

HIGH SPEED, HIGH PRECISION HORIZONTAL MACHINING CENTER

DMH-500 DMH-630

DAHLI MACHINING CENTER HORIZONTAL



LÍNEA DE MÁQUINAS PARA LA INDUSTRIA, DE CALIDAD SUPERVISADA CON LAS MAS ALTAS PRESTACIONES



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High Speed! High Efficiency!

A New Standard in Horizontal Machining

DMH-500

A New Generation of DMH Machine Brings Increased Stability, Rigidity, and Accuracy

- » Advanced box-in-box structural design features optimum rigidity and minimum thermal deformation.
- » Comprehensive thermal deformation control features assure maximum dependability of structural stability.
- » The majors are designed and analyzed through advanced "Finite Element Analysis" for optimum structural rigidity and accuracy.
- » High spindle speed up to 15,000 RPM makes the DMH ideal for high speed machining (optional).
- » Cutting feed rate up to 10,000 mm/min.
- » Rapid traverse rates on X, Y, Z axes are 40 m/min.



DMH-630

The Dah Lih DMH-630 Horizontal Machining Center is designed and built for high speed machining requirements. It is ruggedly constructed throughout with maximum dependability in machining accuracy.

- » Traveling column structure aids in upgrading machining efficiency.
- » The one-piece fabricated T-shaped base ensures stable and fast axis movement.
- » Roller type linear guideways on all three axes exhibit heavy load resisting capacity and allow for fast and stable feeds.
- » Pallet change is driven by servomotor, providing fast and smooth change motions.
- » Table rotation is directly driven by a servomotor for high positioning accuracy.
- » Y-axis movement is driven by double ballscrews, providing optimal rigidity on feed axis and responsiveness.
- » Linear scales on 3 axes are standard.



SPECIALLY DESIGNED X, Y, Z AXIS MOVEMENT

The X and Y axis structure is designed with overlap loading and the Z-axis is independent. This is combined with a shortened spindle length to achieve the best possible cutting rigidity, stability, and accuracy.

Applicable for Precision Machining for Various Industries

- » Automotive and motorcycle industries
- » Precision parts machining
- » General machining

A new generation of horizontal machining center for precision machining in various industries



1. BOX-IN-BOX STRUCTURE

- » The box-in-box structure features excellent force distribution that increases structural rigidity while reducing moving mechanism weight.

2. 3 AXES LINEAR GUIDEWAYS

- » The X, Y, Z-axis slideways are mounted with heavy duty roller type linear guideways that feature exceptionally high stability.
- » Perpendicular slideways enhance both cutting force and gravity load to maximize machining performance as well as the overall structural rigidity.

3. 3 AXES LINEAR SCALES

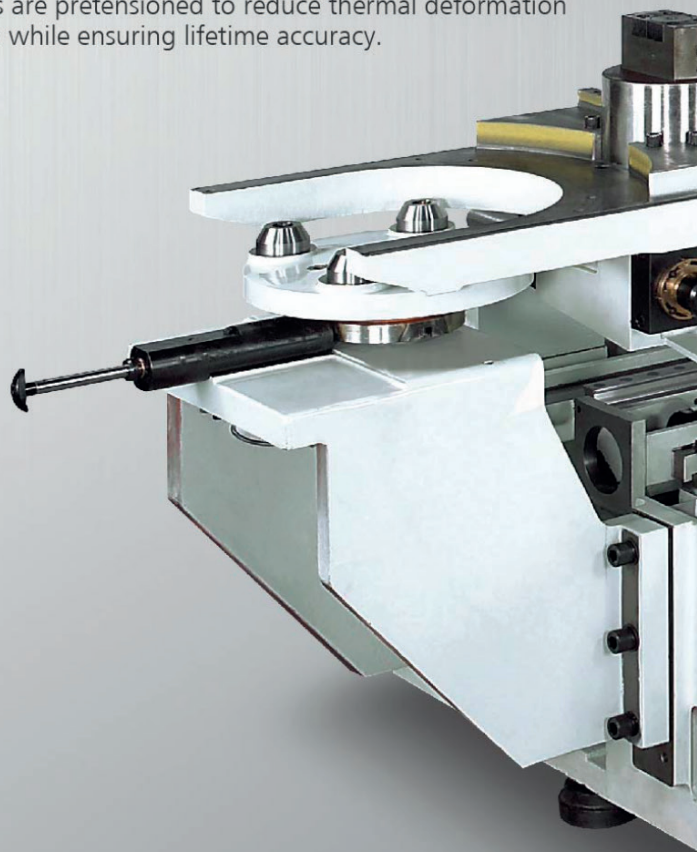
- » The X, Y, Z-axes are all equipped with precision linear scales, providing closed-loop feedback control. With these linear scales, high positioning accuracy on 3 axes is guaranteed.

