



New Products

GUIDED CYLINDER STG SERIES

**High precision
High rigidity
Ecological**



CKD Corporation

CC-781A

New eco-friendly

guided cylinder



Guided cylinder STG Series ($\phi 12$ to $\phi 63$) - Remove toxic substances and protect the environment by preventing contamination

RoHS

(to be complied until the Dec.2005)

Ecological product

Harmful substances such as lead and hexavalent chrome that adversely affect the global environment are not used in the cylinder.
This product complies with the RoHS Directives in effect in the EU.
(Lead free soldered lead wire is used.)

Compatible with high loads

The guide rod shaft has been improved and metal bearing material and bearing structure changed.
This cylinder is robust with lateral and deflective loads, and has higher withstand load performance than conventional products.
Use this cylinder to further improve stability.

Complete maintenance with standard tools
A hexagon wrench is used to install the piston rod, so no special tools are required for maintenance.



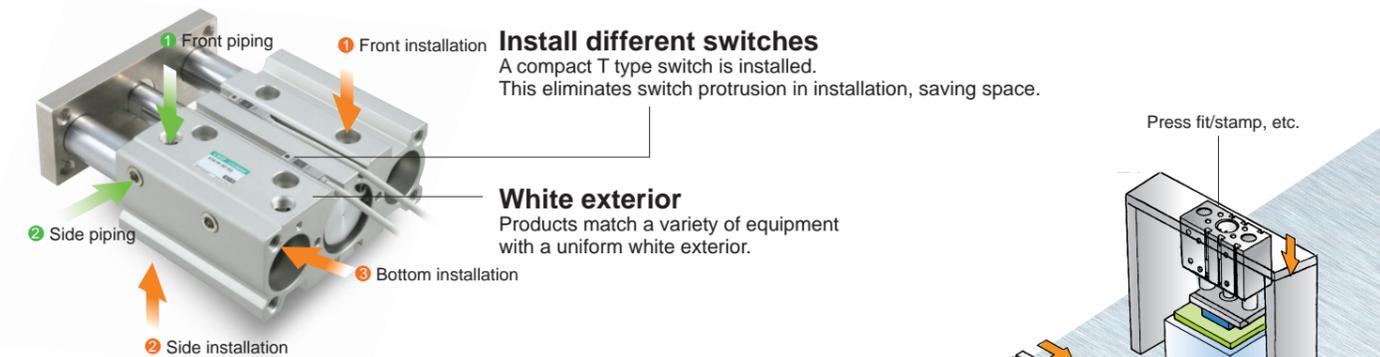
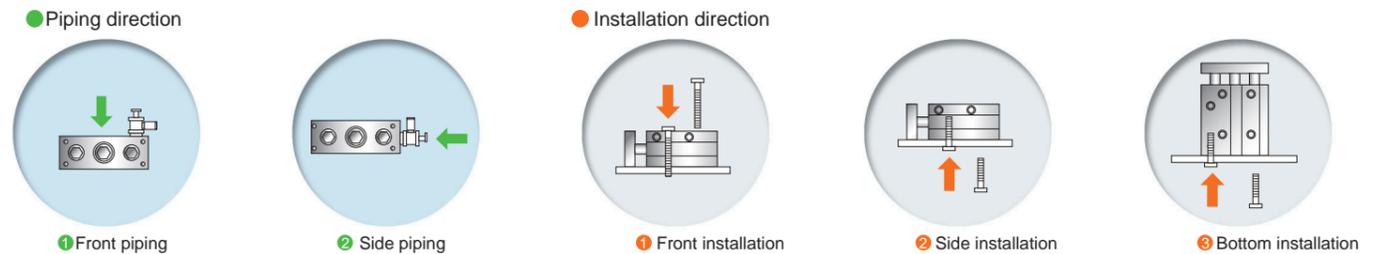
Lightweight and resource-saving

The cylinder's aluminum structure has been reviewed to achieve lighter weight and higher resource saving than conventional products.

High precision/high rigidity

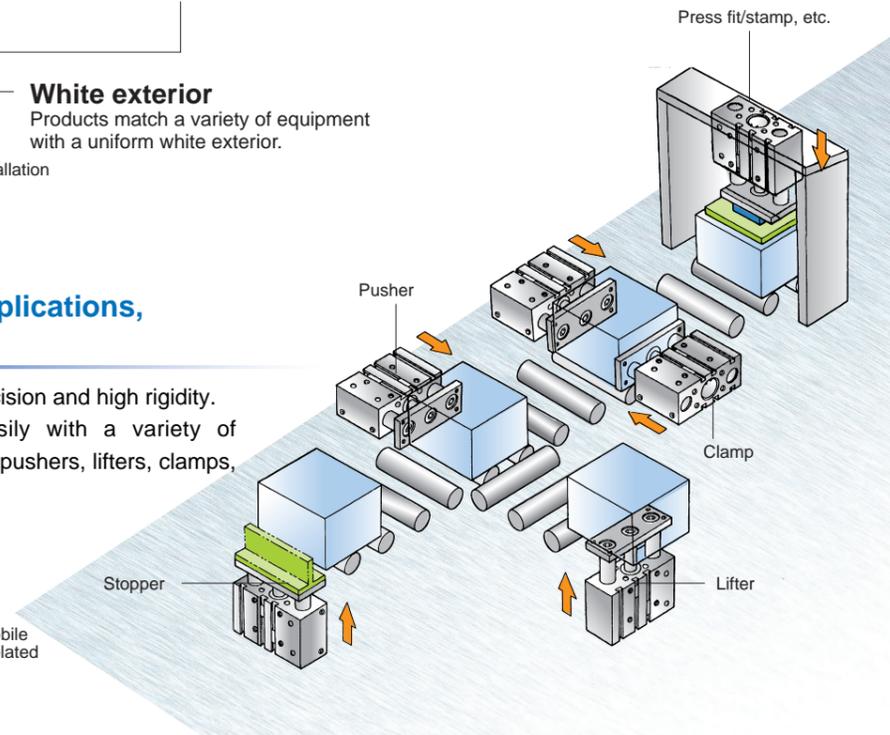
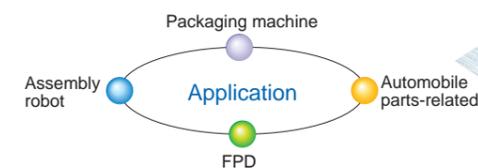
STG-M/B Series

Piping in two directions and installation in three directions



Compatible with a variety of applications, including transfer lines

Two guide rods provide high positioning precision and high rigidity. This space saving cylinder is used easily with a variety of applications, including positioning, stoppers, pushers, lifters, clamps, and press-fitting.



STG Series Products

Model variation		Stroke length (mm)														Max. stroke length	Switch	Page		
Type of bearing	Bore size	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	MAX	SW	
Metal bush bearing STG-M	$\phi 12$	●	●															250	●	3
	$\phi 16$	●	●															250	●	
	$\phi 20$	●	●	●														400	●	
	$\phi 25$		●	●	●													400	●	
Ball bearing STG-B	$\phi 32$			●	●	●	●	●	●	●	●	●	●	●	●	●	●	400	●	
	$\phi 40$			●	●	●	●	●	●	●	●	●	●	●	●	●	●	400	●	
	$\phi 50$			●	●	●	●	●	●	●	●	●	●	●	●	●	●	400	●	
	$\phi 63$			●	●	●	●	●	●	●	●	●	●	●	●	●	●	400	●	



Safety Precautions

Always read this section before starting use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanical mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.

It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely.

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 in handling.

2 Use this product in accordance of specifications.

Contact CKD when using the product outside the unique specifications range, when using it outdoors, and when using it under the conditions and environment below. Do not attempt to modify or additionally machine the product.

① Use for special applications requiring safety including nuclear energy, railroad, aviation, ship, vehicle, medical equipment, equipment, or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press mach

② Use for applications where life or assets could be adversely affected, and special safety measures are required.

3 Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.

ISO 4414, JIS B 8370 (pneumatic system rules), JPAS 005 (principles for pneumatic cylinder use and selection), High Pressure Gas Maintenance Laws Occupational Safety and Sanitation Laws, and other safety regulations, corporate standards, and regulations.

4 Do not handle, pipe, or remove devices before confirming safety.

① Inspect and service the machine and devices after confirming safety of the entire system related to this product.

② Note that there may be hot or charged sections even after operation is stopped.

③ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Discharge any compressed air from the system, and pay enough attention to possible water leakage and leakage of electrici

④ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions on the pages below to prevent accidents.

■ The safety cautions are ranked as " DANGER" , " WARNING" and " CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

 **WARNING:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.

In any case, important information that must be observed is explained.



Pneumatic Components Safety Precautions

Always read before starting use

Refer to Pneumatic Cylinders CB-029SA for general details on the cylinder and cylinder switch.

Guided cylinder STG Series

Design & Selection

CAUTION

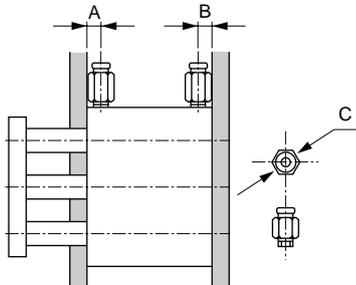
- When using the metal bush bearing type with a long stroke and low speed, stick slipping may occur de-

pending on load conditions. Use the ball bearing type in this case.

Installation & Adjustment

CAUTION

- Install a flow control valve when piping. The following types of joints are used:



Descriptions Bore size (mm)	Port size	Port dimension		Compatible joint	Joint outer diameter ϕC
		A	B		
$\phi 12$	M5X0.8	12	7	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5 GWS6-M5	$\phi 12$ or less
$\phi 16$		12	7.5		
$\phi 20$	Rc1/8	10.5	8.5	SC3W-6-4/6/8	$\phi 15$ or less
$\phi 25$		11.5	9	GWS4-6 GWS6-6	
$\phi 32$		12.5	9	GWS8-6 GWL4-6	
$\phi 40$		14	10	GWL6-6	
$\phi 50$	Rc1/4	14	11	SC3W-8-6/8/10 GWS4-8 GWS6-8 GWS10-8 GWS12-8	$\phi 21$ or less
$\phi 63$		16.5	15	GWL4 to 12-8	

- Check that no dents or scratches are made on main tubing installation or end plates that may adversely affect flatness.

Flatness on the counterpart onto which the end plate is installed must be 0.05 mm or less.

