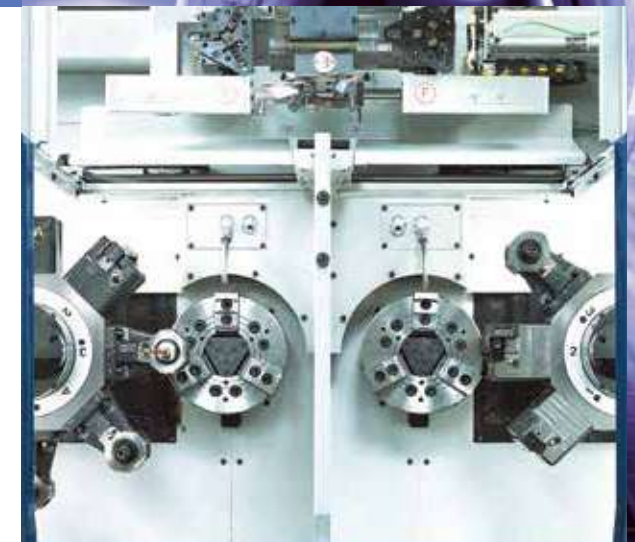


**Twin Spindle / Single Spindle CNC Chucker
CNC Turning Center**

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)

MURATA MACHINERY, LTD.

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



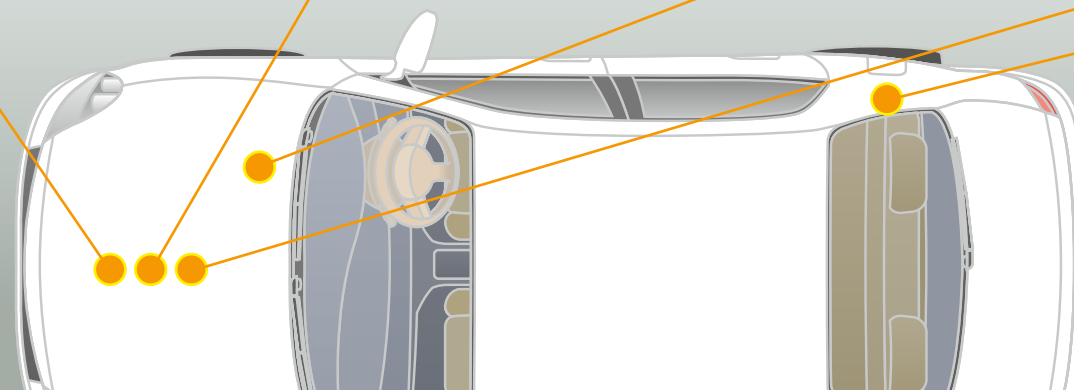
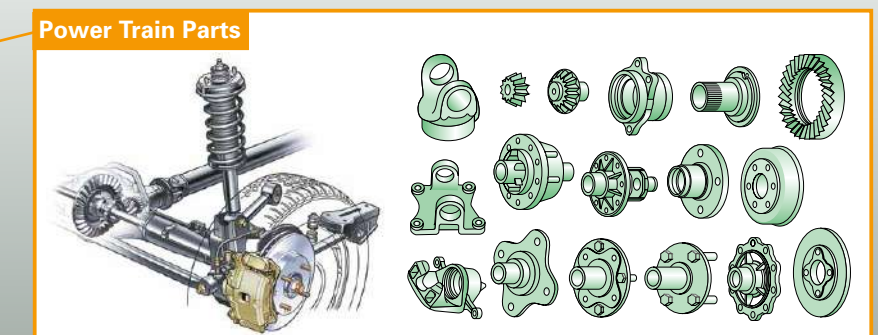
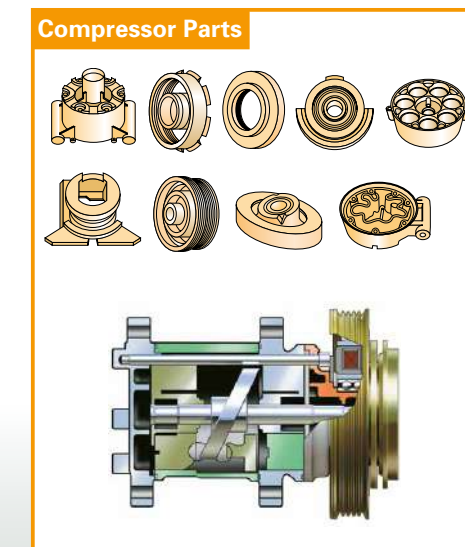
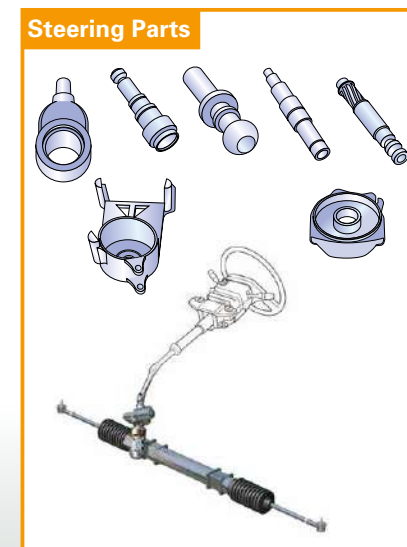
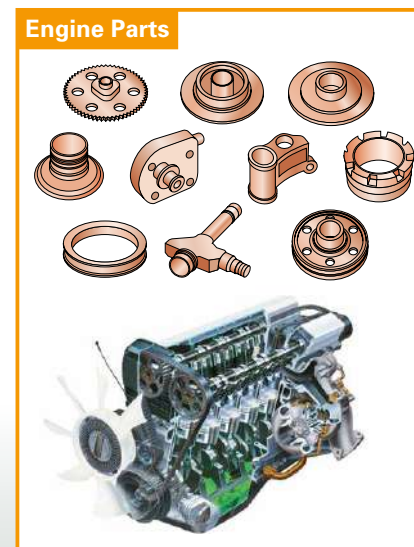
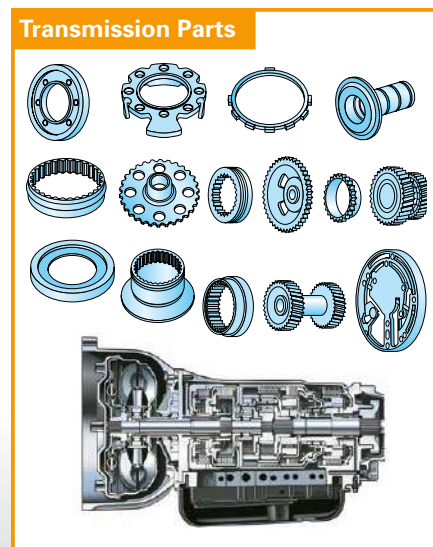
CNC Turning Machine with tailstock

MJ SERIES



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

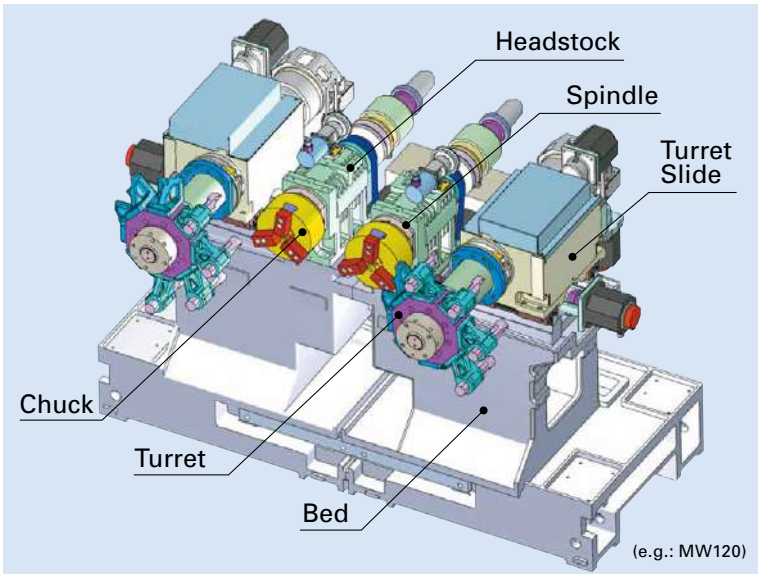
Muratec's unprecedented machine features include precision machining, line planning, higher productivity, automation reliability, longer unattended production, machine rigidity, energy saving and turnkey experience for automobile component manufacturing. These outstanding features have made our machines 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.

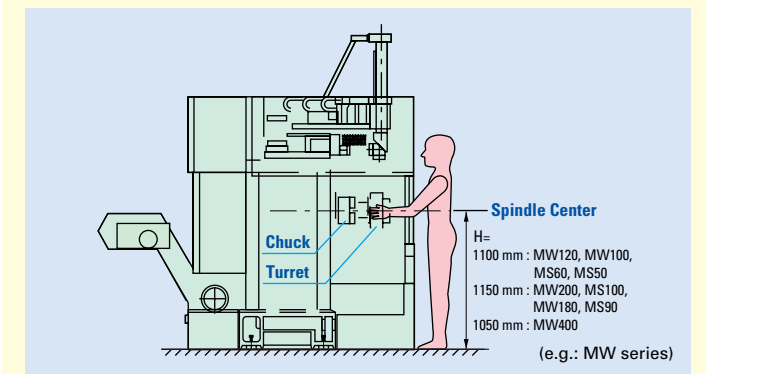


The turret and spindle are designed parallel to each other. Decades of column/turret style MW machines in the field have proven the superior design of these machines. This design supports heavy cuts, accurate finishing and allows free chip fall.

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

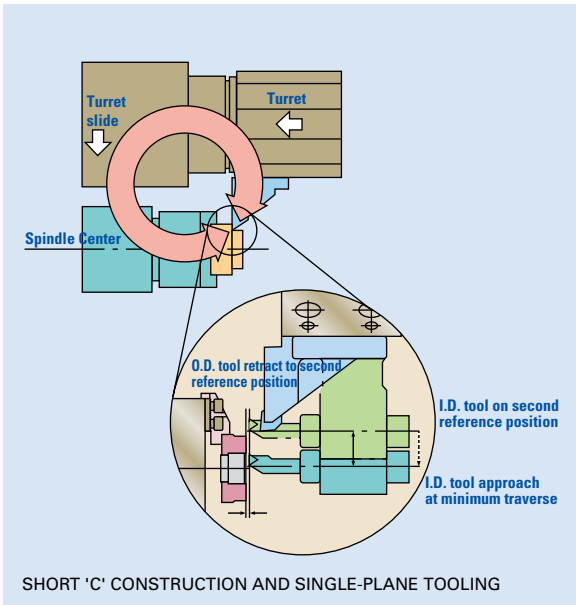
■ Easy Operator Set-Up

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.



