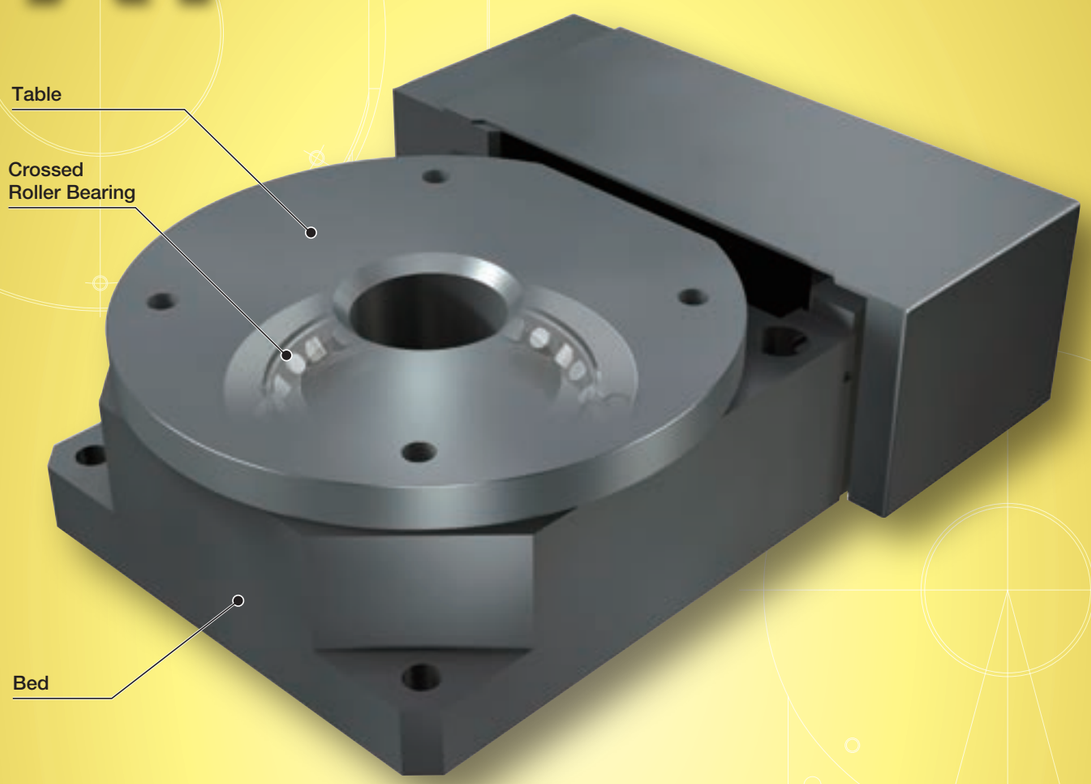
AT

AT

Ball screw

Rotation



Major product specifications

Driving method	Precision ball screw
Linear motion rolling guide and bearing	Linear Way (ball type) Crossed Roller Bearing
Built-in lubrication part	No built-in
Material of table and bed	High carbon steel
Sensor	Provided as standard

Accuracy

unit: sec

Positioning repeatability	±1
Positioning accuracy	–
Lost motion	–
Parallelism in table motion A	–
Parallelism in table motion B	–
Attitude accuracy	–
Straightness	–
Backlash	–

Points

● Rotary positioning table for converting linear motion to rotary motion

1 This is a positioning table that allows precise angle correction by converting the linear motion to the rotational motion through the rotator mechanism combining the Linear Way and ball screws.High rigidity steel-made table and bed are used and a Crossed Roller Bearing is incorporated in the bearing supporting the table.

● Low profile design with high rigidity

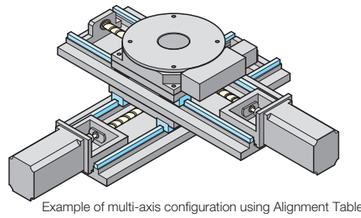
2 Adoption of Crossed Roller Bearing capable of exerting high rigidity in all direction has achieved low profile, high rigidity, and high precision.

