PRODUCT HIGHLIGHTS

SPRING 2019

DIA EDGE

AHB

TOOLING & MACHINERY, INC.

COMPLETE METALWORKING SOLUTIONS

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DIAEDGE

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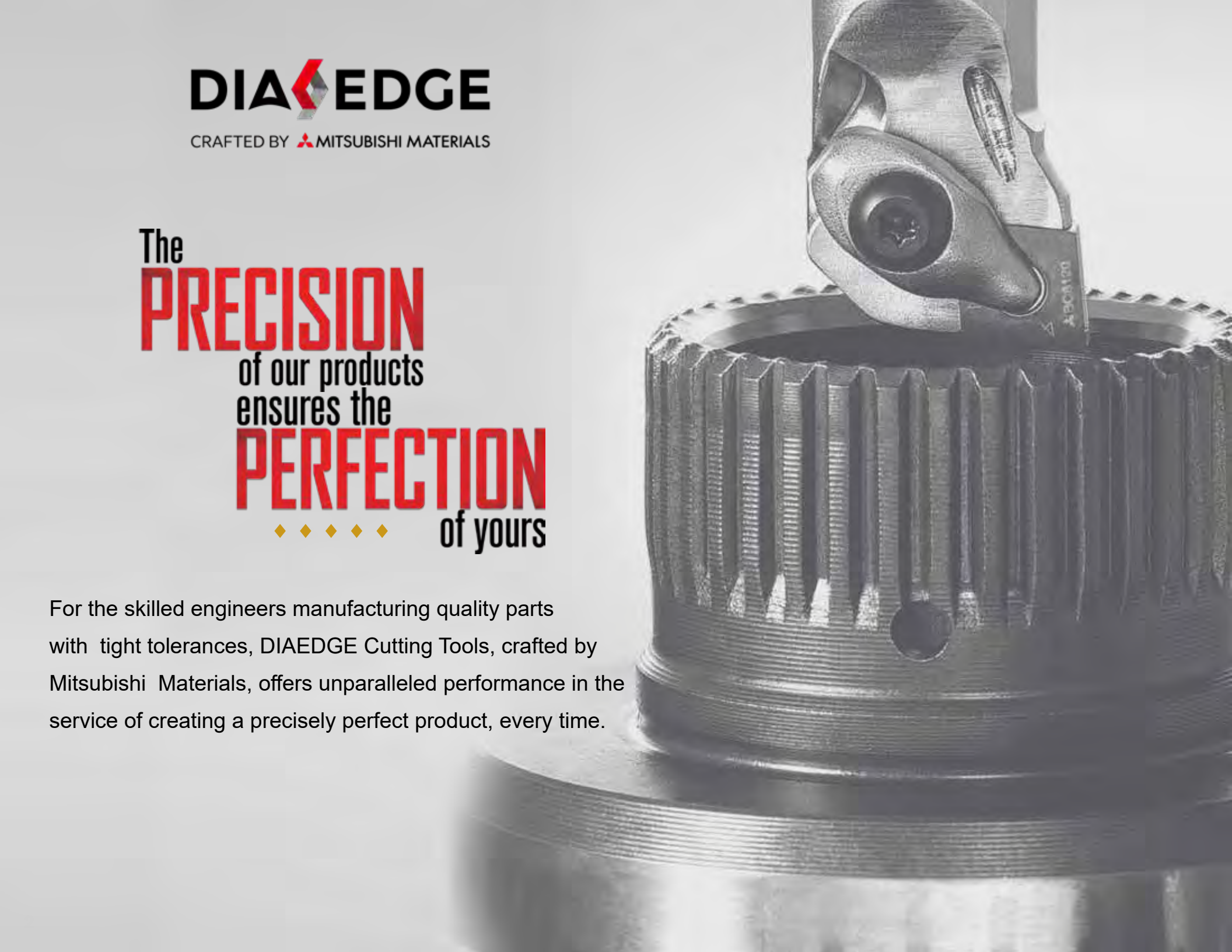
The PRECISION of our products ensures the PERFECTION of yours

For the skilled engineers manufacturing quality parts with tight tolerances, DIAEDGE Cutting Tools, crafted by Mitsubishi Materials, offers unparalleled performance in the service of creating a precisely perfect product, every time.