4. TRAVELING SPINDLE HEAD

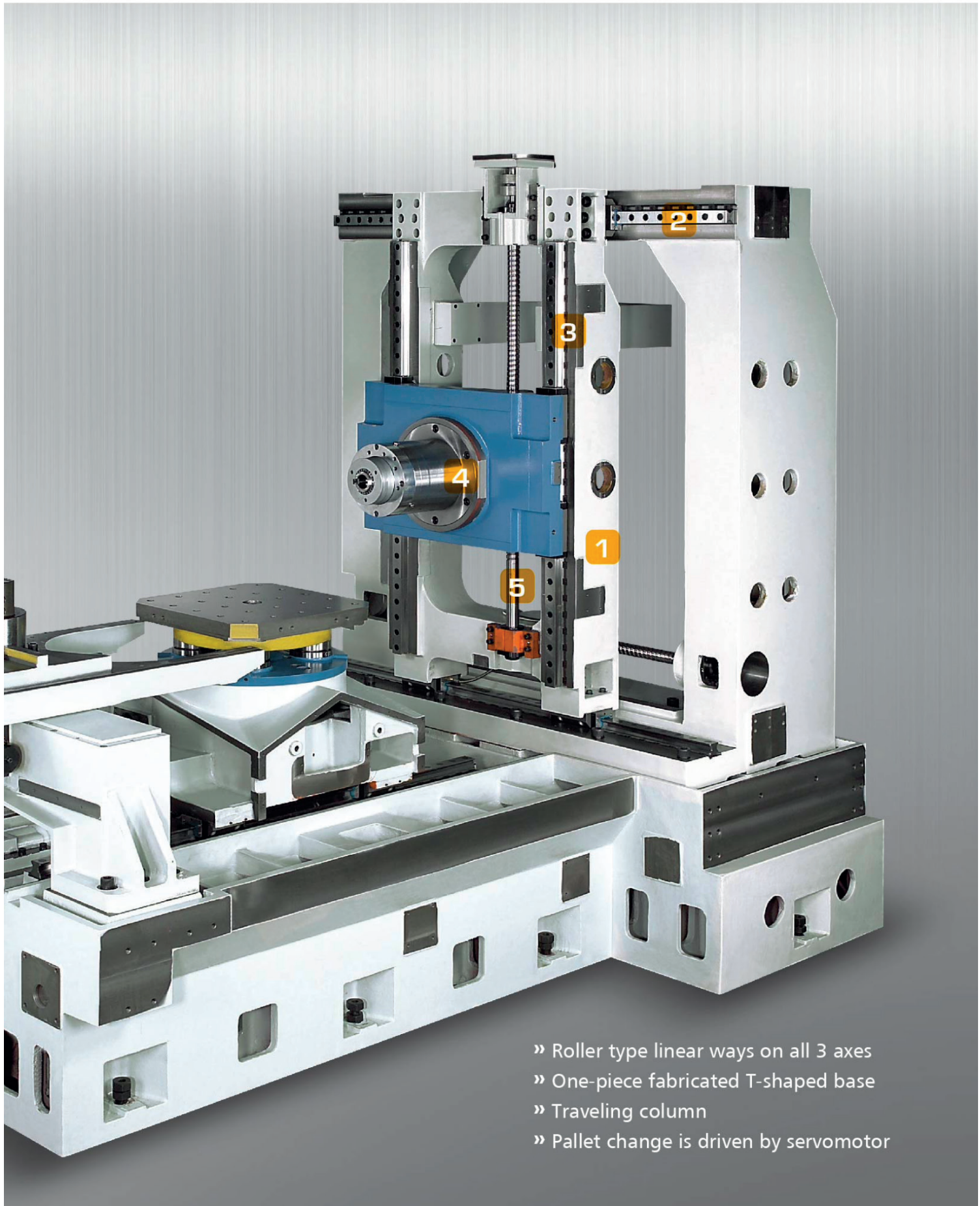
- » The rigidly constructed spindle head moves on linear guideways to ensure high stability during cutting.
- » The traveling spindle head is specially designed for increasing efficiency.

PRETENSIONED BALLSCREWS

- » The ballscrews are pretensioned to reduce thermal deformation to a minimum while ensuring lifetime accuracy.



Rugged Box Type Structure



- » Roller type linear ways on all 3 axes
- » One-piece fabricated T-shaped base
- » Traveling column
- » Pallet change is driven by servomotor



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SPECIALLY DESIGNED X, Y, Z AXIS MOVEMENT

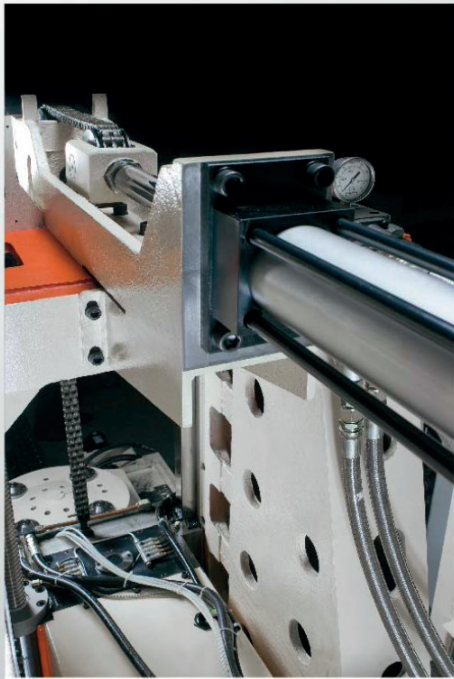
The X and Y axis structure is designed with overlap loading, and the Z-axis is independent. This is combined with a shortened spindle length to achieve the best possible cutting rigidity, stability, and accuracy.

