



MITSUBISHI MATERIALS  
TOOLS EUROPE

# HIGH LIGHTS

SERVICE – PRECISION – RELIABILITY

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A Group Company of  MITSUBISHI MATERIALS TOOLS EUROPE

**MTEC** STUTTGART

 MITSUBISHI MATERIALS TOOLS EUROPE



TUNGSTEN POWDERS

A Group Company of  MITSUBISHI MATERIALS



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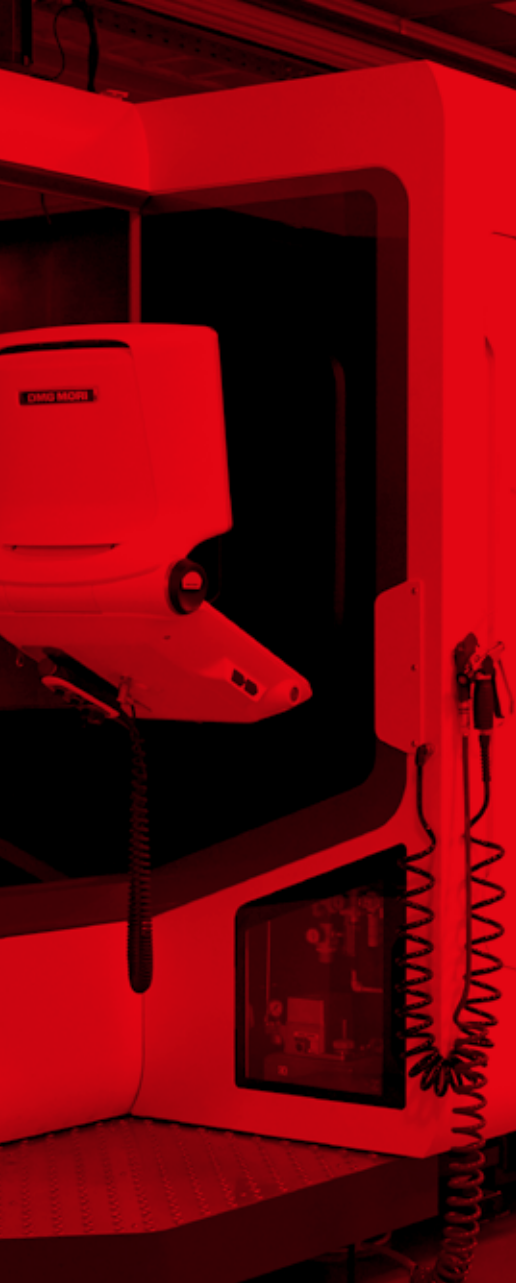
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# MITSUBISHI MATERIALS TECHNOLOGY & EDUCATION CENTRE (MTEC)

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## INNOVATIVE SOLUTIONS FOR SPECIFIC APPLICATIONS

Mitsubishi Materials has established a network of advanced Technology Centres (MTEC) in strategic locations around the world. These centres specialise in developing innovative, customized tooling solutions and offer a comprehensive range of complementary services, including project engineering, process optimization, cutting tests and machining simulations.

In Europe, Mitsubishi Materials operates two state-of-the-art Technology Centres, MTEC Stuttgart and MTEC Valencia. These centres serve as hubs for technical excellence and collaboration with customers. They are supported by a broad network of international application engineers who contribute their extensive expertise and insights into best practices to the project engineering process, ensuring the highest standards of product quality and performance.

In addition to technical support, the Technology Centres also serve as vital platforms for knowledge transfer. They host a variety of educational programmes, including professional training courses, hands-on workshops, and collaborative events. The programmes are designed to equip European customers with the skills and insights needed to stay ahead in an ever evolving manufacturing landscape.



Video MTEC

# PRODUCTION IN EUROPE

## MANUFACTURING CAPABILITIES IN EUROPE

Mitsubishi Materials operates state-of-the-art production facilities in Europe, including Mitsubishi Materials España and UFP, which was recently acquired by Mitsubishi Materials Tools Europe. These facilities manufacture high-performance standard tools and customised solutions that are engineered to meet the specific demands of a diverse range of industries.

The European manufacturing sites utilise the latest developments in precision engineering and cutting edge technologies to ensure that every tool is optimised for the most demanding applications.

The local manufacturing presence in Europe ensures faster lead times, greater flexibility and responsiveness, allowing customers to achieve optimal performance.



Video MME



Video UFP

# RECONDITIONING SERVICE & SPECIAL TOOLS

## COMPREHENSIVE TOOL SERVICES

Mitsubishi Materials is a comprehensive solution provider, offering expert support throughout the entire cutting tool lifecycle. This includes everything from the initial offer and tool design to precision production and responsive after-sales service.

Mitsubishi Materials Tools Europe now offers customers state-of-the-art reconditioning and recoating services, as well as a wide range of special tools. This has been made possible through the strategic integration of UFP (formerly U.F.P. S.r.l.) and Mitsubishi Materials España's modern facilities. These developments ensure first-class quality and unbeatable delivery times.

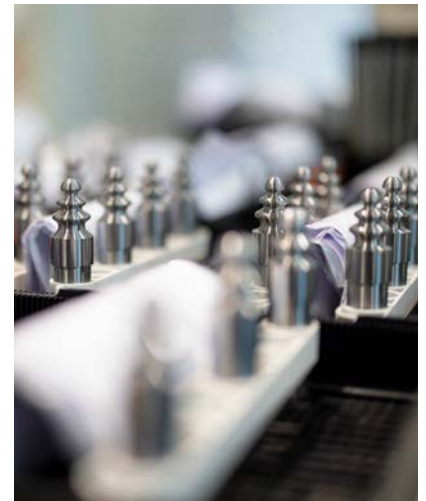
Serving a wide range of industries, including aerospace, medical, automotive, energy and defense, Mitsubishi Materials Tools Europe is committed to unlocking the full potential of cutting tools and maximising performance and productivity.



