

JIS Standard Hydraulic Cylinder Double Acting/Single Rod

Series CH2E/CH2F/CH2G/CH2H

∅32, ∅40, ∅50, ∅63, ∅80, ∅100

3.5MPa
7 MPa
14 MPa

How to Order

Series type

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

Rod size series

Symbol	Series
B	B-series rod size
C	C-series rod size

* ∅32 is for B-series rod size only.

Cylinder stroke (mm)
Refer to the standard strokes table on page 56.
Refer to page 58 for minimum strokes with auto switch.

With Auto Switch CH D2 H B 50 B 100 [] [] A53 []

With auto switch (built-in magnet)

Series type

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

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.

Mounting types

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

Bore size

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

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 front cushion
	H	With rear cushion

Port and cushion valve positions
* Refer to page 56.

Part nos. for cylinders with built-in magnets

In the case of cylinders with built-in magnets but no auto switches, do not indicate any auto switch type symbol.
(Example) CHD2HLA50-100□

* Indicate in alphabetical order.

Applicable Auto Switches: Refer to pages 115 through 119 for auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch type		Lead wire length*			Applicable load		
					DC	AC	Tie-rod mount	Band mount	0.5 (Nil)	3 (L)	5 (Z)	IC circuit	PLC	
Reed switch	—	Grommet	Yes	3-wire NPN (equiv.)	24V	5V	—	A56	—	●	●	—	IC circuit	—
						12V	—	A53	B53	●	●	●	—	PLC
						12V	100V, 200V	A54	B54	●	●	●	—	Relay, PLC
						5V, 12V	—	A67	—	●	●	—	IC circuit	PLC
						5V, 12V	200V or less	A64	B64	●	●	—	Relay, PLC	
						12V	—	—	A33**	—	—	—	—	PLC
Solid state switch	Diagnostic indication (2-color display)	Terminal conduit DIN terminal	Yes	2-wire	24V	12V	100V, 200V	—	A34**	—	—	—	—	Relay
						—	—	—	A44**	—	—	—	PLC	
						—	—	A59W	B59W	●	●	—	—	Relay
						—	—	F59	G59	●	●	○	IC circuit	PLC
						—	100V, 200V	F5P	G5P	●	●	○	—	—
						—	—	J51	—	●	●	○	—	—
						12V	—	J59	K59	●	●	○	—	—
						5V, 12V	—	—	G39**	—	—	—	IC circuit	—
						12V	—	—	K39**	—	—	—	—	—
						5V, 12V	—	F59W	G59W	●	●	○	IC circuit	—
						5V, 12V	—	F5PW	G5PW	●	●	○	IC circuit	—
						12V	—	J59W	K59W	●	●	○	—	—
12V	—	F5BA	G5BA	—	●	○	—	—						
5V, 12V	—	F5NT	G5NT	—	●	○	IC circuit	—						
5V, 12V	—	F59F	G59F	●	●	○	—	—						

* Lead wire length symbols: 0.5m Nil (Example) A53
3m L A53L
5m Z A53Z

** Not applicable to ∅32.

Notes) • The standard lead wire length is 0.5m. However, the standard length for G5NTL, G5BAL, F5NTL and F5BAL is 3m.
• Solid state switches marked "○" are produced upon receipt of order.

Models

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

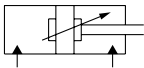
Specifications

Model	CH2E	CH2F	CH2G	CH2H
Action	Double acting/Single rod			
Fluid	Hydraulic fluid			
Nominal pressure	3.5MPa	7MPa	14MPa	
Maximum allowable pressure	3.5MPa	Rear: 9MPa Front: B-rod 13.5MPa : C-rod 11MPa	Rear: 18MPa Front: B-rod 18MPa : C-rod 14MPa	
Proof pressure	5.0MPa	10.5MPa	21MPa	
Minimum operating pressure	When rear side is pressurized: 0.15MPa When front side is pressurized: 0.2MPa			
Ambient and fluid temperature	Without auto switch: -10° to 80°C With auto switch: -10° to 60°C			
Piston speed	8 to 300mm/s			
Cushion	Cushion seal type			
Thread tolerance	JIS class 2			
Stroke length tolerance	to 100mm ^{+0.8} ₀ mm, 101 to 250mm ^{+1.0} ₀ mm, 251 to 630mm ^{+1.25} ₀ mm 631 to 1000mm ^{+1.4} ₀ mm, 1001 to 1800mm ^{+1.8} ₀ mm			



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JIS symbol



Auto Switch Mounting Bracket Part Nos.

Model	Bore size (mm)	Auto switch model		
		D-A3, D-A4 D-G3, D-K3	D-B5, D-B6 D-G5, D-K5	D-A5, D-A6 D-F5, D-J5
CH2E	32	—	BA-32	BT-06
	40	BD1-04M	BA-04	BT-06
	50	BD1-05M	BA-05	BT-06
	63	BD1-06M	BA-06	BT-08
	80	BD1-08M	BA-08	BT-16
	100	BD1-10M	BA-10	BT-18
CH2F	32	—	BAF-32	BT-06
	40	BDS-04M	BAF-04	BT-06
	50	BDS-05M	BAF-05	BT-06
	63	BDS-06M	BAF-06	BT-08
	80	BDS-08M	BAF-08	BT-16
	100	BDS-10M	BAF-10	BT-18
CH2H	32	—	BGS1-032	BT-06
	40	BD1-04M	BH2-040	BT-06
	50	BD1-05M	BH2-050	BT-06
	63	BD1-06M	BA-06	BT-08
	80	BH1-080	BH2-080	BT-16
	100	BH1-100	BH2-100	BT-18

Note) Refer to page 136 for definitions of terms related to pressure.

Standard Strokes

Cylinder bore size (mm)	Standard strokes (mm)	Long stroke (mm)
32	25 to 800	1800 (1401 or more with tie-rod reinforcing ring) Note 1)
40	25 to 800	1800 (1401 or more with tie-rod reinforcing ring) Note 1)
50	25 to 800	1800 (1401 or more with tie-rod reinforcing ring) Note 1)
63	25 to 800	1800 (1501 or more with tie-rod reinforcing ring) Note 2)
80	25 to 1000	1800
100	25 to 1000	1800

* Refer to the stroke selection Table in Technical Data 2, starting with page123, to determine stroke limitation depending on the type of mounting brackets that will be used. Then make your selection. Long stroke ranges also differ depending on the type of mounting brackets.

Note 1) The long stroke range for Series CH2E, CH2F, and CH2H with flange and clevis type mounting brackets as well as Series CHG is up to 1400mm.

Note 2) The long stroke range for Series CH2E, CH2F, and CH2H with flange and clevis type mounting brackets as well as Series CHG is up to 1500mm.

Port and Cushion Valve Positions

Symbol Position Mounting type	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, FE, FF (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.

Series CH2E/CH2F/CH2G/CH2H

Rod Sizes

Rod size series ¹	Bore size (mm)					
	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 (Optional)

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

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

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

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

(Front and rear sides)

Weights

Mounting type		Standard weight (0 stroke)									Additional weight (per 10mm stroke)	
		B		LA	FY, FZ	FC, FD	CA	CB	TC	LB		FA, FB
		Basic	Transaxial foot	Rectangular flange	Square flange	Single clevis	Double clevis	Center trunnion type	Axial foot	Rectangular flange (7MPa)		
B-series rod	32	CH2E	2.50	3.49	—	3.35	2.95	3.06	2.99	3.00	2.94	0.04
		CH2F	2.49	3.48	—	3.34	2.94	3.05	2.98	2.99	2.93	0.04
		CH2G	2.59	3.58	3.12	3.44	3.04	3.15	3.08	—	—	0.06
		CH2H	2.60	3.59	3.13	3.45	3.05	3.16	3.09	—	—	0.05
	40	CH2E	3.27	4.57	—	4.36	3.91	4.12	3.86	3.85	3.86	0.08
		CH2F	3.33	4.63	—	4.42	3.97	4.18	3.92	3.91	3.92	0.08
		CH2G	3.66	4.96	4.36	4.75	4.30	4.51	4.25	—	—	0.10
		CH2H	3.55	4.85	4.25	4.64	4.19	4.40	4.14	—	—	0.10
	50	CH2E	4.90	7.50	—	6.86	6.06	6.07	5.74	5.70	5.98	0.09
		CH2F	4.98	7.58	—	6.94	6.14	6.15	5.82	5.78	6.06	0.10
		CH2G	5.49	8.09	6.98	7.45	6.65	6.66	6.33	—	—	0.14
		CH2H	5.32	7.92	6.81	7.28	6.48	6.49	6.16	—	—	0.14
63	CH2E	7.93	11.81	—	10.83	10.67	10.68	9.47	9.55	9.54	0.17	
	CH2F	7.69	11.57	—	10.59	10.43	10.44	9.23	9.31	9.30	0.17	
	CH2G	8.49	12.37	10.64	11.39	11.23	11.24	10.03	—	—	0.20	
	CH2H	8.43	12.31	10.58	11.33	11.17	11.18	9.97	—	—	0.20	
80	CH2E	13.00	18.35	—	17.59	16.40	16.40	15.02	15.36	15.69	0.24	
	CH2F	12.89	18.24	—	17.48	16.29	16.29	14.91	15.25	15.58	0.26	
	CH2G	14.77	20.12	18.34	19.36	18.17	18.17	16.79	—	—	0.34	
	CH2H	14.21	19.56	17.78	18.80	17.61	17.61	16.23	—	—	0.30	
100	CH2E	18.97	29.78	—	26.44	25.15	25.15	22.62	22.39	23.57	0.41	
	CH2F	19.37	30.17	—	26.84	25.55	25.55	23.02	22.79	23.97	0.46	
	CH2G	22.17	32.98	28.62	29.64	28.35	28.35	25.82	—	—	0.49	
	CH2H	21.81	32.62	28.26	29.28	27.99	27.99	25.46	—	—	0.54	

Mounting type		Standard weight (0 stroke)									Additional weight (per 10mm stroke)	
		B		LA	FY, FZ	FC, FD	CA	CB	TC	LB		FA, FB
		Basic	Transaxial foot	Rectangular flange	Square flange	Single clevis	Double clevis	Center trunnion type	Axial foot	Rectangular flange (7MPa)		
C-series rod	40	CH2E	3.19	4.49	—	4.28	3.83	4.04	3.78	3.77	3.78	0.07
		CH2F	3.25	4.55	—	4.34	3.89	4.10	3.84	3.83	3.84	0.07
		CH2G	3.58	4.88	4.28	4.67	4.22	4.43	4.17	—	—	0.09
		CH2H	3.47	4.77	4.17	4.56	4.11	4.32	4.06	—	—	0.09
	50	CH2E	4.74	7.34	—	6.70	5.90	5.91	5.58	5.54	5.82	0.07
		CH2F	4.82	7.42	—	6.78	5.98	5.99	5.66	5.62	5.90	0.08
		CH2G	5.33	7.93	6.82	7.29	6.49	6.50	6.17	—	—	0.12
		CH2H	5.16	7.76	6.65	7.12	6.32	6.33	6.00	—	—	0.12
	63	CH2E	7.62	11.50	—	10.52	10.36	10.37	9.16	9.24	9.23	0.14
		CH2F	7.39	11.27	—	10.29	10.13	10.14	8.93	9.01	9.00	0.14
		CH2G	8.19	12.07	10.34	11.09	10.93	10.94	9.73	—	—	0.17
		CH2H	8.13	12.01	10.28	11.03	10.87	10.88	9.67	—	—	0.17
80	CH2E	12.56	17.91	—	17.15	15.96	15.96	14.58	14.92	15.25	0.18	
	CH2F	12.45	17.80	—	17.04	15.85	15.85	14.47	14.81	15.14	0.21	
	CH2G	14.32	19.67	17.89	18.91	17.72	17.72	16.34	—	—	0.28	
	CH2H	13.77	19.12	17.34	18.36	17.17	17.17	15.79	—	—	0.25	
100	CH2E	17.91	28.72	—	25.38	24.09	24.09	21.56	21.33	22.51	0.29	
	CH2F	18.31	29.12	—	25.78	24.49	24.49	21.96	21.73	22.91	0.30	
	CH2G	21.11	31.92	27.56	28.58	27.29	27.29	24.76	—	—	0.42	
	CH2H	20.75	31.56	27.20	28.22	26.93	26.93	24.40	—	—	0.38	

Water Resistant Hydraulic Cylinder

CHD2F Mounting Bore size Rod series **R** Stroke Cylinders options F5BAL

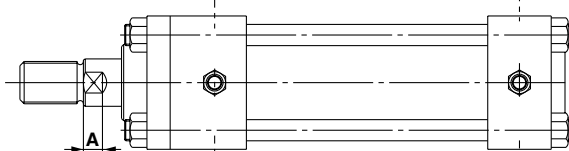
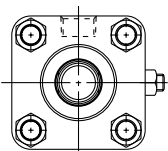
With auto switch (built-in magnet)

Water resistant cylinder
R NBR Seal (nitrile rubber)
V FKM Seal (fluoro rubber)

* Piston seals are NBR for both types R and V.

Water resistant solid state switch with 2-color display

* Stainless steel for the piston rod is a special order.



Specifications

Action	Double acting/Single rod
Cylinder bore size (mm)	32, 40, 50, 63, 80, 100
Cushion	Cushion seal
Auto switch mounting	Tie-rod mounting

* Specifications other than those above are the same as double acting/single rod specifications.

Bore size (mm)	B-series rod
	A
32	—
40	—
50	—
63	—
80	13.5
100	14.5

* Other dimensions are the same as those for the double acting/single rod standard type.