A Competitive Edge for Precision Machining in Various Industries

- » Automotive and motorcycle industries
- » Precision parts machining
- » General machining

HYDRAULIC COUNTER-BALANCE

The Y-axis movement is counter-balanced by hydraulic cylinder with an accumulator. This results in increased stability and smoothness of feed motion on Y-axis.



1. TRAVELING COLUMN

- » The column is a double-wall construction featuring high rigidity with minimum deformation.
- » The step layout of linear guideways on the column slideways provides outstanding stability in heavy cutting.
- » The traveling column structure provides an increase in machining efficiency.

2. 3 AXES LINEAR GUIDEWAYS

- » The X, Y, Z-axis slideways are mounted with heavy duty roller type linear guideways that feature exceptionally high stability.
- » Perpendicular slideways enhance both cutting force and gravity load to maximize machining performance as well as overall structural rigidity.

3. 3 AXES LINEAR SCALES

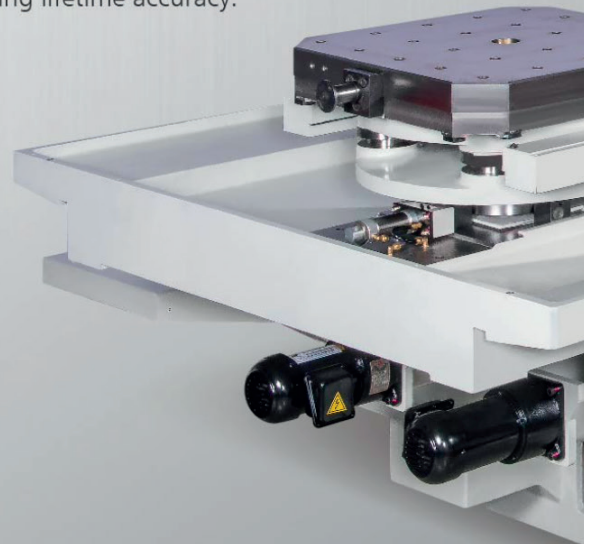
- » The X, Y, Z-axes are all equipped with precision linear scales, providing closed-loop feedback control. With these linear scales, high positioning accuracy on 3 axes is guaranteed.

4. TRAVELING SPINDLE HEAD

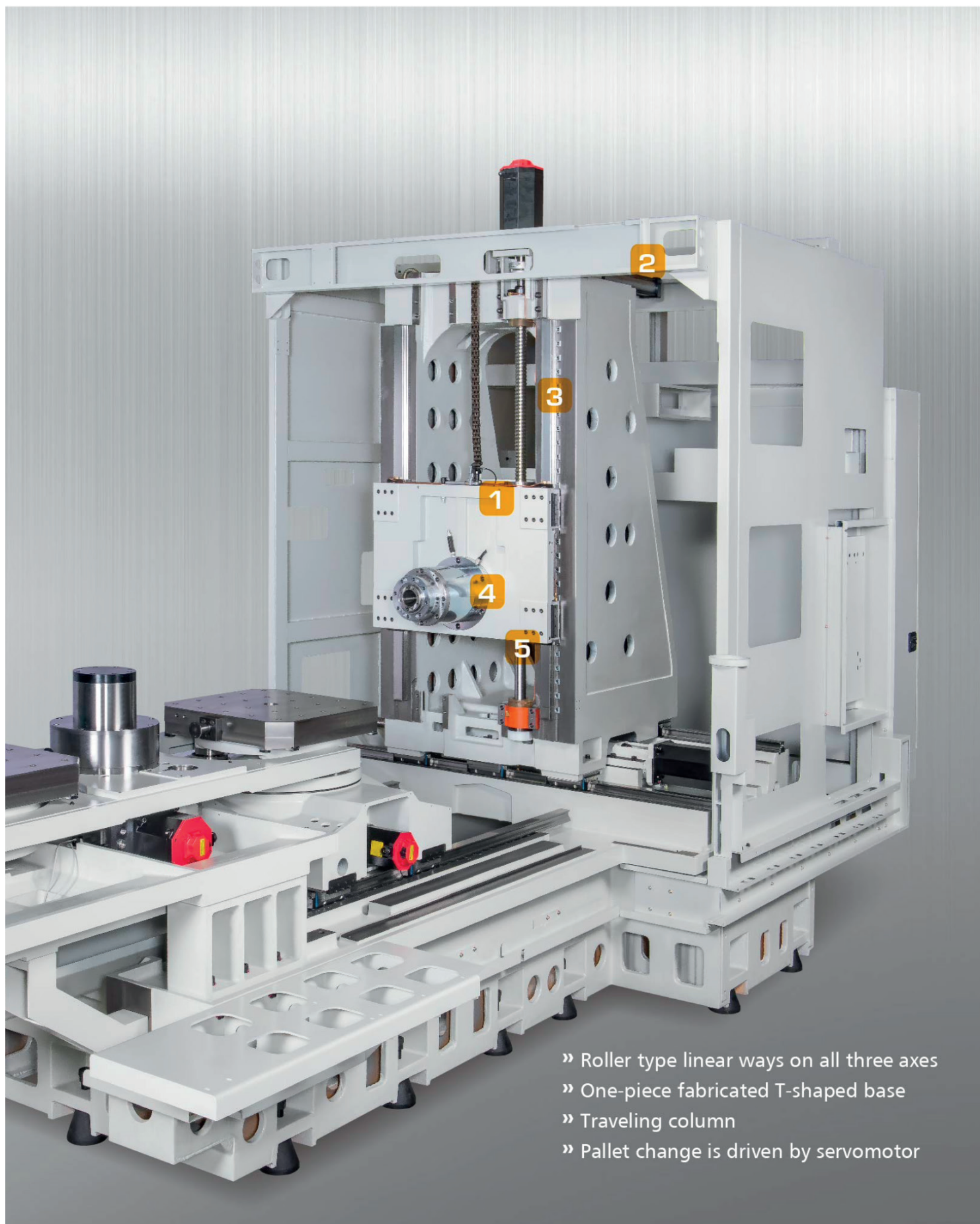
- » The rigidly constructed spindle head moves on linear guideways to ensure high stability during cutting.
- » The traveling spindle head is specially designed for increasing efficiency.