● Positioning repeatability of ±1 sec

3 A rotator for converting linear motion to rotary motion is accurately guided by the combination of Linear Way L and precision ball screw, thus achieving the high positioning repeatability of ±1 sec.

● Available as multi-axis configured alignment table

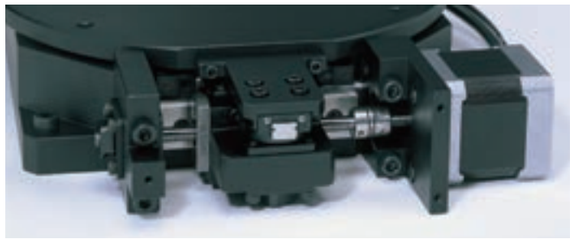
4 Placing this unit on the slide table of Precision Positioning Table LH enables the configuration of low height XY-θ multi-axis positioning mechanism.

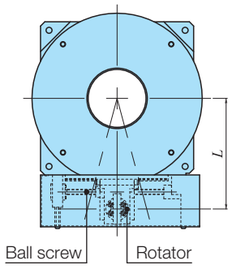


Example of multi-axis configuration using Alignment Table AT

Driving mechanism of Alignment Table AT

Alignment Table AT is driven by stroking a rotator linked to table's outer periphery by driving of ball screw in a linear direction. In order to adjust the distance L and angle from the center of table varied by rotator movement, linear and rotary motion mechanism that follows according to the table angle is incorporated in the rotator. Therefore, in Alignment Table, even when moving the rotator at a same pitch, the table's rotation angle tends to vary depending on the position, so that even when moving it at a constant speed, the rotation speed does not stay constant.

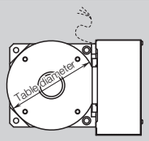




Distance from the center of table L unit: mm

Identification number	L
AT120	100
AT200	130
AT300	186

Variation

Shape	Model and size	Table diameter (mm)	Operating angle range (degree)
	AT120	120	± 5
	AT200	200	
	AT300	300	±10

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification Number

Example of an Identification Number

①	②	③
AT	120	/ AT701

① **Model** Page Ⅱ-325

② **Size** Page Ⅱ-325

③ **Designation of motor attachment** Page Ⅱ-325

Identification Number and Specification

① **Model**
AT: Alignment Table AT

② **Size**
120: Table diameter 120mm
200: Table diameter 200mm
300: Table diameter 300mm

③ **Designation of motor attachment**
As for a motor attachment, select it from the list of Table 1.
- Motor should be prepared by customer.
- Please specify motor attachment applicable to motor for use.
- A coupling shown in Table 2 is temporarily fixed in the main body before shipment, so that final position adjustment should be performed by customer.

Table 1 Application of motor attachment

Models of motor to be used					Flange size mm	Motor attachment	
Type	Manufacturer	Series	Model	Rated output W		AT120 AT200	AT300
AC servo motor	YASKAWA ELECTRIC CORPORATION	Σ-7	SGM7J-A5A	50	□40	AT701	–
			SGM7A-A5A			AT701	–
			SGM7J-01A	100		AT701	AT702
			SGM7A-01A			AT701	AT702
	Mitsubishi Electric Corporation	J4/J5	HG-MR053	50	□40	AT701	–
			HG-KR053/HK-KT053W			AT701	–
			HG-MR13	100		AT701	AT702
			HG-KR13/HK-KT13W			AT701	AT702
	Panasonic Corporation	MINAS A6	MSMF5A	50	□38	AT703	–
			MSMF01	100		AT703	AT704
	Hitachi Industrial Equipment Systems Co., Ltd	AD	ADMA-R5L	50	□40	AT701	–
			ADMA-01L	100		AT701	AT702
Stepper motor	ORIENTAL MOTOR Co., Ltd.	α step	ARM46		□42	AT705	–
			ARM66		□60	–	AT706
			ARM69		□60	–	AT706
		CRK	CRK54		□42	AT707	–
			CRK56 (1)		□60	–	AT708

Note (1) Applicable to the outer diameter ϕ8 of motor output shaft.
Remark: For detailed motor specifications, please see respective motor manufacturer's catalog.

