Air Cylinder/Low Friction

Series CS1□Q

Non-lube/ø125, ø140, ø160

How to Order

Standard CS1 L Q 160 — 300 JR

With auto switch CDS1 L Q 160 — 300 JR — A53 □

With auto switch

Mounting

B	Basic
L	Foot
F	Front flange
G	Rear flange
C	Single clevis
D	Double clevis
T	Center clevis

Low friction

Bore size

125	125mm
140	140mm
160	160mm

Cylinder stroke (mm)

Refer to p.1.10-31 for the standard stroke.

Number of auto switches

—	2
S	1
3	3
n	n

Auto switch

—	Without auto switch

∗ Select the applicable auto switch from the table below.

Rod boot/Cushion

Rod boot	**J**	Nylon tarpaulin
	K	Heat resistant tarpaulin
Cushion	**A**	With double cushion
	R	With Front cushion
	H	With rear cushion
	—	Without cushion

∗ If specifying more than one symbol, please indicate them in alphabetical order.

Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switch.

Style	Special function	Electrical entry	Indicator	Wiring (output)	Load voltage DC	Load voltage AC	Auto switch model Tie rod	Auto switch model Band	Lead wire (m)∗ 0.5 (−)	3 (L)	5 (Z)	None	Applicable load	
Reed switch	——	Grommet	Yes	3 wire (Equiv. to NPN)	5V	—	**A56**	—	●	●	—	—	IC	—
				2 wire	12V	—	**A53**	—	●	●	●	—	—	PLC
					12V	100V, 200V	**A54**	—	●	●	●	—		Relay, PLC
			No		5V, 12V	—	**A67**	—	●	●	—	—	IC	PLC
					12V	≤ 200V	**A64**	—	●	●	—	—	—	Relay, PLC
		Terminal conduit	Yes		24V	—	—	**A33**	—	—	—	●	—	PLC
					12V	100V, 200V	—	**A34**	—	—	—	●		Relay, PLC
		DIN terminal						**A44**	—	—	—	●		
	Diagnostic indication (2 color)	Grommet			—	—	**A59W**	—	●	●	—	—	—	
Solid state switch	——	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**F59**	—	●	●	○	—	IC	
				3 wire (PNP)				**F5P**	—	●	●	○	—	
				2 wire	—	—	100V, 200V	**J51**	—	●	●	○	—	—
					24V	12V	—	**J59**	—	●	●	○	—	
		Terminal conduit		3 wire (NPN)		5V, 12V		—	**G39**	—	—	—	●	IC
				2 wire		12V		—	**K39**	—	—	—	●	—
	Diagnostic indication (2 color)	Grommet		3 wire (NPN)		5V, 12V		**F59W**	—	●	●	○	—	IC
				3 wire (PNP)				**F5PW**	—	●	●	○	—	
				2 wire		12V		**J59W**	—	●	●	○	—	—
	Water resistant (2 color)							**F5BA**	—	●	●	○	—	
	With timer			3 wire (NPN)		5V, 12V		**F5NT**	—	●	●	○	—	IC
	With diagnostic output (2 color)			4 wire (PNP)				**F59F**	—	●	●	○	—	
	Latch with diagnostic output (2 color)					—		**F5LF**	—	●	●	○	—	—

∗ Lead wire length

0.5m ····· — (Example) A53
3m ····· L A53L
5m ····· Z A53Z
None ····· N A33N

∗ Solid state auto switch marked "○" is manufactured upon receipt of order..

Designed with a low sliding resistance of the piston, this air cylinder is ideal for applications such as contact pressure control, which requires smooth movements at low pressures.

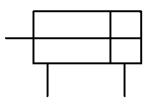
Low sliding resistance

Min. operating pressure – 0.005MPa

Auto switch mounting is possible.

JIS symbol

Double acting



Made to Order

Refer to p.5.4-1 for made to order specifications for series CS1□Q.

⚠ Precautions

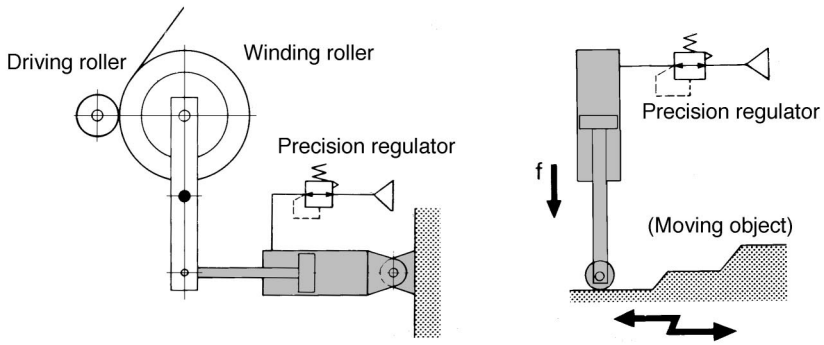
Be sure to read before handling. Refer to p.0-39 to 0-43 for Safety Instructions and common precautions.

Cylinder with auto switch

Refer to the standard style double acting single rod (Series CS1) on p.1.10-7 for auto switch specifications of low friction style.

Application Example

A low friction cylinder is used in combination with a precision regulator (Series IR, etc.).



Specifications

Action	Double acting single rod
Direction of low friction	Both directions
Fluid	Air
Proof pressure	1.05MPa
Max. operating pressure	0.7MPa
Min. operating pressure	0.005MPa*
Ambient and fluid temperature	Without auto switch: 0 to 70°C (No condensation), With auto switch: 0 to 60°C (No condensation)
Allowable leakage rate	0.5 ℓ/min(ANR)or less
Cushion	None (Cushion style is available.)
Thread tolerance	JIS 2 class
Lube	Not required (Non-lube)
Bore size (mm)	ø125, ø140, ø160
Mounting	Basic, Foot, Front flange, Rear flange, Single clevis, Double clevis, Center trunnion

* In case of cushion style, pressure inside cushion stroke is not included.

Max. Stroke

(mm)

Tube material	Aluminum alloy		Carbon steel	
Mounting bracket / Bore size (mm)	Basic, Rear flange, Single clevis, Double clevis, Center trunnion	Front flange	Basic, Rear flange, Single clevis, Double clevis, Center trunnion	Foot, Front flange
125	1000 or less	1400 or less	1000 or less	1600 or less
140	1000 or less	1400 or less	1000 or less	1600 or less
160	1200 or less	1400 or less	1200 or less	1600 or less

Mounting Bracket Part No.

Bore size (mm)	**125**	**140**	**160**
Foot*	CS1-L12	CS1-L14	CS1-L16
Flange	CS1-F12	CS1-F14	CS1-F16
Single clevis	CS1-C12	CS1-C14	CS1-C16
Double clevis	CS1-D12	CS1-D14	CS1-D16

* Order 2 foot brackets for one cylinder.

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)		
	125	**140**	**160**
D-A5/A6/A59W/F5□/J5□/F5NTL D-F5□W/J59W/F5BAL/D-F5□F	BT-12	BT-12	BT-16
D-A3/A44/G39/K39	BS1-125	BS1-140	BS1-160

* Stainless mounting screw set
A set of following stainless steel mounting screws (including a set screw) is attached. (A switch mounting band is not attached. Please order the band separately.)
BBA1: D-A5/A6/F5/J5
"D-F5BAL" switch is set on the cylinder with the screws above when shipped.
When a switch only is shipped, "BBA1" screw is attached.

Accessories

Mounting		Basic	Foot	Front flange	Rear flange	Single clevis	Double clevis	Center trunnion
Std. equipment	Clevis pin	—	—	—	—	—	●	—
Accessory	Rod end nut	●	●	●	●	●	●	●
	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (Knuckle pin, Cotter pin)	●	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●	●

Rod Boot Materials

Symbol	Material	Max. ambient temp
J	Nylon tarpaulin	60°C
K	Heat resistant tarpaulin	110°C*

* Max. ambient temperature for the rod boot itself.

Major Material and Surface Treatments

Description	Material	Note
Cover	Rolled steel	Coated black
Tube	Aluminum alloy *	Hard anodized
	Carbon steel pipe	Inside: Hard chrome plated
Sliding part seal	NBR	PNY, NLP
Piston rod	Carbon steel	Hard chrome plated
Piston	Aluminum alloy cast	Chromated

* With auto switch

Weight/Steel tube (Refer to p.1.10-4 for aluminum tube [With auto switch].)