5. PRETENSIONED BALLSCREWS

- » The ballscrews are pretensioned to reduce thermal deformation to a minimum while ensuring lifetime accuracy.



Advanced Structure Design for Perfect Rigidity



- » Roller type linear ways on all three axes
- » One-piece fabricated T-shaped base
- » Traveling column
- » Pallet change is driven by servomotor



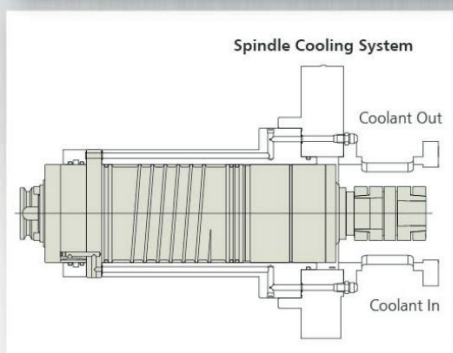
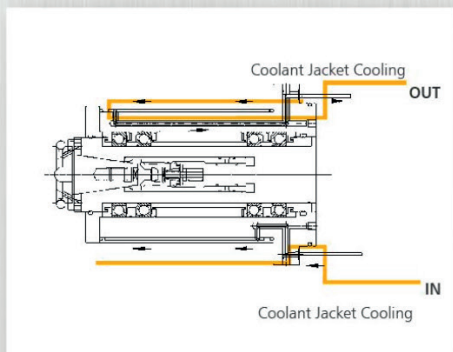
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Spindle Running Transmitted Through Gearbox

Spindle Cooling Diagram

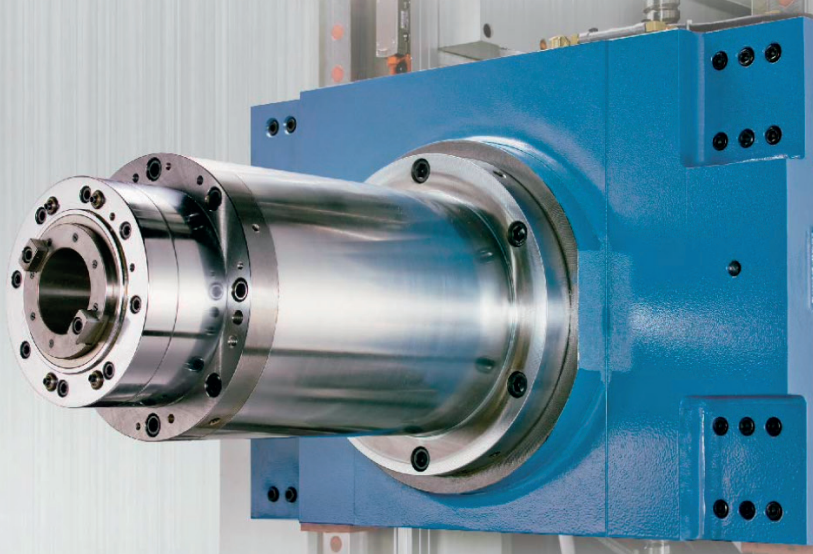


#40 DIRECT-DRIVE TYPE (DMH-500)

#50 DIRECT-DRIVE TYPE (DMH-630)

Rigid, Precision Spindle – Direct Drive High Speed Spindle

- » The machine is equipped with a high speed spindle with maximum speed up to 15,000 RPM, which is excellent for high speed machining and creates fine surface finishes.
- » High torque output of spindle reaches 46 Nm, allowing for heavy-duty machining.



GEAR-DRIVE FOR #50 SPINDLE (Optional on DMH-630)

HIGHLY RIGID SPINDLE HEAD

- » 8 faces contact between the spindle head and the sliding faces enables the spindle head to maintain a maximum stability condition, especially when performing heavy cutting.
- » The spindle head is a symmetrical design, so that the thermal deformation of spindle head can be reduced to a minimum.

6000 RPM GEAR-DRIVE SPINDLE

- » Spindle running is transmitted through a gearbox, providing 2-step speed change. Full power output can reach 302 RPM.
- » Forced lubrication to the spindle and gears effectively reduces temperature growth while ensuring machining accuracy.
- » The spindle runs on NN type double-row roller bearings, making the machine suitable for heavy cutting operations (optional).

