

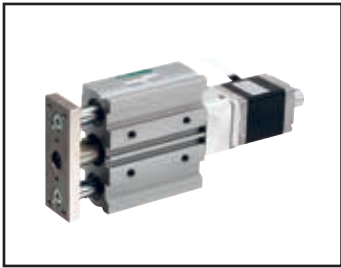


CONTENTS

Product introduction	Intro Page
● Specifications / How to order / Dimensions	
· DSTG-20	26
· DSTG-32	28
· DSTG-50	30
● Model selection	32
⚠ Safety precautions	216
Model Selection Check Sheet	240

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



How to order

DSTG

-

M

-

20

-

S

-

E

-

06

-

020

-

T3PH

-

R1

-

A

-

1

1

Bearing

M

Metal bush bearing

2

Size

20

20

3

Applicable controller * 1

S

ESC4

4

Motor mounting direction

E

Straight mounting

5

Screw lead

06

6 mm

09

9 mm

6

Stroke

020

20 mm

050

50 mm

075

75 mm

100

100 mm

7

Switch

NNNN

None

T3PH

T-type straight

T3PV

T-shaped L-type

8

Relay cable * 2

N0

None

R1

Movable 1 m

R3

Movable 3 m

R5

Movable 5 m

RX

Movable 10 m

9

Controller included

N

None

A

DIN rail mounting specifications

B

Panel mounting specifications

10

IO 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
	Vertical	6.4
Operation speed range *2	mm/s	15 to 90 22 to 135
Max. acceleration/deceleration * 3	mm/s ²	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			9 mm		
	Speed (mm/s)	Payload (kg)		Speed (mm/s)	Payload (kg)	
		Stroke (mm)			Stroke (mm)	
		50 or less	100 or less		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

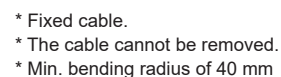
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			9 mm		
	Speed (mm/s)	Payload (kg)		Speed (mm/s)	Payload (kg)	
		Stroke (mm)			Stroke (mm)	
		50 or less	100 or less		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.

● DSTG-20



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



How to order

DSTG

-

M

-

32

S

E

-

06

025

T3PH

R1

A

1

1

Bearing

M

Metal bush bearing

2

Size

32

32

3

Applicable controller * 1

S

ESC4

4

Motor mounting direction

E

Straight mounting

5

Screw lead

06

6 mm

12

12 mm

6

Stroke

025

25 mm

050

50 mm

075

75 mm

100

100 mm

7

Switch

NNNN

None

T3PH

T-type straight

T3PV

T-shaped L-type

8

Relay cable * 2

N0

None

R1

Movable 1 m

R3

Movable 3 m

R5

Movable 5 m

RX

Movable 10 m

9

Controller included

N

None

A

DIN rail mounting specifications

B

Panel mounting specifications

10

IO 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/s ²	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) 50 or less 100 or less		Speed (mm/s)	Payload (kg) Stroke (mm) 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

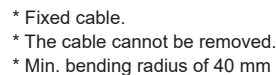
[When installed vertically]

Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg) Stroke (mm) 50 or less 100 or less		Speed (mm/s)	Payload (kg) Stroke (mm) 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.

● DSTG-32



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



How to order

DSTG

-

M

-

50

S

E

-

06

020

T3PH

R1

A

1

1

2

3

4

5

6

7

8

9

10

1

Bearing

M

Metal bush bearing

2

Size

50

50

3

Applicable controller * 1

S

ESC4

4

Motor mounting direction

E

Straight mounting

5

Screw lead

06

6 mm

12

12 mm

6

Stroke

025

25 mm

050

50 mm

075

75 mm

100

100 mm

7

Switch

NNNN

None

T3PH

T-type straight

T3PV

T-shaped L-type

8

Relay cable * 2

N0

None

R1

Movable 1 m

R3

Movable 3 m

R5

Movable 5 m

RX

Movable 10 m

9

Controller included

N

None

A

DIN rail mounting specifications

B

Panel mounting specifications

10

IO 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	Horizontal	14.8 9.2
	Vertical	13.2 7.2
Operation speed range	mm/s	15 to 72 30 to 144
Max. acceleration/deceleration * 3	mm/s ²	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]

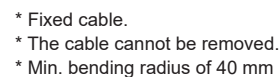
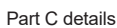
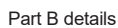
Switch Setting	Screw lead					
	6 mm			12 mm		
	Speed (mm/s)	Payload (kg)		Speed (mm/s)	Payload (kg)	
		Stroke (mm)		Stroke (mm)		
		50 or less	100 or less	50 or less	100 or less	
0	15	14.8	12.2	30	9.2	9.2
1	21	11.6	9.6	42	9.2	9.2
2	27	10.0	8	55	9.2	9.2
3	34	8.4	6.4	68	9.2	7.2
4	40	8.4	6.4	80	8.8	6.8
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)		Speed (mm/s)	Payload (kg)	
		Stroke (mm)		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.

