

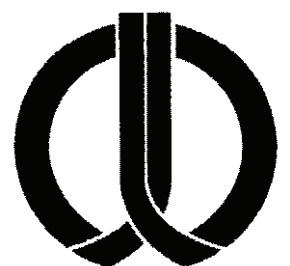
VERTICAL MACHINING CENTER

GENOS M560R-V

TECHNICAL SHEET

(4th Edition)

Pub No. TME13-027-R4 May 2013



TATUNG-OKUMA

INTRODUCTION

Thank you for purchasing this Okuma machine.

This manual contains machine data supplementing the Series OPERATION & MAINTENANCE manual, which is a separate volume. It is intended to be used in conjunction with the series manual.

Please refer to the separate controller manual for information on the controller.

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SECTION 1 OUTLINE

1-1. Machine Specifications

1-1-1. Specification Table GENOS M560-V

	Item	Unit	Description
TRAVEL	X-axis	mm (in.)	1,050 (41.34)
	Y-axis	mm (in.)	560 (22.05)
	Z-axis	mm (in.)	460 (18.11)
	Table upper face to spindle nose	mm (in.)	150 to 610 (5.91 to 24.02)
	Column front to spindle center	mm (in.)	720 (28.35)
TABLE	Working area	mm (in.)	560 × 1,300 (22.05 × 51.18)
	Table size	mm (in.)	560 × 1,300 (22.05 × 51.18)
	Table surface		18 mm (0.71 in.) wide T-slots × 4 (pitch: 125 (4.92))
	Table surface to floor	mm (in.)	800 (31.50)
	Load capacity	kg (lb)	900 (1,980)
SPINDLE	Speed range (Standard)	min ⁻¹	50 to 8,000
	Tapered bore		7/24 taper No. 40
	Bearing ID	mm (in.)	Φ70 (2.76)/8,000, 12,000, 15,000
	Torque/Base speed	N·m (lbf·ft)/min ⁻¹	198 (146)/530
	Max speed (optional)	min ⁻¹	12,000, 15,000
	Torque/Base speed (optional)	N·m (lbf·ft)/min ⁻¹	199 (147)/720
FEED RATE	Rapid traverse	m/min (ipm)	X, Y: 40 (1,574.80), Z: 32 (1,259.84)
	Cutting feed	m/min (fpm)	X, Y, Z: 32 (105)
MOTOR	Spindle drive	kW (hp)	11/7.5 (15/10) (8,000), 22/18.5 (30/24.67) (12,000, 15,000),
	Axis feed	kW (hp)	X, Y, Z: 4.0 (5.33)
ATC	Tool shank		Standard: MAS BT 40 Optional: CAT No. 40, DIN No. 40, JIS BT40
	Pull stud		Standard: MAS 2 Optional: MAS1, CAT, Special CAT, DIN, JIS
	Tool storage capacity (optional)	tools	20 (32)
	Max tool diameter (with/without adjacent tools)	mm (in.)	Φ90/Φ125 (3.54/4.92)
	Max tool length/weight	mm/kg (in./lb)	300/8 (11.81/18)
	Tool selection		Memory random
	Tool change time (T-T/C-C)	sec	1.2/4.0
	Tool change method		Tool change arm

	Item	Unit	Description
MACHINE SPEC	Height	mm (in.)	2,750 (108.27)
	Required floor space (width × depth)	mm (in.)	2,470 × 3,105 (97.24 × 122.24)
	Mass	kg (lb)	7,500 (16,500)
REMARKS	Machine type		X saddle feed ram type
	Guideway		3-axis linear guide
	Coolant tank capacity	L (US gal)	230 (60.8) (effective: 120 (31.7))
	Required total power	kVA	22 (8,000), 37 (12,000, 15,000)
	Voltage	V	200 VAC ± 10%
	Frequency	Hz	50/60
	Protection level of control panel		IP 54

Table 1-1

1-1-2. Dimensional Drawings GENOS M560-V (20/32-tool ATC)

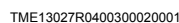


Fig. 1-1

1-2. Installation Plan

1-2-1. GENOS M560-V (20/32-tool ATC)

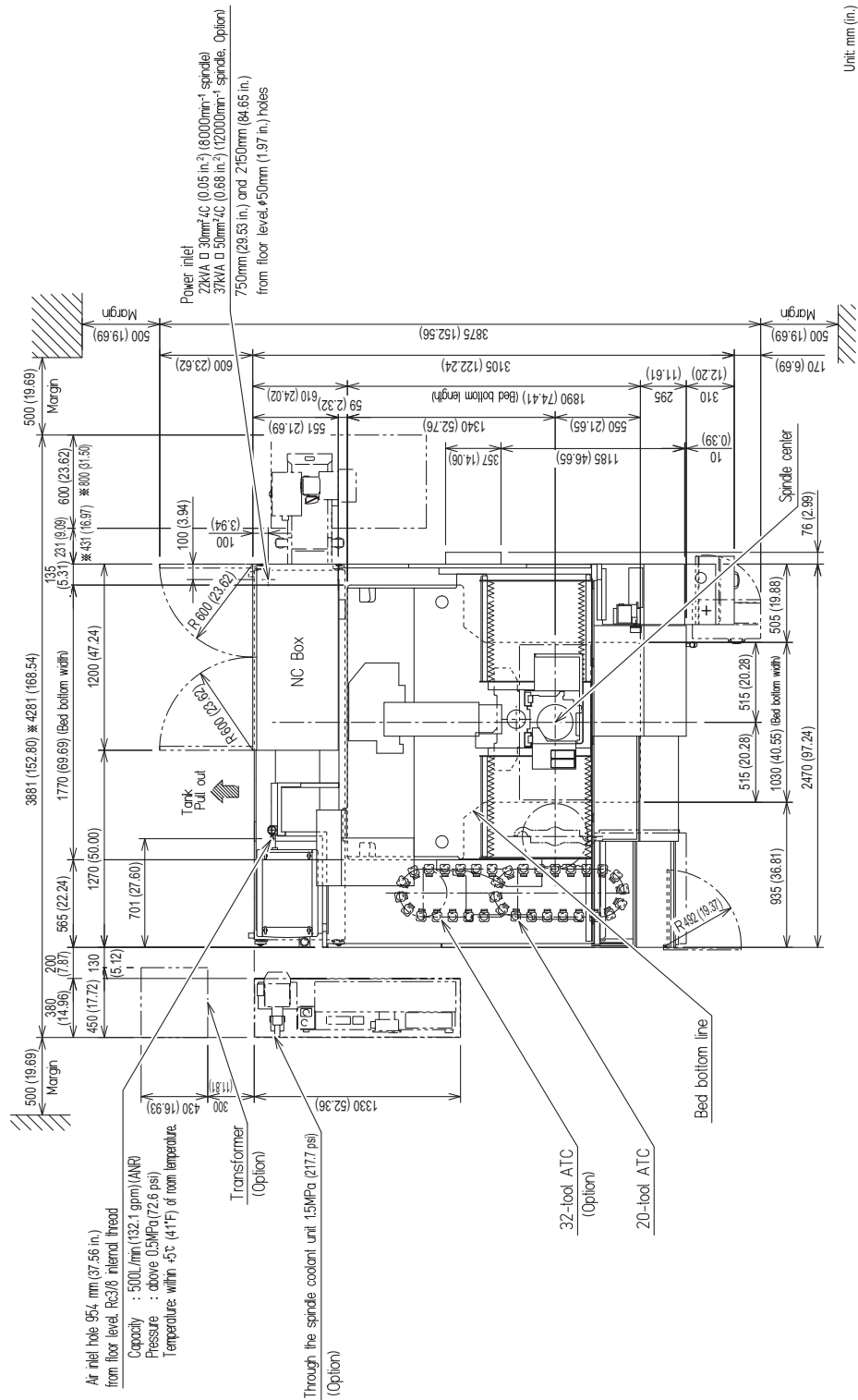
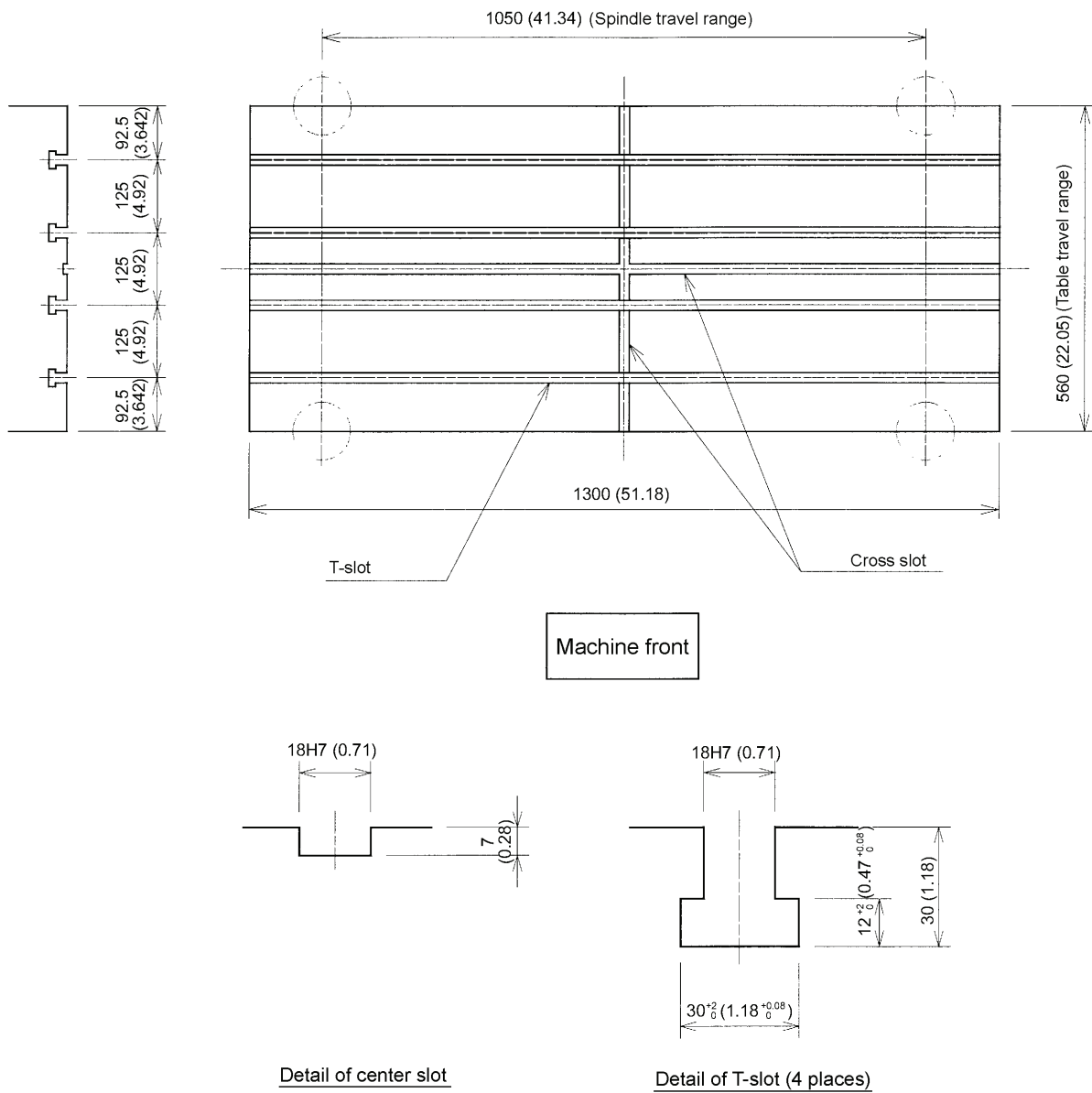


Fig. 1-2

TME13027R0400300030001

1-3. Table Dimensions



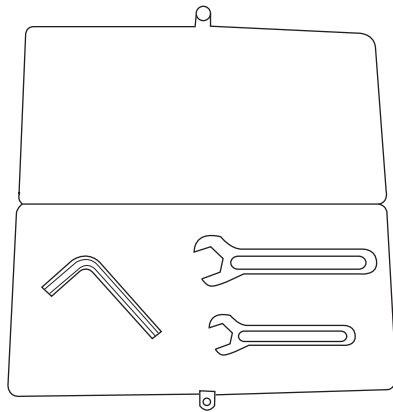
Unit: mm (in.)

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Fig. 1-3

1-4. Standard Accessories

Hand tools for operation (Refer to the accessory table for the sizes and the numbers of tool.)



Single ended wrench

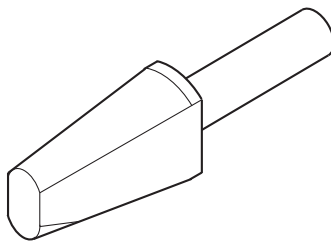
Allen wrench

Tool box

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Fig. 1-4

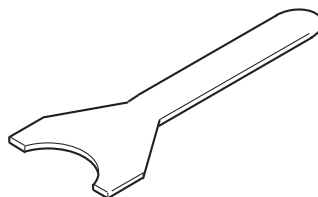
Cleaning bar



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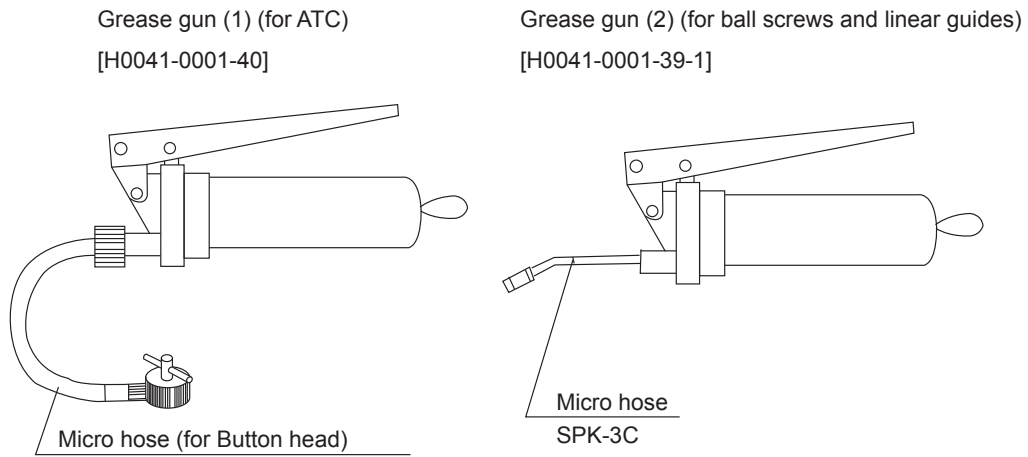
Fig. 1-5

Tool release lever



TME13027R0400300050003

Fig. 1-6



TME13027R0400300050004

Fig. 1-7

1-5. Foundation Plan

1-5-1. GENOS M560-V (20/32-tool ATC)

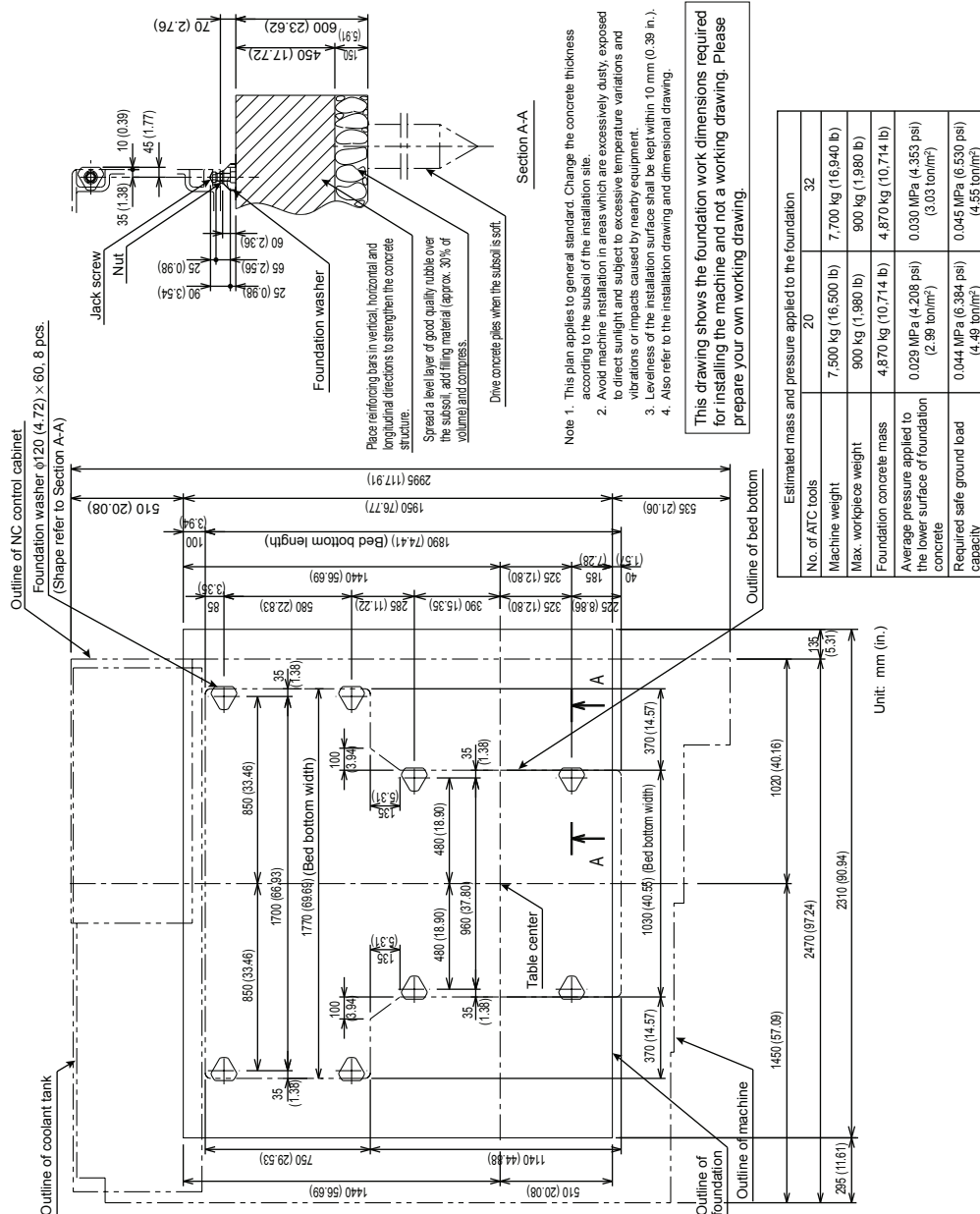
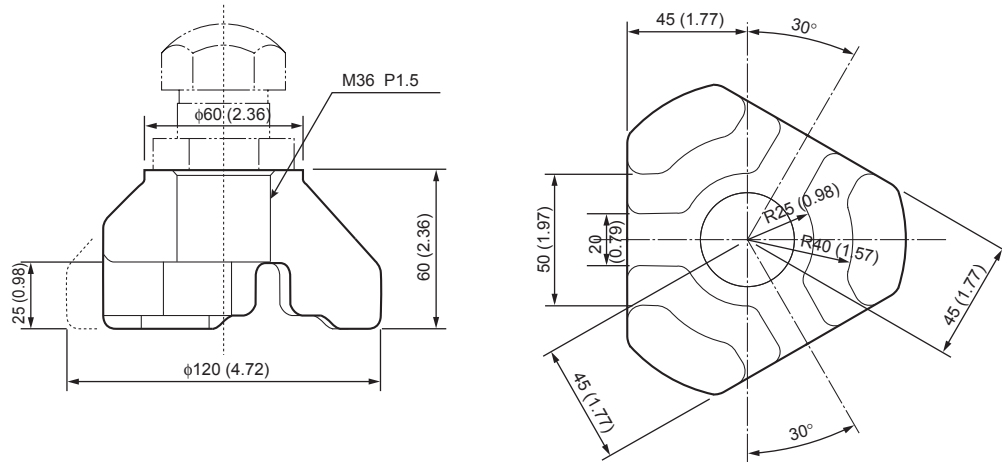


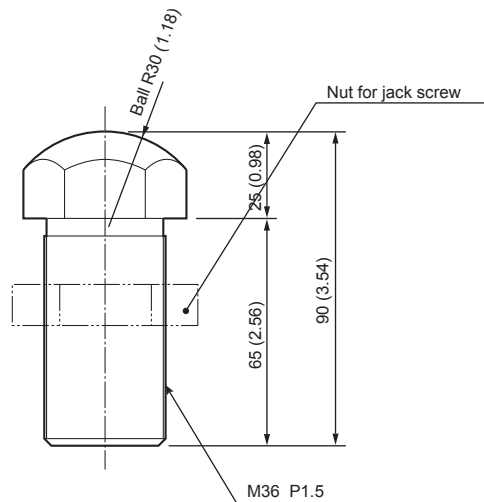
Fig. 1-8

1-6. Foundation Block and Jack Screw (Kit Specification)

Foundation block



Jack screw



Unit: mm (in.)

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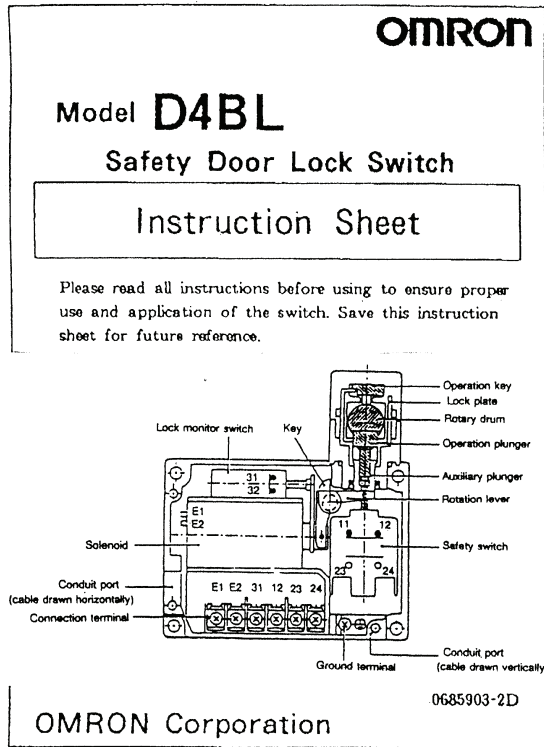
Fig. 1-9

SAFETY INSTRUCTIONS

Indicates general instructions for **safe operation**.

- 1) Eight foundation blocks are necessary.
- 2) Ensure that the floor where the foundation washers are placed is flat.
- 3) Note that the standard clearance from floor to bed bottom is 70 mm (2.76 in.), and should not exceed a maximum of 80 mm (3.15 in.). If the bed bottom is excessively high, the jack screw screwing length becomes short, which may cause damage to the threads.
- 4) When turning the jack screws, insert a key or similar tool into the retention recess in the foundation block.
- 5) After adjusting the level with jack screws, firmly fix the screws with the lock nut.

1-7. Reference Data (Safety Lock Switch)



- Keep the electrical load below the rated value.
- Never wire to a wrong terminal.
- Be sure to evaluate the switch under actual working conditions after installation.
- If the force exceeding holding force is imposed on the operation key, the lock mechanism may break and the equipment in the machine room will start operating.
- Do not drop the switch. Excessive shock and vibration can cause malfunction or other damage to switch characteristics. Do not disassemble the internal switch, there are no user serviceable parts inside.

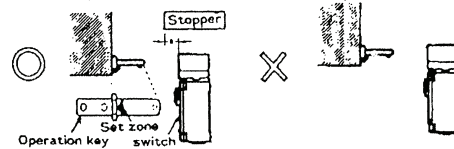
● Release key

- The release key is used to unlock the switch in case of emergency or if the power supply to the switch fails.
- In the case of mechanical lock type, use an appropriate tool (like a driver) to rotate the release key to "Unlock" from "Lock" so that locking will be released and the door can be open. When release key is set to "Unlock", the door will not be locked and no power will be supplied to machine even if the door is closed. The safety of operator working in machine room is ensured.
- Do not use the release key to start or stop the machine.
- Only authorized person must use release key.
- To prevent the easy access to the release key by unauthorized person, set the release key to "Lock" in normal condition and seal the release key with seal wax.
- Confirm position of the release key is under "LOCK" when assembling the cover in the main body.



● Stopper

- Do not use the switch as a stopper. Be sure to install a stopper as shown in the following illustration to prevent edge of operation key from hitting the switch directly.



⚠ CAUTION

Not following a precaution given as a "Caution" can result in injury to people or damage to the product or system.

⚠ CAUTION

Do not dismount the operation key from the door intentionally and insert it to the switch with the door open. Do not operate with the shock damper, which is installed into the switch head when the switch is shipped. Machine may start operating and injury or death may be caused.

NOTICE

- Do not disassemble or touch inside under power-on. Electrical shock hazard may be caused.
- Install the operation key so that it will not hit the operator when the door open. Injury may be caused.
- When operating limit switch as a part of a safety circuit or an emergency stop circuit to prevent injury, operate the NC contacts that have positive-opening function in positive mode. For a safety, tighten the switch body or operation key with one-way screws or equivalents. Or install a switch protection cover and warning label for safety to prevent easy removal of the switch or operation key.
- Connect the fuse to the switch in series to prevent it from short circuit damage. The value of the breaking current of the fuse must be calculated by multiplying rated current by 150 to 200%. When using the switch with EN rating, use 10A fuse, type gI or gG that complies with IEC269.
- Do not put the electric power when wiring.
- To prevent the burning of solenoid due to the overvoltage, put the protective fuse into the solenoid circuit.
- Do not use the switch where explosive gas, ignitable gas, or any other harmful gasses may be present.

● Solenoid lock type

- The solenoid lock type locks the door only when power is supplied to the solenoid. The door will be unlocked if the power supply to the solenoid fails. Do not use solenoid lock type for machines that continue to move for a while even after the machine power is off.

■ Environment

1. Make sure to check influence of the environment when using the switch under the ambient condition of oil and chemicals. Certain kinds of oil and chemicals may adversely affect sealing properties, which may cause faulty contacts, faulty insulation, electric shock hazard or fire.
2. Do not use the switch under any of the conditions mentioned below.
 - Frequent temperature changes.
 - High humidity or where dew condensation may be generated.
 - Where the switch is subjected to severe vibration.
 - Where the processing trash or dust is directly sprayed.

- The life expectancy of the switch is seriously affected by the number of electrical and mechanical actuations. Evaluate the switch under actual working conditions before permanent installation. Be sure to keep the frequency of operations within specifications.

■ Mounting

● Tightening torque

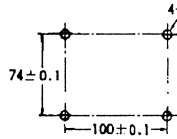
- Adequate tightening torque are as follows and tighten within the range.

Switch mounting hole	4.90 to 5.88 N·m	M5 screw
Switch cover screw	1.18 to 1.37 N·m	M4 screw
Connector at conduit opening	1.77 to 2.16 N·m	
Black cap for conduit opening	1.27 to 1.67 N·m	
Head screw	0.78 to 0.98 N·m	M3.5 screw
Operation key mounting hole	2.35 to 2.75 N·m	M5 screw
Terminal screw	0.59 to 0.78 N·m	M3 screw

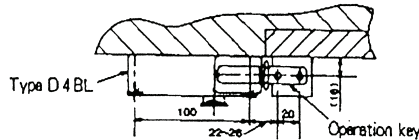
Fig. 1-10

- Mounting of the switch and operation key
Four pieces of M5 allen-head bolt and spring washer are used for mounting the switch body.
When operation key mounted, two pieces of M5 allen-head bolt are used.

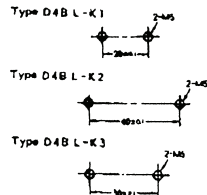
Switch mounting hole
Process dimension



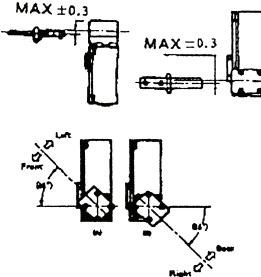
Example of mounting



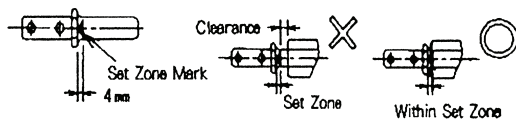
Operation key mounting hole
process dimension



- Mounting of operation key
 - Operation key must be mounted onto the door such that it and entrance of switch head may match each other with the tolerance of ± 0.3 mm.
 - Do not use Model D4BS operation key for D4BL. It is not compatible.
- Head direction change
As shown right in (A) and (B), the head can be mounted and dismounted by rotating the head by 45° .
Make sure that the mechanical lock and solenoid release work properly in mounting the head.



