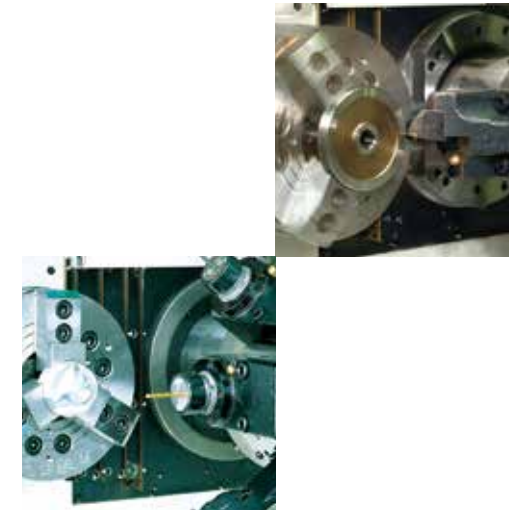




**Twin Spindle / Single Spindle CNC Chucker  
CNC Turning Center**

**MW&MS** Series  
**MD** Series  
**MJ** Series



● **Safety Specification**  
For EU countries, machines are built with CE-safety conformity.

\* The machines shown in the catalogue include some optional items and may vary in appearance from the actual machines.  
\* Specifications and designs are subject to change without prior notice.

**MURATA MACHINERY, LTD.**  
**MACHINE TOOLS DIVISION**



Network

CAT. NO.22T1452 L 23-06-1.5(X-TU)

# Muratec's CNC Chuckers / Turning Centers - Your Solution for maximum part quality and profitability

Twin Spindle CNC Chucker

**MW SERIES**



Single Spindle CNC Chucker

**MS SERIES**



CNC Turning Center

**MD SERIES**



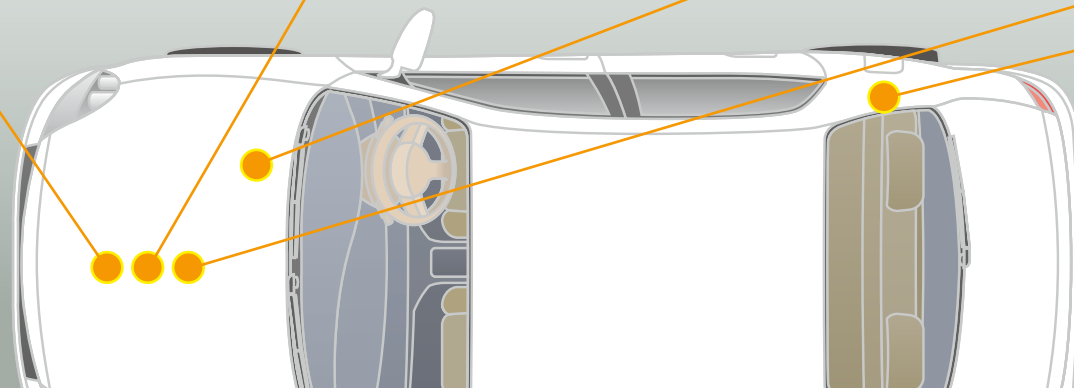
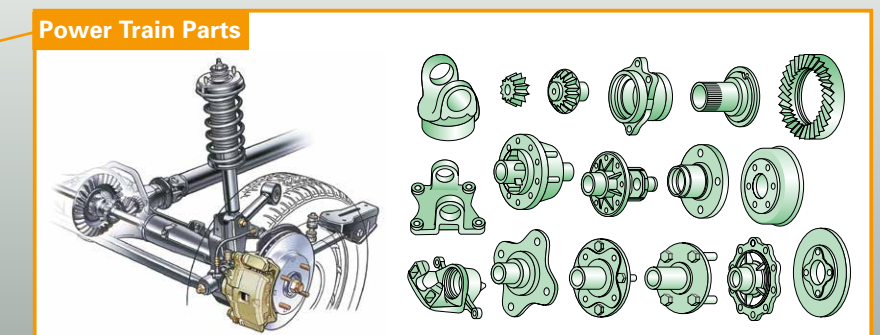
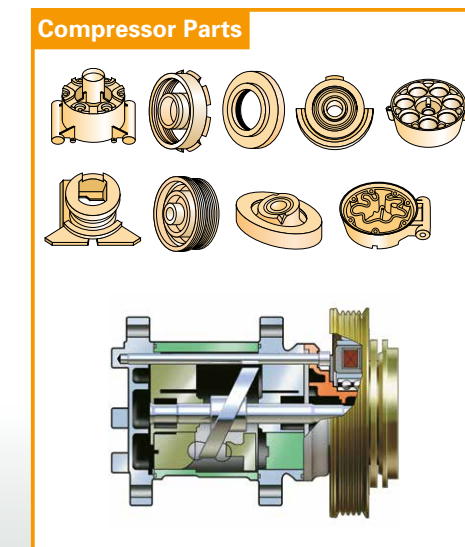
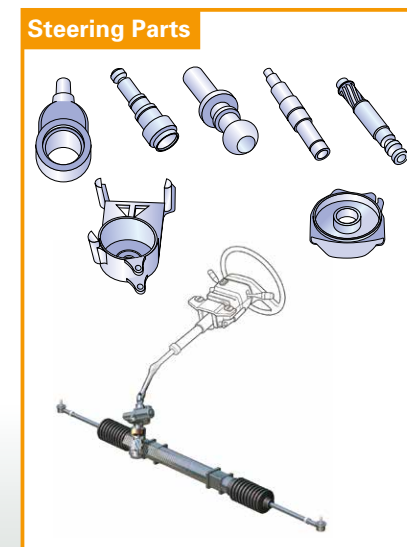
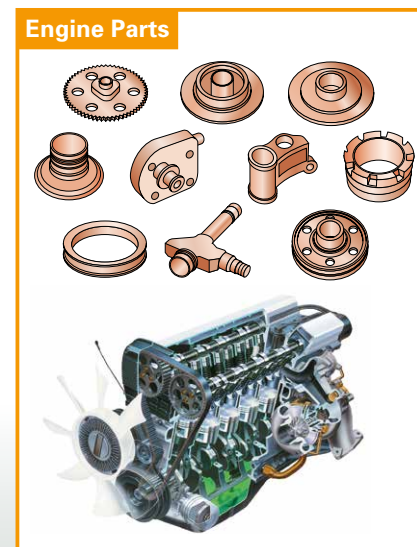
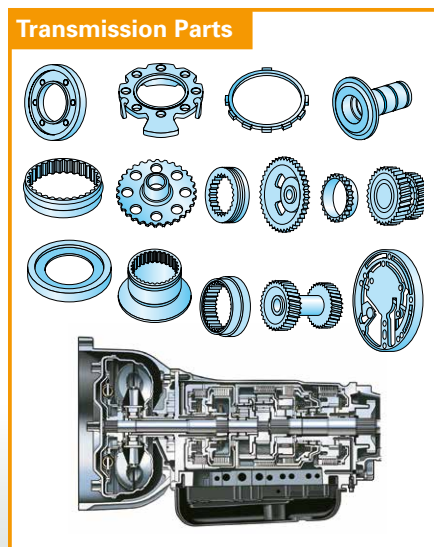
CNC Turning Machine with tailstock

**MJ SERIES**



## Muratec's CNC Chuckers / Turning Centers are designed to exceed the challenging requirements of turning automotive components

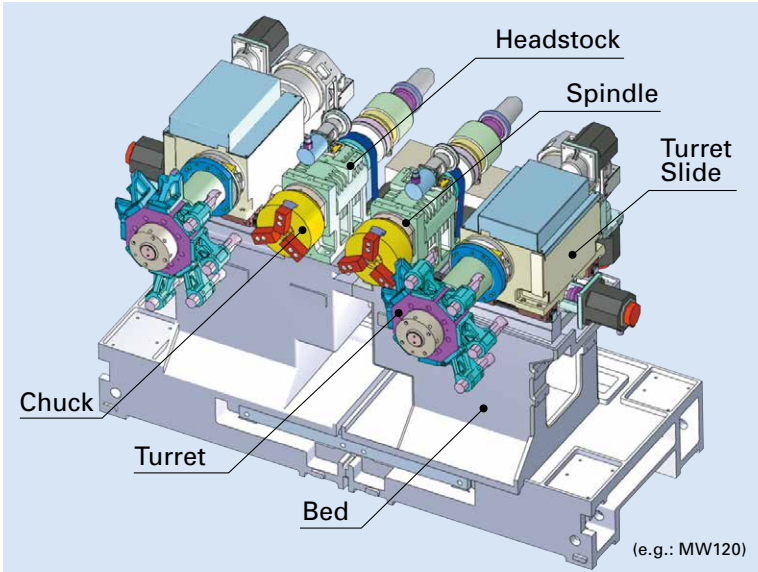
Muratec's unprecedented machine features include precision machining, line planning, higher productivity, automation reliability, longer unattended production, machine rigidity, energy saving and turnkey experience for automobile component manufacturing. These outstanding features have made our machines extremely successful in the worldwide market. Our wealth of turnkey experience includes automotive parts manufacturing for; Electrical power steering, Continuous variable transmission (CVT), high precision light weight hubs, energy saving high performance engines, automotive compressors and more. Muratec continually strives to provide the latest technology in machines, and extremely reliable application solutions to boost productivity and profitability for our customers.



# High Accuracy and High Rigidity -Heavy Duty Machining with Column and Turret Bar Design

## ■ Completely Separate Beds

The twin spindle turning machines are built with completely separate bed constructions. Separate beds minimize the transfer of harmonic vibrations. This unique design provides excellent workpiece roundness and tremendous surface finish capabilities.

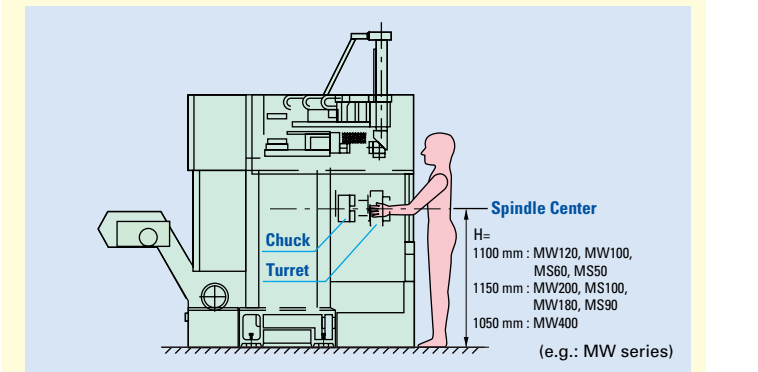


The turret and spindle are designed parallel to each other. Decades of column/turret style MW machines in the field have proven the superior design of these machines. This design supports heavy cuts, accurate finishing and allows free chip fall.

## Better Machine Utilization, Easy Set-Up, Simple Operation and Quick Maintenance

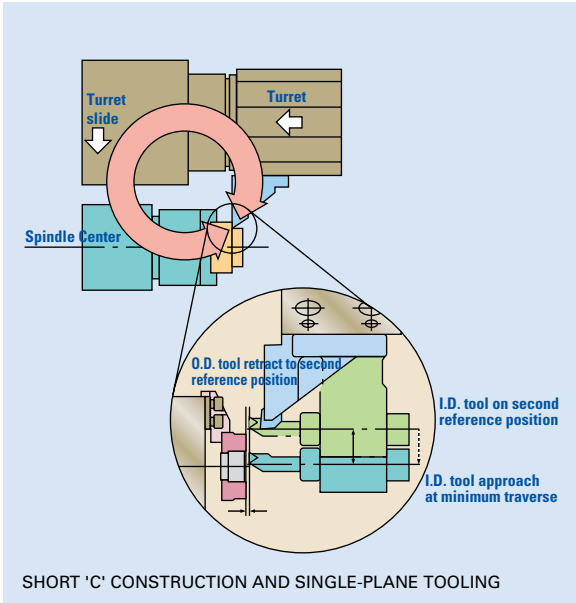
### ■ Easy Operator Set-Up

The wide-open front of the machine permits the operator convenient access to the spindle, turnaround chucks, and gantry grippers. Tool access is ergonomically designed.



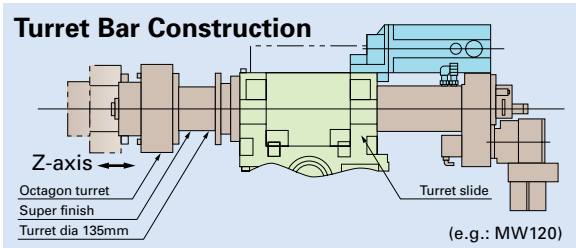
## ■ Short 'C' Construction

Closed 'C' loop between chuck and cutting tool enhances machining rigidity, allowing for full utilization of spindle and live tool power over a wide speed range.



## ■ Turret Bar Construction

The unique round turret design is supported on hydrostatic bearings over a wide span. Our hydraulic curvic coupling design provides exceptional rigidity, smooth axis movement and high speed positioning. When combined, these advanced designs results in stable cutting, close tolerances, and high productivity.



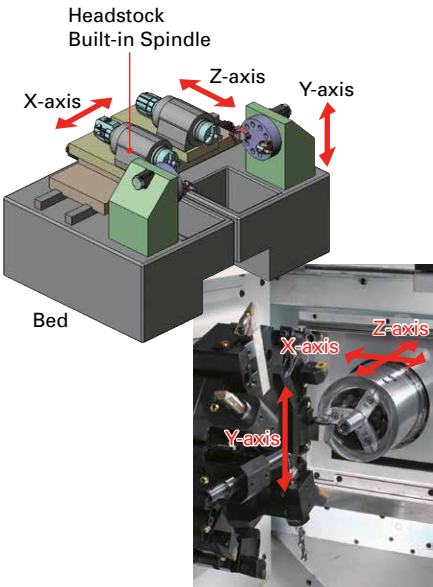
# MW & MS SERIES

The MW series chucks come with column / turret bar design for heavy duty cutting capabilities, precision machining and high rigidity.  
The MS series single spindle chucks are designed for high speed, compact, automated line planning requirements.

## Solution for Mass Production of Small High-Precision Parts Workpiece size less than 50 mm, Tolerance requirement 5 μm ~ 10 μm

### MW40 & MS20 (Chuck size 4", 5")

#### MW40 Single Loader Type Twin Spindle CNC Chuck



#### Live Tool (Option)



The MW40 achieves less than 5μm of thermal displacement even with the indexing style turrets.

An integrated, intelligent 3-axis CNC gantry loader offers versatile automation.

A live tool drive and Y-axis function are available as options.  
The MW40 & MS20 are ideal for process integration of small parts production.

| Basic Machine Specifications               | MW40                                   | MS20                                   |
|--------------------------------------------|----------------------------------------|----------------------------------------|
| Number of spindles                         | 2                                      | 1                                      |
| Maximum chuck size                         | ø 110 mm (4 inch)<br>ø 135 mm (5 inch) | ø 110 mm (4 inch)<br>ø 135 mm (5 inch) |
| Distance between spindle centers           | 430 mm                                 | —                                      |
| Number of turret stations                  | 10 × 2                                 | 10                                     |
| Spindle drive motor                        | 3.7 kW/30min × 2                       | 3.7 kW/30min                           |
| Spindle speed range                        | 80 ~ 8,000 rpm                         | 80 ~ 8,000 rpm                         |
| Spindle nose size                          | Flat nose                              | Flat nose                              |
| Diameter of spindle bore                   | ø 32 mm                                | ø 32 mm                                |
| Spindle diameter at front bearing mounting | ø 60 mm                                | ø 60 mm                                |
| Total weight                               | 3,500 kg                               | 2,500 kg                               |

| Live Tooling Specifications (Option) |                                 |                             |
|--------------------------------------|---------------------------------|-----------------------------|
| Live tool drive motor                | 1.0 kW (2.0 N-m/continuous) × 2 | 1.0 kW (2.0 N-m/continuous) |
| Maximum speed                        | 6,000 rpm                       | 6,000 rpm                   |
| Selectable tool diameter             | ø7 mm                           | ø7 mm                       |

Loading/Unloading Time : 2.6 seconds Reduction in Cycle Time,  
 for High Productivity

## MW50

Tool Plate



**MW50**  
 Single Loader Type  
 Twin Spindle CNC Chucker

- Muratec Design Concept for Small Parts Production**
- High Power Cutting Capability!**  
 7.5 kW Spindle power and ø80mm main spindle bearing allow for efficient machining of small parts.
- Reduction in Idle Time!**  
 Gang tooling construction allows for a reduction in machine idle time (No turret indexing).
- Space-Saving Design!**  
 Space-saving Twin Spindle machine design (Width 1220 mm, Depth 1990 mm, Floor Space 2.4 m<sup>2</sup>) allows compact floor layouts.

Capable of Cutting Parts as Big as ø 80 in Size.  
 Loading/Unloading Time : 2.9 seconds

## MW80

Tool Plate



**MW80**  
 Twin Loader Type  
 Twin Spindle CNC Chucker

Gang tooling construction eliminates turret indexing time for significant cycle time reduction.



Tools used: 4 numbers/ Spindle

| Basic Machine Specifications               | MW50                           | MW80                           |
|--------------------------------------------|--------------------------------|--------------------------------|
| Number of spindles                         | 2                              | 2                              |
| Maximum chuck size                         | ø 165 mm (6 inch)              | ø 165 mm (6 inch)              |
| Distance between spindle centers           | 620 mm                         | 830 mm                         |
| Number of turret stations                  | Tool plate × 2 / Width: 270 mm | Tool plate × 2 / Width: 370 mm |
| Spindle drive motor                        | 7.5 kW/25% × 2                 | 7.5 kW/25% × 2                 |
| Spindle speed range                        | 60 ~ 6,000 rpm                 | 60 ~ 6,000 rpm                 |
| Spindle nose size                          | Flat nose                      | Flat nose                      |
| Diameter of spindle bore                   | ø 42 mm                        | ø 42 mm                        |
| Spindle diameter at front bearing mounting | ø 80 mm                        | ø 80 mm                        |
| Total weight                               | 3,500 kg                       | 4,000 kg                       |

Better Cost Performance for Work Size ø 60 mm x 40 mm Length

## MW100 & MS50

(Chuck size 6")



**MW100**  
 Single Loader Type  
 Twin Spindle CNC Chucker



**MS50**  
 Single Loader Type  
 Single Spindle CNC Chucker  
 6" chuck capacity, compact and an ideal design for line planning with a floor contact width of only 980 mm.

| Basic Machine Specifications               | MW100                                              | MS50                                               |
|--------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| Number of spindles                         | 2                                                  | 1                                                  |
| Maximum chuck size                         | ø 165 mm (6 inch)                                  | ø 165 mm (6 inch)                                  |
| Distance between spindle centers           | 340 mm                                             | —                                                  |
| Number of turret stations                  | 8 × 2                                              | 8                                                  |
| Spindle drive motor                        | 5.5 kW/30min × 2                                   | 5.5 kW/30min                                       |
| Spindle speed range                        | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm |
| Spindle nose size                          | JIS A2-5                                           | JIS A2-5                                           |
| Diameter of spindle bore                   | ø 47 mm                                            | ø 47 mm                                            |
| Spindle diameter at front bearing mounting | ø 80 mm                                            | ø 80 mm                                            |
| Total weight                               | 3,500 kg                                           | 2,000 kg                                           |

Best Seller Machines with Extreme Operational Flexibility

## MW120 & MS60

(Chuck size 6", 8")



**MW120**  
Single Loader Type  
Twin Spindle CNC Chucker



**MS60**  
Manual Load Type  
Single Spindle CNC Chucker



**MS60**  
Single Loader Type  
Single Spindle CNC Chucker

Basic Machine Specifications

|                                            |          | MW120                                                       | MS60                                                        | MS60 Manual load type                              |
|--------------------------------------------|----------|-------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------|
| Number of spindles                         |          | 2                                                           | 1                                                           | 1                                                  |
| Maximum chuck size                         |          | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)             |
| Distance between spindle centers           |          | 340 mm                                                      | —                                                           | —                                                  |
| Number of turret stations                  |          | 8 × 2<br>12 × 2                                             | 8<br>12                                                     | 8                                                  |
| Spindle drive motor                        | Standard | 7.5 kW/30min × 2                                            | 7.5 kW/30min                                                | 7.5 kW/15min                                       |
|                                            | Option   | 11 kW/30min × 2                                             | 11 kW/30min                                                 | 11 kW/15min                                        |
| Spindle speed range                        |          | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm (7.5 kW) | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm (7.5 kW) | 30 ~ 3,000 rpm (Option)<br>45 ~ 4,500 rpm (7.5 kW) |
| Spindle nose size                          |          | JIS A2-5                                                    | JIS A2-5                                                    | JIS A2-5                                           |
| Diameter of spindle bore                   |          | ø 47 mm                                                     | ø 47 mm                                                     | ø 57 mm                                            |
| Spindle diameter at front bearing mounting | Standard | ø 90 mm                                                     | ø 90 mm                                                     | ø 90 mm                                            |
|                                            | Option   | ø 100 mm                                                    | ø 100 mm                                                    | —                                                  |
| Total weight                               |          | 4,500 kg                                                    | 2,500 kg                                                    | 2,500 kg                                           |

Capable of Cutting & Carrying Parts as Large as ø 200 mm x 120 mm in Size.

