



ACTUATOR
UNITS

NEW

Economy series

ES/EC



For details, visit THK at www.thk.com

* Product information is updated regularly on the THK website.

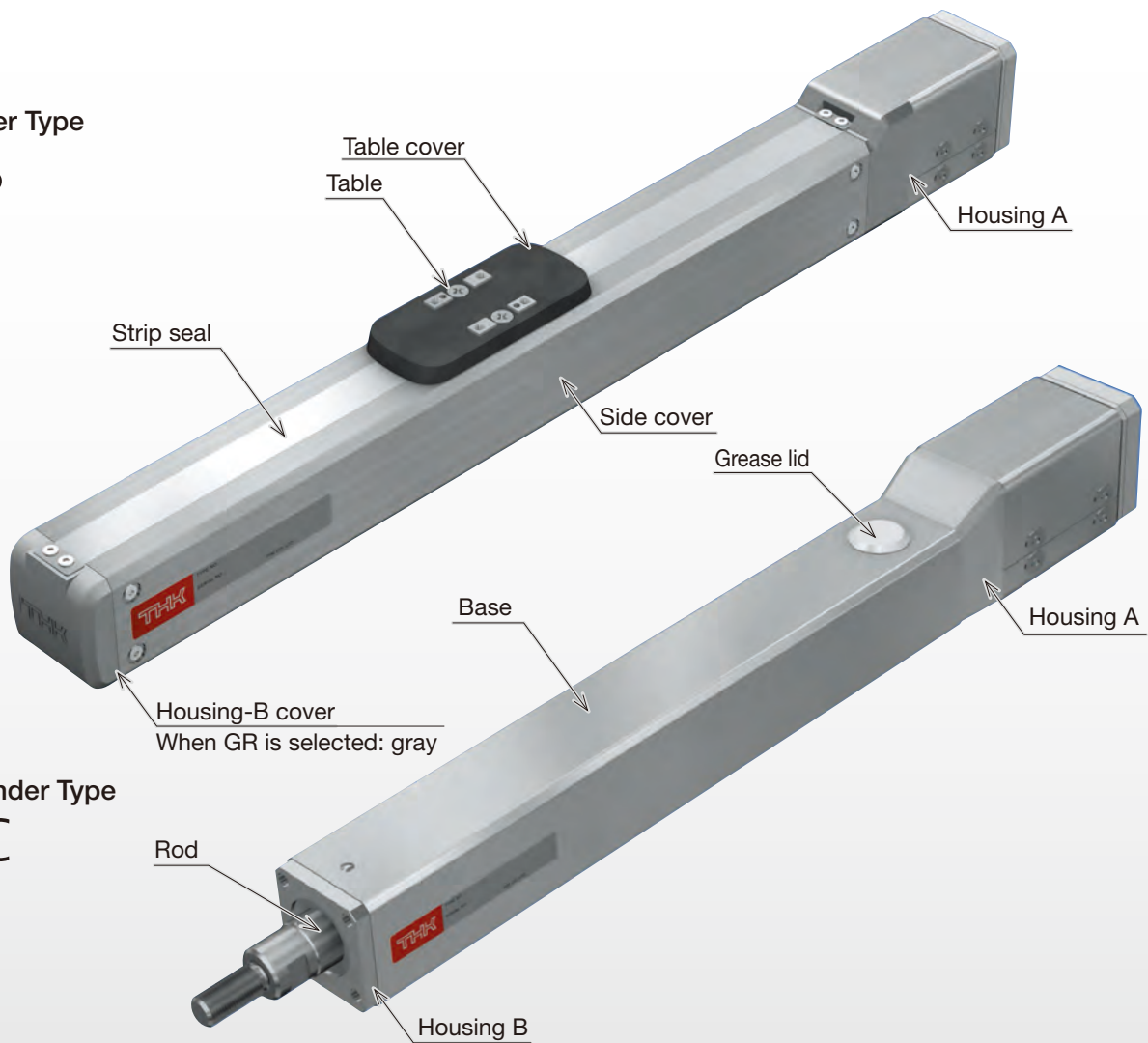
THK CO., LTD.
TOKYO, JAPAN

CATALOG No.373-11E

Electrical Actuator Economy series ES/EC

Lightweight, Compact

Slider Type ES



Cylinder Type EC

Features

Compact and reliable

By incorporating an LM Guide within its rectilinear guide, the ES provides both compactness and reliability.

Reasonably priced

The use of LM Guides reduces the number of components required, making the ES available at a reasonable cost.

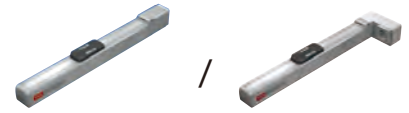
Long-term maintenance-free operation

The ES incorporates the model SRS LM Guide, equipped with ball retainers, as well as Lubricator QZ, for optimal ball-screw lubrication. The combined effect provides for long-term maintenance-free operation.

Predictable service life

The service life of the LM Guide and ball screw can be calculated based on usage conditions. Contact THK for details.

Model Configuration



ES/EC (without motor)

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES4R	06	0150	B	0	A	MR-GR-FL-LB
(1)	(2)	(3)	(4)	(5)	(6)	(7)
ES3	06: 6mm	0050: 50mm	B	0: Without motor	N: None	No symbol: ES : Red cover : EC : None
ES4	12: 12mm	0100: 100mm		1: With motor (Prepared by THK)	A	MR: Motor right wrap *1
ES5		0150: 150mm			B	ML: Motor left wrap *1
ES6		0200: 200mm			C	GR: Change the cover color to gray
ES3R		0250: 250mm				SB: With slider base *2
ES4R		0300: 300mm				CB: With cylinder base *3
ES5R		0350: 350mm				FL: With flange *3 *4
ES6R		0400: 400mm				LB: With link ball *3 *4
EC3		0450: 450mm				□ ₁ □ ₂ : Sensor *2
EC4		0500: 500mm				
EC3R		0550: 550mm				
EC4R		0600: 600mm				
EC3H						
EC4H						

When 0 is selected, a coupling is not provided for motor direct coupled specification. Timing pulley and timing belt are provided for motor wrap configuration. When 1 is selected, THK will prepare a motor and install it.

R represents motor wrap, and H represents with linear bush.

For ES3, ES3R, EC3, EC3R and EC3H, have ball screw lead of 6mm only.

Maximum stroke differs depending on models.
 ES3: 300mm
 ES4: 400mm
 ES5: 500mm
 ES6: 600mm
 EC3: 200mm
 EC4: 300mm

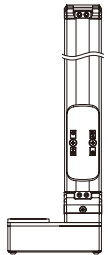
*1 Valid only when ES□R or EC□R is selected in model (1).
 *2 Valid only when ES is selected in model (1).
 *3 Valid only when EC is selected in model (1).
 *4 If you select EC□H for model (1), FL and LB cannot be selected.

Change the cover color to gray
 You can change the color of ES housing cover to gray.
 No symbol: red When GR is selected: gray

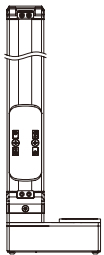
If the GR is not included in the model configuration, cover will be red.

Motor wrap direction

Slider type ES

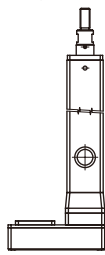


Option symbol ML: Motor left wrap

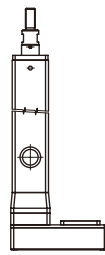


Option symbol MR: Motor right wrap

Cylinder type EC



Option symbol ML: Motor left wrap



Option symbol MR: Motor right wrap

Pages for detailed description

(6) Intermediate flange		P. 33
(7) Options	GR: Change the cover color to gray	P. 33
	SB: With slider base	P. 34
	CB: With cylinder base	P. 38
	FL: With flange	P. 38
	LB: With link ball	P. 38
	□ ₁ □ ₂ : Sensor	P. 36

Lineup List

Model	Ball screw lead [mm]	Stroke [mm]	Rated speed *1 [mm/s]	The reference motor		Maximum load capacity *1 [kg]	
				Stepper motor	Servo motor [W]	Horizontal mount	Vertical mount
ES3	6	50 to 300	—	□28	—	1	0.5
ES4	6	50 to 400	—	□35	—	to 9	to 4
	12					to 7.5	to 1.5
ES5	6	50 to 500	300	—	50	10	5
	12		600			6	2
ES6	6	50 to 600	300	—	50	10	5
	12		600			6	2
ES3R	6	50 to 300	—	□28	—	1	to 0.5
ES4R	6	50 to 400	—	□35	—	4	to 1.5
	12					2	1
ES5R	6	50 to 500	300	—	50	8	2
	12		600			6	1
ES6R	6	50 to 600	300	—	50	8	2
	12		600			6	1
EC3	6	50 to 200	—	□35	—	15	6
EC4	6	50 to 300	300	—	50	14	6
	12		600			7	3
EC3R	6	50 to 200	—	□35	—	15	3
EC4R	6	50 to 300	300	—	50	14	6
	12		600			7	3
EC3H	6	50 to 200	—	□35	—	15	6
EC4H	6	50 to 300	300	—	50	14	6
	12		600			7	3

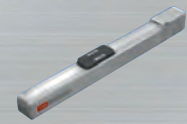
*1 Based on rated motor speed ($3,000\text{min}^{-1}$).

*2 Load mass represents values with THK control devices used. Determine load mass according to specifications of the motor you actually use. For selecting a motor, see Reference Materials for Selecting on page 39 and 40.

*3 Maximum speed is dependent on motor speed of $3,000\text{min}^{-1}$ and, if applicable, permissible rotation speed of ball screw.

Maximum speed for each stroke *3 [mm/s]												
Stroke [mm]												
50	100	150	200	250	300	350	400	450	500	550	600	
300												
300												
600												
300												
600												
300										270	230	
600										540	460	
300												
300												
600												
300												
600												
300										270	230	
600										540	460	
300			250									
300				230	170							
600				460	340							
300			250									
300				230	170							
600				460	340							
300			250									
300				230	170							
600				460	340							

ES3 Slider type Directly coupled without motor



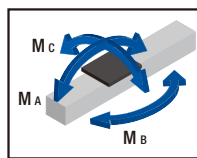
Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES3	06	0150	B	0	A	GR-SB
ES3	06: 6mm	0050: 50mm to 0300: 300mm	B	0: Without motor 1: With motor	A B	No symbol: Red cover GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Basic Specifications

LM Guide (SRS9)	Basic dynamic load rating C [N]	2690	
	Basic static load rating Co [N]	2310	
Ball screw portion	Radial clearance [μm]	-2 to +2	
	Screw shaft diameter [mm]	φ6	
	Ball screw lead [mm]	6	
	Basic dynamic load rating Ca [N]	780	
	Basic static load rating Coa [N]	1250	
	Root diameter [mm]	φ5.1	
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	6550
		Static permissible load P _{0a} [N]	2310
	Permissible rotational speed [min ⁻¹]	3000	
Starting torque [N-mm]		8	
Positioning repeatability [mm] *2		±0.020	
Lost motion [mm] *2		0.1	
Permissible input torque [N-m]		0.065	

Static Permissible Moment *1

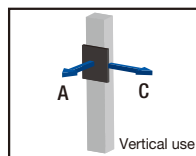
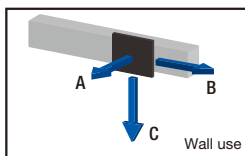
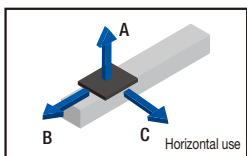


	[N·m]
MA	6.0
MB	7.5
MC	5.9

*1 Static maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.

*2 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2

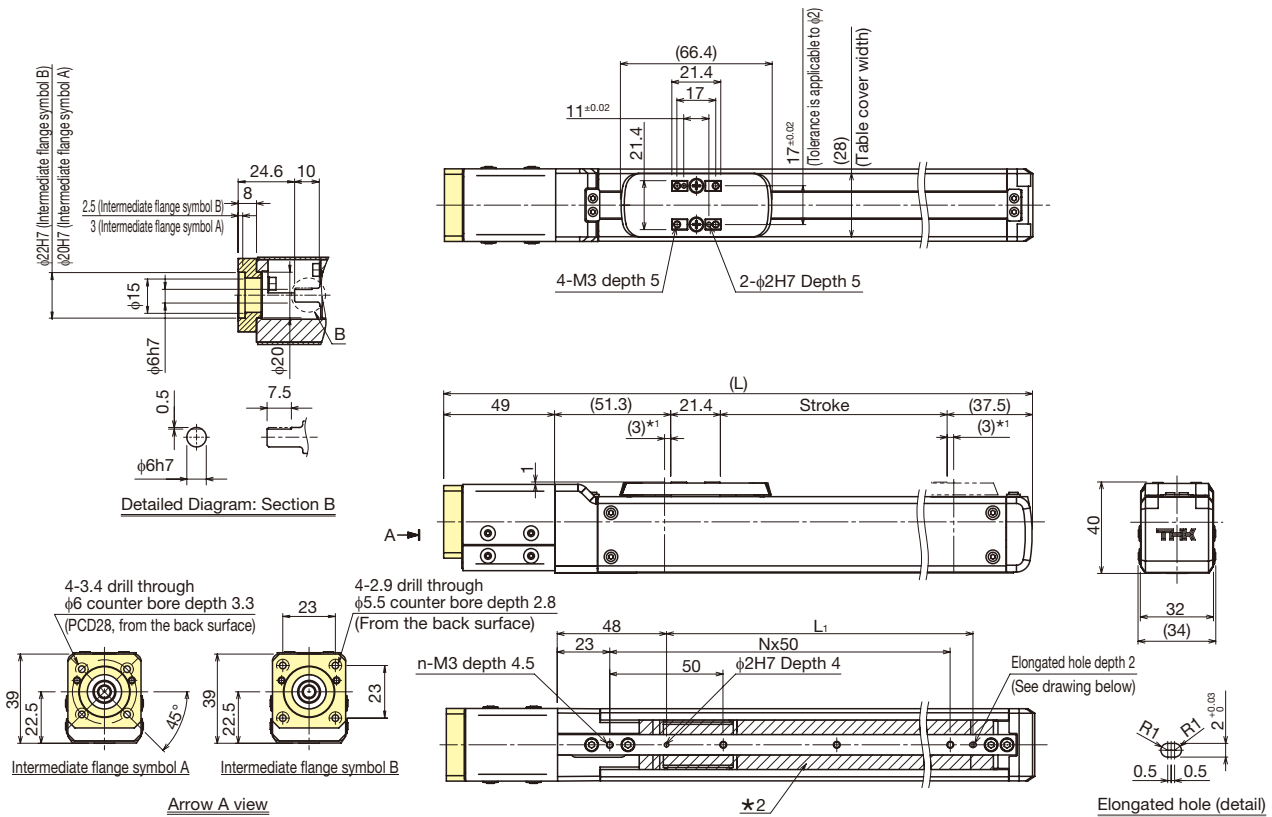


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	0.5	200	200	200	6	0.5	200	200	200	6	0.3	200	200	
	1	200	160	200		1	170	150	200		0.5	200	200	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

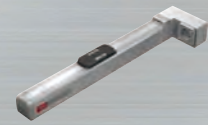


*1 Stroke up to mechanical stopper.
 *2 indicates an opening.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm	300					
Dimensions [mm]	L	209.2	259.2	309.2	359.2	409.2	459.2
	L ₁	85	135	185	235	285	335
Mounting pitch count	N	2	3	4	5	6	7
Mounting hole count	n	3	4	5	6	7	8
Weight [kg]		0.65	0.7	0.8	0.85	0.9	0.95

*1 Load capacity and maximum speed vary depending on the motor used.
 *2 Dependent on the permissible rotational speed of the ball screw.

