STS / STL

Guided Cylinder

ø8, ø12, ø16, ø20, ø25, ø32,
ø40, ø50, ø63, ø80, ø100

CONTENTS

STS/STL Series

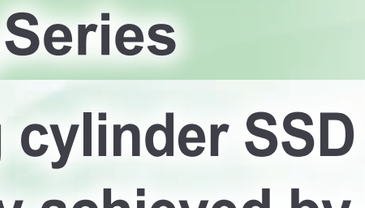
Rectangular, space saving cylinder SSD
High precision/high rigidity achieved by integrating guides on both sides

STL Series

STS Series

Application Example

Suitable for use as a lifter, pusher, etc.



Supports long strokes up to 400 mm

The long stroke STL is compatible with maximum stroke of 200mm at ø8 to ø16 and maximum stroke of 400mm at ø20 to ø80.

Dedicated STS for short stroke

The STS has no protrusion from the body of the guide rod when the end plate is pulled. When mounting using the bottom of the cylinder, it is no longer necessary to drill a hole to release the guide rod.

Boosts integrated equipment accuracy

Two guide rods with metal bush bearing (M) or ball bearing (B). High non-rotating accuracy and deflection, contributing to increased accuracy of the equipment into which it is integrated.

Sleek design

Inner groove on body. Cylinder switch, cable tie, terminal block, etc., can be fixed. The neat square design helps save space.

Suitable for use with high load

Highly rigid and resistant to lateral load, etc., with two guide rods mounted.

End plate material can be selected

Aluminum (standard) or steel (option) end plate can be selected.

Variation

Model variations	Bore size (mm) ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Single rod STS/L-M/B — Standard Type	●	●	●	●	●	●	●	●	●	●	●
Stroke adjustable STS/L-M/BP — Adjustable push stroke	●	●	●	●	●	●	●	●	●	●	
Heat resistance STS/L-M/BT — Compatible with ambient temperature up to 120°C (ø 20 and ø 25 B are not available)		●	●	●	●	●	●	●	●	●	
Packing material fluoro rubber STS/L-M/BT2 — Rod packing, piston packing, etc., changed to fluoro rubber		●	●	●	●	●	●	●	●	●	
Rubber-air cushioned STS/L-M/B-□C — The rubber-air cushion with special structure absorbs impact						●	●	●	●	●	
With air cushion STS/L-M/BC — High impact absorption performance with air cushion					●	●	●	●	●	●	
Position locking STS/L-M/BQ — Lock mechanism at the stroke end prevents falling				●	●	●	●	●	●	●	
Fine speed STS/L-M/BF — Fine speed operation from 1 mm/sec is possible	●	●	●	●	●	●	●	●	●	●	
Low speed STS/L-M/BO — Low speed operation of 10 mm/sec is possible	●	●	●	●	●	●	●	●	●	●	
Rubber scraper STS/L-M/BG Coil scraper STS/L-M/BG1 — Scraper on piston and guide rods prevents the entry of foreign matter (G: earth, sand, dust, G1: spot welding)		●	●	●	●	●	●	●	●	●	
Coolant proof STS/L-M/BG2/G3 — Equipped with coolant proof scraper G2 (nitrile rubber) G3 (fluoro rubber)		●	●	●	●	●	●	●	●	●	
Anti-spatter adherence STS/L-M/BG4 — Coil scraper + anti-spatter adherence agent used to suppress spatter adherence							●	●	●	●	
Valve equipped STS/L-M/BV — Valve equipped type that contributes to reduced piping work-hours		●	●	●	●	●	●	●	●	●	

●: Standard ◎: Option ○: Custom Products ▒: Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore Size (mm)	Standard stroke (mm) STS 10	20	25	30	40	50	75	100	Standard stroke (mm) STL 50	75	100	Stroke (mm) STL 125	150	175	200	225	250	275	300	325	350	375	400	Min. Stroke (mm)	Intermediate stroke (mm) (per mm)	Maximum Stroke (mm)	Bearing type: Plain bearing M	Rolling bearing B	Option: End plate material Steel F	Corrosion proof end plate material Aluminum M	Corrosion proof end plate material SUS M1	Switch	Page
Double Acting / Single Rod Type	ST$^{S}_{L}$-$^{M}_{B}$	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	◎	◎	◎	482
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	◎	◎		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	◎	◎		
		ø100	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	◎	◎		
Double-acting / Stroke adjustment type (Push)	ST$^{S}_{L}$-$^{M}_{B}$P	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	10	–	200	●	●	◎	▒	▒	◎	504
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	▒	▒		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	▒	▒		
Double Acting / Heat Resistant Type	ST$^{S}_{L}$-$^{M}_{B}$T	ø12, ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○ *1	○ *1	▒	520
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	*3	◎	○ *1	○ *1		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○ *1	○ *1		
Double acting / packing material fluoro rubber	ST$^{S}_{L}$-$^{M}_{B}$T2	ø12, ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○	○	◎	528
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double Acting / With Rubber Air Cushion	ST$^{S}_{L}$-$^{M}_{B}$-□C	ø32, ø40, ø50	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	536
		ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10		400	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10		400	●	●	◎	○	○		
Double Acting / With Air Cushion	ST$^{S}_{L}$-$^{M}_{B}$C	ø25/ø32/ø40/ø50/ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15 *2	–	400	●	●	◎	○	○	◎	544
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			375	●	●	◎	○	○		
Double Acting / Drop Prevention Type	ST$^{S}_{L}$-$^{M}_{B}$Q	ø20, ø25, ø32	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	556
		ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			375	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			350	●	●	◎	○	○		
Double Acting / Ultra-slow Speed Type	ST$^{S}_{L}$-$^{M}_{B}$F	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○	○	◎	574
		ø20/ø25/ø32/ø50/ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	○	○		
Double Acting / Low Speed Type	ST$^{S}_{L}$-$^{M}_{B}$O	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	5	5	150	●	●	◎	○	○	◎	578
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	▒	▒	▒	▒	▒			300	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	▒	▒	▒	▒	▒			300	●	●	◎	○	○		
Double Acting, Heavy Duty Scraper Type / Coil Scraper Type	ST$^{S}_{L}$-$^{M}_{B}$G / ST$^{S}_{L}$-$^{M}_{B}$G1	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	582
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double Acting / Coolant Proof Type	ST$^{S}_{L}$-$^{M}_{B}$G2 / ST$^{S}_{L}$-$^{M}_{B}$G3	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	▒	▒	○	◎	602
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	▒	▒	○		
Double Acting / Spatter Adhesion Prevention Type	ST$^{S}_{L}$-$^{M}_{B}$G4	ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	618
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double acting / valve equipped	ST$^{S}_{L}$-$^{M}_{B}$V	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	5	5	100	●	●	◎	▒	▒	◎	628

*1: Ball bearing (B) only.
*2: For min. stroke and below, select the basic type since there is no cushion effect.
*3: Ball bearing (B) is not available for ø20 / ø25.

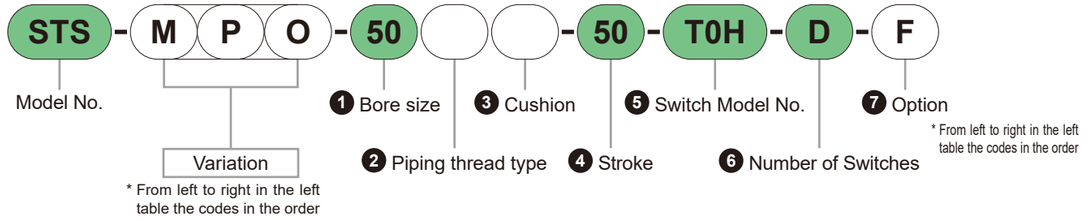
Combinability table of variations and option items (Plain bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Please consult)
× Mark: Not manufacturable

Category		Category	Variation																		Piping Screw		Cushion	Option		
			Double acting basic (metal bush)	Stroke Adjustable Type (Push)	Drop prevention type	With solenoid valve	With Air Cushion	Heat resistant type (120°C)	Packing Material: Fluoro Rubber	Low Speed Type	Heavy-Duty Scraper Type	Coil Scraper Type	Coolant Proof Scraper Type (NBR)	Coolant Proof Scraper Type (FKM)	Sputter adhesion prevention type	Low speed type	2-color display/off-delay/T1/T8 With switch *7	NPT ø32 or more	G ø32 or more	With Rubber Air Cushion	Corrosion proof (aluminum end plate)	Corrosion proof (SUS end plate)	Plate material specification Steel
		Code	M	P	Q	V	C	T	T2	O	G	G1	G2	G3	G4	F	L1	N	G	C	M	M1	F
Variation	Double acting basic (metal bush)	M		●	●	●	●	●	●	●	●	●	●	●	●	●	◎	○	○	●	◎	◎	◎
	Stroke Adjustable Type (Push)	P			*2	○	○	×	○	○	*6	*6	×	×	*6	△	◎	○	○	○	△	△	◎
	Drop prevention type	Q				×	×	×	×	×	△	△	△	△	△	×	◎	○	○	×	○	○	◎
	With solenoid valve	V					×	×	×	○	×	×	×	×	×	×	◎	○	○	○	△	△	◎
	With Air Cushion	C						*1	*1	○	○	○	○	○	○	×	◎	○	○	×	○	○	◎
	Heat resistance (120°)	T							×	×	×	○	×	×	×	×	×	○	○	×	×	×	◎
	Packing Material: Fluoro Rubber	T2								×	×	○	×	*3	×	×	◎	○	○	×	○	○	◎
	Low Speed Type	O									×	×	×	×	×	×	◎	○	○	○	○	○	◎
	Heavy-Duty Scraper Type	G										×	×	×	×	×	◎	○	○	○	○	○	◎
	Coil Scraper Type	G1											×	×	*4	×	◎	○	○	○	○	○	◎
	Coolant Proof Scraper Type (NBR)	G2												×	×	×	*5	○	○	○	*3	○	×
	Coolant Proof Scraper Type (FKM)	G3													×	×	*5	○	○	×	*3	○	×
	Sputter adhesion prevention type	G4														×	◎	○	○	○	○	○	◎
	Low speed type	F															◎	○	○	○	○	○	◎
	2-color display/off-delay with T1/T8 switch *7	L1																○	○	◎	◎	◎	◎
Piping thread	NPT ø32 or higher	N																	×	○	○	○	○
	G ø32 or more	G																		○	○	○	○
Cushion	With Rubber Air Cushion	C																			○	○	○
Option	Corrosion proof (aluminum end plate)	M																				×	×
	Corrosion proof (SUS end plate)	M1																					×
	Plate material specification Steel	F																					
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	×	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

*1: Only ø50 to 100 is available.
*2: Available forhead side position locking only.
*3: For the combination ofG3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)
Similarly, G2 and G3 include the specifications of M (corrosion proof). (The "M" code is not necessary.)
*4: G4 includes coil scraper.
*5: L1 specifications. (L1 code is not required.)
*6: Shock absorber is provided as standard.
*7: Excluding T2W and T3W.

[Model Number Notation Example]



Note) For the 2-color display, T1H/V, T8H/V and off-delay of ø40 and over, insert "L1" with "-" between the variation model No. and bore size. (Excluding T2W, T3W)
(Example) STS-MPO-**L1**-50-50-T2JH-D-F

ø80,ø100 cannot be mounted when the T1H/V, T8H/V, off-delay, AC magnetic field proof switch is retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between Items ❶ and ❷.
(Example) STS-B-**L1**-80-50-F

Model No. : Guided cylinder, short stroke
● Variation : Metal bush bearing, stroke adjustable, low speed
❶ Bore size : ø50 mm
❷ Port thread : Rc Thread
❸ Cushion : With Rubber Cushion
❹ Stroke : 50 mm
❺ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❻ Switch quantity : With 2 pcs.
❼ 7 Option : End plate material: Steel

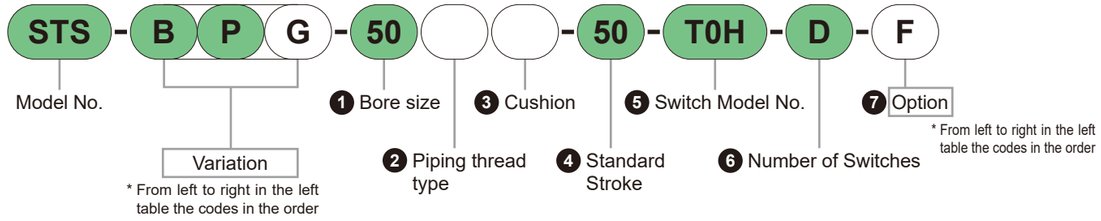
Combinability table of variations and option items (Rolling bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Please consult)
× Mark: Not manufacturable

Category		Code	Double acting basic (bearing bush type) B	Stroke Adjustable Type (Push) P	Drop prevention type Q	With solenoid valve V	With Air Cushion C	Heat resistance (120°C) *2 T	Packing Material: Fluoro Rubber T2	Low Speed Type O	Heavy-Duty Scraper Type G	Coil Scraper Type G1	Coolant Proof Scraper Type (NBR) G2	Coolant Proof Scraper Type (FKM) G3	Sputter adhesion prevention type G4	Low speed type F	2-color display/off-delay/T1/T8 With switch *7 L1	Piping thread: NPT ø32 or more N	Piping thread: G ø32 or more G	Cushion: With Rubber Air Cushion C	Option: Corrosion proof (aluminum end plate) M	Option: Corrosion proof (SUS end plate) M1	Option: Plate material specification Steel F
Variation	Double acting basic (bearing bush type)	B	＼	●	●	●	●	●	●	●	●	●	●	●	●	◎	○	○	●	◎	◎	◎
	Stroke Adjustable Type (Push)	P		＼	*2	○	○	×	○	○	*6	*6	×	×	*6	△	◎	○	○	○	△	△	◎
	With Fall Prevention	Q			＼	×	×	×	×	×	△	△	△	△	△	×	◎	○	○	×	○	○	◎
	With solenoid valve	V				＼	×	×	×	○	×	×	×	×	×	×	◎	○	○	○	△	△	◎
	With Air Cushion	C					＼	*1	*1	○	○	○	○	○	○	×	◎	○	○	×	○	○	◎
	Heat resistance (120°) *2	T						＼	×	×	×	○	×	×	×	×	×	○	○	×	○	○	◎
	Packing Material: Fluoro Rubber	T2							＼	×	×	○	×	*3	×	×	◎	○	○	×	○	○	◎
	Low Speed Type	O								＼	×	×	×	×	×	×	◎	○	○	○	○	○	◎
	Heavy-Duty Scraper Type	G									＼	×	×	×	×	×	◎	○	○	○	○	○	◎
	Coil Scraper Type	G1										＼	×	×	*4	×	◎	○	○	○	○	○	◎
	Coolant Proof Scraper Type (NBR)	G2											＼	×	×	×	*5	○	○	○	*3	○	×
	Coolant Proof Scraper Type (FKM)	G3												＼	×	×	*5	○	○	×	*3	○	×
	Sputter adhesion prevention type	G4													＼	×	◎	○	○	○	○	○	◎
	Low speed type	F														＼	◎	○	○	○	○	○	◎
	2-color display/off-delay with T1/T8 switch *7	L1															＼	○	○	◎	◎	◎	◎
Piping thread	NPT ø32 or higher	N																＼	×	○	○	○	○
	G ø32 or more	G																	＼	○	○	○	○
Cushion	With Rubber Air Cushion	C																		＼	○	○	○
Option	Corrosion proof (aluminum end plate)	M																			＼	×	×
	Corrosion proof (SUS end plate)	M1																				＼	×
	Plate material specification Steel	F																					＼
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	×	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

*1: Only ø50 to 100 is available.
*2: Available for head side position locking only.
*3: For the combination of G3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)
Similarly, G2 and G3 include the specifications of M (corrosion proof). (The "M" code is not necessary.)
*4: G4 includes coil scraper.
*5: L1 specifications. (L1 code is not required.)
*6: Shock absorber is provided as standard.
*7: Excluding T2W and T3W.

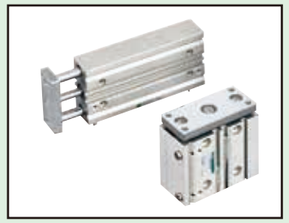
[Model Number Notation Example]



Note) For ø40 and over 2-color display, T1H/V, T8H/V and off-delay, insert "L1" with "-" between the variation model No. and bore size. (Excluding T2W, T3W)
(Example) STS-B-**L1**-63-50-T1H-D-F

ø80,ø100 cannot be mounted when the T1H/V, T8H/V, off-delay, AC magnetic field proof switch is retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between Items ❶ and ❷.
(Example) STS-B-**L1**-80-50-F

Model No. : Guided cylinder/short stroke
● Variation : Ball bearing, stroke adjustable, rubber scraper
❶ Bore size : ø50 mm
❷ Port thread : Rc Thread
❸ Cushion : With Rubber Cushion
❹ Stroke : 50 mm
❺ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❻ Switch quantity : With 2 pcs.
❼ Option : End plate material: Steel



Guided cylinder Double acting, Single rod type

STS / STL-$^{M}_{B}$ Series

● Bore size: ø8/ø12/ø16/ø20/ø25/ø32
ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

RoHS

Model No. Notation Method

●Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M — 8 □ - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M — 8 □ - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color display, T1H/V, T8H/V, With off-delay switch
(Built-in magnet for switch) (ø40 or more)

STS - M - L1 - 40 □ - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M — 8 □ - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M — 8 □ - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color display, T1H/V, T8H/V, With off-delay switch
(Built-in magnet for switch) (ø40 or more)

STL - M - L1 - 40 □ - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80,ø100, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100 (customized product)

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø100)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size										
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
STS	Standard Stroke	10	●	●	●								
		20	●	●	●								
		25				●	●	●	●	●	●	●	●
		30	●	●	●								
		40	●	●	●								
		50	●	●	●	●	●	●	●	●	●	●	●
		75										●	●
		100										●	●
	Intermediate Stroke	*1 *2	Every 5 mm										

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size										
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●		
		75	●	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●	
		250				●	●	●	●	●	●	●	
		275				●	●	●	●	●	●	●	
		300				●	●	●	●	●	●	●	
		325				●	●	●	●	●	●	●	
		350				●	●	●	●	●	●	●	
		375				●	●	●	●	●	●	●	
		400				●	●	●	●	●	●	●	
	Intermediate Stroke	*1 *2	Every 5 mm										

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between and . (However, T2WH/V and T3WH/V are excluded.)
(Example) STS-M-L1-63-50-T1H3-D-F
For ø80,ø100, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
(Example) STS-M-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*7	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Rechargeable Battery Compatible Specification
(Catalog No. CC-1226AA)
● Design compatible with rechargeable battery manufacturing process
STS/L-$^{M}_{B}$ - ····· - P4□
* Please contact us for details.

High Durability Components HP Series
(Catalog No. CC-1421AA)
● Long-life actuator that contributes to productivity improvement with stable operation
STS/L-$^{M}_{B}$ - ····· - HP□

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L - $^{M}_{B}$ - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item		STS-M/B STL-M/B									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type										
Operating Fluid		Compressed Air										
Max. Working Pressure MPa		1.0										
Min. Operating Pressure MPa		0.15					0.1					
Proof Pressure	MPa	1.6										
Ambient Temperature °C		-10 to 60 (No freezing)										
Port Size		M5					Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance	mm	+2.0 0										
Operating Piston Speed mm/s		50 to 500								50 to 300		
Cushion		With Rubber Cushion										
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)										
Allowable Absorbed Energy J		0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			
ø100					

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100 125, 150 175, 200	200	50	50 *2
ø12				
ø16				
ø20	50, 75, 100 125, 150, 175 200, 225, 250 275, 300, 325 350, 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2
ø100	75, 100, 125, 150, 175, 200	200		

*1: Intermediate strokes can be manufactured in 5 mm increments.
However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

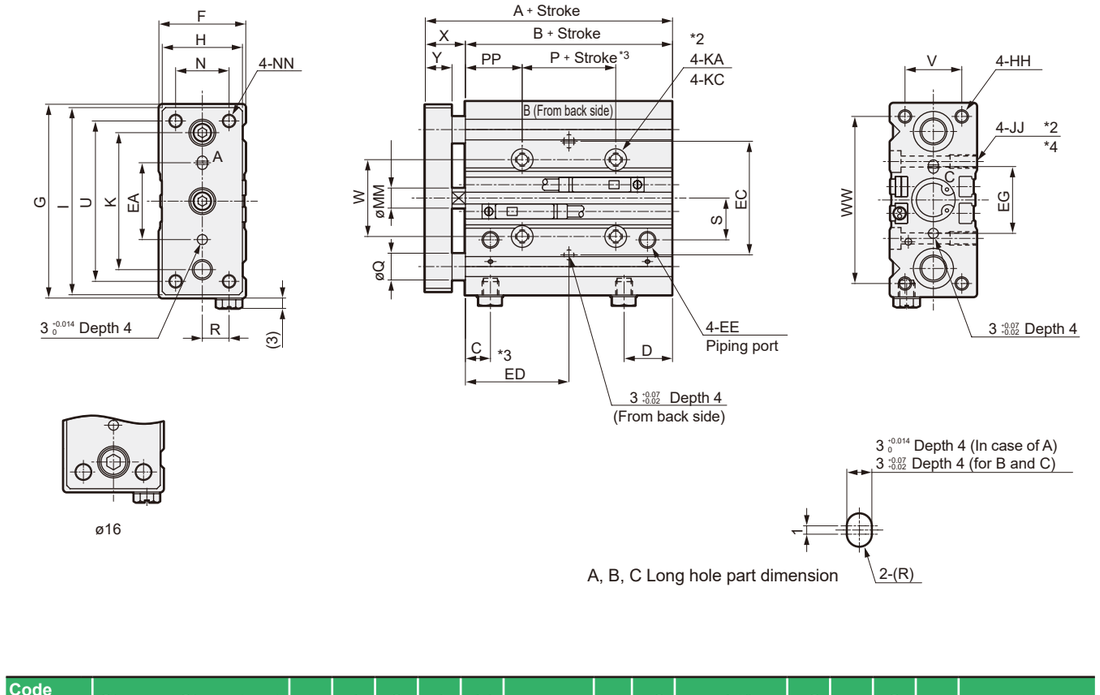
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	–	7.54	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	–	5.65	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	–	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	–	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	–	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	–	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	–	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	–	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	–	73.6	98.2	1.47×10^2	1.96×10^2	$2.45X10^2$	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	–	56.7	75.6	$1.13x10^2$	1.51×10^2	$1.89X10^2$	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	80.4	1.21×10^2	1.61×10^2	2.41×10^2	$3.22X10^2$	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	60.3	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	1.96×10^2	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	3.12×10^2	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	5.03×10^2	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	7.85×10^2	1.18×10^3	1.57×10^3	2.36×10^3	3.14×10^3	3.93×10^3	4.71×10^3	5.50×10^3	6.28×10^3	7.07×10^3	7.85×10^3
	Pull	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

For cylinder weight, please refer to P. 642 to 645.

External dimensions diagram (Bore size: ø8, ø12, ø16)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	EA	EC	ED *3	EG	F	G	H	HH
ø8	10, 20, 30 40, 50	40	28	11	14.5	6.5	M5	20	25	15 + Stroke/2	20	24	53	22	M4 depth 8
ø12		44	32	7.5	14.5	7.5	M5	23	34	16 + Stroke/2	20	26	58	24	M4 depth 8
ø16		45	32	7.5	17	7.5	M5	24	36	16 + Stroke/2	24	30	64	28	M5 Depth 10

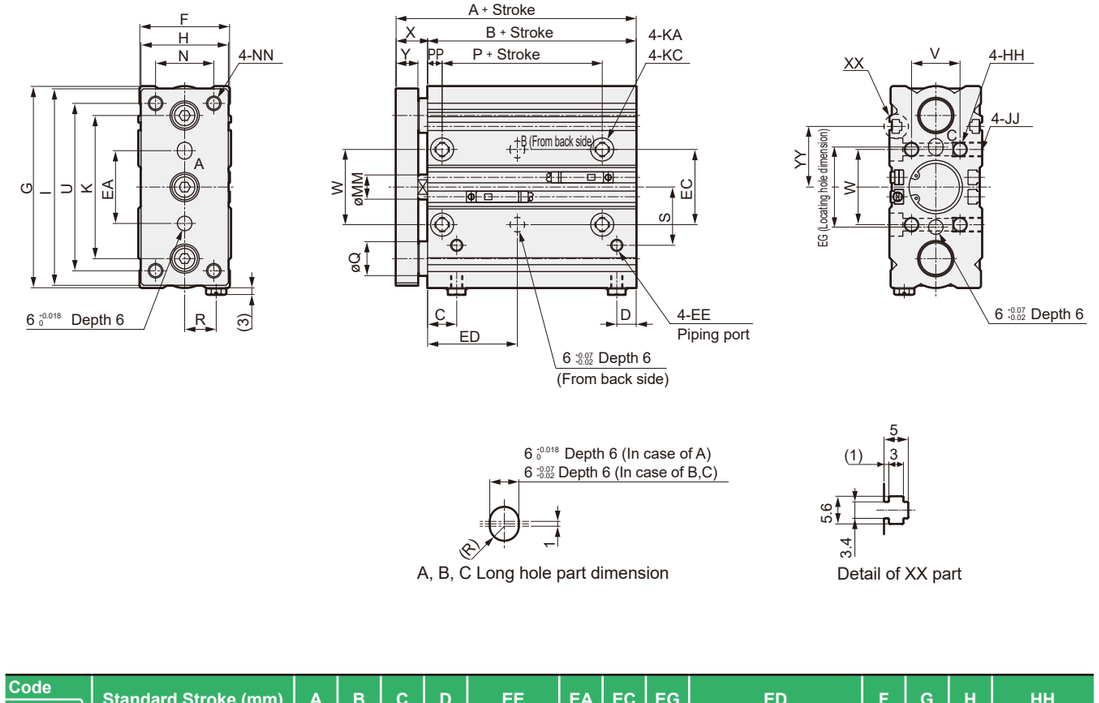
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	-2	17	10	8	10

Code / Bore Size (mm)	S	U	V	W	WW	X	Y
ø8	13.5	43	16	25	45	12 0 -1.5	8
ø12	12.5	48	17	23	50	12 0 -1.5	8
ø16	13	52	22	25	54	13 0 -1.5	9

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
*2: STS-M/B-8-10 (10mm stroke) is 2-KA, 2-KC, 2-JJ (two mounting holes).
*3: ED is 5 for 3: STS-M/B-8-10 (10mm stroke).
*4: STS-M/B-16-10 (10mm stroke) has four JJ dimension M5 screws, as shown in the figure, but the mounting will be two.
***5: For dimensions with each switch, refer to P. 636, 637.**

Outline dimension drawing (bore size: ø20, ø25)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø20	25, 50	53	40	12	8	M5	30	31	33	14 + Stroke/2	38	83	36	M6 Depth 12
ø25		54	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	38	M6 Depth 12

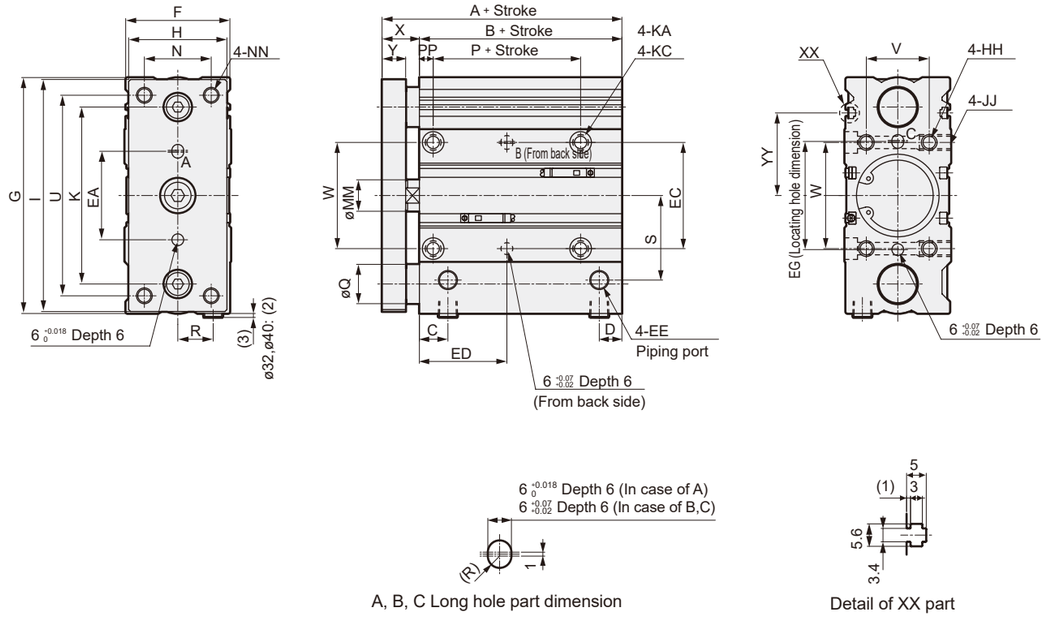
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	13 0 -2	9	25
ø25	26	72	24	35	13	9	27

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø32	25, 50	68	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	45	M8 Depth 16
ø40		72	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	50	M8 Depth 16
ø50		77	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	64	M10 Depth 20
ø63		83	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	75	M10 Depth 20

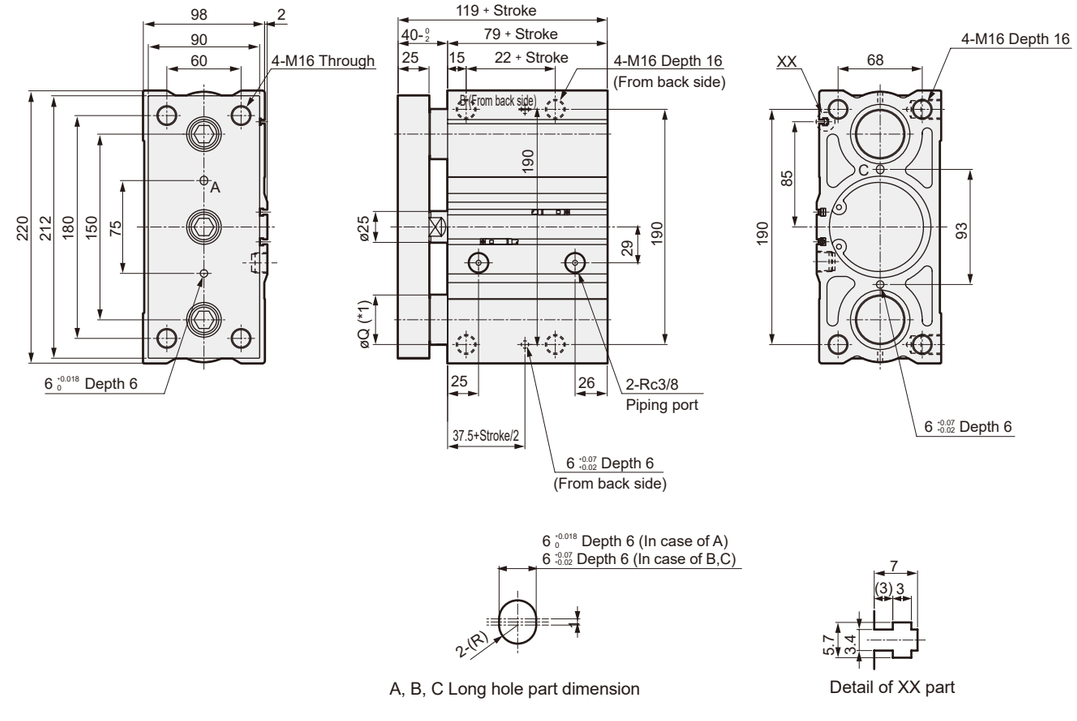
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	19 0 -2	12	39
ø40	43	102	32	54	19 0 -2	12	42
ø50	49	125	38	66	22 0 -2	16	45
ø63	56	140	50	79	22 0 -2	16	52

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

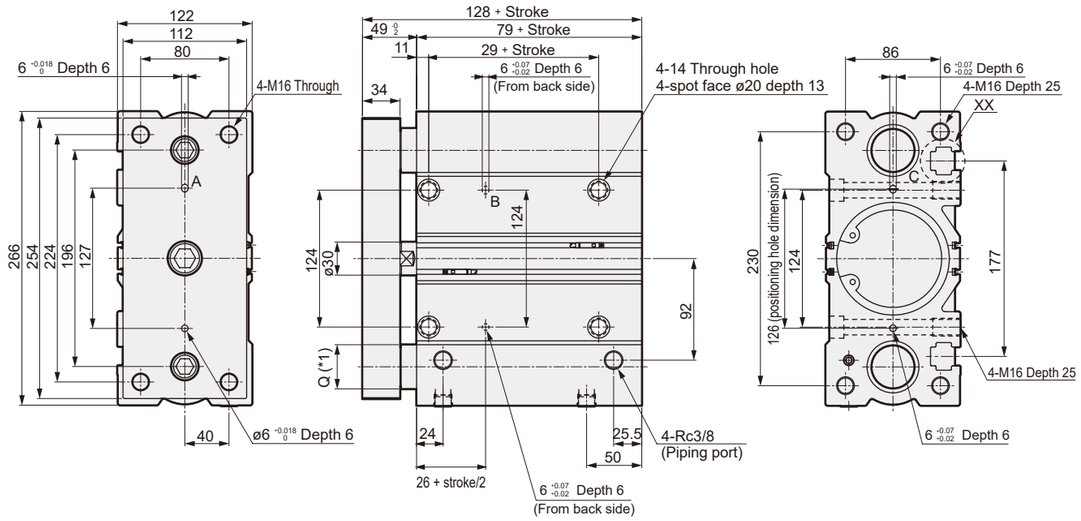
● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1

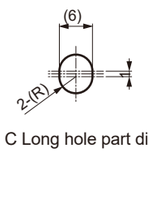


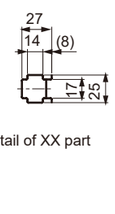
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø100)

- Standard single rod STS-$^{M}_{B}$
- Corrosion proof STS-$^{M}_{B}$-M / M1







A, B, C Long hole part dimension

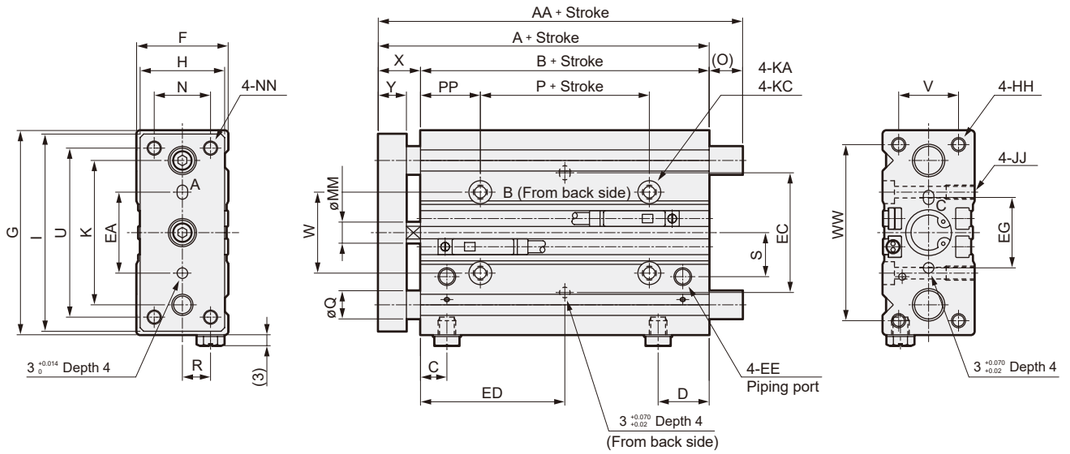
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø8, ø12, ø16)

- Standard single rod STL-$^{M}_{B}$
- Corrosion proof STL-$^{M}_{B}$-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	DD	EE	EA	EC	ED	EG	F	G	H	HH
ø8	50, 75, 100, 125, 150, 175, 200	40	46	28	11	14.5	6.5	M5	20	25	15 + Stroke/2	20	24	53	22	M4 depth 8
ø12		44	53.5	32	7.5	14.5	7.5	M5	23	34	16 + Stroke/2	20	26	58	24	M4 depth 8
ø16		45	64	32	7.5	17	7.5	M5	24	36	16 + Stroke/2	24	30	64	28	M5 Depth 10

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q		R
												STL-M	STL-B	
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	6	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	9.5	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	19	-2	17	10	8	10

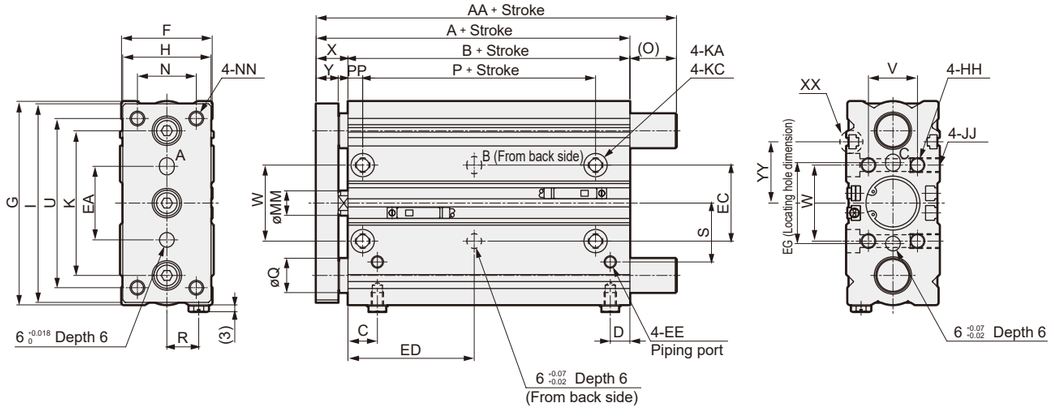
Code / Bore Size (mm)	S	U	V	W	WW	X	Y
ø8	13.5	43	16	25	45	12 0 -1.5	8
ø12	12.5	48	17	23	50	12 0 -1.5	8
ø16	13	52	22	25	54	13 0 -1.5	9

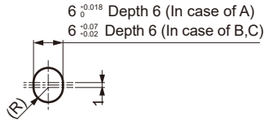
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

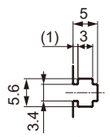
Outline dimension drawing (bore size: ø20, ø25)

- Standard single rod STL-M/B
- Corrosion proof STL-M/B-M / M1





A, B, C Long hole part dimension



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	53	72	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	36
ø25	250, 275, 300, 325, 350, 375, 400	54	72	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	38

Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

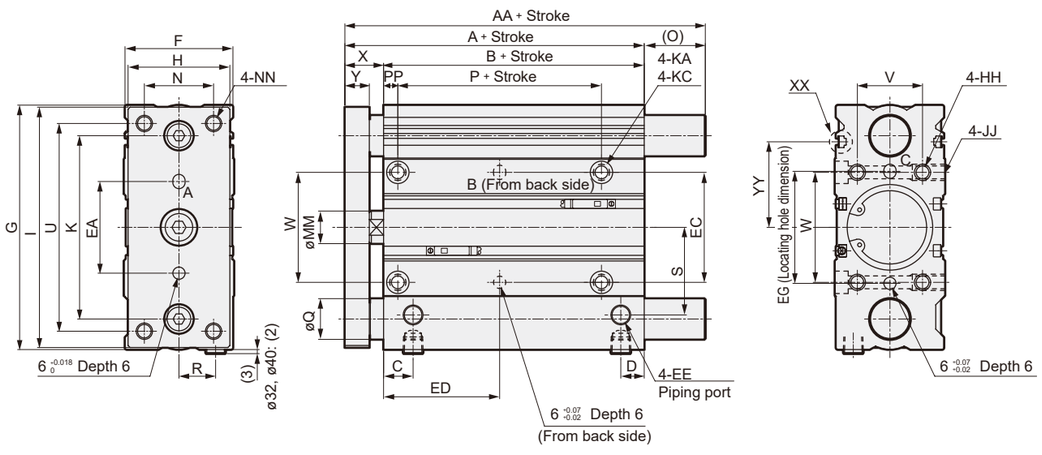
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	13 0 -2	9	25
ø25	26	72	24	35	13 0 -2	9	27

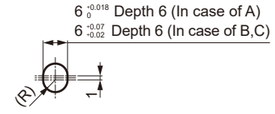
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

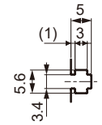
External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

- Standard single rod STL-M/B
- Corrosion proof STL-M/B-M / M1





A, B, C Long hole part dimension



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	68	102	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	45	M8 Depth 16
ø40		72	102	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	50	M8 Depth 16
ø50		77	125	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	64	M10 Depth 20
ø63		83	125	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	75	M10 Depth 20

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

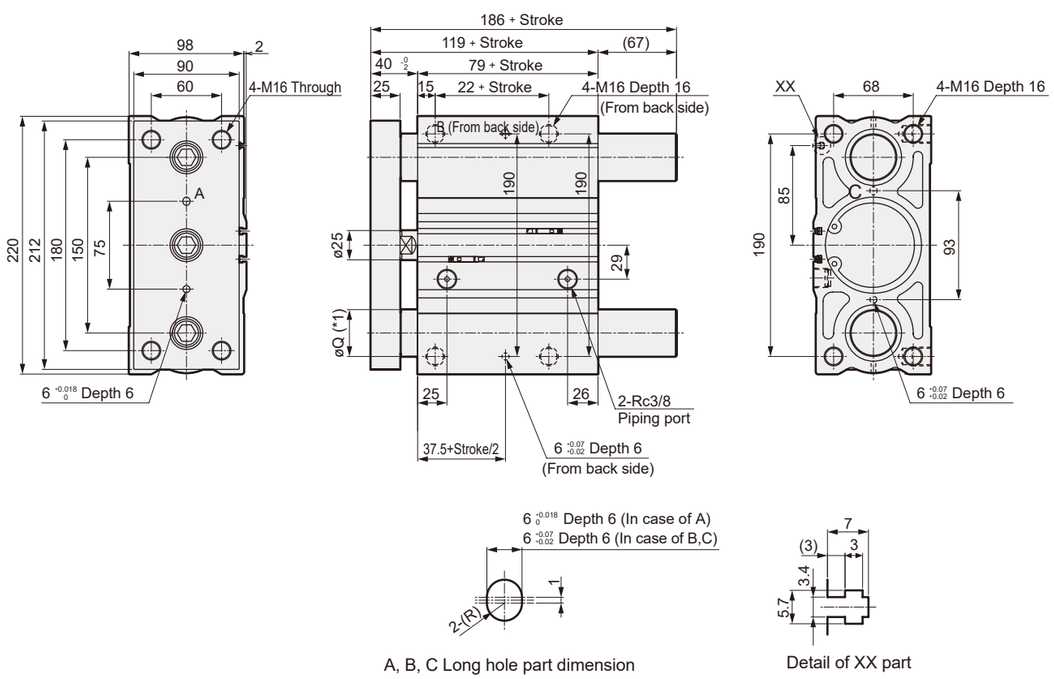
Code / Bore Size (mm)	X	Y	YY
ø32	19 0 -2	12	39
ø40	19 0 -2	12	42
ø50	22 0 -2	16	45
ø63	22 0 -2	16	52

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Standard single rod STL-M/B
● Corrosion proof STL-M/B-M / M1

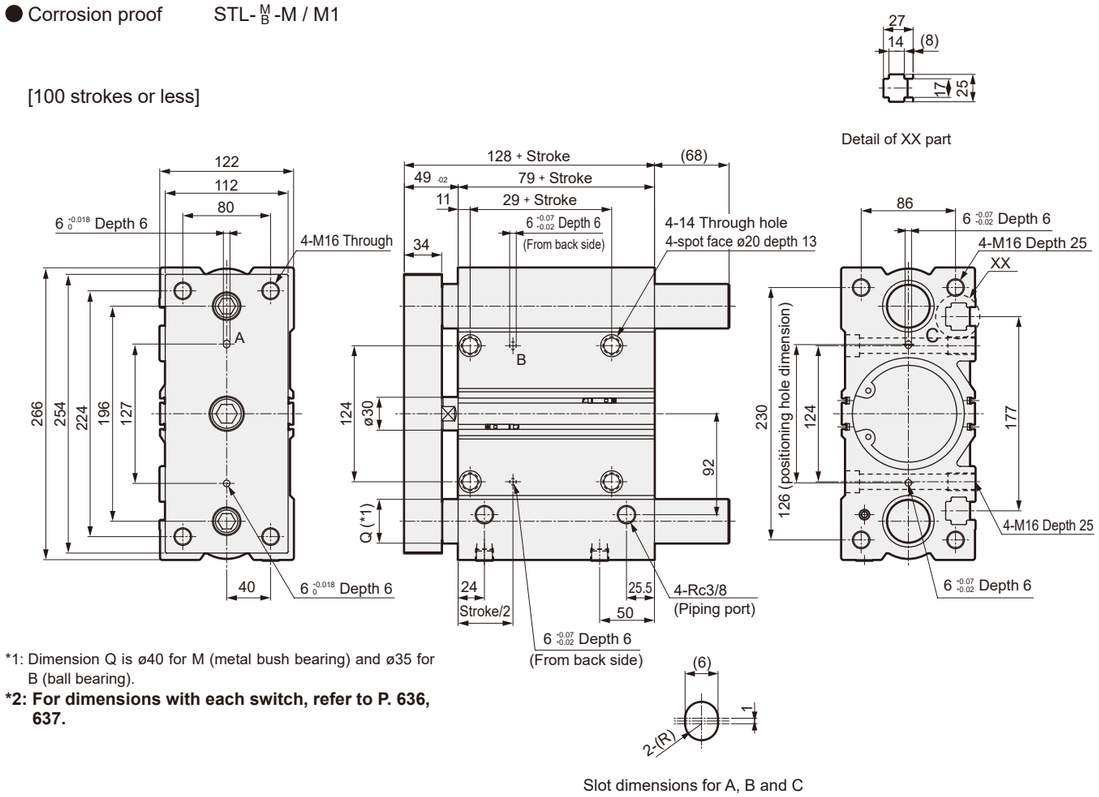


*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.
The standard stroke of ø80 can be selected from 75 to 400 mm in 25 mm increments.
***3: For dimensions with each switch, refer to P. 636, 637.**

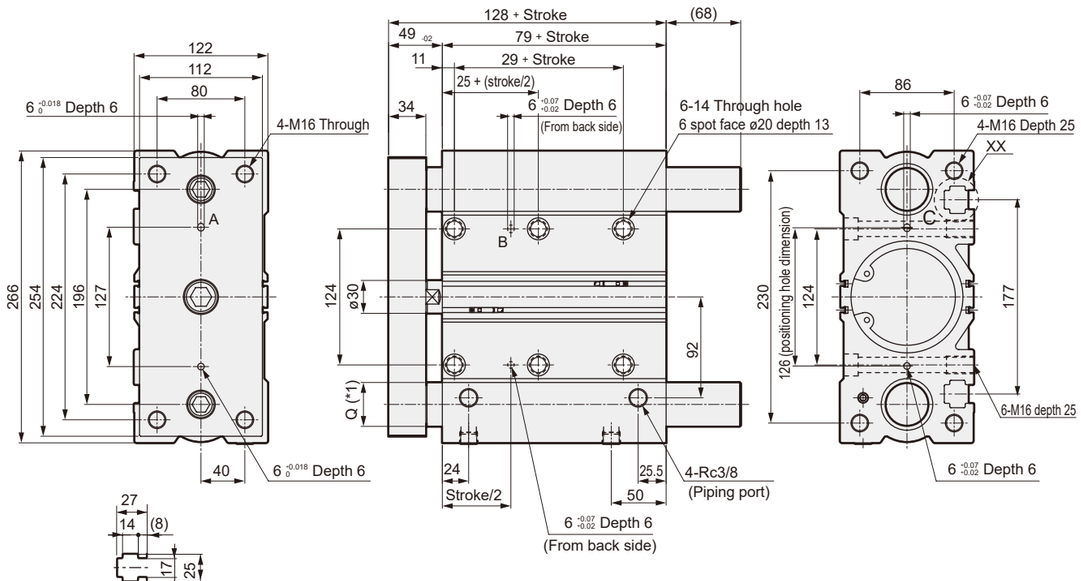
External dimensions diagram (Bore size: ø100)

● Standard single rod STL-M/B
● Corrosion proof STL-M/B-M / M1

[100 strokes or less]



[125 strokes or more]