## MW180 & MS90

(Chuck size 8", 10")



**MW180**  
Single Loader Type  
Twin Spindle CNC Chucker



**MS90**  
Single Loader Type  
Single Spindle CNC Chucker

Basic Machine Specifications

|                                            |          | MW180                                   | MS90                                    |
|--------------------------------------------|----------|-----------------------------------------|-----------------------------------------|
| Number of spindles                         |          | 2                                       | 1                                       |
| Maximum chuck size                         |          | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) |
| Distance between spindle centers           |          | 440 mm                                  | —                                       |
| Number of turret stations                  |          | 10 × 2<br>12 × 2                        | 10<br>12                                |
| Spindle drive motor                        | Standard | 11 kW/30min × 2                         | 11 kW/30min                             |
|                                            | Option   | 15 kW/30min × 2                         | 15 kW/30min                             |
| Spindle speed range                        |          | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        |
| Spindle nose size                          |          | JIS A2-6                                | JIS A2-6                                |
| Diameter of spindle bore                   |          | ø 73 mm                                 | ø 73 mm                                 |
| Spindle diameter at front bearing mounting |          | ø 110 mm                                | ø 110 mm                                |
| Total weight                               |          | 7,000 kg                                | 3,800 kg                                |

10" Chuck Capacity Compact Machine Design

## MW200 & MS100

(Chuck size 8", 10")

**MW200**  
Single Loader Type  
Twin Spindle CNC Chucker



**MS100**  
Single Loader Type  
Single Spindle CNC Chucker  
8" chuck capacity, compact and an ideal design for line planning with a floor contact width of only 1320 mm.

| Basic Machine Specifications               |          | MW200                                   | MS100                                   | MW200 High power spindle type            |
|--------------------------------------------|----------|-----------------------------------------|-----------------------------------------|------------------------------------------|
| Number of spindles                         |          | 2                                       | 1                                       | 2                                        |
| Maximum chuck size                         |          | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch)  |
| Distance between spindle centers           |          | 440 mm                                  | —                                       | 470 mm                                   |
| Number of turret stations                  |          | 10 × 2<br>12 × 2                        | 10<br>12                                | 10 × 2<br>12 × 2                         |
| Spindle drive motor                        | Standard | 15 kW/30min × 2                         | 15 kW/30min                             | 22 kW/30min × 2                          |
|                                            | Option   | 22 kW/30min × 2                         | 22 kW/30min                             | 30 kW/30min × 2                          |
| Spindle speed range                        |          | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        | 25 ~ 2,500 rpm (22 kW)<br>35 ~ 3,500 rpm |
| Spindle nose size                          |          | JIS A2-6                                | JIS A2-6                                | JIS A2-8                                 |
| Diameter of spindle bore                   | Standard | ø 63 mm                                 | ø 63 mm                                 | ø 73 mm                                  |
|                                            | Option   | ø 73 mm                                 | ø 73 mm                                 | —                                        |
| Spindle diameter at front bearing mounting | Standard | ø 100 mm                                | ø 100 mm                                | ø 120 mm                                 |
|                                            | Option   | ø 110 mm                                | ø 110 mm                                | —                                        |
| Total weight                               |          | 7,000 kg                                | 3,800 kg                                | 7,000 kg                                 |

**MW200**  
High Power Spindle Type  
Twin Spindle CNC Chucker  
Capable of operating large parts by 10" chuck



Heavy Duty,  
High Speed Disk Rotor Machining

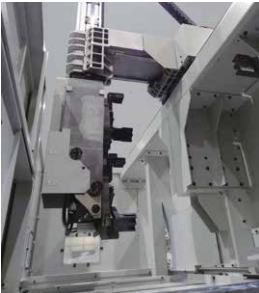
## MW400

(Chuck size 15")

**MW400**  
Single Loader Type  
Twin Spindle CNC Chucker  
Gantry loader is designed for extremely reliable, large-sized part handling.



Loader Head (Swivel type)



Loader Head (Horizontal type)



Turn-around Device

| Basic Machine Specifications               |          | MW400                                            |
|--------------------------------------------|----------|--------------------------------------------------|
| Number of spindles                         |          | 2                                                |
| Maximum chuck size                         |          | ø 381 mm (15 inch)                               |
| Distance between spindle centers           |          | 560 mm                                           |
| Number of turret stations                  |          | 8 × 2<br>12 × 2                                  |
| Spindle drive motor                        | Standard | 22 kW/30min × 2                                  |
|                                            | Option   | 30 kW/30min × 2                                  |
| Spindle speed range                        |          | 30 ~ 3,000 rpm (22 kW)<br>35 ~ 3,500 rpm (30 kW) |
| Spindle nose size                          |          | JIS A2-11                                        |
| Diameter of spindle bore                   |          | ø 73 mm                                          |
| Spindle diameter at front bearing mounting |          | ø 160 mm                                         |
| Total weight                               |          | 13,000 kg                                        |

| Live Tooling Specifications (Option) |                                  |
|--------------------------------------|----------------------------------|
| Live tool drive motor                | 7.0 kW (30.0 N·m/continuous) × 2 |
| Maximum speed                        | 2,000 rpm                        |
| Selectable tool diameter             | ø 20 mm                          |

### Option for Twin-spindle Machines

■ **Spindle Isolation Type**  
Completely separated machine structure into the right spindle, left spindle and loaders minimizes machining vibration from the other turret and loader.



# MD SERIES

Muratec, a global leader in twin-spindle turning machines introduce the MD Series Turning Centers. A new concept in process integration, flexible parts manufacturing and line planning. The new MD Series is designed for compact line operation, flexibility in manufacturing, versatility and easy set-up change.

The MD series, with its compact footprint, is ideal for process integration of mid-size lot production

## MD60 & MD120

(Chuck size 6", 8")

**MD120**  
Single Loader Type  
CNC Turning Center  
(Twin-spindle)



**MD60**  
Single Loader Type  
CNC Turning Center  
(Single-spindle)

| Basic Machine Specifications               |          | MD60                                   | MD120                                  |
|--------------------------------------------|----------|----------------------------------------|----------------------------------------|
| Number of spindles                         |          | 1                                      | 2                                      |
| Maximum chuck size                         |          | ø 165 mm (6 inch)<br>ø 210 mm (8 inch) | ø 165 mm (6 inch)<br>ø 210 mm (8 inch) |
| Distance between spindle centers           |          | —                                      | 340 mm                                 |
| Number of turret stations                  |          | 10                                     | 10 × 2                                 |
| Spindle drive motor                        | Standard | 7.5 kW/30min                           | 7.5 kW/30min × 2                       |
|                                            | Option   | 11 kW/30min                            | 11 kW/30min × 2                        |
| Spindle speed range                        |          | 30 ~ 3,000 rpm (7.5 kW)                | 30 ~ 3,000 rpm (7.5 kW)                |
|                                            |          | 45 ~ 4,500 rpm                         | 45 ~ 4,500 rpm                         |
|                                            |          | 60 ~ 6,000 rpm                         | 60 ~ 6,000 rpm                         |
| Spindle nose size                          |          | JIS A2-5                               | JIS A2-5                               |
| Diameter of spindle bore                   |          | ø 47 mm                                | ø 47 mm                                |
| Spindle diameter at front bearing mounting |          | ø 90 mm                                | ø 90 mm                                |
| Total weight                               |          | 2,500 kg                               | 4,500 kg                               |

### Live Tools and Process Integration

Contemporary manufacturing techniques such as lean manufacturing demand integrated processes, finishing parts on one machine, and compact line layouts to enable consistent and accurate production by eliminating in-process inventory. The MD Series turning centers incorporate live tools on the turret as a standard feature with spindle drive positioning control. Live tools are available on all turret stations. The Live tool heads are available as an option to suit various requirements.

|                          | MD60 / MD120             | MD100 / MD180 / MD200     |
|--------------------------|--------------------------|---------------------------|
| Live tool drive motor    | 2.5 kW(8 N·m/continuous) | 4.0 kW(22 N·m/continuous) |
| Maximum speed            | 4,000 rpm                | 3,000 rpm                 |
| Selectable tool diameter | ø 16 mm                  | ø 20 mm                   |

## Compact Turning Center of 10" Chuck Size

## MD100 & MD200

(Chuck size 8", 10")



**MD100**  
Single Loader Type  
CNC Turning Center  
(Single-spindle)



**MD200**  
Single Loader Type  
CNC Turning Center  
(Twin-spindle)

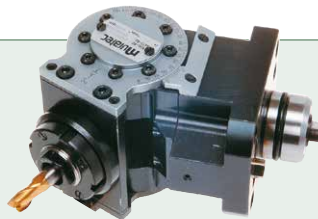
| Basic Machine Specifications               |          | MD100                                   | MD180                                   | MD200                                   |
|--------------------------------------------|----------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Number of spindles                         |          | 1                                       | 2                                       | 2                                       |
| Maximum chuck size                         |          | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) |
| Distance between spindle centers           |          | —                                       | 440 mm                                  | 440 mm                                  |
| Number of turret stations                  |          | 10                                      | 10 × 2                                  | 10 × 2                                  |
| Spindle drive motor                        | Standard | 11 kW/30min                             | 11 kW/30min × 2                         | 11 kW/30min × 2                         |
|                                            | Option   | 22 kW/30min                             | 15 kW/30min × 2                         | 15kW, 22 kW/30min × 2                   |
| Spindle speed range                        |          | 20 ~ 2,000 rpm<br>(11 kW)               | 20 ~ 2,000 rpm<br>(11 kW)               | 20 ~ 2,000 rpm<br>(11 kW)               |
|                                            |          | OP: 24 ~ 2,400 rpm<br>(22 kW)           | 24 ~ 2,400 rpm                          | 24 ~ 2,400 rpm                          |
|                                            |          | OP: 35 ~ 3,500 rpm<br>(22 kW)           | 35 ~ 3,500 rpm                          | 35 ~ 3,500 rpm                          |
| Spindle nose size                          |          | JIS A2-6                                | JIS A2-6                                | JIS A2-6                                |
| Diameter of spindle bore                   |          | ø 63 mm                                 | ø 63 mm                                 | ø 63 mm                                 |
| Spindle diameter at front bearing mounting |          | ø 110 mm                                | ø 110 mm                                | ø 110 mm                                |
| Total weight                               |          | 3,800 kg                                | 7,000 kg                                | 7,000 kg                                |



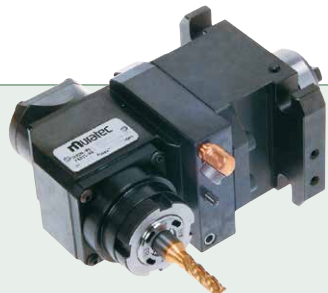
Cross live tool head  
(MD60/120)



Face live tool head  
(MD60/120)



Angular live tool head  
(MD60/120)



High speed face live tool head  
(10,000 rpm spec)  
(MD60/120)

Note: Please check tool dimensions when ordering.

# MJ SERIES

Without changing design concept of the MW and MS series, the MJ60/MJ100 enable shaft work machining with tailstock utilization.

The MJ200 enables reduction of cycle time when combined with twin turrets and tailstock.

The MJ series allows for automated shaft work line construction.

## Turning Machine with Tailstock Accommodates an Automated Line Construction

### MJ60, MJ100, MJ200

(Chuck size MJ60 : 6", 8"  
MJ100, MJ200 : 8", 10")

#### MJ100

Single Loader Type  
CNC Turning Machine  
with Tailstock  
(Single-spindle)



#### MJ200

Single Loader Type  
CNC Turning Machine with Tailstock  
(Single-spindle, 2 turrets)

#### MJ60

Single Loader Type  
CNC Turning Machine  
with Tailstock  
(Single-spindle)



| Basic Machine Specifications               |          | MJ60                                      | MJ100              | MJ200              |
|--------------------------------------------|----------|-------------------------------------------|--------------------|--------------------|
| Number of spindles                         |          | 1                                         | 1                  | 1                  |
| Maximum chuck size                         |          | ø 165 mm (6 inch)                         | ø 210 mm (8 inch)  | ø 210 mm (8 inch)  |
|                                            |          | ø 210 mm (8 inch)                         | ø 254 mm (10 inch) | ø 254 mm (10 inch) |
| Number of turret stations                  |          | 8                                         | 10<br>12           | 10 × 2             |
| Spindle drive motor                        | Standard | 7.5 kW/30min                              | 15 kW/30min        | 22 kW/30min        |
|                                            | Option   | 11 kW/30min                               | 22 kW/30min        | —                  |
| Spindle speed range                        |          | 30 ~ 3,000 rpm                            | 24 ~ 2,400 rpm     | 24 ~ 2,400 rpm     |
|                                            |          | 45 ~ 4,500 rpm<br>60 ~ 6,000 rpm (7.5 kW) | 35 ~ 3,500 rpm     | 35 ~ 3,500 rpm     |
| Spindle nose size                          |          | JIS A2-5                                  | JIS A2-6           | Flat nose          |
| Diameter of spindle bore                   | Standard | ø 57 mm                                   | ø 63 mm            | ø 73 mm            |
|                                            | Option   | —                                         | ø 73 mm            | —                  |
| Spindle diameter at front bearing mounting | Standard | ø 90 mm                                   | ø 100 mm           | ø 110 mm           |
|                                            | Option   | —                                         | ø 110 mm           | —                  |
| Total weight                               |          | 3,500 kg                                  | 5,000 kg           | 7,000 kg           |

# Intelligent CNC Gantry Loader

## An Integral, Intelligent 3-Axis CNC Gantry Loader Offers Versatile Automation

### Loader Re-start at Any Position

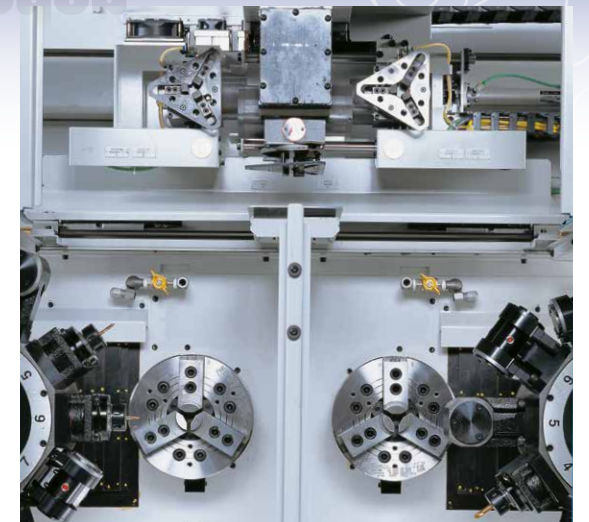
Loader cycle can be restarted at interrupted position.

### Safety at Abnormal Load

Abnormal load detection function immediately stops axes movement and track back function reverses the axis movement.

### Work Discharge at Work Location NG

Auto unloading feature in case of NG work



### Loader Re-start Function

When the program stops, Intelligent gantry loader memorizes the work status during operation. (materials, half-finished parts and finished parts).

The loader cycle can be restarted at any interrupted position when auto cycles are halted due to a machine alarm, caution messages or manual intervention.

| WORK STATUS |          |             |          |
|-------------|----------|-------------|----------|
| WORK STATUS | ST.      | WORK STATUS | ST.      |
| L-CHUCK     | (#500) 0 | R-CHUCK     | (#500) 0 |
| L-A-CHUCK   | (#501) 0 | R-A-CHUCK   | (#501) 0 |
| L-B-CHUCK   | (#502) 0 | R-B-CHUCK   | (#502) 0 |
| L-C-CHUCK   | (#503) 0 | INLET       | (#504) 0 |
| L-D-CHUCK   | (#504) 0 | GAUGE       | (#505) 0 |
| L-E-CHUCK   | (#505) 0 | WASH        | (#506) 0 |
| L-F-CHUCK   | (#506) 0 | OUTLET      | (#507) 0 |
| L-G-CHUCK   | (#507) 0 | RESERVE1    | (#508) 0 |
| L-H-CHUCK   | (#508) 0 | RESERVE2    | (#509) 0 |

---THE CONTENTS OF WORK STATUS DATA---  
 0: NO WORK 1: GAUGED NG WORK 12:  
 1: 0P1 MATERIAL 2: GAUGED NG WORK 13:  
 2: 0P1 PROCESSED 3: 0P1 MATERIAL 14:  
 3: 0P2 MATERIAL 4: 0P2 PROCESSED 15: NG WORK  
 4: 0P2 PROCESSED 16:  
 5: NG WORK 17:

### Abnormal Load Detection

Abnormal load detection function detects abnormal load for all turret and loader axes.

At any crash due to operator's error, programming error etc., this function minimizes the severity of damage to the machine.

### Quick Workpiece Palletizing

Three-axis, swivel head gantry loader allows for easy and quick palletizing of parts different in shape and size through flexible teaching positions.

The loader feature responds swiftly and flexibly to work loading/unloading on stacking, non-stacking type work feeders, conveyors, positioning units, chutes etc. and irregular-shaped parts similar to robot hand.

### Track Back Function

Axis Track Back Function enables reversing of the turret and loader axis movement direction. When an abnormal load is detected, the machine tracks back the detected position after 1msec (0.001sec).

This occurs when an abnormal load (100% motor load) is detected during cutting or axis movements. And this function reduces the damages to the machine and the loader to a minimum.

## Single or twin loader is available for selection according to the cycle time.

### Single Loader Type

A servo gantry loader with CNC 3-axis is incorporated per chucker.

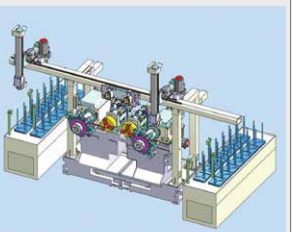
### Twin Loader Type

Two servo gantry loaders with CNC 3-axis are incorporated per chucker.