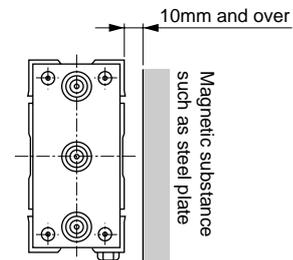
- When passing the bolt through the main body and installing, tighten with the following tightening torque.

$\phi 12$	1.5 to 2.7 N·m
$\phi 16$	
$\phi 20, \phi 25$	3 to 5.4 N·m
$\phi 32, \phi 40$	5.2 to 9.2 N·m
$\phi 50, \phi 63$	12.5 to 22 N·m

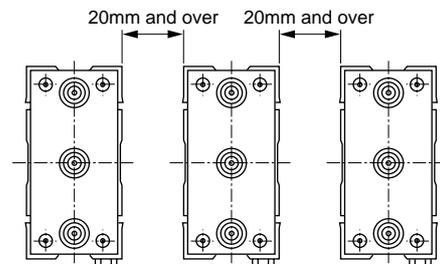
- Allowable energy absorption

Use within the allowable energy absorption. If this is exceeded, install a separate external damper. Refer to the specifications field or the model selection guide for allowable energy absorption.

- The cylinder may malfunction if a magnetic substance, such as a steel plate, is nearby. Move the magnetic substance to at least 10 mm from the cylinder. (Same clearance for all diameters)

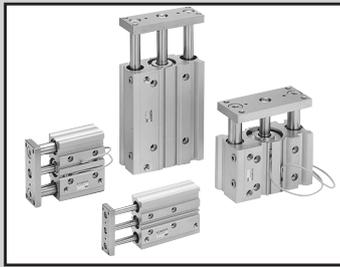


- The cylinder switch may malfunction if cylinders are installed adjacently. Separate cylinders by the following distances. (Same clearance for all diameters)



●: Standard ◎: Option ○: Custom order ■: Not available

Variation	Model No. JIS number	Bore size (mm)	Stroke length (mm)																Max. stroke length (mm)	Type of bearing: ball bearing		Switch	Page
			Stroke length (mm)								Stroke length (mm)									Metal bush bearing	Ball bearing		
			10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400					
Double acting single rod type	STG 	φ12, φ16	●	●	■	●	●	●	●	●	●	■	■	■	■	■	■	■	250	●	●	○	3
		φ20, φ25	■	●	■	●	●	●	●	●	●	●	●	●	●	●	●	●	400	●	●		
		φ32, φ40, φ50, φ63	■	■	●	■	■	●	●	●	●	●	●	●	●	●	●	●	400	●	●		



Guided cylinder Double acting single rod type

STG-M/B Series

● Bore size: $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$, $\phi 50$, $\phi 63$

JIS symbol 

Specifications

Descriptions		STG-M/B							
Bore size	MM	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure	MPa	1.0							
Min. working pressure	MPa	0.15				0.1			
Withstanding pressure	MPa	1.6							
Ambient temperature	°C	-10 to 60 (to be unfrozen)							
Port size		M5		Rc1/8			Rc1/4		
Stroke length tolerance	MM	+2.0 0							
Working piston speed	mm/s	50 to 500							50 to 300
Cushion		Rubber cushioned							
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)							
Allowable energy absorption	J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560

Stroke length

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 12$	10, 20, 30, 40, 50, 75, 100,	250	5	5
$\phi 16$	125, 150, 175, 200, 250			
$\phi 20$	20, 30, 40, 50, 75, 100, 125,			
$\phi 25$	150, 175, 200, 250, 300, 350, 400			
$\phi 32$	25, 50, 75, 100,	400	5	Note 2
$\phi 40$	125, 150, 175,			
$\phi 50$	200, 250, 300,			
$\phi 63$	350, 400			

Note 1: Custom stroke lengths can be manufactured in 5 mm increments. Note that the total length is the same as the next longer standard stroke length.

Note 2: When 1 or 2 switches are installed.

Switch specifications

- One color/bi-color indicator/strong magnetic field proof

Descriptions	Proximity 2 wire		Proximity 3 wire		Reed 2 wire						Proximity 2 wire
	T2H/T2V/T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3YH/T3YV	T0H/T0V			T5H/T5V			T2YD/T2YDT
Applications	Programmable controller		Programmable controller, relay		Programmable controller, relay			Programmable controller, relay, IC circuit (without indicator light), serial connection			Programmable controller
Power voltage	-		10 to 28VDC		-						-
Load voltage	10 to 30VDC		30VDC or less		12/24VDC	110VAC	220VAC	5/12/24VDC	110VAC	220VAC	24VDC±10%
Load current	5 to 20mA (Note 1)		100mA or less	50mA or less	5 to 50mA	7 to 20mA	7 to 10mA	50mA or less	20mA or less	10mA or less	5 to 20mA
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)			-			Red/green LED (ON lighting)

Note 1: The maximum load current of 20 mA applies at 25°C. If the switch's ambient operating temperature exceeds 25°C, the load current becomes less than 20 mA. (5 to 10 mA when 60°C.)

- Preventive maintenance output

Descriptions	Proximity 3 wire		Proximity 4 wire		Proximity 3 wire		Proximity 4 wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller, relay		Programmable controller		Programmable controller, relay		
Light	Installation position adjustment		Red/green LED (ON lighting)						
	Preventive maintenance output		-		Yellow LED (ON lighting)				
Output	Power voltage		10 to 28VDC		-		10 to 28VDC		
	Load voltage		30VDC or less		10 to 30VDC		30VDC or less		
	Load current		50mA or less		5 to 20mA		50mA or less		
Preventive maintenance Output	Load voltage		30VDC or less						
	Load current		50mA or less		5 to 20mA (Note 1)		50mA or less		

Note 1: The maximum load current of 20 mA applies at 25°C. If the switch's ambient operating temperature exceeds 25°C, the load current becomes less than 20 mA. (5 to 10 mA when 60°C.)

Cylinder mass

- STG-M

Unit : kg

Descriptions	Stroke length															Switch mass Grommet	
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350		400
φ12	0.23	0.27		0.30	0.34	0.38	0.49	0.57	0.68	0.77	0.86	0.95	1.13				0.018
φ16	0.32	0.37		0.42	0.47	0.51	0.66	0.78	0.94	1.06	1.18	1.31	1.55				0.018
φ20		0.65		0.73	0.81	0.88	1.13	1.33	1.52	1.71	1.90	2.10	2.55	2.94	3.32	3.71	0.018
φ25		0.92		1.02	1.13	1.23	1.60	1.86	2.12	2.40	2.66	2.92	3.56	4.08	4.62	5.14	0.018
φ32			1.64			2.01	2.54	2.94	3.34	3.73	4.12	4.51	5.49	6.27	7.07	7.85	0.018
φ40			1.89			2.30	2.75	3.15	3.57	3.98	4.39	4.80	5.81	6.64	7.47	8.29	0.018
φ50			3.26			3.88	4.59	5.21	5.83	6.45	7.07	7.69	9.25	10.48	11.74	13.00	0.018
φ63			4.05			4.79	5.61	6.34	7.07	7.81	8.54	9.27	11.06	12.51	13.97	15.42	0.018

- STG-B

Unit : kg

Descriptions	Stroke length															Switch mass Grommet	
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350		400
φ12	0.23	0.26		0.29	0.34	0.38	0.46	0.54	0.64	0.72	0.81	0.88	1.05				0.018
φ16	0.33	0.38		0.42	0.49	0.54	0.65	0.77	0.90	1.01	1.13	1.24	1.46				0.018
φ20		0.68		0.75	0.86	0.94	1.11	1.27	1.47	1.64	1.81	1.98	2.35	2.69	3.03	3.37	0.018
φ25		0.95		1.04	1.21	1.30	1.52	1.76	2.02	2.24	2.46	2.69	3.17	3.63	4.07	4.52	0.018
φ32			1.49			1.79	2.23	2.54	2.90	3.21	3.51	3.82	4.49	5.10	5.71	6.32	0.018
φ40			1.74			2.09	2.56	2.91	3.32	3.67	4.02	4.37	5.12	5.82	6.52	7.22	0.018
φ50			3.02			3.55	4.28	4.81	5.43	5.97	6.50	7.03	8.23	9.28	10.38	11.45	0.018
φ63			3.81			4.45	5.30	5.94	6.67	7.31	7.96	8.60	9.99	11.35	12.61	13.87	0.018

How to order

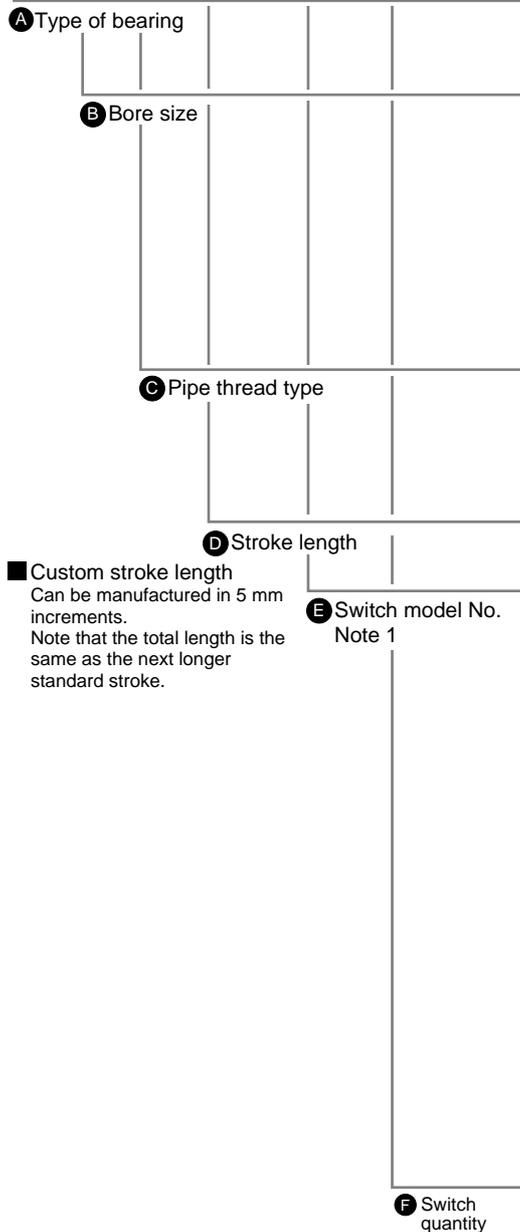
Without switch

STG - (M) - 32 - 25

With switch

STG - (M) - 32 - 25 - T2H - R

Model No.



