CKD

New Products

Electric Actuators

D Series (Screw / Spring drives)
G Series
Controller ESC Series
Controller ECG Series

Inherited the DNA of Air Components
New Electric Actuators

D Series

G Series

ROBODEX *Pulse*

CC-1591AA 2

Electric actuators inheriting the DNA of Air components

DNA of Air Components

Easy adjustments　High rigidity

D Series

Pneumatic-less environment

Speed control

CO_2 reduction

G Series

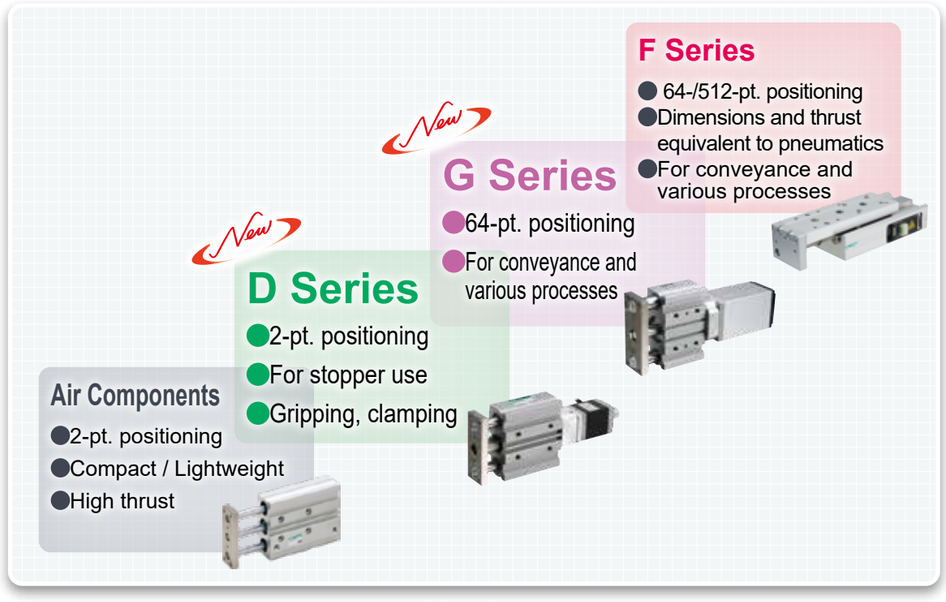
Multi-point positioning

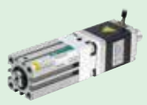
Pneumatic-less environment

Speed control

CO_2 reduction

Ideal models proposed from a wide variety of variations



	Models						Function						Listed page
	Rod	Guided	Stopper-type	Gripper	Table / Rotary		# of position pts.	Thrust / Speed	Pressing operation	Space saving	Position detection	# of inputs	
New **D Series** (Screw drive)							2 pts.	○	Not available	○	Cylinder Switch	3 pts.	1
New **D Series** (Spring drive)							2 pts.	○	○	○	Cylinder Switch	3 pts.	67
New **G Series**							64 pts.	○	○	○	Encoder	13 pts.	113
F Series							64 pts./ 512 pts.	◎	○	◎	Encoder	13 pts./ 16 pts.	Catalog No. Refer to CC-1444A

*Excluding common

Specialized for positioning between 2 points Electric Actuators

D Series (screw drive system)

Making carbon-neutral equipment more accessible

Line-up

		Size 20	Size 32	Size 50	Catalog Page
Actuator	Rod-type DSSD2	●	●	●	3
	Stopper-type DSTK	●	●	●	13
	Guided DSTG	●	●	●	25
	Guided DSTS	●	●	●	39
	Guided DSTL	●	●	●	53
Application Controller	ESC4	●	●	●	99

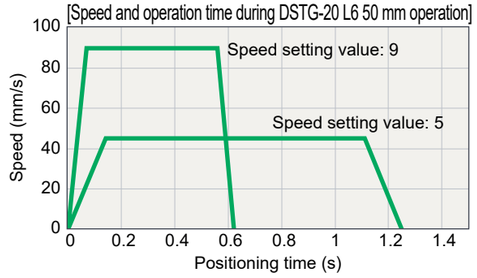
No dedicated tools required. Easy on-site configuration

Easy adjustment

The stop position is adjusted by turning the manual operation knob to the position where the cylinder switch responds. The speed can be set with the rotary DIP switch on the controller.

Cylinder switch

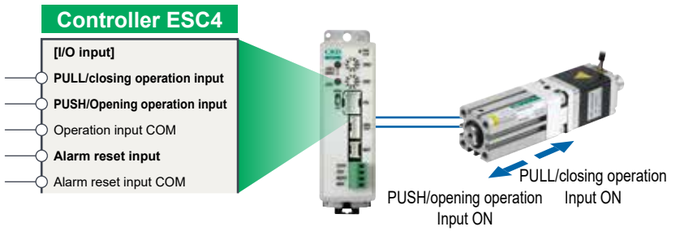
Rotary DIP switch



Operation is possible with 3 input signals

Easy controls

No program is required.
Simple wiring for operation.

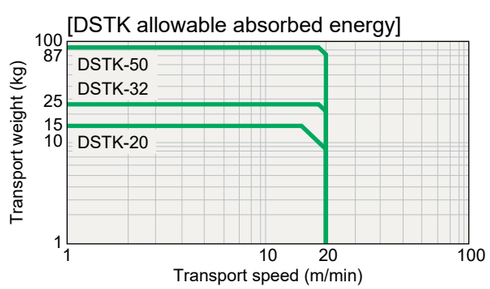


Inherits the high rigidity of air components

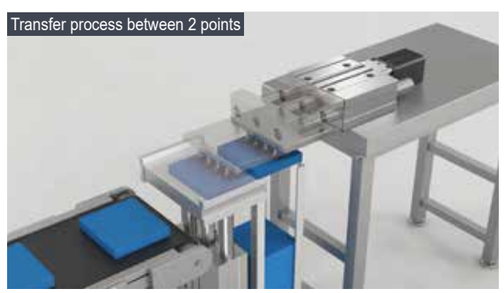
High rigidity | Space saving | Reduced design hours | Reduced number of parts | Long service life

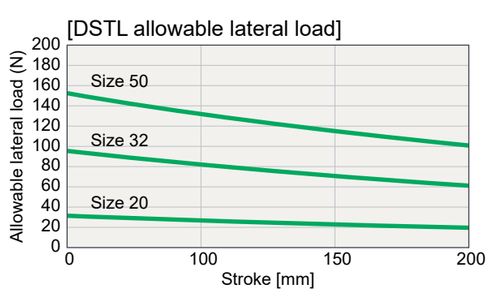
The use of the same body as the air components provides high rigidity unheard of in conventional electric actuators.

Stopper applications



Transfer process between 2 points





Electric actuator with built-in spring specialized for clamp and grip applications

D Series (Spring drive method)

Making carbon-neutral equipment more accessible

Line-up

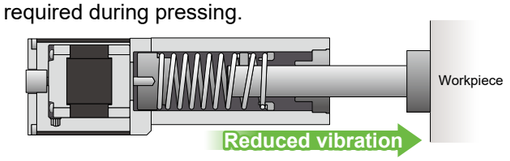
		Size 08	16	20	32	Catalog Page
Actuator	Compact guided DMSDG	●	●	●	●	69
	2-Finger Gripper DLSH			●	●	81
	3-Finger Gripper DCKW			●	●	91
Application Controller	ESC4	●	●	●	●	99

Built-in spring in the drive mechanism

A spring drive system where the motor rotates the spring.

DMSDG Series

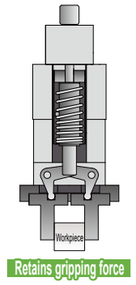
Due to the spring mechanism, impact is reduced on the workpiece and low speed operation is not required during pressing.

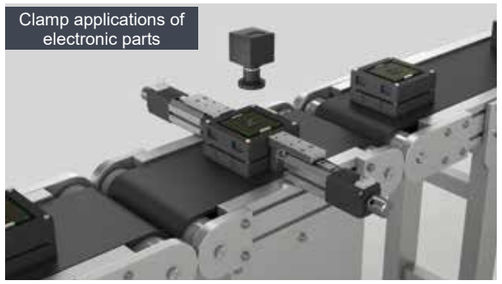


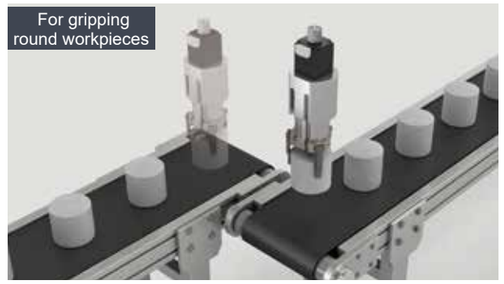
DLSH, DCKW Series

The self-lock and spring mechanism maintain the gripping force even when the power supply is shut OFF, reducing the risk of the workpiece falling.

*Contact CKD if self-locking support is required for the DMSDG Series.





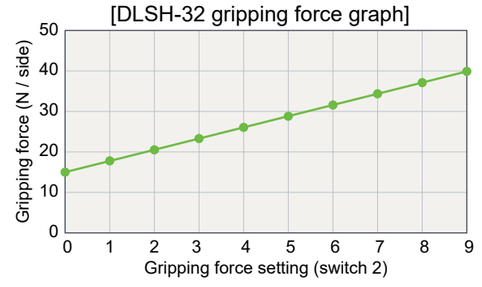


No dedicated tool is required. Easy on-site configuration

The stop position is adjusted by turning the manual operation knob to the position where the cylinder switch responds. The gripping force and speed can be set with the rotary DIP switch on the controller.

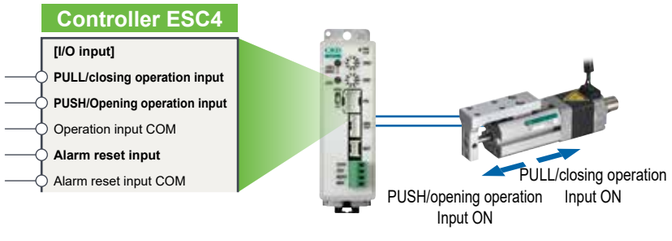

Cylinder switch

Rotary DIP switch



Operation is possible with 3 input signals

No program is required.
Simple wiring for operation.



64-point positioning electric actuator maintaining the user-friendliness of Air and Electric Motion components

G Series (screw drive system)

Rod-type
GSSD2

Controller
ECG

Multi-axis controller
ECMG

3-Finger Gripper
GCKW

Stopper-type
GSTK

Guided
GSTG

Guided
GSTS

Guided
GSTL

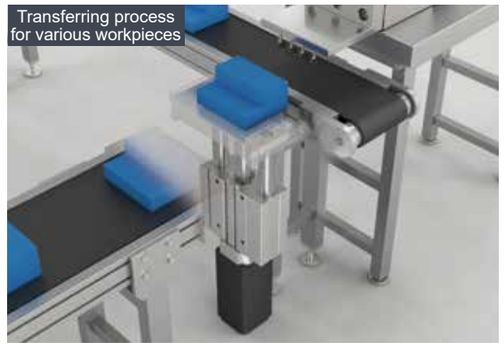
A wide range of Carbon-Neutral equipment variations as desired

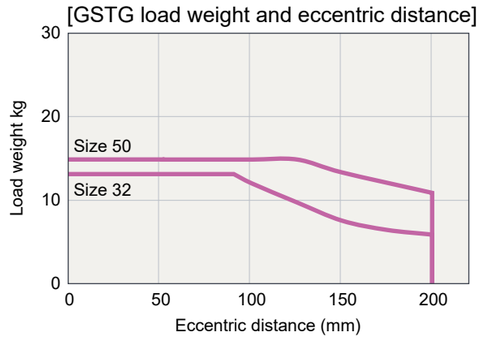
Line-up		Size 16	20	25	32	50	Catalog Page
Actuator	Rod-type GSSD2		●		●	●	115
	Stopper-type GSTK		●		●	●	125
	Guided GSTG		●		●	●	137
	Guided GSTS		●		●	●	151
	Guided GSTL		●		●	●	165
	3-finger gripper GCKW	●	●	●	●	●	179
Application Controller	ECG-A		●		●	●	189
	ECG-B	●	●	●	●	●	203
	ECMG	●	●	●	●	●	Catalog No.CC-1570A for details

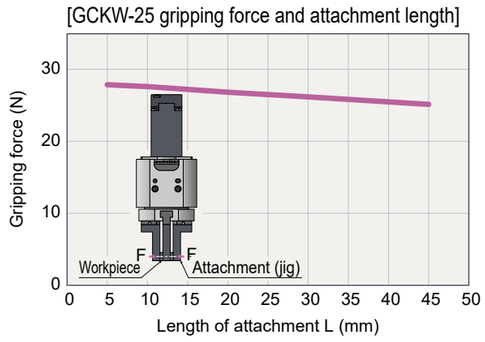
Inherits the high rigidity of air components

High rigidity · Space saving · Reduced design hours · Reduced number of parts · Long service life

The use of the same body as the air components provides high rigidity unheard of in conventional electric actuators.



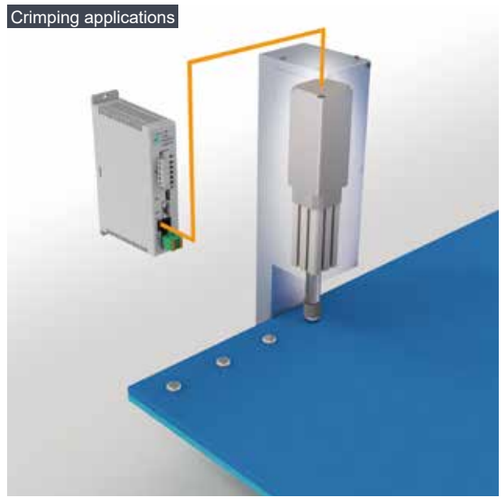




Can be connected to high-function controllers

High versatility · Productivity improved · Supports IoT

It can be connected to various interfaces as well as 64-multi-point positioning and pressing operations.



Single-axis controller
ECG

PIO
IO-Link
CC-Link
EtherCAT
EtherNet/IP

Multi-axis controller
ECMG *

CC-Link
EtherCAT
EtherNet/IP

Refer to catalog CC-1570A for * details

Space saving structure

Model	Max. payload / thrust		Max. speed	Max. stroke	Pressing force	Listed page
	Horizontal	Vertical				
DSSD2 	14.8 kg	13.2 kg	180 mm/s	100 mm	Not available	**3**
GSSD2 	14.8 kg	19.6 kg	500 mm/s	100 mm	590 N	**115**
DMSDG 	0.35 kg	0.35 kg	77 mm/s	30 mm	20 N	**69**
DSTK 	137 N	137 N	180 mm/s	30 mm	Not available	**13**
GSTK 	192 N	192 N	500 mm/s	30 mm	Not available	**125**

2-Finger Gripper

Model	Max. gripping force	Max. speed	Max. stroke	Listed page
DLSH 	40 N (per side)	63 mm/s	22 mm	**81**
FLSH 	65 N (per side)	50 mm/s	22 mm	Refer to Catalog No.CC-1444A
FFLD 	500 N (per side)	10 mm/s	160 mm	Refer to Catalog No.CC-1492A

3-Finger Gripper

Model	Max. gripping force	Max. speed	Max. stroke	Listed page
DCKW 	30 N (per side)	70 mm/s	8 mm	**91**
GCKW 	29 N (per side)	50 mm/s	6 mm	**179**

Guided

Model	Max. payload		Max. speed	Max. stroke	Pressing force	Listed page
	Horizontal	Vertical				
DSTG 	14.8 kg	13.2 kg	180 mm/s	100 mm	Not available	**25**
GSTG 	14.8 kg	19.6 kg	500 mm/s	100 mm	590 N	**137**
DSTS 	14.8 kg	13.2 kg	180 mm/s	50 mm	Not available	**39**
GSTS 	14.8 kg	19.6 kg	500 mm/s	50 mm	590 N	**151**
DSTL 	14.8 kg	13.2 kg	180 mm/s	200 mm	Not available	**53**
GSTL 	14.8 kg	19.6 kg	500 mm/s	200 mm	590 N	**165**

Table-type

Model	Max. payload		Max. speed	Max. stroke	Pressing force	Listed page
	Horizontal	Vertical				
FLCR 	11 kg	8.5 kg	300 mm/s	100 mm	210 N	Refer to Catalog No.CC-1444A

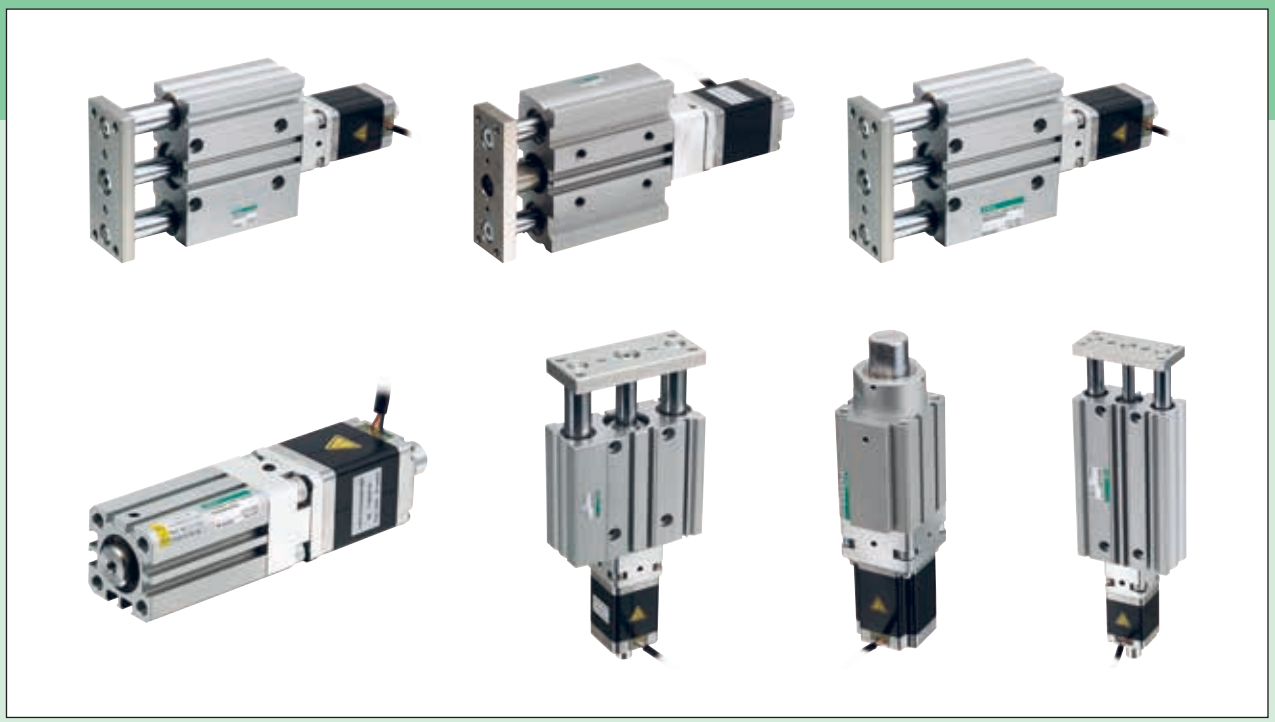
Rotary

Model	Max. torque	Max. speed	Listed page
FGRC 	4.66 N·m	200 deg/s	Refer to Catalog No.CC-1444A

CKD

Electric Actuator D Series

Screw drive system



CONTENTS

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DSSD2

Rod type

Electric actuator
Motor specifications

CONTENTS

DSSD2 Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)				
			Horizontal	Vertical	20	25	50	75	100
DSSD2-20	□35	6	4.4	6.4	90		90		
		9	4.4	4.8	135		135		
DSSD2-32	□42	6	10	14		90			
		12	4	4.8		180			
DSSD2-50	□56	6	14.8	13.2		72			
		12	9.2	7.2		144			

Electric actuator Rod-type

DSSD2-20

□35 Stepping motor

RoHS

How to order

DSSD2 - 20 S E - 06 020 T3PH R1 A 1 - ○ - □ - ○

❶Size

20	20

❷Applicable controller * 1

S	ESC4

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
09	9 mm

❺Stroke

020	20 mm
050	50 mm
075	75 mm
100	100 mm

❻Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

❿Option

Blank	Rod end female thread
N	Rod end male thread

⓫Mounting bracket

Blank	Without mounting bracket
FA	Rod side flange

⓬Accessory *3 (when rod end male thread N is selected)

Blank	Without accessory
I	Rod eye
Y	Rod clevis

* 1 For the controller, refer to CC-1635A.
* 2 Refer to page 104 for relay cable dimensions.
* 3 Rod eye: SSD2-I-20, Rod clevis: SSD2-Y-20. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□35 Stepping motor	
Drive method		Sliding screw ø6	
Stroke	mm	20 to 100	
Screw lead	mm	6	9
Max. payload kg *1, *2	Horizontal	4.4	4.4
	Vertical	6.4	4.8
Operation speed range *3	mm/s	15 to 90	22 to 135
Max. acceleration/deceleration * 4	mm/s²	1312 (setting: 9)	2938 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50 °C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.
*4 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*5 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	0	4.4	22	0	4.4
1	23	53	4.4	35	119	4.4
2	31	129	4.4	47	290	4.0
3	40	229	4.4	60	513	3.6
4	48	351	3.6	72	787	4.0
5	56	497	3.6	85	1114	3.2
6	65	666	2.8	97	1492	2.8
7	73	858	2.8	110	1922	2.4
8	81	1074	2	122	2404	2.8
9	90	1312	2	135	2938	3.2

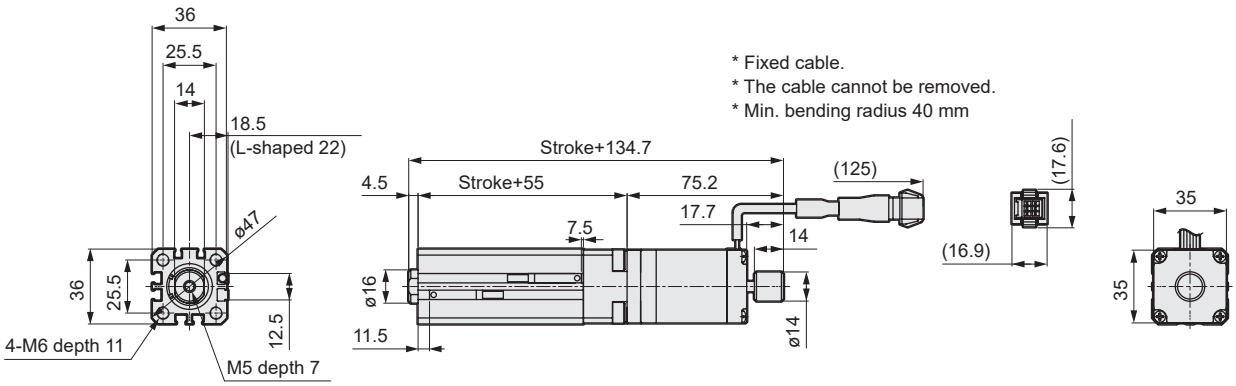
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	0	6.4	22	0	4.8
1	23	53	6.4	35	119	4.8
2	31	129	6.4	47	290	4.8
3	40	229	6.4	60	513	4.8
4	48	351	6.4	72	787	4.4
5	56	497	6.4	85	1114	4.4
6	65	666	6.4	97	1492	4.0
7	73	858	4.8	110	1922	3.6
8	81	1074	4.8	122	2404	3.6
9	90	1312	4.8	135	2938	3.6

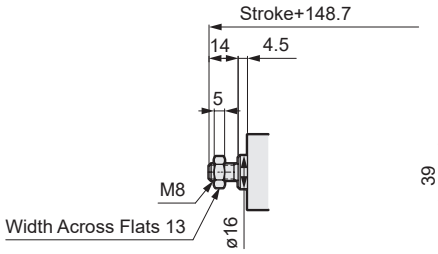
* The speed and acceleration/deceleration settings are merely guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

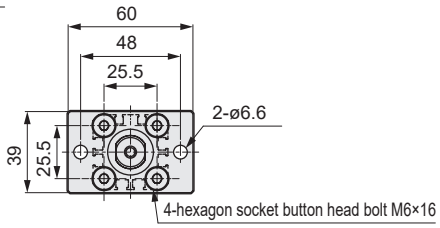
● DSSD2-20

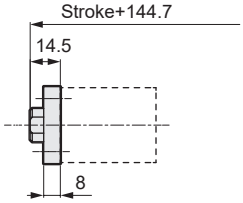


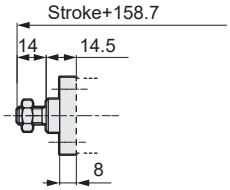
●Rod end male thread



●Rod side flange (FA)







[Dimensions by stroke]

Stroke code	020	050	075	100
Stroke (mm)	20	50	75	100
Weight (kg)	0.6	0.7	0.8	0.9

Electric actuator Rod-type

DSSD2-32

□42 Stepping motor

RoHS

How to order

DSSD2 - 32 S E - 06 025 T3PH R1 A 1 - ○ - ▭ - ○

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬

❶Size	
32	32

❷Applicable controller * 1	
S	ESC4

❸Motor mounting direction	
E	Straight mounting

❹Screw lead	
06	6 mm
12	12 mm

❺Stroke	
025	25 mm
050	50 mm
075	75 mm
100	100 mm

❻Switch	
NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2	
N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included	
N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length	
N	None
1	1 m
3	3 m
5	5 m
X	10 m

❿Option	
Blank	Rod end female thread
N	Rod end male thread

⓫Mounting bracket	
Blank	Without mounting bracket
FA	Rod side flange

⓬Accessory *3 (when rod end male thread N is selected)	
Blank	Without accessory
I	Rod eye
Y	Rod clevis

* 1 For the controller, refer to CC-1635A.
* 2 Refer to page 104 for relay cable dimensions.
* 3 Rod eye: SSD2-I-32, Rod clevis: SSD2-Y-32. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□42 Stepping motor	
Drive method		Sliding screw ø8	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1, *2	Horizontal	10	4
	Vertical	14	4.8
Operation speed range *3	mm/s	15 to 90	30 to 180
Max. acceleration/deceleration * 4	mm/s²	1312 (setting: 9)	5250 (Setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50 °C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.
*4 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*5 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	0	10	30	0	4.0
1	23	53	9.2	46	212	3.2
2	31	129	6	63	518	2.8
3	40	229	6.8	80	916	2.4
4	48	351	6.8	96	1407	2.4
5	56	497	6.8	113	1990	2.4
6	65	666	6.8	130	2666	2.4
7	73	858	6	146	3435	2.0
8	81	1074	4.4	163	4296	1.6
9	90	1312	5.2	180	5250	1.2

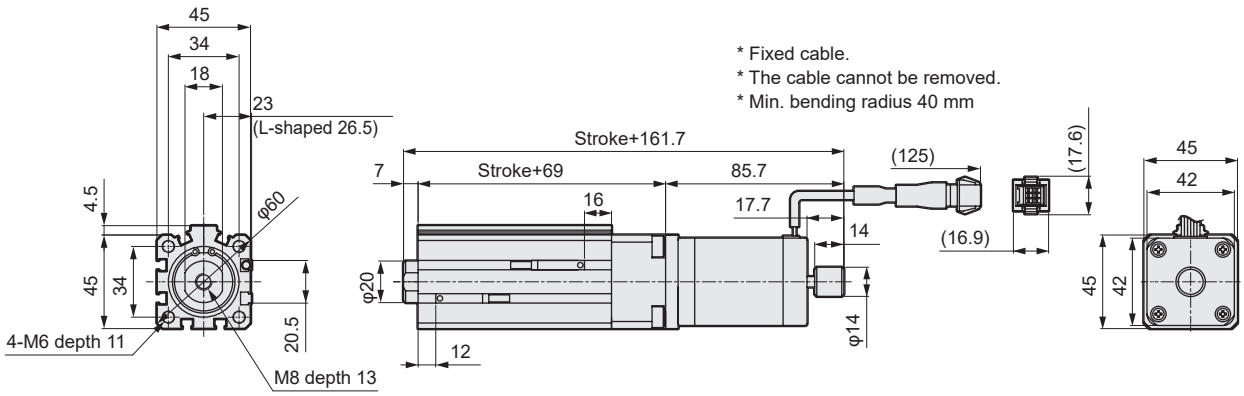
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	(mm/s²)	14	30	0	4.8
1	23	53	13.2	46	212	4
2	31	129	12.4	63	518	4
3	40	229	11.6	80	916	4
4	48	351	11.6	96	1407	3.6
5	56	497	11.6	113	1990	3.2
6	65	666	10.8	130	2666	2.8
7	73	858	10.8	146	3435	2.4
8	81	1074	10	163	4296	2
9	90	1312	9.2	180	5250	1.6

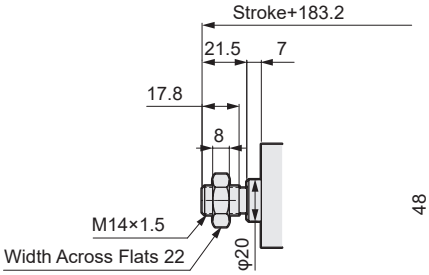
* The speed and acceleration/deceleration setting are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

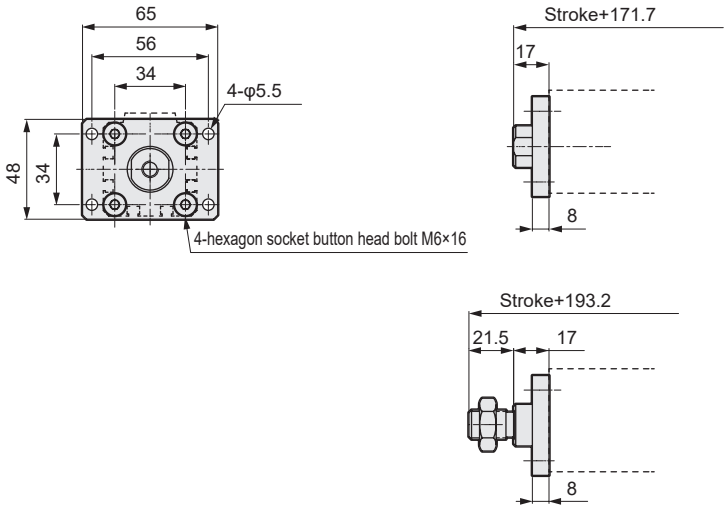
● DSSD2-32



●Rod end male thread



●Rod side flange (FA)



[Dimensions by stroke]

Stroke code	025	050	075	100
Stroke (mm)	25	50	75	100
Weight (kg)	1.1	1.2	1.3	1.4

Electric actuator Rod-type

DSSD2-50

□56 Stepping motor

RoHS

How to order

DSSD2 - 50 S E - 06 025 T3PH R1 A 1 - ○ - ▭ - ○

❶Size

50	50

❷Applicable controller * 1

S	ESC4

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❻Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

❿Option

Blank	Rod end female thread
N	Rod end male thread

⓫Mounting bracket

Blank	Without mounting bracket
FA	Rod side flange

⓬Accessory *3 (when rod end male thread N is selected)

Blank	Without accessory
I	Rod eye
Y	Rod clevis

* 1 For the controller, refer to CC-1635A.
* 2 Refer to page 104 for relay cable dimensions.
* 3 Rod eye: SSD2-I-50, Rod clevis: SSD2-Y-50. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□56 Stepping motor	
Drive method		Sliding screw ø12	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1, *2	Horizontal	14.8	9.2
	Vertical	13.2	7.2
Operation speed range *3	mm/s	15 to 72	30 to 144
Max. acceleration/deceleration * 4	mm/s²	826 (setting: 9)	3306 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50 °C (no freezing) 35 to 80% RH (no condFensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.
*4 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*5 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	0	14.8	30	0	4.4
1	21	38	11.6	42	153	6
2	27	90	10	55	360	9.2
3	34	155	10	68	620	9.2
4	40	233	8.4	80	934	8.8
5	46	325	8.4	93	1301	8.8
6	53	430	8.4	106	1722	8.4
7	59	549	6.8	118	2196	7.6
8	65	681	6.8	131	2724	6
9	72	826	6.8	144	3306	4.4

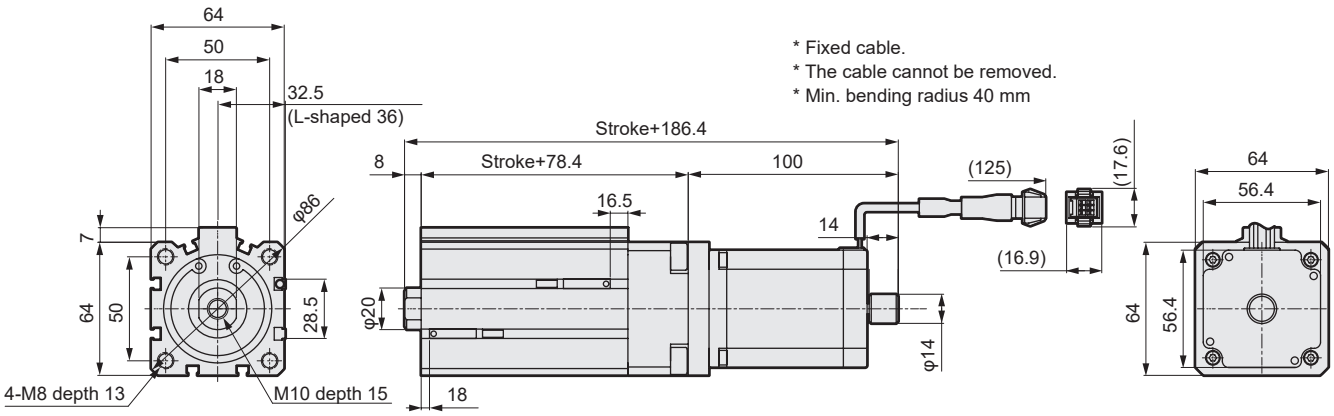
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)	Speed (mm/s)	Acceleration/ Deceleration (mm/s²)	Payload (kg)
0	15	0	13.2	30	0	6.4
1	21	38	13.2	42	153	6.4
2	27	90	13.2	55	360	6.8
3	34	155	13.2	68	620	6.8
4	40	233	12.8	80	934	7.2
5	46	325	12.4	93	1301	6.8
6	53	430	12	106	1722	6.4
7	59	549	9.6	118	2196	6
8	65	681	7.6	131	2724	4.4
9	72	826	0	144	3306	2.4

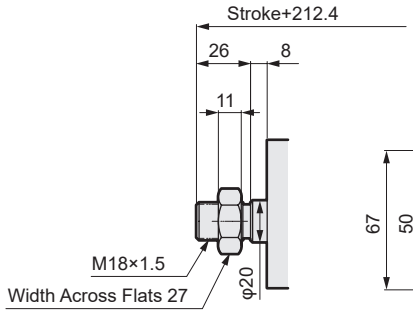
* The speed and acceleration/deceleration setting are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

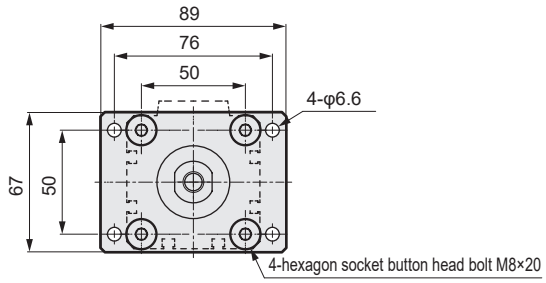
● DSSD2-50

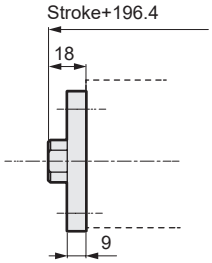


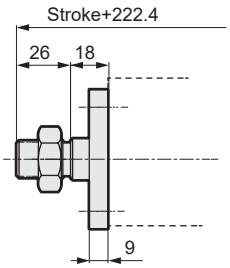
●Rod end male thread



●Rod side flange (FA)







[Dimensions by stroke]

Stroke code	025	050	075	100
Stroke (mm)	25	50	75	100
Weight (kg)	2.3	2.5	2.7	2.9

Model selection

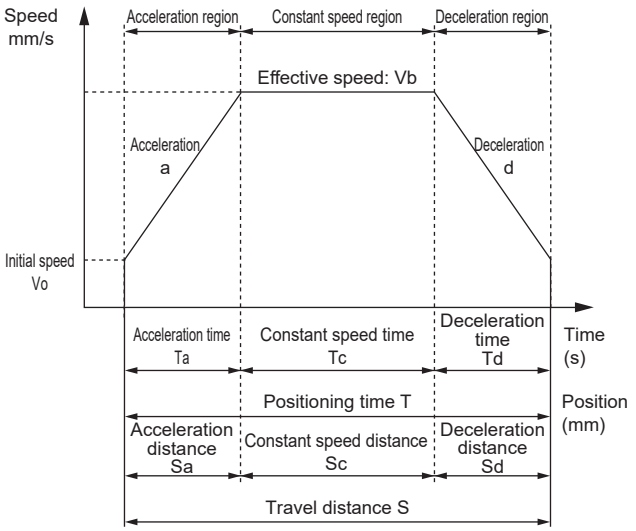
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead and transport speed. Refer to the Series Variation (page 3), the specification table for each model and the Table of Payload by Speed setting to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

Positioning time for general transport operation



	Description	Code	Unit	Formula
Set value	Initial speed	V0	mm/s	According to the table below (= value of switch setting 0)
	Speed setting	V	mm/s	Refer to the table below
	Acceleration	a	mm/s^2	According to the table below (fixed value)
	Deceleration			
	Travel distance	S	mm	*
Calculated value	Achieved speed	Vmax	mm/s	$=(S\times a+V0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=(Vb-V0) / a
	Deceleration time			
	Constant speed time	Tc	s	=Sc/Vb
	Acceleration distance	Sa	mm	$=V0\times Ta+(a\times Ta^2) / 2$
	Deceleration distance			
	Constant speed distance	Sc	mm	=S-2×Sa
	Positioning time	T	s	=2×Ta+Tc

* Depending on the speed setting and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the execution speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration/Deceleration depends on the speed setting.
* Speed is determined by the settings of rotary switches 1 and 2.
* The stabilization time differs depending on the working conditions, but it may take approximately 0.2s.

[Speed setting] (mm/s)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	22	15	30	15	30
1	23	35	23	46	21	42
2	31	47	31	63	27	55
3	40	60	40	80	34	68
4	48	72	48	96	40	80
5	56	85	56	113	46	93
6	65	97	65	130	53	106
7	73	110	73	146	59	118
8	81	122	81	163	65	131
9	90	135	90	180	72	144

[Acceleration, deceleration] (mm/s^2)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	0	0	0	0	0	0
1	53	119	53	212	38	153
2	129	290	129	518	90	360
3	229	513	229	916	155	620
4	351	787	351	1407	234	934
5	497	1114	497	1990	325	1301
6	666	1492	666	2666	431	1722
7	858	1922	858	3435	549	2196
8	1074	2404	1074	4296	681	2724
9	1312	2938	1312	5250	827	3306

MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DSTK

Stopper-type

Electric actuator
Motor specifications

CONTENTS

DSTK Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. Thrust (N) Horizontal / Vertical	Stroke (mm) and Max. speed (mm/s) 10	20	30
DSTK-20	□35	6	62	90		
		9	47	135		
DSTK-32	□42	6	137	90		
		12	47	180		
DSTK-50	□56	6	129		72	
		12	70		144	

Electric actuator Stopper

DSTK-20

□35 Stepping motor

RoHS

How to order

DSTK - M - 20 S E - 06 020 T3PH R1 A 1

❶Size

20	20

❷Applicable controller * 1

S	ESC4

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
09	9 mm

❺Stroke

010	10 mm
020	20 mm

❻Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor	□35 Stepping motor	
Drive method	Sliding screw ø6	
Stroke mm	10, 20	
Screw lead mm	6	9
Max. thrust * 1 N	62	47
Operation speed range * 2 mm/s	15 to 90	22 to 135
Max. acceleration/deceleration * 3 mm/s²	1312 (setting: 9)	2938 (setting: 9)
Insulation resistance	10MΩ, 500 VDC	
Withstand voltage	500 VAC for 1 minute	
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere	No corrosive gas, explosive gas, or dust	
Degree of protection	IP40	

*1 Thrust varies according to speed. Refer to the speed and thrust table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and thrust table for the acceleration/deceleration when setting and other settings.
*4 Pressing operation is not supported.

Speed and thrust

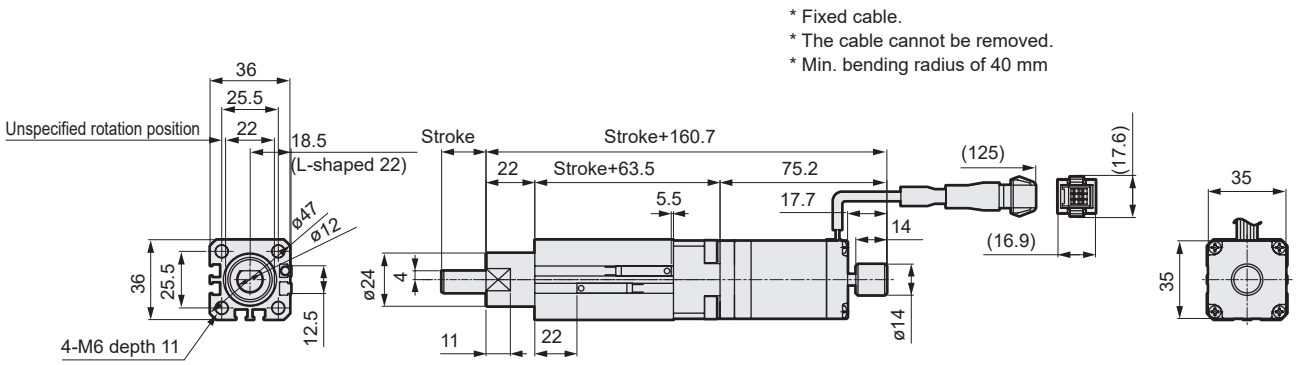
[When installed horizontally or vertically]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)
0	15	0	62	22	0	47
1	23	53	62	35	119	47
2	31	129	62	47	290	47
3	40	229	62	60	513	47
4	48	351	62	72	787	43
5	56	497	62	85	1114	43
6	65	666	62	97	1492	39
7	73	858	47	110	1922	35
8	81	1074	47	122	2404	35
9	90	1312	47	135	2938	35

* The speed and acceleration/deceleration setting are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

● DSTK-20



[Dimensions by stroke]

Stroke code	010	020
Stroke (mm)	10	20
Weight (kg)	0.6	0.6

Electric actuator Stopper

DSTK-32

□42 Stepping motor

RoHS

How to order

DSTK - M - 32 S E - 06 020 T3PH R1 A 1

❶Size

32	32

❷Applicable controller * 1

S	ESC4

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

010	10 mm
020	20 mm

❻Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor	□42 Stepping motor	
Drive method	Sliding screw ø8	
Stroke mm	10, 20	
Screw lead mm	6	12
Max. thrust * 1 N	129	47
Operation speed range * 2 mm/s	15 to 90	30 to 180
Max. acceleration/deceleration * 3 mm/s²	1312 (setting: 9)	5250 (Setting: 9)
Insulation resistance	10MΩ, 500 VDC	
Withstand voltage	500 VAC for 1 minute	
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere	No corrosive gas, explosive gas, or dust	
Degree of protection	IP40	

*1 Thrust varies according to speed. Refer to the speed and thrust table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and thrust table for the acceleration/deceleration when setting and other settings.
*4 Pressing operation is not supported.

Speed and thrust

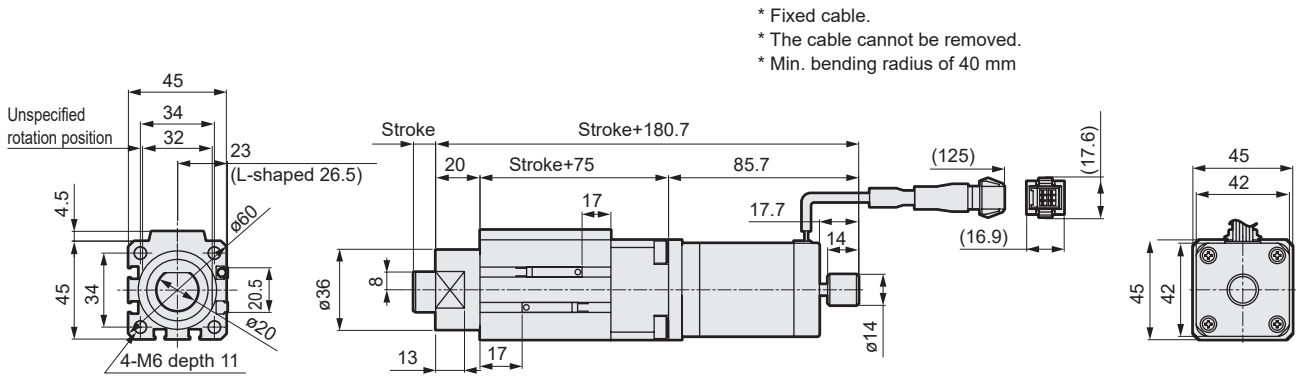
[When installed horizontally or vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)
0	15	0	129	30	0	47
1	23	53	129	46	212	39
2	31	129	121	63	518	39
3	40	229	113	80	916	39
4	48	351	113	96	1407	35
5	56	497	113	113	1990	31
6	65	666	105	130	2666	27
7	73	858	105	146	3435	23
8	81	1074	98	163	4296	19
9	90	1312	90	180	5250	15

* The speed and acceleration/deceleration setting are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

● DSTK-32



[Dimensions by stroke]

Stroke code	010	020
Stroke (mm)	10	20
Weight (kg)	1.1	1.2

Electric actuator Stopper

DSTK-50

□56 Stepping motor

RoHS

How to order

DSTK - M - 50 S E - 06 020 T3PH R1 A 1

❶Size

50	50

❷Applicable controller * 1

S	ESC4

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

020	20 mm
030	30 mm

❻Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❼Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor	□56 Stepping motor	
Drive method	Sliding screw ø12	
Stroke mm	20, 30	
Screw lead mm	6	12
Max. thrust * 1 N	129	70
Operation speed range * 2 mm/s	15 to 72	30 to 144
Max. acceleration/deceleration * 3 mm/s²	826 (setting: 9)	3306 (setting: 9)
Insulation resistance	10MΩ, 500 VDC	
Withstand voltage	500 VAC for 1 minute	
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere	No corrosive gas, explosive gas, or dust	
Degree of protection	IP40	

*1 Thrust varies according to speed. Refer to the speed and thrust table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and thrust table for the acceleration/deceleration when setting and other settings.
*4 Pressing operation is not supported.

Speed and thrust

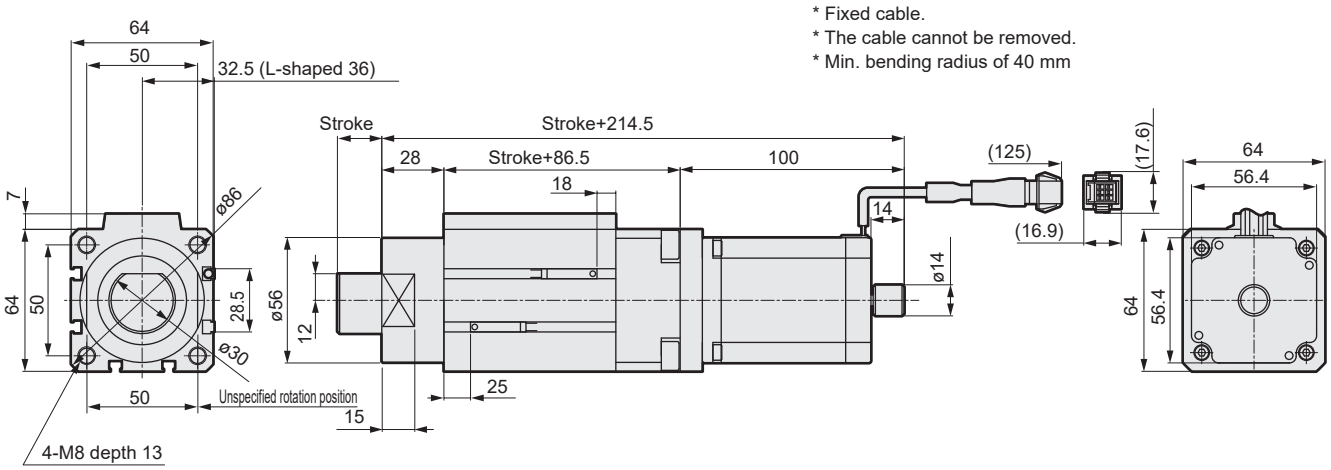
[When installed horizontally or vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)	Speed (mm/s)	Acceleration / Deceleration (mm/s²)	Thrust (N)
0	15	0	129	30	0	62
1	21	38	129	42	153	62
2	27	90	129	55	360	66
3	34	155	129	68	620	66
4	40	233	125	80	934	70
5	46	325	121	93	1301	66
6	53	430	117	106	1722	62
7	59	549	94	118	2196	58
8	65	681	74	131	2724	43
9	72	826	0	144	3306	23

* The speed and acceleration/deceleration settings are merely guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.

Dimensions

● DSTK-50



[Dimensions by stroke]

Stroke code	020	030
Stroke (mm)	20	30
Weight (kg)	2.8	2.9

Model selection

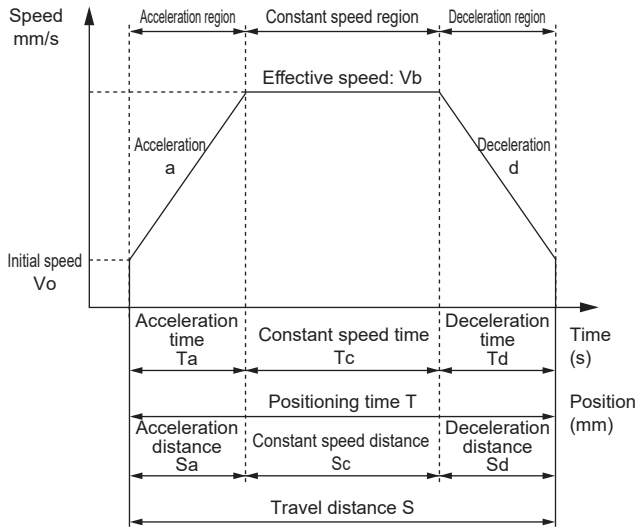
STEP 1 Confirming thrust

Thrust varies with size, screw lead, operation speed and acceleration speed. Refer to the Series Variation (page 13), the specification table for each model and the Table of Thrust by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

Positioning time for general transport operation



	Description	Code	Unit	Formula
Set value	Initial speed	V0	mm/s	According to the table below (= value of switch setting 0)
	Speed setting	V	mm/s	Refer to the table below
	Acceleration	a	mm/s^2	According to the table below (fixed value)
	Deceleration			
	Travel distance	S	mm	*
Calculated value	Achieved speed	Vmax	mm/s	$=(S\times a+V0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=(Vb-V0) / a
	Deceleration time			
	Constant speed time	Tc	s	=Sc/Vb
	Acceleration distance	Sa	mm	$=V0\times Ta+(a\times Ta^2) / 2$
	Deceleration distance			
	Constant speed distance	Sc	mm	=S-2×Sa
	Positioning time	T	s	=2×Ta+Tc

* Depending on the speed setting and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the execution speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration/deceleration depends on the speed setting.
* Speed is determined by the settings of rotary switches 1 and 2.
* The stabilization time differs depending on the working conditions, but it may take approximately 0.2s.

[Speed setting] (mm/s)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	22	15	30	15	30
1	23	35	23	46	21	42
2	31	47	31	63	27	55
3	40	60	40	80	34	68
4	48	72	48	96	40	80
5	56	85	56	113	46	93
6	65	97	65	130	53	106
7	73	110	73	146	59	118
8	81	122	81	163	65	131
9	90	135	90	180	72	144

[Acceleration, deceleration] (mm/s^2)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	0	0	0	0	0	0
1	53	119	53	212	38	153
2	129	290	129	518	90	360
3	229	513	229	916	155	620
4	351	787	351	1407	234	934
5	497	1114	497	1990	325	1301
6	666	1492	666	2666	431	1722
7	858	1922	858	3435	549	2196
8	1074	2404	1074	4296	681	2724
9	1312	2938	1312	5250	827	3306

STEP 3 Working range

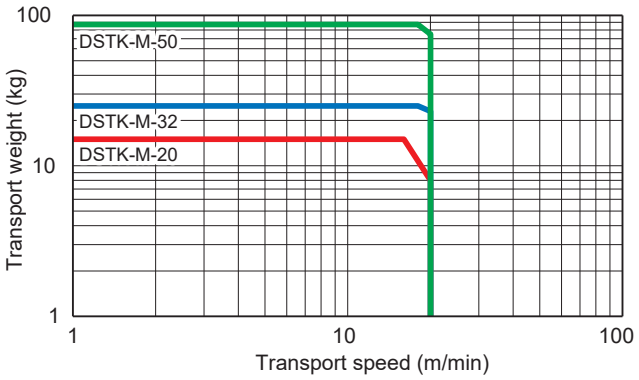
Select the model using transport weight (m) and transport speed (V) so that the model is within the allowable absorbed energy in the graph in the right .

(Example) Transport speed 15 m/min, transport weight 20 kg

[How to look at the graph]

For the selection method of the specifications above, from Graph 1 on the right, obtain the intersection point of 15 m/min on the horizontal axis and 20 kg on the vertical axis and then select DSTK-32 within the allowable absorbed energy range.

Fig. 1 Allowable absorbed energy value



STEP 4 Lateral load and thrust

Depending on the degree of the lateral load applied to the rod end, the thrust varies when the rod is pulled. Therefore, confirm the required working thrust.

1. Calculate the lateral load (F) applied to the rod end.

$F=10 \cdot m \cdot n \cdot \mu_1$

F : Lateral load (N)

m : Transport weight(kg)

n : Number of transported objects

μ_1 : Coefficient of friction between transport pallet and conveyor

2. Obtain the thrust (P) required when the rod is pulled.

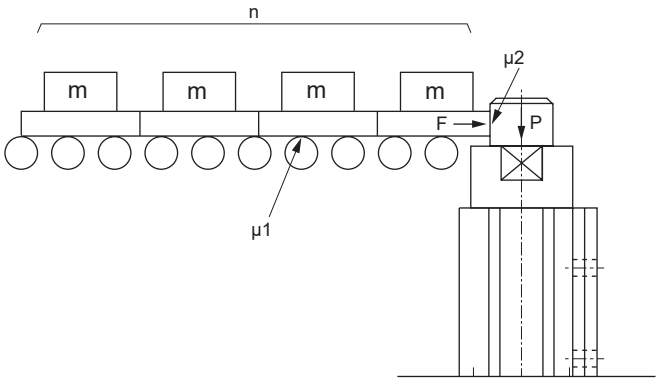
$P=F \cdot \mu_2$

P : Required thrust (N)

μ_2: Coefficient of friction between transported object and rod

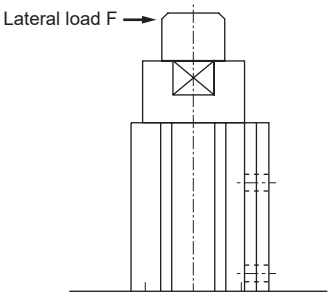
(Note) As the coefficient of friction varies depending on the material of the transported object, refer to the coefficient in the table below.

Transported object	Steel	Aluminum	Urethane
μ_2	0.5	0.8	2.0



Allowable lateral load (N)

Size	Stroke (mm)		
	10	20	30
DSTK-20	106.5	93.2	-
DSTK-32	272.8	238.7	-
DSTK-50	-	582.8	525.8



MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DSTG

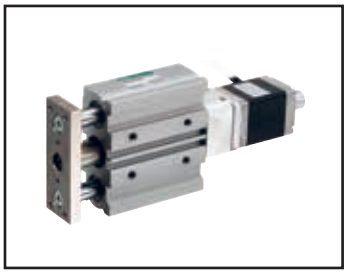
Guided

Electric actuator
Motor specifications

CONTENTS

DSTG Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)				
			Horizontal	Vertical	20	25	50	75	100
DSTG-20	□35	6	4.4	6.4	90		90		
		9	4.4	4.8	135		135		
DSTG-32	□42	6	10	14		90			
		12	4	4.8		180			
DSTG-50	□56	6	14.8	13.2		72			
		12	9.2	7.2		144			



Electric actuator with guide

DSTG-20

□35. Stepping motor

RoHS

How to order

DSTG - M - 20 S E - 06 020 T3PH R1 A 1

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
09	9 mm

❻Stroke

020	20 mm
050	50 mm
075	75 mm
100	100 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Drive method		Sliding screw ø6	
Stroke	mm	20 to 100	
Screw lead	mm	6	9
Max. payload kg *1	Horizontal	4.4	4.4
	Vertical	6.4	4.8
Operation speed range *2	mm/s	15 to 90	22 to 135
Max. acceleration/deceleration * 3	mm/s²	1312 (setting: 9)	2938 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead 6 mm Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	100 or less	Screw lead 9 mm Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	100 or less
0	15	4.4	4.4	22	4.4	3.9
1	23	4.4	4.4	35	4.4	3.9
2	31	4.4	4.4	47	4.0	3.5
3	40	4.4	4.4	60	3.6	3.1
4	48	3.6	3.1	72	3.6	3.1
5	56	3.6	3.1	85	3.2	2.7
6	65	2.8	2.3	97	2.8	2.3
7	73	2.8	2.3	110	2.4	1.9
8	81	2	1.5	122	2.4	1.9
9	90	2	1.5	135	2	1.5

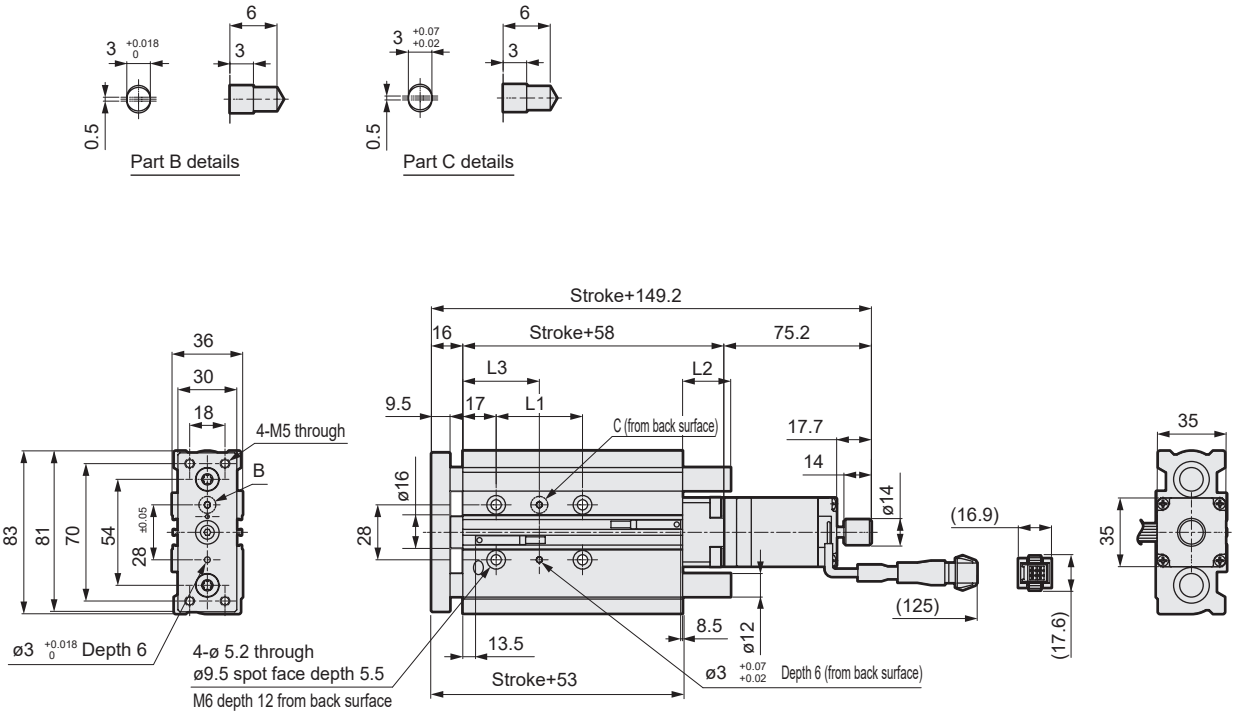
[When installed vertically]

Switch Setting	Screw lead 6 mm Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	100 or less	Screw lead 9 mm Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	100 or less
0	15	6.4	6.4	22	4.8	4.3
1	23	6.4	6.4	35	4.8	4.3
2	31	6.4	6.4	47	4.8	4.3
3	40	6.4	6.4	60	4.8	4.3
4	48	6.4	6.4	72	4.4	3.9
5	56	6.4	6.4	85	4.4	3.9
6	65	6.4	6.4	97	4	3.5
7	73	4.8	4.3	110	3.6	3.1
8	81	4.8	4.3	122	3.3	2.8
9	90	4.8	4.3	135	3	2.5

* The speed and acceleration/deceleration settings are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

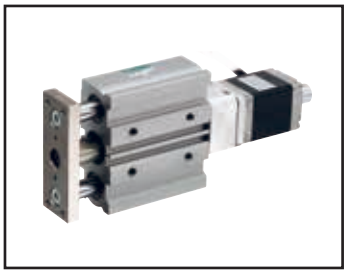
● DSTG-20



* Fixed cable.
* The cable cannot be removed.
* Min. bending radius of 40 mm

[Dimensions by stroke]

Stroke code	020	050	075	100
Stroke (mm)	20	50	75	100
L1	24	44	44	44
L2	0	0	24.5	24.5
L3	29	39	39	39
Weight (kg)	1.1	1.4	1.6	1.8



Electric actuator with guide

DSTG-32

□42 Stepping motor

RoHS

How to order

DSTG - M - 32 S E - 06 025 T3PH R1 A 1

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□42 Stepping motor	
Drive method		Sliding screw ø8	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	10	4
	Vertical	14	4.8
Operation speed range *2	mm/s	15 to 90	30 to 180
Max. acceleration/deceleration * 3	mm/s²	1312 (setting: 9)	5250 (Setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	100 or less		50 or less	100 or less
0	15	10.0	9.5	30	4.0	3.5
1	23	9.2	8.7	46	3.2	1.9
2	31	6.0	5.5	63	2.8	2.3
3	40	6.0	5.5	80	2.4	2.7
4	48	4.0	3.5	96	2.4	1.9
5	56	3.6	3.1	113	2.4	1.9
6	65	3.6	3.1	130	2.4	1.9
7	73	3.2	2.7	146	2.0	1.5
8	81	2.4	1.9	163	1.6	1.1
9	90	2.0	1.5	180	1.2	0.7

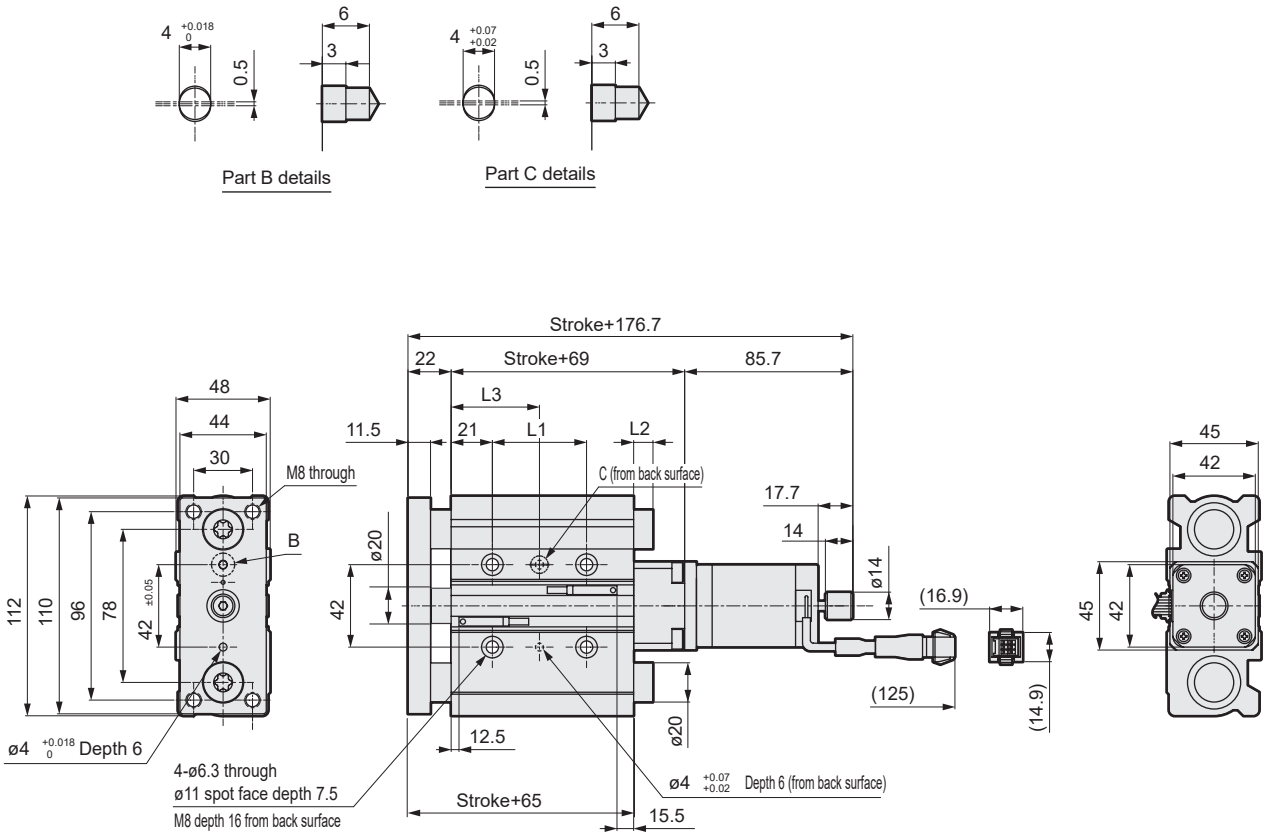
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	100 or less		50 or less	100 or less
0	15	14	13.5	30	4.8	4.3
1	23	13.2	12.7	46	4	3.5
2	31	12.4	11.9	63	4	3.5
3	40	11.6	11.1	80	4	3.5
4	48	11.6	11.1	96	3.6	3.1
5	56	11.6	11.1	113	3.2	2.7
6	65	10.8	10.3	130	2.8	2.3
7	73	10.8	10.3	146	2.4	1.9
8	81	10	9.5	163	2.0	1.5
9	90	9.2	8.7	180	1.6	1.1

* The speed and acceleration/deceleration settings are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

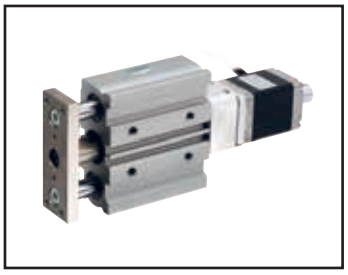
● DSTG-32



* Fixed cable.
* The cable cannot be removed.
* Min. bending radius of 40 mm

[Dimensions by stroke]

Stroke code	025	050	075	100
Stroke (mm)	25	50	75	100
L1	24	48	48	48
L2	13.5	13.5	34.5	34.5
L3	33	45	45	45
Weight (kg)	2.4	2.8	3.2	3.6



Electric actuator with guide

DSTG-50

□56 Stepping motor

RoHS

How to order

DSTG - M - 50 S E - 06 020 T3PH R1 A 1

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Drive method		Sliding screw ø12	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	9.2
	Vertical	13.2	7.2
Operation speed range *2	mm/s	15 to 72	30 to 144
Max. acceleration/deceleration * 3	mm/s²	826 (setting: 9)	3306 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies depending on the speed. Refer to the speed and payload table for details.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	100 or less		50 or less	100 or less
0	15	14.8	12.8	30	9.2	9.2
1	21	11.6	9.6	42	9.2	9.2
2	27	10.0	8	55	9.2	9.2
3	34	8.4	6.4	68	9.2	7.2
4	40	8.4	6.4	80	8.8	6.8
5	46	8.4	6.4	93	8.8	6.8
6	53	8.4	6.4	106	8.4	6.4
7	59	6.8	4.8	118	7.6	5.6
8	65	6.8	4.8	131	6.0	4.0
9	72	6.8	4.8	144	4.4	2.4

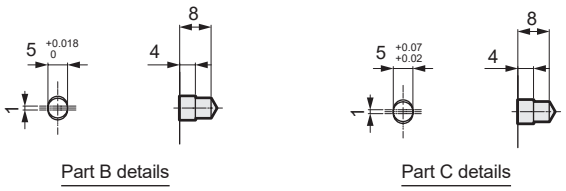
[When installed vertically]

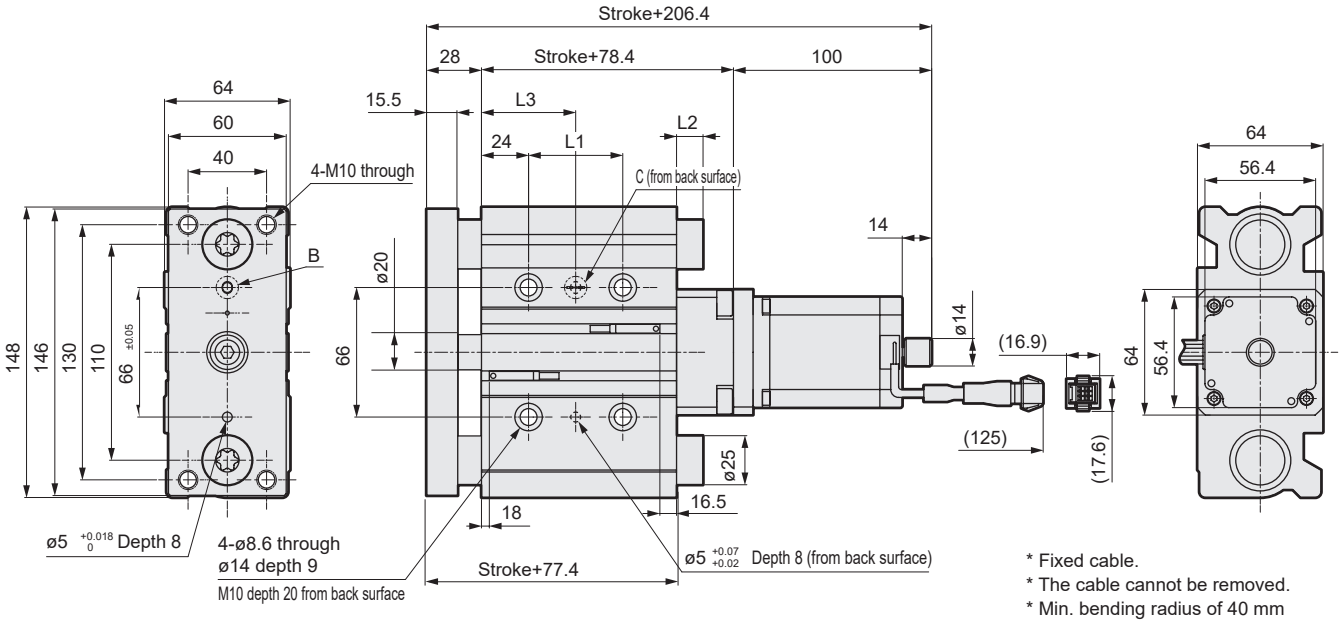
Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	100 or less		50 or less	100 or less
0	15	13.2	12.2	30	7.2	6.2
1	21	13.2	12.2	42	7.2	6.2
2	27	13.2	12.2	55	7.2	6.2
3	34	13.2	12.2	68	7.2	6.2
4	40	12.8	11.8	80	7.2	6.2
5	46	12.4	11.4	93	6.8	5.8
6	53	12	11	106	6.4	5.4
7	59	9.6	8.6	118	6	5
8	65	7.6	6.6	131	4.4	3.4
9	72	6	0	144	2.4	1.4

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

● DSTG-50





* Fixed cable.
* The cable cannot be removed.
* Min. bending radius of 40 mm

[Dimensions by stroke]

Stroke code	025	050	075	100
Stroke (mm)	25	50	75	100
L1	24	48	48	48
L2	13.1	13.1	38.1	38.1
L3	36	48	48	48
Weight (kg)	4.7	5.3	6.1	6.7

Model selection

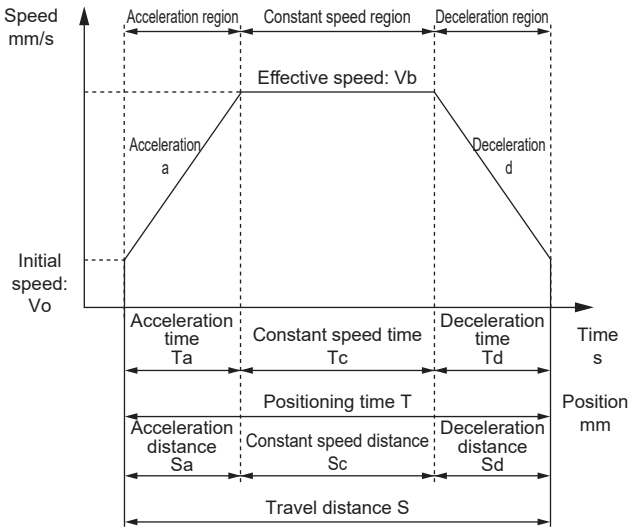
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead and transport speed. Refer to the Series Variation (page 25), the specification table for each model and the Table of Load Capacity by Speed Setting to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Initial speed	V0	mm/s	According to the table below (= value of switch setting 0)
	Speed setting	V	mm/s	Refer to the table below
	Acceleration	a	mm/s^2	According to the table below (fixed value)
	Deceleration			
	Travel distance	S	mm	*
Calculated value	Achieved speed	Vmax	mm/s	$=(S\times a+V0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=(Vb-V0) / a
	Deceleration time			
	Constant speed time	Tc	s	=Sc/Vb
	Acceleration distance	Sa	mm	$=V0\times Ta+(a\times Ta^2) / 2$
	Deceleration distance			
	Constant speed distance	Sc	mm	=S-2×Sa
	Positioning time	T	s	=2×Ta+Tc

* Depending on the speed setting and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the execution speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration/deceleration depends on the speed setting.
* Speed is determined by the settings of rotary switches 1 and 2.
* Though the stabilization time differs depending on working conditions, it may take approximately 0.2s.

[Speed setting] (mm/s)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	22	15	30	15	30
1	23	35	23	46	21	42
2	31	47	31	63	27	55
3	40	60	40	80	34	68
4	48	72	48	96	40	80
5	56	85	56	113	46	93
6	65	97	65	130	53	106
7	73	110	73	146	59	118
8	81	122	81	163	65	131
9	90	135	90	180	72	144

[Acceleration, deceleration] (mm/s^2)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	0	0	0	0	0	0
1	53	119	53	212	38	153
2	129	290	129	518	90	360
3	229	513	229	916	155	620
4	351	787	351	1407	234	934
5	497	1114	497	1990	325	1301
6	666	1492	666	2666	431	1722
7	858	1922	858	3435	549	2196
8	1074	2404	1074	4296	681	2724
9	1312	2938	1312	5250	827	3306

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

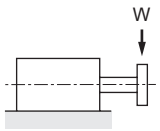
Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

Static allowable load and moment

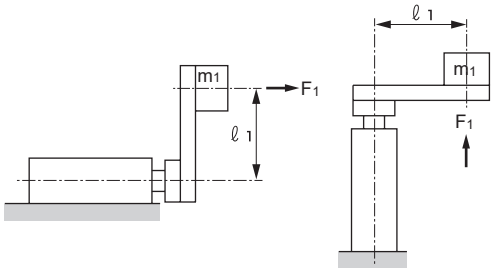
Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
DSTG-20	20	67	35.3	0.9	35.3
	50	46		0.62	
	75	60		0.8	
	100	51		0.69	
DSTG-32	25	223	171.5	4.35	171.5
	50	180		3.5	
	75	179		3.48	
	100	156		3.04	
DSTG-50	25	348	294	9.56	294
	50	296		7.86	
	75	292		8.02	
	100	257		7.07	

● Lateral load W (N)



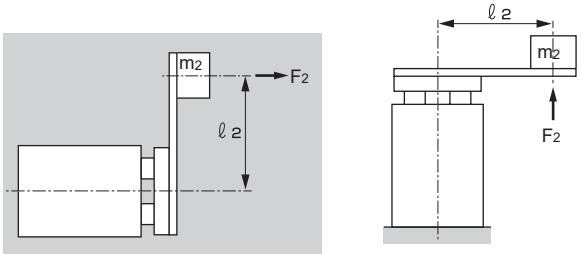
● Bending moment MP (N·m)

MP = F1 × ℓ1 = 10 × m1 × G × ℓ1



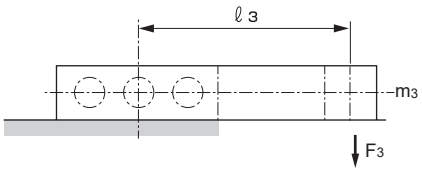
● Radial moment MR. (N·m)

MR = F2 × ℓ2 = 10 × m2 × G × ℓ2



● Torsion moment MY (N·m)

MY = F3 × ℓ3 = 10 × m3 × ℓ3

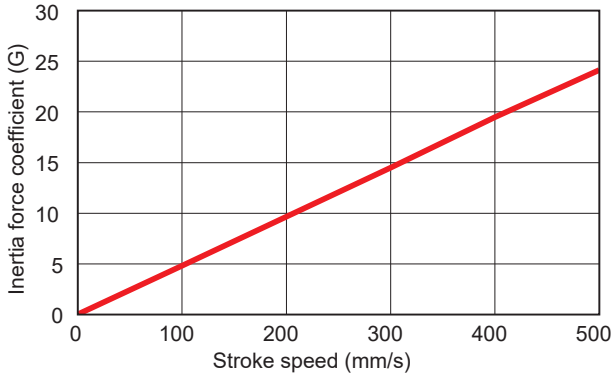


m1: **m2**: **m3**: } Load (kg)

ℓ1: **ℓ2**: **ℓ3**: } Eccentric distance (m)

G: Inertia force coefficient

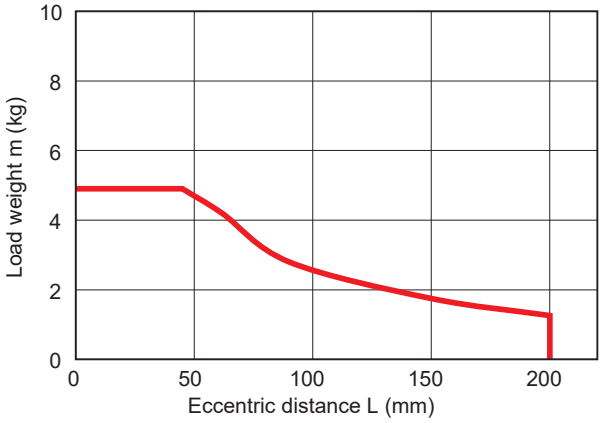
Fig. 1 Trend of inertia force coefficient for guided type



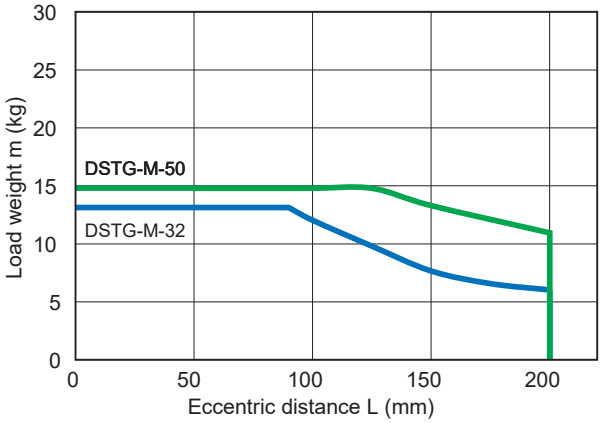
STEP 4 Checking allowable overhang length

Make sure that the overhang length during operation is within the allowable range.

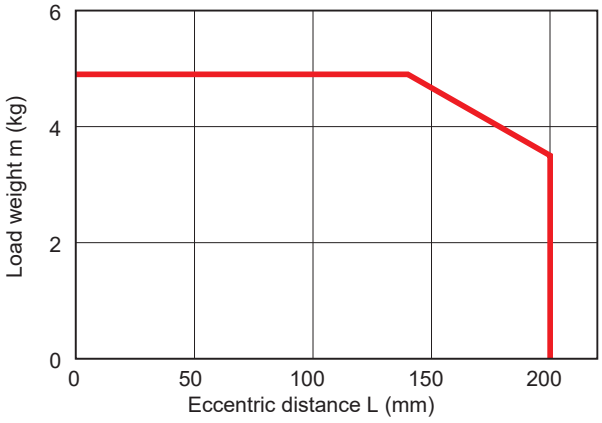
● DSTG-M-20
• Stroke 50 mm or less



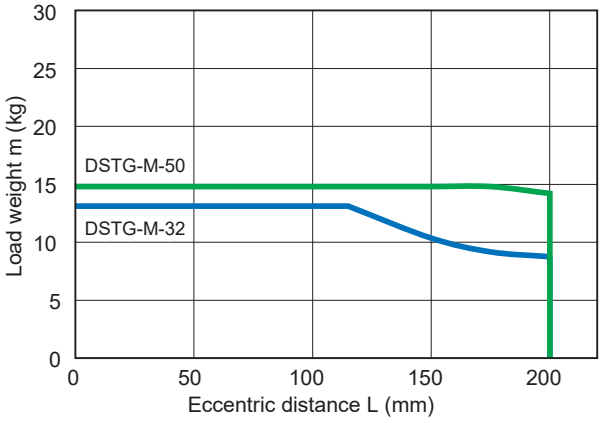
● DSTG-M-32, 50
• Stroke 50 mm or less



● DSTG-M-20
• Over 50 mm stroke

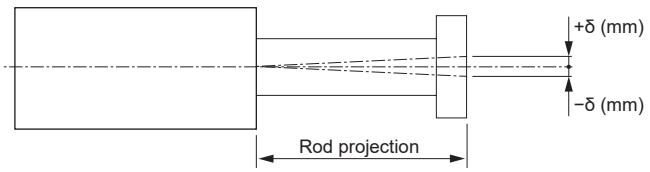


● DSTG-M-32, 50
• Over 50 mm stroke

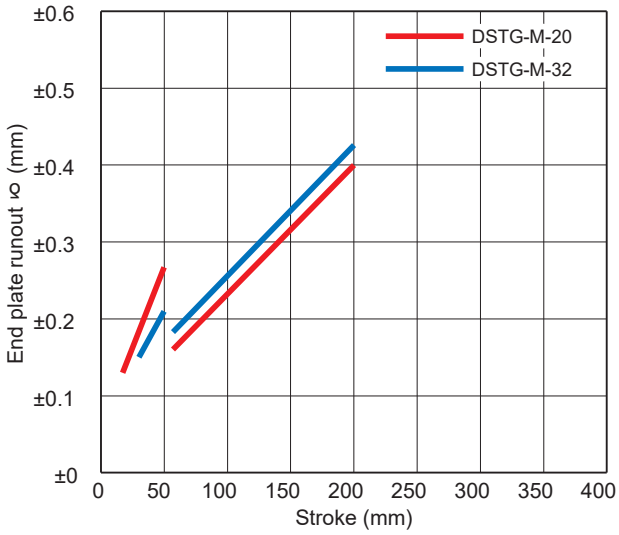


Deflection

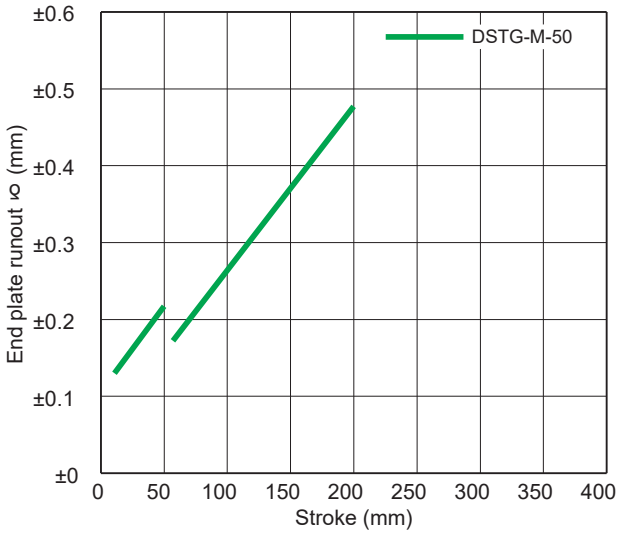
For the runout amount δ produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)



● DSTG-M-20, 32

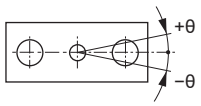


● DSTG-M-50



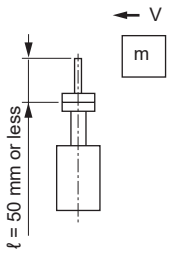
Non-rotating accuracy

(reference value)



Size	Non-rotating accuracy θ (degree)
DSTG-20	±0.07
DSTG-32	±0.06
DSTG-50	±0.05

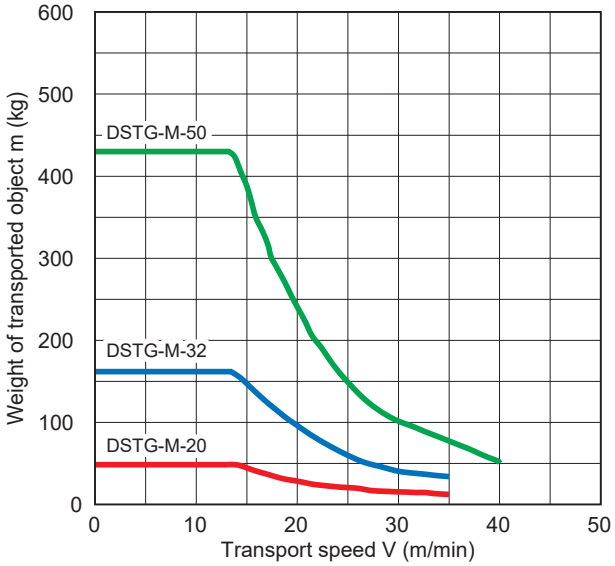
Specified range when using the product as a stopper



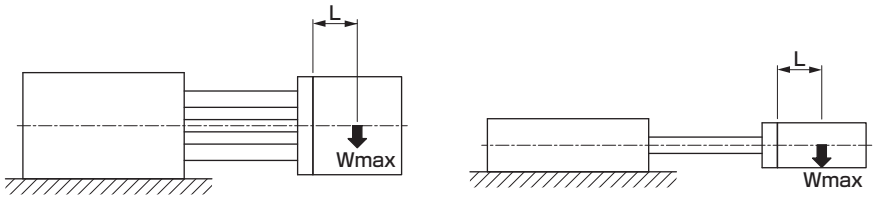
*1 When using the cylinder as a stopper, select a model with stroke 50 or less.
*2 Make sure that the total length of the stopper is ℓ=50 mm or less.
*3 When fixing the actuator body, make sure that the screw insertion depth of the bolt is 2d and over, and take countermeasures for preventing looseness (adhesive, spring washer, etc.) into consideration.
*4 Refer to page 22 for the calculation of the required working thrust.
*5 Calculate the actuator thrust with the following formula.
Thrust = vertical load capacity ×10 (N)

Impact load

DSTG-M (metal bush bearing)

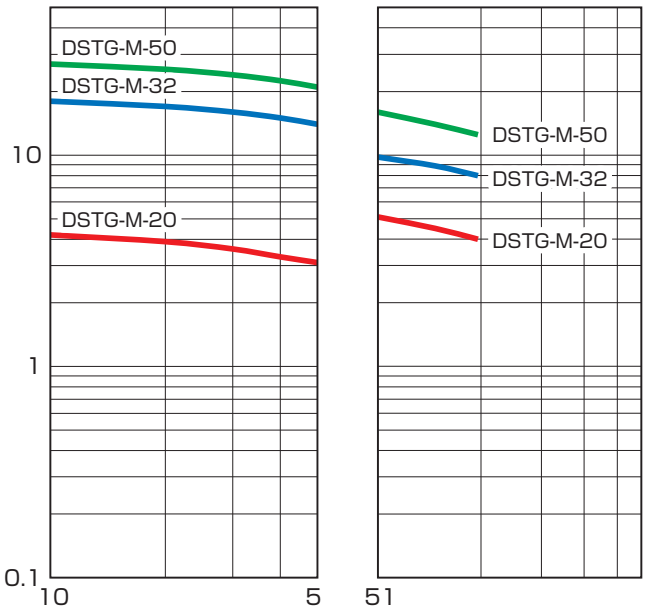


Allowable lateral load　Metal bush bearing

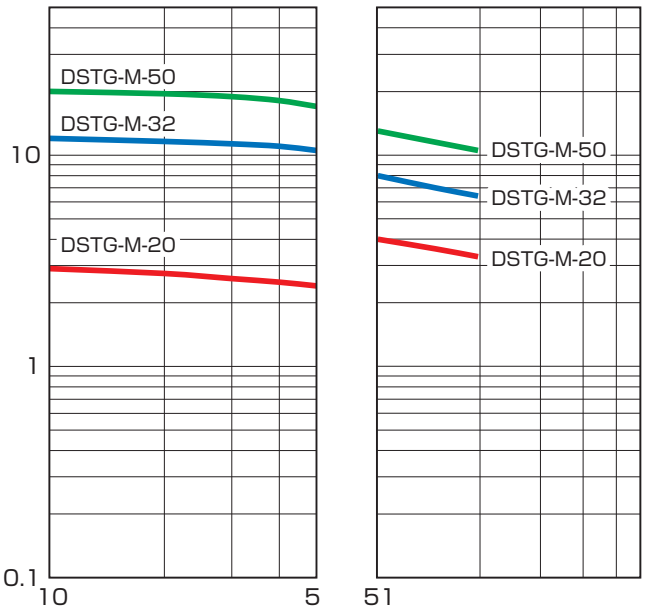


Wmax : Lateral load (kg)
L : Load center of gravity position (mm)

●For L=50mm



●For L=100mm



Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DSTS

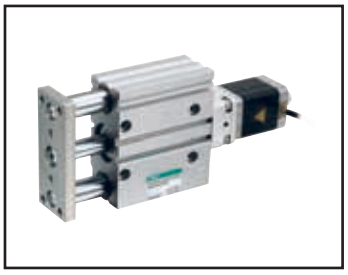
Guided

Electric actuator
Motor specifications

CONTENTS

DSTS Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)	
			Horizontal	Vertical	25	50
DSTS-20	□35	6	4.4	6.4	90	
		9	4.4	4.8	135	
DSTS-32	□42	6	10	14	90	
		12	4	4.8	180	
DSTS-50	□56	6	14.8	13.2	72	
		12	9.2	7.2	144	



Electric actuator Guided

DSTS-20

□35 Stepping motor

RoHS

How to order

DSTS - M - 20 S E - 06 025 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
09	9 mm

❻Stroke

025	25 mm
050	50 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Drive method		Sliding screw ø6	
Stroke mm		25, 50	
Screw lead	mm	6	9
Max. payload kg *1	Horizontal	4.4	4.4
	Vertical	6.4	4.8
Operation speed range * 2	mm/s	15 to 90	22 to 135
Max. acceleration/deceleration * 3	mm/s²	1312 (setting: 9)	2938 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead			
	6 mm		9 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	4.4	22	4.4
1	23	4.4	35	4.4
2	31	4.4	47	4.0
3	40	4.4	60	3.6
4	48	3.6	72	3.6
5	56	3.6	85	3.2
6	65	2.8	97	2.8
7	73	2.8	110	2.4
8	81	2	122	2.4
9	90	2	135	2

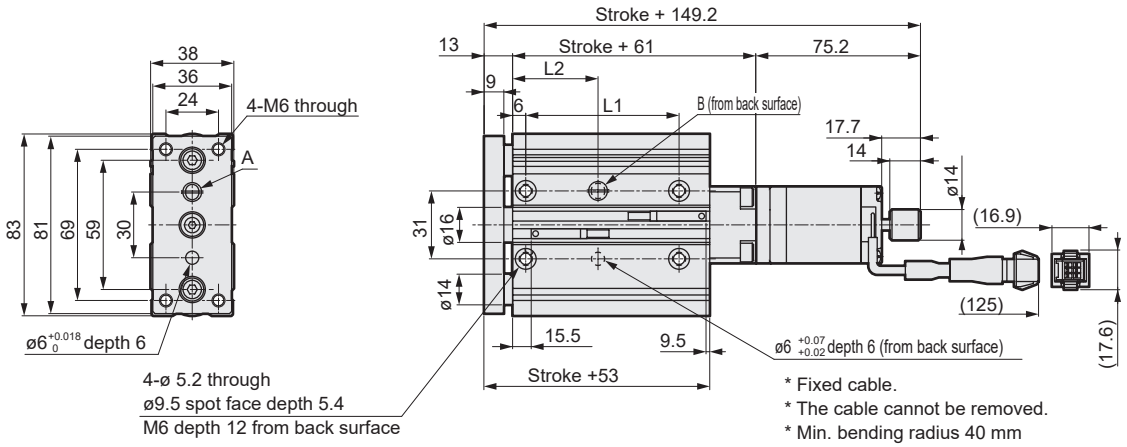
[When installed vertically]

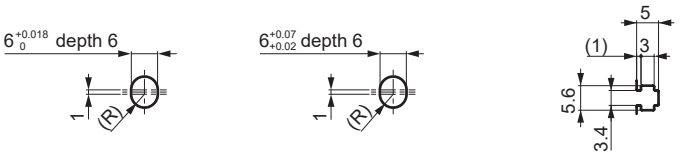
Switch Setting	Screw lead			
	6 mm		9 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	6.4	22	4.8
1	23	6.4	35	4.8
2	31	6.4	47	4.8
3	40	6.4	60	4.8
4	48	6.4	72	4.4
5	56	6.4	85	4.4
6	65	6.4	97	4
7	73	4.8	110	3.6
8	81	4.8	122	3.3
9	90	4.8	135	3

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

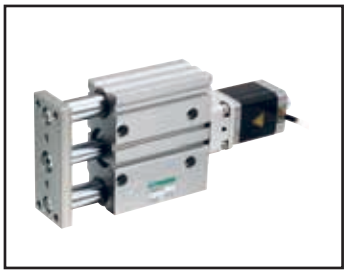
● DSTS-20





[Dimensions by stroke]

Stroke code	025	050
Stroke (mm)	25	50
L1	45	70
L2	26.5	39
Weight (kg)	1.1	1.3



Electric actuator Guided

DSTS-32

□42 Stepping motor

RoHS

How to order

DSTS - M - 32 S E - 06 025 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□42 Stepping motor	
Drive method		Sliding screw ø8	
Stroke mm		25, 50	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	10	4
	Vertical	14	4.8
Operation speed range * 2	mm/s	15 to 90	30 to 180
Max. acceleration/deceleration* 3	mm/s²	1312 (setting: 9)	5250 (Setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead				
	6 mm			12 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less		Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	10.0		30	4.0
1	23	9.2		46	3.2
2	31	6.0		63	2.8
3	40	6.0		80	2.4
4	48	4.0		96	2.4
5	56	3.6		113	2.4
6	65	3.6		130	2.4
7	73	3.2		146	2.0
8	81	2.4		163	1.6
9	90	2.0		180	1.2

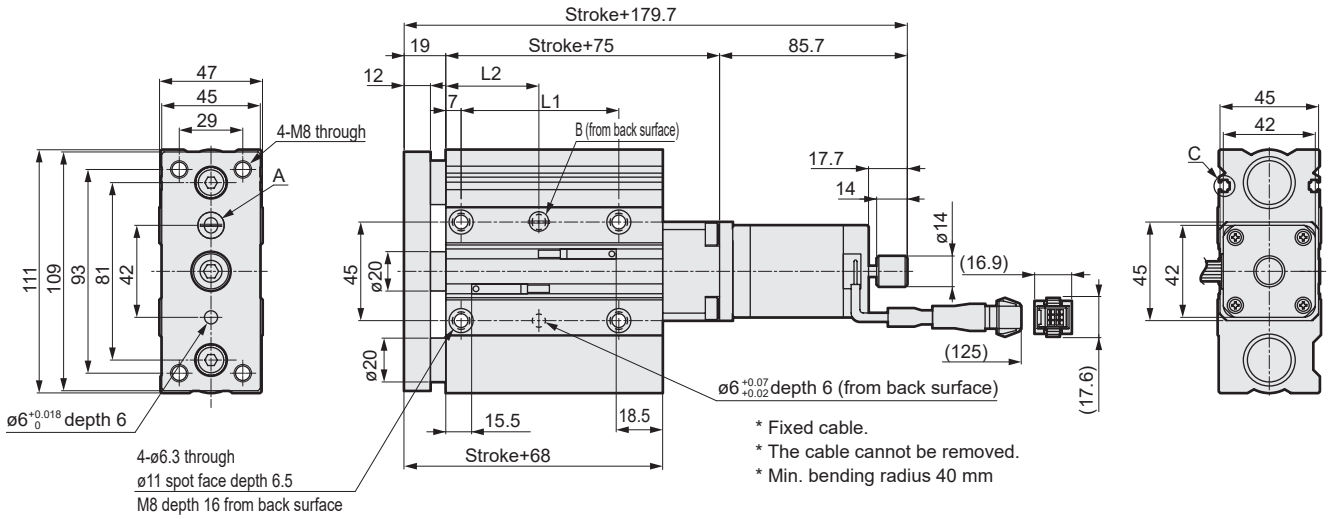
[When installed vertically]

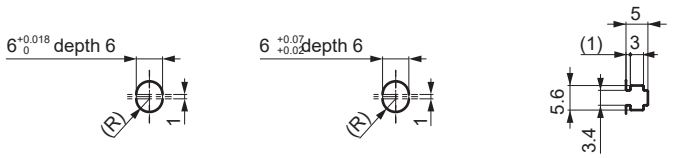
Switch Setting	Screw lead				
	6 mm			12 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less		Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	14		30	4.8
1	23	13.2		46	4
2	31	12.4		63	4
3	40	11.6		80	4
4	48	11.6		96	3.6
5	56	11.6		113	3.2
6	65	10.8		130	2.8
7	73	10.8		146	2.4
8	81	10		163	2.0
9	90	9.2		180	1.6

* The speed and acceleration/deceleration settings are guidelines. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate.
Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

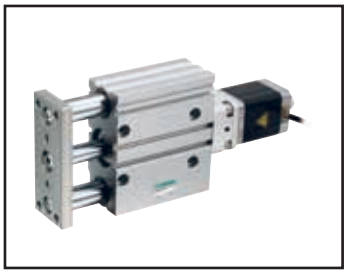
● DSTS-32





[Dimensions by stroke]

Stroke code	025	050
Stroke (mm)	25	50
L1	47	72
L2	30	42.5
Weight (kg)	2.2	2.6



Electric actuator Guided

DSTS-50

□56 Stepping motor

RoHS

How to order

DSTS - M - 50 S E - 06 025 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Drive method		Sliding screw ø12	
Stroke mm		25, 50	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	9.2
	Vertical	13.2	7.2
Operation speed range * 2	mm/s	15 to 72	30 to 144
Max. acceleration/deceleration * 3	mm/s²	827 (Setting: 9)	3306 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead			
	6 mm		12 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	14.8	30	9.2
1	21	11.6	42	9.2
2	27	10.0	55	9.2
3	34	8.4	68	9.2
4	40	8.4	80	8.8
5	46	8.4	93	8.8
6	53	8.4	106	8.4
7	59	6.8	118	7.6
8	65	6.8	131	6.0
9	72	6.8	144	4.4

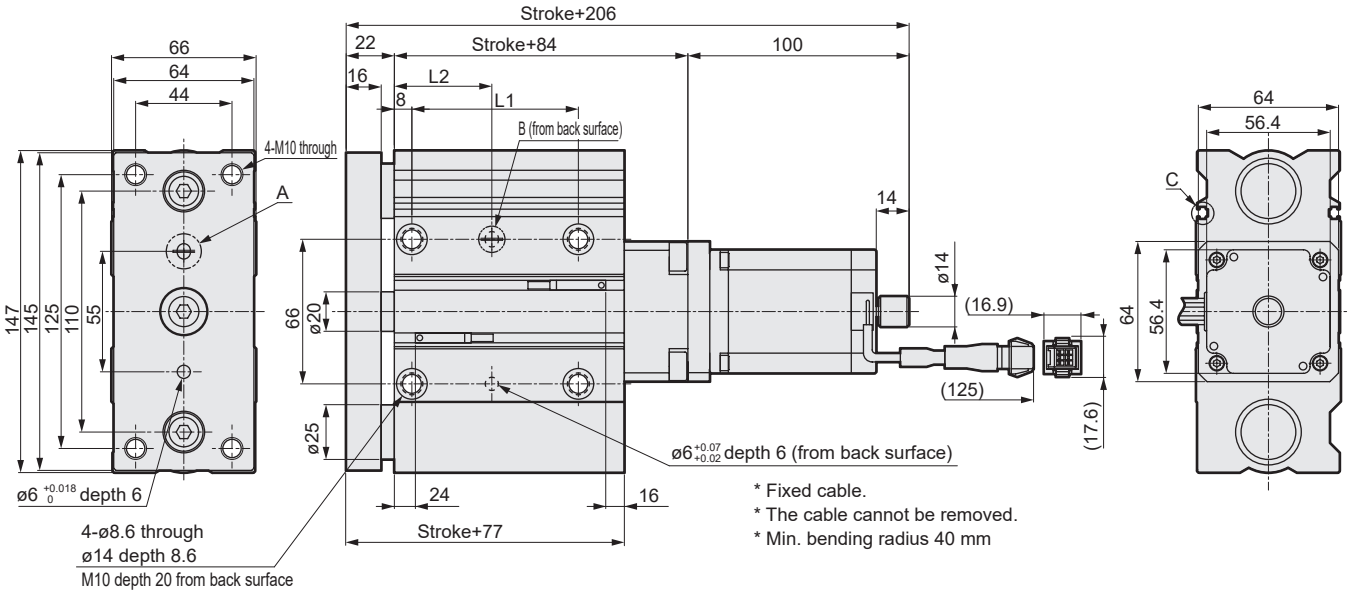
[When installed vertically]

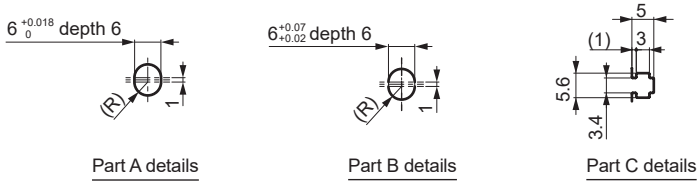
Switch Setting	Screw lead			
	6 mm		12 mm	
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less
0	15	13.2	30	7.2
1	21	13.2	42	7.2
2	27	13.2	55	7.2
3	34	13.2	68	7.2
4	40	12.8	80	7.2
5	46	12.4	93	6.8
6	53	12	106	6.4
7	59	9.6	118	6
8	65	7.6	131	4.4
9	72	6	144	2.4

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

● DSTS-50





[Dimensions by stroke]

Stroke code	025	050
Stroke (mm)	25	50
L1	51	76
L2	32	44.5
Weight (kg)	4.2	4.8

Model selection

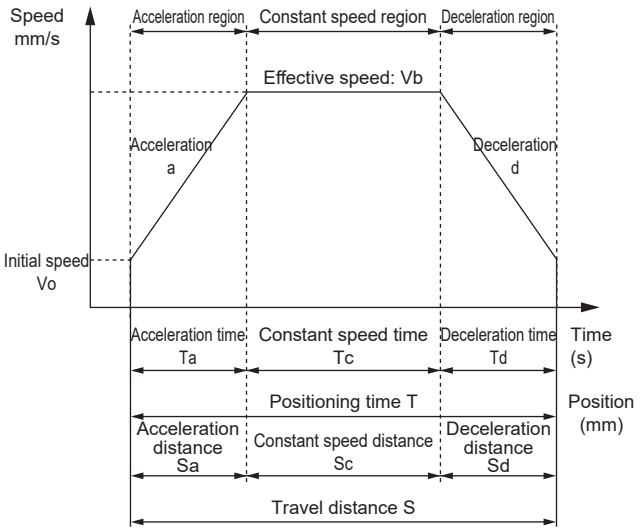
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead and transport speed. Refer to the Series Variation (page 39), the specification table for each model and the Table of Load Capacity by Speed Setting to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

Positioning time for general transport operation



	Description	Code	Unit	Formula
Set value	Initial speed	V0	mm/s	According to the table below (= value of switch setting 0)
	Speed setting	V	mm/s	Refer to the table below
	Acceleration	a	mm/s^2	According to the table below (fixed value)
	Deceleration			
	Travel distance	S	mm	*
Calculated value	Achieved speed	Vmax	mm/s	$=(S\times a+V0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=(Vb-V0) / a
	Deceleration time			
	Constant speed time	Tc	s	=Sc/Vb
	Acceleration distance	Sa	mm	$=V0\times Ta+(a\times Ta^2) / 2$
	Deceleration distance			
	Constant speed distance	Sc	mm	=S-2×Sa
	Positioning time	T	s	=2×Ta+Tc

* Depending on the speed setting and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the execution speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration/deceleration depends on the speed setting.
* Speed is determined by the settings of rotary switches 1 and 2.
* The stabilization time differs depending on the working conditions, but it may take approximately 0.2s.

[Speed setting] (mm/s)

Switch Setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	22	15	30	15	30
1	23	35	23	46	21	42
2	31	47	31	63	27	55
3	40	60	40	80	34	68
4	48	72	48	96	40	80
5	56	85	56	113	46	93
6	65	97	65	130	53	106
7	73	110	73	146	59	118
8	81	122	81	163	65	131
9	90	135	90	180	72	144

[Acceleration, deceleration] (mm/s^2)

Switch Setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	0	0	0	0	0	0
1	53	119	53	212	38	153
2	129	290	129	518	90	360
3	229	513	229	916	155	620
4	351	787	351	1407	234	934
5	497	1114	497	1990	325	1301
6	666	1492	666	2666	431	1722
7	858	1922	858	3435	549	2196
8	1074	2404	1074	4296	681	2724
9	1312	2938	1312	5250	827	3306

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

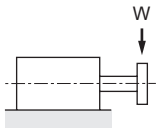
Static allowable load and moment

Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
DSTS-M-20	25	48	32.6	0.71	32.6
	50	35		0.52	
DSTS-M-32	25	141	107.4	2.86	107.4
	50	109		2.21	
DSTS-M-50	25	213	201.7	5.86	201.7
	50	170		4.68	

When operating the unit under a load, calculate the allowable load using the following formula.
Catalog allowable lateral load × 0.9

● Lateral load W (N)

*When installed vertically

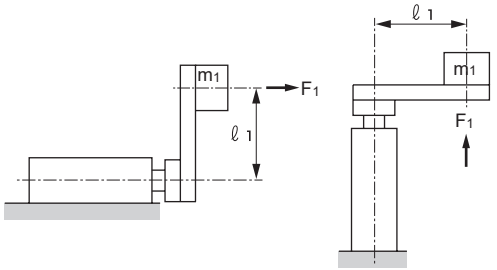


$$\frac{m_1 \times \ell_1 \times 10}{L} \leq W$$

Size	L
20	0.016+st
32	0.022+st
50	0.025+st

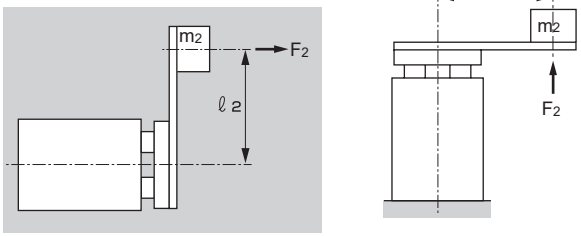
● Bending moment MP (N·m)

$$MP = F_1 \times \ell_1 = 10 \times m_1 \times G \times \ell_1$$



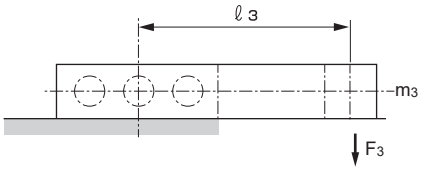
● Radial moment MR (N·m)

$$MR = F_2 \times \ell_2 = 10 \times m_2 \times G \times \ell_2$$



● Torsion moment MY (N·m)

$$MY = F_3 \times \ell_3 = 10 \times m_3 \times \ell_3$$

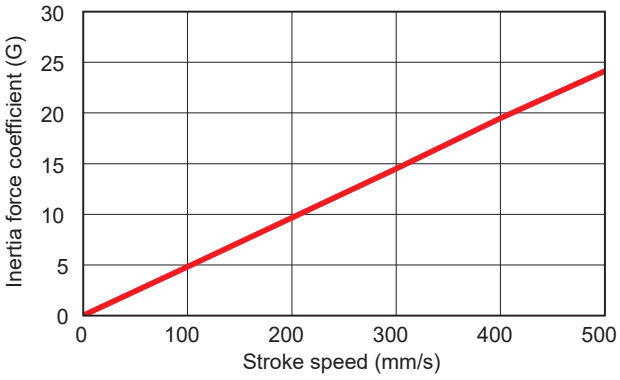


m1, **m2**, **m3**: Load (kg)

ℓ1, **ℓ2**, **ℓ3**: Eccentric distance (m)

G: Inertia force coefficient

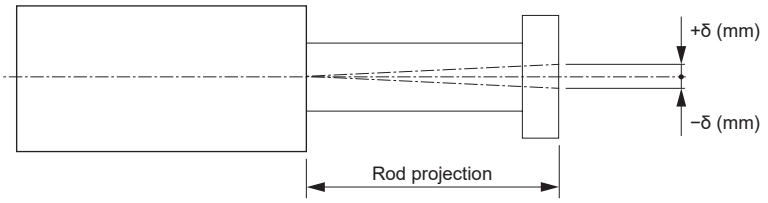
Fig. 1 Trend of inertia force coefficient for guided type

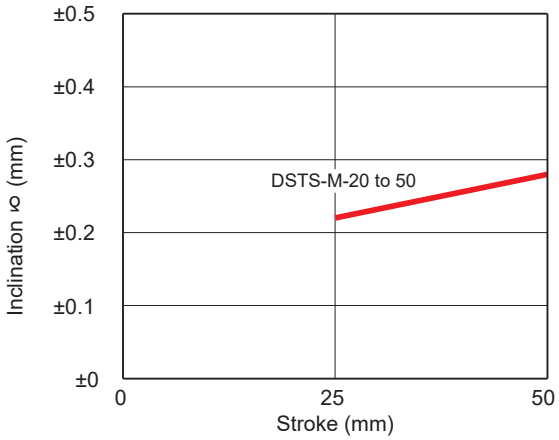


Model selection

Deflection

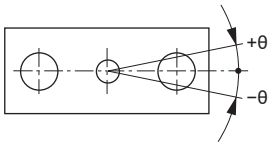
For the inclination that is produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)





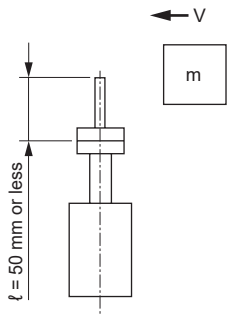
Non-rotating accuracy

(reference value)



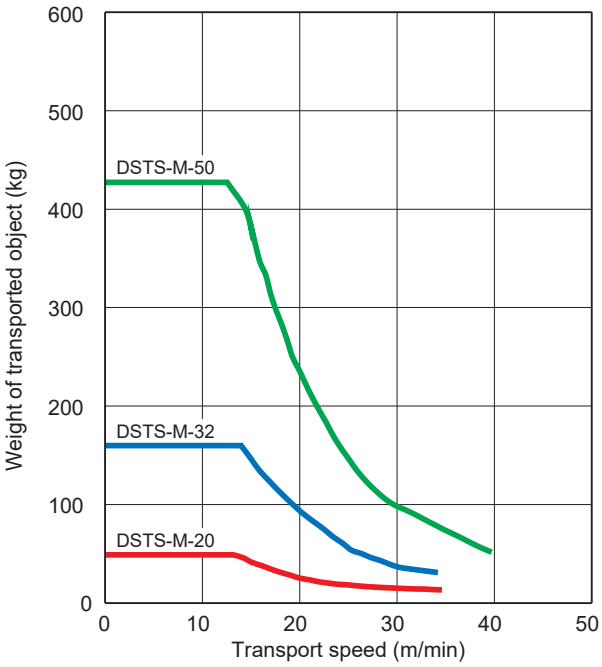
Size	Non-rotating accuracy θ (degrees)
DSTS-M-20	±0.10
DSTS-M-32	±0.08
DSTS-M-50	±0.07

Specified range when using the product as a stopper



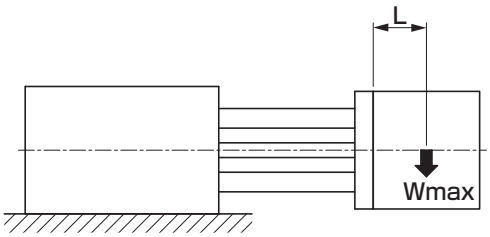
*1 Make sure that the total length of the stopper section is ℓ=50 mm or less.
*2 Make sure that the screw insertion depth of the bolt is 2d and over when fixing the actuator and consider countermeasures for preventing looseness (adhesive, spring washer, etc.).
*3 Refer to page 22 for the calculation of the required operational thrust.
*4 Calculate the actuator thrust with the following formula.
Thrust = vertical load capacity ×10 (N)

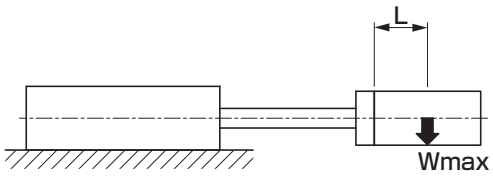
Impact load

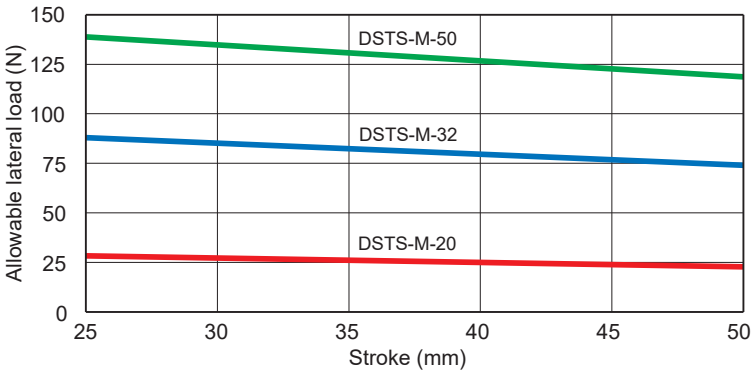


Allowable lateral load　Metal bush bearing

Wmax : Lateral load (N)
L　　: Load center of gravity position (mm)







*1 When operating the unit under a load, calculate the allowable lateral load using the following formula. Catalog allowable lateral load value × 0.9
*2 When designing, be sure to consider the safety factor according to the operating conditions.

MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DSTL

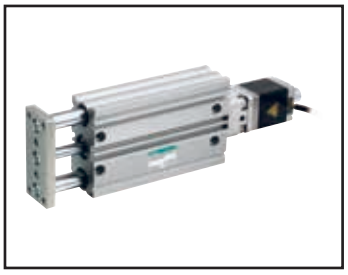
Guided

Electric actuator
Motor specifications

CONTENTS

DSTL System Table

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)			
			Horizontal	Vertical	50	100	150	200
DSTL-20	□35	6	4.4	6.4	90			
		9	4.4	4.8	135			
DSTL-32	□42	6	10	14	90			
		12	4	4.8	180			
DSTL-50	□56	6	14.8	13.2	72			
		12	9.2	7.2	144			



Electric actuator Guided

DSTL-20

□35 Stepping motor

RoHS

How to order

DSTL - M - 20 S E - 06 050 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
09	9 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Drive method		Sliding screw ø6	
Stroke mm		50 to 200	
Screw lead	mm	6	9
Max. payload kg *1	Horizontal	4.4	4.4
	Vertical	6.4	4.8
Operation speed range *2	mm/s	15 to 90	22 to 135
Max. acceleration/deceleration *3	mm/s²	1312 (setting: 9)	2938 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	200 or less		50 or less	200 or less
0	15	4.4	4.4	22	4.4	3.9
1	23	4.4	4.4	35	4.4	3.9
2	31	4.4	4.4	47	4.0	3.5
3	40	4.4	4.4	60	3.6	3.1
4	48	3.6	3.1	72	3.6	3.1
5	56	3.6	3.1	85	3.2	2.7
6	65	2.8	2.3	97	2.8	2.3
7	73	2.8	2.3	110	2.4	1.9
8	81	2	1.5	122	2.4	1.9
9	90	2	1.5	135	2	1.5

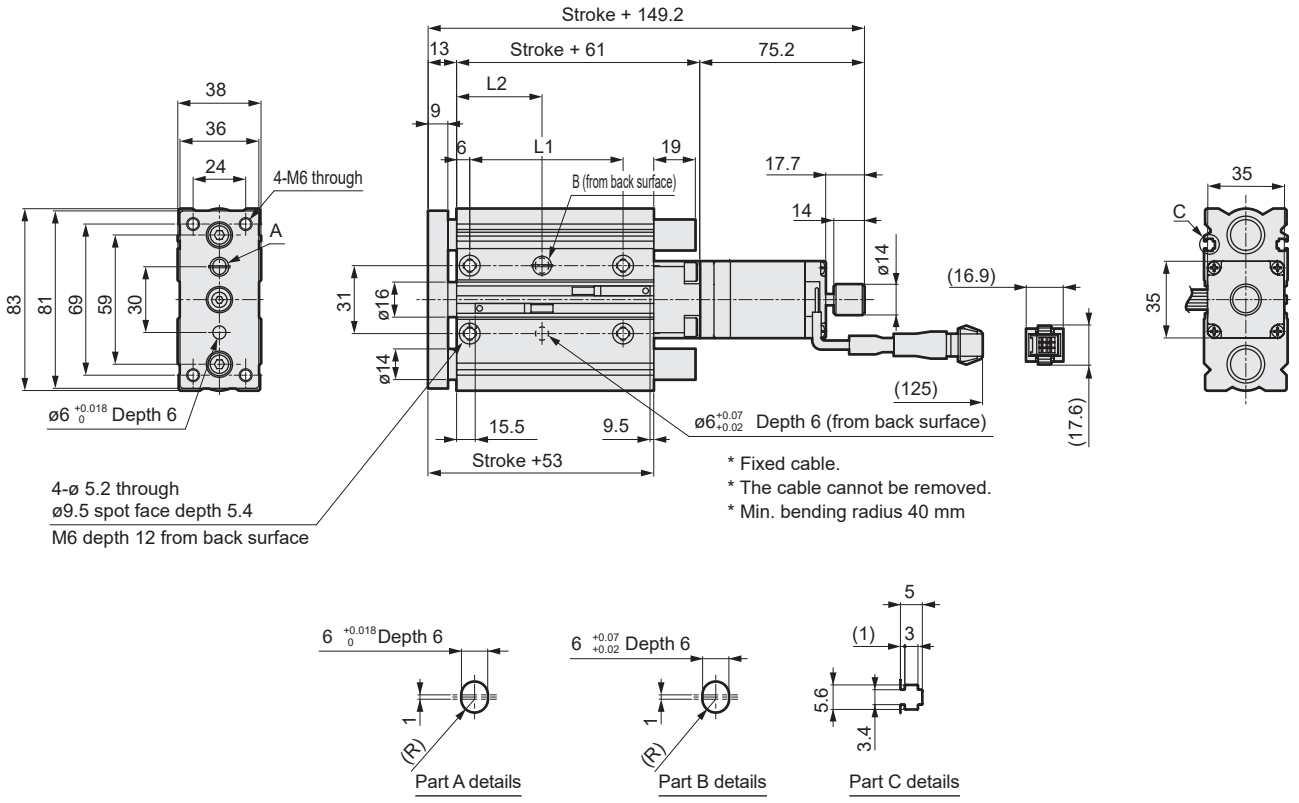
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm)		Speed (mm/s)	Payload (kg) Stroke (mm)	
		50 or less	200 or less		50 or less	200 or less
0	15	6.4	6.4	22	4.8	4.3
1	23	6.4	6.4	35	4.8	4.3
2	31	6.4	6.4	47	4.8	4.3
3	40	6.4	6.4	60	4.8	4.3
4	48	6.4	6.4	72	4.4	3.9
5	56	6.4	6.4	85	4.4	3.9
6	65	6.4	6.4	97	4	3.5
7	73	4.8	4.3	110	3.6	3.1
8	81	4.8	4.3	122	3.3	2.8
9	90	4.8	4.3	135	3	2.5

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

● DSTL-20



[Dimensions by stroke]

Stroke code	050	100	150	200
Stroke (mm)	50	100	150	200
L1	70	120	170	220
L2	39	64	89	114
Weight (kg)	1.4	1.9	2.3	2.8

Electric actuator Guided

DSTL-32

□42 Stepping motor

RoHS

How to order

DSTL - M - 32 S E - 06 050 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□42 Stepping motor	
Drive method		Sliding screw ø8	
Stroke mm		50 to 200	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	10	4
	Vertical	14	4.8
Operation speed range *2	mm/s	15 to 90	30 to 180
Max. acceleration/deceleration *3	mm/s²	1312 (setting: 9)	5250 (Setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead							
	6 mm				12 mm			
	Speed (mm/s)	Payload (kg) Stroke (mm)			Speed (mm/s)	Payload (kg) Stroke (mm)		
		50 or less	100 or less	200 or less		50 or less	100 or less	200 or less
0	15	10.0	9.5	9.0	30	4.0	3.5	3.0
1	23	9.2	8.7	8.2	46	3.2	1.9	1.4
2	31	6.0	5.5	5.0	63	2.8	2.3	1.8
3	40	6.0	5.5	5.0	80	2.4	2.7	2.2
4	48	4.0	3.5	3.0	96	2.4	1.9	1.4
5	56	3.6	3.1	2.6	113	2.4	1.9	1.4
6	65	3.6	3.1	2.6	130	2.4	1.9	1.4
7	73	3.2	2.7	2.2	146	2.0	1.5	1.0
8	81	2.4	1.9	1.4	163	1.6	1.1	0.6
9	90	2.0	1.5	1.0	180	1.2	0.7	0.2

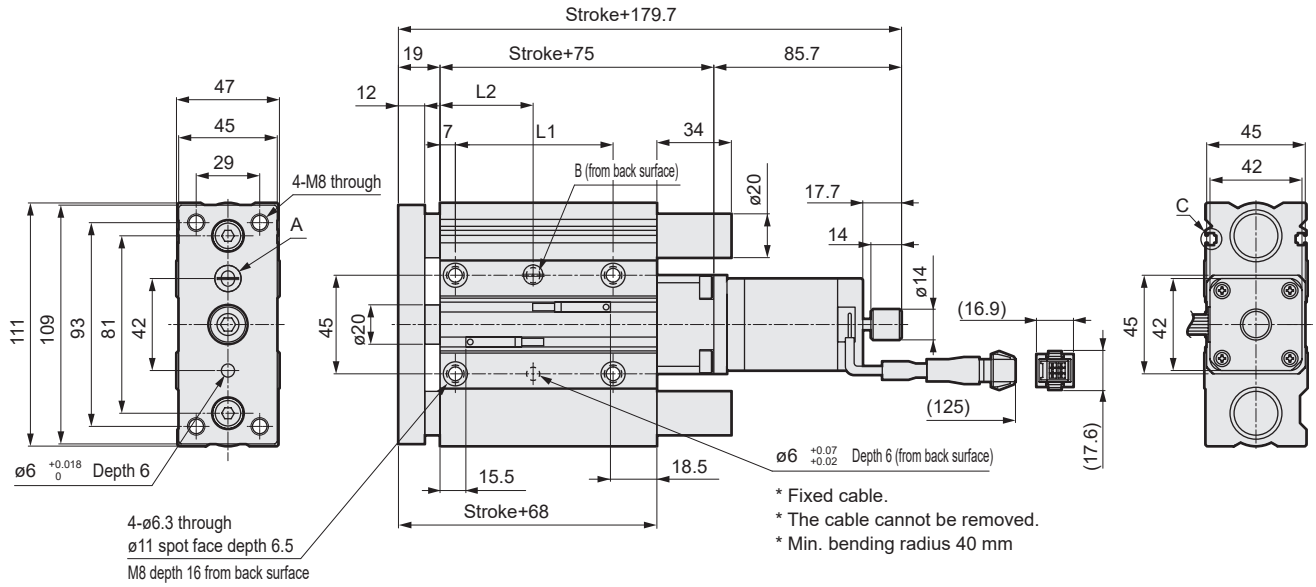
[When installed vertically]

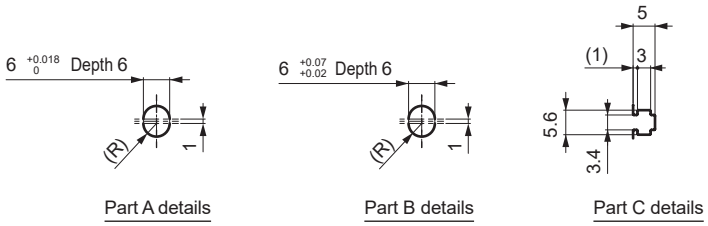
Switch Setting	Screw lead							
	6 mm				12 mm			
	Speed (mm/s)	Payload (kg) Stroke (mm)			Speed (mm/s)	Payload (kg) Stroke (mm)		
		50 or less	100 or less	200 or less		50 or less	100 or less	200 or less
0	15	14	13.5	13	30	4.8	4.3	3.8
1	23	13.2	12.7	12.2	46	4	3.5	3.0
2	31	12.4	11.9	11.4	63	4	3.5	3.0
3	40	11.6	11.1	10.6	80	4	3.5	3.0
4	48	11.6	11.1	10.6	96	3.6	3.1	2.6
5	56	11.6	11.1	10.6	113	3.2	2.7	2.2
6	65	10.8	10.3	9.8	130	2.8	2.3	1.8
7	73	10.8	10.3	9.8	146	2.4	1.9	1.4
8	81	10	9.5	9.0	163	2.0	1.5	1.0
9	90	9.2	8.7	8.2	180	1.6	1.1	0.6

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

● DSTL-32

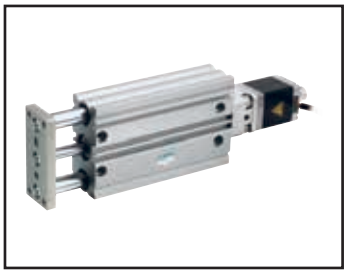




Part A details　Part B details　Part C details

[Dimensions by stroke]

Stroke code	050	100	150	200
Stroke (mm)	50	100	150	200
L1	72	122	172	222
L2	42.5	67.5	92.5	117.5
Weight (kg)	2.7	3.6	4.2	5.3



Electric actuator Guided

DSTL-50

□56 Stepping motor

RoHS

How to order

DSTL - M - 50 S E - 06 050 T3PH R1 A 1 - F

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller * 1

S	ESC4

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Switch

NNNN	None
T3PH	T-type straight
T3PV	T-shaped L-type

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

⓫Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Drive method		Sliding screw ø12	
Stroke mm		50 to 200	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	9.2
	Vertical	13.2	7.2
Operation speed range *2	mm/s	15 to 72	30 to 144
Max. acceleration/deceleration *3	mm/s²	827 (Setting: 9)	3306 (setting: 9)
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Load capacity varies depending on the speed. Refer to the speed and payload table for details. If the operation sounds are loud at low speed, increase the speed.
*2 The maximum speed may decrease depending on the conditions.
*3 Refer to the speed and payload table for the acceleration/deceleration speed at other settings.
*4 Pressing operation is not supported. Collision with the mechanical end, etc., may lead to damage of parts inside the actuator.

Speed and payload

[When installed horizontally]

Switch Setting	Screw lead							
	6 mm				12 mm			
	Speed (mm/s)	Payload (kg) Stroke (mm)			Speed (mm/s)	Payload (kg) Stroke (mm)		
		50 or less	100 or less	200 or less		50 or less	100 or less	200 or less
0	15	14.8	12.8	11.8	30	9.2	9.2	9.2
1	21	11.6	9.6	8.6	42	9.2	9.2	9.2
2	27	10.0	8	7.0	55	9.2	9.2	9.2
3	34	8.4	6.4	5.4	68	9.2	7.2	6.2
4	40	8.4	6.4	5.4	80	8.8	6.8	5.8
5	46	8.4	6.4	5.4	93	8.8	6.8	5.8
6	53	8.4	6.4	5.4	106	8.4	6.4	5.4
7	59	6.8	4.8	3.8	118	7.6	5.6	4.6
8	65	6.8	4.8	3.8	131	6.0	4.0	3.0
9	72	6.8	4.8	3.8	144	4.4	2.4	1.4

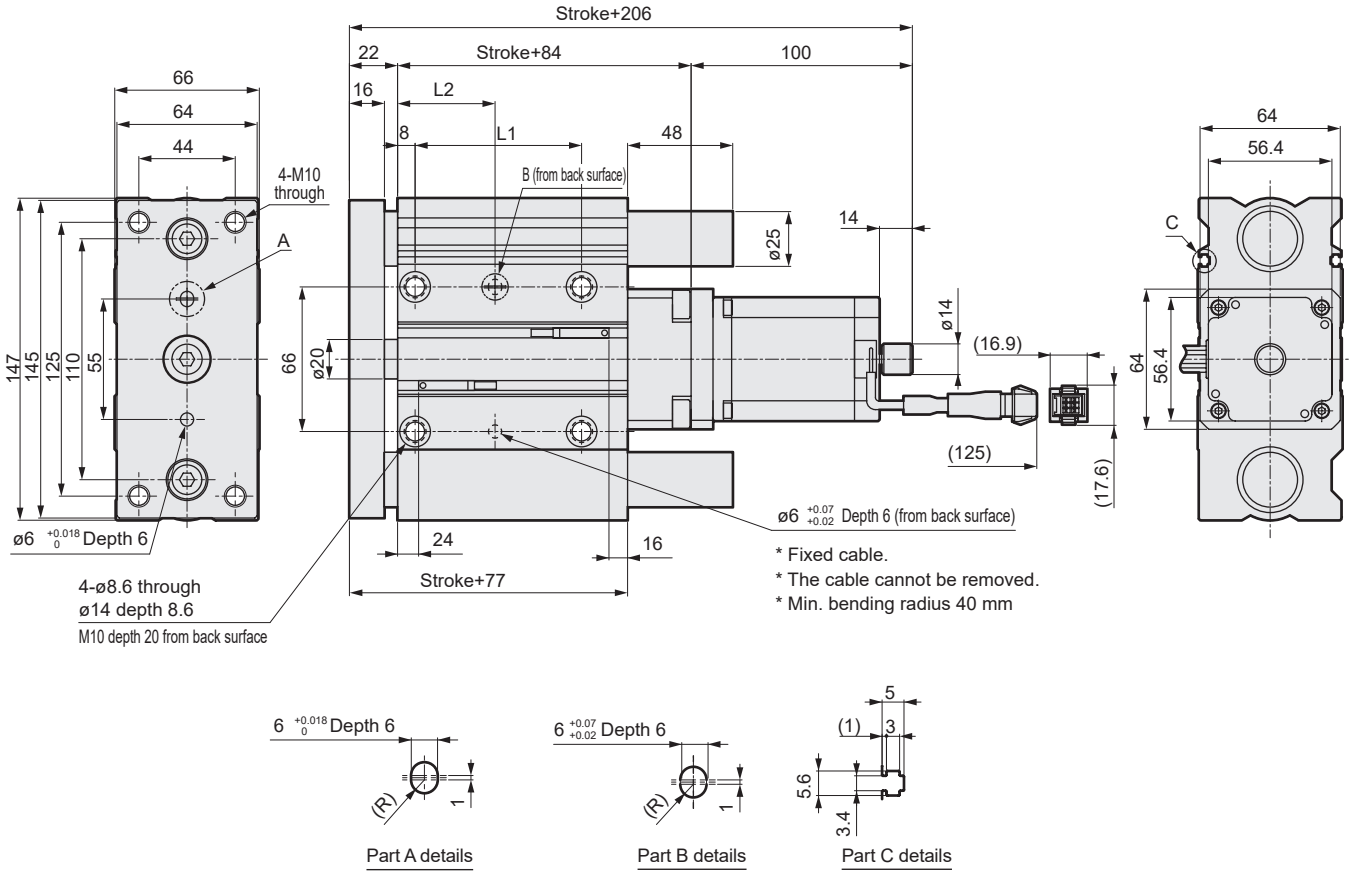
[When installed vertically]

Switch Setting	Screw lead							
	6 mm				12 mm			
	Speed (mm/s)	Payload (kg) Stroke (mm)			Speed (mm/s)	Payload (kg) Stroke (mm)		
		50 or less	100 or less	200 or less		50 or less	100 or less	200 or less
0	15	13.2	12.2	11.2	30	7.2	6.2	5.2
1	21	13.2	12.2	11.2	42	7.2	6.2	5.2
2	27	13.2	12.2	11.2	55	7.2	6.2	5.2
3	34	13.2	12.2	11.2	68	7.2	6.2	5.2
4	40	12.8	11.8	10.8	80	7.2	6.2	5.2
5	46	12.4	11.4	10.4	93	6.8	5.8	4.8
6	53	12	11	10	106	6.4	5.4	4.4
7	59	9.6	8.6	7.6	118	6	5	4
8	65	7.6	6.6	5.6	131	4.4	3.4	2.4
9	72	6	0	0	144	2.4	1.4	0.4

* The speed setting is for reference. The actual values may differ due to switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency and/or temperature.
* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

Dimensions

● DSTL-50



[Dimensions by stroke]

Stroke code	050	100	150	200
Stroke (mm)	50	100	150	200
L1	76	126	176	226
L2	44.5	69.5	94.5	119.5
Weight (kg)	5.2	6.5	7.7	9.1

Model selection

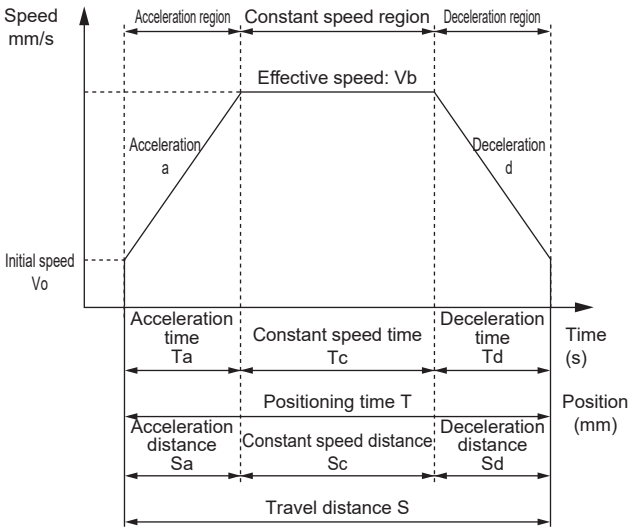
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead and transport speed. Refer to the Series Variation (page 53), the specification table for each model and the Table of Payload by Speed Setting to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

Positioning time for general transport operation



	Description	Code	Unit	Formula
Set value	Initial speed	V0	mm/s	According to the table below (= value of switch setting 0)
	Speed setting	V	mm/s	Refer to the table below
	Acceleration	a	mm/s^2	According to the table below (fixed value)
	Deceleration			
	Travel distance	S	mm	*
Calculated value	Achieved speed	Vmax	mm/s	$=(S\times a+V0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=(Vb-V0) / a
	Deceleration time			
	Constant speed time	Tc	s	=Sc/Vb
	Acceleration distance	Sa	mm	$=V0\times Ta+(a\times Ta^2) / 2$
	Deceleration distance			
	Constant speed distance	Sc	mm	=S-2×Sa
	Positioning time	T	s	=2×Ta+Tc

* Depending on the speed setting and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the execution speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration/deceleration depends on the speed setting.
* Speed is determined by the settings of rotary switches 1 and 2.
* Though the stabilization time differs depending on working conditions, it may take approximately 0.2s.

[Speed setting] (mm/s)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	22	15	30	15	30
1	23	35	23	46	21	42
2	31	47	31	63	27	55
3	40	60	40	80	34	68
4	48	72	48	96	40	80
5	56	85	56	113	46	93
6	65	97	65	130	53	106
7	73	110	73	146	59	118
8	81	122	81	163	65	131
9	90	135	90	180	72	144

[Acceleration, deceleration] (mm/s^2)

Switch setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	0	0	0	0	0	0
1	53	119	53	212	38	153
2	129	290	129	518	90	360
3	229	513	229	916	155	620
4	351	787	351	1407	234	934
5	497	1114	497	1990	325	1301
6	666	1492	666	2666	431	1722
7	858	1922	858	3435	549	2196
8	1074	2404	1074	4296	681	2724
9	1312	2938	1312	5250	827	3306

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

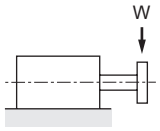
Static allowable load and moment

Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
DSTL-M-20	50	54	32.6	0.80	32.6
	100	38		0.56	
	150	30		0.44	
	200	24		0.35	
DSTL-M-32	50	161	107.4	3.26	107.4
	100	121		2.45	
	150	97		1.96	
	200	81		1.64	
DSTL-M-50	50	243	201.7	6.68	201.7
	100	189		5.20	
	150	155		4.26	
	200	131		3.60	

When operating the unit under a load, calculate the allowable load using the following formula.
Catalog allowable lateral load × 0.9

●Lateral load W (N)

*When installed vertically

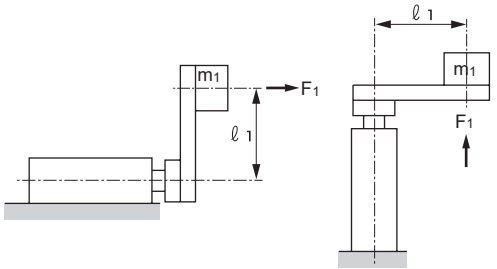


$$\frac{m_1 \times \ell_1 \times 10}{L} \leq W$$

Size	L
20	0.016+st
32	0.022+st
50	0.025+st

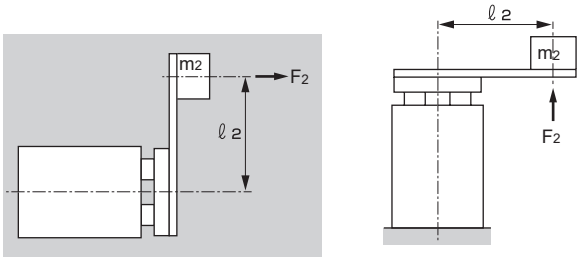
●Bending moment MP (N·m)

MP = F1 × ℓ1 = 10 × m1 × G × ℓ1



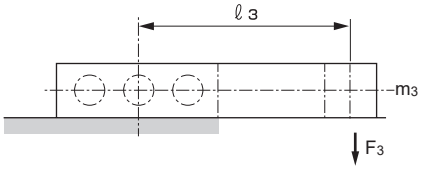
●Radial moment MR (N·m)

MR = F2 × ℓ2 = 10 × m2 × G × ℓ2



●Torsion moment MY (N·m)

MY = F3 × ℓ3 = 10 × m3 × ℓ3

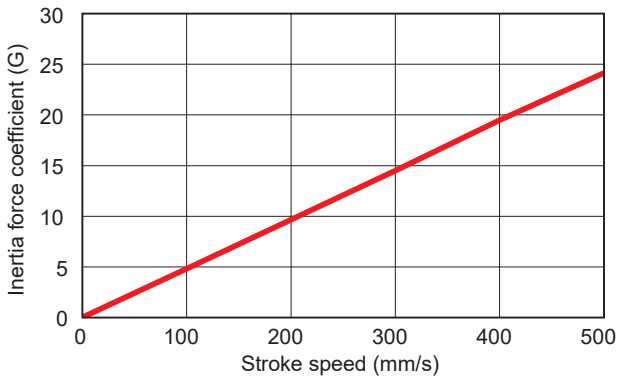


m1: **m2**: **m3**: } Load (kg)

ℓ1: **ℓ2**: **ℓ3**: } Eccentric distance (m)

G: Inertia force coefficient

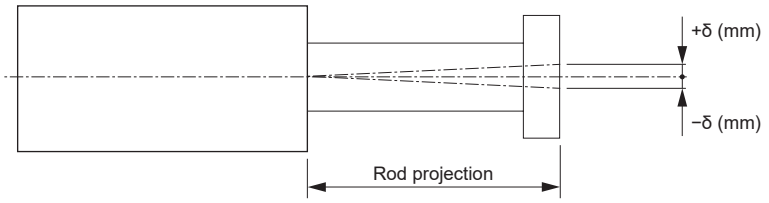
Fig. 1 Trend of inertia force coefficient for guided type



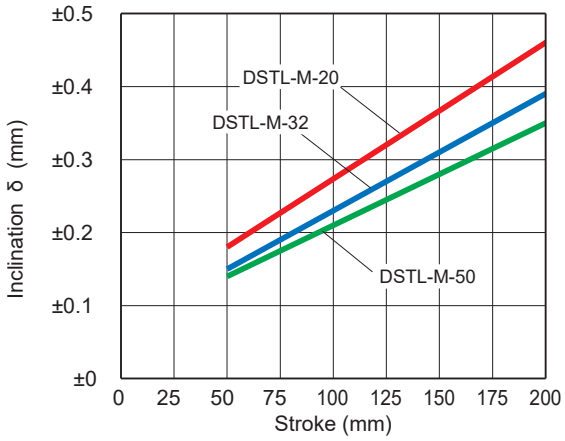
Model selection

Deflection

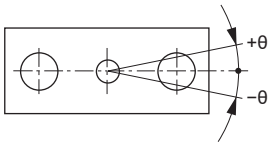
For the inclination that is produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)



● DSTL-M

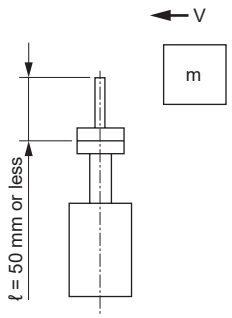


Non-rotating accuracy (reference value)



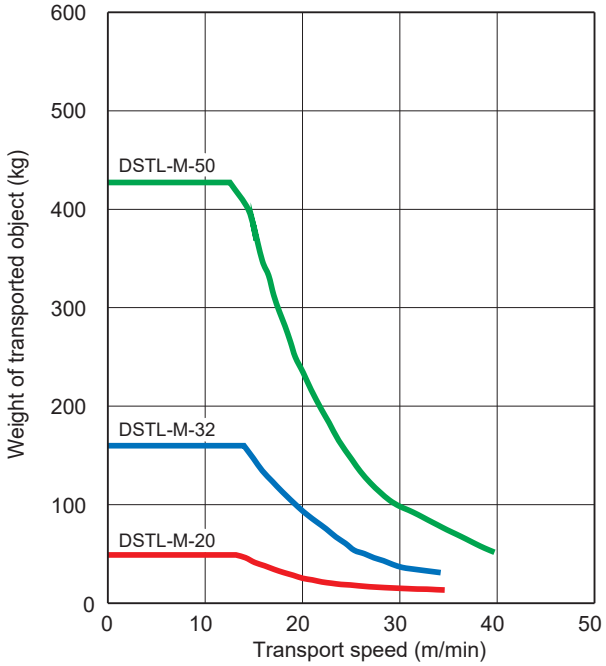
Size	Non-rotating accuracy θ (degrees)
DSTL-M-20	±0.10
DSTL-M-32	±0.08
DSTL-M-50	±0.07

Specified range when using the product as a stopper



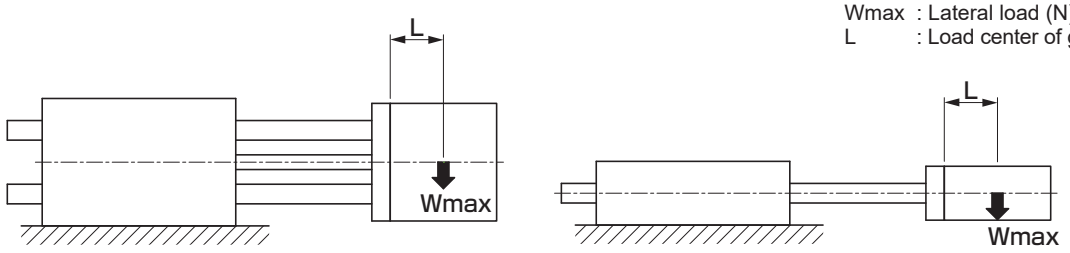
*1 When using the cylinder as a stopper, select a model with stroke 50 or less.
*2 Make sure that the total length of the stopper section is ℓ=50 mm or less.
*3 Make sure that the screw insertion depth of the bolt is 2d and over when fixing the actuator body and consider countermeasures for preventing looseness (adhesive, spring washer, etc.).
*4 Refer to page 22 for the calculation of the required operational thrust.
*5 Calculate the actuator thrust with the following formula.
Thrust = vertical load capacity ×10 (N)

Impact load

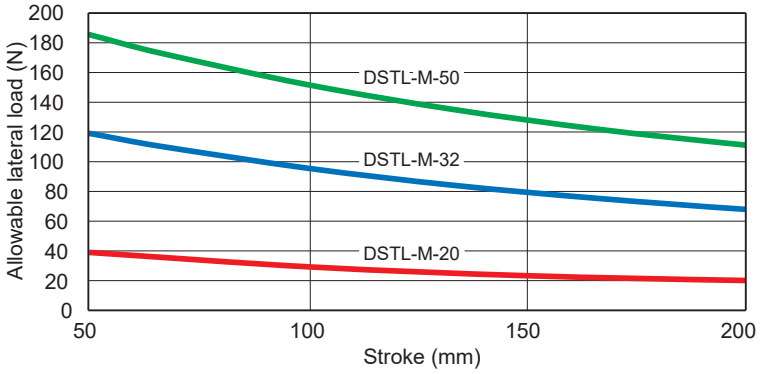


Allowable lateral load | Metal bush bearing

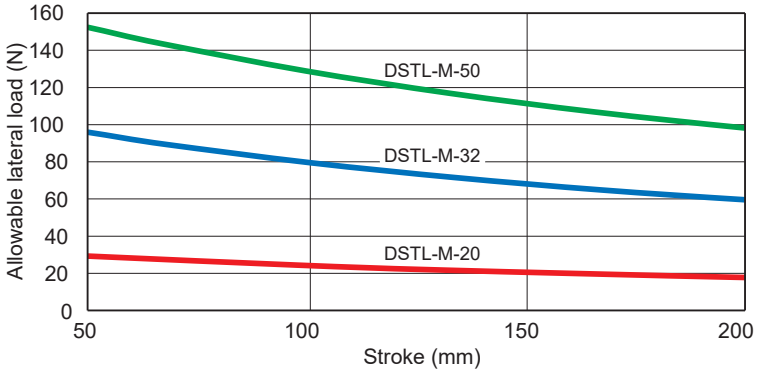
Wmax : Lateral load (N)
L : Load center of gravity position (mm)



● For L=50mm



●For L=100mm



*1 When operating the unit under a load, calculate the allowable lateral load using the following formula. Catalog allowable lateral load value × 0.9
*2 When designing, be sure to consider the safety factor according to the operating conditions.

MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

Electric Actuator D Series

Spring drive system

CONTENTS

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DMSDG

Compact guided

Electric actuator
Motor specifications

CONTENTS

DMSDG Series variation

Actuator model No.	Motor Size	Spring lead (mm)	Stroke and Max. speed (mm/s)			Max. Pressing force (N)
			10	20	30	
DMSDG-08	□20	3.3	50			10
DMSDG-16	□28	5.1	77			30

Electric actuator Compact guided

DMSDG-08

□20 Stepping motor

RoHS

How to order

DMSDG - 08 ❶ S ❷ H3 ❸ 10 ❹ F3PH ❺ - T ❻ R1 ❼ A ❽ 1 ❾

❶Size

08	8

❷Applicable controller * 1

S	ESC4

❸Spring lead

H3	3.3 mm

❹Stroke

10	10 mm
20	20 mm
30	30 mm

❺Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped type

❻Connector leadout direction * 2

T	Top
B	Bottom
R	Right surface
L	Left surface

❼Relay cable *3

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

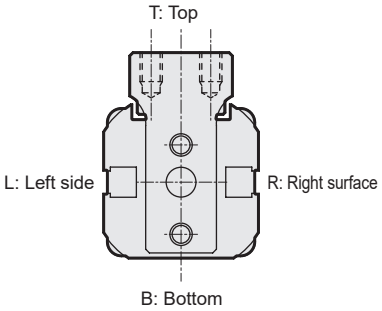
❽Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

[Fig. 1]



Connector leadout direction diagram

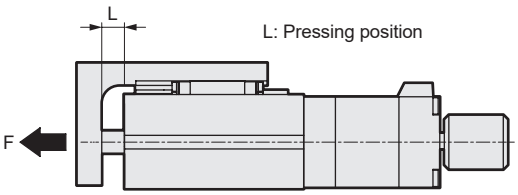
*1 For controller, refer to CC-1635A.
*2 Refer to Figure 1.
*3 Refer to page 104 for relay cable dimensions.

Specifications

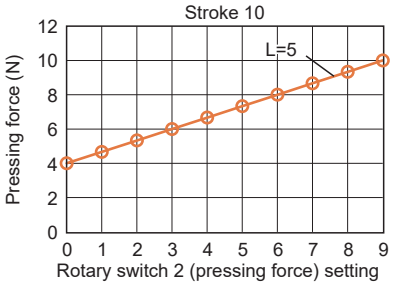
Motor		□20 Stepping motor		
Drive method		Coil spring		
Stroke mm		10	20	30
Pressing effective range (L)	mm	5	5 to 15	5 to 25
Spring lead		H3 (3.3 mm)		
Maximum pressing force *1 *2	N	10		
Static allowable moment	N·m	MP=0.16, MY=0.16, MR=0.24		
Max. load capacity g	Horizontal	270		
	Vertical	80		
Operation speed range	mm/s	8 to 50		
Max. acceleration/deceleration	mm/s²	982 (Setting 9)		
Pressing speed range *1	mm/s	8 to 50		
Insulation resistance		10MΩ, 500 VDC		
Withstand voltage		500 VAC for 1 minute		
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)		
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)		
Atmosphere		No corrosive gas, explosive gas, or dust		
Degree of protection		IP40		

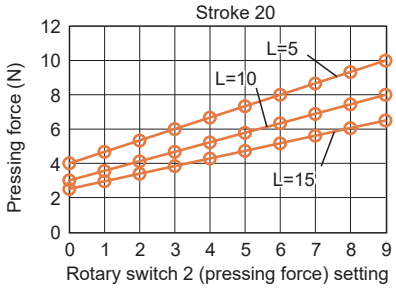
*1 Pressing operation is possible only with PUSH. If a pressing operation is performed at PULL, the actuator internal parts may be damaged.
*2 Pressing position L=5 mm
*3 When installed vertically, the pressing force, Positioning time and stop position will change compared to the horizontal direction. Contact CKD for details.

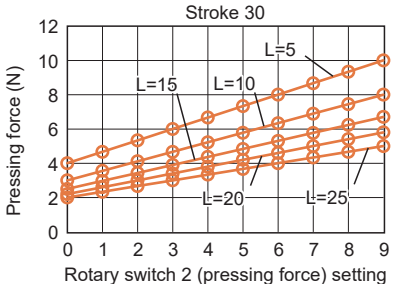
Pressing force and rotary switch setting



*1 Pressing force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 This product does not support self-lock. Contact CKD if self-lock is required.

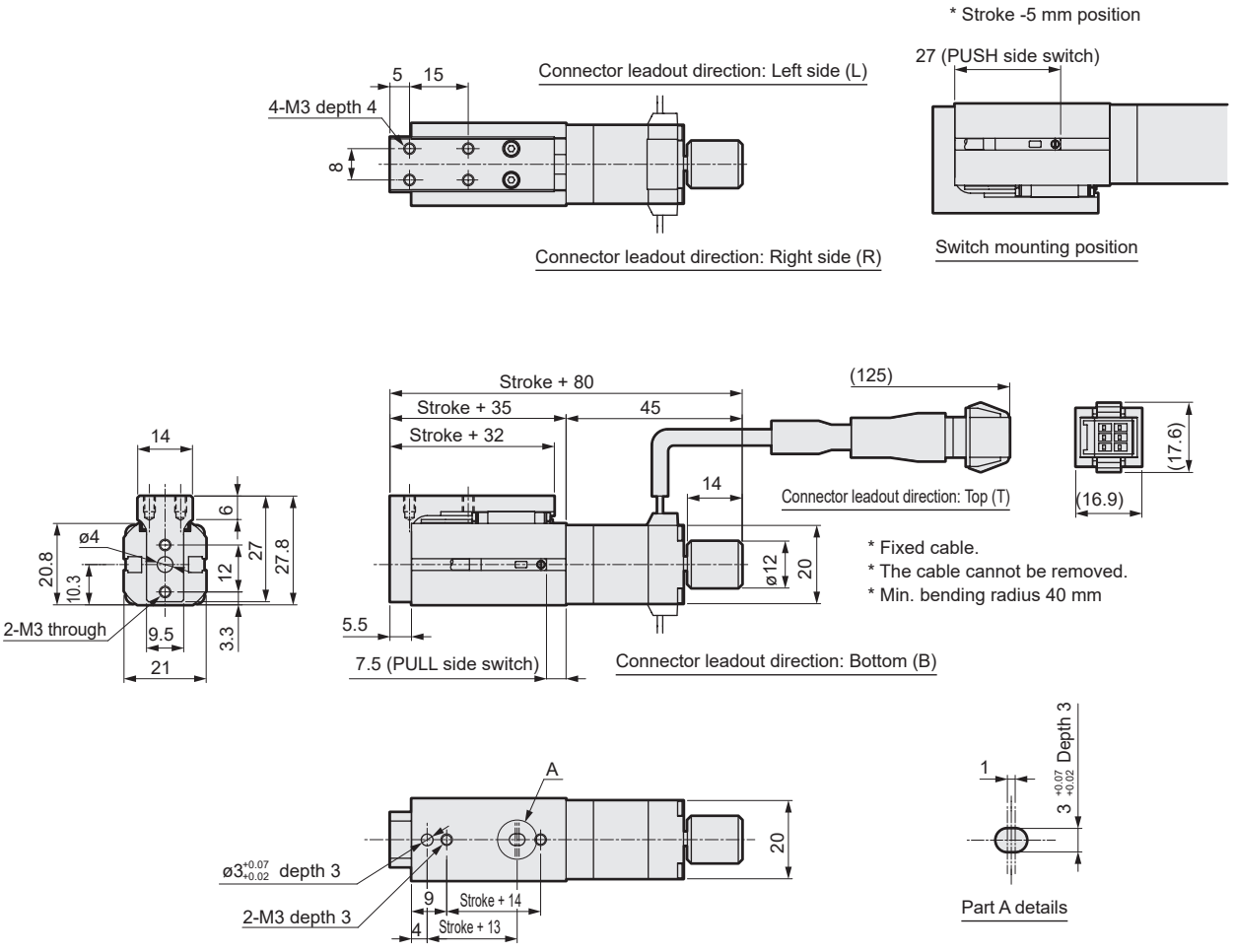




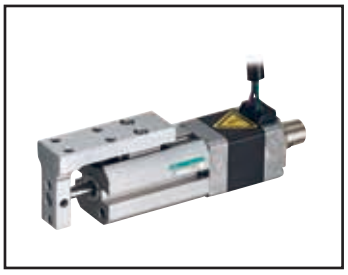


Dimensions

DMSDG-08



Stroke (mm)	10	20	30
Weight (g)	110	130	140



Electric actuator Compact guided

DMSDG-16

□28 Stepping motor

RoHS

How to order

DMSDG - 16 S H5 10 F3PH - T R1 A 1

❶Size

16	16

❷Applicable controller * 1

S	ESC4

❸Spring lead

H5	5.1 mm

❹Stroke

10	10 mm
20	20 mm
30	30 mm

❺Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped type

❻Connector leadout direction * 2

T	Top
B	Bottom
R	Right surface
L	Left surface

❼Relay cable *3

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❽Controller included

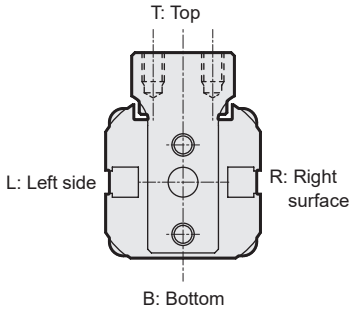
N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❾IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

*1 For controller, refer to CC-1635A.
*2 Refer to Figure 1.
*3 Refer to page 104 for relay cable dimensions.

[Fig. 1]



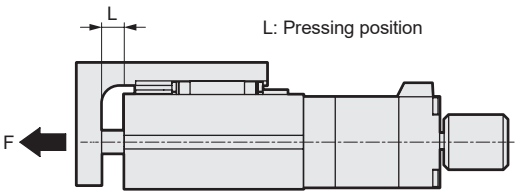
Connector leadout direction diagram

Specifications

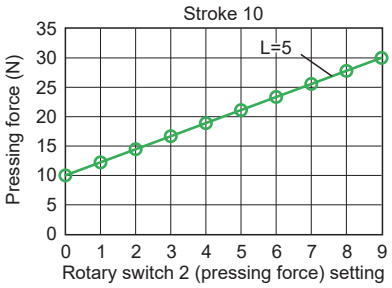
Motor		□28 Stepping motor		
Drive method		Coil spring		
Stroke mm		10	20	30
Pressing effective range (L)	mm	5	5 to 15	5 to 25
Spring lead		H5 (5.1 mm)		
Maximum pressing force	*1 *2 N	30		
Static allowable moment	N·m	MP=0.57, MY=0.57, MR=1.16		
Max. load capacity g	Horizontal	800		
	Vertical	800		
Operation speed range	mm/s	13 to 77		
Max. acceleration/deceleration	mm/s²	2259 (Setting 9)		
Pressing speed range	*1 mm/s	13 to 77		
Insulation resistance		10MΩ, 500 VDC		
Withstand voltage		500 VAC for 1 minute		
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)		
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)		
Atmosphere		No corrosive gas, explosive gas, or dust		
Degree of protection		IP40		

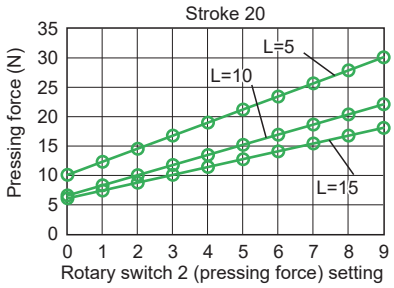
*1 Pressing operation is possible only with PUSH. If a pressing operation is performed at PULL, the actuator internal parts may be damaged.
*2 Pressing position L=5 mm
*3 When installed vertically, the pressing force, Positioning time and stop position will change compared to the horizontal direction. Contact CKD for details.

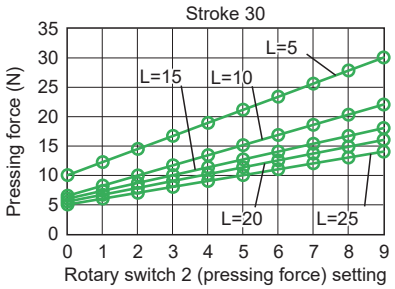
Pressing force and rotary switch setting



*1 Pressing force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 This product does not support self-lock. Contact CKD if self-lock is required.

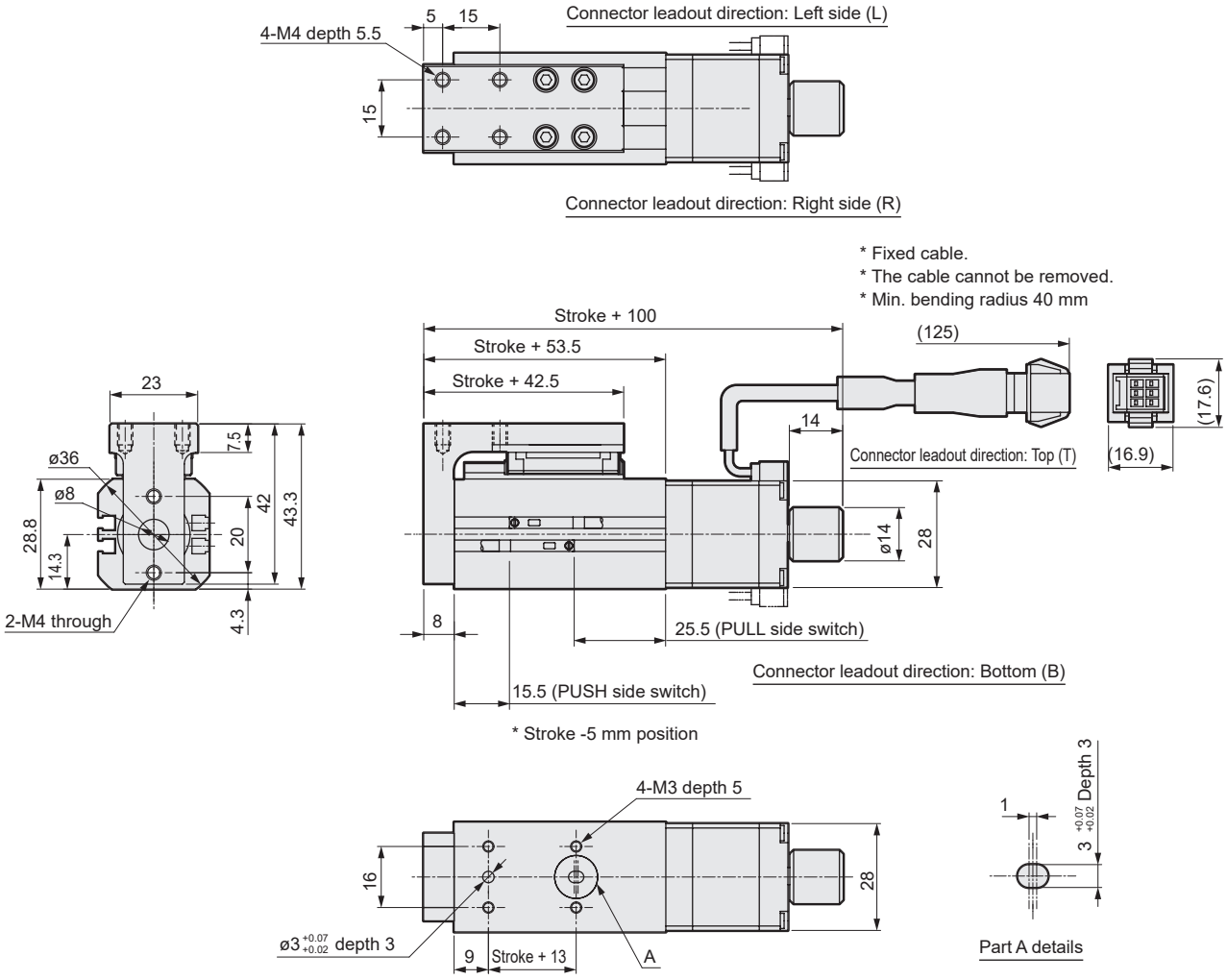






Dimensions

● DMSDG-16

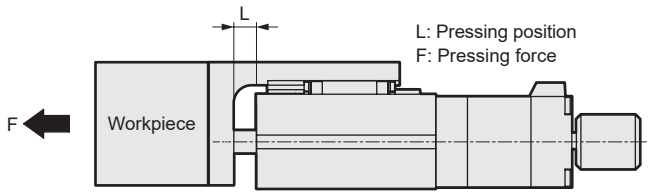


Stroke (mm)	10	20	30
Weight (g)	290	310	330

Model selection

STEP 1 Confirm conditions

①Check the pressing force and ②pressing position conditions.



STEP 2 Model Selection

①Select a model from the table below according to the pressing force and ②pressing position required.

Model selection list

Model	①Maximum pressing force F	②Pressing position L (pressing effective range)		
		5 mm	5 to 15 mm	5 to 25 mm
DMSDG-08SH3	10 N	Stroke: 10 mm	Stroke: 20 mm	Stroke: 30 mm
DMSDG-16SH5	30 N	Stroke: 10 mm	Stroke: 20 mm	Stroke: 30 mm

STEP 3 Confirmation of pressing force and rotary switch setting

Select the graph of the selected model and confirm the setting of the rotary switch from the ①pressing force and ②pressing position.

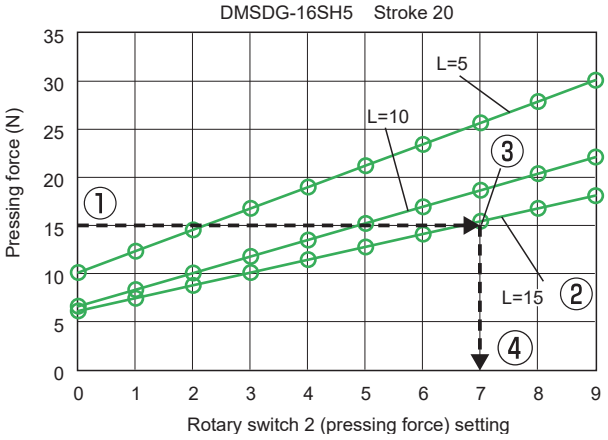
[Example of selection guide]

STEP 1
①Required pressing force 15 N
②Pressing position L 15 mm

STEP 2
For models that satisfy item in the model selection list,
DMSDG-16SH5 stroke 20 mm

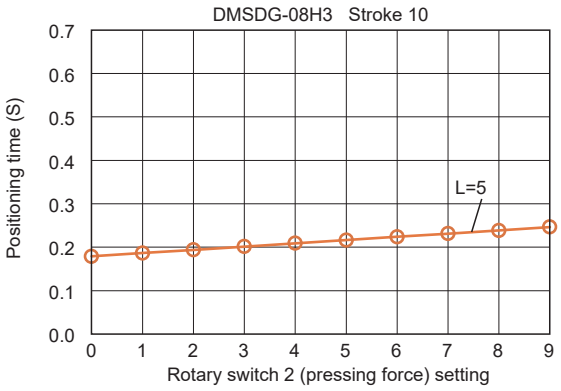
STEP 3
Check in the graph of the pressing force and rotary switch setting (pages 71 and 73) of the model selected in STEP 2, and confirm that the rotary switch setting is 7 or more and that the pressing force is satisfied.

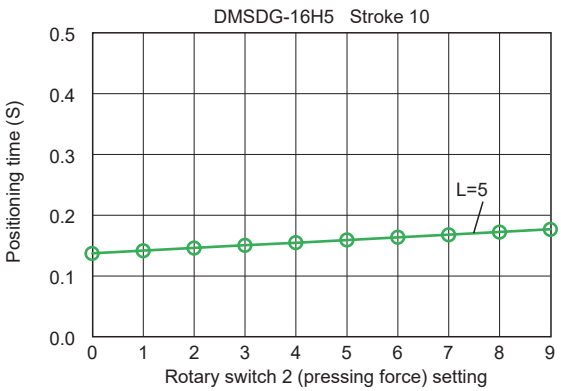
From the above, **DMSDG-16SH520*** can be selected.

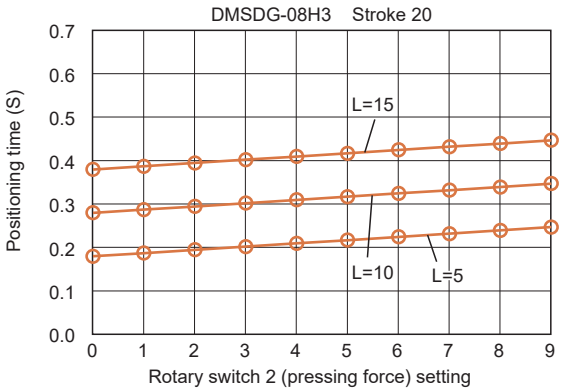


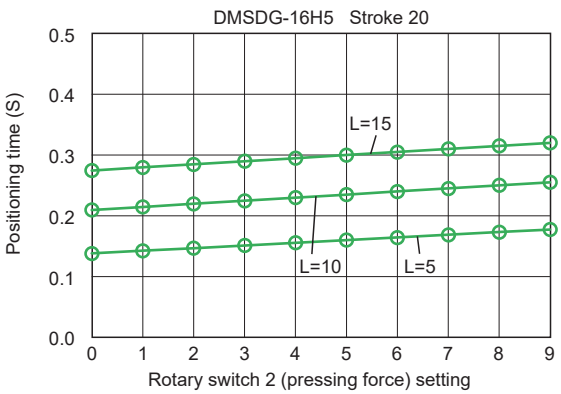
Confirming positioning time

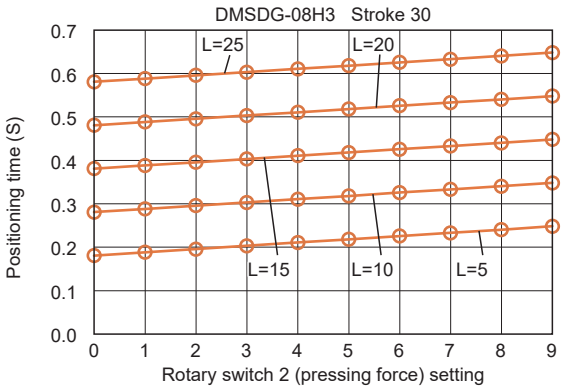
Check the graph to see if the Positioning time of the selected product matches the required tact.

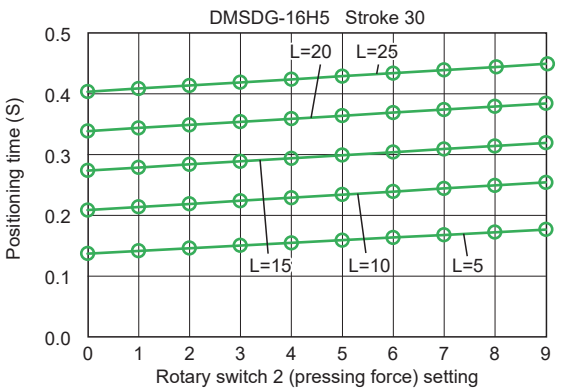


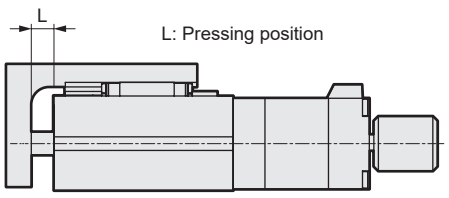












*1 Positioning time is the time from the start of motor rotation to the stop time. Value when

*2 Rotary switch 1 (speed) = 9. Position of start of movement is the value when L = 0. Refer to the instruction manual for other conditions.

STEP 4 Confirming static moment

Calculate the load and moment that are generated when the table is stopped.

●When there is only one load mounting direction, check that the calculated value is within the tolerance value (Table 1).

●If there are more than one load mounting directions (for combined moment), check that the resultant moment (MT) is as follows (the following formula is satisfied) according to the formula below.

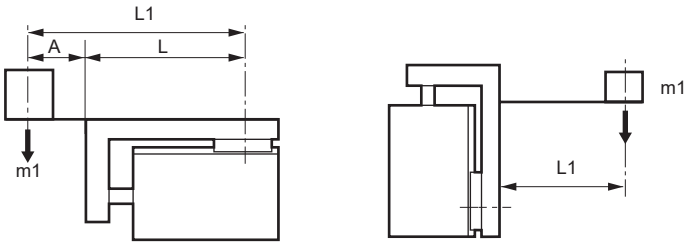
$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} + \frac{MY}{MY_{max}} \leq 1.0$$

Table 1 Allowable moment in operation (N·m)

Size	MP	MR	MY
08	0.16	0.24	0.16
16	0.57	1.16	0.57

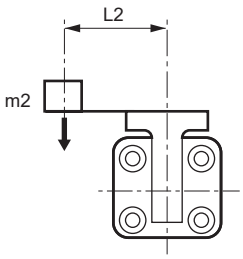
● Bending moment: MP

MP (N·m) =10 × m1 (kg) × L1 (m)



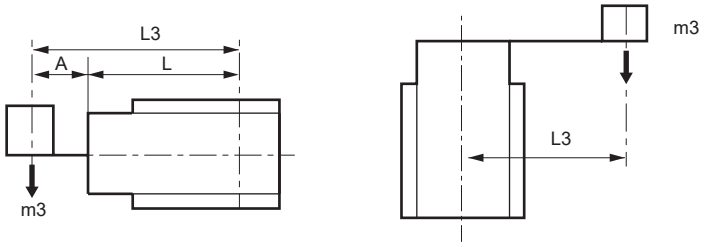
● Radial moment: MR

MR (N·m) =10 × m2 (kg) × L2 (m)



● Torsion moment: MY

MY (N·m) =10 × m3 (kg) × L3 (m)



L value

Size	Stroke (mm)		
	10	20	30
08	0.033	0.043	0.053
16	0.038	0.048	0.058

STEP 5 Confirming moment caused by inertia loads

Depending on the mounting direction, moment caused by inertia load may be applied. Calculate the moment caused by inertia load and confirm that it is less than or equal to the allowable value.

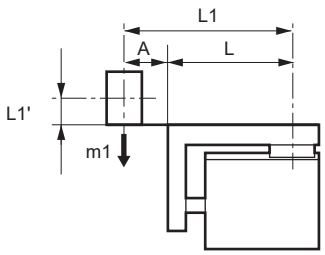
Table 2 Allowable moment when inertia load is applied (N·m)

Size	MP'	MR'	MY'
08	0.33	—	0.33
16	1.11	—	1.11

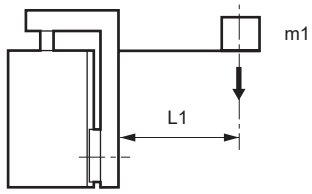
Inertia load does not work in the *MR.' direction.

● bending moment: MP'

MP'=10 × m1×(L1+G × L1')

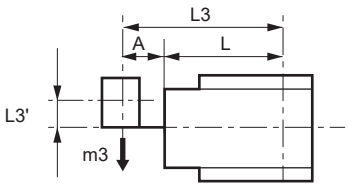


MP'=10 × m1 × L1 × (1+G)

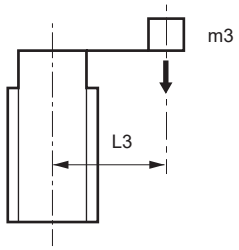


● Torsion moment: MY'

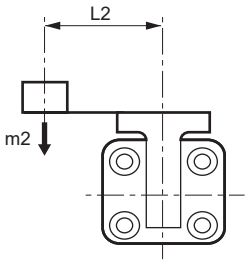
MY'=10 × m3 ×(L3+G × L3')



MY'=10 × m3 × L3 × (1+G)



MY'=10 × m2 × G × L2



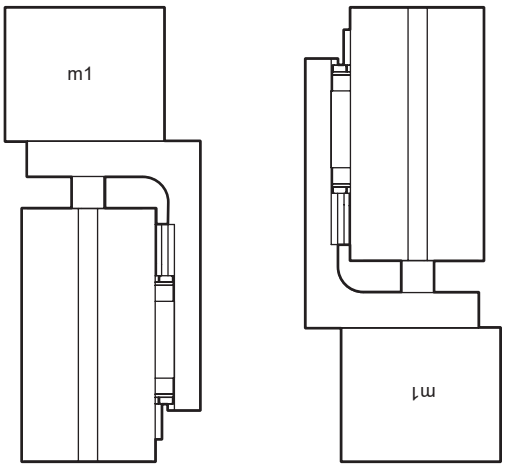
[Switch setting and acceleration]

Speed setting (Switch 1)	Size 08		Size 16	
	Speed (mm/s)	Acceleration (G)	Speed (mm/s)	Acceleration (G)
0	8	0.00	13	0.00
1	13	0.01	20	0.01
2	18	0.01	27	0.03
3	22	0.02	34	0.05
4	27	0.03	41	0.07
5	31	0.04	49	0.09
6	36	0.06	56	0.12
7	41	0.07	63	0.16
8	45	0.09	70	0.20
9	50	0.11	77	0.23

*When the gripping setting (switch 2) is 9

STEP 6 Confirming allowable applied load

Check that the applied load is within the following allowable load value when mounting in the vertical direction.

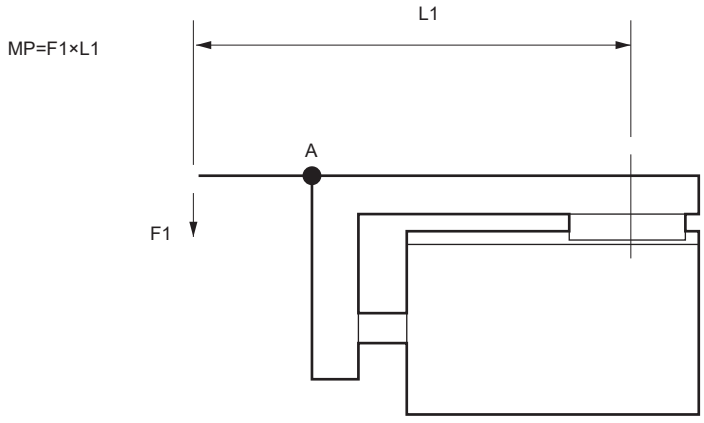


[N]

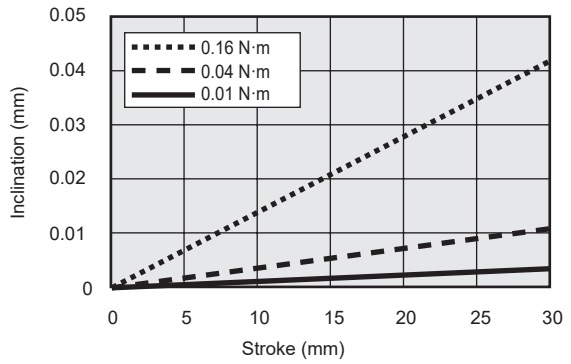
Size	Vertical upward	Vertical downward
08	10	8
16	20	10

Table inclination (reference value)

● Table deflection at point A due to bending moment MP



● DMSDG-08



● DMSDG-16

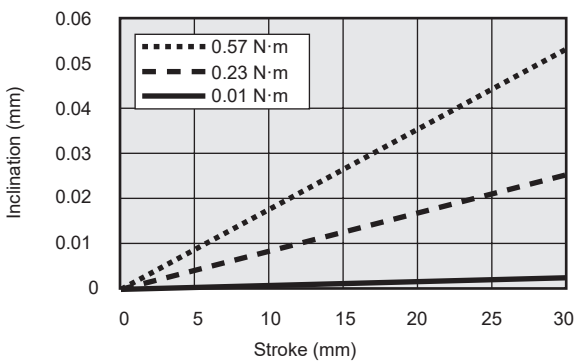
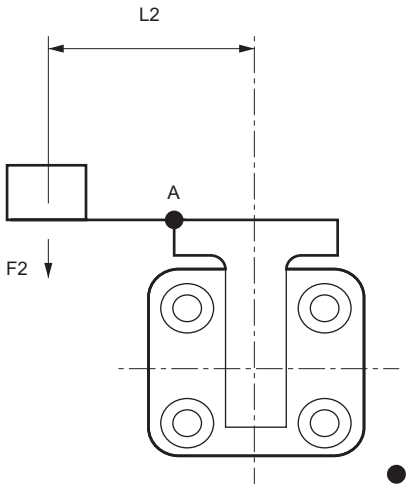


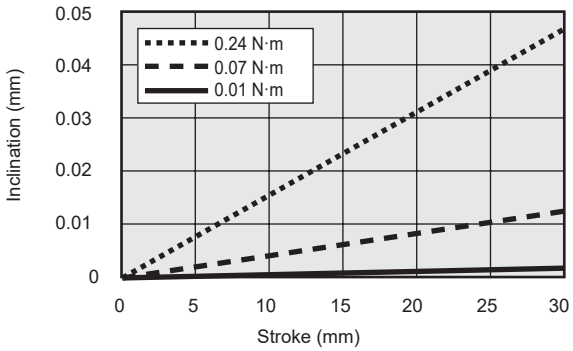
Table inclination (reference value)

● Table deflection at point A due to radial moment MR.

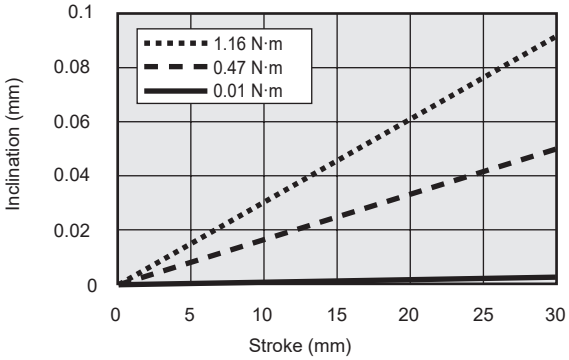
MR=F2 × L2



● DMSDG-08

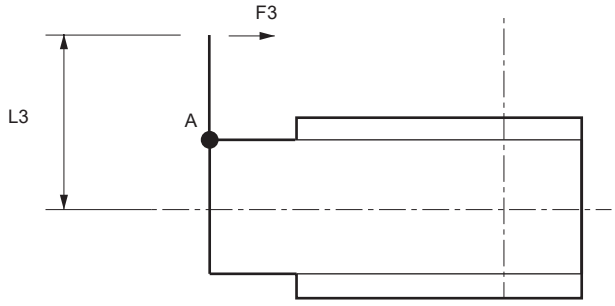


● DMSDG-16

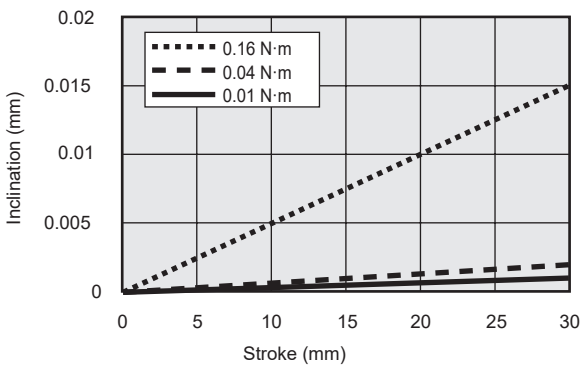


● Table deflection at point A due to torsion moment MY

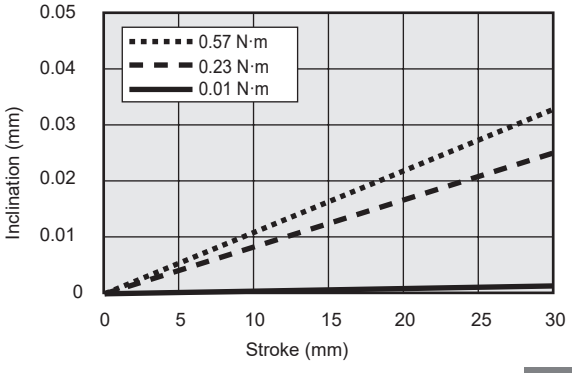
MY=F3×L3



● DMSDG-08



● DMSDG-16



Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DLSH

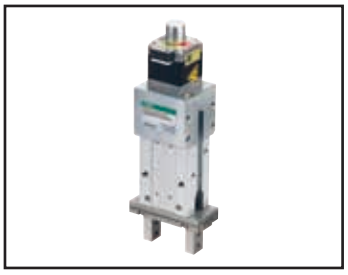
2-Finger Gripper

Electric actuator
Motor specifications

CONTENTS

DLSH Series variation

Actuator model No.	Motor Size	Spring lead (mm)	Stroke and Max. speed (mm/s)		Max. Gripping force (N)
			10	22	
DLSH-20	□28	4.2	63		10
DLSH-32	□42	6		60	40



Electric Actuator 2-Finger Gripper

DLSH-20

□28 Stepping motor

RoHS

How to order

DLSH - 20 S H4 10 N N F3PH - F R1 A 1

❶Size

20	20

❷Applicable controller * 1

S	ESC4

❸Spring lead

H4	4.2 mm

❹Stroke

10	10 mm (5 mm on one side)

❺Rubber cover

N	None

❻Finger

N	Basic

❼Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped

❽Connector leadout direction

F	Front

❾Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❿Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

⓫IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

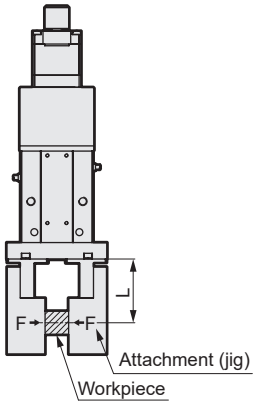
*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

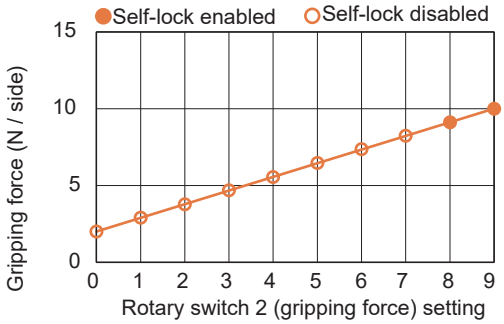
Specifications

Motor	□28 Stepping motor
Drive method	Coil spring
Stroke mm	10 (5 per side)
Pressing effective range mm	5 (2.5 per side)
Max. Gripping force * 1 N	10
Static allowable moment N·m	MP=2.1, MY=2.1, MR=2.1
Operation speed range mm/s	11 to 60
Max. acceleration/deceleration mm/s^2	1371 (Setting 9)
Gripping speed range mm/s	11 to 60
Repeatability * 2 mm	±0.02
Insulation resistance	10MΩ, 500 VDC
Withstand voltage	500 VAC for 1 minute
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere	No corrosive gas, explosive gas, or dust
Degree of protection	IP40
Weight g	600

* 1 Gripping is possible only in the closed direction. Operating the grip in the open direction may lead to damage of the actuator internal parts.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.

Gripping force and rotary switch setting

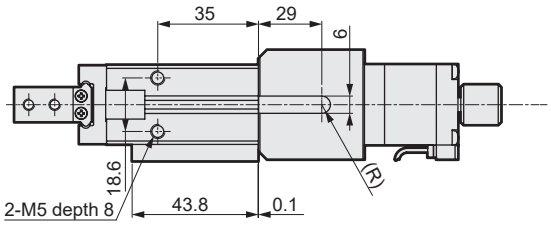


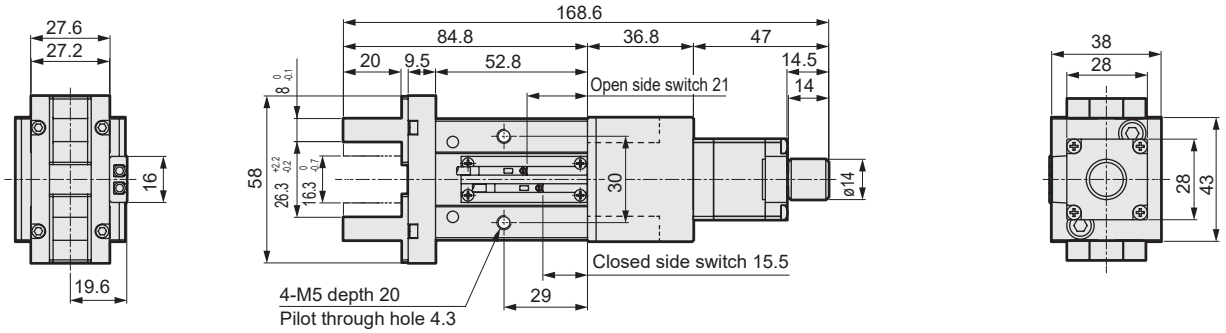


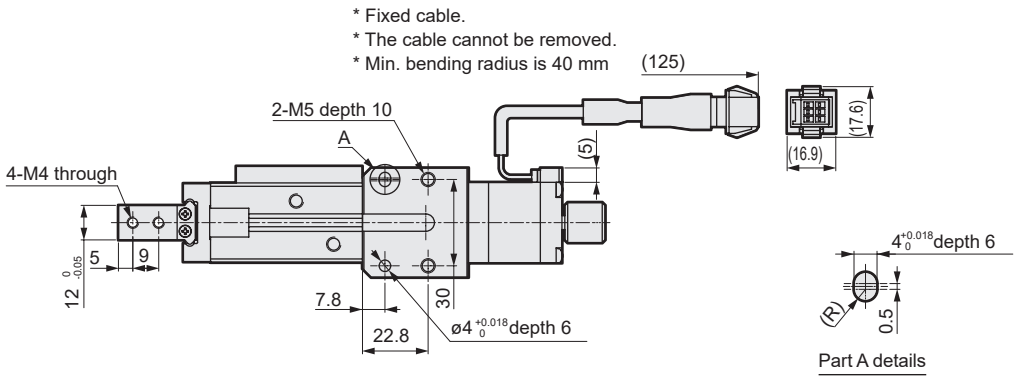
*1 Gripping force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 speed setting is 9 (60 mm/s). (L=20)
*3 Pressing position = stroke × 0.5
*4 The self-lock range is a reference value. Depending on conditions, the self-lock may not be effective.

Dimensions

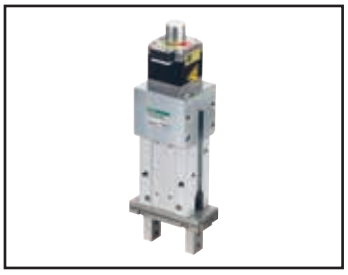
● DLSH-20







* The lead wire direction for switch and F3PH (F-type straight) is on the finger side. If problems occur when processing the lead wire, use F3PV (F-type L-shaped).



Electric Actuator 2-Finger Gripper

DLSH-32

□42 Stepping motor

RoHS

How to order

DLSH - 32 S H6 22 N N F3PH - F R1 A 1

❶Size

32	32

❷Applicable controller * 1

S	ESC4

❸Spring lead

H6	6 mm

❹Stroke

22	22 mm (single side 11 mm)

❺Rubber cover

N	None

❻Finger

N	Basic

❼Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped

❽Connector leadout direction

F	Front

❾Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❿Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

⓫IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

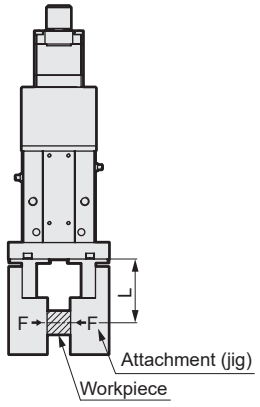
*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

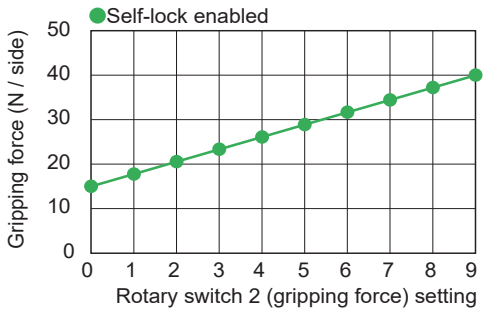
Specifications

Motor	□42 Stepping motor
Drive method	Coil spring
Stroke mm	22 (11 per side)
Pressing effective range mm	11 (5.5 per side)
Max. Gripping force * 1 N	40
Static allowable moment N·m	MP=4.5, MY=4.5, MR=4.5
Operation speed range mm/s	15 to 63
Max. acceleration/deceleration mm/s^2	840 (Setting 9)
Gripping speed range mm/s	15 to 63
Repeatability * 2 mm	±0.02
Insulation resistance	10MΩ, 500 VDC
Withstand voltage	500 VAC for 1 minute
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere	No corrosive gas, explosive gas, or dust
Degree of protection	IP40
Weight g	1950

*1 Gripping is possible only in the closed direction. Operating the grip in the open direction may lead to damage of the actuator internal parts.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.

Gripping force and rotary switch setting

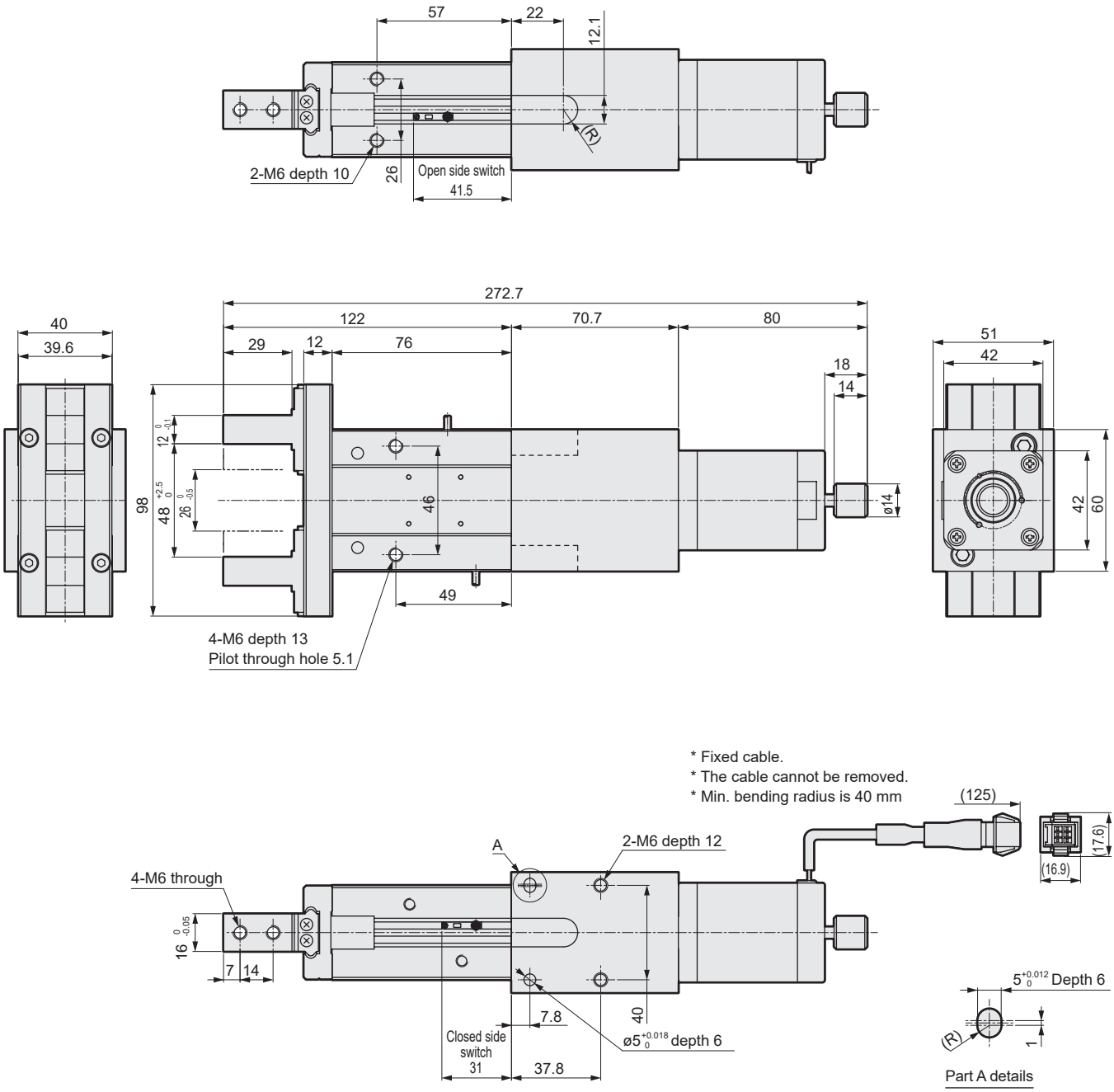




*1 Gripping force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 speed setting is 9 (63 mm/s). (L=20)
*3 Pressing position = stroke × 0.5
*4 The self-lock range is a reference value.
Depending on conditions, the self-lock may not be effective.

Dimensions

● DLSH-32



Model selection

STEP 1 Calculating the required gripping force

Calculate the required Gripping force when transporting a workpiece (weight W_L) with the following as the reference.

$$F_w > \frac{W_L \times g \times K}{n}$$

F_W : Required gripping force (N)
n : Number of attachments = 2
W_L : Workpiece weight (kg)
g : Gravity acceleration 9.8 (m/s^2)
K : Transport coefficient
5 [holding only]
10 [normal transport]
20 [sudden accelerated transport]

Transport coefficient K

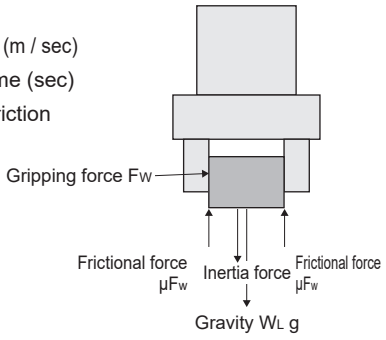
Calculation example: When decelerating and stopping in 0.1 second from transport speed of V = 0.75 m/s with friction coefficient μ of workpiece and attachment as 0.1, see below.

Obtain the transport coefficient K from the force applied to the workpiece

V:Transport speed (m / sec)
t:Deceleration time (sec)
μ:Coefficient of friction

- Inertial force = $W_L \times (V / t)$
- Gravity = $W_L g$
- Required gripping force $F_W >$

$$\frac{W_L \times (V / t) + W_L g}{n\mu} = \frac{W_L \times (V / t + g)}{n\mu} = \frac{17.3 W_L}{2 \times 0.1} = 86.5 W_L$$



∴ Here, the transport coefficient K is calculated from the above equation:

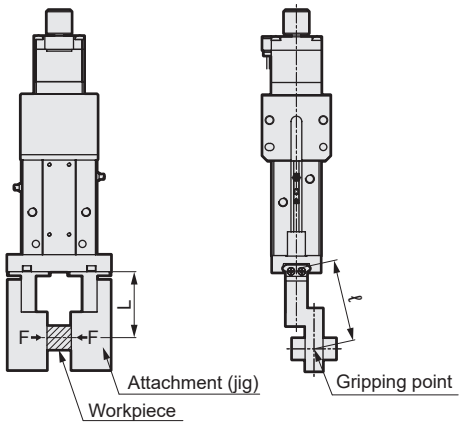
$$\frac{W_L \times g \times K}{n} = 86.5 W_L$$

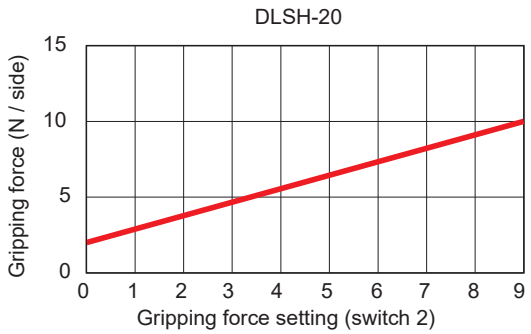
$$K = \frac{n \times 86.5}{g} = \frac{2 \times 86.5}{9.8} \approx 20$$

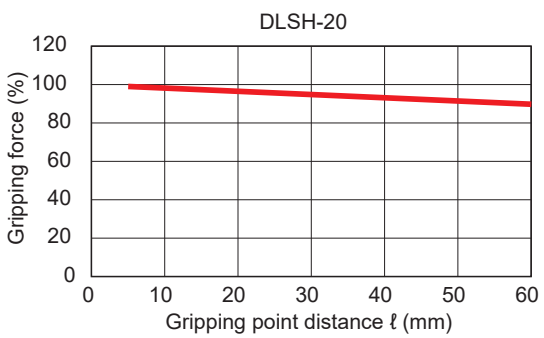
Note) Allowance is required for transport coefficient K due to impacts during transportation, etc. Even when the coefficient of friction μ is higher than μ=0.1, set transport coefficient K from 10 to 20 or more for safety.

STEP 2 Temporarily select a model from the gripping force graph

Check the conditions at right and temporarily select a model from the gripping force graph. The Gripping force varies according to gripping point distance ℓ and gripping force setting. Confirm on the graph that sufficient force can be obtained under the working conditions.



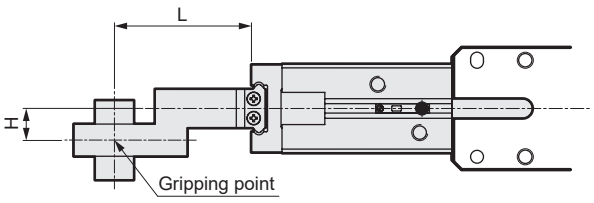




STEP 3 Confirmation of attachment shape

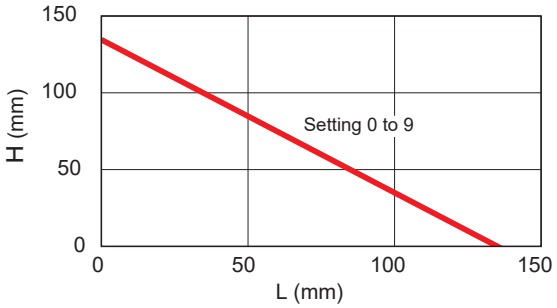
Use gripping point distance within the range of the graph at right.

Example) L: 30 mm, H: 20 mm



If DLSH-20 is selected, L:30mm, H:20mm
intersection point is inside the line with gripping force setting 0 to 9, can be used.

Gripping point distance and gripping force setting



Refer to page 88.

●Use attachments as short and lightweight as possible.

If the attachment is long and heavy, inertia increases when opening and closing, this may cause play in the finger, and adversely affect durability.

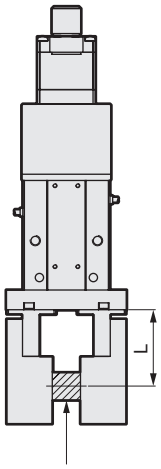
●Minimizing the attachment shape as much as possible within the performance data enables the product to be used for a longer time.

●The weight of the attachment affects the service life, so check that the weight is less than the following value.

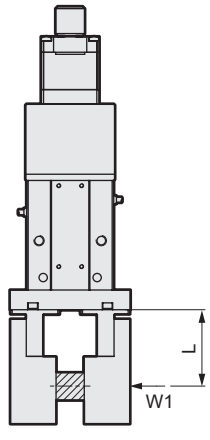
W < 1/4 H (1 pc.) W : Weight of attachment
h : Gripper product weight

STEP 4 Confirmation of external forces applied to finger

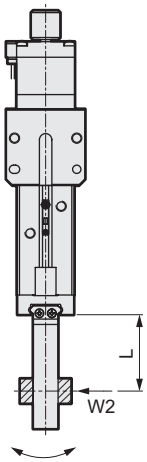
When external force is applied to the finger, use it within the range in [Table 1].



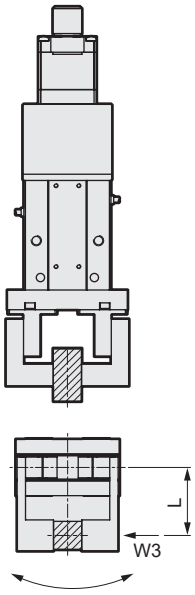
Vertical load
W (N)



Bending moment
MP (N·m) = W1 × L



Radial moment
MR (N·m) = W2 × L



Torsion moment
MY (N·m) = W3 × L

Table 1 Static allowable moment

Size	Vertical load Wmax (N)	Bending moment MP max (N·m)	Radial moment MR max (N·m)	Torsion moment MY max (N·m)
DLSH20	265	2.1	2.1 (40)	2.1
DLSH32	490	4.5	4.5 (90)	4.5

If multiple external forces are applied, the resultant external forces (formula below) must be less than 1.

WT = W / Wmax + MP / MPmax + MR / MRmax + MY / MYmax < 1

Radial moment can be used with less than ( ). In this case, use L and H dimensions with less than 2/3 of the length specified on page 88.

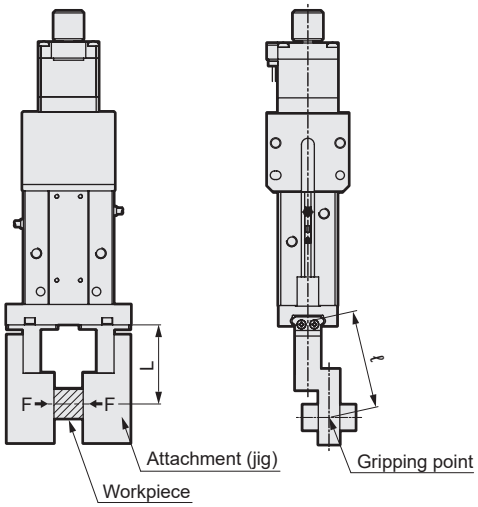
Example of calculation:

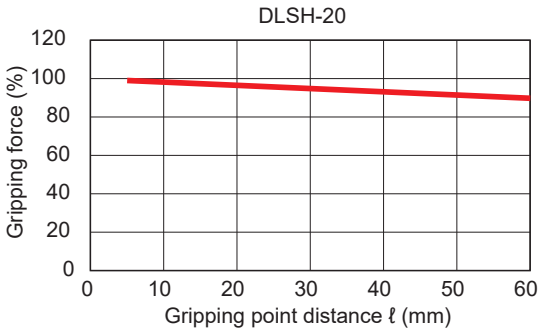
Model No.: DLSH-20, When load W1 : 30 N is applied to L : 40 mm

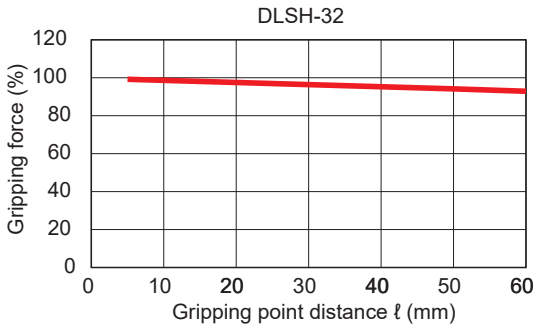
$MP = 30 \times 40 \times 10^{-3} = 1.2\ N{\cdot}m < MPmax = 2.1\ N{\cdot}m$

Gripping force and gripping point distance

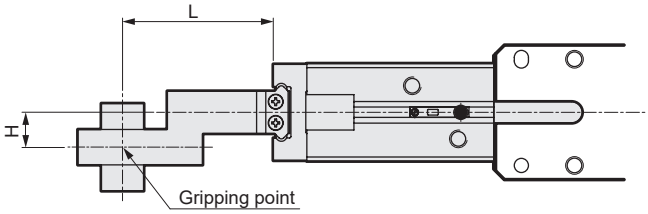
This indicates the gripping force at gripping point distance ℓ.

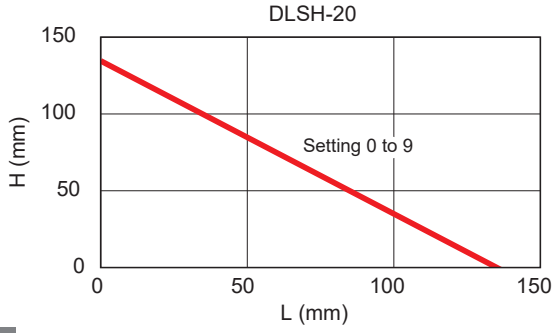


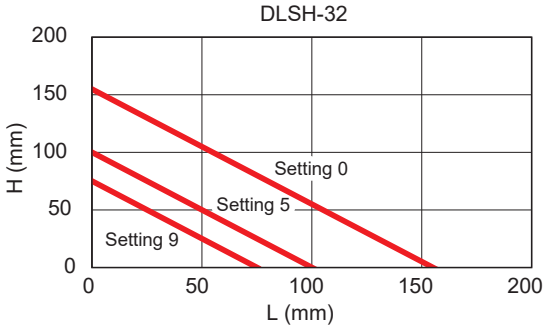




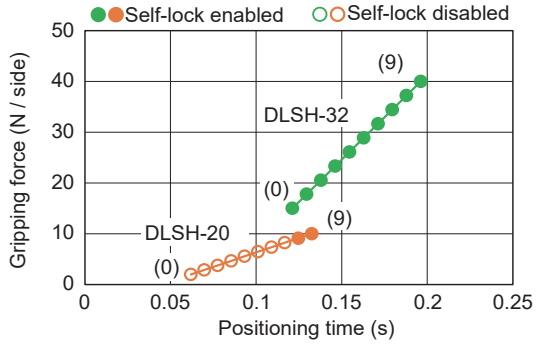
Gripping point distance and gripping force setting







Positioning time for pressing operation



*1 ( ): Rotary switch 2 (gripping force) setting.
*2 The self-lock range is a reference value. Depending on conditions, the self-lock may not be effective.
*3 Gripping force is a guideline.
Errors may occur due to pressing position or cylinder switch adjustment.
*4 Pressing position = center of stroke, rotary switch 1 (speed) setting = 9.
*5 The Positioning time is the time from the start of motor rotation to the stop.

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

DCKW

3-Finger Gripper

Electric actuator
Motor specifications

CONTENTS

DCKW Series variation

Actuator model No.	Motor Size	Spring lead (mm)	Stroke and Max. speed (mm/s)		Max. Gripping force (N)
			4	8	
DCKW-20	□28	4.2	60		8
DCKW-32	□42	6		63	30

Electric Actuator 3-Finger Gripper

DCKW-20

□28 Stepping motor

RoHS

How to order

DCKW - 20 S H4 04 N F3PH - F R1 A 1

❶Size

20	20

❷Applicable controller * 1

S	ESC4

❸Spring lead

H4	4.2 mm

❹Stroke

04	4 mm (2 mm on one side)

❺Rubber cover

N	None

❻Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped

❼Connector leadout direction

F	Front

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

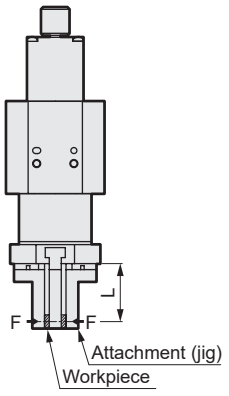
*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

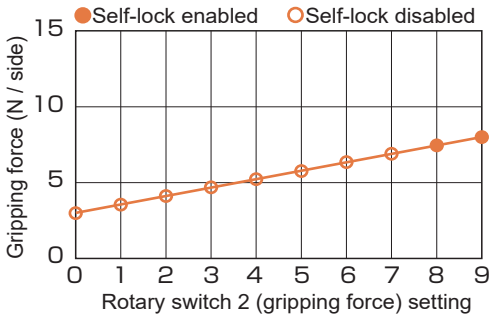
Specifications

Motor	□28 Stepping motor
Drive method	Coil spring
Stroke mm	4 (2 per side)
Pressing effective range mm	2 (1 per side)
Max. gripping force * 1 N	8
Operation speed range mm/s	11 to 60
Max. acceleration/deceleration mm/s^2	3879 (Setting 9)
Gripping speed range mm/s	11 to 60
Repeatability * 2 mm	±0.02
Insulation resistance	10MΩ, 500 VDC
Withstand voltage	500 VAC for 1 minute
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere	No corrosive gas, explosive gas, or dust
Degree of protection	IP40
Weight g	400

*1 Gripping is possible only in the closed direction. Operating the grip in the open direction may lead to damage of the actuator internal parts.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.

Gripping force and rotary switch setting

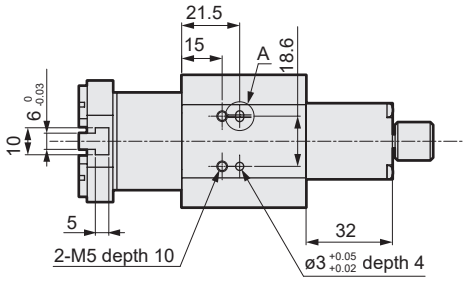


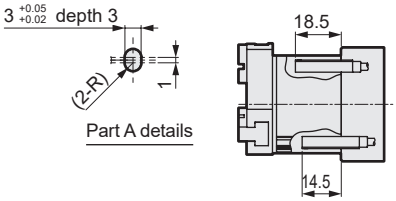


*1 Gripping force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 speed setting is 9 (41 mm/s). (L=20)
*3 Pressing position = stroke × 0.5
*4 The self-lock range is a reference value. Depending on conditions, the self-lock may not be effective.

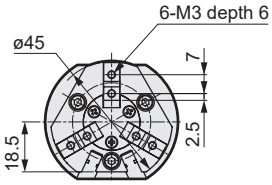
Dimensions

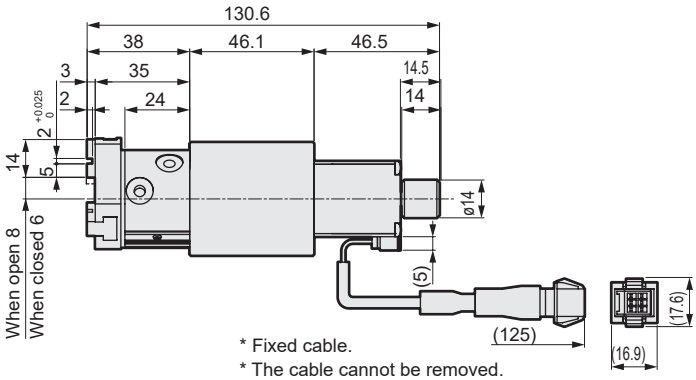
● DCKW-20



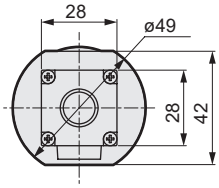


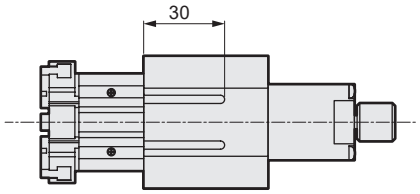
Switch installation dimensions





* Fixed cable.
* The cable cannot be removed.
* Min. bending radius is 40 mm





Electric Actuator 3-Finger Gripper

DCKW-32

□42 Stepping motor

RoHS

How to order

DCKW - 32 S H6 08 N F3PH - F R1 A 1

❶Size

32	32

❷Applicable controller * 1

S	ESC4

❸Spring lead

H6	6 mm

❹Stroke

08	8 mm (4 mm per side)

❺Rubber cover

N	None

❻Switch

NNNN	None
F3PH	F-type straight
F3PV	F-type L-shaped

❼Connector leadout direction

F	Front

❽Relay cable * 2

N0	None
R1	Movable 1 m
R3	Movable 3 m
R5	Movable 5 m
RX	Movable 10 m

❾Controller included

N	None
A	DIN rail mounting specifications
B	Panel mounting specifications

❿IO cable length

N	None
1	1 m
3	3 m
5	5 m
X	10 m

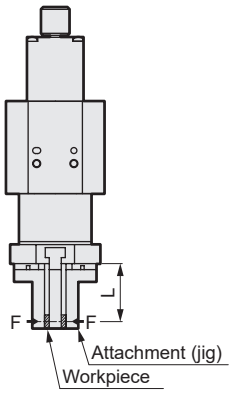
*1 For controller, refer to CC-1635A.
*2 Refer to page 104 for relay cable dimensions.

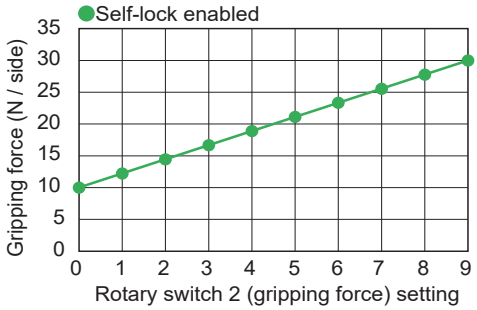
Specifications

Motor	□42 Stepping motor
Drive method	Coil spring
Stroke mm	8 (4 per side)
Pressing effective range mm	4 (2 per side)
Max. gripping force * 1 N	30
Operation speed range mm/s	15 to 63
Max. acceleration/deceleration mm/s²	5471 (Setting 9)
Gripping speed range mm/s	15 to 63
Repeatability * 2 mm	±0.02
Insulation resistance	10MΩ, 500 VDC
Withstand voltage	500 VAC for 1 minute
Operating ambient temperature, humidity	0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity	-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere	No corrosive gas, explosive gas, or dust
Degree of protection	IP40
Weight g	1800

*1 Gripping is possible only in the closed direction. Operating the grip in the open direction may lead to damage of the actuator internal parts.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.

Gripping force and rotary switch setting

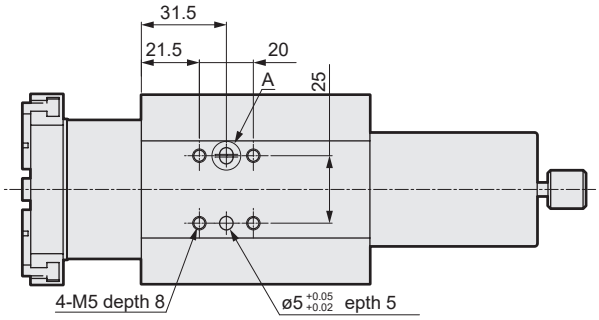


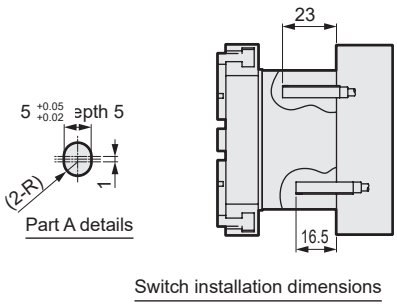


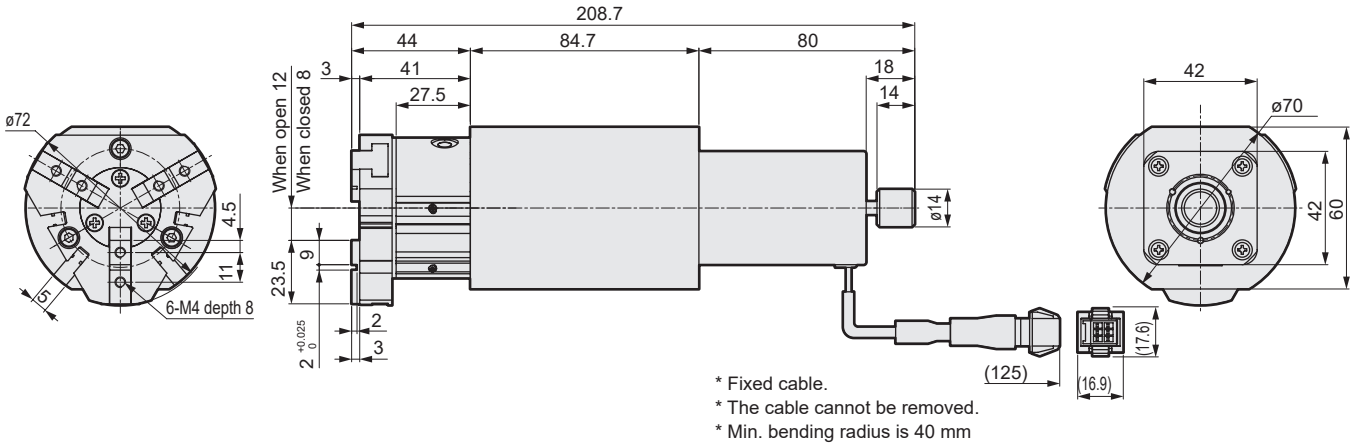
*1 Gripping force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
*2 speed setting is 9 (70 mm/s). (L=20)
*3 Pressing position = stroke × 0.5
*4 The self-lock range is a reference value. Depending on conditions, the self-lock may not be effective.

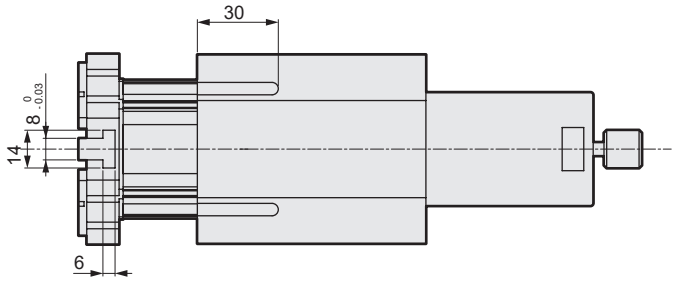
Dimensions

● DCKW-32









Model selection

STEP 1 Calculating the required gripping force

Gripping force F_W satisfying the following equation is required to transport the workpiece (weight W_L).

$$F_W > \frac{W_L \times g \times K}{n}$$

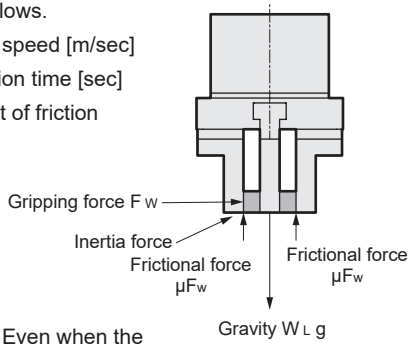
F_W : Required gripping force [N]
n : Number of attachments = 3
W_L : Weight of workpiece [kg]
g : Gravity acceleration 9.8 [m/s^2]
K : Transport coefficient
5 [Holding only]
10 [Normal transport]
20 [Sudden accelerated transport]

Transport coefficient K

Calculation example) Transport speed V = If the friction coefficient μ between the workpiece and the finger is 0.1 for the purpose of decelerating and stopping at 0.75 m / s in 0.1 seconds, the result is as follows.

Obtain the transport coefficient K from the force applied to the workpiece

V : Transport speed [m/sec]
t : Deceleration time [sec]
μ : Coefficient of friction



- Inertial force = $W_L (V/t)$
- Gravity = $W_L g$
- Required gripping force $F_W >$ $\frac{W_L (V/t) + W_L g}{n\mu} = \frac{W_L (V/t+g)}{n\mu} = \frac{17.3\, W_L}{3 \times 0.1} = 57.7\, W_L$

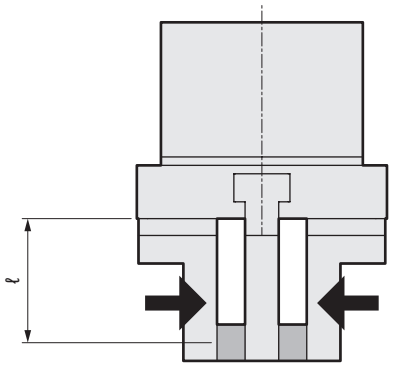
∴ Here, the transport coefficient K is calculated from the above equation: $\frac{V/t + g}{\mu g} = \frac{0.75/0.1 + 9.8}{0.1 \times 9.8} \approx 20$

Note) Allowance is required for transport coefficient K due to impacts during transportation, etc. Even when the coefficient of friction μ is higher than μ=0.1, set transport coefficient K from 10 to 20 or more for safety.

STEP 2 Temporarily select a model from the gripping force graph

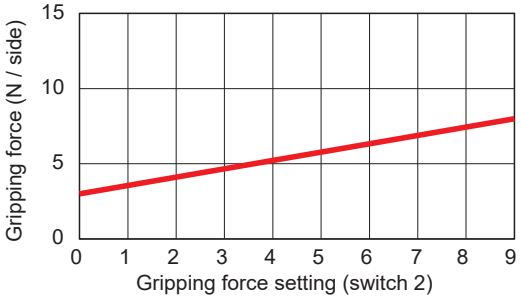
Check the conditions at right and temporarily select a model from the gripping force graph. The gripping force varies according to gripping point distance ℓ and gripping force setting. Confirm on the graph that sufficient force can be obtained under the working conditions.

Grip direction

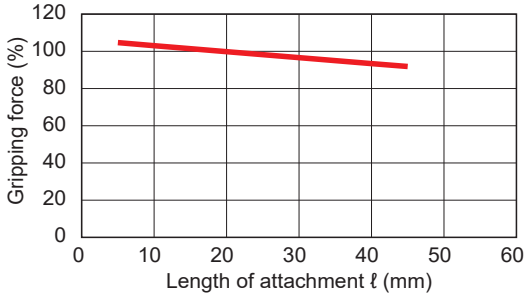


●Close direction (➡)

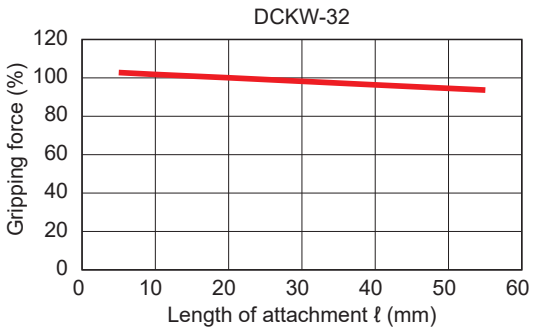
DCKW-20



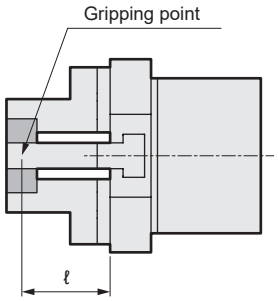
DCKW-20



Gripping force and gripping point distance



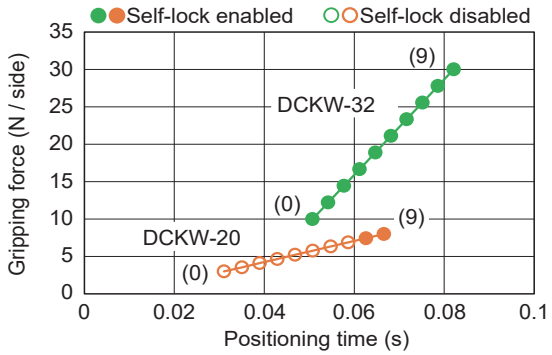
STEP 3 Confirmation of attachment shape



- **Use attachments as short and lightweight as possible.** If the attachment is long and heavy, inertia increases when opening and closing, this may cause play in the finger, and adversely affect durability.
- Minimizing the attachment shape as much as possible within the performance data enables the product to be used for a longer time. Also, if ℓ is long, unexpected vibration, etc., could cause erroneous gripping and falling during transport.
- The weight of the attachment affects durability, so check that the weight is less than the following value.

W < 1/4 H (1 pc.) W : Weight of attachment
H : Weight of Hand product

Positioning time for pressing operation



* 1 ( ): Rotary switch 2 (gripping force) setting.
* 2 The self-lock range is a reference value. Depending on conditions, the self-lock may not be effective.
* 3 Gripping force is a guideline. Errors may occur due to pressing position or cylinder switch adjustment.
* 4 Pressing position = center of stroke, rotary switch 1 (speed) setting = 9.
* 5 Positioning time is the time from the start of motor rotation to the stop thereof.

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

ESC3

Controller

CONTENTS

Controller

ESC3 Series

RoHS

How to order

ESC3 - S2 - 11 - D - 01 - 20 - 06 - 100

❶ ❷ ❸ ❹ ❺

❶Controller mounting method	
D	DIN rail mount
P	Panel mount

❷Model group	
01	DSSD2
02	DSTK
03	DSTG
04	DSTS
05	DSTL
06	DMSDG
07	DLSH
08	DCKW

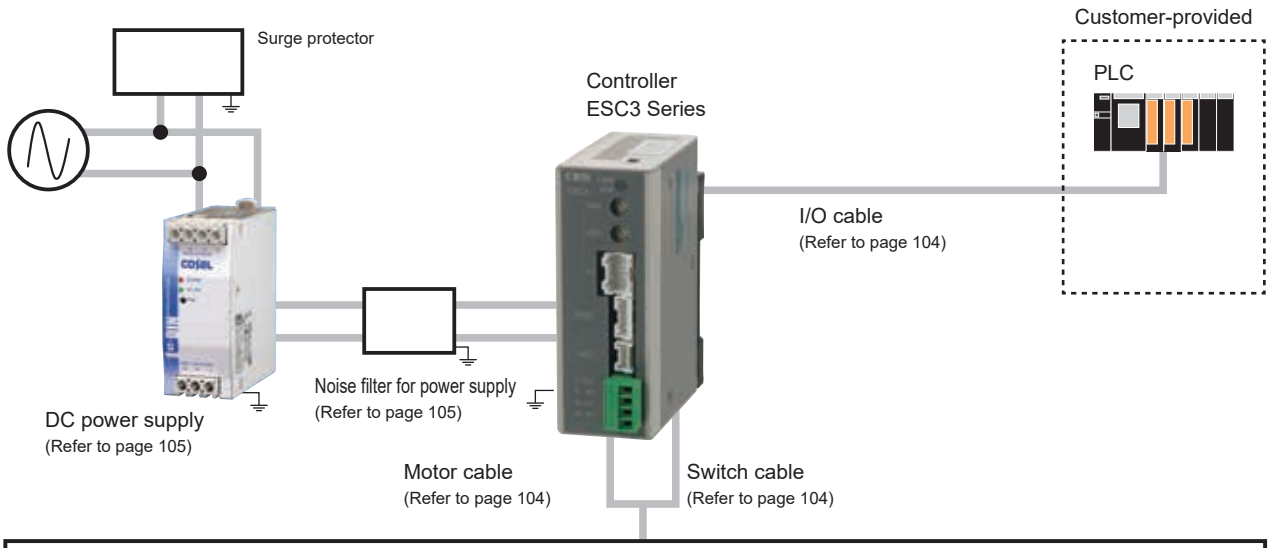
❸Actuator size	
08	8
16	16
20	20
32	32
50	50

❹Actuator lead *2	
NN	None
06	6 mm
09	9 mm
12	12 mm

❺Actuator stroke * 3	
NNN	None
010	10 mm
020	20 mm
025	25 mm
030	30 mm
050	50 mm
075	75 mm
100	100 mm
150	150 mm
200	200 mm

*1 Actuator type is also available for selection.
*2 When selecting 06 (DMSDG), 07 (DLSH), or 08 (DCKW) in the two-model groups, select "None".
*3 When selecting 07 (DLSH) or 08 (DCKW) in the three model groups, select "None".

System configuration



Connectable actuators


DSSD2
(Page 3)


DSTK
(Page 13)


DSTG
(Page 25)


DSTS
(Page 39)


DSTL
(Page 53)


DMSDG
(Page 69)


DLSH
(Page 81)


DCKW
(Page 91)

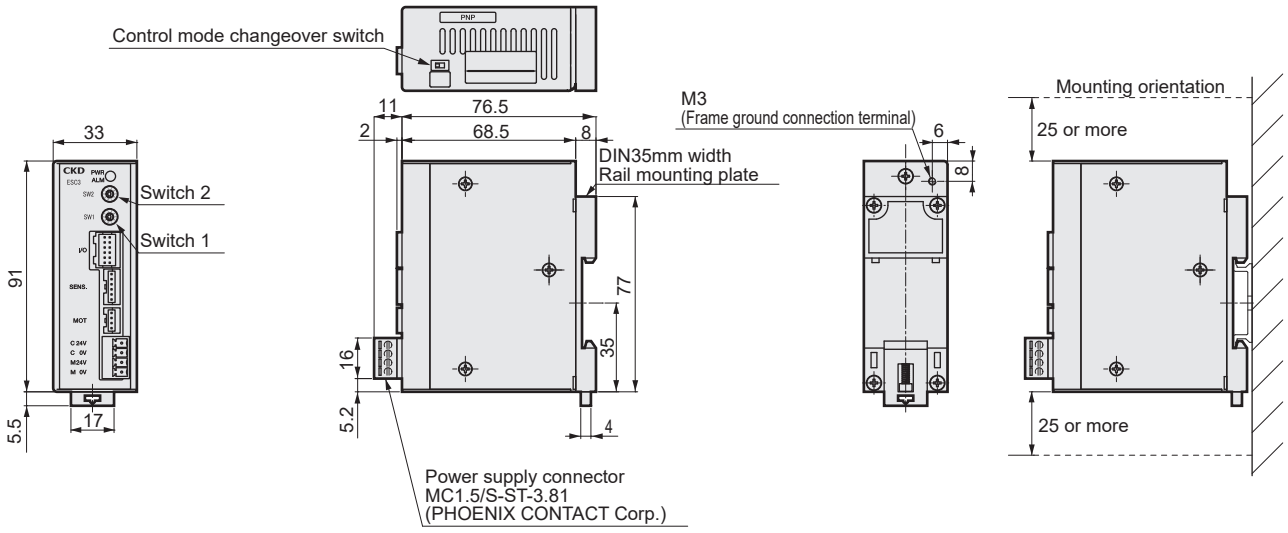
* Refer to the Instruction Manual for details about how to install and wire the noise filter and surge protector.

General specifications

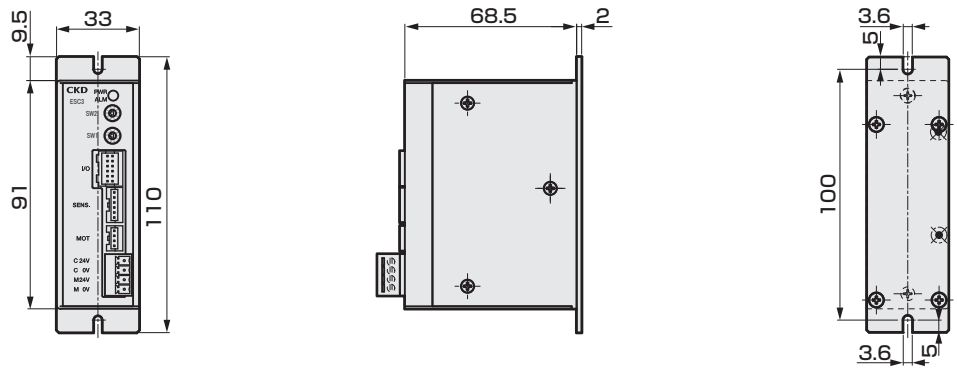
Item		Description				
Applicable actuators		DSSD2, DMSDG, DSTK, DSTG, DSTS, DSTL, DLSH, DCKW				
Applicable motor sizes		□20	□28	□35	□42	□56
Settings tool		Controller rotary switch				
External interface		24 VDC ±10%, input 3 points, output 3 points, cable length up to 10 m				
Indicator lamp		Green ON: Motor in energized state, green blinking: Motor not energized Red ON: Alarm ON (system error), red blinking: Alarm ON (operation error)				
Power supply voltage	Control power	24 VDC±10%				
	Motion power supply	24 VDC±10%				
Current consumption	Control power	100 mA or less				
	Motion power supply	0.8 A or less	2 A or less	3 A or less	3 A or less	3 A or less
Insulation resistance		20 MΩ and over at 500 VDC				
Withstand voltage		1000 VAC for 1 minute				
Operating ambient temperature		0 to 40°C (no freezing)				
Operating ambient humidity		35 to 85% RH (no condensation)				
Storage ambient temperature		-10 to 50°C (no freezing)				
Storage ambient humidity		35 to 85% RH (no condensation)				
Working atmosphere		No corrosive gas, explosive gas, or dust				
Degree of protection		IP30				
Weight		Approx. 145 g				

Dimensions

● DIN rail mount



● Panel mount

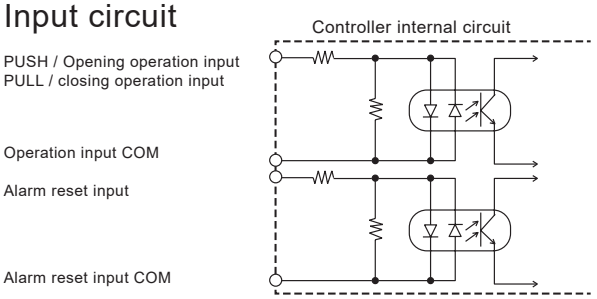


Parallel I/O (PIO) input/output circuit

Input specification

Item	ESC3
No. of inputs	3 points
Input voltage	24 VDC±10%
Input current	3 mA / point
Input current when ON	2 mA or more
Input current when OFF	0.5 mA or less

Input circuit



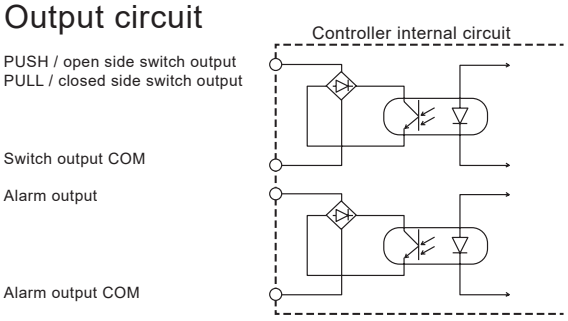
The input is not polarized.
(The input COM can be used with either + or -)

Output specifications

Item	ESC3
No. of output points	3 points
Load voltage	24 VDC±10%
Load current	10 mA / point
Internal voltage drop when ON	6 V or less (at 25°C) *
Leakage current when OFF	10 μA
Output short-circuit protection circuit	Yes
Connecting load	PLC, etc.

* At 40°C, the load current is 9 mA and 6 V or less.

Output circuit



The output is not polarized.
(The output COM can be used with either + or -)

Rotary switch setting

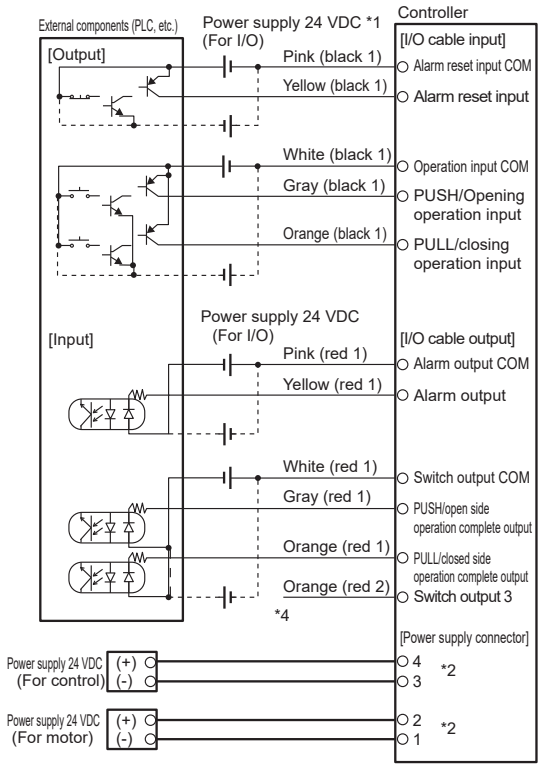
Model	Switch 1	Switch 2
DSSD2	PULL speed	PUSH speed
DSTK		
DSTG		
DSTS		
DSTL		
DMSDG	PUSH & PULL speed	Pressing force
DLSH	Open / Close speed	Gripping force
DCKW		

Control mode changeover switch setting

Code	Operation mode	Overview
V2	Solenoid valve mode double 2-position	This mode is equivalent to 2-position solenoid valve. The ON edge of the operation input moves between the 2 points.
V3	Solenoid valve mode double 3-position	This mode is equivalent to 3 positions of solenoid valves. Move between 2 points by turning the operation input ON (level input).

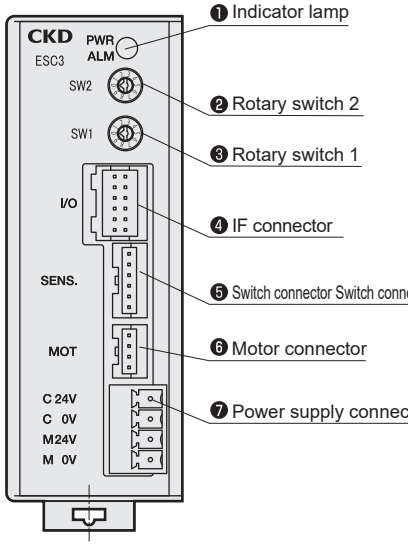
Parallel I/O (PIO) connection diagram

Basic configuration



*1 Determine the polarity of the I/O power supply according to the specifications of the external device.
*2 The Control power supply (-) and power supply (-) are internally connected.
*3 The COMs are not internally connected. Be sure to provide wiring.
*4 Do not connect anything to switch output 3, which is unused. Be sure to provide insulation.
*5 The cable color parentheses indicate the dot color and number of the cable.

[Panel description]



● Attachments

Power supply connector (controller accessory)

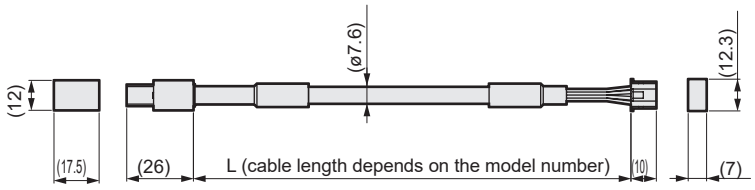
Model No.: MC1.5/4-ST-3.81 (manufactured by PHOENIX CONTACT)
Compatible electric wire size: 0.14 to 1.5 mm2 / 28 to 16 AWG
Stripped wire length: 7 mm
Screw tightening torque: 0.22 to 0.25 N·m

Pin No.	Signal name	Name
1	M0V	Power supply (-)
2	M24V	Motor power supply (+)
3	C0V	Control power (-)
4	C24V	Control power (+)

Relay cable

● Motor relay cable

* Selectable with actuator
* Movable cable.

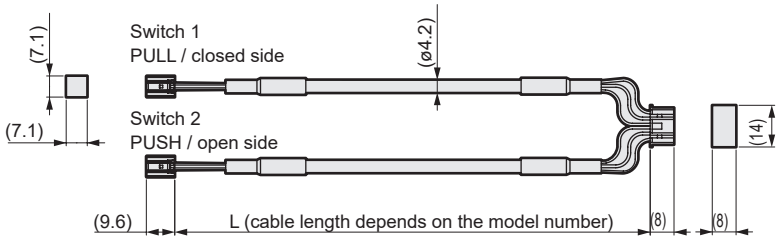


ESC3 - M2 - R ❶

❶Cable length	
1	1 m
3	3 m
5	5 m
X	10 m

● Switch relay cable

* Selectable with actuator
* Movable cable.

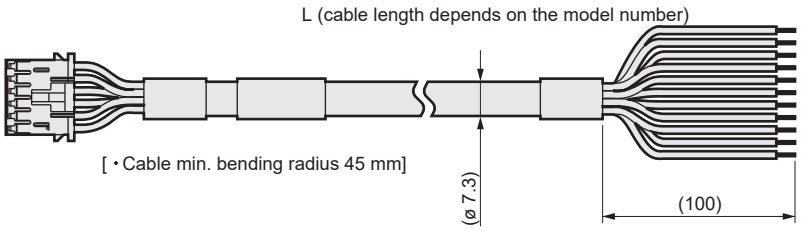


ESC3 - S2 - R ❶

❶Cable length	
1	1 m
3	3 m
5	5 m
X	10 m

● I/O cable

* Selectable with actuator



ESC3 - NP2 - ❶

❶Cable length	
1	1 m
3	3 m
5	5 m
X	10 m

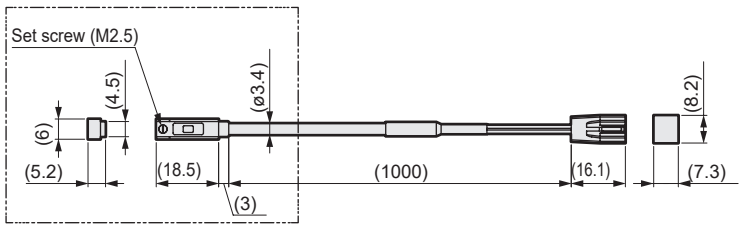
● Cylinder switch cable

* Selectable with actuator
* Refer to the specifications page of each actuator for the type of compatible switch.

ESC3 - SW - T3PH ❶

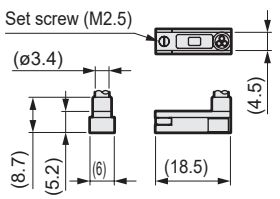
❶Switch	
T3PH	T-type straight
T3PV	T-shaped L-type
F3PH	F-type straight
F3PV	F-type L-shaped

* When T3PH is selected

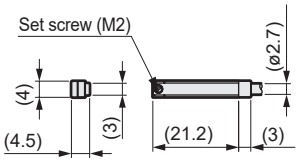


Depending on the switch model No. selection, the dotted lines are as shown below.

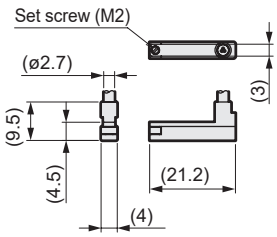
* When T3PV is selected



* When F3PH is selected



* When F3PV is selected



How to order related parts

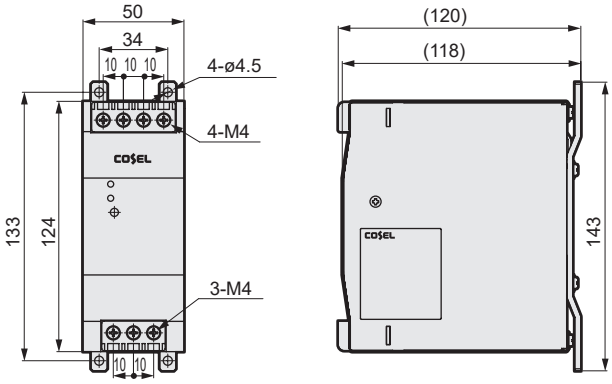
●DC power supply

Item \ Model No.			EA-PWR-KHNA240F-24-N2 (screw mounted) EA-PWR-KHNA240F-24 (DIN rail mount)
Manufacturer			COSEL Co., Ltd.
Manufacturer model No.	Mounting screw		KHNA240F-24-N2
	DIN rail mount		KHNA240F-24
Input voltage			85 AC to 264 V 1ø or 88 DC to 370 V
Output	Power		240 W
	Voltage / Current		24V10A
	Variable voltage range		22.5 to 28.5V
Included functions	Overcurrent protection		Operating at 101% min of peak current
	Overvoltage protection		30.0 to 36.0V
	Remote control		Possible
	Remote sensing		-
	Other		DC_OK display, ALARM display
Operating temperature / humidity			-25 to + 70°C, 20 to 90%RH (no condensation), -40°C Bootable *
Applicable standards	Safety standards	AC input	AC input: Certified UL60950-1, C-UL (CSA60950-1), EN62368-1
			UL508, ANSI / ISA12.12.01, ATEX acquired, CKD compliant *
		DC input	UL60950-1, C-UL (CSA60950-1), EN62368-1
	Noise terminal voltage		Compliant with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B
	Harmonic current		Compliant with IEC61000-3-2 (class A)*
Structure	Dimensions (W x H x D)		50×124×117 mm
	Weight		900 g max
	Cooling method		Natural air cooling

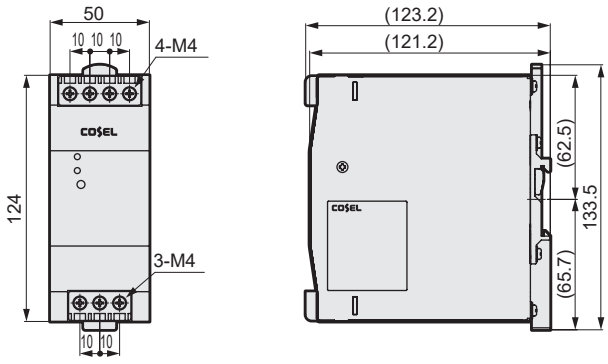
* Refer to the manufacturer's HP for details.
* CE marking and ROHS are obtained with the manufacturer model No.

Part names and dimensions

●EA-PWR-KHNA240F-24-N2 (24 V screw mounted)



●EA-PWR-KHNA240F-24 (24 V DIN rail mounted)



●Other components

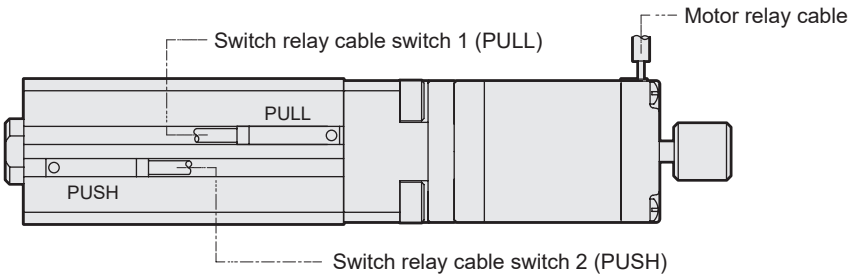
Part name	Model No.
Noise filter for power supply (single phase, 15 A)	AX-NSF-NF2015A-0D

How to use electric actuator D Series

DSSD2, DSTK, DSTG, DSTS, DSTL Series

STEP 1 Wiring

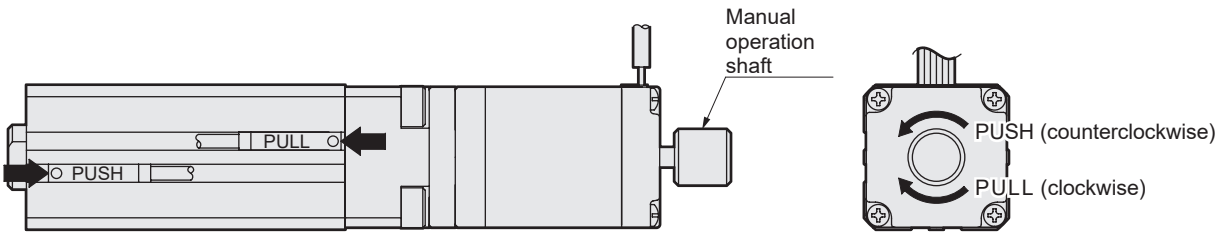
Connect the actuator and controller cable, then turn ON the Control power supply.



* Slide the cylinder switch and confirm that it turns ON.
* Wire the switch relay cable according to the number.
  1: Switch 1 (PULL), 2: Switch 2 (PUSH)

STEP 2 Cylinder switch position adjustment

Rotate the manual operation shaft, and move the movable part of the actuator to a desired position.
Slide the cylinder switch from the outside of the operating range and fix when the LED lights.
Use PUSH and PULL, respectively.



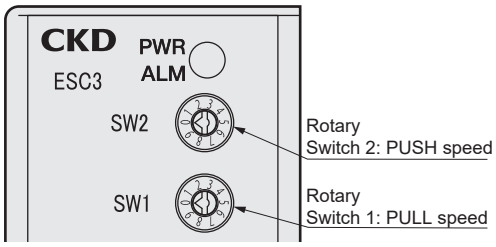
* The actuator detects the rising edge of the cylinder switch and decelerates and stops. Consider the deceleration stop distance and set the cylinder switch position.
* Correctly set the PULL and PUSH positions on the cylinder switch. Malfunction may occur if the installation position is reversed.
* Check that both cylinder switches are ON. If operated when the lamp is not turned ON, it may cause malfunction.
* The lighting range of the cylinder switch varies slightly due to the effect of temperature, etc. Fix the cylinder switch at a position allowing margin with respect to the stroke. There is a risk that it will collide with the mechanical end and cause the motor to step out.
* Do not apply excessive torque to the manual operation shaft. Otherwise it could be damaged or malfunction.

STEP 3 Trial run

Turn power ON, then turn the operation input signal ON to operate the actuator. If the position is different from the desired position, adjust the position of the cylinder switch. Switch the controller rotary switch with a flathead screwdriver, etc., and adjust the actuator operation speed.

[PUSH, PULL speed setting] (mm/s)

Switch Setting	Size 20		Size 32		Size 50	
	L6	L9	L6	L12	L6	L12
0	15	23	15	30	15	30
1	23	35	23	47	21	47
2	32	48	32	63	28	63
3	40	60	40	80	34	80
4	48	73	48	97	40	97
5	57	85	57	113	47	113
6	65	98	65	130	53	130
7	73	110	73	147	59	147
8	82	123	82	163	66	163
9	90	135	90	180	72	144



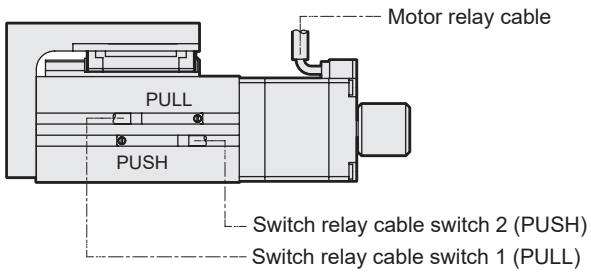
* The speed setting is a guideline.
  Even at the same setting, switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency, and temperature may result in differing actual values.
* Refer to the instruction manual for details.
* Pressing operation is not supported.

How to use electric actuator D Series

DMSDG Series

STEP 1 Wiring

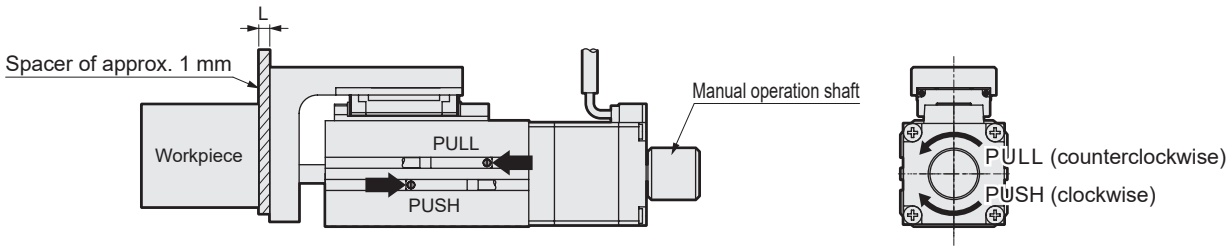
Connect the actuator and controller cable, then turn ON the Control power supply.



* Slide the cylinder switch and confirm that it turns ON.
* Wire the switch relay cable according to the number.
  1: Switch 1 (PULL), 2: Switch 2 (PUSH)

STEP 2 Cylinder switch position adjustment

Insert a 1 mm spacer between the table and the workpiece. Rotate the manual operation shaft, and lightly press the table against the workpiece and spacer. Slide the cylinder switch on the PUSH side from the outside of the operating range, and fix when the LED turns ON. Rotate the manual operation knob, and move it to a desired position on the PULL side. After movement, slide the cylinder switch on the PULL side from the outside of the operating range, and fix when the LED is ON.



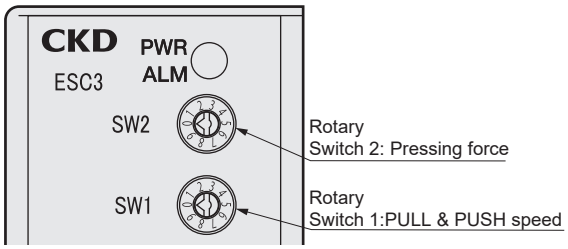
* Correctly set the PULL and PUSH positions on the cylinder switch. Malfunction may occur if the installation position is reversed.
* After pressing the workpiece, do not turn the manual operation shaft with excessive force. Doing so may lead to damage.
* Check that both cylinder switches are ON. If operated when the lamp is not turned ON, it may cause malfunction.
* Pressing operation is possible only with PUSH. Pressing at PULL is not supported.
* For the pressing position, we recommend the center of the stroke. Refer to the instruction manual for details.
* The lighting range of the cylinder switch varies slightly due to the influence of temperature or workpiece dimension error. Check that the LED lights in the pressed state.
* Do not apply excessive torque to the manual operation shaft. Otherwise it could be damaged or malfunction.

STEP 3 Trial run

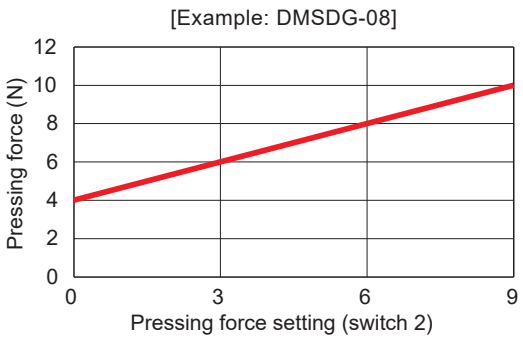
Turn the power supply ON, the operation input signal ON, and the actuator. Switch the rotary switch on the controller, and adjust the pressing force and PULL & PUSH speed.

[PULL & PUSH Speed setting] (mm/s)

Size	Switch 1 setting									
	0	1	2	3	4	5	6	7	8	9
08	8	13	17	22	27	31	36	40	45	50
16	13	20	27	34	41	48	55	62	69	77



[Pressing force setting]



* Refer to page 72 for other sizes.

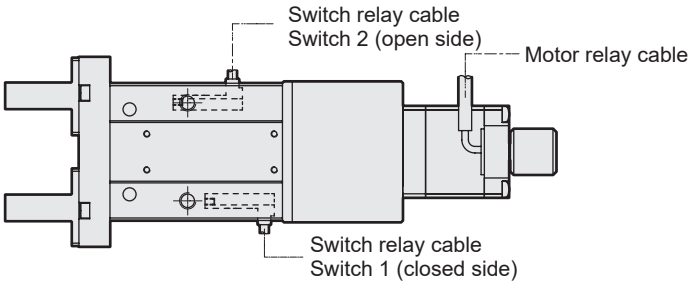
* The speed and pressing force settings are merely guidelines. Even at the same setting, switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency, and temperature may result in differing actual values.
* Refer to the instruction manual for details.
* If pressing / gripping operation is performed near the stroke end, the motor may step out, causing a buzzing sound or reverse rotation. In this case, move the pressing and gripping position to near the stroke center or reduce the pressing and gripping settings.

How to use electric actuator D Series

DLSH, DCKW Series

STEP 1 Wiring

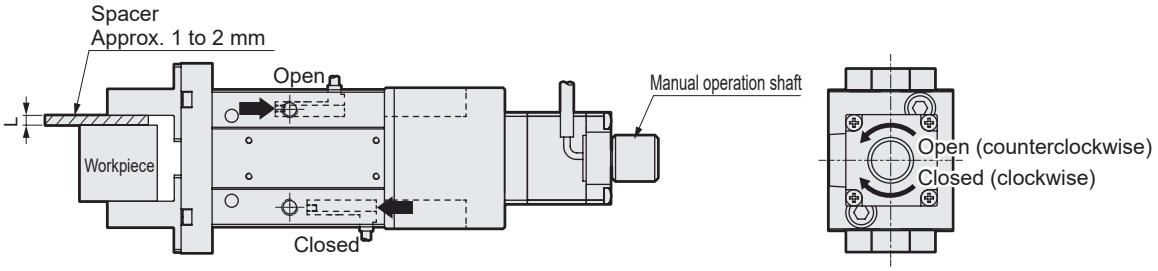
Connect the actuator and controller cable, then turn ON the Control power supply.



* Slide the cylinder switch and confirm that it turns ON.
* Wire the switch relay cable according to the number.
  1: Switch 1 (closed side), 2: Switch 2 (open side)

STEP 2 Cylinder switch position adjustment

Insert a 1 to 2 mm spacer between the finger and workpiece. Rotate the manual operation shaft, and lightly grip the workpiece and spacer. Slide the closed cylinder switch from the outside of the operating range, and fix when the LED turns ON. Rotate the manual operation shaft, and move it to a desired position on the open side. After moving, slide the cylinder switch on the open side from the outside of the operating range, and fix when the LED lights.



* Set the cylinder switch open/close position correctly. Malfunction may occur if the installation position is reversed.
* After gripping the workpiece, do not turn the manual operation knob with excessive force. Doing so may lead to damage.
* Check that both cylinder switches are ON. If operated when the lamp is not turned ON, it may cause malfunction.
* This product is used for external diameter gripping. Inner diameter gripping is not supported.
* As for the gripping position, we recommend the center of the stroke. Refer to the instruction manual for details.
* The lighting range of the cylinder switch varies slightly due to the influence of temperature or workpiece dimension error. Confirm that the LED lights in the gripped state.
* Do not apply excessive torque to the manual operation shaft. Otherwise it could be damaged or malfunction.

STEP 3 Trial run

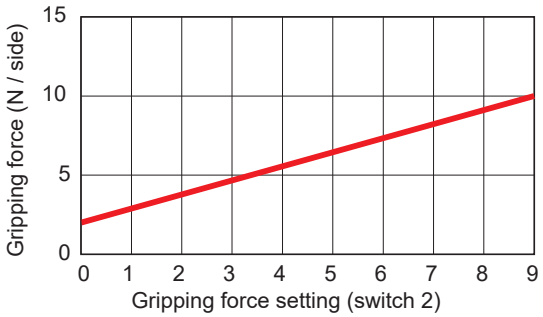
Turn the power supply ON, the operation input signal ON, and the actuator. Switch the rotary switch on the controller, and adjust the gripping force and open/close speed.

[Open/close speed setting] (mm/s)

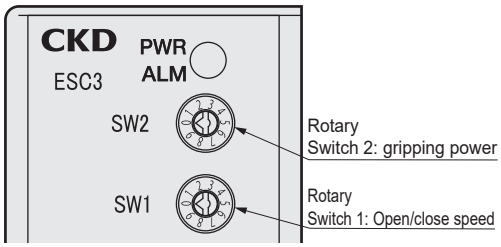
Size	Switch 1 setting									
	0	1	2	3	4	5	6	7	8	9
20	11	21	32	42	53	63	74	84	95	105
32	15	30	45	60	75	90	105	120	135	150

[Gripping force setting]

[Example: DLSH-20]



* Refer to pages 84, 92 and 94 for other models and sizes.



* The speed setting and gripping force setting are guidelines. Even at the same setting, switch adjustment, power supply voltage, individual motor differences, variations in mechanical efficiency, and temperature may result in differing actual values.
* Refer to the instruction manual for details.
* If pressing / gripping operation is performed near the stroke end, the motor may step out, causing a buzzing sound or reverse rotation. In this case, move the pressing and gripping position to near the stroke center or reduce the pressing and gripping settings.

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

Electric actuator G Series

CONTENTS

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

GSSD2

Rod type

Electric actuator
Motor specifications

CONTENTS

GSSD2 Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Maximum speed (mm/s)					Max. Pressing force (N)
			Horizontal	Vertical	20	25	50	75	100	
GSSD2-20	□35	6	4.4	6.4	250		250			100
		9	3.2	4	400		400	300		70
GSSD2-32	□42	6	9	11.6		250				220
		12	4.8	4.8		500				90
GSSD2-50	□56	6	14.8	19.6		250		200		590
		12	14.8	13.2		400		350		425

Electric actuator Rod-type

GSSD2-20

□35 Stepping motor

How to order

GSSD2 - 20 ❶ G ❷ E ❸ - 06 ❹ 020 ❺ B ❻ B ❼ N - R01 ❽ - ❾ - ❿ - ⓫

❶Size

20	20

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
09	9 mm

❺Stroke

020	20 mm
050	50 mm
075	75 mm
100	100 mm

❻Brake *2

N	None
B	Available

❼Encoder

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❾Option

Blank	Rod end female thread
N	Rod end male thread

❿Mounting bracket

Blank	Without mounting bracket
FA	Rod side flange

⓫Accessory *4 (when rod end male thread N is selected)

Blank	Without accessory
I	Rod eye
Y	Rod clevis

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.
*4 rod eye: SSD2-I-20, rod clevis: SSD2-Y-20. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□35 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø6	
Stroke	mm	20 to 100	
Screw lead	mm	6	9
Max. payload kg *1, *2	Horizontal	4.4	3.2
	Vertical	6.4	4
Operation speed range * 3	mm/s	10 to 250	12 to 400
Max. acceleration/ deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	100	70
Pressing operation speed range	mm/s	10 to 20	12 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	93
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.

Speed and payload

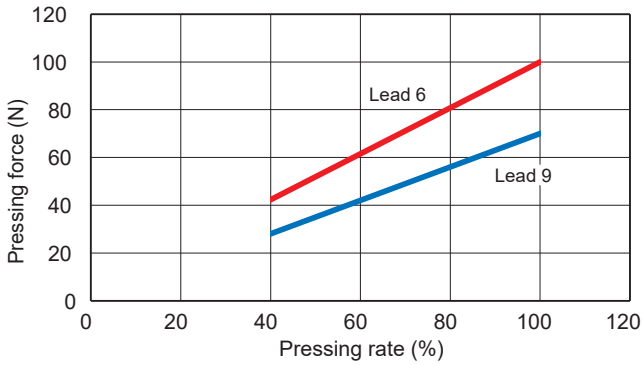
[When installed horizontally] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	0.8	0.3	-	-
12	0.8	0.3	1.5	1.1
50	4.4	3.9	3.2	2
70	4.4	3.9	3.2	2.7
100	4.4	3.9	3.2	2.7
150	4.4	3.9	3.2	2.7
200	2	1.5	3.2	2.7
250	2	1.5	2.4	1.9
300	-	-	0.4	1.9
350	-	-	0.4	-
400	-	-	0.4	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3G			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	6.4	5.9	-	-
12	6.4	5.9	4	3.5
50	6.4	5.9	4	3.5
70	4	3.5	4	3.5
100	4	3.5	4	3.5
150	1.6	1.1	3.2	2.7
200	0.8	0.3	3	2.7
250	-	-	0.8	0.3
300	-	-	0.8	0.3
350	-	-	0.4	-
400	-	-	-	-

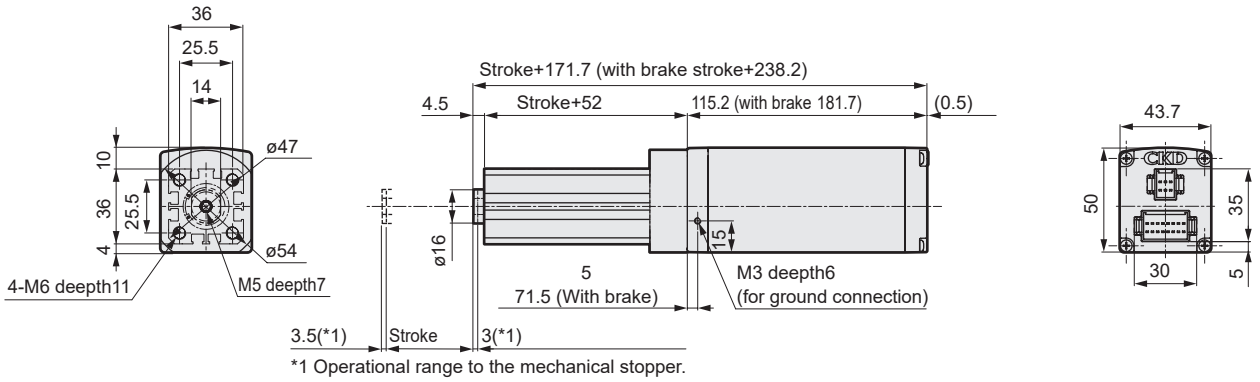
Pressing force



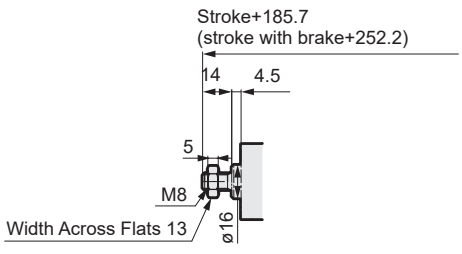
* The pressing force at the top is a reference value. Variations may occur according to conditions such as pressing speed.

Dimensions

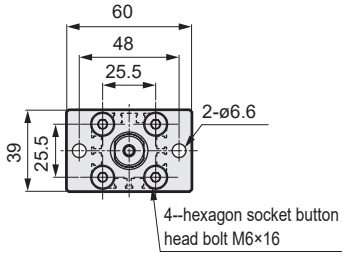
● GSSD2-20

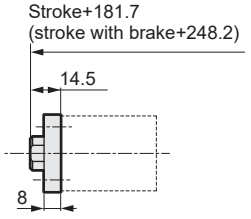


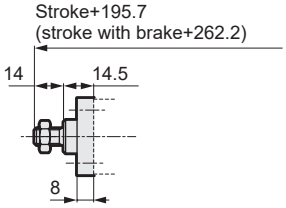
●Rod end male thread



●Rod side flange (FA)







[Dimensions by stroke]

Stroke code		020	050	075	100
Stroke (mm)		20	50	75	100
Weight (kg)	Without brake	0.8	0.9	1	1
	With brake	1.2	1.3	1.4	1.5

Electric actuator Rod-type

GSSD2-32

□42 Stepping motor

How to order

GSSD2 - 32 ❶ G ❷ E ❸ - 06 ❹ 025 ❺ B ❻ B ❼ N - R01 ❽ - ❾ - ❿ - ⓫

❶Size

32	32

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❻Brake *2

N	None
B	Available

❼Encoder

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❾Option

Blank	Rod end female thread
N	Rod end male thread

❿Mounting bracket

Blank	Without mounting bracket
FA	Rod side flange

⓫Accessory *4 (when rod end male thread N is selected)

Blank	Without accessory
I	Rod eye
Y	Rod clevis

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.
*4 Rod eye: SSD2-I-32, rod clevis: SSD2-Y-32. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□42 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø8	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1, *2	Horizontal	9	4.8
	Vertical	11.6	4.8
Operation speed range * 3	mm/s	10 to 250	15 to 500
Max. acceleration/ deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	220	90
Pressing operation speed range	mm/s	10 to 20	15 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	70
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.

Speed and payload

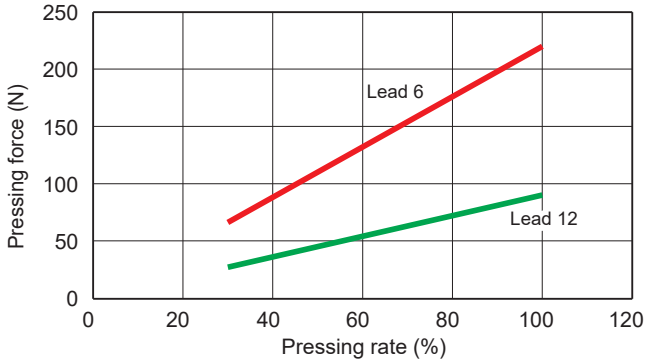
[When installed horizontally] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	1.6	1.1	-	-
15	1.6	1.1	1.2	0.7
50	6.8	6.3	4.8	4.3
70	6.8	6.3	4.8	4.3
100	9	8.7	4.8	4.3
150	6.8	6.3	3.6	3.1
200	2.8	2.3	3.6	3.1
250	0.8	0.3	3.6	3.1
300	-	-	3.6	3.1
350	-	-	1.6	1.1
400	-	-	1.6	1.1
500	-	-	0.8	0.3

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	8.8	8.3	-	-
15	8.8	8.3	4.4	3.9
50	11.6	11.1	4.8	4.3
70	5.2	4.7	4.8	4.3
100	5.2	4.7	4.8	4.3
150	2	1.5	4.8	4.3
200	0.8	0.3	4.5	4.3
250	-	-	1.2	0.7
300	-	-	1.2	0.7
350	-	-	-	-
400	-	-	-	-
500	-	-	-	-

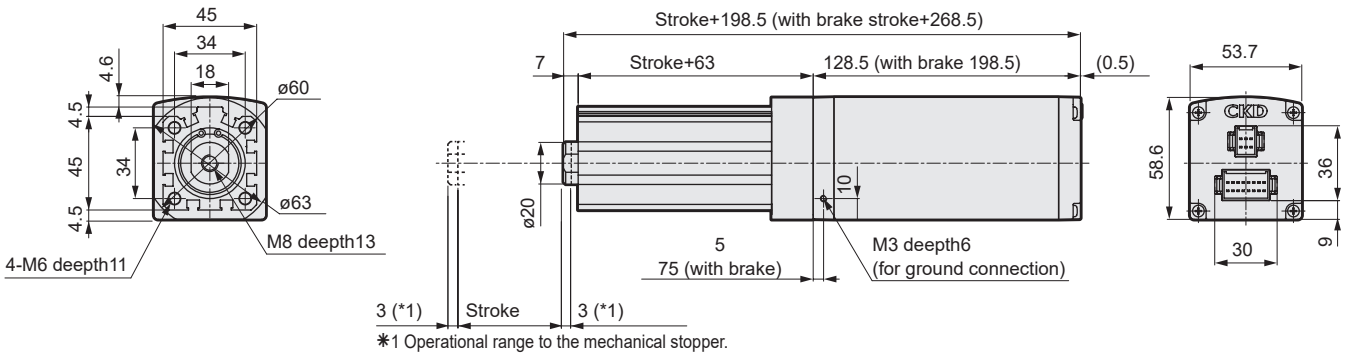
Pressing force



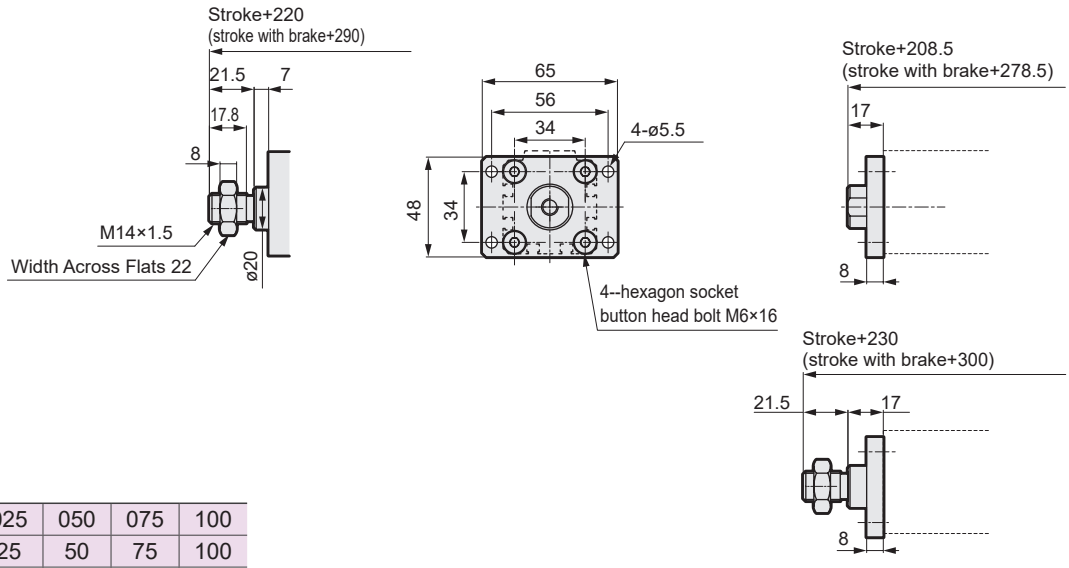
* The pressing force at the top is a reference value. Variations may occur according to conditions such as pressing speed.

Dimensions

● GSSD2-32



● Rod end male thread ● Rod side flange (FA)



[Dimensions by stroke]

Stroke code		025	050	075	100
Stroke (mm)		25	50	75	100
Weight (kg)	Without brake	1.3	1.5	1.6	1.7
	With brake	1.9	2.1	2.2	2.3

Electric actuator Rod-type

GSSD2-50

□56 Stepping motor

How to order

GSSD2 - 50 ❶ G ❷ E ❸ - 06 ❹ 025 ❺ B ❻ B ❼ N - R01 ❽ - ❾ - ❿ - ⓫

❶Size

50	50

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❻Brake *2

N	None
B	Available

❼Encode

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❾Options

Blank	Rod end female thread
N	Rod end male thread

❿Mounting bracket

Blank	Without mounting bracket
FA	Rod side flange

⓫Accessory *4 (when rod end male thread N is selected)

Blank	Without accessory
I	Rod eye
Y	Rod clevis

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.
*4 Rod eye: SSD2-I-50, rod clevis: SSD2-Y-50. For dimensional diagrams, refer to Pneumatic Cylinders General Catalog (CB-029SA).

Specifications

Motor		□56 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø12	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	14.8
	Vertical	19.6	13.2
Operation speed range *2	mm/s	20 to 250	20 to 400
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	590	425
Pressing operation speed range	mm/s	20	20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	640	320
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 Use an external guide when transporting.
*3 The maximum speed may decrease depending on the conditions.

Speed and payload

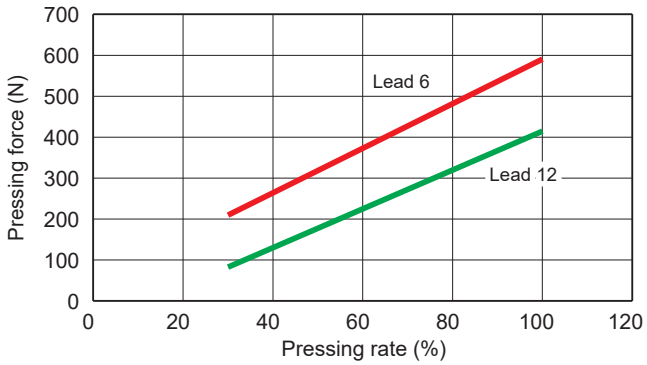
[When installed horizontally] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
20	14.8	12.8	4.4	2.4
50	9.6	7.6	9.6	7.6
70	9.6	7.6	9.6	7.6
100	9.6	7.6	14.8	12.8
150	6	4	10.8	8.8
200	4	2	10.8	8.8
250	0.4	-	6	4
300	-	-	6	4
350	-	-	2.8	0.8
400	-	-	0.7	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
20	19.6	18.6	3.6	2.6
50	14	13	13.2	12.2
70	4.8	3.8	12	11
100	4.8	3.8	10.5	11
150	0.8	-	4	3
200	-	-	4	3
250	-	-	2	1.5
300	-	-	0.7	-
400	-	-	-	-

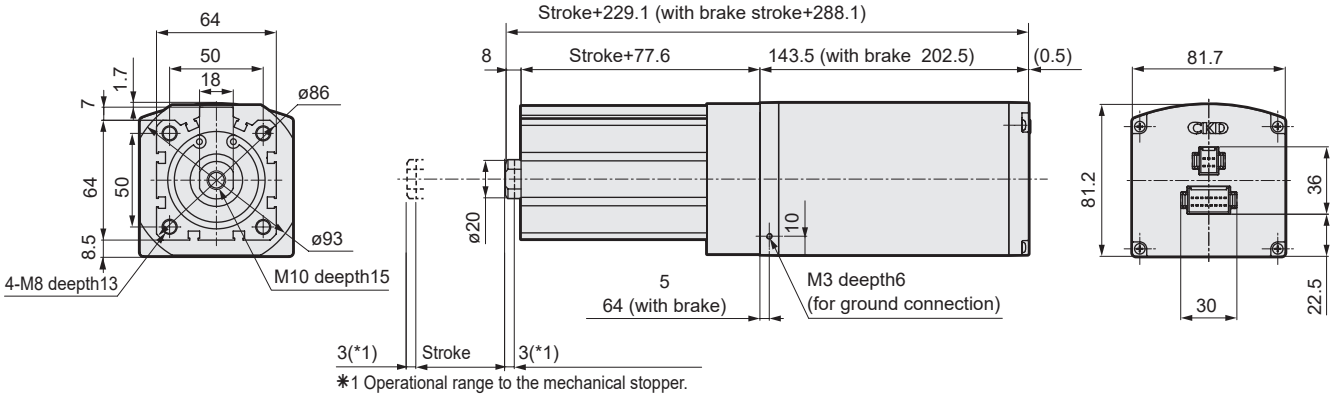
Pressing force



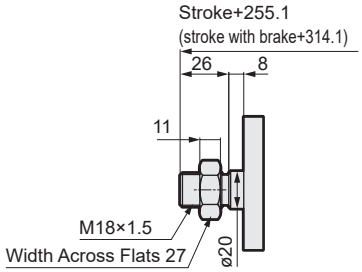
* The pressing force at the top is a reference value. Variations may occur according to conditions such as pressing speed.

Dimensions

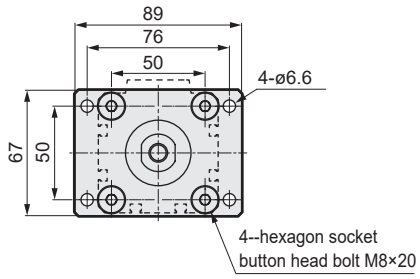
● GSSD2-50

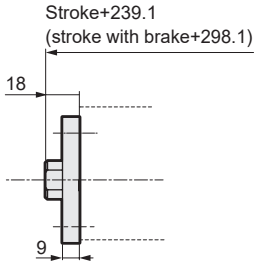


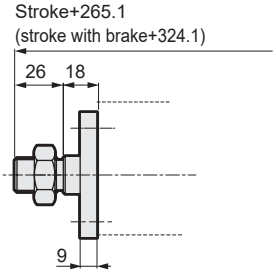
●Rod end male thread



●Rod side flange (FA)







[Dimensions by stroke]

Stroke code		025	050	075	100
Stroke (mm)		25	50	75	100
Weight (kg)	Without brake	2.6	2.7	2.9	3.1
	With brake	3.9	4	4.2	4.4

Model selection

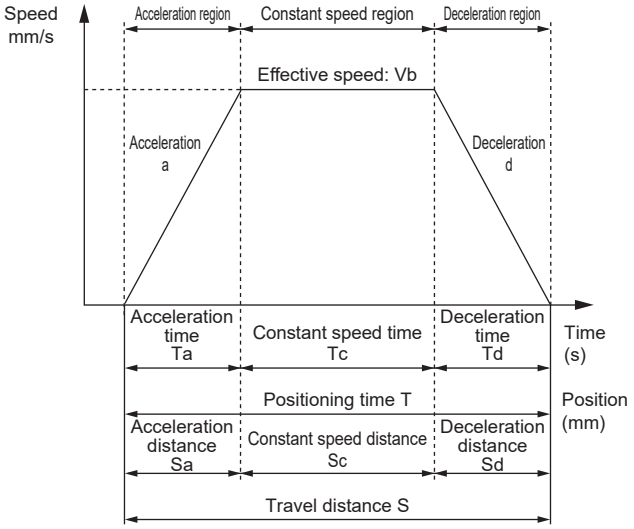
STEP 1 Confirming payload

Load capacity varies with mounting orientation, screw lead, transport speed, acceleration/deceleration and power supply voltage. Refer to the Series Variation (page 115), the specification table for each model and the Table of Load Capacity by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

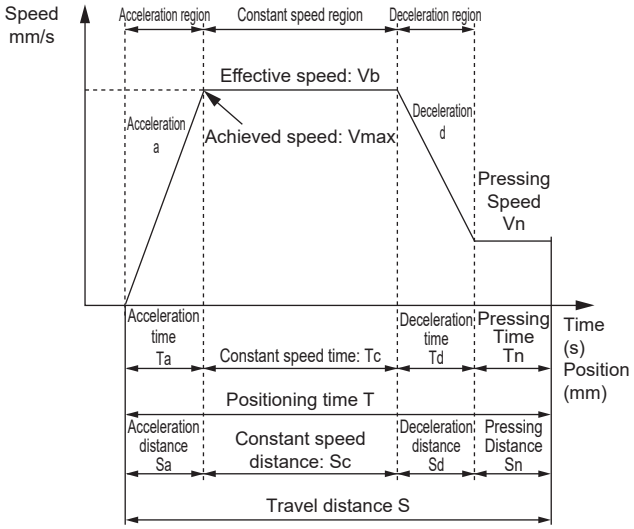
Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times S / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	Smaller of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=Vb / d
	Constant speed time	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 time	T	s	=Ta + Tc + Td

* Do not use at speeds that exceed the specifications.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* acceleration and deceleration differ depending on the product and working conditions. Refer to pages 116, 118 and 120 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ $9.8m/s^2$.

Positioning time for pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
	Pressing speed	Vn	mm/s	
	Pressing distance	Sn	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times (S - Sn+Vn^2 / 2 / d) / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=(Vb-Vn) / d
	Constant speed time	Tc	s	=Sc / Vb
	Pressing time	Tn	s	=Sn / Vn
	Acceleration distance	Sa	mm	$=(a\times Ta^2) / 2$
	Deceleration distance	Sd	mm	=((Vb+Vn) ×Td) / 2
	Constant speed distance	Sc	mm	=S - (Sa+Sd+Sn)
	Positioning time	T	s	=Ta + Tc + Td + Tn

* Do not use at speeds that exceed the specifications.
* Pressing speed differs depending on the product.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* acceleration and deceleration differ depending on the product and working conditions. Refer to pages 116, 118 and 120 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ $9.8m/s^2$.

MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

GSTK

Stopper-type

Electric actuator Motor specifications

CONTENTS

GSTK Series variation

Actuator model No.	Motor size	Screw lead (mm)	Max. thrust (N) Horizontal / Vertical	Stroke (mm) and Max. speed (mm/s) 10	20	30	Max. pushing force (N)
GSTK-20	□35	6	62	200			100
		9	39	350			70
GSTK-32	□42	6	113	200			220
		12	47	300			90
GSTK-50	□56	6	192		150		590
		12	129		300		425

Electric actuator Stopper

GSTK-20

□35 Stepping motor

How to order

GSTK - M - 20 G E - 06 020 B B N - R01

❶Size

20	20

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
09	9 mm

❺Stroke

010	10 mm
020	20 mm

❻Brake *2

N	None
B	Available

❼Encoder

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø6	
Stroke mm		10, 20	
Screw lead	mm	6	9
Max. thrust	N	62	39
Operation speed range *2	mm/s	10 to 200	12 to 350
Max. acceleration/deceleration	Vertical	0.3	0.3
Maximum pressing force	N	100	70
Pressing operation speed range	mm/s	10 to 20	12 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	93
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

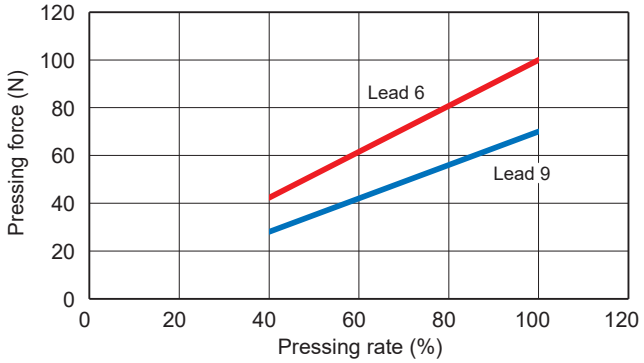
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and thrust

[When installed horizontally/vertically] (N)

Speed (mm/s)	Acceleration / Deceleration 0.3G Screw lead (mm)	
	6	9
10	62	-
12	62	39
50	62	39
70	39	39
100	39	39
150	15	31
200	7	29
250	-	7
300	-	7
350	-	3

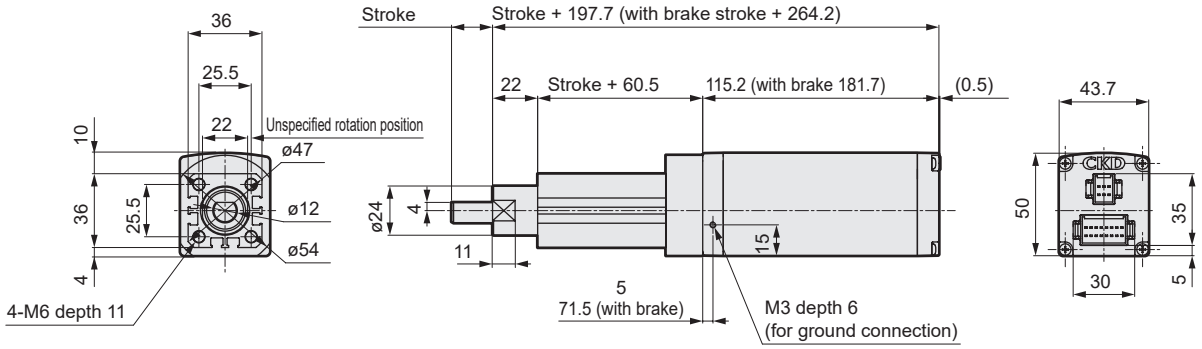
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTK-20



[Dimensions by stroke]

Stroke code		010	020
Stroke (mm)		10	20
Weight (kg)	Without brake	0.8	0.8
	With brake	1.3	1.3

Electric actuator Stopper

GSTK-32

□42 Stepping motor

How to order

GSTK - M - 32 G E - 06 020 B B N - R01

❶Size

32	32

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

010	10 mm
020	20 mm

❻Brake *2

N	None
B	Available

❼Encoder

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□42 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø8	
Stroke mm		10, 20	
Screw lead	mm	6	12
Max. thrust	N	113	47
Operation speed range *2	mm/s	10 to 200	15 to 300
Max. acceleration/deceleration	Vertical	0.3	0.3
Maximum pressing force	N	220	90
Pressing operation speed range	mm/s	10 to 20	15 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	70
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

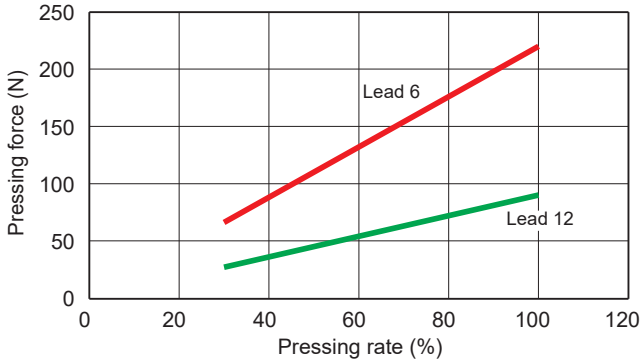
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and thrust

[When installed horizontally/vertically] (N)

Speed (mm/s)	Acceleration / Deceleration 0.3G Screw lead (mm)	
	6	12
10	86	-
15	86	43
50	113	47
70	50	47
100	50	47
150	19	47
200	7	44
250	-	11
300	-	11

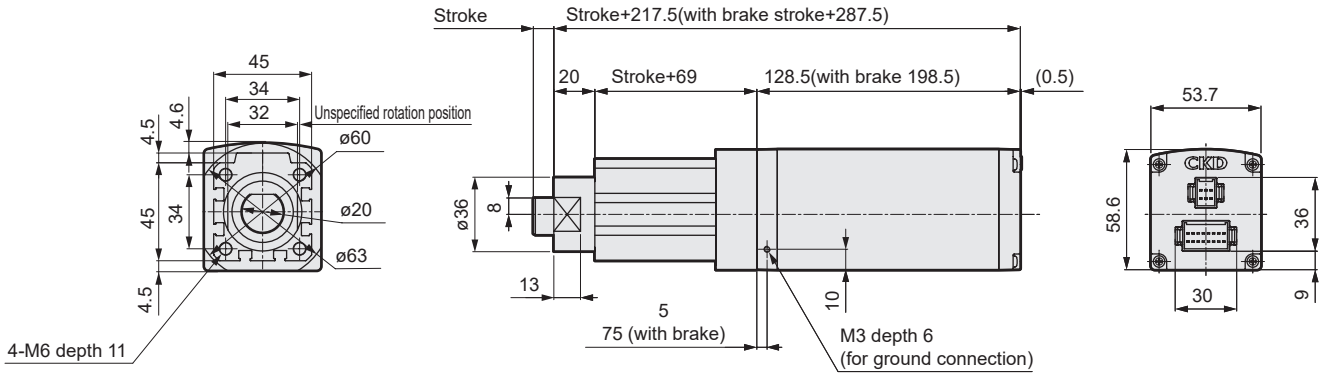
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTK-32



[Dimensions by stroke]

Stroke code		010	020
Stroke (mm)		10	20
Weight (kg)	Without brake	1.4	1.4
	With brake	2	2

Electric actuator Stopper type

GSTK-50

□56 Stepping motor

How to order

GSTK - M - 50 G E - 06 020 B B N - R01

❶Size

50	50

❷Applicable controller * 1

G	ECG-A, ECMG

❸Motor mounting direction

E	Straight mounting

❹Screw lead

06	6 mm
12	12 mm

❺Stroke

020	20 mm
030	30 mm

❻Brake *2

N	None
B	Available

❼Encoder

B	Absolute encoder
C	Incremental encoder

❽Relay cable * 3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø12	
Stroke	mm	20, 30	
Screw lead	mm	6	12
Max. thrust	N	192	129
Operation speed range *2	mm/s	20 to 150	20 to 300
Max. acceleration/deceleration	Vertical	0.3	0.3
Maximum pressing force	N	590	425
Pressing operation speed range	mm/s	20	20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	640	320
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

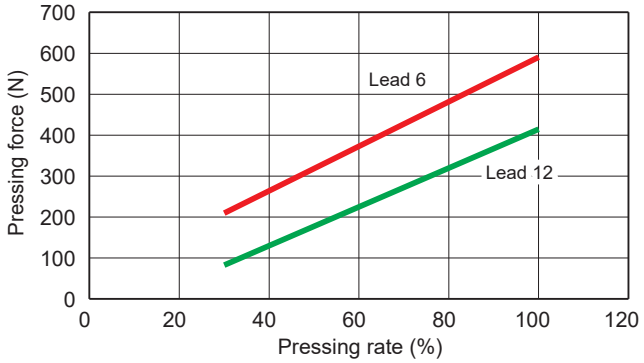
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and thrust

[When installed horizontally/vertically] (N)

Speed (mm/s)	Acceleration / Deceleration 0.3G Screw lead (mm)	
	6	12
20	192	35
50	137	129
70	47	117
100	47	102
150	7	39
200	-	39
250	-	19
300	-	6

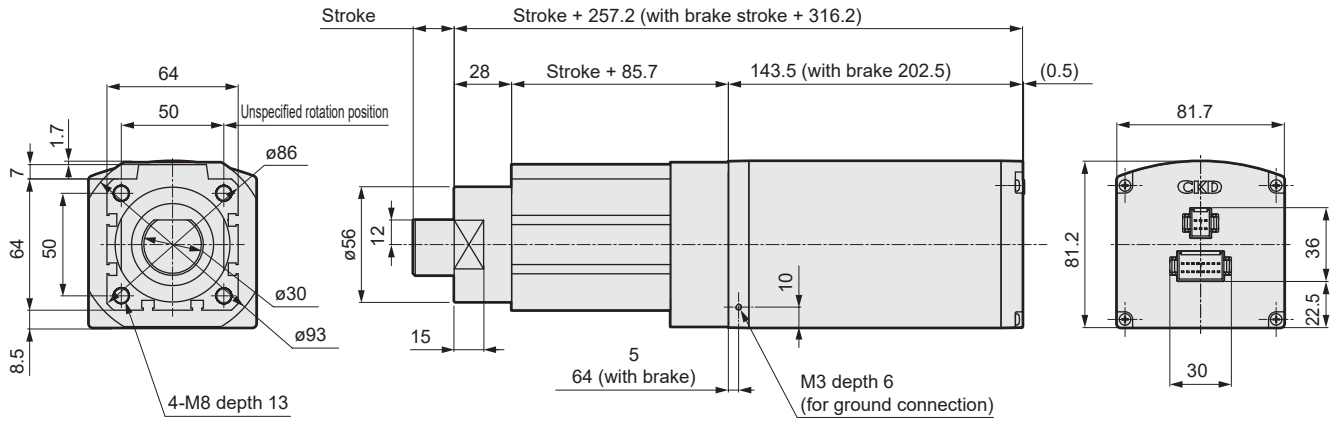
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTK-50



[Dimensions by stroke]

Stroke code		020	030
Stroke (mm)		20	30
Weight (kg)	Without brake	3	3.1
	With brake	4.3	4.4

Model selection

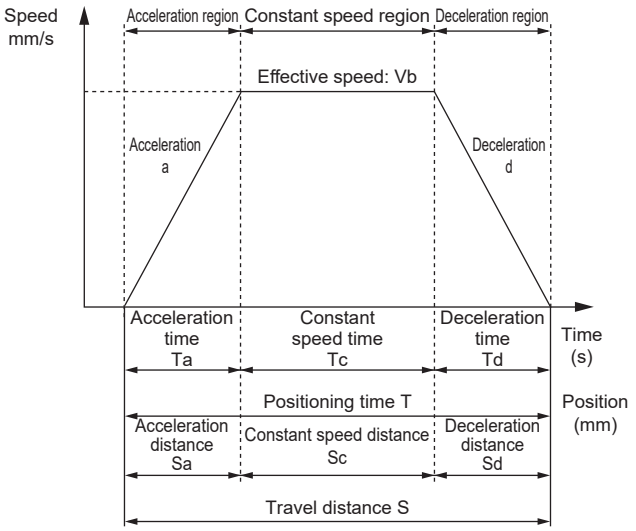
STEP 1 Confirming thrust

Thrust varies with size, screw lead, operation speed and acceleration speed. Refer to the Series Variation (page 125), the specification table for each model and the Table of Thrust by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

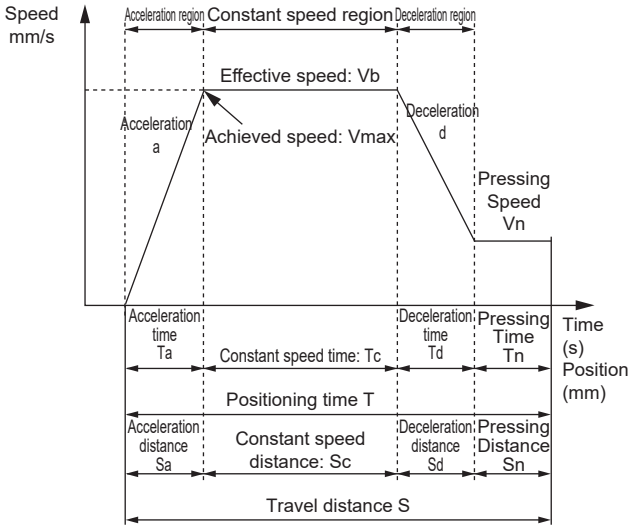
Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times S / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	Smaller of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=Vb / d
	Constant speed time	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 time	T	s	=Ta + Tc + Td

* Do not use at speeds that exceed the specifications.
* Depending on the acceleration/deceleration and stroke, the trapezoidal velocity waveform may not form (the set speed may not be reached). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 126, 128 and 130 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ 9.8m/s^2.

Positioning time for pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
	Pressing speed	Vn	mm/s	
	Pressing distance	Sn	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times(S-Sn+Vn^2 / 2 / d) / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=(Vb-Vn) / d
	Constant speed time	Tc	s	=Sc / Vb
	Pressing time	Tn	s	=Sn / Vn
	Acceleration distance	Sa	mm	$=(a\times Ta^2) / 2$
	Deceleration distance	Sd	mm	$=((Vb+Vn)\times Td) / 2$
	Constant speed distance	Sc	mm	=S-(Sa+Sd+Sn)
	Positioning time	T	s	=Ta + Tc + Td + Tn

* Do not use at speeds that exceed the specifications.
* Pressing speed differs depending on the product.
* Depending on the acceleration/deceleration and stroke, the trapezoidal velocity waveform may not form (the set speed may not be reached). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 126, 128 and 130 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ 9.8m/s^2.

STEP 3 Working range

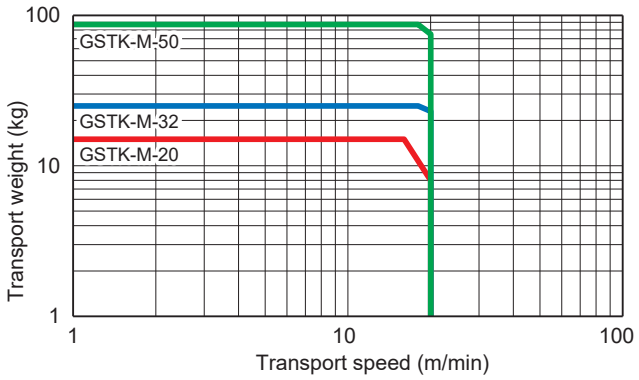
Select the model using transport weight (m) and transport speed (V) so that the model is within the allowable absorbed energy in the graph in the right .

(Example) Transport speed 15 m/min, transport weight 20 kg

[How to look at the graph]

For the selection method of the specifications above, obtain the intersection point of 15 m/min on the horizontal axis and 20 kg on the vertical axis of graph 1 and then select GSTK-32 within the allowable absorbed energy range.

Fig. 1 Allowable absorbed energy value



STEP 4 Lateral load and thrust

Depending on the degree of the lateral load applied to the rod end, the thrust varies when the rod is pulled. Therefore, confirm the required working thrust.

1. Calculate the lateral load (F) applied to the rod end.

$F=10 \cdot m \cdot n \cdot \mu_1$

F : Lateral load (N)

m : Transport weight(kg)

n : Number of transported objects

μ_1 : Coefficient of friction between transport pallet and conveyor

2. Obtain the thrust (P) required when the rod is pulled.

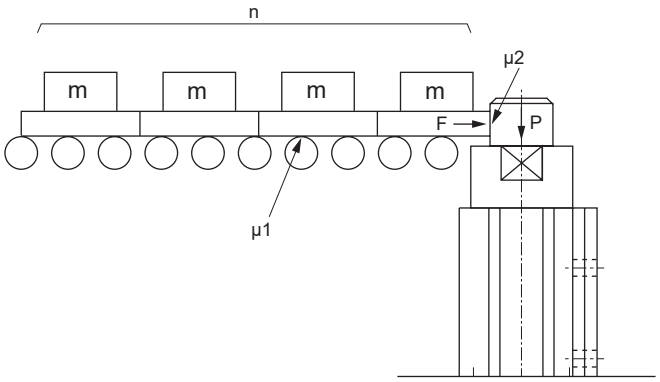
$P=F \cdot \mu_2$

P : Required thrust (N)

μ_2: Coefficient of friction between transported object and rod

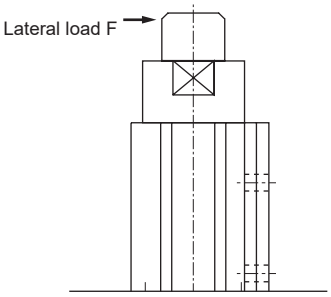
(Note) As the coefficient of friction varies depending on the material of the transported object, refer to the coefficient in the table below.

Transported object	Steel	Aluminum	Urethane
μ_2	0.5	0.8	2.0



Allowable lateral load

Size	Stroke (mm)		
	10	20	30
GSTK-20	106.5	93.2	-
GSTK-32	272.8	238.7	-
GSTK-50	-	582.8	525.8



MEMO

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

GSTG

Guided

Electric actuator
Motor specifications

CONTENTS

GSTG Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)					Max. Pressing force (N)
			Horizontal	Vertical	20	25	50	75	100	
GSTG-20	□35	6	4.4	6.4	250		250			100
		9	3.2	4	400		400	300		70
GSTG-32	□42	6	9	11.6		250				220
		12	4.8	4.8		500				90
GSTG-50	□56	6	14.8	19.6		250		200		590
		12	14.8	13.2		400		350		425

Electric actuator with guide

GSTG-20

□35 Stepping motor

How to order

GSTG - M - 20 G E - 06 020 B B N - R01

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller ✳1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
09	9 mm

❻Stroke

020	20 mm
050	50 mm
075	75 mm
100	100 mm

❼Brake ✳2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable ✳3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

✳1 For the controller, refer to page 189.
✳2 When using vertically, select "Yes".
✳3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø6	
Stroke	mm	20 to 100	
Screw lead	mm	6	9
Max. payload kg ✳1	Horizontal	4.4	3.2
	Vertical	6.4	4
Operation speed range ✳2	mm/s	10 to 250	12 to 400
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	100	70
Pressing operation speed range	mm/s	10 to 20	12 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	93
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

✳1 Payload varies according to acceleration/deceleration and speed.
✳2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

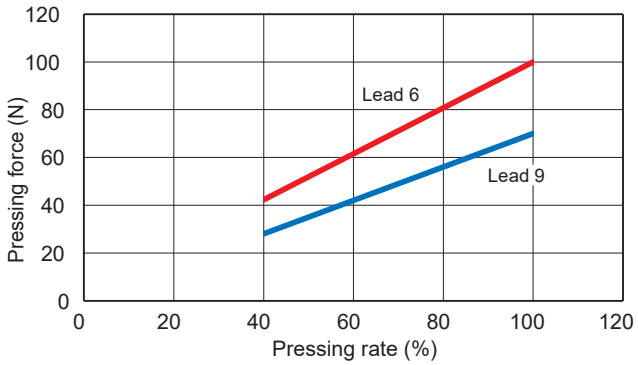
Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	0.8	0.3	-	-
12	0.8	0.3	1.5	1.1
50	4.4	3.9	3.2	2
70	4.4	3.9	3.2	2.7
100	4.4	3.9	3.2	2.7
150	4.4	3.9	3.2	2.7
200	2	1.5	3.2	2.7
250	2	1.5	2.4	1.9
300	-	-	0.4	1.9
350	-	-	0.4	-
400	-	-	0.4	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3G			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	6.4	5.9	-	-
12	6.4	5.9	4	3.5
50	6.4	5.9	4	3.5
70	4	3.5	4	3.5
100	4	3.5	4	3.5
150	1.6	1.1	3.2	2.7
200	0.8	0.3	3	2.7
250	-	-	0.8	0.3
300	-	-	0.8	0.3
350	-	-	0.4	-
400	-	-	-	-

✳ This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

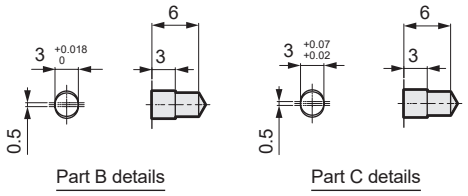
Pressing force

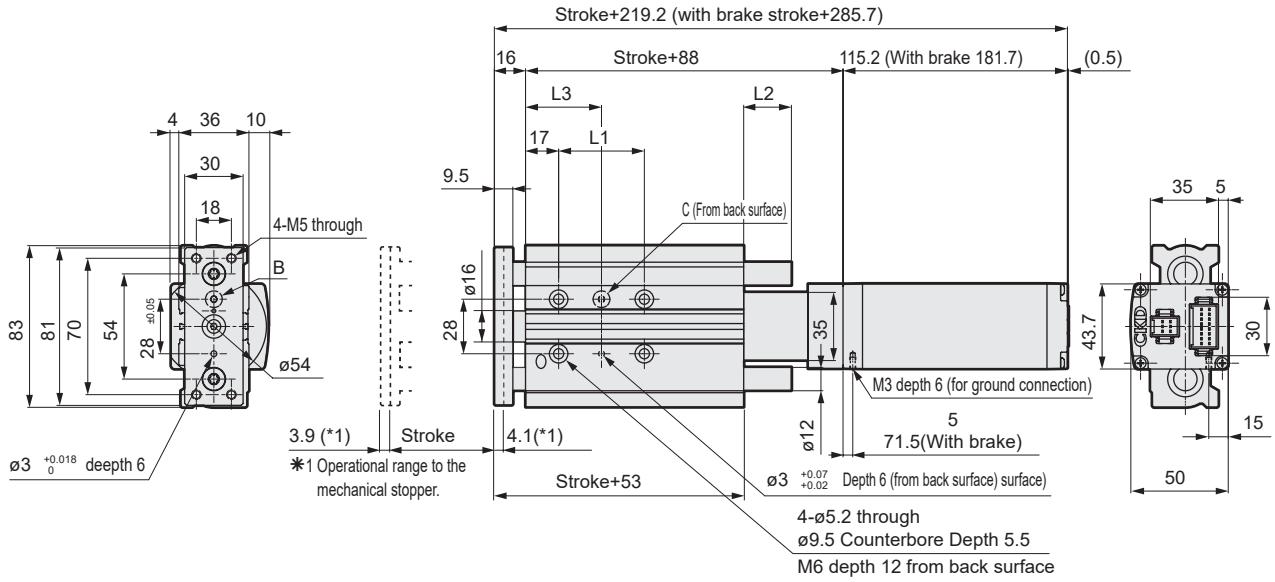


✱ The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTG-20





[Dimensions by stroke]

Stroke code		020	050	075	100
Stroke (mm)		20	50	75	100
L1		24	44	44	44
L2		0	0	24.5	24.5
L3		29	39	39	39
Weight (kg)	Without brake	1.3	1.5	1.8	2
	With brake	1.7	2	2.2	2.4

Electric actuator with guide

GSTG-32

□42 Stepping motor

How to order

GSTG - M - 32 G E - 06 025 B B N - R01

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller ✳1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❼Brake ✳2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable ✳3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

✳1 For the controller, refer to page 189.
✳2 When using vertically, select "Yes".
✳3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□42 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø8	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg ✳1	Horizontal	9	4.8
	Vertical	11.6	4.8
Operation speed range ✳2	mm/s	10 to 250	15 to 500
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	220	90
Pressing operation speed range	mm/s	10 to 20	15 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	70
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

✳1 Payload varies according to acceleration/deceleration and speed.
✳2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

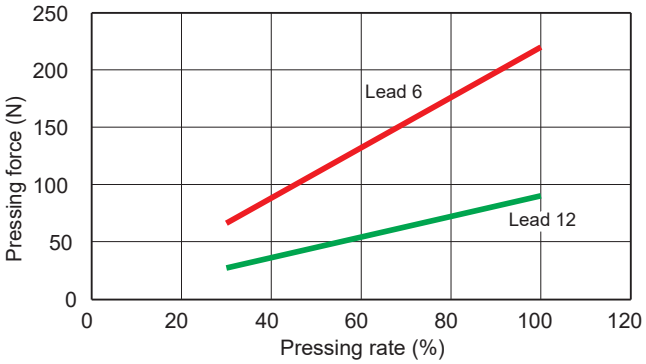
Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	1.6	1.1	-	-
15	1.6	1.1	1.2	0.7
50	6.8	6.3	4.8	4.3
70	6.8	6.3	4.8	4.3
100	9	8.7	4.8	4.3
150	6.8	6.3	3.6	3.1
200	2.8	2.3	3.6	3.1
250	0.8	0.3	3.6	3.1
300	-	-	3.6	3.1
350	-	-	1.6	1.1
400	-	-	1.6	1.1
500	-	-	0.8	0.3

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
10	8.8	8.3	-	-
15	8.8	8.3	4.4	3.9
50	11.6	11.1	4.8	4.3
70	5.2	4.7	4.8	4.3
100	5.2	4.7	4.8	4.3
150	2	1.5	4.8	4.3
200	0.8	0.3	4.5	4.3
250	-	-	1.2	0.7
300	-	-	1.2	0.7
350	-	-	-	-
400	-	-	-	-
500	-	-	-	-

✳ This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

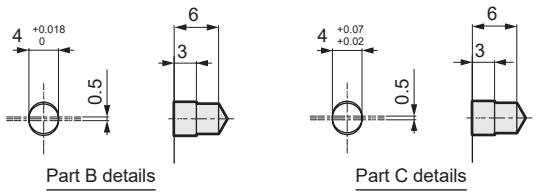
Pressing force

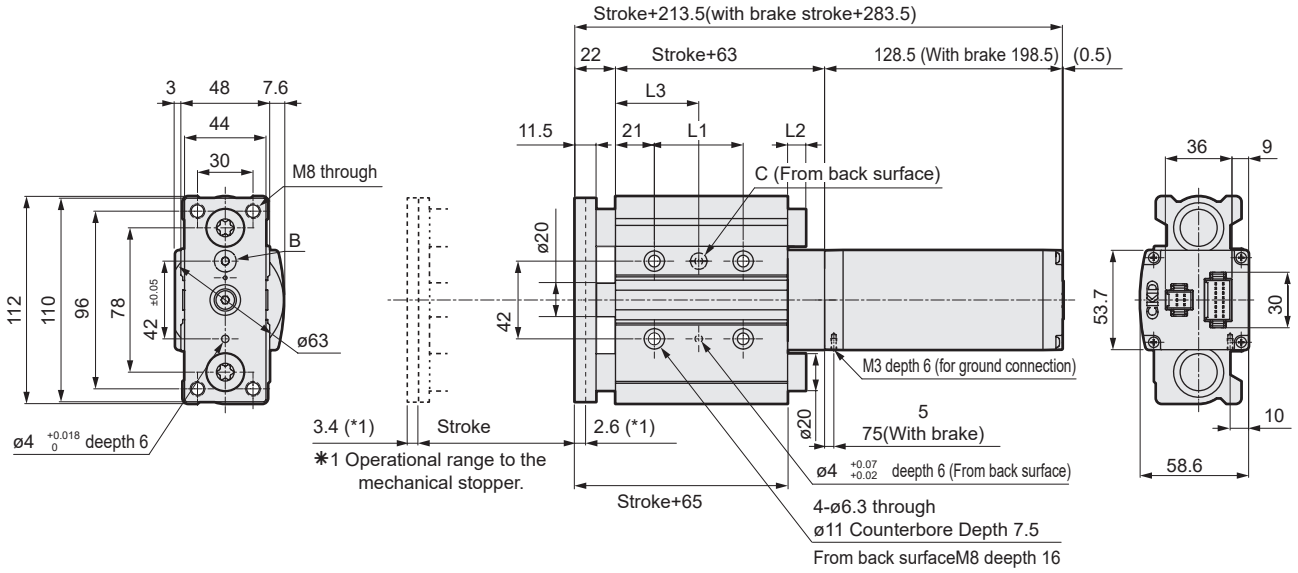


✳ The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTG-32





[Dimensions by stroke]

Stroke code		025	050	075	100
Stroke (mm)		25	50	75	100
L1		24	48	48	48
L2		13.5	13.5	34.5	34.5
L3		33	45	45	45
Weight (kg)	Without brake	2.6	3	3.5	3.8
	With brake	3.2	3.6	4.1	4.4

Electric actuator with guide

GSTG-50

□56 Stepping motor

How to order

GSTG - M - 50 G E - 06 025 B B N - R01

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller ✳1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Screw lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm
075	75 mm
100	100 mm

❼Brake ✳2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable ✳3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

✳1 For the controller, refer to page 189.
✳2 When using vertically, select "Yes".
✳3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø12	
Stroke	mm	25 to 100	
Screw lead	mm	6	12
Max. payload kg ✳1	Horizontal	14.8	14.8
	Vertical	19.6	13.2
Operation speed range ✳2	mm/s	20 to 250	20 to 400
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	590	425
Pressing operation speed range	mm/s	20	20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	640	320
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

✳1 Payload varies according to acceleration/deceleration and speed.
✳2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

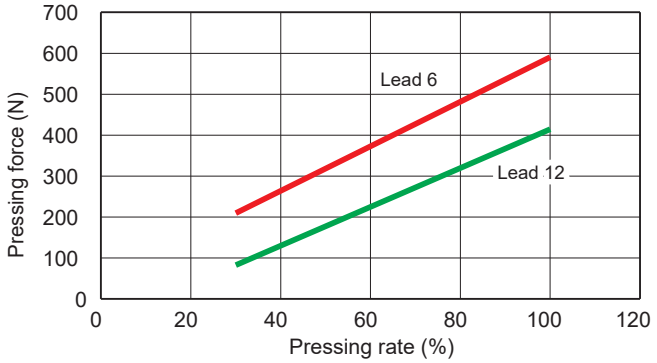
Speed (mm/s)	Acceleration / Deceleration 0.3 / 0.7G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
20	14.8	12.8	4.4	2.4
50	9.6	7.6	9.6	7.6
70	9.6	7.6	9.6	7.6
100	9.6	7.6	14.8	12.8
150	6	4	10.8	8.8
200	4	2	10.8	8.8
250	0.4	-	6	4
300	-	-	6	4
350	-	-	2.8	0.8
400	-	-	0.7	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G			
	Screw lead			
	6 mm		12 mm	
	Stroke (mm)			
	50 or less	100 or less	50 or less	100 or less
20	19.6	18.6	3.6	2.6
50	14	13	13.2	12.2
70	4.8	3.8	12	11
100	4.8	3.8	10.5	11
150	0.8	-	4	3
200	-	-	4	3
250	-	-	2	1.5
300	-	-	0.7	-
400	-	-	-	-

✳ This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

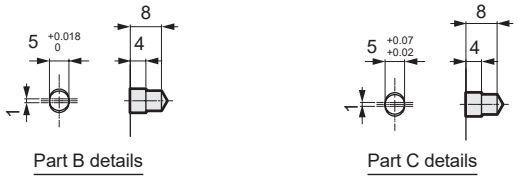
Pressing force

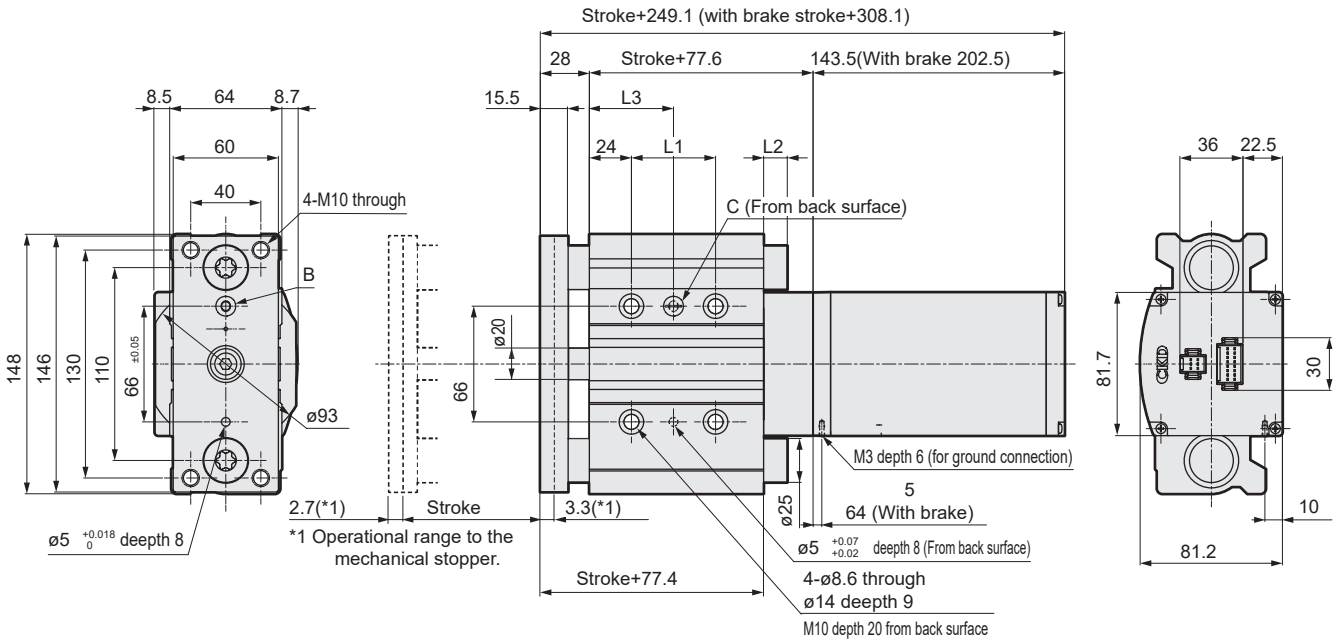


✱ The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTG-50





[Dimensions by stroke]

Stroke code		025	050	075	100
Stroke (mm)		25	50	75	100
L1		24	48	48	48
L2		13.1	13.1	38.1	38.1
L3		36	48	48	48
Weight (kg)	Without brake	4.9	5.5	6.3	6.9
	With brake	6.2	6.8	7.6	8.2

Model selection

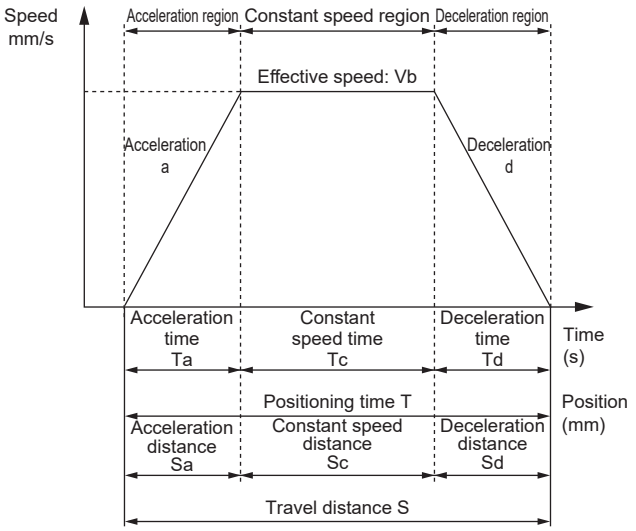
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead, transport speed, acceleration/deceleration and power supply voltage. Refer to the Series Variation (page 137), the specification table for each model and the Table of Payload by Speed and Acceleration / Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

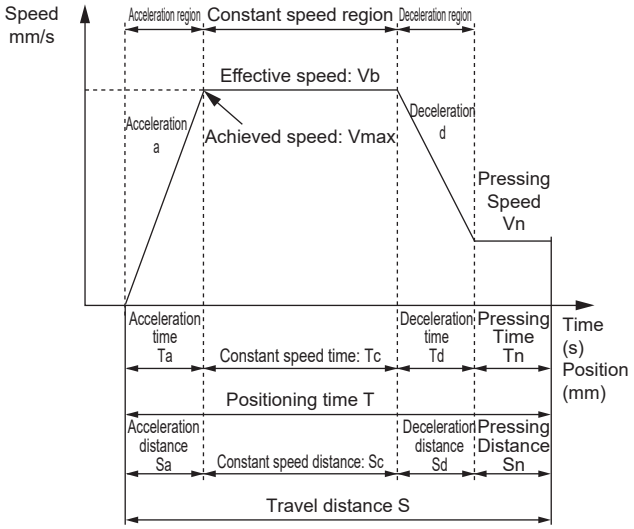
Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=\{2\times a\times d\times S / (a+d)\}^{1/2}$
	Effective speed	Vb	mm/s	Smaller of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=Vb / d
	Constant speed time	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 time	T	s	=Ta + Tc + Td

- Do not use at speeds that exceed the specifications.
- Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
- Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 138, 140 and 142 for details.
- While settling time depends on working conditions, it may take 0.2 seconds or so.
- 1 G ≈ $9.8m/s^2$.

