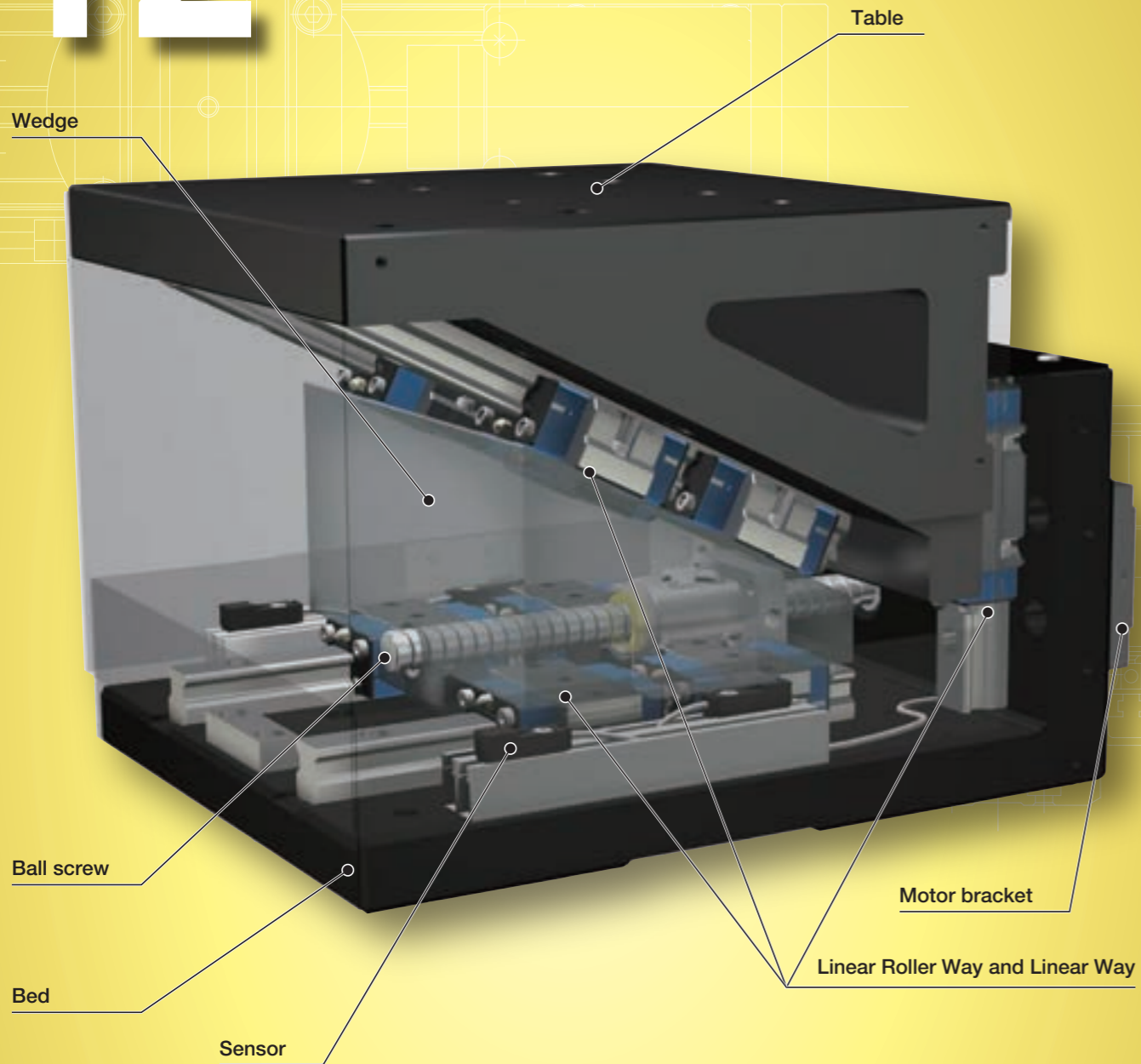
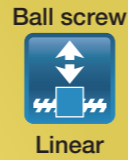


TZ

TZ



Major product specifications

Driving method	Precision ball screw
Linear motion rolling guide	Linear Roller Way (roller type) Linear Way (ball type)
Built-in lubrication part	Lubrication part "C-Lube" is built-in
Material of table and bed	Aluminum extruded material (Alumite)
Sensor	Provided as standard

Accuracy

Positioning repeatability	±0.001
Positioning accuracy	0.005
Lost motion	0.001
Parallelism in table motion A	-
Parallelism in table motion B	-
Attitude accuracy	-
Straightness	-
Backlash	-

unit: mm

Points

● Compact precision elevating table

1 This is an elevating table for performing compact yet high precision vertical positioning with unique wedge mechanism adopted.

● Two types and two sizes selectable depending on the usage

2 Table dimensions of □120 mm and □200 mm have been added to our lineup, including the high accuracy/high rigidity type with roller-type linear motion rolling guide incorporated and the standard type with superior cost performance. Two kinds of wedge reduction ratio are prepared, thus enabling vertical positioning of up to 24mm in stroke.

● Installation of linear encoder enables the positioning of a rank higher level.