Symbol	Descriptions			
A Type of bearing				
M	Metal bush bearing			
B	Ball bearing			
B Bore size (mm)				
12	φ12			
16	φ16			
20	φ20			
25	φ25			
32	φ32			
40	φ40			
50	φ50			
63	φ63			
C Pipe thread type				
Blank	M5 (φ12 to φ16) Rc thread (φ20 to φ63)			
NN	NPT thread (φ20 and over) custom order			
GN	G thread (φ20 and over) custom order			
D Stroke length (mm)				
Refer to the standard stroke length table on following page.				
E Switch model No.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator	2 wire
T5H*	T5V*		Without indicator light	
T2H*	T2V*		Proximity	1 color indicator
T3H*	T3V*	2 color indicator		3 wire
T2YH*	T2YV*	2 color indicator (No light for preventive mainte. output)		2 wire
T3YH*	T3YV*			3 wire
T2YFH*	T2YFV*	2 color indicator (light for preventive mainte. output (1 color))		3 wire
T3YFH*	T3YFV*	4 wire		
T2YMH*	T2YMV*	2 color indicator (light for preventive mainte. output (1 color))		3 wire
T3YMH*	T3YMV*	4 wire		
T2JH*	T2JV*	Off delay type		2 wire
T2YD*	-	Strong magnetic field proof switch		
T2YDT*	-			
*Lead wire length				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			
F Switch quantity				
R	One on rod side			
H	One on head side			
D	Two			
T	Three			

⚠ Cautions for selection guide

Note 1: Custom switch are available other than **E** switch model No. (Custom order)
Refer to Pneumatic Cylinders (No.CB-029SA) for details.

<Example of model number>

STG-B-40-75-T0H-D

Model: Guided cylinder Double acting single rod type

- A** Type of bearing: Ball bearing
- B** Bore size: φ40mm
- C** Pipe thread type: Rc screw
- D** Stroke length: 75 mm
- E** Switch model No.: Reed T0H switch, lead wire length 1m
- F** Switch quantity: Two

[Standard stroke length table]

Standard stroke length	Symbol	Stroke length (mm)	Applicable bore size							
			φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63
10	10	10	●	●						
20	20	20	●	●	●	●				
25	25	25					●	●	●	●
30	30	30	●	●	●	●				
40	40	40	●	●	●	●				
50	50	50	●	●	●	●	●	●	●	●
75	75	75	●	●	●	●	●	●	●	●
100	100	100	●	●	●	●	●	●	●	●
125	125	125	●	●	●	●	●	●	●	●
150	150	150	●	●	●	●	●	●	●	●
175	175	175	●	●	●	●	●	●	●	●
200	200	200	●	●	●	●	●	●	●	●
250	250	250	●	●	●	●	●	●	●	●
300	300	300			●	●	●	●	●	●
350	350	350			●	●	●	●	●	●
400	400	400			●	●	●	●	●	●

How to order switch

SW - **T0V**



Switch model No.
(E) on previous page

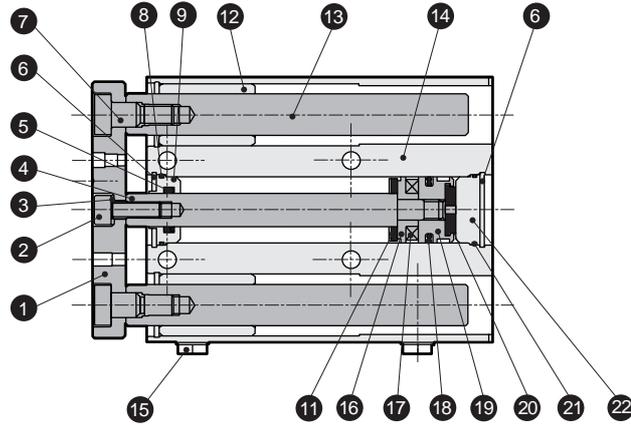
Note: Consult with CKD when using the ecological T type switch.

STG-M Series

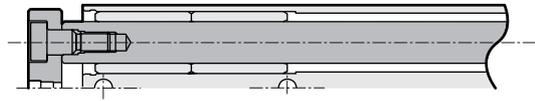
Internal structure and parts list (STG-M)

● $\phi 12, \phi 16$

·50 mm stroke or less



·50 to 100 mm stroke

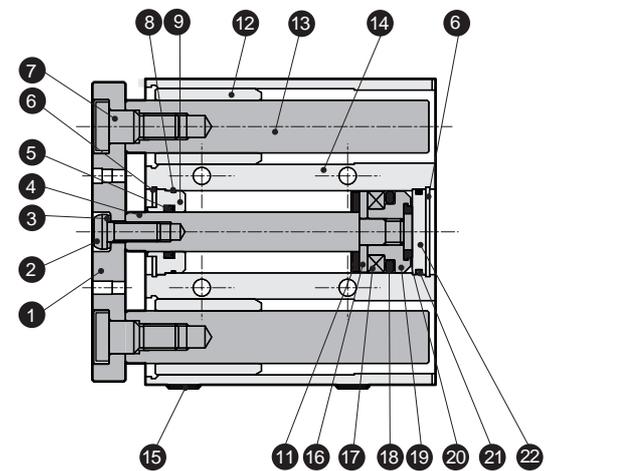


·100 mm stroke over

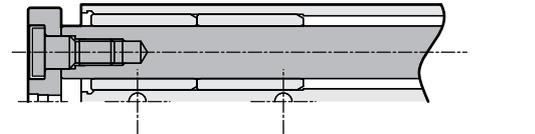


● $\phi 20, \phi 25$

·50 mm stroke or less



·50 to 200 mm stroke



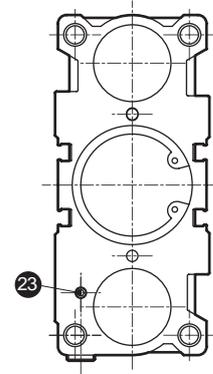
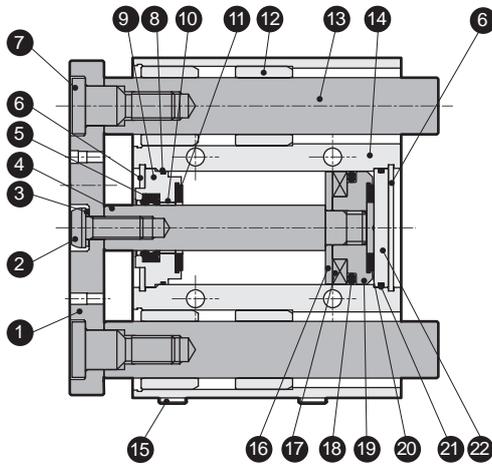
·200 mm stroke over



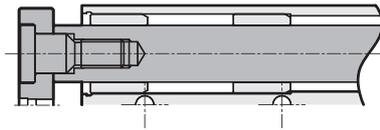
Internal structure and parts list (STG-M)

● $\phi 32$ to $\phi 63$

·50 mm stroke or less



·50 mm stroke over



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	End plate	Steel	Nickeling	12	Metal	Oil impregnated bearing alloy	
2	Hexagon socket bolt ($\phi 12$ to $\phi 16$)	Alloy steel	Zinc chromate	13	Guide rod	Stainless steel ($\phi 12$ to $\phi 16$)	Industrial chrome plated
	Hexagon socket button bolt ($\phi 20$ to $\phi 63$)	Alloy steel	Zinc chromate			Steel ($\phi 20$ to $\phi 63$)	Industrial chrome plated
3	Conical spring washer	Steel	Blackening	14	Tube body	Aluminum alloy	Hard alumite
4	Piston rod	Stainless steel ($\phi 12$ to $\phi 25$)	Industrial chrome plated	15	Plug	Brass or steel	
		Steel ($\phi 32$ to $\phi 63$)	Industrial chrome plated	16	Spacer	Aluminum alloy	
5	Rod packing seal	Nitrile rubber		17	Piston magnet	Plastic magnet	
6	C type snap ring	Steel	Phosphate coating	18	Piston packing seal	Nitrile rubber	
7	Bolt	Alloy steel	Zinc chromate	19	Piston	Aluminum alloy	
8	Metal gasket	Nitrile rubber		20	Cushion rubber	Urethane rubber	
9	Rod bushing	Special aluminum alloy ($\phi 12$ to $\phi 32$)	Alumite	21	O ring	Nitrile rubber	
		Aluminum alloy ($\phi 40$ to $\phi 63$)	Chromate	22	Base plate	Aluminum alloy	Chromate
10	Bush	DU dry bearing ($\phi 40$ to $\phi 63$)		23	Hexagon socket head set screw	Stainless steel	
11	Cushion rubber	Urethane rubber		24	Steel ball	Stainless steel	

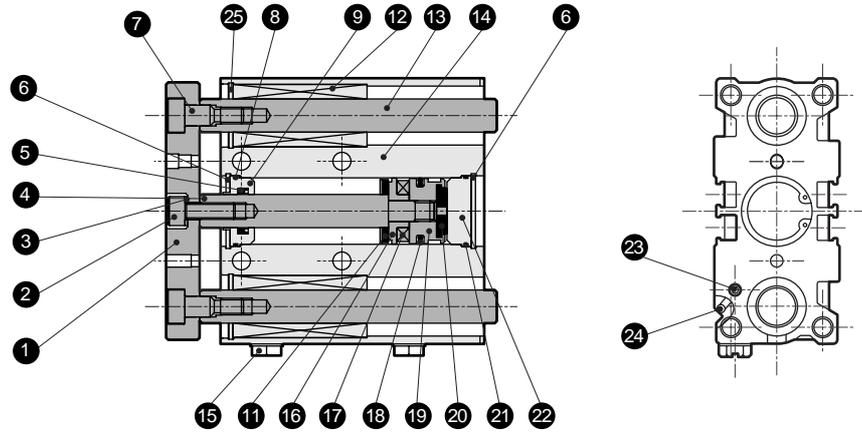
Repair parts list

Bore size (mm)	Kit number	Repair parts number
	STG-M/B	
$\phi 12$	STG-12K	
$\phi 16$	STG-16K	
$\phi 20$	STG-20K	
$\phi 25$	STG-25K	
$\phi 32$	STG-32K	5 8 11 18 20 21
$\phi 40$	STG-40K	
$\phi 50$	STG-50K	
$\phi 63$	STG-63K	