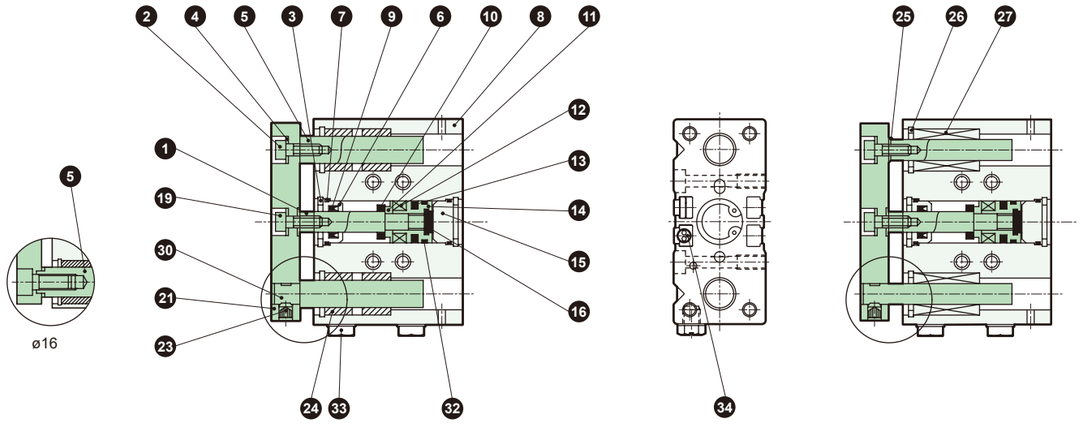
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø8 to ø63)

● Double acting / standard single rod

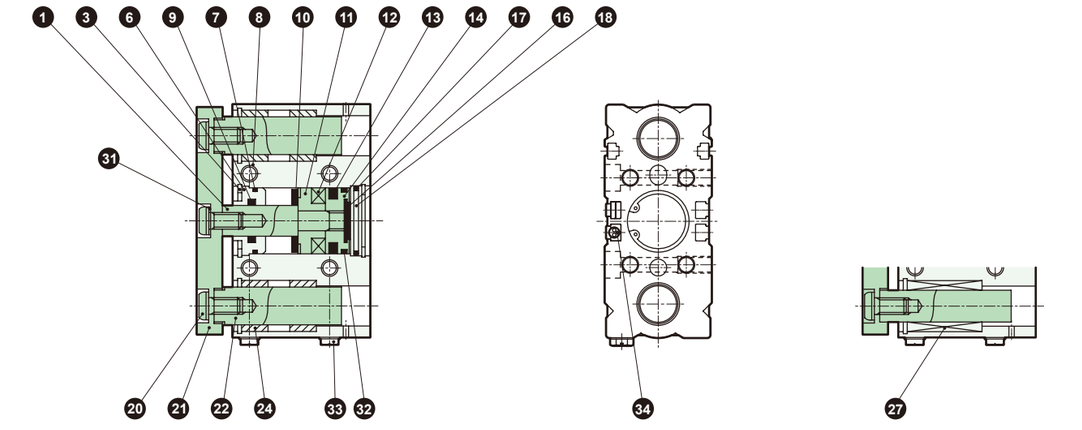
STS-$^{M}_{B}$

ø8, ø12, ø16



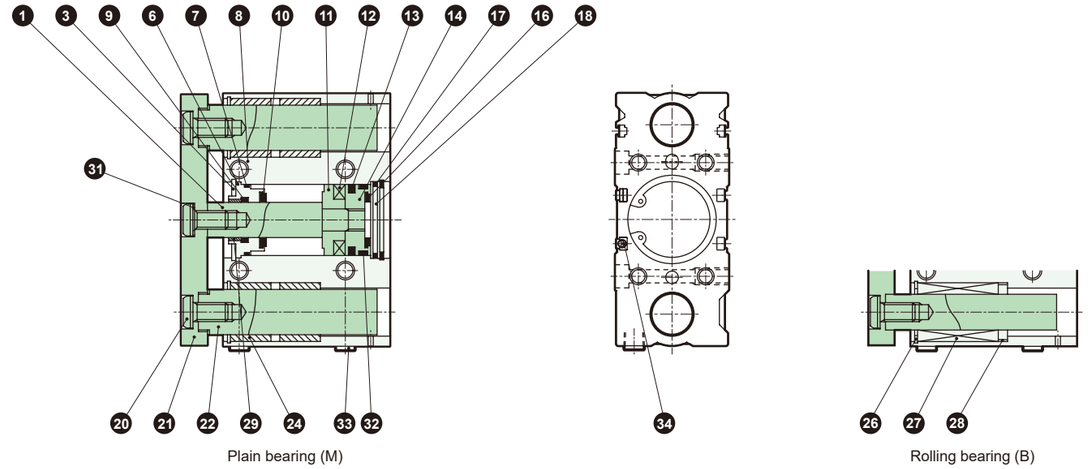
Plain bearing (M)　　Rolling bearing (B)

ø20, ø25



Plain bearing (M)　　Rolling bearing (B)

ø32, ø40, ø50, ø63



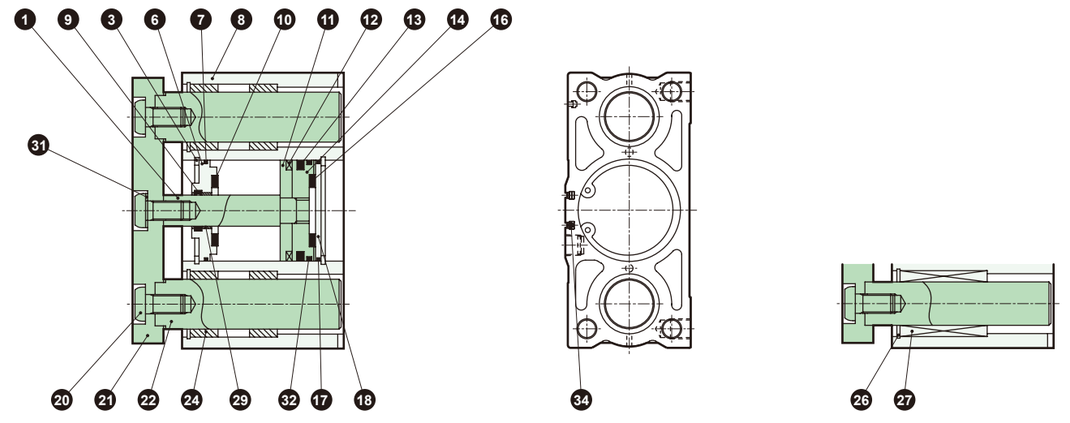
Plain bearing (M)　　Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

● Double acting/standard single rod

STS-$^{M}_{B}$

ø80



Plain bearing (M)　　Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø8 to ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Metal gasket		Nitrile Rubber	
8	Cylinder Body		Aluminum Alloy	Hard Anodized
9	Rod Packing		Nitrile Rubber	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate
12	Magnet			
13	Piston Packing		Nitrile Rubber	
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate
15	Cover		Aluminum Alloy	
16	Cushion rubber (H)		Urethane Rubber	
17	O-ring		Nitrile Rubber	
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate

Part No.	Part Name		Material	Remarks
19	Hexagon nut (ø8)		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
21	End plate		Aluminum Alloy	Alumite
22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
24	Metal		Oil-Impregnated Bearing Alloy	
25	Plain Washer		Steel	Black Oxide
26	C-type retaining ring		Steel	Zinc phosphate
27	Ball bush			
28	Collar		Aluminum Alloy	
29	Bushing		Bearing Alloy	
30	Guide rod (2) (ø8, ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
31	Belleville washer		Steel	
32	Wear Ring		Polyacetal	ø12 to ø80 only
33	Plug		ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
With Switch				
34	Switch			

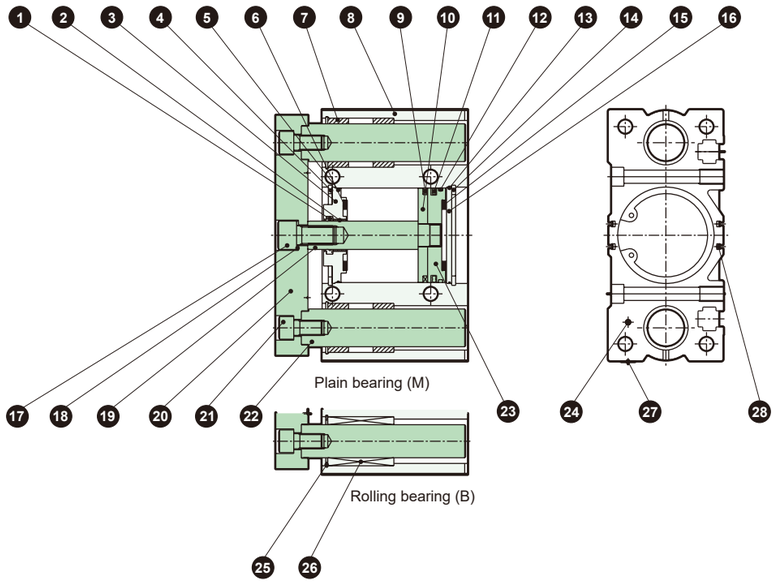
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure / material (bore size: ø100)

● Double acting / standard single rod

STS-$^{M}_{B}$

ø100



Model No.	Part Name	Material	Remarks	Model No.	Part Name	Material	Remarks
1	Rod Packing	Nitrile Rubber		16	Bottom plate	Steel	Zinc Chromate
2	Bushing	Bearing Alloy		17	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
3	Rod Metal	Aluminum Alloy	Chromate	18	Belleville washer	Steel	Zinc Chromate
4	C-type retaining ring	Steel	Zinc phosphate	19	Piston Rod	Steel	Industrial Hard Chrome Plating
5	Metal gasket	Nitrile Rubber		20	End plate	Aluminum Alloy	Alumite
6	Cushion Rubber (R)	Urethane Rubber		21	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
7	Metal	Oil-Impregnated Bearing Alloy		22	Guide rod	Steel	Industrial Hard Chrome Plating
8	Tube body	Aluminum Alloy	Hard Anodized	23	Piston	Aluminum Alloy	Chromate
9	Magnet			24	Hexagon socket head set screw	Steel	Black Oxide
10	Spacer	Aluminum Alloy	Chromate	25	C-type retaining ring	Steel	Zinc phosphate
11	Piston Packing	Nitrile Rubber		26	Ball bearing		
12	Wear Ring	Polyacetal		27	Plug	Steel	Nickel Plating
13	O-ring	Nitrile Rubber		With Switch			
14	C-type retaining ring	Steel	Zinc phosphate	28	Switch		
15	Cushion rubber (H)	Urethane Rubber					

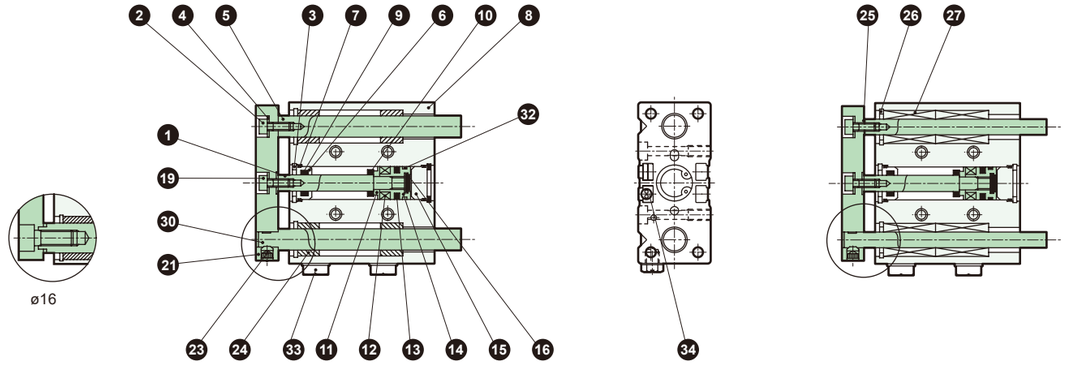
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø8 to ø63)

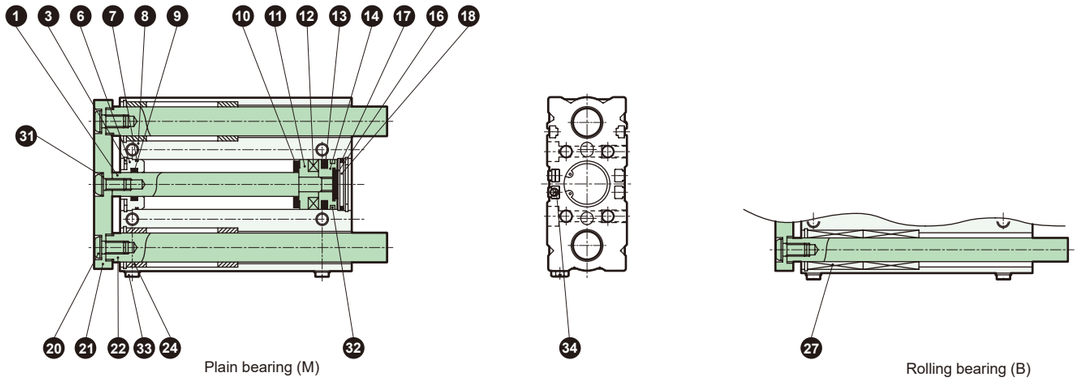
● Double acting/standard single rod

STS-$^{M}_{B}$

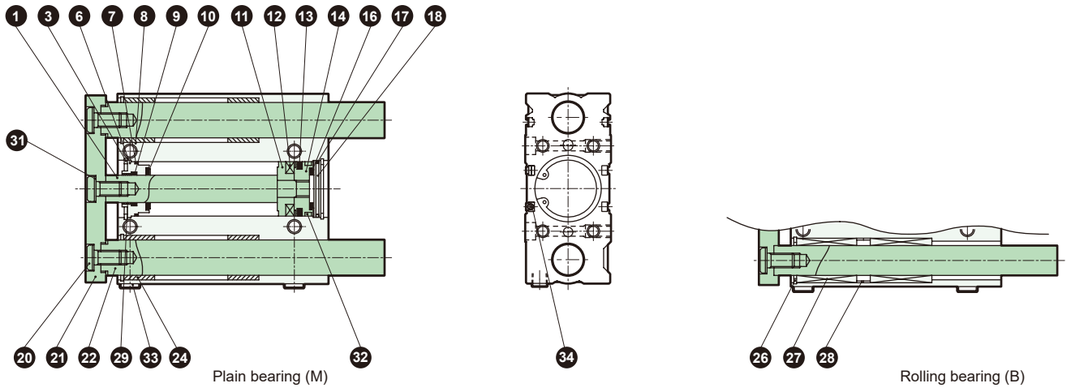
ø8 / ø12 / ø16



ø20, ø25

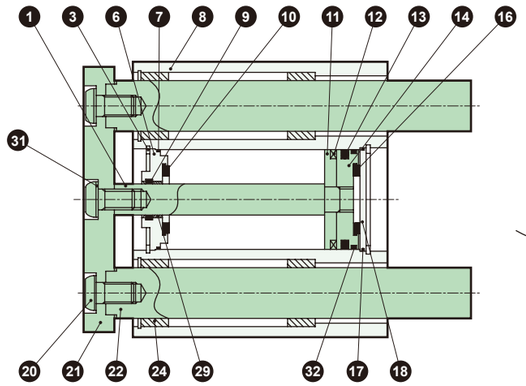


ø32, ø40, ø50, ø63

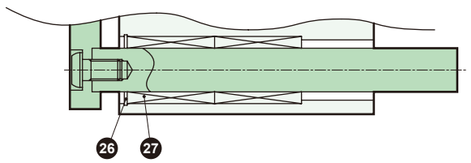


Internal structure diagram / Material (Bore size: ø80)

● Standard single rod ø80
STL-$^{M}_{B}$



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø8 to ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Metal gasket		Nitrile Rubber	
8	Cylinder Body		Aluminum Alloy	Hard Anodized
9	Rod Packing		Nitrile Rubber	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate
12	Magnet			
13	Piston Packing		Nitrile Rubber	
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate
15	Cover		Aluminum Alloy	
16	Cushion rubber (H)		Urethane Rubber	
17	O-ring		Nitrile Rubber	
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
21	End plate		Aluminum Alloy	Alumite
22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
24	Metal		Oil-Impregnated Bearing Alloy	
25	Plain Washer		Steel	Black Oxide
26	C-type retaining ring		Steel	Zinc phosphate
27	Ball bush			
28	Collar		Aluminum Alloy	
29	Bushing		Bearing Alloy	
30	Guide rod (2) (ø8, ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
31	Belleville washer		Steel	
32	Wear Ring		Polyacetal	ø12 to ø80 only
33	Plug		ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
With Switch				
34	Switch			

For maintenance parts, please visit the CKD Equipment Product Site
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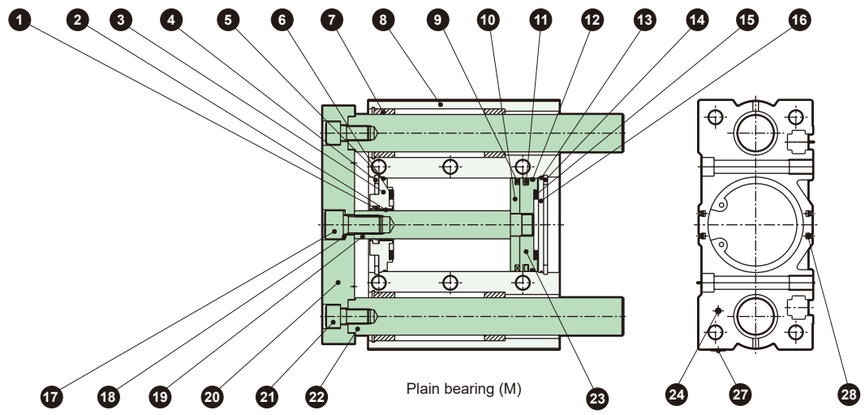
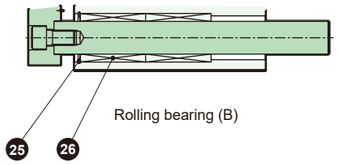
Internal structure/material (bore size: ø100)

● Double acting/standard single rod ø100
STS-$^{M}_{B}$



Plain bearing (M)



Rolling bearing (B)

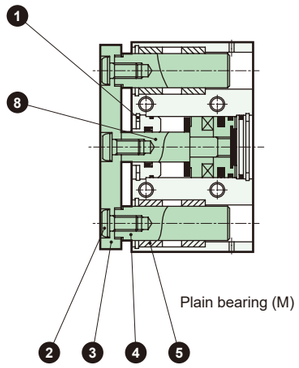
Model No.	Part Name	Material	Remarks
1	Rod Packing	Nitrile Rubber	
2	Bushing	Bearing Alloy	
3	Rod Metal	Aluminum Alloy	Chromate
4	C-type retaining ring	Steel	Zinc phosphate
5	Metal gasket	Nitrile Rubber	
6	Cushion Rubber (R)	Urethane Rubber	
7	Metal	Oil-Impregnated Bearing Alloy	
8	Tube body	Aluminum Alloy	Hard Anodized
9	Magnet		
10	Spacer	Aluminum Alloy	Chromate
11	Piston Packing	Nitrile Rubber	
12	Wear Ring	Polyacetal	
13	O-ring	Nitrile Rubber	
14	C-type retaining ring	Steel	Zinc phosphate
15	Cushion rubber (H)	Urethane Rubber	
16	Bottom plate	Steel	Zinc Chromate
17	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
18	Belleville washer	Steel	
19	Piston Rod	Steel	Industrial Hard Chrome Plating
20	End plate	Aluminum Alloy	Alumite
21	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
22	Guide rod	Steel	Industrial Hard Chrome Plating
23	Piston	Aluminum Alloy	Chromate
24	Hexagon socket head set screw	Steel	Black Oxide
25	C-type retaining ring	Steel	Zinc phosphate
26	Ball bearing		
27	Plug	Steel	Nickel Plating
With Switch			
28	Switch		

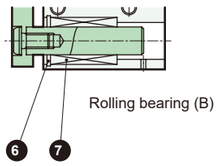
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure / material (corrosion proof Bore size size: ø8 to ø100)

● Corrosion resistant type

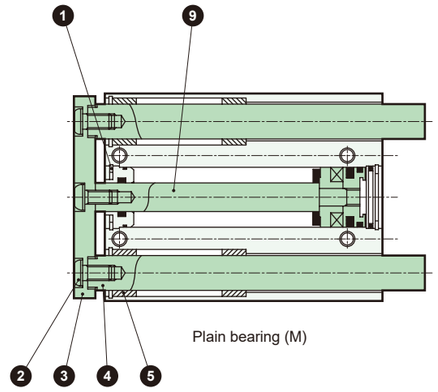
STS-$^{M}_{B}$-M / M1

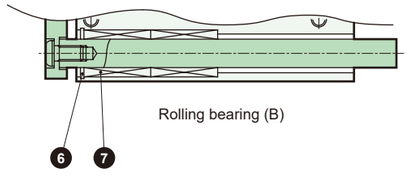




● Corrosion resistant type

STL-$^{M}_{B}$-M / M1





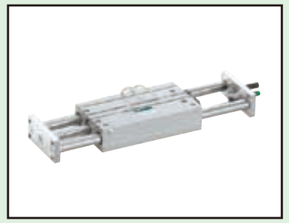
(Parts oher than those listed below are the same as those of double acting/standard single rod. Please refer to P. 497 to 501.)

Model No.	Part Name	Material	Remarks	Model No.	Part Name	Material	Remarks
1	C-type retaining ring	Stainless Steel		5	Metal	Bearing Alloy Steel	
2	Hexagon socket button head bolt (ø8 to ø80) Hexagon socket head cap screw (ø100)	Stainless Steel		6	Adaptor (ø8 to ø16)	Aluminum Alloy	
					C-snap ring (ø32 to ø100)	Stainless Steel	
3	End plate	M: Aluminum Alloy	Alumite	7	Ball bush	Made of stainless steel	
		M1: Stainless steel		8	Piston Rod	Stainless Steel	Industrial Hard Chrome Plating
4	Guide rod	Stainless Steel	Industrial chrome plating (M type only)	9	Piston Rod	Stainless Steel	Industrial Hard Chrome Plating

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending



Guided cylinder Double acting, Stroke adjustment type

STS / STL-$^{M}_{B}$P Series

● Bore size: ø8, ø12, ø16, ø20, ø25, ø32, 40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M P — 8 [ ] - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M P — 8 [ ] - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M P - L1 - 40 [ ] - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

●Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M P — 8 [ ] - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M P — 8 [ ] - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M P - L1 - 40 [ ] - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75			●	●	●	●	●	●	●	●
		100			●	●	●	●	●	●	●	●

Note) Intermediate strokes are not supported. Adjust the stroke with the stroke adjustment mechanism.

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●
		250				●	●	●	●	●	●	●
		275				●	●	●	●	●	●	●
		300				●	●	●	●	●	●	●
		325				●	●	●	●	●	●	●
		350				●	●	●	●	●	●	●
		375				●	●	●	●	●	●	●
		400				●	●	●	●	●	●	●

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded.)
Example) STS-MP-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MP-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel

For combinations of variations and options,
Please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$P-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item		STS-MP/BP STL-MP/BP									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double-acting, Stroke adjustment type									
Operating Fluid		Compressed Air									
Max. Working Pressure	MPa	1.0									
Min. Operating Pressure	MPa	0.2					0.15				
Proof Pressure	MPa	1.6									
Ambient Temperature	°C	-10 to 60 (No freezing)									
Port Size		M5					Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	+2.0 0									
Operating Piston Speed	mm/s	50 to 500								50 to 300	
Cushion		With rubber cushion, With shock absorber at push									
Stroke adjustment range	mm	25									
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)									
Allowable Absorbed Energy	J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

●Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30, 40, 50	50	10	25	10
ø12				15	
ø16				25 *1	25 *1
ø20	25, 50		25		
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: For types with one or two switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100, 125, 150 175, 200	200	50	50 *1
ø12				
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400		
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		75	75 *2

*1: For types with one or two switches.

Theoretical Thrust Table

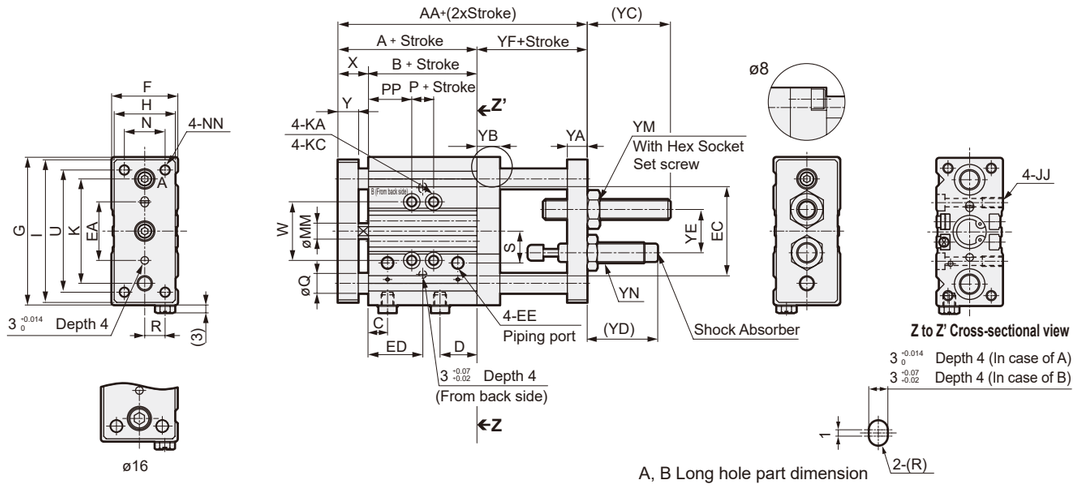
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	–	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	–	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	–	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	–	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	–	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	–	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	–	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	–	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	–	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	–	75.6	$1.13x10^2$	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3

For cylinder weight, please refer to P. 642 to 645.

External dimensions diagram (Bore size: ø8 / ø12 / ø16)

● Stroke adjustment type



A, B Long hole part dimension

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø8	10, 20, 30 40, 50	40	67.5	28	11	14.5	M5	20	25	$15+\frac{Stroke}{2}$	24	53	22
ø12		44	71.5	32	7.5	14.5	M5	23	34	$16+\frac{Stroke}{2}$	26	58	24
ø16		45	73.5	32	7.5	17	M5	24	36	$16+\frac{Stroke}{2}$	30	64	28

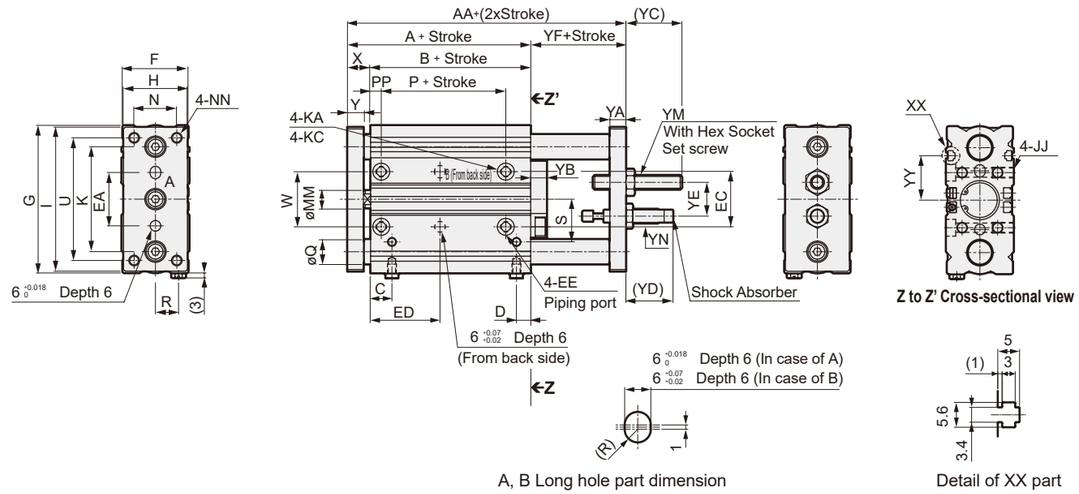
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	-2	17	10	8	10

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *6	YD *6	YE	YF	YM	YN	Shock absorber model number
ø8	13.5	43	25	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø12	12.5	48	23	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø16	13	52	25	$13^{0}_{-1.5}$	9	9	9	31.5	26.5	17	28.5	M8x50	M8x0.75	NCK-00-0.3-C

*1: For STS-$^{M}_{B}$-8-10 (10 mm stroke), it will be 2-KA, 2-KC, 2-JJ (2 mounting holes).
*2: For STS-$^{M}_{B}$-8-10 (10 mm stroke), ED dimension will be 5.
*3: For STS-$^{M}_{B}$-16-10 (10 mm stroke), JJ dimension M5 screws are in 4 places as shown in the diagram, but mounting is in 2 places.
***4: For dimensions with each switch, refer to P. 636, 637.**
*5: Intermediate strokes are not supported.
*6: YC, YD dimensions indicate dimensions at the time of shipment.

Outline dimension drawing (bore size: ø20, ø25)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø20	25, 50	53	81.5	40	12	8	M5	30	31	$14+\frac{Stroke}{2}$	38	83	36
ø25		54	84	41	12	9	M5	32	35	$14.5+\frac{Stroke}{2}$	42	86	38

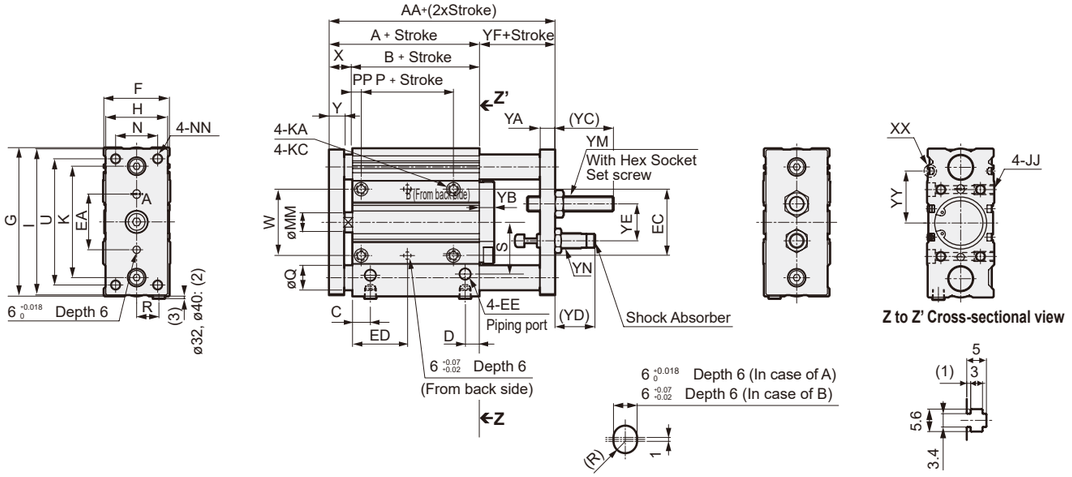
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø20	24	69	31	13^{0}_{-2}	9	9	9	31.5	26.5	19	28.5	M8x50	M8x0.75	25	NCK-00-0.3-C
ø25	26	72	35	13^{0}_{-2}	9	9	9	30	29	19	30	M8x50	M18xx1	27	NCK-00-0.7-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø32	25, 50	68	104.5	49	14	10.5	Rc1/8	42	45	17.5 + Stroke/2	47	111	45
ø40		72	108.5	53	14.5	12	Rc1/8	45	54	19.5+ Stroke/2	54	120	50
ø50		77	124	55	16	12.5	Rc1/4	55	66	19.5+ Stroke/2	66	147	64
ø63		83	130	61	17.5	17.5	Rc1/4	62	79	22.5+ Stroke/2	79	162	75

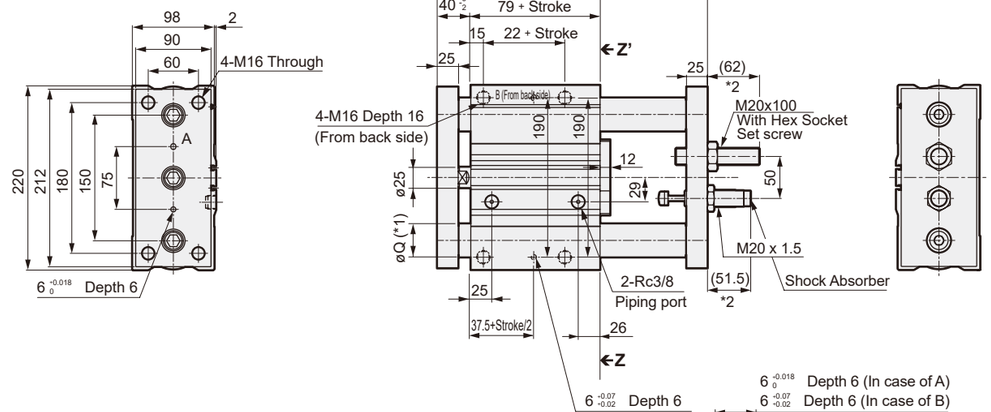
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø32	39	93	45	19 +0.2 0	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	39	NCK-00-1.2-C
ø40	43	102	54	19 +0.2 0	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	42	NCK-00-1.2-C
ø50	49	125	66	22 +0.2 0	16	16	16	51	52	40	47	M16x80	M14x1.5	45	NCK-00-2.6-C
ø63	56	140	79	22 +0.2 0	16	16	16	51	52	40	47	M16x80	M14x1.5	52	NCK-00-2.6-C

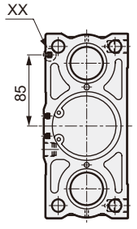
***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

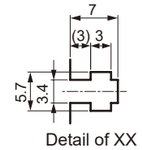
External dimensions diagram (Bore size: ø80)

● Stroke adjustment type



A, B Long hole part dimension



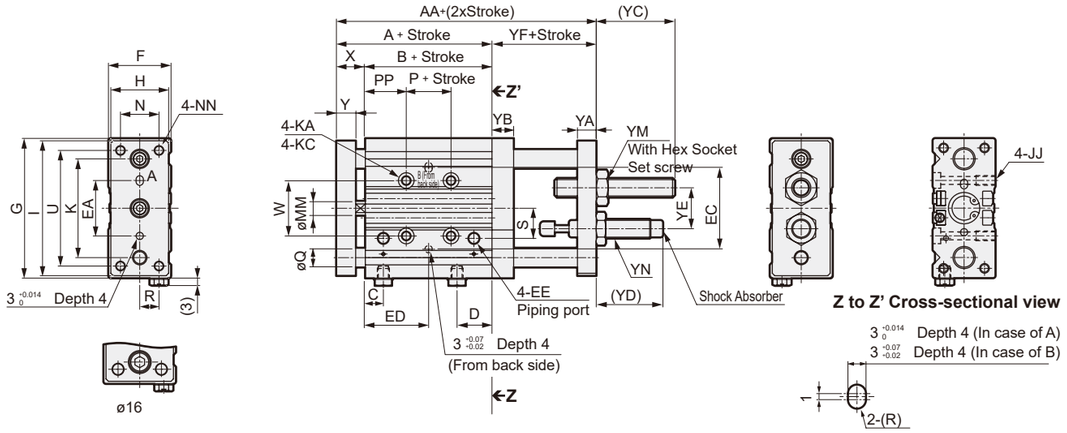


Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: Dimensions at the time of shipment are shown.
*3: Intermediate strokes are not supported.
***4: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø8, ø12, ø16)

● Stroke adjustment type



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø8	50, 75, 100, 125, 150, 175, 200	40	67.5	28	11	14.5	M5	20	25	$15+\frac{Stroke}{2}$	24	53	22
ø12		44	71.5	32	7.5	14.5	M5	23	34	$16+\frac{Stroke}{2}$	26	58	24
ø16		45	73.5	32	7.5	17	M5	24	36	$16+\frac{Stroke}{2}$	30	64	28

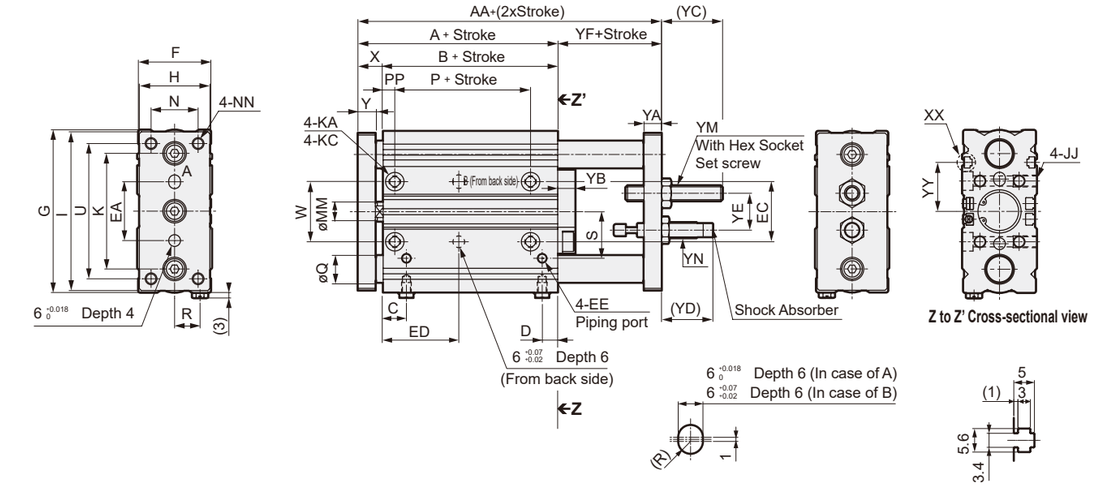
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	−10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	−2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	−2	17	10	8	10

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	Shock absorber model number
ø8	13.5	43	25	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø12	12.5	48	23	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø16	13	52	25	$13^{0}_{-1.5}$	9	9	9	31.5	26.5	17	28.5	M8x50	M8x0.75	NCK-00-0.3-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

Outline dimension drawing (bore size: ø20, ø25)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø20	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	53	81.5	40	12	8	M5	30	31	$14.0+\frac{Stroke}{2}$	38	83	36
ø25		54	84	41	12	9	M5	32	35	$14.5+\frac{Stroke}{2}$	42	86	38

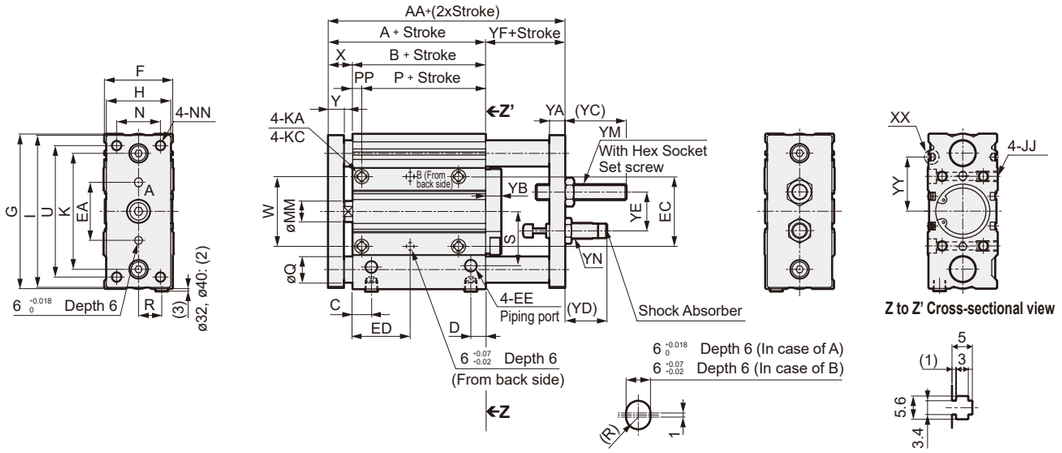
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø20	24	69	31	13^{0}_{-2}	9	9	9	31.5	26.5	19	28.5	M8x50	M8x0.75	25	NCK-00-0.3-C
ø25	26	72	35	13^{0}_{-2}	9	9	9	30	29	19	30	M8x50	M18xx1	27	NCK-00-0.7-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	68	104.5	49	14	10.5	Rc1/8	42	45	17.5 + Stroke/2	47	111	45
ø40		72	108.5	53	14.5	12	Rc1/8	45	54	19.5 + Stroke/2	54	120	50
ø50		77	124	55	16	12.5	Rc1/4	55	66	19.5 + Stroke/2	66	147	64
ø63		83	130	61	17.5	17.5	Rc1/4	62	79	22.5 + Stroke/2	79	162	75

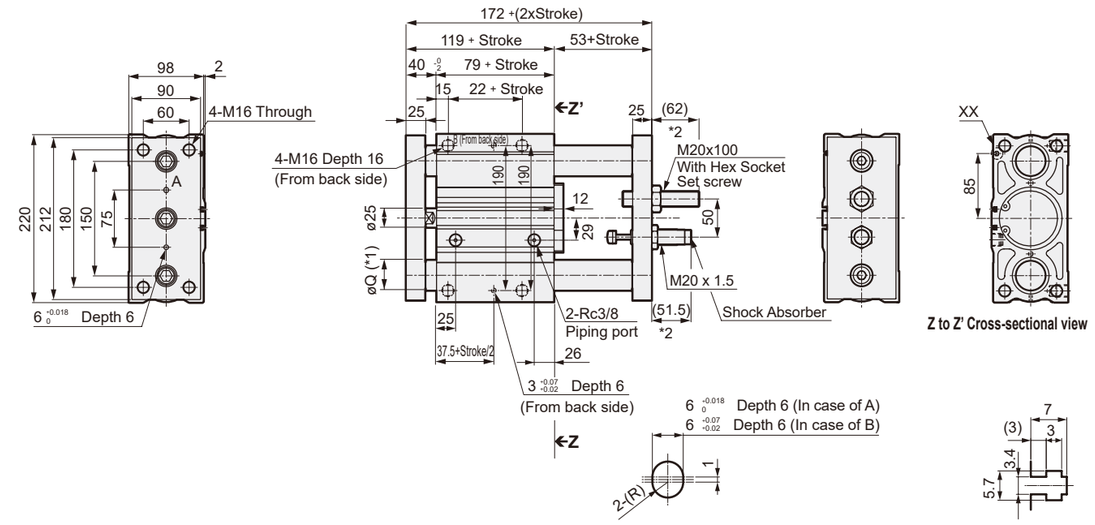
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R	S	U	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16	39	93	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18	43	102	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22	49	125	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26	56	140	79

Code / Bore Size (mm)	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø32	19 0 -2	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	39	NCK-00-1.2-C
ø40	19 0 -2	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	42	NCK-00-1.2-C
ø50	22 0 -2	16	16	16	51	52	40	47	M16x80	M14x1.5	45	NCK-00-2.6-C
ø63	22 0 -2	16	16	16	51	52	40	47	M16x80	M14x1.5	52	NCK-00-2.6-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø80)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

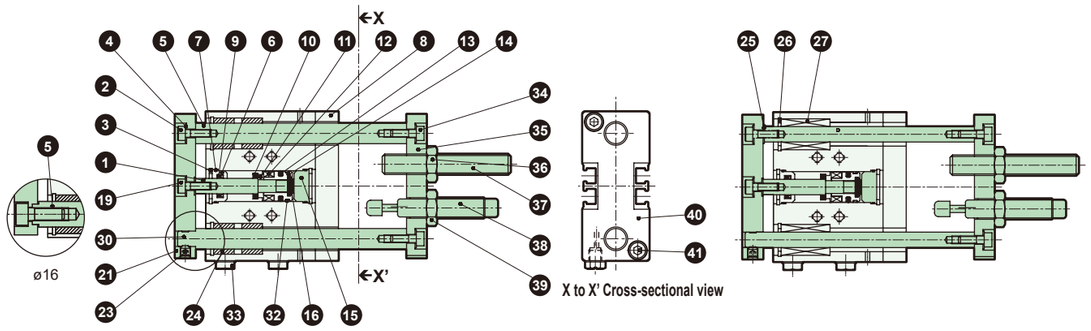
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: Dimensions at the time of shipment are shown.
*3: Intermediate strokes are not supported.
***4: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø8 to ø63)

● Stroke adjustment type

STS-$^{M}_{B}$P

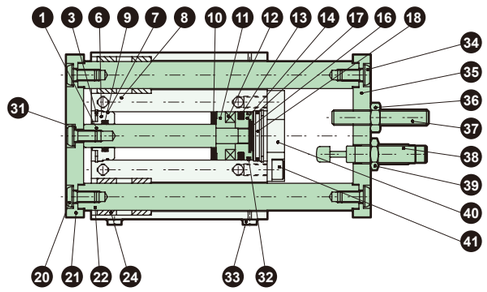
ø8, ø12, ø16



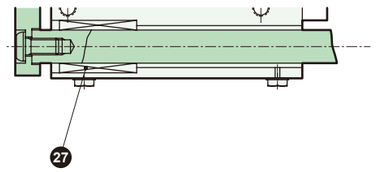
Plain bearing (M)

Rolling bearing (B)

ø20, ø25

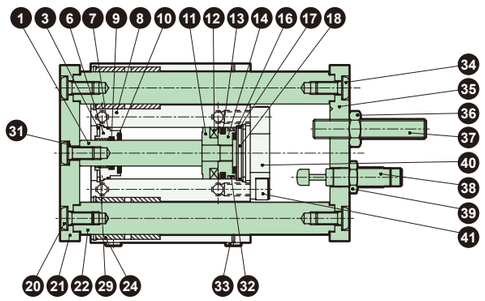


Plain bearing (M)

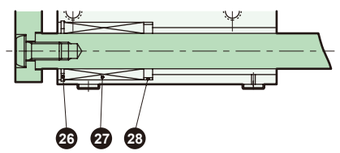


Rolling bearing (B)

ø32, ø40, ø50, ø63



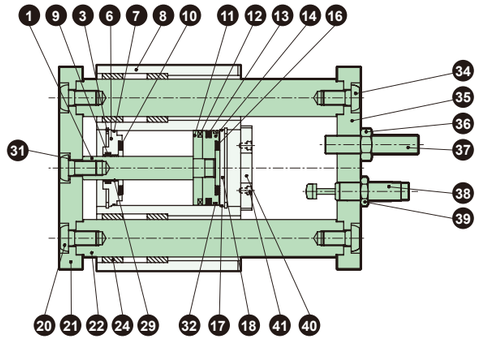
Plain bearing (M)



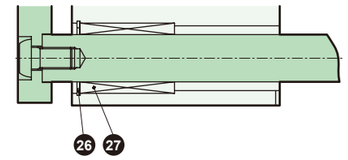
Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

● Stroke adjustment type



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks	Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating	20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
					21	End plate		Aluminum Alloy	Alumite
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate	22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
3	C-type retaining ring		Steel	Zinc phosphate			B	Alloy Steel	Industrial Hard Chrome Plating
4	Plain Washer		Steel	Black Oxide	23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
5	Guide rod (1)	M	Stainless Steel	ø12,16: Industrial chromium plating	24	Metal		Oil-Impregnated Bearing Alloy	
	(ø8 to ø16)	B	Alloy Steel	Industrial Hard Chrome Plating	25	Plain Washer		Steel	Black Oxide
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate	26	C-type retaining ring		Steel	Zinc phosphate
					27	Ball bush			
7	Metal gasket		Nitrile Rubber		28	Collar		Aluminum Alloy	
8	Cylinder Body		Aluminum Alloy	Hard Anodized	29	Bushing		Bearing Alloy	
9	Rod Packing		Nitrile Rubber		30	Guide rod (2)	M	Stainless Steel	ø12: Industrial chromium plating
10	Cushion rubber (R)		Urethane Rubber			(ø8, ø12)	B	Alloy Steel	Industrial Hard Chrome Plating
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate	31	Belleville washer		Steel	
					32	Wear Ring		Polyacetal	ø12 to ø80 only
12	Magnet				33	Plug			ø12 to ø25: FPL (CKD)
13	Piston Packing		Nitrile Rubber					ø32 to ø80: Steel	ø32 to ø63: Zinc chromate
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate	34	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	Cover		Aluminum Alloy		35	End plate (H)		Aluminum Alloy	Alumite
16	Cushion rubber (H)		Urethane Rubber		36	Hexagon Nut		Steel	Black Oxide
17	O-ring		Nitrile Rubber		37	Hexagon socket head set screw		Steel	Black Oxide
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate	38	Shock Absorber			
					39	Hexagon Nut		Steel	Zinc Chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate	40	Stopper plate		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate	41	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate

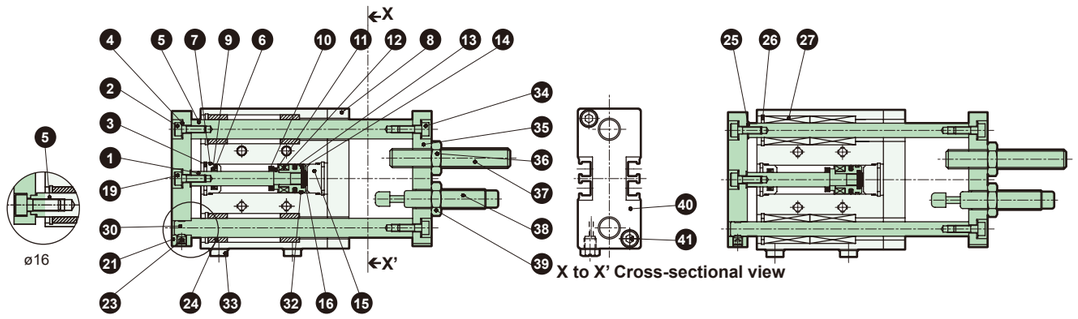
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø8 to ø63)

● Stroke adjustment type

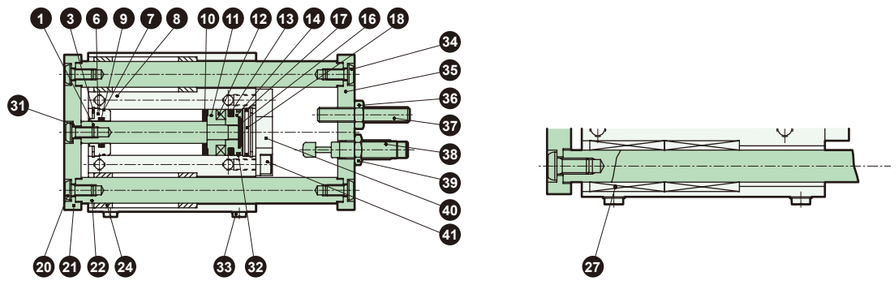
STL-$^{M}_{B}$P

ø8, ø12, ø16



Plain bearing (M) Rolling bearing (B)

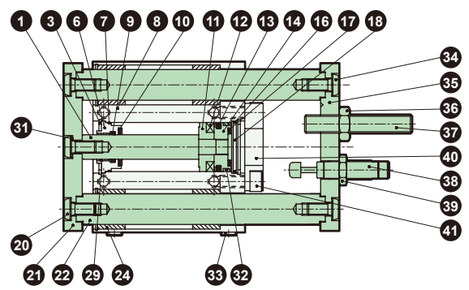
ø20, ø25



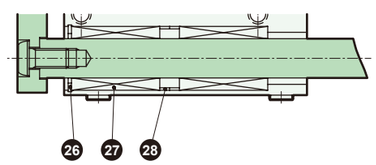
Plain bearing (M)

Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

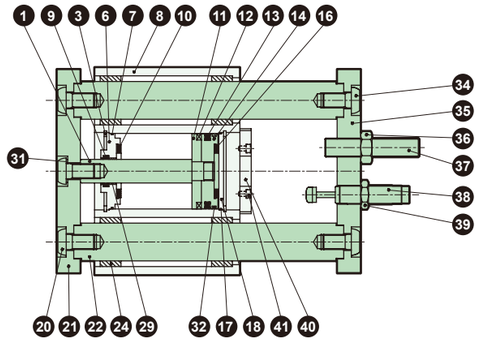


Rolling bearing (B)

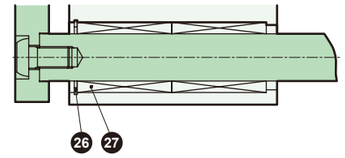
Internal structure diagram / Material (Bore size: ø80)

● Stroke adjustment type

STL-$^{M}_{B}$P



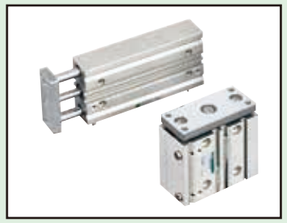
Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks	Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating	20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
					21	End plate		Aluminum Alloy	Alumite
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate	22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
3	C-type retaining ring		Steel	Zinc phosphate			B	Alloy Steel	Industrial Hard Chrome Plating
4	Plain Washer		Steel	Black Oxide	23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
5	Guide rod (1)	M	Stainless Steel	ø12,16: Industrial chromium plating	24	Metal		Oil-Impregnated Bearing Alloy	
	(ø8 to ø16)	B	Alloy Steel	Industrial Hard Chrome Plating	25	Plain Washer		Steel	Black Oxide
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate	26	C-type retaining ring		Steel	Zinc phosphate
					27	Ball bush			
7	Metal gasket		Nitrile Rubber		28	Collar		Aluminum Alloy	
8	Cylinder Body		Aluminum Alloy	Hard Anodized	29	Bushing		Bearing Alloy	
9	Rod Packing		Nitrile Rubber		30	Guide rod (2)	M	Stainless Steel	ø12: Industrial chromium plating
10	Cushion rubber (R)		Urethane Rubber			(ø8, ø12)	B	Alloy Steel	Industrial Hard Chrome Plating
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate	31	Belleville washer		Steel	
					32	Wear Ring		Polyacetal	ø12 to ø80 only
12	Magnet				33	Plug		ø32 to ø80: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
13	Piston Packing		Nitrile Rubber						
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate	34	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	Cover		Aluminum Alloy		35	End plate (H)		Aluminum Alloy	Alumite
16	Cushion rubber (H)		Urethane Rubber		36	Hexagon Nut		Steel	Black Oxide
17	O-ring		Nitrile Rubber		37	Hexagon socket head set screw		Steel	Black Oxide
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate	38	Shock Absorber			
					39	Hexagon Nut		Steel	Zinc Chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate	40	Stopper plate		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate	41	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting, Heat resistant type

STS / STL-$^{M}_{B}$T Series

● Bore size: ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

Short stroke
(Switch cannot be mounted)

STS - M T - 12 [ ] - 10 - F

Model No. ❶ ❷ ❸ ❹ ❺

Long stroke
(Switch cannot be mounted)

STL - M T - 12 [ ] - 50 - F

Model No. ❷ Bore size ❹ Stroke

❶ Bearing type ❸ Piping thread type ❺ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing (ø20 and ø25 cannot be manufactured.)

