



New Products

New Product

Electric Actuator ETS Series

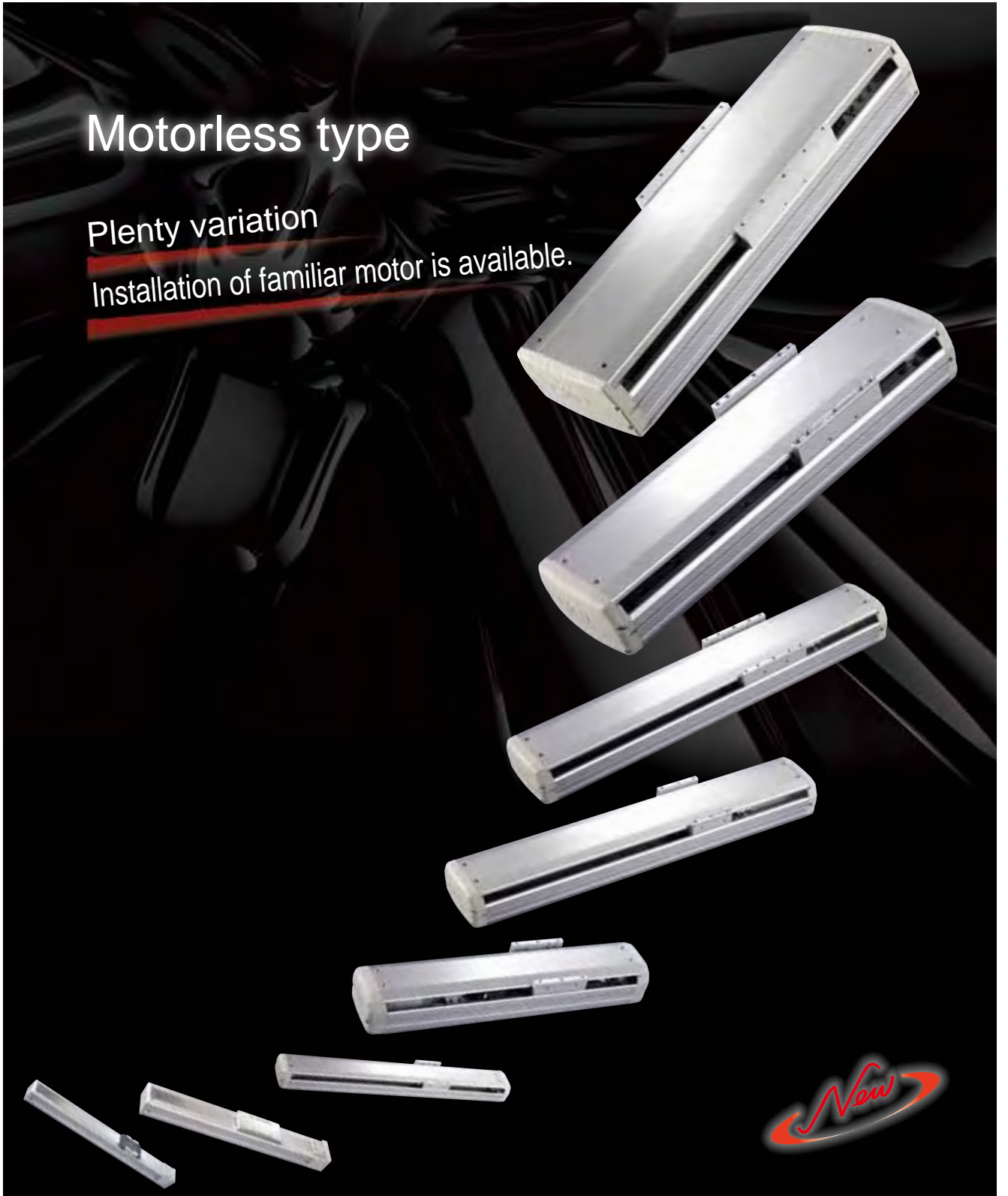


ELECTRIC ACTUATOR ETS SERIES

Motorless type

Plenty variation

Installation of familiar motor is available.



CKD Corporation

CC-1165A

ETS Series

8 sizes

5, 6, 10, 12, 13, 14, 17, 22

Variety of line-up suitable for use application

Max. load capacity : up to 150kg Max. stroke : up to 1500mm Max. speed : up to 2000mm/s



High rigidity body (ETS-10 or more size)



High rigity by using parallel guide
Low installation height oval type



Wide variety of lead!

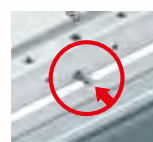


Suitable lead selection according to speed and load capacity
(2mm, 5mm, 10mm, 16mm, 20mm, 25mm, 40mm)

Easy Maintenance!

Direct oil supply from grease port
Long life with easy maintenance

※Option



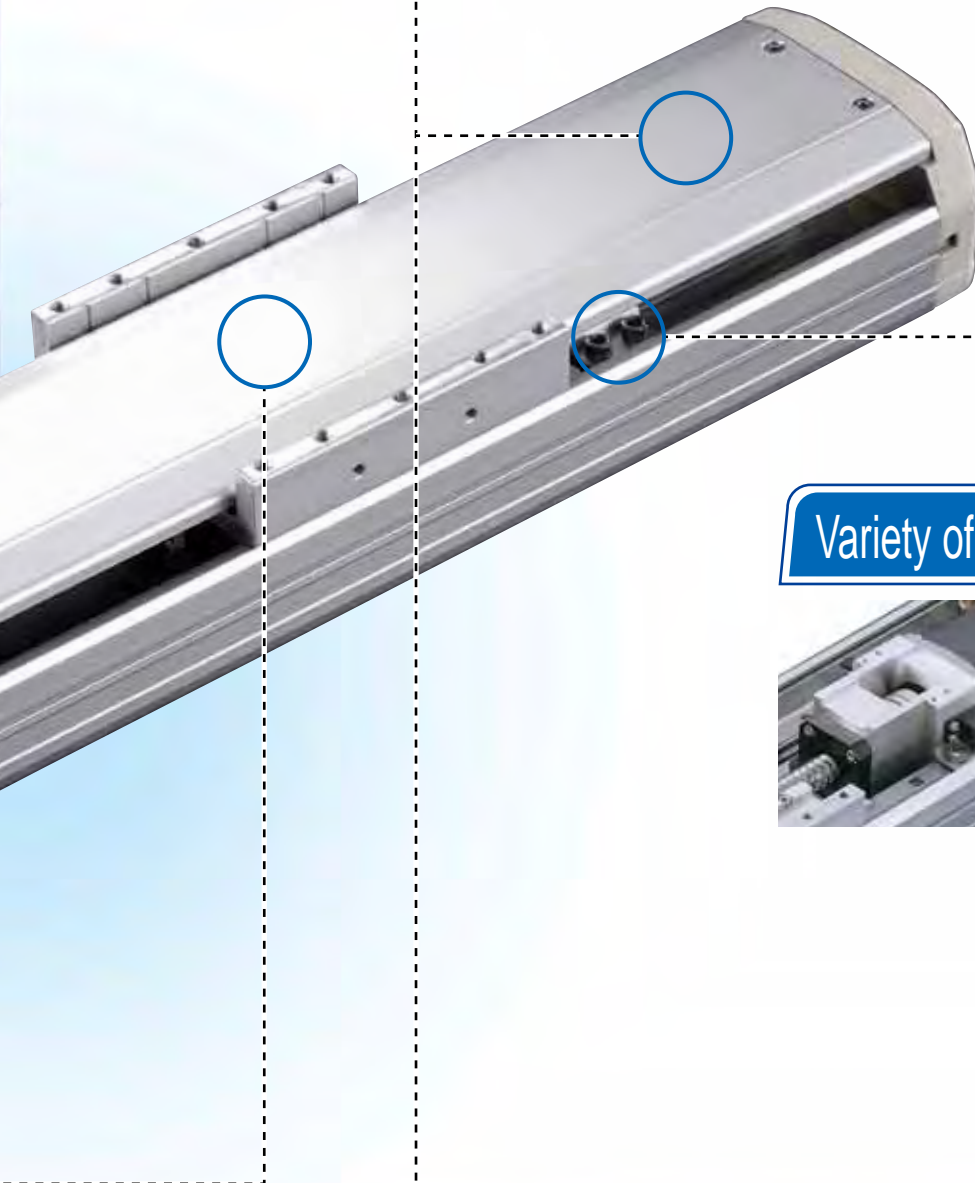
Installation of familiar motor is available



Connection to main field network available

	General-purpose analog voltage pulse row command	SSCNET	CC-Link	MECHATRO LINK-II	MECHATRO LINK-III	DeviceNet
Mitsubishi Denki	○	○	○			
Yasukawa Denki	○			○	○	○
PANASONIC	○					

The motor is not installed with this product. Please obtain and install and adjust the motor and driver by yourself.



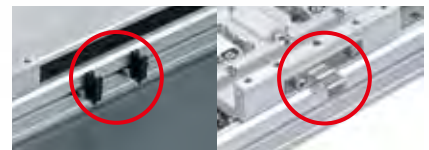
Variety of sensor installation method!



Installation direction of home position sensor and limit sensor and sensor dog selectable
*Option



Inside sensor Inside sensor dog



Outside sensor Outside sensor dog

Selectable motor installation direction



Several brackets available. Manufacturer and installation direction selectable. *Option



Outside direct Left turn-up Right turn-up Below turn-up Built-in

The motor is not installed with this product. Please obtain and install and adjust the motor and driver by yourself.

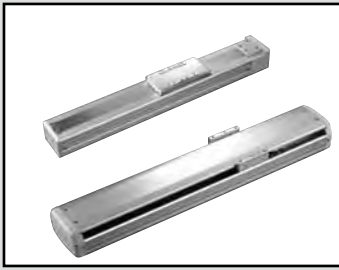
Selection guide

Type	Model no.	Applicable motor volume (W)	Body depth (mm)	Ballscrew precision grade: C7		Repeatability (mm)	Max. load capacity (kg)	
				Outer diameter (mm)	Lead (mm)		Horizontal	Vertical
Slider type	ETS-05	100	51	12	2	±0.02	10	7
							5	3
							10	1.5
	ETS-06	100	65	12	2		30	15
							5	10
							10	5
	ETS-10	100	102	16	5		50	12
							10	8
							16	5
							20	3
	ETS-12	100	102	16	5		50	12
							10	8
							16	5
							20	3
	ETS-13	200	135	16	5		70	17
							10	12
							16	6
							20	4
	ETS-14	200	135	16	5		95	27
							10	18
							16	7
		400	135	16	5		110	33
							10	22
							16	10
ETS-17	400	170	20	5	120	40		
					10	30		
					20	14		
	750	170	20	5	120	50		
					10	40		
					20	25		
ETS-22	750	220	25	5	150	55		
					10	45		
					25	20		
			20	40	120	20		
					60	10		

Strok(mm) and Max. speed(mm/s)*1

100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
			100								90	80	70	60														
			250								225	200	175	150														
			500								450	400	350	300														
			100								90	80	70	60														
			250								225	200	175	150														
			500								450	400	350	300														
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			800								720	640	560	480	400													
			1000								900	800	700	600	500													
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			1000								900	800	700	600	500													
			2000								1800	1600	1400	1200														
			250								225	200	175	150	125													
			500								450	400	350	300	250													
			1000								900	800	700	600	500													
			2000								1800	1600	1400	1200														
			250								225	200	175	150	125	100												
			500								450	400	350	300	250	200												
			1250								1125	1000	875	750	625	500												
			2000								1800	1600	1400	1200	1000	800	600											

Max. speed is estimated valve at 3,000rpm of installed motor.
 Max. speed has limitation by stroke. Do not operate faster than limited speed.



Electric driven actuator slider type

ETS Series

- Applicable motor size: 100W-200W-400W-750W



Specifications

[Applicable motor size:100W]

Descriptions		Model														
		ETS-05			ETS-06			ETS-10				ETS-12				
Ballscrew diameter	mm	12			12			16				16				
Ballscrew precision grade		C7														
Lead	mm	2	5	10	2	5	10	5	10	16	20	5	10	16	20	
Repeatability	mm	±0.02														
Max. load capacity	Horizontal	kg	10	10	5	30	30	15	50	30	22	18	50	30	22	18
	Vertical	kg	7	3	1.5	15	10	5	12	8	5	3	12	8	5	3
Max. speed	mm/s	100	250	500	100	250	500	250	500	800	1000	250	500	800	1000	
Stroke length *	mm	100 to 800			100 to 800			100 to 1050				100 to 1050				
Thrust	N	854	341	170	854	341	170	341	170	106	85	341	170	106	85	

*The stroke pitch is 50.

[Applicable motor size:200W]

Descriptions		Model								
		ETS-13				ETS-14				
Ballscrew diameter	mm	16				16				
Ballscrew precision grade		C7								
Lead	mm	5	10	16	20	5	10	16	20	
Repeatability	mm	±0.02								
Max. load capacity	Horizontal	kg	70	47	30	24	95	75	44	35
	Vertical	kg	17	12	6	4	27	18	7	6
Max. speed	mm/s	250	500	800	1000	250	500	800	1000	
Stroke length *	mm	100 to 1050				100 to 1050				
Thrust	N	683	341	213	174	683	341	213	174	

*The stroke pitch is 50.

CAUTION:

This product does not have motor. Please obtain and install and adjust the motor and driver by yourself.

Max.speed is estimated valve at 3,000rpm of installed motor.

Thrust force and max. load capacity is estimated value at the rated torque of installed motor.

[Applicable motor size:400W]

Descriptions		Model								
		ETS-14				ETS-17				
Ballscrew diameter	mm	16				20				
Ballscrew precision grade		C7								
Lead	mm	5	10	16	20	5	10	20	40	
Repeatability		±0.02								
Max. load capacity	Horizontal	kg	110	88	48	40	120	110	75	35
	Vertical	kg	33	22	10	8	40	30	14	7
Max. speed	mm/s	250	500	800	1000	250	500	1000	2000	
Stroke length *		mm	100 to 1050				100 to 1050			
Thrust	N	1388	694	433	347	1388	694	347	174	

*Stroke pitch is 50m.

[Applicable motor size:750W]

Descriptions		Model								
		ETS-17				ETS-22				
Ballscrew diameter	mm	20				25	20			
Ballscrew precision grade		C7								
Lead	mm	5	10	20	40	5	10	25	40	
Repeatability		±0.02								
Max. load capacity	Horizontal	kg	120	120	83	50	150	150	120	60
	Vertical	kg	50	40	25	10	55	45	20	10
Max. speed	mm/s	250	500	1000	2000	250	500	1250	2000	
Stroke length *		mm	100 to 1250				100 to 1500			
Thrust	N	2563	1281	640	320	2100	1050	420	320	

*Stroke pitch is 50m.

CAUTION:

The motor is not installed with this product. Please obtain and install and adjust the motor and driver by yourself.

Max.speed is estimated valve at 3,000rpm of installed motor.

Thrust force and max. load capacity is estimated value at the rated torque of installed motor.

How to order

ET S - 05 - 05 040 - B M 1 B C N N

Model no.

A Body size

B Lead

C Stroke length

D Motor how to install the product

E Motor manufacturer for installation

F Motor size

G Brake

H Origin sensor

I Limit Sensor

J Grease Nipple

Symbol	Descriptions
A Body size (mm)	
05	
06	
10	
12	
13	
14	
17	
22	
B Lead (refer to the following page table 1.)	
02	2 mm
05	5 mm
10	10mm
16	16mm
20	20mm
25	25mm
40	40mm
C Stroke length (refer to the following page table 1.)	
010	(50mm pitch) Indication is 1/10.
upto 150	
D Motor how to install the product (refer to the following page table 2.)	
E	External direct installation
D	
R	
L	
B	Built-in type
E Customer selection for motor manufacturer(refer to table 3 of next page)	
M	MITSUBISHI
Y	YASUKAWA DENKI
P	PANASONIC
F Motor size (refer to the following page table 2.)	
1	100W
2	200W
4	400W
8	750W
G Brake	
N	Without
B	With brake
H Origin sensor (1 pc.)	
N	Without
A	Inside motor side
B	Inside motor opposition side
C	Outside motor side
D	Outside motor opposition side
I Limit sensor (2)	
N	Without
A	Inside
B	Outside
J Grease nipple (refer to the following page table 5.)	
N	Without
R	With right way
L	With left way

<Example of model number>

ETS-10-10060-EM1NNNN

A Body size: width 102xheight 66mm

B Lead: 10mm

C Stroke length: 600mm

D Motor installation method: external direct installation

E Motor manufacturer for installation: Mitsubishi

F Motor size: 100W

G Without brake:

H Without origin sensor:

I Without limit sensor:

J Without grease nipple:

*Except motor installation method is B, select N as brake in any case.

Table 1 lead and stroke **B C**

Model	B lead (mm)							C mm stroke (mm) (50mm pitch)
	2	5	10	16	20	25	40	
ETS-05	○	○	○	-	-	-	-	100-800
ETS-06	○	○	○	-	-	-	-	100-800
ETS-10	-	○	○	○	○	-	-	100-1050
ETS-12	-	○	○	○	○	-	-	100-1050
ETS-13	-	○	○	○	○	-	-	100-1050
ETS-14	-	○	○	○	○	-	-	100-1050
ETS-17	-	○	○	-	○	-	○	100-1250
ETS-22	-	○	○	-	-	○	○	100-1500

Table 2 motor installation method and motor size **D F**

Model	D motor how to install the product					F motor size			
	Built-in	With direct Installation	Bottom Turn up	Right way Turn up	Left way Turn up	100W	200W	400W	750W
ETS-05	-	○	○	○	○	○	-	-	-
ETS-06	-	○	○	○	○	○	-	-	-
ETS-10	○	○	○	○	○	○	-	-	-
ETS-12	○	○	○	○	○	○	-	-	-
ETS-13	○	○	○	○	○	-	○	-	-
ETS-14	○	○	○	○	○	-	○	○	-
ETS-17	○*1	○	○	○	○	-	-	○	* 1 ○
ETS-22	○	○	○	○	○	-	-	-	○

*1:750W type is not available for built-in.

Table3 Customer preparation manufacturer and motor model No. and rated output **E**

E maker	Motor (without brake)	Motor (with brake)	Rated output
MITSUBISHI	HF-KP13	HF-KP13B	100W
	HF-KP23	HF-KP23B	200W
	HF-KP43	HF-KP43B	400W
	HF-KP73	HF-KP73B	750W
YASUKAWA DENKI	SGMJV-01ADA21	SGMJV-01ADA21C	100W
	SGMJV-02ADA21	SGMJV-02ADA21C	200W
	SGMJV-04ADA21	SGMJV-04ADA21C	400W
	SGMJV-08ADA21	SGMJV-08ADA21C	750W
PANASONIC	MSMD012P1S	MSMD012P1ST	100W
	MHMD022P1S	MHMD022P1ST	200W
	MHMD042P1S	MHMD042P1ST	400W
	MHMD082P1S	MHMD082P1ST	750W

*Consult with us for other motor manufactures and models.

Table 4 Home position sensor and limit sensor **H I**

Model	H Home position sensor (1 pc.)					I Limit sensor (2 pc.)		
	Without	Inside		Outside		Without	Inside	Outside
		Motor side	Motor opposition side	Motor side	Motor opposition side			
ETS-05	○	-	-	○	○	○	-	○
ETS-06	○	-	-	○	○	○	-	○
ETS-10	○	○	○	○	○	○	○	○
ETS-12	○	○	○	○	○	○	○	○
ETS-13	○	○	○	○	○	○	○	○
ETS-14	○	○	○	○	○	○	○	○
ETS-17	○	○	○	○	○	○	○	○
ETS-22	○	○	○	○	○	○	○	○

*Home position sensor and limit sensor are a set. Either is Nil, select Nil for the other.

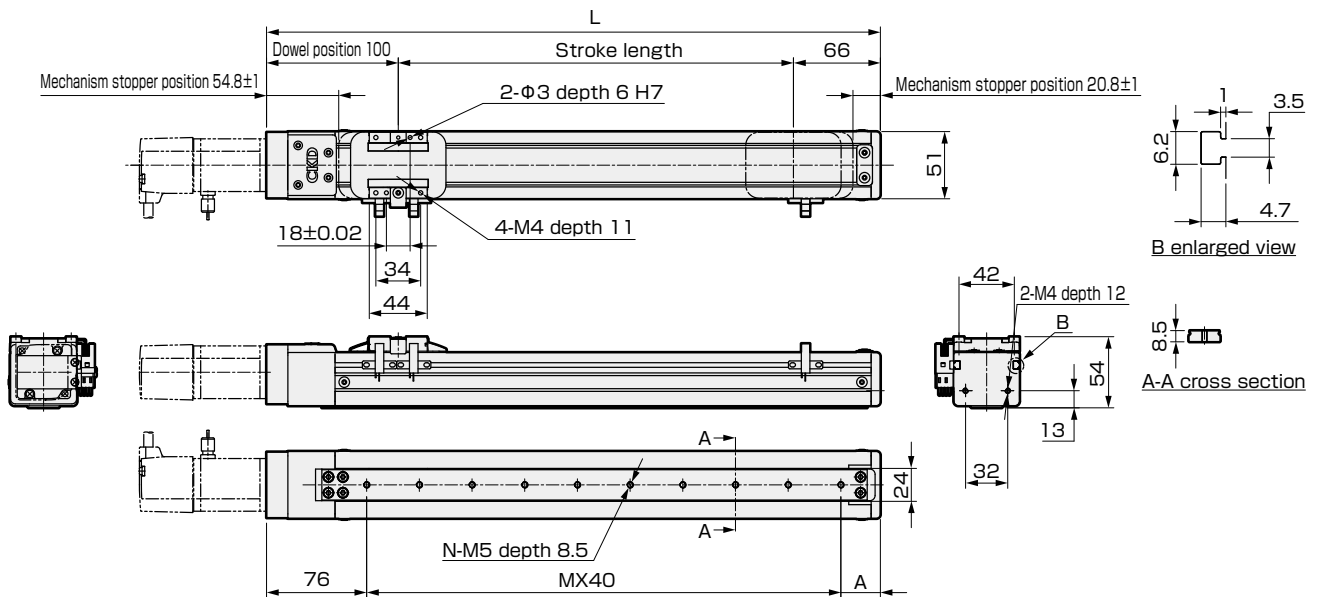
Example: Set of home sensor Nil and limit sensor Nil is not available.