3 Specifying an optional linear encoder attached unit and performing the fully-closed loop control enables the positioning of even higher precision.

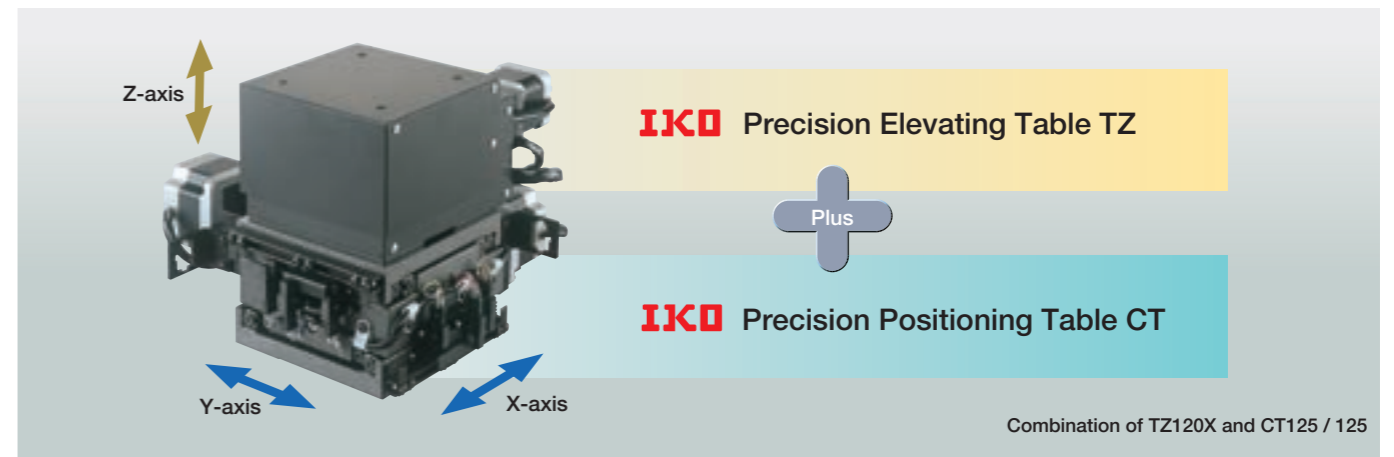
● Sensor provided as standard

4 Limit sensor and origin / pre-origin sensors are provided as standard. The sensor is compactly built in the main unit, thus facilitating the incorporation into a machine or device.

● Available as multi-axis configured Z-axis

5 Placing the unit on a slide table of precision positioning table makes the unit available as Z-axis positioning mechanism of the multi-axis table.

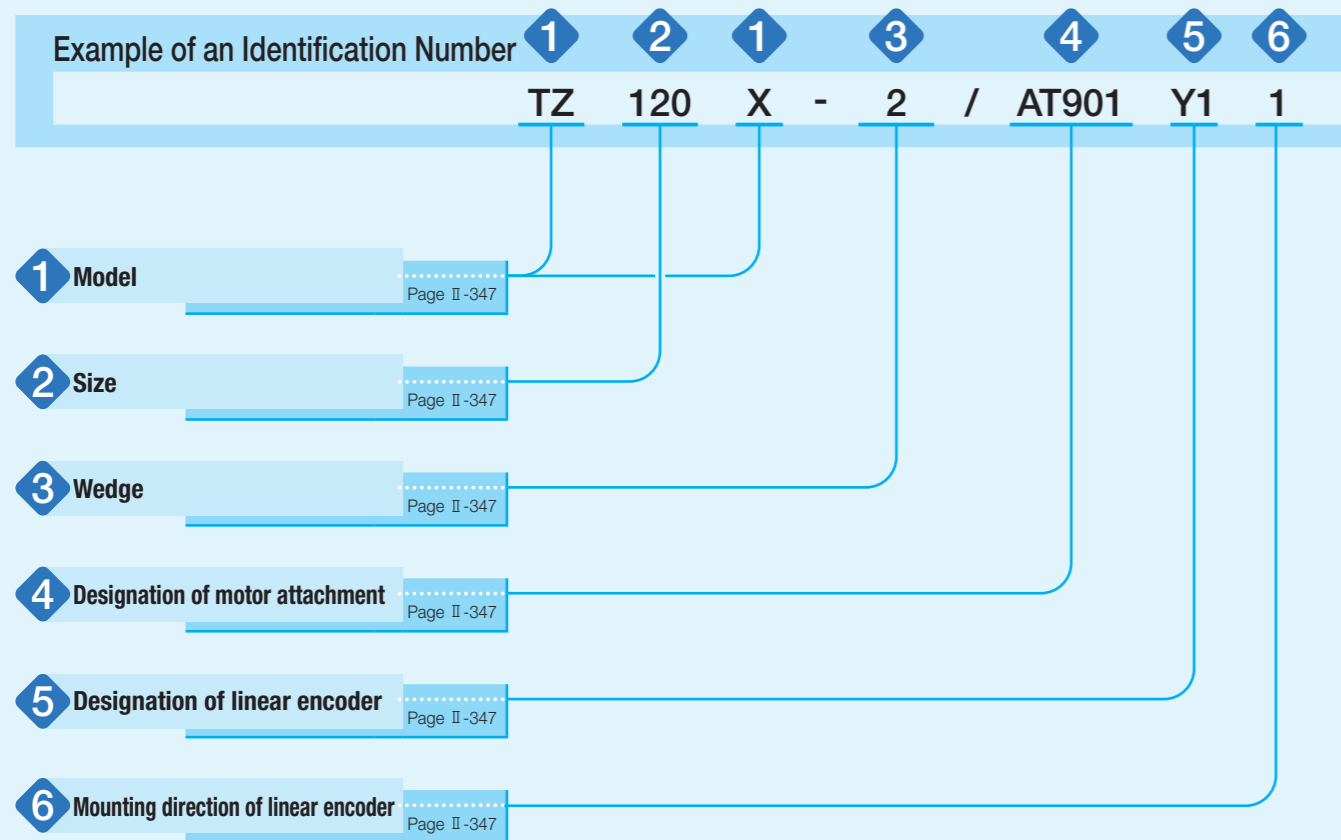
Example of combination with XYZ positioning table using the Precision Elevating Table TZ