❷ Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø12 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●							
		20	●	●							
		25			●	●	●	●	●	●	●
		30	●	●							
		40	●	●							
		50	●	●	●	●	●	●	●	●	●
		75									●
		100									●
	Intermediate Stroke	*1 *2	Every 5 mm								

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●
		225			●	●	●	●	●	●	●
		250			●	●	●	●	●	●	●
		275			●	●	●	●	●	●	●
		300			●	●	●	●	●	●	●
		325			●	●	●	●	●	●	●
		350			●	●	●	●	●	●	●
		375			●	●	●	●	●	●	●
		400			●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm								

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❺ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Ball bearing (B) only.
For details on materials, please refer to P. 502.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$T - ····· O

Specifications

Item	STS-MT/BT STL-MT/BT								
Bore Size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/Heat Resistant Type								
Operating Fluid	Compressed Air								
Max. Working Pressure MPa	1.0								
Min. Operating Pressure MPa	0.2				0.15				
Proof Pressure MPa	1.6								
Ambient Temperature °C	5 to 120								
Port Size	M5				Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0								
Operating Piston Speed mm/s	50 to 500							50 to 300	
Cushion	None								
Lubrication	Not required (Periodically grease up with heat resistant grease.)								
Allowable Absorbed Energy J	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø12	10, 20, 30, 40, 50	50	5
ø16			
ø20	25, 50		
ø25			
ø32			
ø40			
ø50			
ø63			
ø80	25, 50, 75, 100	100	

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø12	50, 75, 100, 125, 150 175, 200	200	50
ø16			
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30
ø25			
ø32			
ø40			
ø50			
ø63			
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55

Note) Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the standard stroke above it.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø12	Push	-	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	-	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	-	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	-	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	-	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	-	75.6	$1.13x10^2$	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.
However, it does not come with a switch.

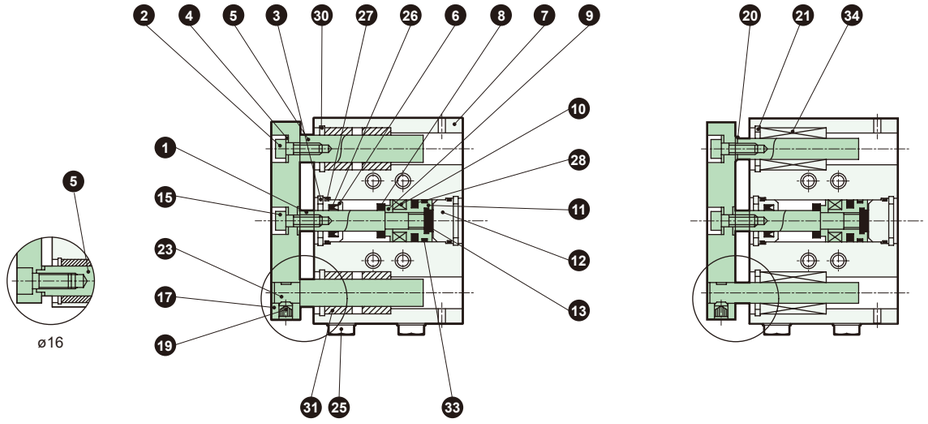
STS Series: Page 486 (ø8 to ø16), page 487 (ø20, ø25), page 488 (ø32 to ø63), page 489 (ø80)
STL Series: Page 491 (ø8 to ø16), page 492 (ø20,ø25), page 493 (ø32 to ø63), page 494 (ø80)

Internal structure diagram / Material (Bore size: ø12 to ø63)

● Heat resistant type

STS-$^{M}_{B}$T

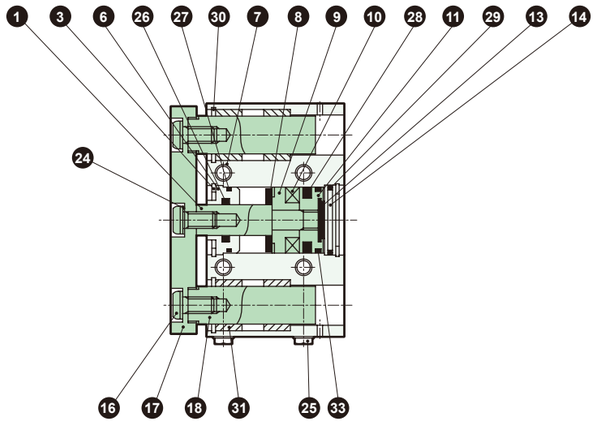
ø12, ø16



Plain bearing (M)

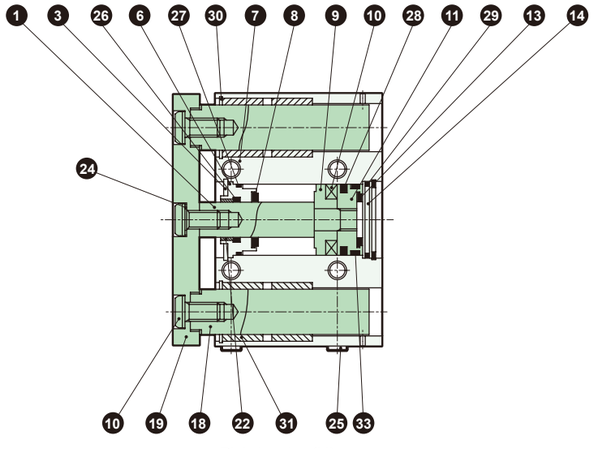
Rolling bearing (B)

ø20, ø25

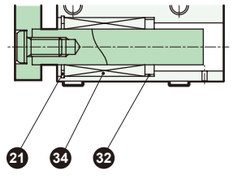


Plain bearing (M)

ø32, ø40, ø50, ø63



Plain bearing (M)

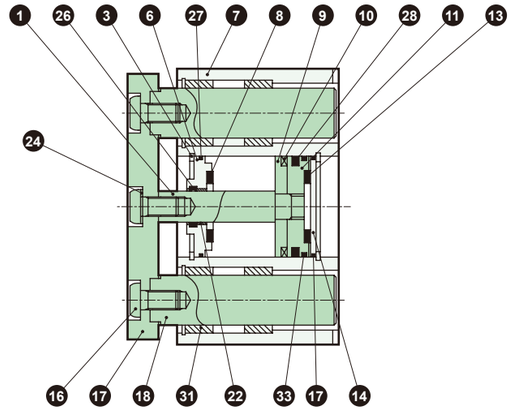


Rolling bearing (B)

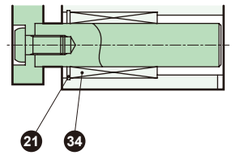
Internal structure diagram / Material (Bore size: ø80)

● Heat resistant type

STS-$^{M}_{B}$T



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Cushion rubber (R)		Urethane Rubber	
9	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
10	Magnet			
11	Piston		Aluminum Alloy	ø20 to ø80: Chromate
12	Cover		Aluminum Alloy	
13	Cushion rubber (H)		Urethane Rubber	
14	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
16	Hex Socket Button Head Bolt		Steel	Zinc Chromate
17	End plate		Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
18	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
19	Hexagon socket head set screw		Steel	Blackening (ø12 only)
20	Plain Washer		Steel	Black Oxide
21	C-type retaining ring		Steel	Zinc phosphate
22	Bushing		Bearing Alloy	
23	Guide rod (2) (ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
24	Belleville washer		Steel	
25	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Rod Packing		Fluoro Rubber	
27	Metal gasket		Fluoro Rubber	
28	Piston Packing		Fluoro Rubber	
29	O-ring		Fluoro Rubber	
30	Round R-type retaining ring		Steel	Black Oxide
31	Metal		Bearing Alloy	
32	Collar		Aluminum Alloy	
33	Wear Ring		ø12, ø16: Polytetrafluoroethylene resin ø20 to ø80: Special resin	
34	Ball bush			

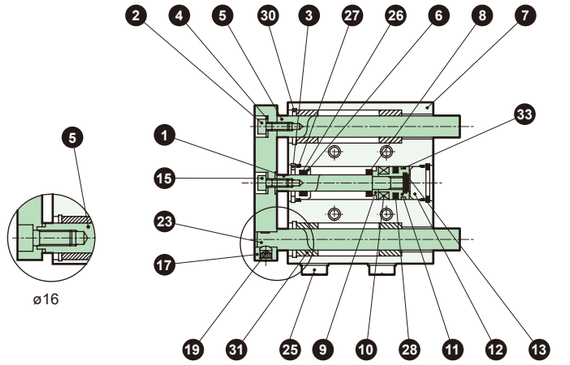
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø12 to ø63)

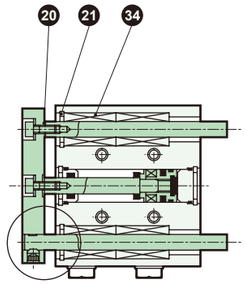
● Heat resistant type

STL-$^{M}_{B}$T

ø12, ø16

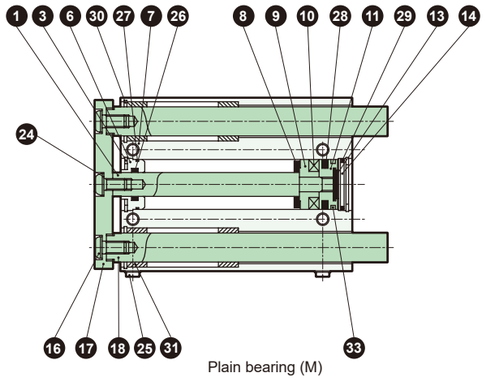


Plain bearing (M)



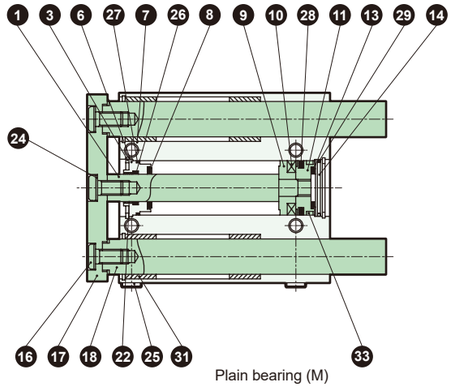
Rolling bearing (B)

ø20, ø25

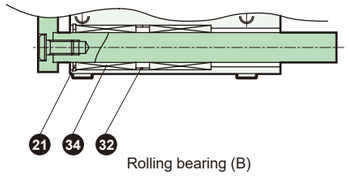


Plain bearing (M)

ø32, ø40, ø50, ø63



Plain bearing (M)

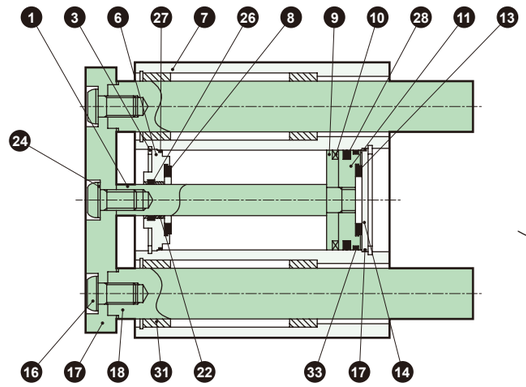


Rolling bearing (B)

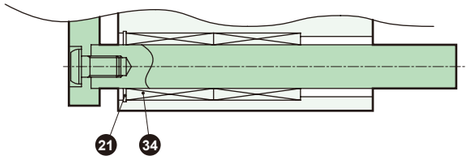
Internal structure diagram / Material (Bore size: ø80)

● Heat resistant type

STL-$^{M}_{B}$T



Plain bearing (M)

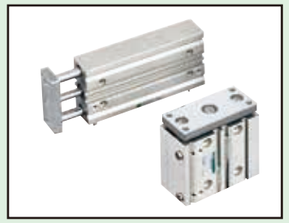


Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Cushion rubber (R)		Urethane Rubber	
9	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
10	Magnet			
11	Piston		Aluminum Alloy	ø20 to ø80: Chromate
12	Cover		Aluminum Alloy	
13	Cushion rubber (H)		Urethane Rubber	
14	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
16	Hex Socket Button Head Bolt		Steel	Zinc Chromate
17	End plate		Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
18	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
19	Hexagon socket head set screw		Steel	Blackening (ø12 only)
20	Plain Washer		Steel	Black Oxide
21	C-type retaining ring		Steel	Zinc phosphate
22	Bushing		Bearing Alloy	
23	Guide rod (2) (ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
24	Belleville washer		Steel	
25	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Rod Packing		Fluoro Rubber	
27	Metal gasket		Fluoro Rubber	
28	Piston Packing		Fluoro Rubber	
29	O-ring		Fluoro Rubber	
30	Round R-type retaining ring		Steel	Black Oxide
31	Metal		Bearing Alloy	
32	Collar		Aluminum Alloy	
33	Wear Ring		ø12, ø16: Polytetrafluoroethylene resin ø20 to ø80: Special resin	
34	Ball bush			

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting/packing seal material fluoro rubber

STS / STL-$^{M}_{B}$T2 Series

● Bore size: ø12, ø16, ø20, ø25, ø32, ø40, ø50 / ø63 / ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M T2 — 12 — 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M T2 — 12 — 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color display, T1H/V, T8H/V,\with off-delay switch
(Built-in magnet for switch) (ø40 or more)

STS - M T2 - L1 - 40 — 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M T2 — 12 — 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M T2 — 12 — 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M T2 - L1 - 40 — 50 - T1H - R - F
Model No.
❶ Bearing type
❷ Tube Bore size
❸ Piping thread Type
❹ Stroke
❺ Switch Model No.
❻ Number of Switches
❼ Option

Note1) Forø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❶.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø12 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●							
		20	●	●							
		25			●	●	●	●	●	●	●
		30	●	●							
		40	●	●							
		50	●	●	●	●	●	●	●	●	●
		75									●
		100									●
	Intermediate Stroke	*1 *2	Every 5 mm								

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●
		225			●	●	●	●	●	●	●
		250			●	●	●	●	●	●	●
		275			●	●	●	●	●	●	●
		300			●	●	●	●	●	●	●
		325			●	●	●	●	●	●	●
		350			●	●	●	●	●	●	●
		375			●	●	●	●	●	●	●
		400			●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm								

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: T8H/V switch cannot be installed on ø12 / ø16.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MT2-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MT2-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$T2 - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item	STS-MT2, BT2 STL-MT2, BT2								
Bore Size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double acting / packing material fluoro rubber								
Operating Fluid	Compressed Air								
Max. Working Pressure MPa	1.0								
Min. Operating Pressure MPa	0.15				0.1				
Proof Pressure MPa	1.6								
Ambient Temperature °C	-10 to 60 (No freezing)								
Port Size	M5				Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0								
Operating Piston Speed mm/s	50 to 500							50 to 300	
Cushion	With Rubber Cushion								
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)								
Allowable Absorbed Energy J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore size	Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø12	10,20,30,40,50	50	5	15	5 *1
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø12	50, 75, 100, 125, 150 175, 200	200	50	50 *2
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	56.7	75.6	1.13x10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	80.4	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	60.3	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.06 x 10²	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	1.96 x 10²	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	1.65 x 10²	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	3.12 x 10²	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	2.80 x 10²	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	5.03 x 10²	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	4.54 x 10²	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.

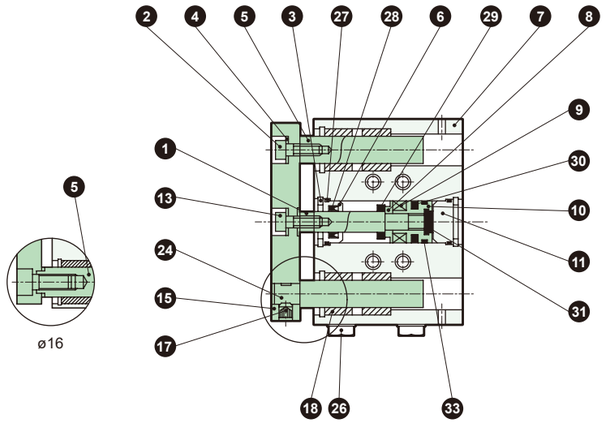
STS Series: P. 486 (ø8 to ø16), P. 487 (ø2, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal structure diagram / Material (Bore size: ø12 to ø63)

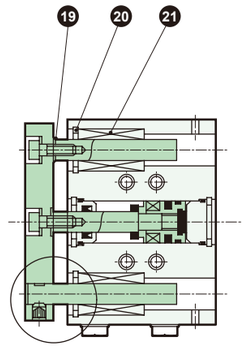
● Packing Material: Fluoro Rubber

STS-$^{M}_{B}$T2

ø12, ø16

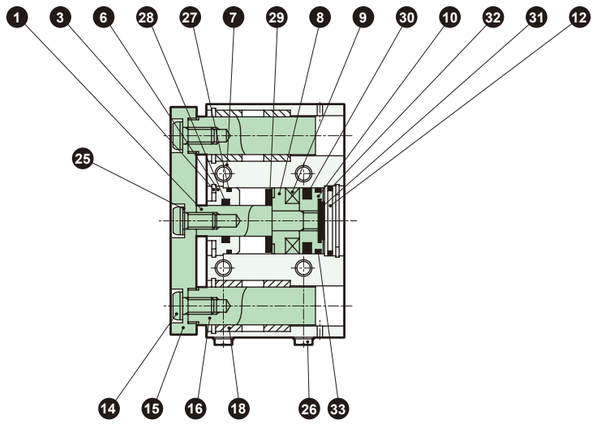


Plain bearing (M)

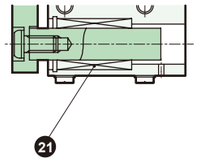


Rolling bearing (B)

ø20, ø25

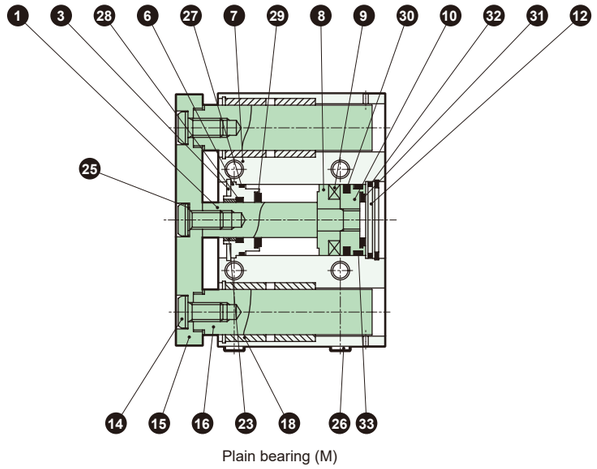


Plain bearing (M)

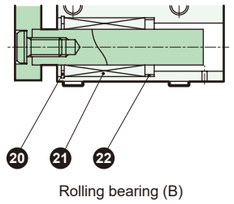


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

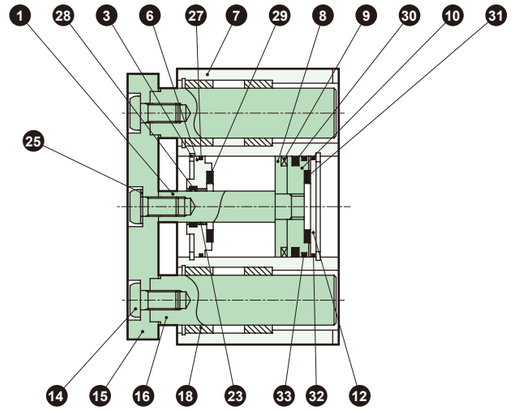


Rolling bearing (B)

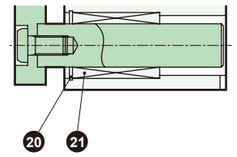
Internal structure diagram / Material (Bore size: ø80)

●Packing Material: Fluoro Rubber

STS-$^{M}_{B}$T2



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M B	Stainless Steel Alloy Steel	ø12,16: Industrial chromium plating Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
9	Magnet			
10	Piston		Aluminum Alloy	ø20 to ø80: Chromate
11	Cover		Aluminum Alloy	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
14	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	End plate		Aluminum Alloy	Alumite
16	Guide rod (ø20 to ø80)	M B	Steel Alloy Steel	Industrial Hard Chrome Plating Industrial Hard Chrome Plating

Part No.	Part Name		Material	Remarks
17	Hexagon socket head set screw		Steel	Blackening (ø12 only)
18	Metal		Oil-Impregnated Bearing Alloy	
19	Plain Washer		Steel	Black Oxide
20	C-type retaining ring		Steel	Zinc phosphate
21	Ball bush			
22	Collar		Aluminum Alloy	
23	Bushing		Bearing Alloy	
24	Guide rod (2) (ø12)	M B	Stainless Steel Alloy Steel	ø12: Industrial chromium plating Industrial Hard Chrome Plating
25	Belleville washer		Steel	
26	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
27	Metal gasket		Fluoro Rubber	
28	Rod Packing		Fluoro Rubber	
29	Cushion rubber (R)		Urethane Rubber	
30	Piston Packing		Fluoro Rubber	
31	Cushion rubber (H)		Urethane Rubber	
32	O-ring		Fluoro Rubber	
33	Wear Ring		Polyacetal	

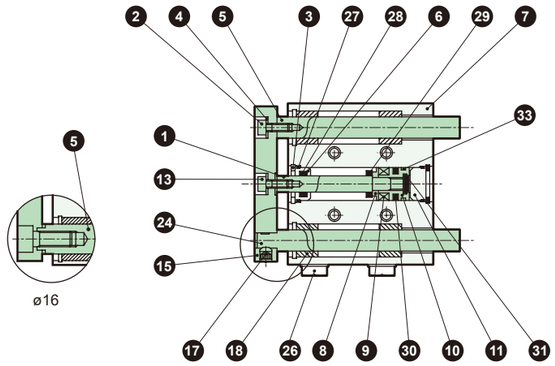
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø12 to ø63)

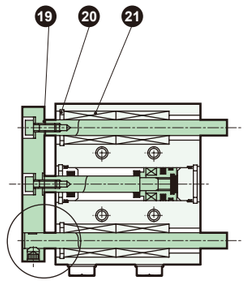
● Packing Material: Fluoro Rubber

STSL-$^{M}_{B}$T2

ø12, ø16

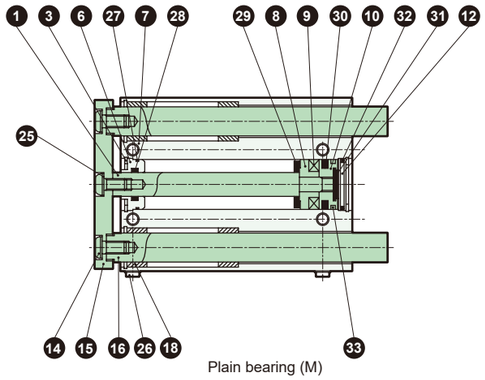


Plain bearing (M)

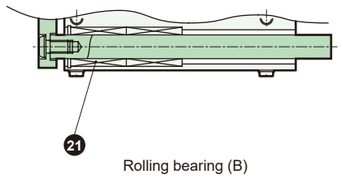


Rolling bearing (B)

ø20, ø25

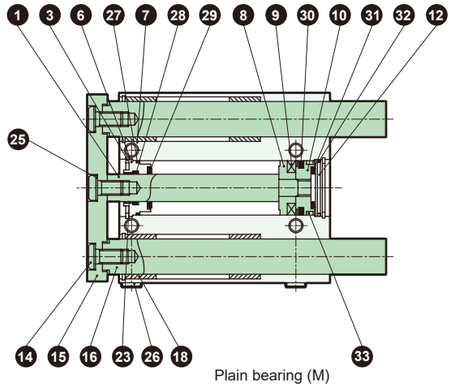


Plain bearing (M)

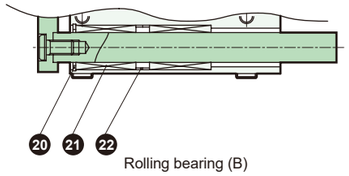


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

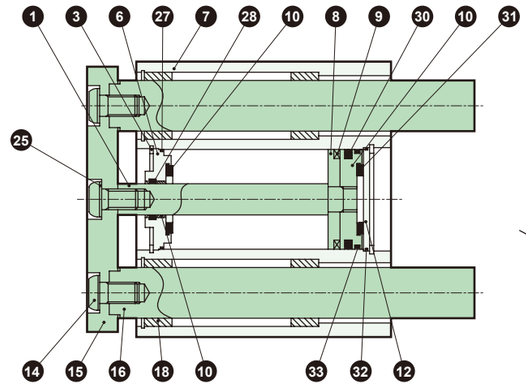


Rolling bearing (B)

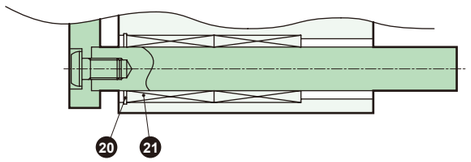
Internal structure diagram / Material (Bore size: ø80)

● Packing Material: Fluoro Rubber

STL-$^{M}_{B}$T2



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
9	Magnet			
10	Piston		Aluminum Alloy	ø20 to ø80: Chromate
11	Cover		Aluminum Alloy	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
14	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	End plate		Aluminum Alloy	Alumite
16	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating

Part No.	Part Name		Material	Remarks
17	Hexagon socket head set screw		Steel	Blackening (ø12 only)
18	Metal		Oil-Impregnated Bearing Alloy	
19	Plain Washer		Steel	Black Oxide
20	C-type retaining ring		Steel	Zinc phosphate
21	Ball bush			
22	Collar		Aluminum Alloy	
23	Bushing		Bearing Alloy	
24	Guide rod (2) (ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
25	Belleville washer		Steel	
26	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
27	Metal gasket		Fluoro Rubber	
28	Rod Packing		Fluoro Rubber	
29	Cushion rubber (R)		Urethane Rubber	
30	Piston Packing		Fluoro Rubber	
31	Cushion rubber (H)		Urethane Rubber	
32	O-ring		Fluoro Rubber	
33	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Rubber-air cushioned

STS / STL-$\frac{M}{B}$-□C Series

● Bore size: ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M — 32 □ C - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M — 32 □ C - 50 - T0H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M - L1 - 40 □ C - 50 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M — 32 □ C - 100 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M — 32 □ C - 100 - T0H - D - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M - L1 - 40 □ C - 100 - T1H - D - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type With Rubber Air Cushion ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	Rc Thread
N	NPT Thread (Custom Order Product)
G	G Thread (Custom Order Product)

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●
		50	●	●	●	●	●
		75					●
		100					●
	Intermediate Stroke *1, *2		Every 5 mm				

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	
		75	●	●	●	●	●
		100	●	●	●	●	●
		125	●	●	●	●	●
		150	●	●	●	●	●
		175	●	●	●	●	●
		200	●	●	●	●	●
		225	●	●	●	●	●
		250	●	●	●	●	●
		275	●	●	●	●	●
		300	●	●	●	●	●
		325	●	●	●	●	●
		350	●	●	●	●	●
		375	●	●	●	●	●
		400	●	●	●	●	●
	Intermediate Stroke *1, *2		Every 5 mm				

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded)
Example) STS-M-L1-63C-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
(Example) STS-M-L1-80C-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$\frac{M}{B}$-□C - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0H
❺ Switch Model No.

Specifications

Item		STS/L-M/B-□C				
Bore Size	mm	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.2				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)				
Port Size		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	+2.0 0				
Operating Piston Speed	mm/s	50 to 500			50 to 300	
Cushion		With Rubber Air Cushion				
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable Absorbed Energy	J	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø32	25, 50	50	5	5 *1
ø40				
ø50				
ø63			10	10 *1
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø32	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

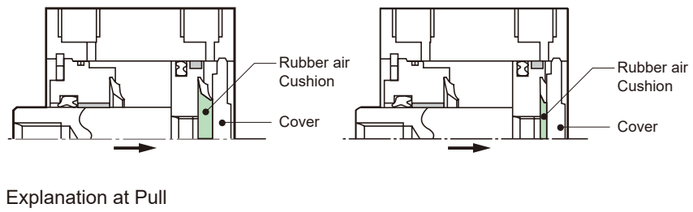
Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø32	Push	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

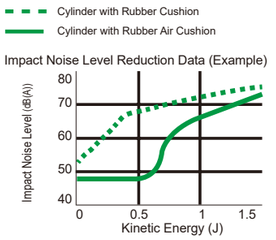
For cylinder weight, please refer to P. 642 to 645.

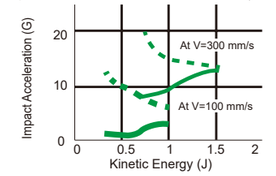
Rubber air cushion mechanism



Explanation at Pull

When the piston operates and the rubber air cushion comes into contact with the cover, a sealed air space is formed in ■. The air in this sealed space is compressed as the piston operates and absorbs energy.
At the stroke end, energy absorption due to the compressive strain of the rubber air cushion is also added.





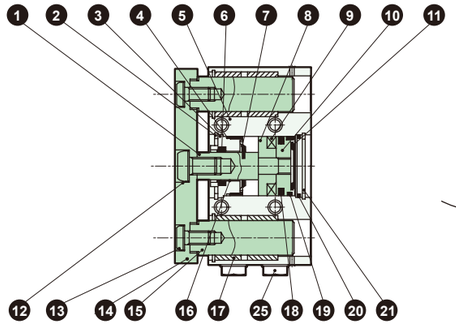
Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.

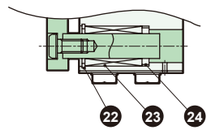
STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P.488 (ø32 to ø63), P.489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal Structure Diagram / Material

● STS-$^{M}_{B}$-32C to 80C (short stroke)

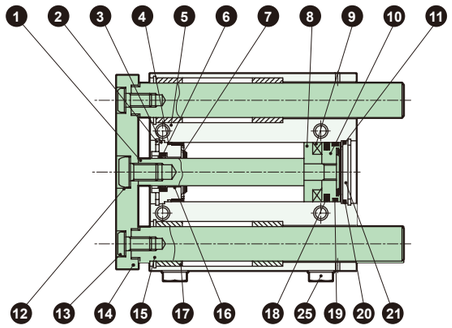


Bearing (M)

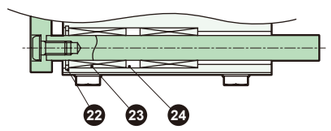


Ball bearing (B)

● STL-$^{M}_{B}$-32C to 80C (long stroke)



Bearing (M)



Ball bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Rubber air cushion (R)	Urethane Rubber	
8	Spacer	Aluminum Alloy	
9	Magnet	Plastic	
10	Piston	Aluminum Alloy	
11	Rubber air cushion (H)	Special rubber	
12	Belleville washer	Steel	
13	Hex Socket Button Head Bolt	Steel	Zinc Chromate
14	End plate	Aluminum Alloy	Alumite

Part No.	Part Name	Material	Remarks
15	Guide rod	Steel	Industrial Hard Chrome Plating
16	Bushing	Bearing Alloy	
17	Metal	Oil-Impregnated Bearing Alloy	
18	Piston Packing	Nitrile Rubber	
19	Wear Ring	Polyacetal	
20	O-ring	Nitrile Rubber	
21	Bottom plate	ø32 to ø63: Aluminum alloy	
		ø80: Steel	ø80: Zinc chromate
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	(Not provided for ø80)
25	Plug	ø8 to ø25: -	ø8 to ø25: FPL (CKD)
		ø32 to ø63: Steel	ø32 to ø63: Zinc chromate

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

Technical Data

Refer to P. 638 for guided cylinder selection guide.

[Performance Comparison of Impact Noise Level]

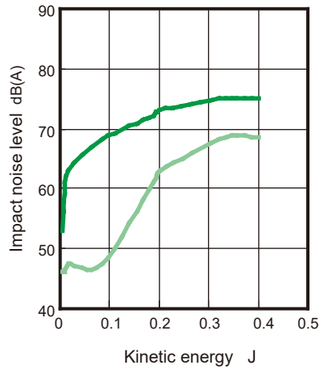
The data is a comparison example under the following conditions.
Values change depending on frame rigidity, etc., so they are not guaranteed values.

(Test conditions)

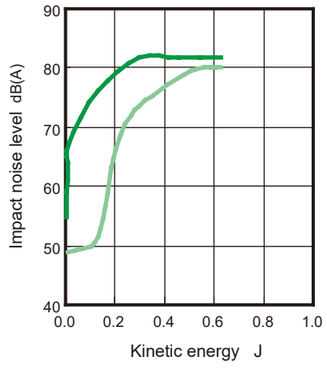
Cylinder type	: STS/L
Cylinder Mounting Direction	: Vertically upward
Cylinder supply pressure	: 0.5 MPa
Sound level meter measurement position	: 1 m from sample

Standard rubber cushion product:
Rubber air cushion product:

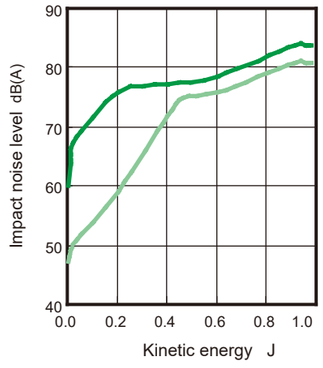
ø32



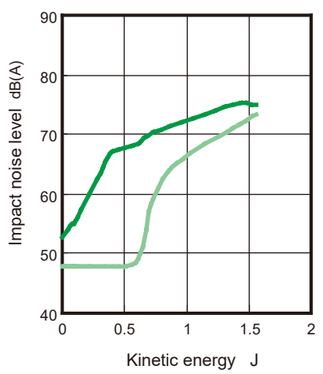
ø40



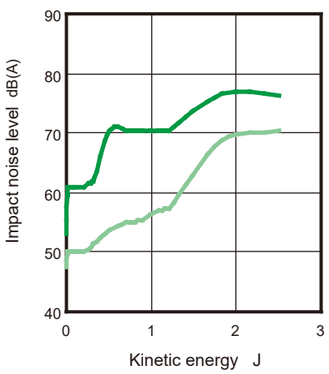
ø50



ø63



ø80

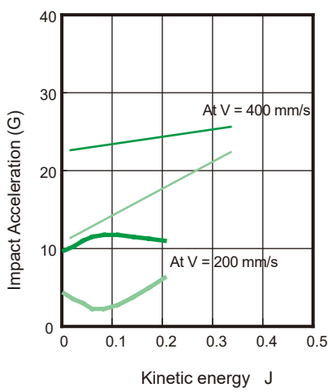


Technical Data

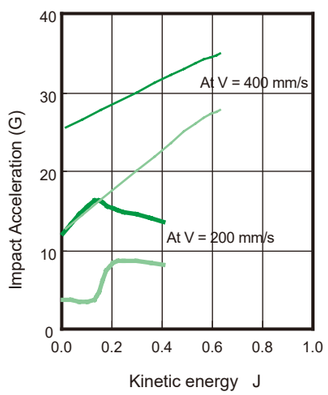
[Performance Comparison of Impact Acceleration]

Standard rubber cushion product:
Rubber air cushion product:

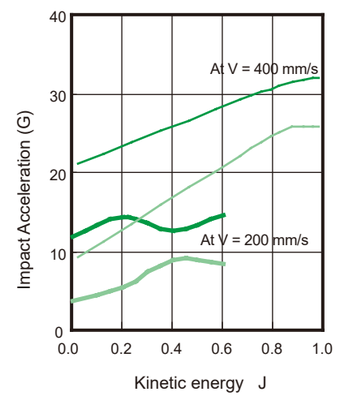
ø32



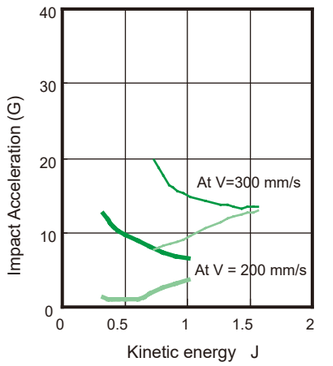
ø40



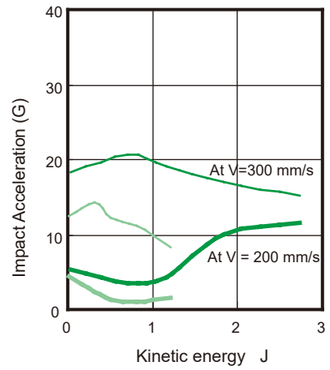
ø50



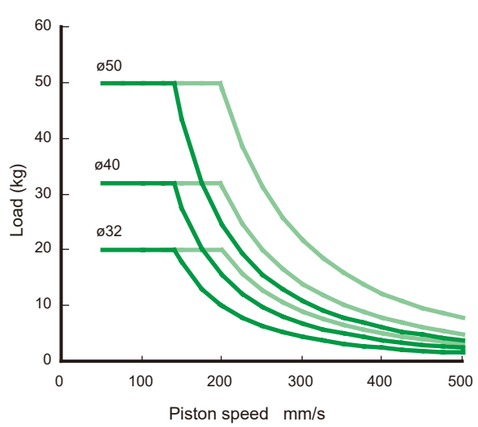
ø63

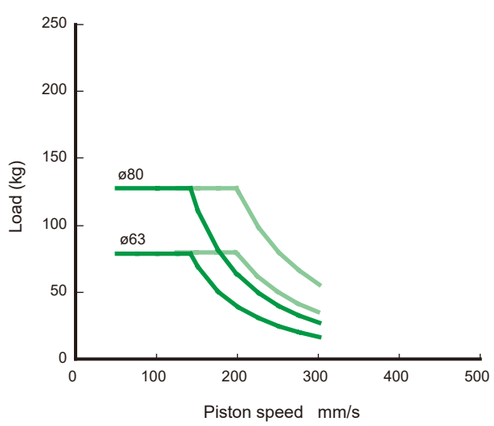


ø80



[Allowable Energy Value]





The usable range is to the lower left of the curve.
It is possible to use within the range indicated by the line in the figure, but it is recommended to use within the range of the solid line to make the silencing effect more effective.

Guided cylinder Double acting, With air cushion

STS / STL-$^{M}_{B}$C Series

● Bore size: ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M C — 25 ( ) - 25 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M C — 25 ( ) - 25 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M C - L1 - 40 ( ) - 25 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M C — 25 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M C — 25 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M C - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●
		50	●	●	●	●	●	●
		75						●
		100						●
	Intermediate Stroke *1		Every 1 mm (Custom product)					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

Series	Stroke (mm)		Applicable Bore Size ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	
		75	●	●	●	●	●	●
		100	●	●	●	●	●	●
		125	●	●	●	●	●	●
		150	●	●	●	●	●	●
		175	●	●	●	●	●	●
		200	●	●	●	●	●	●
		225	●	●	●	●	●	●
		250	●	●	●	●	●	●
		275	●	●	●	●	●	●
		300	●	●	●	●	●	●
		325	●	●	●	●	●	●
		350	●	●	●	●	●	●
		375	●	●	●	●	●	●
		400	●	●	●	●	●	
	Intermediate Stroke *1		Every 1 mm (Custom product)					

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MC-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product.
In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MC-L1-80-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion proof (piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$C - ····· O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item	STS-MC/BC, STL-MC/BC					
Bore Size mm	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/With Air Cushion					
Operating Fluid	Compressed Air					
Max. Working Pressure MPa	1.0					
Min. Operating Pressure MPa	0.15	0.1				
Proof Pressure MPa	1.6					
Ambient Temperature °C	-10 to 60 (No freezing)					
Port Size	M5	Rc1/8		Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_{0}$					
Operating Piston Speed mm/s	50 to 500				50 to 300	
Cushion	With Air Cushion					
Effective Cushion Length mm	8.1	8.6		13.4		15.4
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J	1.18	2.27	3.05	3.81	15.64	20.18

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Minimum Stroke (mm) *1	Min. stroke with switch (mm) *1
ø25	25, 50	50	15	15 *2
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: For min. stroke and below, select the basic type since there is no cushion effect.
*2: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø25	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375	375	55	55 *2

*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

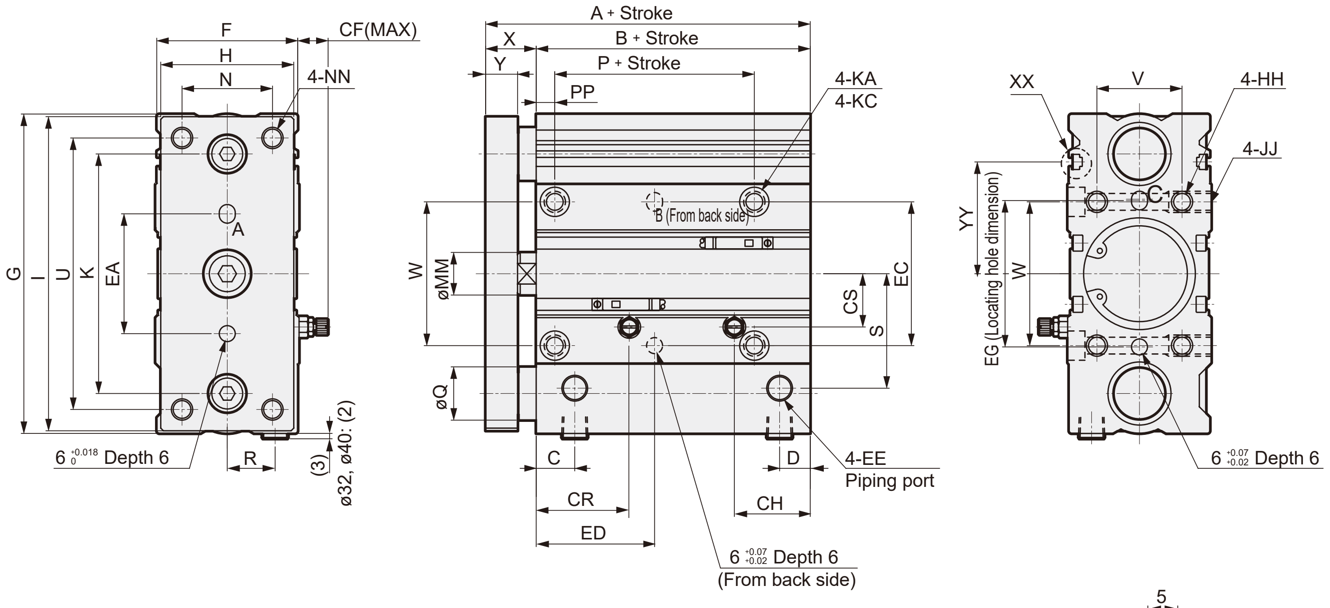
Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø25	Push	-	73.6	98.2	1.47 x 10^2	1.96 x 10^2	2.45 x 10^2	2.95 x 10^2	3.44 x 10^2	3.93 x 10^2	4.42 x 10^2	4.91 x 10^2
	Pull	-	56.7	75.6	1.13x10^2	1.51 x 10^2	1.89 x 10^2	2.27 x 10^2	2.64 x 10^2	3.02 x 10^2	3.40 x 10^2	3.78 x 10^2
ø32	Push	80.4	1.21 x 10^2	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.02 x 10^2	4.83 x 10^2	5.63 x 10^2	6.43 x 10^2	7.24 x 10^2	8.04 x 10^2
	Pull	60.3	90.5	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.02 x 10^2	3.62 x 10^2	4.22 x 10^2	4.83 x 10^2	5.43 x 10^2	6.03 x 10^2
ø40	Push	1.26 x 10^2	1.88 x 10^2	2.51 x 10^2	3.77 x 10^2	5.03 x 10^2	6.28 x 10^2	7.54 x 10^2	8.80 x 10^2	1.01 x 10^3	1.13 x 10^3	1.26 x 10^3
	Pull	1.06 x 10^2	1.58 x 10^2	2.11 x 10^2	3.17 x 10^2	4.22 x 10^2	5.28 x 10^2	6.33 x 10^2	7.39 x 10^2	8.44 x 10^2	9.50 x 10^2	1.06 x 10^3
ø50	Push	1.96 x 10^2	2.95 x 10^2	3.93 x 10^2	5.89 x 10^2	7.85 x 10^2	9.82 x 10^2	1.18 x 10^3	1.37 x 10^3	1.57 x 10^3	1.77 x 10^3	1.96 x 10^3
	Pull	1.65 x 10^2	2.47 x 10^2	3.30 x 10^2	4.95 x 10^2	6.60 x 10^2	8.25 x 10^2	9.90 x 10^2	1.15 x 10^3	1.32 x 10^3	1.48 x 10^3	1.65 x 10^3
ø63	Push	3.12 x 10^2	4.68 x 10^2	6.23 x 10^2	9.35 x 10^2	1.25 x 10^3	1.56 x 10^3	1.87 x 10^3	2.18 x 10^3	2.49 x 10^3	2.81 x 10^3	3.12 x 10^3
	Pull	2.80 x 10^2	4.20 x 10^2	5.61 x 10^2	8.41 x 10^2	1.12 x 10^3	1.40 x 10^3	1.68 x 10^3	1.96 x 10^3	2.24 x 10^3	2.52 x 10^3	2.80 x 10^3
ø80	Push	5.03 x 10^2	7.54 x 10^2	1.01 x 10^3	1.51 x 10^3	2.01 x 10^3	2.51 x 10^3	3.02 x 10^3	3.52 x 10^3	4.02 x 10^3	4.52 x 10^3	5.03 x 10^3
	Pull	4.54 x 10^2	6.80 x 10^2	9.07 x 10^2	1.36 x 10^3	1.81 x 10^3	2.27 x 10^3	2.72 x 10^3	3.17 x 10^3	3.63 x 10^3	4.08 x 10^3	4.54 x 10^3

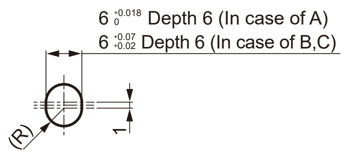
For cylinder weight, please refer to P. 642 to 645.