Table 5 grease nipple **J**

Model	J grease nipple				
	Built-in	External direct installation	Below direct installation	Right side turn up	Left side turn up
ETS-05, 06	N(Grease nipple can not be installed.)				
	N/R/L	N/R/L	N/R/L	N/L	N/R

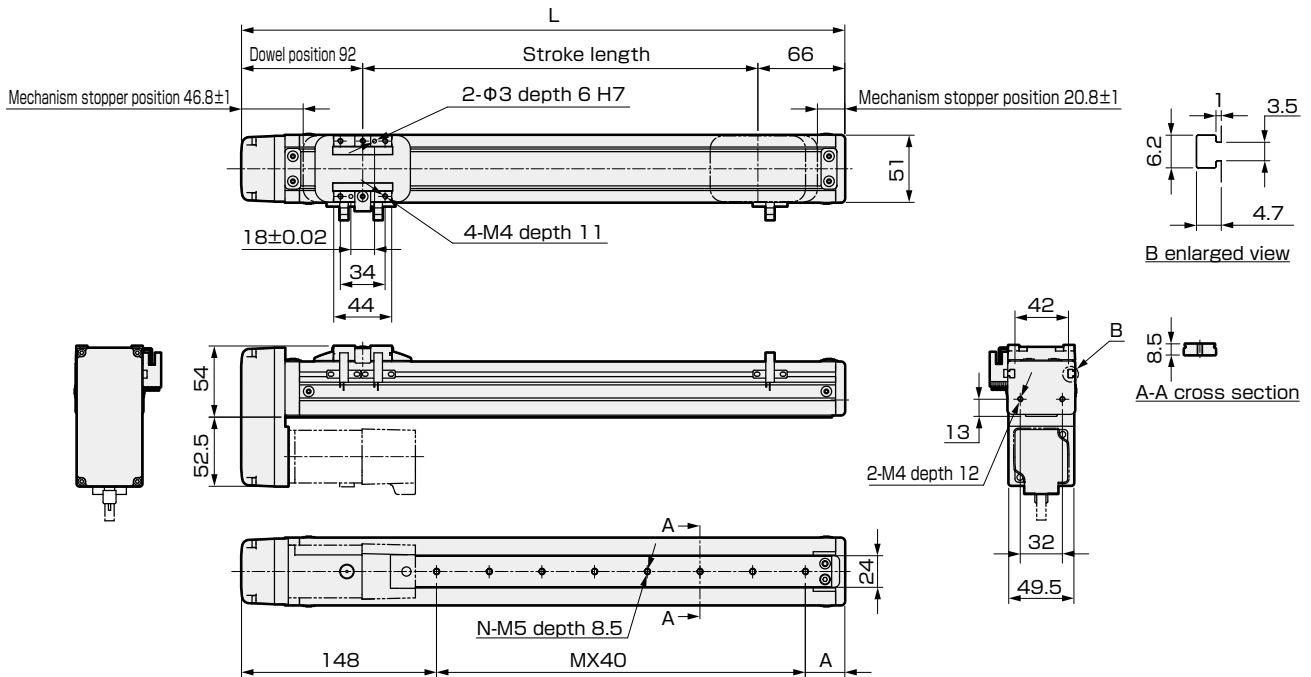
Dimensions (ETS-05)

- ETS-05-**-E (motor how to install the product: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	266	316	366	416	466	516	566	616	666	716	766	816	866	916	966
A	30	40	50	60	30	40	50	60	30	40	50	60	30	40	50
M	4	5	6	7	9	10	11	12	14	15	16	17	19	20	21
N	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
Weight (kg)	1.6	1.7	1.8	1.9	2.1	2.2	2.2	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1

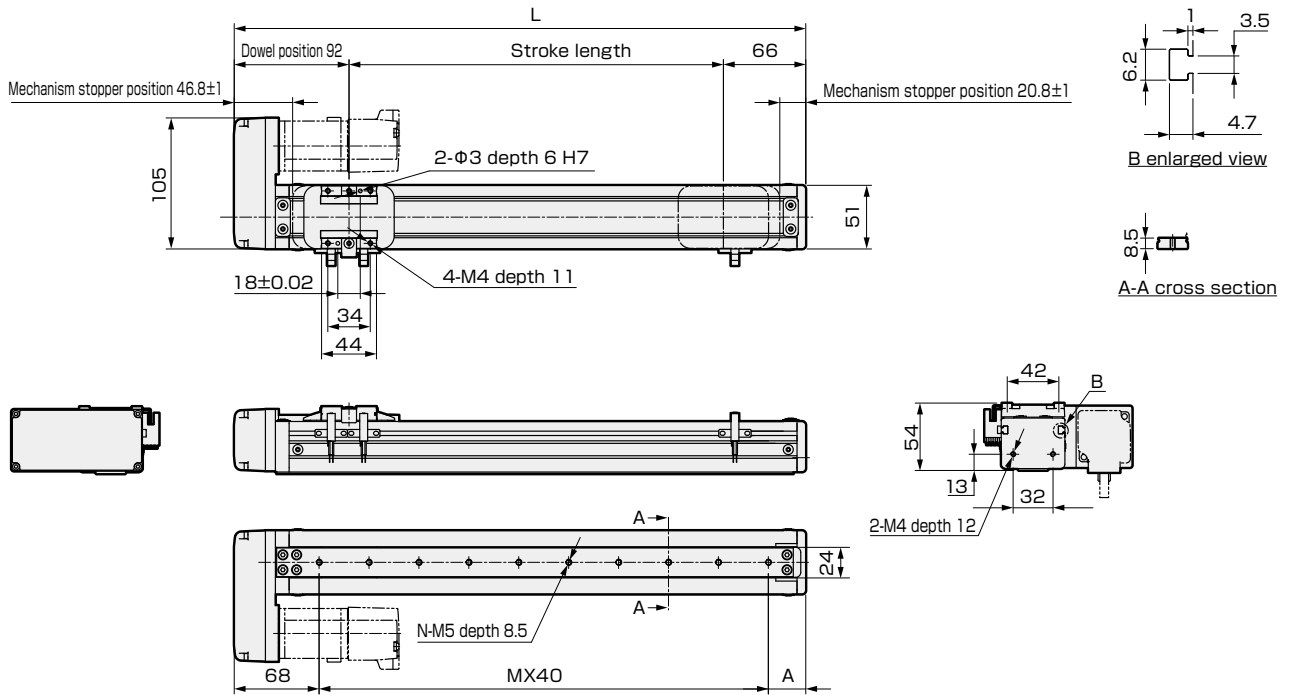
- ETS-05-**-D (Motor installation method : below turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	258	308	358	408	458	508	558	608	658	708	758	808	858	908	958
A	30	40	50	60	30	40	50	60	30	40	50	60	30	40	50
M	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19
N	3	4	5	6	8	9	10	11	13	14	15	16	18	19	20
Weight (kg)	1.8	1.9	2.0	2.1	2.3	2.4	2.4	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3

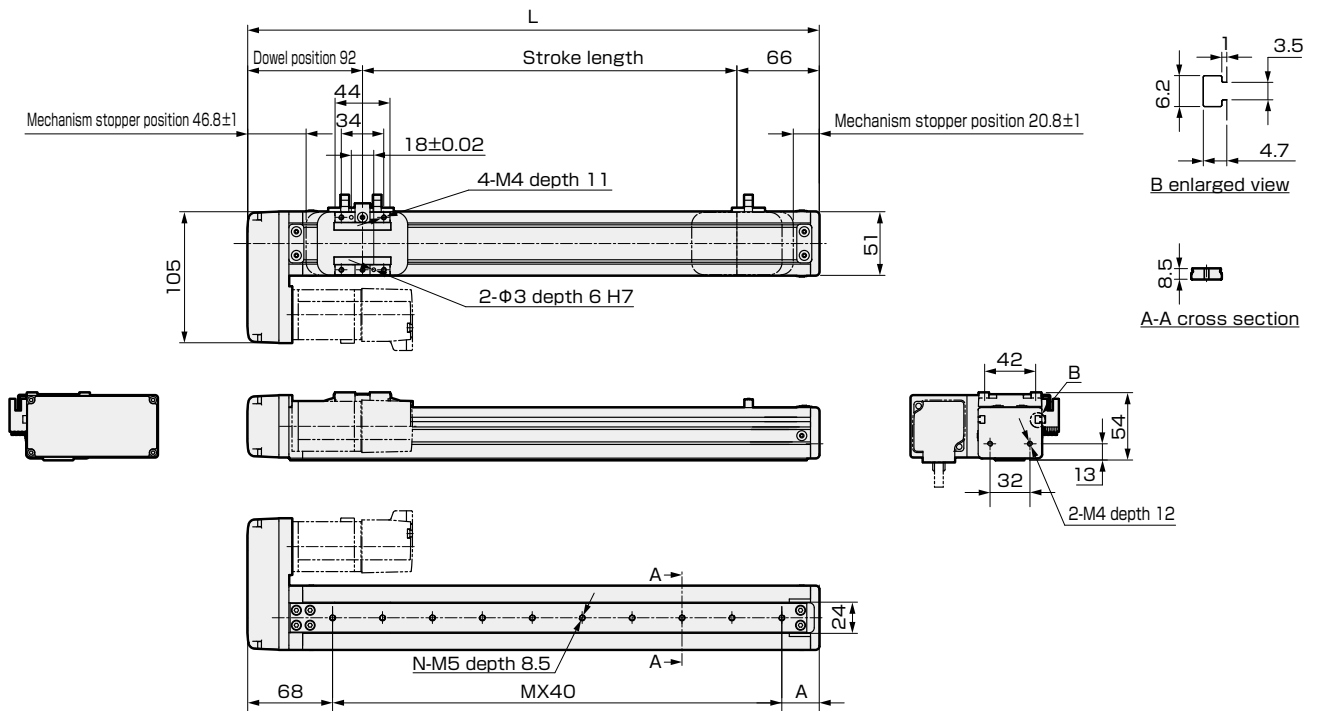
Dimensions (ETS-05)

● ETS-05-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	258	308	358	408	458	508	558	608	658	708	758	808	858	908	958
A	30	40	50	60	30	40	50	60	30	40	50	60	30	40	50
M	4	5	6	7	9	10	11	12	14	15	16	17	19	20	21
N	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
Weight (kg)	1.8	1.9	2.0	2.1	2.3	2.4	2.4	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3

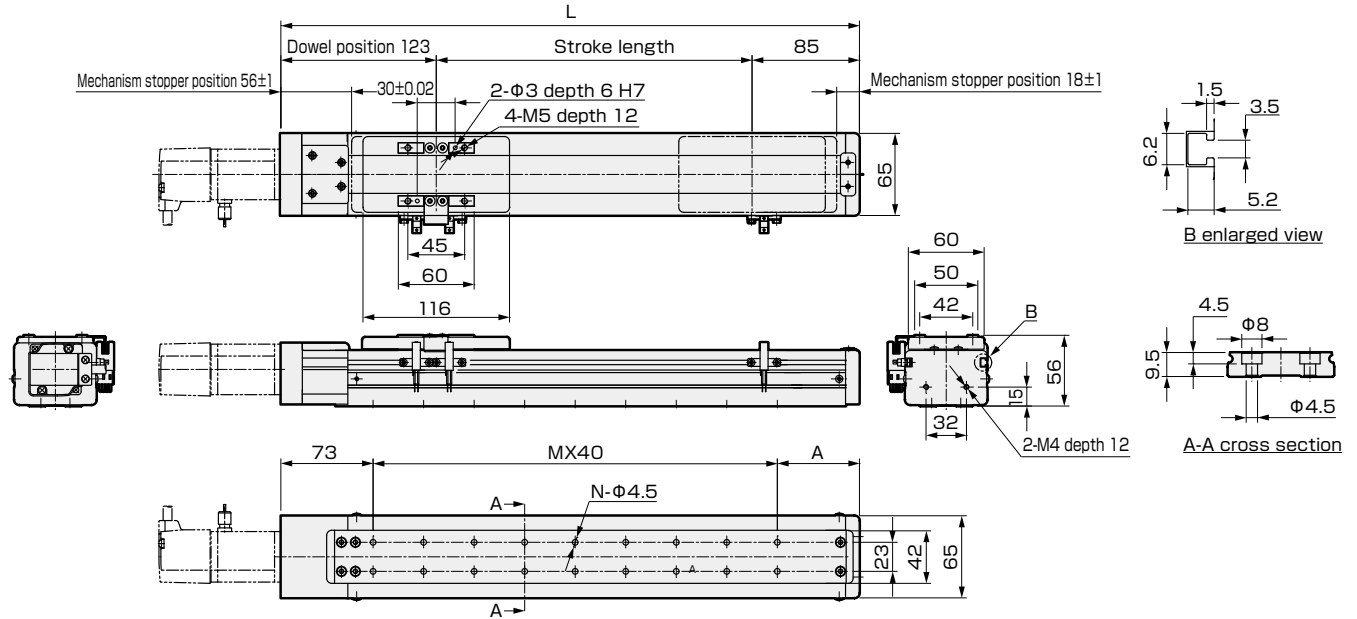
● ETS-05-**-L(Motor installation method : Left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	258	308	358	408	458	508	558	608	658	708	758	808	858	908	958
A	30	40	50	60	30	40	50	60	30	40	50	60	30	40	50
M	4	5	6	7	9	10	11	12	14	15	16	17	19	20	21
N	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
Weight (kg)	1.8	1.9	2.0	2.1	2.3	2.4	2.4	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3

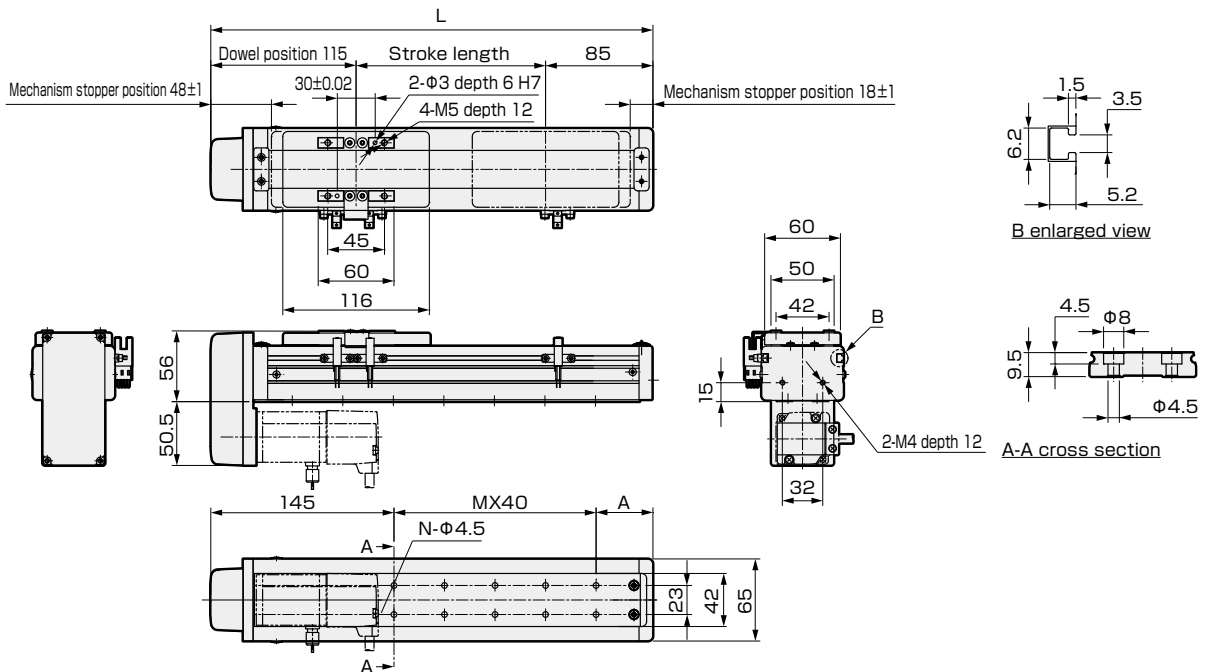
Dimensions (ETS-06)

• ETS-06-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	308	358	408	458	508	558	608	658	708	758	808	858	908	958	1008
A	35	45	55	65	35	45	55	65	35	45	55	65	35	45	55
M	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
N	12	14	16	18	22	24	26	28	32	34	36	38	42	44	46
Weight (kg)	2.1	2.2	2.4	2.6	2.8	3.0	3.1	3.3	3.5	3.7	3.8	4.0	4.2	4.4	4.5

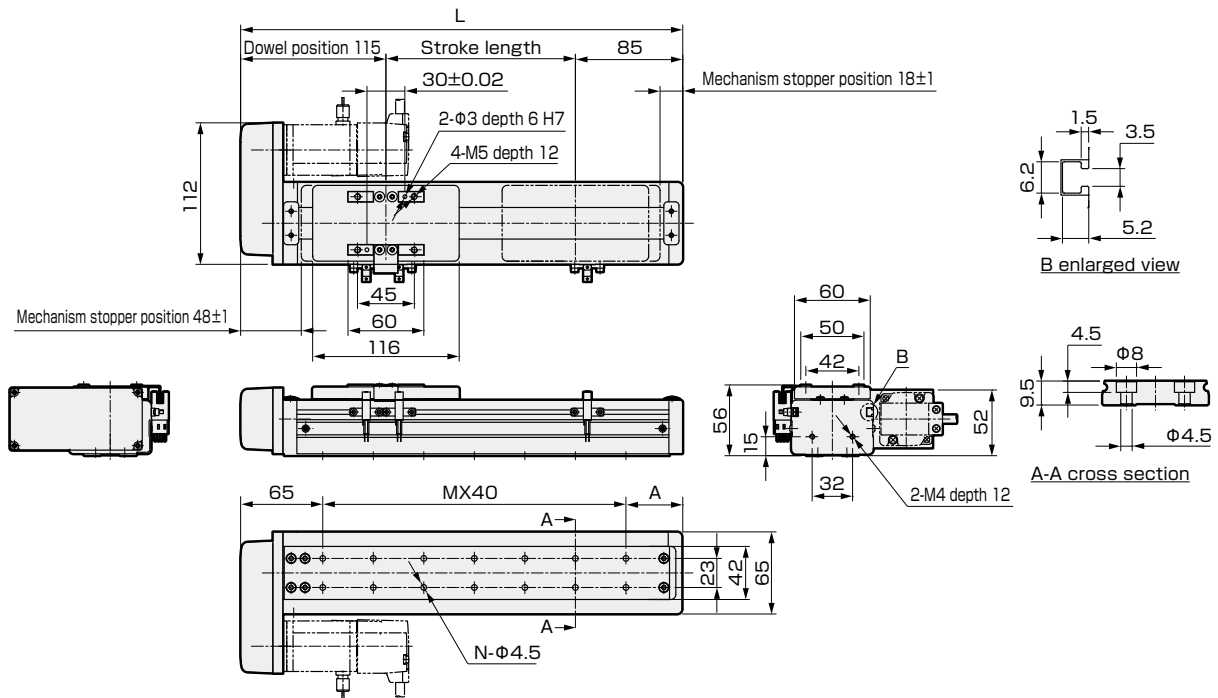
• ETS-06-**-D (Motor installation method: below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
A	35	45	55	65	35	45	55	65	35	45	55	65	35	45	55
M	3	4	5	6	8	9	10	11	13	14	15	16	18	19	20
N	8	10	12	14	18	20	22	24	28	30	32	34	38	40	42
Weight (kg)	2.3	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.4	4.6	4.7

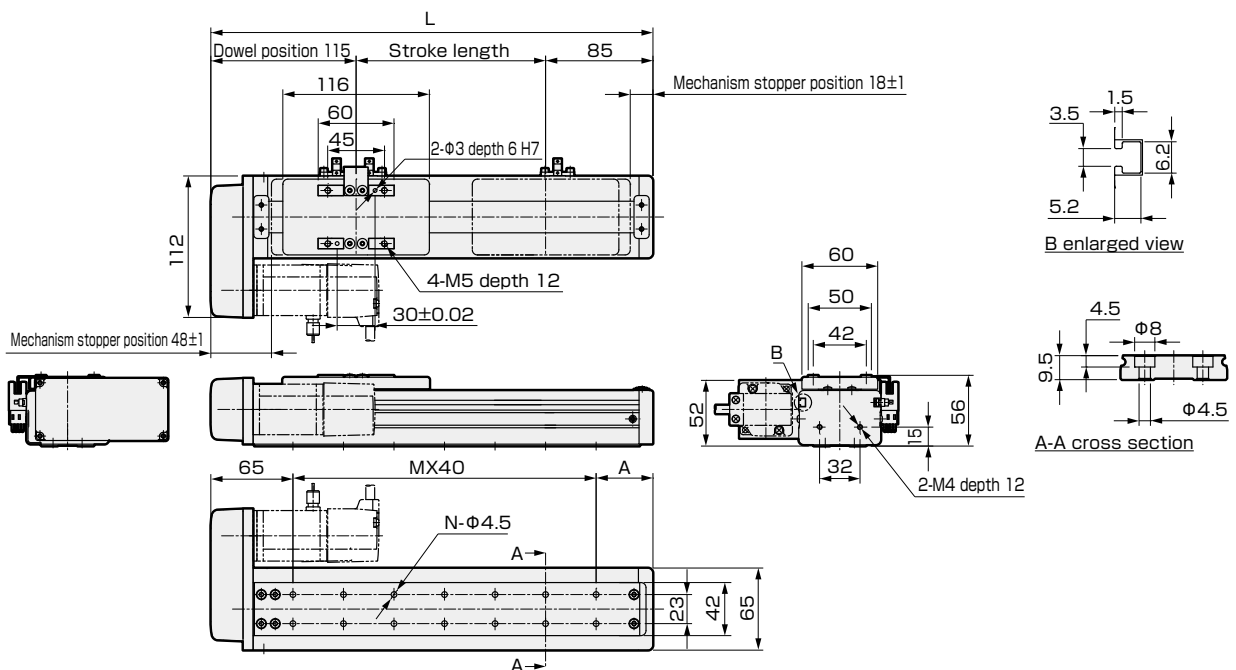
Dimensions (ETS-06)

