DMG MORI

- DMU | DMC 80 *µPrecision*
- DMU | DMC 100 *µPrecision*
- DMU | DMC 125 *µPrecision*
- DMU | DMC 160 *µPrecision*
- DMU | DMC 210 *µPrecision*
- DMU | DMC 270 *µPrecision*
- DMU | DMC 340 *µPrecision*
- NHX 10000 *µPrecision*

DMG MORI *µPrecision*

Precision from Passion

dmgmori.com

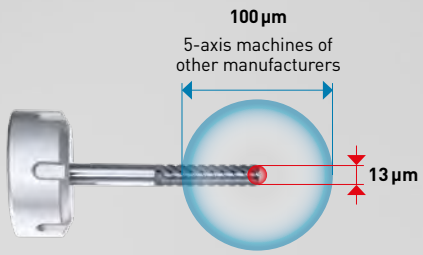
µPrecision

Highest precision – increase volumetric accuracy by up to 80 %

Productivity and precision are an important component of the DNA at DMG MORI.
This is why the *µPrecision* variant of the duoBLOCK, Portal and NHX series with high-precision volumetric accuracy of up to 13 µm is unique in the world.

This is achieved by fine adjustment of all linear axes using shims, temperature control of the cooling and lubrication supply stabilizing machine and workpiece temperatures, tripling the resolution of the circular

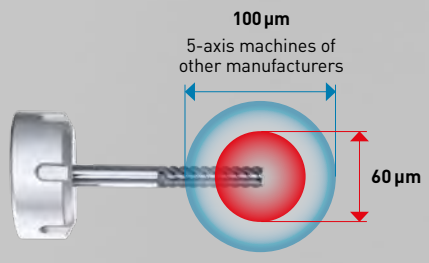
Position accuracy (P_{max}) up to 3 µm



µPrecision PACKAGE

+ Patented fine adjustment of the linear guides
+ Individual temperature compensation, including SGS – Spindle Growth Sensor
+ High-precision OMP 600 measuring probe

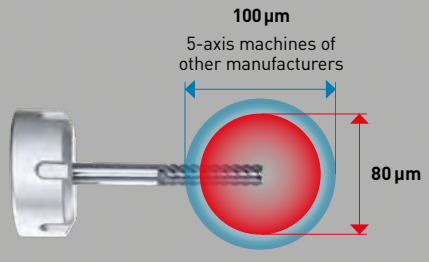
(P_{max}) up to 4 µm



ACCURACY PACKAGE

+ Extended cooling measures on the machine structure and drive elements (standard for Portal series)
+ Volumetric measuring and compensation (VCS Complete)*
+ Thermo-shield on the machine bed (only duoBLOCK series)
+ Coolant temperature control
+ Increased number of compensation support points for NC rotary table
+ Best-fit selection of the machine components

(P_{max}) up to 5 µm



STANDARD ACCURACY

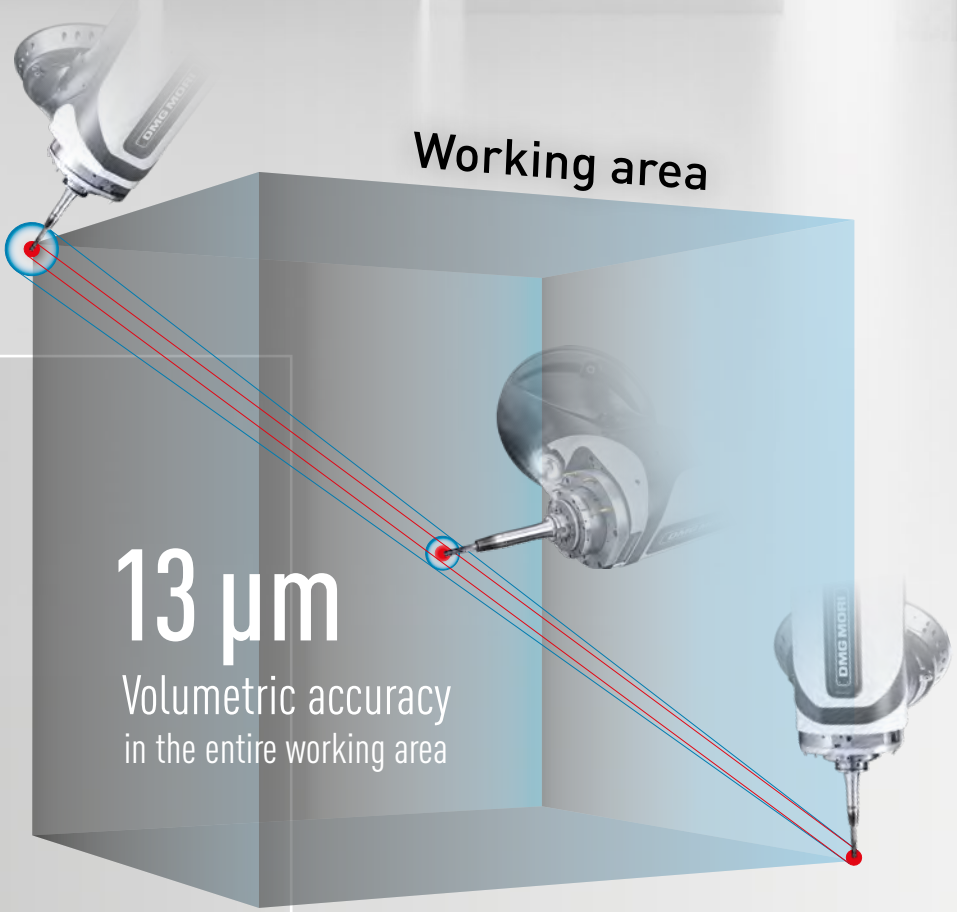
+ Thermo-symmetrical design
+ Inherently rigid machine bed with 3-point-support
+ Temperature compensation
+ Active cooling of the drive elements