Positioning time for pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
	Pressing speed	Vn	mm/s	
	Pressing distance	Sn	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times(S-Sn+Vn^2 / 2 / d) / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=(Vb-Vn) / d
	Constant speed time	Tc	s	=Sc / Vb
	Pressing time	Tn	s	=Sn / Vn
	Acceleration distance	Sa	mm	$=(a\times Ta^2) / 2$
	Deceleration distance	Sd	mm	$=((Vb+Vn)\times Td) / 2$
	Constant speed distance	Sc	mm	=S-(Sa+Sd+Sn)
	Positioning time	T	s	=Ta + Tc + Td + Tn

- Do not use at speeds that exceed the specifications.
- Pressing speed differs depending on the product.
- Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
- Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 138, 140 and 142 for details.
- While settling time depends on working conditions, it may take 0.2 seconds or so.
- 1 G ≈ $9.8m/s^2$.

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

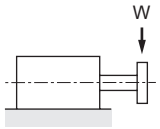
Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

Static allowable load and moment

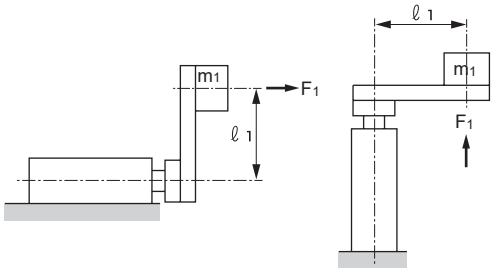
Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
GSTG-20	20	67	35.3	0.9	35.3
	50	46		0.62	
	75	60		0.8	
	100	51		0.69	
GSTG-32	25	223	171.5	4.35	171.5
	50	180		3.5	
	75	179		3.48	
	100	156		3.04	
GSTG-50	25	348	294	9.56	294
	50	296		7.86	
	75	292		8.02	
	100	257		7.07	

●Lateral load W (N)



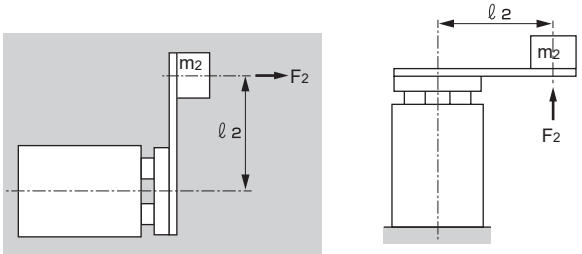
●Bending moment MP (N·m)

MP = F1 × ℓ1 = 10 × m1 × G × ℓ1



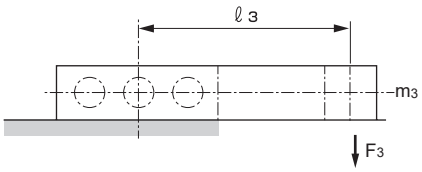
●Radial moment MR. (N·m)

MR = F2 × ℓ2 = 10 × m2 × G × ℓ2



●Torsion moment MY (N·m)

MY = F3 × ℓ3 = 10 × m3 × ℓ3

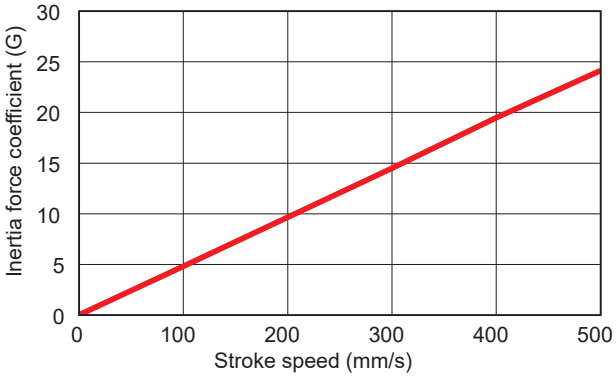


m1: **m2**: **m3**: } Load (kg)

ℓ1: **ℓ2**: **ℓ3**: } Eccentric distance (m)

G: Inertia force coefficient

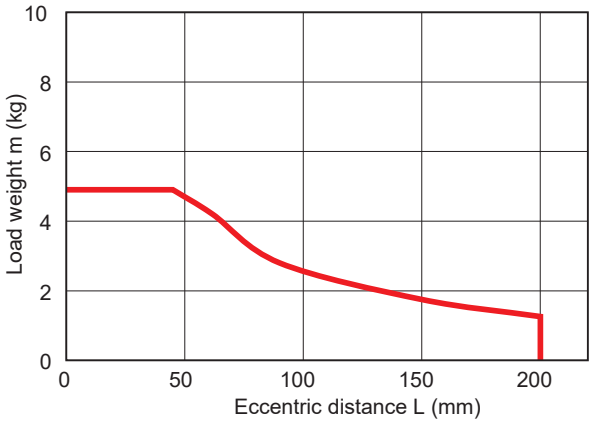
Fig. 1 Trend of inertia force coefficient for guided type



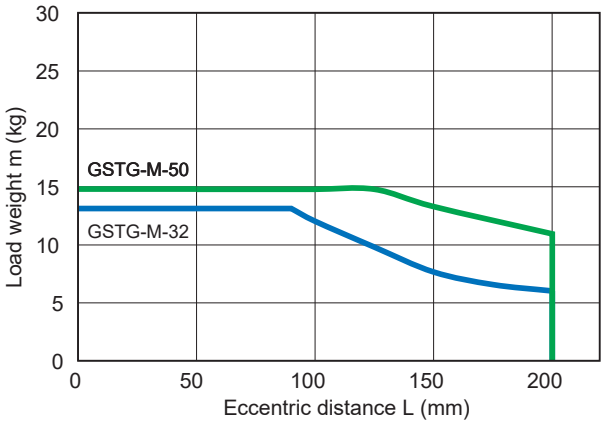
STEP 4 Checking allowable overhang length

Make sure that the overhang length during operation is within the allowable range.

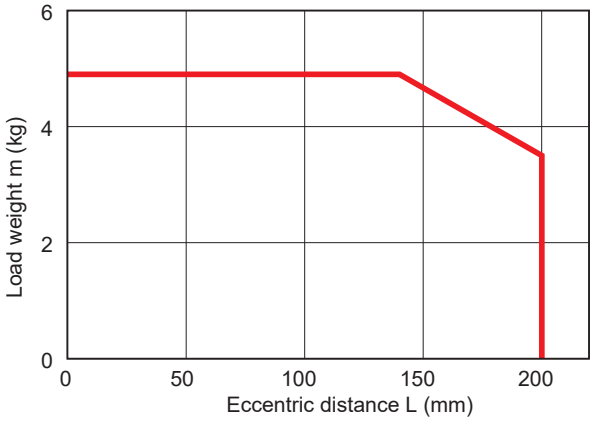
● GSTG-M-20
- Stroke 50 mm or less



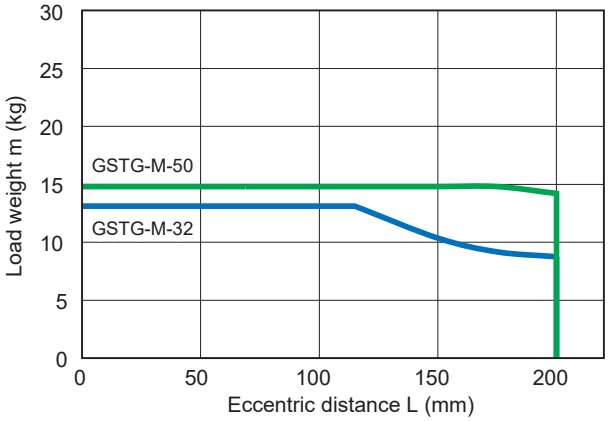
● GSTG-M-32, 50
- Stroke 50 mm or less



● GSTG-M-20
- Over 50 mm stroke

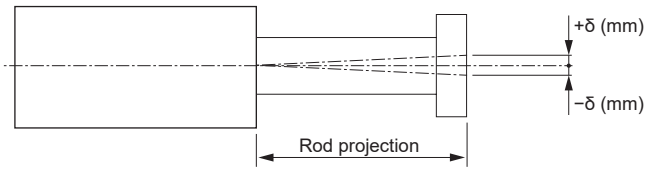


● GSTG-M-32, 50
- Over 50 mm stroke

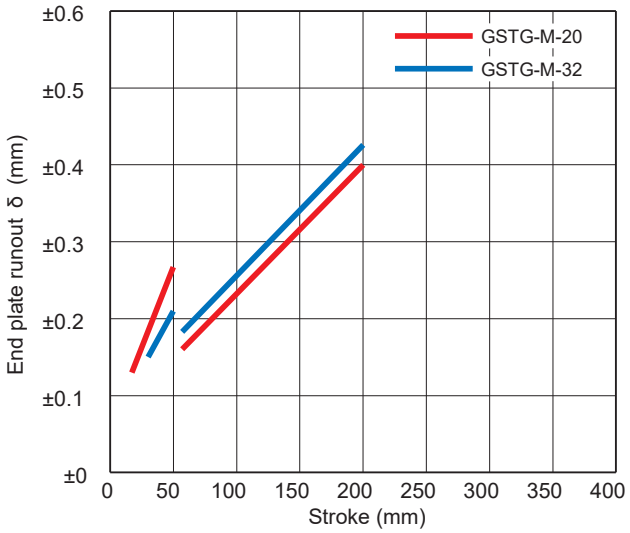


Deflection

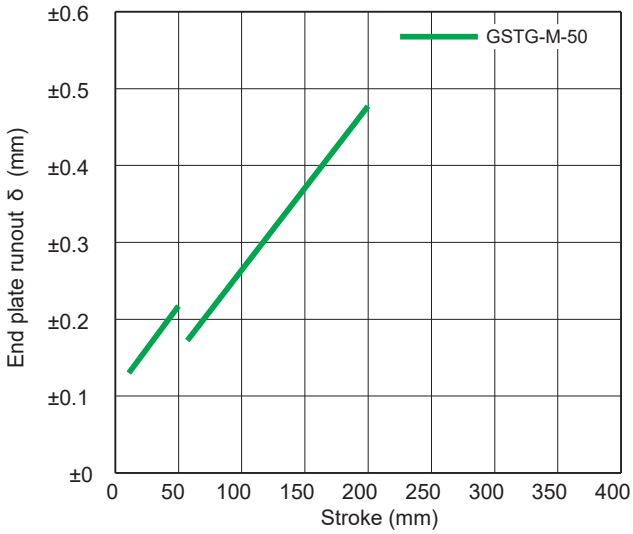
For the runout amount δ produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)



● GSTG-M-20, 32

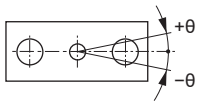


● GSTG-M-50



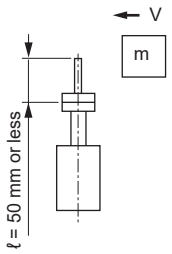
Non-rotating accuracy

(reference value)



Size	Non-rotating accuracy θ (degree)
GSTG-20	±0.07
GSTG-32	±0.06
GSTG-50	±0.05

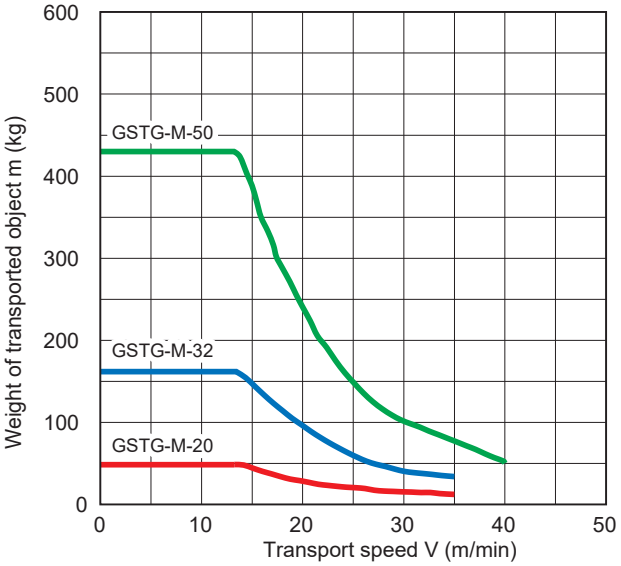
Specified range when using the product as a stopper



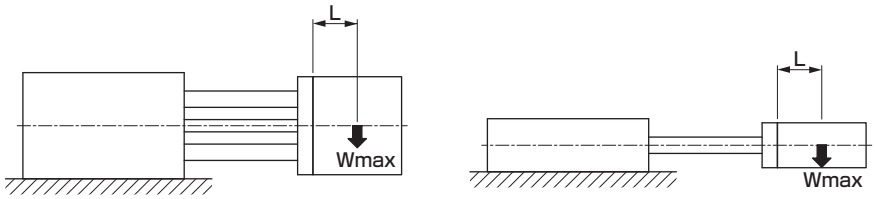
✳1 When using the cylinder as a stopper, select a model with stroke 50 or less.
✳2 Make sure that the total length of the stopper is ℓ=50 mm or less.
✳3 When fixing the actuator body, make sure that the screw insertion depth of the bolt is 2d and over, and take countermeasures for preventing looseness (adhesive, spring washer, etc.) into consideration.
✳4 Refer to page 22 for the calculation of the required working thrust.
✳5 Calculate the actuator thrust with the following formula.
Thrust = vertical payload ×10 (N)

Impact load

GSTG-M (metal bush bearing)

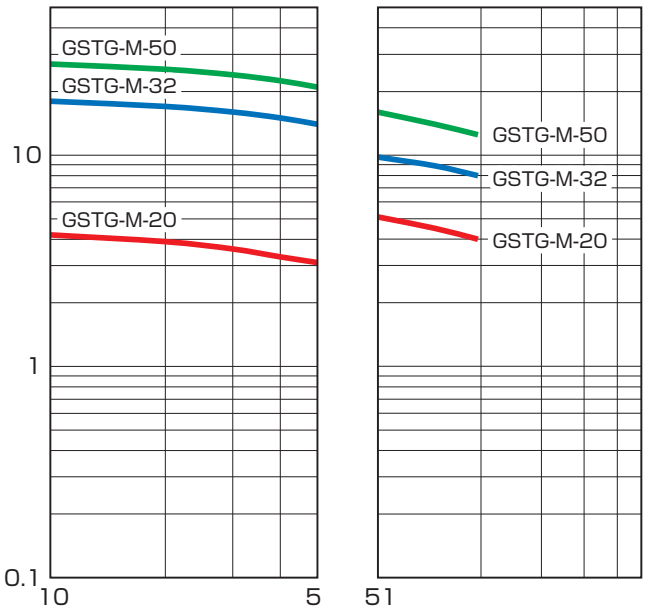


Allowable lateral load | Metal bush bearing

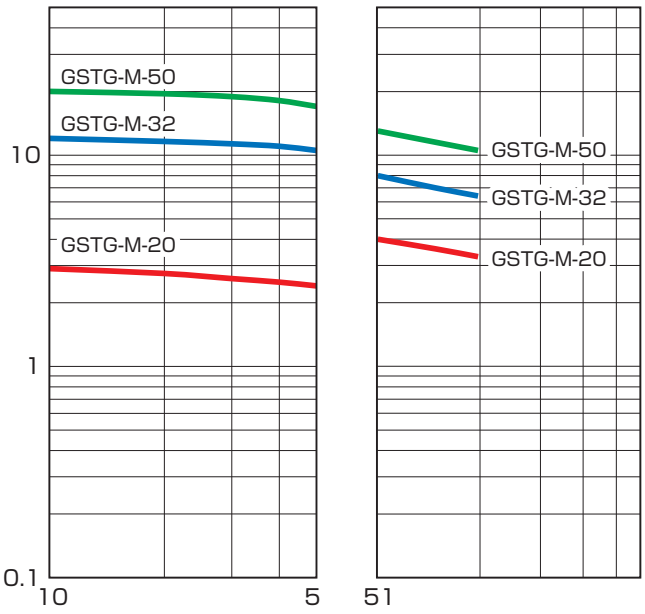


Wmax: Lateral load (kg)
L : Load center of gravity position (mm)

●For L=50mm



●For L=100mm



Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

GSTS

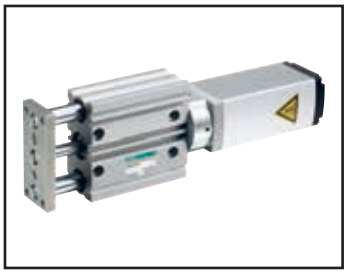
Guided

Electric actuator
Motor specifications

CONTENTS

DSTS Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)		Max. Pressing force (N)
			Horizontal	Vertical	25	50	
GSTS-20	□35	6	4.4	6.4	250		100
		9	3.2	4	400		70
GSTS-32	□42	6	9	11.6	250		220
		12	4.8	4.8	500		90
GSTS-50	□56	6	14.8	19.6	250		590
		12	14.8	13.2	400		425



Electric actuator with guide

GSTS-20

□35 Stepping motor

How to order

GSTS - M - 20 G E - 06 025 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
09	9 mm

❻Stroke

025	25 mm
050	50 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For the controller, refer to page 189.
*2 When using vertically, select "Yes".
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø6	
Stroke	mm	25, 50	
Screw lead	mm	6	9
Max. payload kg *1	Horizontal	4.4	3.2
	Vertical	6.4	4
Operation speed range *2	mm/s	10 to 250	12 to 400
Max. acceleration/ deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	100	70
Pressing operation speed range	mm/s	10 to 20	12 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	93
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

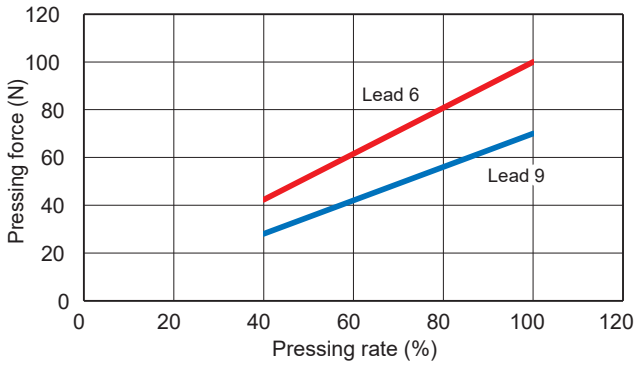
Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G	
	Screw lead	
	6 mm	12 mm
	Stroke (mm)	
	50 or less	50 or less
10	0.8	-
12	0.8	1.5
50	4.4	3.2
70	4.4	3.2
100	4.4	3.2
150	4.4	3.2
200	2	3.2
250	2	2.4
300	-	0.4
350	-	0.4
400	-	0.4

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G	
	Screw lead	
	6 mm	12 mm
	Storke (mm)	
	50 or less	50 or less
10	6.4	-
12	6.4	4
50	6.4	4
70	4	4
100	4	4
150	1.6	3.2
200	0.8	3
250	-	0.8
300	-	0.8
350	-	0.4
400	-	-

* When no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

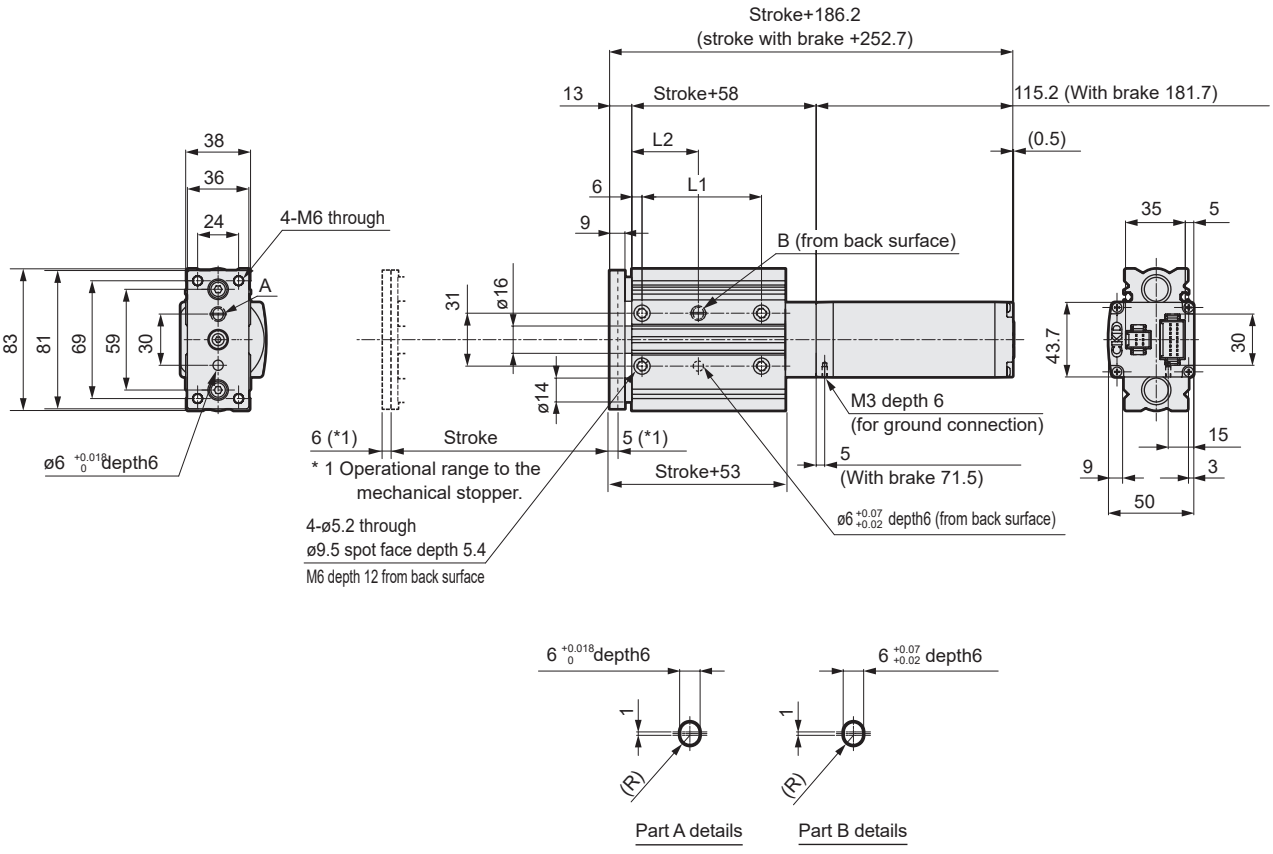
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

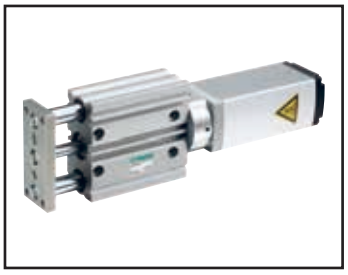
Dimensions

● GSTS-20



[Dimensions by stroke]

Stroke code		025	050
Stroke (mm)		25	50
L1		45	70
L2		26.5	39
Weight (kg)	Without brake	1.2	1.5
	With brake	1.7	1.9



Electric actuator with guide

GSTS-32

□42 Stepper motor

How to order

GSTS - M - 32 G E - 06 025 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For the controller, refer to page 189.
*2 When using vertically, select "Yes".
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□42 Stepper motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø8	
Stroke	mm	25, 50	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	9	4.8
	Vertical	11.6	4.8
Operation speed range *2	mm/s	10 to 250	15 to 500
Max. acceleration/ deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	220	90
Pressing operation speed range	mm/s	10 to 20	15 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	70
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

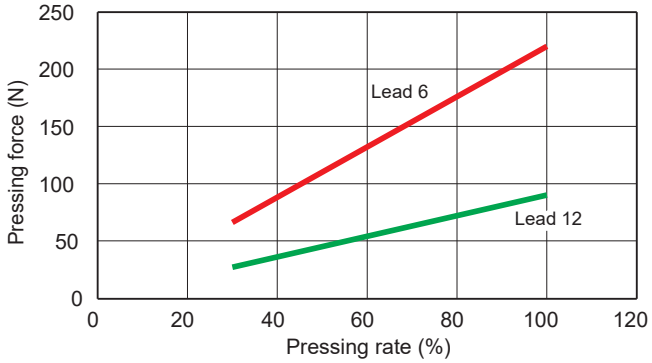
Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G	
	Screw lead	
	6 mm	12 mm
	Stroke (mm)	
	50 or less	50 or less
10	1.6	-
15	1.6	1.2
50	6.8	4.8
70	6.8	4.8
100	9	4.8
150	6.8	3.6
200	2.8	3.6
250	0.8	3.6
300	-	3.6
350	-	1.6
400	-	1.6
500	-	0.8

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G	
	Screw lead	
	6 mm	12 mm
	Storke (mm)	
	50 or less	50 or less
10	8.8	-
15	8.8	4.4
50	11.6	4.8
70	5.2	4.8
100	5.2	4.8
150	2	4.8
200	0.8	4.5
250	-	1.2
300	-	1.2
350	-	-
400	-	-
500	-	-

* When no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

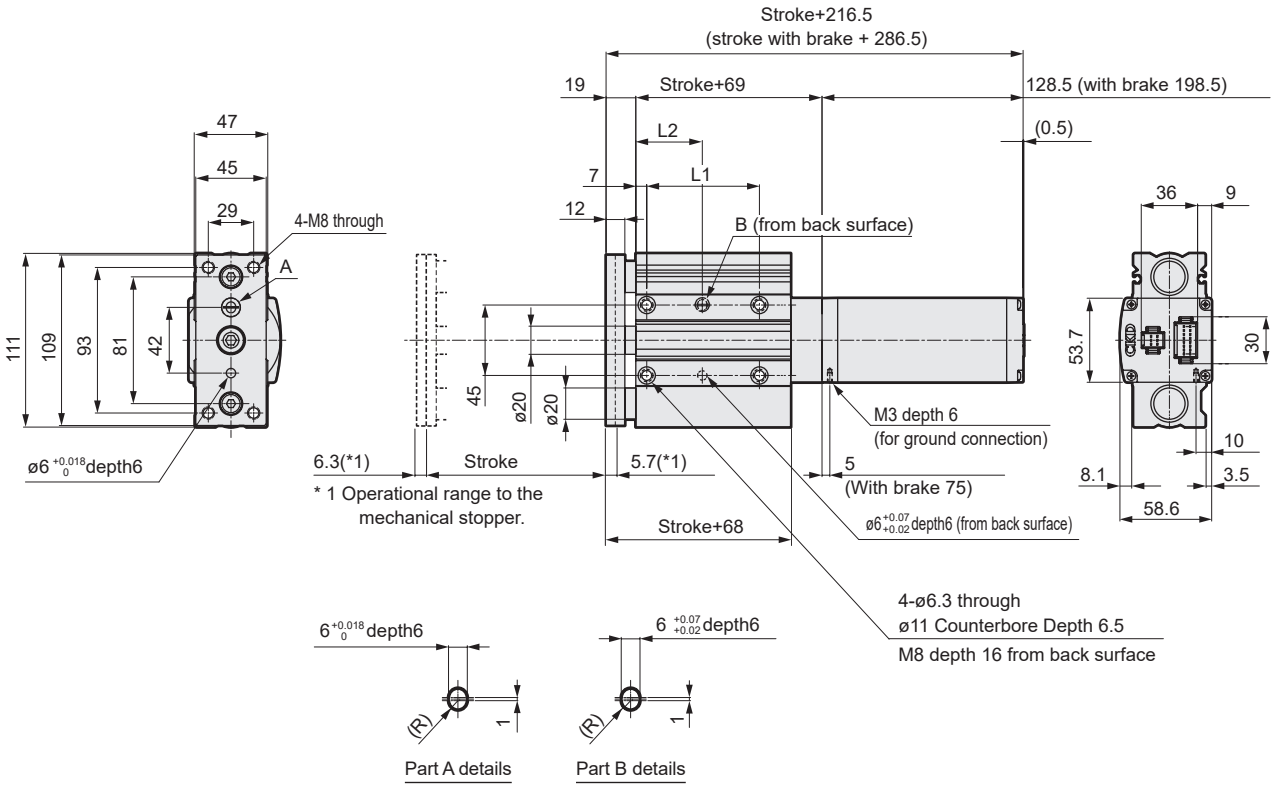
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

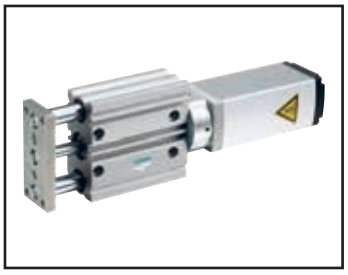
Dimensions

● GSTS-32



[Dimensions by stroke]

Stroke code		025	050
Stroke (mm)		25	50
L1		47	72
L2		30	42.5
Weight (kg)	Without brake	2.4	2.8
	With brake	3	3.4



Electric actuator with guide

GSTS-50

□56 Stepping motor

How to order

GSTS - M - 50 G E - 06 025 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

025	25 mm
050	50 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 For the controller, refer to page 189.
*2 When using vertically, select "Yes".
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø12	
Stroke	mm	25, 50	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	14.8
	Vertical	19.6	13.2
Operation speed range *2	mm/s	20 to 250	20 to 400
Max. acceleration/ deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	590	425
Pressing operation speed range	mm/s	20	20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	640	320
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

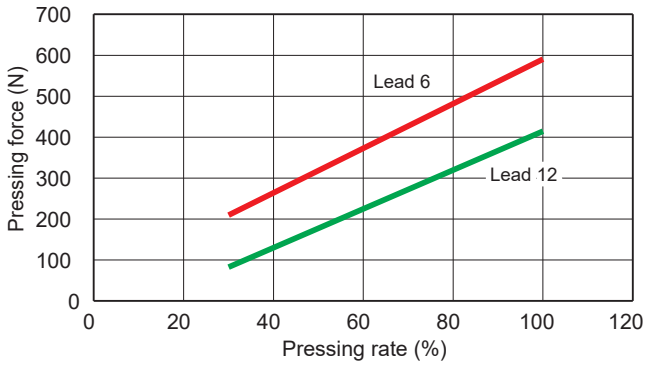
Speed (mm/s)	Acceleration / Deceleration 0.3G / 0.7G	
	Screw lead	
	6 mm	12 mm
	Stroke (mm)	
	50 or less	50 or less
20	14.8	4.4
50	9.6	9.6
70	9.6	9.6
100	9.6	14.8
150	6	10.8
200	4	10.8
250	0.4	6
300	-	6
350	-	2.8
400	-	0.7

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G	
	Screw lead	
	6 mm	12 mm
	Storke (mm)	
	50 or less	50 or less
20	19.6	3.6
50	14	13.2
70	4.8	12
100	4.8	10.5
150	0.8	4
200	-	4
250	-	2
300	-	0.7
400	-	-

* When no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

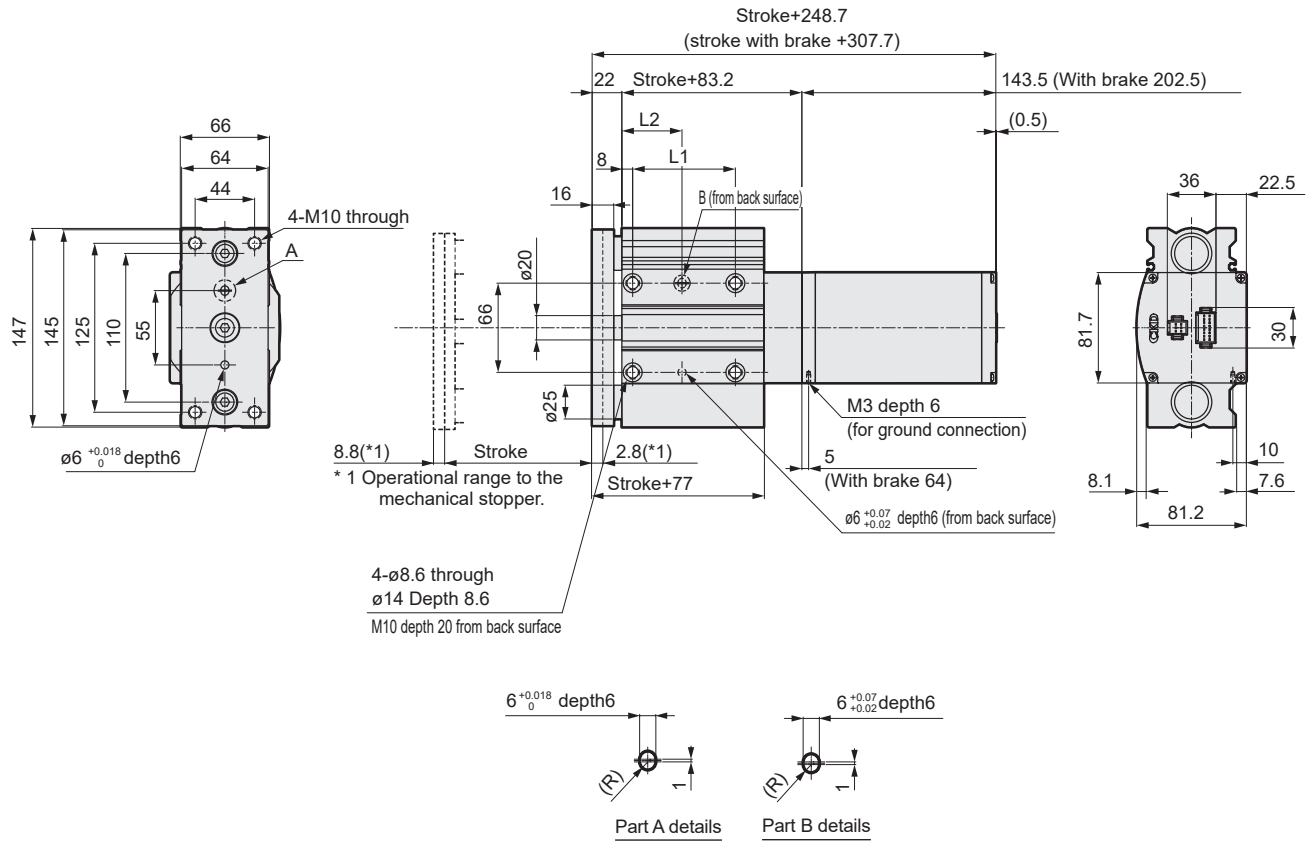
Pressing force



* The pressing force at the top of the is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTS-50



[Dimensions by stroke]

Stroke code		025	050
Stroke (mm)		25	50
L1		51	76
L2		32	44.5
Weight (kg)	Without brake	4.4	5
	With brake	5.7	6.3

Model selection

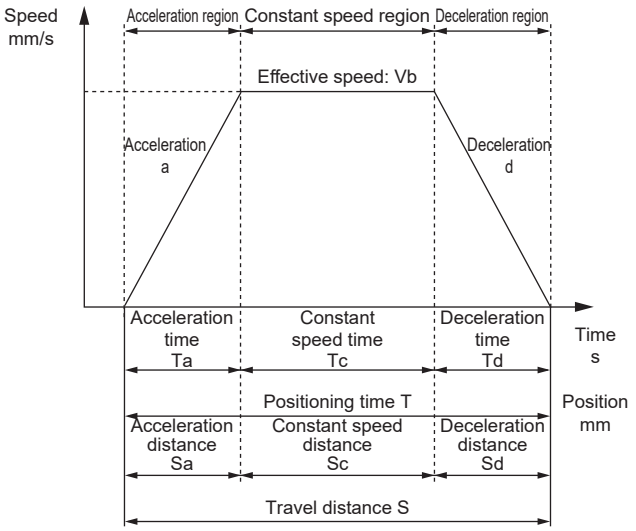
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead, transport speed, acceleration/deceleration and power supply voltage. Refer to the Series Variation (page 151), the specification table for each model and the Table of Load Capacity by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

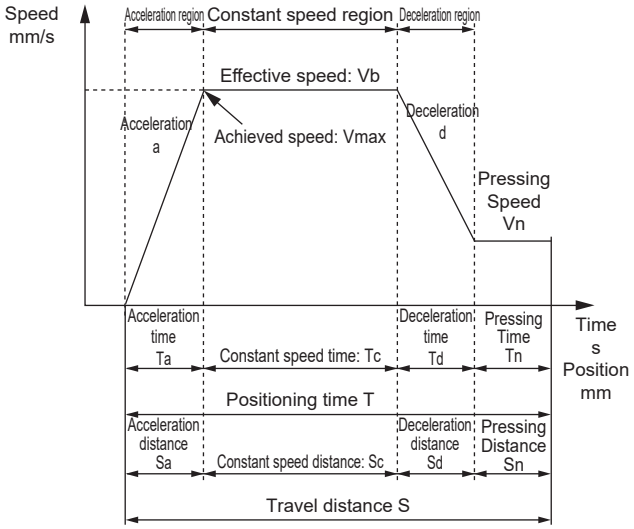
Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=\{2\times a\times d\times S / (a+d)\}^{1/2}$
	Effective speed	Vb	mm/s	Smaller of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=Vb / d
	Constant speed time	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 time	T	s	=Ta + Tc + Td

* Do not use at speeds that exceed the specifications.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 152, 154 and 156 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ 9.8m/s^2.

Positioning time for pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
	Pressing speed	Vn	mm/s	
	Pressing distance	Sn	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times(S-Sn+Vn^2 / 2 / d) / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=(Vb-Vn) / d
	Constant speed time	Tc	s	=Sc / Vb
	Pressing time	Tn	s	=Sn / Vn
	Acceleration distance	Sa	mm	$=(a\times Ta^2) / 2$
	Deceleration distance	Sd	mm	=((Vb+Vn)×Td) / 2
	Constant speed distance	Sc	mm	=S-(Sa+Sd+Sn)
	Positioning time	T	s	=Ta + Tc + Td + Tn

* Do not use at speeds that exceed the specifications.
* Pressing speed differs depending on the product.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 152, 154 and 156 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ 9.8m/s^2.

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

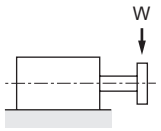
Static allowable load and moment

Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
GSTS-M-20	25	48	32.6	0.71	32.6
	50	35		0.52	
GSTS-M-32	25	141	107.4	2.86	107.4
	50	109		2.21	
GSTS-M-50	25	213	201.7	5.86	201.7
	50	170		4.68	

When operating the unit under a load, calculate the allowable load using the following formula.
Catalog allowable lateral load × 0.9

●Lateral load W (N)

*When installed vertically

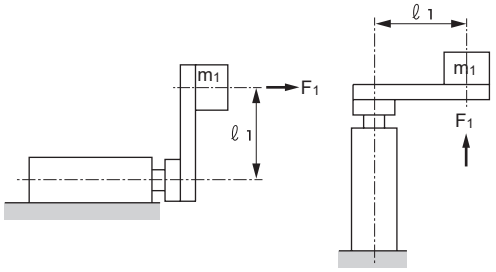


$$\frac{m_1 \times \ell_1 \times 10}{L} \leq W$$

Size	L
20	0.016+st
32	0.022+st
50	0.025+st

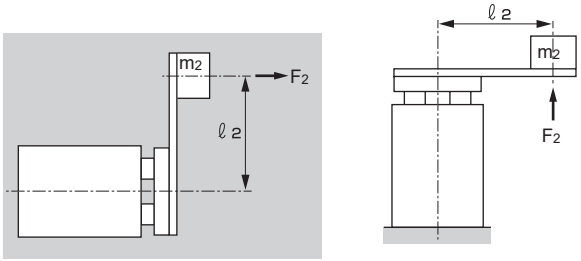
●Bending moment MP (N·m)

MP = F1 × ℓ1 = 10 × m1 × G × ℓ1



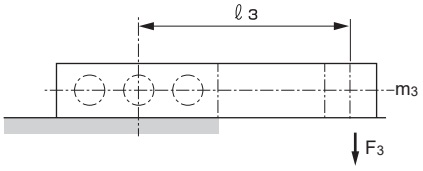
●Radial moment MR. (N·m)

MR = F2 × ℓ2 = 10 × m2 × G × ℓ2



●Torsion moment MY (N·m)

MY= F3 × ℓ3 = 10 × m3 × ℓ3

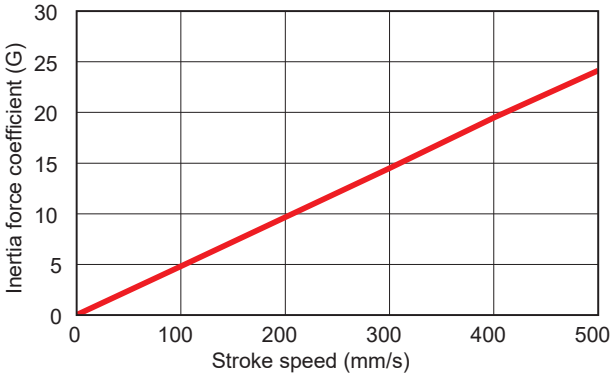


m1: **m2**: **m3**: } Load (kg)

ℓ1: **ℓ2**: **ℓ3**: } Eccentric distance (m)

G: Inertia force coefficient

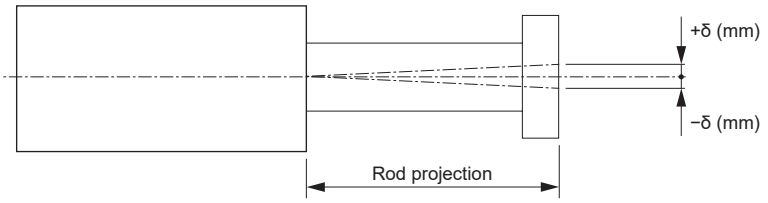
Fig. 1 Trend of inertia force coefficient for guided type

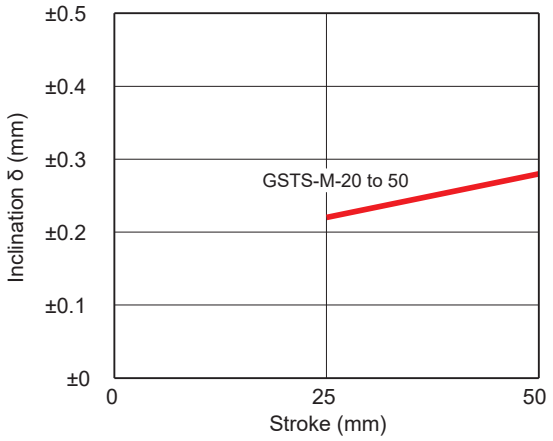


Model selection

Deflection

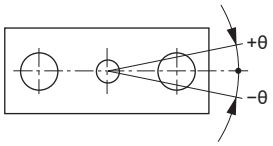
For the inclination that is produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)





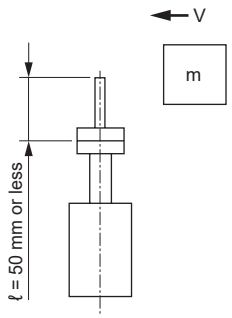
Non-rotating accuracy

(reference value)



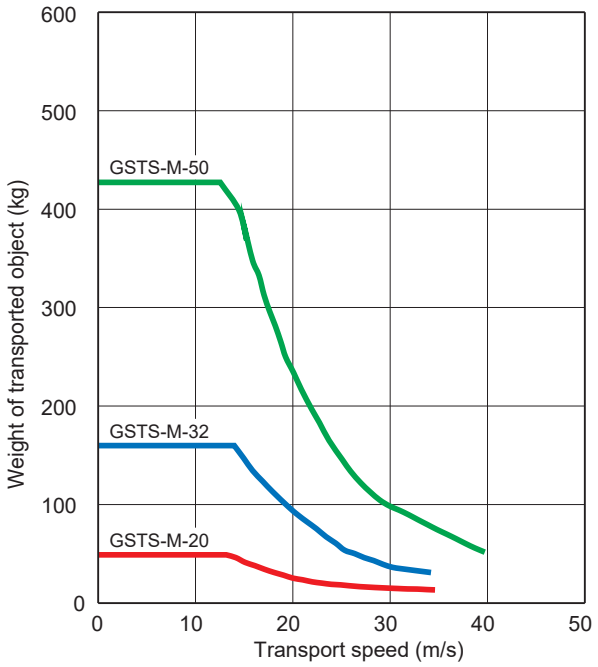
Size	Non-rotating accuracy θ (degrees)
GSTS-M-20	±0.10
GSTS-M-32	±0.08
GSTS-M-50	±0.07

Specified range when using the product as a stopper

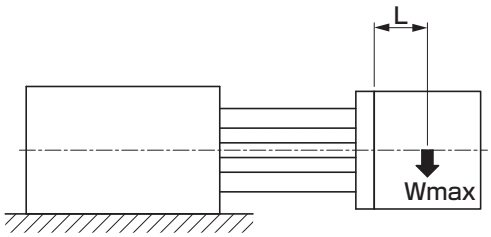


*1 Make sure that the total length of the stopper section is ℓ=50 mm or less.
*2 Make sure that the screw insertion depth of the bolt is 2d and over when fixing the actuator body and consider countermeasures for preventing looseness (adhesive, spring washer, etc.).
*3 Refer to page 22 for the calculation of the required operational thrust.
*4 Calculate the actuator thrust with the following formula.
Thrust = vertical load capacity ×10 (N)

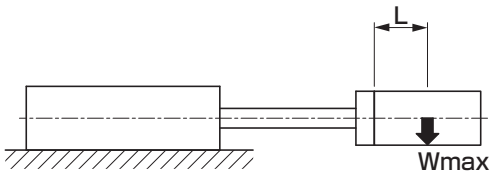
Impact load

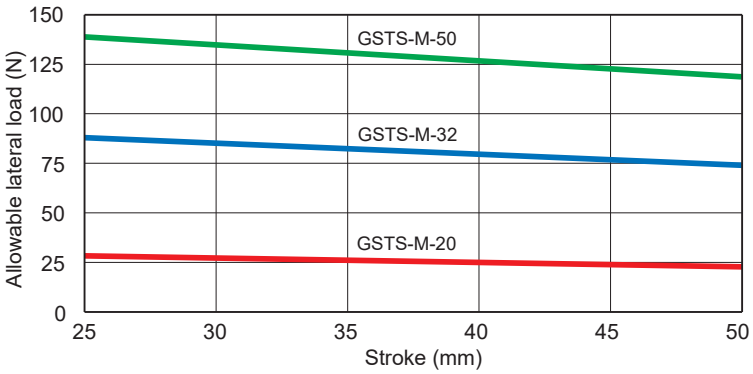


Allowable lateral load　Metal bush bearing



Wmax: Lateral load (N)
L　: Load center of gravity position (mm)





*1 When operating the unit under a load, calculate the allowable lateral load using the following formula. Catalog allowable lateral load value × 0.9
*2 When designing, be sure to consider the safety factor according to the operating conditions.

MEMO

GSTL

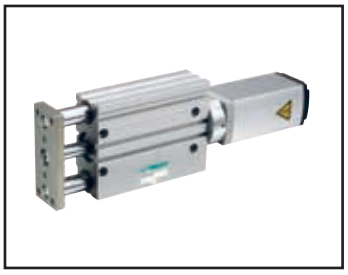
Guided

Electric actuator
Motor specifications

CONTENTS

GSTL Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Max. payload (kg)		Stroke (mm) and Max. speed (mm/s)				Max. Pressing force (N)
			Horizontal	Vertical	50	100	150	200	
GSTL-20	□35	6	4.4	6.4	250				100
		9	3.2	4	400	300			70
GSTL-32	□42	6	9	11.6	250		200		220
		12	4.8	4.8	500		400		90
GSTL-50	□56	6	14.8	19.6	250	200			590
		12	14.8	13.2	400	350	300		425



Electric actuator Guided

GSTL-20

□35 Stepping motor

How to order

GSTL - M - 20 G E - 06 050 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

20	20

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
09	9 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□35 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø6	
Stroke	mm	50 to 200	
Screw lead	mm	6	9
Max. payload kg *1	Horizontal	4.4	3.2
	Vertical	6.4	4
Operation speed range *2	mm/s	10 to 250	12 to 400
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	100	70
Pressing operation speed range	mm/s	10 to 20	12 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	93
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

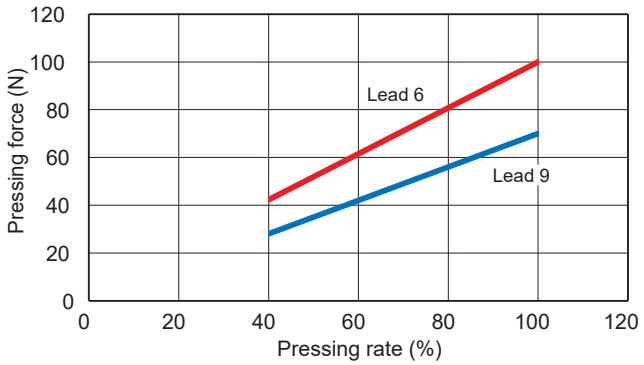
Speed (mm/s)	Acceleration/deceleration 0.3/0.7G			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	200 or less	50 or less	200 or less
10	0.8	0.3	-	-
12	0.8	0.3	1.5	1.1
50	4.4	3.9	3.2	2
70	4.4	3.9	3.2	2.7
100	4.4	3.9	3.2	2.7
150	4.4	3.9	3.2	2.7
200	2	1.5	3.2	2.7
250	2	1.5	2.4	1.9
300	-	-	0.4	1.9
350	-	-	0.4	-
400	-	-	0.4	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration/deceleration 0.3			
	Screw lead			
	6 mm		9 mm	
	Stroke (mm)			
	50 or less	200 or less	50 or less	200 or less
10	6.4	5.9	-	-
12	6.4	5.9	4	3.5
50	6.4	5.9	4	3.5
70	4	3.5	4	3.5
100	4	3.5	4	3.5
150	1.6	1.1	3.2	2.7
200	0.8	0.3	3	2.7
250	-	-	0.8	0.3
300	-	-	0.8	0.3
350	-	-	0.4	-
400	-	-	-	-

* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

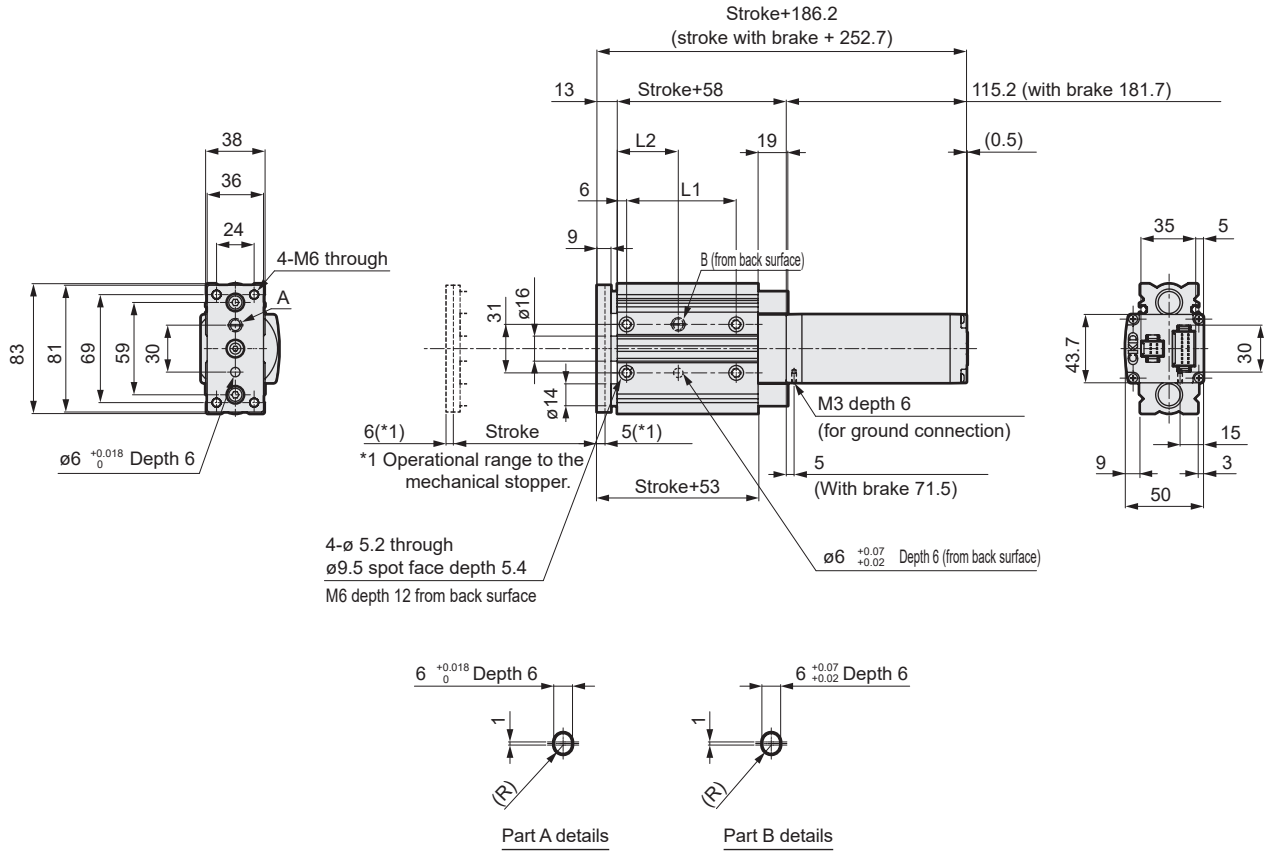
Pressing force



* The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTL-20



[Dimensions by stroke]

Stroke code		050	100	150	200
Stroke (mm)		50	100	150	200
L1		70	120	170	220
L2		39	64	89	114
Weight (kg)	Without brake	1.5	2	2.5	3
	With brake	2	2.5	2.9	3.4

Electric actuator Guided

GSTL-32

□42 Stepper motor

How to order

GSTL - M - 32 G E - 06 050 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

32	32

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□42 Stepper motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø8	
Stroke	mm	50 to 200	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	9	4.8
	Vertical	11.6	4.8
Operation speed range *2	mm/s	10 to 250	15 to 500
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	220	90
Pressing operation speed range	mm/s	10 to 20	15 to 20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	140	70
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

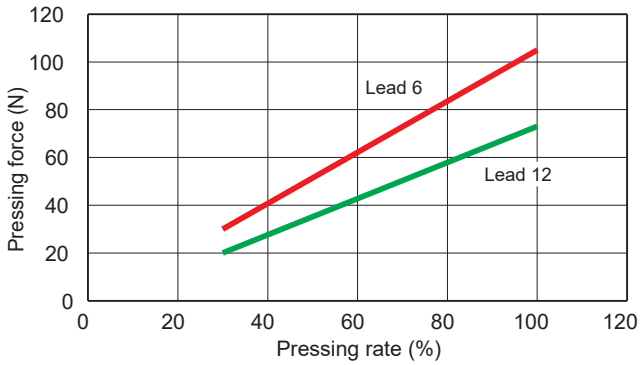
Speed (mm/s)	Acceleration/deceleration 0.3/0.7G					
	Screw lead					
	6 mm			12 mm		
	Stroke (mm)					
	50 or less	100 or less	200 or less	50 or less	100 or less	200 or less
10	1.6	1.1	0.6	-	-	-
15	1.6	1.1	0.6	1.2	0.7	0.2
50	6.8	6.3	5.8	4.8	4.3	3.8
70	6.8	6.3	5.8	4.8	4.3	3.8
100	9	8.7	8.2	4.8	4.3	3.8
150	6.8	6.3	5.8	3.6	3.1	2.6
200	2.8	2.3	1.8	3.6	3.1	2.6
250	0.8	0.3	-	3.6	3.1	2.6
300	-	-	-	3.6	3.1	2.6
350	-	-	-	1.6	1.1	0.6
400	-	-	-	1.6	1.1	0.6
500	-	-	-	0.8	0.3	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G					
	Screw lead					
	6 mm			12 mm		
	Stroke (mm)					
	50 or less	100 or less	200 or less	50 or less	100 or less	200 or less
10	8.8	8.3	7.8	-	-	-
15	8.8	8.3	7.8	4.4	3.9	3.4
50	11.6	11.1	10.6	4.8	4.3	3.8
70	5.2	4.7	4.2	4.8	4.3	3.8
100	5.2	4.7	4.2	4.8	4.3	3.8
150	2	1.5	1	4.8	4.3	3.8
200	0.8	0.3	-	4.5	4.3	3.8
250	-	-	-	1.2	0.7	0.2
300	-	-	-	1.2	0.7	0.2
350	-	-	-	-	-	-
400	-	-	-	-	-	-
500	-	-	-	-	-	-

* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

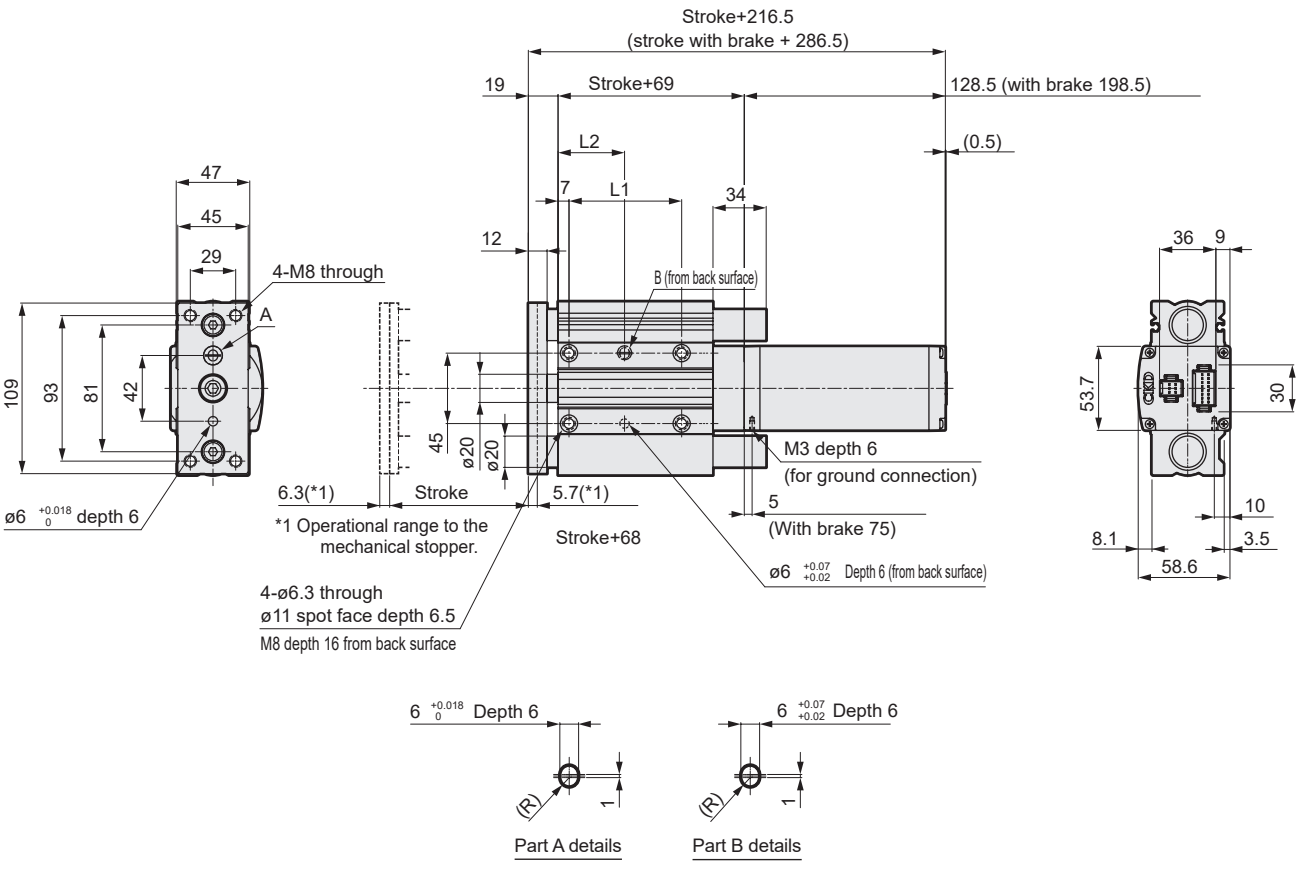
Pressing force



* The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

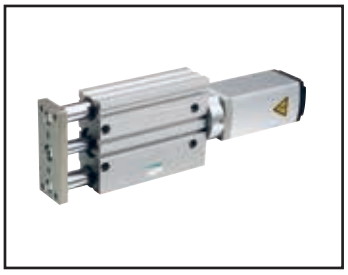
Dimensions

● GSTL-32



[Dimensions by stroke]

Stroke code		050	100	150	200
Stroke (mm)		50	100	150	200
L1		72	122	172	222
L2		42.5	67.5	92.5	117.5
Weight (kg)	Without brake	3	3.8	4.4	5.5
	With brake	3.6	4.4	5	6.1



Electric actuator Guided

GSTL-50

□56 Stepping motor

How to order

GSTL - M - 50 G E - 06 050 B B N - R01 - F

❶Bearing

M	Metal bush bearing

❷Size

50	50

❸Applicable controller * 1

G	ECG-A, ECMG

❹Motor mounting direction

E	Straight mounting

❺Lead

06	6 mm
12	12 mm

❻Stroke

050	50 mm
100	100 mm
150	150 mm
200	200 mm

❼Brake *2

N	None
B	Available

❽Encoder

B	Absolute encoder
C	Incremental encoder

❾Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

❿Option

Blank	End plate material: aluminum
F	End plate material: steel

*1 Refer to page 189 for controller.
*2 Select "Yes" for vertical use.
*3 Refer to page 200 for relay cable dimensions.

Specifications

Motor		□56 Stepping motor	
Encoder-type		Battery-less absolute encoder Incremental encoder	
Drive method		Sliding screw ø12	
Stroke	mm	50 to 200	
Screw lead	mm	6	12
Max. payload kg *1	Horizontal	14.8	14.8
	Vertical	19.6	13.2
Operation speed range *2	mm/s	20 to 250	20 to 400
Max. acceleration/deceleration	Horizontal	0.7	0.7
	Vertical	0.3	0.3
Maximum pressing force	N	590	425
Pressing operation speed range	mm/s	20	20
Repeatability	mm	±0.01	
Lost motion	mm	0.3 or less	
Brake	Models	Non-excitation operation type	
	Holding force N	640	320
Insulation resistance		10MΩ, 500 VDC	
Withstand voltage		500 VAC for 1 minute	
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)	
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Degree of protection		IP40	

*1 Payload varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

Speed and payload

[When installed horizontally] (kg)

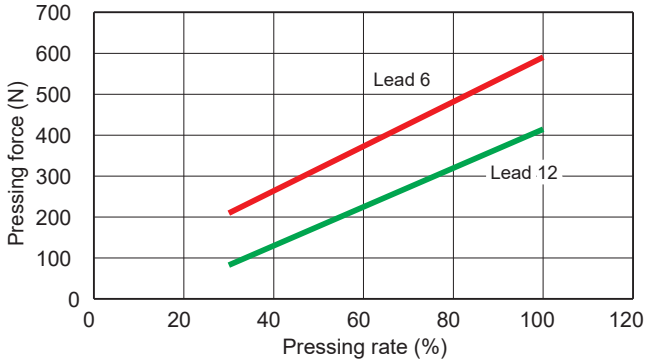
Speed (mm/s)	Acceleration/deceleration 0.3/0.7G					
	Screw lead					
	6 mm			12 mm		
	Stroke (mm)					
	50 or less	100 or less	200 or less	50 or less	100 or less	200 or less
20	14.8	12.8	11.8	4.4	2.4	1.4
50	9.6	7.6	6.6	9.6	7.6	6.6
70	9.6	7.6	6.6	9.6	7.6	6.6
100	9.6	7.6	6.6	14.8	12.8	11.8
150	6	4	3	10.8	8.8	7.8
200	4	2	1	10.8	8.8	7.5
250	0.4	-	-	6	4	3
300	-	-	-	6	4	3
350	-	-	-	2.8	0.8	-
400	-	-	-	0.7	-	-

[When installed vertically] (kg)

Speed (mm/s)	Acceleration / Deceleration 0.3G					
	Screw lead					
	6 mm			12 mm		
	Stroke (mm)					
	50 or less	100 or less	200 or less	50 or less	100 or less	200 or less
20	19.6	18.6	15	3.6	2.6	1.6
50	14	13	12	13.2	12.2	11.2
70	4.8	3.8	2.8	12	11	10
100	4.8	3.8	2.8	10.5	11	8.5
150	0.8	-	-	4	3	2
200	-	-	-	4	3	2
250	-	-	-	2	1.5	1
300	-	-	-	0.7	-	-
400	-	-	-	-	-	-

* This value is for when no moment is applied to the end plate. Refer to the instruction manual for details on mounting surface flatness, etc.

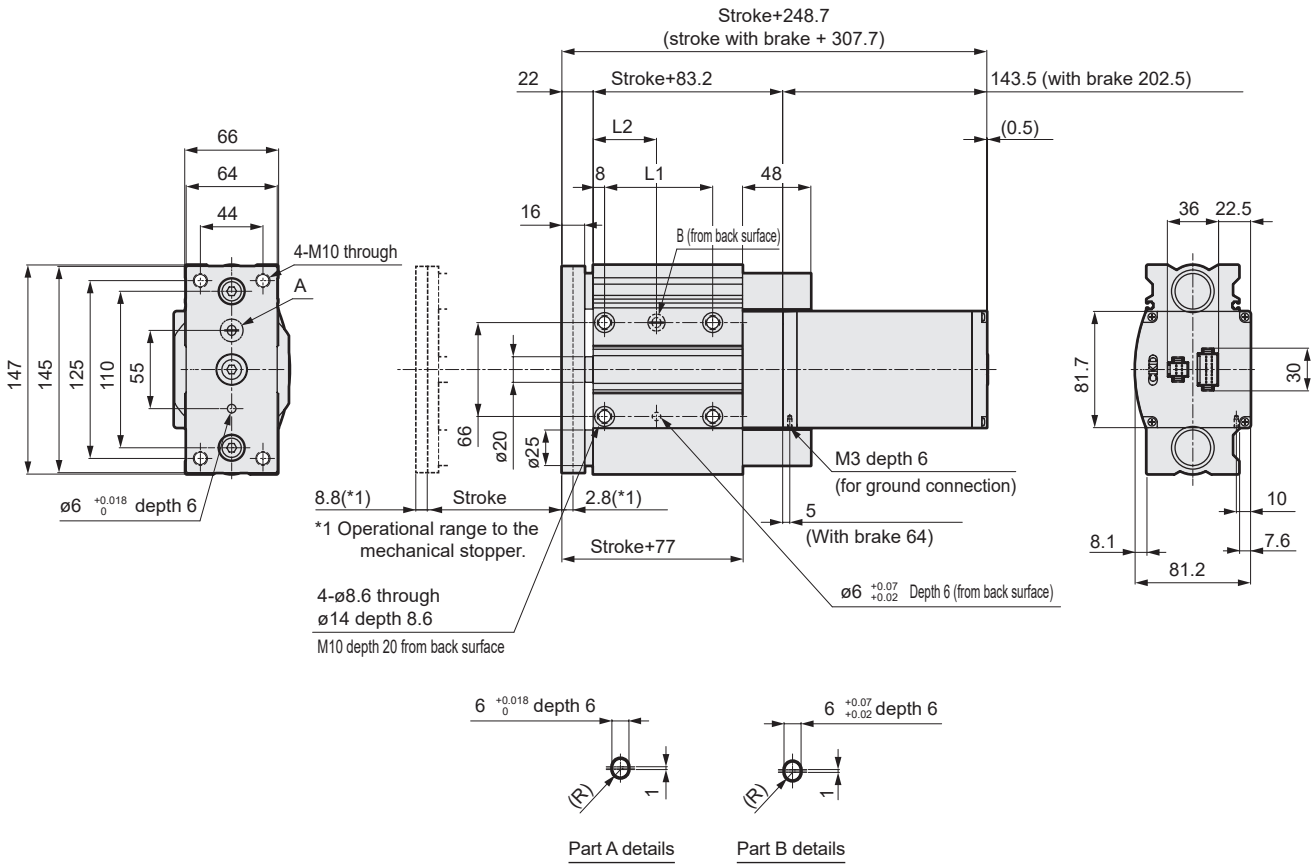
Pressing force



* The pressing force at the top is a reference value. Variation may occur according to conditions such as pressing speed.