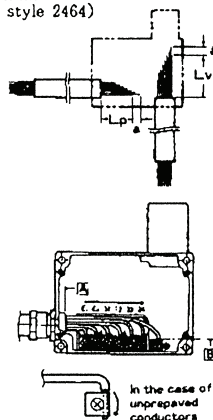
- Fixation of the Door
When the door is closed (Operation key is inserted), the door (Operation key) may return back beyond the set zone mark by the weight of a door, bumper rubber of a door, etc.
The door must be fixed by a hook or the like in order to stay in the set zone mark.



- Connection of cable
 - Cable and conductor
Adequate cable outer diameter: 5.5~14mm
Adequate conductor: AWG 18 (UL style 2464)
 - Stripped dimension

Terminal No.	Lp (mm)	LV (mm)	B (mm)
E ₁	30 ± 2	80 ± 2	8 ± 1
E ₂	35 ± 2	75 ± 2	
31	45 ± 2	60 ± 2	
12	55 ± 2	50 ± 2	
23 (21)	65 ± 2	45 ± 2	
24 (22)	70 ± 2	35 ± 2	
Earth	90 ± 2	50 ± 2	

- Connection of conductors
 - As shown in the illustration, insert the cable to the conduit opening, edge of the external insulation sheath reaching the line A or B, which is inner surface of metal enclosure.
 - As shown in the illustration, for easy wiring, conductors should be connected in sequence beginning with the terminal nearest to the conduit opening.
 - In the case of wiring unprepared stranded conductors, firstly twist the wires a few times, secondly wrap them around screws clockwise.

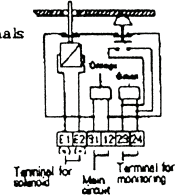
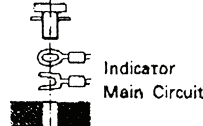


- Indicators
Lighting of Indicators

Condition	Operation mode		
	Door condition	Open	Closed
Build-in switch	Solenoid	ON	OFF
	Indicator/wiring	ON	OFF
1NC/1NO+1NC	Orange/31-12	○	×
	Green/23-24	×	○
2NC+1NC	Orange/31-12	○	×
	Green/21-22	○	×
2NC+2NC	Orange/31-12	○	×
	Green/41-22	○	×

Note: ○ Lighted
× off

Indicators must be wired to designated terminals with main circuit as illustration.



- Handling of conduit opening
To assure IP67 protection, use the OMRON type SC-□M series for connectors. As alternatives for PG13.5 conduit size, type ABS-08PG13.5 or ABS-12PG13.5 manufactured by Niporex may be used.
Apply sealing tape between connector and conduit opening so that the enclosure will conform to IP67.
Use a cable with a diameter suitable for the connector.
For unused conduit opening, apply a conduit cap provided and tighten it to the specified torque.
- Others
Do not touch the solenoid when the power is supplied, or else solenoid will radiate heat.
- TECHNICAL SPECIFICATIONS
Conformity: Machine Directive, Low Voltage Directive, EN1088
Approval: EN60947-5-1, GS-ET-19, SUVA, UL508, CSA C22.2 No.14.
Utilization category: AC-15
Rating voltage: 250VAC (without indicator), 115VAC (with LED), 250VAC (with neon lamp)
Rating current: 3A (without indicator), 6A (with LED), 3A (with neon lamp)

Positive opening travel: 20mm min.
Positive opening minimum force: 19.6N
Enclosure rating: IP67 (EN60947-5-1), TYPE 6P, 13 (UL, CSA)
Minimum actuator travel: 23mm
Maximum speed of actuation: 0.5m/sec
Minimum speed of actuation: 0.05m/sec
Maximum frequency of actuation: 30 operation/min.
Short circuit protective device: Use 10A fuse, type gI or gG.
(IEC269)
Minimum locking force: 700N
Enclosure rating: IP67
Maintenance and Repairs
Please mention in machine manufacturer's instruction Manual that the user must not repair nor maintain the switch and must contact machine manufacturer for them.

Precautions In Using the Product

- Always use this product within its rating and specifications and apply appropriate safety measures. For assistance with any of applications listed below, please consult an Omron sales office.
- ① Condition and circumstances which are not mentioned in the instruction sheet.
- ② Control of nuclear power, trains, air planes, automobiles, incinerators, medical devices, game machines, or safety devices.
- ③ When used in safety applications to prevent injury or property damage.

Contact the following sales offices about product information.

North America		
U.S.A.	OMRON ELECTRONICS INC.	Phone: 1-800-55-OMRON
Canada	OMRON CANADA INC.	Phone: 1-416-286-6465 1-514-636-6676 (French)
Europe		
Headquarter	OMRON EUROPE B.V.	Phone: 31-2356-81-300 Fax: 31-2356-81-388
Asia and Pacific		
大韓民國	韓國OMRON株式会社	Phone: 82-2-549-2766
中國	歐姆龍(中國)有限公司	Phone: 86-10-6516-5778
香港	歐姆龍亞洲有限公司	Phone: 852-2375-3827
台灣	台灣歐姆龍有限公司	Phone: 886-2-2715-3331
Australia	OMRON ELECTRONICS PTY. LTD.	Phone: 61-2-9878-6377
Singapore	OMRON ASIA PACIFIC PTE. LTD.	Phone: 65-635-3011

Fig. 1-11

SECTION 2 TECHNICAL DATA

2-1. Dimensions of Tool Shank and Pull Stud

2-1-1. GENOS M560-V Tool Shank and Pull Stud (#40 MAS2)

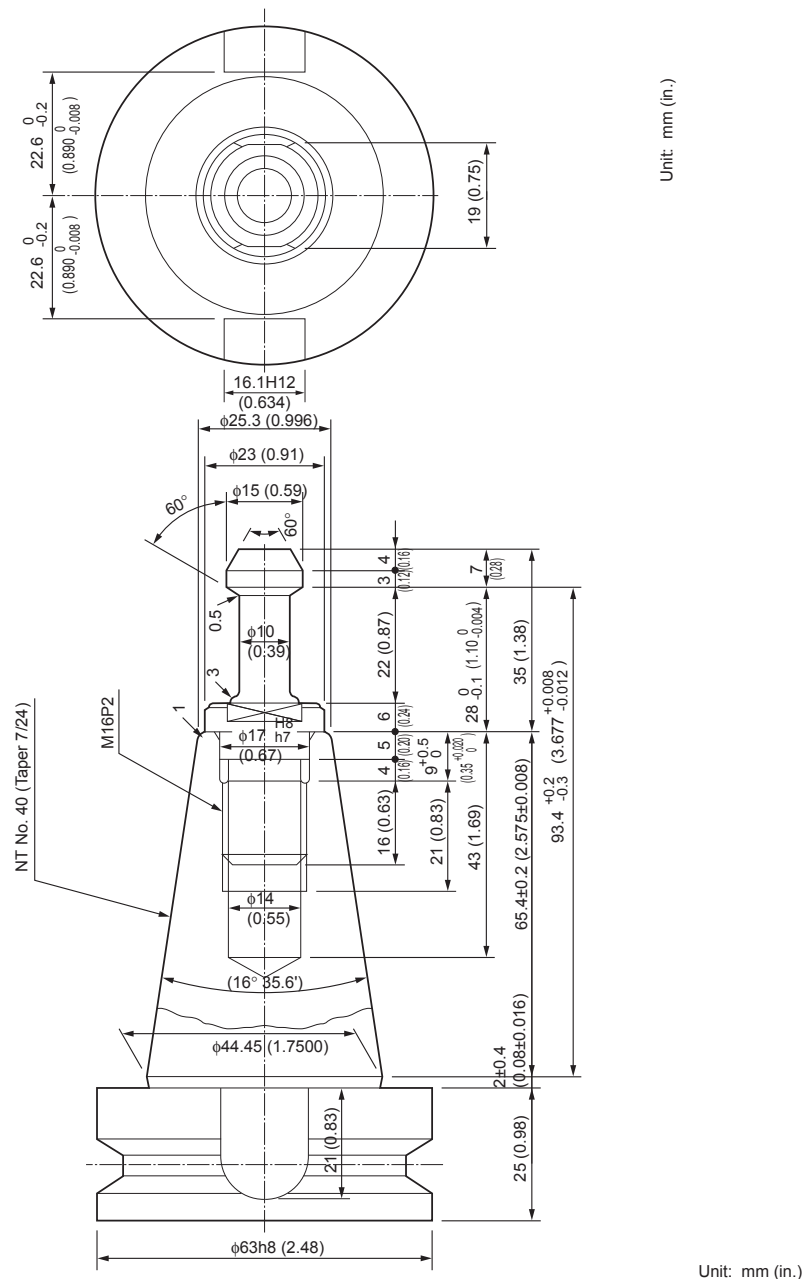


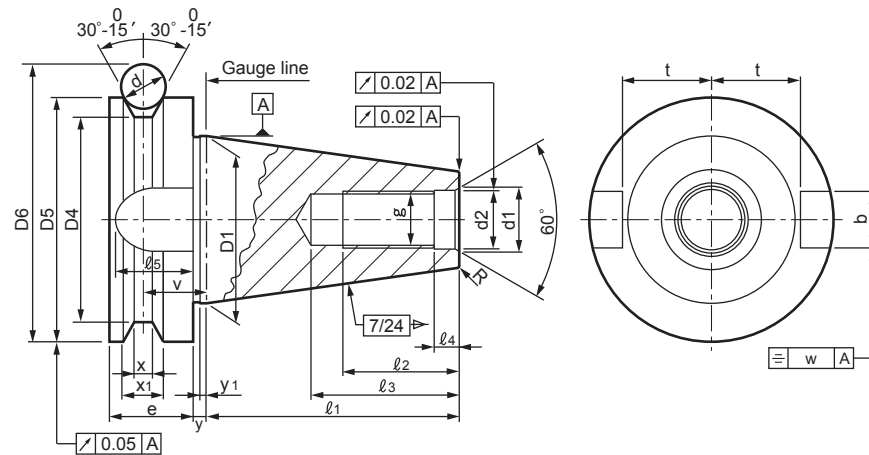
Fig. 2-1

[Supplement]

- 1) Tool shank shape and dimensions comply with MAS Standard BT 40 (403-1982).
- 2) Pull Stud shape and dimensions comply to MAS Standard P40T2 (403-1982).

2-1-2. Tool Shank Dimensions

Bottle Grip Taper Shank (MAS 403-1982)



Unit: mm

Nominal No.	Shank			Thread						Slot on Flange			
	D1	$\ell_1 \pm 0.2$	R (Max.)	d1	d2 H8	g 6H	ℓ_2 (Min.)	ℓ_3 (Min.)	$\ell_4 +0.5$ 0	b H12	ℓ_5 (Min.)	$t_0 -0.2$ 0	W
BT30	31.75	48.4	0.5	14	12.5	M12	24	34	7.0	16.1	17	16.3	0.12
BT35	38.10	56.4	0.5	14	12.5	M12	24	34	7.0	16.1	20	19.6	0.12
➡ BT40	44.45	65.4	1	19	17	M16	30	43	9.0	16.1	21	22.6	0.12
BT45	57.15	82.8	1	23	21	M20	38	53	11.0	19.3	26	29.1	0.12
➡ BT50	69.85	101.8	1	27	25	M24	45	62	13.0	25.7	31	35.4	0.2
BT55	88.90	126.8	1	33	31	M30	56	76	16.0	25.7	31	45.1	0.2
BT60	107.95	161.8	1	33	31	M30	56	76	16.0	25.7	34	60.1	0.2

Nominal No.	Flange								Allowance of 7/24 Taper* ATD	Reference		
	D4	D5 h8	e	v ± 0.1	x	$x_1 +0.1$ 0	y ± 0.4	$y_1 0 -0.4$		Smaller end Diameter	d	D6
BT30	38	46	20	13.6	4	8	2	2	$+0.0039$ 0	17.633	8	56.144
BT35	43	53	22	14.6	5	10	2	2	$+0.0045$ 0	21.650	10	65.680
➡ BT40	53	63	25	16.6	5	10	2	2	$+0.0041$ 0	25.375	10	75.679
BT45	73	85	30	21.2	6	12	3	3	$+0.0052$ 0	33.000	12	100.216
➡ BT50	85	100	35	23.2	7	15	3	3	$+0.0051$ 0	40.158	15	119.019
BT55	107	125	40	26.2	9	18	3	3	$+0.0063$ 0	51.917	18	147.823
BT60	135	155	45	28.2	11	20	3	3	$+0.0065$ 0	60.758	20	180.359

TME13027R0400400020001

Fig. 2-2

[Supplement]

Angular allowance of 7/24 taper shall be plus AT4, minus 0, which is specified in JIS B0614, class AT4.

Note

- 1) Allowance shall be middle class stipulated in JIS B0405, unless otherwise specified.
- 2) A relief may be provided at "d2" portion for finish grinding on mating recess.

[Supplement]

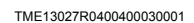


Fig. 2-3

- 1) For more information on the tool shank shape, refer to MAS (403-1982) BT 40.
- 2) The above drawing is based on MAS Standard. Prepare the ATC tools by referring to GENOS-M series OPERATION & MAINTENANCE.

[illegible]

TME13027R0400400040001

- 1) For more information on the tool shank shape, refer to JIS (B6339-1998) BT 40.
- 2) The above drawing is based on JIS. Prepare the ATC tools by referring to GENOS-M series OPERATION & MAINTENANCE.

[illegible]

TME13027R0400400050001

- 1) For more information on the tool shank shape, refer to CAT (MF5311) No. 40.
- 2) The above drawing is based on CAT Standard. Prepare the ATC tools by referring to GENOS-M series OPERATION & MAINTENANCE.

Technical drawing of a mechanical part, showing three views: Front View, Top View, and Side View. The drawing includes dimensions in mm with tolerances, surface texture symbols, and material specifications.

Front View Dimensions:

- Overall diameter: $\phi 22.3 \pm 0.05$ (2.846 $\pm$ 0.0020)
- Flange diameter: $\phi 63.55 \pm 0.1$ (2.5020 $\pm$ 0.004)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Central hole diameter: $\phi 17$ H7 (0.67)
- Central hole depth: 22.8 $\pm$ 0.4 (0.898 $\pm$ 0.016)
- Flange thickness: 25 $\pm$ 0.4 (0.98 $\pm$ 0.016)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)

Top View Dimensions:

- Overall diameter: $\phi 63.55 \pm 0.1$ (2.5020 $\pm$ 0.004)
- Flange diameter: $\phi 63.55 \pm 0.1$ (2.5020 $\pm$ 0.004)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Central hole diameter: $\phi 17$ H7 (0.67)
- Central hole depth: 22.8 $\pm$ 0.4 (0.898 $\pm$ 0.016)
- Flange thickness: 25 $\pm$ 0.4 (0.98 $\pm$ 0.016)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)

Side View Dimensions:

- Overall diameter: $\phi 63.55 \pm 0.1$ (2.5020 $\pm$ 0.004)
- Flange diameter: $\phi 63.55 \pm 0.1$ (2.5020 $\pm$ 0.004)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Central hole diameter: $\phi 17$ H7 (0.67)
- Central hole depth: 22.8 $\pm$ 0.4 (0.898 $\pm$ 0.016)
- Flange thickness: 25 $\pm$ 0.4 (0.98 $\pm$ 0.016)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)
- Flange thickness: 18.5 $\pm$ 0.3 (0.728 $\pm$ 0.012)

Surface Texture Symbols:

- 0.12 A
- 0.02 A
- 0.1 A
- 0.02 A
- 0.05 A
- 0.025 A

Material Specifications:

- NT40 (laper 7/24)
- M16 P2

Angles:

- 30°
- 60° $\pm$ 15°

Other Dimensions:

- 8.2 (0.323)
- Min. 32 (1.26)
- Min. 42.5 (1.673)
- 68.4 $\pm$ 0.1 (2.693 $\pm$ 0.004)
- 19.1 $\pm$ 0.1 (0.752 $\pm$ 0.004)
- 11.1 $\pm$ 0.1 (0.437 $\pm$ 0.004)
- 3.2 $\pm$ 0.1 (0.126 $\pm$ 0.004)
- 3.75 $\pm$ 0.15 (0.1476 $\pm$ 0.0059)

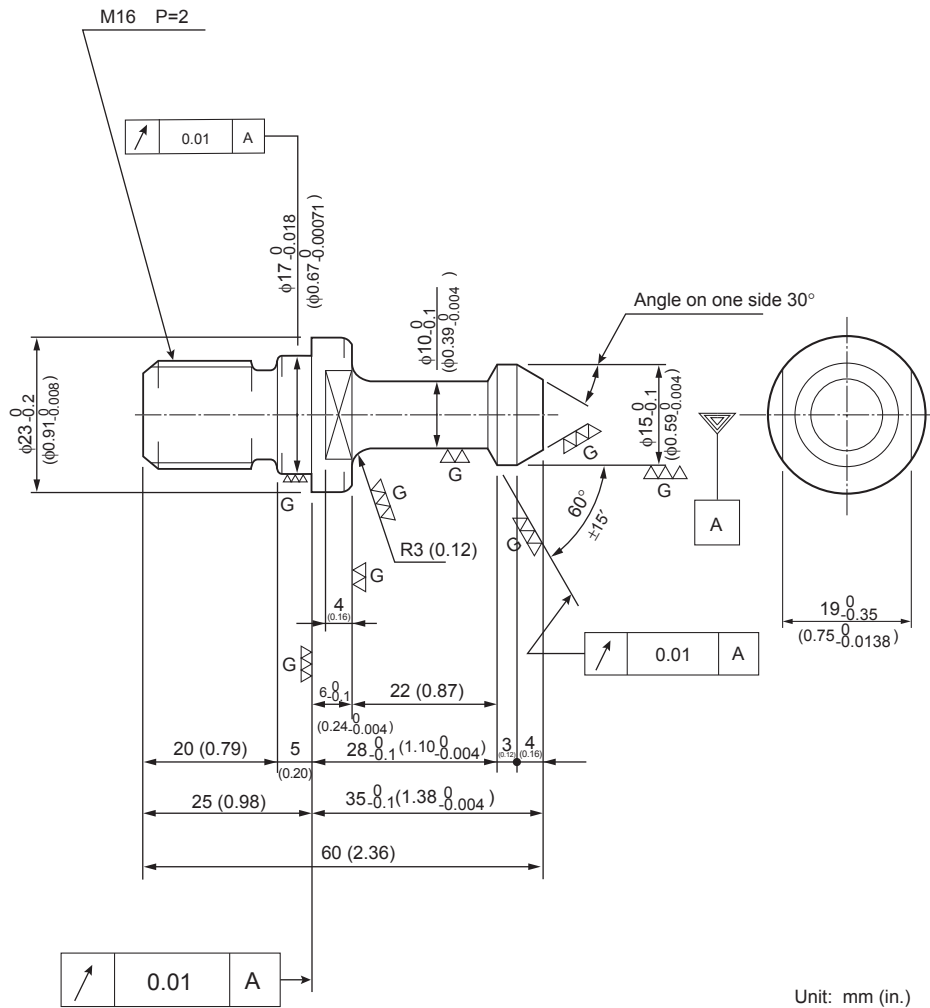
Unit: mm (in.)

TME13027R0400400060001

1) For more information on the tool shank shape, refer to DIN (69871) No. 40.
2) The above drawing is based on DIN Standard. Prepare the ATC tools by referring to GENOS-M series OPERATION & MAINTENANCE.

2-1-3. Pull Stud Dimensions

MAS2 (#40)-compliant tool pull stud



Material : SNCM420

Heat treatment: Carburizing (HRC 60 or higher)

This pull stud is not usable for the tool with coolant hole.

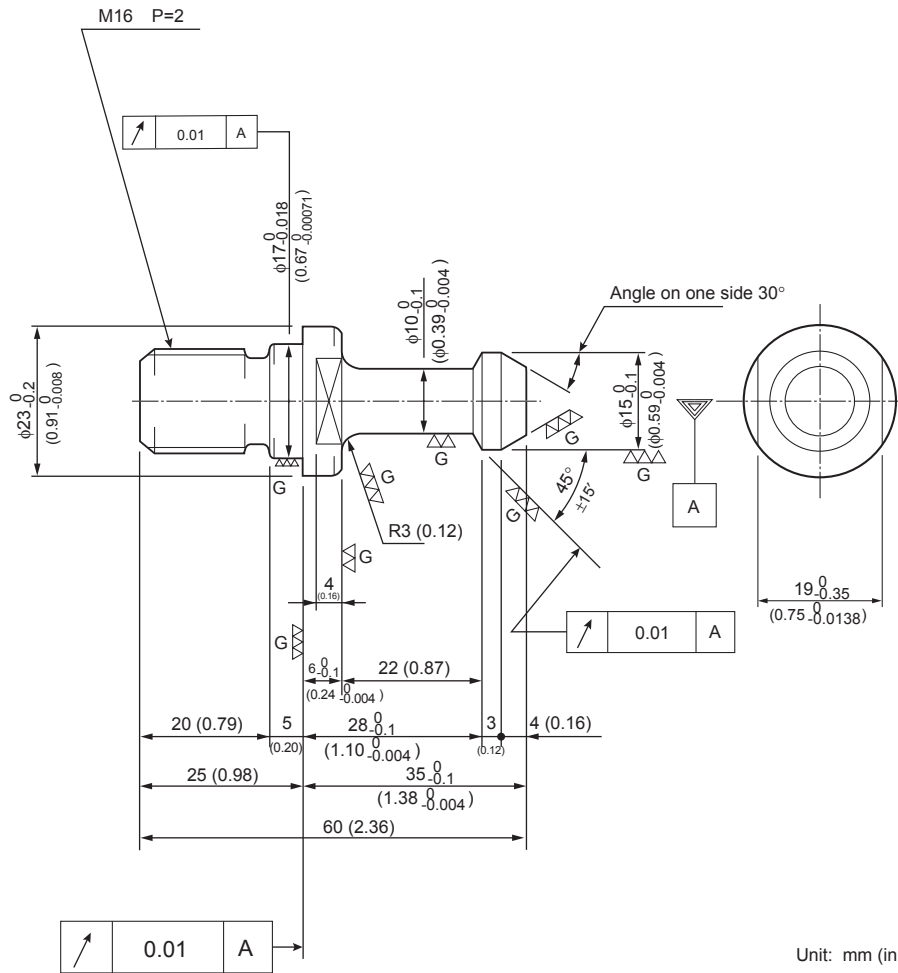
TME13027R0400400070001

Fig. 2-7

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in MAS (403-1982) P40T.

MAS1 (#40)-compliant tool pull stud



Material : SNCM420

Heat treatment: Carburizing (HRC 60 or higher)

This pull stud is not usable for the tool with coolant hole.

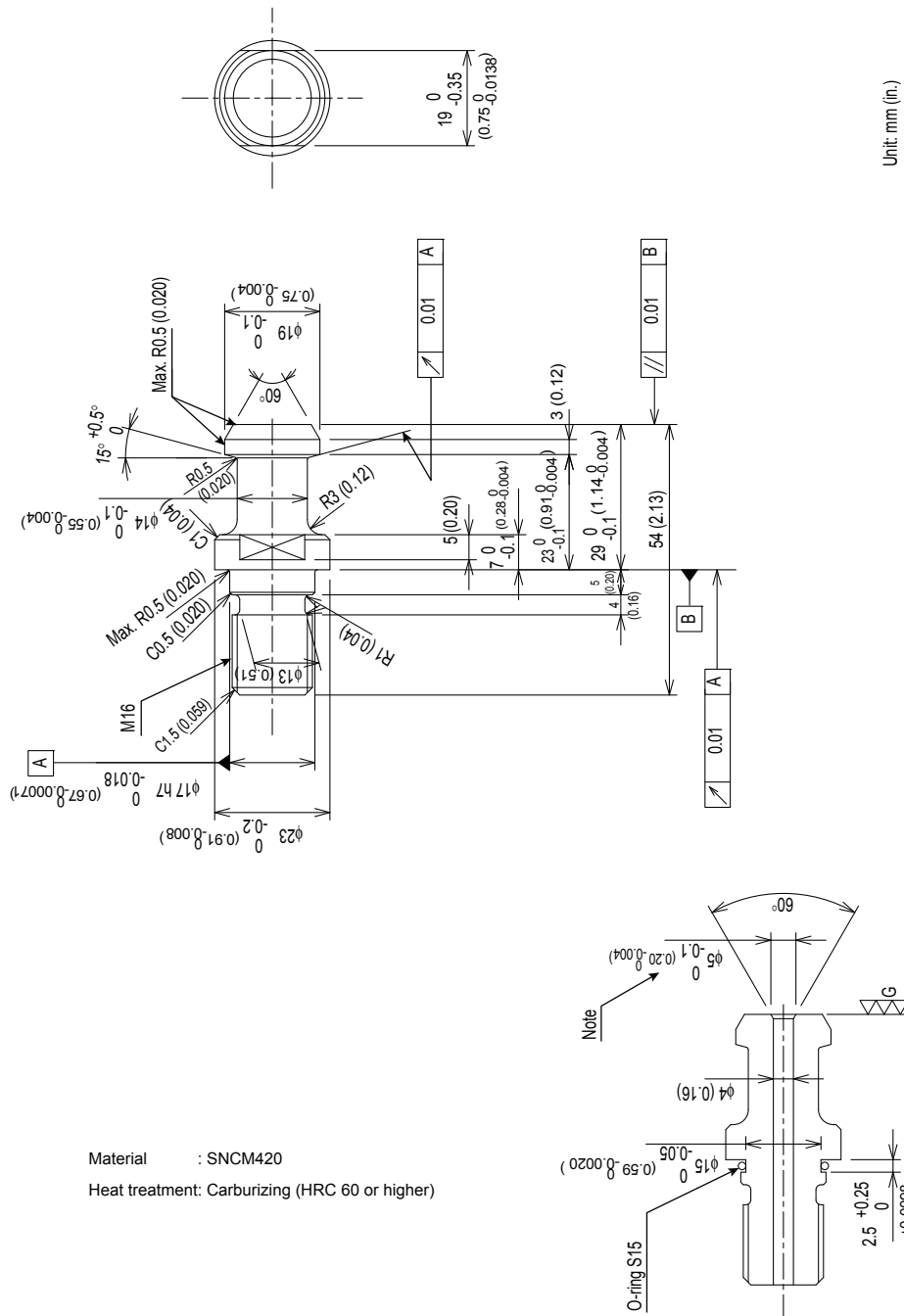
TME13027R0400400080001

Fig. 2-8

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in MAS (403-1982) P40T.

JIS (#40)-compliant tool pull stud



TME13027R0400400090001

Fig. 2-9

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in JIS (6339-1998) 40P.

