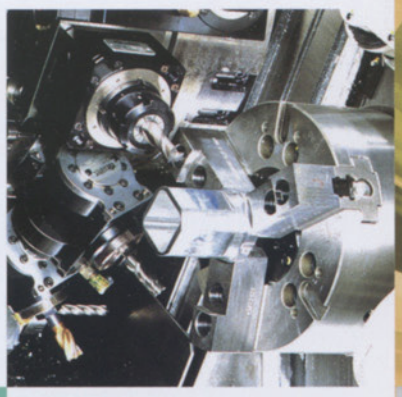
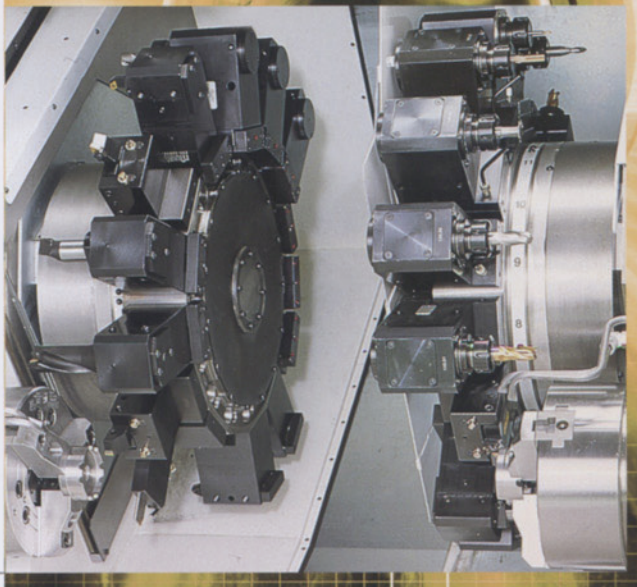
muratec





IN-LINE OPPOSED TWIN SPINDLE CNC TURNING MACHINE

MT Series

MURATA MACHINERY, LTD.

MURATEC brings you the latest in INTE by combining the power of Two machine precision manufacturing.

"One Machine - One Line"

MURATEC has developed the user-friendly MT series turning machines taking into consideration modern day needs of the industry such as ease of operation, precision machining, compactness, unattended machining capabilities, integration of operations with Y-axis capabilities to enable, complete machining processes in one machine while providing low cost manufacturing.

IN-LINE TWIN SPINDLE CNC TURNING MACHINE

MT Series

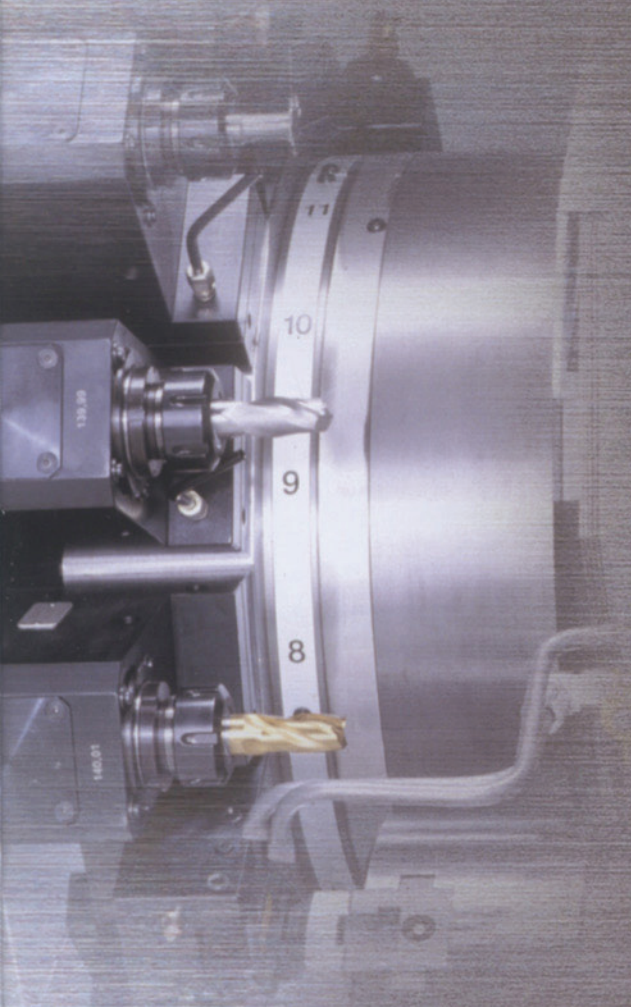
1. Process Integration

2. Productivity

3. Manufacturing Flexibility

Work Sample

RATED turning and machining technology in One to achieve low cost,



One Machine

- Process Integration
- Reduced in-process inventory
- Reduced number of machines in the process
- Reduced labour, Set-up, Jigs, Tooling costs
- Longer continuous unattended production
- Compact design and line planning

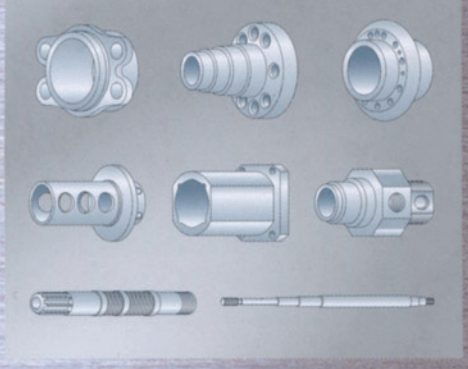
One Line

- Two 15-Station turrets
- Live tool position available on all 30 turret stations
- Y-axis option available on MT20, MT25
  Y-axis stroke MT20 : +/- 50 mm, MT25 : +/- 60 mm
- C-axis control on both spindles
- High precision spindle synchronous work transfer
- Bar feeder and / or Gantry loader system
  for unattended operation

Total Cost Reduction

MT Series machines are designed with the concept of "ONE MACHINE - ONE LINE" for highly flexible production of small or medium size lots of continuously variable production needs.

Manufacturing Flexibility



MT Series

Process Integration, High Productivity

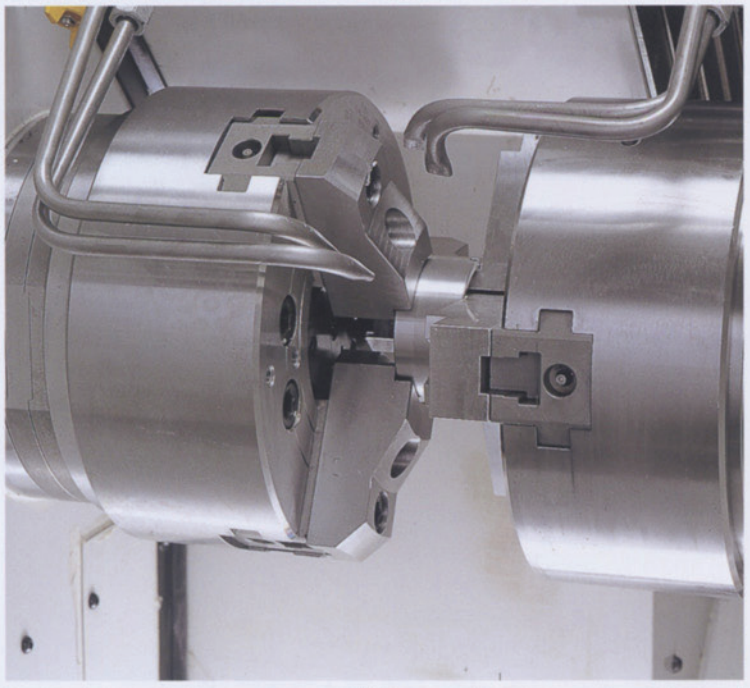
Completely integrated from all directions in

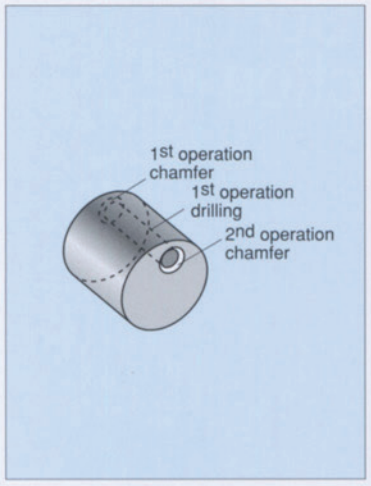
Largest number of turret stations (30 total tools available)

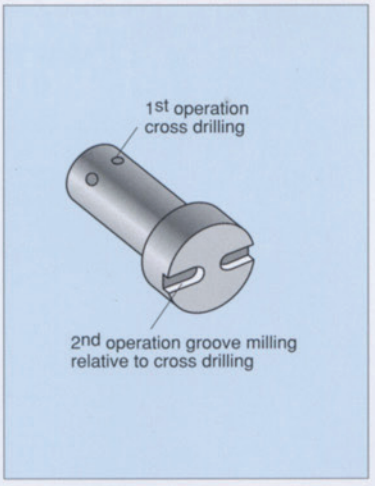
The versatility of applications for complete machining in one set-up is greatly enhanced. Larger number of available tools eliminates tool changeover time and also facilitates longer unattended operations resulting in maximized productivity. Live tooling heads (option) can be mounted on any and all of the turret stations. VDI tooling is used as a standard (MT20, MT25) for quick tool changeover.

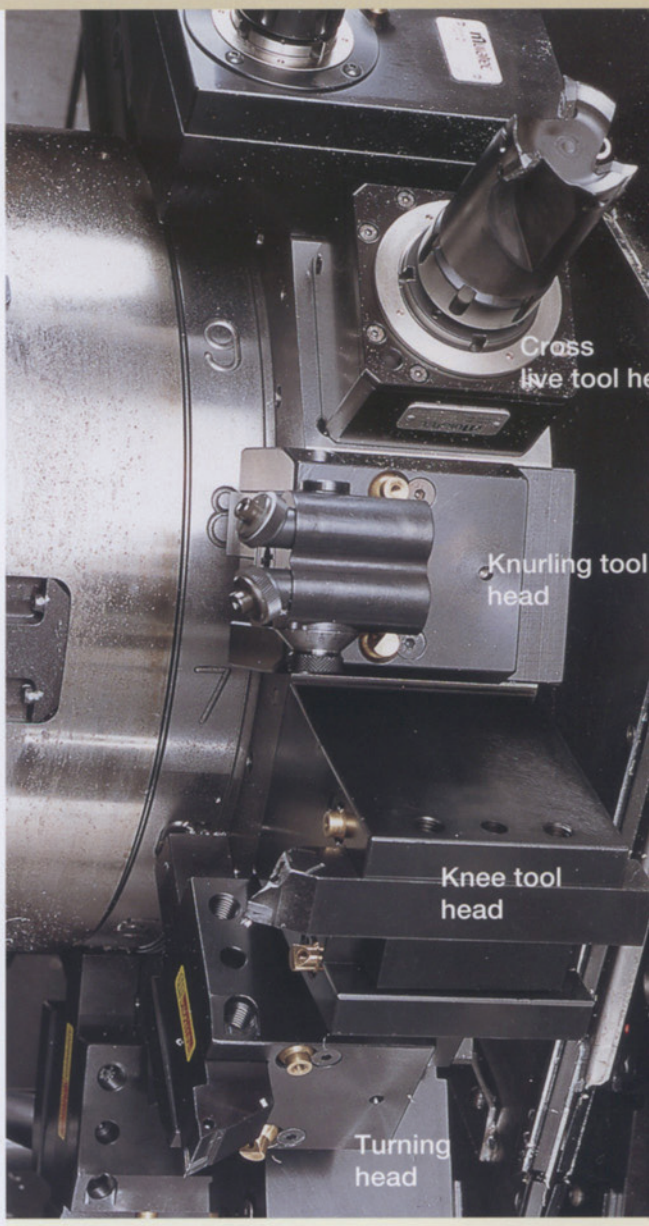
Spindle synchronous rotation for accurate transfer of the workpiece from the left spindle to the right spindle

Workpiece transfer from one spindle to the other is done with the synchronised rotation of both spindles. Accurate orientation is achieved using the C-axis control. The result is precision relational positioning of operations performed at both the spindles. This system does not require any jigs for phase adjustments, thus reduces cost and operation time.

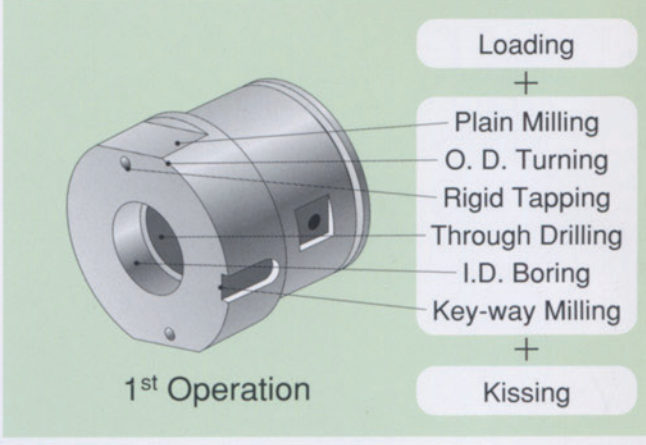




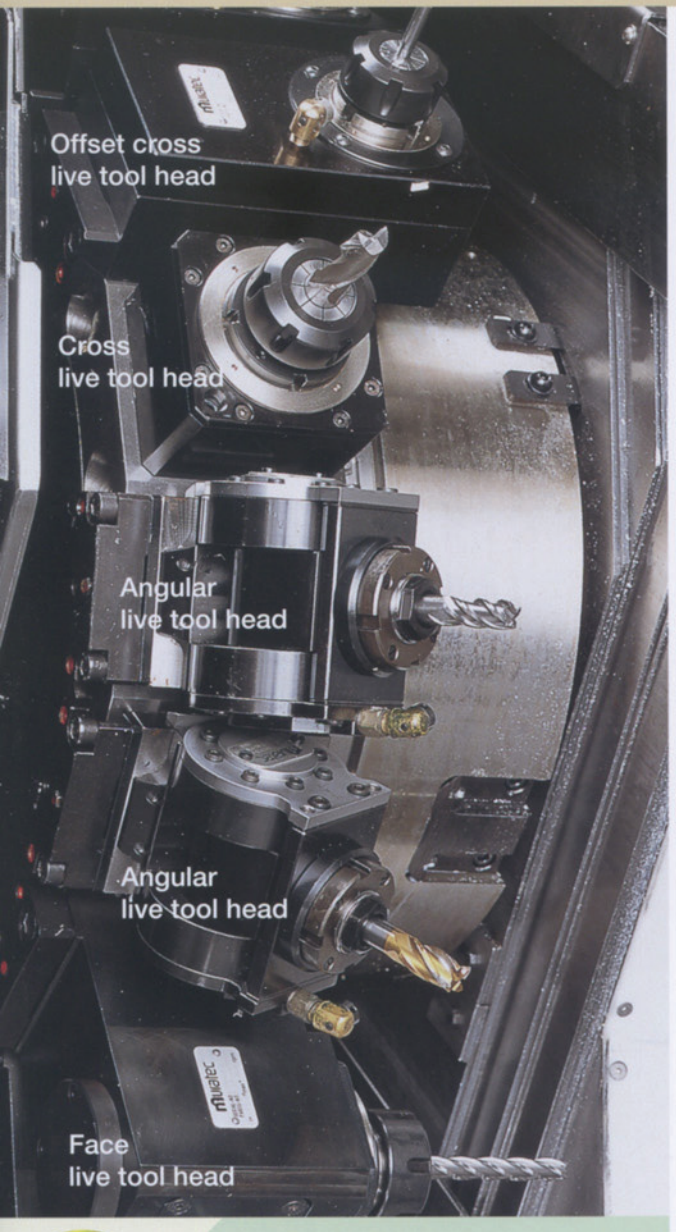




6-Plain machining using Y-axis, C-axis capabilities



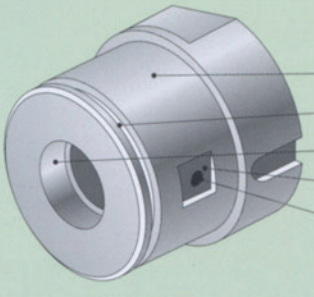
turning and machining one machine set-up



Machine : MT20

Example : Carbon steel, ϕ 100 mm × L 100 mm

Cycle Time 144 sec.



