

MCH-630

MCV-720

**DOUBLE COLUMN MACHINING CENTER**

MCV-1020A

**DCM-2216**  
**3216**

MCV-1020BA

MCV-1250

MCV-1450

MCV-1700

MCV-2100

MCV-2600

DCM-2213



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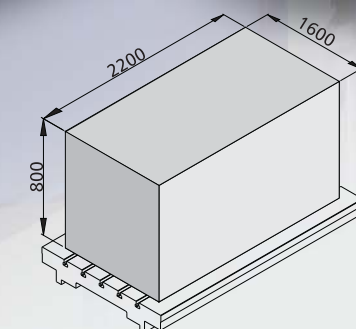
**DCM-2216**  
**DCM-3216**



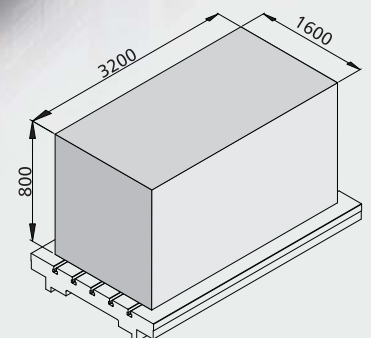
# **D**DOUBLE **C**COLUMN **M**MACHINING **C**CENTER

**Built on Dah Lih's Extensive Experience  
A New Standard in Heavy Cutting Capability**

**Reliable Structural Design  
Outstanding Cutting  
Performance**

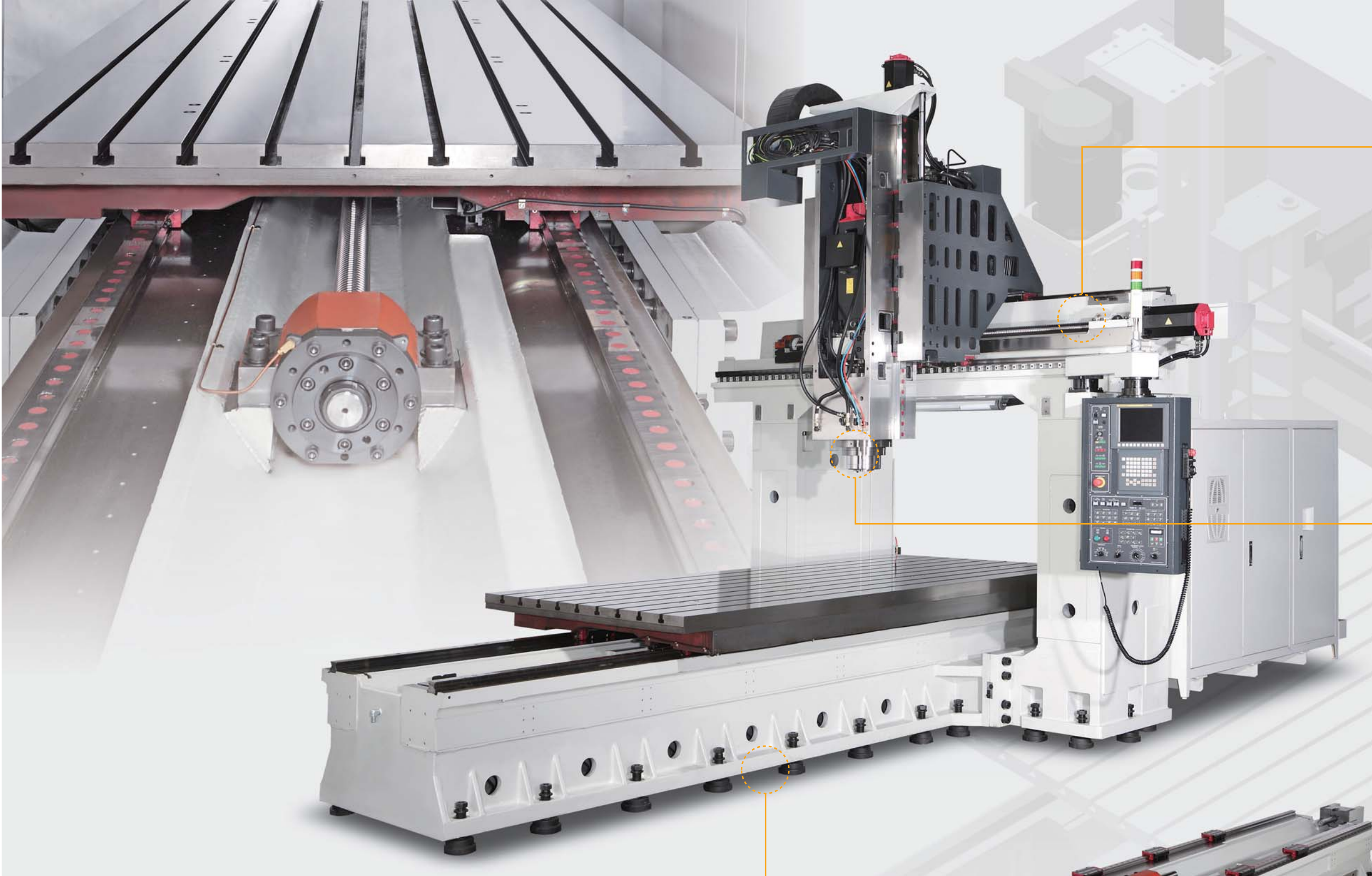


X-axis Travel 2,200 mm.  
Y-axis Travel 1,600 mm.  
Z-axis Travel 800 mm.  
Max. Table Load 6,000 kgw.  
Spindle Speed 10,000 RPM.



X-axis Travel 3,200 mm.  
Y-axis Travel 1,600 mm.  
Z-axis Travel 800 mm.  
Max. Table Load 8,000 kgw.  
Spindle Speed 10,000 RPM.



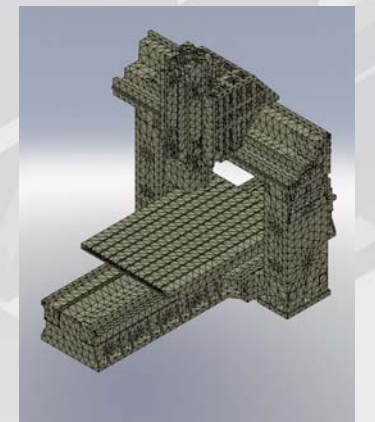


#### Step Type Line Ways Layout

- » The linear ways on y-axis are step deployed, allowing the center of gravity of the milling head and the saddle to be close to the center of the ball screw on the beam. This provides a reduction of bending moment during cutting. Another benefit is that the stability of the drive control system is improved at high-speed cutting.

#### Rigid Spindle Head

- » Box type structure design provides high machining accuracy.
- » The spindle head temperature is controlled by a cooling system, which effectively reduces thermal deformation. It also ensures constant temperature on the spindle head, and maintains an outstanding geometric accuracy.
- » Double hydraulic cylinders counter-balance on Z-axis assure high accuracy movement of Z-axis.



#### FINITE ELEMENT ANALYSIS

- » To ensure the best structural rigidity design and long machine service life, the major parts are analyzed by advanced "Finite Element Analysis."



#### High Rigidity, High Loading Capacity Roller Linear Guide Ways

- » Particularly suitable for heavy duty performance.
- » High damping coefficient, excellent performance in absorbing cutting vibration.
- » High servo response, without hysteresis phenomenon.
- » Complete sealing of roller shoes, capable of working smoothly under difficult conditions.

