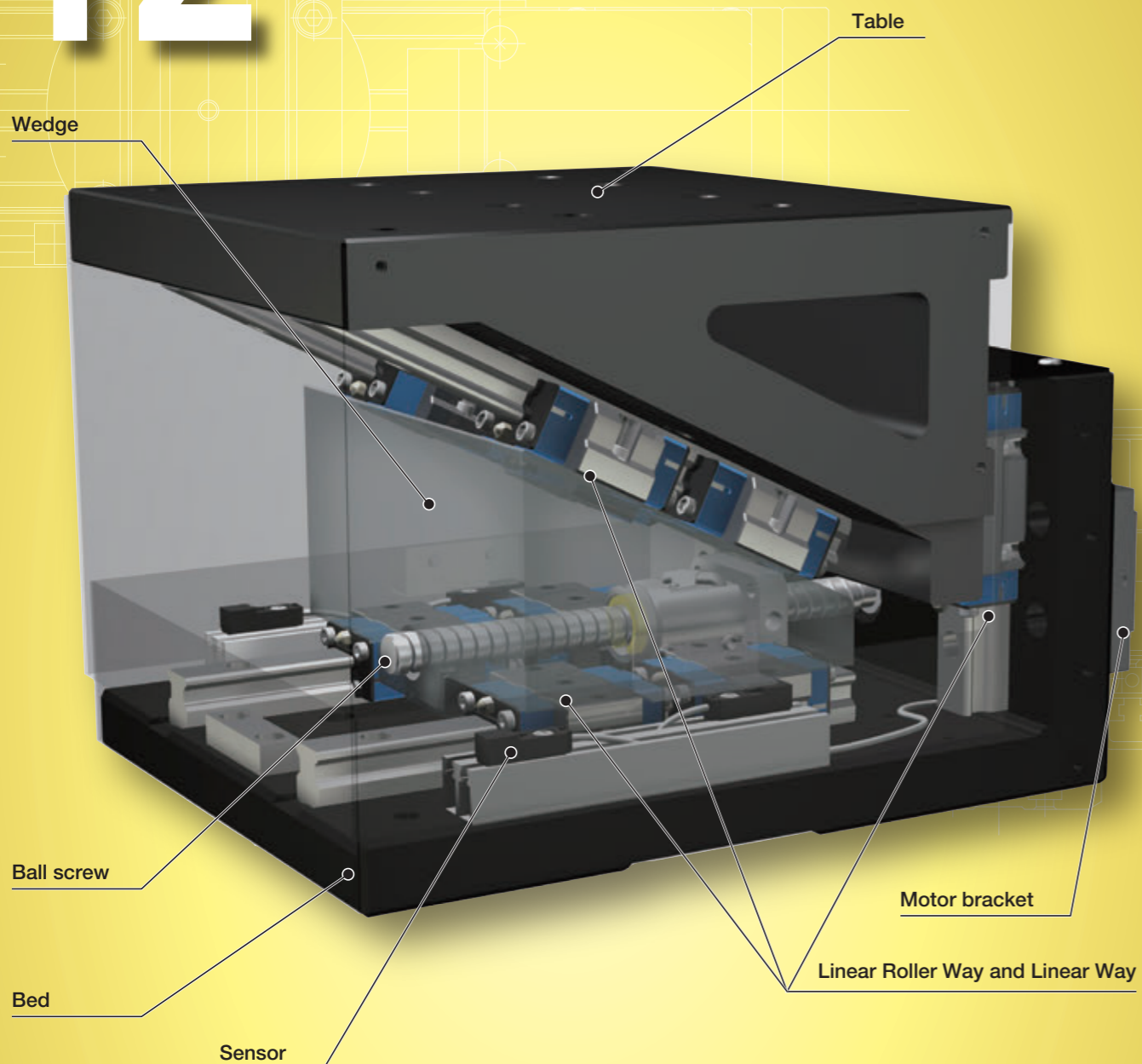
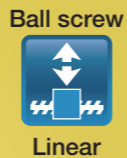