ES3R Slider type Motor wrap



Model Configuration

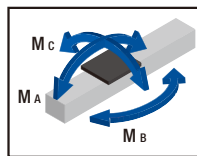
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES3R	06	0150	B	0	A	MR-GR
ES3R	06: 6mm	0050: 50mm to 0300: 300mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS9)	Basic dynamic load rating C [N]		2690
	Basic static load rating Co [N]		2310
	Radial clearance [μm]		-2 to +2
Ball screw portion	Screw shaft diameter [mm]		φ6
	Ball screw lead [mm]		6
	Basic dynamic load rating Ca [N]		780
	Basic static load rating Coa [N]		1250
	Root diameter [mm]		φ5.1
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	6550
		Static permissible load P _{0a} [N]	2310
	Permissible rotational speed [min ⁻¹]		3000
Starting torque *1 [N-mm]		8	
Positioning repeatability [mm] *3		±0.020	
Lost motion [mm] *3		0.1	
Permissible input torque [N-m]		0.065	

Static Permissible Moment *2



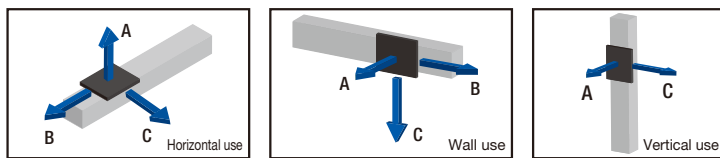
	[N·m]
MA	6.0
MB	7.5
MC	5.9

*1 Pulley and timing belt not included.

*2 Static maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.

*3 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2

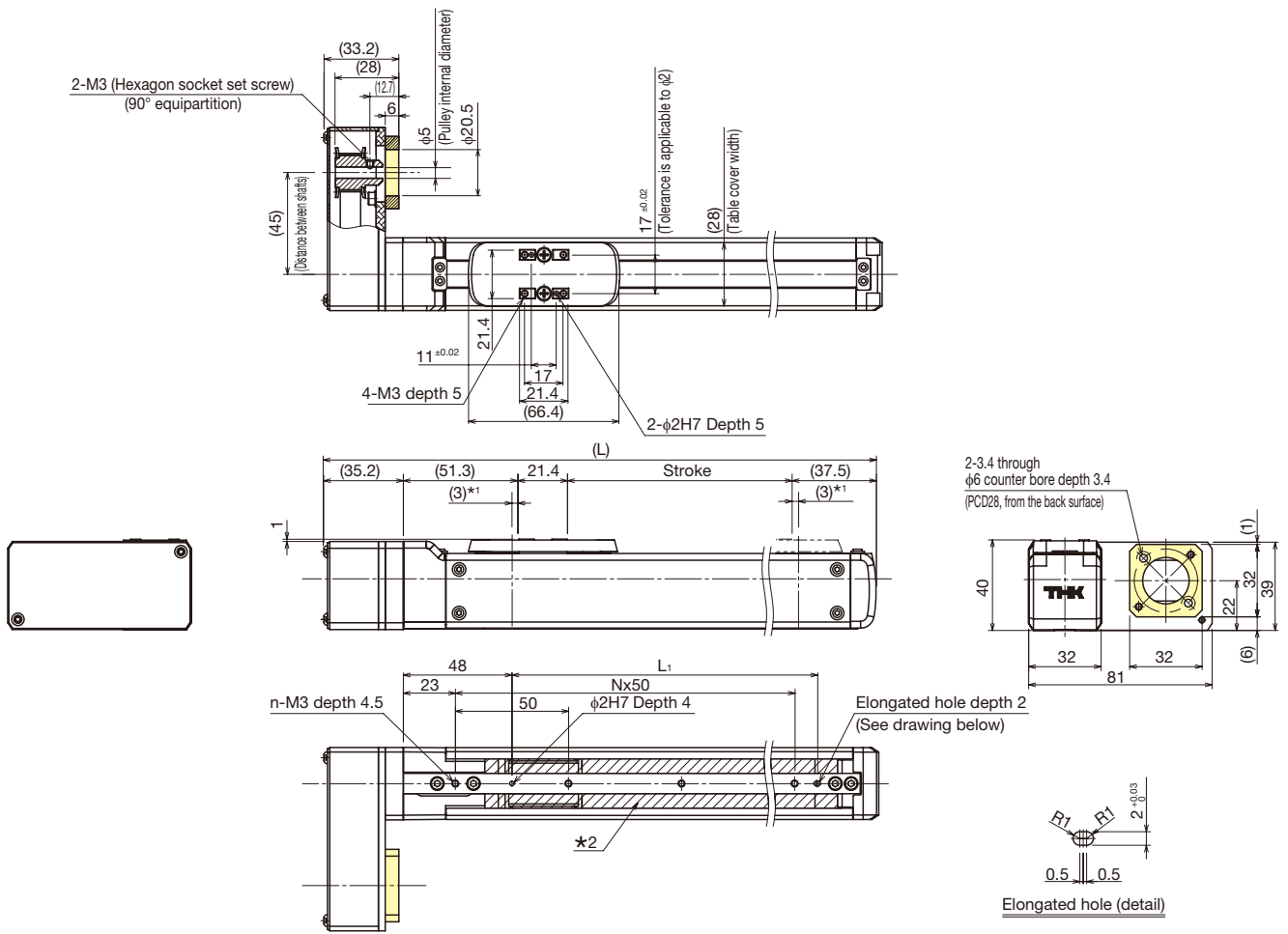


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	0.5	200	200	200	6	0.5	200	200	200	6	0.3	200	200	
	1	200	160	200		1	170	150	200		0.5	200	200	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

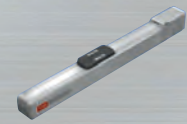
Dimensions



*1 This is a stroke between mechanical stoppers.
*2 indicates an opening.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)
Maximum speed *1*2 [mm/s]	Ball screw lead: 6mm	300					
Dimensions [mm]	L	195.4	245.4	295.4	345.4	395.4	445.4
	L ₁	85	135	185	235	285	335
Mounting pitch count	N	2	3	4	5	6	7
Mounting hole count	n	3	4	5	6	7	8
Weight [kg]		0.65	0.7	0.8	0.85	0.9	0.95

*1 Load capacity and maximum speed vary depending on the motor used.
*2 Dependent on the permissible rotational speed of the ball screw.



ES4 Slider type Directly coupled without motor

Model Configuration

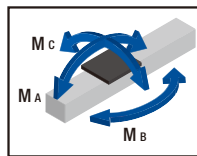
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES4	06	0150	B	0	A	GR-SB
ES4	06: 6mm	0050: 50mm	B	0: Without motor	A	No symbol: Red cover
	12: 12mm	to		1: With motor	B	GR: Change the cover color to gray
		0400: 400mm				SB: With slider base
						□ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS9W)	Basic dynamic load rating C [N]		3290
	Basic static load rating Co [N]		3340
	Radial clearance [μm]		-2 to +2
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating Ca [N]		1770 920
	Basic static load rating Coa [N]		3040 1600
	Root diameter [mm]		φ6.8
	Ball center-to-center diameter [mm]		φ8.4
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
Starting torque [N·mm]		12 21	
Positioning repeatability [mm] *2		±0.020	
Lost motion [mm] *2		0.1	
Permissible input torque [N·m]		0.16	

Static Permissible Moment *1

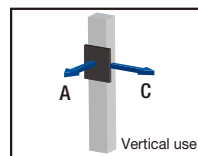
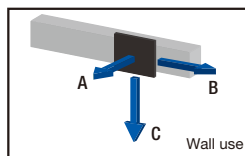
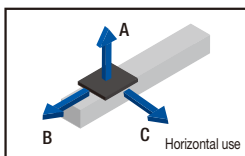


	[N·m]
MA	9.3
MB	13.5
MC	17.7

*1 Static maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.

*2 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2

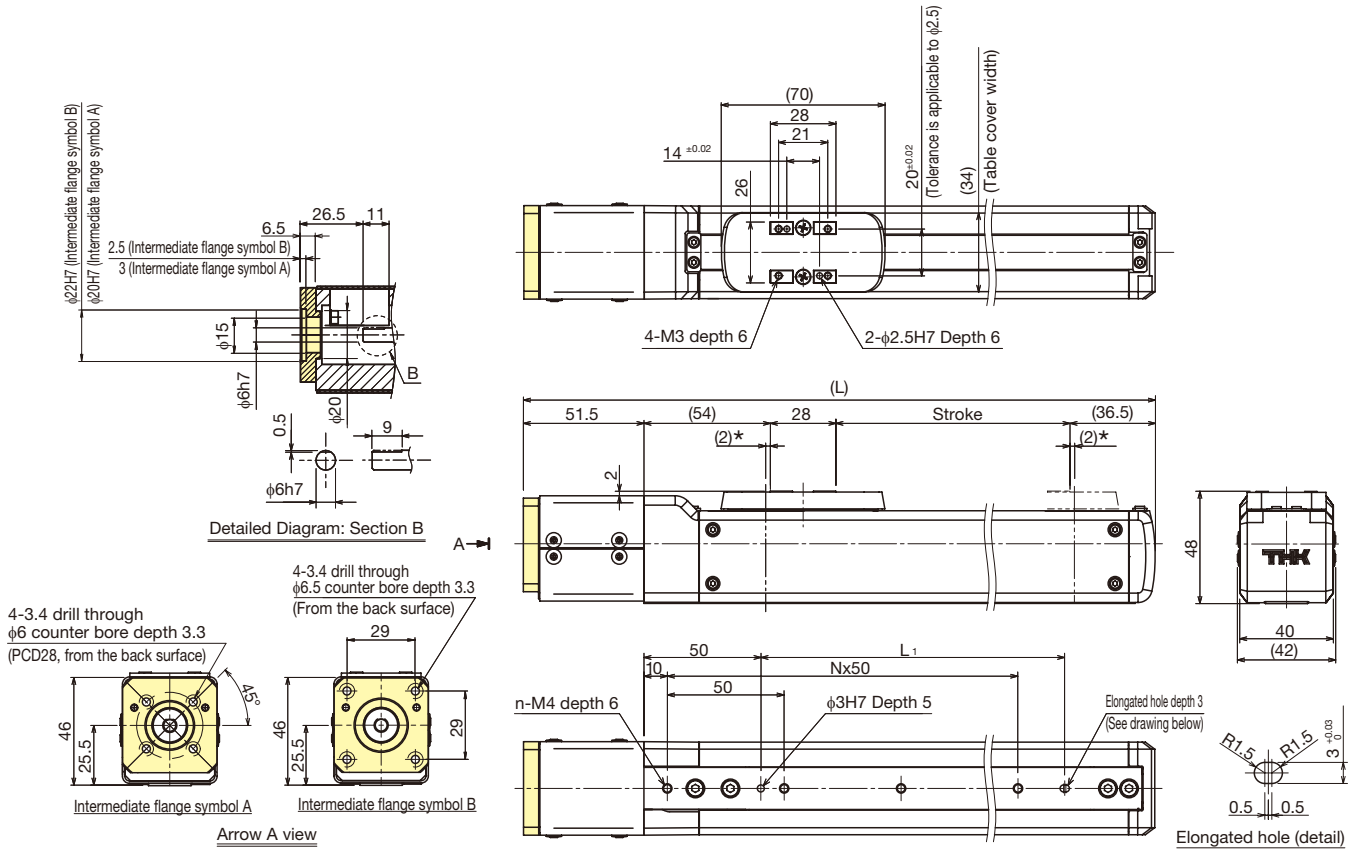


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	4.5	300	50	100	6	4.5	60	30	300	6	2	100	110	
	9	160	20	40		9	10	5	70		4	30	40	
12	3.8	260	60	100	12	3.8	70	40	220	12	0.8	260	300	
	7.5	110	20	40		7.5	10	10	50		1.5	130	150	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

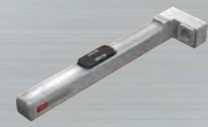


* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (54)	100 (104)	150 (154)	200 (204)	250 (254)	300 (304)	350 (354)	400 (404)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm	300							
	Ball screw lead: 12mm	600							
Dimensions [mm]	L	220	270	320	370	420	470	520	570
	L ₁	80	130	180	230	280	330	380	430
Mounting pitch count	N	2	3	4	5	6	7	8	9
Mounting hole count	n	3	4	5	6	7	8	9	10
Weight [kg]		1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES4R Slider type Motor wrap

Model Configuration

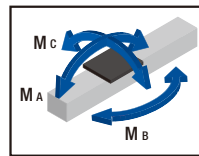
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES4R	06	0150	B	0	A	MR-GR
ES4R	06: 6mm 12: 12mm	0050: 50mm to 0400: 400mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS9W)	Basic dynamic load rating C [N]		3290
	Basic static load rating C ₀ [N]		3340
	Radial clearance [μm]		-2 to +2
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating C _a [N]		1770 920
	Basic static load rating C _{0a} [N]		3040 1600
	Root diameter [mm]		φ6.8
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating C _a [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
Starting torque *1 [N·mm]		12 21	
Positioning repeatability [mm] *3		±0.020	
Lost motion [mm] *3		0.1	
Permissible input torque [N·m]		0.16	

Static Permissible Moment *2



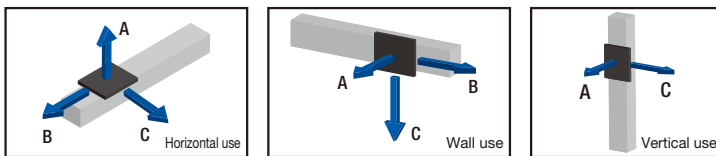
	[N·m]
M _A	9.3
M _B	13.5
M _C	17.7

*1 Pulley and timing belt not included.

*2 Static maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*3 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2

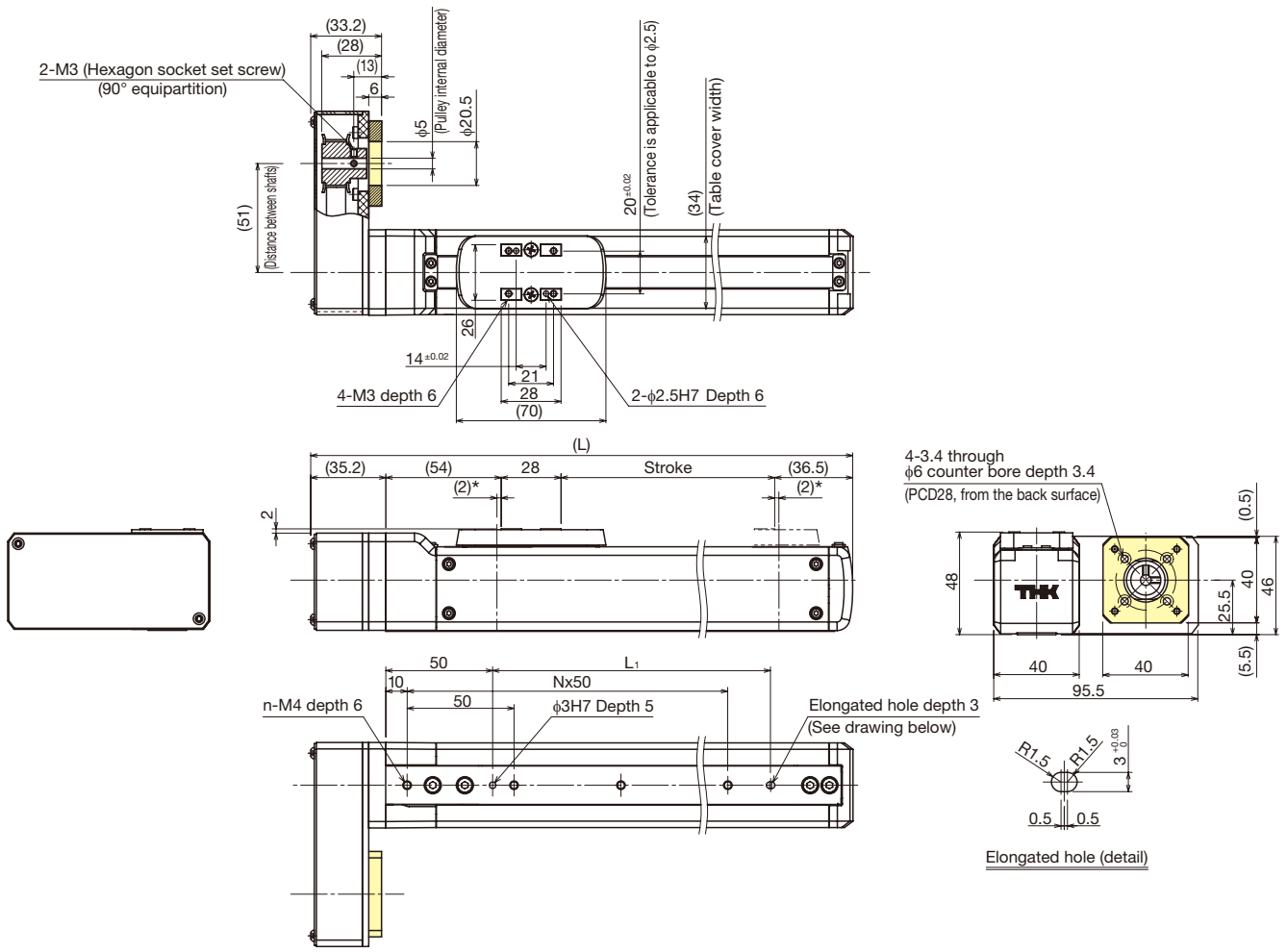


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	2	300	120	240	6	2	210	110	300	6	0.8	280	300	
	4	300	50	110		4	80	40	300		1.5	140	160	
12	1	300	240	300	12	1	300	260	300	12	0.5	300	300	
	2	300	120	200		2	170	110	300		1	210	240	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions

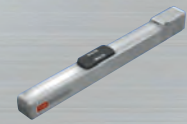


* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (54)	100 (104)	150 (154)	200 (204)	250 (254)	300 (304)	350 (354)	400 (404)
Maximum speed ^{*1*2} [mm/s]	Ball screw lead: 6mm	300							
	Ball screw lead: 12mm	600							
Dimensions [mm]	L	203.7	253.7	303.7	353.7	403.7	453.7	503.7	553.7
	L ₁	80	130	180	230	280	330	380	430
Mounting pitch count	N	2	3	4	5	6	7	8	9
Mounting hole count	n	3	4	5	6	7	8	9	10
Weight [kg]		1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.



ES5 Slider type Directly coupled without motor

Model Configuration

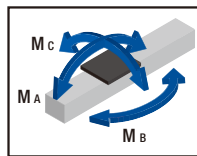
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES5	06	0150	B	0	B	GR-SB
ES5	06: 6mm	0050: 50mm	B	0: Without motor	N: None	No symbol: Red cover
	12: 12mm	to		1: With motor	B	GR: Change the cover color to gray
		0500: 500mm			C	SB: With slider base
						□ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS12W)	Basic dynamic load rating C [N]	5480	
	Basic static load rating Co [N]	5300	
	Radial clearance [μm]	-3 to +3	
Ball screw portion	Screw shaft diameter [mm]	φ8	
	Ball screw lead [mm]	6 12	
	Basic dynamic load rating Ca [N]	1770 920	
	Basic static load rating Coa [N]	3040 1600	
	Root diameter [mm]	φ6.8	
	Ball center-to-center diameter [mm]	φ8.4	
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]	3000	
Starting torque [N·mm]		14 27	
Positioning repeatability [mm] *2		±0.020	
Lost motion [mm] *2		0.1	
Permissible input torque [N·m]		0.35	

Static Permissible Moment *1

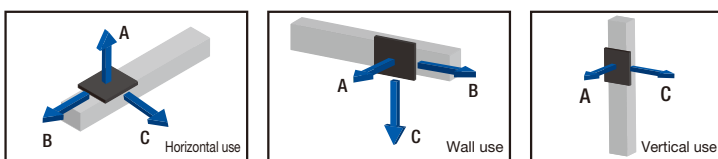


	[N·m]
MA	10.5
MB	22
MC	22.1

*1 Static maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.

*2 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2

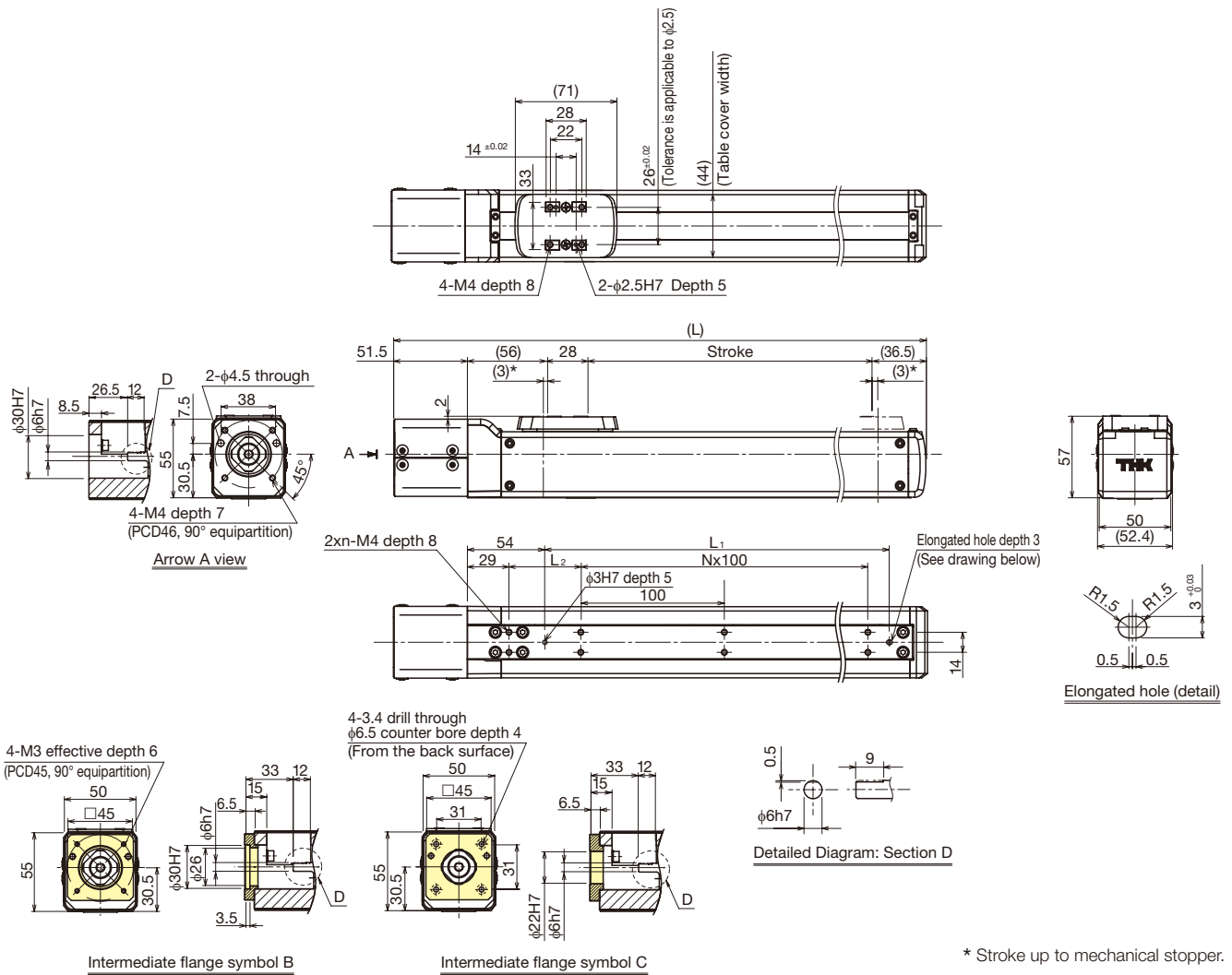


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	5	400	90	200	6	5	160	70	400	6	2.5	160	160	
	10	270	40	90		10	50	20	220		5	70	70	
12	3	400	160	280	12	3	260	130	400	12	1	400	400	
	6	320	70	130		6	100	50	250		2	200	200	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



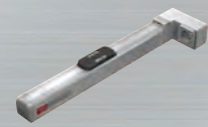
* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)	350 (356)	400 (406)	450 (456)	500 (506)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm	300									
	Ball screw lead: 12mm	600									
Dimensions [mm]	L	222	272	322	372	422	472	522	572	622	672
	L ₁	90	140	190	240	290	340	390	440	490	540
	L ₂	100	50	100	50	100	50	100	50	100	50
Mounting pitch count	N	0	1	1	2	2	3	3	4	4	5
Mounting hole count	n	2	3	3	4	4	5	5	6	6	7
Weight [kg]		1.5	1.7	1.8	1.9	2.0	2.2	2.4	2.5	2.6	2.8

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES5R Slider type Motor wrap



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES5R	06	0150	B	0	A	MR-GR
ES5R	06: 6mm 12: 12mm	0050: 50mm to 0500: 500mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

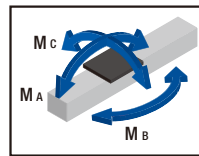
LM Guide (SRS12W)	Basic dynamic load rating C [N]		5480
	Basic static load rating C ₀ [N]		5300
	Radial clearance [μm]		-3 to +3
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating C _a [N]		1770 920
	Basic static load rating C _{0a} [N]		3040 1600
	Root diameter [mm]		φ6.8
	Ball center-to-center diameter [mm]		φ8.4
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating C _a [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
Starting torque *1 [N·mm]		14 27	
Positioning repeatability [mm] *3		±0.020	
Lost motion [mm] *3		0.1	
Permissible input torque [N·m]		0.35	

*1 Pulley and timing belt not included.

*2 Static maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

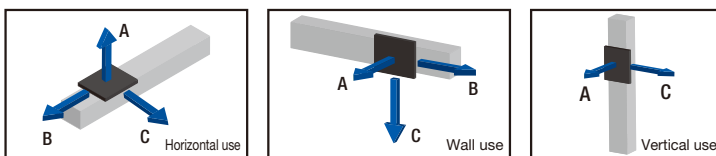
*3 When the appropriate motor is used.

Static Permissible Moment *2



	[N·m]
M _A	10.5
M _B	22
M _C	22.1

Reference Permissible Overhang Length *1 *2

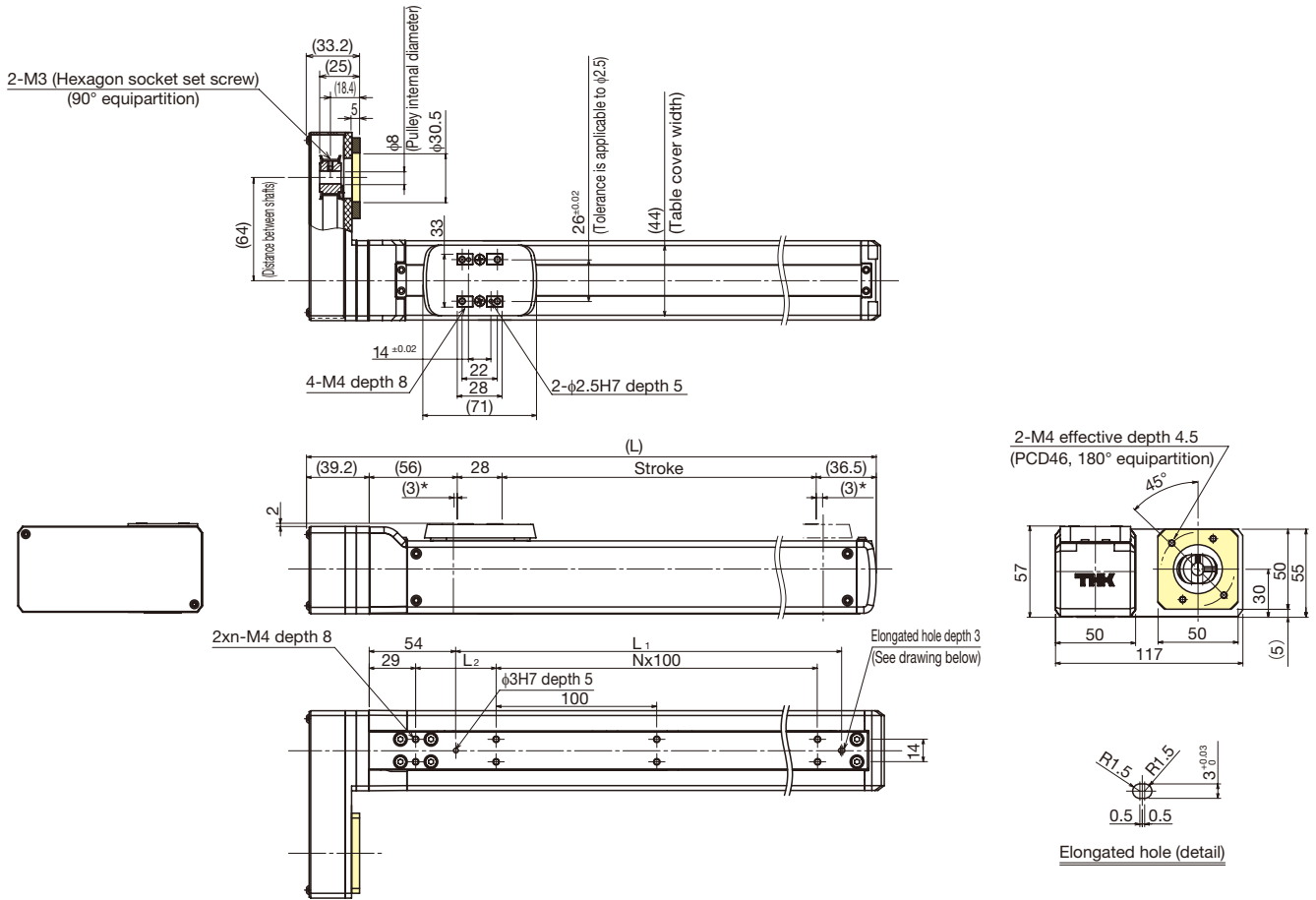


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	4	400	110	260	6	4	220	90	400	6	1	400	400	
	8	340	50	120		8	80	30	320		2	210	210	
12	3	400	160	280	12	3	260	130	400	12	0.5	400	400	
	6	320	70	130		6	100	50	250		1	400	400	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



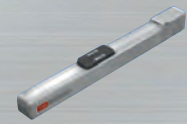
* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)	350 (356)	400 (406)	450 (456)	500 (506)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm	300									
	Ball screw lead: 12mm	600									
Dimensions [mm]	L	209.7	259.7	309.7	359.7	409.7	459.7	509.7	559.7	609.7	659.7
	L ₁	90	140	190	240	290	340	390	440	490	540
	L ₂	100	50	100	50	100	50	100	50	100	50
Mounting pitch count	N	0	1	1	2	2	3	3	4	4	5
Mounting hole count	n	2	3	3	4	4	5	5	6	6	7
Weight [kg]		1.5	1.7	1.8	1.9	2.0	2.2	2.3	2.5	2.6	2.8

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES6 Slider type Directly coupled without motor



Model Configuration

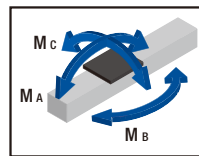
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES6	06	0150	B	0	B	GR-SB
ES6	06: 6mm 12: 12mm	0050: 50mm to 0600: 600mm	B	0: Without motor 1: With motor	N: None B C	No symbol: Red cover GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS12W)	Basic dynamic load rating C [N]		5480
	Basic static load rating C ₀ [N]		5300
	Radial clearance [μm]		-3 to +3
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating C _a [N]		1770 920
	Basic static load rating C _{0a} [N]		3040 1600
	Root diameter [mm]		φ6.8
	Ball center-to-center diameter [mm]		φ8.4
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating C _a [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
Starting torque [N·mm]		15 29	
Positioning repeatability [mm] * ₂		±0.020	
Lost motion [mm] * ₂		0.1	
Permissible input torque [N·m]		0.35	

Static Permissible Moment *₁

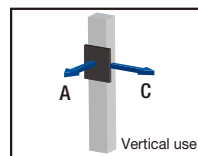
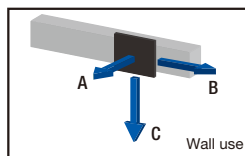
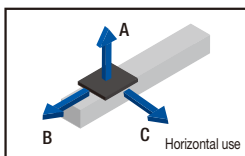


	[N·m]
M _A	10.5
M _B	22
M _C	22.1

*₁ Static maximum permissible moment when unit is stationary. Moment standards: M_A and M_C: top of table; M_B: center of table.