Variation

Shape	Model and size	Table width (mm)	Linear motion rolling guide type	Wedge reduction ratio
	TZ120X-2	□120	Roller Type	1 : 2
	TZ120X-4			1 : 4
	TZ200H-2	□200	Ball type	1 : 2
	TZ200H-4			1 : 4
	TZ200X-2			1 : 2
	TZ200X-4			1 : 4

Identification Number



Identification Number and Specification

1 Model	TZ...H: Precision Elevating Table (applicable to size 200) TZ...X: Precision Elevating Table, high precision and high rigidity type (applicable to size 120, 200)
2 Size	120: Table size □120mm 200: Table size □200mm
3 Wedge	2: Wedge reduction ratio 1 : 2 4: Wedge reduction ratio 1 : 4 This ratio indicates the reduction ratio of vertical travel distance to the ball screw feed rate.
4 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 mounted on the main body before shipment. However, the final position adjustment should be made by customer since it is only temporarily fixed. · When specifying an AC servomotor attachment, an origin sensor is not provided.
5 Designation of linear encoder	No symbol: Without linear encoder When specifying the linear encoder, see Table 3. · "With linear encoder" is only applicable to AC Servomotor specification. For applicable models and motor attachments, see Table 1.
6 Mounting direction of linear encoder	No symbol: On the right as viewed from the side opposite the motor 1 : On the left as viewed from the side opposite the motor · The mounting direction of the linear encoder and pull-out direction of the sensor cord are the same.

Table 1 Application of motor attachment

Type	Motor model			Flange size mm	Motor attachment		
	Manufacturer	Series	Model		Rated output W	TZ120X	TZ200H TZ200X
AC servo motor	YASKAWA ELECTRIC CORPORATION	Σ-V	SGMJV-A5A	50	□40	AT901	-
			SGMAV-A5A			AT901	-
			SGMJV-01A	100		AT901	AT902
			SGMAV-01A			AT901	AT902
			SGMAV-C2A			-	AT902
	Mitsubishi Electric Corporation	J4	HG-MR053	50	□40	AT901	-
			HG-KR053			AT901	-
			HG-MR13	100		AT901	AT902
			HG-KR13			AT901	AT902
	Panasonic Corporation	MINAS A5	MSMD5A	50	□38	AT903	-
			MSME5A			AT903	-
			MSMD01	100		AT903	AT904
MSME01			AT903			AT904	
Stepper motor	ORIENTAL MOTOR Co., Ltd.	α step	ARM46	-	□42	AT905	-
			ARM66		□60	-	AT906
		CRK	ARM69	□60	-	AT906	
			CRK54	□42	AT907	-	
			CRK56 (*)	□60	-	AT908	

Note (*) 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 × 10 ⁻⁹ kg · m ²
AT901	UA-20C-5× 8	Sakai Manufacturing Co., Ltd	0.086
AT902	UA-25C-8× 8	Sakai Manufacturing Co., Ltd	0.29
AT903	UA-20C-5× 8	Sakai Manufacturing Co., Ltd	0.086
AT904	UA-25C-8× 8	Sakai Manufacturing Co., Ltd	0.29
AT905	UA-20C-5× 6	Sakai Manufacturing Co., Ltd	0.086
AT906	UA-25C-8× 10	Sakai Manufacturing Co., Ltd	0.29
AT907	UA-20C-5× 5	Sakai Manufacturing Co., Ltd	0.086
AT908	UA-25C-8× 8	Sakai Manufacturing Co., Ltd	0.29

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

Table 3 Linear encoder models

Item	Target models	TZ120X			TZ200H, TZ200X		
		Y1	J1	P1	Y2	J2	P2
Designation code of linear encoder		Y1	J1	P1	Y2	J2	P2
Manufacturers of compatible drivers		YASKAWA ELECTRIC CORPORATION	Mitsubishi Electric Corporation	Panasonic Corporation	YASKAWA ELECTRIC CORPORATION	Mitsubishi Electric Corporation	Panasonic Corporation
Manufacturer		Renishaw plc			Renishaw plc		
Linear encoder head		T1031-30A			RGH20B30L00A	RGH20Y30D33A	
Linear encoder		A-9705-0004			A-9660-0080		
Interface		Ti0000A00V	Ti0200A04A		-		
Reference mark		-			A-9561-0065		