TZ

# 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

unit: mm

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	-

# 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.

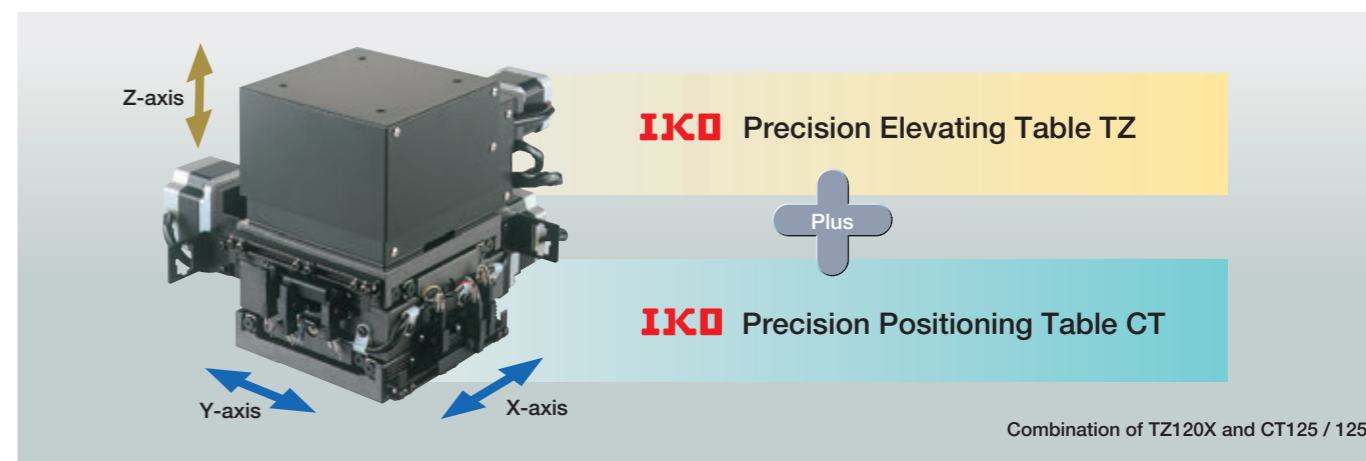
## ● Sensor provided as standard

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.

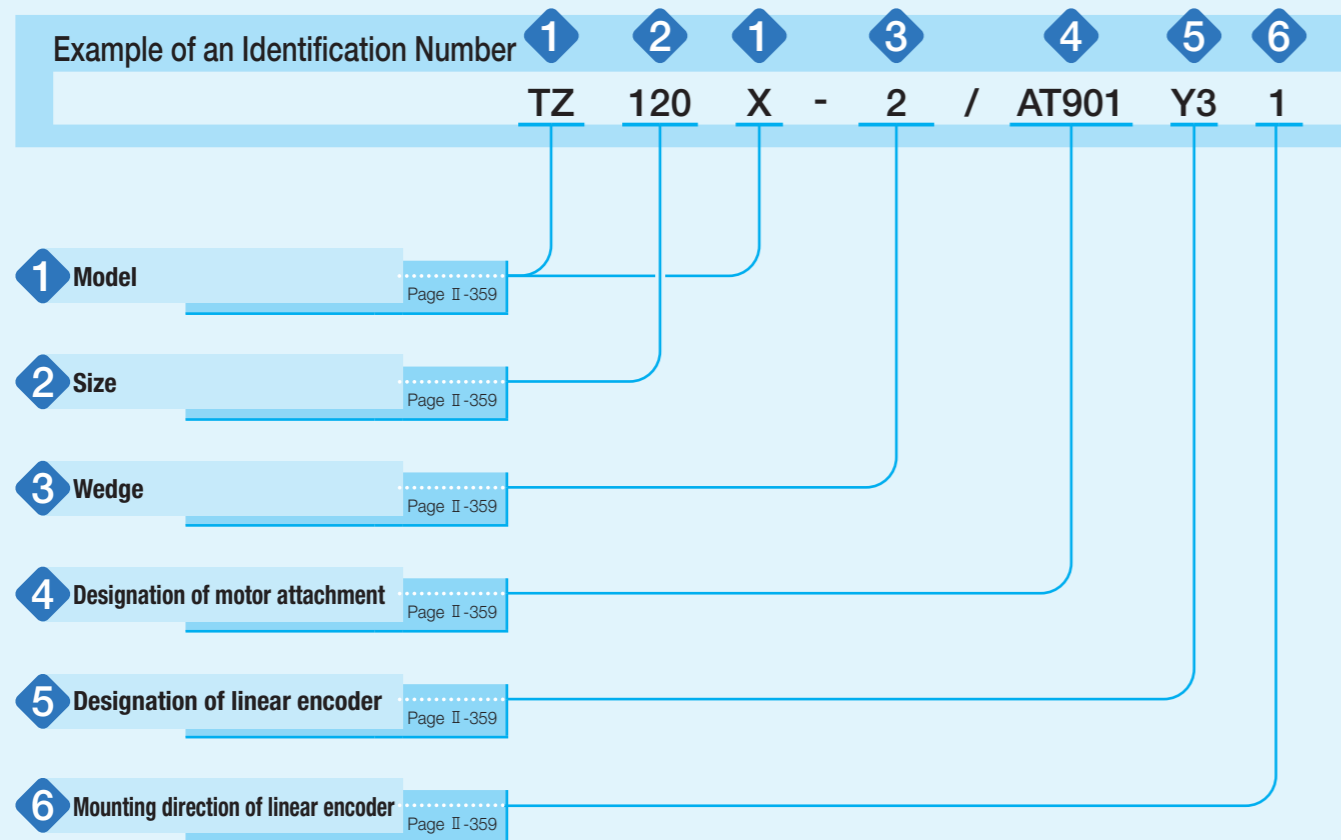
## Example of combination with XYZ positioning table using the Precision Elevating Table TZ