CAT (#40)-compliant tool pull stud

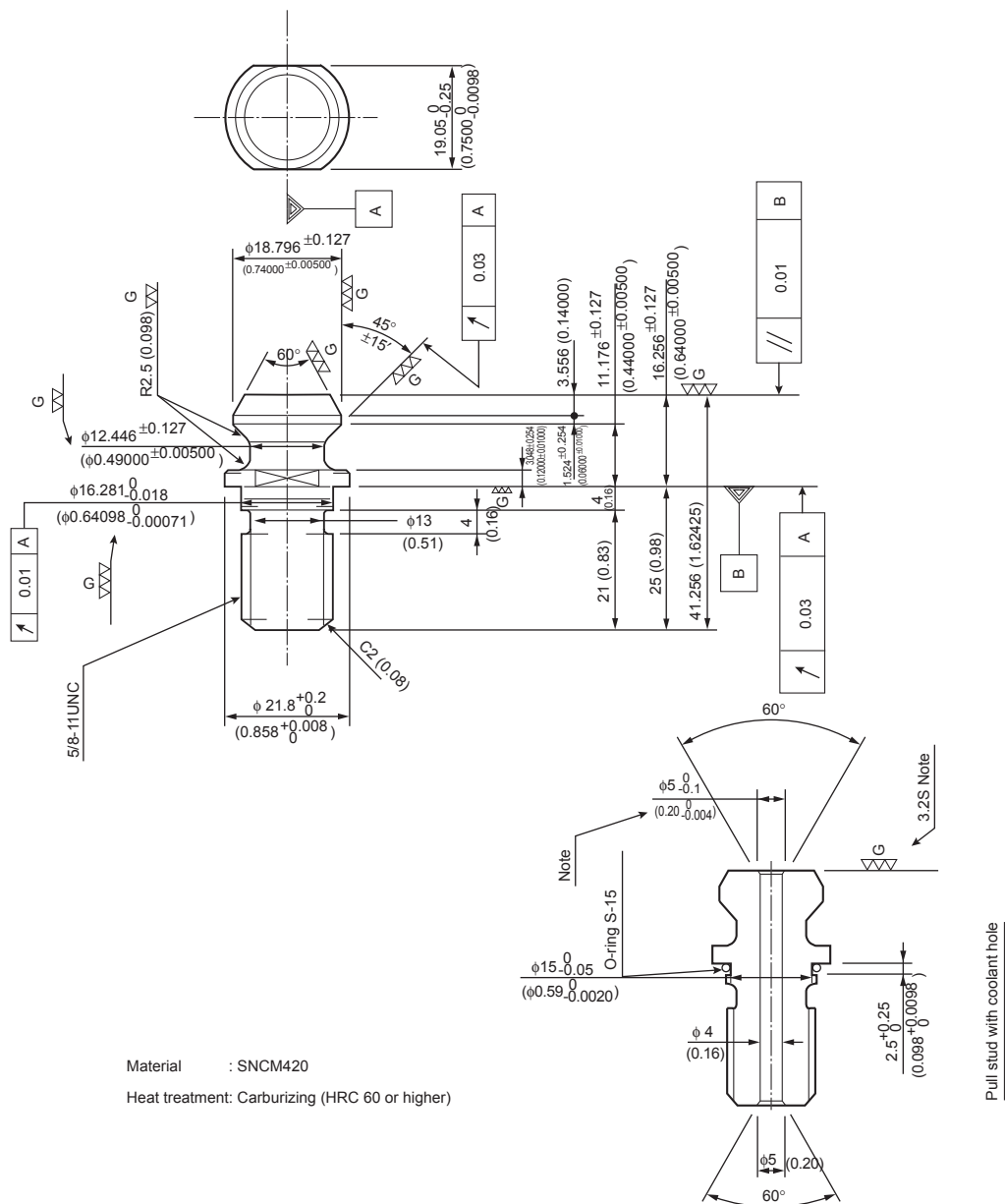


Fig. 2-10

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in CAT (MF2560) No. 40.

Technical drawing of a mechanical part, showing dimensions in millimeters (mm) and inches (in.). The drawing includes a side view and a cross-sectional view.

Dimensions (mm / in.):

- Overall length: 56.15 (2.2106)
- Section 1 (Left):
 - Length: 20 (0.79)
 - Radius: R3 (0.12)
 - Inner diameter: $\phi 16.28^{+0.018}_{-0}$ ($\phi 0.64098^{+0.00071}_{-0}$)
 - Outer diameter: $\phi 21.844$ (0.86000)
- Section 2 (Middle):
 - Length: 4 (0.16)
 - Inner diameter: $\phi 10^{+0.1}_{-0}$ ($\phi 0.39^{+0.004}_{-0}$)
 - Outer diameter: $\phi 15^{+0.1}_{-0}$ ($\phi 0.59^{+0.004}_{-0}$)
- Section 3 (Right):
 - Length: 4 (0.16)
 - Inner diameter: $\phi 15^{+0.1}_{-0}$ ($\phi 0.59^{+0.004}_{-0}$)
 - Outer diameter: $\phi 19^{+0.05}_{-0.35}$ ($\phi 0.75^{+0.0020}_{-0.0138}$)

Surface Texture Specifications:

- Surface 1 (Left): $R_a = 0.01$, A
- Surface 2 (Middle): $R_a = 0.01$, A
- Surface 3 (Right): $R_a = 0.01$, A

Geometric Features:

- Angle on one side 30°
- Angle 60°
- Angle $\pm 15^\circ$

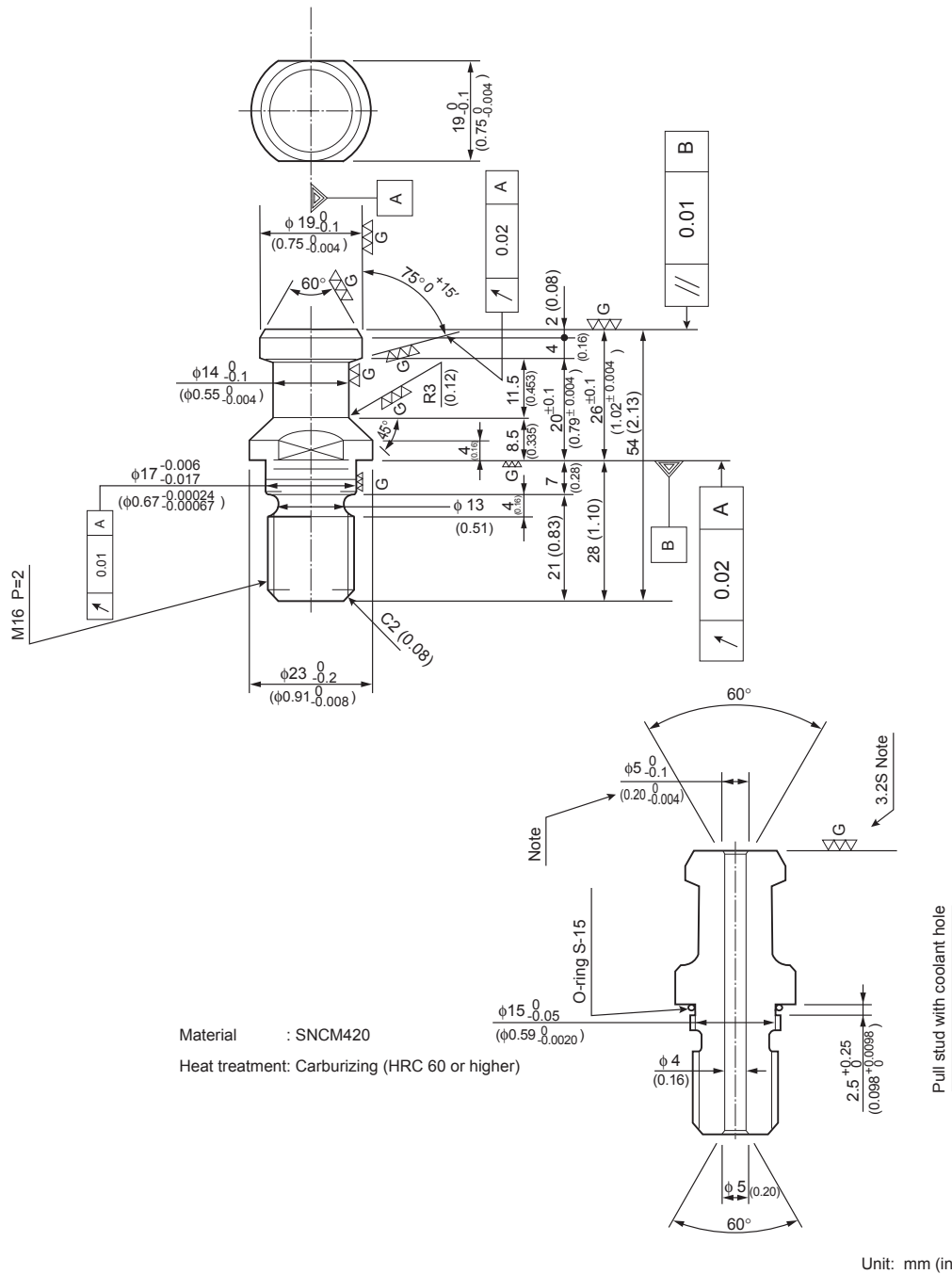
Unit: mm (in.)

TME13027R0400400110001

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in CAT (MF2560) No. 40.

DIN (#40)-compliant tool pull stud

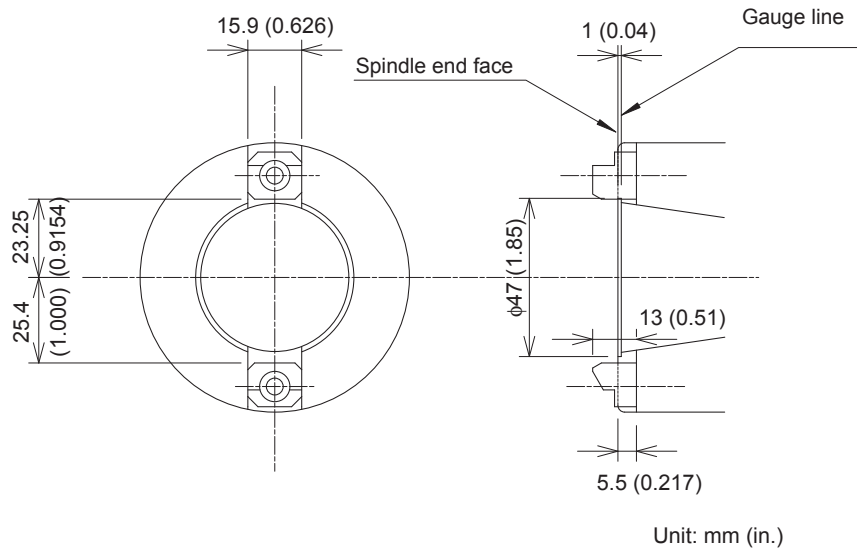


TME13027R0400400120001

Fig. 2-12

[Supplement]

For further information on the tool pull stud shape, refer to the standard dimensions specified in DIN (69 872) form B No. 40.

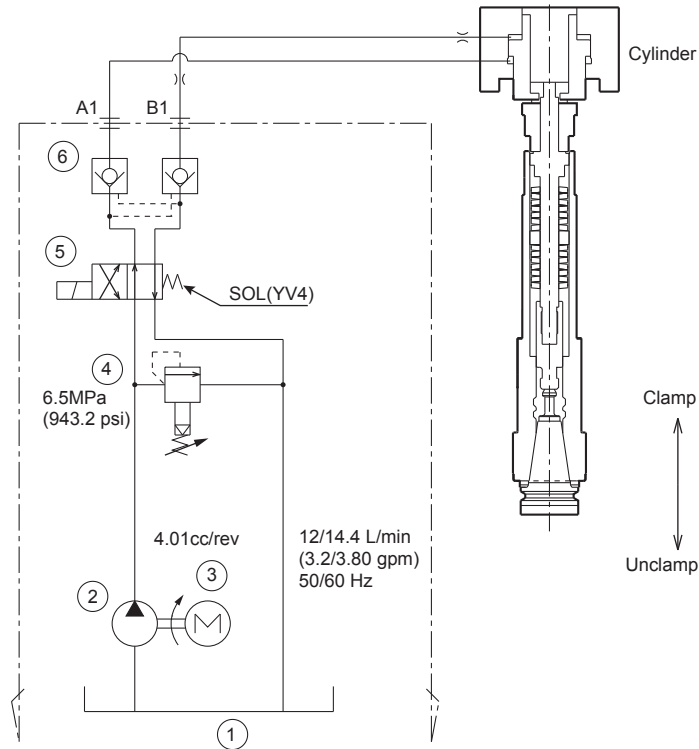
Detail of Spindle End Face (MAS, CAT, and DIN Standard)

TME13027R0400400130002

Fig. 2-14

2-3. Hydraulic Circuit Diagram

2-3-1. Spindlehead (Tool Unclamp Package) (GENOS M560-V)



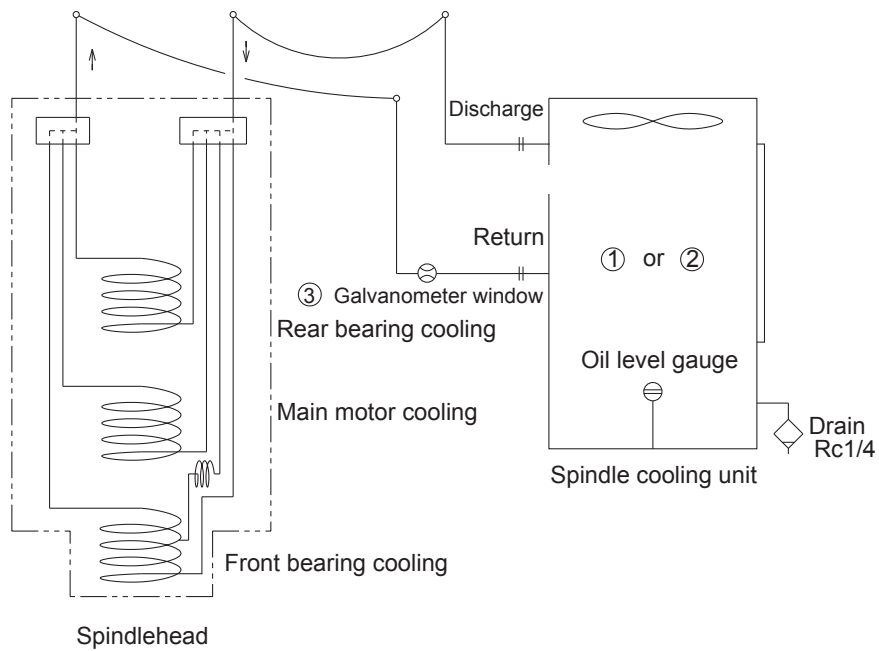
TME13027R0400400140001

Fig. 2-15

No.	Parts Name	Type	Maker	Qty.	Okuma Part No.	Remarks
1	Tank	0.46 L (0.122 gal)	KAYABA INDUSTRY CO., LTD.	1	Hydraulic unit H0130-0020-40-2	
2	Pump	26001-28664		1		
3	Motor	E4116-00203 1.2 kW (1.60 hp)-2P		1		
4	Relief valve	26595-03500		1		
5	Electromagnetic valve	DG4V-3-2A-M-U1-H-7-52	Tokyo Keiki	1	F0001-431-001-02	
6	Pilot check valve	TGMPC-3-ABK-BAK-50J		1	F0040-980-000-22	

Table 2-1

2-4. Spindlehead Cooling Oil Circuit Diagram



TME13027R0400400150001

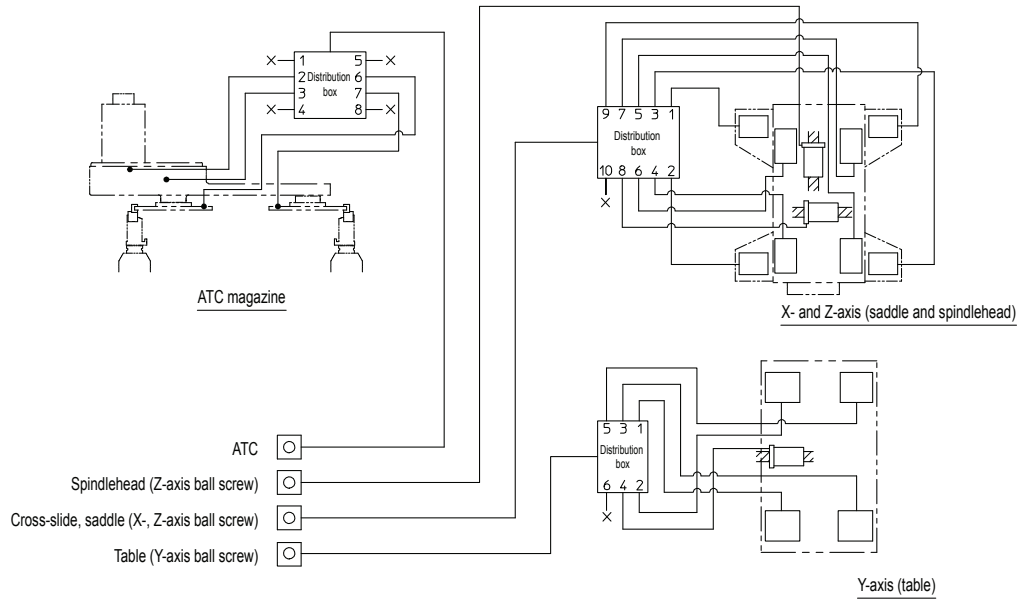
Fig. 2-16

No.	Parts Name	Type	Maker	Qty.	Okuma Part No.	
1	Spindle cooling unit	P-BO-V750PTSBM6-172	HARBOR	1	H0110-0013-76	#40: 8,000 min ⁻¹
2	Spindle cooling unit	P-BO-V900PTSBM6-6	HARBOR	1	H0110-0013-77	#40: 12,000 min ⁻¹ , 15,000 min ⁻¹
3	Galvanometer window	MN-1/2	Koho	1	H0039-0003-34	

Table 2-2

2-5. Grease Lubricating Oil Circuit Diagram

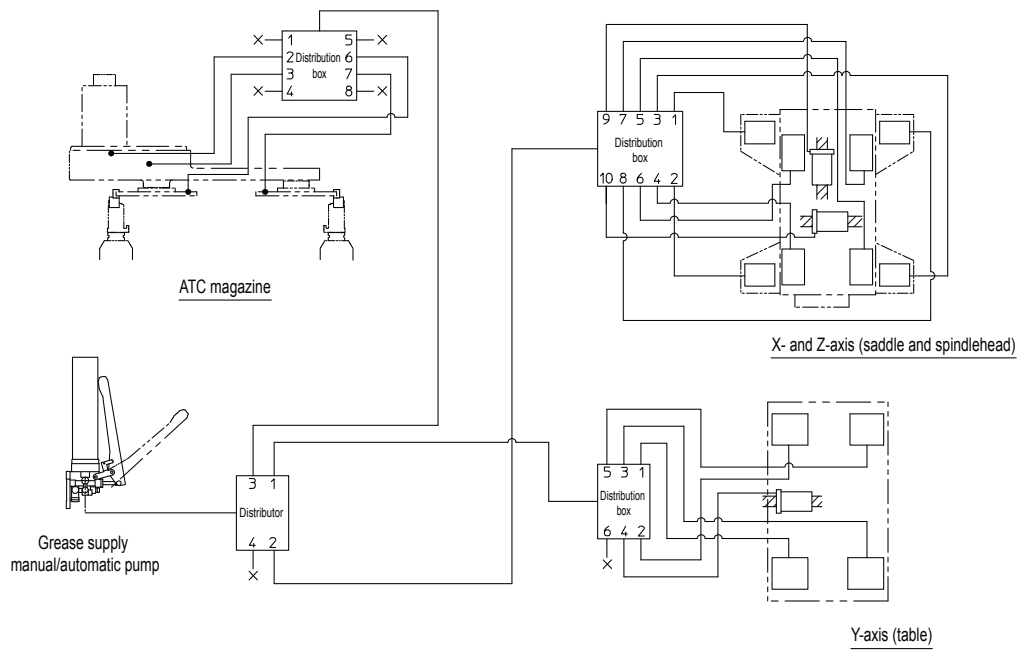
2-5-1. Grease Lubricating Oil Circuit Diagram (Standard)



TME13027R0400400160001

Fig. 2-17

2-5-2. Grease Lubricating Oil Circuit Diagram (Manual/Automatic Pump (Automatic Greasing System))



TME13027R0400400170001

Fig. 2-18

2-6. Pneumatic Circuit Diagram

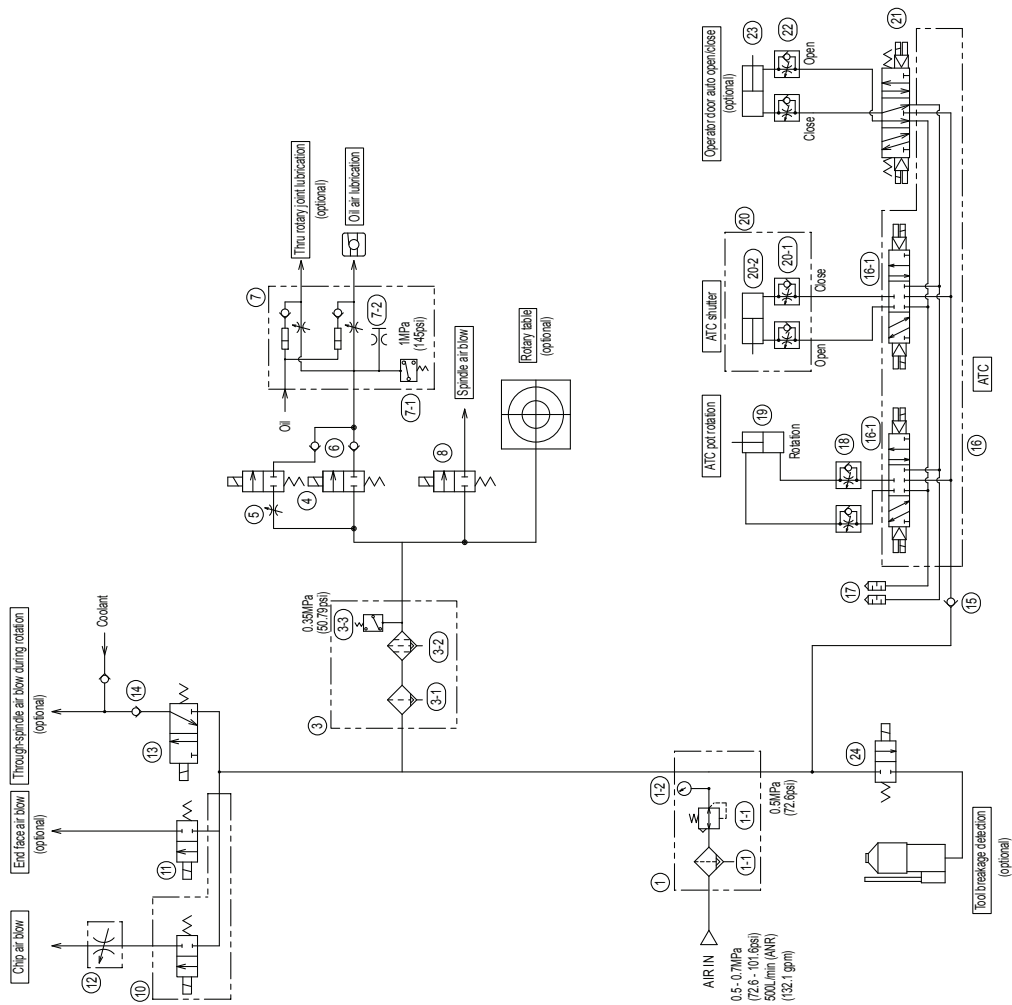


Fig. 2-19

TME13027R0400400180001

SECTION 2 TECHNICAL DATA

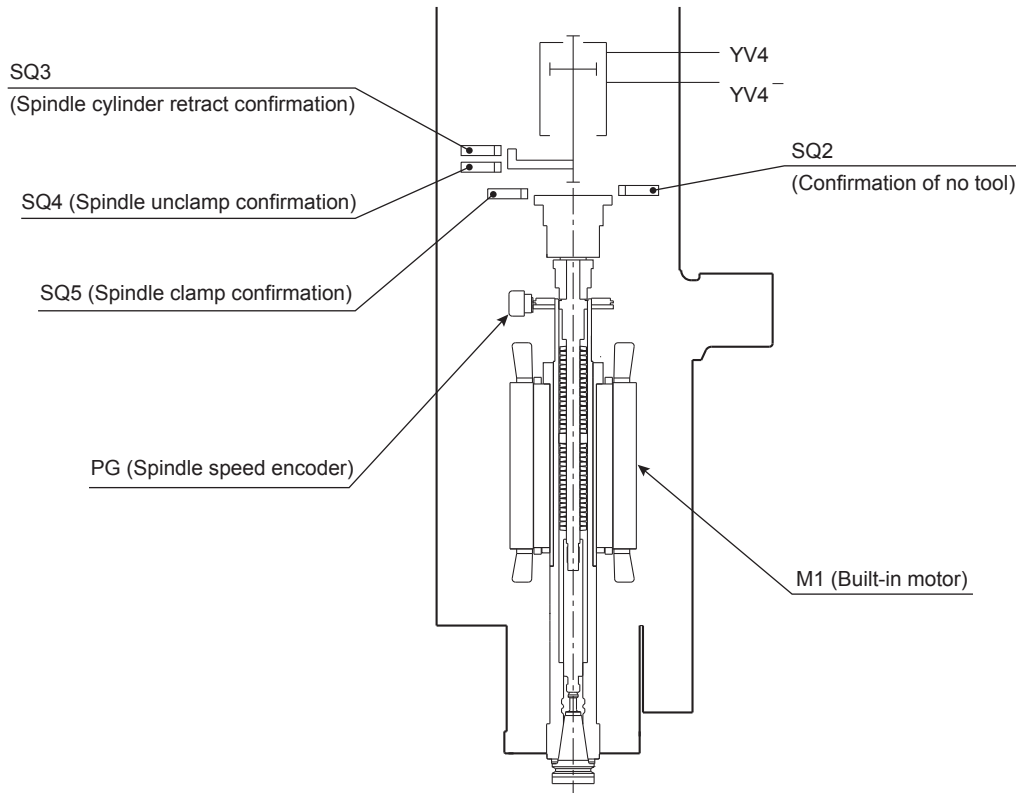
No.	Part Name	Type	Maker	Qty.	Okuma Part No.	Remarks
1	FR unit	MAFR300-10A-D +MPA TOC (dealer)	MindMan	1	H0140-0026-95	Air 2-piece set (Japan)
		MAFR300-10A-D +MPA-PSI TOC (dealer)			H0140-0026-96	Air 2-piece set (overseas)
1-1	Filter/Regulator	MAFR300-10A-D	MindMan	1	(H0140-0026-95)	
1-2	Pressure gauge	G41D-8-P10	CKD	(1)	(T019-400-007-25)	MPa (Japan)
		G41D-8-PS15	CKD	(1)	(T019-400-006-42)	MPa and psi (overseas)
3	Filter set		SMC	1	H0140-0008-73	
3-1	Drain catch	AMG250-02BD-R	SMC	(1)	(H0032-0010-73)	
3-2	Micromist separator	AMD250-02D-RT	SMC	(1)	(H0032-0010-94)	
3-3	Pressure switch	ISE2-01-15L	SMC	(1)	(E3040-321-034)	Set pressure: 0.35 MPa (50.79 psi)
4	Solenoid valve	AD-8B-V-F1-A-24VDC TOC (dealer)	CS-FLUID	2	F0001-400-009-14	For air of oil-air unit
5	Orifice	M8X0.9	Denshin	1	H0039-0010-87	
6	Check valve	M8X0.9	SHANXIONG	2	F0040-581-000-43	
7	Mixing valve	BFA0106BBBBBB	Daido Metal	1	H0120-0008-25-1	For oil air lubrication
7-1	Pressure switch	ACB-MA07-P	Daido Metal	(1)	(H0120-0008-17)	
7-2	Air releasing valve	000-V01-0200	Daido Metal	(1)	(H0120-0007-74)	
8	Solenoid valve	AD-8B-V-F1-A-24VDC TOC (dealer)	CS-FLUID	1	F0001-400-009-14	For Spindle air blow
10	Solenoid valve	GFAB41-X1707 DC24V	CKD	1	F0001-400-009-19	With 2-row manifold
11	Solenoid valve	GFAB41 DC24V	CKD	1	F0001-400-009-18	Solenoid valve single unit
12	Hose (w/ cock)	Coolant nozzle 3 pcs set	Lian Hui	1	H0029-0002-37	Chip air blow nozzle, throttle
13	Solenoid valve	AG4X9371-DC24V	CKD	1	F0001-411-001-43	For thru air blow
14	Check valve	KZU00-005E	Ihara	1	F0040-982-000-82	
15	Check valve	CHV-8J	MindMan	1	F0040-581-000-44	
16	D solenoid valve	M4GA280-06-B-3-FL321951-3	CKD	1	F0000-422-000-29	With 3-row manifold
16-1	D solenoid valve	4GA239-06-B-FL-3	CKD	(2)	(F0000-452-001-32)	For MG pot rotation and ATC shutter
17	Silencer	SLW-8A	Sinpro Enterprise	2	H0036-0002-04	
18	Speed controller	SC3G-6-8	MindMan	2	F0031-581-001-10	
19	Air cylinder	SCM-TA-50B-55-Y-B2	MindMan	1	H0002-0032-46	For #40 ATC pot rotation
20	Air unit		CKD	1	H0140-0014-87-3	For ATC shutter open/close
20-1	Speed controller	SC3W-M5-6	CKD	(2)	(H0016-0007-37)	
20-2	Air cylinder	SCM-LB-25B-405-Q	CKD	(1)	(H0002-0023-33)	
21	D solenoid valve	4GA249-06-B-FL323624-3	CKD	1	F0000-455-000-96	For operator door auto open/close
22	Speed controller	SC3W-8-8-I	CKD	2	F0031-581-000-70	
23	Air cylinder	MY1B40-1400AS	SMC	1	H0002-0023-91	For 560V
24	Solenoid valve	FAB41-8-5-12HS-3	CKD	1	F0001-400-003-62	For air blow in tool breakage detection