Dimensions (bore size: ø25, ø32, ø40, ø50, ø63)

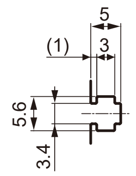
● With Air Cushion

STS-M/B C





A, B, C Long hole part dimension



Detail of XX part

● STS-M/BC (ø25 to ø63)

Code / Bore Size (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH	I	JJ	K	KA
ø25	79	66	12	9	M5x0.8	32	35	37	27 + Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through
ø32	93	74	14	10.5	Rc1/8	42	45	46	30 + Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through
ø40	97	78	14.5	11.5	Rc1/8	45	54	55	32 + Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	102	80	16	12.5	Rc1/4	55	66	69	32 + Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	108	86	12.5	17.5	Rc1/4	62	79	82	35 + Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

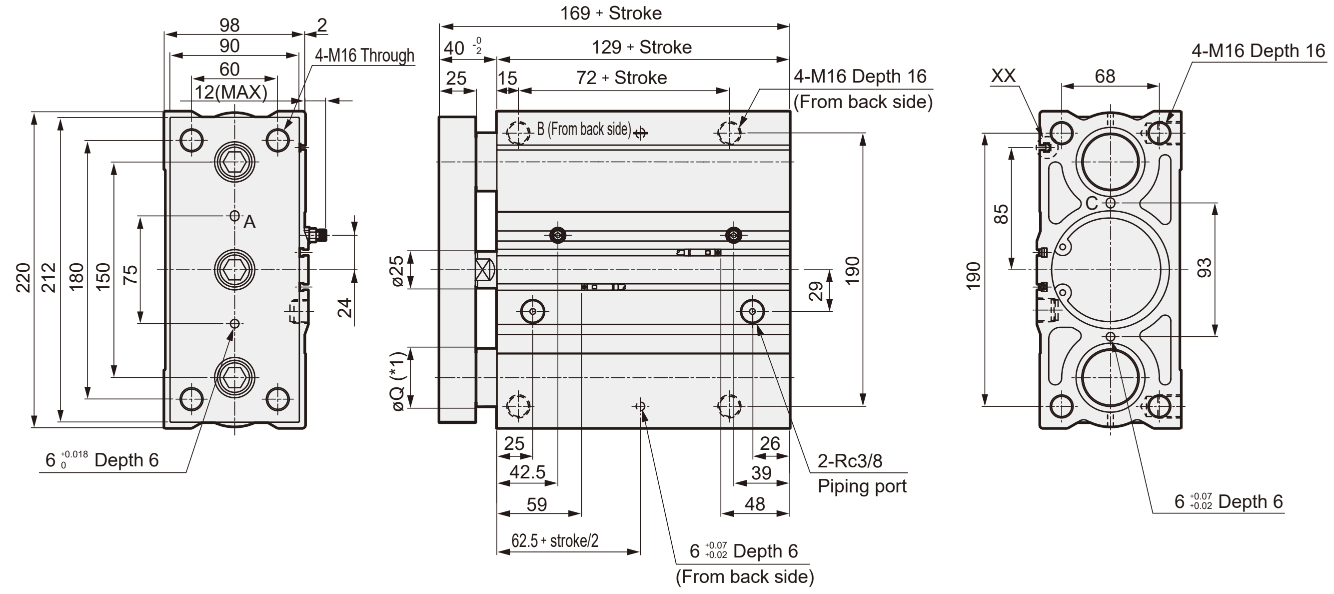
Code / Bore Size (mm)	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R	S	U	V	W	X	Y	YY	CF	CH	CR	CS
ø25	9.5 Counterbore Depth 5.4	12	26	M6 Through	45	6	14	12	14	26	72	24	35	13^{0}_{-2}	9	27	15	24.5	27	25
ø32	11 Counterbore Depth 6.5	16	29	M8 Through	47	7	20	16	16	39	93	25	45	19^{0}_{-2}	12	39	14	28	33	34
ø40	11 Counterbore Depth 6.5	16	34	M8 Through	50	7	20	16	18	43	102	32	54	19^{0}_{-2}	12	42	14	29	35	20
ø50	14 Counterbore Depth 8.6	20	44	M10 Through	51	8	25	20	22	49	125	38	66	22^{0}_{-2}	16	45	17	29	36	23
ø63	14 Counterbore Depth 8.6	20	55	M10 Through	51	8	25	20	26	56	140	50	79	22^{0}_{-2}	16	52	17	29	41.5	25

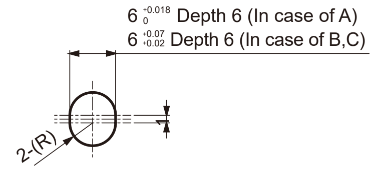
*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: Port plug of ø25 is hexagonal.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

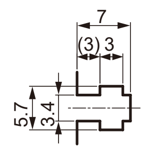
● With Air Cushion

STS-M/B C





A, B, C Long hole part dimension



Detail of XX part

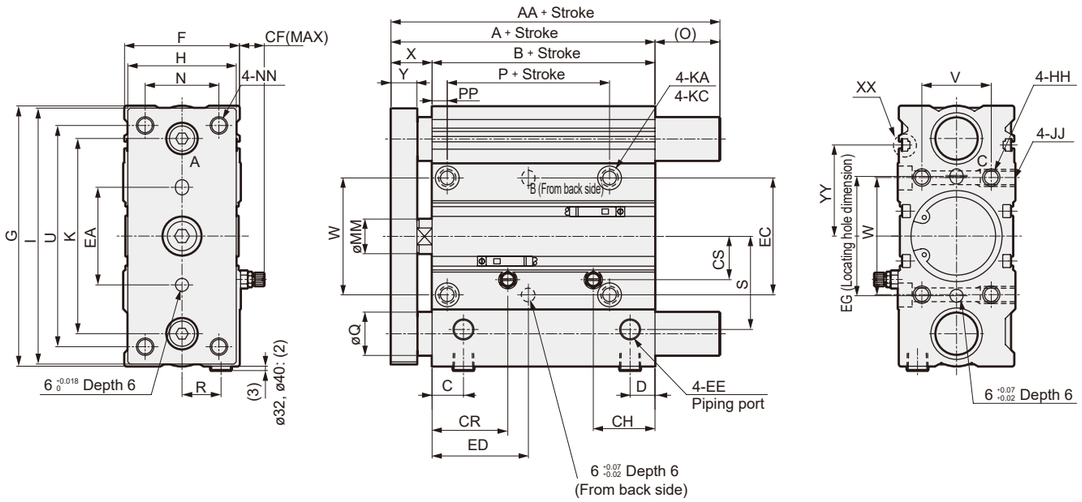
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

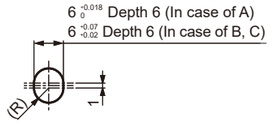
Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

Dimensions (bore size: ø25, ø32, ø40, ø50, ø63)

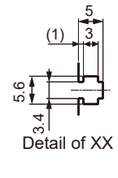
● Air Cushion Type

STL-$^{M}_{B}$C





A, B, C Long hole part dimension



Detail of XX part

● STL-M/BC (ø25 to ø63)

Code / Bore Size (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH	I	JJ	K	KA
ø25	79	79	66	12	9	M5x0.8	32	35	37	27 + Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through
ø32	93	102	74	14	10.5	Rc1/8	42	45	46	30 + Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through
ø40	97	102	78	14.5	11.5	Rc1/8	45	54	55	32 + Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	102	125	80	16	12.5	Rc1/4	55	66	69	32 + Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	108	125	86	12.5	17.5	Rc1/4	62	79	82	35 + Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W	X	Y	YY	CF	CH	CR	CS
ø25	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	45	6	14	12	14	26	72	24	35	13 0 -2	9	27	15	24.5	27	25
ø32	11 Counterbore Depth 6.5	16	29	M8 Through	9	47	7	20	16	16	39	93	25	45	19 0 -2	12	39	14	28	33	34
ø40	11 Counterbore Depth 6.5	16	34	M8 Through	5	50	7	20	16	18	43	102	32	54	19 0 -2	12	42	14	29	35	20
ø50	14 Counterbore Depth 8.6	20	44	M10 Through	23	51	8	25	20	22	49	125	38	66	22 0 -2	16	45	17	29	36	23
ø63	14 Counterbore Depth 8.6	20	55	M10 Through	17	51	8	25	20	26	56	140	50	79	22 0 -2	16	52	17	29	41.5	25

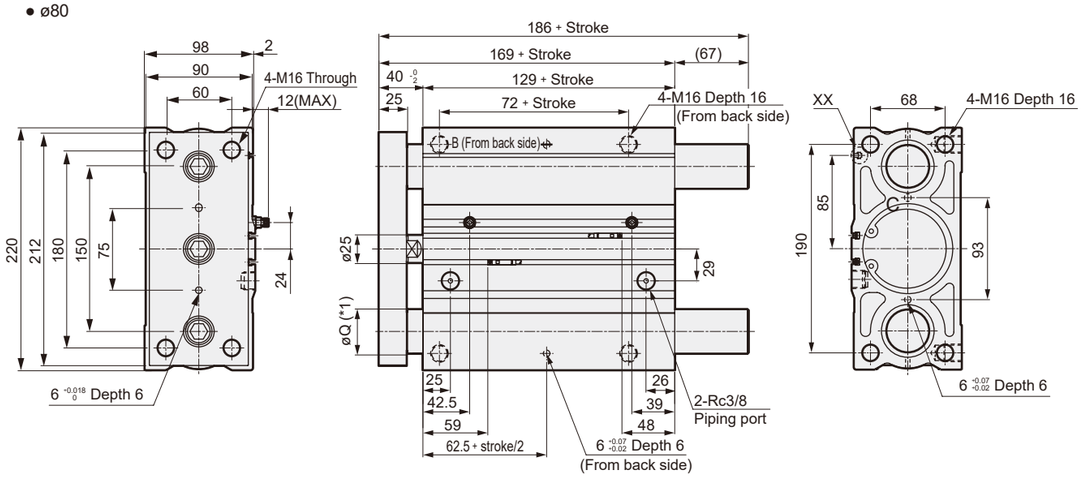
*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: Port plug of ø25 is hexagonal.
***3: For dimensions with each switch, refer to P. 636, 637.**

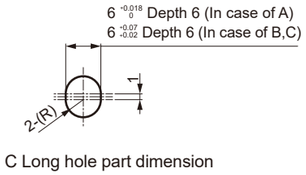
External dimensions diagram (Bore size: ø80)

● Air Cushion Type

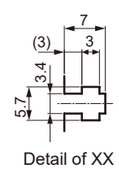
STL-$^{M}_{B}$C

● ø80





A, B, C Long hole part dimension



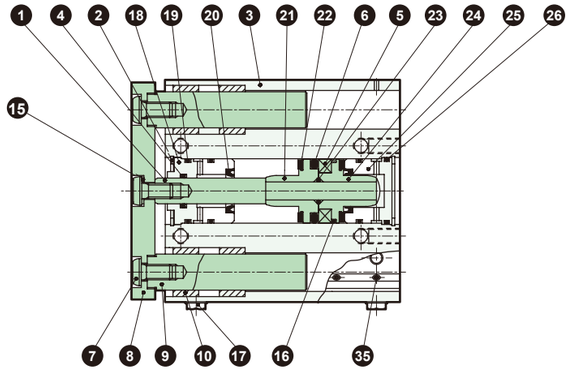
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

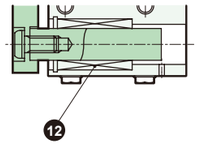
Internal structure / material (bore size: ø25 to ø63)

● With Air Cushion

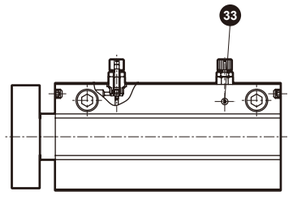
STS-$^{M}_{B}$C



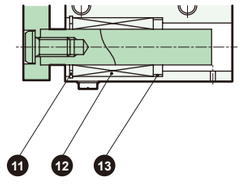
Plain bearing (M)



Rolling bearing (B)



(Only for ø32 to ø63)



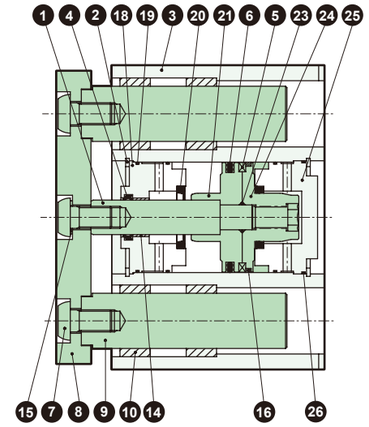
Rolling bearing (B)

(Only for ø32 to ø63)

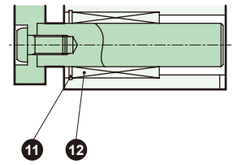
Internal structure diagram / Material (Bore size: ø80)

● With Air Cushion

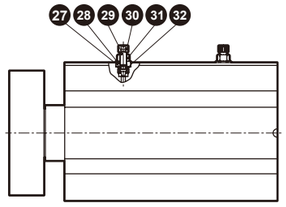
STS-$^{M}_{B}$C



Plain bearing (M)



Rolling bearing (B)



Part No.	Part Name		Material	Remarks
1	Piston Rod		ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Magnet			
6	Piston Packing		Nitrile Rubber	
7	Hex Socket Button Head Bolt		Steel	Zinc Chromate
8	End plate		Aluminum Alloy	Alumite
9	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
10	Metal		Oil-Impregnated Bearing Alloy	
11	C-type retaining ring		Steel	Zinc phosphate
12	Ball bush			
13	Collar		Aluminum Alloy	
14	Bushing		Bearing Alloy	
15	Belleville washer		Steel	
16	Wear Ring		Polyacetal	
17	Plug		ø25 ø32 to ø63: Steel	ø25: FPL (CKD) ø32 to ø63: Zinc chromate

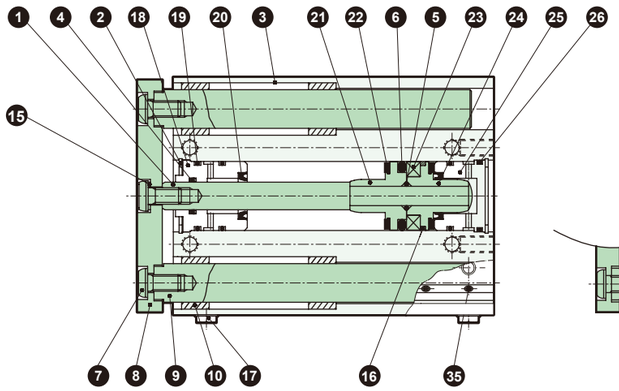
Part No.	Part Name	Material	Remarks
18	Rod Metal	Aluminum Alloy	Alumite
19	Metal gasket	Nitrile Rubber	
20	Cushion Packing	Nitrile Rubber, Steel	
21	Piston R	Aluminum Alloy	
22	Cushion Rubber	Urethane Rubber	
23	O-ring	Nitrile Rubber	
24	Piston H	Aluminum Alloy	
25	Bottom plate	Aluminum Alloy	Chromate
26	O-ring	Nitrile Rubber	
27	O-ring	Nitrile Rubber	
28	Needle Holder	Aluminum Alloy	
29	Needle	Stainless Steel	
30	Knob	Aluminum Alloy	
31	Lock Nut	Steel	Nickel Plating
32	O-ring	Nitrile Rubber	
33	Steel ball	Steel	
34	Hexagon socket head set screw	Stainless Steel	
35	Hexagon socket head set screw	Alloy Steel	Black Oxide

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

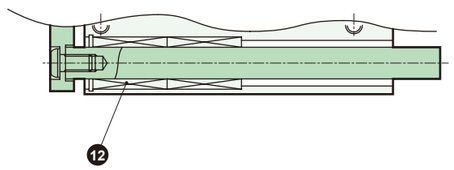
Internal structure / material (bore size: ø25 to ø63)

● With Air Cushion

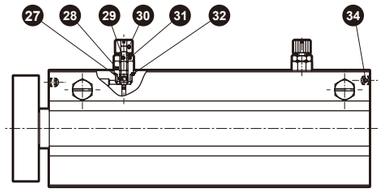
STL-$^{M}_{B}$C

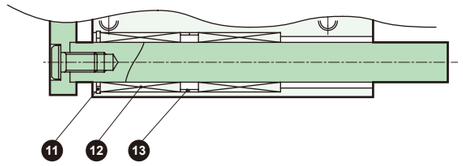


Plain bearing (M)

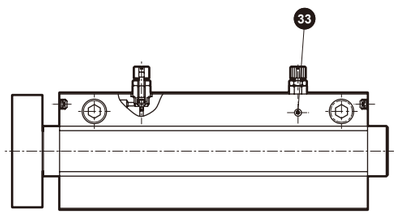


Rolling bearing (B)





Rolling bearing (B)
(For ø32 to ø63)

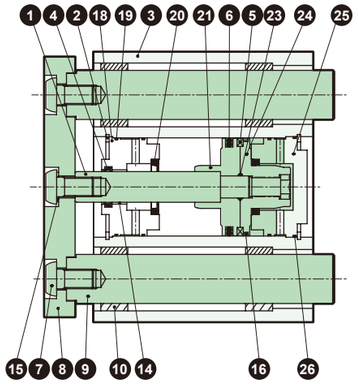


(Only for ø32 to ø63)

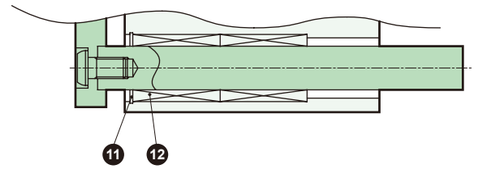
Internal structure diagram / Material (Bore size: ø80)

● With Air Cushion

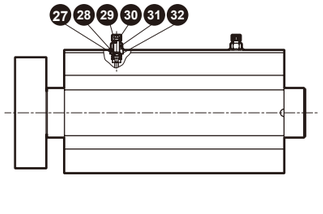
STL-$^{M}_{B}$C



Plain bearing (M)



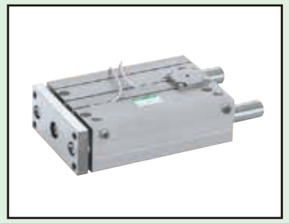
Rolling bearing (B)



Part No.	Part Name		Material	Remarks
1	Piston Rod		ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Magnet			
6	Piston Packing		Nitrile Rubber	
7	Hex Socket Button Head Bolt		Steel	Zinc Chromate
8	End plate		Aluminum Alloy	Alumite
9	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
10	Metal		Oil-Impregnated Bearing Alloy	
11	C-type retaining ring		Steel	Zinc phosphate
12	Ball bush			
13	Collar		Aluminum Alloy	
14	Bushing		Bearing Alloy	
15	Belleville washer		Steel	
16	Wear Ring		Polyacetal	
17	Plug		ø25 ø32 to ø63: Steel	ø25: FPL (CKD) ø32 to ø63: Zinc chromate

Part No.	Part Name	Material	Remarks
18	Rod Metal	Aluminum Alloy	Alumite
19	Metal gasket	Nitrile Rubber	
20	Cushion Packing	Nitrile Rubber, Steel	
21	Piston R	Aluminum Alloy	
22	Cushion Rubber	Urethane Rubber	
23	O-ring	Nitrile Rubber	
24	Piston H	Aluminum Alloy	
25	Bottom plate	Aluminum Alloy	Chromate
26	O-ring	Nitrile Rubber	
27	O-ring	Nitrile Rubber	
28	Needle Holder	Aluminum Alloy	
29	Needle	Stainless Steel	
30	Knob	Aluminum Alloy	
31	Lock Nut	Steel	Nickel Plating
32	O-ring	Nitrile Rubber	
33	Steel ball	Steel	
34	Hexagon socket head set screw	Stainless Steel	
35	Hexagon socket head set screw	Alloy Steel	Black Oxide

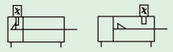
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



STS / STL-$^{M}_{B}$Q Series

Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol



RoHS

Model No. Notation Method

● Short stroke

Without switch Note1) (Built-in magnet for switch)

STS - M Q — 20 ( ) - 25 - H — F

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1) (Built-in magnet for switch)

STS - M Q — 20 ( ) - 25 - H - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch (Built-in magnet for switch) (ø40 or more)

STS - M Q - L1 - 40 ( ) - 25 - H - T1H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

● Long stroke

Without switch Note1) (Built-in magnet for switch)

STL - M Q — 20 ( ) - 50 - H — F

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1) (Built-in magnet for switch)

STL - M Q — 20 ( ) - 50 - H - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch (Built-in magnet for switch) (ø40 or more)

STL - M Q - L1 - 40 ( ) - 50 - H - T1H - R - F

Model No. ❶ Bearing type ❷ Tube Bore size ❸ Piping thread Type ❹ Stroke ❺ Fall prevention mechanism ❻ Switch Model No. ❼ Number of Switches ❽ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø20, ø25) Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke	*1 *2	Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	
		400	●	●	●				
	Intermediate Stroke	*1 *2	Every 5 mm						

❺ Drop prevention mechanism

Code	Content	
H	Head side fall prevention mechanism	
R	Rod side fall prevention mechanism	

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: For the 2-color display, T1H/V and off-delay for φ40 and over, insert "L1" with - between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded)
(Example) STS-MQ-L1-63-50-T1H3-D-F
For ø80, the T1H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷. Example) STS-MQ-L1-80-50-F
*4: In some cases, a switch cannot be inserted from the rod side of the head side position locking type of 25st or less. In this case, temporarily remove the end plate and install it. For removal and assembly methods of the end plate, please contact us.
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❼ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❽ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) Custom Products
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) Custom Products

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

Specifications

Item	STS-MQ/BQ, STL-MQ/BQ						
Bore Size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting, Drop Prevention Type						
Operating Fluid	Compressed Air						
Max. Working Pressure MPa	1.0						
Min. Operating Pressure MPa	0.2		0.15				
Proof Pressure MPa	1.6						
Ambient Temperature °C	-10 to 60 (No freezing)						
Port Size	M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	$^{+2.0}_{0}$						
Operating Piston Speed mm/s	50 to 500					50 to 300	
Cushion	With Rubber Cushion						
Fall prevention mechanism	Rod side or head side						
Holding Force N	Max. Thrust x 0.7						
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400	400	30	30 *2
ø25				
ø32				
ø40	50, 75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375	375		
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350	350	55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments.
However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

⚠Be sure to read the "Safety precautions" on (Drop prevention type) P. 656, 659 before use.

Theoretical Thrust Table

(Unit: N)

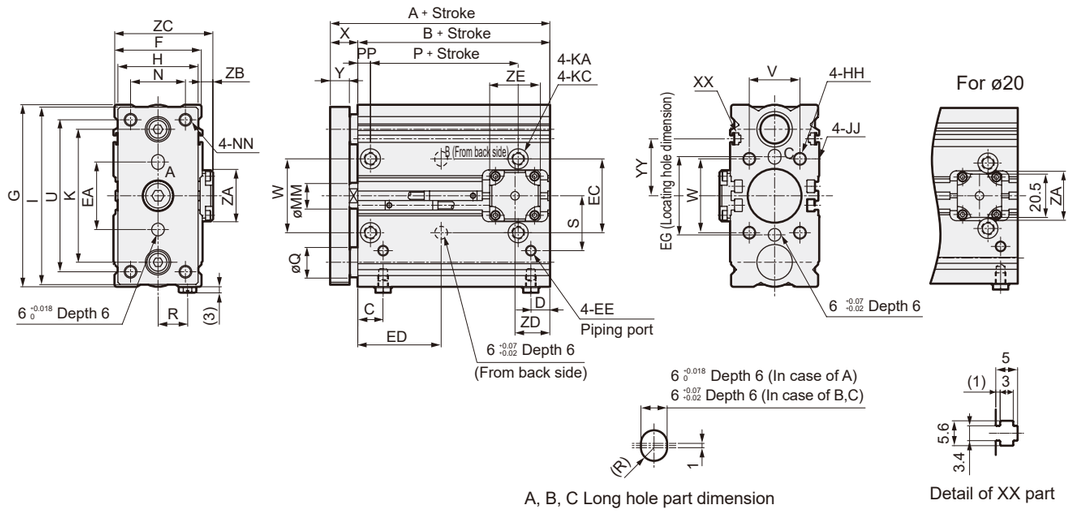
Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

● Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

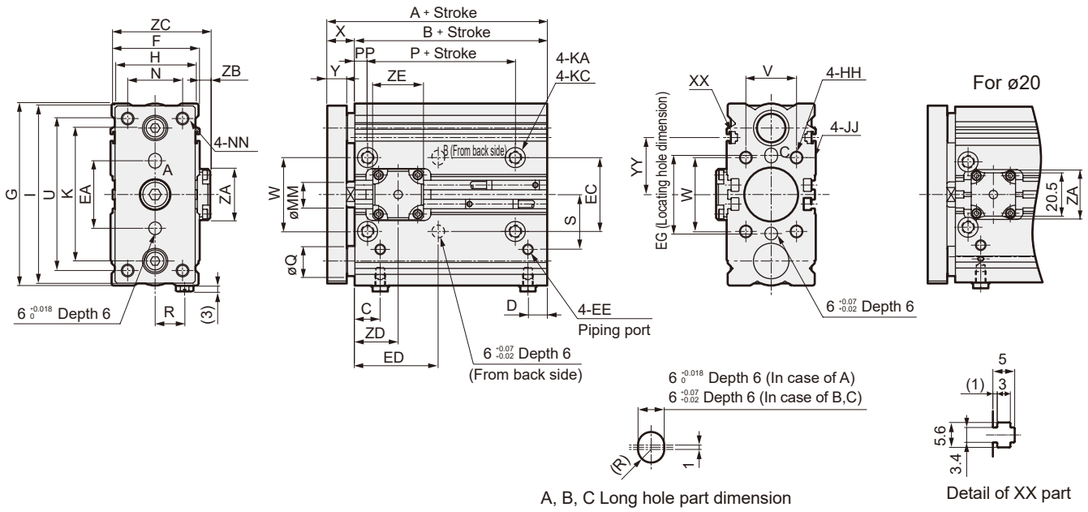


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	A	B	EA	EC	EG	ED	P	PP	W	ZA	ZB	ZC	ZE	STS-$^{M}_{B}$Q-H ZD	STS-$^{M}_{B}$Q-R ZD
ø20	78	65	30	31	33	26.5 + $\frac{Stroke}{2}$	45	6	31	23.2	6	44	21	18	20
ø25	79	66	32	35	37	27 + $\frac{Stroke}{2}$	45	6	35	24	5	47	24	16.5	20.5

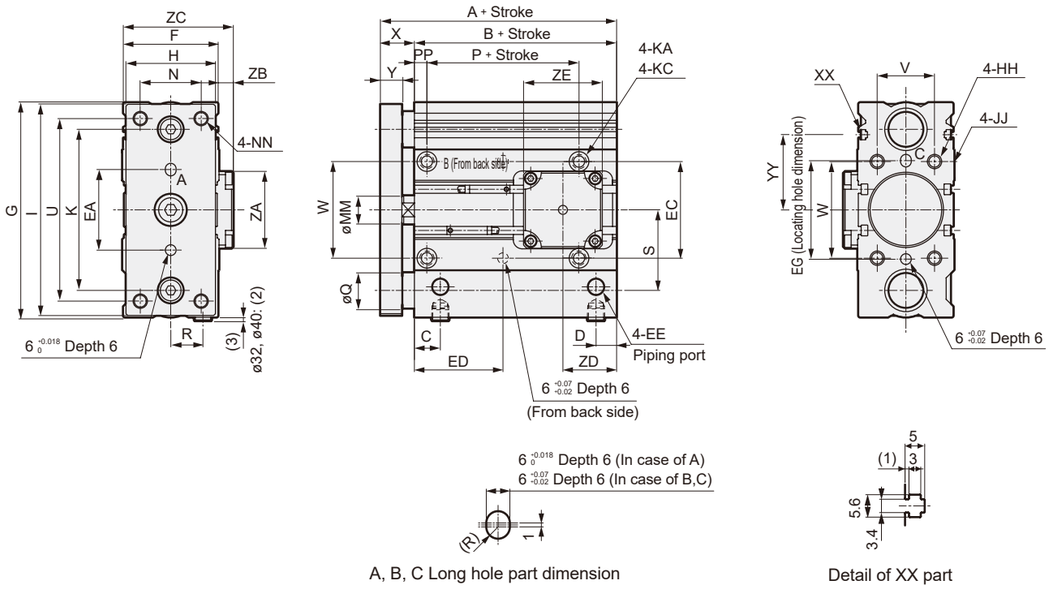
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-$^{M}_{B}$Q-H

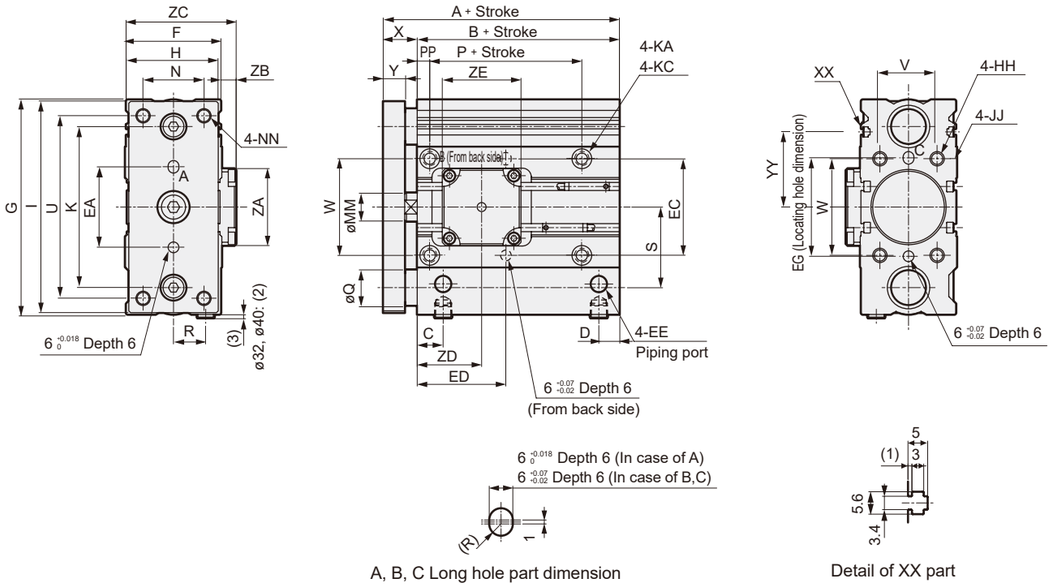


A, B, C Long hole part dimension

Detail of XX part

● Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	A	B	EA	EC	EG	ED	P	PP	W	ZA	ZB	ZC	ZE	STS-$^{M}_{B}$Q-H ZD	STS-$^{M}_{B}$Q-R ZD
ø32	93	74	42	45	46	30 + $\frac{Stroke}{2}$	47	7	45	32	6.5	53.5	24	21	25
ø40	122	103	45	54	55	44.5 + $\frac{Stroke}{2}$	75	7	54	43	8	62	44	30	36
ø50	127	105	55	66	69	44.5 + $\frac{Stroke}{2}$	76	8	66	43	7.5	73.5	44	33	40
ø63	133	111	62	79	82	47.5 + $\frac{Stroke}{2}$	76	8	79	47	7.5	86.5	47	35	40

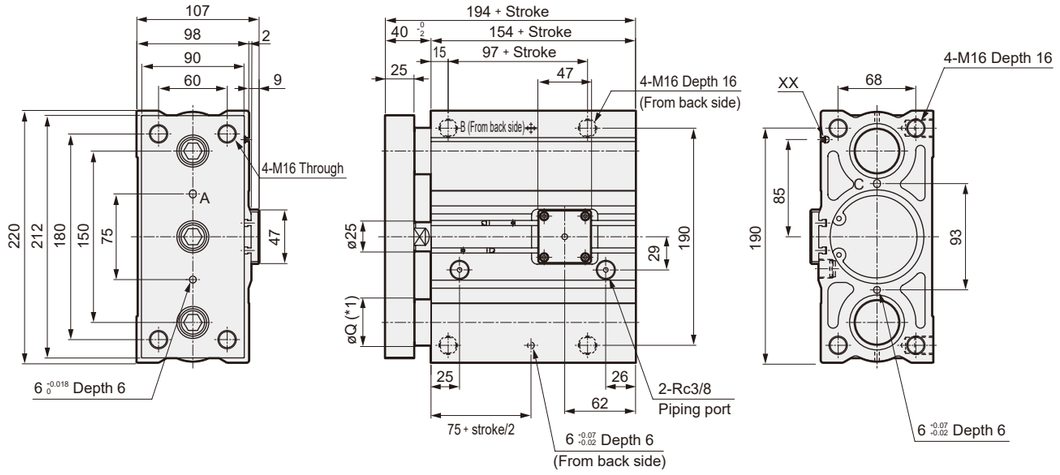
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

●Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

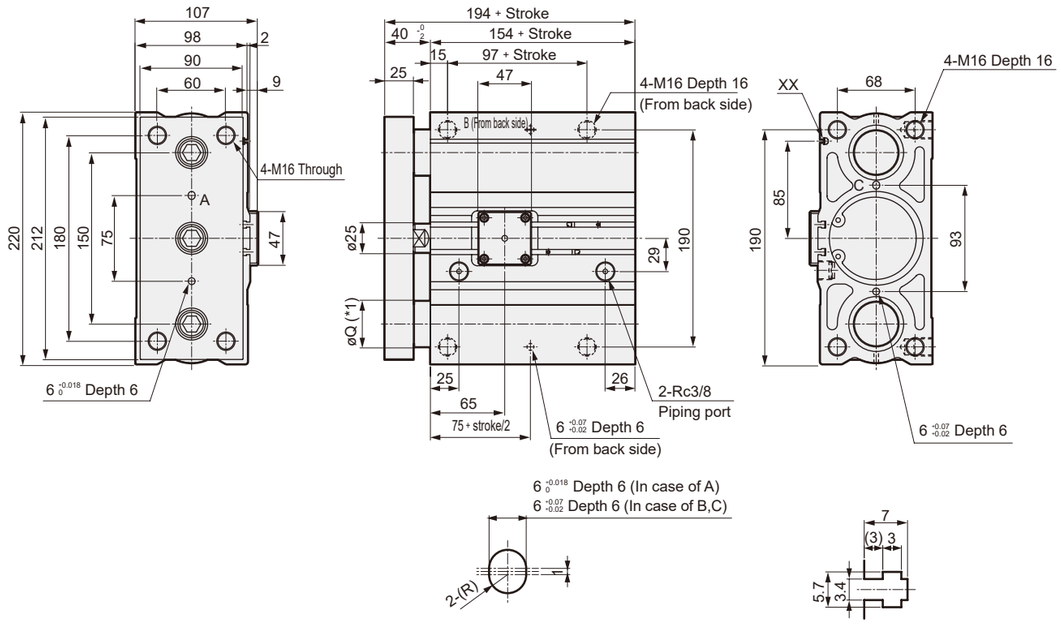


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

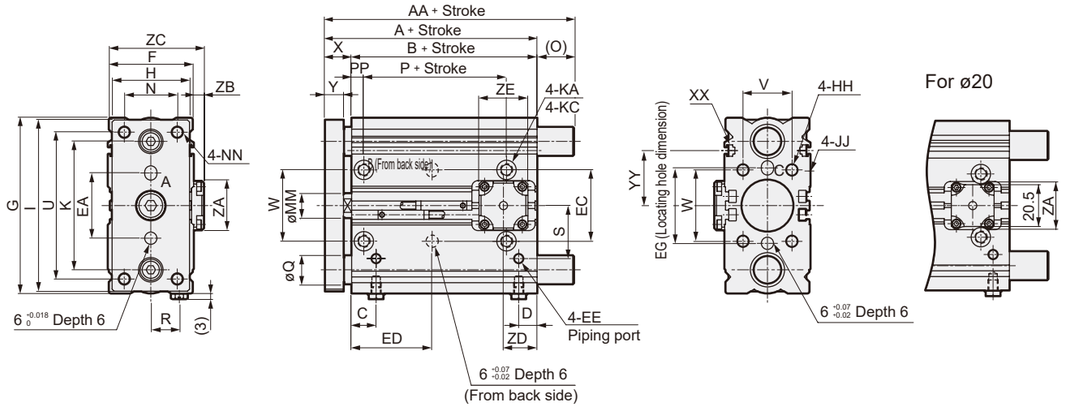
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***3: For dimensions with each switch, refer to P. 636, 637.**

Outline dimension drawing (bore size: ø20, ø25)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

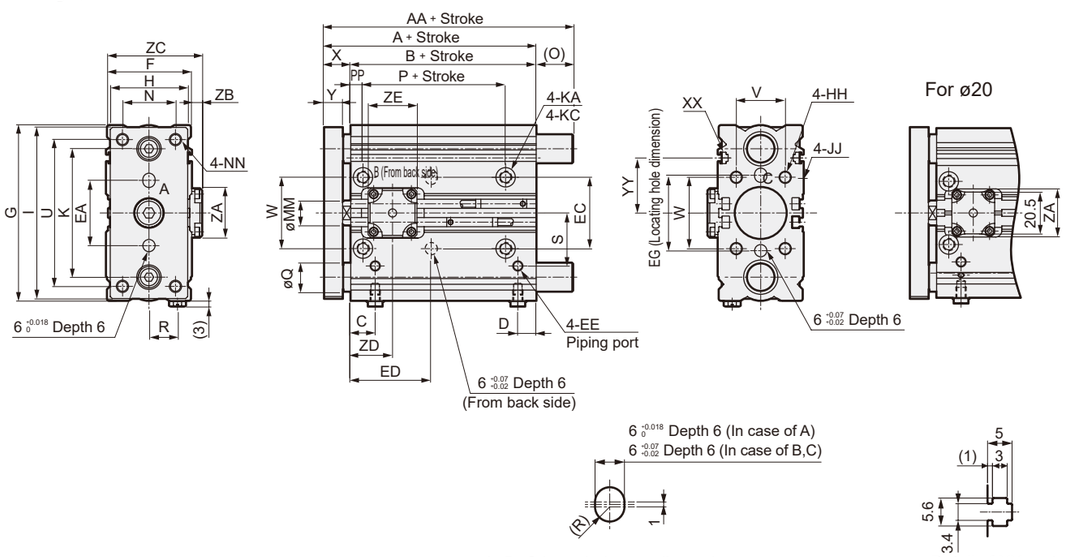


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STL-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

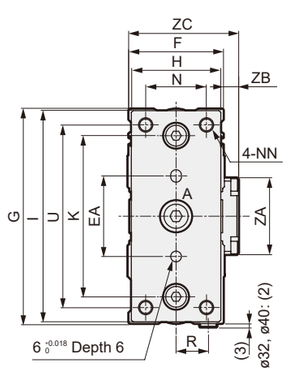
Code / Bore Size (mm)	A	AA	EA	EC	EG	ED	B	P	PP	W	ZA	ZB	ZC	ZE	STL-$^{M}_{B}$Q-H ZD	STL-$^{M}_{B}$Q-R ZD
ø20	78	97	30	31	33	26.5 + $\frac{\text{Stroke}}{2}$	65	45	6	31	23.2	6	44	21	18	20
ø25	79	97	32	35	37	27 + $\frac{\text{Stroke}}{2}$	66	45	6	35	24	5	47	24	16.5	20.5

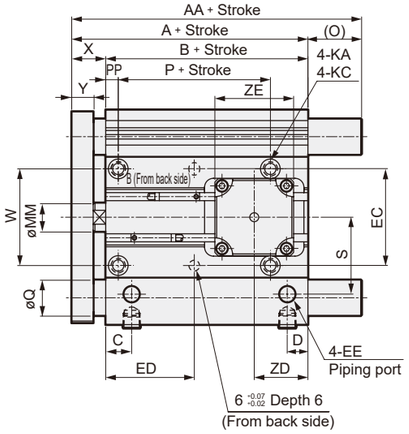
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

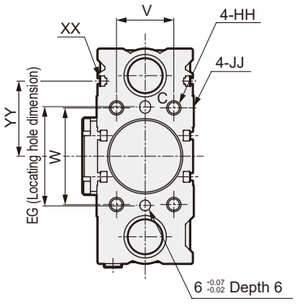
External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

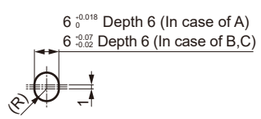
●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

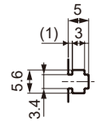








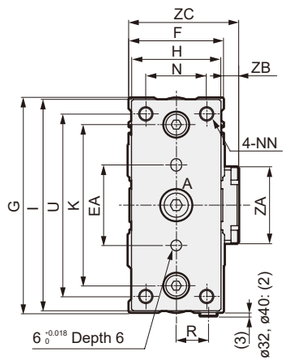
A, B, C Long hole part dimension

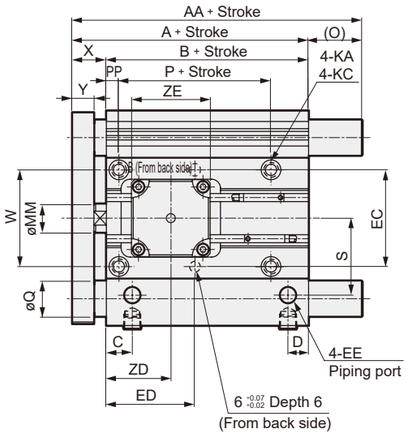


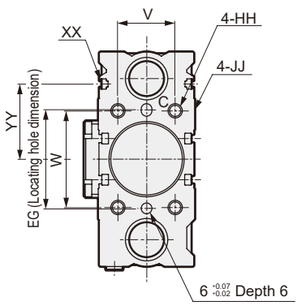
Detail of XX part

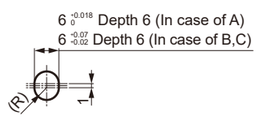
● Position locking/rod side

STL-$^{M}_{B}$Q-R

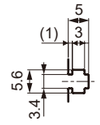








A, B, C Long hole part dimension



Detail of XX part

Code / Bore Size (mm)	A	AA	EA	EC	EG	ED	B	P	PP	W	ZA	ZB	ZC	ZE	STL-$^{M}_{B}$Q-H ZD	STL-$^{M}_{B}$Q-R ZD
ø32	93	127	42	45	46	30 + Stroke/2	74	47	7	45	32	6.5	53.5	24	21	25
ø40	122	152	45	54	55	44.5 + Stroke/2	103	75	7	54	43	8	62	44	30	36
ø50	127	175	55	66	69	44.5 + Stroke/2	105	76	8	66	43	7.5	73.5	44	33	40
ø63	133	175	62	79	82	47.5 + Stroke/2	111	76	8	79	47	7.5	86.5	47	35	40

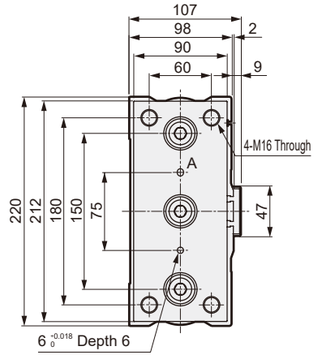
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

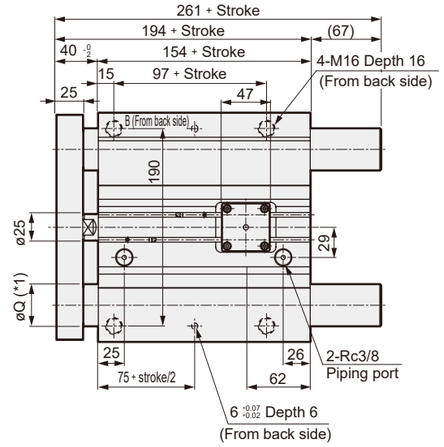
***2: For dimensions with each switch, refer to P. 636, 637.**

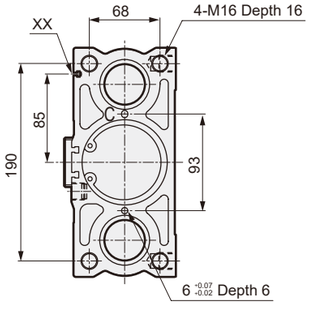
External dimensions diagram (Bore size: ø80)

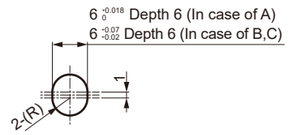
●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

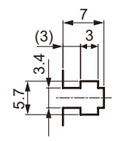








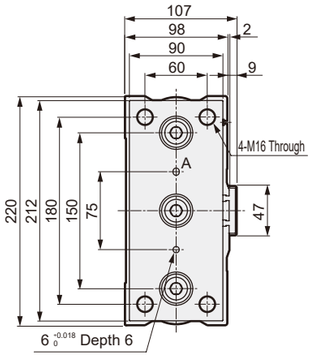
A, B, C Long hole part dimension

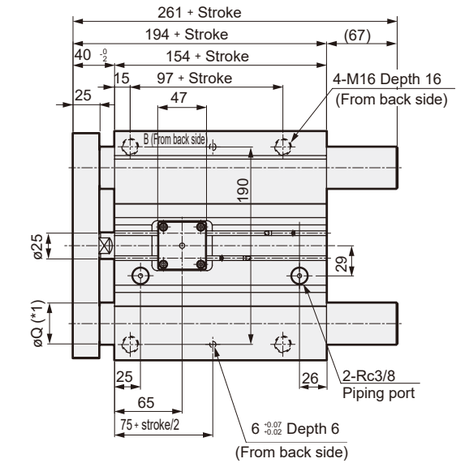


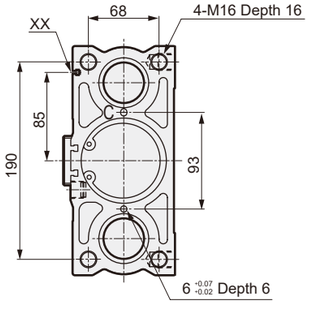
Detail of XX part

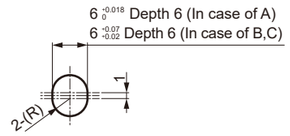
●Drop prevention type / Rod side

STL-$^{M}_{B}$Q-R

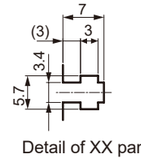








A, B, C Long hole part dimension



Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.

