

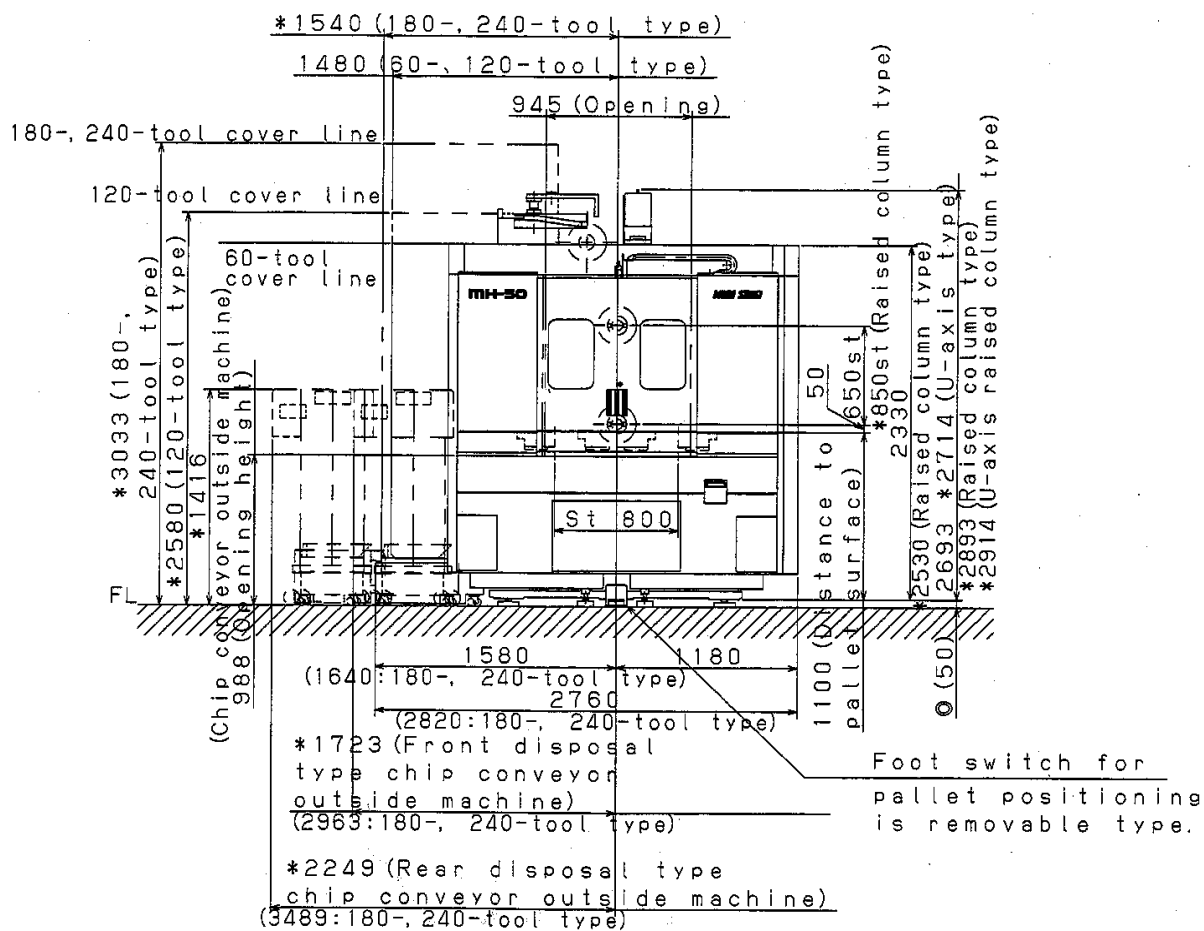
1. GENERAL VIEW



This illustration shows external machine dimensions.

Make sure that the machine can be carried to the installation site without interference and that there is sufficient space around the machine for maintenance.

Unit:mm



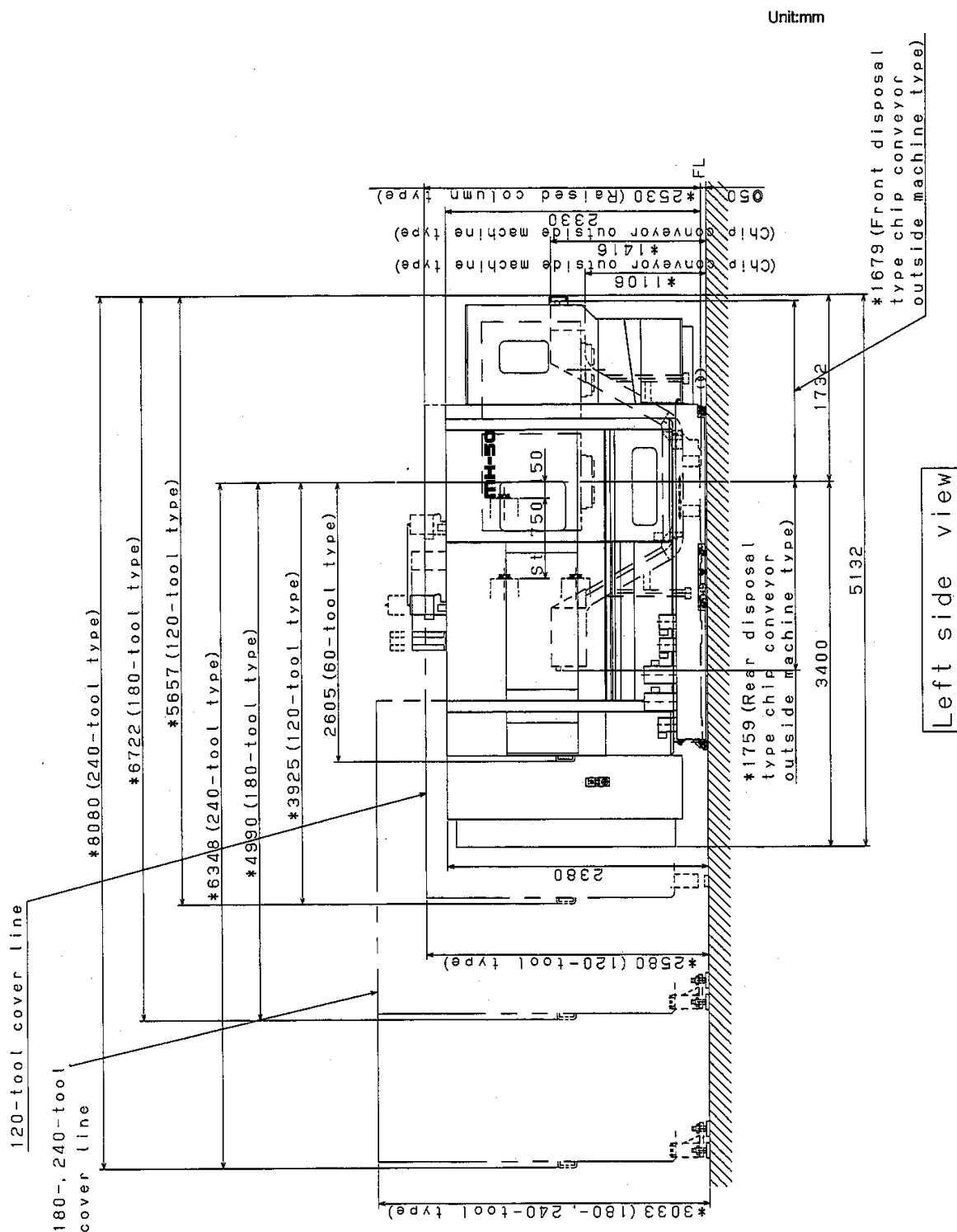
Front view



① Dimensions marked with “*” indicate option.