Table 2 Coupling models

Motor attachment	Coupling models	Manufacturer	Coupling inertia J_C $\times 10^{-5}$kg · m^2
AT701	MSTS-16-5×8	Nabeya Bi-tech Kaisha	0.084
AT702	UA-25C-8×8	Sakai Manufacturing Co., Ltd	0.290
AT703	MSTS-16-5×8	Nabeya Bi-tech Kaisha	0.084
AT704	UA-25C-8×8	Sakai Manufacturing Co., Ltd	0.290
AT705	MSTS-16-5×6	Nabeya Bi-tech Kaisha	0.084
AT706	MSTS-25C-8×10	Nabeya Bi-tech Kaisha	0.71
AT707	MSTS-16-5×5	Nabeya Bi-tech Kaisha	0.084
AT708	MSTS-25C-8×8	Nabeya Bi-tech Kaisha	0.71

Remark: For detailed coupling specifications, please see respective manufacturer's catalog.

Specifications

Table 3 Specifications of ball screw unit: mm

Model and size	Shaft dia.	Overall length
AT120	6	103.5
AT200	6	103.5
AT300	10	183

Table 4 Specification

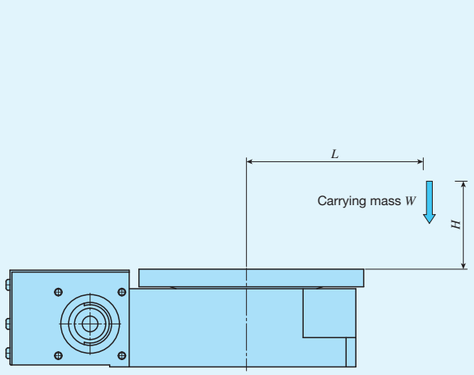
Item / Size	Ball screw lead mm	Rotator resolution μm	Operating angle rance degree	Positioning repeatability sec.	Table inertia J_T $\times 10^{-5}$kg·m^2	Starting torque T_S N·m
AT120	1	1 (1)	± 5	±1	0.012	0.03
AT200					0.014	0.03
AT300	2	2 (1)	±10		0.18	0.04

Note (1) This is a value given when fraction sizes of the motor are 1,000 pulses/rev.

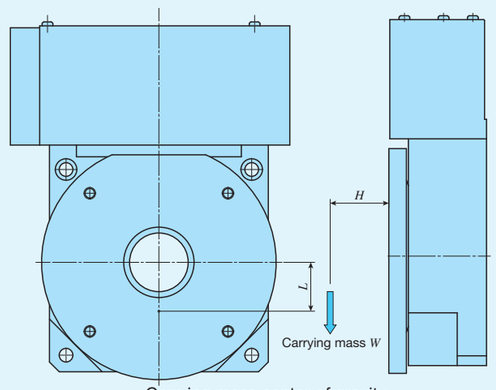
Table 5 Maximum carrying mass

Model and size	Carrying mass center of gravity mm	Maximum carrying mass kg							
		Horizontal direction				Vertical direction			
	Height H \ Length L	0	100	200	300	0	100	200	300
AT120	0	22	22	22	22	22	22	22	22
	100	22	22	22	22	22	22	22	22
	200	22	22	22	22	22	22	22	22
	300	22	22	22	22	16	16	16	16
AT200	0	12	12	12	12	12	12	12	12
	100	12	12	12	12	12	12	12	12
	200	12	12	12	12	12	12	12	12
	300	12	12	12	12	12	12	12	12
AT300	0	44	44	44	44	44	44	44	44
	100	44	44	44	44	44	44	44	44
	200	44	44	44	44	44	44	44	44
	300	44	44	44	44	44	44	44	44

Remark 1. The maximum carrying mass is adjusted by the mass when the rating life of the linear motion rolling guide, ball screws, or bearings is 18,000 hours during continuous operation at a number of revolutions of the motor of 3000min^{-1} and an acceleration/deceleration time of 0.2s. The mass calculated is based upon the basic static load rating of the linear motion rolling guide.
2. Please also check the maximum load mass on page III-20.