MME Special tools



UFP-Website



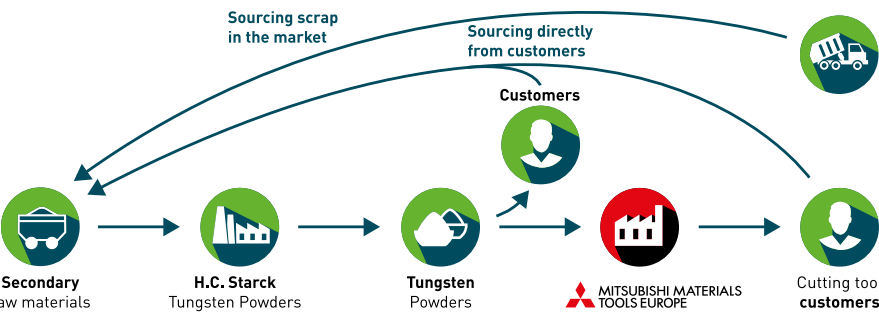
# RECYCLING

## SUSTAINABILITY AS A FUNDAMENTAL PRINCIPLE

Mitsubishi Materials is committed to sustainability, focusing on the recycling of carbide tools and developing solutions that contribute to a sustainable future. With the two group companies; Japan New Metals and H.C. Starck Tungsten Powders, Mitsubishi Materials is a world leader in the recycling of materials containing tungsten and one of the leading providers of tungsten powder.

H.C. Starck Tungsten Powders can extract pure tungsten from almost all forms of tungsten scrap and production waste, including mixed hardmetal, drills, end mills, inserts and drill bits. Tungsten recycling has been based at the headquarters in Goslar, Germany for more than 100 years.

H.C. Starck is also represented in other strategically relevant areas with powder production sites in Canada (Sarnia) and China (Ganzhou). These production sites are supported by numerous sales offices and other facilities within the Mitsubishi Materials Corporation Group.



Video H.C. Starck Tungsten Powders





# TURNING

## **QUALITY – THE HIGHEST STANDARDS ACROSS ALL PRODUCTS AND SERVICES**

Turning tools from Mitsubishi Materials embody this philosophy and have been convincing the global market for more than 90 years!

Mitsubishi Materials precision tools enrich the metalworking industry with durability, speed and accuracy.

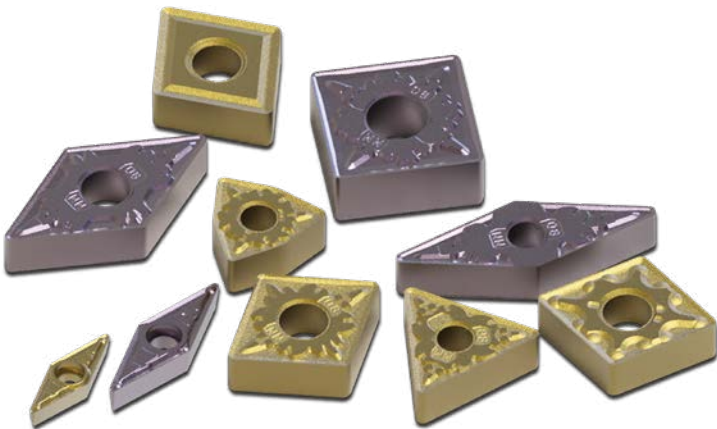
Whether it is a grooving tool, an ISO insert or a vibration damping boring bar, the extensive range of cutting tools has performance in mind.

# MC7115/MC7125/ MP7135

## CVD & PVD COATED GRADES FOR STAINLESS STEEL TURNING

These three new grades of inserts are dedicated to the machining of stainless steels. MC7115 for light cutting, MC7125 for general machining and MP7135 for heavy cutting applications.

Each grade has its own unique combination of coating layers of TiN,  $Al_2O_3$  and TiCN. Additionally, they have innovative binding layers as the Super-Tough Grip for the upper coating layers and the Sub-Grip for the base layer. These bind the coating layers to the carbide substrate, substantially increasing tool life.



### BENEFITS

- High wear resistance
- Durability for cost saving
- Versatility
- Three grades for the ideal choice



M

### PRODUCT RANGE

- Grades: MC7115, MC7125, MP7135
- Geometries
- Negative: CNMG, CNMM, DNMG, SNMG, SNMM, TNMG, TNMX, VNMG, WNMG
- Positive: CCMT, CCMH, CPMH, DCMT, SCMT, TCMT, TPMH, VBMT, VCMT, WBMT, WCMT, WPMT
- Breaker: FM, GH, GM, HL, HM, LM, MA, MM, MV, RM, R/L-ES, SH

### APPLICATIONS

- Continuous, medium and interrupted cutting
- MC7115 for high speed cutting of austenitic stainless steel
- MC7125 first recommendation for a wide application range
- MP7135 for intermittent cutting and forged and cast stainless steels

### FEATURES

- Dedicated carbide base material and state-of-the-art coatings
- High coating adhesion strength for extended tool life

# MC6115/MC6125/ MC6135

## BRINGING THE ULTIMATE HIGH SPEED CUTTING PERFORMANCE

The CVD coated MC6115 and MC6125 grades, plus the new MC6135 grade are the first recommendation for steel turning. They are suitable for a wide range of continuous through to heavy interrupted machining applications. The MC6100 series of grades has been developed to meet the demand of higher cutting speeds and increasing machining efficiency. By improving the existing technology, wear, fracture resistance and cutting edge stability have all been dramatically increased.