Specifications

Table 4 Specifications

Model and size	Wedge reduction ratio	Ball screw lead mm	Resolution ⁽¹⁾ $\mu\text{m/pulse}$	Stroke length mm
TZ120X-2	1 : 2	4	2.0 (0.1)	10
TZ120X-4	1 : 4		1.0 (0.1)	5
TZ200H-2	1 : 2	5	2.5 (0.1)	24
TZ200H-4	1 : 4		1.25 (0.1)	12
TZ200X-2	1 : 2		2.5 (0.1)	24
TZ200X-4	1 : 4		1.25 (0.1)	12

Note ⁽¹⁾ The resolution indicates a value when fraction sizes of the motor are 1,000 pulses/rev.
 Remark: The values in () indicate values with linear encoder and Panasonic Corporation MINAS A5 system selected. If the ΣV system of YASKAWA ELECTRIC CORPORATION is selected, it should be 0.078125 $\mu\text{m/pulse}$.

Table 5 Accuracy

Model and size	Wedge reduction ratio	Positioning repeatability	Positioning accuracy	Lost motion	Parallelism in table elevating	Squareness in table elevating
TZ120X-2	1 : 2	± 0.001	—	0.001	0.010	0.010
TZ120X-4	1 : 4		(0.005)			
TZ200H-2	1 : 2	± 0.001	—	—	—	—
TZ200H-4	1 : 4		(0.005)			
TZ200X-2	1 : 2	± 0.001	—	0.001	0.010	0.010
TZ200X-4	1 : 4		(0.005)			

Remark: The values in () indicate values with a linear encoder.

Table 6 Maximum speed

Model and size	Wedge reduction ratio	Ball screw lead mm	Maximum speed mm/s	
			AC servomotor	Stepper motor
TZ120X-2	1 : 2	4	100	60
TZ120X-4	1 : 4		50	30
TZ200H-2	1 : 2	5	125	75
TZ200H-4	1 : 4		62.5	37.5
TZ200X-2	1 : 2		125	75
TZ200X-4	1 : 4		62.5	37.5

Remark: To measure the practical maximum speed, it is required to consider operation patterns based on the motor to be used and load conditions.

Table 7 Maximum carrying mass

Model and size	Wedge reduction ratio	Maximum carrying mass	
		Horizontal	Vertical
TZ120X	1 : 2	82	10
	1 : 4	146	10
TZ200H	1 : 2	109	9
	1 : 4	109	10
TZ200X	1 : 2	125	9
	1 : 4	160	10

Table 8 Specifications of ball screw

Model and size	Shaft dia.	Overall length
TZ120X	8	168
TZ200H	12	215
TZ200X	12	215

Table 9 Table inertia and starting torque

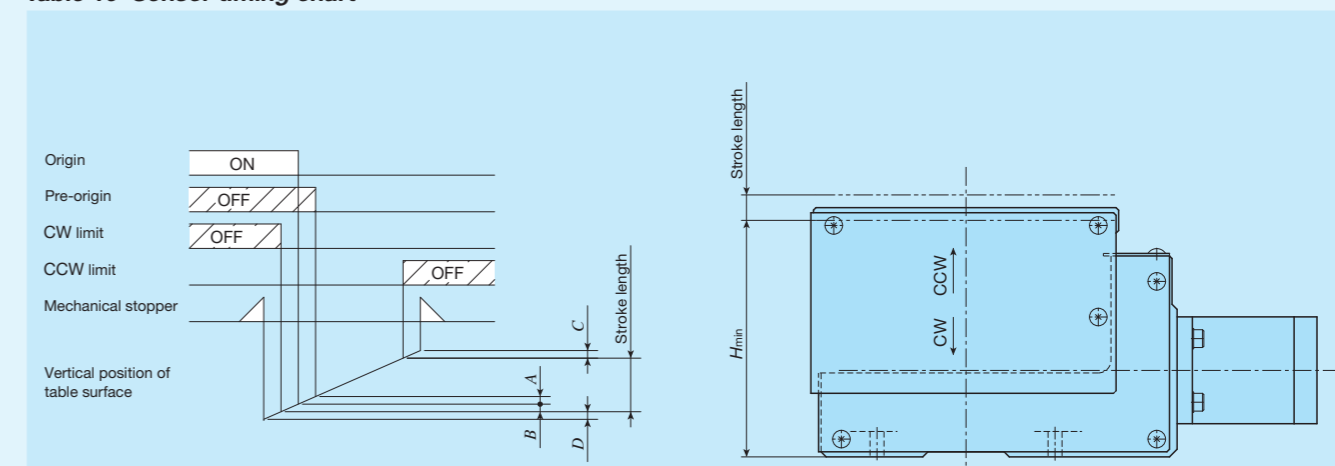
Model and size	Wedge reduction ratio	Table inertia J_T $\times 10^{-5} \text{kg} \cdot \text{m}^2$	Starting torque T_s N·m
TZ120 -2	1 : 2	0.076	0.03
TZ120 -4	1 : 4	0.061	0.02
TZ120X-2	1 : 2	0.076	0.03
TZ120X-4	1 : 4	0.064	0.02
TZ200H-2	1 : 2	0.581	0.07
TZ200H-4	1 : 4	0.473	0.06
TZ200X-2	1 : 2	0.581	0.07
TZ200X-4	1 : 4	0.473	0.06

Mounting

For the fixing screw tightening torque of the Precision Positioning Table, see page III-29.