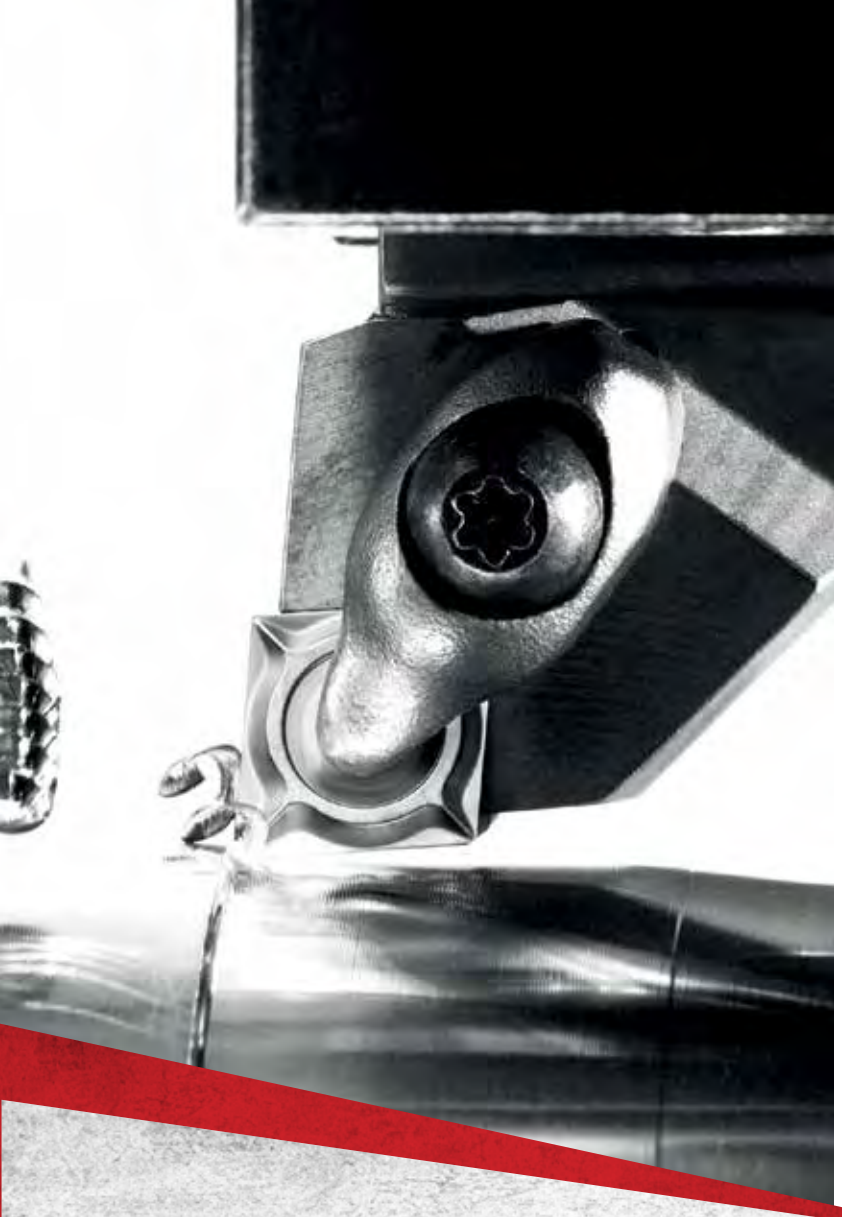


Product INDEX

4.2019

TURNING

Inserts



NEW Product 9000 SERIES

The new technology high Al-rich (Al,Ti)N single layer coating provides stabilization of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance. MP9025 is targeted for M30 ISO-S applications in titanium, inconels, cobalt chrome and other difficult to cut materials.

FEATURES

- High Al-rich (Al,Ti)N single layer coating technology
- Special cemented carbide substrate
- Corner radius with minus tolerance
- Pressed and ground inserts

BENEFITS

- Long tool life
- Improved wear resistance
- Excellent burr control

ISO Turning Inserts For Difficult To Cut Materials

WHAT'S NEW

NEW GRADE	MP9025
EXPANSION	MP9005, MP9015, MT9015
GEOMETRIES	LS, MS, MA, MJ, RS
SHAPES	CNMG, DNMG, SNMG, TNMG, VNMG, WNMG, CCMT, DCMT, SCMT, TCMT, VBMT, VCMT

APPLICATION

- FInishing turning
- Medium turning
- Difficult to cut materials

S

MS6015 Grade

SERIES: TOOLS for SMALL PART MACHINING

The new MS6015 gains high marks for innovation due to the combination of the special carbide substrate and the new PVD coating. Ideal for outstanding performance when machining low carbon steels for high precision parts. Reduced built-up edge and low wear guarantees minimal tolerance deviations.

PVD-coated Grade for Turning Low Carbon Steel

FEATURES

- Corner radius with minus tolerance
- High precision due to parallel chip breakers
- High accuracy during the whole life of the tool

BENEFITS

- High wear resistance
- High welding resistance
- High quality workpieces
- Longer tool life

APPLICATION

- Turning
- Swiss style machines
- Finish cutting
- Light cutting
- Medium cutting

P M

WHAT'S NEW

NEW GRADE MS6015

SHAPES TNGG, CCGH, CCGT, DCGT, TCG, BTAT, BTBT

INSERTS Positive, ground inserts with radil: 0.1, 0.2, & 0.4mm

SERIES: TOOLS for SMALL PART MACHINING — SMB Breaker

A new pressed insert for back turning for small parts machining. The SMB Breaker provides ourstanding surface finish in back turning application from pressedgeometry.

FEATURES

- Eliminates the need for rough and finish passes.
- Achieves a stable tool life by adopting VP15TF that can be used for many types of workpiece material.

BENEFITS

- Geometry stabilizes insert when plunging or grooving.
- Good surface finish from wiper geometry.