When utilised on conventional applications at high speeds, the three grades provide improved cutting edge stability.



### BENEFITS

- Longer and stable tool life
- Reliable production process
- Higher productivity
- Lower cost per part
- Easy wear recognition



### P

### PRODUCT RANGE

- CVD coated grades: MC6115, MC6125, MC6135
- Geometries
- Negative: CNMG, CNMM, DNMG, DNMM, DNMX, RNMG, SNMG, SNMM, VNMG, WNMG, TNMG, TNMM, TNMX
- Chipbreaker: FH, FP, FS, FY, GH, HL, HM, HR, HV, HX, HZ, LP, MA, MH, MP, MS, MW, RP, SH, SW, SY
- Positive: CCMH, CCMT, CPMH, DCMT, DCMX, RCMT, RCMX, SCMT, SPMN, SPMR, TBMT, TCMT, TCMX, TPMH, TPMN, TPMR, TPMX, VBMT, VCMT, WBMT, WCMT, WPMT, XCMT
- Chipbreaker: FP, FV, LP, MP, M, VMW, RR, SW, SVX

### APPLICATIONS

- General steel turning operations
- Roughing and finishing
- High speed cutting

### FEATURES

- High fracture and wear resistance
- Improved coating adhesion with Super-Tough-Grip-Technology
- Improved crystal growth coating process with Super-Nano-Texture-Technology
- High resistance to peeling
- Gold coated outer layer for easy edge identification



# MC5105/MC5115/ MC5125

## CVD COATED GRADES FOR CAST IRON TURNING

The process of casting iron enables complex geometries to be formed in the component that is produced.

Different types of cast irons produce different chips when machined and can cause various types of damage to an insert. The complex shapes produced in castings also creates challenges because contact with the workpiece can suddenly change from continuous to interrupted cutting. In response to these challenges, Mitsubishi Materials has created the MC5100 series that is able to successfully machine all types of cast irons and component geometries.



### BENEFITS

- High wear resistance
- Excellent fracture resistance
- Durability
- Stability
- Versatility
- Abrasion resistance



K

### PRODUCT RANGE

- Grades: MC5105, MC5115, MC5125
- Geometries
- Negative: CNMA, CNMG, CNMM, DNMA, DNMG, DNMM, SNMA, SNMA, SNMN, TNMA, TNMG, TNMN, VNMA, VNMG, WNMA, WNMG, DNMX, TNMX
- Positive: CCMT, CCMW, DCMT, DCMW, RCMX, SCMT, SCMW, TCMT, TCMW, TPMH, VBMT, VBMW, VCMT, VCMW, WPMT
- Breaker: GH, GK, LK, STD, MA, MH, MK, MP, MV, RK, SH
- Wiper: MW, SW

### APPLICATIONS

- Continuous, medium and interrupted cutting
- MC5105 for high speed cutting of gray cast iron
- MC5125 first recommended grade for ductile cast iron
- MC5125 for heavy interrupted cutting of ductile cast iron

### FEATURES

- Super nano-texture technology
- High hardness carbide base material
- Thickest  $\text{Al}_2\text{O}_3$  coating layer
- New adhesion layer for improved peeling resistance
- Intermediate layer microstructure for stability
- TiCN layer for heavy interrupted cutting

# XB SERIES

## VERSATILE RANGE OF COMPLEX TURNING APPLICATIONS WITH ONE HOLDER

A complete range of new tools with high-quality cutting edges and excellent sharpness for a variety of applications are now available. Experience the efficiency and stability provided by this new indexable turning tool.

### EASY AND ACCURATE

The multi-functionality provided by the rigid six sided clamping of the insert to the head enables accuracy and easy setting when replacing inserts.



### BENEFITS

- High precision
- Economical
- Versatile
- Reduced inventory
- High volume through coolant



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### PRODUCT RANGE

Geometries

- Holders: XBSH\_S XBSH\_S-C XBSH\_C-C
- Grade: MPB115

### APPLICATIONS

- Chamfering
- Internal grooving
- Internal threading
- Internal side face grooving
- External side face grooving

### FEATURES

- Multitude of inserts for complex applications
- Highly rigid design
- With or without through coolant
- High pressure coolant with SLV sleeve

# MV9005

## CVD COATED TURNING GRADE FOR MACHINING HEAT RESISTANT SUPER ALLOYS

For machining Ni-based heat-resistant alloys for the aviation industry, coated inserts are widely used in the medium finishing area where the tool life for machining large parts with only one corner is required.

The MV9005 grade incorporates a newly developed Al-Rich coating technology. It combines a high Al content ratio with a high hardness (Al,Ti)N film, which greatly improves the resistance to oxidation, plus, in addition to its hardness it also provides extremely high wear resistance even during high-speed machining of heat resistant super alloys.



### BENEFITS

- Increased oxidation resistance
- Extreme grade hardness
- Superior wear resistance
- High speed machining



S

### PRODUCT RANGE

Geometries

- Negative: CNMG, DNMG, SNMG, TNMG, VNMG
- Positive: RCMT, RCMX
- Breaker: LS, MS, MA, RS

### APPLICATIONS

- High speed continuous cutting
- Finishing of aerospace parts

### FEATURES

- Resistance to edge build-up
- High speed machining of heat resistant nickel superalloys
- Resistance to plastic deformation
- Excellent fracture resistance for stable machining

# MP9015/9025 MT9005/9015

## ISO TURNING INSERTS FOR DIFFICULT-TO-CUT MATERIALS

The MP9000/MT9000 turning insert grades have been developed for difficult-to-cut materials.

