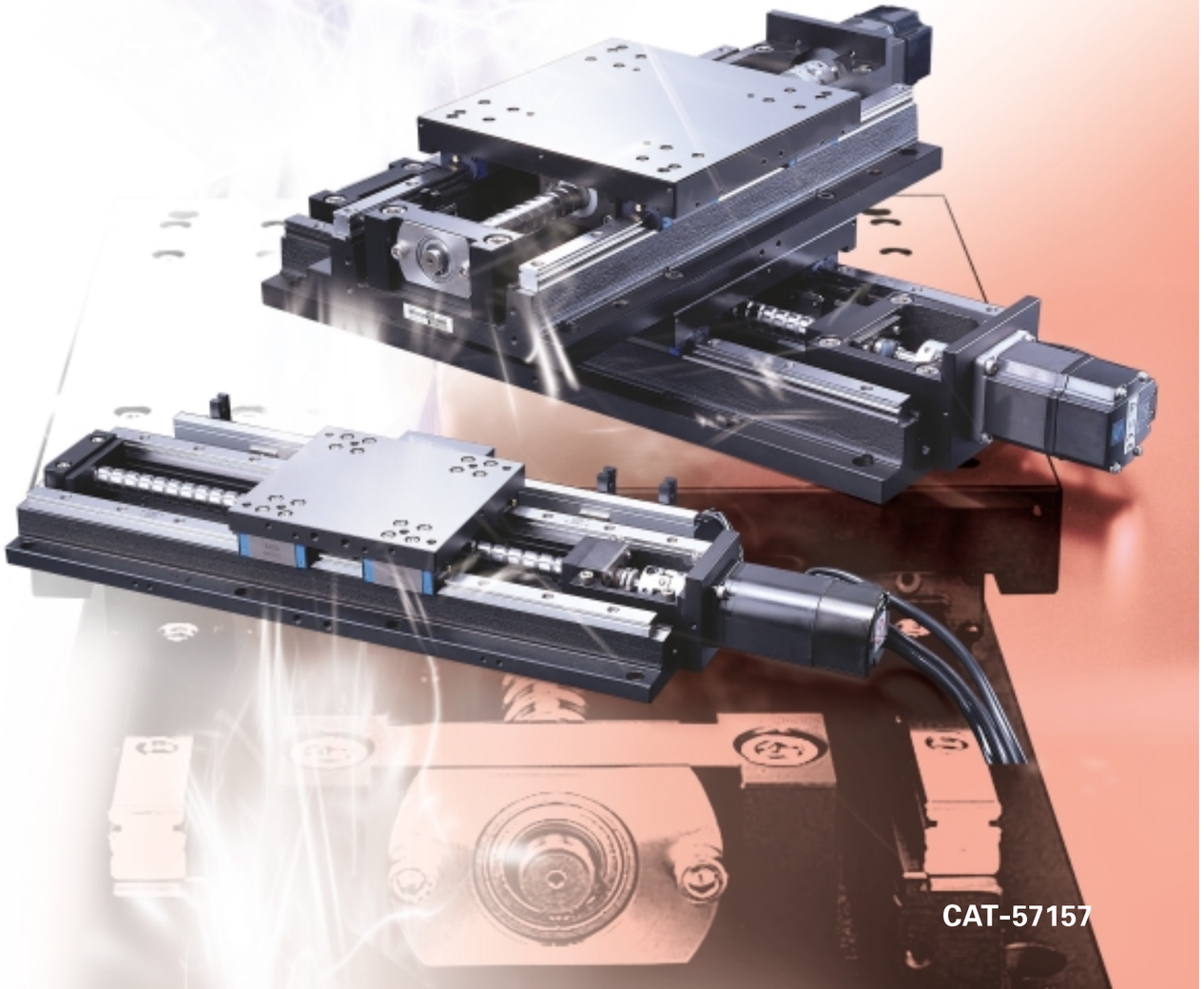
IKO

High Rigidity and Large Load Capacity Table

TSLH & CTLH



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IKO High Rigidity and Large Load Capacity Table

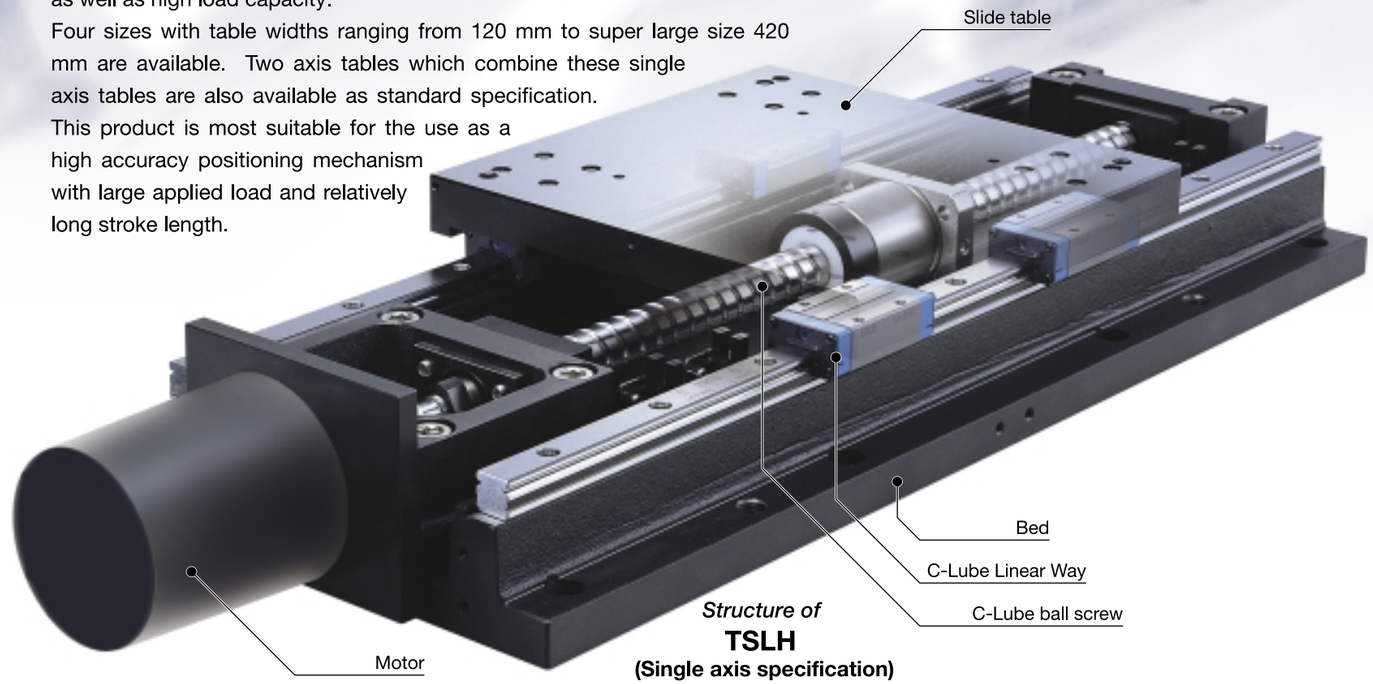
TSLH and CTLH

IKO TSLH and CTLH are positioning tables, featuring high reliability, high accuracy and high rigidity.

IKO C-Lube Linear Ways are assembled on a slide table and a bed made of cast iron which are designed to have high rigidity and superior vibration damping characteristics, and a precision ball screw is assembled as drive mechanism. With the parallel arrangement of a pair of IKO C-Lube Linear Ways, this table provides stable and high running and positioning accuracy, as well as high load capacity.

Four sizes with table widths ranging from 120 mm to super large size 420 mm are available. Two axis tables which combine these single axis tables are also available as standard specification.

This product is most suitable for the use as a high accuracy positioning mechanism with large applied load and relatively long stroke length.



Structure of
TSLH
(Single axis specification)

High running and positioning accuracy

The slide table and bed made of cast iron are finished by grinding and high accuracy component parts are carefully selected for assembly, so both high running accuracy and high positioning accuracy can be obtained.

High rigidity and large loading weight

The design of the table featuring optimal arrangement of two sets of C-Lube Linear Ways mounted on a high rigidity bed achieves high strength under moment and complex load as well as high load capacity.

Maintenance free specification for 5 years or 20,000 km

CTLH
(Two axis specification)

Series includes the super large size with a table width of 420 mm

Four sizes with table widths ranging from 120 mm up to super large size 420 mm are available. Two axis specification tables which combine these single tables are also available as standard specification. Stroke length can also be selected from many lengths provided.

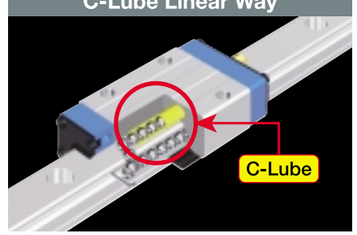
Models	Width of table (mm)	Stroke length (mm)									
		100	150	200	250	300	400	500	600	800	1000
TSLH 120 M	120	●	●	●	●	●					
TSLH 220 M	220		●	●	●	●	●	(●)	(●)		
TSLH 320 M	320					●	●	●	(●)	(●)	(●)
TSLH 420 M	420							●	●	●	(●)

Remark: For the stroke length in ( ), consult IKO.

