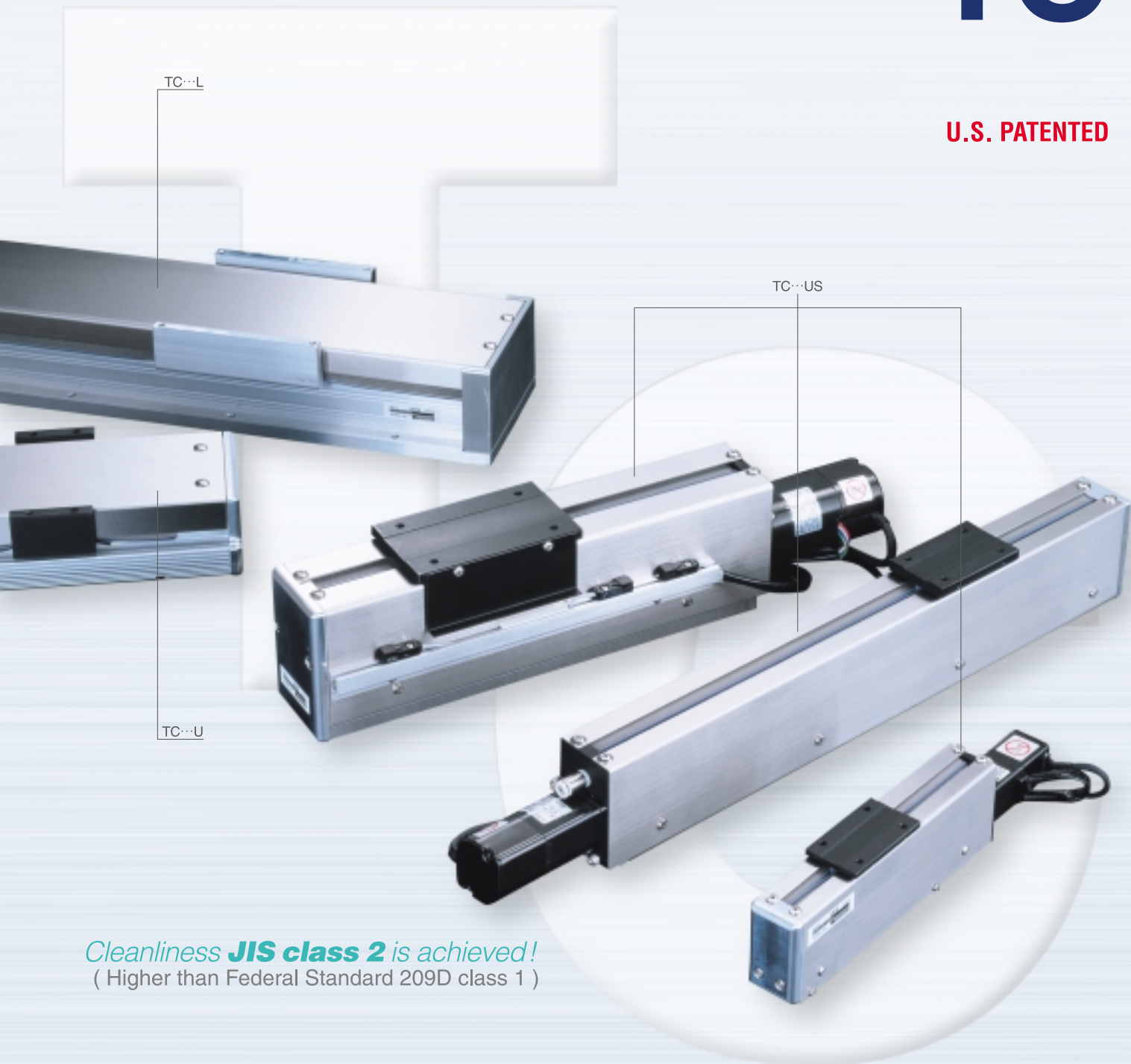


IKO

Cleanroom Precision Positioning Table

TC

U.S. PATENTED

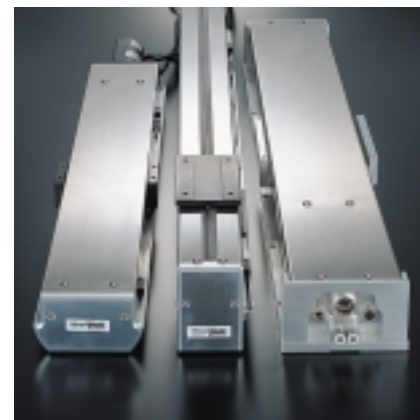


Cleanliness **JIS class 2** is achieved!
(Higher than Federal Standard 209D class 1)

CAT-57123C



TC



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Our primary source for development is listening to the customer wants and needs.

Our performance and work separate us from others by utilizing our creative thinking and original technologies.

IKD is constantly developing and implementing new and advanced technologies in pursuit of excellent motion performance and service for your cost savings.

In pursuit of clean environment...

- Most suitable for the operating conditions of cleanliness level class 2 or 3
- Three types to choose from for your application



TC

IKD Cleanroom Precision Positioning Table

Slim and Super-tight-sealing type

- Cleanliness level **JIS class 2** **TC...US** ■ A high cleanliness level has been achieved with a newly developed Super-tight-sealing structure.
■ Space saving by its slim design, suitable for placing multiple units in parallel.

Wide and High-rigidity type

- Cleanliness level **JIS class 3** **TC...U** ■ Adoption of high rigidity U-shaped track rail
■ Abundant optional specifications available

Wide and Full-covered type

- Cleanliness level **JIS class 3** **TC...L** ■ Lightweight materials and excellent corrosion resistance
■ Attainment of low noise by a full-covered structure

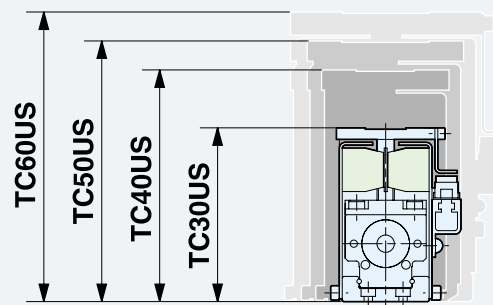
IJKO Cleanroom Precision Positioning Table TC

IJKO Cleanroom Precision Positioning Table TC is most suitable for the use in environments requiring high cleanliness, for example, semiconductor manufacturing equipment and liquid crystal related equipment. Its unique Super-tight-sealing structure ever driving part and slide table guide part perfectly prevents dust emission from the table to the surrounding environment.

IJKO Cleanroom Precision Positioning Table TC is classified into three types, namely, TC...US with a small table width, achieving a cleanliness level equivalent to class 2, TC...U with high accuracy and abundant optional specifications and TC...L with high corrosion resistance full-covered structure, providing low noise.

Various models and sizes available for different applications

Slim and Super-tight-sealing type



Sectional structure of TC...US

A cleanliness class equivalent to JIS class 2 has been achieved!

Using a I-shaped slide table has attained a high airtightness structure, providing a high cleanliness level with a small suction amount.

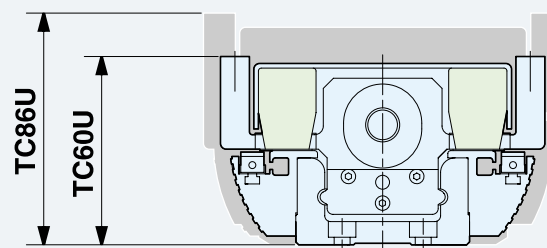
Slim table!

Its slim design does not require a large space even if multiple units are arranged in parallel.

Motor folding back specification has been newly released!

Contribution to more space saving

Wide and high-rigidity type



Sectional structure of TC...U

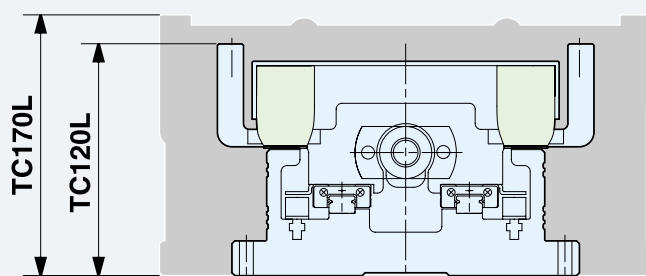
High rigidity

High rigidity U-shaped track rail Linear Way that can be used as structural member of the machine is assembled as guiding part. A multi-axis system is easily configured.

Easy maintenance

Detachable cover allows easy maintenance.

Wide and full-covered type



Sectional structure of TC...L

Full-covered structure

All components including motor are covered perfectly helping noise reduction as well as simple outside appearance.

Easy configuration in multi-axis system

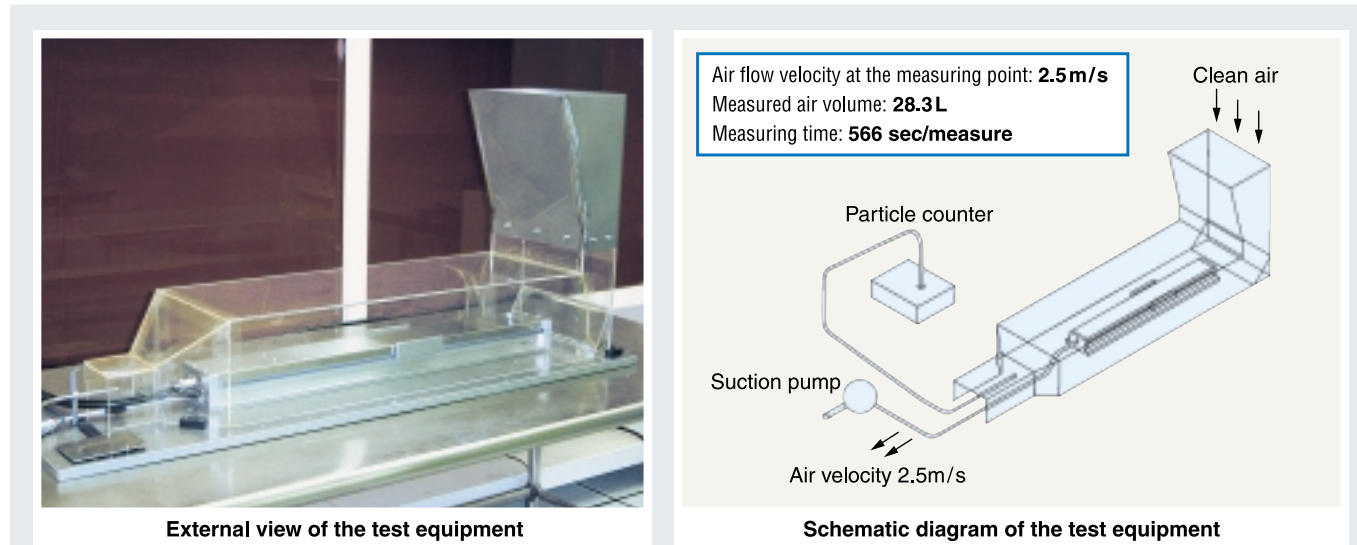
When mounting, the bridge cover does not need to be removed. Since the mounting holes of bed and table are in the same sizes, it is easy to configure multi-axis systems. This permits designing multi-axis system configurations easier.

IJKO unique Super-tight-sealing structure permits high cleanliness and abundant selections

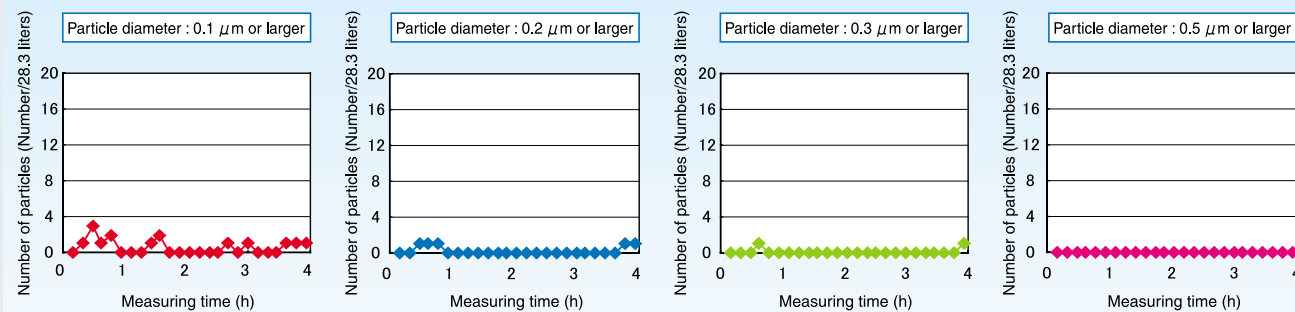
Model	Size	Stroke length (mm)						
TC...US JIS class 2	30	30	70	110	150	190	230	
	40	30	90	150	210	270		
	50	60	140	220	300	380	460	540
	60	100	200	300	400	500	600	
TC...US Motor folding back specification JIS class 2	40	30	90	150	210	270		
	50	60	140	220	300	380	460	540
	60	95	195	295	395	495	595	
TC...U JIS class 3	60	100	200	300	400	500	600	
	86	250	350	450	550	650	750	
TC...L JIS class 3	120	140	300	460				
	170	280	480	680	880			

Cleanliness Measurement

Cleanliness is the degree of air cleanliness represented by the size and number of floating particles per unit volume. In IKO, the cleanliness is measured by using the following method.