up to 80 µm

*not in combination with A-Axis

measuring system and introducing the "Spindle Growth Sensor" to measure and compensate for temperature-related spindle displacement in real time. Additionally, through the individual temperature compensation feature, we determine machine behavior under changing conditions at the customer site, storing the data for continuous retrieval during machining, approximately every 50 milliseconds.

We provide three different packages for our customers: Standard Accuracy, Accuracy Package and *µPrecision* Package, while each package adds more accuracy measures to the package/s beneath.



Accuracy across the entire machining area independent regardless of the spindle position.

up to 60 µm

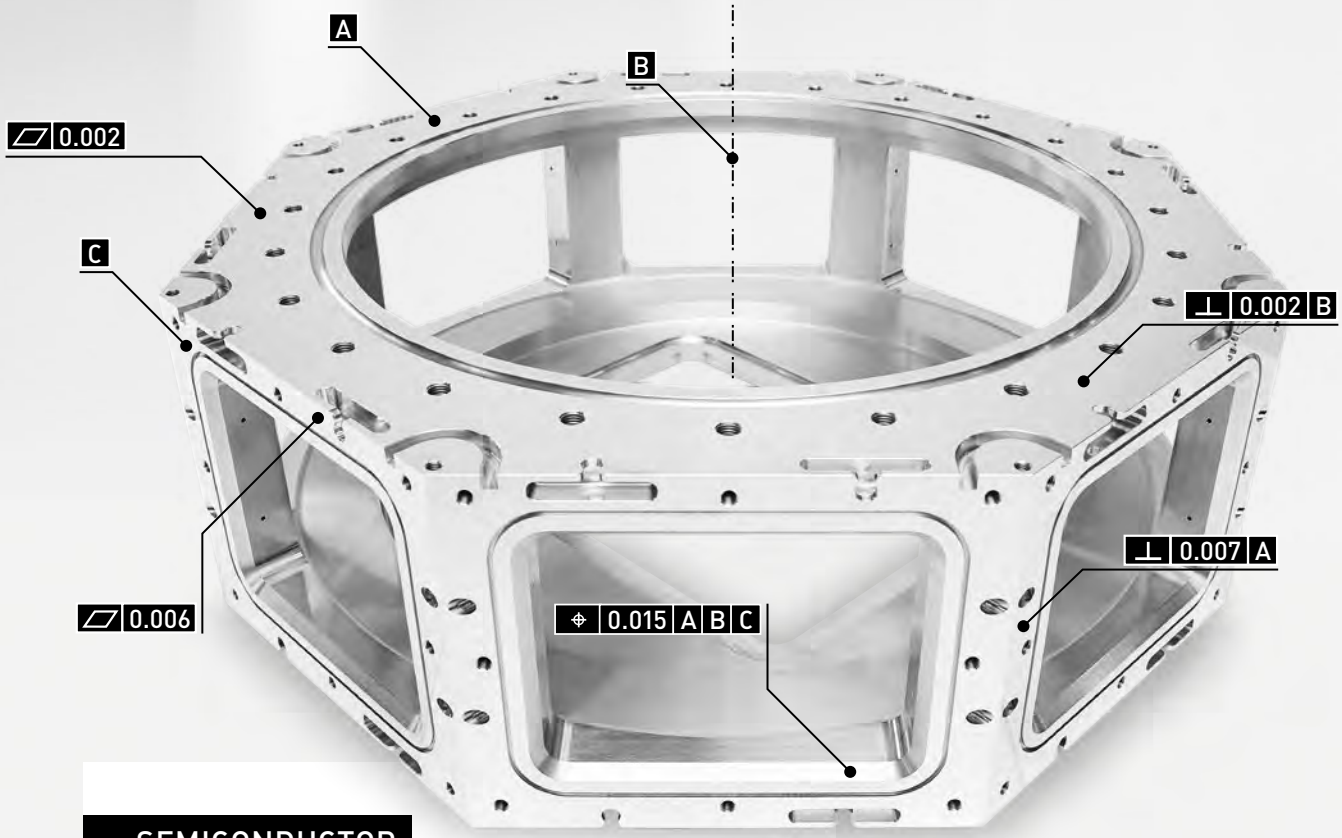
Volumetric Accuracy up to 13 µm

µPrecision

Maximum precision for every application

The *µPrecision* package is offered for **15 different machines** across the DMG MORI portfolio. It's available for all duoBLOCK and Portal machines, with or without pallet changer, and the NHX 10000. These machines cover sizes between 800 to 3,400 mm X-Axis travel distance.