Kissing

+

O. D. Turning
O. D. Grooving
I.D. Boring
Plain Milling
Rigid Tapping

+

2nd Operation

Unloading

Live tool capability increases versatility of applications (Option)

Live tool option on all 30-turret stations

Live tool heads can be mounted on any and all of the 30 turret stations. This allows for complete integrated machining including drilling, milling and tapping in one set-up for a wide variety of components.

Specifications

		MT12	MT20	MT25
Live tool motor		3 kW (9 Nm/Continuous)	3 kW (12 Nm/Continuous)	4 kW (22 Nm/Continuous)
Max. live tool speed		4000 rpm	3600 rpm	3000 rpm
Tool size	Milling	ϕ 16 mm	ϕ 20 mm	ϕ 20 mm
	Tapping	M12	M16	M16

Rigid tap function

Rigid tap function is available with the live tool option. Rigid tap function provides high speed, accurate tapping operations while eliminating the need for special tap holders.

Face live tool head

Cross live tool head

Process integration using Y-axis on both turrets [MT20, MT25] and C-axis on both spindles (Option)

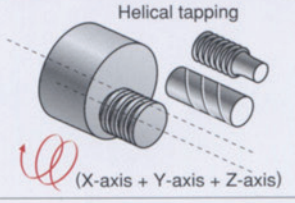
Y-axis option is available on both spindles (MT20, MT25). Operations such as off-center drilling, face milling, key way milling, helical tapping are possible with high relative positioning accuracy. This feature greatly increases the versatility of applications within the MT machines.

Specifications

	MT12	MT20	MT25
Y-axis stroke	—	± 50 mm	± 60 mm
C-axis positioning accuracy	± 0.001°	± 0.001°	± 0.015°
Maximum C-axis speed	200 rpm	100 rpm	100 rpm

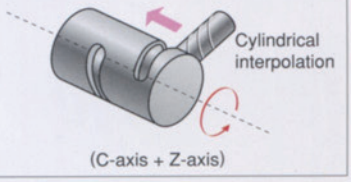
Y-axis live tool capabilities for helical tapping

Off-center threading



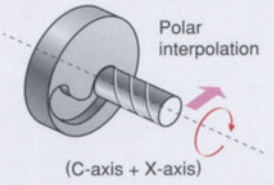
Cylindrical interpolation function

Cam interpolation machining

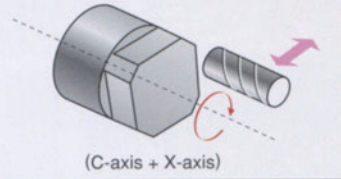


Polar co-ordinate interpolation function

Cam interpolation machining on front face



Multi-face cutting operation



MT Series

High Speed, High Accuracy and High Rigidity

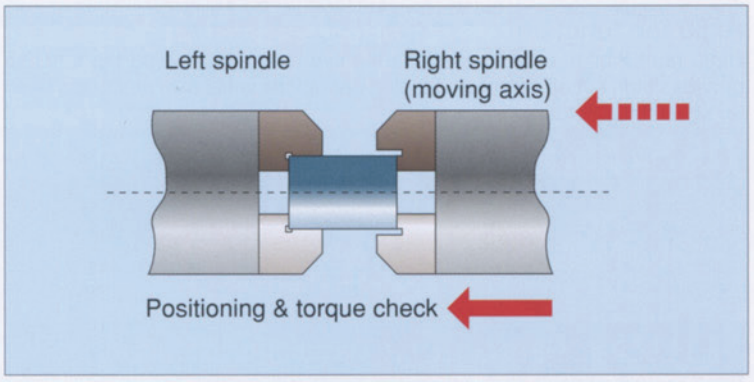
Highly accurate repeat on complicated workpi

Stable seating of the workpiece during workpiece transfer

Stable seating of the workpiece during the workpiece transfer is accomplished by setting right spindle (Z-axis) torque limit, "TORQUE SKIP" function can be used to detect stable chucking of the workpiece by monitoring the torque value. This feature will insure the torque does not exceed the pre-set value. This function enables precise positioning during work transfer.

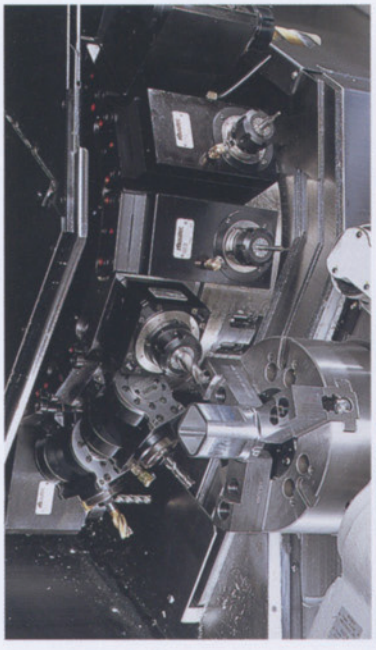
	MT12	MT20	MT25
Rapid traverse during transfer	32 m/min	32 m/min	24 m/min
Workpiece transfer time	9.0 Sec	12.7 Sec	13.6 Sec

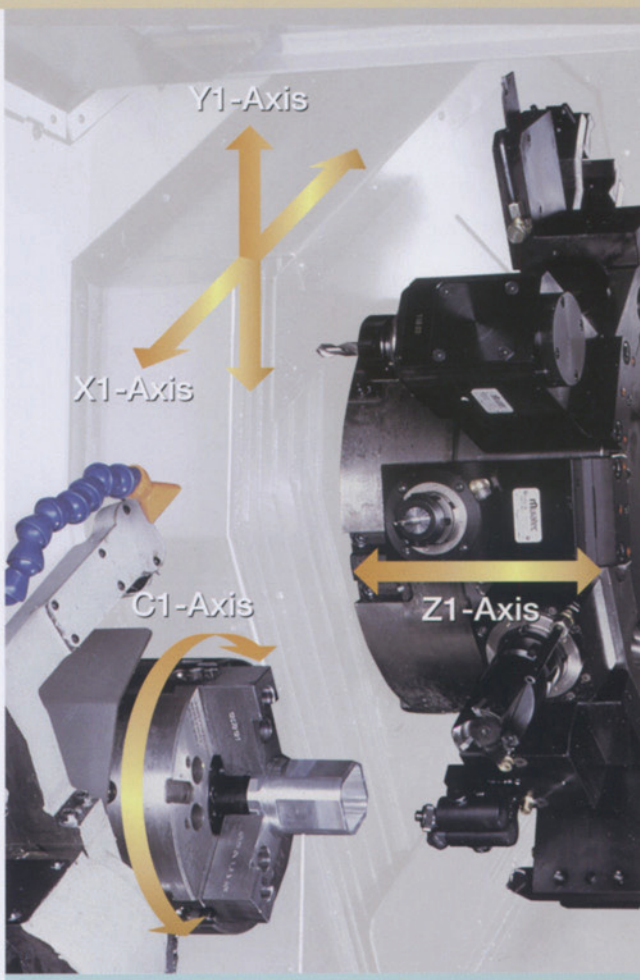
* Transfer time depends on workpiece condition

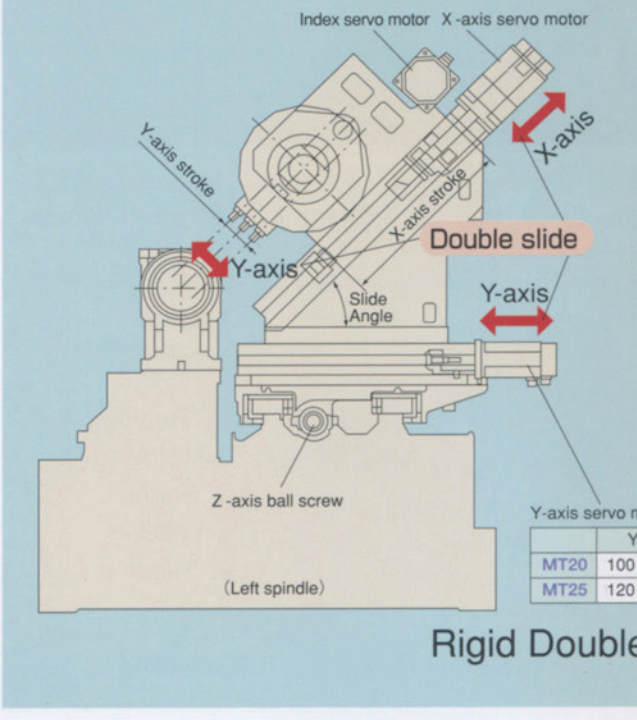


Rigid, double slide construction Y-axis (Option) [MT20, MT25]

The MT Series machines are designed using the low center of gravity concept. This design feature guarantees stable horizontal movement of the Y-axis. The X-axis is constructed on Y-axis slide. Y-axis positioning is achieved by simultaneous control of Y and X-axis slides. Servomotors are directly coupled to the ball screws to achieve highly accurate axis movements. Wide slide span results in smooth, stable axis movements to guarantee high precision.







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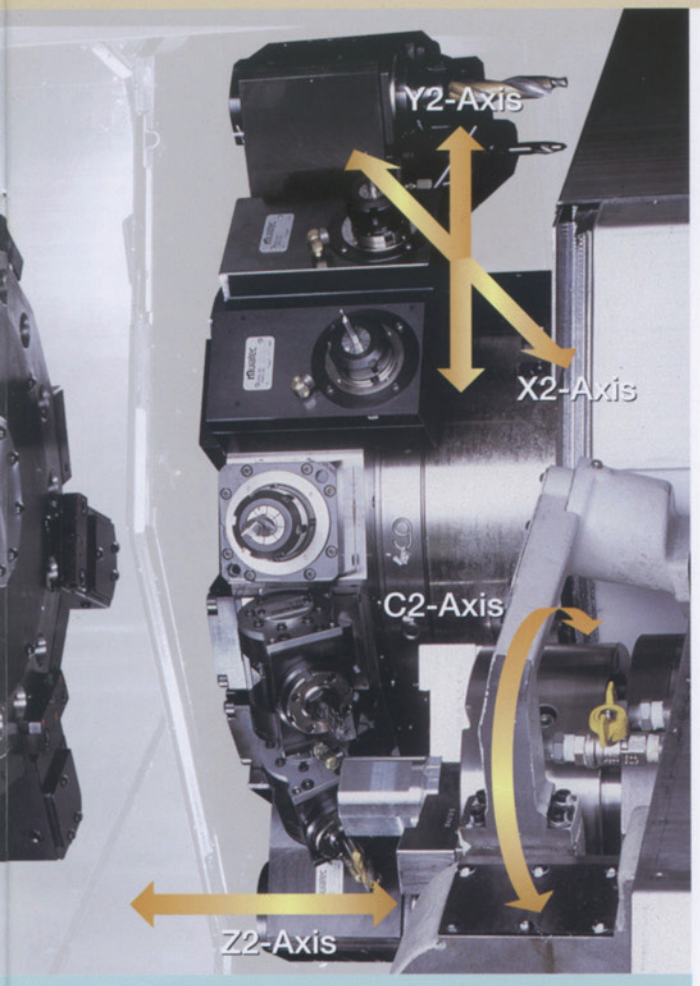
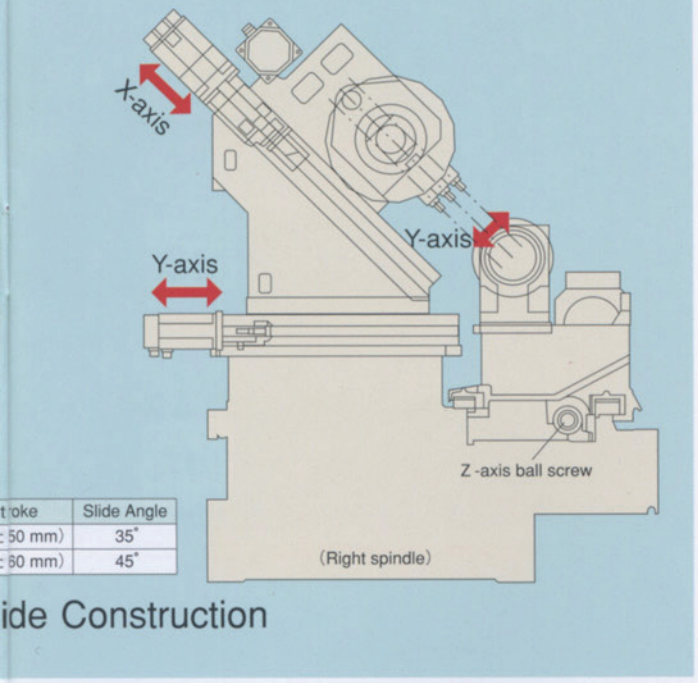




t oke	Slide Angle
50 mm)	35°
80 mm)	45°

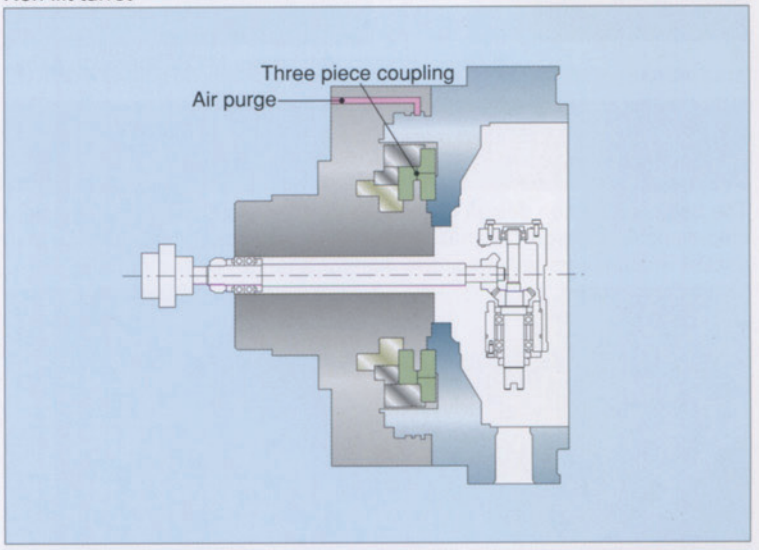
ide Construction

High speed servo driven non-lift turret index

- This is high speed turret index that servomotor is utilized for rotation.
- Non-lift type turret drive with large size coupling divided into three pieces is used for high speed and accurate indexing.
- A positive pressure air purge is provided to prevent contaminants from entering the turret.
- Turret index time