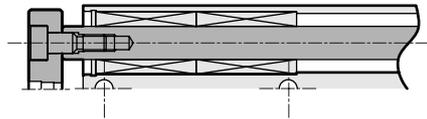
STG-B Series

Internal structure and parts list (STG-B)

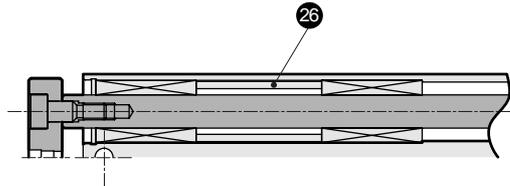
- $\phi 12, \phi 16$
·30 mm stroke or less



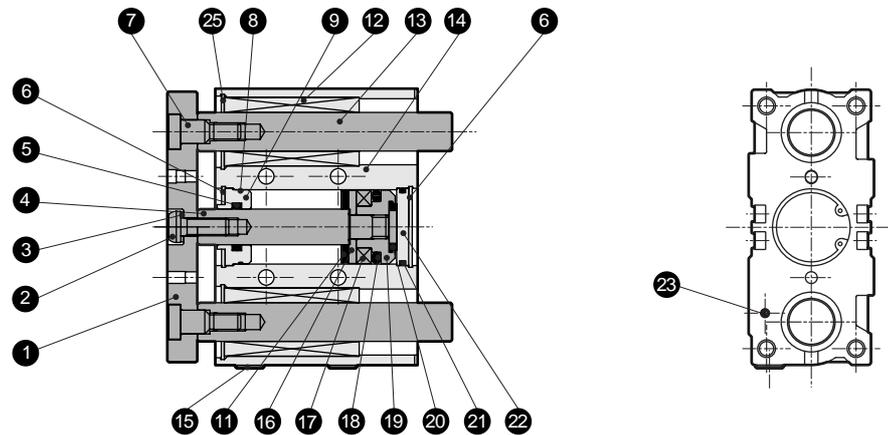
- 30 to 100 mm stroke



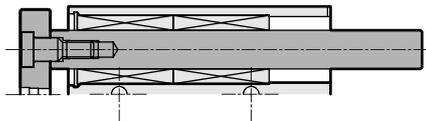
- 100 mm stroke over



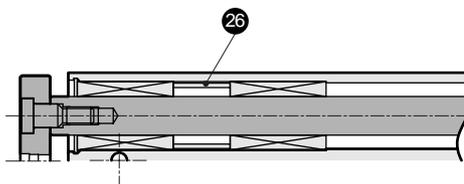
- $\phi 20, \phi 25$
·30 mm stroke or less



- 30 to 100 mm stroke



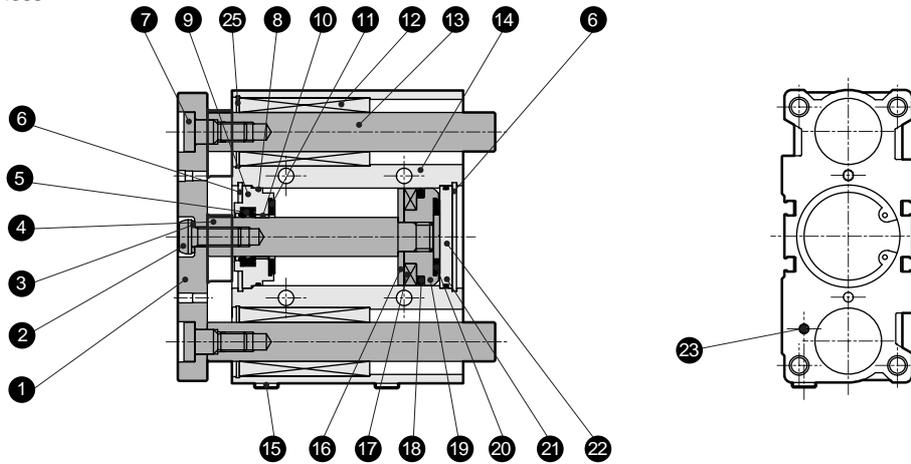
- 100 mm stroke over



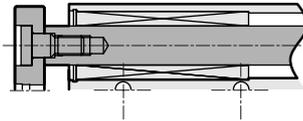
Internal structure and parts list (STG-B)

● $\phi 32$ to $\phi 63$

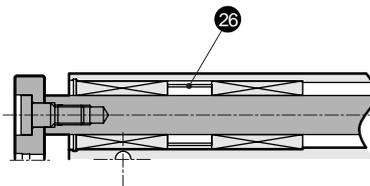
·50 mm stroke or less



·50 to 100 mm stroke



·100 mm stroke over



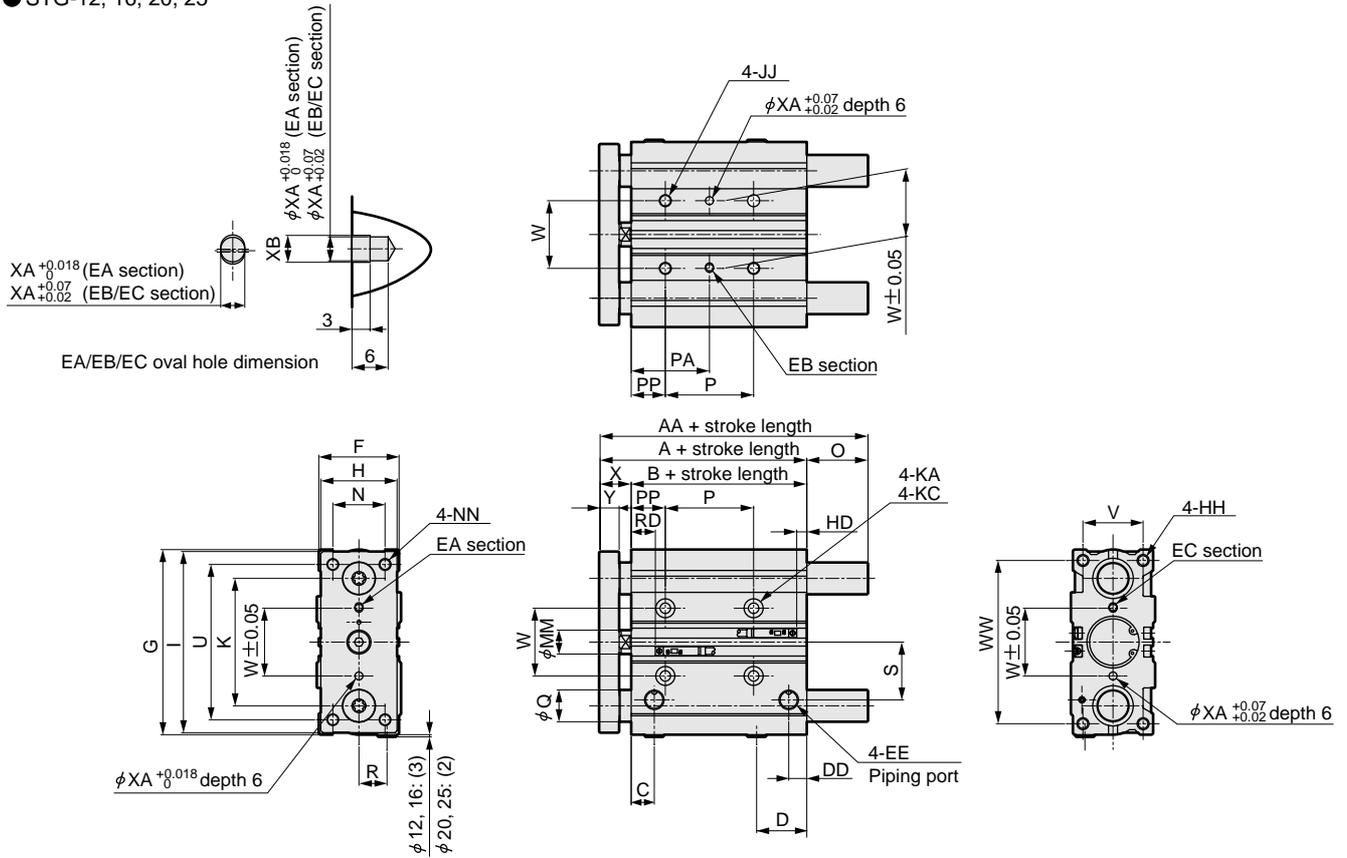
No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	End plate	Steel	Nickeling	13	Guide rod	Alloy steel	Industrial chrome plated
2	Hexagon socket bolt ($\phi 12$ to $\phi 16$)	Alloy steel	Zinc chromate	14	Tube body	Aluminum alloy	Hard alumite
	Hexagon socket button bolt ($\phi 20$ to $\phi 63$)	Alloy steel	Zinc chromate	15	Plug	Brass or steel	
3	Conical spring washer	Steel	Blackening	16	Spacer	Aluminum alloy	
4	Piston rod	Stainless steel ($\phi 12$ to $\phi 25$)	Industrial chrome plated	17	Piston magnet	Plastic magnet	
		Steel ($\phi 32$ to $\phi 63$)	Industrial chrome plated	18	Piston packing seal	Nitrile rubber	
5	Rod packing seal	Nitrile rubber		19	Piston	Aluminum alloy	
6	C type snap ring	Steel	Phosphate coating	20	Cushion rubber	Urethane rubber	
7	Bolt	Alloy steel	Zinc chromate	21	O ring	Nitrile rubber	
8	Metal gasket	Nitrile rubber		22	Base plate	Aluminum alloy	Chromate
9	Rod bushing	Special aluminum alloy ($\phi 12$ to $\phi 32$)	Alumite	23	Hexagon socket head set screw	Stainless steel	
		Aluminum alloy ($\phi 40$ to $\phi 63$)	Chromate	24	Steel ball	Stainless steel	
10	Bush	DU dry bearing ($\phi 40$ to $\phi 63$)		25	C type snap ring	Steel	Phosphate coating
11	Cushion rubber	Urethane rubber		26	Collar	Aluminum alloy	
12	Ball bushing						

Repair parts list

Bore size (mm)	Kit number	Repair parts number
	STG-M/B	
$\phi 12$	STG-12K	● 5 ● 8 ● 11 ● 18 ● 20 ● 21
$\phi 16$	STG-16K	
$\phi 20$	STG-20K	
$\phi 25$	STG-25K	
$\phi 32$	STG-32K	
$\phi 40$	STG-40K	
$\phi 50$	STG-50K	
$\phi 63$	STG-63K	

