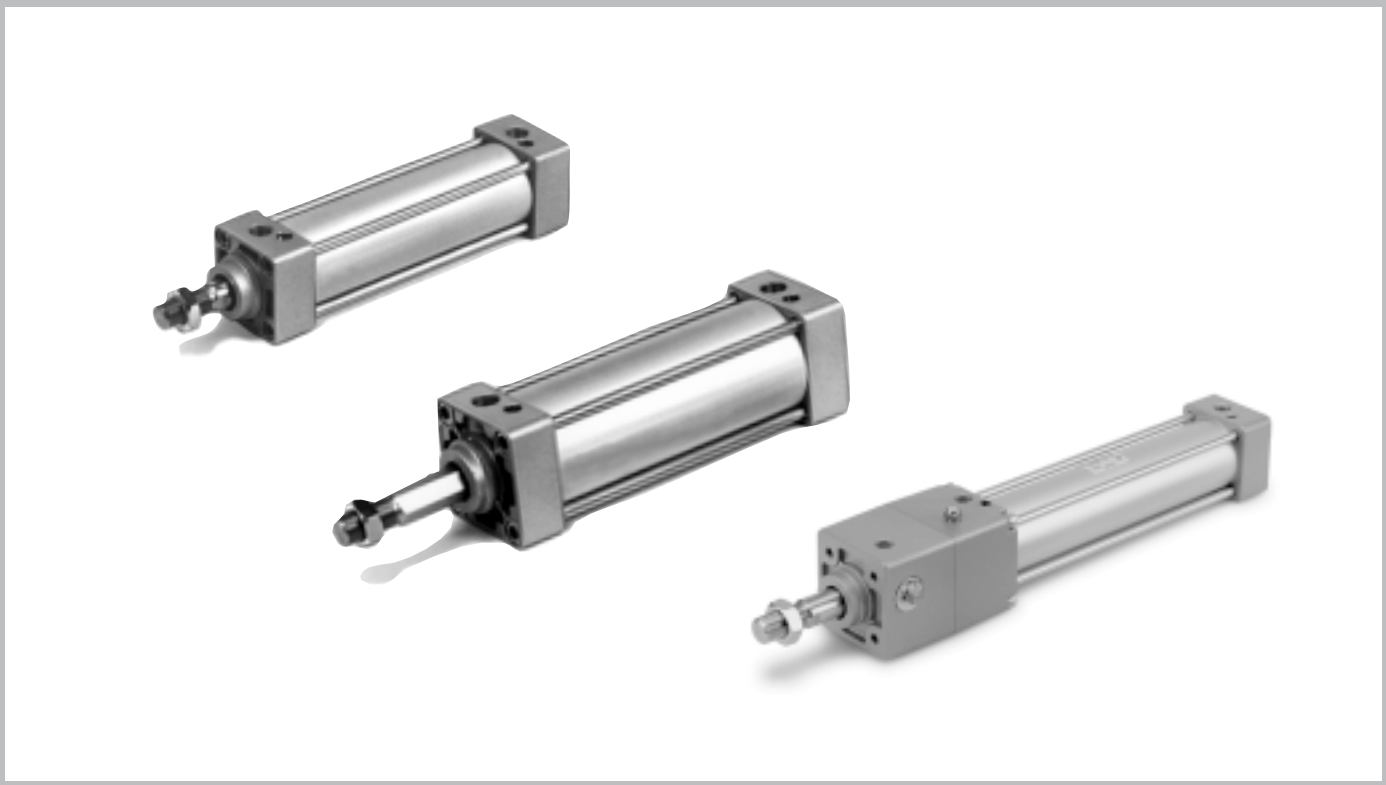


ISO/VDMA Cylinder

Series C95

ø32, ø40, ø50, ø63, ø80, ø100, ø125, ø160, ø200, ø250

Conforming to ISO 6431/CETOP RP43P/VDMA 24562



Model Selection

Execution	Model	Bore Size						Adjustable Stroke End Cushioning	Options Piston Rod			
		32	40	50	63	80	100		Standard Hard Chrome	W	R	K
Standard Type	C95 SB	●	●	●	●	●	●	●	●	○	○	○
	C95 SDB	●	●	●	●	●	●	●	●	○	○	○
With Mounting Centre Trunnion	C95 ST	●	●	●	●	●	●	●	●	○	○	–
	C95 SDT	●	●	●	●	●	●	●	●	○	○	–
Non-Rotating Piston Rod	C95 KB	●	●	●	●	●	●	●	–	○	●	–
	C95 KDB	●	●	●	●	●	●	●	–	○	●	–
Non Rotating Piston Rod with Centre Trunnion	C95 KT	●	●	●	●	●	●	●	–	○	●	–
	C95 KDT	●	●	●	●	●	●	●	–	○	●	–
With Lock	C95 NB	●	●	●	●	●	●	●	●	○	–	–
	C95 NDB	●	●	●	●	●	●	●	●	○	–	–
Non Rotating Piston Rod with Centre Trunnion	C95 NT	●	●	●	●	●	●	●	●	○	–	–
	C95NDT	●	●	●	●	●	●	●	●	○	–	–
With Positioner	C95PB	–	–	●	●	●	●	●	●	–	–	–
	C95 PDB	–	–	●	●	●	●	●	●	–	–	–
Low Friction Cylinder	C95 QB$^{-CA}_{-CB}$	●	●	●	●	●	●	–	●	–	○	○
	C95 QDB$^{-CA}_{-CB}$	●	●	●	●	●	●	–	●	–	○	○
Low Friction Cylinder with Centre Trunnion	C95 QT$^{-CA}_{-CB}$	●	●	●	●	●	●	–	●	–	○	–
	C95 QDT$^{-CA}_{-CB}$	●	●	●	●	●	●	–	●	–	○	–

W = Double/through rod
R = Stainless Steel Piston Rod
K = Stainless &Acid-Proof Piston Rod & Nickel Plated Tie Rods

○ Options
● Standard

ISO Cylinder/Standard: Double Acting

Series C95

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95SD [B] [32] — [100] [W] — [A53] [S]

Built-in magnet

Mounting

B	Basic/Without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis
T	Centre trunnion

Bore size

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

Auto switch

—	Without auto switch

* Refer to table below for selection of applicable auto switch.

Rod Specifications

	Hard chromed rod as standard
W	Double/through rod
R	Stainless steel piston rod
K	stainless steel and acid-proof piston rod
F	Rod boot

Stroke (mm)

Refer to standard stroke table on p. 6-4

Number of auto switches

—	2
S	1
3	3
n	n

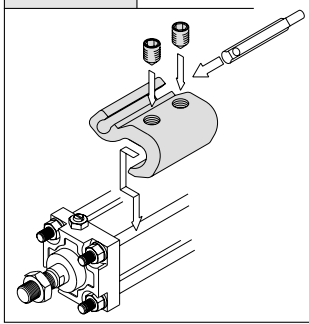
Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage: Wiring (Output)	DC		AC	Auto switch model	Lead wire (m)* 0.5 (—)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	**A56**	●	●	—	IC	—	ø32,ø40 BT-03
				2 wire	24V	12V	—	**A53**	●	●	●	—	Relay PLC	
						5V,12V	100V,200V	**A54**	●	●	●			
			No			5V,12V	—	**A67**	●	●	—	IC		
						12V	200V or less	**A64**	●	●	—			
	Diagnosis indication (2 colour)		Yes			—	—	**A59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**F59**	●	●	○	IC	Relay PLC	ø50,ø63 BT-05
				3 wire (PNP)				**F5P**	●	●	○			
				2 wire	—	—	100V,200V	**J51**	●	●	○	—		
	Diagnosis indication (2 colour)				24V	12V	—	**J59**	●	●	○			
				3 wire (NPN)		5V,12V		**F59W**	●	●	○	IC		ø80,ø100 BT-06
				3 wire (PNP)				**F5PW**	●	●	○			
				2 wire		12V		**J59W**	●	●	○	—		
	Water resistant (2 colour)							**F5BA**	—	●	○			
	With timer			3 wire (NPN)		5V,12V		**F5NT**	—	●	○	IC		
	Diagnosis output (2 colour)							**F59F**	●	●	○			
	Latch diagnosis output (2 colour)			4 wire (NPN)		—		**F5LF**	●	●	○	—		