② Dimensions marked with “⊙” indicate the distance between floor and bottom.

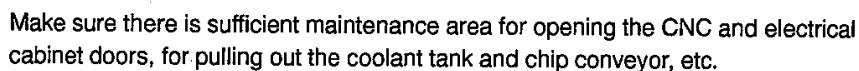
P-2



③ Dimensions marked with “*” indicate option.

④ Dimensions marked with “O” indicate the distance between floor and bottom.

(Q51390 C02)



2.1 2-station APC

[illegible]

2-station APC

NOTE Dimensions marked with * indicate option.

(Q51389 B05 1/2)

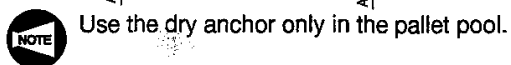
2.2 Multipul Pallet Pool



3.2 Dry Anchor Specification

[illegible]

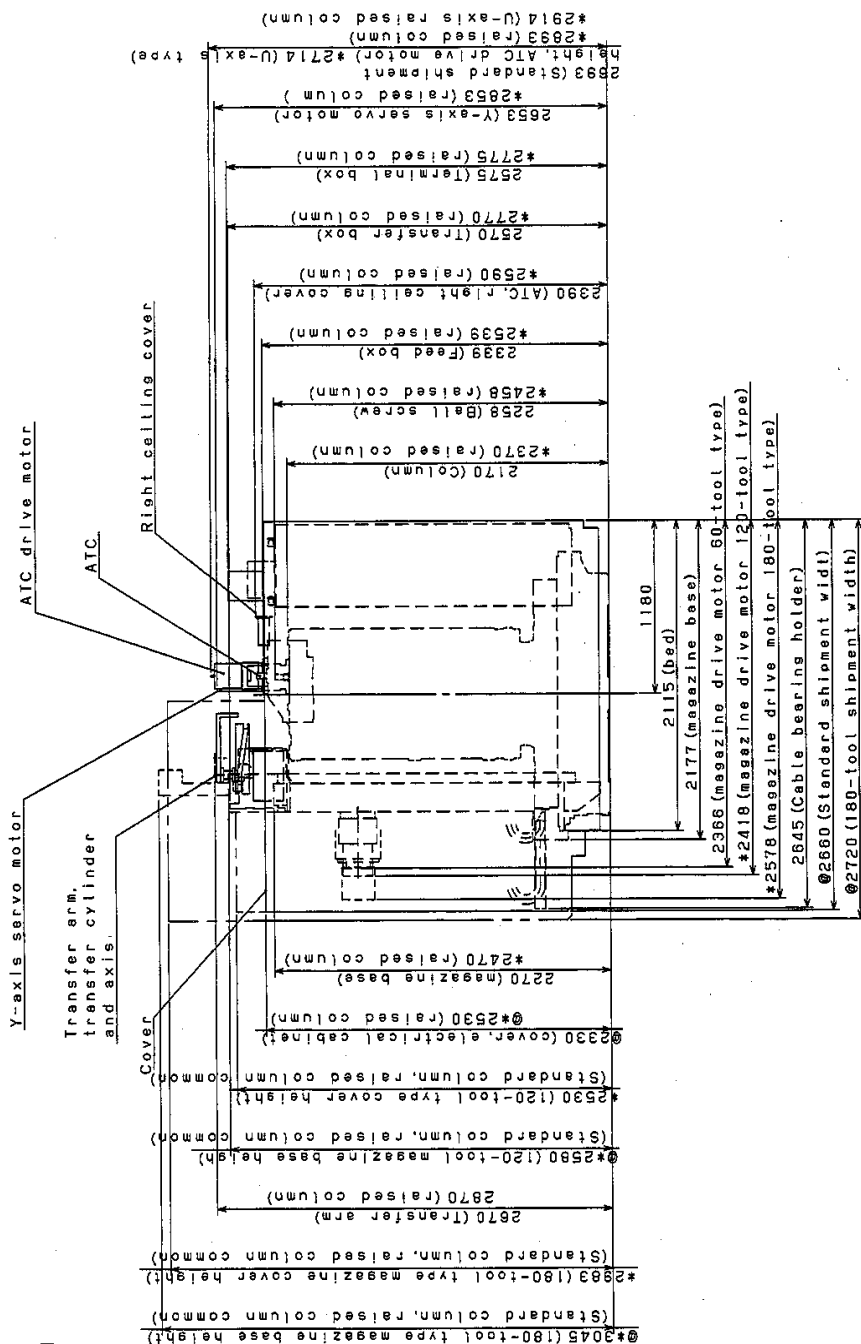
(Q51048 D03 2/3)



P-12

4. DISASSEMBLY DIAGRAM

Unit:mm

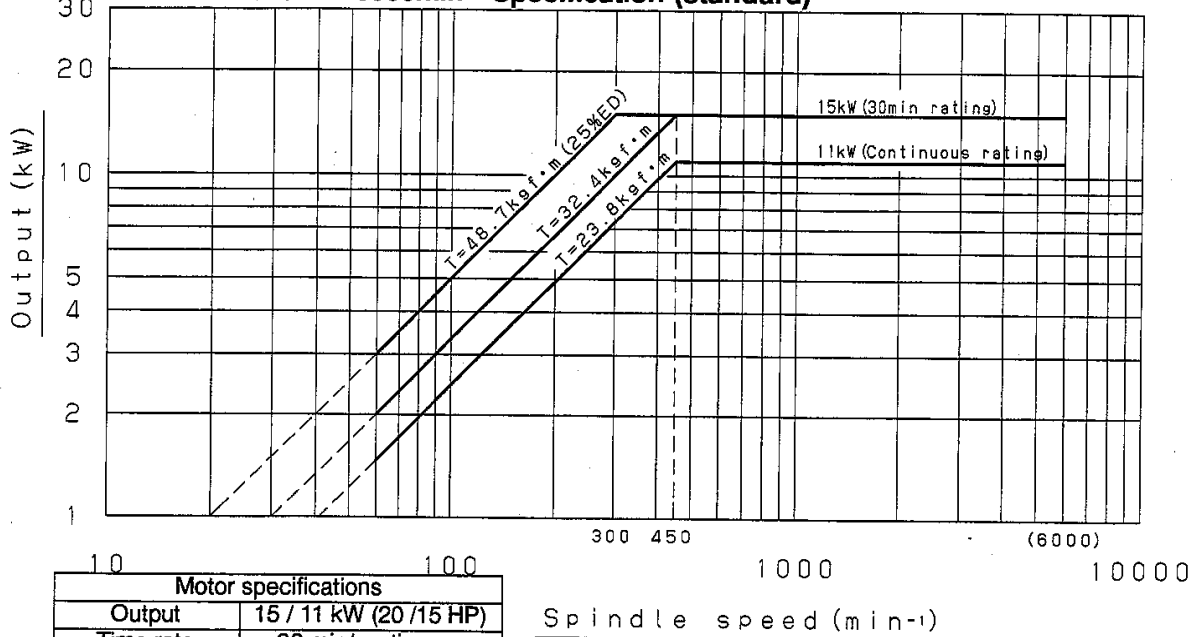


- ① Dimensions marked with “*” indicate option.
- ② Disassembling the machine into the units smaller than @ marked dimensions is impossible.
- ③ When removing transfer box and ATC, use taper pin or others to determine positions for reassembling.