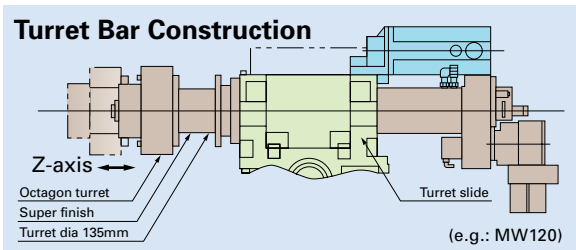
■ Short 'C' Construction

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.



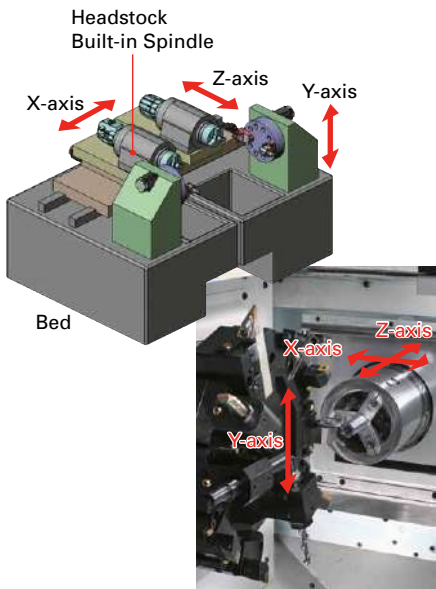
MW & MS SERIES

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.

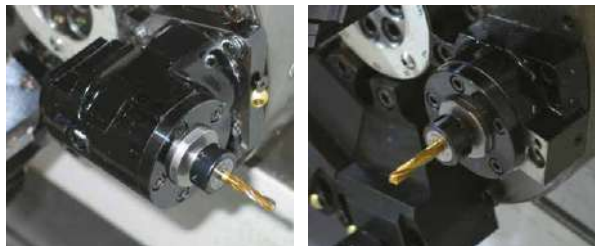
Solution for Mass Production of Small High-Precision Parts Workpiece size less than 50 mm, Tolerance requirement 5 μm ~ 10 μm

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) ø 135 mm (5 inch)	ø 110 mm (4 inch) 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 m²) allows compact floor layouts.

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

MW80

Tool Plate

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



Tools used: 4 numbers/ Spindle



MW80
Twin Loader Type
Twin Spindle CNC Chucker

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 x 2 / Width: 270 mm	Tool plate x 2 / Width: 370 mm
Spindle drive motor	7.5 kW/25% x 2	7.5 kW/25% x 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 x 2	8
Spindle drive motor	5.5 kW/30min x 2	5.5 kW/30min
Spindle speed range	30 ~ 3,000 rpm 45 ~ 4,500 rpm 60 ~ 6,000 rpm	30 ~ 3,000 rpm 45 ~ 4,500 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 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) ø 210 mm (8 inch)	ø 165 mm (6 inch) ø 210 mm (8 inch)	ø 165 mm (6 inch) ø 210 mm (8 inch)
Distance between spindle centers		340 mm	—	—
Number of turret stations		8 × 2 12 × 2	8 12	8
	Spindle drive motor	Standard 7.5 kW/30min × 2 Option 11 kW/30min × 2	7.5 kW/30min 11 kW/30min	7.5 kW/15min 11 kW/15min
Spindle speed range		30 ~ 3,000 rpm 45 ~ 4,500 rpm 60 ~ 6,000 rpm (7.5 kW)	30 ~ 3,000 rpm 45 ~ 4,500 rpm 60 ~ 6,000 rpm (7.5 kW)	30 ~ 3,000 rpm (Option) 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 Option ø 100 mm	ø 90 mm ø 100 mm	ø 90 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) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)
Distance between spindle centers		440 mm	—
Number of turret stations		10 × 2 12 × 2	10 12
	Spindle drive motor	Standard 11 kW/30min × 2 Option 15 kW/30min × 2	11 kW/30min 15 kW/30min
Spindle speed range		24 ~ 2,400 rpm 35 ~ 3,500 rpm	24 ~ 2,400 rpm 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) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)
Distance between spindle centers		440 mm	—	470 mm
Number of turret stations		10 × 2 12 × 2	10 12	10 × 2 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 35 ~ 3,500 rpm	24 ~ 2,400 rpm 35 ~ 3,500 rpm	25 ~ 2,500 rpm (22 kW) 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 12 × 2
Spindle drive motor	Standard	22 kW/30min × 2
	Option	30 kW/30min × 2
Spindle speed range		30 ~ 3,000 rpm (22 kW) 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) ø 210 mm (8 inch)	ø 165 mm (6 inch) 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) 45 ~ 4,500 rpm 60 ~ 6,000 rpm	30 ~ 3,000 rpm (7.5 kW) 45 ~ 4,500 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) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)	ø 210 mm (8 inch) 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 (11 kW) OP: 24 ~ 2,400 rpm (22 kW) OP: 35 ~ 3,500 rpm (22 kW)	20 ~ 2,000 rpm (11 kW) 24 ~ 2,400 rpm	20 ~ 2,000 rpm (11 kW) 24 ~ 2,400 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 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 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

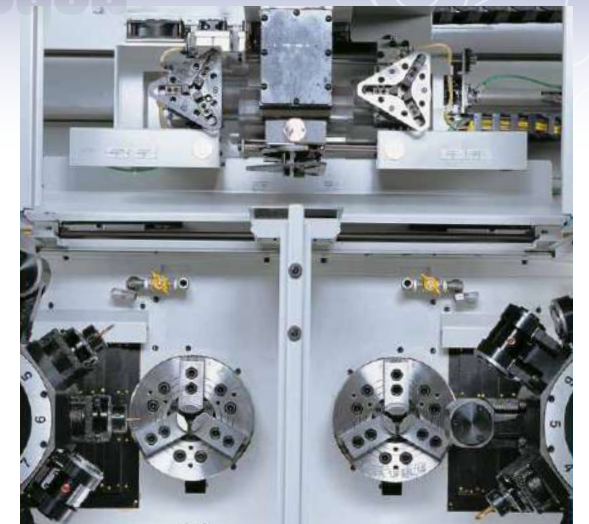
Loader cycle can be restarted at interrupted position.

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	(0500) 0	R-CHUCK	(0500) 0
L-A-CHUCK	(0500) 0	R-A-CHUCK	(0500) 0
L-B-CHUCK	(0500) 0	R-B-CHUCK	(0500) 0
L-CHUCK	(0500) 0	INLET	(0500) 0
L-CHUCK	(0500) 0	GAUGE	(0500) 0
L-CHUCK	(0500) 0	WASH	(0500) 0
L-CHUCK	(0500) 0	OUTLET	(0500) 0
L-CHUCK	(0500) 0	RESERVE1	(0500) 0
L-CHUCK	(0500) 0	RESERVE2	(0500) 0

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.

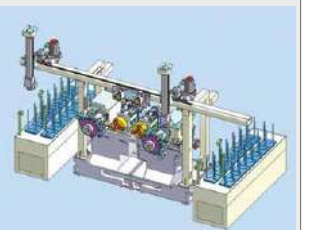
Twin Loader Type

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

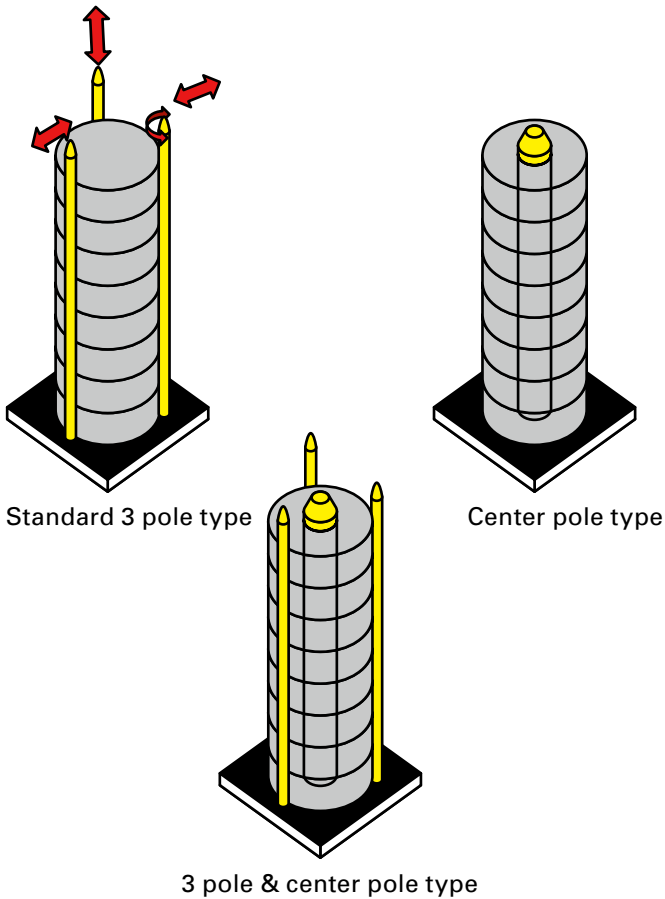
Stockers / Gauge Units / Peripheral Devices

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



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

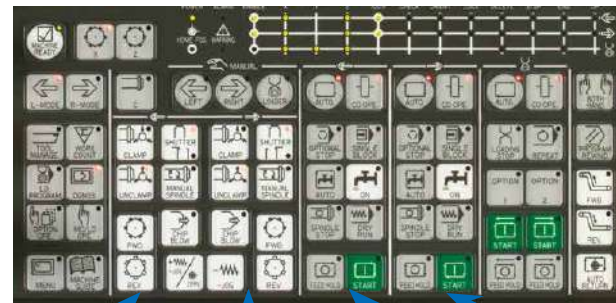


Auto Tray Changer

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)

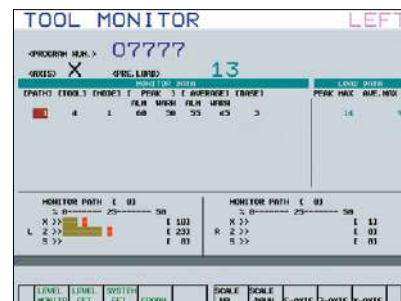


Spare or redundant tools can be activated by tool count or tool breakage detection. Different part programs based on five patterns can be set for auto tool shift function. Each pattern has 8 tool groups with 15 tool shift settings. Standard and rotation tool shift modes are available to meet different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