Individual access to the right and left spindles with two loaders achieves highly effective cutting of short cycle workpieces.



Twin Loader Type



Image

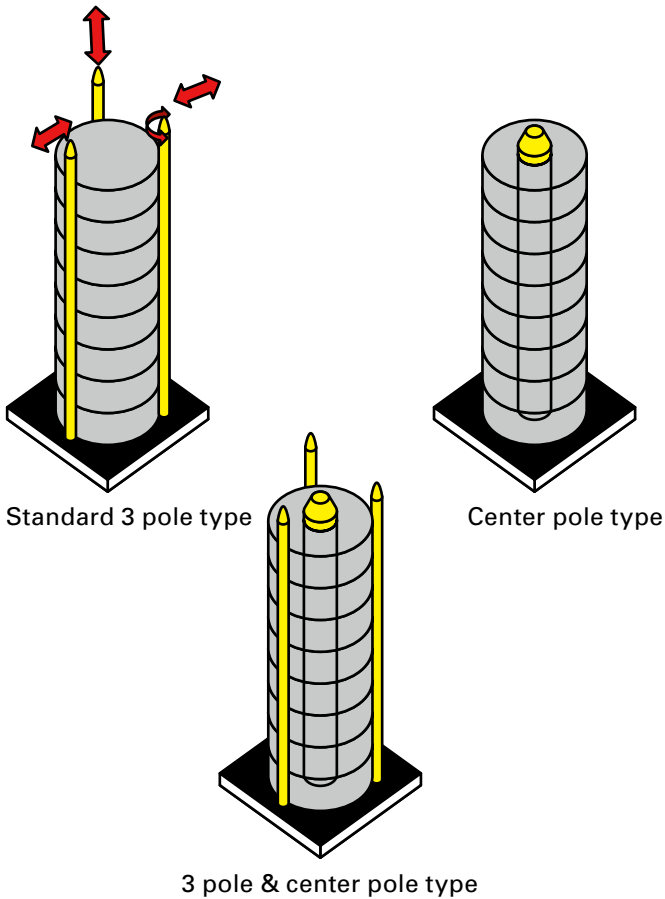
# Stockers / Gauge Units / Peripheral Devices

## Standard Stocker



WF14L-160II

|             | Number of pallets | Stack height | Weight of workpiece | Workpiece diameter |
|-------------|-------------------|--------------|---------------------|--------------------|
| WF10L-160II | 10                | 435 mm       | 40 kg/pallet        | ø 30 mm ~ ø 160 mm |
| WF14L-160II | 14                | 435 mm       | 40 kg/pallet        | ø 30 mm ~ ø 160 mm |
| WF20L-160II | 20                | 435 mm       | 40 kg/pallet        | ø 30 mm ~ ø 160 mm |
| WF30L-160II | 30                | 435 mm       | 30 kg/pallet        | ø 30 mm ~ ø 160 mm |
| WF14L-280II | 14                | 435 mm       | 50 kg/pallet        | ø 60 mm ~ ø 280 mm |



Standard 3 pole type

Center pole type

3 pole & center pole type



WF14-300II  
Non-stacking Type

|            | Number of pallets | Pallet size     | Workpiece weight |
|------------|-------------------|-----------------|------------------|
| WF14-300II | 14                | 310 mm × 310 mm | 30 kg/pallet     |
| WF24-300II | 24                | 310 mm × 310 mm | 25 kg/pallet     |

## Stockers / Gauge Units / Peripheral Devices

- Inlet/Outlet Conveyor
- Wash Unit
- Tray Changer
- Indexing Pallet Feeder Table
- Workpiece Checking Unit
- Aslope Stocker
- Part Orientation
- Post Process Gauge
- Inlet/Outlet Shuttle
- Direct Post Process Gauge
- Parts Feeder
- Turn-around Unit
- Inlet/Outlet Chute
- Deburring Unit
- Interface for Special Unit
- Auto Tray Changer



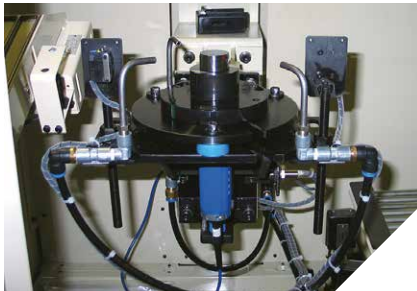
Wash Unit



Tray Changer



Post Process Gauge



Direct Post Process Gauge



Parts Feeder

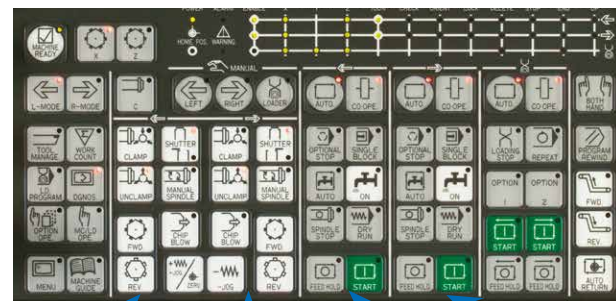


Auto Tray Changer

# Advanced User-friendly Functions and Displays

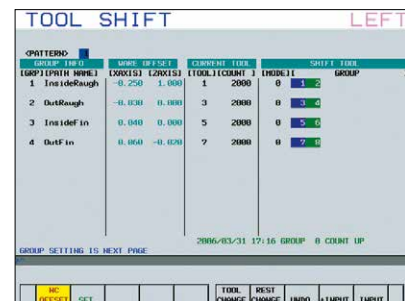


Operation panel is set at a convenient height on the right side of a machine. The panel can rotate 90 degrees. Buttons are clearly classified and logically grouped under: left spindle, right spindle (Twin spindle chucks) and loader. Distinction is also made between manual and automatic. Function Keys and symbolic button labels are in line with international common standards.



Left spindle (Manual) Right spindle (Manual) Left spindle (Automatic) Right spindle (Automatic)

## Auto Tool Shift Function (Option)

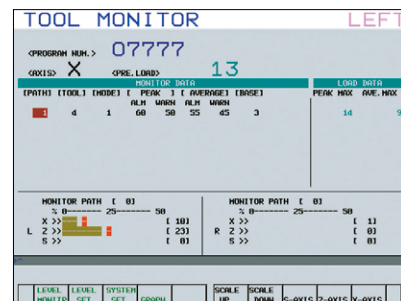


Spare or redundant tools can be activated by tool count or tool breakage detection. Different part programs based on five patterns can be set for auto tool shift function. Each pattern has 8 tool groups with 15 tool shift settings. Standard and rotation tool shift modes are available to meet different production requirements. This tool shift option is useful for continuous and unattended type production.

## Abnormal Load Detection

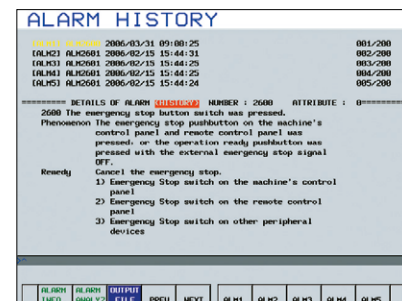
The MW/MS/MD/MJ series machines use the abnormal load detection function to detect abnormal load on all turret and loader axes. At any crash due to operator's mistake, programming mistake etc. this function minimizes damage to the machine by retracting the axis.

## Tool Monitor (Option)



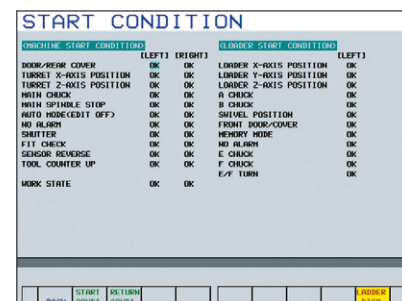
The MW/MS/MD/MJ series machines incorporate optional 3-stage (Upper, Lower level & Zero cut) tool monitor function to check abnormal loads. The cutting load on individual axis is monitored for each cutting process. Emergency stop, Cycle stop or Auto continuous running levels can be set for different cutting loads. In combination with optional Auto Tool Shift function, spare tool can be activated when cutting load exceeds predetermined level. This tool monitor is useful for continuous and unattended operations.

## Diagnostic Function



A display alarm is accompanied by diagnostic explanation. A history of the last 200 alarms is maintained and can be accessed on the display.

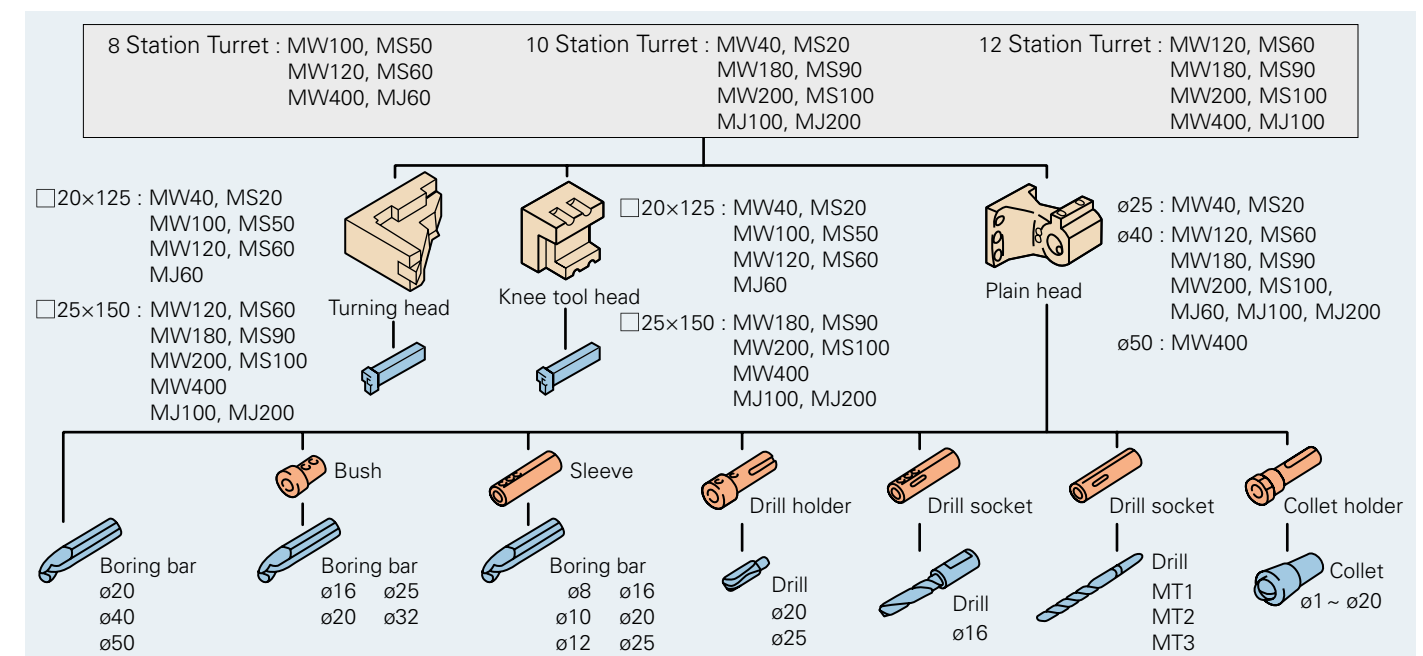
## Machine Guide



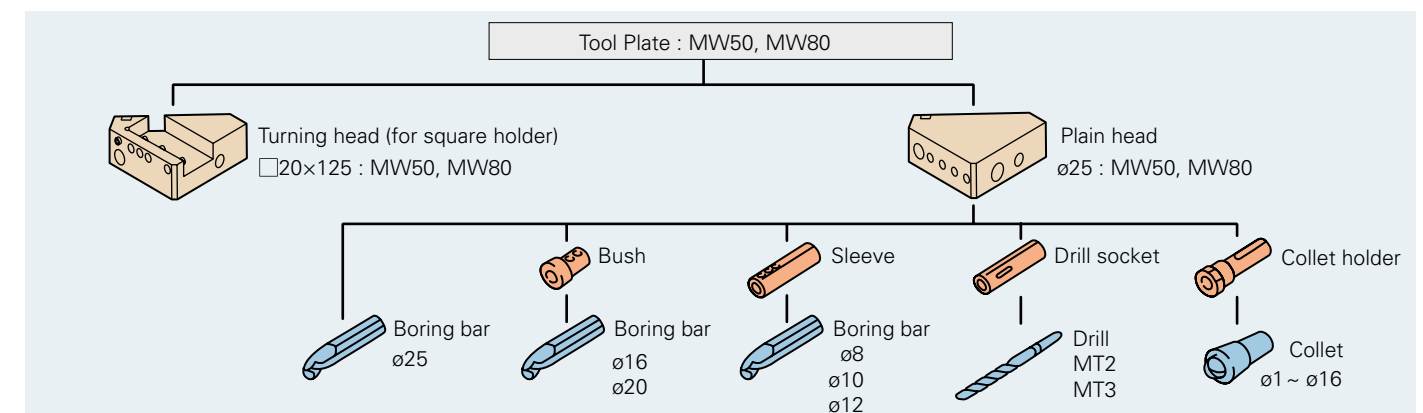
This function helps to check machine and loader status quickly in combined display and guides the operator to restore the machine status for automatic operations or machine zero set.

# Tooling Systems

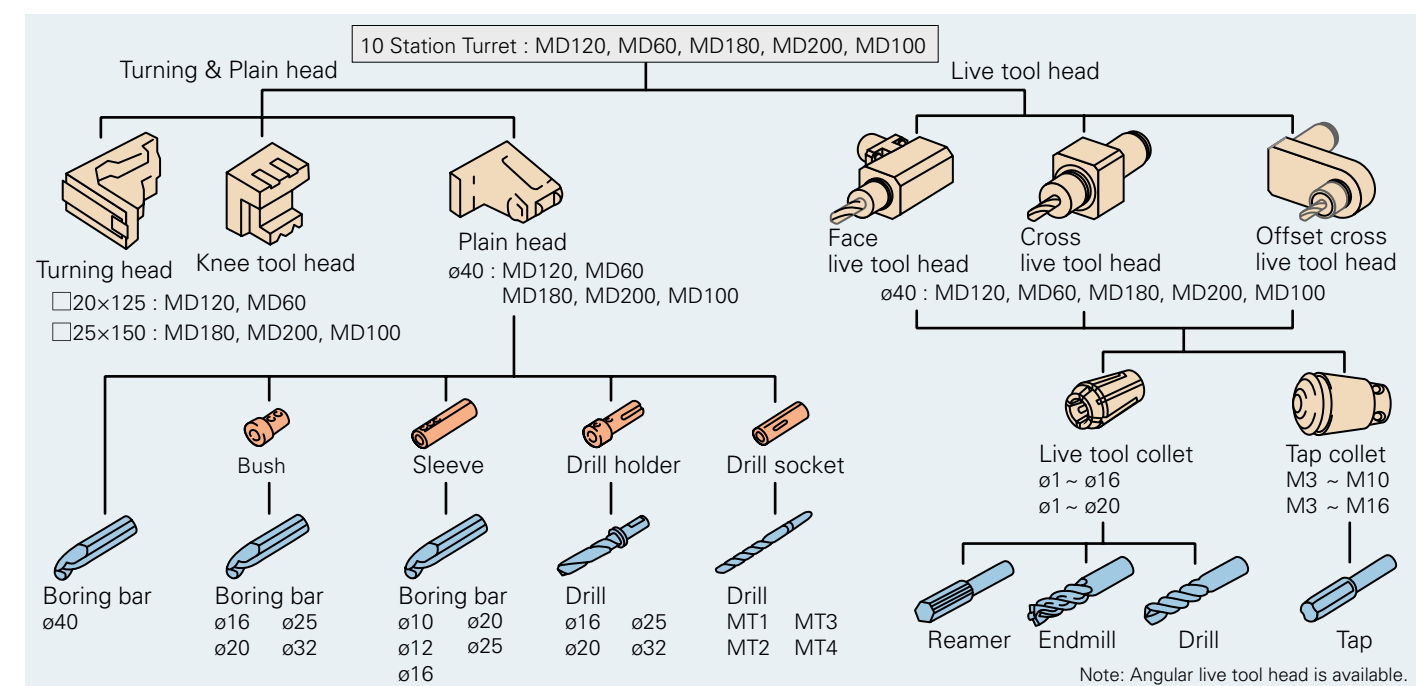
## MW, MS (except MW50, MW80), MJ series