# Sturdy Construction for High Rigidity and High Accuracy

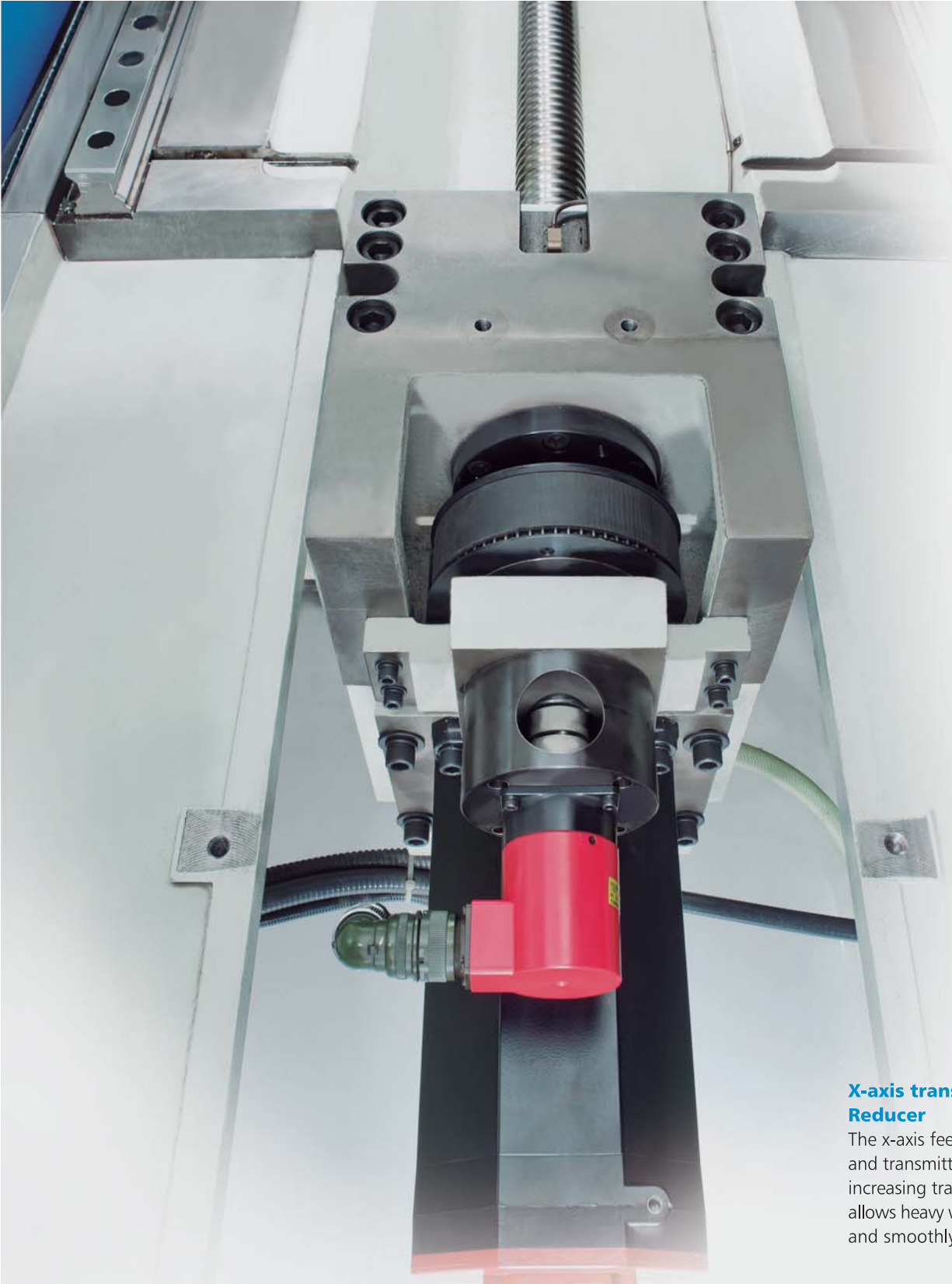
With integrated optimal structural rigidity, the Dah Lih DCM Series Double Column Machining Center is designed and engineered for heavy cutting and high speed machining. It will fully exhibit unmatched stability and smoothness during machining.