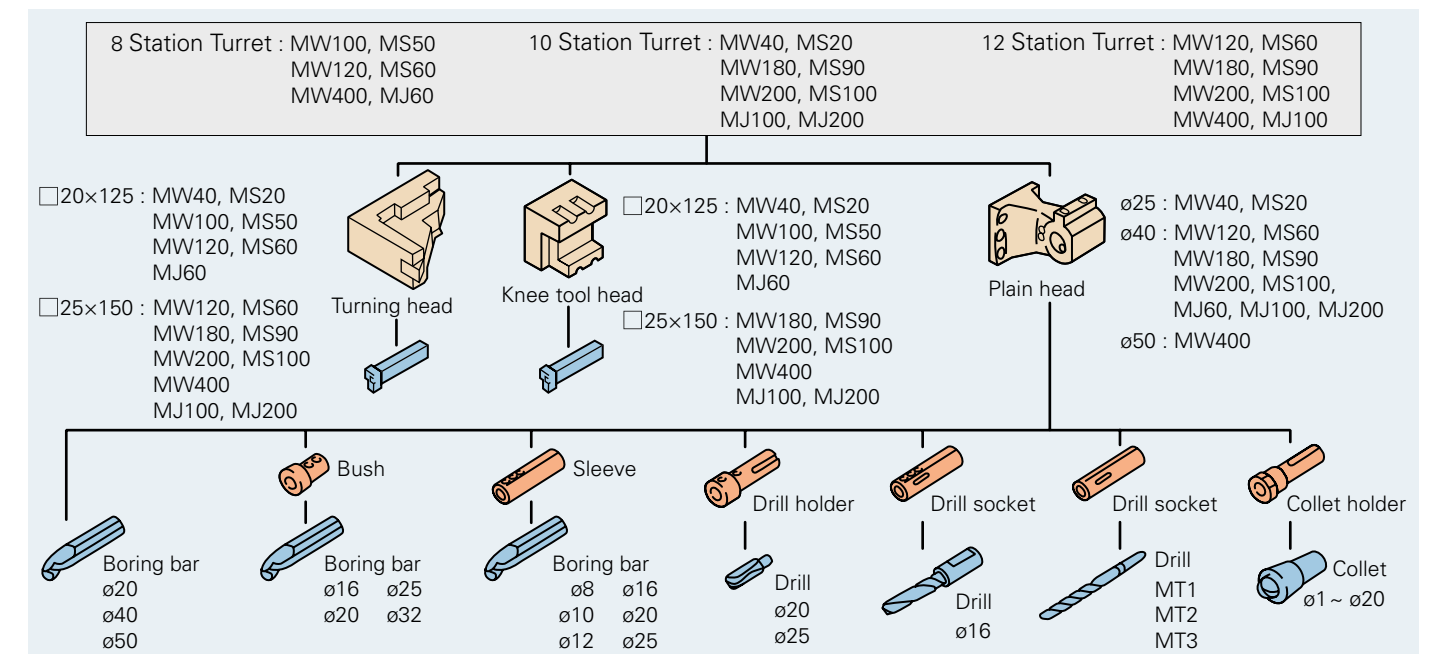
Machine Guide



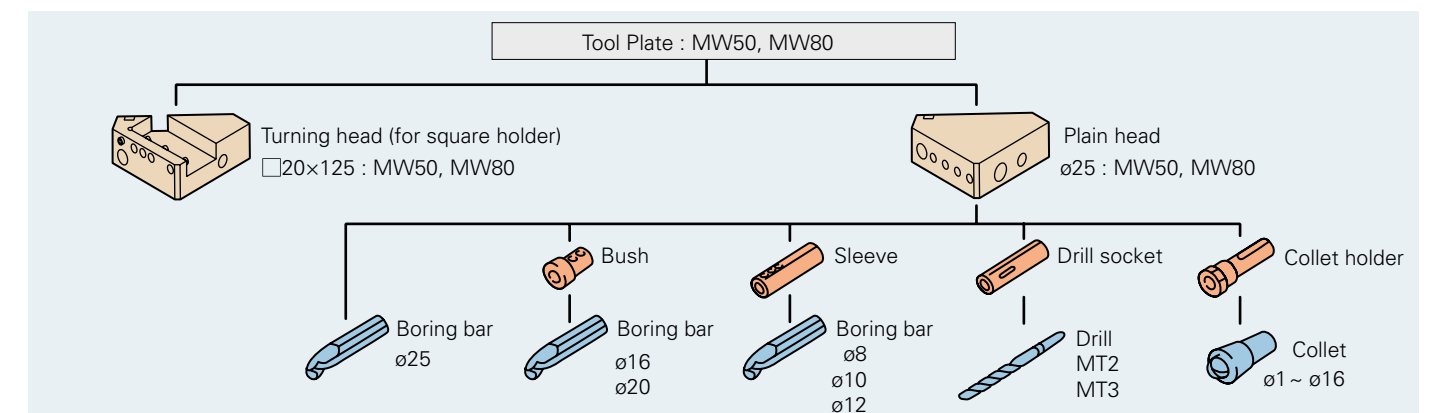
This function helps to check machine and loader status quickly in combined display and guides the operator to restore the machine status for automatic operations or machine zero set.

