

MCH-630

MCV-720

**DOUBLE COLUMN MACHINING CENTER**

MCV-1020A

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

MCV-1020BA

MCV-1250

MCV-1450

MCV-1800

MCV-2100

MCV-2600

DCM-2213



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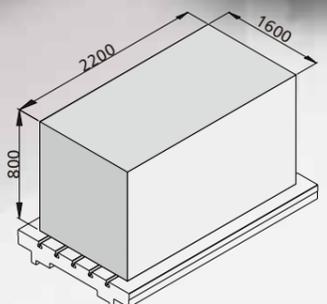


**DCM-2216**  
**DCM-3216**

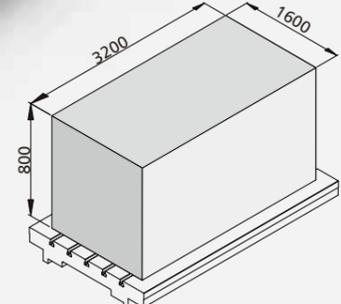
# **D**ouble **C**olumn **M**achining **C**enter

**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.

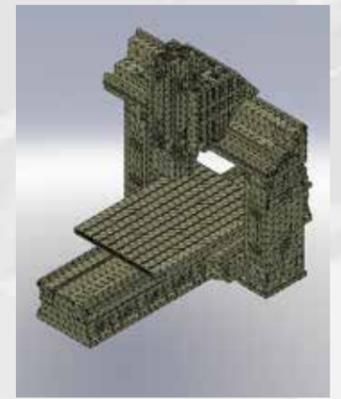


#### Step Type Line Ways Layout

- » 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."



#### 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.



#### 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.

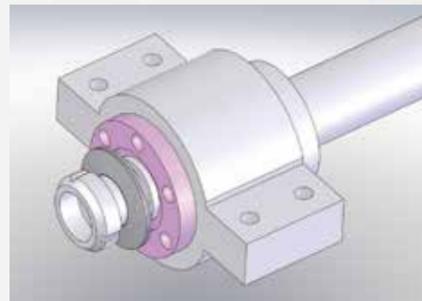
# Sturdy Construction for High Rigidity and High Accuracy

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.



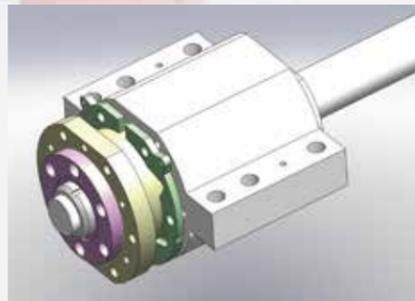
### X-axis transmitted through Gear Reducer

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.



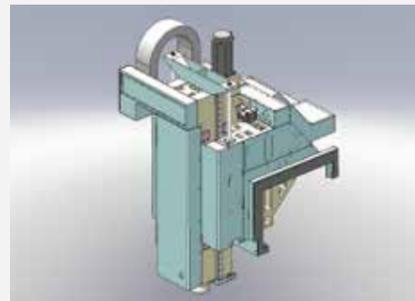
### Y, Z-axis Screw Support with Disc Spring