● DSTG-50



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

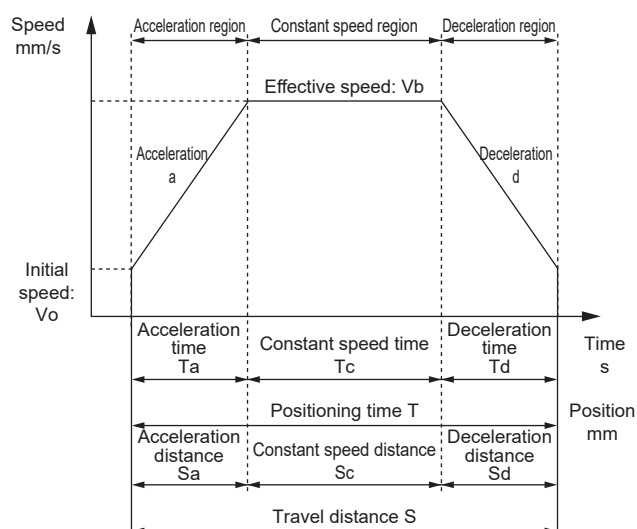
STEP 1 Confirming payload

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	d	mm/s ²	According to the table below (fixed value)
Calculated value	Travel distance	S	mm	*
	Achieved speed	Vmax	mm/s	$= (S \times a + V_0^2)^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	$= (V_b - V_0) / a$
	Deceleration time	Td	s	$= (V_b - 0) / d$
	Constant speed time	Tc	s	$= S_c / V_b$
	Acceleration distance	Sa	mm	$= V_0 \times T_a + (a \times T_a^2) / 2$
	Deceleration distance	Sd	mm	$= V_b \times T_d - (d \times T_d^2) / 2$
	Constant speed distance	Sc	mm	$= S - S_a - S_d$
	Positioning time	T	s	$= 2 \times T_a + T_c$

* 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 (V_b) from the set speed (V) and the achieved speed (V_{max}), 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/s²)

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.

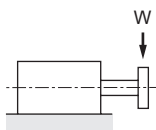
Resultant moment

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

Static allowable load and moment

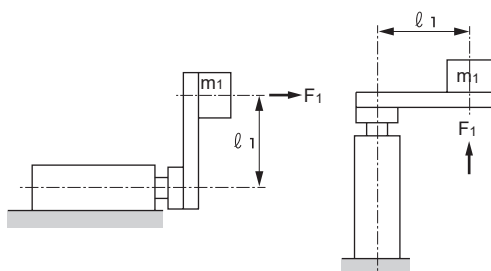
Model No.	Stroke (mm)	Lateral load W (N)	Bending moment MP max (N·m)	Torsion moment MY max (N·m)	Radial moment MR max (N·m)
DSTG-20	20	67	35.3	0.9	35.3
	50	46		0.62	
	75	60		0.8	
	100	51		0.69	
DSTG-32	25	223	171.5	4.35	171.5
	50	180		3.5	
	75	179		3.48	
	100	156		3.04	
DSTG-50	25	348	294	9.56	294
	50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

● Lateral load W (N)



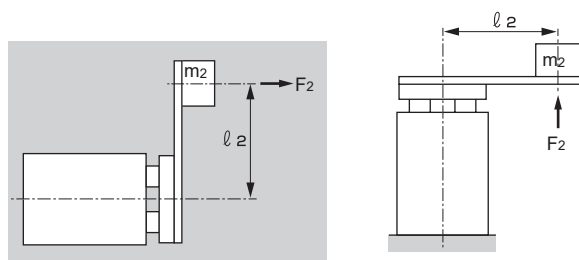
● Bending moment MP (N·m)

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



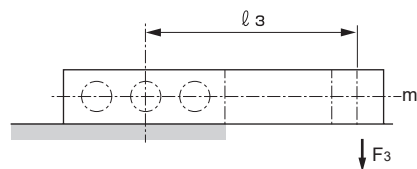
● Radial moment MR (N·m)

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



● Torsion moment MY (N·m)