Sensor Specification

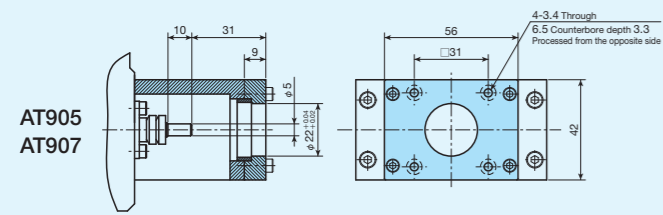
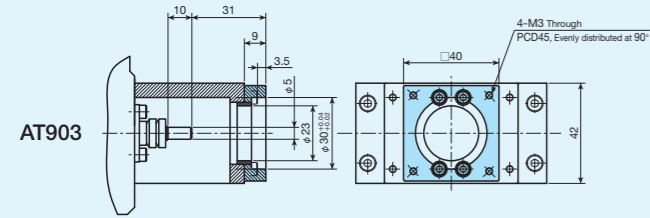
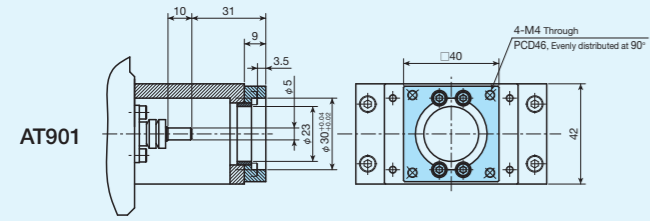
Table 10 Sensor timing chart



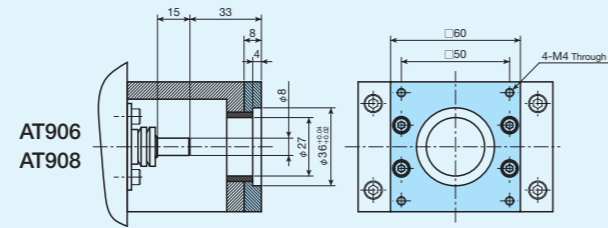
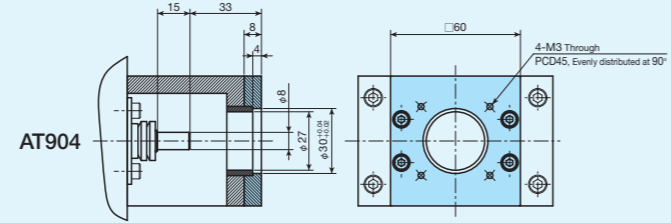
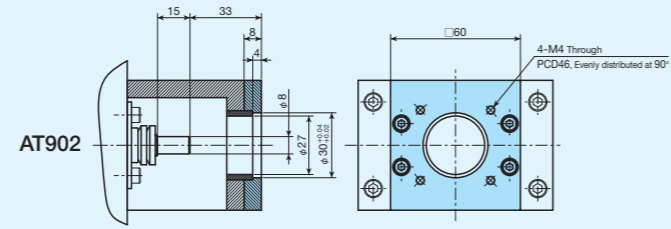
Identification number	A	B	C	D
TZ120X-2	1	1	1	1
TZ120X-4	0.5	0.5	0.5	0.5
TZ200H-2	1.5	1	2.5	1
TZ200H-4	0.75	0.5	1.25	0.5