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



### X-axis Screw Support with Pad

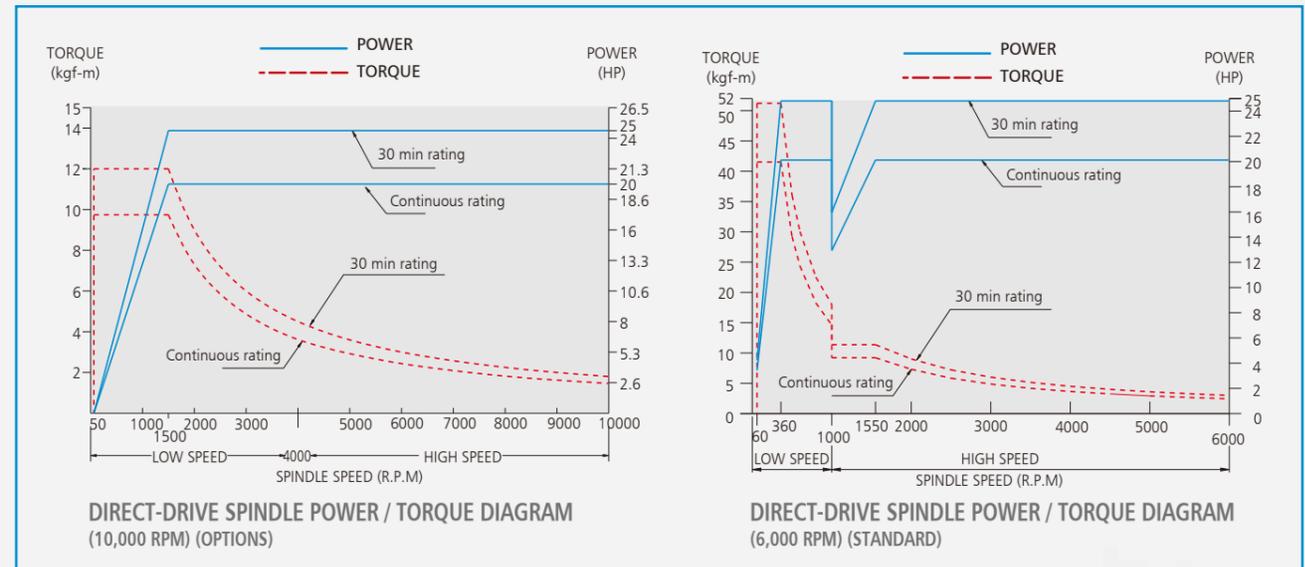
The X-axis ball screw is fitted with a specially designed pad for pretension that effectively reduces screw deflection to a minimum while increasing rigidity. As the result, higher feed accuracy and smoother motion can be achieved.



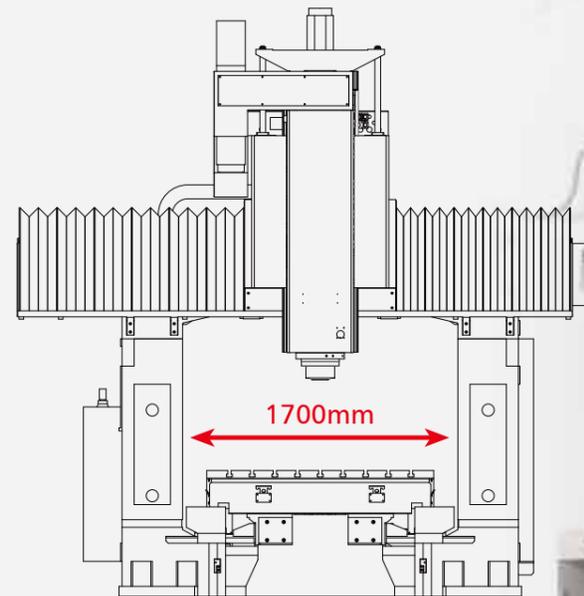
### Z-axis Linear Ways and Counter-balancing Cylinder Deployed at Same Center Line

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.