Tooling Systems

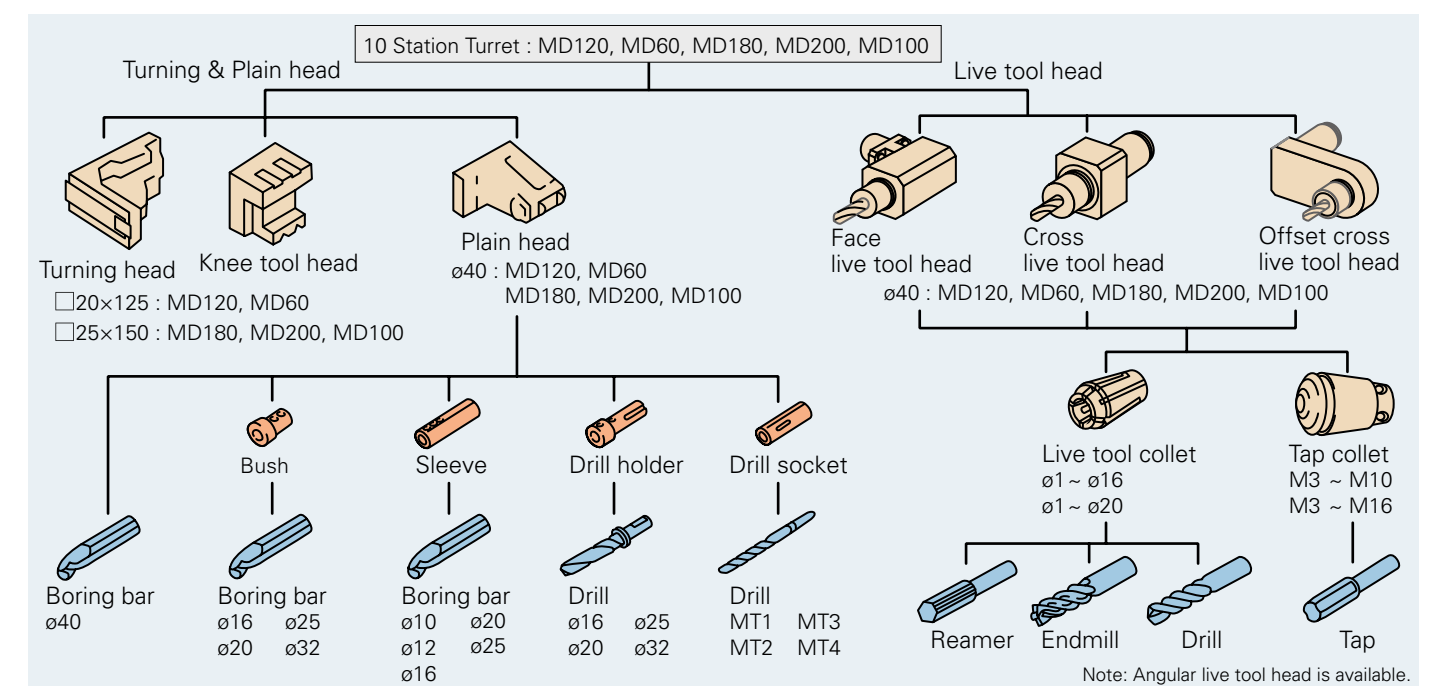
MW, MS (except MW50, MW80), MJ series



MW50, MW80



MD series

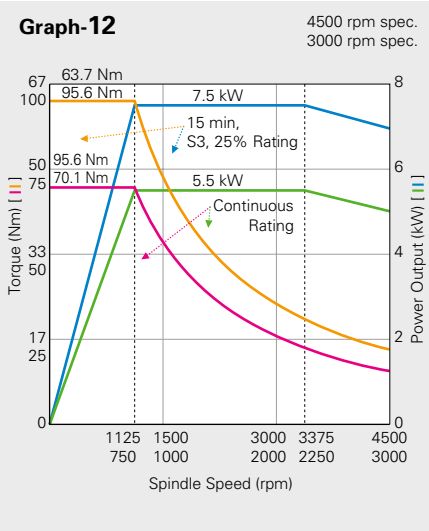
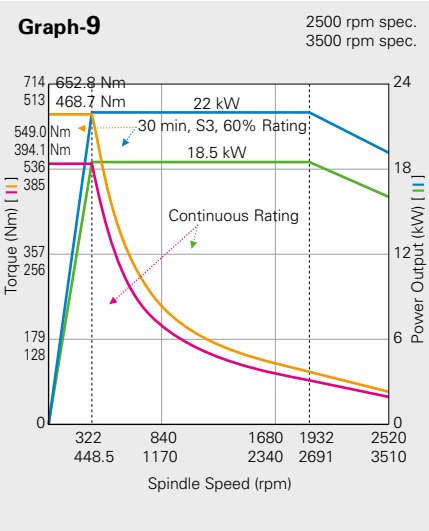
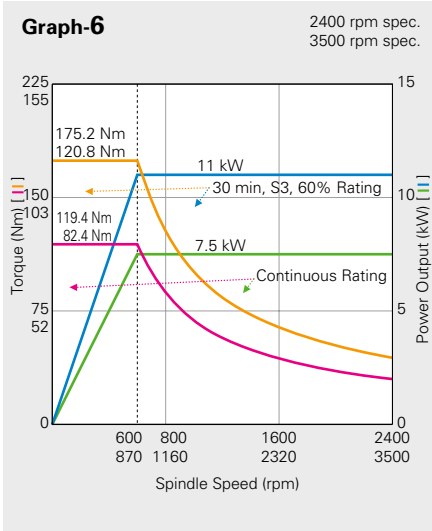
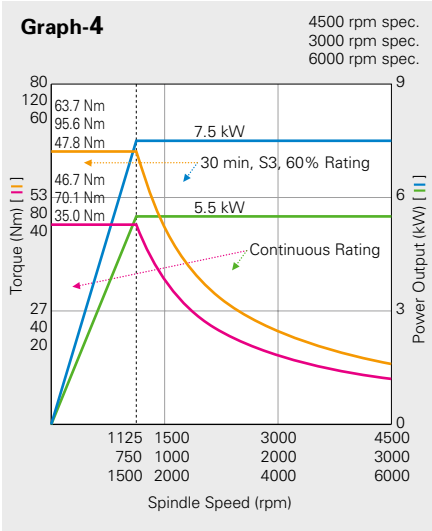
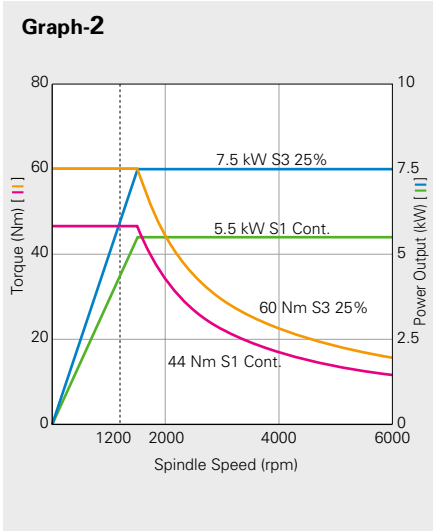
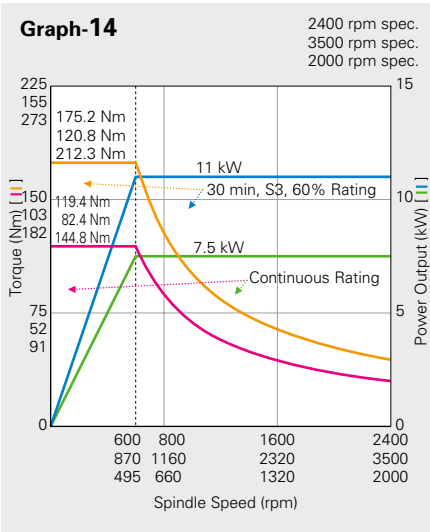
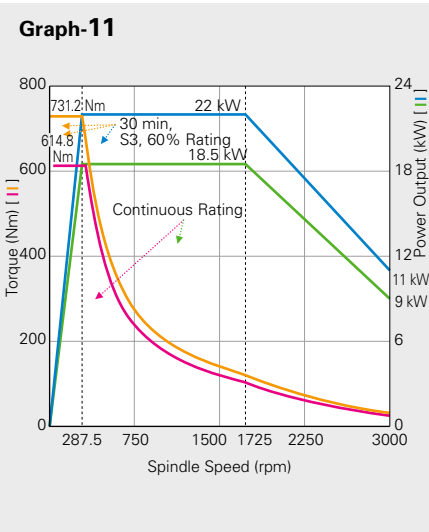
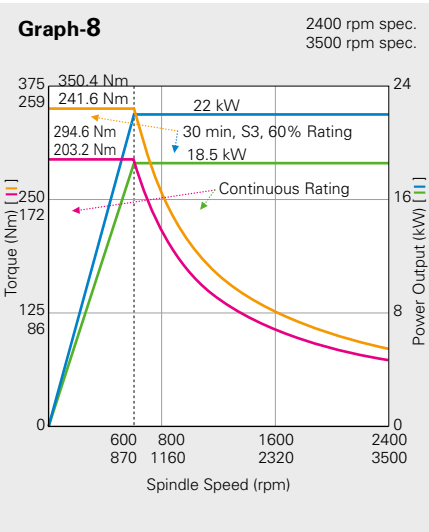
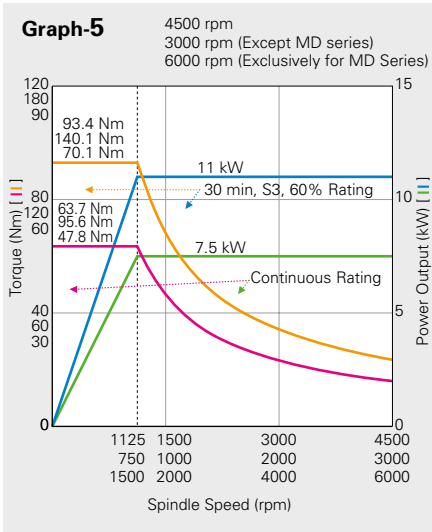
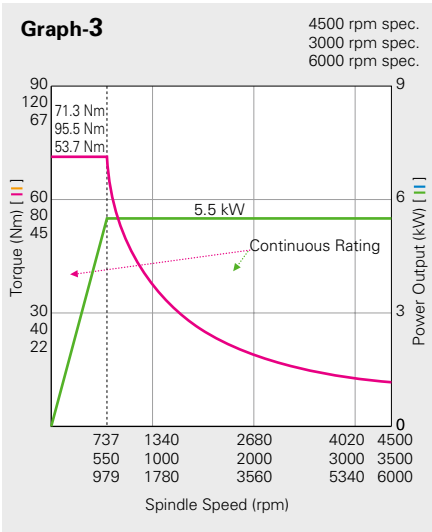
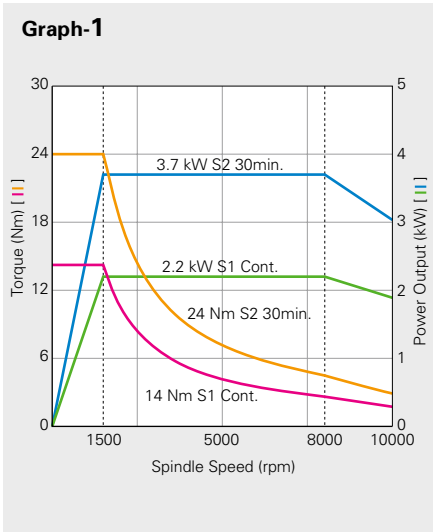
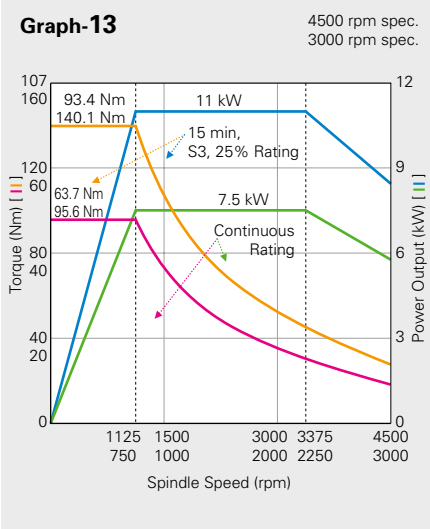
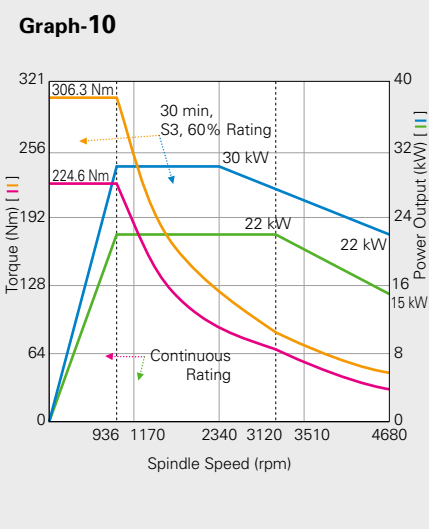
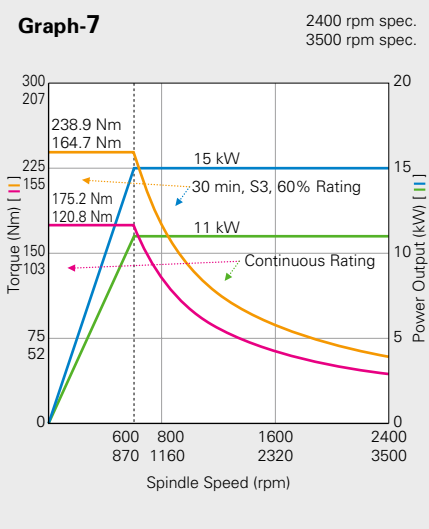


Main Spindle Output Power Characteristics

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) 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) ø 210 mm (8 inch)				ø 210 mm (8 inch) ø 254 mm (10 inch)		ø 210 mm (8 inch) 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 / Width : 270 mm	Tool plate × 2 / Width : 370 mm	8 × 2	8	8 × 2 12 × 2	8 12	8		10 × 2 12 × 2	10 12	10 × 2 12 × 2	10 12	10 × 2 12 × 2		8 × 2 12 × 2
Specification of cutting axes (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 45 ~ 4,500 rpm 60 ~ 6,000 rpm		30 ~ 3,000 rpm 45 ~ 4,500 rpm 60 ~ 6,000 rpm (7.5 kW)		30 ~ 3,000 rpm (Option) 45 ~ 4,500 rpm (7.5 kW)		24 ~ 2,400 rpm 35 ~ 3,500 rpm		24 ~ 2,400 rpm 35 ~ 3,500 rpm		25 ~ 2,500 rpm (22 kW) 35 ~ 3,500 rpm		30 ~ 3,000 rpm (22 kW) 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 × D2,140 mm	W990 mm × D2,140 mm	W1,220 mm × D1,990 mm	W1,770 mm × D2,090 mm	W1,550 mm × D1,650 mm	W980 mm × D1,650 mm	W1,900 mm × D1,930 mm	W1,080 mm × D1,910 mm	W1,080 mm × D1,610 mm		W2,360 mm × D2,240 mm	W1,320 mm × D2,220 mm	W2,420 mm × D2,240 mm	W1,320 mm × D2,220 mm	W2,470 mm × D2,240 mm		W3,490 mm × 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° (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 3.5 MPa	70 N·m 3.5 MPa	805 N·m 3.5 MPa

Specifications

Basic Machine Specifications		MD60	MD120	MD100	MD180	MD200
Maximum chuck size		ø 165 mm (6 inch) ø 210 mm (8 inch)	ø 165 mm (6 inch) ø 210 mm (8 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)	ø 210 mm (8 inch) 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 (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) 45 ~ 4,500 rpm 60 ~ 6,000 rpm	30 ~ 3,000 rpm (7.5 kW) 45 ~ 4,500 rpm 60 ~ 6,000 rpm	2,000 rpm (11 kW) OP: 2,400 rpm (22 kW) OP: 3,500 rpm (22 kW)	20 ~ 2,000 rpm (11 kW) 24 ~ 2,400 rpm 35 ~ 3,500 rpm	20 ~ 2,000 rpm (11 kW) 24 ~ 2,400 rpm 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 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 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 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 3.5 MPa	255 N·m 3.5 MPa

Basic Machine Specifications		MJ60	MJ100	MJ200
Maximum chuck size		ø 165 mm (6 inch) ø 210 mm (8 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)	ø 210 mm (8 inch) ø 254 mm (10 inch)
Number of turret stations		8	10 12	10 × 2
Specification of cutting axes (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 45 ~ 4,500 rpm 60 ~ 6,000 rpm (7.5 kW)	24 ~ 2,400 rpm 35 ~ 3,500 rpm	24 ~ 2,400 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	—
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/ Number of registrable programs/ Number of tool offset (Geometric/ wear)		MW40 MW50 MW80 MW100 MW120 MW180 MW200 MW400	MD120 MD180 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 MS50 MS60 MS90 MS100	MD60 MD100	MJ60 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	○	○	○