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

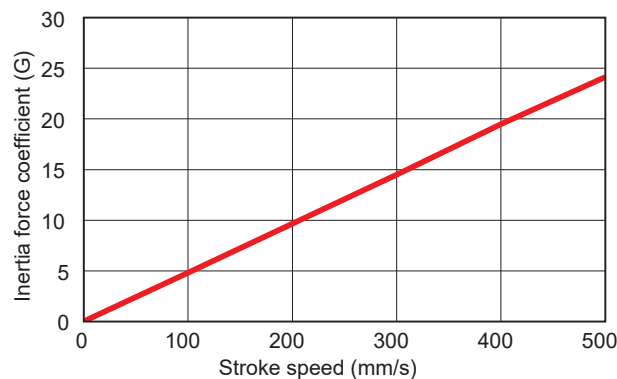


m1:
m2:
m3: } Load (kg)

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

G: Inertia force coefficient

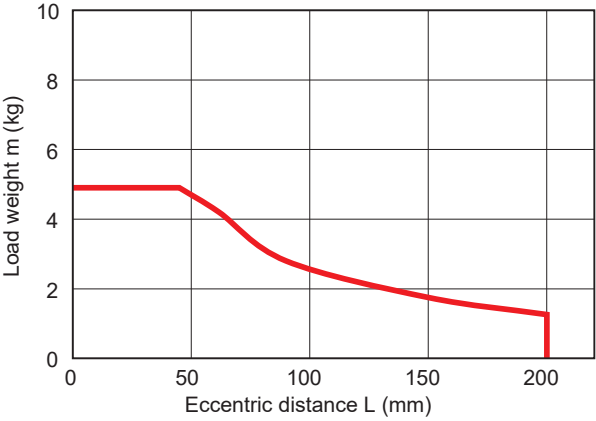
Fig. 1 Trend of inertia force coefficient for guided type



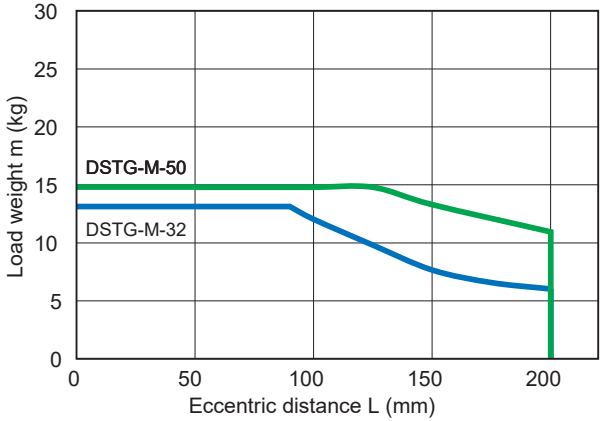
STEP 4 Checking allowable overhang length

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

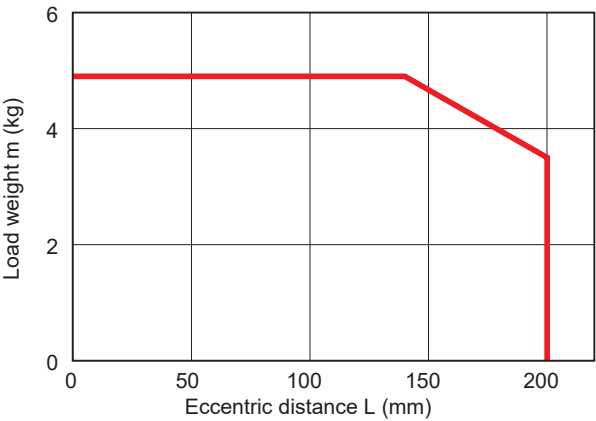
- DSTG-M-20
- Stroke 50 mm or less



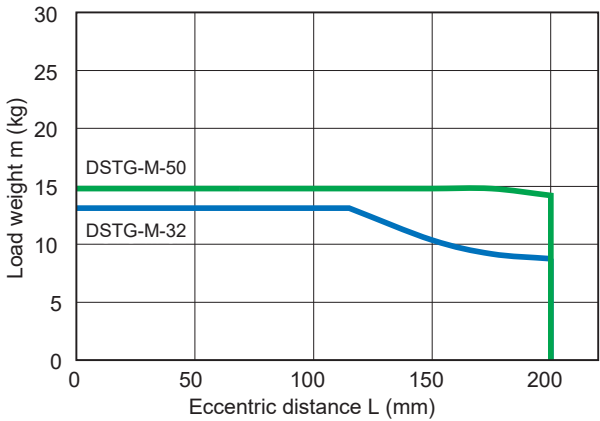
- DSTG-M-32, 50
- Stroke 50 mm or less



- DSTG-M-20
- Over 50 mm stroke



- DSTG-M-32, 50
- Over 50 mm stroke



D Series (Screw drive)

