IKO
Innovation, Know-how & Originality

Cleanroom Precision Positioning Table
TC···E

Patent pending

Cleanliness ISO class 3 is achieved!
(Federal Standerd 209D class 1)

CAT-57183

TC···E

See you again at
IKO Website
http://www.ikont.co.jp/eg/

NIPPON THOMPSON CO., LTD.

Head office : 19-19 Takanawa 2-chome Minato-ku,
Tokyo 108-8586, Japan
Phone : +81 (0)3-3448-5850
Fax : +81 (0)3-3447-7637
E-mail : ntt@ikonet.co.jp
URL : http://www.ikont.co.jp/eg/
Plant : Gifu, Kamakura

NIPPON THOMPSON CO., LTD.

ASEAN REPRESENTATIVE OFFICE
Level 8, #1 Silom Road, Silom
Bangrak, Bangkok
Thailand 10500
Phone: +66 (0)2-231-8278
FAX: +66 (0)2-231-8121
E-mail:ntar@ikonet.co.jp

IKO-THOMPSON (SHANGHAI) LTD.

Shanghai
1402-1404 Sunyoung Center
28 Xuanhua Road, Shanghai
People's Republic of China 200050
Phone: +86 (0)21-3250-5525
Fax: +86 (0)21-3250-5526
E-mail: ntc@ikonet.co.jp

Beijing
Room 1515 15/F, NCI Tower
12A Jianguomenwai Ave, Chaoyang District, Beijing
People's Republic of China 100022
Phone: +86 (0)10-8523-3412
Fax: +86 (0)21-3250-5526
E-mail: ntc@ikonet.co.jp

Guangzhou
Suite 834, Garden Tower, Garden Hotel
368 Huanshi Donglu Yuexiu District, Guangzhou, Guangdong
People's Republic of China 510064
Phone: +86 (0)20-8384-0797
Fax: +86 (0)20-8381-2863
E-mail: ntc@ikonet.co.jp

Wuhan
Room 0233, Novotel Wuhan Xinhua
558 Jianshe Avenue, Jiang Han District, Wuhan, Hubei
People's Republic of China 430022
Phone: +86 (0)27-8556-1610
Fax: +86 (0)27-8556-1630
E-mail: ntc@ikonet.co.jp

IKO INTERNATIONAL, INC.

East coast
91 Walsh Drive
Parsippany, NJ 07054
U.S.A.
Phone: +1 973-402-0254
Toll Free: 1-800-922-0337
Fax: +1 973-402-0441
E-mail:eco@ikonet.co.jp

Midwest
500 K East Thorndale Avenue
Wood Dale, IL 60191
U.S.A.
Phone: +1 630-766-6464
Toll Free: 1-800-323-6694
Fax: +1 630-766-6869
E-mail:mwo@ikonet.co.jp

West coast
9830 Norwalk Boulevard, Suite 198
Santa Fe Springs, CA 90670
U.S.A.
Phone: +1 310-609-3988
Toll Free: 1-800-252-3665
Fax: +1 310-609-3916
E-mail: wco@ikonet.co.jp

3333 Bowers Avenue, Suite 155
Santa Clara, CA 95054
U.S.A.
Phone: +1 408-492-0240
Toll Free: 1-800-252-3665
Fax: +1 408-492-0245
E-mail: wco@ikonet.co.jp

Southeast
2150 Boggs Road, Suite 100
Duluth, GA 30096
U.S.A.
Phone: +1 770-418-1904
Toll Free: 1-800-874-6445
Fax: +1 770-418-9403
E-mail:seo@ikonet.co.jp

Southwest
8105 N. Beltline Road
Suite 130, Irving, TX 75063
U.S.A.
Phone: +1 972-929-1515
Toll Free: 1-800-295-7886
Fax: +1 972-915-0060
E-mail:swo@ikonet.co.jp

NIPPON THOMPSON EUROPE B.V.

The Netherlands
Sheffieldstraat 35-39
3047 AN Rotterdam
The Netherlands
Phone: +31 (0)10-4626868
Fax: +31 (0)10-4626099
E-mail:nte@ikonet.co.jp

Germany
Mündelheimer Weg 56
40472 Düsseldorf
Germany
Phone: +49 (0)211-414061
Fax: +49 (0)211-427693
E-mail:ntd@ikonet.co.jp

Im Gewerbepark D 30
93059 Regensburg
Germany
Phone: +49 (0)941-206070
Fax: +49 (0)941-2060719
E-mail:ntdr@iko-nt.de

Gruben Str.95c
66540 Neunkirchen
Germany
Phone: +49 (0)6821-999-860
Fax: +49 (0)6821-999-8626
E-mail:ntdn@iko-nt.de

UK
2 Vincent Avenue, Crownhill
Milton Keynes Bucks MK8 0AB
United Kingdom
Phone: +44 (0)1908-566144
Fax: +44 (0)1908-565458
E-mail:sales@iko.co.uk

Spain
Autovia Madrid-Barcelona, Km. 43,700
Polig. Ind. AIDA, A-8, Ofic. 2, 1ª
19200-Azuqueca de Henares
Guadalajara, Spain
Phone: +34 949-263390
Fax: +34 949-263113
E-mail:nts@ikonet.co.jp

France
Roissypole Le Dôme
2 rue de La Haye
BP 15950 Tremblay en France
95733 Roissy C. D. G. Cedex
France
Phone: +33 (0)1-48165739
Fax: +33 (0)1-48165746
E-mail:ntf@ikonet.co.jp

Recognizing that conservation of the global environment is the top-priority challenge for the world's population, Nippon Thompson will conduct its activities with consideration of the environment as a corporate social responsibility, reduce its negative impact on the environment, and help foster a rich global environment.

ISO 9001 Certified
ISO 14001 Certified

ISO 9001 & 14001 Quality system registration certificate

June 2011 IKO Overseas Dept.(OKU)

Light-Weigt, Low-Cross section, Compact Cleanroom Precision Positioning Table and Low-dust generation newly appears.