Carrying mass center of gravity (horizontal direction)



Carrying mass center of gravity (vertical direction)

AT

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Mounting

For the processing accuracy of the Precision Positioning Table mounting surface and the tightening torque of the fixing screws, see page Ⅲ-36.

Sensor specification

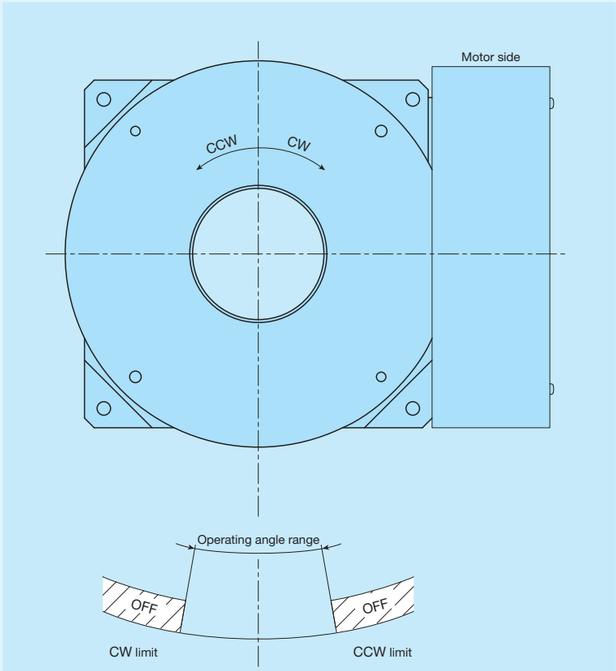


Fig. 1 Sensor timing chart

Example of Combination

■ Configuration of XY-θ multi-axis positioning mechanism

Combining the Alignment Table AT with IKO precision positioning table of single-axis specification or multi-axis specification enables you to easily configure the XY-θ multi-axis positioning mechanism. Low assembling height, compactness, and high-precision positioning capability enable the table to be used as alignment table for precision measuring equipment, inspection equipment, and assembling device.

Table 6 Configuration example of multi-axis positioning mechanism unit: mm

Appearance of multi-axis positioning mechanism	Models of IKO precision positioning tables combined with Alignment Table AT			Stroke length	
				X-axis	Y-axis
	Precision Positioning Table TS/CT	Single-axis specification	TS125/125	50	
			TS125/220	120	
			TS220/220	120	
			TS220/310	180	
			TS260/350	250	
		Two-axis specification	CT125/125	50	50
			CT220/220	120	120
			CT260/350	150	250
			CT350/350	250	250
		Single-axis specification	TSLH120M	100, 150	
				200	
				250	
				300	
			TSLH220M	150	
				200, 250, 300	
				400	
			TSLH320M	300	
				400, 500	
			TSLH420M	500	
				600	
				800	
	Precision Positioning Table LH	Two-axis specification	CTLH120M	100	100
				200	100
				200	200
				300	200
				300	300
			CTLH220M	200	200
				300	200
				300	300
				400	300
				400	400
			CTLH320M	300	300
				400	300
				400	400
				500	400
				500	500