## Power Chart

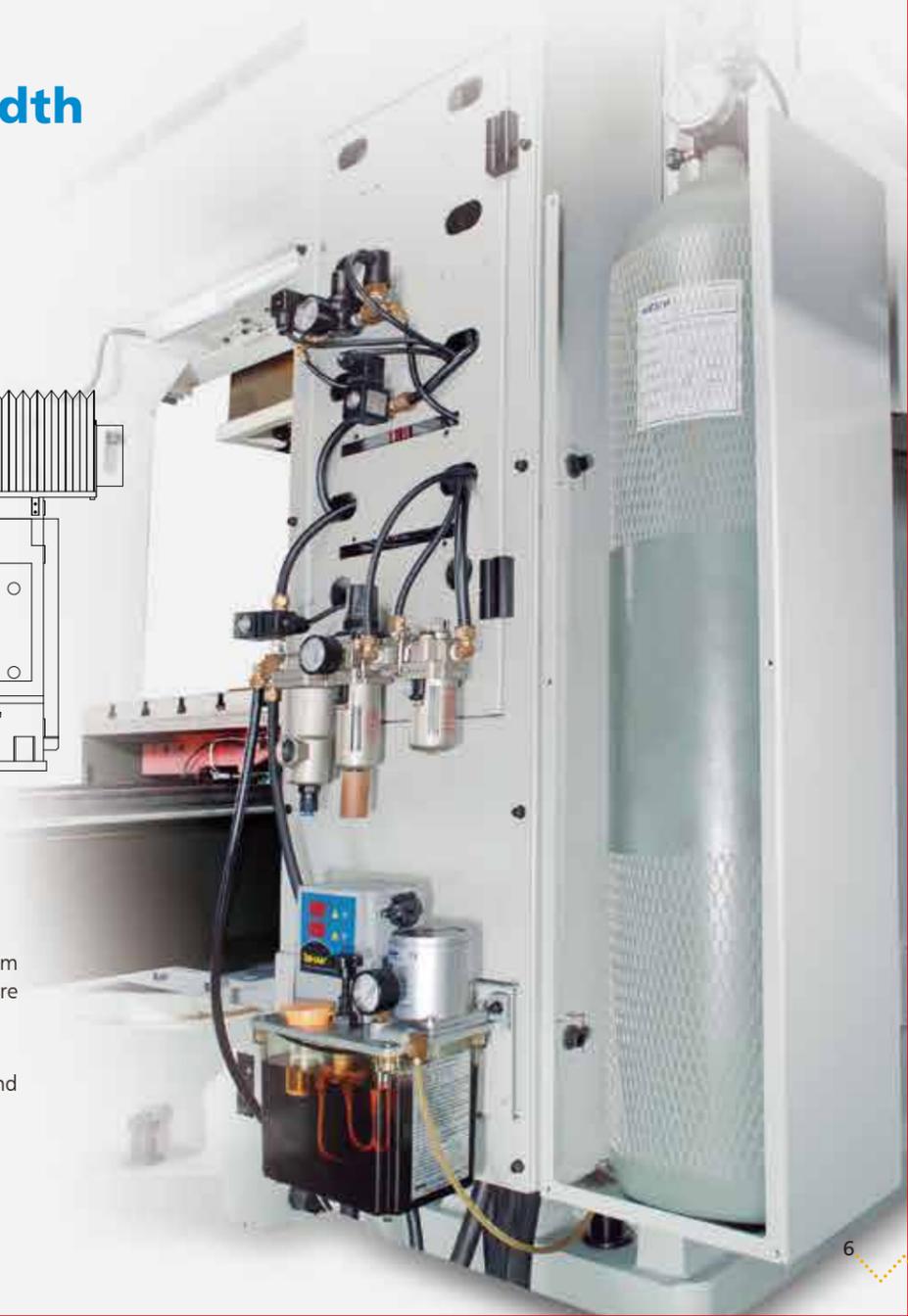


## Effective Door Width



### 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<br>Ø125<br>660 cc/min<br>4.7 mm Depth | Tapping<br>Ø48<br>F 22 mm/min<br>70 mm Depth | Drilling<br>M52 X 5P<br>F 250 mm/min<br>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:

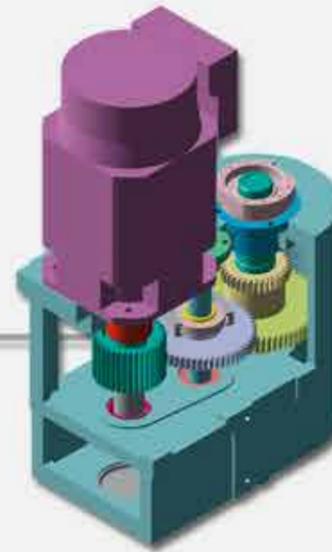
Model: DCM-2216  
Spindle Motor Rated Power: 15/18.5 kW  
Material: S45C  
Drilling Head Material: HSS