## MW50, MW80



## MD series

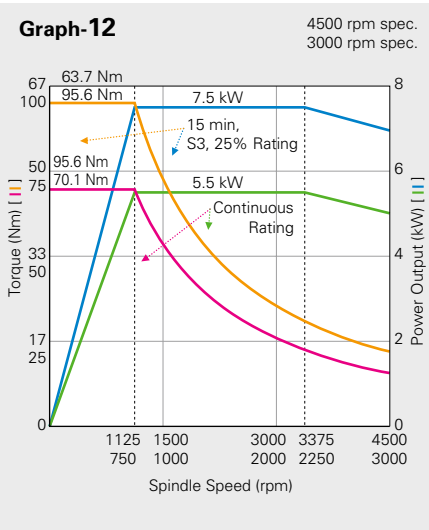
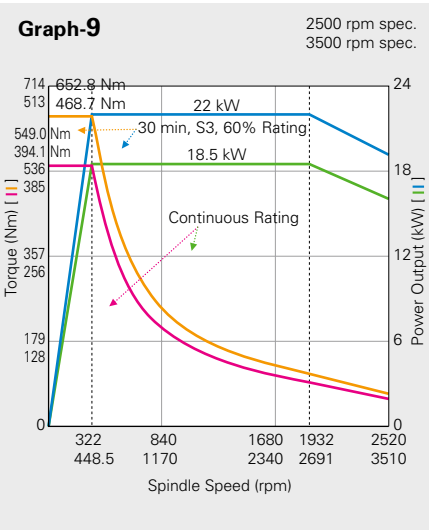
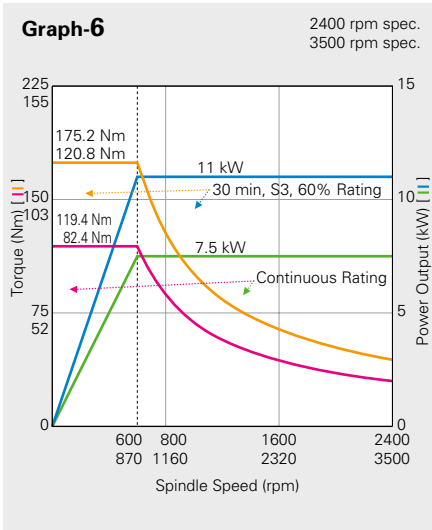
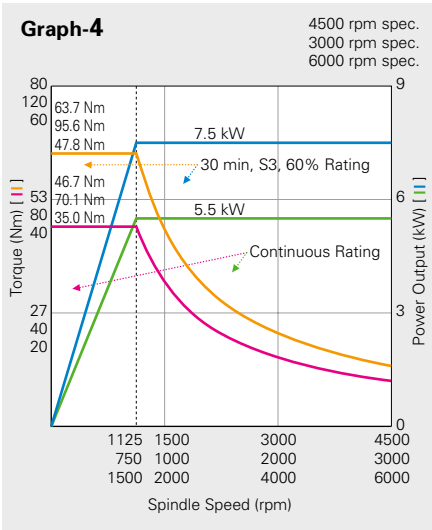
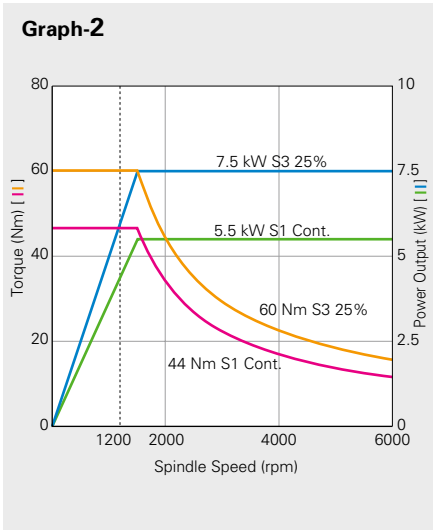
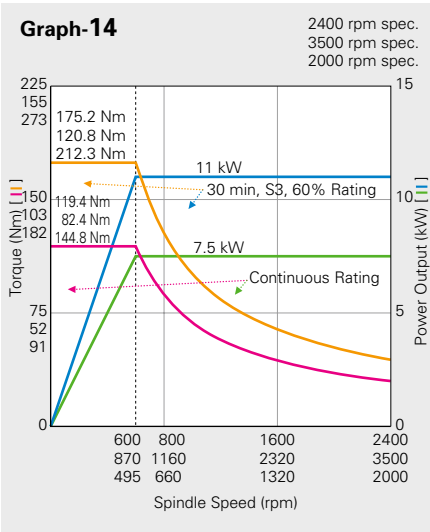
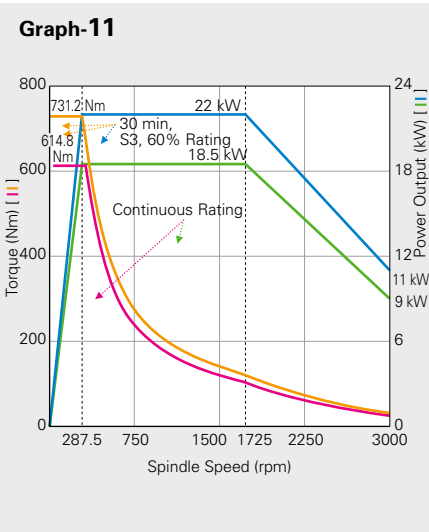
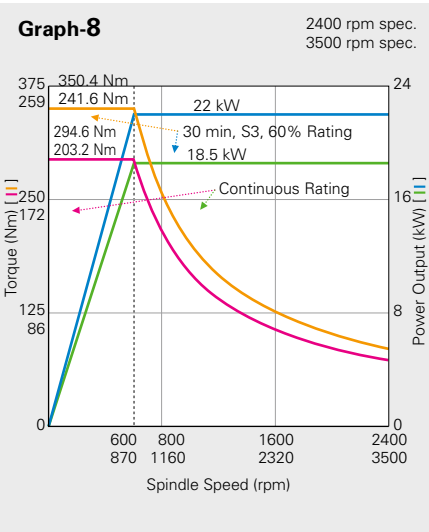
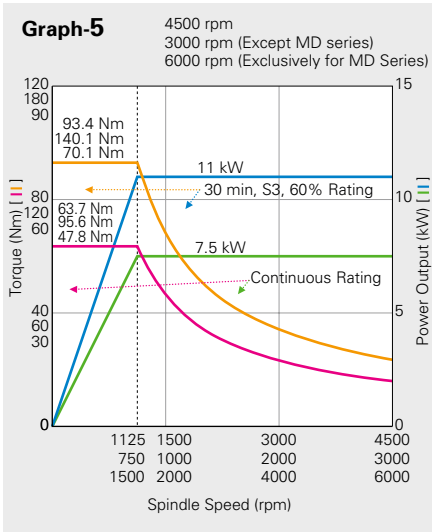
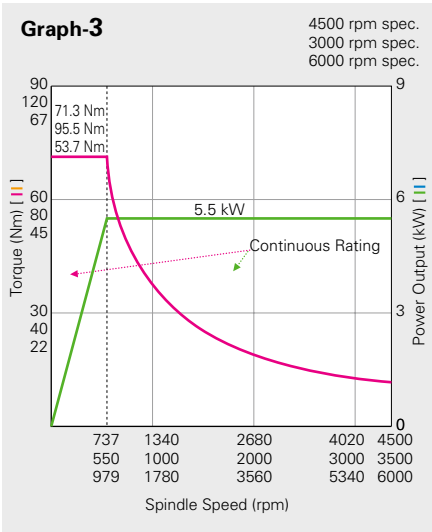
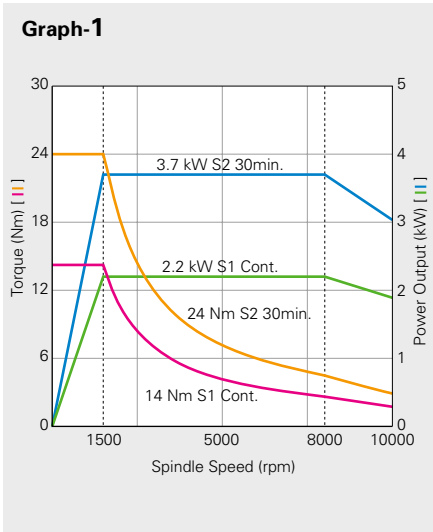
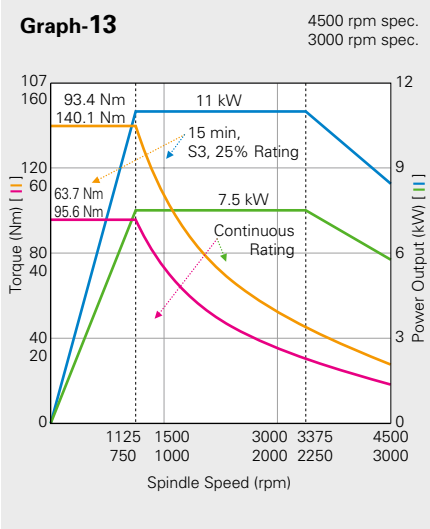
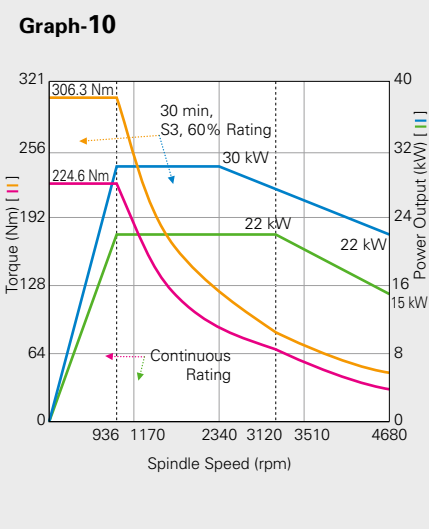
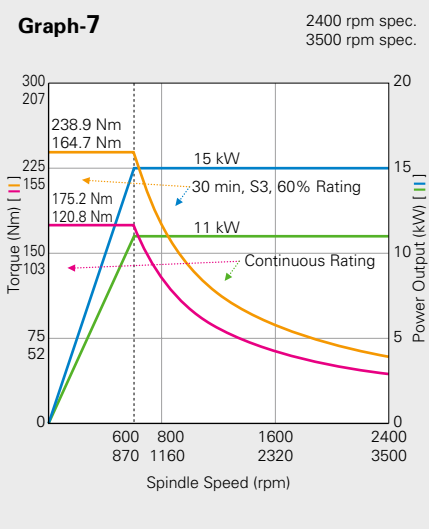


Main Spindle Output Power Characteristics

| Model                   | Power Output | Graph    |
|-------------------------|--------------|----------|
| MW40                    | 3.7 kW/30min | Graph-1  |
| MW50                    | 7.5 kW/30min | Graph-2  |
| MW80                    | 7.5 kW/30min | Graph-2  |
| MW100                   | 5.5 kW/30min | Graph-3  |
| MW120                   | 7.5 kW/30min | Graph-4  |
|                         | 11 kW/30min  | Graph-5  |
| MW180                   | 11 kW/30min  | Graph-6  |
|                         | 15 kW/30min  | Graph-7  |
| MW200                   | 15 kW/30min  | Graph-7  |
|                         | 22 kW/30min  | Graph-8  |
| MW200                   | 22 kW/30min  | Graph-9  |
| High power spindle type | 30 kW/30min  | Graph-10 |
| MW400                   | 22 kW/30min  | Graph-11 |
|                         | 30 kW/30min  | Graph-10 |

| Model            | Power Output | Graph    |
|------------------|--------------|----------|
| MS50             | 5.5 kW/30min | Graph-3  |
| MS60             | 7.5 kW/30min | Graph-4  |
|                  | 11 kW/30min  | Graph-5  |
| MS90             | 11 kW/30min  | Graph-6  |
|                  | 15 kW/30min  | Graph-7  |
| MS100            | 15 kW/30min  | Graph-7  |
|                  | 22 kW/30min  | Graph-8  |
| MS60             | 7.5 kW/15min | Graph-12 |
| Manual load type | 11 kW/15min  | Graph-13 |

| Model | Power Output | Graph    |
|-------|--------------|----------|
| MD60  | 7.5 kW/30min | Graph-4  |
|       | 11 kW/30min  | Graph-5  |
| MD100 | 11 kW/30min  | Graph-14 |
|       | 22 kW/30min  | Graph-8  |
| MD120 | 7.5 kW/30min | Graph-4  |
|       | 11 kW/30min  | Graph-5  |
| MD180 | 11 kW/30min  | Graph-14 |
|       | 15 kW/30min  | Graph-7  |
| MD200 | 11 kW/30min  | Graph-14 |
|       | 22 kW/30min  | Graph-8  |
| MJ60  | 7.5 kW/30min | Graph-4  |
|       | 11 kW/30min  | Graph-5  |
| MJ100 | 15 kW/30min  | Graph-7  |
|       | 22 kW/30min  | Graph-8  |
| MJ200 | 22 kW/30min  | Graph-8  |



Specifications

| Basic Machine Specifications                          |           | MW40                                   | MS20                   | MW50                               | MW80                               | MW100                                              | MS50                   | MW120                                                       | MS60                     | MS60                                               | Manual load | MW180                                   | MS90                     | MW200                                   | MS100                    | MW200                                    | High power spindle type | MW400                                            |
|-------------------------------------------------------|-----------|----------------------------------------|------------------------|------------------------------------|------------------------------------|----------------------------------------------------|------------------------|-------------------------------------------------------------|--------------------------|----------------------------------------------------|-------------|-----------------------------------------|--------------------------|-----------------------------------------|--------------------------|------------------------------------------|-------------------------|--------------------------------------------------|
| Maximum chuck size                                    |           | ø 110 mm (4 inch)<br>ø 135 mm (5 inch) |                        | ø 165 mm (6 inch)                  | ø 165 mm (6 inch)                  | ø 165 mm (6 inch)                                  |                        | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      |                          |                                                    |             | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) |                          | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) |                          |                                          |                         | ø 381 mm (15 inch)                               |
| Distance between spindle centers                      |           | 430 mm                                 | —                      | 620 mm                             | 830 mm                             | 340 mm                                             | —                      | 340 mm                                                      | —                        | —                                                  |             | 440 mm                                  | —                        | 440 mm                                  | —                        | 470 mm                                   |                         | 560 mm                                           |
| Number of turret stations                             |           | 10 × 2                                 | 10                     | Tool plate × 2 /<br>Width : 270 mm | Tool plate × 2 /<br>Width : 370 mm | 8 × 2                                              | 8                      | 8 × 2<br>12 × 2                                             | 8<br>12                  | 8                                                  |             | 10 × 2<br>12 × 2                        | 10<br>12                 | 10 × 2<br>12 × 2                        | 10<br>12                 | 10 × 2<br>12 × 2                         |                         | 8 × 2<br>12 × 2                                  |
| Specification of cutting axes<br>(Stroke, Max. speed) | X-axis    | 155 mm 15 m/min                        |                        | 200 mm 18 m/min                    | 320 mm 18 m/min                    | 130 mm 24 m/min                                    |                        | 130 mm 24 m/min                                             |                          |                                                    |             | 190 mm 24 m/min                         |                          | 190 mm 24 m/min                         |                          |                                          |                         | 250 mm 20 m/min                                  |
|                                                       | Z-axis    | 170 mm 15 m/min                        |                        | 200 mm 24 m/min                    | 200 mm 24 m/min                    | 110 mm 24 m/min                                    |                        | 145 mm 24 m/min                                             |                          |                                                    |             | 170 mm 24 m/min                         |                          | 170 mm 24 m/min                         |                          |                                          |                         | 265 mm 20 m/min                                  |
|                                                       | Y-axis    | ±25 mm 12 m/min                        |                        | —                                  | —                                  | —                                                  | —                      | —                                                           | —                        | —                                                  |             | —                                       |                          | —                                       |                          |                                          |                         | —                                                |
| Use tool                                              | O.D. tool | □20 mm                                 |                        | □20 mm                             | □20 mm                             | □20 mm                                             |                        | □20 mm                                                      |                          |                                                    |             | □25 mm                                  |                          | □25 mm                                  |                          |                                          |                         | □25 mm                                           |
|                                                       | I.D. tool | ø 25 mm                                |                        | ø 20 mm                            | ø 20 mm                            | ø 40 mm                                            |                        | ø 40 mm                                                     |                          |                                                    |             | ø 40 mm                                 |                          | ø 40 mm                                 |                          |                                          |                         | ø 50 mm                                          |
| Spindle drive motor                                   | Standard  | 3.7 kW/30min × 2                       | 3.7 kW/30min           | 7.5 kW/25% × 2                     | 7.5 kW/25% × 2                     | 5.5 kW/30min × 2                                   | 5.5 kW/30min           | 7.5 kW/30min × 2                                            | 7.5 kW/30min             | 7.5 kW/15min                                       |             | 11 kW/30min × 2                         | 11 kW/30min              | 15 kW/30min × 2                         | 15 kW/30min              | 22 kW/30min × 2                          |                         | 22 kW/30min × 2                                  |
|                                                       | Option    | —                                      | —                      | —                                  | —                                  | —                                                  | —                      | 11 kW/30min × 2                                             | 11 kW/30min              | 11 kW/15min                                        |             | 15 kW/30min × 2                         | 15 kW/30min              | 22 kW/30min × 2                         | 22 kW/30min              | 30 kW/30min × 2                          |                         | 30 kW/30min × 2                                  |
| Spindle speed range                                   |           | 80 ~ 8,000 rpm                         |                        | 60 ~ 6,000 rpm                     | 60 ~ 6,000 rpm                     | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm |                        | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm (7.5 kW) |                          | 30 ~ 3,000 rpm (Option)<br>45 ~ 4,500 rpm (7.5 kW) |             | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        |                          | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        |                          | 25 ~ 2,500 rpm (22 kW)<br>35 ~ 3,500 rpm |                         | 30 ~ 3,000 rpm (22 kW)<br>35 ~ 3,500 rpm (30 kW) |
| Spindle nose size                                     |           | Flat nose                              |                        | Flat nose                          | Flat nose                          | JIS A2-5                                           |                        | JIS A2-5                                                    |                          |                                                    |             | JIS A2-6                                |                          | JIS A2-6                                |                          | JIS A2-8                                 |                         | JIS A2-11                                        |
| Diameter of spindle bore                              | Standard  | ø 32 mm                                |                        | ø 42 mm                            | ø 42 mm                            | ø 47 mm                                            |                        | ø 47 mm                                                     |                          | ø 57 mm                                            |             | ø 73 mm                                 |                          | ø 63 mm                                 |                          | ø 73 mm                                  |                         | ø 73 mm                                          |
|                                                       | Option    | —                                      | —                      | —                                  | —                                  | —                                                  | —                      | —                                                           | —                        | —                                                  |             | —                                       | —                        | —                                       | —                        | —                                        |                         | —                                                |
| Spindle diameter at front bearing mounting            | Standard  | ø 60 mm                                |                        | ø 80 mm                            | ø 80 mm                            | ø 80 mm                                            |                        | ø 90 mm                                                     |                          | ø 90 mm                                            |             | ø 110 mm                                |                          | ø 100 mm                                |                          | ø 120 mm                                 |                         | ø 160 mm                                         |
|                                                       | Option    | —                                      | —                      | —                                  | —                                  | —                                                  | —                      | ø 100 mm                                                    | —                        | —                                                  |             | —                                       | —                        | ø 110 mm                                | —                        | —                                        |                         | —                                                |
| Foot print                                            |           | W1,590 mm ×<br>D2,140 mm               | W990 mm ×<br>D2,140 mm | W1,220 mm ×<br>D1,990 mm           | W1,770 mm ×<br>D2,090 mm           | W1,550 mm ×<br>D1,650 mm                           | W980 mm ×<br>D1,650 mm | W1,900 mm ×<br>D1,930 mm                                    | W1,080 mm ×<br>D1,910 mm | W1,080 mm ×<br>D1,610 mm                           |             | W2,360 mm ×<br>D2,240 mm                | W1,320 mm ×<br>D2,220 mm | W2,420 mm ×<br>D2,240 mm                | W1,320 mm ×<br>D2,220 mm | W2,470 mm ×<br>D2,240 mm                 |                         | W3,490 mm ×<br>D2,550 mm                         |
| Total weight                                          |           | 3,500 kg                               | 2,500 kg               | 3,500 kg                           | 4,000 kg                           | 3,500 kg                                           | 2,000 kg               | 4,500 kg                                                    | 2,500 kg                 |                                                    |             | 7,000 kg                                | 3,800 kg                 | 7,000 kg                                | 3,800 kg                 | 7,000 kg                                 |                         | 13,000 kg                                        |