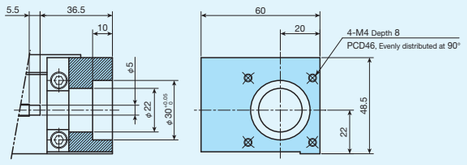
AT

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

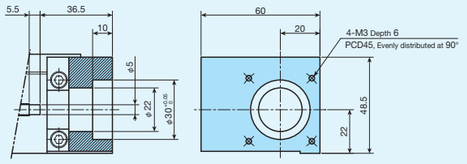
Dimensions of Motor Attachment

AT120, AT200

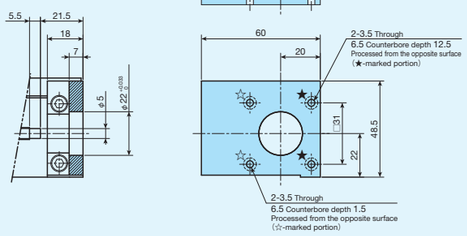
AT701



AT703

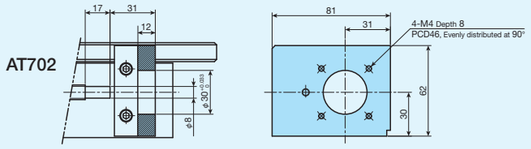


AT705
AT707

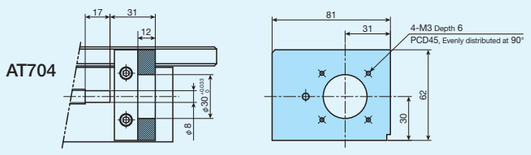


AT300

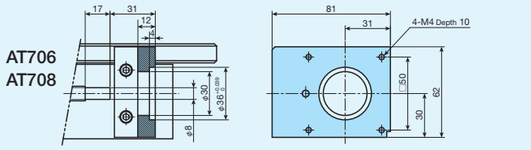