Dimensions

● STG-12, 16, 20, 25



● STG-M/B common

Symbol	Standard stroke length (mm)											A	B	C	D	DD	EE	F	G	H	HH	I	JJ
φ 12	10,20,30,40,50,75,100,125											42	29	12	16	7	M5	26	58	22	M4 depth 10	56	M5 depth 10
φ 16	150,175,200,250											46	33	12	18	7.5	M5	30	64	25	M5 depth 12	62	M5 depth 10
φ 20	20,30,40,50,75,100,125,150											53	37	10.5	24.5	8.5	1/8	36	83	30	M5 depth 13	81	M6 depth 12
φ 25	175,200,250,300,350,400											53.5	37.5	11.5	25	9	1/8	42	93	38	M6 depth 15	91	M6 depth 12

Symbol	K					N					P				
Bore size (mm)	K	KA	MM	N	NN	KC					30 or less	30 to 100	100 to 200	200 to 300	300 over
φ 12	41	4.3 penetrating	6	14	M4 penetrating	8 spot face depth 4.5					20	40	110	200	-
φ 16	46	4.3 penetrating	8	16	M5 penetrating	8 spot face depth 4.5					24	44	110	200	-
φ 20	54	5.2 penetrating	10	18	M5 penetrating	9.5 spot face depth 5.5					24	44	120	200	300
φ 25	64	5.2 penetrating	12	26	M6 penetrating	9.5 spot face depth 5.5					24	44	120	200	300

Symbol	PA					PP	R	S	U	V	W	WW	X	Y	RD	HD	XA	XB
Bore size (mm)	30 or less	30 to 100	100 to 200	200 to 300	300 over													
φ 12	15	25	60	105	-	5	8	17	48	18	23	50	13	8	5	5	3	3.5
φ 16	17	27	60	105	-	5	10	18	54	22	24	56	13	8	4	10	3	3.5
φ 20	29	39	77	117	167	17	11	25	70	24	28	72	16	10	9.5	8.5	3	3.5
φ 25	29	39	77	117	167	17	14	29	78	30	34	82	16	10	10	8.5	4	4.5

● STG-M

Symbol	AA			Q	O		
Bore size (mm)	50 or less	50 to 100	100 over		50 or less	50 to 100	100 over
φ 12	42	55	85	8	0	13	43
φ 16	46	63	95	10	0	17	49

Symbol	AA			Q	O		
Bore size (mm)	50 or less	50 to 200	200 over		50 or less	50 to 200	200 over
φ 20	53	78	122	12	0	25	69
φ 25	53.5	84	122	16	0	30.5	68.5

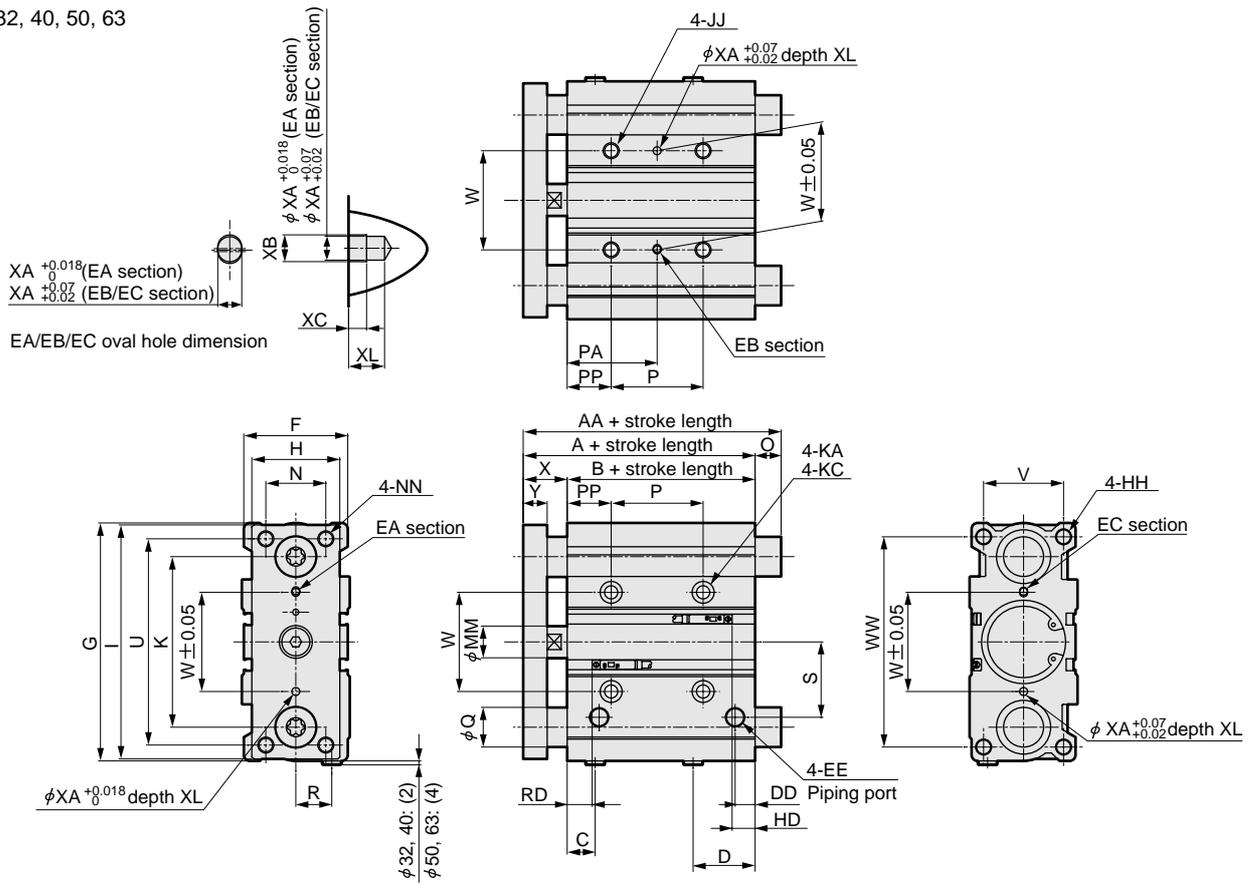
● STG-B

Symbol	AA			Q	O		
Bore size (mm)	30 or less	30 to 100	100 over		30 or less	30 to 100	100 over
φ 12	43	55	85	6	1	13	43
φ 16	49	65	95	8	3	19	49

Symbol	AA				Q	O			
Bore size (mm)	30 or less	30 to 100	100 to 200	200 over		30 or less	30 to 100	100 to 200	200 over
φ 20	59	78	100	122	10	6	25	47	69
φ 25	65	84	103	122	13	11.5	30.5	49.5	68.5

Dimensions

● STG-32, 40, 50, 63



● STG-M/B common

Symbol	Standard stroke length (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
$\phi 32$	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	59.5	37.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 depth 16	78	6.3 penetrating
$\phi 40$		66	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 depth 16	86	6.3 penetrating
$\phi 50$		72	44	14	35	11	Rc1/4	64	148	60	M10 depth 22	146	M10 depth 20	110	8.6 penetrating
$\phi 63$		77	49	16.5	35	15	Rc1/4	78	162	70	M10 depth 22	158	M10 depth 20	124	8.6 penetrating

Symbol	P					PA					
Bore size (mm)	KC	MM	N	NN	25 or less	25 to 100	100 to 200	200 to 300	300 over	25 or less	25 to 100
$\phi 32$	11 spot face depth 7.5	16	30	M8 penetrating	24	48	124	200	300	33	45
$\phi 40$	11 spot face depth 7.5	16	30	M8 penetrating	24	48	124	200	300	34	46
$\phi 50$	14 spot face depth 9	20	40	M10 penetrating	24	48	124	200	300	36	48
$\phi 63$	14 spot face depth 9	20	50	M10 penetrating	28	52	128	200	300	38	50

Symbol	PA				P													
Bore size (mm)	100 to 200	200 to 300	300 over	PP	R	S	U	V	W	WW	X	Y	RD	HD	XA	XB	XC	XL
$\phi 32$	83	121	171	21	15	34	96	34	42	98	22	12	10	8.5	4	4.5	3	6
$\phi 40$	84	122	172	22	18	38	104	40	50	106	22	12	13	12	4	4.5	3	6
$\phi 50$	86	124	174	24	21.5	47	130	46	66	130	28	16	13.5	11.5	5	6	4	8
$\phi 63$	88	124	174	24	28	55	130	58	80	142	28	16	14	16	5	6	4	8

● STG-M

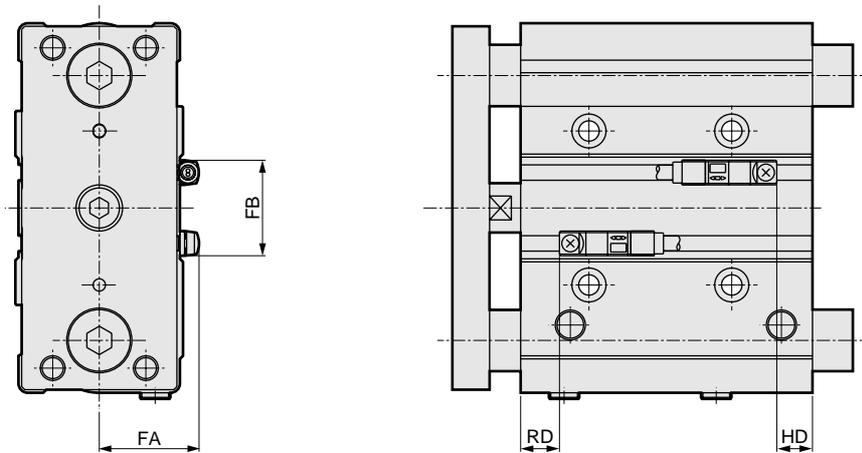
Symbol	AA				Q	O		
Bore size (mm)	50 or less	50 to 200	200 over	50 or less		50 to 200	200 over	
$\phi 32$	79	100	140	20	19.5	40.5	80.5	
$\phi 40$	79	100	140	20	13	34	74	
$\phi 50$	91	116	161	25	19	44	89	
$\phi 63$	91	116	161	25	14	39	84	

● STG-B

Symbol	AA				Q	O			
Bore size (mm)	50 or less	50 to 100	100 to 200	200 over		50 or less	50 to 100	100 to 200	200 over
$\phi 32$	79	98	118	140	16	19.5	38.5	58.5	80.5
$\phi 40$	79	98	118	140	16	13	32	52	74
$\phi 50$	91	114	134	161	20	19	42	62	89
$\phi 63$	91	114	134	161	20	14	37	57	84