Excellent Finish from a Pressed Insert

WHAT'S NEW

GEOMETRY SMB

APPLICATION

- Back Turning
- Small Part Machining

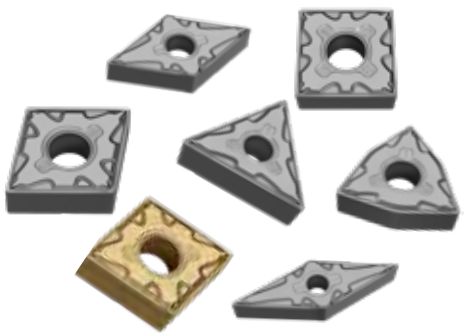
P

FP Breakers

Chip breakers: NX2525 & MP3025

The FP chip breaker has been optimized for finishing in steel and soft materials. With a 2 stage geometry and the 20 degree positive high rake angle, FP manages chip control even in low feed rates and now available in cermet grades NX2525 and MP3025.

The Better Choice for Steel Finish Cutting



FEATURES

- Stable Chip Control in Wide Range
- Available for both General and Low carbon steel
- 20°Positive High Rake Angle

BENEFITS

- Stable chip control in low feed rates.
- Effective for chip control of soft materials
- Good surface finish

APPLICATION

- Finish turning
- Low alloy materials

P

WHAT'S NEW

SHAPES CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

NEW Product

MB4120 GRADE

A newly developed binder and high CBN content gives the MB4120 grade long tool life and provides a very stable cutting edge. These stable properties enable the cutting edge to be finalized with or without honing. The sharp edge type allows sintered alloy components to be machined almost completely without burrs. Additionally, the chemical stability of the CBN grade prevents built-up edge.

FEATURES

- CBN grade for Sintered Alloys and Cast Irons
- High toughness and fracture resistance
- Sharp edge, round and chamfer honing
- High wear resistance
- Fine CBN particles provides high strength

BENEFITS

- Almost no burrs
- Long tool life
- Stable machining
- Stable dimension control
- High precision

Improve Productivity with Excellent Fracture Resistance & Stable Cutting

WHAT'S NEW

TYPE Single and double sided, positive and negative ISO inserts

SHAPES CNGA, DNGA, SNGA, TNGA, VNGA, WNGA, CCGW, CPGB, DCGW, TCGW, TPGB, VBGW

APPLICATION

- High precision machining
- High-speed turning
- Roughing and finishing applications
- Unstable machining, heavy interrupted cutting

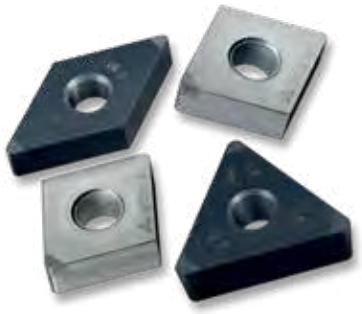
P M K

BC8100 Series

GRADES:
BC8105, BC8110, BC8120, BC8130

The coated CBN series BC8100 provides solutions for cutting of high hardened steels, from light cutting and high speed general applications through to interrupted cutting. BC8100 series offers long and process-safe stable tool life and provides component tolerance accuracy as well as high quality surface finishes.

CBN Turning Insert Series For Hardened Steel



FEATURES

- Medium and finest CBN grain size
- Low coefficient of friction of the coating
- High fracture resistance
- Extreme wear resistance

BENEFITS

- High quality surface finishes
- Long and stable tool life
- Increased efficiency
- Tolerance accuracy over a high number of components
- Optimized chip control

APPLICATION

- General applications
- High precision machining
- High-speed turning
- Roughing and finishing
- Unstable applications, interrupted cutting

H

WHAT'S NEW

TYPE Single and double sided, positive and negative ISO inserts

SHAPES CNGA, CCGN

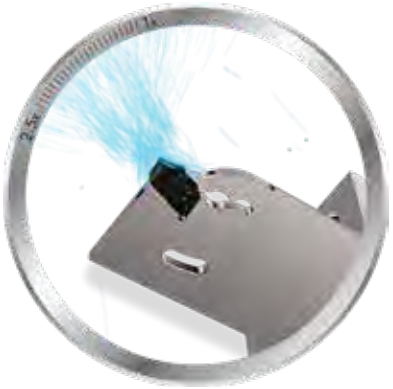
GROOVING

GW Series

NEW Product

The new GW grooving system offers efficient and precise parting-off. Significantly improved tool life and easy insert installation ensures obvious benefits. The innovative insert clamping ensures a firm and stable fit of the insert without loss of performance. The GW series also features internal coolant holes.