Theoretical Output

Unit: N

	Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)					
					1	3.5	5	7	10	14
B-series rod	32	18	OUT	804	804	2813	4019	5627	8038	11254
			IN	550	550	1923	2748	3847	5495	7693
	40	22.4	OUT	1256	1256	4396	6280	8792	12560	17584
			IN	862	862	3017	4311	6035	8621	12070
	50	28	OUT	1963	1963	6869	9813	13738	19625	27475
			IN	1347	1347	4715	6735	9429	13471	18859
	63	35.5	OUT	3116	3116	10905	15578	21810	31157	43619
			IN	2126	2126	7442	10632	14885	21264	29769
	80	45	OUT	5024	5024	17584	25120	35168	50240	70336
			IN	3434	3434	12020	17172	24041	34344	48081
	100	56	OUT	7850	7850	27475	39250	54950	78500	109900
			IN	5388	5388	18859	26941	37718	53882	75435
C-series rod	40	18	OUT	1256	1256	4396	6280	8792	12560	17584
			IN	1002	1002	3506	5008	7012	10017	14023
	50	22.4	OUT	1963	1963	6869	9813	13738	19625	27475
			IN	1569	1569	5490	7843	10980	15686	21961
	63	28	OUT	3116	3116	10905	15578	21810	31157	43619
			IN	2500	2500	8751	12501	17502	25002	35003
	80	35.5	OUT	5024	5024	17584	25120	35168	50240	70336
			IN	4035	4035	14121	20174	28243	40347	56486
	100	45	OUT	7850	7850	27475	39250	54950	78500	109900
			IN	6260	6260	21911	31302	43823	62604	87645

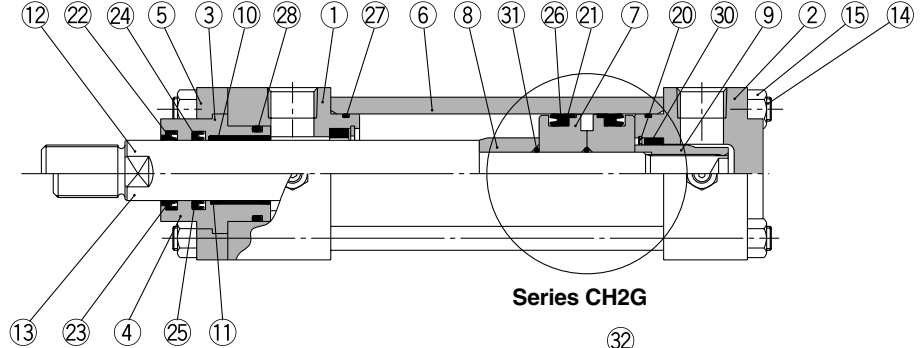
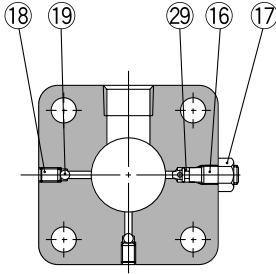
Minimum Strokes for Auto Switch Mounting

Unit: mm

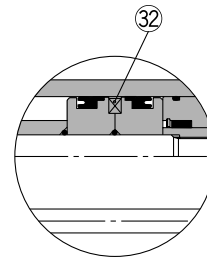
Auto switch type	No. of auto switches		Mounting brackets other than center trunnion		Center trunnion type						
			ø32	ø40 or larger	ø32	ø40	ø50	ø63	ø80	ø100	
D-A5□, D-A6□	2 pcs.	Different sides	10	10	110	110	115	125	135	145	
		Same side	—								
	1 pc.	—	10								
D-A59W	2 pcs.	Different sides	20	20	115	115	125	130	140	150	
		Same side	—								
	1 pc.	—	15								
D-F5□, D-J5□	2 pcs.	Different sides	10	10	115	115	120	130	140	150	
		Same side	—								
	1 pc.	—	10								
D-F5□W, D-J5□W D-F5BAL	2 pcs.	Different sides	10	10	120	120	120	135	140	150	
		Same side	—								
	1 pc.	—	10								
D-F59F D-F5NTL	2 pcs.	Different sides	10	10	125	125	130	140	150	160	
		Same side	—								
	1 pc.	—	10								
D-B5□, D-B6□ D-G5□, D-K59 D-G5□W, D-K59W D-G59F D-G5BAL, D-G5NTL	2 pcs.	Different sides	15	15	110	110	115	125	135	145	
		Same side	75								
	1 pc.	—	10								
D-B59W	2 pcs.	Different sides	20	20	115	115	115	130	140	150	
		Same side	75								
	1 pc.	—	15								
D-A3□ D-G39□, D-K39□	2 pcs.	Different sides	—	—	—	—	80	80	95	105	115
		Same side	—				100	100	100		
	1 pc.	—	—				10	80	80		
D-A44	2 pcs.	Different sides	—	—	—	85	85	100	110	120	
		Same side	—								35
	1 pc.	—	—								10

Series CH2E/CH2F/CH2G/CH2H

Construction



Series CH2G



Series CH2E, CH2F, CH2H

Parts list

No.	Description	Material	Note
1	Rod cover	Carbon steel	Metallic painted
2	Head cover	Carbon steel	Metallic painted
3	Seal holder (B-series rod)	Carbon steel	Metallic painted
4	Seal holder (C-series rod)	Carbon steel	Metallic painted
5	Retainer	Carbon steel	Metallic painted
6	Cylinder tube	CH2E Aluminum alloy	Hard anodized
		CH2F Stainless steel	
		CH2G Carbon steel	Metallic painted
		CH2H Stainless steel	
7	Piston	CH2E Aluminum alloy	
		CH2F Aluminum alloy	
		CH2G Stainless steel	
		CH2H Stainless steel	
8	Cushion ring	Rolled steel	
9	Cushion ring nut	Rolled steel	
10	Bushing (B-series rod)	Copper alloy	
11	Bushing (C-series rod)	Copper alloy	
12	Piston rod (B-series rod)	Carbon steel	Hard chromium electroplated
13	Piston rod (C-series rod)	Carbon steel	Hard chromium electroplated
14	Tie-rod	Carbon steel	
15	Tie-rod nut	Carbon steel	
16	Cushion valve	Alloy steel	
17	Lock nut	Carbon steel	
18	Air release valve	Alloy steel	
19	Check ball	Bearing steel	
20	Snap ring	Carbon tool steel	
21	Back-up ring	Resin	
22	Scraper (B-series rod)	NBR	
23	Scraper (C-series rod)	NBR	
24	Rod seal (B-series rod)	NBR	
25	Rod seal (C-series rod)	NBR	
26	Piston seal	NBR	
27	Cylinder tube gasket	NBR	
28	Holder gasket	NBR	
29	Cushion valve seal	NBR	
30	Cushion seal	—	
31	Piston gasket	NBR	
32	Magnet	—	

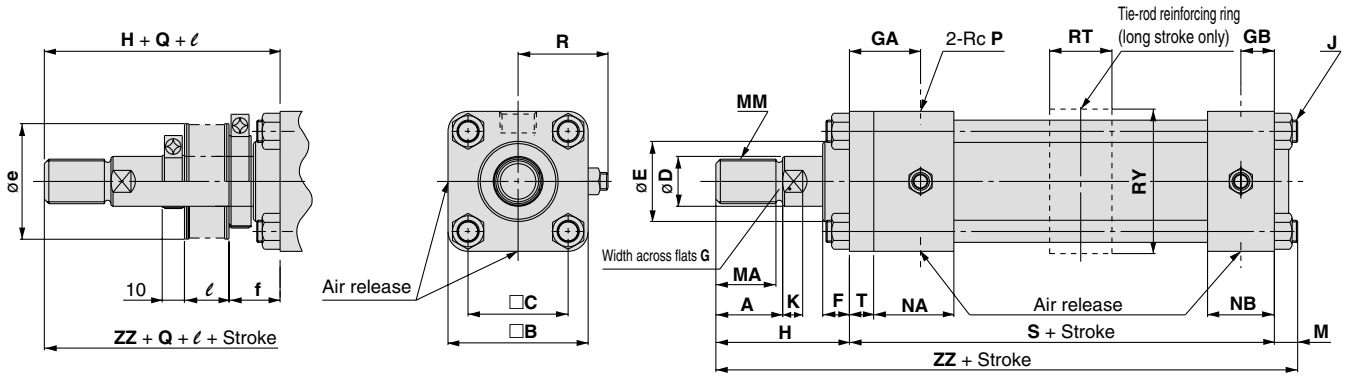
Replacement parts: Seal kits

Bore size (mm)	Seal kit no.		Kit components
	B-series rod	C-series rod	
32	CH2E32B-PS	/	Nos. 21 through 30 from the chart at left
	CH2F32B-PS		
	CH2G32B-PS		
	CH2H32B-PS		
40	CH2E40B-PS	CH2E40C-PS	
	CH2F40B-PS	CH2F40C-PS	
	CH2G40B-PS	CH2G40C-PS	
	CH2H40B-PS	CH2H40C-PS	
50	CH2E50B-PS	CH2E50C-PS	
	CH2F50B-PS	CH2F50C-PS	
	CH2G50B-PS	CH2G50C-PS	
	CH2H50B-PS	CH2H50C-PS	
63	CH2E63B-PS	CH2E63C-PS	
	CH2F63B-PS	CH2F63C-PS	
	CH2G63B-PS	CH2G63C-PS	
	CH2H63B-PS	CH2H63C-PS	
80	CH2E80B-PS	CH2E80C-PS	
	CH2F80B-PS	CH2F80C-PS	
	CH2G80B-PS	CH2G80C-PS	
	CH2H80B-PS	CH2H80C-PS	
100	CH2E100B-PS	CH2E100C-PS	
	CH2F100B-PS	CH2F100C-PS	
	CH2G100B-PS	CH2G100C-PS	
	CH2H100B-PS	CH2H100C-PS	

* Seal kits consist of items 21 through 30 and can be ordered by using the seal kit number for each bore size.

Dimensions

Basic type: CH2EB, CH2FB, CH2GB, CH2HB



**Long stroke
 (with tie-rod reinforcing ring)**

Bore size (mm)	Stroke range* (mm)	RT	RY
32	1401 to 1800	28	58
40	1401 to 1800	28	65
50	1401 to 1800	33	75
63	1501 to 1800	43	90
80	—	—	—
100	—	—	—

* Applicable to Series CH2E, CH2F and CH2H.
 Contact P/A regarding the Series CH2G with the above strokes.

Bore size (mm)	Stroke range (mm)															With rod boot				
		B	C	F	GA	GB	J	M	NA	NB	P	R	S	T	e		f	Q	l	
															B-rod	C-rod			B-rod	C-rod
32	25 to 1400	58	38	16	32	15	M10 x 1.25	11	37	31	3/8	39	141	11	52	—	21.5	15	—	—
40	25 to 1400	65	45	12	32	15	M10 x 1.25	11	36	30	3/8	42	141	11	52	52	12	15	1/3.5	stroke
50	25 to 1400	76	52	15	40	19	M10 x 1.25	11	43	35	1/2	46	155	13	55	52	15	15	1/4	stroke
63	25 to 1500	90	63	15	42	19	M12 x 1.5	14	43	35	1/2	52	163	15	65	55	15	20	1/4	stroke
80	25 to 1800	110	80	17	40	22	M16 x 1.5	16	44	44	3/4	65	184	18	80	65	17	20	1/4	stroke
100	25 to 1800	135	102	19	42	22	M18 x 1.5	18	44	44	3/4	75	192	20	100	80	19	15	1/4	stroke

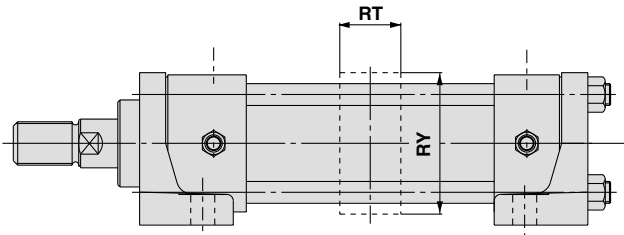
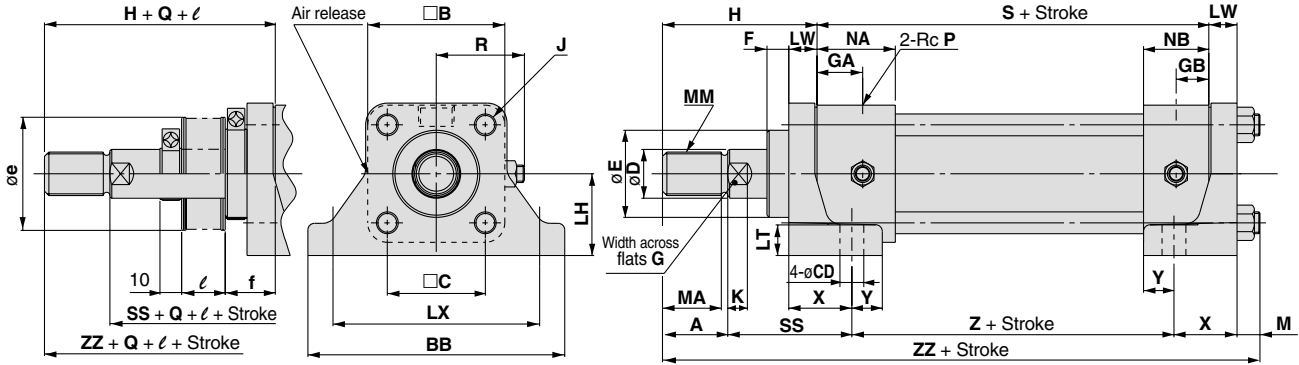
Rod series

Bore size (mm)	B-series rod										C-series rod								
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ	
32	M16 x 1.5	25	22	18	34	7	14	55	207	—	—	—	—	—	—	—	—	—	
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	212	M16 x 1.5	25	22	18	36	7	14	55	207
50	M24 x 1.5	35	32	28	46	-0.025 -0.064	11	24	65	231	M20 x 1.5	30	27	22.4	40	9	19	60	226
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	257	M24 x 1.5	35	32	28	46	11	24	70	247
80	M39 x 1.5	60	57	45	65	-0.030 -0.076	15	41	95	295	M30 x 1.5	45	42	35.5	55	13	30	80	280
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	325	M39 x 1.5	60	57	45	65	15	41	100	310

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Transaxial foot type: CH2ELA, CH2FLA, CH2GLA, CH2HLA



Long stroke (with tie-rod reinforcing ring)

Bore size (mm)	Stroke range* (mm)	RT	RY
32	1401 to 1800	28	58
40	1401 to 1800	28	65
50	1401 to 1800	33	75
63	1501 to 1800	43	90
80	—	—	—
100	—	—	—

* Applicable to Series CH2E, CH2F and CH2H.
Contact P/A regarding Series CH2G with the above strokes.

Bore size (mm)	Stroke range (mm)																					With rod boot							
		B	BB	C	F	GA	GB	J	M	NA	NB	P	R	S	CD	LH	LT	LW	LX	X	Y	Z	SS	e		f	Q		
		B-rod		C-rod		f		Q		B-rod		C-rod																	
32	25 to 1400	58	109	38	14	21	15	M10 x 1.25	11	37	31	3/8	39	130	11	35	14	13	88	29	14	98	57	52	—	21.5	15	—	—
40	25 to 1400	65	118	45	10	21	15	M10 x 1.25	11	36	30	3/8	42	130	11	37.5	14	13	95	29	14	98	57	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	145	52	10	27	19	M10 x 1.25	11	43	35	1/2	46	142	14	45	17	18	115	35	18	108	60	55	52	15	15	—	—
63	25 to 1500	90	165	63	10	27	19	M12 x 1.5	14	43	35	1/2	52	148	18	50	19	20	132	41	19	106	71	65	55	15	20	—	—
80	25 to 1800	110	190	80	11	22	22	M16 x 1.5	16	44	44	3/4	65	166	18	60	24	24	155	45	20	124	74	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	230	102	11	22	22	M18 x 1.5	18	44	44	3/4	75	172	22	71	27	28	190	53	22	122	85	100	80	19	15	—	—

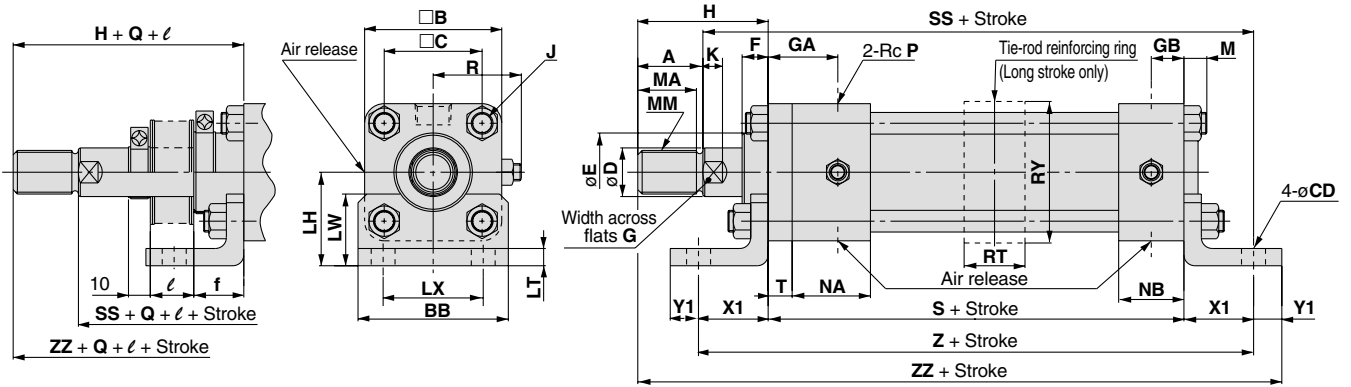
Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	66	220	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	71	225	M16 x 1.5	25	22	18	36	-0.025 -0.064	7	14	66	220
50	M24 x 1.5	35	32	28	46	11	24	78	249	M20 x 1.5	30	27	22.4	40	11	24	73	244		
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	95	277	M24 x 1.5	35	32	28	46	11	24	85	267	
80	M39 x 1.5	60	57	45	65	15	41	113	319	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	98	304	
100	M48 x 1.5	75	72	56	80	-0.038 -0.090	16	50	135	353	M39 x 1.5	60	57	45	65	15	41	120	338	

Tolerance

Bore size (mm)	LH	LX
32	±0.15	±0.18
40		
50		
63		
80	±0.25	±0.20
100		

Axial foot type: CH2ELB, CH2FLB



**Long stroke
(with tie-rod reinforcing ring)**

Bore size (mm)	Stroke range* (mm)	RT	RY
32	1401 to 1800	28	58
40	1401 to 1800	28	65
50	1401 to 1800	33	75
63	1501 to 1800	43	90
80	—	—	—
100	—	—	—

* Applicable to Series CH2E and CH2F.