AT702



AT704

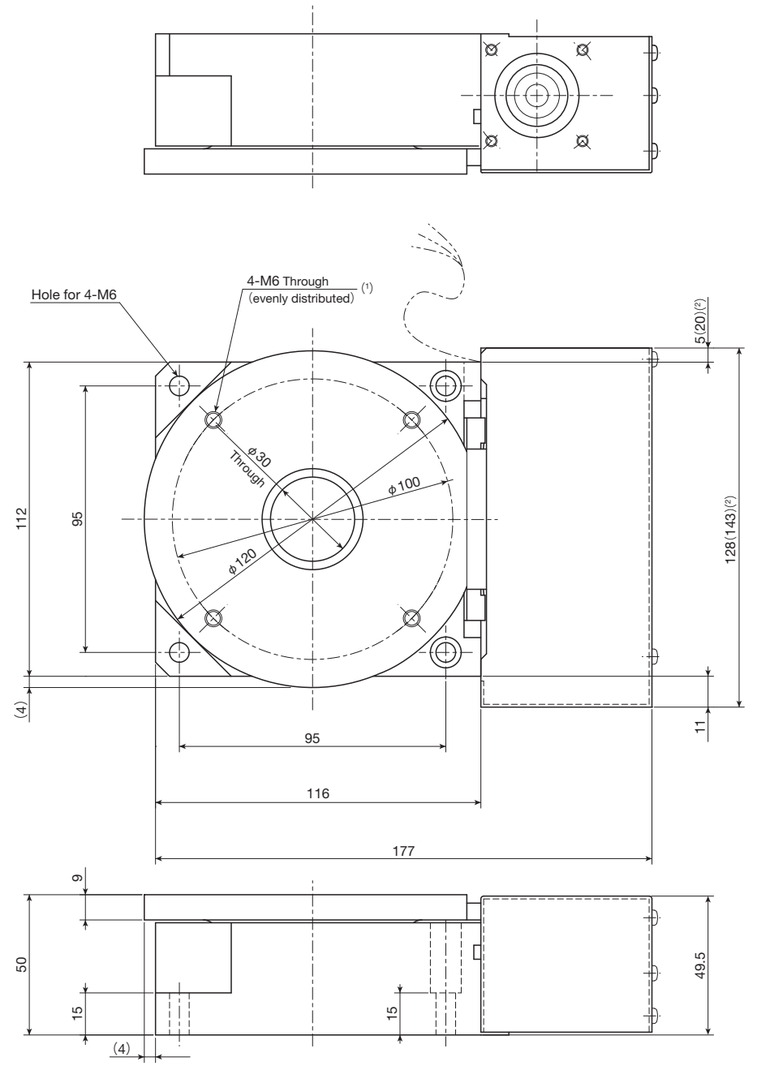


AT706
AT708



IKO Alignment Table AT

AT120



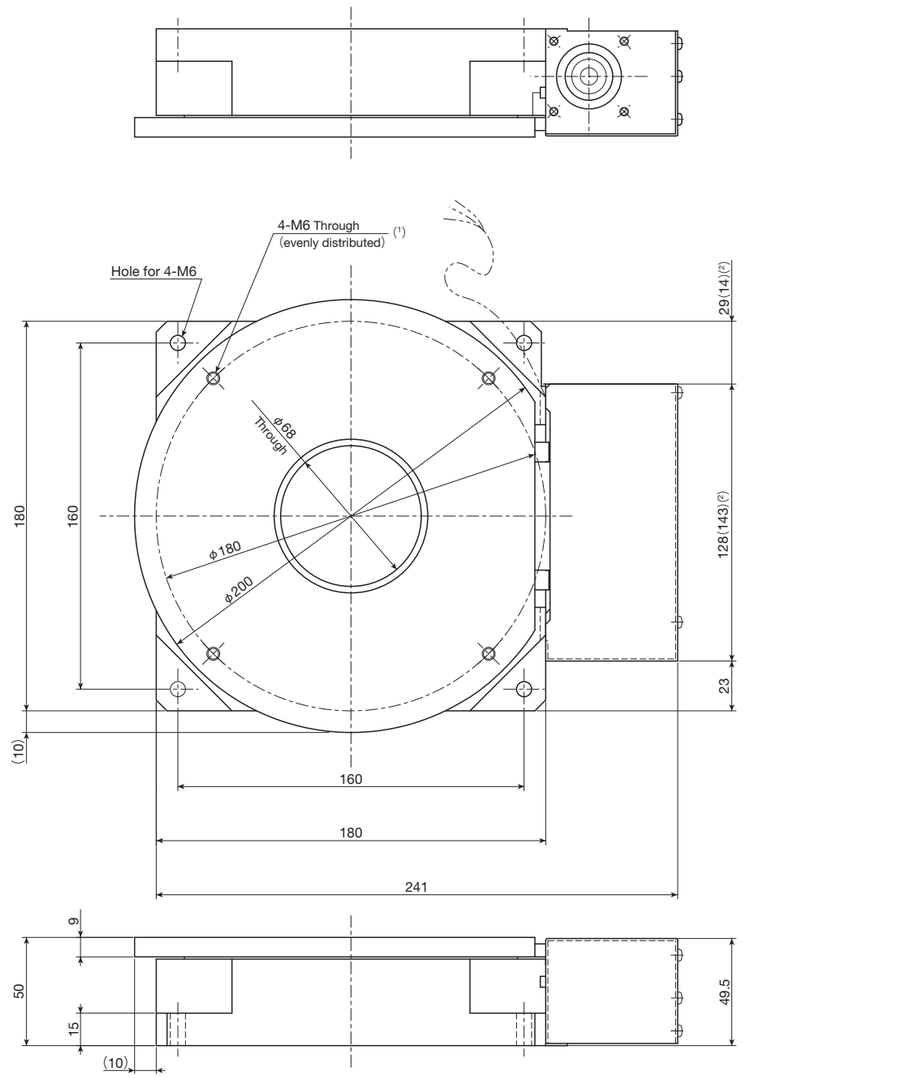
mass: 4.4kg

Notes (1) Too deep insertion depth of the mounting bolt may affect the rotation performance of the table, so never insert a bolt longer than the depth of the through hole.
(2) The dimension in ( ) is applicable to AT701 and AT703.