Dimensions

● GSTL-50



[Dimensions by stroke]

Stroke code		050	100	150	200
Stroke (mm)		50	100	150	200
L1		76	126	176	226
L2		44.5	69.5	94.5	119.5
Weight (kg)	Without brake	5.4	6.8	7.9	9.3
	With brake	6.7	8.1	9.2	10.6

Model selection

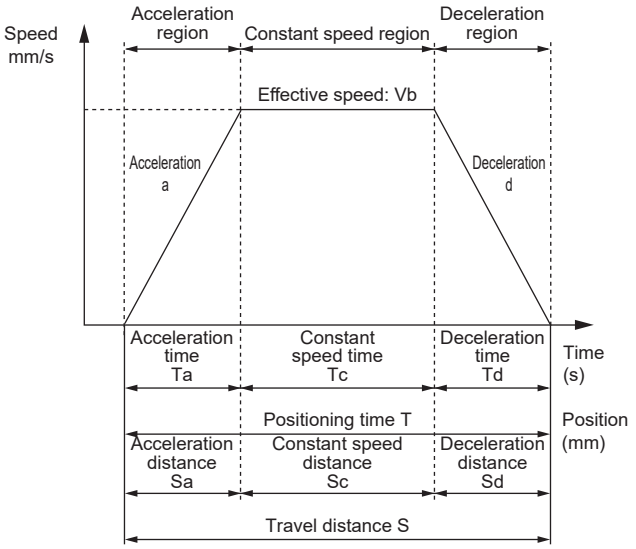
STEP 1 Confirming payload

Payload varies with mounting orientation, screw lead, transport speed, acceleration/deceleration and power supply voltage. Refer to the Series Variation (page 165), the specification table for each model and the Table of Load Capacity by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP 2 Confirming positioning time

Calculate the positioning time with the selected product according to the following example and confirm that the required tact is achievable.

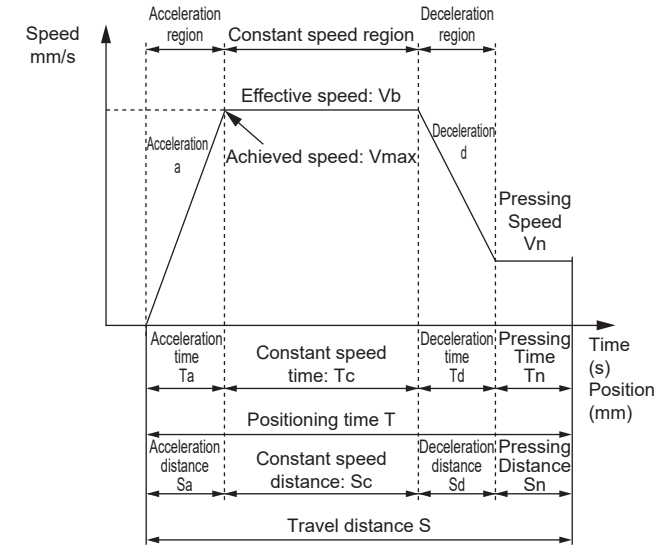
Positioning time for general transport operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times S / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	Smaller of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=Vb / d
	Constant speed time	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 time	T	s	=Ta + Tc + Td

* Do not use at speeds that exceed the specifications.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 166, 168 and 170 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ $9.8m/s^2$.

Positioning time for pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	
	Set acceleration	a	mm/s^2	
	Set deceleration	d	mm/s^2	
	Travel distance	S	mm	
	Pressing speed	Vn	mm/s	
	Pressing distance	Sn	mm	
Calculated value	Achieved speed	Vmax	mm/s	$=[2\times a\times d\times(S-Sn+Vn^2 / 2 / d) / (a+d)]^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	=Vb / a
	Deceleration time	Td	s	=(Vb-Vn) / d
	Constant speed time	Tc	s	=Sc / Vb
	Pressing time	Tn	s	=Sn / Vn
	Acceleration distance	Sa	mm	$=(a\times Ta^2) / 2$
	Deceleration distance	Sd	mm	$=((Vb+Vn)\times Td) / 2$
	Constant speed distance	Sc	mm	=S-(Sa+Sd+Sn)
	Positioning time	T	s	=Ta + Tc + Td + Tn

* Do not use at speeds that exceed the specifications.
* Pressing speed differs depending on the product.
* Depending on the acceleration/deceleration and stroke, the trapezoidal velocity waveform may not form (the set speed may not be reached). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Acceleration and deceleration differ depending on the product and working conditions. Refer to pages 166, 168 and 170 for details.
* While settling time depends on working conditions, it may take 0.2 seconds or so.
* 1 G ≈ $9.8m/s^2$.

STEP 3 Confirming static allowable load and moment

Calculate the load and moment that are generated when the end plate is stopped. Confirm that the lateral load (W) and torsion moment (MY) are as follows. Make sure that the resultant moment (MT) satisfies the following formula according to the formula below.

Resultant moment

$$M_T = \frac{MP}{MP_{max}} + \frac{MR}{MR_{max}} \leq 1.0$$

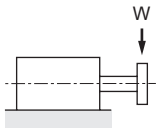
Static allowable load and moment

Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
GSTL-M-20	50	54	32.6	0.80	32.6
	100	38		0.56	
	150	30		0.44	
	200	24		0.35	
GSTL-M-32	50	161	107.4	3.26	107.4
	100	121		2.45	
	150	97		1.96	
	200	81		1.64	
GSTL-M-50	50	243	201.7	6.68	201.7
	100	189		5.20	
	150	155		4.26	
	200	131		3.60	

When operating the unit under a load, calculate the allowable load using the following formula.
Catalog allowable lateral load × 0.9

●Lateral load W (N)

*When installed vertically

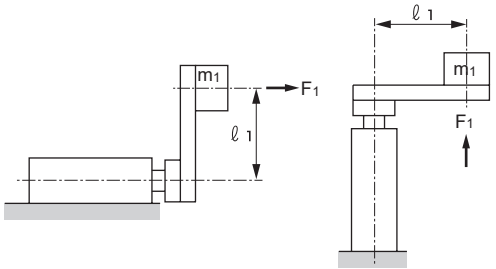


$$\frac{m_1 \times \ell_1 \times 10}{L} \leq W$$

Size	L
20	0.016+st
32	0.022+st
50	0.025+st

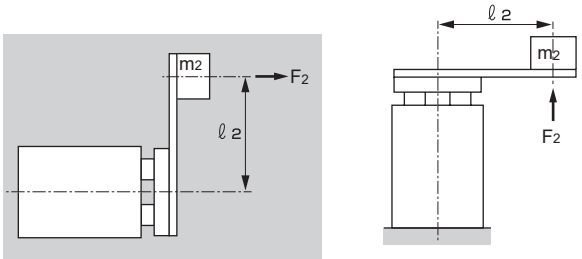
●Bending moment MP (N·m)

$$MP = F_1 \times \ell_1 = 10 \times m_1 \times G \times \ell_1$$



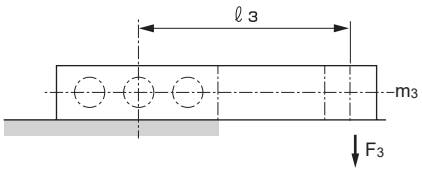
●Radial moment MR. (N·m)

$$MR = F_2 \times \ell_2 = 10 \times m_2 \times G \times \ell_2$$



●Torsion moment MY (N·m)

$$MY = F_3 \times \ell_3 = 10 \times m_3 \times \ell_3$$

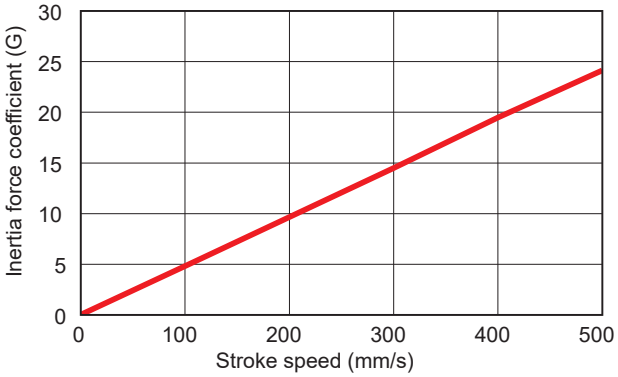


m1, **m2**, **m3**: Load (kg)

ℓ1, **ℓ2**, **ℓ3**: Eccentric distance (m)

G: Inertia force coefficient

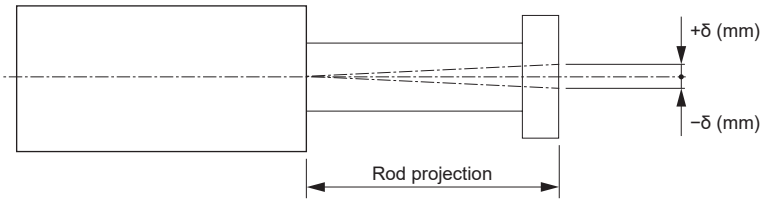
Fig. 1 Trend of inertia force coefficient for guided type

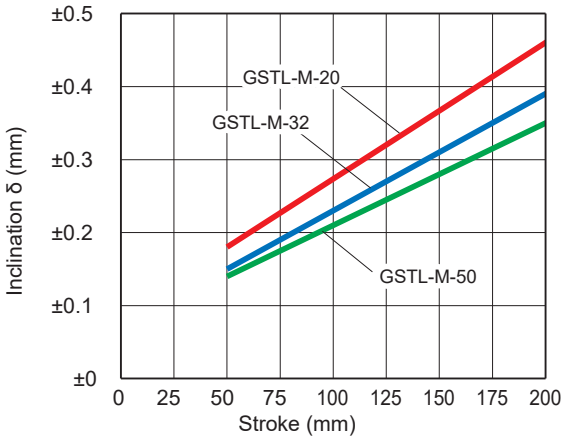


Model selection

Deflection

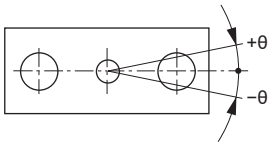
For the inclination that is produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)





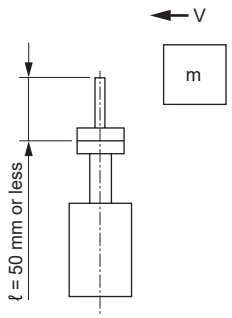
Non-rotating accuracy

(reference value)



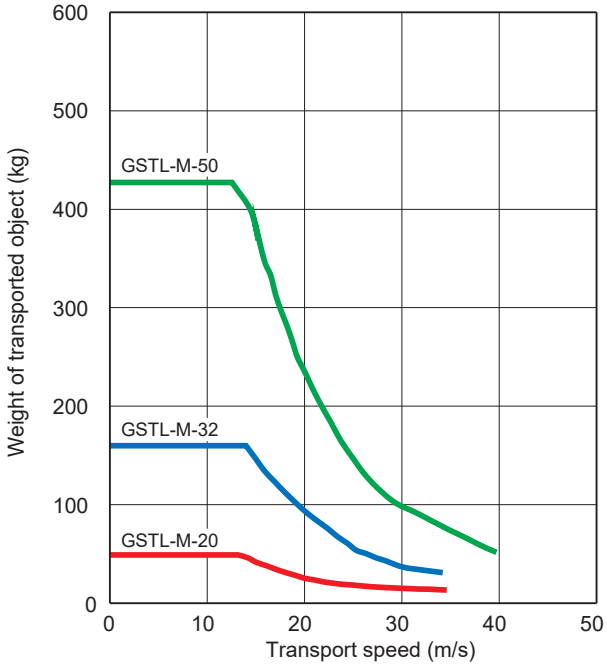
Size	Non-rotating accuracy θ (degrees)
GSTL-M-20	±0.10
GSTL-M-32	±0.08
GSTL-M-50	±0.07

Specified range when using the product as a stopper



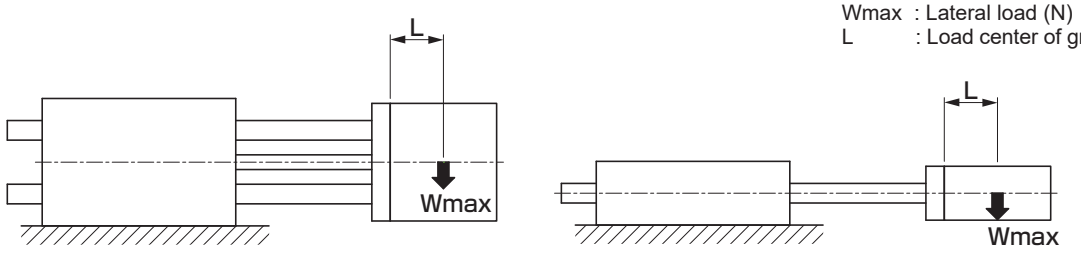
*1 When using the cylinder as a stopper, select a model with stroke 50 or less.
*2 Make sure that the total length of the stopper section is ℓ=50 mm or less.
*3 Make sure that the screw insertion depth of the bolt is 2d and over when fixing the actuator body and consider countermeasures for preventing looseness (adhesive, spring washer, etc.).
*4 Refer to page 22 for the calculation of the required operational thrust.
*5 Calculate the actuator thrust with the following formula.
Thrust = vertical load capacity ×10 (N)

Impact load

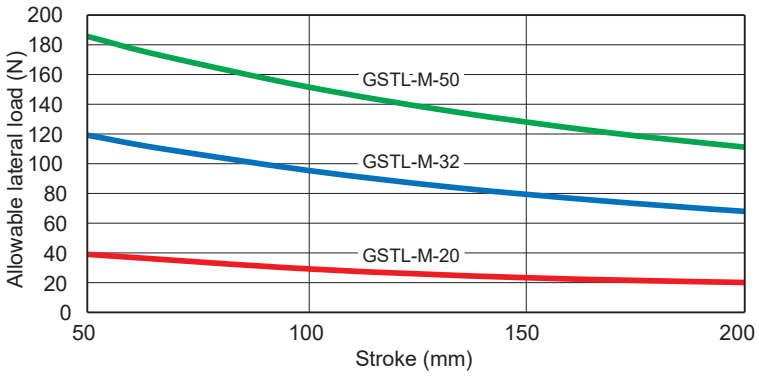


Allowable lateral load　Metal bush bearing

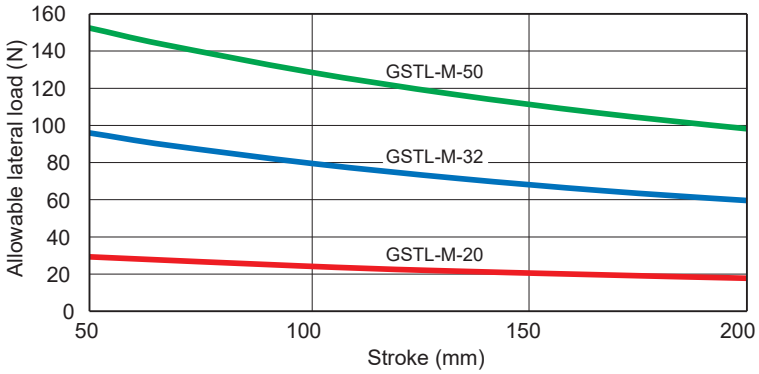
Wmax : Lateral load (N)
L : Load center of gravity position (mm)



● For L=50mm



●For L=100mm



*1 When operating the unit under a load, calculate the allowable lateral load using the following formula.
Catalog allowable lateral load value × 0.9
*2 When designing, be sure to consider the safety factor according to the operating conditions.

MEMO

GCKW

3-Finger Gripper

Electric actuator
Motor specifications

CONTENTS

GCKW Series variation

Actuator model No.	Motor Size	Screw lead (mm)	Stroke and Max. speed (mm/s)		Max. Gripping force (N)
			4	6	
GCKW-16	□20	1.5	50		7
GCKW-20	□25	1.5	50		16
GCKW-25	□25L	1.5		50	29

Electric Actuator 3-Finger Gripper

GCKW-16

□20 Stepping motor

How to order

GCKW - 16 G H1 04 N C N - F R01

❶Size

16	16

❷Applicable controller * 1

G	ECG-B/ECMG

❸Screw lead

H1	1.5 mm

❹Stroke

04	4 mm (2 mm on one side)

❺Rubber cover

N	None

❻Encoder

C	Incremental encoder

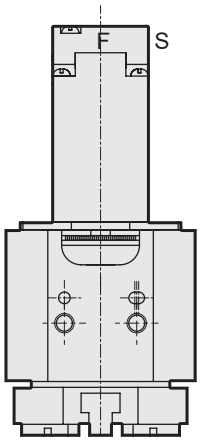
❼Connector leadout direction * 2

F	Front
S	Side

❽Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

[Fig. 1]



Connector leadout direction diagram

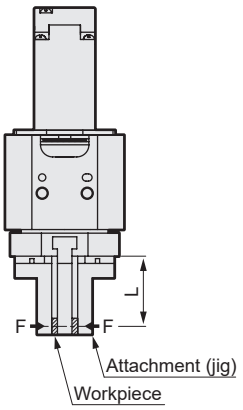
*1 For controller, refer to page 203.
*2 Refer to Figure 1.
*3 Refer to page 214 for relay cable dimensions.

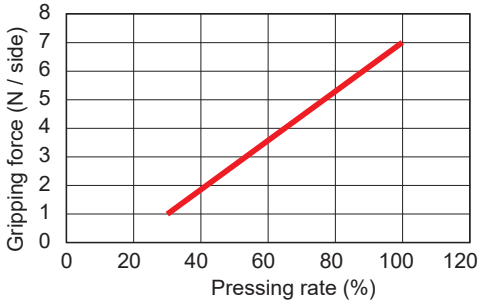
Specifications

Motor		□20 Stepping motor
Drive method		Sliding screw
Stroke	mm	4 (2 per side)
Screw lead	mm	1.5
Max. gripping force *1	N	7
Open/Close speed range	mm/s	5 to 50 (per side)
Gripping speed range *1	mm/s	5 to 15 (per side)
Repeatability * 2	mm	±0.02
Positioning repeatability *3	mm	±0.05 (per side)
Lost motion	mm	0.3 or less (per side)
Insulation resistance		10MΩ, 500 VDC
Withstand voltage		500 VAC for 1 minute
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere		No corrosive gas, explosive gas, or dust
Degree of protection		IP40
Weight	g	250

*1 Gripping is done with pressing operation. If a pressing operation is performed in the positioning mode, parts inside the actuator may be damaged.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.
*3 This will result in variations in the stop position when repeated positioning to the same point is performed.

Gripping force and pressing rate

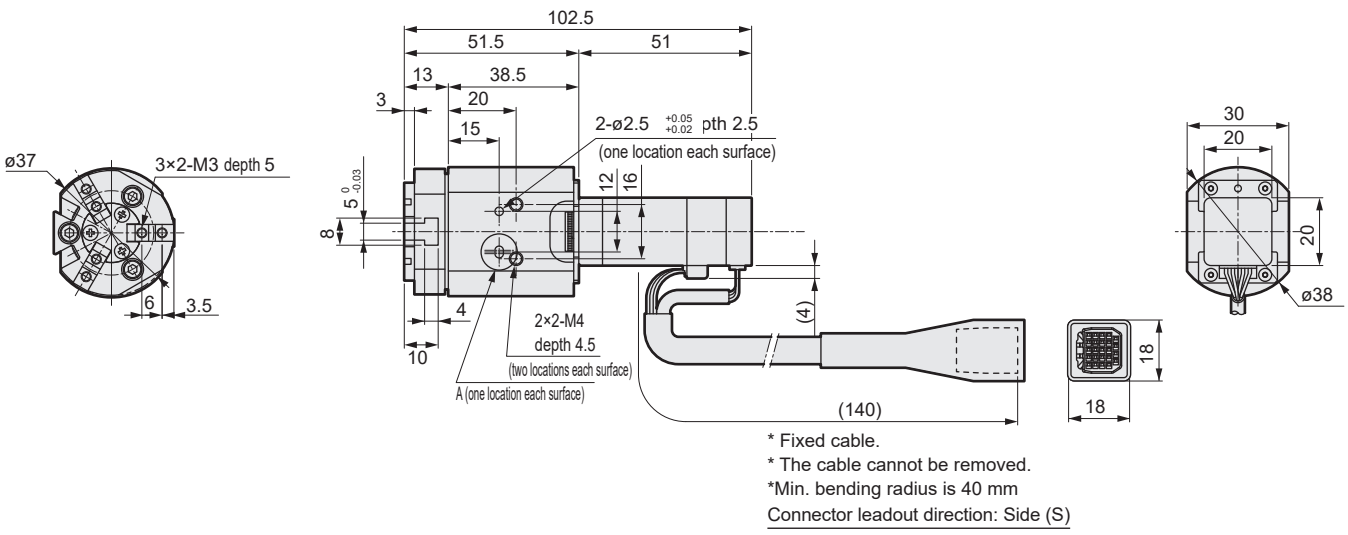




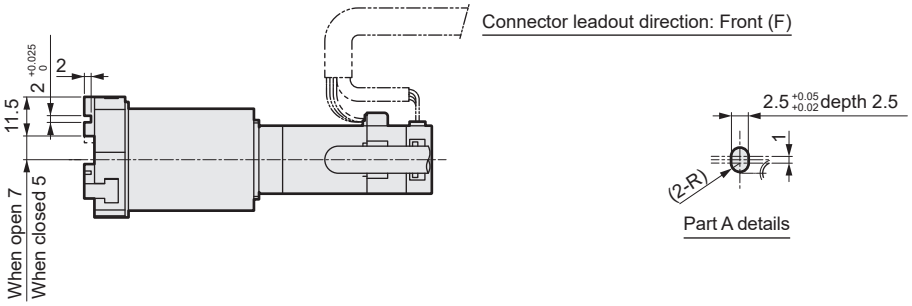
*1 Gripping force and pressing rate indicate a guideline. Power supply voltages, individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.
*2 Speed when gripping is 15 mm/s. (L=20)

Dimensions

● GCKW-16



* Fixed cable.
* The cable cannot be removed.
*Min. bending radius is 40 mm
Connector leadout direction: Side (S)



Electric Actuator 3-Finger Gripper

GCKW-20

□25 Stepping motor

How to order

GCKW - 20 G H1 04 N C N - F R01

❶Size

20	20

❷Applicable controller * 1

G	ECG-B/ECMG

❸Screw lead

H1	1.5 mm

❹Stroke

04	4 mm (2 mm on one side)

❺Rubber cover

N	None

❻Encoder

C	Incremental encoder

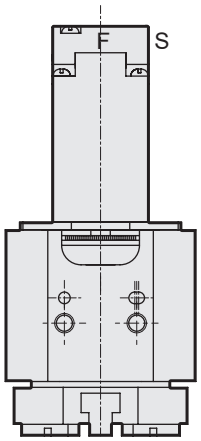
❼Connector leadout direction * 2

F	Front
S	Side

❽Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

[Fig. 1]



Connector leadout direction diagram

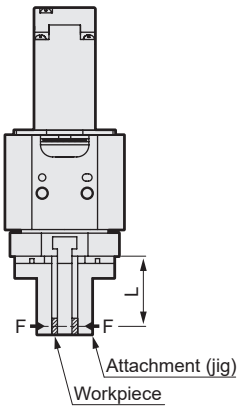
*1 For controller, refer to page 203.
*2 Refer to Figure 1.
*3 Refer to page 214 for relay cable dimensions.

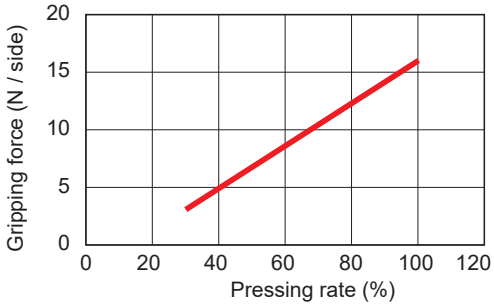
Specifications

Motor		□25 Stepping motor
Drive method		Sliding screw
Stroke	mm	4 (2 per side)
Screw lead	mm	1.5
Max. gripping force *1	N	16
Open/Close speed range	mm/s	5 to 50 (per side)
Gripping speed range *1	mm/s	5 to 15 (per side)
Repeatability * 2	mm	±0.02
Positioning repeatability *3	mm	±0.05 (per side)
Lost motion	mm	0.3 or less (per side)
Insulation resistance		10MΩ, 500 VDC
Withstand voltage		500 VAC for 1 minute
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere		No corrosive gas, explosive gas, or dust
Degree of protection		IP40
Weight	g	390

*1 Gripping is done with pressing operation. If a pressing operation is performed in the positioning mode, parts inside the actuator may be damaged.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.
*3 This will result in variations in the stop position when repeated positioning to the same point is performed.

Gripping force and pressing rate

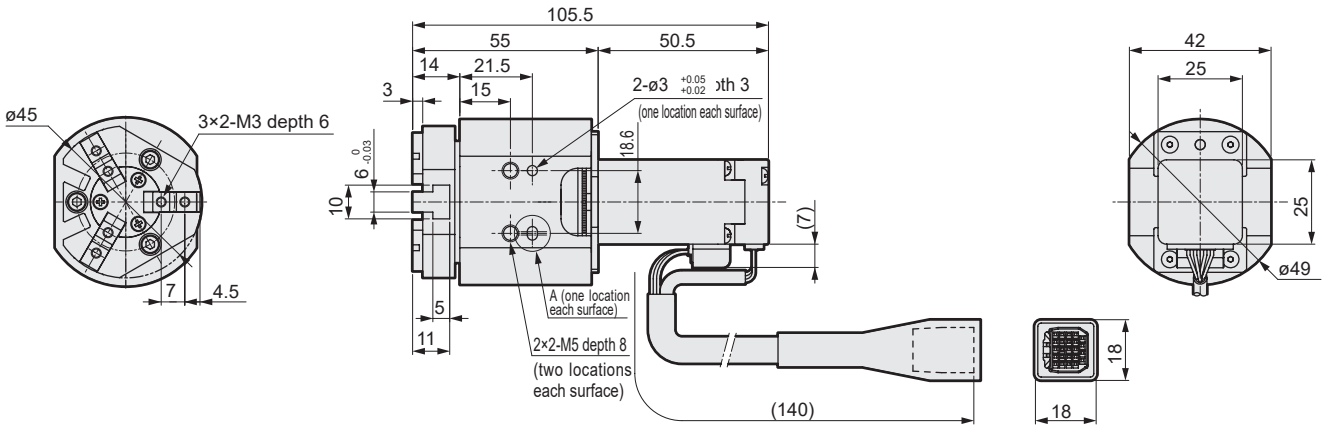




*1 Gripping force and pressing rate indicate a guideline. Power supply voltages, individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.
*2 Speed when gripping is 15 mm/s. (L=20)

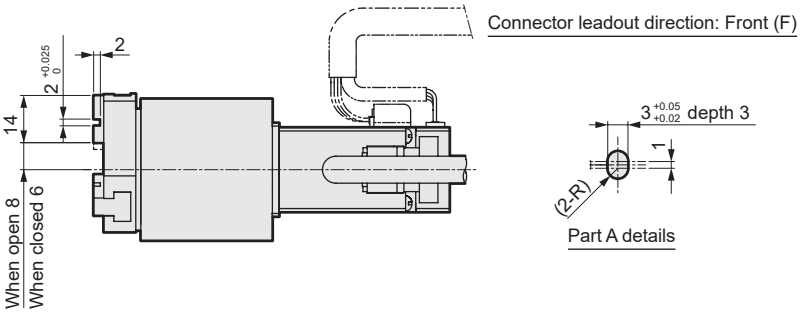
Dimensions

● GCKW-20



* Fixed cable.
* The cable cannot be removed.
*Min. bending radius is 40 mm

Connector leadout direction: Side (S)



Electric Actuator 3-Finger Gripper

GCKW-25

□25L Stepping motor

How to order

GCKW - 25 G H1 06 N C N - F R01

❶Size

25	25

❷Applicable controller * 1

G	ECG-B/ECMG

❸Screw lead

H1	1.5 mm

❹Stroke

06	6 mm (3 mm per side)

❺Rubber cover

N	None

❻Encoder

C	Incremental encoder

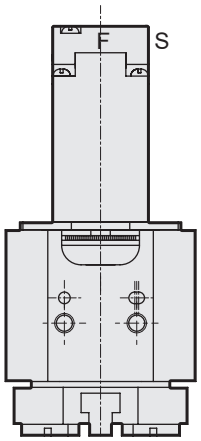
❼Connector leadout direction * 2

F	Front
S	Side

❽Relay cable *3

N00	None
R01	Movable 1 m
R03	Movable 3 m
R05	Movable 5 m
R10	Movable 10 m
S01	Fixed 1 m
S03	Fixed 3 m
S05	Fixed 5 m
S10	Fixed 10 m

[Fig. 1]



Connector leadout direction diagram

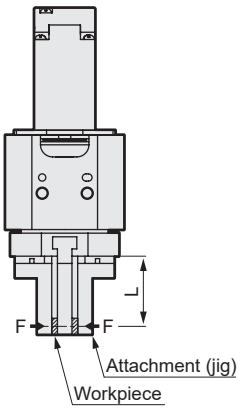
*1 For controller, refer to page 203.
*2 Refer to Figure 1.
*3 Refer to page 214 for relay cable dimensions.

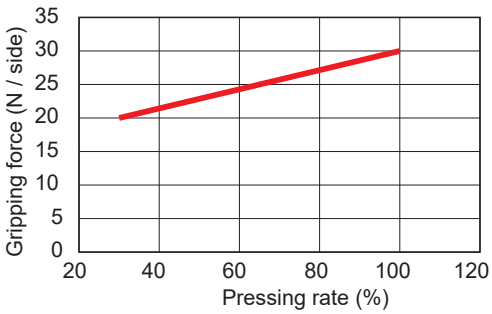
Specifications

Motor		□25L Stepping motor
Drive method		Sliding screw
Stroke	mm	6 (3 per side)
Screw lead	mm	1.5
Max. gripping force * 1	N	29
Open/Close speed range	mm/s	5 to 50 (per side)
Gripping speed range *1	mm/s	5 to 15 (per side)
Repeatability *2	mm	±0.02
Positioning repeatability *3	mm	±0.05 (per side)
Lost motion	mm	0.3 or less (per side)
Insulation resistance		10MΩ, 500 VDC
Withstand voltage		500 VAC for 1 minute
Operating ambient temperature, humidity		0 to 40 °C (no freezing) 35 to 80% RH (no condensation)
Storage ambient temperature, humidity		-10 to 50°C (no freezing) 35 to 80% RH (no condensation)
Atmosphere		No corrosive gas, explosive gas, or dust
Degree of protection		IP40
Weight	g	580

*1 Gripping is done with pressing operation. If a pressing operation is performed in the positioning mode, parts inside the actuator may be damaged.
*2 Repeat accuracy indicates the variation when the same workpiece is repeated gripped at the same power, under the same operation conditions.
*3 This will result in variations in the stop position when repeated positioning to the same point is performed.

Gripping force and pressing rate

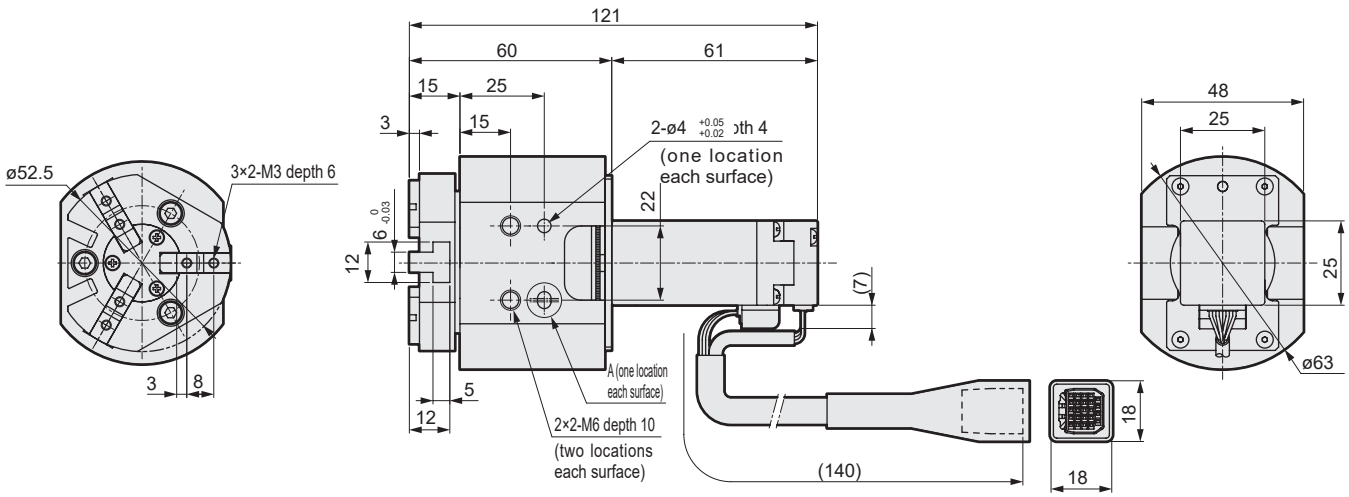




*1 Gripping force and pressing rate indicate a guideline. Power supply voltages, individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.
*2 Speed when gripping is 15 mm/s. (L=20)

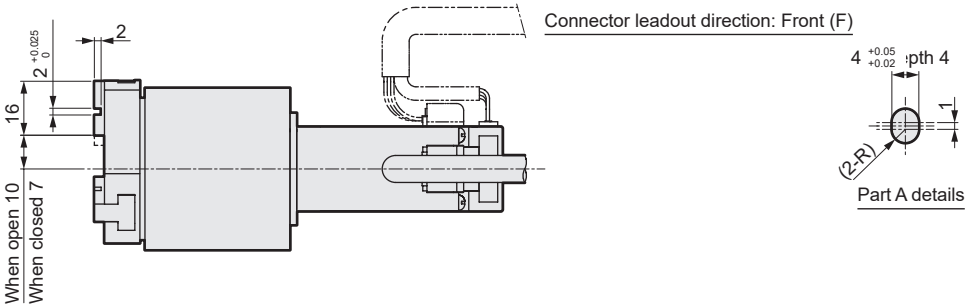
Dimensions

● GCKW-25



* Fixed cable.
* The cable cannot be removed.
*Min. bending radius is 40 mm

Connector leadout direction: Side (S)



Model selection

STEP 1 Calculating the required gripping force

Gripping force F_W satisfying the following equation is required to transport the workpiece (weight W_L).

$$F_W > \frac{W_L \times g \times K}{n}$$

F_W : Required gripping force [N]
n : Number of attachments = 3
W_L : Weight of workpiece [kg]
g : Gravity acceleration 9.8 [m/s^2]
K : Transport coefficient
5 [Holding only]
10 [Normal transport]
20 [Sudden accelerated transport]

Transport coefficient K

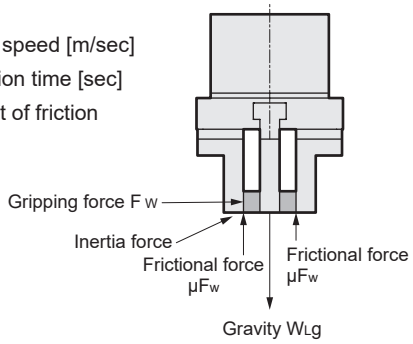
Calculation example) Transport speed V = If the friction coefficient μ between the workpiece and the finger is 0.1 for the purpose of decelerating and stopping at 0.75 m / s in 0.1 seconds, the result is as follows.

Obtain the transport coefficient K from the force applied to the workpiece

V : Transport speed [m/sec]
t : Deceleration time [sec]
μ : Coefficient of friction

- Inertial force = $W_L (V/t)$
- Gravity = $W_L g$
- Required gripping force $F_W >$ $\frac{W_L (V/t) + W_L g}{n\mu} = \frac{W_L (V/t+g)}{n\mu} = \frac{17.3\, W_L}{3 \times 0.1} = 57.7\, W_L$

∴ Here, the transport coefficient K is calculated from the above equation: $\frac{V/t + g}{\mu g} = \frac{0.75/0.1 + 9.8}{0.1 \times 9.8} \approx 20$

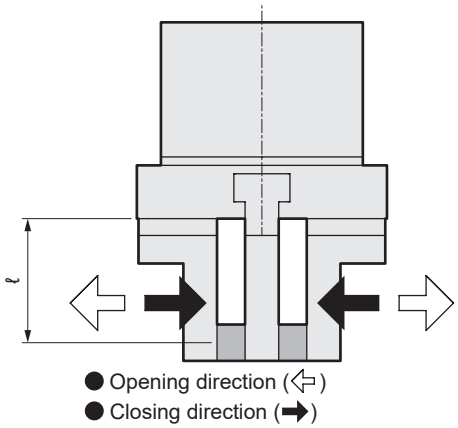


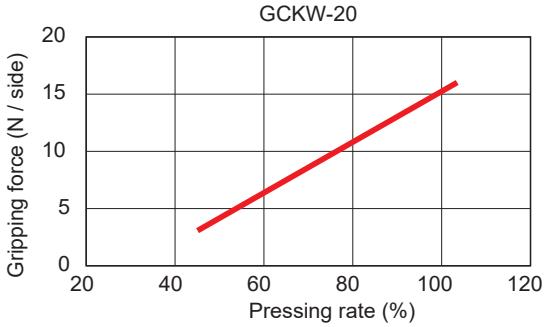
Note) Allowance is required for transport coefficient K due to impacts during transportation, etc. Even when the coefficient of friction μ is higher than μ=0.1, set transport coefficient K from 10 to 20 or more for safety.

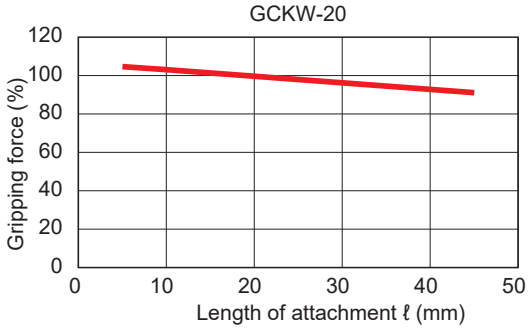
STEP 2 Temporarily select a model from the gripping force graph

Check the conditions at right and temporarily select a model from the gripping force graph. The gripping force varies according to gripping point distance ℓ and the current limit value. Confirm on the graph that sufficient force can be obtained under the working conditions.

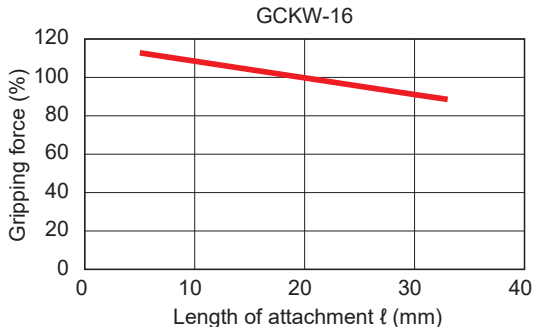
Grip direction

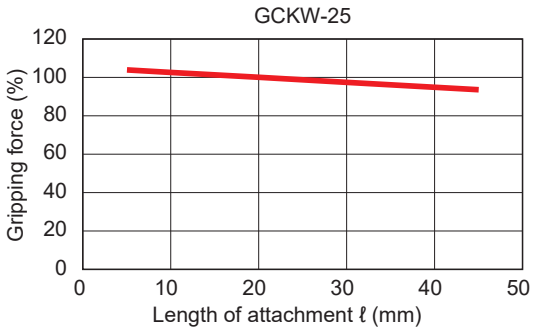




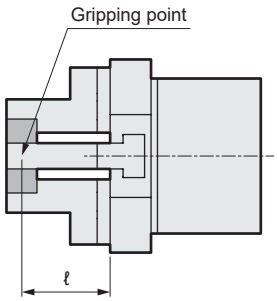


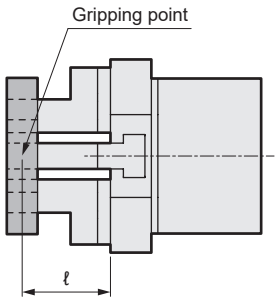
Gripping force and gripping point distance





STEP 3 Confirmation of attachment shape





- **Use attachments as short and lightweight as possible.** If the attachment is long and heavy, inertia increases when opening and closing, this may cause play in the finger, and adversely affect durability.
  - Even if the attachment shape is within the performance data, by making it as small as possible enables the product to have a longer service life. Also, if ℓ is long, unexpected vibration, etc., could cause erroneous gripping and falling during transport.
  - The weight of the attachment affects the service life, so check that the weight is less than the following value.

W < 1/4 H (1 pc.) W : Weight of attachment
H : Gripper product weight

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

ECG-A

Controller

CONTENTS

Controller

ECG-A Series

Controller for G Series

How to order

ECG-ANNN30 - NP A 02

Ⓐ Ⓑ Ⓒ

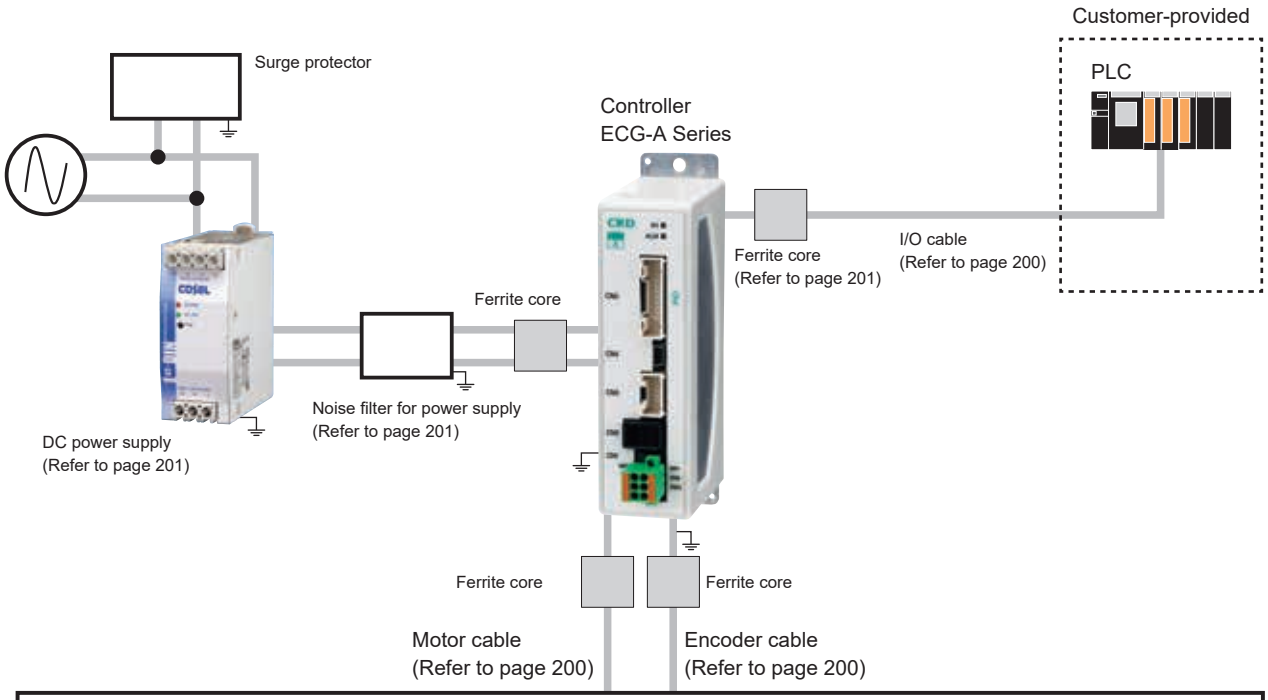
Ⓐ Interface specification	
NP	Parallel I/O (NPN and PNP common)
LK	IO-Link
CL	CC-Link
EC	EtherCAT
EN	EtherNet/IP

Ⓑ Mounting method	
A	Standard mount
D	DIN rail mount

Ⓒ IO Cable length *1	
00	None
02	2 m
03	3 m
05	5 m
10	10 m

*1 Select "None" unless "parallel I/O" is selected for interface specifications.

System configuration



Connectable actuators

GSSD2	GSTK	GSTG	GSTS	GSTL
(Page 115)	(Page 125)	(Page 137)	(Page 151)	(Page 165)

* Refer to the Instruction Manual for details about installing and wiring the noise filter, surge protector, and ferrite core.

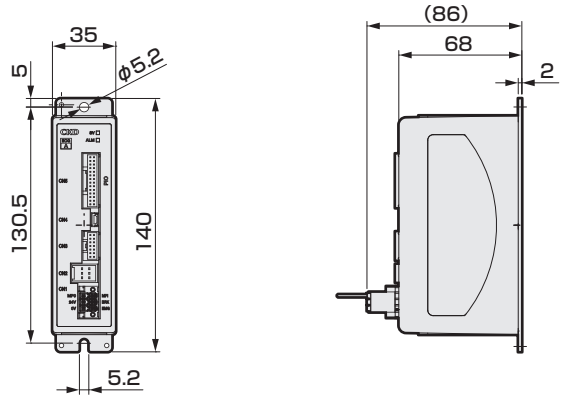
General specifications

Item		Description		
Applicable actuators		GSSD2/GSTK/GSTG/GSTS/GSTL		
Applicable motor sizes		□35	□42	□56
Settings tool		PC setting software (S-Tools) Connection cable: USB cable (mini-B)		
External interface	Parallel I/O specification	24 VDC ±10%, input/output max. 13 points, cable length max. 10 m		
	Field network specification	IO-Link, CC-Link, EtherCAT, EtherNet/IP		
Indicator lamp		SV lamp, alarm lamp Communication status lamp (according to each interface specification)		
Power supply voltage	Control power	24 VDC±10%		
	Motion power supply	24 VDC±10%		
Current consumption	Control power	0.4 A or less		
	Motion power supply	1.7 A or less	1.9 A or less	2.8 A or less
Motor section max. instantaneous current		2.4 A or less	2.7 A or less	4.0 A or less
Brake current consumption		0.4 A or less		
Insulation resistance		10 MΩ and over at 500 VDC		
Withstand voltage		500 VAC for 1 minute		
Operating ambient temperature		0 to 40°C (no freezing)		
Operating ambient humidity		35 to 80% RH (no condensation)		
Storage ambient temperature		-10 to 50°C (no freezing)		
Storage ambient humidity		35 to 80% RH (no condensation)		
Working atmosphere		No corrosive gas, explosive gas, or dust		
Degree of protection		IP20		
Weight	Parallel I/O specification	Approx. 180 g (standard mount), approx. 210 g (DIN rail mount)		
	Field network specification	Approx. 310 g (standard mount), approx. 340 g (DIN rail mount)		

Dimensions

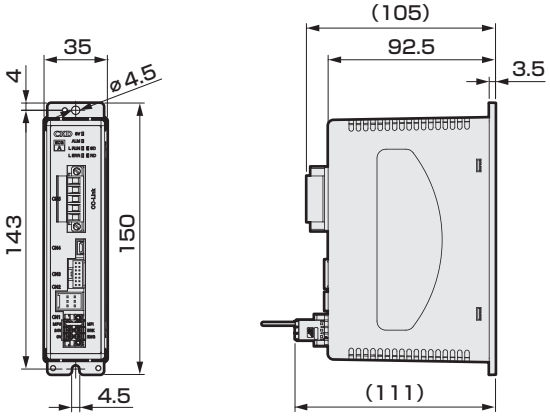
● Standard mount

ECG-ANNN30-NPA□□ (parallel I/O specification)



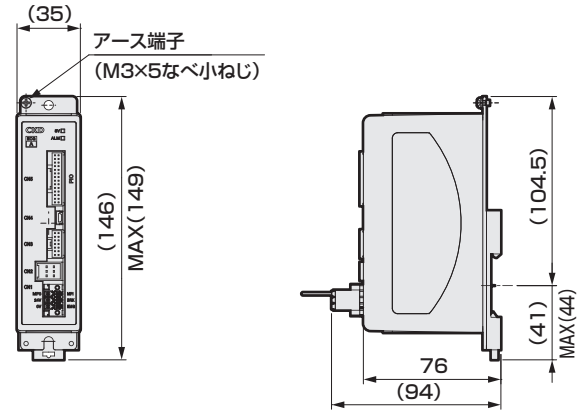
ECG-ANNN30-□□A□□ (Other)

* This figure shows the dimensions diagrams for CC-Link specifications. The dimensions diagrams are the same for other interface specifications, except the connector part.



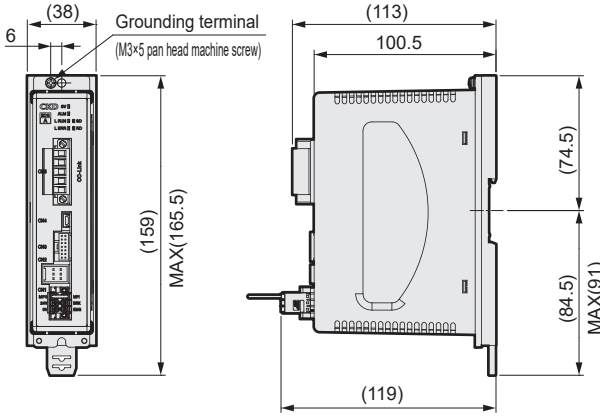
● DIN rail mount

ECG-ANNN30-NPD□□ (parallel I/O specification)



ECG-ANNN30-□□D□□ (Other)

* This figure shows the dimensions diagrams for CC-Link specifications. The dimensions diagrams are the same for other interface specifications, except the connector part.

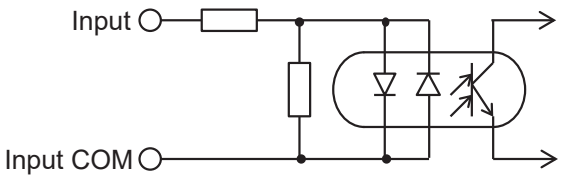


Parallel I/O (PIO) input/output circuit

Input specification

Item	ECG-ANNN30-NP□□
No. of inputs	13 points
Input voltage	24 VDC±10%
Input current	4 mA / point
Input voltage when ON	19 V or higher
Input current when OFF	0.2 mA or less

Input circuit

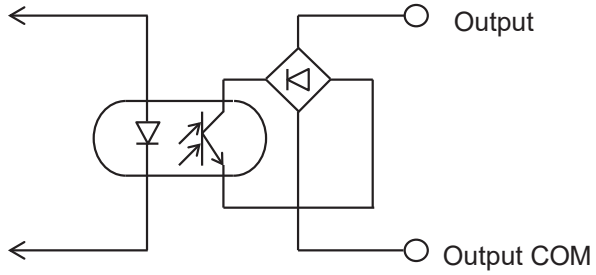


The input is not polarized.
(The input COM can be used with either + or -)

Output specifications

Item	ECG-ANNN30-NP□□
No. of output points	13 points
Load voltage	24 VDC±10%
Load current	20 mA or less / point
Internal voltage drop when ON	3 V or less
Leakage current when OFF	0.1 mA or less
Output short-circuit protection circuit	Yes
Connecting load	PLC, etc.

Output circuit



The output is not polarized.
(The output COM can be used with either + or -)

Parallel I/O (PIO) operation mode

Controllers offer five operation modes.

Use the PC setting software to set the appropriate operation mode. The initial setting is 64-point mode.

Operation mode	Positioning numbers	Overview
64-point mode	64 points	· JOG travel start input · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Simple 7-point mode	7 points	· JOG travel start input · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode double 2-position	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode double 3-position	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode single	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))

Parallel I/O (PIO) signal name list

Input signal

Abbreviation	Name	Abbreviation	Name
PST	Point travel start	JOGM	JOG (-) travel start
PSB*	Point number selection bit *	JOGP	JOG (+) travel start
OST	Origin return start	P*ST	Point number * travel start
SVON	Servo ON	V1ST	Solenoid valve travel instruction 1
ALMRST	Alarm reset	V2ST	Solenoid valve travel instruction 2
STOP	Stop	VST	Solenoid valve travel instruction

Output signal

Abbreviation	Name	Abbreviation	Name
PEND	Point travel complete	SONS	Servo ON state
PCB*	Point number confirmation bit *	ALM	Alarm
ACB*	Alarm confirmation bit *	WARN	Warning
PZONE	Point zone	READY	Operation preparation complete
MOVE	Moving	P*END	Point number * travel complete
ZONE1	Zone 1	SW1	Switch 1
ZONE2	Zone 2	SW2	Switch 2
OEND	Origin return complete	SLMT	Soft limit exceeded
SLMTM	Soft limit over (-)	SLMTP	Soft limit exceeded (+)

Parallel I/O (PIO) operation mode and signal assignment

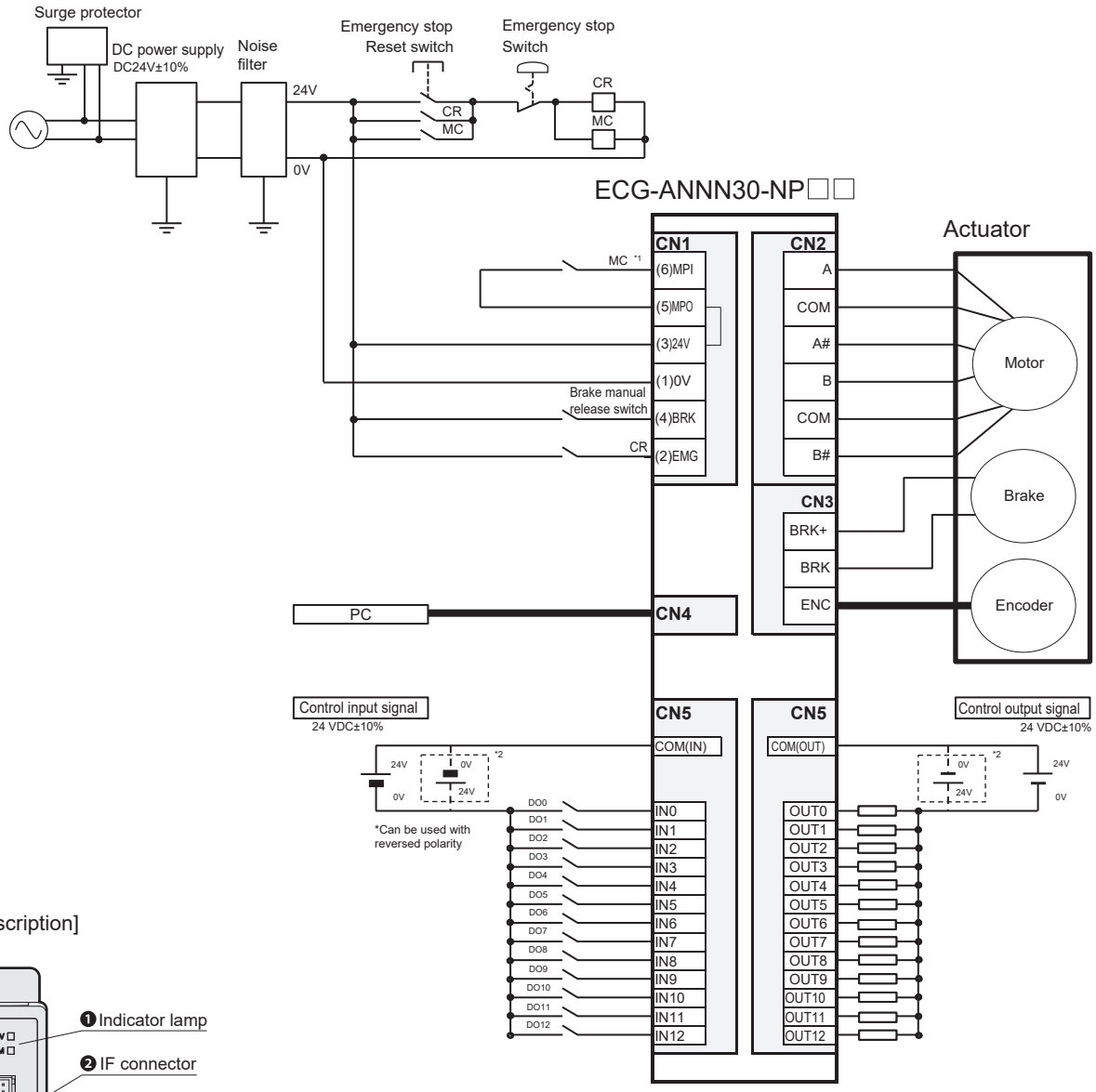
The following figure shows signal assignments in each operation mode.

Operation mode		64-point mode	Simple 7-point mode	Solenoid mode Double 2-position	Solenoid mode Double 3-position	Solenoid mode Single type
Positioning numbers		64	7	2	2	2
Input	IN0	PSB0	P1ST	V1ST	V1ST	-
	IN1	PSB1	P2ST	V2ST	V2ST	VST
	IN2	PSB2	P3ST	-	-	-
	IN3	PSB3	P4ST	-	-	-
	IN4	PSB4	P5ST	-	-	-
	IN5	PSB5	P6ST	-	-	-
	IN6	PST	P7ST	-	-	-
	IN7	JOGM	JOGM	-	-	-
	IN8	JOGP	JOGP	-	-	-
	IN9	OST	OST	OST	OST	OST
	IN10	SVON	SVON	SVON	SVON	SVON
	IN11	ALMRST	ALMRST	ALMRST	ALMRST	ALMRST
	IN12	STOP#	STOP#	-	-	-
Output	OUT0	PCB0/ ACB0	P1END	P1END	P1END	P1END
	OUT1	PCB1/ ACB1	P2END	P2END	P2END	P2END
	OUT2	PCB2/ ACB2	P3END	-	-	-
	OUT3	PCB3/ ACB3	P4END	-	-	-
	OUT4	PCB4	P5END	SW1	SW1	SW1
	OUT5	PCB5	P6END	SW2	SW2	SW2
	OUT6	PEND	P7END	-	-	-
	OUT7	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT8	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT9	OEND	OEND	OEND	OEND	OEND
	OUT10	SONS	SONS	SONS	SONS	SONS
	OUT11	ALM#	ALM#	ALM#	ALM#	ALM#
	OUT12	READY	READY	READY	READY	READY

* The pound sign (#) indicates a negative logic signal.

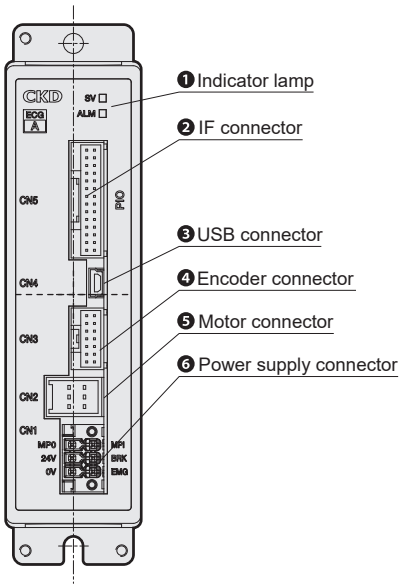
Parallel I/O connection diagram (ECG-ANNN30-NP * *)

[PIO]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.
*3 This can be used even if the polarity is reversed.

[Panel description]



● Attachments

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT

Description of field network operation modes

Operation mode	Overview
PIO mode (PIO)	Point operation can be used and signal assignment of inputs and outputs can be changed in the operation mode (PIO) in the same way as the parallel I/O specification. However, you cannot select a direct value operation that sets the operating conditions for operation directly from the PLC. Reading and writing of parameters do work, but the monitoring function cannot be used. Refer to the table below for details.
Half simple direct value mode (HSDP)	This mode is selectable only with the CC-Link specification controller. Switching the direct travel selection signal enables a target position to be arbitrarily be set by the PLC or 64-point operation. The selected direct travel operation method can then be used. The monitoring function can be used with restrictions. Reading and writing of parameters does not work. Refer to the table below for details.
Simple direct value mode (SDP)	Switching the direct travel selection signal enables a target position to be arbitrarily be set by the PLC or 64-point operation. The selected direct travel operation method can then be used. Reading and writing of parameters do work and the monitoring function can be used. Refer to the table below for details.
Half direct value mode (HDP)	This mode is selectable only with the CC-Link specification controller. Switching the direct travel selection signal enables operating conditions to be arbitrarily be set by a PLC (with restrictions) or 64 point operation. The selected direct travel operation method can then be used. The monitoring function can be used. Reading and writing of parameters does not work. Refer to the table below for details.
Full direct value mode (FDP)	Switching the direct travel selection signal enables operating conditions to be arbitrarily be set by the PLC or 64 point operation. The selected direct travel operation method can then be used. Reading and writing of parameters do work and the monitoring function can be used. Refer to the table below for details.

Operation mode		PIO	HSDP	SDP	HDP	FDP
Parameter read / write		Available	Not available	Available	Not available	Available
Direct value travel selection *1		Selection not possible	1	1	1	1
Positioning numbers		64	No limit	No limit	No limit	No limit
Direct value travel Item *2	Target position	–	○	○	○	○
	Positioning width	–	–	–	○	○
	Speed	–	–	–	○	○
	Acceleration	–	–	–	●	○
	Deceleration	–	–	–	●	○
	Pressing rate	–	–	–	○	○
	Pressing distance	–	–	–	○	○
	Pressing speed	–	–	–	–	○
	Position designation	–	–	–	○	○
	Operation	–	–	–	○	○
	Stop method	–	–	–	○	○
	Acceleration / Deceleration	–	–	–	○	○
Monitor Item *3	Position	–	○	○	○	○
	Speed	–	○	▲	○	○
	Current	–	○	▲	○	○
	Alarm	–	–	▲	○	○

*1 When the direct value travel selection is 0, the values set in the point data are used. This enables up to 64 positioning points.
*2 ○Indicates the item operated with the value set by the PLC. "-" indicates operation with the values set by the point data.
●Indicates items operated with the value set by the PLC, but only the same values can be set.
*3 ○Shows the items that can be monitored. "-" indicates Items that cannot be monitored. ▲Only one Item selected from among can be monitored.
▲Indicates which Items can be monitored when selected as monitor values (one at a time for CC-Link and IO-Link, three values at a time for others).

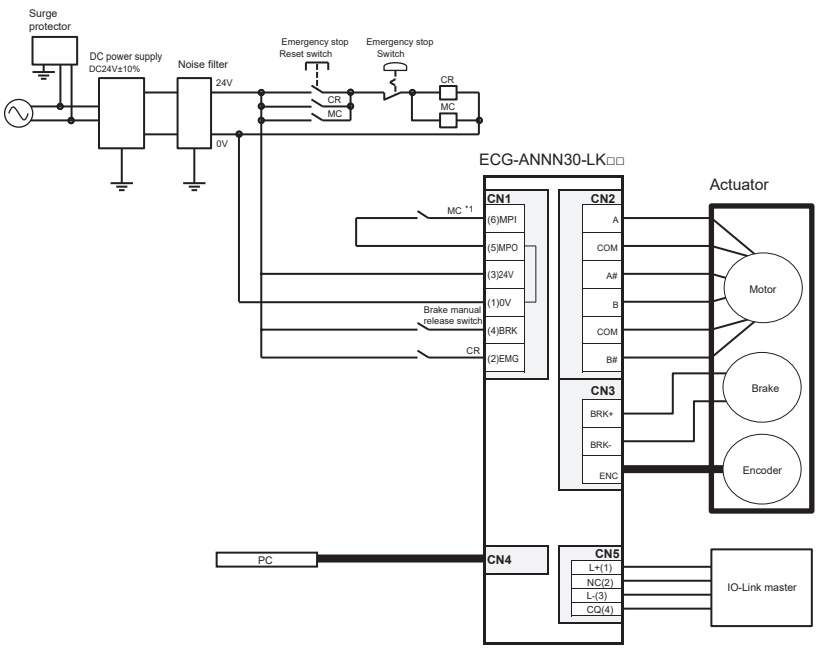
IO-Link specifications and connection diagram (ECG-ANNN30-LK * *)

[Communication specifications]

Item	Specifications
Communication protocol version	V1.1
Transmission bit rate	COM3 (230.4kbps)
Port	Class A
Process data length (input) PD (in) data length	PIO mode: 2 bytes
	Simple direct value mode: 9 bytes
	Full direct value mode: 12 bytes
Process data length (output) PD (out) data length	PIO mode: 2 bytes
	Simple direct value mode: 7 bytes
	Full direct value mode: 22 bytes
Minimum cycle time	PIO mode: 1 ms
	Simple direct value mode: 1.5 ms
	Full direct value mode: 2.5 ms
Monitor function	Position, speed, current, alarm

* The Item that can be monitored varies depending on the operation mode. Refer to page 195 for details.

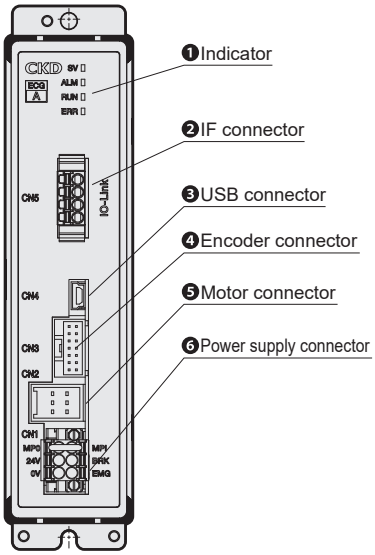
[IO-Link]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)

*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

PD (out)	bit	Full direct value mode Signal name
0	7	Pause#
	6	Stop#
	5	Alarm reset
	4	Servo ON
	3	Origin return start
	2	Point travel start
	1	JOG/INCH (+) travel start
	0	JOG/INCH (-) travel start
1	7	INCH selection
	6	-
	5 to 0	Point number selection bit 5 to 0
2	7 to 4	-
	3 to 1	Rotation direction (direct value travel)
	0	Direct value travel selection
3 to 6	7 to 0	Position (direct value travel)
7 to 8	7 to 0	Positioning width (direct value travel)
9 to 10	7 to 0	Speed (direct value travel)
11	7 to 0	Acceleration (direct value travel)
12	7 to 0	Deceleration (direct value travel)
13	7 to 0	Pressing ratio (direct value travel)
14	7 to 0	Pressing speed (direct value travel)
15 to 18	7 to 0	Pressing distance (direct value travel)
19 to 20	7 to 0	Gain magnification (direct value travel)
21	7	Position designation method (direct value travel)
	6 to 5	Operation method (direct value travel)
	4 to 3	Acceleration / Deceleration method (direct value travel)
	2 to 0	Stop method (direct value travel)

Cyclic data from controller

PD (in)	bit	Full direct value mode Signal name
0	7	Operation preparation complete
	6	Warning#
	5	Alarm#
	4	Servo ON state
	3	Origin return complete
	2	Point travel complete
	1 to 0	-
1	7 to 6	-
	5 to 0	Point number confirmation bit 5 to 0
2	7	Soft limit exceeded (+)
	6	Soft limit over (-)
	5	Soft limit exceeded
	4	Zone 2
	3	Zone 1
	2	Moving
	1	Point zone
	0	Direct travel status
3 to 6	7 to 0	Position (monitor value)
7 to 8	7 to 0	Speed (monitor value)
9	7 to 0	Current (monitor value)
10 to 11	7 to 0	Alarm (monitor value)

* Refer to the Instruction Manual for details of other operation modes.

* # indicates a negative logic signal.

Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT
IO-Link connector	FMC1,5/4-ST-3,5-RF	PHOENIX CONTACT

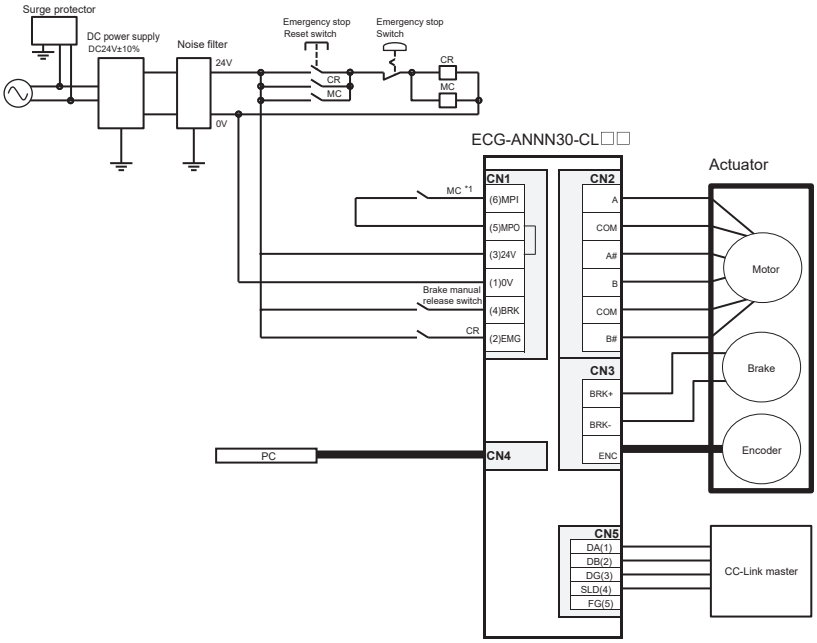
CC-Link specifications and connection diagram (ECG-ANNN30-CL * *)

[Communication specifications]

Item	Specifications
CC-Link Version	Ver. 1.10
Station	Remote device station
Remote station No.	1 to 64 (set by parameter setting)
Operation mode and number of occupied stations	PIO mode (1 station occupied)
	Half simple direct value mode (1 station occupied)
	Simple direct value mode (2 stations occupied)
	Half direct value mode (2 stations occupied)
	Full direct value mode (4 stations occupied)
Remote input/ output points	32 points × occupied stations
Remote Register input/output	4-word × number of occupied stations
Communication speed	10M / 5M / 2.5M / 625k / 156kbps (Selected by parameter setting)
Connection cable	CC-Link Ver. 1.10 compliant cable (3-conductor twisted pair cable with shield)
Number of connected units	42 max. when only remote device stations are connected
Monitor function	Position, speed, current, alarm

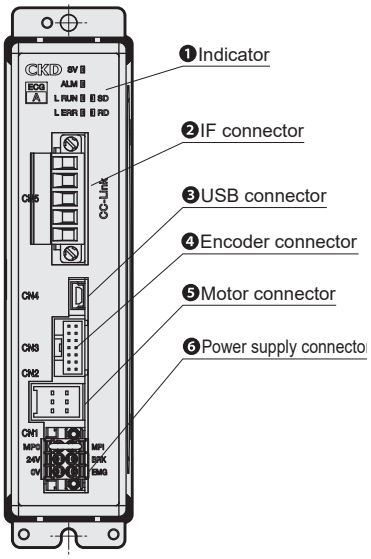
* The Item that can be monitored varies depending on the operation mode. Refer to page 195 for details.

[CC-Link]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Device No.	Half simple direct value mode Signal name
RYn0	Point number selection bit 0
RYn1	Point number selection bit 1
RYn2	Point number selection bit 2
RYn3	Point number selection bit 3
RYn4	Point number selection bit 4
RYn5	Point number selection bit 5
RYn6	Direct value travel selection
RYn7	JOG/INCH (-) travel start
RYn8	JOG/INCH (+) travel start
RYn9	INCH selection
RYnA	Point travel start
RYnB	Origin return start
RYnC	Servo ON
RYnD	Alarm reset
RYnE	Stop#
RYnF	Pause#
RY (n+1) 0 to RY (n+1) F	Vacant

Cyclic data from controller

Device No.	Half simple direct value mode Signal name
RXn0	Point number confirmation bit 0
RXn1	Point number confirmation bit 1
RXn2	Point number confirmation bit 2
RXn3	Point number confirmation bit 3
RXn4	Point number confirmation bit 4
RXn5	Point number confirmation bit 5
RXn6	Direct value travel status
RXn7	Selectable output 1
RXn8	Selectable output 2
RXn9	-
RXnA	Point travel complete
RXnB	Origin return complete
RXnC	Servo ON state
RXnD	Alarm#
RXnE	Warning#
RXnF	Operation preparation complete
RX (n+1) 0 to RX (n+1) F	Vacant

Device No.	Half simple direct value mode Signal name
RWw0	Position (direct value travel)
RWw1	
RWw2	-
RWw3	-

Device No.	Half simple direct value mode Signal name
RWr0	Position (monitor value)
RWr1	
RWr2	Speed (monitor value)
RWr3	Current (monitor value)

* Refer to the Instruction Manual for details of other operation modes.
* # Indicates a negative logic signal.

● Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT
CC-Link connector	MSTB2,5/5-STF-5,08ABGYAU	PHOENIX CONTACT

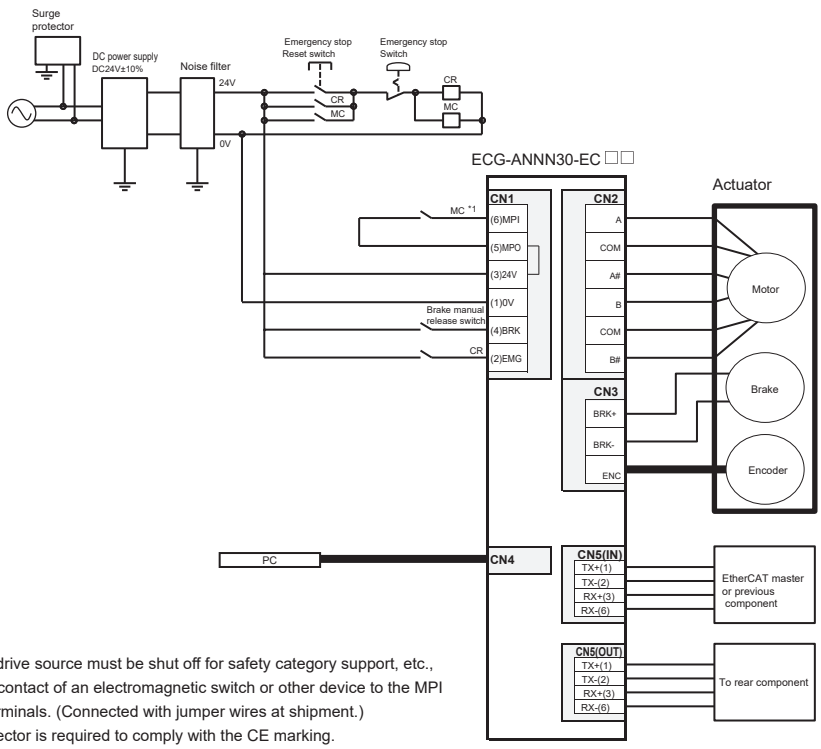
EtherCAT specifications and connection diagram (ECG-ANNN30-EC * *)

[Communication specifications]

Item	Specifications
Communication speed	100 Mbps (fast Ethernet, full duplex)
Process data	Variable PDO mapping
Max. PDO Data length	RxPDO:64 bytes/ TxPDO:64 bytes
Station Alias	0 - 65535 (Set by a parameter)
Connection cable	EtherCAT compliant cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended)
Node address	Automatic allocation by master
Monitor function	Position, speed, current, alarm

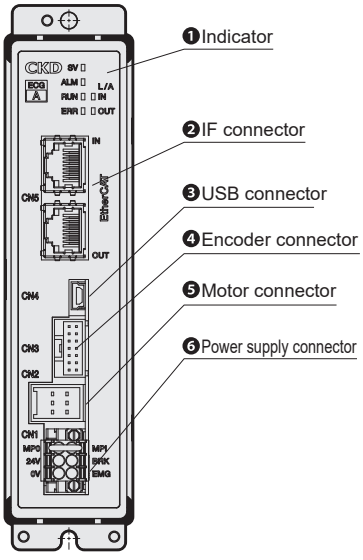
* The Item that can be monitored varies depending on the operation mode. Refer to page 195 for details.

[EtherCAT]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Index	Sub Index	bit	Full direct value mode Signal name
0x2001	0x01	0 to 5	Point number selection bit 0 to 5
		6	-
		7	JOG/INCH (-) travel start
		8	JOG/INCH (+) travel start
		9	INCH selection
		10	Point travel start
		11	Origin return start
		12	Servo ON
		13	Alarm reset
		14	Stop#
		15	Pause#
		16 to 31	-
	0x02	0 to 3	-
		4	Data request
		5	Data R/W selection
		6 to 11	-
		12	Monitor request
		13 to 14	-
		15	Direct value travel selection
		16 to 31	-
0x2003	0x01	0 to 31	Position (direct value travel)
	0x02	0 to 31	Positioning width (direct value travel)
	0x03	0 to 31	Speed (direct value travel)
	0x04	0 to 31	Acceleration (direct value travel)
	0x05	0 to 31	Deceleration (direct value travel)
	0x06	0 to 31	Pressing ratio (direct value travel)
	0x07	0 to 31	Pressing speed (direct value travel)
	0x08	0 to 31	Pressing distance (direct value travel)
	0x09	0 to 31	Mode (direct value travel)
	0x0 A	0 to 31	Gain magnification (direct value travel)
	0x0B	0 to 31	Writing data
	0x0C	0 to 31	Data number
	0x0D	0 to 31	Monitor number 1
	0x0E	0 to 31	Monitor number 2

Cyclic data from controller

Index	Sub Index	bit	Full direct value mode Signal name
0x2005	0x01	0 to 5	Point number confirmation bit 0 to 5
		6 to 9	-
		10	Point travel complete
		11	Origin return complete
		12	Servo ON state
		13	Alarm#
		14	Warning#
		15	Operation preparation complete
		16 to 31	-
	0x02	0 to 3	Data response
		4	Data complete
		5	Data write status
		6 to 7	-
		8 to 11	Monitor response
		12	Monitor complete
		13 to 14	-
		15	Direct value travel status
		16	Point zone
		17	Moving
		18	Zone 1
		19	Zone 2
		20	Soft limit exceeded
		21	Soft limit over (-)
		22	Soft limit exceeded (+)
		23 to 31	-
0x2007	0x01	0 to 31	Position (monitor value)
	0x02	0 to 31	Speed (monitor value)
	0x03	0 to 31	Current (monitor value)
	0x04	0 to 31	-
	0x05	0 to 31	Alarm (monitor value)
	0x06 to 0x0A	0 to 31	-
	0x0B	0 to 31	Read data
	0x0C	0 to 31	Data (alarm)
	0x0D	0 to 31	Monitor value 1
	0x0E	0 to 31	Monitor value 2

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT

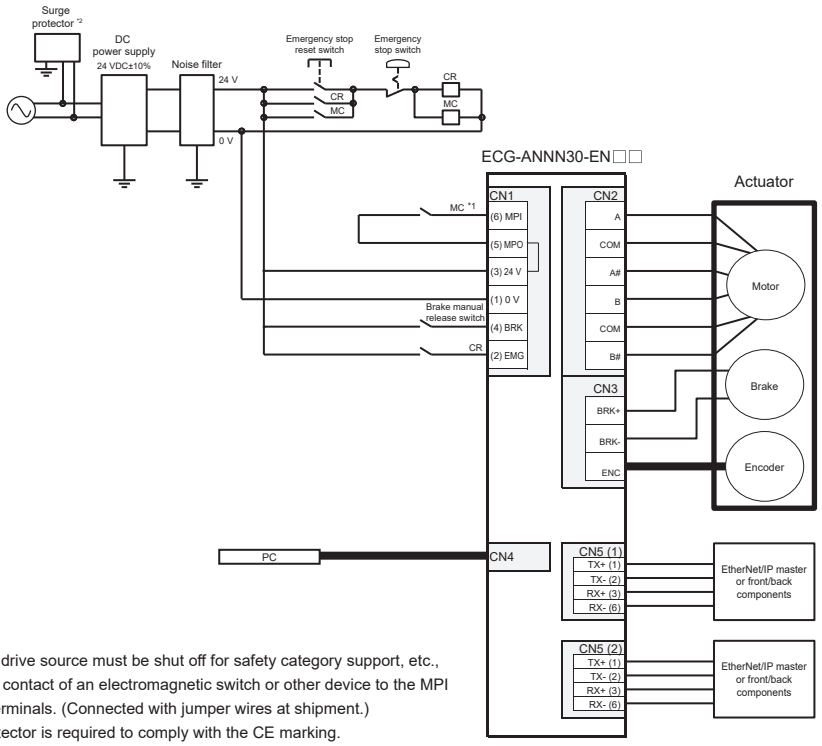
EtherNet/IP specifications and connection diagram (ECG-ANNN30-EN * *)

[Communication specifications]

Item	Specifications
Communication protocol	EtherNet/IP
Communication speed	Automatic setting (100Mbps/10Mbps, full duplex/ Half-duplex)
Occupied bytes	Input: 64 bytes/Output: 64 bytes
IP address	Setting by parameter (0.0.0.0 to 255.255.255.255) Via DHCP server (arbitrary address)
RPI (Packet interval)	4 ms to 10000 ms
Connection cable	EtherNet/IP compliant cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended)
Monitor function	Position, speed, current, alarm

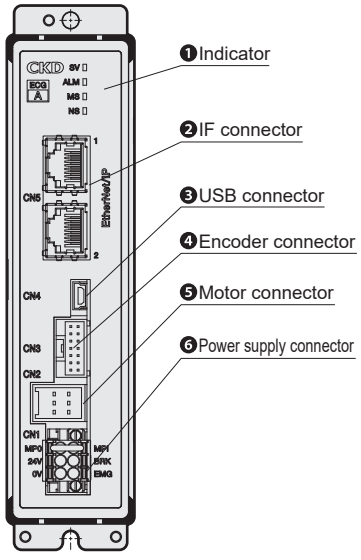
* The Item that can be monitored varies depending on the operation mode. Refer to page 195 for details.