## 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

<b>1 Model</b>	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)
<b>2 Size</b>	120: Table size □120mm 200: Table size □200mm
<b>3 Wedge</b>	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.
<b>4 Designation of motor attachment</b>	As for a motor attachment, select it from the list of Table 1.  <ul style="list-style-type: none"> <li>· Motor should be prepared by customer.</li> <li>· Please specify motor attachment applicable to motor for use.</li> <li>· 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.</li> <li>· When specifying an AC servomotor attachment, an origin sensor is not provided.</li> </ul>
<b>5 Designation of linear encoder</b>	No symbol: Without linear encoder When specifying the linear encoder, see Table 3.  <ul style="list-style-type: none"> <li>· "With linear encoder" is only applicable to AC Servomotor specification. For applicable models and motor attachments, see Table 1.</li> </ul>
<b>6 Mounting direction of linear encoder</b>	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  <ul style="list-style-type: none"> <li>· The mounting direction of the linear encoder and pull-out direction of the sensor cord are the same.</li> </ul>

# Identification Number and Specification

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-7	SGM7J-A5A	50	□40	AT901	—
			SGM7A-A5A			AT901	—
			SGM7J-01A	100		AT901	AT902
			SGM7A-01A			AT901	AT902
	Mitsubishi Electric Corporation	J4/J5	SGM7A-C2A	150		—	AT902
			HG-MR053	50		AT901	—
			HG-KR053/HK-KT053W			AT901	—
			HG-MR13	100		AT901	AT902
	HG-KR13/HK-KT13W	AT901	AT902				
	Panasonic Corporation	MINAS A6	MSMF5A	50		□38	AT903
MSMF01			100	AT903	AT904		
Stepper motor	ORIENTAL MOTOR Co., Ltd.	α step	ARM46	—	□42	AT905	—
			ARM66	—	□60	—	AT906
			ARM69	—	□60	—	AT906
		CRK	CRK54	—	□42	AT907	—
			CRK56 (1)	—	□60	—	AT908

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 $J_c$ × 10 <sup>-8</sup> kg · m <sup>2</sup>
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		
		Y3	J3	P3	Y4	J4	P4
Designation code of linear encoder		Y3	J3	P3	Y4	J4	P4
Manufacturers of compatible drivers		YASKAWA ELECTRIC CORPORATION	Mitsubishi Electric Corporation (1)	Panasonic Corporation	YASKAWA ELECTRIC CORPORATION	Mitsubishi Electric Corporation (1)	Panasonic Corporation
Linear encoder	Manufacturer	Renishaw plc			Renishaw plc		
	Head	T1031-30A	V2BCY30D04F		T1031-30A	V2BCY30D04F	
	Interface	Ti0000A00V	—		Ti0000A00V	—	
	Scale	A-9715-0004			A-9715-0007		

Note(1) Please use an MR-\*\*-\*\*\*-RJ driver.

# Specifications

**Table 4 Specifications**

Model and size	Wedge reduction ratio	Ball screw lead mm	Resolution <sup>(1)</sup> $\mu\text{m/pulse}$	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 <sup>(1)</sup> 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  $\Sigma V$  system of YASKAWA ELECTRIC CORPORATION is selected, it should be 0.078125  $\mu\text{m/pulse}$ .

**Table 5 Accuracy**

unit: mm

Model and size	Wedge reduction ratio	Positioning repeatability	Positioning accuracy	Lost motion	Parallelism in table elevating	Squareness in table elevating
TZ120X-2	1 : 2	$\pm 0.001$	—	0.001	0.010	0.010
TZ120X-4	1 : 4		(0.005)			
TZ200H-2	1 : 2	$\pm 0.001$	—	—	—	—
TZ200H-4	1 : 4		(0.005)			
TZ200X-2	1 : 2	$\pm 0.001$	—	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	Carrying mass center of gravity mm	Maximum carrying mass kg								
			Length L	Horizontal direction				Vertical direction			
				0	100	200	300	0	100	200	300
TZ120X	1:2	0	146	45	25	18	10	10	6	4.5	
		100	95	37	23	16	10	7	5	3.8	
		200	61	31	20	15	6	5	4.1	3.3	
	1:4	0	45	26	18	14	4.4	3.7	3.2	2.8	
		100	146	46	26	18	10	10	6	4.6	
		200	98	37	23	16	10	8	5	3.8	
TZ200H	1:2	0	109	59	35	25	9	9	7	5	
		100	88	45	30	22	9	7	5	4.3	
		200	59	36	26	20	6	5	4.2	3.6	
	1:4	0	44	30	23	18	4.5	3.8	3.3	2.9	
		100	109	62	37	26	10	10	8	5	
		200	95	47	31	23	10	8	6	4.6	
TZ200X	1:2	0	159	123	72	51	9	9	9	9	
		100	159	119	71	51	9	9	9	9	
		200	159	112	70	50	9	9	9	9	
	1:4	0	159	103	67	49	9	9	9	9	
		100	160	124	73	51	10	10	10	10	
		200	160	120	72	51	10	10	10	10	
1:4	0	160	113	70	50	10	10	10	10		
	100	160	105	68	49	10	10	10	10		
	200	160	105	68	49	10	10	10	10		

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<sup>-1</sup> 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 refer to the carrying mass center of gravity diagrams on page II-363 for details on length L and height H.  
 3. Please also check the maximum load mass on page III-21.