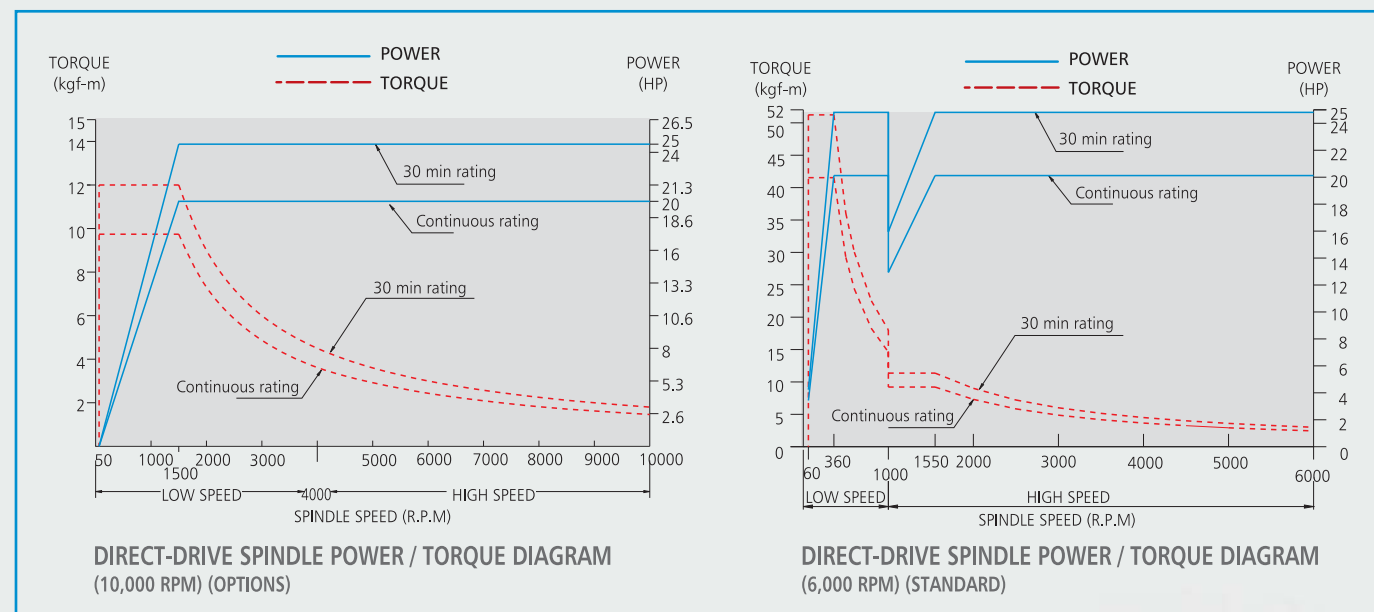
#### Extra Large, Stable Base

- » The base is manufactured from high quality meehanite cast iron, tempered and stress relieved, and honeycomb-type rib reinforced for deformation-free performance.
- » The base is equipped with two extra heavy-duty linear guideways combined with large design, assuring extremely firm support.

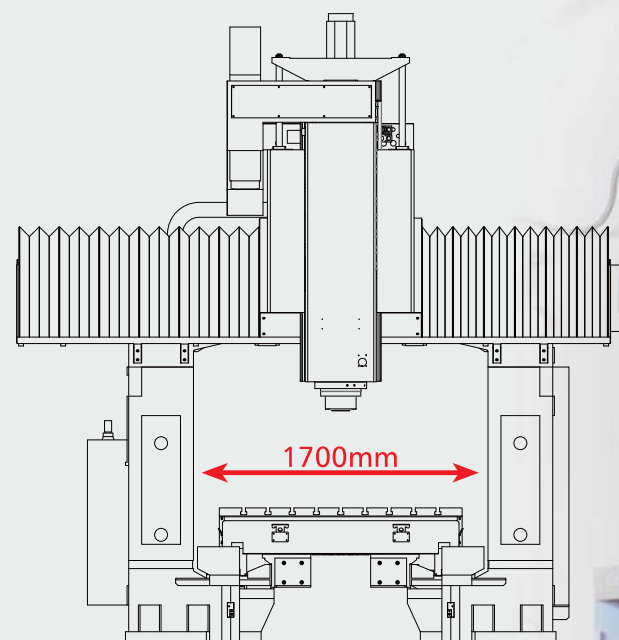




## Power Chart

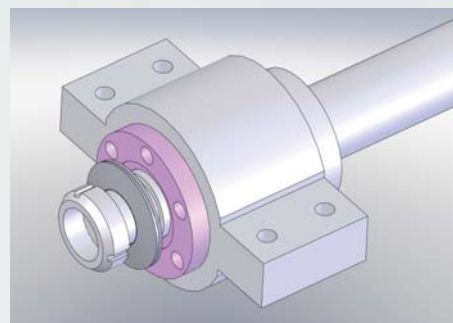


## Effective Door Width



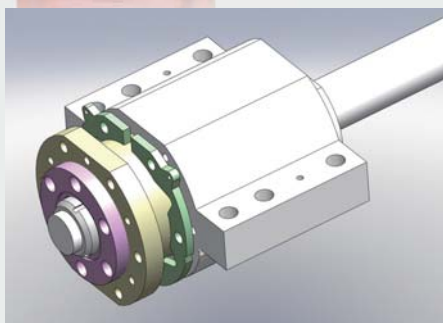
### X-axis transmitted through Gear Reducer

The x-axis feed is driven by a servo motor and transmitted through a gear reducer for increasing transmitting torque. This feature allows heavy workpieces to move effortlessly and smoothly.



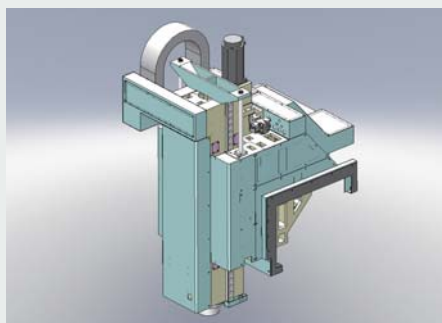
### Y, Z-axis Screw Support with Disc Spring

Thermal growth can cause elongation of ball screw, which makes the nut fail to press against the bearing and reduces pretension-rigidity. On Dah Li DCM Series, such problem is eliminated by fitting disc springs on the y, z-axis ball screw supports.