| Gantry Loader Specifications                |                    | MW40 / MS20                                           | MW50            | MW50            | MW80               | MW80                   | MW100 / MS50     | MW100 / MS50      | MW120 / MS60     | MW180 / MS90     | MW180 / MS90                        | MW400                 | MW400             |
|---------------------------------------------|--------------------|-------------------------------------------------------|-----------------|-----------------|--------------------|------------------------|------------------|-------------------|------------------|------------------|-------------------------------------|-----------------------|-------------------|
|                                             |                    |                                                       | Swivel type     | Horizontal type | Medium Swivel type | Medium Horizontal type | Small parts spec | Medium parts spec |                  | Small parts spec | MW200 / MS100                       | Horizontal type       | Swivel type       |
| Loader workpiece handling capacity (size)   |                    | ø 50 mm × 90 mm                                       | ø 50 mm × 50 mm | ø 50 mm × 50 mm | ø 80 mm × 50 mm    | ø 80 mm × 50 mm        | ø 60 mm × 40 mm  | ø 80 mm × 60 mm   | ø 120 mm × 80 mm | ø 180 mm × 80 mm | ø 200 mm × 120 mm                   | ø 350 mm × 120 mm     | ø 280 mm × 200 mm |
| Loader workpiece handling capacity (weight) |                    | 0.5 kg × 2                                            | 0.5 kg × 2      | 0.5 kg × 2      | 0.5 kg × 2         | 0.5 kg × 2             | 0.7 kg × 2       | 2.0 kg × 2        | 3.0 kg × 2       | 3.0 kg × 2       | 6.0 kg × 2 (OP : 8.0 kg × 2)        | 25.0 kg × 2           | 20.0 kg × 2       |
| X-axis (Left/Right)                         | Stroke             | The gantry loader X-axis stroke adjustable to layout. |                 |                 |                    |                        |                  |                   |                  |                  |                                     |                       |                   |
|                                             | Max. speed         | 180 m/min                                             | 180 m/min       | 180 m/min       | 180 m/min          | 180 m/min              | 150 m/min        | 150 m/min         | 160 m/min        | 160 m/min        | 150 m/min                           | 120 m/min             | 120 m/min         |
| Y-axis (Up/Down)                            | Stroke             | 420 mm                                                | 360 mm          | 480 mm          | 360 mm             | 585 mm                 | 360 mm           | 435 mm            | 552 mm           | 652 mm           | 650 mm                              | 1,180 mm              | 860 mm            |
|                                             | Max. speed         | 130 m/min                                             | 130 m/min       | 130 m/min       | 130 m/min          | 130 m/min              | 120 m/min        | 120 m/min         | 120 m/min        | 120 m/min        | 110 m/min                           | 110 m/min             | 110 m/min         |
| Z-axis (Fwd./Rev.)                          | Stroke             | 135 mm                                                | 95 mm           | 95 mm           | 95 mm              | 95 mm                  | 95 mm            | 135 mm            | 205 mm           | 205 mm           | 300 mm                              | 300 mm                | 300 mm            |
|                                             | Max. speed         | 35 m/min                                              | 35 m/min        | 35 m/min        | 35 m/min           | 35 m/min               | 55 m/min         | 55 m/min          | 35 m/min         | 35 m/min         | 50 m/min                            | 50 m/min              | 50 m/min          |
| α-axis (Hand index)                         | Stroke             | 180°                                                  | 180°            | —               | 180°               | —                      | 180°             | 180°              | 180°             | 180°             | 180°                                | 90° (Lower side only) | 180°              |
|                                             | Cycle time         | 0.5 sec/180°                                          | 0.4 sec/180°    | —               | 0.6 sec/180°       | —                      | 0.4 sec/180°     | 0.6 sec/180°      | 0.6 sec/180°     | 0.6 sec/180°     | 0.9 sec/180°<br>(OP : 1.5 sec/180°) | 1.5 sec/90°           | 1.8 sec/180°      |
| Jaw stroke                                  | Loader/Turn-around | ø 12 mm                                               | ø 12 mm         | ø 12 mm         | ø 12 mm            | ø 12 mm                | ø 12 mm          | ø 30 mm           | ø 30 mm          | ø 30 mm          | ø 55 mm                             | ø 55 mm               | ø 75 mm           |
| Standard loading time                       |                    | 5.4 sec                                               | 5.4 sec         | 2.6 sec         | 6.0 sec            | 3.1 sec                | 6.0 sec          | 7.0 sec           | 7.0 sec          | 7.0 sec          | 9.0 sec (OP : 9.6 sec)              | 12.0 sec              | 15.0 sec          |

| Live Tooling Specifications  |                         | MW40                            | MS20                         | MW400                            |
|------------------------------|-------------------------|---------------------------------|------------------------------|----------------------------------|
| Live tool drive motor        |                         | 1.0 kW (2.0 N-m/continuous) × 2 | 1.0 kW (2.0 N-m/continuous)  | 7.0 kW (30.0 N-m/continuous) × 2 |
| Maximum speed                |                         | 6,000 rpm                       | 6,000 rpm                    | 2,000 rpm                        |
| Selectable tool diameter     |                         | ø 7 mm                          | ø 7 mm                       | ø 20 mm                          |
| Spindle positioning function | C-axis control          | Positioning Accuracy ±0.015°    | Positioning Accuracy ±0.015° | Positioning Accuracy ±0.015°     |
|                              | Maximum speed           | 200 rpm                         | 200 rpm                      | 200 rpm                          |
|                              | Least command increment | 0.001°                          | 0.001°                       | 0.001°                           |
| Spindle brake                |                         | 70 N-m<br>3.5 MPa               | 70 N-m<br>3.5 MPa            | 805 N-m<br>3.5 MPa               |

Specifications

| Basic Machine Specifications                          |           | MD60                                                        | MD120                                                       | MD100                                                               | MD180                                                      | MD200                                                      |
|-------------------------------------------------------|-----------|-------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|
| Maximum chuck size                                    |           | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      | ø 210 mm (8 inch)<br>ø 254 mm (10 inch)                             | ø 210 mm (8 inch)<br>ø 254 mm (10 inch)                    | ø 210 mm (8 inch)<br>ø 254 mm (10 inch)                    |
| Distance between spindle centers                      |           | —                                                           | 340 mm                                                      | —                                                                   | 440 mm                                                     | 440 mm                                                     |
| Number of turret stations                             |           | 10                                                          | 10 × 2                                                      | 10                                                                  | 10 × 2                                                     | 10 × 2                                                     |
| Specification of cutting axes<br>(Stroke, Max. speed) | X-axis    | 125 mm 24 m/min                                             | 125 mm 24 m/min                                             | 190 mm 20 m/min                                                     | 190 mm 20 m/min                                            | 190 mm 20 m/min                                            |
|                                                       | Z-axis    | 145 mm 24 m/min                                             | 145 mm 24 m/min                                             | 170 mm 16 m/min                                                     | 170 mm 16 m/min                                            | 170 mm 16 m/min                                            |
| Use tool                                              | O.D. tool | □20 mm                                                      | □20 mm                                                      | □25 mm                                                              | □25 mm                                                     | □25 mm                                                     |
|                                                       | I.D. tool | ø 40 mm                                                     | ø 40 mm                                                     | ø 40 mm                                                             | ø 40 mm                                                    | ø 40 mm                                                    |
| Spindle drive motor                                   | Standard  | 7.5 kW/30min                                                | 7.5 kW/30min × 2                                            | 11 kW/30min                                                         | 11 kW/30min × 2                                            | 11 kW/30min × 2                                            |
|                                                       | Option    | 11 kW/30min                                                 | 11 kW/30min × 2                                             | 22 kW/30min                                                         | 15 kW/30min × 2                                            | 15kW, 22kW/30min × 2                                       |
| Spindle speed range                                   |           | 30 ~ 3,000 rpm (7.5 kW)<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm | 30 ~ 3,000 rpm (7.5 kW)<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm | 2,000 rpm (11 kW)<br>OP: 2,400 rpm (22 kW)<br>OP: 3,500 rpm (22 kW) | 20 ~ 2,000 rpm (11 kW)<br>24 ~ 2,400 rpm<br>35 ~ 3,500 rpm | 20 ~ 2,000 rpm (11 kW)<br>24 ~ 2,400 rpm<br>35 ~ 3,500 rpm |
| Spindle nose size                                     |           | JIS A2-5                                                    | JIS A2-5                                                    | JIS A2-6                                                            | JIS A2-6                                                   | JIS A2-6                                                   |
| Diameter of spindle bore                              | Standard  | ø 47 mm                                                     | ø 47 mm                                                     | ø 63 mm                                                             | ø 63 mm                                                    | ø 63 mm                                                    |
|                                                       | Option    | —                                                           | —                                                           | —                                                                   | —                                                          | —                                                          |
| Spindle diameter at front<br>bearing mounting         | Standard  | ø 90 mm                                                     | ø 90 mm                                                     | ø 110 mm                                                            | ø 110 mm                                                   | ø 110 mm                                                   |
|                                                       | Option    | —                                                           | —                                                           | —                                                                   | —                                                          | —                                                          |
| Foot print                                            |           | W1,080 mm × D1,910 mm                                       | W1,900 mm × D1,930 mm                                       | W1,360 mm × D2,220 mm                                               | W2,360 mm × D2,240 mm                                      | W2,360 mm × D2,240 mm                                      |
| Total weight                                          |           | 2,500 kg                                                    | 4,500 kg                                                    | 3,800 kg                                                            | 7,000 kg                                                   | 7,000 kg                                                   |

| Gantry Loader Specifications                |                    | MD60 / MD120                                          | MD180 / MD200<br>Small parts spec | MD100 / MD180 / MD200            |
|---------------------------------------------|--------------------|-------------------------------------------------------|-----------------------------------|----------------------------------|
| Loader workpiece handling capacity (size)   |                    | ø 120 mm × 80 mm                                      | ø 180 mm × 80 mm                  | ø 200 mm × 120 mm                |
| Loader workpiece handling capacity (weight) |                    | 3.0 kg × 2                                            | 3.0 kg × 2                        | 6.0 kg × 2 (OP : 8.0 kg × 2)     |
| X-axis (Left/Right)                         | Stroke             | The gantry loader X-axis stroke adjustable to layout. |                                   |                                  |
|                                             | Max. speed         | 160 m/min                                             | 160 m/min                         | 150 m/min                        |
| Y-axis (Up/Down)                            | Stroke             | 552 mm                                                | 652 mm                            | 650 mm                           |
|                                             | Max. speed         | 120 m/min                                             | 120 m/min                         | 110 m/min                        |
| Z-axis (Fwd./Rev.)                          | Stroke             | 205 mm                                                | 205 mm                            | 300 mm                           |
|                                             | Max. speed         | 35 m/min                                              | 35 m/min                          | 50 m/min                         |
| α-axis (Hand index)                         | Stroke             | 180°                                                  | 180°                              | 180°                             |
|                                             | Cycle time         | 0.6 sec/180°                                          | 0.6 sec/180°                      | 0.9 sec/180° (OP : 1.5 sec/180°) |
| Jaw stroke                                  | Loader/Turn-around | ø 30 mm                                               | ø 30 mm                           | ø 55 mm                          |
| Standard loading time                       |                    | 7.0 sec                                               | 7.0 sec                           | 9.0 sec (OP : 9.6 sec)           |

| Live Tooling Specifications     |                         | MD60 / MD120                    | MD100 / MD180 / MD200           |
|---------------------------------|-------------------------|---------------------------------|---------------------------------|
| Live tool drive motor           |                         | 2.5 kW (8 N·m/continuous)       | 4.0 kW (22 N·m/continuous)      |
| Maximum speed                   |                         | 4,000 rpm                       | 3,000 rpm                       |
| Selectable tool diameter        |                         | ø 16 mm                         | ø 20 mm                         |
| Spindle positioning<br>function | C-axis control          | Positioning Accuracy : ± 0.015° | Positioning Accuracy : ± 0.015° |
|                                 | Maximum speed           | 200 rpm                         | 200 rpm                         |
|                                 | Least command increment | 0.001°                          | 0.001°                          |
| Spindle brake                   |                         | 127 N·m<br>3.5 MPa              | 255 N·m<br>3.5 MPa              |

| Basic Machine Specifications                          |           | MJ60                                                        | MJ100                                   | MJ200                                   |
|-------------------------------------------------------|-----------|-------------------------------------------------------------|-----------------------------------------|-----------------------------------------|
| Maximum chuck size                                    |           | ø 165 mm (6 inch)<br>ø 210 mm (8 inch)                      | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) | ø 210 mm (8 inch)<br>ø 254 mm (10 inch) |
| Number of turret stations                             |           | 8                                                           | 10<br>12                                | 10 × 2                                  |
| Specification of cutting axes<br>(Stroke, Max. speed) | X-axis    | 130 mm 24 m/min                                             | 190 mm 24 m/min                         | 190 mm 24 m/min                         |
|                                                       | Z-axis    | 165 mm 24 m/min                                             | 170 mm 24 m/min                         | 270 mm 24 m/min                         |
| Use tool                                              | O.D. tool | □20 mm                                                      | □25 mm                                  | □25 mm                                  |
|                                                       | I.D. tool | ø 40 mm                                                     | ø 40 mm                                 | ø 40 mm                                 |
| Spindle drive motor                                   | Standard  | 7.5 kW/30min                                                | 15 kW/30min                             | 22 kW/30min                             |
|                                                       | Option    | 11 kW/30min                                                 | 22 kW/30min                             | —                                       |
| Spindle speed range                                   |           | 30 ~ 3,000 rpm<br>45 ~ 4,500 rpm<br>60 ~ 6,000 rpm (7.5 kW) | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        | 24 ~ 2,400 rpm<br>35 ~ 3,500 rpm        |
| Spindle nose size                                     |           | JIS A2-5                                                    | JIS A2-6                                | Flat nose                               |
| Diameter of spindle bore                              | Standard  | ø 57 mm                                                     | ø 63 mm                                 | ø 73 mm                                 |
|                                                       | Option    | —                                                           | ø 73 mm                                 | —                                       |
| Spindle diameter at front<br>bearing mounting         | Standard  | ø 90 mm                                                     | ø 100 mm                                | ø 110 mm                                |
|                                                       | Option    | —                                                           | ø 110 mm                                | —                                       |
| Foot print                                            |           | W1,180 mm × D1,920 mm                                       | W1,720 mm × D2,260 mm                   | W1,980 mm × D2,300 mm                   |
| Total weight                                          |           | 3,500 kg                                                    | 5,000 kg                                | 7,000 kg                                |

| Gantry Loader Specifications                |                    | MJ60                                                  | MJ100             | MJ200            |
|---------------------------------------------|--------------------|-------------------------------------------------------|-------------------|------------------|
| Loader workpiece handling capacity (size)   |                    | ø 30 mm × 145 mm                                      | ø 150 mm × 200 mm | ø 90 mm × 210 mm |
| Loader workpiece handling capacity (weight) |                    | 1.0 kg × 2                                            | 6.0 kg × 2        | 3.0 kg × 2       |
| X-axis (Left/Right)                         | Stroke             | The gantry loader X-axis stroke adjustable to layout. |                   |                  |
|                                             | Max. speed         | 160 m/min                                             | 150 m/min         | 150 m/min        |
| Y-axis (Up/Down)                            | Stroke             | 502 mm                                                | 650 mm            | 550 mm           |
|                                             | Max. speed         | 120 m/min                                             | 110 m/min         | 110 m/min        |
| Z-axis (Fwd./Rev.)                          | Stroke             | 205 mm                                                | 300 mm            | 300 mm           |
|                                             | Max. speed         | 35 m/min                                              | 50 m/min          | 50 m/min         |
| α-axis                                      | Stroke             | 90°                                                   | 180°              | 90°              |
|                                             | Cycle time         | 0.7 sec/90°                                           | 1.0 sec/180°      | 1.0 sec/90°      |
| Jaw Stroke                                  | Loader/Turn-around | ø 30 mm                                               | ø 55 mm           | ø 40 mm          |
| Standard loading time                       |                    | 9.0 sec                                               | 9.0 sec           | 9.0 sec          |

| Tailstock Specifications   |  | MJ60                    | MJ100                    | MJ200                    |
|----------------------------|--|-------------------------|--------------------------|--------------------------|
| Tailstock (Rolling center) |  | MT4                     | MT5                      | MT5                      |
|                            |  | Quill                   | Quill                    | Quill & Up/Down          |
| Quill stroke               |  | 60 mm (Hydraulic drive) | 230 mm (Hydraulic drive) | 110 mm (Servo drive)     |
| Quill Up/Down stroke       |  | —                       | —                        | 100 mm (Hydraulic drive) |
| Base-slide offset stroke   |  | 100 mm                  | 95 mm                    | —                        |

CNC Standard Specifications

|                                             |                     |                                                                                                                                           |
|---------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Simultaneous position and feed control      | MW series           | 3 axes (Turret - X1, Z1, turret rotation) + 3 axes (Turret - X2, Z2, turret rotation) + 3 axes (Loader - X, Y, Z)                         |
|                                             | MW40                | 4 axes (Turret - X1,Y1, Spindle - Z1, Turret rotation) + 4 axes (Turret - X2,Y2, Spindle - Z2, Turret rotation) + 3 axes (Loader - X,Y,Z) |
|                                             | MW50, MW80          | 2 axes (Plate - X1, Spindle - Z1) + 2 axes (Plate - X2, Spindle - Z2) + 3axes(Loader - X,Y,Z)                                             |
|                                             | MS series           | 3 axes (Turret - X1, Z1, turret rotation) + 3 axes (Loader - X, Y, Z)                                                                     |
|                                             | MD60, MD100         | 3 axes (Turret - X1, Z1, turret rotation) + 3 axes (Loader - X, Y, Z)                                                                     |
|                                             | MD120, MD180, MD200 | 3 axes (Turret - X1, Z1, turret rotation) + 3 axes (Turret - X2, Z2, turret rotation) + 3 axes (Loader - X, Y, Z)                         |
|                                             | MJ60, MJ100         | 3 axes (Turret - X1, Z1, turret rotation) + 3 axes (Loader - X, Y, Z)                                                                     |
|                                             | MJ200               | 2 axes (Turret - X1, Z1) + 2 axes (Turret - X2, Z2) + 3 axes (Loader - X, Y, Z) + 1 axis (tail-stock Z axis)                              |
| Position sensor (X, Y, Z axes)              |                     | Absolute serial type encoder                                                                                                              |
| Least input increment                       | X-axis              | 0.001 mm/P                                                                                                                                |
|                                             | Z-axis              | 0.001 mm/P                                                                                                                                |
|                                             | Loader X, Y, Z axes | 0.01 mm/P                                                                                                                                 |
| Least movement increment                    | X-axis              | 0.0005 mm/P                                                                                                                               |
|                                             | Z-axis              | 0.001 mm/P                                                                                                                                |
|                                             | Loader X, Y, Z axes | 0.01 mm/P                                                                                                                                 |
| Manual continuous feed jog                  |                     | 0 ~ 1386 mm/min                                                                                                                           |
| Manual pulse generator jog                  |                     | 0.001 mm/div, 0.01 mm/div, 0.1 mm/div                                                                                                     |
| Overrides Rapid (Separate for both turrets) | Feedrate            | 0 to 110 % in 10 % steps                                                                                                                  |
|                                             | Rapid traverse      | 0 % 25 % 50 % 100 %                                                                                                                       |
|                                             | Spindle speed       | 50 % to 120 % in 10 % steps                                                                                                               |
| Turret index / Tool offset                  |                     | T command (4-digit / 2+2)                                                                                                                 |
| Assist function                             |                     | M code (3-digit)                                                                                                                          |
| LCD display                                 |                     | 10.4" color, 7.2" monochrome                                                                                                              |
| Auto input coding recognition               |                     | EIA RS244A, ISO 840 tape code                                                                                                             |
| Tape reader/punch interface                 |                     | Memory Card                                                                                                                               |
| Manual Data Input : MDI                     |                     | Fully keyboard manual data input                                                                                                          |

Additional CNC Features (Standard)

- Sub-program (10 fold nesting) \*1
  - Sub-program (4 fold nesting) \*2
  - Canned cycle
  - Dwell
  - Machine lock
  - Dry run
  - Program number search
  - Sequence number search
  - Normal decimal point or calculator type decimal point input programming
  - Exact stop mode
  - Automatic work coordinate reference shift
  - Direct input of measured data offset type
  - Backlash compensation applied separately for cutting feed and rapid traverse
- Data protection key: 4 types
  - Sub-program stop/ end (M00~M02, M30)
  - Optional block skip
  - Emergency stop
  - Feed hold
  - Single block
  - Sequence number display: 8 digit \*1
  - Sequence number display: 5 digit \*2
  - Circular interpolation radius programming
  - Diameter/ radius programming (X-axis)
  - Work co-ordinate shift/ Work co-ordinate shift direct input
  - Stored stroke limit1
  - Absolute/ incremental programming method
- Linear, circular interpolation
  - Feed per minute/ Feed per revolution
  - Tool offset
  - Extended program edit \*1
  - Extended part program editing \*2
  - Detect abnormal function
  - Position switch
  - Reference return with mechanical stopper setting
  - Constant surface speed control
  - Tool offset (Geometric/ wear)
  - Polar coordinate interpolation/ Cylindrical interpolation \*3
  - Cs axis control function \*3