Dimensions of Motor Attachment

TZ120X

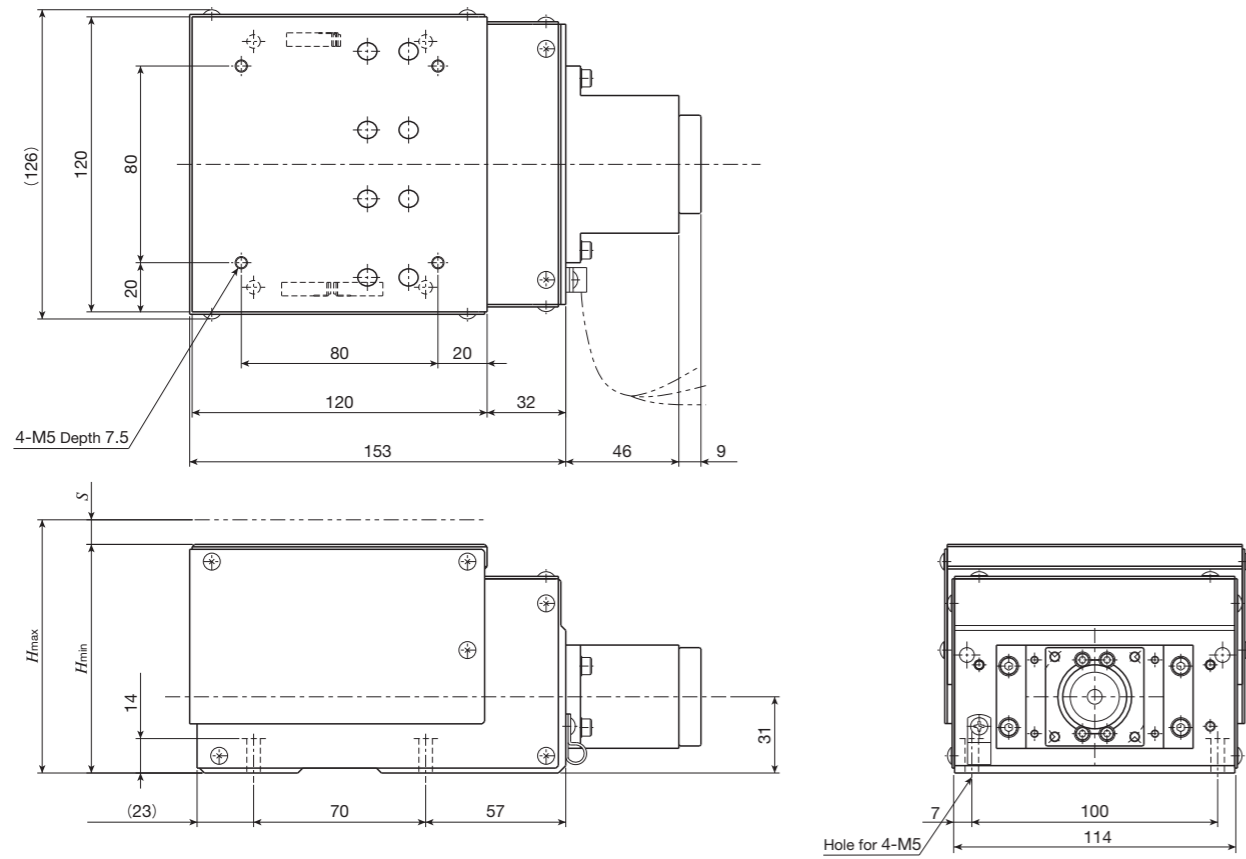


TZ200H, TZ200X



IKO Precision Elevating Table TZ

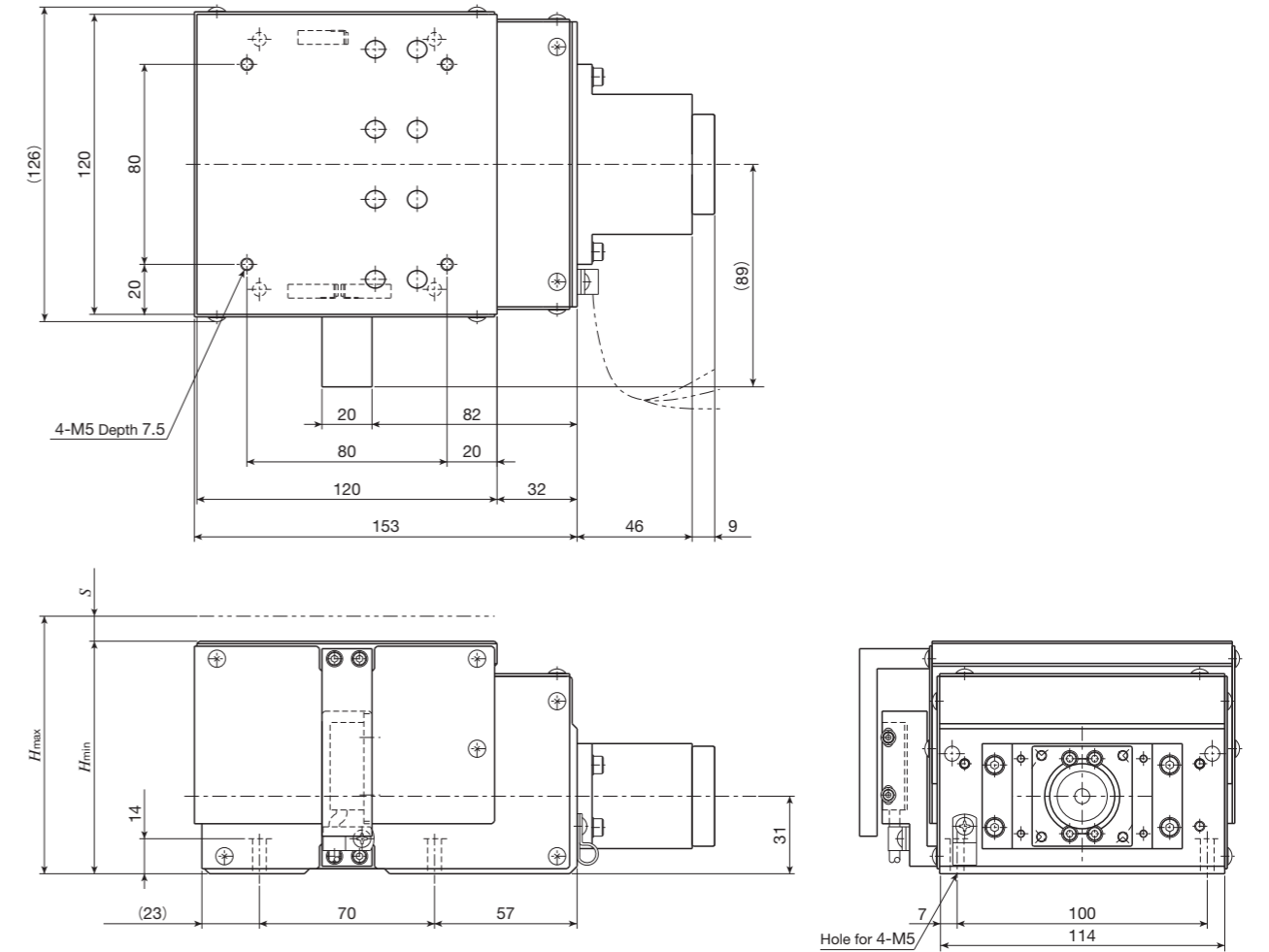
TZ120X without linear encoder



unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Mounting holes of bed		Stroke length S
			H_{min} (CW limit position)	H_{max} (CCW limit position)	