(Q51851 A05)

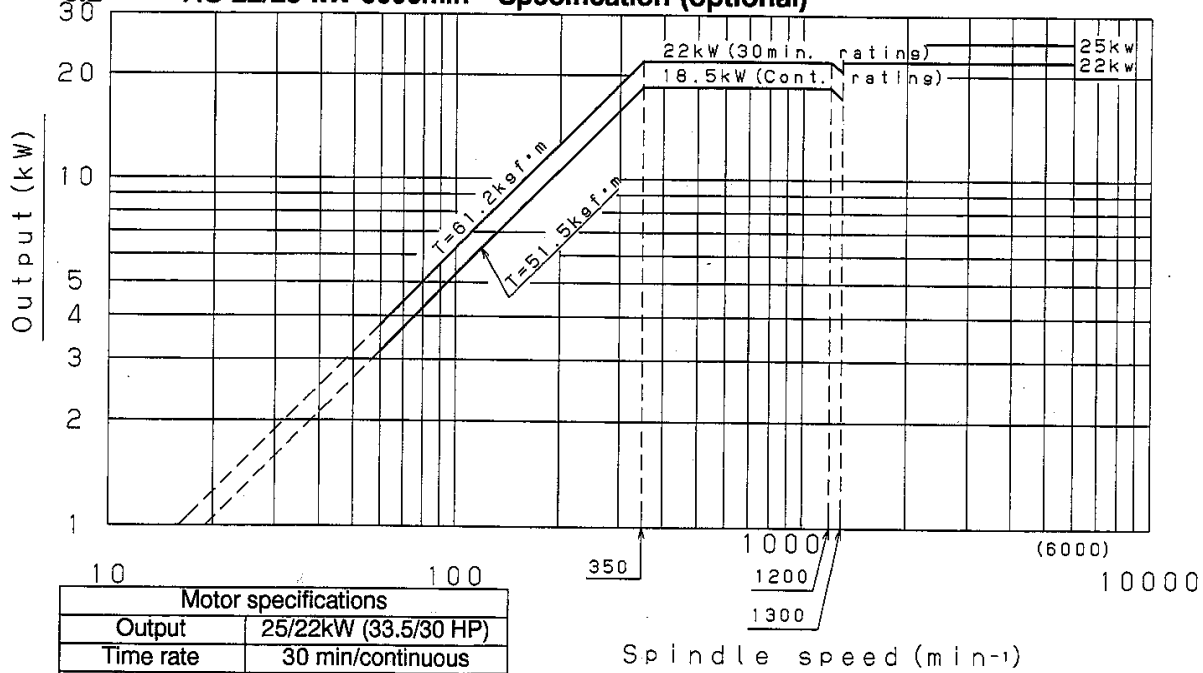
5. SPINDLE SPEED OUTPUT DIAGRAMS

5.1 AC 11/15 kW 6000min⁻¹ Specification (standard)



(Q43540 B01)

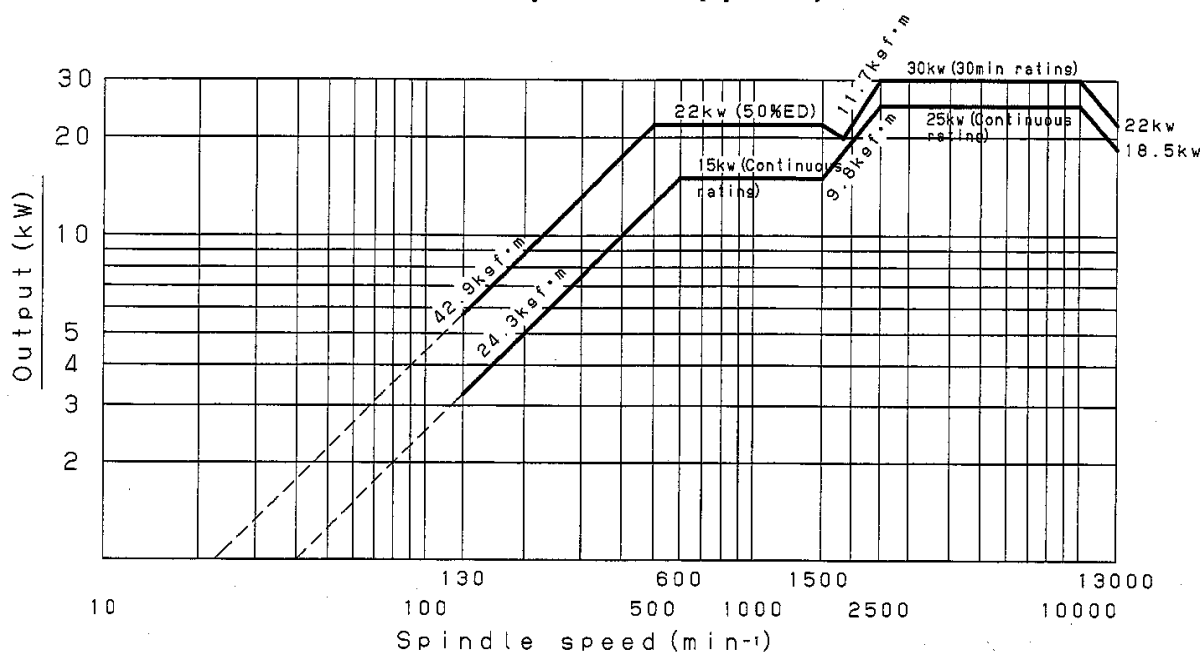
5.2 AC 22/25 kW 6000min⁻¹ Specification (optional)



(Q43541 B01)

P-14

5.3 AC 30/25 kW 13000min⁻¹ Specification (optional)



Motor specifications	
Output	30/25 kW (40/33.5 HP)
Time rate	30 min/continuous
Spindle speed	max. 13000 min ⁻¹
Manufacturer	FANUC

(Q43587 A04)