### X-axis Screw Support with Pad

The X-axis ball screw is fitted with a specially designed pad for pretension that effectively reduces screw deflection to a minimum while increasing rigidity. As the result, higher feed accuracy and smoother motion can be achieved.

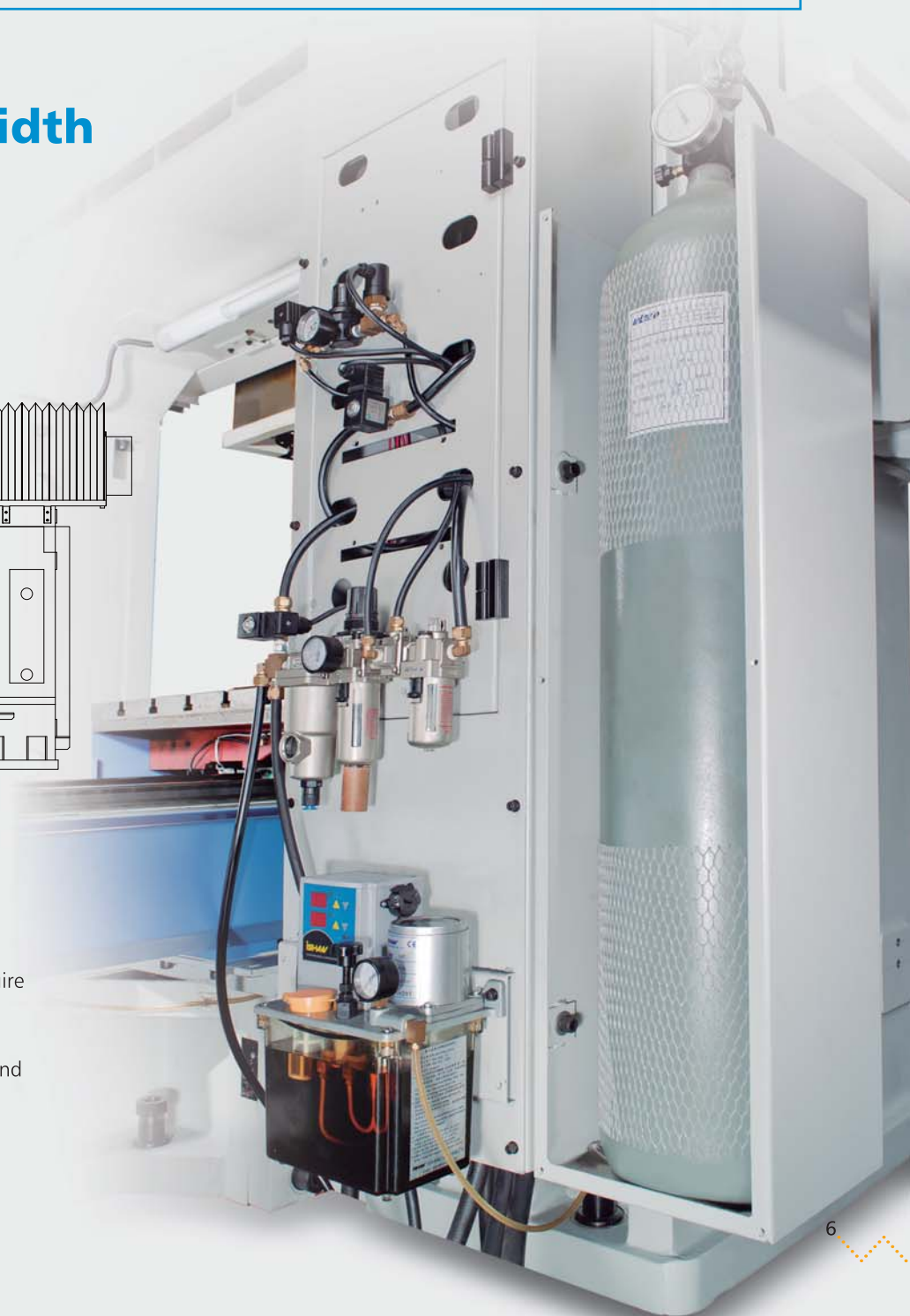


### Z-axis Linear Ways and Counter-balancing Cylinder Deployed at Same Center Line

The Z-axis linear ways and counter-balancing cylinder movement are located at the same center line. The design not only enhances the structural rigidity, but also provides the best counter-balancing effect.

