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TAKAMAZ
高松機械工業株式会社

CNC 1Spindle ! Turret Precision Lathe
～Next Generation Model of XL-100～

XT-6

NEW

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Machine Outline

XL-100

Adding
Additional
Value

XT-6

Machine Width
1360mm

Z axis st.
280mm

Maintaining current concept and in pursuit of

Higher Accuracy

Higher productivity

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Basic Concept

- High Accuracy
- Space Saving
- Higher Rigidity
- Improved Productivity
- Versatile Optional Accessories
- Loaders selectable by customer’s request
- Improved Workability and Safety

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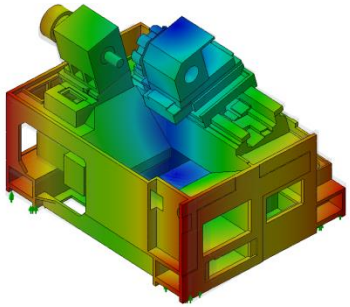
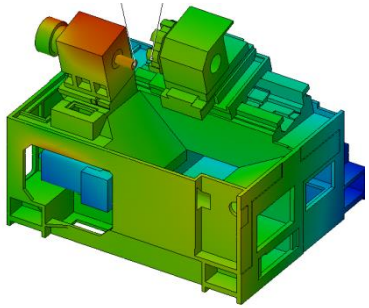
High Accuracy (1/2)

- Machine Bed Structure in pursuit of Higher Accuracy





Adopted pretention structure on X axis. Improved slides rigidity by computer analysis. Adopted machine structure for better thermal stability by thermal displacement analysis.

Thermal displacement φ7micron(In 8 hours), φ2micron (1 hour stop)

(Note：This is not our guaranteed value.)

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High Accuracy (2/2)

- Low center of gravity

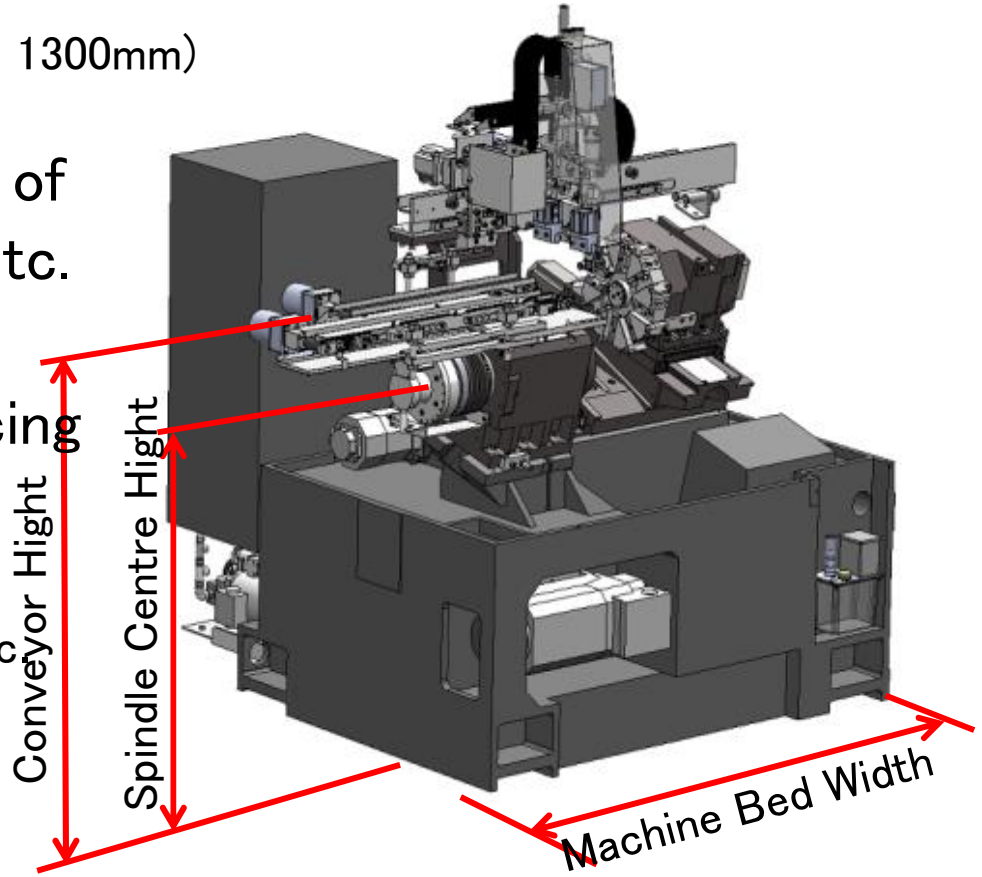
Spindle Center Hgt. *960mm* (XL-100 1050mm)

Conveyor Hgt. *1200mm* (XL-100 1300mm)

Improved Easy change-over of Spindle chuck, Loader grippers, etc.

Easy supply of parts by reducing hight of conveyors

Stable Accuracy on surface, etc by reducing vibration from Lower center of gravity structure



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High Rigidity & Accuracy Machining Capability

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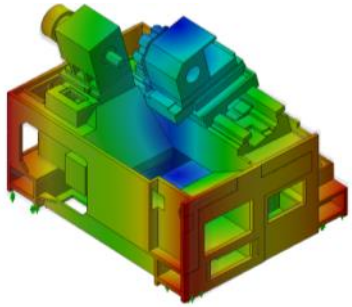
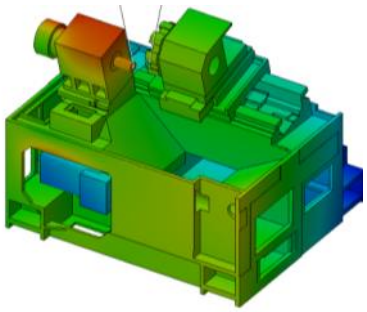
FEM Analysis





Bed Weight.
Appxt.100kg Increased
+
Optim. Rib Structure

O.D. Hvy. cutting

Cutting Depth 4mm
Feed rate 0.4mm/rev
Cross.Sect.Cut.Area
1.6mm²
(Const. Ratio)

(d × f)

O.D.Grooving

Cutting Depth 4mm
Feed rate 0.1mm/rev
Width 5mm
From face of Chuck
100mm

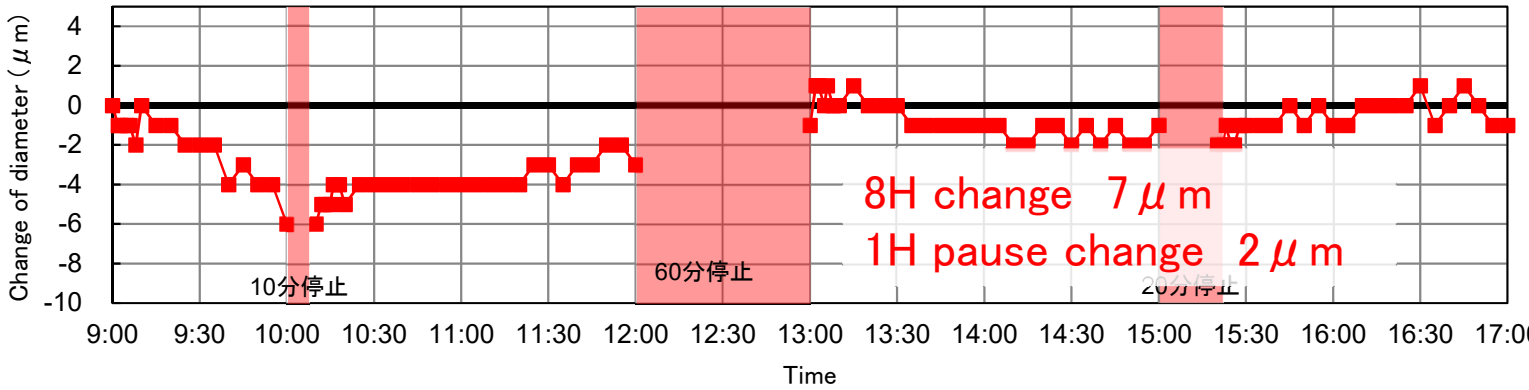
Grv.Width /Dist. from chuck

Drilling

Drill Dia. 25mm
Feedrate 0.3mm/rev

Feed rate

Change of Machined Dia.



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Space Saving

Improved capacity with maintaining space savings

Floor Space 1．86㎡

Realized the same compactness as previous model with machine width 1,360mm, floor space 1.86㎡ and improved machining capability, speed and machine operability.

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High Rigidity

Adopted larger X axis slide and improved slide rigidity

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Improved Productivity(1/3)

1. Realized shorter machining time by increasing rapid traverse on X / Z axis.
   Increased 20% Drilling capability by increased motor out-put of Z axis.

2. Realized shorter air-cut time by high speed servo controlled index.（0.7sec./station), (1.0sec./full station)

   ＊（**The above time includes clamping/unclamping time of turret.**

3. Realized shorter spindle acceleration/deceleration time to contribute shorter cycle time by high speed settings of spindle parameters.

Accel. Time (0→4,500min-1)	50% Reduction
Decel. Time(4,500 →0 min-1)	50% Reduction

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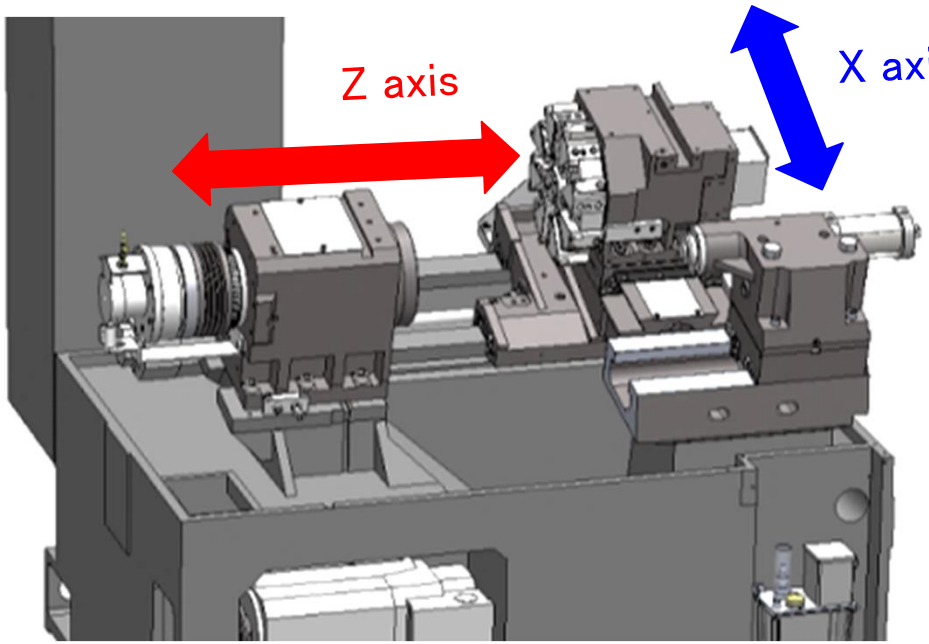
Improved Productivity (2/3)

Increased Rapid Traverse rate



X axis rapid trvs. 18m/min
(XL-100 12m/min)

Full stroke turn around time 26% Faster
(Compared to XL-100) (-0.13s)

Z axis rapid trvs. 24m/min
(XL-100 18m/min)

Z axis rapid trvs. 23% Faster
(Compared to XL-100) (-0.15s)

By increasing the output of
Z axis motor

Machining capability of drills

20% Improved

(Compared to XL-100)

Shortening of Idle time

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Improved productivity (3/3)

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Built-in Spindle (OP)

Realized shorter Acceleration / Deceleration time by Built-in Spindle (OP)

Motor Spec.: 11/7.5kW(FANUC)
Chuck Size : 5 inch
Max. Spindle Speed: 8000min^{-1}

Spindle Acceleration/Deceleration time
Built-in Spindle (8000min^{-1})
4500min^{-1} 0.72s
Standard spec.: (4500min^{-1})
4500min^{-1} 1.53s

Half time of standard spec.'s ! !
Reduction of air-cutting time.

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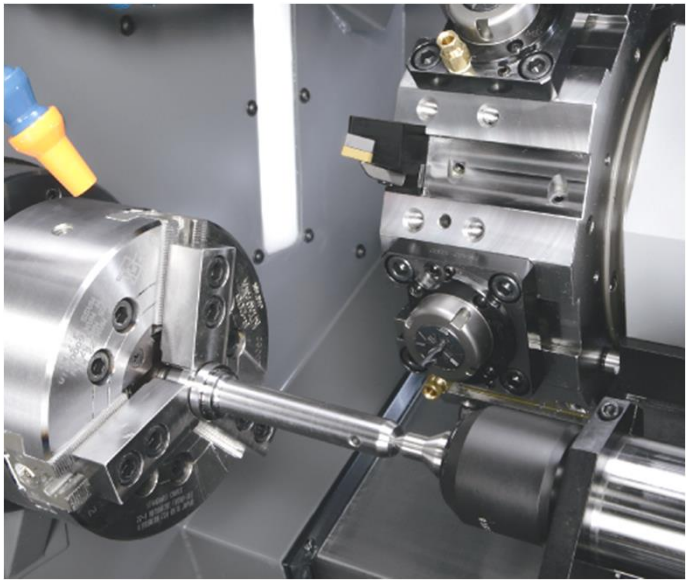
Versatile Optional Accessories (Power tools)

- Adaptable for versatile machining by power tools.(XT-6M)



Process Integration such as drilling or grooving by using drills or end mills to one machine becomes possible.

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Versatile Optional Accessories (Power Tools)

Power Tools Specifications （XT-6M)

Item			Unit	XT-6M
Power tools	Tool Post Type			12 pos. turret
	Output		kW	2.2
	No. of Tools		pcs	6
	Rotation speed		min^{-1}	4000
	Cap.	Drill	mm	10
		End mill	mm	10
		Tap	mm	6
Spindle index	Type			Cs axis
	Rapid traverse		deg/min^{-1}	18000

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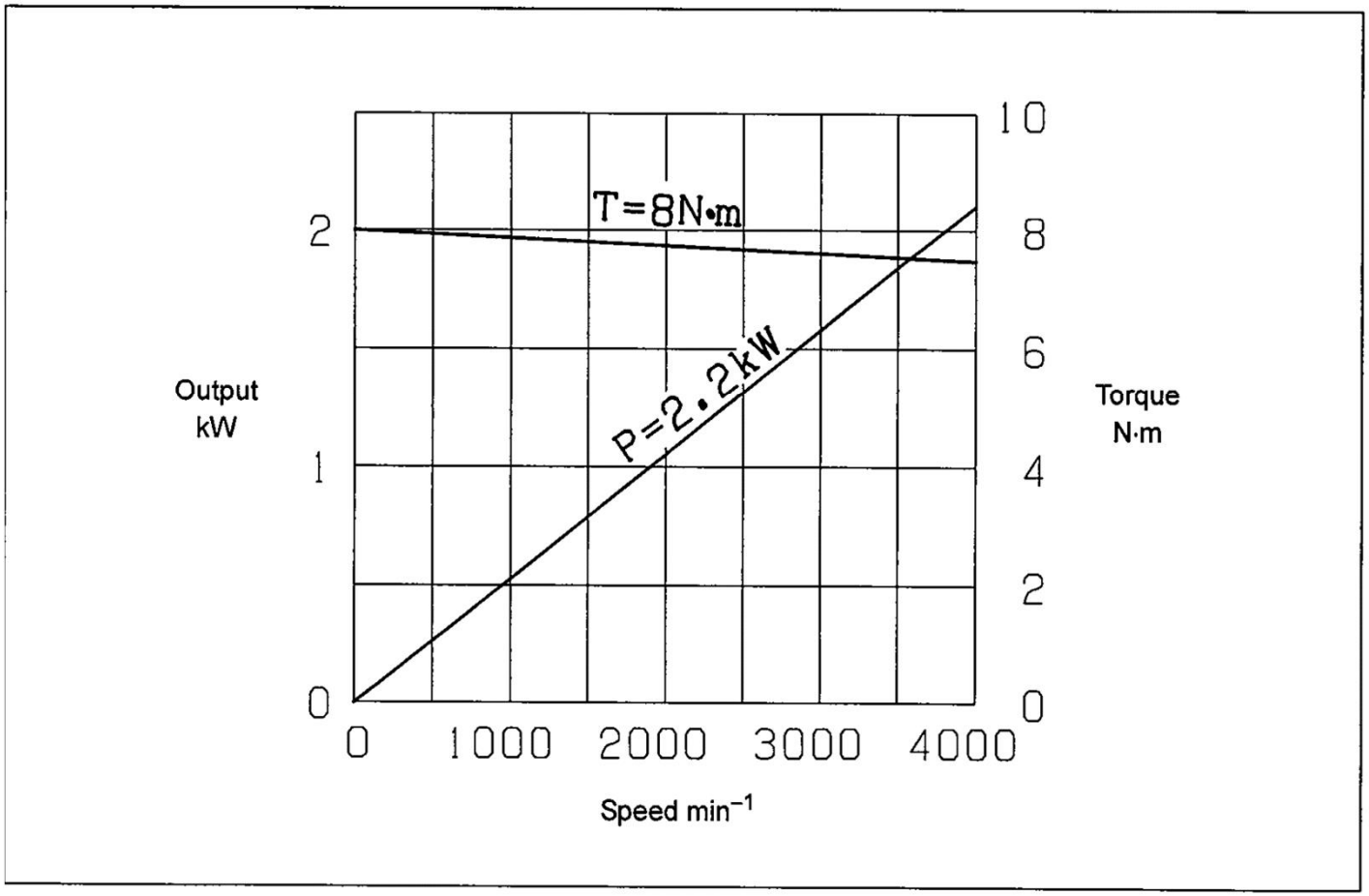
Versatile Optional Accessories (Power Tools)