Table ①

Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



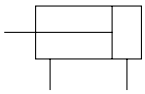
Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage: DC		AC	Auto switch model: Electrical entry direction: Vertical	Lateral	Lead wire length (m) Note): 0.5 (Nil)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	**Z76**	●	●	—	IC circuit	—	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	**Z73**	●	●	●	—	Relay PLC	
			No			5V, 12V	100V or less	—	**Z80**	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	IC circuit	Relay PLC	ø50,ø63 BMB4-050
				3 wire (PNP)				**Y7PV**	**Y7P**	●	●	○			
				2 wire		12V		**Y69B**	**Y59B**	●	●	○	—		
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V, 12V		**Y7NWV**	**Y7NW**	●	●	○	IC circuit		ø80,ø100 BA4-063
				3 wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○			
				2 wire		12V		**Y7BWV**	**Y7BW**	●	●	○	—		
	Water resistant (2 colour indicator)							—	**Y7BA**	—	●	—			
	——	Connector and Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**M9NV**	**M9N**	●	●	○	IC circuit	Relay PLC	See Table ①
				3 wire (PNP)				**M9PV**	**M9P**	●	●	○			
				2 wire		12V		**M9BV**	**M9B**	●	●	○			

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

○: Manufactured upon receipt of order.



ISO Symbol
Double acting



Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100
Action	Double acting					
Fluid	Air					
Proof pressure	1.5MPa					
Max. operating pressure	1.0MPa					
Min. operating pressure	0.05MPa					
Ambient and fluid temperature	Without magnet –10 to 70°C (No freezing)					
	With magnet –10 to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 1000mm/s					
Allowable stroke tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$,1001 to 1500: $^{+1.8}_{0}$					
Cushion	Both ends (Air cushion)					
Thread tolerance	JIS class 2					
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
Mounting	Basic, axial foot, front flange, rear flange, Flotating joint, single rear clevis, double rear clevis, center trunnion					

Minimum Strokes for Auto Switch Mounting

Refer to p.6-32 for "Minimum Strokes for Auto Switch Mounting".

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. * stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1400
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1500

Intermediate strokes are available.
Please consult with SMC for longer strokes.

Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	**Foot**(1)	L5032	L5040	L5050	L5063	L5080	L5100
F,G	**Flange**	F5032	F5040	F5050	F5063	F5080	F5100
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
ES	**Angled rear clevis with ball joint**	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100
E	**Angled rear clevis**	E5032	E5040	E5050	E5063	E5080	E5100
C95-S	**Trunnion pivot bracket**	C95-S03	C95-S04	C95-S04	C95-S06	C95-S06	C95-S10
GKM	**Rod clevis**	GKM10-20	GKM12-24	GKM16-32	GKM16-32	GKM20-40	GKM20-40
KJ	**Piston rod ball joint**	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D
JA	**Floating joint**	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) C95-S: Set of 2 pcs.
Note 4) GKM according to ISO 8140
Note 5) KJ according to ISO 8139
Note 6) Piston rod nut is standard

Theoretical Force

(Unit : N) OUT IN

Bore size (mm)	Rod diameter (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
32	12	OUT	804	161	241	322	402	482	563	643	724	804
		IN	691	138	207	276	346	415	484	553	622	691
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	989	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7068	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

Note) Theoretical force(N) = Pressure (MPa) X Piston area (mm^2)

Weight Table

(kg)

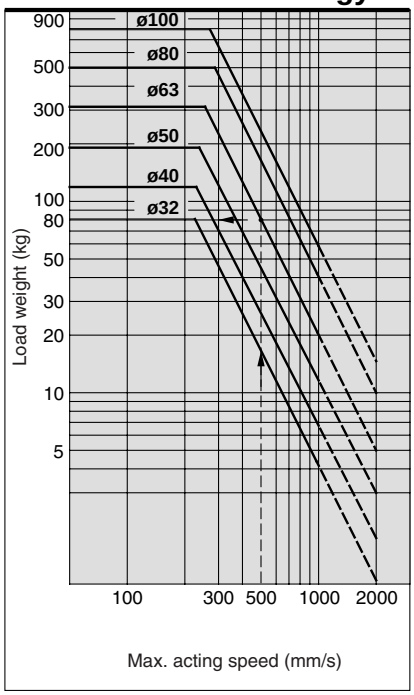
Bore size (mm)		**32**	**40**	**50**	**63**	**80**	**100**
Basic weight	Basic	0.56	0.84	1.39	1.91	3.22	4.24
	Foot	0.16	0.20	0.38	0.46	0.89	1.09
	Flange	0.20	0.23	0.47	0.58	1.30	1.81
	Single clevis	0.16	0.23	0.37	0.60	1.07	1.73
	Double clevis	0.20	0.32	0.45	0.71	1.28	2.11
	Trunnion	0.15	0.26	0.34	0.56	1.03	1.71
Additional weight per 50 stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56
Accessories	Single rod clevis	0.15	0.23	0.26	0.26	0.60	0.83
	Double rod clevis (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

Calculation example: C95SD40-100

- Basic weight ····· 0.84 (Basic, ø40)
- Mounting ····· 0.32 (Double clevis)
- Additional weight ··· 0.16/50 stroke
- Cylinder stroke ····· 100 stroke

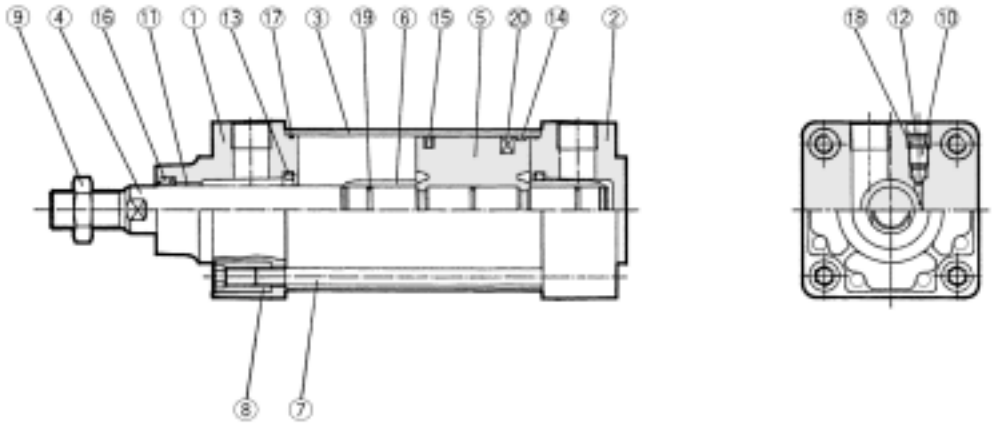
0.84+0.16 X 100/50+0.32=1.48kg

Allowable Kinetic Energy



Example: Load limit at rod end when air cylinder ø63 is actuated with max. actuating speed 500mm/s. See the intersection of lateral axis 500mm/s and ø63 line, and extend the intersection to left. Thus the allowable load is 80kg.