[EtherNet/IP]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Byte	bit	Full direct value mode Signal name
0	0 to 5	Point number selection bit 0 to 5
	6	-
	7	JOG/INCH (-) travel start
1	0	JOG/INCH (+) travel start
	1	INCH selection
	2	Point travel start
	3	Origin return start
	4	Servo ON
	5	Alarm reset
	6	Stop#
	7	Pause#
2 to 3	0 to 7	-
4	0 to 3	-
	4	Data request
	5	Data R/W selection
	6 to 7	-
5	0 to 3	-
	4	Monitor request
	5 to 6	-
	7	Direct value travel selection
6 to 7	0 to 7	-
8 to 11	0 to 7	Position (direct value travel)
12 to 15	0 to 7	Positioning width (direct value travel)
16 to 19	0 to 7	Speed (direct value travel)
20 to 23	0 to 7	Acceleration (direct value travel)
24 to 27	0 to 7	Deceleration (direct value travel)
28 to 31	0 to 7	Pressing ratio (direct value travel)
32 to 35	0 to 7	Pressing speed (direct value travel)
36 to 39	0 to 7	Pressing distance (direct value travel)
40 to 43	0 to 7	Mode (direct value travel)
44 to 47	0 to 7	Gain magnification (direct value travel)
48 to 51	0 to 7	Writing data
52 to 55	0 to 7	Data number
56 to 59	0 to 7	Monitor number 1
60 to 63	0 to 7	Monitor number 2

Cyclic data from controller

Byte	bit	Full direct value mode Signal name
0	0 to 5	Point number confirmation bit 0 to 5
	6 to 7	-
1	0 to 1	-
	2	Point travel complete
	3	Origin return complete
	4	Servo ON state
	5	Alarm#
	6	Warning#
	7	Operation preparation complete
2 to 3	0 to 7	-
4	0 to 3	Data response
	4	Data complete
	5	Data write status
	6 to 7	-
5	0 to 3	Monitor response
	4	Monitor complete
	5 to 6	-
	7	Direct value travel status
6	0	Point zone
	1	Moving
	2	Zone 1
	3	Zone 2
	4	Soft limit exceeded
	5	Soft limit over (-)
	6	Soft limit exceeded (+)
	7	-
7	0 to 7	-
8 to 11	0 to 7	Position (monitor value)
12 to 15	0 to 7	Speed (monitor value)
16 to 19	0 to 7	Current (monitor value)
20 to 23	0 to 7	-
24 to 27	0 to 7	Alarm (monitor value)
28 to 47	0 to 7	-
48 to 51	0 to 7	Read data
52 to 55	0 to 7	Data (alarm)
56 to 59	0 to 7	Monitor value 1
60 to 63	0 to 7	Monitor value 2

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

● Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC 1,5/3-STF-3,5	PHOENIX CONTACT

Relay cable

● Motor cable (fixed / movable)

* Selectable with actuator

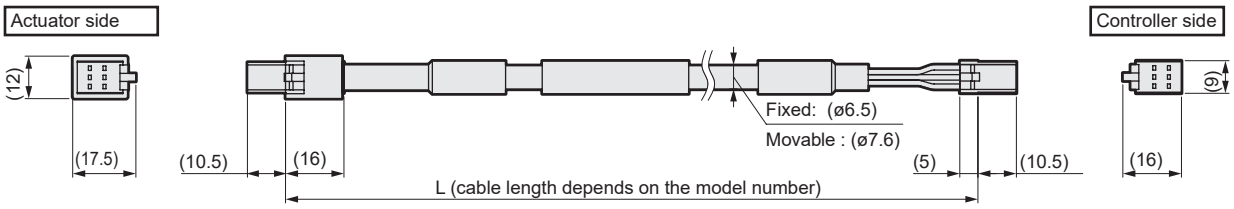
EA-CBLM4 - S 01

Ⓐ Ⓑ

Ⓐ Cable type	
S	Fixed cable
R	Movable cable

Ⓑ Cable length	
01	1 m
03	3 m
05	5 m
10	10 m

●EA-CBLM4



* Use all cables with a bending radius of 51 mm or more.

● Encoder cable (fixed / movable)

* Selectable with actuator

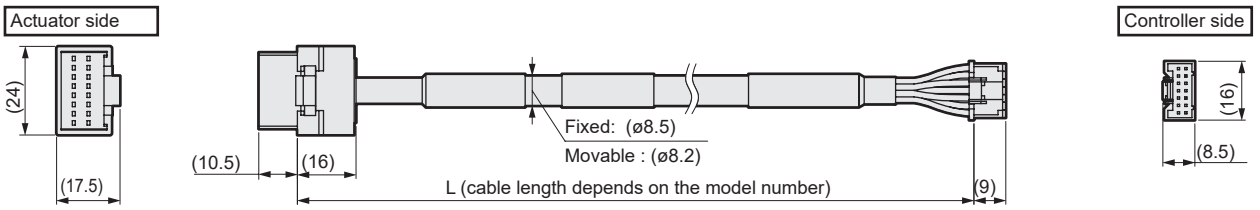
EA-CBLE4 - S 01

Ⓐ Ⓑ

Ⓐ Cable type	
S	Fixed cable
R	Movable cable

Ⓑ Cable length	
01	1 m
03	3 m
05	5 m
10	10 m

●EA-CBLE4



* Use all cables with a bending radius of 51 mm or more.

I/O cable

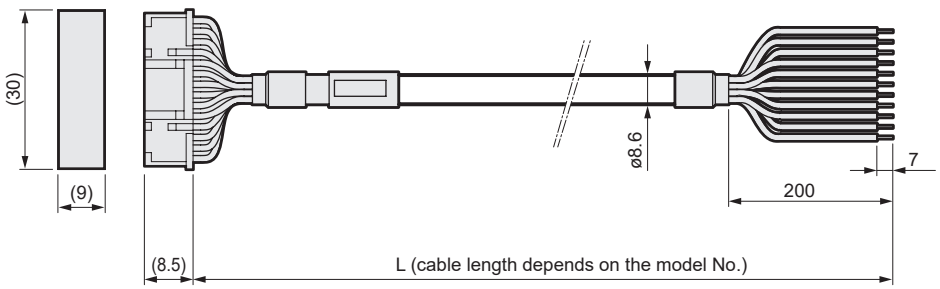
● I/O cable

* Selectable even with parallel I/O specification controller type

EA-CBLNP2 - 02

Ⓐ

Ⓐ Cable length	
02	2 m
03	3 m
05	5 m
10	10 m



How to order related parts

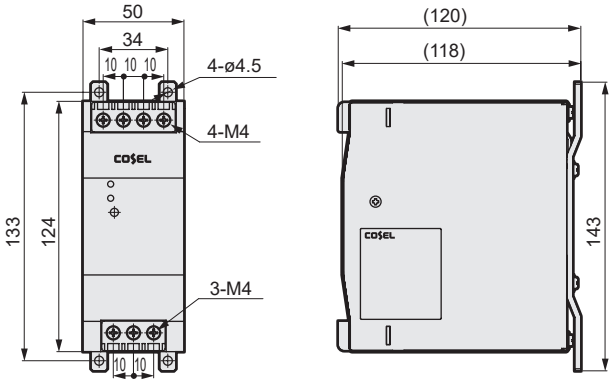
●DC power supply

Item \ Model No.			EA-PWR-KHNA240F-24-N2 (screw mounted) EA-PWR-KHNA240F-24 (DIN rail mount)
Manufacturer			COSEL Co., Ltd.
Manufacturer model No.	Mounting screw		KHNA240F-24-N2
	DIN rail mount		KHNA240F-24
Input voltage			85 to 264 VAC 1ø or 88 to 370 VDC
Output	Power		240 W
	Voltage / Current		24 V10 A
	Variable voltage range		22.5 to 28.5 V
Included functions	Overcurrent protection		Operating at 101% min of peak current
	Overvoltage protection		30.0 to 36.0 V
	Remote control		Possible
	Remote sensing		-
	Other		DC_OK display, ALARM display
Operating temperature / humidity			-25 to + 70°C, 20 to 90%RH (no condensation), -40°C Bootable *
Applicable standards	Safety standards	AC input	AC input: Certified UL60950-1, C-UL (CSA60950-1), EN62368-1
			UL508, ANSI / ISA12.12.01, ATEX acquired, CKD compliant *
		DC input	UL60950-1, C-UL (CSA60950-1), EN62368-1
	Noise terminal voltage		Compliant with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B
	Harmonic current		Compliant with IEC61000-3-2 (class A)*
Structure	Dimensions (W x H x D)		50×124×117 mm
	Weight		900 g max
	Cooling method		Natural air cooling

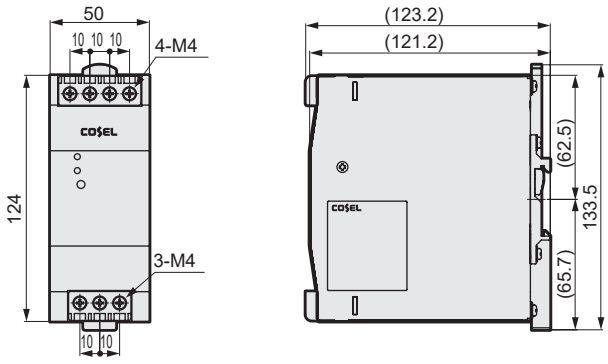
* Refer to the manufacturer's HP for details.
* CE marking and ROHS are obtained with the manufacturer model No.

Part names and dimensions

●EA-PWR-KHNA240F-24-N2 (24 V screw mounted)



●EA-PWR-KHNA240F-24 (24 V DIN rail mounted)



● Other components

Part name	Model No.
Noise filter for power supply (single phase, 15 A)	AX-NSF-NF2015A-OD

* Refer to the instruction manual for the ferrite core to be used.

Model selection Check sheet	Safety Caution	ECG-B (Controller)	ECG-A (Controller)	G Series						ESC3 (Controller)	D Series (Spring drive)			D Series (Screw drive)				
				GCKW	GSTL	GSTS	GSTG	GSTK	GSSD2		DCKW	DLSH	DMSDG	DSTL	DSTS	DSTG	DSTK	DSSD2

ECG-B

Controller

CONTENTS

Controller

ECG-B Series

All sizes of GCKW can be operated with the same controller

How to order

ECG-BNNN30 - NP A 02

Ⓐ Ⓑ Ⓒ

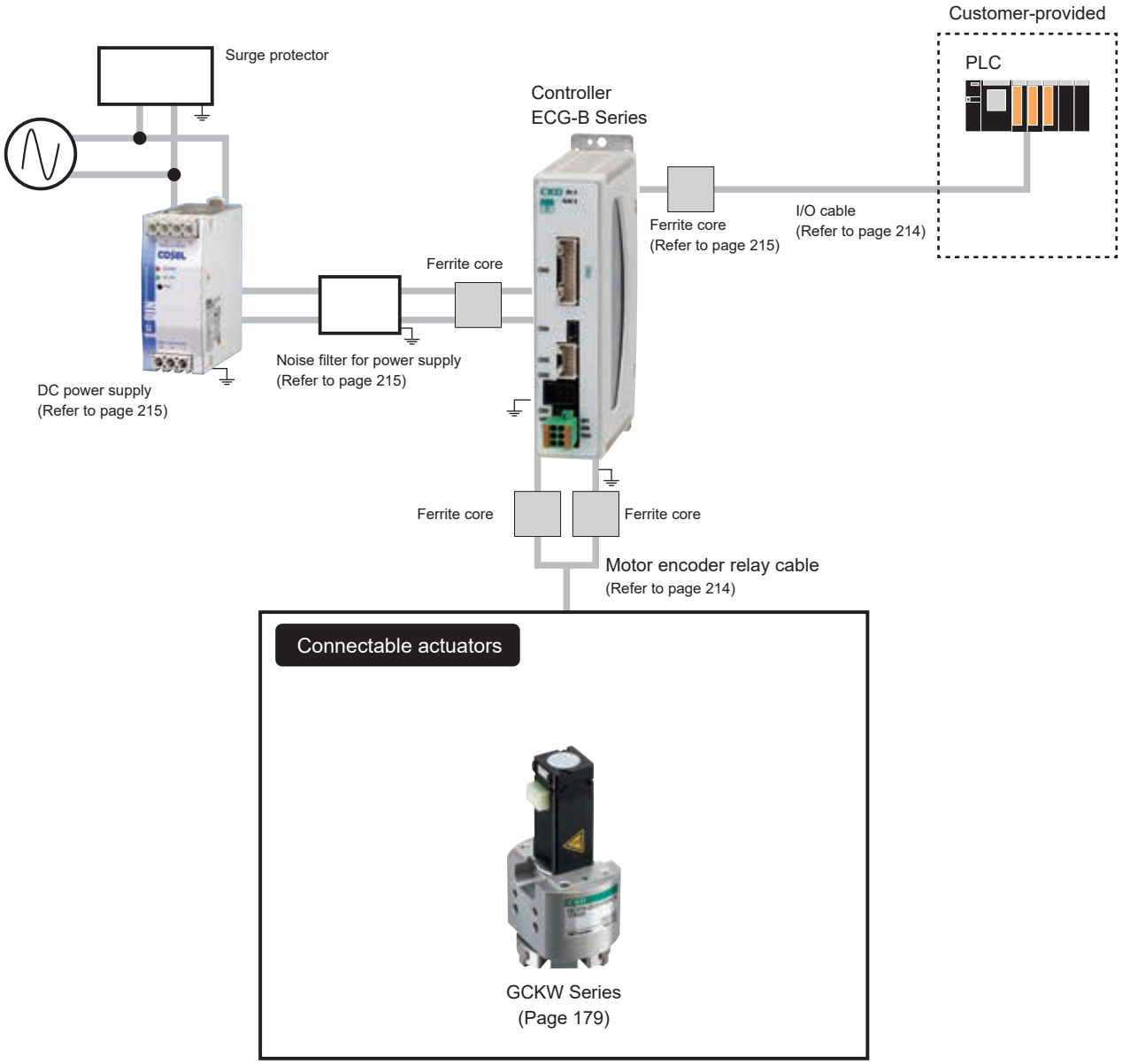
Ⓐ Interface specification	
NP	Parallel I/O (NPN and PNP common)
LK	IO-Link
CL	CC-Link
EC	EtherCAT
EN	EtherNet/IP

Ⓑ Mounting method	
A	Standard mount
D	DIN rail mount

Ⓒ IO Cable length *1	
00	None
02	2 m
03	3 m
05	5 m
10	10 m

*1 Select "None" unless "parallel I/O" is selected for interface specifications.

System configuration



* Refer to the Instruction Manual for details about installing and wiring the noise filter, surge protector, and ferrite core.

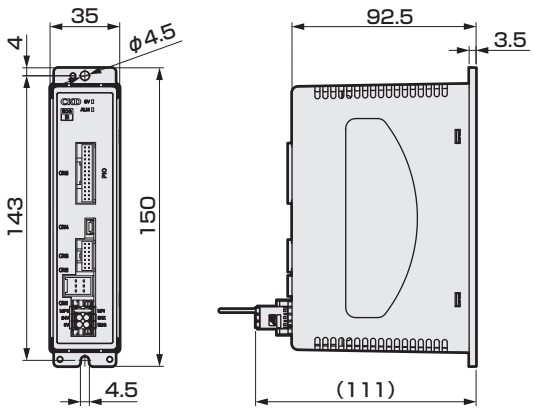
General specifications

Item		Description			
Applicable actuators		GCKW			
Applicable motor sizes		□20	□25	□25L	□35
Settings tool		PC setting software (S-Tools) Connection cable: USB cable (mini-B)			
External interface	Parallel I/O specification	24 VDC ±10%, input/output max. 13 points, cable length max. 10 m			
	Field network specification	IO-Link, CC-Link, EtherCAT, EtherNet/IP			
Indicator lamp		SV lamp, alarm lamp Communication status lamp (according to each interface specification)			
Power supply voltage	Control power	24 VDC±10%			
	Motion power supply	24 VDC±10%			
Current consumption	Control power	0.4 A or less			
	Motion power supply	1.1 A or less	2.1 A or less	3.2 A or less	3.0 A or less
Motor section max. instantaneous current		1.5 A or less	3.0 A or less	4.5 A or less	4.2 A or less
Insulation resistance		10 MΩ and over at 500 VDC			
Withstand voltage		500 VAC for 1 minute			
Operating ambient temperature		0 to 40°C (no freezing)			
Operating ambient humidity		35 to 80% RH (no condensation)			
Storage ambient temperature		-10 to 50°C (no freezing)			
Storage ambient humidity		35 to 80% RH (no condensation)			
Working atmosphere		No corrosive gas, explosive gas, or dust			
Degree of protection		IP20			
Weight		Approx. 310 g (standard mount) Approx. 340 g (DIN rail mount)			

Dimensions

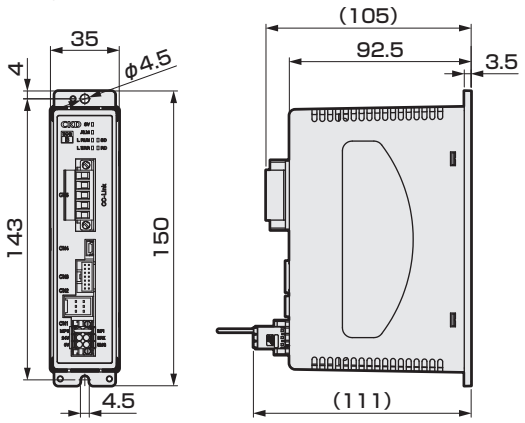
● Standard mount

ECG-BNNN30-NPA□□ (parallel I/O specification)



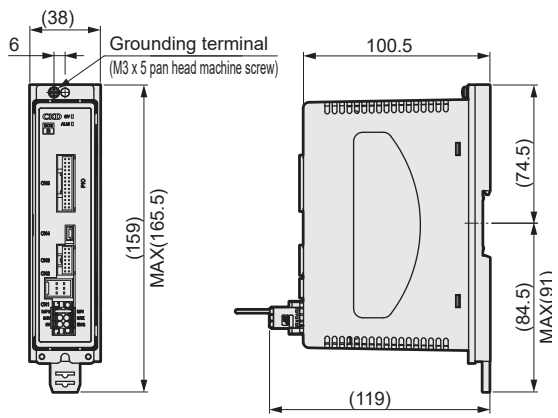
ECG-BNNN30-□□A□□ (Other)

* This figure shows the dimensions diagrams for CC-Link specifications. The dimensions diagrams are the same for other interface specifications, except the connector part.



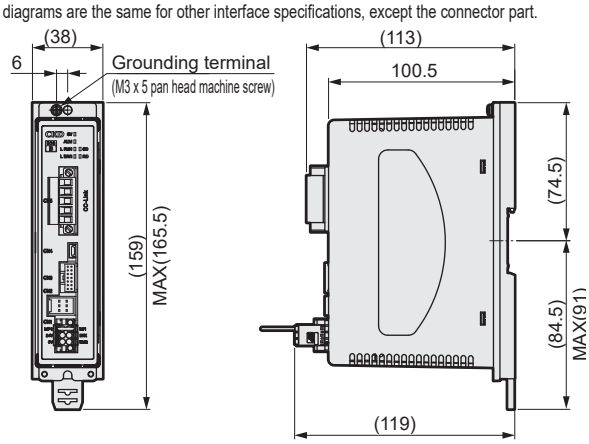
● DIN rail mount

ECG-BNNN30-NPD□□ (parallel I/O specification)



ECG-BNNN30-□□D□□ (Other)

* This figure shows the dimensions diagrams for CC-Link specifications. The dimensions diagrams are the same for other interface specifications, except the connector part.

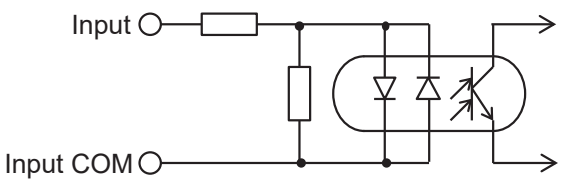


Parallel I/O (PIO) input/output circuit

Input specification

Item	ECG-ANNN30-NP□□
No. of inputs	13 points
Input voltage	24 VDC±10%
Input current	4 mA / point
Input voltage when ON	19 V or higher
Input current when OFF	0.2 mA or less

Input circuit

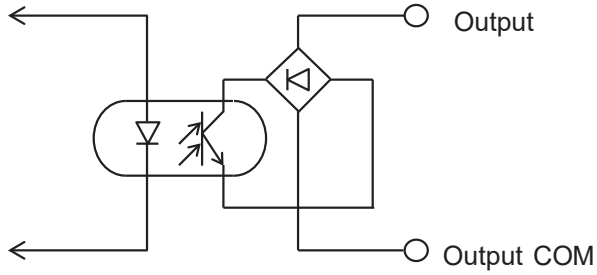


The input is not polarized.
(The input COM can be used with either + or -)

Output specifications

Item	ECG-ANNN30-NP□□
No. of output points	13 points
Load voltage	24 VDC±10%
Load current	20 mA or less / point
Internal voltage drop when ON	3 V or less
Leakage current when OFF	0.1 mA or less
Output short-circuit protection circuit	Yes
Connecting load	PLC, etc.

Output circuit



The output is not polarized.
(The output COM can be used with either + or -)

Parallel I/O (PIO) operation mode

Controllers offer five operation modes.

Use the PC setting software to set the appropriate operation mode. The initial setting is 64-point mode.

Operation mode	Positioning numbers	Overview
64-point mode	64 points	· JOG travel start input · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Simple 7-point mode	7 points	· JOG travel start input · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode double 2-position	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode double 3-position	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))
Solenoid valve mode single	2 points	· SW output: 2 points · Selectable output: 2 points (point zone, zone 1, zone 2, travel, warning, soft limit over (-), soft limit over (+))

Parallel I/O (PIO) signal name list

Input signal

Abbreviation	Name	Abbreviation	Name
PST	Point travel start	JOGM	JOG (-) travel start
PSB*	Point number selection bit *	JOGP	JOG (+) travel start
OST	Origin return start	P*ST	Point number * travel start
SVON	Servo ON	V1ST	Solenoid valve travel instruction 1
ALMRST	Alarm reset	V2ST	Solenoid valve travel instruction 2
STOP	Stop	VST	Solenoid valve travel instruction

Output signal

Abbreviation	Name	Abbreviation	Name
PEND	Point travel complete	SONS	Servo ON state
PCB*	Point number confirmation bit *	ALM	Alarm
ACB*	Alarm confirmation bit *	WARN	Warning
PZONE	Point zone	READY	Operation preparation complete
MOVE	Moving	P*END	Point number * travel complete
ZONE1	Zone 1	SW1	Switch 1
ZONE2	Zone 2	SW2	Switch 2
OEND	Origin return complete	SLMT	Soft limit exceeded
SLMTM	Soft limit over (-)	SLMTP	Soft limit exceeded (+)

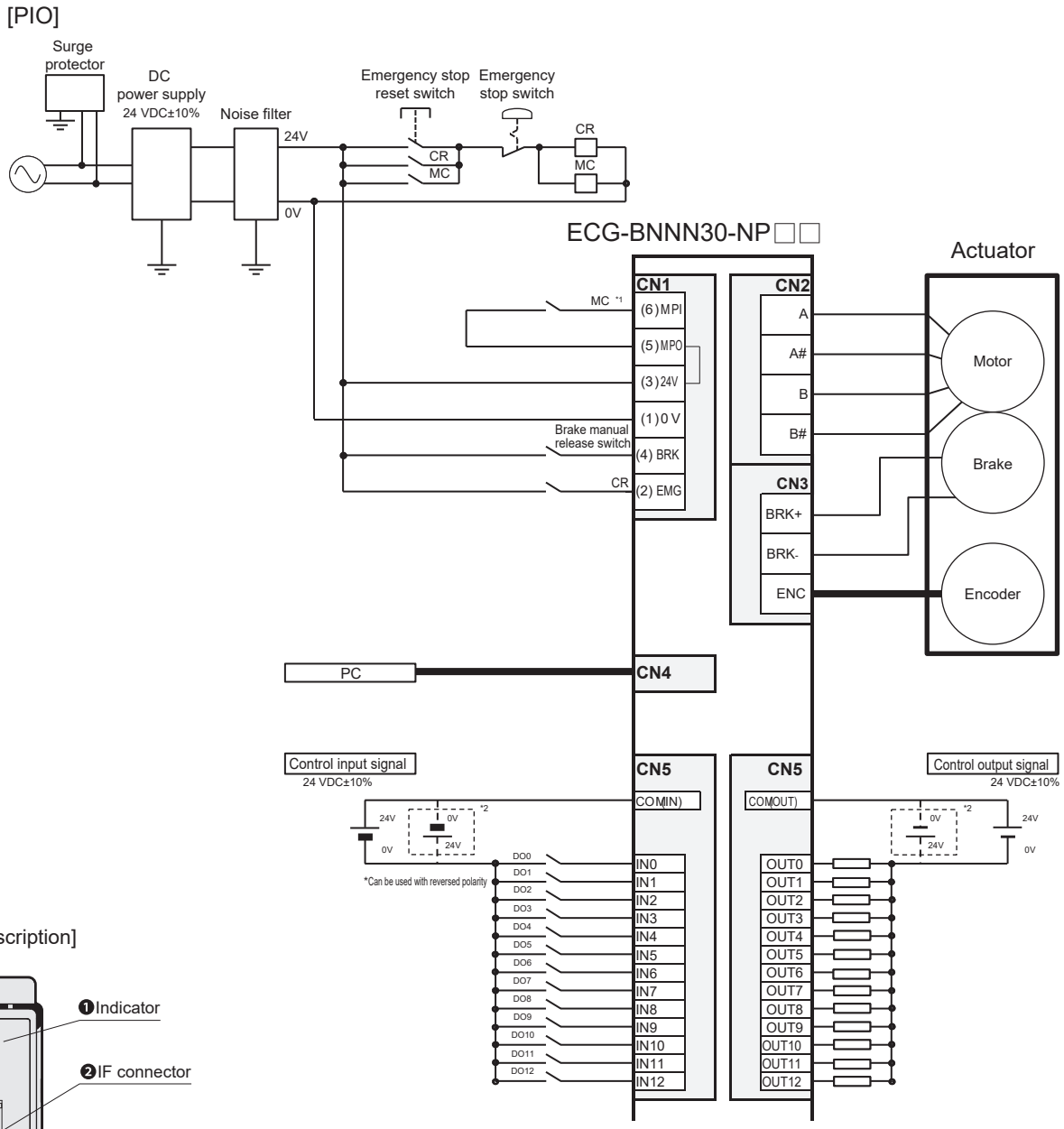
Parallel I/O (PIO) operation mode and signal assignment

The following figure shows signal assignments in each operation mode.

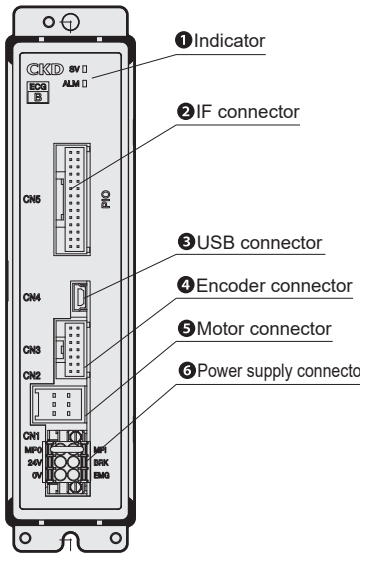
Operation mode		64-point mode	Simple 7-point mode	Solenoid mode Double 2-position	Solenoid mode Double 3-position	Solenoid mode Single type
Positioning numbers		64	7	2	2	2
Input	IN0	PSB0	P1ST	V1ST	V1ST	-
	IN1	PSB1	P2ST	V2ST	V2ST	VST
	IN2	PSB2	P3ST	-	-	-
	IN3	PSB3	P4ST	-	-	-
	IN4	PSB4	P5ST	-	-	-
	IN5	PSB5	P6ST	-	-	-
	IN6	PST	P7ST	-	-	-
	IN7	JOGM	JOGM	-	-	-
	IN8	JOGP	JOGP	-	-	-
	IN9	OST	OST	OST	OST	OST
	IN10	SVON	SVON	SVON	SVON	SVON
	IN11	ALMRST	ALMRST	ALMRST	ALMRST	ALMRST
	IN12	STOP#	STOP#	-	-	-
Output	OUT0	PCB0/ ACB0	P1END	P1END	P1END	P1END
	OUT1	PCB1/ ACB1	P2END	P2END	P2END	P2END
	OUT2	PCB2/ ACB2	P3END	-	-	-
	OUT3	PCB3/ ACB3	P4END	-	-	-
	OUT4	PCB4	P5END	SW1	SW1	SW1
	OUT5	PCB5	P6END	SW2	SW2	SW2
	OUT6	PEND	P7END	-	-	-
	OUT7	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT8	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP	PZONE/ ZONE1/ ZONE2/ MOVE/ WARN# SLMT/ SLMTM/ SLMTP
	OUT9	OEND	OEND	OEND	OEND	OEND
	OUT10	SONS	SONS	SONS	SONS	SONS
	OUT11	ALM#	ALM#	ALM#	ALM#	ALM#
	OUT12	READY	READY	READY	READY	READY

* The pound sign (#) indicates a negative logic signal.

Parallel I/O connection diagram (ECG-BNNN30-NP * *)



[Panel description]



* 1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.
*3 This can be used even if the polarity is reversed.

- Attachments

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT

Description of field network operation modes

Operation mode	Overview
PIO mode (PIO)	Point operation can be used and signal assignment of inputs and outputs can be changed in the operation mode (PIO) in the same way as the parallel I/O specification. However, you cannot select a direct value operation that sets the operating conditions for operation directly from the PLC. Reading and writing of parameters do work, but the monitoring function cannot be used. Refer to the table below for details.
Half simple direct value mode (HSDP)	This mode is selectable only with the CC-Link specification controller. Switching the direct travel selection signal enables a target position to be arbitrarily be set by the PLC or 64-point operation. The selected direct travel operation method can then be used. The monitoring function can be used with restrictions. Reading and writing of parameters does not work. Refer to the table below for details.
Simple direct value mode (SDP)	Switching the direct travel selection signal enables a target position to be arbitrarily be set by the PLC or 64-point operation. The selected direct travel operation method can then be used. Reading and writing of parameters do work and the monitoring function can be used. Refer to the table below for details.
Half direct value mode (HDP)	This mode is selectable only with the CC-Link specification controller. Switching the direct travel selection signal enables operating conditions to be arbitrarily be set by a PLC (with restrictions) or 64 point operation. The selected direct travel operation method can then be used. The monitoring function can be used. Reading and writing of parameters does not work. Refer to the table below for details.
Full direct value mode (FDP)	Switching the direct travel selection signal enables operating conditions to be arbitrarily be set by the PLC or 64 point operation. The selected direct travel operation method can then be used. Reading and writing of parameters do work and the monitoring function can be used. Refer to the table below for details.

Operation mode		PIO	HSDP	SDP	HDP	FDP
Parameter read / write		Available	Not available	Available	Not available	Available
Direct value travel selection *1		Selection not possible	1	1	1	1
Positioning numbers		64	No limit	No limit	No limit	No limit
Direct value travel Item *2	Target position	-	-	-	-	-
	Positioning width	-	-	-	-	-
	Speed	-	-	-	-	-
	Acceleration	-	-	-	-	-
	Deceleration	-	-	-	-	-
	Pressing rate	-	-	-	-	-
	Pressing distance	-	-	-	-	-
	Pressing speed	-	-	-	-	-
	Position designation method	-	-	-	-	-
	Operation	-	-	-	-	-
	Stop method	-	-	-	-	-
	Acceleration / Deceleration method	-	-	-	-	-
	Rotation direction	-	-	-	-	-
Monitor Item *3	Position	-	-	-	-	-
	Speed	-	-	-	-	-
	Current	-	-	-	-	-
	Alarm	-	-	-	-	-

*1 When the direct value travel selection is 0, the values set in the point data are used. This enables up to 64 positioning points.
*2 ○Indicates the item operated with the value set by the PLC. "-" indicates operation with the values set by the point data.
●Indicates items operated with the value set by the PLC, but only the same values can be set.
*3 ○Shows the items that can be monitored. "-" indicates Items that cannot be monitored. ▲Only one Item selected from among can be monitored. ▲Indicates the Item that can be monitored when selected as a monitor value. (CC-Link and IO-Link can monitor one value, and the others can monitor three values at the same time.)

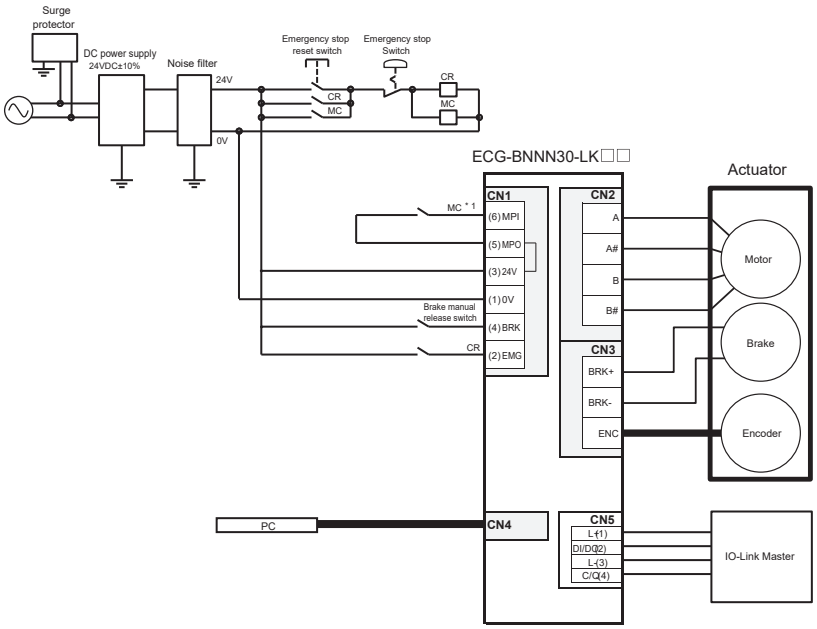
IO-Link specifications and connection diagram (ECG-BNNN30-LK * *)

[Communication specifications]

Item	Specifications
Communication protocol version	V1.1
Transmission bit rate	COM3 (230.4kbps)
Port	Class A
Process data length (Input) PD (in) data length	PIO mode: 2 bytes
	Simple direct value mode: 9 bytes
	Full direct value mode: 12 bytes
Process data length (Output) PD (out) data length	PIO mode: 2 bytes
	Simple direct value mode: 7 bytes
	Full direct value mode: 22 bytes
Minimum cycle time	PIO mode: 1 ms
	Simple direct value mode: 1.5 ms
	Full direct value mode: 2.5 ms
Monitor function	Position, speed, current, alarm

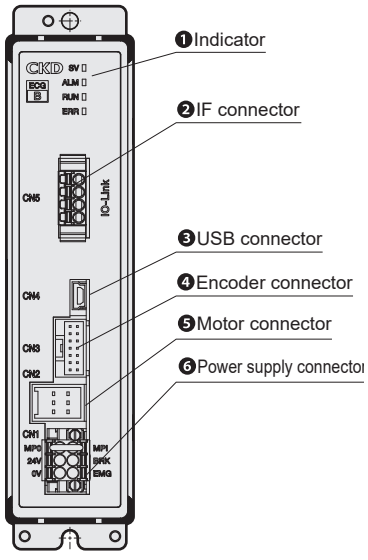
* The Item that can be monitored varies depending on the operation mode. Refer to page 209 for details.

[IO-Link]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

PD (out)	bit	Full direct value mode Signal name
0	7	Pause#
	6	Stop#
	5	Alarm reset
	4	Servo ON
	3	Origin return start
	2	Point travel start
	1	JOG/INCH (+) travel start
	0	JOG/INCH (-) travel start
1	7	INCH selection
	6	-
	5 to 0	Point number selection bit 5 to 0
2	7 to 4	-
	3 to 1	Rotation direction (direct value travel)
	0	Direct value travel selection
3 to 6	7 to 0	Position (direct value travel)
7 to 8	7 to 0	Positioning width (direct value travel)
9 to 10	7 to 0	Speed (direct value travel)
11	7 to 0	Acceleration (direct value travel)
12	7 to 0	Deceleration (direct value travel)
13	7 to 0	Pressing rate (direct value travel)
14	7 to 0	Pressing speed (direct value travel)
15 to 18	7 to 0	Pressing distance (direct value travel)
19 to 20	7 to 0	Gain magnification (direct value travel)
21	7	Position specification method (direct value travel)
	6 to 5	Operation method (direct value travel)
	4 to 3	Acceleration/deceleration method (direct value travel)
	2 to 0	Stop method (direct value travel)

Cyclic data from controller

PD (in)	bit	Full direct value mode Signal name
0	7	Operation preparation complete
	6	Warning#
	5	Alarm#
	4	Servo ON state
	3	Origin return complete
	2	Point travel complete
	1 to 0	-
1	7 to 6	-
	5 to 0	Point number confirmation bit 5 to 0
2	7	Soft limit exceeded (+)
	6	Soft limit over (-)
	5	Soft limit exceeded
	4	Zone 2
	3	Zone 1
	2	Moving
	1	Point zone
	0	Direct travel status
3 to 6	7 to 0	Position (monitor value)
7 to 8	7 to 0	Speed (monitor value)
9	7 to 0	Current (monitor value)
10 to 11	7 to 0	Alarm (monitor value)

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

Attachments

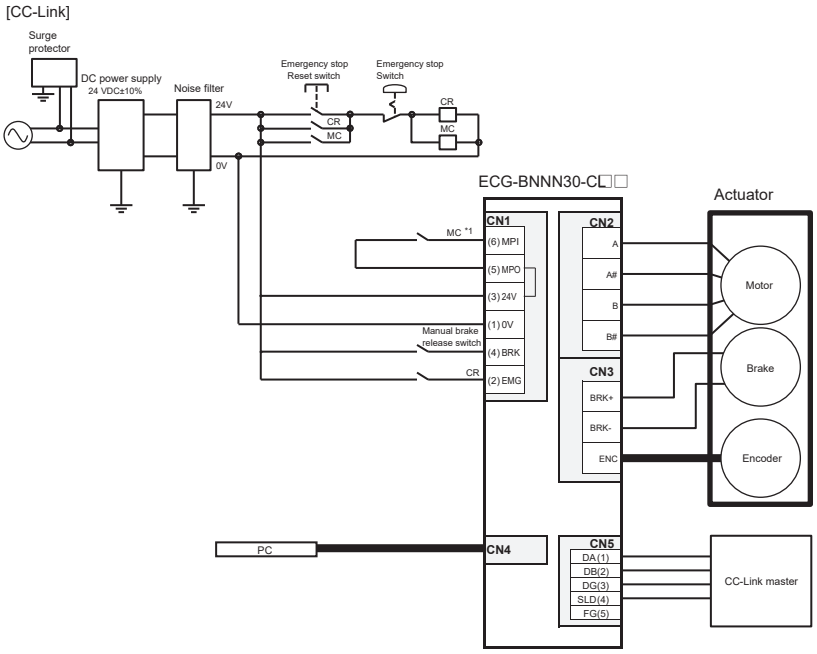
Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT
IO-Link connector	FMCI,5/4-ST-3,5-RF	PHOENIX CONTACT

CC-Link specifications and connection diagram (ECG-BNNN30-CL * *)

[Communication specifications]

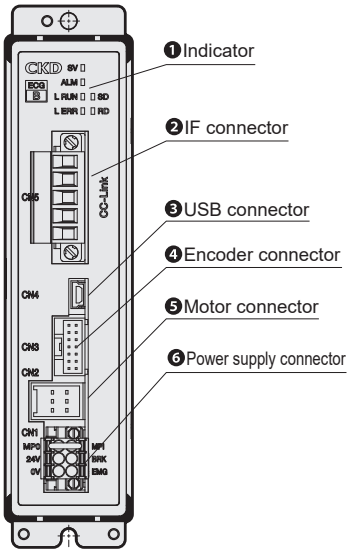
Item	Specifications
CC-Link Version	Ver. 1.10
Station	Remote device station
Remote station No.	1 to 64 (set by parameter setting)
Operation mode and number of occupied stations	PIO mode (1 station occupied)
	Half simple direct value mode (1 station occupied)
	Simple direct value mode (2 stations occupied)
	Half direct value mode (2 stations occupied)
	Full direct value mode (4 stations occupied)
Remote input/ output points	32 points × occupied stations
Remote Register input/output	4-word × number of occupied stations
Communication speed	10M / 5M / 2.5M / 625k / 156kbps (Selected by parameter setting)
Connection cable	CC-Link Ver. 1.10 compliant cable (3-conductor twisted pair cable with shield)
Number of connected units	42 max. when only remote device stations are connected
Monitor function	Position, speed, current, alarm

* The Item that can be monitored varies depending on the operation mode. Refer to page 209 for details.



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Device No.	Half simple direct value mode Signal name
RYn0	Point number selection bit 0
RYn1	Point number selection bit 1
RYn2	Point number selection bit 2
RYn3	Point number selection bit 3
RYn4	Point number selection bit 4
RYn5	Point number selection bit 5
RYn6	Direct value travel selection
RYn7	JOG/INCH (-) travel start
RYn8	JOG/INCH (+) travel start
RYn9	INCH selection
RYnA	Point travel start
RYnB	Origin return start
RYnC	Servo ON
RYnD	Alarm reset
RYnE	Stop#
RYnF	Pause#
RY (n+1) 0 to RY (n+1) F	Vacant

Cyclic data from controller

Device No.	Half simple direct value mode Signal name
RXn0	Point number confirmation bit 0
RXn1	Point number confirmation bit 1
RXn2	Point number confirmation bit 2
RXn3	Point number confirmation bit 3
RXn4	Point number confirmation bit 4
RXn5	Point number confirmation bit 5
RXn6	Direct value travel status
RXn7	Selectable output 1
RXn8	Selectable output 2
RXn9	-
RXnA	Point travel complete
RXnB	Origin return complete
RXnC	Servo ON state
RXnD	Alarm#
RXnE	Warning#
RXnF	Operation preparation complete
RX (n+1) 0 to RX (n+1) F	Vacant

Device No.	Half simple direct value mode Signal name
RWw0	Position (direct value travel)
RWw1	
RWw2	-
RWw3	-

Device No.	Half simple direct value mode Signal name
RWr0	Position (monitor value)
RWr1	
RWr2	Speed (monitor value)
RWr3	Current (monitor value)

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

● Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT
CC-Link connector	MSTB2,5/5-STF-5,08ABGYAU	PHOENIX CONTACT

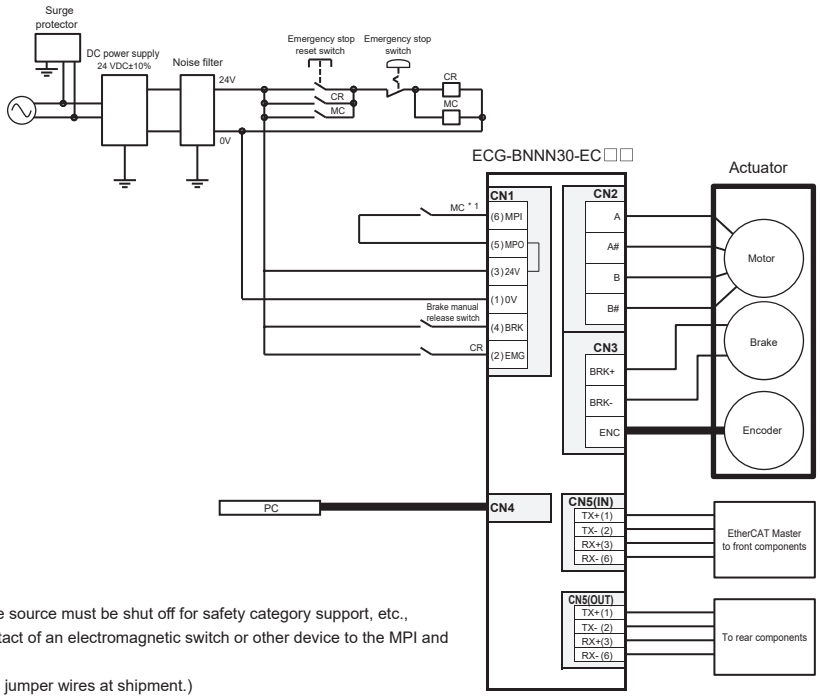
EtherCAT specifications and connection diagram (ECG-BNNN30-EC * *)

[Communication specifications]

Item	Specifications
Communication speed	100 Mbps (fast Ethernet, full duplex)
Process data	Variable PDO mapping
Max. PDO Data length	RxPDO:64 bytes/TxPDO: 64 bytes
Station Alias	0 - 65535 (Set by a parameter)
Connection cable	EtherCAT compliant cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended)
Node address	Automatic allocation by master
Monitor function	Position, speed, current, alarm

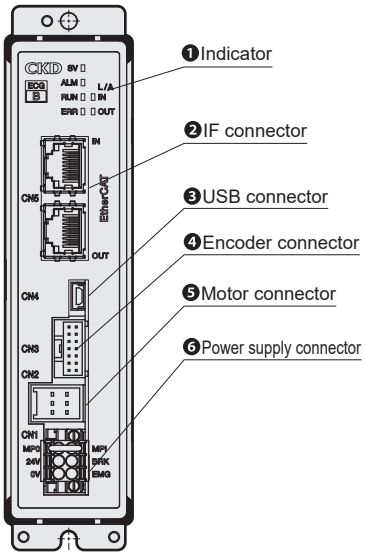
* The Item that can be monitored varies depending on the operation mode. Refer to page 209 for details.

[EtherCAT]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals.
(Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Index	Sub Index	bit	Full direct value mode Signal name
0x2001	0x01	0 to 5	Point number selection bit 0 to 5
		6	-
		7	JOG/INCH (-) travel start
		8	JOG/INCH (+) travel start
		9	INCH selection
		10	Point travel start
		11	Origin return start
		12	Servo ON
		13	Alarm reset
		14	Stop#
		15	Pause#
		16 to 31	-
	0x02	0 to 3	-
		4	Data request
		5	Data R/W selection
		6 to 11	-
		12	Monitor request
		13 to 14	-
		15	Direct value travel selection
		16 to 31	-
0x2003	0x01	0 to 31	Position (direct value travel)
	0x02	0 to 31	Positioning width (direct value travel)
	0x03	0 to 31	Speed (direct value travel)
	0x04	0 to 31	Acceleration (direct value travel)
	0x05	0 to 31	Deceleration (direct value travel)
	0x06	0 to 31	Pressing rate (direct value travel)
	0x07	0 to 31	Pressing speed (direct value travel)
	0x08	0 to 31	Pressing distance (direct value travel)
	0x09	0 to 31	Mode (direct value travel)
	0x0A	0 to 31	Gain magnification (direct value travel)
	0x0B	0 to 31	Writing data
	0x0C	0 to 31	Data number
	0x0D	0 to 31	Monitor number 1
	0x0E	0 to 31	Monitor number 2

Cyclic data from controller

Index	Sub Index	bit	Full direct value mode Signal name
0x2005	0x01	0 to 5	Point number confirmation bit 0 to 5
		6 to 9	-
		10	Point travel complete
		11	Origin return complete
		12	Servo ON state
		13	Alarm#
		14	Warning#
		15	Operation preparation complete
		16 to 31	-
	0x02	0 to 3	Data response
		4	Data complete
		5	Data write status
		6 to 7	-
		8 to 11	Monitor response
		12	Monitor complete
		13 to 14	-
		15	Direct value travel status
		16	Point zone
		17	Moving
		18	Zone 1
		19	Zone 2
		20	Soft limit exceeded
		21	Soft limit over (-)
		22	Soft limit exceeded (+)
		23 to 31	-
0x2007	0x01	0 to 31	Position (monitor value)
	0x02	0 to 31	Speed (monitor value)
	0x03	0 to 31	Current (monitor value)
	0x04	0 to 31	-
	0x05	0 to 31	Alarm (monitor value)
	0x06 ↔ 0x0A	0 to 31	-
	0x0B	0 to 31	Read data
	0x0C	0 to 31	Data (alarm)
	0x0D	0 to 31	Monitor value 1
	0x0E	0 to 31	Monitor value 2

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

● Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT

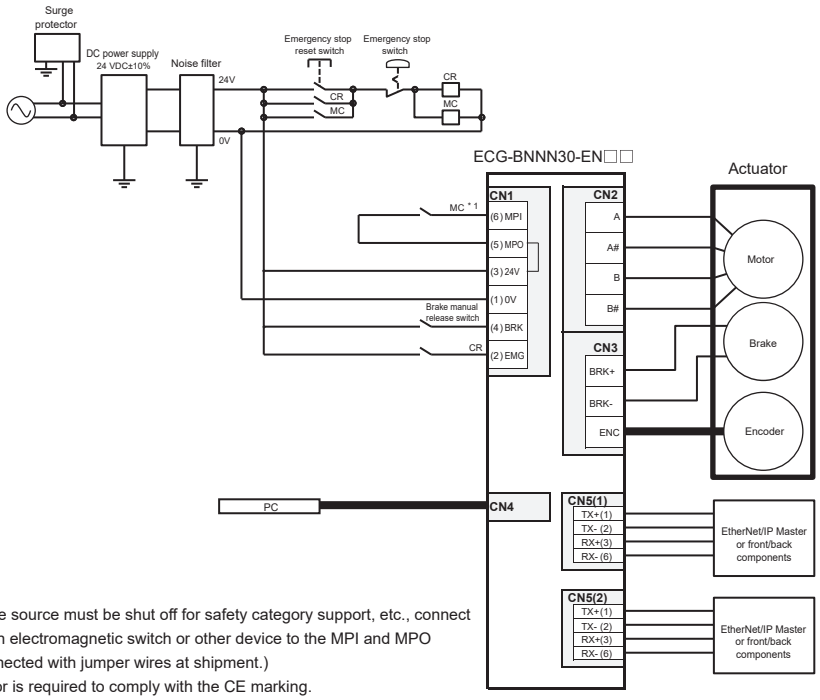
EtherNet/IP specifications and connection diagram (ECG-BNNN30-EN * *)

[Communication specifications]

Item	Specifications
Communication protocol	EtherNet/IP
Communication speed	Automatic setting (100Mbps/10Mbps, Full duplex / Half duplex)
Occupied bytes	Input: 64 bytes/Output: 64 bytes
IP address	Setting by parameter (0.0.0.0 to 255.255.255.255) Via DHCP server (arbitrary address)
RPI (Packet interval)	4 ms to 10000 ms
Connection cable	EtherNet/IP compliant cable (Twisted pair cable of CAT5e or higher (Double shielding with aluminum tape and braid is recommended)
Monitor function	Position, speed, current, alarm

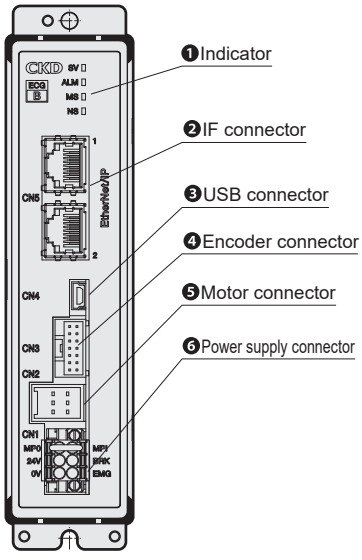
* The Item that can be monitored varies depending on the operation mode. Refer to page 209 for details.

[EtherNet/IP]



*1 If the motor drive source must be shut off for safety category support, etc., connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals. (Connected with jumper wires at shipment.)
*2 A surge protector is required to comply with the CE marking.

[Panel description]



Cyclic data from master

Byte	bit	Full direct value mode Signal name
0	0 to 5	Point number selection bit 0 to 5
	6	-
	7	JOG/INCH (-) travel start
1	0	JOG/INCH (+) travel start
	1	INCH selection
	2	Point travel start
	3	Origin return start
	4	Servo ON
	5	Alarm reset
	6	Stop#
	7	Pause#
2 to 3	0 to 7	-
4	0 to 3	-
	4	Data request
	5	Data R/W selection
	6 to 7	-
5	0 to 3	
	4	Monitor request
	5 to 6	-
	7	Direct value travel selection
6 to 7	0 to 7	-
8 to 11	0 to 7	Position (direct value travel)
12 to 15	0 to 7	Positioning width (direct value travel)
16 to 19	0 to 7	Speed (direct value travel)
20 to 23	0 to 7	Acceleration (direct value travel)
24 to 27	0 to 7	Deceleration (direct value travel)
28 to 31	0 to 7	Pressing ratio (direct value travel)
32 to 35	0 to 7	Pressing speed (direct value travel)
36 to 39	0 to 7	Pressing distance (direct value travel)
40 to 43	0 to 7	Mode (direct value travel)
44 to 47	0 to 7	Gain magnification (direct value travel)
48 to 51	0 to 7	Writing data
52 to 55	0 to 7	Data number
56 to 59	0 to 7	Monitor number 1
60 to 63	0 to 7	Monitor number 2

Cyclic data from controller

Byte	bit	Full direct value mode Signal name
0	0 to 5	Point number confirmation bit 0 to 5
	6 to 7	-
1	0 to 1	-
	2	Point travel complete
	3	Origin return complete
	4	Servo ON state
	5	Alarm#
	6	Warning#
	7	Operation preparation complete
2 to 3	0 to 7	-
4	0 to 3	Data response
	4	Data complete
	5	Data write status
	6 to 7	-
5	0 to 3	Monitor response
	4	Monitor complete
	5 to 6	-
	7	Direct value travel status
6	0	Point zone
	1	Moving
	2	Zone 1
	3	Zone 2
	4	Soft limit exceeded
	5	Soft limit over (-)
	6	Soft limit exceeded (+)
	7	-
7	0 to 7	-
8 to 11	0 to 7	Position (monitor value)
12 to 15	0 to 7	Speed (monitor value)
16 to 19	0 to 7	Current (monitor value)
20 to 23	0 to 7	-
24 to 27	0 to 7	Alarm (monitor value)
28 to 47	0 to 7	-
48 to 51	0 to 7	Read data
52 to 55	0 to 7	Data (alarm)
56 to 59	0 to 7	Monitor value 1
60 to 63	0 to 7	Monitor value 2

* Refer to the Instruction Manual for details of other operation modes.
* # indicates a negative logic signal.

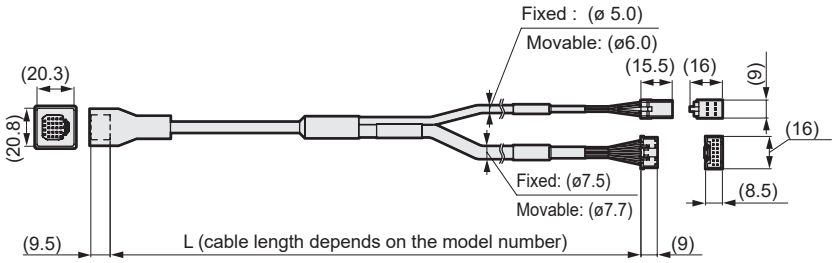
● Accessories

Part name	Manufacturer model	Manufacturer
Power supply connector	DFMC1,5/3-STF-3,5	PHOENIX CONTACT

Relay cable

● Motor encoder relay cable (fixed/movable)

* Selectable with actuator



EA-CBLME4 - S 01
Ⓐ Ⓑ

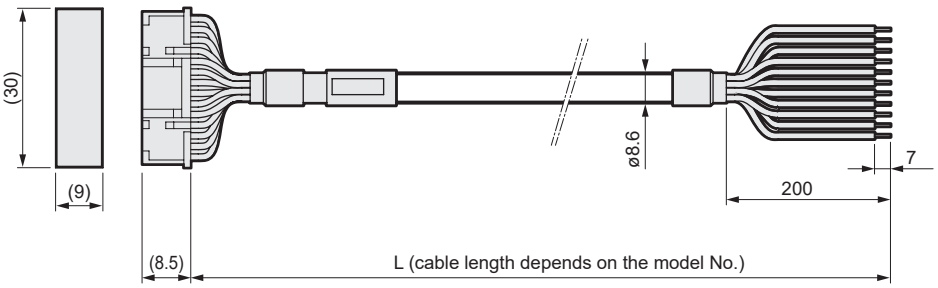
Ⓐ Cable type	
S	Fixed cable
R	Movable cable

Ⓑ Cable length	
01	1 m
03	3 m
05	5 m
10	10 m

I/O cable

● I/O cable

* Selectable even with parallel I/O specification controller type



EA-CBLNP2 - 02
Ⓐ

Ⓐ Cable length	
02	2 m
03	3 m
05	5 m
10	10 m

How to order related parts

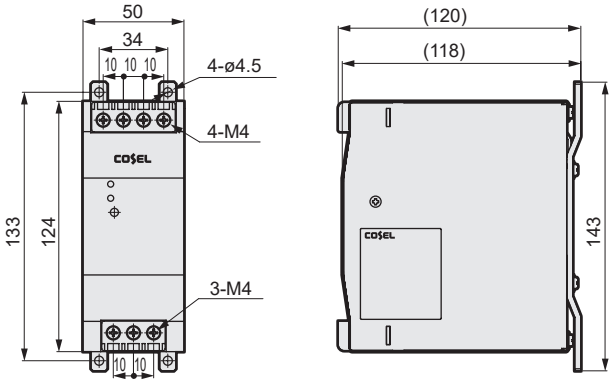
●DC power supply

Item \ Model No.			EA-PWR-KHNA240F-24-N2 (screw mounted) EA-PWR-KHNA240F-24 (DIN rail mount)
Manufacturer			COSEL Co., Ltd.
Manufacturer model No.	Mounting screw		KHNA240F-24-N2
	DIN rail mount		KHNA240F-24
Input voltage			85 to 264 VAC 1ø or 88 to 370 VDC
Output	Power		240 W
	Voltage / Current		24 V10 A
	Variable voltage range		22.5 to 28.5 V
Included functions	Overcurrent protection		Operating at 101% min of peak current
	Overvoltage protection		30.0 to 36.0 V
	Remote control		Possible
	Remote sensing		-
	Other		DC_OK display, ALARM display
Operating temperature / humidity			-25 to + 70°C, 20 to 90%RH (no condensation), -40°C Bootable *
Applicable standards	Safety standards	AC input	AC input: Certified UL60950-1, C-UL (CSA60950-1), EN62368-1
			UL508, ANSI / ISA12.12.01, ATEX acquired, CKD compliant *
		DC input	UL60950-1, C-UL (CSA60950-1), EN62368-1
	Noise terminal voltage		Compliant with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B
	Harmonic current		Compliant with IEC61000-3-2 (class A)*
Structure	Dimensions (W x H x D)		50×124×117 mm
	Weight		900 g max
	Cooling method		Natural air cooling

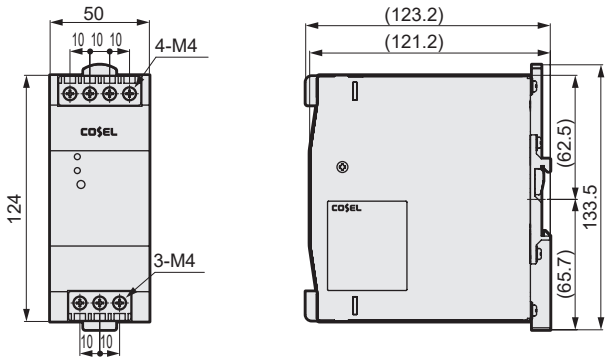
* Refer to the manufacturer's HP for details.
* CE marking and ROHS are obtained with the manufacturer model No.

Part names and dimensions

●EA-PWR-KHNA240F-24-N2 (24 V screw mounted)



●EA-PWR-KHNA240F-24 (24 V DIN rail mounted)



● Other components

Part name	Model No.
Noise filter for power supply (single phase, 15 A)	AX-NSF-NF2015A-OD

* Refer to the instruction manual for the ferrite core to be used.

Safety Precautions

Be sure to read this section before use.

When designing equipment using electric actuators, the manufacturer is obligated to ensure that the safety of the mechanism and the system that runs the electrical controls are secured.
It is important to select, use, handle and maintain CKD products appropriately to ensure their safe usage.
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.

2 Use the product within the specifications range.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product. This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors or for use under the following conditions or environments. (Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for special applications including nuclear energy, railways, aircrafts, marine vessels, vehicles, medicinal devices, devices or applications coming into contact with beverages or foodstuffs, amusement devices, emergency operation (shutoff circuits, releases, etc.), press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of the device design.

4 Do not remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of the entire system related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or maintaining equipment, be sure to shut off the power supply of the equipment and relevant facilities, using caution to avoid electrical shock.

5 Observe the instructions and precautions of each product to prevent accidents.

❶ During teaching work and trial operation, there may be unexpected operation, so be careful not to touch the actuator. When operating from a position where the actuator cannot be seen, make sure that it is safe for the output shaft to rotate before operation.

6 Observe the precautions to prevent electric shock.

❶ Do not touch the controller interior heat sink, cement resistor, or motor. The high temperatures can cause burns by touching associated parts. Only after sufficient time has passed, conduct inspections, etc. Even immediately after turning OFF the power supply, a high voltage will be applied until the electric charge stored in the internal capacitor is discharged. Do not touch for about 3 minutes.
❷ Before maintenance and inspection, turn OFF the controller power supply switch.
There is a risk of electrical shock from high voltage.
❸ Do not attach or detach connectors while the power is ON. This may cause malfunction, failure, or electric shock.

7 Install an overcurrent protector.

The driver should be wired in accordance with JIS B 9960-1:2019 (IEC 60204-1:2016) Safety of Machinery - Electrical Equipment of Machines - Part 1: General Requirements. Install an overcurrent protector (a circuit protector or a shutoff mechanism for wiring) on the main power supply / control power supply / and the I/O power supply.

(Reference: JIS B 9960-1 7.2.1 General description)
When the circuit current may exceed either the rated value of the component or the allowable current of the conductor, an overcurrent protection must be provided. The details of the ratings or set values to be selected shall be provided in 7.2.10.

8 Observe the following precautions to prevent accidents.

■ Precautions are ranked as "DANGER", "WARNING", and "CAUTION" in this section.

DANGER (DANGER): In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.

WARNING (WARNING): A dangerous situation may occur if handling is mistaken, leading to fatal or serious injuries.

CAUTION (CAUTION): A dangerous situation may occur if handling is mistaken, leading to minor injuries or property damage.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions. All items contain important information and must be observed.

Warranty

1 Warranty period

This warranty is valid for one (1) year after delivery to the customer's designated site.

2 Scope of warranty

In case any defect clearly attributable to CKD is found during the warranty period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part and at no cost, according to its own judgment.

Note that the following failures are excluded from the warranty scope:

(1) Failures due to use outside the conditions and environments set forth in the catalog, specifications, or instruction manuals
(2) Failures resulting from factors exceeding durability (frequency, distance, time, etc.) or relating to consumable parts
(3) Failures resulting from factors other than this product.
(4) Failures caused by improper use of the product.
(5) Failures resulting from modifications or repairs made without CKD consent.
(6) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
(7) Failures resulting from natural disasters or accidents for which CKD is not liable.

The warranty covers the actual delivered product, as a single unit, and does not cover any damages resulting from losses induced by malfunctions in the delivered product.

Note) Contact the nearest CKD Sales Office for details on durability and consumable parts.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

4 Service range

The service costs for dispatched technicians are not included in the price of delivered items. The following will be charged separately.

(1) Mounting adjustment guidance and trial run observation
(2) Maintenance inspection, adjustment and repair
(3) Technical guidance and technical education (operation, programming, wiring method, safety education, etc.)

Precautions for export

Products and related technologies in this catalog

The products and related technologies in this catalog are subject to US Export Administration Regulations (EAR), and display of EAR-compliant products is marked on the product page.

For export or provision of products or related technologies subject to EAR regulations, we request that the US Export Administration Regulations (EAR) be observed appropriately.

Safety Precautions

Be sure to read this section before use.

Common precautions: Electric actuator D Series / Controller ESC3

Design / Selection

1. Common

⚠DANGER

■ Do not use in places where dangerous goods such as ignitable substances, inflammable substances or explosives are present.
There is a possibility of ignition, combustion or explosion.

■ Ensure that the product is free of water droplets and oil droplets.
Failure to do so may cause fire or malfunction.

■ When mounting the product, be sure to securely hold and fix it (including the workpiece).
If the product falls, is knocked over, or experiences malfunction, it may lead to injury. As a rule, fix the product using all mounting holes.

■ Use a DC stabilized power supply (24V DC ±10%) for the input/output circuit power supply and the ESC3 Series motor and control power supplies.
Connecting directly to the AC power supply may cause fire, explosion, damage, etc.

⚠WARNING

■ Use the product in the range of conditions specified for the product.

■ Provide a safety fence to prevent entry to the movable range of the electric actuator. In addition, install the emergency stop button switch as a device in a location which is easy to operate in an emergency situation. For the emergency stop button, use a structure and wiring that will prevent automatic restoration or inadvertent restoration by personnel.

■ It may take several seconds to complete an emergency stop, depending on the travel speed and load.

■ Design a safety circuit or equipment so that damage to equipment, injury to persons, etc., does not occur when the machine stops in the event of a system failure such as emergency stop or power outage.

■ Install indoors with low humidity.
There is a risk of electric leakage or fire accidents in places exposed to rainwater or where there is high humidity (humidity of 85% or more, condensation). Oil drops and oil mist are also strictly prohibited. Use in such an environment could lead to damage or operation failure.

■ Make sure that the product is D type grounded (ground resistance of 100 Ω or less).
If electrical leakage occurs, it may lead to electric shock or malfunction.

■ Use and store in accordance with the working/storage temperatures and where there is no condensation. (Storage temperature: -10°C to 50°C, storage humidity: 35% to 80%, operating ambient temperature: 0°C to 40°C, operating ambient humidity: 35% to 80%)
Otherwise, abnormal stopping or decreased product service life may result. Ventilate in locations where heat may build up.

■ Do not use this product in a location where the ambient temperature could suddenly change and cause dew to condense.

■ Install in a location free from direct sunlight, dust, and corrosive gas/explosive gas/inflammable gas/combustibles, and away from heat sources. Furthermore, chemical resistance has not been reviewed for this product.
Failure to comply may lead to damage, explosion, or combustion.

■ Use and store in locations free from strong electromagnetic waves, ultraviolet rays, or radiation.
Otherwise, malfunction or damage may result.

■ Take possibility of power source breakdown into consideration.
Take measures to prevent bodily injury or machine damage even in the event of a power failure.

■ Take the operational status into consideration if the machine is reactivated after emergency or abnormal stops.
Design the system so that bodily injury or equipment damage will not occur when restarting. If there is a need to reset the electric actuator to the starting position, design a safe control device. Consider the possibility of power failure of the mounted motor. Take measures to prevent bodily injury or machine damage even in the event of a power failure.

■ Avoid using this product where vibration and impact are present.

■ Do not apply a load to the product that is greater than or equal to the allowable load listed in the materials for selection.

■ If there is a risk of bodily injury, install a protective cover.
If the actuator's drive section could cause bodily injury, install a protective cover. Design a structure that prevents person(s) from entering the actuator's operating range or coming into contact with those sections directly.

■ Take measures to prevent physical harm or property damage in the event of failure of this product.

⚠CAUTION

■Do not use in a range where the moving table and rod could collide with the stroke end.

■The product is manufactured in conformity with the related standards. Do not disassemble or modify the product.

■The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

■Set up the wiring so as not to apply inductive noise.
Avoid locations where large currents or strong magnetic fields are generated. Do not wire together with other large motor power lines (with multi-conductor cables). Do not wire the same as inverter power supplies used for robots, etc. Apply a frame ground for the power supply and insert the filter to the output part.

■Do not use this product in an environment where strong magnetic fields are generated.
This could cause improper operation.

■Be sure to separate the power supply of the output of this product and the power supply of inductive loads that generate surges, such as solenoid valves and relays.
If the power supply is shared, surge current may flow into the output and cause damage. If a separate power supply cannot be used, connect the surge absorber directly to all inductive loads in parallel.

■Select a power supply which provides ample capacity based on the number of installed products. Malfunction may occur if there is no excess capacity.
□20 …0.8 A / base
□28 …2 A / base
□35 …3 A / base
□42 …3 A / base
□56 …3 A / base

■Use a movable cable with a bending radius of 39 mm or more.
Because the bending radius does not apply to bending of the connector part, we recommend fixing near the connector.

■Use a cable within 10 m to connect the IF connector.

■The detection range of the cylinder switch changes depending on the temperature and mounting. Select a model that has sufficient margin against the stroke range.

■If the rod side cylinder switch contacts moving parts, select an L-shaped cylinder switch.

2. DSSD2 Series

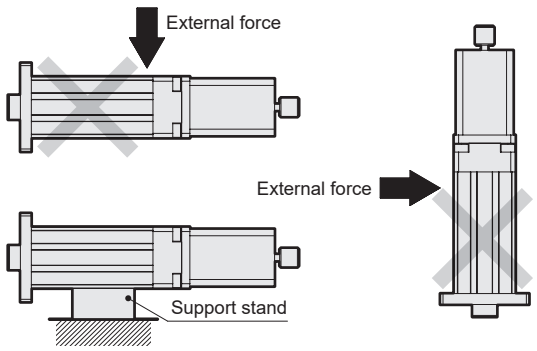
⚠CAUTION

■To avoid damaging the screw on the end of the piston rod and bushing wear and burning, etc., connect the end of the piston rod and load with a floating fitting or simplified floating fitting so twisting does not occur at any position in the stroke.

■If the gap between clevis and the corresponding bearing is large, the pins and shaft will bend. Therefore, keep this gap relatively small.
(Recommended fit: H10/e8)

■Do not apply external force to the body when mounting the flange (option). External force may lead to malfunction or part damage.
Install a support stand when front-mounting horizontally. Vibration caused by operation conditions or the installation area could damage the actuator body. If the body will be subject to external force use the mounting holes on its base to fix the body in place. Avoid fixing the flange mounting hole only.

[For flange mounting]



3. DMSDG Series

⚠WARNING

■Depending on the pressing amount, the self-lock may not function when not energized. Use a safe design that takes this into consideration.

■The workpiece may come off during a power outage or similar. Incorporate a safety device that prevents injury or mechanical damage.

⚠CAUTION

■Do not use the actuator as a stopper.

4. DSTK Series

⚠CAUTION

■When using a stopper actuator to brake loads directly connected to actuator, etc

● The specified range is only for stopping pallets on the conveyor. When using a stopper cylinder to stop loads directly connected to cylinder, etc., because the cylinder thrust is applied as a lateral load, select the actuator within the range of allowable absorbed energy and allowable lateral load.

5. DLSH / DCKW Series

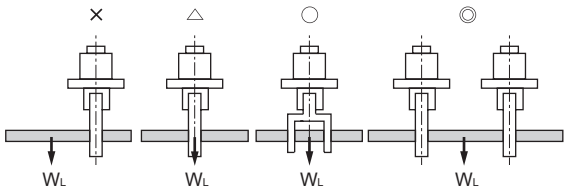
⚠WARNING

■The gripping force may decrease during a power outage or similar. Use a safe design that takes this into consideration. The gripping force may decrease during a power outage or similar, dislodging the workpiece, so be sure to incorporate a safety mechanism to prevent injury or mechanical damage.

■Depending on the gripping amount, the self-lock may not function when not energized. Use a safe design that takes this into consideration. The workpiece may come off during a power outage or similar. Incorporate a safety device that prevents injury or mechanical damage.

⚠CAUTION

■ When gripping long or large workpieces, stable gripping requires a grip on the center of gravity. Stability is a must when using larger or multiple workpieces as well.

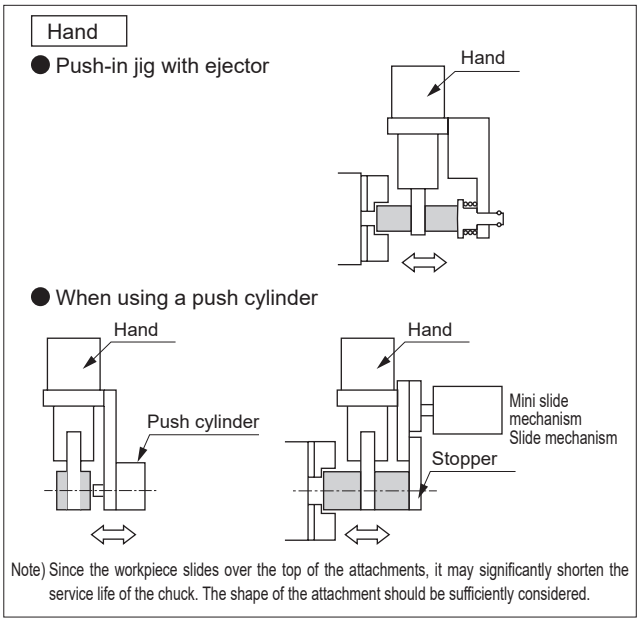


◎: Excellent, ○: Good, △: Conditional, × : NG

■ The detection range of the cylinder switch changes depending on the temperature and mounting. Select a model that has sufficient power to grip the workpiece weight.

■ Select a model that has sufficient opening/closing width for the workpiece size. The gripping position may become unstable due to variation in the open/close width or the workpiece. When opening after gripping operation, increase the stroke by an amount corresponding to the backlash amount.

■ If directly inserting the workpiece into the jig with the hand, consider clearance during design. The hand could be damaged.



Note) Since the workpiece slides over the top of the attachments, it may significantly shorten the service life of the chuck. The shape of the attachment should be sufficiently considered.

6. Cylinder switch

⚠ WARNING

■ Application, load current, voltage, temperature, impact, environment, etc., outside the specifications will result in damage or operation faults. Use the device as instructed in the specifications.

■ Never use this product in an explosive gas atmosphere. The cylinder switch does not have an explosive-proof structure. Never use in an explosive gas atmosphere as explosions or fires could result.

⚠ CAUTION

■ Avoid using in an environment constantly exposed to water.

● Insulation failure can cause malfunctions.

■ Avoid using this product in environments containing oil or chemicals.

● The cylinder switch may be adversely affected (insulation failure, malfunction caused by swelling of the filled resin, hardening of lead wire sheath, etc.) if used in an environment containing oil, coolant, cleaning fluid, or chemicals. Consult with CKD.

■ Do not use in a high-impact environment.

■ Do not use this product in surge generating areas.

If there is a device components (solenoid lifter, high frequency induction furnace, motor, etc.) around the actuator with proximity switch that generates a large surge, consider surge protection of the source as it may lead to deterioration or damage of the switch internal circuit element.

■ Be careful of accumulation of iron powder and contact with magnetic substances.

If a large amount of iron chips such as cutting chips or welding spatter accumulate or if magnetic objects (material attracted to magnets) contact the actuator with a cylinder switch, the actuator will be demagnetized and cylinder switch operations may be inhibited.

■ Pay attention to the proximity of actuators, etc.

● When installing more than 2 cylinders with switches in parallel, keep sufficient distance between the cylinder tubes according to the actuator series. Mutual magnetic interference may cause the switch to malfunction.

Mounting, installation and adjustment

1. Common

⚠DANGER

- Do not enter the operating range of the product while the product is operable.
  The product may suddenly move and may result in injuries.
- The wiring should be in accordance with JIS B 9960-1:20 19 Safety of Machinery - Electrical Equipment of Machines Part 1: General Requirements. Install an overcurrent protector (a circuit protector or a shutoff mechanism for wiring) for the primary side of the power supply.
- Do not operate the unit with wet hands.
  It may lead to electric shock.
- Fingers and other extremities may be snagged between the body and table during operation of the D STG, DSTS, DSTL, and D MSDG Series. Please be careful.
- The Control power supply and power supply are not isolated, so never connect the + and - of the power supply in reverse.
  There is a risk of damage to parts.