Grooving System With Internal Coolant Supply

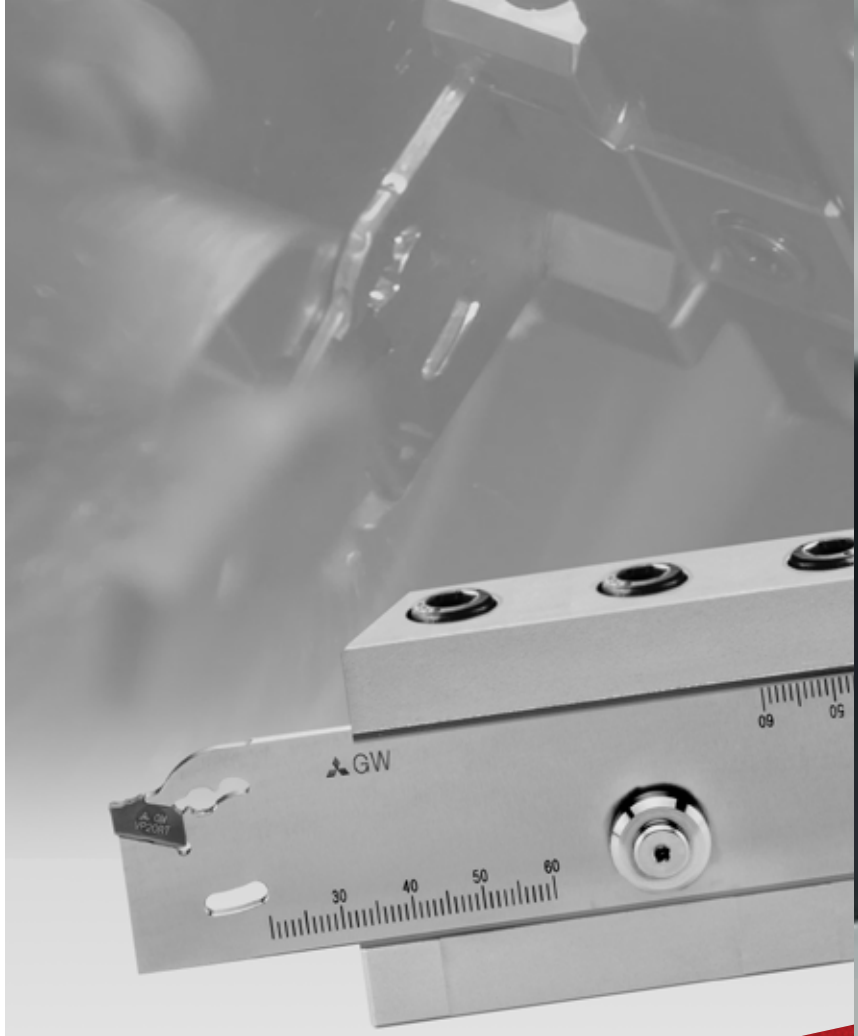


FEATURES

- Easy handling
- Safe and easy installation of the blade and inserts
- Comes with and without internal coolant holes

BENEFITS

- Improved tool life
- Excellent chip control
- Easy to use
- High productivity



APPLICATION

- Parting off

P M K S

WHAT'S NEW

BLOCKS 0.75, 1.00 in
20, 25 mm

INSERT WIDTHS 2 - 5 mm with GS, GM Breaker

Solid END MILLS

VQT6UR Series

NEW Product

A new barrel end mill designed for finishing in Titanium alloys. The nose radius is designed for both fillet milling and tangential form radius blade surface machining. Compared with a ball nose end mill, the tangential form radius is larger and cusp height is minimized and more controllable. The combination of irregular pitch and the Smart Miracle coating generate excellent surface finish and extended tool life.

Barrel Endmills for Finish Cutting of Titanium Alloys

FEATURES

- Sequential Dual-radius Design
- Nose and tangential form part has two distinct radii
- Optimum Cutting Edge Design
- 6-flute Peripheral Cutting Edge
- 3-flute End Cutting Edge

BENEFITS

- Nose radius designed for both fillet milling and tangential form radius blade surface machining
- Irregular pitch design prevents chattering
- Achieves a quality surface finish with no chipping on the cutting edge
- Compared with a ball nose end mill, the tangential form radius is larger and cusp height is minimized for more controllable
- Hhighly efficient machining with a pick feed

APPLICATION

- Finish profiling
- Difficult to cut materials
- Titanium alloys

P M S N

WHAT'S NEW

DIAMETERS 8, 10, 12 mm

Product: VQMHV & VQJHV

SMART MIRACLE

New geometry combined with Smart Miracle coating provide high efficiency machining due to stable chip evacuation doubling vertical feed rates when compared to conventional products. The VQ series end mills have an irregular helix flute design which reduces vibration. Smart Miracle coating with unique ZERO-μ Surface, retains cutting edge sharpness and smoothness in addition to longer tool life compared to previous technologies.

FEATURES

- ZERO-μ Surface
- Super-fine-particle/super-hard base material
- With & without coolant through holes

Revolutionary Performance for Difficult-to-Cut Materials

BENEFITS

- Superior vibration resistance
- Improves fracture resistance
- improves chip discharge performance
- Retains cutting edge sharpness and smoothness
- Better wear resistance

APPLICATION

- Profile milling
- Finish milling

P M S N

WHAT'S NEW

DIAMETERS 1, 1.5 mm

DL Series

Product: DF2XLBF

Diamond Coated End Mills for finishing graphite. The combination of optimized cutting edges and a diamond coating greatly enhances cutting performance. The combination of long tool life and the seamless sharp cutting edge ensure outstanding surface finish.