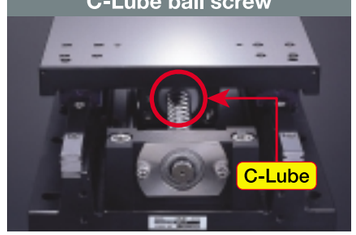
Maintenance free

C-Lube Linear Way and C-Lube ball screw keep lubrication condition well for long period of time allowing lubrication maintenance avoidable up to 5 years or 20,000 km of running distance.

C-Lube Linear Way

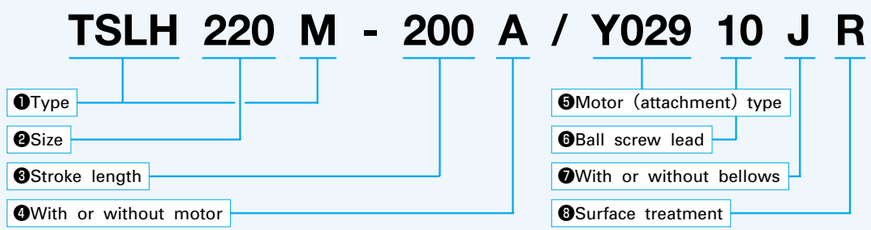


C-Lube ball screw



Identification Number

Example of identification number (Single axis specification)



❶Type	TSLH···M : Precision Positioning Table LH (Single axis specification)

❷Size	Number shows the width of table.

❸Stroke length	Stroke lengths in Table 1 are available.

The stroke length of the table with bellows is shorter than that without bellows. Refer to the dimension table.

Table 1 Stroke length

Model number	Table width mm	Stroke length mm
TSLH120M	120	100, 150, 200, 250, 300
TSLH220M	220	150, 200, 250, 300, 400 (500, 600)
TSLH320M	320	300, 400, 500 (600, 800, 1000)
TSLH420M	420	500, 600, 800 (1000)

Remark : When the stroke length indicated in the parenthesis is required, consult IKO

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

In case the motor is provided by the customer, select "without motor" (No symbol).

❺Motor (attachment) type	Select a motor code in Table 2.

In case "without motor" (No symbol) is selected in item ❹, the motor attachment and coupling for the motor type selected in this item are attached.

Table 2 Motor type and code

Model number	Motor type			
	AC servo motor		Stepping motor	
	Without brake	With brake	Without brake	With brake
TSLH120M	Y028, P002, J002	Y033, P007, J007	V011	V012
TSLH220M	Y029, P003, J003	Y034, P008, J008	V013	V014
TSLH320M				
TSLH420M	Y030, P004, J004	Y035, P009, J009	—	—

❻Ball screw lead	5 : Lead 5mm, 10 : Lead 10mm

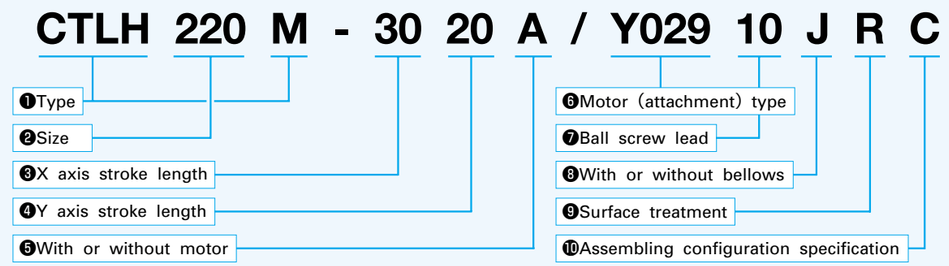
❼With or without bellows	No symbol : Without bellows, J : With bellows

The stroke length of the table with bellows is a little shorter than that without bellows. Refer to the dimension table.

❽Surface treatment	No symbol : Black chrome surface treatment, R : Black chrome surface treatment 1, L : Black chrome surface treatment 2

Black chrome surface treatment : Treatment is made on all surfaces of main parts except Linear Ways, ball screw and ball bearings.
Black chrome surface treatment 1 : In addition to the above, treatment is made on the Linear Way surface.
Black chrome surface treatment 2 : In addition to the above treatment 1, treatment is made on the ball screw surface.
Black chrome surface treatment is a surface treatment by which a black permeable film is formed on the surface to increase corrosion resistance.
The films on the reference surfaces of table and bed are removed after the treatment.

Example of identification number (Two axis specification)



❶Type	CTLH···M : Precision Positioning Table LH (Two axis specification)

❷Size	120 : Table width 120mm 220 : Table width 220mm 320 : Table width 320mm

Single axis tables in different sizes can be assembled.

❸❹Stroke length	Refer to the dimension table.

The stroke length of each axis is indicated in cm. The lengths that can be selected are different for X and Y axes.
The stroke length of the table with bellows is shorter than that without bellows. Refer to the dimension table.

❺With or without motor	No symbol : Without motor, A : With motor

In case the motor is provided by the customer, select "without motor" (No symbol).

❻Motor (attachment) type	Select a motor code in Table 3.

In case "without motor" (No symbol) is selected in item 5, the motor attachment and coupling for the selected motor type are attached.

Table 3 Motor type and code

Model number	Motor type			
	AC servo motor		Stepping motor	
	Without brake	With brake	Without brake	With brake
CTLH120M	Y028, P002, J002	Y033, P007, J007	V011	V012
CTLH220M	Y029, P003, J003	Y034, P008, J008	V013	V014
CTLH320M				

❼Ball screw lead	5 : Lead 5mm, 10 : Lead 10mm

❽With or without bellows	No symbol : Without bellows, J : With bellows

The stroke length of the table with bellows is a little shorter than that without bellows. Refer to the dimension table.

❾Surface treatment	No symbol : Black chrome surface treatment, R : Black chrome surface treatment 1, L : Black chrome surface treatment 2

Black chrome surface treatment : Treatment is made on all surfaces of main parts except Linear Ways, ball screw and ball bearings.
Black chrome surface treatment 1 : In addition to the above, treatment is made on the Linear Way surface.
Black chrome surface treatment 2 : In addition to the above treatment 1, treatment is made on the ball screw surface.
Black chrome surface treatment is a surface treatment by which a black permeable film is formed on the surface to increase corrosion resistance.
The films on the reference surfaces of table and bed are removed after the treatment.

❿Assembling configuration specification	No symbol : Standard configuration, C : Reverse configuration

Standard configuration : X and Y axes are assembled with the Y axis motor at right in sight of X axis motor in front.
Reverse configuration : X and Y axes are assembled with the Y axis motor at left in sight of X axis motor in front.

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

Accuracy

The accuracy of precision positioning table LH are shown in Table 4.

Table 4 Accuracy

unit : mm

	Size	Stroke length X axis	Stroke length Y axis	Positioning accuracy	Repeatability	Parallelism in operation A	Straightness	Squareness of XY travel	Back lash
Single axis specification	**TSLH120M**	100		0.010	±0.002	0.010	0.005	—	0.001
		150							
		200		0.015		0.015			
		250					0.010		
		300		0.020		0.020			
	TSLH220M	150		0.010	±0.002	0.010	0.005	—	0.001
		200		0.015		0.015			
		250							
		300							
		400		0.020		0.020	0.010		
	TSLH320M	300		0.015	±0.002	0.015	0.005	—	0.001
		400		0.020					
		500							
	TSLH420M	500		0.025	±0.002	0.025	0.015	—	0.001
		600		0.030		0.030			
		800		0.035		0.035	0.020		
Two axis specification	**CTLH120M**	100	100	0.015	±0.002	0.015	0.005	0.005	0.001
		200	100	0.020		0.020	0.010	0.010	
		200	200			0.025			
		300	200	0.030		0.030	0.025		
		300	300						
	CTLH220M	200	200	0.020	±0.002	0.025	0.010	0.010	0.001
		300	200						
		300	300						
		400	300	0.030		0.035	0.020	0.015	
		400	400						
	CTLH320M	300	300	0.020	±0.002	0.020	0.005	0.010	0.001
		400	300	0.025		0.025	0.010	0.015	
		400	400						
		500	400	0.030					
		500	500						

Maximum speed

The maximum operation speed of precision positioning table LH are shown in Table 5.

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

Table 5 Maximum speed

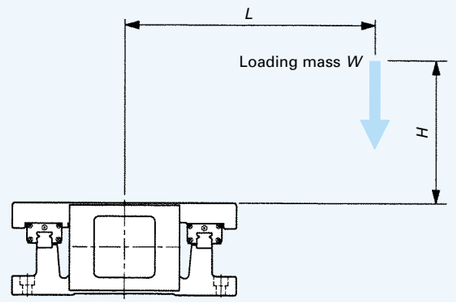
Motor type	Size: Single axis specification	Size: Two axis specification	Motor speed r/min	Maximum speed mm/s: Lead 5mm	Maximum speed mm/s: Lead 10mm
AC servo motor	**TSLH120M** **TSLH220M**	**CTLH120M** **CTLH220M**	3000	250	500
	TSLH320M **TSLH420M**	**CTLH320M**	2690	224	448
Stepping motor	**TSLH120M** **TSLH220M** **TSLH320M**	**CTLH120M** **CTLH220M** **CTLH320M**	1800	150	300

Maximum Loading Mass

Table 6 shows the maximum loading mass of Precision Positioning Table LH.

The maximum loading mass is a general value of the maximum mass that can be loaded on the table when the table is used in a horizontal position. The value of the maximum mass varies depending on the positions (height distance H and length distance L) where the mass is loaded.