Bore size (mm)	Stroke range (mm)																					With rod boot				(mm)			
		B	BB	C	F	GA	GB	J	M	NA	NB	P	R	S	T	CD	LH	LT	LX	LW	X1	Y1	SS	Z	e	f	Q	l	
		B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod	B-rod	C-rod
32	25 to 1400	58	62	38	16	32	15	M10 x 1.25	11	37	31	3/8	39	141	11	11	40	8	40	30	32	13	203	205	52	—	21.5	15	—
40	25 to 1400	65	69	45	12	32	15	M10 x 1.25	11	36	30	3/8	42	141	11	11	43	8	46	33	32	13	203	205	52	52	12	15	1/3.5 stroke
50	25 to 1400	76	85	52	15	40	19	M10 x 1.25	11	43	35	1/2	46	155	13	14	50	8	58	37	35	15	220	225	55	52	15	15	1/4 stroke
63	25 to 1500	90	98	63	15	42	19	M12 x 1.5	14	43	35	1/2	52	163	15	18	60	10	65	45	42	18	240	247	65	55	15	20	1/4 stroke
80	25 to 1800	110	118	80	17	40	22	M16 x 1.5	16	44	44	3/4	65	184	18	18	72	12	87	50	50	20	269	284	80	65	17	20	1/4 stroke
100	25 to 1800	135	150	102	19	42	22	M18 x 1.5	18	44	44	3/4	75	192	20	22	85	12	109	55	55	23	287	302	100	80	19	15	1/4 stroke

Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)	
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ	LH	LX		
32	M16 x 1.5	25	22	18	34	7	14	55	241	—	—	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	246	M16 x 1.5	25	22	18	36	7	14	55	241	—		
50	M24 x 1.5	35	32	28	46	11	24	65	270	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	265	—		
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	303	M24 x 1.5	35	32	28	46	11	24	70	293	—		
80	M39 x 1.5	60	57	45	65	15	41	95	349	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	334	—		
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	385	M39 x 1.5	60	57	45	65	15	41	100	370	—		

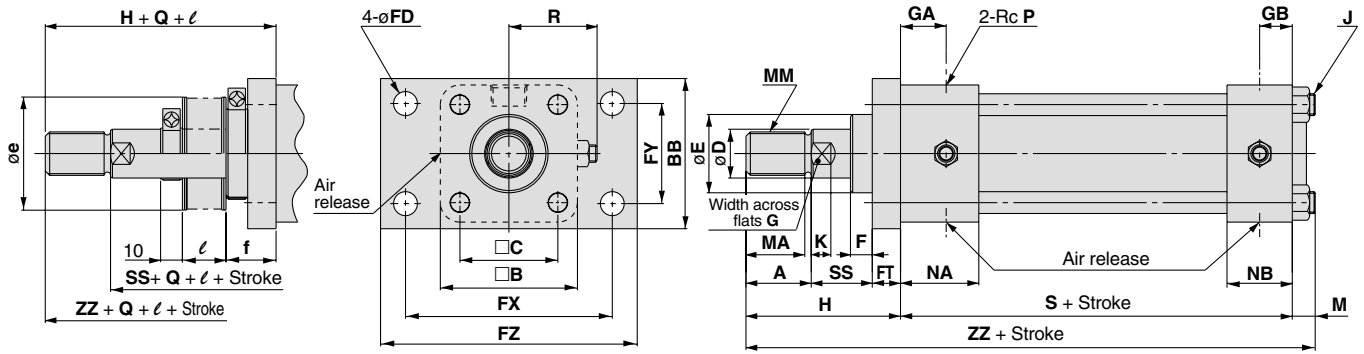
Tolerance

Bore size (mm)	LH	LX
32	±0.15	±0.13
40		±0.15
50		±0.15
63	±0.25	±0.18
80		±0.18
100		±0.18

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Front rectangular flange type: CH2EFA, CH2FFA



Bore size (mm)	Stroke range (mm)																			With rod boot				(mm)		
		B	BB	C	F	GA	GB	J	M	NA	NB	P	R	S	FD	FT	FX	FY	FZ	SS	e		f	Q	l	
		B-rod		C-rod		B-rod		C-rod																		
32	25 to 1400	58	62	38	16	21	15	M10 x 1.25	11	37	31	3/8	39	130	11	11	88	40	109	30	52	—	21.5	15	—	—
40	25 to 1400	65	69	45	12	21	15	M10 x 1.25	11	36	30	3/8	42	130	11	11	95	46	118	30	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	85	52	15	27	19	M10 x 1.25	11	43	35	1/2	46	142	14	13	115	58	145	30	55	52	15	15	—	—
63	25 to 1500	90	98	63	15	27	19	M12 x 1.5	14	43	35	1/2	52	148	18	15	132	65	165	35	65	55	15	20	—	—
80	25 to 1800	110	118	80	17	22	22	M16 x 1.5	16	44	44	3/4	65	166	18	18	155	87	190	35	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	150	102	19	22	22	M18 x 1.5	18	44	44	3/4	75	172	22	20	190	109	230	40	100	80	19	15	—	—

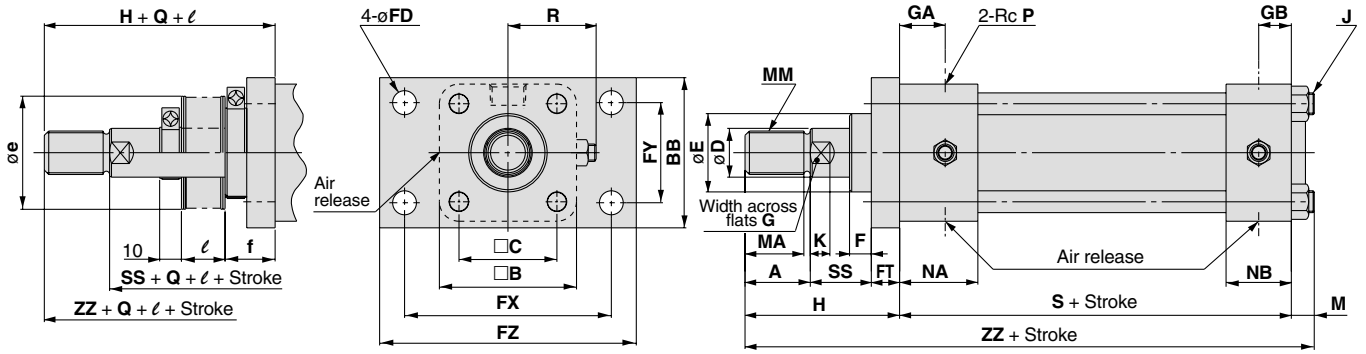
Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)	
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ				
32	M16 x 1.5	25	22	18	34	7	14	66	207	—	—	—	—	—	—	—	—	—				
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	71	212	M16 x 1.5	25	22	18	36	7	14	66	207			
50	M24 x 1.5	35	32	28	46	11	24	78	231	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	73	226			
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	95	257	M24 x 1.5	35	32	28	46	11	24	85	247			
80	M39 x 1.5	60	57	45	65	15	41	113	295	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	98	280			
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	135	325	M39 x 1.5	60	57	45	65	15	41	120	310			

Tolerance

Bore size (mm)	FT	FY	FX
32			
40	±0.2	±0.13	±0.18
50		±0.15	
63	±0.3		±0.2
80		±0.18	
100			±0.23

Front rectangular flange type: CH2GFY, CH2HFY



Bore size (mm)	Stroke range (mm)																			With rod boot				(mm)		
		B	BB	C	F	GA	GB	J	M	NA	NB	P	R	S	FD	FT	FX	FY	FZ	SS	e		f	Q	l	
		B-rod		C-rod		B-rod		C-rod																		
32	25 to 1400	58	62	38	14	21	15	M10 x 1.25	11	37	31	3/8	39	130	11	13	88	40	109	30	52	—	21.5	15	—	—
40	25 to 1400	65	69	45	10	21	15	M10 x 1.25	11	36	30	3/8	42	130	11	13	95	46	118	30	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	85	52	10	27	19	M10 x 1.25	11	43	35	1/2	46	142	14	18	115	58	145	30	55	52	15	15	—	—
63	25 to 1500	90	98	63	10	27	19	M12 x 1.5	14	43	35	1/2	52	148	18	20	132	65	165	35	65	55	15	20	—	—
80	25 to 1800	110	118	80	11	22	22	M16 x 1.5	16	44	44	3/4	65	166	18	24	155	87	190	35	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	150	102	11	22	22	M18 x 1.5	18	44	44	3/4	75	172	22	28	190	109	230	40	100	80	19	15	—	—

Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)	
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ	FT	FX		
32	M16 x 1.5	25	22	18	34	7	14	68	209	—	—	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	73	214	M16 x 1.5	25	22	18	36	7	14	68	209	±0.2	±0.18	
50	M24 x 1.5	35	32	28	46	11	24	83	236	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	78	231	±0.3	±0.15	
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	100	262	M24 x 1.5	35	32	28	46	11	24	90	252	±0.2	±0.18	
80	M39 x 1.5	60	57	45	65	-0.076	15	41	119	301	M30 x 1.5	45	42	35.5	55	-0.030	13	30	104	286	±0.23	±0.18
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	143	333	M39 x 1.5	60	57	45	65	-0.076	15	41	128	318	—	—

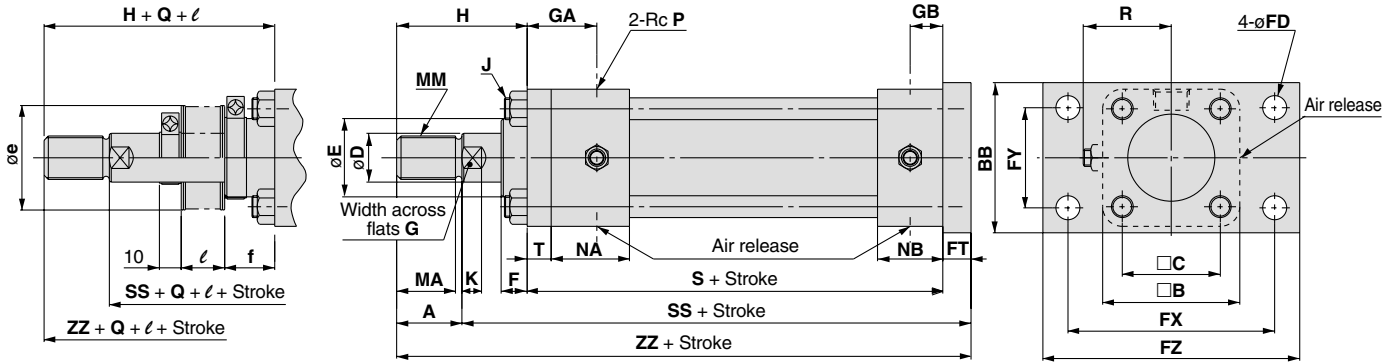
Tolerance

Bore size (mm)	FT	FX	FY
32	±0.2	±0.18	±0.13
40	±0.2	±0.18	±0.13
50	±0.3	±0.2	±0.15
63	±0.3	±0.2	±0.15
80	±0.3	±0.2	±0.18
100	±0.3	±0.23	±0.18

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Rear rectangular flange type: CH2EFB, CH2FFB



Bore size (mm)	Stroke range (mm)																			With rod boot				(mm)		
		B	BB	C	F	GA	GB	J	NA	NB	P	R	S	T	FD	FT	FX	FY	FZ	SS	e		f	Q	l	
		B-rod		C-rod		f		Q		B-rod		C-rod														
32	25 to 1400	58	62	38	16	32	15	M10 x 1.25	37	31	3/8	39	141	11	11	11	88	40	109	182	52	—	21.5	15	—	—
40	25 to 1400	65	69	45	12	32	15	M10 x 1.25	36	30	3/8	42	141	11	11	11	95	46	118	182	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	85	52	15	40	19	M10 x 1.25	43	35	1/2	46	155	13	14	13	115	58	145	198	55	52	15	15	—	—
63	25 to 1500	90	98	63	15	42	19	M12 x 1.5	43	35	1/2	52	163	15	18	15	132	65	165	213	65	55	15	20	—	—
80	25 to 1800	110	118	80	17	40	22	M16 x 1.5	44	44	3/4	65	184	18	18	18	155	87	190	237	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	150	102	19	42	22	M18 x 1.5	44	44	3/4	75	192	20	22	20	190	109	230	252	100	80	19	15	—	—

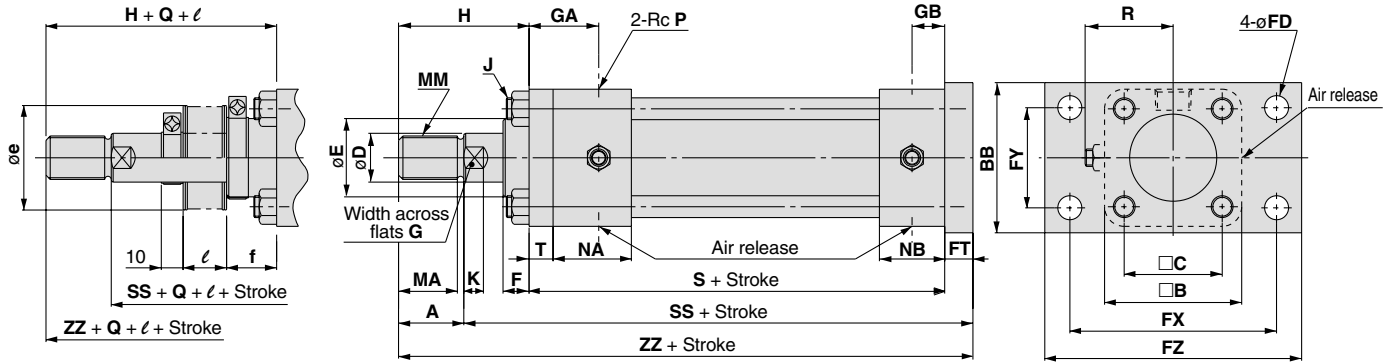
Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)	
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ	FT	FY		
32	M16 x 1.5	25	22	18	34	7	14	55	207	—	—	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	212	M16 x 1.5	25	22	18	36	7	14	55	207	±0.2		
50	M24 x 1.5	35	32	28	46	11	24	65	233	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	228	±0.2		
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	258	M24 x 1.5	35	32	28	46	11	24	70	248	±0.2		
80	M39 x 1.5	60	57	45	65	15	41	95	297	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	282	±0.3		
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	327	M39 x 1.5	60	57	45	65	15	41	100	312	±0.23		

Tolerance

Bore size (mm)	FT	FY	FX
32		±0.13	
40	±0.2		±0.18
50		±0.15	
63			±0.2
80	±0.3	±0.18	
100			±0.23

Rear rectangular flange type: CH2GFZ, CH2HFZ



Bore size (mm)	Stroke range (mm)																			With rod boot				(mm)		
		B	BB	C	F	GA	GB	J	NA	NB	P	R	S	T	FD	FT	FX	FY	FZ	SS	e		f	Q	l	
		B-rod	C-rod																					B-rod	C-rod	
32	25 to 1400	58	62	38	16	32	15	M10 x 1.25	37	31	3/8	39	141	11	11	13	88	40	109	184	52	—	21.5	15	—	—
40	25 to 1400	65	69	45	12	32	15	M10 x 1.25	36	30	3/8	42	141	11	11	13	95	46	118	184	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	85	52	15	40	19	M10 x 1.25	43	35	1/2	46	155	13	14	18	115	58	145	203	55	52	15	15	—	—
63	25 to 1500	90	98	63	15	42	19	M12 x 1.5	43	35	1/2	52	163	15	18	20	132	65	165	218	65	55	15	20	—	—
80	25 to 1800	110	118	80	17	40	22	M16 x 1.5	44	44	3/4	65	184	18	18	24	155	87	190	243	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	150	102	19	42	22	M18 x 1.5	44	44	3/4	75	192	20	22	28	190	109	230	260	100	80	19	15	—	—

Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)					
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ								
32	M16 x 1.5	25	22	18	34	-0.025 -0.064	7	14	55	209	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	M20 x 1.5	30	27	22.4	40		9	19	60	214	M16 x 1.5	25	22	18	36	-0.025 -0.064	7	14	55	209	—	—	—	—	—	—
50	M24 x 1.5	35	32	28	46	11	24	65	238	M20 x 1.5	30	27	22.4	40	9		19	60	233	—	—	—	—	—	—	—
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	263	M24 x 1.5	35	32	28	46	11	24	70	253	—	—	—	—	—	—	—
80	M39 x 1.5	60	57	45	65	-0.076	15	41	95	303	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	288	—	—	—	—	—	—
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	335	M39 x 1.5	60	57	45	65	-0.076	15	41	100	320	—	—	—	—	—	—

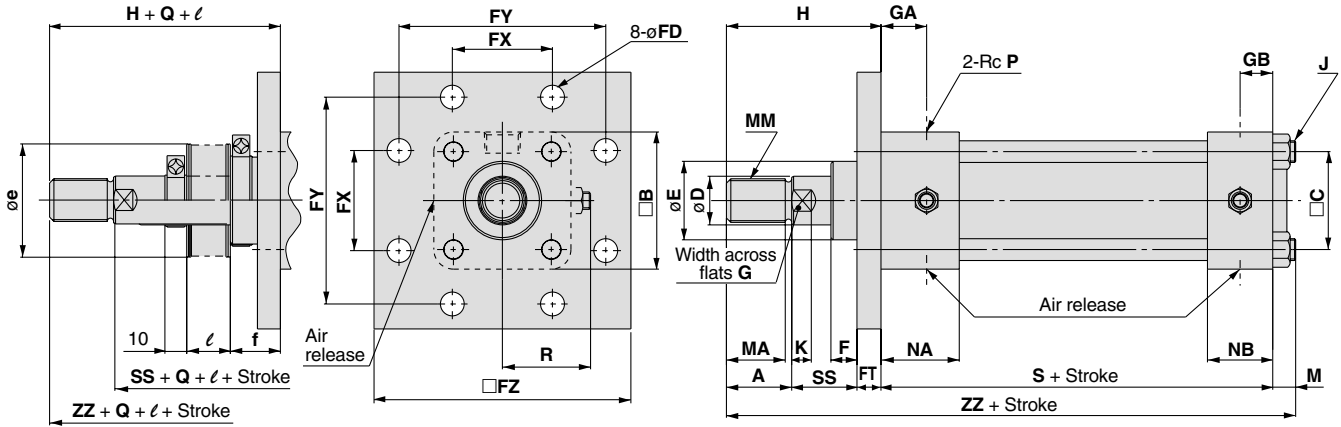
Tolerance

Bore size (mm)	FT	FX	FY
32	±0.2	±0.18	±0.13
40			
50	±0.3	±0.2	±0.15
63			
80			
100	±0.23	±0.18	—

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Front square flange type: CH2EFC, CH2FFC, CH2GFC, CH2HFC



Bore size (mm)	Stroke range (mm)																			With rod boot					
		B	C	F	GA	GB	J	M	NA	NB	P	R	S	FD	FT	FX	FY	FZ	SS	e		f	Q	l	
		B-rod	C-rod																						B-rod
32	25 to 1400	58	38	16	21	15	M10 x 1.25	11	37	31	3/8	39	130	11	11	40	88	109	30	52	—	21.5	15	—	—
40	25 to 1400	65	45	12	21	15	M10 x 1.25	11	36	30	3/8	42	130	11	11	46	95	118	30	52	52	12	15	1/3.5	stroke
50	25 to 1400	76	52	15	27	19	M10 x 1.25	11	43	35	1/2	46	142	14	13	58	115	145	30	55	52	15	15	—	—
63	25 to 1500	90	63	15	27	19	M12 x 1.5	14	43	35	1/2	52	148	18	15	65	132	165	35	65	55	15	20	—	—
80	25 to 1800	110	80	17	22	22	M16 x 1.5	16	44	44	3/4	65	166	18	18	87	155	190	35	80	65	17	20	1/4	stroke
100	25 to 1800	135	102	19	22	22	M18 x 1.5	18	44	44	3/4	75	172	22	20	109	190	230	40	100	80	19	15	—	—

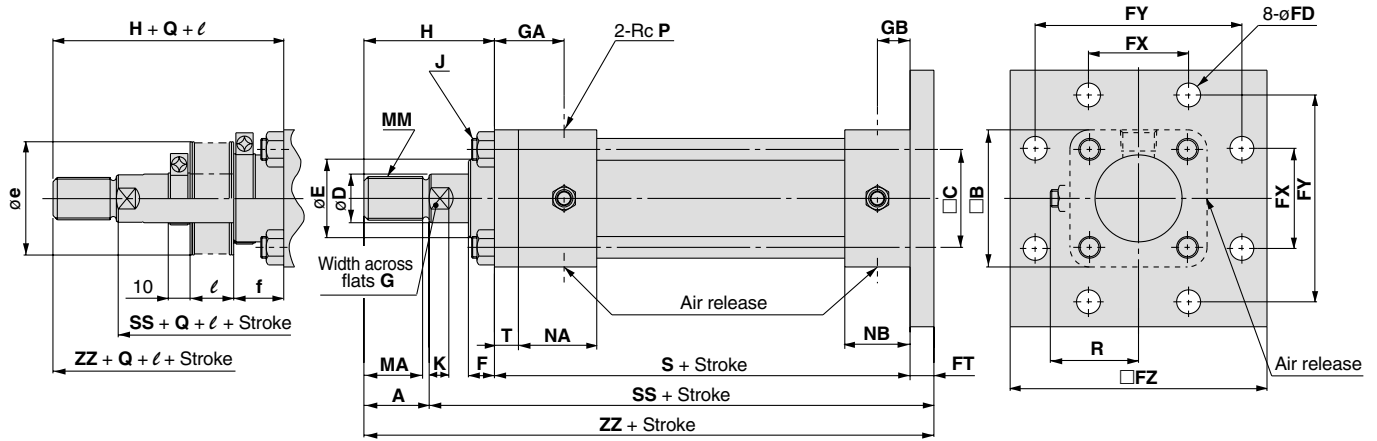
Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	66	207	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	71	212	M16 x 1.5	25	22	18	36	7	14	66	207	
50	M24 x 1.5	35	32	28	46	11	24	78	231	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	73	226	
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	95	257	M24 x 1.5	35	32	28	46	11	24	85	247	
80	M39 x 1.5	60	57	45	65	-0.076	15	41	113	295	M30 x 1.5	45	42	35.5	55	-0.030	13	30	98	280
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	135	325	M39 x 1.5	60	57	45	65	-0.030 -0.076	15	41	120	310

Tolerance

Bore size (mm)	FT	FX	FY
32			
40	±0.2	±0.13	±0.18
50		±0.15	
63			
80	±0.3	±0.18	±0.23
100		±0.18	

Rear square flange type: CH2EFD, CH2FFD, CH2GFD, CH2HFD



Bore size (mm)	Stroke range (mm)																			With rod boot					
		B	C	F	GA	GB	J	NA	NB	P	R	S	T	FD	FT	FX	FY	FZ	SS	e		f	Q	ℓ	
		B-rod	C-rod																				B-rod	C-rod	
32	25 to 1400	58	38	16	32	15	M10 x 1.25	37	31	3/8	39	141	11	11	11	40	88	109	182	52	—	21.5	15	—	—
40	25 to 1400	65	45	12	32	15	M10 x 1.25	36	30	3/8	42	141	11	11	11	46	95	118	182	52	52	12	15	1/3.5 stroke	—
50	25 to 1400	76	52	15	40	19	M10 x 1.25	43	35	1/2	46	155	13	14	13	58	115	145	198	55	52	15	15	—	—
63	25 to 1500	90	63	15	42	19	M12 x 1.5	43	35	1/2	52	163	15	18	15	65	132	165	213	65	55	15	20	—	—
80	25 to 1800	110	80	17	40	22	M16 x 1.5	44	44	3/4	65	184	18	18	18	87	155	190	237	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	102	19	42	22	M18 x 1.5	44	44	3/4	75	192	20	22	20	109	190	230	252	100	80	19	15	—	—

Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	55	207	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	212	M16 x 1.5	25	22	18	36	7	14	55	207	
50	M24 x 1.5	35	32	28	46	11	24	65	233	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	228	
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	258	M24 x 1.5	35	32	28	46	11	24	70	248	
80	M39 x 1.5	60	57	45	65	-0.076	15	41	95	297	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	282
100	M48 x 1.5	75	72	56	80	-0.038 -0.090	16	50	115	327	M39 x 1.5	60	57	45	65	15	41	100	312	

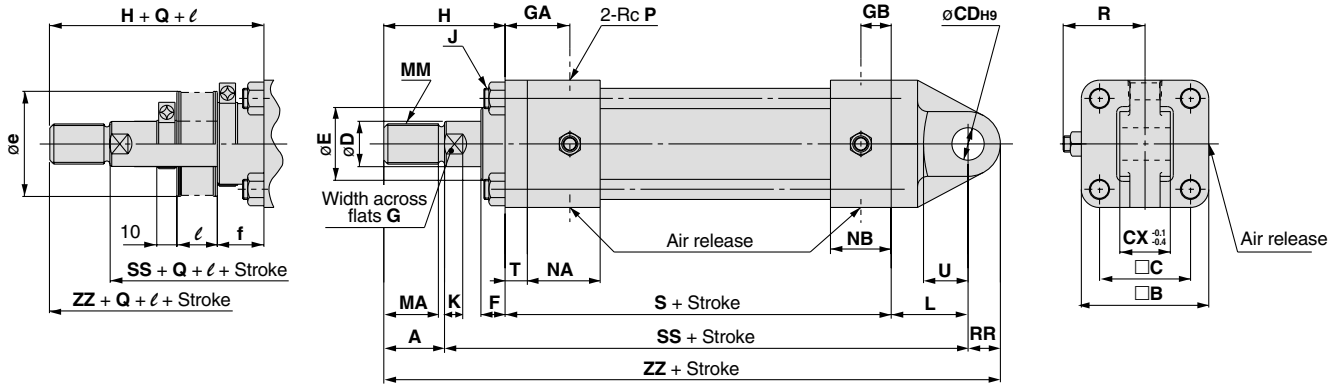
Tolerance

Bore size (mm)	FT	FX	FY
32			
40	±0.2	±0.13	±0.18
50		±0.15	
63			±0.2
80	±0.3	±0.18	
100			±0.23

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Single clevis type: CH2ECA, CH2FCA, CH2GCA, CH2HCA



Bore size (mm)	Stroke range (mm)																			With rod boot				(mm)	
		B	C	F	GA	GB	J	NA	NB	P	R	S	T	CX	CD	RR	SS	U	L	e		f	Q	l	
		B-rod	C-rod																					B-rod	C-rod
32	25 to 1400	58	38	16	32	15	M10 x 1.25	37	31	3/8	39	141	11	25	16	16	209	22	38	52	—	21.5	15	—	—
40	25 to 1400	65	45	12	32	15	M10 x 1.25	36	30	3/8	42	141	11	25	16	16	209	22	38	52	52	12	15	1/3.5	stroke
50	25 to 1400	76	52	15	40	19	M10 x 1.25	43	35	1/2	46	155	13	31.5	20	20	230	25	45	55	52	15	15	—	—
63	25 to 1500	90	63	15	42	19	M12 x 1.5	43	35	1/2	52	163	15	40	31.5	31.5	261	40	63	65	55	15	20	—	—
80	25 to 1800	110	80	17	40	22	M16 x 1.5	44	44	3/4	65	184	18	40	31.5	31.5	291	40	72	80	65	17	20	1/4	stroke
100	25 to 1800	135	102	19	42	22	M18 x 1.5	44	44	3/4	75	192	20	50	40	40	316	50	84	100	80	19	15	—	—