The 9000 series is divided into 2 types – coated (MP) and uncoated (MT). All inserts are ground and available in different geometries. The latest technologies of the coated grades (MP) provide improved fracture and wear resistance. The uncoated grades (MT) with polished, sharp cutting edges provide long tool life when machining titanium alloys.



### BENEFITS

- Improved wear resistance
- Excellent burr control
- Stable production process



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### PRODUCT RANGE

- PVD coated grades: MP9005, MP9015, MP9025
- Uncoated grades: MT9005, MT9015

Geometries

- Negative: CNMG, DNMG, SNMG, TNMG, VNMG, WNMG, CNGG, DNGG
- Positive: CCGT, CCMT, DCGT, DCGR, DCMT, RCMT, SCMT, TCMT, VBMT, VCGT, VCMT, WCGX

Chipbreaker

- Positive, sintered FS, LS, LS-P, MS, FS-P RS, MA, MS, STD, MJ

### APPLICATIONS

- Finish cutting
- Medium cutting
- Titanium
- Ni-Alloys

### MINUS RADIUS TOLERANCE



### FEATURES

- Corner radius with minus tolerance
- Sintered and ground inserts
- Coated and uncoated (polished) grades
- (Al,Ti)N-monolayer-coating

# MS6015/MS7025/ MS9025

## MS TURNING SERIES – PVD COATED GRADES FOR HIGH PRECISION AND SMALL PARTS MACHINING

The MS turning insert grades have been developed for a wide range of small parts machining in steels, stainless and difficult-to-cut materials.

Ideal for different and ever more complex materials and workpiece geometries with ever tighter dimensional tolerances.



### BENEFITS

- Improved application range
- Excellent reliability
- Wide choice of geometries
- Ideal for high precision
- Breaks chips efficiently



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### PRODUCT RANGE

- PVD coated grades: MS6015, MS7025, MS9025

#### Geometries

- Positive: CCET, CCGH, CCGT, DCET, DCGT, VCGT, GTBT, GTCT, TNGG, VBGT, VPGT
- Chipbreakers: R/L-FS, FS-P, R/L-SRF, R/L-F, LS-P, R/L-SS, R/L-SN, SMG

### APPLICATIONS

- Small parts machining
- Tight tolerance components
- Steels, stainless and difficult-to-cut materials
- Controlled vibration machining

### FEATURES

- New coatings adapted to different workpieces
- Improved carbide base material
- Precise Nano multi-layer coating
- Dramatically improved wear resistance



# MICRO MINI BORING BAR

## FOR HIGH PRECISION SMALL PARTS MACHINING

Ideal for small-diameter boring of steels and stainless steel. Economical, solid shank type with two cutting edges. A cutting edge on each end provides reduced tooling costs.

### MULTI PURPOSE BORING BAR

The multi-functionality of the Micro-Mini twin enables a wide application range that covers boring, grooving and threading and is available with or without a chipbreaker.



### BENEFITS

- High precision
- Economical
- Dual cutting edges
- Small diameter capability
- Versatile



### PRODUCT RANGE

- Grades: MS7025/MS9025/VP Grade/TF15

### APPLICATIONS

- Internal machining
- Internal copying
- Internal grooving
- Internal threading
- Precision machining

### FEATURES

- Various grades for machining a wide range of materials
- High precision geometries
- Grades ideal for small tools machining
- With and without chipbreaker
- Machining diameter 2.2 mm – 8.2 mm
- Double ended cutting edges
- Multi-purpose use boring bar

# BC8210/BC8220

## THE NEXT GENERATION OF COATED PCBN GRADES FOR MACHINING HARDENED STEELS

The grades BC8210 and BC8220 are the newest, innovative PcBN grades for turning hard materials in continuous, light and medium interrupted cutting applications.

The new grades offer excellent resistance to flank and crater wear. Along with an increased chipping resistance, they provide a more stable machining process and enable long tool life over a wide range of high speed applications.

The new BR chipbreaker in combination with the grade BC8220 was developed to provide the advantage of improved chip control during high depths of cut machining.

The gold coated outer layer makes it easier to detect wear and easily defines used cutting edges.



### BENEFITS

- Easy wear recognition with the gold outer layer
- Reduced flank wear and good surface finishes
- High resistance to peeling
- Excellent chipping, fracture and crater wear resistance
- Higher depths of cut with the new BR chipbreaker

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### PRODUCT RANGE

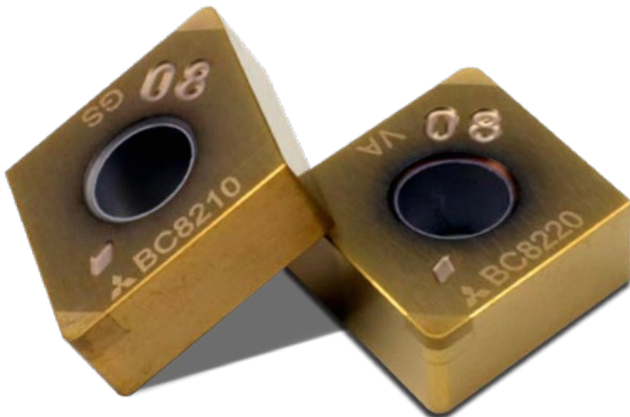
- PVD coated grades: BC8220, BC8210
- Geometries
- Negative: CNGA, CNGM, DNGA, DNGM, SNGA, TNGA, VNGA, WNGA
- Positive: CCGT, CCGW, CPGB, DCGW, DCGT, TPGB, VBGW, VCGW
- Honing types: FS, GA, GH, GS, TA, TH, TS, VA
- Chipbreakers: BF, BM, BR
- Wiper: WS, WS2JR, WS2JL