Construction



Component Parts

No.	Description	Material	Note
①	**Rod cover**	Aluminum die cast	
②	**Head cover**	Aluminum die cast	
③	**Cylinder tube**	Aluminum die cast	
④	**Piston rod**	C45 anodised steel	
⑤	**Piston**	Aluminum die cast	
⑥	**Cushion ring**	Brass	
⑦	**Tie rod**	Steel	(chromated)
⑧	**Tie rod nut**	Steel	(chromated)
⑨	**Mounting nut**	Steel	(chromated)
⑩	**Cushion adjustment screw**	Steel	(chromated)
⑪	**Bushing**	Bronze bush	
⑫	**Serrated washer**	Steel	(chromated)
⑬	**Cushion seal**	PUR	

No.	Description	Material	Note
⑭	**Wearing**	Resin	
⑮	**Piston seal**	NBR	
⑯	**Rod seal/Gasket**	NBR	
⑰	**Cylinder tube gasket**	NBR	
⑱	**Cushion screw seal**	NBR	
⑲	**Piston gasket**	NBR	
⑳	**Magnet ring**		

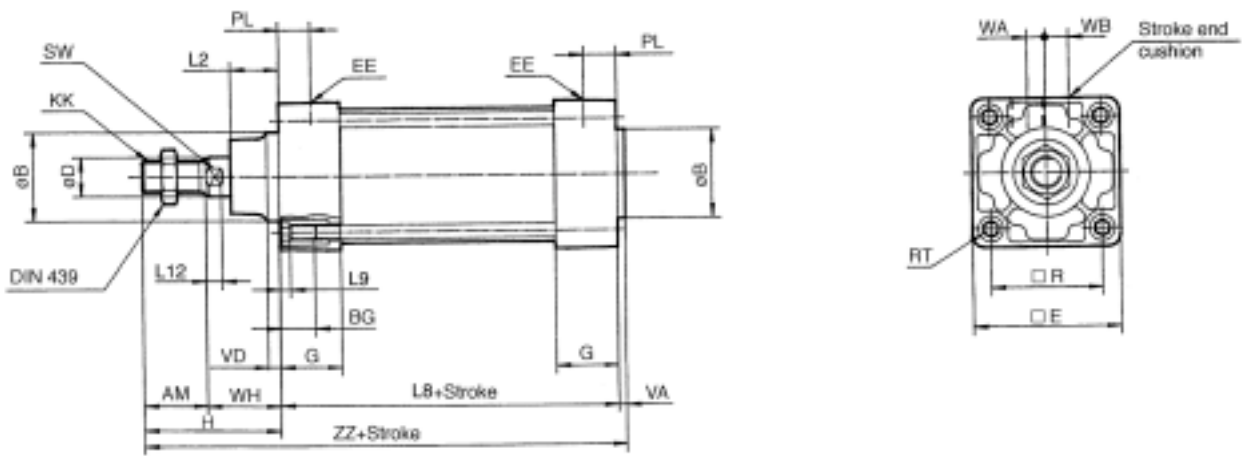
Seal Kits

Bore size (mm)	Kit No.	Contents
32	CS95-32	Kits include items 13 to 17 for ø32, 12 to 18 for ø40 to ø100 from the table above.
40	CS95-40	
50	CS95-50	
63	CS95-63	
80	CS95-80	
100	CS95-100	

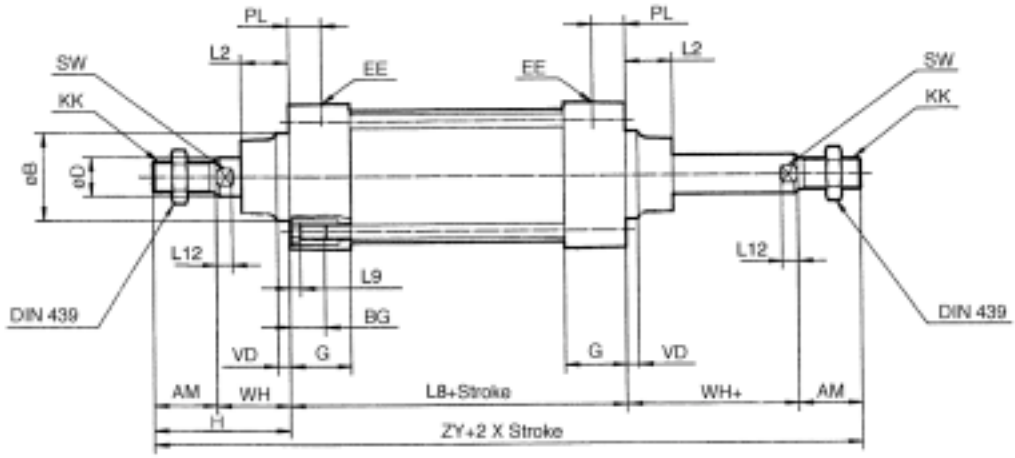
∗ Seal kits consist of items 13 to 17 for ø32, items 12 to 18 for ø40 to ø100 contained in one kit, and can be ordered using the order number for each respective tube bore size.

Without Mounting Bracket

C95SBø-Stroke



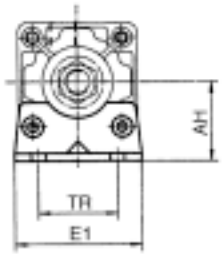
C95SBø-Stroke W

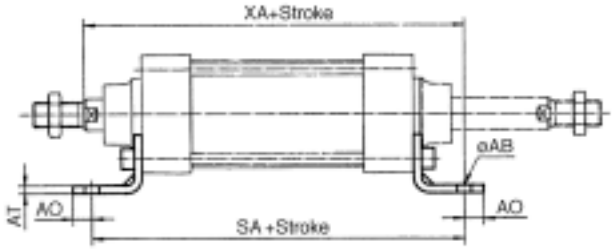


Bore (mm)	AM	øB e11	øD	EE	PL	RT	L12	KK	SW	G	BG	L8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	L2	L9	H
32	22	30	12	G1/8	13	M6	6	M10 X 1.25	10	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4	48
40	24	35	16	G1/4	14	M6	6.5	M12 X 1.25	13	27	16	105	4	4	4	9	30	163	213	52	38	17	4	54
50	32	40	20	G1/4	15.5	M8	8	M16 X 1.5	16	31.5	16	106	6	4	5	10.5	37	179	244	65	46.5	24	5	69
63	32	45	20	G3/8	16.5	M8	8	M16 X 1.5	16	31.5	16	121	6	4	9	12	37	194	259	75	56.5	24	5	69
80	40	45	25	G3/8	19	M10	10	M20 X 1.5	21	38	16	128	8	4	11.5	14	46	218	300	95	72	30	5	86
100	40	55	30	G1/2	19	M10	10	M20 X 1.5	21	38	16	138	8	4	17	15	51	233	320	114	89	32	5	91

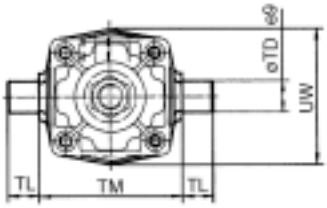
With Mounting Bracket

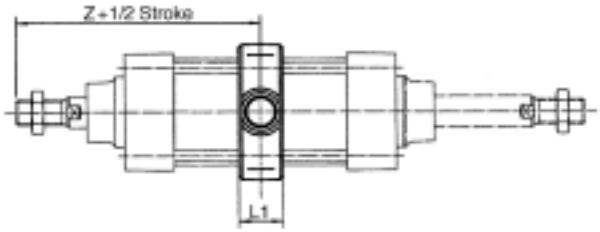
Foot L



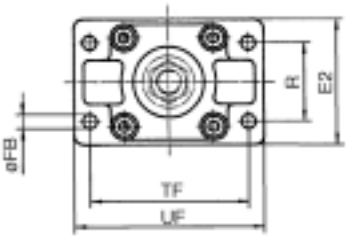


Centre Trunnion T

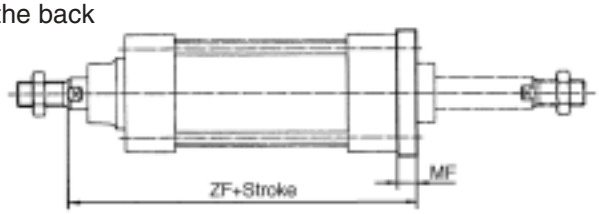




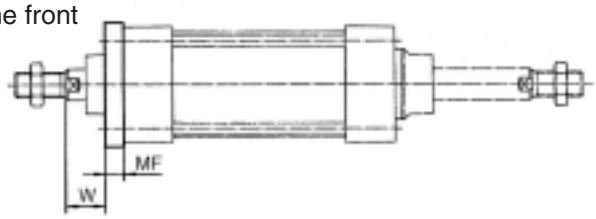
Flange F



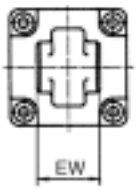
Mounting at the back

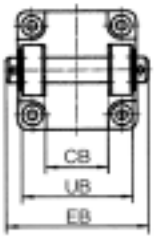


Mounting at the front



Rear single clevis C Rear double clevis D

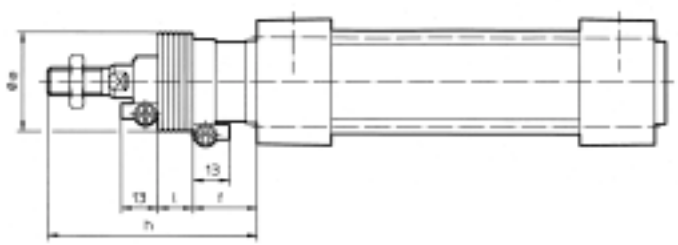






Bore (mm)	E1	R	W	MF	ZF	øFB	CD	EB	L	XD	UB	CB	EW	MR	TR	AO	AT	XA	SA	AH	øAB	L1	Z	TL	øTD	TM	UW	TF	UF	E2
32	48	32	16	10	130	7	10	65	12	142	45	26	26	9.5	32	10	4.5	144	142	32	7	17	95	12	12	50	49	64	79	50
40	55	36	20	10	145	9	12	75	15	160	52	28	28	12	36	11	4.5	163	161	36	10	22	106.5	16	16	63	58	72	90	55
50	68	45	25	12	155	9	12	80	15	170	60	32	32	12	45	12	5.5	175	170	45	10	22	122	16	16	75	71	90	110	70
63	80	50	25	12	170	9	16	90	20	190	70	40	40	16	50	12	5.5	190	185	50	10	28	129.5	20	20	90	87	100	120	80
80	100	63	30	16	190	12	16	110	20	210	90	50	50	16	63	14	6.5	215	210	63	12	34	150	20	20	110	110	126	153	100
100	120	75	35	16	205	14	20	140	25	230	110	60	60	20	75	16	6.5	230	220	71	14.5	40	160	25	25	132	136	150	178	120

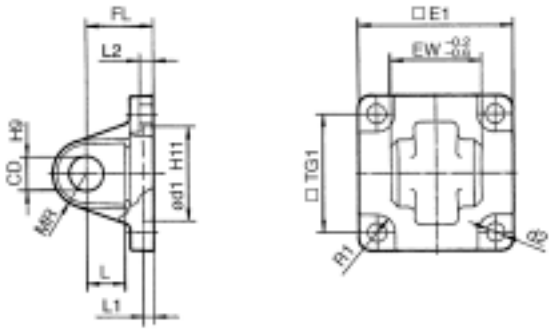
Rod boot (gaiter)



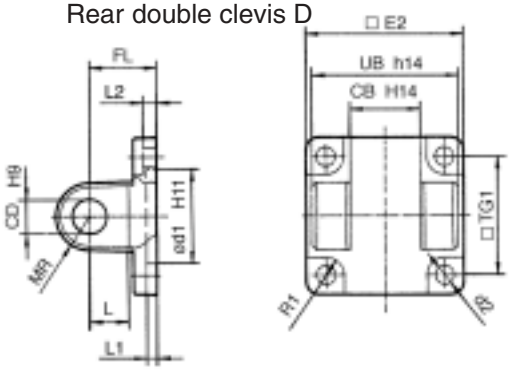
Bore (mm)	e max	f	l					h				
			Stroke 1-50	Stroke 51-100	Stroke 101-150	Stroke 151-200	Stroke 201-300	Stroke 1-50	Stroke 51-100	Stroke 101-150	Stroke 151-200	Stroke 201-300
32	42	23	12.5	25	37.5	50	75	75	88	100	113	138
40	43	23	12.5	25	37.5	50	75	75	88	100	113	138
50	52	25	12.5	25	37.5	50	75	87	100	112	125	150
63	52	25	12.5	25	37.5	50	75	87	100	112	125	150
80	58	29	12.5	25	37.5	50	75	103	116	128	141	166
100	65	29	12.5	25	37.5	50	75	103	116	128	141	166

Accessories

Rear single clevis C

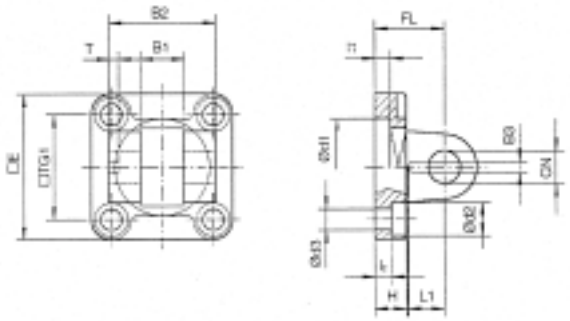


Rear double clevis D



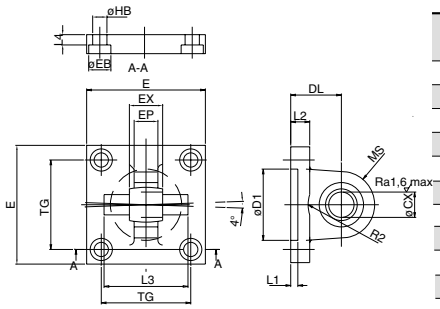
Bore (mm)	□E1	EW	□TG1	FL	L1	L	L2	ød1	CD	MR	d2	R1	□E2	UB	CB
32	45	26	32.5	22	5	12	5.5	30	10	9.5	6.6	6.5	48	45	26
40	51	28	38	25	5	15	5.5	35	12	12	6.6	6.5	56	52	28
50	64	32	46.5	27	5	15	6.5	40	12	12	9	8.5	64	60	32
63	74	40	56.5	32	5	20	6.5	45	16	16	9	8.5	75	70	40
80	94	50	72	36	5	20	10	45	16	16	11	11	95	90	50
100	113	60	89	41	5	25	10	55	20	20	11	12	115	110	60

Rear Sngle Clevis DS



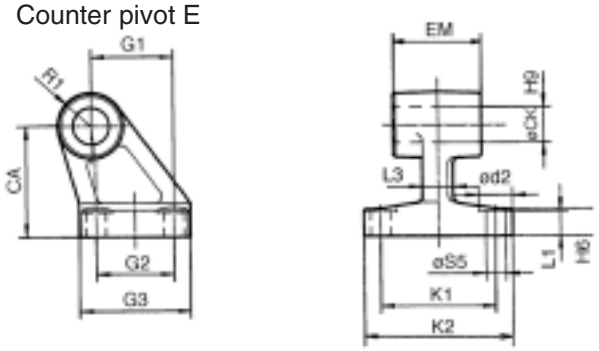
Bore (mm)	□E	B1	B2	B3	□TG1	T	L1	L3	l_1	l_2	FL	H	Ød1	Ød2	Ød3	CN	XD
32	45	14	34	3.3	32.5	3	11.5	41	5	5.5	22	10	30	10.5	6.6	10	142
40	55	16	40	4.3	38	4	12	48	5	5.5	25	10	35	11	6.6	12	160
50	65	21	45	4.3	46.5	4	14	54	5	6.5	27	10	40	15	9	16	170
63	75	21	51	4.3	56.5	4	14	60	5	6.5	32	12	45	15	9	16	190
80	95	25	65	4.3	72	4	16	75	5	10	36	16	45	18	11	20	210
100	115	25	75	6.3	89	4	16	85	5	10	41	16	55	18	11	20	230