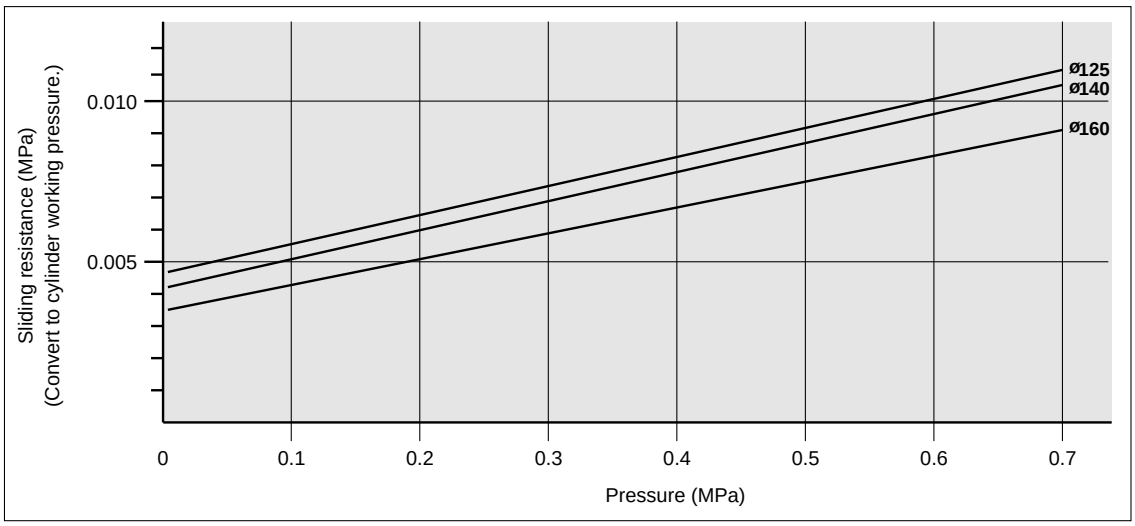
(kg)

Bore size (mm)		ø125	ø140	ø160
Basic weight	Basic	15.20	18.38	25.24
	Foot	16.83	20.90	28.04
	Front flange	17.88	23.38	31.63
	Rear flange	17.88	23.38	31.63
	Single clevis	18.27	22.67	30.73
	Double clevis	18.73	23.42	31.58
	Trunnion	19.33	24.11	32.64
Additional weight per 100 stroke		2.66	3.01	3.58
Accessory	Single knuckle joint	0.91	1.16	1.56
	Double knuckle joint (with pin)	1.37	1.81	2.48

Calculation example: **CS1LQ160, 500**(Foot, ø160)
- Basic weight ····· 28.04
- Additional weight ····· 3.58/100 stroke
- Cylinder stroke ····· 500 stroke