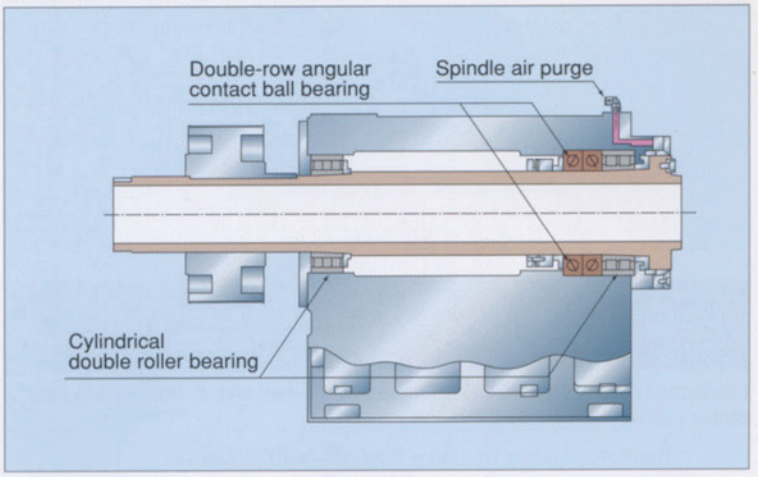
MT12	0.2 Sec/1 Station
MT20	0.3 Sec/1 Station
MT25	0.6 Sec/1 Station

Non lift turret



Stable, high speed spindle

The main spindle is evenly supported in a symmetrical head stock structure in order to prevent thermal displacement. The spindle with angular contact bearings and cylindrical double roller bearings achieves high rigidity during high speed operation. Positive pressure air purge in front of the spindle seal prevents entry of contaminants, and preserves bearings life. Our latest design spindle amplifier with HRV control realises high speed and high response current controls, enhancing velocity loop response and suppressing drop in spindle speed during load fluctuation.



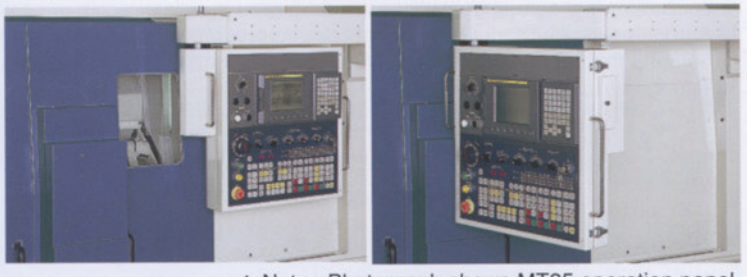
MT Series

Easy Maintenance & Safety Construction

Operator-friendly design for safe, easy workpiece

Flexible movement of operation panel

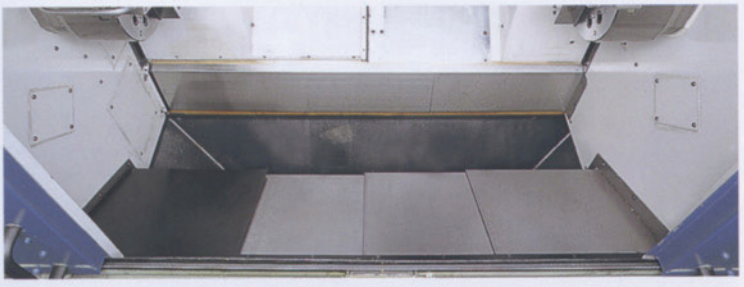
Operation panel can swing at 90° and can be set at convenient positions to set up left and right spindles and turrets.



* Note : Photograph shows MT25 operation panel.

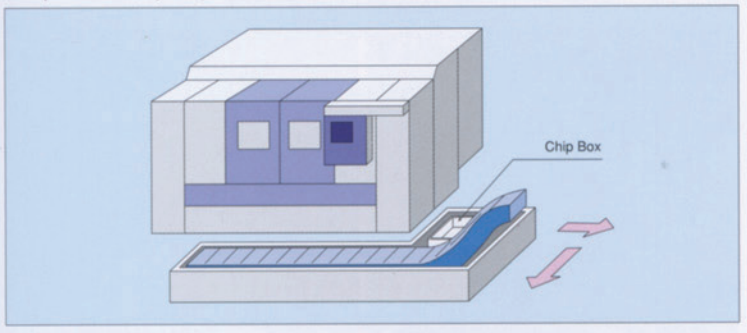
Uninterrupted chip flow and disposal

The bed construction design creates a wider area to ensure easy, efficient chip disposal in large volumes. Efficient chip disposal through wide chip pocket enables unattended production for a longer period of time.



Easy coolant tank maintenance

The coolant sump is on casters and separate from the chip conveyor. The coolant sump simply rolls out from under the front of the machine. This eases cleaning work and reduces cleaning time. Portable chip box in the coolant sump holds stray chips.

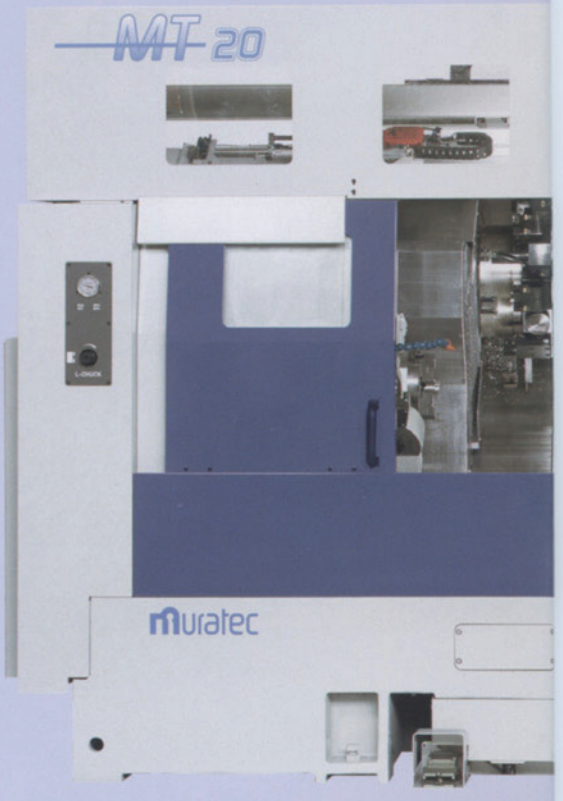


Safe operating environment

Front door incorporates a CE approved reinforced shatterproof glass having better visibility.

Reinforced glass (6 mm) + Naphtol resin (2 mm) +
Poly-carbonate (12 mm)= 20 mm Thick protection glass

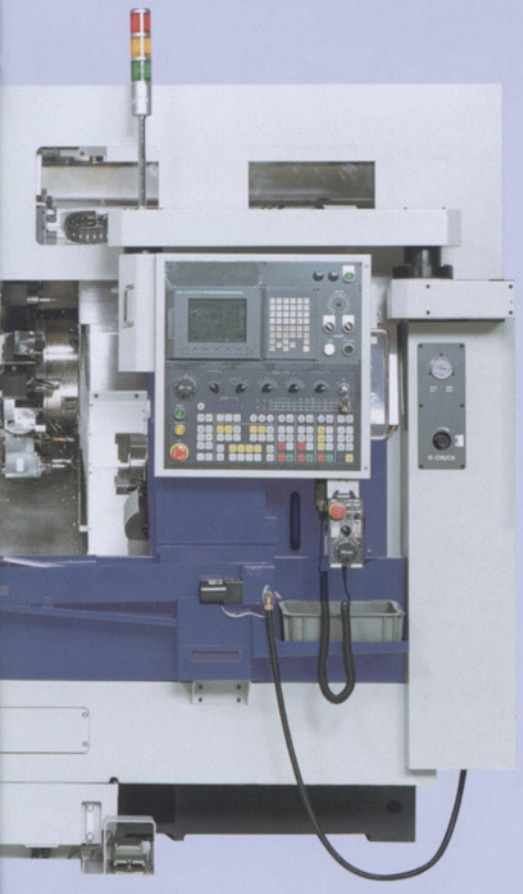
Compact

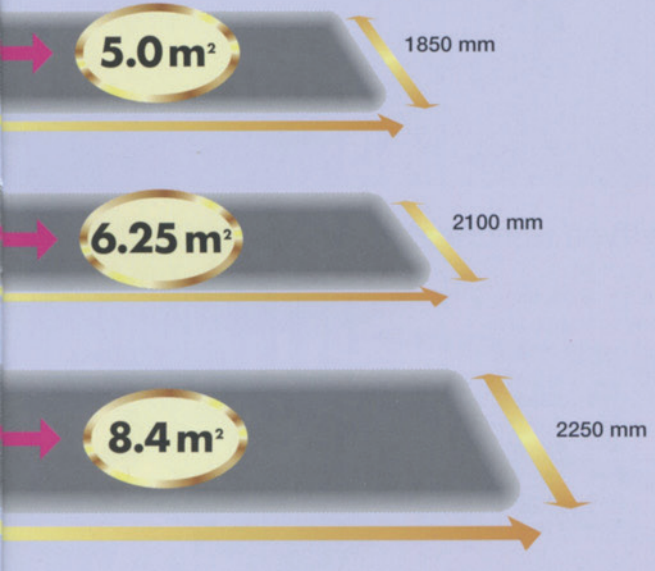


MT12	X-axis Z-axis Live tool C-axis	× 2	2700 m
MT20	X-axis Z-axis Y-axis Live tool C-axis	× 2	2980 m
MT25	X-axis Z-axis Y-axis Live tool C-axis	× 2	3700 m

set-up

design





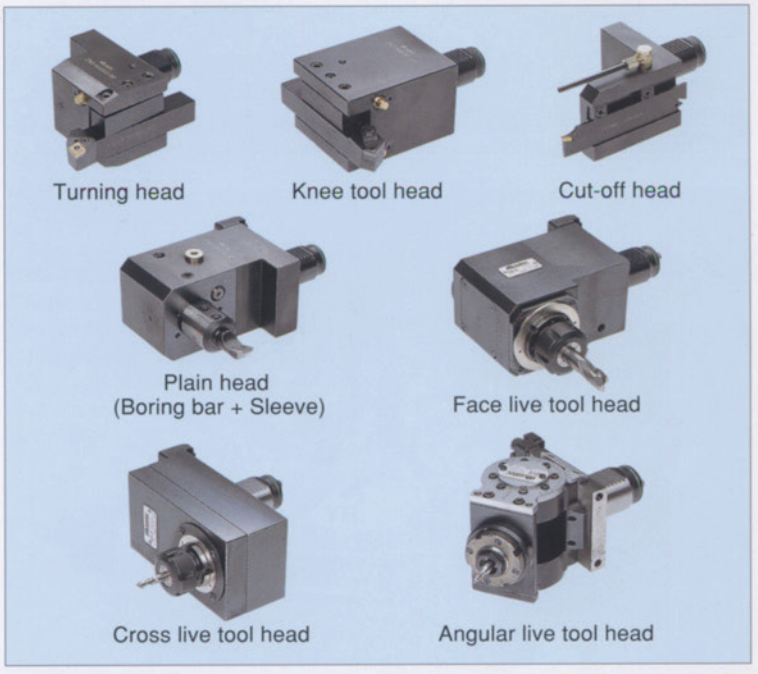
* Photograph includes several options.

Quick change VDI tooling [MT20/MT25]

VDI tooling

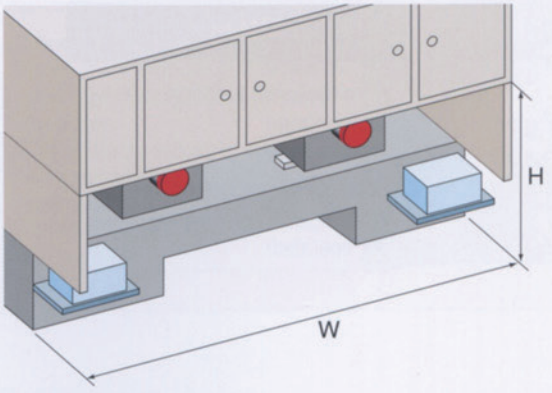
MT20 and MT25 use VDI tooling as a standard for easy and quick tool changeover.

- VDI quick-change tooling is a tooling standard used globally
- High repeatability through pre-adjusted tool holders
- Tool spindle centerline is aligned to machine spindle centerline without adjustments by the operator
- Boring bar holder aligned to center line of spindle to increase cutting tool life
- Cutting tool length and position can be adjusted without tool holder being mounted on machine
- Two layered sealing system to prevent contaminants from entering the tool holder body
- Double sealing on shank to prevent contaminants from entering into the turret



Convenient maintenance access

A wide area is open for easy access to all important maintenance items.
MT12 : W 2400 mm × H 1200 mm
MT20 : W 2630 mm × H 1240 mm
MT25 : W 2982 mm × H 1285 mm



MT Series

Integral CNC Gantry Loader

State-of-the-art automati
Fully applicable for unma

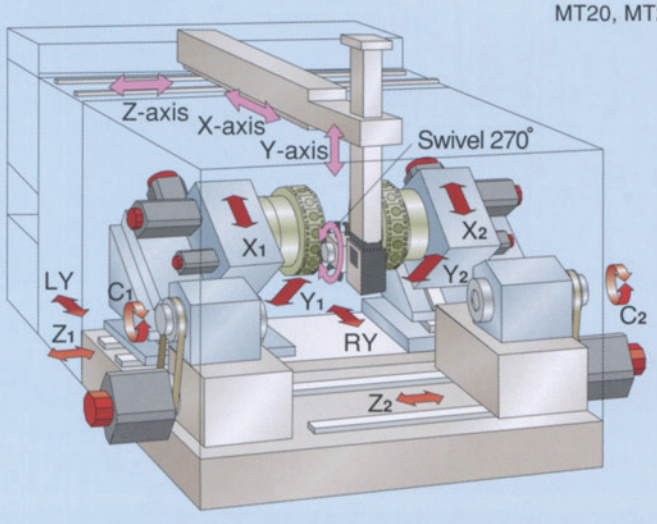
CNC Gantry loader

CNC controlled servo gantry loader is highly versatile, and has been designed for small or medium size lots with a large variety of parts. The loader can be programmed through easy and quick teach-in positions method. Used with our stacking type work feeder, highly productive unattended production is possible. MURATEC's special DELTA axis control (MT20, MT25) is used for the loader Z-axis to determine the optimum time required for traverse. Checking the stroke in the program provides this check.