*₂ When the appropriate motor is used.

Reference Permissible Overhang Length *₁ *₂

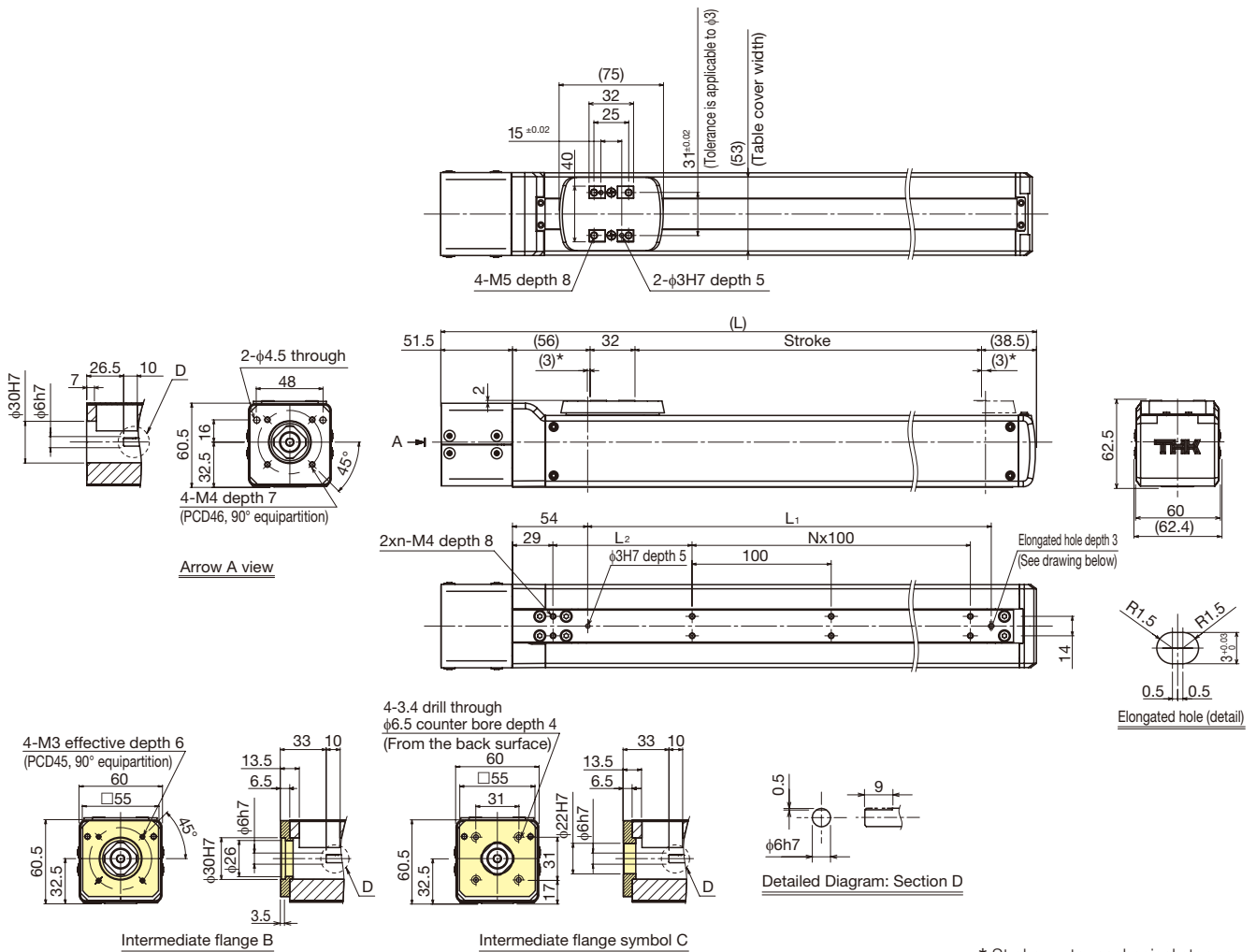


Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	5	500	90	200	6	5	160	70	500	6	2.5	160	160	
	10	260	40	90		10	40	20	210		5	60	60	
12	3	500	160	280	12	3	250	130	500	12	1	420	420	
	6	320	70	130		6	90	50	240		2	190	190	

*₁ Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*₂ Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

Dimensions



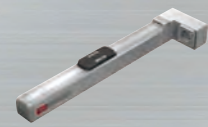
* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)	350 (356)	400 (406)	450 (456)	500 (506)	550 (556)	600 (606)
Maximum speed ^{*1 *2} [mm/s]	Ball screw lead: 6mm	300										270	230
	Ball screw lead: 12mm	600										540	460
Dimensions [mm]	L	228	278	328	378	428	478	528	578	628	678	728	778
	L ₁	90	140	190	240	290	340	390	440	490	540	590	640
	L ₂	100	50	100	50	100	50	100	50	100	50	100	50
Mounting pitch count	N	0	1	1	2	2	3	3	4	4	5	5	6
Mounting hole count	n	2	3	3	4	4	5	5	6	6	7	7	8
Weight [kg]		1.9	2.0	2.2	2.3	2.5	2.6	2.7	2.9	3.0	3.2	3.3	3.5

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

ES6R Slider type Motor wrap



Model Configuration

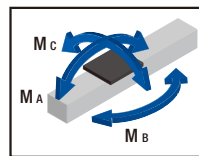
Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
ES6R	06	0150	B	0	A	MR-GR
ES6R	06: 6mm 12: 12mm	0050: 50mm to 0600: 600mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap GR: Change the cover color to gray SB: With slider base □ ₁ □ ₂ : Sensor

Note: If the GR is not included in the model configuration, cover will be red.

Basic Specifications

LM Guide (SRS12W)	Basic dynamic load rating C [N]		5480
	Basic static load rating Co [N]		5300
	Radial clearance [μm]		-3 to +3
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating Ca [N]		1770 920
	Basic static load rating Coa [N]		3040 1600
	Root diameter [mm]		φ6.8
	Ball center-to-center diameter [mm]		φ8.4
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
Permissible rotational speed [min ⁻¹]		3000	
Starting torque *1 [N-mm]		15	29
Positioning repeatability [mm] *3		±0.020	
Lost motion [mm] *3		0.1	
Permissible input torque [N-m]		0.35	

Static Permissible Moment *2



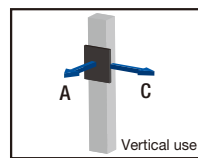
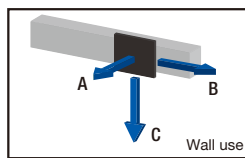
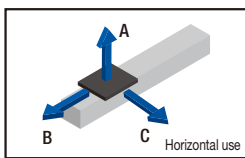
	[N-m]
MA	10.5
MB	22
MC	22.1

*1 Pulley and timing belt not included.

*2 Static maximum permissible moment when unit is stationary. Moment standards: MA and MC: top of table; MB: center of table.

*3 When the appropriate motor is used.

Reference Permissible Overhang Length *1 *2



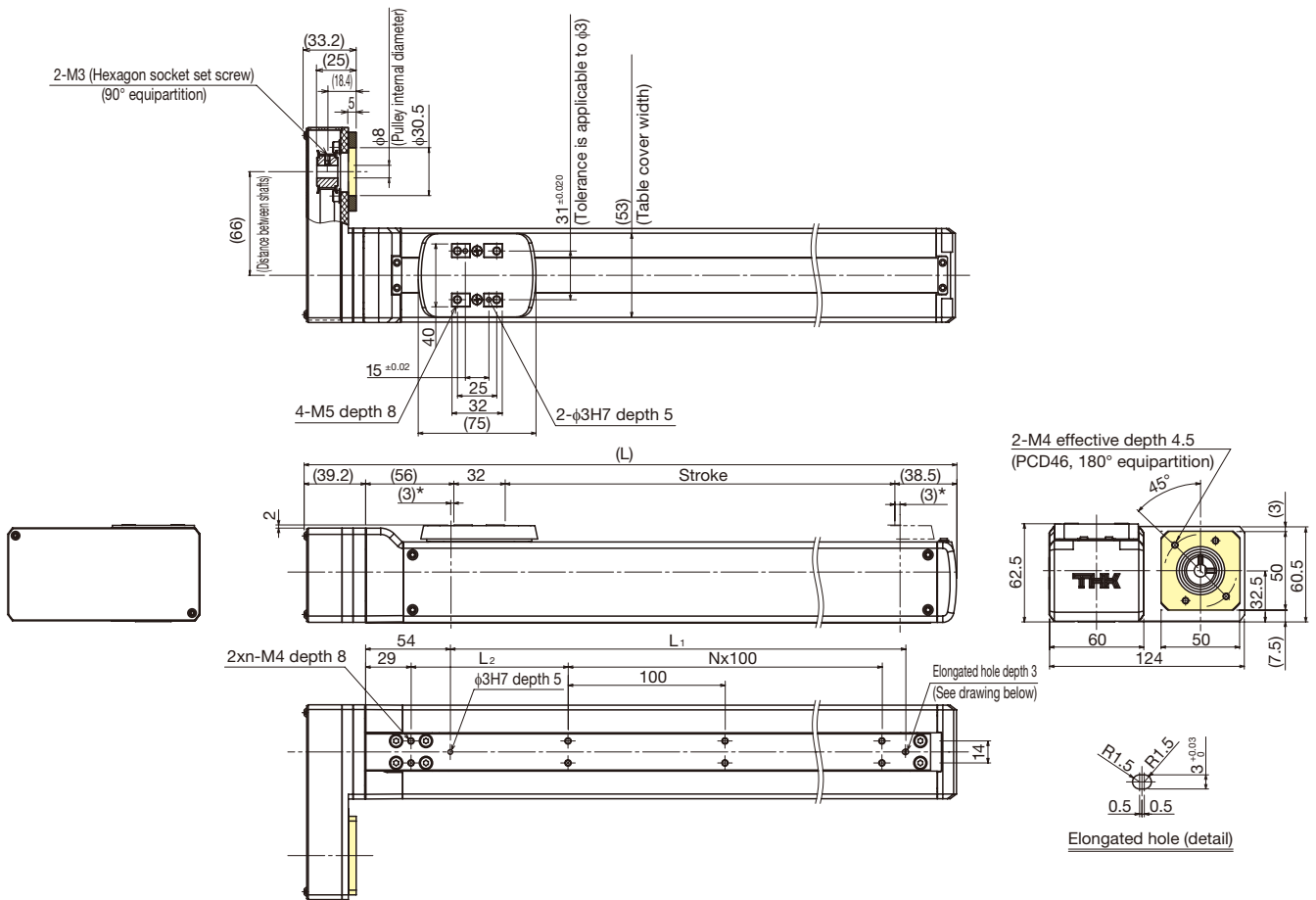
Horizontal mount [mm]					Wall mount [mm]					Vertical mount [mm]				
Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	B	C	Ball screw lead [mm]	Load mass [kg]	A	C	
6	4	500	110	260	6	4	210	90	500	6	1	450	450	
	8	340	50	120		8	70	30	300		2	210	210	
12	3	500	160	280	12	3	250	130	500	12	0.5	500	500	
	6	320	70	130		6	90	50	240		1	420	420	

*1 Distance from the center of the top face of the table to the load center of gravity under the following conditions: 5,000km running life, single-direction load, 0.3G horizontal or vertical, 150mm stroke.

*2 Value when THK control device is used. Actual load mass should be determined based on the specifications of the motor used. See "Reference Materials for Selecting ES" in P.39.

ES6R

Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (56)	100 (106)	150 (156)	200 (206)	250 (256)	300 (306)	350 (356)	400 (406)	450 (456)	500 (506)	550 (556)	600 (606)
Maximum speed ^{*1*} [mm/s]	Ball screw lead: 6mm	300										270	230
	Ball screw lead: 12mm	600										540	460
Dimensions [mm]	L	215.7	265.7	315.7	365.7	415.7	465.7	515.7	565.7	615.7	665.7	715.7	765.7
	L ₁	90	140	190	240	290	340	390	440	490	540	590	640
	L ₂	100	50	100	50	100	50	100	50	100	50	100	50
Mounting pitch count	N	0	1	1	2	2	3	3	4	4	5	5	6
Mounting hole count	n	2	3	3	4	4	5	5	6	6	7	7	8
Weight [kg]		1.9	2.0	2.1	2.2	2.4	2.6	2.7	2.8	3.0	3.1	3.3	3.4

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3

Cylinder type Directly coupled without motor



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC3	06	0150	B	0	A	FL-LB
EC3	06: 6mm	0050: 50mm to 0200: 200mm	B	0: Without motor 1: With motor	A B	No symbol: None CB: With cylinder base FL : With flange LB : With link ball

Basic Specifications

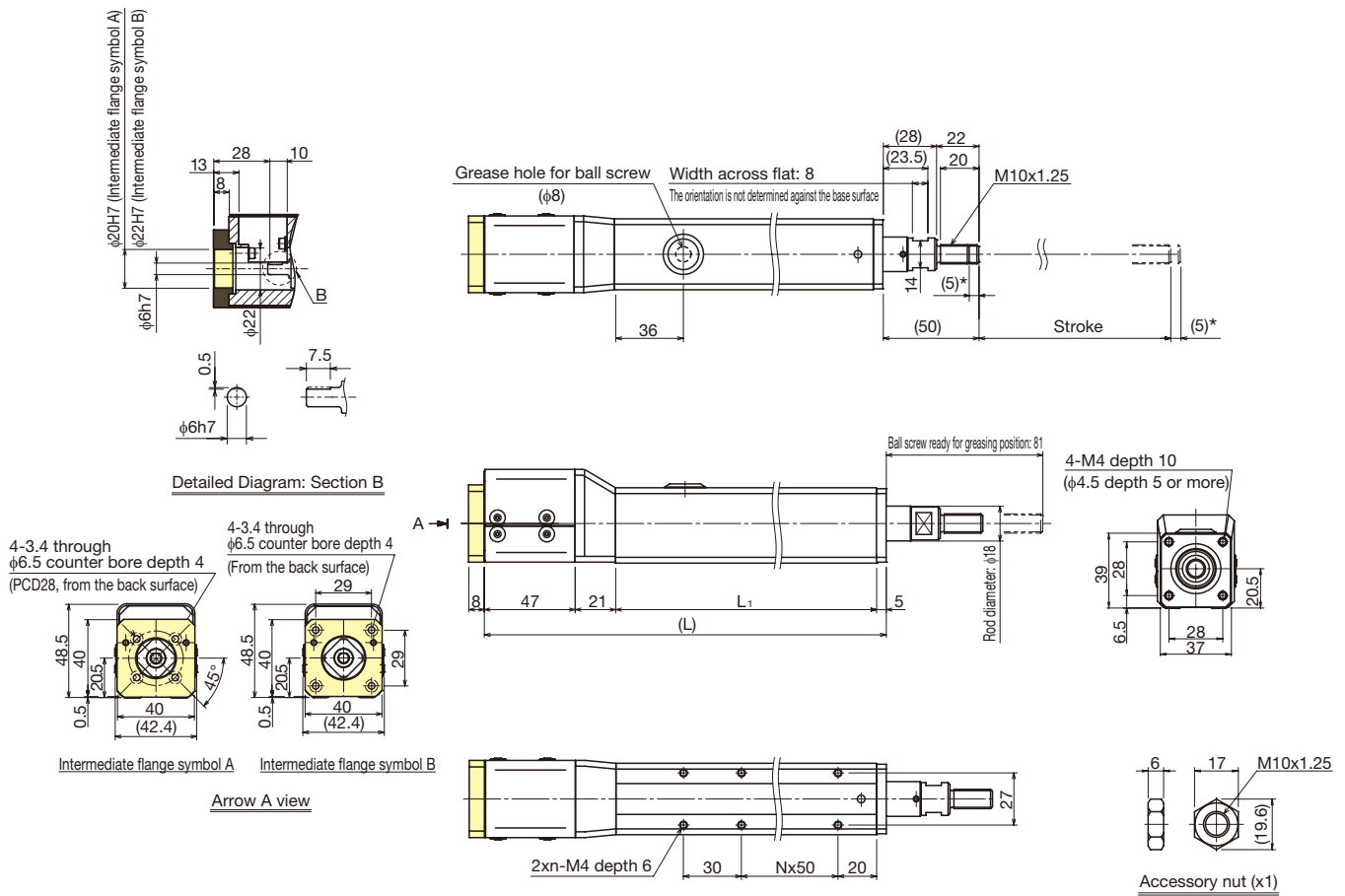
Ball screw portion	Screw shaft diameter [mm]		φ6
	Ball screw lead [mm]		6
	Basic dynamic load rating Ca [N]		780
	Basic static load rating C _{0a} [N]		1250
	Root diameter [mm]		φ5.1
	Ball center-to-center diameter [mm]		φ6.3
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	6550
		Static permissible load P _{0a} [N]	2310
Permissible rotational speed [min ⁻¹]			3000
Starting torque [N·mm]			14
Positioning repeatability [mm] *			±0.020
Lost motion [mm] *			0.1
Permissible input torque [N·m]			0.16

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

* When appropriate motor is used.

Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm		300		250
Dimensions [mm]	L	208	258	308	358
	L ₁	135	185	235	285
Mounting pitch count	N	1	2	3	4
Mounting hole count	n	3	4	5	6
Weight [kg]		1.0	1.2	1.4	1.6

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3R

Cylinder type Motor wrap



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC3R	06	0150	B	0	A	MR-FL-LB
EC3R	06: 6mm	0050: 50mm to 0200: 200mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap CB: With cylinder base FL: With flange LB: With link ball

Basic Specifications

Ball screw portion	Screw shaft diameter [mm]		φ6
	Ball screw lead [mm]		6
	Basic dynamic load rating Ca [N]		780
	Basic static load rating C _{0a} [N]		1250
	Root diameter [mm]		φ5.1
	Ball center-to-center diameter [mm]		φ6.3
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	6550
		Static permissible load P _{0a} [N]	2310
Permissible rotational speed [min ⁻¹]			3000
Starting torque ^{*1} [N·mm]			14
Positioning repeatability [mm] ^{*2}			±0.020
Lost motion [mm] ^{*2}			0.1
Permissible input torque [N·m]			0.16

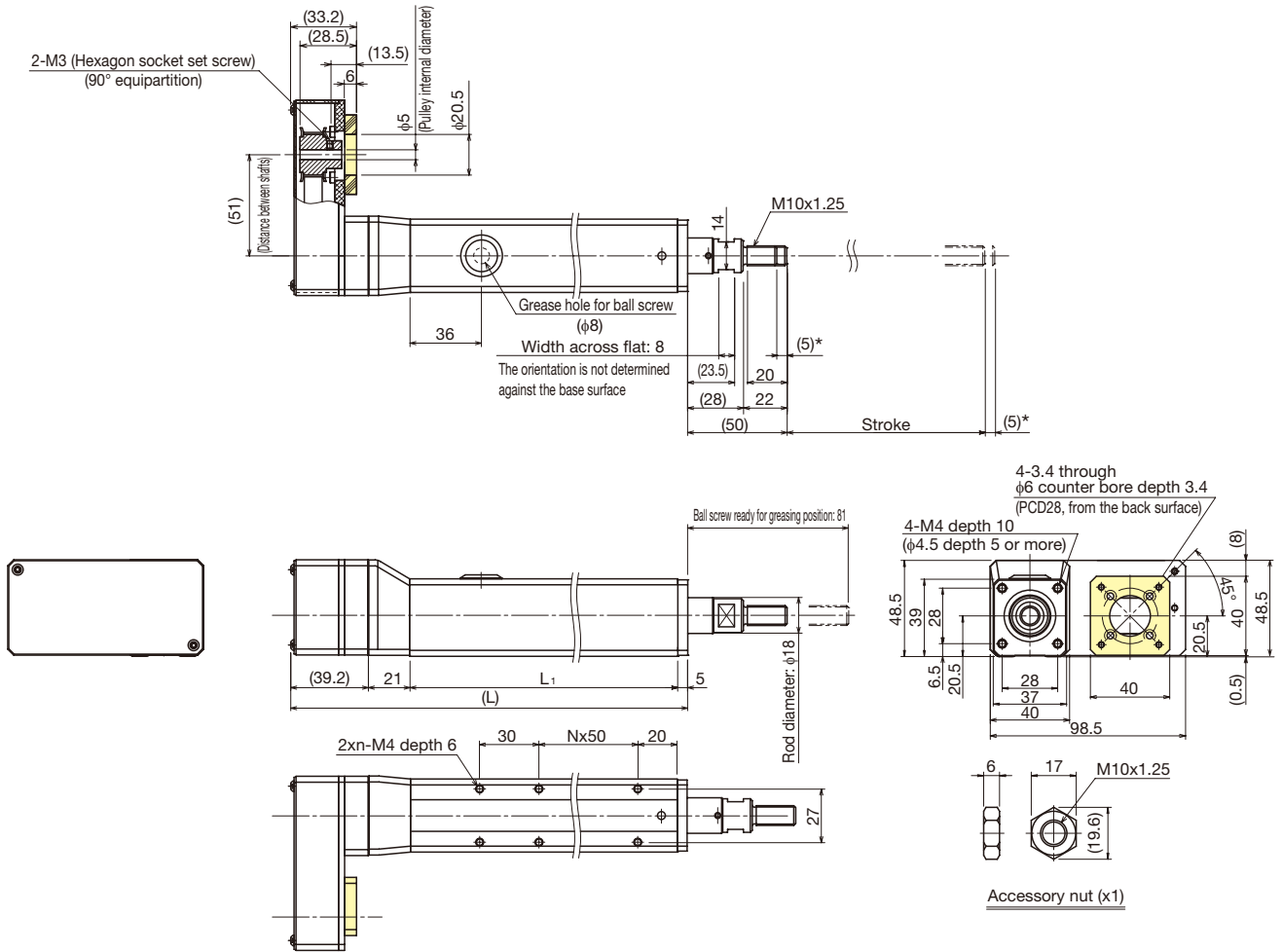
Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

*1 Pulley and timing belt not included.

*2 When appropriate motor is used.

Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)
Maximum speed *1*2 [mm/s]	Ball screw lead: 6mm		300		250
Dimensions [mm]	L	200.2	250.2	300.2	350.2
	L ₁	135	185	235	285
Mounting pitch count	N	1	2	3	4
Mounting hole count	n	3	4	5	6
Weight [kg]		1.0	1.2	1.4	1.6

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC3H

Cylinder type Directly coupled without motor/with linear bush



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC3H	06	0150	B	0	A	CB
EC3H	06: 6mm	0050: 50mm to 0200: 200mm	B	0: Without motor 1: With motor	A B	No symbol: None CB: With cylinder base

Basic Specifications

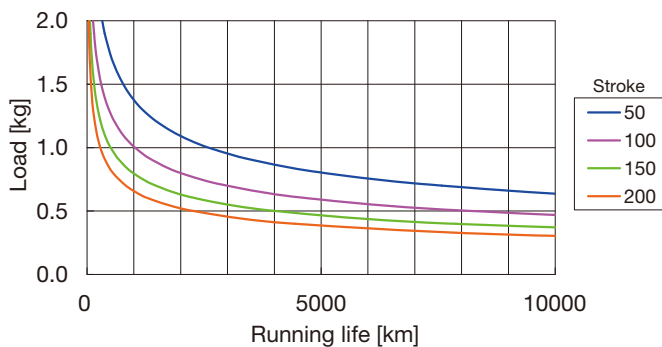
Ball screw portion	Screw shaft diameter [mm]		φ6
	Ball screw lead [mm]		6
	Basic dynamic load rating Ca [N]		780
	Basic static load rating Co [N]		1250
	Root diameter [mm]		φ5.1
	Ball center-to-center diameter [mm]		φ6.3
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	6550
		Static permissible load P _{0a} [N]	2310
Linear bush unit (LMK8LUU)	Basic dynamic load rating C [N]		265
	Basic static load rating Co [N]		402
Permissible rotational speed [min ⁻¹]			3000
Starting torque [N·mm]			18
Positioning repeatability [mm] *			±0.020
Lost motion [mm] *			0.1
Permissible input torque [N·m]			0.16

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide. Take into account the sliding resistance of LM Guide when making selection.

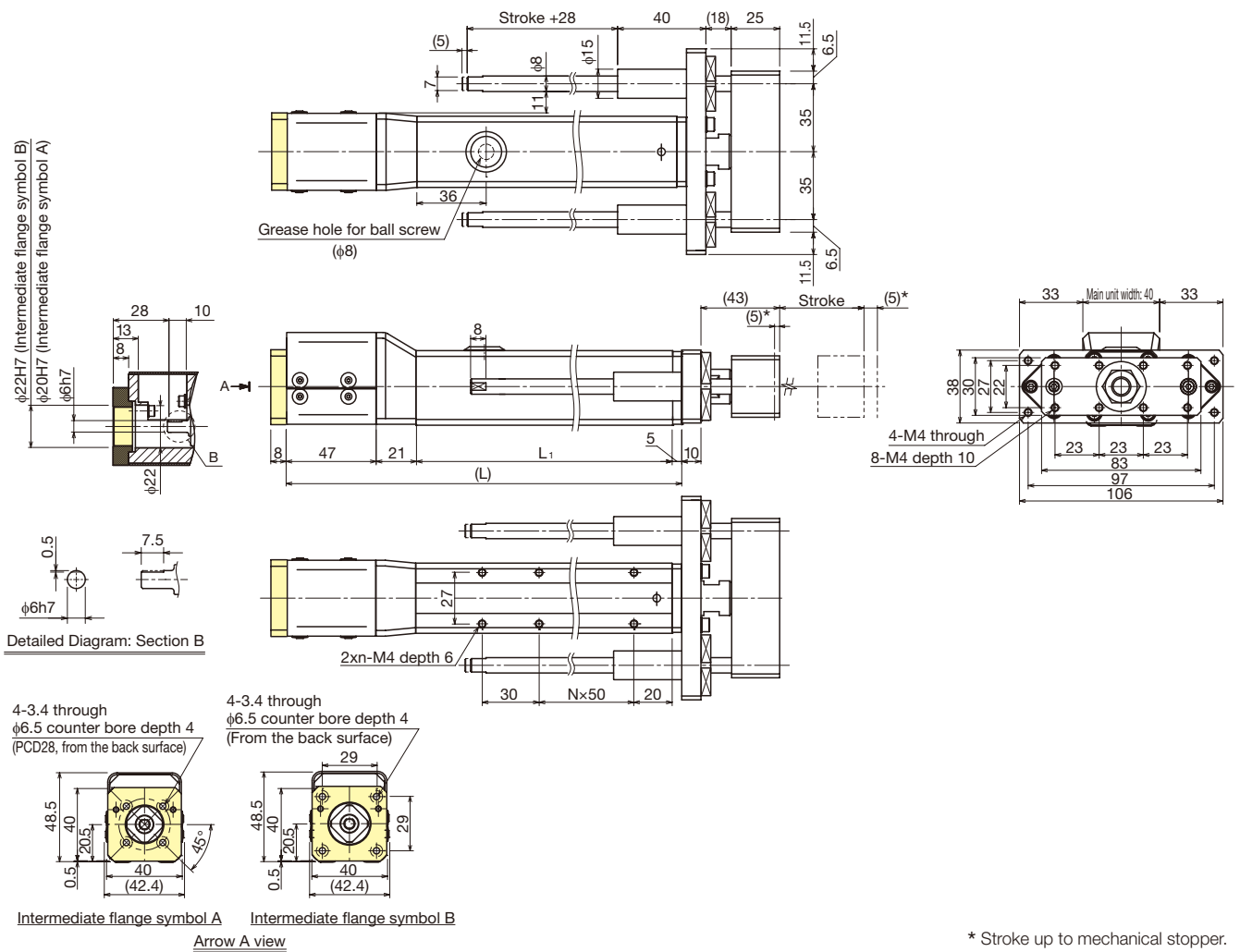
* When appropriate motor is used.

Reference Load and Running Life

Running life varies when a load is applied to the end without using an LM guide, as shown below.



Dimensions



Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm		300		250
Dimensions [mm]	L	208	258	308	358
	L ₁	135	185	235	285
Mounting pitch count	N	1	2	3	4
Mounting hole count	n	3	4	5	6
Weight [kg]		1.3	1.5	1.8	2.0

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

EC4

Cylinder type Directly coupled without motor



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC4	06	0150	B	0	B	FL-LB
EC4	06: 6mm	0050: 50mm	B	0: Without motor	N: None	No symbol: None
	12: 12mm	to		1: With motor	B	CB: With cylinder base
		0300: 300mm			C	FL: With flange
						LB: With link ball

Basic Specifications

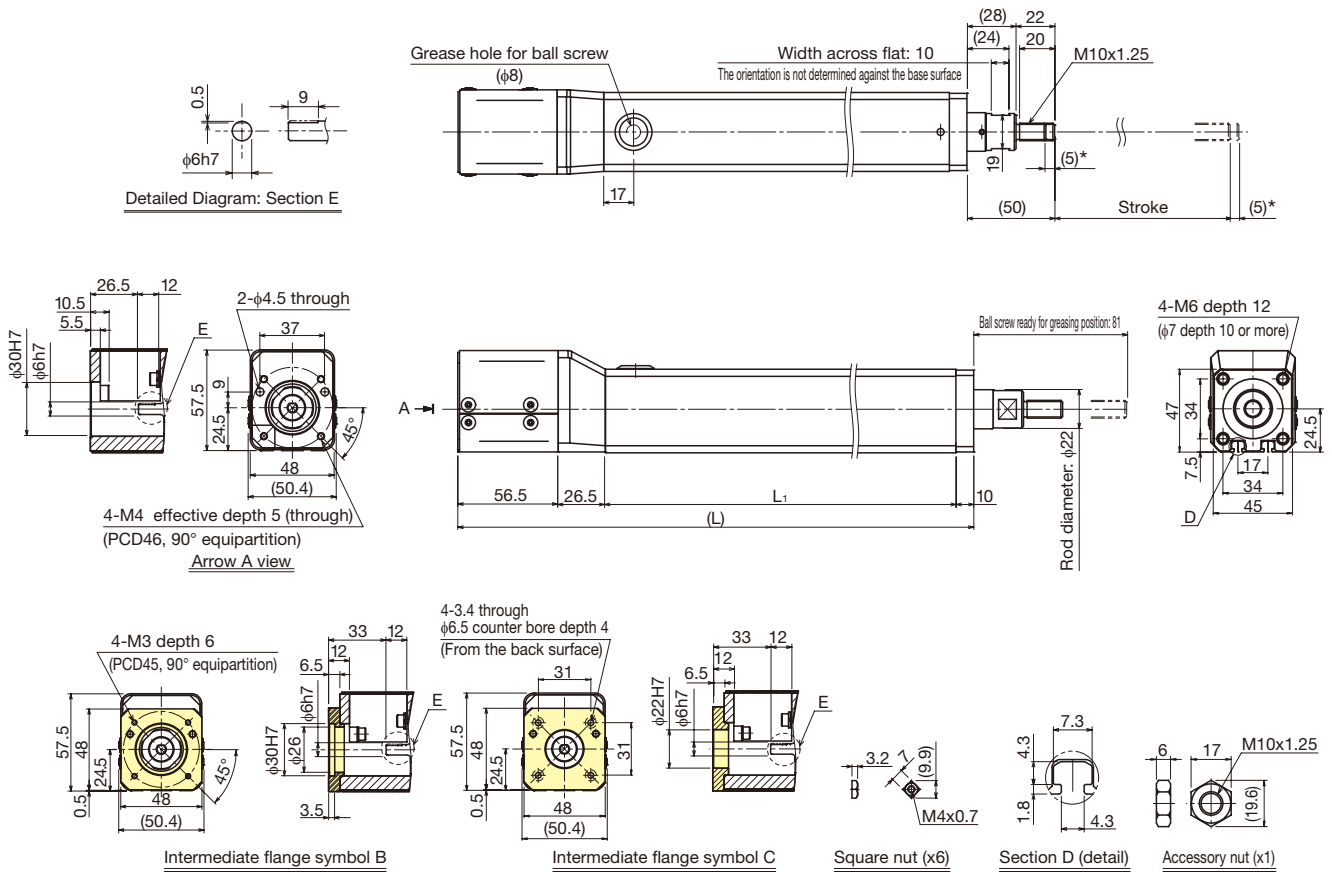
Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating Ca [N]		1770 920
	Basic static load rating C _{0a} [N]		3040 1600
	Root diameter [mm]		φ6.8
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
	Starting torque [N·mm]		22 42
Positioning repeatability [mm] *		±0.020	
Lost motion [mm] *		0.1	
Permissible input torque [N·m]		0.35	

Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

* When appropriate motor is used.

Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm			300		230	170
	Ball screw lead: 12mm			600		460	340
Dimensions [mm]	L	240	290	340	390	440	490
	L ₁ *3	147	197	247	297	347	397
Weight [kg]		1.6	1.9	2.2	2.6	2.9	3.2

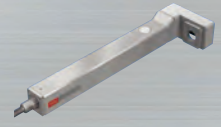
*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

*3 T slot milling in the range of L₁.

EC4R

Cylinder type Motor wrap



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC4R	06	0150	B	0	A	MR-FL-LB
EC4R	06: 6mm 12: 12mm	0050: 50mm to 0300: 300mm	B	0: Without motor 1: With motor	A	MR: Motor right wrap ML: Motor left wrap CB: With cylinder base FL: With flange LB: With link ball

Basic Specifications

Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating Ca [N]		1770 920
	Basic static load rating Co [N]		3040 1600
	Root diameter [mm]		φ6.8
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
	Permissible rotational speed [min ⁻¹]		3000
Starting torque *1 [N·mm]		22 42	
Positioning repeatability [mm] *2		±0.020	
Lost motion [mm] *2		0.1	
Permissible input torque [N·m]		0.35	

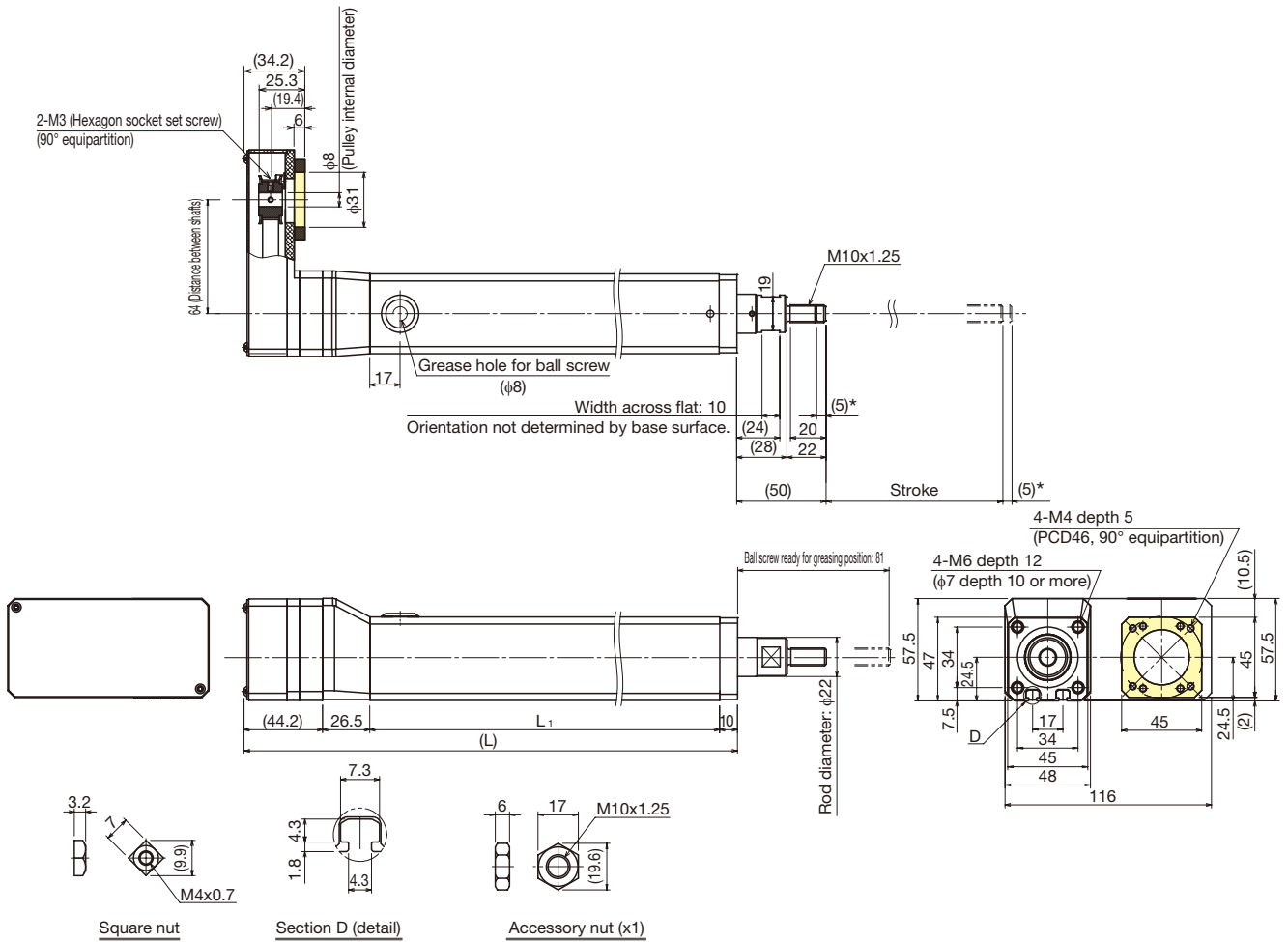
Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

*1 Pulley and timing belt not included.

*2 When appropriate motor is used.

Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)
Maximum speed *1 *2 [mm/s]	Ball screw lead: 6mm			300		230	170
	Ball screw lead: 12mm			600		460	340
Dimensions [mm]	L	227.7	277.7	327.7	377.7	427.7	477.7
	L ₁ *3	147	197	247	297	347	397
Weight [kg]		1.6	1.9	2.3	2.6	2.9	3.2

*1 Load capacity and maximum speed vary depending on the motor used.

*2 Dependent on the permissible rotational speed of the ball screw.

*3 T slot milling in the range of L₁.

EC4H

Cylinder type Directly coupled without motor/with linear bush



Model Configuration

Model	Ball screw lead	Stroke	Design symbol	With/without motor	Intermediate flange	Option
EC4H	06	0150	B	0	B	CB
EC4H	06: 6mm 12: 12mm	0050: 50mm to 0300: 300mm	B	0: Without motor 1: With motor	N: None B C	No symbol: None CB: With cylinder base

Basic Specifications

Ball screw portion	Screw shaft diameter [mm]		φ8
	Ball screw lead [mm]		6 12
	Basic dynamic load rating Ca [N]		1770 920
	Basic static load rating C _{0a} [N]		3040 1600
	Root diameter [mm]		φ6.8
	Ball center-to-center diameter [mm]		φ8.4
Bearing portion (fixed side)	Axial direction	Basic dynamic load rating Ca [N]	8000
		Static permissible load P _{0a} [N]	3240
Linear bush unit (LMK10LUU)	Basic dynamic load rating C [N]		373
	Basic static load rating C ₀ [N]		549
Permissible rotational speed [min ⁻¹]			3000
Starting torque [N·mm]			28 55
Positioning repeatability [mm]*			±0.020
Lost motion [mm]*			0.1
Permissible input torque [N·m]			0.35

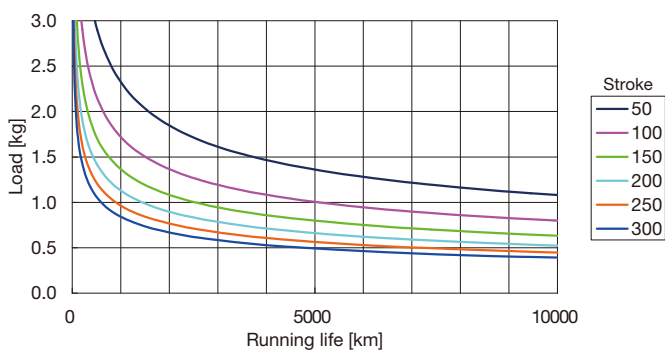
Note: With EC, only an axial load is permissible; do not apply any other type of load to the rod using an LM Guide.

Take into account the sliding resistance of LM Guide when making selection.

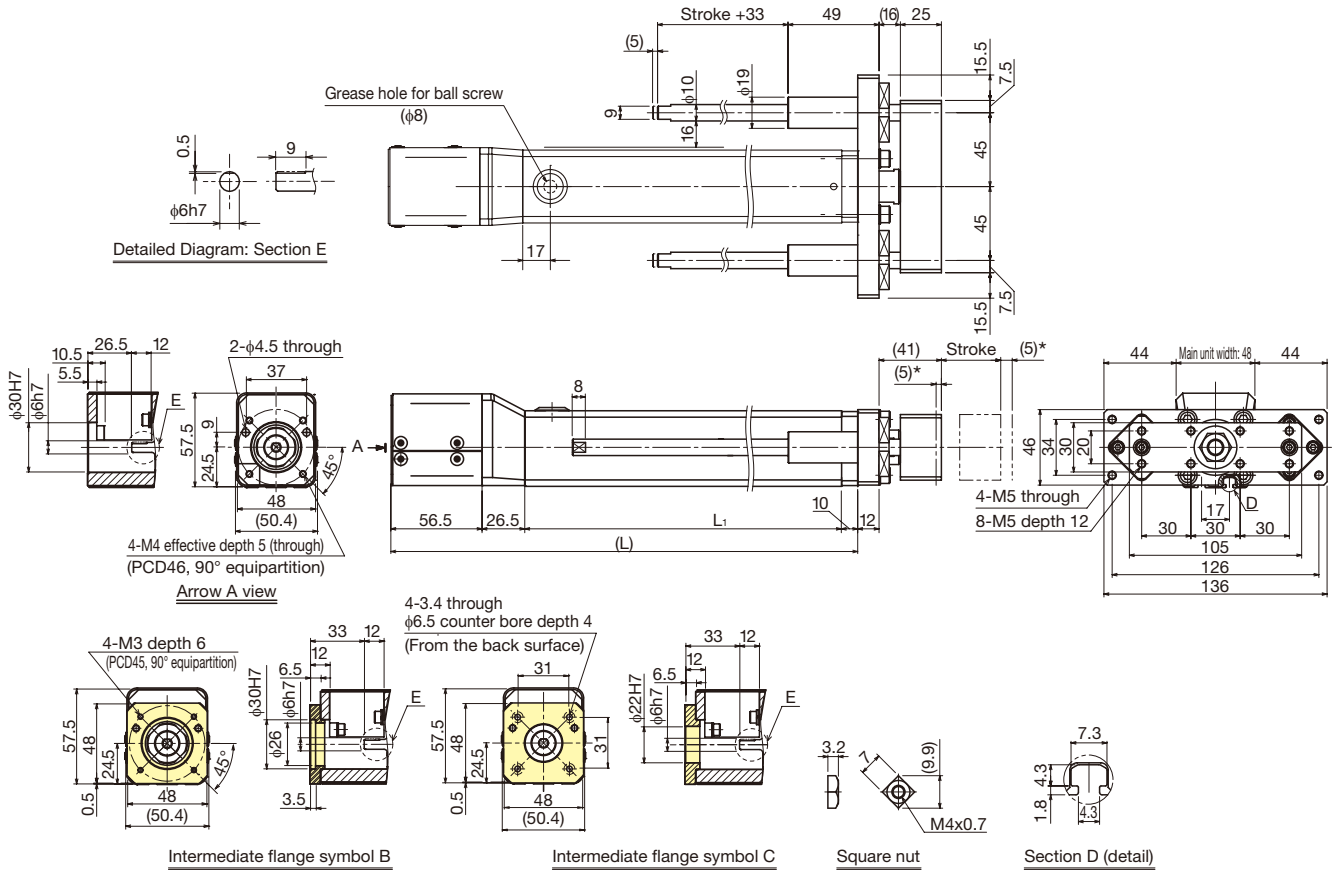
* When appropriate motor is used.

Reference Load and Running Life

Running life varies when a load is applied to the end without using an LM guide, as shown below.



Dimensions



* Stroke up to mechanical stopper.

Stroke [mm] (Stroke between mechanical stoppers)		50 (60)	100 (110)	150 (160)	200 (210)	250 (260)	300 (310)
Maximum speed ^{*1*} [mm/s]	Ball screw lead: 6mm	300			230	170	
	Ball screw lead: 12mm	600			460	340	
Dimensions [mm]	L	240	290	340	390	440	490
	L ₁ ^{*3}	147	197	247	297	347	397
Weight [kg]		2.2	2.5	2.9	3.3	3.6	4.0

^{*1} Load capacity and maximum speed vary depending on the motor used.

^{*2} Dependent on the permissible rotational speed of the ball screw.

^{*3} T slot milling in the range of L₁.

ES/EC Intermediate Flange

Intermediate flanges are available to mount various kinds of motors. Specify an intermediate flange that matches the motor used.