Rear Sngle Clevis CS



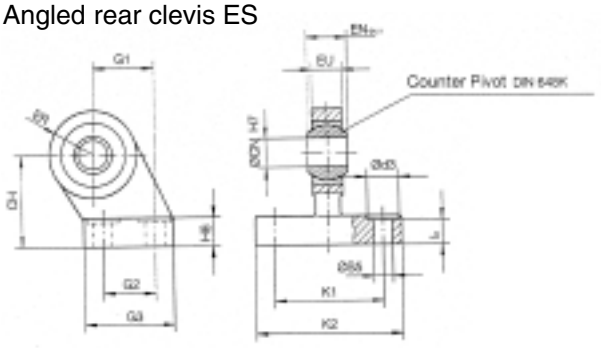
Part No.	Bore (mm)	E	TG	EX	DL	L1	L2	MS	L3	EB	HB	R2	CX	D1	L4	EP
CS5032	**32**	48	32.5	14	22	5	10	16	36	11	6.6	12.5	10	30	5.5	10
CS5040	**40**	56	38	16	25	5	10	16	42	11	6.6	14.5	12	35	5.5	11.5
CS5050	**50**	64	46.5	21	27	5	10	20	48	15	9	19.5	16	40	6.5	14.5
CS5063	**63**	75	56.5	21	32	5	12	22	55	15	9	19.5	16	45	6.5	14.5
CS5080	**80**	95	72	25	36	5	14	26	70	18	11	24.5	20	45	10	17.5
CS5100	**100**	115	89	25	41	5	16	26	80	18	11	24.5	20	55	10	17.5
CS5125	**125**	140	110	37	50	7.5	20	38	100	20	13.5	32.5	30	60	10	24.5
CS5160	**160**	178	140	43	55	7.5	20	40	125	25	17.5	38.5	35	65	10	29.5
CS5200	**200**	225	175	43	60	7.5	25	42	125	25	17.5	40.5	35	75	11	29.5
CS5250	**250**	282	220	49	70	11.5	25	50	130	31	22	44.5	40	90	11	34.5

Counter pivot E



Bore (mm)	ød2	øCK	øS5	K1	K2	L3	G1	L1	G2	EM	G3	CA	H6	R1
32	11	10	6.6	38	51	10	21	7	18	26	31	32	8	10
40	11	12	6.6	41	54	10	24	9	22	28	35	36	10	11
50	15	12	9	50	65	12	33	11	30	32	45	45	12	12
63	15	16	9	52	67	14	37	11	35	40	50	50	12	15
80	18	16	11	66	86	18	47	12.5	40	50	60	63	14	15
100	18	20	11	76	96	20	55	13.5	50	60	70	71	15	19

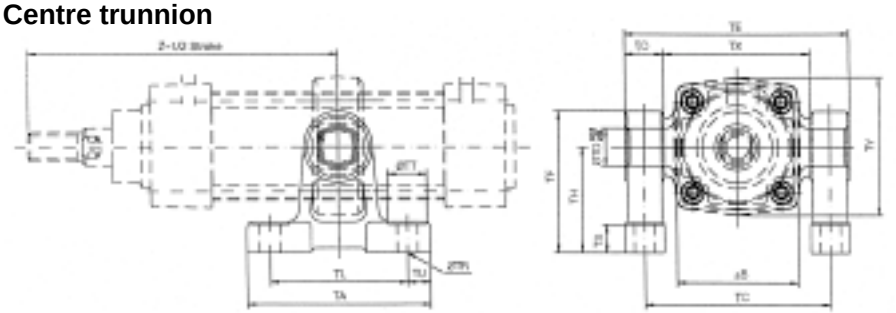
Angled rear clevis ES



Bore (mm)	Ød3	ØCN	ØS_5	K1	K2	l_2	G1	G2	G3□	EN	EU	CH	H6	ER
32	11	10	6.6	38	51	8.5	21	18	31	14	10.5	32	10	15
40	11	12	6.6	41	54	8.5	24	22	35	16	12	36	10	18
50	15	16	9	50	65	10.5	33	30	45	21	15	45	12	20
63	15	16	9	52	67	10.5	37	35	50	21	15	50	12	23
80	18	20	11	66	86	11.5	47	40	60	25	18	63	14	27
100	18	20	11	76	96	12.5	55	50	70	25	18	71	15	30

Accessories

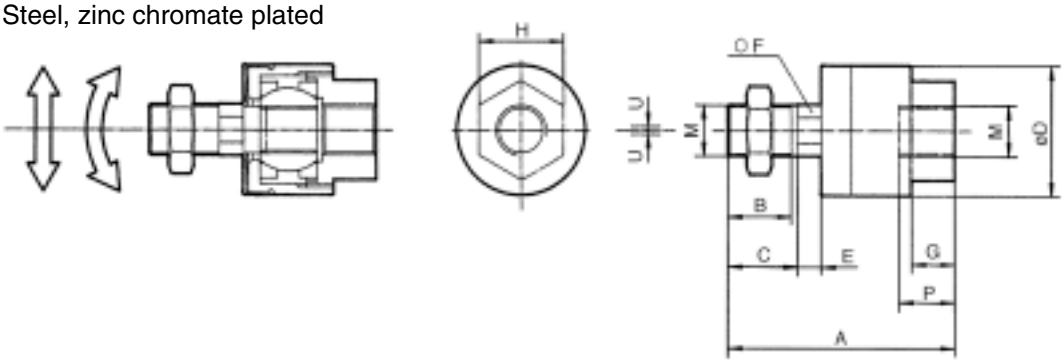
Centre trunnion



Part No.	Bore (mm)	±B	TA	TC	ØTD	TE	TF	TH	TL	TO	ØTR	TS	ØTT	TU	TX	TY	Z
C95-S03	**32**	46	62	62	12	74	47	35	45	12	7	10	13	8.5	50	49	95
C95-S04	**40**	52	80	80	16	97	60	45	60	17	9	12	17	10	63	58	106.5
	50	65	80	92	16	109	60	45	60	17	9	12	17	10	75	71	122
C95-S06	**63**	75	100	110	20	130	80	60	70	20	11	14	22	15	90	87	129.5
	80	95	100	130	20	150	80	60	70	20	11	14	22	15	110	110	150
C95-S10	**100**	114	120	158	25	184	100	75	90	26	13.5	17	24	15	132	136	160

Floating joint JA

Steel, zinc chromate plated

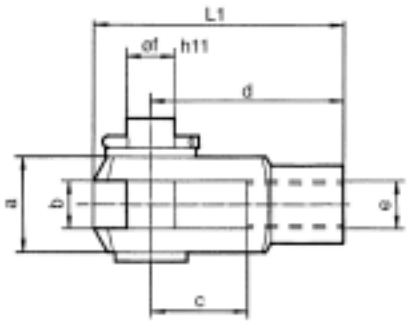


Bore (mm)	M	A	B	C	øD	E	F	G	H	P	U	Load (kn)	Weight (g)	Radial deflection
32	M10 X 1.25	49.5	19.5	—	24	5	8	8	17	9	0.5	2.5	70	±5
40	M12 X 1.25	60	20	—	31	6	11	11	22	13	0.75	4.4	160	
50/63	M16 X 1.5	71.5	22	—	41	7.5	14	13.5	27	15	1.0	11	300	
80/100	M20 X 1.5	101	28	31	59.5	11.5	24	16	32	18	2.0	18	1080	