| 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 |

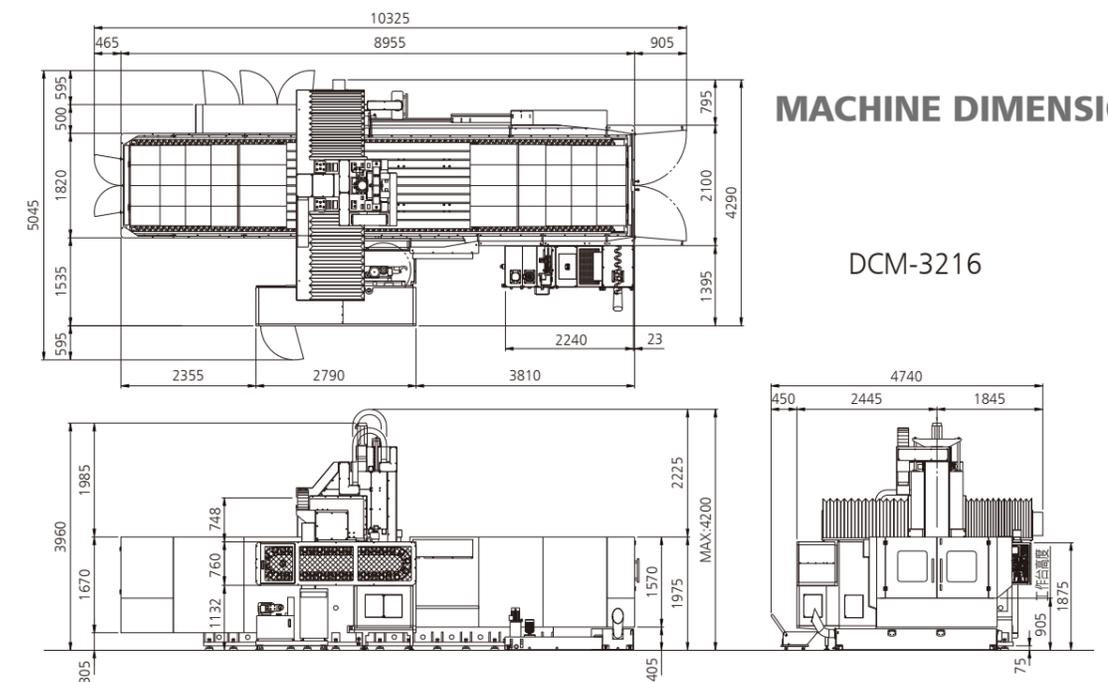
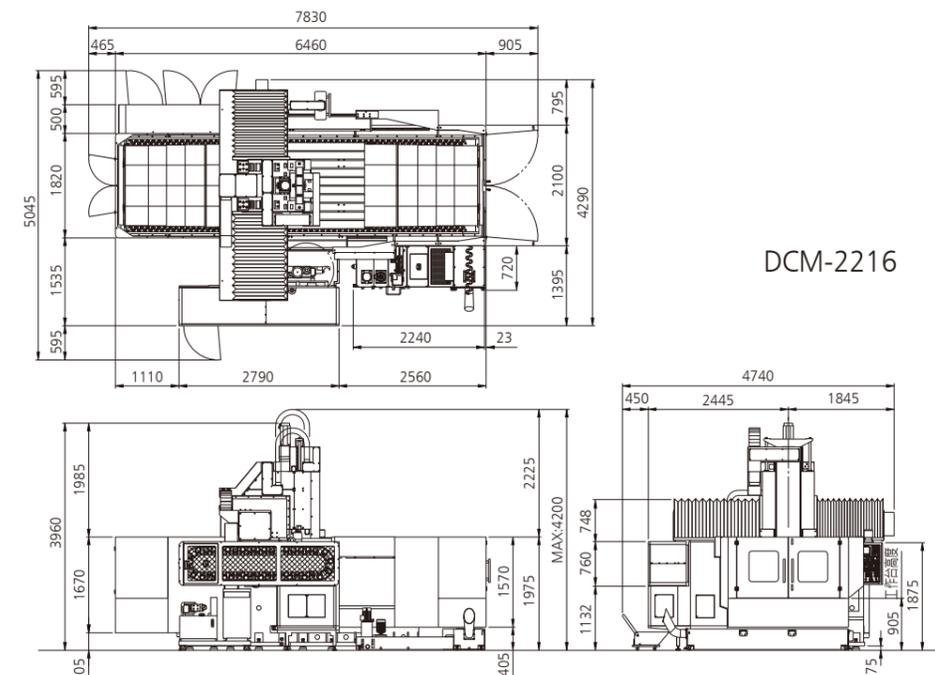
Specifications are subject to change without prior notice.