Diamond Coated End Mills for Graphites & Finishing

FEATURES

- Optimized cutting edges
- Crystallized diamond coating

BENEFITS

- Enhances cutting performance
- Outstanding finishes even for wall surface
- Long-neck ball end mills are ideal non-ferrous metals
- 3x tool life when compared to conventional

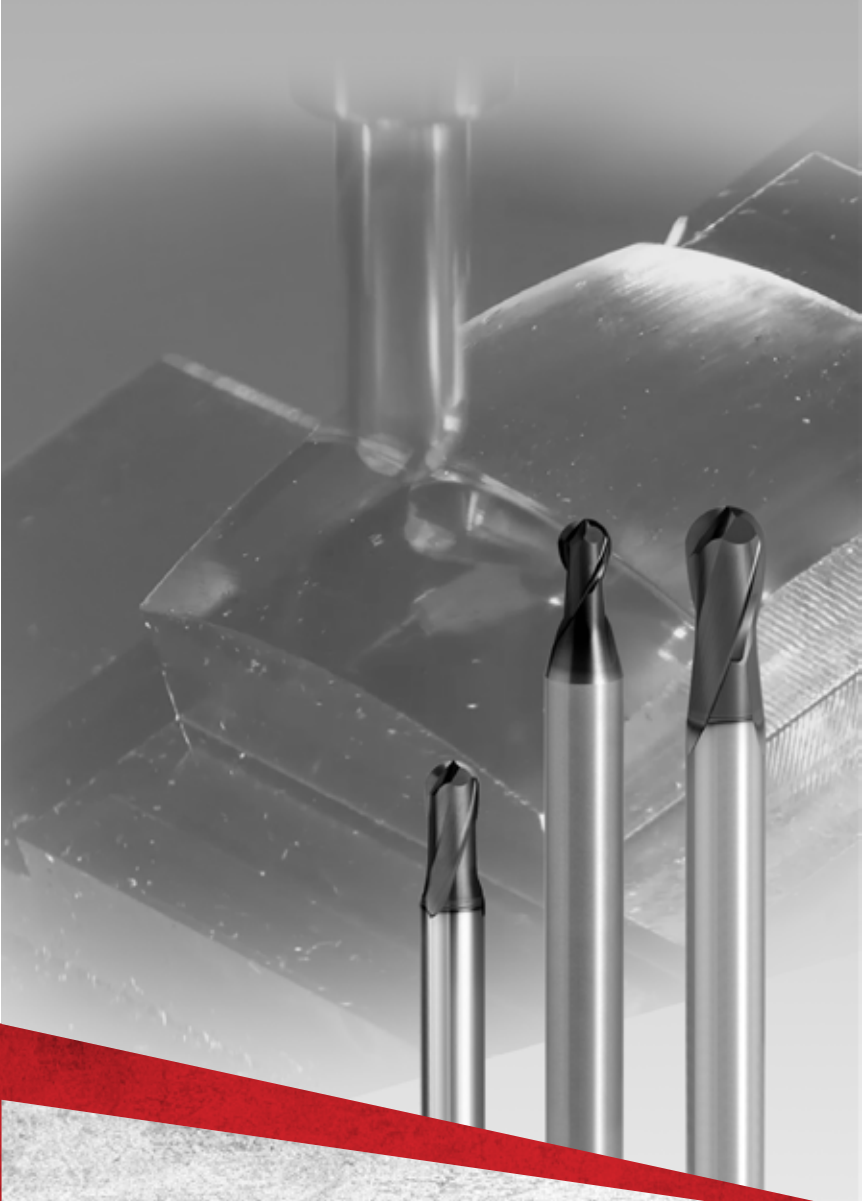
APPLICATION

- Extreme finishing
- Graphite materials
- Profile milling

N

WHAT'S NEW

Radii 0.3, 0.5, 1, 1.5 mm



PRODUCT: VFR2SSB

IMPACT MIRACLE

Duplex courner radius and multi-flute geometry for high feed stable machining of hardened steels.

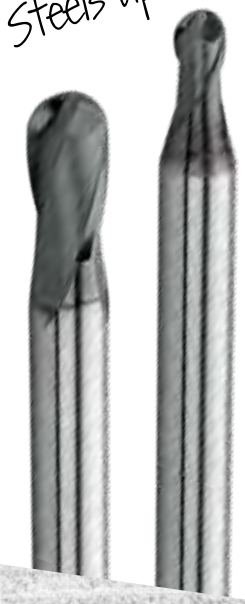
FEATURES

- Optimized geometry with S-shaped cutting edge geometry
- For machining steels up to 70 HRC
- Reduce cutting resistance in radial direction

BENEFITS

- Economical machining of high hardened steel and HSS
- Radius tolerance ± 0.005mm
- Suppresses tool vibration
- Reduces deflection

End Mill Series For Cutting Hardened Steels Up To 70 HRC



APPLICATION

- Contouring, roughing and pre-finishing

P H

WHAT'S NEW

Radii 0.5, 0.75, 1, 1.5, 2, 2.5, 3, 4, 5, 6 mm

iMX Series

PRODUCT: iMX-B2S & iMX-B4S

TThe iMX series is a revolutionary end mill system that enables efficiency, high accuracy and rigidity by combining the advantages of both solid carbide and indexable end mills. Exchangeable head end mill offering double face (Taper + end face) contact type of cemented carbide head and cemented carbide holder. Now expanding an already large program, Mitsubishi Materials adds ball nose in 2 & 4 flute in grade EP8110 for hardened steels.

Exchangeable Head End Mill Series

FEATURES

- Large assortment
- Carbide head & holders
- Double face contact

BENEFITS

- High flexibility
- Reduced tooling costs
- Optimized vibration control
- Increased tool life
- High hardened steel

APPLICATION

- Contouring
- Roughing, pre-finishing and finishing

H

WHAT'S NEW

TYPE Ball nose 2 & 4 flute

Radii 8, 10 mm

Milling

TOOL INSERTS

VPX Series

NEW Product

The versatile VPX cutter series excels with tangential inserts for general machining. Innovative geometry in combination with high performance levels – the four-sided inserts with a smooth cutting effect, creates an even surface profile that reduces the need for finishing.

