

High power cylinder/double acting/double force

SHC Series

● Equivalent bore size: ø40/ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Specifications

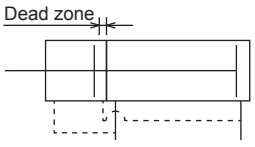
Item			SHC				
Bore size		mm	ø40	ø50	ø63	ø80	ø100
Actuation			Double acting/projection double force				
Working fluid			Compressed air				
Max. working pressure		MPa	0.9 (≈130 psi, 9 bar)				
Min. working pressure		MPa	0.2 (≈29 psi, 2 bar)	0.15 (≈22 psi, 1.5 bar)			
Proof pressure		MPa	1.35 (≈200 psi, 13.5 bar)				
Ambient temperature		°C	-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc	1/8	1/4	1/4	3/8	3/8
Stroke tolerance		mm	$^{+1.3}_{0}$ (to 300), $^{+1.7}_{0}$ (to 1000), $^{+2.1}_{0}$ (1000 to)				
Working piston speed *1	Cylinder	mm/s	50 to 500				
	Booster section		40 to 70 (booster section single control)				
Cushion			Air cushion				
Lubrication			Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Rod side allowable absorbed energy (J)			12.2	22.9	31.3	47.2	76.2
Head side allowable absorbed energy (J)			5.84	9.99	15.1	25.5	41.0

*1: As the piston speed differs depending on the supply pressure, refer to the technical data on page 1166.

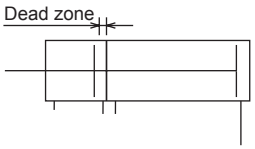
Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)	Booster stroke	(mm) Dead zone
ø40	100, 150, 200, 250, 300, 400, 500	700	10, 20	1.9
ø50				1.9
ø63		800		2
ø80		900		2.3
ø100		1000		2.8

Normal use

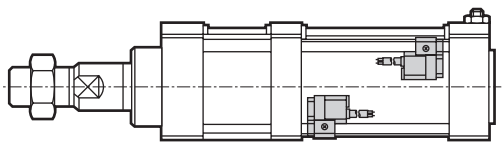
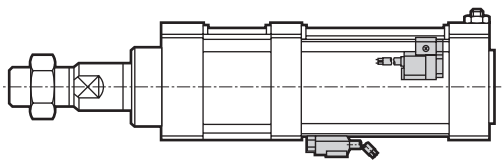


Booster section single operation



*1: The custom stroke is available in 5 mm increments.
*2: Dead zone (area not generating boosted thrust) stroke, until connection with booster piston completes, is included in the booster stroke.
*3: Min. stroke is 40 mm with or without switch. For types with switch, minimum stroke varies depending on mounting method. Refer to the following table.

Min. stroke with switch

Bore size (mm)	When mounted on the same surface	When mounted on different surfaces
		
ø40	65	40
ø50		
ø63	40	
ø80		
ø100		

Switch specifications

● 1-color/2-color LED

Item		Proximity 2-wire			Proximity 3-wire	
		R1	R2	R2Y (2-color LED)	R3	R3Y (2-color LED)
Applications		Programmable controller, relay, compact solenoid valve	Dedicated for programmable controller		For programmable controller, relay, IC circuit, solenoid valve	
Output method		-			NPN output	
Power supply voltage		-			4.5 VDC to 28 VDC	
Load voltage		85 VAC to 265 VAC	10 to 30 VDC		30 VDC or less	
Load current		5 to 100 mA	5 to 30 mA		200 mA or less	100 mA or less
Indicator		LED (Lit when ON)		Red/green LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current		1 mA or less with 100 VAC, 2 mA or less with 200 VAC	1 mA or less	1.2 mA or less	10 μA or less	
Weight g	Grommet	1 m:42 3 m:100 5 m:158		1 m:56 3 m:114 5 m:172	1 m:42 3 m:100 5 m:158	1 m:56 3 m:114 5 m:172
	Terminal box	68		82	68	82

Item		Reed 2-wire								
		R0			R4		R5			R6
Applications		Relay, programmable controller			For high capacity relay, solenoid valve		For programmable controller, relay, IC circuit (without indicator lamp), serial connection			Dedicated for programmable controller (with DC self-hold)
Load voltage		12/24 VDC	110 VAC	220 VAC	110 VAC	220 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC
Load current		5 to 50 mA	7 to 20 mA	7 to 10 mA	20 to 200 mA	10 to 200 mA	50 mA or less	20 mA or less	10 mA or less	5 to 50 mA
Indicator		LED (Lit when ON)			Neon lamp (Lit when OFF)		No indicator lamp			LED (Lit when ON)
Leakage current		0 mA			1 mA or less		0 mA			0.1 mA or less
Weight g	Grommet	1 m:42 3 m:100 5 m:158								
	Terminal box	68								

● Strong magnetic field proof

Item	Reed 2-wire
	H0
Applications	For relay, programmable controller
Load voltage	12/24 VDC / 110 VAC
Load current	5 to 50 mA / 7 to 20 mA
Indicator	Green LED (Lit when ON)
Leakage current	10 μA or less
Weight g	1 m:76 3 m:181 5 m:289