Table 6 Maximum loading mass



unit : kg

Size	Lead of ball screw mm	Height distance H mm	Length distance L mm: 0	100	200	300	400	500	600	800	1000
TSLH120M	5	0	280	83	49	34	27	22	18	14	11
		200	230	81	48	34	27	22	18	14	11
		400	180	77	47	34	26	22	18	14	11
		600	150	72	46	33	26	21	18	14	11
	10	0	110	63	37	26	20	16	14	11	8.5
		200	110	59	36	26	20	16	14	11	8.5
		400	92	51	34	25	20	16	14	10	8.5
		600	67	44	31	24	19	16	13	10	8.4
TSLH220M	5	0	410	220	140	100	82	68	58	44	36
		200	410	220	140	100	82	67	57	44	36
		400	410	210	140	100	81	67	57	44	36
		600	360	200	130	100	80	67	57	44	36
	10	0	270	170	110	79	62	51	44	34	27
		200	270	160	110	78	62	51	44	34	27
		400	240	140	100	76	61	50	43	33	27
		600	190	130	93	72	59	49	42	33	27
TSLH320M	5	0	820	730	500	380	300	260	220	170	140
		200	820	720	490	380	300	250	220	170	140
		400	820	700	490	370	300	250	220	170	140
		600	820	670	480	370	300	250	220	170	140
	10	0	380	380	380	290	230	190	170	130	110
		200	380	380	370	280	230	190	170	130	110
		400	380	380	360	280	230	190	160	130	110
		600	380	380	330	270	220	190	160	130	110
TSLH420M	5	0	800	800	560	440	360	300	260	210	170
		200	800	790	560	440	360	300	260	210	170
		400	800	770	560	430	360	300	260	210	170
		600	800	750	550	430	350	300	260	210	170
	10	0	360	360	360	330	270	230	200	160	130
		200	360	360	360	330	270	230	200	160	130
		400	360	360	360	320	270	230	200	160	130
		600	360	360	360	310	260	220	190	150	130

Remark 1 : The maximum loading mass is obtained by calculating the mass under that the rating life of the ball screw or linear way becomes 18000 hours when the table is continuously operated in an operation pattern consisting of 0.2s duration each at the maximum speed (for each size), at acceleration, and at deceleration.

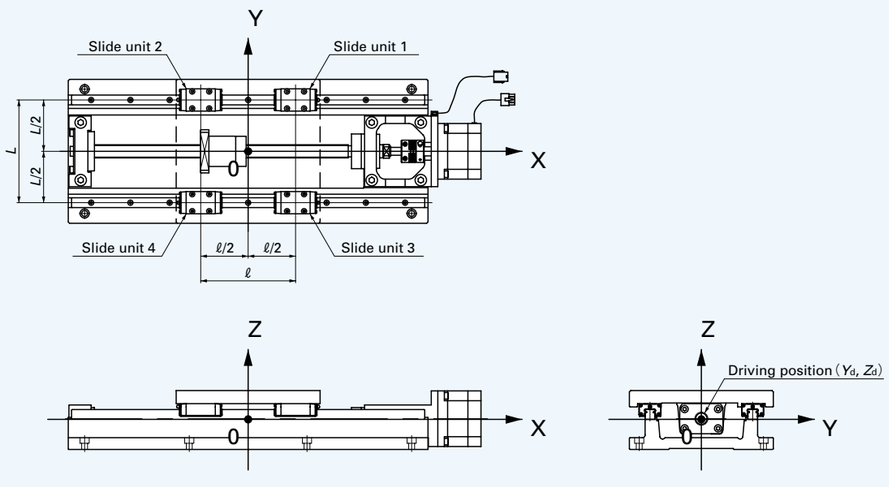
2 : For two axis specification table, examine the loading mass for each axis.

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

Specifications for Linear Motion Rolling Guides and Ball Screws

The specifications of liner motion rolling guides which are used in Precision Positioning Table LH are shown in Table 7 and 8 as a reference. These load ratings are not applicable for the maximum load on Precision Positioning Table L. Refer Maximum Allowable Load on Table 6.

Table 7 Specifications of linear motion rolling guide



Model	Basic dynamic load rating(1) C N	Basic static load rating(1) C0 N	Locations L mm	ℓ mm	Yd mm	Zd mm
TSLH120M	6260	8330	88	82	0	2
TSLH220M	11600	13400	157	145	0	1
TSLH320M	25200	28800	240	210	0	6
TSLH420M	30800	38300	300	290	0	0

Note(1) : Load ratings in the table are those of one slide unit.

Table 8 Specifications of ball screws

Model	Type	Lead mm	Outside dia. of screw mm	Axial clearance mm	Basic dynamic load rating C N	Basic static load rating C0 N
TSLH120M	Ground screw	5	15	0	7070	12800
		10			7070	12800
TSLH220M	Ground screw	5	20	0	8230	17150
		10			10900	21700
TSLH320M	Ground screw	5	25	0	16700	43500
TSLH420M		10			15800	32700

Table inertia and starting torque

The table inertia and starting torque of Precision Positioning Table LH are shown in Table 9.

Table 9 Table inertia and starting torque

	Model number	Stroke length mm X-axis	Stroke length mm Y-axis	Table inertia J_T ×10⁻⁵kg・m² Lead 5mm	Table inertia J_T ×10⁻⁵kg・m² Lead 10mm	Starting torque T_0 N・m Lead 5mm	Starting torque T_0 N・m Lead 10mm
Single axis	**TSLH120M**	100		1.2	1.7	0.07	
		150		1.4	1.9		
		200		1.5	2.1		
		250		1.7	2.3		
		300		1.9	2.5		
	TSLH220M	150		5.1	6.9	0.12	
		200		5.7	7.5		
		250		6.3	8.1		
		300		7.0	8.7		
		400		8.2	10		
	TSLH320M	300		20	26	0.20	
		400		23	29		
		500		26	32		
	TSLH420M	500		30	39	0.22	
		600		33	42		
		800		39	48		
Two axis	**CTLH120M**	100	100	1.8	4.2	0.08	
		200	100	2.2	4.5		
		200	200	2.3	5.1		
		300	200	2.7	5.5		
		300	300	2.8	6.0		
	CTLH220M	200	200	7.8	16	0.12	
		300	200	9.1	17		
		300	300	9.3	18		
		400	300	11	19		
		400	400	11	21		
	CTLH320M	300	300	27	51	0.22	0.25
		400	300	30	54		
		400	400	30	57		
		500	400	33	60		
		500	500	34	62		

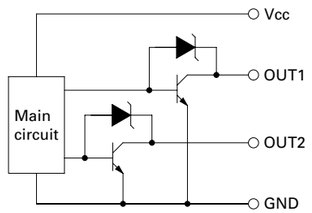
Remark : In case of two axis table, values in the table are for X-axis. Refer to the values in single axis for Y-axis.

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

Sensor specification

The sensor specifications are shown in Table10 and the specifications for connector are shown in Table 11. Table 12 is sensor timing chart.

Table 10 Sensor specification

Item \ Sensor	Origin(1)／CW Limit／CCW Limit／Pre-origin
Type	Photo sensor
Power supply voltage	DC5～24V ±10%
Current consumption	30mA or less
Output	NPN type Transistor ・Maximum input current：100mA ・Applied voltage ：DC30V以下 ・Residual voltage ：0.7V or less for 50mA of input current 0.4V or less for 16mA of input current
Output operation	Two operations are available. When light through：OFF When light blocked：ON
Operation indicator	LED（red）
Circuit diagram	

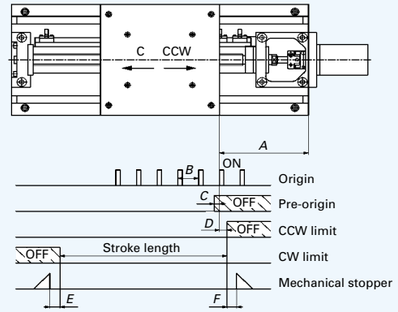
Note(1)：In case AC servo motor is selected, sensors are not attached to the table. Use C-phase of encoder for the origin signal.
(2)：OUT1 is connected. When approaching：OFF

Table 11 Specifications of connector

Pin NO.	Signal name	Connector（by Taiko Electronics AMP CO., LTD.）	
		Body side	Other side(2)
1	Origin(1)	Cap housing 172160-1	Plug housing 172168-1
2	Pre-origin		
3	CW limit		
4	CCW limit	Contactor 170365-1	Contactor 170363-1
5	Power input		
6	GND		

Note(1)：Not connected when AC servo motor is selected.
(2)：Connector shall be prepared by customer.

Table 12 Sensor timing chart



unit：mm

Model	Ball screw lead	A	B	C	D	E	F
TSLH120M	5	50	5	3	30	5.5	4.5
	10		10	7			
TSLH220M	5	45	5	3	30	14	10
	10		10	7		12	
TSLH320M	5	45	5	3	30	19	15
	10		10	7		17	
TSLH420M	5	45	5	3	30	18	15
	10		10	7			

Remarks：1. Values in the table are also available for each axis of two axis table.
2. Not applicable to table with bellows.
3. In case AC servo motor is selected, origin sensor is not attached to the table. Use C-phase or Z-phase for the origin signal.

Motor specification

Specifications of motor are shown in Table 13 and 14.