6. INTERFERENCE BETWEEN TOOL AND WORKPIECE

6.1 Standard

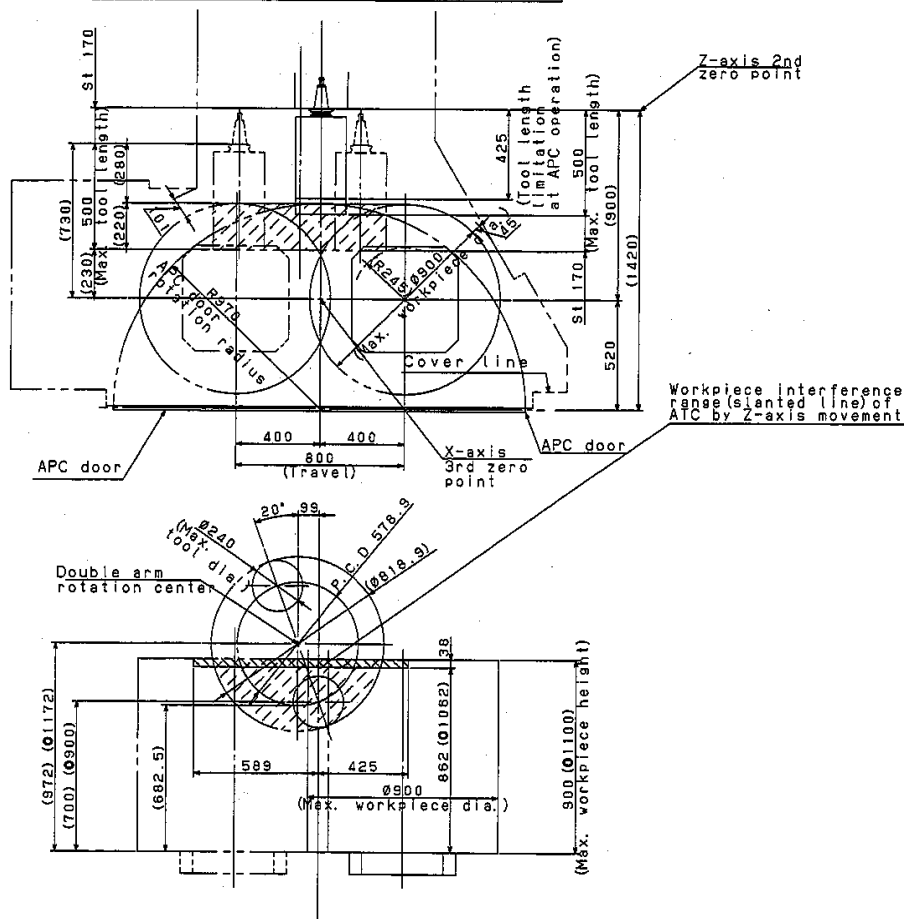


- ① When ATC is operating tools and workpieces may interfere even if they are within the dimension limits.
Interference range depends on X-axis coordinates.
- ② ATC and APC cannot operate simultaneously.

Unit:mm

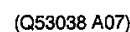
When attaching the tool over 425mm length into the spindle, the automatic pallet change (APC) cannot be made.

When loading the maximum workpiece, the automatic tool changer (ATC) cannot be made with maximum tool.



- ① Dimensions in brackets [] are only for reference.
- ② The Z-axis 2nd zero point is APC and ATC operation position.
The Y-axis 2nd zero point is ATC operation position.
The X-axis 3rd zero point is APC operation position.
- ③ © indicates the length of raised column specifications.

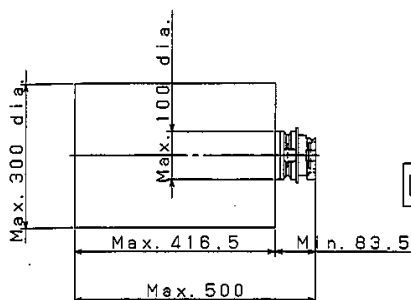
*For the simultaneous operation of APC and ATC, the double arm of ATC starts to move after completion of rotation (180° clockwise) of pallet (APC door).



P-18

Unit:mm

Max. mass	30 kg
Max. moment (from gage line)	29.4N·m 13000 kgf·mm



Tool limitation diagram

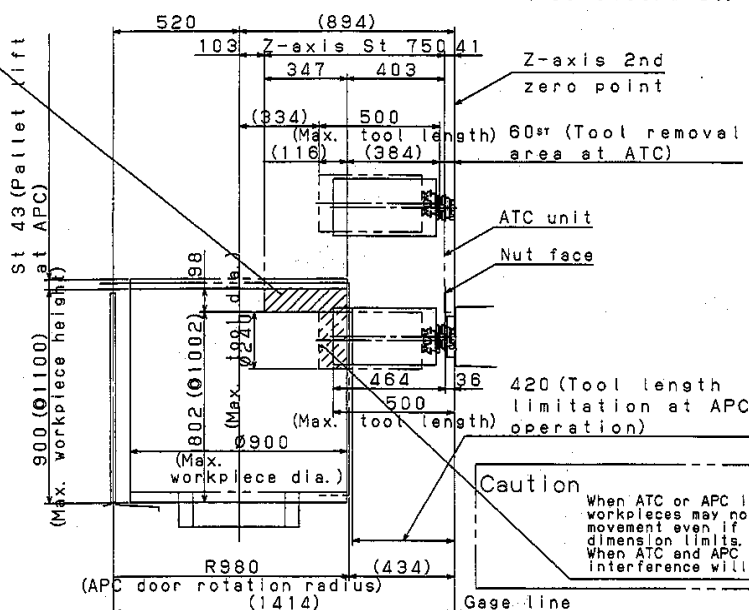
Limitation for tool and workpiece

*At APC operation:
workpiece: 900mm dia. x 900mm, 1000Kgf
Maximum tool length: 420mm

*At AT operation:
Interference may occur even within the limitation for maximum tool and maximum workpiece (slant line portion with broken line)

*For the simultaneous operation of APC and ATC, the double arm of ATC starts to move after completion of rotation (180° clockwise) of pallet (APC door).

Workpiece interference range
(slanted line) of ATC by
Z-axis movement



Caution
When ATC or APC is operating, tools and workpieces may not interfere by X-axis movement even if they are within the dimension limits.
When ATC and APC operate simultaneously, interference will occur.

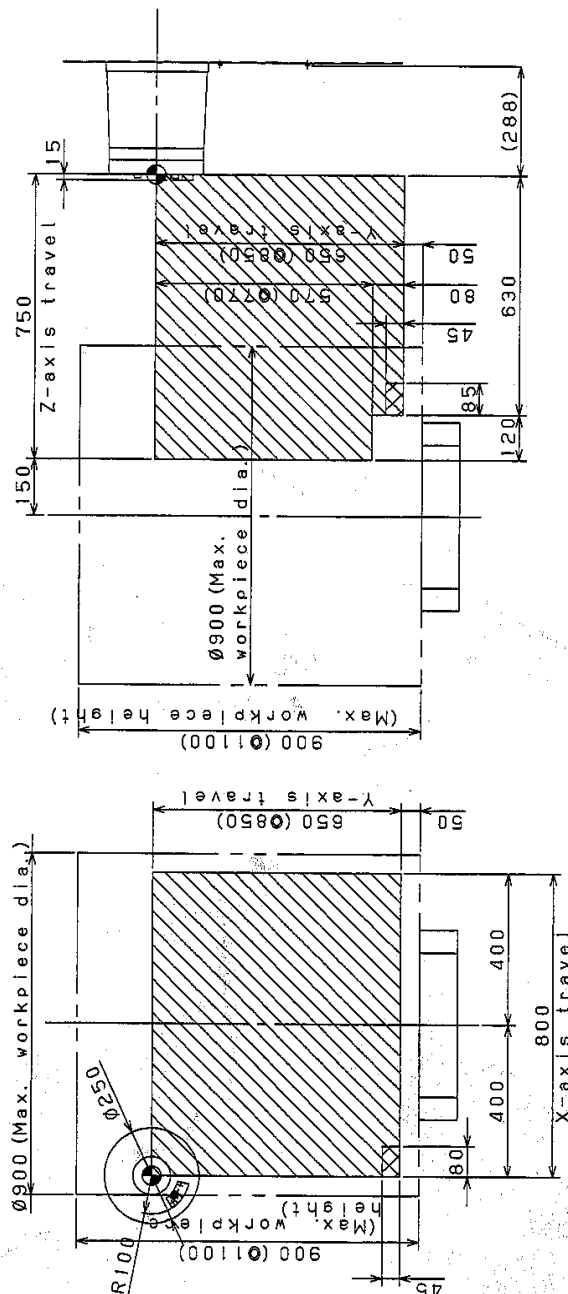


- ① Dimensions in brackets [] are only for reference.
- ② The Z-axis 2nd zero point is APC and ATC operation position.
The Y-axis 2nd zero point is ATC operation position.
The X-axis 3rd zero point is APC operation position.
- ③ Ⓞ indicates the length of raised column specifications.