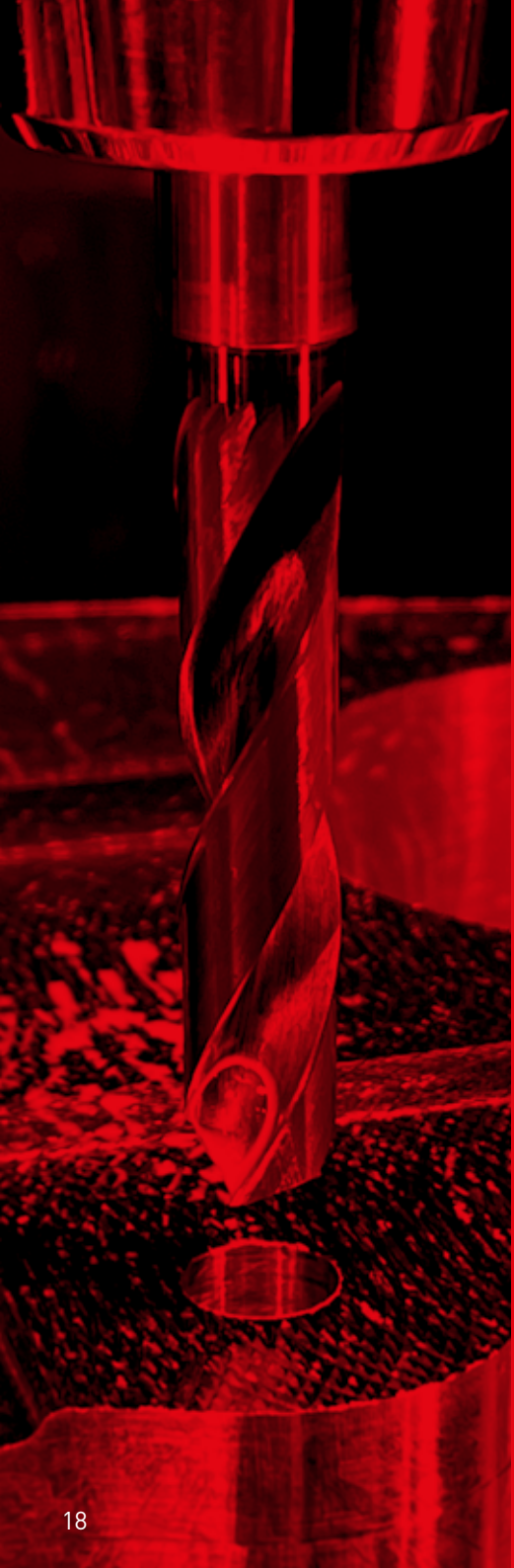
### APPLICATIONS

- General hard turning applications
- Continuous, light and medium interrupted cutting
- High speed machining
- New BR chipbreaker for improved chip control for larger depths of cut up to 1 mm and for hard-soft layer turning.

### FEATURES

- Gold coated outer layer
- High adhesion strength between substrate and coating
- New ultra micro grain heat-resistant binder
- The BR breaker's positive rake angle and breaker wall is highly effective at breaking chips
- Super multi-layer ceramic PVD coating





# DRILLING

## PERFORMANCE – REDEFINING THE PARAMETERS

The modern manufacturing industry is fast moving, therefore Mitsubishi Materials continuously strives to be at the forefront of the market.

In a constant exchange with partners and clients, solutions are offered for every application.

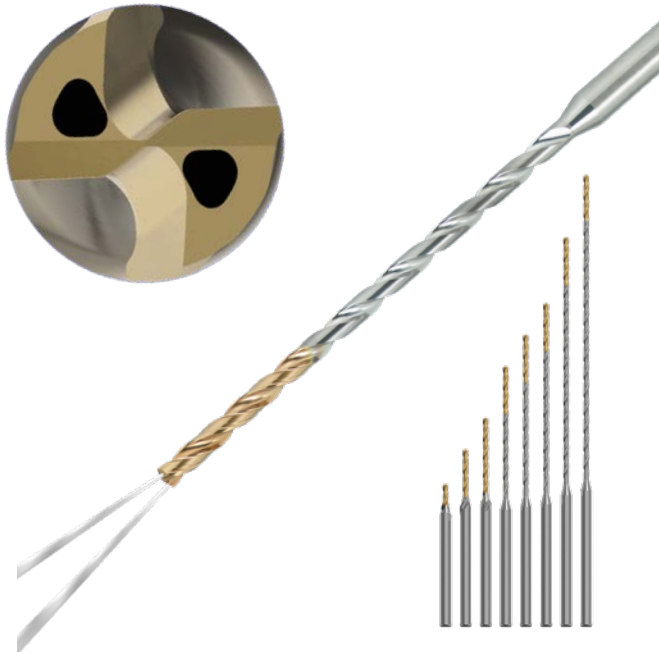
From the indexable insert drill MVX for hole depths up to  $6xD$ , through to the extra deep-hole MPS1, to the exchangeable head type DXAS drills for steel machining, Mitsubishi Materials offers a wide range of individual solutions.