### Nitrogen Gas Counter-balance

- » The nitrogen gas counter-balancing system employs an accumulator that does not require additional power.
- » No hydraulic power unit is required.
- » No noise, extremely stable, no resonance, and greatly upgrades machining efficiency.
- » Easy to adjust servo parameters.





## Separately Mounted Chain-type Magazine



### 40-tools Standard, 60-tools Optional

- » The tool magazine is separately mounted from the machining area to prevent contamination from chips or coolant.
- » The tool magazine accommodates BT50 tool shank.
- » Bi-directional, random tool selection with fast tool change can be accomplished in only 6 seconds.
- » Tool magazine is cam-driven for fast and reliable motion.
- » The separately mounted magazine also allows for machining increased-size workpieces.

## MACHINING CAPABILITIES (Material S45C)

Face Milling	Tapping	Drilling
Ø125 660 cc/min 4.7 mm Depth	Ø48 F 22 mm/min 70 mm Depth	M52 X 5P F 250 mm/min 40 mm Depth

## Cutting Test Report

### Chip Removal Rate

Model: DCM-2216  
Spindle Motor Rated Power: 15/18.5 kW  
Material: S45C  
Cutter Diameter: 125 mm.  
No. of Inserts: 8

Cutting Condition					Spindle Load %	Chip Removal Rate c.c km.min
Spindle Speed rpm	Cutting Speed m/min	Cutting Depth mm	Cutting Width mm	Cutting Feedrate mm/min		
700	274	2	80	1260	100	23.35
1230	483	3	80	1260	90	19.93
1230	483	3.5	80	1260	110	23.25

### Drilling Capacity:

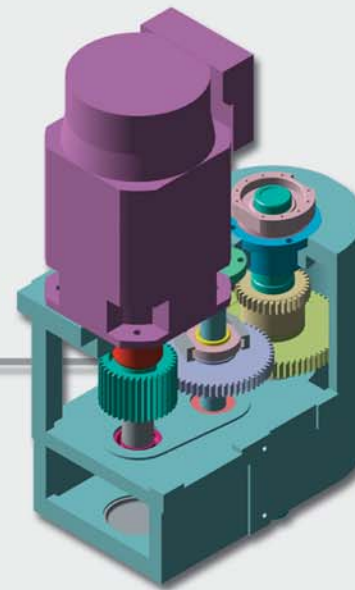
Model: DCM-2216  
Spindle Motor Rated Power: 15/18.5 kW  
Material: S45C  
Drilling Head Material: HSS

Cutting Condition					Spindle Load %	HSS
Tool Diameter mm	Spindle Speed rpm	Cutting Speed m/min	Drilling Depth mm	Cutting Feedrate mm/min		
17.5	381	20	35	36	11	○
27	200	20	35	20	32	○
48	166	18	35	24	100	○

### Tapping Capacity:

Spindle Motor Rated Power: 15/18.5 kW  
Material: S45C

Cutting Condition					Spindle Load %	Z Axis Load %
Tool Diameter mm	Spindle Speed rpm	Cutting Feedrate mm/min	Cutting Speed m/min	Tapping Depth mm/min		
M20xP2.5	150	375	10	30	25	40
M27xP3	118	354	10	30	35	40
M42xP4.5	50	225	6.6	30	180	X



### Gearbox for Spindle

- » The gearbox provides high/low speed ranges. The wide range of speed allows for heavy cutting and fine finishing.
- » All gears are precision ground for silent running.
- » The gearbox employs an oil-bath lubrication system.

## Automatic Tool Length Measuring Device (optional)



### Contact Type

The tool length measuring device is used for detecting the tool wear condition while assuring machining accuracy at all times.



### Non-Contact Type

The laser tool length measuring device is used for detecting the tool wear condition while assuring machining accuracy at all times.

### 90 Degree Milling Attachment (Optional)

The device may cover the milling direction from vertical to horizontal, NT#50 tool holders are applicable for the attachment.



## SOPHISTICATED INSPECTION INSTRUMENTS ALLOW HIGH PRECISION INSPECTIONS.

### Twin Ball-Bar inspection

Twin Ball-Bar inspection is conducted to ensure the optimum 2D cutting accuracy.



### Spindle Dynamic Running Accuracy Test

Sophisticated spindle running testing equipment is applied to inspect the spindle running accuracy.