Table 2-3

2-7. Skeleton Drawing

2-7-1. Spindle Drive Mechanism (GENOS M560-V)

#40: (8,000 min⁻¹, 12,000 min⁻¹, 15,000 min⁻¹)

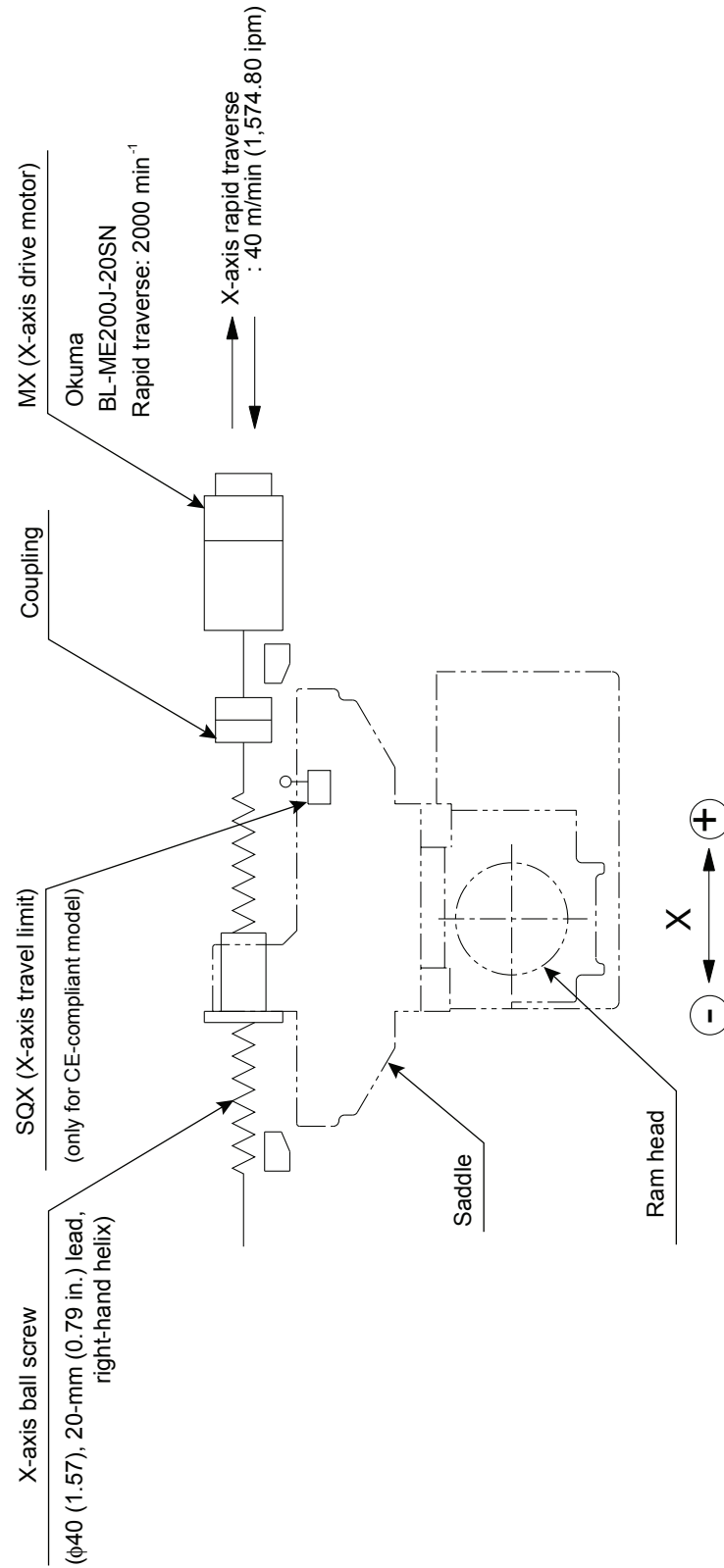


TME13027R0400400190001

Fig. 2-20

2-7-2. X-, Y- and Z-axis Drive Mechanism

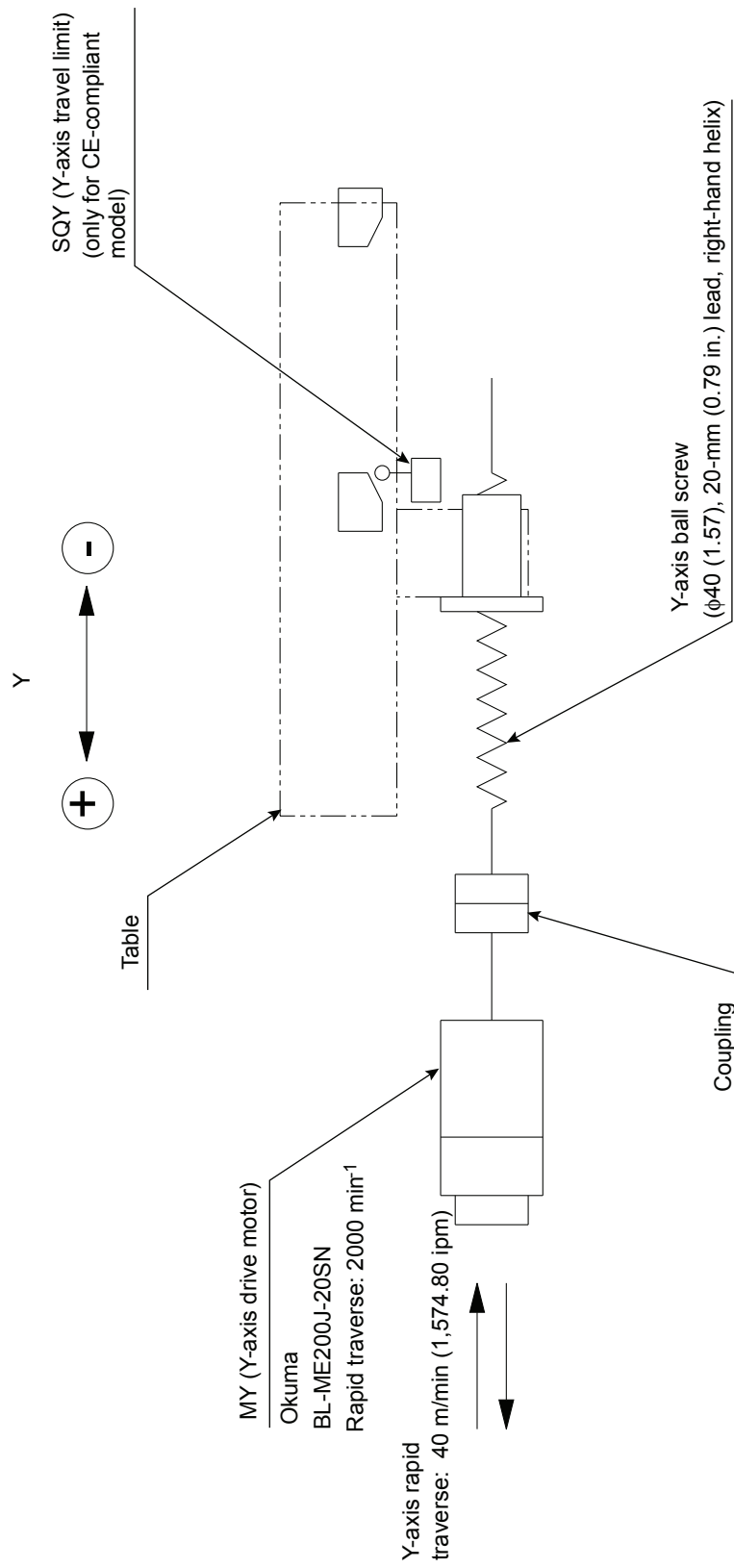
(1) X-axis Drive Mechanism (Rapid Traverse: 40 m/min (1,574.80 ipm))



TME13027R0400400200001

Fig. 2-21

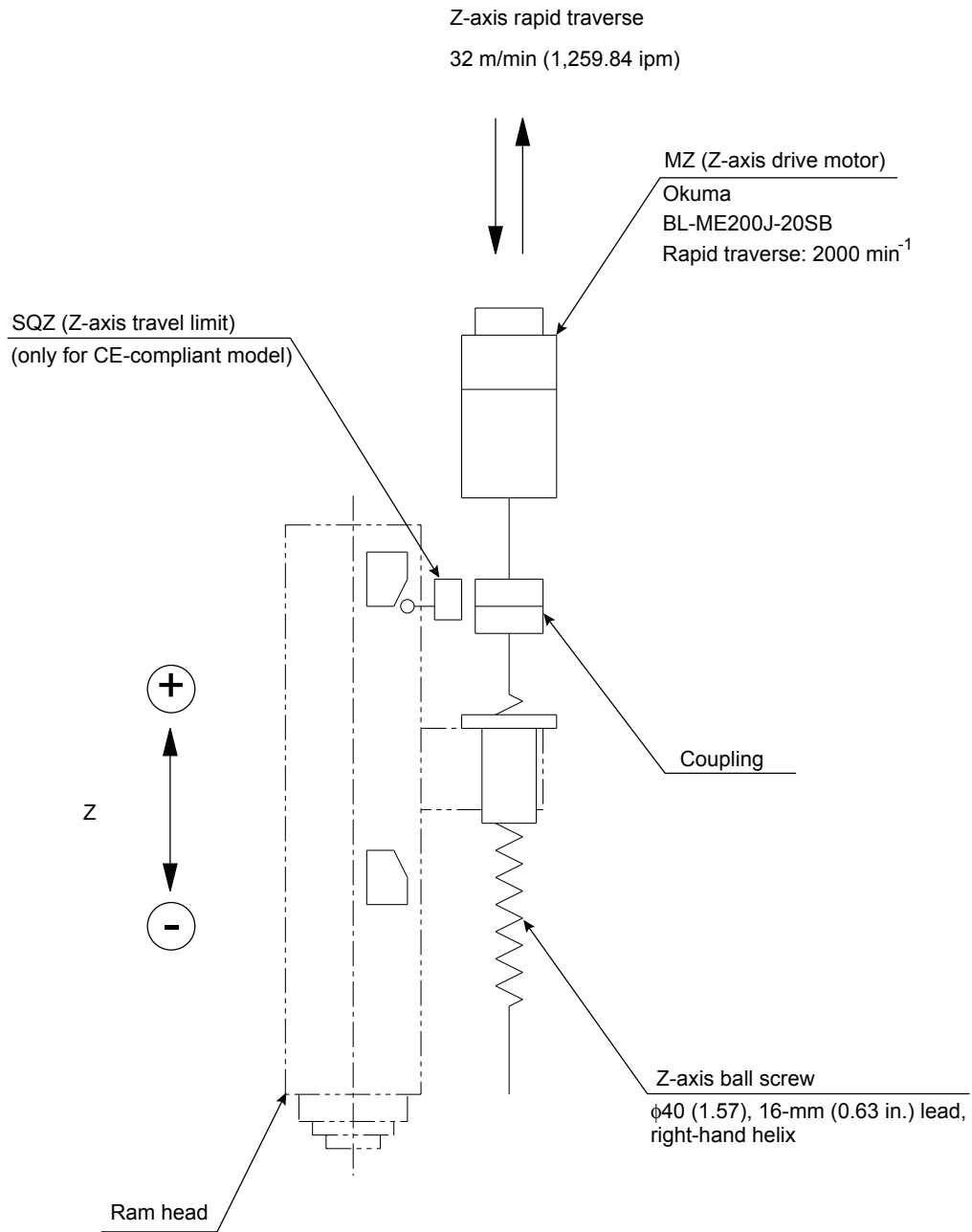
(2) Y-axis Drive Mechanism (Rapid Traverse: 40 m/min (1,574.80 ipm))



TME13027R0400400200002

Fig. 2-22

(3) Z-axis Drive Mechanism (Rapid Traverse: 32 m/min (1,259.84 ipm))



TME13027R0400400200003

Fig. 2-23

2-7-3. ATC Drive Mechanism

(1) ATC Tool Change Arm VA (#40)

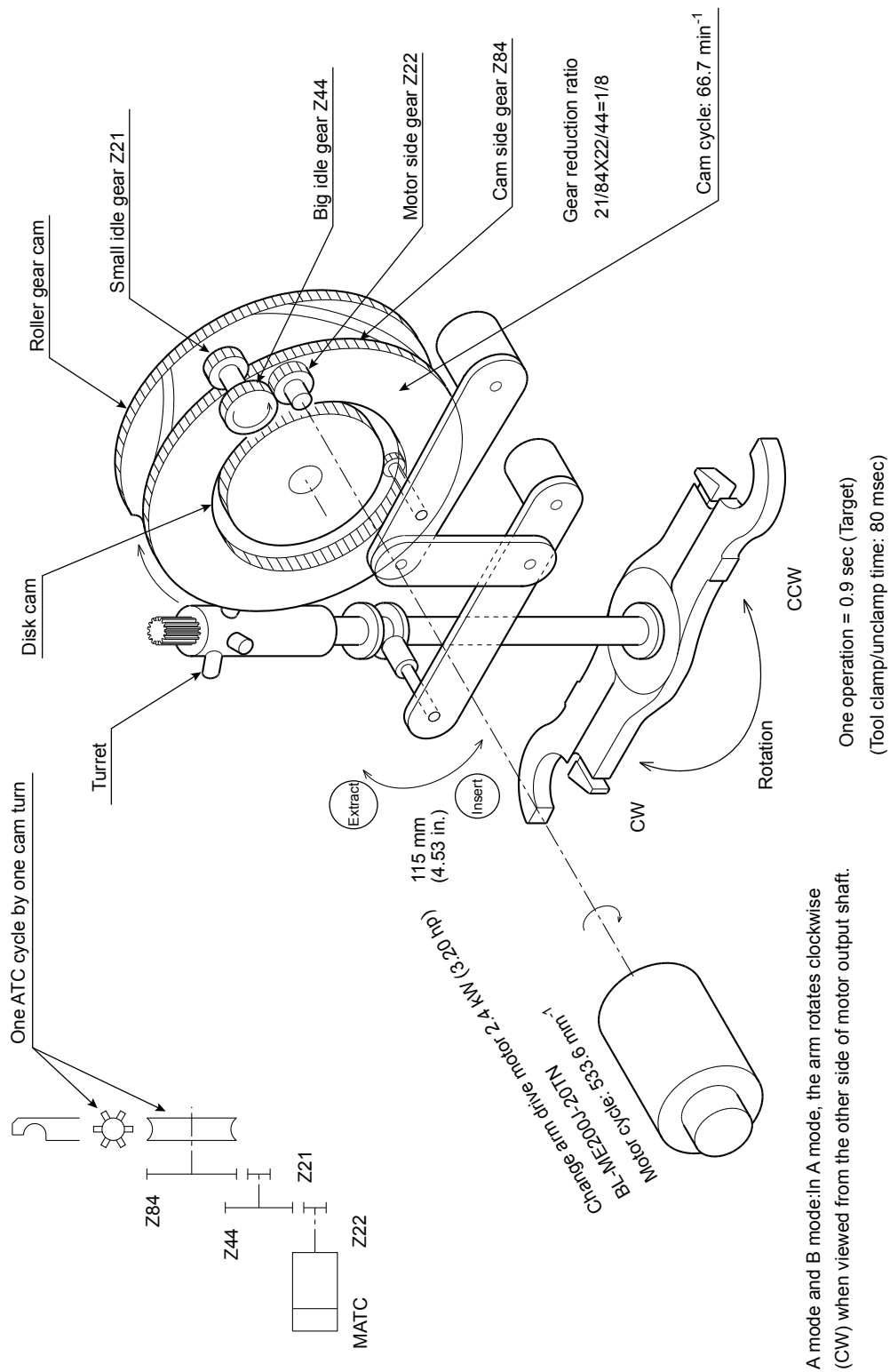


Fig. 2-24

- (2) ATC Magazine VA (#40)
 20 tool magazine
 32 tool magazine

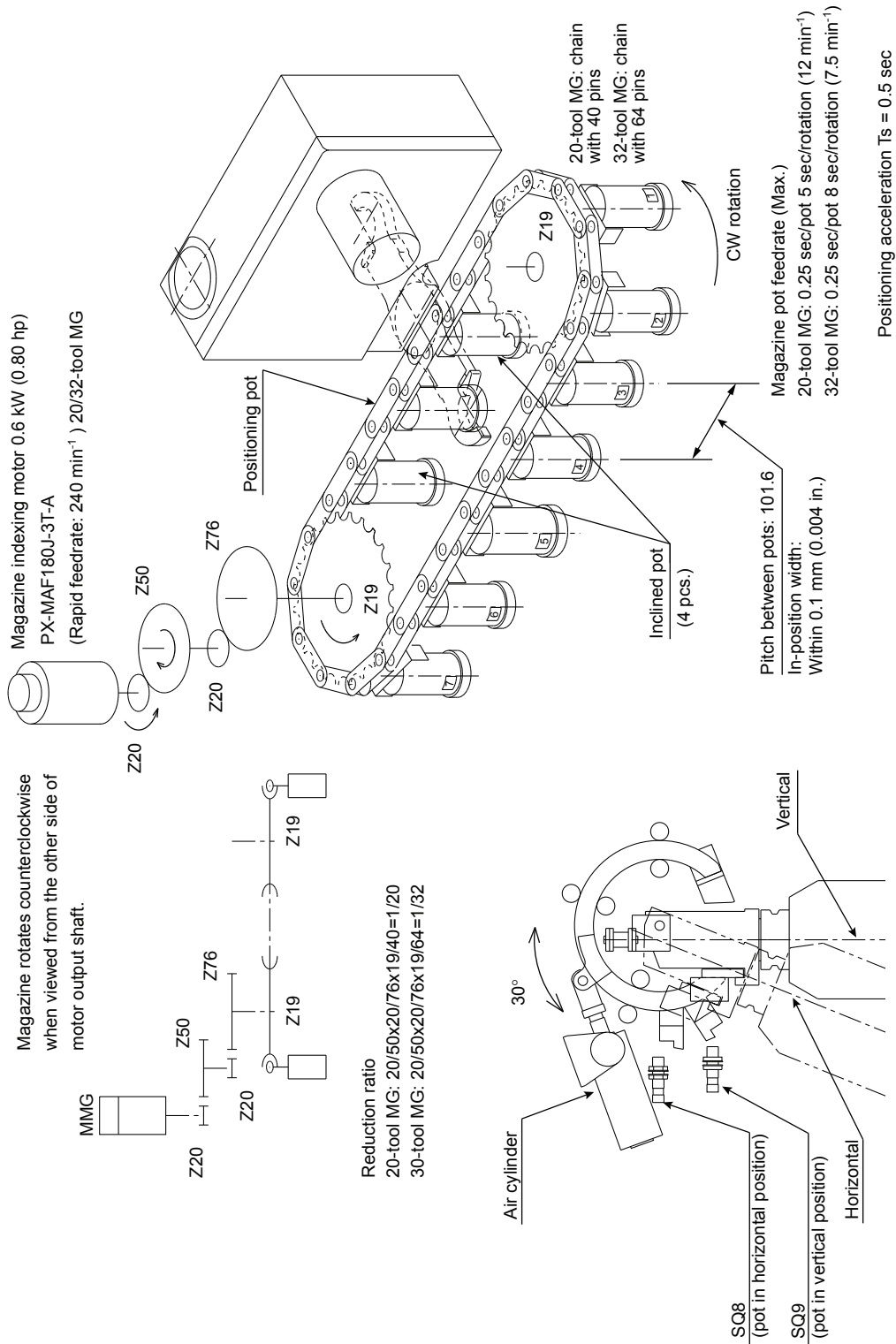
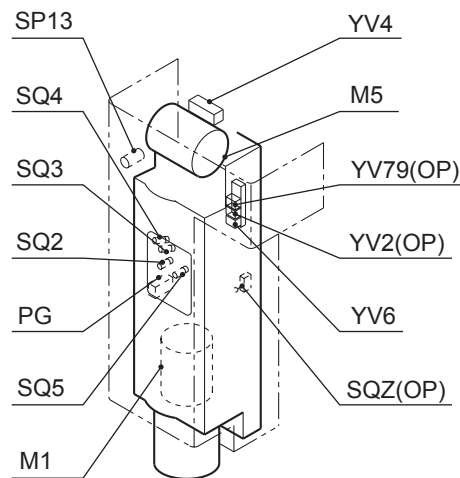


Fig. 2-25

2-8. Arrangement of Spindlehead Switches



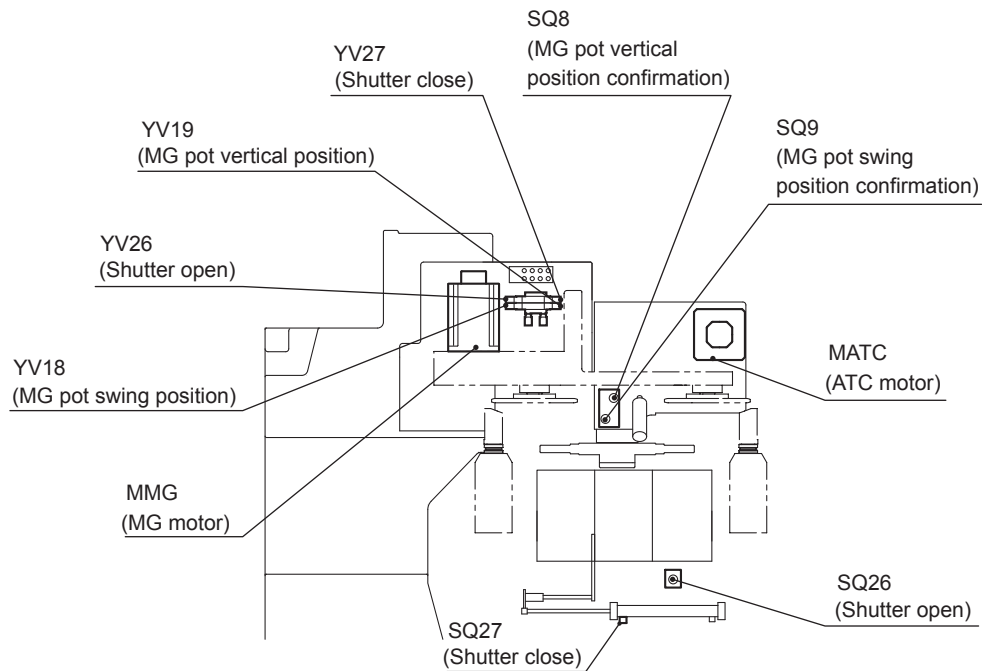
TME13027R0400400220001

Fig. 2-26

Device symbol	Name	Maker	Type	Remarks
SQZ	Z-axis emergency limit switch	Telemechanic	XCM-B502	Optional
SQ2	No spindle tool confirmation proximity switch	OMRON	E2E-X2D2-M3G	
SQ3	Spindle cylinder retract confirmation proximity switch	OMRON	E2E-X2D1-M3G	
SQ4	Spindle unclamp confirmation proximity switch	OMRON	E2E-X2D1-M3G	
SQ5	Spindle clamp confirmation proximity switch	OMRON	E2E-X2D1-M3G	Confirming tool presence
SP13	Pressure switch for detecting oil- air pressure rise	Saginomiya	ACB-MA07-P	
PG	Spindle speed detection (pulse generator)	Okuma		
M1	Spindle motor		Built-in type VAC11/7.5kW (15/10 hp) VAC22/18.5kW (30/24.67 hp) VAC22/18.5kW (30/24.67 hp)	8,000 min ⁻¹ 12,000 min ⁻¹ 15,000 min ⁻¹
M5	Tool unclamp package	KAYABA	KESNU-0060101	
YV4	Spindle tool unclamp SOL (inner cylinder)	Tokyo Keiki	DG4V-3-2A-M-U1-H-52	
YV6	Chip air blow (nozzle) SOL	CKD	GFAB41-X1578-DC24V	

Table 2-4

2-9. Arrangement of ATC Switches



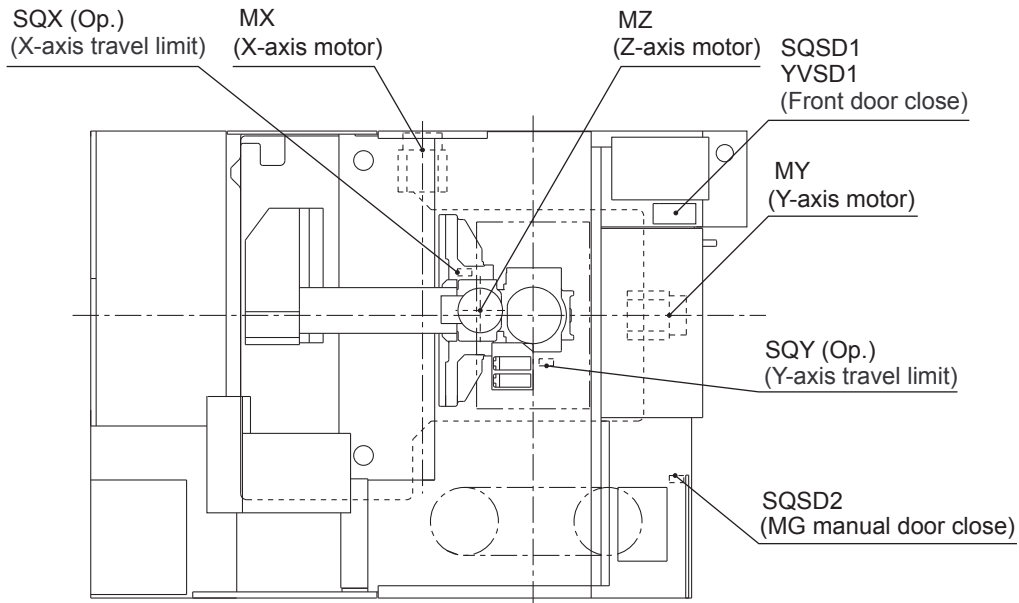
TME13027R0400400230001

Fig. 2-27

No.	Part Name	Maker	Type	Remarks
SQ8	Proximity switch for MG pot vertical position confirmation	OMRON	E2E-X3D1-M1G	
SQ9	Proximity switch for MG pot swing position confirmation	OMRON	E2E-X3D1-M1G	
SQ26	Proximity switch for ATC shutter open confirmation	OMRON	E2E-X3D1-M1G	
SQ27	Proximity switch for ATC shutter close confirmation	CKD	SW-T2H-FL170174	
MATC	Change arm drive motor	Okuma	BL-ME200J-20TN	
MMG	MG drive motor	Okuma	PX-MAF180J-3T-A	
YV18	MG pot swing position SOL	CKD	4GA239-06-B-FL-3	
YV19	MG pot vertical position SOL	CKD	4GA239-06-B-FL-3	
YV26	ATC shutter open SOL	CKD	4GA239-06-B-FL-3	
YV27	ATC shutter close SOL	CKD	4GA239-06-B-FL-3	