IKO
Cleanroom Precision Positioning Table
TC···E

- Cleanliness **ISO class 3** (Federal Standard 209D class 1) is achieved
- Light table made of high-strength aluminum alloy
- Assures high-precision positioning with precision-ground ball screws
- Built-in C-Lube for long-term maintenance-free service

TC86E

Line up of seven models
86 mm wide, 67 mm high,
and 340 to 940 mm long

TC60E

Line up of six models
60 mm wide, 54 mm high,
and 150 to 600 mm long

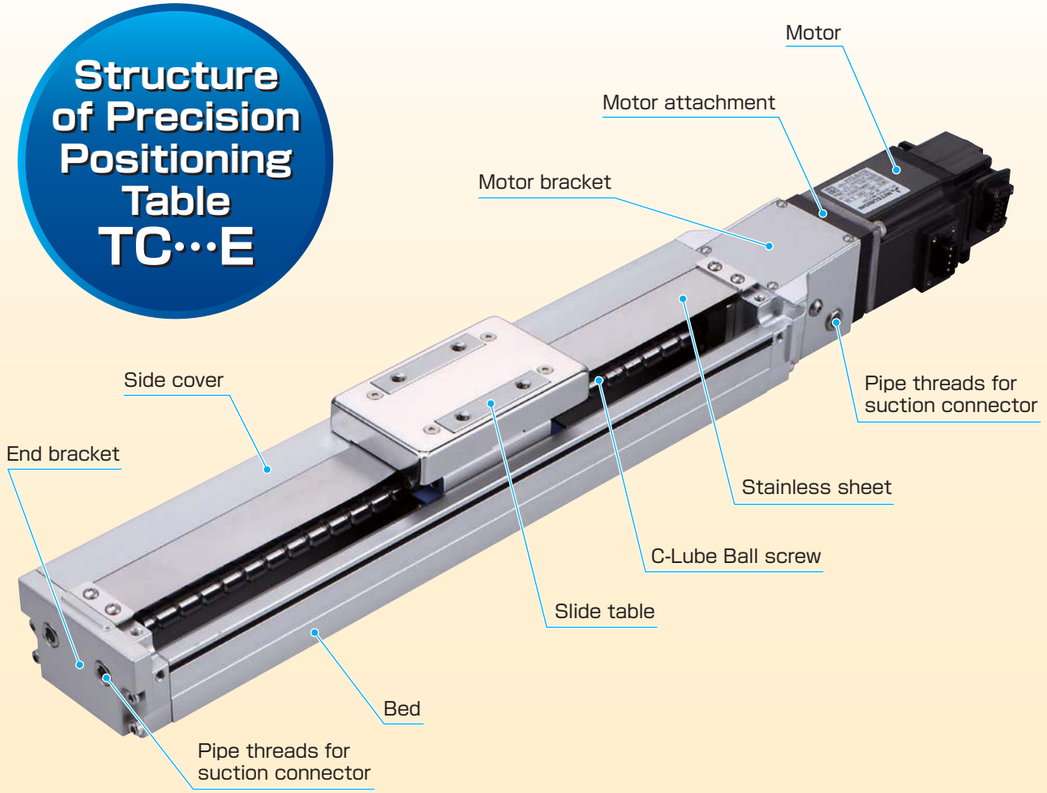
IKO C-Lube Maintenance-free®

IKO Cleanroom Precision Positioning Table TC···E

IKO Cleanroom Precision Positioning Table TC···E is light-weight, low-cross section, and compact precision positioning table, which is TE table with tight-sealing structure.
The driving part and slide table guide part inside of table are sealed tightly with stainless sheet and side covers, which prevent dust generating from the table to the surrounding environment.
Its driving mechanism adopts a precision-ground ball screw to assure high reliability high-precision positioning.
C-Lube lubrication part built in the linear motion rolling guide and the ball screw enables long-term maintenance-free operation. It can reduce your time-consuming for lubrication.

You can freely select ball screw leads, motor types, sensor installation, and other specifications so that you can build up optimum positioning tables fit for your need.
IKO Cleanroom Precision Positioning Table TC···E is most suitable for an use where The number of the particle positioning is required in Cleanroom environment such as semiconductor or LCD relative manufacturing equipment and etc.

Structure of Precision Positioning Table TC···E



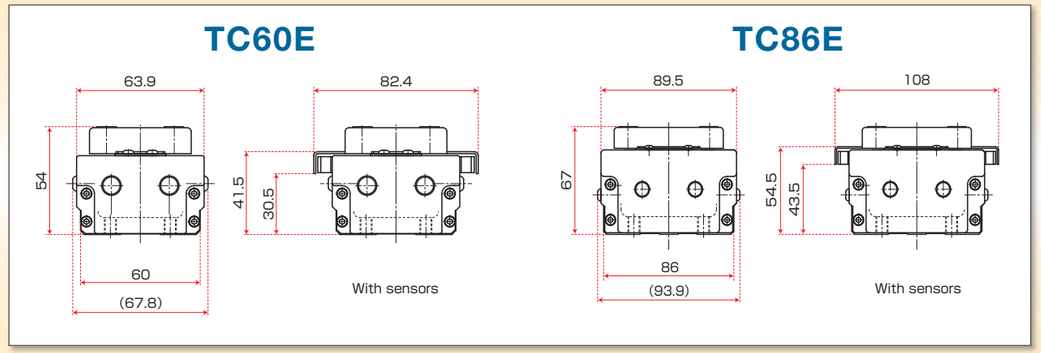
Features of IKO Cleanroom Precision Positioning Table TC···E

1 Cleanliness level equivalent to ISO class 3 (Federal Standard 209D class 1)

The driving part and slide table guide part inside of table are sealed tightly with stainless sheet and side covers, which are excellent for corrosion resistance.
The stainless sheet is pressed on the side covers by resin rollers set in the slide table, and surely attracted by the strong magnet sheet. The tight-sealing structure prevents dust generating to the surrounding of the table by air suction from the internal space sealed up.
Moreover, IKO low dust generating grease CGL for Cleanroom environment is adopted for the linear motion rolling guide and the ball screw, and the dust generating is controlled.
In the cleanliness evaluation by IKO measuring method, ISO class 3 (Federal Standard 209D class 1) has been achieved.

2 Light-Weight, Low-Cross Section, and Compact

Light-weight and compact positioning table using high-strength aluminum alloy for its main components.
Low cross-section (54 mm high for TC60E and 67 mm high for TC86E) due to optimum designing of linear guides and ball screws.
Moreover, the structure of various sensors installable on ditch of the side covers contributes to the miniaturization.



3 High positioning accuracy

Higher precision positioning by one rank due to a combination of IKO unique linear motion rolling guide technology and precision-ground ball screws.

4 High corrosion resistance

The main composition parts, which are made from high strength aluminum alloy coated with alumite treatment and stainless sheet, are excellent in corrosion resistance.

5 Long-Term Maintenance free

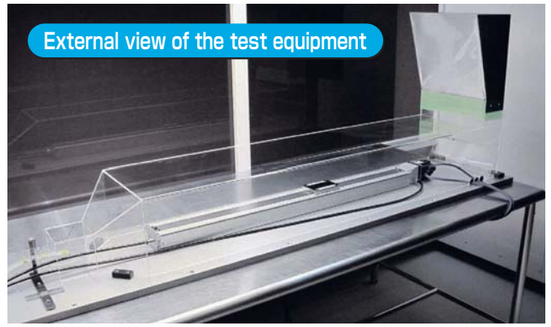
Long-term maintenance free operation due to IKO unique C-Lude lubrication part built in the linear motion rolling guide and the ball screw.
This can reduce labor time for lubrication and increase the reliability of the equipment.