Power Tool Motor Output Characteristics



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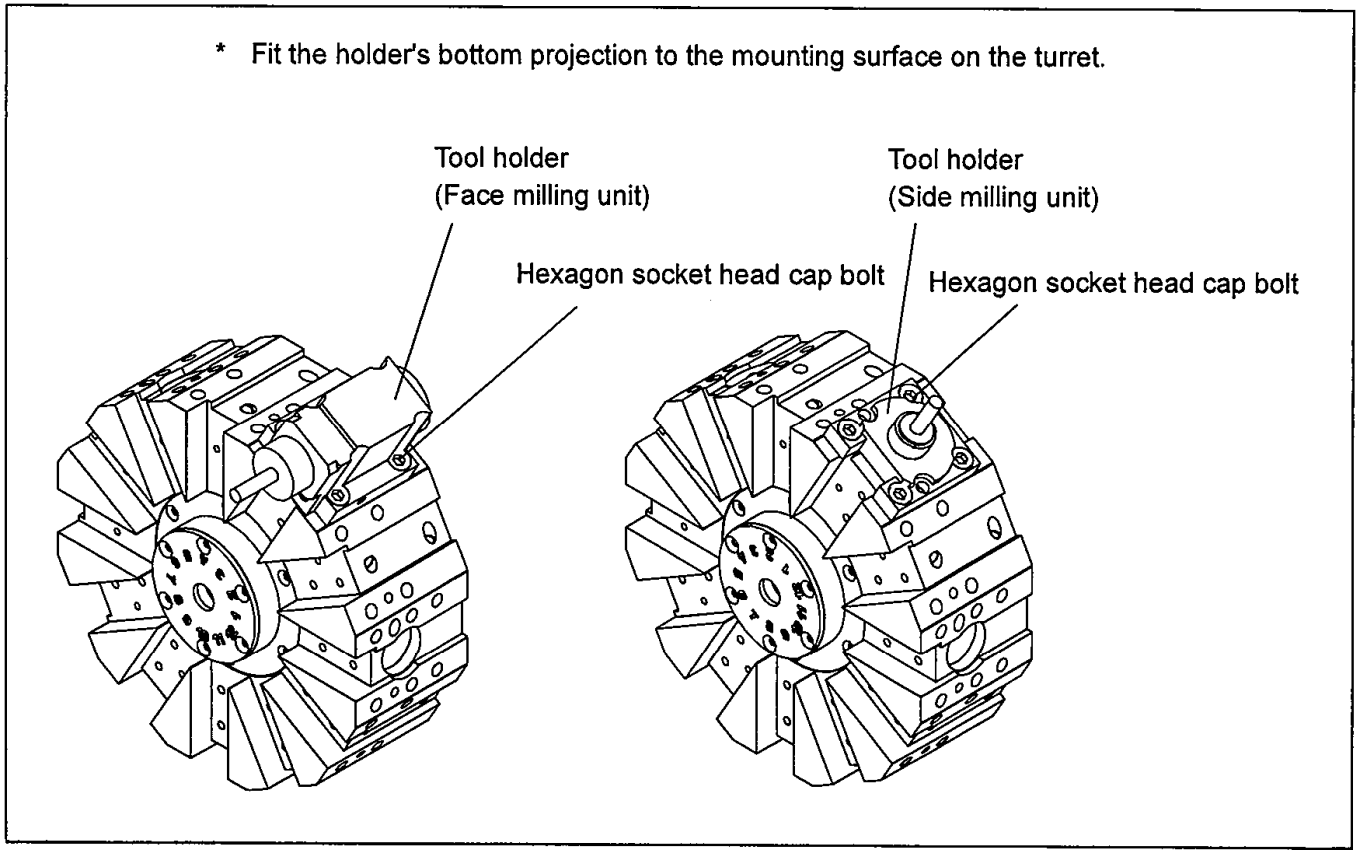
Versatile Optional Accessories (Power Tools)



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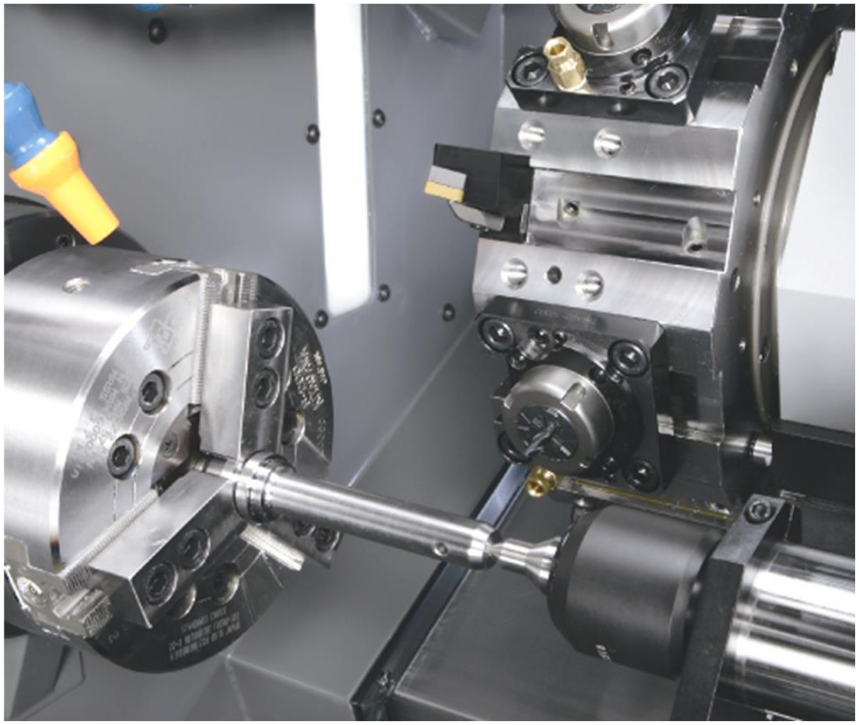
Versatile Optional Accessories (Tailstock)

- Adaptable for a shaft part by Tailstock (OP)



Slide stroke	mm	220
Quill stroke	mm	85
Tapered bore size	MT	3
Quill OD	mm	56
Allowable thrust	kN	3.5 (2.0 MPa)

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Selectable loaders according to customers requests

- For XT-6, we prepare various types of loaders according to customers request.
- In addition to Takamaz original Σ loadres, we prepare the compact loader controlled by FANUC.
- The compact ΣC60 loader is space-saving because of being able to mount on a machine.
- Using conveyors for workpiece transportation.
- Prepared various types of turn-around devices according to shape of workpieces and machining area.
- Realized speedy & certain workpiece transportation.
- “FC 60” compact loader by FANUC controller realized higher speed. Reduced loading time to 2.8 sec. by simplified loader motion.(20% reduction from previous loader.)
- Gantry ΣGH loader made flexible machining layout possible by connecting peripheral units or other machines.

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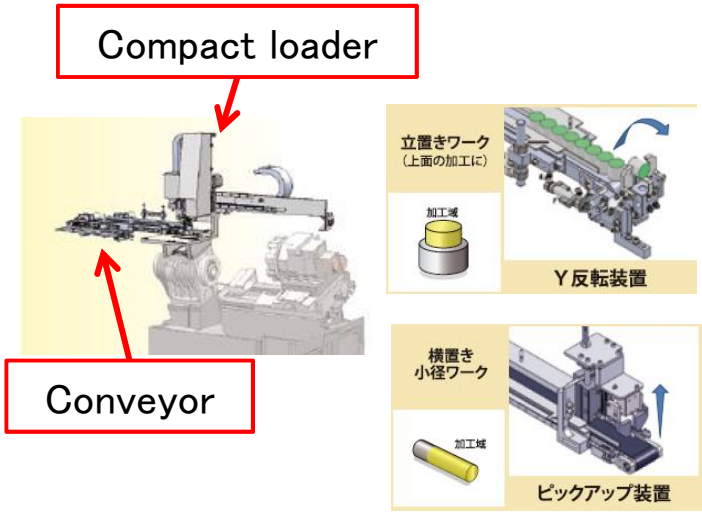
Selectable loaders (1/3)

Loader Selection

Compact Loader: Features

Space-saving high-speed loaders



Turn around unit

Gantry loader: Features

Flexible machining layout becomes possible.

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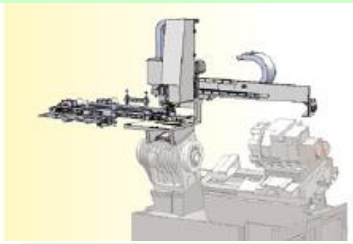
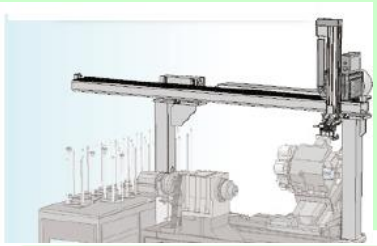
Selectable Loader (2/3)

Loader Selection

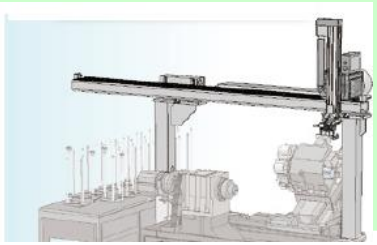
Σi Loader
(Takamaz original loader)



Compact loader
ΣiC60 loader



Gantry loader
ΣiGH loader



Gantry loader
ΣiGH loader
Hi-Speed type

Mote：CE Specifications does not adaptable for Σi loader but for Σ loader.

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Selectable Loaders (3/3)

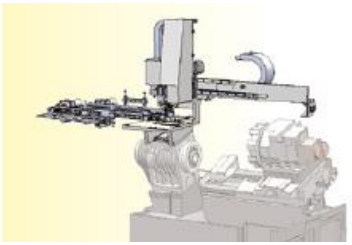
FANUC controlled loaders

In addition to the current loaders, newly developed ΣiGH loader (High speed loader) and FANUC controlled compact FC60 loader.

NEW!

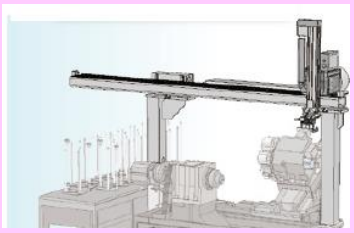
F loader
(FANUC controlled loader)

NEW!



Compact loader
Fc60 loader

NEW!



Gantry loader
FGH loader

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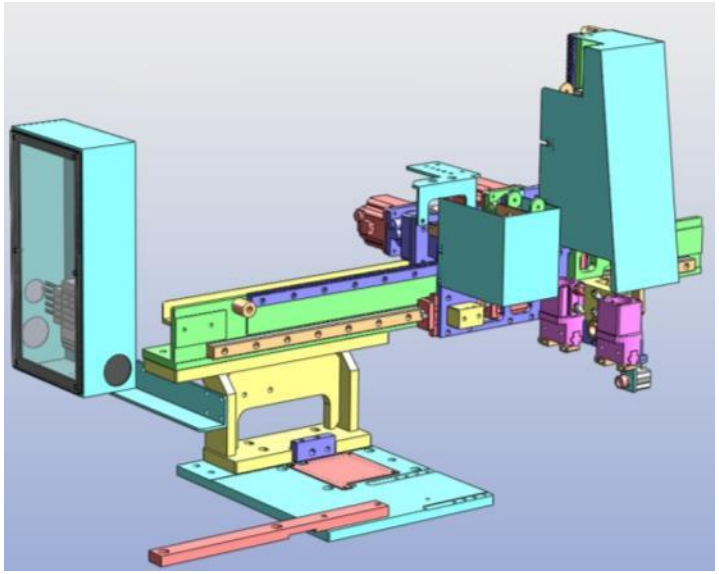
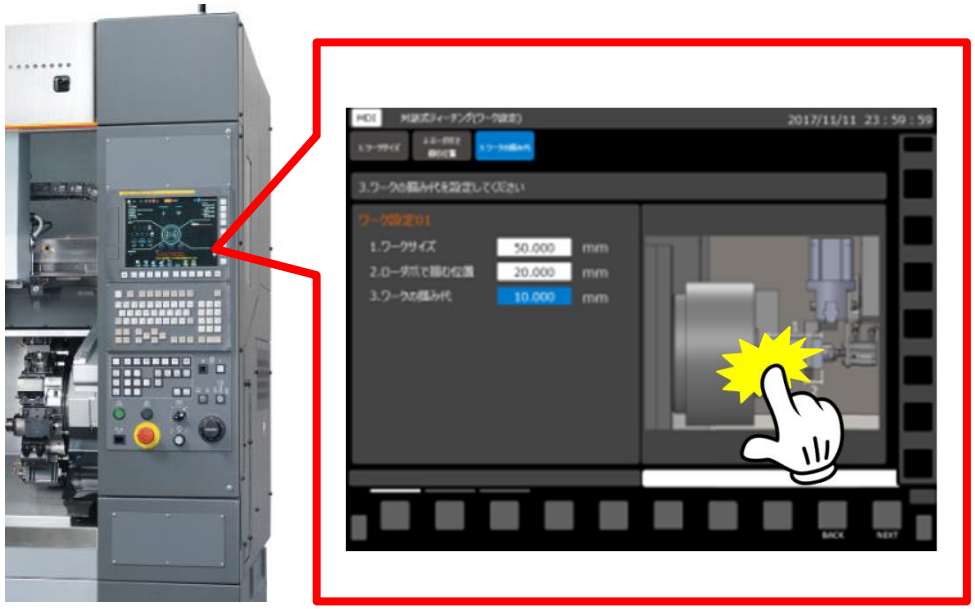
High Speed Loaders

・Fc60 Loader NEW!





・Rapid Traverse Ratio

Traverse axis *120m/min* (Σ ic60 84m/min)

Vertical axis *120m/min* (Σ ic60 74m/min)

Loading by simplified motions

2.8s(20% Less compared with conventional)

・Touch panel
・Windows installed
・AutoTeaching function,
etc.

※Available only for Fc60 Loader

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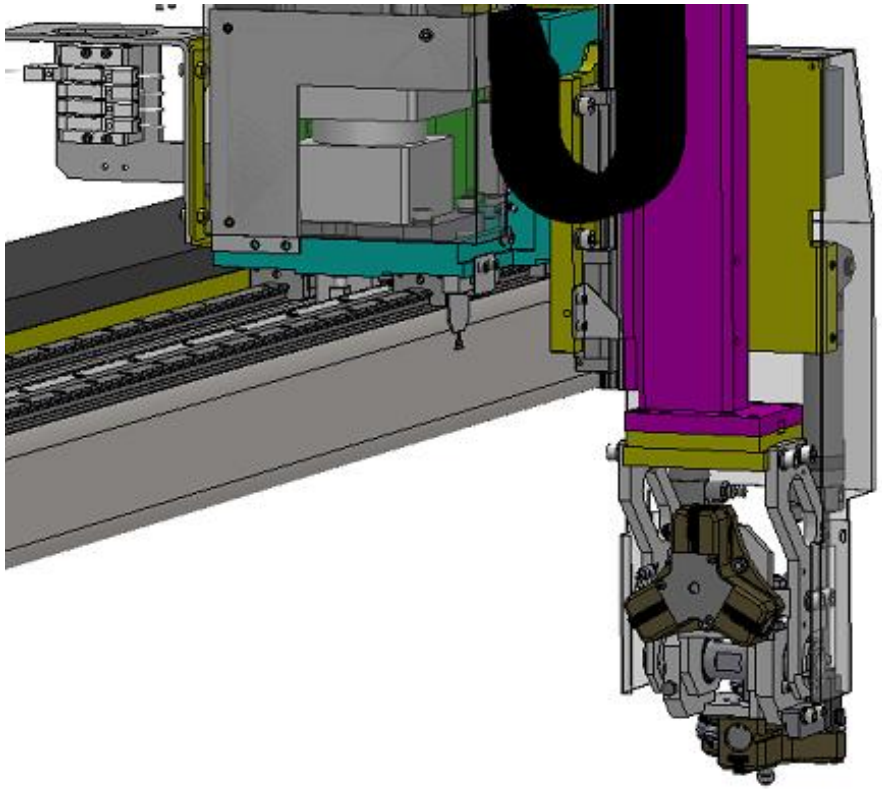
High Speed Loader

・ΣiGH Hi-Speed type

NEW!

Realized shorter cycle time with overwhelming our competitors !!



Rapid Traverse

Vertical Axis 170m/min

(ΣiGH STD 125m/min)

Realized shorter loading time by simplified Takamaz original loader motion.

Loading time *1.85s*

(50% reduction compared with ΣiGH std.)

Note：Currently, not adaptable for CE specification.

特願2018−33083

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Improved Workability(1/3)

- The latest controller mounted (FANUC 0iTF Plus)

  Adopted 10.4” touch panel type color monitor for FC60 loader operation.

- Many functions installed for improving efficiency

  “Manual Handle Retrace function” for safety program checking.

  “Auto Back-up Function” for data loss.

  “ Workpiece/Tool counter function” for workpiece management.

  “Turret Continuous Operation Function” for improved operability of manual turret operation.

  “Support Cycle Program Function” for easy programming.

  “Maintenance Info Display Function” for displaying periodical checking.

Various functions improve machine operability and safety.

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Improved Workability (2/3)

List of Main Functions

1.Manual Handle Retrace
2.Workpiece / Tool counter
3.Turret Continuous Operation Function
4.Maintenance Information Display
5.Support Cycle Program
6.Easy Loader Operation
7.Loader Motion Check Function
8.Loader Workpiece Size Teaching Function
9.Loader Abnormal Load Detection Function
10.Start Conditions Display(FANUC Loader)
11.Lubrication Oil Precaution Function(FANUC Loader)
12.M Code List Display(FANUC Loader)

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Improved Workability(3/3)

List of main Functions

13. Tool Alignment Support Function (FANUC Loader)
14. IoT (Traceability) Function (FANUC Loader)(OP)
15. In-Machine Camera Display(FANUC Loader)(OP)
16. Digital Vernier Wear Offset Function (FANUC Loader)(OP)
17. Machine Crash Detection Function
18. Individual Tool Torque Setting Function
19. Quantitative Wear Offset Function
20. Easy Alarm Diagnosis

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New Operation System integrated with IoT Technology

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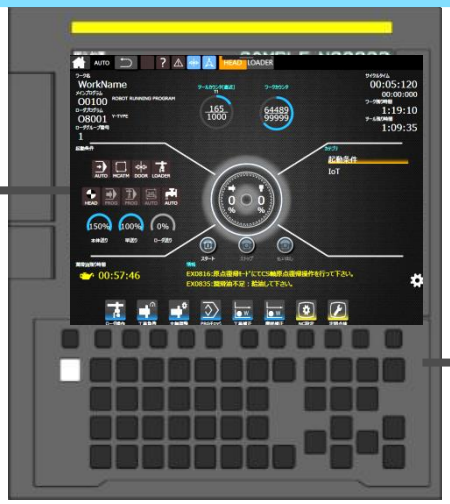
※Only for XT-6 FANUC Loader

1.Home Screen
Reduced Production down Time



Touch Panel

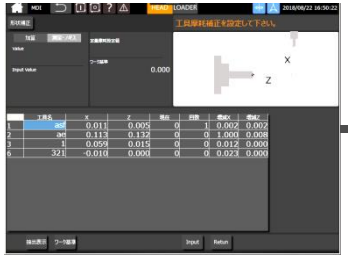
MDI key

FANUC

Conventional Operation

2.Loader
Short Set-up Time

3.Wear Offset
Secured Input



4.Set-up
Improved Set-up

5.Monitoring
Labor Saving

...