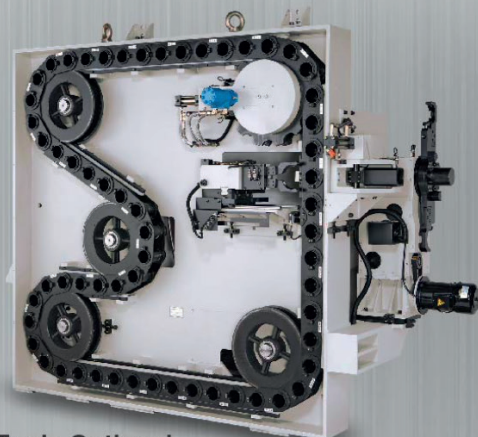


Chain Type Magazine

DMH-500 #40

40-tool Standard / 60, 90-tool Optional

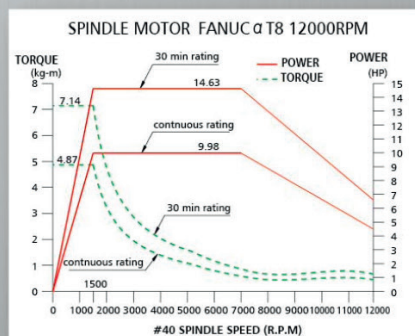
- » Driven by the hydraulic indexing motor, the magazine and cam-type ATC allow driving and positioning to be accomplished simultaneously.
- » The ATC is built on the magazine body for easy control of tool change accuracy. There is no need to calibrate tool change accuracy in case the magazine is dismantled or remounted.



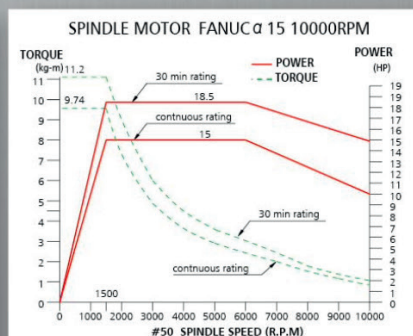
DMH-630 #50

60 Tools Standard / 90 Tools Optional

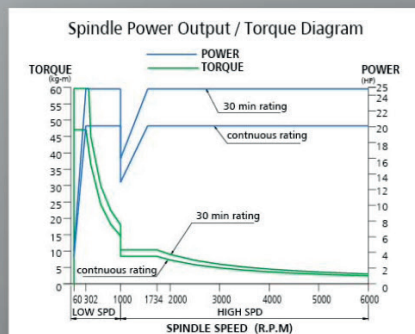
- » The magazine is driven by a hydraulic indexing motor for fast rotation and high accuracy.
- » A waiting position of the magazine tool port allows pre-selection of the next tool to save time.
- » The tool magazine is separately mounted from the machining area to prevent contamination from chips or coolant.



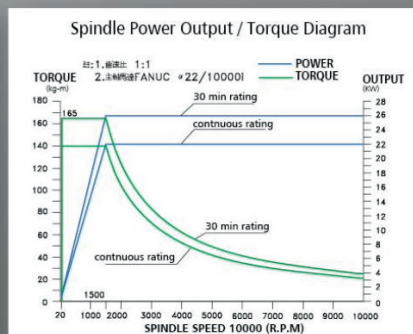
DMH-500



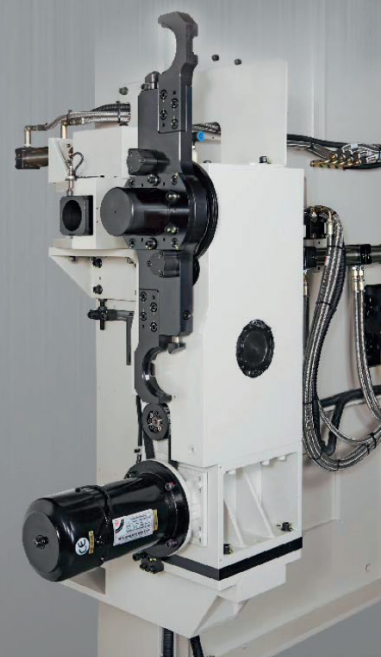
DMH-500



DMH-630



DMH-630



EFFICIENT AUTO TOOL CHANGER

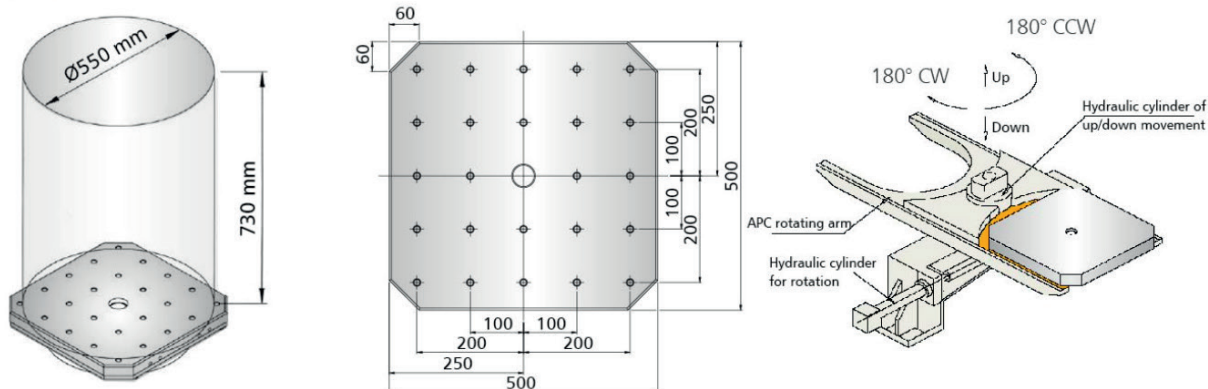
- » The tool change arm is driven by a cam.
- » The auto tool changer allows the spindle and the tool pocket to clamp tools simultaneously, helping to upgrade tool change efficiency with fast and smooth motions.
- » An auto door is equipped on the auto tool changer to protect tools from chips and coolant.