Tangential Insert Cutter For Multi-Functional Milling

FEATURES

- Tangential insert with 4 cutting edges
- Ground inserts
- Highly rigid tool body
- Low cutting force
- Two size inserts: VPX 200/300

BENEFITS

- Stable machining
- 90° precision shoulder milling
- Roughing and finishing
- High performance

APPLICATION

- General machining
- Face milling
- Shoulder milling
- Slotting

P	M	K	N	S	H

WHAT'S NEW

COUPLING Inch & Metric
Cylindrical, Arbor, exchangleable head

DIAMETERS 0.625 - 3.0 in
16 - 80 mm

GRADES MC5020, MP6120, MP6130, MP7130, MP9120, MP9130, VP15TF, TF15

NEW Product

WJX SERIES

WJX is a high feed cutter capable of high feed and large depth of cut in the same pass. The dovetail structure of the insert holds the insert securely in the pocket during feed rates up to 0.079 in per tooth. The flank shape combines the strength and economy of negative inserts, with the sharpness and multifunctionality of positive inserts.

FEATURES

- High feed radius with double-sided insert type.
- Suitable for ramping
- Increased insert thickness
- Flank shape combines the strength and economy of negative inserts, with the sharpness and multifunctionality of positive inserts

BENEFITS

- Low cutting resistance when beginning cut
- Stability in interrupted and large depths of cut
- Excellent sharpness, long tool life and reduced cutting noise
- Short chips to prevent chip jamming

High Feed Milling

WHAT'S NEW

COUPLING Inch & Metric Cylindrical, Arbor

DIAMETERS 2.5 - 6 in
50 - 160 mm

APPLICATION

- General milling
- Rough milling
- Ramping
- Helical milling
- Pocket milling

P M K S H

WSX445 Series

PRODUCT: MX 3020 & MX3030

WSX445 is the next-generation of indexable insert face mill cutters – characterized by its low cutting resistance, reduced axial and radial forces and constant low-vibration machining. Stable insert clamping with a unique conical seat in combination with an anti-fly feature ensures process reliability. In addition, economy is noticeably increased with 8 cutting edges.

Next-Generation Face Mills

FEATURES

- Double-sided insert with Z geometry
- Wide range of inserts
- Low axial and radial forces
- Stable insert clamping system