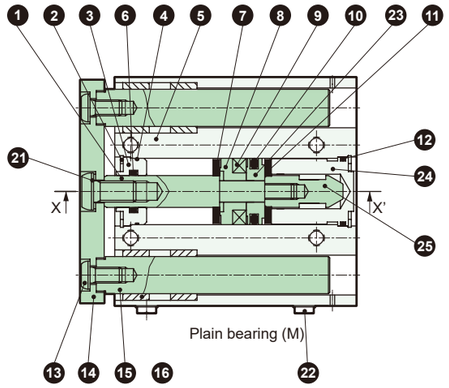
***3: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø20 to ø63)

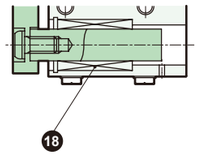
●Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

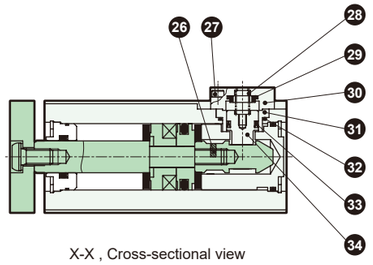
ø20, ø25



Plain bearing (M)

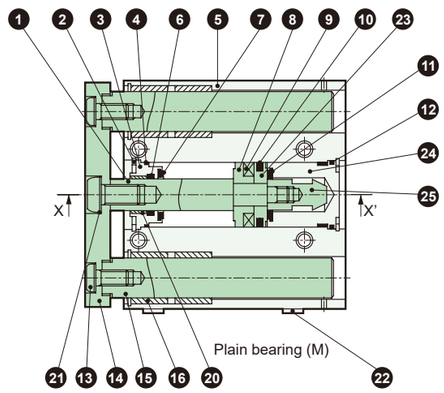


Rolling bearing (B)

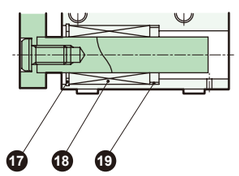


X-X , Cross-sectional view

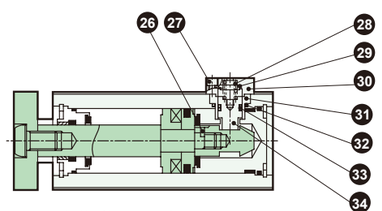
ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

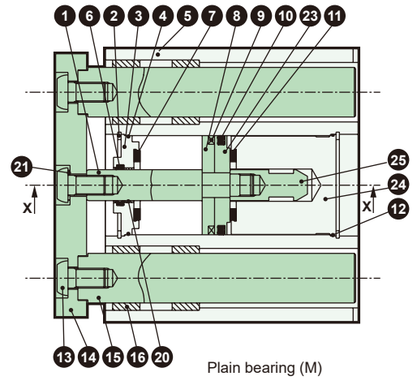


X-X , Cross-sectional view

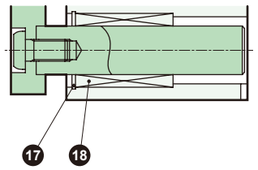
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Head side

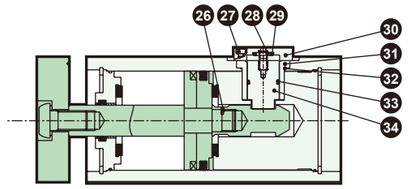
STS-$^{M}_{B}$Q-H



Plain bearing (M)



Rolling bearing (B)



X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket		Nitrile Rubber	
5	Cylinder Body		Aluminum Alloy	Hard Anodized
6	Rod Packing		Nitrile Rubber	
7	Cushion rubber (R)		Urethane Rubber	
8	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet			
10	Piston Packing		Nitrile Rubber	
11	Cushion rubber (H)		Urethane Rubber	
12	O-ring		Nitrile Rubber	
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	

Part No.	Part Name	Material	Remarks
17	C-type retaining ring	Steel	Zinc phosphate
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Plug	ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
23	Piston	Aluminum Alloy	Chromate
24	Head Cover	Aluminum Alloy	
25	Sleeve	Steel	Nitriding Treatment
26	Spring Pin	Steel	Black Oxide
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Coil Spring	Steel	Electrodeposition Coating
29	Cushion Rubber	Urethane Rubber	
30	Stopper Cover	Aluminum Alloy	Alumite
31	Stopper housing	Aluminum Alloy	Alumite
32	O-ring	Nitrile Rubber	
33	Stopper packing	Nitrile Rubber	
34	Stopper Piston	Steel	Nitriding Treatment

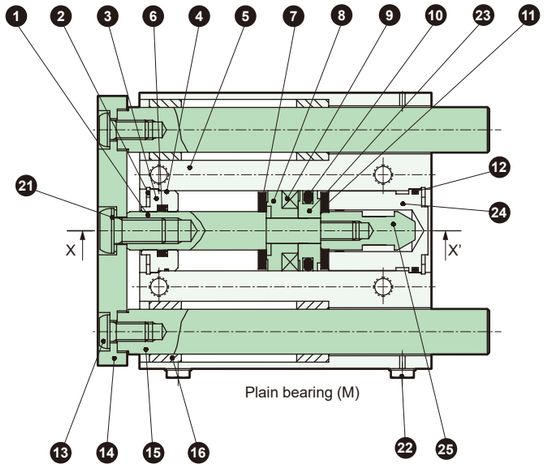
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

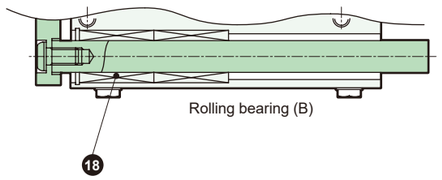
Internal structure diagram / Material (Bore size: ø20 to ø63)

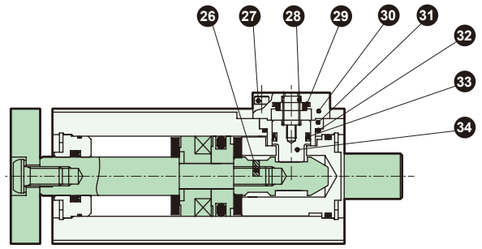
●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

ø20, ø25

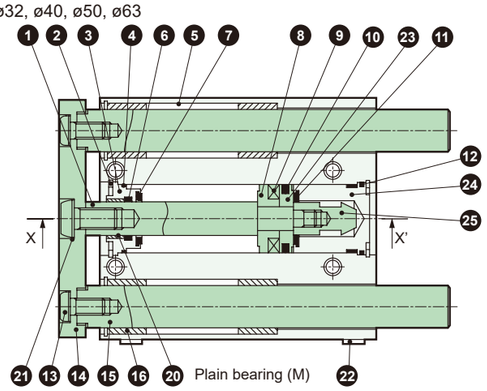


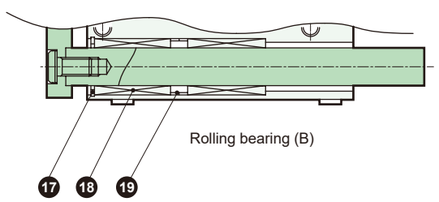


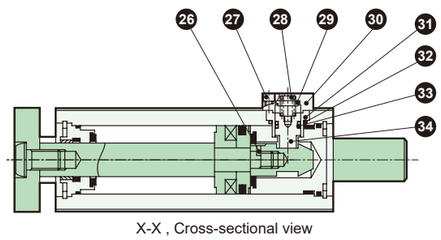


X-X , Cross-sectional view

ø32, ø40, ø50, ø63





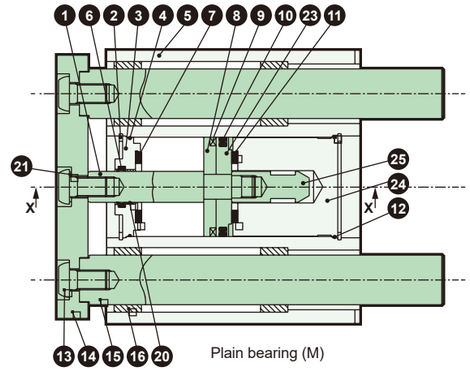


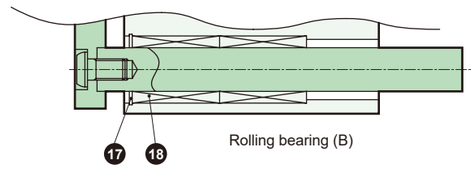
X-X , Cross-sectional view

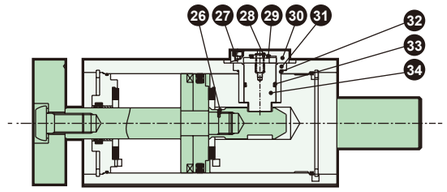
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H







X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket		Nitrile Rubber	
5	Cylinder Body		Aluminum Alloy	Hard Anodized
6	Rod Packing		Nitrile Rubber	
7	Cushion rubber (R)		Urethane Rubber	
8	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet			
10	Piston Packing		Nitrile Rubber	
11	Cushion rubber (H)		Urethane Rubber	
12	O-ring		Nitrile Rubber	
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	

Part No.	Part Name	Material	Remarks
17	C-type retaining ring	Steel	Zinc phosphate
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Plug	ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
23	Piston	Aluminum Alloy	Chromate
24	Head Cover	Aluminum Alloy	
25	Sleeve	Steel	Nitriding Treatment
26	Spring Pin	Steel	Black Oxide
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Coil Spring	Steel	Electrodeposition Coating
29	Cushion Rubber	Urethane Rubber	
30	Stopper Cover	Aluminum Alloy	Alumite
31	Stopper housing	Aluminum Alloy	Alumite
32	O-ring	Nitrile Rubber	
33	Stopper packing	Nitrile Rubber	
34	Stopper Piston	Steel	Nitriding Treatment

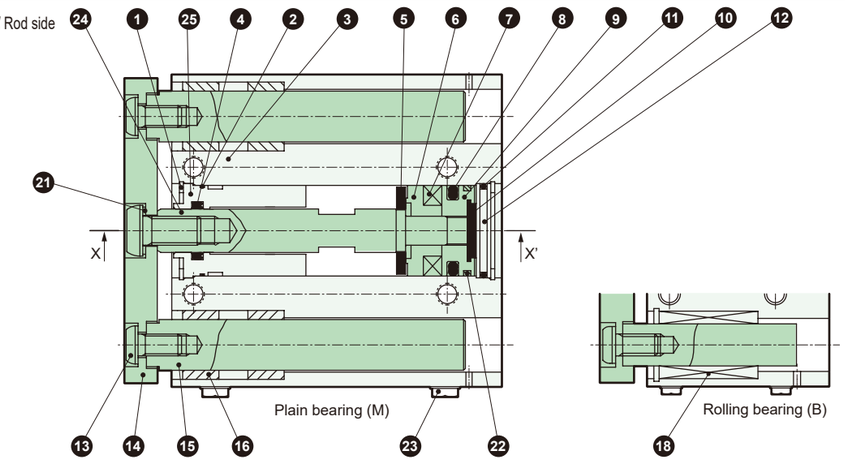
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

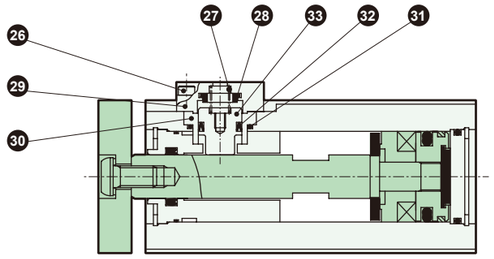
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R

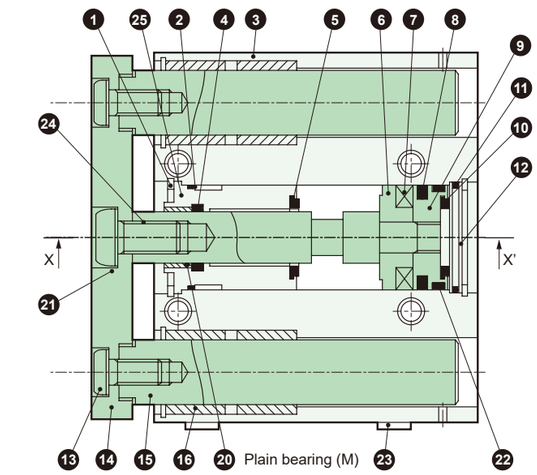
ø20, ø25

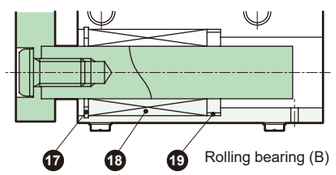


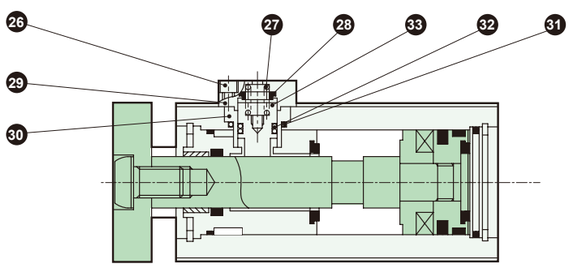


X-X , Cross-sectional view

ø32, ø40, ø50, ø63





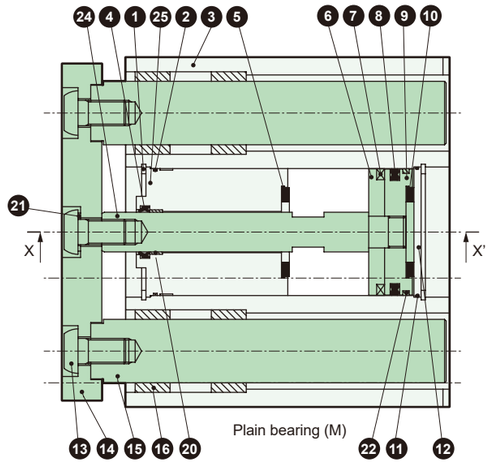


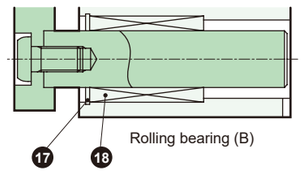
X-X , Cross-sectional view

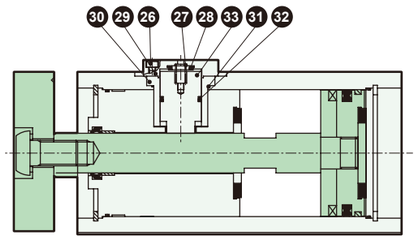
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R







X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	C-type retaining ring		Steel	Zinc phosphate
2	Metal gasket		Nitrile Rubber	
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Cushion rubber (R)		Urethane Rubber	
6	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
7	Magnet			
8	Piston Packing		Nitrile Rubber	
9	Piston		Aluminum Alloy	Chromate
10	Cushion rubber (H)		Urethane Rubber	
11	O-ring		Nitrile Rubber	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	
17	C-type retaining ring		Steel	Zinc phosphate

Part No.	Part Name	Material	Remarks
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Wear Ring	Polyacetal	
23	Plug	ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
24	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
25	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
27	Coil Spring	Steel	Electrodeposition Coating
28	Cushion Rubber	Urethane Rubber	
29	Stopper Cover	Aluminum Alloy	Alumite
30	Stopper housing	Aluminum Alloy	Alumite
31	O-ring	Nitrile Rubber	
32	Stopper packing	Nitrile Rubber	
33	Stopper Piston	Steel	Nitriding Treatment

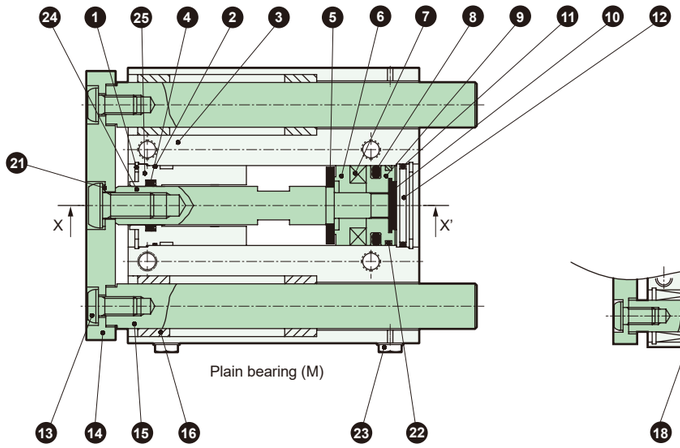
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø20 to ø63)

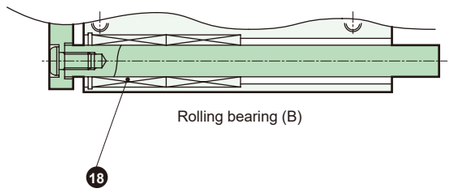
●Drop prevention type

STL-$^{M}_{B}$Q-R

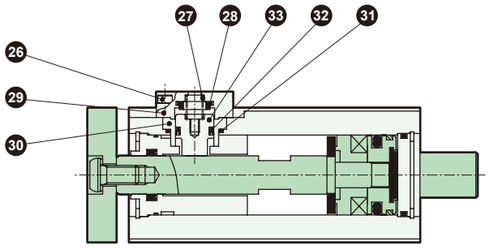
ø20, ø25



Plain bearing (M)

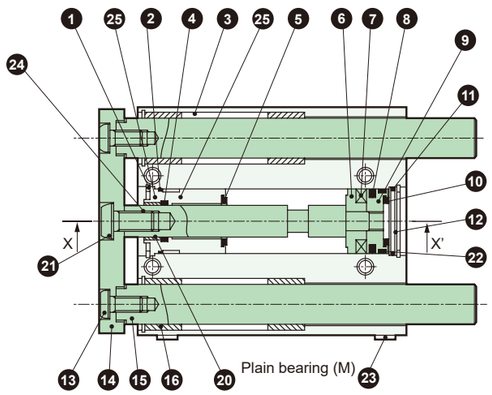


Rolling bearing (B)

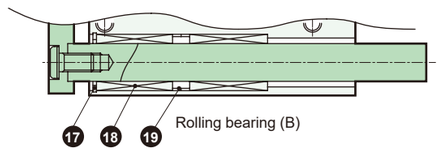


X-X , Cross-sectional view

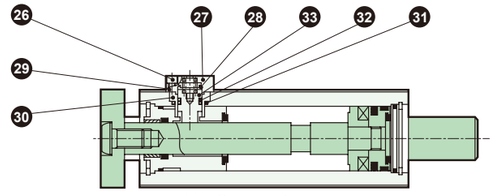
ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

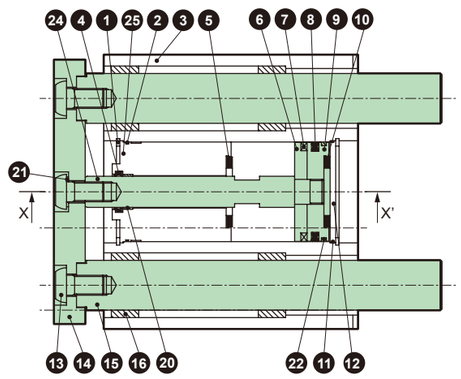


X-X , Cross-sectional view

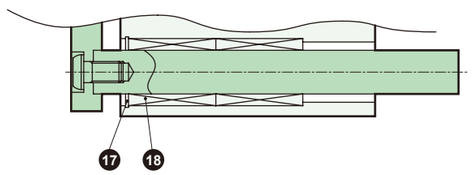
Internal structure diagram / Material (Bore size: ø80)

● Drop prevention type

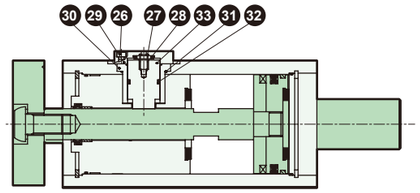
STL-$^{M}_{B}$Q-R



Plain bearing (M)



Rolling bearing (B)



X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	C-type retaining ring		Steel	Zinc phosphate
2	Metal gasket		Nitrile Rubber	
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Cushion rubber (R)		Urethane Rubber	
6	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
7	Magnet			
8	Piston Packing		Nitrile Rubber	
9	Piston		Aluminum Alloy	Chromate
10	Cushion rubber (H)		Urethane Rubber	
11	O-ring		Nitrile Rubber	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	
17	C-type retaining ring		Steel	Zinc phosphate
18	Ball bush			
19	Collar		Aluminum Alloy	
20	Bushing		Bearing Alloy	
21	Belleville washer		Steel	
22	Wear Ring		Polyacetal	
23	Plug		ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
24	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
25	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
26	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
27	Coil Spring		Steel	Electrodeposition Coating
28	Cushion Rubber		Urethane Rubber	
29	Stopper Cover		Aluminum Alloy	Alumite
30	Stopper housing		Aluminum Alloy	Alumite
31	O-ring		Nitrile Rubber	
32	Stopper packing		Nitrile Rubber	
33	Stopper Piston		Steel	Nitriding Treatment

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder / Ultra Low speed type

STS / STL-$^{M}_{B}$F Series

● Bore size ø8, ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M F — 8 [ ] - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M F — 8 [ ] - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M F - L1 - 40 [ ] - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M F — 8 [ ] - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M F — 8 [ ] - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M F - L1 - 40 [ ] - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
		100										●
	Intermediate Stroke	*1 *2	Every 5 mm									

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm									

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-color Water resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	*4
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded
Example) STS-MF-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷. Example) TS-MF-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$F-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

Specifications

Item		STS-MF, STS-BF (Short stroke) / STL-MF, STL-BF (Long stroke)									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting Type									
Operating Fluid		Compressed Air									
Max. Working Pressure	MPa	1.0									
Min. Operating Pressure	MPa	0.15					0.1				
Proof Pressure	MPa	1.6									
Ambient Temperature	°C	5 to 60									
Port Size		M5					Rc 1/8		Rc 1/4		Rc 3/8
Stroke tolerance	mm	$^{+2.0}_{0}$									
Operating Piston Speed	mm/s	1 to 200									
Cushion		Rubber Cushion									
Lubrication		Not Available									
Allowable Absorbed Energy	J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510

Note) **For the theoretical thrust table, please refer to P. 485.**

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100 125, 150 175, 200	200	50	50 *2
ø12				
ø16				
ø20	50, 75, 100 125, 150, 175 200	200	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175, 200		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

For cylinder weight, please refer to P. 642 to 645.

Technical Data

For technical data on measurement dimensions, please refer to the measurement method (Pneumatic cylinder ②(Catalog No. RJ-003AA) SSD-F / SSD-KF).

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series.
STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

MEMO

Guided cylinder Double acting, Low speed type

STS / STL-$^{M}_{B}$O Series

● Bore size: ø8, ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

●Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M O — 8 ( ) - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M O — 8 ( ) - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M O - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

●Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M O — 8 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M O — 8 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M O - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
		100										●
	Intermediate Stroke	*1 *2	Every 5 mm									

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175				●	●	●	●	●	●	●
		200				●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●
		250				●	●	●	●	●	●	●
		275				●	●	●	●	●	●	●
		300				●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm									

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷.
(However, T2WH/V and T3WH/V are excluded) Example) STS-MO-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product.
In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MO-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$O-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item	STS-MO/BO, STL-MO/BO									
Bore Size mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/Low Speed Type									
Operating Fluid	Compressed Air									
Max. working pressure MPa	1.0									
Min. Operating Pressure MPa	0.15					0.1				
Proof Pressure MPa	1.6									
Ambient Temperature °C	-10 to 60 (No freezing)									
Port Size	M5					Rc 1/8		Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_{0}$									
Operating Piston Speed mm/s	10 to 200									
Cushion	With Rubber Cushion									
Lubrication	Not Available									
Allowable Absorbed Energy J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30, 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: For types with one or two switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100, 125, 150	150	50	50
ø12				
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300	300	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300		55	55 *2

*1: The custom stroke is available in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: For types with one or two switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	-	7.54	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	-	5.65	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	-	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^{2}$	1.13×10^{2}
	Pull	-	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	-	30.2	40.2	60.3	80.4	1.01×10^{2}	1.21×10^{2}	1.41×10^{2}	1.61×10^{2}	1.81×10^{2}	2.01×10^{2}
	Pull	-	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^{2}	1.21×10^{2}	1.36×10^{2}	1.51×10^{2}
ø20	Push	-	47.1	62.8	94.2	1.26×10^{2}	1.57×10^{2}	1.88×10^{2}	2.20×10^{2}	2.51×10^{2}	2.83×10^{2}	3.14×10^{2}
	Pull	-	35.3	47.1	70.7	94.2	1.18×10^{2}	1.41×10^{2}	1.65×10^{2}	1.88×10^{2}	2.12×10^{2}	2.36×10^{2}
ø25	Push	-	73.6	98.2	1.47×10^{2}	1.96×10^{2}	2.45×10^{2}	2.95×10^{2}	3.44×10^{2}	3.93×10^{2}	4.42×10^{2}	4.91×10^{2}
	Pull	-	56.7	75.6	1.13×10^{2}	1.51×10^{2}	1.89×10^{2}	2.27×10^{2}	2.64×10^{2}	3.02×10^{2}	3.40×10^{2}	3.78×10^{2}
ø32	Push	80.4	1.21×10^{2}	1.61×10^{2}	2.41×10^{2}	3.22×10^{2}	4.02×10^{2}	4.83×10^{2}	5.63×10^{2}	6.43×10^{2}	7.24×10^{2}	8.04×10^{2}
	Pull	60.3	90.5	1.21×10^{2}	1.81×10^{2}	2.41×10^{2}	3.02×10^{2}	3.62×10^{2}	4.22×10^{2}	4.83×10^{2}	5.43×10^{2}	6.03×10^{2}
ø40	Push	1.26×10^{2}	1.88×10^{2}	2.51×10^{2}	3.77×10^{2}	5.03×10^{2}	6.28×10^{2}	7.54×10^{2}	8.80×10^{2}	1.01×10^{3}	1.13×10^{3}	1.26×10^{3}
	Pull	1.06×10^{2}	1.58×10^{2}	2.11×10^{2}	3.17×10^{2}	4.22×10^{2}	5.28×10^{2}	6.33×10^{2}	7.39×10^{2}	8.44×10^{2}	9.50×10^{2}	1.06×10^{3}
ø50	Push	1.96×10^{2}	2.95×10^{2}	3.93×10^{2}	5.89×10^{2}	7.85×10^{2}	9.82×10^{2}	1.18×10^{3}	1.37×10^{3}	1.57×10^{3}	1.77×10^{3}	1.96×10^{3}
	Pull	1.65×10^{2}	2.47×10^{2}	3.30×10^{2}	4.95×10^{2}	6.60×10^{2}	8.25×10^{2}	9.90×10^{2}	1.15×10^{3}	1.32×10^{3}	1.48×10^{3}	1.65×10^{3}
ø63	Push	3.12×10^{2}	4.68×10^{2}	6.23×10^{2}	9.35×10^{2}	1.25×10^{3}	1.56×10^{3}	1.87×10^{3}	2.18×10^{3}	2.49×10^{3}	2.81×10^{3}	3.12×10^{3}
	Pull	2.80×10^{2}	4.20×10^{2}	5.61×10^{2}	8.41×10^{2}	1.12×10^{3}	1.40×10^{3}	1.68×10^{3}	1.96×10^{3}	2.24×10^{3}	2.52×10^{3}	2.80×10^{3}
ø80	Push	5.03×10^{2}	7.54×10^{2}	1.01×10^{3}	1.51×10^{3}	2.01×10^{3}	2.51×10^{3}	3.02×10^{3}	3.52×10^{3}	4.02×10^{3}	4.52×10^{3}	5.03×10^{3}
	Pull	4.54×10^{2}	6.80×10^{2}	9.07×10^{2}	1.36×10^{3}	1.81×10^{3}	2.27×10^{3}	2.72×10^{3}	3.17×10^{3}	3.63×10^{3}	4.08×10^{3}	4.54×10^{3}

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS / STL series. Please refer to the page below.

STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal Structure Diagram / Material

Same as double acting / single rod type. Please refer to P. 496 to 501.

Guided cylinder Double acting, Heavy-duty scraper type

STS / STL-$^{M}_{B}$G Series

Double-acting, Coil scraper type

STS / STL-$^{M}_{B}$G1 Series

● Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M G — 20 ( ) - 25 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1)
(Built-in magnet for switch)

STS - M G — 20 ( ) - 25 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M G - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M G — 20 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1)
(Built-in magnet for switch)

STL - M G — 20 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M G - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Model No. ❸ Bore size ❹ Piping thread type ❺ Stroke ❻ Switch Model No. ❼ Number of Switches ❽ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Model No.

Code	Content
G	Heavy-Duty Scraper Type
G1	Coil Scraper Type

❸ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❹ Piping thread type

Code	Content
Blank	M5 (ø20, ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❺ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke *1 *2		Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm						

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED / Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MG-L1-63-50-T1H3-D-F
In this case, select a model number with "L1" inserted between ❶ and ❷. Example) STS-MG-L1-80-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*6	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❼ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❽ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$G·G1-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V
❻ Switch Model No.

Specifications

Item	STS-MG/BG, STS-MG1/BG1, STL-MG/BG, STL-MG1/BG1						
Bore Size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double acting, Scraper type						
Operating Fluid	Compressed Air						
Max. working pressure MPa	1.0						
Min. Operating Pressure MPa	0.2		0.15				
Proof Pressure MPa	1.6						
Ambient Temperature °C	-10 to 60 (No freezing)						
Port Size	M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	$^{+2.0}_{0}$						
Operating Piston Speed mm/s	50 to 500					50 to 300	
Cushion	With Rubber Cushion						
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: For types with one or two switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: The custom stroke is available in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: For types with one or two switches.

Theoretical Thrust Table

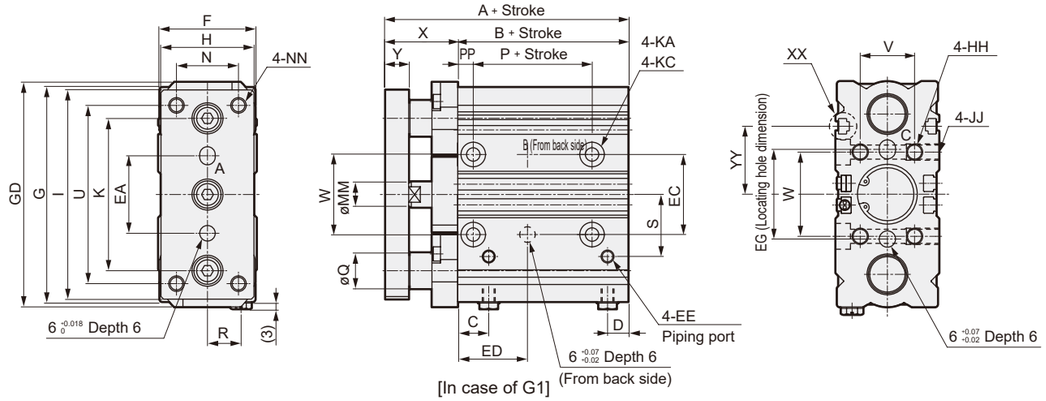
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

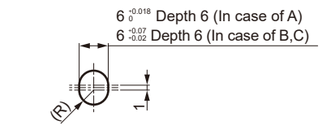
For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

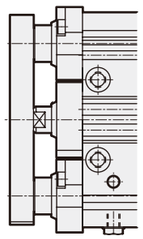
- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G

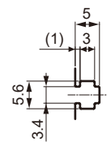


[In case of G1]



A, B, C Long hole part dimension





Detail of XX part

[In case of G]

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø20	25, 50	68	40	12	8	M5	30	31	33	14 + Stroke/2	38	83	87	36	M6 Depth 12
ø25		69	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	91	38	M6 Depth 12

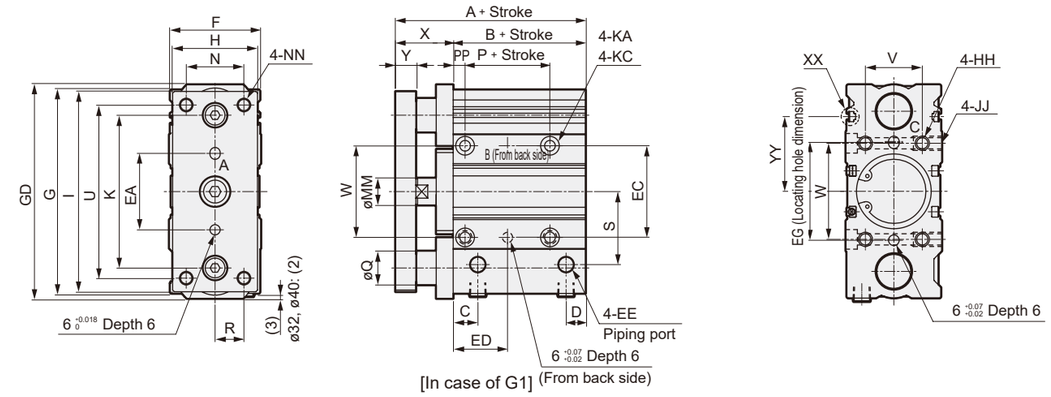
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 $^{0}_{-2}$	9	25
ø25	26	72	24	35	28 $^{0}_{-2}$	9	27

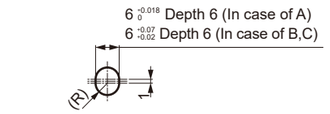
Note) **For dimensions with each switch, refer to P. 636 and 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

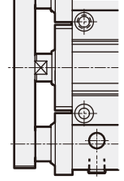
- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G

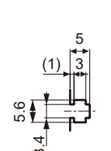


[In case of G1]



A, B, C Long hole part dimension





Detail of XX part

[In case of G]

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	25, 50	83	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20

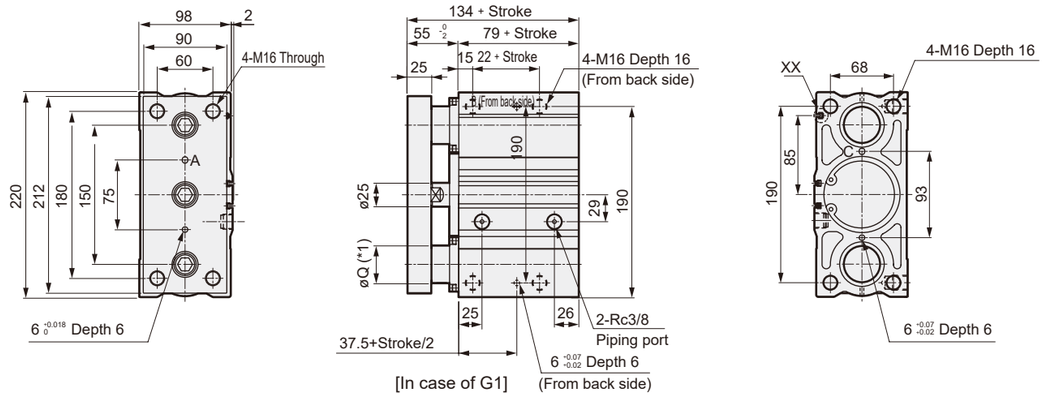
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

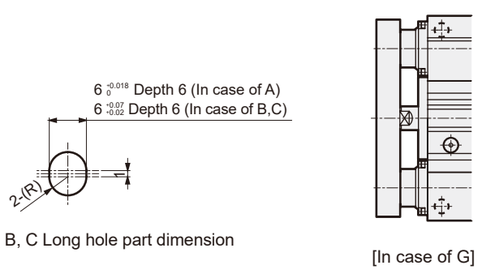
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	34 $^{0}_{-2}$	12	39
ø40	43	102	32	54	34 $^{0}_{-2}$	12	42
ø50	49	125	38	66	37 $^{0}_{-2}$	16	45
ø63	56	140	50	79	37 $^{0}_{-2}$	16	52

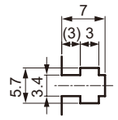
Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G







Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

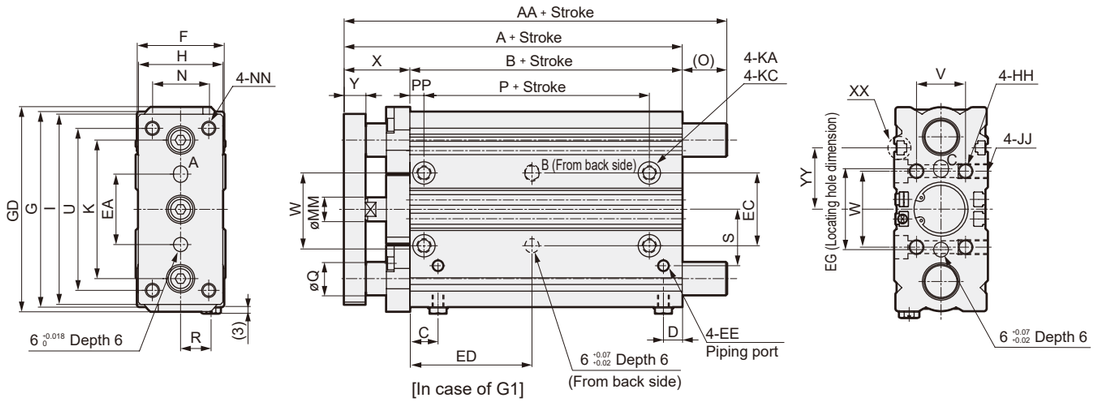
***2: For dimensions with each switch, refer to P. 636, 637.**

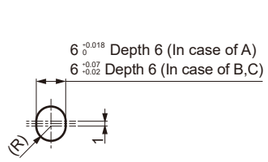
MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

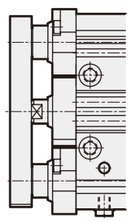
Outline dimension drawing (bore size: ø20, ø25)

- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G

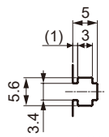




A, B, C Long hole part dimension



[In case of G]



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	68	87	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	87	36
ø25	250, 275, 300, 325, 350, 375, 400	69	87	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	91	38

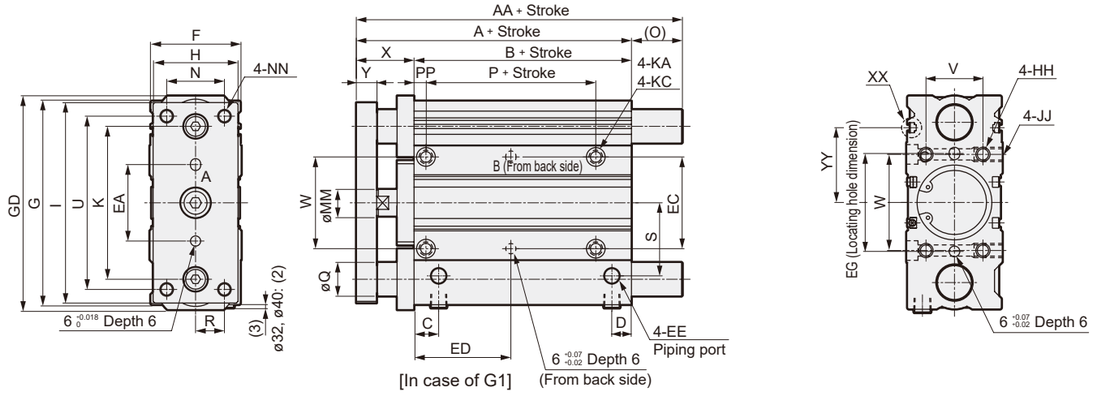
Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

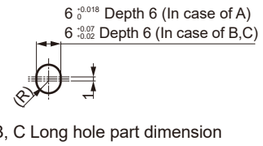
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 0 -2	9	25
ø25	26	72	24	35	28 0 -2	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

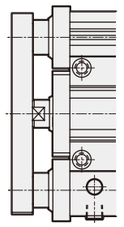
External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G

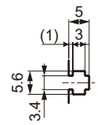




A, B, C Long hole part dimension



[In case of G]



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	83	117	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	117	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	140	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	140	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20

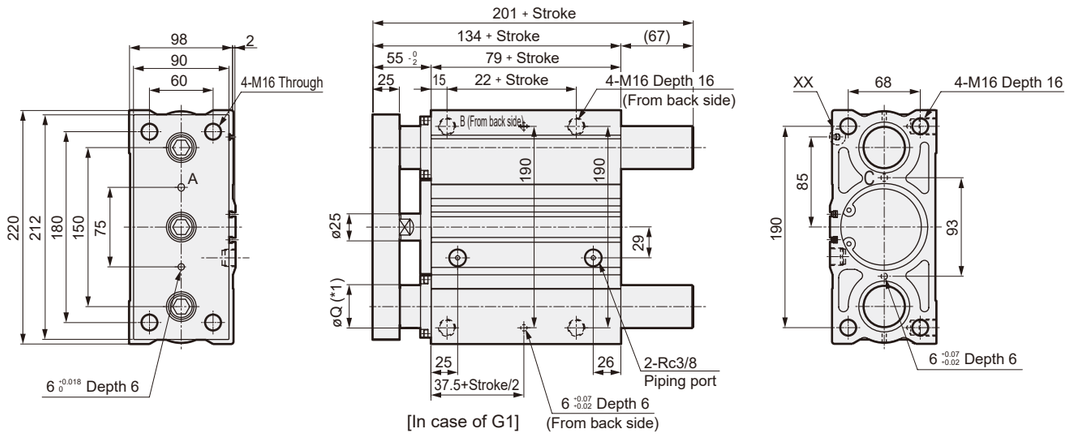
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

Code / Bore Size (mm)	X	Y	YY
ø32	34 0 -2	12	39
ø40	34 0 -2	12	42
ø50	37 0 -2	16	45
ø63	37 0 -2	16	52

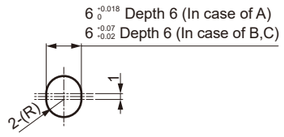
Note: For dimensions with each switch, refer to P. 636, 637.