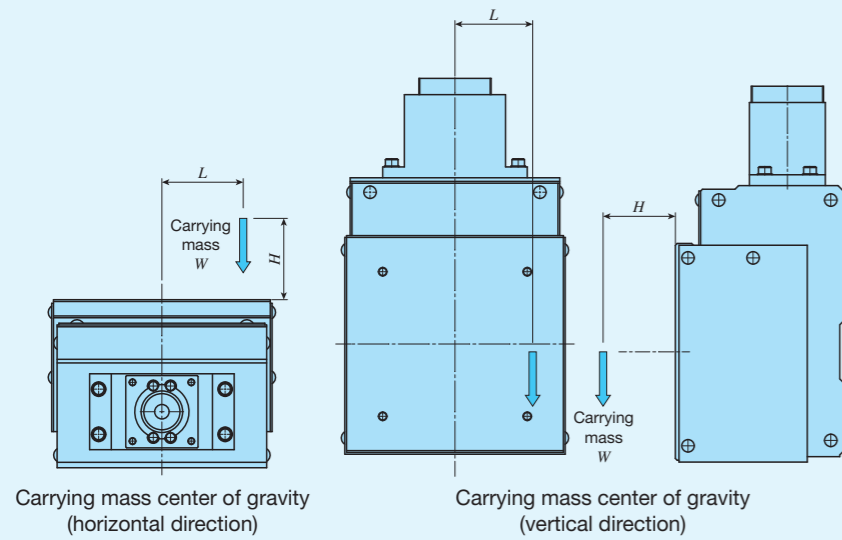


Table 8 Specifications of ball screw unit: mm

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

Table 9 Table inertia and starting torque

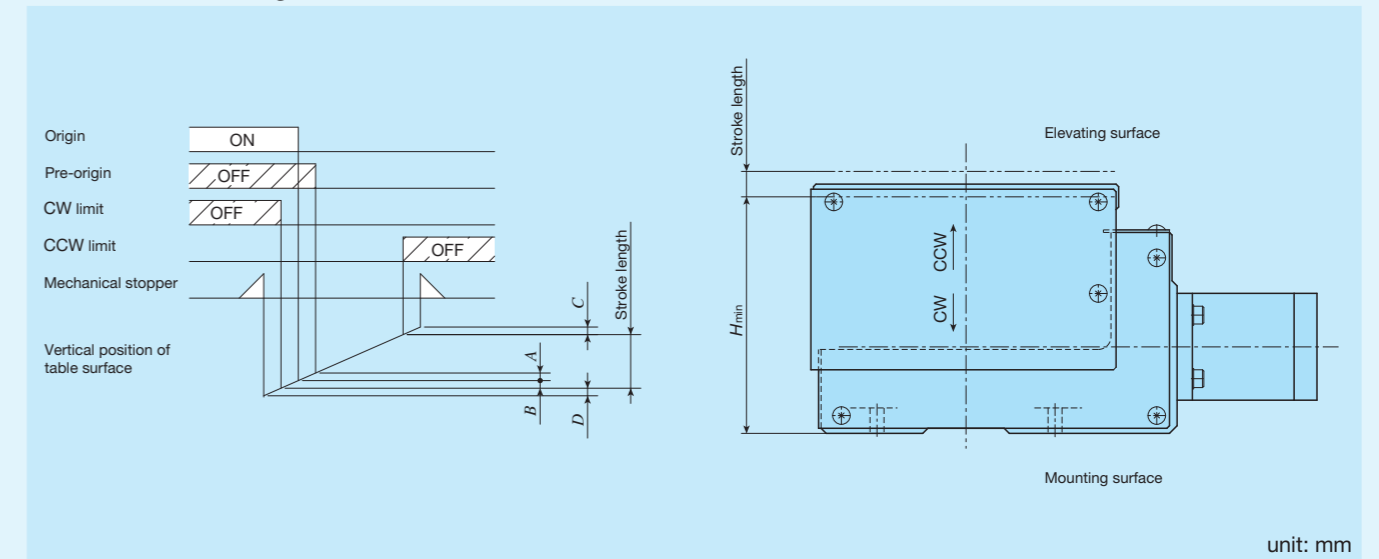
Model and size	Wedge reduction ratio	Table inertia $J_T$ $\times 10^{-5} \text{kg} \cdot \text{m}^2$	Starting torque $T_s$ N·m
TZ120 -2	1 : 2	0.076	0.03
TZ120 -4	1 : 4	0.061	0.02
TZ120X-2	1 : 2	0.076	0.03
TZ120X-4	1 : 4	0.064	0.02
TZ200H-2	1 : 2	0.581	0.07
TZ200H-4	1 : 4	0.473	0.06
TZ200X-2	1 : 2	0.581	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 -36.

## Sensor Specification

Table 10 Sensor timing chart

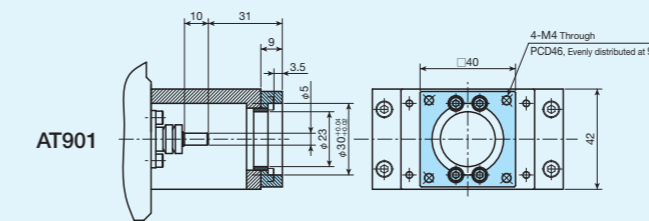


Identification number	A	B	C	D
TZ120X-2	1	1	1	1
TZ120X-4	0.5	0.5	0.5	0.5
TZ200H-2	1.5	1	2.5	1
TZ200H-4	0.75	0.5	1.25	0.5
TZ200X-4				

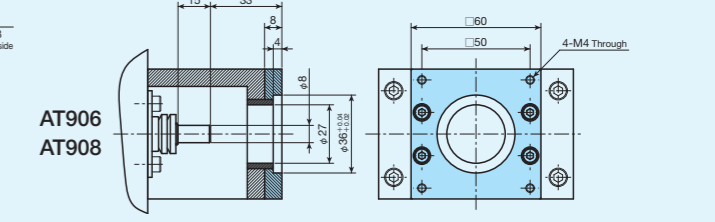
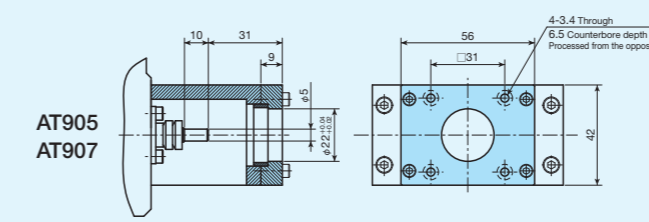
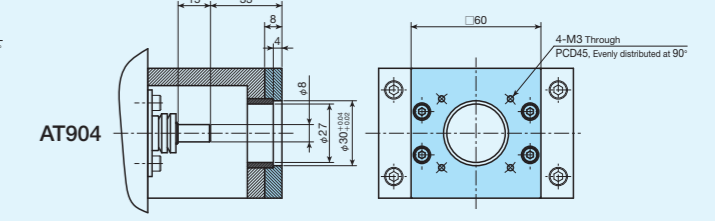
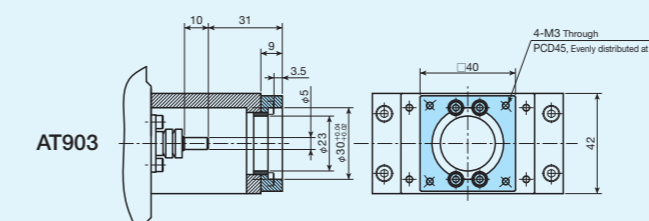
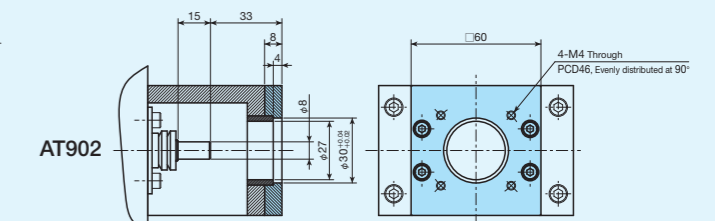
Remark: The linear encoder count increases in the CCW direction.

## Dimensions of Motor Attachment

### TZ120X



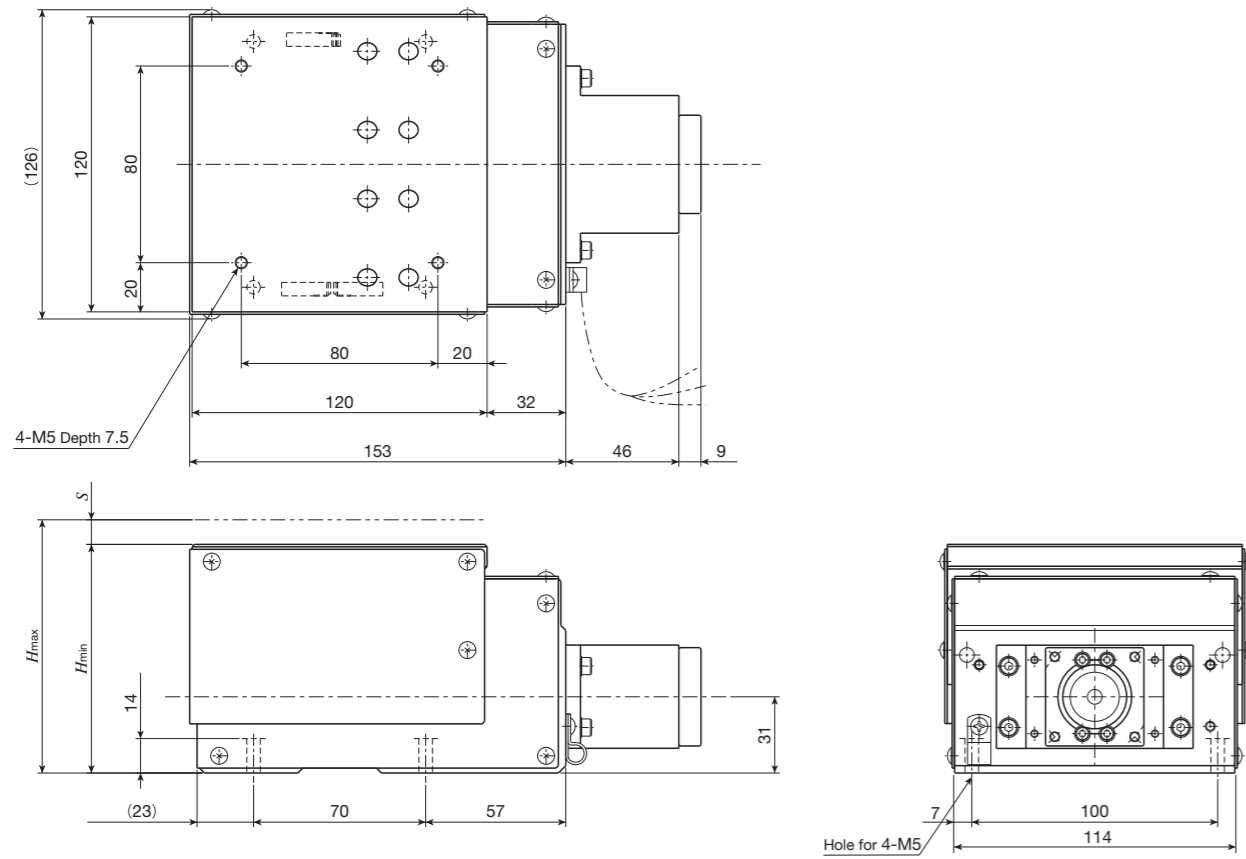
### TZ200H, TZ200X



Remark: The opening for the motor attachment is on the mounting surface of the Precision Elevating Table TZ. Please contact IKO if motor replacement or other maintenance is expected after installation.

# IKO Precision Elevating Table TZ

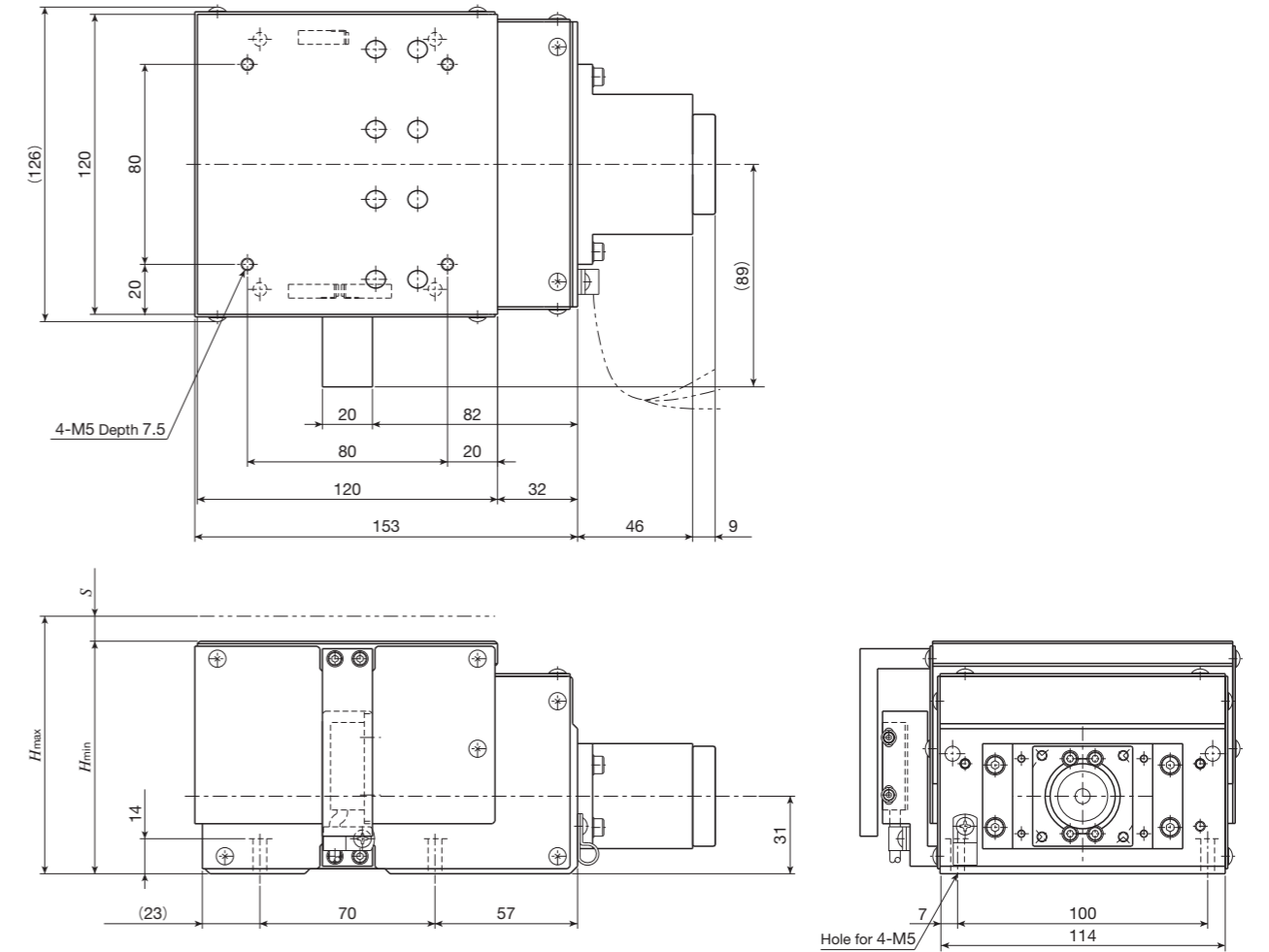
## TZ120X without linear encoder



unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Height		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