Motor type				Motor rated output	Flange angle	ES3		ES4		ES5		ES6		EC3		EC4			
						Direct coupling	Motor Wrap	Direct coupling	Motor Wrap	Direct coupling	Motor Wrap	Direct coupling	Motor Wrap	Direct coupling	Motor Wrap	Direct coupling	Motor Wrap		
AC servo motor	Yaskawa Electric Corporation	Σ-V	SGMMV-A2	20W	□25	A	A	A	A	-	-	-	-	A	A	-	-		
			SGMMV-A3	30W		A	A	A	A	-	-	-	-	A	A	-	-		
			SGMJV-A5	50W		-	-	-	-	N	A	N	A	-	-	N	A		
		SGMAV-A5	-		-	-	-	N	A	N	A	-	-	N	A				
		Σ-7	SGM7J-A5	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A		
			SGM7A-A5		□40	-	-	-	-	N	A	N	A	-	-	N	A		
	Mitsubishi Electric Corporation	J3	J3	HF-MP053	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A	
				HF-KP053			-	-	-	-	N	A	N	A	-	-	N	A	
		J4	HG-AK0236	20W	□25	A	A	A	-	-	-	-	-	-	A	-	-	-	
			HG-AK0336	30W		A	-	A	A	-	-	-	-	-	-	A	A	-	-
			HG-MR053	50W		□40	-	-	-	-	N	A	N	A	-	-	N	A	
		HG-KR053	□40		-	-	-	-	N	A	N	A	-	-	N	A			
	JN	HF-KN053	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A			
	Tamagawa Seiki Co., Ltd.	TBL-II	TBL-II	TS4602	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A	
				TSM3101	30W		-	-	-	-	N	A	N	A	-	-	N	A	
		TBL-IV	TBL-IV	TSM3102	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A	
				MSMD5A	50W	□38	-	-	-	-	B	-	B	-	-	-	B	-	
	Panasonic Corporation	A5	A5	MSME5A		50W	□38	-	-	-	-	B	-	B	-	-	-	B	
				MSMF5A	□40			-	-	-	-	B	-	B	-	-	-	B	
	Keyence Corporation	SV	SV	SV-M005	50W	□40	-	-	-	-	N	A	N	A	-	-	N	A	
SV2-M005				50W	-		-	-	-	N	A	N	A	-	-	N	A		
Sanyo Denki Co., Ltd.	SANMOTION R	SANMOTION R	R2□A04003	30W	□40	-	-	-	-	N	-	N	-	-	-	N	-		
			R2□A04005	50W		-	-	-	-	N	-	N	-	-	-	N	-		
OMRON Corporation	OMNUC G5	OMNUC G5	R88M-K05030	50W	□40	-	-	-	-	N	-	N	-	-	-	N	-		
Stepper motor	Oriental Motor Co. Ltd.	α step	AZ2*, AR2*	□28	B	-	-	-	-	-	-	-	-	-	-	-	-		
			AZ4*, AR4*	□42	-	-	-	-	C	-	C	-	-	-	-	C	-		
			5-phase	CRK	CRK52*	□28	B	-	-	-	-	-	-	-	-	-	-	-	
				CRK54*	□42	-	-	-	-	C	-	C	-	-	-	-	C	-	
		PKA	RK II	RKS54*	□42	-	-	-	-	C	-	C	-	-	-	C	-		
			PKA	PKA544	□42	-	-	-	-	C	-	C	-	-	-	C	-		
		2-phase	CVK	CVK52*	□28	B	-	-	-	-	-	-	-	-	-	-	-		
				CVK54*	□42	-	-	-	-	C	-	C	-	-	-	C	-		
			CMK	CMK22*	□28	B	-	-	-	-	-	-	-	-	-	-	-		
				CMK24*	□42	-	-	-	-	C	-	C	-	-	-	C	-		
	Sanyo Denki Co., Ltd.	PB	PB	PBDM28*	□28	B	-	-	-	-	-	-	-	-	-	-			
				PBDM423, PBA**423	□42	-	-	-	-	C	-	C	-	-	-	C	-		
		5-phase	5-phase	FAF/FDF52*	□28	B	-	-	-	-	-	-	-	-	-	-			
				FAF54*/FDF54*/FA511M42/FB511M42	□42	-	-	-	-	C	-	C	-	-	-	C	-		
		2-phase	2-phase	D*14S28*	□28	B	-	-	-	-	-	-	-	-	-	-			
				DB14H52*	□42	-	-	-	-	C	-	C	-	-	-	C	-		
	Keyence Corporation	2-phase	2-phase	DU15H52*	□42	-	-	-	-	C	-	C	-	-	-	C	-		
				QS-M28	□28	B	-	-	-	-	-	-	-	-	-	-			
	QS-M42	□42	-	-	-	-	C	-	C	-	-	-	-	C	-				

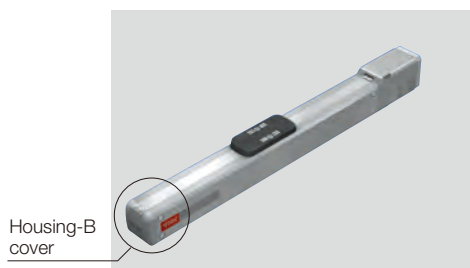
Notes:

- Motor model number in the table shows the main part of the model number only. For more details, please refer to catalogs from each motor manufacturers.
- For motor wrap type, a set screw connects pulley and motor output shaft. Select a D-cut motor output shaft.
Under "Intermediate flange model," "N" indicates that there is no intermediate flange.
Mitsubishi model HF-KN053 does not support D-cut shafts; consult the manufacturer for further details.

ES Option

GR: Change the cover color to gray

As an option for ES, the cover color can be changed from red to gray.



No symbol: red cover



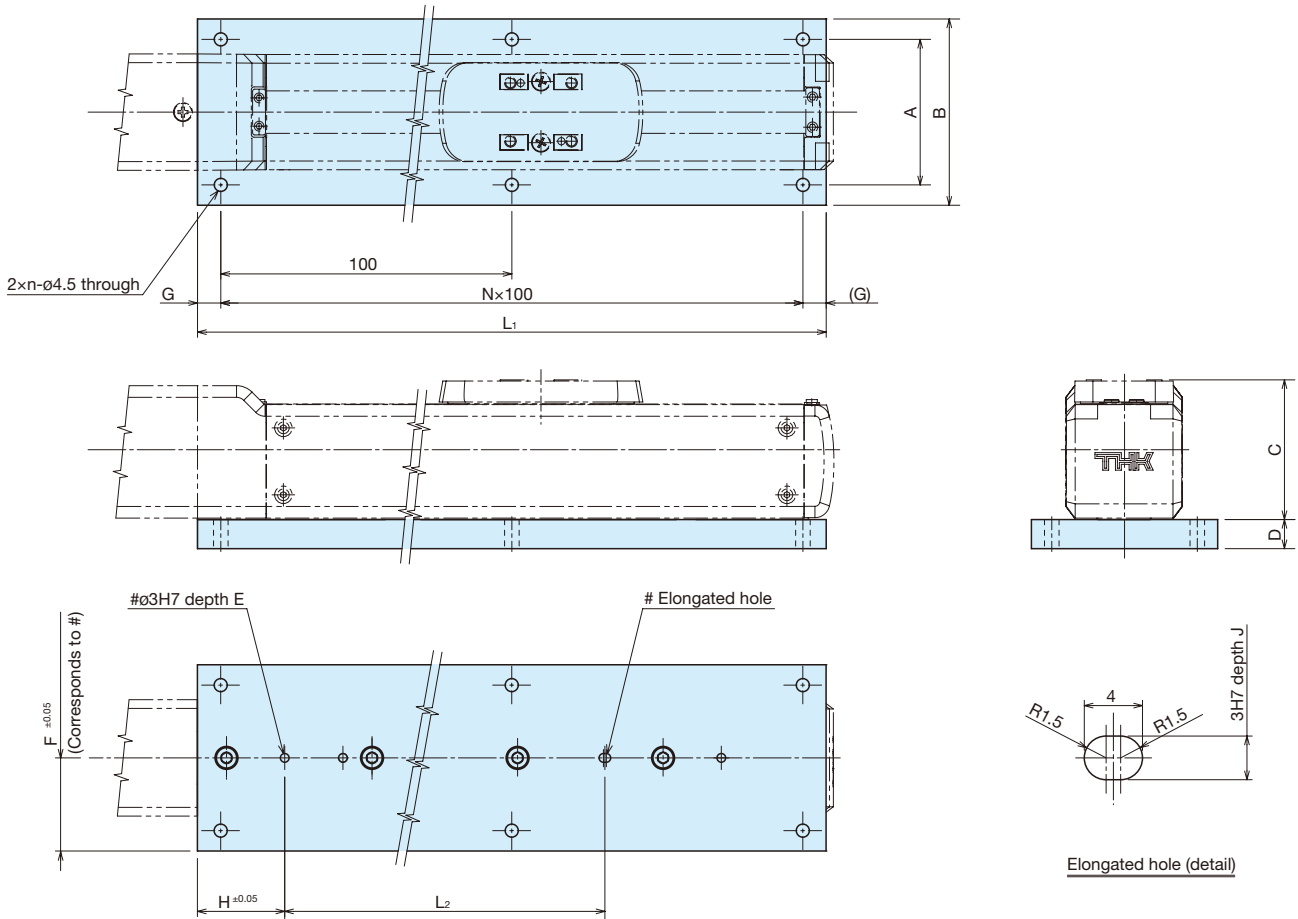
When GR is selected: gray cover

If the GR is not included in the model configuration, cover will be red.

ES Option

SB: Slider base (direct coupled specification)

THK provides a slider base for installing the ES main unit from the top face.
 * Included with unit



Unit: mm

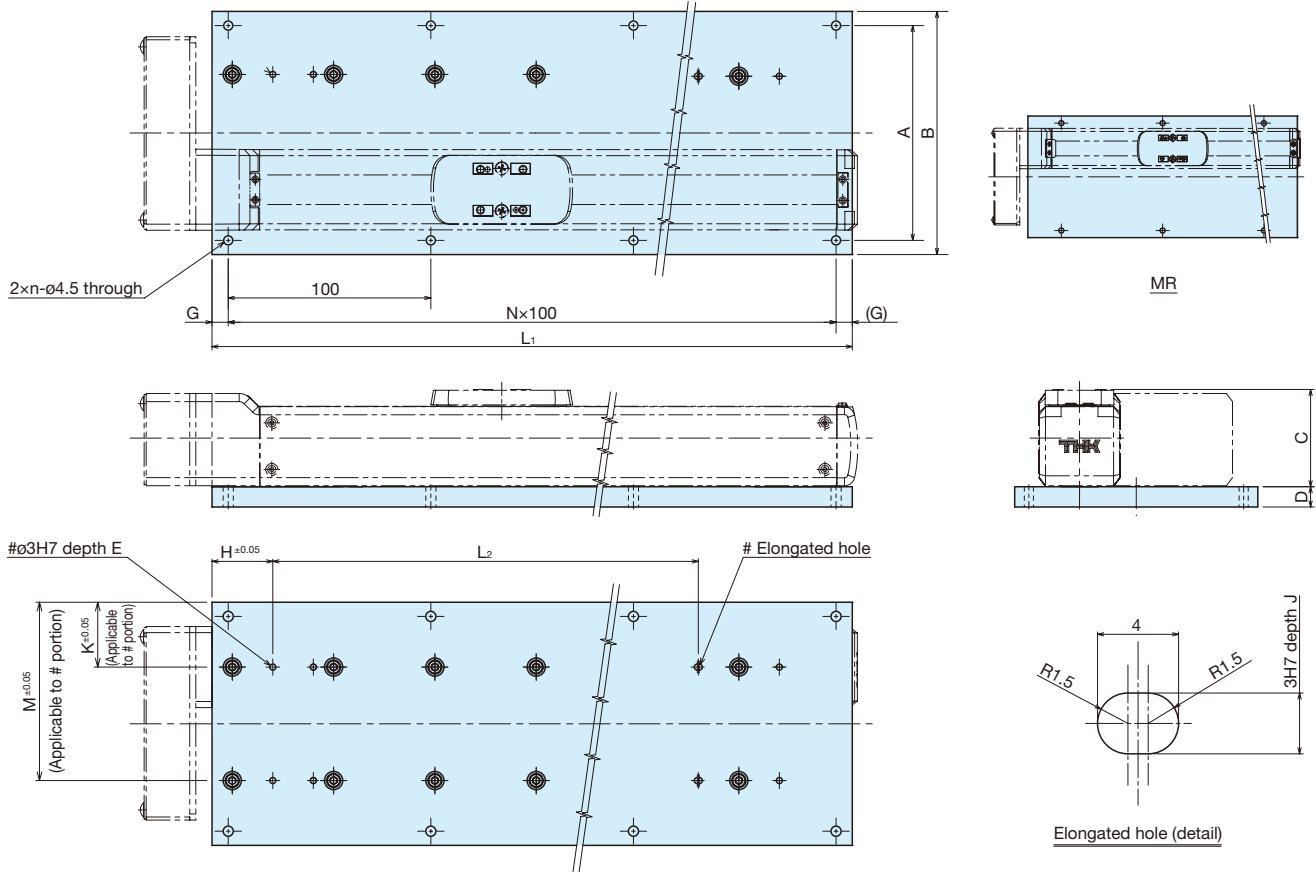
Model	A	B	C	D	E	F	H	J
ES3	42	56	40	8	8	28	40	8
ES4	50	64	48	10	10	32	30	10
ES5	70	84	57	10	10	42	45	10
ES6	70	84	62.5	10	10	42	45	10

Stroke		50	100	150	200	250	300	350	400	450	500	550	600
ES3	L1[mm]	156	206	256	306	356	406	-	-	-	-	-	-
	L2[mm]	70	120	170	220	270	320	-	-	-	-	-	-
	n	2	2	3	3	4	4	-	-	-	-	-	-
	N	1	1	2	2	3	3	-	-	-	-	-	-
	G[mm]	28	53	28	53	28	53	-	-	-	-	-	-
ES4	L1[mm]	166	216	266	316	366	416	466	516	-	-	-	-
	L2[mm]	60	110	160	210	260	310	360	410	-	-	-	-
	n	2	3	3	4	4	5	5	6	-	-	-	-
	N	1	2	2	3	3	4	4	5	-	-	-	-
	G[mm]	33	8	33	8	33	8	33	8	-	-	-	-
ES5	L1[mm]	174	224	274	324	374	424	474	524	574	624	-	-
	L2[mm]	70	120	170	220	270	320	370	420	470	520	-	-
	n	2	3	3	4	4	5	5	6	6	7	-	-
	N	1	2	2	3	3	4	4	5	5	6	-	-
	G[mm]	37	12	37	12	37	12	37	12	37	12	-	-
ES6	L1[mm]	174	224	274	324	374	424	474	524	574	624	674	724
	L2[mm]	70	120	170	220	270	320	370	420	470	520	570	620
	n	2	3	3	4	4	5	5	6	6	7	7	8
	N	1	2	2	3	3	4	4	5	5	6	6	7
	G[mm]	37	12	37	12	37	12	37	12	37	12	37	12

ES Option

SB: Slider base (motor wrap type)

THK provides a slider base for installing the ES main unit from the top face.
 * Included with unit



Unit: mm

Model	A	B	C	D	E	H	J	K	M
ES3	92	106	40	8	8	40	8	28	78
ES4	106	120	48	10	10	30	10	32	88
ES5	136	150	57	10	10	45	10	42	108
ES6	136	150	62.5	10	10	45	10	42	108

Stroke		50	100	150	200	250	300	350	400	450	500	550	600
ES3	L ₁ [mm]	156	206	256	306	356	406	-	-	-	-	-	-
	L ₂ [mm]	70	120	170	220	270	320	-	-	-	-	-	-
	n	2	2	3	3	4	4	-	-	-	-	-	-
	N	1	1	2	2	3	3	-	-	-	-	-	-
ES4	G[mm]	28	53	28	53	28	53	-	-	-	-	-	-
	L ₁ [mm]	166	216	266	316	366	416	466	516	-	-	-	-
	L ₂ [mm]	60	110	160	210	260	310	360	410	-	-	-	-
	n	2	3	3	4	4	5	5	6	-	-	-	-
ES5	N	1	2	2	3	3	4	4	5	-	-	-	-
	G[mm]	33	8	33	8	33	8	33	8	-	-	-	-
	L ₁ [mm]	174	224	274	324	374	424	474	524	574	624	-	-
	L ₂ [mm]	70	120	170	220	270	320	370	420	470	520	-	-
ES6	n	2	3	3	4	4	5	5	6	6	7	-	-
	N	1	2	2	3	3	4	4	5	5	6	-	-
	G[mm]	37	12	37	12	37	12	37	12	37	12	-	-
	L ₁ [mm]	174	224	274	324	374	424	474	524	574	624	674	724
ES6	L ₂ [mm]	70	120	170	220	270	320	370	420	470	520	570	620
	n	2	3	3	4	4	5	5	6	6	7	7	8
	N	1	2	2	3	3	4	4	5	5	6	6	7
	G[mm]	37	12	37	12	37	12	37	12	37	12	37	12

□₁□₂: Sensors

ES units can be equipped with optional proximity sensors and photo sensors. Sensor-equipped models also feature a dedicated sensor rail. The following precautions apply to sensor-equipped ES units.