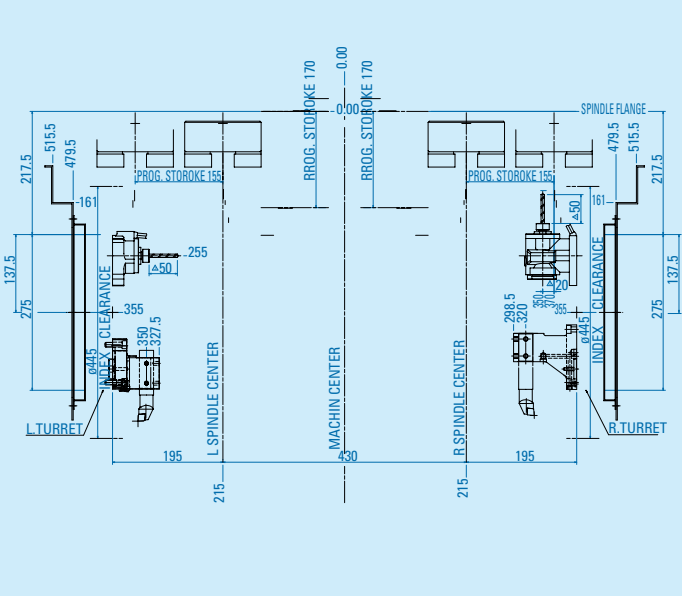
◎ : Standard ○ : Option

CNC Features (Option)

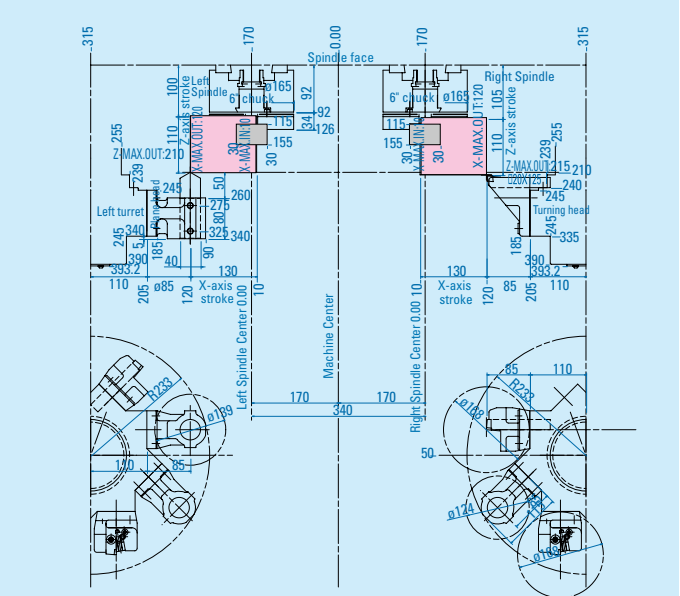
- Least input increment : sub-micrometer
 - Inch/Metric conversion
 - Thread cutting cycle retract
 - Variable lead threading
 - Continuous threading
 - Workpiece coordinate system
 - Direct drawing dimension programming
 - Tool nose R compensation
 - Chamfering/ Corner R
 - Multiple repetitive programming 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

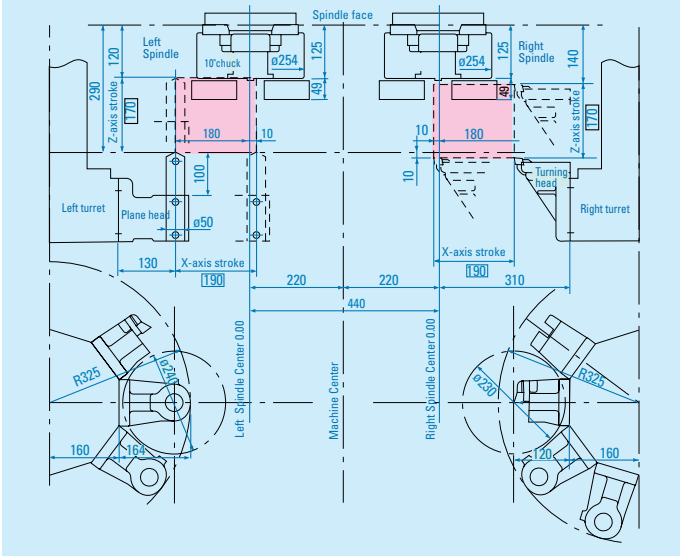
MW40 / MS20 (10 Station Turret)



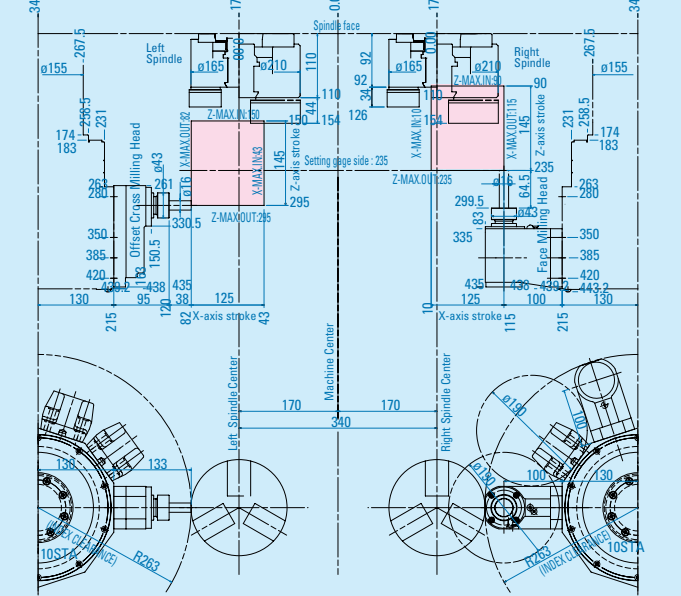
MW100 / MS50 (8 Station Turret)



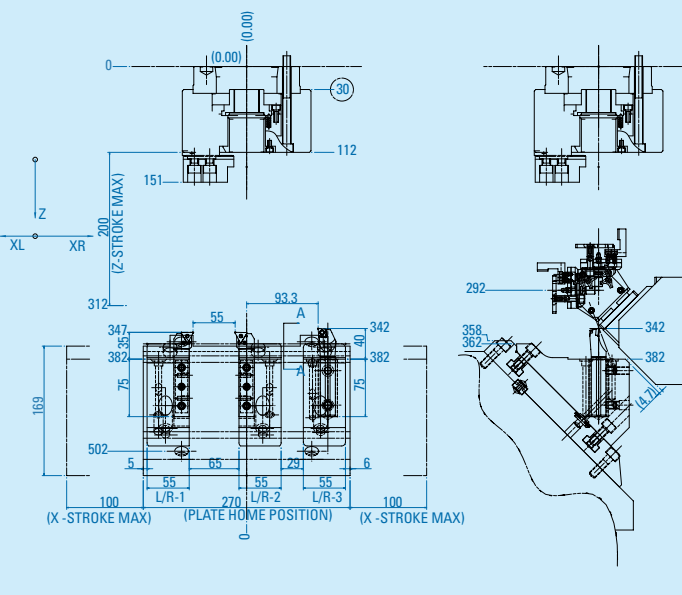
MW180 / MS90 (10 Station Turret)
MW200 / MS100 (10 Station Turret)



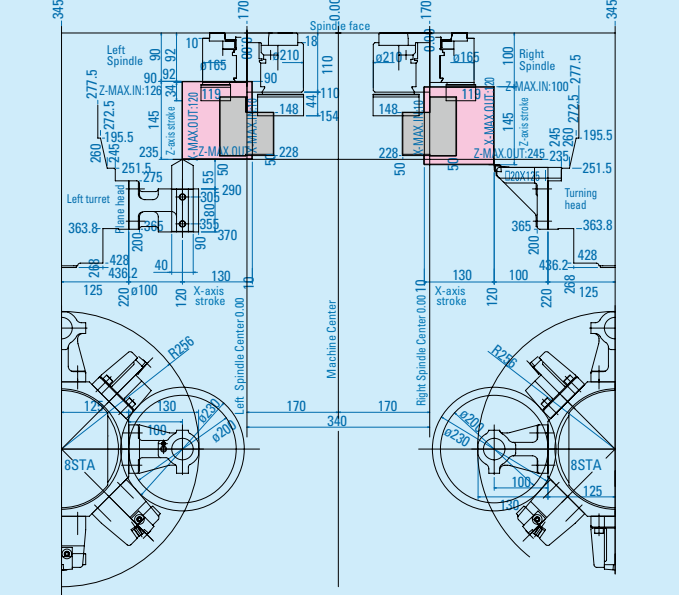
MD60 / MD120 (10 Station Turret)



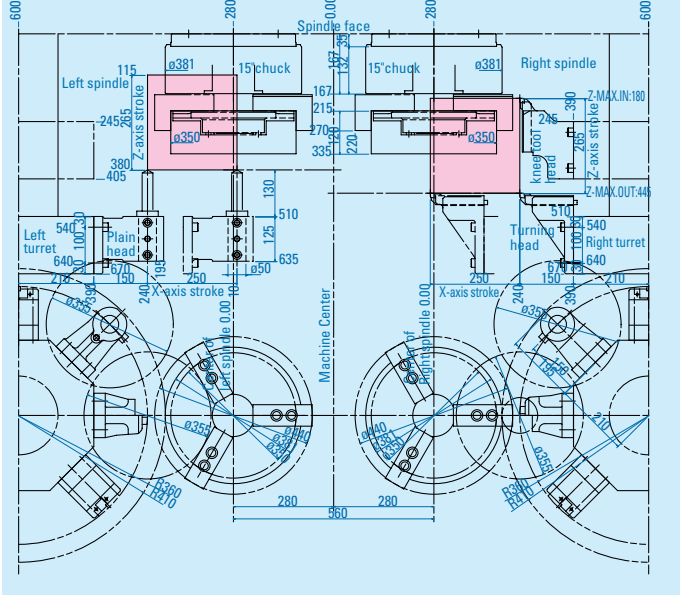
MW50 (Tool plate)



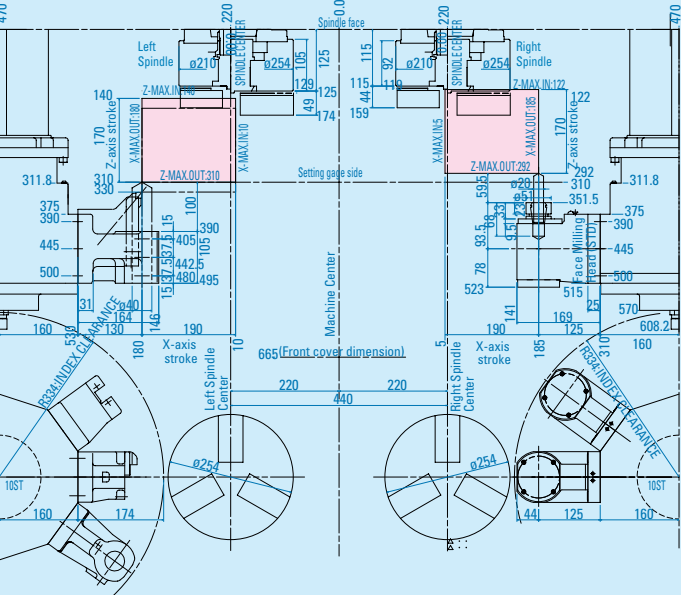
MW120 / MS60 (8 Station Turret)