Table 2-5

2-10. Arrangement of Limit Switches and Motors



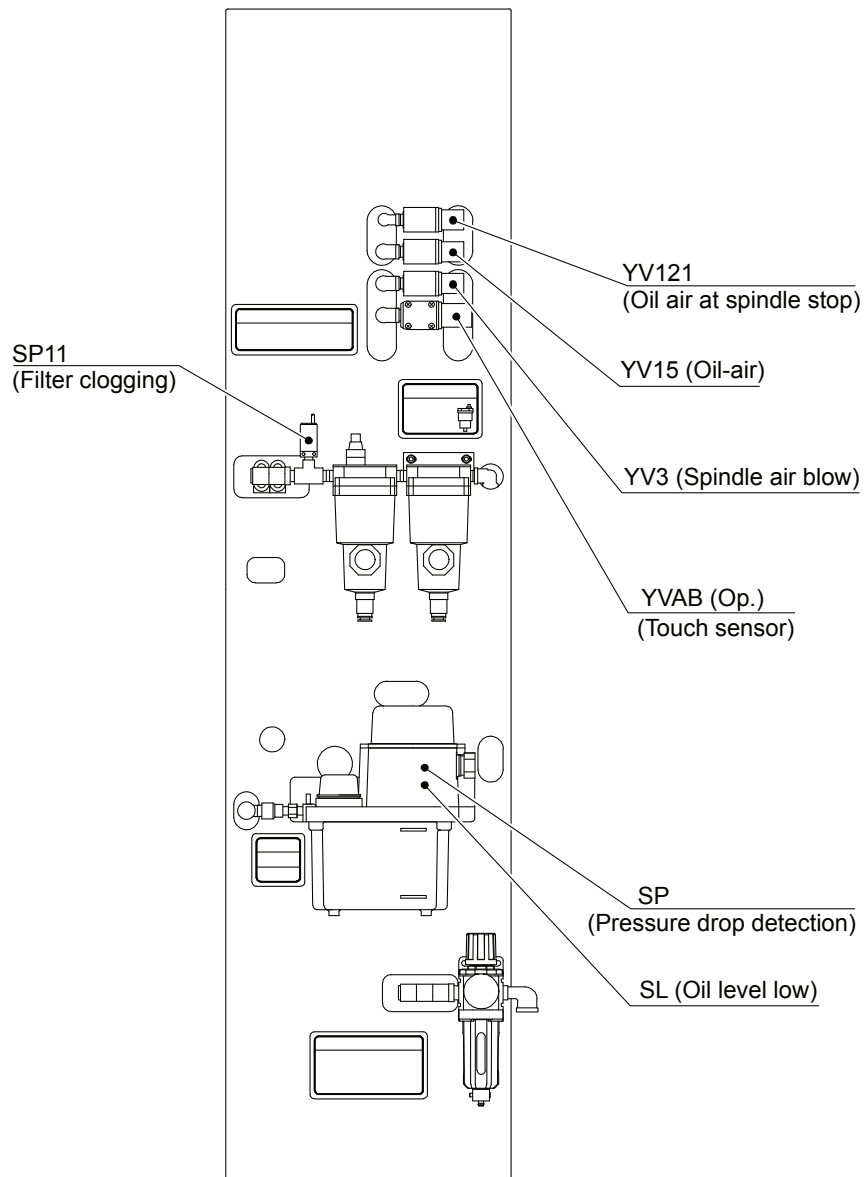
TME13027R0400400240001

Fig. 2-28

No.	Part Name	Maker	Type	Remarks
SQX	X-axis emergency limit switch	Telemecanique	XCM-B502	Optional
SQY	Y-axis emergency limit switch	Telemecanique	XCM-B502	Optional
SQSD2	Safety lock switch for MG manual door close confirmation	OMRON	D4BL-2DRG (Switch) D4BL-K3 (Key)	
SQSD1 YVSD1	Safety lock switch for front door close confirmation	OMRON	D4BL-2DRA (Switch) D4BL-K2 (Key)	
MX	X-axis drive motor	Okuma	BL-ME200J-20SN	
MY	Y-axis drive motor	Okuma	BL-ME200J-20SN	
MZ	Z-axis drive motor	Okuma	BL-ME200J-20SB	

Table 2-6

2-11. Arrangement of Air Panel Switches



TME13027R0400400250001

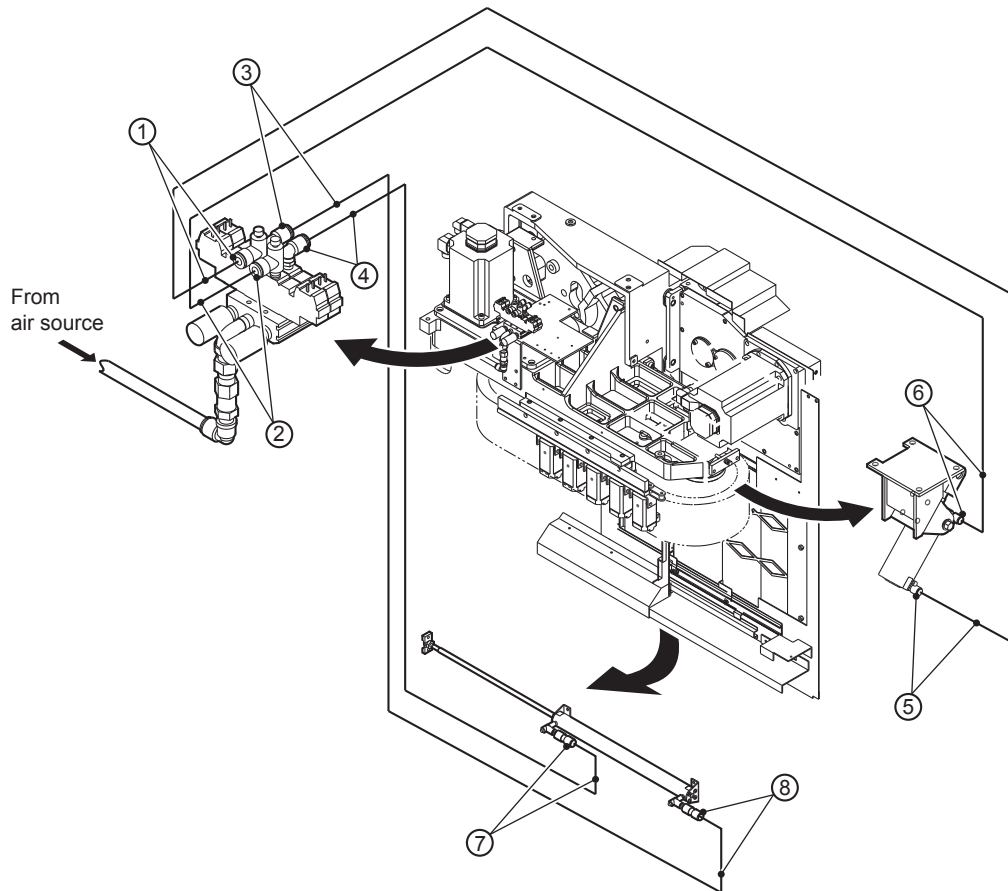
Fig. 2-29

SECTION 2 TECHNICAL DATA

No.	Part Name	Maker	Type	Remarks
SP	Pressure switch for detecting oil-air pressure drop	Nippon Texas Instruments	PS015L	
SL	Float switch for detecting oil-air low oil level	Nippon Aleph	FS02B	
SP11	Pressure switch for detecting filter clogging	SMC	ISE2-01-15L	
YV3	Spindle air blow SOL	CS-FLUID	AD-8B-V-F1-A-24VDC	
YV15	Air SOL for oil-air lubrication unit	CS-FLUID	AD-8B-V-F1-A-24VDC	
YV121	Air SOL for oil air at spindle stop	CS-FLUID	AD-8B-V-F1-A-24VDC	
YVAB	Air SOL for touch sensor	CKD	FAB41-8-5-12HS-3	Optional

Table 2-7

2-12. Drawing for Pneumatic Pressure Drive Piping



TME13027R0400400260001

Fig. 2-30

No.	Use
1	Magazine pot swing position (Solenoid valve side)
2	Magazine pot vertical position (Solenoid valve side)
3	ATC shutter open (Solenoid valve side)
4	ATC shutter close (Solenoid valve side)
5	Magazine pot cylinder swing position (Cylinder side)
6	Magazine pot cylinder vertical position (Cylinder side)
7	ATC shutter open (Shutter side)
8	ATC shutter close (Shutter side)

Table 2-8

SECTION 3 CAUTION PLATE

3-1. Caution Plate Positions

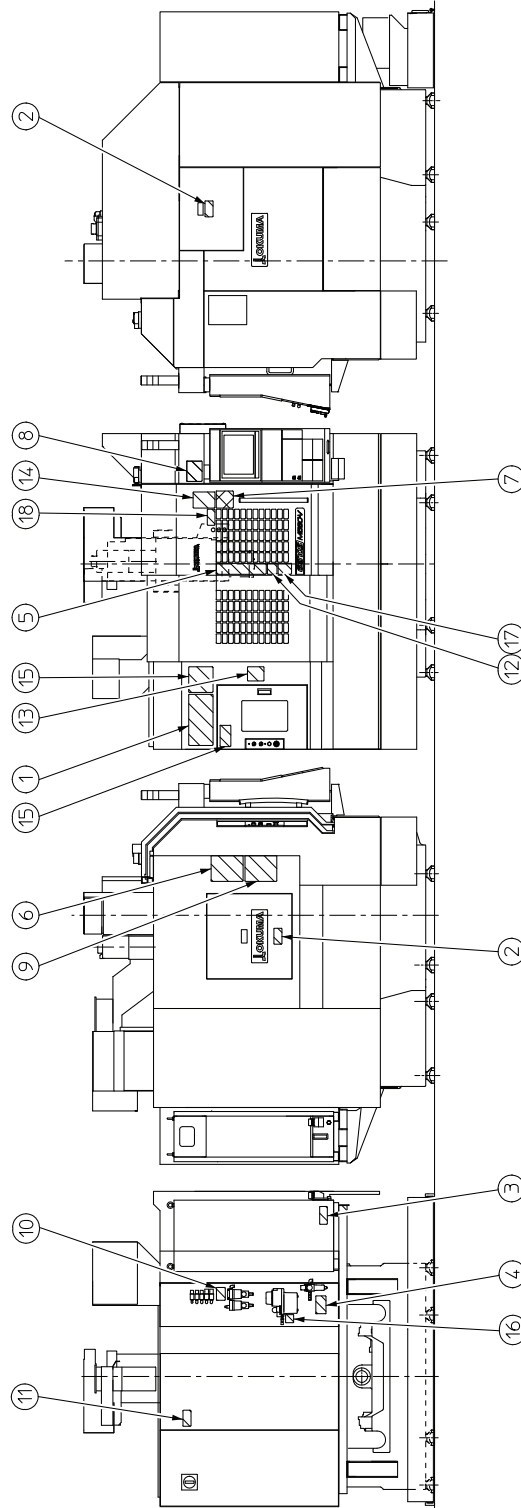


Fig. 3-1

3-2. Caution Plate List

No.	Item	Japanese	English	German	Swedish
(1)	Precautions on machine operation	H1090-1044-73-3	H1090-1044-74-3	H1090-1044-75-4	H1090-1044-80-3
(2)	Cautions for removing the maintenance cover	H1090-1020-35	H1090-1018-33	H1090-1020-36-1	H1090-1020-37-2
(3)	Cooling oil maintenance	H1090-1022-21-1	H1090-1022-32-1	H1090-1022-43-1	H1090-1022-98-2
(4)	Cautions for setting air source pressure	H1090-1022-22-2	H1090-1022-33-1	H1090-1022-44-2	H1090-1022-99-3
(5)	Common instruction plate	H1090-1152-28-1	H1090-1152-29-1	H1090-1153-71-1	H1090-1154-70-1
(6)	Cautions for operating high speed spindle	H1090-1050-57-5	H1090-1050-58-5	H1090-1050-59-6	H1090-1050-64-5
(7)	Cautions for door interlock	H1042-1233-21	H1044-1142-92		
(8)	Tool handling, locked-in, and fire prevention	H1090-1042-42-1	H1090-1042-43-1	H1090-1042-44-1	H1090-1043-01-1
(9)	Periodical replacement of thru-pin	H1090-1052-84-3	H1090-1044-89-5	H1090-1059-50-3	H1090-1059-51-3
(10)	Periodical replacement of air filter	H1090-1026-50-1	H1090-1026-59-1	H1090-1026-68-1	H1090-1026-77-2
(11)	Control panel nameplates	E5421-019-001	E5421-019-002	E5415-183-068	E5415-183-070
(12)	Cautions for grease lubrication	H1090-1152-30	H1090-1152-31	H1090-1153-74	H1090-1154-72
(13)	Cautions for handling CAT, DIN tools	H1090-1046-53-1	H1090-1046-55-1	H1090-1046-57-1	H1090-1046-67-2
(14)	Cautions for handling CAT, DIN tools	H1090-1046-54-1	H1090-1046-56-1	H1090-1046-58-1	H1090-1046-68-2
(15)	Cautions for installing a tool in the magazine [BT]	H1090-1090-99	H1090-1091-01	H1090-1091-02	H1090-1091-07
	Cautions for installing a tool in the magazine [BIG plus]	H1090-1099-20-2	H1090-1099-21-2	H1090-1099-22-2	H1090-1099-27-2
		H1090-1125-10	H1090-1125-09	H1090-1142-59	H1090-1142-61
(16)	Specified oil-air lube for high speed spindle	H1090-1033-66-2	H1090-1033-67-2	H1090-1033-68-2	H1090-1033-69-2
(17)	Cautions for models with automatic door	H1090-1152-32	H1090-1152-33	H1090-1153-75	H1090-1154-73
(18)	Cautions for installing tools in standard spindle	H1090-1157-55	H1090-1157-56		

Table 3-1

No.	Item	Dutch	Finnish	Danish	French
(1)	Precautions on machine operation	H1090-1044-78-3	H1090-1044-81-3	H1090-1044-79-3	H1090-1044-77-3
(2)	Cautions for removing the maintenance cover	H1090-1020-38-2	H1090-1020-39-1	H1090-1020-40-2	H1090-1018-34-1
(3)	Cooling oil maintenance	H1090-1022-76-1	H1090-1023-10-1	H1090-1060-95-2	H1090-1022-65-1
(4)	Cautions for setting air source pressure	H1090-1022-77-3	H1090-1023-11-2	H1090-1060-92-2	H1090-1022-66-2
(5)	Common instruction plate	H1090-1154-44	H1090-1154-74	H1090-1154-51	H1090-1154-15
(6)	Cautions for operating high speed spindle	H1090-1050-62-6	H1090-1050-65-6	H1090-1050-63-6	H1090-1050-61-5
(7)	Cautions for door interlock				
(8)	Tool handling, locked-in, and fire prevention	H1090-1042-98-1	H1090-1043-02-1	H1090-1042-99-1	H1090-1042-97-1
(9)	Periodical replacement of thru-pin	H1090-1059-52-3	H1090-1059-53-3	H1090-1060-97-3	H1090-1059-55-3
(10)	Periodical replacement of air filter	H1090-1026-87-1	H1090-1060-81-1	H1090-1060-94-2	H1090-1027-16-1
(11)	Control panel nameplates	E5415-183-073	E5415-183-071	E5415-183-072	E5415-183-069
(12)	Cautions for grease lubrication	H1090-1154-46	H1090-1154-80	H1090-1154-53	H1090-1154-17
(13)	Cautions for handling CAT, DIN tools	H1090-1046-63-1	H1090-1046-69-1	H1090-1046-65-2	H1090-1046-61-1
(14)	Cautions for handling CAT, DIN tools	H1090-1046-64-1	H1090-1046-70-1	H1090-1046-66-2	H1090-1046-62-1
(15)	Cautions for installing a tool in the magazine [BT]	H1090-1091-05	H1090-1091-08	H1090-1091-06	H1090-1091-04
	Cautions for installing a tool in the magazine [BIG plus]	H1090-1099-25-2	H1090-1099-28-2	H1090-1099-26-2	H1090-1099-24-2
		H1090-1128-66	H1090-1142-62	H1090-1126-24	H1090-1125-95
(16)	Specified oil-air lube for high speed spindle	H1090-1033-70-2	H1090-1033-71-2	H1090-1033-72-2	H1090-1033-73-2
(17)	Cautions for models with automatic door	H1090-1154-47	H1090-1154-81	H1090-1154-54	H1090-1154-16
(18)	Cautions for installing tools in standard spindle				

Table 3-2

No.	Item	Italian	Spanish	Chinese
(1)	Precautions on machine operation	H1090-1044-76-3	H1090-1044-82-3	H1090-1052-50-6
(2)	Cautions for removing the maintenance cover	H1090-1020-41	H1090-1025-71-1	H1090-1055-94-2
(3)	Cooling oil maintenance	H1090-1022-54-1	H1090-1025-72-1	H1090-1058-27-2
(4)	Cautions for setting air source pressure	H1090-1022-55-2	H1090-1032-47-1	H1090-1058-20-2
(5)	Common instruction plate	H1090-1154-10-1	H1090-1154-84-1	H1090-1154-90

No.	Item	Italian	Spanish	Chinese
(6)	Cautions for operating high speed spindle	H1090-1050-60-6	H1090-1050-66-5	H1090-1058-21-5
(7)	Cautions for door interlock			H1044-1142-93
(8)	Tool handling, locked-in, and fire prevention	H1090-1042-96-1	H1090-1043-03-1	H1090-1052-47-2
(9)	Periodical replacement of thru-pin	H1090-1059-56-4	H1090-1059-57-3	H1090-1058-25-4
(10)	Periodical replacement of air filter	H1090-1027-25-1	H1090-1032-54-1	H1090-1058-23-2
(11)	Control panel nameplates	E5415-186-074	E5481-090-019	E5420-019-244
(12)	Cautions for grease lubrication	H1090-1154-12	H1090-1154-86	H1090-1154-92
(13)	Cautions for handling CAT, DIN tools	H1090-1046-59-1	H1090-1046-71-2	
(14)	Cautions for handling CAT, DIN tools	H1090-1046-60-1	H1090-1046-72-2	
(15)	Cautions for installing a tool in the magazine [BT]	H1090-1091-03	H1090-1091-09	H1090-1091-10-1
	Cautions for installing a tool in the magazine [BIG plus]	H1090-1099-23-2	H1090-1099-29-2	H1090-1099-30-2
		H1090-1142-60	H1090-1142-63	H1090-1142-64
(16)	Specified oil-air lube for high speed spindle	H1090-1033-74-2	H1090-1033-75-2	H1090-1058-28-3
(17)	Cautions for models with automatic door	H1090-1154-11	H1090-1154-87	H1090-1154-93
(18)	Cautions for installing tools in standard spindle			

Table 3-3

3-3. Caution Plate and Okuma Part Numbers

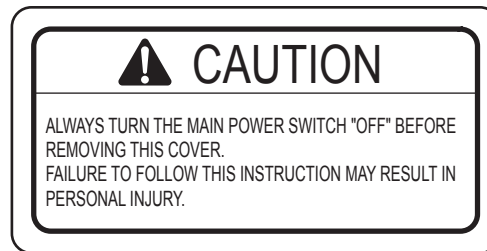
- (1) Precautions on machine operation
Okuma Part No. H1090-1044-74-3

 WARNING	 CAUTION
1. DURING AUTOMATIC OPERATION, DO NOT ENTER THE MACHINE'S AREA OF MOVEMENT. 2. TURN OFF THE POWER AND ENSURE SAFETY WHENEVER REMOVING PROTECTIVE COVERS OR ENTERING THE MACHINE WORKING RANGE FOR CLEANING, INSPECTION, ADJUSTMENT, SETUP CHANGE, ETC. 3. DO NOT REMOVE PROTECTIVE COVERS, INTERLOCKS (MECHANICAL OR ELECTRICAL), OR OTHER SAFETY DEVICES WHEN USING THIS MACHINE. OKUMA CORPORATION WILL NOT BE RESPONSIBLE FOR ACCIDENTS RESULTING FROM UNAUTHORIZED MODIFICATION OF THE MACHINE'S ORIGINAL SAFETY DEVICES. 4. NEVER TOUCH A ROTATING OR MOVING SPINDLE, CUTTING TOOL, OR WORKPIECE WITH YOUR HAND (OR SOME MAKESHIFT DEVICE). 5. ALWAYS STOP THE SPINDLE BEFORE ATTEMPTING TO REMOVE CHIPS ENTANGLED ON THE CUTTING TOOL. 6. STAY CLEAR OF THE CUTTING AREA DURING MACHINING. COOLANT, CHIPS, OR BROKEN TOOLS MAY FLY OFF AND MAY RESULT IN DEATH OR SERIOUS PERSONAL INJURY. 7. DO NOT PERFORM MACHINING WITH THE OPERATION DOOR OPEN. 8. NEVER ROTATE THE SPINDLE OR MOVE A MACHINE COMPONENT WITH PERSONNEL ON THE MACHINE TABLE. 9. ATC AND APC OPERATIONS ARE ESPECIALLY DANGEROUS. ALL PERSONNEL SHOULD STAY AWAY FROM THESE MOVING COMPONENTS. 10. FOR SOME REASON WHEN AN ATC OR APC OPERATION MUST BE STOPPED IN MDI-CYCLE, DO NOT ENTER THE PATH OF A MOVING COMPONENT. SUDDEN AND UNEXPECTED MOVEMENT MAY OCCUR. FAILURE TO OBSERVE THESE PRECAUTIONS MAY RESULT IN A SERIOUS ACCIDENT.	1. OPERATOR AND MAINTENANCE PERSONNEL MUST CAREFULLY READ, UNDERSTAND, AND FULLY COMPLY WITH THE INSTRUCTIONS AND SAFETY PRECAUTIONS GIVEN IN ALL MACHINE RELATED MANUALS AND MACHINE ATTACHED WARNING SIGNS --- BEFORE INSTALLING, OPERATING, OR PERFORMING MAINTENANCE ON THIS MACHINE. 2. ONLY QUALIFIED PERSONNEL SHOULD BE ALLOWED TO OPERATE THIS MACHINE. 3. ALWAYS WEAR EYE PROTECTORS, HELMETS, AND SAFETY SHOES WHEN WORKING WITH THIS MACHINE. 4. IF TWO OR MORE PERSONNEL MUST WORK TOGETHER, USE CONSTANT COMMUNICATION SIGNALS. 5. ALWAYS MAKE SURE WORKPIECES AND CUTTING TOOLS ARE MOUNTED SECURELY. DO NOT ROTATE THE SPINDLE WITH TOOLS OR OTHER ITEMS SO LOOSELY ATTACHED. THEY MAY FLY OFF WHEN ROTATED. 6. WHEN CHANGING OR INSPECTING TOOLS IN THE ATC MAGAZINE, ALWAYS TURN ON THE [MANUAL INTERRUPT] SWITCH ON THE MANUAL OPERATION PANEL, AND MAKE SURE EACH TOOL IS SECURELY INSERTED IN EACH MAGAZINE TOOL POT. 7. UNAUTHORIZED MODIFICATION OF THE ORIGINAL PARAMETERS IN THE MACHINE'S NUMERICAL CONTROL SYSTEM IS PROHIBITED. 8. DO NOT REMOVE OR DEFACE THE WARNING SIGNS ATTACHED TO THIS MACHINE. 9. DO NOT STAND ON THE TELESCOPIC COVER. 10. ENSURE SAFETY BEFORE PRESSING THE START BUTTON. 11. THE WINDOWS OF OPERATION DOORS ARE CONSUMABLE PARTS. REPLACE THEM EVERY 2 YEARS.

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Fig. 3-2

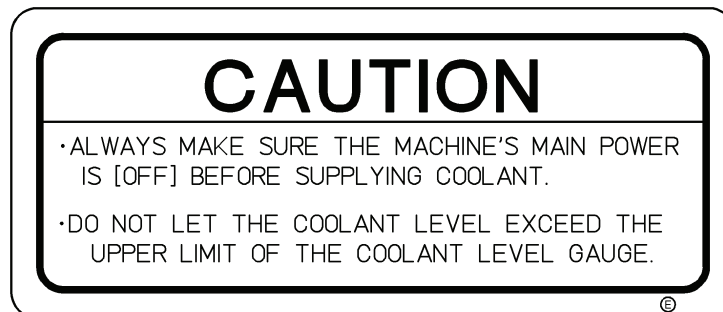
- (2) Cautions for removing the maintenance cover
Okuma Part No. H1090-1018-33



TME13027R0400500030002

Fig. 3-3

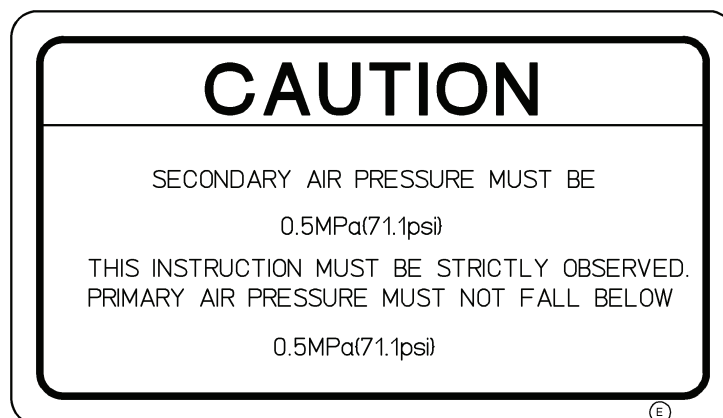
- (3) Cooling oil maintenance
Okuma Part No. H1090-1022-32-1



TME13027R0400500030003

Fig. 3-4

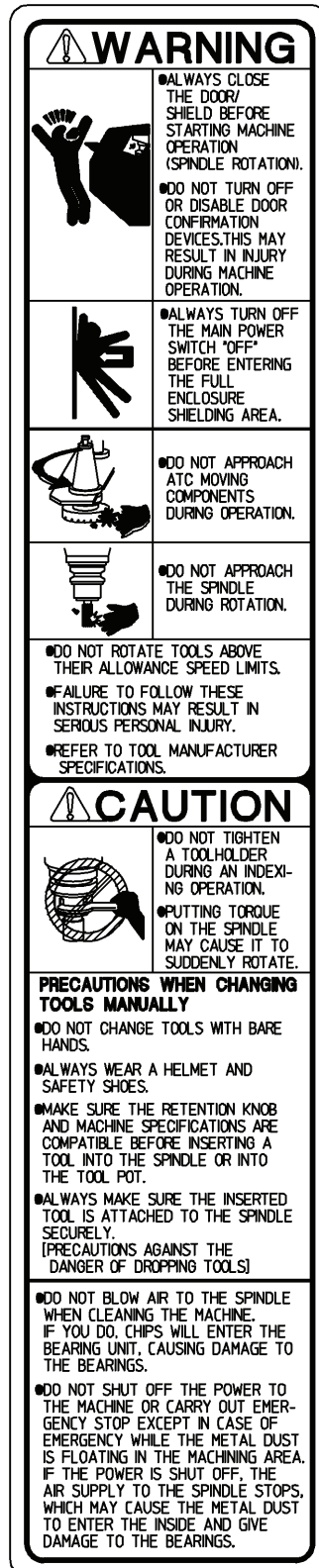
- (4) Cautions for setting air source pressure
Okuma Part No. H1090-1022-33-1



TME13027R0400500030004

Fig. 3-5

- (5) Common instruction plate
Okuma Part No. H1090-1152-29-1



TME13027R0400500030005

Fig. 3-6

- (6) Cautions for operating high speed spindle
Okuma Part No. H1090-1050-58-5



WARNING

1. Do not rotate tools above their maximum speed limits.
Failure to follow this instruction may result in serious personal injury.
* Refer to tool manufacturer specifications for allowable speed limits.
Especially when using the tool with throw-away tips, be careful not to exceed the allowable rotation speed to prevent the tips from coming off.

2. Use dynamically balanced tools.
* If excess vibration occurs during high-speed rotation, stop rotation immediately.

3. When using HSK shanks
* Always ensure that manually clamped HSK tools are securely fastened to the spindle nose before rotation.
* Do not rotate the spindle without tools attached.

Failure to observe these precautions may result in a serious accident.

CAUTION

Starting spindle rotation

1. After turning on the power, regularly check the air pressure and the oil level of the oil-air lubrication unit.

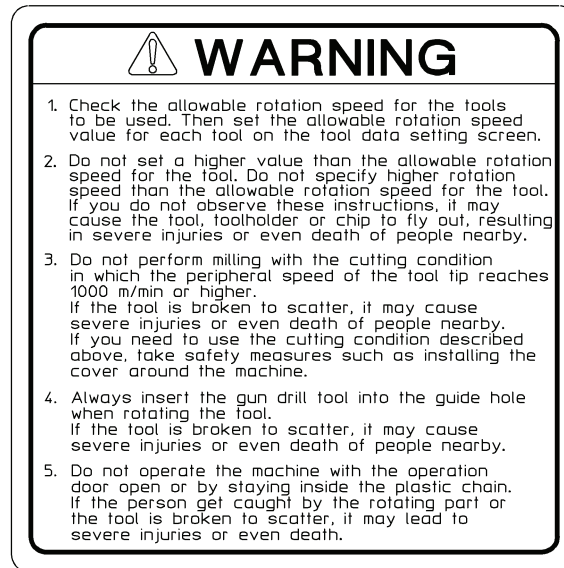
2. Follow the warm-up sequences in the chart below.