External dimensions diagram (Bore size: ø80)

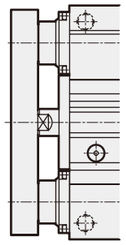
- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G



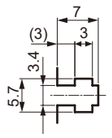
[In case of G1]



A, B, C Long hole part dimension



[In case of G]



Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

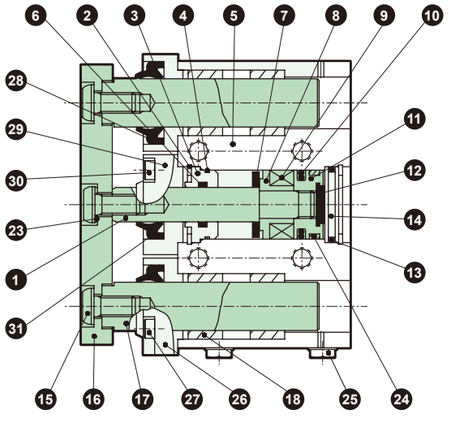
Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

Internal structure diagram / Material (Bore size: ø20 to ø63)

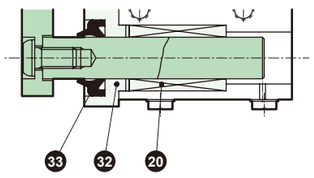
● Heavy-duty scraper type

STS-$^{M}_{B}$G

ø20, ø25

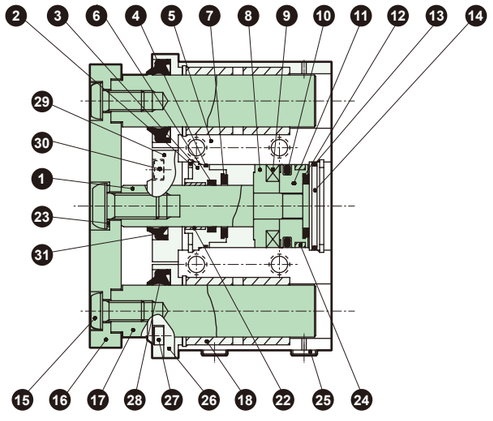


Plain bearing (M)

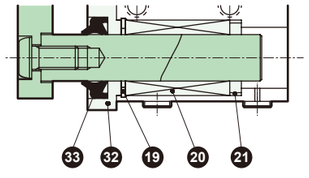


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

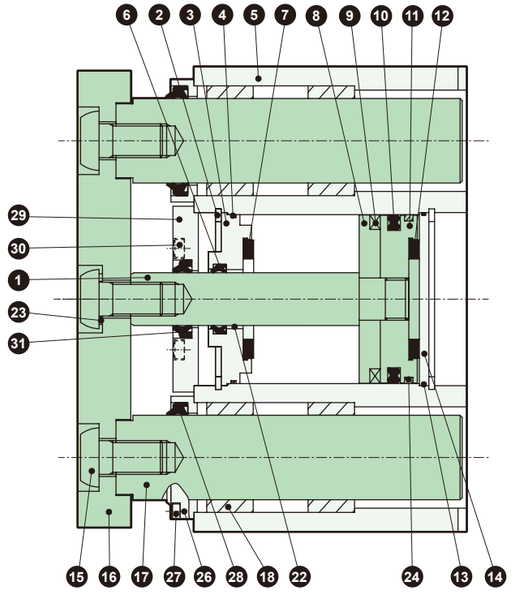


Rolling bearing (B)

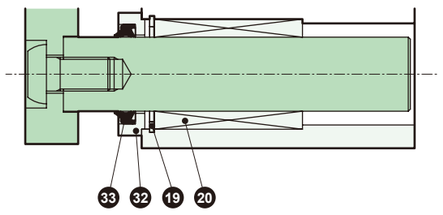
Internal structure diagram / Material (Bore size: ø80)

● Heavy-duty scraper type

STS-$^{M}_{B}$G



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper		Nitrile rubber, Steel	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Heavy-duty Scraper		Nitrile rubber, Steel	
32	Adapter C		Aluminum Alloy	Alumite
33	Heavy-duty Scraper		Nitrile rubber, Steel	

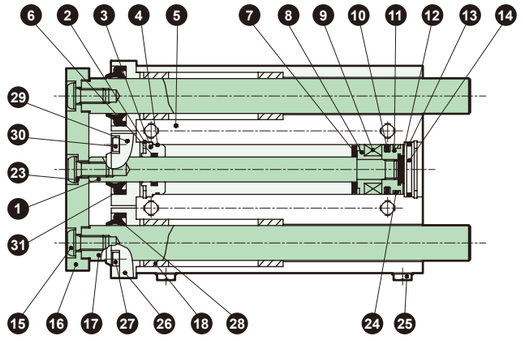
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

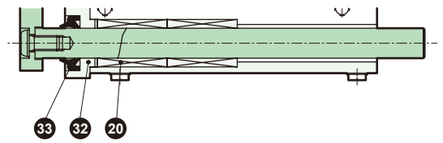
● Heavy-duty scraper type

STL-$^{M}_{B}$G

ø20, ø25

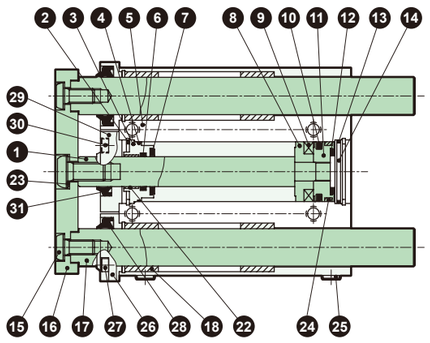


Plain bearing (M)

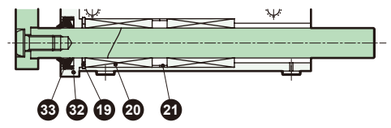


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

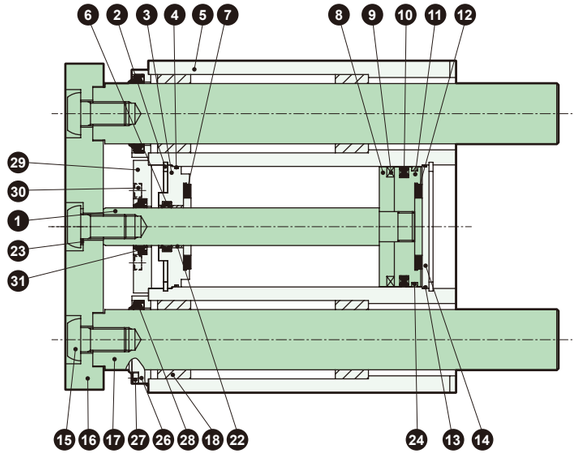


Rolling bearing (B)

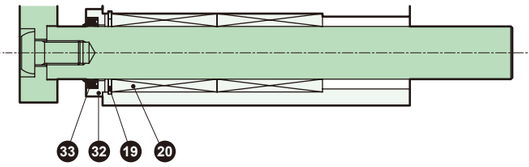
Internal structure diagram / Material (Bore size: ø80)

● Heavy-duty scraper type

STL-$^{M}_{B}$G



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper		Nitrile rubber, Steel	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Heavy-duty Scraper		Nitrile rubber, Steel	
32	Adapter C		Aluminum Alloy	Alumite
33	Heavy-duty Scraper		Nitrile rubber, Steel	

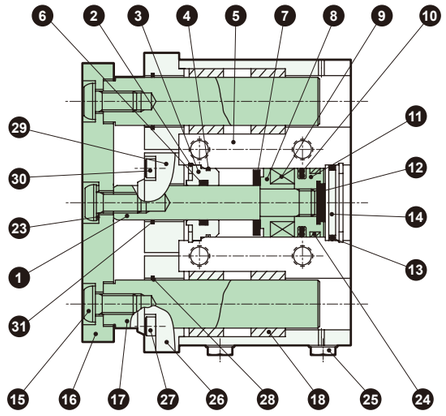
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

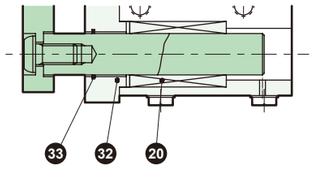
● Coil scraper type

STS-$^{M}_{B}$G1

ø20, ø25

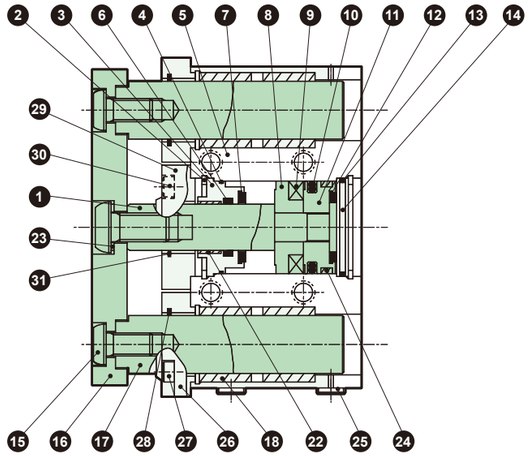


Plain bearing (M)

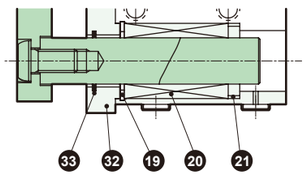


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

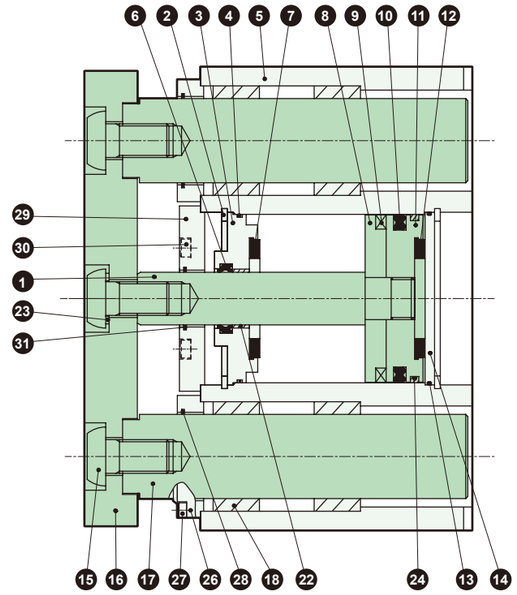


Rolling bearing (B)

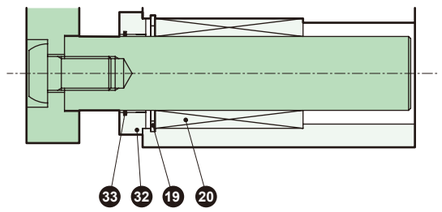
Internal structure diagram / Material (Bore size: ø80)

● Coil scraper type

STS-$^{M}_{B}$G1



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø20 to ø25: - ø32 to ø63: Steel	ø20 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Coil scraper		Phosphor bronze	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Coil scraper		Phosphor bronze	
32	Adapter C		Aluminum Alloy	Alumite
33	Coil scraper		Phosphor bronze	

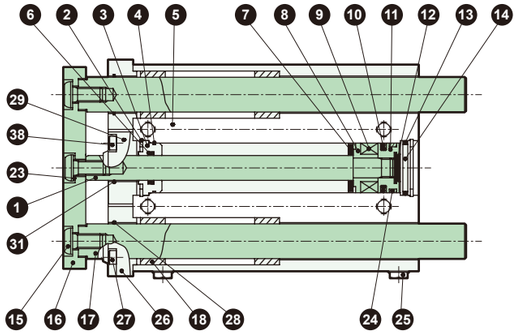
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

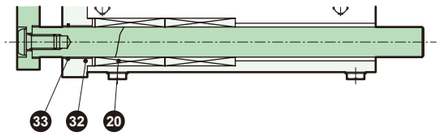
● Coil scraper type

STL-$^{M}_{B}$G-1

ø20, ø25

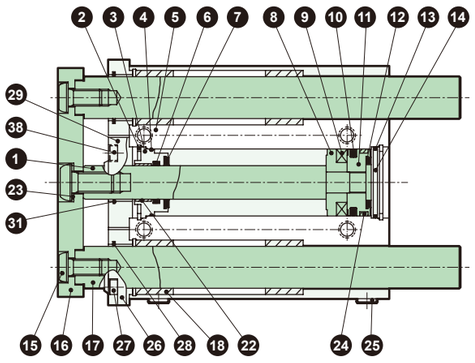


Plain bearing (M)

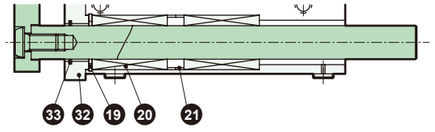


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

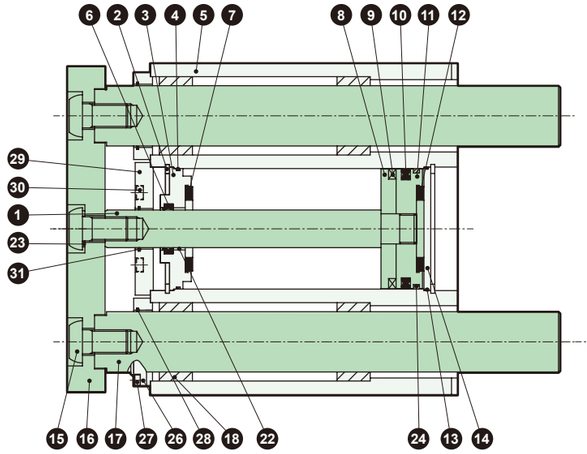


Rolling bearing (B)

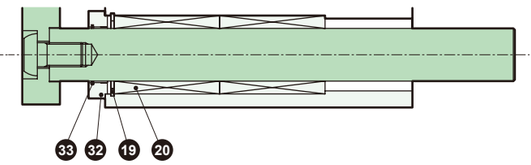
Internal structure diagram / Material (Bore size: ø80)

● Coil scraper type

STL-$^{M}_{B}$G-1



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø8 to ø25: - ø32 to ø63: Steel	ø20 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Coil scraper		Phosphor bronze	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Coil scraper		Phosphor bronze	
32	Adapter C		Aluminum Alloy	Alumite
33	Coil scraper		Phosphor bronze	

For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Guided cylinder Double acting, Cutting oil resistant type

STS / STL-$^{M}_{B}$G$^{2}_{3}$ Series

● Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

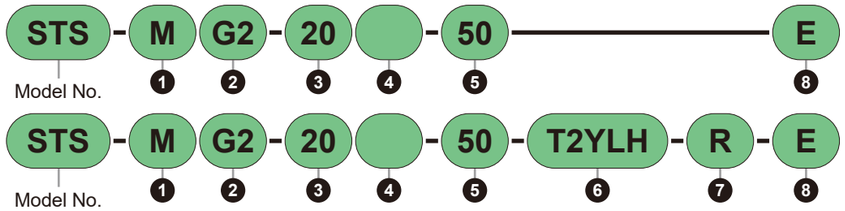
RoHS

Model No. Notation Method

● Short stroke

Without Switch
(Built-in magnet for switch)

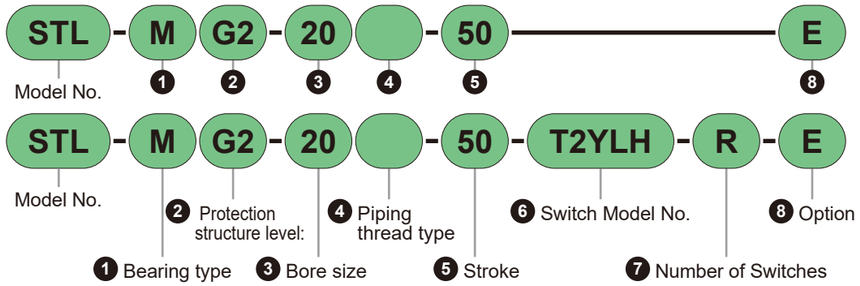
With Switch
(Built-in magnet for switch)



● Long stroke

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



1 Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

2 Protection structure level

Code	Content
G2	Cutting Oil Resistant Scraper + NBR Packing
G3	Cutting Oil Resistant Scraper + FKM Packing

3 Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

4 Piping thread type

Code	Content
Blank	M5 (ø20, ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

5 Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke	*1 *2	Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm						

6 Switch Model No.

For switch details, please see P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	 *2
	2-Color For Cutting Oil	2-wire	-	10 to 30	-	5 to 20	T2YLH□	T2YLV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3YLH□	T3YLV□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*4	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2YLH
3 m F2S 3
5 m F2S 5

7 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

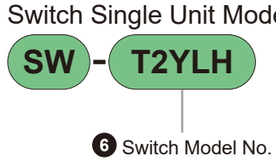
8 Option

Code	Content
M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Switch Single Unit Model No. Notation Method



Specifications

Item		STS/STL-$^{M}_{B}$G$^{2}_{3}$						
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting, Coolant Proof Type						
Operating Fluid		Compressed Air						
Max. Working Pressure	MPa	1.0						
Min. Operating Pressure	MPa	0.2		0.15				
Proof Pressure	MPa	1.6						
Ambient Temperature	°C	-10 to 60 (no freezing)						
Port Size		M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	$^{+2.0}_{0}$						
Operating Piston Speed	mm/s	50 to 500					50 to 300	
Cushion		With rubber cushion (Urethane rubber)						
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Scraper Type

· Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

· Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *3
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *3

*1: Intermediate strokes can be manufactured every 5 mm. However, the total length is the same as that of the next longer standard stroke.
*2: Stroke over standard to maximum is available in increments of 25.
*3: This is for the case with 1 or 2 switches.

Caution: The rod side with scraper is coolant proof but the head side without scraper is not. Therefore, protect it with a cover.

Theoretical Thrust Table

(Unit: N)

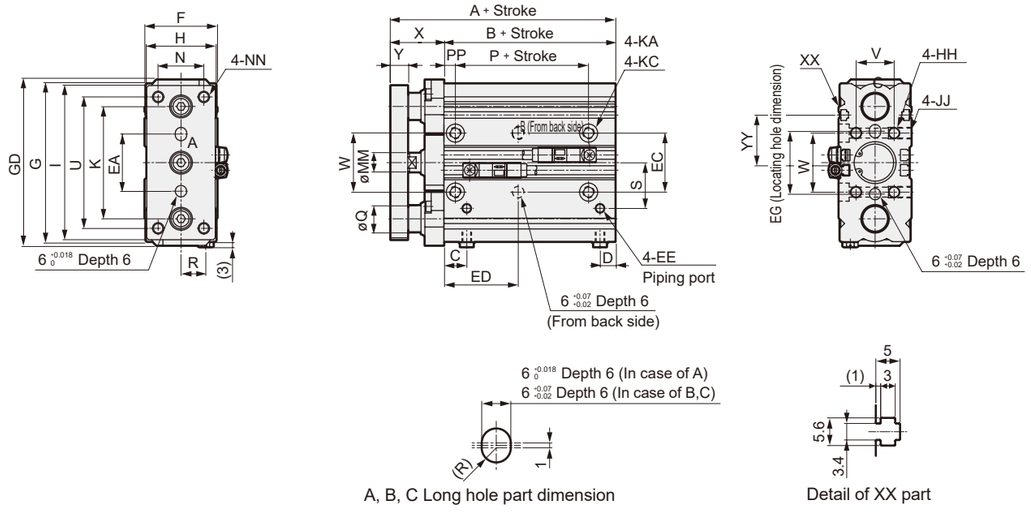
Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

● Cutting Oil Resistant Type

STS-$^{M}_{B}$G2 / G3



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø20	25, 50	68	40	12	8	M5	30	31	33	14+ Stroke/2	38	83	87	36	M6 Depth 12
ø25		69	41	12	9	M5	32	35	37	14.5+ Stroke/2	42	86	91	38	M6 Depth 12

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

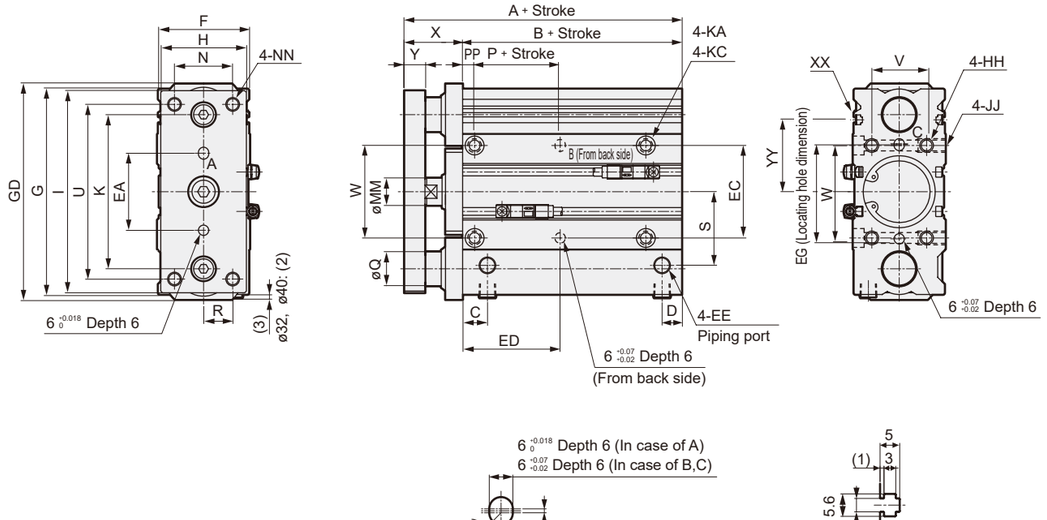
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 0 -2	9	25
ø25	26	72	24	35	28 0 -2	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Cutting Oil Resistant Type

STS-$^{M}_{B}$G2 / G3



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	25, 50	83	49	14	10.5	Rc1/8	42	45	46	17.5+ Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	53	14.5	12	Rc1/8	45	54	55	19.5+ Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	55	16	12.5	Rc1/4	55	66	69	19.5+ Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	61	17.5	17.5	Rc1/4	62	79	82	22.5+ Stroke/2	79	162	166	75	M10 Depth 20

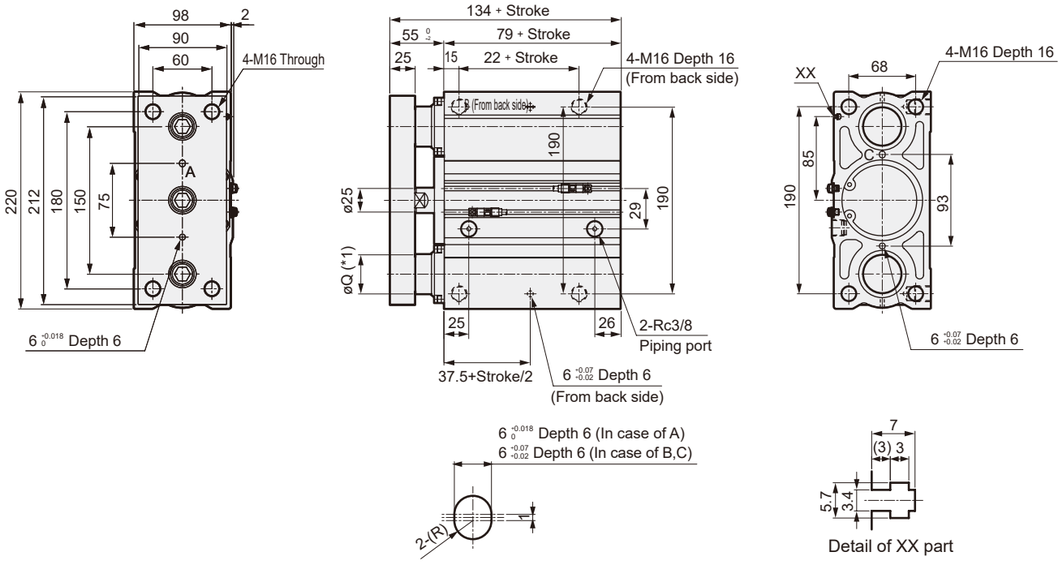
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	34 0 -2	12	39
ø40	43	102	32	54	34 0 -2	12	42
ø50	49	125	38	66	37 0 -2	16	45
ø63	56	140	50	79	37 0 -2	16	52

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Cutting Oil Resistant Type
STS-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

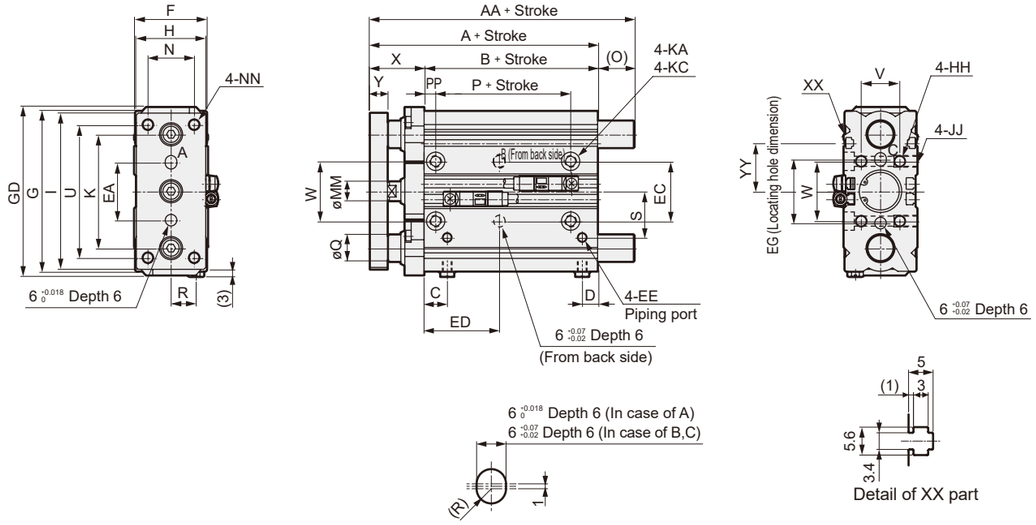
MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

Outline dimension drawing (bore size: ø20, ø25)

● Cutting Oil Resistant Type

STL-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	68	87	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	87	36
ø25	250, 275, 300, 325, 350, 375, 400	69	87	41	12	9	M5	32	35	37	14.5+ Stroke/2	42	86	91	38

Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

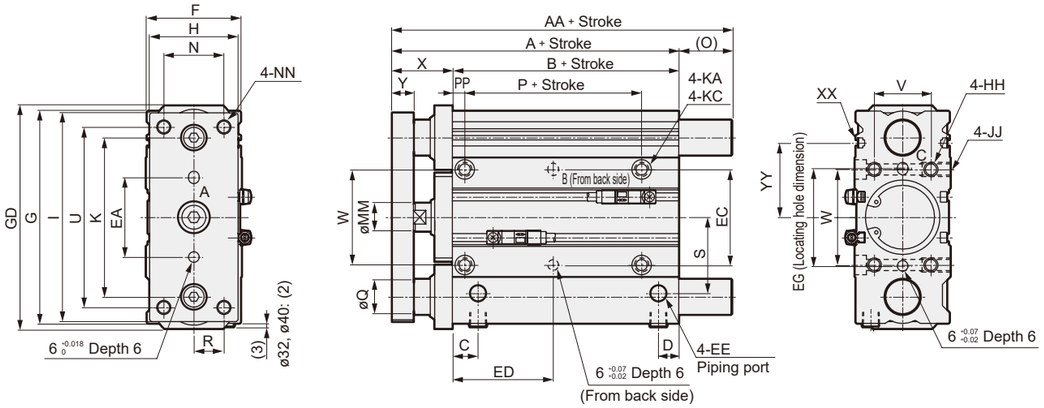
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 $^{0}_{-2}$	9	25
ø25	26	72	24	35	28 $^{0}_{-2}$	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

Cutting Oil Resistant Type

STL-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	50, 75, 100, 125, 150,	83	117	49	14	10.5	Rc1/8	42	45	46	17.5+ Stroke/2	47	111	117	45	M8 Depth 16
ø40	175, 200, 225, 250, 275,	87	117	53	14.5	12	Rc1/8	45	54	55	19.5+ Stroke/2	54	120	126	50	M8 Depth 16
ø50	300, 325, 350, 375, 400	92	140	55	16	12.5	Rc1/4	55	66	69	19.5+ Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	140	61	17.5	17.5	Rc1/4	62	79	82	22.5+ Stroke/2	79	162	166	75	M10 Depth 20

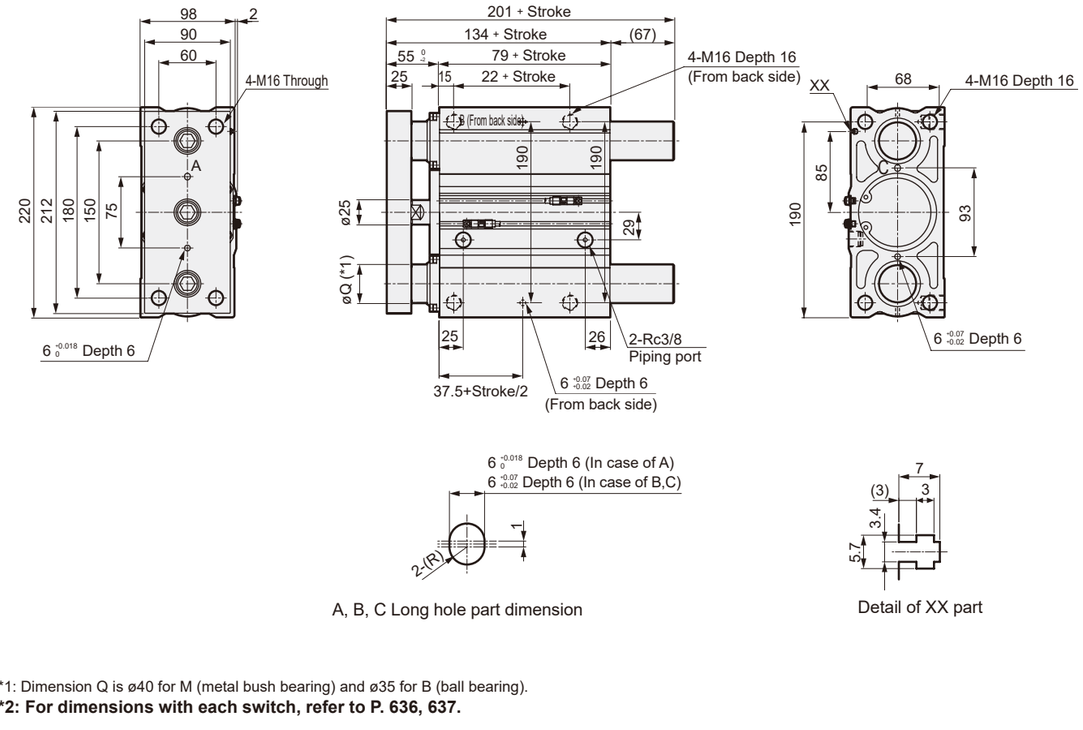
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

Code / Bore Size (mm)	X	Y	YY
ø32	34 $^{0}_{-2}$	12	39
ø40	34 $^{0}_{-2}$	12	42
ø50	37 $^{0}_{-2}$	16	45
ø63	37 $^{0}_{-2}$	16	52

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Cutting Oil Resistant Type
STL-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

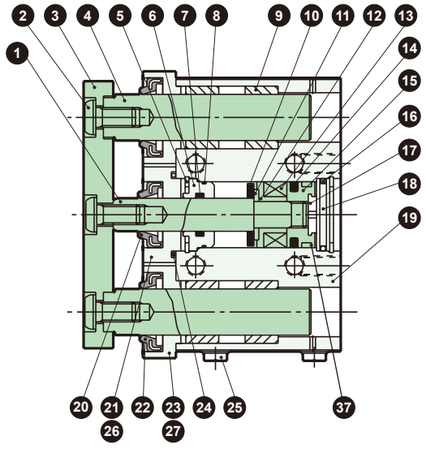
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Protection structure level: Packing NBR / FKM

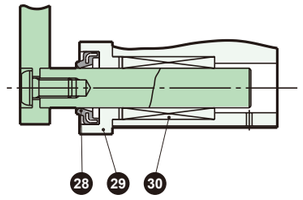
STS-$^{M}_{B}$G2

STS-$^{M}_{B}$G3

● ø20, ø25

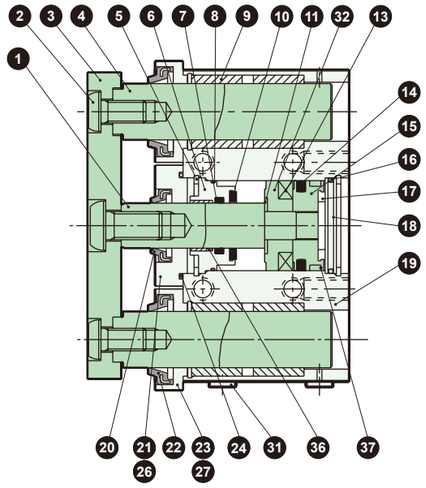


Plain bearing (M)

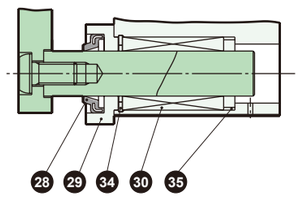


Rolling bearing (B)

● ø32, ø40, ø50, ø63



Plain bearing (M)



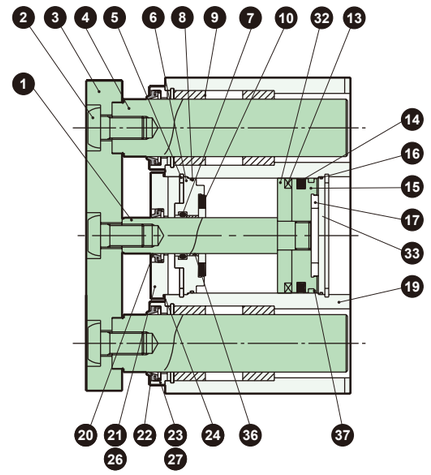
Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

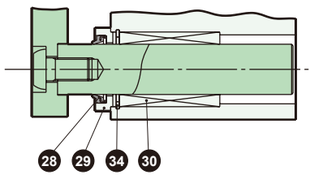
● Protection structure level: Packing NBR / FKM

STS-$^{M}_{B}$G2

STS-$^{M}_{B}$G3



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating
2	Hex Socket Button Head Bolt		Stainless Steel	
3	End plate		Aluminum Alloy	Alumite
4	Guide rod		Stainless Steel	Industrial Hard Chrome Plating
5	C-type retaining ring for hole		Stainless Steel	
6	Rod Metal		Aluminum Alloy	Alumite
7	Rod Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
8	Metal gasket	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
9	Metal		Oil-Impregnated Bearing Alloy	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer washer		Stainless Steel	ø20 to ø50 only
12	Spacer		Polyamide	ø20 to ø50 only
13	Magnet			
14	Piston Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
15	Piston		Aluminum Alloy	Chromate
16	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
17	Cushion rubber (H)		Urethane Rubber	
18	Bottom plate		Aluminum Alloy	ø20 to ø63 only
19	Tube body		Aluminum Alloy	Hard Anodized
20	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
21	Adaptor A		Aluminum Alloy	Alumite
22	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
23	Adapter B		Aluminum Alloy	Alumite
24	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
25	Plug		-	FPL(CKD)
26	Hexagon Socket Head Cap Screw		Stainless Steel	
27	Hexagon Socket Head Cap Screw		Stainless Steel	
28	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
29	Adapter C		Aluminum Alloy	Alumite
30	Bearing		Stainless Steel	
31	Hexagon socket flush plug		Stainless Steel	ø32 to ø63 only
32	Spacer		Aluminum Alloy	ø63.ø80 only
33	Bottom plate		Steel	Zinc chromate (ø80 only)
34	C-type retaining ring for hole		Stainless Steel	ø32 to ø80 only
35	Collar		Aluminum Alloy	ø32 to ø63 only
36	Bushing		Bearing Alloy	ø32 to ø80 only
37	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

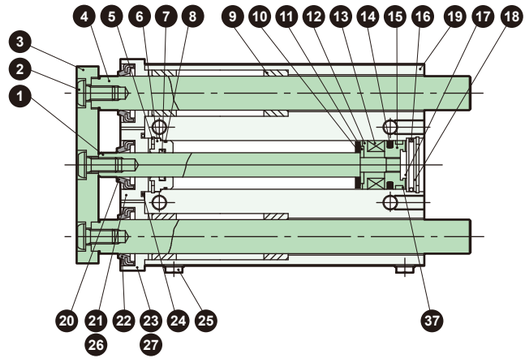
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Protection structure level: Packing NBR / FKM

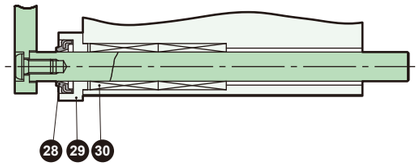
STL-$^{M}_{B}$G2

STL-$^{M}_{B}$G3

● ø20, ø25

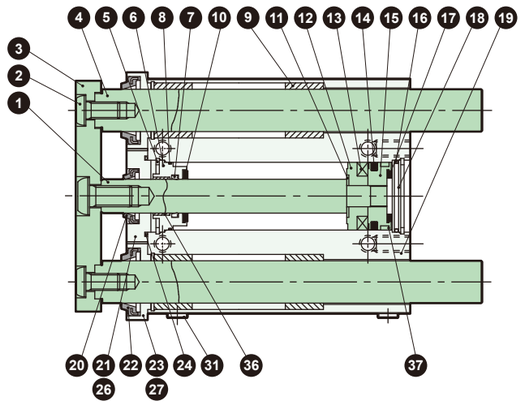


Plain bearing (M)

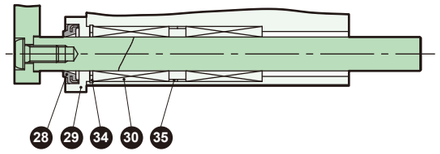


Rolling bearing (B)

● ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

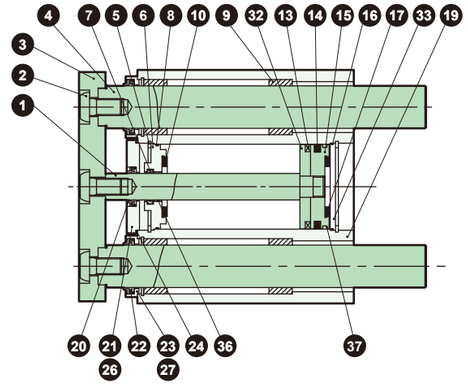
Internal structure diagram / Material (Bore size: ø80)

● Protection structure level: Packing NBR / FKM

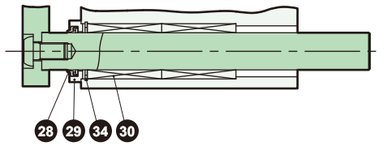
STL-$^{M}_{B}$G2

STL-$^{M}_{B}$G3

● ø80



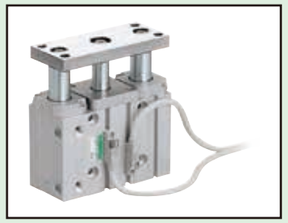
Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating
2	Hex Socket Button Head Bolt		Stainless Steel	
3	End plate		Aluminum Alloy	Alumite
4	Guide rod		Stainless Steel	Industrial Hard Chrome Plating
5	C-type retaining ring for hole		Stainless Steel	
6	Rod Metal		Special aluminum	Alumite
7	Rod Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
8	Metal gasket	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
9	Metal		Oil-Impregnated Bearing Alloy	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer washer		Stainless Steel	ø20 to ø50 only
12	Spacer		Polyamide	ø20 to ø50 only
13	Magnet			
14	Piston Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
15	Piston		Aluminum Alloy	Chromate
16	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
17	Cushion rubber (H)		Urethane Rubber	
18	Bottom plate		Aluminum Alloy	ø20 to ø63 only
19	Tube body		Aluminum Alloy	Hard Anodized
20	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
21	Adapter A		Aluminum Alloy	Alumite
22	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
23	Adapter B		Aluminum Alloy	Alumite
24	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
25	Plug		-	FPL(CKD)
26	Hexagon Socket Head Cap Screw		Stainless Steel	
27	Hexagon Socket Head Cap Screw		Stainless Steel	
28	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
29	Adapter C		Aluminum Alloy	Alumite
30	Bearing		Stainless Steel	
31	Hexagon socket flush plug		Stainless Steel	ø32 to ø63 only
32	Spacer		Aluminum Alloy	ø63.ø80 only
33	Bottom plate		Steel	Zinc chromate (ø80 only)
34	C-type retaining ring for hole		Stainless Steel	ø32 to ø80 only
35	Collar		Aluminum Alloy	ø32 to ø63 only
36	Bushing		Bearing Alloy	ø32 to ø80 only
37	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Anti-spatter adherence

STS / STL-G4 Series

● Bore size: ø40, ø50, ø63, ø80

Circuit Diagram Symbol ● Double acting type

RoHS

Model No. Notation Method

●Short stroke

Without Switch
(Built-in magnet for switch)

STS - M G4 - L1 - 40 ( ) - 50 ——— F

Model No. ① ② ③ ④ ⑦

With Switch
(Built-in magnet for switch)

STS - M G4 - L1 - 40 ( ) - 50 - T2YD - R - F

Model No. ① ② ③ ④ ⑤ ⑥ ⑦

●Long stroke

Without Switch
(Built-in magnet for switch)

STL - M G4 - L1 - 40 ( ) - 100 ——— F

Model No. ① ② ③ ④ ⑦

With Switch
(Built-in magnet for switch)

STL - M G4 - L1 - 40 ( ) - 100 - T2YD - D - F

Model No. ① Bearing type ② Bore size ③ Piping thread type ④ Stroke ⑤ Switch Model No. ⑥ Number of Switches ⑦ Option

① Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

② Bore Size (mm)

Code	Content
40	ø40
50	ø50
63	ø63
80	ø80

③ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

④ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●
		50	●	●	●	●
		75				●
		100				●
	Intermediate Stroke *1 *2		Every 5 mm			

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	
		75	●	●	●	●
		100	●	●	●	●
		125	●	●	●	●
		150	●	●	●	●
		175	●	●	●	●
		200	●	●	●	●
		225	●	●	●	●
		250	●	●	●	●
		275	●	●	●	●
		300	●	●	●	●
		325	●	●	●	●
		350	●	●	●	●
		375	●	●	●	●
		400	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm			

⑤ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead Wire *1 Straight	L-shape
Solid State	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–
			-		-		T2YDT□	–

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m T2YD
3 m T2YD 3
5 m T2YD 5

⑥ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

⑦ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-G4- ····· - O

Switch Single Unit Model No. Notation Method

SW - T2YD

⑤ Switch Model No.

Specifications

Item	STS/STL-G4			
Bore Size mm	ø40	ø50	ø63	ø80
Actuation method	Double Acting Type			
Operating Fluid	Compressed Air			
Max. Working Pressure MPa	1.0			
Min. Operating Pressure MPa	0.15			
Proof Pressure MPa	1.6			
Ambient Temperature °C	-10 to 60 (Provided that freezing does not occur)			
Port Size	Rc1/8	Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0			
Operating Piston Speed mm/s	50 to 500		50 to 300	
Cushion	With Rubber Cushion			
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy J	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø40	25, 50	50	5	5 *1
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø40	50, 75, 100, 125, 150 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 *2
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured every 5 mm.
However, the total length is the same as that of the next longer standard stroke.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

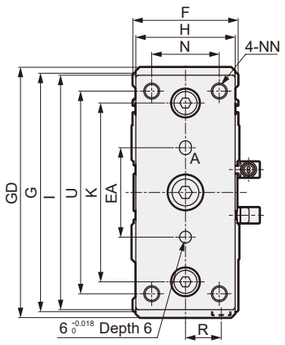
* For cylinder weight, please refer to P. 642 to 645.

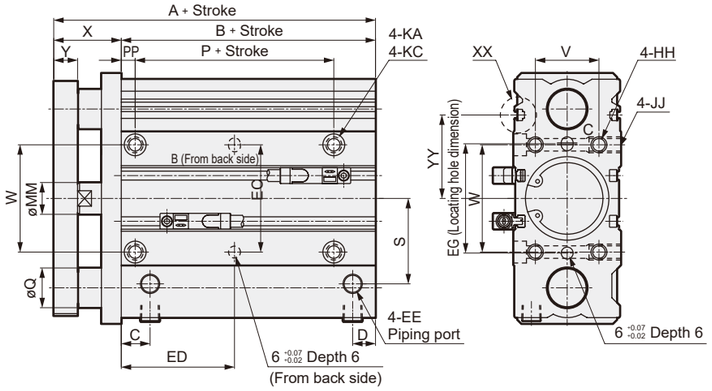
MEMO

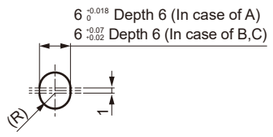
External Dimensions Diagram (Bore size: ø40, ø50, ø63)

● Double acting / standard single rod

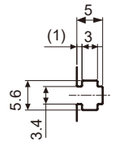
STS-$^{M}_{B}$G4







A, B, C Long hole part dimension



Detail of XX part

STS-$^{M}_{B}$-G4 Code / Bore Size (mm)	A	B	C	D	E	EE	EA	EC	EG	ED	F	G	GD	H	HH	I	JJ	K	KA
ø40	87	53	14.5	12	5.6	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	92	55	16	12.5	5.6	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	98	61	17.5	17.5	5.6	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

STS-$^{M}_{B}$-G4 Code / Bore Size (mm)	KC	L	M	MM	N	NN	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z
ø40	11 Counterbore Depth 6.5	1	3.4	16	34	M8 Through	25	7	20	18	43	5	102	32	54	34 -0.2 0	12	42	3
ø50	14 Counterbore Depth 8.6	1	3.4	20	44	M10 Through	26	8	25	22	49	5	125	38	66	37 -0.2 0	16	45	3
ø63	14 Counterbore Depth 8.6	1	3.4	20	55	M10 Through	26	8	25	26	56	5	140	50	79	37 -0.2 0	16	52	3

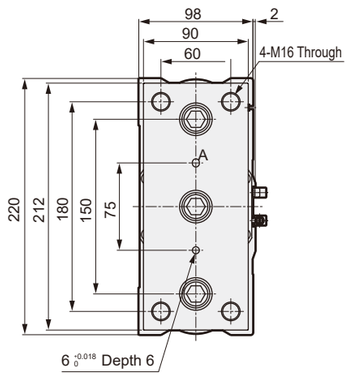
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

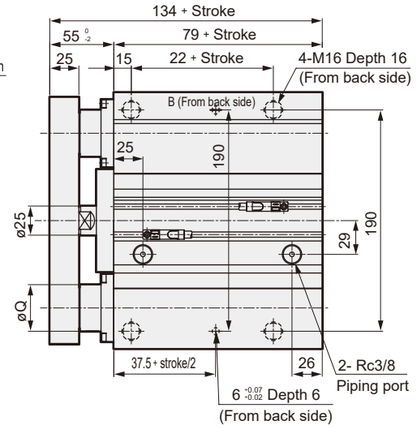
***2: For dimensions with each switch, refer to P. 636, 637.**

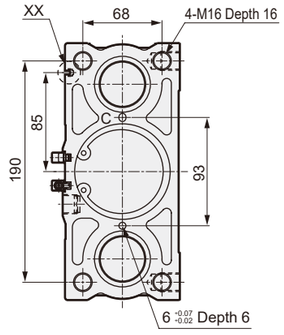
External dimensions diagram (Bore size: ø80)

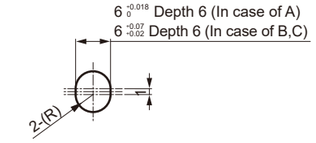
● Double acting/standard single rod

STS-$^{M}_{B}$G4

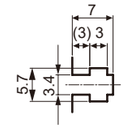








A, B, C Long hole part dimension



Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

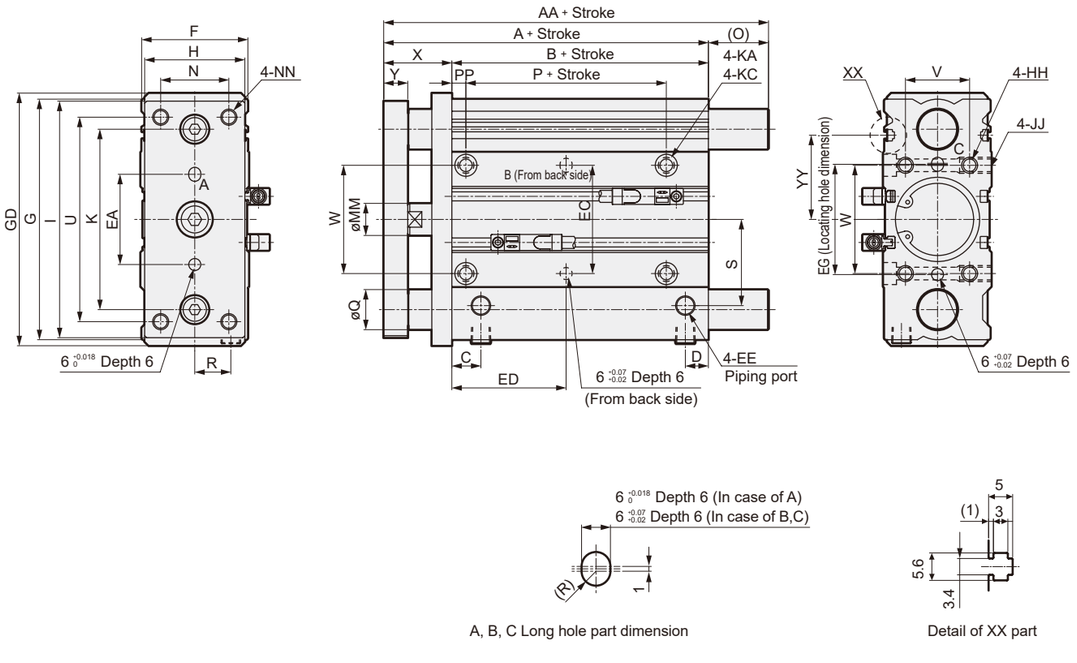
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.

***3: For dimensions with each switch, refer to P. 636, 637.**

External Dimensions Diagram (Bore size: ø40, ø50, ø63)

● Double acting / standard single rod

STL-$^{M}_{B}$G4



A, B, C Long hole part dimension

Detail of XX part

STL-$^{M}_{B}$-G4 Code / Bore Size (mm)	A	AA	B	C	D	E	EE	EA	EC	EG	ED	F	G	GD	H	HH	I	JJ	K	KA
ø40	87	117	53	14.5	12	5.6	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	92	140	55	16	12.5	5.6	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	98	140	61	17.5	17.5	5.6	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

STL-$^{M}_{B}$-G4 Code / Bore Size (mm)	KC	L	M	MM	N	NN	O	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z
ø40	11 Counterbore Depth 6.5	1	3.4	16	34	M8 Through	30	25	7	20	18	43	5	102	32	54	34 0 -2	12	42	3
ø50	14 Counterbore Depth 8.6	1	3.4	20	44	M10 Through	48	26	8	25	22	49	5	125	38	66	37 0 -2	16	45	3
ø63	14 Counterbore Depth 8.6	1	3.4	20	55	M10 Through	42	26	8	25	26	56	5	140	50	79	37 0 -2	16	52	3

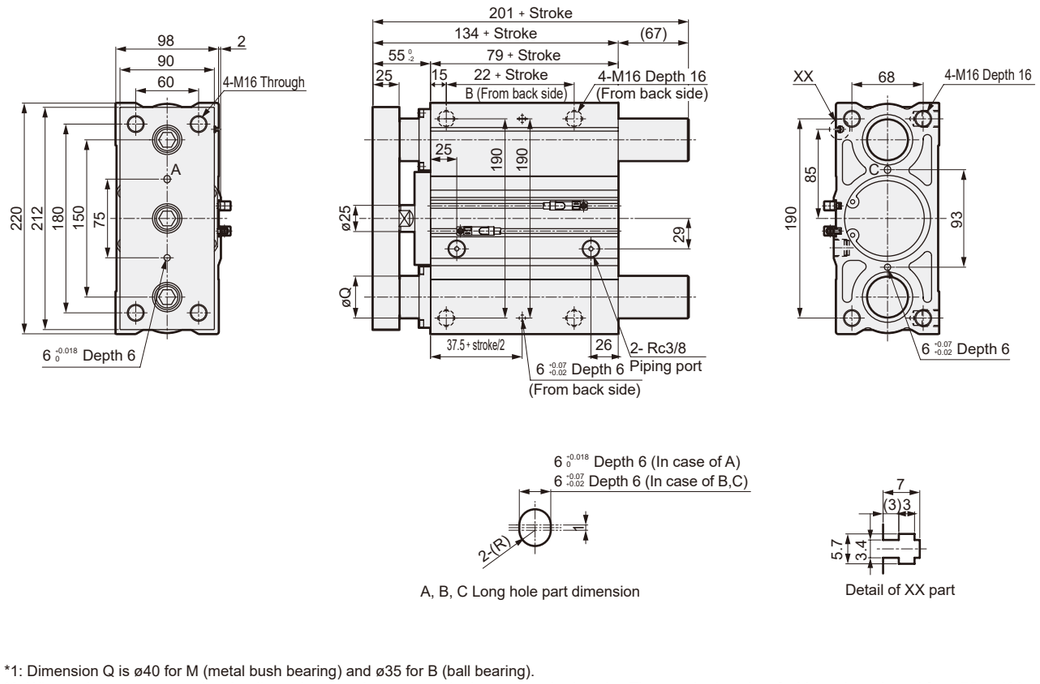
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Double acting/standard single rod

STL-$^{M}_{B}$G4



A, B, C Long hole part dimension

Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard stroke of ø80 can be selected from 75 to 400 mm in 25 mm increments.