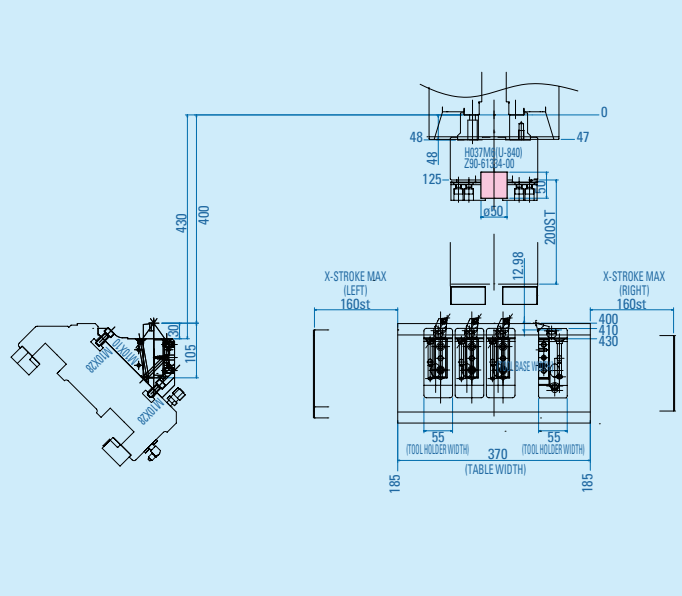
MW400 (8 Station Turret)



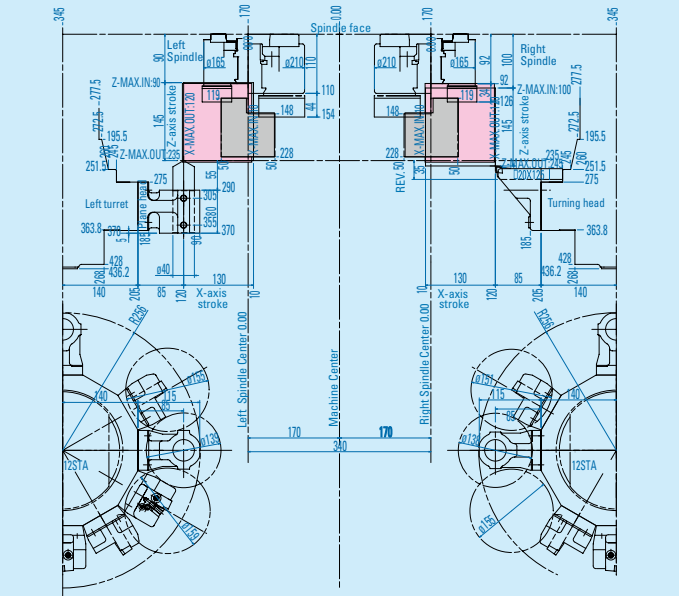
MD100 / MD180 / MD200 (10 Station Turret)



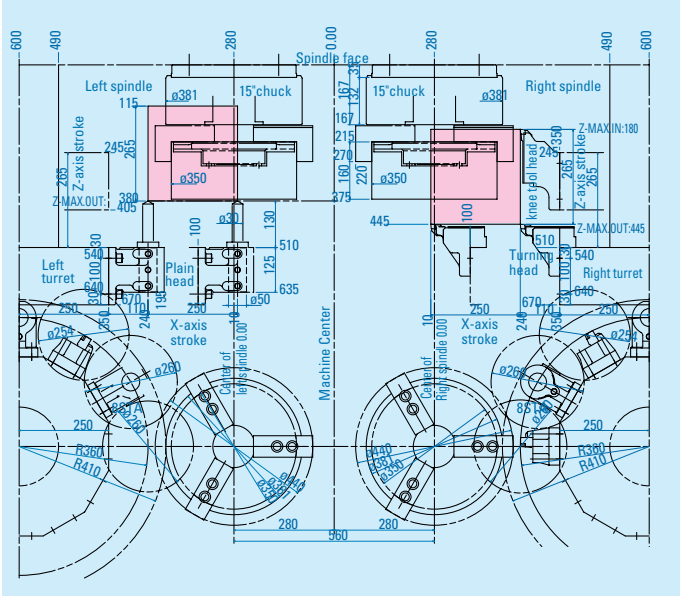
MW80 (Tool plate)



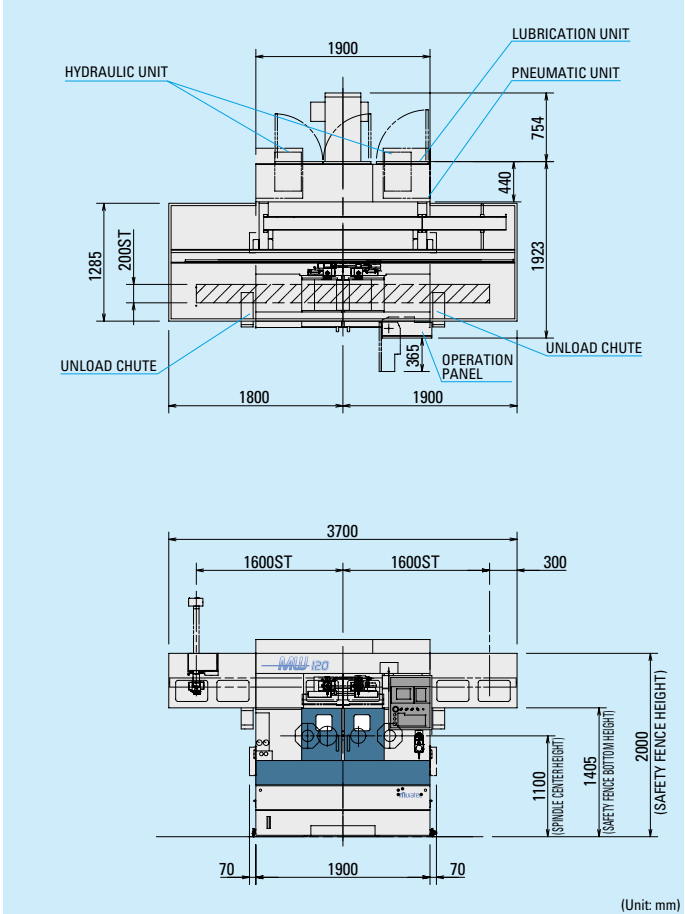
MW120 / MS60 (12 Station Turret)



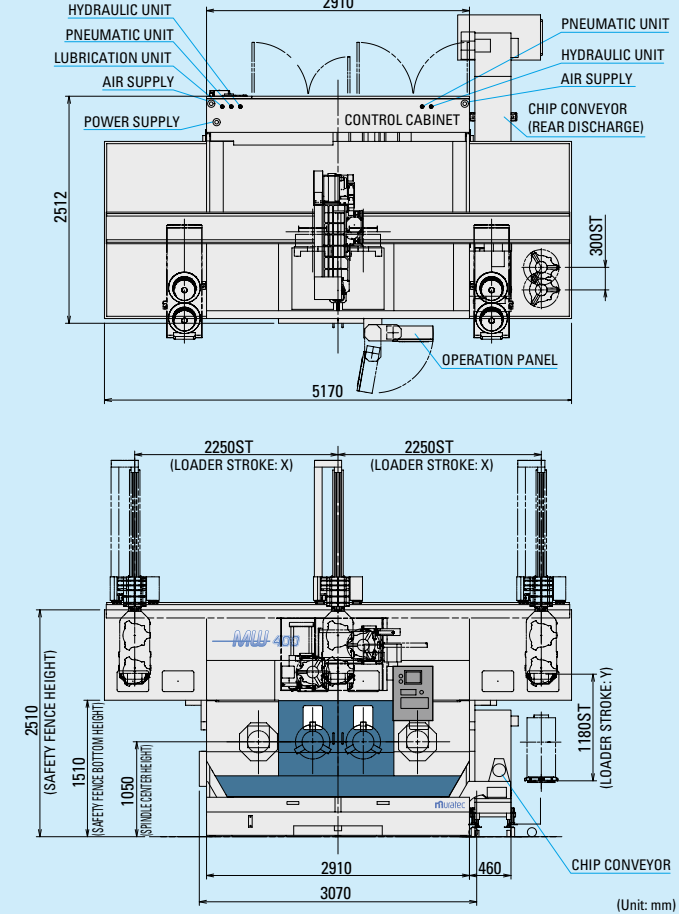
MW400 (12 Station Turret)



