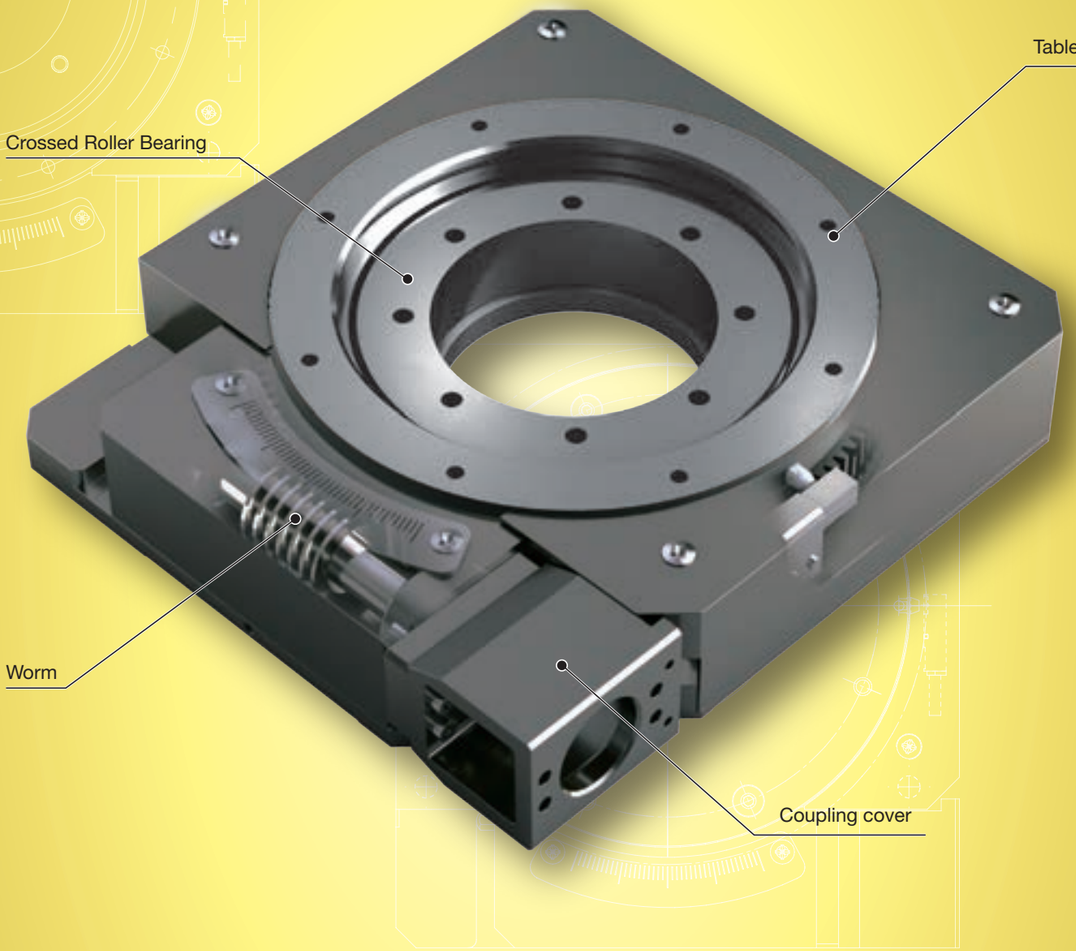
SK…W

SK···W

Worm gear drive

Rotation



Major product specifications

Driving method	Worm gear
Bearings	Crossed Roller Bearing
Built-in lubrication part	No built-in
Material of table and bed	Table : High carbon steel Upper table: Aluminum alloy table(1) Bed : Aluminum alloy
Sensor	For origin : Provided as standard Limit : Select by identification number

Note(1) Only added in models with a limit sensor.

Accuracy

unit: sec

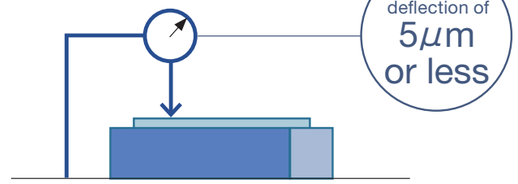
Positioning repeatability	±7.2
Positioning accuracy	21.6
Lost motion	32.4
Parallelism in table motion A	–
Parallelism in table motion B	–
Attitude accuracy	–
Straightness	–
Backlash	32.4

Points

● High Accuracy

1

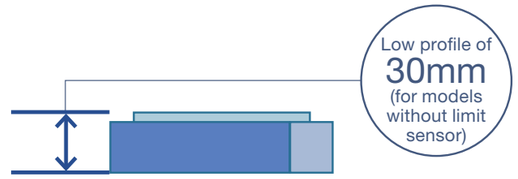
IKO Crossed Roller Bearings are used in the rotation guiding parts and can achieve deflection on the table upper surface of 5μm or less.



● Low profile, high rigidity

2

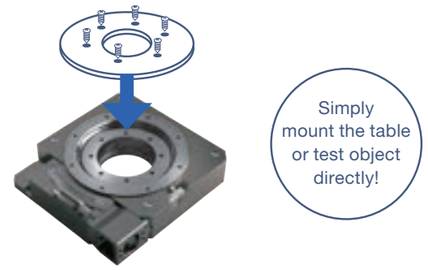
IKO Crossed Roller Bearings are used in the rotation guiding parts and offer high rigidity in any direction.
In addition, since Crossed Roller Bearings are used directly as the table, a low profile is achieved.



● Reduced Design Work

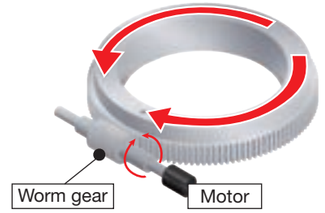
3

The device table or test object can be mounted directly to the table. The use of mechanical parts reduces the labor hours required to design rotating tables from scratch.



Rotation Stage SK···W drive mechanism

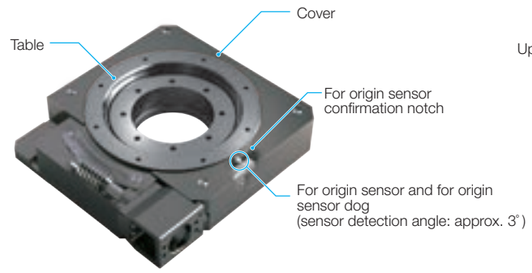
The SK···W is an unlimited rotation stage that employs a worm gear mechanism.
IKO Crossed Roller Bearings are used in the rotation guiding parts and utilized directly as a table to achieve high-precision rotational runout, high rigidity and a low profile.



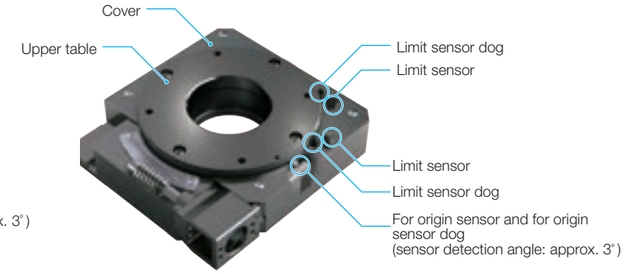
Variation

The SK···W is available with or without a limit sensor.
For models with a limit sensor, the operating range can be set to any position up to 320 degrees.

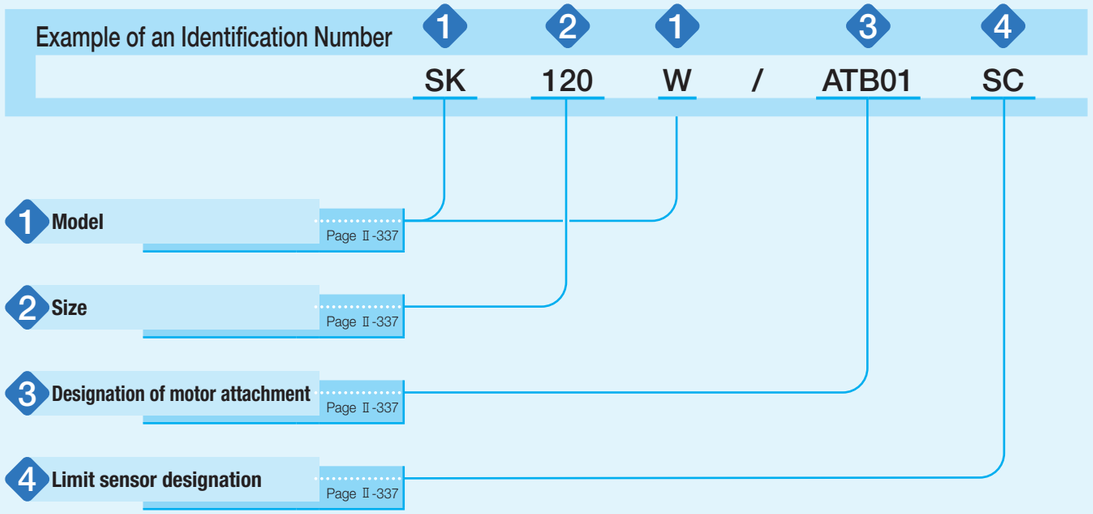
Without limit sensor



With limit sensor



Identification Number



Identification Number and Specification

1 Model

SK···W: Rotation Stage SK···W

2 Size

120: Table diameter of 115mm (120mm)
Remarks: Dimensions in parentheses are for models with a limit sensor.

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, final position adjustment should be performed by customer.

4 Limit sensor designation

No symbol: No limit sensor (built-in for origin sensor is included)
SC: With limit sensor (includes upper table)

Table 1 Application of motor attachment

Motor to be used					Flange size mm	Motor attachment symbol
Type	Manufacturer	Series	Model	Rated output W		
Five-phase stepper motor	ORIENTAL MOTOR Co., Ltd.	PK	PK525HPB(2)		□28	ATB01
Two-phase stepper motor (bi-polar)	MinebeaMitsumi Inc.	10PM-K	10PM-K406CNVA6098(1)(2)		□25	ATB02
AC servo motor	Mitsubishi Electric Corporation	J4	HG-AK0236	20	□25	ATB03

Note (1) Dedicated IKO model number. Available for purchase from NMB Sales Co., Ltd.
Note (2) Dual-axis model

Table 2 Coupling models

Motor attachment	Coupling models	Manufacturer	Coupling inertia J_C $\times 10^{-5}$kg·m^2
ATB01, ATB02	MSTS-12C-5×5	Nabeya Bi-tech Kaisha	0.022
ATB03	XGS-15C-5×5	Nabeya Bi-tech Kaisha	0.020

Specifications

Table 3 Specifications

Operating angle range (1)	degree	360
Resolution (2)	sec	1.08
Maximum number of table revolutions	min^{-1}	5
Maximum number of worm axis revolutions	min^{-1}	600
Moment rigidity	s/N·cm	0.04
Allowable load (3) (4)	N	50

Note (1) Values shown are for models without a limit sensor. When models with a limit sensor are used, adjustments can be performed to any angle within a range of up to 320 degrees.
(2) The resolution indicates a value when fraction sizes of the motor are 10,000 pulses/rev.
(3) Allowable load refers to the maximum load that can be applied without affecting functions or performance.
(4) Please position the carrying mass center of gravity within the outside diameter of the upper table or the table on page Ⅱ-340.

Table 4 Accuracy

Positioning accuracy	sec	21.6
Positioning repeatability	sec	±7.2
Lost motion	sec	32.4
Backlash	sec	32.4
Parallelism of table to mounting surface	μm	20 (40)
Radial runout of table diameter	μm	5 (15)
Deflection on table upper surface	μm	5 (25)

Remark: Values in parentheses are for models with a limit sensor.

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

The SK···W is fitted with a for origin sensor (E2S-W13B 1M produced by OMRON Corporation) as standard.
There is no precision regulation of the relative positions of the for origin sensor and the table mounting hole, precise adjustment of the return to origin position should be performed by performing offset adjustment through a higher-level controller. For models with a limit sensor, a limit sensor (E2S-W14 1M produced by OMRON Corporation) and an upper table are added. The position of the limit sensor dog can be adjusted. The operating range can be set to any position up to 320 degrees.

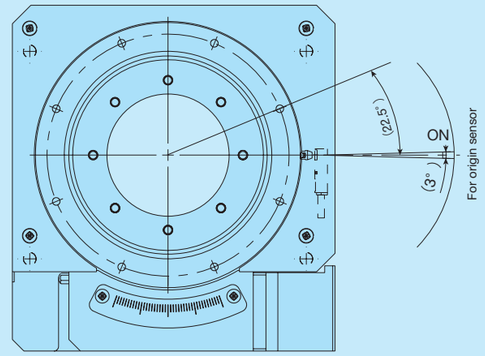
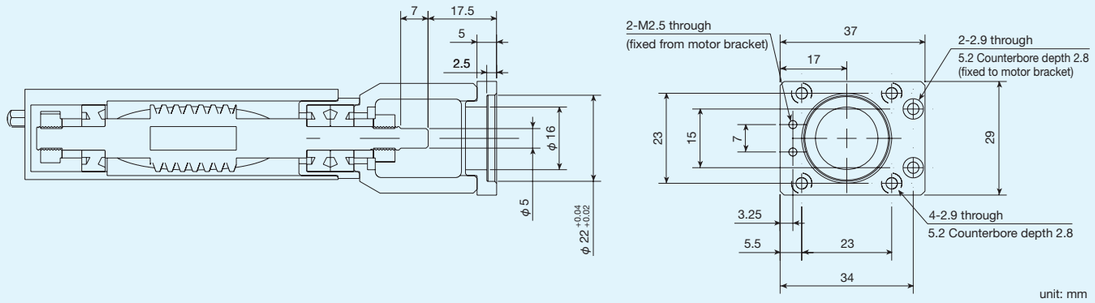


Fig.1 For origin sensor timing chart

* For models without a limit sensor, the for origin sensor dog position can be checked from the cover notch.
* For models with a limit sensor, check the position of the for origin sensor dog with the cover removed.
* The cover cannot be removed after limit sensor dog adjustment. Perform limit sensor dog adjustment after fixing the base of the product to the mounting surface and mounting the cover.