# SPECIFICATIONS, ACCESSORIES AND DIMENSIONS

## SPECIFICATIONS

MODEL	DCM-2216	DCM-3216
<b>TABLE</b>		
Table size	2200 x 1500 mm	3200 x 1500 mm
T-slots (size x number x pitch)	22 x 9 x 150 mm	22 x 9 x 150 mm
Max. table load	6000 kg	8000 kg
<b>TRAVEL</b>		
Longitudinal travel (X)	2200 mm	3200 mm
Vertical travel (Y)	1600 mm	
Cross travel (Z)	800 mm (Opt:1100 mm)	
Distance between spindle nose to table surface	200~1000 mm	
Distance between column	1700 mm	
Guid way type (X, Y, Z-axis)	5S Type Roller Linear Guideways	
X, Y, Z-axis transmission/ X, Y, Z-axis	X: Belt, Y/Z: Direct Coupled	
<b>FEED</b>		
Rapid feedrate	X-axis: 20 m/min	18 m/min
	Y-axis: 20 m/min	20 m/min
	Z-axis: 20 m/min	20 m/min
Cutting feedrate	10000 mm/min	
Min. input increment	0.001mm	
<b>SPINDLE</b>		
Spindle transmission	Direct Coupled (Opt.: Gear Transmission)	
Spindle motor	α i 15 / 10000, 15(20) / 18.5(24.8)	
Spindle Taper Cone	BT50	
Spindle speed	10000 rpm (Opt: 6000 rpm)	
Spindle bearing diameter	Ø90 mm (Opt: Ø100 mm)	
Spindle max. torque	120N-m (Opt: 520N-m)	
Cooling / Lubrication	Oil Cooling / Grease Lubrication	
<b>ATC (Automatic Tool Changer)</b>		
Tool magazine capacity	40T	
Tool holder	BT50	
Pull Stud Type	Collet Type 45° Pull Stud	
Max. tool weight	18 kgw	
Max. tool length	400 mm	
Max. tool diameter	125(250) mm	
Tool selection	Bi-Directional / Random	
<b>MOTOR</b>		
X-axis drive motor KW (HP)	7Kw (9.3HP)	
Y-axis drive motor KW (HP)	7Kw (9.3HP)	
Z-axis drive motor KW (HP)	7Kw (9.3HP)	
<b>CNC CONTROLLER</b>		
	FANUC 0i (Opt: 31i)	
<b>OTHERS</b>		
Power consumption	50 KVA	
Pneumatic pressure	6 kg/cm <sup>2</sup>	
Coolant pump	1 1/4 HP	
Coolant tank capacity	400L	
Chip Conveyor	Screw Type (Opt: Lift-up Hinge Type)	
Net weight	25000 kgw	30000 kgw
Floor space (L x W)	7830 mm x 5045 mm	10325 mm x 5045 mm