10000min ⁻¹ 12000min ⁻¹ SPINDLE	20000min ⁻¹ SPINDLE	25000min ⁻¹ SPINDLE	35000min ⁻¹ SPINDLE
3000min ⁻¹ 10min 6000min ⁻¹ 10min	5000min ⁻¹ 4min 10000min ⁻¹ 10min 15000min ⁻¹ 10min	5000min ⁻¹ 20min 20000min ⁻¹ 15min	2000min ⁻¹ 5min 5000min ⁻¹ 5min 10000min ⁻¹ 5min 15000min ⁻¹ 5min 20000min ⁻¹ 5min 25000min ⁻¹ 5min 30000min ⁻¹ 5min 35000min ⁻¹ 5min
15000min ⁻¹ SPINDLE			
4000min ⁻¹ 10min 9000min ⁻¹ 10min			

TME13027R0400500030006

Fig. 3-7

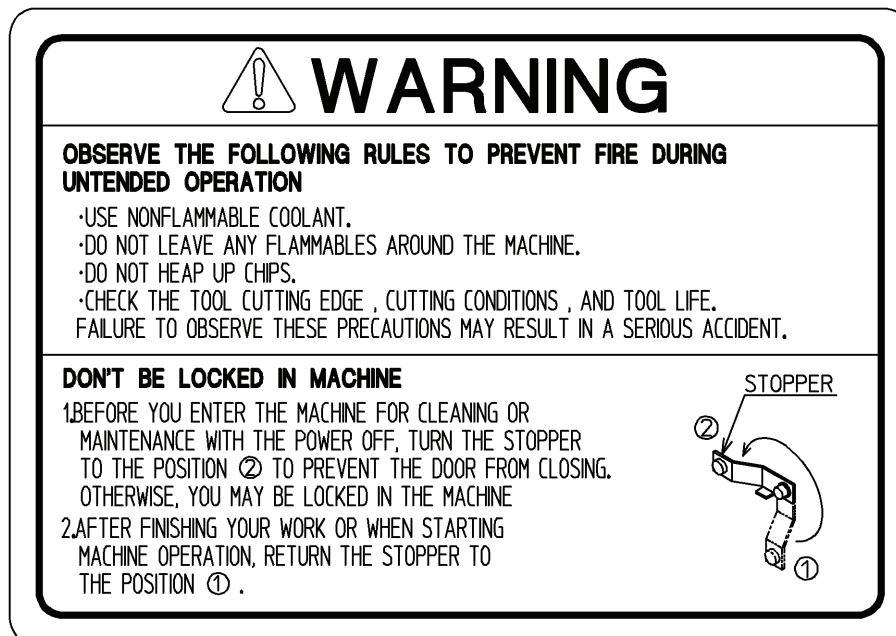
- (7) Cautions for door interlock
Okuma Part No. H1044-1142-92



TME13027R0400500030007

Fig. 3-8

- (8) Tool handling, locked-in, and fire prevention
Okuma Part No. H1090-1042-43-1



TME13027R0400500030008

Fig. 3-9

- (9) Periodical replacement of thru-pin
Okuma Part No. H1090-1044-89-5

CAUTION

Periodical replacement of thru-pin for thru-spindle coolant function

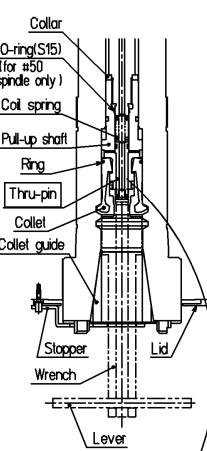
1. The thru-pin in the tool pull-up shaft used for thru-spindle coolant is a consumable part. Replace the thru-pin every 10 months (or 180,000 times of ATC operation, whichever comes earlier).
If the seal at the tip of thru-pin develops wear, coolant will leak, causing a trouble.
2. The seal life varies depending on the machining conditions, coolant type, etc. If the coolant leaks before the above time limit is reached, stop using the thru-spindle coolant and replace the thru-pin.
3. Thru-pin No. and O-ring (for #50 spindle only) No.

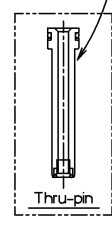
	Specification	Thru-pin part No.
#40 spindle	JS/DIN	U9800-0614-013-01
	CAT	U9800-0614-014-01
#50 spindle	MAS/JS/DIN/CAT(*1)	U9800-0616-017-01

*1: Includes the specs based on the special CAT.

	Type	Part No. of O-ring only
O-ring (*2)	S15 JS class 4, D	F109-0004-88

*2: #50 spindle only (supplied to the U9800-0616-017-01)





Thru-pin

Procedure for changing thru-pin in the tool pull-up shaft

Note: Before replacing the thru-pin, be sure to read the instruction manual in conjunction with this caution plate.

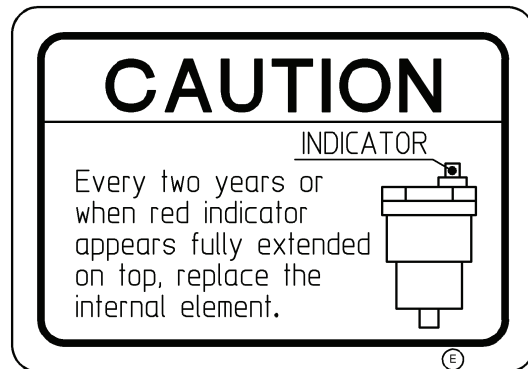
1. Attach the "collet guide" to the "stopper" and install them to the spindle. Then, insert the supplied "wrench" into the spindle. When installing the "stopper", remove the "lid" fixing bolts.
(2 bolts for #40 and 3 bolts for #50)
2. Undamp the spindle tool.
3. Remove the "pull-up shaft" unit using the supplied "wrench" and "lever".
"Collet", "ring", "thru-pin", "coil spring", and "collar" are disassembled at the same time together with the "pull-up shaft".
4. Remove the "coil spring" and the "thru-pin" from the "pull-up shaft".
Note: For #50 spindle, remove the "O-ring (S15)" assembled in the "pull-up shaft". When removing the "O-ring", use a bar having a thin tip.
The "thru-pin" cannot be removed if the "O-ring (S15)" remains.
5. Assemble the "thru-pin" in the "pull-up shaft". For #50 spindle, also assemble a new "O-ring (S15)". Fill the finally disassembled "coil spring".
Note: When assembling an "O-ring (S15)" in the #50 spindle, use a soft bar which is free of sharp edges.
The inside of "pull-up shaft" is threaded. So, your finger will be injured if inserted into it.
Apply grease to the O-ring around the "thru-pin" using care not to damage the ring.
Apply grease to the "O-ring (S15)" also when fitting the "coil spring".
6. Install the assembled "pull-up shaft" and "collar" to the spindle.
Note: Completely tighten the "pull-up shaft" using only the supplied "wrench" and "lever". Never attempt to retighten by inserting a pipe or the like. Doing so will damage the spindle.
Moreover, be careful not to damage the O-ring when fitting it.
7. After confirming that the "pull-up shaft" has been completely tightened, perform the ATC operation to check for normal operation.
Note: Make sure that the "stopper" is removed during ATC operation.
8. Mount a thru-spindle tool and discharge coolant to check that no coolant leaks from inside of the spindle.

--- End of replacement ---

TME13027R0400500030009

Fig. 3-10

- (10) Periodical replacement of air filter
Okuma Part No. H1090-1026-59-1



TME13027R0400500030010

Fig. 3-11

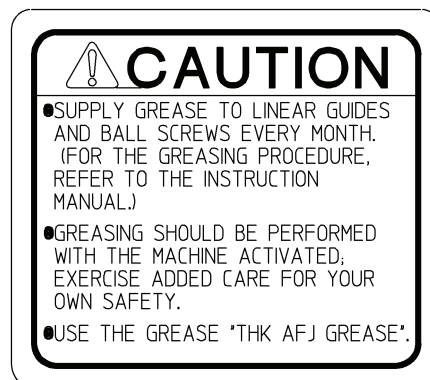
- (11) Control panel nameplates
Okuma Part No. E5421-019-002



TME13027R0400500030011

Fig. 3-12

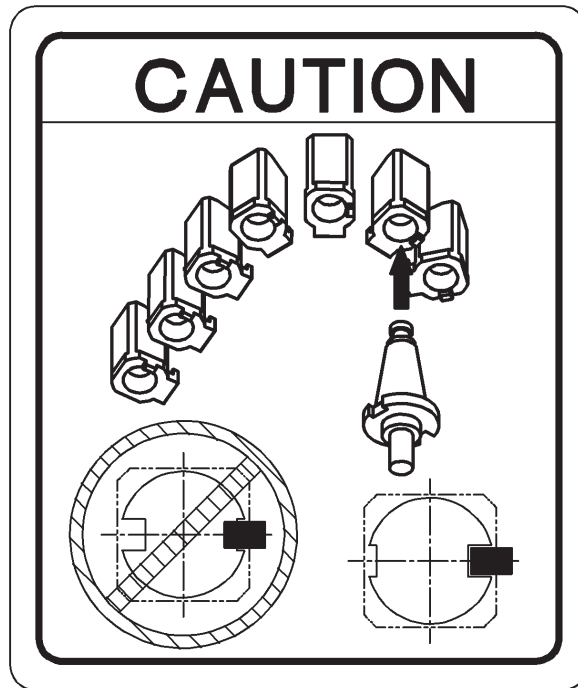
- (12) Cautions for grease lubrication
Okuma Part No. H1090-1152-31



TME13027R0400500030012

Fig. 3-13

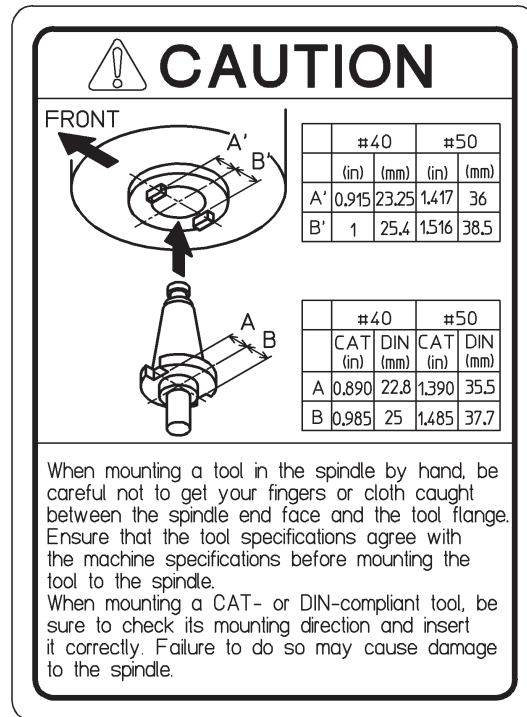
- (13) Cautions for handling CAT, DIN tools
Okuma Part No. H1090-1046-55-1



TME13027R0400500030013

Fig. 3-14

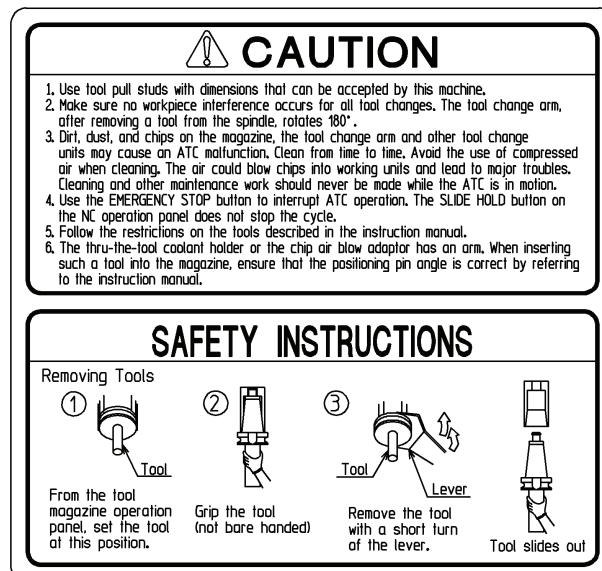
- (14) Cautions for handling CAT, DIN tools
Okuma Part No. H1090-1046-56-1



TME13027R0400500030014

Fig. 3-15

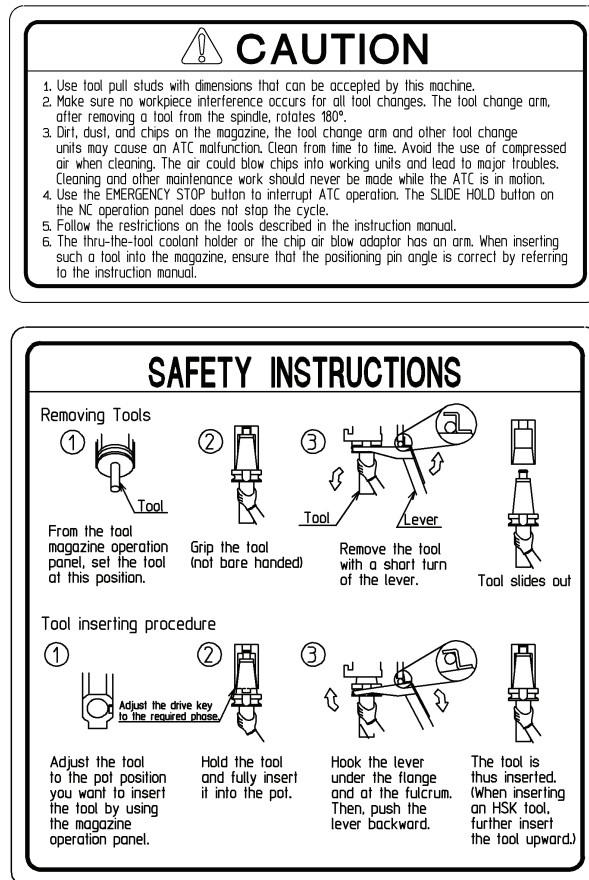
- (15)-1 Cautions for installing a tool in the magazine [BT]
Okuma Part No. H1090-1091-01



TME13027R0400500030015

Fig. 3-16

- (15)-2 Cautions for installing a tool in the magazine [BIG plus]
Okuma Part No. H1090-1099-21-2, H1090-1125-09



TME13027R0400500030016

Fig. 3-17

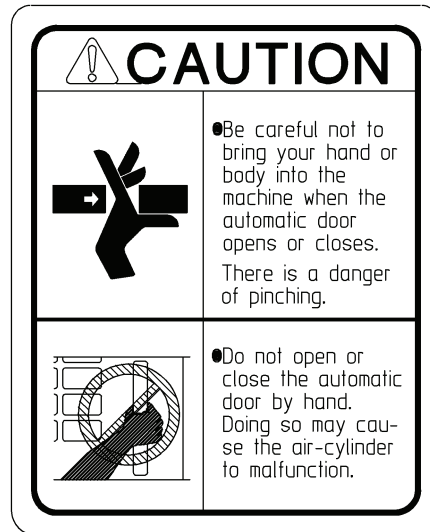
- (16) Specified oil-air lube for high speed spindle
Okuma Part No. H1090-1033-67-2



TME13027R0400500030017

Fig. 3-18

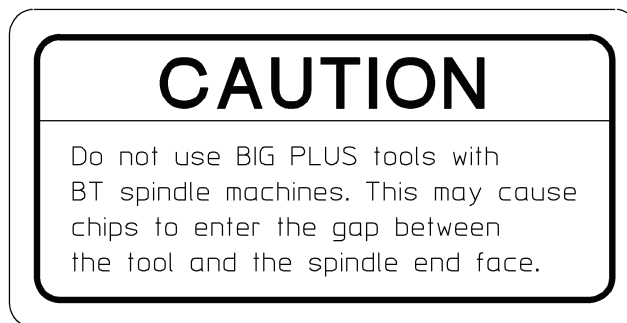
- (17) Cautions for models with automatic door
Okuma Part No. H1090-1152-33



TME13027R0400500030018

Fig. 3-19

- (18) Cautions for installing tools in standard spindle
Okuma Part No. H1090-1157-56

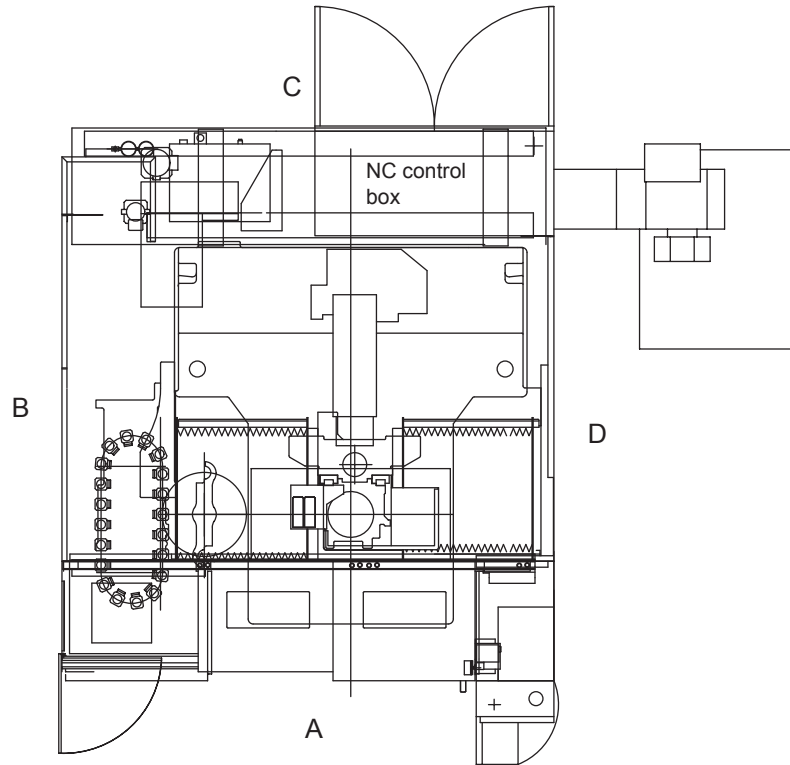


TME13027R0400500030019

Fig. 3-20

SECTION 4 NOISE LEVEL

4-1. Measuring Position (Top View)



TME13027R0400600010001

Fig. 4-1

4-2. Noise

The equivalent continuous A-weighted sound pressure are shown in the following table:

Measuring Position	A	B	C	D
Sound Pressure dB (A)*	73	76	76	73

Table 4-1

* In accordance to the JIS Z8731 and JIS C1502

4-3. Measuring Conditions

- a. Place :
A, B, C and D 4 places
- b. Position :
1 m (3 ft.) away from the machine
1.6 m (5.2 ft.) high from the floor level
- c. Machine operation conditions
 - The spindle is rotated (max. speed $12,000 \text{ min}^{-1}$).
 - The X-, Y- and Z-axis are fed at rapid traverse.
 - The full-enclosure shielding is closed.

SECTION 5 SPARE PARTS LIST

<Classification of listed parts>

- (1) Spindlehead Frame & Piping (#40-8,000 min⁻¹/12,000 min⁻¹/15,000 min⁻¹)
- (2) #40 Spindlehead 8,000 min⁻¹
- (3) #40 Spindlehead 12,000 min⁻¹/15,000 min⁻¹ (Optional)
- (4) X/Y/Z-axis Ball Screws
- (5) X/Y/Z-axis Drive Mechanisms
- (6) X/Y/Z-axis Guideways
- (7) #40 ATC Unit
- (8) #40 20-tool Magazine
- (9) #40 32-tool Magazine (Optional)
- (10) Full-enclosure Shielding
- (11) Machine (Including Optional Specifications)
- (12) Chip Disposal System (Including Optional Specifications)
- (13) Fluorescent Work Light
- (14) Auto Tool Length Offset Device (Touch Sensor: Optional)
- (15) Auto Zero Offset Device (Touch Probe: Optional)
- (16) 1.5 MPa (217.7 psi) Thru-spindle Coolant System (Optional)
- (17) 7.0 MPa (1,015.7 psi) Thru-spindle Coolant System (Optional)
- (18) Pull-stud Bolt & Accessories (Optional)

<Rank>

- A: Standard accessories
- C: Consumable parts that should be replaced after operation for 8000 hours or three years.
- D: Consumable parts that should be stocked at the overseas distributors and dealers for maintenance of the exported machines

<When ordering parts>

- Please let us know the number and the delivery date of your machine for our easy identification because the machines are always remodeled for improvement.
- Also refer to the attached parts book.

5-1. Spindlehead Frame & Piping (#40-8,000 min⁻¹/12,000 min⁻¹/15,000 min⁻¹)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Hydraulic unit	Kayaba	E4115-02000u-2 (for MB-V)	1	Tool unclamp UT	H0130-0020-40-2	D
2	Joint	Sinpro Enterprise	KQ2U08-10	1	Spindle air piping	H0016-0013-86	D
3	Elbow union	Sinpro Enterprise	KQL08-01S	3	Spindle air piping	H0016-0013-87	D
4	Soft nylon tube	SMC	TS0806B 4m	1	Spindle air piping	H0026-0011-71	C
5	Check valve	KITZ	150 type lift checking valve PT1/2	1	Spindle coolant piping	F0040-583-000-22	D
6	Rubber hose	Sinpro Enterprise	L35-19MX1300	1	Spindle coolant piping	H0027-0052-08	C
7	Dia clamp	Yuan-siang	SD-1025	2	Spindle coolant piping	H0035-0008-02	D
8	Compression spring setting	Ihara	0.6X8.6X13X6 SUS304	1	Spindle coolant piping	M109-0018-77	D
9	O-ring (copper)	Yuan-siang	P7	1	Spindle frame STD	F109-0009-54	C
10	O-ring (copper)	Yuan-siang	P16	2	Spindle frame STD	F109-0009-62	C
11	7 MPa hose	Ohnoko (dealer)	12X350 with fixtures	1	Spindle hydraulic/cooling piping	C2797-120352	D
12	7 MPa hose	Ohnoko (dealer)	12X650 with fixtures	1	Spindle hydraulic/cooling piping	C2797-120652	D
13	Joint	Sinpro Enterprise	L4N8-PT1/4	2	Spindle hydraulic/cooling piping	H0015-0014-74	D
14	Plate	Mach Rubber	Nitrile rubber 16X44X3	1	Spindle hydraulic/cooling piping	H1020-1181-91-1	D
15	Plug PA	Showa	PA-4	12	Spindle oil-air piping	H0012-0000-88	D
16	Sleeve PB	Showa	PB-4	12	Spindle oil-air piping	H0012-0000-89	D
17	Insert	Sinpro Enterprise	AL-4	12	Spindle oil-air piping	H0019-0011-32	D
18	Nylon pipe	Sinpro Enterprise	6X2000	1	Spindle oil-air piping	H0026-0020-92	D
19	Hylon tube	Sinpro Enterprise	HN-0425 L7000	1	Spindle oil-air piping	H0026-0020-93	D
20	S solenoid valve	CKD	AG4X9371-DC24V delivery spec. provided	1	Thru-spindle piping	F0001-411-001-43	D
21	Check valve	Ihara Science	KZU00-005E	2	Thru-spindle piping	F0040-982-000-82	D
22	Synflex tube	Nitta	N2-4-8X6 L1000 black	1	Thru-spindle piping	F1262-1000-0	D
23	Elbow union	SMC	KQL10-02S	1	Thru-spindle piping	H0011-0004-71	D
24	Elbow union	SMC	KQL08-02S	2	Thru-spindle piping	H0011-0005-90	D
25	Elbow union	SMC	KQL08-03S	1	Thru-spindle piping	H0016-0000-30	D
26	Hose	Ohnoko (dealer)	Hose set with fixtures on both ends	1	Thru-spindle piping	H0027-1054-06-1	D
27	S solenoid valve	CKD	GFAB41-X1707 DC24V	1	Spindle upper piping unit STD	F0001-400-009-19	D
28	Synflex tube	Nitta	N2-4-8X6 L500 black	1	Spindle upper piping unit STD	F1262-0500-0	D
29	Synflex tube	Sinpro Enterprise	N5-4-10X8 L600	1	Spindle upper piping unit STD	H0026-0020-97	D
30	Half union	SMC	KQH08-02S	2	Spindle upper piping unit STD	H0011-0004-87	D
31	Line filter	Daido Metal	F01-2 drawing 000-UF1-0200 delivery spec. provided	1	Spindle upper piping unit STD	H0120-0007-63-1	D
32	Mixing valve	Daido Metal	BFA0106BBBBBB delivery spec. provided	1	Spindle upper piping unit STD	H0120-0008-25-1	D
33	Lubrication parts	Sinpro Enterprise	9-pc set	1	Spindle upper piping unit STD	H0120-0012-36	D
34	W universal elbow	Sinpro Enterprise	KQVD10-03S	1	Spindle upper piping unit STD	H0016-0013-85	D
35	Plug	SMC	KQP-10	1	Spindle upper piping unit STD	H0011-0002-82	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
36	O-ring	Eiwa (dealer)	Class 1 A (nitrile rubber) wire dia:Φ3, ID:Φ190, OD: Φ196,	1	Only for #40 spindle	F109-0005-17	C
37	O-ring (copper)	Yuan-siang	P5	1	Only for #40 spindle	F109-0009-52	C
38	Piping	LIAHUEI	GENOS-M #40 spindlehead piping set	1	Only for #40 spindle	H0190-0136-51	D
39	Connector	Sinpro Enterprise	C4N8X6-PT1/4	1	Only for #40 spindle	H0015-0014-80	D
40	Synflex tube	Sinpro Enterprise	N2-4-8X6 L220 BLACK	1	Only for #40 spindle	H0026-0020-96	D
41	Elbow	Sinpro Enterprise	L4N8X6-PT1/4	1	Only for #40 spindle	H0015-0014-79	D

Table 5-1

5-2. #40 Spindlehead 8,000 min⁻¹

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Encoder	Tamagawa Seiki	TS5270N56 magnetic encoder compact I type cable 2m	1	Spindle speed detection	E3051-396-014-1	D
2	Connector	HARTING	HAN 8U 3001	1	Spindle speed detection	E3703-661-103	D
3	Connector AT	HARTING	09150006104 clip pin for 0.2S	8	Spindle speed detection	E3708-661-012	D
4	Connector AT	HARTING	09620031440 HAN3A top entry PG11 for EMC	1	Spindle speed detection	E3708-661-132	D
5	Bushing	HARTING	1.691.1100.01 HSK-M-EMV PG11 for EMC	1	Spindle speed detection	E5601-661-037	D
6	3-phase induction motor	YASKAWA	Built-in rotor for 8000/15000 min-1 spindle type UAASID-11COK11/37HOK3	1	Rotor commonly used	E1005-892-208	D
7	3-phase induction motor	YASKAWA	Built-in stator VAC-YMB11/7.5-5.3/80 type UAASID-11COK11	1	Motor 6000/8000	E1005-892-209	D
8	O-ring	Yuan-siang	S50	1	#40 spindle BT8000	F109-0009-69	C
9	O-ring	Yuan-siang	S50	1	#40 spindle BIG8000	F109-0009-69	C
10	Bearing	NSK	70BER10STYDBBELP4YU10 for 8000 min-1 spindle	1	#40 bearing 8000	M009-0045-60	D
11	Bearing	NSK	N1011RT42CCG5P4YU10 for 8000/15000 min-1 spindle	1	#40 bearing 8000	M009-0045-61	D
12	O-ring (copper)	Yuan-siang	G105	2	#40 spindle unit front side	F109-0009-66	C
13	O-ring (copper)	Yuan-siang	P9	6	#40 spindle unit front side	F109-0009-55	C
14	O-ring (copper)	Yuan-siang	G85	1	#40 spindle unit rear side	F109-0009-60	C
15	O-ring (copper)	Yuan-siang	P6	4	#40 oil-air nozzle	F109-0009-53	C
16	Plug PA	Showa	PA-4	6	#40 oil-air nozzle	H0012-0000-88	D
17	Sleeve PB	Showa	PB-4	6	#40 oil-air nozzle	H0012-0000-89	D
18	Nipple	Wellico	PD54	1	#40 oil-air nozzle	H0015-0014-76	D
19	Lubrication parts	YEONG DIEN	Lubrication parts 6-pc set	1	#40 oil-air nozzle	H0120-0012-41	D
20	Compression spring	Ihara	SUS304 0.4X4.8X20X13	2	#40 taper air blow block	M109-0022-32	C
21	O-ring (copper)	Yuan-siang	G200	2	#40 outer sleeve	F109-0009-68	C
22	O-ring (copper)	Yuan-siang	P10	5	#40 outer sleeve	F109-0009-61	C
23	O-ring	Yuan-siang	S185	2	#40 outer sleeve	F109-0009-72	C
24	O-ring (copper)	Yuan-siang	G135	2	#40 inner sleeve 8000	F109-0009-67	C
25	O-ring (copper)	Yuan-siang	P5	1	#40 inner sleeve 8000	F109-0009-52	C
26	O-ring	Yuan-siang	S130	1	#40 inner sleeve 8000	F109-0009-73	C
27	O-ring (copper)	Yuan-siang	P9	1	Spacer cooling parts	F109-0009-55	C
28	O-ring (copper)	Yuan-siang	G105	2	#40 rear housing 8000	F109-0009-66	C
29	O-ring (copper)	Yuan-siang	P7	2	#40 rear housing 8000	F109-0009-54	C
30	O-ring	Yuan-siang	JIS-B2401 4 type D P11	1	S pull-up shaft #40	F109-0009-74	C
31	O-ring	Yuan-siang	JIS-B2401 4 type D P16	1	S pull-up shaft #40	F109-0009-75	C
32	O-ring	Yuan-siang	JIS-B2401 4 type D P36	1	S pull-up shaft #40	F109-0009-76	C

