JIS Standard Hydraulic Cylinder
Double Acting/Single Rod

3.5 MPa
7 MPa
14 MPa

CH2E/CH2F/CH2G/CH2H Series

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Series type

Symbol	Tubing material	Nominal pressure
E	Aluminum alloy	3.5 MPa
F	Stainless steel	7 MPa
G	Steel	14 MPa
H	Stainless steel	14 MPa

Rod size series

B	B-series rod size
C	C-series rod size

∗ ø32 is for B-series rod size only.

Cylinder stroke (mm)
Refer to the standard stroke table on page 359.
Refer to page 378 for minimum stroke with auto switch.

CH2 H B 50 B – 100 [ ] – [ ] – [ ]

With Auto Switch

CH D2 H B 50 B – 100 [ ] – [ ] – M9BW [ ] – [ ]

With auto switch (built-in magnet)

Series type

Symbol	Tube material	Nominal pressure
E	Aluminum alloy	3.5 MPa
F	Stainless steel	7 MPa
H	Stainless steel	14 MPa

Mounting type

B	Basic type	
LA	Transaxial foot type	
LB	Axial foot type	For 3.5 & 7 MPa
FA	Rod rectangular flange type	
FB	Head rectangular flange type	
FY	Rod rectangular flange type	For 14 MPa
FZ	Head rectangular flange type	
FC	Rod square flange type	
FD	Head square flange type	
CA	Single clevis type	
CB	Double clevis type	
TC	Center trunnion type	

Bore size

32	32 mm	63	63 mm
40	40 mm	80	80 mm
50	50 mm	100	100 mm

Port and cushion valve positions
∗ Refer to page 359.

Cylinder options

Rod end nut	Nil	Without rod end nut
	A	With rod end nut
Rod boot	Nil	Without rod boot
	J	Nylon tarpaulin
	K	Neoprene cloth
Cushion	Nil	With double-side cushion
	N	Without cushion
	R	With rod cushion
	H	With head cushion

∗ Indicate in alphabetical order.

Made to Order specifications
For details, refer to page 359.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Auto switch type

Nil	Without auto switch

∗ Select applicable auto switches from the table below.

Applicable Auto Switches/Refer to pages 431 to 490 for further details on each auto switch.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mount ø32	Tie-rod mount ø40 to ø100	Band mount ø32	Band mount ø40 to ø100	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None	Pre-wired connector	Applicable load	
Solid state auto switch	———	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	—	M9N	—		●	●	●	○	—	○	IC circuit	Relay PLC
				3-wire (PNP)	24 V		F59		G59		●	—	●	○	—	○		
							—	M9P	—		●	●	●	○	—	○		
				2-wire	12 V		F5P		G5P		●	—	●	○	—	○		
							—	M9B	—		●	●	●	○	—	○		
							J59		K59		●	—	●	○	—	○		
		Terminal conduit		3-wire (NPN)	5 V, 12 V		—		—	G39	—	—	—	—	●	—	IC circuit	
				2-wire	12 V		—		—	K39	—	—	—	—	●	—	—	
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)	5 V, 12 V		—	M9NW	—		●	●	●	○	—	○	IC circuit	
							F59W		G59W		●	—	●	○	—	○		
				3-wire (PNP)			—	M9PW	—		●	●	●	○	—	○		
							F5PW		G5PW		●	—	●	○	—	○		
				2-wire	12 V		—	M9BW	—		●	●	●	○	—	○	—	
							J59W		K59W		●	—	●	○	—	○		
	Water resistant (2-color indicator)			3-wire (NPN)	5 V, 12 V		—	M9NA∗1	—		○	○	●	○	—	○	IC circuit	
				3-wire (PNP)			—	M9PA∗1	—		○	○	●	○	—	○		
				2-wire	12 V		—	M9BA∗1	—		○	○	●	○	—	○	—	
	Diagnostic output (2-color indicator)			4-wire (NPN)	5 V, 12 V		F5BA∗1		G5BA∗1		—	—	●	○	—	○	IC circuit	
							F59F		G59F		●	—	●	○	—	○		
Reed auto switch	———	Grommet	Yes	3-wire (NPN equiv.)	5 V	—	—	A96∗∗	—		●	—	●	—	—	—	IC circuit	—
			No	2-wire	24 V	100 V	—	A93∗∗	—		●	●	●	●	—	—	—	
			Yes			100 V or less	—	A90∗∗	—		●	—	●	—	—	—	IC circuit	Relay PLC
			No		12 V	100 V, 200 V	A54		B54		●	—	●	●	—	—		
			Yes			200 V or less	A64		B64		●	—	●	—	—	—		
		Terminal conduit				—	—		—	A33	—	—	—	—	●	—	—	PLC
		DIN terminal				100 V, 200 V	—		—	A34	—	—	—	—	●	—		Relay PLC
	Diagnostic indication (2-color indicator)	Grommet			—	—	A59W		B59W		●	—	●	—	—	—		

∗1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
The water resistant type CH2F series is recommended for use in an environment which requires water resistance. Consult with SMC regarding the water resistant type CH2E, CH2G and CH2H series.