AT

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

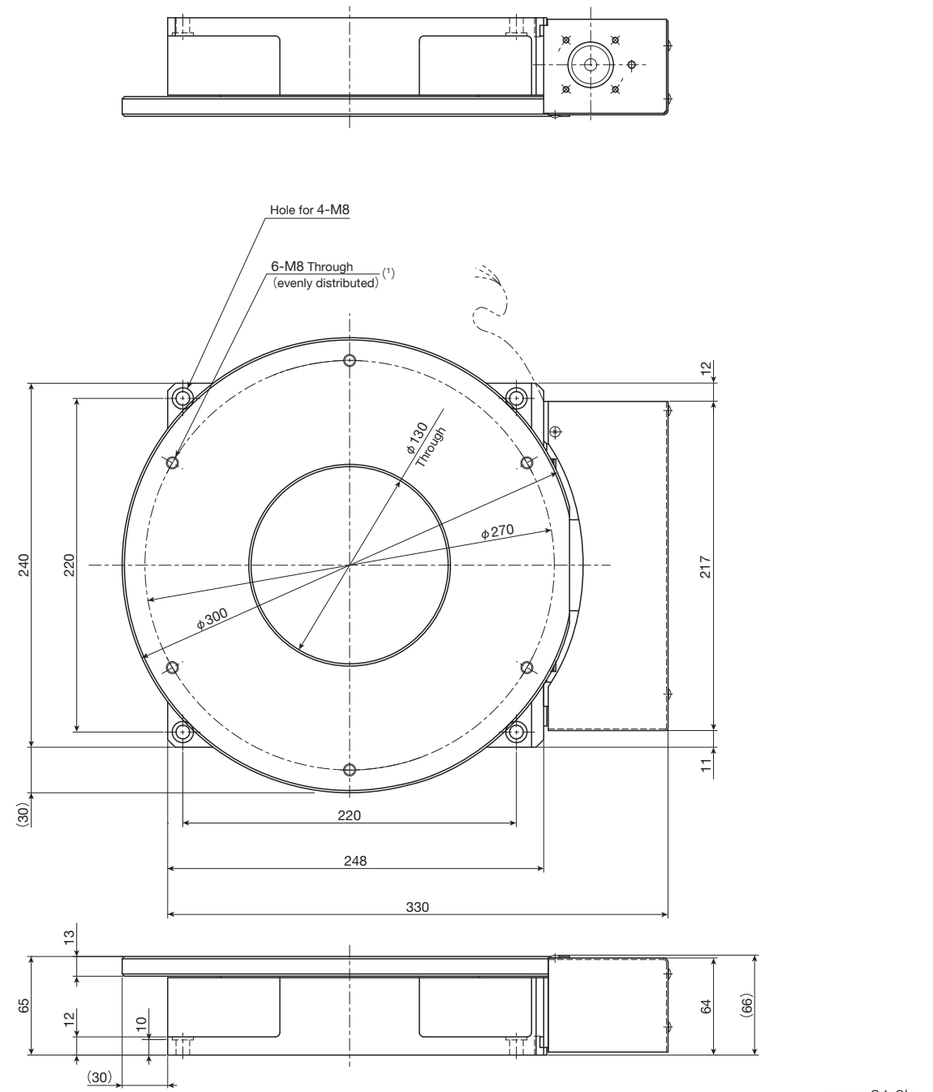
AT200



mass: 9.9kg

Notes (1) Too deep insertion depth of the mounting bolt may affect the rotation performance of the table, so never insert a bolt longer than the depth of the through hole.
(2) The dimension in ( ) is applicable to AT701 and AT703.

AT300



mass: 21.0kg

Note (1) Too deep insertion depth of the mounting bolt may affect the rotation performance of the table, so never insert a bolt longer than the depth of the through hole.

AT

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch