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

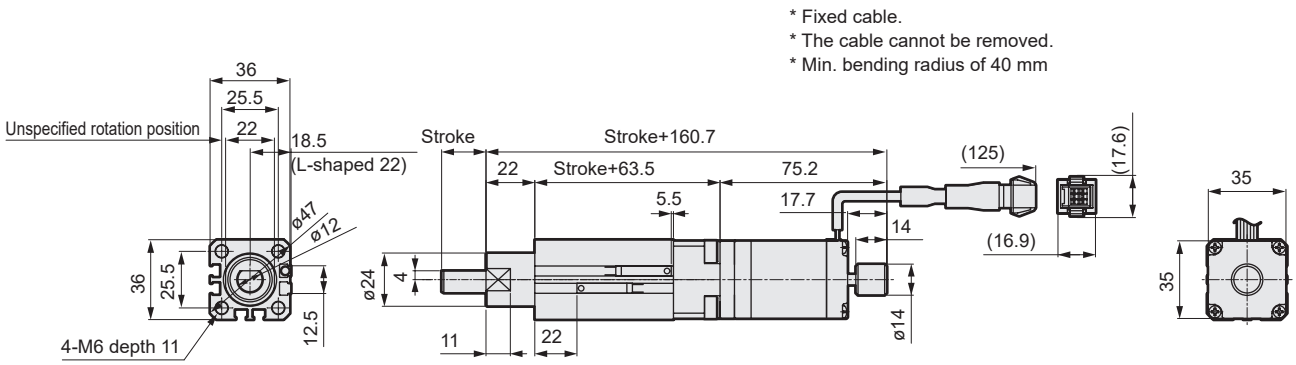
[When installed horizontally or vertically]

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

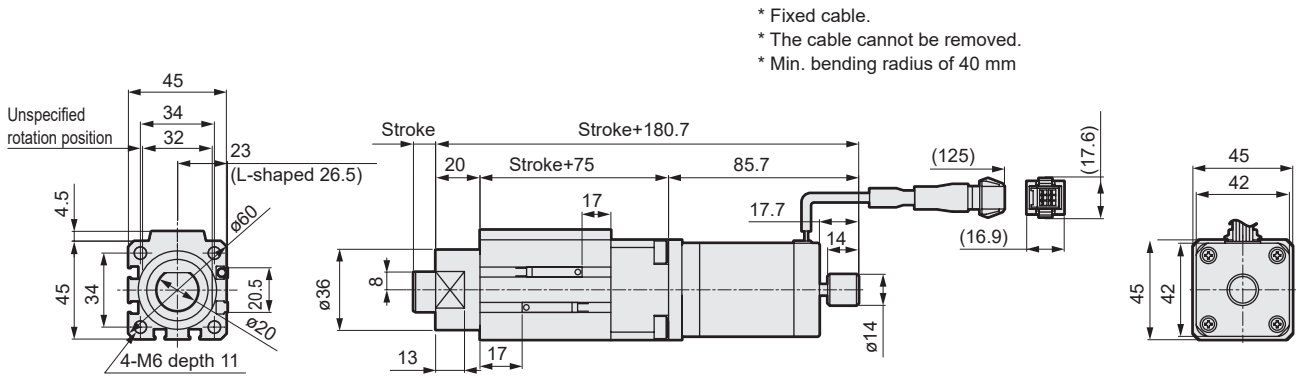
[When installed horizontally or vertically]