(Q53063 A02)

7. AXIS TRAVEL DIAGRAMS

Unit:mm



Axis travel range around spindle (standard)

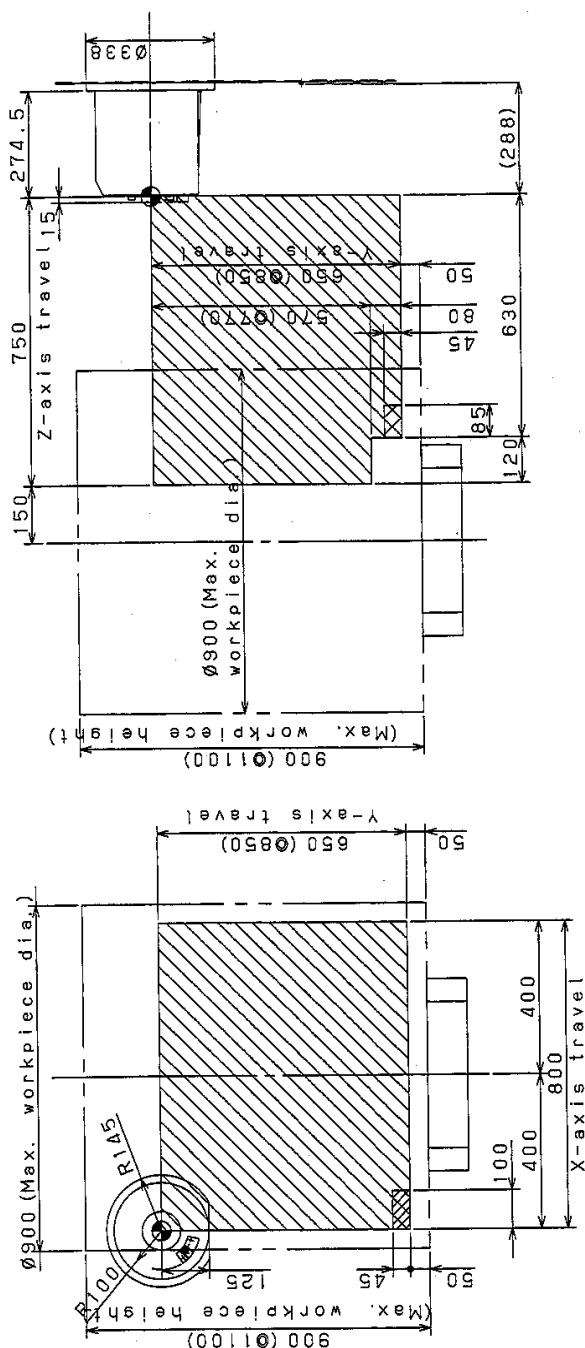
Indicate the interference range between spindle head and mount sensor cover at table mount type sensor specification



- ① Drawing indicates machine travel range. Takes into consideration spindle head and pallet interference at B-axis zero point. Interference with edge locator, etc. is not included.
- ② ⊕ indicates machine zero point.
- ③ ⊙ indicates the length for raised column specifications.

P-20

Unit:mm



Axis travel range around spindle (Metal contact type sensor)

Indicates the interference range between spindle head and mount sensor cover at metal contact type sensor specification.



- ① Drawing indicates machine travel range. Takes into consideration spindle head and pallet interference at B-axis zero point. Interference with edge locator, etc. is not included.
- ② ● indicates machine zero point.
- ③ ○ indicates the length for raised column specifications.

(Q52509 A05)

Unit:mm

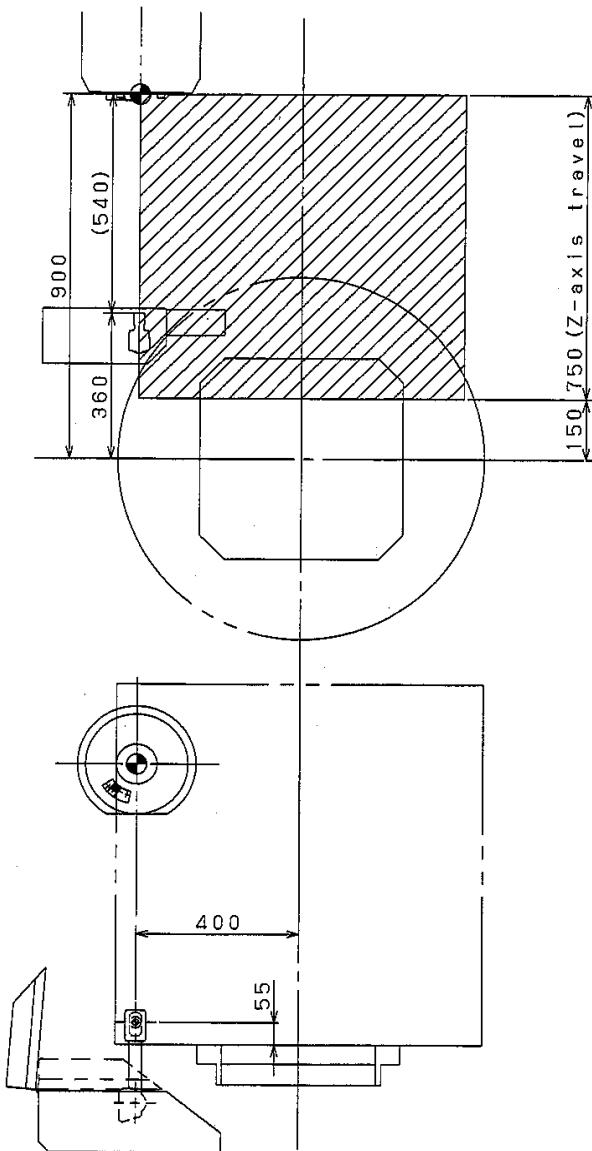


Table mount type sensor
arrangement diagram
(Metal contact type sensor and
table mount type sensor)



- ① Drawing indicates machine travel range. Takes into consideration spindle head and pallet interference at B-axis zero point. Interference with edge locator, etc. is not included.
- ② ⊕ indicates machine zero point.
- ③ ⊙ indicates the length for raised column specifications.