Rod series

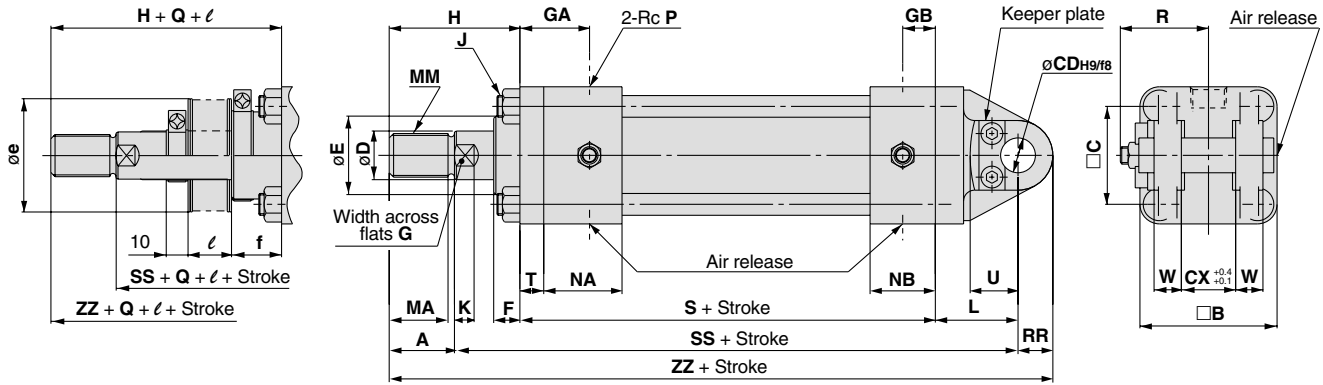
Bore size (mm)	B-series rod										C-series rod										(mm)		
	MM	A	MA	D	E	K	G	H	ZZ		MM	A	MA	D	E	K	G	H	ZZ		Bore size (mm)	CDH9	
32	M16 x 1.5	25	22	18	34	7	14	55	250	—	—	—	—	—	—	—	—	—	—	—	32	+0.043	
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	255	M16 x 1.5	25	22	18	36	7	14	55	250	—	40	0	
50	M24 x 1.5	35	32	28	46	11	24	65	285	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	280	—	50	+0.052 0	
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	337.5	M24 x 1.5	35	32	28	46	11	24	70	327.5	—	63	+0.062 0	
80	M39 x 1.5	60	57	45	65	-0.030 -0.076	15	41	95	382.5	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	367.5	—	80	+0.062 0
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	431	M39 x 1.5	60	57	45	65	15	41	100	416	—	100	—	

Tolerance

Bore size (mm)	CDH9
32	+0.043
40	0
50	+0.052 0
63	+0.062 0
80	+0.062 0
100	—

JIS Standard Hydraulic Cylinder
 Double Acting/Single Rod **Series CH2E/CH2F/CH2G/CH2H**

Double clevis type: CH2ECB, CH2FCB, CH2GCB, CH2HCB



Bore size (mm)	Stroke range (mm)																				With rod boot				
		B	C	F	GA	GB	J	NA	NB	P	R	S	T	CX	CD	RR	SS	L	U	W	e		f	Q	
		B-rod		C-rod		B-rod		C-rod		B-rod		C-rod		B-rod		C-rod		B-rod		C-rod		B-rod		C-rod	
32	25 to 1400	58	38	16	32	15	M10 x 1.25	37	31	3/8	39	141	11	25	16	16	209	38	22	12.5	52	—	21.5	15	—
40	25 to 1400	65	45	12	32	15	M10 x 1.25	36	30	3/8	42	141	11	25	16	16	209	38	22	12.5	52	52	12	15	1/3.5 stroke
50	25 to 1400	76	52	15	40	19	M10 x 1.25	43	35	1/2	46	155	13	31.5	20	20	230	45	25	16	55	52	15	15	—
63	25 to 1500	90	63	15	42	19	M12 x 1.5	43	35	1/2	52	163	15	40	31.5	31.5	261	63	40	20	65	55	15	20	—
80	25 to 1800	110	80	17	40	22	M16 x 1.5	44	44	3/4	65	184	18	40	31.5	31.5	291	72	40	20	80	65	17	20	1/4 stroke
100	25 to 1800	135	102	19	42	22	M18 x 1.5	44	44	3/4	75	192	20	50	40	40	316	84	50	25	100	80	19	15	—

Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	55	250	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	255	M16 x 1.5	25	22	18	36	7	14	55	250	
50	M24 x 1.5	35	32	28	46	11	24	65	285	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	280	
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	337.5	M24 x 1.5	35	32	28	46	11	24	70	327.5	
80	M39 x 1.5	60	57	45	65	-0.076	15	41	95	382.5	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	367.5
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	431	M39 x 1.5	60	57	45	65	-0.076	15	41	100	416

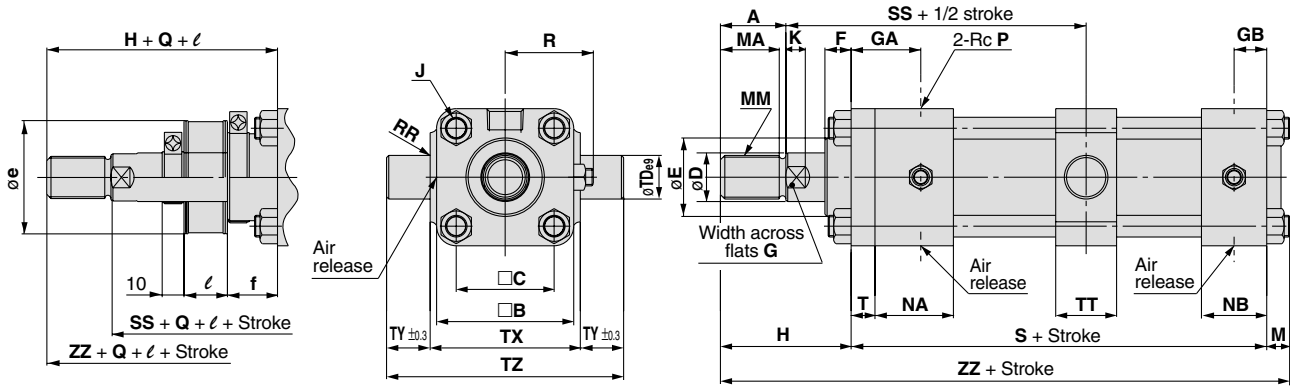
Tolerance

Bore size (mm)	CD	
	H9	f8
32	+0.043	-0.016
40	0	-0.043
50	+0.052 0	-0.020 -0.053
63	+0.062	-0.025
80	0	-0.064
100		

Series CH2E/CH2F/CH2G/CH2H

Dimensions

Center trunnion type: CH2ETC, CH2FTC, CH2GTC, CH2HTC



Bore size (mm)	Stroke range (mm)																				With rod boot				(mm)		
		B	C	F	GA	GB	J	M	NA	NB	P	R	S	T	RR	SS	TD	TT	TX	TY	TZ	e		f	Q	l	
		B-rod		C-rod		B-rod		C-rod																			
32 ^{*1}	25 to 1800	58	38	16	32	15	M10 x 1.25	11	37	31	3/8	39	141	11	2	113	20	28	58	20	98	52	—	21.5	15	—	—
40 ^{*1}	25 to 1800	65	45	12	32	15	M10 x 1.25	11	36	30	3/8	42	141	11	2	113	20	28	69	20	109	52	52	12	15	1/3.5 stroke	—
50 ^{*1}	25 to 1800	76	52	15	40	19	M10 x 1.25	11	43	35	1/2	46	155	13	2.5	121	25	33	85	25	135	55	52	15	15	—	—
63 ^{*2}	25 to 1800	90	63	15	42	19	M12 x 1.5	14	43	35	1/2	52	163	15	2.5	132	31.5	43	98	31.5	161	65	55	15	20	—	—
80	25 to 1800	110	80	17	40	22	M16 x 1.5	16	44	44	3/4	65	184	18	2.5	146	31.5	43	118	31.5	181	80	65	17	20	1/4 stroke	—
100	25 to 1800	135	102	19	42	22	M18 x 1.5	18	44	44	3/4	75	192	20	3	156	40	53	145	40	225	100	80	19	15	—	—

*1: CH2GTC is limited to 1400mm. *2: CH2GTC is limited to 1500mm.

Rod series

Bore size (mm)	B-series rod										C-series rod										(mm)						
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ
32	M16 x 1.5	25	22	18	34	—	7	14	55	207	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	212	M16 x 1.5	25	22	18	36	—	7	14	55	207	—	—	—	—	—	—	—
50	M24 x 1.5	35	32	28	46	—	11	24	65	231	M20 x 1.5	30	27	22.4	40	-0.025 -0.064	9	19	60	226	—	—	—	—	—	—	—
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	257	M24 x 1.5	35	32	28	46	—	11	24	70	247	—	—	—	—	—	—	—
80	M39 x 1.5	60	57	45	65	—	15	41	95	295	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	80	280	—	—	—	—	—	—	—
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	325	M39 x 1.5	60	57	45	65	—	15	41	100	310	—	—	—	—	—	—	—

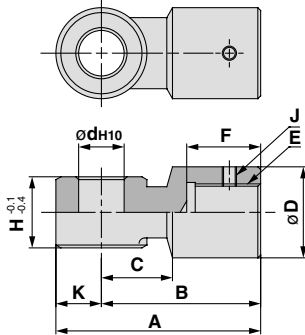
Tolerance

Bore size (mm)	TD _{e9}	TX
32	—	0
40	-0.040 -0.092	-0.3
50	—	0
63	-0.050 -0.112	-0.35
80	—	0
100	—	-0.4

Accessories (optional)

Single knuckle joint

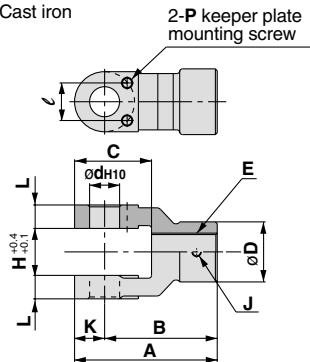
Material: Cast iron



Rod series	Part no.	Bore size (mm)											
			A	B	C	D	d	E	F	H	J	K	
B-series	IH2-03B	32	76	60	25	32	16	$^{+0.07}_0$	M16 x 1.5	26	25	M5 x 0.8	16
	IH2-04B	40	76	60	25	32	16	$^{+0.07}_0$	M20 x 1.5	31	25	M5 x 0.8	16
	IH2-05B	50	90	70	30	40	20	$^{+0.084}_0$	M24 x 1.5	36	31.5	M5 x 0.8	20
	IH2-06B	63	145	115	45	60	31.5	$^{+0.1}_0$	M30 x 1.5	50	40	M6 x 1.0	30
	IH2-08B	80	145	115	45	60	31.5	$^{+0.1}_0$	M39 x 1.5	61	40	M6 x 1.0	30
	IH2-10B	100	185	145	57	79	40	$^{+0.1}_0$	M48 x 1.5	76	50	M8 x 1.25	40
C-series	IH2-03B	40	76	60	25	32	16	$^{+0.07}_0$	M16 x 1.5	26	25	M5 x 0.8	16
	IH2-05C	50	90	70	30	40	20	$^{+0.084}_0$	M20 x 1.5	31	31.5	M5 x 0.8	20
	IH2-06C	63	145	115	45	60	31.5	$^{+0.1}_0$	M24 x 1.5	40	40	M6 x 1.0	30
	IH2-06B	80	145	115	45	60	31.5	$^{+0.1}_0$	M30 x 1.5	50	40	M6 x 1.0	30
	IH2-10C	100	185	145	57	79	40	$^{+0.1}_0$	M39 x 1.5	63	50	M8 x 1.25	40

Double knuckle joint

Material: Cast iron

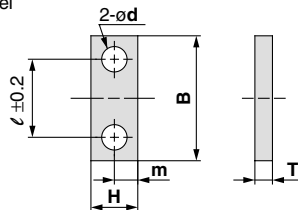


Rod series	Part no.	Bore size (mm)													
			A	B	C	D	d	E	H	J	K	L	ℓ	P	
B-series	YH2-03B	32	76	60	41	32	16	$^{+0.07}_0$	M16 x 1.5	25	M5 x 0.8	16	12.5	20	M6 x 1.0
	YH2-04B	40	76	60	41	32	16	$^{+0.07}_0$	M20 x 1.5	25	M5 x 0.8	16	12.5	20	M6 x 1.0
	YH2-05B	50	90	70	50	40	20	$^{+0.084}_0$	M24 x 1.5	31.5	M5 x 0.8	20	16	20	M6 x 1.0
	YH2-06B	63	145	115	75	60	31.5	$^{+0.1}_0$	M30 x 1.5	40	M6 x 1.0	30	20	24	M8 x 1.25
	YH2-08B	80	145	115	75	60	31.5	$^{+0.1}_0$	M39 x 1.5	40	M6 x 1.0	30	20	24	M8 x 1.25
	YH2-10B	100	185	145	95	80	40	$^{+0.1}_0$	M48 x 1.5	50	M8 x 1.25	40	25	26	M10 x 1.5
C-series	YH2-03B	40	76	60	41	32	16	$^{+0.07}_0$	M16 x 1.5	25	M5 x 0.8	16	12.5	20	M6 x 1.0
	YH2-05C	50	90	70	50	40	20	$^{+0.084}_0$	M20 x 1.5	31.5	M5 x 0.8	20	16	20	M6 x 1.0
	YH2-06C	63	145	115	75	60	31.5	$^{+0.1}_0$	M24 x 1.5	40	M6 x 1.0	30	20	24	M8 x 1.25
	YH2-06B	80	145	115	75	60	31.5	$^{+0.1}_0$	M30 x 1.5	40	M6 x 1.0	30	20	24	M8 x 1.25
	YH2-10C	100	185	145	95	80	40	$^{+0.1}_0$	M39 x 1.5	50	M8 x 1.25	40	25	26	M10 x 1.5

Note) The pin, keeper plate and cap bolt are included with a double knuckle joint.

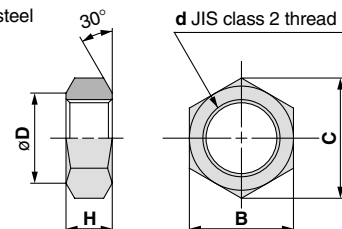
Keeper plate

Material: Rolled steel



Rod end nut

Material: Carbon steel

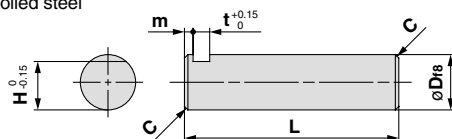


Part no.	Bore size (mm)							Cap bolt
		B	H	ℓ	m	T	d	
KP-05	32, 40, 50	32	12	20 ±0.2	6	4.5	6.5	M6 x 10ℓ
KP-08	63, 80	44	18	24 ±0.2	9	4.5	9	M8 x 12ℓ
KP-10	100	44	22	26 ±0.2	11	6	11.5	M10 x 14ℓ

Rod series	Part no.	Bore size (mm)					d
			B	C	D	H	
B-series	NTH-040	32	22	25.4	21	10	M16 x 1.5
	NTH-050	40	27	31.2	26	12	M20 x 1.5
	NTH-060	50	32	37	31	14	M24 x 1.5
	NTH-080	63	41	47.3	40	17	M30 x 1.5
	NTH-100	80	55	63.5	54	20	M39 x 1.5
C-series	NTH-125	100	70	80.8	69	26	M48 x 1.5
	NTH-040	40	22	25.4	21	10	M16 x 1.5
	NTH-050	50	27	31.2	26	12	M20 x 1.5
	NTH-060	63	32	37	31	14	M24 x 1.5
	NTH-080	80	41	47.3	40	17	M30 x 1.5
	NTH-100	100	55	63.5	54	20	M39 x 1.5

Double clevis/Double knuckle pin

Material: Rolled steel



Part no.	Bore size (mm)							
		Df8	C	L	m	T	d	
CDH-04	32, 40	16	$^{-0.016}_{-0.043}$	1	62	2.5	4.8	14
CDH-05	50	20	$^{-0.016}_{-0.043}$	1	76.5	3.5	4.8	18
CDH-08	63, 80	31.5	$^{-0.016}_{-0.043}$	1.5	93	3.5	4.8	29
CDH-10	100	40	$^{-0.016}_{-0.043}$	2	117	6	6.3	35

Series CH2E/CH2F/CH2G/CH2H Auto Switch Specifications

Auto Switches: Proper Mounting Positions and Mounting Heights for Stroke End Detection

<Tie-rod mount type>

Reed switches

D-A5, D-A6

D-A59W

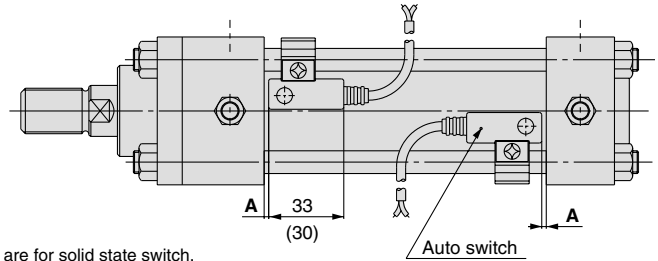
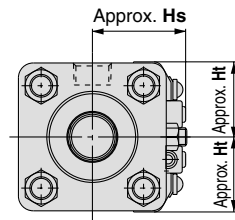
Solid state switches

D-F5□, D-J5□

D-F5NTL

D-F5□W, D-J59W

D-F5BAL, D-F59F



Dimensions inside () are for solid state switch.