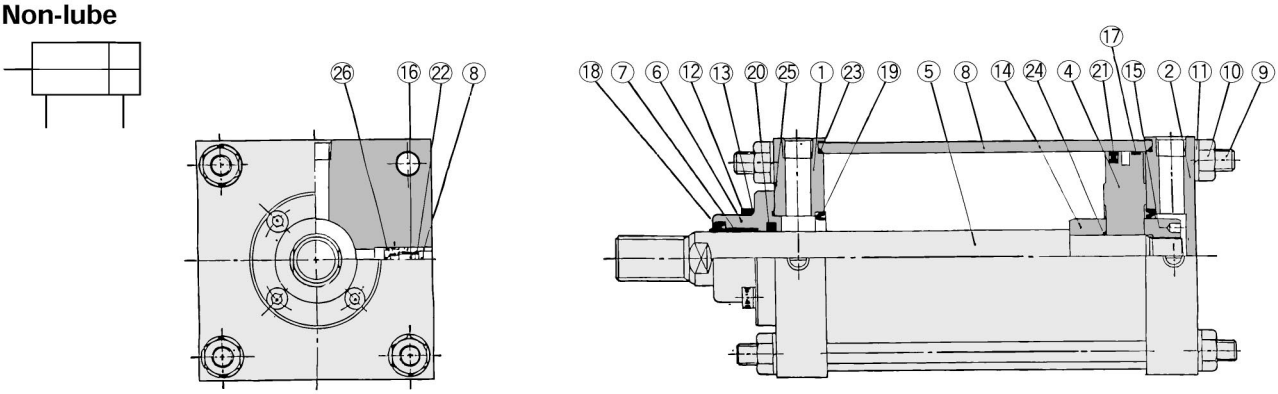
28.04+3.58 X 500/100=45.94kg

Sliding Resistance



Construction

Non-lube



Component Parts

No.	Description	Material	Note
①	Rod cover	Rolled steel plate	Black coated
②	Head cover	Rolled steel plate	Black coated
③	Cylinder tube	Aluminum alloy*	Hard anodized
		Carbon steel pipe	Hard chrome plated
④	Piston	Aluminum alloy die cast	Chromated
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Holder plate	Cast iron	Black coated
⑦	Bushing	Lead bronze casting	
⑧	Valve guide	Brass	
⑨	Tie rod	Carbon steel	Chromated
⑩	Tie rod nut	Rolled steel	Black zinc chromated
⑪	Spring washer	Steel wire	Black zinc chromated
⑫	Holder plate bolt	Chrome-molybdenum steel	Black zinc chromated
⑬	Spring washer	Steel wire	Black zinc chromated
⑭	Cushion ring A	Rolled steel	Zinc chromated
⑮	Cushion ring B	Rolled steel	Zinc chromated
⑯	Cushion valve	Rolled steel	Nickel plated
⑰	Wear ring	Resin	

* With auto switch

Seal List

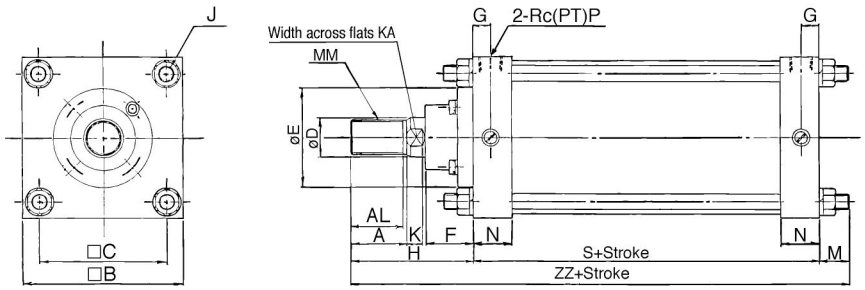
No.	Description	Mat'l	Part No.		
			125	**140**	**160**
⑱	Wiper ring	NBR	SFR-36K	SFR-36K	SFR-40K
⑲	Cushion seal*		DSM-50S	DSM-50S	DSM-50S
⑳	Rod seal		PNY-36	PNY-36	PNY-40
㉑	Piston seal		NLP-125A	NLP-140A	NLP-160A
㉒	Valve seal		P7	P7	P7
㉓	Tube gasket		C120	C135	C155
㉔	Piston gasket		G25		
㉕	Holder plate gasket		G55		
㉖	Guide gasket		N-12.5-1.5		

*It is used in case of cushion style only.

According to Mounting Brackets/Dimensions

Refer to dimensions of the standard style on p.1.10-12 to 1.10-18 for those with mounting brackets except the basic style.

Basic/CS1BQ CAD



(mm)

Bore (mm)	Stroke range (mm)	A	AL	□B	□C	D	E	F	G	J	K	KA	M	MM	N	P	S	H	ZZ
125	to 1000	50	47	145	115	36	90	43	16	M14 X 1.5	15	31	27	M30 X 1.5	35	1/2	98	110	235
140	to 1000	50	47	161	128	36	90	43	16	M14 X 1.5	15	31	27	M30 X 1.5	35	1/2	98	110	235
160	to 1200	56	53	182	144	40	90	43	18.5	M16 X 1.5	17	36	30.5	M36 X 1.5	39	3/4	106	120	256.5

CAD CS1BQ125·····SCS1125, #1
CS1BQ140·····SCS1140, #1
CS1BQ160·····SCS1160, #1

* The drawing shows with an auto switch style. Eliminate the unnecessary parts.