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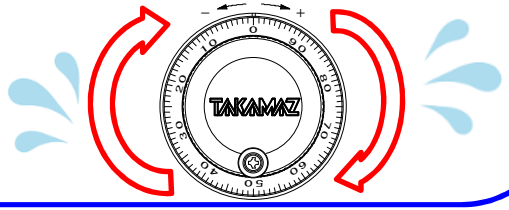
Manual Handle Retrace（NEW Type）

On checking program, it ‘s possible to proceed a program forward/backward by using manual pulse generator with enabling handle retrace function and we improved operability by reducing the restrictions of usage and improvement of handle operation.

▲Not ON/OFF while auto running

・Starting over not possible

▲In program, command blocks with slow federate, forward speed by handle becomes slow.



●Possible ON/OFF while auto running

・Possible to check from the middle of program.
・Possible to change to normal running for blocks not necessary to check.

●Possible checking by using handle retrace and dry run at the same time.

・In case forward speed by handle becomes slow in command blocks with slow federate, possible to check program by turning Dry run ON.
・Possible to return to retrace status again from Dry run and check program by handle.

PMC software	XC-100,150,XL-100,150:16版／XL-200:05版／XY-120PLUS:12版／XW-60(M):05版／XW-130:07版／XW-130M,XW-200:07版／SKV-8:03版／XTT-500(M):03版
Model	XC-100,XL-100,XC-150,XL-150,XL-200,XY-120PLUS,XW-60,XW-60M,XW-130,XW-130M,XW-200, SKV-8,XTT-500,XTT-500M
Start time	From factory delivery in 2018

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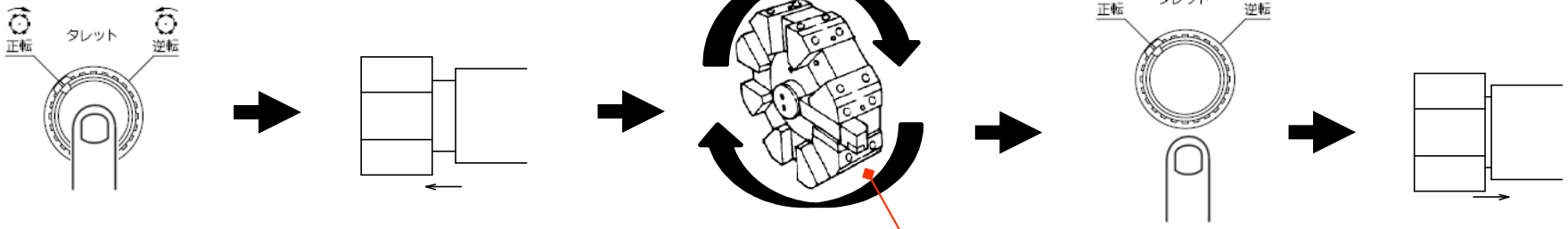
Improved Manual Turret Operability



Press Turret Button Continuously

Turret unclamp

Turret is unclamps and indexes while the button is pressed

Press off the button at the desired position

Turret clamp

★Reduced operation waiting time for 1step motion.

★Reduced number of button operation.

After each index, completion sound is produced.

※Usual button operation of ON→OFF induces 1 step motion the same as before.

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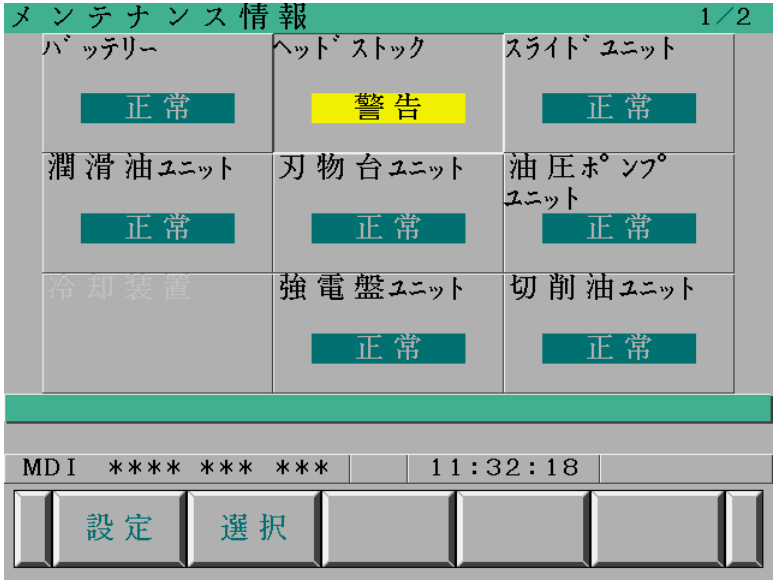
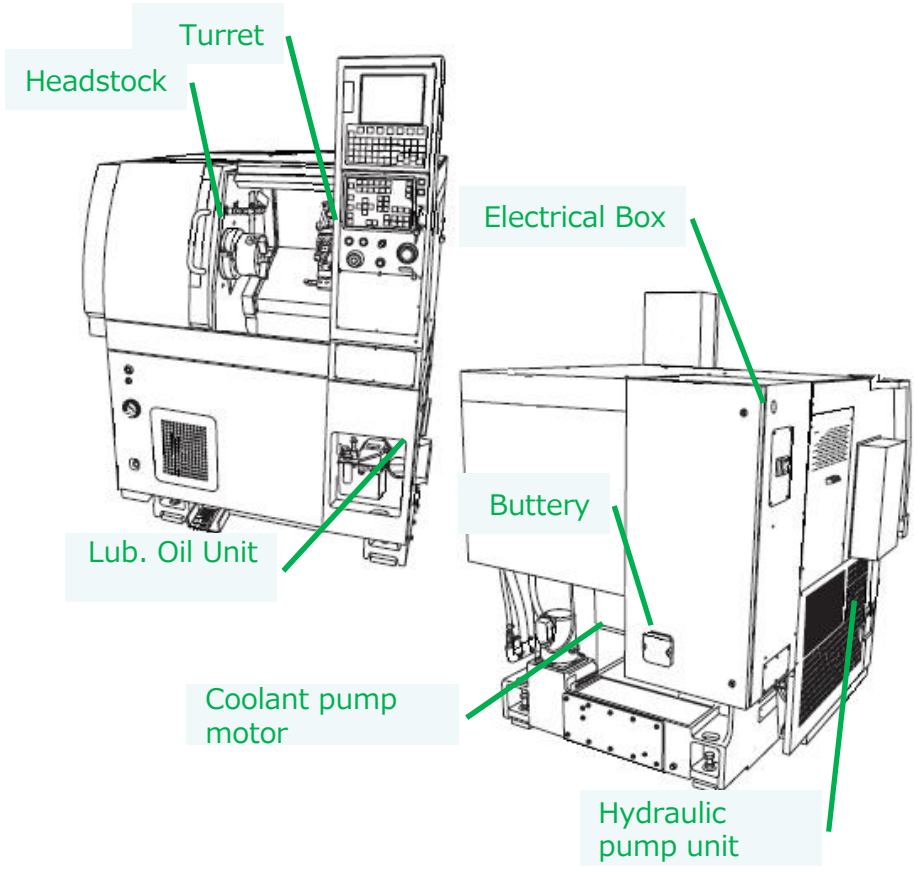
Maintenance Information Display

Announcing periodical maintenance by displaying checking time of the units that need maintenance and supporting stable long-term machine running.

Easy to see display for the status of periodical checking on each unit.





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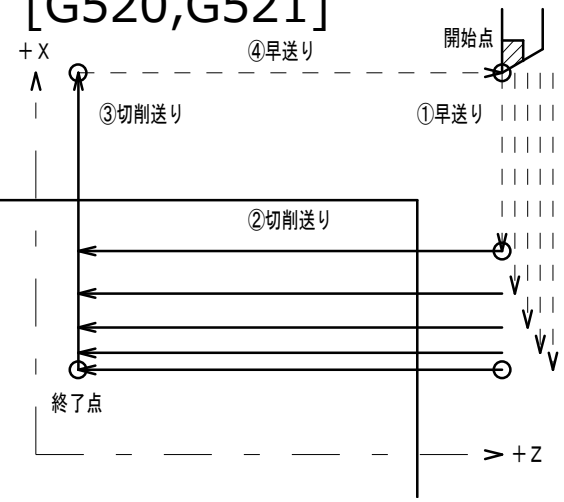
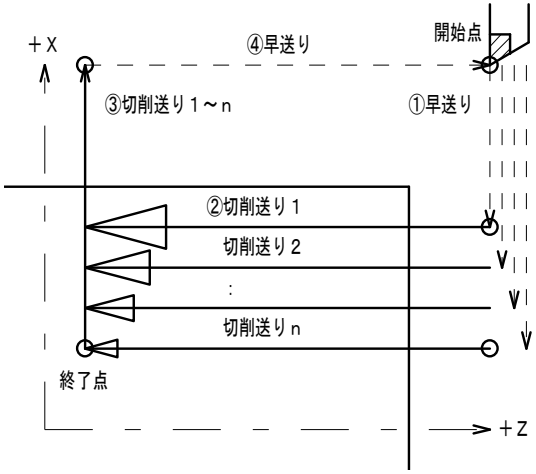
Reduced burden when making a program by using Takamaz original G codes

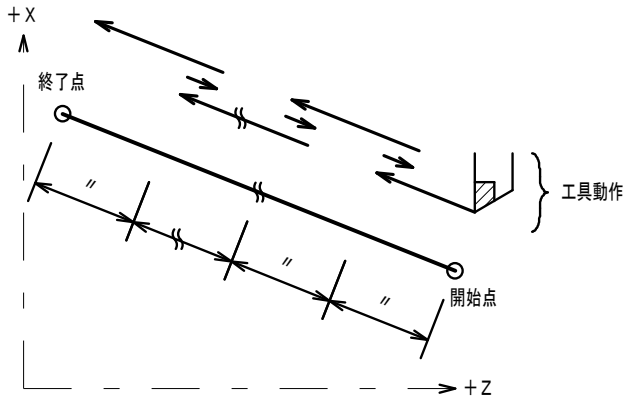
・Variable Cutting Depth Cycle [G520,G521]



・Variable Feed rate Cycle [G522,G523]



・Taper Turning Inching Cycle [G526]



G71 Turning
Cutting length
1,000m

→

G520 Turning
Cutting length
1,000m

G71 Turning
Cutting length
1,000m

→

G522 Turning
Cutting length
1,000m

※Effect differs from turning conditions.

Time for making a program
6min. → 1min.

※Effect differs from the content of a program.

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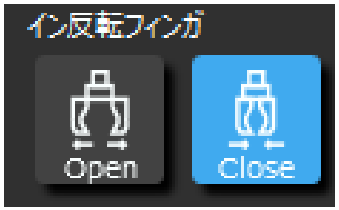
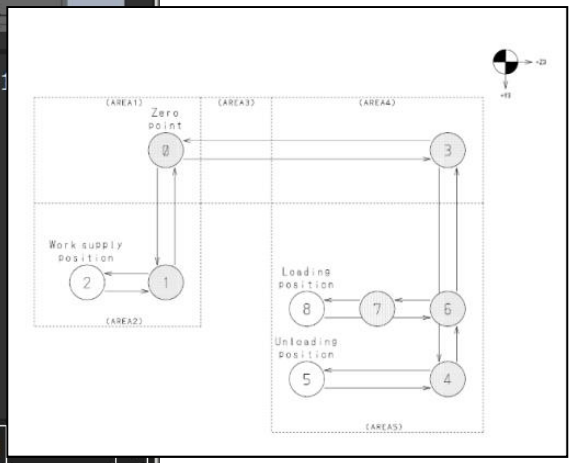
Easy Loader operation

Realized easy loader operation even for beginners

Guide display

Easy operation by symbols & characters





Point diagram display

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Loader Motion Check

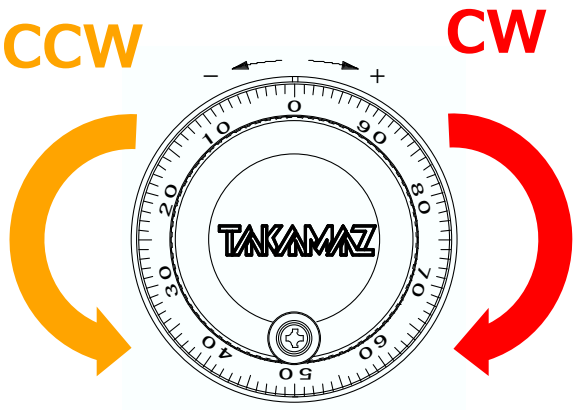
Safety & Speedy motion checking of loader program by manual handle operation

■ **Program moves forward/backward according to handle operation.**

(Machine moves)

※Backward enable only in one block.

Handle Retrace Mode SW



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Loader Workpiece Size Teaching

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Teaching completed only by setting size of workpiece

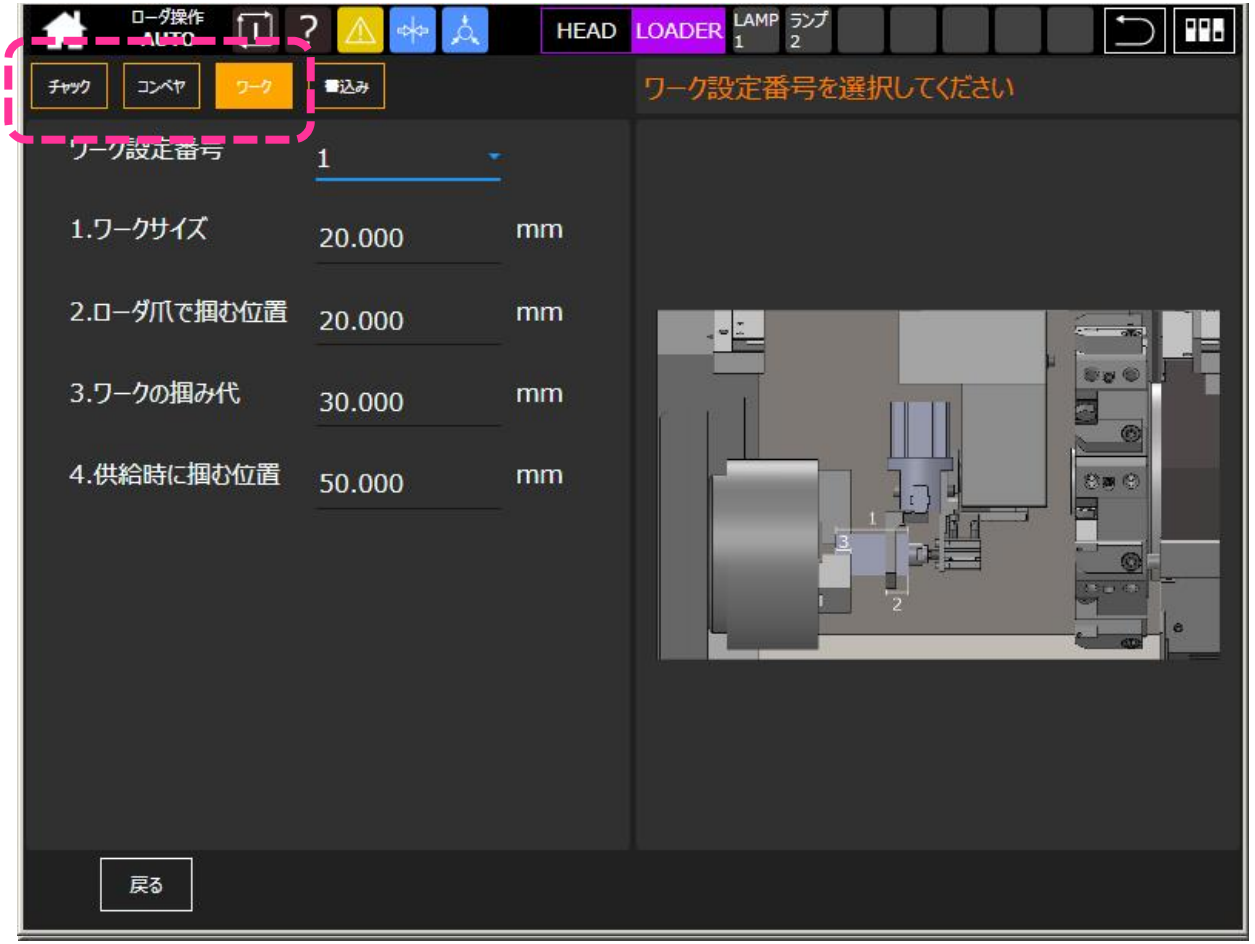
Patent pending

Chuck Position Alignment (Only First time)

Conveyor Position Alignment (Only First time)

Workpiece size, Clamping position setting(Refer:

1.Workpiece size(Length)
2.Clamp pos. by loader grippers
3.Length of Work clamping by loader grippers
4.Clapming pos. when inserting a chuck



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New Operation System for FANUC loader

Table of New Operation System

New Operation system (PANELi)	(Windows PC)
Home Screen	○
Lub. Oil Precaution Function	○
M code List Display Function	○
Tool Alignment Support Function	○
IoT (Traceability) Function	☆(OP)
In-Machine Camera Display	☆(OP)
Digital Vernier Wear Offset Function	☆(OP)

※Not adaptable for Standard and Σi loader.