• ETS-06-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
A	35	45	55	65	35	45	55	65	35	45	55	65	35	45	55
M	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
N	12	14	16	18	22	24	26	28	32	34	36	38	42	44	46
Weight (kg)	2.3	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.4	4.6	4.7

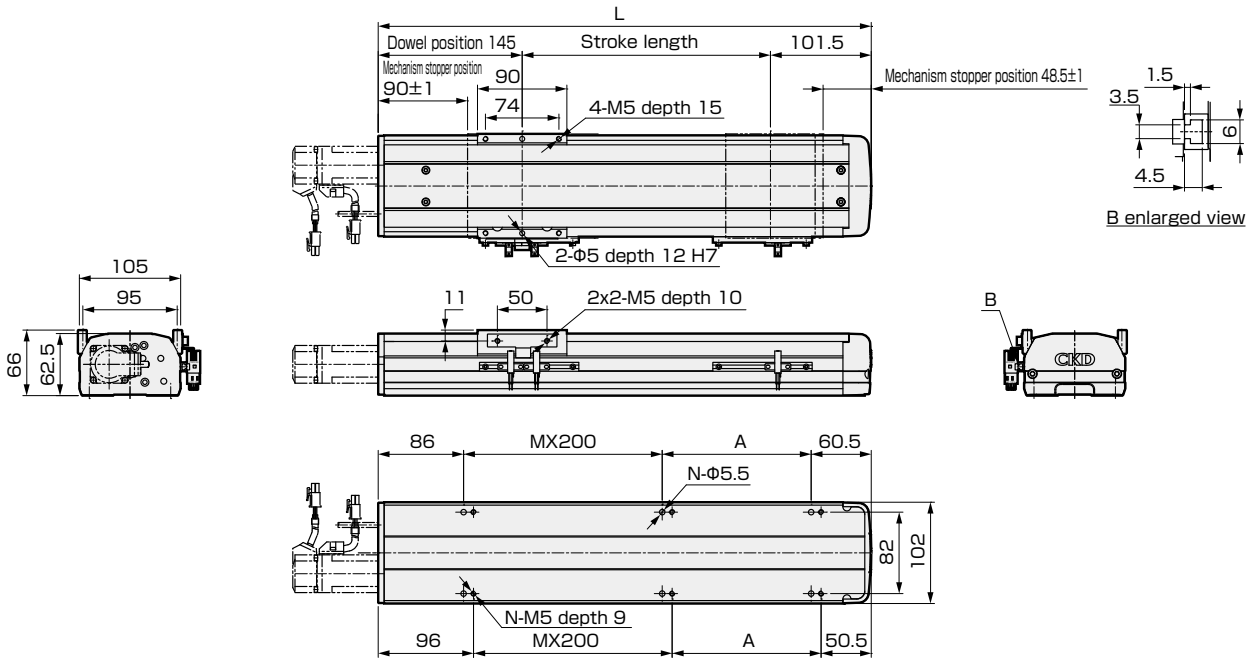
• ETS-06-**-L(motor installation method : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
A	35	45	55	65	35	45	55	65	35	45	55	65	35	45	55
M	5	6	7	8	10	11	12	13	15	16	17	18	20	21	22
N	12	14	16	18	22	24	26	28	32	34	36	38	42	44	46
Weight (kg)	2.3	2.4	2.6	2.8	3.0	3.2	3.3	3.5	3.7	3.9	4.0	4.2	4.4	4.6	4.7

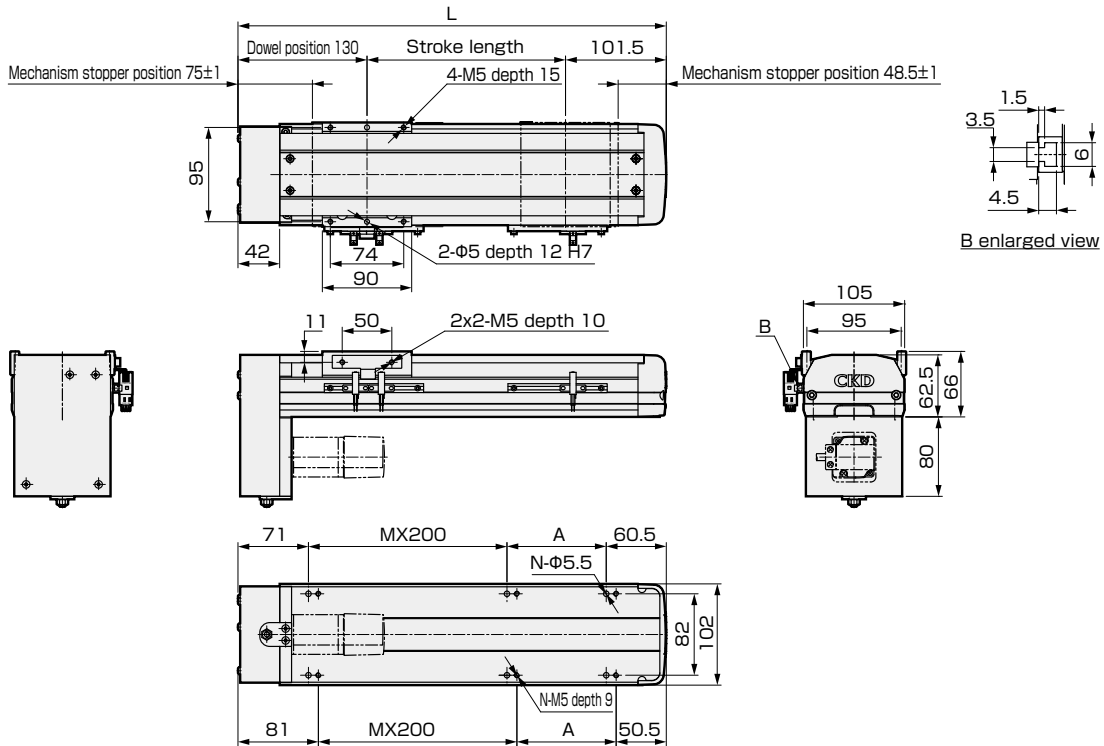
Dimensions (ETS-10)

• ETS-10-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	346.5	396.5	446.5	496.5	546.5	596.5	646.5	696.5	746.5	796.5	846.5	896.5	946.5	996.5	1046.5	1096.5	1146.5	1196.5	1246.5	1296.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	4.9	5.2	5.6	6.0	6.4	6.8	7.2	7.6	7.9	8.3	8.7	9.1	9.5	9.9	10.3	10.6	11.0	11.4	11.8	12.2

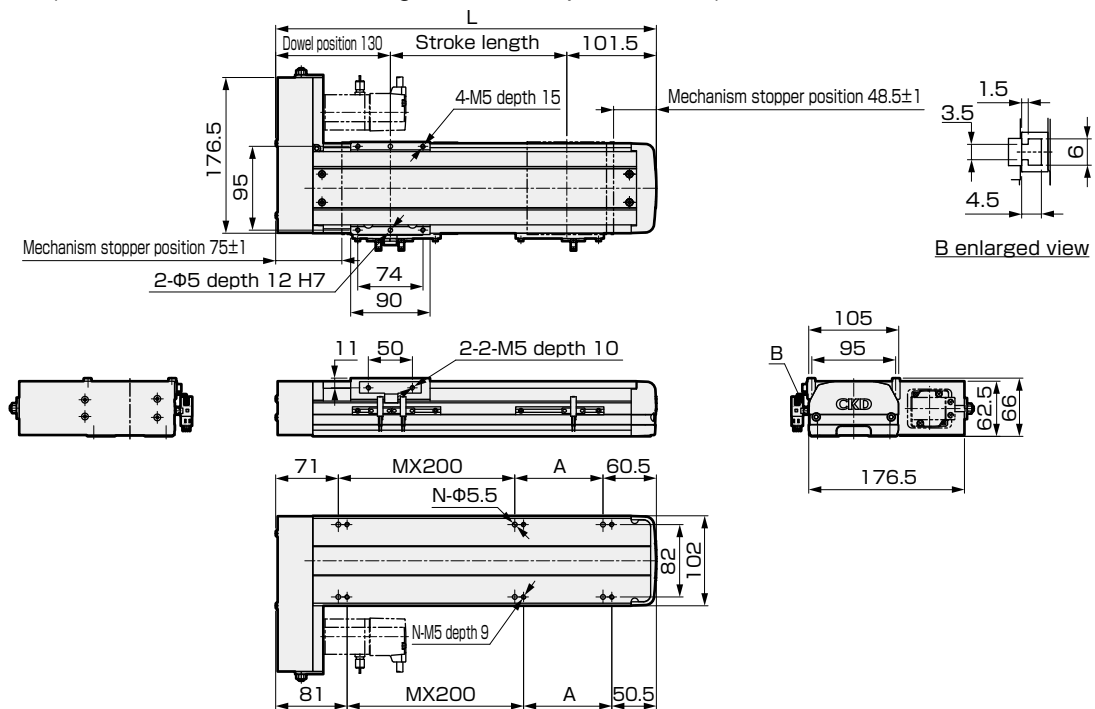
• ETS-10-**-D (Motor installation method : Below turn up installation method)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	331.5	381.5	431.5	481.5	531.5	581.5	631.5	681.5	731.5	781.5	831.5	881.5	931.5	981.5	1031.5	1081.5	1131.5	1181.5	1231.5	1281.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	5.7	6.0	6.4	6.6	7.0	7.6	8.0	8.4	8.7	9.1	9.5	9.9	10.3	10.7	11.1	11.4	11.8	12.2	12.6	13.0

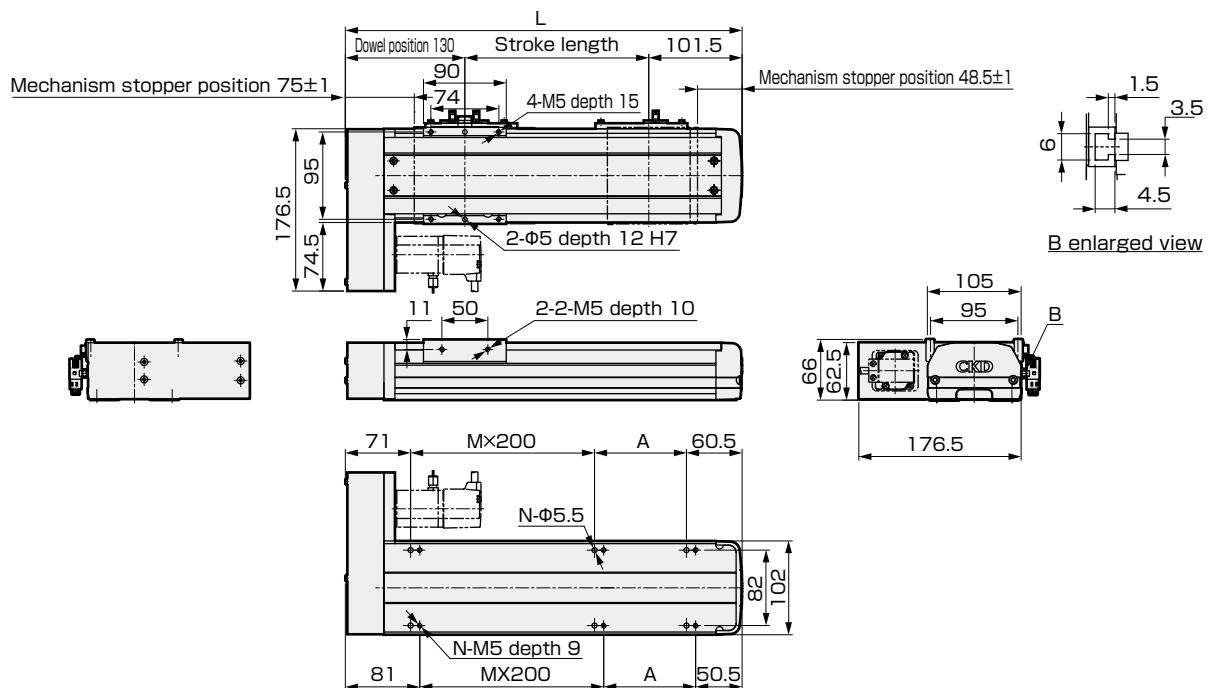
Dimensions (ETS-10)

• ETS-10-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	331.5	381.5	431.5	481.5	531.5	581.5	631.5	681.5	731.5	781.5	831.5	881.5	931.5	981.5	1031.5	1081.5	1131.5	1181.5	1231.5	1281.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	5.5	5.8	6.2	6.6	7.0	7.4	7.8	8.2	8.5	8.9	9.3	9.7	10.1	10.5	10.9	11.2	11.6	12.0	12.4	12.8

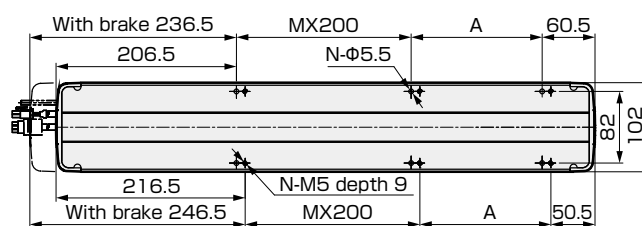
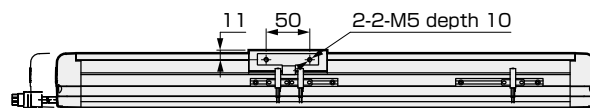
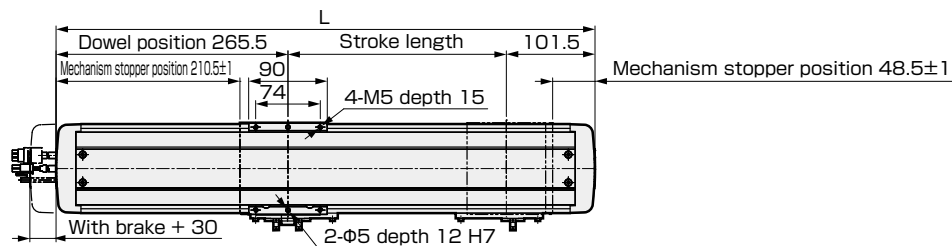
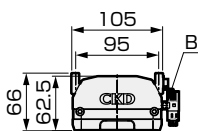
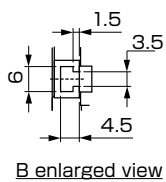
• ETS-10-**-L(Motor installation method : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	331.5	381.5	431.5	481.5	531.5	581.5	631.5	681.5	731.5	781.5	831.5	881.5	931.5	981.5	1031.5	1081.5	1131.5	1181.5	1231.5	1281.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	5.5	5.8	6.2	6.6	7.0	7.4	7.8	8.2	8.5	8.9	9.3	9.7	10.1	10.5	10.9	11.2	11.6	12.0	12.4	12.8

Dimensions (ETS-10)

- ETS-10-**-B (Motor installation method: built-in)

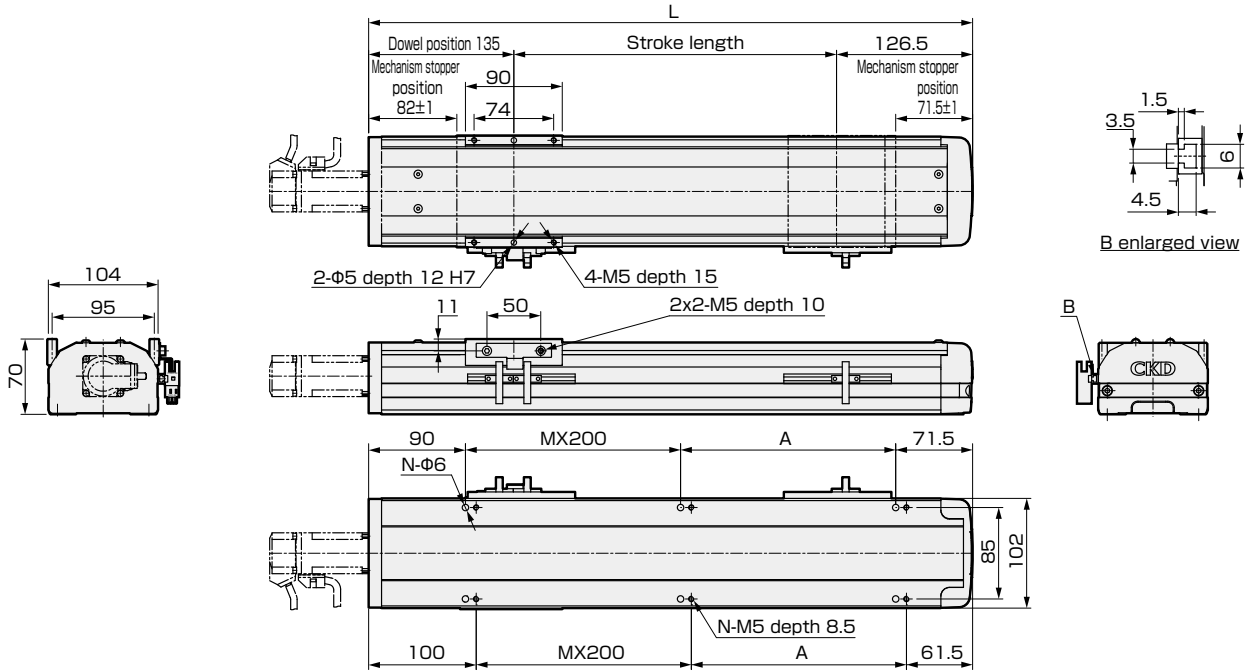


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	467	517	567	617	667	717	767	817	867	917	967	1017	1067	1117	1167	1217	1267	1317	1367	1417	
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	
Weight (kg)	Without brake	6.7	7.4	8.1	8.8	9.5	10.2	10.9	11.6	12.4	13.1	13.8	14.5	15.2	15.9	16.6	17.4	18.1	18.8	19.5	20.2
	With brake	7.1	7.8	8.5	9.2	9.9	10.6	11.4	12.1	12.8	13.5	14.2	14.9	15.6	16.4	17.1	17.8	18.5	19.2	19.9	20.6

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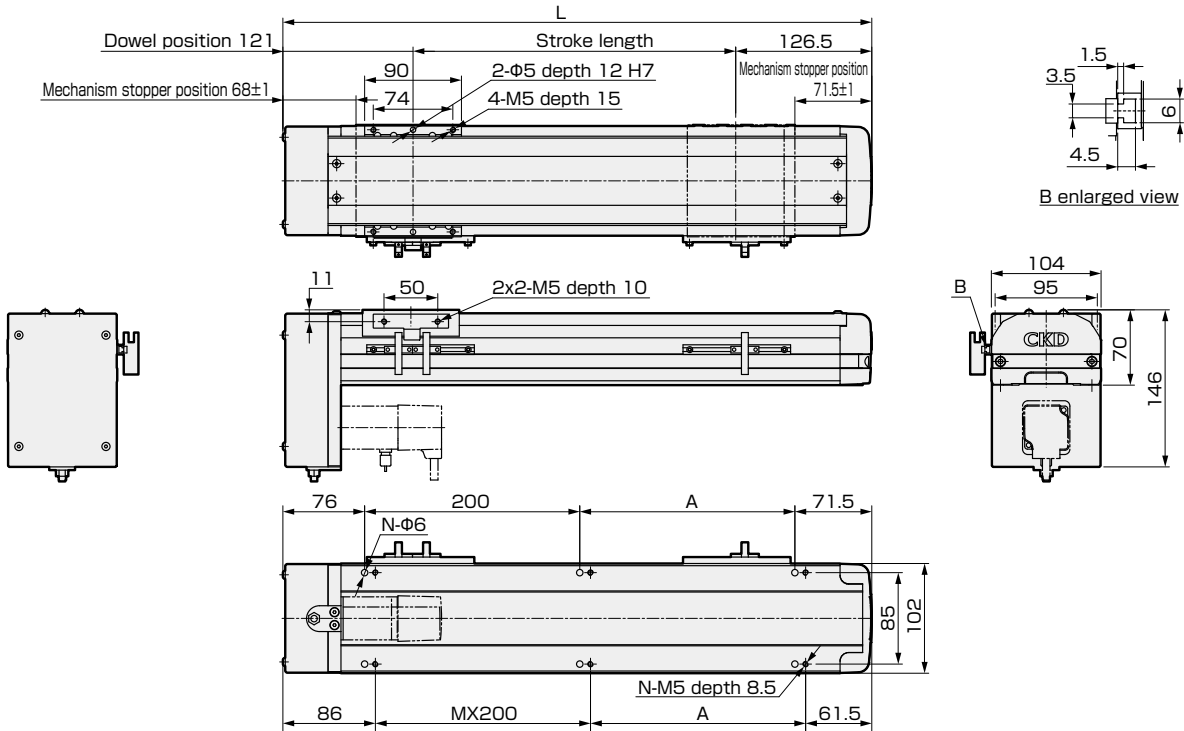
Dimensions (ETS-12)

• ETS-12-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	361.5	411.5	461.5	511.5	561.5	611.5	661.5	711.5	761.5	811.5	861.5	911.5	961.5	1011.5	1061.5	1111.5	1161.5	1211.5	1261.5	1311.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.8	9.1	9.5	9.9	10.3	10.7	11.1	11.5	11.8	12.2	12.6	13.0	13.4