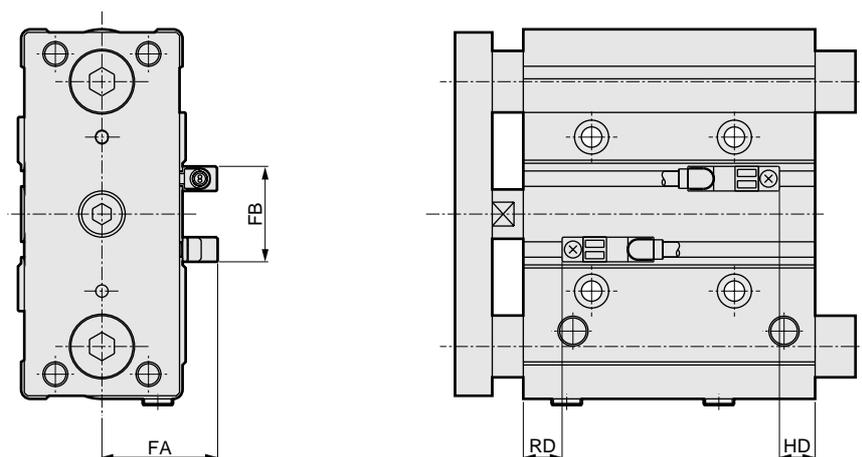
STG series common (Two color indicator, preventive maintenance output, switch) dimensions

● STG-**-**-T₃YH/V



Symbol Bore size (mm)	FA	FB	RD	HD
φ12	19	16	4	4
φ16	21	16	3	9
φ20	24	17	8.5	7.5
φ25	27	24	9	7.5
φ32	30	24	9	8
φ40	33	31	12	11
φ50	38	32	12.5	10.5
φ63	45	32	13	15

● STG-**-**-T₃YFH/V, T₃YMH/V



Symbol Bore size (mm)	FA	FB	RD	HD
φ12	24	16	4	4
φ16	26	16	3	9
φ20	29	17	8.5	7.5
φ25	32	24	9	7.5
φ32	35	24	9	8
φ40	38	31	12	11
φ50	43	32	12.5	10.5
φ63	50	32	13	15

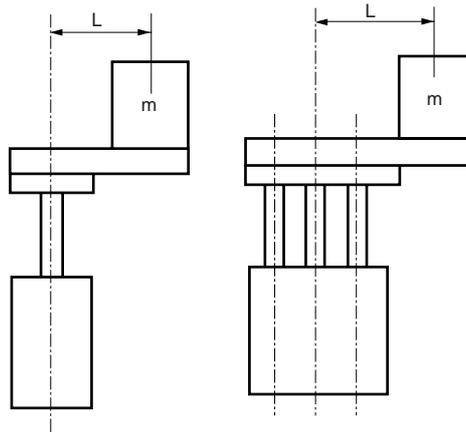
MEMO

Selection guide

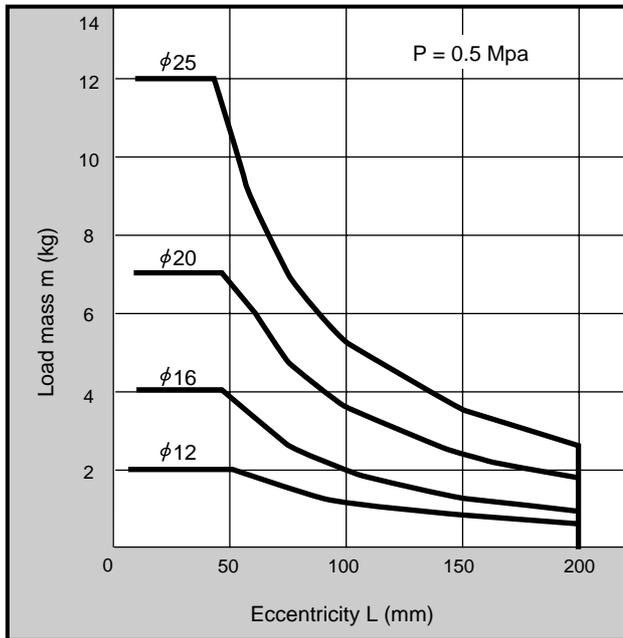
Vertical installation

- Select the tube bore size so that total load for theoretical thrust is less than below.

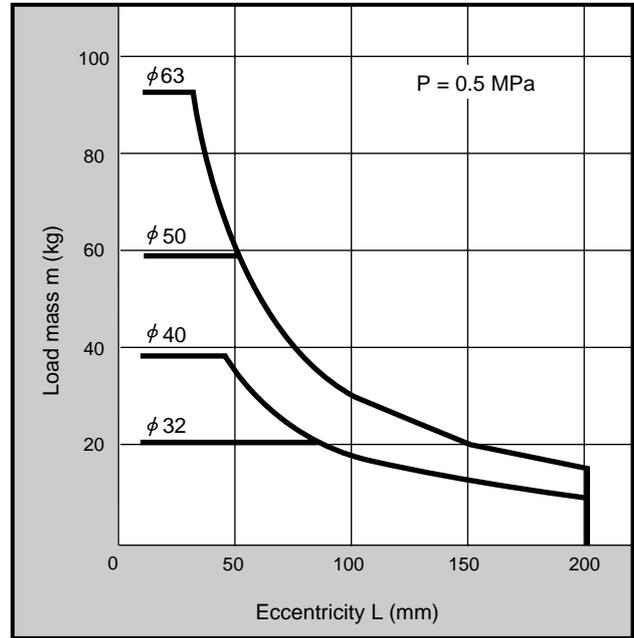
Bore size	Load factor for theoretical thrust
12, 16	40% or less
20, 25	50% or less
32 to 63	60% or less



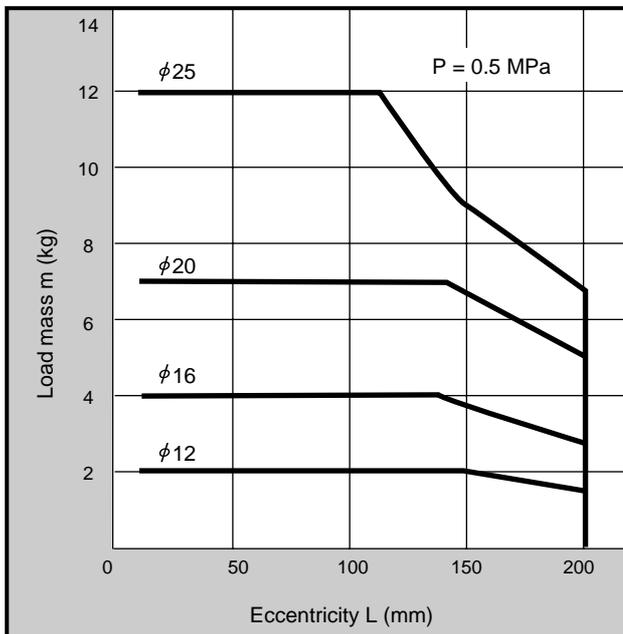
- STG-M-12 to 25
·50 mm stroke or less



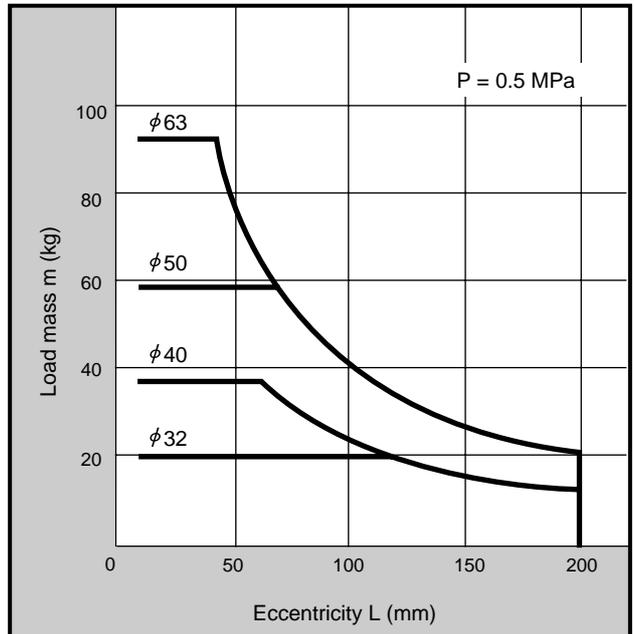
- STG-M-32 to 63
·50 mm stroke or less



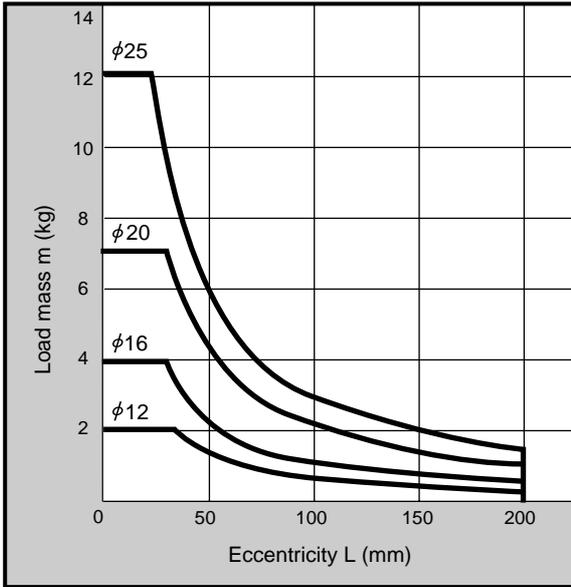
- STG-M-12 to 25
·50 mm stroke over



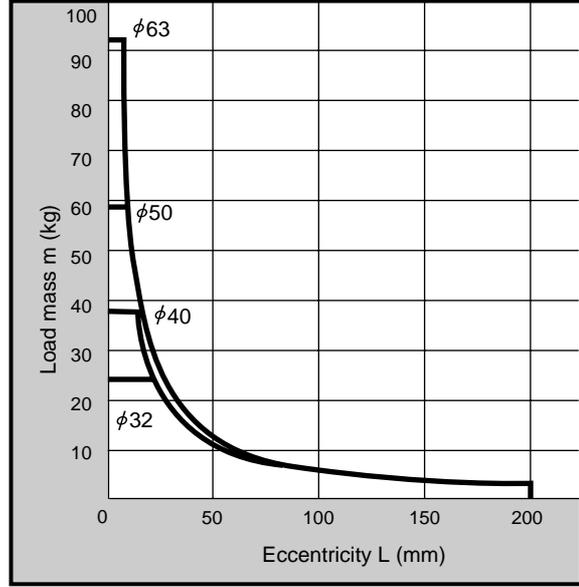
- STG-M-32 to 63
·50 mm stroke over



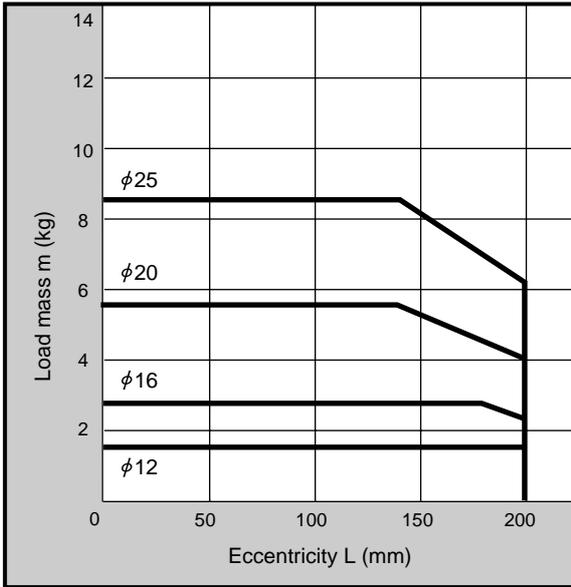
● STG-B-12 to 25
·30 mm stroke or less



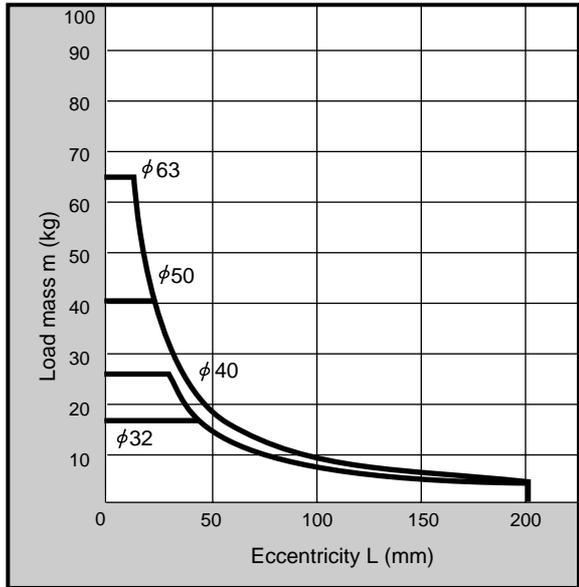
● STG-B-32 to 63
·50 mm stroke or less



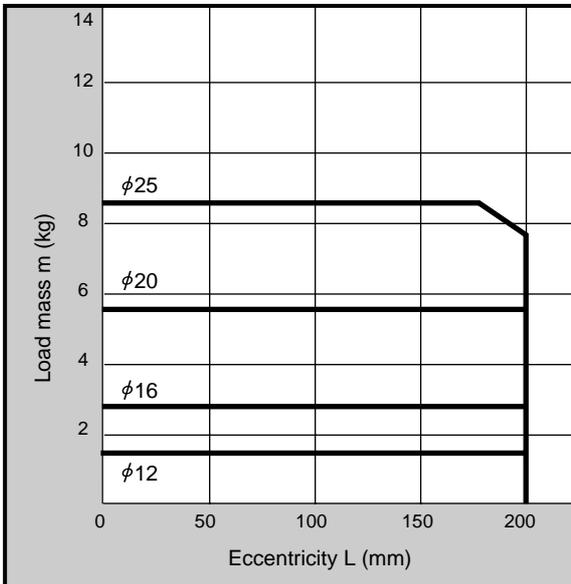
● STG-B-12 to 25
·30 to 100 mm stroke



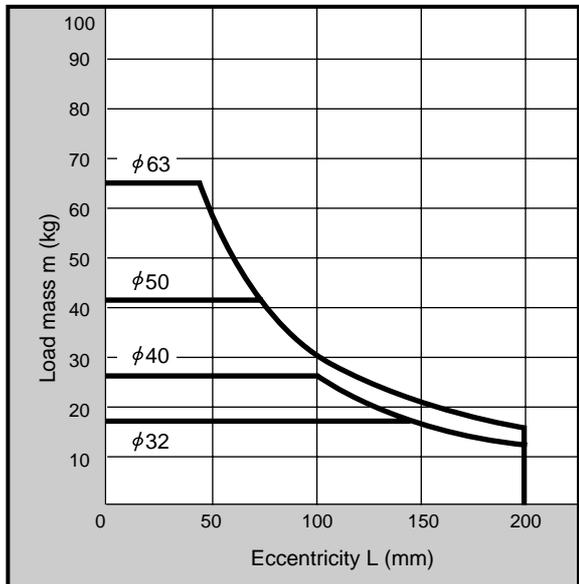
● STG-B-32 to 63
·50 to 100 mm stroke



● STG-B-12 to 25
·100 mm stroke over

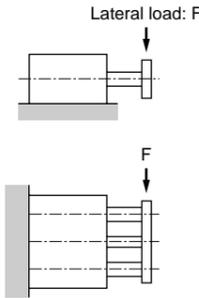


● STG-B-32 to 63
·100 mm stroke over



Selection guide

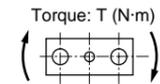
Allowable lateral load



Unit: N

Bore size (mm)	Model No.	Bearing Type	Stroke length (mm)							Stroke length (mm)									
			10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
φ12	STG-M	Metal bush bearing	29	24		20		18	16	20	17	15	13	12	10	9			
	STG-B	Ball bearing	38	27		22		34	29	21	16	12	11	9	8	6			
φ16	STG-M	Metal bush bearing	51	42		36		32	28	36	31	27	24	21	19	16			
	STG-B	Ball bearing	49	35		29		50	43	31	25	20	17	15	13	10			
φ20	STG-M	Metal bush bearing		67		58		51	46	60	51	45	40	36	33	28	24	21	19
	STG-B	Ball bearing		52		42		76	65	49	38	60	51	44	39	32	27	23	20
φ25	STG-M	Metal bush bearing		125		110		98	88	112	97	85	76	69	63	53	46	41	37
	STG-B	Ball bearing		81		66		108	94	70	56	81	69	60	53	42	36	30	27
φ32	STG-M	Metal bush bearing			223				180	179	156	138	124	112	103	88	77	68	61
	STG-B	Ball bearing			171				120	190	159	123	106	93	83	66	56	48	42
φ40	STG-M	Metal bush bearing			223				180	179	156	138	124	112	103	88	77	68	61
	STG-B	Ball bearing			171				120	190	159	123	106	93	83	66	56	48	42
φ50	STG-M	Metal bush bearing			348				286	292	257	230	208	190	174	150	132	118	106
	STG-B	Ball bearing			181				129	215	181	139	121	106	95	78	67	58	50
φ63	STG-M	Metal bush bearing			348				286	292	257	230	208	190	174	150	132	118	106
	STG-B	Ball bearing			181				129	215	181	139	121	106	95	78	67	58	50

Allowable torque

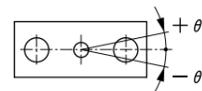


Unit: N-m

Bore size (mm)	Model No.	Bearing Type	Stroke length (mm)							Stroke length (mm)									
			10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
φ12	STG-M	Metal bush bearing	0.30	0.25		0.21		0.18	0.16	0.21	0.18	0.15	0.13	0.12	0.11	0.09			
	STG-B	Ball bearing	0.39	0.28		0.23		0.35	0.30	0.21	0.17	0.13	0.11	0.09	0.08	0.07			
φ16	STG-M	Metal bush bearing	0.59	0.49		0.42		0.36	0.32	0.42	0.35	0.31	0.27	0.24	0.22	0.18			
	STG-B	Ball bearing	0.56	0.41		0.33		0.58	0.50	0.36	0.28	0.23	0.19	0.17	0.15	0.12			
φ20	STG-M	Metal bush bearing		0.90		0.78		0.69	0.62	0.80	0.69	0.61	0.54	0.49	0.44	0.37	0.32	0.29	0.26
	STG-B	Ball bearing		0.70		0.57		1.02	0.88	0.66	0.52	0.80	0.69	0.60	0.53	0.43	0.36	0.31	0.27
φ25	STG-M	Metal bush bearing		2.00		1.75		1.56	1.41	1.80	1.55	1.37	1.22	1.10	1.00	0.85	0.74	0.66	0.59
	STG-B	Ball bearing		1.29		1.06		1.74	1.50	1.13	0.90	1.29	1.11	0.96	0.85	0.68	0.57	0.49	0.42
φ32	STG-M	Metal bush bearing			4.35				3.50	3.48	3.04	2.69	2.42	2.19	2.01	1.72	1.50	1.33	1.20
	STG-B	Ball bearing			3.33				2.34	3.70	3.10	2.40	2.07	1.82	1.61	1.29	1.09	0.94	0.82
φ40	STG-M	Metal bush bearing			4.80				3.86	3.84	3.35	2.97	2.66	2.42	2.21	1.89	1.65	1.47	1.32
	STG-B	Ball bearing			3.68				2.58	4.08	3.42	2.65	2.28	2.00	1.78	1.43	1.20	1.03	0.90
φ50	STG-M	Metal bush bearing			9.56				7.86	8.02	7.07	6.32	5.71	5.21	4.79	4.13	3.63	3.23	2.92
	STG-B	Ball bearing			4.99				3.56	5.90	4.99	3.83	3.32	2.93	2.61	2.16	1.83	1.58	1.39
φ63	STG-M	Metal bush bearing			10.78				8.86	9.04	7.97	7.12	6.44	5.88	5.41	4.66	4.09	3.65	3.29
	STG-B	Ball bearing			5.63				4.01	6.66	5.62	4.32	3.75	3.30	2.94	2.43	2.06	1.78	1.57

Revolvable angle tolerance

(Reference value)



Descriptions Bore size (mm)	Revolvable angle tolerance θ (degree).	
	Metal bush bearing	Ball bearing
φ12	±0.08	±0.06
φ16		
φ20	±0.07	±0.05
φ25		
φ32	±0.06	±0.04
φ40		
φ50	±0.05	±0.03
φ63		

