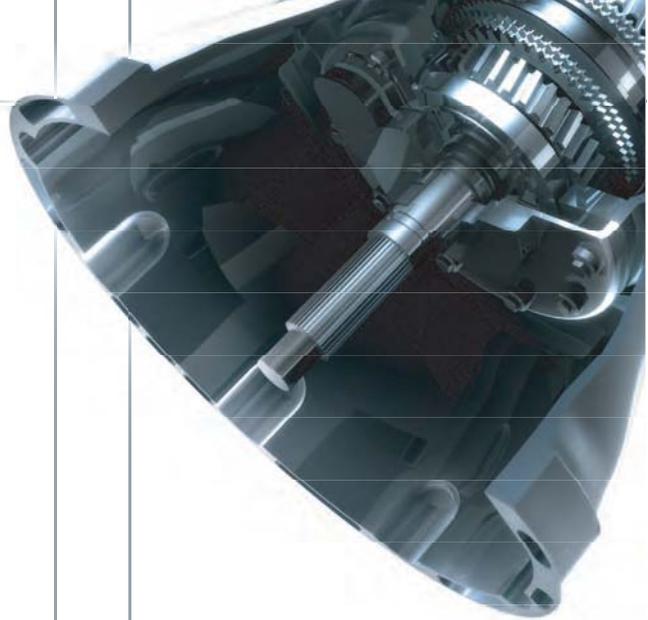
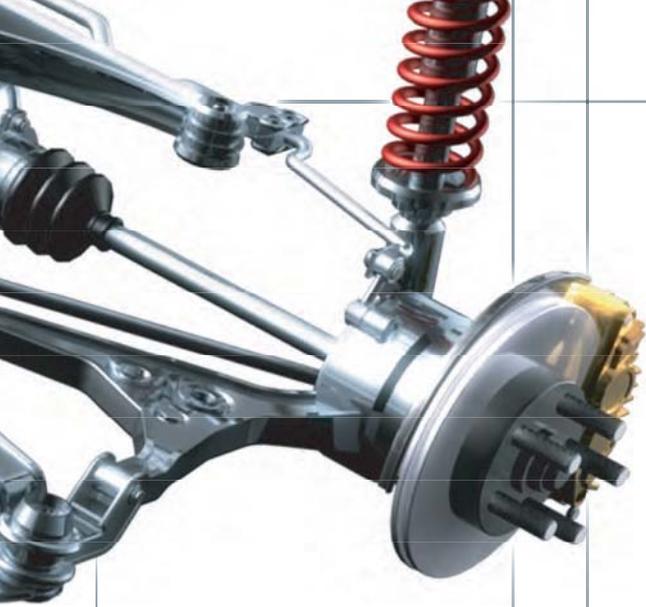
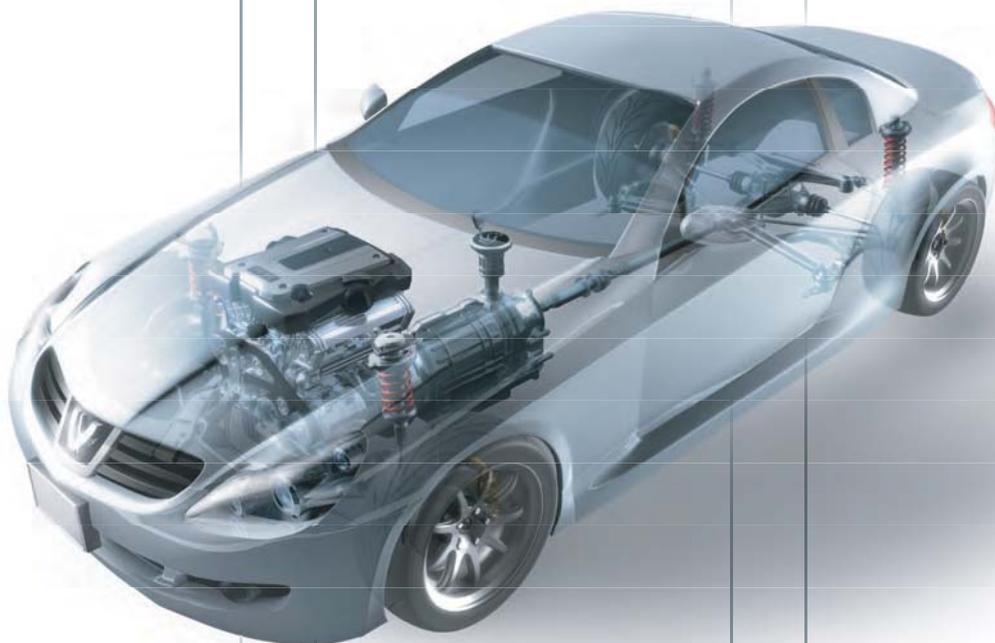


AUTOMOTIVE INDUSTRY

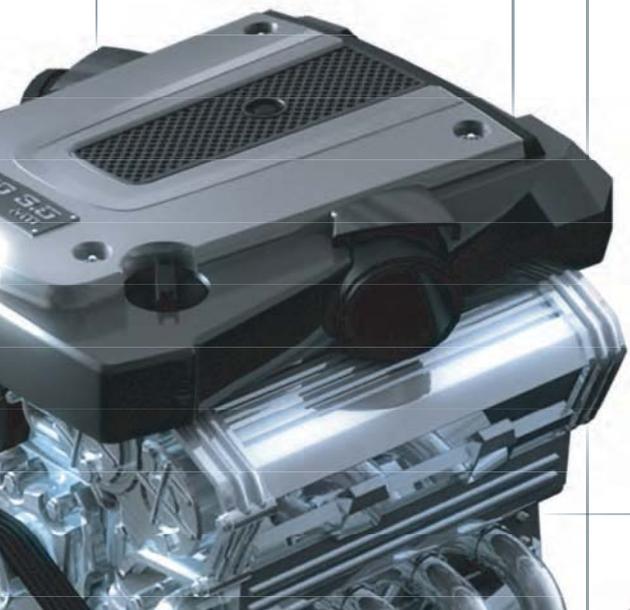




True partnership



Customised design



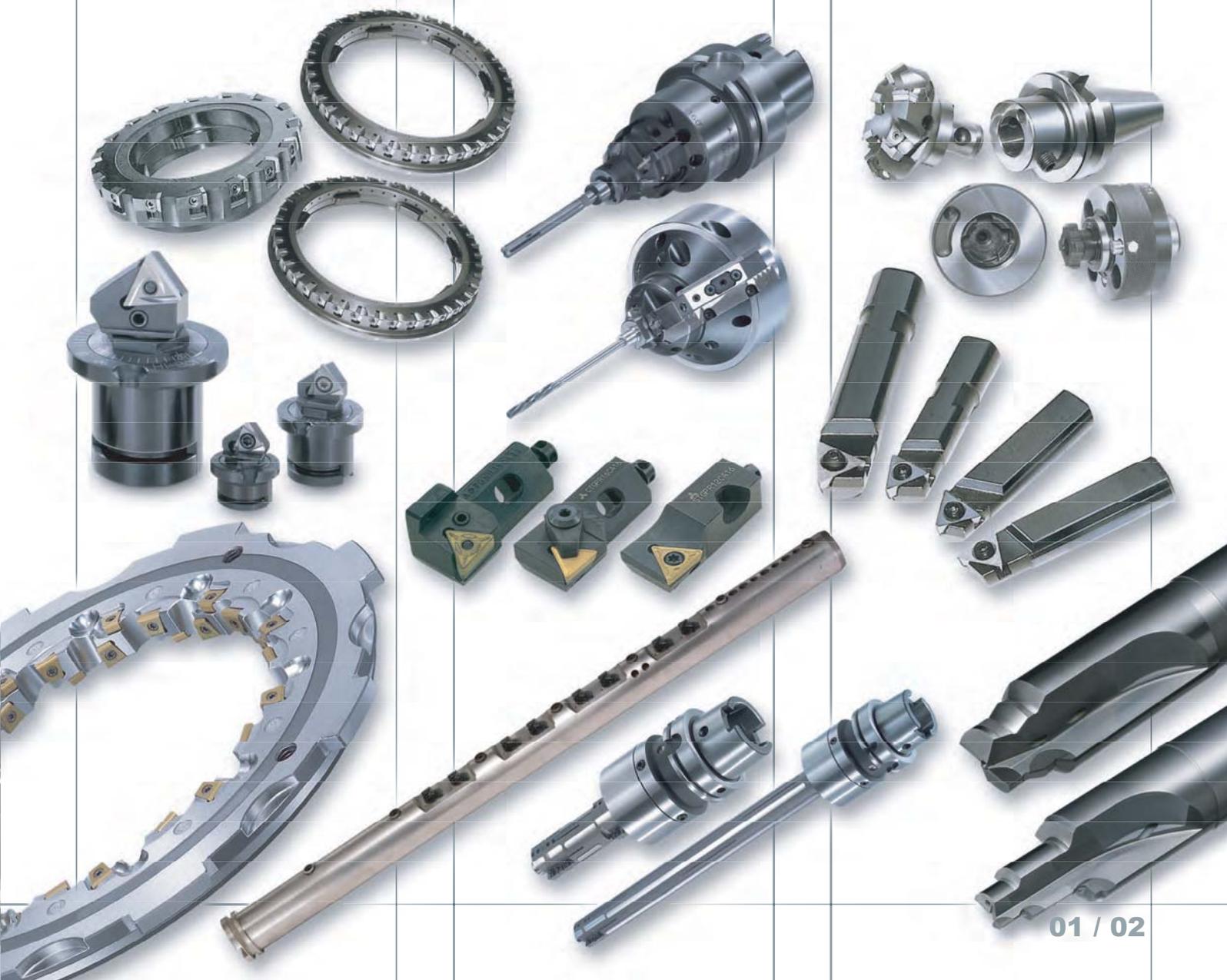
There is a long history regarding the development and design of Automobiles leading back to over a 100 years.