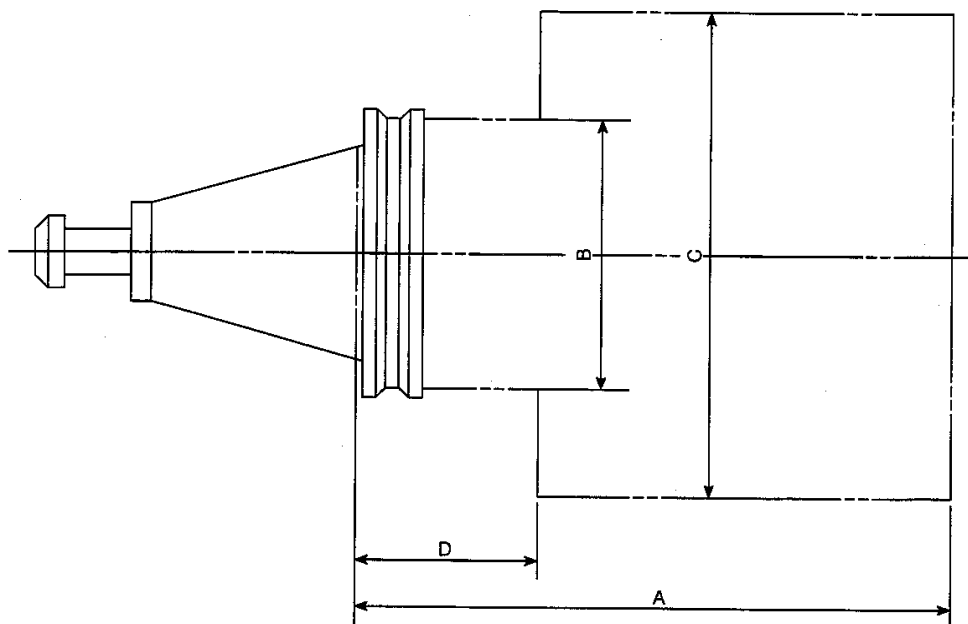
P – 22

8. TOOL LIMITATIONS



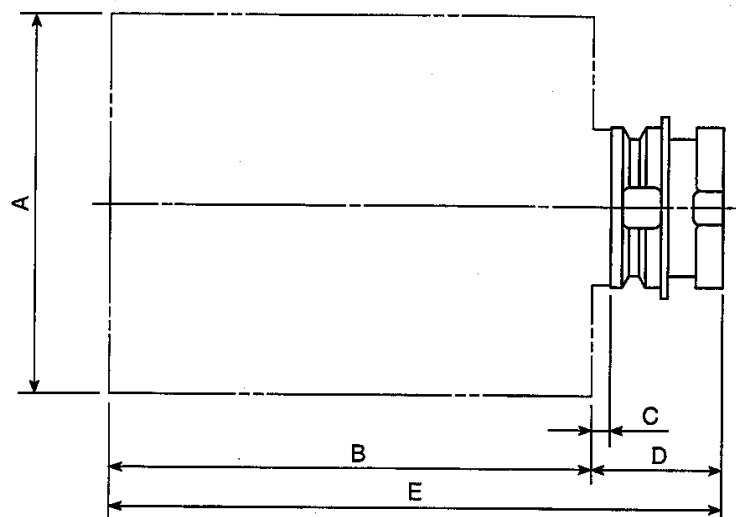
The dimensions and mass of the tools used with the machine are restricted by mainly the capacity of magazine. Use the tools which are within the limits indicated below.

8.1 Standard



Machine Model	Shank Type	A	B	C		D	Mass
				With Adjacent Tools	Without Adjacent Tools		
MH-50	MAS BT-50	500 mm	—	120 mm	240 mm	—	30 kg
	CAT-50	19.68 in.	2.75 in.	4.72 in.	9.44 in.	1.375 in.	66 lb.

8.2 U-axis Specification



Machine Model	Shank Type	A		B	C	D	E
		With Adjacent Tools	Without Adjacent Tools				
MH-50/U	FMT-100	120 mm	240 mm	415 mm	11.5 mm	85 mm	500 mm

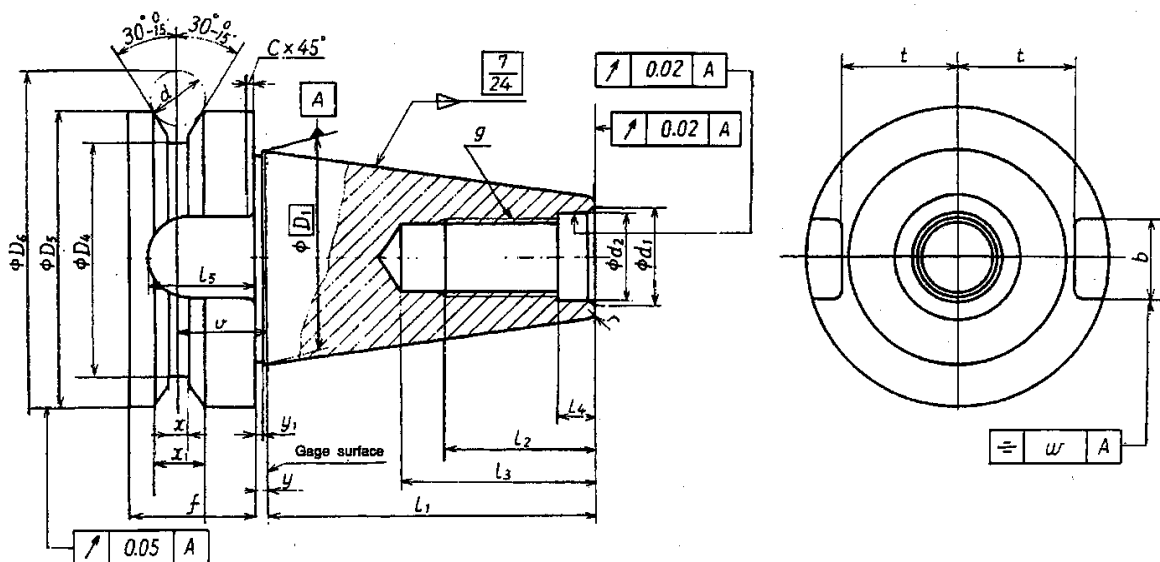
Machine Model	Shank Type	Max. mass	Max. Moment (from gage line)
MH-50/U	FMT-100	30 kg	29.4 N·m

10. TOOL SHANK DIMENSIONS



The dimensions given below are only for reference purpose and the tool holders must not be manufactured by simply referring to the indicated dimensions. Mori Seiki is not responsible for any loss and problem arising from the user of tool holders manufactured in such a manner.

10.1 MAS BT-50



	Shank			Screw						Tenon			
	D ₁	ℓ ₁ ±0.2	R (max.)	d ₁	d ₂ H8	g 6H	ℓ ₂ (min.)	ℓ ₃ (min.)	ℓ ₄ +0.5 0	b H12	ℓ ₅ (min.)	t 0 -0.2	ω
BT50	69.85	101.8	1	27	25	M24	45	62	13.0	25.7	31	35.4	0.2

	Flange								7/24 Taper angle tolerance *1 AT _D	References		
	D ₄	D ₅ h8	e	v ±0.1	x	x ₁ +0.1 0	y ±0.1	y ₄ 0 -0.4		Dia. at small end	d	D ₆
BT50	85	100	35	23.2	7	15	3	3	+0.0051 0	40.158	15	119.020



*1: 7/24 Taper angle tolerance is $^{+AT4}_0$ (JIS B0614 taper angle tolerance class AT4).