(Initial value for PULL) Note: Excluding guide rod's deflection

Selection guide

Movable part mass table

STG-M movable part mass table

Unit: kg

Bore size (mm)	Stroke length (mm)															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
φ 12	0.12	0.13		0.14	0.15	0.16	0.20	0.23	0.27	0.30	0.32	0.35	0.40			
φ 16	0.16	0.18		0.19	0.21	0.22	0.29	0.33	0.41	0.45	0.49	0.53	0.62			
φ 20		0.33		0.35	0.38	0.40	0.52	0.58	0.64	0.70	0.76	0.82	1.00	1.13	1.24	1.35
φ 25		0.52		0.56	0.60	0.64	0.84	0.95	1.05	1.15	1.25	1.34	1.66	1.87	2.06	2.26
φ 32			1.07			1.23	1.42	1.58	1.74	1.90	2.07	2.23	2.73	3.06	3.40	3.71
φ 40			1.14			1.30	1.49	1.65	1.81	1.98	2.14	2.30	2.82	3.13	3.47	3.78
φ 50			2.15			2.40	2.75	3.00	3.26	3.51	3.76	4.02	4.85	5.37	5.88	6.38
φ 63			2.50			2.75	3.09	3.35	3.60	3.86	4.11	4.36	5.19	5.70	6.21	6.72

STG-B movable part mass table

Unit: kg

Bore size (mm)	Stroke length (mm)															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
φ 12	0.11	0.11		0.12	0.13	0.14	0.16	0.17	0.20	0.22	0.23	0.25	0.29			
φ 16	0.15	0.16		0.17	0.20	0.21	0.24	0.27	0.32	0.35	0.38	0.41	0.47			
φ 20		0.31		0.33	0.37	0.39	0.44	0.48	0.56	0.60	0.65	0.70	0.80	0.90	1.00	1.09
φ 25		0.49		0.52	0.58	0.61	0.69	0.76	0.88	0.95	1.02	1.10	1.28	1.44	1.58	1.72
φ 32			0.82			0.94	1.11	1.23	1.40	1.53	1.65	1.77	2.07	2.30	2.54	2.78
φ 40			0.89			1.01	1.18	1.30	1.48	1.60	1.72	1.83	2.14	2.38	2.61	2.84
φ 50			1.77			1.95	2.24	2.45	2.71	1.89	3.08	3.27	3.76	4.13	4.50	4.87
φ 63			2.11			2.30	2.59	2.77	3.05	3.25	3.43	3.61	4.11	4.48	4.84	5.21

Calculating allowable energy absorption

Calculate kinetic energy of the load actually used, and confirm whether it is absorbed with the cylinder's allowable energy absorption.

- Values in the graph are used for the cylinder's allowable energy absorption (E).
- Calculation formula for load's kinetic energy

$$E = \frac{1}{2} \times (W1 + W2) \times V^2 \times \frac{1}{10}$$

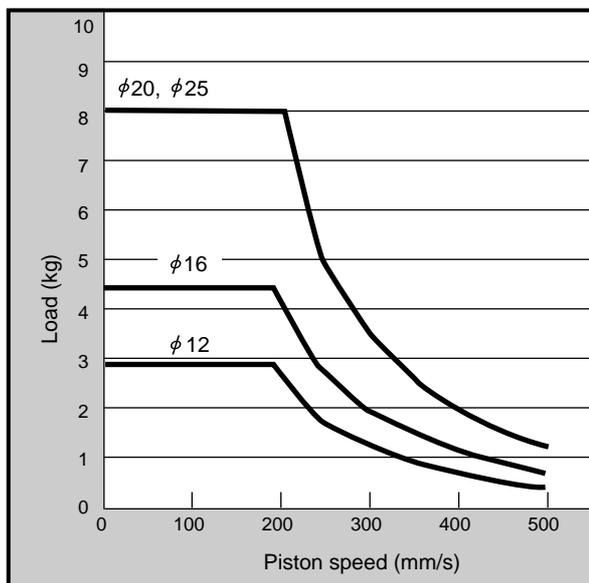
W1: Load (kg) W2: Cylinder movable part mass (kg)

V: Cylinder speed (mm/s)

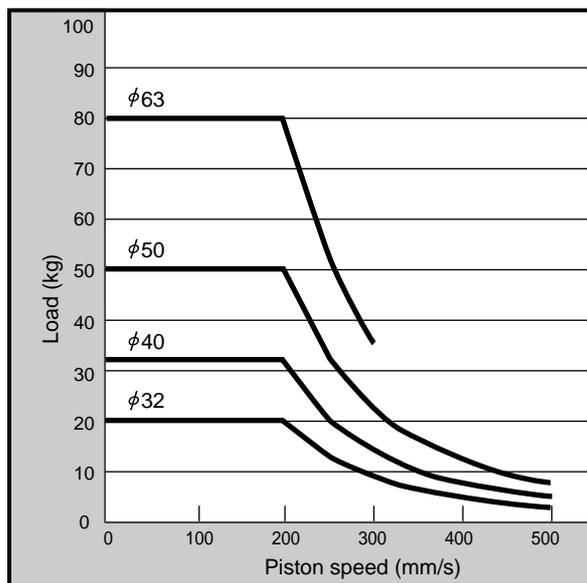
Allowable energy absorption

The cylinder can be used in the lower left range of the curve. An external damper must be installed for use in the upper right range.

● STG-12 to 25

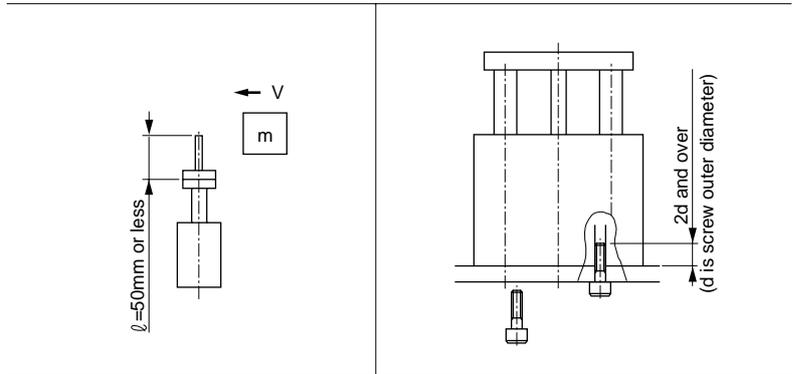
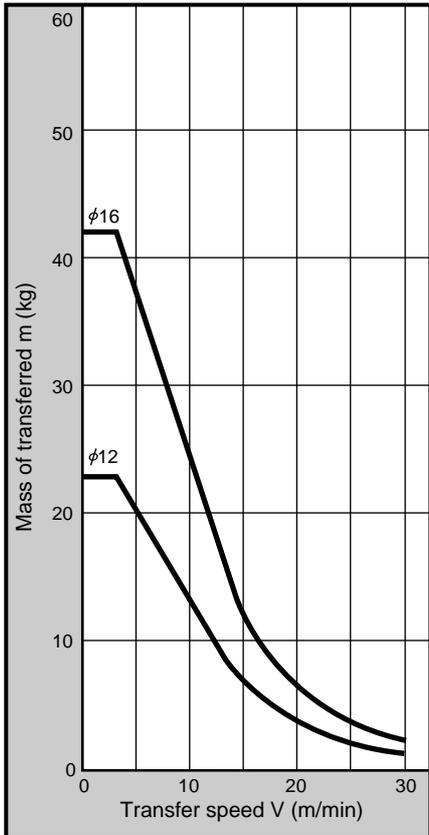


● STG-32 to 63



Working range when used as stopper

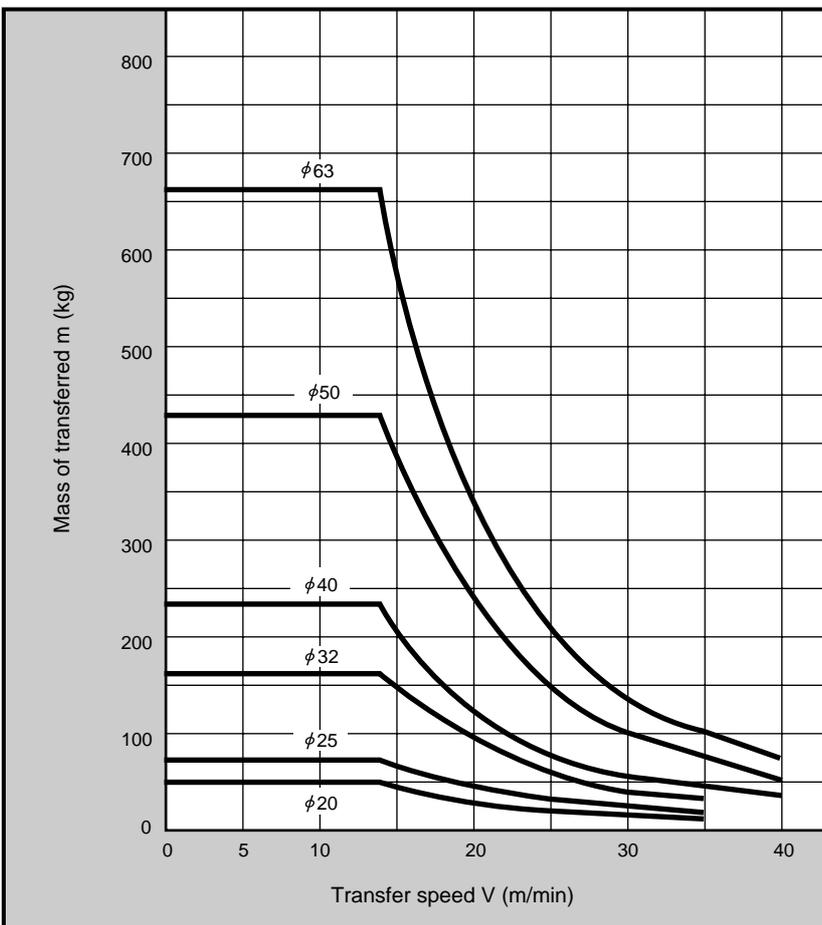
Impact load
STG-M-12, 16 (metal bush bearing)



⚠ Precautions

- Note 1: When used as a stopper, select a model with 50 mm stroke or less (STG-M) (30 mm stroke or less for $\phi 12$ to $\phi 16$.)
- Note 2: The stopper must be $\ell = 50$ mm or shorter.
- Note 3: When fixing the cylinder, the bolt must be screwed in by $2d$ or deeper, and measures to prevent loosening, such as adhesive or spring washers, must be considered. (The screw depth for the $\phi 80$ is $1 d$. d indicates the outer screw diameter.)
- Note 4: The STG-B (ball bearing) cannot be used as a stopper.

Impact load
STG-M-20 to 63 (metal bush bearing)



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