Loader Specifications

		MT12	MT20	MT25
Workpiece capacity (Diameter × Length)	Size	ϕ 120 mm×100 mm	ϕ 170 mm×140 mm	ϕ 220 mm×170 mm
	Weight	3.0 kg × 2	5.0 kg × 2	8.0 kg × 2
Loader chuck stroke		ϕ 30 mm	ϕ 33 mm	ϕ 40 mm
Rapid traverse rate	Z-axis	100 m/min	120 m/min	100 m/min
	Y-axis	100 m/min	100 m/min	70 m/min
	X-axis	—	35 m/min	30 m/min
Loader chuck swivel speed		0.8 sec/90°	1.5 sec/270°	1.5 sec/270°
Loader patterns		4	4	4
Registerable loader programs		32	32	32

MT20, MT25



＊ Note : MT12 Gantry loader is 2-axis.

Easy loader programm
Easy program re-start
Easy work palletizing

Options for enhancing automation

Work size control

- Tool setter
- In-process gauging
- Post-process gauging
- Quality check counter

Others

- Auto tool shift function
- Tool counter
- Tool monitor
- Coolant blow through spindle
- Work location confirmation sensor (Air operated)

Stacking type work feeder WF14L-160Ⅱ

Number of pallets : 14
Workpiece size : ϕ 30 mm ～ ϕ 160 mm
Max. Workpiece weight : 40 kg/pallet
Max. Loading height : 450 mm

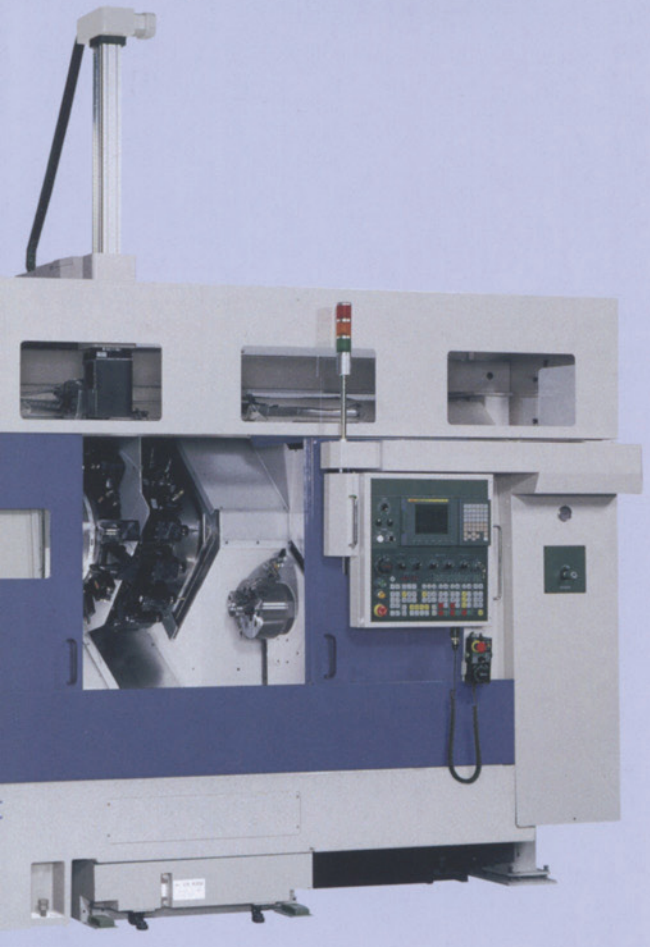
	Number of pallets	Stack height	Weight of workpiece	Workpiece diameter
WF10L-160Ⅱ	10	450 mm	40 kg/pallet	ϕ30 mm～ϕ160 mm
WF14L-160Ⅱ	14	450 mm	40 kg/pallet	ϕ30 mm～ϕ160 mm
WF20L-160Ⅱ	20	450 mm	40 kg/pallet	ϕ30 mm～ϕ160 mm
WF30L-160Ⅱ	30	450 mm	30 kg/pallet	ϕ30 mm～ϕ160 mm
WF14L-280Ⅱ	14	400 mm	50 kg/pallet	ϕ60 mm～ϕ280 mm

＊ Note : Models avail

n know-how
ned production

g

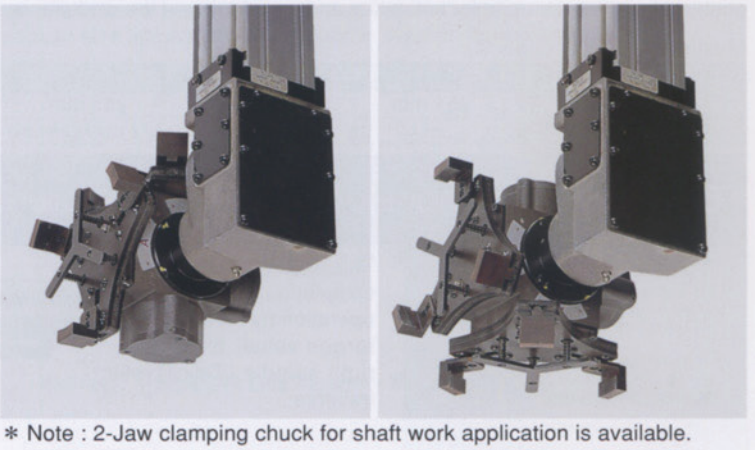
th safety interlock



* Photograph includes several options.

Gantry loader dual gripper swivel head

The loader chuck can swivel 270°. This enables flexible applications of loading/unloading all type of parts. Post-process gauges, quality checks, chutes, and post-process applications are easily accomplished.



* Note : 2-Jaw clamping chuck for shaft work application is available.

Remote pendant operator panel

Operator can quickly position the loader and set teach points at all the pick and place positions in loader pattern with this portable hand held operator panel. The panel includes a manual pulse generator.

Non stacking type work feeder WF14-300Ⅱ

Number of pallets : 14
Pallet size : 310 mm × 310 mm
Max. Workpiece weight : 30 kg/pallet

	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

o suit machine model specifications.

Tool setter

The following functions help for continuous unattended operations.

- Auto tool setter function checks tool offset amount and stores in tool geometry compensation register.
- Tool tip breakage detection function checks tool breakage by comparing actual coordinates to the pre-set value.

MT Series

Flexible Bar Work Processing
A wide variety of System Configuration

Bar-work and chuck-w
All-in-one with flexible

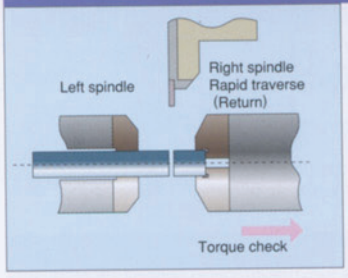
Bar work automation

MT Series turning machines are designed for high speed, precision, unattended bar work. This is accomplished by interfacing an automatic bar feeder unit to the left spindle. A parts catcher with conveyance systems or a gantry loader may be used for unloading and transferring of the workpieces.

Maximum bar size capacity

	MT12	MT20	MT25
Standard	ϕ51 mm	ϕ65 mm	ϕ65 mm
Option	—	—	ϕ71 mm (Only Left)

Simultaneous check of cut-off operation



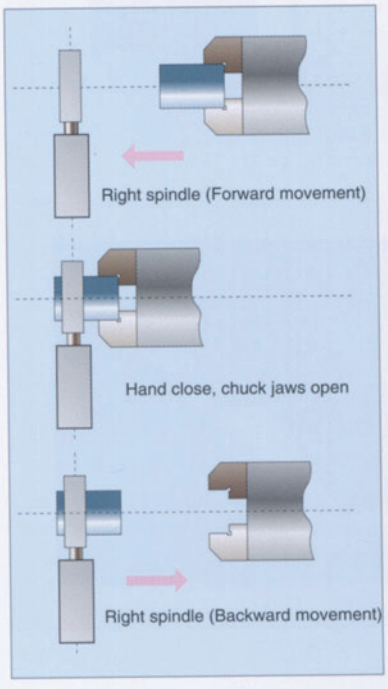
This function checks proper completion of cut-off operation by measuring torque value, to initiate right spindle (Z-axis) return traverse .

Parts catcher (option)

An optional hand type parts catcher is used to grip the finished workpiece and insure proper discharge of the finished workpiece into a tray or a conveyor.

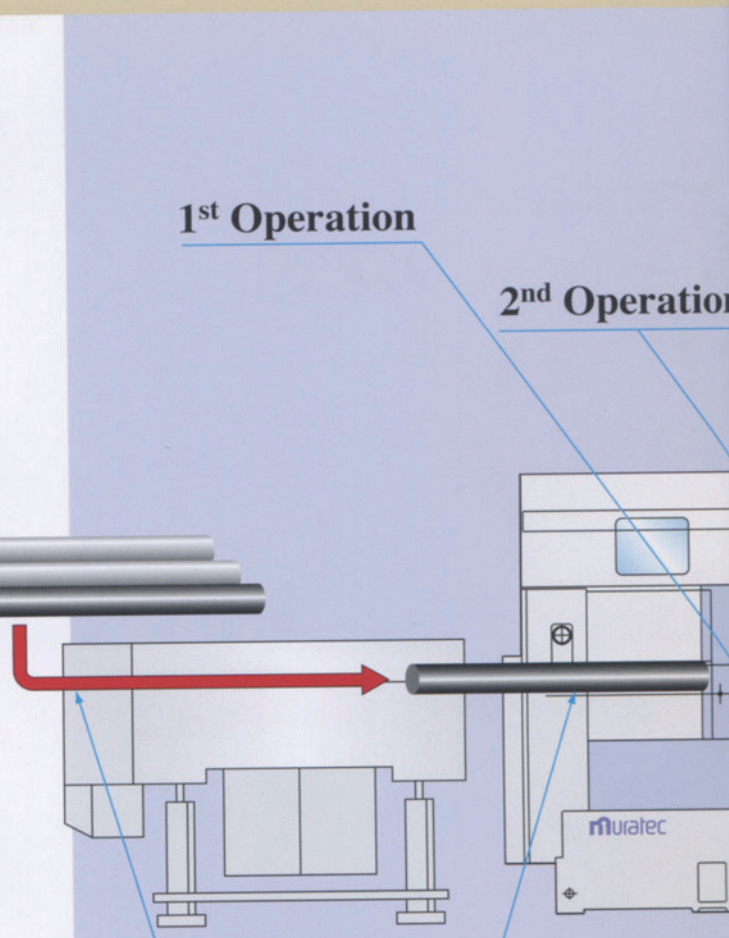
Maximum workpiece capacity (Diameter × Length)

MT12	ϕ51 mm×150 mm , Weight 2.5 kg
MT20	ϕ65 mm×160 mm , Weight 4.0 kg
MT25	ϕ70 mm×200 mm , Weight 6.5 kg



Hand Type Parts Catcher (Option)

Unload Conveyor (Option)



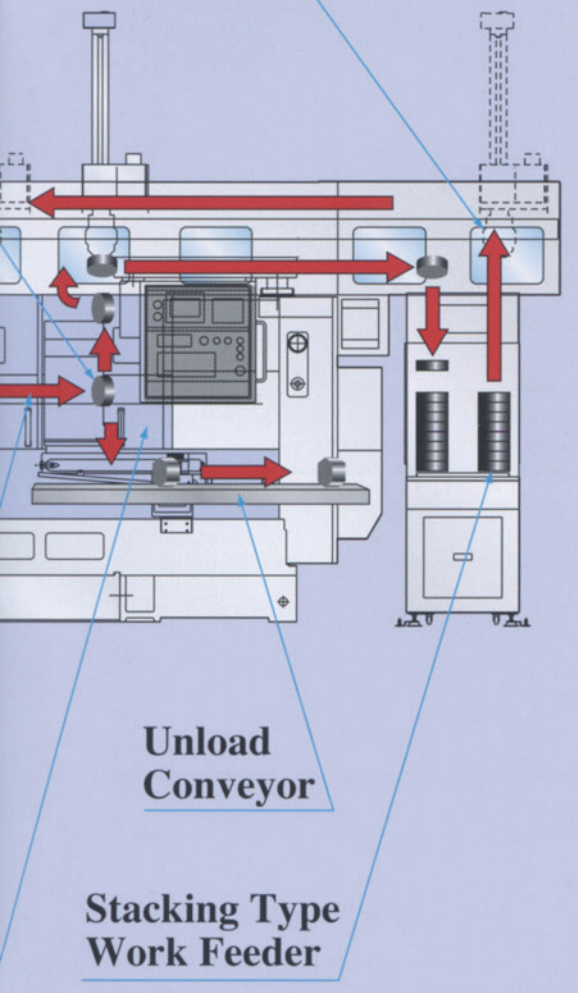
MT Series

MT12

MT20

rk flexibility
utomation

Work Handling Using Loader

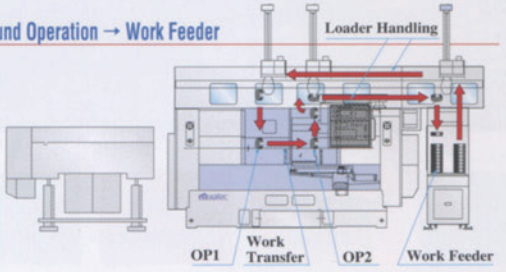


MT25

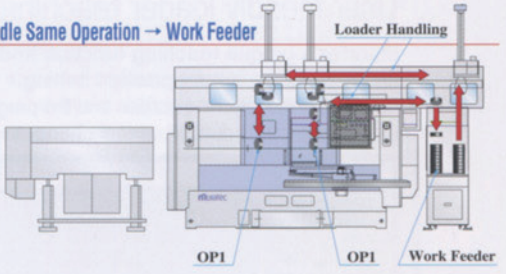
System configuration to suit customer needs

MURATEC's long experience in designing compact cells to full fledged automation systems, FMS, is used to design customer needs based system layout. A wide variety of system configuration is possible to create efficient system cells for various customer needs of small and variable parts lot, medium size lots and mass production system requirements.

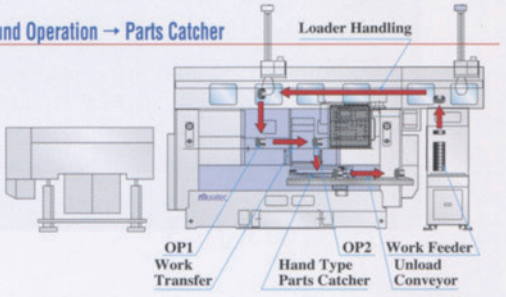
1 Work Feeder → Turnaround Operation → Work Feeder



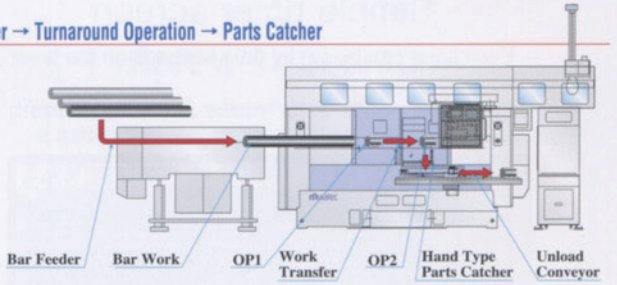
2 Work Feeder → Both Spindle Same Operation → Work Feeder



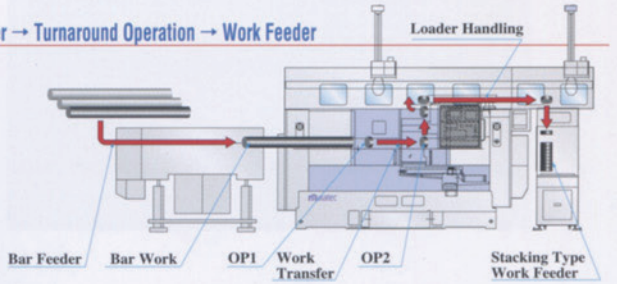
3 Work Feeder → Turnaround Operation → Parts Catcher



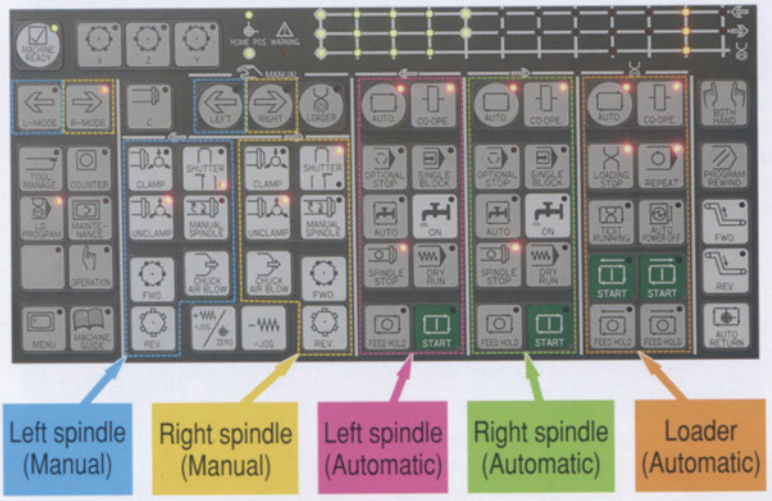
4 Bar Feeder → Turnaround Operation → Parts Catcher



5 Bar Feeder → Turnaround Operation → Work Feeder



Advanced user-friendly

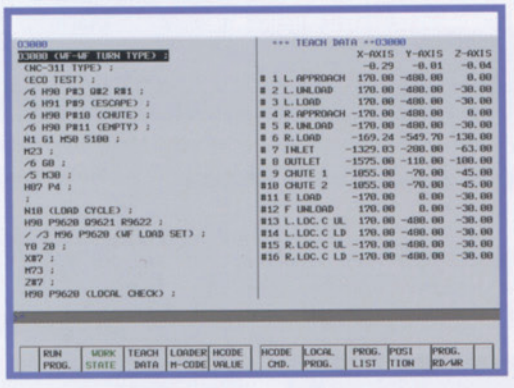


User-friendly operation panel

Operation panel buttons are clearly marked and logically grouped under left spindle, right spindle and loader. Distinction is also made for manual and automatic operation. Symbolic button labels are used for international standards.

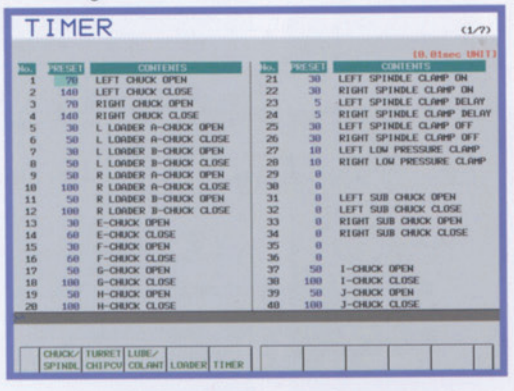
User-friendly loader teaching screen

Muratec's unique teaching function and its screen facilitate gantry loader position setting.
Using both the teaching screen and the program screen are effective in reduction of tool changeover time.



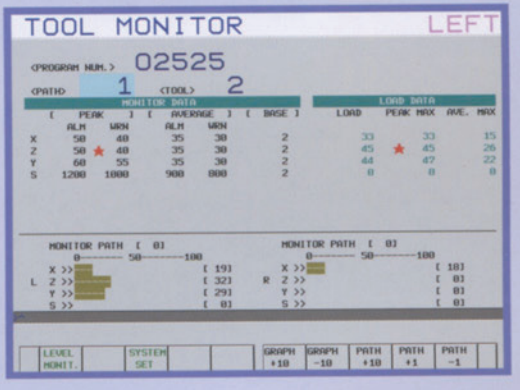
Simple timer screen

Each timer can be set by 0.01 seconds on the timer screens.
Each individual timer name provides smooth searching.



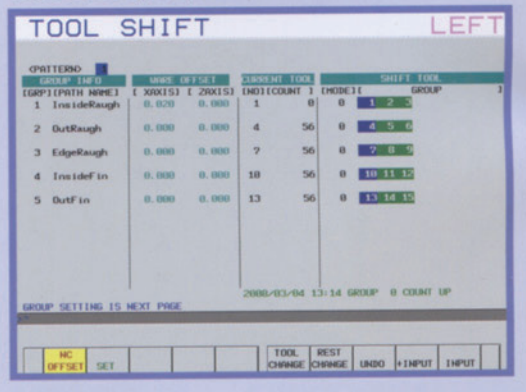
3-Stage tool monitor (option)

MT Series incorporates 3-stage tool monitor function to check abnormal load, warning load and low level cutting loads. This function helps to detect tool/ drill breakage during the cutting process.



Auto tool shift function (option)

Spare or redundant tools can be activated by tool count or tool breakage detection.
This tool monitor option is useful for continuous and unattended type operations.



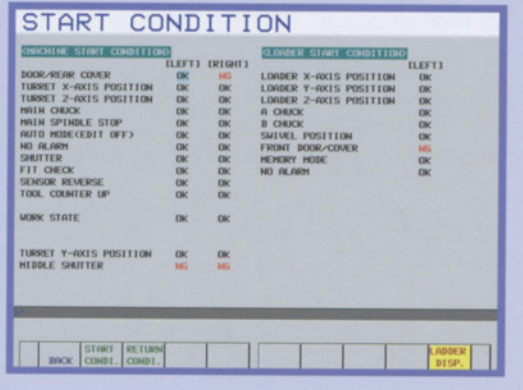
functions and displays

Abnormal load detection

MT Series turning machines uses abnormal load detection to detect abnormal load on all turret and loader axes. Any crash due to operator's mistake, programming mistake etc. will minimize severity of damage to the machine by retracting the axis.

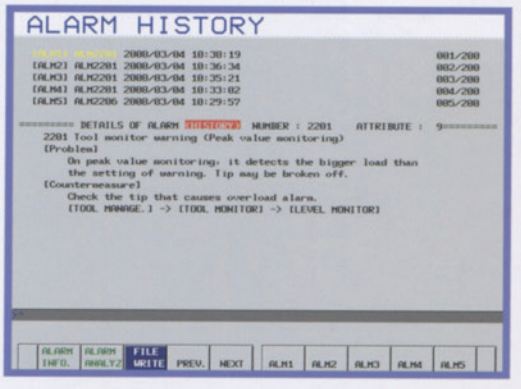
Machine guide

This function helps to check machine status and guides the operator to restore machine status for automatic operations or machine zero set.



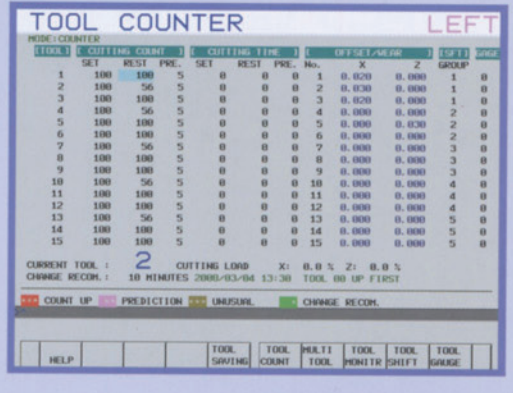
Diagnostics function

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



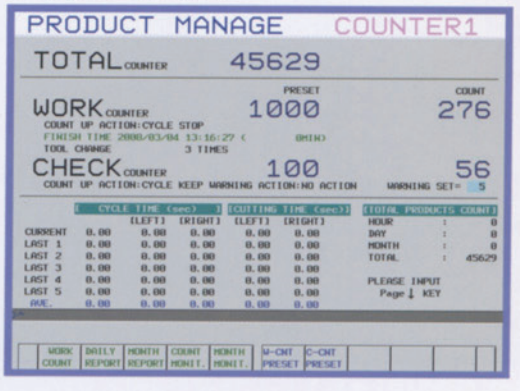
Soft tool counter

Tool life management is possible by pre-setting data at the tool counter function.



Soft work counter

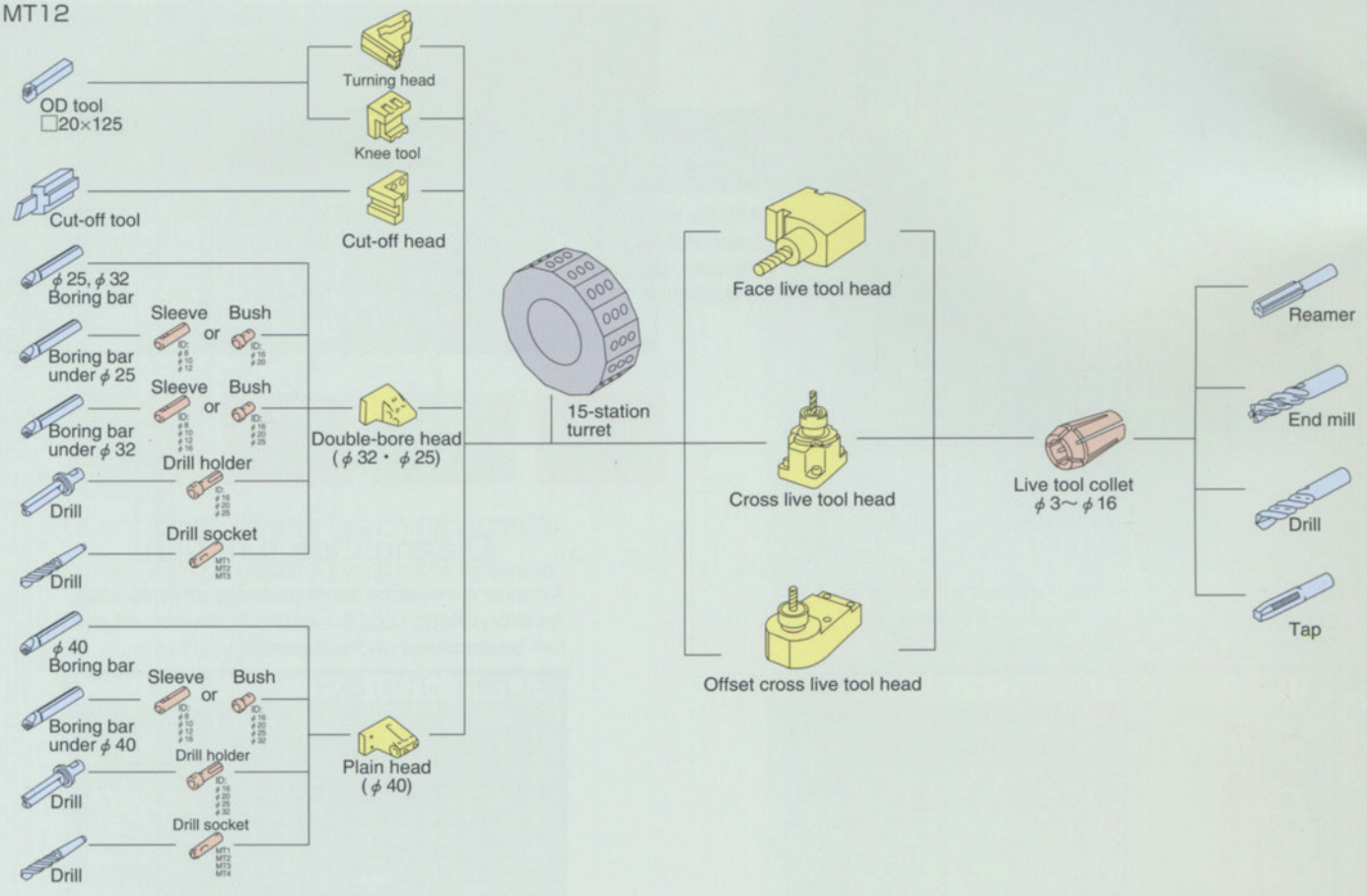
Total counter and settable work counter are provided as a standard feature.



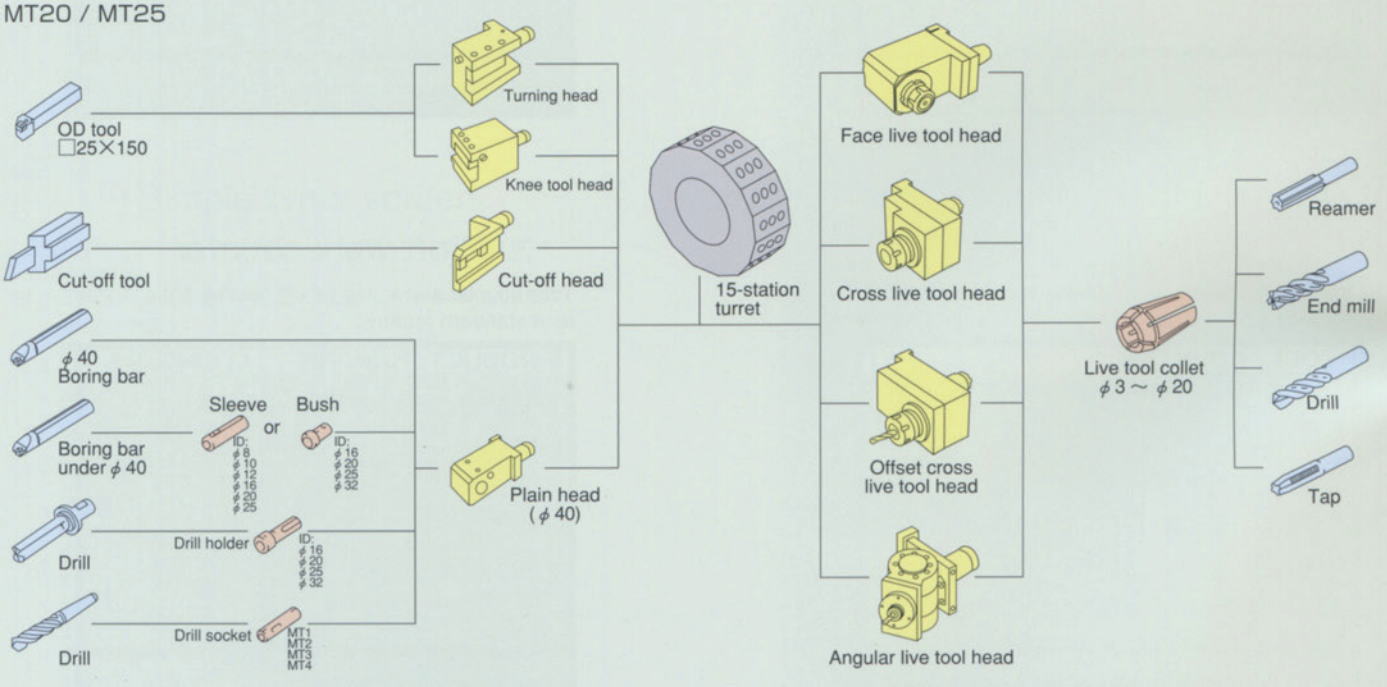
Tooling System & Too

Tooling system

MT12



MT20 / MT25

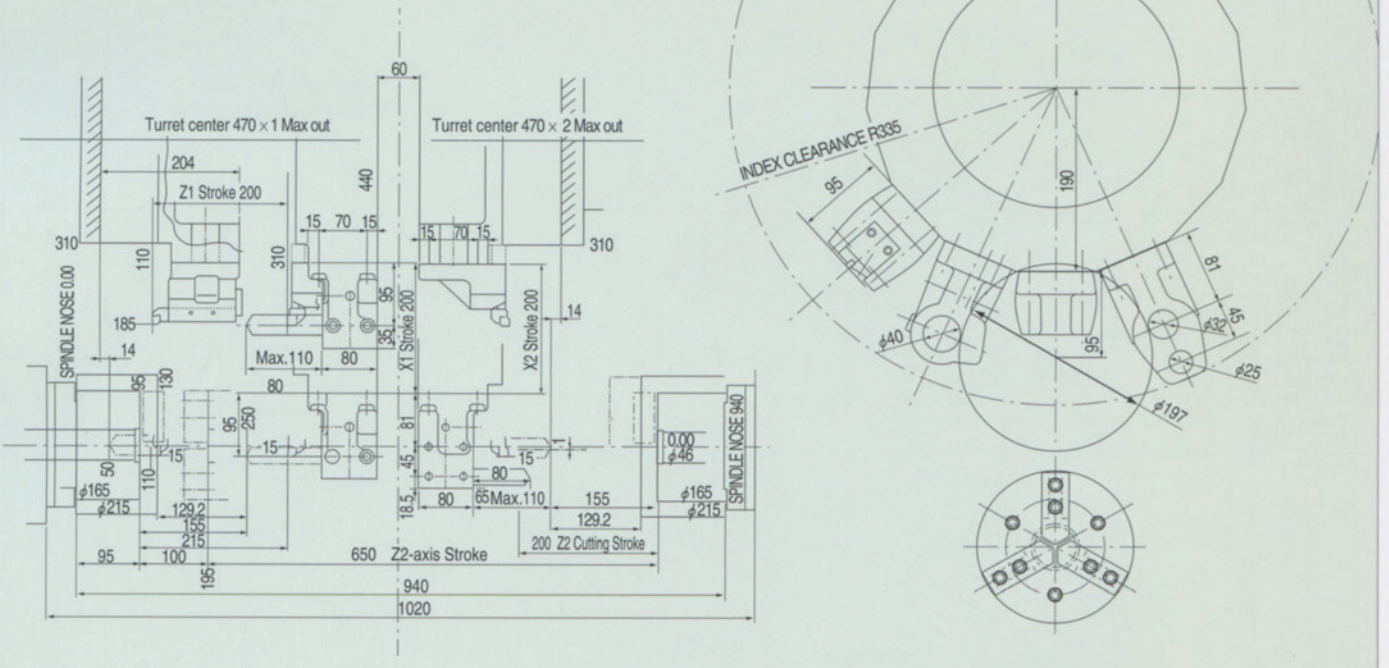


dimension drawing

MT12

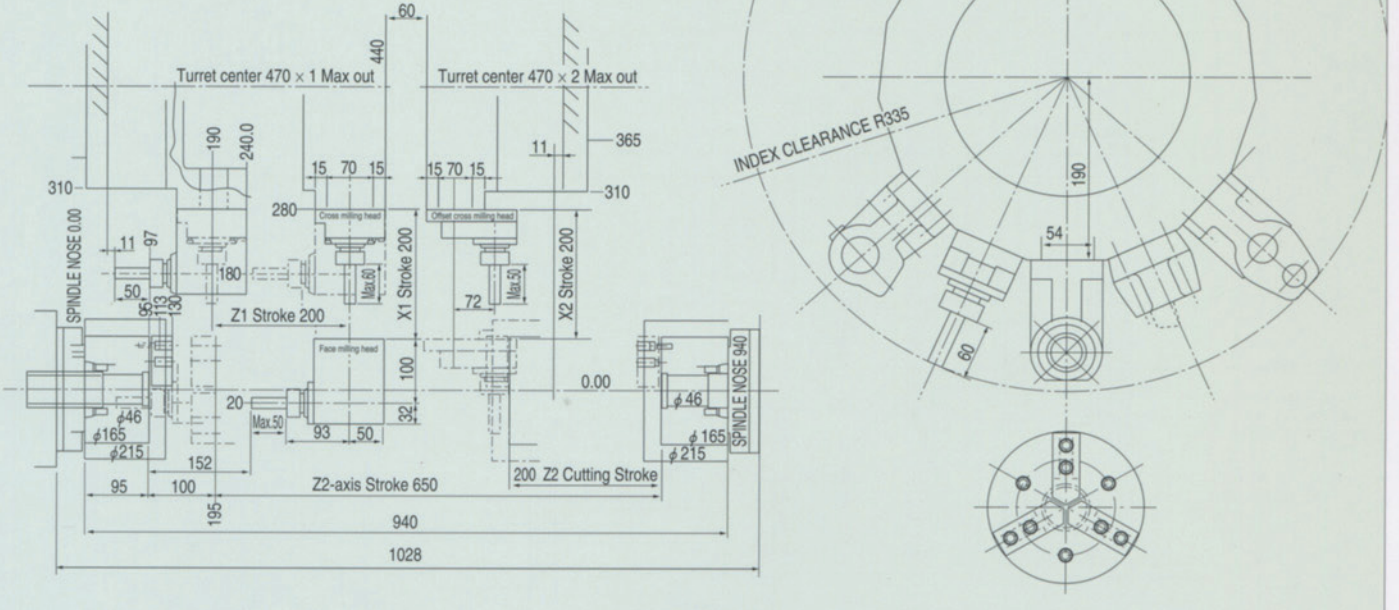
Tool dimension drawing for Turning

(unit : mm)



Tool dimension drawing for Live tools (option)

(unit : mm)

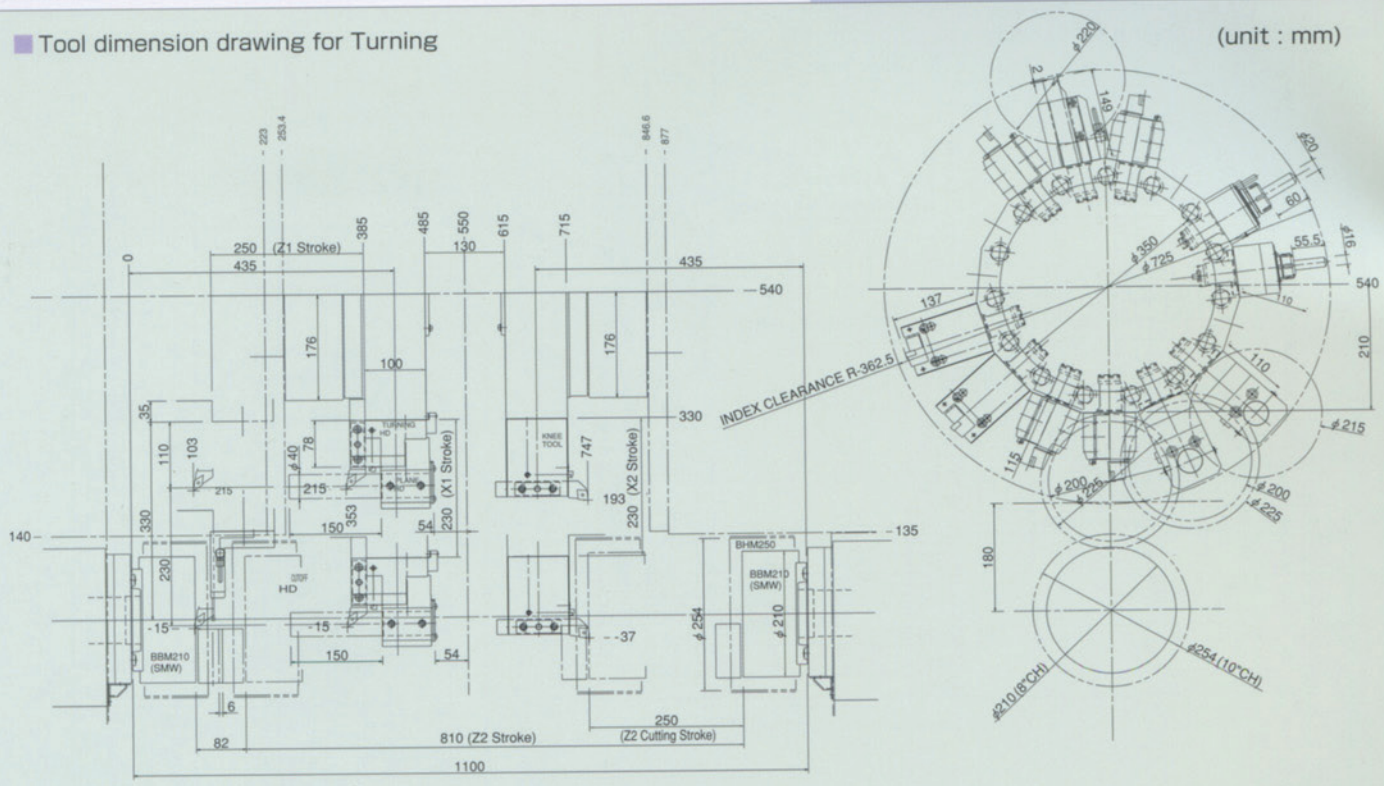


Tool dimension drawing

MT20

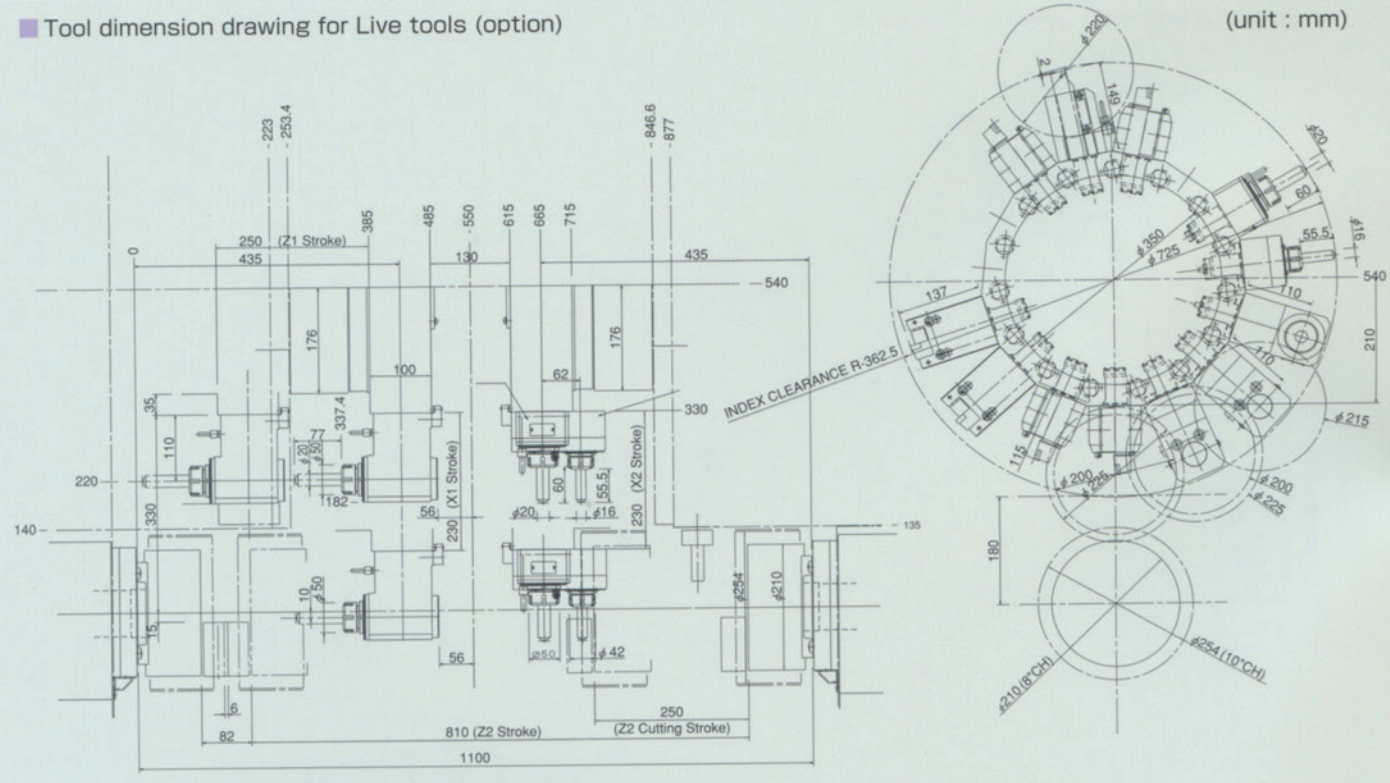
Tool dimension drawing for Turning

(unit : mm)



Tool dimension drawing for Live tools (option)

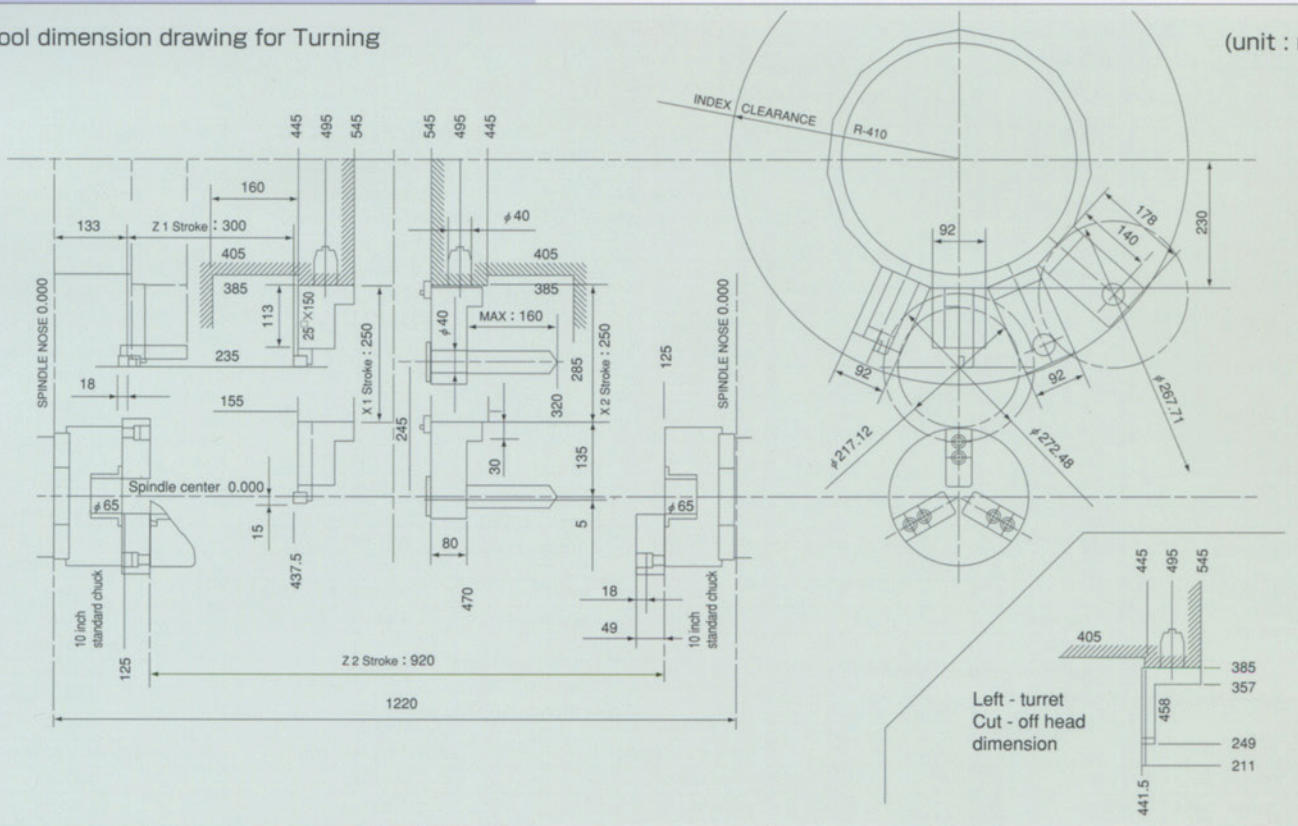
(unit : mm)



MT25

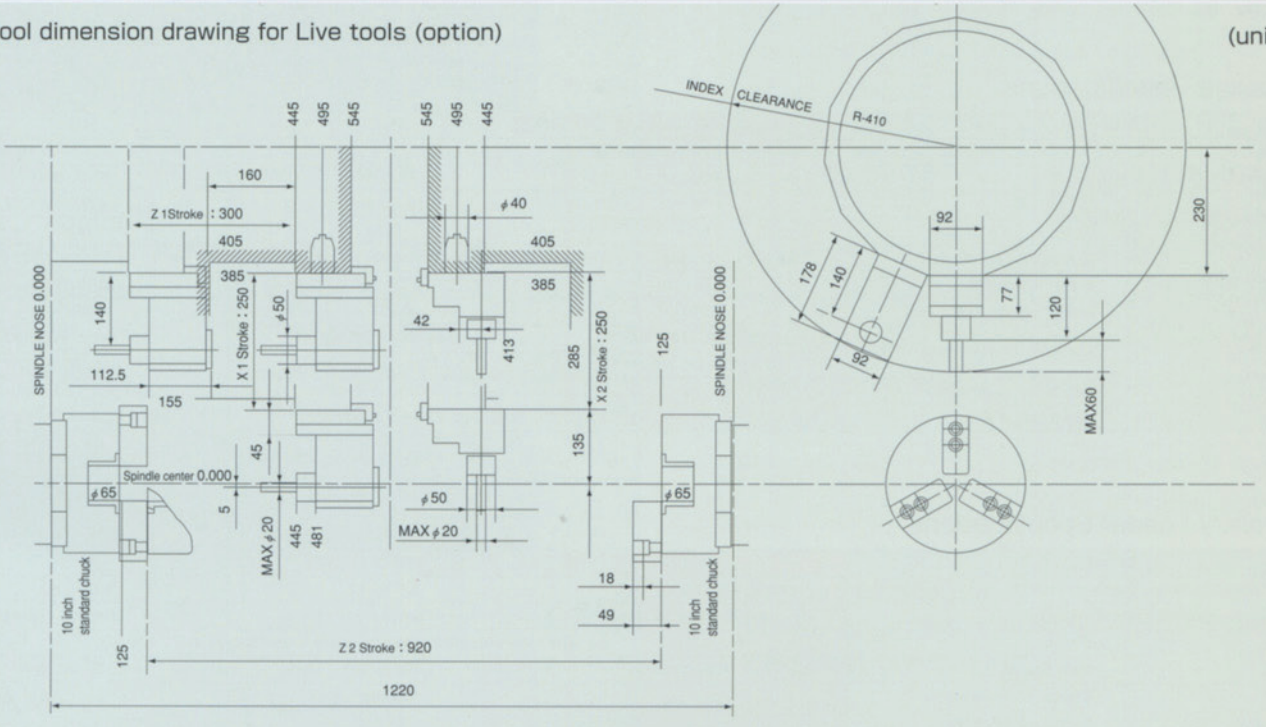
Tool dimension drawing for Turning

(unit : mm)



Tool dimension drawing for Live tools (option)

(unit : mm)



Machine & CNC specif

Basic Machine Specifications

Contents		MT12	MT20	MT25
Maximum chuck size	Standard	ϕ 165 mm (6 inch)	ϕ 210 mm (8 inch)	ϕ 254 mm (10 inch)
	Option	ϕ 210 mm (8 inch)	—	—
Number of turret stations		15	15	15
Specification of cutting axes for turret	X-axis	200 mm 24 m/min	230 mm 20 m/min	250 mm 16 m/min
	Z1-axis	200 mm 24 m/min	250 mm 24 m/min	300mm 18m/min
	Z2-axis	650 mm 24 m/min (Work transfer : 32 m/min)	850 mm 24 m/min (Work transfer : 32 m/min)	920 mm 18 m/min (Work transfer : 24 m/min)
	Y-axis	—	± 50 mm 20 m/min	± 60 mm 10 m/min
Use tool	O.D. tool	□ 20 mm	□ 25 mm	□ 25 mm
	I.D. tool	ϕ 40 mm	ϕ 40 mm	ϕ 40 mm
Spindle drive motor	Standard	7.5 kW/30min x 2	15 kW/30min x 2	15 kW/30min x 2
	Option	11 kW/30min x 2	18.5 kW/30min x 2	22 kW/30min (Left spindle only)
Spindle speed range	Standard A	45 ~ 4500 rpm	42 ~ 4200 rpm	25 ~ 2500 rpm
	Standard B	30 ~ 3000 rpm	—	35 ~ 3500 rpm
	Standard C	60 ~ 6000 rpm (7.5kW)	—	40 ~ 4000 rpm
Spindle diameter at front bearing mounting	Standard	ϕ 90 mm	ϕ 110 mm	ϕ 110 mm
	Option	—	—	ϕ 120 mm (Left spindle only)
Diameter of spindle bore	Standard	ϕ 62 mm	ϕ 77 mm	ϕ 77 mm
	Option	—	—	ϕ 83 mm (Left spindle only)
Spindle nose size		JISA2-5	JISA2-6	JISA2-6
Spindle draw tube diameter	Standard	ϕ 52 mm	ϕ 66 mm	ϕ 66 mm
	Option	—	—	ϕ 72 mm (Left spindle only)
Maximum bar workpiece size	maximum diameter : Standard	ϕ 51 mm	ϕ 65 mm	ϕ 65 mm
	maximum diameter : Option	—	—	ϕ 71 mm (Left spindle only)
	maximum length	800 mm	1150 mm	1300 mm
Foot print		2700 mm x 1850 mm	2980 mm x 2100 mm	3700 mm x 2250 mm
Total weight (with tools, without loader)		5,200 kg	10,400 kg	10,000 kg
Total weight (with tools and loader)		5,600 kg	10,800 kg	10,400 kg

Live Tooling Specifications

Contents		MT12	MT20	MT25
Live tool drive motor		2.7 kW (12 Nm/continuous)	3.0 kW (12 Nm/continuous)	4.0 kW (22 Nm/continuous)
Maximum speed		4000 rpm	3600 rpm	3000 rpm
Maximum tool shank size	Milling	ϕ 16 mm	ϕ 20 mm	ϕ 20 mm
	Tapping	M16	M16	M16
Spindle positioning function	C-axis control	Positioning Accuracy : ± 0.015°	Positioning Accuracy : ± 0.015°	Positioning Accuracy : ± 0.015°
	Maximum speed	200 rpm	100 rpm	100 rpm
	Least command increment	0.001°	0.001°	0.001°
Spindle brake	Hydraulic brake torque	185 Nm (18.9 kgf) [4.4 Mpa (45 kgf/cm²)]	148 Nm (15.1 kgf) [3.5 Mpa (35 kgf/cm²)]	185 Nm (18.9 kgf) [3.5 Mpa (35 kgf/cm²)]
	Additional air pressure brake torque	—	17 Nm (1.7 kgf) [0.4 Mpa (4 kgf/cm²)]	21 Nm (2.16 kgf) [0.4 Mpa (4 kgf/cm²)]

CNC Gantry Loader Specifications

Contents		MT12	MT20	MT25
Loader workpiece handling capacity (weight)		3.0 kg x 2	5.0 kg x 2	8.0 kg x 2
Loader workpiece handling capacity (size)		ϕ 120 mm x 100 mm	ϕ 170 mm x 140 mm	ϕ 220 mm x 170 mm
Z-axis(Left/Right)	Stroke	The gantry loader Z-axis stroke adjustable to layout.		
	Max. Speed	100 m/min	120 m/min	100 m/min
Y-axis(Up/Down)	Stroke (3 Jaws type)	585 mm	666 mm	850 mm
	Stroke (2 Jaws type)		766 mm	
	Max. Speed	100 m/min	110 m/min	70 m/min
X-axis(Front/Rear)	Stroke	—	150 mm	150 mm
	Max. Speed	—	35 m/min	30 m/min
α -axis	Stroke	270°	270°	270°
	Cycle time	1.5 sec/270°	1.5 sec/270°	1.5 sec/270°
Jaw Stroke	Loader/ T/A unit	ϕ 40 mm	ϕ 30 mm	ϕ 36 mm

cations

CNC specifications

Contents			Specifications
Number of axes controlled	MT12		2 axes (X_1, Z_1) + 2 axes (X_2, Z_2)
	MT20	Standard	2 axes (X_1, Z_1) + 2 axes (X_2, Z_2)
	MT25	Option	3 axes (X_1, Y_1, Z_1) + 3 axes (X_2, Y_2, Z_2)
X,Y,Z axes position feed back			Absolute pulse coder
Least input increment		X-axis	0.001 mm (on diameter)
		Y-axis	0.001 mm [MT20,MT25] (option)
		Z-axis	0.001 mm
Least move increment		X-axis	0.0005 mm/P
		Y-axis	0.001 mm/P [MT20,MT25] (option)
		Z-axis	0.001 mm/P
Traverse rate	Rapid traverse		G00 X- axis: MT12 : 24,000 mm/min; MT20 : 20,000 mm/min; MT25 : 16,000 mm/min
			G00 Y- axis (option): MT20 : 20,000 mm/min; MT25 : 10,000 mm/min
			G00 Z- axis: MT12 : 24,000 mm/min; MT20 : 24,000 mm/min; MT25 : 18,000 mm/min
	Cutting feed rate		G01 mm/rev, mm/min (inch/rev, inch/min)
	Thread cutting		F: 0.0001 - 500.0000 mm/rev
	Continuous thread cutting		Straight, taper, face thread
Manual jog feed rate			0 to 1260 mm/min
Manual handle feed rate			0.001 mm/div., 0.01 mm/div., 0.1 mm/div.
Override	Cutting feed rate		0 to 110% (for every 10%)
	Rapid feed rate		0/25/50/100%
	Spindle speed		50 to 120% (for every 10%)
Tool function no. of sets of tool offsets			T4 Digit (2+2) 32 sets
Assistant function			M-code (3-digit)
Display unit			10.4" color LCD
Memory capacity			64K Byte (80 m each spindle)
Auto Input coding recognition			EIA RS244, ISO 840 automatic judgment
Manual data input			MDI Multi-block command input/running
Reference point return			G27, G28
Program format			Absolute/Increment commands in 1 block
Maximum number of programs			63
Program No.			10 Digit, Program name-31 characters
Subprogram			10 fold nesting
Canned cycle			G90, G92, G94
Miscellaneous			Alarm description display, Help function, Parameter setting display, Self-diagnostics function, Alarm history display, Number of running spindle rotation display, Running speed display

Other CNC functions

- Optional block skip
- Emergency stop
- Feed hold
- Optional stop
- Program number search
- Sequence number search
- Decimal point designation/calculator type
- Circular radius R designation
- Auto coordinate system set
- Work cordinate system direct input
- Data protect key switch
- Canned cycle for drilling (G80 - G89)
- Nose radius compensation (G40 - G42)
- Background edit
- Clock function
- Dwell (G04; seconds unit)
- Machine lock
- Dry run mode
- Single block mode
- Sequence number display : 5 digit
- Second reference point return
- Chamfering and corner R
- Diameter / radius designation
- Work cordinate system unit
- Stored stroke limit
- Multiple repetitive cycle (G70-G76)
- Offset value program input (G10)
- Display of run time and parts count
- Synchronization M-code
- Custom macro B

Other standard functions

Auto zero return	Standard	X_1, Z_1, X_2, Z_2 - axis
	Option	X_1, Y_1, Z_1, X_2, Y_2, Z_2 - axis
Cut-off sensor		Torque detection type
Work counter (LCD)		8 digit. Left/Right with preset function
Total counter (LCD)		8 digit. Left/Right
Soft tool counter (LCD)		6 digit. Left/Right 15 pairs
Foot switch		Left/Right 1 each
Manual pulse generator		0.001 mm, 0.01 mm, 0.1 mm
Work light		LED, 2 No. Light-up with power ON
Work light ON/OFF switch		LCD soft switch
Coolant nozzle near chuck		Left/Right one each (M8 coolant ON)
Coolant unit		Coolant tank, pump, piping
Reader/Punch interface		Memory Card
Help menu		Operation, zero return information, M-code list
Alarm display		Alarm contents, measures, concerned LS No., DGN No., are displayed on LCD

Safety specifications

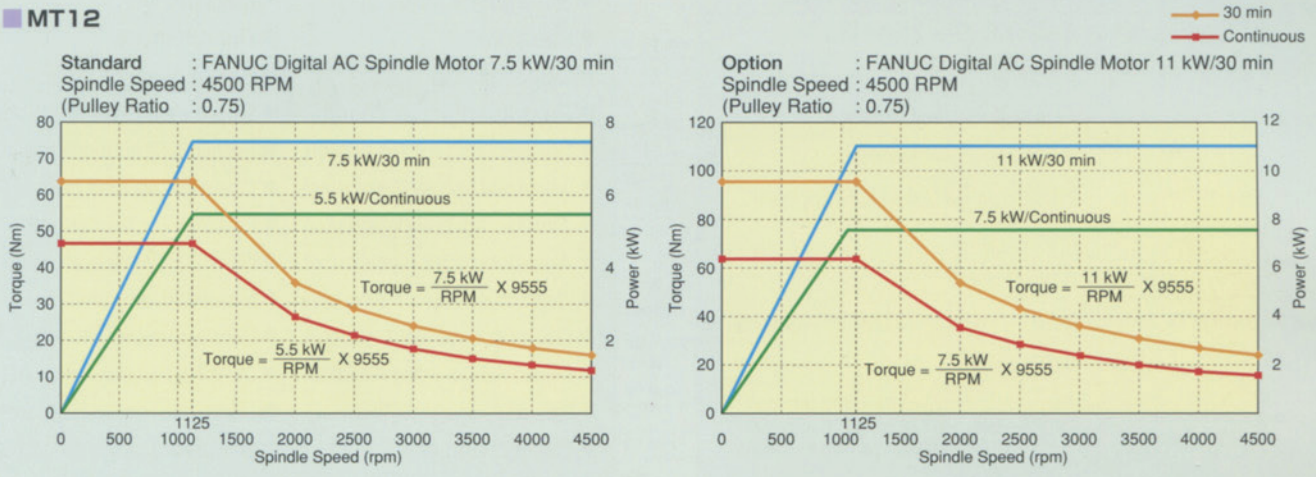
For EU countries, machines are built with CE-safety conformity.

* Machine appearance may differ to that shown in the photographs.
* All specifications are subject to change without notice.

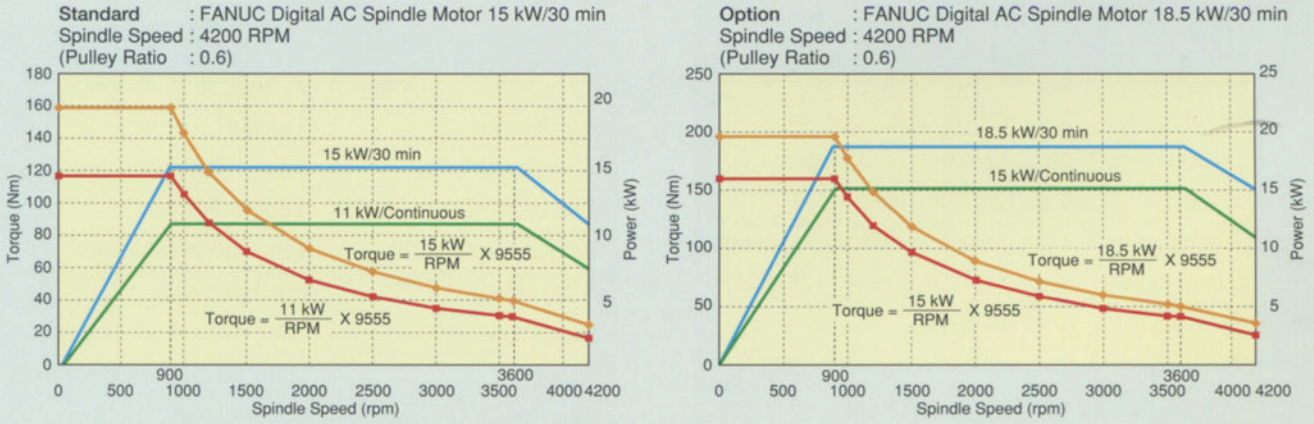
Spindle output power characteristics

Spindle output power characteristics

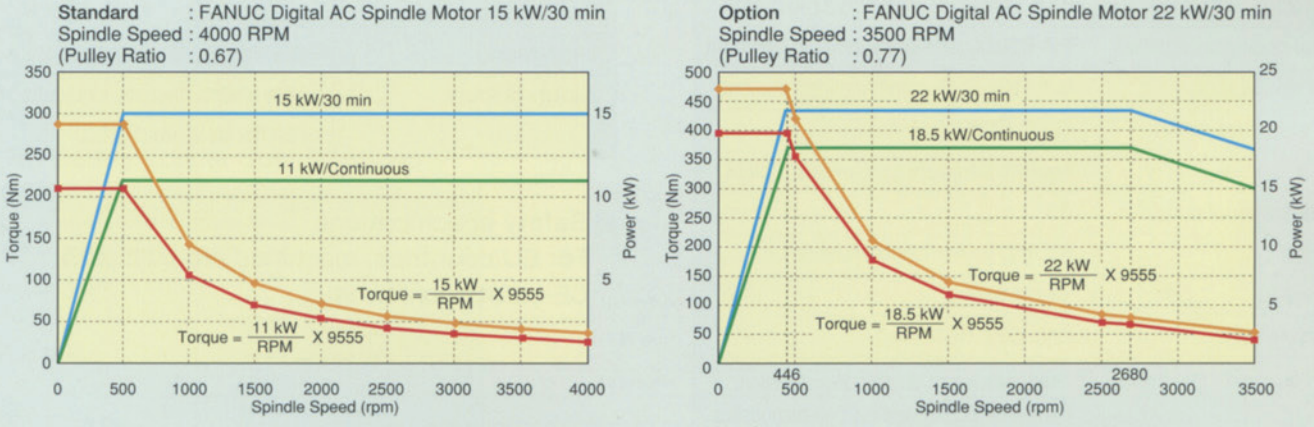
MT12



MT20



MT25



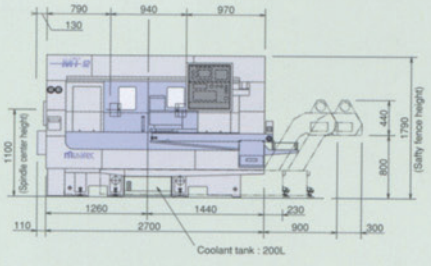
Floor plan

Floor plan

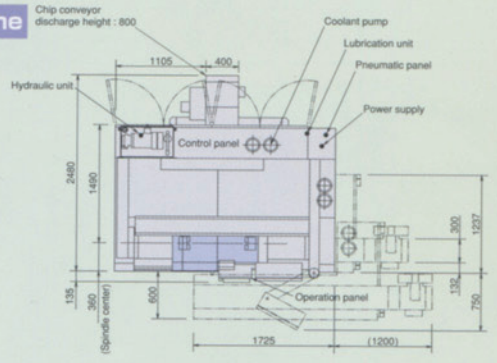
MT12

(unit : mm)

Front



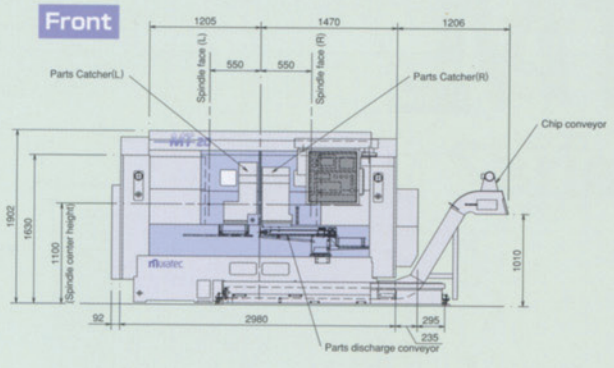
Plane



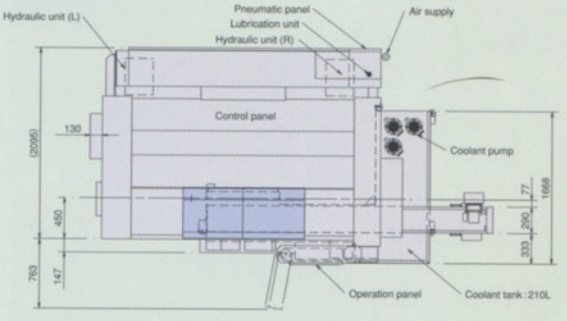
MT20

(unit : mm)

Front



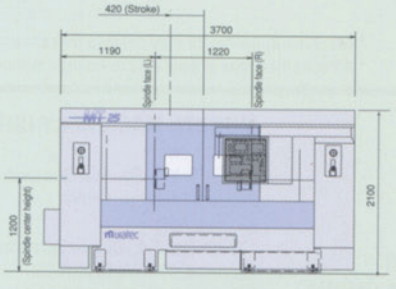
Plane



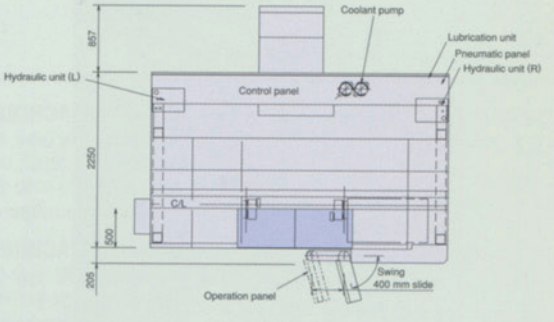
MT25

(unit : mm)

Front



Plane



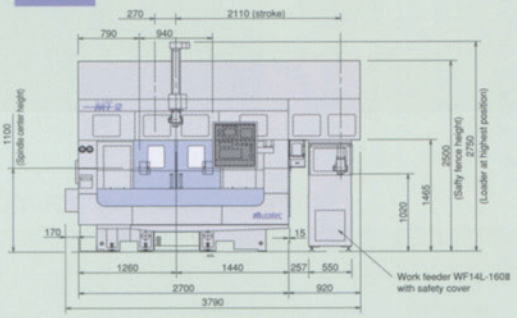
External paint color — Standard : Light Gray / Gray Blue
Other colors available on special order.

Floor plan (Gantry loader type)

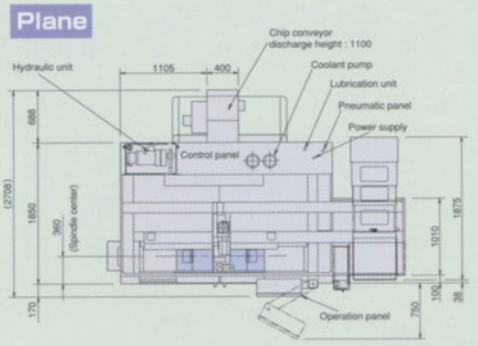
MT12

(unit : mm)

Front



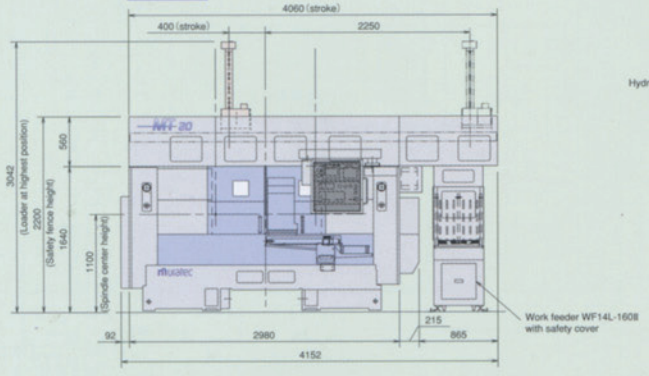
Plane



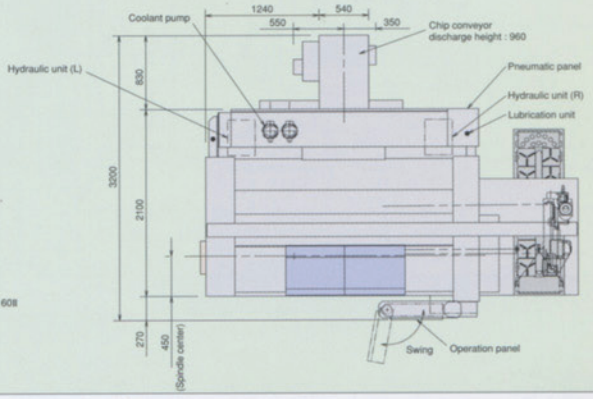
MT20

(unit : mm)

Front



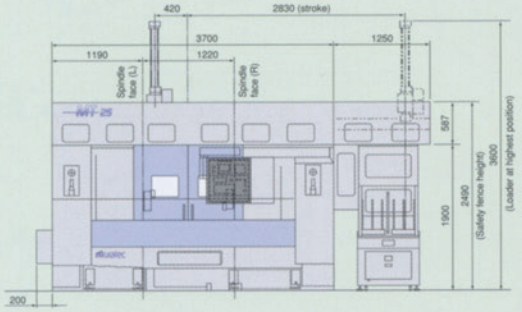
Plane



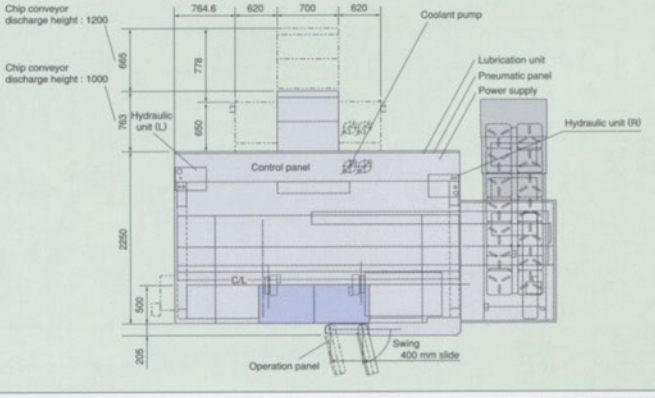
MT25

(unit : mm)

Front



Plane



External paint color

Standard : Light Gray / Gray Blue
Other colors available on special order.

■Safety Sp cification
For EU countries, machines are built with CE-safety conformity.

* Machine appearance may differ to that shown in the catalogue pictures.
* All specifications are subject to change without advance notice.

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