\*1: Without MW400, MJ200   \*2: Only MW400, MJ200   \*3: Only MW40, MD series

Selectable CNC Options

|                                                                                                            |                                                     |                                                                   |                         |       |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------|-------------------------|-------|
| Part program storage length/<br>Number of registrable programs/<br>Number of tool offset (Geometric/ wear) |                                                     | MW40<br>MW50<br>MW80<br>MW100<br>MW120<br>MW180<br>MW200<br>MW400 | MD120<br>MD180<br>MD200 | MJ200 |
| Part program storage length                                                                                | Total 64 K byte (Equivalent to 80 m × 2)            | ◎                                                                 | ◎                       | ◎     |
|                                                                                                            | Total 128 K byte (Equivalent to 160 m × 2)          | ○                                                                 | ○                       | ○     |
|                                                                                                            | Total 256 K byte (Equivalent to 320 m × 2)          | ○                                                                 | ○                       | ○     |
|                                                                                                            | Total 512 K byte (Equivalent to 640 m × 2)          | ○                                                                 | ○                       | ○     |
|                                                                                                            | Total 1 M byte (Equivalent to 1280 m × 2)           | ○                                                                 | ○                       | ○     |
| Number of registrable programs                                                                             | Total 63                                            | ◎                                                                 | ◎                       | ◎     |
|                                                                                                            | Extension 1 (depend on Part program storage length) | ○                                                                 | ○                       | ○     |
| Number of tool offset (Geometric/ wear)                                                                    | Total 32                                            | ◎                                                                 | ◎                       | ◎     |
|                                                                                                            | Total 64                                            | ○                                                                 | ○                       | ○     |
|                                                                                                            | Total 200                                           | ○                                                                 | ○                       | ○     |

|                                         |                                                     |                                       |               |               |
|-----------------------------------------|-----------------------------------------------------|---------------------------------------|---------------|---------------|
|                                         |                                                     | MS20<br>MS50<br>MS60<br>MS90<br>MS100 | MD60<br>MD100 | MJ60<br>MJ100 |
| Part program storage length             | 64 K byte                                           | ◎                                     | ◎             | ◎             |
|                                         | 128 K byte                                          | ○                                     | ○             | ○             |
|                                         | 256 K byte                                          | ○                                     | ○             | ○             |
|                                         | 512 K byte                                          | ○                                     | ○             | ○             |
|                                         | 1 M byte                                            | ○                                     | ○             | ○             |
| Number of registrable programs          | 63                                                  | ◎                                     | ◎             | ◎             |
|                                         | Extension 1 (depend on Part program storage length) | ○                                     | ○             | ○             |
| Number of tool offset (Geometric/ wear) | 32                                                  | ◎                                     | ◎             | ◎             |
|                                         | 64                                                  | ○                                     | ○             | ○             |
|                                         | 200                                                 | ○                                     | ○             | ○             |

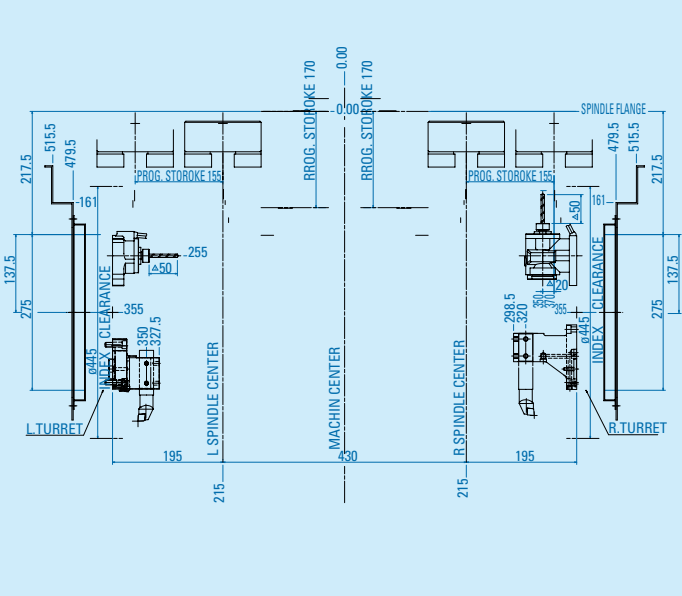
◎ : Standard   ○ : Option

CNC Features (Option)

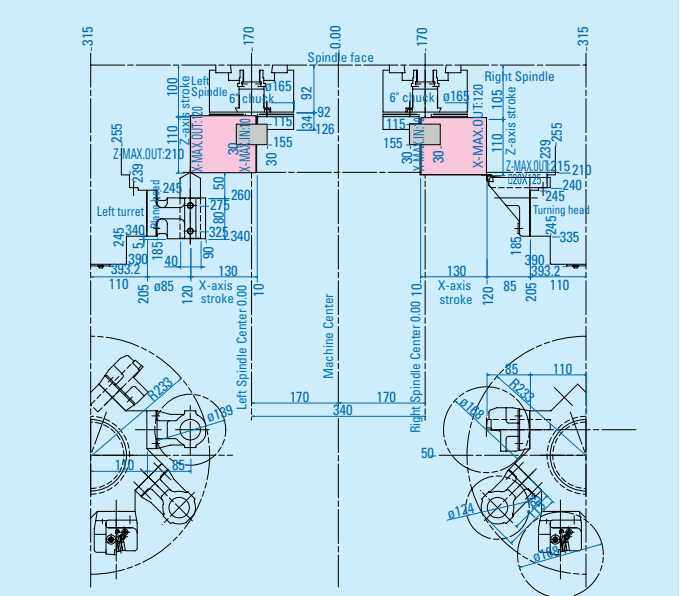
- Least input increment : sub-micrometer
  - Inch/Metric conversion
  - Thread cutting cycle retract
  - Variable lead threading
  - Continuous threading
  - Workpiece coordinate system
  - Direct drawing dimension programming
  - Tool nose R compensation
  - Chamfering/ Corner R
  - Multiple repetitive programming II
- Multiple repetitive programming
  - Canned cycle for drilling
  - Custom macro
  - Custom macro common variables
  - Direct input od tool offset value measured B
  - Rigid tap function
  - Spindle orientation
  - Display of run time and Parts preset
  - Background edit function
  - Graphic function

Tool Dimension Layouts

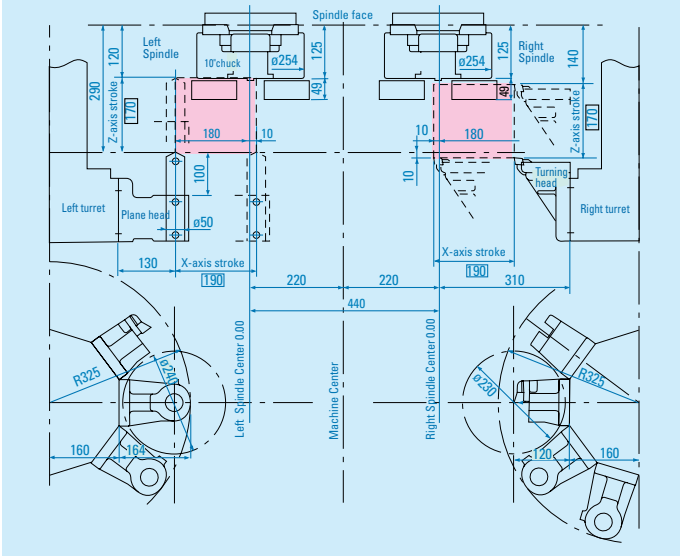
MW40 / MS20 (10 Station Turret)



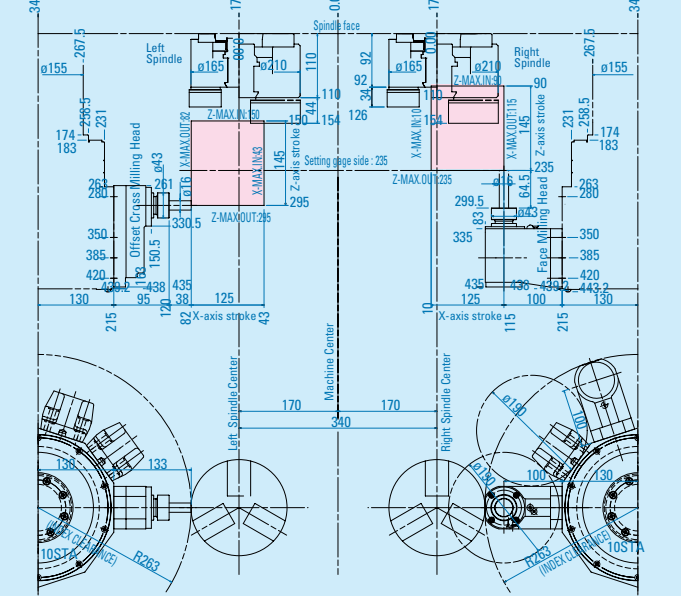
MW100 / MS50 (8 Station Turret)



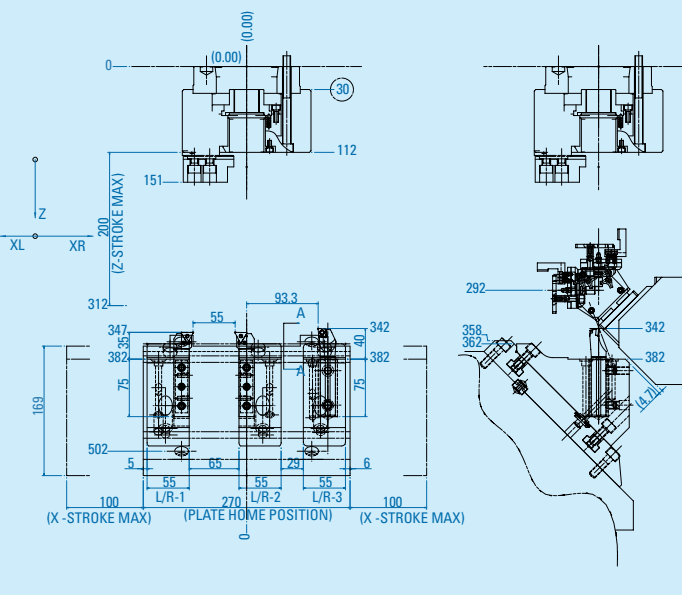
MW180 / MS90 (10 Station Turret)  
MW200 / MS100 (10 Station Turret)



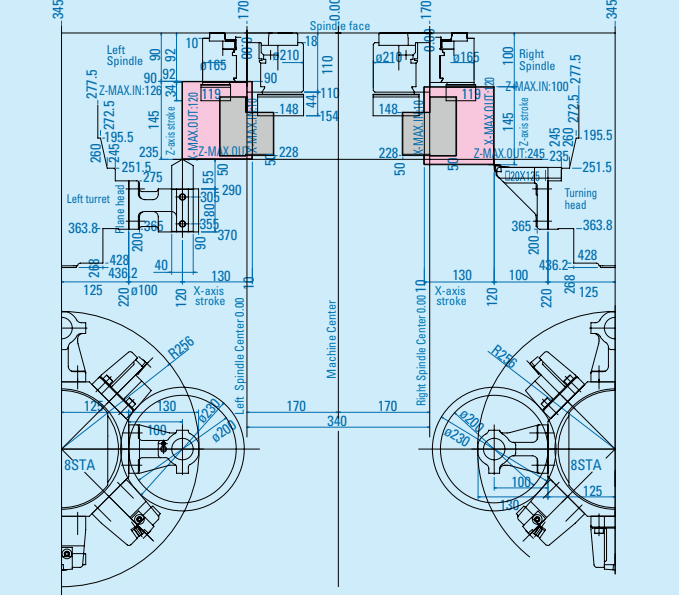
MD60 / MD120 (10 Station Turret)



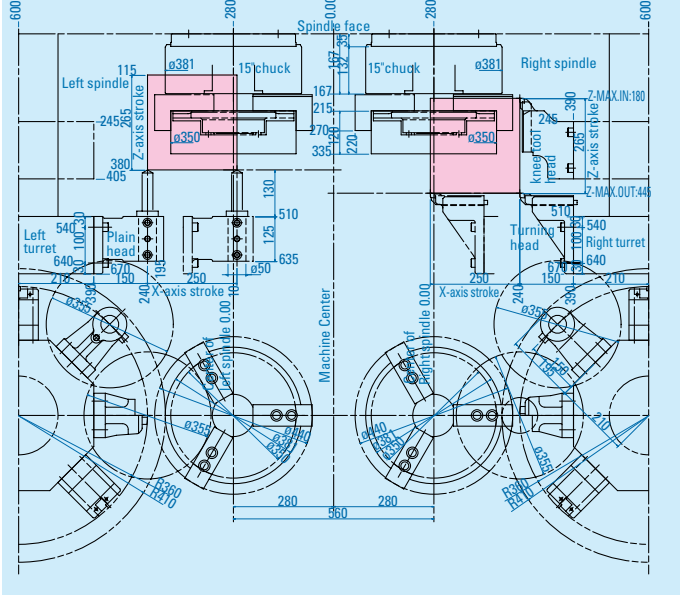
MW50 (Tool plate)



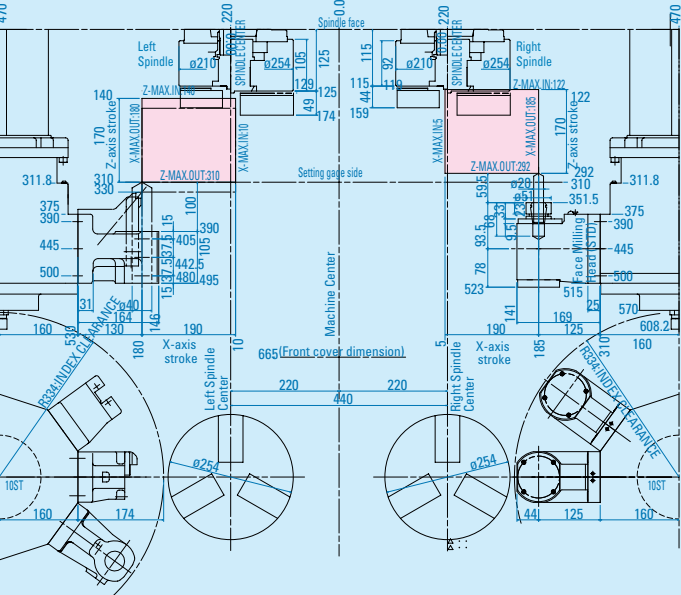
MW120 / MS60 (8 Station Turret)



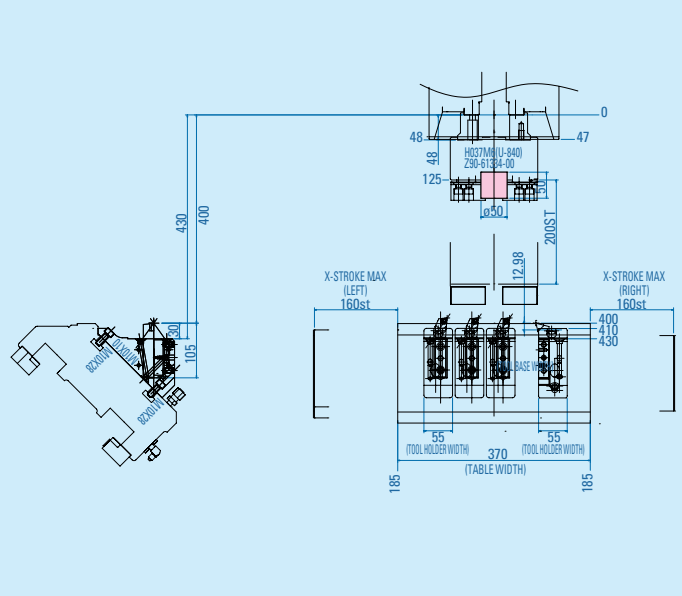
MW400 (8 Station Turret)



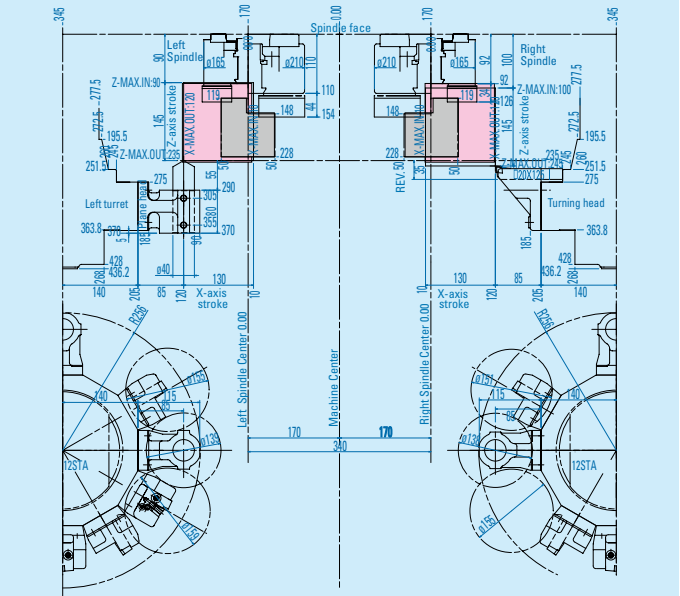
MD100 / MD180 / MD200 (10 Station Turret)



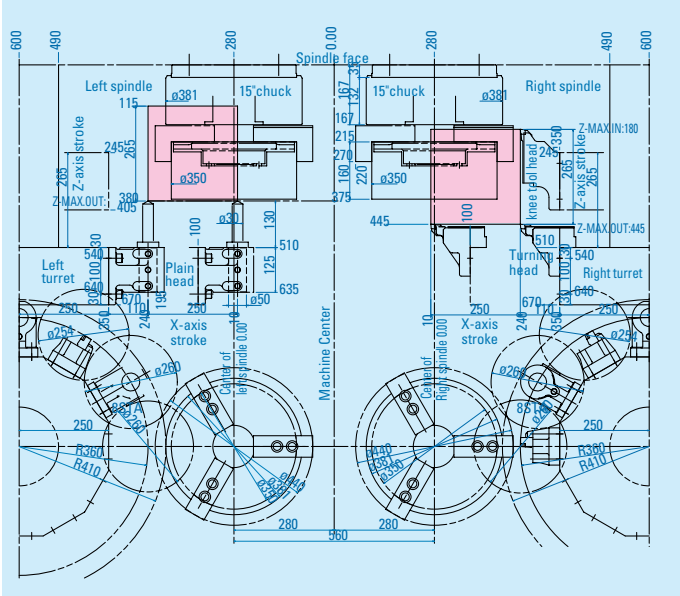
MW80 (Tool plate)



MW120 / MS60 (12 Station Turret)

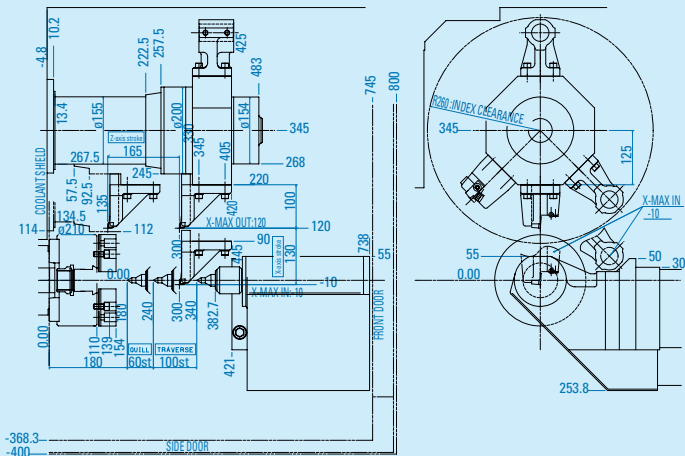


MW400 (12 Station Turret)