TZ120X-2	1 : 2	3.8	93	103	10
TZ120X-4	1 : 4	3.4	84.5	89.5	5

TZ120X with linear encoder

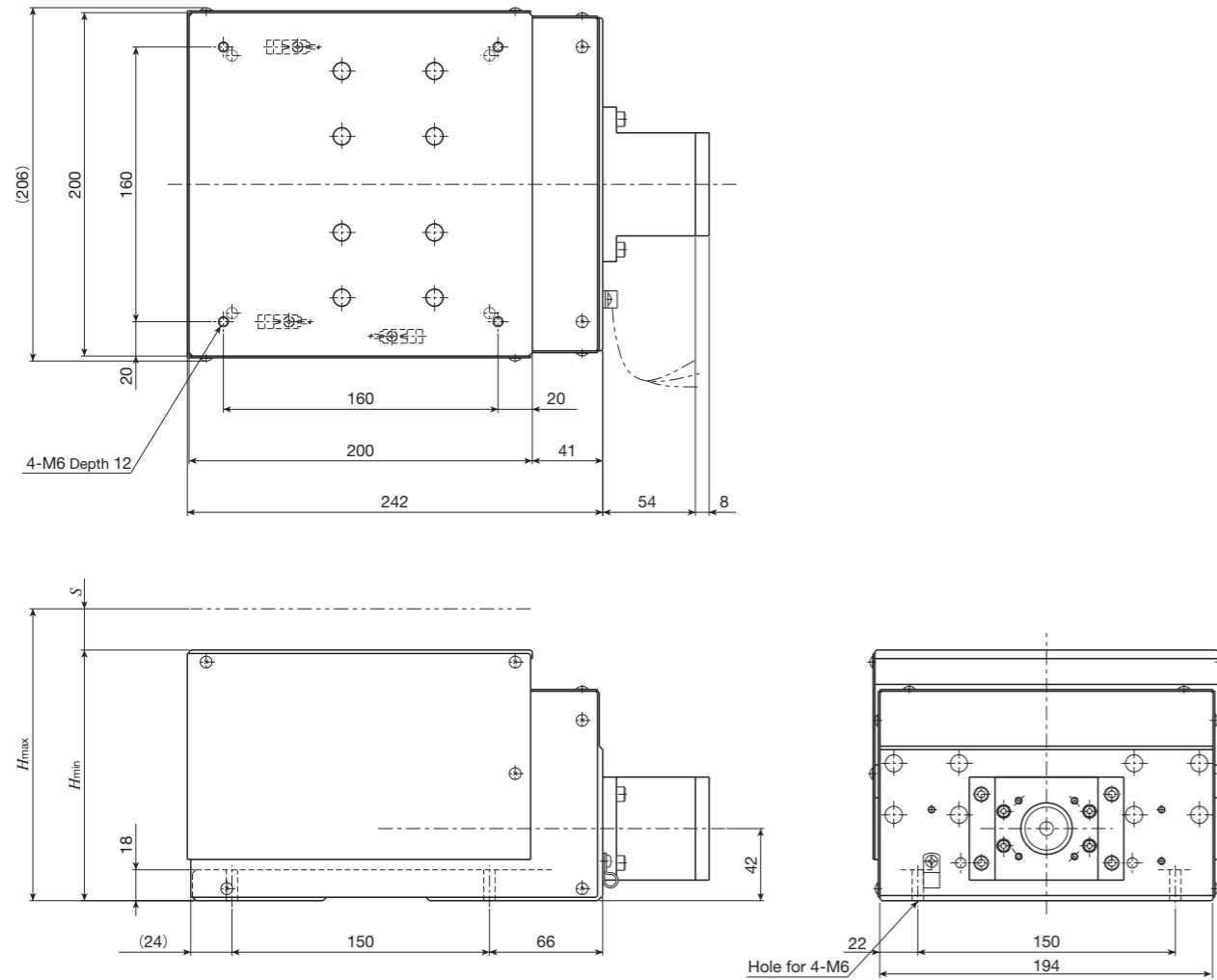


unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Mounting holes of bed		Stroke length S
			H_{min} (CW limit position)	H_{max} (CCW limit position)	
TZ120X-2	1 : 2	4.5	93	103	10
TZ120X-4	1 : 4	4.1	84.5	89.5	5