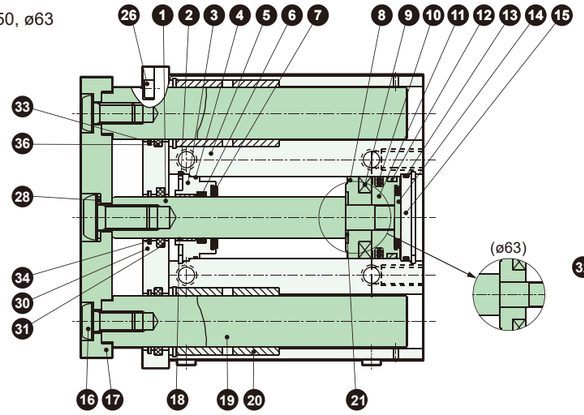
***3: For dimensions with each switch, refer to P. 636, 637.**

Internal Structure Diagram / Material

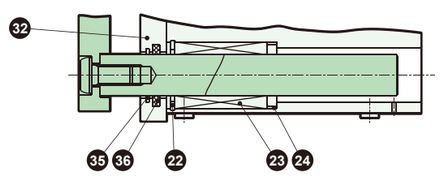
● Double acting / standard single rod

STS-$^{M}_{B}$G4

●ø40, ø50, ø63

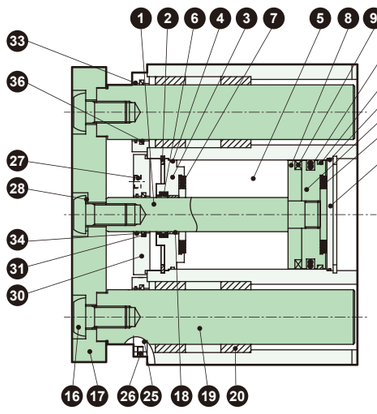


Plain bearing (M)

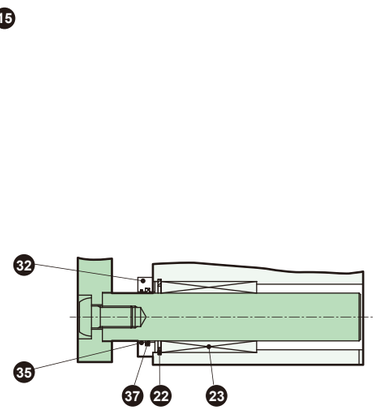


Rolling bearing (B)

● ø80



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø40 / ø50: Polyamide	ø63 / ø80: Chromate
		ø63 / ø80: Aluminum alloy	
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Wear Ring	Polyacetal	
13	O-ring	Nitrile Rubber	
14	Cushion rubber (H)	Urethane Rubber	
15	Bottom plate	ø40 to ø63: Aluminum alloy	ø40 to ø63: Chromate
		ø80: Steel	ø80: Zinc chromate
16	Hex Socket Button Head Bolt	Steel	Zinc Chromate
17	End plate	Aluminum Alloy	Alumite
18	Bushing	Bearing Alloy	

Part No.	Part Name	Material	Remarks
19	Guide rod	Steel	Industrial Hard Chrome Plating
20	Metal	Oil-Impregnated Bearing Alloy	
21	Spacer washer	Stainless Steel	
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	
25	Adapter B	Aluminum Alloy	Alumite
26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
27	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
28	Belleville washer	Steel	
29	Plug	Steel	Zinc chromate (ø40 to ø63 only)
30	Adapter A	Aluminum Alloy	Alumite
31	Lube keeper	Special rubber	
32	Adapter C	Aluminum Alloy	Alumite
33	Coil scraper	Phosphor bronze	
34	Coil scraper	Phosphor bronze	
35	Coil scraper	Phosphor bronze	
36	Lube keeper	Special rubber	
37	Lube keeper	Special rubber	

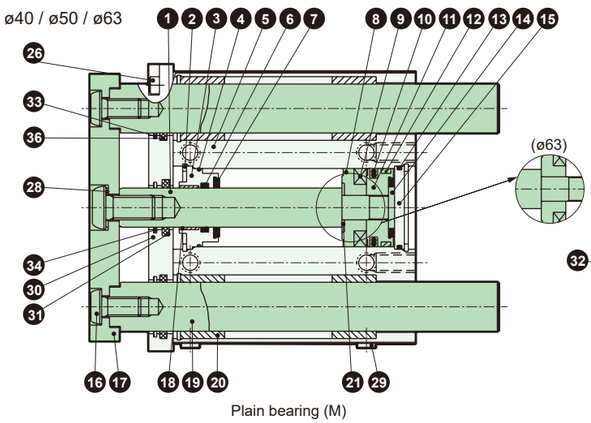
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal Structure Diagram / Material

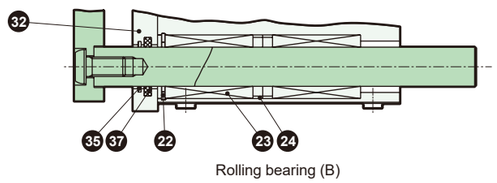
● Double acting/standard single rod

STL-$^{M}_{B}$G4

● ø40 / ø50 / ø63

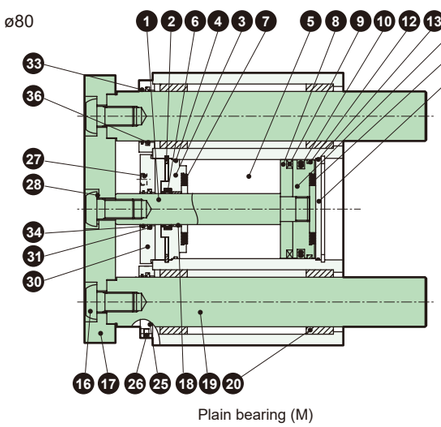


Plain bearing (M)

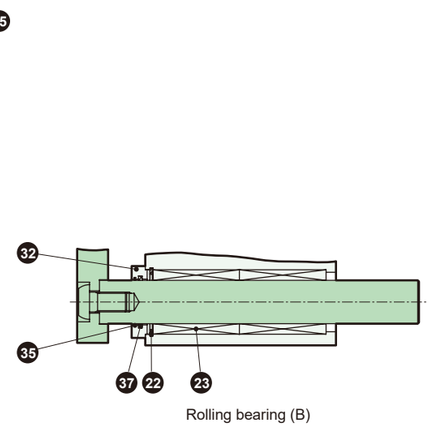


Rolling bearing (B)

● ø80



Plain bearing (M)

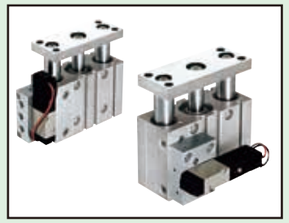


Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø40 / ø50: Polyamide	ø63 / ø80: Chromate
		ø63 / ø80: Aluminum alloy	
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Wear Ring	Acetal Resin	
13	O-ring	Nitrile Rubber	
14	Cushion rubber (H)	Urethane Rubber	
15	Bottom plate	ø40 to ø63: Aluminum alloy	ø40 to ø63: Chromate
		ø80: Steel	ø80: Zinc chromate
16	Hex Socket Button Head Bolt	Steel	Zinc Chromate
17	End plate	Aluminum Alloy	Alumite
18	Bushing	Bearing Alloy	

Part No.	Part Name	Material	Remarks
19	Guide rod	Steel	Industrial Hard Chrome Plating
20	Metal	Oil-Impregnated Bearing Alloy	
21	Spacer washer	Stainless Steel	
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	
25	Adapter B	Aluminum Alloy	Alumite
26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
27	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
28	Belleville washer	Steel	
29	Plug	Steel	Zinc chromate (ø40 to ø63 only)
30	Adapter A	Aluminum Alloy	Alumite
31	Lube keeper	Special rubber	
32	Adapter C	Aluminum Alloy	Alumite
33	Coil scraper	Phosphor bronze	
34	Coil scraper	Phosphor bronze	
35	Coil scraper	Phosphor bronze	
36	Lube keeper	Special rubber	
37	Lube keeper	Special rubber	

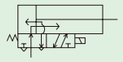
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder/valve equipped

STS / STL-$^{M}_{B}$V Series

●Bore size: ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

● Short stroke

Without Switch
(Built-in magnet for switch)

STS - M(1) V1(2) S(3) — 20(4) [ ](5) - 25(6) B(7) 1(8) — F(11)
Model No.

With Switch
(Built-in magnet for switch)

STS - M(1) V1(2) S(3) — 20(4) [ ](5) - 25(6) B(7) 1(8) T0H(9) R(10) F(11)
Model No.

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M(1) V1(2) S(3) - L1 - 40(4) [ ](5) - 25(6) B(7) 1(8) T1H(9) R(10) F(11)
Model No.

● Long stroke

Without Switch
(Built-in magnet for switch)

STL - M(1) V1(2) S(3) — 50(4) [ ](5) - 50(6) B(7) 1(8) — F(11)
Model No.

With Switch
(Built-in magnet for switch)

STL - M(1) V1(2) S(3) — 50(4) [ ](5) - 50(6) B(7) 1(8) T0H(9) R(10) F(11)
Model No.

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M(1) V1(2) S(3) - L1 - 50(4) [ ](5) - 50(6) B(7) 1(8) T1H(9) R(10) F(11)
Model No.

❶ Bearing type
❷ Operating Direction
❸ Valve mounting direction
❹ Bore size
❺ Piping thread type
❻ Stroke
❼ Electrical connections
❽ Rated voltage
❾ Switch Model No.
❿ Number of Switches
⓫ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Operating Direction

Code	Content
V1	Pushed out when energized
V2	Energized retraction type

❸ Valve mounting direction

Code	Content
Blank	With valve on front
S	With valve on side

*1: When selecting types with valve on side with a stroke of 25 mm or less, the valve mounting dimensions (VC) may exceed the overall length of the cylinder (A + stroke). Check the measurements using the external dimensions chart.
*2: T1H/V, T8H/V, off-delay, AC magnetic field proof switch cannot be mounted on the valve on front type.

❹ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

❺ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❻ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63
STS	Standard Stroke	25	●	●	●	●	●	●
		50	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm					

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63
STL	Standard Stroke	50	●	●	●	●	●	●
		75	●	●	●	●	●	●
		100	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❼ Electrical connections

Code	Content
Blank	Grommet lead wire (300 mm)
B	Compact terminal box, without lead wire
C	C-connector, lead wire (300 mm)
D	D-connector, lead wire (300 mm)

❽ Rated voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC

❾ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-color Water resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	 *3
	Two-color mixture For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-	*2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MV1S-L1-50-50-B-1-T1H3-D-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❿ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

⓫ Option

Code	Content
F	End plate material: Steel

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$V- ····· - O

Switch Single Unit Model No. Notation Method

SW - T0H
❾ Switch Model No.

Specifications

Item		STS-MV, STS-BV (short stroke)/STL-MV/STL-BV (long stroke)					
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	0.7					
Min. Operating Pressure	MPa	0.15					
Proof Pressure	MPa	1.0					
Ambient Temperature	°C	-5 to 50 (no freezing)					
Port Size		Rc1/8			Rc1/4		
Stroke tolerance	mm	+2.0 0					
Operating Piston Speed	mm/s	50 to 500					50 to 300
Cushion		With Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Incorporated valve		4KB1 Series			4KB2 Series		
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560

Note) Refer to "Directional control valve " (No. RJ-012AA) for details on valves.

Stroke

Bore Size (mm)	Standard Stroke (mm)		Maximum Stroke (mm)	Min. Stroke (mm)
ø20, ø25, ø32	STS	25 / 50	100	5
ø40, ø50, ø63	STL	50, 75, 100		

Note) Custom stroke Custom strokes other than the standard stroke are available in 5 mm increments. However, the overall length dimension will be the same as the dimension of the standard stroke above it. (Example) For STS-MV1-25-35, A spacer is mounted inside the STS-MV1-25-50 body to obtain a total length the same as that of the 50-stroke type.

Series Variations

Bore Size (mm)	Applicable Valve Series	Position Number of solenoids	Valve effective cross-sectional area (mm²) (Cv)
ø20	4KB1 Series	2-position single	4 (0.22)
ø25			
ø32			
ø40	4KB2 Series	2-position single	14 (0.76)
ø50			
ø63			

Valve specifications

Item	STS-MV1, STS-BV1, STS-MV2, STS-BV2 STL-MV1, STL-BV1, STL-MV2, STL-BV2 Short stroke			STS-MV1, STS-BV1, STS-MV2, STS-BV2 STL-MV1, STL-BV1, STL-MV2, STL-BV2 Long stroke		
Applicable Valve Series	4KB1 Series			4KB2 Series		
Position Number of solenoids	2-position single			2-position single		
Valve effective cross-sectional area (mm²) (Cv)	4 (0.22)			14 (0.76)		
Rated Voltage (V)	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 DC	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 DC
Starting Current (A)	0.056/0.044	0.034/0.026	0.075	0.056/0.044	0.028/0.022	0.075
Holding Current (A)	0.028/0.022	0.017/0.013		0.028/0.022	0.014/0.011	
Power Consumption (W)	1.8/1.4	2.1/1.6	1.8	1.8/1.4		1.8
Voltage Fluctuation Range	±10%			±10%		
Heat Resistance Class	Class B molded coil			Class B molded coil		

Note) **Refer to "Directional control valve " (No. RJ-012AA) for details on valves.**

Theoretical Thrust Table

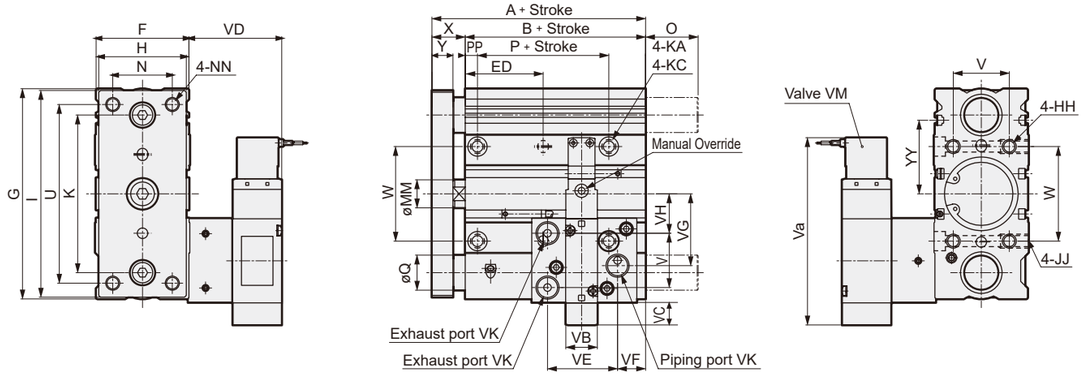
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²
	Pull	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²
ø25	Push	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²
	Pull	56.7	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

● With valve on front



Code / Bore Size (mm)	A	B	ED	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O STS	O STL	P
ø20	53	40	14+ Stroke/2	38	83	36	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	0	18	20
ø25	54	41	14.5+ Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	17	20
ø32	68	49	17.5+ Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	0	34	22
ø40	72	53	19.5+ Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	0	30	25
ø50	77	55	19.5+ Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	0	48	26
ø63	83	61	22.5+ Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	0	42	26

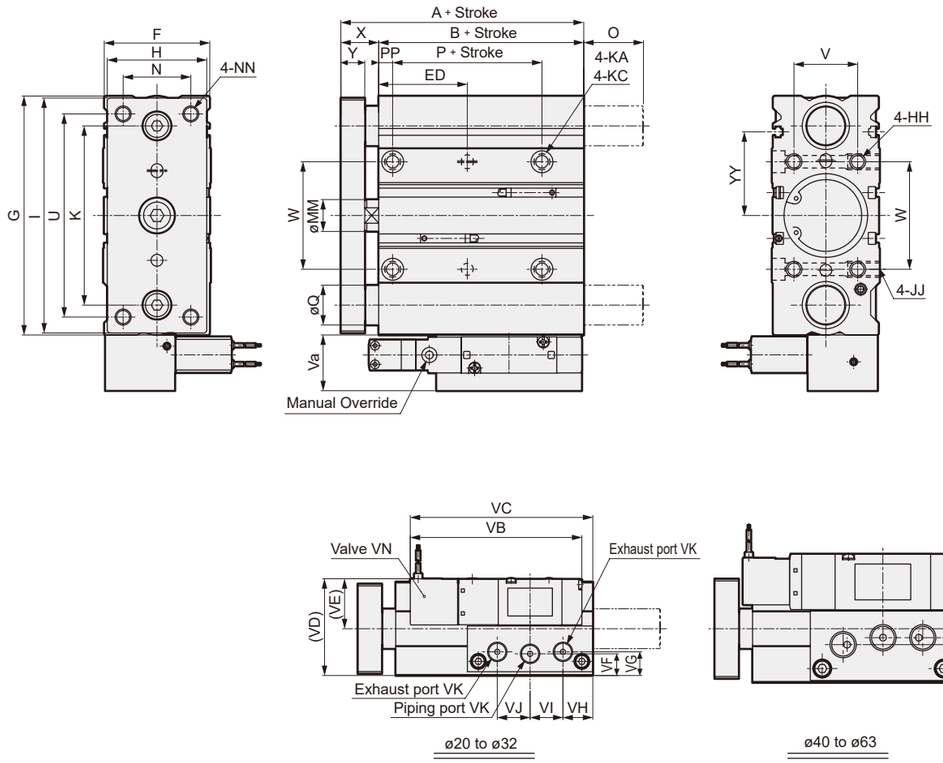
Code / Bore Size (mm)	PP	Q M type	Q B-type	U	V	W	X	Y	YY	Va	VB	VC	VD	VE	VF	VG	VH	VI	VK	VM
ø20	6	14	12	69	20	31	13 0 -2	9	25	86	15	8.5	42.5	35.5	9.5	29.5	13	22	Rc1/8	4KB1 Series
ø25	6	14	12	72	24	35	13 0 -2	9	27	86	15	8	42.5	35.5	10.5	30.5	14	22	Rc1/8	4KB1 Series
ø32	7	20	16	93	25	45	19 0 -2	12	39	86	15	4	42.5	37.5	15.5	39	20.5	26	Rc1/8	4KB1 Series
ø40	7	20	16	102	32	54	19 0 -2	12	42	107	18	15	52.5	40	16	41	22.5	31	Rc1/4	4KB2 Series
ø50	8	25	20	125	38	66	22 0 -2	16	45	107	18	9	52.5	41	17	49	43	21	Rc1/4	4KB2 Series
ø63	8	25	20	140	50	79	22 0 -2	16	52	107	18	8	52.5	41	23	55.5	49.5	21	Rc1/4	4KB2 Series

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

Outline Dimension Drawing

● With valve on side



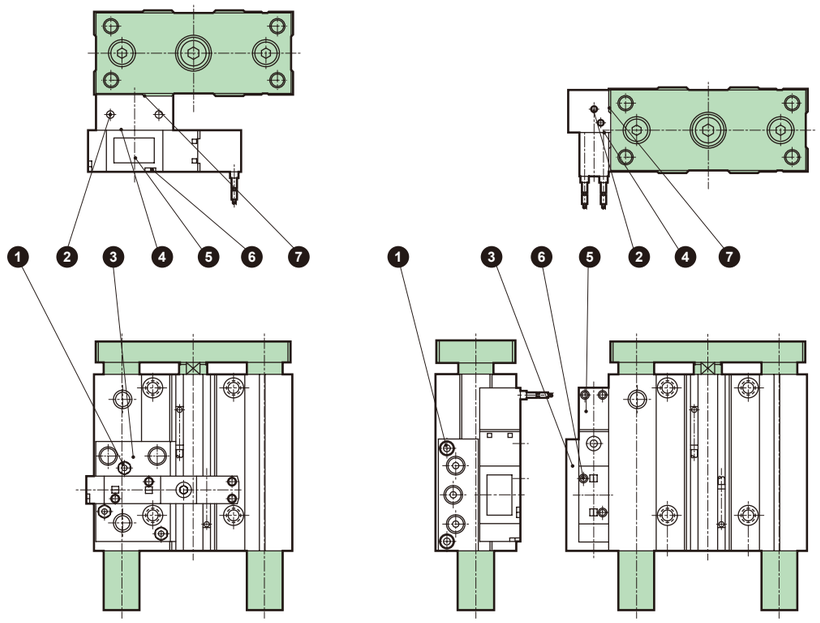
Code / Bore Size (mm)	A	B	ED	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O STS	O STL	P
ø20	53	40	14+ Stroke/2	38	83	36	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	0	18	20
ø25	54	41	14.5+ Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	17	20
ø32	68	49	17.5+ Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	0	34	22
ø40	72	53	19.5+ Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	0	30	25
ø50	77	55	19.5+ Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	0	48	26
ø63	83	61	22.5+ Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	0	42	26

Code / Bore Size (mm)	PP	Q M type	Q B-type	U	V	W	X	Y	YY	Va	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VN
ø20	6	14	12	69	20	31	13 0 -2	9	25	23	86	92	47.5	28.5	10	11	15	16.5	16.5	Rc1/8	4KB1 Series
ø25	6	14	12	72	24	35	13 0 -2	9	27	23	86	92	49.5	28.5	12	13	15	16.5	16.5	Rc1/8	4KB1 Series
ø32	7	20	16	93	25	45	19 0 -2	12	39	23	86	92	48.5	25	11	12	15	16.5	16.5	Rc1/8	4KB1 Series
ø40	7	20	16	102	32	54	19 0 -2	12	42	28	107	108	64.5	37.5	19	22.5	17.5	20	20	Rc1/4	4KB2 Series
ø50	8	25	20	125	38	66	22 0 -2	16	45	28	107	108	66.5	33.5	21	24.5	17.5	20	20	Rc1/4	4KB2 Series
ø63	8	25	20	140	50	79	22 0 -2	16	52	28	107	108	68	28.5	22.5	26	17	20	20	Rc1/4	4KB2 Series

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

Internal Structure Diagram / Material



With valve on front

With valve on side

Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Stainless Steel	
2	Hexagon socket head set screw	Steel	Black Oxide
3	Sub-base	Aluminum Alloy	Alumite
4	Gasket	Nitrile Rubber	
5	Selex valve		
6	Mounting Screw	Steel	Zinc Chromate
7	O-ring	Nitrile Rubber	

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

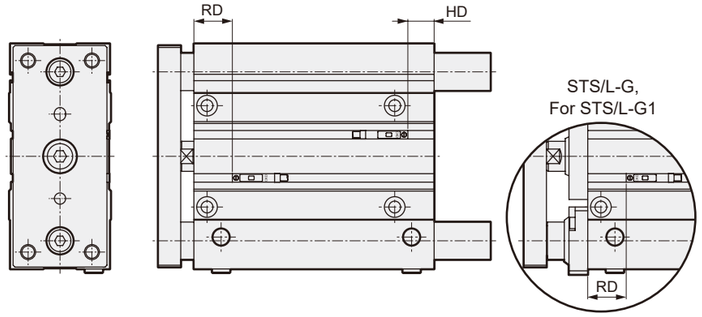
MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

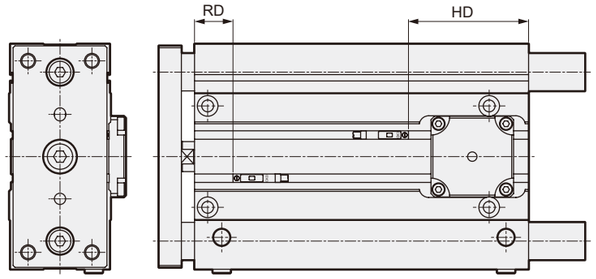
Dimensions with STS/STL series switch

● T0H/V,T5H/V,T2H/V,T2□R3,T3H/V,T3PH/V,T2WH/V,T3WH/V,T2WLH/V

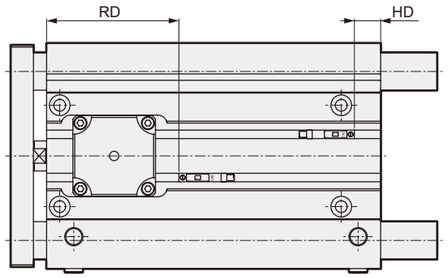
● STS/L, STS/L-P, STS/L-T2, STS/L-□C, STS/L-C, STS/L-F, STS/L-O, STS/L-G, STS/L-G1, STS/L-V



● STS/L-Q-H



● STS/L-Q-R



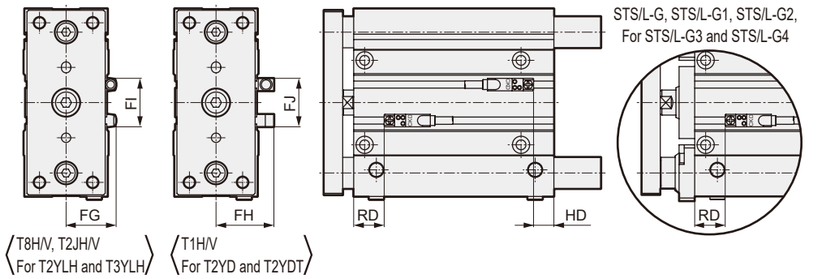
Code	STS/L, -P, -T2, -□C, -F, -O, -G, -G1, -V				STS/L-C				STS/L-Q-H				STS/L-Q-R			
	T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL	
Bore Size (mm)	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD
ø8	6.5	2.5	8.5	4.5	-	-	-	-	-	-	-	-	-	-	-	-
ø12	5	8.5	7	10.5	-	-	-	-	-	-	-	-	-	-	-	-
ø16	4	9.5	6	11.5	-	-	-	-	-	-	-	-	-	-	-	-
ø20	10.5	10.5	12.5	12.5	-	-	-	-	10.5	35.5	12.5	37.5	35.5	10.5	37.5	12.5
ø25	12.5	9	14.5	11	27.5	19	29.5	21	12.5	34	14.5	36	37.5	9	39.5	11
ø32	17	13	19	15	34	21	36	23	17	38	19	40	42	13	44	15
ø40	20.5	14	22.5	16	38	22	40	24	20.5	64	22.5	66	70.5	14	72.5	16
ø50	21.5	14.5	23.5	16.5	38	22.5	40	24.5	21.5	64.5	23.5	66.5	71.5	14.5	73.5	16.5
ø63	19.5	22.5	21.5	24.5	43.5	25.5	45.5	27.5	19.5	72.5	21.5	74.5	69.5	22.5	71.5	24.5
ø80	26	33.5	28	35.5	60	49.5	62	51.5	26	108.5	28	110.5	101	33.5	103	35.5
ø100	25	35	27	37	-	-	-	-	-	-	-	-	-	-	-	-

Note) For switch mountability, refer to the model No. notation method for each variation.

Dimensions with STS / STL series switch

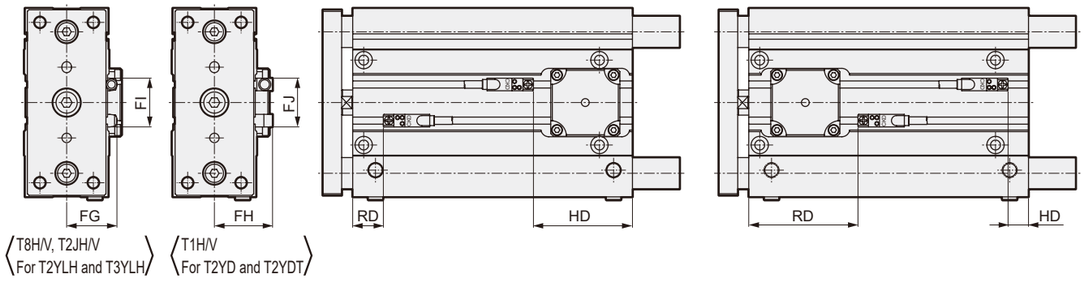
● T2JH/V, T2YLH, T3YLH, T8H/V, T1H/V, T2YD, T2YDT

● STS/L, STS/L-P, STS/L-T2, STS/L-□C, STS/L-C, STS/L-Q-H, STS/L-Q-R, STS/L-F, STS/L-O, STS/L-G, STS/L-G1, STS/L-G2, STS/L-G3, STS/L-G4, STS/L-V



● STS/L-Q-H

● STS/L-Q-R



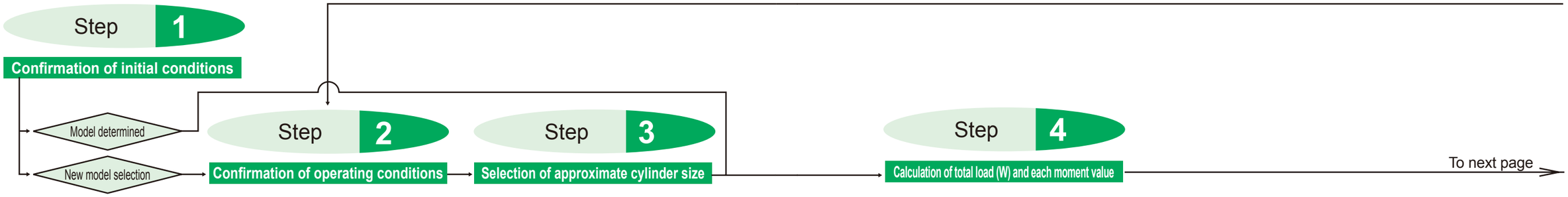
Code	STS/L, -P, -T2, -□C, -F, -O, -G, -G1, -G2, -G3, -G4, -V										STS/L-C									
	FG	FI	T2J, T2Y, T3Y		T8		FH	FJ	T1, T2YD, T2YDT		FG	FI	T2J, T2Y, T3Y		T8		FH	FJ	T1, T2YD, T2YDT	
Bore Size (mm)			RD	HD	RD	HD			RD	HD			RD	HD	RD	HD			RD	HD
ø8	17.6	16	5.5	1.5	- *2	- *2	22.6	16	5.5	1.5	-	-	-	-	-	-	-	-	-	-
ø12	18.8	16	4	7.5	- *2	- *2	23.8	16	4	7.5	-	-	-	-	-	-	-	-	-	-
ø16	20.8	16	3	8.5	- *2	- *2	25.8	16	3	8.5	-	-	-	-	-	-	-	-	-	-
ø20	24.3	16	9.5	9.5	4.5	4.5	29.3	16	9.5	9.5	-	-	-	-	-	-	-	-	-	-
ø25	26.3	17	11.5	8	6.5	3	31.3	17	11.5	8	26.3	17	26.5	18	21.5	13	31.3	17	26.5	18
ø32	28.8	24	16	12	11	7	33.8	24	16	12	28.8	24	33	19	28	14	33.8	24	33	19
ø40	32.3	31	19.5	13	14.5	8	37.3	31	19.5	13	32.3	31	37	21	32	16	37.3	31	37	21
ø50	38.3	32	20.5	13.5	15.5	8.5	43.3	32	20.5	13.5	38.3	32	37	21.5	32	16.5	43.3	32	37	21.5
ø63	44.8	32	18.5	21.5	13.5	16.5	49.8	32	18.5	21.5	44.8	32	42.5	24.5	37.5	19.5	49.8	32	42.5	24.5
ø80	55.3	32	25	32.5	20	27.5	60.3	32	25	32.5	55.3	32	59	48.5	54	43.5	60.3	32	59	48.5
ø100	65	32	24	34	19	29	70.9	32	24	34	-	-	-	-	-	-	-	-	-	-

Code	STS/L-Q-H								STS/L-Q-R							
	FG	FI	T2J, T2Y, T3Y		FH	FJ	T1, T2YD, T2YDT		FG	FI	T2J, T2Y, T3Y		FH	FJ	T1, T2YD, T2YDT	
Bore Size (mm)			RD	HD			RD	HD			RD	HD			RD	HD
ø8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø20	24.3	16	9.5	34.5	29.3	16	9.5	34.5	24.3	16	34.5	9.5	29.3	16	34.5	9.5
ø25	26.3	17	11.5	33	31.3	17	11.5	33	26.3	17	36.5	8	31.3	17	36.5	8
ø32	28.8	24	16	37	33.8	24	16	37	28.8	24	41	12	33.8	24	41	12
ø40	32.3	31	19.5	63	37.3	31	19.5	63	32.3	31	69.5	13	37.3	31	69.5	13
ø50	38.3	32	20.5	63.5	43.3	32	20.5	63.5	38.3	32	70.5	13.5	43.3	32	70.5	13.5
ø63	44.8	32	18.5	71.5	49.8	32	18.5	71.5	44.8	32	68.5	21.5	49.8	32	68.5	21.5
ø80	55.3	32	25	107.5	60.3	32	25	107.5	55.3	32	100	32.5	60.3	32	100	32.5
ø100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*1: For switch mountability, refer to the model number notation method for each variation.
*2: STS/L-8 to 16, STS/L-P-8 to 16, STG-T2-12, 16, STS/L-Q-20 to 80 (R/H), STS/L-F-8 to 16, and STS/L-O-8 to 16 cannot be installed on T8H/V.

Model selection guide

Since the selection conditions are different from general air cylinders, please check the suitability using the selection guide.



Step 2 Confirmation of operating conditions

1. Operating pressure P (MPa)
2. Total load W (N)
   [Total load]
   When determining the total applied load, take into account the weight of the guide rod part of the cylinder body.
   W = (Load) + (Jig load) +
   (Self-weight of guide rod part: Fa).
   Table 1 shows the formula for the self-weight of the guide rod part.

Table 1 Weight of movable part calculation formula

Tube Bore size	Fa: Weight of the movable part (N)	
	STS	STL
ø8	(0.36) + 0.004 x ST	(0.43) + 0.004 x ST
ø12	(0.54) + 0.008 x ST	(0.69) + 0.008 x ST
ø16	(0.81) + 0.012 x ST	(1.10) + 0.012 x ST
ø20	(1.30) + 0.030 x ST	(2.00) + 0.030 x ST
ø25	(1.50) + 0.033 x ST	(2.20) + 0.033 x ST
ø32	(3.90) + 0.065 x ST	(5.80) + 0.065 x ST
ø40	(4.10) + 0.065 x ST	(6.10) + 0.065 x ST
ø50	(7.40) + 0.101 x ST	(11.2) + 0.101 x ST
ø63	(8.30) + 0.101 x ST	(12.1) + 0.101 x ST
ø80	(26.2) + 0.234 x ST	(40.6) + 0.234 x ST
ø100	(52.3) + 0.248 x ST	(65.8) + 0.248 x ST

ST: Stroke (mm)

3. Mounting direction
   [Operating method]
   Horizontal, Vertical - Ascending, Vertical - Descending
4. Stroke ST (mm)
5. Operating time t (s)
6. Operating speed V (mm/s)
   Calculation formula for average operating speed Va of cylinder
   Va=ST/t (mm/s)

Step 3 Selection of approximate cylinder size

● Cylinder size (I.D.) calculation formula

$F = \pi/4 \times D^2 \times P$

$\therefore D = \sqrt{4F/\pi P}$

D: Cylinder inner diameter (mm)
P: Operating Pressure (MPa)
F: Cylinder theoretical thrust (N)

● When obtaining from the theoretical thrust value in Table 2
Approximate required thrust ≥ Load x 2
(x2 of Load x 2 is when the load factor is about 50% as a safety factor)

[Example] Operating pressure 0.5 (MPa)
Load 25 (N)
Required thrust is 25 (N)x2=50 (N)
From Table 2, if you select a bore size with a theoretical thrust of 50N or more at an operating pressure of 0.5 mPa, it will be ø12 or more.
D=ø12

[Cylinder theoretical thrust]

Table 2 Cylinder theoretical thrust table

Theoretical thrust table ø8,ø12 Unit: N

Operating direction	Pressure MPa	Bore size mm	
		ø8	ø12
At push	0.15	7.5	17
	0.2	10	22.6
	0.3	15.1	33.9
	0.4	20	45.2
	0.5	25.1	56.6
	0.6	30.1	67.8
	0.7	35.2	79.1
	0.8	40.2	90.4
	0.9	45.2	101.8

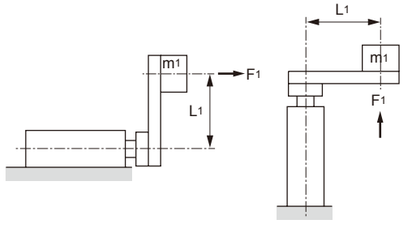
* For the theoretical thrust table, please refer to P. 485.

Step 4 Calculation of total load (W) and each moment value

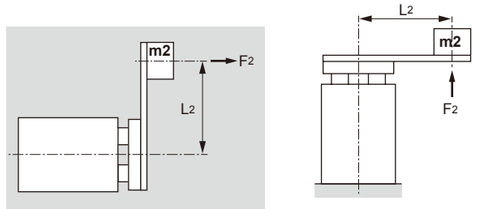
● Static load depending on the cylinder mounting state of the load
Calculate (W_0), moment (M)
W_0 = (Load) + (Jig load) (N)
$M_1 = F_1 \times L_1$ (N·m)
$M_2 = F_2 \times L_2$ (N·m)
$M_3 = F_3 \times L_3$ (N·m)
Use Figure 2 for the values of F_1, F_2, F_3

Figure 2 Calculation formula for each moment
Calculate each moment from the total load, inertial force coefficient, and eccentric distance.

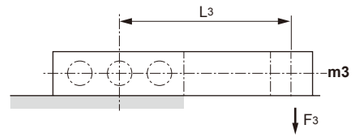
[Bending moment]
$M_1 = F_1 \times L_1 = 10 \times m_1 \times G \times L_1$



[Lateral bending moment]
$M_2 = F_2 \times L_2 = 10 \times m_2 \times G \times L_2$



[Torsional moment]
$M_3 = F_3 \times L_3 = 10 \times m_3 \times L_3$

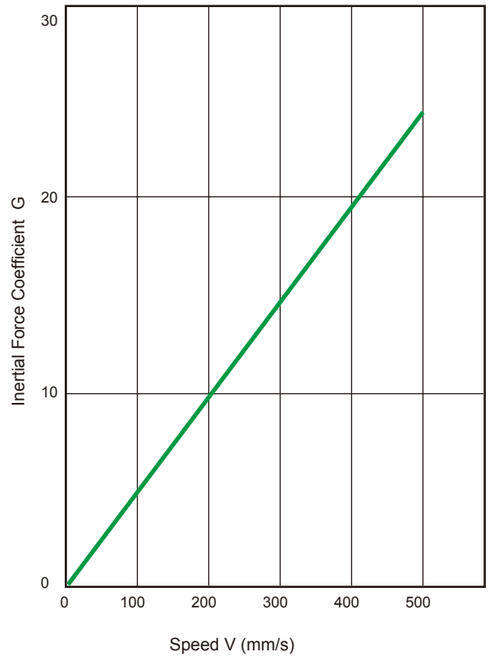


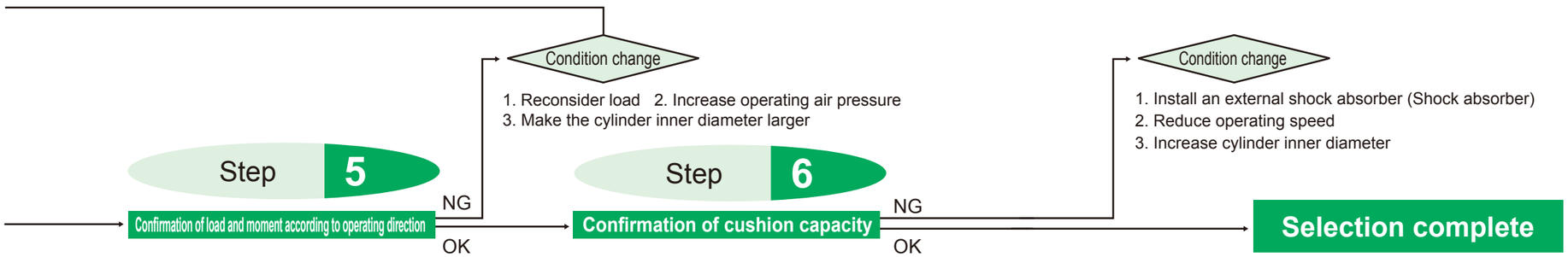
m_1:
m_2:
m_3: } Load weight (kg)

L_1:
L_2: } Eccentric distance (m)
L_3:

G: Inertial force coefficient

Figure 3 Trend of inertial force coefficient of guided cylinder





Step 5 Confirmation of load and moment according to operating direction

5-1 Confirming total applied load

❶ During horizontal operation

Static load should be less than or equal to the allowable load value

Static applied load Wo — Value calculated in Step 4

Allowable lateral load Wmax — Select from Table 3 or the graph based on the stroke.

(For intermediate strokes, select the longer standard stroke.)

Wo≤Wmax

Table 3 Allowable lateral load — Unit: N

Bore Size (mm)	Model	Bearing type	STS		
			10	20	25
ø8	STS/L-M-8	Plain bearing	14	11	-
	STS/L-B-8	Rolling bearing	16	11	-
ø12	STS/L-M-12	Plain bearing	23	19	-
	STS/L-B-12	Rolling bearing	30	21	-
ø16	STS/L-M-16	Plain bearing	40	34	-
	STS/L-B-16	Rolling bearing	44	32	-
ø20	STS/L-M-20	Plain bearing	-	-	48
	STS/L-B-20	Rolling bearing	-	-	45
ø25	STS/L-M-25	Plain bearing	-	-	48
	STS/L-B-25	Rolling bearing	-	-	45
ø32	STS/L-M-32	Plain bearing	-	-	141
	STS/L-B-32	Rolling bearing	-	-	49

* For allowable lateral load, please refer to P. 648.
Also refer to the graphs on pages 650 to 653 for eccentric load.

❷ During vertical operation

Ensure that the total load is the theoretical thrust value, taking into account the load factor.

● Calculation of load factor

Total load W : Value calculated in Step 2

Theoretical thrust of cylinder F : Select according to the pressure from the Theoretical Thrust Table on P. 485.

$\alpha = W/F \times 100$ (%)

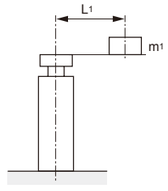
● The load factor is determined considering the stability margin and life of the cylinder operating speed, and the usage conditions. For general use, the range in Table 4 is desirable.

Table 4 Appropriate range of load factor (Reference value)

Operating pressure (MPa)	Load factor (%)
0.1 to 0.3	α ≤ 40
0.3 to 0.6	α ≤ 50
0.6 to 1.0	α ≤ 60

● During eccentric load, lateral load acts.

The acting lateral load should be less than or equal to the allowable lateral load in Table 3



$$\frac{m_1 \times L_1 \times 10}{L} \leq Wmax$$

St: Stroke (m)

Bore size	L	Bore size	L
ø8	0.015 + st	ø32	0.022 + st
ø12	0.015 + st	ø40	0.022 + st
ø16	0.016 + st	ø50	0.025 + st
ø20	0.016 + st	ø63	0.025 + st
ø25	0.016 + st	ø80	0.046 + st
		ø100	0.055 + st

5-2 Confirmation of moment

❶ Table of bending moment and lateral bending moment

Divide by the value of 5, obtain the moment ratio, and the total value of the moment ratio should be 1.0 or less

● Calculation of moment ratio

Bending moment M_1 } Value obtained in Step 4

Radial moment M_2 }

$M_1 / M_{1\,max} + M_2 / M_{2\,max} \leq 1.0$

Table 5 Allowable moment value (N·m)

Bore size (mm)	Allowable bending moment M_{1max}, M_{2max} (N·m)
ø8	4.1
ø12	6.1
ø16	19.3
ø20	32.6
ø25	48.5
ø32	107.4
ø40	107.4
ø50	201.7
ø63	201.7
ø80	726.0
ø100	726.0

❷ Torsional moment should be less than or equal to the allowable rotational torque

Torsional moment M3 Value calculated in Step 4

Allowable rotational torque

M3max Select from Table 6 according to stroke

(For intermediate strokes, select the longer standard stroke)

$M_3 \leq M_{3\,max}$

Table 6 Allowable rotational torque (N·m)

Bore Size (mm)	Model	Bearing type	STS		
			10	20	25
ø8	STS/L-M-8	Plain bearing	0.14	0.11	-
	STS/L-B-8	Rolling bearing	0.16	0.11	-
ø12	STS/L-M-12	Plain bearing	0.24	0.19	-
	STS/L-B-12	Rolling bearing	0.31	0.22	-
ø16	STS/L-M-16	Plain bearing	0.46	0.39	-
	STS/L-B-16	Rolling bearing	0.51	0.37	-
ø20	STS/L-M-20	Plain bearing	-	-	0.71
	STS/L-B-20	Rolling bearing	-	-	1.19
ø25	STS/L-M-25	Plain bearing	-	-	0.76
	STS/L-B-25	Rolling bearing	-	-	1.28
ø32	STS/L-M-32	Plain bearing	-	-	2.86
	STS/L-B-32	Rolling bearing	-	-	0.99
ø40	STS/L-M-40	Plain bearing	-	-	3.17
	STS/L-B-40	Rolling bearing	-	-	1.10
ø50	STS/L-M-50	Plain bearing	-	-	5.86
	STS/L-B-50	Rolling bearing	-	-	2.01
ø63	STS/L-M-63	Plain bearing	-	-	6.60
	STS/L-B-63	Rolling bearing	-	-	2.26
ø80	STS/L-M-80	Plain bearing	-	-	13.95
	STS/L-B-80	Rolling bearing	-	-	8.48
ø100	STS/L-M-100	Plain bearing	-	-	18.23
	STS/L-B-100	Rolling bearing	-	-	11.07

* For allowable rotational torque, please refer to P. 648.

Step 6 CONFIRMATION OF CUSHION CAPACITY

Check if the kinetic energy of the load actually used can be absorbed by the cushion capacity of the cylinder itself.

● The allowable absorbed energy of cylinder (E_1) depends on the cylinder model. Use the values in Table 7 for STS and STL.

● Calculation formula for piston kinetic energy (E_2)

$$E_2 = 1/2 \times W \times V^2 \times \frac{1}{10} \quad (J)$$

W: Total applied load (N) Value obtained in Step 2

V: Speed of the piston entering the cushion (m/s)

$V = ST/t \times (1+1.5x\alpha/100)$

St : Stroke (m)

t : Operating Time (s)

α : Load factor (%)

Allowable absorption energy of cylinder

● The value of kinetic energy absorption capacity by the cylinder cushion mechanism varies depending on the cylinder inner diameter. Compare guided cylinders with the values in Table 7.