1. The customer should provide a sensor dog; a sensor dog cannot be installed onto the actuator main unit.
2. When ordered, the sensor is included with the unit.
3. When motor wrap is selected, a sensor cannot be mounted on the same side as the motor wrap direction of the motor.
4. When an optional sensor is used, the homing method may differ from that indicated in this brochure.
5. If proximity sensors are placed too close to each other, they may not work properly. In this case, the customer must provide sensors with variant frequencies. (For specifications, contact each manufacturer.)

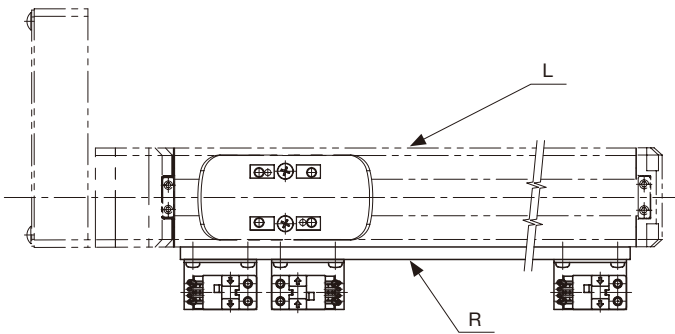
Description	Type	Accessory	Symbol	
			□ ₁	□ ₂
With sensor rail	-	-	L/R	1
Photo Sensor * [x3]	EE-SX674 (OMRON Corporation)	Mounting screw, nuts, sensor rail (x1), mounting plates (x3), connectors (EE-1001, x3)	L/R	6
Sensor N.O. contact [x1] N.C. contact points [x2]	GX-F12A (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor rail	L/R	J
Sensor N.O. contact [x1] (PNP output) N.C. contact points [x2] (PNP output)	GX-F12A-P (Panasonic Industrial Devices SUNX Co., Ltd.) GX-F12B-P (Panasonic Industrial Devices SUNX Co., Ltd.)	Mounting screws, nuts, sensor rail	L/R	M

N.O. contact: Normally open contact point

N.C. contact: Normally closed contact point

* The photo sensors can be switched between ON when lit and ON when unlit.

Example: When a photo sensor is selected with motor wrap



Option: Sensor symbols

Symbol	
□ ₁	□ ₂
R	6

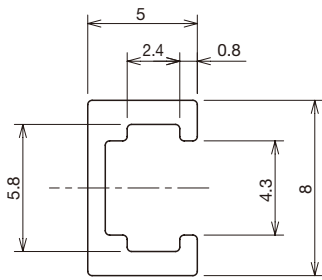
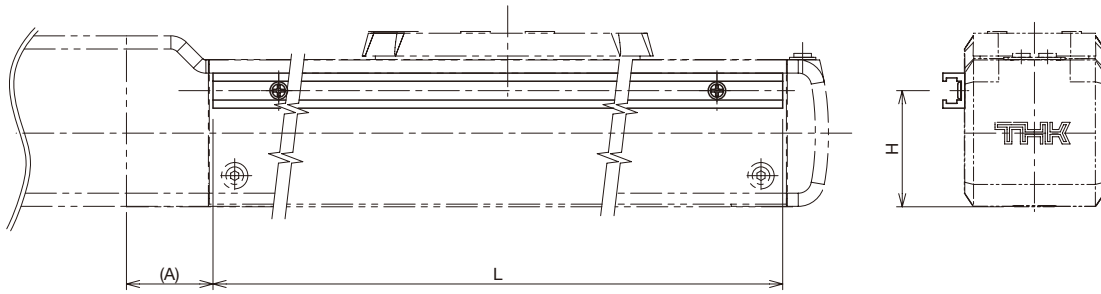
* □₁ represents the mounting position for sensor rail and sensor.

□₂ represents the type of sensors.

* □₁ on the same side as the motor wrap direction of the motor cannot be selected. L cannot be selected.

□₁□₂: Sensor

Symbol 1: Sensor rail

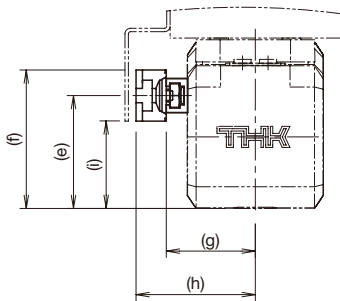


Sensor rail (detail)

Unit: mm

Model	H	A	L
ES3	26.5	19.8	Stroke+78
ES4	31.5	26.5	
ES5	38.1	27	
ES6	43.6	30	

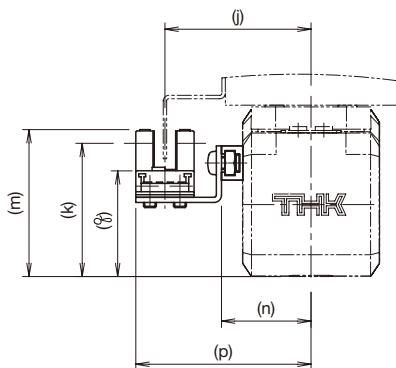
Symbols J, M: Proximity sensor GX-F12* (Panasonic Industrial Devices SUNX Co., Ltd.)



Unit: mm

Model	e	f	g	h	i
ES3	26.5	32.5	20.9	28	20.5
ES4	31.5	37.5	24.8	31.9	25.5
ES5	38.1	44.1	29.8	36.9	32.1
ES6	43.6	49.6	34.8	41.9	37.6

Symbol 6: Photo sensor EE-SX674 (OMRON Corporation)



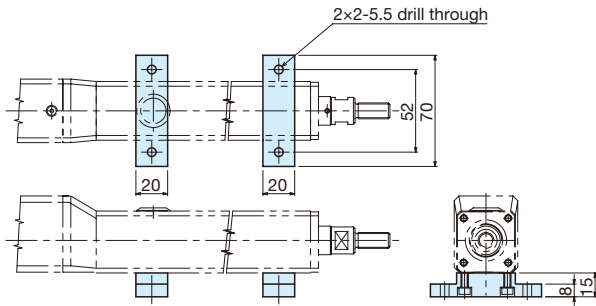
Unit: mm

Model	j	k	m	n	p	φ
ES3	31.4	28.6	31.8	20.9	38.4	22.2
ES4	35.3	33.6	36.8	24.8	42.3	27.2
ES5	40.3	40.2	43.4	29.8	47.3	33.8
ES6	45.3	45.7	48.9	34.8	52.3	39.3

EC Option

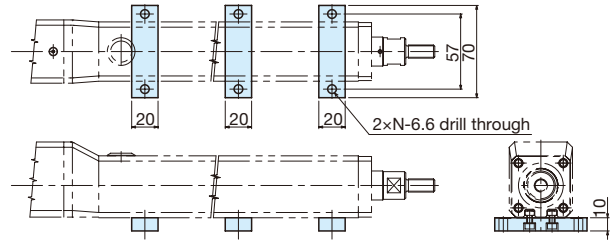
CB: Cylinder Base

EC3



* Included with unit

EC4

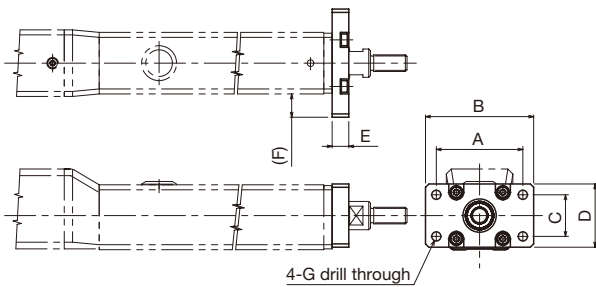


Stroke	50	100	150	200	250	300
N	2	2	2	2	3	3

* Included with unit

FL: Flange

EC3/4, EC3R/4R

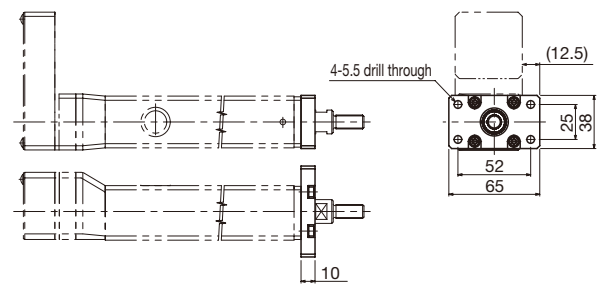


Unit: mm

Model	A	B	C	D	E	F	G
EC3/EC3R	52	65	25	38	10	14	5.5
EC4/EC4R	60	75	34	46	12	15	6.6

* Included with unit

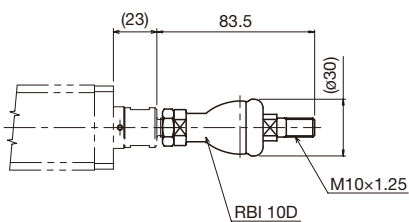
EC3R (When ST=50)



* Included with unit

LB: Link Ball

EC3/4



* Included with unit

ES Motor Selection

See the table below to select a motor to be installed to ES. For details on how to select a motor and motor specifications, contact the manufacturer.

Actuator		Ball Screw				Recommended Coupling		
Model	Stroke ^{*1} [mm]	Lead [mm]	Shaft diameter [mm]	Shaft length [mm]	Outer diameter of shaft end [mm]	Actuator model	Model	Inertial moment [kg · cm ²]
ES3	50	6	φ6	182	φ6h7	ES3	SFC-005DA2 (Miki Pulley Co., LTD.)	0.0036
	300			432			XBW-15C2 (Nabeya Bi-tech Kaisha)	0.0022
ES4	50	6	φ8	191	φ6h7	ES4	SFC-010DA2 (Miki Pulley Co., LTD.)	0.0079
	400			541			XBW-19C2 (Nabeya Bi-tech Kaisha)	0.0067
	50	12	φ8	191	φ6h7		SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
	400			541			XBW-25C2 (Nabeya Bi-tech Kaisha)	0.023
ES5	50	6	φ8	191	φ6h7	ES5	SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
	500			641			XBW-25C2 (Nabeya Bi-tech Kaisha)	0.023
	50	12	φ8	191	φ6h7		SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
	500			641			XBW-25C2 (Nabeya Bi-tech Kaisha)	0.023
ES6	50	6	φ8	198	φ6h7	ES6	SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
	600			748			XBW-25C2 (Nabeya Bi-tech Kaisha)	0.023
	50	12	φ8	198	φ6h7		SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
	600			748			XBW-25C2 (Nabeya Bi-tech Kaisha)	0.023

*1 For strokes, see the corresponding specification tables.

Actuator model	Weight of moving element [kg]	Sliding resistance [N]
ES3	0.17	3
ES4	0.18	4.8
ES5	0.23	6.5
ES6	0.34	6.6

Actuator model	Permissible input torque	
	Direct motor coupling [N · m]	Motor wrap [N · m]
ES3	0.065	0.065
ES4	0.16	0.16
ES5	0.35	0.35
ES6	0.35	0.35

Timing pulley (The sum of two.)	
Actuator model	Inertial moment [kg · cm ²]
ES3	0.0060
ES4	0.0202
ES5	0.0182
ES6	0.0182

EC Motor Selection

See the table below to select a motor to be installed to EC. For details on how to select a motor and motor specifications, contact the manufacturer.

Actuator		Ball Screw				Recommended Coupling		
Model	Stroke ^{*1} [mm]	Lead [mm]	Shaft diameter [mm]	Shaft length [mm]	Outer diameter of shaft end [mm]	Actuator model	Model	Inertial moment [kg · cm ²]
EC3	50	6	φ6	159	φ6h7	EC3	SFC-010DA2 (Miki Pulley Co., LTD.)	0.0079
	200			309				
EC4	50	6	φ8	175	φ6h7		XBW-19C2 (Nabeya Bi-tech Kaisha)	0.0067
	300			425				
	50	12	φ8	175	φ6h7	EC4	SFC-020DA2 (Miki Pulley Co., LTD.)	0.034
300	425			XBW-25C2 (Nabeya Bi-tech Kaisha)				

*1 For strokes, see the corresponding specification tables.

Actuator model	Weight of moving element [kg]						Sliding resistance [N]
	Stroke [mm]	50	100	150	200	250	
EC3*	0.53	0.63	0.73	0.83	–	–	7.5
EC4*	0.86	1.02	1.17	1.33	1.48	1.63	10

* Values with a Linear Bushing attached.

Permissible input torque			Timing pulley (The sum of two.)	
Actuator model	Direct motor coupling [N · m]	Motor wrap [N · m]	Actuator model	Inertial moment [kg · cm ²]
EC3	0.16	0.16	EC3	0.0195
EC4	0.35	0.35	EC4	0.0182



Precautions on Use

● Application

- This product cannot be applied to any equipment or system that may be used under a life-threatening condition.
- If you are considering using this product for special applications such as mobile vehicles, medical uses, aerospace, or thermonuclear power generation or a power plant, make sure to contact THK for applicability beforehand.

● Handling

- Do not disassemble this product unless absolutely necessary. This will cause dust to enter the product resulting in loss of functionality.
- Take care not to drop or strike this product. This could cause injury or product damage or impair the product's function even if the product looks intact.
- Exceeding the maximum recommended speed could damage components or cause an accident. Be sure to use the product within the specification range designated by THK.
- Foreign material entering the product will cause damage to the ball circulation components and loss of functionality. Prevent foreign material, such as dust or cutting chips, from entering the system.
- Using the product in an environment where coolant can penetrate the inner block could cause malfunction, depending on the type of the coolant. Contact THK for details.
- The service temperature range of this product is 0 to 40°C (no freezing or condensation). Consult THK before attempting to use the product outside this temperature range.
- Contact THK before attempting to use the product in a location exposed to vibration or abnormally high or low temperatures, or in a vacuum or clean room.
- When the product is operating or in the ready state, never touch a moving part. In addition, do not enter the operating area.
- If two or more people are involved in the operation, confirm the procedures in advance, and appoint another person to monitor the operation.

● Environment

- An indoor location and ambient temperatures from 0 to 40°C, and humidity of 80%RH or below (no freezing or condensation).

Wrong environment can cause failures of the actuator and driver. The best place to use the product is as follows:

- A place free from corrosive gas and flammable gas.
- A place where vibration or impact is not transmitted to the unit.
- A place free from electrically conductive powder (such as iron powder), dust, oil mist, cutting fluid, moisture, salt, and organic solvent.
- A place free from direct sunlight and radiant heat.
- A place free from strong electric and magnetic fields.
- A place that is easily accessible for service and cleaning purposes.
- When using the product in locations exposed to constant vibrations or in special environments such as vacuum or abnormally high or low temperatures, contact THK in advance.

● Mounting

- Surface The surface should be the plane that has the precision of machining or the equivalent of that. Some products specify the required flatness. When you wish to use the product with QZ in a position other than horizontal (such as wall mount and vertical posture), contact THK.

● Lubrication

- In order to effectively use the actuator, lubrication is required. Insufficient lubrication may increase abrasion on the rolling part and cause early failure.
- Do not use a mix of lubricants with different physical properties. Note that encapsulated lubricant types vary depending on products.
- Please contact THK if using special lubricants.
- THK recommend the greasing interval to be approximately every 100km. However, it may vary depending on the usage conditions, so THK recommends determining a greasing interval during the initial inspection.
- If the product is to be used in a location exposed to vibrations or in a special environment such as vacuum, or abnormally high or low temperatures, or in a clean room, normal lubricants may not be used. Contact THK for details.
- When adopting an oil lubrication method, contact THK.

● Storage


- When storing this actuator, enclose it in a package designated by THK and store it in a horizontal position away from abnormally high or low temperatures and high humidity.

● Instruction Manual

- Instruction Manuals can be downloaded from the website (a login process may be required).
- THK Technical Support site <https://tech.thk.com/>
"Economy series ES/EC Instruction Manual"
and other contents including CAD data and PC software (D-STEP) can also be downloaded.



Economy Series ES/EC

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