Piston rod clevis GKM (ISO 8140)

Steel, zinc chromate plated

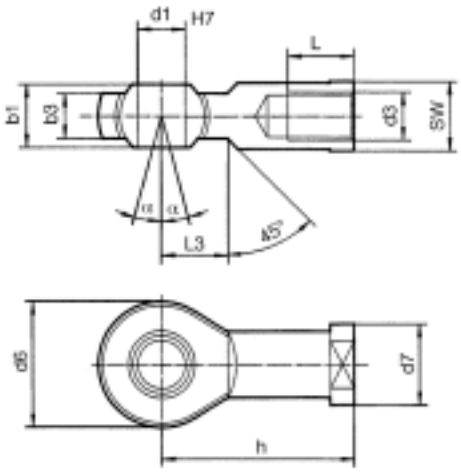
Bore (mm)	e	b	d	øf	L1	c	a
32	M10 X 1.25	10	40	10	52	20	20
40	M12 X 1.25	12	48	12	62	24	24
50/63	M16 X 1.5	16	64	16	83	32	32
80/100	M20 X 1.5	20	80	20	105	40	40



Piston rod ball joint KJ (ISO 8139)

Steel, zinc chromate plated

Bore (mm)	d3	d1	h	d6	b3	b1	L	d7	α	L3	SW
32	M10 X 1.25	10	43	28	10.5	14	20	19	13°	14	17
40	M12 X 1.25	12	50	32	12	16	22	22	13°	16	19
50/63	M16 X 1.5	16	64	42	15	21	28	27	15°	26	32
80/100	M20 X 1.5	20	77	50	18	25	33	34	15°	26	32



ISO Cylinder/Standard: Double Acting

Series C95K

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95KD [B] [32] — [100] [W] — [A53] [S]

Built-in magnet

Mounting

B	Basic/without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis
T	Centre trunnion

Bore size

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

Stroke (mm)
Refer to standard stroke table on p.6-12

Rod specifications

—	Stainless steel 1.4301 standard
W	double/through rod

Auto switch

—	Without auto switch

∗ Refer to table below for selection of applicable auto switch.

Number of auto switches

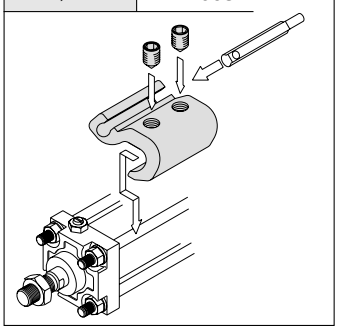
—	2
S	1
3	3
n	n

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage: Wiring (Output)	DC		AC	Auto switch model	Lead wire (m)∗ 0.5 (—)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	A56	●	●	—	IC	—	ø32,ø40 BT-03
				2 wire	24V	12V	—	A53	●	●	●	—	Relay PLC	
						5V,12V	100V,200V	A54	●	●	●			
			No			5V,12V	—	A67	●	●	—	IC		
						12V	200V or less	A64	●	●	—			
	Diagnosis indication (2 colour)		Yes			—	—	A59W	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	F59	●	●	○	IC	Relay PLC	ø50,ø63 BT-05
				3 wire (PNP)				F5P	●	●	○			
				2 wire	—	—	100V,200V	J51	●	●	○	—		
					24V	12V	—	J59	●	●	○			
	Diagnosis indication (2 colour)			3 wire (NPN)		5V,12V		F59W	●	●	○	IC		ø80,ø100 BT-06
				3 wire (PNP)				F5PW	●	●	○			
				2 wire		12V		J59W	●	●	○	—		
	Water resistant (2 colour)							F5BA	—	●	○			
	With timer			3 wire (NPN)		5V,12V		F5NT	—	●	○	IC		
	Diagnosis output (2 colour)							F59F	●	●	○			
	Latch diagnosis output (2 colour)			4 wire (NPN)		—		F5LF	●	●	○	—		

Table ①
Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



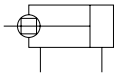
Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage: DC		AC	Auto switch model: Electrical entry direction Vertical	Lateral	Lead wire length (m) Note) 0.5 (Nil)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	—	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	Z73	●	●	●	—	Relay PLC	
			No			5V, 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	Relay PLC	ø50,ø63 BMB4-050
				3 wire (PNP)				Y7PV	Y7P	●	●	○			
				2 wire		12V		Y69B	Y59B	●	●	○	—		
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V, 12V		Y7NWV	Y7NW	●	●	○	IC circuit		ø80,ø100 BA4-063
				3 wire (PNP)				Y7PWV	Y7PW	●	●	○			
				2 wire		12V		Y7BWV	Y7BW	●	●	○	—		
	Water resistant (2 colour indicator)							—	Y7BA	—	●	—			
	——	Connector and Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	M9NV	M9N	●	●	○	IC circuit	Relay PLC	See Table ①
				3 wire (PNP)				M9PV	M9P	●	●	○			
				2 wire		12V		M9BV	M9B	●	●	○			

∗ Lead wire length 0.5m····· — (Example: A53)
3m····· L (Example: A53L)
5m····· Z (Example: A53Z)

○: Manufactured upon receipt of order.



ISO Symbol
Double acting



Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100
Action	Double acting					
Fluid	Air					
Proof pressure	1.5MPa					
Max. operating pressure	1.0MPa					
Min. operating pressure	0.05MPa					
Ambient and fluid temperature	Without magnet –10 to 70°C (No freezing)					
	With magnet –10 to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 1000mm/s					
Allowable stroke tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$					
Cushion	Both ends (Air cushion)(1)					
Thread tolerance	JIS class 2					
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
Mounting	Basic, axial direction foot, front flange, rear flange, single rear clevis, double rear clevis, centre trunnion, spherical bearing					

Non-rotating accuracy	ø32, ø40	±0.5°
	ø50, ø63	±0.5°
	ø80, ø100	±0.3°

Allowable rotating torque (Nm) max.	ø32	0.25	ø80	0.79
	ø40	0.45	ø100	0.93
	ø50, ø63	0.64	—	—

Note 1) Absorbable kinetic energy by cushion mechanism is identical to double acting single rod.

Minimum Strokes for Auto Switch Mounting

Refer to p.6-32 on "Minimum Strokes for Auto Switch Mounting".

Theoretical Force

OUT side is identical to double acting single rod.
Refer to table below for IN side.

Bore size (mm)	Rod diameter (mm^2)	Bore size (mm)	Rod diameter (mm^2)
32	675	**63**	2804
40	1082	**80**	4568
50	1651	**100**	7223

Theoretical force (N) =
Pressure (MPa) X Piston area (mm^2)

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. * stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000

Intermediate strokes are available.
* Please consult with SMC for longer strokes.

Weight

(kg)

Bore size (mm)		32	40	50	63	80	100
Basic weight	Basic	0.56	0.84	1.39	1.91	3.22	4.24
	Axial foot	0.16	0.20	0.38	0.46	0.89	1.09
	Flange	0.20	0.23	0.47	0.58	1.30	1.81
	Single clevis	0.16	0.23	0.37	0.60	1.07	1.73
	Double clevis	0.20	0.32	0.45	0.71	1.28	2.11
	Center trunnion	0.15	0.26	0.34	0.57	1.03	1.71
Additional weight per 50 stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56
Accessories	Single rod clevis	0.15	0.23	0.26	0.26	0.60	0.83
	Double rod clevis (with pin)	0.22	0.37	0.43	0.43	0.87	1.27

Calculation example: C95KD40-100
- Basic weight ····· 0.84 (Basic)
- Additional weight ··· 0.16/50 stroke
- Cylinder stroke ····· 100 stroke
- Mounting ····· 0.32 (Double clevis)

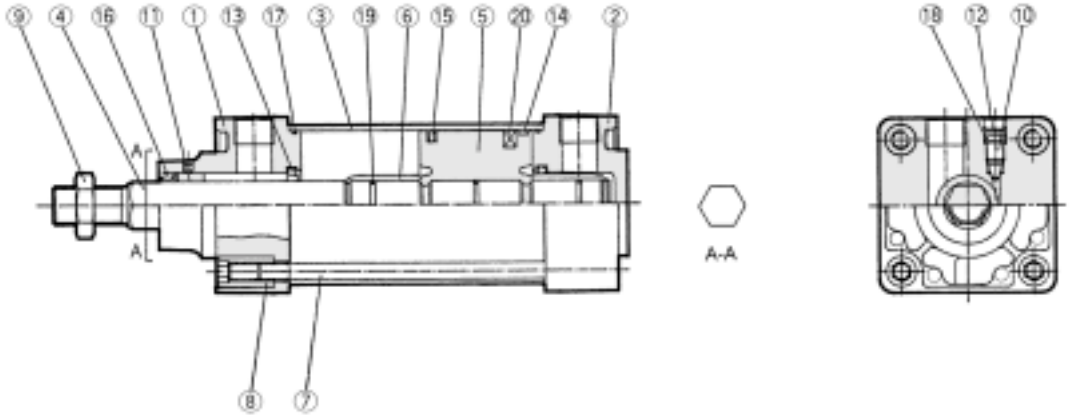
0.84+0.16 X 100/50+0.32=1.48kg

Part No: Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	**Foot**(1)	L5032	L5040	L5050	L5063	L5080	L5100
F,G	**Flange**	F5032	F5040	F5050	F5063	F5080	F5100
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
ES	**Angled rear clevis with ball joint**	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100
E	**Angled rear clevis**	E5032	E5040	E5050	E5063	E5080	E5100
C95-S	**Trunnion pivot bracket**	C95-S03	C95-S04	C95-S04	C95-S06	C95-S06	C95-S10
GKM	**Rod clevis**	GKM10-20	GKM12-24	GKM16_32	GKM16-32	GKM20-40	GKM20-40
KJ	**Piston rod ball joint**	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D
JA	**Floating joint**	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) C95-S: Set of 2 pcs.
Note 4) GKM according to ISO 8140
Note 5) KJ according to ISO 8139
Note 6) Piston rod nut is standard

Construction



Component Parts

No.	Description	Material	Note
①	**Rod cover**	Aluminum die cast	
②	**Head cover**	Aluminum die cast	
③	**Cylinder tube**	Aluminum die cast	
④	**Piston rod**	C45 anodised steel	
⑤	**Piston**	Aluminum die cast	
⑥	**Cushion ring**	Brass	
⑦	**Tie rod**	Steel	(chromated)
⑧	**Tie rod nut**	Steel	(chromated)
⑨	**Mounting nut**	Steel	(chromated)
⑩	**Cushion adjustment screw**	Steel	(chromated)
⑪	**Bushing**	Bronze bush	
⑫	**Serrated washer**	Steel	(chromated)
⑬	**Cushion seal**	PUR	

No.	Description	Material	Note
⑭	**Wearing**	Resin	
⑮	**Piston seal**	NBR	
⑯	**Rod seal/Gasket**	NBR	
⑰	**Cylinder tube gasket**	NBR	
⑱	**Cushion screw seal**	NBR	
⑲	**Piston gasket**	NBR	
⑳	**Magnet ring**		

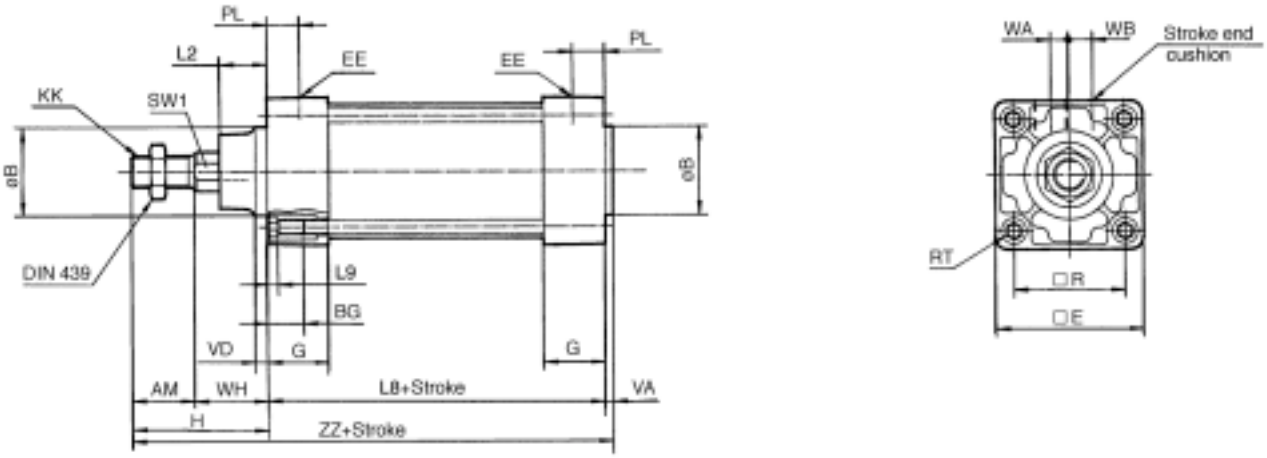
Seal Kits

Bore size (mm)	Kit No.	Contents
32	CS95-32	Kits include items 13 to 17 for ø32, 12 to 18 for ø40 to ø100 from the table above.
40	CS95-40	
50	CS95-50	
63	CS95-63	
80	CS95-80	
100	CS95-100	

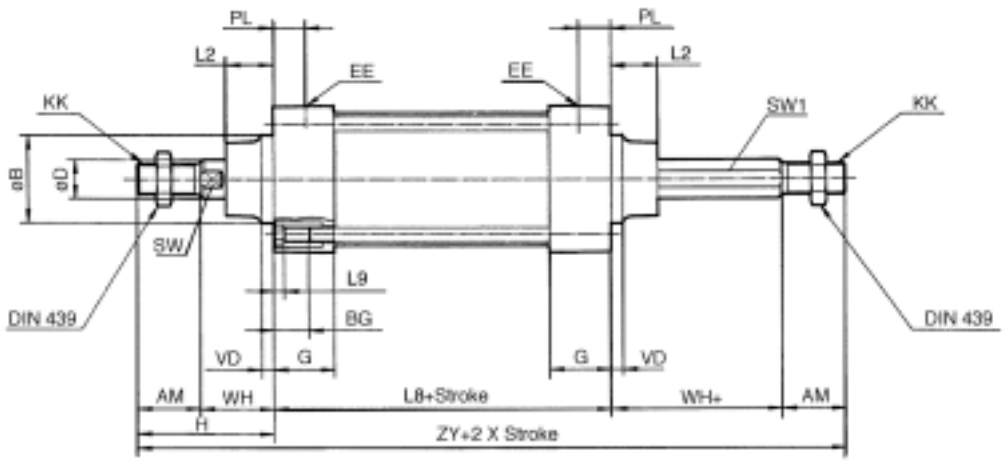
∗ Seal kits consist of items 13 to 17 for ø32, items 12 to 18 for ø40 to ø100 contained in one kit, and can be ordered using the order number for each respective tube bore size.