⚠WARNING

- Precision parts are built in, so laying the product on its side or applying vibration or impact during transportation are strictly prohibited.
  This may cause damage to the parts.
- For preliminary installation, place horizontally.
- Do not step onto the packaging or place objects on it.
- Avoid condensation, freezing, etc., and maintain ambient temperatures of -10 to 50°C and ambient humidity of 35 to 80% RH during transportation and shipping.
  Failure to do so may cause damage to the product.
- Mount the product on incombustible materials. Direct attachment or mounting to or near flammable materials may cause fire.
  There is a risk of burns.
- Do not step onto the product or place objects on it.
  This may result in falling, knocking the product over, injury due to falling, product damage and/or malfunctions due therein, etc.
- Take measures to prevent bodily injury or machine damage even in the event of a power failure.
  There is a risk of unexpected accidents.
- If the product generates abnormal heat, smoke or odor, turn OFF the power immediately.
  Otherwise, product may result in damage or fire.
- Stop operation immediately when abnormal noise or major vibration occurs.
  Otherwise, product damage or abnormal operation may result.
- Wire the product securely while confirming with this catalog and the instruction manual and ensuring that there is no miswiring or loose connectors. Check wiring insulation.
  Due to contact with other circuits, ground faults and insulation failure between terminals, overcurrent may flow into the product and damage it. This could lead to malfunction or fire.
- Be sure to insulate unused wires.
  Failure to do so may result in malfunction, failure, or electric shock.
- Do not damage the cable, snag it, apply excessive stress to it, or place heavy objects on it.
  Otherwise, poor conduction or electric shock may occur.
- Be sure to perform a safety check of the components' operating range before supplying power to the product. If the product LEDs do not light up when the power supply is turned ON, immediately turn the power OFF.
  Inadvertently supplying power can cause electric shock or injury.
- Before restarting a machine or device, check that measures are taken so that parts do not come off.
- Check that the motor is not energized when manually moving the movable parts of the product.
- The movable parts of the equipment may make unintended movements if the actuator or motor is in the power-off state. When switching the motor to the power OFF state, take steps to prevent danger and operate the motor with full attention to safety.
- Before operating the actuator, check that it will operate safely.
- When installing the actuator in a direction other than horizontal, provide an external stopper.
  The movable parts may fall and cause injury or workpiece damage when the power supply is turned OFF or the motor is tuned off.

⚠CAUTION

■ Regarding installing, setting up, and/or adjusting the actuator, read through the instruction manual and operate correctly.

■ When installing the product, be sure to secure space for maintenance work.
Otherwise, it may not be possible to conduct inspection and maintenance, leading to stoppage or damage of the device or injury during operation.

■ When carrying the product, support it from the bottom.

■ Do not hold the product's movable parts or cables during transportation and installation.
This may lead to injury or disconnection.

■ When transporting or installing the product, ensure sufficient operator safety by supporting the product securely with a lift or support, or by having more than one person working on the product, etc.

■ Do not install in places where large vibration or impact is transmitted.
This may cause malfunction.

■ Do not operate the movable parts of the product with external force or sudden deceleration.
This may lead to malfunction or damage due to regenerative current.

■ Do not use the mechanical stopper, etc., with products other than the DMSDG, DLSH, and DCKW Series.
Pressing operation is not supported. There is a risk of damage to the actuator's internal parts.

■ Durability varies with transported load and environment. The transport load, etc., should be at a setting well within the margin.

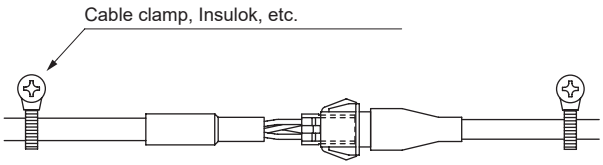
■ Make sure that no vibration / impact is applied to the movable parts.

■ Install such that no torsion or bending force is applied to the product.

■ When performing electric welding on the equipment to which the product is mounted, remove all F.G. (frame ground) wire connections to the product.
If electric welding is performed with the F.G. connection attached, the product may be damaged by the welding current, excessively high voltage during welding, or surge voltage.

■ Do not disassemble or modify the product.
This may cause injury, accident, malfunction or failure.

■ Do not move the cable leading out of the actuator. Fix the cable part. Furthermore, use cables with a bending radius of 40 mm or more.



■ Do not fix the cable leading out of the actuator in a pulled state.
There is a risk of damage to the actuator internal parts.

■ Avoid use in locations exposed to ultraviolet rays or with atmospheres of corrosive gas or salt.
Otherwise, degradation of performance, abnormal operation or deterioration in strength due to rust may result.

■ Make sure to use the dedicated cable for connecting between the actuator and controller.
Mistakenly connecting another component may cause malfunction or failure.

■ When wiring, do not apply excessive force to the connectors.

■ Do not push hard on the controller case.

■ When using a positioning hole, use a pin of dimensions that do not require press fitting. If a pin is press fitted, the load of press fitting may damage or distort the linear guide, lowering the accuracy. The recommended tolerance of a pin is JIS tolerance m6 or less.

■ To move the motor when not energized, turn the manual operation shaft to move the motor. Do not apply excessive force to the manual operation shaft. Otherwise it could be damaged or malfunction.

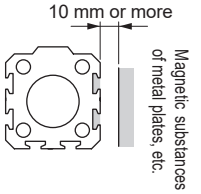
■ Use with a load that does not exceed the specified range. Using the product outside the specifications range may cause the motor to step out.

■ Fix the cylinder switch at a position allowing sufficient margin in relation to the stroke.
There is a risk that it will collide with the mechanical end and cause the motor to step out.

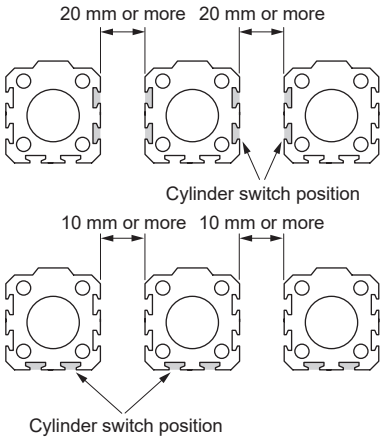
2. DSSD2, DSTK Series

⚠CAUTION

■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Confirm that a distance of at least 10 mm is allocated from the surface of the cylinders.
(Same clearance for all bore sizes)



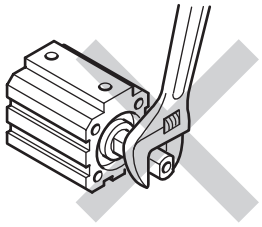
■ The cylinder switch may malfunction if cylinders are installed adjacently. Check that the following distances are allocated between cylinders. (Same clearance for all bore sizes)



■ Do not use the product so as to apply rotation torque to the piston rod.
The bushing for the rotation lock may deform and significantly shorten the service life.

■ Use the product so that load on the piston rod is always applied in the rod axial direction.

■ When fixing a workpiece onto the tip of the piston rod, retract the piston rod to the stroke end and apply a wrench to the section protruding from the rod's parallel section. Tighten so that torque is not applied to the cylinder body.



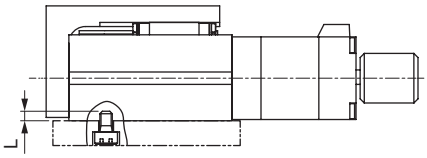
■ Use an external guide when transporting. Check that it operates smoothly in all positions of the product stroke before installation.

3. DMSDG Series

⚠CAUTION

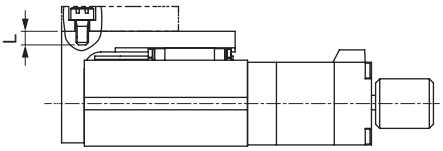
■ Installation
Do not damage the surface flatness by denting or scratching the body (tube) mounting surface or the table surface. Make sure that the flatness of the mating surface for table mounting is 0.05 mm or less.

■ Tighten the body mounting screws with the appropriate torque.



Item	Bolt used	Tightening torque (N·m)	Max. insertion Depth L (mm)
DMSDG-08	M3×0.5	0.59	3
DMSDG-16	M3×0.5	0.59	5

■ Use appropriate tightening torque when fixing the jig on the table.



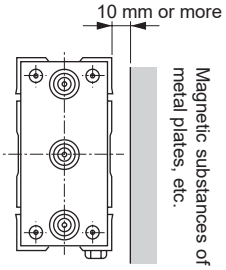
Item	Bolt used	Tightening torque (N·m)	Max. insertion Depth L (mm)
DMSDG-08	M3×0.5	0.59	4
DMSDG-16	M4×0.7	1.4	5.5

4. DSTG, DSTS, DSTL Series

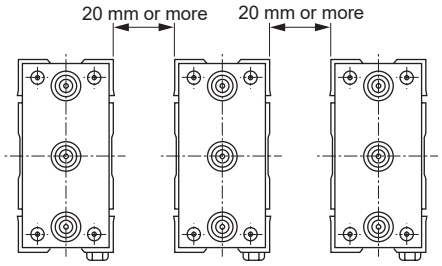
⚠CAUTION

■ Do not damage surface flatness by denting or scratching the body (tube) mounting surface or the end plate surface. Make sure that the flatness of the mating surface where the end plate will be attached is, as a guideline, 0.03 mm or below.

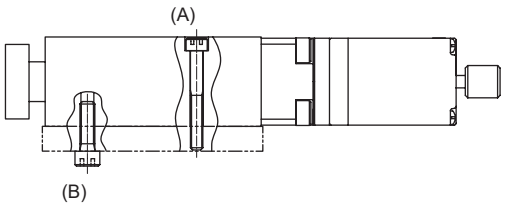
■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 10 mm is provided from the surface of the actuator.
(Same for all bore sizes)



■ The cylinder switch may malfunction if actuators are installed adjacently. Check that the following distances are provided between cylinders.
(Same for all bore sizes)



■ Tighten the body mounting screws with the appropriate torque.

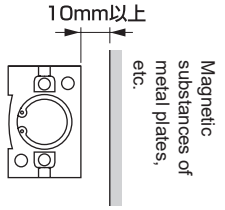


Item	(A) Mounting from top		(B) Mounting from bottom	
	Usage Bolt	Tightening torque (N·m)	Usage Bolt	Tightening torque (N·m)
DSTG-20	M5	3 to 5.4	M6	3 to 5.4
DSTG-32	M6	5.2 to 9.2	M8	5.2 to 9.2
DSTG-50	M8	12.5 to 22	M10	12.5 to 22

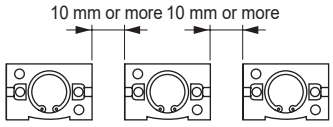
5. DLSH Series

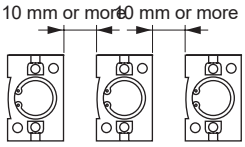
⚠CAUTION

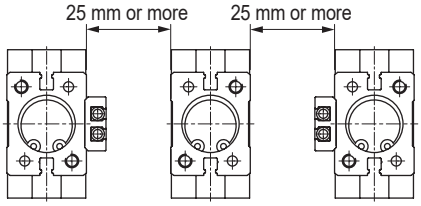
■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 10 mm or more is provided from the surface of the actuator.



■ The cylinder switch may malfunction if actuators are installed adjacently. Check that the following distances are provided between cylinders.



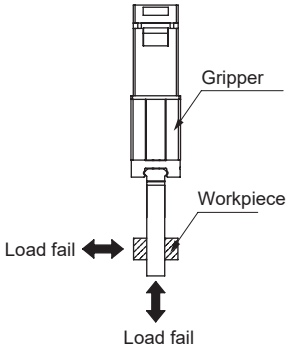




■ Do not cause dents or scratches that may damage flatness or perpendicularity on the body mounting surface and finger.

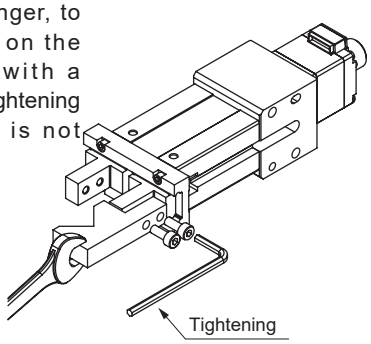
■ Do not retighten or disassemble, other than the screws used for fixing the body and finger.
This could lead to malfunction.

■ Be sure not to apply an excessive load to the fingers and attachment when attaching and detaching or conveying workpieces. Scratches and dents may occur on the rolling surface of the finger linear guide, possibly causing malfunction.



■ Attachment mounting method

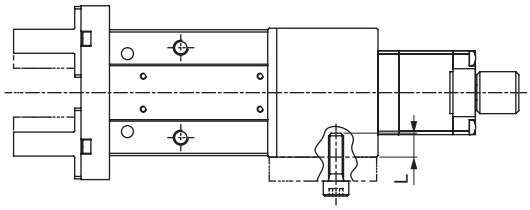
When mounting the attachment to the finger, to prevent any effect on the gripper, support with a wrench, etc., when tightening so that the finger is not twisted.



Item	Bolt used	Tightening torque (N·m)
DLSH-20	M4×0.7	1.4
DLSH-32	M6×1.0	4.9

■ Refer to the following section for body mounting.

● Side mounting



Item	Bolt used	Tightening torque (N·m)	Max. insertion Depth L (mm)
DLSH-20	M5×0.8	2.8	10
DLSH-20	M6×1.0	4.9	10

6. DCKW Series

⚠CAUTION

■ If a lateral load or load with a large impact is applied to the finger, play or damage could occur in the finger. Adjust and check that external force is not applied to the finger.

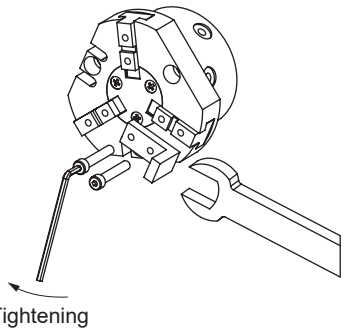
■ Pressing operation is accurate when performed as softly as possible at a low speed. Repeatability is also stable.

■ Regularly grease the sliding section of the finger. Regular replenishment can extend service life further.

■ When installing the attachment, check that a lateral load is not applied to the finger.

■ Attachment mounting method

When mounting the attachment to the finger, to prevent any effect on the chuck body, support with a wrench, etc., when tightening so that the finger is not twisted.



Item	Bolt used	Tightening torque (N·m)
DCKW-20	M3×0.5	0.59
DCKW-32	M4×0.7	1.4

7. Cylinder switch

⚠CAUTION

■ Do not drop or apply impact.

Do not drop, bump, or apply excessive impact (980m/s^2 or more proximity switch). Even if the switch case is not damaged, switch components could break or malfunction.

■ Do not carry the cylinder by the switch's lead wire.

Never do this: it not only causes disconnection of lead wires, but since stress is applied to the internal switch, it may also damage the switch's internal element.

■ Slide the switch from the outside of the operating range, and set at the rising position of the operating range.

Adjust the mounting position of the cylinder switch to the rising position of the operating range (ON range). (The actuator detects the rise of the switch and performs deceleration stop.) If the unit is set to the center of the operation range, the unit may stop further than the desired position and collide with the mechanical stopper, etc.

■Observe tightening torque when installing the switch.

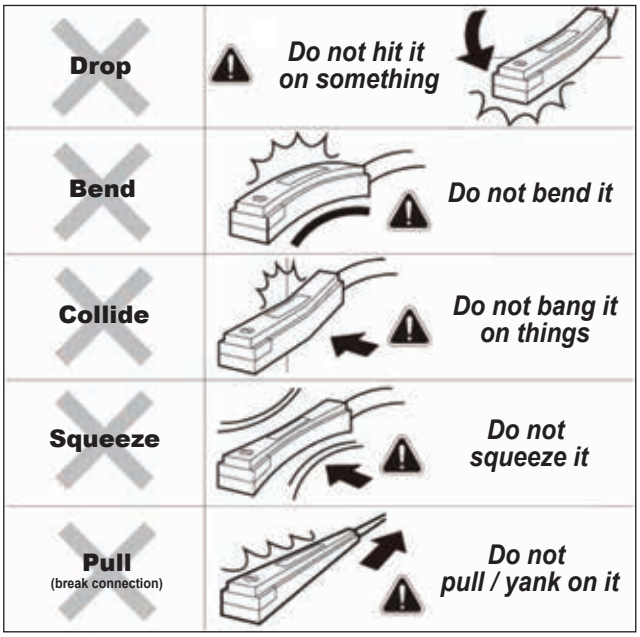
If the tightening torque range is exceeded, the set screw, mounting bracket, switch, etc., could be damaged. In addition, if tightening the set screw with a torque less than the min. tightening torque, the switch mounting position could be displaced. Use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, a 2.4 mm or smaller tip, and a thickness of 0.3 mm or less to tighten the fixing screw.

Item	Tightening torque (N·m)
T2, T3	0.1 to 0.2
F2, F3	0.03 to 0.08

■ Lead wire protection

The lead wire's min. bending radius is 9 mm or more (when fixed). Pay attention to wiring so repeated bending and tensile strain are not applied to the lead wire.

■External force



Use / Maintenance

1. Common

⚠DANGER

■ Do not operate the unit with wet hands.
It may lead to electric shock.

⚠WARNING

■ Wiring work and inspection should be done by a specialized technician.

■ When performing maintenance, inspection and repair, stop the power supply to this product.
Caution people in the vicinity that a third party should not turn ON the power inadvertently.

■ Do not attach or detach wiring or connectors with the power supply ON.
Failure to do so may cause malfunction, failure, or electric shock.

■ For wiring work and inspection, check the voltage with a tester after more than 5 minutes have elapsed since turning OFF the power.
It may lead to electric shock.

■ Mount the product before wiring.
It may lead to electric shock.

■ Make sure that the diameter of the lead wire used for the power cable can tolerate up to 8.6A of current.
Otherwise, heat generation or damage during operation may be caused.

■ Do not connect the product's communication connector to other components.
Doing so may cause failure or damage.

■ Turn OFF the power supply in the event of a power failure. When the power is restored, the product may move unexpectedly and cause accidents.

■ Perform a safety check of the components' operating range before supplying power to the product.
Inadvertently supplying power can cause electric shock or injury.

■ Do not enter the operating range while the product is operable.

■ Do not touch the product with hands or body during operation or immediately after stopping.
This may cause burns.

■ Do not step onto the product or place objects on it.
This may result in falling, knocking the product over, injury due to falling, product damage, malfunctions due thereto, etc.

■ Take measures to prevent bodily injury or machine damage even in the event of a power breakdown.
There is a risk of unexpected accidents.

■ Before operating from a position where the actuator cannot be seen, confirm that it can be safely operated.

■ Check that the motor is not energized when manually moving the movable parts of the product.

■ If the product generates abnormal heat, smoke or odor, turn OFF the power immediately.
Otherwise, product may result in damage or fire.

■ Stop operation immediately when abnormal noise or major vibration occurs.
Otherwise, product damage or abnormal operation may result.

⚠CAUTION

■ Do not put fingers or objects into the opening of the product.
This may cause product damage or injury.

■ Do not dent or damage the movable parts.
This may cause malfunction.

■ Do not enter the motor in the energized state with gravity or inertia applied.
The motor may continue to operate or fall during the power-OFF state. Be sure to operate the motor in the non-energized state in a balanced state without gravity or inertia applied, or confirm safety before proceeding.

■ Do not put the motor in the energized state while the motor is accelerating or decelerating.
Doing so may result in a dangerous change in speed (acceleration).

■ When operation involves vibration, change the set speed so that vibration does not occur.

■ Vibration may occur even within the operation speed range depending on the working conditions.

■ Do not disassemble or modify the product.
This may cause injury, accident, malfunction or failure.

■ Ensure proper operation through periodic inspections (2 to 3 times per year).

■ When disposing of the product, follow all laws concerning waste processing and cleaning, and be sure to consign the processing to a specialized waste management service company.

■ The circuit board inside the product has capacitors connected in between the circuits and the metal body to prevent damage due to static electricity. Avoid withstand voltage and insulation resistance tests on equipment with this product installed. If tests are done, the product will be damaged. If it is necessary for the equipment, remove the product before doing the test.

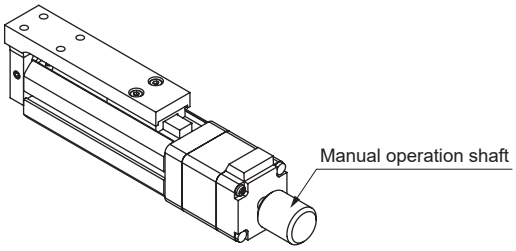
■ Be sure to check the actuator and controller combination before starting operation.
The controller differs according to the model and size specifications. If operated with an incorrect combination, unexpected movement may result in an accident.

■ Frequently turning the power ON/OFF can cause damage to the elements inside the controller.

■ Use the product in the range of conditions specified for the product.
The elements inside the controller may overheat and be damaged.

■ The relationships between pressing force (gripping force) and pressing force (gripping force) settings described in this catalog are merely guidelines. Fluctuation in motor torque, etc., may cause errors even at the same set values.

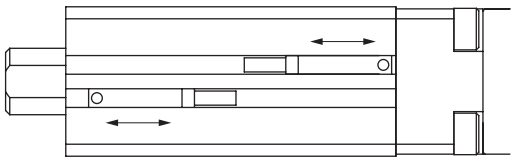
■ To move the movable part while the motor is not energized, turn the manual operation shaft. However, do not apply excessive torque to the manual operation shaft. Otherwise it could be damaged or malfunction.



■ Do not touch the manual operation shaft during operation.

■ Correctly open and close the cylinder switch at PUSH/PULL.
The actuator decelerates and stops after detecting the cylinder switch. Misoperation may occur if the switch is installed in the wrong direction.

■ The operating position of the cylinder switch may change due to the temperature, so the actuator's stop position and gripping force may change slightly.
If the amount of change is a problem, readjust the cylinder switch position.



■ Change the controller rotary switch while it is stopped.
If it is changed during operation, it may cause abnormal operation.

2. DMSDG Series

⚠CAUTION

■ When pressing the workpiece, use only in the PUSH direction.
Applying a load to the rod in the PULL direction may cause breakdown.

3. DSTK Series

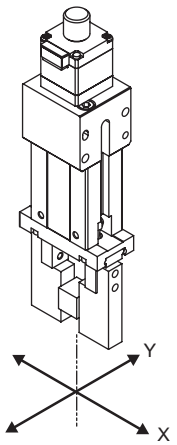
⚠CAUTION

■ The rotation-stop direction cannot be changed. Do not remove the set screw on the rod cover.

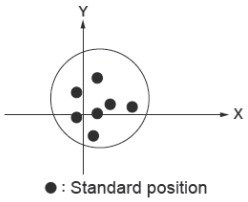
4. DLSH, DCKW Series

⚠CAUTION

■ Repeatability
The repeatability here indicates the displacement of the finger in the case of repeated clamping and unclamping in the same conditions (gripper fixed, same attachment used: see below). Shock during opening and closing may lead to position misalignment of the workpiece and deterioration of repeatability. Note as well that attachment wear or insufficient rigidity may lead to deterioration of accuracy.



Conditions
- Attachment dimensions, shape, weight
- Attachment workpiece gripping position
- Clamp method, length
- Attachment and workpiece contact area resistance
- Fluctuation of gripping force, etc.



■ The amount of backlash has no effect during pressing operation. Backlash may cause misalignment in the position of the finger during positioning operation, so be sure to take the amount of backlash into consideration when setting the position.

■ This finger uses a finite orbit guide. Therefore, when inertia is applied due to travel or rotation, the steel ball moves closer, possibly increasing the sliding resistance or decreasing the accuracy. In this case, perform full stroke operation. (D LSH Series)

■ Apply AFF grease (THK) to the guide rail surface after 6 months or when the number of operational cycles reaches one million, whichever comes first. (DLSH Series)

■ When gripping a workpiece, use only in the closed direction.
If the spring is opened when gripped, excessive force will be applied to the spring, causing breakdown.

■ Be sure to wear protective eyewear when lubricating. (DLSH Series)
If grease scatters and enters the eye, it may cause inflammation.

Safety Precautions

Be sure to read this section before use.

Common precautions: Electric actuator G Series / Controller ECG

Design / Selection

1. Common

⚠DANGER

■ Do not use in places where dangerous goods such as ignitable substances, inflammable substances or explosives are present.
There is a possibility of ignition, combustion or explosion.

■ Ensure that the product is free of water droplets and oil droplets.
Failure to do so may cause fire or malfunction.

■ When mounting the product, be sure to securely hold and fix it (including the workpiece).
If the product falls, is knocked over, or experiences malfunction, it may lead to injury. As a rule, fix the product using all mounting holes.

■ Use a stabilized DC power supply (24 VDC ±10%) for the input/output circuit power supply and the ECG Series motor and control power supplies.
Connecting directly to the AC power supply may cause fire, explosion, damage, etc.

⚠WARNING

■ Use the product in the range of conditions specified for the product.

■ Provide a safety fence to prevent entry to the movable range of the electric actuator. In addition, install the emergency stop button switch as a device in a location which is easy to operate in an emergency situation. For the emergency stop button, use a structure and wiring that will prevent automatic restoration or inadvertent restoration by personnel.

■ It may take several seconds to complete an emergency stop, depending on the travel speed and load.

■ Design a safety circuit or equipment so that damage to equipment, injury to persons, etc., does not occur when the machine stops in the event of a system failure such as emergency stop or power outage.

■ Install indoors with low humidity.
There is a risk of electric leakage or fire accidents in places exposed to rainwater or where there is high humidity (humidity of 85% or more, condensation). Oil drops and oil mist are also strictly prohibited. Use in such an environment could lead to damage or operation failure.

■ Make sure that the product is D type grounded (ground resistance of 100 Ω or less).
If electrical leakage occurs, it may lead to electric shock or malfunction.

■ When installing the actuator in a direction other than horizontal, select the-type with brake.
If the motor is not equipped with a brake, the movable parts may fall off at servo OFF (including emergency stops and alarms) or power OFF, which may result in injury or damage to the workpiece.

■ The brakes are not sufficient to completely retain the actuator in all situations. Be sure to achieve a balanced state or install a mechanical lock mechanism where safety must be guaranteed, such as when performing maintenance in an application where the slider moves with an unbalanced load or when stopping the machine for a long period of time.

■ When vertically installing the actuator, do everything possible to keep the motor on top.
While normal operation with the motor on the bottom will not be problematic, if the motor is stopped for a long time, the grease may separate and flow into the motor, very occasionally leading to malfunctions.

■ Use and store in accordance with the working/storage temperatures and where there is no condensation.
(Storage temperature: -10°C to 50°C, storage humidity: 35% to 80%, operating ambient temperature: 0°C to 40°C (for EBS-G and EBR-G, 10°C to 40°C), operating ambient humidity: 35% to 80%) Otherwise, abnormal stopping or decreased product service life may result. Ventilate in locations where heat may build up.

■ Do not use this product in a location where the ambient temperature could suddenly change and cause dew to condense.

■ Install in a location free from direct sunlight, dust, and corrosive gas/explosive gas/inflammable gas/combustibles, and away from heat sources. Furthermore, chemical resistance has not been reviewed for this product.
Failure to comply may lead to damage, explosion, or combustion.

■ Use and store in locations free from strong electromagnetic waves, ultraviolet rays, or radiation.
Otherwise, malfunction or damage may result.

■ Take possibility of power source breakdown into consideration.
Take measures to prevent bodily injury or machine damage even in the event of a power failure.

■ Take the operational status into consideration if the machine is reactivated after emergency or abnormal stops.
Design the system so that bodily injury or equipment damage will not occur when restarting. If there is a need to reset the electric actuator to the starting position, design a safe control device. Consider the possibility of power failure of the mounted motor. Take measures to prevent bodily injury or machine damage even in the event of a power failure.

■ Avoid using this product where vibration and impact are present.

■ Do not apply a load to the product that is greater than or equal to the allowable load listed in the materials for selection.

■ If there is a risk of bodily injury, install a protective cover.
If the actuator's drive section could cause bodily injury, install a protective cover. Design a structure that prevents person(s) from entering the actuator's operating range or coming into contact with those sections directly.

■ Take measures to prevent physical harm or property damage in the event of failure of this product.

⚠CAUTION

■ Do not use in a range where the moving table, rod or finger could collide with the stroke end.

■ The product is manufactured in conformity with the related standards. Do not disassemble or modify the product.

■ The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

■ Set up the wiring so as not to apply inductive noise.
Avoid locations where large currents or strong magnetic fields are generated. Do not wire together with other large motor power lines (with multi-conductor cables). Do not wire the same as inverter power supplies used for robots, etc. Apply a frame ground for the power supply and insert the filter to the output part.

■ Do not use this product in an environment where strong magnetic fields are generated.
This could cause improper operation.

■ Be sure to separate the power supply of the output of this product and the power supply of inductive loads that generate surges, such as solenoid valves and relays.
If the power supply is shared, surge current may flow into the output and cause damage. If a separate power supply cannot be used, connect the surge absorber directly to all inductive loads in parallel.

■ Select a power supply which provides ample capacity based on the number of installed products. Malfunction may occur if there is no excess capacity.
[For ECG Series]
(□ 35… 2.4 A / base,□ 42... 2.7 A / base, □ 56...4.0 A / base)

■ A fixed cable cannot be used in applications where it is repeatedly bent. Use a movable cable in places where it is repeatedly bent.

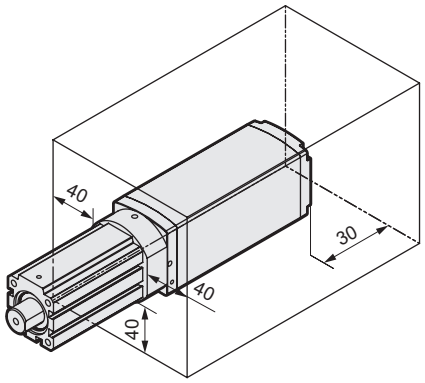
■ Use fixed/movable cables with a bending radius of 51mm or more. (For GCKW Series, bending radius 63mm or more)
Because the bending radius does not apply to bending of the connector part, we recommend fixing near the connector.

■ Use a cable within 10 m to connect the IF connector.

■ The origin position is recognized when the power supply is turned ON. If an external stopper or holding mechanism (brake, etc.) is attached, an unintended position may be recognized as the origin position. Be careful with the layout of the external stopper, etc., so that the origin can be properly detected after the power supply is turned ON.

■ When using GSSD2, GSTK, or GSTG Series, do not apply a magnetic field with magnetic flux density of 0.7 mT or more to the surface of the motor.
This may cause damage or malfunction of the product.

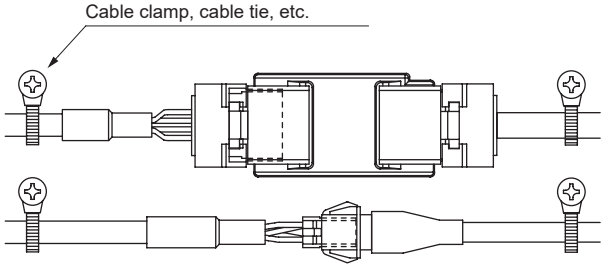
■ When using multiple GSSD2, GSTK, or GSTG Series units, separate the motors by at least the distance shown in the figure below.
Installing them close together may result in malfunction.



■ Do not hold the product's movable parts or cables during transportation and installation.
This may lead to injury or disconnection.

■ Do not fix the cable leading out of the actuator in a pulled state.
There is a risk of damage to the actuator internal parts.

■ Do not move the cable leading out of the actuator. Fix the cable part. Furthermore, use cables with a bending radius of 40mm or more.



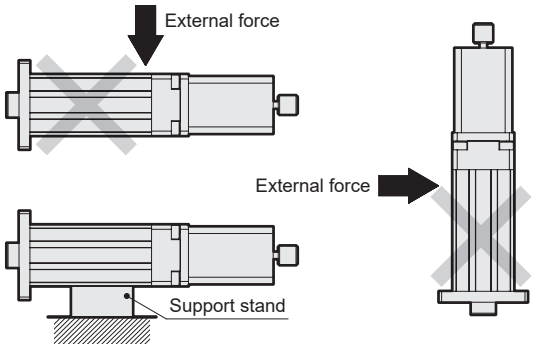
2. GSSD2 Series

⚠CAUTION

■ Do not apply external force to the body when mounting the flange (option). External force may lead to malfunction or part damage.

Install a support stand when front-mounting horizontally. Vibration caused by operation conditions or the installation area could damage the actuator body. If the body will be subject to external force use the mounting holes on its base to fix the body in place. Avoid fixing the flange mounting hole only.

[For flange mounting]



■To avoid damaging the screw on the end of the piston rod and bushing wear and burning, etc., connect the end of the piston rod and load with a floating fitting or simplified floating fitting so twisting does not occur at any position in the stroke.

■If the gap between clevis and the corresponding bearing is large, the pins and shaft will bend. Therefore, keep this gap relatively small.
(Recommended fit: H10/e8)

3. GSTK Series

⚠CAUTION

■When using a stopper actuator to brake loads directly connected to actuator, etc

●The specified range is only for stopping pallets on the conveyor. When using a stopper cylinder to stop loads directly connected to cylinder, etc., because the cylinder thrust is applied as a lateral load, select the actuator within the range of allowable absorbed energy and allowable lateral load.

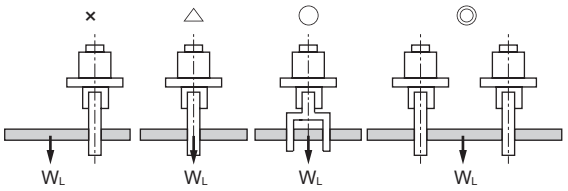
4. GCKW Series

⚠WARNING

■ The gripping force may decrease during a power outage or similar. Use a safe design that takes this into consideration. The gripping force may decrease during a power outage or similar, dislodging the workpiece, so be sure to install a safety mechanism to prevent injury or mechanical damage.

⚠CAUTION

■ When gripping long or large workpieces, stable gripping requires a grip on the center of gravity. Stability is a must when using larger or multiple workpieces as well.

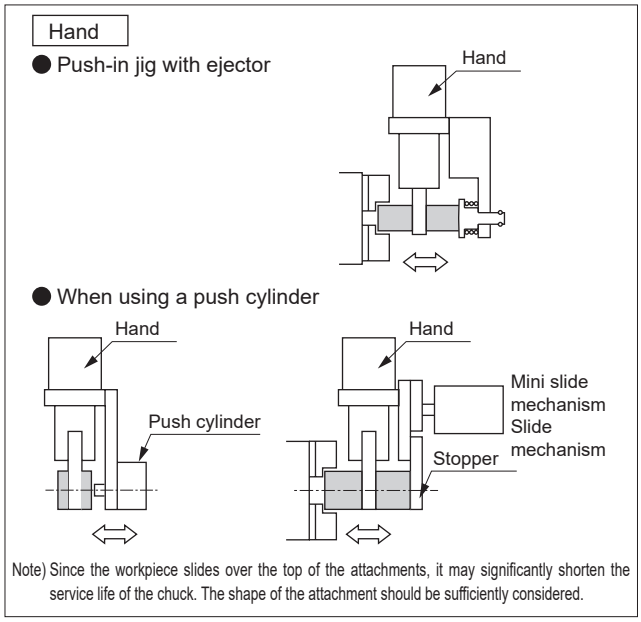


◎: Excellent, ○: Good, △: Conditional, × : NG

■ Select a model that has sufficient power to grip the workpiece weight.

■ Select a model that has sufficient opening/closing width for the workpiece size. The gripping position may become unstable due to variation in the open/close width or the workpiece. When opening after gripping operation, increase the stroke by an amount corresponding to the backlash amount.

■ If directly inserting the workpiece into the jig with the hand, consider clearance during design. The hand could be damaged.



Note) Since the workpiece slides over the top of the attachments, it may significantly shorten the service life of the chuck. The shape of the attachment should be sufficiently considered.

1. Common

⚠DANGER

- Do not enter the operating range of the product while the product is operable.
  The product may suddenly move and may result in injuries.
- The wiring should be in accordance with JIS B 9960-1: 2019 Safety of Machinery - Electrical Equipment of Machines - Part 1: General Requirements. Install an overcurrent protector (a circuit protector or a shutoff mechanism for wiring) for the primary side of the power supply.
- Do not operate the unit with wet hands.
  It may lead to electric shock.
- Fingers and other extremities may be snagged between the body and table when returning to the origin of the GSTG, GSTS, GSTL Series. Please be careful.
- When connecting to a PC, the frame ground (FG) of the PC should not be grounded.
  When using a controller with positive grounding, connecting the controller and peripheral components to the computer with a USB cable risks short-circuiting the DC power supply.
- The Control power supply and power supply are not isolated, so never connect the + and - of the power supply in reverse.
  There is a risk of damage to parts.

⚠WARNING

- Precision parts are built in, so laying the product on its side or applying vibration or impact during transportation are strictly prohibited.
  This may cause damage to the parts.
- For preliminary installation, place horizontally.
- Do not step onto the packaging or place objects on it.
- Avoid condensation, freezing, etc., and maintain ambient temperatures of -10 to 50°C and ambient humidity of 35 to 80% RH during transportation and shipping.
  Failure to do so may cause damage to the product.
- Mount the product on incombustible materials. Direct attachment or mounting to or near flammable materials may cause fire.
  There is a risk of burns.
- Do not step onto the product or place objects on it.
  This may result in falling, knocking the product over, injury due to falling, product damage and/or malfunctions due therein, etc.
- Take measures to prevent bodily injury or machine damage even in the event of a power failure.
  There is a risk of unexpected accidents.
- If the product generates abnormal heat, smoke or odor, turn OFF the power immediately.
  Otherwise, product may result in damage or fire.
- Stop operation immediately when abnormal noise or major vibration occurs.
  Otherwise, product damage or abnormal operation may result.
- Wire the product securely while confirming with this catalog and the instruction manual and ensuring that there is no miswiring or loose connectors. Check wiring insulation.
  Due to contact with other circuits, ground faults and insulation failure between terminals, overcurrent may flow into the product and damage it. This could lead to malfunction or fire.
- Be sure to insulate unused wires.
  Failure to do so may result in malfunction, failure, or electric shock.
- Do not damage the cable, snag it, apply excessive stress to it, or place heavy objects on it.
  Otherwise, poor conduction or electric shock may occur.
- Be sure to perform a safety check of the components' operating range before supplying power to the product. If the product LEDs do not light up when the power supply is turned ON, immediately turn the power OFF.
  Inadvertently supplying power can cause electric shock or injury.
- Before restarting a machine or device, check that measures are taken so that parts do not come off.
- Check that the servo is turned OFF when manually moving the movable parts of the product.
- The movable parts of the equipment may make unintended movements when the actuator servo is turned OFF. When turning the servo OFF, take steps to prevent danger and operate the equipment with full attention to safety.
- Before operating the actuator, check that it will operate safely.

⚠CAUTION

- Regarding installing, setting up, and/or adjusting the actuator, read through the instruction manual and operate correctly.

■ When installing the product, be sure to secure space for maintenance work.
Otherwise, it may not be possible to conduct inspection and maintenance, leading to stoppage or damage of the device or injury during operation.

■ When carrying the product, support it from the bottom.

■ Do not hold the product's movable parts or cables during transportation and installation.
This may lead to injury or disconnection.

■ When transporting or installing the product, ensure sufficient operator safety by supporting the product securely with a lift or support, or by having more than one person working on the product, etc.

■ Do not install in places where large vibration or impact is transmitted.
This may cause malfunction.

■ Do not operate the movable parts of the product with external force or sudden deceleration.
This may lead to malfunction or damage due to regenerative current.

■ When returning to origin, excluding pressing operation, do not hit the mechanical stopper, etc.
This may cause malfunction.

■ Durability varies with transported load and environment. The transport load, etc., should be at a setting well within the margin.

■ Do not apply external force to the actuator during origin return. There is a possibility of misrecognition of the origin.

■ Make sure that no vibration / impact is applied to the movable parts.

■ Install such that no torsion or bending force is applied to the product.

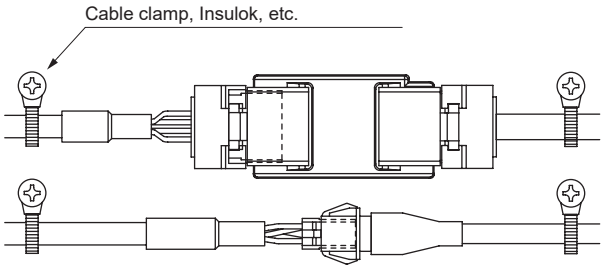
■ When performing electric welding on the equipment to which the product is mounted, remove all F.G. (frame ground) wire connections to the product.
If electric welding is performed with the F.G. connection attached, the product may be damaged by the welding current, excessively high voltage during welding, or surge voltage.

■ Do not disassemble or modify the product.
This may cause injury, accident, malfunction or failure.

■ Do not fix the cable leading out of the actuator in a pulled state.
There is a risk of damage to the actuator's internal parts.

■ Do not bend the fixing cable repeatedly.
If the cable needs to be repeatedly bent, use a movable cable.

■ Do not move the cable leading out of the actuator. Fix the cable part. Furthermore, use cables with a bending radius of 40 mm or more.



■ Avoid use in locations exposed to ultraviolet rays or with atmospheres of corrosive gas or salt.
Otherwise, degradation of performance, abnormal operation or deterioration in strength due to rust may result.

■ Make sure to use the dedicated cable for connecting between the actuator and controller.
Mistakenly connecting another component may cause malfunction or failure.

■ Before adjusting the gain, secure the actuator body to a rigid machine and securely mount jigs and other components as well.

■ When wiring, do not apply excessive force to the connectors.

■ Do not push hard on the controller case.

■ When using a positioning hole, use a pin of dimensions that do not require press fitting. If a pin is press fitted, the load of press fitting may damage or distort the linear guide, lowering the accuracy. The recommended tolerance of a pin is JIS tolerance m6 or less.

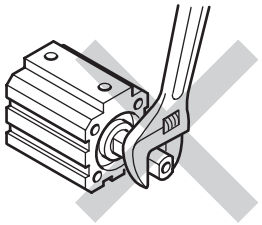
2. GSSD2 Series

⚠CAUTION

■ Do not use the product so as to apply rotation torque to the piston rod.
The bushing for the rotation lock may deform and significantly shorten the service life.

■ Use the product so that load on the piston rod is always applied in the rod axial direction.

■ When fixing a workpiece onto the tip of the piston rod, retract the piston rod to the stroke end and apply a wrench to the section protruding from the rod's parallel section. Tighten so that torque is not applied to the cylinder body.



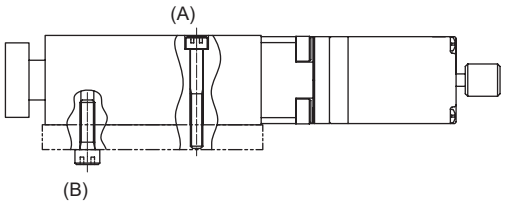
■ When using an external guide, check that it operates smoothly in all positions of the product stroke before installation.

3. GSTG, GSTS, GSTL Series

⚠ CAUTION

■ Do not damage surface flatness by denting or scratching the body (tube) mounting surface or the end plate surface. Make sure that the flatness of the mating surface where the end plate will be attached is, as a guideline, 0.03 mm or below.

■ Tighten the body mounting screws with the appropriate torque.



Item	(A) Mounting from top		(B) Mounting from bottom	
	Usage Bolt	Tightening torque (N·m)	Usage Bolt	Tightening torque (N·m)
GSTG-20	M5	3 to 5.4	M6	3 to 5.4
GSTG-32	M6	5.2 to 9.2	M8	5.2 to 9.2
GSTG-50	M8	12.5 to 22	M10	12.5 to 22

4. GCKW Series

⚠ CAUTION

■ If a lateral load or load with a large impact is applied to the finger, play or damage could occur in the finger. Adjust and check that external force is not applied to the finger.

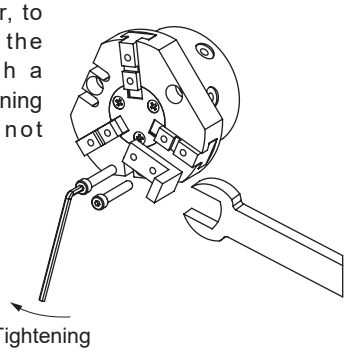
■ Clamping operation is accurate when performed as softly as possible at a low speed. Repeatability is also stable.

■ Regularly grease the sliding section of the finger. Regular replenishment can extend service life further.

■ When installing the attachment, check that a lateral load is not applied to the finger.

■ Attachment mounting method

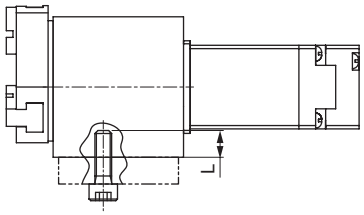
When mounting the attachment to the finger, to prevent any effect on the gripper, support with a wrench, etc., when tightening so that the finger is not twisted.



Item	Bolt used	Tightening torque (N·m)
GCKW-16	M3×0.5	0.59
GCKW-20	M3×0.5	0.59
GCKW-25	M3×0.5	0.59

■ Refer to the following section for body mounting.

● Side mounting



Item	Bolt used	Tightening torque (N·m)	Max. insertion Depth L (mm)
GCKW-16	M4×0.7	1.6	4.5
GCKW-20	M5×0.8	3.3	8
GCKW-25	M6×1.0	5.2	10

■ To remove the workpiece when not energized, use the manual operation plate to open/close the finger, or remove the attachment and then remove the workpiece. Do not apply excessive force to the manual operation plate. Otherwise it could be damaged or malfunction. (Refer to page 237)

Use / Maintenance

1. Common

⚠ DANGER

- Do not operate the unit with wet hands.
  It may lead to electric shock.
- When connecting a computer, do not ground its frame ground (FG).
  When using a controller with positive grounding, connecting the controller and peripheral components to the computer with a USB cable risks short-circuiting the DC power supply.

⚠ WARNING

- Wiring work and inspection should be done by a specialized technician.
- When performing maintenance, inspection and repair, stop the power supply to this product.
  Caution people in the vicinity that a third party should not turn ON the power inadvertently.
- Do not attach or detach wiring or connectors with the power supply ON.
  Failure to do so may cause malfunction, failure, or electric shock.
- For wiring work and inspection, check the voltage with a tester after more than 5 minutes have elapsed since turning OFF the power.
  It may lead to electric shock.
- Mount the product before wiring.
  It may lead to electric shock.
- Make sure that the diameter of the lead wire used for the power cable can tolerate up to 8.6A of current.
  Otherwise, heat generation or damage during operation may be caused.
- Do not connect the product's communication connector to other components.
  Doing so may cause failure or damage.
- Turn OFF the power supply in the event of a power failure. When the power is restored, the product may move unexpectedly and cause accidents.
- Perform a safety check of the components' operating range before supplying power to the product.
  Inadvertently supplying power can cause electric shock or injury.
- Do not enter the operating range while the product is operable.
- Do not touch the product with hands or body during operation or immediately after stopping.
  This may cause burns.
- Do not step onto the product or place objects on it.
  This may result in falling, knocking the product over, injury due to falling, product damage, malfunctions due thereto, etc.
- Take measures to prevent bodily injury or machine damage even in the event of a power breakdown.
  There is a risk of unexpected accidents.
- Before operating from a position where the actuator cannot be seen, confirm that it can be safely operated.
- Check that the servo is turned OFF when manually moving the movable parts of the product.
- If the product generates abnormal heat, smoke or odor, turn OFF the power immediately.
  Otherwise, product may result in damage or fire.
- Stop operation immediately when abnormal noise or major vibration occurs.
  Otherwise, product damage or abnormal operation may result.

⚠ CAUTION

- Do not put fingers or objects into the opening of the product.
  This may cause product damage or injury.
- Do not dent or damage the movable parts.
  This may cause malfunction.
- Do not turn OFF the servo with gravity or inertia applied.
  The product may continue to operate or fall at servo OFF. Be sure to turn OFF the servo in a balanced state without gravity or inertia applied, or confirm safety before proceeding.
- Do not issue a stop command while the product is accelerating or decelerating.
  Doing so may result in a dangerous change in speed (acceleration).
- When operation involves vibration, change the set speed so that vibration does not occur.
- Vibration may occur even within the operation speed range depending on the working conditions.
- Do not disassemble or modify the product.
  This may cause injury, accident, malfunction or failure.
- Ensure proper operation through periodic inspections (2 to 3 times per year).
- When disposing of the product, follow all laws concerning waste processing and cleaning, and be sure to consign the processing to a specialized waste management service company.
- The circuit board inside the product has capacitors connected in between the circuits and the metal body to prevent damage due to static electricity. Avoid withstand voltage and insulation resistance tests on equipment with this product installed. If tests are done, the product will be damaged. If it is necessary for the equipment, remove the product before doing the test.
- If the actuator and controller combination is changed, be sure to confirm the programs and parameters prior to operation.
  Otherwise, there is a risk of unexpected accidents.
- Frequently turning the power ON/OFF can cause damage to the elements inside the controller.
- Use the product in the range of conditions specified for the product.
  The elements inside the controller may overheat and be damaged.
- The relationships between pressing force (gripping force) and pressing rate described in this catalog are merely guidelines. Fluctuation in motor torque, etc., may cause errors even at the same set values.

2. GSTK Series

⚠CAUTION

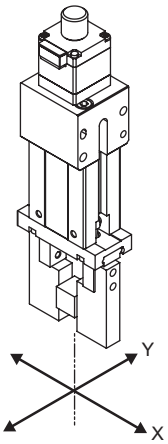
■ The rotation-stop direction cannot be changed. Do not remove the set screw on the rod cover.

3. GCKW Series

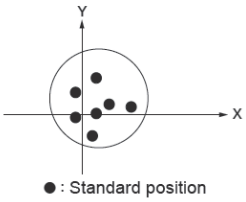
⚠CAUTION

■ Repeatability

The repeatability here indicates the displacement of the finger in the case of repeated clamping and unclamping in the same conditions (gripper fixed, same attachment used: see below). Shock during opening and closing may lead to position misalignment of the workpiece and deterioration of repeatability. Note as well that attachment wear or insufficient rigidity may lead to deterioration of accuracy.



Conditions
- Attachment dimensions, shape, weight
- Attachment workpiece gripping position
- Clamp method, length
- Attachment and workpiece contact area resistance
- Fluctuation of gripping force, etc.



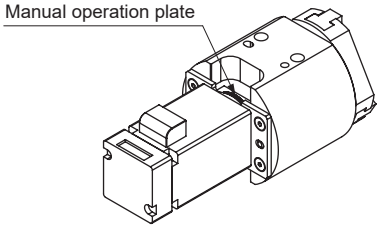
■ The amount of backlash has no effect during pressing operation. Backlash may cause misalignment in the position of the finger during positioning operation, so be sure to take the amount of backlash into consideration when setting the position.

■ When gripping during pressing operation, set the target position with some margin from the stop position. (Include the amount of backlash.)

■ When gripping a workpiece, always use pressing operation . Do not allow the finger or attachment to strike the workpiece during positioning operation or within the positioning range. The feed screw may seize, leading to malfunction.

■ Set the operating torque when releasing the grip to a value larger than the pressing operating torque. If the release torque is low, galling may prevent releasing.

■ If the finger suffers galling due to operation setting abnormalities, use the manual operation plate to open/close the finger. However, do not apply excessive torque to the manual operation plate. Otherwise it could be damaged or malfunction.



DSSD2, GSSD2 Model Selection Check Sheet → CKD (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	DSSD2, GSSD2	
Basic specifications	Max. stroke: mm, screw lead: mm	
Operating conditions	DSSD2	GSSD2
	Travel stroke: mm, travel time: s	
	Speed switch setting: (mm/s)	Set speed: mm/s
		Set acceleration speed: mm/s^2 (set acceleration speed: s)
	Repeatability: ± mm	
Load conditions	Mounting orientation: Horizontal / wall mounted / vertical / ceiling mounted / Other	
	Load weight: kg	
	Pressing load: No / Yes (N) Operating / Stopped Direction of the force applied to rod center ( )	
Working environment	Ambient temperature: °C, Ambient humidity: %	
	Atmosphere:	
Controller	ESC4 / ECG / ECMG	
Interface specification	Parallel I/O, IO-Link, CC-Link, EtherCAT, EtherNet/IP	
Remarks		

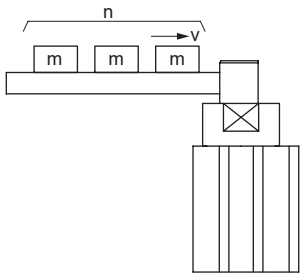
DSTK, GSTK Model Selection Check Sheet → CKD (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

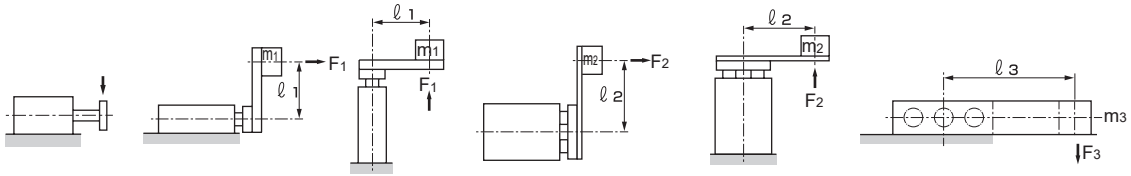
Desired model	DSTK, GSTK	
Basic specifications	Max. stroke: mm, screw lead: mm	
Operating conditions	DSTK	GSTK
	Travel stroke: mm, travel time: s	
	Speed switch setting: (mm/s)	Set speed: mm/s
		Set acceleration speed: mm/s^2 (set acceleration speed: s)
	Repeatability: ± mm	
Load conditions	Mounting orientation: Horizontal / wall mounted / vertical / ceiling mounted / Other	
	Transport weight: kg Transport speed: m/s Transport quantity: pcs. Material of transported object:	STK - Fig. 1 
Working environment	Ambient temperature: °C, Ambient humidity: %	
	Atmosphere:	
Controller	ESC4 / ECG / ECMG	
Interface specification	Parallel I/O, IO-Link, CC-Link, EtherCAT, EtherNet/IP	
Remarks		

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	DSTG, DSTS, DSTL, GSTG, GSTS, GSTL	
Basic specifications	Max. stroke: mm, screw lead: mm	
Operating conditions	DSTG/DSTS/DSTL	GSTG/GSTS/GSTL
	Travel stroke: mm, travel time: s	
	Speed switch setting: (mm/s)	Set speed: mm/s
		Set acceleration speed: mm/s^2 (set acceleration speed: s)
	Repeatability: ± mm	
Load conditions	Mounting orientation: Horizontal / wall mounted / vertical / ceiling mounted / Other	
	Load weight: kg External force on end plate:	
	 Lateral load / Bending moment / Radial moment / Torsion moment	
	(Lo N) (Weight: kg) Distance: mm) (Weight: kg) Distance: mm) (Weight: kg) Distance: mm)	
	With stopper: No / Yes Transport weight: kg Transport speed: m/s Transport quantity: pcs.	Pressing load: No / Yes (N) At operation / At stopped Direction of the force applied to plate center ( )
Working environment	Ambient temperature: °C, Ambient humidity: %	
	Atmosphere:	
Controller	ESC4 / ECG / ECMG	
Interface specification	Parallel I/O, IO-Link, CC-Link, EtherCAT, EtherNet/IP	
Remarks		

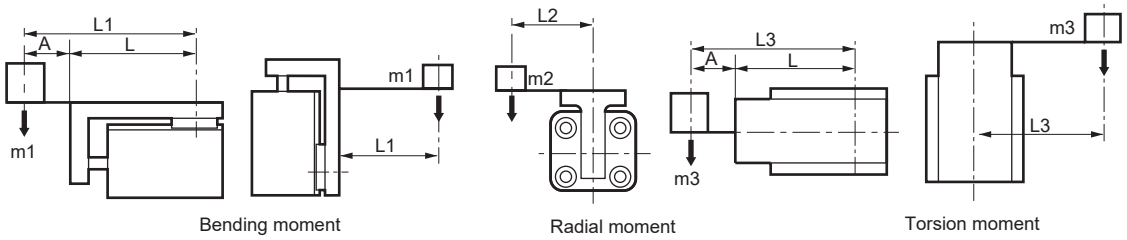
DMSDG Model Selection Check Sheet → **CKD** (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	DMSDG
Basic specifications	Max. stroke: mm
Operating conditions	Travel stroke: mm, travel time: s
	Speed switch setting: (mm/s)
	Pressing switch setting: (N)
	Repeatability: ± mm
Load conditions	Mounting orientation: Horizontal / wall mounted / vertical / ceiling mounted / Other
	Load weight: kg External force on table:  Bending moment (Weight: kg) Distance: mm) Radial moment (Weight: kg) Distance: mm) Torsion moment (Weight: kg) Distance: mm)
	Pressing load: No / Yes (N) Operating / Stopped Direction of the force applied to table center ( )
Working environment	Ambient temperature: °C, Ambient humidity: %
	Atmosphere:
Interface specification	Parallel I/O
Remarks	

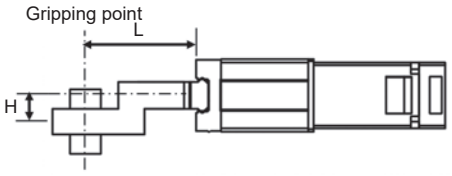
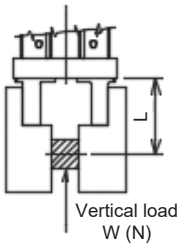
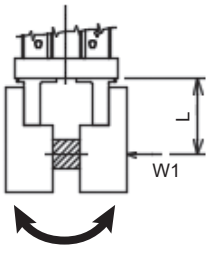
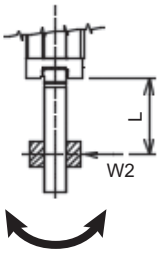
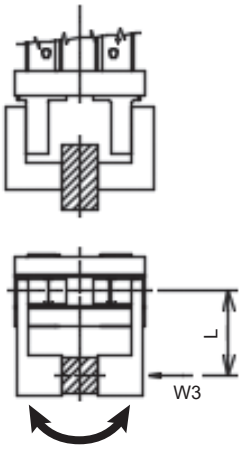
DLSH Model Selection Check Sheet → **CKD** (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	DLSH
Basic specifications	Max. stroke (per side): mm
Operating conditions	Travel stroke (per side): mm, travel time: s
	Gripping force switch setting: (One side N)
	Speed switch setting: (One side mm/s)
	Positioning repeatability: ± mm
Load conditions	Mounting orientation: Horizontal / Wall mounted / Vertical / Other
	Weight of workpiece: kg, material of workpiece:
	Number of attachments: Attachment material: Attachment weight: kg
	Attachment length: H: mm L: mm 
	External force applied to finger: No / Yes  (Load: N)  Bending moment (Load: N, distance: mm)  Radial moment (Load: N, distance: mm)  Torsion moment (Load: N, distance: mm)
Working environment	Ambient temperature: °C, Ambient humidity: %
	Atmosphere:
Interface specification	Parallel I/O
Remarks	

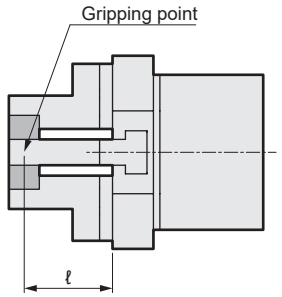
DCKW/GCKW Model Selection Check Sheet → CKD (Contact)

Fill in the form and send to the nearest CKD Sales Office. We will respond with the model selection results.

Customers:

Company		Department	
Name		E-mail	
TEL		FAX	

Selecting conditions:

Desired model	DCKW / GCKW	
Basic specifications	Max. stroke (per side): mm	
Operating conditions	DCKW	GCKW
	Travel stroke (one side): mm, travel time s	
	Gripping force switch setting: (One side N)	Gripping force (one side) N
	Speed switch setting: (single side mm/s)	Open / Close speed (one side) mm/s
		Gripping speed (one side) mm/s
	Repeatability: ± mm	
		Positioning repeatability: ± mm
Load conditions	Mounting orientation: Horizontal / Wall mounted / Vertical / Other	
	Weight of workpiece: kg, material of workpiece:	
	Number of attachments: Attachment material: Attachment weight: kg	
	Attachment length: ℓ: mm	
Working environment	Ambient temperature: °C, Ambient humidity: %	
	Atmosphere:	
Controller	ESC4 / ECG / ECMG	
Interface specification	Parallel I/O, IO-Link, CC-Link, EtherCAT, EtherNet/IP	
Remarks		

MEMO

MEMO

Related products

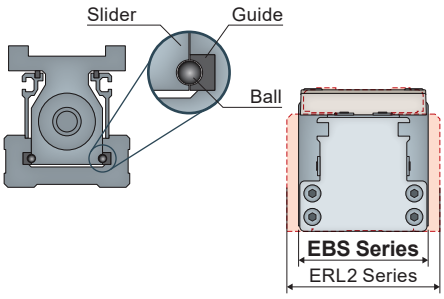
● Slider

EJSG, EBS-G

Main specifications

- □35 to □56 Equipped with a stepping motor
- Max. payload: Horizontal 80 kg
  Vertical 43.3 kg
- Max. speed 1120 mm/s
- Max. acceleration/deceleration 1G
- Max. stroke 1100 mm

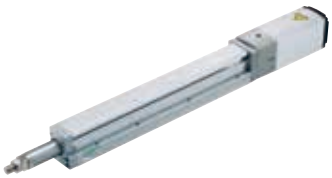
Downsized, high rigidity body saves equipment space



		Conventional product	EJSG-05
Body width		64 mm	54 mm
Static allowable moment	MP	25.7 N·m	103 N·m
	MY	25.7 N·m	103 N·m
	MR	58 N·m	144 N·m

● Rod with built-in guide

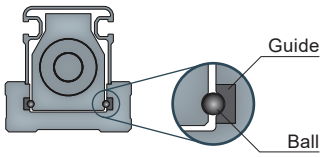
EBR-G



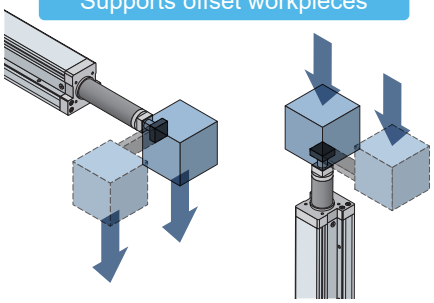
Main specifications

- □35 to □56 Equipped with a stepping motor
- Max. payload: Horizontal 80 kg
  Vertical 55 kg
- Max. speed 1000 mm/s
- Max. acceleration/deceleration 1G
- Max. stroke 700 mm

Built-in guide, no need for additional guides

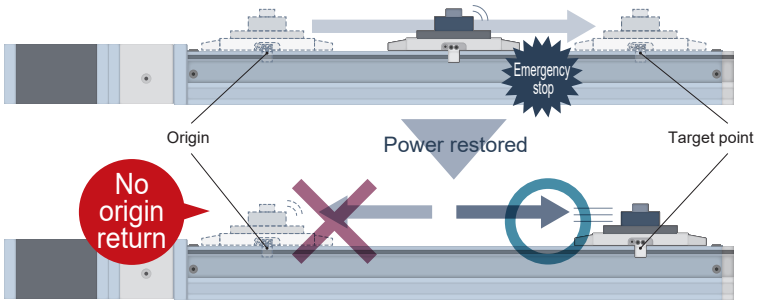


Supports offset workpieces

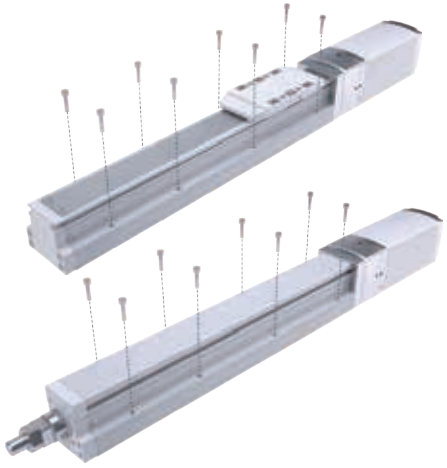


● Common features of EJSG, EBS-G, EBR-G

Equipped with a battery-less absolute encoder to reduce startup and recovery time of equipment.



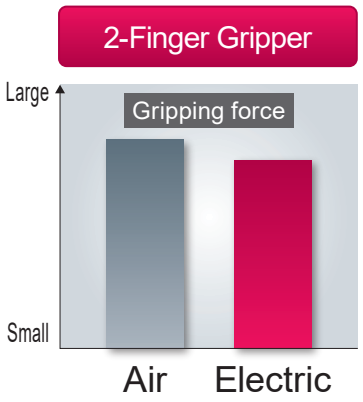
Can be installed without disassembling the body. Installation time is greatly reduced.



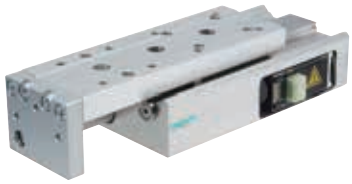
● 2-Finger Gripper
FLSH-G

Main specifications
- □Equipped with 20 to □25 L stepping motor
- Max. gripping force 65 N / finger
- Max. stroke 22 mm (one side 11 mm)
- With option rubber cover
  Finger shape

Compatible mounting with air components to achieve the same capacity

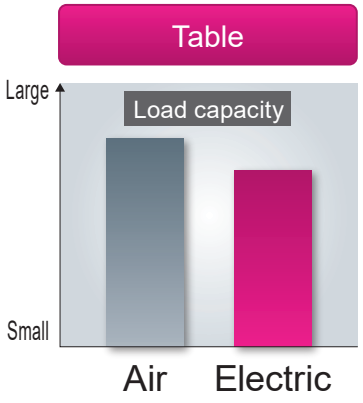


● Table
FLCR-G



Main specifications
- □Equipped with 20 to □25 L stepping motor
- Max. payload: Horizontal 11 kg
  Vertical 8.5 kg
- Max. speed 300 mm/s
- Max. stroke 100 mm
- Option with brake

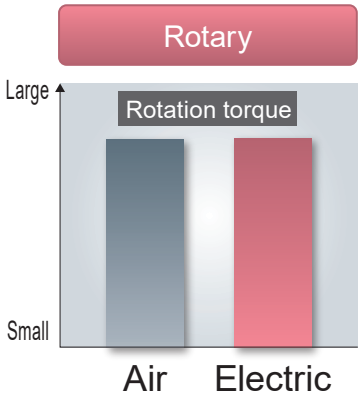
Dimensional compatibility with air components and equivalent performance



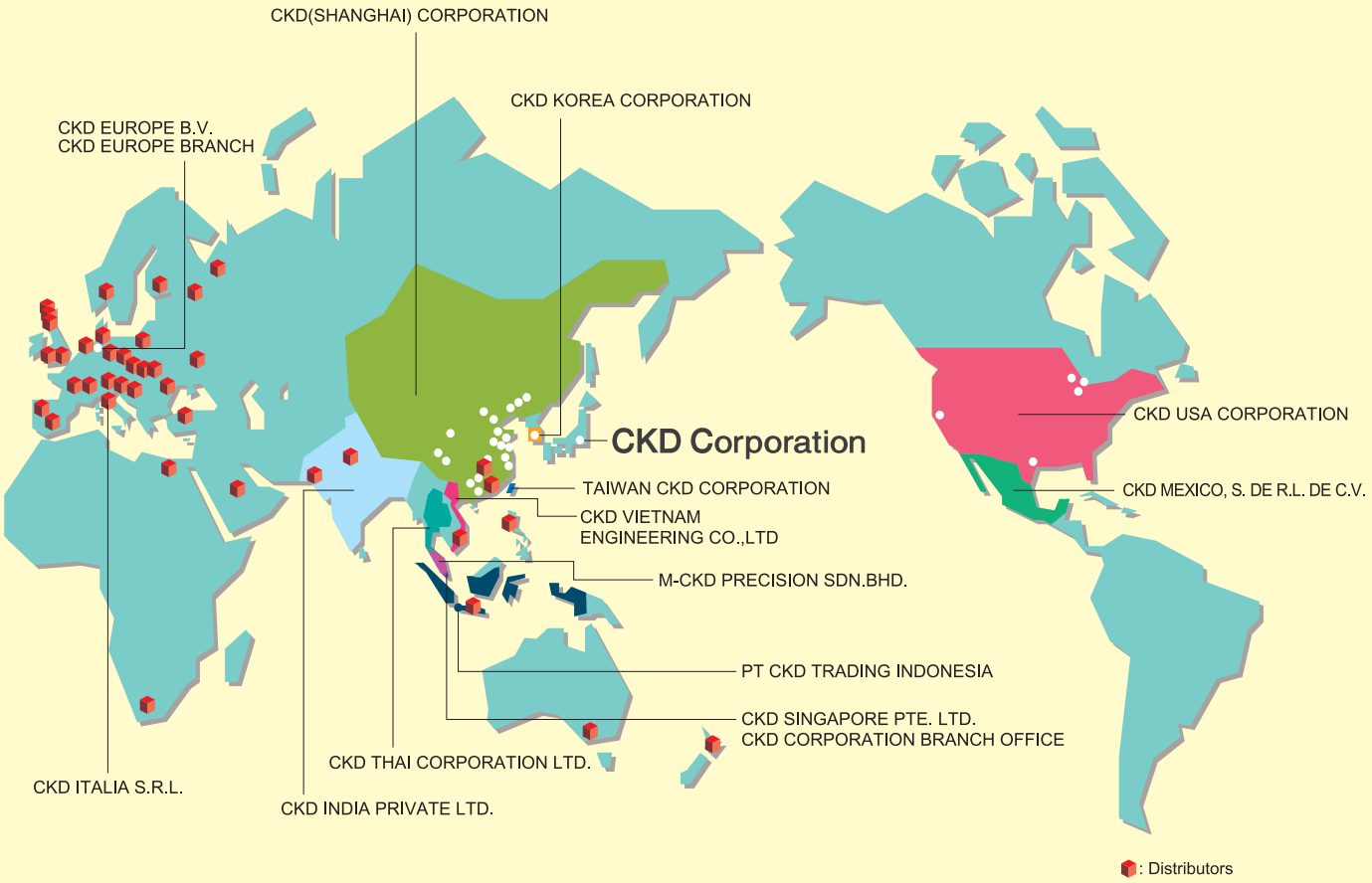
● Rotary
FGRC-G

Main specifications
- □20 to □35 Equipped with stepping motor
- Max. output torque 4.66 N· m
- Max. allowable moment of inertia 0.0297 kg· m^2
- Max. speed 200 deg/s

More compact and equivalent to an air components



WORLD-NETWORK



CKD Corporation

Website https://www.ckd.co.jp/en/

□ 2-250 Ouji, Komaki City, Aichi 485-8551, Japan
□ PHONE +81-568-74-1338 FAX +81-568-74-1165

ASIA

喜開理(上海)機器有限公司
CKD(SHANGHAI)CORPORATION

- 本社/上海浦西支店(SALES HEADQUARTERS / SHANGHAI PUXI BRANCH OFFICE)
  Room 612, 6th Floor, Yuanzhongkeyan Building, No. 1905 Hongmei Road, Xuhui District, Shanghai 200233, China
  PHONE +86-21-60906046 / 60906047 / 60906048
  FAX +86-21-60906046
- 上海浦東支店(SHANGHAI PUDONG BRANCH OFFICE)
- 寧波支店(NINGBO BRANCH OFFICE)
- 杭州支店(HANGZHOU BRANCH OFFICE)
- 無錫支店(WUXI BRANCH OFFICE)
- 昆山支店(KUNSHAN BRANCH OFFICE)
- 蘇州支店(SUZHOU BRANCH OFFICE)
- 常州支店(CHANGZHOU BRANCH OFFICE)
- 南京支店(NANJING BRANCH OFFICE)
- 合肥支店(HEFEI BRANCH OFFICE)
- 成都支店(CHENGDU BRANCH OFFICE)
- 武漢支店(WUHAN BRANCH OFFICE)
- 鄭州支店(ZHENGZHOU BRANCH OFFICE)
- 長沙支店(CHANGSHA BRANCH OFFICE)
- 重慶支店(CHONGQING BRANCH OFFICE)
- 西安支店(XIAN BRANCH OFFICE)
- 広州支店(GUANGZHOU BRANCH OFFICE)
- 中山支店(ZHONGSHAN BRANCH OFFICE)
- 深圳西支店(WEST SHENZHEN BRANCH OFFICE)
- 深圳東支店(EAST SHENZHEN BRANCH OFFICE)
- 東莞支店(DONGGUAN BRANCH OFFICE)
- 厦門支店(XIAMEN BRANCH OFFICE)
- 福州支店(FUZHOU BRANCH OFFICE)
- 惠州支店(HUIZHOU BRANCH OFFICE)
- 瀋陽支店(SHENYANG BRANCH OFFICE)
- 大連支店(DALIAN BRANCH OFFICE)
- 長春支店(CHANGCHUN BRANCH OFFICE)
- 北京支店(BEIJING BRANCH OFFICE)
- 天津支店(TIANJIN BRANCH OFFICE)
- 青島支店(QINGDAO BRANCH OFFICE)
- 濰坊支店(WEIFANG BRANCH OFFICE)
- 済南支店(JINAN BRANCH OFFICE)
- 烟台支店(YANTAI BRANCH OFFICE)

CKD INDIA PRIVATE LTD.

- HEADQUARTERS
  Unit No. 607, 6th Floor, Welldone Tech Park, Sector 48, Sohna Road, Gurgaon-122018, Haryana, India
  PHONE +91-124-418-8212
- BANGALORE OFFICE
- PUNE OFFICE
- CHENNAI OFFICE
- MUMBAI OFFICE
- HYDERABAD OFFICE

PT CKD TRADING INDONESIA

- HEAD OFFICE
  Menara Bidakara 2, 18th Floor, Jl. Jend. Gatot Subroto Kav. 71-73, Pancoran, Jakarta 12870, Indonesia
  PHONE +62-21-2938-6601 FAX +62-21-2906-9470
- MEDAN OFFICE
- BEKASI OFFICE
- KARAWANG OFFICE
- SEMARANG OFFICE
- SURABAYA OFFICE

CKD KOREA CORPORATION

- HEADQUARTERS
  (3rd Floor), 44, Sinsu-ro, Mapo-gu, Seoul 04088, Korea
  PHONE +82-2-783-5201～5203 FAX +82-2-783-5204
- 水原事務所(SUWON OFFICE)
- 天安事務所(CHEONAN OFFICE)
- 蔚山事務所(ULSAN OFFICE)

M-CKD PRECISION SDN.BHD.

- HEAD OFFICE
  Lot No.6,Jalan Modal 23/2, Seksyen 23, Kawasan MIEL, Fasa 8, 40300 Shah Alam,Selangor Darul Ehsan, Malaysia
  PHONE +60-3-5541-1468 FAX +60-3-5541-1533
- JOHOR BAHRU BRANCH OFFICE
- PENANG BRANCH OFFICE

CKD SINGAPORE PTE. LTD.

No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67442623 FAX +65-67442486

CKD CORPORATION BRANCH OFFICE

No.33 Tannery Lane #04-01 Hoesteel Industrial Building, Singapore 347789, Singapore
PHONE +65-67447260 FAX +65-68421022

CKD THAI CORPORATION LTD.

- HEADQUARTERS
  19th Floor, Smooth Life Tower, 44 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand
  PHONE +66-2-267-6300 FAX +66-2-267-6304-5
- NAVANAKORN OFFICE
- EASTERN SEABOARD OFFICE
- LAMPHUN OFFICE
- KORAT OFFICE
- AMATANAKORN OFFICE
- PRACHINBURI OFFICE
- SARABURI OFFICE

台湾喜開理股份有限公司
TAIWAN CKD CORPORATION

- HEADQUARTERS
  16F-3, No. 7, Sec. 3, New Taipei Blvd., Xinzhuang Dist., New Taipei City 242, Taiwan
  PHONE +886-2-8522-8198 FAX +886-2-8522-8128
- 新竹営業所(HSINCHU OFFICE)
- 台中営業所(TAICHUNG OFFICE)
- 台南営業所(TAINAN OFFICE)
- 高雄営業所(KAOHSIUNG OFFICE)

CKD VIETNAM ENGINEERING CO.,LTD.

- HEADQUARTERS
  18th Floor, CMC Tower, Duy Tan Street, Cau Giay District, Hanoi, Vietnam
  PHONE +84-24-3795-7631 FAX +84-24-3795-7637
- HO CHI MINH OFFICE

EUROPE

CKD EUROPE B.V.

- HEADQUARTERS
  Beechavenue 125A, 1119 RB Schiphol-Rijk, the Netherlands
  PHONE +31-23-554-1490
- CKD EUROPE GERMANY OFFICE
- CKD EUROPE UK
- CKD EUROPE CZECH O.Z.

CKD CORPORATION EUROPE BRANCH

Beechavenue 125A, 1119 RB Schiphol-Rijk, the Netherlands
PHONE +31-23-554-1490

CKD ITALIA S.R.L.

Via di Fibbiana 15 Calenzano (FI) CAP 50041, Italy
PHONE +39 0558825359 FAX +39 0558827376

NORTH AMERICA & LATIN AMERICA

CKD MEXICO, S. DE R.L. DE C.V.

Cerrada la Noria No. 200 Int. A-01, Querétaro Park II, Parque Industrial Querétaro, Santa Rosa Jáuregui, Querétaro, C.P. 76220, México
PHONE +52-442-161-0624

CKD USA CORPORATION

- HEADQUARTERS
  1605 Penny Lane, Schaumburg, IL 60173, USA
  PHONE +1-847-648-4400 FAX +1-847-565-4923
- LEXINGTON OFFICE
- SAN JOSE OFFICE/ TECHNICAL CENTER
- AUSTIN OFFICE

The goods and/or their replicas, the technology and/or software found in this catalog are subject to complementary export regulations by Foreign Exchange and Foreign Trade Law of Japan. The law requires a license from Ministry of Economy, Trade and Industry to export them.

2025.6