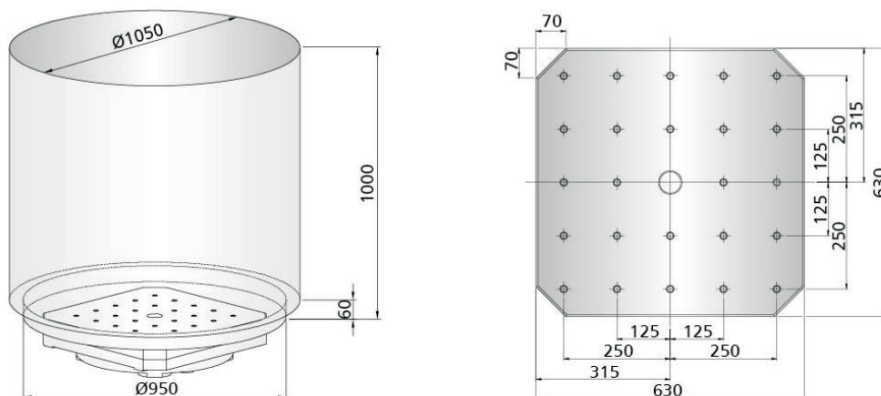
Swing Type Auto Pallet Changer

AUTOMATIC WORKPIECE CHANGE MODULE

DMH-500

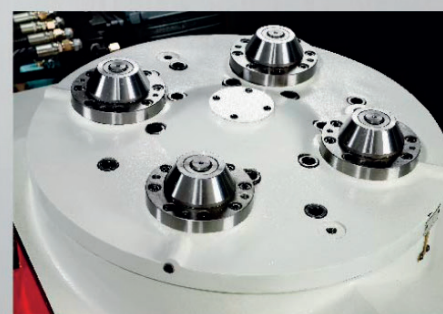
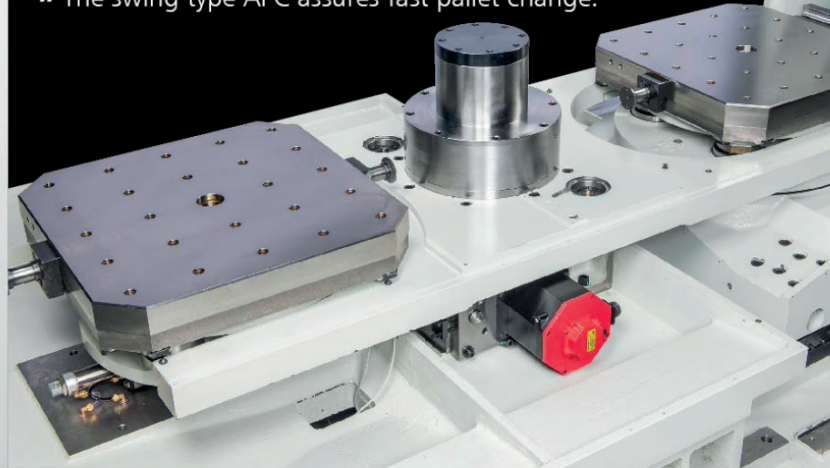


DMH-630



SWING TYPE AUTO PALLET CHANGER

- » The index table is driven by a high precision servomotor and positioned by curvic coupling.
- » Standard indexing unit is 1° .
- » Indexing unit 0.001° is available as an optional device.
- » The swing type APC assures fast pallet change.