# MINI DVAS

## SOLID CARBIDE DRILL SERIES FOR FAST, RELIABLE AND ACCURATE DRILLING

The MINI DVAS drills can perform at higher feeds and speeds meaning faster drilling cycles. They ensure high machining efficiency, high precision and increased tool life.

Straighter holes and improved dimensional accuracy are enabled by using the DVAS drills. The tool life exceeds all normal expectations.



### BENEFITS

- High process stability
- High accuracy
- Efficient chip removal
- Increased coolant volume
- Reduced cutting force during drilling



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### PRODUCT RANGE

- Diameter: DC Ø1 – 2.9 mm
- Length: 2 – 50 L/D
- Double point angle: 139°/141°

### APPLICATIONS

- General applications
- Deep hole drilling L/D = 50

### FEATURES

- Advanced coolant hole
- New XR point thinning
- Tough and sharp cutting edge design
- New coated grade DP1120
- Unique rigid form

# DFAS / MFE / MINI MFE

## SOLID CARBIDE FLAT BOTTOM DRILLS FOR A WIDE RANGE OF APPLICATIONS

The flat gash lands on the corners provide greater strength and sharpness for a substantial reduction of burrs. The end geometry that combines different radii forms a strong cutting edge and provides excellent chip control.

The multi radius point geometry in combination with the thinned centre point forms ideal chip shapes, thereby dramatically reducing cutting resistance.

The special coolant channels of the advanced cooling technology offer significantly increased chip evacuation and ensure stable machining of stainless steels and titanium alloys.



### BENEFITS

- High efficiency counter boring on various types of applications achieved with excellent chipping resistance
- Low cutting force reduces burrs
- High precision positional accuracy increases performance



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### PRODUCT RANGE

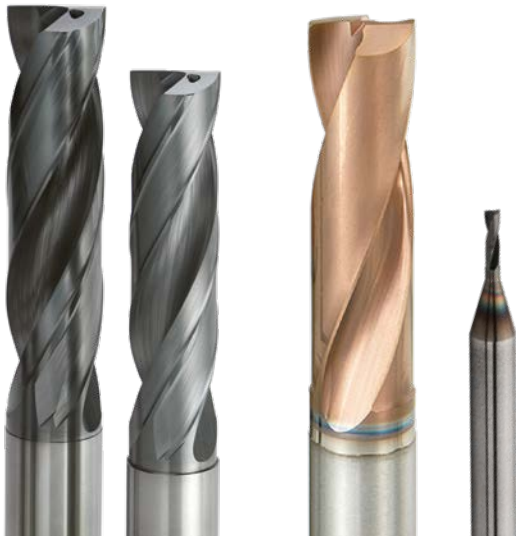
- |                      |                 |
|----------------------|-----------------|
| • DFAS Diameter:     | DC Ø3 – 14      |
| Length:              | 3 x DC          |
| • MINI MFE Diameter: | DC Ø0.75 – 2.95 |
| Length:              | 2 x DC          |
| • MFE Diameter:      | DC Ø3 – 20      |
| Length:              | 2 x DC          |

### APPLICATIONS

- Spot facing
- Shoulder drilling
- Drilling
- Intersecting holes
- Eccentric and cast holes
- Small diameters

### FEATURES

- Unique sharp cutting edges
- Excellent chip control
- Point thinning for lower thrust forces
- External coolant



# DXAS

## EXCHANGEABLE HEAD CARBIDE DRILL

A revolutionary exchangeable head drill that dramatically reduces running costs and achieves machining accuracy and an efficiency level comparable to solid drills.

The two-screw fastening suppresses deformation of the holder and enables high-strength fastening. Therefore, it is less likely to loosen and securely fixes the head, even in high-stress machining environments.

The new drill has exceptionally long tool life especially with the DP6020 grade coated carbide. As a result, running costs are significantly reduced compared to conventional exchangeable head drills.



### BENEFITS

- Reduced running costs
- Increased usability
- High efficiency and accuracy
- Low cutting resistance



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### PRODUCT RANGE

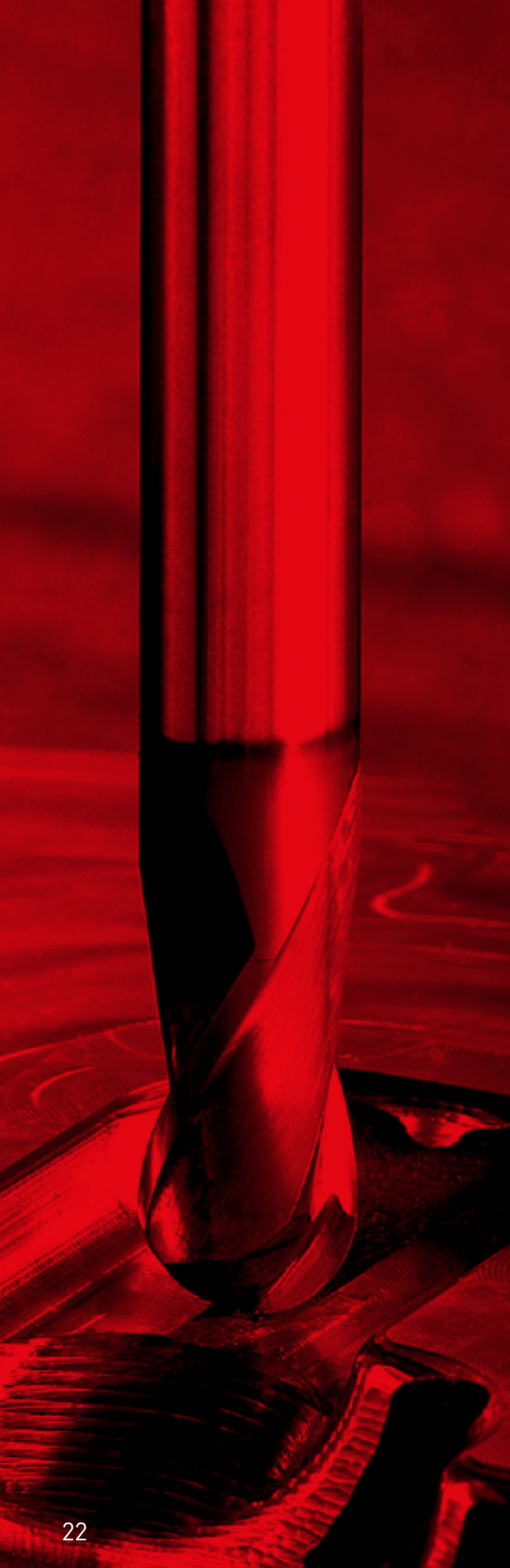
- Diameter: DC Ø 18 – 30 mm
- Length: 1.5 – 8 L/D