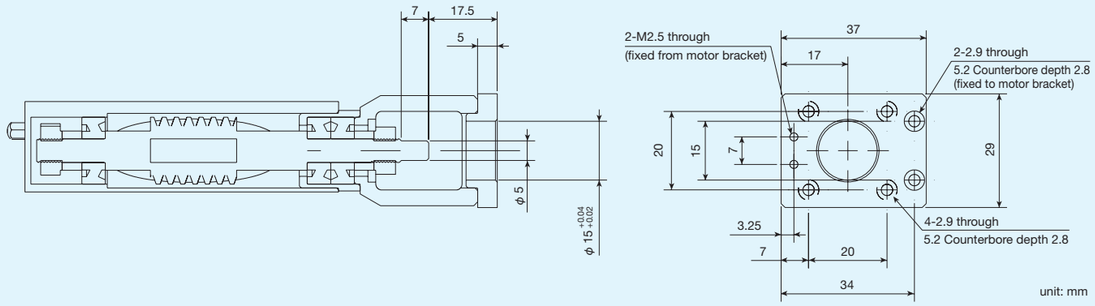
Dimensions of Motor Attachment

ATB01



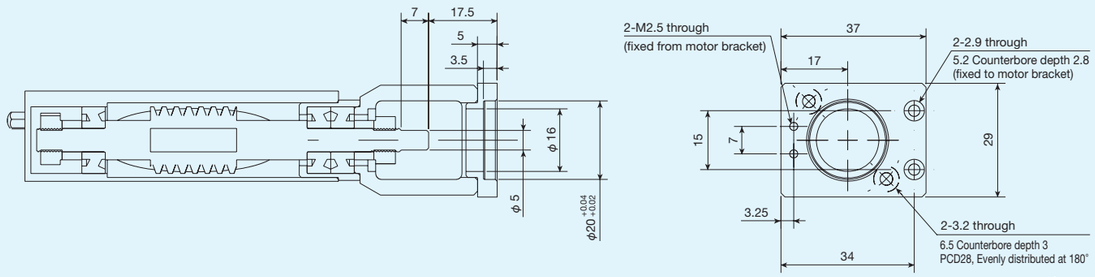
unit: mm

ATB02



unit: mm

ATB03

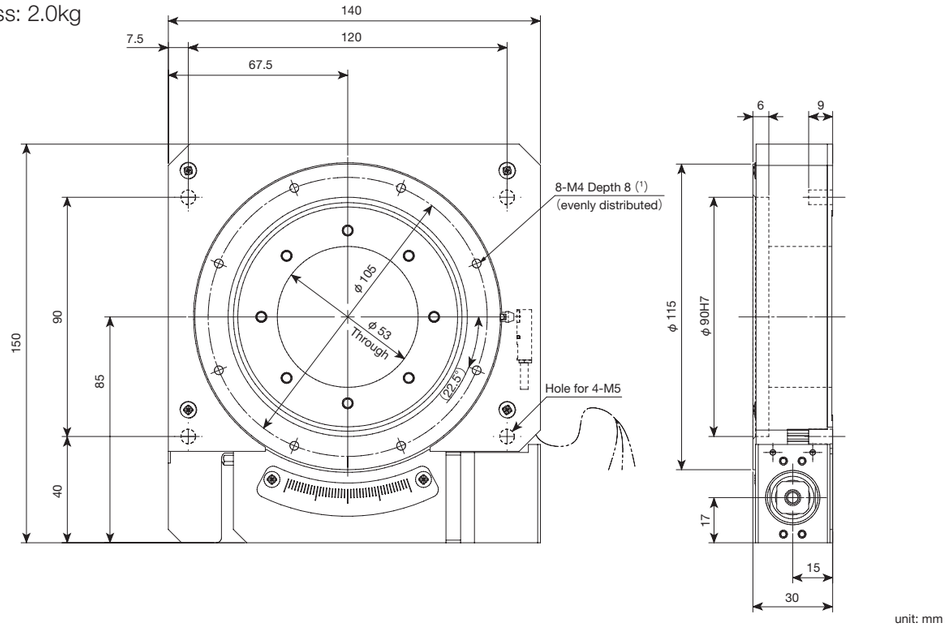


unit: mm

IKO Rotation Stage SK···W

SK120W Without limit sensor

Mass: 2.0kg

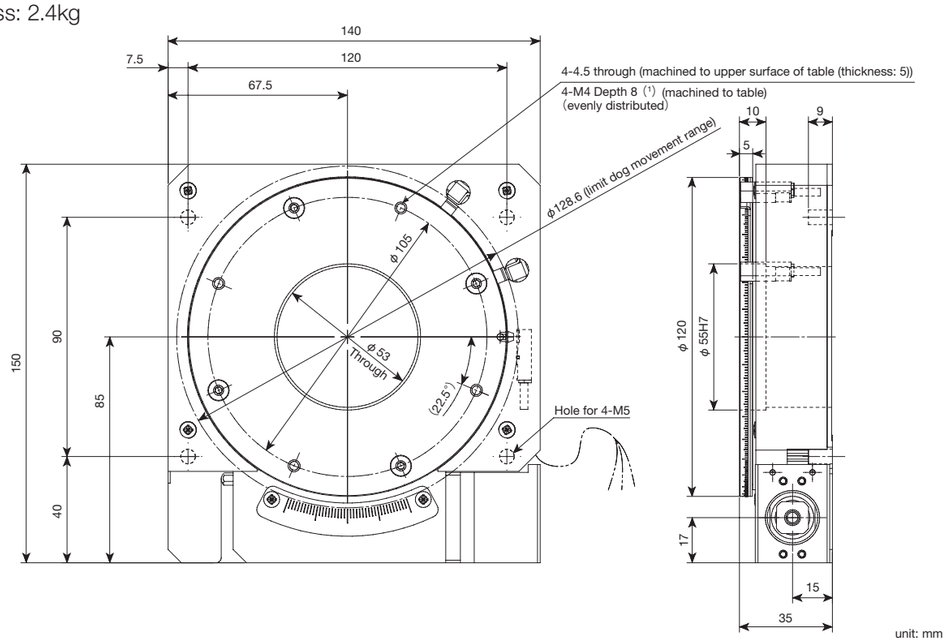


unit: mm

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.

SK120W With limit sensor/with upper table

Mass: 2.4kg



unit: mm

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.