*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when at 0 mm stroke						Switch weight	Mounting bracket weight		Additional weight per 100 mm cylinder stroke	Additional weight per 10 mm booster stroke	Additional weight of F type
	Basic (00)	Axial foot (LB)	Flange (FA/FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA/TB/TC)		R type	H type			
ø40	1.84	1.99	2.21	2.19	2.19	2.27	Refer to the weight in the switch specifications.	0.023	0.028	0.43	0.08	0.16
ø50	2.80	3.02	3.23	3.24	3.24	3.37		0.021	0.026	0.45	0.10	0.28
ø63	4.02	4.35	5.02	4.57	4.62	4.92		0.019	0.024	0.60	0.13	0.30
ø80	6.78	7.40	8.48	8.32	8.33	8.18		0.025	0.029	0.79	0.19	0.50
ø100	9.85	9.93	12.35	12.00	11.96	12.45		0.023	0.028	1.23	0.40	0.49

Formula for product weight
(Example) SHC-LB-40H-200-20-R0-D-F

- Product weight at 0 mm stroke.....1.99 kg
- Additional weight per 200 mm stroke .....0.43x $\frac{200}{100}$ =0.86 kg
- Additional weight per 20 mm booster stroke .....0.08x $\frac{20}{10}$ =0.16 kg
- Additional weight of F type .....0.16 kg
- Weight of two RO switches .....0.042x2=0.084 kg
- Weight of 2 mounting brackets.....0.023x2=0.046 kg
- Product weight.....1.99+0.86+0.16+0.16+0.084+0.046=3.300 kg

How to order

● Without switch (built-in magnet for switch)

SHC - LB - 40 H - 100 - 20 ——— S I

● R type with switch (built-in magnet for switch)

SHC - LB - 40 H - 100 - 20 - R0 - R - S I

● With strong magnetic field proof switch (H0, H0Y) (built-in magnet for switch)

SHC-L2 - LB - 40 H - 100 - 20 - H0 - R - S I

Ⓐ Mounting *2 *3 *4

Ⓑ Bore size

Ⓒ Cushion

Ⓓ Stroke *5

Ⓔ Booster stroke

Ⓕ Switch model No. * indicates the lead wire length.

Ⓖ Switch quantity *7

Ⓗ Option *8 *9 *11

Ⓘ Accessory *10

Code	Description
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TA	Rod side trunnion
TB	Head side trunnion
TC	Intermediate trunnion

Ⓑ Bore size (mm)	
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Cushion	
H	Head side cushioned
N	Without cushion

Ⓓ Stroke (mm)

Bore size	Stroke *6	Custom stroke
ø40	**40 to 700**	**In 5 mm increments**
ø50	**40 to 700**	
ø63	**40 to 800**	
ø80	**40 to 900**	
ø100	**40 to 1000**	

Ⓔ Booster stroke (mm)	
10	10
20	20

Ⓕ Switch model No.

Grommet	Terminal box	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
R1*	**R1B**	Proximity	●		1-color LED	2-wire
R2*	**R2B**			●		
R2Y*	**R2YB**			●	2-color LED	
R3*	**R3B**			●	1-color LED	3-wire
R3Y*	**R3YB**			●	2-color LED	
R0*	**R0B**	Reed	●	●	1-color LED	2-wire
R4*	**R4B**		●			
R5*	**R5B**		●	●	no indicator lamp	
R6*	**R6B**			●	1-color LED	
HO*	**-**		●	●	Strong magn field proof SW	

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

Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4
5	5

Ⓗ Option

		Max. ambient temperature	instantaneous max. temp
J	Bellows	100°C	200°C
L	Bellows	250°C	400°C
Blank	Rod end form/male thread (standard)		
F	Rod end form/flange		
Blank	Piping port position, top from rod side (standard)		
R	Piping port position, right from rod side		
S	Piping port position, bottom from rod side		
T	Piping port position, left from rod side		
G1	Metal scraper		
P6	Copper and PTFE free		
A	Booster single control port		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B11	Eye bracket (for clevis)
B21	Clevis bracket (for clevis)
B12	Eye bracket (for rod eye)
B22	Clevis bracket (for rod eye) (pin and snap ring attached)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped assembled with the product.

*2 : For TA (rod side trunnion), the booster single control ports C/D are located on the bottom when viewed from the rod side.
Refer to the booster single control port position full view on page 1162.

*3 : In the case of the TA (rod side trunnion), since the trunnion mounting position is placed at the moving part of the stroke projection or booster section return, the position of the stroke projection of the cylinder switch or the booster section return cannot be detected.

*4 : For TA (rod side trunnion) and TB (head side trunnion), piping port position cannot be specified on the trunnion shaft projecting surface.

*5 : For the stroke indicated in Item Ⓓ Stroke, indicate the full stroke (movement stroke + booster stroke).

*6 : Refer to page 1144 for min. stroke with switch.

*7 : When selecting TA or TB as mounting, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.

*8 : L (bellows (for max. ambient temperature 250°C)) is available as a made-to-order product.

*9 : Booster cylinder can be individually controlled.
In this case, select option A (booster single control port).

*10 : "I" and "Y" cannot be selected together.

*11 : The piping port position R and T cannot be selected for FA (rod side flange).

[Example of model No.]

SHC-LB-40H-100-20-R0-R-SI

Model No.: High power cylinder Double acting/double force

Ⓐ Mounting : Axial foot
Ⓑ Bore size : ø40 mm
Ⓒ Cushion : Head side cushioned
Ⓓ Stroke : 100 mm
(movement stroke 80 mm + booster stroke 20 mm)
Ⓔ Booster stroke : 20 mm
Ⓕ Switch model No.: Reed R0 switch, lead wire 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Piping port position, bottom from rod side
Ⓘ Accessory : Rod eye