Cleanliness Measurement

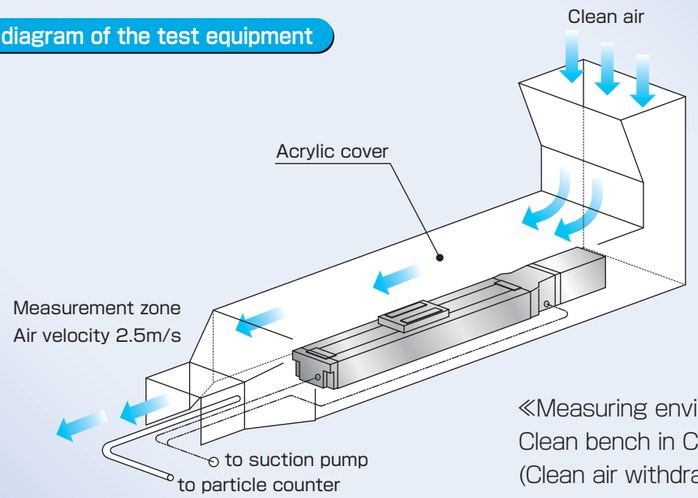
Cleanliness is the degree of air cleanliness represented by the size and number of floating particles per unit volume.
In IKO, the cleanliness is measured by using the following method.

【Measuring condition】

Item	Condition
Measuring device	Particle counter
Air velocity in measuring zone	2.5 m/s
Measuring air amount	28.3 L (1cf)
Measuring time	48 hours (10 min./time, 1 time/hour)


External view of the test equipment

Schematic diagram of the test equipment



≪Measuring environment≫
Clean bench in Cleanroom
(Clean air withdrawing in acrylic cover)

Upper limit concentration of cleanliness based on ISO standard

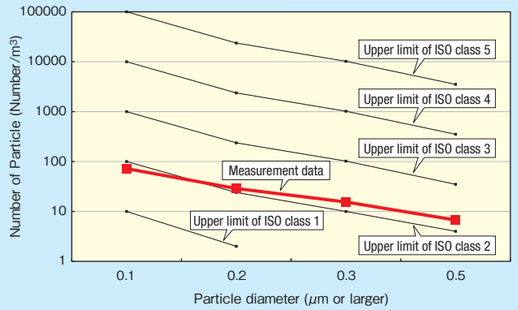
Unit (Number of particles/m³)

Cleanliness	Particle diameter			
	0.1μm or larger	0.2μm or larger	0.3μm or larger	0.4μm or larger
ISO Class 1	10	2	–	–
ISO Class 2	100	24	10	4
ISO Class 3 (Federal Standard 209D Class 1)	1000	237	102	35
ISO Class 4 (Federal Standard 209D Class 10)	10000	2370	1020	352
ISO Class 5 (Federal Standard 209D Class 100)	100000	23700	10200	3520
ISO Class 6 (Federal Standard 209D Class 1000)	1000000	237000	102000	35200

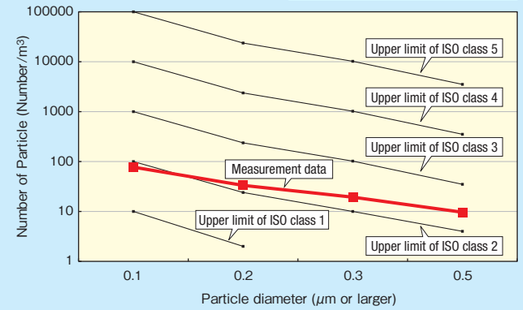
Data of measured Cleanliness

Example of measurement data [Cleanliness evaluation result with upper limit density of Cleanliness class]

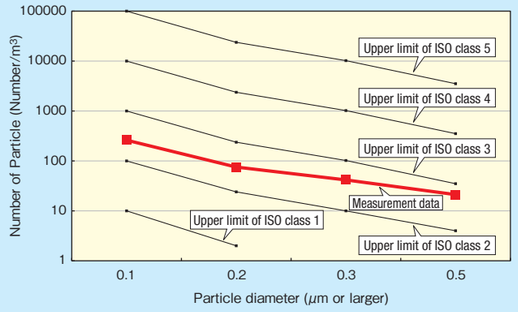
TC60E300
(Lead of ball screw : 10 mm)
Stroke length : 200 mm
Moving speed : 500 mm/s
Internal suction amount : 30 L/min



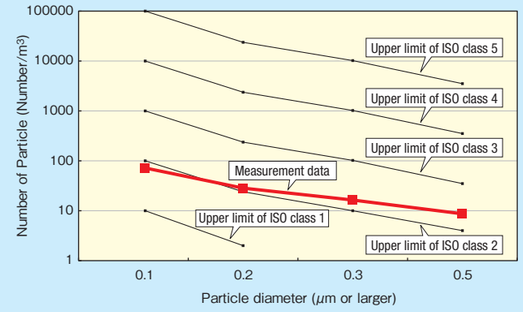
TC60E600
(Lead of ball screw : 10 mm)
Stroke length : 500 mm
Moving speed : 500 mm/s
Internal suction amount : 30 L/min



TC86E640
(Lead of ball screw : 20 mm)
Stroke length : 500 mm
Moving speed : 1000 mm/s
Internal suction amount : 70 L/min



TC86E940
(Lead of ball screw : 20 mm)
Stroke length : 800 mm
Moving speed : 560 mm/s
Internal suction amount : 40 L/min



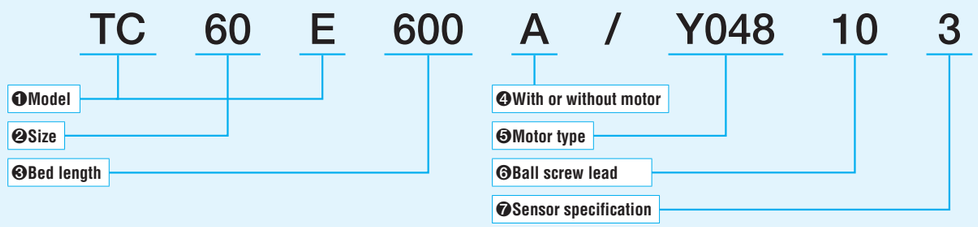
Cleanliness evaluation result

Model and size	Length of bed	Lead of screw mm	Stroke length mm	Moving speed mm/s	Suction amount L/min	Cleanliness (JIS B 9920:2002)
TC60E	150	5	50	250	30	ISO class 3
	300	10	200	500	30	ISO class 3
	600	10	500	500	30	ISO class 3
TC86E	340	10	200	500	30	ISO class 3
	640	10	500	500	40	ISO class 3
	640	20	500	1000	70	ISO class 3
	940	20	800	560	40	ISO class 3

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

Identification Number

Example of identification number of TC···E



❶Model	TC···E：Cleanroom Precision Positioning Table TC
❷Size	60：60mm of bed width 86：86mm of bed width
❸Bed length	Select bed length shown on Table 1.