<Band mount type>

Reed switches

D-B5, D-B6, D-B59W

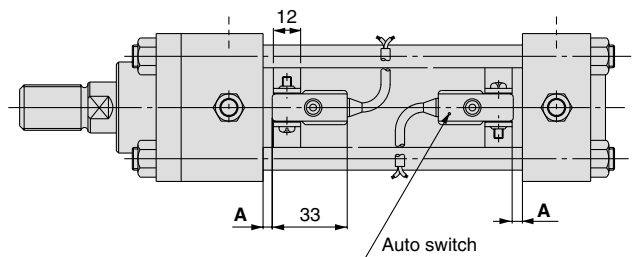
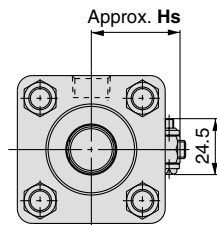
Solid state switches

D-G5□, D-K59

D-G5□W, D-K59W

D-G5BAL

D-G59F, D-G5NTL

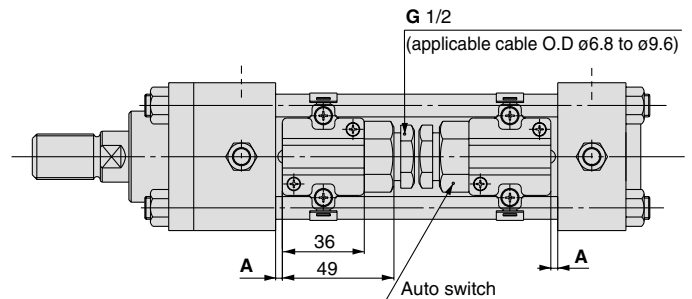
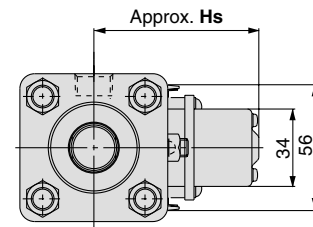


Reed switch

D-A3

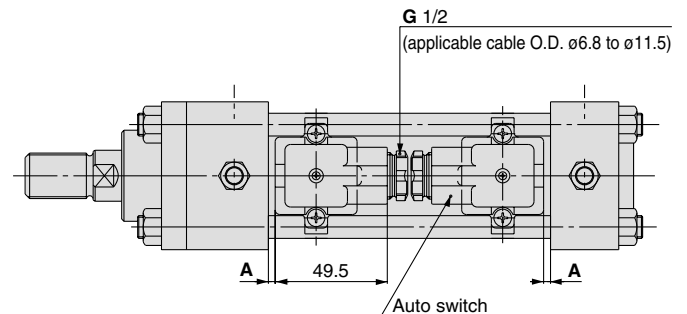
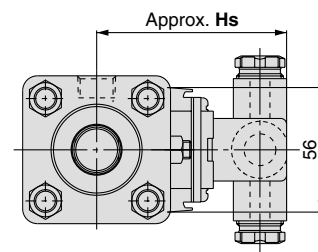
Solid state switches

D-G39, D-K39



Reed switch

D-A44



Auto switch mounting heights

Unit: mm

Bore size (mm)		D-A5, D-A6 D-A59W		D-F5□, D-J5□ D-F5□W, D-J59W D-F5BAL, D-F59F D-F5NTL		D-B5□, D-B6□ D-B59W D-G5□, D-K59 D-G5□W, D-K59W D-G5BAL D-G59F, D-G5NTL		D-A3 D-G39, D-K39		D-A44	
		Hs	Ht	Hs	Ht	Hs	Hs	Hs	Hs		
32	CH2E	35	29.5	35	29.5	33.5	—	—	—	—	
	CH2F	34.5	30	34.5	30	32	—	—	—		
	CH2H	34.5	29.5	34.5	29.5	32.5	—	—	—		
40	CH2E	38.5	32.5	38.5	32.5	38	72.5	82.5	82.5		
	CH2F	38	33.5	38	33.5	36.5	71	81	81		
	CH2H	38	33	38	33	37	71.5	81.5	81.5		
50	CH2E	43	36.5	42	36.5	43.5	78	88	88		
	CH2F	41.5	36.5	41.5	36.5	41.5	76	86	86		
	CH2H	42	36	42	36	42.5	77	87	87		
63	CH2E	48.5	43	47	43	50.5	85	95	95		
	CH2F	46.5	43	46.5	43	48.5	83	93	93		
	CH2H	48.5	43	47	43	50.5	85	95	95		
80	CH2E	58.5	55.5	57	55.5	59	93.5	103.5	103.5		
	CH2F	56.5	55.5	56.5	55.5	57.5	92	102	102		
	CH2H	59	55.5	57.5	55.5	59.5	94	104	104		
100	CH2E	66.5	67	66.5	67	69.5	104	114	114		
	CH2F	65.5	67	65.5	67	68	102.5	112.5	112.5		
	CH2H	67.5	67	67.5	67	71	105.5	115.5	115.5		

Proper auto switch mounting positions

Auto switch type	Bore size (mm)	D-A5□, D-A6□ D-A3□, D-A44 D-G39□, D-K39□	D-A59W	D-F5□, D-J5□ D-F5□W, D-J59W D-F5BAL	D-F59F	D-F5NTL	D-G5□, D-K59 D-G5□W, D-K59W D-G5BAL, D-G5NTL	D-B5□, D-B64 D-G59F	D-B59W
		A	A	A	A	A	A	A	A
	32	15 (Note)	19	21.5	25.5	26.5	17	15.5	18.5
	40	16	20	22.5	26.5	27.5	18	16.5	19.5
	50	16	20	22.5	26.5	27.5	18	16.5	19.5
	63	19	23	25.5	29.5	30.5	21	19.5	22.5
	80	23	27	29.5	33.5	34.5	25	23.5	26.5
	100	26	30	32.5	36.5	37.5	28	26.5	29.5

Note) Auto switch models D-A3□, D-A44, D-G39□ and D-K39□ cannot be mounted on ø32 bore size cylinders.

Series CH2E/CH2F/CH2G/CH2H Made to Order Specifications

Contact P/A for detailed specifications, lead times, and prices.



1 Modification of Rod End Configuration

CH2 Series Mounting type Bore size Rod size series Stroke Cylinder options — X **A0**

Indicate the rod end configuration pattern symbol

<p>A1</p>	<p>A2</p>	<p>A3</p>								
<p>A4</p> <p>Note) Female thread effective depth should be no more than twice the thread diameter.</p>	<p>A5</p> <p>Note) Male thread effective length should be no more than 100mm.</p>	<p>A6</p> <p>Note) Male thread effective length should be no more than 100mm.</p>								
<p>A7</p> <p>Note) Male thread effective length should be no more than 100mm.</p>	<p>A0</p> <p>When the rod end configuration is the same as the standard type, and only the H dimension or MM dimension is changed, indicate the H dimension or MM dimension.</p> <p>Note) Dimensions indicated with an asterisk (*) in the patterns A1, A3, A4 and A5 are provided in the table below.</p> <table border="1"> <thead> <tr> <th>Pattern</th> <th>Dimension for *</th> </tr> </thead> <tbody> <tr> <td>A1</td> <td rowspan="2">ød-2</td> </tr> <tr> <td>A3</td> </tr> <tr> <td>A4</td> <td rowspan="2">øD-2</td> </tr> <tr> <td>A5</td> </tr> </tbody> </table> <p>If dimensions other than the above are necessary, please indicate as such.</p> <p>* Please indicate the desired dimensions on the bold lines provided in the drawings.</p>		Pattern	Dimension for *	A1	ød-2	A3	A4	øD-2	A5
Pattern	Dimension for *									
A1	ød-2									
A3										
A4	øD-2									
A5										

JIS Standard Hydraulic Cylinder Double Acting/Double Rod

Series **CH2EW/CH2FW**

ø32, ø40, ø50, ø63, ø80, ø100

3.5MPa
7 MPa

How to Order

Type: Double acting/Double Rod

Auto switch type

Nil	Without auto switch
-----	---------------------

* Select applicable auto switch models from the table below.

Number of auto switches

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

With Auto Switch CHD2 F W LA 50 B 100 A53

With auto switch (built-in magnet) CH2 F W LA 50 B 100

Series type

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

Mounting types

Symbol	Mounting type
B	Basic type
LA	Transaxial foot type
LB	Axial foot type
FA	Front rectangular flange type
FC	Front square flange type
TC	Center trunnion type

Cylinder options

Option	Symbol	Description
Rod end nut	Nil	Without rod end nut
	A	With rod end nut
Cushion	Nil	With double side cushion
	N	Without cushion
	R	With front cushion
	H	With rear cushion

* Indicate in alphabetical order.

Cylinder stroke (mm)

Refer to the standard stroke table on page 78.
Refer to page 79 for minimum strokes with auto switch.

Rod size series

Symbol	Series
B	B-series rod size
C	C-series rod size

Port and cushion valve positions

* Refer to page 78.

Bore size

Symbol	Bore size (mm)
32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm

Part nos. for cylinders with built-in magnets

In the case of cylinders with built-in magnets but no auto switches, do not indicate any auto switch type symbol.
(Example) CHD2FWLA50-100□

Applicable Auto Switches: Refer to pages 115 to 119 for auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch type		Lead wire length (m)*			Applicable load			
					DC	AC	Tie-rod mount	Band mount	0.5 (Nil)	3 (L)	5 (Z)				
Reed switch	—	Grommet	Yes	3-wire (NPN equiv.)	24V	5V	—	A56	—	●	●	—	IC circuit		
						12V	—	A53	B53	●	●	●	—	PLC	
						12V	100V, 200V	A54	B54	●	●	●	—	Relay, PLC	
		Terminal conduit	No	2-wire	24V	5V, 12V	—	A67	—	●	●	—	IC circuit		
						5V, 12V	200V or less	A64	B64	●	●	—	Relay, PLC		
						12V	—	—	A33**	—	—	—	—	PLC	
DIN terminal	Yes	2-wire	24V	12V	100V, 200V	—	A34**	—	—	—	—	Relay			
				—	—	—	A44**	—	—	—	—	PLC			
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	F59	G59	●	●	○	IC circuit		
						3-wire (PNP)	—	F5P	G5P	●	●	○	—		
						2-wire	—	J51	—	●	●	○	—		
				Terminal conduit	Yes	3-wire (NPN)	24V	12V	—	J59	K59	●	●	○	—
								5V, 12V	—	—	G39**	—	—	—	IC circuit
								12V	—	—	K39**	—	—	—	—
		Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	F59W	G59W	●	●	○	IC circuit		
						3-wire (PNP)	—	F5PW	G5PW	●	●	○	—		
						2-wire	12V	J59W	K59W	●	●	○	—		
		Water resistant (2-color display)	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	F5BA	G5BA	—	●	○	—	
							3-wire (PNP)	—	F5NT	G5NT	—	●	○	—	
							2-wire	12V	F59F	G59F	●	●	○	IC circuit	
With timer	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	F59F	G59F	●	●	○	IC circuit			
					4-wire (NPN)	5V, 12V	—	—	—	—	—	—	—		

* Lead wire length symbols: 0.5m Nil (Example) A53
3m L A53L
5m Z A53Z

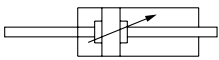
** Cannot be mounted on ø32 bore size cylinders.
Note) • The standard lead wire length is 0.5m. However, the standard length for G5NLT, G5BAL, F5NLT and F5BAL is 3m.
• Solid state switches marked "○" are produced upon receipt of order.

JIS Standard Hydraulic Cylinder
 Double Acting/Double Rod **Series CH2EW/CH2FW**



Pages 75 to 76

JIS symbol



Models

Model	CH2EW	CH2FW
Tube material	Aluminum alloy	Stainless steel
Nominal pressure	3.5MPa	7
Bore size	32, 40, 50, 63, 80, 100mm	
Auto switch mounting	Applicable	Applicable

Specifications

Model	CH2EW	CH2FW
Action	Double acting/Double rod	
Fluid	Hydraulic fluid	
Nominal pressure	3.5MPa	7MPa
Maximum allowable pressure	3.5MPa	B-rod: 13.5MPa C-rod: 11MPa
Proof pressure	5.0MPa	10.5MPa
Minimum operating pressure	0.3MPa	
Ambient and fluid temperature	Without auto switch: -10° to 80°C	
	With auto switch: -10° to 60°C	
Piston speed	8 to 300mm/s	
Cushion	Cushion seal type	
Rod end threads	Male threads	
Thread tolerance	JIS class 2	
Stroke length tolerance	to 100mm ^{+0.8} ₀ mm, 101 to 250mm ^{+1.0} ₀ mm, 251 to 630mm ^{+1.25} ₀ mm, 631 to 1000mm ^{+1.4} ₀ mm	

Note) Refer to page 136 for definitions of terms related to pressure.

Auto Switch mounting Bracket Part Nos.

Model	Bore size (mm)	Auto switch type			
		D-A3, D-A4 D-G3, D-K3	D-B5, D-B6 D-G5, D-K5	D-A5, D-A6 D-F5, D-J5	
CH2E	32	—	BA-32	BT-06	
	40	BD1-04M	BA-04	BT-06	
	50	BD1-05M	BA-05	BT-06	
	63	BD1-06M	BA-06	BT-08	
	80	BD1-08M	BA-08	BT-16	
	100	BD1-10M	BA-10	BT-18	
CH2F	32	—	BAF-32	BT-06	
	40	BDS-04M	BAF-04	BT-06	
	50	BDS-05M	BAF-05	BT-06	
	63	BDS-06M	BAF-06	BT-08	
	80	BDS-08M	BAF-08	BT-16	
	100	BDS-10M	BAF-10	BT-18	

Standard Strokes

Bore size (mm)	Standard strokes (mm)
32	25 to 800
40	25 to 800
50	25 to 800
63	25 to 800
80	25 to 1000
100	25 to 1000

Note) Refer to the stroke selection Table in Technical Data 2, starting with page 123 to determine stroke limitation depending on the type of mounting brackets that will be used. Then make your selection.