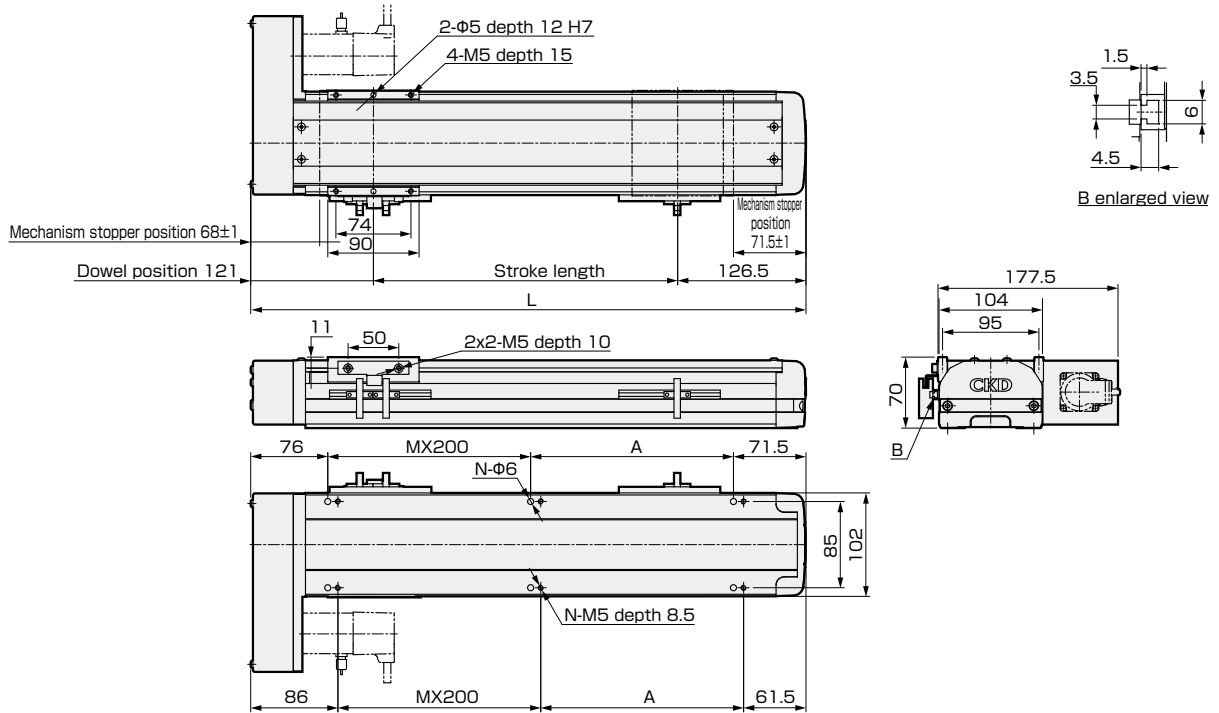
• ETS-12-**-D (Motor installation method : below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	347.5	397.5	447.5	497.3	547.5	597.5	647.5	697.5	747.5	797.5	847.5	897.5	947.5	997.5	1047.5	1097.5	1147.5	1197.5	1247.5	1297.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	6.8	7.2	7.6	7.8	8.2	8.8	9.2	9.6	9.9	10.3	10.7	11.1	11.5	11.9	12.3	12.6	13.0	13.4	13.8	14.2

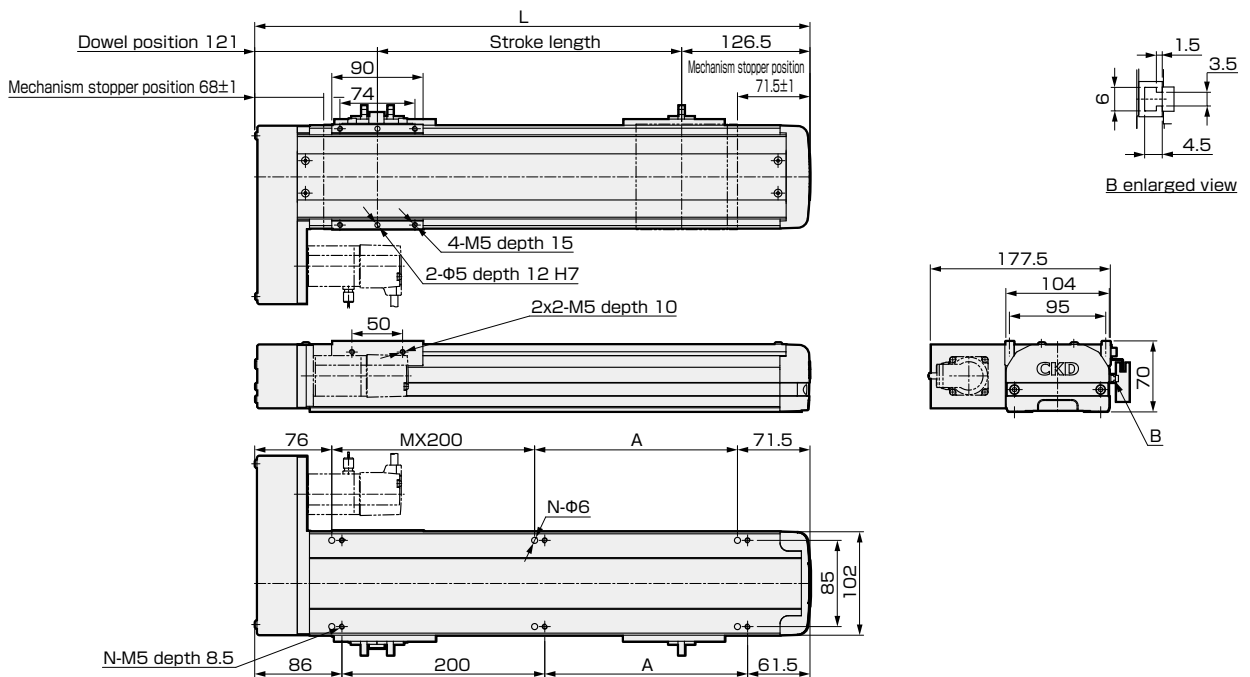
Dimensions (ETS-12)

• ETS-12-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	347.5	397.5	447.5	497.5	547.5	597.5	647.5	697.5	747.5	797.5	847.5	897.5	947.5	997.5	1047.5	1097.5	1147.5	1197.5	1247.5	1297.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	6.6	7.0	7.4	7.8	8.2	8.6	9.0	9.4	9.7	10.1	10.5	10.9	11.3	11.7	12.1	12.4	12.8	13.2	13.6	14.0

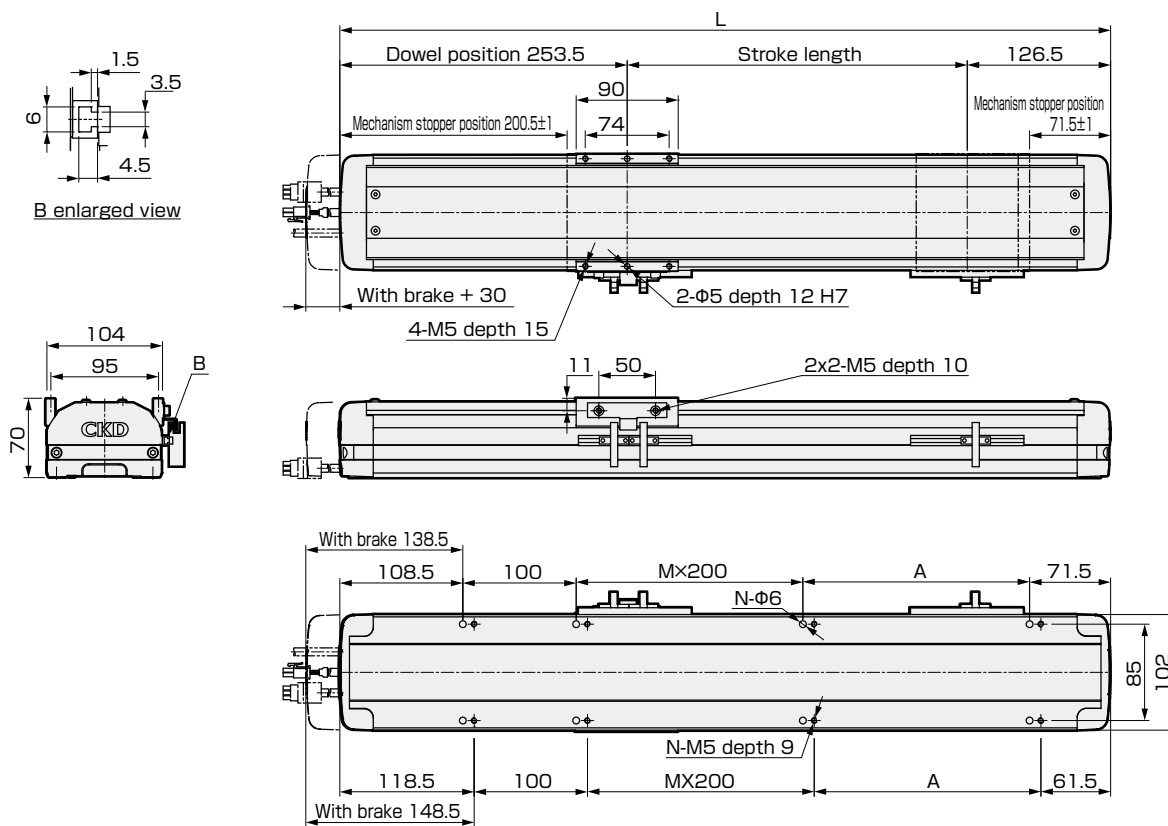
• ETS-12-**-L(Motor installation method : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	347.5	397.5	447.5	497.5	547.5	597.5	647.5	697.5	747.5	797.5	847.5	897.5	947.5	997.5	1047.5	1097.5	1147.5	1197.5	1247.5	1297.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	6.6	7.0	7.4	7.8	8.2	8.6	9.0	9.4	9.7	10.1	10.5	10.9	11.3	11.7	12.1	12.4	12.8	13.2	13.6	14.0

Dimensions (ETS-12)

- ETS-12-**-B (Motor installation method: built-in)

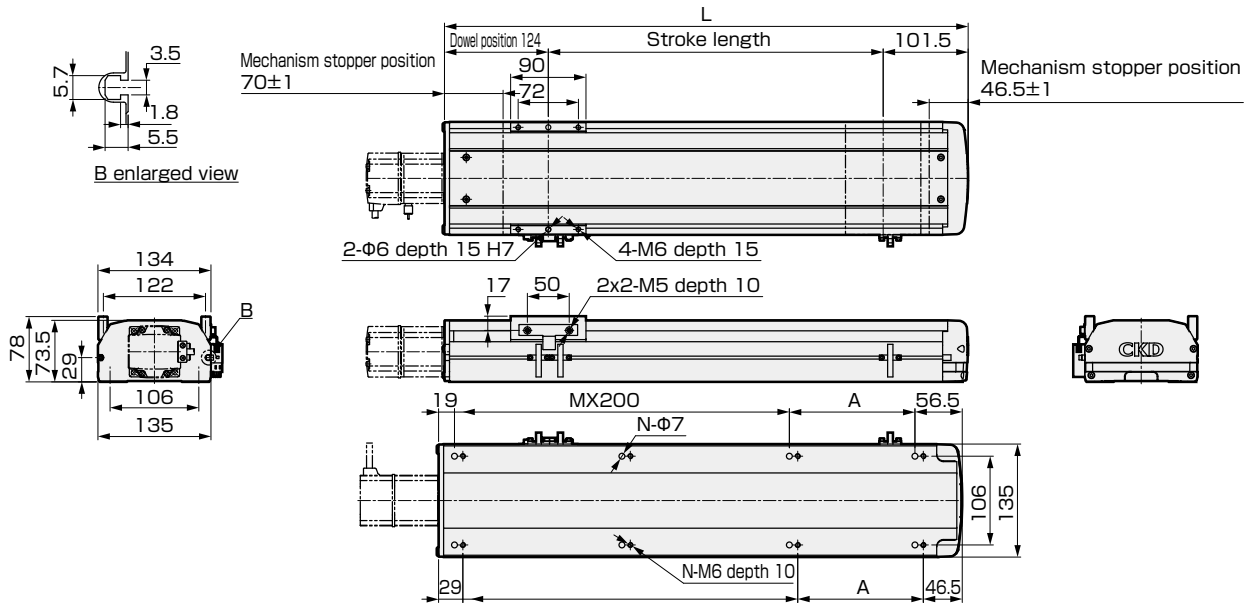


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230	1280	1330	1380	1430	
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	
N	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	
Weight (kg)	Without brake	8.0	8.9	9.7	10.5	11.4	12.2	13.0	13.9	14.7	15.5	16.4	17.2	18.0	18.9	19.7	20.6	21.4	22.2	23.1	23.9
	With brake	8.5	9.4	10.2	11.0	11.9	12.7	13.5	14.4	15.2	16.0	16.9	17.7	18.5	19.4	20.2	21.1	21.9	22.7	23.6	24.4

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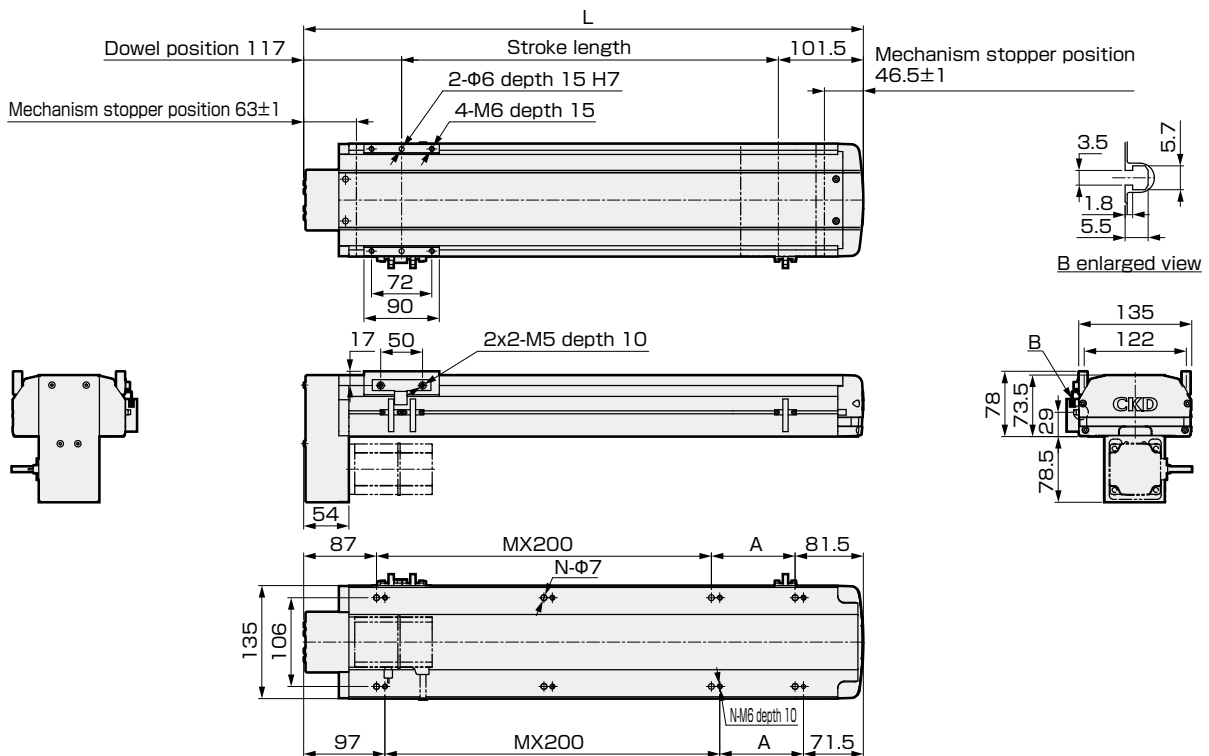
Dimensions (ETS-13)

• ETS-13-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	325.5	375.5	425.5	475.5	525.5	575.5	625.5	675.5	725.5	775.5	825.5	875.5	925.5	975.5	1025.5	1075.5	1125.5	1175.5	1225.5	1275.5
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Weight (kg)	6.5	6.9	7.4	7.9	8.4	8.9	9.3	9.9	10.3	10.9	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.2	15.8

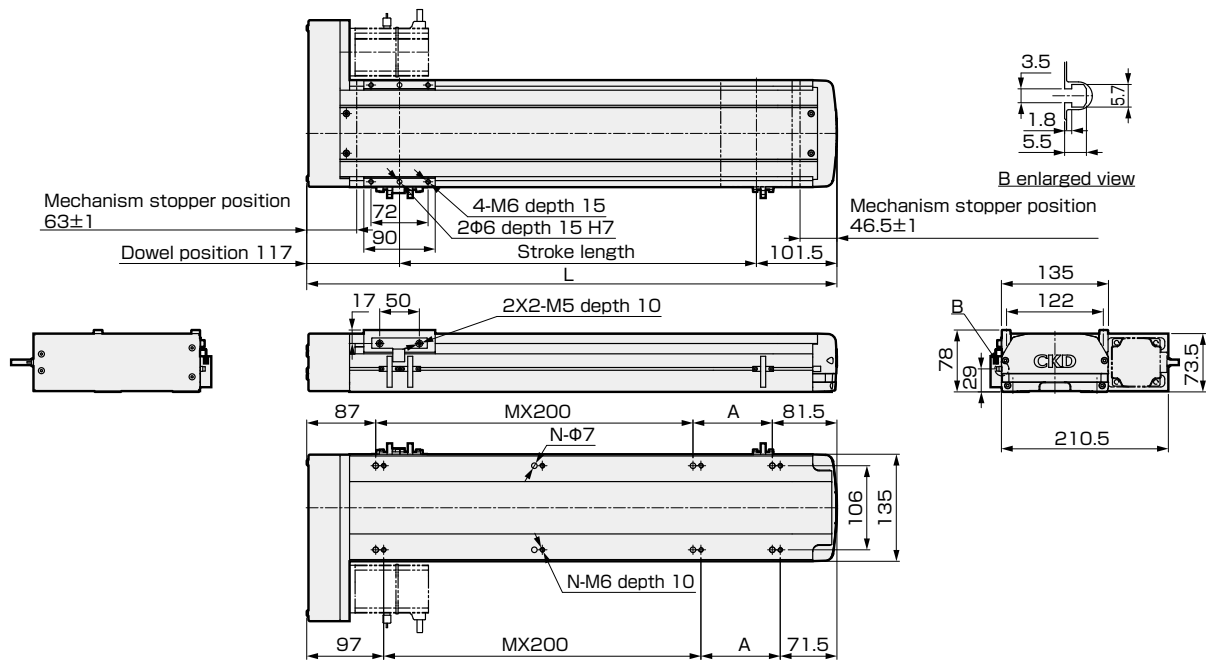
• ETS-13-**-D (Motor installation : below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	318.5	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5
A	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
N	4	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14
Weight (kg)	7.3	7.7	8.2	8.7	9.2	9.7	10.1	10.7	11.1	11.7	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.0	16.6

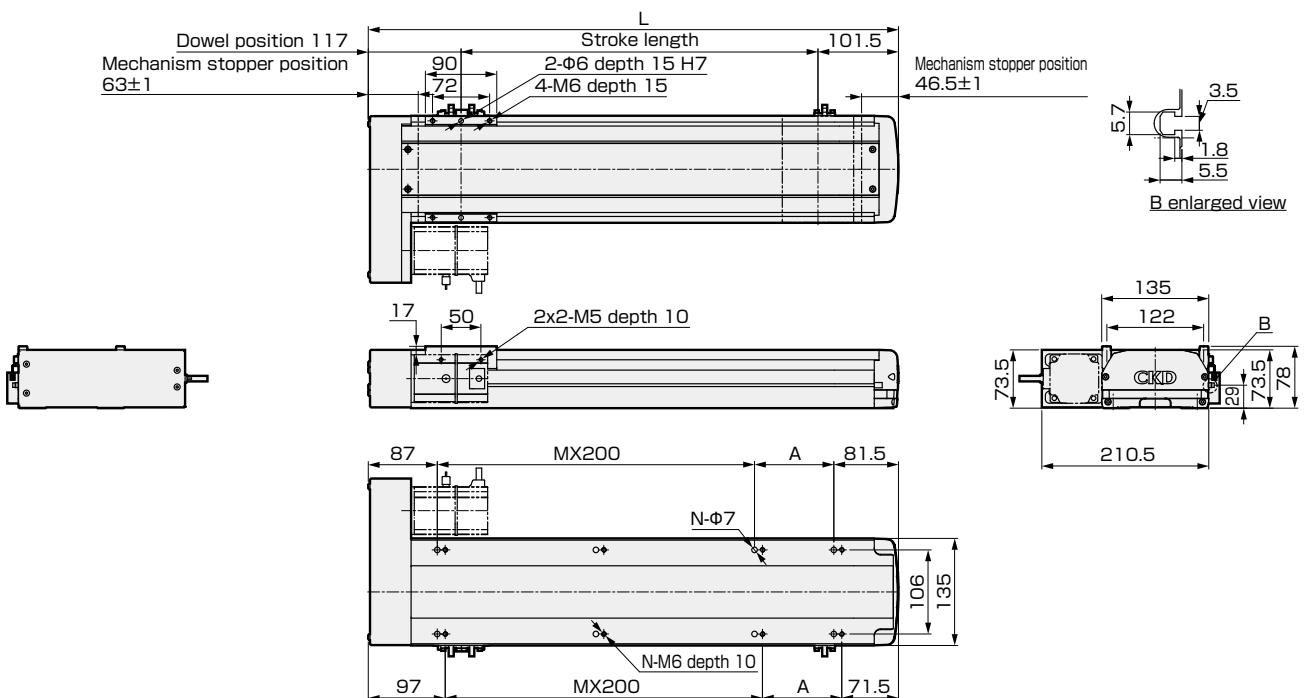
Dimensions (ETS-13)

- ETS-13-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	318.5	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5
A	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
N	4	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14
Weight (kg)	7.3	7.7	8.2	8.7	9.2	9.7	10.1	10.7	11.1	11.7	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.0	16.6