BENEFITS

- Low cutting resistance
- Suitable for all machines
- Excellent chip control

APPLICATION

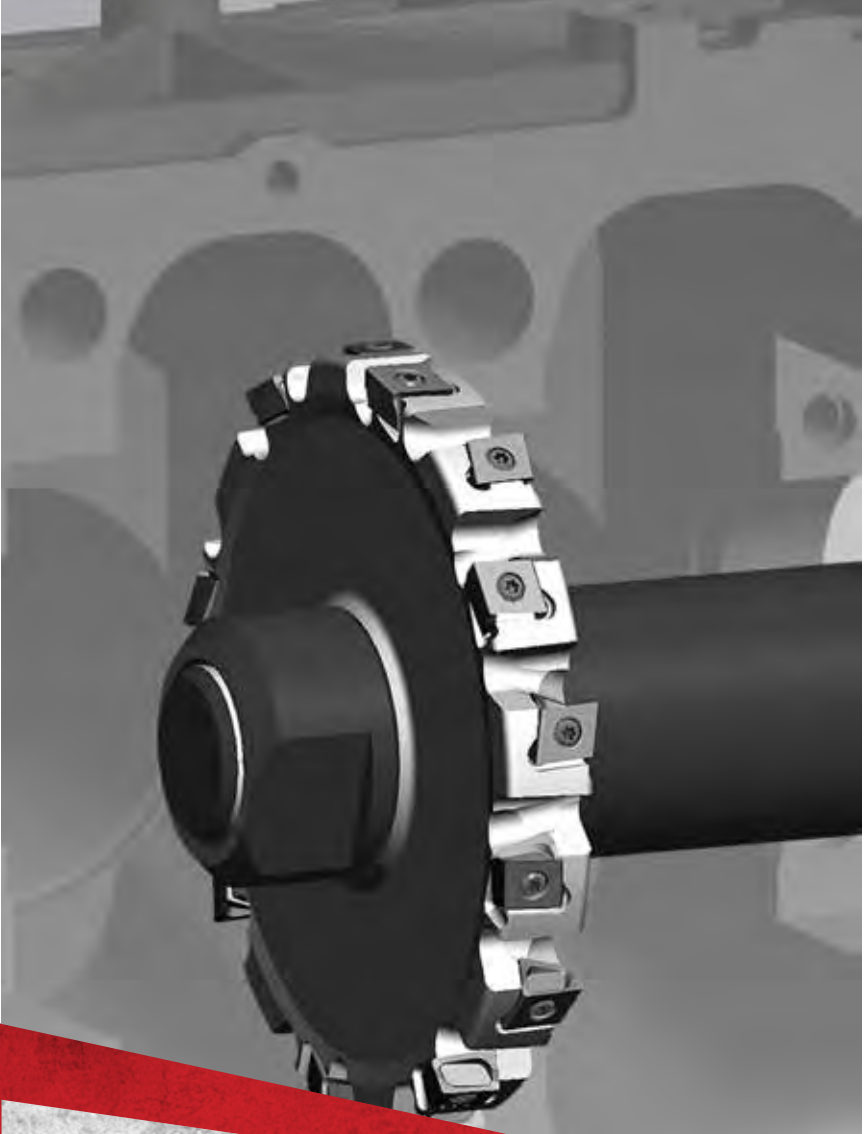
- Face milling

P M K N S H

WHAT'S NEW

INSERTS

MX3020 cermet wipers
MX3030 left-handed inserts



PRODUCT: VAS400 — Side Cutter Series

VAS side milling cutter with 4 cutting edges. Unique side cutter series taking advantage of latest technology suitable for steel alloys, stainless steels & cast irons. Original insert design focused on low cutting resistance insert geometry in a secure pocket. Now introducing a strong cutting geometry for heavier feed rates and a stronger edge for interupted cuts..

FEATURES

- 2 widths available (half & full)
- Cutter body can hold all corner radii (RE1) from small to large
- Vertical-mount, double-sided inserts

BENEFITS

- Inserts absorb principle cutting force through thickness of the insert
- Wide seating surface ensures secure insert clamping
- Simplified, easy to clamp insert
- Low cutting resistance due to convex curve cutting edge and double-phased helical rake angles

WHAT'S NEW

GEOMETRY	R breaker for roughing
RADii	0.016 - 0.197 in

APPLICATION

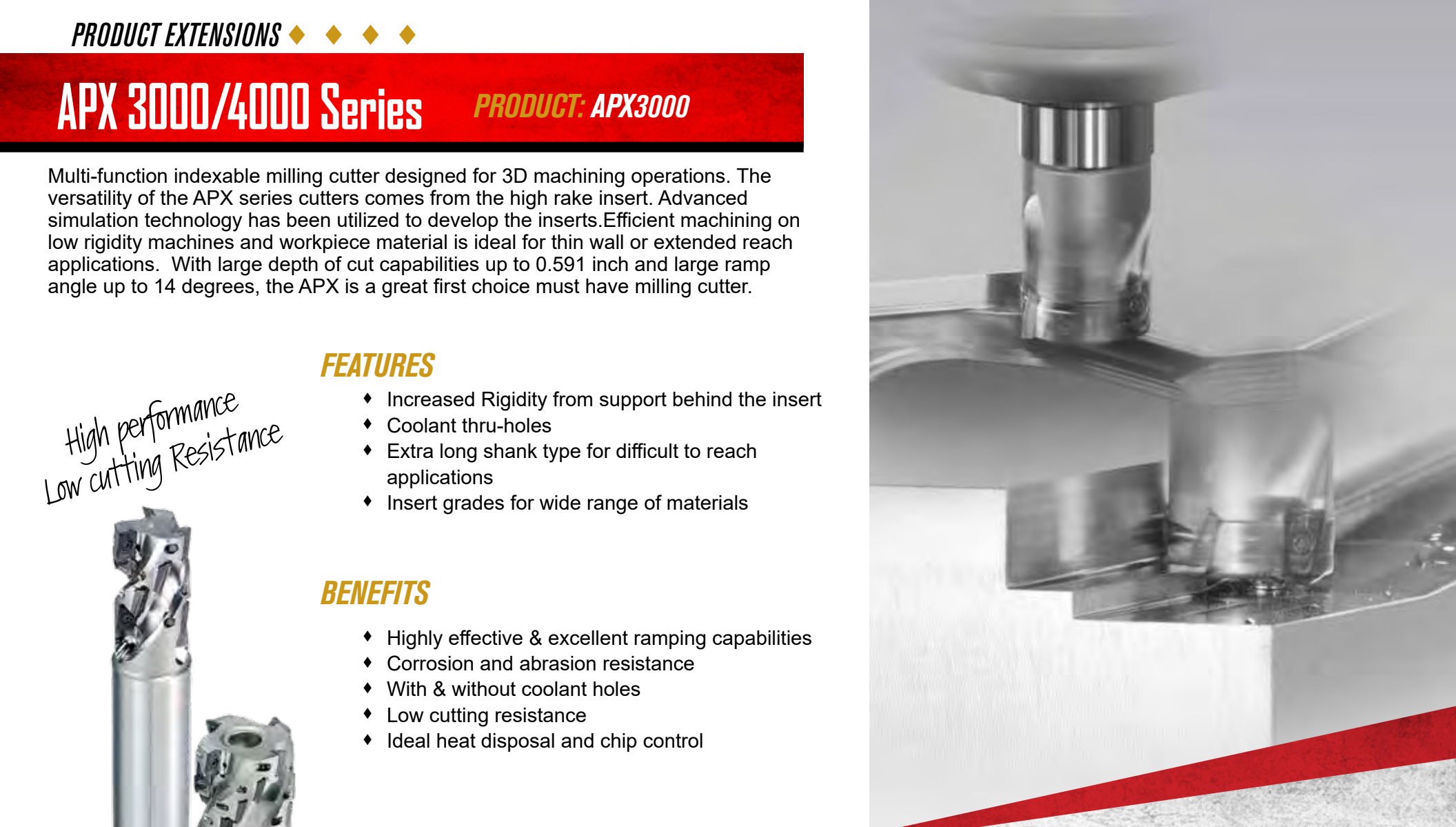
- Side milling,
- Shoulder milling
- Back milling

P M K

APX 3000/4000 Series

PRODUCT: APX3000

Multi-function indexable milling cutter designed for 3D machining operations. The versatility of the APX series cutters comes from the high rake insert. Advanced simulation technology has been utilized to develop the inserts.Efficient machining on low rigidity machines and workpiece material is ideal for thin wall or extended reach applications. With large depth of cut capabilities up to 0.591 inch and large ramp angle up to 14 degrees, the APX is a great first choice must have milling cutter.