Port and Cushion Valve Positions

Symbol Position	Nil	A	C	D	E	F	G	H
Mounting type	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 end rod of the cylinder.

Series CH2EW/CH2FW

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 (optional)

Refer to page 72.

Single knuckle, Double Knuckle
Lock nut, Knuckle pin

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 P/A.

Cushion Stroke

(mm)

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

Auto Switches: Proper Mounting Positions and Mounting Heights for Stroke End Detection

Same as double acting/single rod: Refer to page 74.

Weights

Unit: kg

Bore size (mm)	Mounting type Model	B	LA	FC	TC	LB	FA	Additional weight (per 10mm stroke)	
		Basic	Transaxial foot	Square flange	Center trunnion	Axial foot	Rectangular flange (7MPa)		
B-series rod	32	CH2E	2.94	3.93	3.79	3.43	3.44	3.38	0.04
		CH2F	2.93	3.92	3.78	3.42	3.43	3.37	0.04
	40	CH2E	3.82	5.12	4.91	4.41	4.40	4.41	0.08
		CH2F	3.79	5.09	4.88	4.38	4.37	4.38	0.08
	50	CH2E	6.37	8.97	8.33	7.21	7.17	7.45	0.09
		CH2F	6.27	8.87	8.23	7.11	7.07	7.35	0.10
	63	CH2E	9.75	13.63	12.65	11.29	11.37	11.36	0.17
		CH2F	9.16	13.04	12.06	10.70	10.78	10.77	0.17
	80	CH2E	15.00	20.35	19.59	17.02	17.36	17.69	0.24
		CH2F	14.36	19.71	18.95	16.38	16.72	17.05	0.26
	100	CH2E	21.82	32.63	29.29	25.47	25.24	26.42	0.41
		CH2F	21.26	32.06	28.73	24.91	24.68	25.86	0.46

Bore size (mm)	Mounting type Model	B	LA	FC	TC	LB	FA	Additional weight (per 10mm stroke)	
		Basic	Transaxial foot	Square flange	Center trunnion	Axial foot	Rectangular flange (7MPa)		
C-series rod	40	CH2E	3.74	5.04	4.83	4.33	4.32	4.33	0.07
		CH2F	3.71	5.01	4.80	4.30	4.29	4.30	0.07
	50	CH2E	6.21	8.81	8.17	7.05	7.01	7.29	0.07
		CH2F	6.11	8.71	8.07	6.95	6.91	7.19	0.08
	63	CH2E	9.44	13.32	12.34	10.98	11.06	11.05	0.14
		CH2F	8.86	12.74	11.76	10.40	10.48	10.47	0.14
	80	CH2E	14.56	19.91	19.15	16.58	16.92	17.25	0.18
		CH2F	13.92	19.27	18.51	15.94	16.28	16.61	0.21
	100	CH2E	20.76	31.57	28.23	24.41	24.18	25.36	0.29
		CH2F	20.20	31.01	27.67	23.85	23.62	24.80	0.30

Theoretical Output

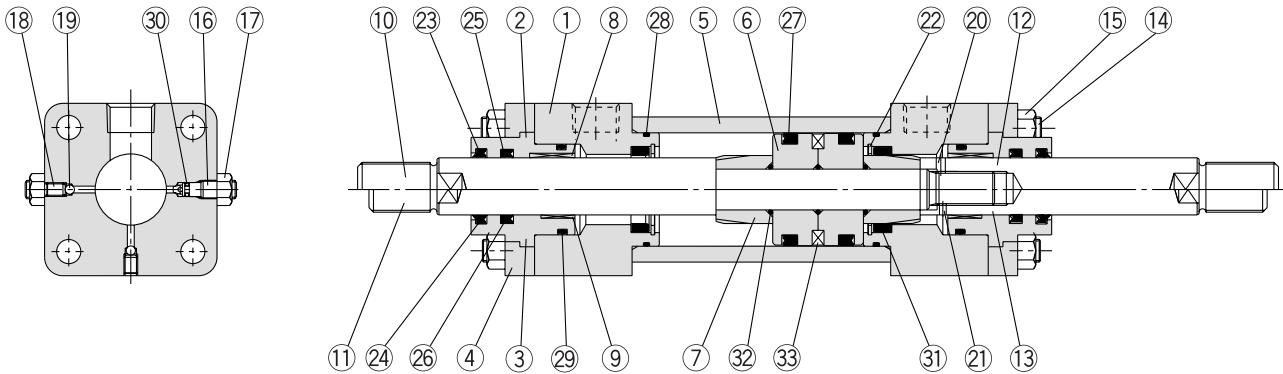
Unit: N

	Bore size (mm)	Rod size (mm)	Piston area (mm ²)	Nominal pressure (MPa)			
				1	3.5	5	7
B-series rod	32	18	550	550	1923	2748	3847
	40	22.4	862	862	3017	4311	6035
	50	28	1347	1347	4715	6735	9429
	63	35.5	2126	2126	7442	10632	14885
	80	45	3434	3434	12020	17172	24041
	100	56	5388	5388	18859	26941	37718
C-series rod	40	18	1002	1002	3506	5008	7012
	50	22.4	1569	1569	5490	7843	10980
	63	28	2500	2500	8751	12501	17502
	80	35.5	4035	4035	14121	20174	28243
	100	45	6260	6260	21911	31302	43823

Minimum Strokes for Auto Switch Mounting

Refer to the table for double acting/single rod on page 58.

Construction



Parts list

No.	Description	Material	Note
1	Rod cover	Carbon steel	
2	Seal holder (B-series rod)	Carbon steel	
3	Seal holder (C-series rod)	Carbon steel	
4	Retainer	Carbon steel	
5	Cylinder tube	CH2E Aluminum alloy	Hard anodized
		CH2F Stainless steel	
6	Piston	Aluminum alloy	
7	Cushion ring	Rolled steel	
8	Bushing (B-series rod)	Copper alloy	
9	Bushing (C-series rod)	Copper alloy	
10	Piston rod A (B-series rod)	Carbon steel	Hard chromium electroplated
11	Piston rod A (C-series rod)	Carbon steel	Hard chromium electroplated
12	Piston rod B (B-series rod)	Carbon steel	Hard chromium electroplated
13	Piston rod B (C-series rod)	Carbon steel	Hard chromium electroplated
14	Tie-rod	Carbon steel	
15	Tie-rod nut	Carbon steel	
16	Cushion valve	Alloy steel	
17	Lock nut	Carbon steel	
18	Air release valve	Alloy steel	
19	Check ball	Bearing steel	
20	Spring pin (B-series rod)	Carbon tool steel	
21	Spring pin (C-series rod)	Carbon tool steel	
22	Snap ring	Carbon tool steel	
23	Scraper (B-series rod)	NBR	
24	Scraper (C-series rod)	NBR	
25	Rod seal (B-series rod)	NBR	
26	Rod seal (C-series rod)	NBR	
27	Piston seal	NBR	
28	Cylinder tube gasket	NBR	
29	Holder gasket	NBR	
30	Cushion valve seal	NBR	
31	Cushion seal	-	
32	Gasket	NBR	
33	Magnet	-	

Replacement parts: Seal kits

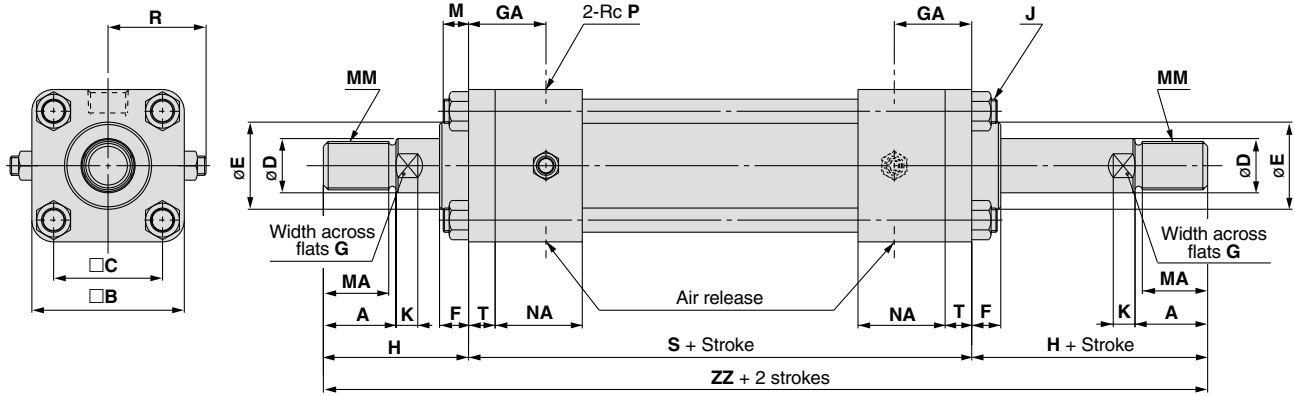
Bore size (mm)	Seal kit no.		Kit components
	B-series rod	C-series rod	
32	CH2EW32B-PS	CH2EW32C-PS	Nos. 23 through 32 from the chart at left
	CH2FW32B-PS	CH2FW32C-PS	
40	CH2EW40B-PS	CH2EW40C-PS	
	CH2FW40B-PS	CH2FW40C-PS	
50	CH2EW50B-PS	CH2EW50C-PS	
	CH2FW50B-PS	CH2FW50C-PS	
63	CH2EW63B-PS	CH2EW63C-PS	
	CH2FW63B-PS	CH2FW63C-PS	
80	CH2EW80B-PS	CH2EW80C-PS	
	CH2FW80B-PS	CH2FW80C-PS	
100	CH2EW100B-PS	CH2EW100C-PS	
	CH2FW100B-PS	CH2FW100C-PS	

* Seal kits consist of items 23 through 32 and can be ordered using the seal kit number for each bore size.

Series CH2EW/CH2FW

Dimensions

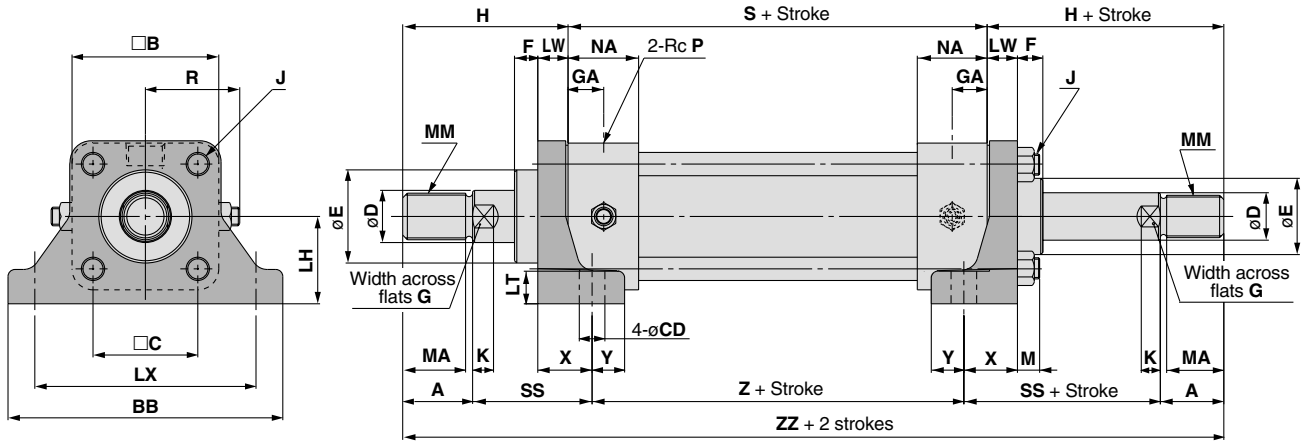
Basic type: CH2EWB, CH2FWB



Bore size (mm)	Stroke range (mm)	B	C	F	GA	J	M	NA	P	R	S	T
32	25 to 800	58	38	16	32	M10 x 1.25	11	37	3/8	39	158	11
40	25 to 800	65	45	12	32	M10 x 1.25	11	36	3/8	42	158	11
50	25 to 800	76	52	15	40	M10 x 1.25	11	43	1/2	46	176	13
63	25 to 800	90	63	15	42	M12 x 1.5	14	43	1/2	52	186	15
80	25 to 1000	110	80	17	40	M16 x 1.5	16	44	3/4	65	202	18
100	25 to 1000	135	102	19	42	M18 x 1.5	18	44	3/4	75	212	20

Bore size (mm)	B-series rod										C-series rod							
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ
32	M16 x 1.5	25	22	18	34	7	14	55	268	—	—	—	—	—	—	—	—	—
40	M20 x 1.5	30	27	22.4	40	9	19	60	278	M16 x 1.5	25	22	18	36	7	14	55	268
50	M24 x 1.5	35	32	28	46	11	24	65	306	M20 x 1.5	30	27	22.4	40	9	19	60	296
63	M30 x 1.5	45	42	35.5	55	13	30	80	346	M24 x 1.5	35	32	28	46	11	24	70	326
80	M39 x 1.5	60	57	45	65	15	41	95	392	M30 x 1.5	45	42	35.5	55	13	30	80	362
100	M48 x 1.5	75	72	56	80	16	50	115	442	M39 x 1.5	60	57	45	65	15	41	100	412

Transaxial foot type: CH2EWLA, CH2FWLA



Bore size (mm)	Stroke range (mm)	BB	B	C	CD	F	GA	J	LH	LT	LW	LX	M	NA	P	R	S	SS	X	Y	Z		
																						MM	A
32	25 to 800	109	58	38	11	14	21	M10 x 1.25	35	±0.15	14	13	88	±0.18	11	37	3/8	39	136	57	29	14	104
40	25 to 800	118	65	45	11	10	21	M10 x 1.25	37.5		14	13	95		11	36	3/8	42	136	57	29	14	104
50	25 to 800	145	76	52	14	10	27	M10 x 1.25	45		17	18	115		11	43	1/2	46	150	60	35	18	116
63	25 to 800	165	90	63	18	10	27	M12 x 1.5	50	±0.20	19	20	132	±0.20	14	43	1/2	52	156	71	41	19	114
80	25 to 1000	190	110	80	18	11	22	M16 x 1.5	60		24	24	155		16	44	3/4	65	166	74	45	20	124
100	25 to 1000	230	135	102	22	11	22	M18 x 1.5	71	±0.25	27	28	190	±0.23	18	44	3/4	75	172	85	53	22	122