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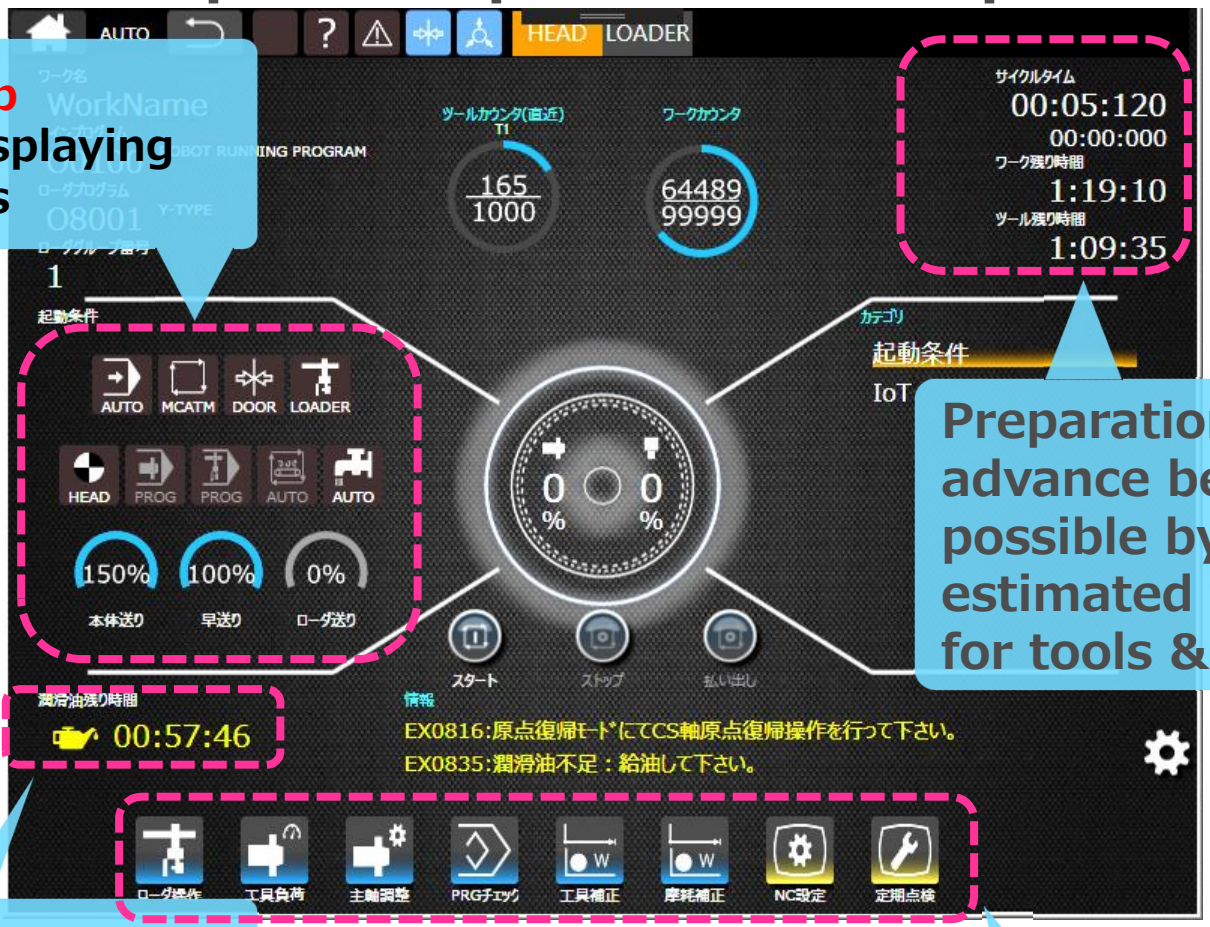
1. Home Screen

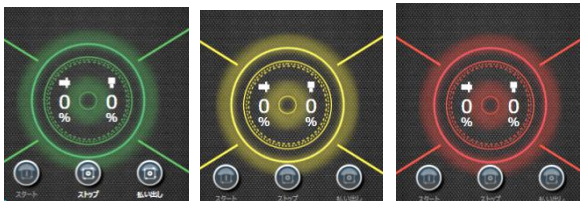
Inform machine conditions in advance and prevent production stop

Smooth Start-up Operation by displaying those conditions



Preparation in advance becomes possible by displaying estimated finish time for tools & workpieces.

Count-down display showing time to Lub. Oil running out.



Easy calling of screens according to your purpose.

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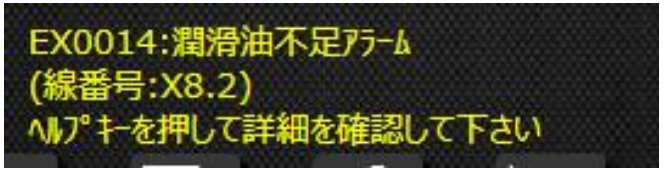
Lub. Oil Precaution Function

Preventing Machine stop by displaying the message of Lub. Oil shortage.

Lub. Oil Shortage

■**Count down display to machine stop**



■**Machine stop after 60min. From displaying the message**

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M Code List Display

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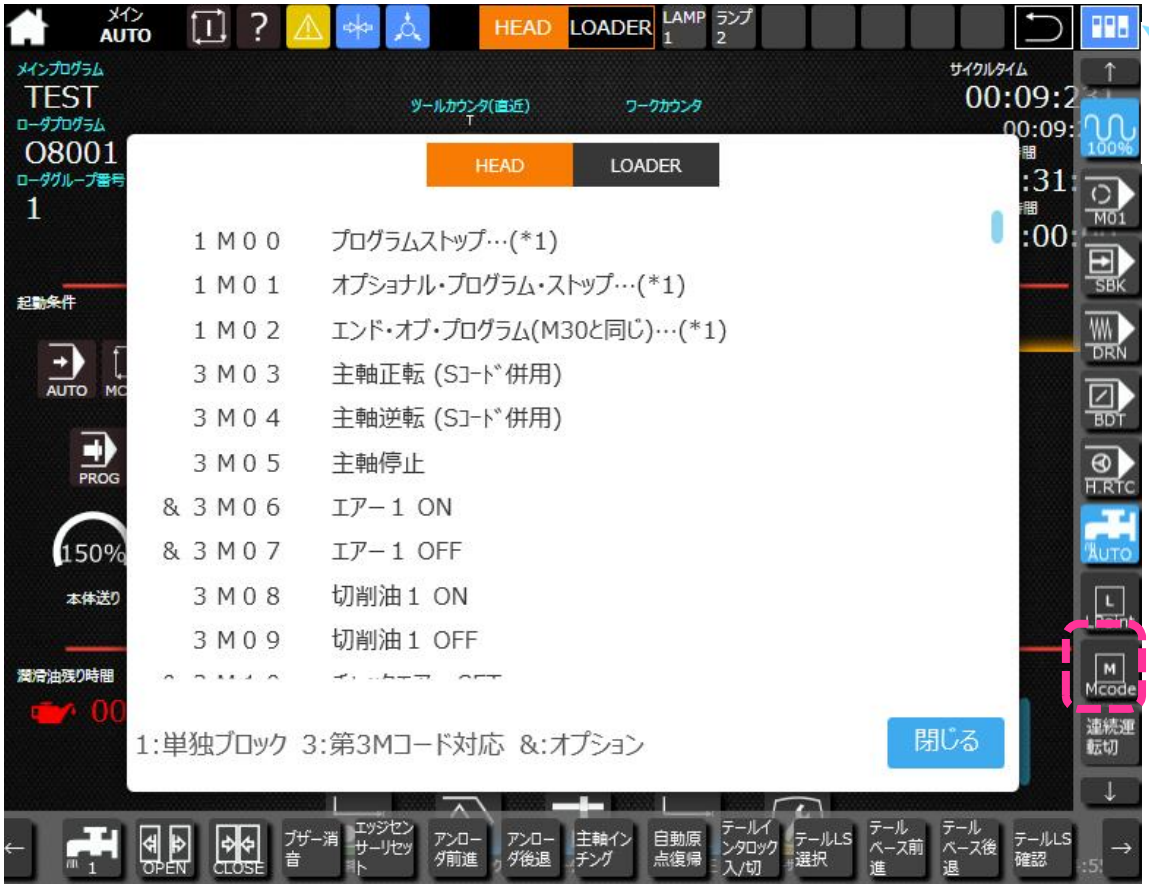
M code list displayed on screen



Soft SW Display

PUSH!

■ Displaying **M code lists** for machine and loader

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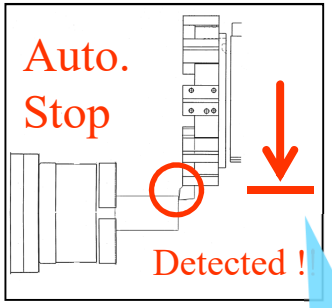
Setting up

Supporting tool alignment operation by assist functions

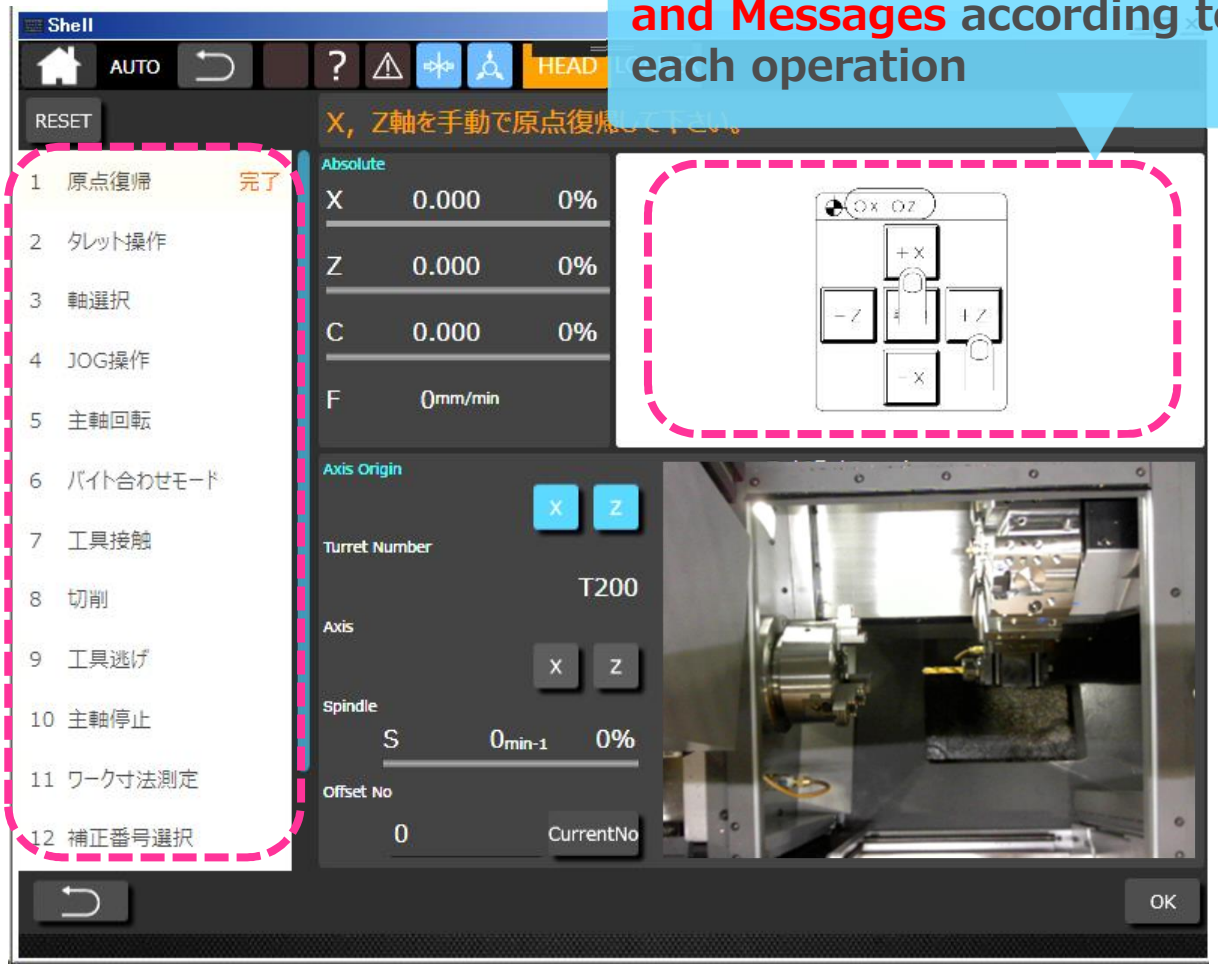
Simple Tool Alignment by Wizard format

Safety･Simple Tool Alignment with workpiece & tool Auto Recognition



Auto Stop of manual hand feed op. when touching a workpiece.

Instruction by Pictures and Messages according to each operation



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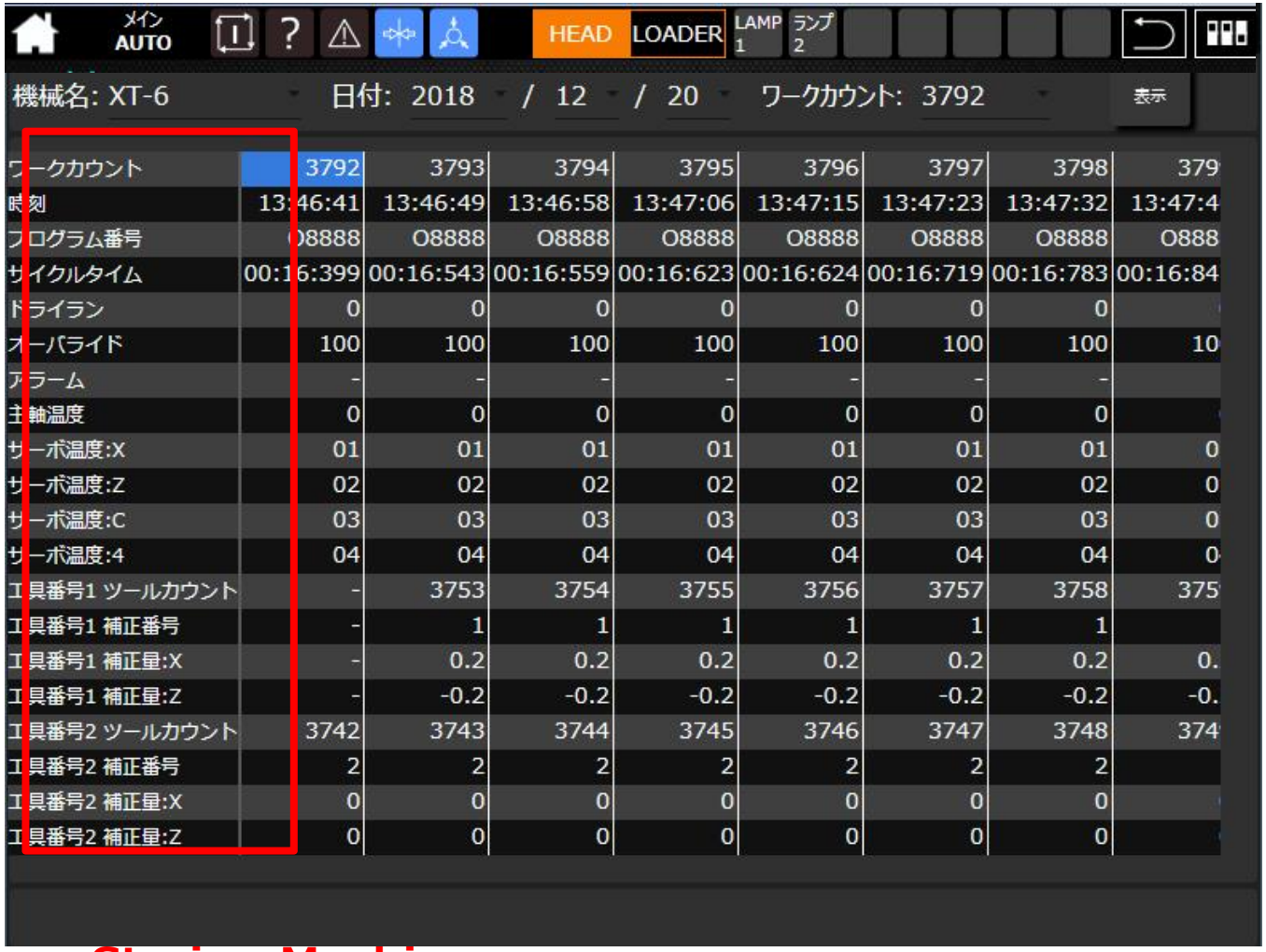
IoT (Traceability) Function

Traceability data utilized to quality assurance and preventative maintenance



ークカウント	3792	3793	3794	3795	3796	3797	3798	379
時刻	13:46:41	13:46:49	13:46:58	13:47:06	13:47:15	13:47:23	13:47:32	13:47:4
プログラム番号	08888	O8888	O8888	O8888	O8888	O8888	O8888	O888
サイクルタイム	00:16:399	00:16:543	00:16:559	00:16:623	00:16:624	00:16:719	00:16:783	00:16:84
ドライラン	0	0	0	0	0	0	0	
オーバライド	100	100	100	100	100	100	100	10
アラーム	-	-	-	-	-	-	-	
主軸温度	0	0	0	0	0	0	0	
サーボ温度:X	01	01	01	01	01	01	01	0
サーボ温度:Z	02	02	02	02	02	02	02	0
サーボ温度:C	03	03	03	03	03	03	03	0
サーボ温度:4	04	04	04	04	04	04	04	0
工具番号1 ツールカウント	-	3753	3754	3755	3756	3757	3758	375
工具番号1 補正番号	-	1	1	1	1	1	1	
工具番号1 補正量:X	-	0.2	0.2	0.2	0.2	0.2	0.2	0.
工具番号1 補正量:Z	-	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.
工具番号2 ツールカウント	3742	3743	3744	3745	3746	3747	3748	374
工具番号2 補正番号	2	2	2	2	2	2	2	
工具番号2 補正量:X	0	0	0	0	0	0	0	
工具番号2 補正量:Z	0	0	0	0	0	0	0	

■ **Storing Machine conditions data by a workpiece**

■ **Enabling users data analysis by CSV output**

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Machine Crash Detection function Σ/ F

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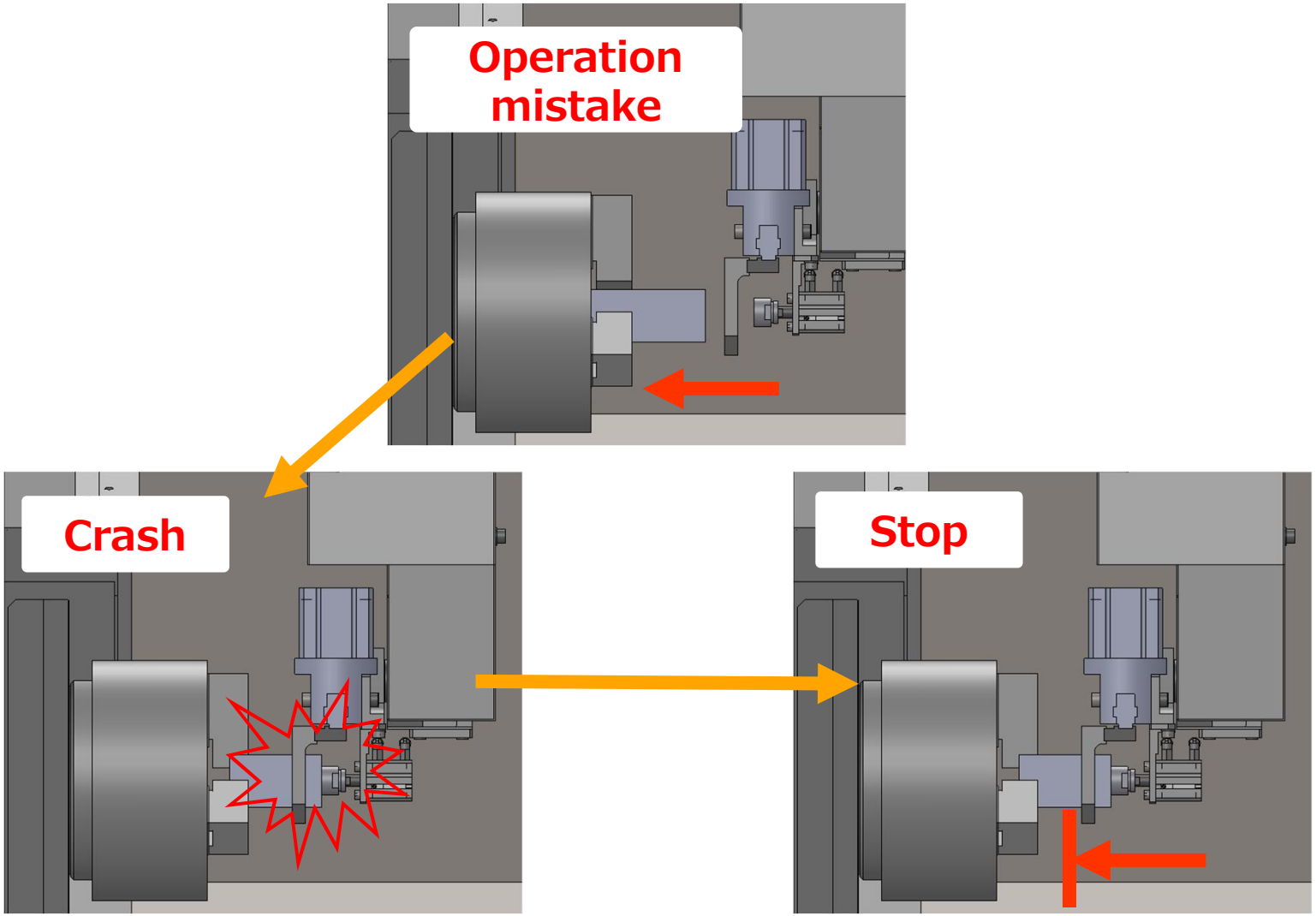
Reduced machine crash with operation mistake



※This is not the function for preventing machine crash at all.