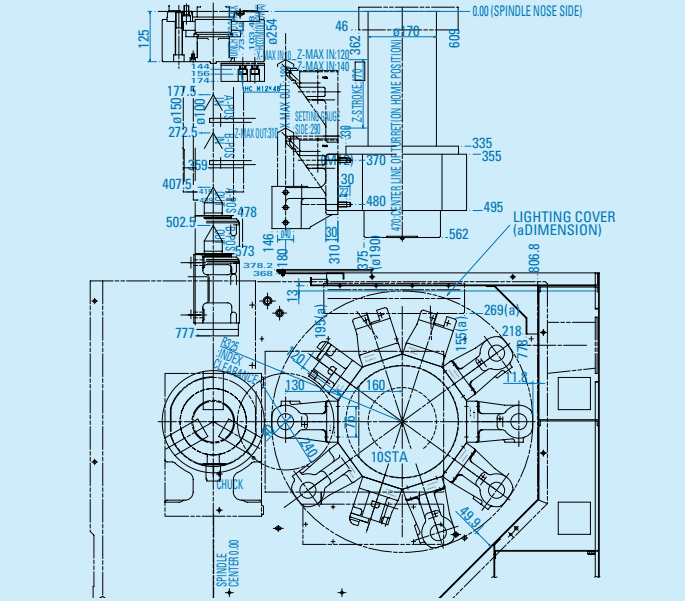


Tool Dimension Layouts

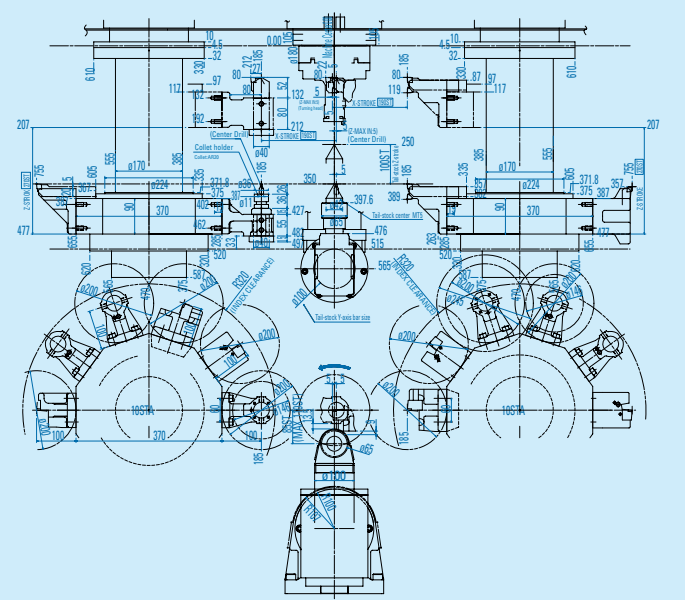
MJ60 (8 Station Turret)



MJ100 (10 Station Turret)

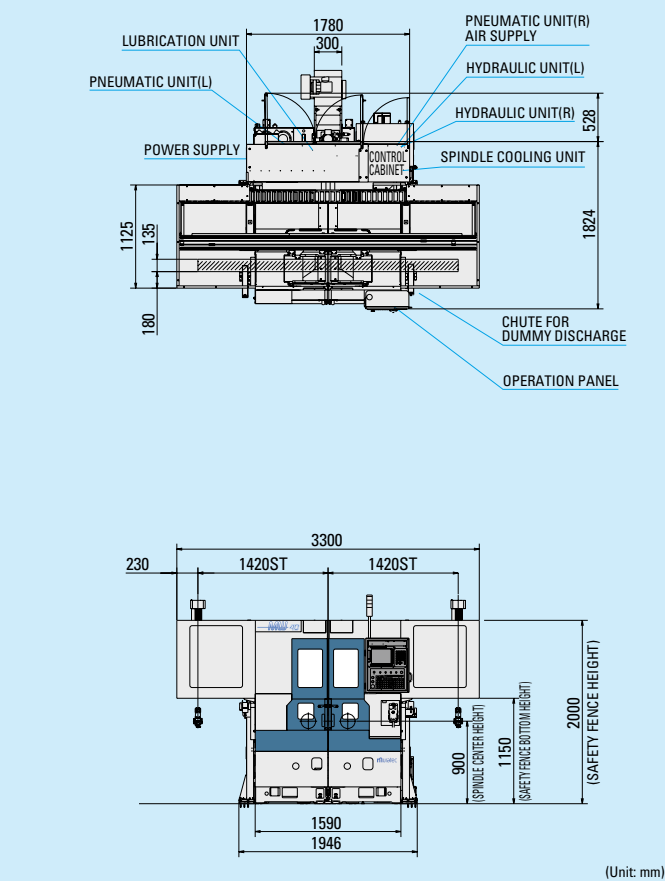


MJ200 (10 Station Turret)