Since the origins,
there has been an extensive advance in concept,
new features and performance.

The present day automotive industry has grown into a huge industry reaching for further developments and prospects.

Mitsubishi Materials offers a wide range of cutting edge technological products that meet the ever demanding requirements from the Automotive Industry.

Mitsubishi Materials also offers materials that are frequently used in the Automotive Industry therefore making it possible to also supply the cutting tools that are required to machine these particular materials.



AUTOMOTIVE

CATEGORY **ENGINE PARTS**

CYLINDER HEAD TOOLING	05
CYLINDER BLOCK TOOLING	07
CRANK SHAFT TOOLING	09
CAM SHAFT TOOLING	10
CON ROD TOOLING	10

CATEGORY **TRANSMISSION PARTS**

TRANSMISSION CASE TOOLING	12
VALVE BODY TOOLING	12
STATOR TOOLING	12
OUTPUT SHAFT TOOLING	13
CVT PULLEY TOOLING	13
GEAR TOOLING	14
TORQUE CONVERTER COVER TOOLING	15

CATEGORY **AXLE PARTS**

KNUCKLE ARM TOOLING	17
HUB TOOLING	17
DRIVE SHAFT & CVJ TOOLING	17

CATEGORY **BRAKE PARTS**

DISC BRAKE CALIPER TOOLING	18
DISC TOOLING	18

CATEGORY **ELECTRICAL PARTS**

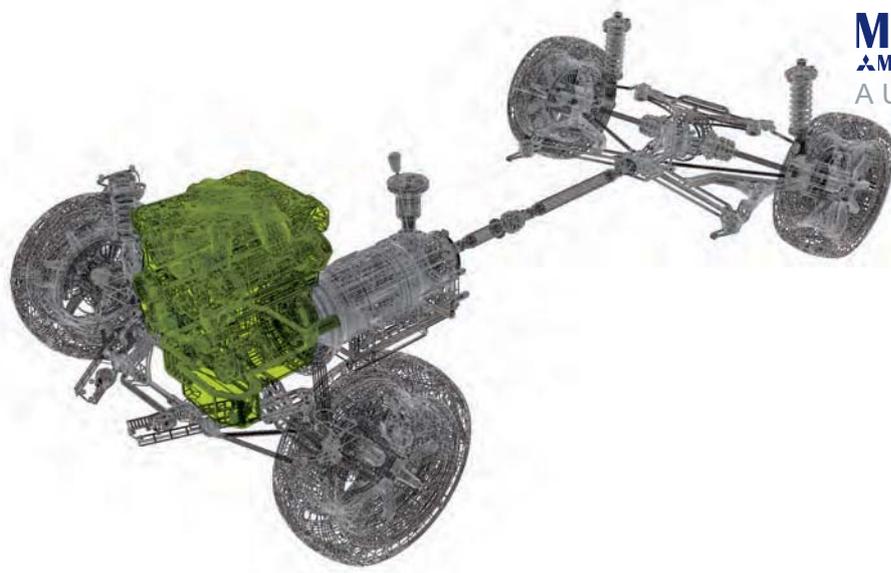
COMMON RAIL & INJECTOR TOOLING	20
ABS TOOLING	20
MOTOR TOOLING	20