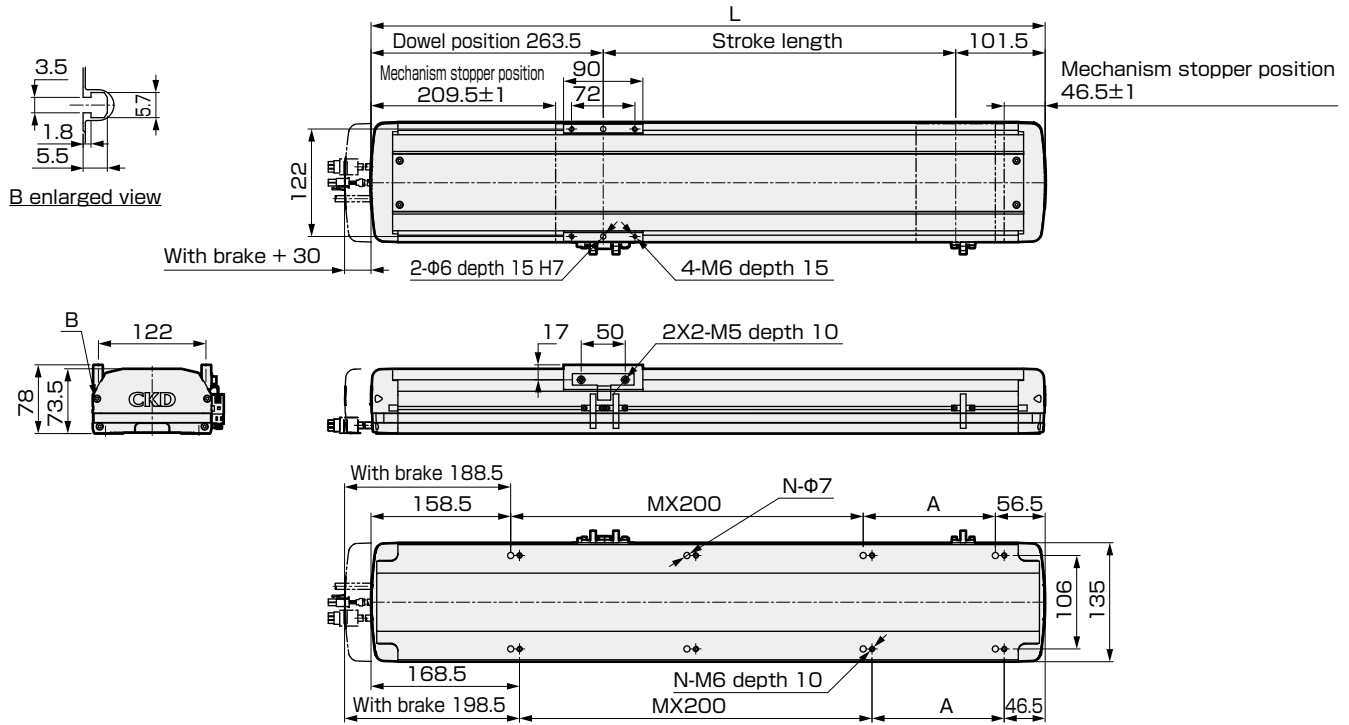
- ETS-13-**-L(Motor installation method : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	318.5	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5
A	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
N	4	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14
Weight (kg)	7.3	7.7	8.2	8.7	9.2	9.7	10.1	10.7	11.1	11.7	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.0	16.6

Dimensions (ETS-13)

• ETS-13-**-B (Motor installation method: built-in)

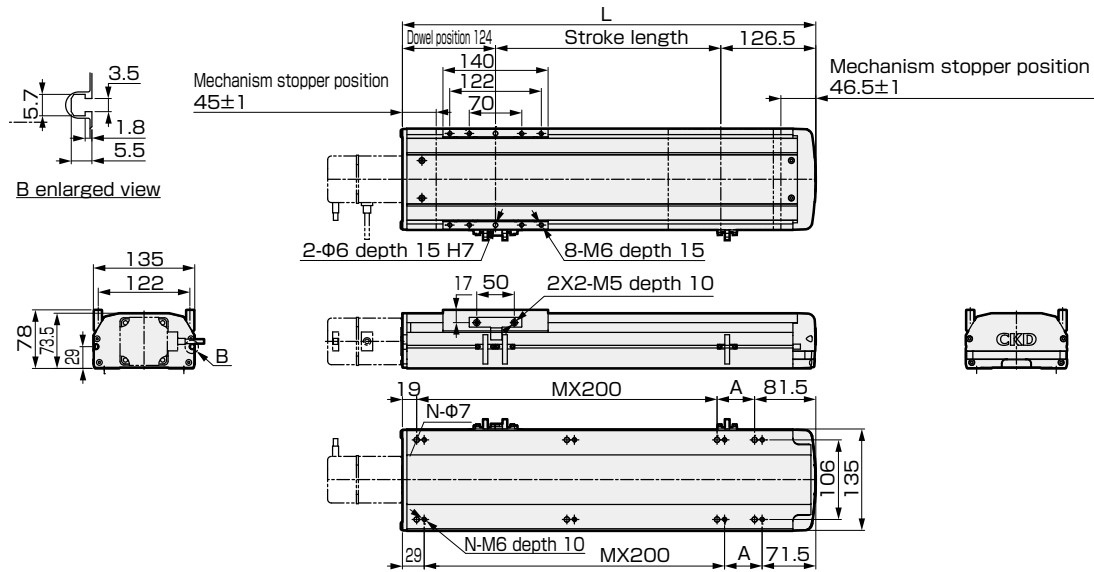


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	465	515	565	615	665	715	765	815	865	915	965	1015	1065	1115	1165	1215	1265	1315	1365	1415	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	
Weight (kg)	Without brake	9.2	10.2	11.2	12.2	13.2	14.2	15.2	16.2	17.2	18.2	19.2	20.1	21.1	22.1	23.1	24.1	25.1	26.1	27.1	28.1
	With brake	9.8	10.8	11.8	12.8	13.8	14.8	15.8	16.8	17.8	18.8	19.7	20.7	21.7	22.7	23.7	24.7	25.7	26.7	27.7	28.7

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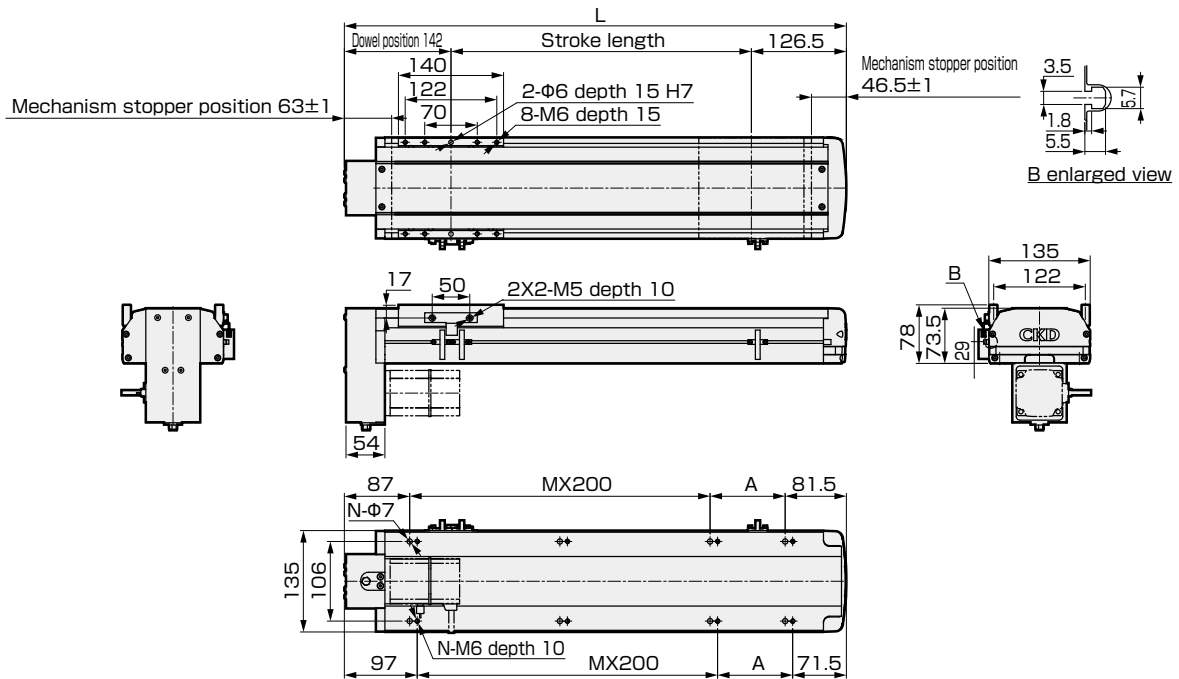
Dimensions (ETS-14)

• ETS-14-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	350.5	400.5	450.5	500.5	550.5	600.5	650.5	700.5	750.5	800.5	850.5	900.5	950.5	1000.5	1050.5	1100.5	1150.5	1200.5	1250.5	1300.5
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Weight (kg)	6.7	7.1	7.6	8.1	8.6	9.1	9.5	10.1	10.5	11.1	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.4	16.0

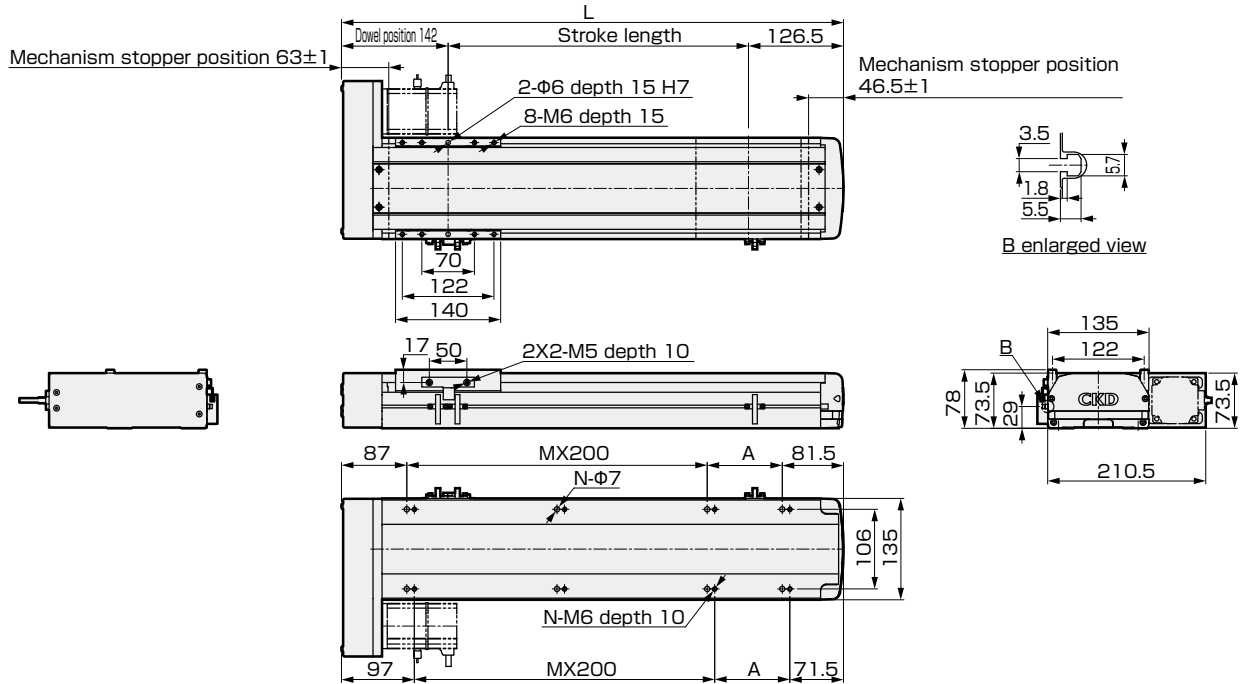
• ETS-14-**-D (Motor installation method : below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5	1318.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	7.5	7.9	8.4	8.9	9.4	9.9	10.3	10.9	11.3	11.9	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.2	16.8

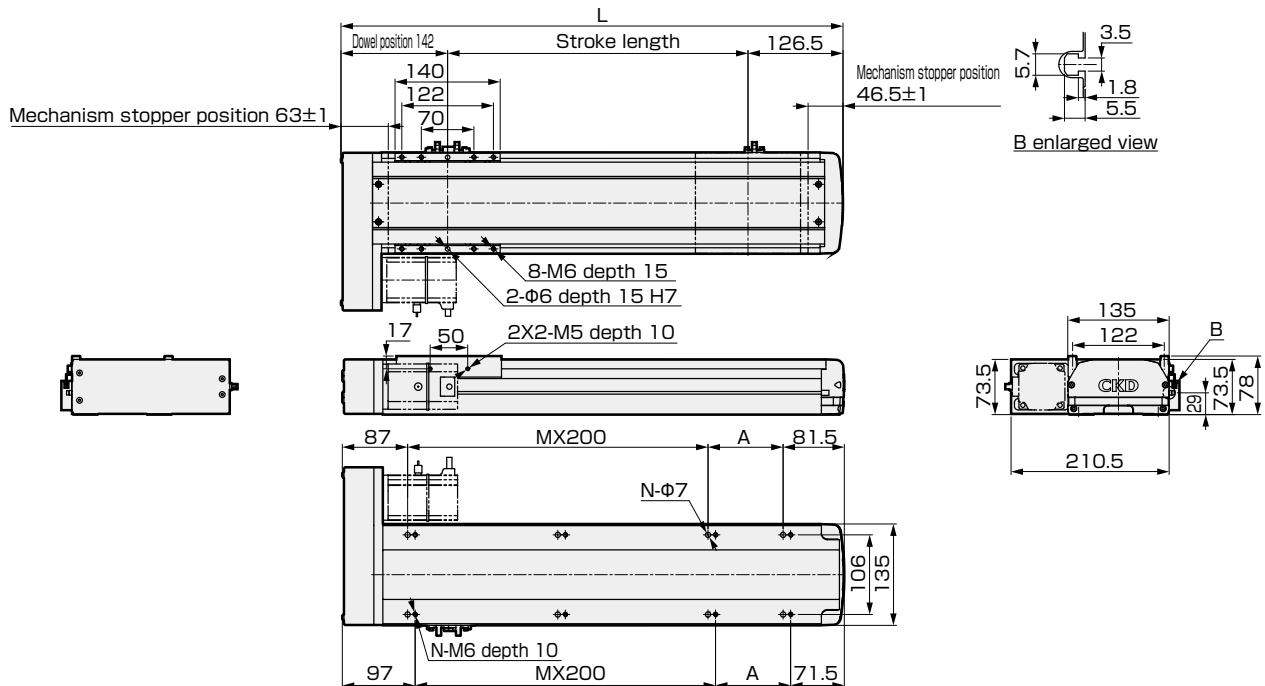
Dimensions (ETS-14)

• ETS-14-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5	1318.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	7.5	7.9	8.4	8.9	9.4	9.9	10.3	10.9	11.3	11.9	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.2	16.8

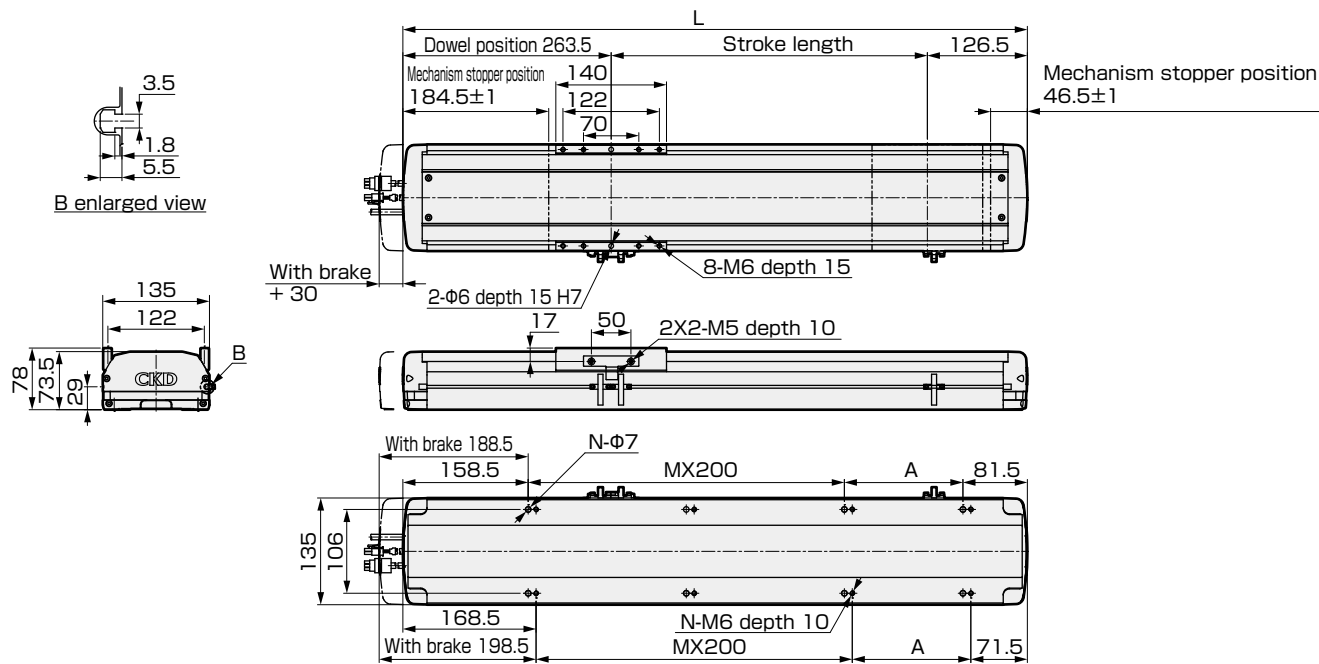
• ETS-14-**-L(Motor installation method : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	368.5	418.5	468.5	518.5	568.5	618.5	668.5	718.5	768.5	818.5	868.5	918.5	968.5	1018.5	1068.5	1118.5	1168.5	1218.5	1268.5	1318.5
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14
Weight (kg)	7.5	7.9	8.4	8.9	9.4	9.9	10.3	10.9	11.3	11.9	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.2	16.8

Dimensions (ETS-14)

- ETS-14-**-B (Motor installation method: built-in)

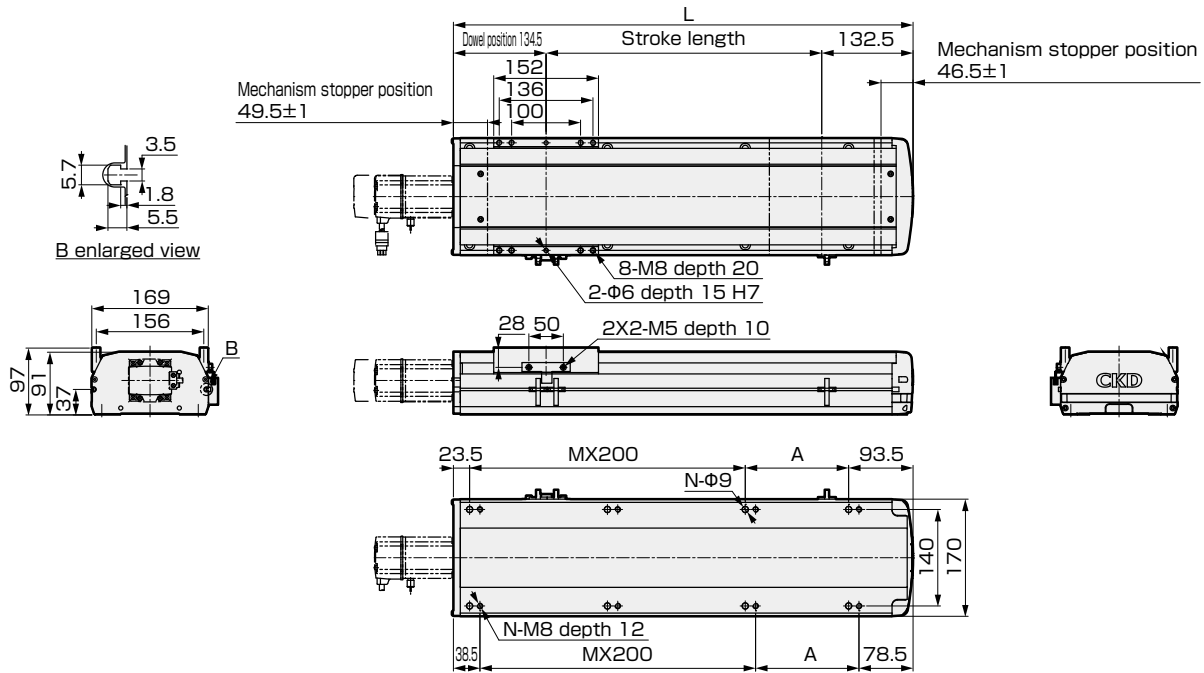


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140	1190	1240	1290	1340	1390	1440	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	
Weight (kg)	Without brake	9.3	10.3	11.2	12.2	13.1	14.1	15.0	16.0	16.9	17.9	18.8	19.8	20.7	21.7	22.6	23.6	24.5	25.5	26.4	27.4
	With brake	9.9	10.8	11.8	12.7	13.7	14.6	15.6	16.5	17.5	18.4	19.4	20.3	21.3	22.2	23.2	24.1	25.1	26.0	27.0	27.9

MEMO

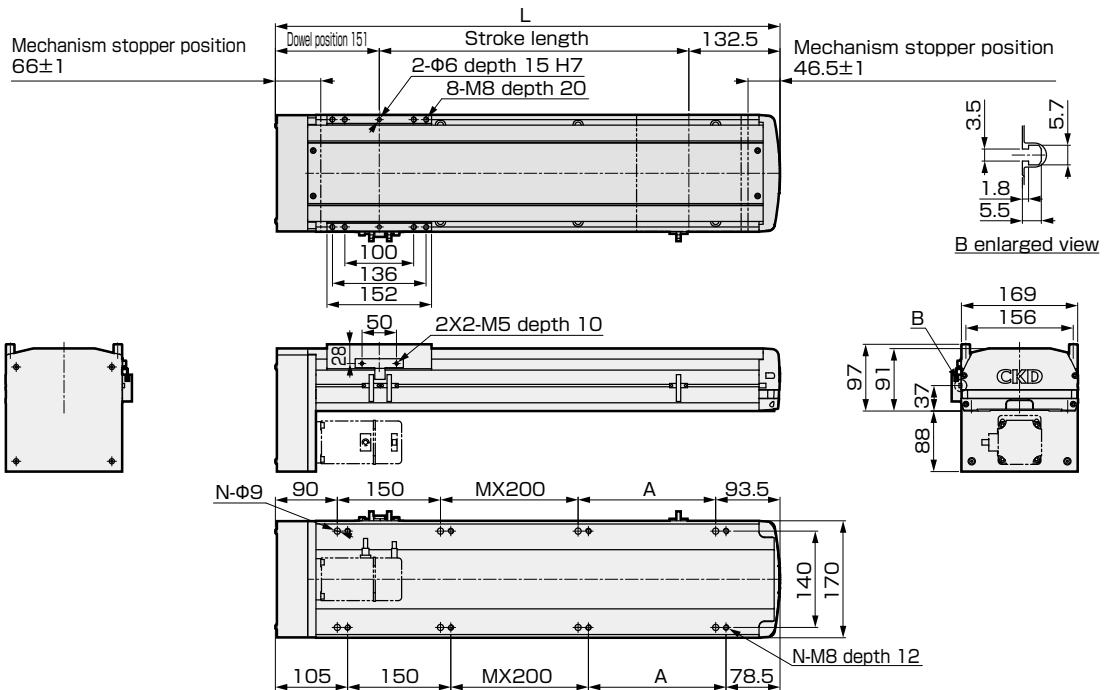
Dimensions (ETS-17)