High performance
Low cutting Resistance

FEATURES

- Increased Rigidity from support behind the insert
- Coolant thru-holes
- Extra long shank type for difficult to reach applications
- Insert grades for wide range of materials

BENEFITS

- Highly effective & excellent ramping capabilities
- Corrosion and abrasion resistance
- With & without coolant holes
- Low cutting resistance
- Ideal heat disposal and chip control

APPLICATION

- Rough milling
- Shoulder milling
- Pocket milling, ramping

P M K N S H

WHAT'S NEW

COUPLING

Inch & Metric
Cylindrical, Shell
0.75, 1, 1.25, 1.5, 2.0 in
20, 25, 32, 42, 50 mm

DRILLING

DLE Series

NEW Product

The 90 degree drill designed for chamfering, corner chamfering, V-grooving and centering. The DLE is perfect for CNC automatic lathes, where strength is needed and for processing at low power, when compared to conventional products. The thinning pocket promotes smooth chip evacuation and provides excellent hole position accuracy. Sharp cutting edge shape and high fracture resistance,stable cutting and burr prevention are possible.

Center & Chamfer Drilling

FEATURES

- Thinning Geometry pocket
- Two-step point angles with negative cutting edge and cutting edge treatment
- Extensive Support for CNC Automatic Lathes
- Coated Grade DP1020

BENEFITS

- Ideal for processing at low power
- Smooth chip evacuation and hole position accuracy
- High fracture resistance
- Stable cutting and burr prevention are possible.
- Diverse lineup of shanks for more applications

APPLICATION

- Centering
- Chamfering
- Corner chamfering
- V-grooving

P M K

WHAT'S NEW

DIAMETERS 3 - 16 mm

PRODUCT: Small Diameters — MFE Series

Solid carbide flat bottom drills, the MFE series features new “Z” thinning to lower thrust force and a gash land on the outer edge for a stronger corner. When machining into or through uneven surfaces, the gash land on the outer edge provides excellent chipping resistance. The combination of different radius sizes in the flutes provides excellent chip control, which reduces risk of drill breakage.

FEATURES

- Spot-facing & pilot drilling for angled surfaces, offset circular surfaces and shoulder.
- Drilling of thin plate and intersecting holes and reform drilling of eccentric holes and cast holes
- Combination of different radius sizes provides strong cutting edge
- New “Z” Thinning with Lower Thrust Force
- Gash Land for Stronger Corner

BENEFITS

- Excellent chipping resistance.
- Smooth surface clearance for reduced deflection
- Excellent position accuracy
- Excellent chip control

Flat bottom for small diameters

APPLICATION

- Drilling
- Uneven surfaces
- Through holes
- Flat bottom blind holes

P M K N

WHAT’S NEW

DIAMETERS 0.75 - 2.95 mm

MVX Series

PRODUCT: Smaller Sizes

The indexable insert drill MVX is gaining in popularity due to versatility and uniqueness - allowing drill depths up to 6xD. State-of-the-art technologies ensure a high rigidity of the tool body and optimized insert properties, which positively effect the cutting edge as well help reduce vibration. In addition, MVX covers a wide range of diameters and lengths and by using two different insert types for the internal and external positions – produces excellent finishes without loss of stability.

Indexable Insert Drill For Drilling Depths Up To 5XD

FEATURES

- High rigidity, stable tool body
- Optimized insert location
- Economical inserts with 4 cutting edges
- Wiper geometry at the peripheral cutting edge
- Various grades and chipbreakers

BENEFITS

- Drilling depths up to 5xD
- Covers a wide range of applications
- Reduced vibration during drilling
- Excellent hole surfaces without loss of stability

APPLICATION

- Drilling ~ up to 5XD
- Angled hole entrance and exit
- Plunging
- Boring
- Internal and external turning

P M K N H

WHAT'S NEW

DIAMETER 0.562 - 0.656 in
14 – 16.5 mm

LENGTH 2 – 5xD


The PRECISION of our products
ensures the PERFECTION of yours

MTEC
MACHINING TECHNOLOGY
& EDUCATION CENTER

MACHINING TECHNOLOGY & EDUCATION CENTER

MTEC

ABOUT MTEC 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.

MTEC NC OFFERS:

- Training
- Customer process analysis
- Tooling & application testing and
- Complete process improvement analysis

Besides our Craftsman Machining Technology training, we will offer:

- Education and skills training for basic metal cutting
- Partner collaborative training
- Seminars for the latest solutions to improve production and provide cost savings

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.

MORE MTEC INFORMATION

For more information on course schedule, course description, and accommodations, please visit our website.

www.mtectraining.info

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.

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.

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.

TECHNICAL SUPPORT

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

DIA EDGE

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.

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