Table 7 STS/STL allowable absorbed energy (E1)

Bore Size (mm)	Allowable Absorption Energy (J)			
	Rubber Cushion	Rubber Air Cushion	Air Cushion	Without cushion
ø8	0.029	-	-	-
ø12	0.056	-	-	0.004
ø16	0.088	-	-	0.010
ø20	0.157	-	-	0.016
ø25	0.157	-	1.18	0.021
ø32	0.401	0.401	2.27	0.025
ø40	0.627	0.627	3.05	0.092
ø50	0.980	0.980	3.81	0.100
ø63	1.560	1.560	15.64	0.120
ø80	2.510	2.510	20.18	0.270
ø100	3.920	-	-	0.560

$E_1 > E_2$

(Allowable absorption energy) > (Piston kinetic energy)

Selection complete

$E_1 < E_2$

(Allowable absorption energy) < (Piston kinetic energy)

● Short stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm (ø8 to ø16: Additional weight per St = 10 mm)
● Standard single rod STS-$^{M}_{B}$ ● Low Speed Type STS-$^{M}_{B}$O ● Corrosion resistant type STS-$^{M}_{B}$-M/M1 ● Heat resistant type STS-$^{M}_{B}$T ● Packing fluoro rubber STS-$^{M}_{B}$T2 ● Rubber Air Cushion Type STS-$^{M}_{B}$-□C ● Ultra Low Speed Type STS-$^{M}_{B}$F	ø8	M	102	22	62	Refer to the mass described in the switch specifications on P. 753	29
		B	89				
	ø12	M	151	27	76		37
		B	154				
	ø16	M	225	37	104		47
		B	229				
	ø20	M	483	72	200		150
		B	363				
	ø25	M	534	78	219		169
		B	415				
	ø32	M	924	162	451		231
		B	804				
	ø40	M	1333	195	543		283
		B	1214				
	ø50	M	2026	415	1158		428
		B	1915				
	ø63	M	2803	530	1478		557
		B	2569				
	ø80	M	6435	1335	3720		1265
		B	5876				1150
	ø100	M	10850	2685	7491		1933
		B	9934				1817
● Stroke adjustment type STS-$^{M}_{B}$P	ø8	M	260	22	62	Refer to the mass described in the switch specifications on P. 753	33
		B	243				
	ø12	M	340	27	76		45
		B	333				
	ø16	M	462	37	104		59
		B	454				
	ø20	M	742	72	200		210
		B	602				
	ø25	M	836	78	219		229
		B	697				
	ø32	M	1499	162	451		335
		B	1331				
	ø40	M	2006	195	543		407
		B	1841				
	ø50	M	3323	415	1158		620
		B	3106				
	ø63	M	4458	530	1478		749
		B	4118				
	ø80	M	9505	1335	3720		1755
		B	8776				1526
● Drop prevention type STS-$^{M}_{B}$Q-H (with head side position locking)	ø20	M	680	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	560				
	ø25	M	767	78	219		169
		B	648				
	ø32	M	1235	162	451		231
		B	1115				
	ø40	M	2183	195	543		283
		B	2064				
	ø50	M	3305	415	1158		428
		B	3194				
	ø63	M	4554	530	1478		557
		B	4320				
	ø80	M	11583	1335	3720		1265
		B	10679				1150
● Drop prevention type STS-$^{M}_{B}$Q-R (with rod side position locking)	ø20	M	666	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	546				
	ø25	M	749	78	219		169
		B	630				
	ø32	M	1221	162	451		231
		B	1101				
	ø40	M	2126	195	543		283
		B	2007				
	ø50	M	3214	415	1158		428
		B	3103				
	ø63	M	4434	530	1478		557
		B	4200				
	ø80	M	11340	1335	3720		1265
		B	10436				1150

● Short stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Coil Scraper Type STS-$^{M}_{B}$G1 ● Rubber scraper STS-$^{M}_{B}$G ● Cutting Oil Resistant Type STS-$^{M}_{B}$G2, G3 ● Sputter adhesion prevention type STS-$^{M}_{B}$G4	ø20	M	572	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	452				
	ø25	M	630	78	219		169
		B	511				
	ø32	M	1083	162	451		231
		B	963				
	ø40	M	1667	195	543		283
		B	1548				
	ø50	M	2299	415	1158		428
		B	2188				
	ø63	M	3125	530	1478		557
		B	2891				
	ø80	M	6861	1335	3720		1265
		B	6302				1150
● Valve Mounted Type STS-$^{M}_{B}$V$^{1}_{2}$ (With valve on front)	ø20	M	668	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	548				
	ø25	M	719	78	219		169
		B	600				
	ø32	M	1136	162	451		231
		B	1016				
	ø40	M	1648	195	543		283
		B	1529				
	ø50	M	2428	415	1158		428
		B	2317				
	ø63	M	3205	530	1478		557
		B	2971				
● Valve Mounted Type STS-$^{M}_{B}$V$^{1}_{2}$S (With valve on side)	ø20	M	663	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	543				
	ø25	M	714	78	219		169
		B	595				
	ø32	M	1104	162	451		231
		B	684				
	ø40	M	1651	195	543		283
		B	1532				
	ø50	M	2344	45	1158		428
		B	2233				
	ø63	M	3121	530	1478		557
		B	2887				

Note) **Refer to P. 753 for the switch weight of 3 m and 5 m switch lead wire lengths.**

● Long stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Standard single rod STL-$^{M}_{B}$ ● Low Speed Type STL-$^{M}_{B}$O ● Corrosion resistant type STL-$^{M}_{B}$-M/M1 ● Heat resistant type STL-$^{M}_{B}$T ● Packing fluoro rubber STL-$^{M}_{B}$T2 ● Rubber Air Cushion Type STL-$^{M}_{B}$-□C ● Ultra Low Speed Type STL-$^{M}_{B}$F	ø8	M	103	22	62	Refer to the mass described in the switch specifications on P. 753	73
		B	99				
	ø12	M	159	27	76		91
		B	173				
	ø16	M	232	37	104		119
		B	265				
	ø20	M	890	72	200		150
		B	751				
	ø25	M	979	78	219		169
		B	840				
	ø32	M	1705	162	451		231
		B	1520				
	ø40	M	2218	195	543		283
		B	2033				
	ø50	M	3587	415	1158		428
		B	3228				
	ø63	M	4501	530	1478		557
		B	4142				
	ø80	M	10337	1335	3720		1265
		B	9341				1150
	ø100	M	16649	2685	7491		1933
		B	15385				1817
● Stroke adjustment type STL-$^{M}_{B}$P	ø8	M	261	22	62	Refer to the mass described in the switch specifications on P. 753	84
		B	253				
	ø12	M	348	27	76		111
		B	352				
	ø16	M	469	37	104		150
		B	490				
	ø20	M	1149	72	200		210
		B	990				
	ø25	M	1281	78	219		229
		B	1122				
	ø32	M	2280	162	451		335
		B	2049				
	ø40	M	2891	195	543		407
		B	2658				
	ø50	M	4884	415	1158		620
		B	4419				
	ø63	M	6156	530	1478		749
		B	5691				
	ø80	M	12035	1335	3720		1755
		B	11191				1526
● Drop prevention type STL-$^{M}_{B}$Q-H (with head side position locking)	ø20	M	1087	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	948				
	ø25	M	1212	78	219		169
		B	1073				
	ø32	M	2016	162	451		231
		B	1831				
	ø40	M	3068	195	543		283
		B	2883				
	ø50	M	4866	415	1158		428
		B	4507				
	ø63	M	6252	530	1478		557
		B	5893				
	ø80	M	15485	1335	3720		1265
		B	14144				1150
● Drop prevention type STL-$^{M}_{B}$Q-R (with rod side position locking)	ø20	M	1073	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	934				
	ø25	M	1194	78	219		169
		B	1056				
	ø32	M	2002	162	451		231
		B	1867				
	ø40	M	3011	195	543		283
		B	2826				
	ø50	M	4775	415	1158		428
		B	4416				
	ø63	M	6132	530	1478		557
		B	5773				
	ø80	M	15242	1335	3720		1265
		B	13401				1150

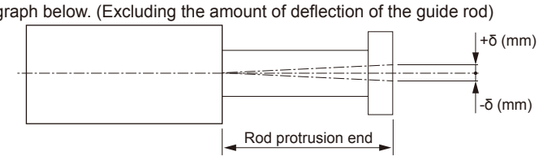
● Long stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Coil Scraper Type STL-$^{M}_{B}$G1 ● Rubber scraper STL-$^{M}_{B}$G ● Cutting Oil Resistant Type STL-$^{M}_{B}$G2, G3 ● Sputter adhesion prevention type STL-$^{M}_{B}$G4	ø20	M	979	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	840				
	ø25	M	1075	78	219		169
		B	936				
	ø32	M	1864	162	451		231
		B	1679				
	ø40	M	2552	195	543		283
		B	2367				
	ø50	M	3860	415	1158		428
		B	3501				
	ø63	M	4823	530	1478		557
		B	4464				
	ø80	M	10763	1335	3720		1265
		B	9767				1150
● Valve Mounted Type STL-$^{M}_{B}$V$^{1}_{2}$ (With valve on front)	ø20	M	1075	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	936				
	ø25	M	1164	78	219		169
		B	1025				
	ø32	M	1917	162	451		231
		B	1732				
	ø40	M	2533	195	543		283
		B	2348				
	ø50	M	3989	415	1158		428
		B	3630				
	ø63	M	4903	530	1478		557
		B	4544				
● Valve Mounted Type STL-$^{M}_{B}$V$^{1}_{2}$S (With valve on side)	ø20	M	1070	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	931				
	ø25	M	1159	78	219		169
		B	1020				
	ø32	M	1885	162	451		231
		B	1700				
	ø40	M	2536	195	543		283
		B	2351				
	ø50	M	3905	415	1158		428
		B	3546				
	ø63	M	4819	530	1478		557
		B	4460				

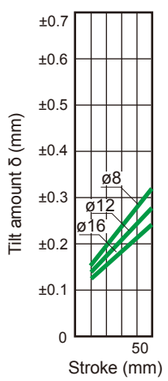
Runout accuracy

The amount of tilt that occurs at the tip of the end plate when there is no load is estimated by the values in the graph below. (Excluding the amount of deflection of the guide rod)

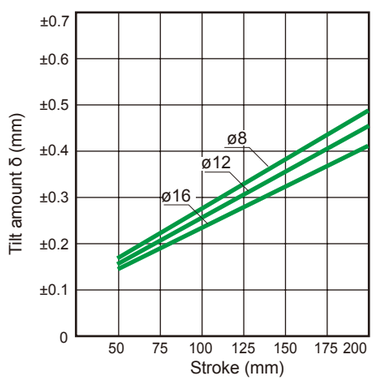


ø8 to ø16 metal bush bearing

STS-M

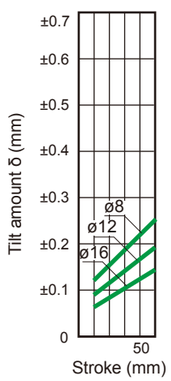


STL-M

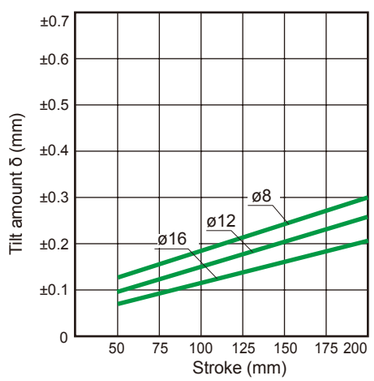


ø8 to ø16 ball bearing

STS-B

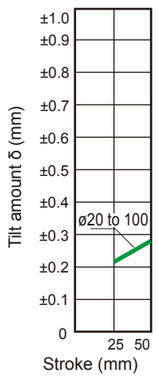


STL-B

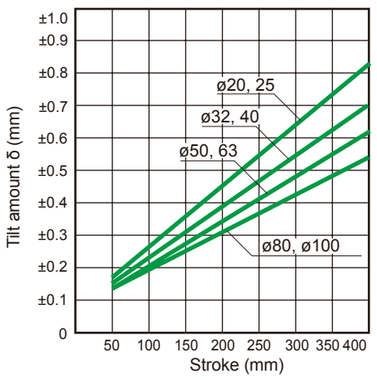


ø20 to ø100 Metal bush bearing

STS-M

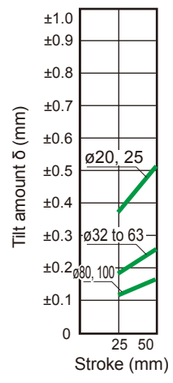


STL-M

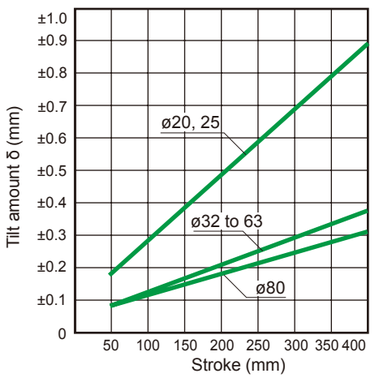


ø20 to ø80 ball bearing

STS-B

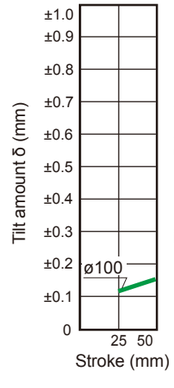


STL-B

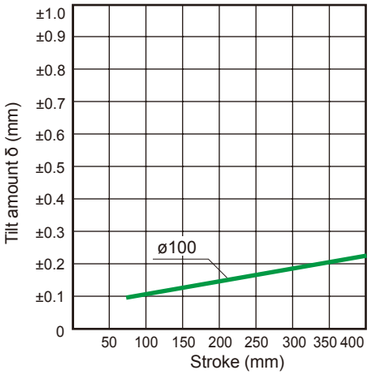


ø100 ball bearing

STS-B



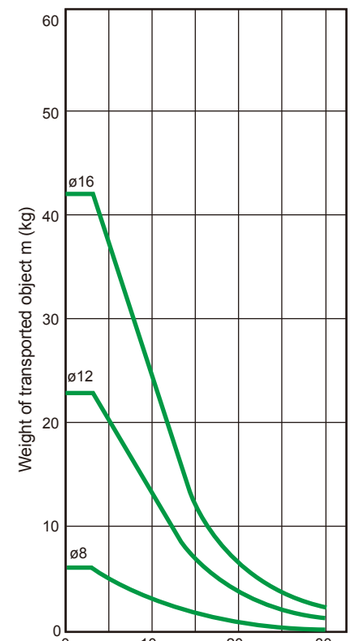
STL-B

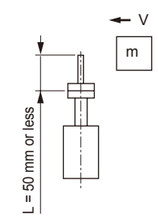


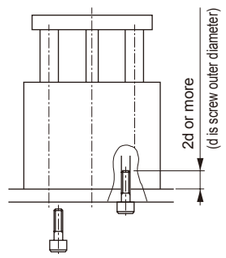
Operating range when used as a stopper

Impact load

STS-M-8 to 16 (metal bush bearing)

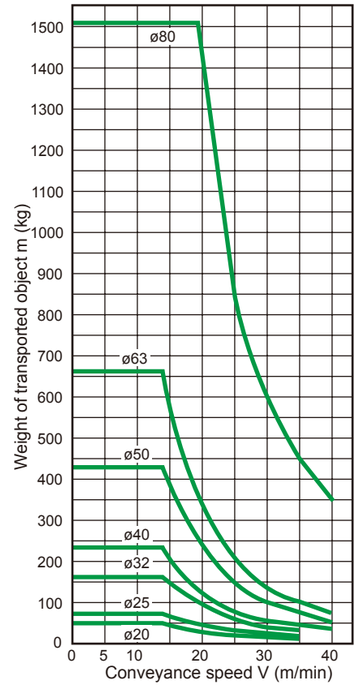




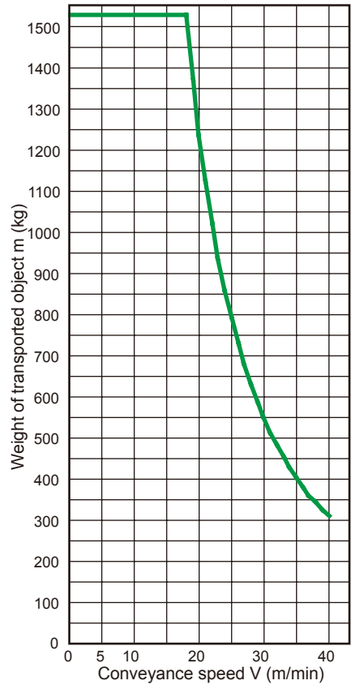


Impact load

STS-M-20 to 80 (metal bush bearing)



STS-M-100 (metal bush bearing)



Notes on Use

Note1) When using the cylinder as a stopper, select a model with 50 mm stroke or less (STS-M). (30 mm stroke or less for ø8 to ø16)

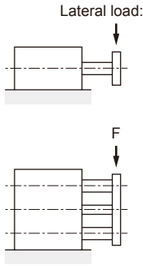
Note2) Make sure that the total length of the stopper section ℓ = 50mm or less.

Note3) When fixing the cylinder body, ensure the bolt screw-in depth is 2d or more, and consider measures to prevent loosening (adhesive, spring washer, etc.). (for ø80 and ø100, make sure that the screw insertion depth is 1d. d is thread outer diameter)

Note4) STS-B (ball bearing) cannot be used as a stopper.

STS / STL Series
Technical data ❹ Allowable lateral load/allowable torque/non-rotating accuracy

Allowable Lateral Load

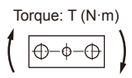


Unit: N

Bore Size (mm)	Model No.	Bearing type	Stroke (mm) STS 10	20	25	30	40	50	75	100	STL 50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
ø8	ST$^{S}_{L}$-M-8	Plain bearing	14	11	-	9	8	7	-	-	12	9	7	6	5	5	4	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-8	Rolling bearing	16	11	-	8	7	6	-	-	16	11	9	7	5	4	4	-	-	-	-	-	-	-	-
ø12	ST$^{S}_{L}$-M-12	Plain bearing	23	19	-	16	14	12	-	-	20	16	13	11	10	9	8	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-12	Rolling bearing	30	21	-	16	13	11	-	-	23	16	13	10	8	7	6	-	-	-	-	-	-	-	-
ø16	ST$^{S}_{L}$-M-16	Plain bearing	40	34	-	29	25	22	-	-	35	29	24	21	19	17	15	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-16	Rolling bearing	44	32	-	25	21	18	-	-	34	25	19	16	13	11	10	-	-	-	-	-	-	-	-
ø20	ST$^{S}_{L}$-M-20	Plain bearing	-	-	48	-	-	35	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST$^{S}_{L}$-B-20	Rolling bearing	-	-	45	-	-	29	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
ø25	ST$^{S}_{L}$-M-25	Plain bearing	-	-	48	-	-	35	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST$^{S}_{L}$-B-25	Rolling bearing	-	-	45	-	-	29	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
ø32	ST$^{S}_{L}$-M-32	Plain bearing	-	-	141	-	-	109	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST$^{S}_{L}$-B-32	Rolling bearing	-	-	49	-	-	33	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
ø40	ST$^{S}_{L}$-M-40	Plain bearing	-	-	141	-	-	109	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST$^{S}_{L}$-B-40	Rolling bearing	-	-	49	-	-	33	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
ø50	ST$^{S}_{L}$-M-50	Plain bearing	-	-	213	-	-	170	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST$^{S}_{L}$-B-50	Rolling bearing	-	-	73	-	-	50	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
ø63	ST$^{S}_{L}$-M-63	Plain bearing	-	-	213	-	-	170	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST$^{S}_{L}$-B-63	Rolling bearing	-	-	73	-	-	50	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
ø80	ST$^{S}_{L}$-M-80	Plain bearing	-	-	372	-	-	316	275	243	-	402	367	338	312	291	272	255	241	228	216	205	196	187	179
	ST$^{S}_{L}$-B-80	Rolling bearing	-	-	226	-	-	165	133	112	-	235	197	170	149	133	120	109	99	91	85	79	73	69	64
ø100	ST$^{S}_{L}$-M-100	Plain bearing	-	-	372	-	-	316	275	243	-	402	367	338	312	291	272	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-100	Rolling bearing	-	-	226	-	-	165	133	112	-	235	197	170	149	133	120	-	-	-	-	-	-	-	-

*1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
2: When designing, be sure to consider the safety factor according to the operating conditions.

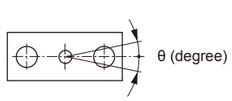
Allowable rotational torque



Unit: N·m

Bore Size (mm)	Model No.	Bearing type	Stroke (mm) STS 10	20	25	30	40	50	75	100	STL 50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
ø8	ST$^{S}_{L}$-M-8	Plain bearing	0.14	0.11	-	0.09	0.08	0.07	-	-	0.12	0.09	0.07	0.06	0.05	0.05	0.04	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-8	Rolling bearing	0.16	0.11	-	0.08	0.07	0.06	-	-	0.16	0.11	0.08	0.07	0.05	0.04	0.04	-	-	-	-	-	-	-	-
ø12	ST$^{S}_{L}$-M-12	Plain bearing	0.24	0.19	-	0.16	0.14	0.12	-	-	0.21	0.16	0.13	0.11	0.10	0.09	0.08	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-12	Rolling bearing	0.31	0.22	-	0.16	0.13	0.11	-	-	0.24	0.16	0.13	0.10	0.08	0.07	0.06	-	-	-	-	-	-	-	-
ø16	ST$^{S}_{L}$-M-16	Plain bearing	0.46	0.39	-	0.33	0.29	0.25	-	-	0.40	0.33	0.28	0.24	0.22	0.20	0.17	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-16	Rolling bearing	0.51	0.37	-	0.29	0.24	0.21	-	-	0.39	0.29	0.22	0.18	0.15	0.13	0.12	-	-	-	-	-	-	-	-
ø20	ST$^{S}_{L}$-M-20	Plain bearing	-	-	0.71	-	-	0.52	-	-	0.80	0.66	0.56	0.49	0.44	0.40	0.35	0.32	0.30	0.28	0.25	0.24	0.22	0.21	0.21
	ST$^{S}_{L}$-B-20	Rolling bearing	-	-	1.19	-	-	0.80	-	-	1.00	0.74	0.58	0.47	0.40	0.34	0.30	0.27	0.24	0.21	0.19	0.18	0.16	0.15	0.13
ø25	ST$^{S}_{L}$-M-25	Plain bearing	-	-	0.76	-	-	0.55	-	-	0.85	0.71	0.60	0.52	0.47	0.43	0.38	0.35	0.32	0.30	0.27	0.25	0.24	0.22	0.22
	ST$^{S}_{L}$-B-25	Rolling bearing	-	-	1.28	-	-	0.85	-	-	1.07	0.79	0.61	0.50	0.43	0.36	0.32	0.28	0.25	0.22	0.20	0.19	0.17	0.16	0.14
ø32	ST$^{S}_{L}$-M-32	Plain bearing	-	-	2.86	-	-	2.21	-	-	3.26	2.79	2.45	2.19	1.96	1.78	1.64	1.52	1.40	1.32	1.24	1.15	1.09	1.03	0.97
	ST$^{S}_{L}$-B-32	Rolling bearing	-	-	0.99	-	-	0.67	-	-	2.03	1.54	1.26	1.03	0.89	0.77	0.69	0.61	0.55	0.51	0.45	0.43	0.38	0.36	0.32
ø40	ST$^{S}_{L}$-M-40	Plain bearing	-	-	3.17	-	-	2.45	-	-	3.62	3.11	2.72	2.43	2.18	1.98	1.82	1.69	1.55	1.46	1.37	1.28	1.22	1.15	1.08
	ST$^{S}_{L}$-B-40	Rolling bearing	-	-	1.10	-	-	0.74	-	-	2.25	1.71	1.40	1.15	0.99	0.86	0.77	0.68	0.61	0.56	0.50	0.47	0.43	0.41	0.36
ø50	ST$^{S}_{L}$-M-50	Plain bearing	-	-	5.86	-	-	4.68	-	-	6.68	5.86	5.20	4.68	4.26	3.91	3.60	3.33	3.11	2.92	2.75	2.59	2.45	2.34	2.23
	ST$^{S}_{L}$-B-50	Rolling bearing	-	-	2.01	-	-	1.38	-	-	4.43	3.47	2.83	2.39	2.06	1.82	1.60	1.43	1.29	1.18	1.10	0.99	0.94	0.85	0.80
ø63	ST$^{S}_{L}$-M-63	Plain bearing	-	-	6.60	-	-	5.27	-	-	7.53	6.60	5.86	5.27	4.81	4.40	4.06	3.75	3.50	3.29	3.10	2.91	2.76	2.64	2.51
	ST$^{S}_{L}$-B-63	Rolling bearing	-	-	2.26	-	-	1.55	-	-	4.99	3.91	3.19	2.70	2.33	2.05	1.80	1.61	1.46	1.33	1.24	1.12	1.05	0.96	0.90
ø80	ST$^{S}_{L}$-M-80	Plain bearing	-	-	13.95	-	-	11.85	10.31	9.11	-	15.08	13.76	12.68	11.70	10.91	10.20	9.56	9.04	8.55	8.10	7.69	7.35	7.01	6.71
	ST$^{S}_{L}$-B-80	Rolling bearing	-	-	8.48	-	-	6.19	4.99	4.20	-	8.81	7.39	6.38	5.59	4.99	4.50	4.09	3.71	3.41	3.19	2.96	2.74	2.59	2.40
ø100	ST$^{S}_{L}$-M-100	Plain bearing	-	-	18.23	-	-	15.48	13.48	11.91	-	19.70	17.98	16.56	15.29	14.26	13.33	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-100	Rolling bearing	-	-	11.07	-	-	8.09	6.52	5.49	-	11.52	9.65	8.33	7.30	6.52	5.88	-	-	-	-	-	-	-	-

Non-rotation accuracy

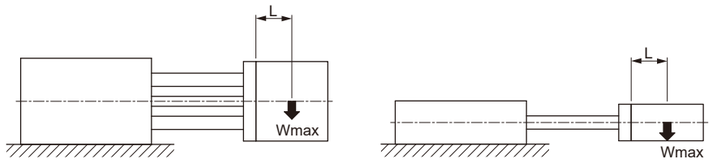


Item / Bore Size (mm)	Non-rotation Accuracy θ (degrees) Plain bearing	Rolling bearing
ø8	±0.09	
ø12	±0.10	±0.06
ø16		
ø20		±0.08
ø25		
ø32	±0.08	±0.04
ø40	±0.07	
ø50		±0.03
ø63	±0.06	
ø80	±0.05	±0.03
ø100		

(PULL time initial value) Note) Excluding guide rod deflection amount

Short stroke

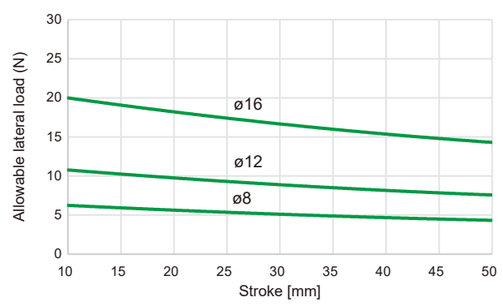
Allowable Lateral Load Plain bearing



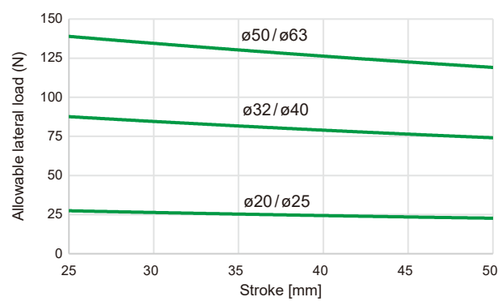
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

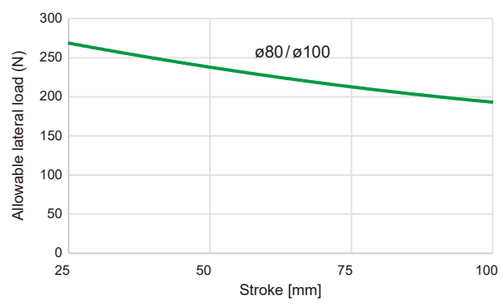
STS-M-8 to 16



STS-M-20 to 63

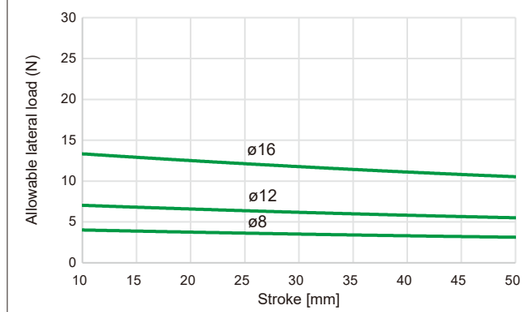


STS-M-80 / 100

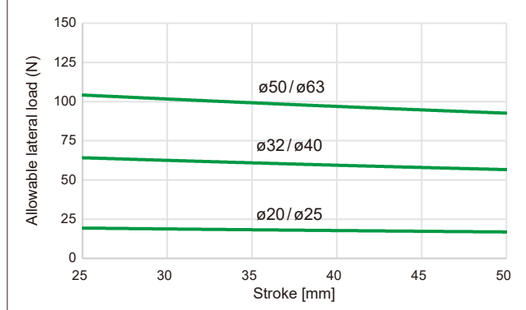


● When L=100 mm

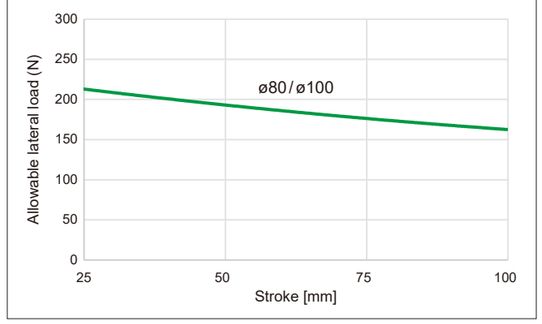
STS-M-8 to 16



STS-M-20 to 63



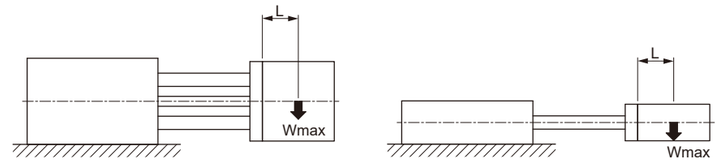
STS-M-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Short stroke

Allowable Lateral Load Rolling bearing

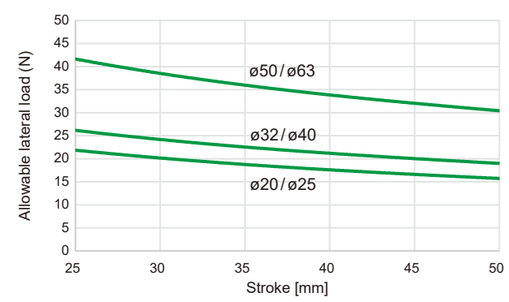


Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

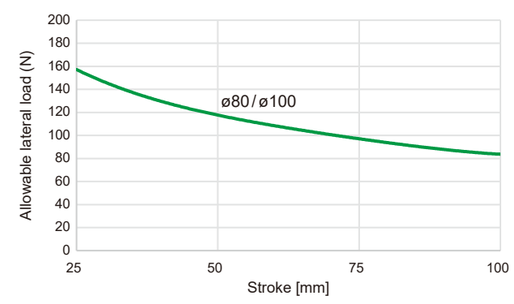
● When L=50 mm

STS-B-8 to 16

STS-B-20 to 63

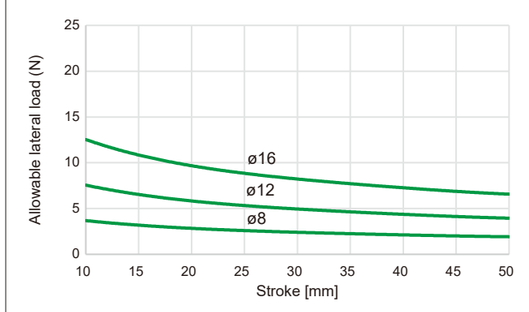


STS-B-80 / 100

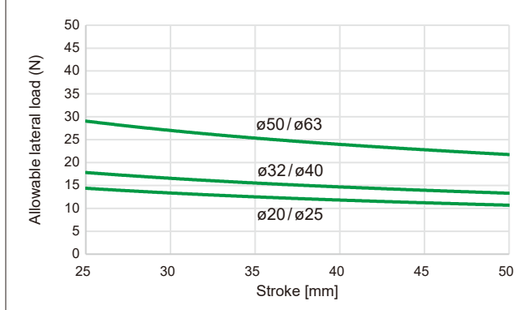


● When L=100 mm

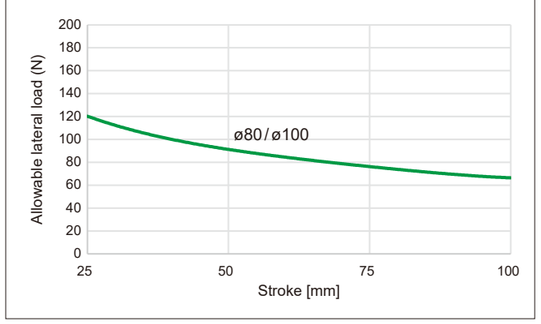
STS-B-8 to 16



STS-B-20 to 63



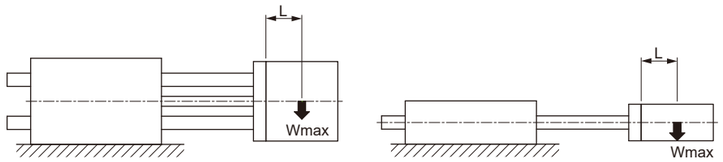
STS-B-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Long stroke

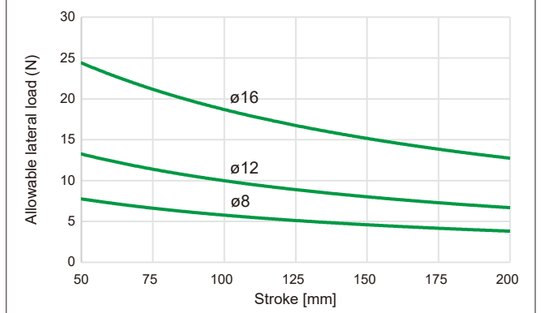
Allowable Lateral Load Plain bearing



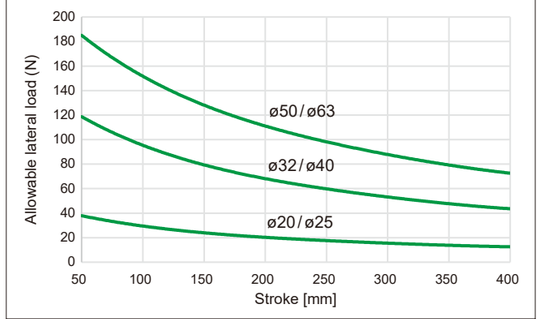
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

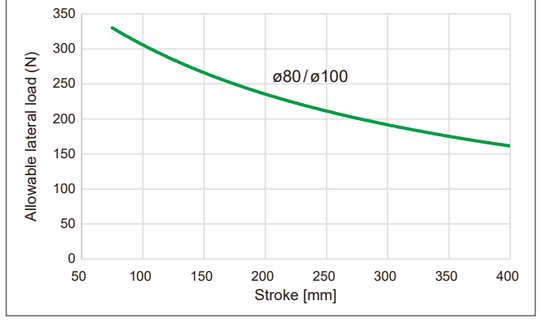
STL-M-8 to 16



STL-M-20 to 63

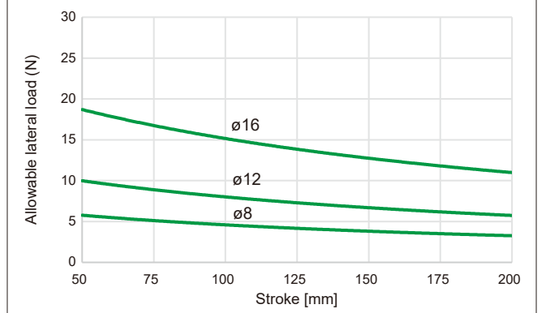


STL-M-80 / 100

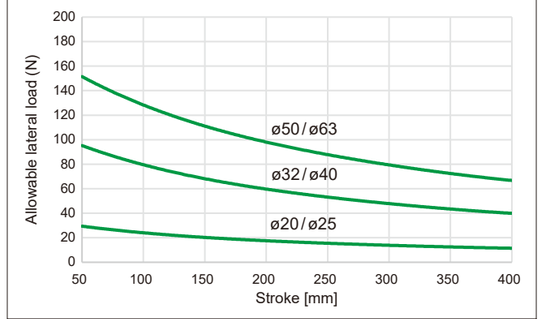


● When L=100 mm

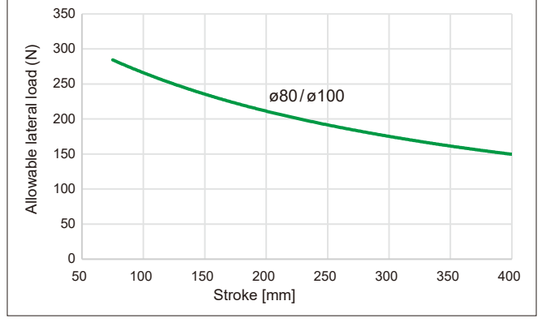
STL-M-8 to 16



STL-M-20 to 63



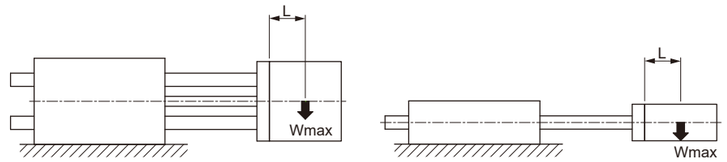
STL-M-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Long stroke

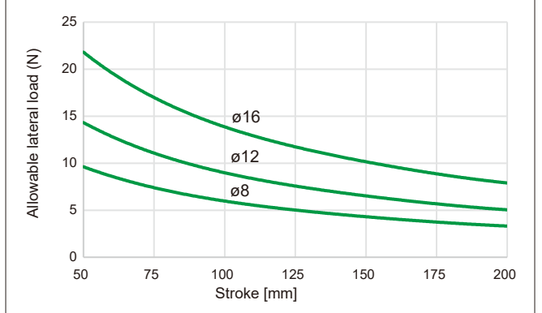
Allowable Lateral Load Rolling bearing



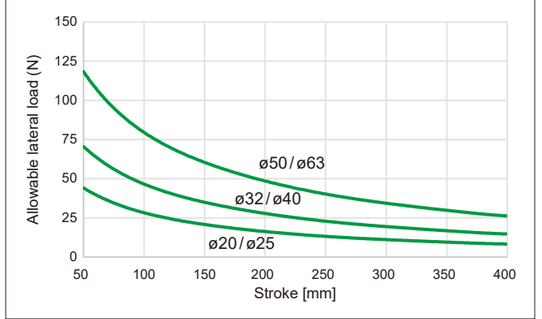
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

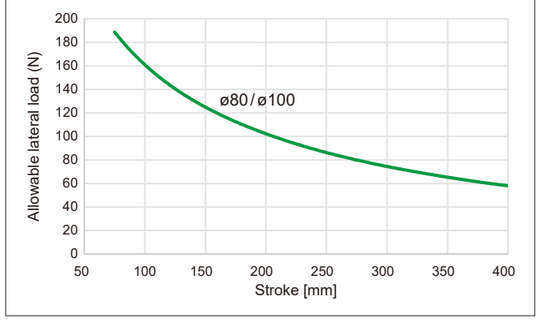
STL-B-8 to 16



STL-B-20 to 63

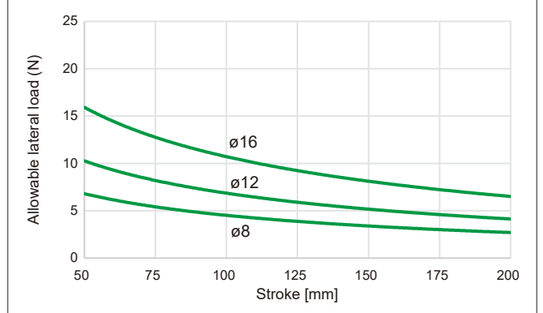


STL-B-80 / 100

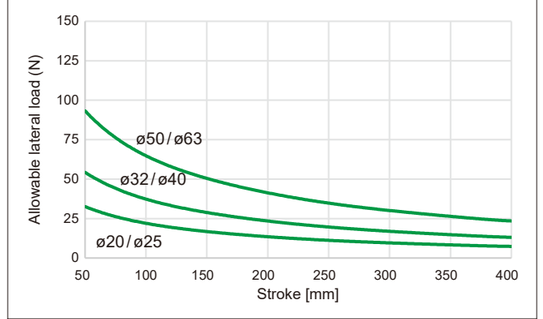


● When L=100 mm

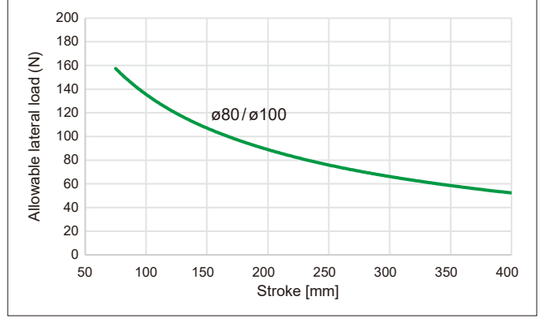
STL-B-8 to 16



STL-B-20 to 63



STL-B-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Port symmetrical type (-O)

Content: Position the port opposite to the standard port position.

Model No. Notation Method

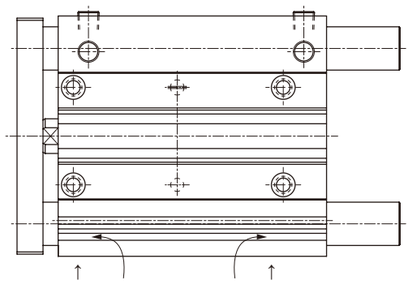
STS/L - M - 50 - 50 - P6 O

* Indicated without a hyphen immediately after the option code.

Model No.

Refer to How to order for STS/L Series.

Outer Dimensions Diagram



The standard product has a port on this side.

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Opening Section P. 41, and for cylinder switches, see P. 808.

Individual Precautions: Guided cylinder STS/STL Series

During Design / Selection

1. Common

Caution

■ When using a plain bearing type with a long stroke at low speed, stick-slip may occur depending on the load conditions. In this case, use a rolling bearing type.

2. With rubber air cushion STS/STL-$^{M}_{B}$-□C

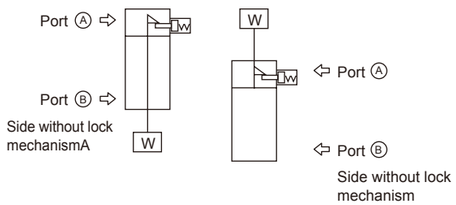
Caution

■ Due to the structure, if the air supply is cut off, the stroke end position cannot be maintained. Please be careful. When detecting the stroke end with a switch, it may be outside the detection range, so set the switch position in an air-pressurized state.

3. Drop prevention type STS/STL-$^{M}_{B}$Q

Warning

■ In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



■ When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

■ Do not use 3-position valves.
Do not use in combination with 3-position valves (especially closed-center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

Caution

■ Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■ If back pressure is applied to the lock mechanism side, the lock may be released, so use a single valve or a manifold with individual exhaust.

■ Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

4. Low speed type (STS/STL-$^{M}_{B}$F)

Caution

■ Use without lubrication.
Lubrication may change characteristics.

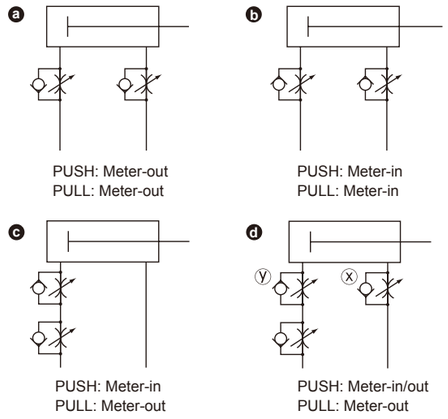
■ Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable. SC-M3/M5-F, SC3W, SCD-M3/M5-F Series speed controllers are recommended.

■ Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.

■ Do not apply lateral load to the cylinder. Also, install the sliding guide without twisting.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable operation.

■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

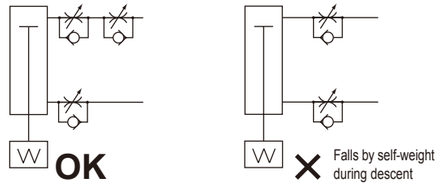
■ Speed control with a meter-out circuit provides stability.
When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits ⓑ, ⓒ, or ⓓ. Circuit ⓓ is the most stable.



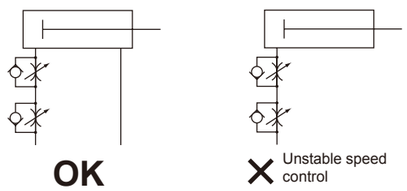
ⓓ Speed adjustment method for PUSH operation of the circuit:
1. Setting the speed with the x-axis speed controller
2. Restrict the speed with the y-axis speed controller until there is no popping out.
3. Reconfirmation of speed

Note1) Comparing ⓑⓒⓓ, the ⓓ circuit is the most stable in operation.

Note2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



Note3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)
Lurching occurs in the following cases:
• Thrust > Resistance
* Resistance: Thrust due to residual pressure on exhaust side (For creep speed type, intake pressure = residual pressure) + [For horizontal use: Frictional force due to load / For vertical use: Dead weight of the load]

5. Coolant proof STS/STL-$^{M}_{B}$G$^{2}_{3}$

Caution

■ Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.

■ If there is no splashing of cutting oil or water on the piston rod, use the G or G1 series.
Please case that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced.

■ Install a speed controller on the cylinder.
Install a speed controller on the cylinder. Use within the operating piston speed range of each cylinder.

6. Spatter adhesion prevention type STS/STL-$^{M}_{B}$G4

Caution

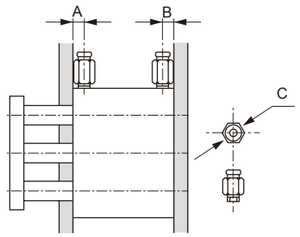
■ This cylinder series has improved durability in a spatter scattering atmosphere compared to general-purpose cylinders. However, please *that durability may be inferior to general type cylinders when used in other atmospheres.

During Use

1. Common

Caution

■ Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



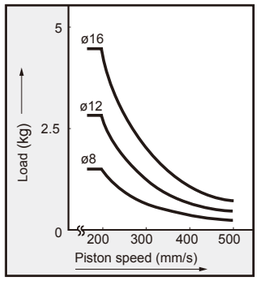
ø80 does not allow side piping such as shown in the figure above.

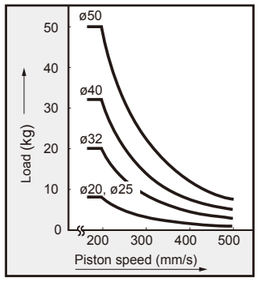
Item / Bore Size (mm)	Port Size	Port position dimension A	Port position dimension B	Usable Fittings	Fitting outer diameter øC
ø8	M5x0.8	11	6.5	SC3W-M5-4 SC3W-M5-6	ø12 or less
ø12		7.5	7.5	GWS4-M5-S GWS4-M5 GWL4-M5	
ø16		7.5	7.5	GWL6-M5 GWS6-M5	
ø20		12	8	SC3W-M5-4, SC3W-M5-6 GWS4-M5-S, GWS4-M5 GWL4-M5	ø15 or less
ø25		12	9	GWL6-M5	
ø32	Rc1/8	14	9	SC3W-6-4 / 6 / 8 GWS4-6, GWS6-6, GWS8-6	ø15 or less
ø40		14.5	10	GWS8-6, GWL4-6	
ø50	Rc1/4	16	11	SC3W-8-6 / 8 / 10 GWS4-8 GWS6-8 GWS10-8 GWS12-8 GWL4 to 12-8	ø21 or less
ø63		17.5	16		
ø80	Rc3/8	25	26	SC3W-10-8/10/12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø21 or less
ø100	Rc3/8	24	25.5 (50)	SC3W-10-8/10/12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø21 or less

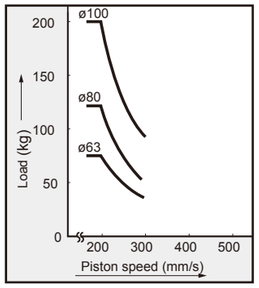
■ To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side included to the end plate should be 0.05 mm or less.
If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■ Be sure not to rotate the piston rod, as it may destabilize operation (due to misalignment).

■ Allowable Energy Value
Use within the range to the lower left of the curve. If using in the upper right range, provide a separate external shock absorber.







■ Do not rotate the piston rod except when disassembling the product for maintenance, etc. Misalignment may occur and operation may become unstable, so do not rotate the piston rod.

■ Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

2. With rubber air cushion STS/STL-$^{M}_{B}$-□C

Caution

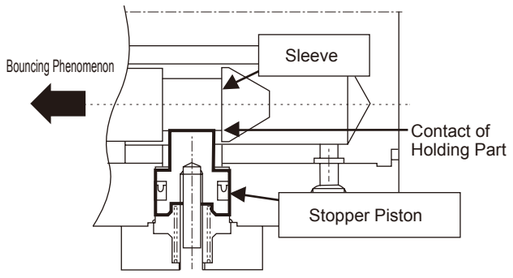
■ Do not rapidly exhaust the air in the cylinder after operating at low speed outside the catalog specification range. (Example Removing piping or couplers, etc.) The rubber air cushion may come off. Please be especially careful as this is more likely to occur when the air pressure is high.

3. Drop prevention type STS/STL-$^{M}_{B}$Q

Warning

■ During equipment maintenance, please take separate measures for safety so that the load does not fall due to its own weight.

■ When stopping with external shock absorbing equipment (shock absorbers, etc.), adjust so that there is no bounce. If it bounces, the sleeve and stopper piston will make impact contact, leading to damage to the lock mechanism. Also, please perform periodic inspections once or twice a year to check for damage to the holding part due to this phenomenon.



Caution

■ Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■ Supply pressure equal to or higher than the minimum operating pressure to the port on the side with the lock mechanism.

■ If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the valve will lead to similar results.

■ Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

4. Low speed type (STS/STL-$^{M}_{B}$F)

Caution

■ Make adjustments such as alignment so that no lateral load is applied to the cylinder. Also, adjust and install so that there is no twisting with respect to the sliding guide.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable operation.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual