRAM

DC 3/16, ¼, 5/16, 3/8, 7/16 in.
3XD



LANDING GEAR

PERFECT PART EVERY TIME

Landing gear components are made of forgings from ultra-high strength steels, stainless steels, titanium and aluminum alloys for a good combination of strength, minimal weight and impact resistance. Similar to Our cutting tools stringent development processes, the end product must be precise and perfect every time.

MILLING



VFX

Large depths of cut for pockets, shoulders and heavy metal removal.

- VFX is a long edge milling solution for titanium and super alloys with internal coolant and large 'V' pocket seat for stability.

PROGRAM

DC 2.0 - 4.25 in.
DC 40 - 80mm
Axial Depth of cut
1.0 - 2.9 in.
26 - 75 mm



VPX

Tough multi-purpose milling solution for shoulder, pocket, helical and slot milling

- VPX is brand new, designed to be tougher all around solution. Stronger design for higher feed rates, stronger edge line with coated & uncoated inserts

PROGRAM

Inch & Metric
Cylindrical, Arbor and exchangeable head couplings.
DC 16.0 – 50.0 mm
DC 5/8 – 2-1/2 in.

TURNING



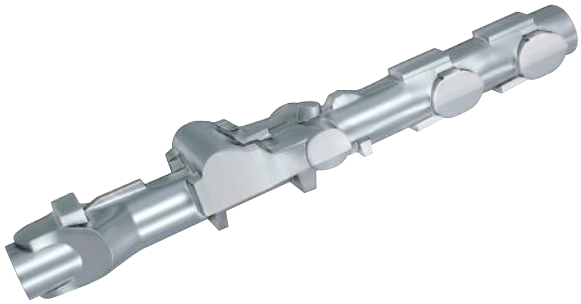
MC6115/6125/6135

Landing gear assemblies made of high strength, high heat treatment steel, because of its high strength and high fracture toughness

- Advanced nano-layer coatings with fracture resistant substrates designed for finish to rough steel machining

PROGRAM

Positive & negative shapes





LANDING GEAR PARTS

Stainless steel is an alloy, which is iron-based and contains various combinations of other elements to make it suit the aerospace needs. Varying hardening processes such as precipitation aged greatly increase difficulty to machine. Materials such as 13-8, 15-5, 17-4PH, 347, 412, 904L, and 316.

DRILLING



MVE/MVS

Drills in small diameters designed for titanium and super alloys in uneven surfaces

- Stronger edge with double margin plus optimized flute shape

PROGRAM

DC 1.0 - 2.9 mm
DC 1/16,3/32,7/64 in.



MVX

Economical indexable drilling applications for blind and through holes or uneven surfaces.

- MVX combines 4 corner inserts with a hardened body to resist chip flow to maximize hole productivity

PROGRAM

DC 0.562 - 2.500 in.
DC 14.0 - 63.0 mm

MTEC

MACHINING TECHNOLOGY AND EDUCATION CENTER

Welcome to our new world-class Machining Technology and Education Center (MTEC) in Mooresville, NC providing year round support and services to North America.



ABOUT MTEC

TOOLING PROPOSALS & EVALUATION

We will review your current processes or outline a new process. From this review, we will improve productivity, analyze programming methods and output a solution with programming, tooling and time savings.

MACHINING SIMULATION

Using the latest CAD/CAM software and our cutting tool experience, we will outline a new process using proper machining techniques to maximize tool life and productivity.

TECHNICAL SUPPORT

Dedicated local professionals to answer any of your order, product or technical questions.

TRAINING

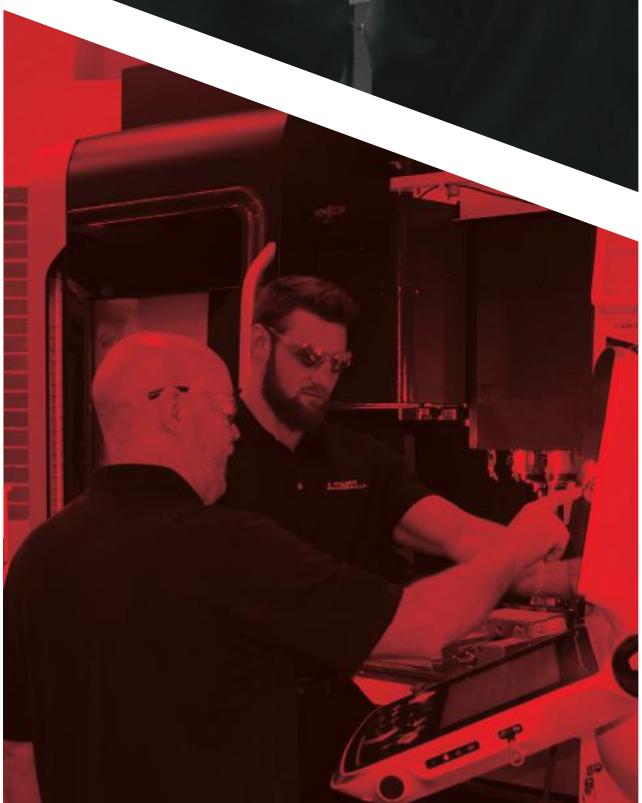
We are excited to offer several levels of training with goals to reach our highest level--Craftsman Machining Technology. At MTEC NC, we will train using a combination of classroom and hands-on machine time to develop skills and real-world understanding of materials, tools and applications. In addition to multi-day courses, we will have Machining Technology skills seminars, as well as seminars from our partners to complement our apprentice level courses, our journeyman courses, and up to our craftsman level courses.

PROCESS IMPROVEMENTS

Review of the complete part processing and recommend changes of speed, feed, new tooling, reduction of passes, modifying programming and other solutions to reduce cycle time, save money and be proactive.







WEBINARS

Our FREE online webinar series is available anytime on-demand. Narrated by the MTEC training staff, you will receive in-depth knowledge of the topic. Simply register online at the link below for access. You will receive a certificate upon completion of each course.

mmusnewsstand.com/register

ONLINE TRAINING

Our FREE e-learning program offers 11 courses in drilling, milling, turning, threading, tool grades and workpiece materials. Once each course is completed, you will be given the opportunity to print a certificate.

- Basic Drilling
- Basic Milling
- Basic Turning
- Advanced Drilling
- Advanced End Milling
- Advanced Turning
- Basic Threading
- Advanced Face Milling
- Basic Workpiece Materials
- Tool Grades
- Advanced Workpiece Materials

TRAINING COURSES

Programs are designed for several levels of skill development – from basic understanding to advance manufacturing with digital solutions, complementing to your valued experience in CNC machining environment. Participate in machining demonstrations with Mitsubishi Materials' skilled engineers. Discover methods to reduce setup and cycle time, optimize programs and enhance your knowledge base.

Information on course schedule,
course description, and accommodations

MTECTRAINING.INFO

Follow the QR Code for a virtual facility tour

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FOR YOUR SAFETY

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

www.mmc-carbide.com/us

Tools specifications subject to change without notice.

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