D Series (Spring drive)

ESC3 (Controller)

G Series

ECG-A (Controller)

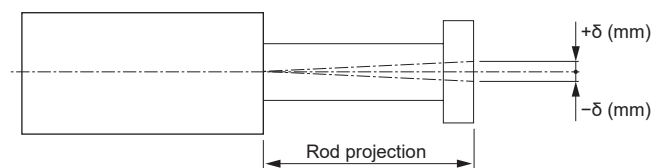
ECG-B (Controller)

Safety Caution

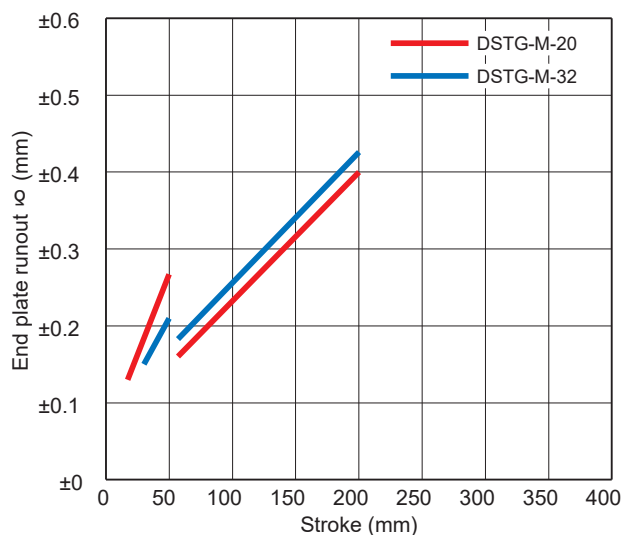
Model selection Check sheet

Deflection

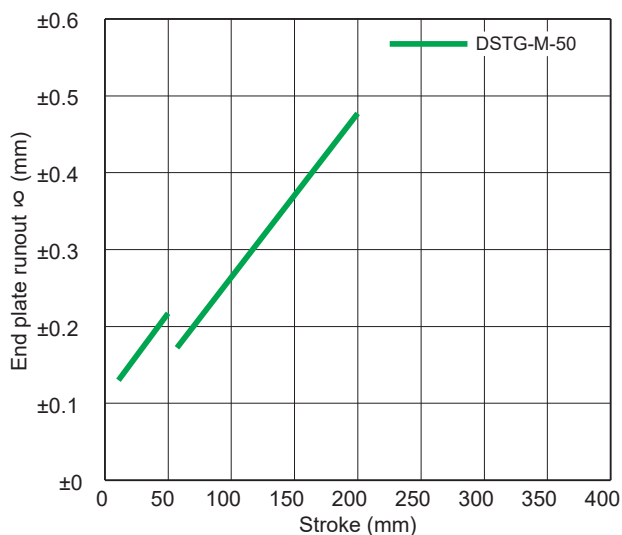
For the runout amount δ produced at the end of the end plate when no load is applied, the value in the graph below is used as a guide. (Excluding sag of guide rod)



● DSTG-M-20, 32

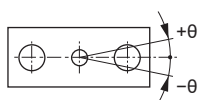


● DSTG-M-50



Non-rotating accuracy

(reference value)



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

D Series (Screw drive)

D Series (Spring drive)

ESC3 (Controller)

G Series

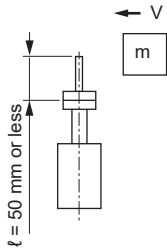
ECG-A (Controller)

ECG-B (Controller)

Safety Caution

Model selection Check sheet

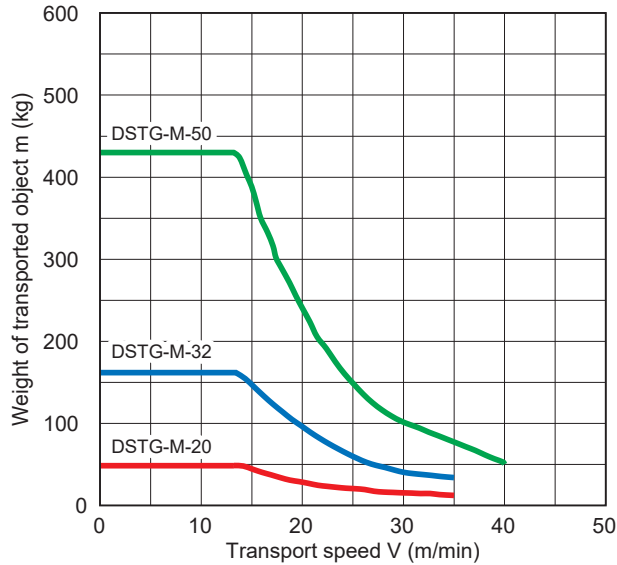
Specified range when using the product as a stopper