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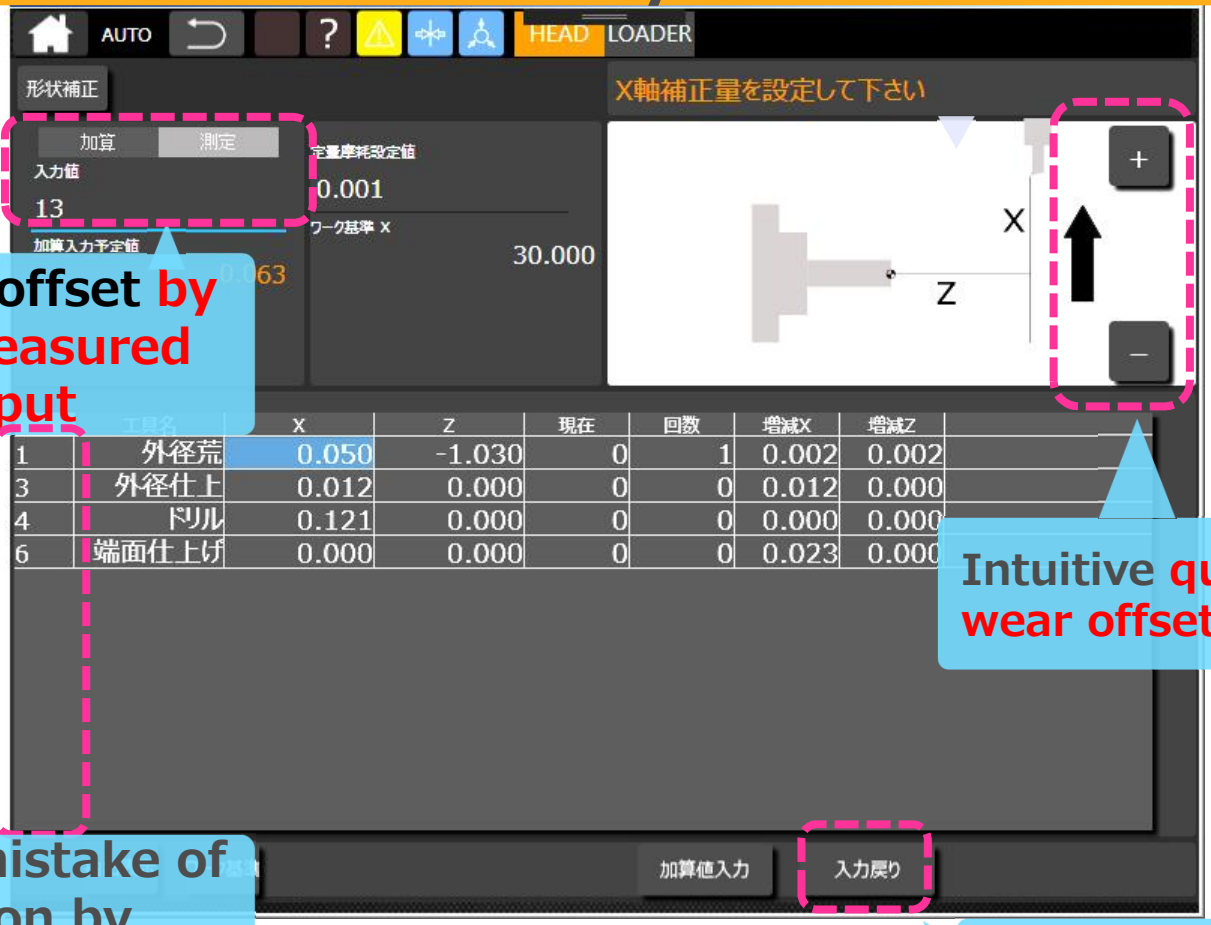
Wear Offset

Even beginners can perform offset operation without any trouble



Simple wear offset by workpiece measured dimension input

Intuitive quantitative wear offset input

Preventing mistake of offset selection by not displaying offset No. which is not used.

Return to previous offset amount to eliminate re-measuring

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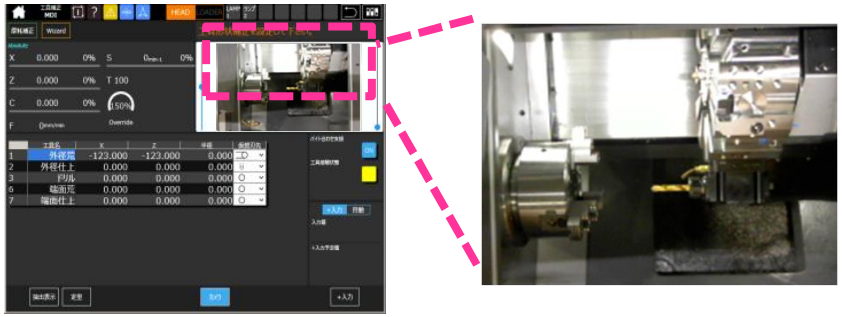
In-Machine Camera Display Function (OP)

■In-Machine Camera Display Function



・**Displaying WEB Camera image** on Tool offset screen

・**Easy Machine Operation** with door closed

It is possible to display WEB Camera Image on Tool Offset Screen.
By this function, easy machine operation becomes possible.

※We kindly ask users preparing cameras.

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Digital Vernier Wear Offset Function(OP)

Offset Input can be done simply by a digital Vernier connected to NC controller.

Procedures:

①Register machined diameter of workpiece on wear offset screen.

②Measure a workpiece diameter by digital Vernier.

Amount of wear offset is input into the selected offset No. by pressing a button on the Vernier.

By this operation, wear offset operation can be done speedy & firmly.

■ Wear Offset by Digital vernier

・**Easy Offset input** by digital Vernier connected to NC.

①Registering the workpiece reference value.

↓

②Measuring workpiece dia. (Press button)

↓

③Wear input Offset to NC

※We kindly ask users preparing digital vernier.

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Easy Maintenance

- Daily maintenance points arranged collectively on machine front side

Σi Loader Adjustment

Chuck Pressure Adjustment

Air Pressure Adjustment

Lubrication Pump

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Consideration for Safety

Machines comply with CE safety regulation. There are many countermeasures and the followings are the major ones.

- Adoption of Dual, Check, Safety Function (see attachment)
- Door Interlock(Electro Magnetic Lock type)
- Electric Box Door Interlock
- Countermeasures for reduction of Electromagnetic Waves
- Complying language display on OP panel with International safety standard (see attachment)
- Reduction of risk of accident in case of manual operation (see attachment)
- Machine crash detection function installed(see attachment)
- Addition of Auto running support function (optional) (see attachment)

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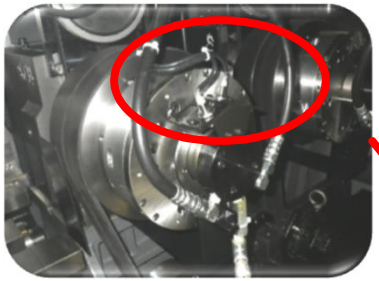
標/Σ/ F
Modified Machine Specs/Operation/Motion (Machine safety standard JIS B 6031)

Chuck Open/close conf. SW



E. Box Breaker Handle

Front Door(Safety window)

E. Magnetic Door Lock

Hyd. Pressure Conf.

OP. Mode Switch
Door Interlock Release Switch

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TECHNICAL INFORMATION

これ以降は参考図(取説内にあるもの)を付ける。

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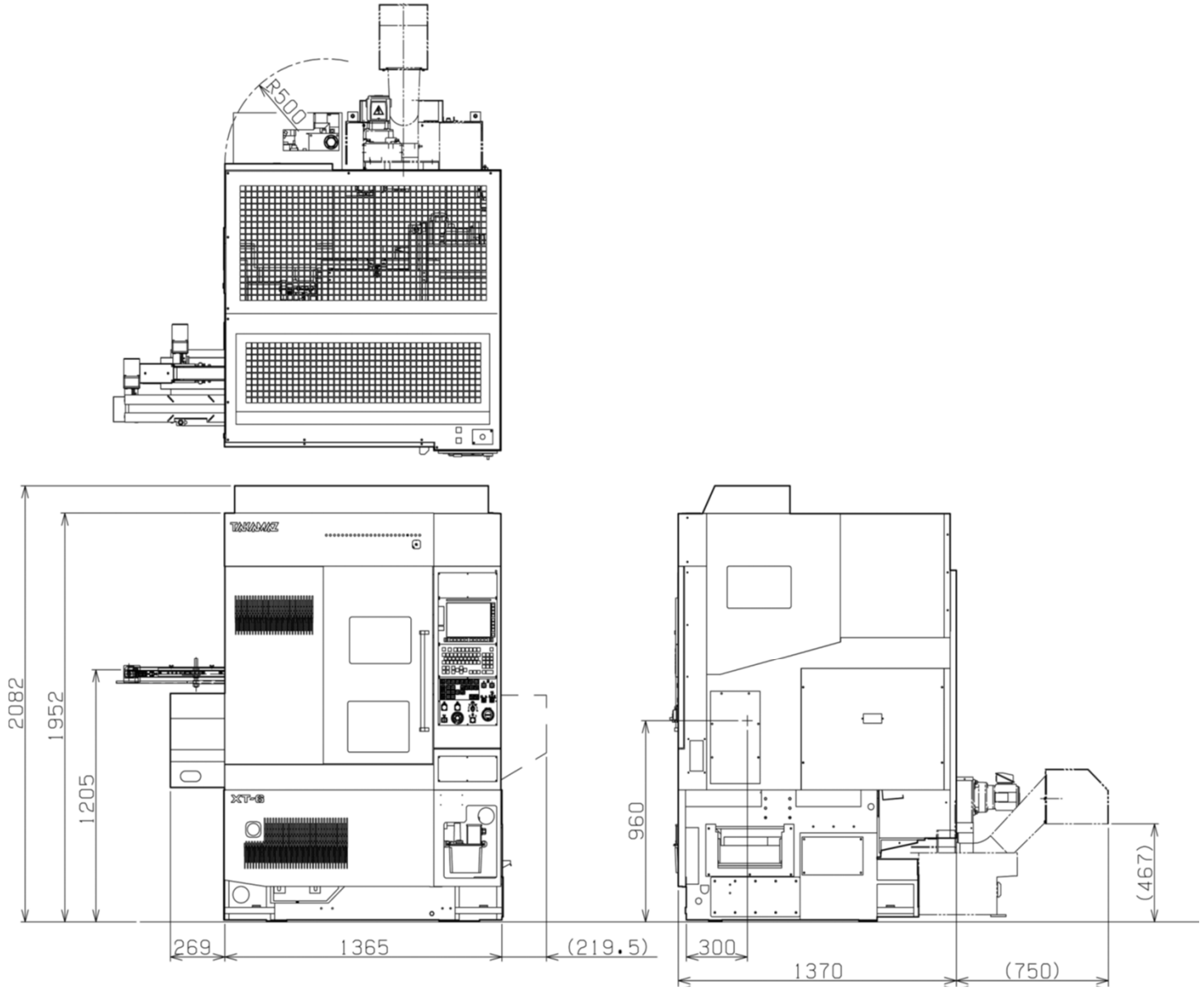
Dimensional drawing



Standard Specifications

Item			Unit	XT-6		XT-6M
				6-inch	8-inch	6-inch
Capacity	Max. turning diameter		mm	ϕ180 (12-station turret: ϕ200)		ϕ200
	Max. turning length		mm	240		195
	Max. bar diameter		mm	ϕ26 (ϕ35)	(ϕ42)	
	Chuck size		inch	6	8	6
Spindle	Spindle nose		JIS	A_2-5		A_2-5
	Spindle bearing ID		mm	ϕ75	ϕ85	ϕ75
	Hole through spindle		mm	ϕ46	ϕ52	ϕ46
	Spindle speed		min^{-1}	4,500 (6,000)	3,500	4,500 (6,000)
Tool post	Type			8-station (12-station) turret	8-station turret	12-station turret
	Tool shank		mm	8-station turret: 20 sq. (12-station turret: 20 sq./16 sq.)	20 sq.	12-station turret: 20 sq./16 sq.
	Boring holder I.D.		mm	ϕ25		
	Max. stroke		mm	X: 120 (with tailstock: 90 (8-station), 100 (12-station)), Z: 280		X: 120 (with tailstock: 100) Z: 265
	Rapid traverse rate		m/min	X: 18 Z: 24		
Power tool	Tool storage capacity		pcs	—		6
	Max. rotating speed		min^{-1}	—		4,000
	Capacity	Drill	mm	—		ϕ10
		Endmill	mm	—		ϕ10
		Tap	mm	—		M6
Cs-axis	Rapid traverse rate		deg./min	—		18,000
Motor	Spindle motor		kW	AC 7.5/5.5 (AC 11/7.5)	AC 7.5/5.5	AC 7.5/5.5
	Feed motor		kW	X: AC 0.75 Z: AC 1.8		
	Coolant motor		kW	AC 0.25		
	Hydraulic motor		kW	AC 0.75		
	Power tool motor		kW	—		AC 2.2
Dimensions	W × D × H		mm	1,360 × 1,370 × 1,700		
	Machine weight		kg	2,300		2,500
Total power capacity			kVA	12 to 18 (depends on the specification)		
Noise level			dB (A)	80.5		

* ( ): For optional features

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■ Standard accessories

Item	XT-6	XT-6M
Boring holder	2 sets	
Clamp block	8 sets (12 sets)	
Collet flange	1 set	
Coolant block	8 pcs (OD nozzle)	
Stroke adjusting hollow hydraulic cylinder	1 set	
Hydraulic unit	1 set	
Chuck clamp detector	1 set	
Spindle indexing unit	—	1 set (Cs-axis)
Power tool drive unit	—	1 set
Thread cutting unit (including constant surface speed control)	1 set	
Coolant unit	1 set (140 lit.)	
Work light	1 set	
Service tool kit	1 set	
TAKAMAZ instruction manual	1 set	
TAKAMAZ loader system	1 set	
Bar feeder system	○	
Unloader	○	
Work set detector	○	
Tailstock unit	○	
Chip conveyor (rear/right) (floor type, spiral type)	○	
Front air blower	○	
Rear air blower	○	
Rear coolant unit	○	
Signal light (1-color, 2-color, 3-color)	○	
Automatic fire extinguisher	○	
Automatic power-off unit	○	
Automatic door (shutter)	1 set	

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■ Optional accessories

Item	XT-6	XT-6M
Hydraulic power chuck	○	
Hydraulic chucking cylinder (solid)	○	
Tool holders	○	
Collet chucks	○	
Power tools	—	○
Hydraulic chucks	○	
High-damping alloy clamp holder	○	
Built-in spindle motor	○	
Thermal displacement compensation system	○	
Special color	○	
Others	○*	

* For more information on other accessories, contact Takamatsu.

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Standard Specifications

Item	TAKAMAZ FANUC 0i-TF Plus	
	XT-6	XT-6M
Controlled axes	2 axes (X, Z)	3 axes (X, Z, C)
Simultaneously controllable axes	Simultaneous 2 axes	Simultaneous 3 axes
Least input increment	0.001 mm (X in diameter)	
Least command increment	X: 0.0005 mm, Z: 0.001 mm	
Auxiliary function	M-3 digit	
Spindle function	S-4 digit	
Tool function	T-4 digit	
Tape code	EIA (RS232C)/ISO (840) automatic recognition	
Cutting feedrate	1 - 5000 mm/min	
Command system	Incremental/Absolute	
Linear interpolation	G01	
Circular interpolation	G02, G03	
Cutting feedrate override	0 - 150%	
Rapid traverse override	F0, 100%	
Program name	32 characters	
Backlash compensation	0 - 9999 μm	
Part program storage size	512 Kbytes (equivalent to 1280 m in tape length)	
Tool offsets	64 sets	
Registered programs	400 pcs.	
Tool geometry/wear offset	Standard	
Canned cycle	G90, G92, G94	
Radius designation on arc	Standard	
Tool offset measurement input	Standard	
Background editing	Standard	
Direct drawing dimension programming	Standard	
Custom macro	Standard	
Additional custom macro common variables	#100 - #199, #500 - #999	
Pattern data input	Standard	
Nose R compensation	G40, G41, G42	
Inch/metric conversion	G20/G21	
Programmable data input	G10	

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Item	TAKAMAZ FANUC 0i-TF Plus	
	XT-6	XT-6M
Run hour/parts count display	Standard	
Extended part program editing	Standard	
Multiple repetitive cycle	G70 - G76	
Multiple repetitive cycle II	Pocket shape	
Canned cycle for drilling	Standard	
Constant surface speed control	G96, G97	
Continuous thread cutting	G32	
Variable-lead thread cutting	G34	
Thread cutting retract	Standard	
Clock function	Standard	
Help function	Standard	
Alarm history display	50 pcs.	
Self-diagnosis function	Standard	
Sub-program call	up to 10 loops	
Decimal point input	Standard	
2nd reference point return	G30	
Work coordinate system	G50, G54 - G59	
Stored stroke check 1	Standard	
Stored stroke check 2, 3	Standard	
Input/output interface	USB flash drive, memory card (in the electric cabinet), Ethernet	
Alarm message	Standard	
Abnormal load detection	Standard	
English display	Standard	
Graphic function	Standard	
Conversational programming with graphic function	Standard	
Manual handle retrace	Standard	
Automatic data backup	Max. 3	
Screen saver	Standard	
Rigid tapping	Standard	
Polar coordinate interpolation	Standard	
Cylindrical interpolation	Standard	
TAKAMAZ management support menu	Work/tool counter, tool torque monitor, etc	
TAKAMAZ maintenance menu	Standard	
FANUC manual set	DVD-ROM	

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Optional Specifications

Item	TAKAMAZ FANUC 0i-TF
Input/output interface	RS232C
Spindle orientation	
Multiple M codes one block	Max. 3
Tool life management	
Dynamic graphic display	
FANUC Manual	Book

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Spindle Nose Drawing

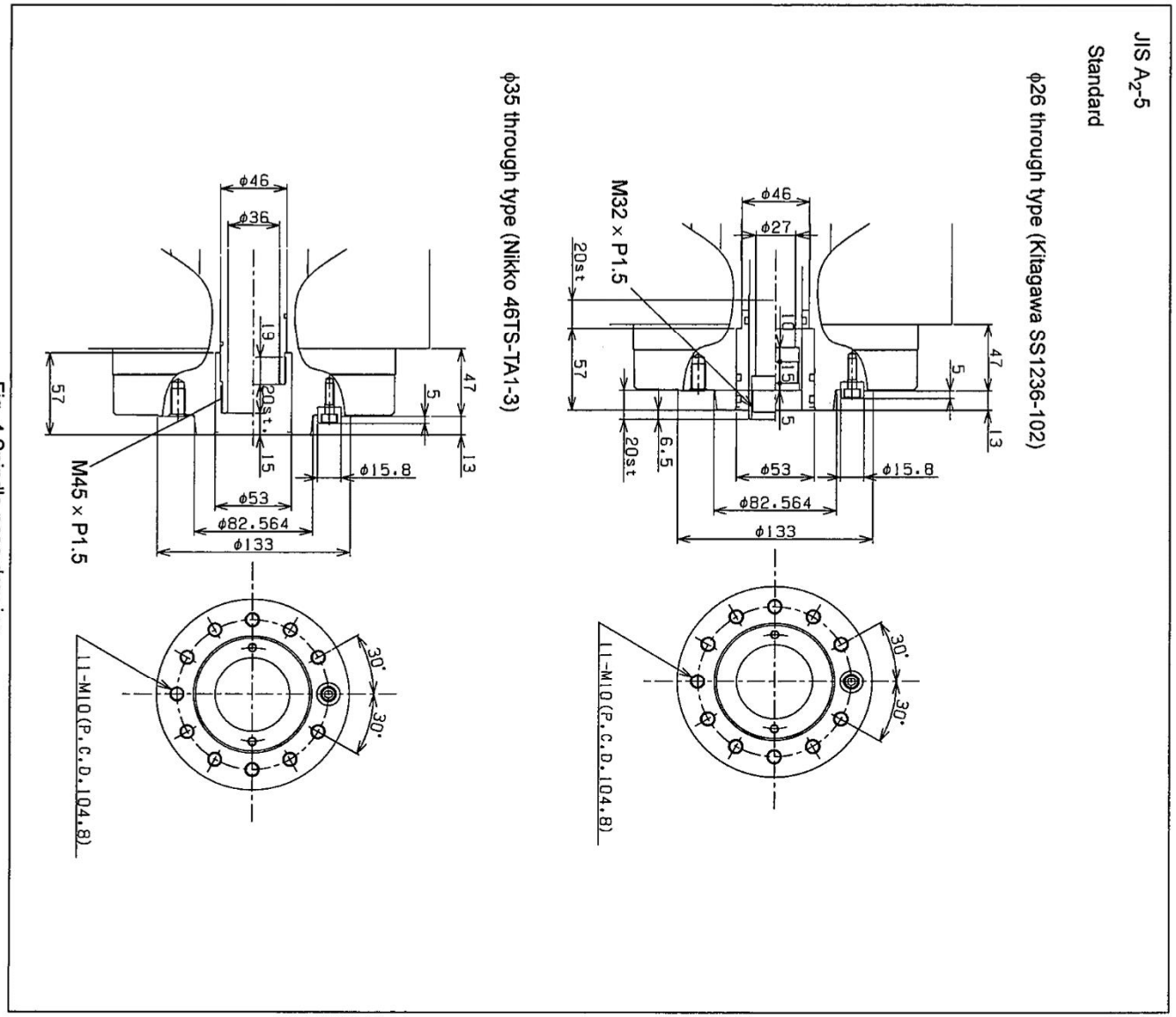
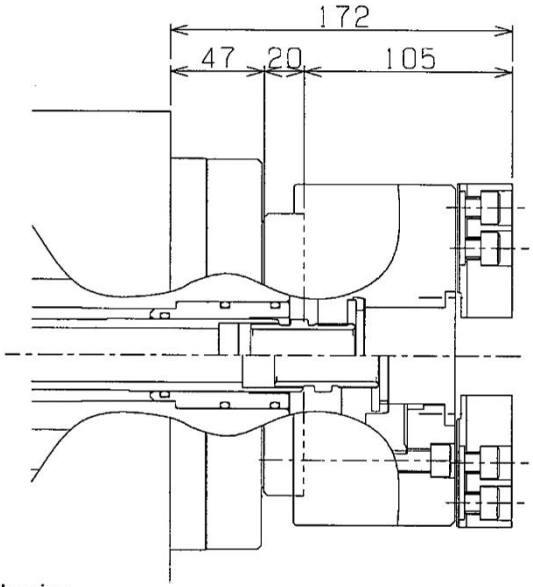


Fig. 4 Spindle nose drawing

Chuck Mounting Drawing

Power chuck mounting drawing
Hollow type (JIS A_2-5)
Power chuck: B206 (Kitagawa)
Chucking cylinder: SS1236-102 (Kitagawa)



Collet chuck mounting drawing
Hollow type (JIS A_2-5)
Collet chuck: TSC-D26-ST (T850)
Chucking cylinder: SS1236-102 (Kitagawa)

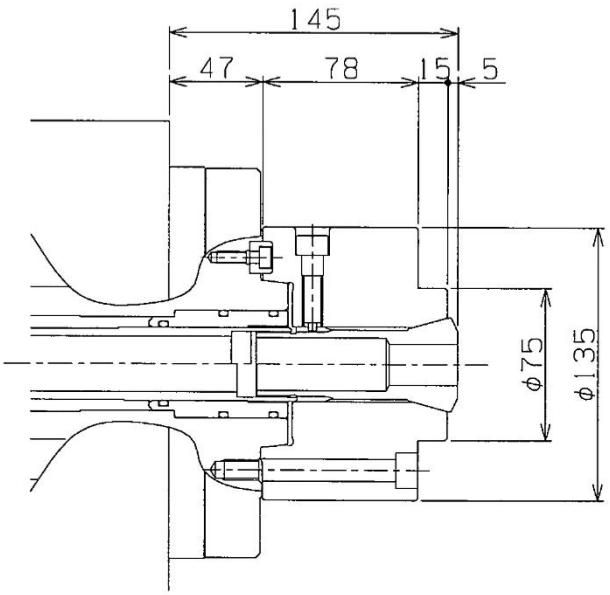


Fig. 5 Chuck mounting drawing

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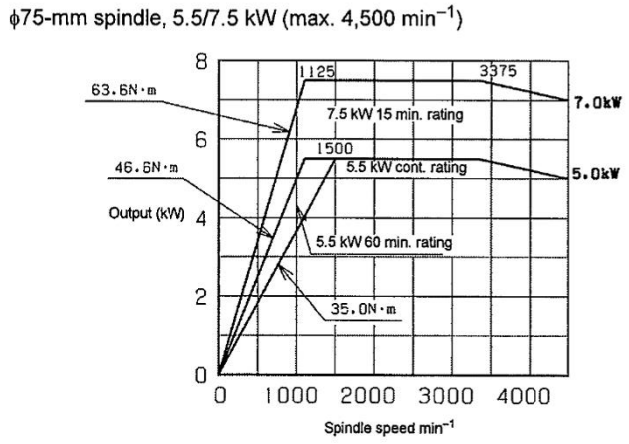
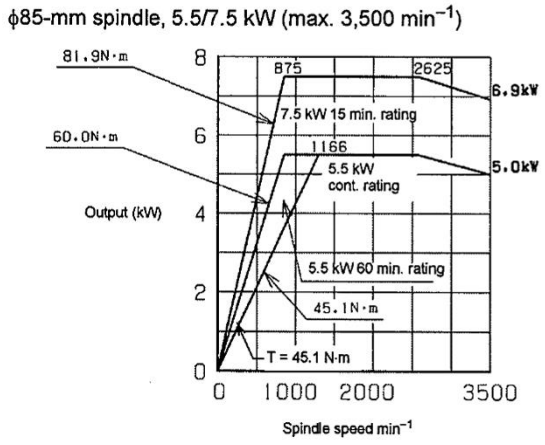
Spindle Motor Characteristic Diagram





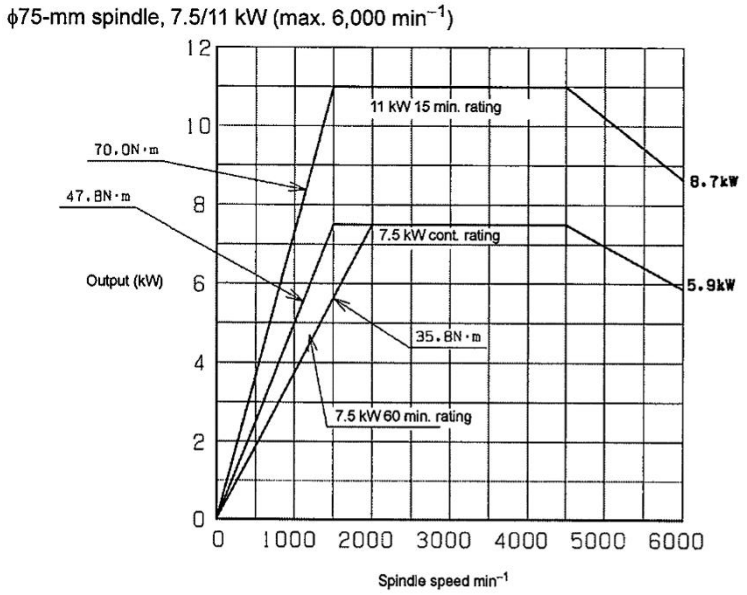


Fig. 6 Spindle motor characteristic diagram

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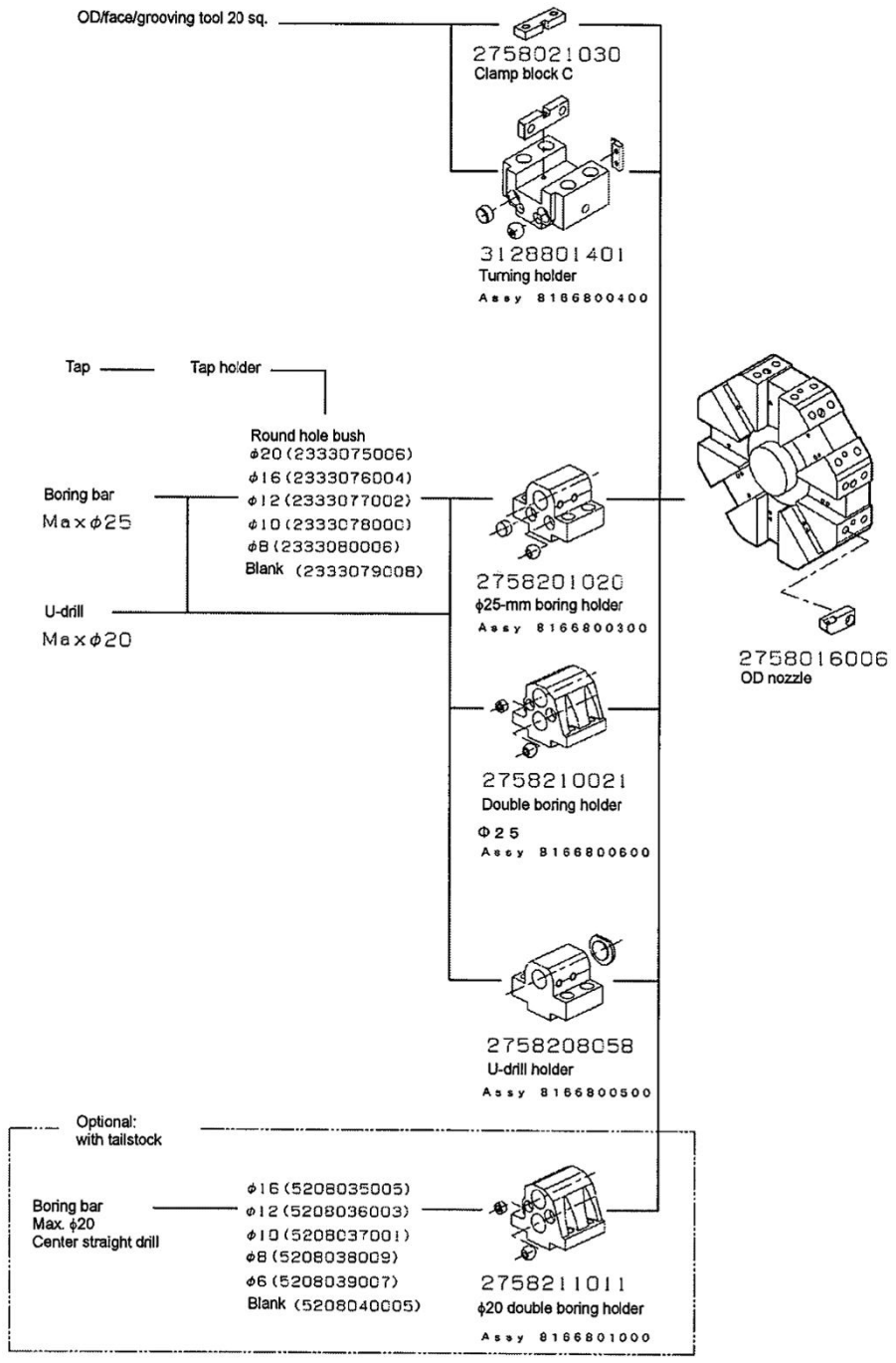
Tooling System Drawing

XT-6
8-station turret specification



CAUTION Do not use an ID holder (2758204024) provided for X-100 (X-10i or X-10). It interferes with the cover when the turret turns.

Fig. 7 Tooling system drawing

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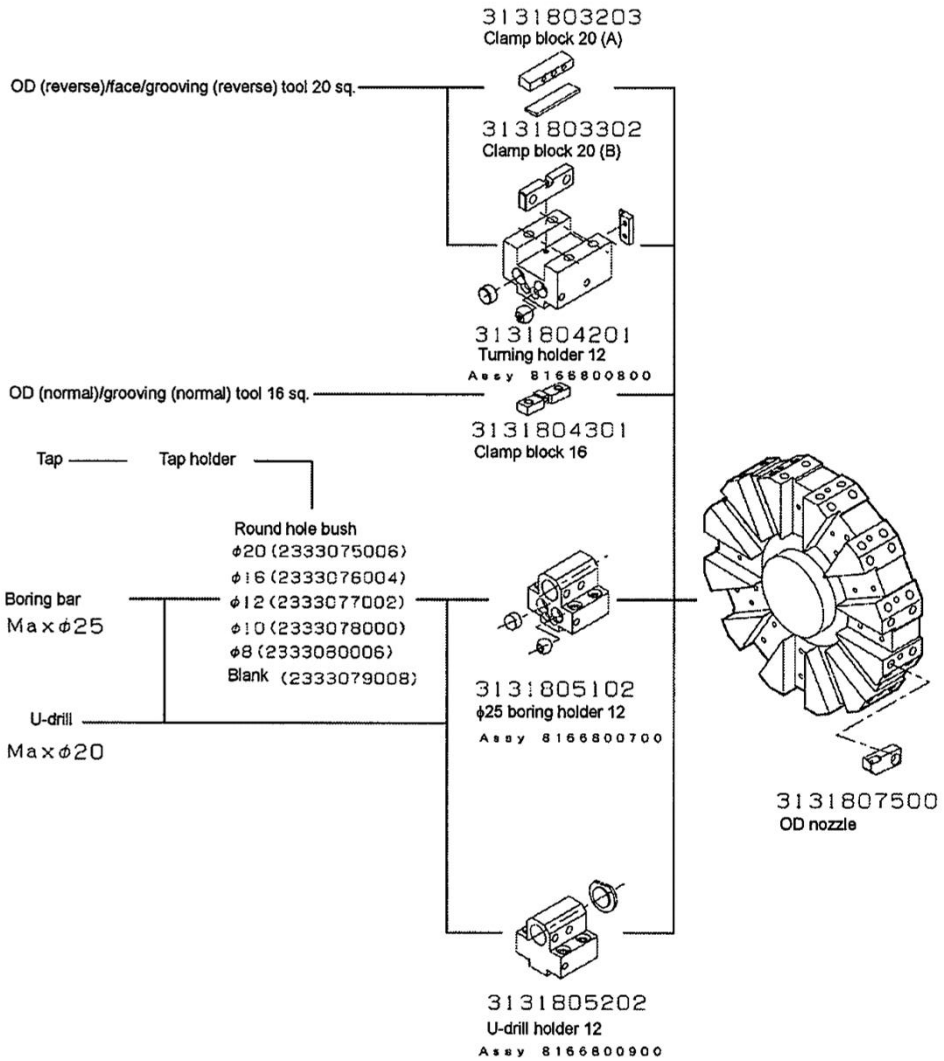
XT-6

12-station turret specification



* In the case of OD and grooving tools, the reverse mounting size is 20 sq. and the normal mounting size is 16 sq.

Fig. 8 Tooling system drawing

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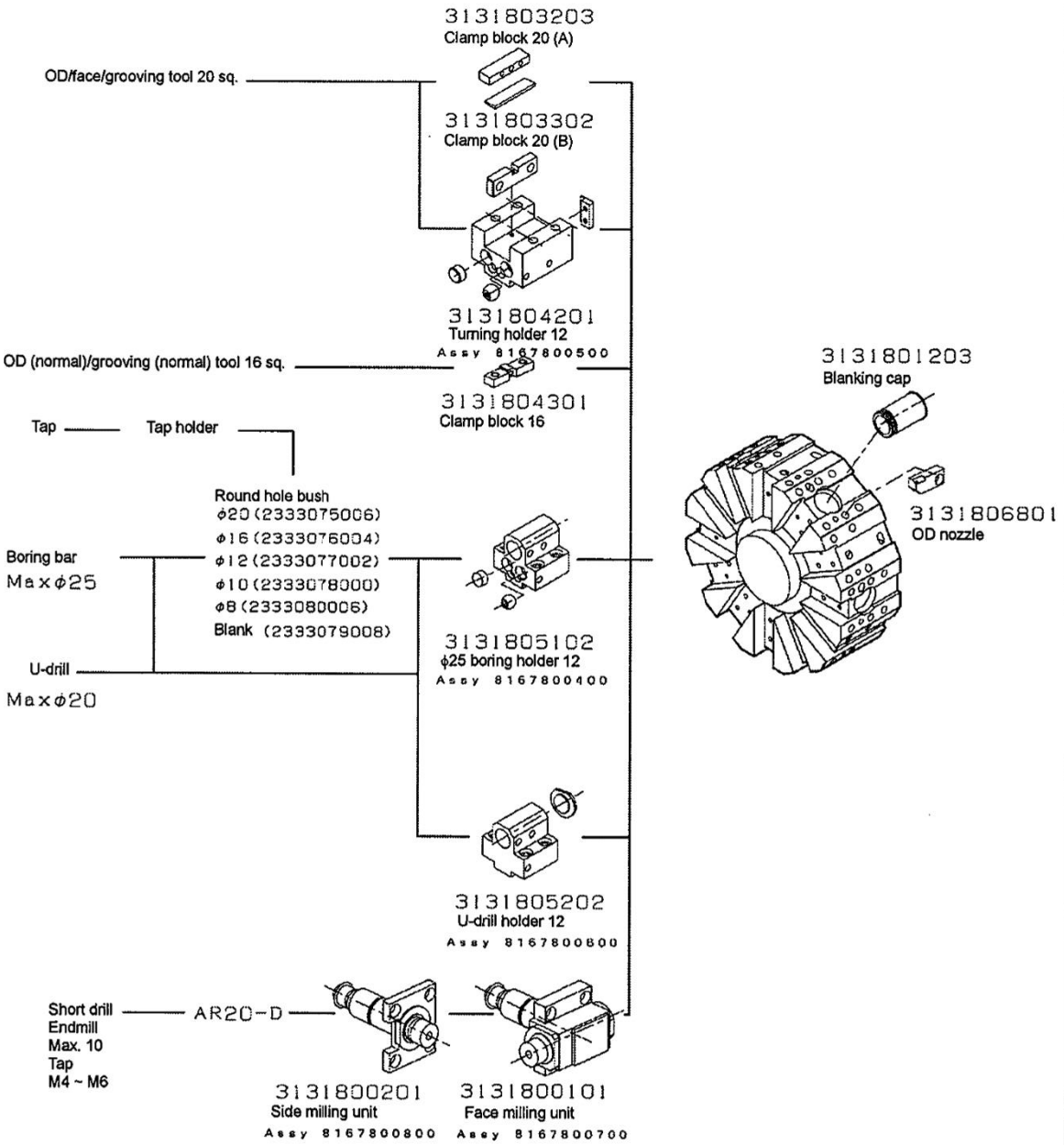
XT-6M



* In the case of OD and grooving tools, the reverse mounting size is 20 sq. and the normal mounting size is 16 sq.

Fig. 9 Tooling system drawing

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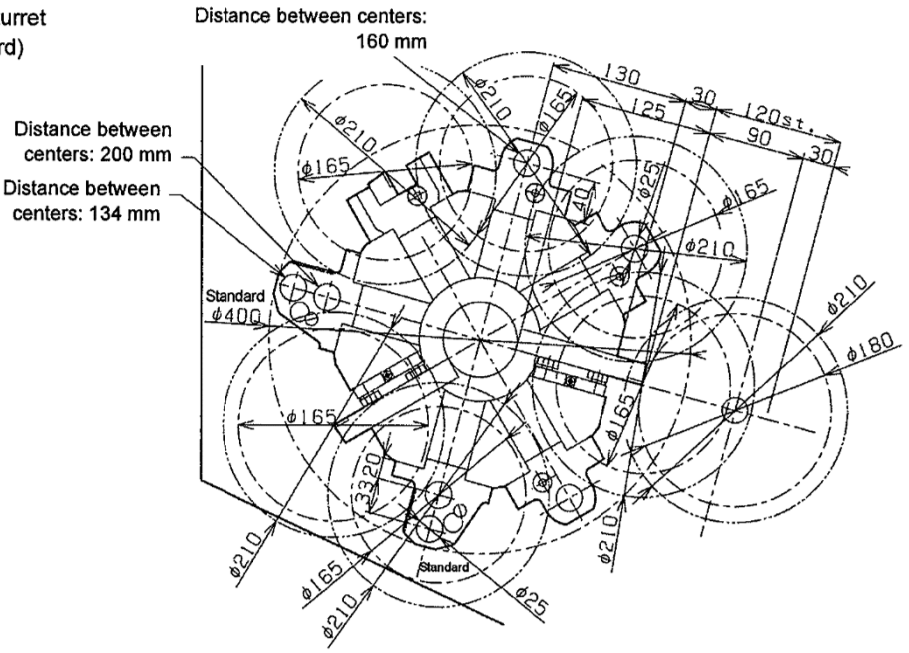
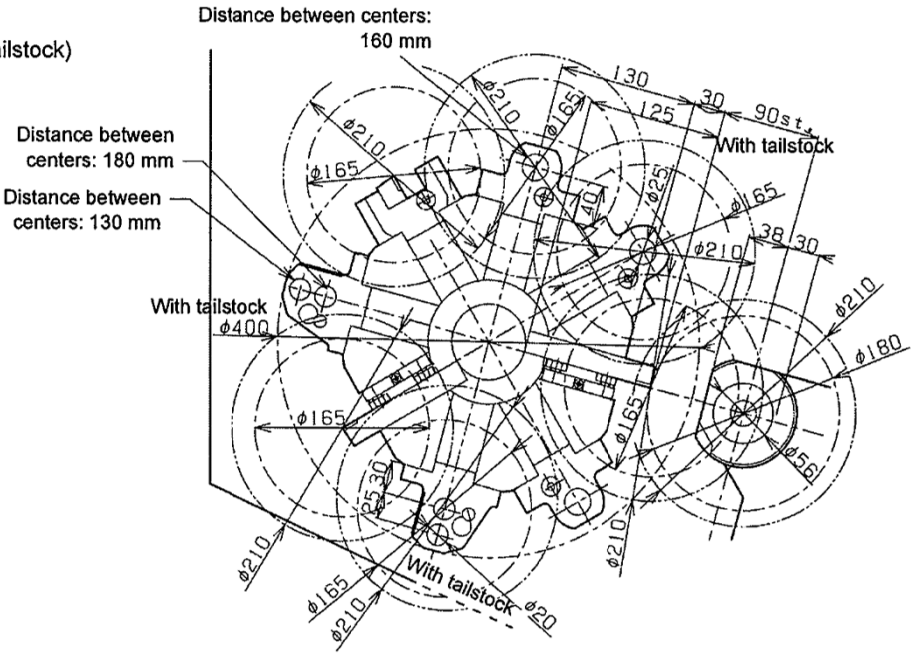
Turret Interference

XT-6
8-station turret
(Standard)



(With tailstock)



CAUTION

Boring holders or turning holders may interfere with the chuck. Pay careful attention when tooling up the turret.

Fig. 10 Turret interference

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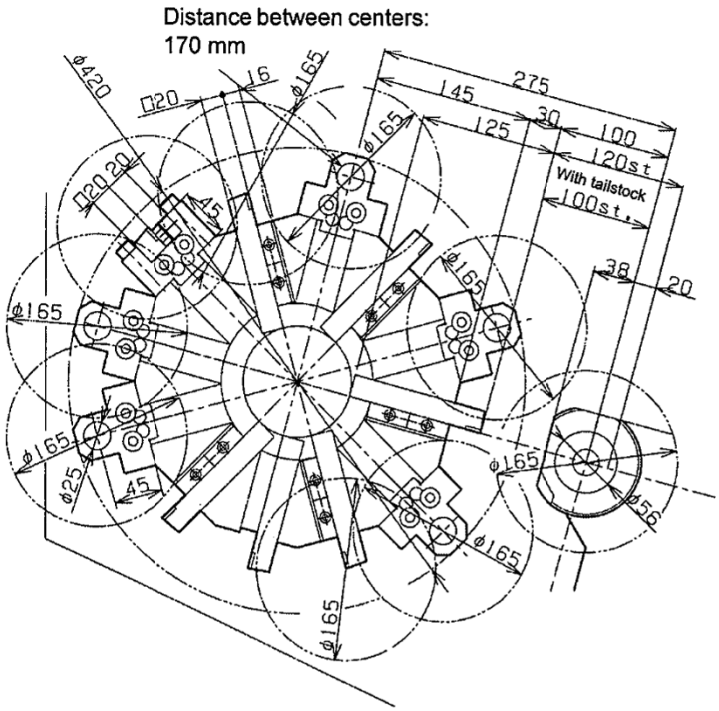
XT-6
12-station turret



* The figure above shows the tooling when an OD (reverse) cutting tool (20 sq.) is mounted.
When an OD (normal) cutting tool is mounted, the tool size is limited to 16 sq.

CAUTION Boring holders or turning holders may interfere with the chuck. Pay careful attention when tooling up the turret.

Fig. 11 Turret interference

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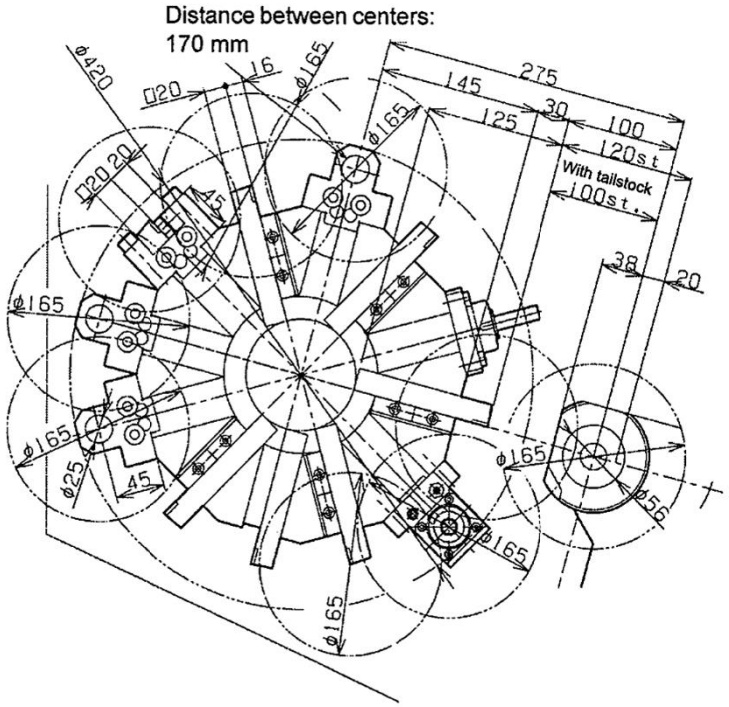
XT-6M



* The figure above shows the tooling when an OD (reverse) cutting tool (20 sq.) is mounted.
When an OD (normal) cutting tool is mounted, the tool size is limited to 16 sq.

CAUTION Boring holders or turning holders may interfere with the chuck. Pay careful attention when tooling up the turret.

Fig. 12 Turret interference

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Stroke Diagram

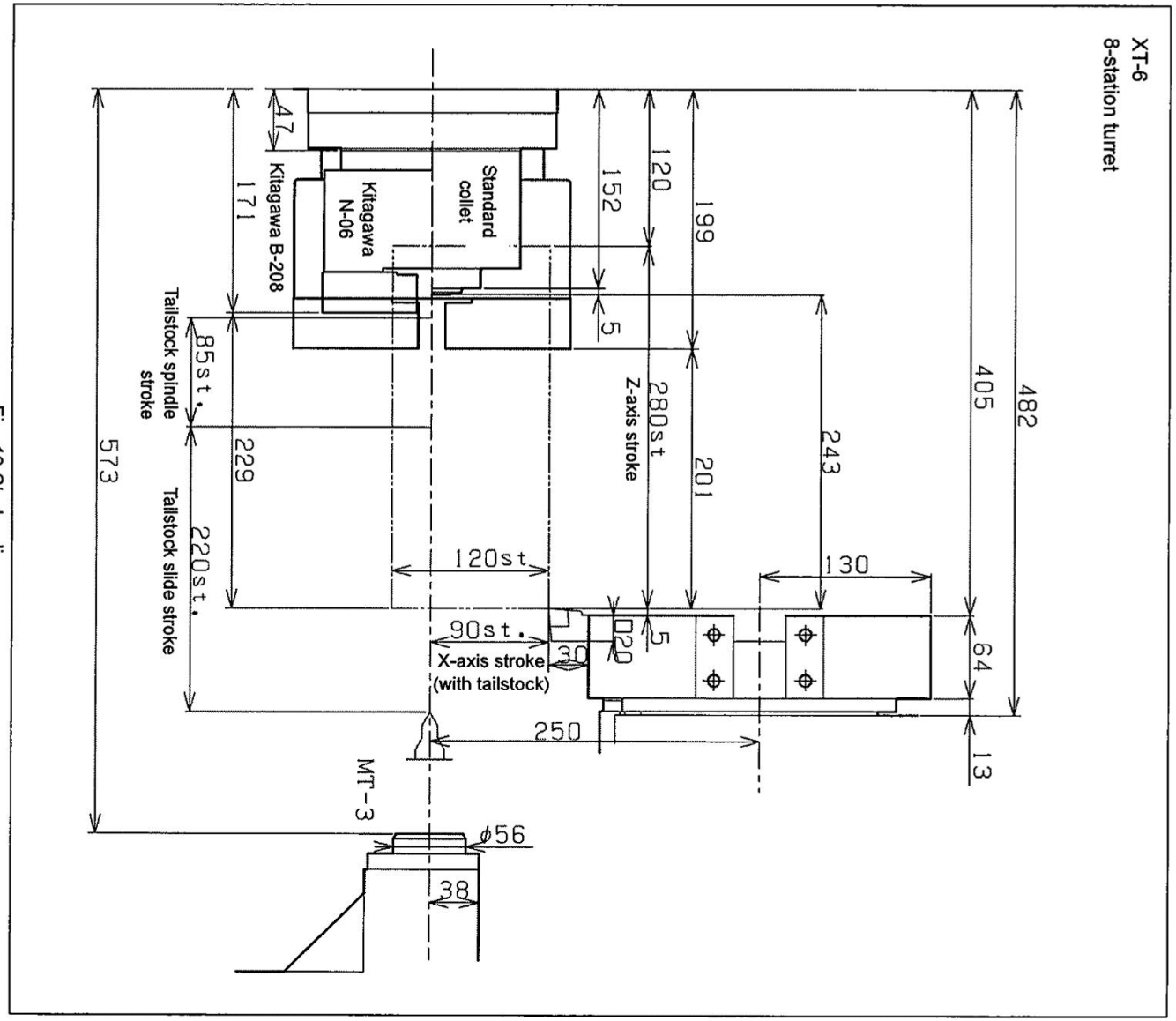

Fig. 13 Stroke diagram

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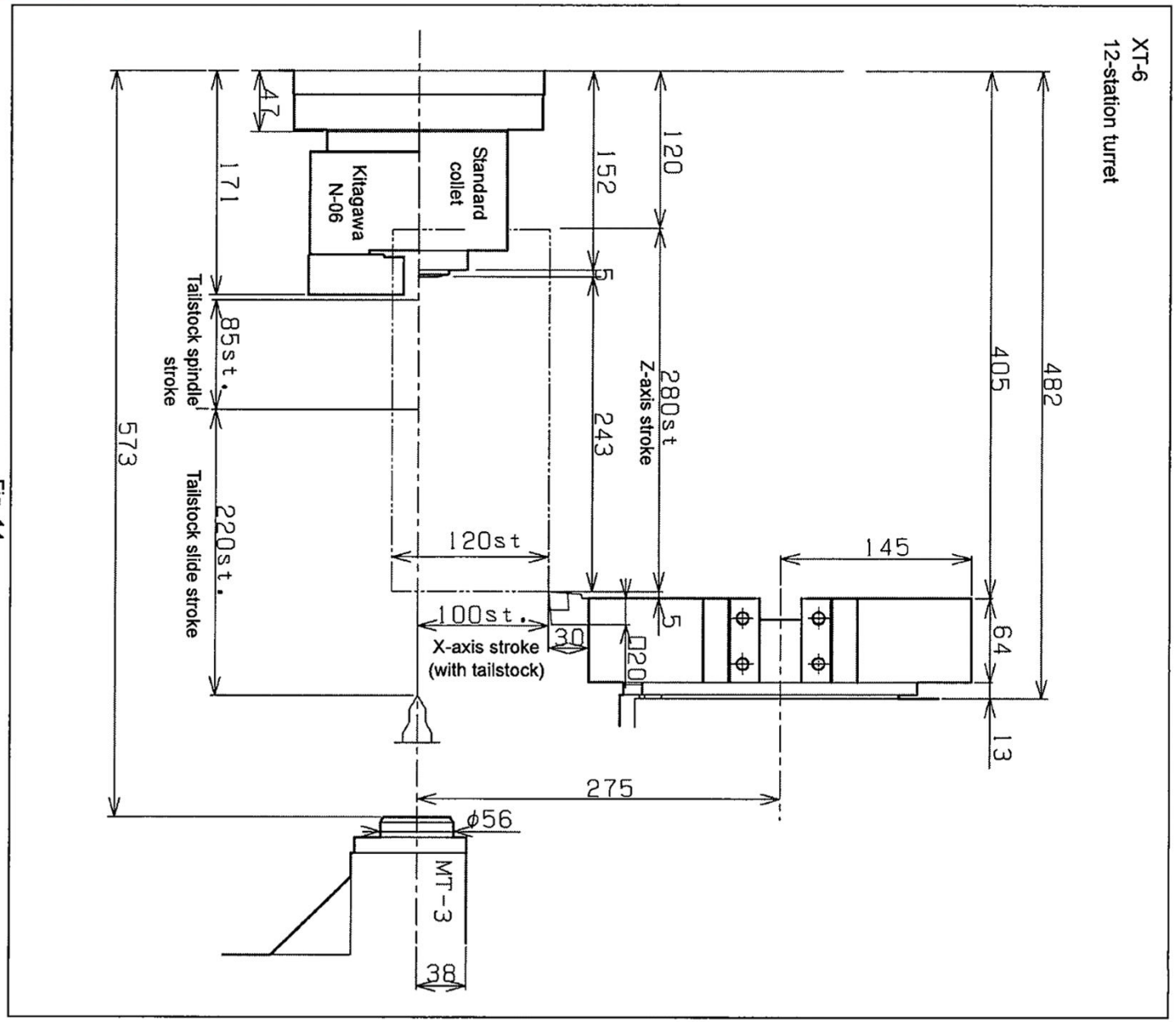

Fig. 14

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XT-6M
O.D. turning range

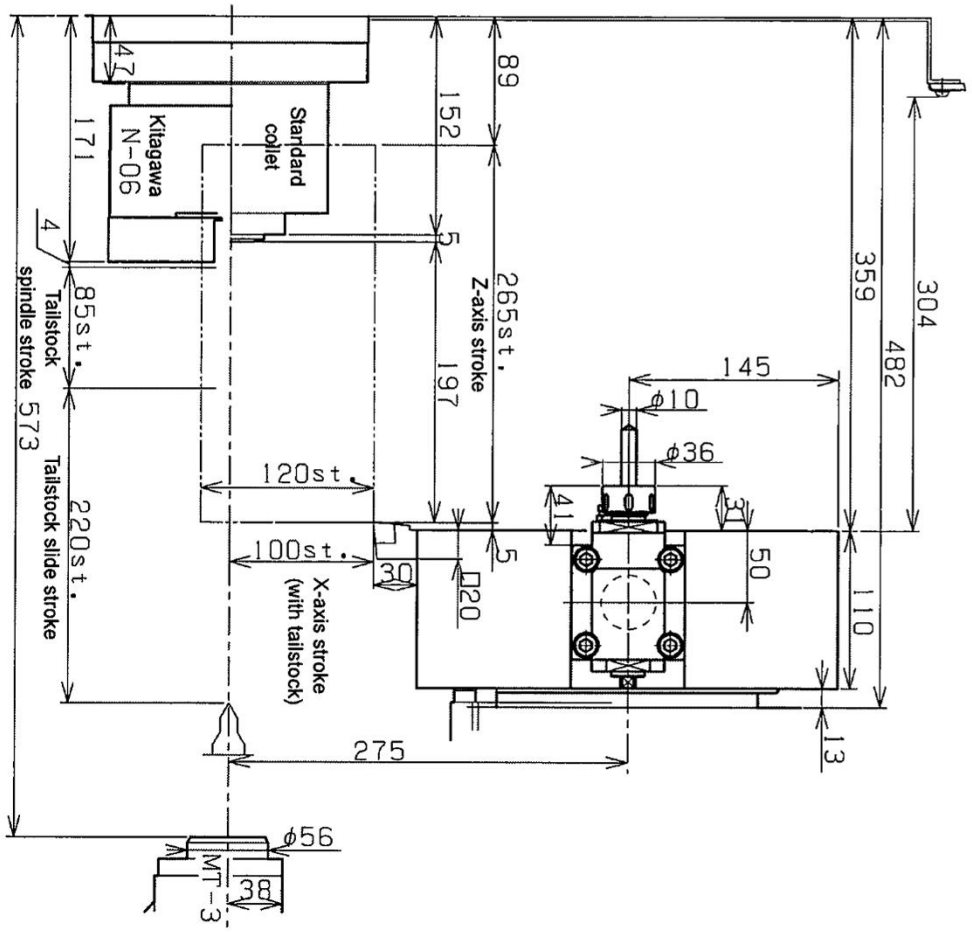

Fig. 15

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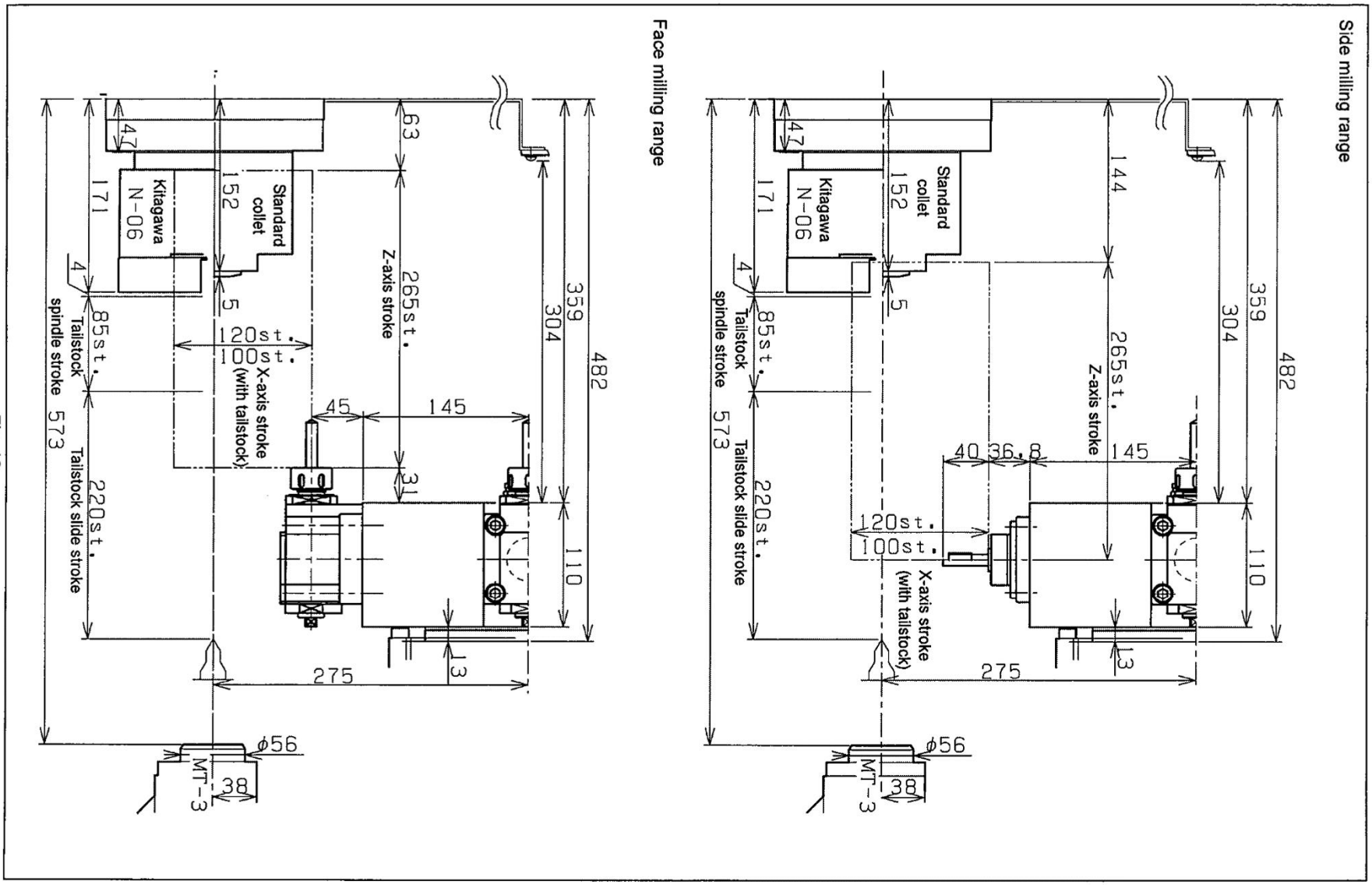

Fig. 16

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Loader Specifications

Item			Unit	FC60	FGH
General	Workpiece size	Max. diameter	mm	ϕ60	ϕ80
		Loading capacity (one side)	kg	1	1.5
		Length	mm	*1	
Loader unit	Traverse axis (Z-axis)	Drive system	-	Rack & pinion	
		Stroke	mm	390 (720 st: optional)	1940 - *1
		Rapid traverse rate	m/min	120	160
	Traverse axis (Y-axis)	Drive system	-	Rack & pinion	
		Stroke	mm	490	460/580*1
		Rapid traverse rate	m/min	120	160
	Hand rotation	Drive system	-	Air cylinder	Air cylinder*2
		Rotation angle	deg.	180	180*2
	Finger	Drive system	-	Air cylinder	
		Jaw stroke (one side)	mm	10	

*1: Details may change depending on the loader type.

*2: For Q-type hand

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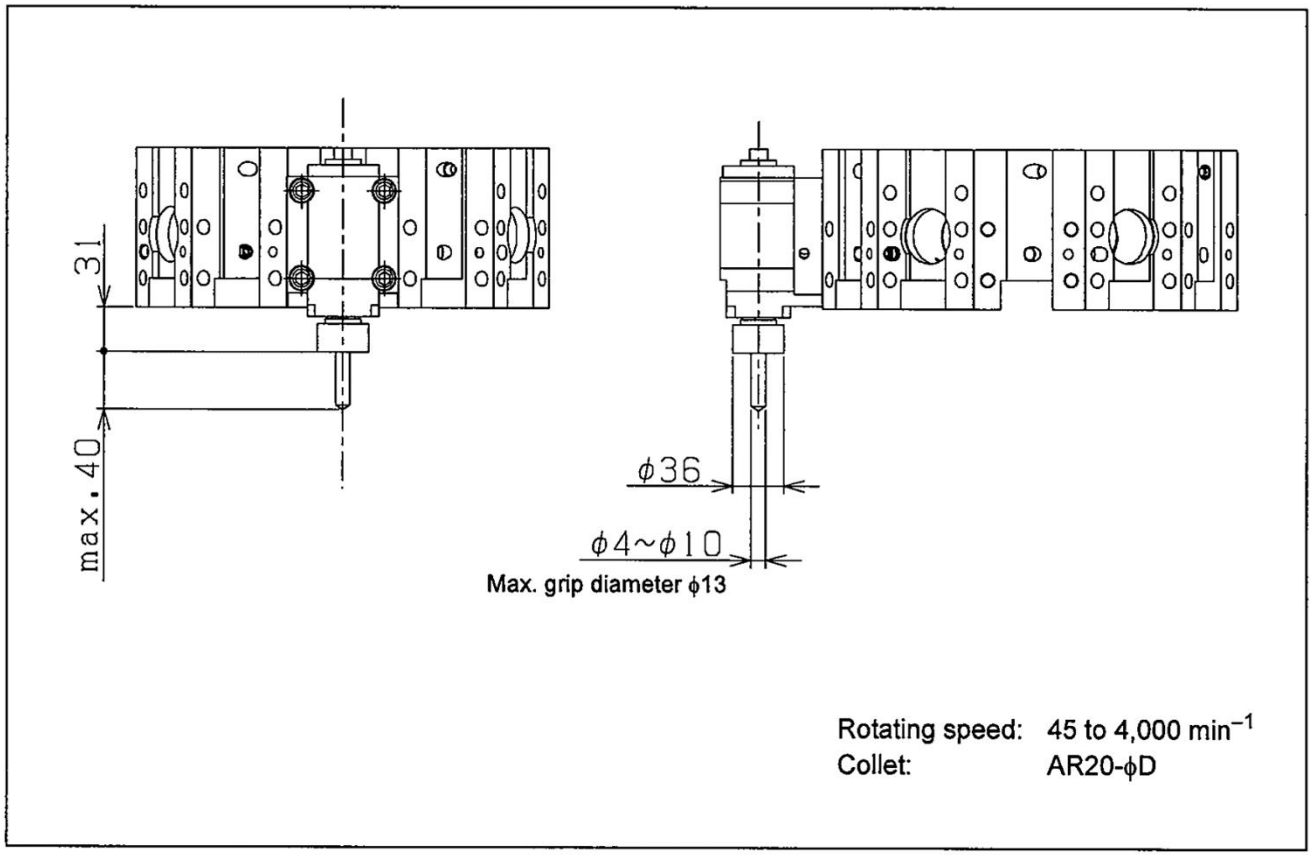
Power Tool Dimensional Drawing

Face Milling Unit



Rotating speed: 45 to 4,000 min^{-1}
Collet: AR20-φD

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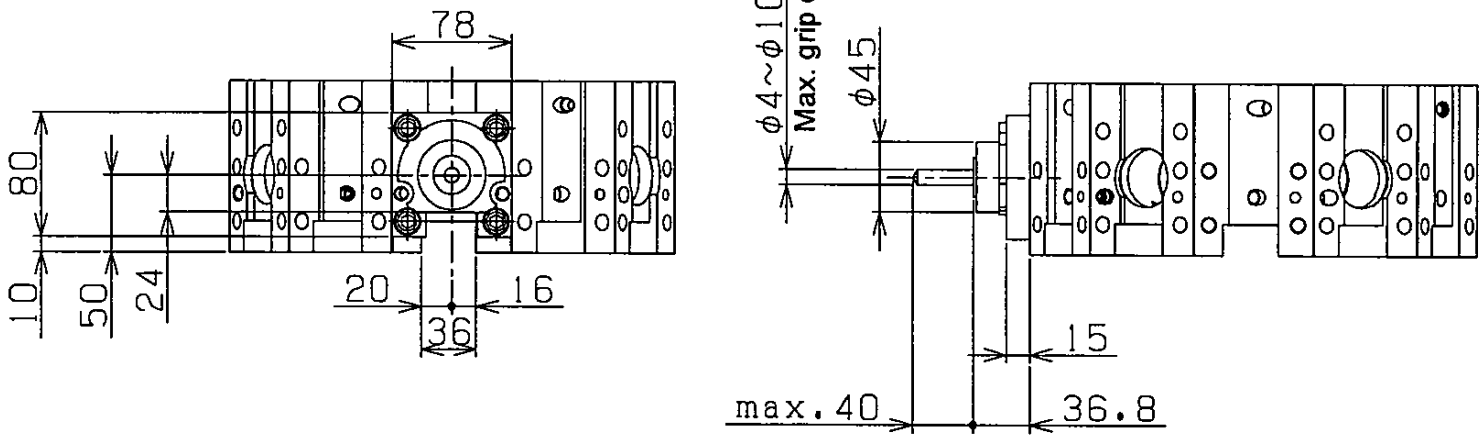
Side Milling Unit



Rotating speed: 45 to 4,000 min^{-1}

Collet: AR20-φD

Programming for Power Tool

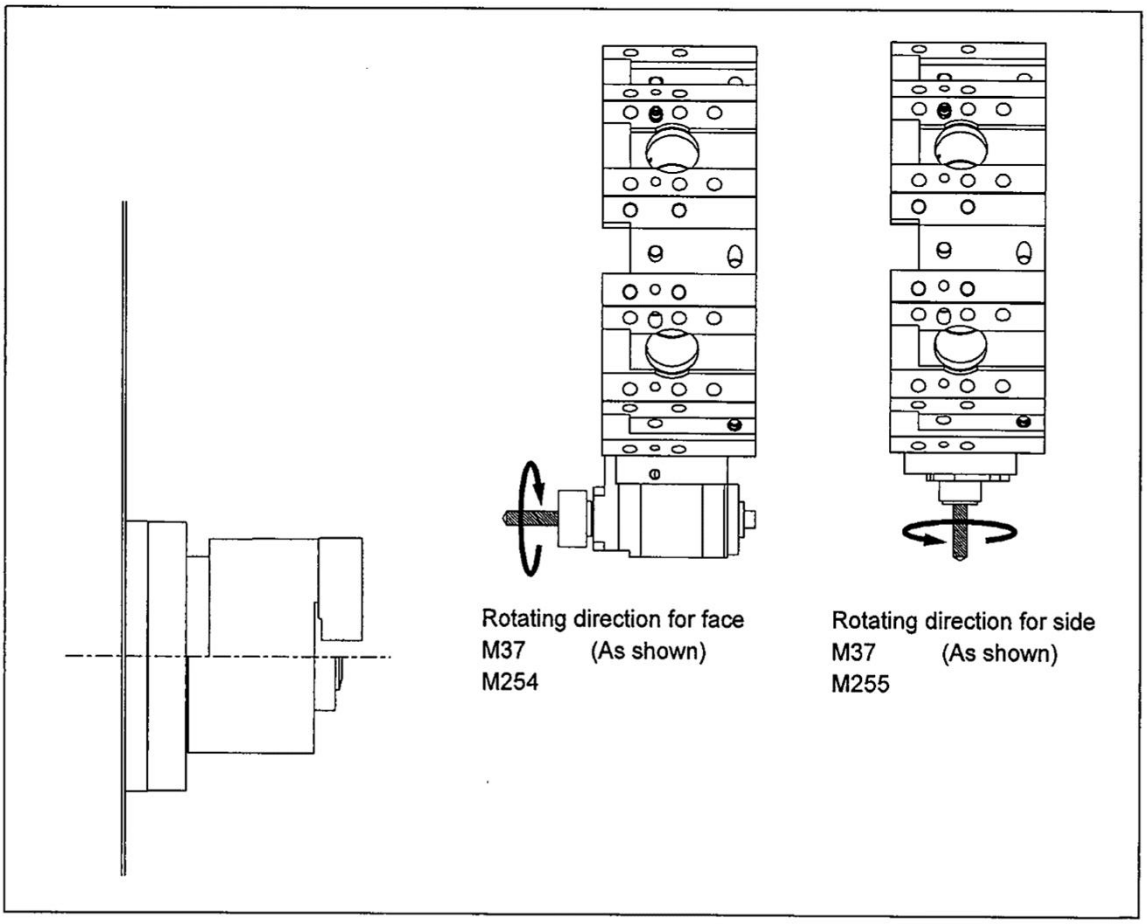
M Codes

Power tool

M37	Power tool normal rotation
M38	Power tool reverse rotation
M39	Power tool stop

M254	Face power tool selection
M255	Side power tool selection

* The face and side power tools rotate in different directions. Therefore, select either the face power tool or side power tool using M254 or M255.



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