IKO performs evaluation for each particle size range.



An example of measurement result of the number of particles (TC60U)

The cleanliness is evaluated according to the following table based on JIS B 9920.

Upper limit concentration of cleanliness based on JIS standard (Number of particles/m³)

Particle diameter	Cleanliness					
	JIS Class 1	JIS Class 2	JIS Class 3 (Federal Standard 209D Class 1)	JIS Class 4 (Federal Standard 209D Class 10)	JIS Class 5 (Federal Standard 209D Class 100)	JIS Class 6 (Federal Standard 209D Class 1000)
0.1 μm or larger	10	100	1 000	10 000	100 000	1 000 000
0.2 μm or larger	2	24	237	2 370	23 700	237 000
0.3 μm or larger		10	102	1 020	10 200	102 000
0.5 μm or larger		4	35	352	3 520	35 200

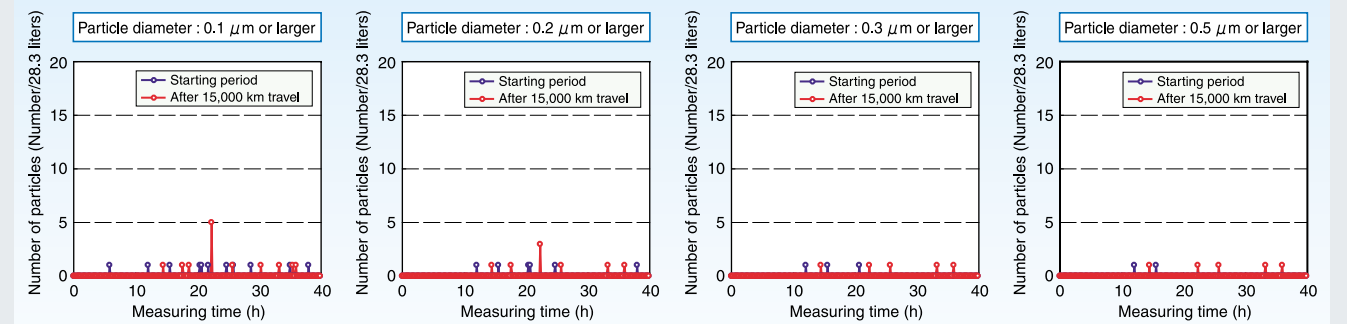
Remark: The classifications in () are Federal Standard 209D.

Data of measured Cleanliness

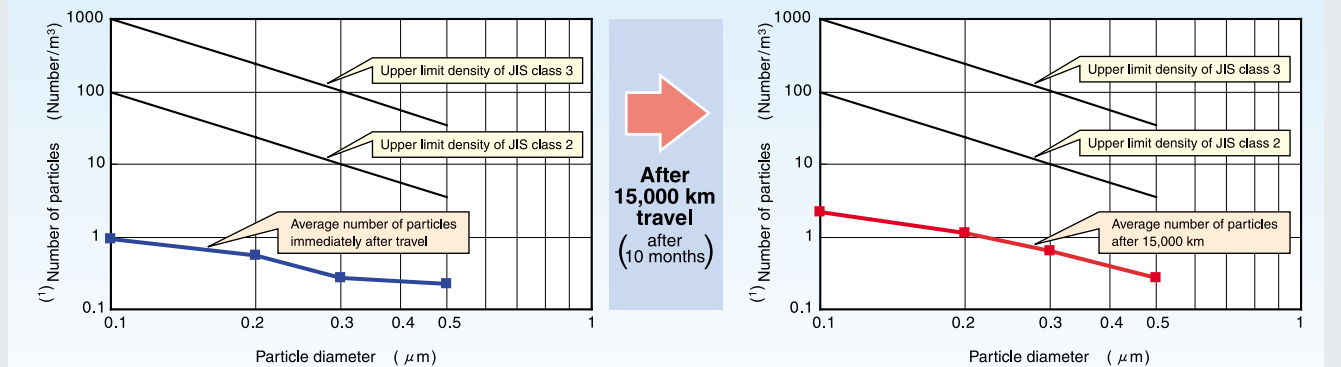
Example of measurement data

Model No. : TC60US690A/A1G20 Test conditions Moving speed : 1000 mm/s
 Stroke length : 500 mm
 Internal suction amount : 20 NL/min

<Dust generation amount immediately after start and after 15,000 km of travel>



<Cleanliness evaluation result>



Note (1): The ordinate axis indicates the number of particles that are equal to or larger than the diameter of abscissas.

Cleanliness evaluation result of TC series

Model	Suction amount NL / min	Stroke length mm	Moving speed of slide table mm / s	Cleanliness (JIS B 9920)
TC30US	20	230	250	Class 2
TC40US (1)	20	270	400	Class 2
TC50US (1)	20	460	500	Class 2
TC60US (1)	20	500	1 000	Class 2 (2)
TC60U	30	500	500	Class 3
TC86U	30	650	920	Class 3
TC120L	30	460	500	Class 3
TC170L	30	480	1 000	Class 3

Note (1) : Including motor folding back specification

(2) : For motor folding back specification of TU60US, it becomes cleanliness JIS class 2 when the suction amount is 30NL/min.

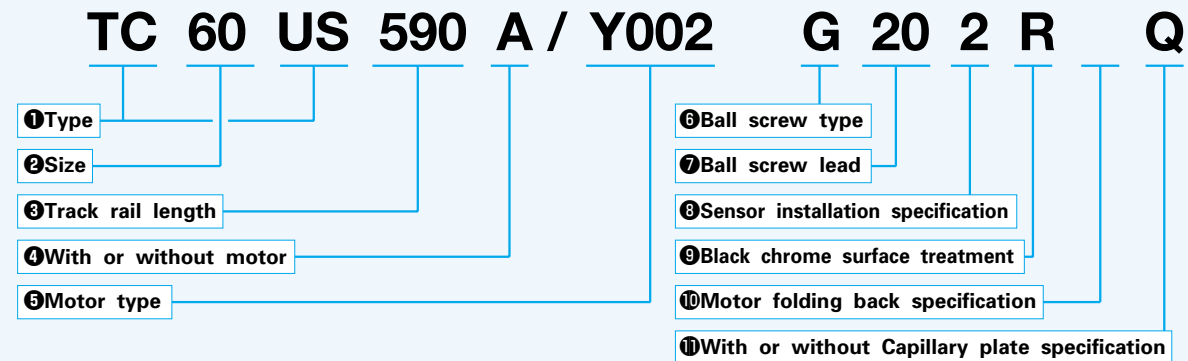
When the moving speed of slide table is less than 500mm/s, it is cleanliness JIS class 2 with 20NL/min.

Remark 1 : Cleanliness has been evaluated based on JIS B 9920 and with the under condition of assume that measuring equipment is arranged in a clean room.

2 : Measured data may vary depend on the changes in measuring environments.

Identification Number

Example of identification number of TC...US and TC...U



1 Type	TC...US : Cleanroom Precision Positioning Table (Super-tight-sealing type) TC...U : Cleanroom Precision Positioning Table (Wide and High-rigidity type)
2 Size	30 : Track rail width 30 mm 60 : Track rail width 60 mm 40 : Track rail width 40 mm 86 : Track rail width 86 mm 50 : Track rail width 50 mm
3 Track rail length	Track rail lengths shown in Table 1 can be selected. The track rail length is indicated in mm.

Table 1.1 Track rail length and stroke length

unit : mm

Model	Capillary plate specification	Track rail length (stroke length)						
TC30US ⁽¹⁾	Without Capillary plates	140(30)	180(70)	220(110)	260(150)	300(190)	340(230)	—
	With Capillary plates	—	240(80)	300(140)	360(200)	420(260)	—	—
TC40US	Without Capillary plates	220(60)	300(140)	380(220)	460(300)	540(380)	620(460)	700(540)
	With Capillary plates	220(45)	300(125)	380(205)	460(285)	540(365)	620(445)	700(525)
TC50US	Without Capillary plates	290(100)	390(200)	490(300)	590(400)	690(500)	790(600)	—
	With Capillary plates	290(85)	390(185)	490(285)	590(385)	690(485)	790(585)	—
TC60US	Without Capillary plates	290(95)	390(195)	490(295)	590(395)	690(495)	790(595)	—
	With Capillary plates	290(70)	390(170)	490(270)	590(370)	690(470)	790(570)	—
TC60U	Without Capillary plates	290(100)	390(200)	490(300)	590(400)	690(500)	790(600)	—
	With Capillary plates	290(85)	390(185)	490(285)	590(385)	690(485)	790(585)	—
TC86U	Without Capillary plates	290(95)	390(195)	490(295)	590(395)	690(495)	790(595)	—
	With Capillary plates	290(70)	390(170)	490(270)	590(370)	690(470)	790(570)	—

Note⁽¹⁾ : With Capillary plate specification is not available for TC30US.

Remark : For motor folding back specification, see Table 1.2.

Table 1.2 Track rail length and stroke length (Motor folding back specification)

unit : mm

Model	Capillary plate specification	Track rail length (stroke length)						
TC40US	Without Capillary plates	140(30)	200(90)	260(150)	320(210)	380(270)	—	—
	With Capillary plates	—	200(80)	260(140)	320(200)	380(260)	—	—
TC50US	Without Capillary plates	180(60)	260(140)	340(220)	420(300)	500(380)	580(460)	660(540)
	With Capillary plates	180(45)	260(125)	340(205)	420(285)	500(365)	580(445)	660(525)
TC60US	Without Capillary plates	244(95)	344(195)	444(295)	544(395)	644(495)	744(595)	—
	With Capillary plates	244(80)	344(180)	444(280)	544(380)	644(480)	744(580)	—

4 With or without motor	No symbol : Without motor A : With motor
--------------------------------	---

When the customer prepares a motor, specify "without motor".

5 Motor type	Specify a motor code indicated in Table 16 to 19 on page 19 to 22.
---------------------	--

When "without motor" (no symbol) is selected in 4 With or without motor, the motor attachment and coupling (pulley)⁽¹⁾ fit for each motor shown in Table 16 to 19 will be supplied. If the motor attachment and coupling are not required, specify "no symbol"⁽²⁾.

Note⁽¹⁾ : Pulley is applicable to motor folding back specification

⁽²⁾ : Not applicable to TC...US.

6 Ball screw type	G : Ground ball screw
--------------------------	-----------------------

7 Ball screw lead	Specify a ball screw lead shown in Table 2. The ball screw lead is indicated in mm.
--------------------------	---

Table 2 Applicable ball screw lead

Model	Ball screw lead mm				
	4	5	8	10	20
TC30US	—	○	—	—	—
TC40US	○	—	○	—	—
TC50US	—	○	—	○	—
TC60US	TC60U	—	○	—	○
	TC86U	—	—	—	○

8 Sensor installation specification	0 : Without sensor and without sensor rail ⁽¹⁾ 2 : Two sensors (limit sensors) 3 : Three sensors (limit and pre-origin sensors) Recommendable for the AC servo motor specification 4 : Four sensors (limit, pre-origin and origin sensors) Recommendable for the stepping motor specification 9 : Without sensor and with sensor rails
--	---

The sensor specification indicates the number of sensors and whether a rail to fixing the sensors is available or not.

Note⁽¹⁾ : Not applicable to TC60U and TU86U

Remark : TC60U and TC86U are provided with a sensor rail.

9 Black chrome surface treatment	No symbol : Black chrome surface treatment is performed on the surface of the slide table. R : Black chrome surface treatment R L : Black chrome surface treatment L
---	--

A black permeable film is formed on the surface to increase corrosion resistance.

Black chrome surface treatment R : Black chrome surface treatment is performed on the surfaces of the slide table and track rail.

Black chrome surface treatment L : In addition to black chrome surface treatment R, black chrome surface treatment is performed on the ball screw shaft and nut.