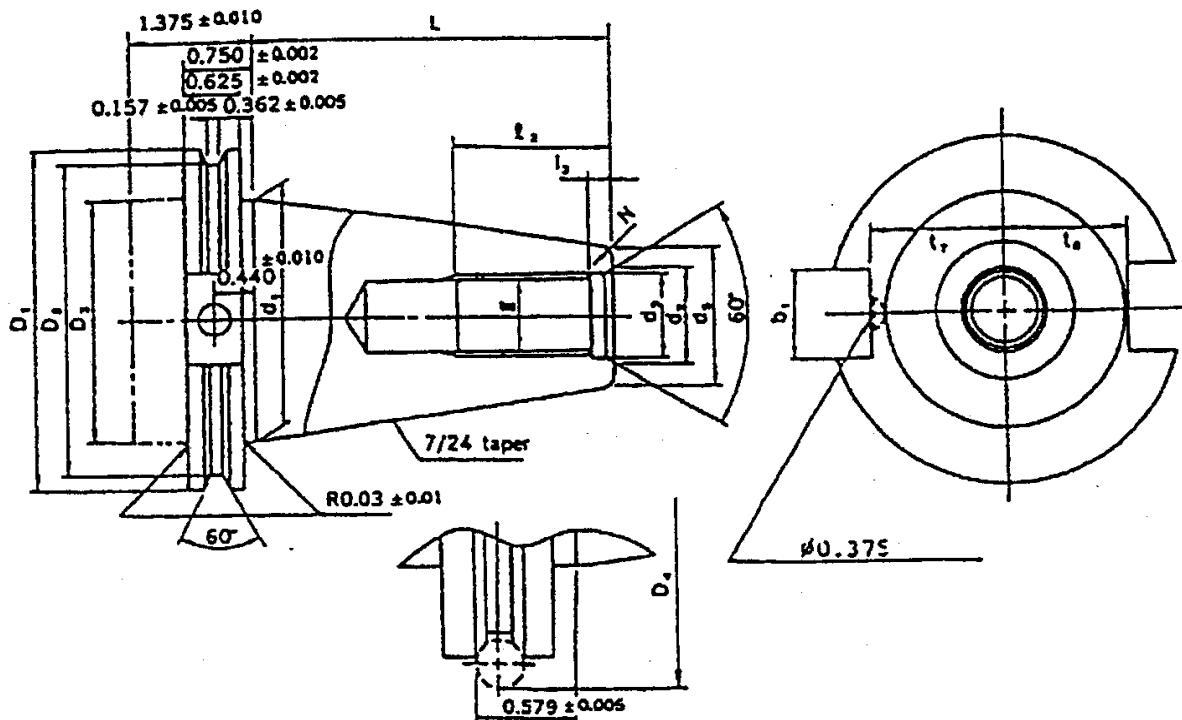
① Unless otherwise specified, the allowance should be middle class specified by JIS B0405.

② Relief for finish grinding may be provided on "d₂".

P - 26

10.2 CAT-50

Dimensions Unit: in.



Shank	D ₁		D ₂		D ₃		D ₄		d ₁ (Basic dimension)	
	Dimension	Tolerance	dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance
CAT-50	3.875	0 -0.002	3.594	± 0.010	2.750	± 0.010	4.238	± 0.002	2.750	± 0.002

Shank	d ₂		d ₃		L		l ₂		g	N
	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance		
CAT-50	1.125	± 0.010	1.031	± 0.015 0	4.000	± 0.010 0	1.75	± 0.040	1.000 -8	0.060 -0.120

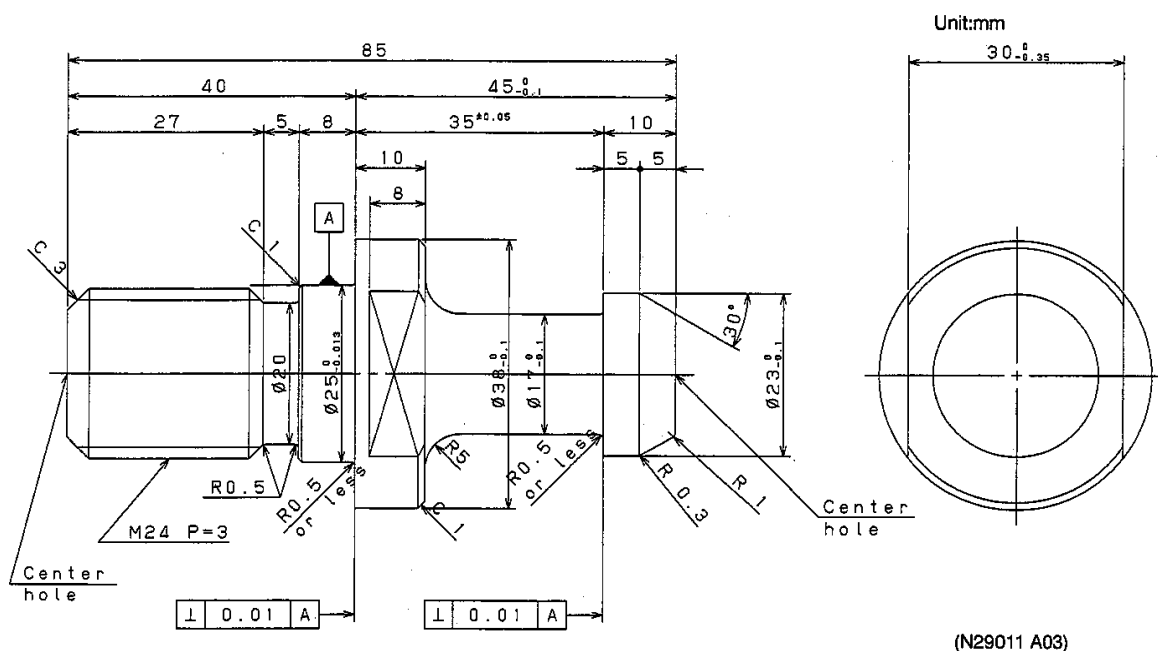
Shank	l ₃		b ₁		t ₇		t ₈		Reference	
	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance	d ₅	
CAT-50	0.250	± 0.010	1.020	± 0.010	1.485	0 -0.015	1.390	0 -0.015	1.38	