• ETS-17-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	367	417	467	517	567	617	667	717	767	817	867	917	967	1017	1067	1117	1167	1217	1267	1317	1367	1417	1467	1517
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	1	1	1	1	2	2	2	2	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16
Weight (kg)	10.3	11.1	11.9	12.7	13.4	14.2	15.0	15.8	16.5	17.3	18.1	18.9	19.6	20.4	21.2	22.0	22.7	23.5	24.3	25.1	25.9	26.7	27.5	28.3

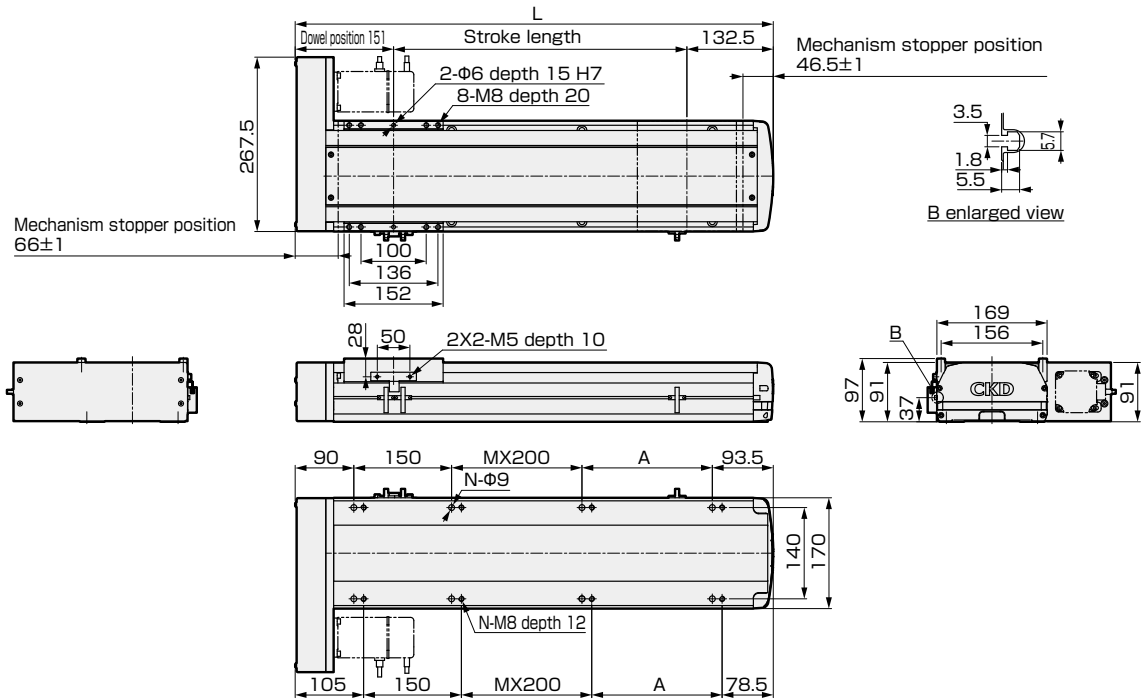
• ETS-17-**-D (Motor installation method : below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	383.5	433.5	483.5	533.5	583.5	633.5	683.5	733.5	783.5	833.5	883.5	933.5	983.5	1033.5	1083.5	1133.5	1183.5	1233.5	1283.5	1333.5	1383.5	1433.5	1483.5	1533.5
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16
Weight (kg)	11.9	12.7	13.5	14.3	15.0	15.8	16.6	17.4	18.1	18.9	19.7	20.5	21.2	22.0	22.8	23.6	24.3	25.1	25.9	26.7	27.5	28.3	29.1	29.9

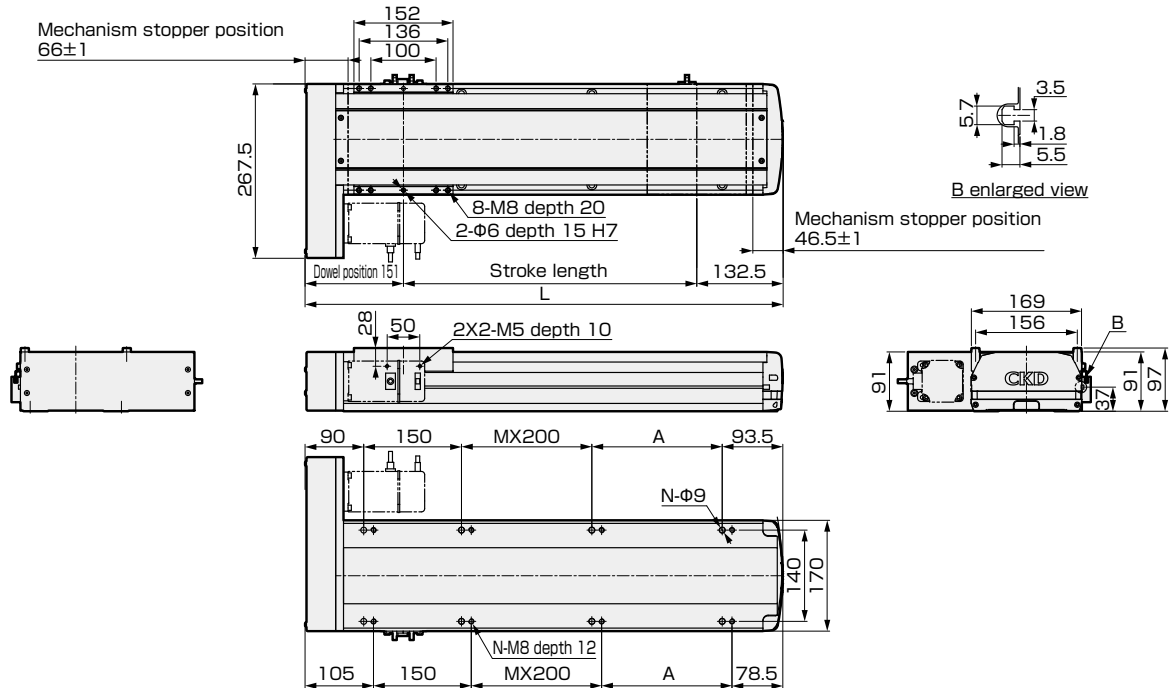
Dimensions (ETS-17)

● ETS-17-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	383.5	433.5	483.5	533.5	583.5	633.5	683.5	733.5	783.5	833.5	883.5	933.5	983.5	1033.5	1083.5	1133.5	1183.5	1233.5	1283.5	1333.5	1383.5	1433.5	1483.5	1533.5
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16
Weight (kg)	11.6	12.4	13.2	14.0	14.7	15.5	16.3	17.1	17.8	18.6	19.4	20.2	20.9	21.7	22.5	23.3	24.0	24.8	25.6	26.4	27.2	28.0	28.8	29.6

● ETS-17-**-L(Motor installation method : left side turn up installation)

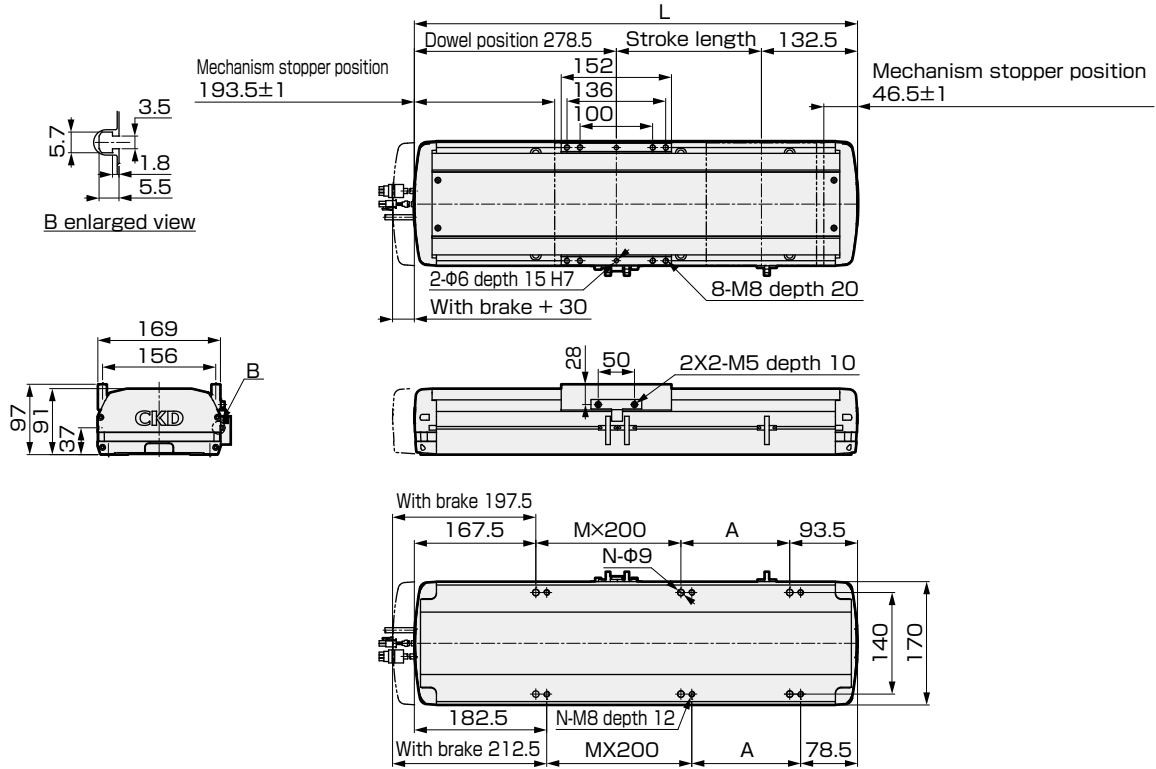


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	383.5	433.5	483.5	533.5	583.5	633.5	683.5	733.5	783.5	833.5	883.5	933.5	983.5	1033.5	1083.5	1133.5	1183.5	1233.5	1283.5	1333.5	1383.5	1433.5	1483.5	1533.5
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
M	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16
Weight (kg)	11.6	12.4	13.2	14.0	14.7	15.5	16.3	17.1	17.8	18.6	19.4	20.2	20.9	21.7	22.5	23.3	24.0	24.8	25.6	26.4	27.2	28.0	28.8	29.6

Dimensions (ETS-17)

• ETS-17-**-B (Motor installation method: built-in)

*750W type is not available for built in type.

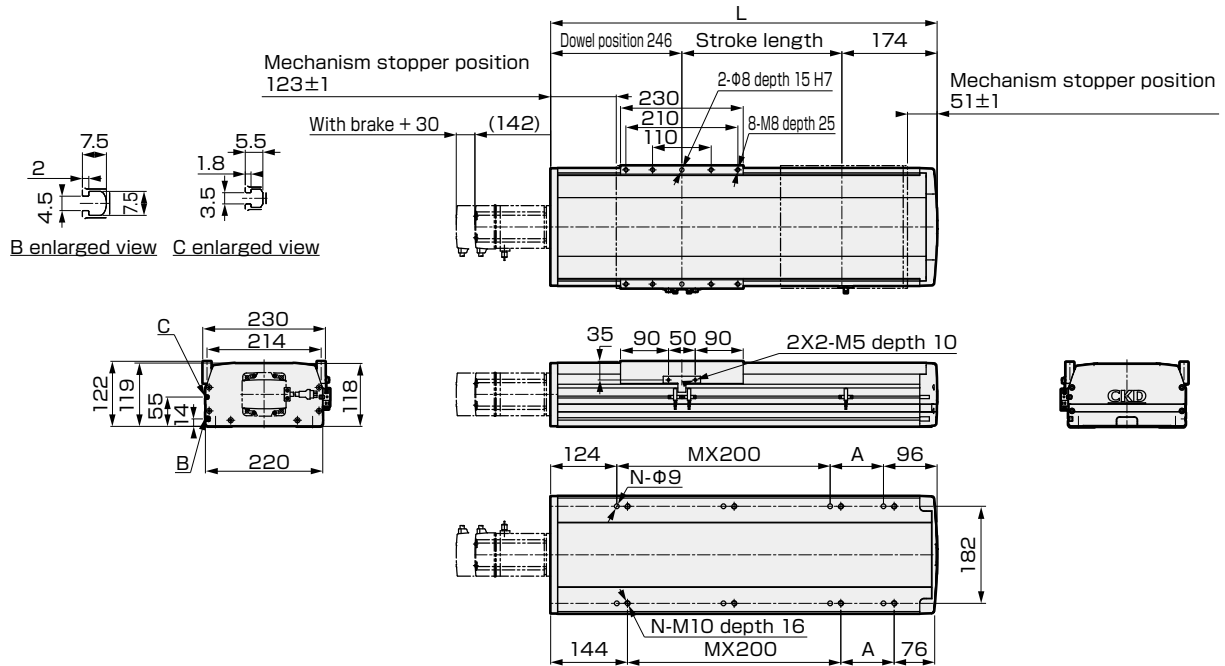


Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
L	511	561	611	661	711	761	811	861	911	961	1011	1061	1111	1161	1211	1261	1311	1361	1411	1461	1511	1561	1611	1661	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	
N	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	
Weight (kg)	Without brake	14.3	15.7	17.1	18.6	20.0	21.4	22.8	24.2	25.6	27.0	28.4	29.8	31.2	32.6	34.0	35.4	36.8	38.2	39.6	41.0	42.4	43.8	45.2	46.6
	With brake	15.2	16.6	18.0	19.4	20.8	22.2	23.6	25.0	26.4	27.8	29.2	30.6	32.0	33.4	34.8	36.2	37.6	39.0	40.4	41.8	43.2	44.7	46.1	47.5

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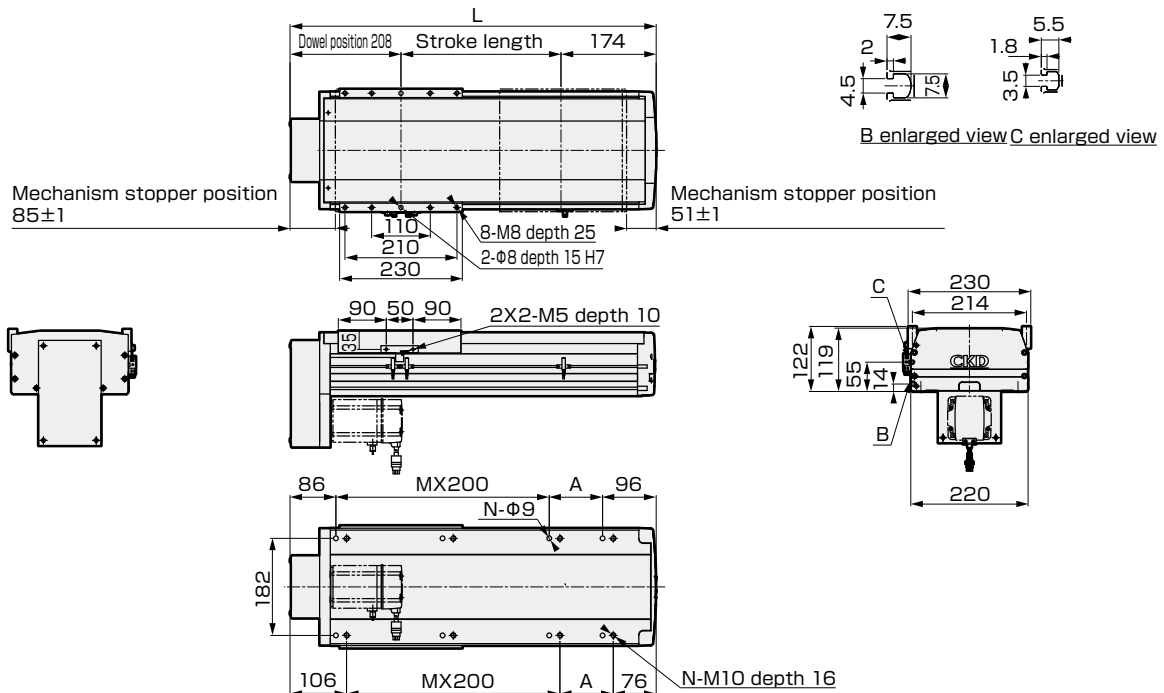
Dimensions (ETS-22)

• ETS-22-**-E (Motor installation method: external direct installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570	1620	1670	1720	1770	1820	1870	1920
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8
N	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20
Weight (kg)	21.2	22.4	23.7	24.9	26.1	27.3	28.5	29.8	31.0	32.2	33.4	34.6	35.9	37.1	38.3	39.5	40.7	42	43.2	44.4	45.6	46.8	48.1	49.3	50.5	51.7	52.9	54.1	55.3

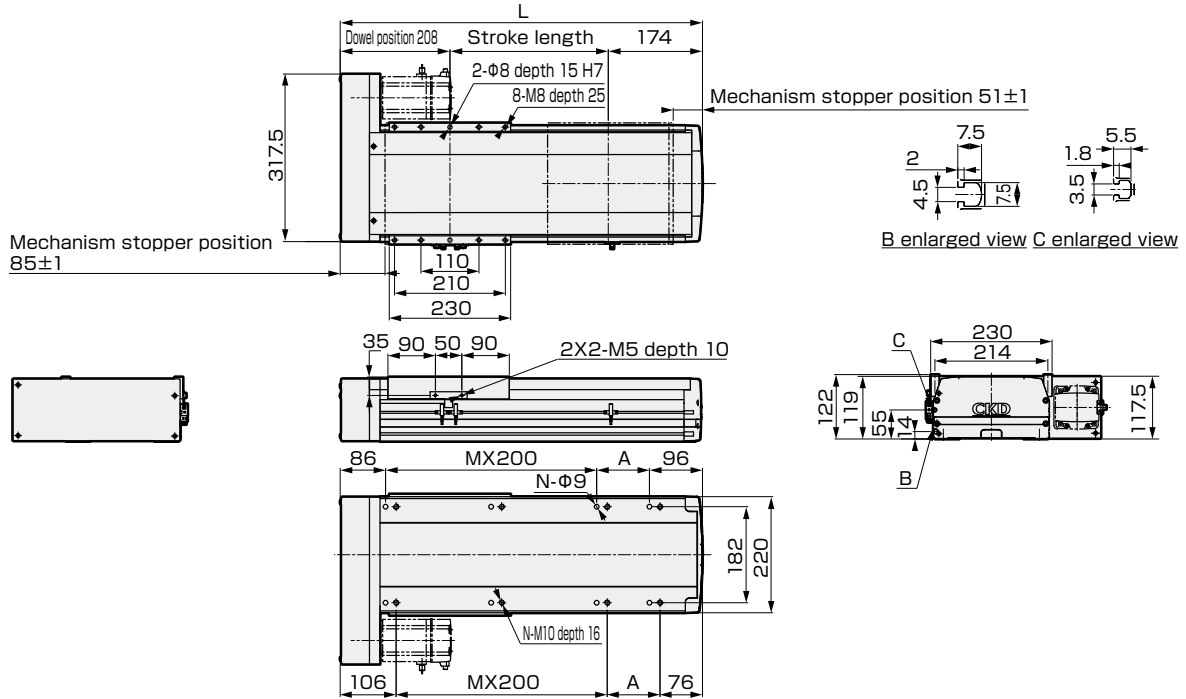
• ETS-22-**-D (Motor installation method : below side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	482	532	582	632	682	732	782	832	882	932	982	1032	1082	1132	1182	1232	1282	1332	1382	1432	1482	1532	1582	1632	1682	1732	1782	1832	1882
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8
N	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20
Weight (kg)	23.6	24.8	26.1	27.3	28.5	29.7	30.9	32.2	33.4	34.6	35.8	37.0	38.3	39.5	40.7	41.9	43.1	44.4	45.6	46.8	48.0	49.2	50.5	51.7	52.9	54.1	55.3	56.5	57.7