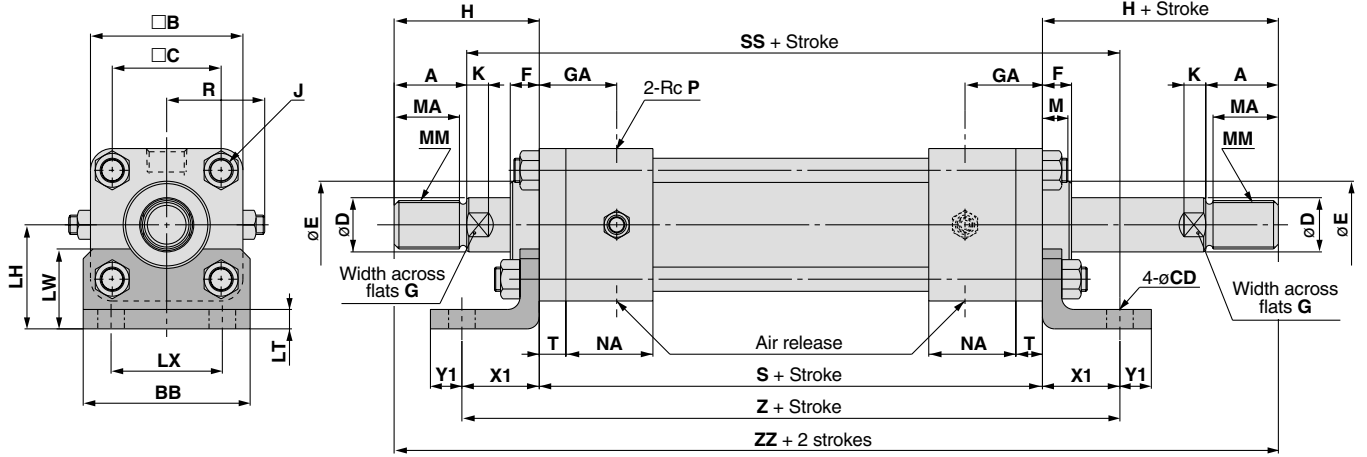
Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	-0.025 -0.064	7	14	66	268	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40		9	19	71	278	M16 x 1.5	25	22	18	36	7	14	66	268	
50	M24 x 1.5	35	32	28	46	11	24	78	306	M20 x 1.5	30	27	22.4	40	9	19	73	296		
63	M30 x 1.5	45	42	35.5	55	-0.030 -0.076	13	30	95	346	M24 x 1.5	35	32	28	46	11	24	85	326	
80	M39 x 1.5	60	57	45	65		15	41	113	392	M30 x 1.5	45	42	35.5	55	13	30	98	362	
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	135	442	M39 x 1.5	60	57	45	65	15	41	120	412	

Series CH2EW/CH2FW

Dimensions

Axial foot type: CH2EWLB, CH2FWLB



(mm)

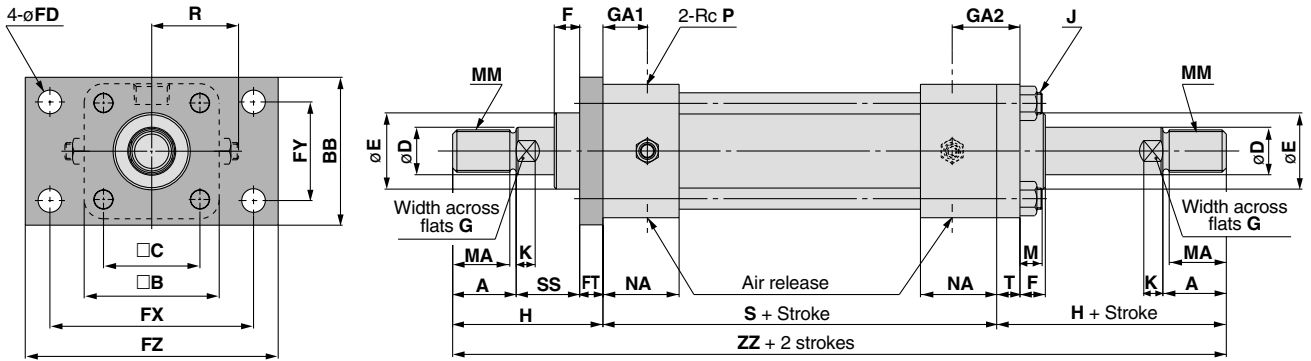
Bore size (mm)	Stroke range (mm)	BB	B	C	CD	F	GA	J	LH	LT	LW	LX	M	NA	P	R	S	SS	T	X1	Y1	Z		
32	25 to 800	62	58	38	11	16	32	M10 x 1.25	40	±0.15	8	30	40	11	37	3/8	39	158	220	11	32	13	222	
40	25 to 800	69	65	45	11	12	32	M10 x 1.25	43		8	33	46	±0.13	11	36	3/8	42	158	220	11	32	13	222
50	25 to 800	85	76	52	14	15	40	M10 x 1.25	50		8	37	58	±0.15	11	43	1/2	46	176	241	13	35	15	246
63	25 to 800	98	90	63	18	15	42	M12 x 1.5	60	±0.15	10	45	65	14	43	1/2	52	186	263	15	42	18	270	
80	25 to 1000	118	110	80	18	17	40	M16 x 1.5	72		12	50	87	±0.18	16	44	3/4	65	202	287	18	50	20	302
100	25 to 1000	150	135	102	22	19	42	M18 x 1.5	85	±0.25	12	55	109	±0.18	18	44	3/4	75	212	307	20	55	23	322

Rod series

(mm)

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	55	268	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	-0.025	9	19	60	278	M16 x 1.5	25	22	18	36	7	14	55	268	
50	M24 x 1.5	35	32	28	46	-0.064	11	24	65	306	M20 x 1.5	30	27	22.4	40	9	19	60	296	
63	M30 x 1.5	45	42	35.5	55	-0.030	13	30	80	346	M24 x 1.5	35	32	28	46	11	24	70	326	
80	M39 x 1.5	60	57	45	65	-0.076	15	41	95	392	M30 x 1.5	45	42	35.5	55	13	30	80	362	
100	M48 x 1.5	75	72	56	80	-0.036 -0.090	16	50	115	442	M39 x 1.5	60	57	45	65	15	41	100	412	

Front rectangular flange type: CH2EWFA, CH2FWFA



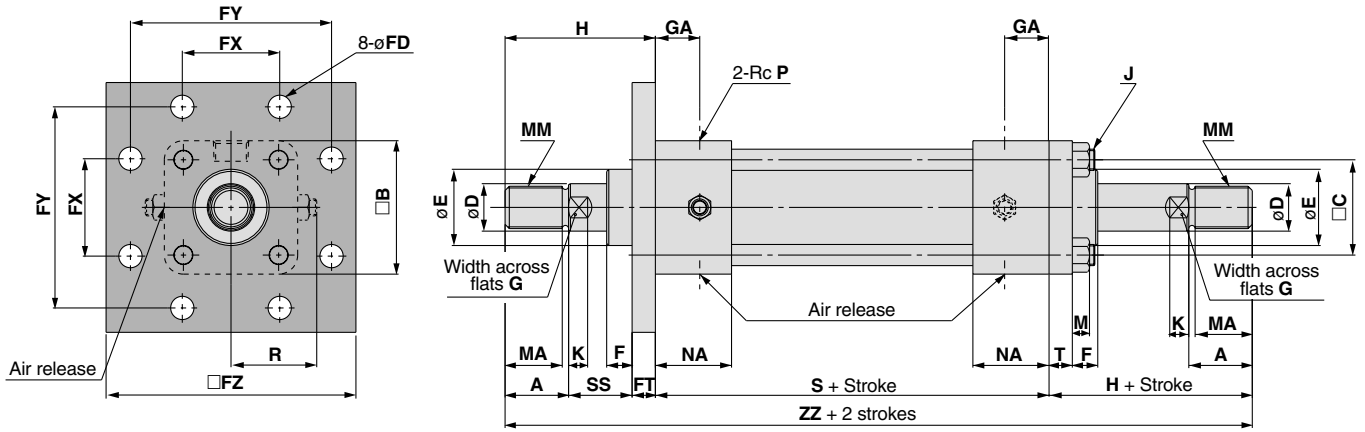
Bore size (mm)	Stroke range (mm)	BB	B	C	F	FD	FT	FX		FY		FZ	GA1	GA2	J	M	NA	P	R	S	SS	T
								88	95	115	132											
32	25 to 800	62	58	38	16	11	11	88	±0.13	40	±0.13	109	21	32	M10 x 1.25	11	37	3/8	39	136	30	11
40	25 to 800	69	65	45	12	11	11	95	±0.18	46	±0.13	118	21	32	M10 x 1.25	11	36	3/8	42	136	30	11
50	25 to 800	85	76	52	15	14	13	115	±0.15	58	±0.15	145	27	40	M10 x 1.25	11	43	1/2	46	150	30	13
63	25 to 800	98	90	63	15	18	15	132	±0.2	65	±0.15	165	27	42	M12 x 1.5	14	43	1/2	52	156	35	15
80	25 to 1000	118	110	80	17	18	18	155	±0.2	87	±0.18	190	22	40	M16 x 1.5	16	44	3/4	65	166	35	18
100	25 to 1000	150	135	102	19	22	20	190	±0.23	109	±0.18	230	22	42	M18 x 1.5	18	44	3/4	75	172	40	20

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	66	268	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	9	19	71	278	M16 x 1.5	25	22	18	36	7	14	66	268		
50	M24 x 1.5	35	32	28	46	11	24	78	306	M20 x 1.5	30	27	22.4	40	9	19	73	296		
63	M30 x 1.5	45	42	35.5	55	13	30	95	346	M24 x 1.5	35	32	28	46	11	24	85	326		
80	M39 x 1.5	60	57	45	65	15	41	113	392	M30 x 1.5	45	42	35.5	55	13	30	98	362		
100	M48 x 1.5	75	72	56	80	16	50	135	442	M39 x 1.5	60	57	45	65	15	41	120	412		

Series CH2EW/CH2FW

Dimensions

Square flange type: CH2EWFC, CH2FWFC

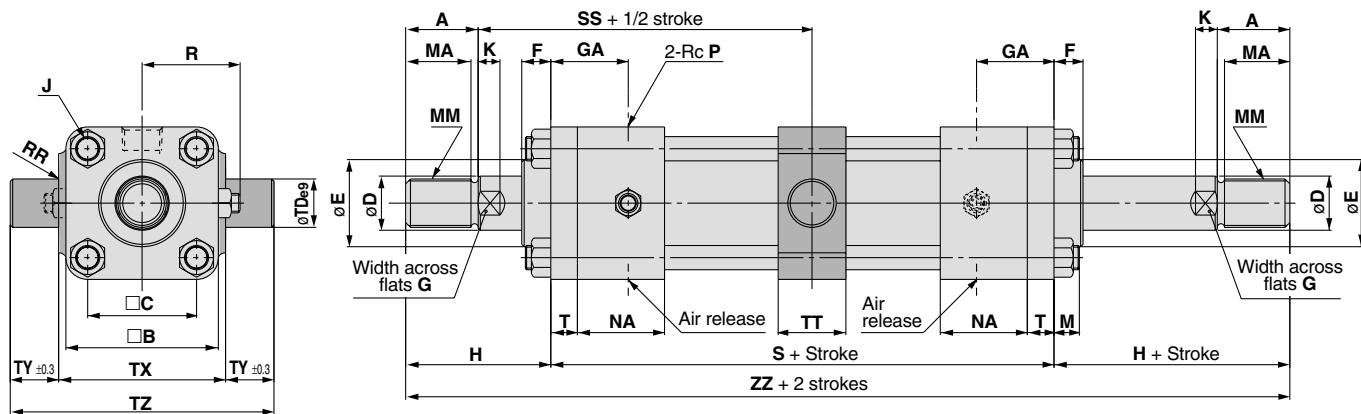


Bore size (mm)	Stroke range (mm)	B	C	F	FD	FT	FX		FY		FZ	GA	J	M	NA	P	R	S	SS	T
							±0.2	±0.13	±0.18	±0.2										
32	25 to 800	58	38	16	11	11	40	88	109	21	M10 x 1.25	11	37	3/8	39	136	30	11		
40	25 to 800	65	45	12	11	11	46	95	118	21	M10 x 1.25	11	36	3/8	42	136	30	11		
50	25 to 800	76	52	15	14	13	58	115	145	27	M10 x 1.25	11	43	1/2	46	150	30	13		
63	25 to 800	90	63	15	18	15	65	132	165	27	M12 x 1.5	14	43	1/2	52	156	35	15		
80	25 to 1000	110	80	17	18	18	87	155	190	22	M16 x 1.5	16	44	3/4	65	166	35	18		
100	25 to 1000	135	102	19	22	20	109	190	230	22	M18 x 1.5	18	44	3/4	75	172	40	20		

Rod series

Bore size (mm)	B-series rod										C-series rod							
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ
32	M16 x 1.5	25	22	18	34	7	14	66	268	—	—	—	—	—	—	—	—	—
40	M20 x 1.5	30	27	22.4	40	9	19	71	278	M16 x 1.5	25	22	18	36	7	14	66	268
50	M24 x 1.5	35	32	28	46	11	24	78	306	M20 x 1.5	30	27	22.4	40	9	19	73	296
63	M30 x 1.5	45	42	35.5	55	13	30	95	346	M24 x 1.5	35	32	28	46	11	24	85	326
80	M39 x 1.5	60	57	45	65	15	41	113	392	M30 x 1.5	45	42	35.5	55	13	30	98	362
100	M48 x 1.5	75	72	56	80	16	50	135	442	M39 x 1.5	60	57	45	65	15	41	120	412

Center trunnion type: CH2EWTC, CH2FWTC



Bore size (mm)	Stroke range (mm)	B	C	F	GA	J	M	NA	P	R	RR	S	SS	T	TD _{e9}	TT	TX	TY	TZ		
																				TD _{e9}	TT
32	25 to 800	58	38	16	32	M10 x 1.25	11	37	3/8	39	2	158	113	11	20	-0.040	28	58	0	20	98
40	25 to 800	65	45	12	32	M10 x 1.25	11	36	3/8	42	2	158	113	11	20	-0.092	28	69	-0.3	20	109
50	25 to 800	76	52	15	40	M10 x 1.25	11	43	1/2	46	2.5	176	121	13	25	-0.050	33	85	0	25	135
63	25 to 800	90	63	15	42	M12 x 1.5	14	43	1/2	52	2.5	186	132	15	31.5	-0.112	43	98	-0.35	31.5	161
80	25 to 1000	110	80	17	40	M16 x 1.5	16	44	3/4	65	2.5	202	146	18	31.5	-0.112	43	118	-0.35	31.5	181
100	25 to 1000	135	102	19	42	M18 x 1.5	18	44	3/4	75	3	212	156	20	40	-0.112	53	145	-0.4	40	225

Rod series

Bore size (mm)	B-series rod										C-series rod									
	MM	A	MA	D	E	K	G	H	ZZ	MM	A	MA	D	E	K	G	H	ZZ		
32	M16 x 1.5	25	22	18	34	7	14	55	268	—	—	—	—	—	—	—	—	—		
40	M20 x 1.5	30	27	22.4	40	9	19	60	278	M16 x 1.5	25	22	18	36	7	14	55	268		
50	M24 x 1.5	35	32	28	46	11	24	65	306	M20 x 1.5	30	27	22.4	40	9	19	60	296		
63	M30 x 1.5	45	42	35.5	55	13	30	80	346	M24 x 1.5	35	32	28	46	11	24	70	326		
80	M39 x 1.5	60	57	45	65	15	41	95	392	M30 x 1.5	45	42	35.5	55	13	30	80	362		
100	M48 x 1.5	75	72	56	80	16	50	115	442	M39 x 1.5	60	57	45	65	15	41	100	412		