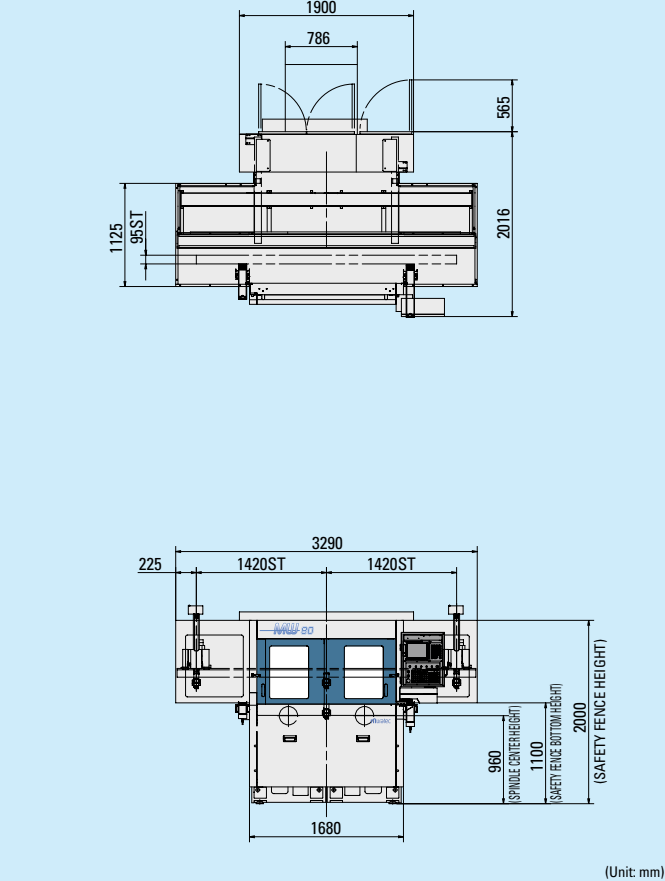


Floor Plans

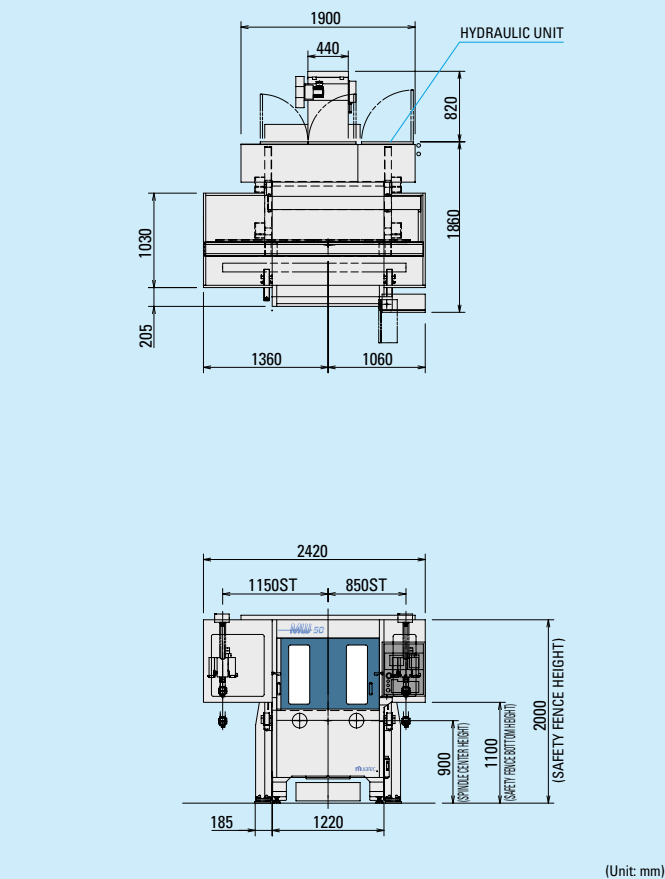
MW40 Standard Cell System



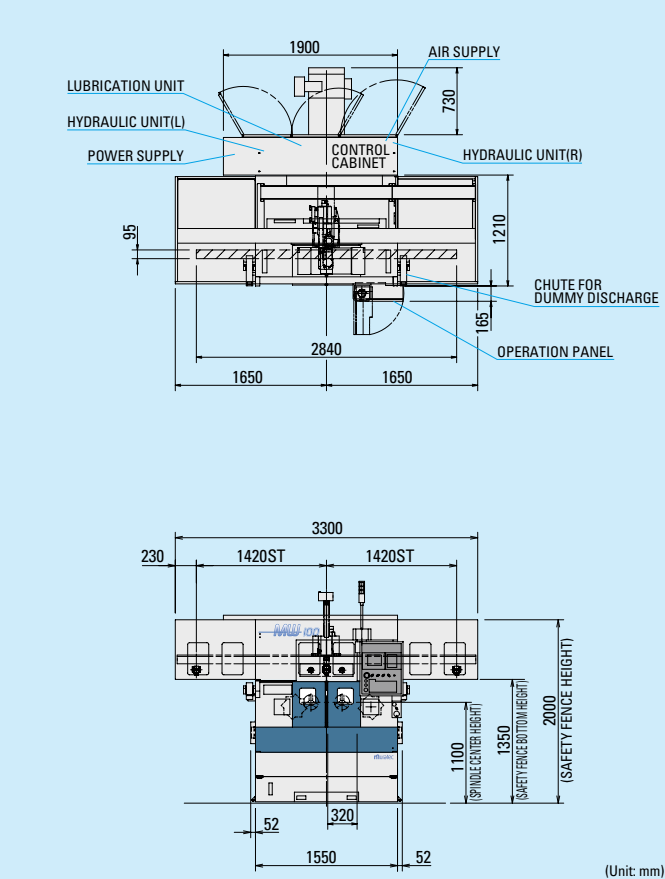
MW80 Standard Cell System



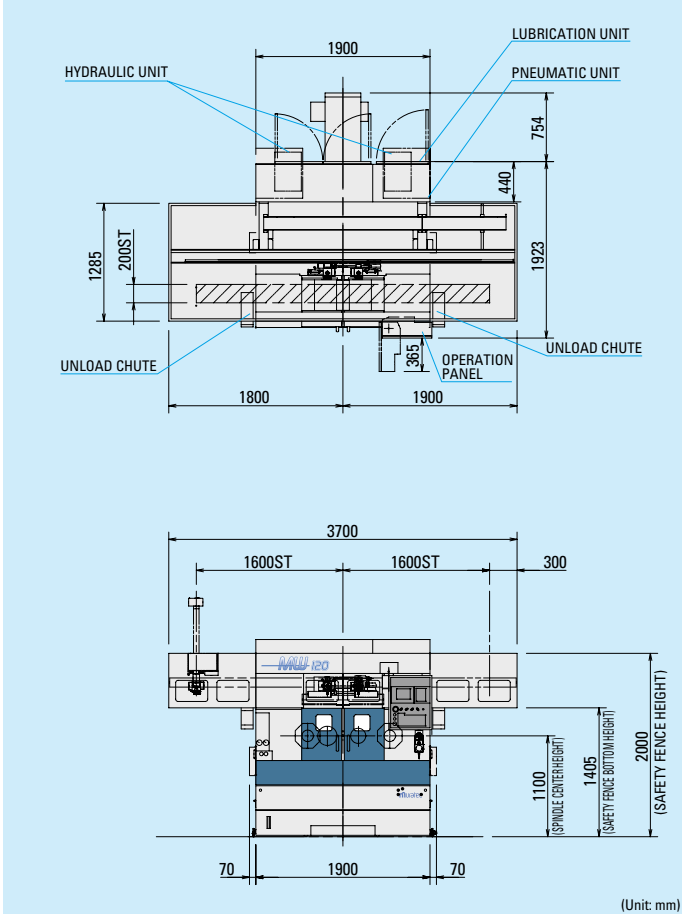
MW50 Standard Cell System



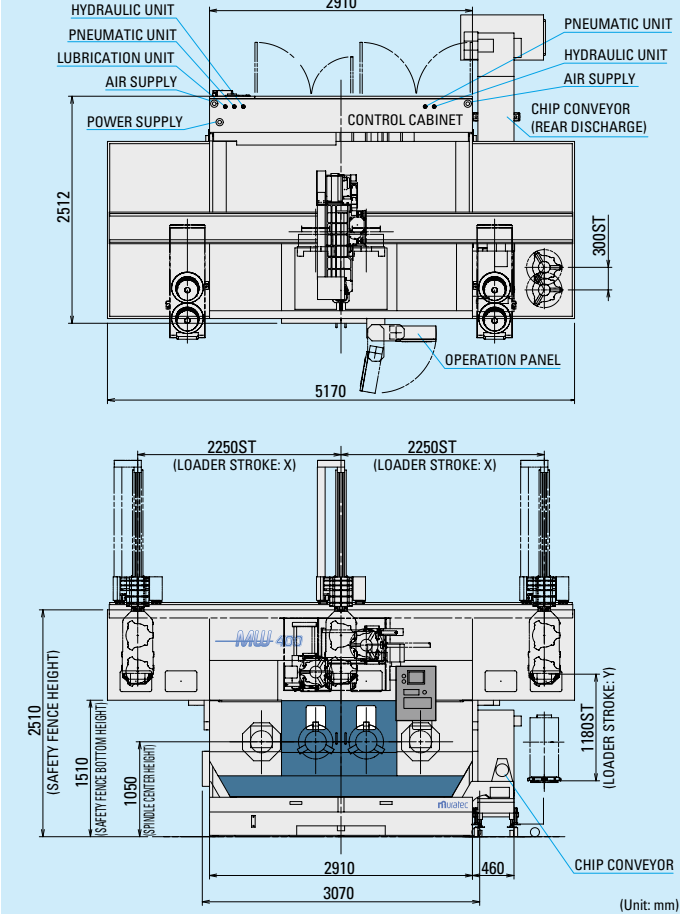
MW100 Standard Cell System



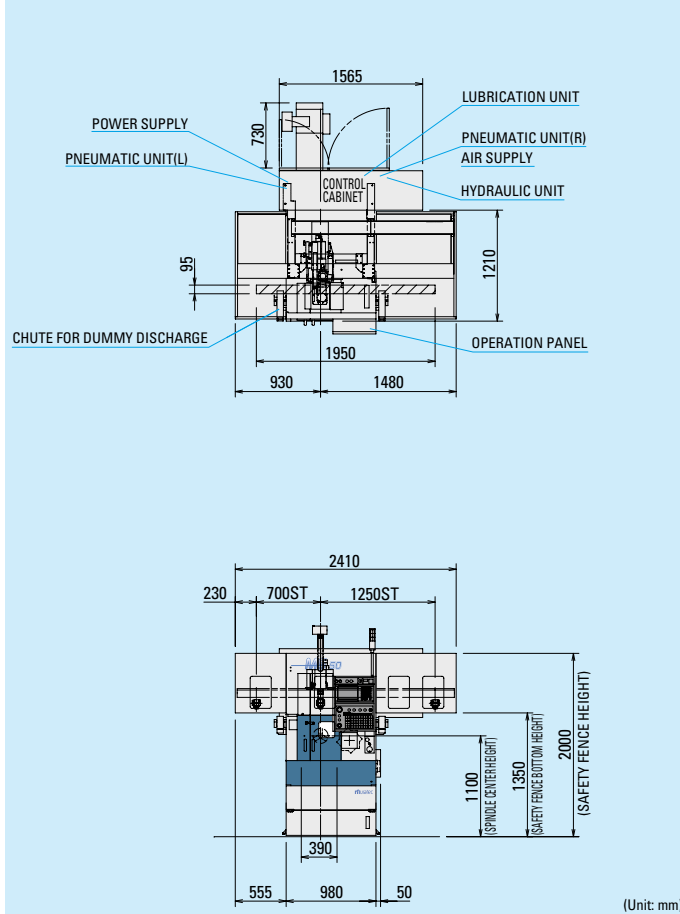
MW120 Standard Cell System



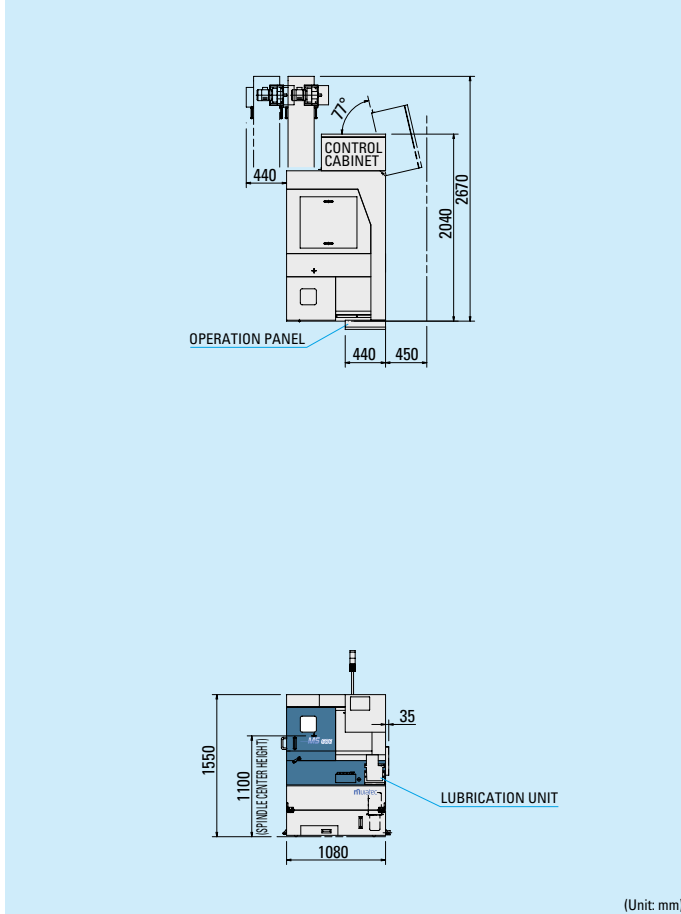
MW400 Standard Cell System



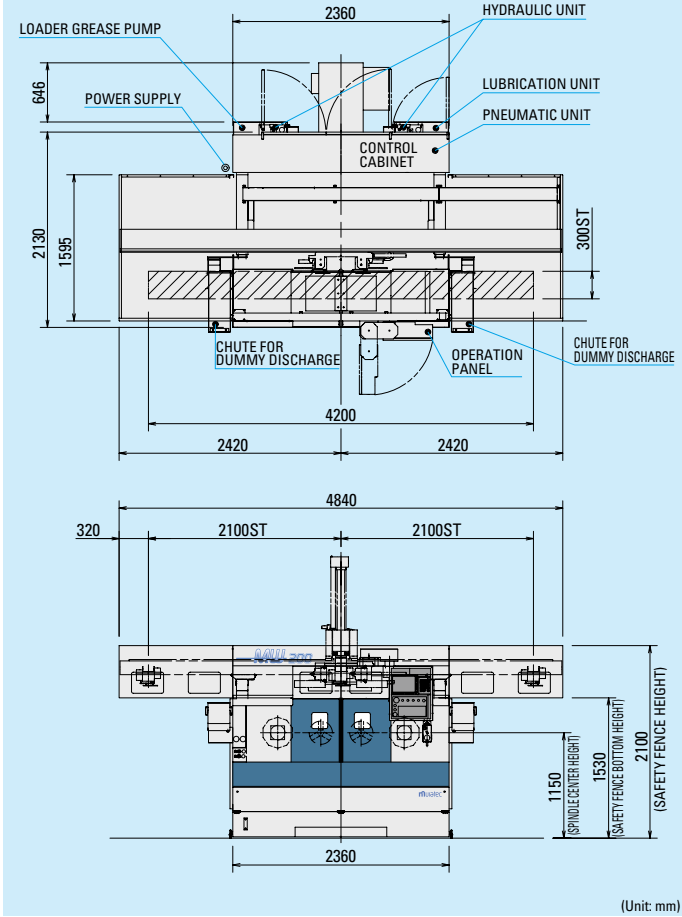
MS50 Standard Cell System



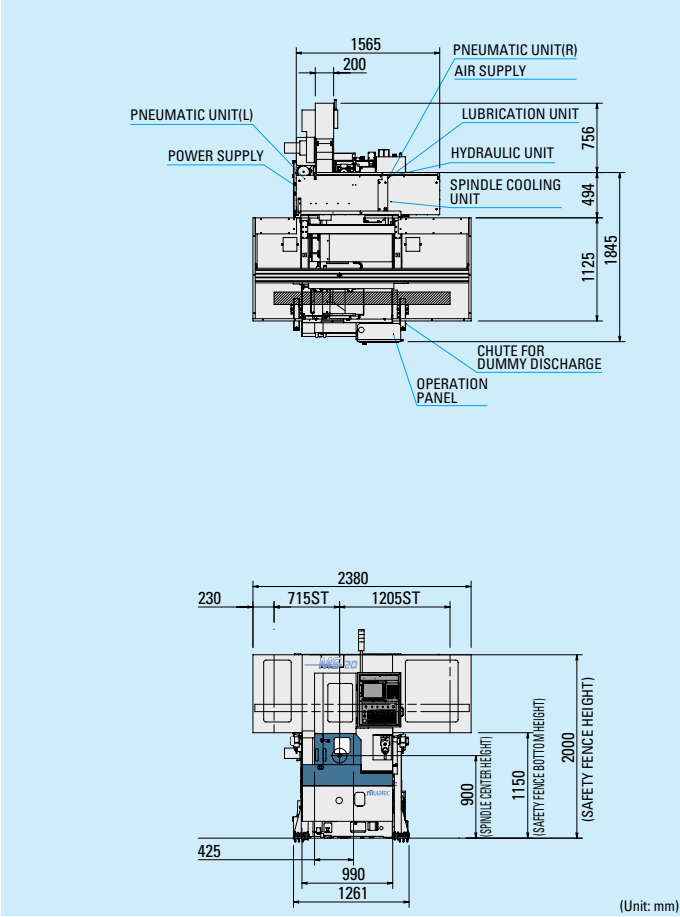
MS60 Manual Load Type Standard Cell System



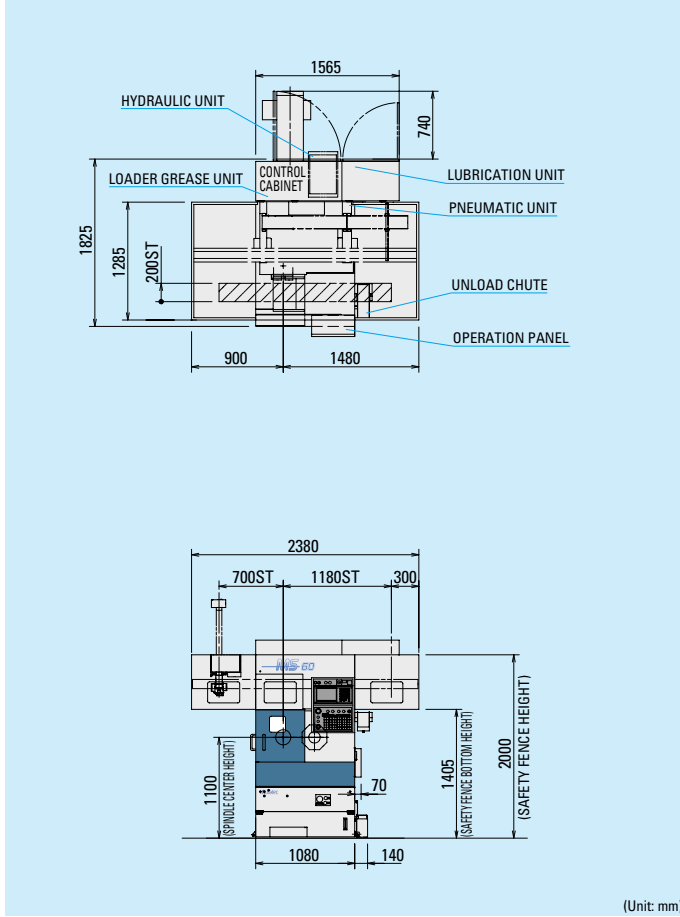
MW180 / MW200 Standard Cell System



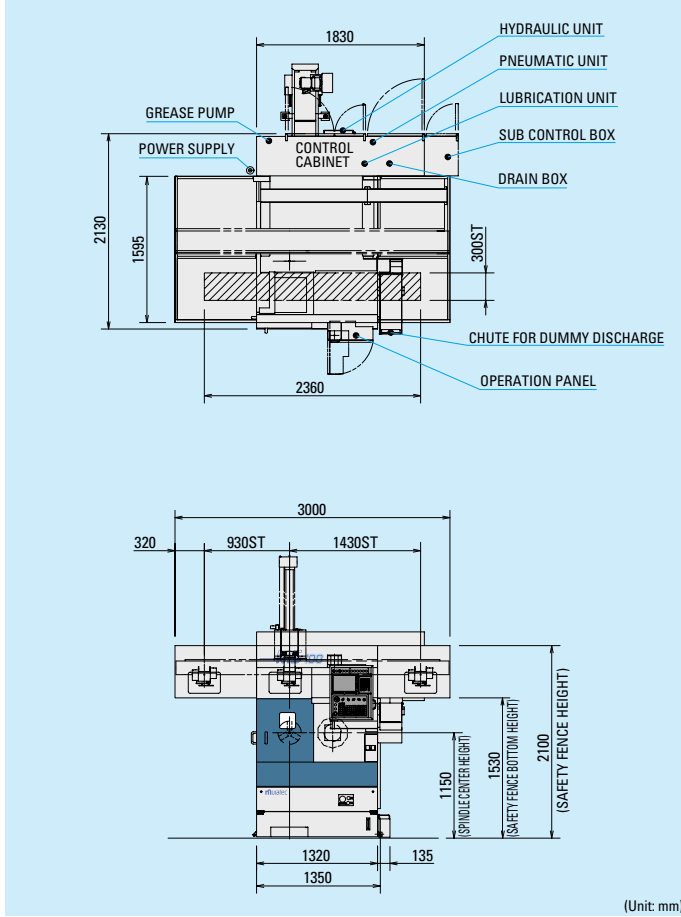
MS20 Standard Cell System



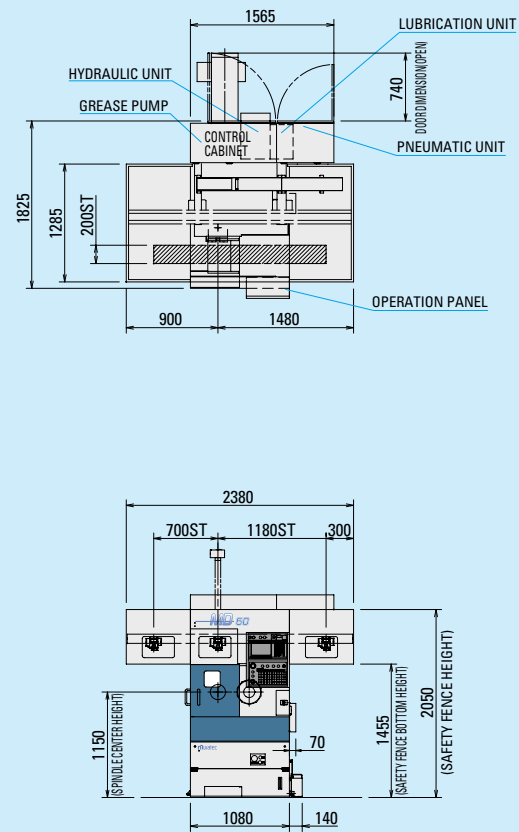
MS60 Standard Cell System



MS100 Standard Cell System

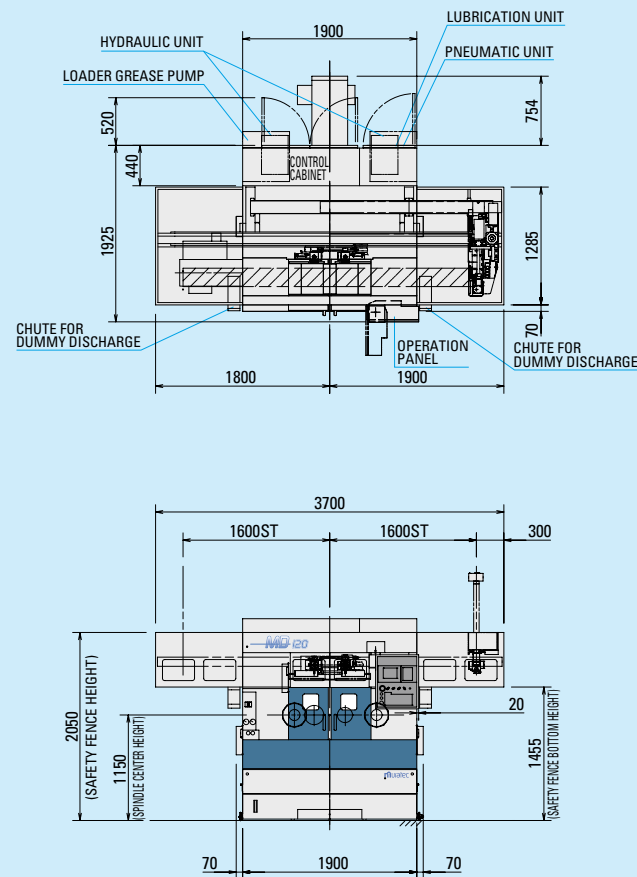


MD60 Standard Cell System



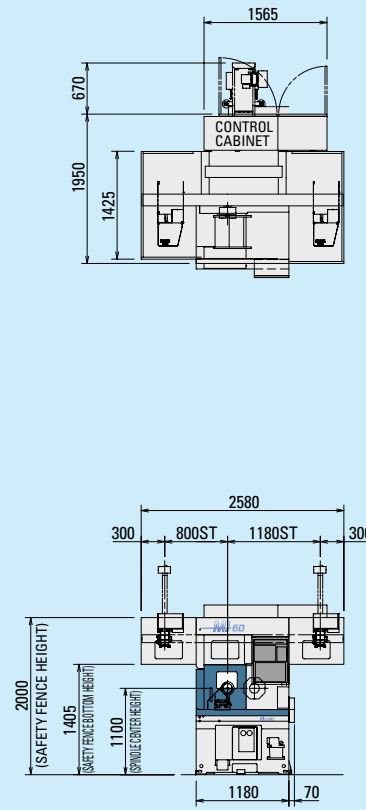
(Unit: mm)

MD120 Standard Cell System



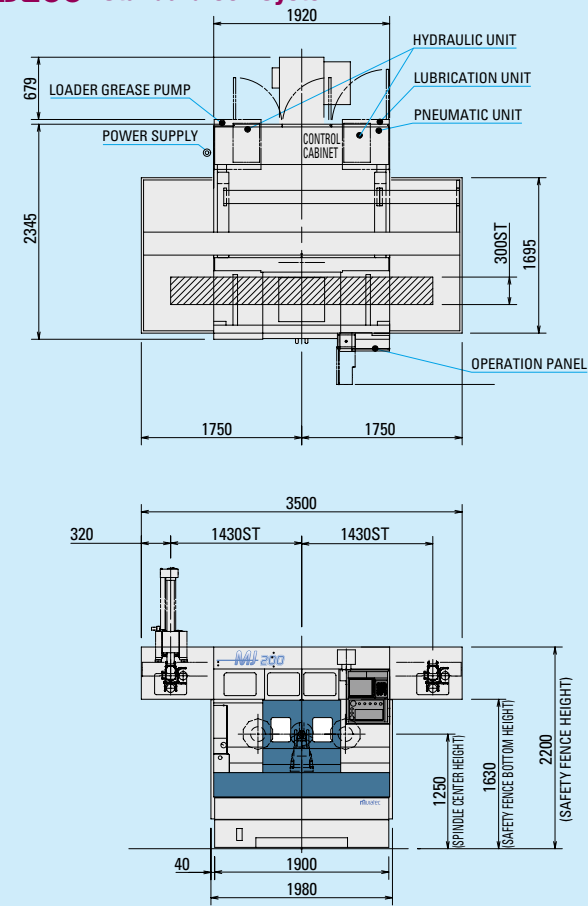
(Unit: mm)

MJ60 Standard Cell System



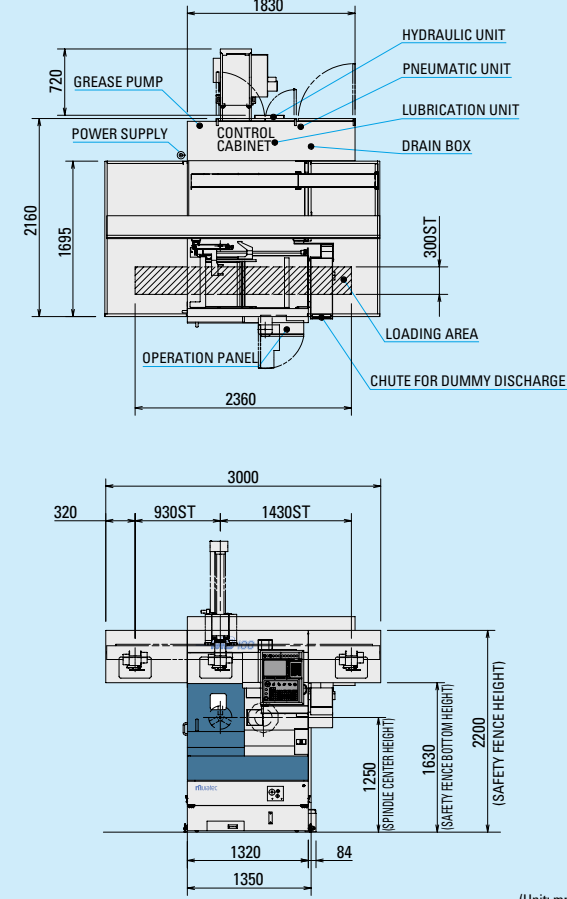
(Unit: mm)

MJ200 Standard Cell System



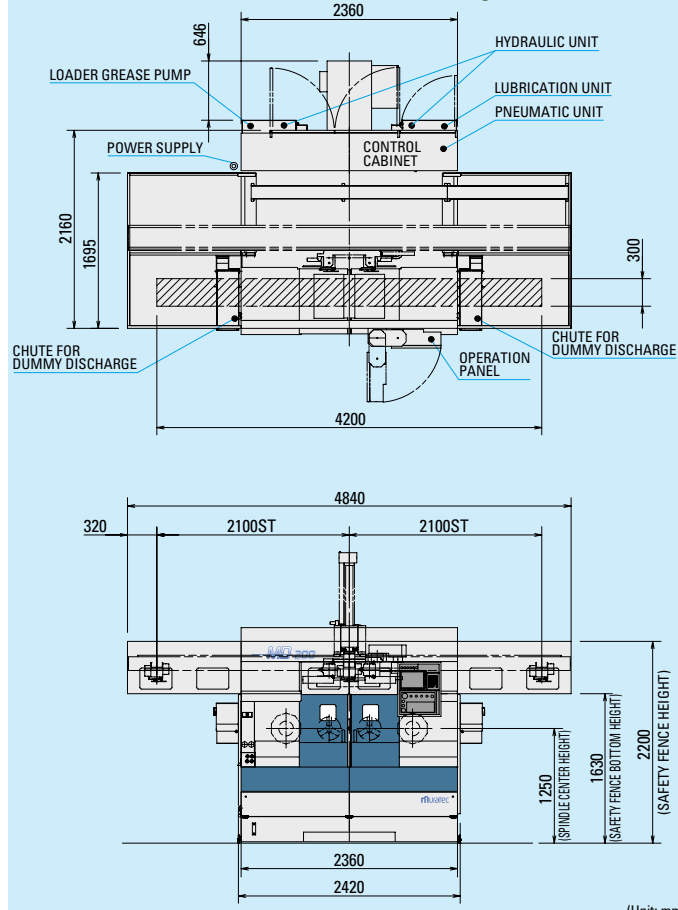
(Unit: mm)

MD100 Standard Cell System



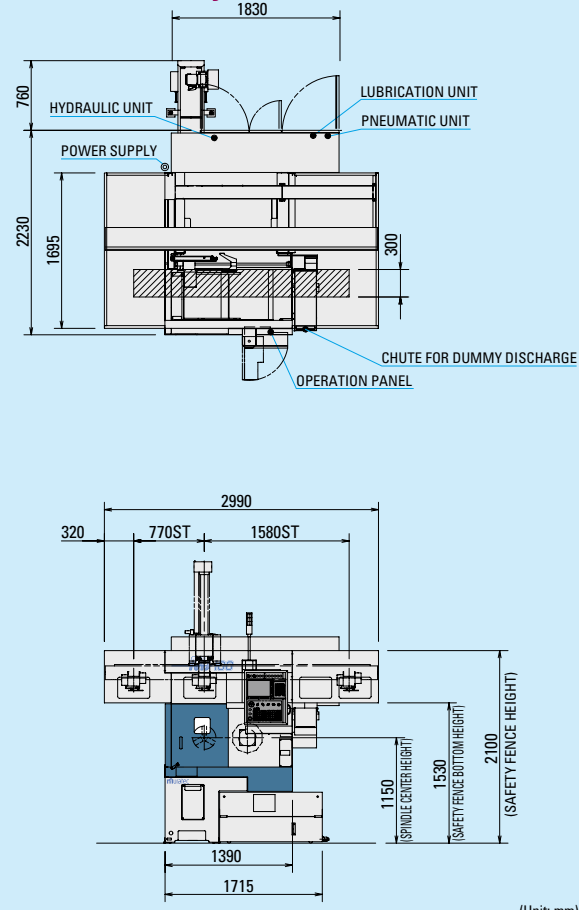
(Unit: mm)

MD180 / MD200 Standard Cell System



(Unit: mm)

MJ100 Standard Cell System



(Unit: mm)