

STS/STL-M (Metal bush bearing) Series

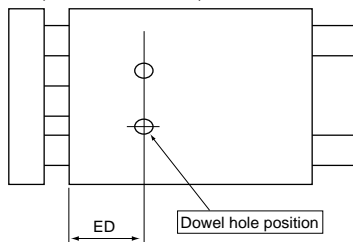
Variation and options selection table (metal bush bearing)

- : Standard
- ⊙ : Option
- : Available (custom order)
- △ : Available depending on condition (consult with CKD)
- X : Not available

Code	Code	Variation																Piping Screw		Cushion	Option									
		Symbol	M	P	Q	V	C	T	T2	O	G	G1	G2	G3	G4	F	L1	N	G	C	M	M1	F	P6	P72	P73	E			
		Double acting basic type (metal bush type)	Stroke adjustable type (extended)	Position locking type	With solenoid valve	Air cushioned	Heat resistance type (120°C)	Packing seal material fluoro rubber	Low speed type	Rubber scraper type	Coil scraper type	Coolant proof scraper type (NBR)	Coolant proof scraper type (FKM)	Spatter adherence prevention type	Fine speed type	Strong magnetic field, 2 color indicator, preventive maintenance w/ SW	NPT φ 32 and over	G φ and over	Rubber-air cushioned	Corrosion proof (material of end plate aluminum)	Corrosion proof (material of end plate SUS)	Plate material assignment steel	Copper and PTFE free type	Clean room specifications (exhaust treatment)	Clean room specifications (vacuum treatment)	With dowel hole				
SCP*2																														
CMK2																														
CMA2																														
SCM																														
SCG																														
SCA2																														
SCS																														
CKV2																														
CA/OV2																														
SSD																														
CAT																														
MDC2																														
MVC																														
SMD2																														
MSD*																														
FC*																														
STK																														
ULK*																														
JSK/M2																														
JSG																														
JSC3																														
USSD	Double acting basic type (metal bush type)	M	●	●	●	●	●	●	●	●	●	●	●	●	●	⊙	○	○	○	○	○	○	○	○	○	○				
USC	Stroke adjustable type (extend)	P		○	○	○	X	○	○	○	○	X	X	○	△	⊙	○	○	○	△	△	⊙	△	X	X	○				
JSB3	Position locking type	Q			X	X	X	X	X	△	△	△	△	△	X	⊙	○	○	X	○	○	○	X	X	X	Note 4				
LMB	With solenoid valve	V				X	X	X	○	X	X	X	X	X	⊙	○	○	○	△	△	⊙	X	X	X	○					
STG	Air cushioned	C					Note 1	Note 1	○	○	○	○	○	X	⊙	○	○	X	○	○	○	X	X	X	Note 4					
STS/L	Heat resistance type (120°)	T					X	X	X	○	X	X	X	X	X	○	○	X	X	X	⊙	X	X	X	○					
LCS	Packing seal material fluoro rubber	T2						X	X	○	X	Note 3	X	X	⊙	○	○	X	○	○	⊙	X	X	X	○					
LCG	Low speed type	O							X	X	X	X	X	X	⊙	○	○	○	○	○	○	X	X	X	○					
LCM	Rubber scraper type	G								X	X	X	X	X	⊙	○	○	○	○	○	○	X	X	X	○					
LCT	Coil scraper type	G1									X	X	Note 5	X	⊙	○	○	○	○	○	○	X	X	X	○					
LCY	Coolant proof scraper type (NBR)	G2										X	X	X	Note 7	○	○	○	Note 3	○	X	X	X	X	○					
STR2	Coolant proof scraper type (FKM)	G3											X	X	Note 7	○	○	X	Note 3	○	X	X	X	X	○					
UCA2	Spatter adherence prevention type	G4												X	⊙	○	○	○	○	○	⊙	X	X	X	○					
HCM	Fine speed type	F													⊙	○	○	○	○	○	⊙	X	X	X	○					
SRL2	Strong magnetic field, 2 color indicator, preventive maintenance w/ switch	L1														○	○	⊙	⊙	⊙	⊙	⊙	X	X	⊙					
SRG	NPT φ 32 and over	N															X	○	○	○	○	○	○	X	X	○				
SRM	G φ 32 and over	G																				○	○	○	X	X	○			
SRT	Rubber-air cushioned	C																				○	○	○	X	X	○			
MRL2	Corrosion proof (material of end plate aluminum)	M																			X	X	X	X	X	○				
MRG2	Corrosion proof (material of end plate SUS)	M1																				X	X	X	X	○				
SM-25	Plate material assignment steel	F																				⊙	X	X	⊙					
CAC3	Copper and PTFE free type	P6																					X	X	○					
UCAC	Clean room specifications (exhaust treatment)	P72																							X	X				
RCC2	Clean room specifications (vacuum treatment)	P73																								X	X			
MFC	With dowel hole	E																								X	X			
SHC	Accessory	Cylinder switch	Listed on Ending	⊙	⊙	⊙	⊙	⊙	X	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			
GLC																														

Cautions

- Note 1. Available for φ 50 to 100.
- Note 2. Only head end position locking type available.
- Note 3: With the G3 and T2 combination, all packing will be fluorine rubber since G3 is selected. (The T2 symbol is not required.)
In the same manner, with the G2, G3 and M (corrosion resistant) combination, if G2 and G3 are selected M (corrosion resistant) will be included. (The M symbol is not required.)
- Note 4. For type with dowel holes, the dowel holes positions may vary depending on cylinder tube length.
- Note 5. G4 type structurally include metal scraper.
- Note 6. Refer to the "Clean component system (catalog No. CB-033SA)" for clean room specifications P72, P73.
- Note 7. L1 specification. (L1 symbol is not required.)



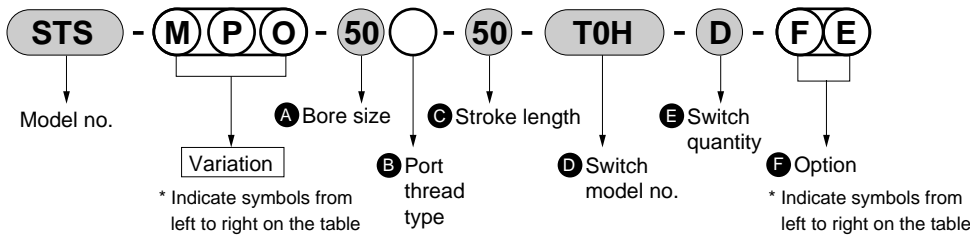
Dowel hole position (ED dimension)

Port size	Combination	
	Position locking type + with dowel hole	Air cushioned + with dowel hole
	Q-E	C-E
φ 8		
φ 12		
φ 16		
φ 20	26.5 + $\frac{\text{Stroke length}}{2}$	
φ 25	27 + $\frac{\text{Stroke length}}{2}$	27 + $\frac{\text{Stroke length}}{2}$
φ 32	30 + $\frac{\text{Stroke length}}{2}$	30 + $\frac{\text{Stroke length}}{2}$
φ 40	44.5 + $\frac{\text{Stroke length}}{2}$	32 + $\frac{\text{Stroke length}}{2}$
φ 50	44.5 + $\frac{\text{Stroke length}}{2}$	32 + $\frac{\text{Stroke length}}{2}$
φ 63	47.5 + $\frac{\text{Stroke length}}{2}$	35 + $\frac{\text{Stroke length}}{2}$
φ 80	75 + $\frac{\text{Stroke length}}{2}$	62.5 + $\frac{\text{Stroke length}}{2}$

STS/STL-M (metal bush bearing) Series

Variation and option selection table

<Example of model number>



Note: For a 40mm and more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between Variation and Bore size. (E.g.) STS-MPO-L1-50-50-T2YH3-D-F

- Model no. : Guided cylinder, short stroke
- Variation : Metal bush bearing, stroke adjustable type or low station
- **A** Bore size : ϕ 50mm
- **B** Port thread type : Rc thread
- **C** Stroke length : 50mm
- **D** Switch model no. : Reed T0H switch, lead wire 1m
- **E** Switch quantity : 2
- **F** Option : End plate material; steel with dowel hole

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-B (ball bearing) Series

Variation and option selection table (ball bearing)

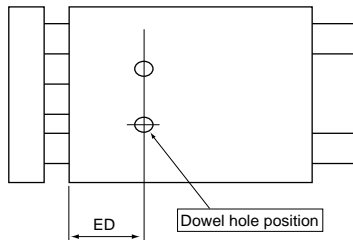
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

- : Standard
- : Option
- : Available (custom order)
- △ : Available depending on condition (consult with CKD)
- X : Not available

Code	Code	Variation														Piping Screw		Cushion	Option								
		Symbol	B	P	Q	V	C	T	T2	O	G	G1	G2	G3	G4	F	L1	N	G	C	M	M1	F	P6	P72	P73	E
Variation	Double acting basic type (bearing bush type)	B	●	●	●	●	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○
	Stroke adjustable type (extended)	P			Note 3	○	○	X	○	○	○	○	X	X	○	△	○	○	○	○	△	△	○	△	X	X	○
	Position locking	Q				X	X	X	X	△	△	△	△	△	X	○	○	○	○	X	○	○	○	△	△	△	Note 5
	With solenoid valve	V				X	X	X	○	X	X	X	X	X	X	○	○	○	○	△	△	○	X	X	X	○	
	Air cushioned	C					Note 1	Note 1	○	○	○	○	○	○	X	○	○	○	X	○	○	○	○	X	X	Note 5	
	Heat resistance type (120°) Note 2	T						X	X	X	○	X	X	X	X	X	○	○	X	○	○	○	X	X	X	○	
	Packing seal material fluoro rubber	T2							X	X	○	X	Note 4	X	X	○	○	○	X	○	○	○	X	○	○	○	
	Low speed type	O								X	X	X	X	X	X	○	○	○	○	○	○	○	○	X	○	○	○
	Rubber scraper type	G									X	X	X	X	X	○	○	○	○	○	○	○	○	X	X	○	
	Coil scraper type	G1										X	X	Note 6	X	○	○	○	○	○	○	○	X	X	X	○	
	Coolant proof scraper type (NBR)	G2											X	X	X	Note 6	○	○	○	Note 4	○	X	○	X	X	○	
	Coolant proof scraper type (FKM)	G3												X	X	Note 6	○	○	X	Note 4	○	X	○	X	X	○	
	Spatter adherence prevention type	G4												X	X	○	○	○	○	○	○	○	X	X	X	○	
	Fine speed type	F													X	○	○	○	○	○	○	○	X	○	○	○	
	Strong magnetic field, 2color indicator, preventive maintenance w/ switch	L1														○	○	○	○	○	○	○	○	○	○	○	
	Port thread	NPT φ 32 and over	N															X	○	○	○	○	○	○	○	○	○
G φ 32 and over		G																									
Cushion	Rubber-air cushioned	C																									
	Corrosion proof (material of end plate aluminum)	M																			X	X	Note 4	Note 4	○		
Option	Corrosion proof (material of end plate SUS)	M1																				X	○	○	○	○	
	Plate material assignment steel	F																				○	X	X	○		
	Copper and PTFE free	P6																						X	X	○	
	Clean room specifications (exhaust treatment)	P72																							X	Note 5	
	Clean room specifications (vacuum treatment)	P73																								Note 5	
	With dowel hole	E																									
Accessory	Cylinder switch	Listed on Ending	○	○	○	○	○	X	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

Cautions

- Note 1. Available for φ 50 to 100.
- Note 2. φ 20 to φ 25 are not available.
- Note 3. Only head end position locking available
- Note 4. With the G3 and T2 combination, all packing will be fluorine rubber since G3 is selected. (The T2 symbol is not required.)
In the same manner, with the G2, G3 and M (corrosion resistant) combination, if G2 and G3 are selected M (corrosion resistant) will be included. (The M symbol is not required.)
- Note 5. For type with dowel holes, the dowel holes positions may vary depending on cylinder tube length.
- Note 6. G4 type structurally include metal scraper.
- Note 7. Refer to the "Clean component system (catalog No. CB-033SA)" for clean room specifications P72, P73.
- Note 8. L1 specifications. (The L1 symbol is not required.)



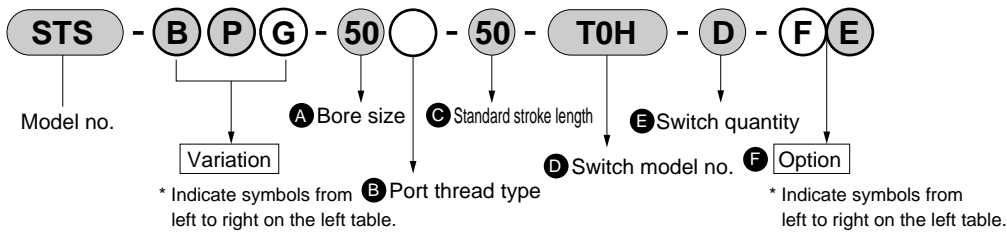
Dowel hole position (ED dimension)

Port size	Combination	Position locking type + with dowel hole	Air cushioned + with dowel hole	Clean room specifications + with dowel hole
		Q-E	C-E	P72/P73-E
φ 8				25 + Stroke length / 2
φ 12				26 + Stroke length / 2
φ 16				26 + Stroke length / 2
φ 20		26.5 + Stroke length / 2		26.5 + Stroke length / 2
φ 25		27 + Stroke length / 2	27 + Stroke length / 2	27 + Stroke length / 2
φ 32		30 + Stroke length / 2	30 + Stroke length / 2	30 + Stroke length / 2
φ 40		44.5 + Stroke length / 2	32 + Stroke length / 2	32 + Stroke length / 2
φ 50		44.5 + Stroke length / 2	32 + Stroke length / 2	32 + Stroke length / 2
φ 63		47.5 + Stroke length / 2	35 + Stroke length / 2	35 + Stroke length / 2
φ 80		75 + Stroke length / 2	62.5 + Stroke length / 2	

STS/STL-B (ball bearing) Series

Variation and option selection table

<Example of model number>



Note: For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between Variation and Bore size.
(E.g.) STS-B-L1-63-50-T2YH3-D-F

2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product.
In this case, insert "L1" between A and B in model no.
(E.g.) STS-B-L1-63-50-F

- Model no. : Guided cylinder, short stroke
- Variation : Ball bearing, stroke adjustable type/rubber scraper type
- **A** Bore size : ϕ 50mm
- **B** Port thread type : Rc thread
- **C** Stroke length : 50mm
- **D** Switch model no. : Reed T0H switch, lead wire 1m
- **E** Switch quantity : 2
- **F** Option : End plate material: steel, with dowel hole

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions



Safety precautions

Always read this section before starting use.

Refer to Intro 71 for general precautions of the cylinder, and to Intro 78 for general precautions of the cylinder switch.

Guided cylinder STS/STL Series

Design & Selection

1. Common

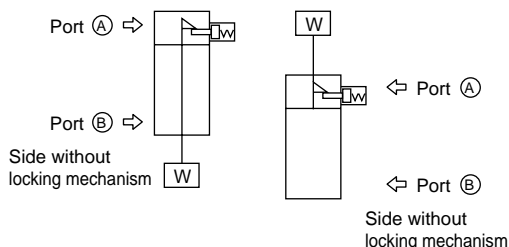
⚠ CAUTION

- When using the metal bush bearing type with a long stroke and low speed, stick slipping may occur depending on load conditions. Use the ball bearing type in this case.

2. Position locking type STS/STL-^M_BQ

⚠ WARNING

- If pressure is supplied to port (A) in the locked state with neither port pressurized, locks may not be releasable or may be released suddenly, causing the piston rod to pop out, which is extremely dangerous. When releasing the locking mechanism, supply pressure to port (B) and check that no load is applied to the locking mechanism.



- If lowering speed is to be increased with the quick exhaust valve, the cylinder may move out faster than the lock pin and prevent the lock pin from being released correctly. Do not use a quick exhaust valve with the cylinder with position locking.

- Do not use a 3-position valve.

Do not use this cylinder combined with a 3-position valve, especially that with a closed center metal seal. This kind of use closes the pressure at the locking mechanism side, and is unable to lock the position. Even if locked once, air leakage from the valve may enter the cylinder then the lock may be released over time.

⚠ CAUTION

- Cylinder load factor must be 50% or less.
If the load factor is high, the lock may not be released or the lock section could be damaged.
- If back pressure is applied to the locking mechanism, the lock may be released. Use the solenoid valve as a discrete unit, or use an independently exhausted manifold.
- Do not use multiple cylinders synchronized.
Do not move 1 workpiece using more than 1 position locking type cylinder. One of the cylinder's locks may not be released.

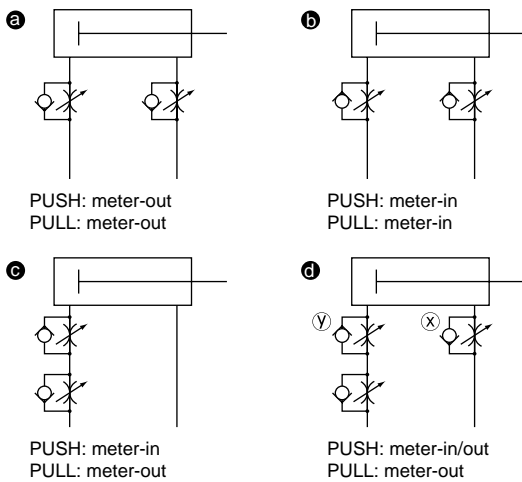
3. Fine speed type (STS/STL-^M_BF)

⚠ CAUTION

- Use by oil-free.
Features may change if the device is lubricated.
- Install a flow control valve close to a cylinder.
Speed may be unstable if assembled away from the cylinder. Use the SC-M3/M5, SC3W, SCD-M3/M5, or SC3WU Series speed control valve.
- Generally, the speed is stable when the load factor is lower and when air pressure is higher.
Keep the load factor at 50% or less.
- Do not apply lateral load on the cylinder.
Install the cylinder to avoid the sliding guide to be twisted.
The presence of load or resistance variation may result in unstable operations. Large differential between static friction and dynamic friction of guide results in unstable operation.
- Avoid use with vibration.
The product will be adversely affected by vibration and operation will be unstable.
- Stable speed control is achieved with a meter-out circuit.
When driving the single rod cylinder at fine speed with the operation direction set to PUSH, popping-out may occur if operation is started when load resistance is small. As a corrective action, use (b) and (c) or (d) circuit. Note that the (d) circuit is the most stable.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

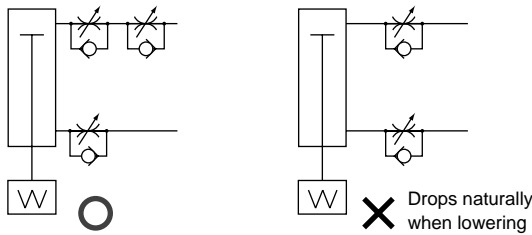
Guided cylinder
Combined functions



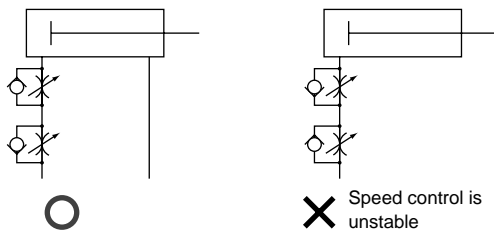
- Speed adjustment method of PUSH operation of circuit **d** :
1. Set the speed with the x flow control valve.
 2. Lower the flow rate with the y flow control valve until popping out no longer occurs.
 3. Reconfirm speed.

(Note 1) When circuits **b**, **c**, and **d** are compared, **d** circuit operation is most stable.

(Note 2) When installed vertically, the workpiece will drop naturally if the meter-in circuit is used. Use the meter-out circuit in this case.



(Note 3) Connect the speed control valve in the parallel with the following circuit.



- Reduce the flow rate to reach a fine speed at the exhaust side in a meter-out circuit. This results in the same pressure level on the both sides immediately after valve switched. The thrust caused by the differential of pressurized area of piston is applied to the PUSH direction and a popping-out of piston rod occurs.

(Guide to popping out occurrence)

- Popping out occurs when :
the piston rod area x air pressure > load resistance.

4. Coolant proof type STS/STL-M_BG₃

CAUTION

- Do not apply the deviated load onto the piston rod. It could shorten scraper and bearing life.

- If coolant or water do not get on the piston rod, select the G or G1 Series.

When using the G2 or G3 series and the coolant or water does not splatter, the piston rod's lubrication could be spent and cause the life to shorten.

- Install a flow control valve on the cylinder.

Install a flow control valve on the cylinder. Use within the working piston speed range of each cylinder.

5. Spatter adherence prevention type STS/STL-M_BG₄

CAUTION

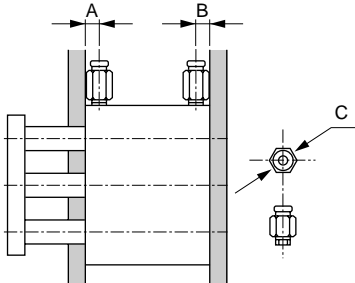
- This cylinder series has improved durability over the general-purpose cylinder in atmospheres where spatter could occur. However durability may be shorter than the general cylinder when used in other environments.

Installation & Adjustment

1. Common

CAUTION

- Install a flow control valve when piping. The applicable joints are shown as below.



φ 80 cannot be piped on the side as shown above

Descriptions Bore size (mm)	Port size	Port dimension		Applicable joints	Joint O.D. φ C
		A	B		
φ 8	M5 x 0.8	11	6.5	SC3W-M5-4 SC3W-M5-6	φ 12 or less
φ 12		7.5	7.5	GWS4-M5-S GWS4-M5 GWL4-M5	
φ 16		7.5	7.5	GWL6-M5 GWS6-M5	
φ 20		12	8	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5	φ 15 or less
φ 25	12	9	GWL4-M5 GWL6-M5		
φ 32	Rc1/8	14	9	SC3W-6-4/6/8 GWS4-6 GWS6-6 GWS8-6	φ 15 or less
φ 40		14.5	10	GWL4-6 GWL6-6	
φ 50	Rc1/4	16	11	SC3W-8-6/8/10 GWS4-8 GWS6-8	φ 21 or less
φ 63		17.5	16	GWS10-8 GWS12-8 GWL4 to 12-8	
φ 80	Rc3/8	25	26	SC3W-10-8/10/12 GWS6-10 GWS8-10 GWS10-10	φ 21 or less
φ 100	Rc3/8	24	25.5 (50)	GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	

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

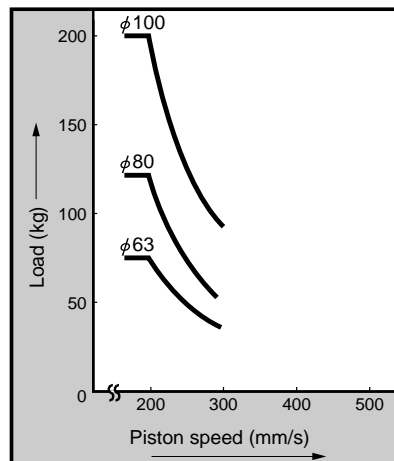
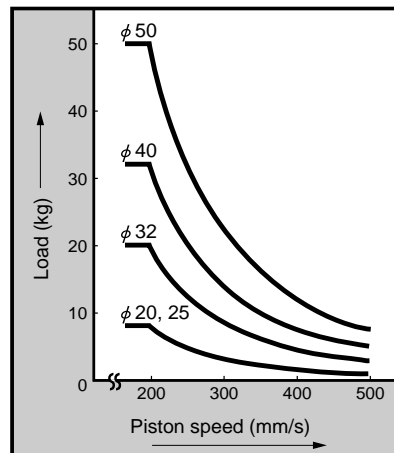
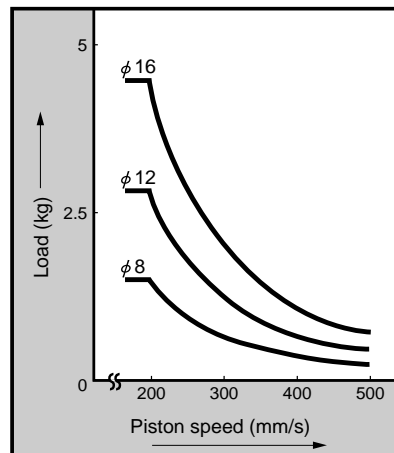
Flatness on the counterpart onto which the end plate is installed must be 0.05 mm or less.

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

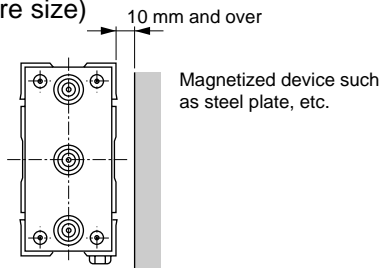
φ 8, φ 12	1.0 N·m
φ 16	2.4 N·m
φ 20, φ 25	5.1 N·m
φ 32, φ 40	8.6 N·m
φ 50, φ 63	21.5 N·m
φ 80, φ 100	75.5 N·m

- Allowable energy

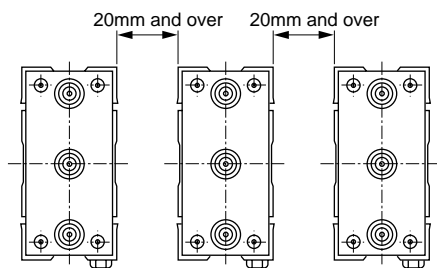
Use within the range at lower left of the curve. A separate shock absorber must be provided externally when used in the upper right range.



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



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



- The CKD shock absorber is treated as a consumable. Replace the shock absorber if the energy absorption performance starts to drop or if the movement is no longer smooth.

2. Position locking type STS/STL-M_BQ

⚠ CAUTION

- If the stopper is applied with an external stopper in the middle of the stroke, the lock may not function and result in dropping. Before setting the load, check that the locking mechanism functions correctly.
- Supply a pressure higher than the minimum working pressure to the port having the locking mechanism.
- If piping on the side with the lock is thin and long, or if the speed controller is separated from the cylinder port, exhaust may slow, taking time for the lock to function. This may also occur if the silencer on the valve's EXH, port is clogged.

3. Fine speed type STS/STL-M_BF

⚠ CAUTION

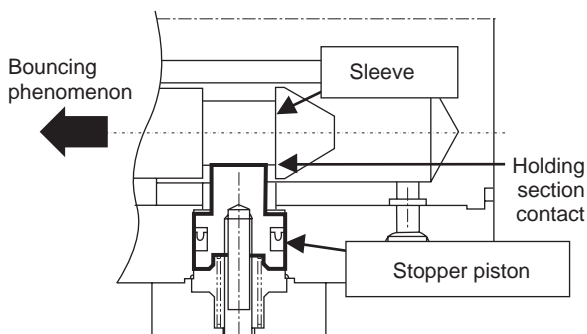
- Adjust the alignment, etc., so lateral load is not applied to the cylinder.
Adjust so that the cylinder does not twist in relation to the sliding guide.
The presence of load or resistance variation may result in unstable operations.
Large differential between static friction and dynamic friction of guide results in unstable operation.

During Use & Maintenance

1. Position locking type STS/STL-M_BQ

⚠ WARNING

- For safety purposes, prevent the load from dropping under its own weight during maintenance.
- When stopping with an external shock absorber, etc., adjust so that there is no bouncing. If the piston bounces, the sleeve and stopper position could contact with impact, and cause damage to the lock mechanism. Regularly (once/twice a year) check that the holding section is not damaged by this symptom.



⚠ CAUTION

- If the locking mechanism has been manually operated, check and then return it to the original position manually. Do not use a manual override except during adjustment, because this may be dangerous.
- Release the lock when installing or adjusting the cylinder.
The lock may be damaged if the cylinder is installed while the lock is applied.
- Use the flow control valve by a meter out.
Locks may not be released during meter-in control.
- Use the side with the lock with the cylinder stroke end.
The lock is not applied if the cylinder piston does not reach the stroke limit.

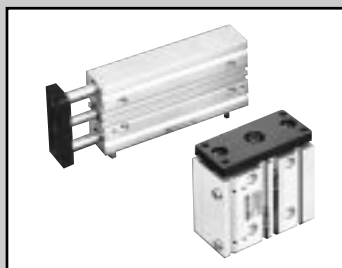
2. Coolant proof type STS/STL-M_BG₃

⚠ CAUTION

- Fluorine-based grease is used for G3 series. Note that lighting a cigarette with fluorine-based grease on hands generates toxic gases.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions



Guided cylinder Double acting single rod type

STS/STL-M Series

● Bore size: $\phi 8$, $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$,
 $\phi 40$, $\phi 50$, $\phi 63$, $\phi 80$, $\phi 100$

JIS symbol



Specifications

Descriptions	STS-M/BSTL-M/B												
	Bore size	mm	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
Actuation	Double acting												
Working fluid	Compressed air												
Max. working pressure	MPa	1.0											
Min. working pressure	MPa	0.15						0.1					
Withstanding pressure	MPa	1.6											
Ambient temperature	°C	-10 to 60 (no freezing)											
Port size		M5				Rc1/8			Rc1/4		Rc3/8		
Stroke tolerance	mm	+2.0 0											
Working piston speed	mm/s	50 to 500						50 to 300					
Cushion		Rubber cushioned											
Lubrication		Not required (when lubricating, use turbine oil Class 1 ISO VG32)											
Allowable energy absorption	J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92	

Stroke length

● Short stroke STS

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 8$	10, 20, 30, 40, 50	50	5	5 With 1 or 2 switches
$\phi 12$				
$\phi 16$				
$\phi 20$				
$\phi 25$				
$\phi 32$				
$\phi 40$	25, 50	100	5	5 With 1 or 2 switches
$\phi 50$				
$\phi 63$	25, 50, 75, 100	100	5	5 With 1 or 2 switches
$\phi 80$				
$\phi 100$				

● Long stroke STL

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 8$	50, 75, 100,	200	50	50 With 1 or 2 switches
$\phi 12$	125, 150,			
$\phi 16$	175, 200			
$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 With 1 or 2 switches
$\phi 25$				
$\phi 32$				
$\phi 40$				
$\phi 50$				
$\phi 63$				
$\phi 80$	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400,	200	55	55 With 1 or 2 switches
$\phi 100$	75, 100, 125, 150, 175, 200			

Clean room specifications

(Catalog No. CB-033SA)

● Dust prevention structure for inside the clean room

STS/L - **P7***

STS/L - **P5***

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

Switch specifications

- 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/ T2YV	T3H/ T3V	T3PH/T3PV (Custom order)	T3YH/ T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay			Programmable controller, relay	Programmable controller, relay, IC circuit (w/o light), serial connection		Programmable controller, relay			
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Without indicator light		LED (ON lighting)			
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA						

- With preventive maintenance output

Descriptions	Proximity 3-wire		Proximity 4-wire		Proximity 3-wire		Proximity 4-wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller, relay		Programmable controller		Programmable controller, relay		
Output method	NPN output								
Light	Installation position adjustment	Red/green LED (ON lighting)							
	Preventive maintenance output	-			Yellow LED (ON lighting)				
Output section	Power voltage	-		10 to 28 VDC		-		10 to 28 VDC	
	Load voltage	10 to 30 VDC		30 VDC or less		10 to 30 VDC		30 VDC or less	
	Load current	5 to 20 mA		50 mA or less		5 to 20 mA		50 mA or less	
	Leakage current	1 mA or less		10 μA or less		1.2 mA or less		10 μA or less	
Preventive maintenance output	Load voltage	30 VDC or less							
	Load current	20 mA or less		50 mA or less		5 to 20 mA or less		50 mA or less	
	Leakage current	10 μA or less							

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25 °C. (5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire	
	T2YD	
Applications	Programmable controller	
Light	Red/green LED (ON lighting)	
Load voltage	24 VDC ± 10%	
Load current	5 to 20 mA	
Internal voltage drop	6 V or less	
Leakage current	1.0 mA or less	
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS	
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)	
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Maximum shock resistance	980m/s ²	
Ambient temperature	-10 to +60 °C	
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance	

Note 1. This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-M_B Series

How to order

Short stroke

STS - **M** - **8** - **10** - **T2H** - **R** - **F**

Long stroke

STL - **M** - **8** - **50** - **T2H** - **R** - **F**

Model no.

A Bearing method

B Bore size

C Port thread type

D Stroke length

E Switch model no.
Note 1, Note 3

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between A and B.
E.g.) STS-M-L1-63-50-T2YH3-D-F
2 color indicator, preventive maintenance, strong magnetic field proof switches cannot be installed after purchasing a standard product.
In this case, insert "L1" between A and B in model no.
E.g.) STS-M-L1-63-50-F

F Switch quantity

G Option

■ Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

⚠ Note on model no. selection

Note 1: Switches other than D switch model no. are available. (Custom order)
Refer to Ending 1 for the details.

Note 2: Refer to page 1526 (metal bush bearing M) and 1528 (ball bearing B) for variation and option combination.

Note 3: T1H/V, T8H/V installation is custom order. Note that T8H/V is not available for $\phi 8$ to $\phi 16$.

Note 4: $\phi 8$ to $\phi 25$ are copper and PTFE free as standard at ball bearing B.

<Example of model number>

STS-M-8-30-T0H-R-F

Model: Guided cylinder, short stroke length standard single rod type

A Bearing method : Metal bush bearing

B Bore size : $\phi 8$ mm

C Port thread type : Rc thread

D Stroke length : 30mm

E Switch model no. : Reed T0H, lead wire length 1m

F Switch quantity : One on rod end

G Option : Material of end plate: Steel

Symbol	Descriptions
--------	--------------

A Bearing method

M	Metal bush bearing
B	Ball bearing

B Bore size (mm)

8	$\phi 8$
12	$\phi 12$
16	$\phi 16$
20	$\phi 20$
25	$\phi 25$
32	$\phi 32$
40	$\phi 40$
50	$\phi 50$
63	$\phi 63$
80	$\phi 80$
100	$\phi 100$ (custom order)

C Port thread type

Blank	Rc thread
NN	NPT thread ($\phi 32$ and over) custom order
GN	G thread ($\phi 32$ and over) custom order

D Stroke length (mm)

Refer to the stroke length table on the following page.

E Switch model no.

Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*		1 color indicator type	
T1H*	T1V*			
T2H*	T2V*	Proximity	1 color indicator (custom order)	3-wire
T3H*	T3V*			
T3PH*	T3PV*		2 color	2-wire
T2YH*	T2YV*		2 color indicator type (W/o light for preventive maintenance output)	3-wire
T3YH*	T3YV*			3-wire
T2YFH*	T2YFV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	3-wire
T3YFH*	T3YFV*			4-wire
T2YMH*	T2YMV*		Off-delay type	3-wire
T3YMH*	T3YMV*			4-wire
T2JH*	T2JV*		Strong magnetic field proof switch	2-wire
T2YD*	-			
T2YDT*	-			

*Lead wire length

Blank	1m (standard)
3	3m (option)
5	5m (option)

F Switch quantity

R	One on rod end
H	One on head end
D	Two
T	Three

G Option

F	Material of end plate: Steel
M	End plate corrosion proof material (aluminum)
M1	End plate corrosion proof material (SUS)
E	With dowel hole
P6	Copper and PTFE free

D Stroke length

Series	Stroke length (mm)	Applicable bore size												
		φ8	φ12	φ16	φ20	φ25	φ32	φ40	φ50	φ63	φ80	φ100		
STS	Standard stroke length	10	●	●	●									
		20	●	●	●									
		25				●	●	●	●	●	●	●	●	
		30	●	●	●									
		40	●	●	●									
		50	●	●	●	●	●	●	●	●	●	●	●	
		75										●	●	
		100										●	●	
		Min. stroke length Note 1		5										
		Custom stroke length Note 1, Note 2		Per 5mm										
STL	Standard stroke length	50	●	●	●	●	●	●	●	●	●			
		75	●	●	●	●	●	●	●	●	●	●	●	
		100	●	●	●	●	●	●	●	●	●	●	●	
		125	●	●	●	●	●	●	●	●	●	●	●	
		150	●	●	●	●	●	●	●	●	●	●	●	
		175	●	●	●	●	●	●	●	●	●	●	●	
		200	●	●	●	●	●	●	●	●	●	●	●	
		225				●	●	●	●	●	●	●		
		250				●	●	●	●	●	●	●		
		275				●	●	●	●	●	●	●		
		300				●	●	●	●	●	●	●		
		325				●	●	●	●	●	●	●		
		350				●	●	●	●	●	●	●		
		375				●	●	●	●	●	●	●		
		400				●	●	●	●	●	●	●		
Min. stroke length Note 1		50			30					55				
Custom stroke length Note 1, Note 2		Per 5mm												

Note 1: For the total dimensions, the dimensions are the same as the longer standard stroke.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch

SW - T0V

Switch model no.
(Item (E) previous page)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

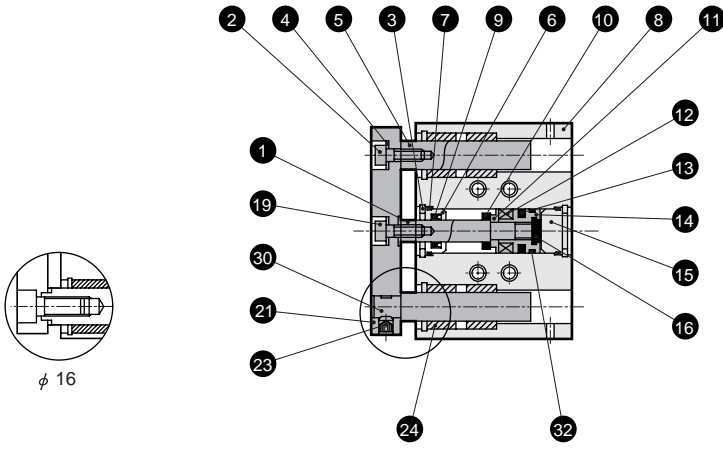
Guided cylinder
Combined functions

Internal structure and parts list

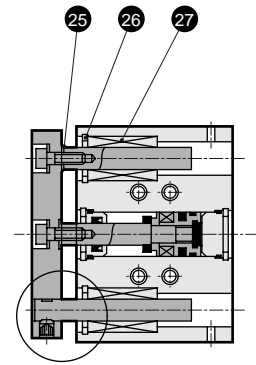
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

● Double acting standard single rod type $\phi 8, \phi 12, \phi 16$
STS-M_B

● With dowel hole
STS-M_B-E

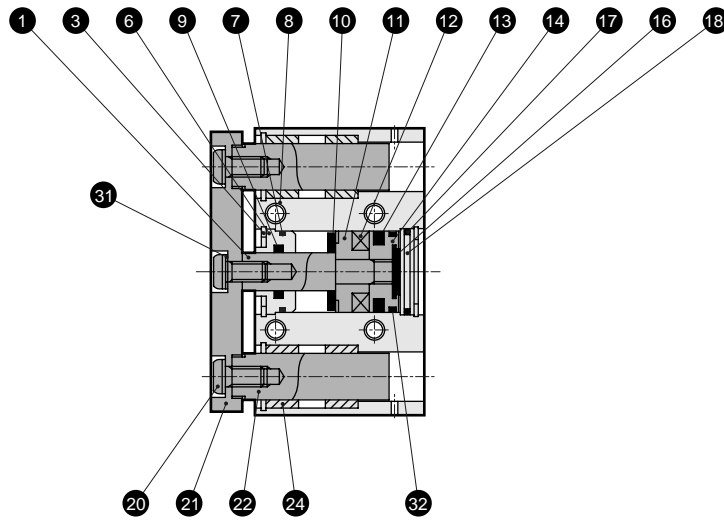


Metal bush bearing

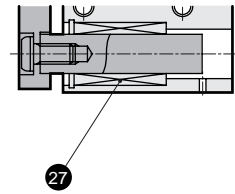


Ball bearing

$\phi 20, \phi 25$

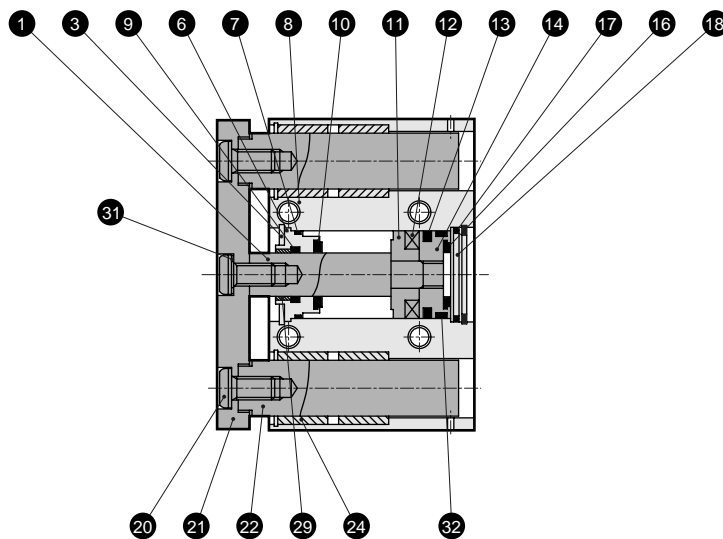


Metal bush bearing

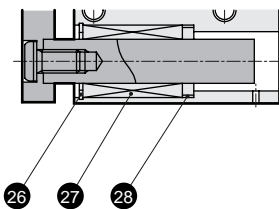


Ball bearing

$\phi 32, \phi 40, \phi 50, \phi 63$



Metal bush bearing

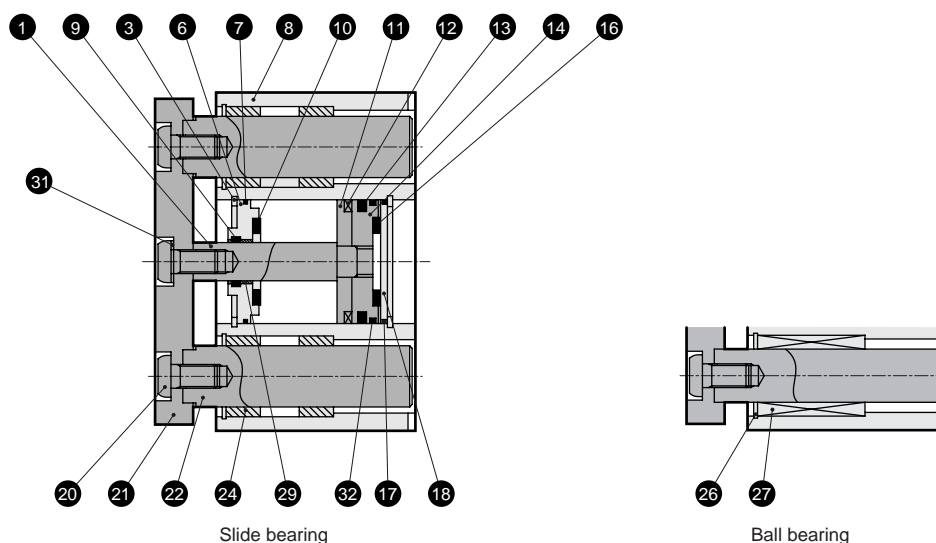


Ball bearing

Internal structure and parts list

● Double acting standard single rod type $\phi 80$
STS-M_B

● With dowel hole
STS-M_B-E



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
STS-M_B (standard single rod type), STS-M_B-E (dowel hole)							
1	Piston rod	Stainless steel ($\phi 8$ to $\phi 25$) Steel ($\phi 32$ to $\phi 80$)	Industrial chrome plating	16	Cushion rubber (H)	Urethane rubber	
2	Hexagon socket head cap bolt	Alloy steel	Blackening	17	O ring	Nitrile rubber	
3	C type snap ring	Steel	Phosphoric acid salt membrane	18	Base plate	Aluminum alloy ($\phi 20$ to $\phi 63$) Steel ($\phi 80$)	Chromate ($\phi 20$ to $\phi 63$) Galvanizing ($\phi 80$)
4	Plain washer	Steel	Blackening	19	Hexagon nut ($\phi 8$)	Steel	Blackening
5	Guide rod (1)	M: Stainless steel B: Alloy steel	Industrial chrome plating ($\phi 12, \phi 16$) Industrial chrome plating	19	Hexagon socket head cap bolt ($\phi 12, \phi 16$)	Alloy steel	
6	Rod bushing	Special aluminum alloy	Alumite	20	Hexagon socket head button bolt	Alloy steel	Black galvanizing
7	Metal gasket	Nitrile rubber		21	End plate	Aluminum alloy	Black alumite
8	Cylinder body	Aluminum alloy	Hard alumite	22	Guide rod ($\phi 20$ to $\phi 80$)	Steel	Industrial chrome plating
9	Rod packing seal	Nitrile rubber		23	Hexagon socket head set screw ($\phi 8, \phi 12$)	Alloy steel	Blackening
10	Cushion rubber (R)	Urethane rubber		24	Metal	Oil impregnated bearing alloy	
11	Spacer	Aluminum alloy ($\phi 8$ to $\phi 12, \phi 63, \phi 80$) Polyamide ($\phi 20$ to $\phi 50$)	Chromate ($\phi 8$ to $\phi 12, \phi 63, \phi 80$)	25	Plain washer	Steel	Blackening
12	Magnet	Plastic		26	C type snap ring	Steel	Phosphoric acid salt membrane
13	Piston packing seal	Nitrile rubber		27	Ball bush		
14	Piston	Special aluminum alloy ($\phi 8$) Aluminum alloy ($\phi 12$ to $\phi 80$)	Chromate ($\phi 8, \phi 20$ to $\phi 80$)	28	Collar	Aluminum alloy	
15	Guard	Aluminum alloy		29	Bush	DU dry bearing	
				30	Guide rod (2) ($\phi 8, \phi 12$)	M: Stainless steel B: Alloy steel	Industrial chrome plating ($\phi 12$) Industrial chrome plating
				31	Belleville spring washer	Steel	
				32	Wear ring	Acetar resin	$\phi 12$ to $\phi 80$

Repair parts list

Bore size (mm)	Kit No.		Repair parts number
	STS-M _B	STS-M _B -E	
$\phi 8$	STS-8K		7 9 10 13 16
$\phi 12$	STS-12K		7 9 10 13 16 32
$\phi 16$	STS-16K		
$\phi 20$	STS-20K		
$\phi 25$	STS-25K		
$\phi 32$	STS-32K		7 9 10 13
$\phi 40$	STS-40K		
$\phi 50$	STS-50K		16 17 32
$\phi 63$	STS-63K		
$\phi 80$	STS-80K		

Note: Specify the kit No. when placing an order.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

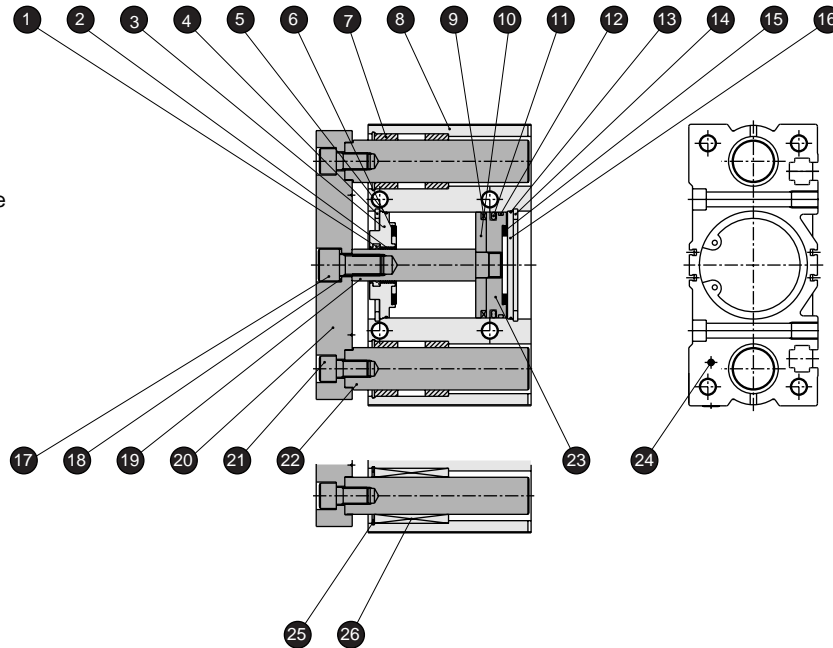
Internal structure and parts list (φ 100)

● Double acting standard single rod type φ 100
STS-M_B

● With dowel hole
STS-M_B-E

● Corrosion proof
STS-M_B-M-M1

● Copper and PTFE free type
STS-M_B-P6



Model no.	Parts name	Material	Remarks	Model no.	Parts name	Material	Remarks
STS/L-M _B (standard rod types), STS/L-M _B -E (with dowel hole)							
1	Rod packing seal	Nitrile rubber		22	Guide rod	Steel	Industrial chrome plating
2	Bush	DU dry bearing		23	Piston	Aluminum alloy	Chromate treatment
3	Rod bushing	Aluminum alloy	Chromate treatment	24	Hexagon socket head set screw	Steel	Blackening
4	C type snap ring	Steel	Phosphate coating	25	C type snap ring	Steel	Phosphate coating
5	Metal gasket	Nitrile rubber		26	Ball bearing		
6	Cushion rubber (R)	Urethane rubber		STS/L-M _B -M/M1 (corrosion proof)			
7	Metal	Oil impregnated bearing alloy		4	C type snap ring	Stainless steel	
8	Tube body	Aluminum alloy	Hard alumite	7	Metal	Solid lubricant bearing	
9	Magnet	Plastic		14	C type snap ring	Stainless steel	
10	Spacer	Aluminum alloy	Chromate treatment	17	Hexagon socket head cap bolt	Stainless steel	
11	Piston packing seal	Nitrile rubber		19	Piston rod	Stainless steel	
12	Wear ring	Acetar resin		20	End plate	M: Aluminum alloy M1: Stainless steel	Black alumite
13	O ring	Nitrile rubber		21	Hexagon socket head cap bolt	Stainless steel	
14	C type snap ring	Steel	Phosphate coating	22	Guide rod	Stainless steel	
15	Cushion rubber (H)	Urethane rubber		24	Hexagon socket head set screw	Stainless steel	
16	Base plate	Steel	Galvanizing	25	C type snap ring	Stainless steel	
17	Hexagon socket head cap bolt	Steel	Galvanizing	26	Ball bearing	Stainless steel	
18	Belleville spring washer	Steel	Galvanizing	STS/L-M _B -P6 (copper and PTFE free type)			
19	Piston rod	Steel	Industrial chrome plating	2	Bush	Cast iron system oil impregnated bearing	
20	End plate	Aluminum alloy	Black alumite				
21	Hexagon socket head cap bolt	Steel	Galvanizing				

Repair kits

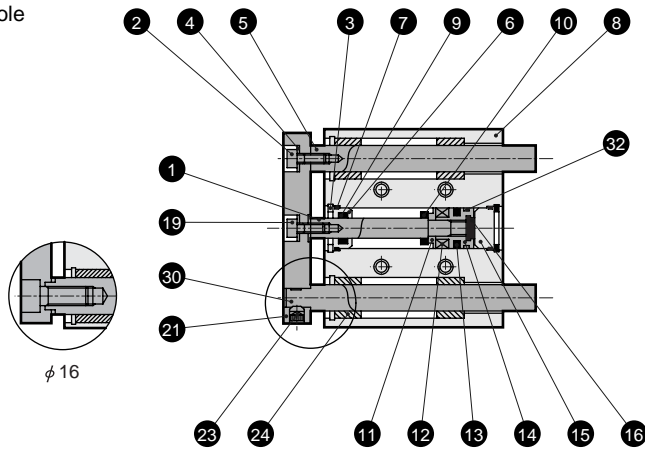
Bore size (mm)	Kit No.				Repair parts number
	STS-M _B	STS-M _B -E	STS-M _B -M,M1	STS-M _B -P6	
φ 100	STS-100K				1 5 6 11 12 13 15

Note: Specify the kit No. when placing an order.

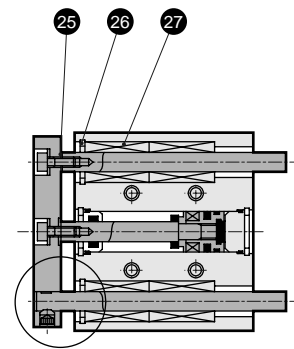
Internal structure and parts list

● Double acting standard single rod type $\phi 8, \phi 12, \phi 16$
STL-M^B

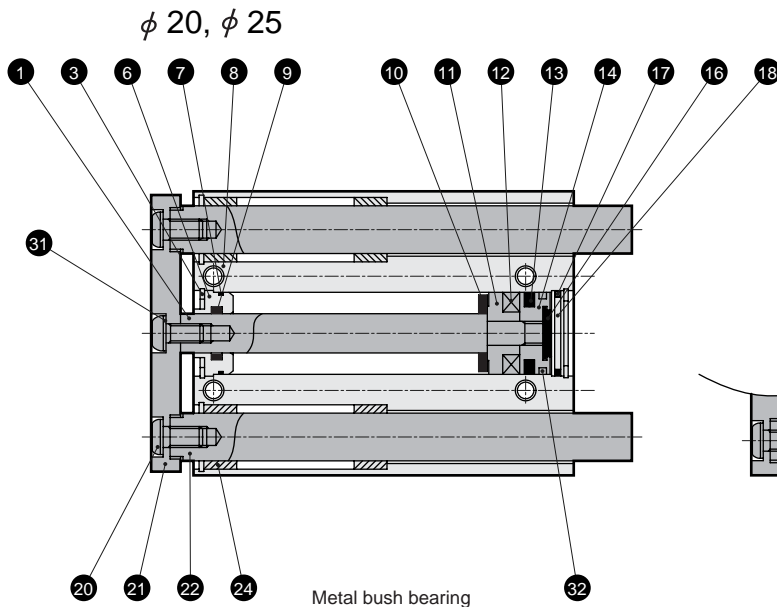
● With dowel hole
STL-M^B-E



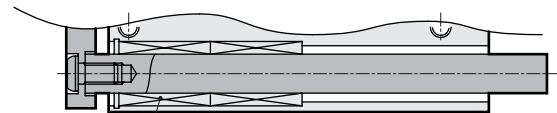
Metal bush bearing



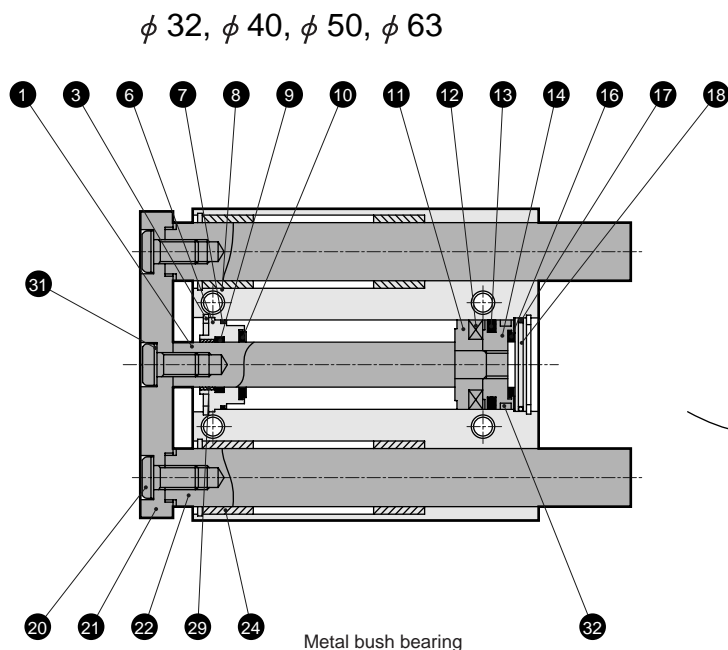
Ball bearing



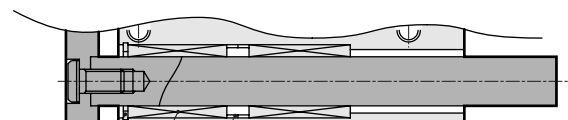
Metal bush bearing



Ball bearing



Metal bush bearing



Ball bearing

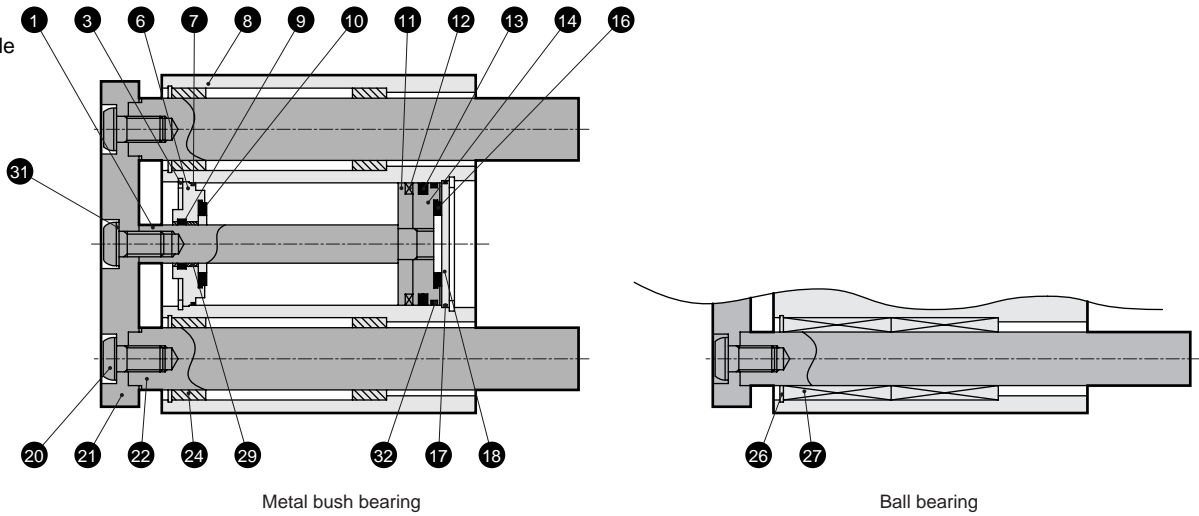
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Internal structure and parts list

● Standard single rod type $\phi 80$
STL-M_B

● With dowel hole
STL-M_B-E



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
STL-M_B (double acting, standard single rod type), STL-M_B-E (dowel hole)							
1	Piston rod	Stainless steel ($\phi 8$ to $\phi 25$) Steel ($\phi 32$ to $\phi 80$)	Industrial chrome plating	16	Cushion rubber (H)	Urethane rubber	
2	Hexagon socket head cap bolt	Alloy steel	Blackening	17	O ring	Nitrile rubber	
3	C type snap ring	Steel	Phosphoric acid salt membrane	18	Base plate	Aluminum alloy ($\phi 20$ to $\phi 63$) Steel ($\phi 80$)	Chromate ($\phi 20$ to $\phi 63$) Galvanizing ($\phi 80$)
4	Plain washer	Steel	Blackening	19	Hexagon nut ($\phi 8$)	Steel	Blackening
5	Guide rod (1)	M: Stainless steel B: Alloy steel	Industrial chrome plating ($\phi 12, \phi 16$) Industrial chrome plating	20	Hexagon socket head button bolt	Alloy steel	Black galvanizing
6	Rod bushing	Special aluminum alloy	Alumite	21	End plate	Aluminum alloy	Black alumite
7	Metal gasket	Nitrile rubber		22	Guide rod ($\phi 20$ to $\phi 80$)	Steel	Industrial chrome plating
8	Cylinder body	Aluminum alloy	Hard alumite	23	Hexagon socket head set screw ($\phi 8, \phi 12$)	Alloy steel	Blackening
9	Rod packing seal	Nitrile rubber		24	Metal	Oil impregnated bearing alloy	
10	Cushion rubber (R)	Urethane rubber		25	Plain washer	Steel	Blackening
11	Spacer	Aluminum alloy ($\phi 8$ to $\phi 12, \phi 63, \phi 80$) Polyamide ($\phi 20$ to $\phi 50$)	Chromate ($\phi 8, \phi 12, \phi 63, \phi 80$)	26	C type snap ring	Steel	Phosphoric acid salt membrane
12	Magnet	Plastic		27	Ball bush		
13	Piston packing seal	Nitrile rubber		28	Collar	Aluminum alloy	
14	Piston	Special aluminum alloy ($\phi 8$) Aluminum alloy ($\phi 12$ to $\phi 80$)	Chromate	29	Bush	DU dry bearing	
15	Guard	Aluminum alloy		30	Guide rod (2) ($\phi 8, \phi 12$)	M: Stainless steel B: Alloy steel	Industrial chrome plating ($\phi 12$) Industrial chrome plating
				31	Belleville spring washer	Steel	
				32	Wear ring	Acetar resin	$\phi 12$ to $\phi 80$

Repair parts list

Bore size (mm)	Kit No.	Repair parts number
	STL-M _B , STL-M _B -E	
$\phi 8$	STS-8K	7 9 10 13 16
$\phi 12$	STS-12K	7 9 10 13 16 32
$\phi 16$	STS-16K	7 9 10 13 16 32
$\phi 20$	STS-20K	
$\phi 25$	STS-25K	
$\phi 32$	STS-32K	7 9 10
$\phi 40$	STS-40K	
$\phi 50$	STS-50K	13 16 17 32
$\phi 63$	STS-63K	
$\phi 80$	STS-80K	

Note: Specify the kit No. when placing an order.

Internal structure and parts list (φ 100)

- Double acting standard single rod type φ 100

STL-M_B

- With dowel hole

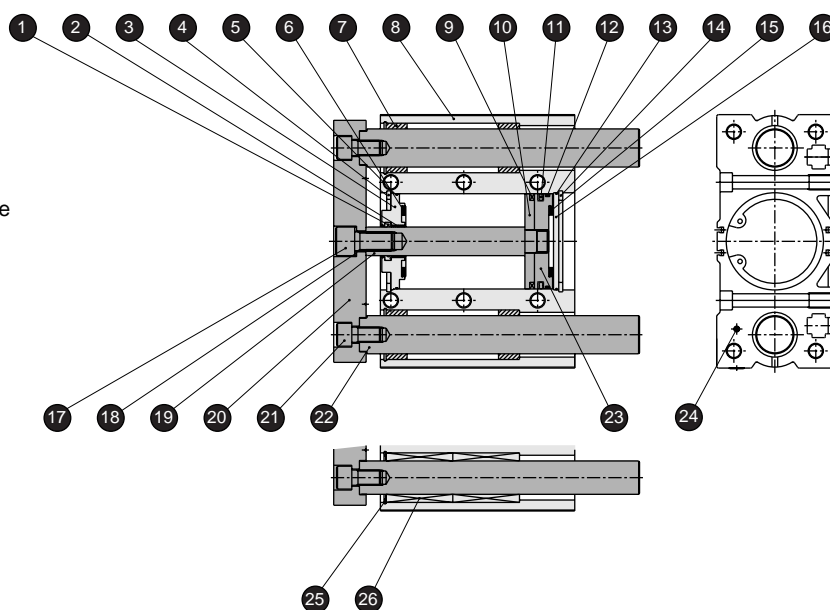
STL-M_B-E

- Corrosion proof

STL-M_B-M-M1

- Copper and PTFE free type

STL-M_B-P6



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Model no.	Parts name	Material	Remarks	Model no.	Parts name	Material	Remarks
STS/L- ^M / _B (standard rod types), STS/L- ^M / _B -E (with dowel hole)							
1	Rod packing seal	Nitrile rubber		22	Guide rod	Steel	Industrial chrome plating
2	Bush	DU dry bearing		23	Piston	Aluminum alloy	Chromate treatment
3	Rod bushing	Aluminum alloy	Chromate treatment	24	Hexagon socket head set screw	Steel	Blackening
4	C type snap ring	Steel	Phosphate coating	25	C type snap ring	Steel	Phosphate coating
5	Metal gasket	Nitrile rubber		26	Ball bearing		
6	Cushion rubber (R)	Urethane rubber		STS/L- ^M / _B -M/M1 (corrosion proof)			
7	Metal	Oil impregnated bearing alloy		4	C type snap ring	Stainless steel	
8	Tube body	Aluminum alloy	Hard alumite	7	Metal	Solid lubricant bearing	
9	Magnet	Plastic		14	C type snap ring	Stainless steel	
10	Spacer	Aluminum alloy	Chromate treatment	17	Hexagon socket head cap bolt	Stainless steel	
11	Piston packing seal	Nitrile rubber		19	Piston rod	Stainless steel	
12	Wear ring	Acetar resin		20	End plate	M: Aluminum alloy M1: Stainless steel	Black alumite
13	O ring	Nitrile rubber		21	Hexagon socket head cap bolt	Stainless steel	
14	C type snap ring	Steel	Phosphate coating	22	Guide rod	Stainless steel	
15	Cushion rubber (H)	Urethane rubber		24	Hexagon socket head set screw	Stainless steel	
16	Base plate	Steel	Galvanizing	25	C type snap ring	Stainless steel	
17	Hexagon socket head cap bolt	Steel	Galvanizing	26	Ball bearing	Stainless steel	
18	Belleville spring washer	Steel	Galvanizing	STS/L- ^M / _B -P6 (copper and PTFE free type)			
19	Piston rod	Steel	Industrial chrome plating	2	Bush	Cast iron system oil impregnated bearing	
20	End plate	Aluminum alloy	Black alumite				
21	Hexagon socket head cap bolt	Steel	Galvanizing				

Repair kits

Bore size (mm)	Kit No.				Repair parts number
	STL-M _B	STL-M _B -E	STL-M _B -M,M1	STL-M _B -P6	
φ 100	STS-100K				1 5 6 11 12 13 15

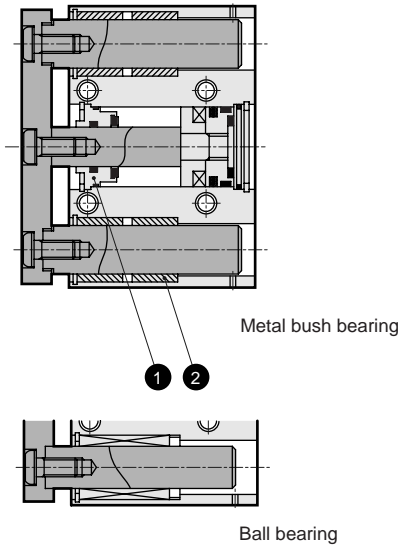
Note: Specify the kit No. when placing an order.

Guided cylinder
Combined functions

Internal structure and parts list ($\phi 8$ to $\phi 80$)

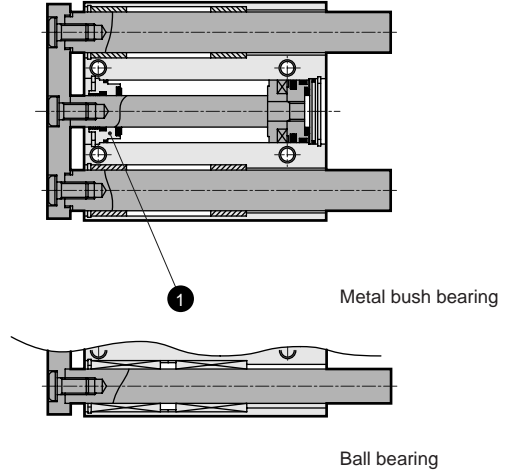
● Copper and PTFE free type

STS-M-P6 * We have no 29 bush for the P6.



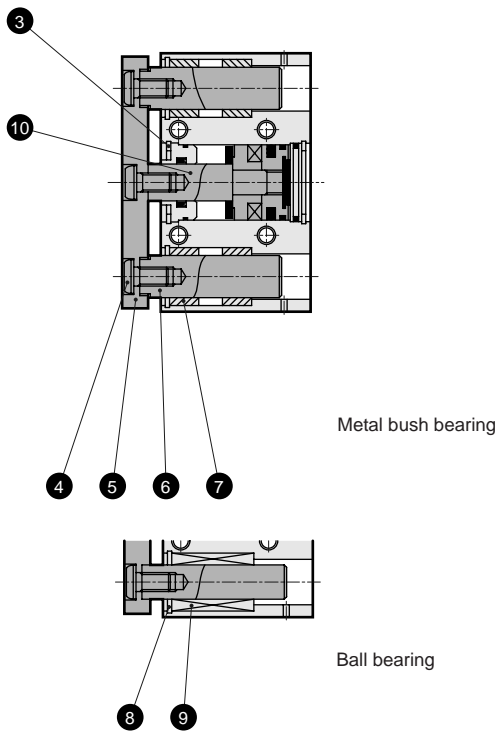
● Copper and PTFE free type

STL-M-P6 * We have no 29 bush for the P6.



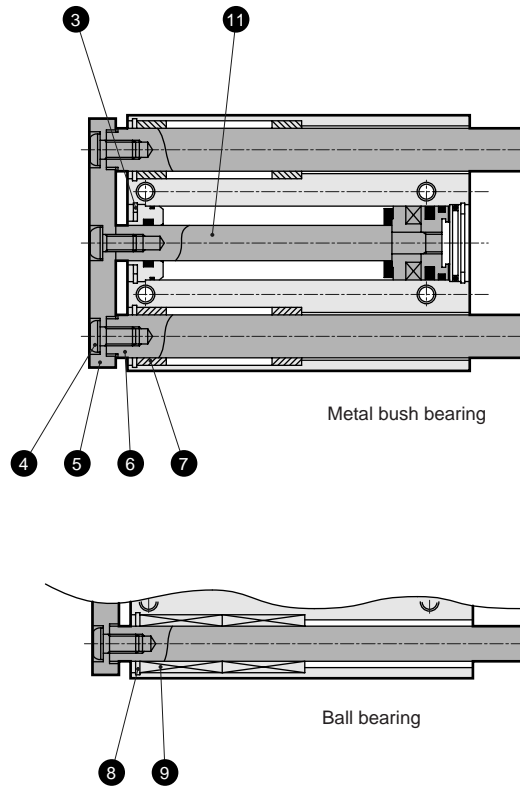
● Corrosion proof

STS-M-M/EM1



● Corrosion proof

STL-M-M/EM1



Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1542.)

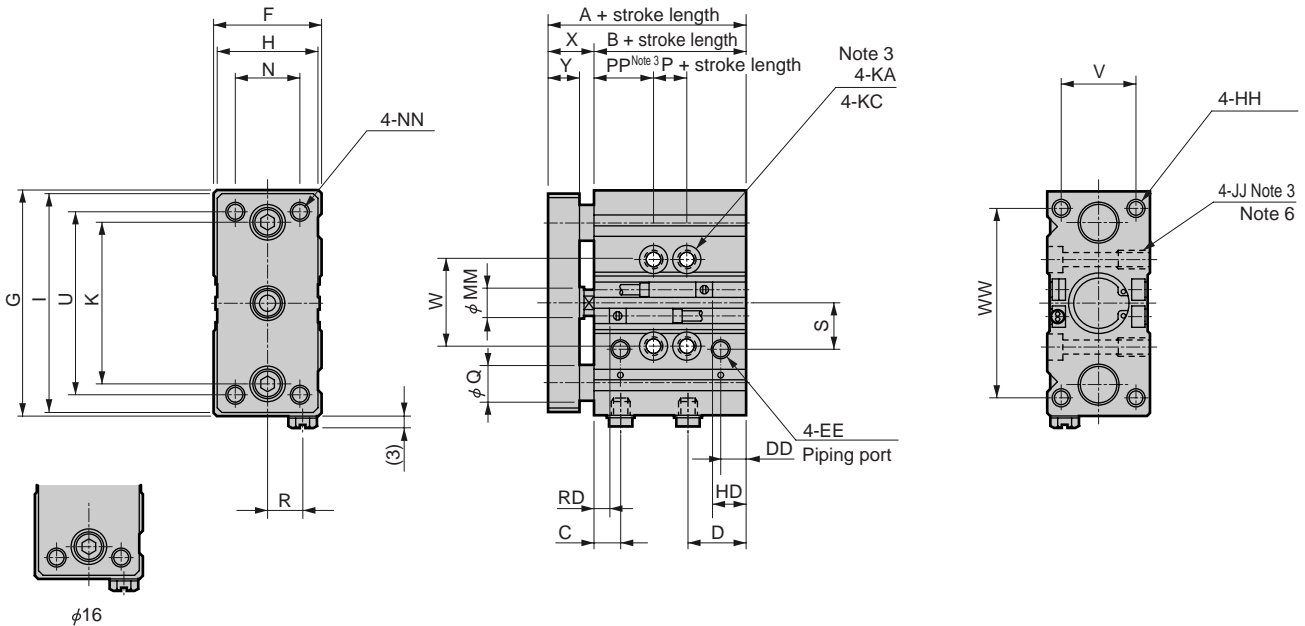
No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
ST_L^S-M-P6 (copper and PTFE free type)				6	Guide rod	Stainless steel	Industrial chrome plating (only M type)
1	Rod bushing	Special aluminum alloy		7	Metal	Solid lubricant bearing	
2	Metal	Cast iron system oil impregnated bearing		8	Adaptor ($\phi 8$ to $\phi 16$)	Aluminum alloy	
ST_L^S-M-M/M1 (corrosion proof)							
3	C type snap ring	Stainless steel		9	Ball bush	Stainless steel	
4	Hexagon socket head button bolt	Stainless steel		10	Piston rod	Stainless steel	
5	End plate	M: Aluminum alloy M1: Stainless steel	Black alumite	11	Piston rod	Stainless steel	Industrial chrome plating

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Dimensions: $\phi 8$, $\phi 12$, $\phi 16$

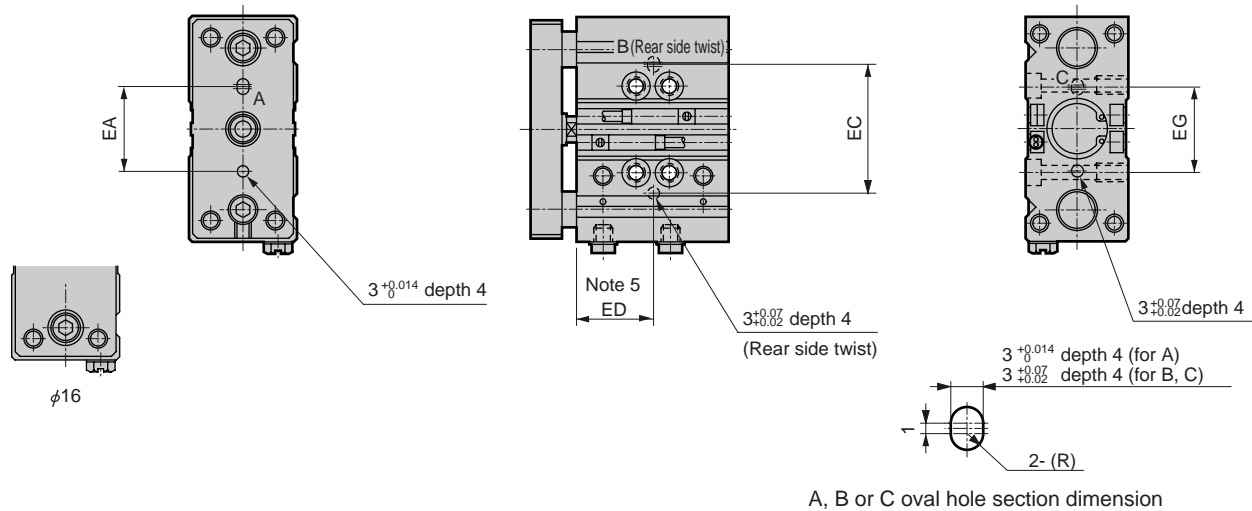


- Standard single rod type STS-M-B
- Corrosion proof STS-M-B-M/M1



- With dowel hole STS-M-B-E

(Dimensions other than those listed below are the same as the double acting standard single rod type.)



Symbol	Standard stroke length (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
$\phi 8$	10, 20, 30	40	28	11	14.5	6.5	M5	24	53	22	M4 depth 8	51	M4 depth 10	40	3.3 penetrating
$\phi 12$	40, 50	44	32	7.5	14.5	7.5	M5	26	58	24	M4 depth 8	56	M4 depth 10	41	3.3 penetrating
$\phi 16$		45	32	7.5	17	7.5	M5	30	64	28	M5 depth 10	62	M5 depth 10	46	4.3 penetrating

Symbol	KC	MM	N	NN	P	PP	Q		R	S	U	V	W	WW	X	Y
							STS-M	STS-B								
$\phi 8$	6.5 spot face depth 3.3	4	15	M4 penetrating	-10	20	6	5	7.5	13.5	43	16	25	45	$12^{+0}_{-1.5}$	8
$\phi 12$	6.5 spot face depth 3.3	6	16	M4 penetrating	-2	17	8	6	8	12.5	48	17	23	50	$12^{+0}_{-1.5}$	8
$\phi 16$	8 spot face depth 4.4	8	18	M5 penetrating	-2	17	10	8	10	13	52	22	25	54	$13^{+0}_{-1.5}$	9

Symbol	RD	HD	EA	EC	ED	EG
$\phi 8$	6.5	2.5	20	25	$15 + \frac{\text{Stroke length}}{2}$	20
$\phi 12$	5	8.5	23	34	$16 + \frac{\text{Stroke length}}{2}$	20
$\phi 16$	4.5	9.5	24	36	$16 + \frac{\text{Stroke length}}{2}$	24

Note 1: Note that the HD and RD dimensions at 10 stroke may differ from these dimensions due to the various settings.
 Note 2: Each dimension is the same as the next longer standard stroke length for custom stroke length.
 Note 3: When STS-M-B-8-10 (10mm stroke) is selected, this will be 2-KA, 2-KC, 2-JJ (two mounting holes).
 Note 4: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V switch.
 Note 5: ED dimension is 5 when STS-M-B-8-10 (10mm stroke).
 Note 6: When STS-M-B-16-10 (10mm stroke) is selected, there are four mounting holes for the JJM5 screws as shown in the drawing, but only two are used for mounting.

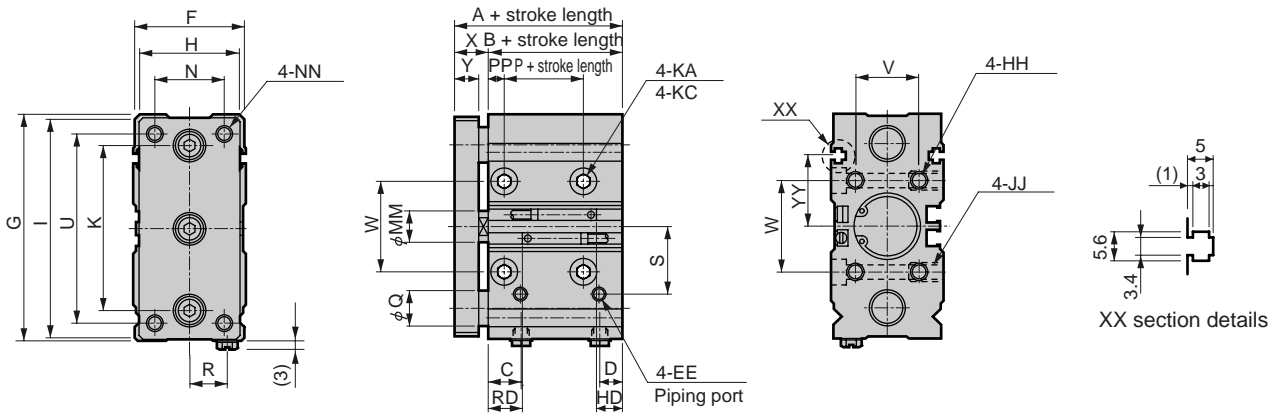
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Dimensions: $\phi 20$, $\phi 25$

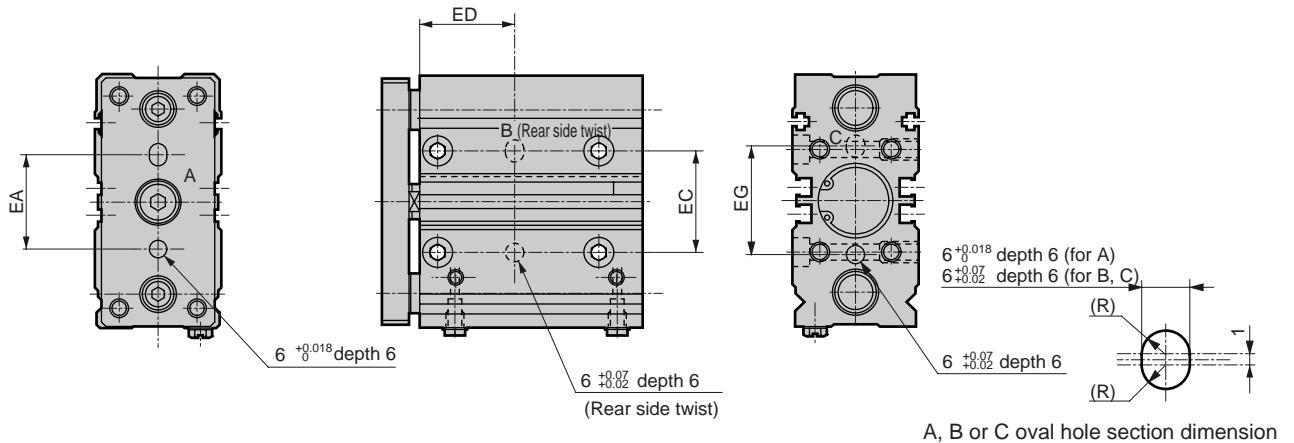


- Standard single rod type STS-M_B
- Corrosion proof STS-M_B-M/M1



- With dowel hole STS-M_B-E

(Dimensions other than those listed below are the same as the double acting standard single rod type .)



A, B or C oval hole section dimension

Symbol	Standard stroke length (mm)	A	B	C	D	EE	F	G	H	HH	I	JJ	K	KA			
Bore size (mm)	25, 50	$\phi 20$	53	40	12	8	M5	38	83	36	M6 depth 12	81	M6 depth 12	59	5.2 penetrating		
		$\phi 25$	54	41	12	9	M5	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating		
Symbol	KC	MM	N	NN	P	PP	Q		R	S	U	V	W	X	Y	YY	
Bore size (mm)	9.5 spot face depth 5.4	10	24	M6 penetrating	20	6	STS-M		13	24	69	20	31	$13 \frac{0}{-2}$	9	25	
							STB-M	STB-B									
Bore size (mm)	9.5 spot face depth 5.4	12	26	M6 penetrating	20	6	STS-M		14	26	72	24	35	$13 \frac{0}{-2}$	9	27	
							STB-M	STB-B									
Symbol	RD	HD	EA	EC	EG	ED											
Bore size (mm)	$\phi 20$	12	9.5	30	31	33	$14 + \frac{\text{Stroke length}}{2}$										
	$\phi 25$	13	9	32	35	37	$14.5 + \frac{\text{Stroke length}}{2}$										

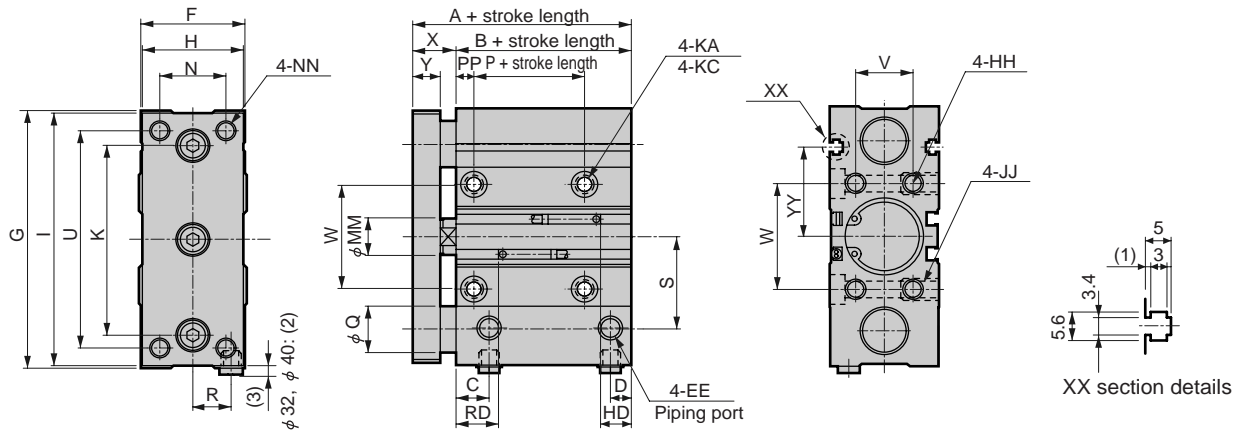
Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Dimensions: ϕ 32, ϕ 40, ϕ 50, ϕ 63

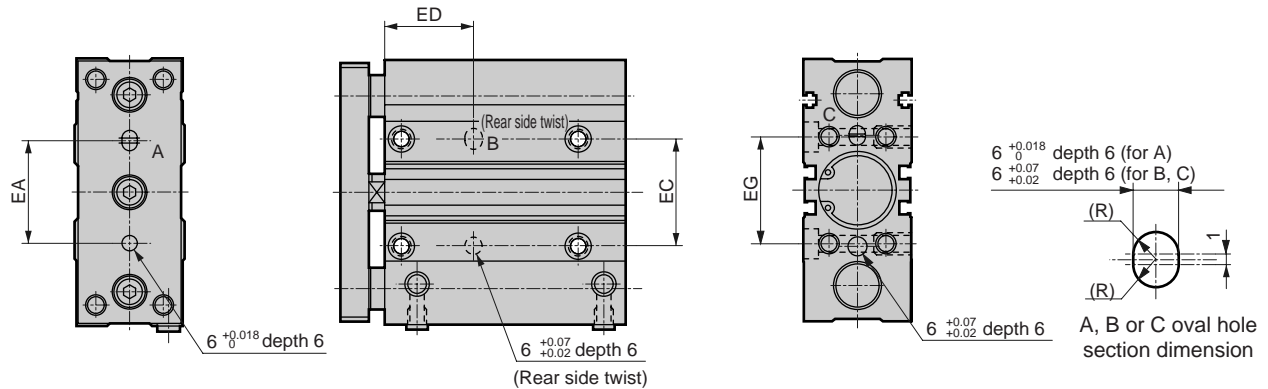


- Standard single rod type STS-M_B
- Corrosion proof STS-M_B-M/M1



- With dowel hole STS-M_B-E

(Dimensions other than those listed below are the same as double acting standard single rod type.)



Symbol	Standard stroke length (mm)	A	B	C	D	EE	F	G	H	HH	I	JJ	K	KA		
ϕ 32	25, 50	68	49	14	10.5	Rc1/8	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating		
ϕ 40		72	53	14.5	12	Rc1/8	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating		
ϕ 50		77	55	16	12.5	Rc1/4	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating		
ϕ 63		83	61	17.5	17.5	Rc1/4	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating		
Symbol	KC	MM	N	NN	P	PP	Q		R	S	U	V	W	X	Y	YY
ϕ 32	11 spot face depth 6.5	16	29	M8 penetrating	22	7	20	16	16	39	93	25	45	19 $\frac{0}{-2}$	12	39
ϕ 40	11 spot face depth 6.5	16	34	M8 penetrating	25	7	20	16	18	43	102	32	54	19 $\frac{0}{-2}$	12	42
ϕ 50	14 spot face depth 8.6	20	44	M10 penetrating	26	8	25	20	22	49	125	38	66	22 $\frac{0}{-2}$	16	49
ϕ 63	14 spot face depth 8.6	20	55	M10 penetrating	26	8	25	20	26	56	140	50	79	22 $\frac{0}{-2}$	16	56
Symbol	RD	HD	EA	EC	EG	ED										
ϕ 32	17.5	13.5	42	45	46	17.5 + $\frac{\text{Stroke length}}{2}$										
ϕ 40	21	14	45	54	55	19.5 + $\frac{\text{Stroke length}}{2}$										
ϕ 50	22	16	55	66	69	19.5 + $\frac{\text{Stroke length}}{2}$										
ϕ 63	20	23	62	79	82	22.5 + $\frac{\text{Stroke length}}{2}$										

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

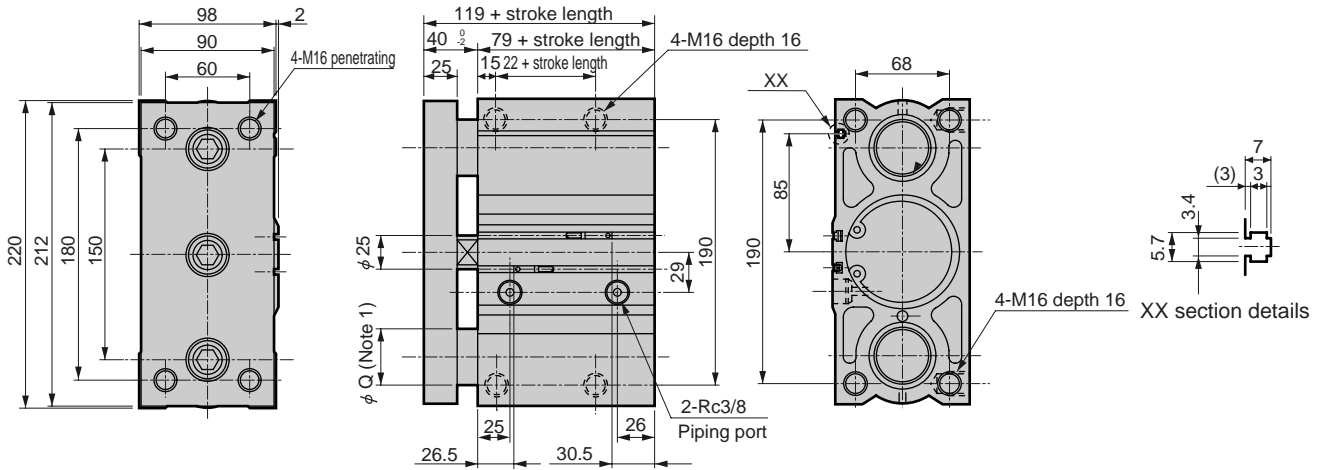
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC

Ending
Guided cylinder
Combined functions

Dimensions: $\phi 80$



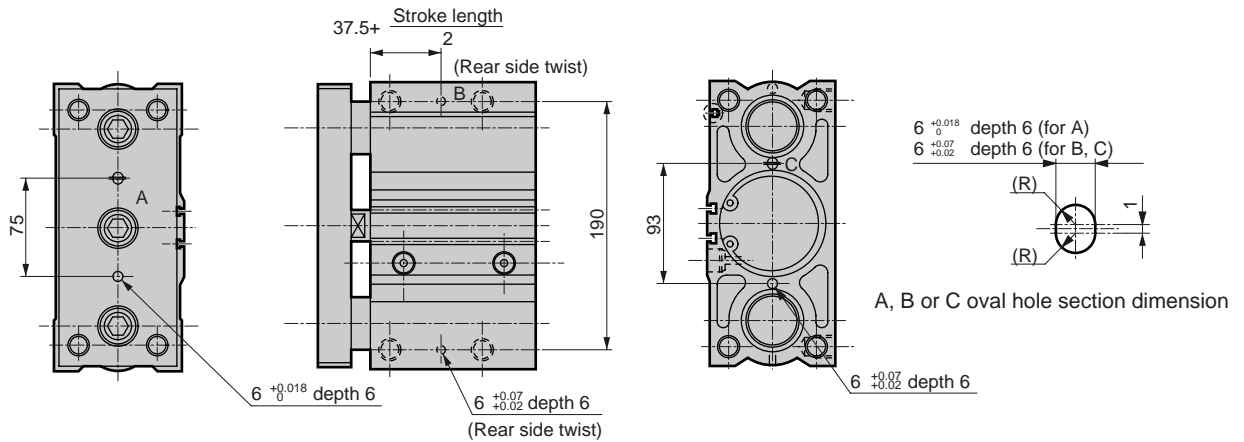
- Standard single rod type STS-M_B
- Corrosion proof STS-M_B-M/M1



Note 1: Dimension Q is $\phi 40$ for M (slide bearings) and $\phi 35$ for B (ball bearings).

- With dowel hole STS-M_B-E

(Dimensions other than those listed below are the same as the double acting standard single rod type .)



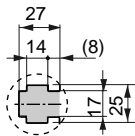
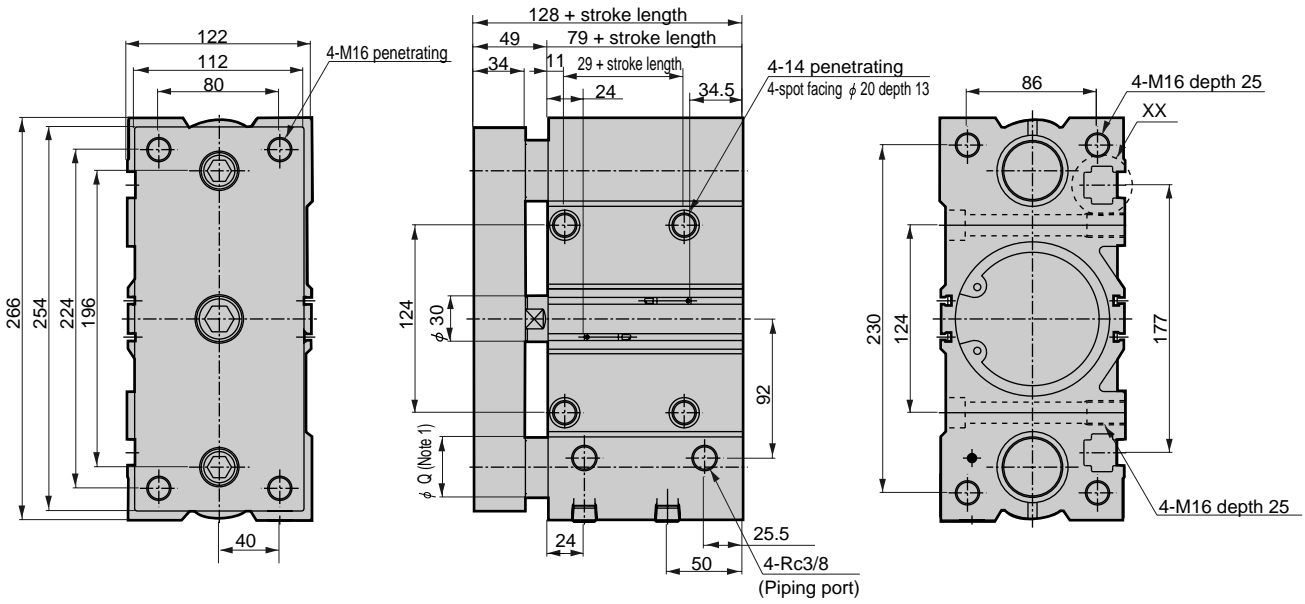
Note 2: Each dimension is the same as the next longer standard stroke length for custom stroke length. Standard stroke lengths for $\phi 80$ are 4 types (25, 50, 75, 100mm).

Note 3: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Dimensions: $\phi 100$



- Standard single rod type STS-M
- Corrosion proof STS-M-M/M1
- Copper and PTFE free type STS-M-P6

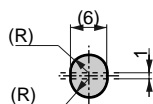
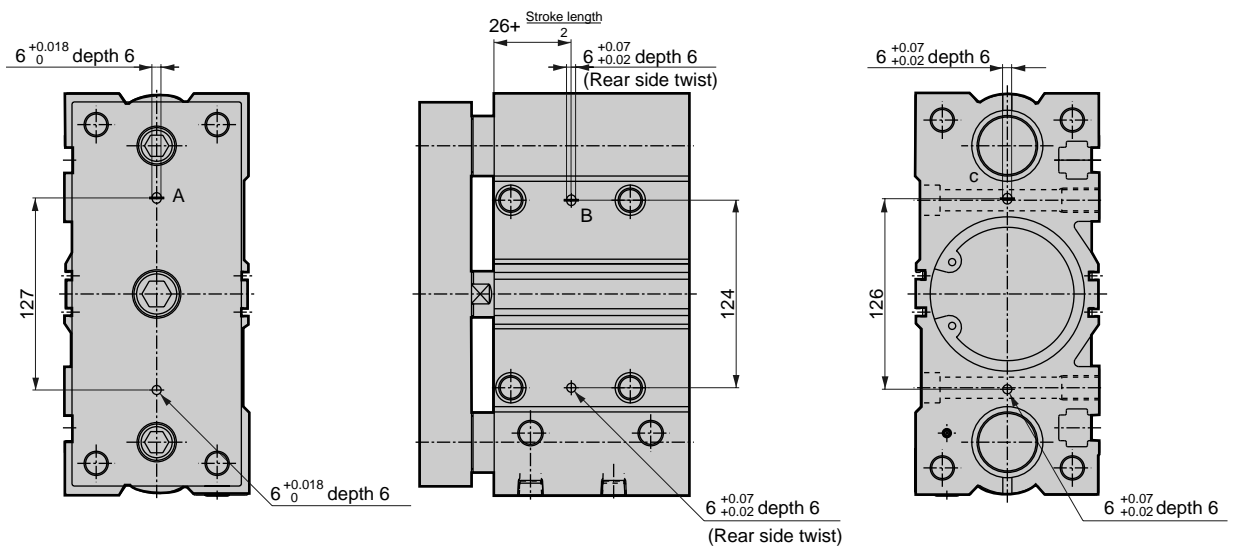


XX section details

Note 1: Dimension Q is $\phi 40$ for M (slide bearings) and $\phi 35$ for B (ball bearings).
 Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

● With dowel hole STS-M-E

(Dimensions other than those listed below are the same as the standard single rod type.)



A/B/C oval hole section dimension

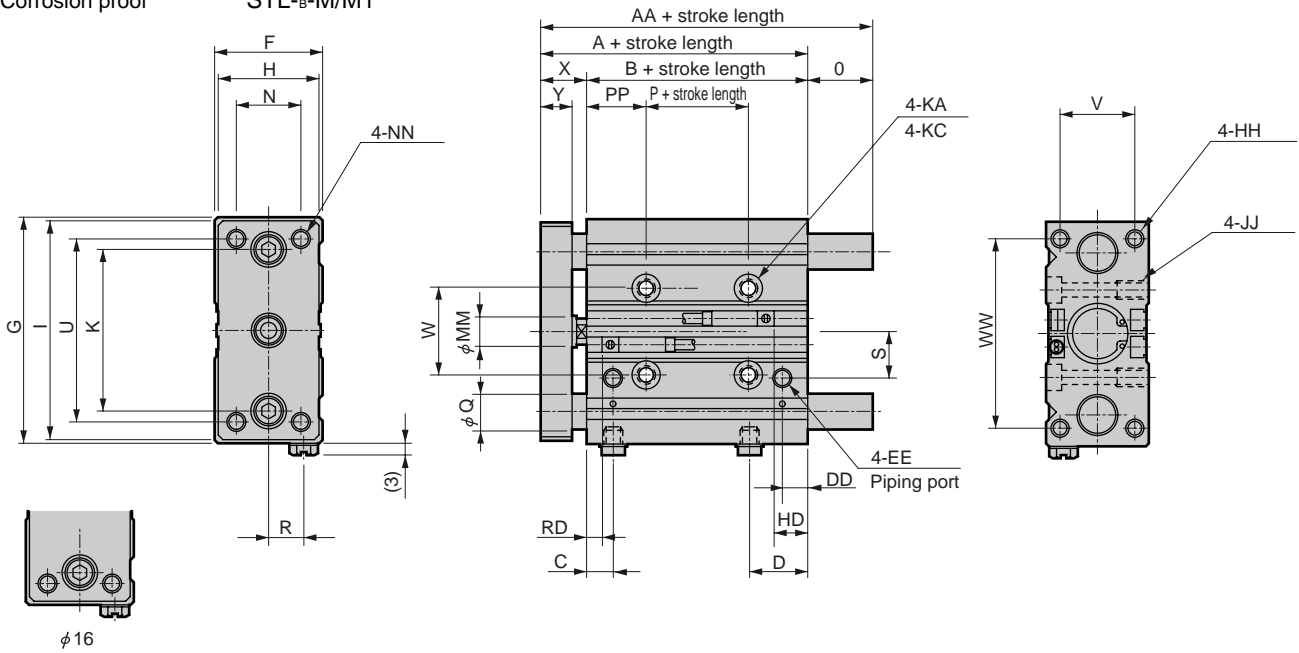
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Dimensions: $\phi 8$, $\phi 12$, $\phi 16$

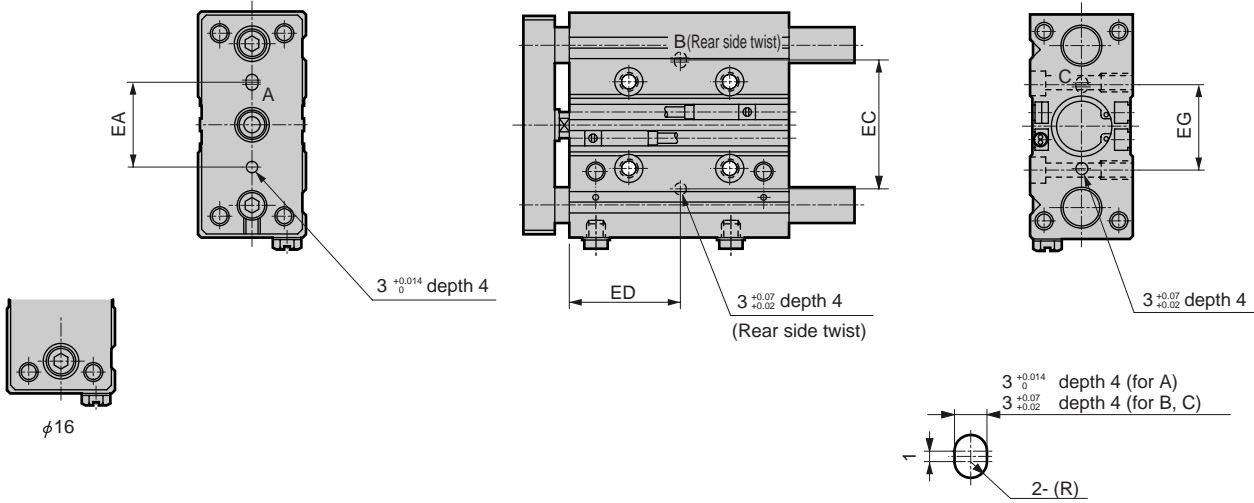


- Standard single rod type STL-M_B
- Corrosion proof STL-M_B-M/M1



- With dowel hole STL-M_B-E

(Dimensions other than those listed below are the same as the double acting standard single rod type.)



A, B or C oval hole section dimension

Symbol	Standard stroke length (mm)	A	AA	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA		
$\phi 8$	50, 75, 100, 125, 150, 175, 200	40	46	28	11	14.5	6.5	M5	24	53	22	M4 depth 8	51	M4 depth 10	40	3.3 penetrating		
$\phi 12$		44	53.5	32	7.5	14.5	7.5	M5	26	58	24	M4 depth 8	56	M4 depth 10	41	3.3 penetrating		
$\phi 16$		45	64	32	7.5	17	7.5	M5	30	64	28	M5 depth 10	62	M5 depth 10	46	4.3 penetrating		
Symbol	KC	MM	N	NN	O	P	PP	Q		R	S	U	V	W	WW	X	Y	
$\phi 8$	6.5 spot face depth 3.3	4	15	M4 penetrating	6	-10	20	STL-M	STL-B	5	7.5	13.5	43	16	25	45	12 ⁰ _{-1.5}	8
$\phi 12$	6.5 spot face depth 3.3	6	16	M4 penetrating	9.5	-2	17	8	6	8	8	12.5	48	17	23	50	12 ⁰ _{-1.5}	8
$\phi 16$	8 spot face depth 4.4	8	18	M5 penetrating	19	-2	17	10	8	10	13	52	22	25	54	13 ⁰ _{-1.5}	9	
Symbol	RD	HD	EA	EC	ED		EG											
$\phi 8$	6.5	2.5	20	25	15 + $\frac{\text{Stroke length}}{2}$		20											
$\phi 12$	5	8.5	23	34	16 + $\frac{\text{Stroke length}}{2}$		20											
$\phi 16$	4.5	9.5	24	36	16 + $\frac{\text{Stroke length}}{2}$		24											

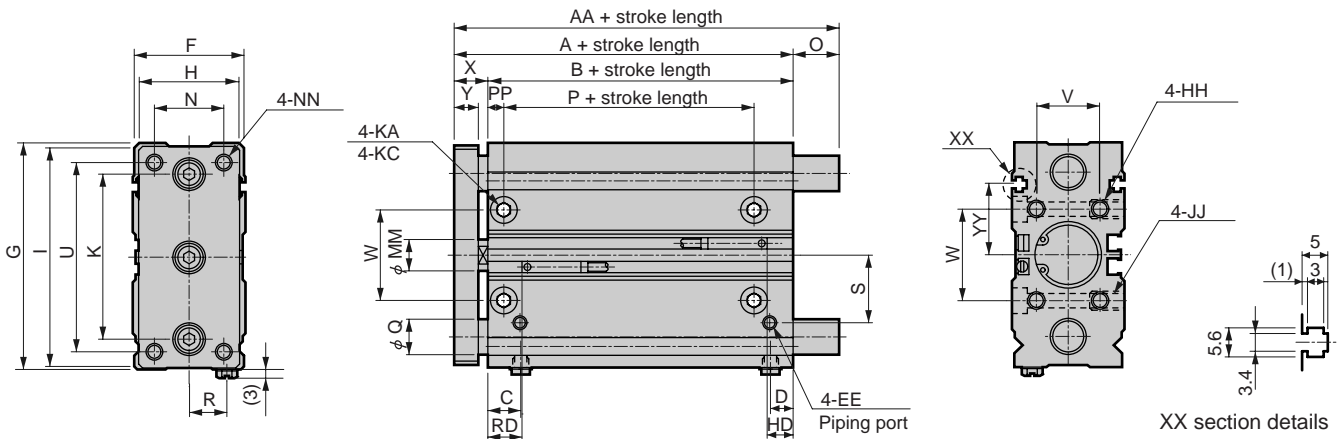
Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V switch.

Dimensions: $\phi 20, \phi 25$

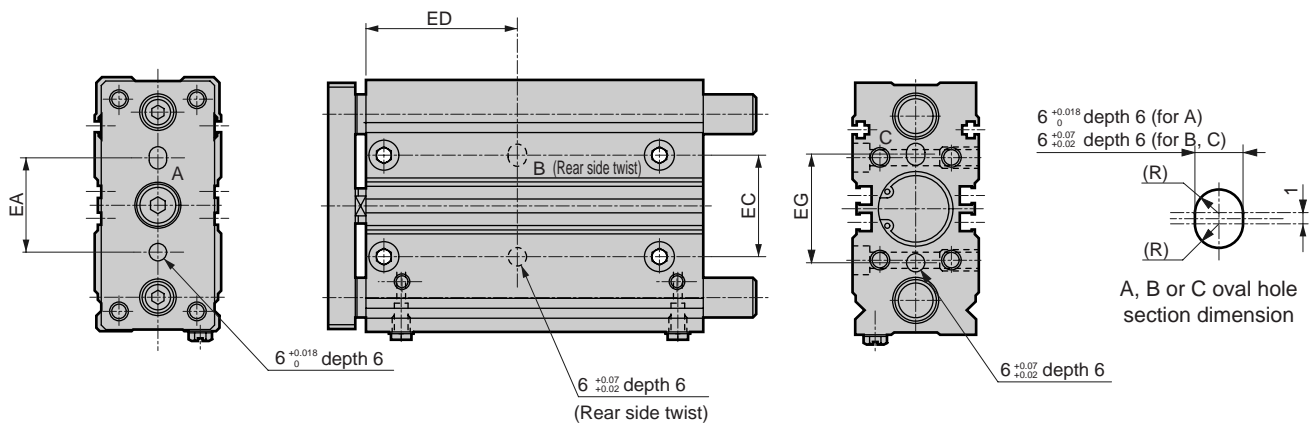


- Standard single rod type $STL-B^M$
- Corrosion proof $STL-B^M-M/M1$



● With dowel hole $STL-B^M-E$

(Dimensions other than those listed below are the same as the double acting standard single rod type .)



Symbol	Standard stroke length (mm)													A	AA	B	C	D	EE	F	G	H	HH	I	JJ	K
$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225,													53	72	40	12	8	M5	38	83	36	M6 depth 12	81	M6 depth 12	59
$\phi 25$	250, 275, 300, 325, 350, 375, 400													54	72	41	12	9	M5	42	86	38	M6 depth 12	84	M6 depth 12	63
Symbol	KA	KC	MM	N	NN	O	P	PP	Q		R	S	U	V	W	X	Y									
Bore size (mm)									STL-M	STL-B																
$\phi 20$	5.2 penetrating	9.5 spot face depth 5.4	10	24	M6 penetrating	19	20	6	14	12	13	24	69	20	31	13.0 ⁰ / ₂	9									
$\phi 25$	5.2 penetrating	9.5 spot face depth 5.4	12	26	M6 penetrating	18	20	6	14	12	14	26	72	24	35	13.0 ⁰ / ₂	9									
Symbol	YY	RD	HD	EA	EC	EG	ED																			
Bore size (mm)																										
$\phi 20$	25	12	9.5	30	31	33	14.0 + ^{Stroke length} / ₂																			
$\phi 25$	27	13	9	32	35	37	14.5 + ^{Stroke length} / ₂																			

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

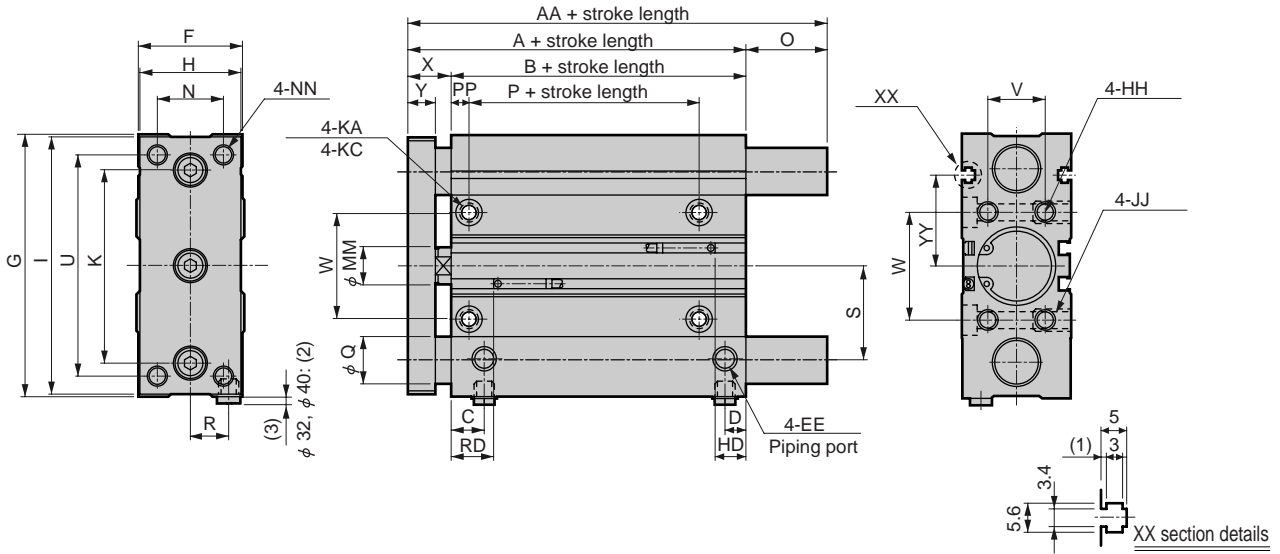
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STSL**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

Ending
Guided cylinder
Combined functions

Dimensions: ϕ 32, ϕ 40, ϕ 50, ϕ 63

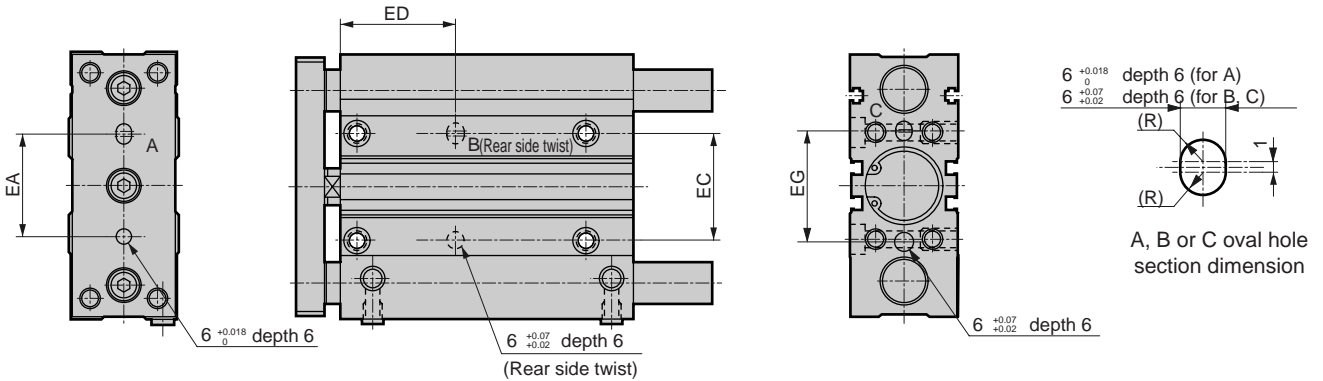


- Standard single rod type STL-M_B
- Corrosion proof STL-M_B-M/M1



- With dowel hole STL-M_B-E

(Dimensions other than those listed below are the same as the double acting standard single rod type .)



Symbol	Standard stroke length (mm)	A	AA	B	C	D	EE	F	G	H	HH	I	JJ	K	KA
ϕ 32	50, 75, 100, 125, 150,	68	102	49	14	10.5	Rc1/8	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating
ϕ 40	175, 200, 225, 250, 275,	72	102	53	14.5	12	Rc1/8	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating
ϕ 50	300, 325, 350, 375, 400	77	125	55	16	12.5	Rc1/4	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating
ϕ 63		83	125	61	17.5	17.5	Rc1/4	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating

Symbol	KC	MM	N	NN	O	P	PP	Q		R	S	U	V	W	X	Y	YY	RD	HD	EA
								STL-M	STL-B											
ϕ 32	11 spot face depth 6.5	16	29	M8 penetrating	34	22	7	20	16	16	39	93	25	45	19 ⁰ / ₋₂	12	39	17.5	13.5	42
ϕ 40	11 spot face depth 6.5	16	34	M8 penetrating	30	25	7	20	16	18	43	102	32	54	19 ⁰ / ₋₂	12	42	21	14	45
ϕ 50	14 spot face depth 8.6	20	44	M10 penetrating	48	26	8	25	20	22	49	125	38	66	22 ⁰ / ₋₂	16	49	22	16	55
ϕ 63	14 spot face depth 8.6	20	55	M10 penetrating	42	26	8	25	20	26	56	140	50	79	22 ⁰ / ₋₂	16	56	20	23	62

Symbol	EC	EG	ED
ϕ 32	45	46	17.5 + $\frac{\text{Stroke length}}{2}$
ϕ 40	54	55	19.5 + $\frac{\text{Stroke length}}{2}$
ϕ 50	66	69	19.5 + $\frac{\text{Stroke length}}{2}$
ϕ 63	79	82	22.5 + $\frac{\text{Stroke length}}{2}$

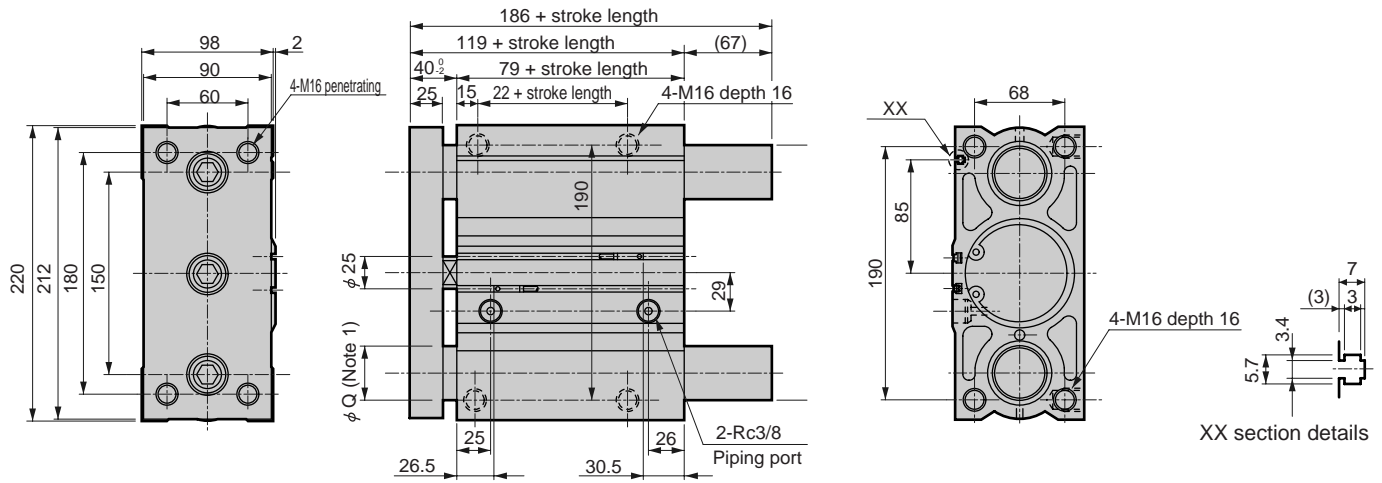
Note 1: Dimensions other than above are the same as the standard type. Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Dimensions: $\phi 80$



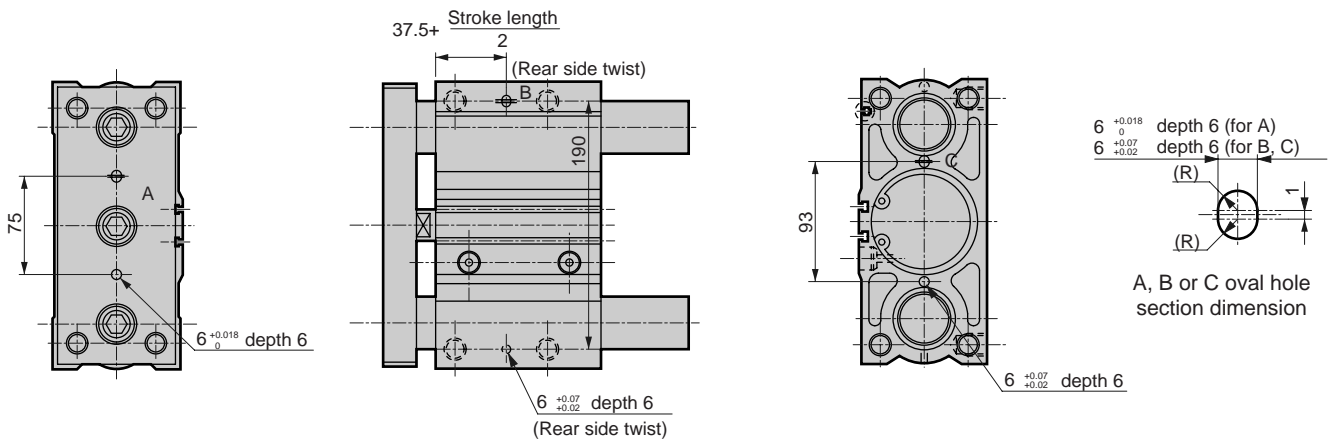
- Standard single rod type STL-M
- Corrosion proof STL-M-M/M1



Note 1: Dimension Q is $\phi 40$ for M (slide bearings) and $\phi 35$ for B (ball bearings).

- With dowel hole STL-M-E

(Dimensions other than those listed below are the same as the standard type .)



Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length. Increment of $\phi 80$ standard stroke is per 25mm between 75 to 400mm.

Note 2: Refer to the pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

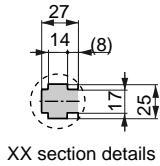
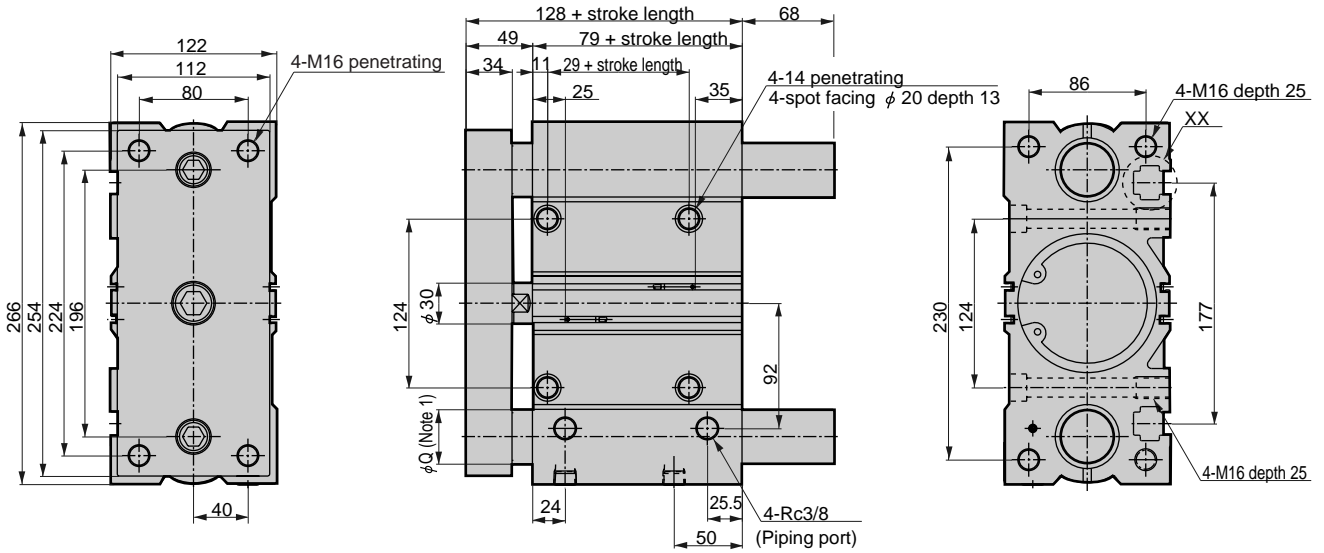
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STSL
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Dimensions: $\phi 100$

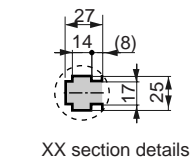
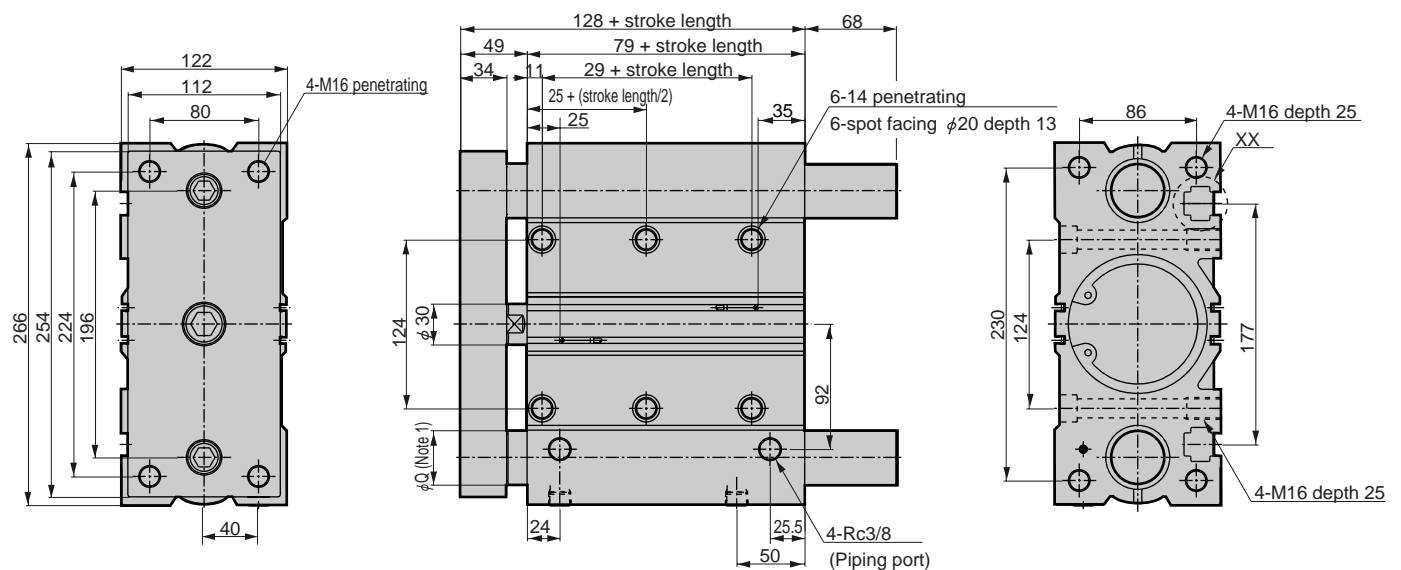
- Standard single rod type STL-M_B
- Corrosion proof STL-M_B-M/M1
- Copper and PTFE free type STL-M_B-P6

<100 mm stroke or less>



- Note 1: Dimension Q is $\phi 40$ for M (metal bush bearings) and $\phi 35$ for B (ball bearings).
- Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

<125 mm stroke and over>



- Note 1: Dimension Q is $\phi 40$ for M (slide bearings) and $\phi 35$ for B (ball bearings).

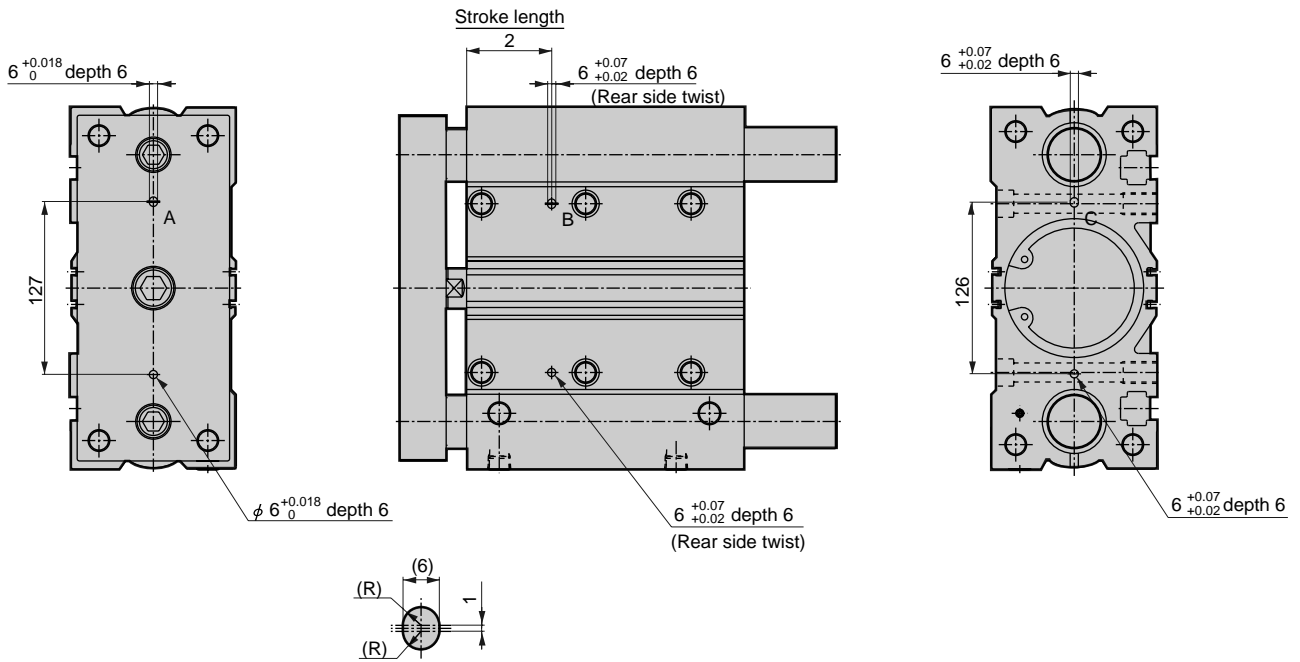
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STSL**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Dimensions: $\phi 100$



● Type with dowel hole

STL-M-E (dimensions other than those listed below are the same as the standard single rod type.)



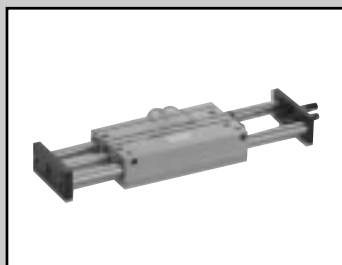
A/B/C oval hole section dimension

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Guided cylinder Double acting stroke adjustable type

STS/STL-MP Series



● Bore size: $\phi 8$, $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$,
 $\phi 40$, $\phi 50$, $\phi 63$, $\phi 80$

JIS symbol



Specifications

Descriptions	STS-MP/BP STL-MP/BP											
Bore size mm	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$		
Actuation	Double acting stroke adjustable type											
Working fluid	Compressed air											
Max. working pressure MPa	1.0											
Min. working pressure MPa	0.2					0.15						
Withstanding pressure MPa	1.6											
Ambient temperature $^{\circ}\text{C}$	-10 to 60 (no freezing)											
Port size	M5					Rc1/8		Rc1/4		Rc3/8		
Stroke tolerance mm	+2.0 0											
Working piston speed mm/s	50 to 500								50 to 300			
Cushion	With rubber cushioned and extend time shock absorber											
Adjustable stroke range mm	25											
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)											
Allowable energy absorption J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510		

Stroke length

● Short stroke STS

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 8$	10, 20, 30, 40, 50	50	10	5 With 1 or 2 switches
$\phi 12$				
$\phi 16$				
$\phi 20$	25, 50	50	10	5 With 1 or 2 switches
$\phi 25$				
$\phi 32$				
$\phi 40$				
$\phi 50$	25, 50, 75, 100	100		
$\phi 63$				
$\phi 80$				

● Long stroke STL

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 8$	50, 75, 100, 125, 150, 175, 200	200		
$\phi 12$				
$\phi 16$				
$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	50	50 With 1 or 2 switches
$\phi 25$				
$\phi 32$				
$\phi 40$				
$\phi 50$				
$\phi 63$	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		75	75 With 1 or 2 switches
$\phi 80$				

Switch specifications

- 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (w/o light), serial connection			Programmable controller, relay	
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC		10 to 30 VDC	30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA		5 to 20 mA (Note 1)	100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)		LED (ON lighting) Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)		Without indicator light			LED (ON lighting)	
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC		1 mA or less		10 μA or less			0mA					

- With preventive maintenance output

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

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C.
(5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire
	T2YD
Applications	Programmable controller
Light	Red/green LED (ON lighting)
Load voltage	24 VDC ± 10%
Load current	5 to 20 mA
Internal voltage drop	6 V or less
Leakage current	1.0 mA or less
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)
Insulation resistance	100 MΩ and over with 500 VDC megger
Withstand voltage	No failure impressed at 1000 VAC for one minute
Maximum shock resistance	980m/s ²
Ambient temperature	-10 to +60°C
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance

Note 1. This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

How to order

Short stroke

STS - **M** P - **8** - **10** - **T2H** - **R** - **F**

Long stroke

STL - **M** P - **8** - **50** - **T2H** - **R** - **F**

Model no.

A Bearing method

B Bore size

C Port thread type

D Stroke length

E Switch model no.
Note 1, Note 4

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**
Example) STS-MP-L1-63-50-T2YH3-D-F

2 color indicator, preventive maintenance, strong magnetic field proof switches cannot be installed after purchasing a standard product.
In this case, insert "L1" between **A** and **B** in model no.
Example) STS-MP-L1-63-50-F

F Switch quantity

G Option

Note on model no. selection

Note 1: Switches other than **E** switch model no. are available. (Custom order)

Refer to Ending 1 for the details.

Note: Refer to pages 1526 to 1529 for available variation and options.

Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.

Note 4: T1H/V, T8H/V installation is custom order. Note that T8H/V is not available for $\phi 8$ to $\phi 16$.

<Example of model number>

STS-MP-8-30-T0H-R-F

Model: Guided cylinder, short stroke length standard, stroke adjustment type

- A** Bearing method : Metal bush bearing
- B** Bore size : $\phi 8$ mm
- C** Port thread type : Rc thread
- D** Stroke length : 30mm
- E** Switch model no. : Reed T0H, lead wire length 1m
- F** Switch quantity : One on rod end
- G** Option : Material of end plate: Steel

Symbol	Descriptions			
A Bearing method				
M	Metal bush bearing			
B	Ball bearing			
B Bore size (mm)				
8	$\phi 8$			
12	$\phi 12$			
16	$\phi 16$			
20	$\phi 20$			
25	$\phi 25$			
32	$\phi 32$			
40	$\phi 40$			
50	$\phi 50$			
63	$\phi 63$			
80	$\phi 80$			
C Port thread type				
Blank	Rc thread			
NN	NPT thread ($\phi 32$ and over) custom order			
GN	G thread ($\phi 32$ and over) custom order			
D Stroke length (mm)				
Refer to the following page stroke length table.				
E Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*		1 color indicator type	
T1H*	T1V*	Proximity	1 color indicator type	3-wire
T2H*	T2V*		1 color indicator (custom order)	3-wire
T3H*	T3V*		2 color indicator type	2-wire
T3PH*	T3PV*		2 color indicator type	3-wire
T2YH*	T2YV*		2 color indicator type (W/o light for preventive maintenance output)	3-wire
T3YH*	T3YV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	4-wire
T2YFH*	T2YFV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	3-wire
T3YFH*	T3YFV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	4-wire
T2YMH*	T2YMV*		Off-delay type	2-wire
T3YMH*	T3YMV*		Strong magnetic field proof switch	2-wire
T2YD*	-			
T2YDT*	-			
*Lead wire length				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			
F Switch quantity				
R	One on rod end			
H	One on head end			
D	Two			
T	Three			
G Option				
F	Material of end plate: Steel			
E Note 3	With dowel hole (custom order)			

D Stroke length

Series	Stroke length (mm)	Applicable bore size										
		φ8	φ12	φ16	φ20	φ25	φ32	φ40	φ50	φ63	φ80	
STS	Standard stroke length	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
	100										●	
	Min. stroke length	5										
STL	Standard stroke length	50	●	●	●	●	●	●	●	●	●	●
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●
		250				●	●	●	●	●	●	●
		275				●	●	●	●	●	●	●
		300				●	●	●	●	●	●	●
		325				●	●	●	●	●	●	●
		350				●	●	●	●	●	●	●
375				●	●	●	●	●	●	●		
	400				●	●	●	●	●	●		
	Min. stroke length	50										

Note: Custom stroke length is not available. Adjust stroke by adjustable stroke mechanism.

How to order switch

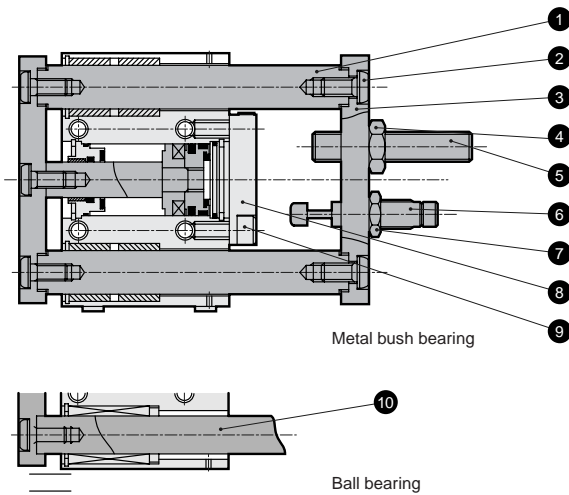
SW - TOV

Switch model no.
(Item E) previous page)

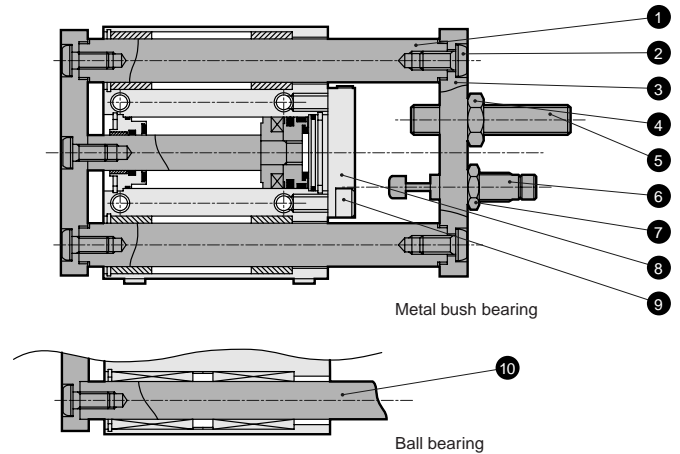
Internal structure and parts list

● Stroke adjustable type

STS-M^BP



STL-M^BP



Parts list (parts other than below are the same as the standard. Refer to pages 1538 to 1542.)

No.	Parts name	Material	Remarks
ST^SL^M-M^BP (stroke adjustable type)			
1	Guide rod	Steel	Industrial chrome plating
2	Hexagon socket head button bolt	Alloy steel	Black galvanizing
3	End plate (H)	Aluminum alloy	Black alumite
4	Hexagon nut	Steel	Blackening
5	Hexagon socket head set screw	Steel	Blackening
6	Shock absorber	—	
7	Hexagon nut	Steel	Blackening
8	Stopper plate	Steel	Black galvanizing
9	Hexagon socket head cap bolt	Alloy steel	Blackening
10	Guide rod	Alloy steel	Industrial chrome plating

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MKG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

Ending

Guided cylinder
Combined functions

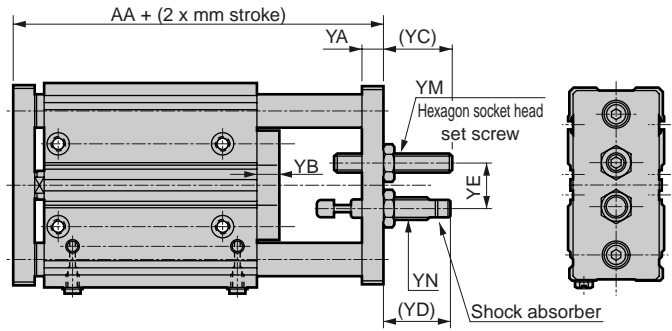
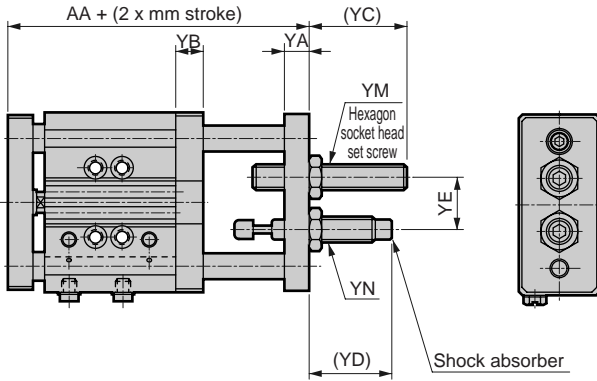


Dimensions

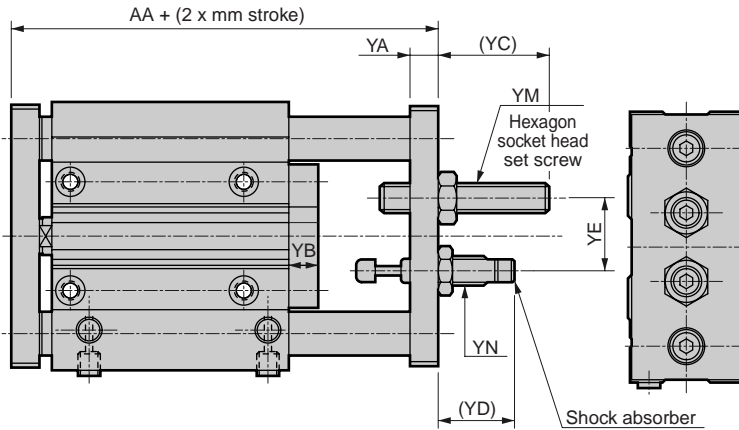
● Stroke adjustable type (dimensions other than those listed below are the same as the double acting single rod type.)

$\phi 8, \phi 12, \phi 16$

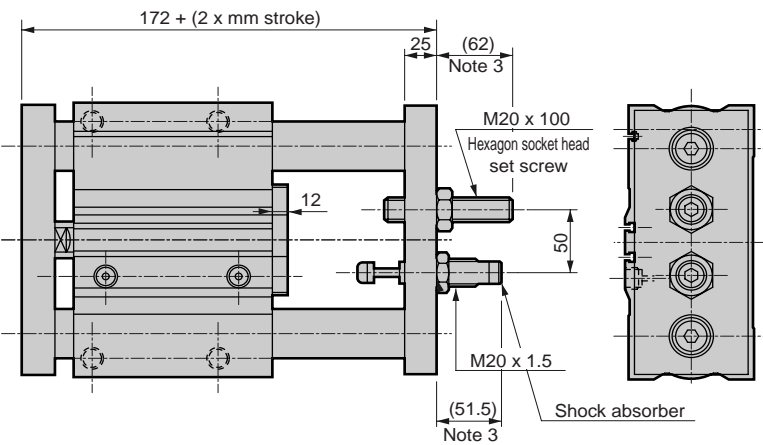
$\phi 20, \phi 25$



$\phi 32, \phi 40, \phi 50, \phi 63$



$\phi 80$



Symbol	AA	YA	YB	YC Note 3	YD Note 3	YE	YM	YN	Shock absorber model no.
$\phi 8$	67.5	8	9	32.5	27.5	17	M8X50	M8X0.75	NCK-00-0.3-C
$\phi 12$	71.5	8	9	32.5	27.5	17	M8X50	M8X0.75	NCK-00-0.3-C
$\phi 16$	73.5	9	9	31.5	26.5	17	M8X50	M8X0.75	NCK-00-0.3-C
$\phi 20$	81.5	9	9	31.5	26.5	19	M8X50	M8X0.75	NCK-00-0.3-C
$\phi 25$	84	9	9	30	29	19	M8X50	M10X1	NCK-00-0.7-C
$\phi 32$	104.5	12	12	47.5	32.5	30	M12X70	M12X1	NCK-00-1.2-C
$\phi 40$	108.5	12	12	47.5	32.5	30	M12X70	M12X1	NCK-00-1.2-C
$\phi 50$	124	16	16	51	52	40	M16X80	M14X1.5	NCK-00-2.6-C
$\phi 63$	130	16	16	51	52	40	M16X80	M14X1.5	NCK-00-2.6-C
$\phi 80$	172	25	12	62	51.5	50	M20X100	M20X1.5	NCK-00-7.0-C

Note 1: Custom stroke length is not available.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Note 3: The YC and YD dimensions indicate the default dimensions.

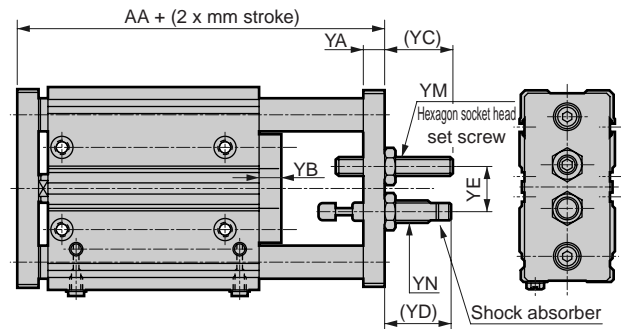
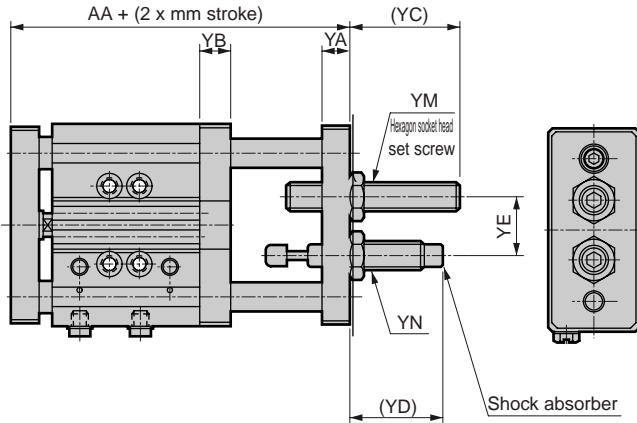
Dimensions



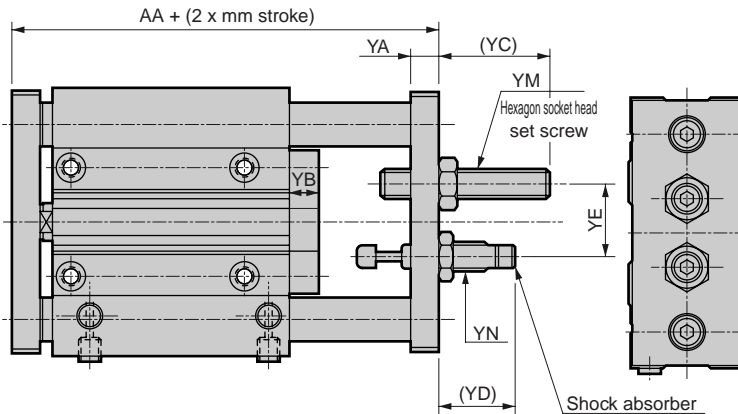
● Stroke adjustable type (dimensions other than those listed below are the same as the double acting single rod type.)

φ 8, φ 12, φ 16

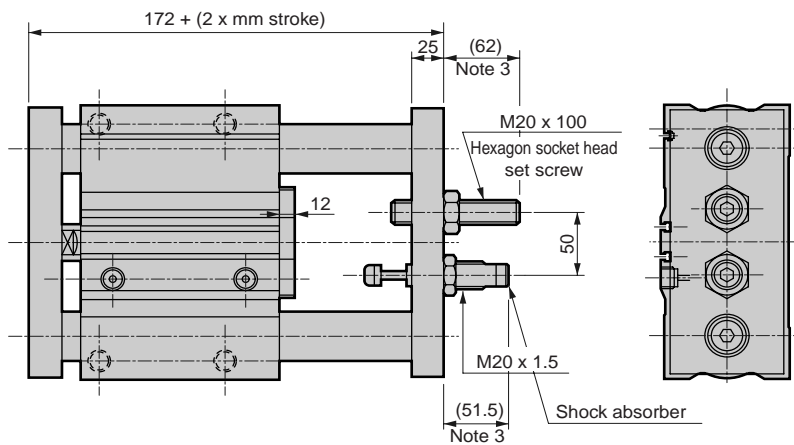
φ 20, φ 25



φ 32, φ 40, φ 50, φ 63



φ 80



Symbol Bore size (mm)	AA	YA	YB	YC Note 3	YD Note 3	YE	YM	YN	Shock absorber model no.
φ 8	67.5	8	9	32.5	27.5	17	M8X50	M8X0.75	NCK-00-0.3-C
φ 12	71.5	8	9	32.5	27.5	17	M8X50	M8X0.75	NCK-00-0.3-C
φ 16	73.5	9	9	31.5	26.5	17	M8X50	M8X0.75	NCK-00-0.3-C
φ 20	81.5	9	9	31.5	26.5	19	M8X50	M8X0.75	NCK-00-0.3-C
φ 25	84	9	9	30	29	19	M8X50	M10X1	NCK-00-0.7-C
φ 32	104.5	12	12	47.5	32.5	30	M12X70	M12X1	NCK-00-1.2-C
φ 40	108.5	12	12	47.5	32.5	30	M12X70	M12X1	NCK-00-1.2-C
φ 50	124	16	16	51	52	40	M16X80	M14X1.5	NCK-00-2.6-C
φ 63	130	16	16	51	52	40	M16X80	M14X1.5	NCK-00-2.6-C
φ 80	172	25	12	62	51.5	50	M20X100	M20X1.5	NCK-00-7.0-C

Note 1: Custom stroke length is not available.

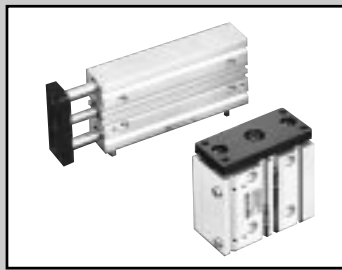
Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Note 3: The YC and YD dimensions indicate the default dimensions.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC

Ending

Guided cylinder
Combined functions



Guided cylinder Double acting heat resistance type

STS/STL-MT Series

● Bore size: $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$,
 $\phi 50$, $\phi 63$, $\phi 80$

JIS symbol



Specifications

Descriptions	STS-MT/BT STL-MT/BT										
	Bore size	mm	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$
Actuation	Double acting heat resistance type										
Working fluid	Compressed air										
Max. working pressure	MPa	1.0									
Min. working pressure	MPa	0.2					0.15				
Withstanding 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									
Working piston speed	mm/s	50 to 500							50 to 300		
Cushion		None									
Lubrication		Not required (apply heat resistance grease periodically.)									
Allowable energy absorption	J	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27	

Stroke length

● Short stroke STS

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 12$	10, 20, 30, 40, 50 25, 50	50	5
$\phi 16$			
$\phi 20$			
$\phi 25$			
$\phi 32$			
$\phi 40$			
$\phi 50$			
$\phi 63$	25, 50, 75, 100	100	
$\phi 80$			

● Long stroke STL

Bore size	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 12$	50, 75, 100, 125, 150, 175, 200	200	50
$\phi 16$			
$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30
$\phi 25$			
$\phi 32$			
$\phi 40$			
$\phi 50$			
$\phi 63$			
$\phi 80$	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

How to order

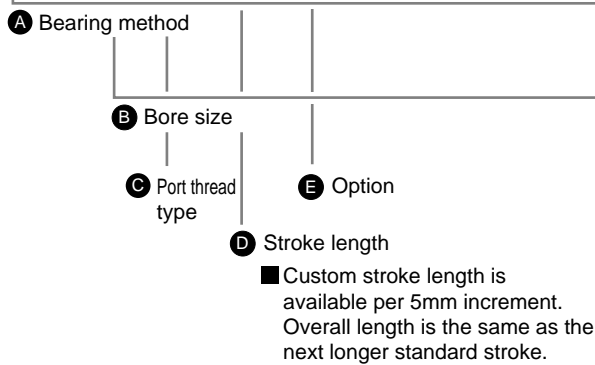
Short stroke

STS - **M** T - **12** - **10** - **F**

Long stroke

STL - **M** T - **12** - **50** - **F**

Model no.



⚠ Note on model no. selection

Note 1: Refer to pages 1526 to 1529 for available variation and option.

Note 2: Only ball bearing (B) is available.

Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.

<Example of model number>

STS-MT-12-30-F

Model: Guided cylinder, short stroke length standard, heat resistance type

- A** Bearing method : Metal bush bearing
- B** Bore size : ϕ 12mm
- C** Port thread type : Rc thread
- D** Stroke length : 30mm
- E** Option : Material of end plate: Steel

D Stroke length

Series	Stroke length (mm)	Applicable bore size									
		ϕ 12	ϕ 16	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80	
STS	10	●	●								
	20	●	●								
	25			●	●	●	●	●	●	●	
	30	●	●								
	40	●	●								
	50	●	●	●	●	●	●	●	●	●	
	75									●	
	100									●	
	Min. stroke length Note 1		5								
	Custom stroke length Note 1, Note 2		Per 5mm								
STL	50	●	●	●	●	●	●	●	●	●	
	75	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	
	125	●	●	●	●	●	●	●	●	●	
	150	●	●	●	●	●	●	●	●	●	
	175	●	●	●	●	●	●	●	●	●	
	200	●	●	●	●	●	●	●	●	●	
	225			●	●	●	●	●	●	●	
	250			●	●	●	●	●	●	●	
	275			●	●	●	●	●	●	●	
	300			●	●	●	●	●	●	●	
	325			●	●	●	●	●	●	●	
	350			●	●	●	●	●	●	●	
	375			●	●	●	●	●	●	●	
400			●	●	●	●	●	●	●		
Min. stroke length Note 1		50			30			55			
Custom stroke length Note 1, Note 2		Per 5mm									

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing (ϕ 20, ϕ 25 are not available)
B Bore size (mm)	
12	ϕ 12
16	ϕ 16
20	ϕ 20
25	ϕ 25
32	ϕ 32
40	ϕ 40
50	ϕ 50
63	ϕ 63
80	ϕ 80
C Port thread type	
Blank	Rc thread
NN	NPT thread (ϕ 32 and over) custom order
GN	G thread (ϕ 32 and over) custom order
D Stroke length (mm)	
Refer to the stroke length table below.	
E Option	
F	Material of end plate: Steel
M	End plate corrosion proof material (aluminum) (custom order) Note 2
M1	End plate corrosion proof material (SUS) (custom order) Note 2
E	With dowel hole (custom order) Note 3

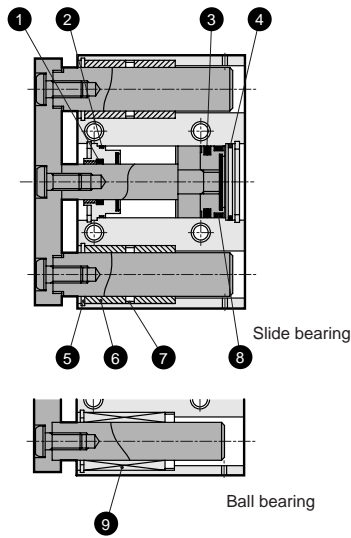
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC

Ending
Guided cylinder
Combined functions

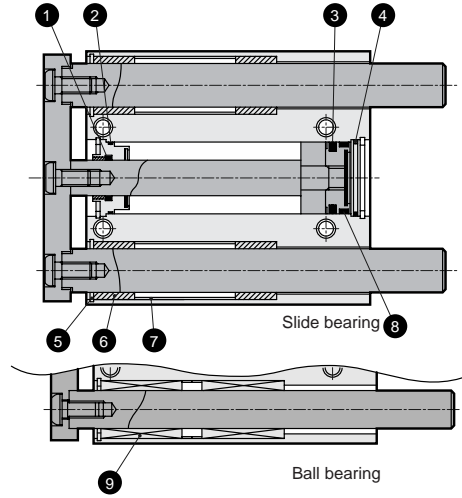
Internal structure and parts list

● Heat resistance type

STS-M^S-BT



STL-M^S-BT



Note 1: A ball bearing of $\phi 20$, $\phi 25$ of heat resistance type is not available.

Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1542.)

No.	Parts name	Material	Remarks
ST^S-L-M^S-BT (heat resistance type)			
1	Rod packing seal	Fluoro rubber	
2	Metal gasket	Fluoro rubber	
3	Piston packing seal	Fluoro rubber	
4	O ring	Fluoro rubber	
5	Round R type snap ring	Steel	Blackening
6	Metal	Solid lubricant bearing	
7	Collar	Aluminum alloy	
8	Wear ring	Tetrafluoroethylene resin ($\phi 12$, $\phi 16$) Special plastic ($\phi 20$ to $\phi 80$)	
9	Ball bush		

Repair parts list

● ST^S-L-M^S-BT (heat resistance type)

Bore size (mm)	Kit No.	Repair parts number
$\phi 12$	STS-T-12K	
$\phi 16$	STS-T-16K	
$\phi 20$	STS-T-20K	
$\phi 25$	STS-T-25K	
$\phi 32$	STS-T-32K	
$\phi 40$	STS-T-40K	
$\phi 50$	STS-T-50K	
$\phi 63$	STS-T-63K	
$\phi 80$	STS-T-80K	

Note: Specify the kit No. when placing an order.

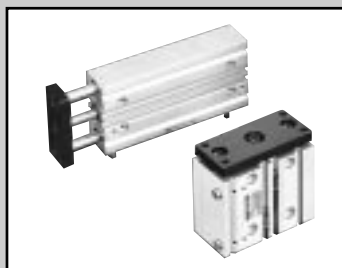
Dimensions

It is the same as the double acting/single rod type STS/STL series. Refer to pages below.

STS Series: page 1545 ($\phi 8$ to $\phi 16$), page 1546 ($\phi 20$, $\phi 25$), page 1547 ($\phi 32$ to $\phi 63$), page 1548 ($\phi 80$)

STL Series: page 1550 ($\phi 8$ to $\phi 16$), page 1551 ($\phi 20$, $\phi 25$), page 1552 ($\phi 32$ to $\phi 63$), page 1553 ($\phi 80$)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
ST5/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending



Guided cylinder Double acting packing seal material fluoro rubber

STS/STL-B^MT2 Series

● Bore size: $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$,
 $\phi 50$, $\phi 63$, $\phi 80$

JIS symbol



Specifications

Descriptions	STS-MT2, BT2 STL-MT2, BT2									
Bore size mm	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	
Actuation	Double acting packing seal material fluoro rubber									
Working fluid	Compressed air									
Max. working pressure MPa	1.0									
Min. working pressure MPa	0.15					0.1				
Withstanding pressure MPa	1.6									
Ambient temperature $^{\circ}\text{C}$	-10 to 60 (no freezing)									
Port size	M5				Rc1/8			Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0									
Working piston speed mm/s	50 to 500							50 to 300		
Cushion	Rubber cushioned									
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)									
Allowable energy absorption J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	

Stroke length

● Short stroke STS

Bore size	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 12$	10, 20, 30, 40, 50 25,50	50	5	5 With 1 or 2 switches
$\phi 16$				
$\phi 20$				
$\phi 25$				
$\phi 32$				
$\phi 40$				
$\phi 50$				
$\phi 63$	25, 50, 75, 100	100		
$\phi 80$				

● Long stroke STL

Bore size	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
$\phi 12$	50, 75, 100, 125, 150,	200	50	50 With 1 or 2 switches
$\phi 16$	175, 200			
$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 With 1 or 2 switches
$\phi 25$				
$\phi 32$				
$\phi 40$				
$\phi 50$				
$\phi 63$	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 With 1 or 2 switches
$\phi 80$				

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

Switch specifications

- 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay			Programmable controller, relay	Programmable controller, relay IC circuit (without indicator light), serial connection			Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Without indicator light		LED (ON lighting)			
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA						

- With preventive maintenance output

Descriptions	Proximity 3-wire		Proximity 4-wire		Proximity 3-wire		Proximity 4-wire		
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V		
Applications	Programmable controller		Programmable controller, relay		Programmable controller		Programmable controller, relay		
Output method	NPN output								
Light	Red/green LED (ON lighting)								
	Yellow LED (ON lighting)								
Output section	Power voltage	-		10 to 28 VDC		-		10 to 28 VDC	
	Load voltage	10 to 30 VDC		30 VDC or less		10 to 30 VDC		30 VDC or less	
	Load current	5 to 20 mA		50 mA or less		5 to 20 mA		50 mA or less	
	Leakage current	1 mA or less		10 μA or less		1.2 mA or less		10 μA or less	
Preventive maintenance output	Load voltage	30 VDC or less							
	Load current	20 mA or less		50 mA or less		5 to 20 mA or less		50 mA or less	
	Leakage current	10 μA or less							

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C. (5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire	
	T2YD	
Applications	Programmable controller	
Light	Red/green LED (ON lighting)	
Load voltage	24 VDC ± 10%	
Load current	5 to 20 mA	
Internal voltage drop	6 V or less	
Leakage current	1.0 mA or less	
Output delay time (Note 1) (ON/ OFF delay)	30 to 60 mS	
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)	
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Maximum shock resistance	980m/s ²	
Ambient temperature	-10 to +60°C	
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance	

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-M_BT2 Series

How to order

Short stroke

STS - **M** T2 - **12** - **10** - **T2H** - **R** - **F**

Long stroke

STL - **M** T2 - **12** - **50** - **T2H** - **R** - **F**

Model no.

A Bearing method

B Bore size

C Port thread type

D Stroke length

■ Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

E Switch model no.
Note 1, Note 4

Note: For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**.

Example) STS-MT2-L1-63-50-T2YH3-D-F
2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product.

In this case, insert "L1" between **A** and **B** in model no.

Example) STS-MT2-L1-63-50-F

⚠ Note on model no. selection

Note 1: Switches other than **E** switch model no. are available. (Custom order)
Refer to Ending 1 for the details.

Note 2: Refer to pages 1526 to 1529 for available variation and options.

Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.

Note 4: T1H/V, T8H/V installation is custom order. Note that T8H/V cannot be installed onto $\phi 12$ and $\phi 16$.

F Switch quantity

G Option

<Example of model number>

STS-MT2-12-30-T0H-R-F

Model: Guided cylinder, short stroke length standard, packing seal material fluorine

- A** Bearing method : Metal bush bearing
- B** Bore size : $\phi 12$ mm
- C** Port thread type : Rc thread
- D** Stroke length : 30mm
- E** Switch model no. : Reed T0H, lead wire length 1m
- F** Switch quantity : One on rod end
- G** Option : Material of end plate: Steel

Symbol	Descriptions			
A Bearing method				
M	Metal bush bearing			
B	Ball bearing			
B Bore size (mm)				
12	$\phi 12$			
16	$\phi 16$			
20	$\phi 20$			
25	$\phi 25$			
32	$\phi 32$			
40	$\phi 40$			
50	$\phi 50$			
63	$\phi 63$			
80	$\phi 80$			
C Port thread type				
Blank	Rc thread			
NN	NPT thread ($\phi 32$ and over) custom order			
GN	G thread ($\phi 32$ and over) custom order			
D Stroke length (mm)				
Refer to the stroke length table on the following page				
E Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*		1 color indicator type	
T1H*	T1V*	Proximity	1 color indicator type	3-wire
T2H*	T2V*		1 color indicator type (custom order)	3-wire
T3H*	T3V*		2 color indicator type	3-wire
T3PH*	T3PV*		2 color indicator type (W/o light for preventive maintenance output)	3-wire
T2YH*	T2YV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	4-wire
T3YH*	T3YV*		Off-delay type	2-wire
T2YFH*	T2YFV*		Strong magnetic field proof switch	2-wire
T3YFH*	T3YFV*			
T2YMH*	T2YMV*			
T3YMH*	T3YMV*			
T2JH*	T2JV*			
T2YD*	-			
T2YDT*	-			
*Lead wire length				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			
F Switch quantity				
R	One on rod end			
H	One on head end			
D	Two			
T	Three			
G Option				
F	Material of end plate: Steel			
M	End plate corrosion proof material (aluminum) (custom order)			
M1	End plate corrosion proof material (SUS) (custom order)			
E <small>Note 3</small>	With dowel hole (custom order)			

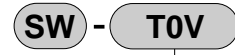
D Stroke length

Series	Stroke length (mm)	Applicable bore size									
		φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	
STS	10	●	●								
	20	●	●								
	25			●	●	●	●	●	●	●	
	30	●	●								
	40	●	●								
	50	●	●	●	●	●	●	●	●	●	
	75									●	
	100									●	
	Min. stroke length Note 1		5								
	Custom stroke length Note 1, Note 2		Per 5mm								
STL	50	●	●	●	●	●	●	●	●	●	
	75	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	
	125	●	●	●	●	●	●	●	●	●	
	150	●	●	●	●	●	●	●	●	●	
	175	●	●	●	●	●	●	●	●	●	
	200	●	●	●	●	●	●	●	●	●	
	225			●	●	●	●	●	●	●	
	250			●	●	●	●	●	●	●	
	275			●	●	●	●	●	●	●	
	300			●	●	●	●	●	●	●	
	325			●	●	●	●	●	●	●	
	350			●	●	●	●	●	●	●	
	375			●	●	●	●	●	●	●	
	400			●	●	●	●	●	●	●	
	Min. stroke length Note 1		50		30					55	
Custom stroke length Note 1, Note 2		Per 5mm									

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch



Switch model no.
(Item E) previous page)

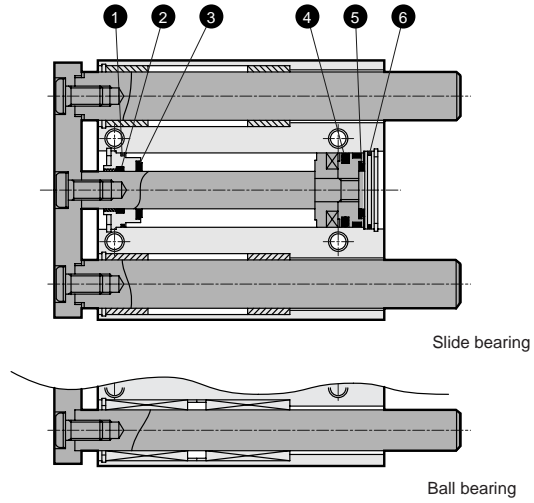
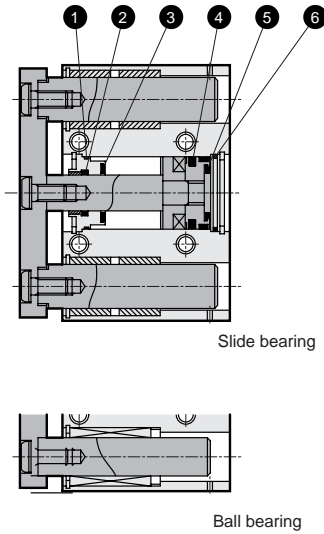
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Guided cylinder
Combined functions

Internal structure and parts list

● Packing seal material fluoro rubber
STS-^M_BT2

STL-^M_BT2



Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1542.)

No.	Parts name	Material	Remarks
ST^S_L-^M_BT2 (packing seal material fluoro rubber)			
1	Metal gasket	Fluoro rubber	
2	Rod packing seal	Fluoro rubber	
3	Cushion rubber (R)	Urethane rubber	
4	Piston packing seal	Fluoro rubber	
5	Cushion rubber (H)	Urethane rubber	
6	O ring	Fluoro rubber	

Repair parts list

● ST^S_L-^M_BT2 (packing seal material fluoro rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 12	STS-T2-12K	
φ 16	STS-T2-16K	
φ 20	STS-T2-20K	
φ 25	STS-T2-25K	
φ 32	STS-T2-32K	
φ 40	STS-T2-40K	
φ 50	STS-T2-50K	
φ 63	STS-T2-63K	
φ 80	STS-T2-80K	

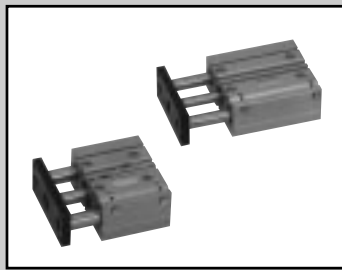
Note: Specify the kit No. when placing an order.

Dimensions

It is the same as the double acting/single rod type STS/STL Series. Refer to pages below.

STS Series: page 1545 (φ 8 to φ 16), page 1546 (φ 20, φ 25), page 1547 (φ 32 to φ 63), page 1548 (φ 80)

STL Series: page 1550 (φ 8 to φ 16), page 1551 (φ 20, φ 25), page 1552 (φ 32 to φ 63), page 1553 (φ 80)



Guided cylinder rubber-air cushioned

STS/STL-M-B-*C Series

● Bore size: ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80

JIS symbol



Specifications

Descriptions		STS/L-M/B-*C				
Bore size	mm	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure	MPa	1.0				
Min. working pressure	MPa	0.2				
Withstanding pressure	MPa	1.6				
Ambient temperature	°C	-10 to 60 (no freezing)				
Port size		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	+2.0 0				
Working piston speed	mm/s	50 to 500			50 to 300	
Cushion		Rubber-air cushioned				
Lubrication		Not required (when lubricating, use turbine oil Class 1 ISO VG32)				
Allowable energy absorption	J	0.401	0.627	0.980	1.560	2.510

Stroke length

· Short stroke STS

Bore size (mm)	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 32	25, 50	50	5	5
ϕ 40				
ϕ 50				
ϕ 63	25, 50, 75, 100	100	10	10
ϕ 80				

With 1 or 2 switches

· Long stroke STL

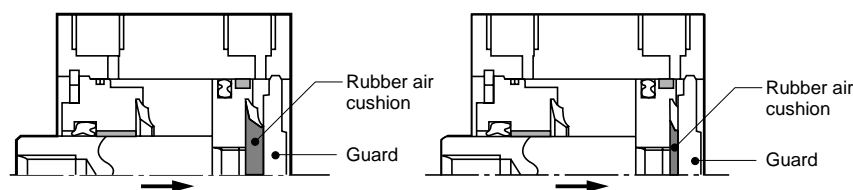
Bore size (mm)	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 32	50, 75, 100, 125, 150,	400	30	30
ϕ 40	175, 200, 225, 250,			
ϕ 50	275, 300, 325, 350,			
ϕ 63	375, 400			
ϕ 80	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55

Note: Custom stroke length is available per 5mm increment.

Overall length is the same as the next longer standard stroke.

With 1 or 2 switches

Rubber-air cushion mechanism

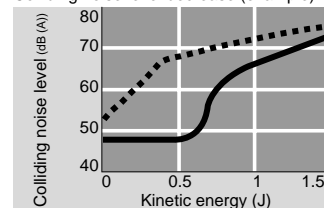


Explanation at PULL

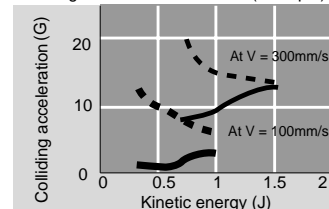
The movement of piston until rubber air cushion and the cover contact, generates an air closed room in the area \blacksquare . The air in the shaded section is compressed as the piston moves, and energy is absorbed. Energy absorbed by the rubber air cushion's compression strain is also calculated at the stroke end.

--- Rubber cushioned cylinder
— Rubber-air cushioned cylinder

Colliding noise level decrease (example)



Colliding acceleration decrease (example)



Switch specifications

- 1 color/2 color indicator

*The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working conditions.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller Relay, small solenoid valve	Programmable controller		Programmable controller, relay			Programmable controller, relay	Programmable controller, relay, IC circuit (without indicator light), serial connection			Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100mA	5 to 20mA (Note 1)		100mA or less		50mA or less	5 to 50mA	7 to 20mA	50mA or less	20mA or less	5 to 50mA	7 to 20mA	7 to 10mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)		Without indicator light			LED (ON lighting)	
Leakage current	1mA or less with 100 VAC 2mA or less with 200 VAC	1mA or less		10 μA or less			0mA						

- With preventive maintenance output

Descriptions	Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
	T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications	Programmable controller		Programmable controller, relay	
Output method	NPN output			
Light	Red/green LED (ON lighting)			
	Preventive maintenance output		Yellow LED (ON lighting)	
Output section	Power voltage	-	10 to 28 VDC	-
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC
	Load current	5 to 20mA	50mA or less	5 to 20mA
	Leakage current	1mA or less	10 μA or less	1.2mA or less
Preventive maintenance output	Load voltage	30 VDC or less		
	Load current	20mA or less	50mA or less	5 to 20mA or less
	Leakage current	10 μA or less		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Maximum load current above: 20mA applies at 25°C. The current is lower than 20mA if ambient temperature around switch is higher than 25°C.
(5 to 10mA, when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire
	T2YD
Applications	Programmable controller
Light	Red/green LED (ON lighting)
Load voltage	24 VDC ±10%
Load current	5 to 20mA
Internal voltage drop	6V or less
Leakage current	1.0mA or less
Output delay time (Note 1) (ON / OFF delay)	30 to 60mS
Lead wire length (standard) (Note 2)	1m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)
Insulation resistance	100MΩ and over with 500 VDC megger
Withstand voltage	No failure impressed at 1000 VAC for one minute
Maximum. shock resistance	980m/s ²
Ambient temperature	-10 to + 60°C
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-M-B-*C Series

How to order

Short stroke

STS - **M** - **32** - **C** - **50** - **T0H** - **R** - **F**

Long stroke

STL - **M** - **32** - **C** - **100** - **T0H** - **D** - **F**

A Bearing method

B Bore size

C Port thread type

Rubber-air cushioned

D Stroke length

- Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.
- The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

E Switch model no. Note 4

F Switch quantity

G Option

⚠ Note on model no. selection

- Note 1: The total length is the same as the next longer standard stroke length.
 Note 2: Refer to pages 1526 to 1529 for available variation and option.
 Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.
 Note 4: T1H/V, T8H/V installation is the custom order.

<Example of model number>

STS-M-32C-50-T0H-R

Model: Guided cylinder, short stroke length rubber-air cushioned

- A** Bearing method : Metal bush bearing
- B** Bore size : ϕ 32mm
- C** Port thread type : Rc thread
- D** Stroke length : 50mm
- E** Switch model no. : Reed T0H, lead wire 1m
- F** Switch quantity : One on rod end

Note: For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**.
 (Example)
 STS-M-L1-63C-50-T2YH3-D-F

How to order switch

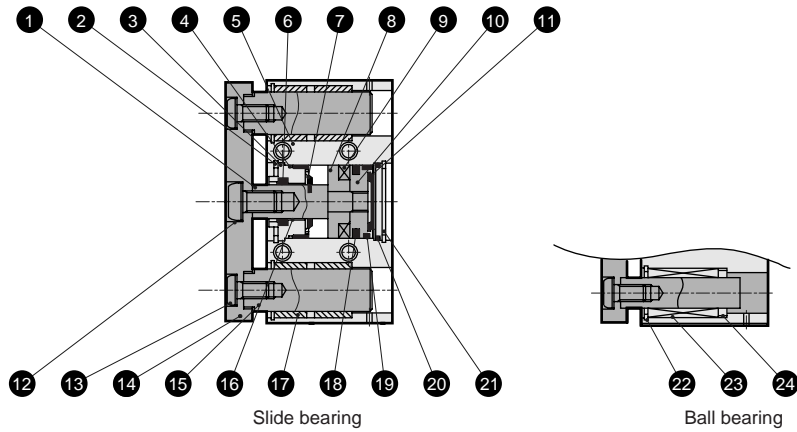
SW - **T0H**

Switch model no.
(Item **E** above)

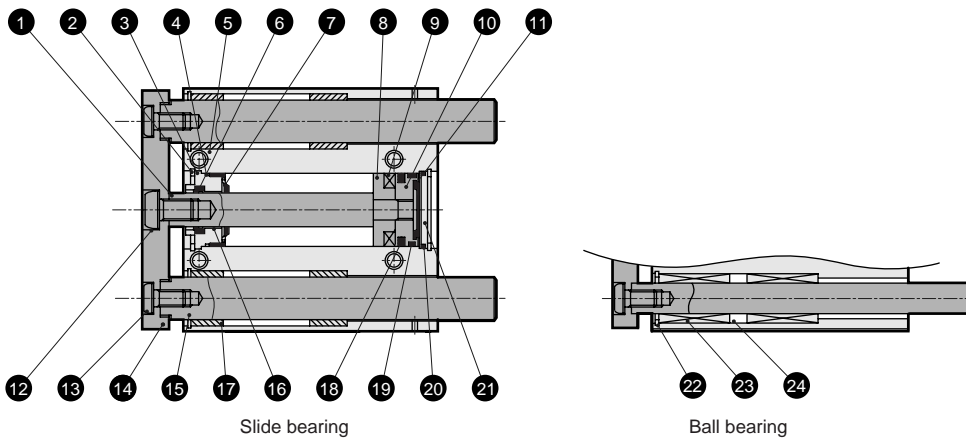
Symbol	Descriptions					
A Bearing method						
M	Metal bush bearing					
B	Ball bearing					
B Bore size (mm)						
32	ϕ 32					
40	ϕ 40					
50	ϕ 50					
63	ϕ 63					
80	ϕ 80					
C Port thread type						
Blank	Rc thread					
N	NPT thread (custom order)					
G	G thread (custom order)					
D Stroke length						
Series	Stroke length (mm)	Applicable bore size				
		ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80
STS	Standard stroke length	25	●	●	●	●
	50	●	●	●	●	●
	75					●
	100					●
	Min. stroke length Note 1	5			10	
	Custom stroke length Note 1	Per 5mm				
STL	50	●	●	●	●	●
	75	●	●	●	●	●
	100	●	●	●	●	●
	125	●	●	●	●	●
	150	●	●	●	●	●
	175	●	●	●	●	●
	200	●	●	●	●	●
	225	●	●	●	●	●
	250	●	●	●	●	●
	275	●	●	●	●	●
	300	●	●	●	●	●
	325	●	●	●	●	●
	350	●	●	●	●	●
375	●	●	●	●	●	
400	●	●	●	●	●	
	Min. stroke length Note 1	30			55	
	Custom stroke length Note 1	Per 5mm				
E Switch model no.						
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire		
T0H*	T0V*	Reed	1 color indicator type	2-wire		
T5H*	T5V*		Without indicator light			
T8H*	T8V*		1 color indicator type			
T1H*	T1V*					
T2H*	T2V*					
T3H*	T3V*	Proximity	1 color indicator type (custom order)	3-wire		
T3PH*	T3PV*		2 color indicator type	2-wire		
T2YH*	T2YV*			3-wire		
T3YH*	T3YV*		2 color indicator type (W/o light for preventive maintenance output)	3-wire		
T2YFH*	T2YFV*			4-wire		
T3YFH*	T3YFV*		2 color indicator type (W/ light for preventive maintenance output (1 color))	3-wire		
T2YMH*	T2YMV*			4-wire		
T3YMH*	T3YMV*	Off-delay type	2-wire			
T2JH*	T2JV*	Strong magnetic field proof switch	2-wire			
T2YD*	—					
T2YDT*	—					
*Lead wire length (m)						
Blank	1m (standard)					
3	3m (option)					
5	5m (option)					
F Switch quantity						
R	One on rod end					
H	One on head end					
D	Two					
G Option						
F	End plate material (steel)					
M	End plate corrosion proof material (aluminum) (custom order)					
M1	End plate corrosion proof material (SUS) (custom order)					
E Note 3	With dowel hole (custom order)					
P6	Copper and PTFE free type (custom order)					

Internal structure and parts list

● STS-^M/_B-32C to 80C (short stroke)



● STL-^M/_B-32C to 80C (long stroke)



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Piston rod	Steel	Industrial chrome plating	13	Hexagon socket head button bolt	Alloy steel	Black galvanizing
2	C type snap ring	Steel	Phosphoric acid salt membrane	14	End plate	Aluminum alloy	Black alumite
3	Rod bushing	Special aluminum alloy	Alumite	15	Guide rod	Steel	Industrial chrome plating
4	Metal gasket	Nitrile rubber		16	Bush	DU dry bearing	
5	Cylinder body	Aluminum alloy	Hard alumite	17	Metal	Oil impregnated bearing alloy	
6	Rod packing seal	Nitrile rubber		18	Piston packing seal	Nitrile rubber	
7	Rubber-air cushion (R)	Urethane rubber		19	Wear ring	Acetar resin	
8	Spacer	Aluminum alloy		20	O ring	Nitrile rubber	
9	Magnet	Plastic		21	Base plate	Aluminum alloy (φ 32 to φ 63), steel (φ 80)	Galvanizing (φ 80)
10	Piston	Aluminum alloy		22	C type snap ring	Steel	Phosphoric acid salt membrane
11	Rubber-air cushion (H)	Special rubber		23	Ball bush		
12	Belleville spring washer	Steel		24	Collar	Aluminum alloy	(No φ 80)

Repair parts list

Bore size (mm)	Kit No.	Repair parts number
φ 32	STS-32CK	
φ 40	STS-40CK	4 6 7 11
φ 50	STS-50CK	18 19 20
φ 63	STS-63CK	
φ 80	STS-80CK	

Dimensions

It is the same as the double acting/single rod type STS/STL Series. Refer to pages below.

STS Series: page 1545 (φ 8 to φ 16), page 1546 (φ 20, φ 25), page 1547 (φ 32 to φ 63), page 1548 (φ 80)

STL Series: page 1550 (φ 8 to φ 16), page 1551 (φ 20, φ 25), page 1552 (φ 32 to φ 63), page 1553 (φ 80)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Technical data

Refer to page 1638 for guided cylinder selection guide.



(Comparison of colliding noise level performance)

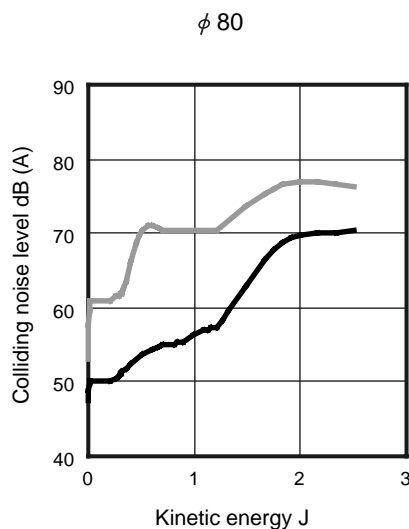
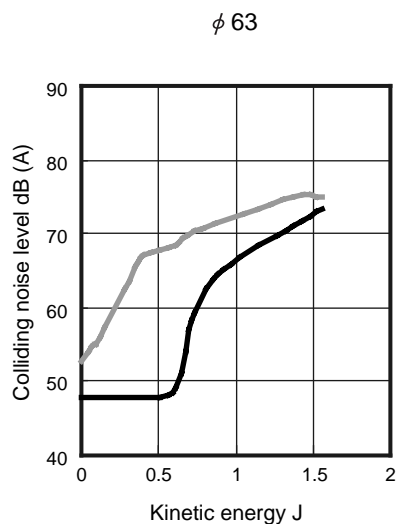
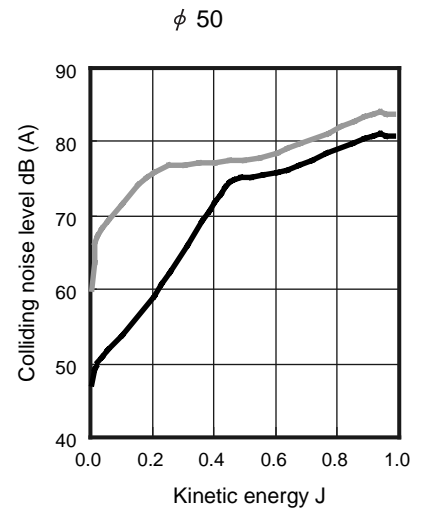
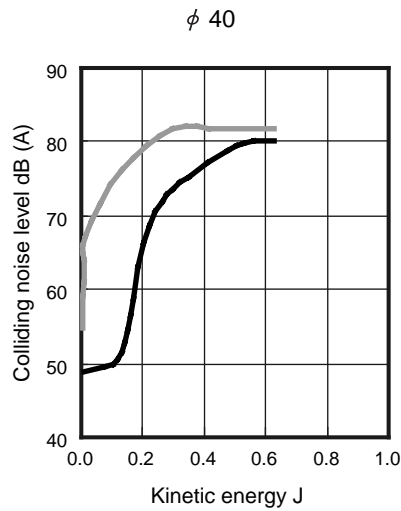
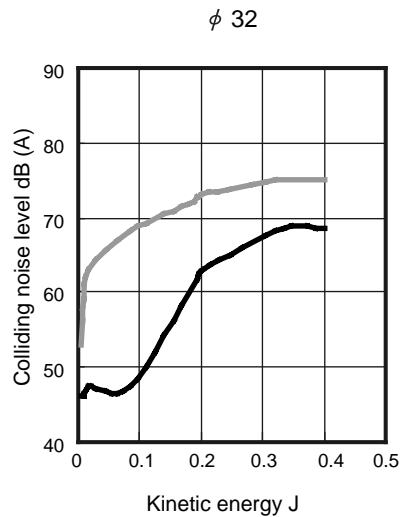
Data show an example of comparison with conditions below.

The number varies depending on the frame rigidity, etc, and not guaranteed values.

(Test conditions)



Cylinder type : STS/L
 Cylinder installation attitude : Vertical rod upward
 Cylinder supply pressure : 0.5MPa
 Noise meter measurement position : 1m from specimen

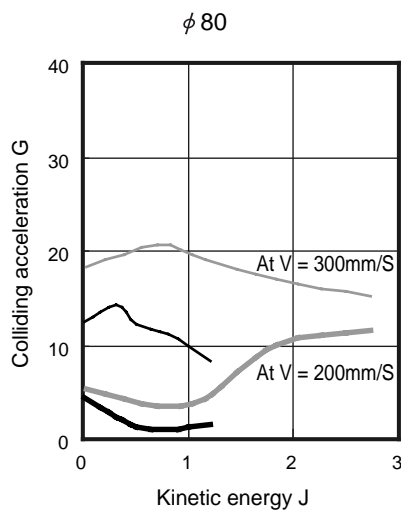
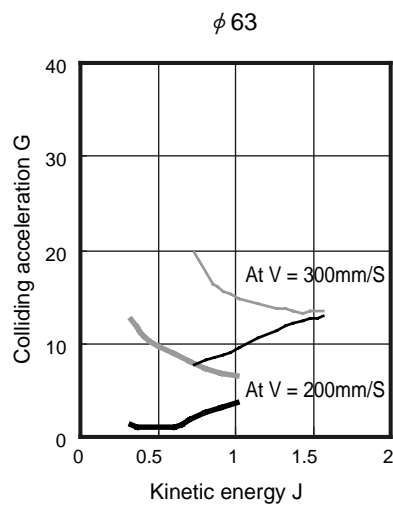
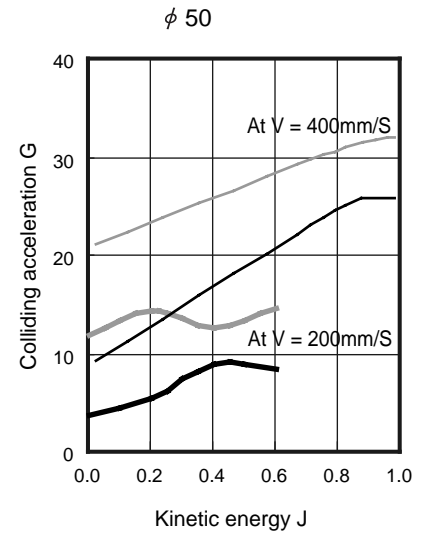
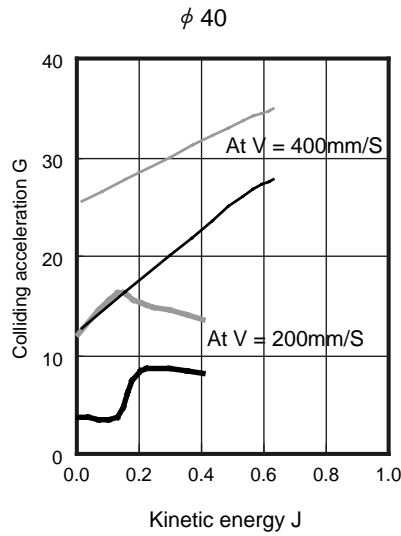
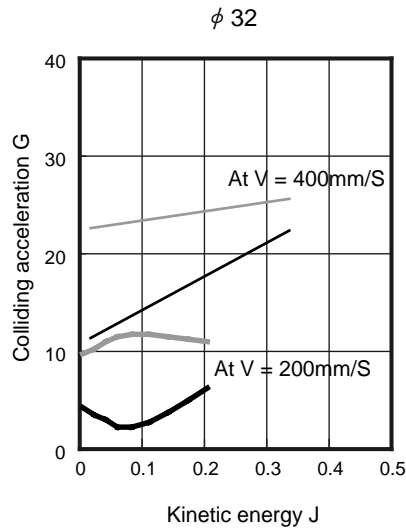
Standard rubber cushion: 
 Rubber-air cushion : 



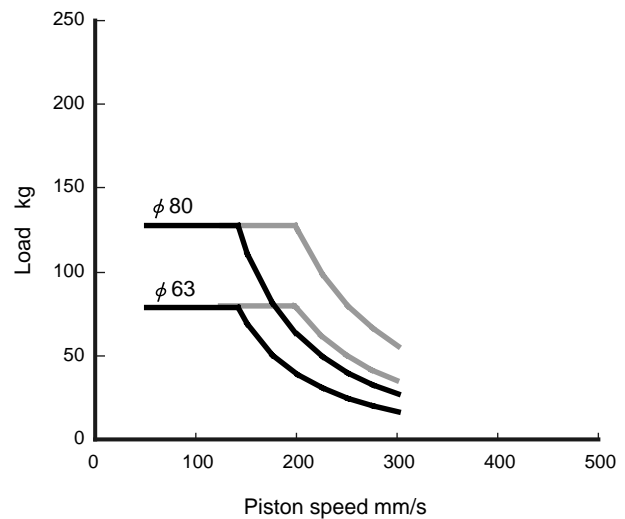
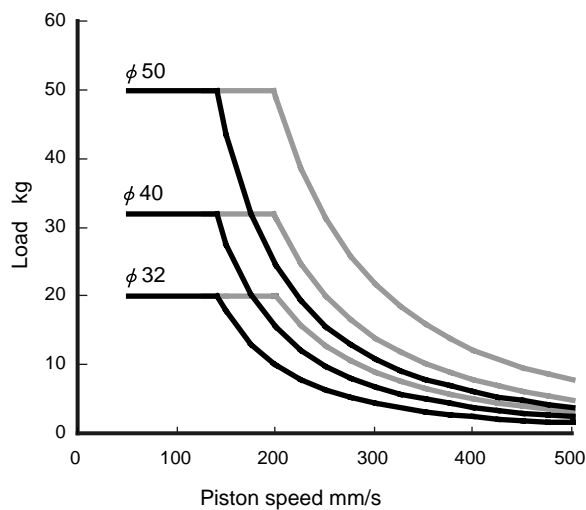
Technical data


(Comparison of colliding acceleration performance)

Standard rubber cushion: 
 Rubber-air cushion : 



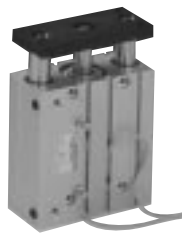
(Allowable energy)



The product is used in the range at the lower left of the curve.
 Use is possible within the range shown with the  line in the graph, but to effectively use the silencing effect, the product should be used within the range shown with the solid line.

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG**
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Guided cylinder
 Combined functions



Guided cylinder Double acting air cushioned

STS/STL-M_BC Series

● Bore size: ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80

JIS symbol



Specifications

Descriptions	STS-MC/BC and STL-MC/BC					
Bore size mm	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80
Actuation	Double acting air cushioned					
Working fluid	Compressed air					
Max. working pressure MPa	1.0					
Min. working pressure MPa	0.15					0.1
Withstanding pressure MPa	1.6					
Ambient temperature °C	-10 to 60 (no freezing)					
Port size	M5	Rc1/8		Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_0$					
Working piston speed mm/s	50 to 500			50 to 300		
Cushion	Rubber cushioned					
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 energy absorption J	1.18	2.27	3.05	3.81	15.64	20.18

Stroke length

· Short stroke STS

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm) note	Min. stroke length with switch (mm) note
ϕ 25	25, 50	50	15	15 With 1 or 2 switches
ϕ 32				
ϕ 40				
ϕ 50				
ϕ 63				
ϕ 80	25, 50, 75, 100	100		

Note: The cushion effect may not be achieved at the minimum stroke or lower, so select the basic type.

· Long stroke STL

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 25	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 With 1 or 2 switches
ϕ 32				
ϕ 40				
ϕ 50				
ϕ 63				
ϕ 80	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375	375	55	55 With 1 or 2 switches

Note: Custom stroke length is available per 1mm increment. (Custom order)

Switch specifications

● 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1 V	T2H/T2V T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay			Programmable controller, relay	Programmable controller, relay (C circuit (without indicator light), serial connection)			Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)		Without indicator light			LED (ON lighting)	
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA						

● With preventive maintenance output

Descriptions	Proximity 3-wire		Proximity 4-wire		Proximity 3-wire		Proximity 4-wire	
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V	
Applications	Programmable controller		Programmable controller, relay		Programmable controller		Programmable controller, relay	
Output method	-		-		-		-	
Light	NPN output		-		-		-	
	Red/green LED (ON lighting)		-		-		-	
Output section	Yellow LED (ON lighting)		-		-		-	
	Power voltage	-	10 to 28 VDC		-	10 to 28 VDC		
Preventive maintenance output	Load voltage	10 to 30 VDC	30 VDC or less		10 to 30 VDC	30 VDC or less		
	Load current	5 to 20 mA	50 mA or less		5 to 20 mA	50 mA or less		
	Leakage current	1 mA or less	10 μA or less		1.2 mA or less	10 μA or less		
	Load voltage	30 VDC or less		-		-		
Preventive maintenance output	Load current	20 mA or less	50 mA or less		5 to 20 mA or less	50 mA or less		
	Leakage current	10 μA or less		-		-		
	Leakage current	10 μA or less		-		-		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C. (5 to 10mA when 60°C)

Switch specifications

● Strong magnetic field proof

Descriptions	Proximity 2-wire	
	T2YD	
Applications	Programmable controller	
Light	Red/green LED (ON lighting)	
Load voltage	24 VDC ±10%	
Load current	5 to 20 mA	
Internal voltage drop	6 V or less	
Leakage current	1.0 mA or less	
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS	
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)	
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000VAC for one minute	
Maximum shock resistance	980m/s ²	
Ambient temperature	-10 to +60 °C	
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance	

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

How to order

● Short stroke

STS - **M** **C** - **25** - **25** - **T2H** - **R** - **F**

● Long stroke

STL - **M** **C** - **25** - **50** - **T2H** - **R** - **F**

A Bearing method

B Bore size

C Port thread type

D Stroke length

E Switch model no.
Note 1, Note 5

F Switch quantity

G Option

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing

B Bore size (mm)	
25	φ 25
32	φ 32
40	φ 40
50	φ 50
63	φ 63
80	φ 80

C Port thread type	
Blank	Rc thread
NN	NPT thread (φ32 and over) custom order
GN	G thread (φ32 and over) custom order

D Stroke length (mm)	
Refer to the stroke length table on the following page.	

E Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*			
T1H*	T1V*	Proximity	1 color indicator type	3-wire
T2H*	T2V*			
T3H*	T3V*			
T3PH*	T3PV*		1 color indicator type (custom order)	3-wire
T2YH*	T2YV*		2 color indicator type	2-wire
T3YH*	T3YV*		2 color indicator type (W/light for preventive maintenance output)	3-wire
T2YFH*	T2YFV*		2 color indicator type (W/light for preventive maintenance output)	4-wire
T3YFH*	T3YFV*		2 color indicator type (W/light for preventive maintenance output (1 color))	3-wire
T2YMH*	T2YMV*		2 color indicator type (W/light for preventive maintenance output (1 color))	4-wire
T3YMH*	T3YMV*			3-wire
T2JH*	T2JV*		Off-delay type	2-wire
T2YD*	—	Strong magnetic field proof switch		2-wire
T2YDT*	—			

*Lead wire length	
Blank	1m (standard)
3	3m (option)
5	5m (option)

F Switch quantity	
R	One on rod end
H	One on head end
D	Two
T	Three

G Option	
F	Material of end plate (steel)
M	End plate corrosion proof material (aluminum) (custom order)
M1	End plate corrosion proof material (SUS) (custom order)
E Note 3	With dowel hole (custom order)
P6 Note 4	Copper and PTFE free (custom order)

Note on model no. selection

Note1: Switches other than **E** switch model no. are also available.

(Custom order)
Refer to Ending 1 for the details.

Note2: Refer to pages 1526 to 1529 for available variation and option.

Note3: Refer to page 1526 or 1528 for dowel holes for positioning.

Note4: φ25 is copper and PTFE free as standard at ball bearing B.

Note5: T1H/V, T8H/V installation is custom order.

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**.

Example) STS-MC-L1-63-50-T2YH3-D-F
2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product.
In this case, insert "L1" between **A** and **B** in model no.

Example) STS-MC-L1-63-50-F

<Example of model number>

STS-MC-25-50-T0H-R-F

Model: Guided cylinder, short stroke length standard, air cushioned

A Bearing method : Metal bush bearing

B Bore size : φ25mm

C Port thread type : Rc thread

D Stroke length : 50mm

E Switch model no.: Reed T0H, lead wire length 1m

F Switch quantity : One on rod end

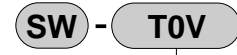
G Option : Material of end plate: Steel

D Stroke length

Series	Stroke length (mm)	Applicable bore size						
		φ25	φ32	φ40	φ50	φ63	φ80	
STS	Standard stroke length	25	●	●	●	●	●	●
		50	●	●	●	●	●	●
		75						●
		100						●
	Min. stroke length	15						
STL	Standard stroke length	50	●	●	●	●	●	
		75	●	●	●	●	●	●
		100	●	●	●	●	●	●
		125	●	●	●	●	●	●
		150	●	●	●	●	●	●
		175	●	●	●	●	●	●
		200	●	●	●	●	●	●
		225	●	●	●	●	●	●
		250	●	●	●	●	●	●
		275	●	●	●	●	●	●
		300	●	●	●	●	●	●
		325	●	●	●	●	●	●
		350	●	●	●	●	●	●
		375	●	●	●	●	●	●
		400	●	●	●	●	●	●
Min. stroke length	30			55				

Note: Custom stroke length is custom order.

How to order switch



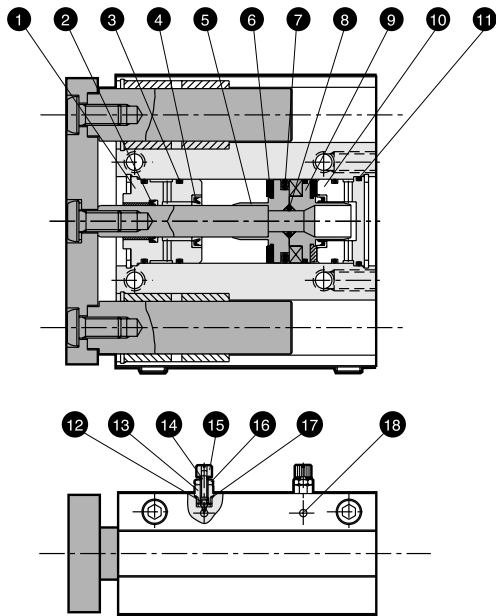
Switch model no.
(Item ⑤ previous page)

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG**
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
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- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

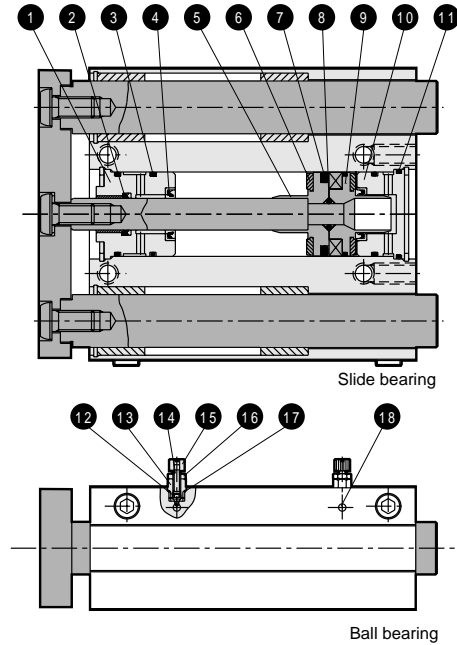
Guided cylinder
Combined functions

Internal structure and parts list

● Air cushioned
STS-^M/_BC



● Air cushioned
STL-^M/_BC



Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1542.)

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
STS-^M/_BC (air cushioned)							
1	Rod bushing	Special aluminum alloy	Alumite	10	Base plate	Aluminum alloy	Chromate
2	Rod packing seal	Nitrile rubber		11	O ring	Nitrile rubber	
3	Metal gasket	Nitrile rubber		12	O ring	Nitrile rubber	
4	Cushion packing seal	Nitrile rubber and steel		13	Needle holder	Aluminum alloy	
5	Piston R	Aluminum alloy		14	Needle	Stainless steel	
6	Cushion rubber	Urethane rubber		15	Knob	Aluminum alloy	
7	Piston packing seal	Nitrile rubber		16	Lock nut	Steel	Nickeling
8	O ring	Nitrile rubber		17	O ring	Nitrile rubber	
9	Piston H	Aluminum alloy		18	Steel ball	Alloy steel	

Repair parts list

● STS-^M/_BC (air cushioned)

Bore size (mm)	Kit No.	Repair parts number
φ 25	STS-C-25K	
φ 32	STS-C-32K	32 108 109 110
φ 40	STS-C-40K	112 113 117
φ 50	STS-C-50K	
φ 63	STS-C-63K	
φ 80	STS-C-80K	

Note: Specify the kit No. when placing an order.

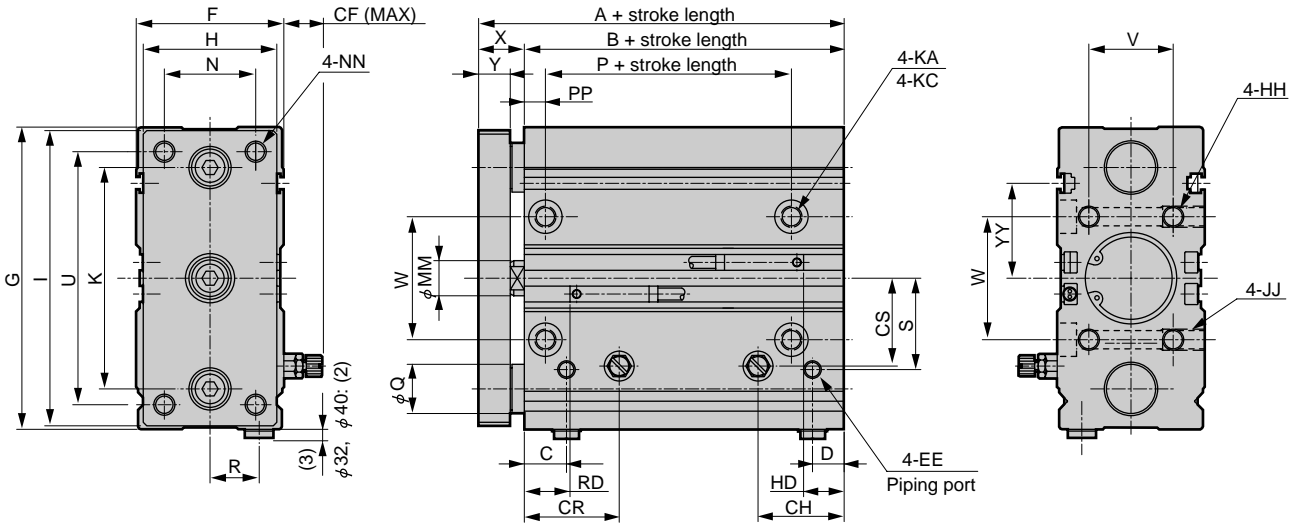
Dimensions



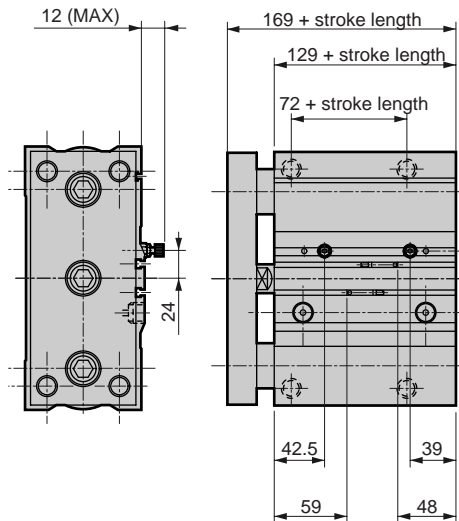
● Air cushioned

STS-^MBC (dimensions other than those listed below are the same as double acting standard single rod type.)

· $\phi 25$, $\phi 32$, $\phi 40$, $\phi 50$, $\phi 63$



· $\phi 80$



Note 1: Custom stroke length is available per 1mm increment. (Custom order)

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Note 3: Refer to page 1526 for dimensions with dowel hole (E).

Note 4: Plug for $\phi 25$ port is hexagon head plug.

● STS-M/BC ($\phi 25$ to $\phi 63$)

Symbol	A	B	C	D	EE	F	G	H	HH	I	JJ	K	KA	KC	MM	N
$\phi 25$	79	66	12	9	M5 x 0.8	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	9.5 spot face depth 5.4	12	26
$\phi 32$	93	74	14	10.5	Rc1/8	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	11 spot face depth 6.5	16	29
$\phi 40$	97	78	14.5	11.5	Rc1/8	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	16	34
$\phi 50$	102	80	16	12.5	Rc1/4	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	20	44
$\phi 63$	108	86	12.5	17.5	Rc1/4	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	20	55

Symbol	NN	P	PP	Q		R	S	U	V	W	X	Y	YY	CF	CH	CR	CS	HD	RD
				STS-M	STS-B														
$\phi 25$	M6 penetrating	45	6	14	12	14	26	72	24	35	13 ⁰ / ₂	9	27	15	24.5	27	25	19	28
$\phi 32$	M8 penetrating	47	7	20	16	16	39	93	25	45	19 ⁰ / ₂	12	39	14	28	33	34	21.5	34.5
$\phi 40$	M8 penetrating	50	7	20	16	18	43	102	32	54	19 ⁰ / ₂	12	42	14	29	35	20	22	38
$\phi 50$	M10 penetrating	51	8	25	20	22	49	125	38	66	22 ⁰ / ₂	16	49	17	29	36	23	24.5	38.5
$\phi 63$	M10 penetrating	51	8	25	20	26	56	140	50	79	22 ⁰ / ₂	16	56	17	29	41.5	25	26	44

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

Ending

Guided cylinder
Combined functions

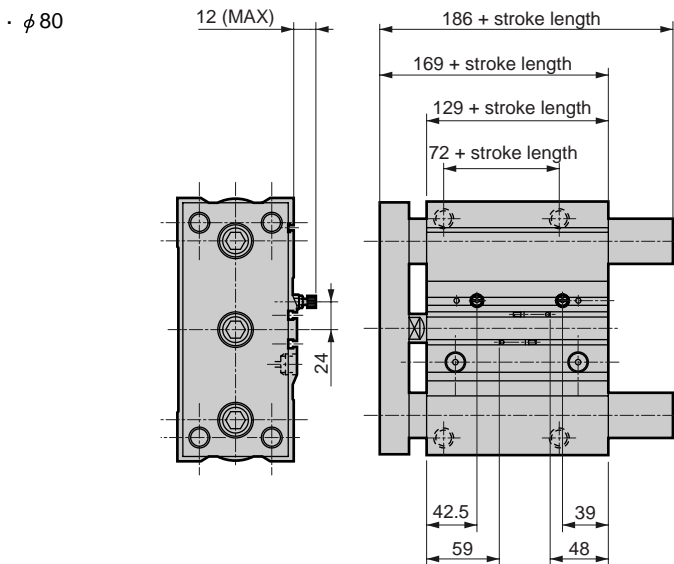
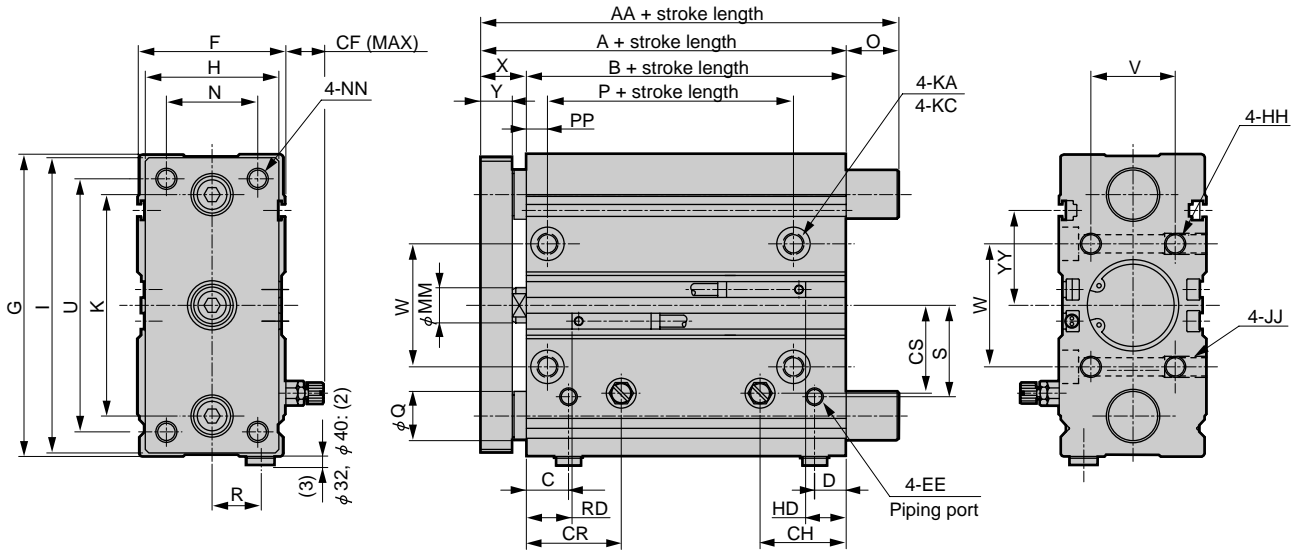


Dimensions

● Air cushion type

STL-M_BC (dimensions other than those listed below are the same as double acting standard single rod type.)

· ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63



Note 1: Custom stroke length is available per 1mm increment. (Custom order)

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Note 3: Refer to page 1526 for dimensions with dowel hole (E).

Note 4: Plug for ϕ 25 port is hexagon head plug.

● STL-M/BC (ϕ 25 to ϕ 63)

Symbol	A	AA	B	C	D	EE	F	G	H	HH	I	JJ	K	KA	KC	MM	N
ϕ 25	79	79	66	12	9	M5 x 0.8	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	9.5 spot face depth 5.4	12	26
ϕ 32	93	102	74	14	10.5	Rc1/8	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	11 spot face depth 6.5	16	29
ϕ 40	97	102	78	14.5	11.5	Rc1/8	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	16	34
ϕ 50	102	125	80	16	12.5	Rc1/4	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	20	44
ϕ 63	108	125	86	12.5	17.5	Rc1/4	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	20	55

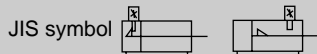
Symbol	NN	O	P	PP	Q		R	S	U	V	W	X	Y	YY	CF	CH	CR	CS	HD	RD
Bore size (mm)					STL-M	STL-B														
ϕ 25	M6 penetrating	0	45	6	14	12	14	26	72	24	35	13 ⁰ / ₂	9	27	15	24.5	27	25	19	28
ϕ 32	M8 penetrating	9	47	7	20	16	16	39	93	25	45	19 ⁰ / ₂	12	39	14	28	33	34	21.5	34.5
ϕ 40	M8 penetrating	5	50	7	20	16	18	43	102	32	54	19 ⁰ / ₂	12	42	14	29	35	20	22	38
ϕ 50	M10 penetrating	23	51	8	25	20	22	49	125	38	66	22 ⁰ / ₂	16	49	17	29	36	23	24.5	38.5
ϕ 63	M10 penetrating	17	51	8	25	20	26	56	140	50	79	22 ⁰ / ₂	16	56	17	29	41.5	25	26	44



Guided cylinder Double acting position locking type

STS/STL-^M_BQ Series

● Bore size: ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80



Specifications

Descriptions	STS-MQ/BQ, STL-MQ/BQ							
Bore size mm	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80	
Actuation	Double acting position locking type							
Working fluid	Compressed air							
Max. working pressure MPa	1.0							
Min. working pressure MPa	0.2				0.15			
Withstanding 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							
Working piston speed mm/s	50 to 500				50 to 300			
Cushion	Rubber cushioned							
Position locking mechanism	Rod end or head end							
Holding force N	Maximum thrust x 0.7							
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)							
Allowable energy absorption J	0.157	0.157	0.401	0.627	0.980	1.560	2.510	

Stroke length

· Short stroke STS

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 20	25, 50	50	5	5 With 1 or 2 switches
ϕ 25				
ϕ 32				
ϕ 40				
ϕ 50				
ϕ 63	25, 50, 75, 100	100		
ϕ 80				

· Long stroke STL

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 20	50, 75, 100, 125, 150, 175,	400	30	30 With 1 or 2 switches
ϕ 25	200, 225, 250, 275, 300,			
ϕ 32	325, 350, 375, 400			
ϕ 40	50, 75, 100, 125, 150, 175,	375	30	30 With 1 or 2 switches
ϕ 50	200, 225, 250, 275, 300,			
ϕ 63	325, 350, 375			
ϕ 80	75, 100, 125, 150, 175,	350	55	55 With 1 or 2 switches
	200, 225, 250, 275, 300,			
	325, 350			

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

⚠ Always read Safety Precautions for **Position Locking** (pages 1530 to 1533) before starting use.

Switch specifications

- 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire	
	T1H/T1 V	T2H/T2V T2JH/T2JV	T2YH/T2YV	T3H/T3V	T3PH/T3PV (Custom order)	T3YH/T3YV	T0H/T0V	T5H/T5V
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay			Programmable controller, relay	Programmable controller, relay (IC circuit (without indicator light), serial connection)
Output method	-			NPN output	PNP output	NPN output	-	
Power voltage	-			10 to 28 VDC			-	
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Without indicator light
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA	

- With preventive maintenance output

Descriptions	Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
	T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications	Programmable controller	Programmable controller, relay	Programmable controller	Programmable controller, relay
Output method	NPN output			
Light	Installation position adjustment	Red/green LED (ON lighting)		
	Preventive maintenance output	Yellow LED (ON lighting)		
Output section	Power voltage	-	10 to 28 VDC	-
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC
	Load current	5 to 20 mA	50 mA or less	5 to 20 mA
	Leakage current	1 mA or less	10 μA or less	1.2 mA or less
Preventive maintenance output	Load voltage	30 VDC or less		
	Load current	20 mA or less	50 mA or less	5 to 20 mA or less
	Leakage current	10 μA or less		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C. (5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire
	T2YD
Applications	Programmable controller
Light	Red/green LED (ON lighting)
Load voltage	24 VDC ± 10%
Load current	5 to 20 mA
Internal voltage drop	6 V or less
Leakage current	1.0 mA or less
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)
Insulation resistance	100 MΩ and over with 500 VDC megger
Withstand voltage	No failure impressed at 1000 VAC for one minute
Maximum shock resistance	980m/s ²
Ambient temperature	-10 to +60°C
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord as a lead wire option is available.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-M_BQ Series

How to order

● Short stroke

STS - M Q - 20 - 25 - H - T2H - R - F

● Long stroke

STL - M Q - 20 - 50 - H - T2H - R - F

A Bearing method

B Bore size

C Port thread type

D Stroke length

■ Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

E Position locking mechanism

F Switch model no.
Note 1
Note 5
Note 6

Note on model no. selection

Note 1: Switches other than **E** switch model no. are also available. (Custom order)

Refer to Ending 1 for the details.

Note 2: Refer to pages 1526 to 1529 for available variation and option.

Note 3: Refer to pages 1526 or 1528 for dowel holes for positioning.

Note 4: $\phi 20$ and $\phi 25$ are copper and PTFE free as standard at ball bearing B.

Note 5: When the position locking mechanism is provided on the head end and 25st or less is selected, it may not be possible to insert the switch from the rod end. In this case, temporarily remove the end plate and mount.

Contact CKD for information on removing and assembling the end plate.

Note 6: T1H/V installation is the custom order.

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**.

Example) STS-MQ-L1-63-50-T2YH3-D-F
2 color indicator, preventive maintenance, strong magnetic field proof switches cannot be installed after purchasing a standard product. In this case, insert "L1" between **A** and **B** in model no.

Example) STS-MQ-L1-63-50-F

<Example of model number>

STS-MQ-20-25-H-T0H-R-F

Model: Guided cylinder, short stroke length position locking type

- A** Bearing method : Metal bush bearing
- B** Bore size : $\phi 20$ mm
- C** Port thread type : Rc thread
- D** Stroke length : 25mm
- E** Position locking mechanism : Bed side position locking
- F** Switch model no. : Reed T0H, lead wire length 1m
- G** Switch quantity : One on rod end
- H** Option : Material of end plate: Steel

G Switch quantity

H Option

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing

B Bore size (mm)	
20	$\phi 20$
25	$\phi 25$
32	$\phi 32$
40	$\phi 40$
50	$\phi 50$
63	$\phi 63$
80	$\phi 80$

C Port thread type	
Blank	Rc thread
NN	NPT thread ($\phi 32$ and over) custom order
GN	G thread ($\phi 32$ and over) custom order

D Stroke length (mm)	
Refer to the stroke length table on the following page.	

E Position locking mechanism	
H	Head end position locking mechanism
R	Rod end position locking mechanism

F Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type Without indicator light	2-wire
T5H*	T5V*			
T1H*	T1V*	Proximity	1 color indicator type	2-wire
T2H*	T2V*			
T3H*	T3V*			
T3PH*	T3PV*	Proximity	1 color indicator type (custom order)	3-wire
T2YH*	T2YV*			
T3YH*	T3YV*	Proximity	2 color indicator type	2-wire
T2YFH*	T2YFV*			
T3YFH*	T3YFV*			
T2YMH*	T2YMV*	Proximity	2 color indicator type (W/ light for preventive maintenance output)	3-wire
T3YMH*	T3YMV*			
T2JH*	T2JV*	Proximity	Off-delay type	2-wire
T2YD*	—			
T2YDT*	—			
*Lead wire length				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			

*Lead wire length	
Blank	1m (standard)
3	3m (option)
5	5m (option)

G Switch quantity	
R	One on rod end
H	One on head end
D	Two
T	Three

H Option	
F	Material of end plate (steel)
M	End plate corrosion proof material (aluminum) (custom order)
M1	End plate corrosion proof material (SUS) (custom order)
E Note 3	With dowel hole (custom order)
P6 Note 4	Copper and PTFE free (custom order)

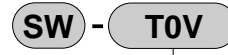
D Stroke length

Series	Stroke length(mm)	Applicable bore size							
		φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	
STS	Standard stroke length	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Min. stroke length Note 1	5							
Custom stroke length Note 1, Note 2	Per 5mm								
STL	Standard stroke length	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
		Min. stroke length Note 1	30						55
Custom stroke length Note 1, Note 2	Per 5mm								

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch



Switch model no.
(Item ⑥ previous page)

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG**
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

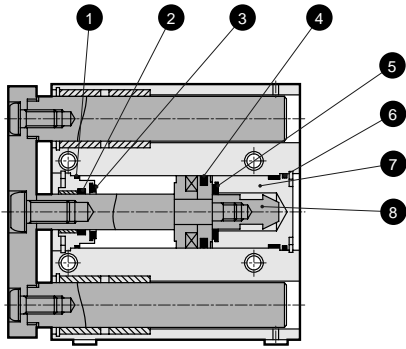
Ending

Guided cylinder
Combined functions

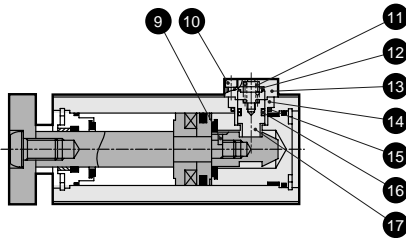
Internal structure and parts list

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

● Position locking type/head end
STS-^M_BQ-H

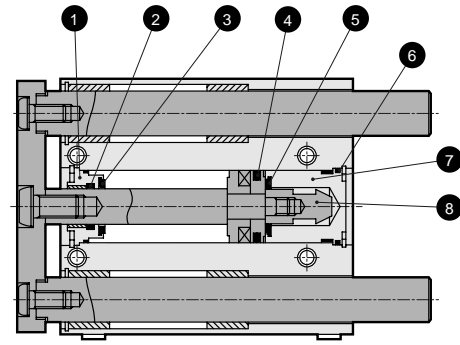


Slide bearing

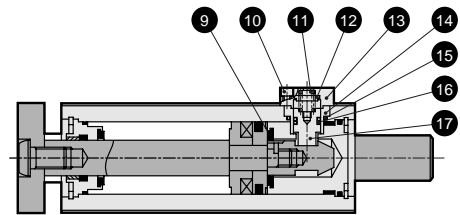


Ball bearing

STL-^M_BQ-H

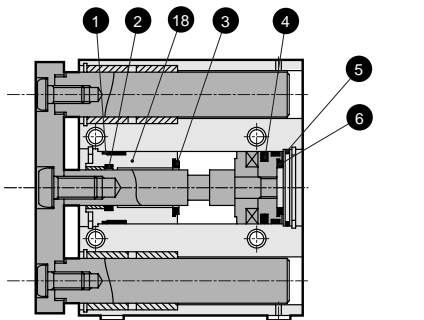


Slide bearing

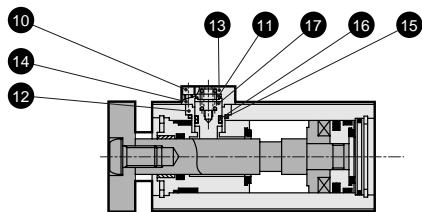


Ball bearing

● Position locking type/rod end
STS-^M_BQ-R

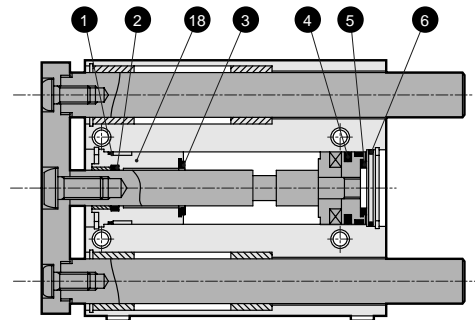


Slide bearing

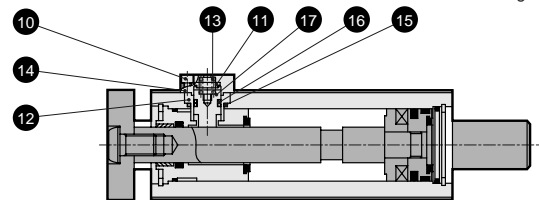


Ball bearing

STL-^M_BQ-R



Slide bearing



Ball bearing

Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1544.)

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
ST^S/_L-^M/_BQ-H (position locking type/head end)				ST^S/_L-^M/_BQ-R (position locking type/rod end)			
1	Metal gasket	Nitrile rubber		1	Metal gasket	Nitrile rubber	
2	Rod packing seal	Nitrile rubber		2	Rod packing seal	Nitrile rubber	
3	Cushion rubber (R)	Urethane rubber		3	Cushion rubber (R)	Urethane rubber	
4	Piston packing seal	Nitrile rubber		4	Piston packing seal	Nitrile rubber	
5	Cushion rubber (H)	Urethane rubber		5	Cushion rubber (H)	Urethane rubber	
6	O ring	Nitrile rubber		6	O ring	Nitrile rubber	
7	Head cover	Aluminum alloy		10	Hexagon socket head cap bolt	Alloy steel	Black galvanizing
8	Sleeve	Steel	Nitriding	11	Coil spring	Steel	Electrode position coating
9	Spring pin	Steel	Blackening	12	Cushion rubber	Urethane rubber	
10	Hexagon socket head cap bolt	Alloy steel	Black galvanizing	13	Stopper guard	Aluminum alloy	Alumite
11	Coil spring	Steel	Electrode position coating	14	Stopper housing	Aluminum alloy	Alumite
12	Cushion rubber	Urethane rubber		15	O ring	Nitrile rubber	
13	Stopper guard	Aluminum alloy	Alumite	16	Stopper packing seal	Nitrile rubber	
14	Stopper housing	Aluminum alloy	Alumite	17	Stopper piston	Stainless steel	
15	O ring	Nitrile rubber		18	Rod cover	Aluminum alloy	Alumite
16	Stopper packing seal	Nitrile rubber					
17	Stopper piston	Steel	Nitriding				

Repair parts list


● ST^S/_L-^M/_BQ (position locking type)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-Q-20K	
φ 25	STS-Q-25K	
φ 32	STS-Q-32K	
φ 40	STS-Q-40K	
φ 50	STS-Q-50K	
φ 63	STS-Q-63K	
φ 80	STS-Q-80K	

Note: Specify the kit No. when placing an order.

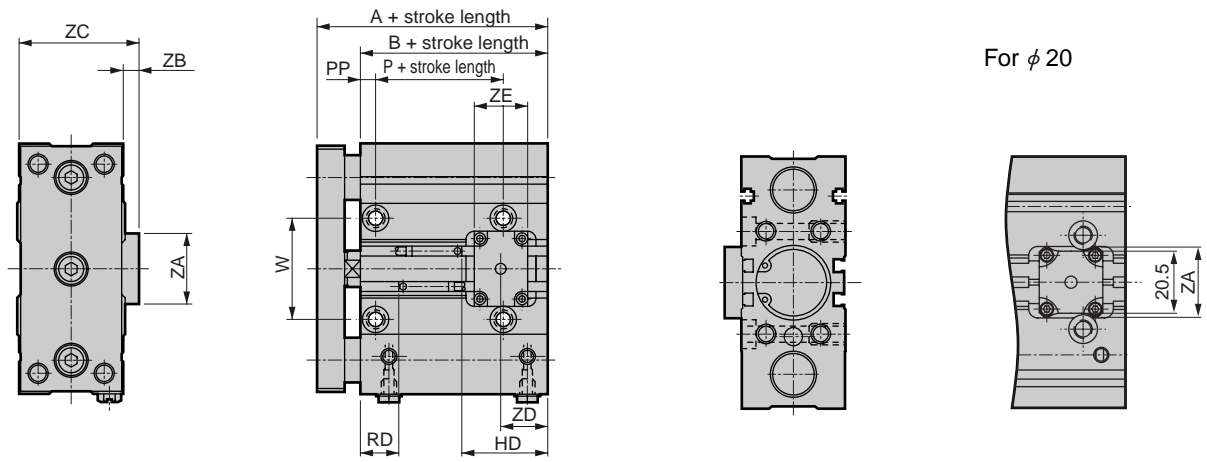
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

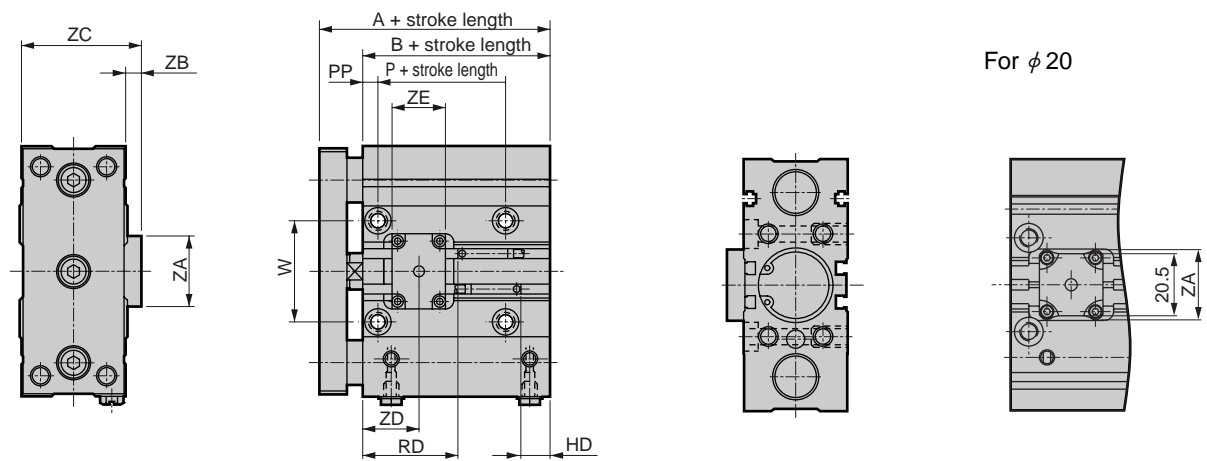
Dimensions: $\phi 20$, $\phi 25$ 

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

● Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-M_BQ-H




● Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-M_BQ-R

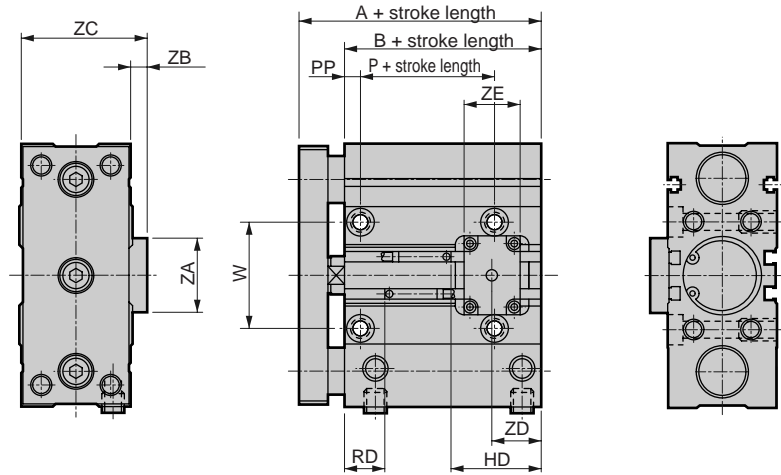


Symbol Bore size (mm)	A	B	P	PP	W	ZA	ZB	ZC	ZE	STS-M _B Q-H			STS-M _B Q-R		
										ZD	RD	HD	ZD	RD	HD
$\phi 20$	78	65	45	6	31	23.2	6	44	21	18	12	34.5	20	37	9.5
$\phi 25$	79	66	45	6	35	24	5	47	24	16.5	13	34	20.5	38	9

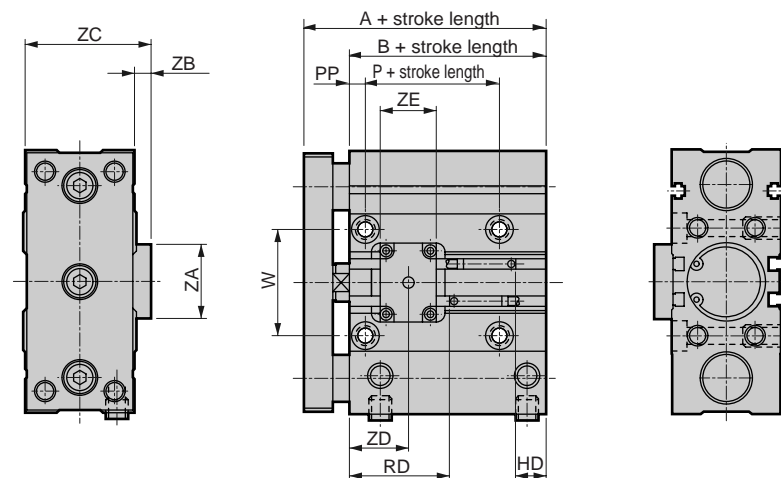
Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.
 Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).
 Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

Dimensions: $\phi 32$, $\phi 40$, $\phi 50$, $\phi 63$ 

- Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-^M/_BQ-H



- Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-^M/_BQ-R



Symbol Bore size (mm)	A	B	P	PP	W	ZA	ZB	ZC	ZE	STS- ^M / _B Q-H			STS- ^M / _B Q-R		
										ZD	RD	HD	ZD	RD	HD
$\phi 32$	93	74	47	7	45	32	6.5	53.5	24	21	17.5	38.5	25	42.5	13.5
$\phi 40$	122	103	75	7	54	43	8	62	44	30	21	64	36	71	14
$\phi 50$	127	105	76	8	66	43	7.5	73.5	44	33	22	66	40	72	16
$\phi 63$	133	111	76	8	79	47	7.5	86.5	47	35	20	73	40	70	23

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.


Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).

Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC

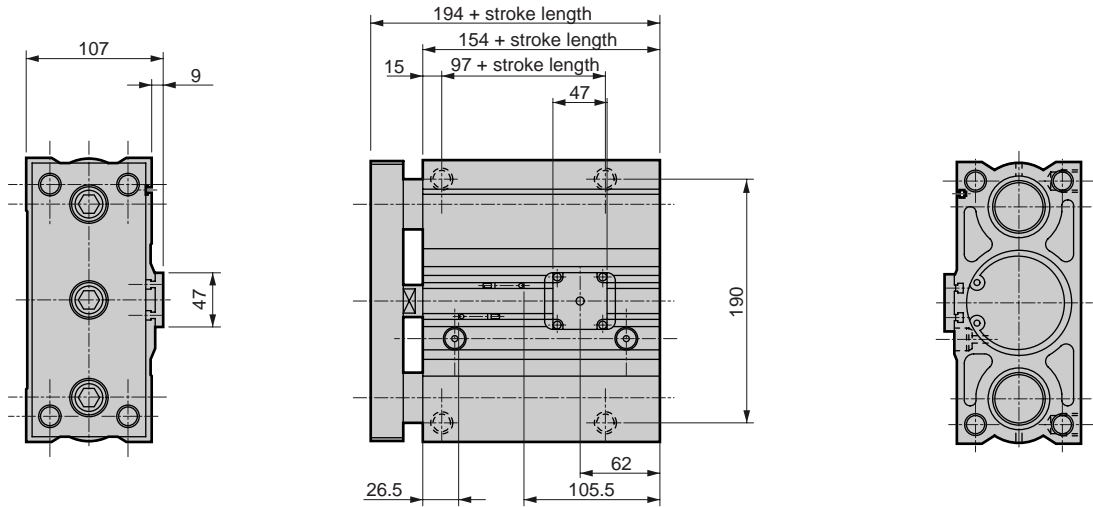
Ending

Guided cylinder
Combined functions

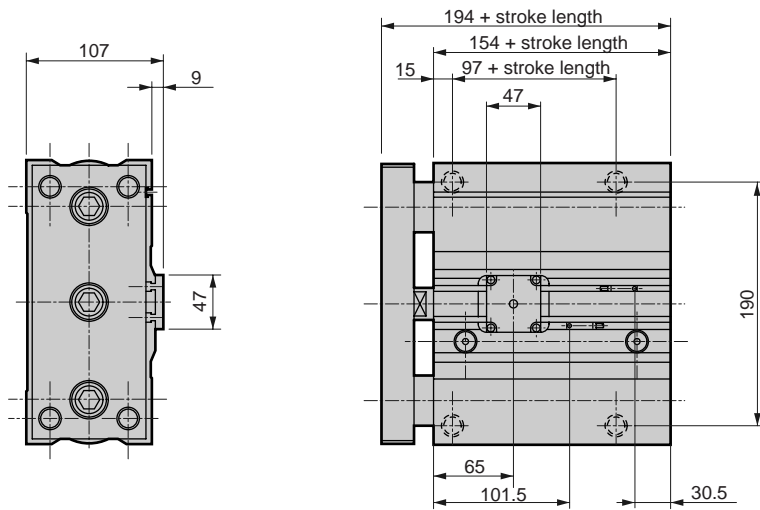
Dimensions: $\phi 80$ 

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

● Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-M_BQ-H



● Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)
STS-M_BQ-R



Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).

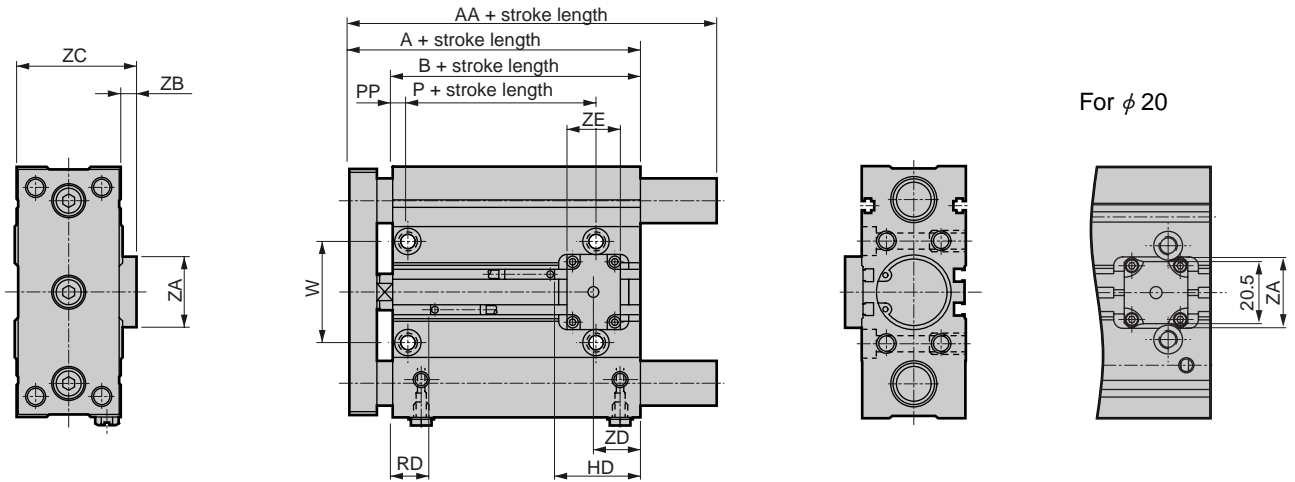
Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

Dimensions: $\phi 20$, $\phi 25$



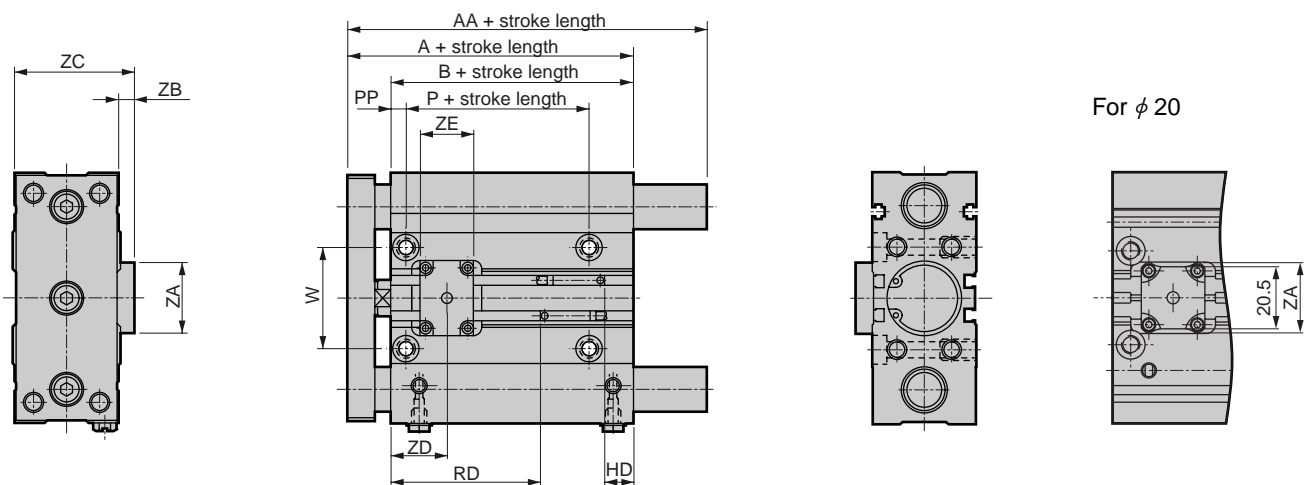
- Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)

STL-^M/_BQ-H



- Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)

STL-^M/_BQ-R



Symbol Bore size (mm)	A	AA	B	P	PP	W	ZA	ZB	ZC	ZE	STL- ^M / _B Q-H			STL- ^M / _B Q-R		
											ZD	RD	HD	ZD	RD	HD
$\phi 20$	78	97	65	45	6	31	23.2	6	44	21	18	12	34.5	20	37	9.5
$\phi 25$	79	97	66	45	6	35	24	5	47	24	16.5	13	34	20.5	38	9

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.


Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).

Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STSL**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

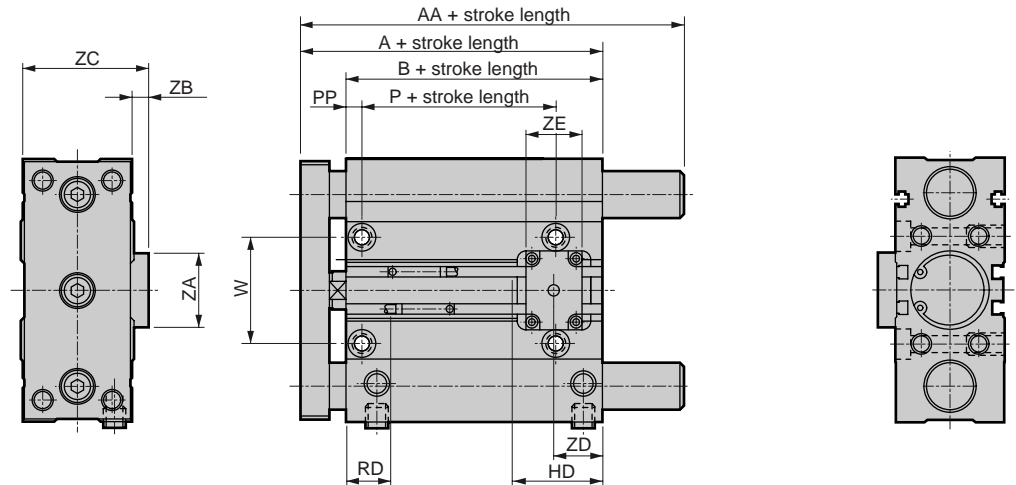
Ending

Guided cylinder
Combined functions

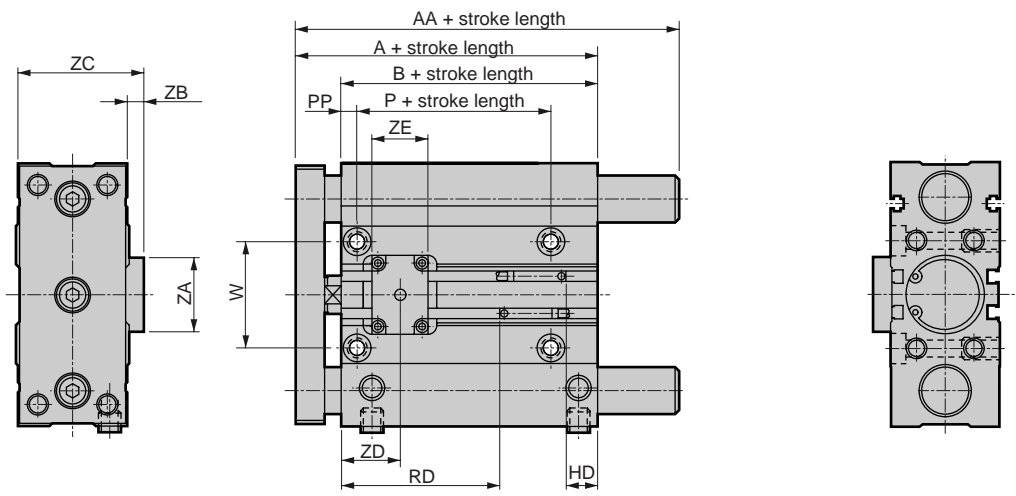
Dimensions: ϕ 32, ϕ 40, ϕ 50, ϕ 63 

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
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- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

● Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)
STL-M_BQ-H



● Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)
STL-M_BQ-R



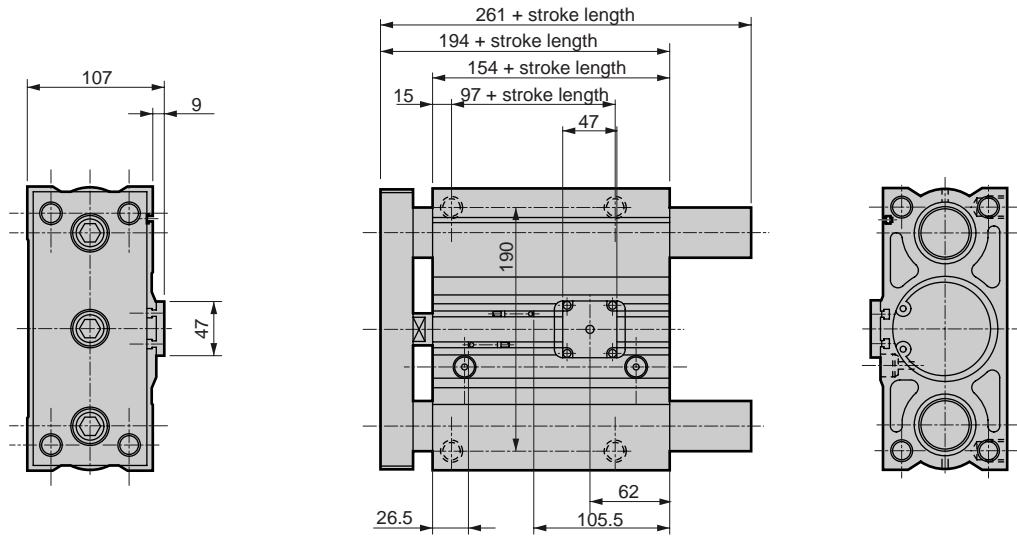
Symbol Bore size (mm)	A	AA	B	P	PP	W	ZA	ZB	ZC	ZE	STL-M _B Q-H			STL-M _B Q-R		
											ZD	RD	HD	ZD	RD	HD
ϕ 32	93	127	74	47	7	45	32	6.5	53.5	24	21	17.5	38.5	25	42.5	13.5
ϕ 40	122	152	103	75	7	54	43	8	62	44	30	21	64	36	71	14
ϕ 50	127	175	105	76	8	66	43	7.5	73.5	44	33	22	66	40	72	16
ϕ 63	133	175	111	76	8	79	47	7.5	86.5	47	35	20	73	40	70	23

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.
 Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).
 Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

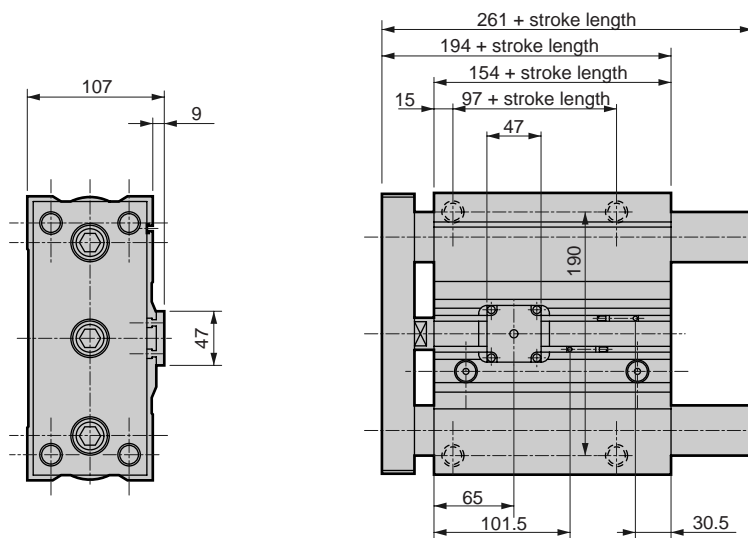
Dimensions: ϕ 80



- Position locking type/head end (dimensions other than those listed below are the same as the double acting single rod type.)
STL-^M_BQ-H



- Position locking type/rod end (dimensions other than those listed below are the same as the double acting single rod type.)
STL-^M_BQ-R



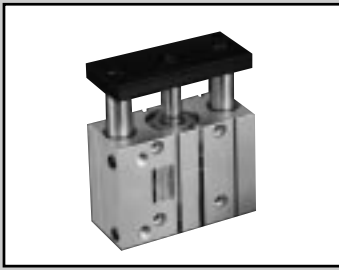
Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to page 1526 for the dimensions with the dowel hole (E).

Note 3: Refer to pages 1636 and 1637 for the RD, HD, and projecting dimensions of the 2 color indication type, preventive maintenance output type, off delay type, strong magnetic field proof type, T1H/V, T8H/V switch.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions



Guided cylinder Fine speed type

STS/STL-^M_BF Series

- Bore size: $\phi 8, \phi 12, \phi 16, \phi 20, \phi 25, \phi 32,$
 $\phi 40, \phi 50, \phi 63, \phi 80$

JIS symbol



Specifications

Descriptions	STS-MF, STS-BF(Short stroke)/ STL-MF,STL-BF(Long stroke)											
Bore size mm	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$		
Actuation	Double acting											
Working fluid	Compressed air											
Max. working pressure MPa	1.0											
Min. working pressure MPa	0.15					0.1						
Withstanding pressure MPa	1.6											
Ambient temperature $^{\circ}\text{C}$	5 to 60											
Port size	M5					Rc 1/8			Rc 1/4		Rc 3/8	
Stroke tolerance mm	$^{+2.0}_0$											
Working piston speed mm/s	1 to 200											
Cushion	Rubber cushion											
Lubrication	Not available											
Allowable energy absorption J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510		

Stroke length

Model no.	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
STS-MF	$\phi 8, \phi 12, \phi 16$	10, 20, 30, 40, 50	50	5
	$\phi 20, \phi 25, \phi 32, \phi 40, \phi 50, 63$	25, 50		
STS-BF	$\phi 80$	25, 50, 75, 100	100	
	$\phi 8, \phi 12, \phi 16$	50, 75, 100, 125, 150, 175, 200	200	50
STL-MF	$\phi 20, \phi 25, \phi 32, \phi 40, \phi 50, 63$	50, 75, 100, 125, 150, 175, 200		200
	$\phi 80$	75, 100, 125, 150, 175, 200	55	

Note 1: Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

Switch specifications

- 1 color/2 color indicator/strong magnetic field proof

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire				Proximity 2-wire			
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/ T2YV	T3H/ T3V	T3PH/T3PV (Custom order)	T3YH/ T3YV	T0H/T0V	T5H/T5V	T8H/T8V	T2YD				
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay			Programmable controller, relay	Programmable controller, relay IC circuit (w/o indicator light), serial connection		Programmable controller, relay	Programmable controller			
Output method	-			NPN output	PNP output	NPN output	-							
Power voltage	-			10 to 28 VDC			-							
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC $\pm 10\%$
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 20 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Without indicator light		LED (ON lighting)		Red/green LED (ON lighting)		
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA					1 mA or less		

- With preventive maintenance output

Descriptions	Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
	T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications	Programmable controller	Programmable controller, relay	Programmable controller	Programmable controller, relay
Output method	NPN output			
Light	Red/green LED (ON lighting)			
	-		Yellow LED (ON lighting)	
Output section	Power voltage	-	10 to 28 VDC	-
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC
	Load current	5 to 20 mA	50 mA or less	5 to 20 mA
	Leakage current	1 mA or less	10 μA or less	1.2 mA or less
Preventive maintenance output	Load voltage	30 VDC or less		
	Load current	20 mA or less	50 mA or less	5 to 20 mA or less
	Leakage current	10 μA or less		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 $^{\circ}\text{C}$. The current will be lower than 20mA if ambient temperature around switch is higher than 25 $^{\circ}\text{C}$. (5 to 10mA when 60 $^{\circ}\text{C}$)

Dimensions

This is the same as the double acting/single rod type STS/STL series.

STS Series: page 1545 ($\phi 8$ to $\phi 16$), page 1546 ($\phi 20, \phi 25$), page 1547 ($\phi 32$ to $\phi 63$), page 1548 ($\phi 80$)

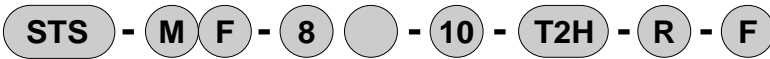
STL Series: page 1550 ($\phi 8$ to $\phi 16$), page 1551 ($\phi 20, \phi 25$), page 1552 ($\phi 32$ to $\phi 63$), page 1553 ($\phi 80$)

Technical data

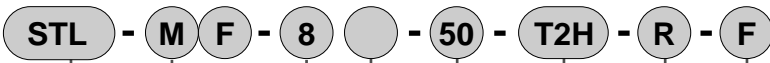
Refer to the measuring method on page 806 for technical data for measuring dimensions.

How to order

- Short stroke



- Long stroke



Model no.

A Bearing method

B Bore size

C Port thread type

D Stroke length

E Switch model no. Note 4

Note on model no. selection

Note 1: Refer to pages 1526, 1528 for available variation and options.

<Example of model number>

STL-MF-8-50-T2H-R-F

Model: Guided cylinder, long stroke length fine speed type

- A** Bearing method : Metal bush bearing
- B** Bore size : ϕ 8mm
- C** Port thread type : Rc thread
- D** Stroke length : 50mm
- E** Switch model no. : proximity switch T2H, lead wire 1m
- F** Switch quantity : One on rod end
- G** Option : Material of end plate: Steel

D Stroke length

Series	Stroke length (mm)	Applicable bore size									
		ϕ 8	ϕ 12	ϕ 16	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80
STS	10	●	●	●							
	20	●	●	●							
	25	●	●	●	●	●	●	●	●	●	●
	30	●	●	●							
	40	●	●	●							
	50	●	●	●	●	●	●	●	●	●	●
	75										●
	100										●
Min. stroke length Note 1		5									
Custom stroke length Note 1, Note 2		Per 5mm									
STL	50	●	●	●	●	●	●	●	●	●	●
	75	●	●	●	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●	●	●	●
	125	●	●	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●	●	●
	175	●	●	●	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●	●	●	●
	Min. stroke length Note 1		50			30				55	
Custom stroke length Note 1, Note 2		Per 5mm									

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.

Note 4: T1H/V, T8H/V installation is custom order. Note that T8H/V is not available for ϕ 8 to ϕ 16.

How to order switch



Switch model no.
(Item **E** above)

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" to model no.
(example) STS-MF-L1-63-50-T2YH-D

F Switch quantity

G Option

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing

B Bore size (mm)	
8	ϕ 8
12	ϕ 12
16	ϕ 16
20	ϕ 20
25	ϕ 25
32	ϕ 32
40	ϕ 40
50	ϕ 50
63	ϕ 63
80	ϕ 80

C Port thread type	
Blank	Rc thread
NN	NPT thread (ϕ 32 and over) custom order
GN	G thread (ϕ 32 and over) custom order

D Stroke length (mm)	
Refer to the stroke length table on the following page.	

E Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type Without indicator light	2-wire
T5H*	T5V*			
T8H*	T8V*		Proximity	1 color indicator type
T1H*	T1V*			
T2H*	T2V*			
T3H*	T3V*	1 color indicator type (custom order)		3-wire
T3PH*	T3PV*	2 color indicator type		2-wire
T2YH*	T2YV*	2 color indicator type (W/ light for preventive maintenance output)	3-wire	
T3YH*	T3YV*		3-wire	
T2YFH*	T2YFV*		4-wire	
T3YFH*	T3YFV*		3-wire	
T2YMH*	T2YMV*	2 color indicator type (W/ light for preventive maintenance output (1 color))	4-wire	
T3YMH*	T3YMV*		4-wire	
T2JH*	T2JV*	Off-delay type	2-wire	
T2YD*	—	Strong magnetic field proof switch	2-wire	
T2YDT*	—			

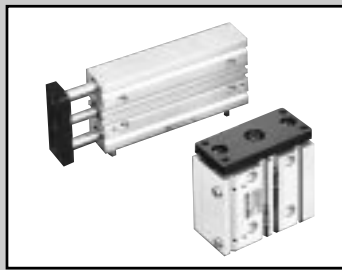
*Lead wire length	
Blank	1m (standard)
3	3m (option)
5	5m (option)

F Switch quantity	
R	One on rod end
H	One on head end
D	Two
T	Three

G Option	
F	Material of end plate (steel)
M	End plate corrosion proof material (aluminum) (custom order)
M1	End plate corrosion proof material (SUS) (custom order)
E Note 3	With dowel hole (custom order)

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

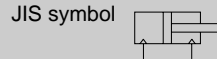
Ending
Guided cylinder
Combined functions



Guided cylinder Double acting low speed type

STS/STL-M_BO Series

- Bore size: $\phi 8$, $\phi 12$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$
 $\phi 50$, $\phi 63$, $\phi 80$



Specifications

Descriptions	STS-MO/BO, STL-MO/BO										
Bore size mm	$\phi 8$	$\phi 12$	$\phi 16$	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	
Actuation	Double acting low speed type										
Working fluid	Compressed air										
Max. working pressure MPa	1.0										
Min. working pressure MPa	0.15					0.1					
Withstanding pressure MPa	1.6										
Ambient temperature °C	-10 to 60 (no freezing)										
Port size	M5					Rc 1/8			Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_0$										
Working piston speed mm/s	10 to 200										
Cushion	Rubber cushioned										
Lubrication	Not available										
Allowable energy absorption J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510	

Stroke length

• Short stroke STS

STS/L	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
LCS	$\phi 8$	10, 20, 30, 40, 50	50	5	5 With 1 or 2 switches
LCG	$\phi 12$				
LCM	$\phi 16$				
LCT	$\phi 20$				
LCY	$\phi 25$	25, 50	50	5	5 With 1 or 2 switches
STR2	$\phi 32$				
UCA2	$\phi 40$				
HCM	$\phi 50$				
HCA	$\phi 63$	25, 50, 75, 100	100		
SRL2	$\phi 80$				

• Long stroke STL

	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
SRT	$\phi 8$	50, 75, 100, 125, 150	150	50	50
MRL2	$\phi 12$				
MRG2	$\phi 16$				
SM-25	$\phi 20$	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300	300	30	30 With 1 or 2 switches
CAC3	$\phi 25$				
UCAC	$\phi 32$				
RCC2	$\phi 40$				
MFC	$\phi 50$				
SHC	$\phi 63$	75, 100, 125, 150, 175, 200, 225, 250, 275, 300	300	55	55 With 1 or 2 switches
GLC	$\phi 80$				

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

Switch specifications

- 1 color/2 color indicator

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/ T2YV	T3H/ T3V	T3PH/T3PV (Custom order)	T3YH/ T3YV	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay			Programmable controller, relay		Programmable controller, relay IC circuit (without indicator light), serial connection		Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)		Without indicator light		LED (ON lighting)		
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA						

- With preventive maintenance output

Descriptions	Proximity 3-wire		Proximity 4-wire		Proximity 3-wire		Proximity 4-wire	
	T2YFH/V		T3YFH/V		T2YMH/V		T3YMH/V	
Applications	Programmable controller		Programmable controller, relay		Programmable controller		Programmable controller, relay	
Output method	NPN output							
Light	Installation position adjustment		Red/green LED (ON lighting)					
	Preventive maintenance output		-		Yellow LED (ON lighting)			
Output section	Power voltage	-	10 to 28 VDC		-	10 to 28 VDC		
	Load voltage	10 to 30 VDC		30 VDC or less		10 to 30 VDC		30 VDC or less
	Load current	5 to 20 mA		50 mA or less		5 to 20 mA		50 mA or less
	Leakage current	1 mA or less		10 μA or less		1.2 mA or less		10 μA or less
Preventive maintenance output	Load voltage	30 VDC or less						
	Load current	20 mA or less		50 mA or less		5 to 20 mA or less		50 mA or less
	Leakage current	10 μA or less						

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25 °C. (5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire	
	T2YD	
Applications	Programmable controller	
Light	Red/green LED (ON lighting)	
Load voltage	24 VDC ± 10%	
Load current	5 to 20 mA	
Internal voltage drop	6 V or less	
Leakage current	1.0 mA or less	
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS	
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)	
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Maximum shock resistance	980m/s ²	
Ambient temperature	-10 to +60 °C	
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance	

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

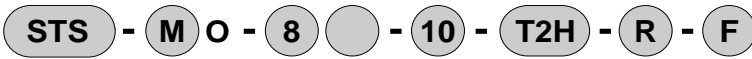
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

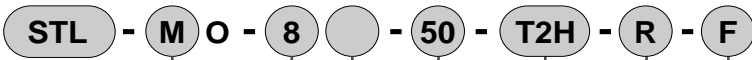
STS/STL-M_BO Series

How to order

● Short stroke



● Long stroke



A Bearing method

B Bore size

C Port thread type

D Stroke length

Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

E Switch model no.
Note 1, Note 4

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **A** and **B**.

Example) STS-MO-L1-63-50-T2YH3-D-F
2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product. In this case, insert "L1" between **A** and **B** in model no.

Example) STS-MO-L1-63-50-F

Note on model no. selection

Note 1: Switches other than **E** switch model no. are available. (Custom order) Refer to Ending 1 for the details.

Note 2: Refer to pages 1526 to 1529 for available variation and options.

Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.

Note 4: T1H/V, T8H/V installation is custom order. Note that T8H/V is not available for $\phi 8$ to $\phi 16$.

<Example of model number>

STS-MO-8-30-T0H-R-F

Model: Guided cylinder, short stroke length standard, low speed type

- A** Bearing method : Metal bush bearing
- B** Bore size : $\phi 8$ mm
- C** Port thread type : Rc thread
- D** Stroke length : 30mm
- E** Switch model no. : Reed T0H, lead wire length 1m
- F** Switch quantity : One on rod end
- G** Option : Material of end plate: Steel

F Switch quantity

G Option

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing

B Bore size (mm)	
8	$\phi 8$
12	$\phi 12$
16	$\phi 16$
20	$\phi 20$
25	$\phi 25$
32	$\phi 32$
40	$\phi 40$
50	$\phi 50$
63	$\phi 63$
80	$\phi 80$

C Port thread type	
Blank	Rc thread
NN	NPT thread ($\phi 32$ and over) custom order
GN	G thread ($\phi 32$ and over) custom order

D Stroke length (mm)	
Refer to the stroke length table on the following page.	

E Switch model no.					
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire	
T0H*	T0V*	Reed	1 color indicator type Without indicator light	2-wire	
T5H*	T5V*				
T8H*	T8V*				
T1H*	T1V*	Proximity	1 color indicator type	2-wire	
T2H*	T2V*				
T3H*	T3V*				
T3PH*	T3PV*			1 color indicator type (custom order)	3-wire
T2YH*	T2YV*			2 color indicator type	2-wire
T3YH*	T3YV*			2 color indicator type (W/o light for preventive maintenance output)	3-wire
T2YFH*	T2YFV*	Proximity	2 color indicator type (W/ light for preventive maintenance output)	3-wire	
T3YFH*	T3YFV*				
T2YMH*	T2YMV*			2 color indicator type (W/ light for preventive maintenance output)	3-wire
T3YMH*	T3YMV*				
T2JH*	T2JV*	Proximity	Off-delay type	2-wire	
T2YD*	—				
T2YDT*	—				

*Lead wire length	
Blank	1m (standard)
3	3m (option)
5	5m (option)

F Switch quantity	
R	One on rod end
H	One on head end
D	Two
T	Three

G Option	
F	Material of end plate (steel)
M	End plate corrosion proof material (aluminum) (custom order)
M1	End plate corrosion proof material (SUS) (custom order)
E Note 3	With dowel hole (custom order)

D Stroke length

Series	Stroke length (mm)	Applicable bore size										
		φ 8	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	
STS	10	●	●	●								
	20	●	●	●								
	25				●	●	●	●	●	●	●	
	30	●	●	●								
	40	●	●	●								
	50	●	●	●	●	●	●	●	●	●	●	
	75										●	
	100										●	
	Min. stroke length Note 1	5										
	Custom stroke length Note 1, Note 2	Per 5mm										
STL	50	●	●	●	●	●	●	●	●	●	●	
	75	●	●	●	●	●	●	●	●	●	●	
	100	●	●	●	●	●	●	●	●	●	●	
	125	●	●	●	●	●	●	●	●	●	●	
	150	●	●	●	●	●	●	●	●	●	●	
	175				●	●	●	●	●	●	●	
	200				●	●	●	●	●	●	●	
	225				●	●	●	●	●	●	●	
	250				●	●	●	●	●	●	●	
	275				●	●	●	●	●	●	●	
	300				●	●	●	●	●	●	●	
		Min. stroke length Note 1	50			30						55
	Custom stroke length Note 1, Note 2	Per 5mm										

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch

SW - TOV

Switch model no.
(Item E) previous page)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Internal structure and parts list

This is the same as double acting single rod type. Refer to pages 1538 to 542.

Repair parts list

Bore size (mm)	Kit No.	Repair parts number
	STS- ^M _B O	
φ 8	STS-O-8K	7 9 10 13 16
φ 12	STS-O-12K	7 9 10 13 16 32
φ 16	STS-O-16K	
φ 20	STS-O-20K	
φ 25	STS-O-25K	
φ 32	STS-O-32K	7 9 10 13
φ 40	STS-O-40K	
φ 50	STS-O-50K	16 17 32
φ 63	STS-O-63K	
φ 80	STS-O-80K	

Note: Specify the kit No. when placing an order.

Dimensions

It is the same as the double acting/single rod type STS/STL Series. Refer to pages below.

STS Series : page 1545 (φ 8 to φ 16), page 1546 (φ 20, φ 25), page 1547 (φ 32 to φ 63), page 1548 (φ 80)

STL Series : page 1550 (φ 8 to φ 16), page 1551 (φ 20, φ 25), page 1552 (φ 32 to φ 63), page 1553 (φ 80)




Guided cylinder Double acting rubber scraper type

STS/STL-M_BG Series

Double acting Coil scraper type

STS/STL-M_BG1 Series

● Bore size: ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80

JIS symbol 



Specifications

Descriptions	STS-MG/BG, STS-MG1/BG1, STL-MG/BG, STL-MG1/BG1							
Bore size mm	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80	
Actuation	Double acting scraper type							
Working fluid	Compressed air							
Max. working pressure MPa	1.0							
Min. working pressure MPa	0.2			0.15				
Withstanding pressure MPa	1.6							
Ambient temperature $^{\circ}$ C	-10 to 60 (no freezing)							
Port size	M5		Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance mm	+2.0 0							
Working piston speed mm/s	50 to 500					50 to 300		
Cushion	Rubber cushioned							
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)							
Allowable energy absorption J	0.157	0.157	0.401	0.627	0.980	1.560	2.510	

Stroke length

· Short stroke STS

STS/L	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
LCS	ϕ 20	25, 50	50	5	5 With 1 or 2 switches
LCG	ϕ 25				
LCM	ϕ 32				
LCT	ϕ 40				
LCY	ϕ 50				
STR2	ϕ 63	25, 50, 75, 100	100		
UCA2	ϕ 80				

· Long stroke STL

	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
SRL2	ϕ 20	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 With 1 or 2 switches
SRG	ϕ 25				
SRM	ϕ 32				
SRT	ϕ 40				
MRL2	ϕ 50				
MRG2	ϕ 63	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 With 1 or 2 switches
SM-25	ϕ 80				

Note: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STL/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Switch specifications

- 1 color/2 color indicator

*The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire						
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/ T2YV	T3H/ T3V	T3PH/T3PV (Custom order)	T3YH/ T3YV	T0H/T0V	T5H/T5V		T8H/T8V			
Applications	Programmable controller, relay, small solenoid valve		Programmable controller	Programmable controller, relay			Programmable controller, relay	Programmable controller, relay IC circuit (without indicator light), serial connection			Programmable controller, relay		
Output method	-			NPN output	PNP output	NPN output	-						
Power voltage	-			10 to 28 VDC			-						
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Without indicator light		LED (ON lighting)			
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μA or less			0mA						

- With preventive maintenance output

Descriptions	Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
	T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications	Programmable controller		Programmable controller, relay	
Output method	NPN output			
Light	Installation position adjustment			
	Red/green LED (ON lighting)		Yellow LED (ON lighting)	
Output section	Preventive maintenance output	-		
	Power voltage	-	10 to 28 VDC	-
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC
	Load current	5 to 20 mA	50 mA or less	5 to 20 mA
Preventive maintenance output	Leakage current	1 mA or less	10 μA or less	1.2 mA or less
	Load voltage	30 VDC or less		
	Load current	20 mA or less	50 mA or less	5 to 20 mA or less
	Leakage current	10 μA or less		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25 °C. (5 to 10mA when 60°C)

Switch specifications

- Strong magnetic field proof

Descriptions	Proximity 2-wire
	T2YD
Applications	Programmable controller
Light	Red/green LED (ON lighting)
Load voltage	24 VDC ± 10%
Load current	5 to 20 mA
Internal voltage drop	6 V or less
Leakage current	1.0 mA or less
Output delay time (Note 1) (ON / OFF delay)	30 to 60 mS
Lead wire length (standard) (Note 2)	1 m (oil resistant vinyl cabtire cable 2-conductor 0.5mm ²)
Insulation resistance	100 MΩ and over with 500 VDC megger
Withstand voltage	No failure impressed at 1000 VAC for one minute
Maximum shock resistance	980m/s ²
Ambient temperature	-10 to +60 °C
Protective structure	IEC standards IP67, JIS C0920 (water tight type), oil resistance

Note 1: This shows the time until a magnetic sensor detects the piston magnet and outputs a switch signal.

Note 2: Flame resistance cabtire cord is available as an option.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STS/STL-M_BG/G1 Series

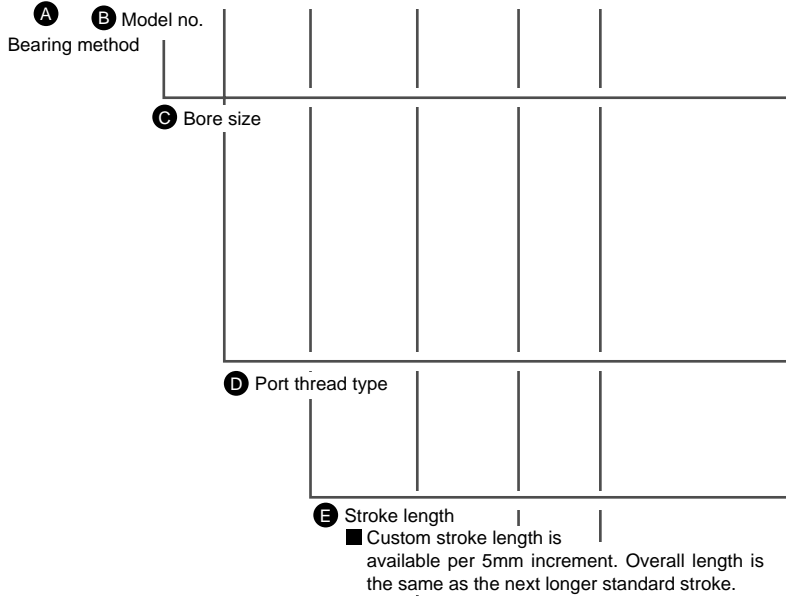
How to order

● Short stroke

STS - **M** **G** - **20** - **25** - **T2H** - **R** - **F**

● Long stroke

STL - **M** **G** - **20** - **50** - **T2H** - **R** - **F**



Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing
B Model no.	
G	Rubber scraper type
G1	Coil scraper type
C Bore size (mm)	
20	φ 20
25	φ 25
32	φ 32
40	φ 40
50	φ 50
63	φ 63
80	φ 80
D Port thread type	
Blank	Rc thread
NN	NPT thread (φ 32 and over) custom order
GN	G thread (φ 32 and over) custom order
E Stroke length (mm)	
Refer to the stroke length table on the following page.	

F Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T0H*	T0V*	Reed	1 color indicator type	2-wire
T5H*	T5V*		Without indicator light	
T8H*	T8V*		Proximity	1 color indicator type
T1H*	T1V*			
T2H*	T2V*	2 color indicator type (custom order)		3-wire
T3H*	T3V*			
T3PH*	T3PV*			
T2YH*	T2YV*	2 color indicator type	2 color	2-wire
T3YH*	T3YV*		indicator type	3-wire
T2YFH*	T2YFV*	2 color indicator type (W/o light for preventive maintenance output)	2 color	3-wire
T3YFH*	T3YFV*			4-wire
T2YMH*	T2YMV*	2 color indicator type (W/ light for preventive maintenance output (1 color))	2 color	3-wire
T3YMH*	T3YMV*			4-wire
T2JH*	T2JV*	Strong magnetic field proof switch	Off-delay type	2-wire
T2YD*	—		2-wire	
T2YDT*	—			

*Lead wire length	
Blank	1m (standard)
3	3m (option)
5	5m (option)

G Switch quantity	
R	One on rod end
H	One on head end
D	Two
T	Three

H Option	
F	Material of end plate (steel)
M	End plate corrosion proof material (aluminum) (custom order)
M1	End plate corrosion proof material (SUS) (custom order)
E Note 3	With dowel hole (custom order)
P6 Note 4	Copper and PTFE free (custom order) (Not available for the coil scraper type G1.)

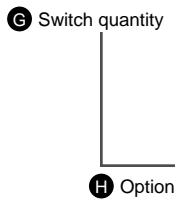
Note on model no. selection

- Note 1: Switches other than **F** switch model no. are available. (Custom order) Refer to Ending 1 for the details.
- Note 2: Refer to pages 1526 to 1529 for available variation and options.
- Note 3: Refer to page 1526 or 1528 for dowel holes for positioning.
- Note 4: φ 20, 25 is copper and PTFE free by ball bearing B standard products. Not available for the coil scraper type G1.
- Note 5: T1H/V, T8H/V installation is custom order.

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product.
 Example) STS-MG-L1-63-50-T2YH3-D-F
 In this case, insert "L" between **A** and **B** in model no.
 Example) STS-MG-L1-63-50-F

<Example of model number>

- STS-MG-20-25-T0H-R-F**
 Model: Guided cylinder, short stroke length
- A** Bearing method : Metal bush bearing
 - B** Model no. : Rubber scraper
 - C** Bore size : φ 20mm
 - D** Port thread type : Rc thread
 - E** Stroke length : 25mm
 - F** Switch model no. : Reed T0H, lead wire length 1m
 - G** Switch quantity : One on rod end
 - H** Option : Material of end plate: Steel



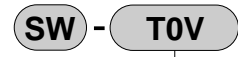
E Stroke length

Series	Stroke length (mm)	Applicable bore size							
		φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	
STS	Standard stroke length	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Min. stroke length Note 1	5							
Custom stroke length Note 1, Note 2	Per 5mm								
STL	Standard stroke length	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
		Min. stroke length Note 1	30						55
Custom stroke length Note 1, Note 2	Per 5mm								

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch



Switch model no.
(Item ⑥ previous page)

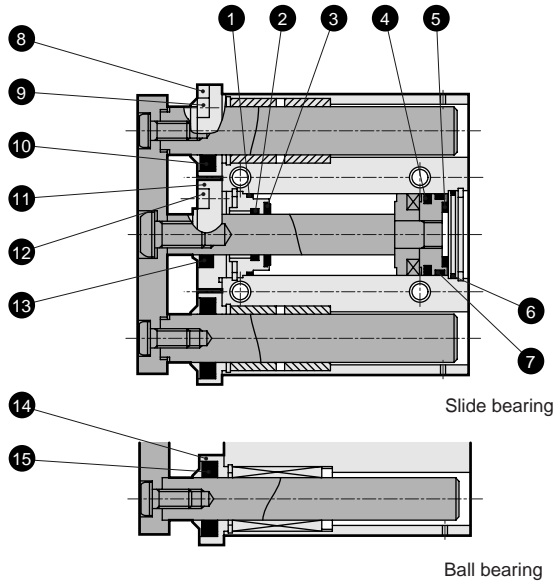
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG**
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Guided cylinder
Combined functions

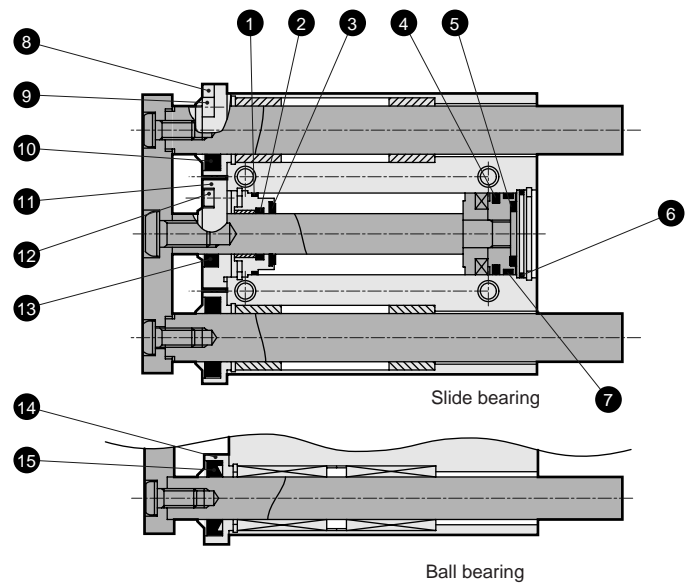
Internal structure and parts list

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

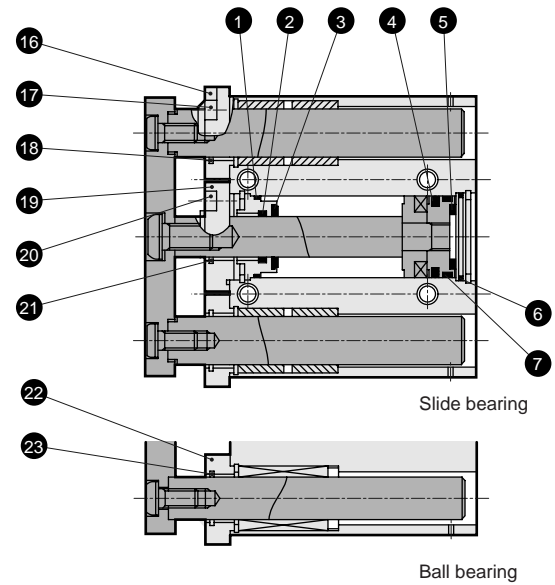
● Rubber scraper type
STS-^M_BG



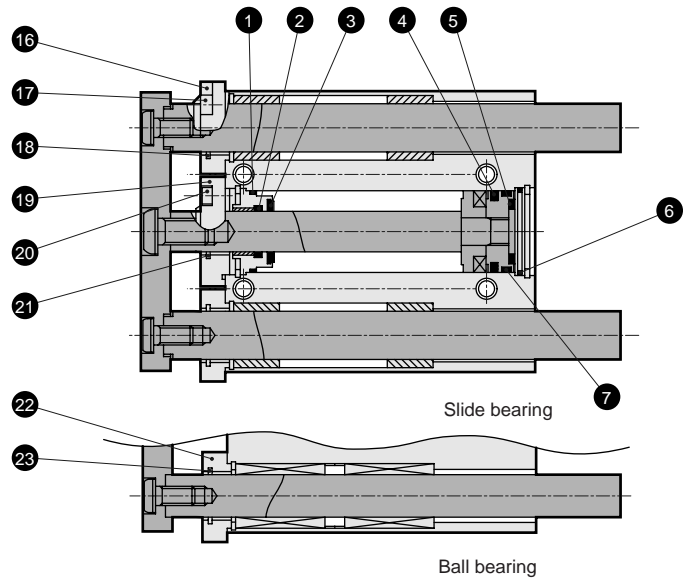
STL-^M_BG



● Coil scraper type
STS-^M_BG1



STL-^M_BG1



Parts list (parts other than below are the same as the double acting standard single rod type. Refer to pages 1538 to 1542.)