10 Motor folding back specification	No symbol : Without motor folding back S ⁽¹⁾ : Downward motor folding back M ⁽¹⁾ : Motor folding back to right H ⁽¹⁾ : Motor folding back to left
--	---

Note⁽¹⁾ : Applicable to TU40US, TU50US and TU60US

11 With or without Capillary plate	No symbol : Without Capillary plates Q : Table with Capillary plates ⁽¹⁾
---	--

The Capillary plates are assembled to the end faces of the slide table and ball screw nut.

The Capillary plate is a lubricating part in which a large quantity of lubrication oil is impregnated in continuously porous sintered resin. Lubrication oil impregnated in the Capillary plate is continuously fed to the raceways in a proper amount, when the Capillary plate travels along the raceways of track rail and ball screw in uniform contact with the raceways. Re-lubrication interval can be made longer, and maintenance man-hours can be reduced. The Capillary plate is suitable for use at places where re-lubrication is difficult. The stroke length of slide table with Capillary plates is changed shorter.

Note⁽¹⁾ : Not applicable to TU30US

Accuracy and Maximum Speed

Accuracy of Cleanroom Precision Positioning Table TC is shown in Table 5 and 6 and its maximum speed is shown in Table 7 to 9.

The maximum speeds shown in these tables are applicable when a standard motor is used. The actual maximum speed must be determined by examining the operating pattern considering the motor type used, load conditions and etc.

Table 5 Accuracy of TC··US

Track rail length mm		Repeatability mm	Positioning accuracy ⁽¹⁾ mm	Parallelism in table operation B mm	Backlash ⁽¹⁾ mm
Over	Incl.				
—	400	±0.002 (±0.020)	0.025	0.010	0.003
400	500		0.030	0.012	
500	600			0.035	
600	700				
700	800				

Note⁽¹⁾ : Not applicable to motor folding back specification.

Remark 1 : The value in () is applicable to table of motor folding back specification.

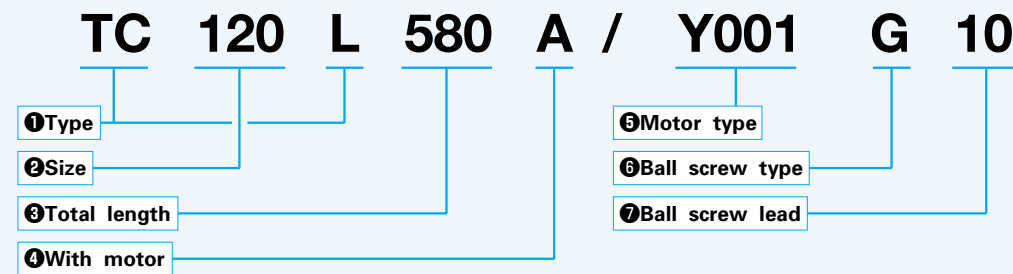
2 : Accuracy of motor folding back specification is given when the tension of timing belt is properly adjusted.

Table 6 Accuracy of TC··U and TC··L

Model	Track rail length or total length ⁽¹⁾ mm	Repeatability mm	Positioning accuracy mm	Parallelism in table operation B mm	Backlash mm
TC··U	290	±0.002	0.020	0.008	0.003
	390			0.010	
	490				
	590		0.025		
	690				
	790		0.030	0.014	
	890				
	990				
TC120L	580	±0.002	0.020	0.030	0.003
	740		0.030	0.040	
	900		0.045	0.050	
TC170L	820	±0.002	0.025	0.050	0.003
	1020		0.030	0.060	
	1220		0.040	0.070	
	1420		0.050	0.080	

Note⁽¹⁾ : For TC··U, the values show the track rail lengths. For TC··L, the values show the whole lengths.

Example of identification number of TC··L



1 Type	TC··L : Cleanroom Precision Positioning Table (Wide and Full-covered type)
2 Size	120 : Bed width 120 mm 170 : Bed width 170 mm
3 Total length	Total length shown in Table 3 can be selected. The total length is indicated in mm.

Table 3 Total length and stroke length

TC120L		TC170L	
Total length mm	Stroke length mm	Total length mm	Stroke length mm
580	140	820	280
740	300	1020	480
900	460	1220	680
—	—	1420	880

4 With motor	A : With motor
5 Motor type	Specify a motor code indicated in Table 16 to 19 on page 19 to 22.
6 Ball screw type	G : Ground ball screw
7 Ball screw lead	Ball screw leads are shown in Table 4. The leads are indicated in mm.

Table 4 Applicable ball screw leads

Model	Ball screw lead
TC120L	10 : 10mm
TC170L	20 : 20mm

Allowable Moment and Maximum Load Mass

Table 7 Maximum speed of TC···US

Motor type	Type and size	Track rail length mm	Motor speed min ⁻¹	Maximum speed mm/s				
				Ball screw lead mm				
				4	5	8	10	20
AC servo motor	TC30US	340 or less	3000	—	250	—	—	—
	TC40US	420 or less	3000	200	—	400	—	—
	TC50US	620 or less	3000	—	250	—	500	—
	TC60US	690 or less	3000	—	250	—	500	1000
790		2910	—	243	—	485	970	
Stepping motor	TC30US	340 or less	1800	—	150	—	—	—
	TC40US	420 or less	1800	120	—	240	—	—
	TC50US	620 or less	1800	—	150	—	300	—
	TC60US	790 or less	1800	—	150	—	300	600

Table 8 Maximum speed of TC···U

Motor type	Type and size	Track rail length mm	Motor speed min ⁻¹	Maximum speed mm/s		
				Ball screw lead mm		
				5	10	20
AC servo motor	TC60U	690 or less	3000	250	500	1000
		790	2910	243	485	970
	TC86U	790 or less	3000	—	500	1000
		890	2760	—	460	920
Stepping motor	TC60U	990	2180	—	363	727
		790 or less	1800	150	300	600
	TC86U	990 or less	1800	—	300	600

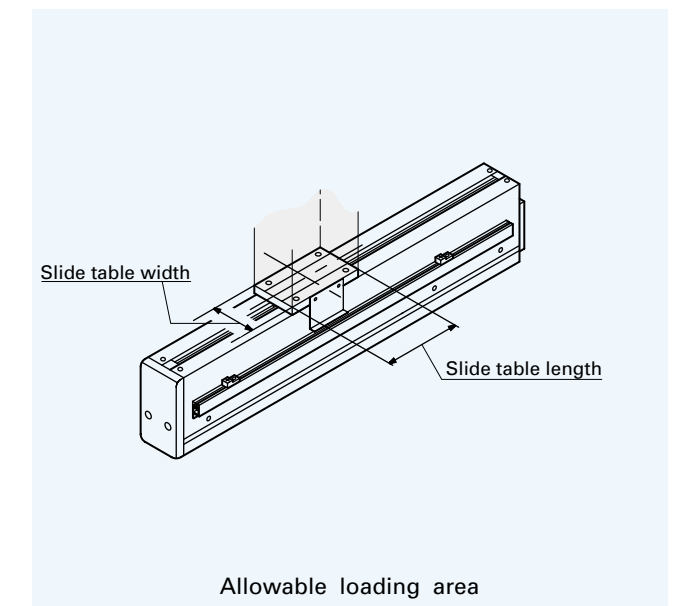
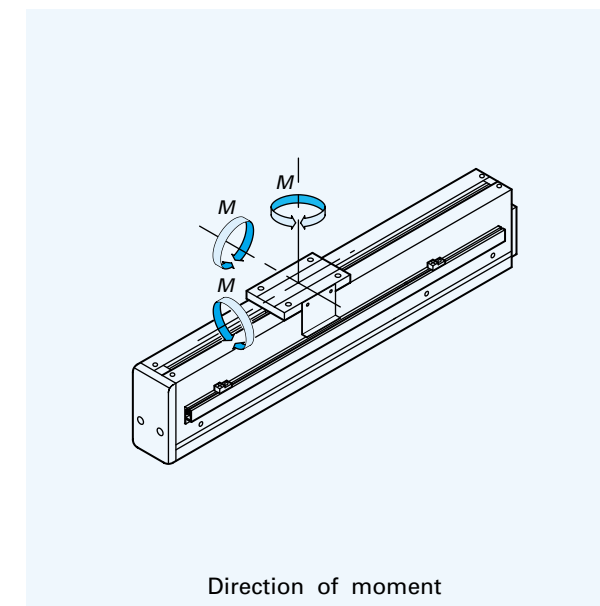
Table 9 Maximum speed of TC···L

Motor type	Type and size	Total length mm	Motor speed min ⁻¹	Maximum speed mm/s	
				Ball screw lead mm	
				10	20
AC servo motor	TC120L	580	3000	500	—
		740			
		900			
	TC170L	820	3000	—	1000
		1020			
		1220			
		1420	1460		487

The allowable load for Cleanroom Precision Positioning Table TC may depend on the bending strength and shear strength of the slide table rather than the load rating as the linear motion guides of the slide table guide. Therefore, the load that reaches a certain displacement value when a load is applied to the slide table is defined as the allowable moment or allowable load mass.

Table 10 Allowable moment and Maximum load mass

Model	Allowable moment M N · m	Maximum load mass kg
TC 30US	1.5	6
TC 40US	2.0	9
TC 50US	3.9	14
TC 60US	6.1	18
TC 60U	6.9	25
TC 86U	33.5	50
TC120L	8.9	15
TC170L	21.9	30



Sensor Specification

Table 11 Table inertia and starting torque

Model	Track rail length or whole length ⁽¹⁾ mm	Table inertia J_T ⁽²⁾ $\times 10^{-5} \text{kg} \cdot \text{m}^2$					Starting torque T_0 ⁽³⁾ N · m
		Ball screw lead mm					
		4	5	8	10	20	
TC 30US	140	—	0.064	—	—	—	0.03
	180	—	0.076	—	—	—	
	220	—	0.089	—	—	—	
	260	—	0.10	—	—	—	
	300	—	0.11	—	—	—	
	340	—	0.13	—	—	—	
TC 40US	180 (140)	0.070	—	0.13	—	—	0.07
	240 (200)	0.089	—	0.15	—	—	
	300 (260)	0.11	—	0.17	—	—	
	360 (320)	0.13	—	0.19	—	—	
	420 (380)	0.15	—	0.21	—	—	
TC 50US	220 (180)	—	0.20	—	0.36	—	0.09
	300 (260)	—	0.27	—	0.42	—	
	380 (340)	—	0.33	—	0.49	—	
	460 (420)	—	0.39	—	0.55	—	
	540 (500)	—	0.45	—	0.61	—	
	620 (580)	—	0.51	—	0.67	—	
	700 (660)	—	0.57	—	0.73	—	
TC 60US	290 (244)	—	0.50	—	0.76	1.8	0.13
	390 (344)	—	0.66	—	0.92	2.0	
	490 (444)	—	0.82	—	1.1	2.1	
	590 (544)	—	0.98	—	1.2	2.3	
	690 (644)	—	1.1	—	1.4	2.4	
	790 (744)	—	1.3	—	1.6	2.6	
TC 60U	290	—	0.49	—	0.69	1.5	0.13
	390	—	0.65	—	0.85	1.7	
	490	—	0.80	—	1.0	1.8	
	590	—	0.96	—	1.2	2.0	
	690	—	1.1	—	1.3	2.2	
	790	—	1.3	—	1.5	2.3	
TC 86U	490	—	—	—	2.4	4.3	0.21
	590	—	—	—	2.8	4.7	
	690	—	—	—	3.2	5.0	
	790	—	—	—	3.6	5.4	
	890	—	—	—	4.0	5.8	
	990	—	—	—	4.3	6.2	
TC120L	580	—	—	—	0.49	—	0.07
	740	—	—	—	0.61	—	
	900	—	—	—	0.73	—	
TC170L	820	—	—	—	—	1.6	0.15
	1020	—	—	—	—	2.0	
	1220	—	—	—	—	2.3	
	1420	—	—	—	—	2.7	

Note⁽¹⁾ : For TC···US and TC···U, the value indicates the track rail length. For TC···L, the value indicates the whole length.

⁽²⁾ : In case of motor folding back specification, values in below must be added.

TC40US : $0.28 \times 10^{-5} \text{kg} \cdot \text{m}^2$ TC50US : $0.28 \times 10^{-5} \text{kg} \cdot \text{m}^2$ TC60US : $1.5 \times 10^{-5} \text{kg} \cdot \text{m}^2$

⁽³⁾ : In case of motor folding back, values in the table must be approximately doubled.

Remark : The values in () are applied to table of motor folding back specification.

The sensor specifications are shown in Table 12 and the specifications for sensor connectors are shown in Table 13. For Precision Positioning Table TC···U, the number of sensors can be specified. If two sensors (limit sensors) or three sensors (limit sensors and pre-origin sensor) are specified in the identification number, wirings for those sensors that are not specified will not be provided. Table 14 and 15 show timing charts for the case where the number of sensors is specified to four. TC···L is provided with three sensors (limit sensors and pre-origin sensor) as the standard specification.

Table 12 Specifications of sensors

Item	Type	Limit, pre-origin	Origin
Type		Proximity sensor	
Power supply voltage		DC12~24V $\pm 10\%$	
Current consumption		15 mA or less	
Output		Open collector Maximum current : 100 mA Applied voltage : DC 30 V or less Residual voltage : 1.0 V or less at 100 mA in-flow current 0.4 V or less at 16 mA in-flow current.	
Output operation		When approaching : OFF	When approaching : ON
Operation indicator		LED (red)	
Circuit diagram			

Table 13 Specifications of sensor connectors

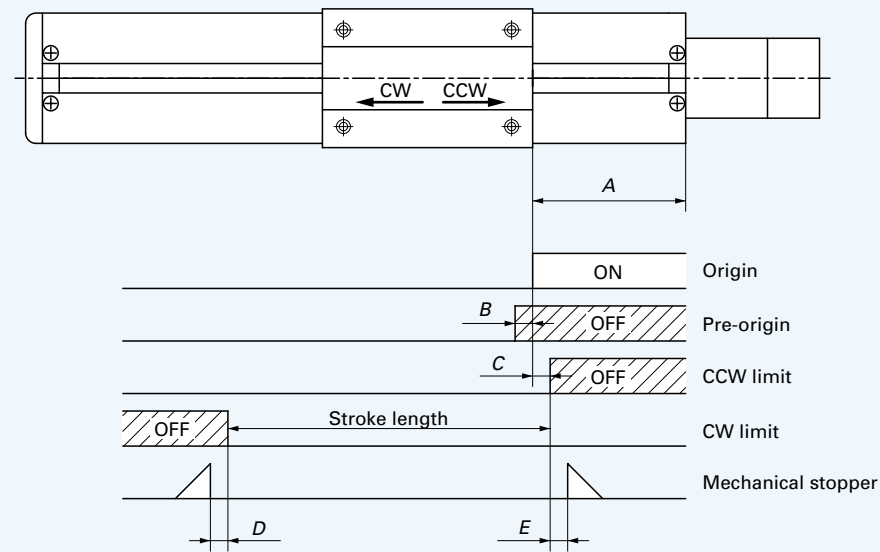
Type	Sensor-side connector type	Opposite-side connector type	Specification
TC···US TC···U	Cap housing 172160-1	Plug housing 172168-1	Pin Signal name No.1 : Origin 2 : Pre-origin 3 : CW limit 4 : CCW limit 5 : Power input 6 : GND
	Contact 170365-1	Contact 170363-1	
TC···L	HR10A-10R-10S	HR10A-10P-10P	

Remark 1. : The connector for TC···US or TC···U is manufactured by Tyco Electronics AMP K.K. The connector for TC···L is manufactured by Hirose Electric Co., Ltd.

2. : In case AC servo motor, use the C or Z phase of the encoder for origin signal.

3. : Prepare the opposite-side connector by customer.

Table 14 Timing chart of TC...US and TC...U sensors



unit : mm

Model	Ball screw lead	A				B	C	D	E
		Without motor folding back		With motor folding back					
		Without Capillary plate	With Capillary plate	Without Capillary plate	With Capillary plate				
TC30US ⁽¹⁾	5	(74)	(74)	—	—	3	10	10	8
TC40US	4	(81)	(91)	(33)	(43)	2	10	10 ⁽²⁾	8
	8					6			
TC50US	5	(76)	(91)	(29)	(44)	3	10	8	8
	10					7			
TC60US	5	(87)	(87)	(38)	(38)	3	20	9	8
	10					7			
	20	(87)	(102)	(38)	(53)	14			
TC60U	5	103	103	—	—	3	20	9.6	7
	10					7			
	20	103	118	—	—	14			
TC86U	10	108	108	—	—	7	20	13	11
	20					14		12	

Note⁽¹⁾ : For TC30US, a type with Capillary plates is not available.

⁽²⁾ : In case of table with Capillary plate, the value changes to 5.

Remark : Adjust the sensor timing of TC...US on the customer side after assembling the cover.

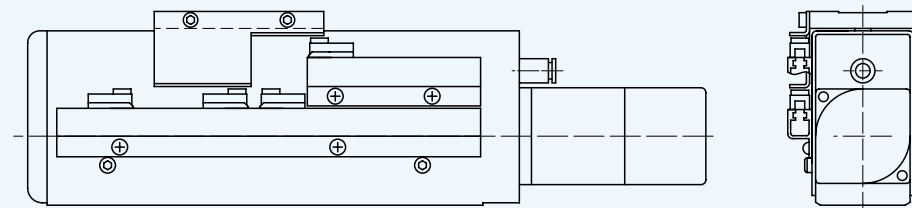
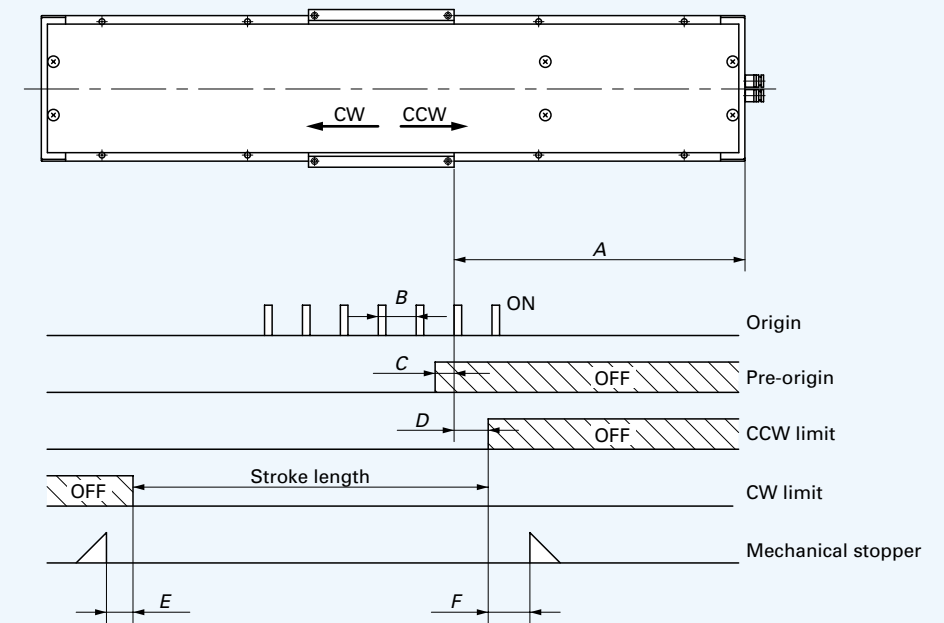


Fig. 1 Sensor arrangement example in four-sensors specification

Table 15 Timing chart of TC...L sensors



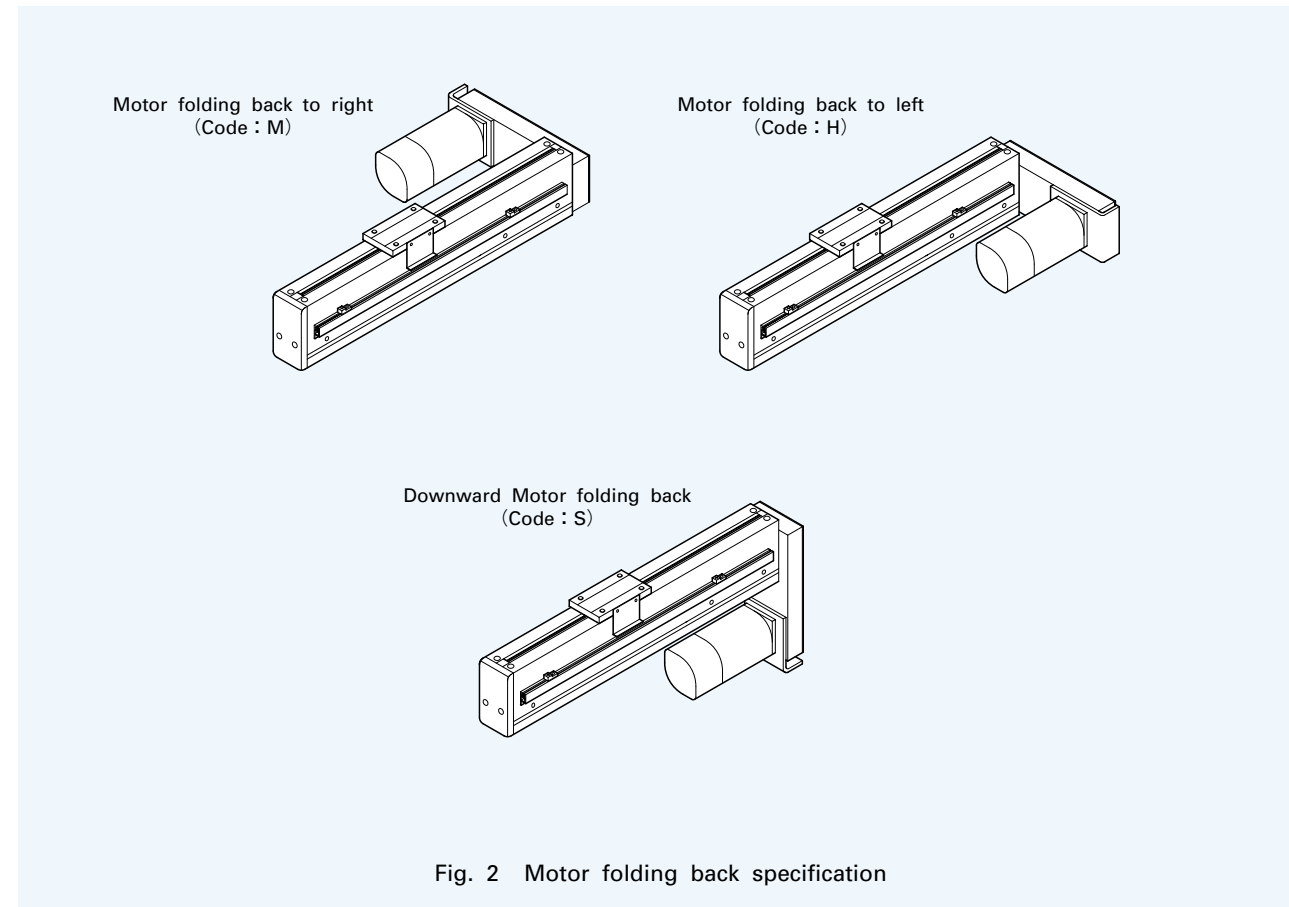
unit : mm

Model	A	B	C	D	E	F
TC120L	260	10	7	10	12	7
TC170L	300	20	14	10	11	7

Motor Folding Back Specification

The motor folding back specification is available for IKO Cleanroom Precision Positioning Table TC...US. Space can be saved by folding back the motor and reducing the total length of the table. For the motor folding back specification, see the dimension tables from page 26.

Note that the track rail lengths of motor folding back specification are different from these of tables without motor folding back.