## » STANDARD

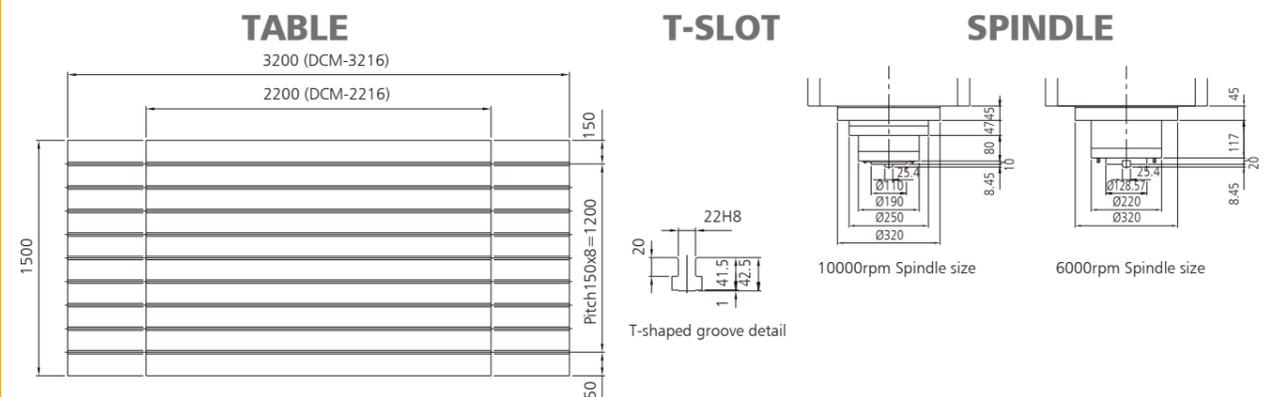
- Spindle cooler
- Ring type coolant nozzle
- Heat exchanger
- Remote MPG
- Screw type chip conveyor + Chip cart
- Screw type chip conveyor
- Pilot lamp
- Working lamp
- Enclosed splash guard
- Tool kit