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
33	Collar	Ihara	SUS304 Φ42XΦ20X0.5	1	S pull-up shaft #40	H1009-1000-86	D
34	Collar	Ihara	SUS304 Φ42XΦ20X0.1	5	S pull-up shaft #40	H1009-1000-87	D
35	Belleville spring	Tokai Spring	Belleville spring I-MC 20.4X40X2X3.1 3X40	1	S belleville spring #40	M109-0022-20	C
36	Proximity switch sensor	OMRON	E2E-X2D1-M3G M8 NO shield type	1	Shared with cylinder parts	E3020-397-295	D
37	Proximity switch sensor	OMRON	E2E-X2D2-M3G	1	Shared with cylinder parts	E3020-397-302	D
38	Elbow	Sinpro Enterprise	L4N8X6-PT1/8	2	Shared with cylinder parts	H0015-0014-77	D
39	O-ring (copper)	Yuan-siang	G85	1	#40 cylinder	F109-0009-60	C
40	O-ring (copper)	Yuan-siang	P80	1	#40 cylinder	F109-0009-64	C
41	Piston seal	Yuan-siang	60	1	#40 cylinder	H0031-0028-92	C
42	Piston seal	Yuan-siang	80	1	#40 cylinder	H0031-0028-93	C
43	Proximity switch sensor	OMRON	E2E-X2D1-M3G M8 NO shield type	2	#40 cylinder	E3020-397-295	D
44	Thermistor cable	Hagiwara	Sensor 103AT-4 (high response 5 meter (Drawing: S-43341))	4	Accessory for #40 thermal deformation compensation	E4925-653-005-1	D
45	Compression spring setting	Fuji Spring	1.6X15.0X42X9	6	Fall prevention of the piston #40	M101-16150-04209	D
46	Connector	Sinpro Enterprise	C4N10X8-PT1/4	2	Accessory for #40 MB-V	H0015-0014-78	D
47	End plug	Wellico	PE08	1	Cover without through hole	H0015-0014-81	D
48	Rotary joint	RIX	SX20J-7186 without lubrication nozzle	1	#40 through rotary joint	H0019-0005-13	D
49	Nozzle	RIX	Nozzle for ESX20J	1	#40 through rotary joint	H0019-0005-14	D
50	Insert	Sinpro Enterprise	AL-4	3	#40 through rotary joint	H0019-0011-32	D
51	Plug PA	Showa	PA-4	3	#40 through rotary joint	H0012-0000-88	D
52	Sleeve PB	Showa	PB-4	3	#40 through rotary joint	H0012-0000-89	D
53	Nipple	Wellico	PD54	1	#40 through rotary joint	H0015-0014-76	D
54	Connector PM	Showa	PM-4	1	#40 through rotary joint	H0012-0901-47	D
55	Nylon pipe	Showa	Φ4X1000	1	#40 through rotary joint	H0026-0011-36	C
56	Collar	Ihara	SUS304 Φ42XΦ58X0.5	1	#40 through rotary joint	H1009-1000-88	D
57	Collar	Ihara	SUS304 Φ42XΦ58X0.1	5	#40 through rotary joint	H1009-1000-89	D
58	O-ring	Yuan-siang	JIS-B2401 4 type D P36	1	#40 through rotary joint	F109-0009-76	C
59	Compression spring setting	Ihara	1.6X11.6X100X45	1	#40 through rotary joint	M101-16116-10045	D
60	Ring	Ihara	SUS304-WPB 0.4X2X60X150 NO.40 spindle for collet	1	#40 collet MAS2, MAS1	M109-0019-23	C
61	Ring	Ihara	SUS304-WPB 0.4X2X60X150 NO.40 spindle for collet	1	#40 collet JIS,DIN,CAT	M109-0019-23	C
62	O-ring	NOK	P22A CO-0019I type 4 D	1	JIS, DIN collet pull-up shaft	F109-0004-61	C
63	O-ring	NOK	JIS-B2401 type 4 D P15	1	JIS, DIN collet pull-up shaft	J9824-0150-P15	C
64	Shaft	Mach Rubber	S45C.fluorocarbon rubber Φ13X50	3	Through pin JIS,DIN #40	H1023-1049-67	C
65	O-ring	NOK	JIS-B2401 type 4 D P10	3	Through pin JIS,DIN #40	J9824-0150-P10	C
66	Backup ring	NOK	JIS-B2407 T2 P10	3	Through pin JIS,DIN #40	J9824-0710-P10	C
67	O-ring	NOK	P22A CO-0019I type 4 D	1	CAT collet pull-up shaft	F109-0004-61	C
68	O-ring	NOK	JIS-B2401 type 4 D P15	1	CAT collet pull-up shaft	J9824-0150-P15	C
69	Shaft	Mach Rubber	S45C.fluorocarbon rubber Φ13X60	3	Through pin CAT #40	H1023-1049-66	C
70	O-ring	NOK	JIS-B2401 type 4 D P10	3	Through pin CAT #40	J9824-0150-P10	C
71	Backup ring	NOK	JIS-B2407 T2 P10	3	Through pin CAT #40	J9824-0710-P10	C

Table 5-2

5-3. #40 Spindlehead 12,000 min⁻¹/15,000 min⁻¹ (Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Encoder	Tamagawa Seiki	TS5270N56 magnetic encoder compact I type cable 2m	1	Spindle speed detection	E3051-396-014-1	D
2	Connector	HARTING	HAN 8U 3001	1	Spindle speed detection	E3703-661-103	D
3	Connector AT	HARTING	09150006104 clip pin for 0.2S	8	Spindle speed detection	E3708-661-012	D
4	Connector AT	HARTING	09620031440 HAN3A top entry PG11 for EMC	1	Spindle speed detection	E3708-661-132	D
5	Bushing	HARTING	1.691.1100.01 HSK-M-EMV PG11 for EMC	1	Spindle speed detection	E5601-661-037	D
6	3-phase induction motor	YASKAWA	Built-in rotor for 8000/15000 min-1 spindle type UAASID-11COK11/37HOK3	1	Rotor commonly used	E1005-892-208	D
7	3-phase induction motor	YASKAWA	Built-in stator VAC-YMB26/18.5-40/150-B type UAASID-37HOK31	1	Motor 12,000/15,000	E1006-892-122	D
8	O-ring	Yuan-siang	S50	1	#40 spindle BT12,000/15,000	F109-0009-69	C
9	O-ring	Yuan-siang	S50	1	#40 spindle BIG12,000/15,000	F109-0009-69	C
10	Bearing	NSK	N1011RT42CCG5P4YU10 for 8000/15000 min-1 spindle	1	#40 bearing 12,000/15,000	M009-0045-61	D
11	Bearing	NSK	70BNR10XTDBBCA10P4YU10 for 15000 min-1 spindle	1	#40 bearing 12,000/15,000	M009-0045-62	D
12	O-ring (copper)	Yuan-siang	G105	2	#40 spindle unit front side	F109-0009-66	C
13	O-ring (copper)	Yuan-siang	P9	6	#40 spindle unit front side	F109-0009-55	C
14	O-ring (copper)	Yuan-siang	G85	1	#40 spindle unit rear side	F109-0009-60	C
15	O-ring (copper)	Yuan-siang	P6	4	#40 oil-air nozzle	F109-0009-53	C
16	Plug PA	Showa	PA-4	6	#40 oil-air nozzle	H0012-0000-88	D
17	Sleeve PB	Showa	PB-4	6	#40 oil-air nozzle	H0012-0000-89	D
18	Nipple	Wellico	PD54	1	#40 oil-air nozzle	H0015-0014-76	D
19	Lubrication parts	YEONG DIEN	Lubrication parts 6-pc set	1	#40 oil-air nozzle	H0120-0012-41	D
20	Compression spring	Ihara	SUS304 0.4X4.8X20X13	2	#40 taper air blow block	M109-0022-32	C
21	O-ring (copper)	Yuan-siang	G200	2	#40 outer sleeve	F109-0009-68	C
22	O-ring (copper)	Yuan-siang	P10	5	#40 outer sleeve	F109-0009-61	C
23	O-ring	Yuan-siang	S185	2	#40 outer sleeve	F109-0009-72	C
24	O-ring (copper)	Yuan-siang	G135	2	#40 inner sleeve 12,000/15,000	F109-0009-67	C
25	O-ring (copper)	Yuan-siang	P5	1	#40 inner sleeve 12,000/15,000	F109-0009-52	C
26	O-ring	Yuan-siang	S130	1	#40 inner sleeve 12,000/15,000	F109-0009-73	C
27	O-ring (copper)	Yuan-siang	P9	1	Spacer cooling parts	F109-0009-55	C
28	O-ring (copper)	Yuan-siang	G105	2	#40 rear housing 12,000/15,000	F109-0009-66	C
29	O-ring (copper)	Yuan-siang	P7	2	#40 rear housing 12,000/15,000	F109-0009-54	C
30	O-ring	Yuan-siang	JIS-B2401 4 type D P11	1	S pull-up shaft #40	F109-0009-74	C
31	O-ring	Yuan-siang	JIS-B2401 4 type D P16	1	S pull-up shaft #40	F109-0009-75	C
32	O-ring	Yuan-siang	JIS-B2401 4 type D P36	1	S pull-up shaft #40	F109-0009-76	C
33	Collar	Ihara	SUS304 $\Phi 42 \times \Phi 20 \times 0.5$	1	S pull-up shaft #40	H1009-1000-86	D
34	Collar	Ihara	SUS304 $\Phi 42 \times \Phi 20 \times 0.1$	5	S pull-up shaft #40	H1009-1000-87	D
35	Belleville spring	Tokai Spring	Belleville spring I-MC 20.4X40X2X3.1 3X40	1	S belleville spring #40	M109-0022-20	C
36	Proximity switch sensor	OMRON	E2E-X2D1-M3G M8 NO shield type	1	Shared with cylinder parts	E3020-397-295	D
37	Proximity switch sensor	OMRON	E2E-X2D2-M3G	1	Shared with cylinder parts	E3020-397-302	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
38	Elbow	Sinpro Enterprise	L4N8X6-PT1/8	2	Shared with cylinder parts	H0015-0014-77	D
39	O-ring (copper)	Yuan-siang	G85	1	#40 cylinder	F109-0009-60	C
40	O-ring (copper)	Yuan-siang	P80	1	#40 cylinder	F109-0009-64	C
41	Piston seal	Yuan-siang	60	1	#40 cylinder	H0031-0028-92	C
42	Piston seal	Yuan-siang	80	1	#40 cylinder	H0031-0028-93	C
43	Proximity switch sensor	OMRON	E2E-X2D1-M3G M8 NO shield type	2	#40 cylinder	E3020-397-295	D
44	Thermistor cable	Hagiwara	Sensor 103AT-4 (high response) 5 meter (drw S-43341)	4	Accessory for #40 thermal deformation compensation	E4925-653-005-1	D
45	Compression spring setting	Fuji Spring	1.6X15.0X42X9	6	Fall prevention of the piston #40	M101-16150-04209	D
46	Connector	Sinpro Enterprise	C4N10X8-PT1/4	2	Accessory for #40 MB-V	H0015-0014-78	D
47	End plug	Wellico	PE08	1	Cover without through hole	H0015-0014-81	D
48	Rotary joint	RIX	SX20J-7186 without lubrication nozzle	1	#40 through rotary joint	H0019-0005-13	D
49	Nozzle	RIX	Nozzle for ESX20J	1	#40 through rotary joint	H0019-0005-14	D
50	Insert	Sinpro Enterprise	AL-4	3	#40 through rotary joint	H0019-0011-32	D
51	Plug PA	Showa	PA-4	3	#40 through rotary joint	H0012-0000-88	D
52	Sleeve PB	Showa	PB-4	3	#40 through rotary joint	H0012-0000-89	D
53	Nipple	Wellico	PD54	1	#40 through rotary joint	H0015-0014-76	D
54	Connector PM	Showa	PM-4	1	#40 through rotary joint	H0012-0901-47	D
55	Nylon pipe	Showa	Φ4X1000	1	#40 through rotary joint	H0026-0011-36	C
56	Collar	Ihara	SUS304 Φ42XΦ58X0.5	1	#40 through rotary joint	H1009-1000-88	D
57	Collar	Ihara	SUS304 Φ42XΦ58X0.1	5	#40 through rotary joint	H1009-1000-89	D
58	O-ring	Yuan-siang	JIS-B2401 type 4 D P36	1	#40 through rotary joint	F109-0009-76	C
59	Compression spring setting	Ihara	1.6X11.6X100X45	1	#40 through rotary joint	M101-16116-10045	D
60	Ring	Ihara	SUS304-WPB 0.4X2X60X150 NO.40 spindle for collet	1	#40 collet MAS2, MAS1	M109-0019-23	C
61	Ring	Ihara	SUS304-WPB 0.4X2X60X150 NO.40 spindle for collet	1	#40 collet JIS,DIN,CAT	M109-0019-23	C
62	O-ring	NOK	P22A CO-0019I type 4 D	1	JIS, DIN collet pull-up shaft	F109-0004-61	C
63	O-ring	NOK	JIS-B2401 type 4 D P15	1	JIS, DIN collet pull-up shaft	J9824-0150-P15	C
64	Shaft	Mach Rubber	S45C.fluorocarbon rubber Φ13X50	3	Through pin JIS, DIN #40	H1023-1049-67	C
65	O-ring	NOK	JIS-B2401 type 4 D P10	3	Through pin JIS, DIN #40	J9824-0150-P10	C
66	Backup ring	NOK	JIS-B2407 T2 P10	3	Through pin JIS, DIN #40	J9824-0710-P10	C
67	O-ring	NOK	P22A CO-0019I type 4 D	1	CAT collet pull-up shaft	F109-0004-61	C
68	O-ring	NOK	JIS-B2401 type 4 D P15	1	CAT collet pull-up shaft	J9824-0150-P15	C
69	Shaft	Mach Rubber	S45C.fluorocarbon rubber Φ13X60	3	Through pin CAT #40	H1023-1049-66	C
70	O-ring	NOK	JIS-B2401 type 4 D P10	3	Through pin CAT #40	J9824-0150-P10	C
71	Backup ring	NOK	JIS-B2407 T2 P10	3	Through pin CAT #40	J9824-0710-P10	C

Table 5-3

5-4. X, Y, Z-axis Ball Screws

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Ball screw	HIWIN	M560-V Y-axis A11R5AA2	1	Y-axis ball screw 40 m	H1014-0028-99	D
2	Ball screw	HIWIN	M460-V Z-axis A11JKGA4	1	Z-axis ball screw	H1014-0027-74	D
3	Ball screw	HIWIN	M560-V X-axis A11R5BA2	1	X-axis ball screw 40 m	H1014-0028-98	D

Table 5-4

5-5. X, Y, Z-axis Drive Mechanisms

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	V-ring	Sinpro Enterprise	V-40A	4	Common to X-, Y-axis drive mechanism	H0031-0028-94	D
2	V-ring	Sinpro Enterprise	V-40A	1	For Z-axis drive mechanism	H0031-0028-94	D
3	Nut	YINSH	AA-FTAB035AER (M35XP1.5) TOC (dealer)	6	Common to X-, Y-, Z-axis drive mechanism	H1005-0009-01	D
4	Coupling	TATUNG-OKUMA	LK15-80-30-35 TOC (dealer)	3	Common to X-, Y-, Z-axis drive mechanism	H1012-0009-77	D
5	Bearing	Yung Ho Shun	35TAC72BDBDC10PN7A	3	Common to X-, Y-, Z-axis drive mechanism	M009-0059-46	D
6	Bearing	Yung Ho Shun	35TAC72BDTPN7A	3	Common to X-, Y-, Z-axis drive mechanism	M009-0059-47	D
7	Stopper	Yuan-siang	M82X45	2	X-, Y-axis stopper 40 M	H1023-0049-52	D
8	Stopper	Yuan-siang	M92X25	2	X-, Y-axis stopper 40 M	H1023-0049-53	D
9	Stopper	Yuan-siang	M74X24	1	Z-axis stopper	H1023-0049-54	D
10	Stopper	Yuan-siang	M82X20	1	Z-axis stopper	H1023-0049-55	D

Table 5-5

5-6. X, Y, Z-axis Guideways

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Bearing	THK	45/55V Z-axis SNS45LR2SSCSE+1090	1	Z-LM guideway for 46, 56V	M009-0043-99	D
2	Linear guide	THK	SNS45LR MB-56V for X-axis	1	X-LM guideway 56V	H1016-0000-95	D
3	Linear guide	THK	SNS45LR MB-56V for Y-axis	1	Y-LM guideway 56V	H1016-0000-96	D

Table 5-6

5-7. #40 ATC Unit

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Sight glass	SHANXIONG	V20	1	#40 ATC	H0039-0010-85	D
2	Retaining ring (shaft)	ICHAN JENN	25	1	#40 ATC	H1000-0006-49	D
3	Rubber cord	Yuan-siang	3X1600	1	#40 ATC	H1020-0018-22	C
4	O-ring (copper)	Yuan-siang	G55	2	#40 ATC	F109-0009-56	C
5	O-ring (copper)	Yuan-siang	G60	2	#40 ATC	F109-0009-57	C
6	O-ring (copper)	Yuan-siang	G65	1	#40 ATC	F109-0009-58	C
7	O-ring (copper)	Yuan-siang	G80	1	#40 ATC	F109-0009-59	C
8	O-ring (copper)	Yuan-siang	G85	1	#40 ATC	F109-0009-60	C
9	O-ring (copper)	Yuan-siang	G135	1	#40 ATC	F109-0009-67	C
10	O-ring (copper)	Yuan-siang	P16	2	#40 ATC	F109-0009-62	C
11	O-ring (copper)	Yuan-siang	P50	1	#40 ATC	F109-0009-63	C
12	Piston seal	Yuan-siang	55	1	#40 ATC	H0031-0028-91	C
13	Clamp nut	GIZIN	SCN 40X1.5	1	#40 ATC	H1005-0009-05	D
14	Fine U nut	Yangon	FU01SS	2	#40 ATC	H1005-0009-09	D
15	Fine U nut	Yangon	M25P1.5	1	#40 ATC	H1005-0009-10	D
16	Fine U nut	Yangon	FU07SS M35P1.5	1	#40 ATC	H1005-0009-12	D
17	Fine U nut	Yangon	M50P1.5	1	#40 ATC	H1005-0009-13	D
18	Fine U nut	Yangon	FU03SC M17P1	2	#40 ATC	H1005-0009-14	D
19	Coupling	Miki Pulley	ETP-G-35	1	#40 ATC	H1012-0005-05	D
20	Cam follower	Otsuka Hi-Tech	E20464	1	#40 ATC	H1019-0012-48-1	D

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No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
21	Turret	Otsuka Hi-Tech	For 631V 40, DWG D27209, specs. available	1	#40 ATC	H1019-0014-45	D
22	Cam follower	Otsuka Hi-Tech	30 circle for 631V 40, DWG E4411-TC50-MSK, specs. available	1	#40 ATC	H1019-0014-46	D
23	Roller-gear cam	Otsuka Hi-Tech	ISO key for MB-V 40, DWG C27147A, specs. available	1	#40 ATC	H1019-0014-47-2	D
24	Shift cam	Otsuka Hi-Tech	ISO key for MB-V 40, DWG C27148A, specs. available	1	#40 ATC	H1019-0014-48-1	D
25	Bearing	Hing Yau	ET-32006X	2	#40 ATC	M009-0059-55	D
26	Bearing	Hing Yau	ET-32010X	2	#40 ATC	M009-0059-56	D
27	Bearing	Hing Yau	RNA4901	2	#40 ATC	M009-0059-57	D
28	Bearing	Hing Yau	TAF243220	4	#40 ATC	M009-0059-58	D
29	Bearing	Hing Yau	6005	2	#40 ATC	M009-0059-49	D
30	Bearing	Hing Yau	6207	1	#40 ATC	M009-0059-52	D
31	Bearing	HORIZON	MB5540DU	1	#40 ATC	M009-0059-69	D
32	Belleville spring	GIZIN	JIS-L 41.0X80.0XT3.0XH2.3	3	#40 ATC	M109-0027-91	C
33	Retaining ring (shaft)	ICHAN JENN	25	1	ATC arm #40	H1000-0006-49	D
34	Felt ring	GIZIN	55	1	ATC arm #40	H1032-0003-02	C
35	E type retaining ring	ICHAN JENN	E-7	2	ATC arm #40	H1000-0006-54	D
36	Coupling	Miki Pulley	ETP-G-30	1	ATC arm #40	H1012-0005-08	D
37	Bearing	Hing Yau	AXK1114	1	ATC arm #40	M009-0059-61	D
38	Bearing	Yung Ho Shun	GS81114	1	ATC arm #40	M009-0059-63	D
39	Bearing	HORIZON	MB1508DU	4	ATC arm #40	M009-0059-65	D
40	Bearing	HORIZON	MB1510DU	2	ATC arm #40	M009-0059-66	D
41	Bearing	HORIZON	MB2220DU	2	ATC arm #40	M009-0059-67	D
42	Compression spring setting	Ihara Steel	1.0X7.0X54X28 P1.7KG flexure 10	2	ATC arm #40	M101-10070-05428	C
43	Compression spring setting	Ihara Steel	1.2X10.2X67X23 left hand helix	2	ATC arm #40	M101-12102-06723L	C
44	Compression spring setting	Ihara Steel	1.2X17.2X53X8	2	ATC arm #40	M101-12172-05308	C
45	Compression spring setting	Ihara Steel	2.0X22.0X46X8	2	ATC arm #40	M101-20220-04608	C

Table 5-7

5-8. #40 20-Tool Magazine

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Retaining ring (shaft)	ICHAN JENN	20	1	Magazine drive	H1000-0006-48	D
2	Retaining ring (shaft)	ICHAN JENN	30	1	Magazine drive	H1000-0006-50	D
3	Retaining ring (hole)	ICHAN JENN	55	1	Magazine drive	H1000-0006-52	D
4	Fine U nut	Yangon	M40XP1.5	1	Magazine drive	H1005-0009-08	D
5	Fine U nut	Yangon	FU06SC	1	Magazine drive	H1005-0009-11	D
6	Fine U nut	Yangon	FU03SC M17P1	1	Magazine drive	H1005-0009-14	D
7	Nilos ring	Kuan-Ho	7008AVG	4	Magazine drive	H0041-0001-88	D
8	Bearing	HORIZON	6004ZZ	2	Magazine drive	M009-0059-48	D
9	Bearing	HORIZON	6006ZZ	1	Magazine drive	M009-0059-50	D
10	Bearing	Kuan-Ho	7008DB	2	Magazine drive	M009-0059-54	D
11	Pipe clamp A	Showa	6X3	1	MG lubrication	C7700-003060	D
12	Lubrication parts	Darley	20MG lubrication parts 3-pc set	1	MG lubrication	H0120-0012-39	C
13	D solenoid valve	CKD	M4GA280-06-B-3-FL321951-3 for MB-V, spec. A3-321951	1	ATC air device	F0000-422-000-29	D
14	Check valve	MINDMAN	CHV-8J	1	ATC air device	F0040-581-000-44	D
15	Silencer	Sinpro Enterprise	SLW-8A	2	ATC air device	H0036-0002-04	D
16	Elbow union	SMC	KQL10-02S	1	ATC air device	H0011-0004-71	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
17	Proximity switch sensor	OMRON	E2E-X3D1-M1G	2	Pot swing	E3020-397-265	C
18	Speed control valve	MINDMAN	SC3G-6-8	2	Pot swing	F0031-581-001-10	D
19	Actuator	MINDMAN	SCM-TA-50B-55-Y-B2	1	Pot swing	H0002-0032-46	D
20	Elbow union	SMC	KQL08-01S	2	Pot swing	H0011-0004-51	D
21	Bearing	CHIEN HSIN	CF8UU	4	Pot swing	M009-0059-62	D
22	Bearing	CHIEN HSIN	CFE8UU	4	Pot swing	M009-0059-70	D
23	Bearing	HORIZON	MB1420DU	1	Pot swing	M009-0059-64	D
24	Tool pot	Fudo	#40 MAS 20-tool set for MB-V, specs. available	1	Pot chain 40-MAS	H0190-0088-68	D
25	Tool pot	Fudo	#40 JIS/DIN 20-tool set for MB-V, specs. available	1	Pot chain 40-JIS/DIN	H0190-0090-72	D
26	Tool pot	Fudo	#40 CAT 20-tool set for MB-V, specs. available	1	Pot chain 40-CAT	H0190-0091-74	D

Table 5-8

5-9. #40 32-Tool Magazine (Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Retaining ring (shaft)	ICHAN JENN	20	1	Magazine drive	H1000-0006-48	D
2	Retaining ring (shaft)	ICHAN JENN	30	1	Magazine drive	H1000-0006-50	D
3	Retaining ring (hole)	ICHAN JENN	55	1	Magazine drive	H1000-0006-52	D
4	Fine U nut	Yangon	M40XP1.5	1	Magazine drive	H1005-0009-08	D
5	Fine U nut	Yangon	FU06SC	1	Magazine drive	H1005-0009-11	D
6	Fine U nut	Yangon	FU03SC M17P1	1	Magazine drive	H1005-0009-14	D
7	Nilos ring	Kuan-Ho	7008AVG	4	Magazine drive	H0041-0001-88	D
8	Bearing	HORIZON	6004ZZ	2	Magazine drive	M009-0059-48	D
9	Bearing	HORIZON	6006ZZ	1	Magazine drive	M009-0059-50	D
10	Bearing	Kuan-Ho	7008DB	2	Magazine drive	M009-0059-54	D
11	Pipe clamp A	Showa	6X3	1	MG lubrication	C7700-003060	D
12	Lubrication parts	Darley	20MG lubrication parts 3-pc set	1	MG lubrication	H0120-0012-39	C
13	D solenoid valve	CKD	M4GA280-06-B-3-FL321951-3 for MB-V, spec. A3-321951	1	ATC air device	F0000-422-000-29	D
14	Check valve	MINDMAN	CHV-8J	1	ATC air device	F0040-581-000-44	D
15	Silencer	Sinpro Enterprise	SLW-8A	2	ATC air device	H0036-0002-04	D
16	Elbow union	SMC	KQL10-02S	1	ATC air device	H0011-0004-71	D
17	Proximity switch sensor	OMRON	E2E-X3D1-M1G	2	Pot swing	E3020-397-265	C
18	Speed control valve	MINDMAN	SC3G-6-8	2	Pot swing	F0031-581-001-10	D
19	Actuator	MINDMAN	SCM-TA-50B-55-Y-B2	1	Pot swing	H0002-0032-46	D
20	Elbow union	SMC	KQL08-01S	2	Pot swing	H0011-0004-51	D
21	Bearing	CHIEN HSIN	CF8UU	4	Pot swing	M009-0059-62	D
22	Bearing	CHIEN HSIN	CFE8UU	4	Pot swing	M009-0059-70	D
23	Bearing	HORIZON	MB1420DU	1	Pot swing	M009-0059-64	D
24	Tool pot	Fudo	#40 MAS 32-tool set for MB-V, specs. available	1	Pot chain 40-MAS	H0190-0091-18	D
25	Tool pot	Fudo	#40 JIS/DIN 32-tool set for MB-V, specs. available	1	Pot chain 40-JIS/DIN	H0190-0091-73	D
26	Tool pot	Fudo	#40 CAT 32-tool set for MB-V, specs. available	1	Pot chain 40-CAT	H0190-0091-75	D