The *µPrecision* package is legit for many different industries and usecases, especially the semiconductor industry. Generally speaking: **Whenever precision is needed *µPrecision* is the way to go!**



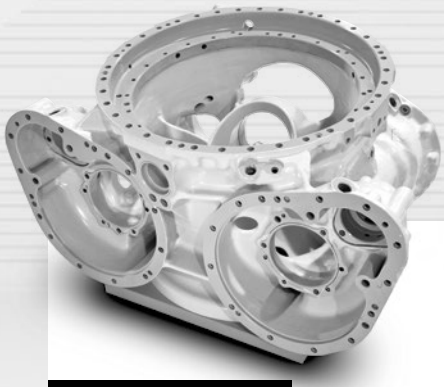
SEMICONDUCTOR

Octagon Housing

Material:	high-strength aluminum
Size:	ø 900 mm × 310 mm
Setups:	3
Number of Tools:	25
Processing time:	12 hours

TECHNICAL DATA

Volumetric accuracy	µm	
Max. travel path (X)	mm	
Positioning uncertainty (X/Y/Z) in accordance with ISO 230-2	µm	
Positioning uncertainty (B/C) in accordance with ISO 230-2	arcsec	



AEROSPACE

Helicopter gearbox housing out of high-strength aluminum

DIE & MOLD

Injection mold slide out of steel

ENGINEERING

Machine bed out of cast iron

AVAILABLE MACHINES

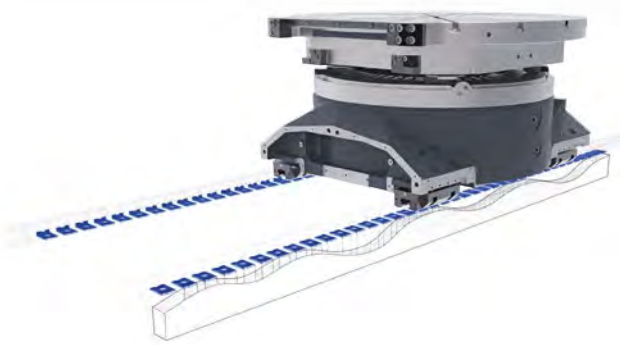
	duoBLOCK series				Portal series			NHX series
	DMU/DMC 80 *µPrecision*	**DMU/DMC 100** *µPrecision*	**DMU/DMC 125** *µPrecision*	**DMU/DMC 160** *µPrecision*	**DMU/DMC 210** *µPrecision*	**DMU/DMC 270** *µPrecision*	**DMU/DMC 340** *µPrecision*	**NHX 10000** *µPrecision*
	13	15	15	20	20	25	30	15
	800	1,000	1,250	1,600	2,100	2,700	3,400	1,700
	3/3/3	4/3/4	4/3/4	4/4/4	4/4/4	6/6/6	7/7/7	6/6/6
	4/4	4/4	4/4	4/4	4/4	4/4	4/4	9/-