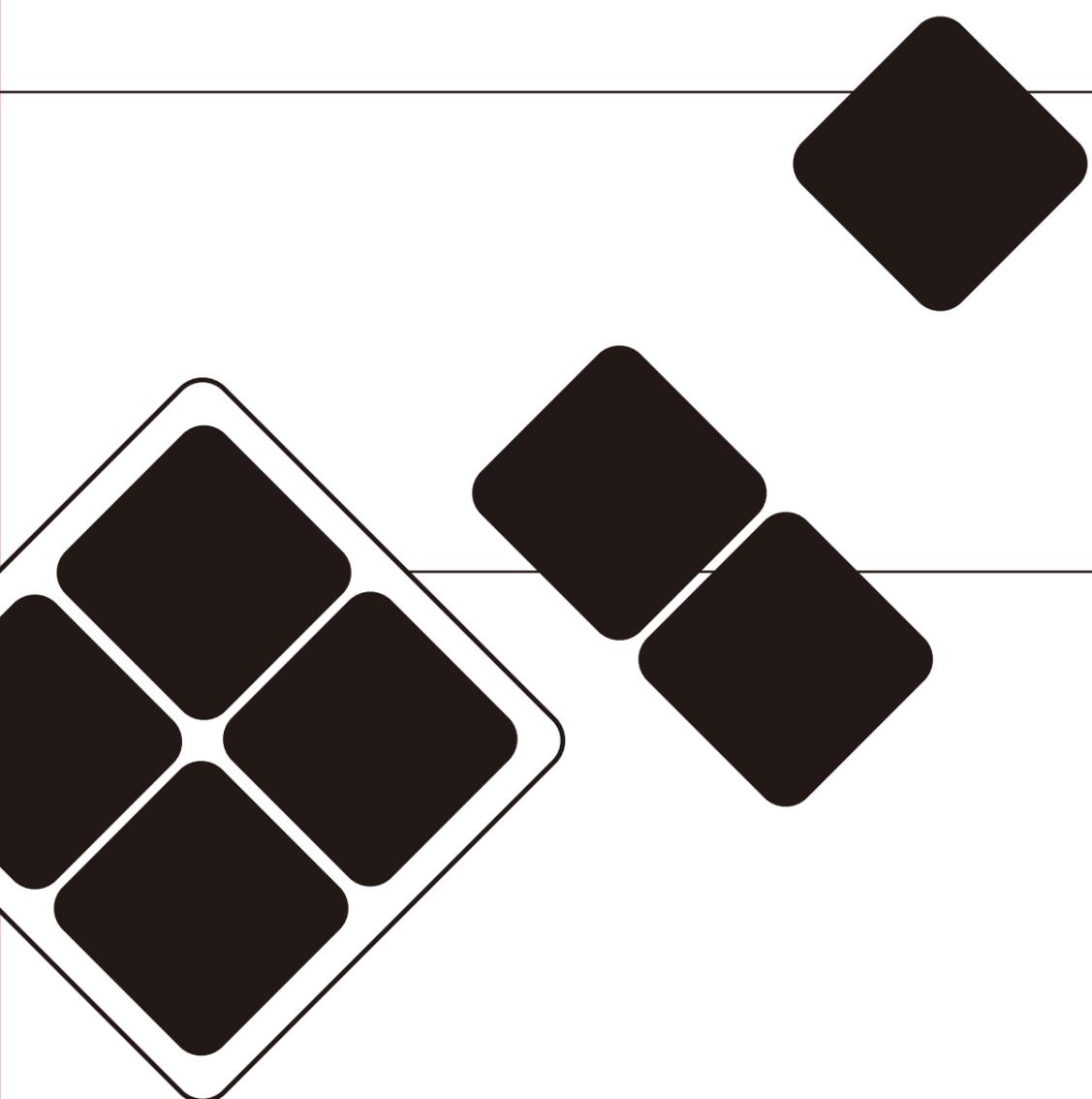
## » OPTIONS

- BT50 Geared spindle
- Coolant system:
  - Deep hole drilling device
  - Coolant through spindle Form A+Cartridge filter
  - 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

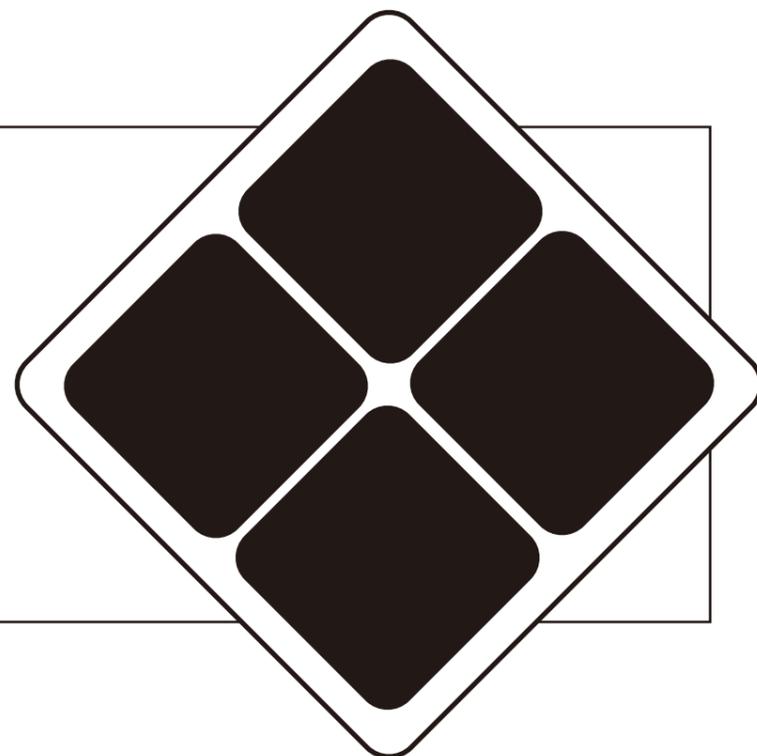




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