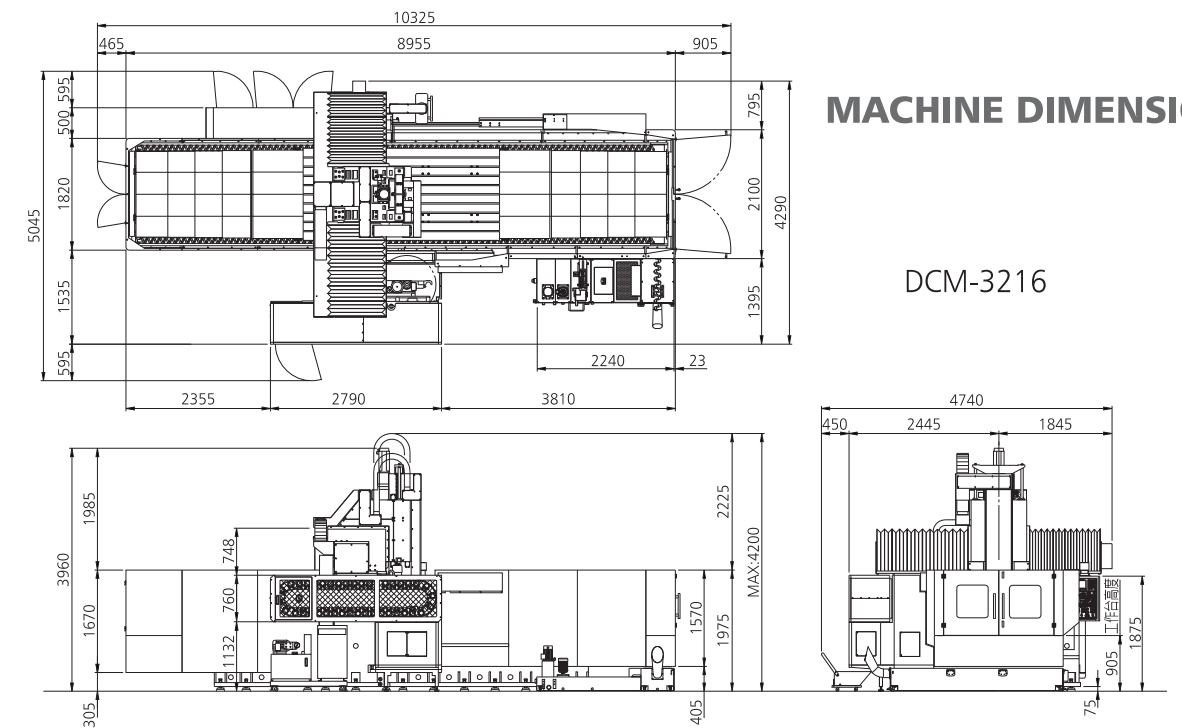
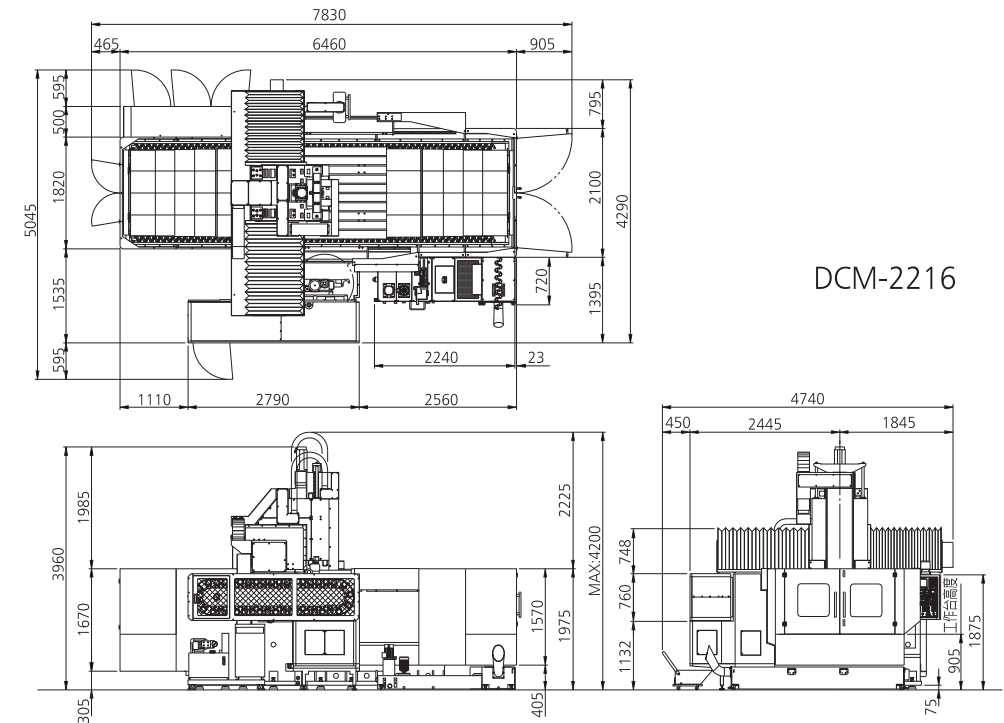
Specifications are subject to change without prior notice.

## » STANDARD

- Spindle cooler
- Ring type coolant nozzle
- Heat exchanger
- Remote MPG
- Screw type chip conveyor + Chip cart
- Screw type chip conveyor
- Pilot lamp
- Working lamp
- Enclosed splash guard
- Tool kit

## » OPTIONS

- BT50 Geared spindle
- Coolant system:
  - a.Deep hole drilling device
  - b.Coolant through spindle Form A+ Cartridge filter
  - c.Coolant through spindle Form B+Paper filter
- Oil mist device
- Lift-up hinge type chip conveyor+Chip cart
- Oil skimmer
- Automatic centering device
- X, Y, Z axis linear scales
- Tool breakage detection device
- Tool length measurement
- Tool setter
- Alarm beeper
- 90milling attachment
- 60 tools ATC unit
- Coolant gun and air gun
- Air conditioner for electrical cabinet



## MACHINE DIMENSIONS