### APPLICATIONS

- General drilling of steels and cast iron
- Deep hole drilling up to L/D = 8

### FEATURES

- Super secure head clamping
- Perfect head centering
- XR point thinning
- New through coolant system
- Flute design for excellent chip evacuation



# MILLING

## **INNOVATION – THE KEY TO CONTINUOUS GROWTH**

Mitsubishi Materials wide range of milling products provides off the shelf or tailor-made solutions, whether for the automotive, aerospace and medical, or general machining industries.

From the smallest cutter in the mini end mill series, through to the ceramic CE-series as well as a range of versatile indexable insert milling cutters, in combination with innovative carbide grades, Mitsubishi Materials provides state-of-the-art, high quality products.

# MV1000

## COATED CARBIDE GRADE FOR HIGH SPEED MACHINING

The MV1000 series comprises two grades; the MV1020 and the MV1030. Both grades have an innovative CVD coating with a high aluminium content and can be used for a wide range of applications, particularly for machining unalloyed and low-alloy steels, stainless steels and nodular cast iron.

**MV1020** – Provides high thermal shock resistance during dry and wet machining and for stable machining without thermal cracking at high cutting speeds. Significantly reduced machining times can be achieved.

**MV1030** – Enables high reliability, especially when dry machining stainless steels. High oxidation resistance and excellent wear resistance to prevent breakage, chipping and plastic deformation.



### BENEFITS

- Excellent tool life when machining at high cutting speeds
- High thermal shock resistance thanks to the new CVD coating technology
- Improved fracture strength due to a newly developed hard metal substrate



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### PRODUCT RANGE

- WWX200/400
- WSX445
- WJX09/14
- WSF406W
- VPX200/300
- AHX440/475
- ASX400/445

### APPLICATIONS

- High-speed machining
- Versatile series with different grades for a wide range of applications

### FEATURES

- Excellent thermal wear resistance
- Very smooth surface of the coating
- Increased fracture resistance



# WJX09 / 14 WWX200 / 400 WSX445

## SHARPNESS WITH STABILITY FOR HIGH EFFICIENCY

The W series is a highly versatile and comprehensive range of indexable insert milling cutters. Innovative double sided inserts bring a high level of economy and a reduction of tooling inventory.

Available in various types including screw-in, shank and face milling geometries to ensure a vast range of milling applications can be effectively machined.

### W SERIES CUTTERS

#### BENEFITS

- Vast choice of multi-edge cutters for a huge range of applications
- High-tech insert grades for modern day performance
- Reduction of inventory costs



### W SERIES PRODUCT RANGE

Screw in type: Ø 25 – 40

Shank type: Ø 25 – 80

Arbor type: Ø 40 – 200

WJX09 / 14



WWX200 / 400



WSX445



# VQJCSRB / VQLCSRB / VQELCSRB

## SEMI-LONG, LONG AND EXTRA-LONG END MILLS WITH AN EFFECTIVE CHIP-BREAKING FLUTE GEOMETRY

The VQCS series of carbide end mills include an exceptional flute geometry that effectively breaks chips. The extra-long version, introduced together with long and semi-long flute length types are supplied in square and corner radius geometry.

Designed for specialised roughing applications on heat resistant super alloys. They can also perform effectively on hardened stainless steels and can even machine materials such as copper and copper alloys as well as carbon and alloy steels.



### BENEFITS

- Multi-functional solid carbide end mills
- Excellent chip removal
- Ramp capability up to 30°
- High performance machining



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### PRODUCT RANGE

Square and corner radius

DC Ø 6 – 20 mm

### APPLICATIONS

- Roughing
- Trochoidal milling
- Shoulder milling

### FEATURES

- Special flute geometry ideal for breaking chips
- (Al, Cr)N coating for excellent wear resistance
- Long and extra-long flute lengths

# VQ4XLRB, VQ2/4XLB, VQ3/4XL & VQT

## MULTI-FLUTE LONG REACH, CORNER RADIUS & BARREL GEOMETRY END MILLS

**VQ2/3/4** – The optimised long neck end mills maintain rigidity while avoiding interference with the workpiece. Together with a gash land and larger chip pocket for a stable machining in a difficult long reach applications.

**VQT5/VQT6** end mills, embrace the latest geometry to include an innovative 6 flute, conical taper barrel type. Specially designed for high efficiency finish machining of titanium alloy blades and for a wide range of materials from mild steel through to aluminium alloys.