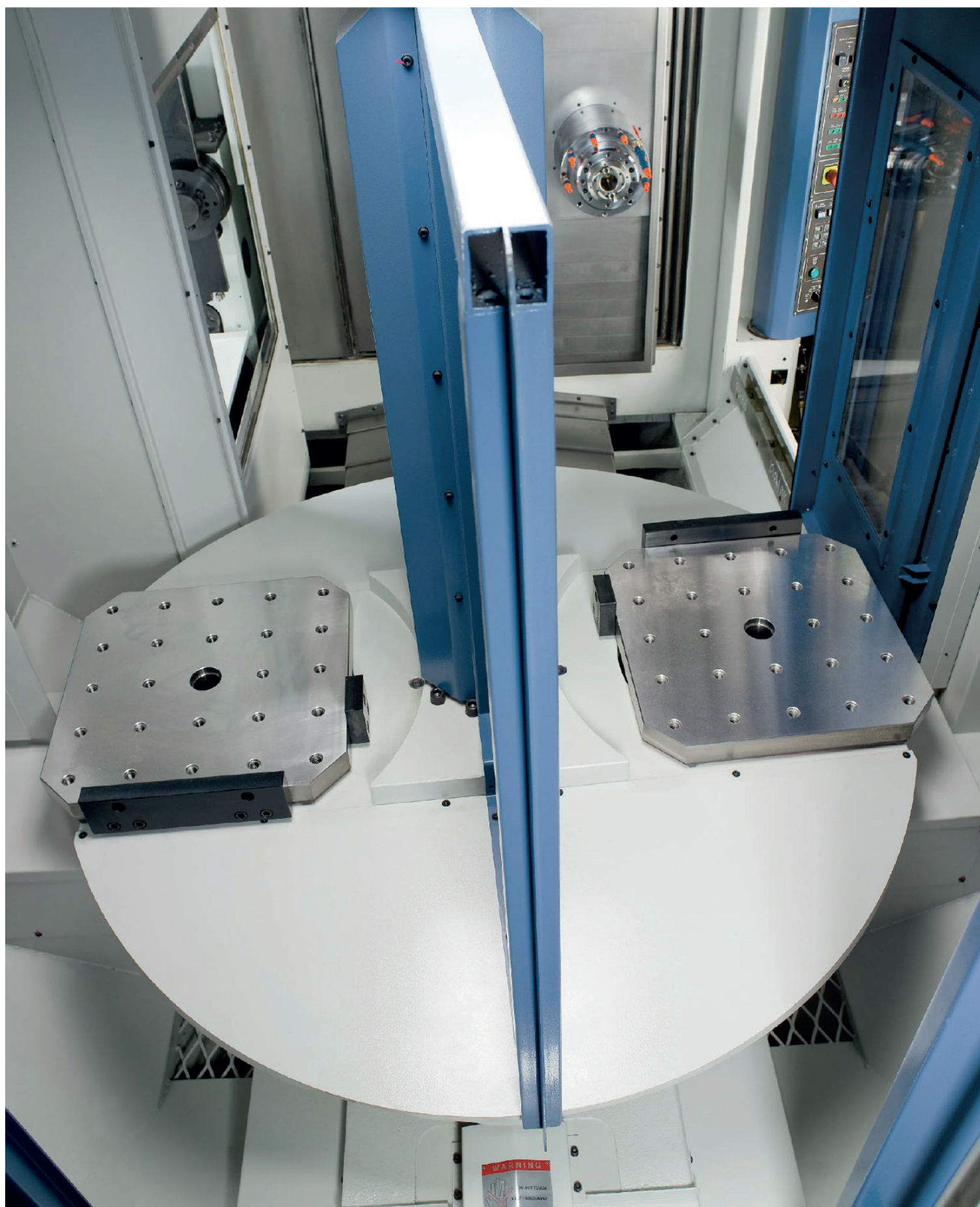


DMH-630

HIGH ACCURACY OF PALLET POSITIONING

- » The pallet is accurately positioned on 4-tapered cones for high positioning accuracy and repeatability.





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Ultra Stable Column and High Precision Spindle



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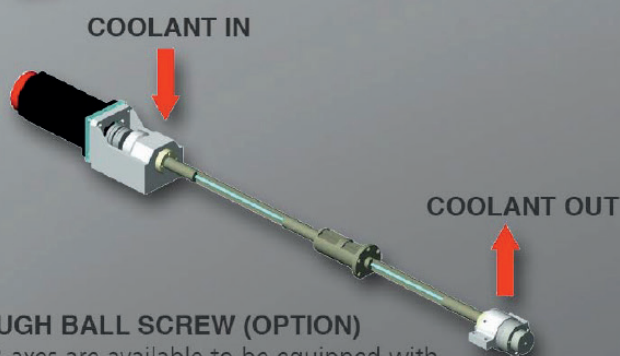
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Optional Equipment Allows for the Development of More Powerful and More Efficient Machining Performance

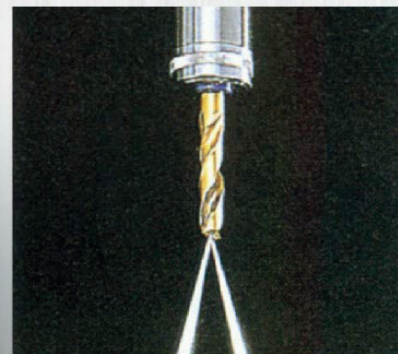


Flat type chip conveyor



COOLANT THROUGH BALL SCREW (OPTION)

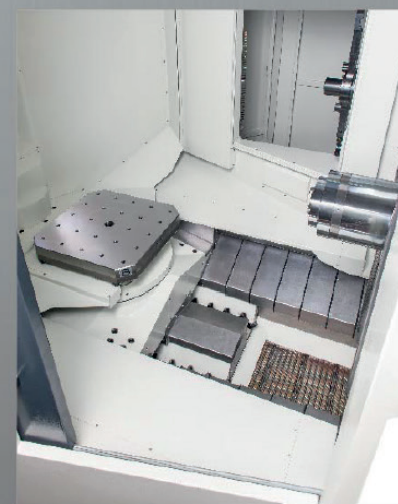
The ballscrews on 3 axes are available to be equipped with a coolant through ballscrew device that provides cooling to the ballscrew supporting bearings. This optional cooling device effectively suppresses the thermal deformation of the ballscrew.