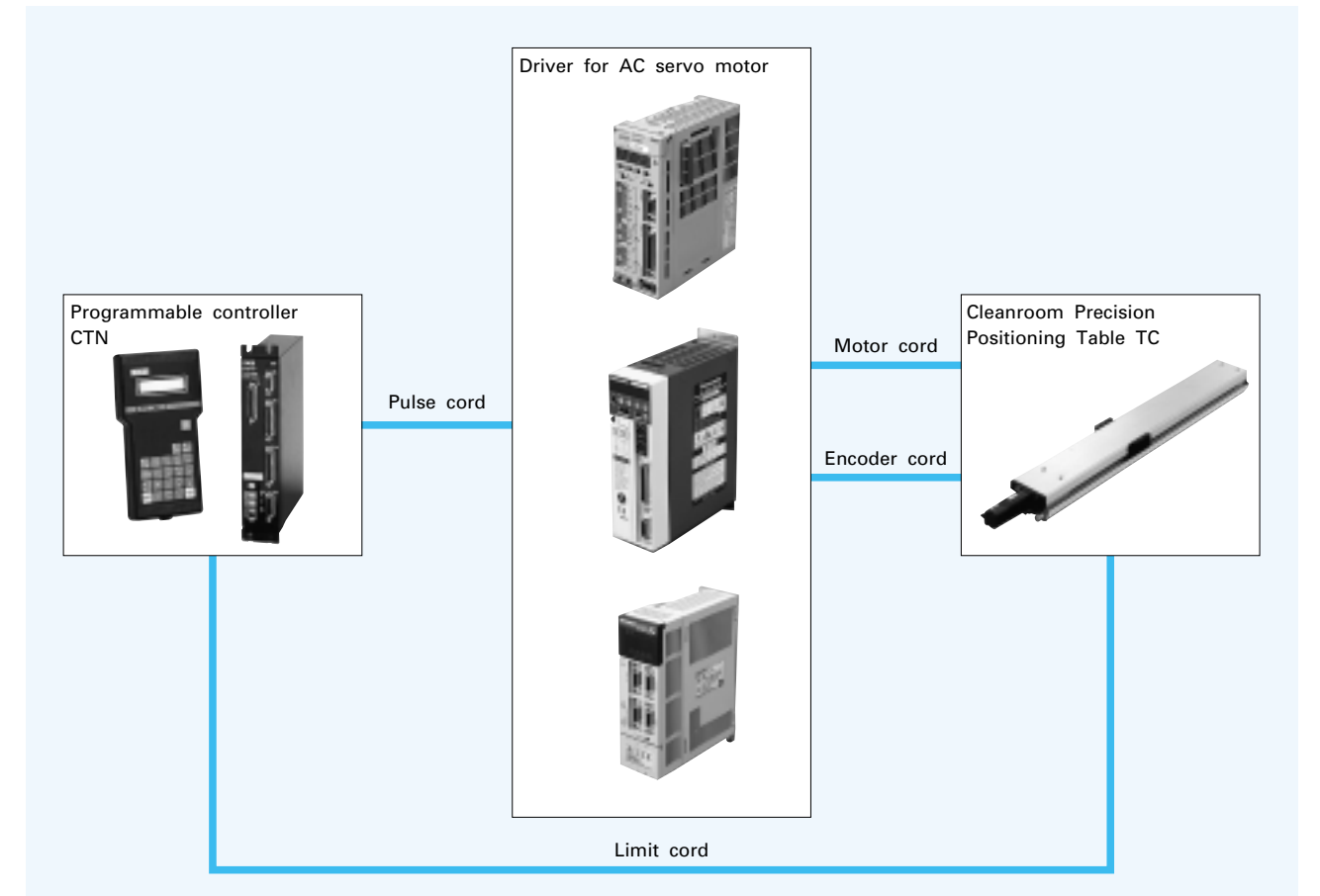
Electric Devices

System configuration

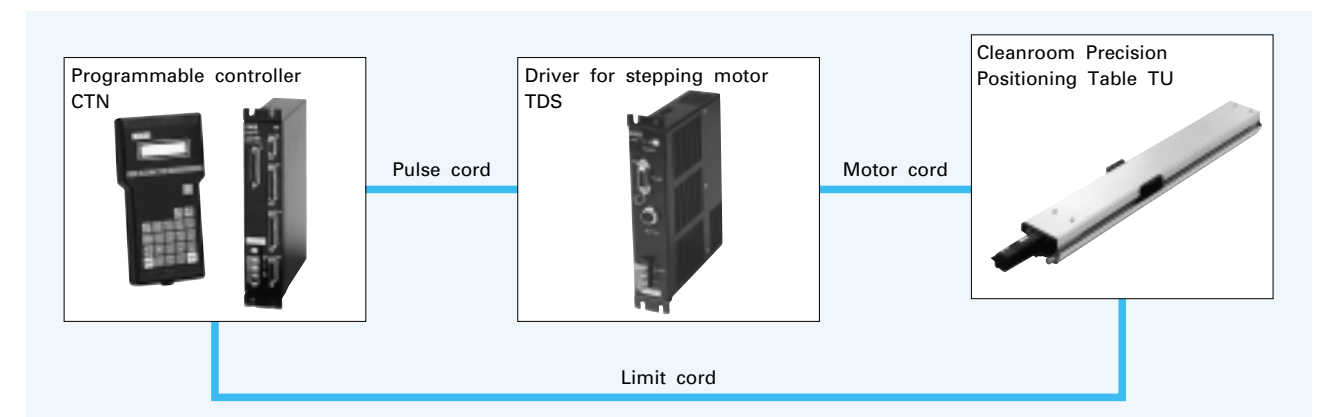
The electrical devices made by each motor manufacturers are applied for the AC servo motor. The electrical device designed for exclusive use is prepared for the stepping motor. A well-balanced system can be constructed by using these devices with the table.

Table 16 to 18 show system configurations with AC servo motor and Table 19 shows system configurations with stepping motor.

System configuration of the table with AC servo motor (configuration with a driver and a programmable controller)



System configuration of the table with stepping motor



The system configurations for AC servo motor and driver that are manufactured by Yaskawa Electric Corporation are shown in Table 16.1 and Table 16.2.

Table 16.1 Models of motor, driver, motor cord and encoder cord

Model	With or without brake	Motor code	Model number of motor	Dimension W×L _M	Model number of driver	Motor cord	Encoder cord	
TC 30US	Without brake	AL6	SGMM-A2C312	25× 64	SGDF-A2CP	TAE20J6-AM□□ (TAE20J5-AM□□) Max. length is 5m	TAE20K0-EC□□ (TAE20J9-EC□□) Max. length is 5m	
TC 40US		Y001	SGMAH-A5AAA21	40× 77	SGDH-A5AE	TAE20G2-AM□□ (TAE20G1-AM□□)	TAE20G6-EC□□ (TAE20G5-EC□□)	
TC 50US		Y002	SGMAH-01AAA21	40× 94.5	SGDH-01AE			
TC 60US		Y003	SGMAH-02AAA21	60× 96.5	SGDH-02AE			
TC 86U		With brake ⁽¹⁾	Y001	SGMAH-A5AAA21	40× 77	SGDH-A5AE	TAE20K9-AM□□ (TAE20L0-AM□□)	TAE20L3-EC□□ (TAE20L4-EC□□)
TC120L			Y003	SGMAH-02AAA21	60× 96.5	SGDH-02AE	TAE20J8-AMB□□ (TAE20J7-AMB□□) Max. length is 5m	TAE20K0-EC□□ (TAE20J9-EC□□) Max. length is 5m
TC170L			Y006	SGMAH-A5AAA2C	40×108.5	SGDH-A5AE	TAE20G4-AMB□□ (TAE20G3-AMB□□)	TAE20G6-EC□□ (TAE20G5-EC□□)
TC 30US	Y007		SGMAH-01AAA2C	40×135	SGDH-01AE	TAE20L1-AMB□□ (TAE20L2-AMB□□)	TAE20L3-EC□□ (TAE20L4-EC□□)	
TC 40US	Y008	SGMAH-02AAA2C	60×136	SGDH-02AE				
TC 50US	Y006	SGMAH-A5AAA2C	40×108.5	SGDH-A5AE				
TC 60US	Y008	SGMAH-02AAA2C	60×136	SGDH-02AE				
TC 86U								
TC120L								
TC170L								

Note⁽¹⁾ : In case of with brake type, the power supply unit for brake release is required.

Remark 1 : The cords in () have high bending resistance.

2 : The length of motor cord or encoder cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

※Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE20J6-AM03)

3 : In the motor mounted in TC···US or TC···U, the clearance is sealed with silicone resin to reduce dust generation from the inside of the motor.

Table 16.2 Models of programmable controller, teaching box and pulse·limit cord

Programmable controller	Teaching box	Pulse cord	Limit cord
CTN120G ⁽¹⁾	TAE1005-TB	TAE10B8-LD□□ (TAE10B9-LD□□)	
CTN130G	TAE1016-TB	TAE10C4-PC	(TAE1042-LC□□)
CTN140G	TAE1025-TB	TAE10C7-PC	TAE1027-LCA□□ (TAE1083-RLCA□□)
CTN150S	TAE1048-TB	TAE10D0-LD□□ (TAE10D1-LD□□)	

Note⁽¹⁾ : The origin sensor is required.

Remark 1 : The cords in () have high bending resistance.

2 : The length of limit cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

※Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE10B8-LD03)

3 : The length of pulse cord is 1.5m.

The system configurations for AC servo motor and driver that are manufactured by Matsushita Electric Industrial Co., Ltd. are shown in Table 17.1 and Table 17.2.

Table 17.1 Models of motor, driver, motor cord and encoder cord

Model	With or without brake	Motor code	Model number of motor	Dimension W×L _M	Model number of driver	Motor cord	Encoder cord	
TC 40US	Without brake	P001	MSMA5AZA1A	38× 73	MSDA5A5A1A	TAE20G8-AM□□ (TAE20G7-AM□□)	TAE20H2-EC□□ (TAE20H1-EC□□)	
TC 50US		P002	MSMA012A1A	38×103	MSDA015A1A			
TC 60US		P003	MSMA022A1A	60× 94	MSDA023A1A			
TC 86U		With brake ⁽¹⁾	P001	MSMA5AZA1A	38× 73	MSDA5A5A1A	TAE20P3-AM□□ (TAE20P4-AM□□)	TAE20P7-EC□□ (TAE20P8-EC□□)
TC120L			P003	MSMA022A1A	60× 94	MSDA023A1A		
TC170L			P006	MSMA5AZA1B	38×105	MSDA5A5A1A	TAE20H0-AMB□□ (TAE20G9-AMB□□)	TAE20H2-EC□□ (TAE20H1-EC□□)
TC 40US			P007	MSMA012A1B	38×135	MSDA015A1A		
TC 50US	P008		MSMA022A1B	60×127	MSDA023A1A			
TC 60U	P006		MSMA5AZA1B	38×105	MSDA5A5A1A	TAE20P5-AMB□□ (TAE20P6-AMB□□)	TAE20P7-EC□□ (TAE20P8-EC□□)	
TC 86U	P008	MSMA022A1B	60×127	MSDA023A1A				
TC120L								
TC170L								

Note⁽¹⁾ : In case of with brake type, the power supply unit for brake release is required.

Remark 1 : The cords in () have high bending resistance.

2 : The length of motor cord or encoder cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

※Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE20G8-AM03)

3 : In the motor mounted in TC···US or TC···U, the clearance is sealed with silicone resin to reduce dust generation from the inside of the motor.

Table 17.2 Models of programmable controller, teaching box and pulse·limit cord

Programmable controller	Teaching box	Pulse cord	Limit cord
CTN120G	TAE1005-TB	TAE10C0-LD□□ (TAE10C1-LD□□)	
CTN130G	TAE1016-TB	TAE10C5-PC	(TAE1042-LC□□)
CTN140G	TAE1025-TB	TAE10C8-PC	TAE1027-LCA□□ (TAE1083-RLCA□□)
CTN150S	TAE1048-TB	TAE10C0-LD□□ (TAE10C1-LD□□)	

Remark 1 : The cords in () have high bending resistance.

2 : The length of limit cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

※Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE10C0-LD03)

3 : The length of pulse cord is 1.5m.

The system configurations for AC servo motor and driver that are manufactured by Mitsubishi Electric Corporation are shown in Table 18.1 and 18.2.

Table 18.1 Models of motor, driver, motor cord and encoder cord

Type and size	With or without brake	Motor code	Model number of motor	Dimension W×L _M	Model number of driver	Motor cord	Encoder cord
J002	HC-KFS13	40× 96.5	MR-J2S-10A				
J003	HC-KFS23	60× 99.5	MR-J2S-20A				
J001	HC-KFS053	40× 81.5	MR-J2S-10A	TAE20L5-AM□□ (TAE20L6-AM□□)	TAE20L9-EC□□ (TAE20M0-EC□□)		
J003	HC-KFS23	60× 99.5	MR-J2S-20A				
J006	HC-KFS053B	40×109.5	MR-J2S-10A	TAE20H6-AMB□□ (TAE20H5-AMB□□)	TAE20H8-EC□□ (TAE20H7-EC□□)		
J007	HC-KFS13B	40×124.5	MR-J2S-10A				
J008	HC-KFS23B	60×131.5	MR-J2S-20A				
J006	HC-KFS053B	40×109.5	MR-J2S-10A	TAE20L7-AMB□□ (TAE20L8-AMB□□)	TAE20L9-EC□□ (TAE20M0-EC□□)		
J008	HC-KFS23B	60×131.5	MR-J2S-20A				

Note(1) : In case of with brake type, the power supply unit for brake release is required.

Remark 1 : The cords in () have high bending resistance.

2 : The length of motor cord or encoder cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

*Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE20H4-AM03)

3 : In the motor mounted in TC···US or TC···U, the clearance is sealed with silicone resin to reduce dust generation from the inside of the motor.