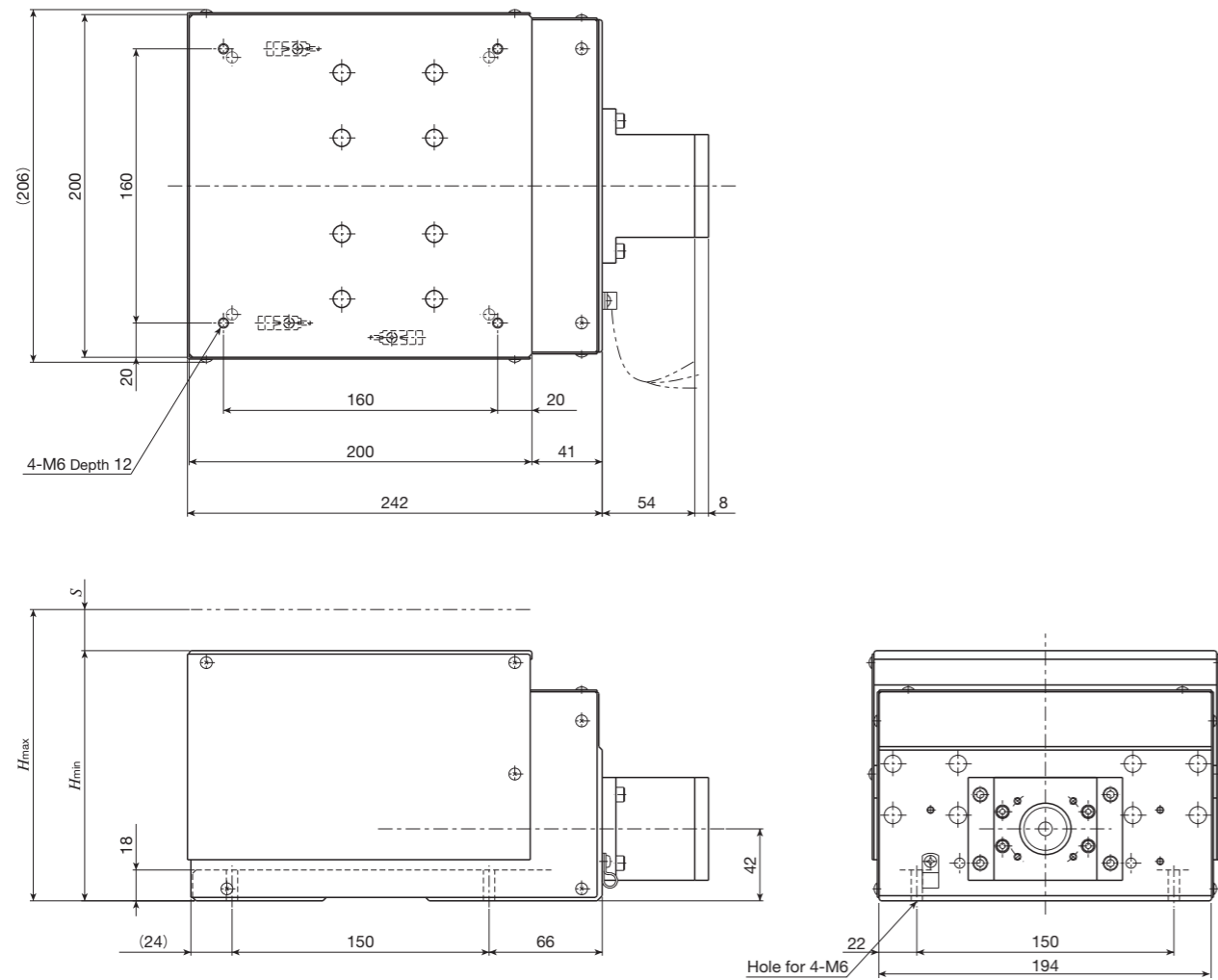


unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Height		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

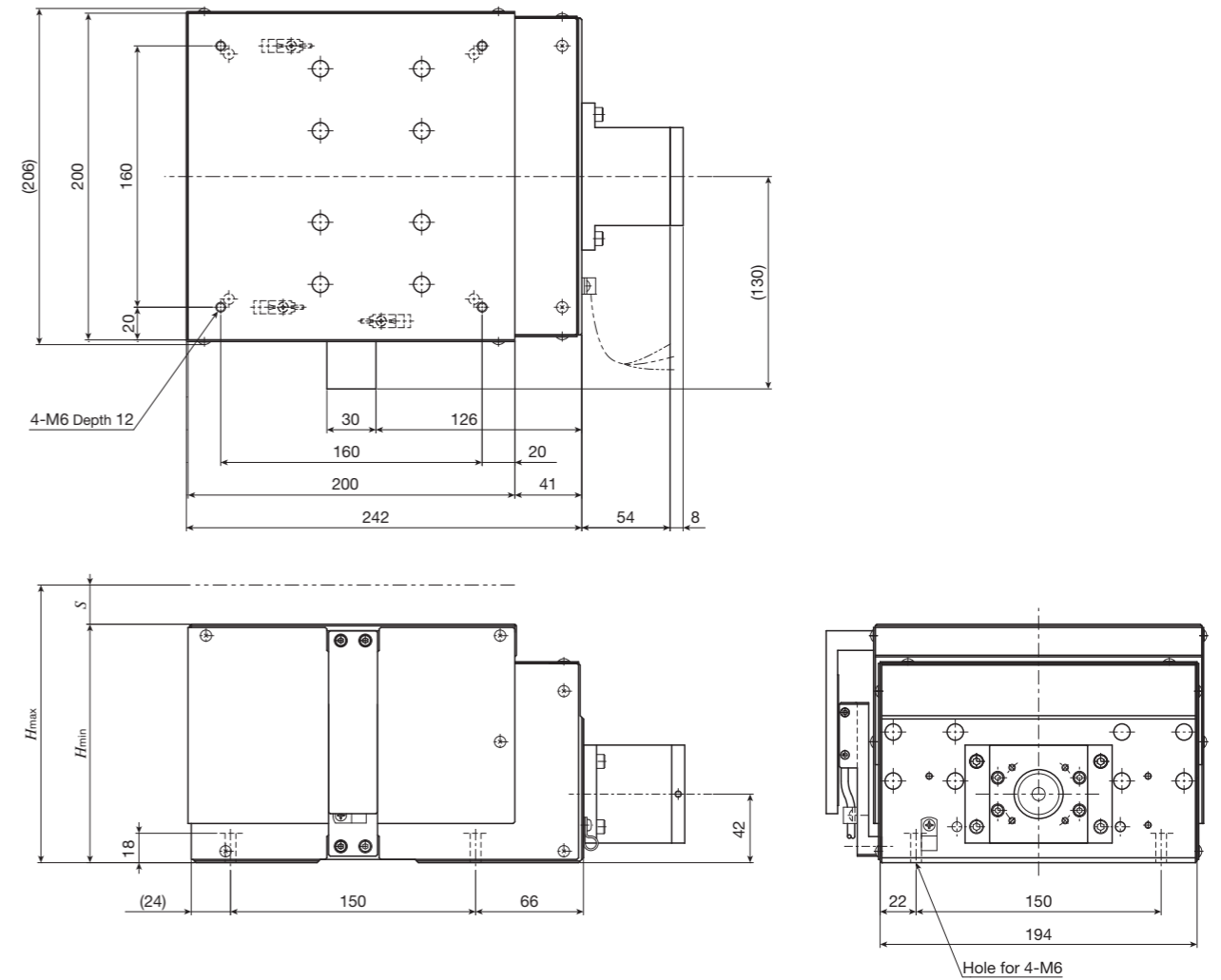
## TZ200H, TZ200X without linear encoder



unit: mm

Identification number	Wedge reduction ratio	Mass (Ref.) kg	Height		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	Height		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