Coolant through spindle device (without inclu. Tool)



Coolant wash



CHIP EVACUATION DEVICE

Chips are delivered through the center for faster evacuation, which can avoid affecting the machine accuracy.



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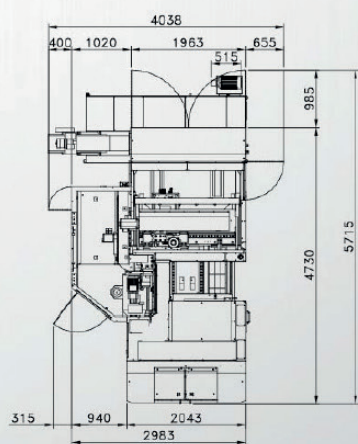
Ultimate Accuracy Through Rigorous Inspection



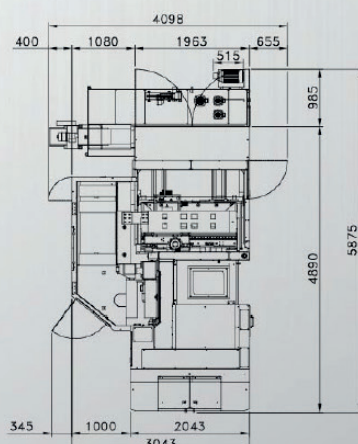
» Applying laser interferometer to inspect indexing accuracy

» Applying laser interferometer to inspect linear position accuracy

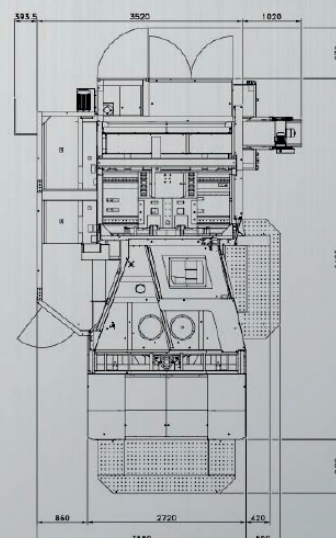
MACHINE DIMENSIONS



DMH-500 #40





DMH-500 #50




DMH-630

■ Size in () represents the dimension for machine with #50 spindle taper



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Specifications, Accessories, and Dimensions

SPECIFICATIONS

MODEL	DMH-500	DMH-630
TABLE		
Pallet area	500 x 500 mm	630 x 630 mm
Max. table load	600 kg	1200 kg
Min. indexing angle	1°	1°
Pallet change type	Swing type	Swing type
TRAVEL		
Longitudinal travel (X)	750 mm	1000 mm
Vertical travel (Y)	680 mm	900 mm
Cross travel (Z)	650 mm	900 mm
Distance from spindle nose to table surface	150~800 mm	200~1100 mm
Distance from spindle center to table surface	50~730 mm	80~980 mm
SPINDLE		
Spindle nose taper	N.T.40 / N.T.50	N.T.50
Spindle speeds	120-12000 (#40) / 100-10000 (#50)	100~10000r.p.m
Spindle motor	α 8 / 12000i, α 15 / 10000i	α 22 / 10000i
FEED		
Cutting feed rates (X, Y, Z-axes)	1~18000 mm/min	1~18000 mm/min
Rapid traverse rate (X, Y, Z-axes)	40 m/min	40 m/min
Min. input increment	0.001 mm	0.001 mm
ATC (AUTO TOOL CHANGER)		
Tool storage capacity	40 tools	60 tools
Tool shank	B.T.40 / B.T.50	BT50
Max. tool sizes (dia. x length)	Ø100 x 400 mm	Ø120 x 500 mm
Max. tool weight	8 kg / 20 kg	20 kg
Max. tool dia. (without adjacent tool)	Ø150 mm / Ø250 mm	Ø250 mm
Tool selection method	Bi-Directional	Bi-Directional
MOTOR		
Spindle motor (Rated output for 30 min.)	#40 11kw (15HP) / #50 18.5kw (25HP)	22 kw (30hp) / 26 kw (35hp)
SERVOMOTOR	X axis	4.0kw (5.4HP)
	Y axis	4.0kw (5.4HP)
	Z axis	4.0kw (5.4HP)
MACHINE SPACE AND WEIGHT		
Floor area occupied (X, Z-axes)	2650 x 5000 mm	3700 x 6300 mm
Machine weight	15000 kg	23500 kg

» STANDARD

1. Spindle cooling device
2. Heat exchanger
3. Automatic pallet changer
4. Removable manual pulse generator
5. X, Y, Z linear guideways
6. Flood coolant device
7. Coolant tank
8. Spiral type chip auger
9. Automatic power cut-off device
10. Call light
11. Work light
12. Toolbox with tool kit
13. Linear scales on 3 axes

» OPTIONS

1. ATC tool storage: 60 tools
2. Coolant through spindle
3. Flat type chip conveyor with chip cart
4. BT40 / 15,000 RPM direct-drive spindle
5. Auto tool length measuring device
6. Automatic centering device
7. 0.001° continuous indexing on B-axis

■ Design and specifications are subject to change without prior notice





Inheriting Craftsmanship / Innovative Technology / Creating The Future