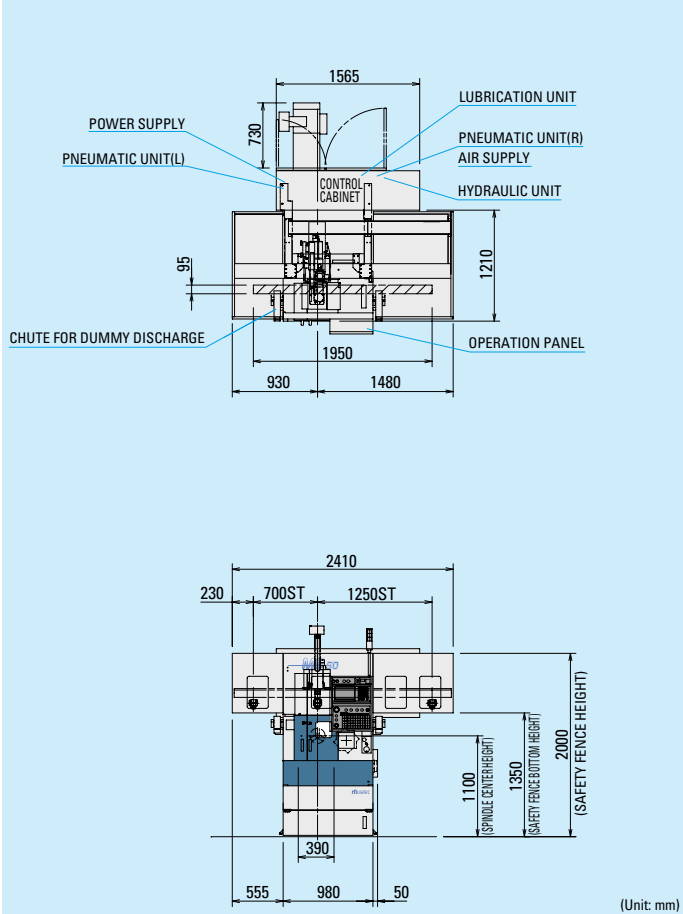
MW120 Standard Cell System



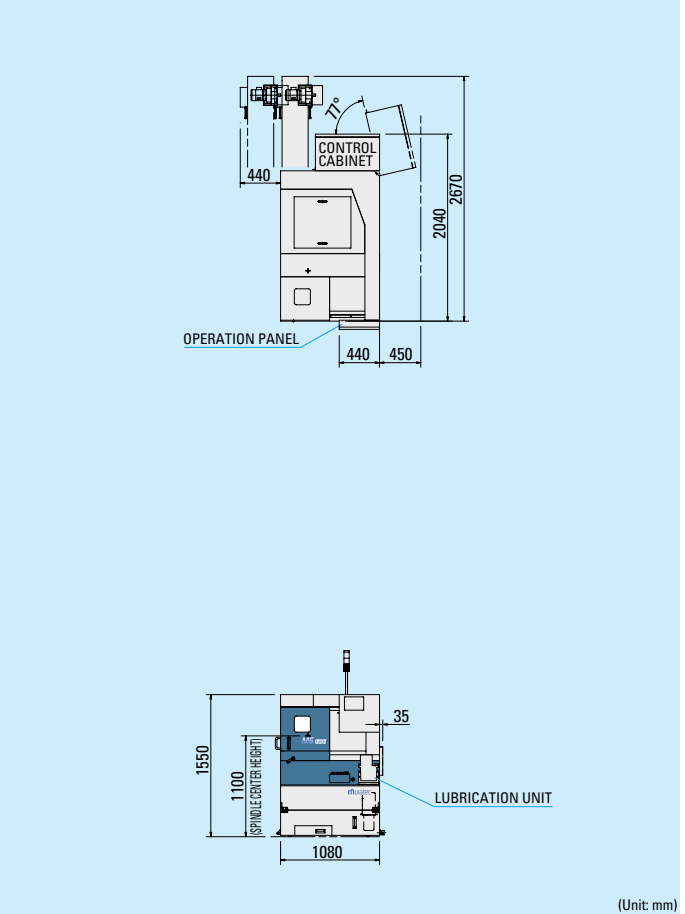
MW400 Standard Cell System



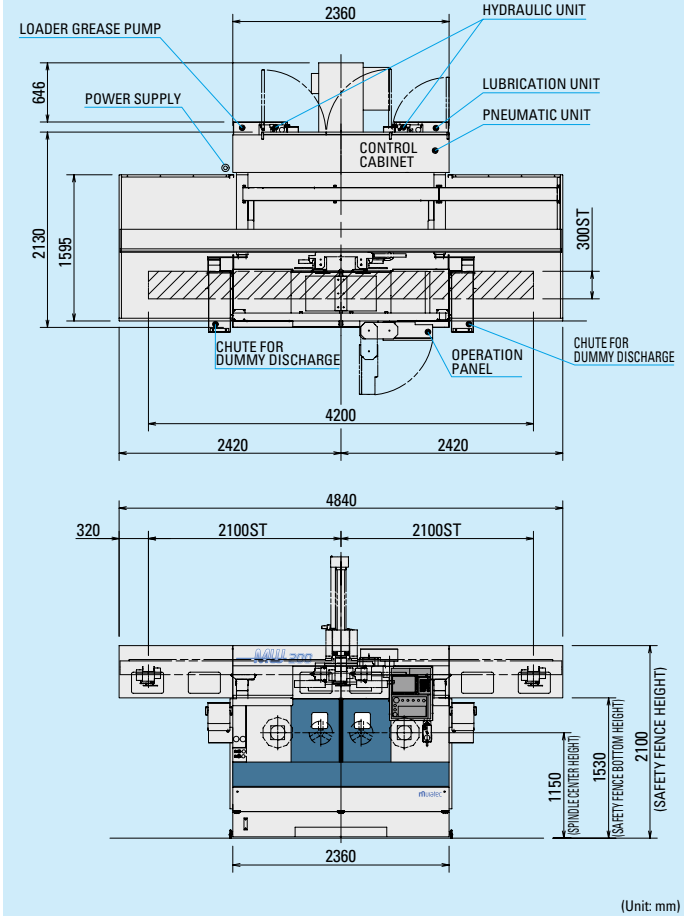
MS50 Standard Cell System



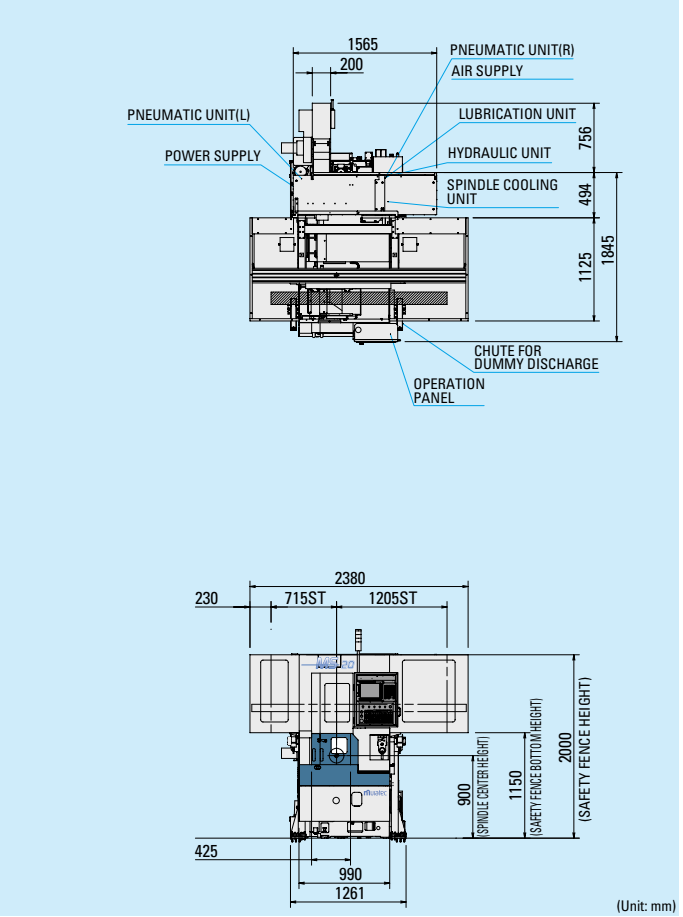
MS60 Manual Load Type Standard Cell System