Table 1　Bed length and Stroke length

unit：mm

Model	Bed width	Bed length（Stroke length）						
TC60E	60	150（ 50）	200（100）	300（200）	400（300）	500（400）	600（500）	—
TC86E	86	340（200）	440（300）	540（400）	640（500）	740（600）	840（700）	940（800）

❹With or without motor	No symbol：Without motor A　　：With motor

If the motor is prepared on the customer side, specify “Without motor”.（No symbol）

❺Motor type	Select a motor shown on Table 2.

When “Without motor”（no symbol）is selected in item ❹,
・Motor attachment and coupling applicable to the selected motor are mounted at delivery.
・When motor attachment and coupling are not necessary, please specify “No symbol”.

❻Ball screw lead	5：Lead　5mm（Applicable to TC60E） 10：Lead 10mm（Applicable to TC60E and TC86E） 20：Lead 20mm（Applicable to TC86E）

❼Sensor specification	0：Without sensor 2：With 2 sensors wired（limits） 3：With 3 sensors wired（limits and pre-origin） 4：With 4 sensors wired（limits, pre-origin, and origin） 5：Append 2 sensors（for limits） 6：Append 3 sensors（for limits and pre-origin） 7：Append 4 sensors（for limits, pre-origin, and origin）

When specify “With sensors”（code 2, 3, and 4）, specified number of sensors are fixed in the sensor grooves on side covers, and 2 detecting plates are fixed on slide table.
When specify, “Append sensors”（code 5, 6, and 7）, specified number of sensors are appended with slide table including the fixing screws and nuts, and 2 detecting plates with slide table in shipping.

Table 2　Motor type

Model	Motor type	With or without brake	Motor code	Motor part number	Motor brand
TC60E	AC servo motor	Without brake	Y048	SGMJV-01A3A21	Yaskawa Electric
			P022	MSME012S1A	Panasonic
			J012	HF-KP13	Mitsubishi Electric
		With brake	Y050	SGMJV-01A3A2C	Yaskawa Electric
			P027	MSME012S1B	Panasonic
			J017	HF-KP13B	Mitsubishi Electric
	Stepper motor	Without brake	V009	PK566AE	Oriental Motor
		With brake	V010	PK566AEM	
TC86E	AC servo motor	Without brake	Y059	SGMJV-02A3A21	Yaskawa Electric
			P023	MSME022S1A	Panasonic
			J013	HF-KP23	Mitsubishi Electric
		With brake	Y060	SGMJV-02A3A2C	Yaskawa Electric
			P028	MSME022S1B	Panasonic
			J018	HF-KP23B	Mitsubishi Electric
	Stepper motor	Without brake	V011	PK569AE	Oriental Motor
		With brake	V012	PK569AEM	

Table 3　Accuracy

unit：mm

Model	Bed length	Stroke length	Repeatability	Positioning accuracy	Parallelism in table operation B	Backlash
TC60E	150	50	±0.002	0.020	0.008	0.003
	200	100				
	300	200				
	400	300			0.010	
	500	400				
	600	500		0.025		
TC86E	340	200	±0.002	0.020	0.008	0.003
	440	300			0.010	
	540	400		0.025		
	640	500			0.012	
	740	600		0.030		
	840	700			0.014	
	940	800		0.035	0.016	

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

Characteristics

Table 4 Maximum speed

Model	Motor type	Bed length mm	Motor speed r/min	Maximum speed mm/s		
				Lead 5mm	Lead 10mm	Lead 20mm
TC60E	AC servo motor	150	3000	250	500	—
		200				
		300				
		400				
		500				
		600				
	Stepper motor	150	1800	150	300	—
		200				
		300				
		400				
		500				
		600				
TC86E	AC servo motor	340	3000	—	500	1000
		440				
		540				
		640				
		740	2700	—	450	900
		840	2100	—	350	700
		940	1680	—	280	560
	Stepper motor	340	1800	—	300	600
		440				
		540				
		640				
		740				
		840				
		940	1680	—	280	560

Remark : The values of the maximum speed are applicable when the standard motor is used. The actual maximum speeds must be determined by examining the operating pattern considering the motor used, load conditions, etc.

Table 5 Allowable moment and Maximum load mass

Model	Allowable moment M N·m	Maximum load mass kg
TC60E	6.0	25
TC86E	10.0	30

Remark : The values in above show the moment load or mass to be the constant displacement when load is applied to the slide table as allowable moment or maximum load mass. The allowable moment is applied to all directions; the maximum load mass is applicable to apply in the range of slide table width and length.

Table 6 Table inertia and starting torque

Model	Bed length mm	Table inertia $J_T \times 10^{-5}$kg・m²			Starting torque T_0 N・m		
		Lead 5mm	Lead 10mm	Lead 20mm	Lead 5mm	Lead 10mm	Lead 20mm
TC60E	150	0.14	0.21	—	0.03	0.04	—
	200	0.20	0.27	—			
	300	0.27	0.34	—			
	400	0.34	0.41	—			
	500	0.41	0.48	—			
	600	0.49	0.55	—			
TC86E	340	—	0.78	1.36	—	0.06	0.10
	440	—	0.93	1.51			
	540	—	1.08	1.66			
	640	—	1.23	1.81			
	740	—	1.38	1.96			
	840	—	1.53	2.11			
	940	—	1.68	2.26			

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

Sensor specification

Table 7 Specifications of sensors

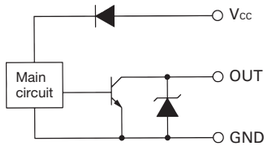
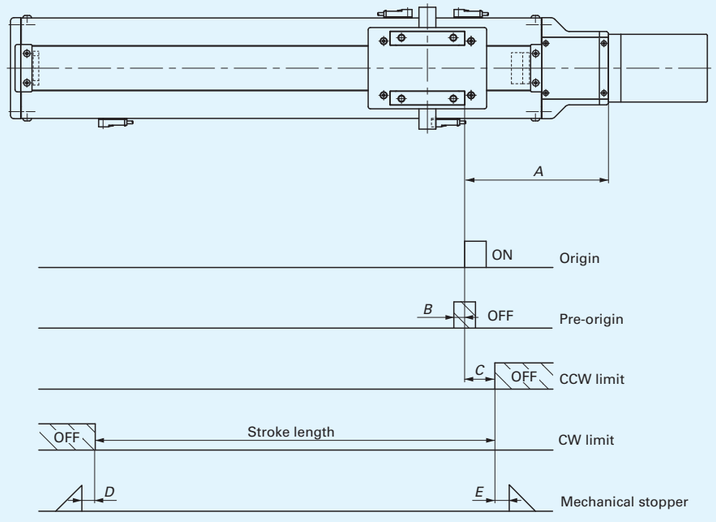
Item \ Sensor	Proximity sensor	
	Limit, pre-origin	Origin
Type	APM [Yamatake Co., Ltd.]	
Power supply voltage	DC12～24V ±10%	
Current consumption	10mA or less	
Output	Open corrector, NPN transistor ・Maximum current : 30mA or less (Resister) ・Applied voltage : DC26.4V or less ・Residual voltage : 1V or less at 30mA	
Output operation	When approaching : OFF	When approaching : ON
Operation indicator	LED (Orange) (OFF when senses)	LED (Orange) (ON when senses)
Circuit diagram		

Table 8 Specifications of connectors

Pin No.	Signal name	Part number of Sensor-side connector	Part number of Opposite side connector(1)
1	Origin	Cap housing 172160-1 Connector 170365-1 170366-1	Plug housing 172168-1 Connector 170363-1
2	Pre-origin		
3	CW Limit		
4	CCW Limit		
5	Power input		
6	GND		

Note (1) : Prepare the opposite-side connector by customer.
Remarks 1 : The connector is manufactured by Tyco Electronics Japan G.K.
2 : Above table shows connector specification in case of sensor specification "4".

Table 9 Timing chart of sensors



unit : mm

Model	Ball screw lead	A	B	C	D	E
TC60E	5	104	3	20	(7.5)	(8)
	10		5			
TC86E	10	127.5	5	20	(11)	(14)
	20		10			

System configuration

Each motor manufacture makes matching electrical components for their AC servo and stepper motors. By using their corresponding components you will attain a well-balanced system.

■*AC servo motor*

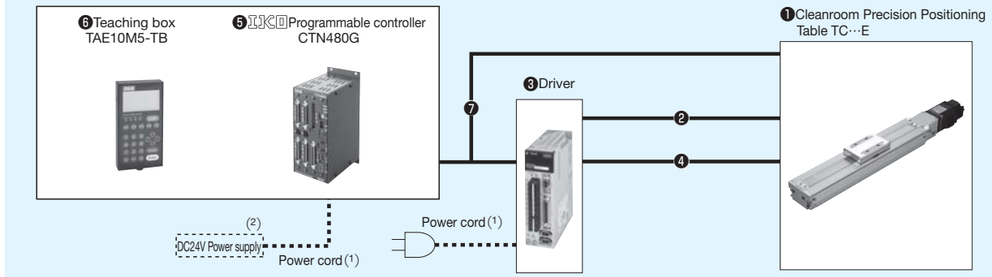


Fig.1 System configuration of the table with AC servo motor

Note (1) : Power cable shall be prepared at customer side.
(2) : DC24V Power supply shall be prepared at customer side.

Table 10 Electric devices for the motor of Yaskawa Electric Corporation

Items		Model number	
❶Cleanroom Precision Positioning Table TC		TC60E	TC86E
Motor without brake	Motor code	Y048	Y059
	❷Motor cord	JZSP-CSM01-□□-E (JZSP-CSM21-□□-E)	JZSP-CSM02-□□-E (JZSP-CSM22-□□-E)
Motor with brake(1)	Motor code	Y050	Y060
	❷Motor cord	JZSP-CSM11-□□-E (JZSP-CSM31-□□-E)	JZSP-CSM12-□□-E (JZSP-CSM32-□□-E)
❸Driver		SGDV-R90A01A	SGDV-1R6A01A
❹Encoder cord		JZSP-CSP01-□□-E (JZSP-CSP21-□□-E)	

Note (1) : In case of with brake type, the power supply unit for brake release shall be prepared at customer side.
Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of motor cord or encoder cord shall be selected in the end of model number □□, from 3m, 5m, 10m, and 20m.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : JZSP-CSM01-03-E)

Table 11 Electric devices for the motor of Yaskawa Electric and Programmable controller CTN480G

Items	Model number
Motor code	Y048, Y050, Y059, Y060
❺Programmable controller	CTN480G
❻Teaching box	TAE10M5-TB
❼Pulse limit cord	TAE10M7-LD□□ (TAE10M8-LD□□)

Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of pulse limit cord can be specified by increments of 1m up to 20m maximum at the end of model number □□.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : TAE10M7-LD03)
3 : The length of pulse limit cord is 1.5m.

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

Table 12 Electric devices of the table with Panasonic AC servo motor

Items			Model number	
❶Cleanroom Precision Positioning Table TC			TC60E	TC86E
Motor without brake		Motor code	P022	P023
		❷Motor cord	MFMCA0□□0NJD	
Motor with brake(1)		Motor code	P027	P028
		❷Motor cord	MFMCA0□□0NJD	
	Brake cord(2)		MFMCB0□□0PJT	
❸Driver cord			MADHT1505	MADHT1507
❹Encoder cord			MFECA0□□0MJD	

Note (1) : In case of with brake type, the power supply unit for brake release shall be prepared at customer side.
(2) : A brake cord shall be prepared at customer side.
Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of motor cord or encoder cord shall be selected in the end of model number □□, from 3m, 5m, 10m, and 20m.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : MFMCA0030NJD)

Table 13 Electric devices for the motor of Panasonic and Programmable controller CTN480G

Items	Model number
Motor code	P022, P023, P027, P028
❺Programmable controller	CTN480G
❻Teaching box	TAE10M5-TB
❼Pulse limit cord	TAE10V2-LD□□ (TAE10V3-LD□□)

Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of pulse limit cord can be specified by increments of 1m up to 20m maximum at the end of model number □□.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : TAE10V2-LD03)
3 : The length of pulse limit cord is 1.5m.

Table 14 Electric devices of the table with Mitsubishi Electric AC servo motor

Items			Model number	
❶Cleanroom Precision Positioning Table TC			TC60E	TC86E
Motor without brake		Motor code	J012	J013
		❷Motor cord	MR-PWS1CBL□M-A1-L (MR-PWS1CBL□M-A1-H)	
Motor with brake(1)		Motor code	J017	J018
		❷Motor cord	MR-PWS1CBL□M-A1-L (MR-PWS1CBL□M-A1-H)	
	Brake cord(2)		MR-BKS1CBL□M-A1-L (MR-BKS1CBL□M-A1-H)	
❸Driver cord			MR-J3-10A	MR-J3-20A
❹Encoder cord			MR-J3ENCBL□M-A1-L (MR-J3ENCBL□M-A1-H)	

Note (1) : In case of with brake type, the power supply unit for brake release shall be prepared at customer side.
(2) : A brake cord shall be prepared at customer side.
Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of motor cord or encoder cord shall be selected in the end of model number □□, from 3m, 5m, 10m, and 20m.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 2m : MR-PWS1CBL2M-A1-L)

Table 15 Electric devices for the motor of Mitsubishi Electric Corporation and Programmable controller CTN480G

Items	Model number
Motor code	J012, J013, J017, J018
❺Programmable controller	CTN480G
❻Teaching box	TAE10M5-TB
❼Pulse limit cord	TAE10V4-LD□□ (TAE10V5-LD□□)

Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of pulse limit cord can be specified by increments of 1m up to 20m maximum at the end of model number □□.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : TAE10V4-LD03)
3 : The length of pulse limit cord is 1.5m.

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

System configuration

■*Stepper motor*

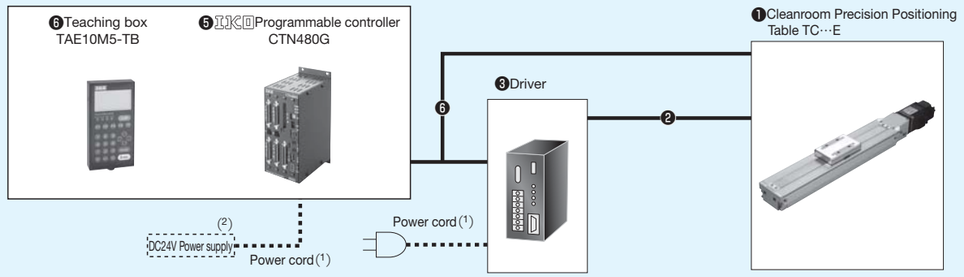


Fig.2 System configuration of the table with stepper motor

Note (1) : Power cable shall be prepared at customer side.
(2) : DC24V Power supply shall be prepared at customer side.

Table 16 Electric devices of the table with Oriental stepper motor

Items		Model number	
❶Cleanroom Precision Positioning Table TC		TC60E	TC86E
Motor without brake	Motor code	V009	V011
	❷Motor cord	TAE20R8-SM□□ (TAE20R9-SN□□)	
	❸Driver	RKD514L-A	
Motor with brake(1)	Motor code	V010	V012
	❷Motor cord	TAE20S1-SMB□□ (TAE20S2-SNB□□)	
	❸Driver	RKD514LM-A	

Note (1) : In case of with brake type, the power supply unit for brake release shall be prepared at customer side.
(2) : A brake cord shall be prepared at customer side.
Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of motor cord can be specified by □□ in the end of supplemental code. Selecting length is up to 10m in increments of 1m.
※ The length under 10m is also selected by two digits. (Example of 3m : TAE20R8-SM03)

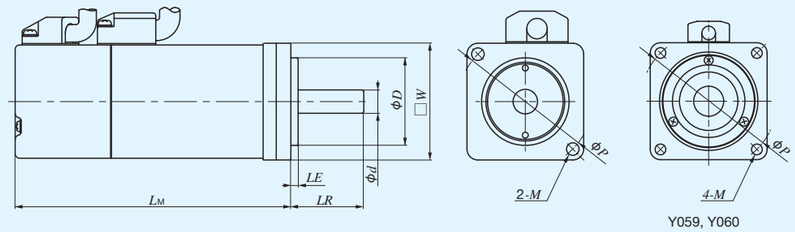
Table 17 Electric devices for the motor of Oriental Motor Corporation and Programmable controller CTN480G

Items	Model number
Motor code	V009, V010, V011, V012
❺Programmable controller	CTN480G
❻Teaching box	TAE10M5-TB
❼Pulse limit cord	TAE10S3-LD□□ (TAE10S4-LD□□)

Remarks 1 : The cords in ( ) have high bending resistance.
2 : The length of pulse limit cord can be specified by increments of 1m up to 20m maximum at the end of model number □□.
※ Code is specified by two digits even if length of cord is less than 10m.
(Example for case of 3m : TAE10S3-LD03)
3 : The length of pulse limit cord is 1.5m.

Specification of Motor and Driver

■*AC servo motor and Driver of Yaskawa Electric Corporation (RoHS compliance)*



Y059, Y060

Motor specifications

Motor code	Motor model number	Power supply voltage V	Rated output W	Rated torque N・m	Instantaneous maximum torque N・m	Rated number of revolution r/min	Motor inertia J_M $\times10^{-4}$kg・m²	Encoder specification	Mass kg
Y048	SGMJV-01A3A21	200	100	0.318	1.110	3000	0.0665	Common for incremental and absolute 20bits (1048576pulse/rev)	0.4
Y050	SGMJV-01A3A2C		100	0.318	1.110		0.0812		0.7
Y059	SGMJV-02A3A21		200	0.637	2.230		0.259		0.9
Y060	SGMJV-02A3A2C		200	0.637	2.230		0.323		1.5

Motor mounting dimension unit : mm

Motor code	□$W\times L_M$	LR	LE	d	D	P	M
Y048	40×82.5	25	2.5	8	30	46	ϕ4.3
Y050	40×127.5	25	2.5	8	30	46	ϕ4.3
Y059	60×80	30	3	14	50	70	ϕ5.5
Y060	60×120	30	3	14	50	70	ϕ5.5

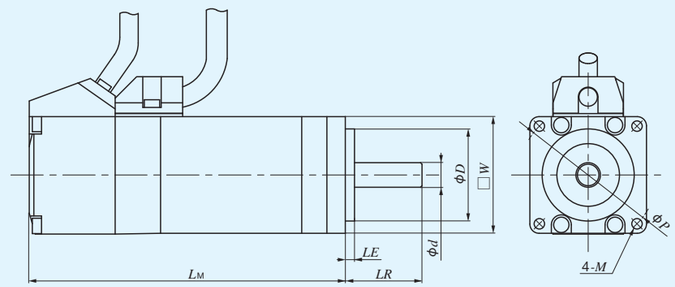
Driver specifications

Item \ Model number of driver	SGDV-R90A01A	SGDV-1R6A01A
Applicable motor code	Y048, Y050	Y059, Y060
Rated output	200V	200V
Feed back	100W	200W
Command input pulse	Serial encoder	
Type of command input pulse	Selection one from symbol with pulse line, CCW or CW with pulse line, two phase pulse with 90-degree difference.	
Capability of command input speed	Line driver or Open collector	
Main power supply voltage	Three phases AC200～230V −15～10% 50/60Hz	
Control circuit supply voltage	Single phase AC200～230V −15～10% 50/60Hz	
Continuous rated current Arms	0.91	1.60
Maximum consumption current Arms	2.90	5.80
Ambient temperature in operation	0～55℃	
Ambient temperature in storage	−20～85℃	
Ambient temperature in operation and storage	90%RH or less (Keep dewdrop free)	
Mass kg	0.9	0.9

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

Specification of Motor and Driver

■AC servo motor and Driver of Panasonic Corporation（RoHS compliance）



Motor specifications

Motor code	Motor model number	Power supply voltage V	Rated output W	Rated torque N・m	Instantaneous maximum torque N・m	Rated number of revolution r/min	Motor inertia J_M ×10⁻⁴kg・m²	Encoder specification	Mass kg
P022	MSME012S1A	200	100	0.32	0.95	3000	0.051	Common for incremental and absolute 17bits (131072pulse/rev)	0.47
P023	MSME022S1A		200	0.64	1.91		0.140		0.82
P027	MSME012S1B		100	0.32	0.95		0.054		0.68
P028	MSME022S1B		200	0.64	1.91		0.160		1.30

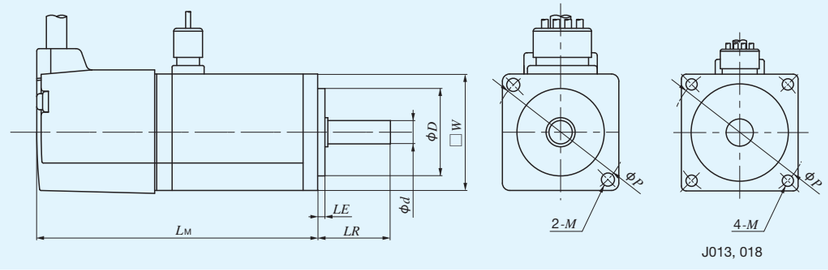
Motor mounting dimension unit：mm

Motor code	□W×L_M	LR	LE	d	D	P	M
P022	38×92	25	3	8	30	45	ϕ3.4
P023	60×79.5	30	3	11	50	70	ϕ4.5
P027	38×122	25	3	8	30	45	ϕ3.4
P028	60×116	30	3	11	50	70	ϕ4.5

Driver specifications

Item \ Model number of driver	MADHT1505	MADHT1507
Applicable motor code	P022, P027	P023, P028
Power supply voltage	200V	200V
Rated output	100W	200W
Feed back	Serial encoder	
Command input pulse	Selection one from Symbol with pulse line, CCW or CW with pulse line, two phases pulse with 90-degree difference.	
Type of command input pulse	Line driver, Photo coupler	
Capability of command input speed	Line receiver：4Mpps　Photo coupler：500kpps	
Main power supply voltage	Single phase/Three phases　AC200～240V　−15～10%　50/60Hz	
Continuous rated current　Arms	Single phase　AC200～240V　−15～10%　50/60Hz	
Maximum consumption current　Arms	1.1	1.5
Control circuit supply voltage	4.7	6.5
Ambient temperature in operation	0～55℃（Keep freeze free）	
Ambient temperature in storage	−20～65℃（Keep freeze free）	
Ambient temperature in operation and storage	90%RH or less（Keep dewdrop free）	
Mass　kg	0.8	0.8

■AC servo motor and Driver of Mitsubishi Electric Corporation（RoHS compliance）



J013, 018

Motor specifications

Motor code	Motor model number	Power supply voltage V	Rated output W	Rated torque N・m	Instantaneous maximum torque N・m	Rated number of revolution r/min	Motor inertia J_M ×10⁻⁴kg・m²	Encoder specification	Mass kg
J012	HF-KP13	200	100	0.32	0.95	3000	0.088	Common for incremental and absolute 18bits (262144pulse/rev)	0.56
J013	HF-KP23		200	0.64	1.90		0.240		0.94
J017	HF-KP13B		100	0.32	0.95		0.090		0.86
J018	HF-KP23B		200	0.64	1.90		0.310		1.60

Motor mounting dimension unit：mm

Motor code	□W×L_M	LR	LE	d	D	P	M
J012	40×82.4	25	2.5	8	30	46	ϕ4.5
J013	60×76.6	30	3	14	50	70	ϕ5.8
J017	40×123.5	25	2.5	8	30	46	ϕ4.5
J018	60×116.1	30	3	14	50	70	ϕ5.8

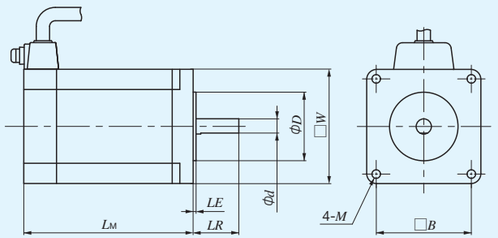
Driver specifications

Item \ Model number of driver	MR-J3-10A	MR-J3-20A
Applicable motor code	J012, J017	J013, J018
Power supply voltage	200V	200V
Rated output	100W	200W
Feed back	Serial encoder	
Command input pulse	Selection one from Symbol with pulse line, CCW or CW with pulse line, two phase pulse with 90-degree difference.	
Type of command input pulse	Line driver, Open collector	
Capability of command input speed	Line driver：4Mpps　Open collector：200kpps	
Main power supply voltage	Single phase/Three phase　AC200～230V　−15～10%　50/60Hz	
Control circuit supply voltage	Single phase　AC200～230V　−15～10%　50/60Hz	
Continuous rated current　Arms	0.8	1.4
Maximum consumption current　Arms	2.4	4.2
Ambient temperature in operation	0～55℃（Keep freeze free）	
Ambient temperature in storage	−20～65℃（Keep freeze free）	
Ambient temperature in operation and storage	90%RH or less（Keep dewdrop free）	
Mass　kg	0.8	0.8

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

Specification of Motor and Driver

■ ***Stepper motor and Driver of Oriental Motor Corporation*** **(*RoHS compliance*)**



Motor Specifications

Motor code	Motor model number	Step angle	Maximum holding torque N・m	Current A-phase	Roter inertia J_M $\times 10^{-5}$kg・m^2	Mass kg
V009	PK566AE	0.72	0.83	1.4	2.8	0.8
V010	PK566AEM		0.83	1.4	4.4	1.1
V011	PK569AE		1.66	1.4	5.6	1.3
V012	PK569AEM		1.66	1.4	7.2	1.6

Motor mounting dimension

unit : mm

Motor code	□$W \times L_M$	LR	LE	d	D	B	M
V009	60×59.5	24	1.5	8	36	50	ϕ4.5
V010	60×99.5						
V011	60×89						
V012	60×129						

Driver specifications

Items \ Model number of Driver	RKD514L-A	RKD514LM-A
Applicable motor code	V009, V011	V010, V012
Executing type	Micro step	
Command input pulse	CW/CCW signal, pulse/Rotational direction signal	
Type of command input pulse	Photo coupler input, input resistance 220Ω, input current 10～20mA	
Main power supply voltage	Single phase 100～115V±15% 50/60Hz 4.5A	
Ambient temperature in operation	0～50℃（Keep Freeze free）	
Ambient temperature in storage	85% or less（Keep dew drop free）	
Mass kg	0.85	

Caution in Use

◆Cleanroom Precision Positioning Table TC is a precision equipment. A careful handling is strongly required. Do not apply any excessive force or heavy shock.
◆Make sure that the mating surface for mounting the table is free from dust or harmful objects.
◆Good flatness is required for mounting surfaces to assure positioning accuracy. 30μm or better is recommended.
◆Lubricating part, C-Lube is built-in linear motion rolling guides and ball screws. It achieves long-term maintenance free.
◆The linear motion rolling guide and ball screw assembled in Cleanroom Precision Positioning Table TC are lubricated with IKO Low-dust generating grease.
◆Cleanroom Precision Positioning Table TC is machined, assembled and adjusted very precisely. Therefore, never disassemble or modify the table.
◆When multiple axes are assembled, allowable moment and maximum load mass should be checked for mass of assembling table and the carrying mass.

◎The appearance, specifications and other details of the products are subject to change without prior for improvement.

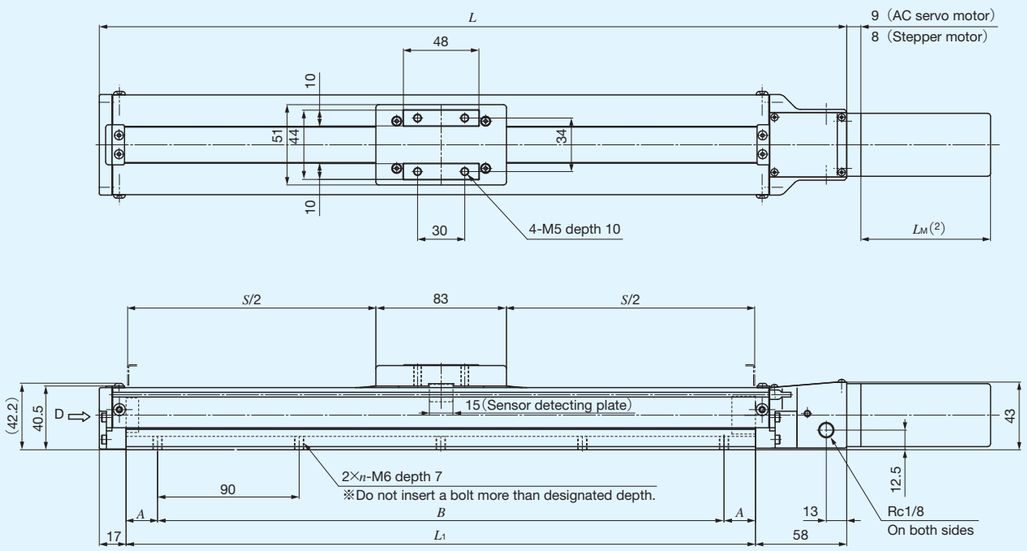
■Duration and scope of warranty

The period of warranty for the precision positioning table and related electrical devices is set at one year after delivery.
If a failure occurs while the product is correctly being used and the failure is clearly attributable to its manufacture, the product will be repaired at no cost within the warranty period.
A warranty here means the guarantee of the precision positioning table itself as a single unit.
It shall be a fare-paying service is required.
When the trouble is not obviously judged by our product deficiency as a result of our investigation, the customer shall be responsible for the repair coast. Secondary damage that occurs on the product breakdown or use is out of our warranty.
When disposing of the product, treat them as ordinary industrial waste.

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

IKO Cleanroom Precision Positioning Table TC···E

TC60E



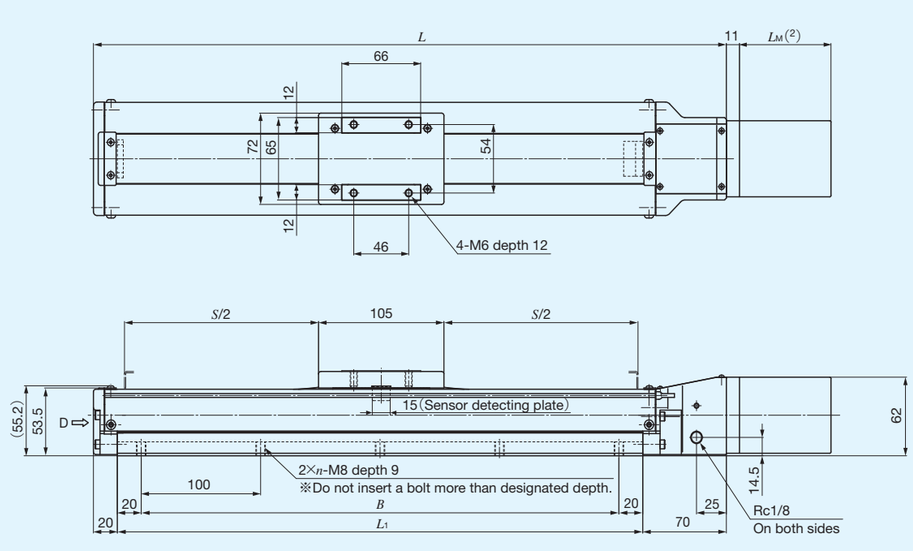
unit : mm

Bed length	Stroke length	Mounting holes of bed			Mass(1) (Ref.)
L	*S*	*B*	*C*	*n*	kg
150	50	90	30	2	1.1
200	100	180	10	3	1.3
300	200	270	15	4	1.7
400	300	360	20	5	2.0
500	400	450	25	6	2.4
600	500	540	30	7	2.7

Note (1) : Motor weight is not included.
(2) : See "Specifications of Motor and Driver".
Remark : When motor code V009 or V010 is selected, the motor attachment and the motor protrude from the mounting surface of bed.

IKO Cleanroom Precision Positioning Table TC···E

TC86E



unit : mm

Bed length	Stroke length	Mounting holes of bed		Mass(1) (Ref.)
L	*S*	*B*	*n*	kg
340	200	300	4	3.6
440	300	400	5	4.2
540	400	500	6	4.8
640	500	600	7	5.4
740	600	700	8	6.0
840	700	800	9	6.6
940	800	900	10	7.3

Note (1) : Motor weight is not included.
(2) : See "Specifications of Motor and Driver".

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