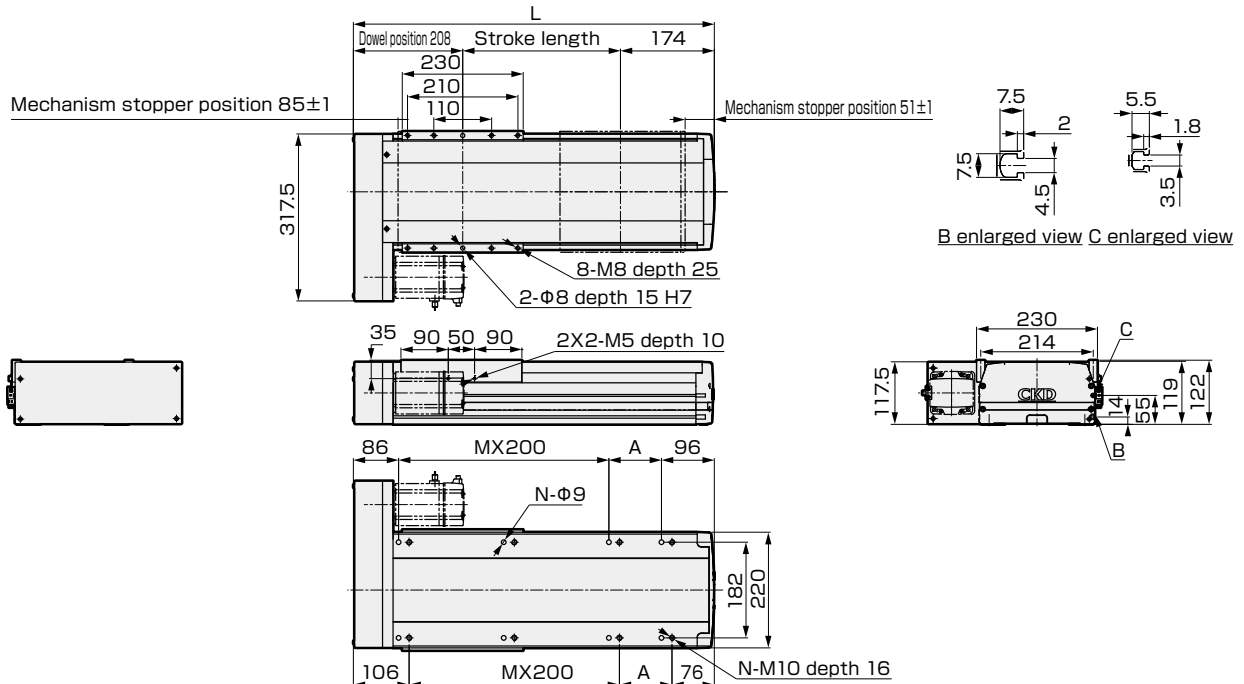
Dimensions (ETS-22)

• ETS-22-**-R(Motor installation method : right side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	482	532	582	632	682	732	782	832	882	932	982	1032	1082	1132	1182	1232	1282	1332	1382	1432	1482	1532	1582	1632	1682	1732	1782	1832	1882
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8
N	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20
Weight (kg)	23.7	24.9	26.2	27.4	28.6	29.8	31.0	32.3	33.5	34.7	35.9	37.1	38.4	39.6	40.8	42.0	43.2	44.5	45.7	46.9	48.1	49.3	50.6	51.8	53.0	54.2	55.4	56.6	57.8

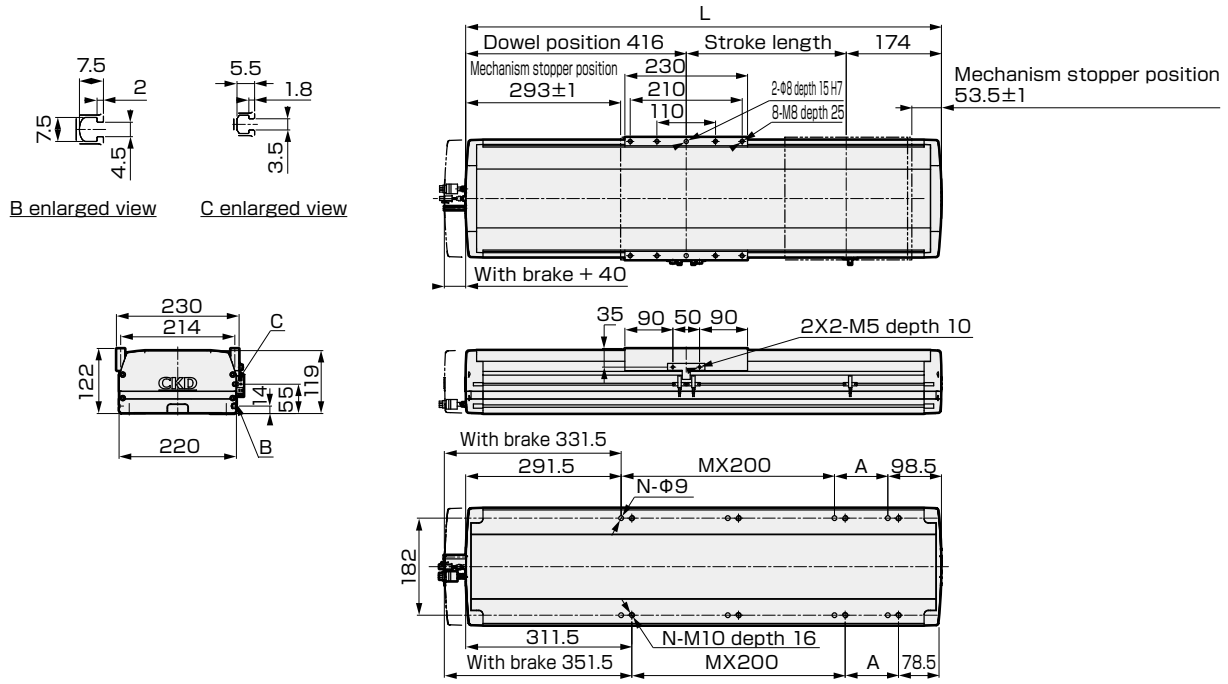
• ETS-22-**-L(Motor installation : left side turn up installation)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
L	482	532	582	632	682	732	782	832	882	932	982	1032	1082	1132	1182	1232	1282	1332	1382	1432	1482	1532	1582	1632	1682	1732	1782	1832	1882
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8
N	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20
Weight (kg)	23.7	24.9	26.2	27.4	28.6	29.8	31.0	32.3	33.5	34.7	35.9	37.1	38.4	39.6	40.8	42.0	43.2	44.5	45.7	46.9	48.1	49.3	50.6	51.8	53.0	54.2	55.4	56.6	57.8

Dimensions (ETS-22)

- ETS-22-**-B (Motor installation method: built-in)



Stroke length (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
L	690	740	790	840	890	940	990	1040	1090	1140	1190	1240	1290	1340	1390	1440	1490	1540	1590	1640	1690	1740	1790	1840	1890	1940	1990	2040	2090	
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
M	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8	
N	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20	
Weight (kg)	Without brake	28.1	30.2	32.2	34.2	36.3	38.3	40.4	42.4	44.4	46.5	48.5	50.6	52.6	54.6	56.7	58.7	60.7	62.8	64.8	66.9	68.9	70.9	73.0	75.0	77.1	79.1	81.1	83.2	85.2
	With brake	29.4	31.4	33.4	35.5	37.5	39.5	41.6	43.6	45.7	47.7	49.7	51.8	53.8	55.9	57.9	59.9	62.0	64.0	66.0	68.1	70.1	72.2	74.2	76.2	78.3	80.3	82.4	84.4	86.4

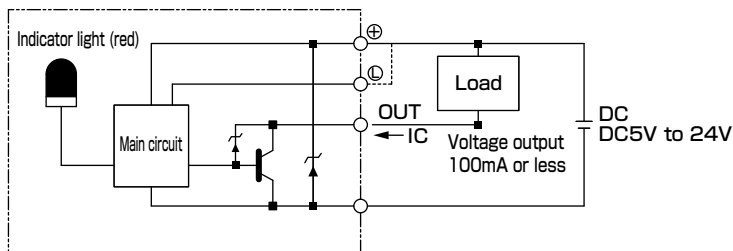
Home position sensor, limit sensor

	Maker	Type
Outside installation sensor	OMRON	EE-SX672
Inside installation sensor	OMRON	EE-SX674

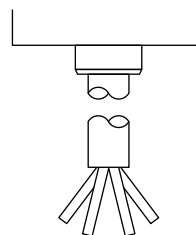
Performance

Descriptions	Specifications
Hysteresis	0.025mm or less
light wave (peak emission range)	GaAs red out LED (940nm)
Indicator light	lighting when light enters (red) (Lighting when light shuts for A type and R type)
Power voltage	DC5~24V±10% ripple(p-p) less than 10%
Current consumption	35mA or less (NPN type)
Control output	NPN type:NPN open collector output DC5 to 24V less than 100mA Current when off less than 0.5mA residual voltage less than 0.8V (load current less than 40mA)
Use outside periphery luminance	acceptance surface luminance fluorescent: less than 1,000lx
Ambient temperature range	When operates: -25~+55°C When storages: -30~+80°C(No freezing)
Ambient humidity range	When operates: 5~85%RH When storages: 5~95%RH(No freezing)
Protective structure	IP50IEC60529 standards
Code length	1m (connector (EE-10101M) with code)

Output circuit



Wiring diagram



Terminal arrangement

Brown	DC5V to 24V
Pink	L
Blue	0V
Black	OUTPUT

Selection guide

STEP-1 Load capacity confirmation

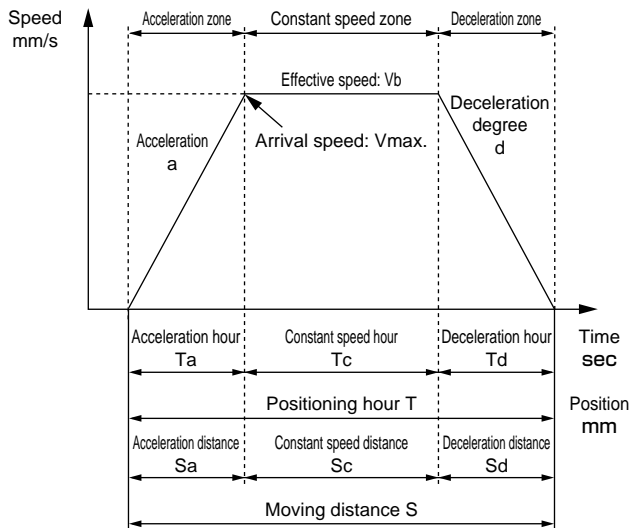
Load capacity changes according to installation attitude and transferring speed.

Select size and lead referring selection table(Intro 1 and 2) and specification table (page 1 and 2) of each models.

STEP-2 Tact time confirmation

Confirm tact time matches to required one by calculating the tact time according to the following example.

Select rotation speed and rotation acceleration and deceleration speed by specification tables of each models (page 1 and 2)



	Descriptions	Symbol	Unit	Remarks
Set value	Setting speed	V	mm/s	
	Setting acceleration	a	mm/s ²	
	Setting deceleration degree	d	mm/s ²	
	Moving distance	S	mm	
Calculated value	Arrival speed	Vmax.	mm/s	$= (2 \times a \times d \times S / (a + d))^{1/2}$
	Effective speed	Vb	mm/s	V and Vmax. smaller one
	Acceleration hour	Ta	s	$= Vb / a$
	Deceleration hour	Td	s	$= Vb / d$
	Constant speed hour	Tc	s	$= Sc / Vb$
	Acceleration distance	Sa	mm	$= (a \times Ta^2) / 2$
	Deceleration distance	Sd	mm	$= (d \times Td^2) / 2$
	Constant speed distance	Sc	mm	$= S - (Sa + Sd)$
Positioning hour	T	s	$= Ta + Tc + Td$	

· Do not use by more speed than specifications.

Acceleration and deceleration setting by acceleration time and deceleration time changes depending on the setting speed and the stroke length.

The velocity curve may not be available (unreachable to setting speed) by acceleration and deceleration speed. Compare by using Vmax and setting speed.

Make a comparison of by the Vmax. [con and] the setting speed.

STEP-3 Allowable moment confirmation

Confirm that actual moment is less than allowable moment and overhang amount

Allowable moment confirmation when operates

Confirm that actual moment is less than allowable moment (satisfies the following formula)

$$M_T = \frac{W}{W_{max}} + \frac{MR}{MR_{max}} + \frac{MP}{MP_{max}} + \frac{MY}{MY_{max}} < 1$$

MT: combination of moment (must be less than 1)

W: vertical weighting

MR: rolling moment

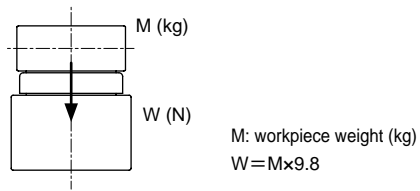
MP: pitching moment

MY: yawing moment

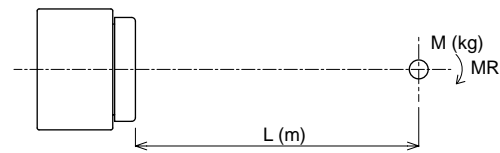
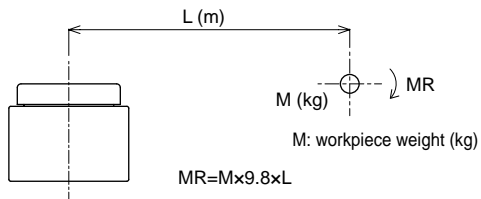
Wmax: allowable load

MR(max), MP(max), MY(max): Refer page 35 to 38 for dynamic allowable moment.

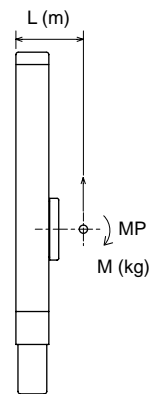
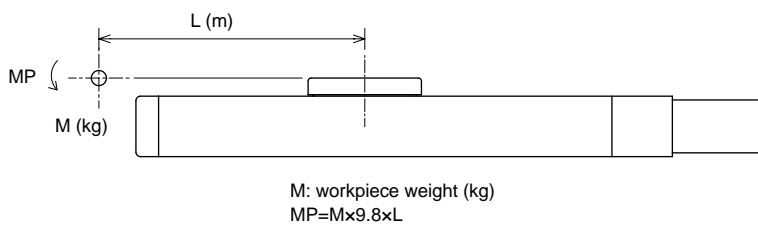
• Vertical load W (N)



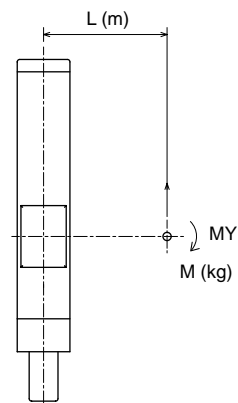
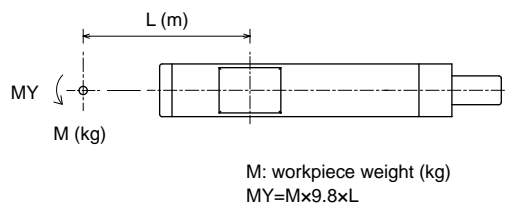
• rolling moment MR(N·m)



•pitching moment MP(N·m)



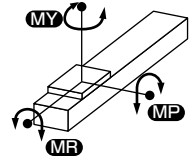
• yawing moment MY(N·m)



[Dynamic allowable moment and overhang amount] Applicable motor size: 100W

[Dynamic load capacity and allowable moment]

	Allowable load	Allowable moment		
	W (max) (N)	MR (max) (N·m)	MP (max) (N·m)	MY (max) (N·m)
ETS-05	551	6.8	2.8	2.8
ETS-06	1209	24.8	8.9	8.9
ETS-10	2651	24.8	24.1	24.1
ETS-12	1660	53.1	42.3	42.3



[Overhang moment]

ETS-05

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	2	5	700	29	71
		10	380	12	33
	5	4	515	58	135
		7	340	26	62
	10	3	433	87	180
		5	223	33	75
Side surface 	2	5	56	12	500
		10	16	0	220
	5	4	107	24	380
		7	31	0	195
	10	3	149	54	376
		5	50	1	148
Vertical 	2	3	40	-	41
		7	0	-	0
	5	3	56	-	57
		7	-	-	-
	10	1.5	125	-	125
		1.5	-	-	-

ETS-06

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	10	374	33	109
		30	159	0	25
	10	3	624	125	335
		8	273	41	121
	15	3	216	24	77
		8	-	-	-
Side surface 	5	5	204	45	530
		10	72	0	245
	10	3	293	96	510
		8	89	14	210
	15	3	43	0	130
		8	-	-	-
Vertical 	5	2	171	-	172
		4	73	-	74
	10	1	355	-	352
		2	165	-	165
	15	1	70	-	72
		2	-	-	-

ETS-10

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	30	424	24	25
		50	0	0	0
		-	-	-	-
	10	15	394	76	79
		25	184	22	25
		30	111	-	-
	16	5	937	282	259
		10	487	121	116
		22	236	40	44
	20	5	940	285	264
		10	490	125	120
		15	240	45	48
Side surface 	5	10	105	50	1400
		20	22	0	538
		30	0	0	0
	10	10	100	50	545
		20	20	0	221
		30	0	0	0
	16	5	116	58	605
		10	24	0	253
		22	0	0	0
	20	5	251	211	903
		10	97	49	436
		15	23	0	153
Vertical 	5	5	100	-	145
		10	50	-	90
		12	23	-	63
	10	4	335	-	375
		6	140	-	180
		8	100	-	140
	16	1	620	-	620
		2	680	-	680
		5	310	-	350
	20	1	580	-	580
		2	645	-	645
		5	310	-	350

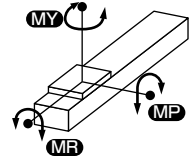
ETS-12

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	30	1200	158	311
		50	1100	124	124
		-	-	-	-
	10	15	1000	190	250
		25	900	190	170
		30	850	124	122
	16	5	2150	1365	982
		10	1190	462	427
		22	1270	242	291
	20	5	1936	1229	882
		10	1039	418	387
		15	1073	220	264
Side surface 	5	10	126	60	800
		20	70	30	600
		30	50	15	476
	10	10	246	180	700
		20	150	80	515
		30	72	32	422
	16	5	1068	976	1579
		10	405	278	776
		22	220	107	680
	20	5	958	875	1420
		10	361	248	696
		15	107	95	610
Vertical 	5	5	412	-	398
		10	394	-	356
		12	357	-	355
	10	4	711	-	578
		6	534	-	414
		8	411	-	376
	16	1	1210	-	1210
		2	1174	-	1174
		5	650	-	650
	20	-	-	-	-
		-	-	-	-
		3	1030	-	802

[Dynamic allowable moment and overhang amount] Applicable motor size: 200W

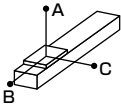
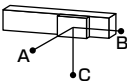
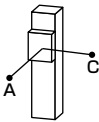
[Dynamic load capacity and allowable moment]

	Allowable load	Allowable moment		
	W (max) (N)	MR (max) (N·m)	MP (max) (N·m)	MY (max) (N·m)
ETS-13	4822	191.7	45.1	45.1
ETS-14	6567	261.0	262.7	262.7

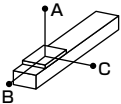
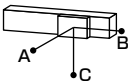
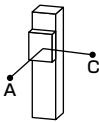


[Overhang amount]

ETS-13

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	40	2448	316	322
		55	2197	247	257
		70	2005	207	219
	10	25	1958	370	490
		35	1660	370	333
		47	1725	247	243
	16	10	1800	1400	800
		20	1100	700	450
		30	1047	445	324
	20	5	2105	1351	960
		15	1170	455	420
		24	1300	250	305
Side surface 	5	40	204	112	1394
		55	130	57	1115
		70	85	24	895
	10	25	414	333	1277
		35	235	157	929
		47	129	57	751
	16	10	461	372	1410
		20	264	178	1027
		30	148	69	832
	20	5	1041	965	1560
		15	400	271	770
		24	220	108	685
Vertical 	5	5	762	-	614
		10	607	-	489
		12	498	-	493
	10	4	1365	-	1101
		6	901	-	727
		8	674	-	543
	16	1	1067	-	1217
		2	997	-	805
		6	747	-	603
	20	1	580	-	580
		2	1155	-	1155
		4	1130	-	885

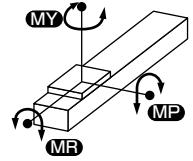
ETS-14 (200W)

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	60	2448	316	322
		80	2197	247	257
		95	2005	207	219
	10	30	1958	370	490
		50	1660	370	333
		75	1725	247	243
	16	10	2265	1674	961
		20	1402	855	537
		44	1047	445	324
	20	10	2263	1672	958
		20	1400	852	535
		35	1052	448	328
Side surface 	5	60	204	112	1394
		80	130	57	1115
		95	85	24	895
	10	30	414	333	1277
		50	235	157	929
		75	129	57	751
	16	10	461	372	1410
		20	264	178	1027
		44	148	69	832
	20	10	997	1217	1709
		20	513	555	985
		35	268	231	640
Vertical 	5	20	762	-	614
		25	607	-	489
		27	498	-	483
	10	10	1365	-	1101
		15	901	-	727
		18	674	-	543
	16	2	2420	-	2031
		4	1690	-	1360
		7	1300	-	1050
	20	6	1695	-	1361
		-	-	-	-
		-	-	-	-

[Dynamic allowable moment and overhang amount] Applicable motor size: 400W

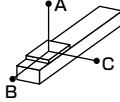
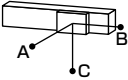
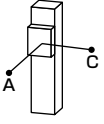
[Dynamic load capacity and allowable moment]

	Allowable load	Allowable moment		
	W (max) (N)	MR (max) (N·m)	MP (max) (N·m)	MY (max) (N·m)
ETS-14	6567	261.0	262.7	262.7
ETS-17	10102	520.3	424.3	424.3

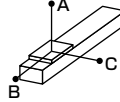
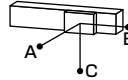
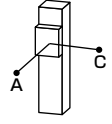


[Overhang amount]

ETS-14 (400W)

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	60	2448	316	322
		80	2197	247	257
		110	2005	207	219
	10	30	1958	370	490
		50	1660	370	333
		88	1725	247	243
	16	10	2265	1674	961
		20	1402	855	537
		48	1047	445	324
	20	10	2263	1672	958
		20	1400	852	535
		40	1052	448	328
Side surface 	5	60	204	112	1394
		80	130	57	1115
		110	85	24	895
	10	30	414	333	1277
		50	235	157	929
		88	129	57	751
	16	10	461	372	1410
		20	264	178	1027
		48	148	69	832
	20	10	997	1217	1709
		20	513	555	985
		40	268	231	640
Vertical 	5	20	762	-	614
		25	607	-	489
		33	498	-	483
	10	10	1365	-	1101
		15	901	-	727
		22	674	-	543
	16	2	1067	-	1217
		4	997	-	805
		10	747	-	603
	20	4	2402	-	2018
		6	1701	-	1366
		8	1305	-	1055

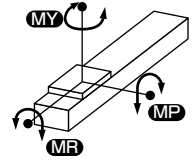
ETS-17 (400W)

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	60	2980	435	577
		100	2000	207	331
		110	1846	202	269
	10	60	2440	428	570
		75	2010	253	336
		90	1851	207	274
	20	30	2652	899	994
		50	1775	526	593
		75	1396	317	267
	40	10	3545	2738	2003
		20	2545	1360	1185
		35	2640	664	739
Side surface 	5	60	530	350	2438
		100	277	165	1995
		110	215	118	1836
	10	60	533	353	2441
		75	293	179	2010
		90	230	133	1851
	20	30	982	815	2573
		50	569	442	1680
		75	337	232	1258
	40	10	2020	2671	3500
		20	1200	1281	2480
		35	755	591	2518
Vertical 	5	20	1510	-	1220
		30	1210	-	990
		40	992	-	962
	10	15	1778	-	1778
		25	1050	-	1050
		30	750	-	750
	20	5	1700	-	1700
		10	2202	-	2202
		14	1485	-	1485
	40	7	650	-	650
		-	-	-	-
		-	-	-	-

[Dynamic allowable moment and overhang amount] Applicable motor size: 750W

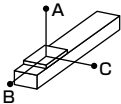
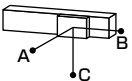
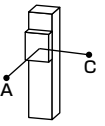
[Dynamic load capacity and allowable moment]

	Allowable load	Allowable moment		
	W (max) (N)	MR (max) (N·m)	MP (max) (N·m)	MY (max) (N·m)
ETS-17	10102	520.3	424.3	424.3
ETS-22	14174	999.3	1098.5	1098.5

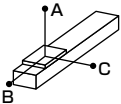
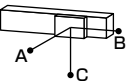
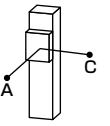


[Overhang amount]

ETS-17 (750W)

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	60	2980	435	577
		100	2000	207	331
		120	1846	202	269
	10	60	2440	428	570
		75	2010	253	336
		95	1851	207	274
	20	30	2652	899	994
		50	1775	526	593
		83	1396	317	267
	40	10	3545	2738	2003
		30	2545	1360	1185
		50	2640	664	739
Side surface 	5	60	530	350	2438
		100	277	165	1995
		120	215	118	1836
	10	60	533	353	2441
		75	293	179	2010
		95	230	133	1851
	20	30	982	815	2573
		50	569	442	1680
		83	337	232	1258
	40	10	2020	2671	3500
		30	1200	1281	2480
		50	755	591	2518
Vertical 	5	20	1510	-	1220
		30	1210	-	990
		50	992	-	962
	10	15	1778	-	1778
		25	1050	-	1050
		40	750	-	750
	20	5	1700	-	1700
		10	2202	-	2202
		25	1485	-	1485
	40	12	650	-	650
		-	-	-	-
		-	-	-	-

ETS-22

Installation attitude	Lead	Load kg	Overhang mm		
			A	B	C
Horizontal 	5	60	3672	653	866
		100	3000	370	497
		150	2493	273	363
	10	60	2652	899	994
		100	1775	526	593
		150	1396	317	267
	25	50	2862	956	1191
		80	2412	581	773
		120	2025	373	556
	40	10	4010	4010	3460
		30	3011	2003	1911
		60	2453	730	980
Side surface 	5	60	795	525	3657
		100	416	248	2993
		150	290	159	2479
	10	60	982	815	2573
		100	569	442	1680
		150	337	232	1258
	25	50	1207	879	2862
		80	779	504	2412
		120	515	295	2025
	40	10	3057	4113	4113
		30	2112	2108	3387
		60	1020	668	2461
Vertical 	5	30	2688	-	2688
		50	1893	-	1893
		70	1640	-	1640
	10	20	2297	-	2297
		30	1518	-	1518
		45	999	-	999
	25	15	2767	-	2767
		20	2100	-	2100
		25	1702	-	1702
	40	-	-	-	-
		-	-	-	-
		-	-	-	-



Safety precautions

Always read this section before starting use.

When designing and manufacturing devices using electric actuator, the manufacturer has an obligation to manufacture a safe device, and to check that the safety of the device's mechanical mechanism and the system operated by the electrical control that controls the device is secured.

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely.

Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.



WARNING

- 1** This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience in handling.
- 2** Use within the product's specification range.
This product must be used within its stated specifications. Do not attempt to modify or additionally machine the product.
This product is intended for use as a general-purpose industrial device or part. It is not intended for use outdoors or for use under the following conditions or environment.
(Note that this product can be used when CKD is consulted prior to use and the customer consents to CKD product specifications. The customer must provide safety measures to avoid risks in the event of problems.)
 - 1** Use for special applications including nuclear energy, railway, aircraft, marine vessel, vehicle, medical equipment, equipment, or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.
 - 2** Use for applications where life or assets could be adversely affected, and special safety measures are required.
- 3** Observe corporate standards and regulations, etc., related to the safety of device design.
- 4** Do not remove devices until safety is confirmed.
 - 1** Inspect and service the machine and devices after securing the safety of all the systems related to this product.
 - 2** Exercise caution as high temperature and charged parts can be present even when operation is stopped.
 - 3** Before starting device inspection or maintenance, turn off the device power and other powers to related devices, release compressed air in the system, and check leakage current.
- 5** Observe warnings and cautions in the instruction manual of each product.
 - 1** Provide a safeguard to prevent entry to the movable scope of electric actuator.
In case of emergency, connect the controller's emergency stop push button switch and install it in a place facilitating operation.
Be sure that the emergency stop push button has a structure which will not allow automatic restoration or unsafe restoration by operator.
 - 2** Use the shaft with a built-in brake when the shaft is not installed horizontally.
If the servomotor is turned off (including emergency stop or alarm) or brakes are turned off, the actuator may fall and cause injury.
 - 3** Direct teaching function is teaching operation to be performed while the servo is OFF.
When the servo of the actuator is OFF, the moving part of the machine may move unexpectedly.
In case of switching to the servo OFF, take countermeasures to make sure the safety and operate carefully.
 - 4** Unexpected movement may occur during robot teaching or test operation, so keep hands, etc., away from the actuator. When conducting operation with the shaft not visible, be sure before starting operation that safety is ensured even if the actuator moves.
 - 5** The shaft with a built-in brake cannot completely clamp the actuator in all cases. When the slider is moved with unbalanced load during maintenance or the machine is stopped for a long time, it may not be sufficient to stop the shaft with the brakes alone for ensuring safety. Be sure that the equipment is in a balanced state or provide a mechanical locking mechanism.
 - 6** It may take several seconds to stop in an emergency, depending on rotation speed and load.
- 6** To prevent electric shock, observe warnings and cautions.
 - 1** Do not touch the heat sink, cement resistor and motor installed in the controller.
Failure to do so may cause burn because these parts are hot. Take sufficient time before conducting inspection and other operations.
Even immediately after the power is turned off, a high voltage is applied until the electric charge accumulated in the internal capacitor is discharged. Wait three minutes or so after turning the power off before touching these parts.
 - 2** Turn off the controller power source before conducting maintenance or inspection.
Electric shocks from high voltage may occur.
 - 3** Do not connect or disconnect connectors while power is on. Misoperation, faults, or electrical shock may occur.
- 7** Before restarting a machine or system, check that measures are taken so that parts do not come off.

8 Set up the overcurrent protection device.

In carrying out wiring to the controller, install over-current protective devices (such as wiring breaker and circuit protector) to the primary power supply for power (terminal block number L1, L2 and L3) and control (connector number CN3-24VDC) in accordance with "JIS B 9960-1:2008 Safety of machinery - Electrical equipment of machines - Part 1: General requirements".

(Excerpt from JIS B9960-1 7.2.1 General Requirements)

Overcurrent protection shall be provided where the current in a machine circuit can exceed either the rating of any component or the allowable current-carrying capacity of the conductors, whichever is the lesser value. The ratings or settings to be selected are specified in 7.2.10.

9 Observe the following cautions to prevent accidents.

The safety cautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

⚠ DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

⚠ WARNING: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

⚠ CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. In any case, important information that must be observed is explained.

Notes for ordering

1 Warranty period

"Warranty Period" of this product is one (1) year from the first delivery to the place you specified.

2 Scope of warranty

In case of a fault which is proved to be the responsibility of the CKD during the above warranty period, we shall offer a replacement part or a spare part of this product free of charge or repair the part in our plant free of charge.

Note that the following faults are excluded from the warranty:

- ① Operation under the conditions or in the environment derailing from those specified in the product specifications.
- ② Failure caused by lack of attention or erroneous control.
- ③ Failure caused by other than the delivered product.
- ④ Failure caused by operation derailing from the purposes for which the product is designed.
- ⑤ Failure caused by modification in the structure, performance, specification or other features made by other than us after delivery, or failure caused by repairs done by other than our designated contractor.
- ⑥ Loss in our product assembled to your machine or equipment, which would be avoided if your machine or equipment were provided with general functions, structures or other features common in the industry.
- ⑦ Failure caused by reason that is unforeseeable with technology put into practical use at the time of delivery.
- ⑧ Failure caused by fire, earthquake, flood, lightning, or other acts of God, earth shock, pollution, salt hazard, gas intoxication, excessive voltage, or other external causes.

The warranty mentioned here covers the discrete delivered product. Only the scope of warranty shall not cover losses induced by the failure of the delivered product.

3 Warranty for exported products

- (1) Products returned to the CKD factory or to a company or factory designated by CKD shall be repaired. Work and cost necessary for transportation shall not be compensated for.
- (2) The repaired product shall be returned to a designated place in Japan with domestic packaging specifications. This warranty specifies basic conditions. If warranty details in individual specification drawings or specifications differ from these warranty conditions, specification drawings or specifications shall take priority.

4 Compatibility confirmation

In no event shall CKD be liable for merchantability or fitness for a particular purpose, notwithstanding any disclosure to CKD of the use to which the product is to be put.

5 Scope of service

Technician dispatch service expense is not included in the price of delivered products. We shall receive the expense separately in the following cases:

- (1) Installation adjustment instruction and presence in test operation
- (2) Maintenance, adjustment and repair
- (3) Technical guidance and technical training (operation, program, wiring method, safety education, etc.)



Safety precautions

Always read this section before starting use.

Individual precautions : Electric driven actuator ETS Series

Design & Selection

Danger

- Do not operate the product in flammable or explosive atmospheres.
Doing so may create the risk of ignition and explosion.
- Keep the actuator away from drop of water or oil.
Failure to do so may result in a fire or faulty operation.
- Make sure to hold and lock (including work pieces) when installing the product.
The operator could be injured due to falling or abnormal operation of the product.

Warning

- Use the product within the product-specific specification scope.
- Install a protection cover in case of possible danger to the operator.
 - If the electric actuator's movable portions may pose danger to the operator, be sure that the actuator has a structure preventing the operator from entering its operation range or touching the movable portions directly.
 - Do not get close to the robot if you wear a medical device such as pacemaker. Strong magnet used in the robot may cause misoperation of the pacemaker and other devices.
- Take the operation status during emergency stop into consideration.
 - In case the safety device stops the machine due to emergency stop, power outage or other system errors, the electric actuator must be designed so that its movement causes no damage to the operator and equipment.
- Install the actuator inside and keep away from humid places.
Electrical leakage or a fire may occur in places where rainwater drips or is humid (under the conditions its humidity is more than 85% and condensation occurs). Drop of oil and oil mist should also be prohibited.
- Use and store the product under the right use/storage temperature in atmospheres without condensation.
Failure to do so may result in shorter life or abnormal stop of the actuator. Please ventilate if the heat is muffled.
- To prevent failure, explosion, or ignition, install the product away from direct sun, dust, flammable items, corrosive gas, explosive gas, and flammable gas. The product is not considered for chemical resistance.
Failure to do so may result in the cause of break, explosion or ignition.

- Do not use and store the actuator in the places with strong electromagnetic waves, ultraviolet rays and radiation.
Doing so may cause malfunction or failure.
- Take possibility of power source failure into consideration.
 - In case of a failure in the power source, take countermeasures without causing trouble or damage to the operator or equipment.
- Consider the operation status if the machine is reactivated after emergency stop or abnormal stop.
 - The machine must be designed so that reactivation causes no damage to the operator or equipment.
If the electric actuator must be reset to the start position, be sure to provide the machine with safe control device.
- Install the product away from rainwater, moisture and direct sun.
- Do not operate the actuator in corrosive atmospheres.
 - Failure to do so may result in damage or faulty operation.
- Do not use the actuator under shock or vibration conditions.
- Do not use the actuator in dusty places or places affected by water droplet and oil droplet.
- Do not apply load exceeding the allowance specified in the selection document to the actuator.

Caution

- Do not hit the trolley table against the stroke end.
- Specify the maintenance conditions in the equipment instruction manual.
 - Product functions may be deteriorated significantly due to usage, service conditions or maintenance. This may result in failure to ensure safety. Conducting maintenance with accuracy allows the product to fully exert its functions.
- Read through the instruction manual to perform installation and adjustment properly.
- The product is manufactured in conformity with the related standards. Never attempt to modify the product.
- The suitability of our products with system, machines, equipment that you are going to use, please check with your own risk.

Installation & Adjustment

⚠ Danger

- Do not enter the operating range of the actuator when the product is ready to operate. The product may move suddenly and injure.

⚠ Warning

- Overturn, vibration, and shock should be avoided during transportation due to the integrated precision components.
Parts could damage.
- In case of locating temporarily, place the actuator in a horizontal position.
- Do not climb on top of the product, use it as a footstool or, place any object.
- Set ambient temperature -10° to 50° and ambient humidity 35 to 80% when transporting without condensation or freezing.
If not, failure may occur.
- Attachment to incombustible items is necessary. Direct attachment to flammable items or near the items could cause a fire.
There is a risk of burns.
- Do not climb on top of the product, use it as a footstool or, place any object.
That could be the causes of accidents by falling, turnover of the product, injury from falling, damage to the product, or operation errors caused by the damage.
- Even if there is a power failure, take countermeasures so as to cause no damage to human body, or to machines.
Unexpected accident may happen.
- If any abnormality is found, stop using immediately and contact our sales office nearest you.

⚠ Caution

- Installing the actuator in places under large vibration or impact conditions may lead to malfunction.
Malfunction could occur.
- Do not operate the moving part of the product or decelerate rapidly by an external force.
There is a possibility to damage or malfunction by the regenerative current.
- During home return, do not hit the mechanical stopper etc. other than the pressing action.
Damaged feed screw may cause malfunction.
- Durability can be changed by transport load or environment. Sufficient setting for transport load etc. is required. In addition, use without shock applying to the moving part.
- Do not act on the slider and give it an excessive moment.
The product can be damaged or malfunction.
- Flatness of the mounting surface should be 0.05mm/200mm, and do not give twist or bending force to the actuator.
- Flatness of the side of a work piece attaching to the slider should be less than 0.02. Do not give twist or bending force to it. The product can be damaged or malfunction.
- Tighten the screws that attach the body, using the screws on the length of the table below with proper torque.

Thread size	Tightening torque (N·m)
M4	1.5
M5	3
M6	5.2
M8	12.5
M10	24.5

During Use & Maintenance

⚠ Danger

- Working with wet hands may cause an electric shock.

⚠ Caution

- Conduct a regular check 2 to 3 times in a year to make sure to work properly.
- Grease lubrication interval is usually 100km. However, it varies depending on the use conditions. It is

recommended to determine the lubrication interval by the initial inspection.

- When performing maintenance, inspection, repair, stop the power supply to the product before. Call attention to the others around you not to turn the power on, or operate carelessly by a third party.
- In case of disposing the product, follow the law of waste disposal and public cleaning outsource to professional waste disposal service.

MEMO

MEMO

Related products

Electric driven actuator ERL/ESD Series

- **Light assist**
Light assist for next pushing. Friendly for beginners!
- **Easy operation with one hand**
Fitting shape. Easy operation with one hand
- **Easy operation**
Only 6 large button for setting. Easy setting without failure.
- **Industry min.**
Compact controller. Setting in any place of the control box is available.

Catalog No. CC-1147



Electric driven actuator ESSD/ELCR Series

- **Space saving**
Wiring and installation space for the controller is no longer required.
- **Design pneumatically**
Shaped, used, operated like pneumatic cylinder.
- **Flexible motion control**
Three control modes (solenoid valve mode, 7 position mode and pitch feeding mode) available.
- **Easy teaching**
Easy setting with 5 buttons. Direct configuration is available.

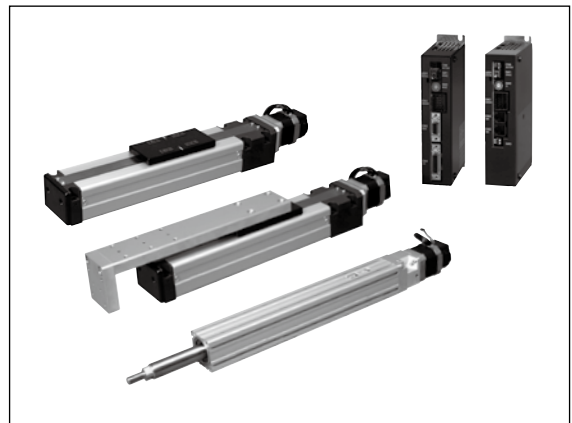
Catalog No. CC-1002



Electric driven actuator KBZ Series

- **High tact time**
Max. operation speed of 800mm/s possible
- **Servo motor**
Servo motor for a compact axis. Allow to high-speed operation, quick acceleration and deceleration, and high load capacity.
- **Absolute specifications**
No need for return-home routine.
- **Compact controller**
Drastic downsizing.

Catalog No. CC-1102



Direct drive actuator compact type AX6000M Series

Catalog No. CC-1148

■ Space saving

In addition to industry min.external dimensions, for the concentric shape (the fixed axis and the rotation axis is the same), compact machine design that saves a waste of space is possible.

■ Flexible

Operation can be realized as imagined because it has abundant program creation functions.

Furthermore, it corresponds to simple operation setting such as automatic creation point specified program.

■ High reliable and maintenance free

Because of the direct-drive system(gearless), there is no need to worry about gear damage or accuracy changes through wear of the gear unit.



Direct drive actuator quick response type AX1000T、AX2000T、AX4000T Series

Catalog No. CC-995

■ Saving energy and no need for exchange and disposal of lubricant oil, space saving

■ Return to origin not required

■ Smooth cam curve drive

■ Compact and high torque

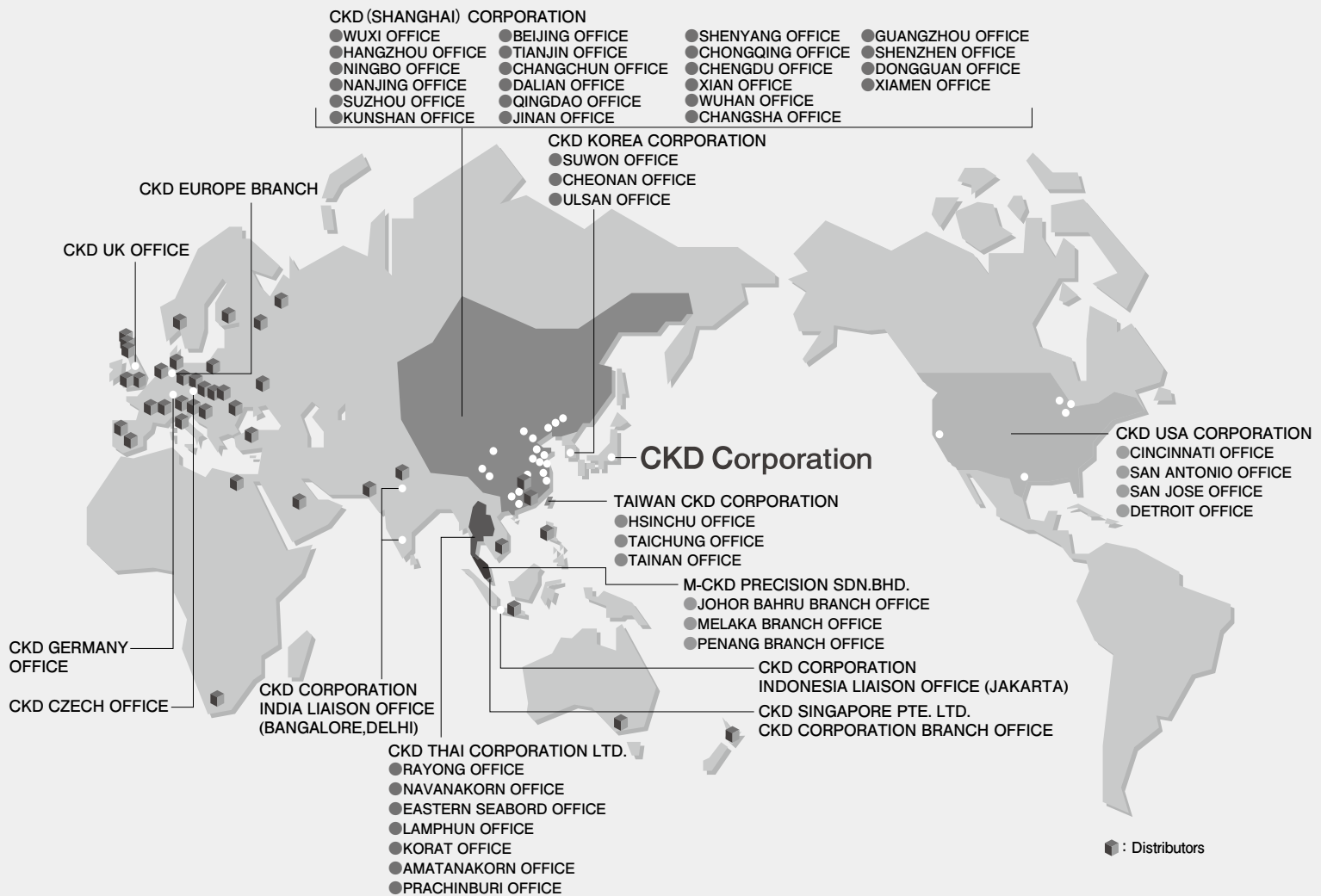
■ Easy operation

■ TS type driver (till max. output 75N·m)

Selection of TH type driver(Max. output more than 150N·m) is available.

■ Drivers are available for CC-Link, DeviceNet, PROFIBUS-DP.





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