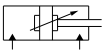
∗ Lead wire length symbols: 0.5 m ····· Nil (Example) M9NW
1 m ····· M (Example) M9NWM
3 m ····· L (Example) M9NWL
5 m ····· Z (Example) M9NWZ

∗ Solid state auto switches marked "○" are produced upon receipt of order.
∗∗ Auto switch models D-A9□ and D-AP□V cannot be mounted on CHD2E, CHD2H of all bore sizes and CHD2Fø32.

∗ Since there are applicable auto switches other than listed, refer to page 380 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 474 and 475.
∗ D-A9□, M9□, M9□W, M9□A auto switches are shipped together. (not assembled). (Only the auto switch mounting bracket is pre-assembled.)

Made to Order **Made to order specifications**
(For details, refer to page 382)

Symbol	Specifications
-XA□	Change of rod end shape
-XC14	Change of trunnion bracket mounting position



Rod Sizes

(mm)

Bore size (mm) / Rod size series *	32	40	50	63	80	100
B-series	18	22.4	28	35.5	45	56
C-series	—	18	22.4	28	35.5	45

* Based on JIS B8367.

Accessories (Option)

Single knuckle, Double knuckle, Lock nut, Knuckle pin, Rod boot (Nylon tarpulin, Neoprene cloth) Note)

Note) Maximum operating temperature:
Nylon tarpaulin (60°C),
Neoprene cloth (110°C)

* Refer to page 375 for part numbers and dimensions. (For rod boot, refer to the dimensions.)

Hydraulic Fluid Compatibility

Hydraulic fluid	Compatibility
Standard mineral hydraulic fluid	Compatible
W/O hydraulic fluid	Compatible
O/W hydraulic fluid	Compatible
Water/Glycol hydraulic fluid	*
Phosphate hydraulic fluid	Not compatible

* Consult with SMC.

Cushion Strokes

(mm)

Bore size (mm)	32	40	50	63	80	100
Effective cushion stroke	16	16	17	16	20	23

(Front and rear sides)

Models

Model	CH2E	CH2F	CH2G	CH2H
Tube material	Aluminum alloy	Stainless steel	Steel	Stainless steel
Nominal pressure (MPa)	3.5	7	14	14
Bore size (mm)	32, 40, 50, 63, 80, 100			
Auto switch mounting	Applicable	Applicable	—	Applicable

Specifications

Model	CH2E	CH2F	CH2G	CH2H
Action	Double acting/Single rod			
Fluid	Hydraulic fluid			
Nominal pressure (MPa)	3.5	7	14	
Maximum allowable pressure (MPa)	3.5	Head: 9 Rod: B rod 13.5 : C rod 11	Head: 18 Rod: B rod 18 : C rod 14	
Proof pressure (MPa)	5.0	10.5	21	
Minimum operating pressure (MPa)	Head: 0.15 Rod: 0.2			
Ambient and fluid temperature	Without auto switch: –10 to 80°C With auto switch: –10 to 60°C			
Piston speed	8 to 300 mm/s			
Cushion	Cushion seal type			
Stroke length tolerance	to 100 st $^{+0.8}_{0}$, 101 to 250 st $^{+1.0}_{0}$, 251 to 630 st $^{+1.25}_{0}$, 631 to 1000 st $^{+1.4}_{0}$, 1001 to 1800 st $^{+1.8}_{0}$			

Note) Refer to page 214 for definitions of terms related to pressure.

Standard Strokes

Cylinder bore size (mm)	Standard strokes (mm)	Long stroke (mm)
32, 40, 50	25 to 800	1800 (1401 or more with tie-rod reinforcing ring) Note 2)
63	25 to 800	1800 (1501 or more with tie-rod reinforcing ring) Note 3)
80, 100	25 to 1000	1800

Note 1) Refer to pages 230 and 231, to determine stroke limitation depending on the type of mounting brackets that will be used. Then make yur selection. Long stroke ranges also differ depending on the type of mounting brackets.
Note 2) The long stroke range for the CH2E, CH2F, and CH2H series with flange and clevis type mounting brackets as well as the CH2G series is up to 1400 mm.
Note 3) The long stroke range for the CH2E, CH2F, and CH2H series with flange and clevis type mounting brackets as well as the CH2G series is up to 1500 mm.

Port and Cushion Valve Positions

Mounting type \ Position / Symbol	Nil	A	C	D	E	F	G	H
	Port: Top Cushion valve: Right	Port: Right Cushion valve: Bottom	Port: Left Cushion valve: Top	Port: Top Cushion valve: Left	Port: Top Cushion valve: Bottom	Port: Right Cushion valve: Top	Port: Right Cushion valve: Left	Port: Left Cushion valve: Right
B (Basic type)	●			●	●			
FA, FB, FC FD, FY, FZ (Flange type) **CA, CB** (Single clevis type) **TC** (Center trunnion type)	●	●		●	●	●	●	
LA, LB (Foot type)	●		●	●		●	●	●

: Piping port : Cushion valve

* The cylinder's exterior dimensions represented here are as seen from the rod end of the cylinder.