Table 18.2 Models of programmable controller, teaching box and pulse·limit cord

Programmable controller	Teaching box	Pulse cord	Limit cord
CTN120G	TAE1005-TB	TAE10C2-LD□□ (TAE10C3-LD□□)	
CTN130G	TAE1016-TB	TAE10C6-PC	(TAE1042-LC□□)
CTN140G	TAE1025-TB	TAE10C9-PC	TAE1027-LCA□□ (TAE1083-RLCA□□)
CTN150S	TAE1048-TB	TAE10C2-LD□□ (TAE10C3-LD□□)	

Remark 1 : The cords in () have high bending resistance.

2 : The length of limit cord is specified in the end of model number □□ by 1m pitch and the maximum length is 20m.

*Code is specified by two digits even if length of cord is less than 10m. (Example for case of 3m : TAE10C2-LD03)

3 : The length of pulse cord is 1.5m.

The system configurations for stepping motor are shown in Table 19.

Table 19 System configuration of a table with stepping motor

Model	With or without brake	Motor code	Dimension L _M ×W	Type of applicable electric devices							
				Driver		Programmable controller					
				Main body	Motor cord	Main body	Teaching box	Pulse cord	Limit cord		
TC30US	Without brake	Q1	30.5×25	AU9112	TAE20D5-SM03 (TAE20D6-SN03)	CTN120G	TAE1005-TB	TAE10B4-LD03 (TAE10B5-LD03)			
						CTN130G	TAE1006-TB	TAE10B6-PC	TAE1042-LC03		
						CTN140G	TAE1025-TB	TAE10B7-PC	TAE1027-LCA03		
						CTN150S	TAE1048-TB	TAE10B4-LD03 (TAE10B5-LD03)			
TC40US TC50US TC40U TC50U	Without brake	K3	47 ×42	TDS1-5071	TAE2055-SMC03 (TAE2057-SNC03)	CTN120G	TAE1005-TB	TAE1056-LD03			
						CTN130G	TAE1006-TB	TAE1023-PC	TAE1042-LC03		
						CTN140G	TAE1025-TB	TAE1026-PCA	TAE1027-LCA03		
						CTN150S	TAE1048-TB	TAE1056-LD03			
				TDS1-5145	TAE2045-SML03 (TAE2059-SNL03)	CTN120G	TAE1005-TB	TAE1022-LD03			
						CTN130G	TAE1006-TB	TAE1012-PC	TAE1042-LC03		
						CTN140G	TAE1025-TB	TAE1030-PCA	TAE1027-LCA03		
						CTN150S	TAE1048-TB	TAE1022-LD03			
TC60US TC60U TC86U	With brake	K3B	77 ×42	TDS1-5145BK	TAE2061-SMBL03 (TAE2062-SNBL03)	CTN120G	TAE1005-TB	TAE1022-LD03			
						CTN130G	TAE1006-TB	TAE1012-PC	TAE1042-LC03		
						CTN140G	TAE1025-TB	TAE1030-PCA	TAE1027-LCA03		
						CTN150S	TAE1048-TB	TAE1022-LD03			
						TDS1-5145	TAE2045-SML03 (TAE2059-SNL03)	CTN120G	TAE1005-TB	TAE1022-LD03	
								CTN130G	TAE1006-TB	TAE1012-PC	TAE1042-LC03
								CTN140G	TAE1025-TB	TAE1030-PCA	TAE1027-LCA03
								CTN150S	TAE1048-TB	TAE1022-LD03	

Remark 1 : The cords in () have high bending resistance.

2 : The standard length of the motor cord and limit cord is 3m. The length of the pulse cord is 1.5m.

3 : In the motor mounted in TC···US or TC···U, the clearance is sealed with silicone resin to reduce dust generation from the inside of the motor.

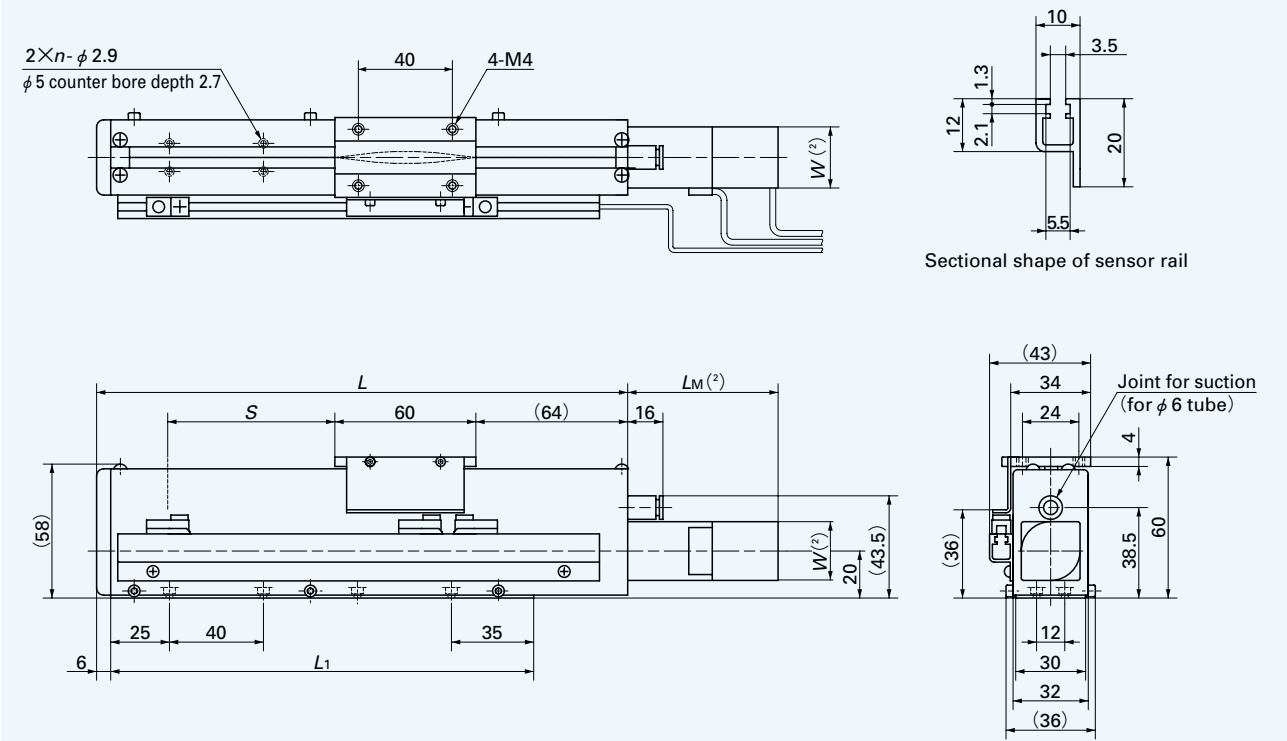
Precautions for Use

- Cleanroom Precision Positioning Table TC is a precision instrument. If an excessive load or shock is given to it, this will lower the accuracy or damage its parts. Take extreme care when handling it.
- Make sure that the mating surface for mounting the table is free from dust or harmful objects.
- The linear motion rolling guide and ball screw assembled in Cleanroom Precision Positioning Table TC are lubricated with grease. It is important to protect them from the intrusion of dust and other harmful foreign matter. If dust or foreign material is intruded, remove them and dirty grease completely, and apply clean grease.
- A six months interval is generally recommended and, if the table operation consists of reciprocating motions with many cycles and long strokes, re-lubrication every three months is recommended. At the re-lubrication, wipe off old grease and apply clean grease again.
- Cleanroom Precision Positioning Table TC is machined, assembled and adjusted with high accuracy. Never disassemble or modify the table.
- When two or multiple axes system is required, mass of the table and load amount must be considered to meet "allowable moment" and "maximum load mass" on page12.

* The appearance, specifications and other details of the product are subject to change without prior notice for improvement.

IKO Cleanroom Precision Positioning Table TC...US

TC30US



unit : mm

Model number	Track rail length L_1	Total length L	n	Stroke length S	Mass ⁽¹⁾ kg
TC30US140	140	186	3	30	1.0
TC30US180	180	226	4	70	1.1
TC30US220	220	266	5	110	1.2
TC30US260	260	306	6	150	1.3
TC30US300	300	346	7	190	1.4
TC30US340	340	386	8	230	1.5

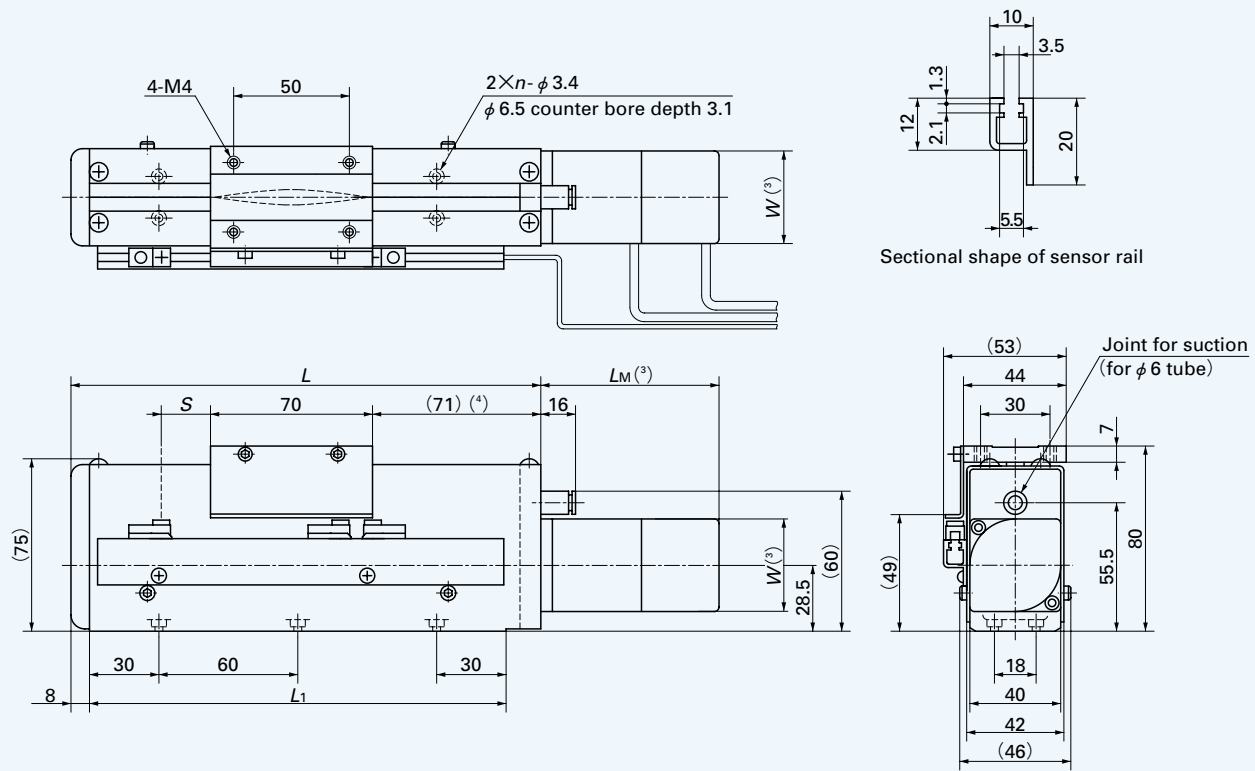
Note⁽¹⁾ : The mass of the motor is not included.

⁽²⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

Remark : When the number of sensor is specified as four, the sensor rail is mounted on both sides of the table.