IKO Precision Elevating Table TZ

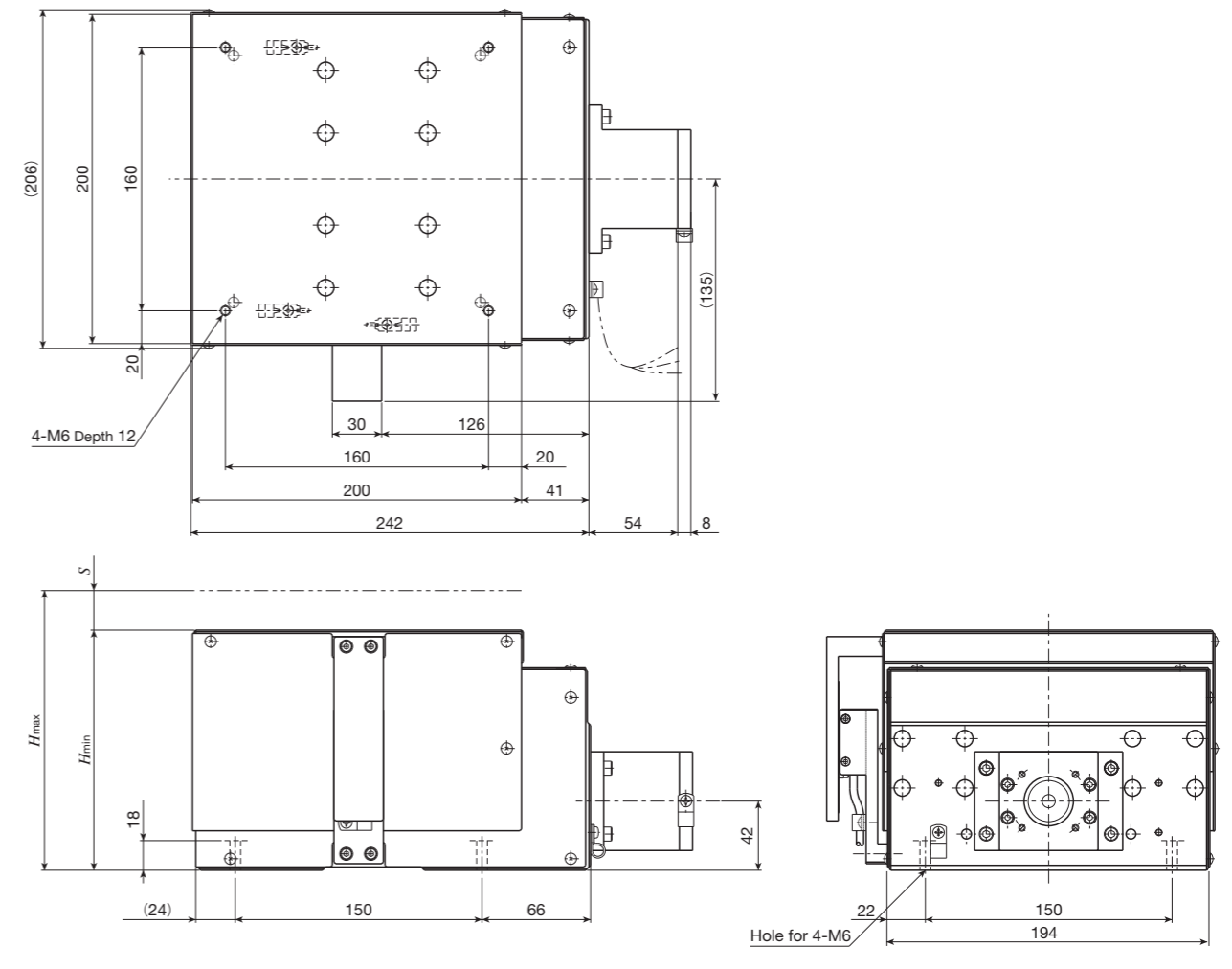
TZ200H, TZ200X without linear encoder



unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Mounting holes of bed		Stroke length S
			H_{min} (CW limit position)	H_{max} (CCW limit position)	
TZ200H-2	1 : 2	13.2	146	170	24
TZ200H-4	1 : 4	12.2	132	144	12
TZ200X-2	1 : 2	13.3	146	170	24
TZ200X-4	1 : 4	12.3	132	144	12

TZ200H, TZ200X with linear encoder



unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Mounting holes of bed		Stroke length S
			H_{min} (CW limit position)	H_{max} (CCW limit position)	
TZ200H-2	1 : 2	14.2	146	170	24
TZ200H-4	1 : 4	13.2	132	144	12
TZ200X-2	1 : 2	14.3	146	170	24
TZ200X-4	1 : 4	13.3	132	144	12