CATEGORY **DIE AND MOULD**

CRANK SHAFT MOULD TOOLING	21
CON ROD MOULD TOOLING	21
SIDE PANEL MOULD TOOLING	21

CATEGORY **NEWS**

GENERAL, SPECIAL, PRODUCT	22
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CATEGORY **ENGINE PARTS**

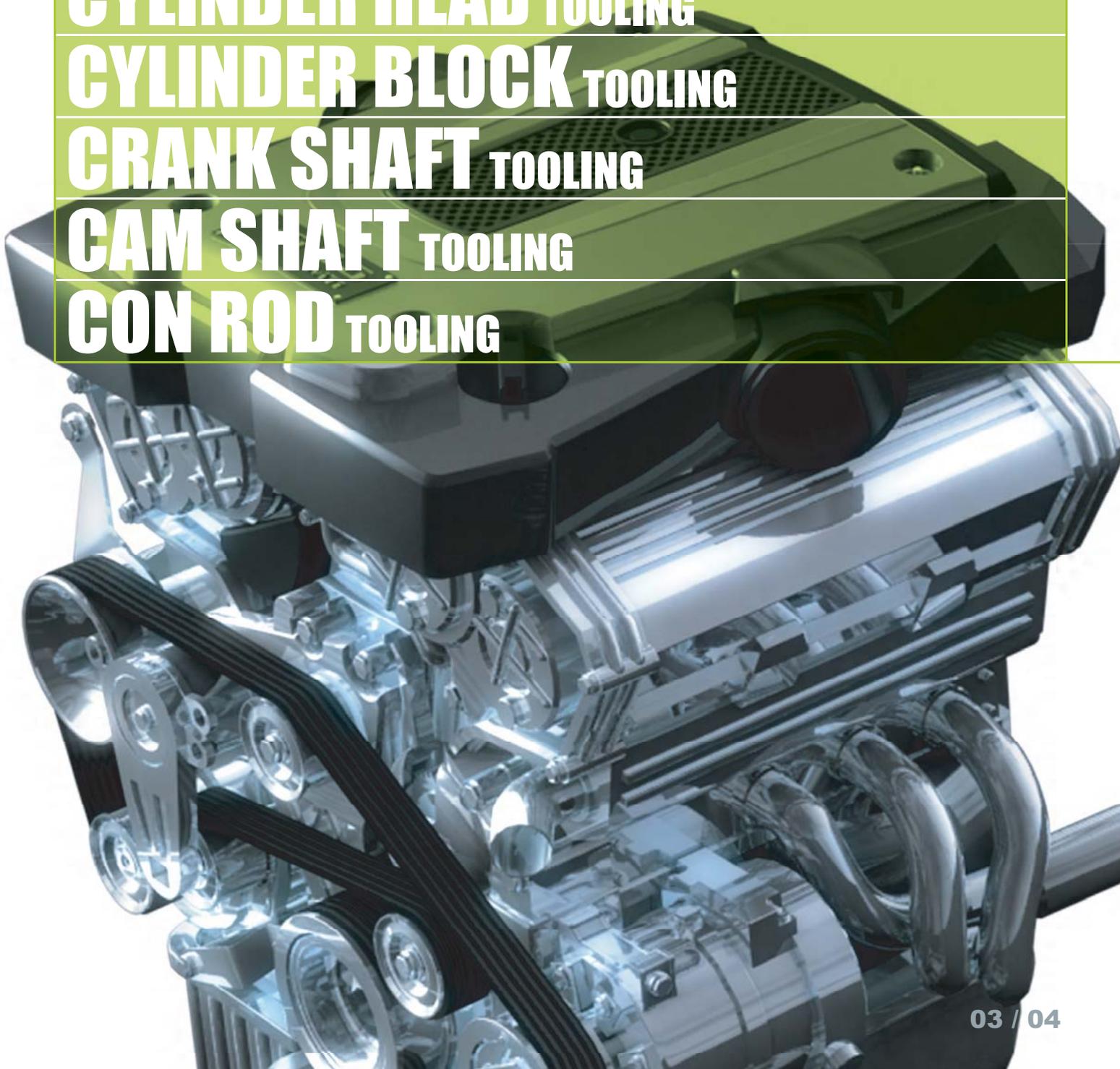
CYLINDER HEAD TOOLING

CYLINDER BLOCK TOOLING

CRANK SHAFT TOOLING

CAM SHAFT TOOLING

CON ROD TOOLING



CATEGORY ENGINE PARTS

CYLINDER HEAD TOOLING

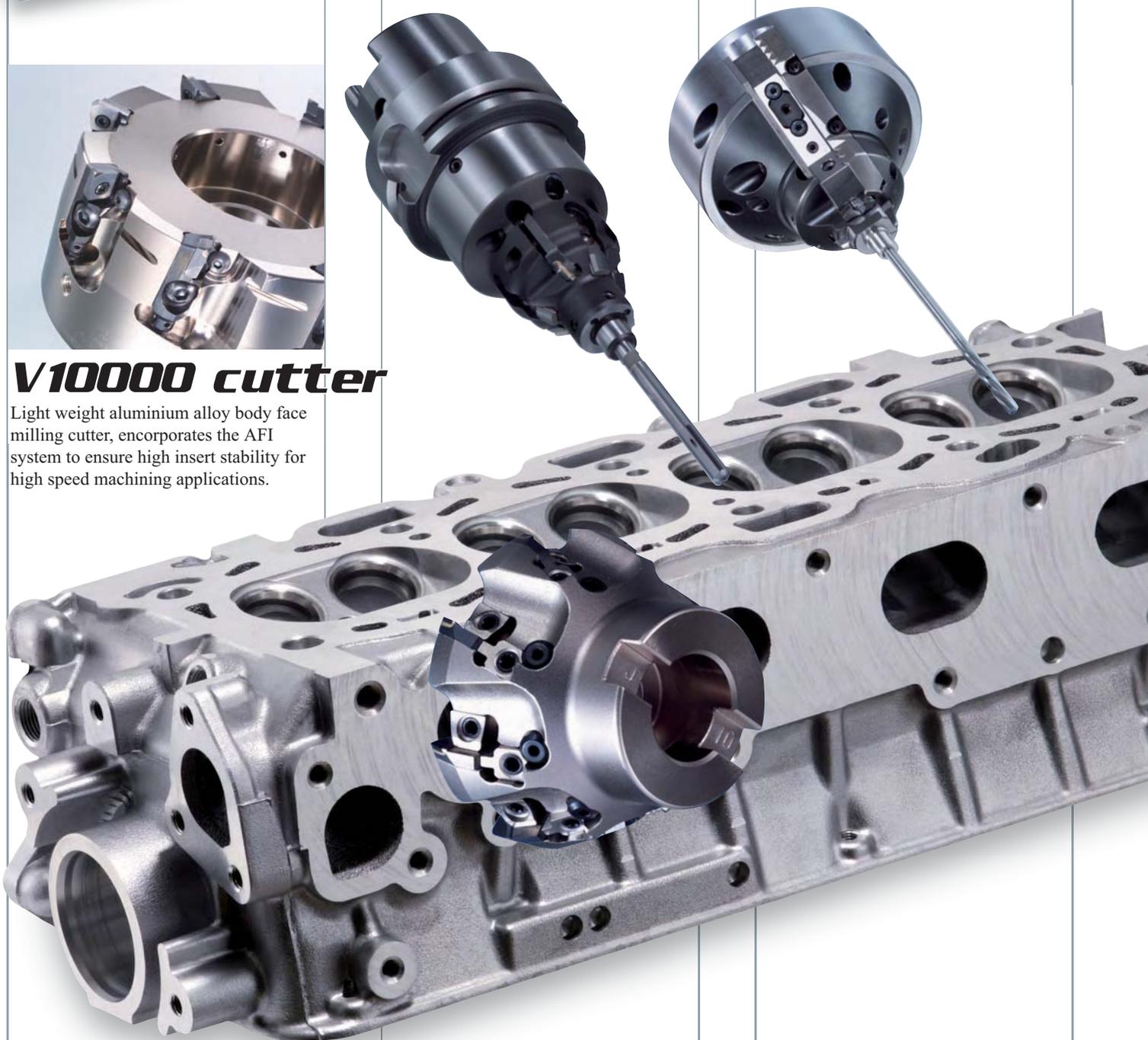
Insert reamer

Employs carbide guide pads that improves the self guiding properties leading to an overall improvement in hole roundness.



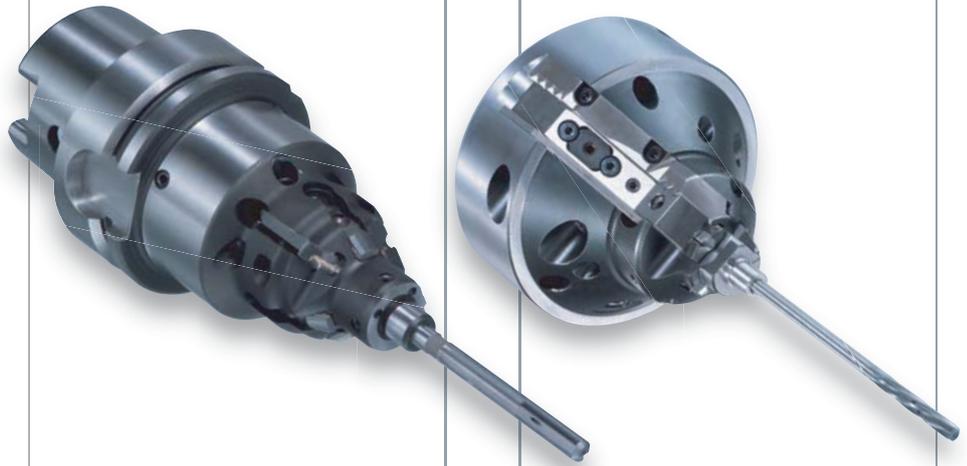
V10000 cutter

Light weight aluminium alloy body face milling cutter, incorporates the AFI system to ensure high insert stability for high speed machining applications.



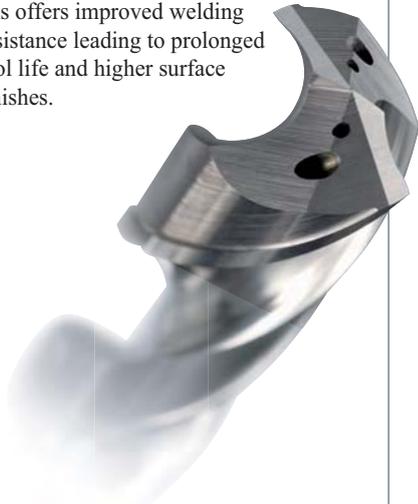
VP10RT

Specifically designed for use with sintered materials.
 Economical approach with performance equal to that of CBN.



MNS drill

Employs 4 through coolant holes. Therefore when drilling aluminium alloys this offers improved welding resistance leading to prolonged tool life and higher surface finishes.



Valve finishing tool (Valve seat face and the stem guide hole)

Plunge type (for machining centres) (Valve seat face)

Provides high accuracy machining of the seat and stem hole resulting in extremely high quality cylinder heads.

Traverse type (for special machines) (Valve seat face)

Employs a unique sliding device that provides high accuracy machining of the seat and stem hole resulting in extremely high quality cylinder heads.

Solid carbide gun reamer (Stem guide hole)

Solid carbide shank offering improved roundness, straightness and prolonged tool life.

U flute design to ensure effective coolant flow to improve chip disposal leading to higher surface finishes.



MAE/MAS drills

MAE/MAS drills have a double margin, offering finished holes that do not require a reaming process.

Suitable for high speed machining of aluminium and cast irons.



"Zero" run out cutter, QM7000

A face milling tool that has a user friendly cutting edge height adjustment device to ensure minimum cutting edge run out. Can be used with the QM7000 arbor. High dynamic balance making it suitable for high speed machining applications.



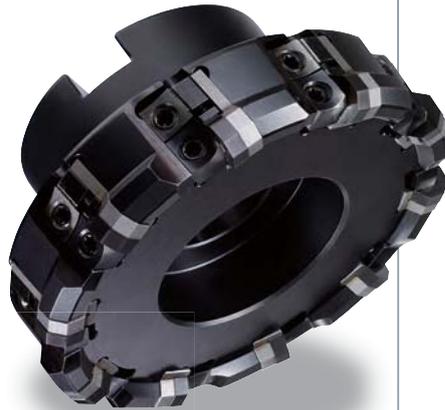
CATEGORY ENGINE PARTS

CYLINDER BLOCK TOOLING



Line boring bar (Crank shaft hole)

Employs unique micro-boring unit devices that ensure that high dimensional accuracies can be achieved.



Face milling cutter for solid CBN inserts

Solid CBN (MBS140) face milling cutter for machining of cast irons. Suitable for both rough and finish machining of cast irons.



"Zero" run out cutter, QM7000

A face milling tool that has a user friendly cutting edge height adjustment device to ensure minimum cutting edge run out. Can be used with the QM7000 arbor. High dynamic balance making it suitable for high speed machining applications.



MWS-DB/ MSL drills (Extra long type)

Non step drilling of holes 10~30D possible. Therefore offering high efficiency machining. Possible to convert from special gun drill machines to general purpose machining centres, leading to high machining flexibility and performance.

FINISHING Carbide inserts



FINISHING CBN inserts



ROUGHING Carbide inserts



Cylinder bore boring cutters (Roughing & Finishing)

The roughing boring tool uses a combination of a tool grade, that offers high speed & feed machining, and a suitable chip breaker, for reduced cutting resistance, so as to achieve improved machining efficiencies.

The finishing tool uses CBN inserts that can provide high wear resistance properties that lead to an increase in overall machining dimensions. The finishing tool also employs a diameter adjustment function ensuring that high machining accuracies can be achieved.

Light weight/ Quick change face milling cutters (Head locating face)

Quick change cutter.

A face milling cutter designed to be as light as possible so as to reduce the machine down time during tool changes.



Pelican double clamp tool holder

The combination of the high insert clamping rigidity and the overall strength of the pelican holder itself results in effective machining even under heavy interrupted or high feed machining with large tool overhangs.



Pin milling cutter (Rough machining of the crank pin)

High rigidity assembly mechanism ensures high rigidity and ease in assembly.

Unique cutting edge geometry used that results in lower cutting resistance leading to the prevention of burrs, prolonged tool life and an increase in overall performance.



CATEGORY **ENGINE PARTS**

CAM SHAFT TOOLING

CON ROD TOOLING



UE6110

(CVD coated grade for machining of steels)

A revolutionary tool grade offering both high crater and flank wear resistance that leads to higher machining stability and tool life management.



**MWE/
 MWS
 step drills**

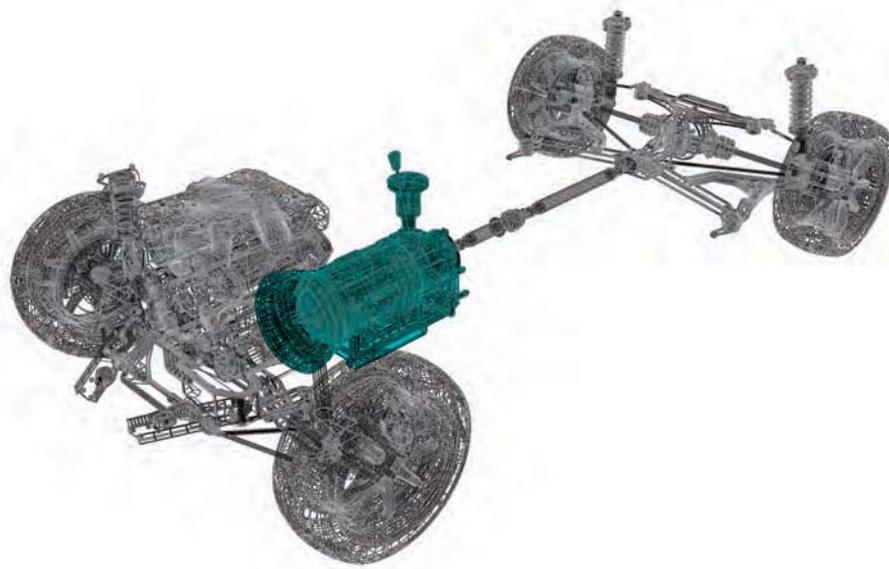
The MWE/MWS drills can be used to reduce the number of machining operations therefore reducing machining time and cost while maintaining high hole accuracies.



**MWS-DB/MSL drills
 (Extra long type)**

Non step drilling of holes 10~30D possible. Therefore offering high efficiency machining.

Possible to convert from special gun drill machines to general purpose machining centres, leading to high machining flexibility and performance.



CATEGORY **TRANSMISSION PARTS**

TRANSMISSION CASE TOOLING

VALVE BODY TOOLING

STATOR TOOLING

OUTPUT SHAFT TOOLING

CVT PULLEY TOOLING

GEAR TOOLING

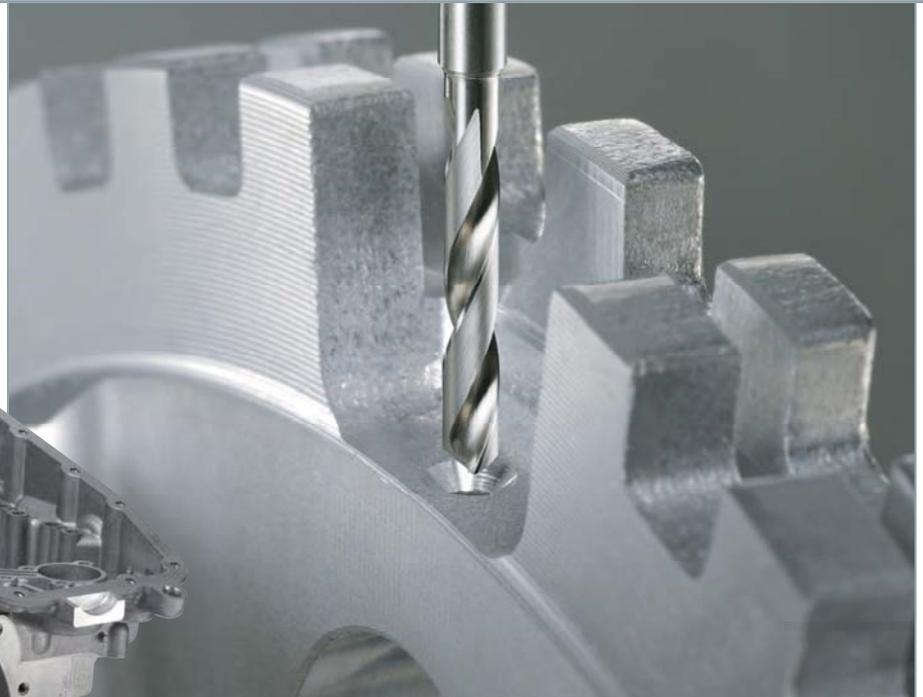
TORQUE CONVERTER COVER TOOLING



CATEGORY **TRANSMISSION PARTS**

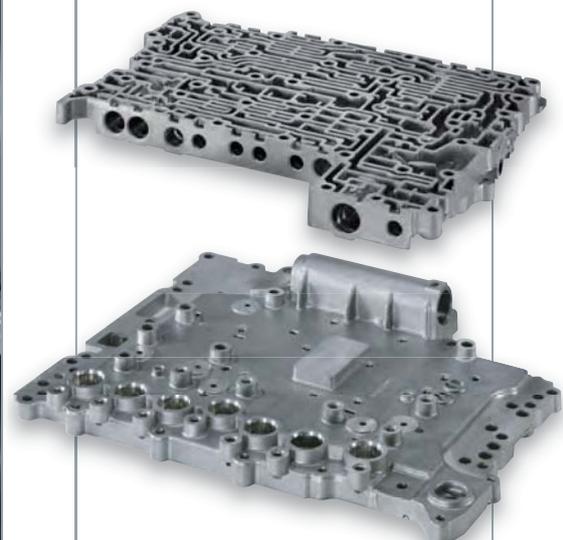
TRANSMISSION CASE TOOLING
STATOR TOOLING

VALVE BODY TOOLING



NF10000
cutter

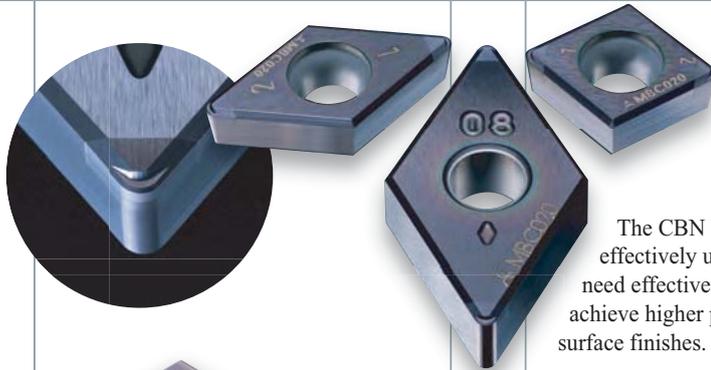
The minor cutting edge is made into a radius, therefore ensuring that high surface finishes can be achieved. Incorporates the AFI system to ensure high insert stability for high speed machining applications.



CATEGORY TRANSMISSION PARTS

OUTPUT SHAFT TOOLING

CVT PULLEY TOOLING



CBN breaker insert

The CBN breaker insert can be effectively used for applications that need effective chip control so as to achieve higher productivity and higher surface finishes.



CBN wiper insert

A CBN insert that has a wiper edge designed in between the straight cutting edge and the nose radius. High feed machining without influencing the surface finish is possible. It is possible to reduce the machining time and increase overall productivity.



UE6110

(CVD coated grade for machining of steels)

A revolutionary tool grade offering both high crater and flank wear resistance that leads to higher machining stability and tool life management.



MBC020

(Coated CBN tool grade for machining of hardened materials)

MBC020 is a tool grade that can be used for continuous through to interrupted machining.

An extensive range of edge preparations are available to suit various machining applications.



MBC010

(Coated CBN tool grade for machining of hardened materials)

A high grade that enables high speed machining of hardened steels. Cutting speeds of over 300m/min are possible leading to an increase in overall machining efficiency.

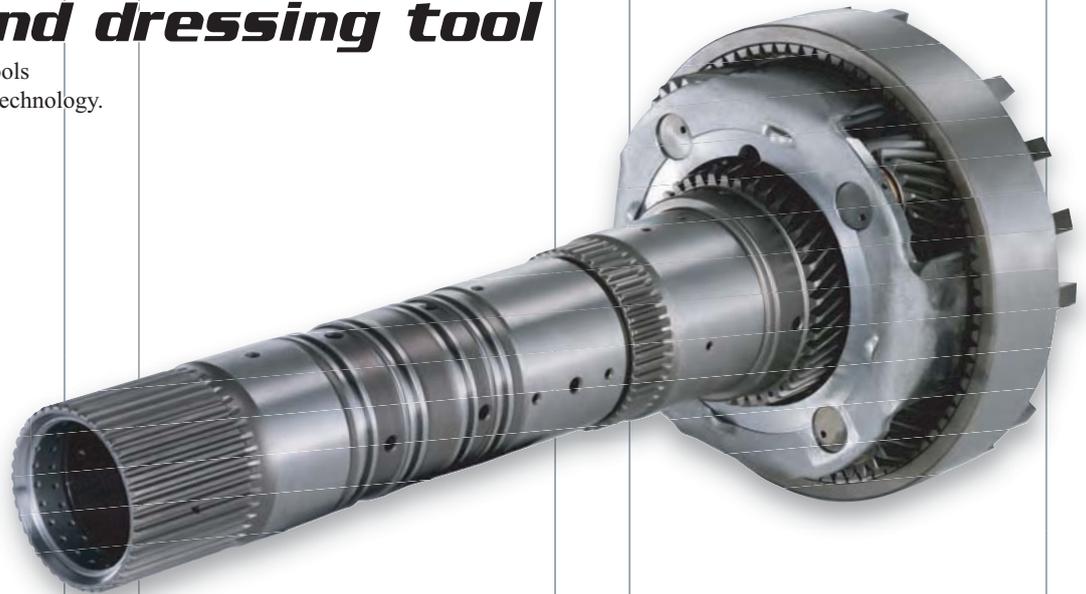


CATEGORY TRANSMISSION PARTS

GEAR TOOLING

TRG diamond dressing tool

A new range of diamond dressing tools incorporating the latest machining technology.



MWE/MWS drills (Small size)

Wavy cutting edge and a unique flute geometry provides effective chip disposal leading to lower cutting resistance and prolonged tool life.



Shaving cutter

High speed, high performance and longer tool life can be achieved using the surface treated STH shaving cutter and the irregular land type shaving cutter.

Broach

Mono-bloc helical broach offering high machining accuracies and lower running costs.



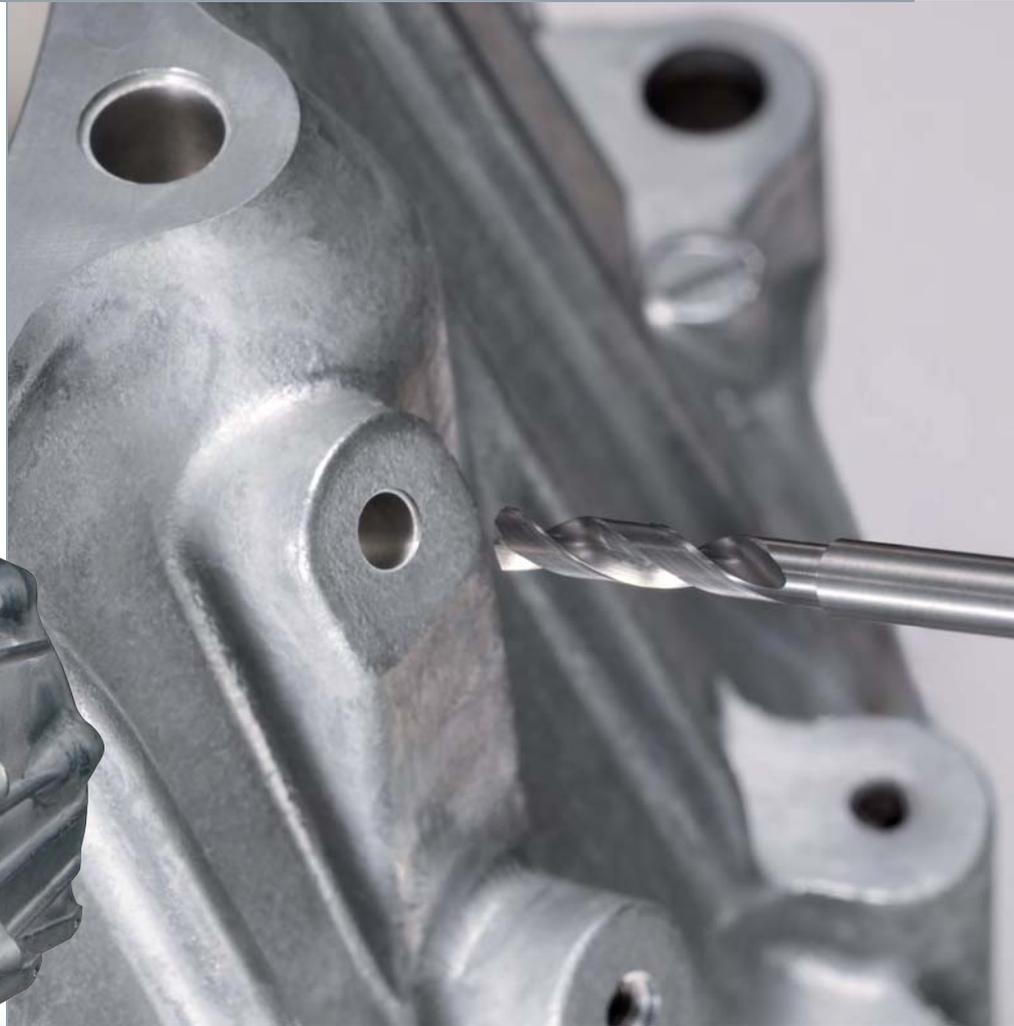
Hob

Carbide Miracle hobs. (Al,Ti)N coated and Super Violet hobs for increased machining performance capable of high speed dry machining.



CATEGORY **TRANSMISSION PARTS**

TORQUE CONVERTER COVER TOOLING



AZ chip breaker

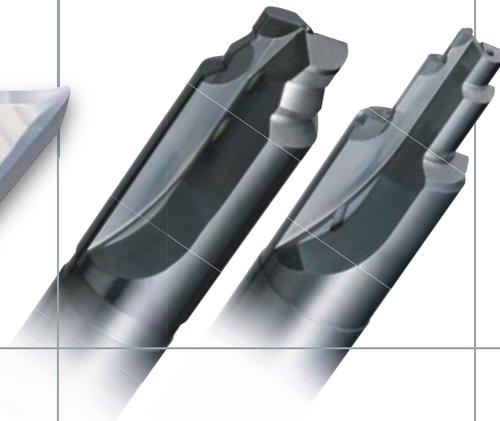
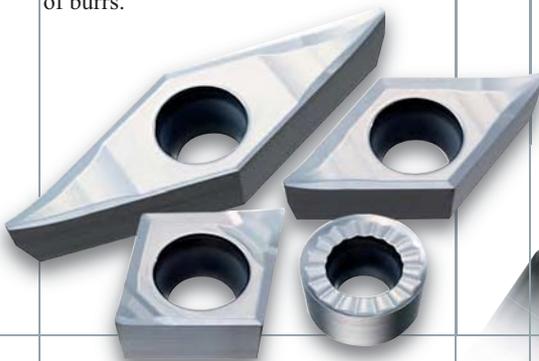
The AZ chip breaker employs a unique chip breaker, high rake that results in smooth chip control, improved welding resistance, and prevents the development of burrs.

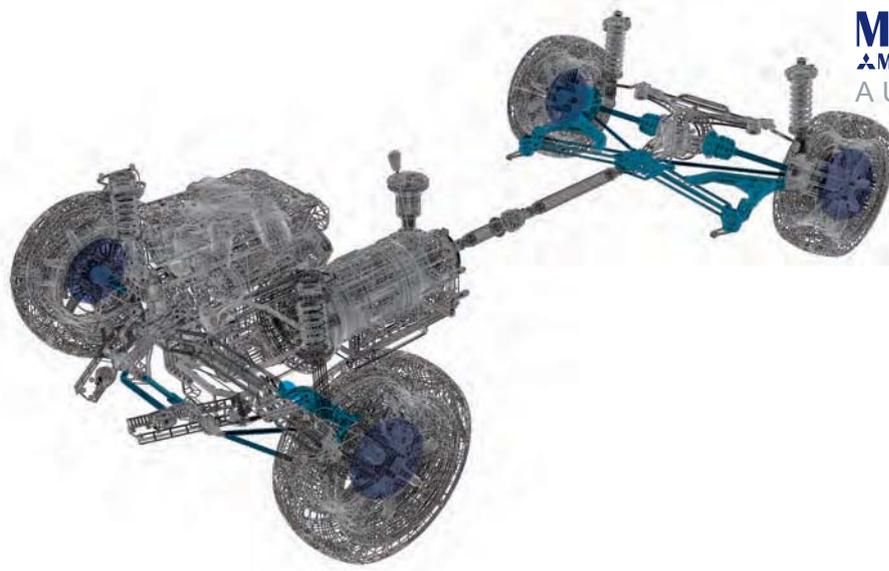
Multiple PCD reamer

The use of a multiple reamer enables a reduction in machining operations resulting in improvements in productivity and tool management.

MNS drill

Employs 4 through coolant holes. Therefore when drilling aluminium alloys this offers improved welding resistance leading to prolonged tool life and higher surface finishes.





CATEGORY **AXLE PARTS**

KNUCKLE ARM TOOLING

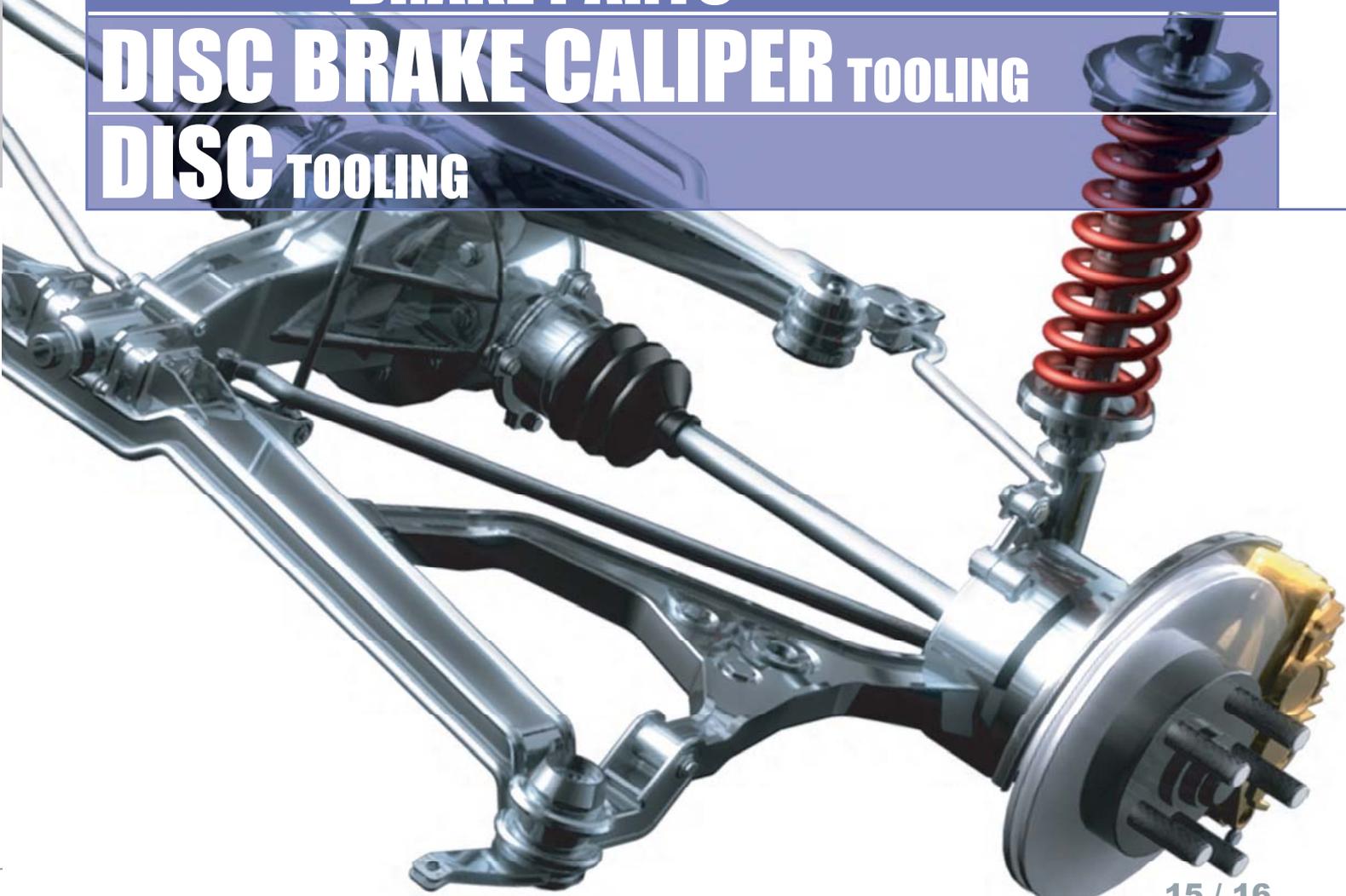
HUB TOOLING

DRIVE SHAFT & CVJ TOOLING

CATEGORY **BRAKE PARTS**

DISC BRAKE CALIPER TOOLING

DISC TOOLING



CATEGORY **AXLE PARTS**

KNUCKLE ARM TOOLING

HUB TOOLING

DRIVE SHAFT & CVJ TOOLING

UE6000 **series**

(CVD coated grade
for machining of steels)

A revolutionary tool grade offering both high crater and flank wear resistance that leads to higher machining stability and tool life management.



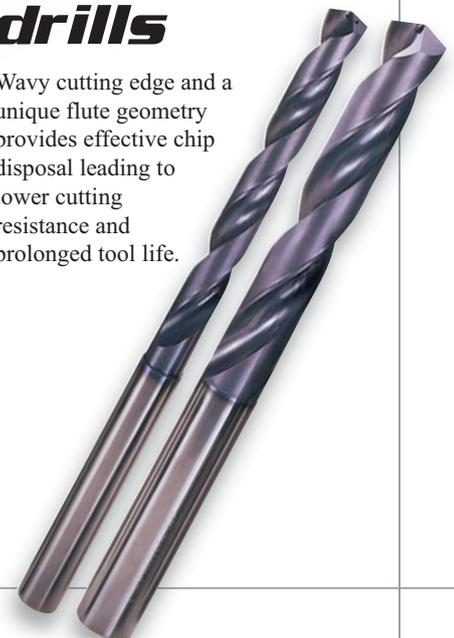
MHE **hub drill**

A uniquely designed drill that offers high performance machining of hub bolt holes. The design of the drill ensures excellent chip disposal properties and machining accuracies.



MWE/MWS **drills**

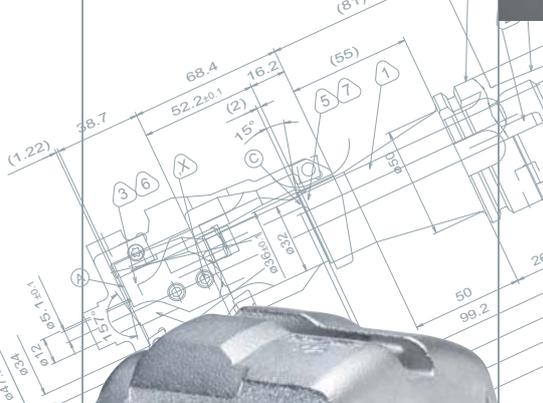
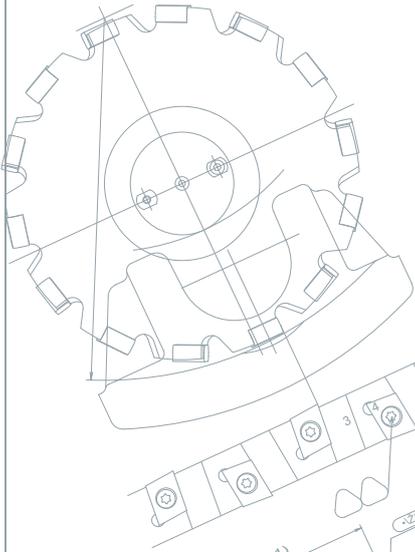
Wavy cutting edge and a unique flute geometry provides effective chip disposal leading to lower cutting resistance and prolonged tool life.



CATEGORY **BRAKE PARTS**

DISC BRAKE CALIPER TOOLING **DISC TOOLING**

**Side cutter
 and
 Customised
 cutter**



**UC5100
 series**

(CVD coated grade for machining of cast irons)

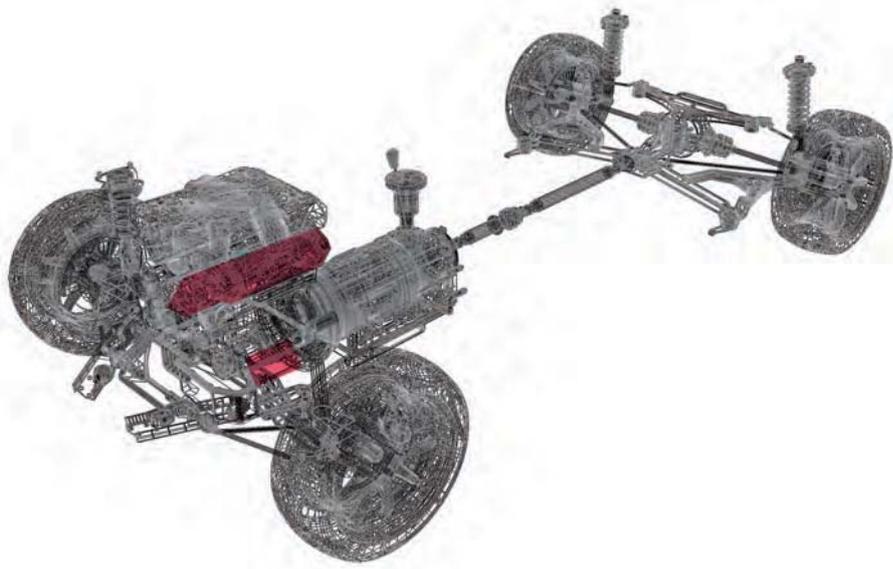
CVD, coated grade that uses a special process to ensure the surface of the insert is very smooth. This leads to excellent welding resistance, prolonged tool life and improved surface finishes.



**MBS140 Solid
 CBN insert**

Insert is manufactured from 100% CBN, therefore there are no limitations regarding depth of cut. This leads to higher machining efficiency and performance. High fracture resistance properties leading to high speed and efficiency machining.





CATEGORY **ELECTRICAL PARTS**

COMMON RAIL & INJECTOR TOOLING

ABS TOOLING

MOTOR TOOLING



CATEGORY **ELECTRICAL PARTS**

COMMON RAIL & INJECTOR TOOLING **ABS TOOLING**
MOTOR TOOLING

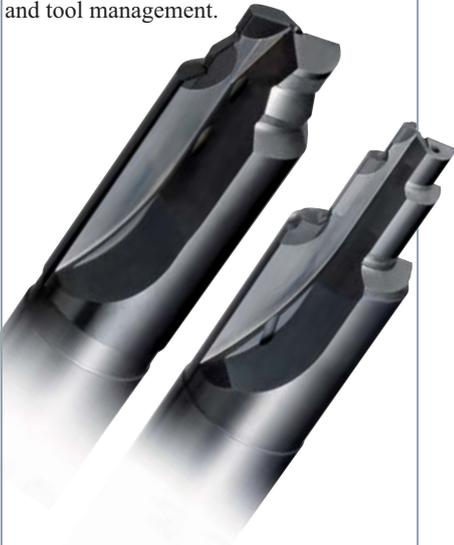
MNS drill

Employs 4 through coolant holes. Therefore when drilling aluminium alloys this offers improved welding resistance leading to prolonged tool life and higher surface finishes.



Multiple PCD reamer

The use of a multiple reamer enables a reduction in machining operations resulting in improvements in productivity and tool management.



MGS drill
(Solid carbide gun drill)

High run out accuracies making it possible to carry out stable deep hole drilling even on general machines.



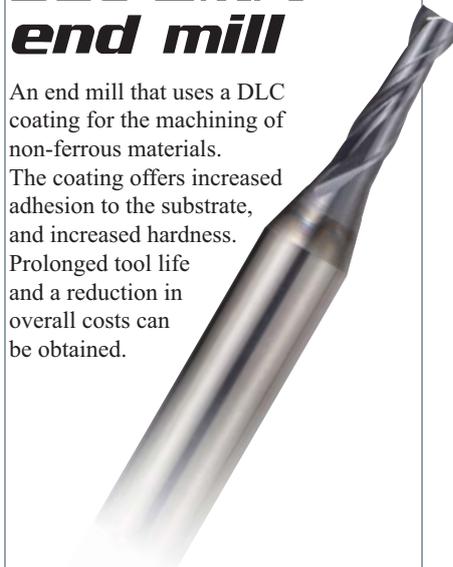
MSE
miniature drill

The MSE miniature drill uses a tough substrate in combination with miracle coating. A unique flute geometry ensures effective chip control leading to longer tool life.



DLC-2MA
end mill

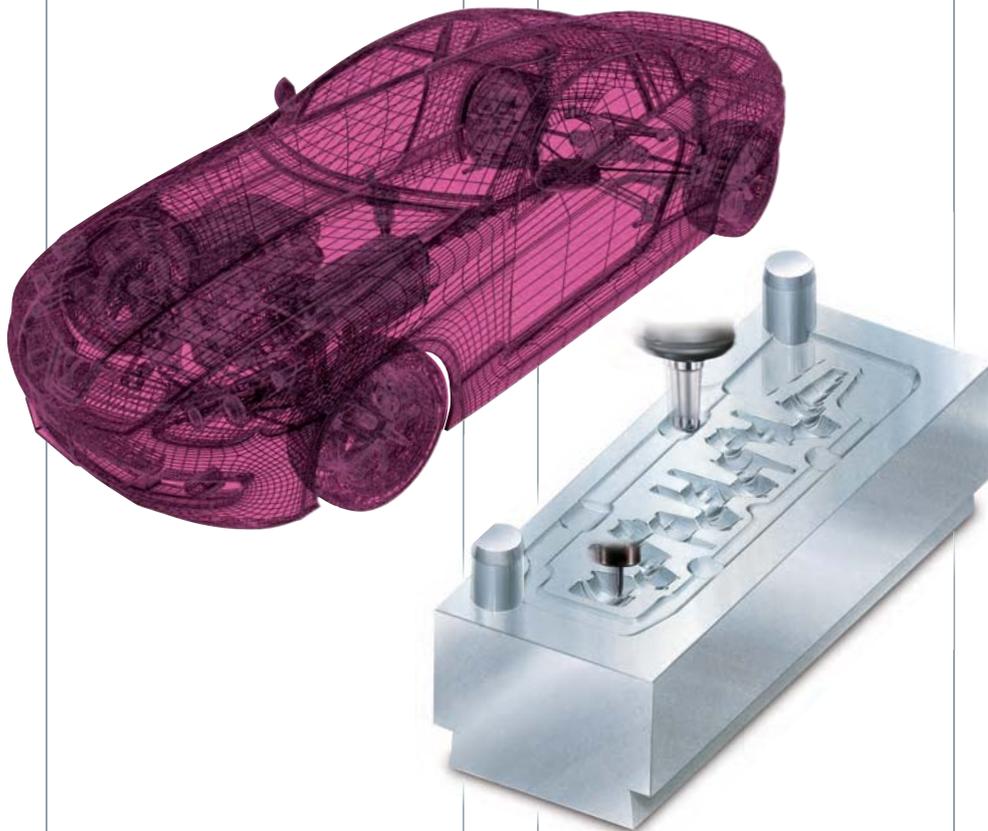
An end mill that uses a DLC coating for the machining of non-ferrous materials. The coating offers increased adhesion to the substrate, and increased hardness. Prolonged tool life and a reduction in overall costs can be obtained.



Double margin drill

Wavy cutting edge and a unique flute geometry provides effective chip disposal. The drill has 4 margins that ensure high hole accuracies and roundness. When the drill exits the hole problems can tend to occur but the double margin can provide stable machining and prolonged tool life.