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

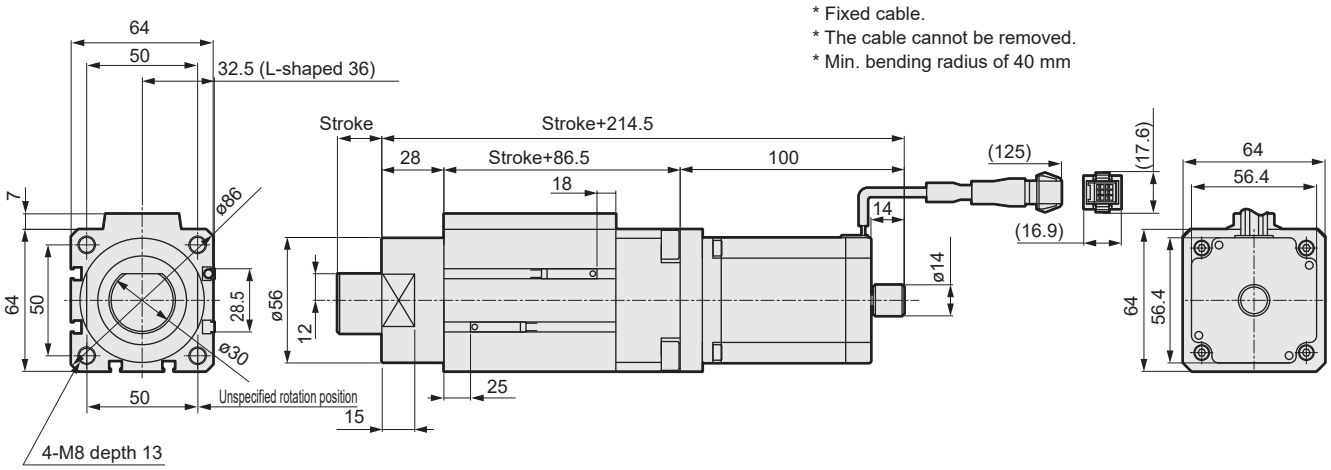
[When installed horizontally or vertically]

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

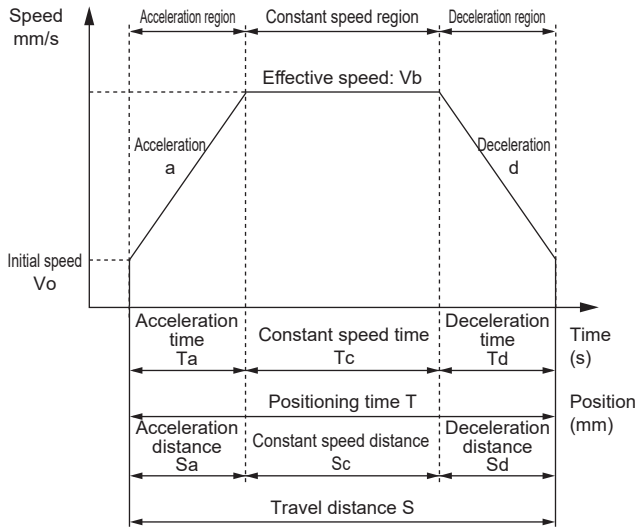
STEP 1 Confirming thrust

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

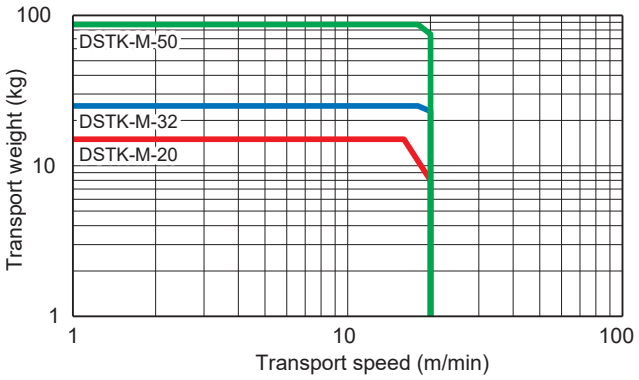
Select the model using transport weight (m) and transport speed (V) so that the model is within the allowable absorbed energy in the graph in the right .

(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.

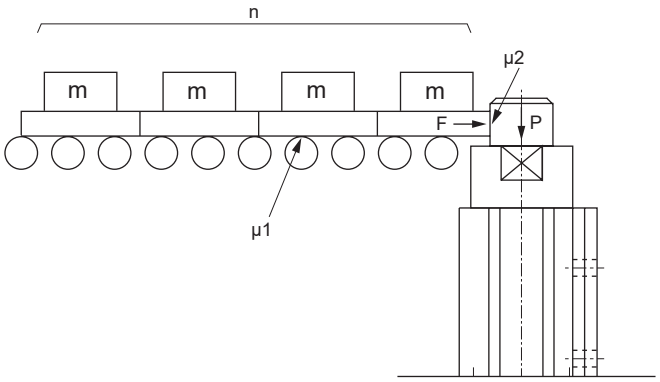
$P=F \cdot \mu_2$

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