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
ST^S_L-^M_BG (rubber scraper type)				ST^S_L-^M_BG1 (coil scraper type)			
1	Metal gasket	Nitrile rubber		1	Metal gasket	Nitrile rubber	
2	Rod packing seal	Nitrile rubber		2	Rod packing seal	Nitrile rubber	
3	Cushion rubber (R)	Urethane rubber		3	Cushion rubber (R)	Urethane rubber	
4	Piston packing seal	Nitrile rubber		4	Piston packing seal	Nitrile rubber	
5	Cushion rubber (H)	Urethane rubber		5	Cushion rubber (H)	Urethane rubber	
6	O ring	Nitrile rubber		6	O ring	Nitrile rubber	
7	Wear ring	Acetar resin		7	Wear ring	Acetar resin	
8	Adaptor B	Aluminum alloy	Alumite	16	Adaptor B	Aluminum alloy	Alumite
9	Hexagon socket head cap bolt	Alloy steel	Blackening	17	Hexagon socket head cap bolt	Alloy steel	Blackening
10	Rubber scraper	Nitrile rubber + steel		18	Coil scraper	Phosphor bronze	
11	Adaptor A	Aluminum alloy	Alumite	19	Adaptor A	Aluminum alloy	Alumite
12	Hexagon socket head cap bolt	Alloy steel	Blackening	20	Hexagon socket head cap bolt	Alloy steel	Blackening
13	Rubber scraper	Nitrile rubber + steel		21	Coil scraper	Phosphor bronze	
14	Adaptor C	Aluminum alloy	Alumite	22	Adaptor C	Aluminum alloy	Alumite
15	Rubber scraper	Nitrile rubber + steel		23	Coil scraper	Phosphor bronze	

Repair parts list (Note: Specify the kit No. when placing an order.)

● STS-MG/STL-MG (rubber scraper type)

Bore size (mm)	Kit No.	Repair parts number
φ20	STS-MG-20K	
φ25	STS-MG-25K	1 2 3
φ32	STS-MG-32K	4 5 6
φ40	STS-MG-40K	7 10 13
φ50	STS-MG-50K	
φ63	STS-MG-63K	
φ80	STS-MG-80K	

● STS-BG/STL-BG (rubber scraper type)

Bore size (mm)	Kit No.	Repair parts number
φ20	STS-BG-20K	
φ25	STS-BG-25K	1 2 3
φ32	STS-BG-32K	4 5 6
φ40	STS-BG-40K	7 13 15
φ50	STS-BG-50K	
φ63	STS-BG-63K	
φ80	STS-BG-80K	

● STS-MG1/STL-MG1 (coil scraper type)

Bore size (mm)	Kit No.	Repair parts number
φ20	STS-MG1-20K	
φ25	STS-MG1-25K	1 2 3
φ32	STS-MG1-32K	4 5 6
φ40	STS-MG1-40K	7 18 21
φ50	STS-MG1-50K	
φ63	STS-MG1-63K	
φ80	STS-MG1-80K	

● STS-BG1/STL-BG1 (coil scraper type)

Bore size (mm)	Kit No.	Repair parts number
φ20	STS-BG1-20K	
φ25	STS-BG1-25K	1 2 3
φ32	STS-BG1-32K	4 5 6
φ40	STS-BG1-40K	7 21 23
φ50	STS-BG1-50K	
φ63	STS-BG1-63K	
φ80	STS-BG1-80K	

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Dimensions

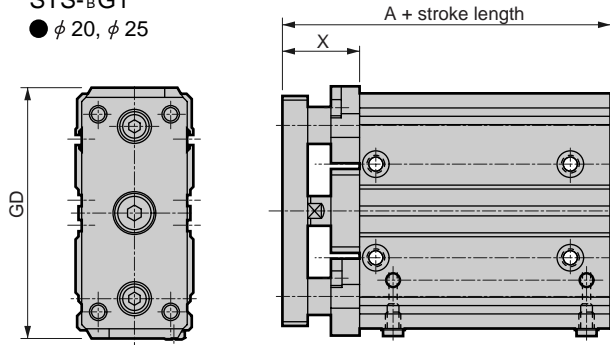


● Coil scraper type

(Dimensions other than those listed below are the same as the double acting single rod type on pages 1545 to 1548.)

STS-M-B-G1

- $\phi 20, \phi 25$

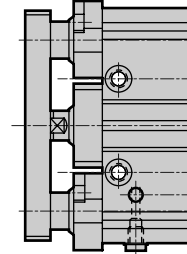


● Rubber scraper type

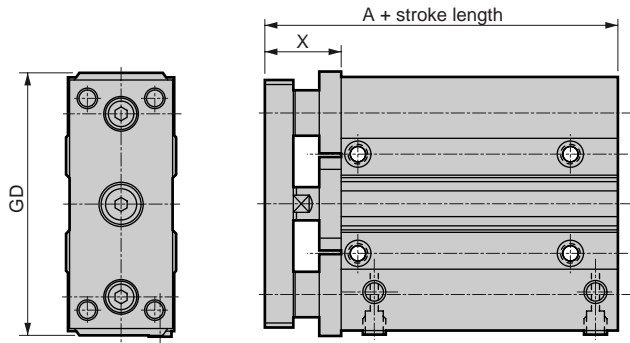
(Dimensions other than those listed below are the same as double acting single rod type on pages 1545 to 1548.)

STS-M-B-G

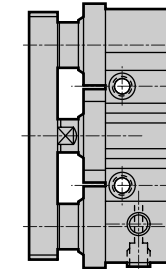
- $\phi 20, \phi 25$



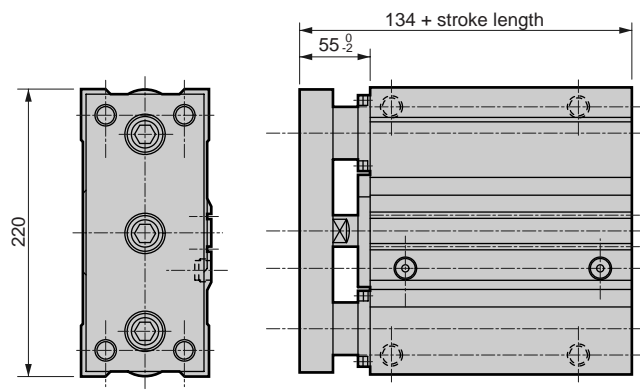
- $\phi 32, \phi 40, \phi 50, \phi 63$



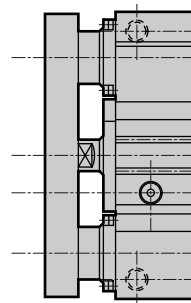
- $\phi 32, \phi 40, \phi 50, \phi 63$



- $\phi 80$



- $\phi 80$



Symbol	A	X	GD
Bore size (mm)			
$\phi 20$	68	$28 \frac{0}{-0.2}$	87
$\phi 25$	69	$28 \frac{0}{-0.2}$	91
$\phi 32$	83	$34 \frac{0}{-0.2}$	117
$\phi 40$	87	$34 \frac{0}{-0.2}$	126
$\phi 50$	92	$37 \frac{0}{-0.2}$	152
$\phi 63$	98	$37 \frac{0}{-0.2}$	166
$\phi 80$	134	$55 \frac{0}{-0.2}$	220

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.
 Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

SCP*2
 CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS
 CKV2
 CA/OV2
 SSD
 CAT
 MDC2
 MVC
 SMD2
 MSD*
 FC*
 STK
 ULK*
 JSK/M2
 JSG
 JSC3
 USSD
 USC
 JSB3
 LMB
STG
STS/L
 LCS
 LCG
 LCM
 LCT
 LCY
 STR2
 UCA2
 HCM
 HCA
 SRL2
 SRG
 SRM
 SRT
 MRL2
 MRG2
 SM-25
 CAC3
 UCAC
 RCC2
 MFC
 SHC
 GLC
 Ending

Dimensions

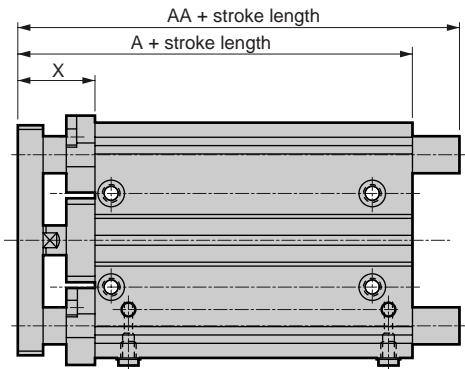
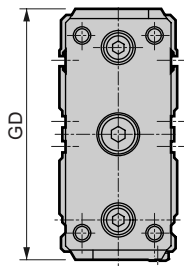


● Coil scraper type

(Dimensions other than listed below are the same as double acting single rod type on pages 1550 to 1553.)

STL-^M_BG1

● $\phi 20, \phi 25$

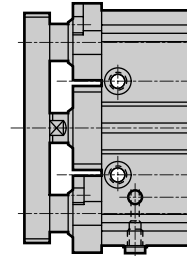


● Rubber scraper type

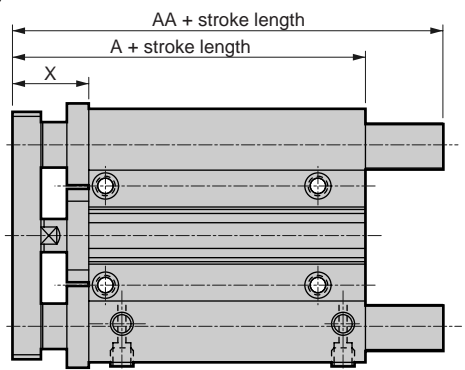
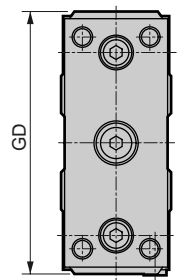
(Dimensions other than those listed below are the same as the double acting single rod type on pages 1550 to 1553.)

STL-^M_BG

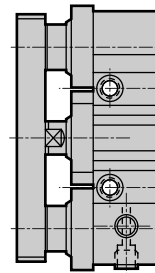
● $\phi 20, \phi 25$



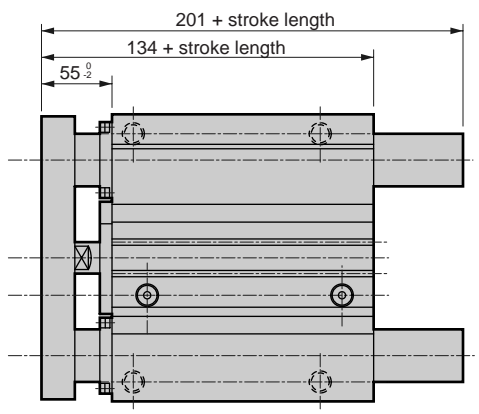
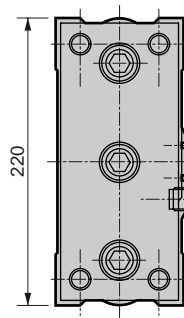
● $\phi 32, \phi 40, \phi 50, \phi 63$



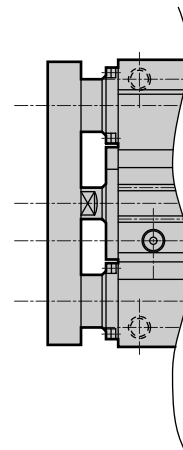
● $\phi 32, \phi 40, \phi 50, \phi 63$



● $\phi 80$



● $\phi 80$



Symbol	A	AA	X	GD
Bore size (mm)				
$\phi 20$	68	87	$28 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	87
$\phi 25$	69	87	$28 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	91
$\phi 32$	83	117	$34 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	117
$\phi 40$	87	117	$34 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	126
$\phi 50$	92	140	$37 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	152
$\phi 63$	98	140	$37 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	166
$\phi 80$	134	201	$55 \begin{smallmatrix} 0 \\ -0.2 \end{smallmatrix}$	220

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

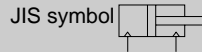
Guided cylinder
Combined functions



Guided cylinder Double acting coolant proof type

STS/STL-MBG²₃ Series

● Bore size: ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63, ϕ 80



Specifications

Descriptions	STS/STL-MBG ² ₃							
Bore size mm	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80	
Actuation	Double acting coolant proof type							
Working fluid	Compressed air							
Max. working pressure MPa	1.0							
Min. working pressure MPa	0.2				0.15			
Withstanding 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							
Working piston speed mm/s	50 to 500					50 to 300		
Cushion	Rubber cushioned (urethane rubber)							
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)							
Allowable energy absorption J	0.157	0.157	0.401	0.627	0.980	1.560	2.510	

Stroke length

● Scraper type

· Short stroke STS

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 20	25, 50	50	5	5 With 1 or 2 switches
ϕ 25				
ϕ 32				
ϕ 40				
ϕ 50				
ϕ 63				
ϕ 80	25, 50, 75, 100	100		

· Long stroke STL

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 20	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 With 1 or 2 switches
ϕ 25				
ϕ 32				
ϕ 40				
ϕ 50				
ϕ 63				
ϕ 80	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 With 1 or 2 switches

Note 1: Custom stroke length is available per 5mm increment.

Overall length is the same as the next longer standard stroke.

Note 2: Stroke length over standard to max. is available per 25mm increment.



CAUTION The rod end has a scraper and coolant proof structure, but a scraper is not set on the head end.

Provide a cover, etc., for protection.

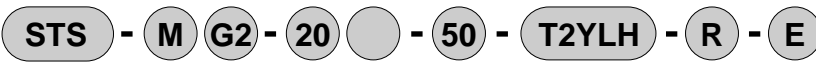
Switch specifications

Type/model no.	Proximity switch specifications	
Descriptions	T2YLH/T2YLV	T3YLH/T3YLV
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage and current	10 to 30 VDC, 5 to 20mA	Note 1 30 VDC or less, 50mA or less
Light	Red/green LED (ON lighting)	
Leakage current	1 mA or less	10 μ A or less
Maximum shock resistance	980 m / S ²	

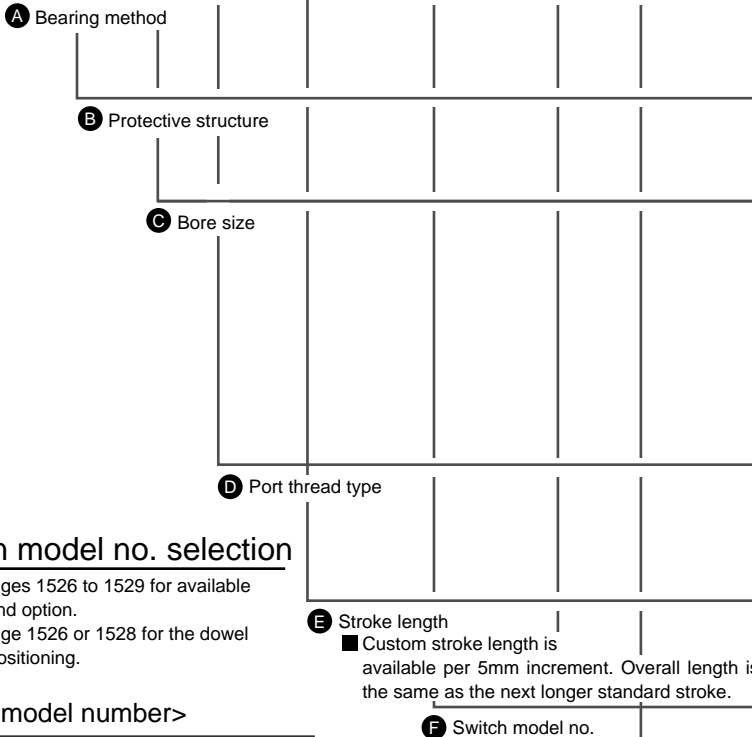
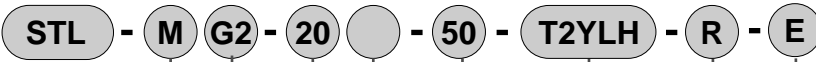
Note 1: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25 °C. (5 to 10mA with 60 °C)

How to order

● Short stroke



● Long stroke



Note on model no. selection

Note 1: Refer to pages 1526 to 1529 for available variation and option.

Note 2: Refer to page 1526 or 1528 for the dowel holes for positioning.

<Example of model number>

STS-MG2-20-50-T2YLH-R

Model: Guided cylinder, short stroke length

- A** Bearing method : Metal bush bearing
- B** Protective structure : Coolant proof scraper + packing seal NBR
- C** Bore size : ϕ 20mm
- D** Port thread type : Rc thread
- E** Stroke length : 50mm
- F** Switch model no. : Proximity switch T2YLH, lead wire 1m
- G** Switch quantity : One on rod end

E Stroke length

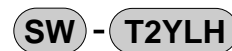
Series	Stroke length (mm)	Applicable bore size							
		ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63	ϕ 80	
STS	Standard stroke length	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Min. stroke length Note 1	5							
Custom stroke length Note 1, Note 2		Per 5mm							
STL	Standard stroke length	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●	
Min. stroke length Note 1	30					55			
Custom stroke length Note 1, Note 2		Per 5mm							

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

Symbol	Descriptions			
A Bearing method				
M	Metal bush bearing			
B	Ball bearing			
B Protective structure				
G2	Coolant proof scraper + packing seal NBR			
G3	Coolant proof scraper + packing seal FKM			
C Bore size (mm)				
20	ϕ 20			
25	ϕ 25			
32	ϕ 32			
40	ϕ 40			
50	ϕ 50			
63	ϕ 63			
80	ϕ 80			
D Port thread type				
Blank	Rc thread			
NN	NPT thread (ϕ 32 and over) custom order			
GN	G thread (ϕ 32 and over) custom order			
E Stroke length (mm)				
Refer to the stroke length table below.				
F Switch model no.				
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire
T2YLH*	T2YLV*	Proximity	2 color indicator type	2-wire
T3YLH*	T3YLV*			
*Lead wire length				
Blank	1m (standard)			
3	3m (option)			
5	5m (option)			
G Switch quantity				
R	One on rod end			
H	One on head end			
D	Two			
H Option				
M1	End plate material (SUS) (custom order)			
E Note 2	With dowel hole (custom order)			

How to order switch



Switch model no. (Item F above)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Internal structure and parts list

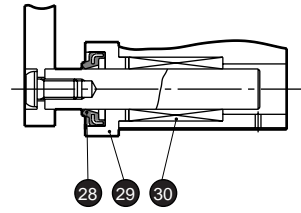
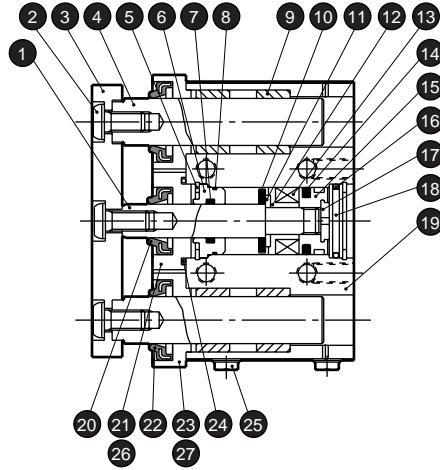
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

● Protective structure: Packing seal NBR/FKM

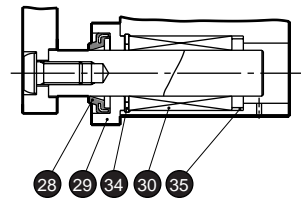
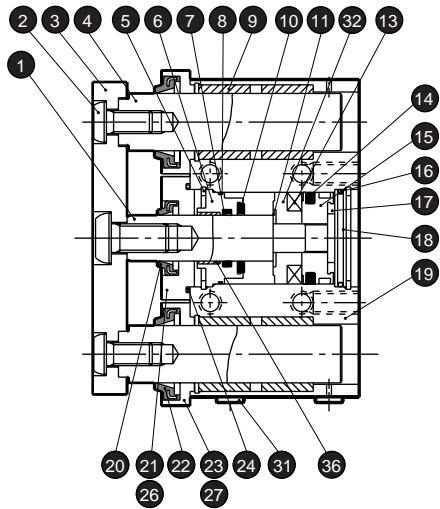
STS-M_BG2

STS-M_BG3

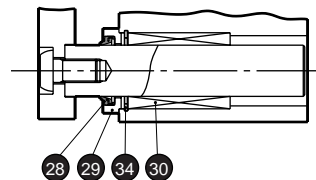
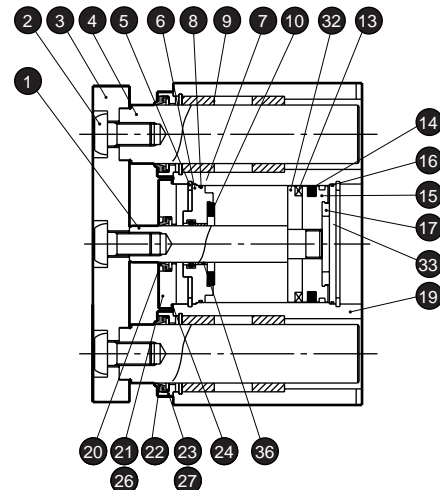
● ϕ 20, ϕ 25



● ϕ 32, ϕ 40, ϕ 50, ϕ 63



● ϕ 80



Parts list

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Piston rod	Stainless steel	Industrial chrome plating	19	Tube body	Aluminum alloy	Hard alumite treatment
2	Hexagon socket head button bolt	Stainless steel		20	Scraper	G2	Nitrile rubber
3	End plate	Aluminum alloy	Black alumite treatment			G3	Fluoro rubber
4	Guide rod	Stainless steel	Industrial chrome plating	21	Adopter A	Aluminum alloy	Alumite treatment
5	C type snap ring for hole	Stainless steel		22	Scraper	G2	Nitrile rubber
6	Rod bushing	Special aluminum	Alumite treatment			G3	Fluoro rubber
7	Rod packing seal	G2	Nitrile rubber	23	Adaptor B	Aluminum alloy	
		G3	Fluoro rubber			Alumite treatment	
8	Metal gasket	G2	Nitrile rubber	24	O ring	G2	Nitrile rubber
		G3	Fluoro rubber			G3	Fluoro rubber
9	Metal	Oil impregnated bearing alloy		25	Plug	Brass	Nickeling
10	Cushion rubber (R)	Urethane rubber		26	Hexagon socket head cap bolt	Stainless steel	
11	Spacer washer	Stainless steel	φ 20 to φ 50	27	Hexagon socket head cap bolt	Stainless steel	
12	Spacer	Polyamide	φ 20 to φ 50				
13	Magnet	Plastic		28	Scraper	G2	Nitrile rubber
14	Piston packing seal	G2	Nitrile rubber	29	Adaptor C	Aluminum alloy	
		G3	Fluoro rubber			Alumite treatment	
15	Piston	Aluminum alloy	Chromate treatment	30	Bearing	Stainless steel	
16	O ring	G2	Nitrile rubber	31	Hexagon socket head sunk plug	Stainless steel	φ 32 to φ 63
		G3	Fluoro rubber	32	Spacer	Aluminum alloy	φ 63, φ 80
17	Cushion rubber (H)	Urethane rubber		33	Base plate	Steel	Galvanizing φ 80
18	Base plate	Aluminum alloy φ 20 to φ 63		34	C type snap ring for hole	Stainless steel	φ 32 to φ 80
				35	Collar	Aluminum alloy	φ 32 to φ 63
				36	Bush	DU dry bearing	φ 32 to φ 80

Repair parts list

● STS-MG2 (metal bush bearing, packing seal material: nitrile rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-MG2-20K	
φ 25	STS-MG2-25K	7 8 10
φ 32	STS-MG2-32K	14 16 17
φ 40	STS-MG2-40K	20 22 24
φ 50	STS-MG2-50K	
φ 63	STS-MG2-63K	
φ 80	STS-MG2-80K	

● STS-BG2 (ball bearing, packing seal material: nitrile rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-BG2-20K	
φ 25	STS-BG2-25K	7 8 10
φ 32	STS-BG2-32K	14 16 17
φ 40	STS-BG2-40K	20 24 28
φ 50	STS-BG2-50K	
φ 63	STS-BG2-63K	
φ 80	STS-BG2-80K	

● STS-MG3 (metal bush bearing, packing seal material: fluoro rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-MG3-20K	
φ 25	STS-MG3-25K	7 8 10
φ 32	STS-MG3-32K	14 16 17
φ 40	STS-MG3-40K	20 22 24
φ 50	STS-MG3-50K	
φ 63	STS-MG3-63K	
φ 80	STS-MG3-80K	

● STS-BG3 (ball bearing, packing seal material: fluoro rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-BG3-20K	
φ 25	STS-BG3-25K	7 8 10
φ 32	STS-BG3-32K	14 16 17
φ 40	STS-BG3-40K	20 24 28
φ 50	STS-BG3-50K	
φ 63	STS-BG3-63K	
φ 80	STS-BG3-80K	

Note: Specify the kit No. when placing an order.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

STL-^M_BG2/G3 Series

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

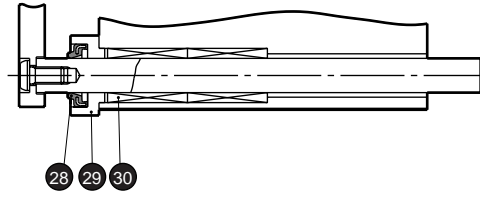
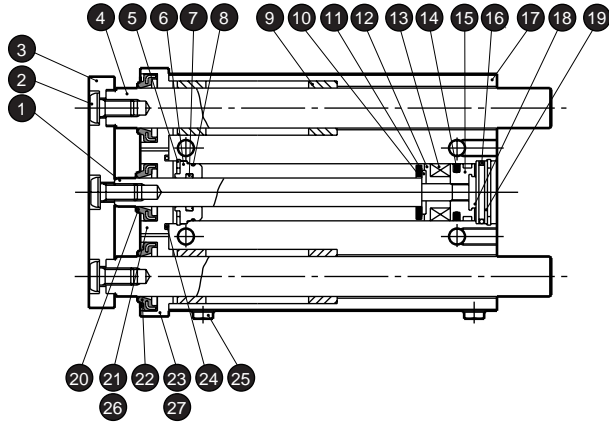
Internal structure and parts list

● Protective structure: Packing seal NBR/FKM

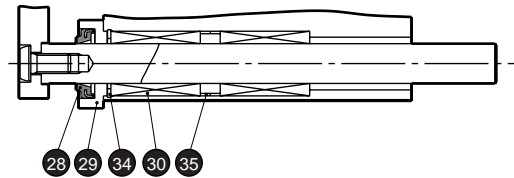
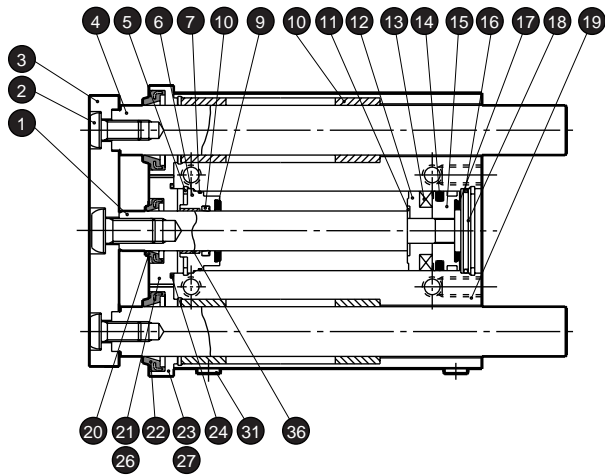
STL-^M_BG2

STL-^M_BG3

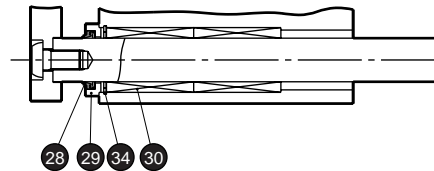
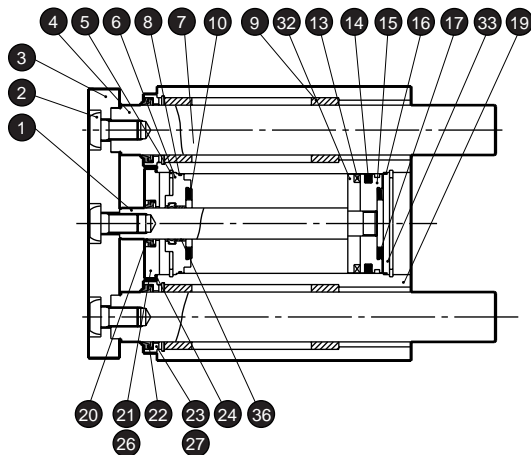
● ϕ 20, ϕ 25



● ϕ 32, ϕ 40, ϕ 50, ϕ 63



● ϕ 80



Parts list

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Piston rod	Stainless steel	Industrial chrome plating	19	Tube body	Aluminum alloy	Hard alumite treatment
2	Hexagon socket head button bolt	Stainless steel		20	Scraper	G2	Nitrile rubber
3	End plate	Aluminum alloy	Black alumite treatment			G3	Fluoro rubber
4	Guide rod	Stainless steel	Industrial chrome plating	21	Adopter A	Aluminum alloy	Alumite treatment
5	C type snap ring for hole	Stainless steel		22	Scraper	G2	Nitrile rubber
6	Rod bushing	Special aluminum	Alumite treatment			G3	Fluoro rubber
7	Rod packing seal	G2	Nitrile rubber	23	Adaptor B	Aluminum alloy	Alumite treatment
		G3	Fluoro rubber	24	O ring	G2	Nitrile rubber
8	Metal gasket	G2	Nitrile rubber			G3	Fluoro rubber
		G3	Fluoro rubber	25	Plug	Brass	Nickeling
9	Metal	Oil impregnated bearing alloy		26	Hexagon socket head cap bolt	Stainless steel	
10	Cushion rubber (R)	Urethane rubber		27	Hexagon socket head cap bolt	Stainless steel	
11	Spacer washer	Stainless steel	φ 20 to φ 50	28	Scraper	G2	Nitrile rubber
12	Spacer	Polyamide	φ 20 to φ 50			G3	Fluoro rubber
13	Magnet	Plastic		29	Adaptor C	Aluminum alloy	Alumite treatment
14	Piston packing seal	G2	Nitrile rubber	30	Bearing	Stainless steel	
		G3	Fluoro rubber	31	Hexagon socket head sunk plug	Stainless steel	φ 32 to φ 63
15	Piston	Aluminum alloy	Chromate treatment	32	Spacer	Aluminum alloy	φ 63, φ 80
16	O ring	G2	Nitrile rubber	33	Base plate	Steel	Galvanizing φ 80
		G3	Fluoro rubber	34	C type snap ring for hole	Stainless steel	φ 32 to φ 80
17	Cushion rubber (H)	Urethane rubber		35	Collar	Aluminum alloy	φ 32 to φ 63
18	Base plate	Aluminum alloy	φ 20 to φ 63	36	Bush	DU dry bearing	φ 32 to φ 80

Repair parts list

● STS-MG2 (metal bush bearing, packing seal material: nitrile rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-MG2-20K	
φ 25	STS-MG2-25K	7 8 10
φ 32	STS-MG2-32K	14 16 17
φ 40	STS-MG2-40K	20 22 24
φ 50	STS-MG2-50K	
φ 63	STS-MG2-63K	
φ 80	STS-MG2-80K	

● STS-BG2 (ball bearing, packing seal material: nitrile rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-BG2-20K	
φ 25	STS-BG2-25K	7 8 10
φ 32	STS-BG2-32K	14 16 17
φ 40	STS-BG2-40K	20 24 28
φ 50	STS-BG2-50K	
φ 63	STS-BG2-63K	
φ 80	STS-BG2-80K	

● STS-MG3 (metal bush bearing, packing seal material: fluoro rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-MG3-20K	
φ 25	STS-MG3-25K	
φ 32	STS-MG3-32K	7 8 10
φ 40	STS-MG3-40K	14 16 17
φ 50	STS-MG3-50K	20 22 24
φ 63	STS-MG3-63K	
φ 80	STS-MG3-80K	

● STS-BG3 (ball bearing, packing seal material: fluoro rubber)

Bore size (mm)	Kit No.	Repair parts number
φ 20	STS-BG3-20K	
φ 25	STS-BG3-25K	
φ 32	STS-BG3-32K	7 8 10
φ 40	STS-BG3-40K	14 16 17
φ 50	STS-BG3-50K	20 24 28
φ 63	STS-BG3-63K	
φ 80	STS-BG3-80K	

Note: Specify the kit No. when placing an order.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

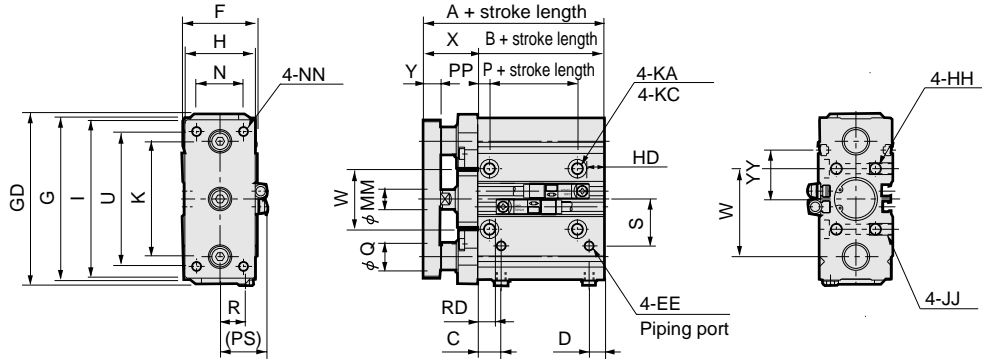
STS-M_BG2/G3 Series

Dimensions

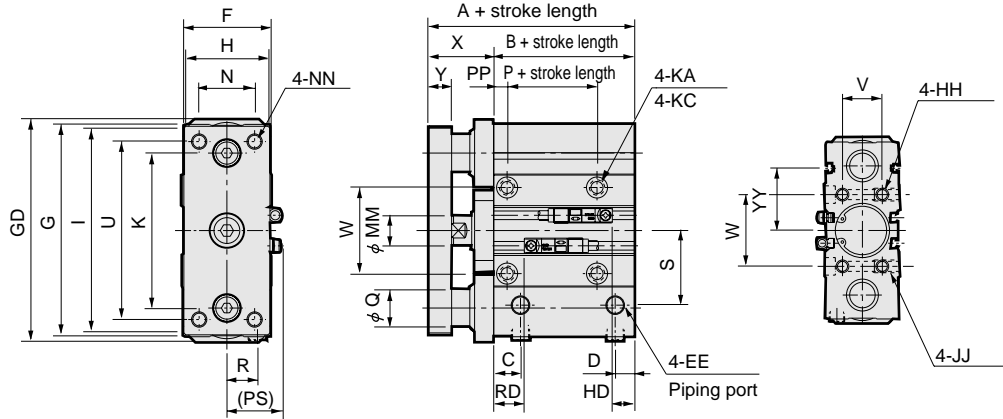


● Coolant proof type STS-M_BG2/G3

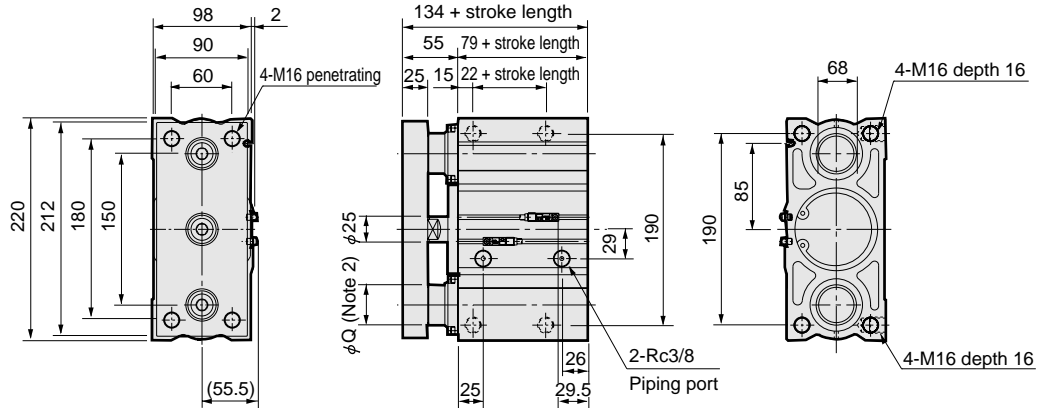
● $\phi 20, \phi 25$



● $\phi 32, \phi 40, \phi 50, \phi 63$



● $\phi 80$



Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.
Note 2: Dimension Q is 40 for M (metal bush bearings) and 35 for B (ball bearings).

Symbol	A	B	C	D	EE	F	G	H	HH	I	JJ	K	KA	KC
$\phi 20$	68	40	12	8	M5	38	83	36	M6 depth 12	81	M6 depth 12	59	5.2 penetrating	9.5 spot face depth 5.4
$\phi 25$	69	41	12	9	M5	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	9.5 spot face depth 5.4
$\phi 32$	83	49	14	10.5	Rc1/8	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	11 spot face depth 6.5
$\phi 40$	87	53	14.5	11.5	Rc1/8	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5
$\phi 50$	92	55	16	12.5	Rc1/4	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6
$\phi 63$	98	61	17.5	17.5	Rc1/4	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6

Symbol	GD	MM	N	NN	P	PP	Q		R	S	U	V	W	X	Y	YY	PS	RD	HD
							STS-M	STS-B											
$\phi 20$	87	10	24	M6 penetrating	20	6	14	12	13	24	69	20	31	28	9	25	24.5	9.5	8
$\phi 25$	91	12	26	M6 penetrating	20	6	14	12	14	26	72	24	35	28	9	27	26.5	11.5	7.5
$\phi 32$	117	16	29	M8 penetrating	22	7	20	16	16	39	93	25	45	34	12	39	29	16	12
$\phi 40$	126	16	34	M8 penetrating	25	7	20	16	18	43	102	32	54	34	12	42	32.5	19.5	13
$\phi 50$	152	20	44	M10 penetrating	26	8	25	20	22	49	125	38	66	37	16	49	38.5	21.5	13.5
$\phi 63$	166	20	55	M10 penetrating	26	8	25	20	26	56	140	50	79	37	16	56	45	18.5	21.5

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

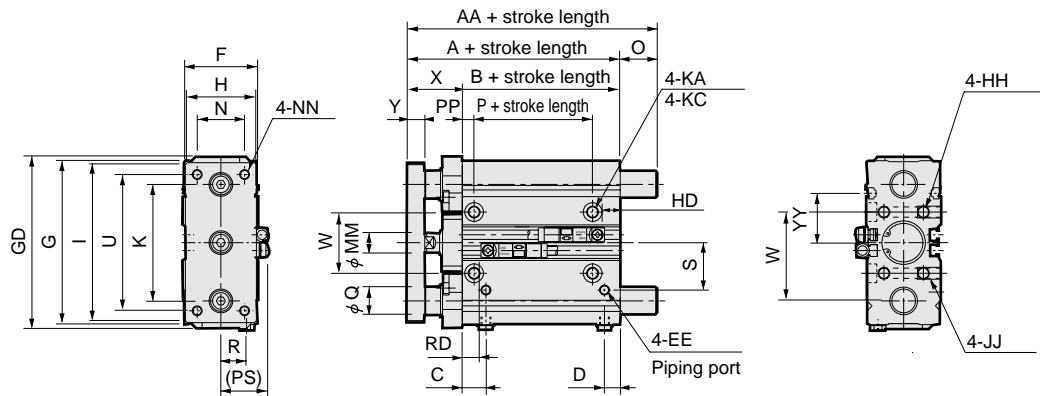
Dimensions



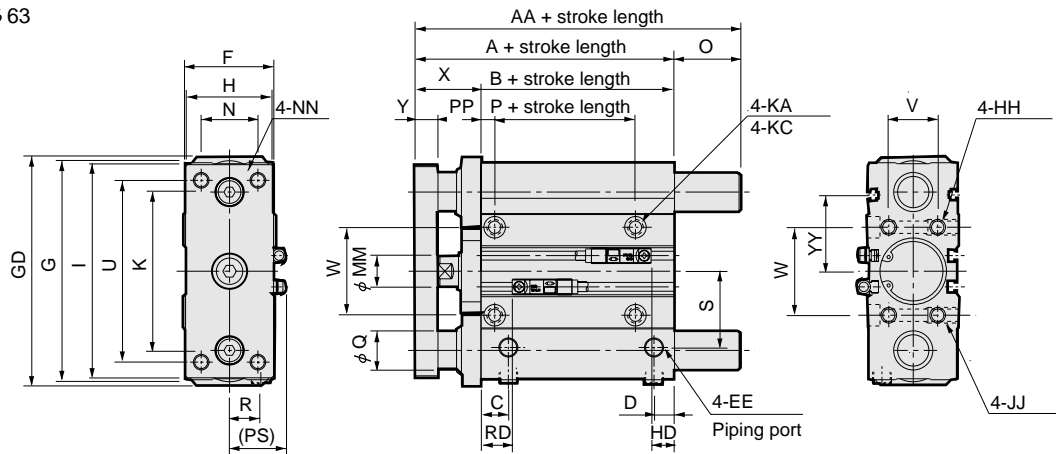
● Coolant proof type

STL-^M_BG2/G3

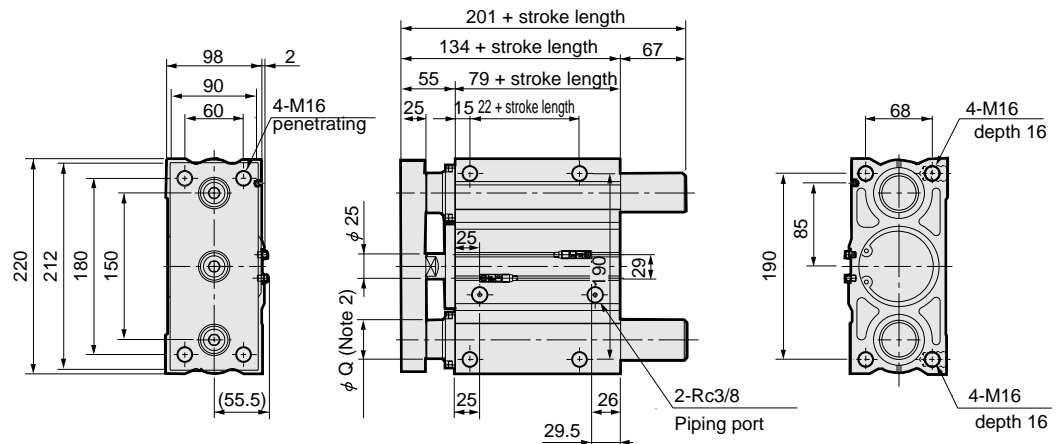
- $\phi 20, \phi 25$



- $\phi 32, \phi 40, \phi 50, \phi 63$



- $\phi 80$



Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Dimension Q is 40 for M (metal bush bearings) and 35 for B (ball bearings).

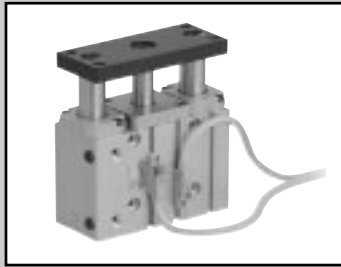
Symbol	A	AA	B	C	D	EE	F	G	GD	H	HH	I	JJ	K	KA	KC
$\phi 20$	68	87	40	12	8	M5	38	83	87	36	M6 depth 12	81	M6 depth 12	59	5.2 penetrating	$\phi 9.5$ spot face depth 5.4
$\phi 25$	69	87	41	12	9	M5	42	86	91	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	$\phi 9.5$ spot face depth 5.4
$\phi 32$	83	117	49	14	10.5	Rc1/8	47	111	117	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	$\phi 11$ spot face depth 6.5
$\phi 40$	87	117	53	14.5	11.5	Rc1/8	54	120	126	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	$\phi 11$ spot face depth 6.5
$\phi 50$	92	140	55	16	12.5	Rc1/4	66	147	152	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	$\phi 14$ spot face depth 8.6
$\phi 63$	98	140	61	17.5	17.5	Rc1/4	79	162	166	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	$\phi 14$ spot face depth 8.6

Symbol	MM	N	NN	O	P	PP	Q		R	S	U	V	W	X	Y	YY	PS	RD	HD
							STS-M	STS-B											
$\phi 20$	10	24	M6 penetrating	19	20	6	14	12	13	24	69	20	31	28	9	25	24.5	9.5	8
$\phi 25$	12	26	M6 penetrating	18	20	6	14	12	14	26	72	24	35	28	9	27	26.5	11.5	7.5
$\phi 32$	16	29	M8 penetrating	34	22	7	20	16	16	39	93	25	45	34	12	39	29	16	12
$\phi 40$	16	34	M8 penetrating	30	25	7	20	16	18	43	102	32	54	34	12	42	32.5	19.5	13
$\phi 50$	20	44	M10 penetrating	48	26	8	25	20	22	49	125	38	66	37	16	49	38.5	21.5	13.5
$\phi 63$	20	55	M10 penetrating	42	26	8	25	20	26	56	140	50	79	37	16	56	45	18.5	21.5

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

Ending

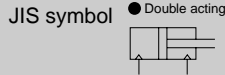
Guided cylinder
Combined functions



Guided cylinder Spatter adherence prevention type

STS/STL-G4 Series

● Bore size: ϕ 40, ϕ 50, ϕ 63, ϕ 80



Specifications

Descriptions	STS/STL-G4			
Bore size mm	ϕ 40	ϕ 50	ϕ 63	ϕ 80
Actuation	Double acting			
Working fluid	Compressed air			
Max. working pressure MPa	1.0			
Min. working pressure MPa	0.15			
Withstanding pressure MPa	1.6			
Ambient temperature °C	-10 to 60 (no freezing)			
Port size	Rc1/8	Rc1/4	Rc3/8	
Stroke tolerance mm	+2.0 0			
Working piston speed mm/s	50 to 500		50 to 300	
Cushion	Rubber cushioned			
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32)			
Allowable energy absorption J	0.627	0.980	1.560	2.510

Stroke length

· Short stroke STS

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 40	25, 50	50	5	5 With 1 or 2 switches
ϕ 50				
ϕ 63	25, 50, 75, 100	100	5	5 With 1 or 2 switches
ϕ 80				

· Long stroke STL

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)	Min. stroke length with switch (mm)
ϕ 40	50, 75, 100, 125, 150,	400	30	30 With 1 or 2 switches
ϕ 50	175, 200, 225, 250, 275,			
ϕ 63	300, 325, 350, 375, 400			
ϕ 80	75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 With 1 or 2 switches

Note 1: Custom stroke length is available per 5mm increment.
Overall length is the same as the next longer standard stroke.

Switch specifications

Descriptions	Proximity 2-wire
	T2YD
Applications	Programmable controller
Light	Red/green LED (ON lighting)
Load voltage	24 VDC \pm 10%
Load current	5 to 20mA DC
Internal voltage drop	6V or less
Leakage current	1.0mA or less
Output delay time Note 1 (ON / OFF delay)	30 to 60ms
Lead wire length	1m (oil resistant vinyl cable ϕ 6, 0.5mm ² x 2-conductor) Note 2, Note 3
Insulation resistance	100M Ω and over with 500 VDC megger
Withstand voltage	No abnormality when 1000 VAC is applied for one minute
Maximum shock resistance	980m/s ²
Ambient temperature	-10 to +60°C
Protective structure	JIS C0920 (water tight), IECStandardIP67, oil proof

Note 1: Indicates the time from detection of the piston magnet by the magnetic sensor to switch output.

Note 2: For lead wire options, 3m and 5m are available.

Note 3: Flame resistance type is available as lead wire option.

How to order

● Short stroke
STS - **M** **G4** - **L1** - **40** - **50** - **T2YD** - **R** - **F**

● Long stroke
STL - **M** **G4** - **L1** - **40** - **100** - **T2YD** - **D** - **F**

Series

A Bearing method

B Bore size

C Port thread type

D Stroke length

■ Custom stroke length is available per 5mm is increment. The total length is the same as the next longer standard stroke length.

E Switch model no.

F Switch quantity

G Option

Symbol	Remarks				
A Bearing method					
M	Metal bush bearing				
B	Ball bearing				
B Bore size (mm)					
40	φ 40				
50	φ 50				
63	φ 63				
80	φ 80				
C Port thread type					
Blank	Rc thread				
NN	NPT thread custom order				
GN	G thread custom order				
D Stroke length (mm)					
Refer to the stroke length table below.					
E Switch model no.					
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire	
T2YD*	—	Proximity	Strong magnetic field proof switch	2-wire	
T2YDT*	—				
Lead wire length					
Blank	1m (standard)				
3	3m (option)				
5	5m (option)				
F Switch quantity					
R	One on rod end				
H	One on head end				
D	Two				
T	Three				
G Option					
F	Material of end plate: Steel				
M	End plate corrosion proof material (aluminum) (custom order)				
M1	End plate corrosion proof material (SUS) (custom order)				
E <small>Note 2</small>	With dowel hole (custom order)				

⚠ Note on model no. selection

Note 1: Refer to pages 1526 to 1529 for available variation and option.

Note 2: Refer to page 1526 or 1528 for the dowel holes for positioning.

D Stroke length

Series	Stroke length (mm)	Applicable bore size				
		φ 40	φ 50	φ 63	φ 80	
STS	Standard stroke length	25	●	●	●	●
		50	●	●	●	●
		75				●
		100				●
	Min. stroke length <small>Note 1</small>	5				
Custom stroke length <small>Note 1, Note 2</small>		Per 5mm				
STL	Standard stroke length	50	●	●	●	●
		75	●	●	●	●
		100	●	●	●	●
		125	●	●	●	●
		150	●	●	●	●
		175	●	●	●	●
		200	●	●	●	●
		225	●	●	●	●
		250	●	●	●	●
		275	●	●	●	●
		300	●	●	●	●
		325	●	●	●	●
		350	●	●	●	●
		375	●	●	●	●
		400	●	●	●	●
Min. stroke length <small>Note 1</small>	30		55			
Custom stroke length <small>Note 1, Note 2</small>		Per 5mm				

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

How to order switch

SW - **T2YD**

Switch model no.
(Item **E** above)

SCP*2
 CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS
 CKV2
 CA/OV2
 SSD
 CAT
 MDC2
 MVC
 SMD2
 MSD*
 FC*
 STK
 ULK*
 JSK/M2
 JSG
 JSC3
 USSD
 USC
 JSB3
 LMB
 STG
STS/L
 LCS
 LCG
 LCM
 LCT
 LCY
 STR2
 UCA2
 HCM
 HCA
 SRL2
 SRG
 SRM
 SRT
 MRL2
 MRG2
 SM-25
 CAC3
 UCAC
 RCC2
 MFC
 SHC
 GLC

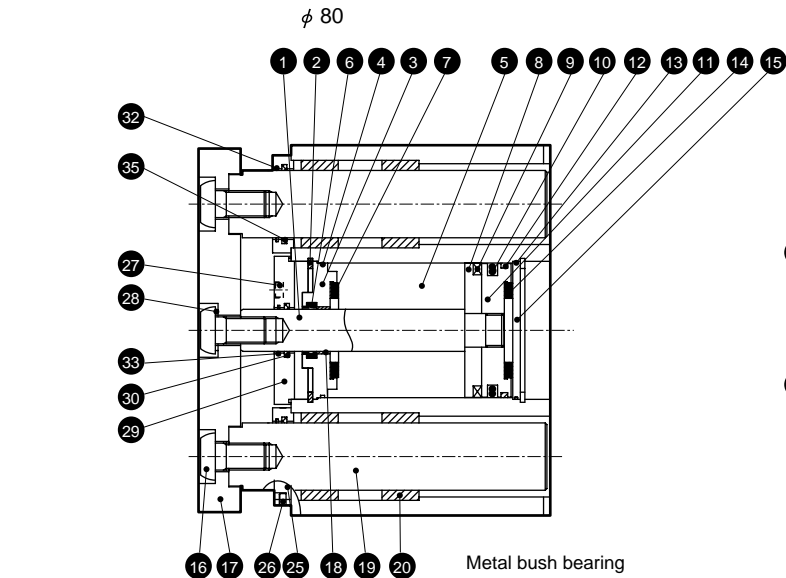
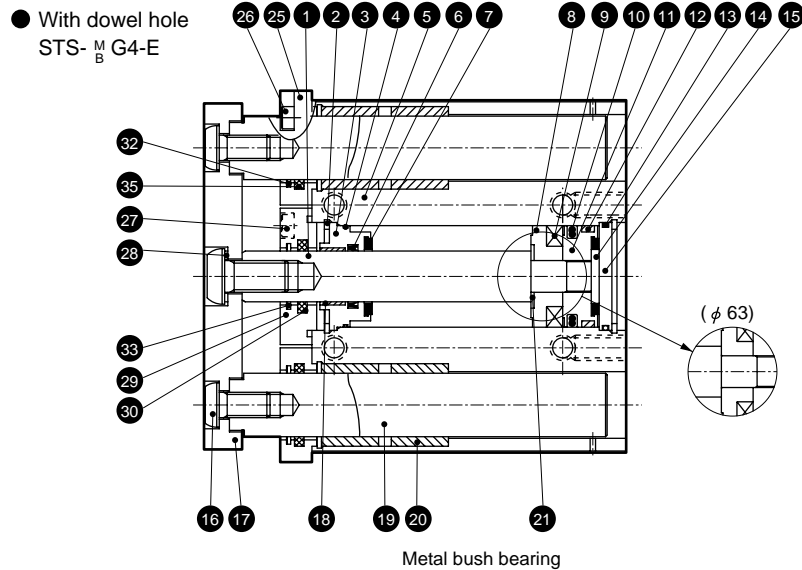
Ending
 Guided cylinder
 Combined functions

STS-G4 Series

Internal structure and parts list (with a dowel hole is the same as the standard)

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

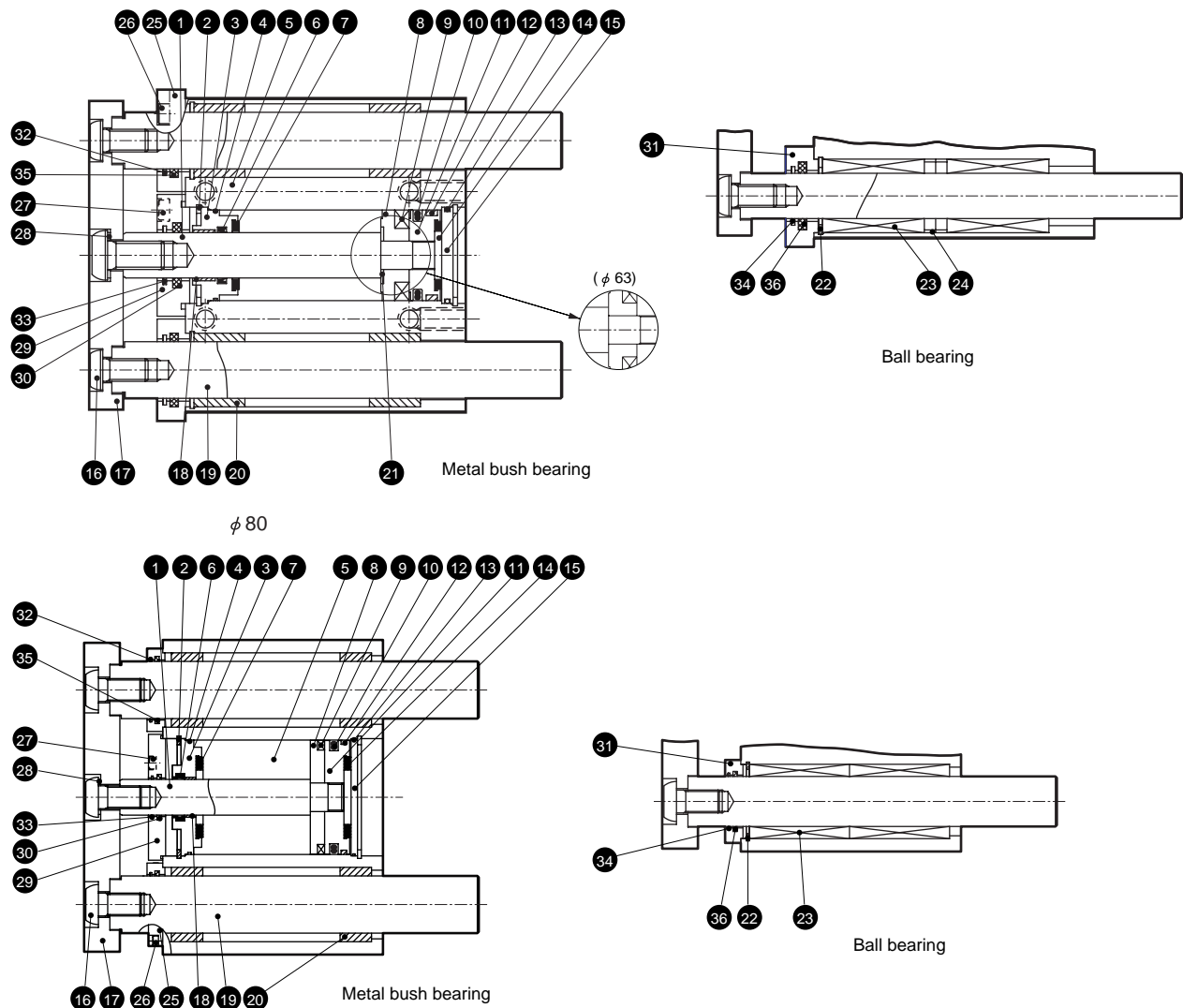
● Double acting standard single rod type $\phi 40, \phi 50, \phi 63$
STS-_B G4



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Piston rod	Steel	Industrial chrome plating	18	DU bush		
2	C type snap ring	Steel	Phosphoric acid salt membrane	19	Guide rod	Steel	Industrial chrome plating
3	Rod bushing	Special aluminum alloy	Alumite	20	Metal	Oil impregnated bearing alloy	
4	Metal gasket	Nitrile rubber		21	Spacer washer	Stainless steel	
5	Cylinder body	Aluminum alloy	Hard alumite	22	C type snap ring	Steel	Phosphoric acid salt membrane
6	Rod packing seal	Nitrile rubber		23	Ball bushing		
7	Cushion rubber (R)	Urethane rubber		24	Collar	Aluminum alloy	
8	Spacer	Polyamide ($\phi 40, \phi 50$) Aluminum alloy ($\phi 63, \phi 80$)	Chromate ($\phi 63, \phi 80$)	25	Adaptor B	Aluminum alloy	Alumite
9	Magnet	Plastic		26	Hexagon socket head cap bolt	Alloy steel	Black galvanizing
10	Piston packing seal	Nitrile rubber		27	Hexagon socket head cap bolt	Alloy steel	Black galvanizing
11	Piston	Aluminum alloy	Chromate	28	Conical spring washer	Steel	
12	Wear ring	Acetar resin		29	Adaptor A	Aluminum alloy	Alumite
13	O ring	Nitrile rubber		30	Lube keeping structure	Special rubber	
14	Cushion rubber (H)	Urethane rubber		31	Adaptor C	Aluminum alloy	Alumite
15	Base plate	Aluminum alloy ($\phi 40$ to $\phi 63$) Steel ($\phi 80$)	Chromate ($\phi 40$ to $\phi 63$) Galvanizing ($\phi 80$)	32	Coil scraper	Phosphor bronze	
16	Hexagon socket head button bolt	Steel	Black galvanizing	33	Coil scraper	Phosphor bronze	
17	End plate	Aluminum alloy	Black alumite	34	Coil scraper	Phosphor bronze	
				35	Lube keeping structure	Special rubber	
				36	Lube keeping structure	Special rubber	

Internal structure and parts list (with a dowel hole is the same as the standard)

- Double acting standard single rod type $\phi 40, \phi 50, \phi 63$
STL- $\frac{M}{B}$ G4
- With dowel hole
STL- $\frac{M}{B}$ G4-E



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Piston rod	Steel	Industrial chrome plating	18	DU bush		
2	C type snap ring	Steel	Phosphoric acid salt membrane	19	Guide rod	Steel	Industrial chrome plating
3	Rod bushing	Special aluminum alloy	Alumite	20	Metal	Oil impregnated bearing alloy	
4	Metal gasket	Nitrile rubber		21	Spacer washer	Stainless steel	
5	Cylinder body	Aluminum alloy	Hard alumite	22	C type snap ring	Steel	Phosphoric acid salt membrane
6	Rod packing seal	Nitrile rubber		23	Ball bushing		
7	Cushion rubber (R)	Urethane rubber		24	Collar	Aluminum alloy	
8	Spacer	Polyamide ($\phi 40, \phi 50$) Aluminum alloy ($\phi 63, \phi 80$)	Chromate ($\phi 63, \phi 80$)	25	Adaptor B	Aluminum alloy	Alumite
9	Magnet	Plastic		26	Hexagon socket head cap bolt	Alloy steel	Black galvanizing
10	Piston packing seal	Nitrile rubber		27	Hexagon socket head cap bolt	Alloy steel	Black galvanizing
11	Piston	Aluminum alloy	Chromate	28	Conical spring washer	Steel	
12	Wear ring	Acetar resin		29	Adaptor A	Aluminum alloy	Alumite
13	O ring	Nitrile rubber		30	Lube keeping structure	Special rubber	
14	Cushion rubber (H)	Urethane rubber		31	Adaptor C	Aluminum alloy	Alumite
15	Base plate	Aluminum alloy ($\phi 40$ to $\phi 63$) Steel ($\phi 80$)	Chromate ($\phi 40$ to $\phi 63$) Galvanizing ($\phi 80$)	32	Coil scraper	Phosphor bronze	
16	Hexagon socket head button bolt	Steel	Black galvanizing	33	Coil scraper	Phosphor bronze	
17	End plate	Aluminum alloy	Black alumite	34	Coil scraper	Phosphor bronze	
				35	Lube keeping structure	Special rubber	
				36	Lube keeping structure	Special rubber	

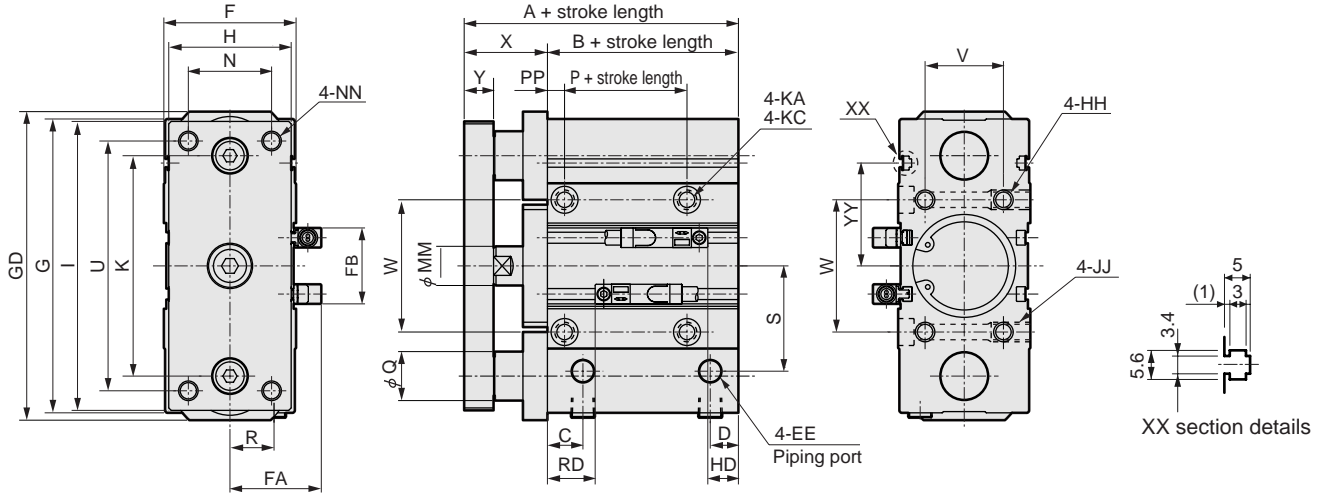
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Guided cylinder
Combined functions

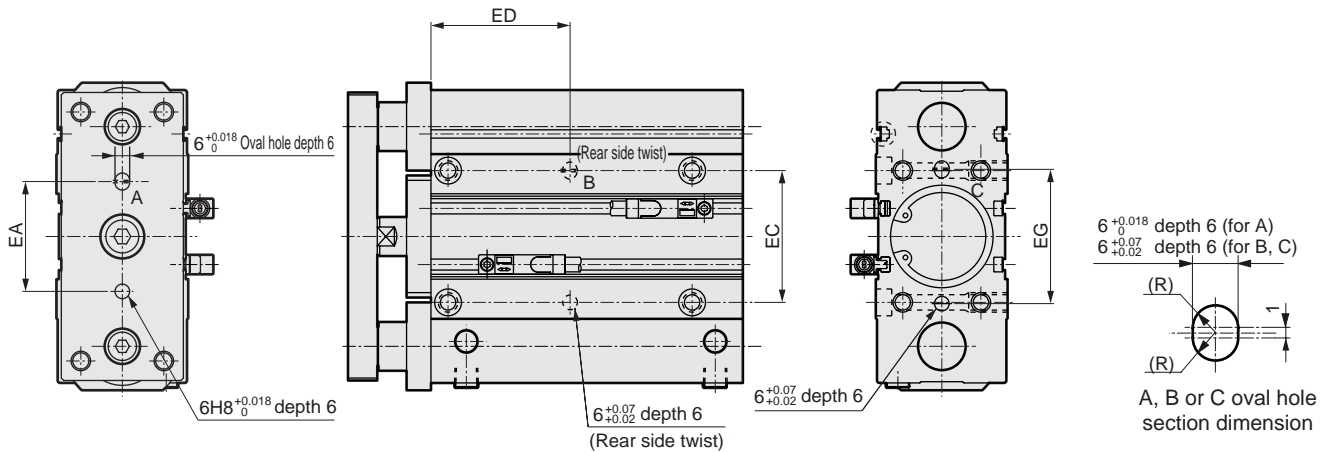
STS-G4 Series

Dimensions: $\phi 40$, $\phi 50$, $\phi 63$

- Double acting standard single rod type
STS- $\frac{M}{B}$ G4



- With dowel hole
STS- $\frac{M}{B}$ G4-E (dimensions other than those listed below are the same as double acting standard single rod type.)



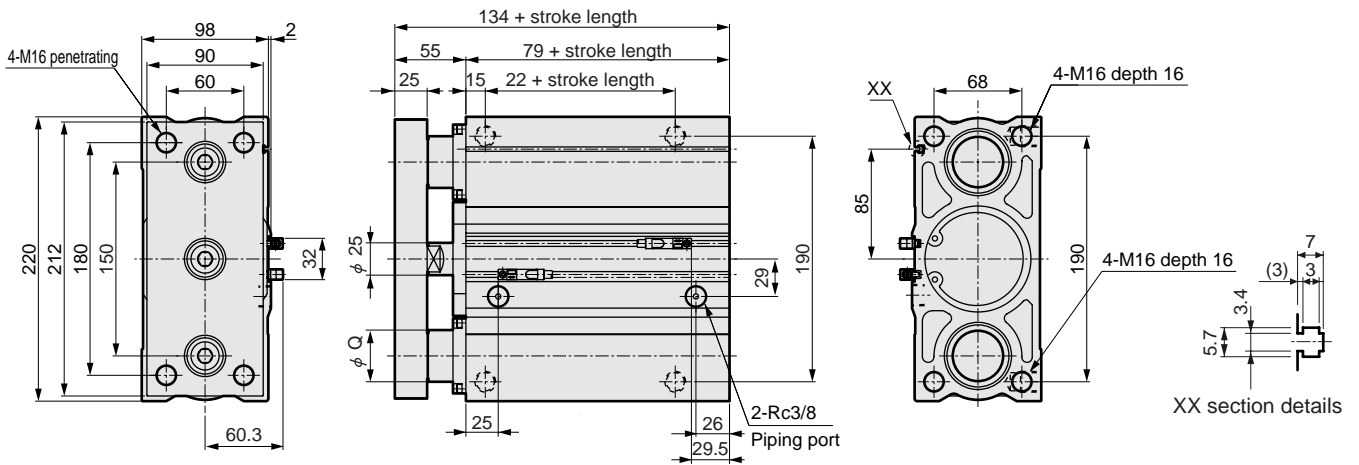
Note 1: For custom stroke, each dimension is same as the longer standard stroke.

STS- $\frac{M}{B}$ -G4																		
Symbol	A	B	C	D	E	EE	F	G	GD	H	HH	I	JJ	K	KA	KC	L	M
Bore size (mm)																		
$\phi 40$	87	53	14.5	12	5.6	Rc1/8	54	120	126	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	1	3.4
$\phi 50$	92	55	16	12.5	5.6	Rc1/4	66	147	152	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	1	3.4
$\phi 63$	98	61	17.5	17.5	5.6	Rc1/4	79	162	166	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	1	3.4

STS- $\frac{M}{B}$ -G4																	STS- $\frac{M}{B}$ -G4-E							
Symbol	MM	N	NN	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z	RD	HD	FA	FB	EA	EC	EG	ED
Bore size (mm)																								
$\phi 40$	16	34	M8 penetrating	25	7	20	18	43	5	102	32	54	34	12	42	3	19.5	12.5	32.3	31	45	54	55	19.5 + $\frac{\text{Stroke length}}{2}$
$\phi 50$	20	44	M10 penetrating	26	8	25	22	49	5	125	38	66	37	16	49	3	21.5	13.5	38.3	32	55	66	69	19.5 + $\frac{\text{Stroke length}}{2}$
$\phi 63$	20	55	M10 penetrating	26	8	25	26	56	5	140	50	79	37	16	56	3	18.5	21.5	44.8	32	62	79	82	22.5 + $\frac{\text{Stroke length}}{2}$

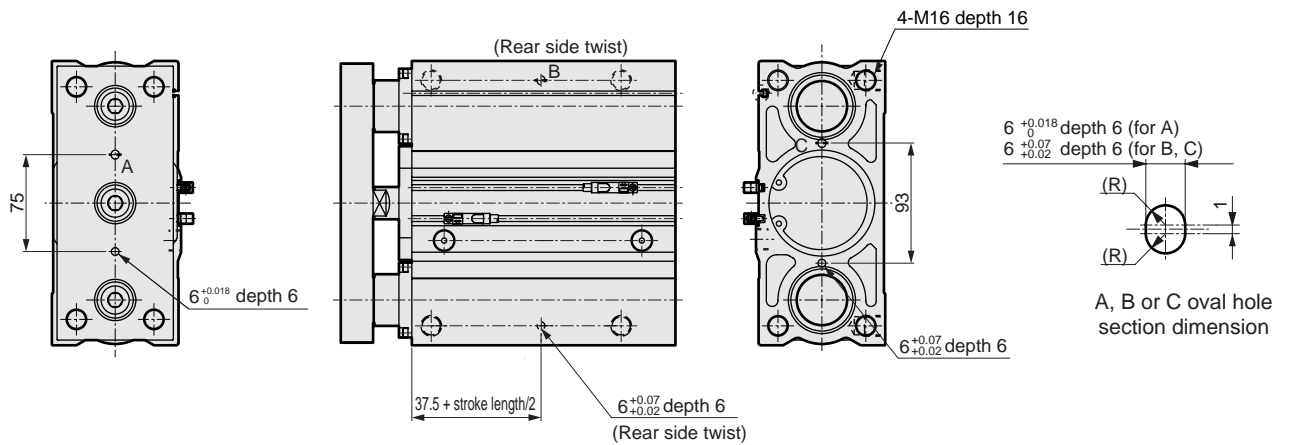
Dimensions: $\phi 80$

- Double acting standard single rod type
STS- $\frac{M}{B}$ G4



Dimension Q is $\phi 40$ for M (metal bush bearings) and $\phi 35$ for B (ball bearings).

- With dowel hole
STS- $\frac{M}{B}$ G4-E (dimensions other than those listed below are the same as the double acting standard single rod type.)



Note: For custom stroke, each dimension is the same as the longer standard stroke. Standard stroke lengths for $\phi 80$ are 4 types (25, 50, 75, 100mm).

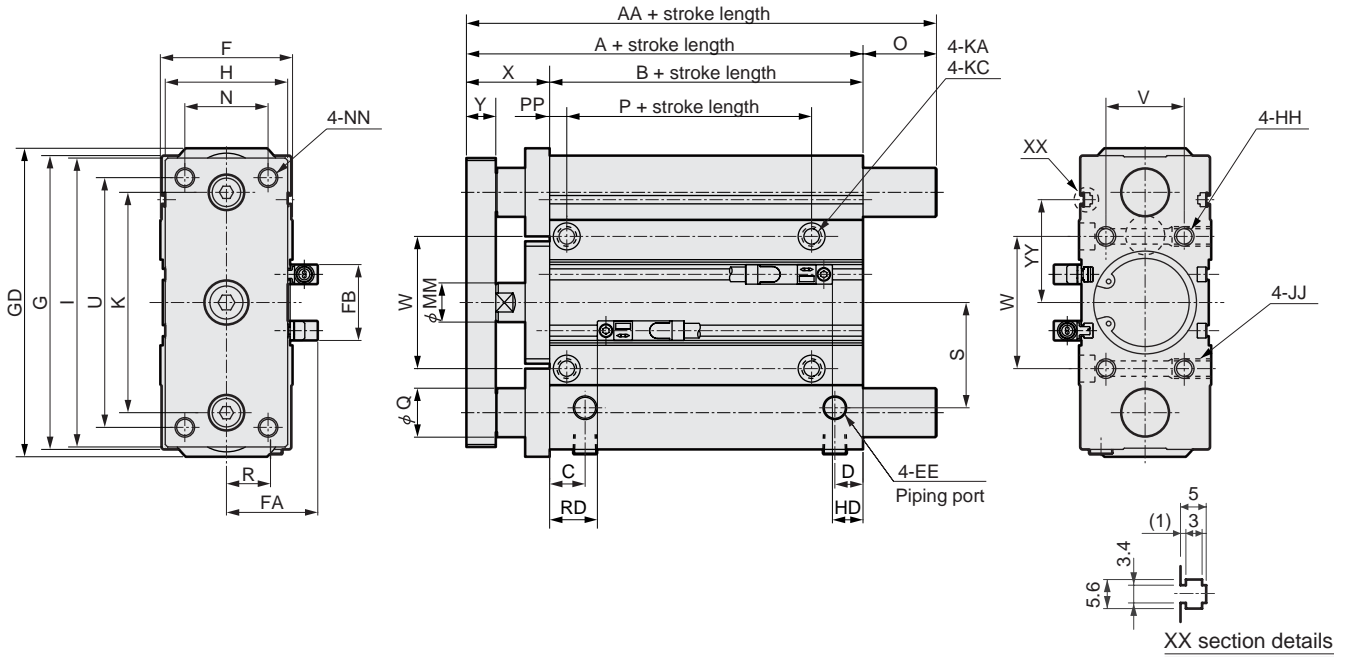
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

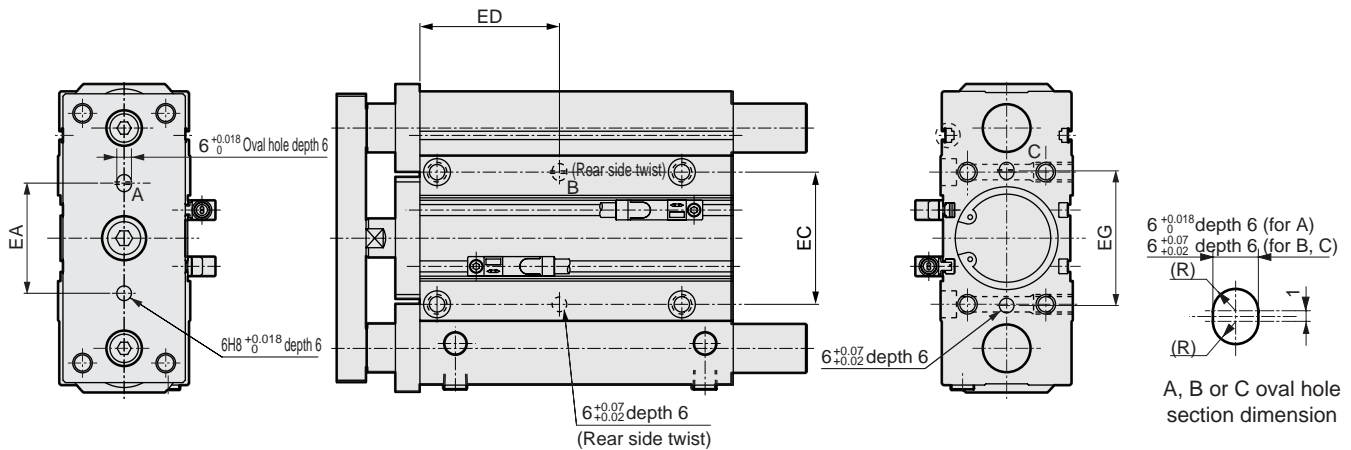
STL-G4 Series

Dimensions: $\phi 40$, $\phi 50$, $\phi 63$

- Double acting standard single rod type
STL- $\frac{M}{B}$ -G4



- With dowel hole
STL- $\frac{M}{B}$ -G4-E (dimensions other than those listed below are the same as double acting standard single rod type.)



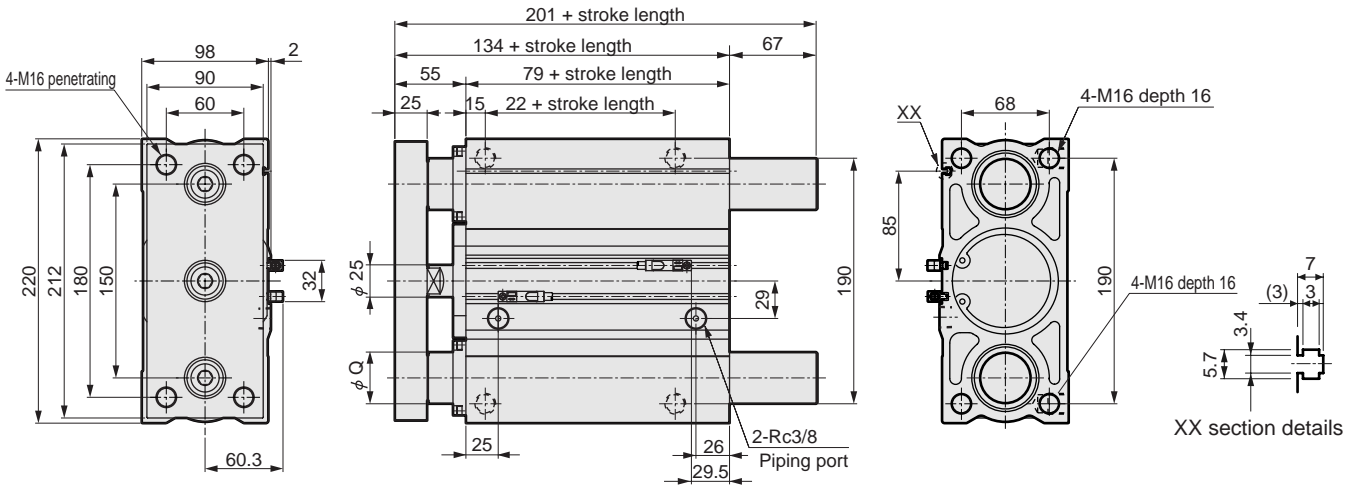
Note 1: For custom stroke, each dimension is the same as the longer standard stroke.

STL- $\frac{M}{B}$ -G4																			
Symbol	A	AA	B	C	D	E	EE	F	G	GD	H	HH	I	JJ	K	KA	KC	L	M
Bore size (mm)																			
$\phi 40$	87	117	53	14.5	12	5.6	Rc1/8	54	120	126	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	1	3.4
$\phi 50$	92	140	55	16	12.5	5.6	Rc1/4	66	147	152	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	1	3.4
$\phi 63$	98	140	61	17.5	17.5	5.6	Rc1/4	79	162	166	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	1	3.4

STL- $\frac{M}{B}$ -G4																	STL- $\frac{M}{B}$ -G4-E									
Symbol	MM	N	NN	O	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z	RD	HD	FA	FB	EA	EC	EG	ED	
Bore size (mm)																										
$\phi 40$	16	34	M8 penetrating	30	25	7	20	18	43	5	102	32	54	34	12	42	3	19.5	12.5	32.3	31	45	54	55	19.5 + Stroke length 2	
$\phi 50$	20	44	M10 penetrating	48	26	8	25	22	49	5	125	38	66	37	16	49	3	21.5	13.5	38.3	32	55	66	69	19.5 + Stroke length 2	
$\phi 63$	20	55	M10 penetrating	42	26	8	25	26	56	5	140	50	79	37	16	56	3	18.5	21.5	44.8	32	62	79	82	22.5 + Stroke length 2	

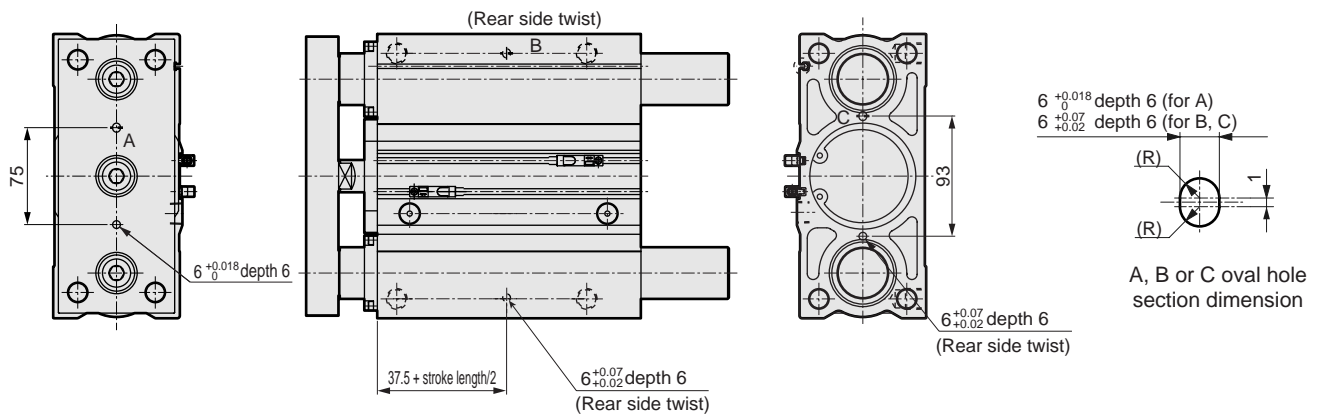
Dimensions: $\phi 80$

- Double acting standard single rod type
STL- $\frac{M}{B}$ G4



Dimension Q is $\phi 40$ for M (metal bush bearings) and $\phi 35$ for B (ball bearings).

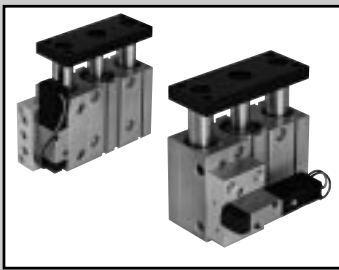
- With dowel hole
STL- $\frac{M}{B}$ G4-E (dimensions other than those listed below are the same as the double acting standard single rod type.)



Note: For custom stroke, each dimension is the same as the longer standard stroke. Increment of $\phi 80$ standard stroke is per 25mm between 75 to 400mm.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STSL
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

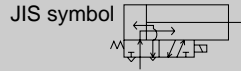
Guided cylinder
Combined functions



Guided cylinder Type with valve

STS/STL-M^BV Series

● Bore size: ϕ 20, ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63



Specifications

Descriptions	STS-MV, STS-BV(short stroke), STL-MV, STL-BV(long stroke)					
Bore size mm	ϕ 20	ϕ 25	ϕ 32	ϕ 40	ϕ 50	ϕ 63
Actuation	Double acting					
Working fluid	Compressed air					
Max. working pressure MPa	0.7					
Min. working pressure MPa	0.15					
Withstanding pressure MPa	1.0					
Ambient temperature °C	-5 to 50 (no freezing)					
Port size	Rc1/8			Rc1/4		
Stroke tolerance mm	+2.0 0					
Working piston speed mm/s	50 to 500				50 to 300	
Cushion	Rubber cushioned					
Lubrication	Not required (when lubricating, use turbine oil Class 1 ISO VG32.)					
Used valve	4KB1 Series			4KB2 Series		
Allowable energy absorption J	0.157	0.157	0.401	0.627	0.980	1.560

Note: Refer to "Pneumatic Valves (catalog no. CB-23SA)" for details of valves.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
ϕ 20, ϕ 25, ϕ 32	STS 25, 50	100	5
ϕ 40, ϕ 50, ϕ 63	STL 50, 75, 100		

Custom stroke length Custom stroke other than standard stroke is available per 5mm increment.
Note that the total length is the same as the next longer standard stroke length.
(Example) With the STS-MV1-25-35, a spacer is mounted in the main body of the STS-MV1-25-50 so the total length dimensions are the same as the 50 stroke.

Switch specifications

● 1 color/2 color indicator/strong magnetic field proof

* The T0/T5 switch can be used with 220 VAC.
Consult with CKD for working condition.

Descriptions	Proximity 2-wire			Proximity 3-wire			Reed 2-wire				Proximity 2-wire			
	T1H/T1V	T2H/T2V T2JH/T2JV	T2YH/ T2YV	T3H/ T3V	T3PH/T3PV (Custom order)	T3YH/ T3YV	T0H/T0V	T5H/T5V		T8H/T8V		T2YD		
Applications	Programmable controller, relay, small solenoid valve	Programmable controller		Programmable controller, relay			Programmable controller, relay	Programmable controller, relay IC circuit (without indicator light), serial connection		Programmable controller, relay		Programmable controller		
Output method	-			NPN output	PNP output	NPN output	-							
Power voltage	-			10 to 28 VDC			-							
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less			12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC \pm 10%
Load current	5 to 100 mA	5 to 20 mA (Note 1)		100 mA or less		50 mA or less	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 20 mA
Light	LED (ON lighting)	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Green LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)		Without indicator light		LED (ON lighting)		Red/green LED (ON lighting)	
Leakage current	1 mA or less with 100 VAC 2 mA or less with 200 VAC	1 mA or less		10 μ A or less			0mA						1 mA or less	

● With preventive maintenance output

Descriptions	Proximity 3-wire	Proximity 4-wire	Proximity 3-wire	Proximity 4-wire
	T2YFH/V	T3YFH/V	T2YMH/V	T3YMH/V
Applications	Programmable controller	Programmable controller, relay	Programmable controller	Programmable controller, relay
Output method	NPN output			
Light	Red/green LED (ON lighting)			
	Installation position adjustment		Yellow LED (ON lighting)	
Output section	Power voltage	-	10 to 28 VDC	-
	Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC
	Load current	5 to 20 mA	50 mA or less	5 to 20 mA
	Leakage current	1 mA or less	10 μ A or less	1.2 mA or less
Preventive maintenance output	Load voltage	30 VDC or less		
	Load current	20 mA or less	50 mA or less	5 to 20 mA or less
	Leakage current	10 μ A or less		

Note 1: Refer to Ending 1 for other switch specifications.

Note 2: Max. load current above: 20mA at 25 °C. The current will be lower than 20mA if ambient temperature around switch is higher than 25 °C. (5 to 10mA when 60°C)

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Valve specifications

Descriptions	ST ^{S/L} - M/B V1 ²⁰ ₋₂₅ V2 ³²			ST ^{S/L} - M/B V1 ⁴⁰ ₋₅₀ V2 ⁶³		
	4KB1 Series			4KB2 Series		
Applicable valve series	4KB1 Series			4KB2 Series		
Position no. of solenoid	2-position single solenoid			2-position single solenoid		
Effective area of valve (mm ²) (Cv flow factor)	4 (0.22)			14 (0.76)		
Rated voltage (V)	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 VDC	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 VDC
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%		
Insulation class	Class B molded coil			Class B molded coil		

Note: Refer to "Pneumatic Valves (catalog no. CB-23SA)" for details of valves.

Guided cylinder
Combined functions

STS/STL Series

How to order

Short stroke

STS - **M** **V1** **S** - **20** - **25** - **B** - **1** - **T0H** - **R** - **F**

Long stroke

STL - **M** **V1** **S** - **50** - **50** - **B** - **1** - **T0H** - **R** - **F**

B Operating direction

C Valve installation attitude
Note 1 · Note 2

A Bearing method

D Bore size

G Electric connection

E Port thread type

F Stroke length

■ Custom stroke length is available per 5mm increment. Overall length is the same as the next longer standard stroke.

H Rated voltage

I Switch model no.
Note 5

⚠ Note on model no. selection

Note 1: If a 25mm or less stroke is selected for valve side mounting, the valve mounting dimensions (VC) may be larger than the cylinder's total length (A + stroke). Check the dimensions with the dimension drawings.

Note 2: 2 indicator switch, preventive maintenance and strong magnetic field proof switches can not be installed on the front side of valve.

Note 3: Refer to pages 1526 to 1529 for available variation and options.

Note 4: Refer to page 1526 or 1528 for the dowel holes of positioning.

Note 4: T1H/V, T8H/V installation is custom order.

<Example of model number>

STS-MV1S-20-25-B-1-T0H-R-F

Model: Guided cylinder, short stroke length type with valve

A Bearing method : Metal bush bearing

B Operating direction : Extend at energized

C Valve installation attitude : Valve installed on the side

D Bore size : ϕ 20mm

E Port thread type : Rc thread

F Stroke length : 25mm

G Electric connection : Small terminal box, no lead wire

H Rated voltage : 100 VAC

I Switch model no. : Reed T0H, lead wire 1m

J Switch quantity : One on rod end

K Option : Material of end plate (steel)

For a 40mm more cylinder with 2 color indicator, preventive maintenance, strong magnetic field proof switches, insert "L1" with "-" between **C** and **D**.

Example) STS-MV1S-L1-50-50-B-1-T2YH3-D-F

2 color indicator, preventive maintenance, strong magnetic field proof switches, cannot be installed after purchasing a standard product.

In this case, insert "L1" between **C** and **D** in model no.

Example) STS-MV1S-L1-50-50-F

How to order switch

SW - **T0H**

Switch model no.
(Item **I** above)

J Switch quantity

K Option

Symbol	Descriptions
A Bearing method	
M	Metal bush bearing
B	Ball bearing

B Operating direction	
V1	Extend at energized
V2	Retract at energized

C Valve installation attitude	
Blank	Valve on front
S	Valve installed on the side

D Bore size (mm)	
20	ϕ 20
25	ϕ 25
32	ϕ 32
40	ϕ 40
50	ϕ 50
63	ϕ 63

E Port thread type	
Blank	Rc thread
NN	NPT thread (ϕ 32 and over) custom order
GN	G thread (ϕ 32 and over) custom order

F Stroke length	
Refer to the stroke length table on the following page.	

G Electric connection	
Blank	Grommet lead wire (300mm)
B	Small terminal box, no lead wire
C	C-connector, lead wire (300mm)
D	D-connector, lead wire (300mm)

H Rated voltage	
1	100 VAC
2	200 VAC
3	24 VDC

I Switch model no.						
Axial lead wire	Radial lead wire	Contact	Indicator	Lead wire		
T0H*	T0V*	Reed	1 color indicator type Without indicator light	2-wire		
T5H*	T5V*					
T8H*	T8V*					
T1H*	T1V*	Proximity	1 color indicator type	3-wire		
T2H*	T2V*					
T3H*	T3V*					
T3PH*	T3PV*					
T2YH*	T2YV*				1 color indicator type (custom order)	3-wire
T3YH*	T3YV*				2 color indicator type	2-wire
T2YFH*	T2YFV*				2 color indicator type (W/o indicator light for preventive maintenance output)	3-wire
T3YFH*	T3YFV*				2 color indicator type (W/ indicator light for preventive maintenance output (1 color))	4-wire
T2YMH*	T2YMV*				2 color indicator type (W/ indicator light for preventive maintenance output (1 color))	3-wire
T3YMH*	T3YMV*				2 color indicator type (W/ indicator light for preventive maintenance output (1 color))	4-wire
T2JH*	T2JV*		Off-delay type	2-wire		
T2YD*	-		Strong magnetic field proof switch	2-wire		
T2YDT*	-					

*Lead wire length (m)	
Blank	1m (standard)
3	3m (option)
5	5m (option)

J Switch quantity	
R	One on rod end
H	One on head end
D	Two

K Option	
F	Material of end plate (steel)
E <small>Note 4</small>	With dowel hole (custom order)

F Stroke length

Series	Stroke length (mm)	Applicable bore size						
		φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	
STS	Standard stroke length	25	●	●	●	●	●	●
	50	●	●	●	●	●	●	●
	Min. stroke length Note 1	5						
	Custom stroke length Note 1, Note 2	Per 5mm						
STL	Standard stroke length	50	●	●	●	●	●	●
	75	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●
	Min. stroke length Note 1	30						
	Custom stroke length Note 1, Note 2	Per 5mm						

Note 1: The total length is the same as the next longer standard stroke length.

Note 2: The total dimensions for the custom stroke can be a length dedicated for the custom stroke. (Custom order)

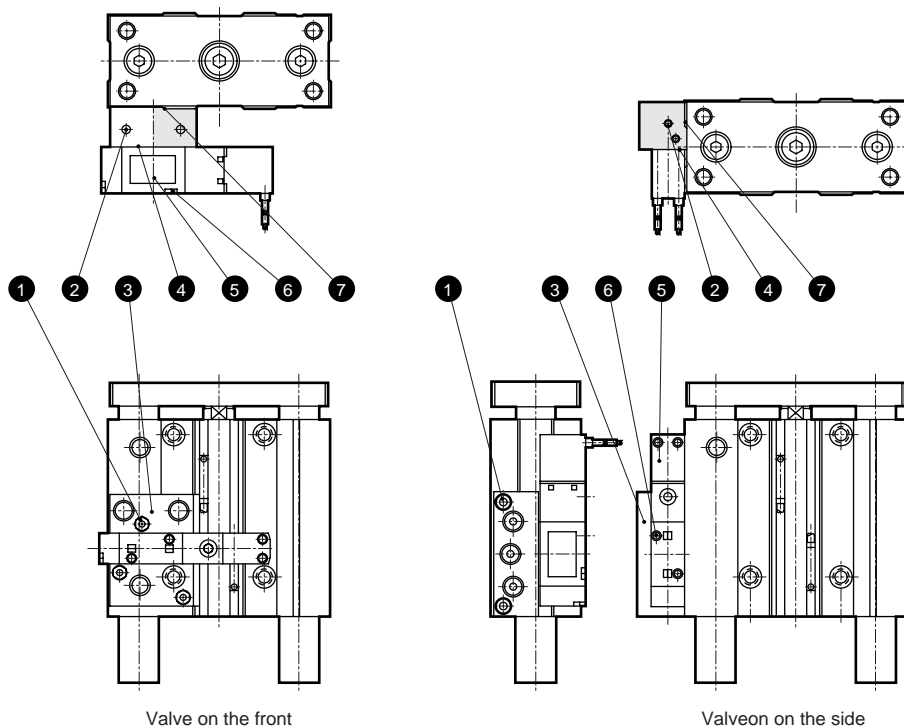
Series variation

Bore size (mm)	Standard stroke length (mm)					Applicable valve series	Position no. of solenoid	Effective area of valve (mm ²) (Cv flow factor)
	STS		STL					
	25	50	50	75	100			
φ 20	●	●	●	●	●	4KB1 Series	2-position single solenoid	4 (0.22)
φ 25	●	●	●	●	●			
φ 32	●	●	●	●	●			
φ 40	●	●	●	●	●	4KB2 Series	2-position single solenoid	14 (0.76)
φ 50	●	●	●	●	●			
φ 63	●	●	●	●	●			

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Internal structure and parts list



No.	Parts name	Material
1	Hexagon socket head cap bolt	Stainless steel
2	Hexagon socket head set screw	Steel
3	Sub-base	Aluminum alloy
4	Gasket	Nitrile rubber
5	Pneumatic valve	
6	Set screw	Steel
7	O ring	Nitrile rubber

Repair parts list

Repair parts list is the same as the double acting single rod type.
Refer to page 1539 for STS Series, and to page 1542 for STL Series.

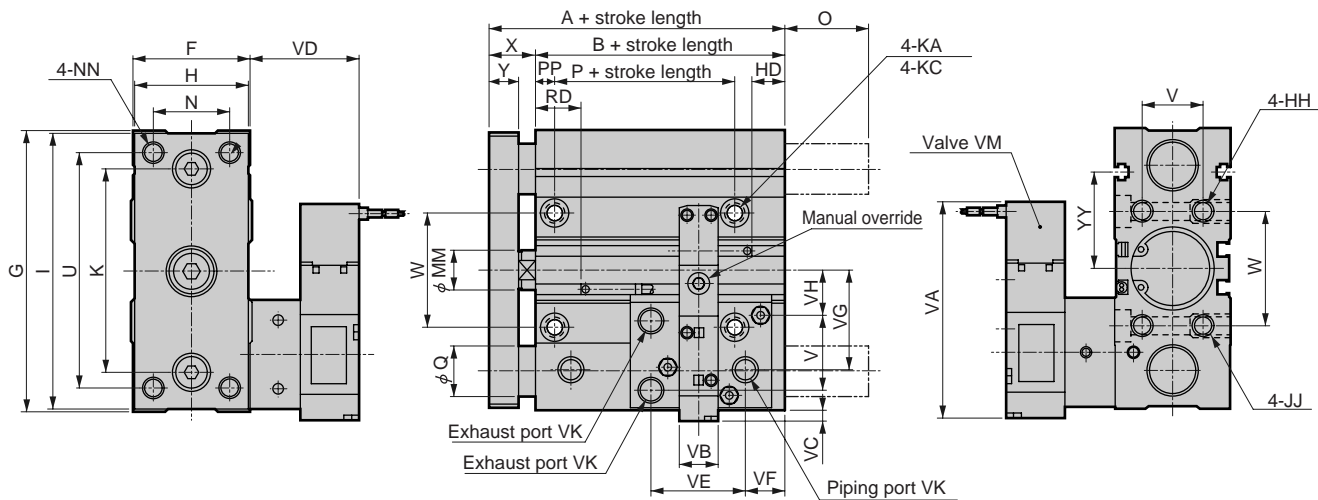
Sub-base kit

Bore size (mm)	Kit No.	Part number	Bore size (mm)	Kit No.	Part number	
(Valve on front extend at energized) STS-M/B-V1	φ 20	1 2 3 7	(Valve on side extend at energized) on the side STS-M/B-V1S	φ 20	1 2 3 7	
	φ 25			STS-V1-20		STS-V1S-20
	φ 32			STS-V1-32		STS-V1S-32
	φ 40			STS-V1-40		STS-V1S-40
	φ 50			STS-V1-50		STS-V1S-50
	φ 63					
(Valve on front retract at energized) STS-M/B-V2	φ 20	1 2 3 7	(Valve on side retract at energized) STS-M/B-V2S	φ 20	1 2 3 7	
	φ 25			STS-V2-20		STS-V2S-20
	φ 32			STS-V2-32		STS-V2S-32
	φ 40			STS-V2-40		STS-V2S-40
	φ 50			STS-V2-50		STS-V2S-50
	φ 63					

Dimensions



● Valve on the front



Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

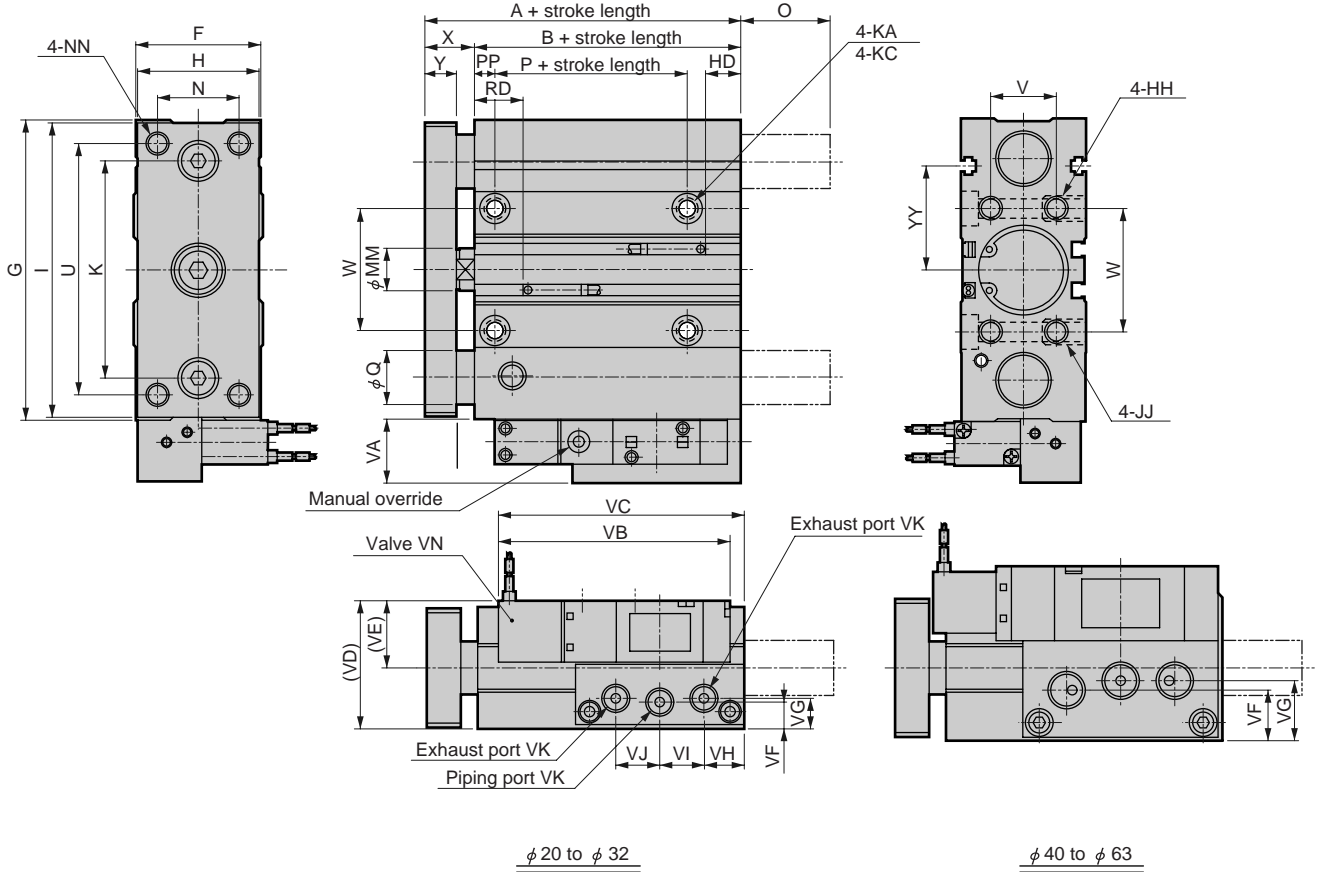
Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Symbol	A	B	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O		P	PP			
															STS	STL					
MRG2 Bore size (mm)																					
φ 20	53	40	38	83	36	M6 depth 12	81	M6 depth 12	59	5.2 penetrating	9.5 spot face depth 5.4	10	24	M6 penetrating	0	18	20	6			
CAC3 φ 25	54	41	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	9.5 spot face depth 5.4	12	26	M6 penetrating	0	17	20	6			
UCAC φ 32	68	49	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	11 spot face depth 6.5	16	29	M8 penetrating	0	34	22	7			
RCC2 φ 40	72	53	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	16	34	M8 penetrating	0	30	25	7			
MFC φ 50	77	55	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	20	44	M10 penetrating	0	48	26	8			
SHC φ 63	83	61	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	20	55	M10 penetrating	0	42	26	8			
Symbol	Q		U	V	W	X	Y	YY	VA	VB	VC	VD	VE	VF	VG	VH	VI	VK	VM	HD	RD
	M type	B type																			
GLC Bore size (mm)																					
φ 20	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	9	12
φ 25	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	9	13
φ 32	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	13.5	17.5
φ 40	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	14	21
φ 50	25	20	125	38	66	22 ⁰ / ₂	16	49	107	18	9	52.5	41	17	49	43	21	Rc1/4	4KB2 Series	16	22
φ 63	25	20	140	50	79	22 ⁰ / ₂	16	56	107	18	8	52.5	41	23	55.5	49.5	21	Rc1/4	4KB2 Series	23	20

Dimensions



● Valve on the side



$\phi 20$ to $\phi 32$

$\phi 40$ to $\phi 63$

Note 1: Each dimension is the same as the next longer standard stroke length for custom stroke length.

Note 2: Refer to pages 1636, 1637 for dimensions of HD, RD, and projecting section of 2 color indicator, preventive maintenance output, off delay, strong magnetic proof, T1H/V and T8H/V switch.

Symbol Bore size (mm)	A	B	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O		P	PP	Q	
															STS	STL			M type	B type
$\phi 20$	53	40	38	83	36	M6 depth 12	81	M6 depth 12	59	5.2 penetrating	9.5 spot face depth 5.4	10	24	M6 penetrating	0	18	20	6	14	12
$\phi 25$	54	41	42	86	38	M6 depth 12	84	M6 depth 12	63	5.2 penetrating	9.5 spot face depth 5.4	12	26	M6 penetrating	0	17	20	6	14	12
$\phi 32$	68	49	47	111	45	M8 depth 16	109	M8 depth 16	81	6.3 penetrating	11 spot face depth 6.5	16	29	M8 penetrating	0	34	22	7	20	16
$\phi 40$	72	53	54	120	50	M8 depth 16	118	M8 depth 16	90	6.3 penetrating	11 spot face depth 6.5	16	34	M8 penetrating	0	30	25	7	20	16
$\phi 50$	77	55	66	147	64	M10 depth 20	145	M10 depth 20	110	8.6 penetrating	14 spot face depth 8.6	20	44	M10 penetrating	0	48	26	8	25	20
$\phi 63$	83	61	79	162	75	M10 depth 20	160	M10 depth 20	124	8.6 penetrating	14 spot face depth 8.6	20	55	M10 penetrating	0	42	26	8	25	20
Symbol Bore size (mm)	U	V	W	X	Y	YY	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VN	HD	RD
$\phi 20$	69	20	31	13 ^{+0.2} _{-0.2}	9	25	23	86	92	47.5	28.5	10	11	15	16.5	16.5	Rc1/8	4KB1 Series	9	12
$\phi 25$	72	24	35	13 ^{+0.2} _{-0.2}	9	27	23	86	92	49.5	28.5	12	13	15	16.5	16.5	Rc1/8	4KB1 Series	9	13
$\phi 32$	93	25	45	19 ^{+0.2} _{-0.2}	12	39	23	86	92	48.5	25	11	12	15	16.5	16.5	Rc1/8	4KB1 Series	13.5	17.5
$\phi 40$	102	32	54	19 ^{+0.2} _{-0.2}	12	42	28	107	108	64.5	37.5	19	22.5	17.5	20	20	Rc1/4	4KB2 Series	14	21
$\phi 50$	125	38	66	22 ^{+0.2} _{-0.2}	16	49	28	107	108	66.5	33.5	21	24.5	17.5	20	20	Rc1/4	4KB2 Series	16	22
$\phi 63$	140	50	79	22 ^{+0.2} _{-0.2}	16	56	28	107	108	68	28.5	22.5	26	17	20	20	Rc1/4	4KB2 Series	23	20

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Guided cylinder
Combined functions

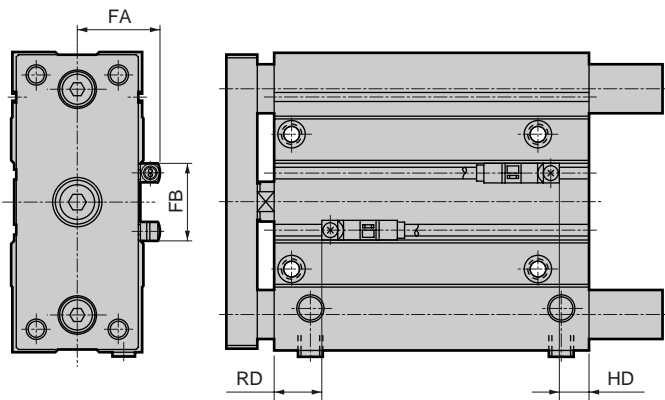
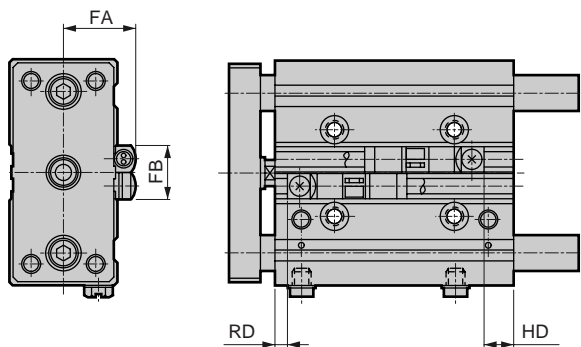
STS/STL Series

STS/STL Series common dimensions: 2 color indicator type, off-delay type, T8H/V switch installation dimension

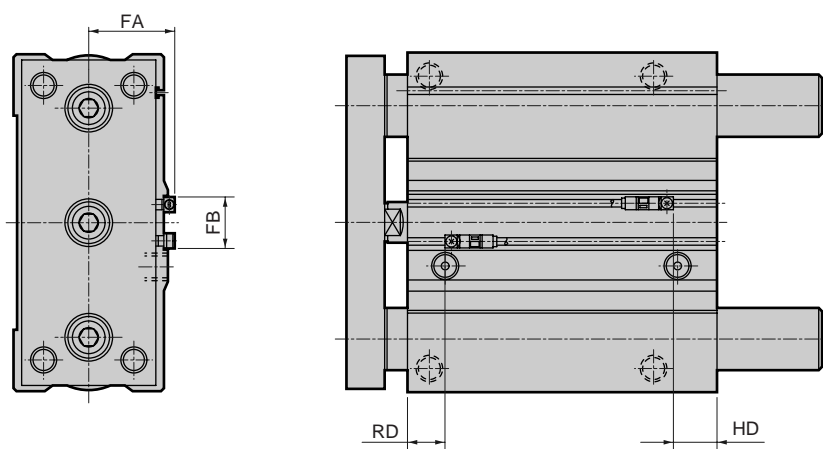
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

● Bore size ϕ 8 to ϕ 16

● Bore size ϕ 20 to ϕ 63



● Bore size ϕ 80



STS/STL (basic type)

Symbol Bore size (mm)	FA	FB	T*YH/V, T2JH/V		T8H/V	
			RD	HD	RD	HD
ϕ 8	17.6	16	5.5	1.5	-	-
ϕ 12	18.8	16	4	7.5	-	-
ϕ 16	20.8	16	3.5	8.5	-	-
ϕ 20	24.3	16	9.5	8	6	3.5
ϕ 25	26.3	17	11.5	7.5	7	3
ϕ 32	28.8	24	16	12	11.5	7.5
ϕ 40	32.3	31	19.5	12.5	15	8
ϕ 50	38.3	32	21.5	13.5	16	10
ϕ 63	44.8	32	18.5	21.5	14	17
ϕ 80	55.3	32	25	33	20.5	24.5
ϕ 100	65	32	24	34	19	29

STS/STL-Q-R (rod end position locking)

Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 20	24.3	16	34.5	8
ϕ 25	26.3	17	36.5	7.5
ϕ 32	28.8	24	41	12
ϕ 40	32.3	31	69.5	13
ϕ 50	38.3	32	71.5	13.5
ϕ 63	44.8	32	68.5	21.5
ϕ 80	55.3	32	100	33

Note 1: T8H/V can not be installed.

STS/STL-Q-H (head end position locking)

Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 20	24.3	16	9.5	33
ϕ 25	26.3	17	11.5	32.5
ϕ 32	28.8	24	16	37
ϕ 40	32.3	31	19.5	63
ϕ 50	38.3	32	21.5	63.5
ϕ 63	44.8	32	18.5	71.5
ϕ 80	55.3	32	25	108

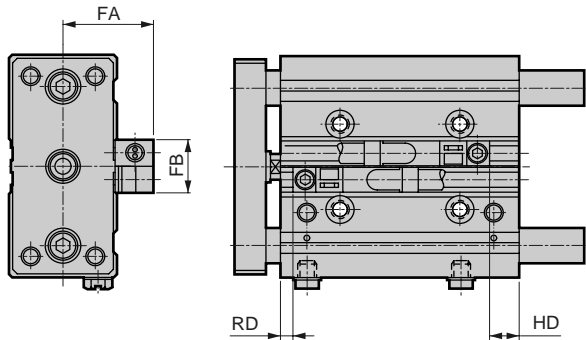
Note 1: T8H/V can not be installed.

STS/STL-C (air cushioned)

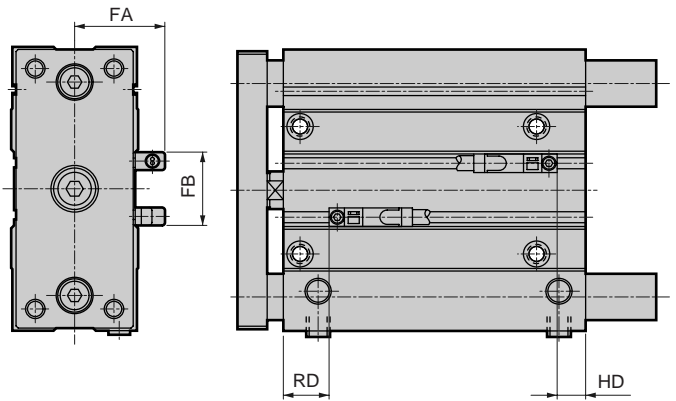
Symbol Bore size (mm)	FA	FB	T*YH/V, T2JH/V		T8H/V	
			RD	HD	RD	HD
ϕ 25	26.3	17	26.5	17.5	20.5	11.5
ϕ 32	28.8	24	33	20	27	14
ϕ 40	32.3	31	36.5	21	30.5	15
ϕ 50	38.3	32	37	22	31	16
ϕ 63	44.8	32	42.5	24.5	36.5	18.5
ϕ 80	55.3	32	59	49	53	43

STS/STL Series common dimensions: Preventive maintenance output type, strong magnetic field proof, T1H/V switch installation dimension

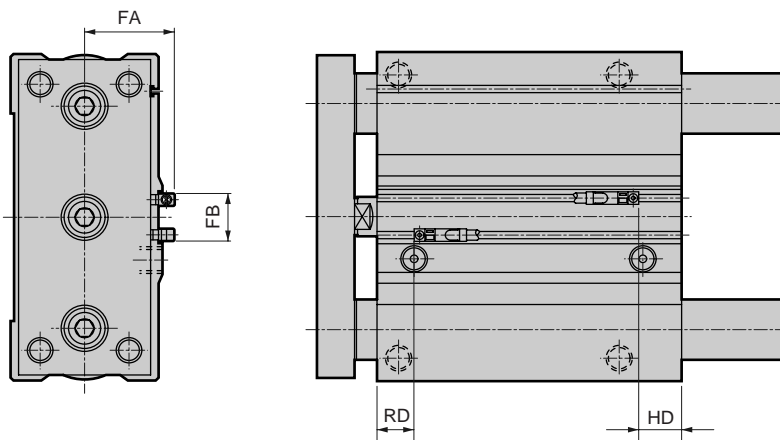
● Bore size ϕ 8 to ϕ 16



● Bore size ϕ 20 to ϕ 63



● Bore size ϕ 80



STS/STL (basic type)

Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 8	22.6	16	5.5	1.5
ϕ 12	23.8	16	4	7.5
ϕ 16	25.8	16	3.5	8.5
ϕ 20	29.3	16	9.5	8
ϕ 25	31.3	17	11.5	7.5
ϕ 32	33.8	24	16	12
ϕ 40	37.3	31	19.5	12.5
ϕ 50	43.3	32	21.5	13.5
ϕ 63	49.8	32	18.5	21.5
ϕ 80	60.3	32	25	29.5
ϕ 100	70.9	32	24	34

STS/STL-Q-R (rod end position locking)

Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 20	29.3	16	34.5	8
ϕ 25	31.3	17	36.5	7.5
ϕ 32	33.8	24	41	12
ϕ 40	37.3	31	69.5	13
ϕ 50	43.3	32	71.5	13.5
ϕ 63	49.8	32	68.5	21.5
ϕ 80	60.3	32	100	33

STS/STL-Q-H (head end position locking)

Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 20	29.3	16	9.5	33
ϕ 25	31.3	17	11.5	32.5
ϕ 32	33.8	24	16	37
ϕ 40	37.3	31	19.5	63
ϕ 50	43.3	32	21.5	63.5
ϕ 63	49.8	32	18.5	71.5
ϕ 80	60.3	32	25	108

STS/STL-C (air cushion)

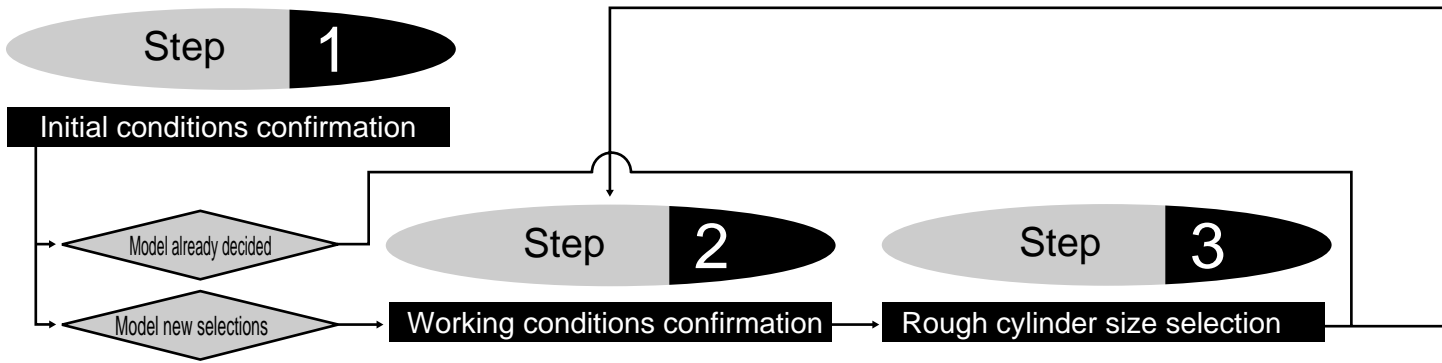
Symbol Bore size (mm)	FA	FB	RD	HD
ϕ 25	31.3	17	26.5	17.5
ϕ 32	33.8	24	33	20
ϕ 40	37.3	31	36.5	21
ϕ 50	43.3	32	37	22
ϕ 63	49.8	32	42.5	24.5
ϕ 80	60.3	32	59	49

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG**
- STS/L**
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC

Ending

Guided cylinder
Combined functions

Check availability according to the selection guide. The selecting conditions are different from a general standard cylinder.



Step 2 Working conditions confirmation

1. Working pressure P (MPa)
2. Load W (N)
(load)

When determining the load, consider the weight of guide rod part of cylinder main body.

W = (load) + (jig load) + (guide rod part self-weight: a)
Guide rod part self-weight formula is as on Table 1.

Table 1 Guide rod part self-weight formula

Bore size	a: Guide section self-weight force (N)	
	STS	STL
φ 8	(0.36) + 0.004 x st	(0.43) + 0.004 x st
φ 12	(0.54) + 0.008 x st	(0.69) + 0.008 x st
φ 16	(0.81) + 0.012 x st	(1.10) + 0.012 x st
φ 20	(1.30) + 0.030 x st	(2.00) + 0.030 x st
φ 25	(1.50) + 0.033 x st	(2.20) + 0.033 x st
φ 32	(3.90) + 0.065 x st	(5.80) + 0.065 x st
φ 40	(4.10) + 0.065 x st	(6.10) + 0.065 x st
φ 50	(7.40) + 0.101 x st	(11.2) + 0.101 x st
φ 63	(8.30) + 0.101 x st	(12.1) + 0.101 x st
φ 80	(26.2) + 0.234 x st	(40.6) + 0.234 x st
φ 100	(52.3) + 0.248 x st	(65.8) + 0.248 x st

st: Stroke length (mm)

3. Installation attitude
(actuation)

Horizontal, vertical-up or vertical-down

4. Stroke length L (mm)
5. Operation time t (s)
6. Operation speed V (mm/s)

Formula of cylinder average operation speed Va

$$V_a = L/t \text{ (mm/s)}$$

Step 3 Rough cylinder size selection

- Formula of cylinder size (inner diameter)

$$F = \pi / 4 \times D^2 \times P$$

$$\therefore D = \sqrt{4F / \pi P}$$

D: Cylinder bore size (mm)

P: Working pressure (MPa)

F: Cylinder theoretical thrust (N)

- Calculating according to theoretical thrust value on Table 2.

The rough required thrust \geq load x 2

(x 2 of [load x 2] is a load as safety factor for load factor.)

(Example) Working pressure 0.5 (MPa)

Load 25 (N)

Required trust is 25(N) x 2 = 50(N)

Chose the proper bore size when used at 0.5MPa and theoretical thrust is more than 50N. Table 2 shows the answer that the bore size should be more than 12 mm.

$$D = \phi 12$$

(Cylinder theoretical thrust)

Table 2 Cylinder theoretical thrust table

Theoretical thrust table φ 8, φ 12

Unit: N

Operational direction	Pressure MPa	Bore size (mm)	
		φ 8	φ 12
Extend	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

*Refer to Ending 62 to 66 for the theoretical thrust table.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

Step 4

Calculation of load (W), each moment value

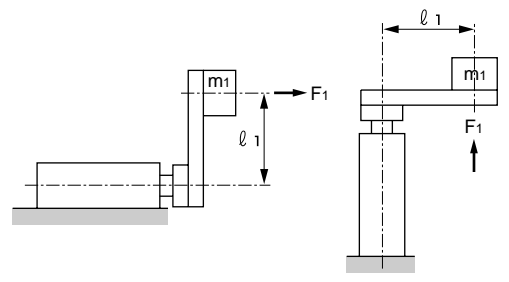
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Step 4 Calculation of load (W), each moment value

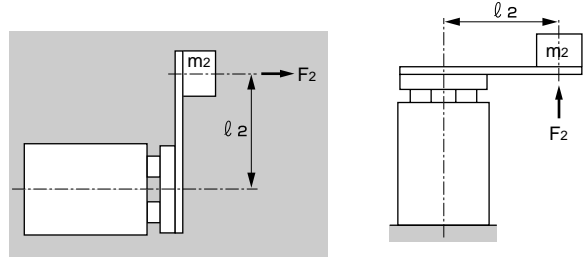
- Calculate static load (W0) and moment (M) according to load installation conditions onto the cylinder.
- $W0 = (\text{load}) + (\text{jig load}) \text{ (N)}$
- $M1 = F1 \times \ell 1 \text{ (N}\cdot\text{m)}$
- $M2 = F2 \times \ell 2 \text{ (N}\cdot\text{m)}$
- $M3 = F3 \times \ell 3 \text{ (N}\cdot\text{m)}$
- Refer to Fig. 2 for values of F1, F2 and F3.

Fig. 2 Formula of each moment
Find each moment according to load and inertia force, coefficient, and eccentric distance.

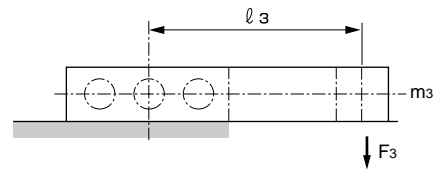
<Bending moment>
 $M1 = F1 \times \ell 1 = 10 \times m1 \times G \times \ell 1$



<Radial moment>
 $M2 = F2 \times \ell 2 = 10 \times m2 \times G \times \ell 2$

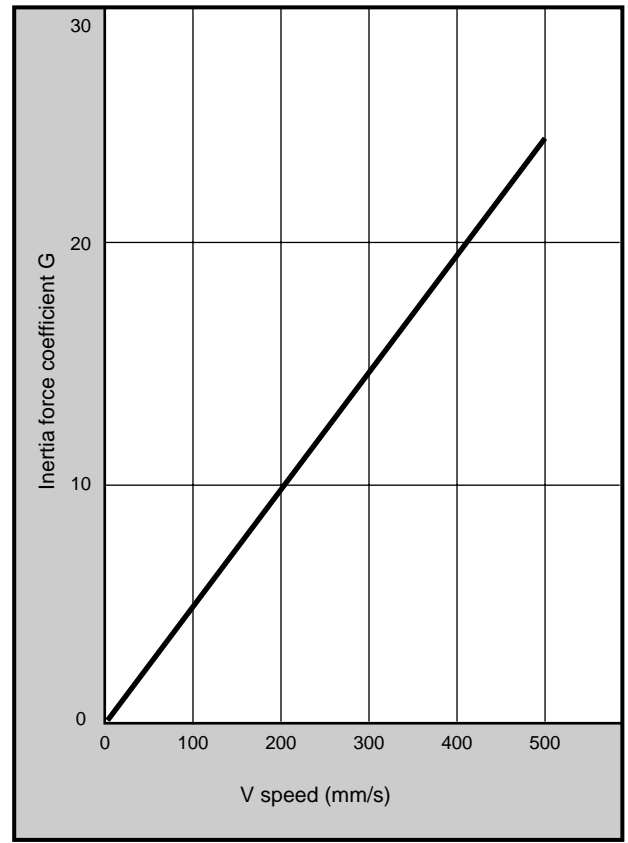


<Twisting moment>
 $M3 = F3 \times \ell 3 = 10 \times m3 \times \ell 3$

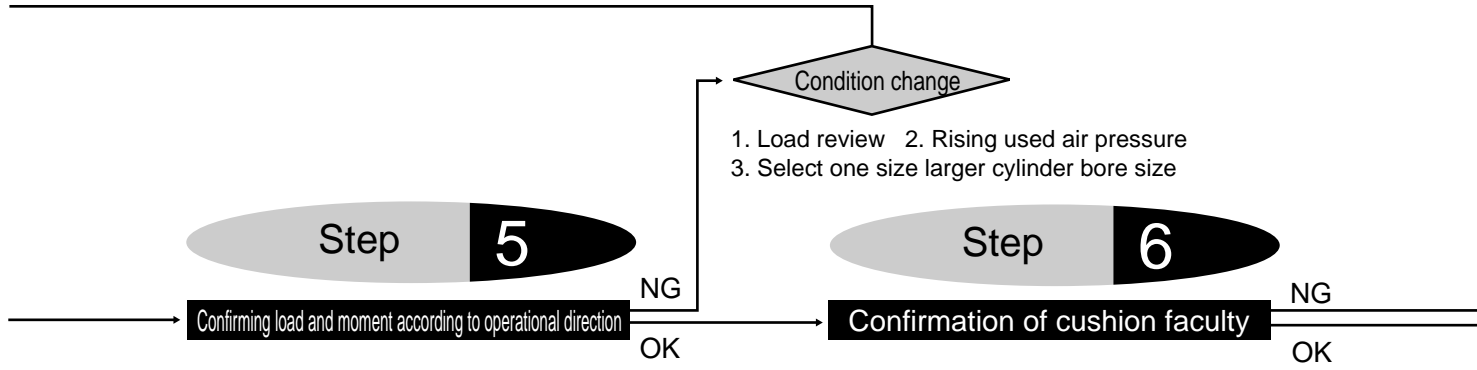


- m1: } Load weight (kg)
- m2: }
- m3: }
- ℓ1: } Eccentric distance (m)
- ℓ2: }
- ℓ3: }
- G: Inertia force coefficient

Fig. 3 Inertia force coefficient tendency of guided cylinder



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending



Step 5 Confirming load and moment according to operational direction

5-1 Load confirmation

1 At horizontal operation

Static load should be allowable load value or less
 Static load W_0 Calculated at step 4
 Allowable lateral load W_{max} . Select from Table 3 according to stroke length

(When custom stroke length, select longer standard stroke length.)

$$W_0 \leq W_{max}$$

Table 3 Allowable lateral load

Unit: N

Bore size	Type	Type of bearing	STS		
			10	20	25
φ 8	ST _L ^S -M-8	Metal bush bearing	14	11	-
	ST _L ^S -B-8	Ball bearing	16	11	-
φ 12	ST _L ^S -M-12	Metal bush bearing	23	19	-
	ST _L ^S -B-12	Ball bearing	30	21	-
φ 16	ST _L ^S -M-16	Metal bush bearing	40	34	-
	ST _L ^S -B-16	Ball bearing	44	32	-
φ 20	ST _L ^S -M-20	Metal bush bearing	-	-	48
	ST _L ^S -B-20	Ball bearing	-	-	45
φ 25	ST _L ^S -M-25	Metal bush bearing	-	-	48
	ST _L ^S -B-25	Ball bearing	-	-	45
φ 32	ST _L ^S -M-32	Metal bush bearing	-	-	141
	ST _L ^S -B-32	Ball bearing	-	-	49

* Refer to page 1648 for the allowable lateral load.

2 At vertical operation

Load should be the value that load factor is considered for theoretical thrust value.

● Calculation of load factor

Load W Calculated at Step 2
 Cylinder theoretical thrust F Selected from theoretical thrust table on Ending 62 to 66 according to pressure.

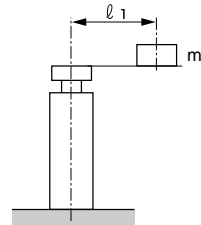
$$\alpha = W/F \times 100(\%)$$

● Determine the load factor according to stability of cylinder operation speed, safety factor, service life and usage. For general use, the load factor should be within the range of Table 4.

Table 4 Allowable range of load factor (reference value)

Working pressure (MPa)	Load factor (%)
0.1 to 0.3	$\alpha \leq 40$
0.3 to 0.6	$\alpha \leq 50$
0.6 to 1.0	$\alpha \leq 60$

● When eccentric load, lateral load functions. The applied lateral load should be allowable lateral load or less on Table 3.



$$\frac{m_1 \times l_1 \times 10}{L} \leq W_{max}$$

st: stroke (m)

Bore size	L	Bore size	L
φ 8	0.015 + st	φ 32	0.022 + st
φ 12	0.015 + st	φ 40	0.022 + st
φ 16	0.016 + st	φ 50	0.025 + st
φ 20	0.016 + st	φ 63	0.025 + st
φ 25	0.016 + st	φ 80	0.046 + st
		φ 100	0.055 + st

5-2 Moment confirmation

1 Divide bending moment and radial moment by the value on Table 5 to find the moment ratio.

The total of moment ratio should be 1.0 or less.

● Calculation of moment ratio

Bending moment M_1
 Radial moment M_2 } Calculated value at Step 4

$$M_1/M_{1max} + M_2/M_{2max} \leq 1.0$$

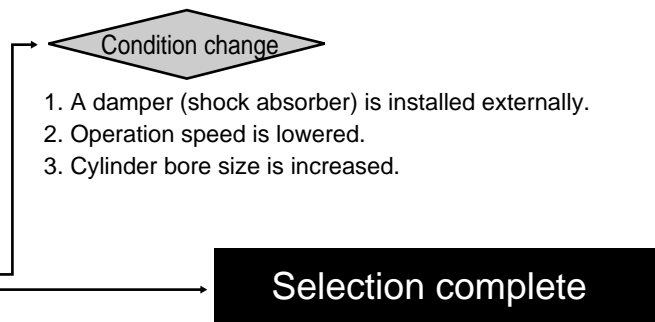


Table 5 Allowable moment (N·m)

Bore size (mm)	Allowable bending moment M1, M2 (N·m)
φ 8	4.1
φ 12	6.1
φ 16	19.3
φ 20	32.6
φ 25	48.5
φ 32	107.4
φ 40	107.4
φ 50	201.7
φ 63	201.7
φ 80	726.0
φ 100	726.0

- ② Twisting moment should be allowable torque or less.
 Twisting moment M3 calculated at Step 4
 Allowable torque
 M3max select from Table 6 according to stroke length
 (When custom stroke length, select longer standard stroke length)
 M3 ≤ M3max.

Table 6 Allowable torque (N·m)

Bore size (mm)	Type	Type of bearing	STS		
			10	20	25
φ 8	ST ^S _L -M-8	Metal bush bearing	0.14	0.11	-
	ST ^S _L -B-8	Ball bearing	0.16	0.11	-
φ 12	ST ^S _L -M-12	Metal bush bearing	0.24	0.19	-
	ST ^S _L -B-12	Ball bearing	0.31	0.22	-
φ 16	ST ^S _L -M-16	Metal bush bearing	0.46	0.39	-
	ST ^S _L -B-16	Ball bearing	0.51	0.37	-
φ 20	ST ^S _L -M-20	Metal bush bearing	-	-	0.71
	ST ^S _L -B-20	Ball bearing	-	-	1.19
φ 25	ST ^S _L -M-25	Metal bush bearing	-	-	0.76
	ST ^S _L -B-25	Ball bearing	-	-	1.28
φ 32	ST ^S _L -M-32	Metal bush bearing	-	-	2.86
	ST ^S _L -B-32	Ball bearing	-	-	0.99
φ 40	ST ^S _L -M-40	Metal bush bearing	-	-	3.17
	ST ^S _L -B-40	Ball bearing	-	-	1.10
φ 50	ST ^S _L -M-50	Metal bush bearing	-	-	5.86
	ST ^S _L -B-50	Ball bearing	-	-	2.01
φ 63	ST ^S _L -M-63	Metal bush bearing	-	-	6.60
	ST ^S _L -B-63	Ball bearing	-	-	2.26
φ 80	ST ^S _L -M-80	Metal bush bearing	-	-	13.95
	ST ^S _L -B-80	Ball bearing	-	-	8.48
φ 100	ST ^S _L -M-100	Metal bush bearing	-	-	18.23
	ST ^S _L -B-100	Ball bearing	-	-	11.07

* Refer to page 1648 for the allowable torque.

Step 6 Confirming cushion faculty

Check that cushion faculty of a cylinder can absorb the kinetic energy of actually used load.

- Allowable energy absorption (E1) of a cylinder is the specific value for each cylinder. For STS and STL Series, the value on Table 7 are used.
- Formula of kinetic energy (E2) of piston

$$E_2 = 1/2 \times W \times V^2 \times \frac{1}{10} \text{ (J)}$$

W: Load (N) Calculated value at Step 2

V: Piston rush into cushion speed (m/s)

$$V = L/t \times (1 + 1.5 \times \alpha / 100)$$

L: Stroke length (m)

T: Operation time (s)

α: Load factor (%)

Cylinder allowable energy absorption

- The value of kinetic energy absorbing faculty of cylinder cushion mechanism varies depending on cylinder bore size. For a guided cylinder, compare the values on Table 7.

Table 7 Allowable energy absorption of STS/STL (E1)

Bore size (mm)	Allowable energy absorption (J)			
	Rubber cushion	Rubber-air cushion	Air cushion	No cushion
φ 8	0.029	-	-	-
φ 12	0.056	-	-	0.004
φ 16	0.088	-	-	0.010
φ 20	0.157	-	-	0.016
φ 25	0.157	-	1.18	0.021
φ 32	0.401	0.401	2.27	0.025
φ 40	0.627	0.627	3.05	0.092
φ 50	0.980	0.980	3.81	0.100
φ 63	1.560	1.560	15.64	0.120
φ 80	2.510	2.510	20.18	0.270
φ 100	3.920	-	-	0.560

E1 > E2
 (Allowable energy absorption) > (Kinetic energy of piston)

Selection complete

E1 < E2
 (Allowable energy absorption) < (Kinetic energy of piston)

SCP*2
 CMK2
 CMA2
 SCM
 SCG
 SCA2
 SCS
 CKV2
 CA/OV2
 SSD
 CAT
 MDC2
 MVC
 SMD2
 MSD*
 FC*
 STK
 ULK*
 JSK/M2
 JSG
 JSC3
 USSD
 USC
 JSB3
 LMB
STG
STS/L
 LCS
 LCG
 LCM
 LCT
 LCY
 STR2
 UCA2
 HCM
 HCA
 SRL2
 SRG
 SRM
 SRT
 MRL2
 MRG2
 SM-25
 CAC3
 UCAC
 RCC2
 MFC
 SHC
 GLC
 Ending

Guided cylinder
 Combined functions

STS Series

Technical data ① Cylinder weight

● Short stroke

Unit: g

Series	Bore size (mm)	Bearing type	Weight when stroke length 0mm			Additional weight per St = 25mm (For ϕ 8 to ϕ 16, additional weight per St = 10mm)
			Cylinder body	End plate		
				Standard type	Steel	
● Standard single rod type	ϕ 8	M	102	22	62	29
● Low speed type		B	89			
● Copper and PTFE free type	ϕ 12	M	151	27	76	37
● Type proof		B	154			
● Heat resistance type	ϕ 16	M	225	37	104	47
● Packing seal fluoro rubber		B	229			
● With dowel hole	ϕ 20	M	483	72	200	150
● Rubber-air cushion type		B	363			
● Fine speed type	ϕ 25	M	534	78	219	169
● Stroke adjustable type		B	415			
● Position locking type	ϕ 32	M	924	162	451	231
● Position locking type		B	804			
● Position locking type	ϕ 40	M	1333	195	543	283
● Position locking type		B	1214			
● Position locking type	ϕ 50	M	2026	415	1158	428
● Position locking type		B	1915			
● Position locking type	ϕ 63	M	2803	530	1478	557
● Position locking type		B	2569			
● Position locking type	ϕ 80	M	6435	1335	3720	1265
● Position locking type		B	5876			
● Position locking type	ϕ 100	M	10850	2685	7491	1933
● Position locking type		B	9934			
● Position locking type	ϕ 8	M	260	22	62	33
● Position locking type		B	243			
● Position locking type	ϕ 12	M	340	27	76	45
● Position locking type		B	333			
● Position locking type	ϕ 16	M	462	37	104	59
● Position locking type		B	454			
● Position locking type	ϕ 20	M	742	72	200	210
● Position locking type		B	602			
● Position locking type	ϕ 25	M	836	78	219	229
● Position locking type		B	697			
● Position locking type	ϕ 32	M	1499	162	451	335
● Position locking type		B	1331			
● Position locking type	ϕ 40	M	2006	195	543	407
● Position locking type		B	1841			
● Position locking type	ϕ 50	M	3323	415	1158	620
● Position locking type		B	3106			
● Position locking type	ϕ 63	M	4458	530	1478	749
● Position locking type		B	4118			
● Position locking type	ϕ 80	M	9505	1335	3720	1755
● Position locking type		B	8776			
● Position locking type	ϕ 20	M	680	72	200	150
● Position locking type		B	560			
● Position locking type	ϕ 25	M	767	78	219	169
● Position locking type		B	648			
● Position locking type	ϕ 32	M	1235	162	451	231
● Position locking type		B	1115			
● Position locking type	ϕ 40	M	2183	195	543	283
● Position locking type		B	2064			
● Position locking type	ϕ 50	M	3305	415	1158	428
● Position locking type		B	3194			
● Position locking type	ϕ 63	M	4554	530	1478	557
● Position locking type		B	4320			
● Position locking type	ϕ 80	M	11583	1335	3720	1265
● Position locking type		B	10679			
● Position locking type	ϕ 20	M	666	72	200	150
● Position locking type		B	546			
● Position locking type	ϕ 25	M	749	78	219	169
● Position locking type		B	630			
● Position locking type	ϕ 32	M	1221	162	451	231
● Position locking type		B	1101			
● Position locking type	ϕ 40	M	2126	195	543	283
● Position locking type		B	2007			
● Position locking type	ϕ 50	M	3214	415	1158	428
● Position locking type		B	3103			
● Position locking type	ϕ 63	M	4434	530	1478	557
● Position locking type		B	4200			
● Position locking type	ϕ 80	M	11340	1335	3720	1265
● Position locking type		B	10436			

● Short stroke

Unit: g

Series	Bore size (mm)	Bearing type	Weight when stroke length 0mm				Additional weight per St = 25mm		
			Cylinder body	End plate		Weight per switch (Grommet)			
				Standard type	Steel				
● Coil scraper type STS- ^M / _B G1 ● Rubber scraper type STS- ^M / _B G	φ 20	M	572	72	200	18	150		
		B	452						
	φ 25	M	630	78	219		169		
		B	511						
	φ 32	M	1083	162	451		231		
		B	963						
	φ 40	M	1667	195	543		283		
		B	1548						
	φ 50	M	2299	415	1158		428		
		B	2188						
	φ 63	M	3125	530	1478		557		
		B	2891						
	φ 80	M	6861	1335	3720		1265		
		B	6302				1150		
● Type with valve STS- ^M / _B V ¹ / ₂ (valve on the front)	φ 20	M	668	72	200	18	150		
		B	548						
	φ 25	M	719	78	219		169		
		B	600						
	φ 32	M	1136	162	451		231		
		B	1016						
	φ 40	M	1648	195	543		283		
		B	1529						
	φ 50	M	2428	415	1158		428		
		B	2317						
	φ 63	M	3205	530	1478		557		
		B	2971						
	● Type with valve STS- ^M / _B V ¹ / ₂ S (valve on the side)	φ 20	M	663	72		200	18	150
			B	543					
φ 25		M	714	78	219	169			
		B	595						
φ 32		M	1104	162	451	231			
		B	684						
φ 40		M	1651	195	543	283			
		B	1532						
φ 50		M	2344	45	1158	428			
		B	2233						
φ 63		M	3121	530	1478	557			
		B	2887						

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

 Guided cylinder
 Combined functions

STL Series

● Long stroke

Unit: g

Series	Bore size (mm)	Bearing type	Weight when stroke length 0mm				Additional weight per St = 25mm
			Cylinder body	End plate		Weight per switch (Grommet)	
				Standard type	Steel		
SCP*2	φ 8	M	103	22	62	73	
CMK2		B	99				
CMA2	φ 12	M	159	27	76	91	
SCM		B	173				
SCG	φ 16	M	232	37	104	119	
SCA2		B	265				
SCS	φ 20	M	890	72	200	150	
CKV2		B	751				
CA/OV2	φ 25	M	979	78	219	169	
SSD		B	840				
CAT	φ 32	M	1705	162	451	231	
MDC2		B	1520				
MVC	φ 40	M	2218	195	543	283	
SMD2		B	2033				
MSD*	φ 50	M	3587	415	1158	428	
FC*		B	3228				
STK	φ 63	M	4501	530	1478	557	
ULK*		B	4142				
JSK/M2	φ 80	M	10337	1335	3720	1265	
JSG		B	9341				
JSC3	φ 100	M	16649	2685	7491	1933	
USSD		B	15385				
USC	φ 8	M	261	22	62	84	
JSB3		B	253				
LMB	φ 12	M	348	27	76	111	
STG		B	352				
STS/L	φ 16	M	469	37	104	150	
LCS		B	490				
LCG	φ 20	M	1149	72	200	210	
LCM		B	990				
LCT	φ 25	M	1281	78	219	229	
LCY		B	1122				
STR2	φ 32	M	2280	162	451	355	
UCA2		B	2049				
HCM	φ 40	M	2891	195	543	407	
HCA		B	2658				
SRL2	φ 50	M	4884	415	1158	620	
SRG		B	4419				
SRM	φ 63	M	6156	530	1478	749	
SRT		B	5691				
MRL2	φ 80	M	12035	1335	3720	1755	
MRG2		B	11191				
SM-25	φ 20	M	1087	72	200	150	
CAC3		B	948				
UCAC	φ 25	M	1212	78	219	169	
RCC2		B	1073				
MFC	φ 32	M	2016	162	451	231	
SHC		B	1831				
GLC	φ 40	M	3068	195	543	283	
Ending		B	2883				
	φ 50	M	4866	415	1158	428	
		B	4507				
	φ 63	M	6252	530	1478	557	
		B	5893				
	φ 80	M	15485	1335	3720	1265	
		B	14144				
	φ 20	M	1073	72	200	150	
		B	934				
	φ 25	M	1194	78	219	169	
		B	1056				
	φ 32	M	2002	162	451	231	
		B	1867				
	φ 40	M	3011	195	543	283	
		B	2826				
	φ 50	M	4775	415	1158	428	
		B	4416				
	φ 63	M	6132	530	1478	557	
		B	5773				
	φ 80	M	15242	1335	3720	1265	
		B	13401				

● Long stroke

Series	Bore size (mm)	Bearing type	Weight when stroke length 0mm			Weight per switch (Grommet)	Additional weight per St = 25mm		
			Cylinder body	End plate					
				Standard type	Steel				
● Coil scraper type STL- ^M _B G1 ● Rubber scraper type STL- ^M _B G	φ 20	M	979	72	200	18	150		
		B	840						
	φ 25	M	1075	78	219		169		
		B	936						
	φ 32	M	1864	162	451		231		
		B	1679						
	φ 40	M	2552	195	543		283		
		B	2367						
	φ 50	M	3860	415	1158		428		
		B	3501						
	φ 63	M	4823	530	1478		557		
		B	4464						
	φ 80	M	10763	1335	3720		1265		
		B	9767				1150		
● Type with valve STL- ^M _B V ¹ / ₂ (valve on the front)	φ 20	M	1075	72	200	18	150		
		B	936						
	φ 25	M	1164	78	219		169		
		B	1025						
	φ 32	M	1917	162	451		231		
		B	1732						
	φ 40	M	2533	195	543		283		
		B	2348						
	φ 50	M	3989	415	1158		428		
		B	3630						
	φ 63	M	4903	530	1478		557		
		B	4544						
	● Type with valve STL- ^M _B V ¹ / ₂ S (valve on the side)	φ 20	M	1070	72		200	18	150
			B	931					
φ 25		M	1159	78	219	169			
		B	1020						
φ 32		M	1885	162	451	231			
		B	1700						
φ 40		M	2536	195	543	283			
		B	2351						
φ 50		M	3905	415	1158	428			
		B	3546						
φ 63		M	4819	530	1478	557			
		B	4460						

Unit: g

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

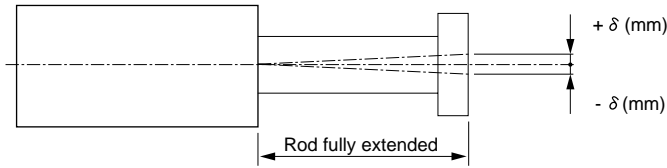
 Guided cylinder
 Combined functions

STS/STL Series

Technical data ② Deflection

Deflection

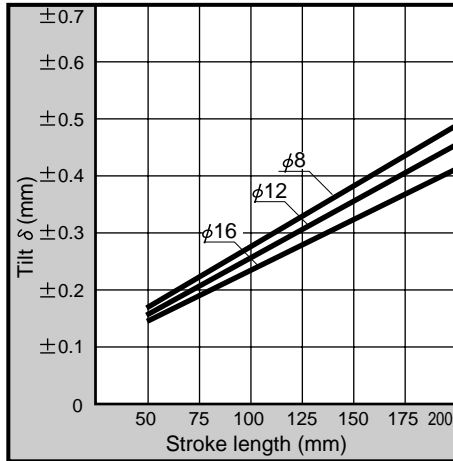
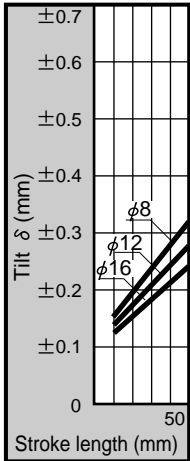
Refer to values on the following graph for end plate tilt angle at no load.
(Excluding deflection of guide rod)



φ 8 to φ 16 Metal bush bearing

STS-M

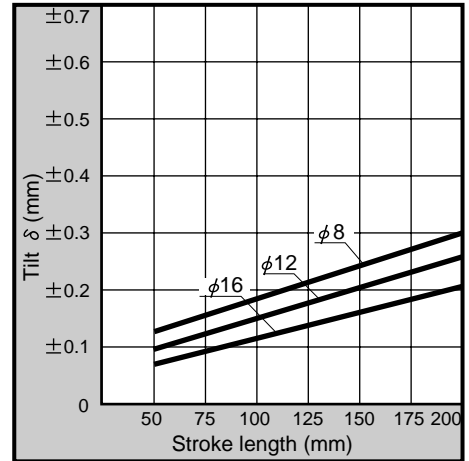
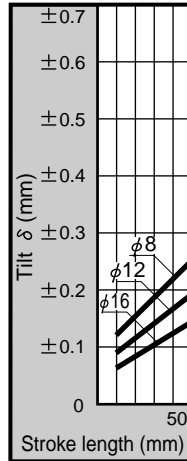
STL-M



φ 8 to φ 16 ball bearing

STS-B

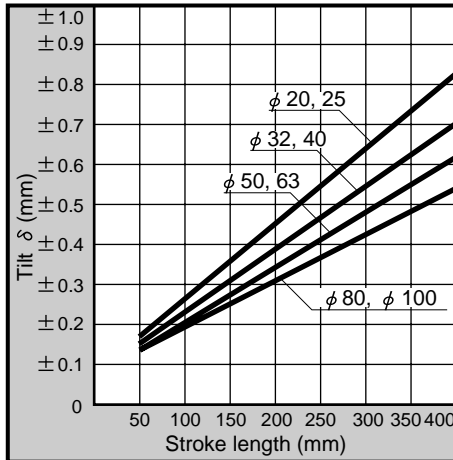
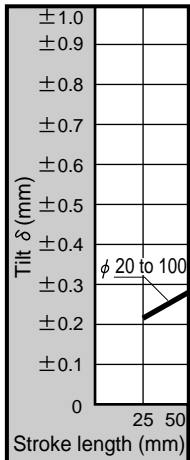
STL-B



φ 20 to φ 100 Metal bush bearing

STS-M

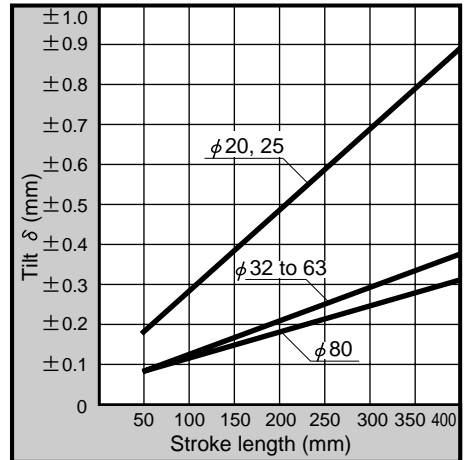
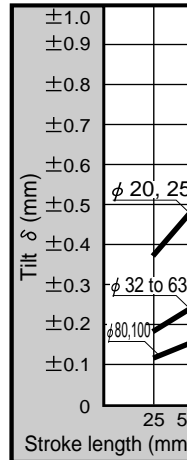
STL-M



φ 20 to φ 80 ball bearing

STS-B

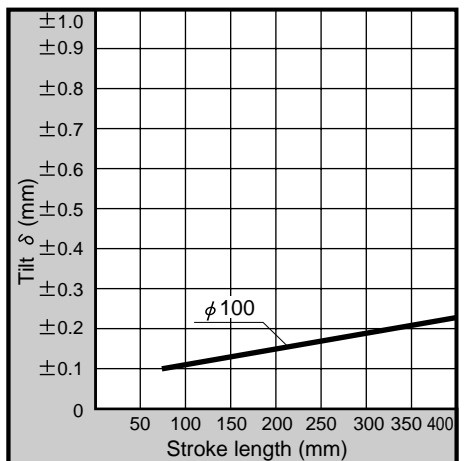
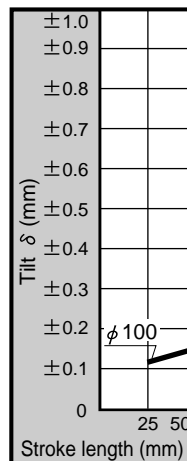
STL-B



φ 100 ball bearing

STS-B

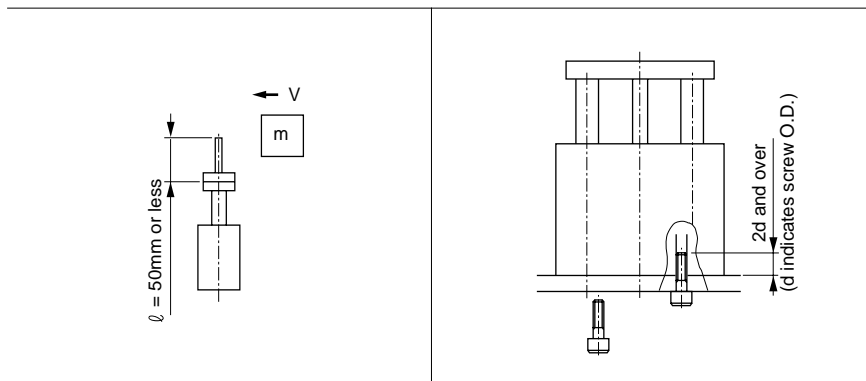
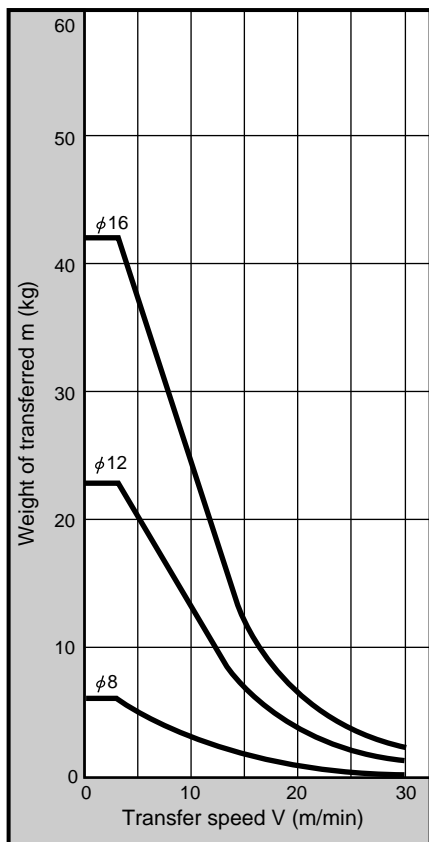
STL-B



Working range when used as a stopper

Impact load

STS-M-8 to 16 (Metal bush bearing)



Safety precautions

Note 1: When using as a stopper, select a model with the stroke length not greater than 50mm (STS-M). (30 mm stroke or less for φ 8 to φ 16)

Note 2: The stopper section must be $l = 50$ mm long or less.

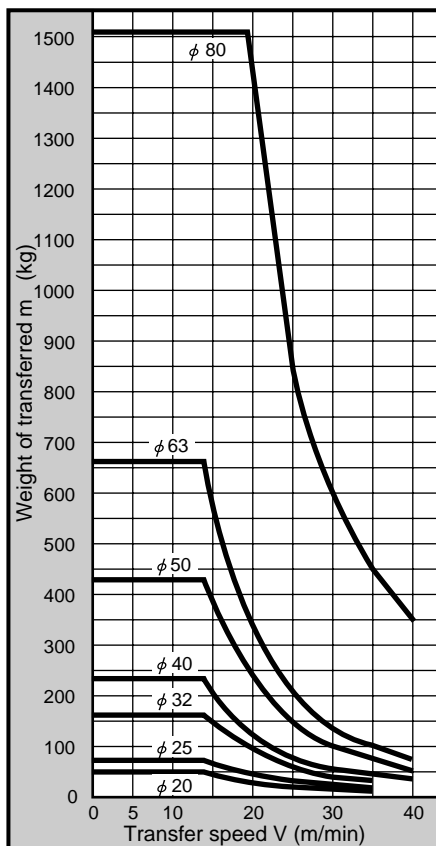
Note 3: When fixing the cylinder main body, bolt screw depth should be $2d$ and over, and consider countermeasures for loose prevention (adhesive, spring washer etc.)

(φ 80, φ 100 indicates screw depth $1d$. d indicates screw O.D.)

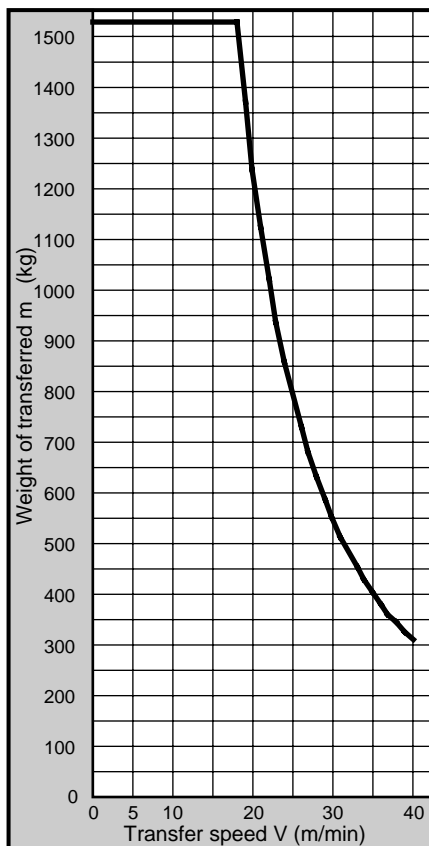
Note 4: STS-B (ball bearing) cannot be used as a stopper.

Impact load

STS-M-20 to 80 (Metal bush bearing)



STS-M-100 (Metal bush bearing)



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Guided cylinder
Combined functions

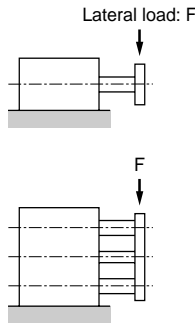
Unit: N

Unit: N

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Allowable lateral load



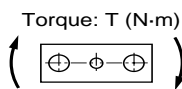
Bore size (mm)	Model no.	Type of bearing	Stroke length (mm)																										
			STS												STL														
			10	20	25	30	40	50	75	100	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400				
φ 8	ST ^S _L -M-8	Metal bush bearing	14	11	-	9	8	7	-	-	-	-	-	-	12	9	7	6	5	5	4	-	-	-	-	-	-	-	-
	ST ^S _L -B-8	Ball bearing	16	11	-	8	7	6	-	-	-	-	-	-	16	11	9	7	5	4	4	-	-	-	-	-	-	-	-
φ 12	ST ^S _L -M-12	Metal bush bearing	23	19	-	16	14	12	-	-	-	-	-	-	20	16	13	11	10	9	8	-	-	-	-	-	-	-	-
	ST ^S _L -B-12	Ball bearing	30	21	-	16	13	11	-	-	-	-	-	-	23	16	13	10	8	7	6	-	-	-	-	-	-	-	-
φ 16	ST ^S _L -M-16	Metal bush bearing	40	34	-	29	25	22	-	-	-	-	-	-	35	29	24	21	19	17	15	-	-	-	-	-	-	-	-
	ST ^S _L -B-16	Ball bearing	44	32	-	25	21	18	-	-	-	-	-	-	34	25	19	16	13	11	10	-	-	-	-	-	-	-	-
φ 20	ST ^S _L -M-20	Metal bush bearing	-	-	48	-	-	35	-	-	-	-	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST ^S _L -B-20	Ball bearing	-	-	45	-	-	29	-	-	-	-	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
φ 25	ST ^S _L -M-25	Metal bush bearing	-	-	48	-	-	35	-	-	-	-	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST ^S _L -B-25	Ball bearing	-	-	45	-	-	29	-	-	-	-	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
φ 32	ST ^S _L -M-32	Metal bush bearing	-	-	141	-	-	109	-	-	-	-	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST ^S _L -B-32	Ball bearing	-	-	49	-	-	33	-	-	-	-	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
φ 40	ST ^S _L -M-40	Metal bush bearing	-	-	141	-	-	109	-	-	-	-	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST ^S _L -B-40	Ball bearing	-	-	49	-	-	33	-	-	-	-	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
φ 50	ST ^S _L -M-50	Metal bush bearing	-	-	213	-	-	170	-	-	-	-	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST ^S _L -B-50	Ball bearing	-	-	73	-	-	50	-	-	-	-	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
φ 63	ST ^S _L -M-63	Metal bush bearing	-	-	213	-	-	170	-	-	-	-	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST ^S _L -B-63	Ball bearing	-	-	73	-	-	50	-	-	-	-	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
φ 80	ST ^S _L -M-80	Metal bush bearing	-	-	372	-	-	316	275	243	-	-	-	-	-	402	367	338	312	291	272	255	241	228	216	205	196	187	179
	ST ^S _L -B-80	Ball bearing	-	-	226	-	-	165	133	112	-	-	-	-	-	235	197	170	149	133	120	109	99	91	85	79	73	69	64
φ 100	ST ^S _L -M-100	Metal bush bearing	-	-	372	-	-	316	275	243	-	-	-	-	-	402	367	338	312	291	272	-	-	-	-	-	-	-	-
	ST ^S _L -B-100	Ball bearing	-	-	226	-	-	165	133	112	-	-	-	-	-	235	197	170	149	133	120	-	-	-	-	-	-	-	-

Note 1: When load is applied during operation, allowable lateral load should be calculated according to the following two formulas.
(Corrosion proof type) catalog allowable lateral load x 0.6
(Option variation other than above) catalog allowable lateral load x 0.9
2: When designing, consider safety factor according to working conditions.

Unit: N·m

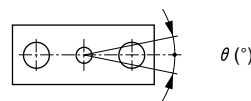
Unit: N·m

Allowable torque



Bore size (mm)	Model no.	Type of bearing	Stroke length (mm)																										
			STS												STL														
			10	20	25	30	40	50	75	100	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400				
φ 8	ST ^S _L -M-8	Metal bush 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	Ball 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	-	-	-	-	-	-	-	-
φ 12	ST ^S _L -M-12	Metal bush 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	Ball 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	-	-	-	-	-	-	-	-
φ 16	ST ^S _L -M-16	Metal bush 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	Ball 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	-	-	-	-	-	-	-	-
φ 20	ST ^S _L -M-20	Metal bush 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	Ball 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
φ 25	ST ^S _L -M-25	Metal bush 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	Ball 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
φ 32	ST ^S _L -M-32	Metal bush 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	Ball 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
φ 40	ST ^S _L -M-40	Metal bush 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	Ball 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
φ 50	ST ^S _L -M-50	Metal bush 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	Ball 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
φ 63	ST ^S _L -M-63	Metal bush 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	Ball 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
φ 80	ST ^S _L -M-80	Metal bush 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	Ball 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
φ 100	ST ^S _L -M-100	Metal bush 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	Ball bearing	-	-	11.07	-	-	8.09	6.52	5.49	-	-	-	-	-	11.52	9.65	8.33	7.30	6.52	5.88	-	-	-	-	-	-	-	-

Revolvable angle tolerance



Descriptions Bore size (mm)	Revolvable angle tolerance θ (°)	
	Metal bush bearing	Ball bearing
φ 8	±0.09	±0.06
φ 12	±0.10	
φ 16		
φ 20		
φ 25		±0.08
φ 32	±0.04	
φ 40		
φ 50		
φ 63		±0.03
φ 80	±0.03	
φ 100		