Table 13 AC servo motor

Model		Without brake		With brake(1)		Output [W]
Single axis	Two axis	Motor code	Motor type	Motor code	Motor type	
TSLH120M	**CTLH120M**	Y028	SGMAH-01AAA21-E	Y033	SGMAH-01AAA2C-E	100
		P002	MSMA012A1A	P007	MSMA012A1B	
		J002	HC-KFS13	J007	HC-KFS13B	
TSLH220M **TSLH320M**	**CTLH220M** **CTLH320M**	Y029	SGMAH-02AAA21-E	Y034	SGMAH-02AAA2C-E	200
		P003	MSMA022A1A	P008	MSMA022A1B	
		J003	HC-KFS23	J008	HC-KFS23B	
TSLH420M	—	Y030	SGMAH-04AAA21-E	Y035	SGMAH-04AAA2C-E	400
		P004	MSMA042A1A	P009	MSMA042A1B	
		J004	HC-KFS43	J009	HC-KFS43B	

Note(1)：In the motor with brake, power supply for brake release is needed.
In two axis table, the motor with brake is attached to Y-axis only.
When the motor code Y033 is selected, Y028 for X-axis and Y033 for Y-axis are attached.

Table 14 Stepping motor

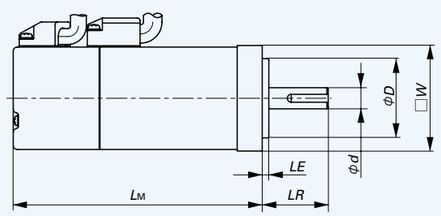
Model		Without brake		With brake(1)	
Single axis	Two axis	Motor code	Motor type	Motor code	Motor type
TSLH120M	**CTLH120M**	V011	PK569AE	V012	PK569AEM
TSLH220M **TSLH320M**	**CTLH220M** **CTLH320M**	V013	PK596AE	V014	PK596AEM

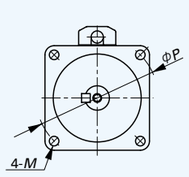
Note(1)：In two axis table, the motor with brake is attached to Y-axis only.
When the motor code V014 is selected, V013 for X-axis and Y014 for Y-axis are attached.

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

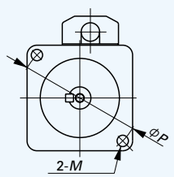
Specifications of Motor and Driver

Motor and driver by YASKAWA Electric Corporation

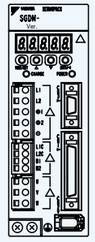




Y029, Y030, Y034, Y035



Y028, Y033



Specifications of motor

Motor code	Model	Power voltage V	Rated voltage W	Rated torque N・m	Maximum momentary torque N・m	Rated number of revolution r/min	Motor inertia J_M $\times10^{-4}$ kg・m²	Encoder type	Mass kg
Y028	SGMAH-01AAA21-E	200	100	0.318	0.955	3000	0.0364	Incremental 13 bits (8192 pulse/rev)	0.5
Y029	SGMAH-02AAA21-E		200	0.637	1.91		0.106		1.1
Y030	SGMAH-04AAA21-E		400	1.27	3.82		0.173		1.7
Y033	SGMAH-01AAA2C-E		100	0.318	0.955		0.0449		0.8
Y034	SGMAH-02AAA2C-E		200	0.637	1.91		0.164		1.6
Y035	SGMAH-04AAA2C-E		400	1.27	3.82		0.231		2.2

Dimension of motor

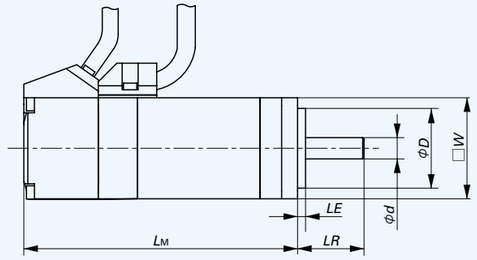
unit：mm

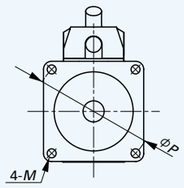
Motor code	□W×L_M	LR	LE	d	D	P	M
Y028	40× 94.5	25	2.5	8	30	46	φ4.3
Y029	60× 96.5	30	3	14	50	70	φ5.5
Y030	60×124.5	30	3	14	50	70	φ5.5
Y033	40×135	25	2.5	8	30	46	φ4.3
Y034	60×136	30	3	14	50	70	φ5.5
Y035	60×164	30	3	14	50	70	φ5.5

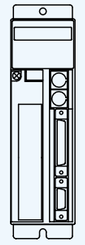
Specifications of driver

Driver type	SGDH-01AE-E	SGDH-02AE-E	SGDH-04AE-E
Applicable motor code	Y028, Y033	Y029, Y034	Y030, Y035
Rated output of applicable motor	100W	200W	400W
Signal feeding back	Serial encoder		
Type of command pulse input	＋ pulse line, 90degrees two phases, Chose one from CW or CCW.		
System of command pulse input	Line driver, Open corrector		
Main circuit power voltage	Single/Three phase AC200～230V −15～＋10% 50/60Hz		
Control circuit power supply	Single phase AC200～230V −15～＋10% 50/60Hz		
Continuously output current Arms	0.91	2.1	2.8
Maximum output current Arms	2.8	6.5	8.5
Ambient temperature in operation	0～50℃		
Ambient temperature in storage	−20～85℃		
Ambient humidity (use and storage)	Less than 90%RH (Keep dewdrop free)		
Mass kg	0.8	0.8	1.1

Motor and driver by Matsushita Electric Industrial Co., Ltd.







Specifications of motor

Motor code	Model	Power voltage V	Rated voltage W	Rated torque N・m	Maximum momentary torque N・m	Rated number of revolution r/min	Motor inertia J_M $\times10^{-4}$ kg・m²	Encoder type	Mass kg
P002	MSMA012A1A	200	100	0.32	0.95	3000	0.062	Incremental 2500 pulse/rev	0.56
P003	MSMA022A1A		200	0.64	1.91		0.17		1.0
P004	MSMA042A1A		400	1.3	3.8		0.36		1.6
P007	MSMA012A1B		100	0.32	0.95		0.066		0.76
P008	MSMA022A1B		200	0.64	1.91		0.20		1.4
P009	MSMA042A1B		400	1.3	3.8		0.39		2.0

Dimension of motor

unit：mm

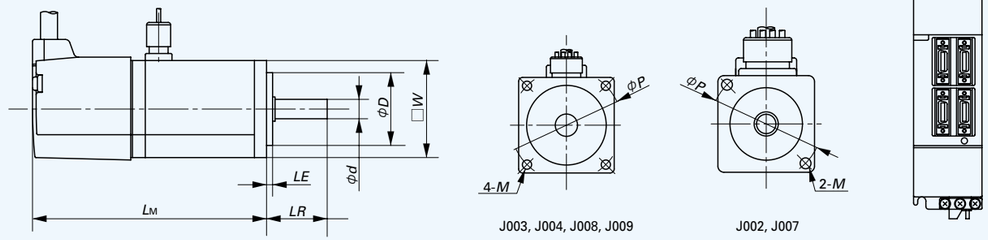
Motor code	□W×L_M	LR	LE	d	D	P	M
P002	38×103	25	3	8	30	45	φ3.4
P003	60× 94	30	3	11	50	70	φ4.5
P004	60×123.5	30	3	14	50	70	φ4.5
P007	38×135	25	3	8	30	45	φ3.4
P008	60×127	30	3	11	50	70	φ4.5
P009	60×156.5	30	3	14	50	70	φ4.5

Specifications of driver

Driver type	MSDA015A1A	MSDA023A1A	MSDA043A1A
Applicable motor code	P002, P007	P003, P008	P004, P009
Rated output of applicable motor	100W	200W	400W
Signal feeding back	Incremental type encoder 2500pulse/rev		
Type of command pulse input	＋ pulse line, 90degrees two phases, Chose one from CW or CCW.		
System of command pulse input	Line driver, Open corrector		
Main circuit power voltage	Single/Three phase AC200～230V −15～10% 50/60Hz	Three phase AC200～230V −15～＋10% 50/60Hz	
Control circuit power supply	Single phase AC200～230V −15～＋10% 50/60Hz		
Power supply capacity kVA	0.3	0.5	0.9
Ambient temperature in operation	0～55℃ (Keep dewdrop free)		
Ambient temperature in storage	−20～85℃ (Keep dewdrop free)		
Ambient humidity (use and storage)	Less than 90%RH (Keep dewdrop free)		
Mass kg	1.0	1.0	1.1

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

Motor and driver by Mitsubishi Electric Corporation (RoHS compatible)



Specifications of motor

Motor code	Model	Power voltage V	Rated voltage W	Rated torque N・m	Maximum momentary torque N・m	Rated number of revolution r/min	Motor inertia J_M $\times10^{-4}$ kg・m²	Encoder type	Mass kg
J002	HC-KFS13	200	100	0.32	0.95	3000	0.084	17 bit Common for absolute and incremental	0.53
J003	HC-KFS23		200	0.64	1.9		0.42		0.99
J004	HC-KFS43		400	1.3	3.8		0.67		1.45
J007	HC-KFS13B		100	0.32	0.95		0.087		0.89
J008	HC-KFS23B		200	0.64	1.9		0.47		1.6
J009	HC-KFS43B		400	1.3	3.8		0.72		2.1

Dimension of motor

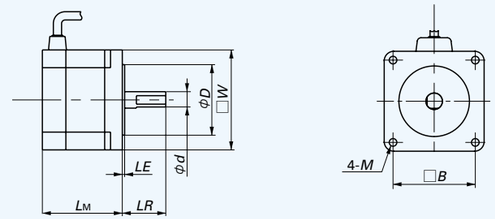
unit : mm

Motor code	□*W*×*LM*	*LR*	*LE*	*d*	*D*	*P*	*M*
J002	40× 96.5	25	2.5	8	30	46	φ4.5
J003	60× 99.5	30	3	14	50	70	φ5.8
J004	60×124.5	30	3	14	50	70	φ5.8
J007	40×124.5	25	2.5	8	30	46	φ4.5
J008	60×131.5	30	3	14	50	70	φ5.8
J009	60×156.5	30	3	14	50	70	φ5.8

Specifications of driver

Driver type	**MR-J2S-10A**	**MR-J2S-20A**	**MR-J2S-40A**
Applicable motor code	J002, J007	J003, J008	J004, J009
Rated output of applicable motor	100W	200W	400W
Signal feeding back	17bits encoder (Common for absolute and incremental)		
Type of command pulse input	+ pulse line, 90degrees two phases, Chose one from CW or CCW.		
System of command pulse input	Line driver, Open corrector		
Main circuit power voltage	Three phases AC200～230V, 50/60Hz or single phase AC230V, 50/60Hz		
Control circuit power supply	Single phase AC200～230V, 50/60Hz		
Rated output current A	0.71	1.1	2.3
Maximum output current A	2.2	3.4	6.9
Ambient temperature in operation	0～55℃ (Keep dewdrop free)		
Ambient temperature in storage	−20～65℃ (Keep dewdrop free)		
Ambient humidity (use and storage)	Less than 90%RH (Keep dewdrop free)		
Mass kg	0.7	0.7	1.1

Stepping motor and driver by ORIENTAL MOTOR CO., LTD (RoHS compatible)



Specifications of motor

Motor code	Model	Step angle	Maximum holding torque N・m	Current A-phase	Rotor Inertia J_M kg・m²	Mass (Ref.) kg
V011	PK569AE	0.72	1.66	1.4	5.6×10^{-5}	1.3
V013	PK596AE		2.1	1.4	14×10^{-5}	1.7
V012	PK569AEM		1.66	1.4	7.2×10^{-5}	1.6
V014	PK596AEM		2.1	1.4	24.7×10^{-5}	2.4

Dimension of motor

unit : mm

Motor code	□*W*×*LM*	*LR*	*LE*	*d*	*D*	*B*	*M*
V011	60× 89	24	1.5	8	36	50	φ4.5
V013	85× 68	37	2	14	60	70	φ6.5
V012	60×129	24	1.5	8	36	50	φ4.5
V014	85×119	37	2	14	60	70	φ6.5

Specifications of driver

Driver type	**RKD514L-A**	**RKD514LM-A**	**RKD514H-A**	**RKD514HM-A**
Applicable motor code	V011	V012	V013	V014
Excitation type	Micro step			
Input	CW/CCW signal Pulse/Rotational direction signal			
Input type	Photo coupler input, input resistance 220Ω, Input current 10～20mA			
Power supply	Single phase 100～115V±15% 50/60Hz 4.5A			
Ambient temperature in operation	0～50℃ (Keep freeze free)			
Ambient temperature in storage	Less than 85%RH (Keep dewdrop free)			
Mass kg	0.85			

Remark : Refer instruction manual.

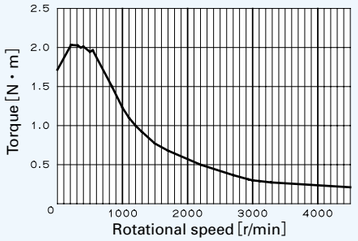
Connection of motor

Without motor		With motor		Connectors (Tyco Electronics AMP K.K.)	
Pin No.	Cord color	Pin No.	Cord color	Motor side	Connection side
1	Blue	1	Blue	Plug・Housing 172170-1 Terminal 170364-1	Plug・Housing 172162-1 Terminal 170366-1
2	No-use	2	No-use		
3	Red	3	Red		
4	No-use	4	No-use		
5	Orange	5	Orange		
6	No-use	6	No-use		
7	Green	7	Green		
8	No-use	8	No-use		
9	Black	9	Black		
10	No-use	10	No-use		
11	No-use	11	Red/White (Brake input +)		
12	No-use	12	Black/White (Brake input −)		

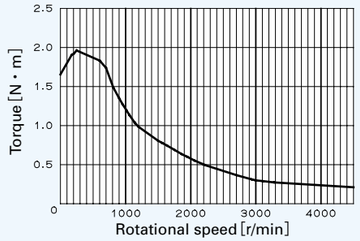
Remark : Prepare applicable connector.

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

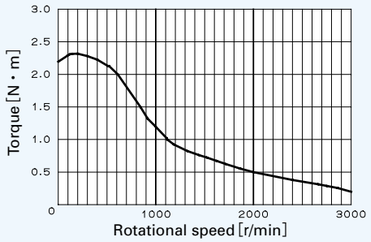
Torque charts of stepping motor



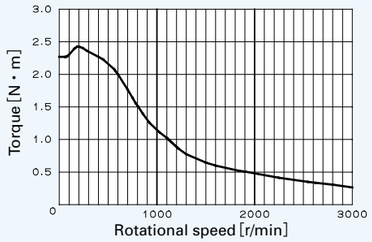
Motor code	Motor type	Driver type
V011	PK569AE	RK514L-A



Motor code	Motor type	Driver type
V012	PK569AEM	RKD514LM-A



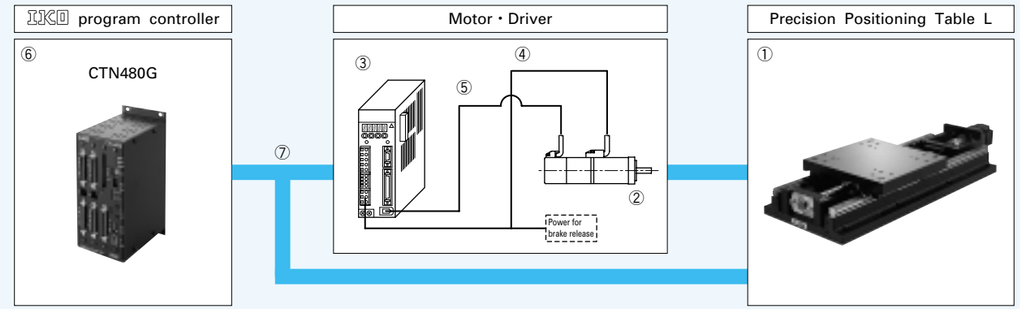
Motor code	Motor type	Driver type
V013	PK596AE	RKD514H-A



Motor code	Motor type	Driver type
V014	PK596AEM	RKD514HM-A

System Configuration

TSLH···M (for single axis table)



System configuration

Combination of Motor・Driver・Controller

AC servomotor

①Models	Without brake		With brake(1)		⑤Encoder cord	③Driver	⑥Controller CTN480G
	②Motor code	④Motor cord	②Motor code	④Motor cord			⑦Pulse・Limit cord
TSLH120M	Y028	TAE20G2-AM□□ (TAE20G1-AM□□)	Y033	TAE20G4-AMB□□ (TAE20G3-AMB□□)	TAE20G6-EC□□ (TAE20G5-EC□□)	SGDH-01AE-E	TAE10M7-LD□□ (TAE10M8-LD□□)
TSLH220M **TSLH320M**	Y029		Y034			SGDH-02AE-E	
TSLH420M	Y030		Y035			SGDH-04AE-E	
TSLH120M	P002	TAE20G8-AM□□ (TAE20G7-AM□□)	P007	TAE20H0-AMB□□ (TAE20G9-AMB□□)	TAE20H2-EC□□ (TAE20H1-EC□□)	MSDA015A1A	TAE10M9-LD□□ (TAE10P0-LD□□)
TSLH220M **TSLH320M**	P003		P008			MSDA023A1A	
TSLH420M	P004		P009			MSDA043A1A	
TSLH120M	J002	TAE20H4-AM□□ (TAE20H3-AM□□)	J007	TAE20H6-AMB□□ (TAE20H5-AMB□□)	TAE20H8-EC□□ (TAE20H7-EC□□)	MR-J2S-10A	TAE10P1-LD□□ (TAE10P2-LD□□)
TSLH220M **TSLH320M**	J003		J008			MR-J2S-20A	
TSLH420M	J004		J009			MR-J2S-40A	

Note(1) : In the motor with brake, power supply for brake release is needed.

Remarks : 1. The cord in ( ) have high bending resistance.
2. The lengths of cord can be specified by □□ in the end of supplemental code. Selectable length is up to 20m in increments of 1m.
※The length under 10m is also selected by two digits. (Example of 3m : TAE20G2-AM03)
3. The length of pulse cord and limit cord are 1.5m.

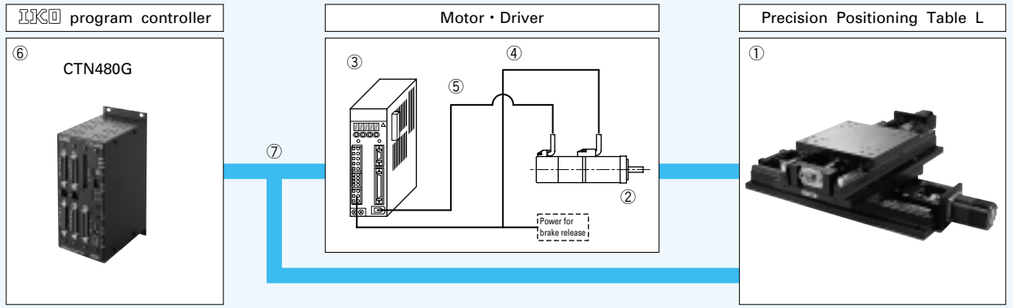
Stepping motor

①Models	Without brake			With brake			⑥Controller CTN480G
	②Motor code	④Motor cord	③Driver	②Motor code	④Motor cord	③Driver	⑦Pulse・Limit cord
TSLH120M	V011	TAE20R8-SM□□ (TAE20R9-SN□□)	RKD514L-A	V012	TAE20S1-SMB□□ (TAE20S2-SNB□□)	RKD514LM-A	TAE10S3-LD□□ (TAE10S4-LD□□)
TSLH220M **TSLH320M**	V013		RKD514H-A	V014		RKD514HM-A	

Remarks : 1. The cord in ( ) has high bending resistance.
2. The lengths of cord can be specified by □□ in the end of supplemental code. Selectable length is up to 10m in increments of 1m.
(Example of 3m : TAE20R8-SM03)
3. The length of limit cord can be specified by □□ in the end of supplemental code. Selectable length is up to 20m in increments of 1m.
(Example of 3m : TAE10R1-LD03)
4. The length of pulse cord is 1.5m.

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

CTLH···M (for two axis table)



System configuration

Combination of Motor・Driver・Controller

AC servomotor

①Models	Without brake		With brake(1)		⑤Encoder cord	③Driver	⑥Controller CTN480G
	②Motor code	④Motor cord	②Motor code	④Motor cord			⑦Pulse・Limit cord
CTLH120M	Y028	TAE20G2-AM□□ (TAE20G1-AM□□) ×2	Y033	TAE20G2-AM□□ (TAE20G1-AM□□) + TAE20G4-AMB□□ (TAE20G3-AMB□□)	TAE20G6-EC□□ (TAE20G5-EC□□) ×2	SGDH-01AE-E×2	TAE10M7-LD□□ (TAE10M8-LD□□) ×2
CTLH220M CTLH320M	Y029		Y034			SGDH-02AE-E×2	
CTLH120M	P002	TAE20G8-AM□□ (TAE20G7-AM□□) ×2	P007	TAE20G8-AM□□ (TAE20G7-AM□□) + TAE20H0-AMB□□ (TAE20G9-AMB□□)	TAE20H2-EC□□ (TAE20H1-EC□□) ×2	MSDA015A1A×2	TAE10M9-LD□□ (TAE10P0-LD□□) ×2
CTLH220M CTLH320M	P003		P008			MSDA023A1A×2	
CTLH120M	J002	TAE20H4-AM□□ (TAE20H3-AM□□) ×2	J007	TAE20H4-AM□□ (TAE20H3-AM□□) + TAE20H6-AMB□□ (TAE20H5-AMB□□)	TAE20H8-EC□□ (TAE20H7-EC□□) ×2	MR-J2S-10A×2	TAE10P1-LD□□ (TAE10P2-LD□□) ×2
CTLH220M CTLH320M	J003		J008			MR-J2S-20A×2	

Note(1) : In the motor with brake, power supply for brake release is needed.
Remarks : 1. The cord in ( ) has high bending resistance.
2. The lengths of cord can be specified by □□ in the end of supplemental code. Selectable length is up to 20m in increments of 1m.
※The length under 10m is also selected by two digits. (Example of 3m : TAE20G2-AM03)
3. The length of pulse cord and limit cord are 1.5m.

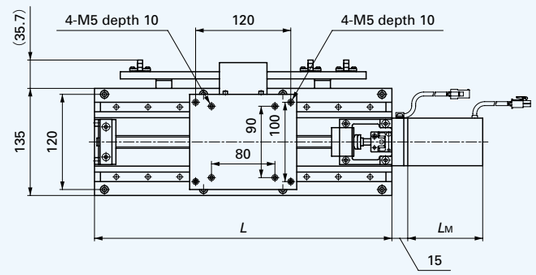
Stepping motor

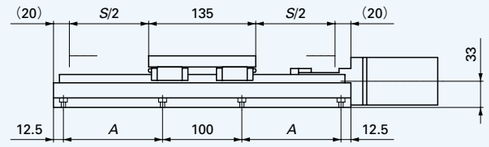
①Models	Without brake			With brake			⑥Controller CTN480G
	②Motor code	④Motor cord	③Driver	②Motor code	④Motor cord	③Driver	⑦Pulse・Limit cord
CTLH120M	V011	TAE20R8-SM□□ (TAE20R9-SN□□) ×2	RKD514L-A	V012	TAE20R8-SM□□ (TAE20R9-SN□□) + TAE20S1-SMB□□ (TAE20S2-SNB□□)	RKD514LM-A	TAE10S3-LD□□ (TAE10S4-LD□□) ×2
CTLH220M CTLH320M	V013		RKD514H-A	V014		RKD514HM-A	

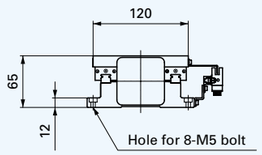
Remarks : 1. The cord in ( ) has high bending resistance.
2. The lengths of cord can be specified by □□ in the end of supplemental code. Selectable length is up to 10m in increments of 1m.
(Example of 3m : TAE20R8-SM03)
3. The length of limit cord can be specified by □□ in the end of supplemental code. Selectable length is up to 20m in increments of 1m.
(Example of 3m : TAE10S3-LD03)
4. The length of pulse cord is 1.5m.

IKO Precision Positioning Table LH

TSLH120M







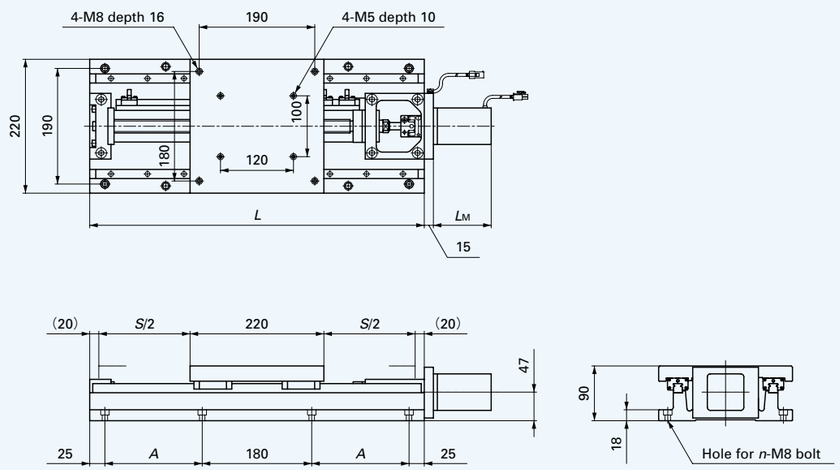
unit : mm

Model code	Stroke length S	Overall length L	Mounting hole of bed A	Mass(1) (Ref.) kg
TSLH120M-100	100	275	75	9.8
TSLH120M-150	150	325	100	10.8
TSLH120M-200	200	375	125	11.9
TSLH120M-250	250	425	150	12.9
TSLH120M-300	300	475	175	14.0

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".

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

TSLH220M

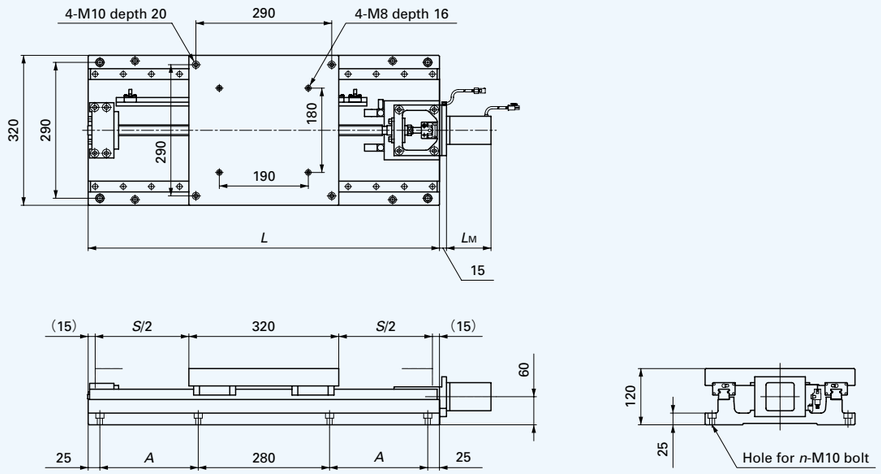


unit : mm

Model code	Stroke length S	Overall length L	Mounting hole of bed A (n × pitch)	Mounting hole of bed n	Mass(1) (Ref.) kg
TSLH220M-150	150	400	85	8	31.1
TSLH220M-200	200	450	110	8	33.3
TSLH220M-250	250	500	135	8	35.5
TSLH220M-300	300	550	160	8	37.6
TSLH220M-400	400	650	210 (2×105)	12	42.0
(TSLH220M-500)	500	750	260 (2×130)	12	46.4
(TSLH220M-600)	600	850	310 (2×155)	12	50.8

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If models in ( ) are required, consult IKO.

TSLH320M



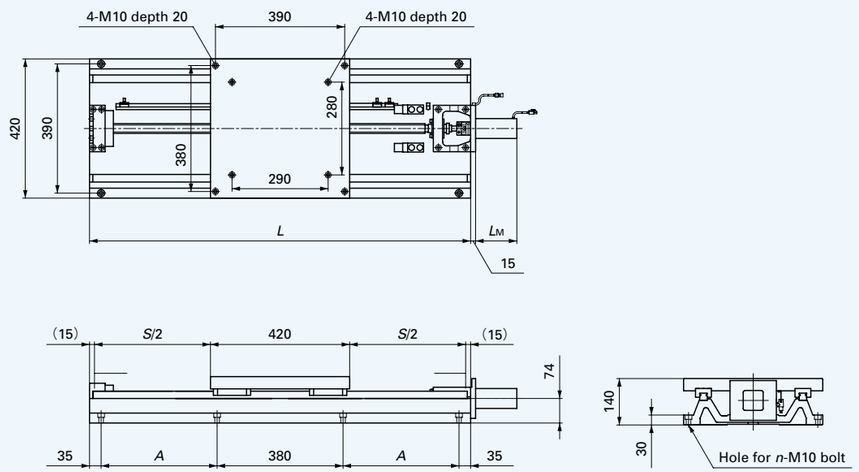
unit : mm

Model code	Stroke length S	Overall length L	Mounting hole of bed A (quanity × pitch)	Mounting hole of bed n	Mass(1) (Ref.) kg
TSLH320M- 300	300	650	160	8	99.5
TSLH320M- 400	400	750	210	8	109
TSLH320M- 500	500	850	260	8	118
(TSLH320M- 600)	600	950	310	8	127
(TSLH320M- 800)	800	1150	410 (2×205)	12	146
(TSLH320M-1000)	1000	1350	510 (2×255)	12	164

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If models in ( ) are required, consult IKO.

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

TSLH420M

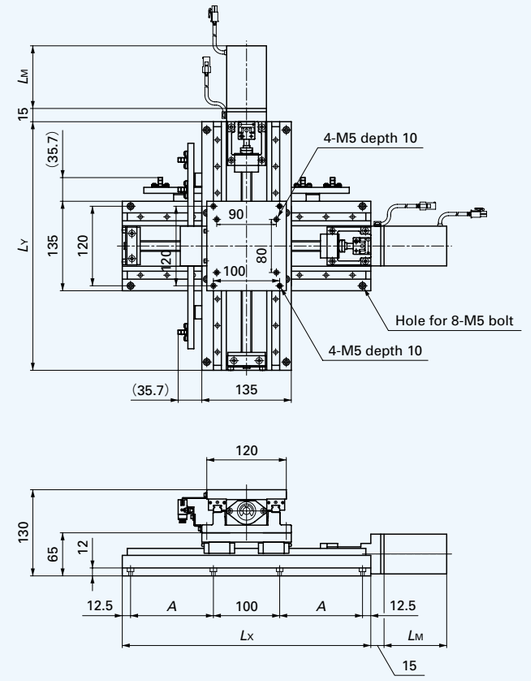


unit : mm

Model code	Stroke length S	Overall length L	Mounting hole of bed A (number × pitch)	Mounting hole of bed n	Mass(1) (Ref.) kg
TSLH420M- 500	500	950	250	8	176
TSLH420M- 600	600	1050	300	8	188
TSLH420M- 800	800	1250	400 (2×200)	12	212
(TSLH420M-1000)	1000	1450	500 (2×250)	12	237

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If models in ( ) are required, consult IKO.

CTLH120M



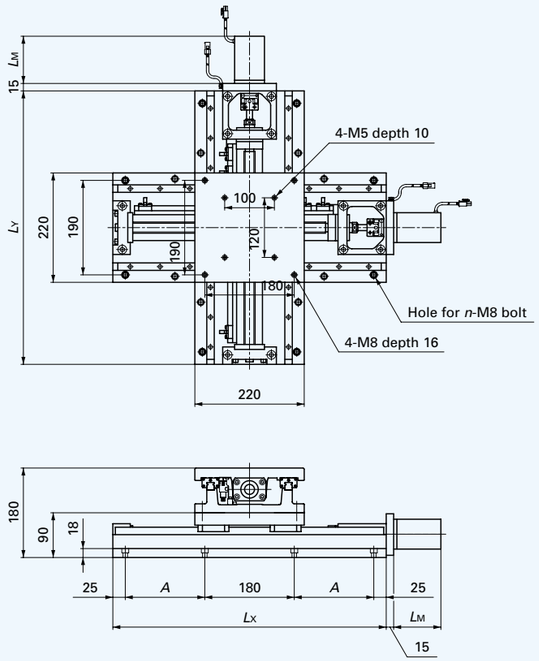
unit : mm

Model code	Stroke length S X axis	Stroke length S Y axis	Overall length LX	Overall length LY	Mounting hole of bed (n X pitch) A	Mass(1) (Ref.) kg
CTLH120M-1010	100	100	275	275	75	19.6
CTLH120M-2010	200	100	375	275	125	21.7
CTLH120M-2020	200	200	375	375	125	23.8
CTLH120M-3020	300	200	475	375	175	25.8
CTLH120M-3030	300	300	475	475	175	27.9

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If other stroke length and different size combination are required, consult IKO.

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

CTLH220M

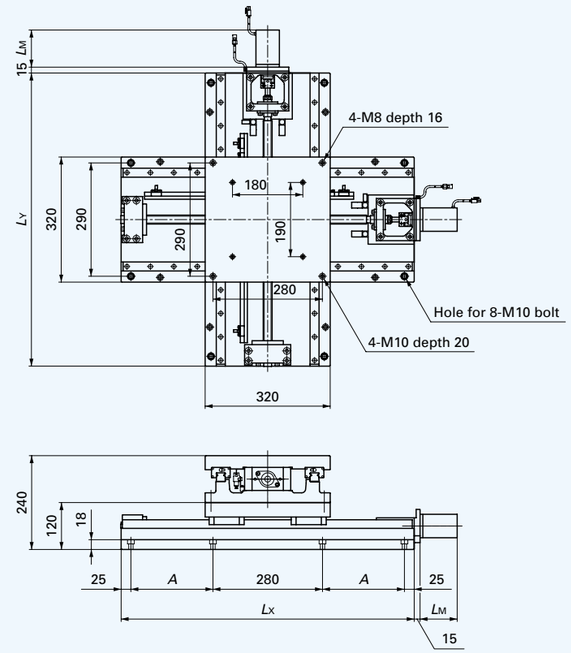


unit : mm

Model code	Stroke length S		Overall length		Mounting hole of bed (n × pitch)		Mass(1) (Ref.)
	X axis	Y axis	L_X	L_Y	A	n	kg
CTLH220M-2020	200	200	450	450	110	8	66.5
CTLH220M-3020	300	200	550	450	160	8	70.9
CTLH220M-3030	300	300	550	550	160	8	75.3
CTLH220M-4030	400	300	650	550	210 (2×105)	12	79.7
CTLH220M-4040	400	400	650	650	210 (2×105)	12	84.0

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If other stroke length and different size combination are required, consult IKO.

CTLH320M



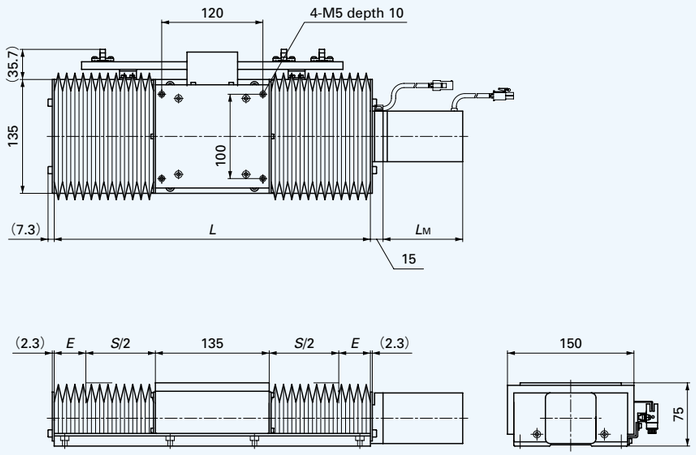
unit : mm

Model code	Stroke length S		Overall length		Mounting hole of bed (n X pitch)	Mass(1) (Ref.)
	X axis	Y axis	L_X	L_Y	A	kg
CTLH320M-3030	300	300	650	650	160	199
CTLH320M-4030	400	300	750	650	210	208
CTLH320M-4040	400	400	750	750	210	217
CTLH320M-5040	500	400	850	750	260	227
CTLH320M-5050	500	500	850	850	260	236

Note(1) : The motor mass is not included.
(2) : Refer to "Specifications of Motor and Driver".
Remark : If other stroke length and different size combination are required, consult IKO.

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

With bellows TSLH120M···J

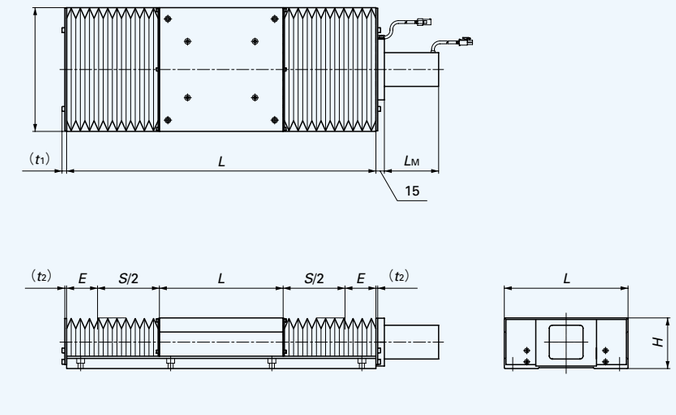


unit : mm

Model code	Stroke length S	Overall length L	E
TSLH120M-100···J	85	275	27.5
TSLH120M-150···J	125	325	32.5
TSLH120M-200···J	165	375	37.5
TSLH120M-250···J	205	425	42.5
TSLH120M-300···J	240	475	50.0

Note(1) : Refer to "Specifications of Motor and Driver".
Remark : 1. In vertical usage, the dimension of bellows needs to be modified. Consult IKO.
2. Regarding the mounting holes of bed, refer to the dimension table of TSLH120M

With bellows TSLH220M···J, TSLH320M···J, TSLH420M···J



unit : mm

Model code	Stroke length S	Overall length L	W	H	E	t1	t2
TSLH220M- 150···J	110	400	220	90	35	8.2	3.2
TSLH220M- 200···J	150	450			40		
TSLH220M- 250···J	180	500			50		
TSLH220M- 300···J	220	550			55		
TSLH220M- 400···J	300	650			65		
(TSLH220M- 500···J)	370	750			80		
(TSLH220M- 600···J)	440	850			95		
TSLH320M- 300···J	230	650	320	120	50	9.2	3.2
TSLH320M- 400···J	310	750			60		
TSLH320M- 500···J	400	850			65		
(TSLH320M- 600···J)	480	950			75		
(TSLH320M- 800···J)	640	1150			95		
(TSLH320M-1000···J)	800	1350			115		
TSLH420M- 500···J	410	950	420	140	60	10.5	4.5
TSLH420M- 600···J	500	1050			65		
TSLH420M- 800···J	660	1250			85		
(TSLH420M-1000···J)	830	1450			100		

Note(1) : Refer to "Specifications of Motor and Driver".
Remark : 1. In vertical usage, the dimension of bellows needs to be modified. Consult IKO.
2. If models in ( ) are required, consult IKO.
3. Regarding the mounting holes of bed, refer to the dimension table of TSLH220M, TSLH320M and TSLH420M.

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

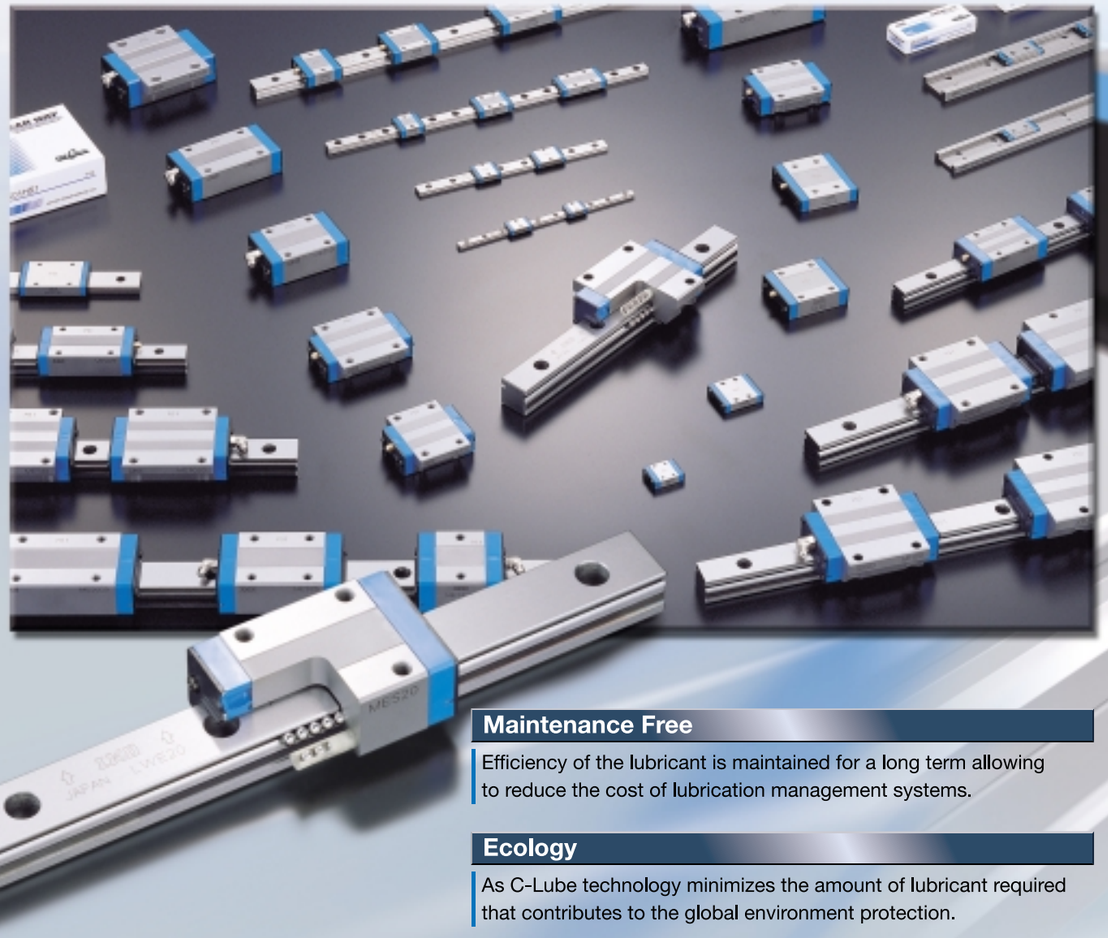
Engineers' dream now becomes a reality

Maintenance free for 20,000km or 5 years

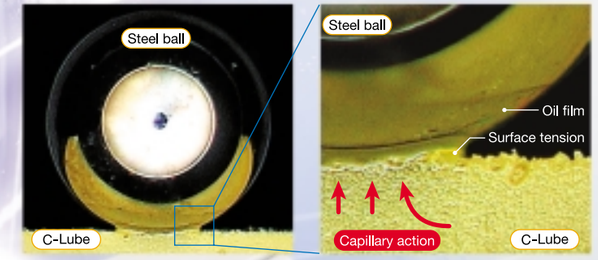
IKO Maintenance Free & Interchangeable

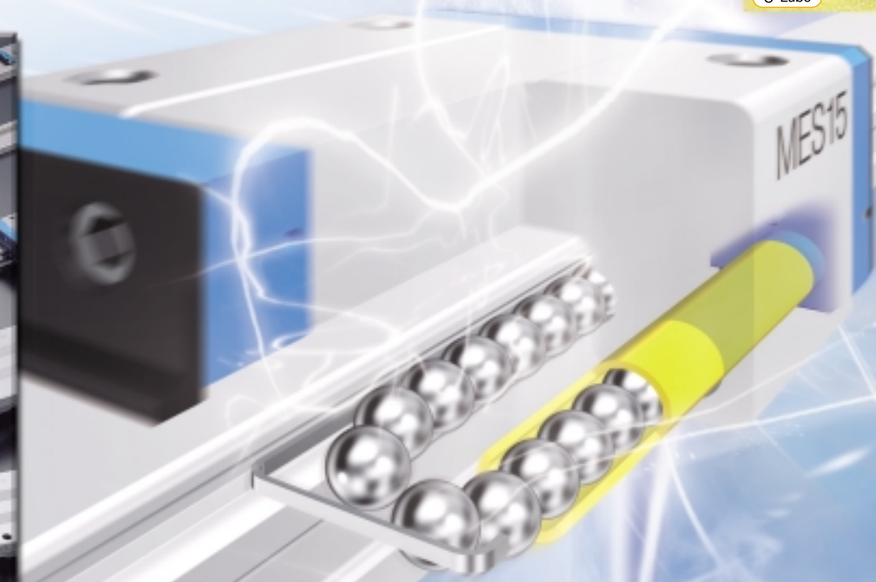
C-Lube Linear Way

ML ME MH MUL



The Capillary system that IKO have developed is a new method of lubrication. The Lube-body is formed by sintering fine resin powder to act as reservoir and the open pores are impregnated with a large amount of lubrication oil.
The capillary action deposits the appropriate amount of lubrication on the rolling elements to protect the raceways for long periods.





Interchangeable series is available.

C-Lube slide units can be supplied separately, and can be matched, replaced and added freely to the interchangeable track rail. This feature is be useful in machine design, facilitating standardization of product specification and quick changes of specification.

Maintenance Free

Efficiency of the lubricant is maintained for a long term allowing to reduce the cost of lubrication management systems.

Ecology

As C-Lube technology minimizes the amount of lubricant required that contributes to the global environment protection.

Compact

Unlike attached-on external lubrication parts, there is no increase in carriage length.
No loss of available stroke length when replacing standard units.

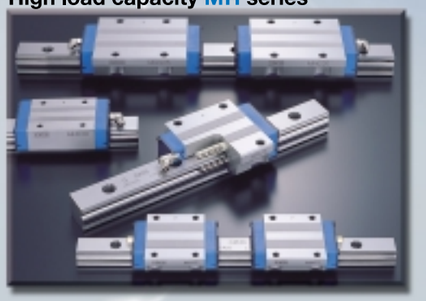
Smooth

Light and smooth running is achieved by the improvement of internal design. C-Lube is designed not to have direct contact with the track rail allowing very smooth operation.

Miniature type ML series

Compact ME series

High load capacity MH series



U-shaped track rail MUL series

World Network of IKO

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