AJX cutter

The AJX high feed radius cutter is capable of feed rates that are up to 5 times higher than conventional tools therefore enabling high efficiency machining and an overall reduction in machining time.



SRF ball end mill

The SRF is a finishing ball end mill.

Uses a high precision radius insert that offers machining accuracies comparable to a solid end mill.

As the tool is indexable there is no need for regrinding.



SRM2 ball end mill

The SRM2 is capable of rough through to semi finish machining.

The combination of a highly rigid body with high accuracy low resistance inserts enables efficient machining.



SPX end mill

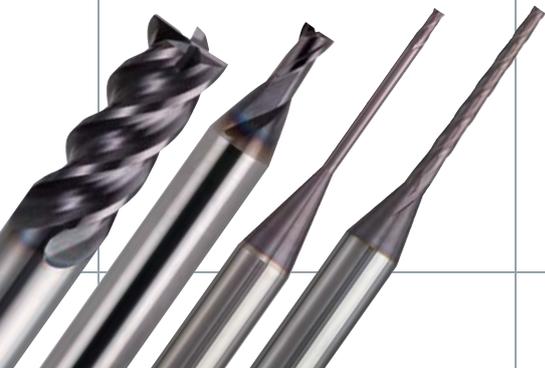
An end mill suitable for rough machining of deep faces.

Uses inserts that have a wavy geometry to reduce the overall cutting resistance and to improve the chip breaking performance.



MSTAR end mills

General purpose end mill. Available in a wide range of sizes and geometries.



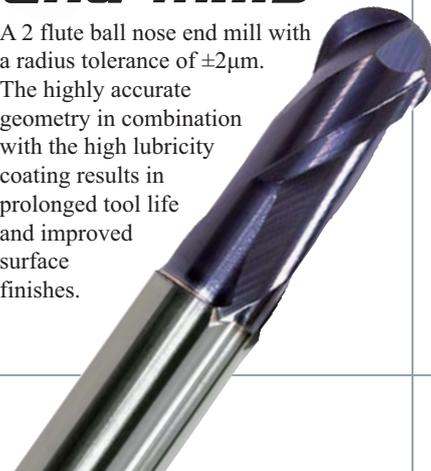
IMPACT MIRACLE end mills

An end mill series that uses Impact Miracle coating. Impact miracle coating offers high hardness and oxidation resistance. Unique cutting edge geometry leads to increased chipping resistance. Suitable for materials up to 60HRC.



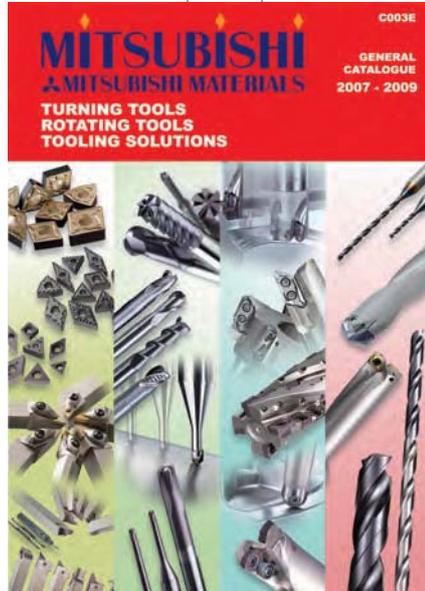
MIRACLE NOVA end mills

A 2 flute ball nose end mill with a radius tolerance of $\pm 2\mu\text{m}$. The highly accurate geometry in combination with the high lubricity coating results in prolonged tool life and improved surface finishes.



CATEGORY NEWS

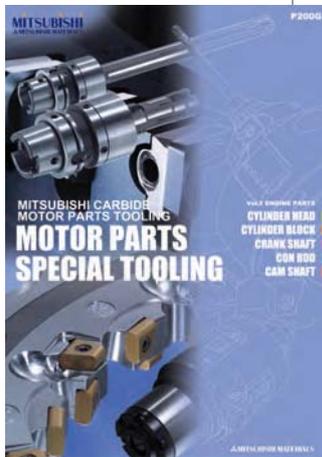
GENERAL, SPECIAL, PRODUCT



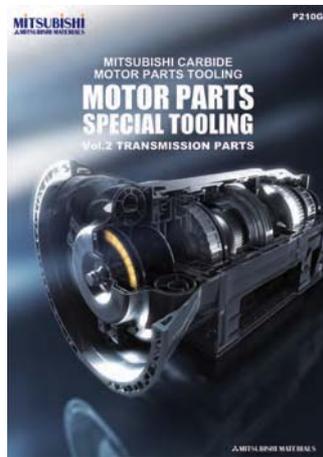
C003E



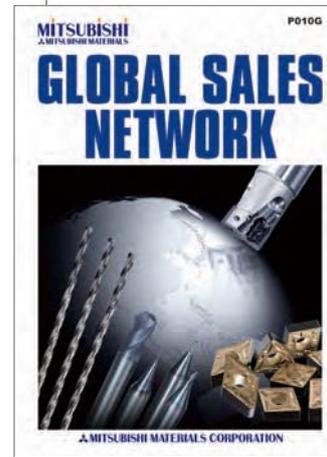
C500G



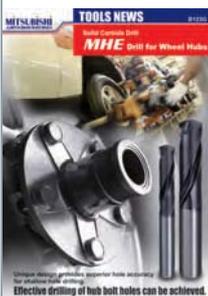
P200G



P210G



P010G



**TOOLS NEWS
 MHE**



**TOOLS NEWS
 MICRO-MGS**



**TOOLS NEWS
 MBC010**



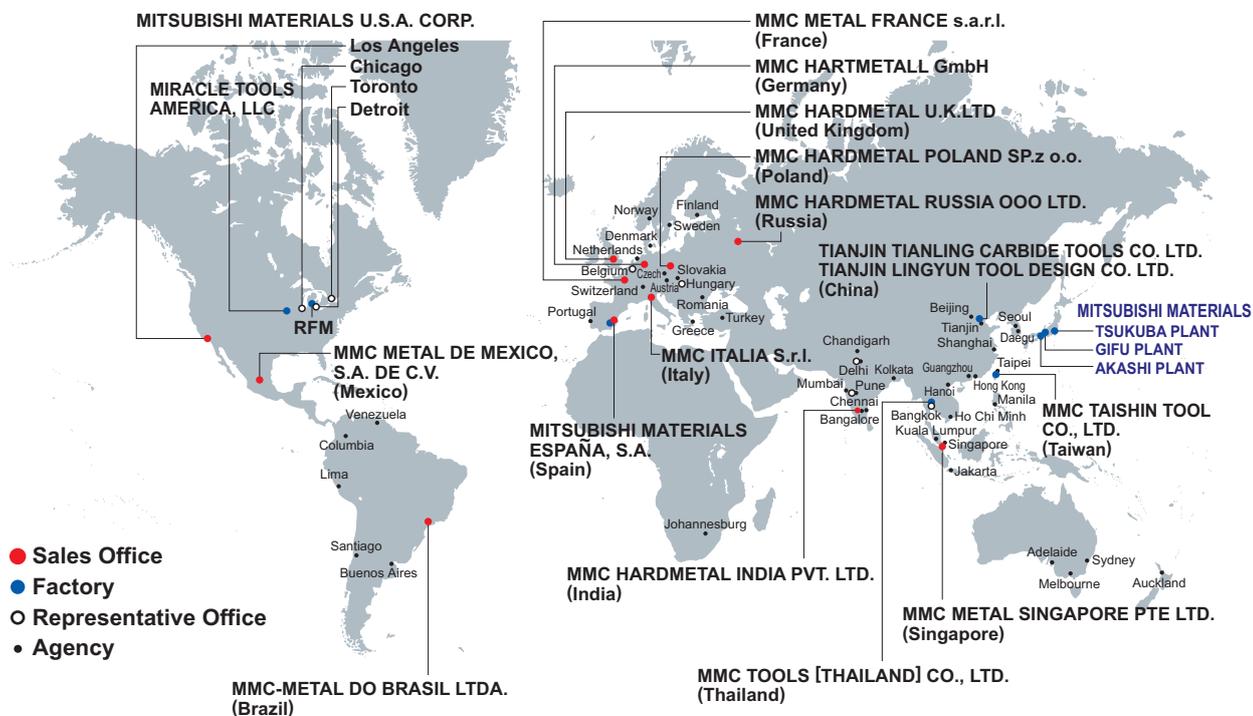
**TOOLS NEWS
 MBC020**



**TOOLS NEWS
 UE6110**



**TOOLS NEWS
 UC5105/UC5115**



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