### BENEFITS VQ2/3/4

- Long neck for deep applications
- High rigidity neck geometry for stability and reliability
- Small diameters for precision machining

### BENEFITS VQT

- Innovative barrel geometry for reduced cusps
- High efficiency milling of titanium



### PRODUCT RANGE

|          |                                        |
|----------|----------------------------------------|
| VQ4XLRB: | DC Ø0.4 – 1.0 mm (RE 0.05 mm – 0.2 mm) |
| VQ2XLB:  | DC Ø1.0 – 3.0 mm (RE 0.5 – 1.5 mm)     |
| VQ3XL:   | DC Ø0.2 – 0.3 mm                       |
| VQ4XL:   | DC Ø0.4 – 1.0 mm                       |
| VQT5:    | DC Ø16 – 25 mm R1 -6 mm                |
| VQT6:    | DC Ø8 – 12 mm                          |

### APPLICATIONS

- **VQ2/3/4** Long reach milling
- Small component machining
- **VQT** – Titanium alloys and blade milling

### FEATURES

- **VQ2/3/4** – Long neck small diameter end mills
- Micro gash land for edge strength
- **VQT5/6** – Special flute geometry for advanced machining techniques



# MS PLUS

## SOLID CARBIDE END MILL SERIES FOR GENERAL MACHINING

The MS Plus series is characterised by versatility and reliability. Now expanded with new 3-fluted chamfer cutters Ø 2 – 12 mm.

In addition, the MS Plus series offers corner radius end mills from Ø 0.2 – Ø 20 with corner radii of 0.1 – 5 mm and neck lengths of (2.5 x DC – 12 x DC). Furthermore, ball end mill cutters with radii of 0.05 – 6 mm and neck lengths of up to 20 x DC can be selected.



### BENEFITS

- Efficiency and economy for machining various materials
- Hardened steel ≤ 55 HRC
- Increased tool life
- Optimized vibration control



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### PRODUCT RANGE

- |                            |                    |               |
|----------------------------|--------------------|---------------|
| • Ball nose end mills:     | DC Ø               | 0.2 – 12 mm   |
| • Corner radius end mills: | DC Ø               | 0.2 – 20 mm   |
| • Corner radii:            | RE                 | 0.05 – 0.5 mm |
| • Square corner end mills: | DC Ø               | 0.2 – 20 mm   |
| • Various neck lengths:    | 2.5 x DC – 12 x DC |               |
| • Chamfer end mill:        | DC Ø               | 2 – 12 mm     |

### APPLICATIONS

- Slotting and shoulder milling
- Roughing and finishing
- Contouring
- Chamfering

### FEATURES

- Versatile end mills for universal machining
- Irregular helix flutes to reduce vibration
- Long tool life on materials up to 55 HRC



# MPLUS

## COOPERATION – OVERCOMING BOUNDARIES

MPlus is a complementary product line that enriches the existing range of tools.

A wide range of supplementary tools manufactured in cooperation with partners across Europe that meet specific customer needs.

Outstanding tools and sophisticated tooling solutions for the metalworking industry.

*M*plus...

# 415SD

## A VERSATILE MILLING TOOL FOR MACHINING A WIDE RANGE OF MATERIALS

The 415SD high-feed milling cutter offers reliability and cost efficiency for plunge, circular and ramp machining. Precise positioning and secure insert clamping with large contact surfaces enables more efficient high-feed machining. MV1000 grades with different chip breakers are available for the P, M and K material groups, while MP9130 indexable inserts are available for machining titanium alloys. The uneven irregular pitch flutes reduces vibrations and the fine tooth pitch ensures highly efficient cutting performance.



### BENEFITS

- Secure insert positioning for stable and reliable machining
- Irregular pitch cutting edge distribution reduces vibration, especially in applications with long overhangs
- Higher performance when using the MV1000 grades



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### PRODUCT RANGE

- Arbor type: DC Ø 50 – 66 mm

### APPLICATIONS

- Face milling
- Shoulder milling
- Helical milling
- Pocket milling
- Roughing

### FEATURES

- Low power consumption
- Good chip removal
- Specially designed chipbreakers
- Stable and robust 4-edged inserts for efficient high-feed milling

# ISO PSC TOOL HOLDERS

## WIDE RANGE PSC HOLDERS AND ADAPTORS FOR MULTIPLE OPERATIONS

The new ISO PSC Holder series is taking advantage of the latest technology, materials and geometries. Due to the wide variety of tools available, this series offers a solution for nearly every application – ranging from multi-purpose, through to turning and profiling tool holders and boring bars.



### BENEFITS

- Optimisation of tool life
- Better surface finishes
- Higher process reliability
- Increased productivity



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### PRODUCT RANGE

- D-Type Holder
- P-Type Holder
- S-Type Holder
- P-Type Boring Bar
- S-Type Boring Bar
- External and internal threading
- Top clamp holder for ceramic inserts
- Shell mill adaptor
- Screw in type shank
- Boring bar holder
- Collet chuck holder
- Adaptor for square turning tool holder
- Multi-purpose adaptor with radial mounting
- Automatic caps

### APPLICATIONS

- External Turning
- Internal Boring
- Facing
- Threading
- Rouging & finishing
- Multitask machining
- Profiling applications
- Milling operations

### FEATURES

- Large variety of holders in different insert geometries (positive & negative)
- Wide choice of holders for different applications
- Internal coolant for high efficiency and longer tool life
- Secure insert clamping systems



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