11. RETENTION KNOB DIMENSIONS

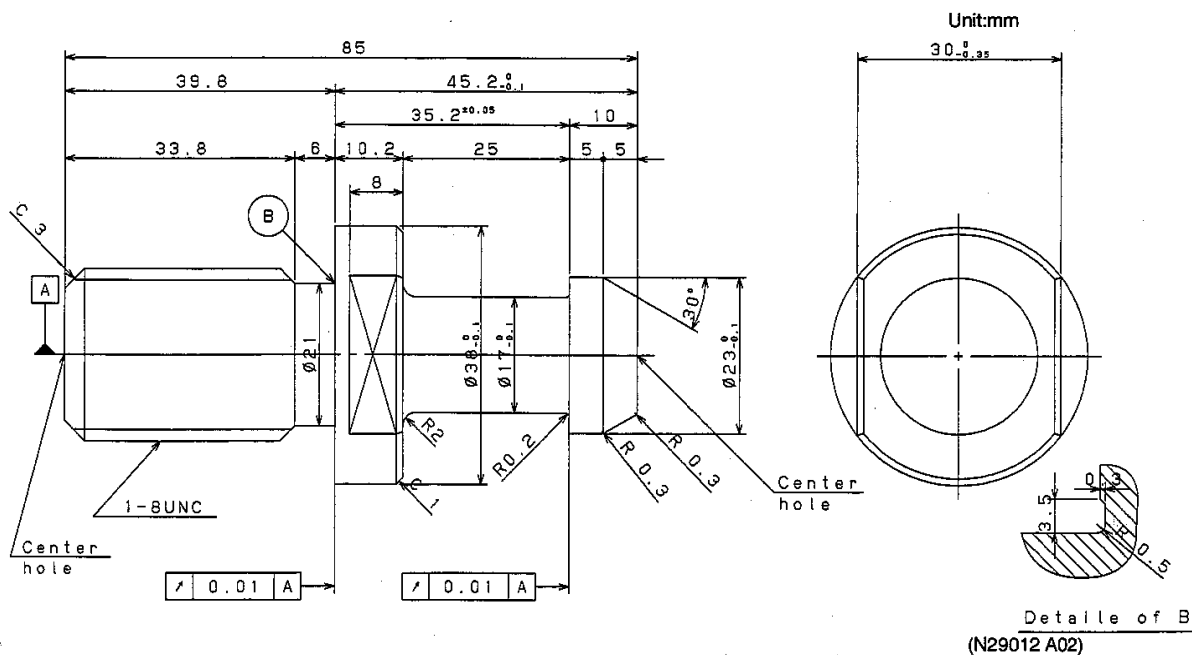


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11.1 MAS BT-50



11.2 CAT-50



12. PALLET DIMENSIONS

12.1 Tap Pallet

Technical drawing of a workpiece, showing multiple views and dimensions. The drawing includes a top view, a side view, a detailed view of a hole, and a detailed view of a clamping screw hole.

Top View: Shows a rectangular workpiece with a central circular hole. Dimensions include overall width of 500 (19.685), overall height of 500 (19.685), and a central hole diameter of $\phi 26$ (1.024). The distance from the center to the top edge is 16 (0.630). The distance from the center to the bottom edge is 18 (0.709). The distance from the center to the left edge is 16 (0.630). The distance from the center to the right edge is 18 (0.709). The distance from the center to the top edge is 16 (0.630). The distance from the center to the bottom edge is 18 (0.709). The distance from the center to the left edge is 16 (0.630). The distance from the center to the right edge is 18 (0.709).

Side View: Shows the workpiece from the side. Dimensions include overall width of 500 (19.685), overall height of 500 (19.685), and a central hole diameter of $\phi 26$ (1.024). The distance from the center to the top edge is 16 (0.630). The distance from the center to the bottom edge is 18 (0.709). The distance from the center to the left edge is 16 (0.630). The distance from the center to the right edge is 18 (0.709).

Detailed view of hole: Shows a cross-section of a hole with a diameter of $\phi 20$ and a depth of 40 (1.575). The hole is located at a distance of 30 (1.181) from the top edge and 118° from the side edge.

Detailed view of clamping screw hole: Shows a cross-section of a clamping screw hole with a diameter of $\phi 25$ and a depth of 25 (0.984). The hole is located at a distance of 18 (0.709) from the top edge and 80 from the side edge.

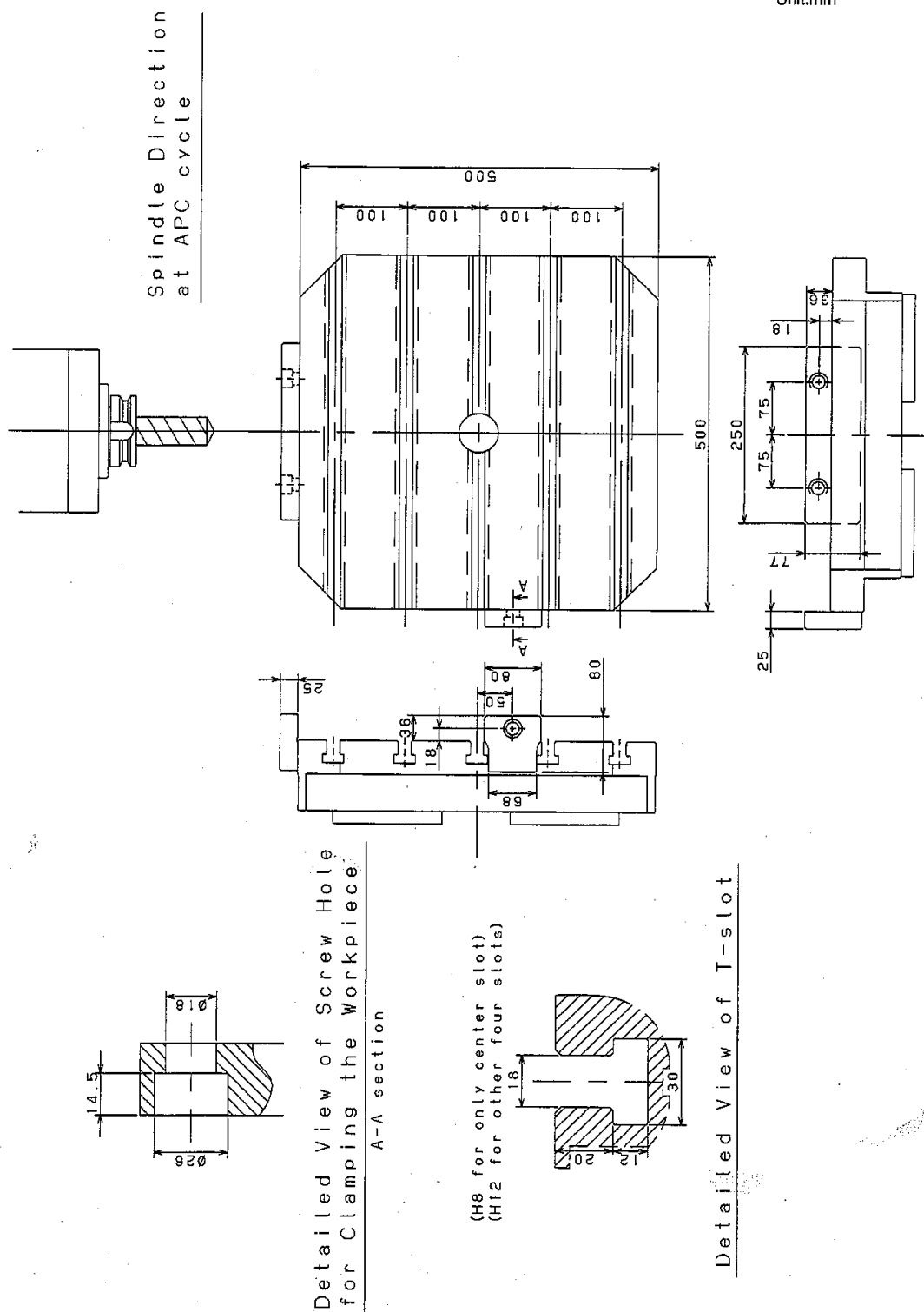
Spindle direction at shipment of APC: A note indicating the spindle direction at shipment of APC.

Pallet type	M	P ₁	P ₂
Metric tap	M16	100mm	200mm
Inch tap	1/2-13UNC	4"	8"

Dimensions in () are converted from metric system to inch system
(Q51849 A02)

12.2 T-slot Pallet

Unit:mm



(A04186 A03)