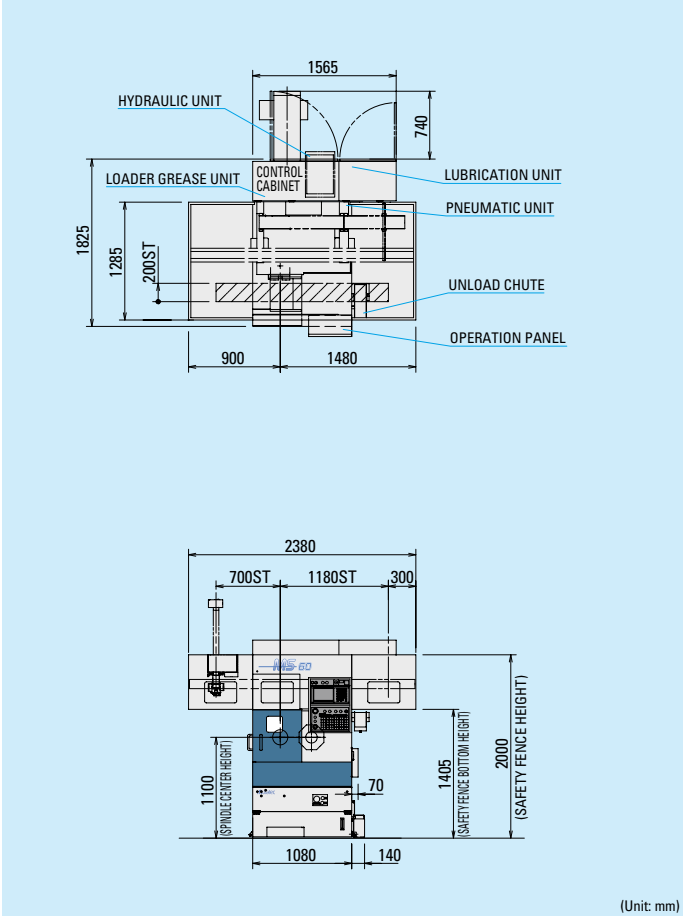
MW180 / MW200 Standard Cell System



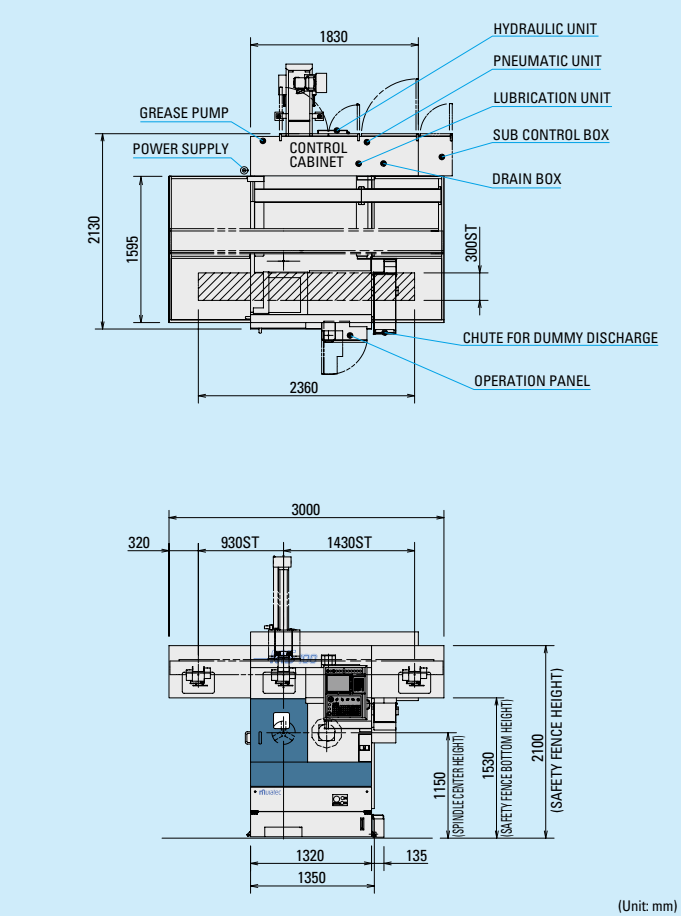
MS20 Standard Cell System



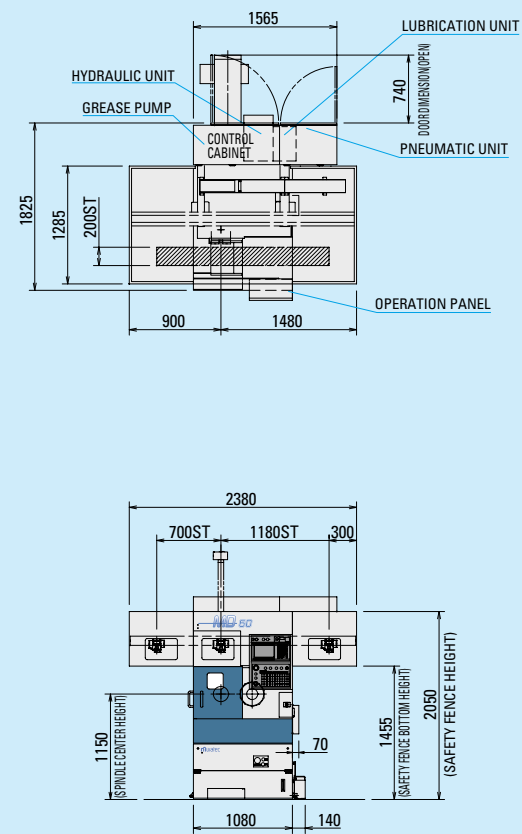
MS60 Standard Cell System



MS100 Standard Cell System

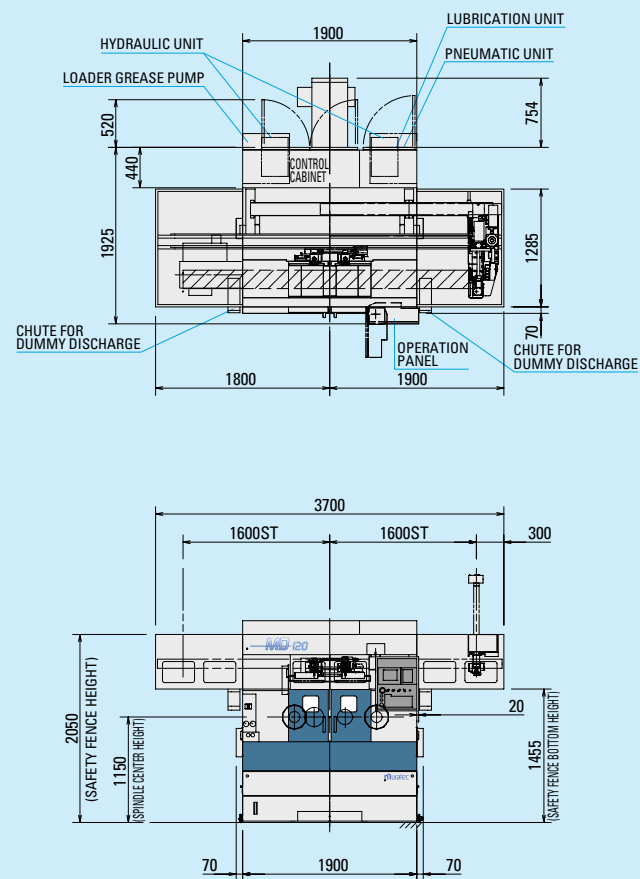


MD60 Standard Cell System



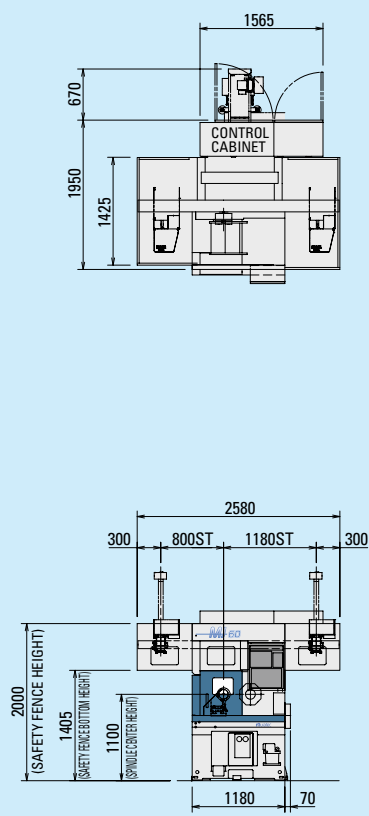
(Unit: mm)

MD120 Standard Cell System



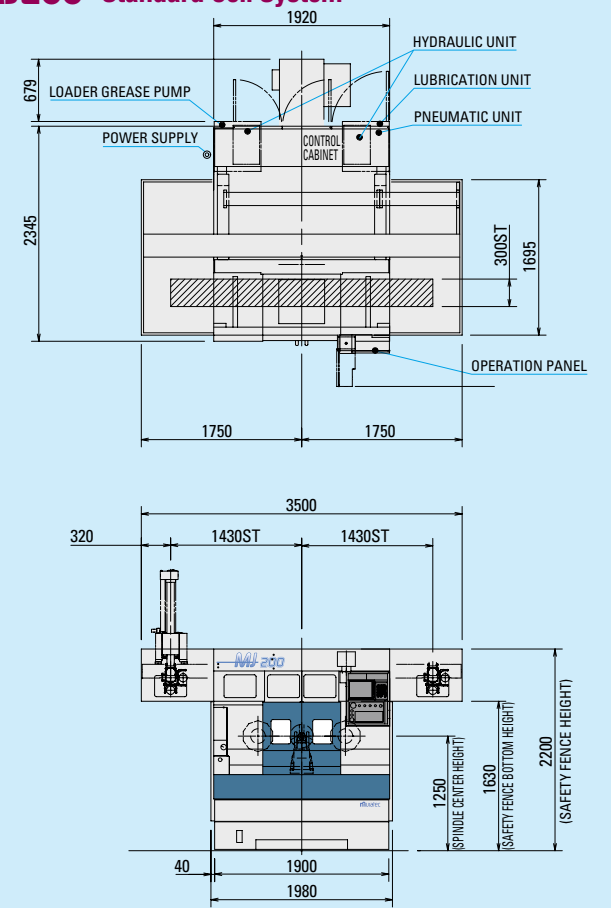
(Unit: mm)

MJ60 Standard Cell System



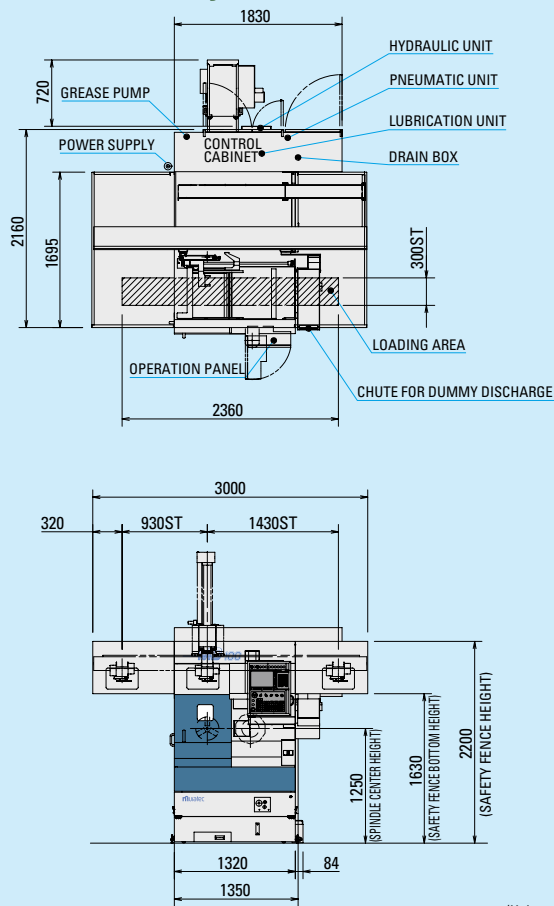
(Unit: mm)

MJ200 Standard Cell System



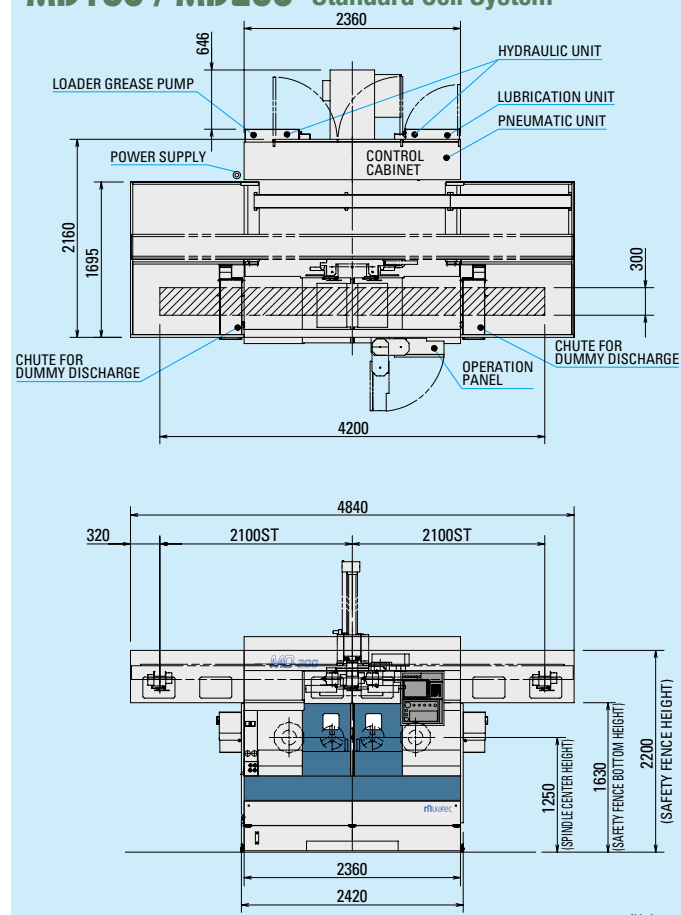
(Unit: mm)

MD100 Standard Cell System



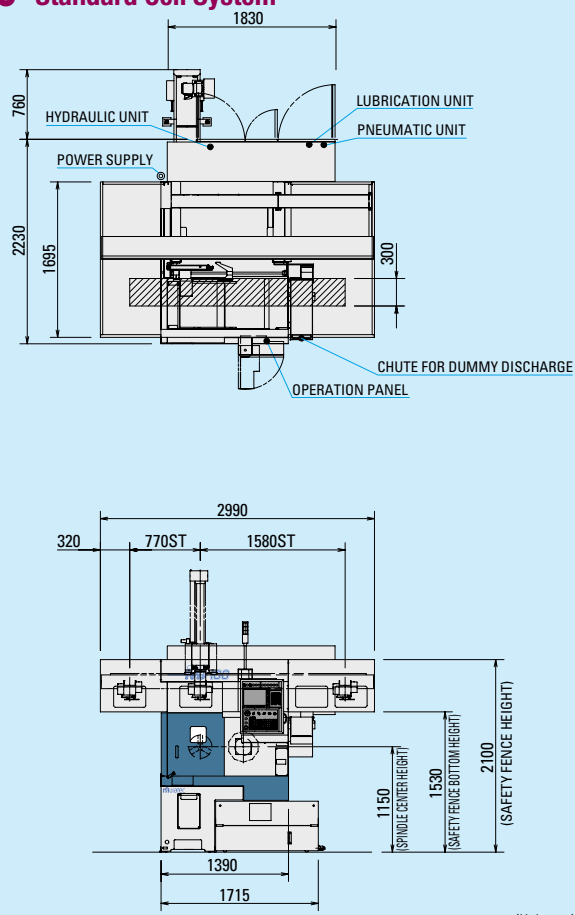
(Unit: mm)

MD180 / MD200 Standard Cell System



(Unit: mm)

MJ100 Standard Cell System



(Unit: mm)