- *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 $\times 10$ (N)

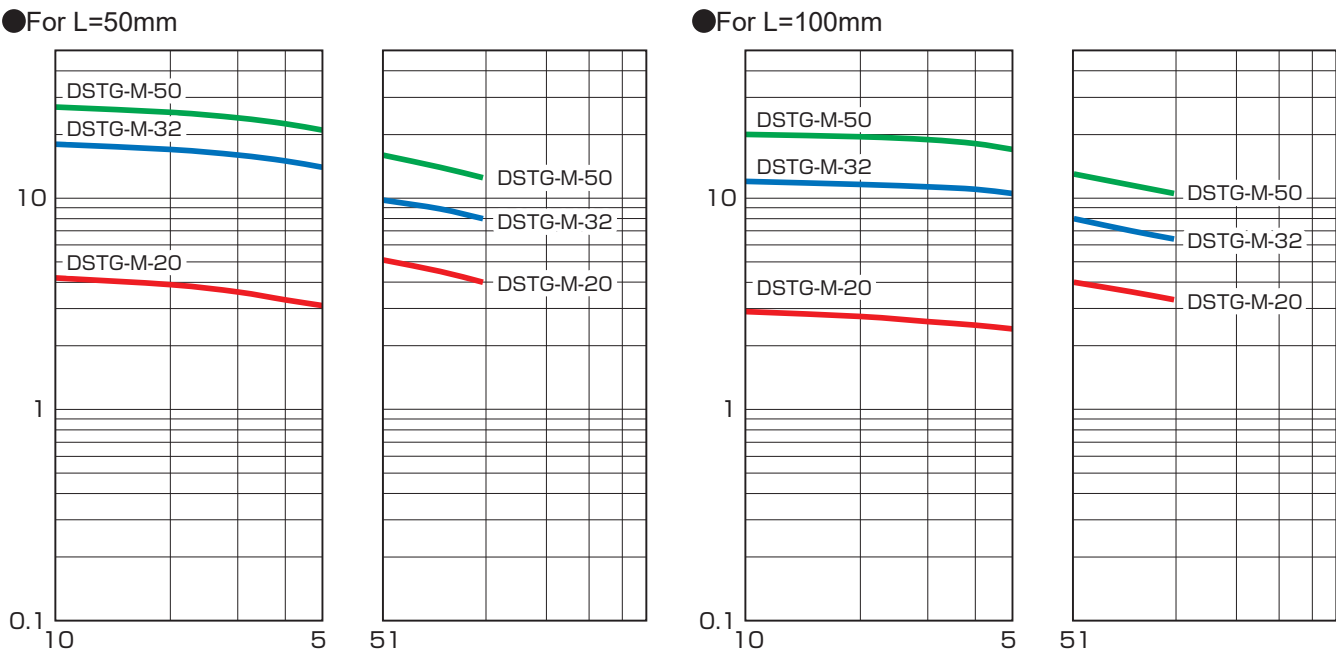
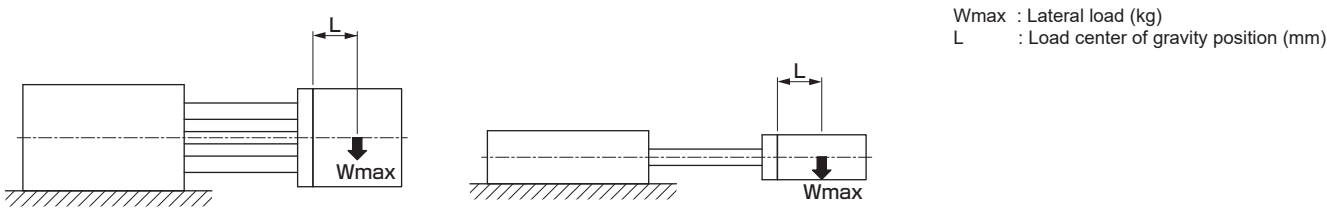
Impact load

DSTG-M (metal bush bearing)



Allowable lateral load

Metal bush bearing



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