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	

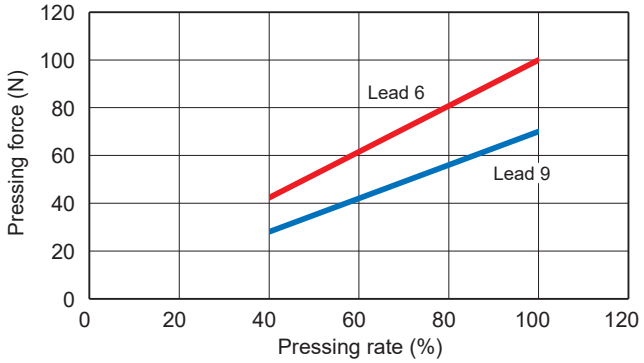
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

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

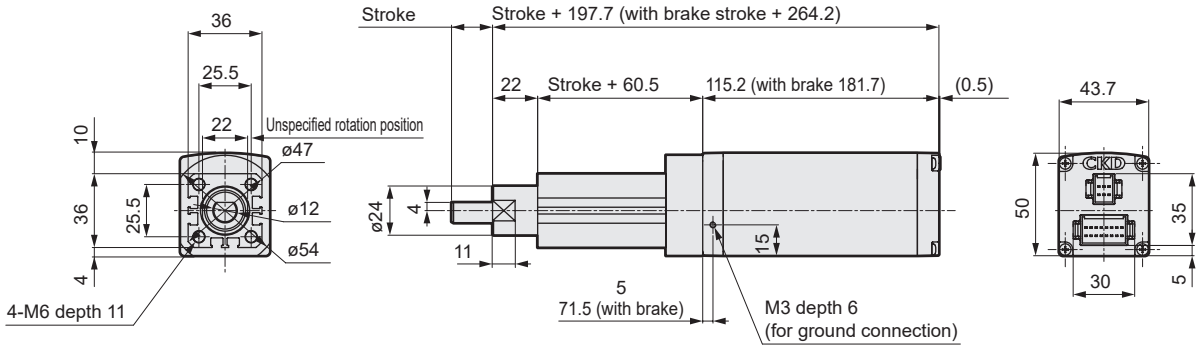
Pressing force



* 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	

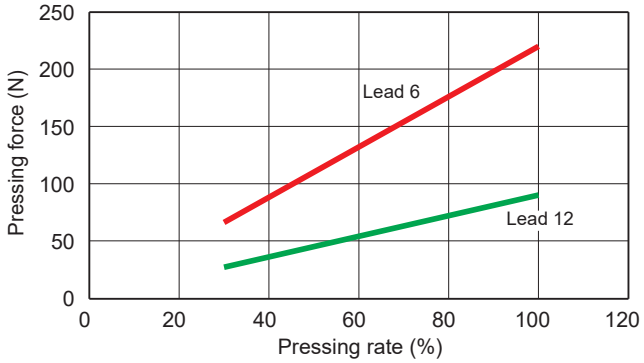
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

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

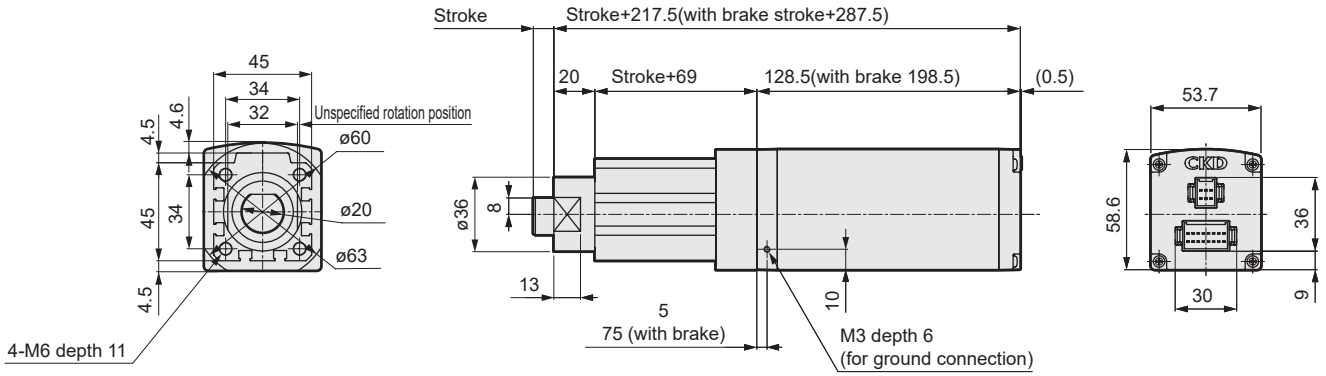
Pressing force



* 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	

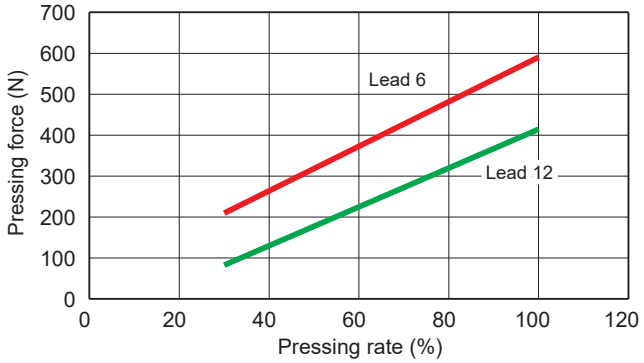
*1 Thrust varies according to acceleration/deceleration and speed.
*2 The maximum speed may decrease depending on the conditions.

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

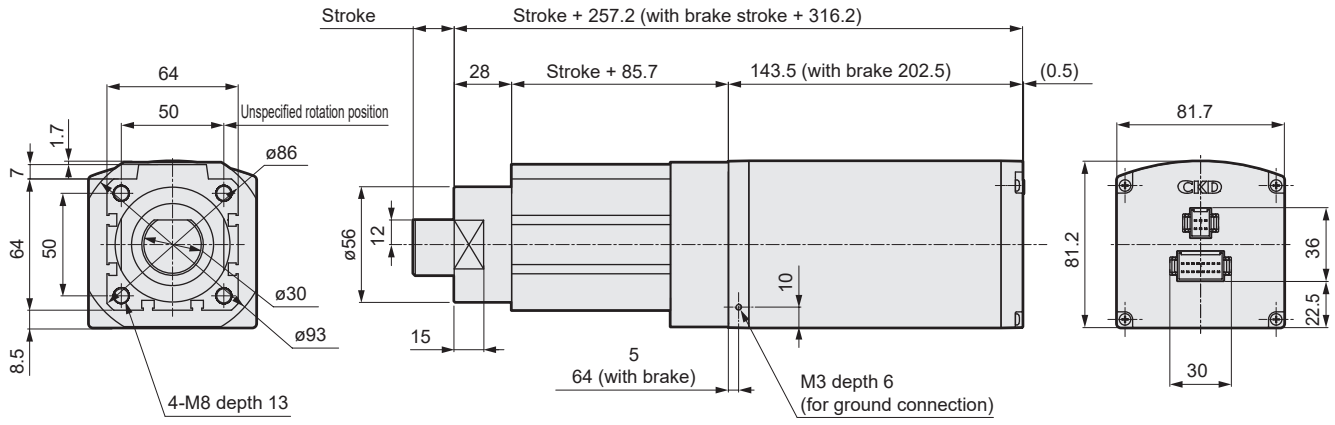
Pressing force



* 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

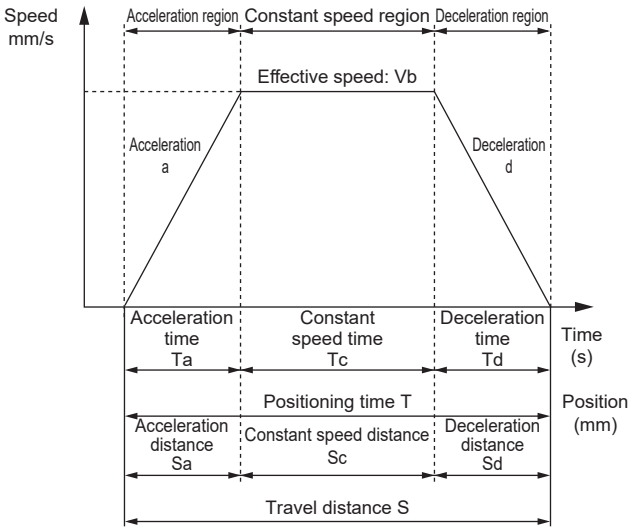
STEP 1 Confirming thrust

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.

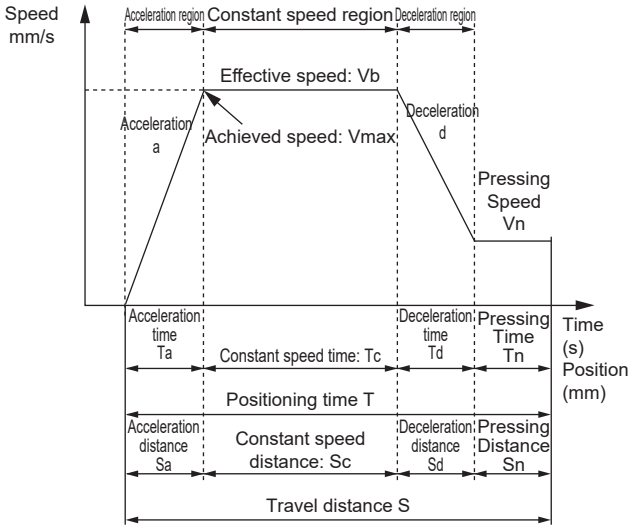
Positioning time for general transport operation



	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

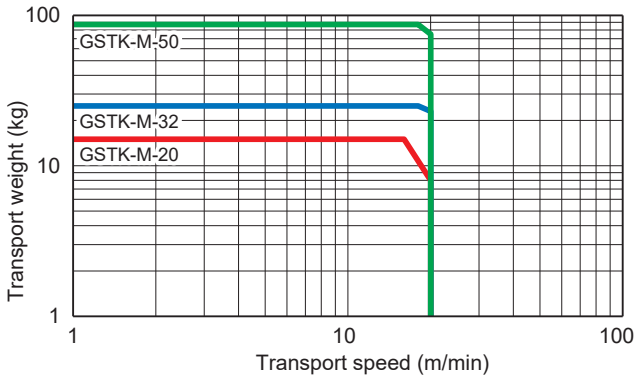
Select the model using transport weight (m) and transport speed (V) so that the model is within the allowable absorbed energy in the graph in the right .

(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.

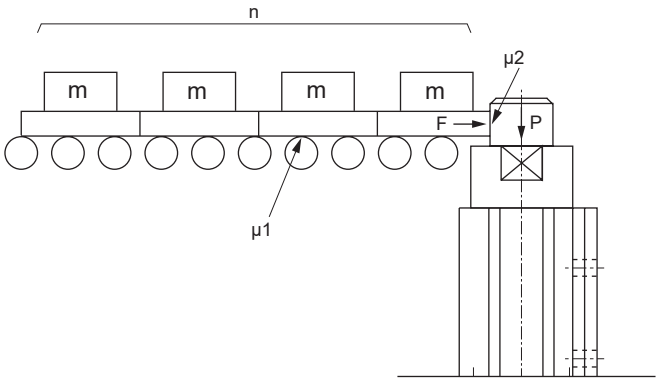
$P=F \cdot \mu_2$

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