IKO Cleanroom Precision Positioning Table TC...US

TC40US



unit : mm

Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S	Mass ⁽²⁾ kg
TC40US180	180	203	3	30	1.9
TC40US240	240	263	4	90 (80)	2.2
TC40US300	300	323	5	150 (140)	2.5
TC40US360	360	383	6	210 (200)	2.8
TC40US420	420	443	7	270 (260)	3.1

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

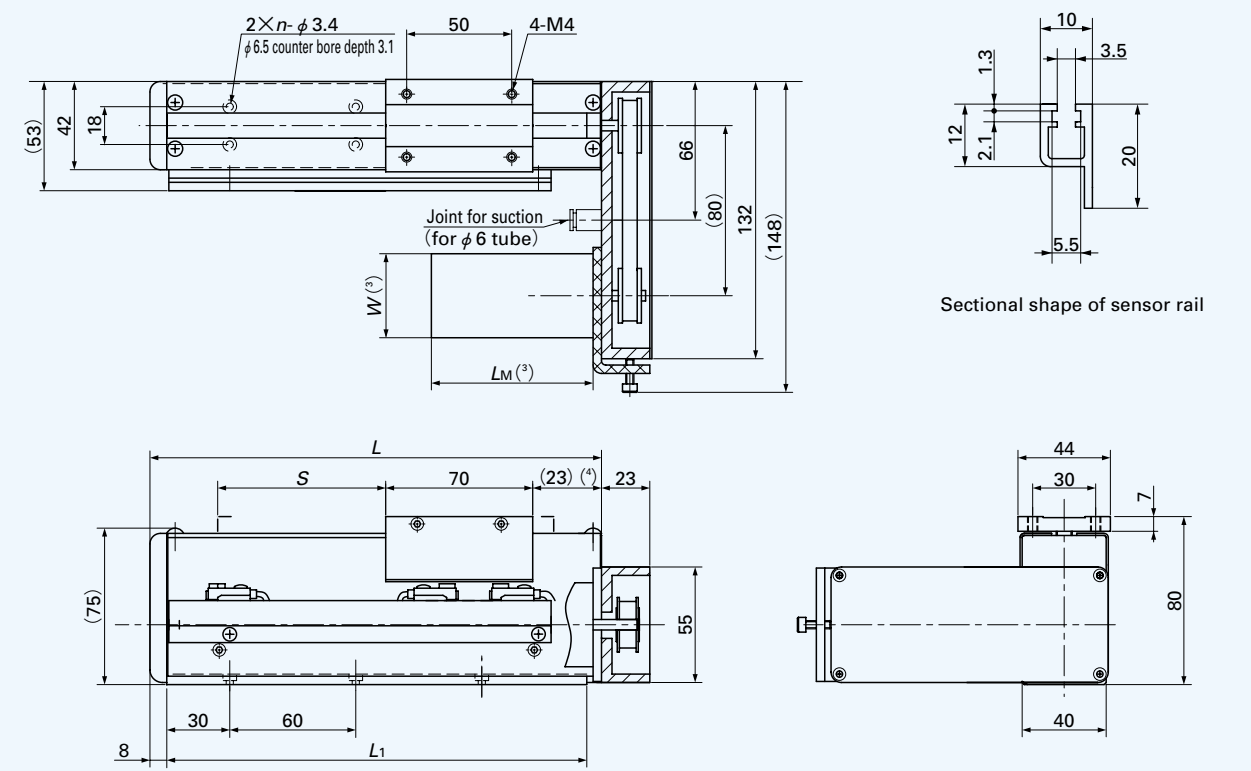
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate, it changes to (81).

IKO Cleanroom Precision Positioning Table TC...US

TC40US Motor folding back specification



unit : mm

Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S	Mass ⁽²⁾ kg
TC40US140	140	155	2	30 (—)	1.9
TC40US200	200	215	3	90 (80)	2.2
TC40US260	260	275	4	150 (140)	2.5
TC40US320	320	335	5	210 (200)	2.8
TC40US380	380	395	6	270 (260)	3.1

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

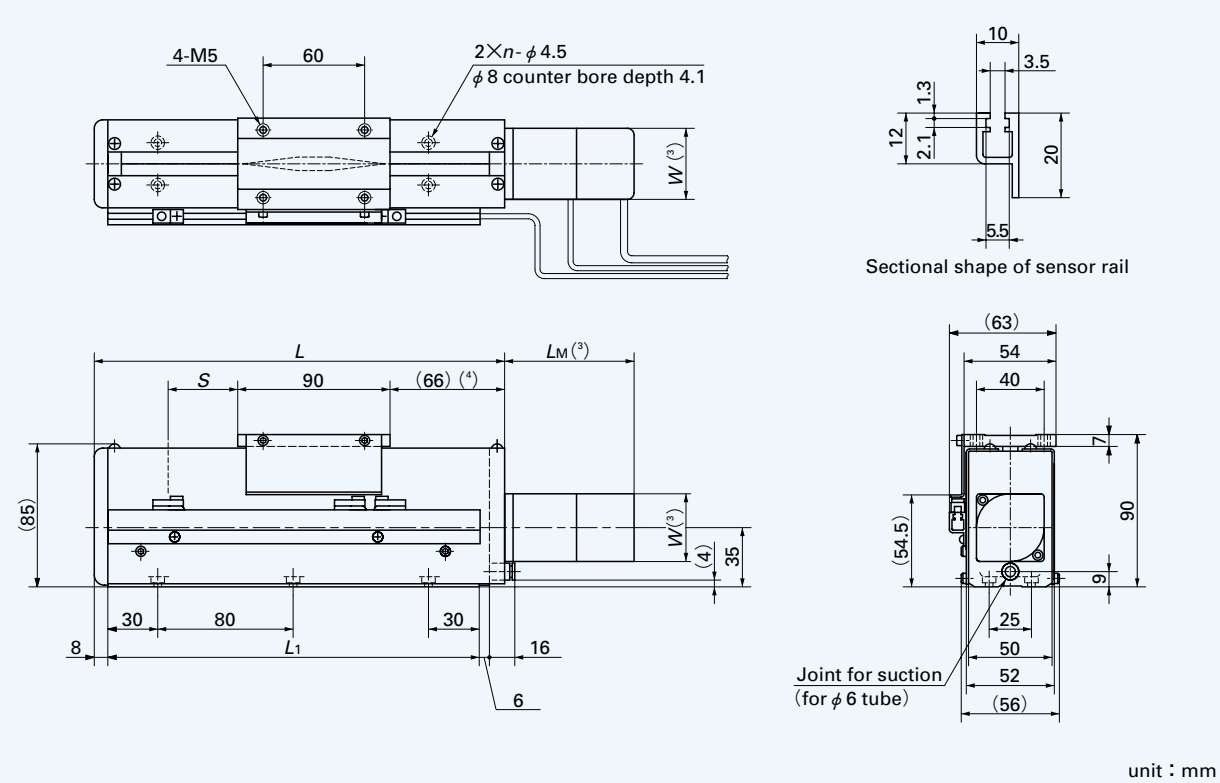
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate, it changes to (33).

IKO Cleanroom Precision Positioning Table TC...US

TC50US



Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S	Mass ⁽²⁾ kg
TC50US220	220	243	3	60 (45)	2.8
TC50US300	300	323	4	140 (125)	3.4
TC50US380	380	403	5	220 (205)	3.9
TC50US460	460	483	6	300 (285)	4.4
TC50US540	540	563	7	380 (365)	4.9
TC50US620	620	643	8	460 (445)	5.4
TC50US700	700	723	9	540 (525)	5.9

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

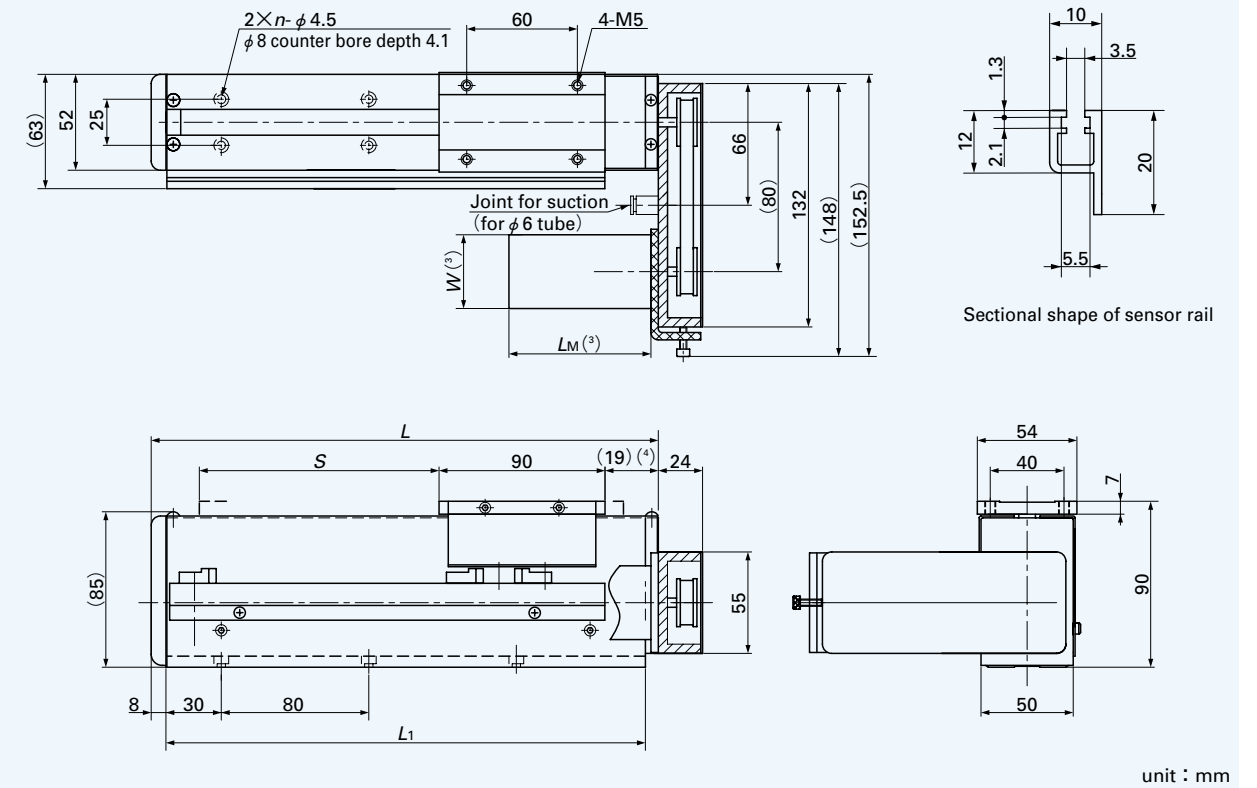
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate, it changes to (81).

IKO Cleanroom Precision Positioning Table TC...US

TC50US Motor folding back specification



Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S	Mass ⁽²⁾ kg
TC50US180	180	195	2	60 (45)	2.8
TC50US260	260	275	3	140 (125)	3.4
TC50US340	340	355	4	220 (205)	3.9
TC50US420	420	435	5	300 (285)	4.4
TC50US500	500	515	6	380 (365)	4.9
TC50US580	580	595	7	460 (445)	5.4
TC50US660	660	675	8	540 (525)	5.9

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

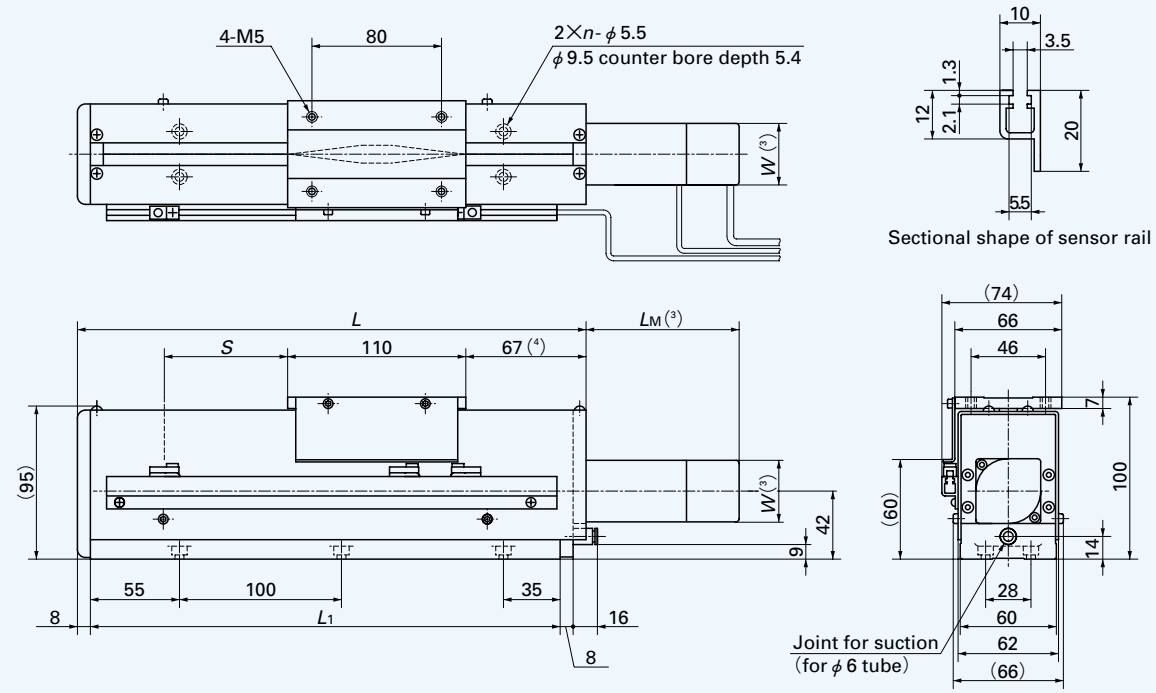
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate, it changes to (34).