Table 5-9

5-10. Full-enclosure Shielding

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	ATC air unit	CKD	Air parts set for MB-V ATC shutter	1	ATC shutter	H0140-0014-87-1	D
	(Cylinder)	(CKD)	SCM-LB-25B-405-Q	1	(ATC air unit)	(H0002-0023-33)	
	(Cylinder switch)	(CKD)	SW-T2H-FL170174 0.3 m lead wire with connector	1	(ATC air unit)	(E3020-453-042)	
	(Joint)	(CKD)	GWS68-0	2	(ATC air unit)	(H0016-0003-14)	
	(Joint)	(CKD)	GWP6-0	2	(ATC air unit)	(H0016-0007-36)	
	(Speed control valve)	(CKD)	SC3W-M5-6	2	(ATC air unit)	(H0016-0007-37)	
	(Joint)	(CKD)	FK-M10	1	(ATC air unit)	(H0039-0007-07)	
2	Shutter	KEYARROW	ATC shutter for M460-V	1	ATC shutter	H0190-0133-06	D
3	Proximity switch sensor	OMRON	E2E-X3D1-M1G	1	ATC shutter	E3020-397-265	C
4	Soft nylon tube	SMC	TS0806B L3000	2	ATC shutter	H0026-0013-32	C
5	Elbow union	SMC	KQL08-01S	2	ATC shutter	H0011-0004-51	D
6	Guide	CHEN WAY	UE770 30X165X10	2	#40 tool pot guide	H1022-0027-75	C
7	Grommet	Takigen	C-30-SG-30B	1	Cam box cover	H1023-0028-06	D
8	Door lock switch	OMRON	D4BL-2DRA mechanical lock	1	Operation door	E3049-397-032	C
9	Key for door lock switch	OMRON	Key for D4BL K2 type	1	Operation door	E3049-397-010	C
10	Door lock switch	OMRON	D4BL-2DRG solenoid lock	1	Magazine door	E3049-397-033	C
11	Key for door lock switch	OMRON	Key for D4BL K3 type	1	Magazine door	E3049-397-011	C
12	Shoulder bolt	Denshin	MSB12-30	1	Operation panel under support	H1001-0042-48	D
13	Hinge	Jy Huei	B-94	2	Magazine door	H1003-0005-49	D
14	E type retaining ring	ICHAN JENN	B-1024-5	2	Magazine door	H1000-0006-53	D
15	Magnet catch	Tochigiya	TL-272-2	1	Magazine door	H1009-0001-44	D
16	Plate	Eiwa (dealer)	PET 281X401X3 transparent and colorless	1	Magazine door	H1022-0016-80-1	D
17	Handle	JENIOU	THA-241-1A-1.6	1	Magazine door	H1062-0005-16	D
18	Handle	JENIOU	THA-241-1A-1.6	1	Right cover	H1062-0005-16	D
19	Handle	JENIOU	THA-241-1A-1.6	1	Left cover	H1062-0005-16	D
20	Bushing	AVC	NO.24	1	Left front face cover	E5601-03G-002	C
21	Bushing	AVC	NO.16	1	Right front face cover	E5601-03G-003	C
22	Wiper	Yunshuo	29X968.6X18.5	1	Crossrail face cover	H1023-0049-58	C
23	Rubber cushion	Yuan-siang	C-30-CS-2	1	Operation door	H1023-0049-49	C
24	Rubber cushion	Yuan-siang	C-30-CS-6	6	Operation door	H1023-0049-50	C
25	Trim seal	ASMITH	3100-B-3X16CT L1500	1	Operation door	H1023-0049-51	C
26	Trim seal	Iwata	3100-B-3X16C L1720	1	Operation door	H1023-0037-42	C
27	Handle	TATUNG-OKUMA	Drawing No. 7989-032400	1	Operation door	H1062-0004-93	D
28	Plate	Eiwa (dealer)	Polycarbonate 456X608X6 transparent	2	Operation door	H1022-0016-81	C
29	Norseal	Yamasei (dealer)	15B×3T×30ML Type V-710	1	Operation door	E5586-894-075	C
30	Washer	Denshin	WSSB20-12-3	8	Operation door upper roller	H1004-0010-34	D
31	Washer	Denshin	WSSB20-12-5	8	Operation door upper roller	H1004-0010-35	D
32	Bearing	Hing Yau	#6201ZZ	8	Operation door upper roller	M009-0059-51	D
33	Retaining ring (hole)	ICHAN JENN	32	4	Operation door under roller	H1000-0006-51	D
34	Shoulder bolt	Denshin	MSB12-10	4	Operation door under roller	H1001-0042-46	D
35	Bearing	Hing Yau	#6201ZZ	4	Operation door under roller	M009-0059-51	D
36	Filter	AQC	PS/600 350X350X20	1	For TAS-C (option)	H1022-1132-45	C

Table 5-10

5-11. Machine (Including Optional Specifications)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Bellows	Nippon Jabara	MB-56V for right X-axis 1050ST, Specifications available	1	X-axis bellows 56V	H1024-0005-93-1	C
2	Bellows	Nippon Jabara	MB-56V for left X-axis 1050ST, Specifications available	1	X-axis bellows 56V	H1024-0005-94-1	C
3	Telescopic cover	KEYARROW	M560-V Y-axis 480 stroke TOC (dealer)	1	Y-axis telescopic cover 56V	H1090-0037-53	D
4	Bearing	TATUNG-OKUMA	TM-86-A-5	2	Y-axis slide cover 56V	M009-0059-60	C
5	Elbow	SMC	KQL10-00	2	Machine piping	H0011-0002-61	D
6	Soft nylon tube	Sinpro Enterprise	TS1075B L 3500	1	Machine piping	H0026-0021-01	C
7	Soft nylon tube	SMC	TS1075B L3700	1	Machine piping	H0026-0012-90	C
8	Straight conduit connector	AVC	N-FGW33-34B	4	Machine piping	E3710-03G-002	D
9	Bushing	Kinjo Denki	Metal lock nut for GM-P29 PG	4	Machine piping	E5601-192-145	D
10	Round flexible conduit	Kinjo Denki	RF-29 L800	1	Machine piping	H1090-0021-93	C
11	Round flexible conduit	AVC	RF-29 L1800	1	Machine piping	H1090-0037-79	C
12	Hose	Sinpro Enterprise	Hose, 1 set, w/ metal parts on both ends, 3-pc set	1	Machine piping	H0027-0052-12	C
13	Hose	Sinpro Enterprise	Hose, 1 set, w/ metal parts on both ends, 4-pc set	1	Machine piping (oil-air)	H0027-0052-13	C
15	Holder	Mach Rubber	SPCC 30X135X59.5	1	Machine piping	H1023-1051-03	D
16	Grease nipple	Lian Hui	A type NO.4017 PT1/4	3	Lubrication piping 56V X,Y,Z	H0041-0001-87	D
17	Hose	Tokai Rubber	3MPa-6 (1/4) without armoring with fixtures on both ends	1	Lubrication piping 56V X, Z	H0027-1054-25	C
18	Nipple	Sinpro Enterprise	1013 PT1/8XPF1/4	1	Lubrication piping 56V X, Z	H0014-0022-33	D
19	Joint	YEONG DIEN	LB. UNIT	1	Lubrication piping 56V X, Z	H0120-0012-37	D
20	Joint	Lube	7-pc set MB-46/56V	1	Lubrication piping 56V X, Z	H0120-1010-61-2	D
21	Hylon tube	Sinpro Enterprise	HN-0604 L13000	1	Lubrication piping 56V X, Z	H0026-0020-99	C
22	Joint	YEONG DIEN	SHOWA 5 KINDS PARTS PACK	1	Lubrication piping 56V Y, Z	H0120-0012-40	D
23	Hylon tube	Sinpro Enterprise	HN-0604 L1000	1	Lubrication piping 56V Y, Z	H0026-0020-94	C
24	Joint	YEONG DIEN	CHIBA LB. UNIT	1	Lubrication piping 56V Y	H0120-0012-38	D
25	Joint	Lube	7-pc set MB-46/56V	1	Lubrication piping 56V Y	H0120-1010-63-2	D
26	Hylon tube	Tokai Rubber	HN-0604 L3500 milk white	1	Lubrication piping 56V Y	F1201-3500-1	C
27	Button head nipple	Lian Hui	NO.5011 PT1/4	1	Lubrication piping 56V ATC	H0041-0001-86	D
28	Hylon tube	Tokai Rubber	HN-0804 L2000	1	Lubrication piping 56V ATC	F1209-2000-1	C
29	Rubber hose	Sinpro Enterprise	L35-25MX3300	1	Coolant hose	H0027-0052-18	C
30	Hose band	Yuan-siang	SD-1032 M20-M35	2	Coolant hose	H0035-0008-01	D
31	Oil controller	HARBOR	P-BO-V750PTSBM6-172 TOC (dealer)	1	Oil controller for standard spindle	H0110-0013-76	D
	(air filter)	(Daikin)	For oil controller AKZ328	1	(Oil controller for standard spindle)	(H0110-0010-05)	
	(thermistor)	(Daikin)	R1/8-10M for synchronizing oil controller	1	(Oil controller for standard spindle)	(H0110-0010-07)	
32	Oil controller	HARBOR	P-BO-V900PTSBM6-6 TOC (dealer)	1	Oil controller for high-speed spindle	H0110-0013-77	D
	(air filter)	(Daikin)	For oil controller AKZ438	1	(Oil controller for high-speed spindle)	(H0110-0010-06)	
	(thermistor)	(Daikin)	R1/8-10M for synchronizing oil controller	1	(Oil controller for high-speed spindle)	(H0110-0010-07)	

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
33	Seat	Mach Rubber	Nitrile rubber M11XM30X5.0	8	For oil controller	M1310-01103050	C
34	Male female socket	Ihara Science	PT3/4 (male)XPF 1/2 (female) drw T-65034	1	Current detector for oil controller	H0014-0009-07	D
35	Oil pot window	SHANXIONG	KIM 1/2	1	Current detector for oil controller	H0039-0010-84	D
36	1.5 MPa hose	Tokai Rubber	Without fixtures 19X3000	1	Oil controller piping	C2788-193000	C
37	Diamond clamp	Yuan-siang	SD-1025	2	Oil controller piping	H0035-0008-02	D
38	S solenoid valve	CS-FLUID	AD-8B-V-F1-A-24VDC	2	Air panel	F0001-400-009-14	D
39	Elbow union	SMC	KQL10-02S	2	Air panel	H0011-0004-71	D
40	Triple universal	Sinpro Enterprise	KQVT10-03S	1	Air panel	H0016-0013-93	D
41	Double universal	Sinpro Enterprise	KQVD10-02S	1	Air panel	H0016-0013-94	D
42	Filter set	SMC	AMG250-02BD-R+AMD250-02D-RT+ISE2-01-15L with joint	1	Air panel	H0140-0008-73	D
43	Pneumatic part	MINDMAN	MAFR300-10A-D +MPA TOC (dealer)	1	Air panel Japan	H0140-0026-95	D
44	Lubrication unit	Daido Metal	Oil-air unit MPA	1	Air panel Japan	H0120-0009-88-1	D
45	Pneumatic part	MINDMAN	MAFR300-10A-D +MPA-PSI TOC (dealer)	1	Air panel for export	H0140-0026-96	D
46	Lubrication unit	Daido Metal	Oil-air unit MPA/PSI	1	Air panel for export	H0120-0009-89-1	D
47	Hand tool set	Ibuki Industrial	4-pc set	1	Tool box	T009-891-000-95-1	D
48	Broom	Nishiyama	Broom small	1	Tool box	H1195-8006-17	C
49	Grease gun	Lube	2-way grease gun 990+ Macro hose SPK-3C	1	Tool box for drive shaft	H0041-0001-39-1	D
50	Grease gun	Lube	2-way grease gun 990 button head nozzle	1	Tool box for ATC	H0041-0001-40	D
51	Arbor	Yamasei	Polyethylene 550P Φ45X170X22	1	Tool box #40MAS cleaning bar	H1023-1028-44	D
56	Limit switch	Schneider Japan	XCM-B503 (Telemechanic)	1	X-axis emergency limit switch (option)	E3019-963-003	C
57	Limit switch	Schneider Japan	XCM-B502 cord length 5 m (Telemechanic)	2	YZ-axis emergency limit switch (option)	E3019-963-004	C

Table 5-11

5-12. Chip Disposal System (Including Optional Specifications)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Coolant pump	WALRUS	TPAK2-15 TOC (dealer)	1	**Coolant pump IE	F0130-03-001-66	D
2	Handle cock	Toa Valve	3/8	1	Chip bucket L	D2760-000222	D
3	Caster	Kobayashi Sharyo	PB0 M130	1	Chip bucket L	H1080-0002-70	D
4	Caster	Kobayashi Sharyo	PBW M130	2	Chip bucket L	H1080-0002-71	D
5	Handle cock	Toa Valve	3/8	1	Chip bucket H	D2760-000222	D
6	Caster	Kobayashi Sharyo	PB0 M130	2	Chip bucket H	H1080-0002-70	D
7	Caster	Kobayashi Sharyo	PBW M130	2	Chip bucket H	H1080-0002-71	D
8	Coolant pump	Fuji Electric	VKP095AF CE-compliant	1	Chip flusher pump 40	F0130-04-001-27-1	D
9	Coolant pump	Fuji Electric	VKA342AH 600W CE-compliant	1	Chip flusher pump 600W	F0130-05-000-53	D
10	Rubber hose	Sinpro Enterprise	IB35X52-32NX3500	1	Chip flusher piping for 56V	H0027-0052-17	C
11	Rubber hose	Sinpro Enterprise	SIB35-25 L1100	2	Chip flusher piping for 56V	H0027-0052-19	C
12	Hose clamp	Yuan-siang	AH-1038	4	Chip flusher piping for 56V	H0035-0008-03	D
13	Hose clamp	Sugita Valve	SD-2050	2	Chip flusher piping for 56V	C2766-000501	D
14	Coil type chip conveyor V	JENIOU	M560-V Y-axis right TOC (dealer)	1	Internal conveyor for 56V STD	H0162-0049-88-1	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
15	Coil type chip conveyor V	JENIOU	M560-V Y-axis left TOC (dealer)	1	Internal conveyor for 56V STD	H0162-0049-87-1	D
16	Oil gauge	SHANXIONG	KL-120	1	Common to coolant tanks	H0039-0010-86	D
17	Bearing	Hing Yau	6306LLU	4	Common to coolant tanks	M009-0059-53	D
18	Bearing	Jy Huei	TM-86-A-2	2	Only tank chip pan	M009-0059-59	D
19	Plate	Mach Rubber	Nitrile rubber 208X253X2	2	Tank lift-up	H1020-1223-98-2	D
20	Plate	Takiron	TS601HI 160X450X5, tough and transparent	1	Tank lift-up	H1022-1127-02	D
21	Handle	Takigen	AP-3-1 black	1	Tank lift-up	H1062-0001-56	D
22	Oil gauge	Showa Yuki	KL-120	1	Tank for drum filter	C2937-001201	D
23	Rubber hose	Tokai Rubber	SIB35X52-25NX2400 only rubber hose	1	Back flush piping for 56V	H0027-0046-22	C
24	Hose band	Sugita Valve	Dia clamp SD-1032 M20-M35	2	Back flush piping for 56V	H0035-0004-19	D
25	Socket head plug	Goshou	1.1/2	2	Tank for drum filter 56	C7861-000072	D
26	Caster	NANSIN	THN-65PH	4	Tank for drum filter 56	H1080-0002-75	D
27	Bolt		JIS-B1180 A M16X110 8.8 black-oxide	2	Tank for drum filter 56	J9811-8030-160110	D
28	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, STD W300L1225H735 Specifications available	1	LU conveyor H750 Japan	H0162-0012-63-2	D
29	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, IEC W300L1225H735 Specifications available	1	LU conveyor H750 IEC	H0162-0012-64-2	D
30	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, CE W300L1225H735 Specifications available	1	LU conveyor H750 CE	H0162-0012-66-2	D
31	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, STD W300L1225H985 Specifications available	1	LU conveyor H1000 Japan	H0162-0012-79-1	D
32	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, IEC W300L1225H985 Specifications available	1	LU conveyor H1000 IEC	H0162-0012-80-1	D
33	Chip conveyor	Enomoto	MB-56V floor type, right side disposal, CE W300L1225H985 Specifications available	1	LU conveyor H1000 CE	H0162-0012-82-1	D
34	Chip conveyor	Enomoto	MB56V floor type, right side disposal, IEC H1200 spec. provided	1	LU conveyor H1200 IEC	H0162-0015-19-2	D
35	Chip conveyor	Tsubakimoto Mayfran	CONSEP2000 MB-56V right side chip discharge Japan/IEC, spec. provided	1	Drum filter conveyor Japan, IEC	H0162-0013-84-3	D
36	Chip conveyor	Tsubakimoto Mayfran	CONSEP2000 MB-56V right side chip discharge for CE, spec. provided	1	Drum filter conveyor CE	H0162-0019-41-1	D
37	Chip conveyor	Tsubakimoto Mayfran	CONSEP2000 MB-56V right side chip discharge Japan/IEC H1200, spec. provided	1	Drum filter conveyor for Japan, IEC H1200	H0162-0016-91-2	D

Table 5-12

5-13. Fluorescent Work Light

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Fluorescent lamp	Nikki	JF-WN36DBG 36W	1	Fluorescent lamp	E3534-431-001	C
	(Fluorescent lamp)	(OSRAM)	DULUX-L 36W 4000K	1	For fluorescent lamp	(E3534-905-002)	C
		(PHILIPS)	(PL-L36W 4000K)	(1)	(For fluorescent lamp)		
		(Mitsubishi)	(60W861)	(1)	(For fluorescent lamp)		
2	Adapter	Nikki	M20 × 1.5-G1/2	1	Fluorescent lamp wiring port	H0015-0012-45	D

Table 5-13

5-14. Auto Tool Length Offset Device (Touch Sensor: Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	T-slot nut		JIS-B1167 M16.0 S45C black-oxide	2	Touch sensor	J9811-6740-000016	D
2	Tool length setter	Metrol	Drawing T24D-23-05 delivery spec. provided	1	Touch sensor	T019-520-000-95	D
3	S solenoid valve	CKD	FAB41-8-5-12HS-3	1	Touch sensor wiring and piping	F0001-400-003-62	D
4	SP coupler	Nitto Kohki	2S2P SP type, brass	1	Touch sensor wiring and piping	H0010-0011-06	D
5	Elbow union	SMC	KQL10-02S	3	Touch sensor wiring and piping	H0011-0008-84	D
6	Branch union Y	SMC	KQU10-99	1	Touch sensor wiring and piping	H0016-0002-01	D
7	Tube	SMC	TS1075B L5000	1	Touch sensor wiring and piping	H0026-0004-20	D
8	Rubber bushing	NHK	RB-38-18	2	Touch sensor wiring and piping	H1009-0000-80	C
9	Multi clamp	NHK	Rubber bushing RB38-12	2	Touch sensor wiring and piping	H1009-0002-14	D
10	Multi clamp	NHK	MC38-2	2	Touch sensor wiring and piping	H1009-0004-96	D
11	NS tool setter	Nissin Sangyo	M-50 (with magnet)	1	Manual touch sensor	T019-520-000-58	D
12	1MPa hose	Ohnoko (dealer)	With fixtures 6X3250	1	Touch sensor air hose for 56V	C2795-063252	C

Table 5-14

5-15. Auto Zero Offset Device (Touch Probe: Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Touch probe	Renishaw	5-piece set	1	Renishaw probe	T019-591-001-21	D
2	Touch probe	Nissin Sangyo	BT40NM non-magnetic type, drawing 10-1030	1	Manual probe BT40	T019-590-004-12-2	D
3	Ring gauge	TEC	Ring gauge with magnet TC-0001	1	Ring gauge	T019-290-000-14	D

Table 5-15

5-16. 1.5 MPa (217.7 psi) Thru-spindle Coolant System (Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Trochoid pump	NOP	TOP-2MY750-208HWM-VD terminal box IN-OUT mirror image, delivery spec provided	1	**Low-pressure OH pump	F0101-32-000-05	D
2	Trochoid pump	NOP	TOP-2MY750-SO-208HWMRVD-A15, delivery spec provided	1	Mid-pressure OHP IEC	F0101-32-000-06-1	D
3	Oil gauge	Showa Yuki	KL-150	1	15K tank unit	C2937-001501	D
4	Vinyl hose	Ohnoko (dealer)	Includes Tetron blade 15X350	1	Discharge piping	C7793-150350	C
5	Vinyl hose	Ohnoko (dealer)	Includes Tetron blade 25X150	1	15K tank unit	C7793-250150	C
6	Level switch	Noken	OLV-2A	2	15K tank unit	E3041-592-017	D
7	Check valve	JAP Controls (dealer)	Circle seal 2232B-4SS PT1/2	1	Discharge piping	F0040-583-000-03	D
8	Cock	Toyo Valve (Dealer: Okaya)	400 type ball valve RC1/2	1	15K tank unit	F0041-683-000-06	D
9	Cock	Toyo Valve (Dealer: Okaya)	400 type ball valve RC1/2	2	Suction piping	F0041-683-000-06	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
10	MS filter	Yamasei	MS70 20µm	4	20 micron filter	H0032-0012-77	A
11	Stopper	Daiwa	PZ1122	2	Suction piping	H0035-0003-76	
12	Cable joint	Asia Kogyo	898210022-01 PG-11X(M) PS1/2(F)	2	15K tank unit	H1001-0007-19	D
13	Grommet	Takigen	C-30-SG-42A with film	1	15K tank unit	H1023-0016-93	D
14	Coolant pump	Fuji Electric	VKP075A, 180W, IEC-compliant	1	Suction pump for thru coolant	F0130-03-001-29	D
15	Vinyl hose	Ohnoko (dealer)	50X600 incorporating spring	1	1.5MPa thru piping	C7792-500600	C
16	Hose	Yamasei (dealer)	1MPa hose with fixtures on both ends	1	1.5MPa thru piping	H0027-1054-04	C
17	Hose	Yamasei (dealer)	C2797 hose 2-piece set with fixtures on both ends	1	1.5MPa thru piping	H0027-1054-23	C
18	Hose clamp	Sugita Valve	AH-1065	2	1.5MPa thru piping	H0035-0005-20	D

Table 5-16

5-17. 7.0 MPa (1,015.7 psi) Thru-spindle Coolant System (Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	1MPa hose	Yamasei (dealer)	With fixtures 12X1400	1	Hi-pressure thru-the-tool coolant tank	C2795-121402	C
2	Oil gauge	Showa Yuki	KL-150	1	Hi-pressure thru-the-tool coolant tank	C2937-001501	D
3	O-ring (copper)	NOK	P24	2	Hi-pressure thru-the-tool coolant tank	C6110-000P24	C
4	Vinyl hose	Ohnoko (dealer)	Includes Tetron blade 19X300	1	Hi-pressure thru-the-tool coolant tank	C7793-190300	C
5	Vinyl hose	Ohnoko (dealer)	Includes Tetron blade 19X600	1	Hi-pressure thru-the-tool coolant tank	C7793-190600	C
6	Level switch	Willy Vogel	WS32-2/340	1	Hi-pressure thru-the-tool coolant tank	E3041-070-037	D
7	Level switch	Noken	FS-2S L430	1	Hi-pressure thru-the-tool coolant tank	E3041-592-019-1	D
8	Cock	Toyo Valve (Dealer: Okaya)	400 type ball valve RC1/2	1	Hi-pressure thru-the-tool coolant tank	F0041-683-000-06	D
9	Cock	Toyo Valve (Dealer: Okaya)	400 type ball valve RC3/4	3	Hi-pressure thru-the-tool coolant tank	F0041-684-000-04	D
10	MS filter	Yamasei	MS150 5µm	6	Hi-pressure thru-the-tool coolant tank	H0032-0012-75	A
11	Suction line filter	Masuda	F-VLFE06-100S06T, drawing 0506-058	1	Hi-pressure thru-the-tool coolant tank	H0032-0009-22	C
12	Line filter	Masuda	F-FPME06-20S-036-X-C delivery spec. provided	1	Hi-pressure thru-the-tool coolant tank	H0032-0011-22-2	C
13	Float switch	Toho Separator	For H0101-0000-44 (Noken FP-1A)	1	Hi-pressure thru-the-tool coolant tank	H0090-0003-10	
14	Coolant separator	San-esu	Encased (SUS304) micro separator L-300	1	Hi-pressure thru-the-tool coolant tank	H0100-0001-81	D
15	Cable joint	Asia Kogyo	898210022-01 PG-11X(M)PS1/2(F)	1	Hi-pressure thru-the-tool coolant tank	H1001-0007-19	D
16	Multi clamp	NHK	MC38-1	1	Hi-pressure thru-the-tool coolant tank	H1009-0001-15	D
17	Rubber bushing	NHK	RB38-16	1	Hi-pressure thru-the-tool coolant tank	H1009-0004-97	C
18	Pressure gauge	Yodogawa	PAGT-R1/4X60X16MPa (dealer: Showa)	1	MPa scale	T019-400-008-12	D
19	Pressure gauge	Yodogawa	PAGT-R1/4X60X16 MPa/psi double scale	1	MPa/psi scale	T019-400-008-13	D
20	10MPa hose	Yamasei (dealer)	With fixtures 9X1600	1	Hi-pressure pump 7MPa	C2798-091602	C
21	Coolant pump	Kiso	PK-6 50/60HZ 14L/MIN7MPa 2.2KW	1	Hi-pressure pump 7MPa	F0130-07-000-35-2	D

SECTION 5 SPARE PARTS LIST

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
22	Vinyl hose	Ohnoko (dealer)	Includes spring 25X1000	1	7MPa thru piping 46	C7792-251000	C
23	S solenoid valve	CKD	CVS2-15A-70-B2HS-3	1	7MPa thru piping 46	F0001-400-005-69	D
24	Syn-flex tube	Nitta	N2-4-10X8 L2000 black	1	7MPa thru piping 46	F1263-2000-0	C
25	Elbow union	SMC	KQL10-02S	1	7MPa thru piping 46	H0011-0004-71	D
26	Branch union Y	SMC	KQU10-99	1	7MPa thru piping 46	H0016-0002-01	D
27	Hose	Yamasei (dealer)	1MPa hose with fixtures on both ends	1	7MPa thru piping 46	H0027-1054-04	C
28	Hose	Yamasei (dealer)	MB-46V 14MPa 1 hose set with fixtures on both ends	1	7MPa thru piping 46	H0027-1055-39	C
29	Hose clamp	Sugita Valve	AH-1032	2	7MPa thru piping 46	H0035-0005-33	D
30	Coolant pump	Fuji Electric	VKP075A 180W IEC-compliant	1	Thru coolant suction pump	F0130-03-001-29	D
31	U packing	Kiso	UPH25 × 35 × 8 urethane	3	High-pressure pump 7MPa	H0031-0022-75	C
32	Dust packing	Kiso	SP25 × 33 × 5 biton	3	High-pressure pump 7MPa	H0031-0022-76	C

Table 5-17

5-18. Pull-stud Bolt and Accessories (Optional)

No.	Part Name	Maker	Part Type	Qty.	Used for	Okuma Part No.	Rank
1	Pull Stud	Nikken	PS-75 MAS.BT40-2 with M4 hole thru center	1	PSB#40MAS2 air thru	T129-800-001-85	C
2	Pull Stud	Nikken	PS-73 MAS.BT40-1 with M4 hole thru center	1	PSB#40MAS1 thru	T129-800-001-84	C
3	O-ring	NOK	S15	1	Pull stud C with thru hole	F100-150-01450	C
4	O-ring	NOK	S15	1	Pull stud J with thru hole	F100-150-01450	C
5	O-ring	NOK	S15	1	Pull stud D with thru hole	F100-150-01450	C
6	O-ring (copper)	NOK	P21	1	Pull stud with thru hole MAS 2	C6110-000P21	C
7	O-ring (copper)	NOK	P21	1	Pull stud with thru hole MAS 1	C6110-000P21	C
8	O-ring (copper)	NOK	P22	1	Pull stud with thru hole CAT	C6110-000P22	C
9	O-ring (copper)	NOK	P21	1	Pull stud with thru hole JIS	C6110-000P21	C
10	O-ring (copper)	NOK	P21	1	Pull stud with thru hole DIN	C6110-000P21	C
11	O-ring (copper)	NOK	P22	1	Pull stud with thru hole USA	C6110-000P22	C

Table 5-18

LIST OF PUBLICATIONS

Publication No.	Date	Edition
TME13-027-R1	March 2012	1st
TME13-027-R4	May 2013	4th

Original Instruction Manual

This manual may be at variance with the actual product due to specification or design changes.

Please also note that specifications are subject to change without notice.
If you require clarification or further explanation of any point in this manual,
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