µPrecision

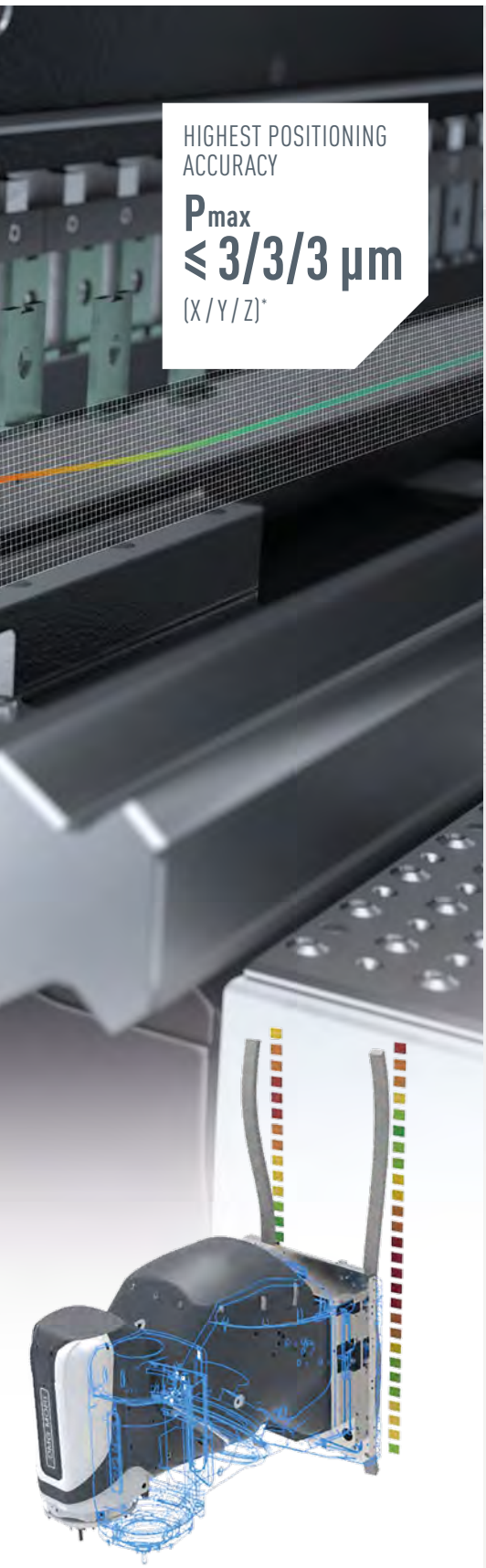
Fine adjustment using shims

The basis for increased accuracy are finely adjusted linear guides. In order to achieve a perfect machining result in the entire working area, a high degree of precision is required in terms of the flatness, perpendicularity and straightness of all axes.

Previously, *µPrecision* guideway support required over 500 hours of manual scraping. Now, this is done using shims placed with simulation for precise mounting, achieving flatness and straightness of all linear guides under 3 µm.

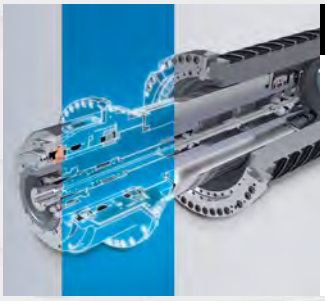


*DMU | DMC 80 *µPrecision*



All linear axes (X, Y, Z) are fine-tuned to reach maximum precision.

INCLUDED AND SUPPLEMENTARY EXCLUSIVE TECHNOLOGY CYCLES



SGS – Spindle Growth Sensor

Included in the *µPrecision* Package

+ Detection of axial displacement caused by centrifugal forces and thermal expansion
+ Compensation of spindle nose misalignment for higher process reliability and optimum surface results

VCS Complete**

Included in the Accuracy & *µPrecision* Package

+ Geometric fingerprint of the machine for volumetric calibration at the push of a button
+ Compensation of deviations (dimensional and angular errors, straightness of the linear axis and machine kinematics.

3D quickSET

Strongly recommended

+ Suitable for every machine kinematic
+ Periodic recalibration of the machine with comprehensive documentation
+ Highest kinematic accuracy in self-regulation

Application Tuning Cycle

Recommended combination

+ Adjustment of drive parameters for the highest surface quality during layering
+ Minimization of the machining thime while maximizing the component quality

TCC – Tool Control Center

Recommended combination

+ Monitoring of radial and axial spindle load as well as cutting edge breakage detection to protect the tool and workpiece
+ Chip detection on plan pad and tool cone

**A quick measurement takes about ten minutes, while a complete process, including compensation table updates, takes about 40 minutes. Checks should be done before high-precision machining or at least every six months.

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MORE KNOWLEDGE

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Best price guarantee for original spare parts.
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Spindle service at best prices.
The highest level of competence from the manufacturer at new and attractive prices – DMG MORI spindle service!

*All information and price advantages for Customer First are available at: **customer-first.dmgmori.com**

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The machines depicted here may include some options, equipment and CNC alternatives.

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