IKO Cleanroom Precision Positioning Table TC...US

TC60US



unit : mm

Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S		Mass ⁽²⁾ kg
				Lead 5mm and 10mm	Lead 20mm	
TC60US290	290	314	3	100 (85)	95 (70)	4.8
TC60US390	390	414	4	200 (185)	195 (170)	6.2
TC60US490	490	514	5	300 (285)	295 (270)	7.4
TC60US590	590	614	6	400 (385)	395 (370)	8.5
TC60US690	690	714	7	500 (485)	495 (470)	9.5
TC60US790	790	814	8	600 (585)	595 (570)	10.5

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

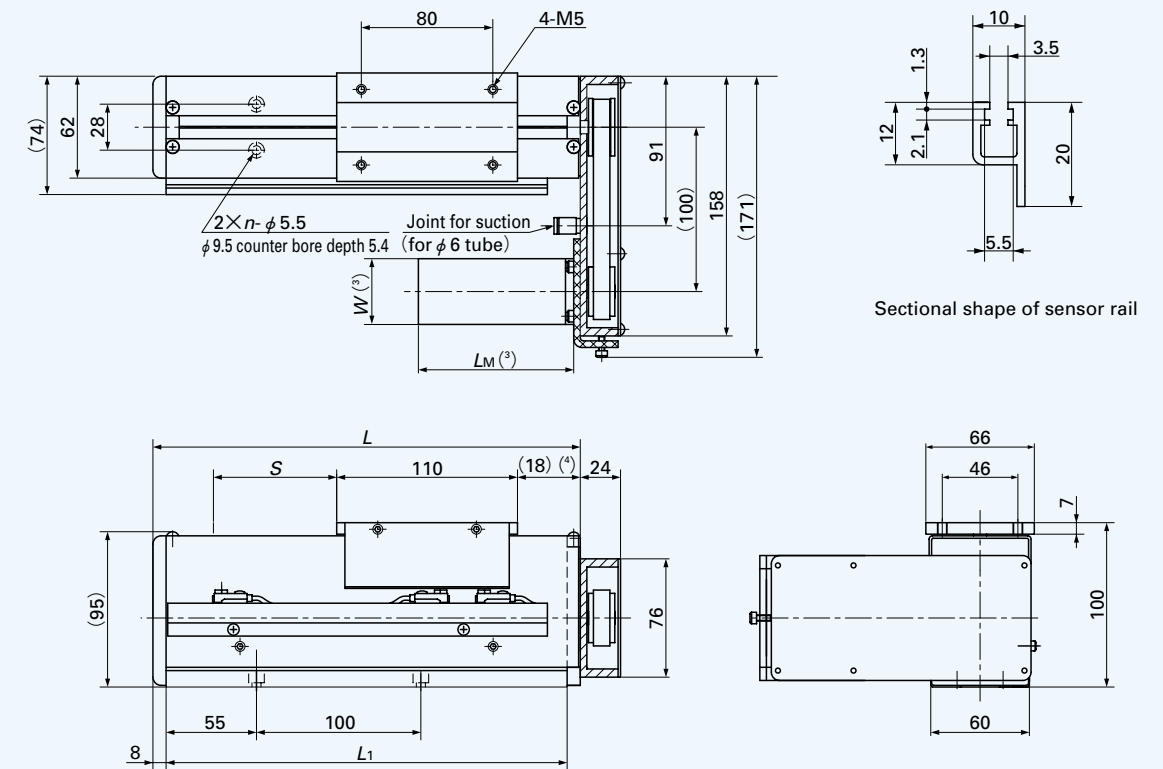
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate and ball screw lead 20mm, it changes to (82).

IKO Cleanroom Precision Positioning Table TC...US

TC60US Motor folding back specification



unit : mm

Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S		Mass ⁽²⁾ kg
				Lead 5mm and 10mm	Lead 20mm	
TC60US244	244	260	2	95 (80)	95 (65)	4.8
TC60US344	344	360	3	195 (180)	195 (165)	6.2
TC60US444	444	460	4	295 (280)	295 (265)	7.4
TC60US544	544	560	5	395 (380)	395 (365)	8.5
TC60US644	644	660	6	495 (480)	495 (465)	9.5
TC60US744	744	760	7	595 (580)	595 (565)	10.5

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

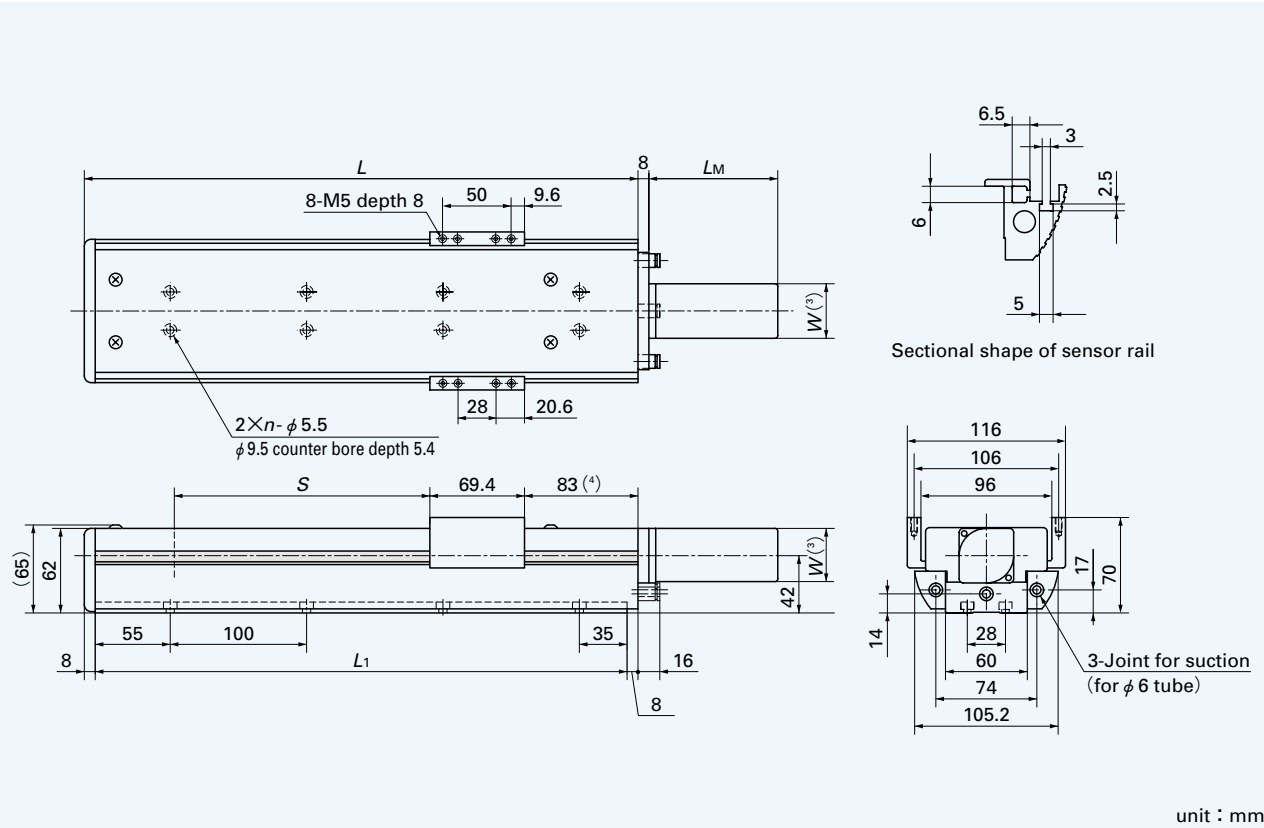
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate and ball screw lead 20mm, it changes to (33).

IKO Cleanroom Precision Positioning Table TC...U

TC60U



Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S		Mass ⁽²⁾ kg
				Lead 5mm and 10mm	Lead 20mm	
TC60U290	290	306	3	100 (85)	95 (70)	5.2
TC60U390	390	406	4	200 (185)	195 (170)	6.3
TC60U490	490	506	5	300 (285)	295 (270)	7.4
TC60U590	590	606	6	400 (385)	395 (370)	8.5
TC60U690	690	706	7	500 (485)	495 (470)	9.7
TC60U790	790	806	8	600 (585)	595 (570)	10.8

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

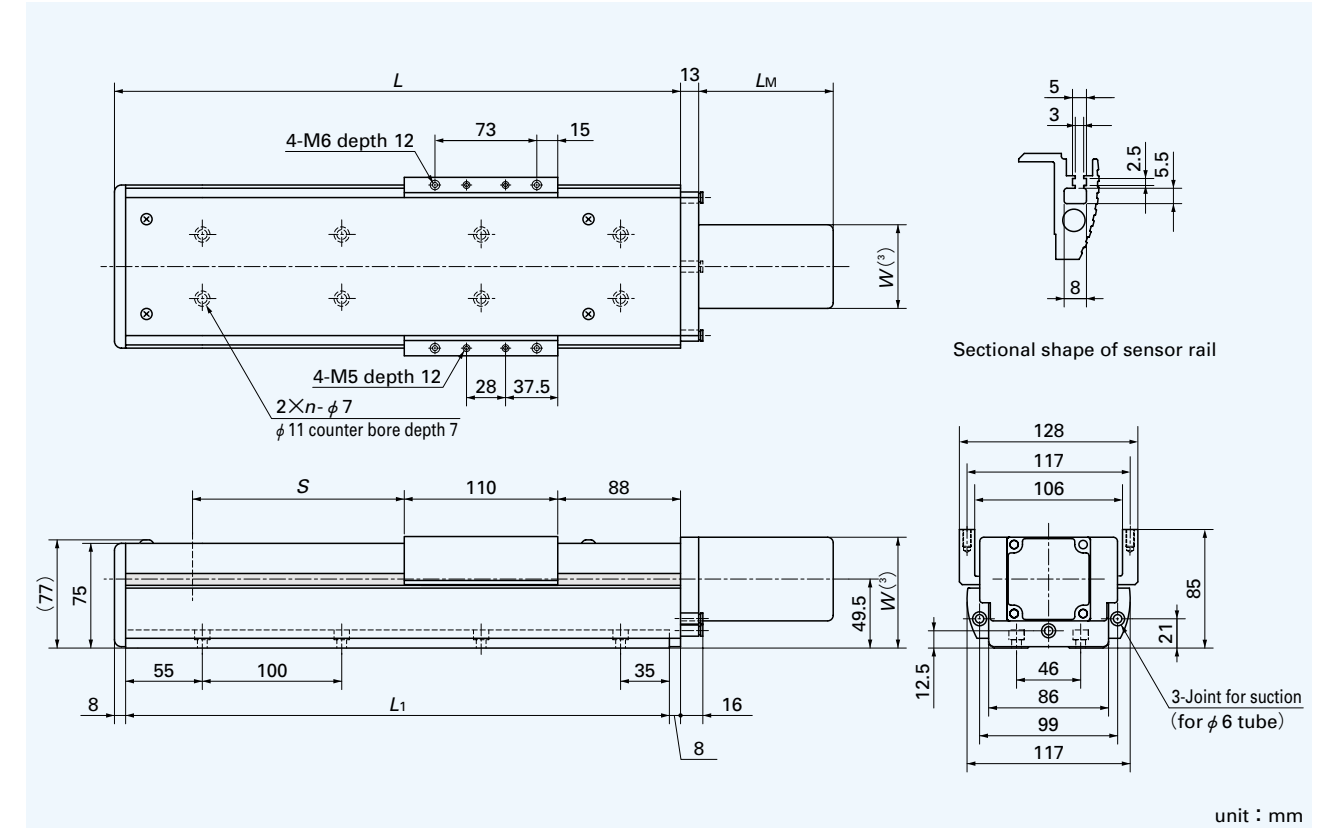
⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

⁽⁴⁾ : In case of table with Capillary plate and ball screw lead 20mm, it changes to (98).

IKO Cleanroom Precision Positioning Table TC...U

TC86U



Model number	Track rail length L_1	Total length L	n	Stroke length ⁽¹⁾ S	Mass ⁽²⁾ kg
TC86U490	490	506	5	250 (230)	13.3
TC86U590	590	606	6	350 (330)	15.3
TC86U690	690	706	7	450 (430)	17.2
TC86U790	790	806	8	550 (530)	19.1
TC86U890	890	906	9	650 (630)	21.1
TC86U990	990	1006	10	750 (730)	23.0

Note⁽¹⁾ : The values in () indicate the stroke lengths with Capillary plates.

⁽²⁾ : The mass of the motor is not included.

⁽³⁾ : For motor dimension, see "Electric Devices" on page 18 to 22.