Without Mounting Bracket

C95KBø-Stroke



C95KBø-Stroke W



Bore size (mm)	AM	øB e11	øD	EE	PL	RT	KK	SW1	SW	G	BG	L8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	L2	L9	H
32	22	30	12	G1/8	13	M6	M10 X 1.25	12.2	10	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4	48
40	24	35	16	G1/4	14	M6	M12 X 1.25	14.2	13	27	16	105	4	4	4	9	30	163	213	52	38	17	4	54
50	32	40	20	G1/4	15.5	M8	M16 X 1.5	19	16	31.5	16	106	6	4	5	10.5	37	179	244	65	46.5	24	5	69
63	32	45	20	G3/8	16.5	M8	M16 X 1.5	19	16	31.5	16	121	6	4	9	12	37	194	259	75	56.5	24	5	69
80	40	45	25	G3/8	19	M10	M20 X 1.5	23	21	38	16	128	8	4	11.5	14	46	218	300	95	72	30	5	86
100	40	55	30	G1/2	19	M10	M20 X 1.5	27	21	38	16	138	8	4	17	15	51	233	320	114	89	32	5	91

∗ Refer to p.6-8 through 6-10 for dimensions with mounting bracket and accessories.

Series C95Q

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95QD **B** **32** — **100** **R** **CA** — **A53** **S**

Built-in magnet

Mounting

B	Basic/without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis
T	Centre trunnion

Bore size

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

Stroke (mm)
Refer to standard stroke table on p.6-16

Rod specifications

—	Hard chrome as standard
R	Stainless steel piston rod
K	Stainless steel and acid-proof piston rod

Direction of low friction

CA	With pressure at head side
CB	With pressure at rod side

Auto switch

—	Without auto switch

∗ Refer to table below for selection of applicable auto switch.

Number of auto switches

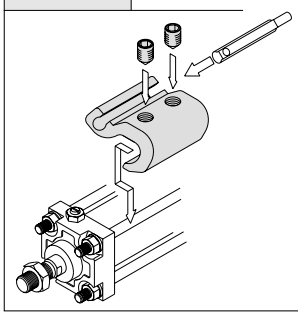
—	2
S	1
3	3
n	n

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage: Wiring (Output)	DC		AC	Auto switch model	Lead wire (m)∗ 0.5 (—)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	**A56**	●	●	—	IC	—	ø32,ø40 BT-03
				2 wire	24V	12V	—	**A53**	●	●	●	—	Relay PLC	
						5V,12V	100V,200V	**A54**	●	●	●			
			No			5V,12V	—	**A67**	●	●	—	IC		
						12V	200V or less	**A64**	●	●	—			
	Diagnosis indication (2 colour)		Yes			—	—	**A59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**F59**	●	●	○	IC	Relay PLC	ø50,ø63 BT-05
				3 wire (PNP)				**F5P**	●	●	○			
				2 wire	—	—	100V,200V	**J51**	●	●	○	—		
					24V	12V	—	**J59**	●	●	○			
	Diagnosis indication (2 colour)			3 wire (NPN)		5V,12V		**F59W**	●	●	○	IC		ø80,ø100 BT-06
				3 wire (PNP)				**F5PW**	●	●	○			
				2 wire		12V		**J59W**	●	●	○	—		
	Water resistant (2 colour)							**F5BA**	—	●	○			
	With timer			3 wire (NPN)		5V,12V		**F5NT**	—	●	○	IC		
	Diagnosis output (2 colour)							**F59F**	●	●	○			
	Latch diagnosis output (2 colour)			4 wire (NPN)		—		**F5LF**	●	●	○	—		

Table ①
Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage: DC		AC	Auto switch model: Electrical entry direction: Vertical	Lateral	Lead wire length (m) Note) 0.5 (Nil)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	**Z76**	●	●	—	IC circuit	—	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	**Z73**	●	●	●	—	Relay PLC	
			No			5V, 12V	100V or less	—	**Z80**	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	IC circuit	Relay PLC	ø50,ø63 BMB4-050
				3 wire (PNP)				**Y7PV**	**Y7P**	●	●	○			
				2 wire		12V		**Y69B**	**Y59B**	●	●	○	—		
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V, 12V		**Y7NWV**	**Y7NW**	●	●	○	IC circuit		ø80,ø100 BA4-063
				3 wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○			
				2 wire		12V		**Y7BWV**	**Y7BW**	●	●	○	—		
	Water resistant (2 colour indicator)							—	**Y7BA**	—	●	—			
	——	Connector and Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**M9NV**	**M9N**	●	●	○	IC circuit	Relay PLC	See Table ①
				3 wire (PNP)				**M9PV**	**M9P**	●	●	○			
				2 wire		12V		**M9BV**	**M9B**	●	●	○			

∗ Lead wire length 0.5m····· — (Example: A53)
3m····· L (Example: A53L)
5m····· Z (Example: A53Z)

○: Manufactured upon receipt of order.

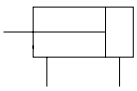


Specifications

Bore size (mm)	32	40	50	63	80	100
Action	Double acting single rod					
Direction of low friction	One direction					
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.01MPa					
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing)					
	With auto switch: –10 to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Cushion	None					
Port size	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 1/2
Mounting	Basic, Foot, Front flange, Rear flange, Single clevis, Double clevis, Centre trunnion, spherical bearing					

Standard Stroke

ISO Symbol
Double acting



Bore size (mm)	Standard stroke (mm)	Max. * stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1000

Intermediate strokes are available.
* Please consult with SMC for longer strokes.

Part No: Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	**Foot**(1)	L5032	L5040	L5050	L5063	L5080	L5100
F,G	**Flange**	F5032	F5040	F5060	F5063	F5080	F5100
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
ES	**Angled rear clevis with ball joint**	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100
E	**Angled rear clevis**	E5032	E5040	E5050	E5063	E5080	E5100
C95-S	**Trunnion pivot bracket**	C95-S03	C95-S04	C95-S04	C95-S06	C95-S06	C95-S10
GKM	**Rod clevis**	GKM10-20	GKM12-24	GKM16_32	GKM16-32	GKM20-40	GKM20-40
KJ	**Piston rod ball joint**	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D
JA	**Floating joint**	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) C95-S: Set of 2 pcs.
Note 4) GKM according to ISO 8140
Note 5) KJ according to ISO 8139
Note 6) Piston rod nut is standard

Selection Guide for the Low Friction Side

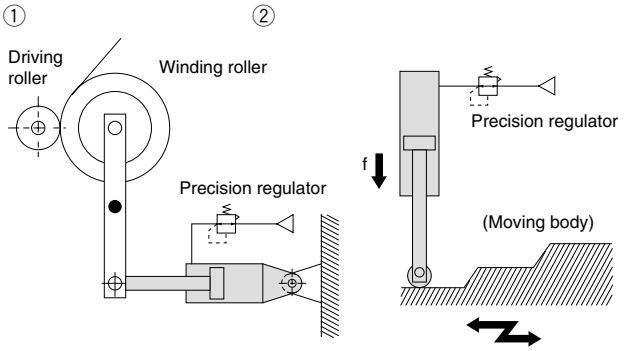
① When used as a balancer etc., follow the example of the application mentioned earlier applying pressure at one port while leaving the other port open to atmosphere.
With pressure at rod cover port
····· Low friction side CB (Example of application ①)
With pressure at head cover port
····· Low friction side CA (Example of application ②)
In both cases, as long as the outside pressure moves the piston rod, low friction can result in the direction of extension and retraction.

② When used applying pressure to both ports the same time, follow theabove mentioned guide and as in the following.
With relatively higher pressure on rod cover port
·····Use Low friction side CB
With relatively higher pressure on head cover port
·····Use Low friction side CA

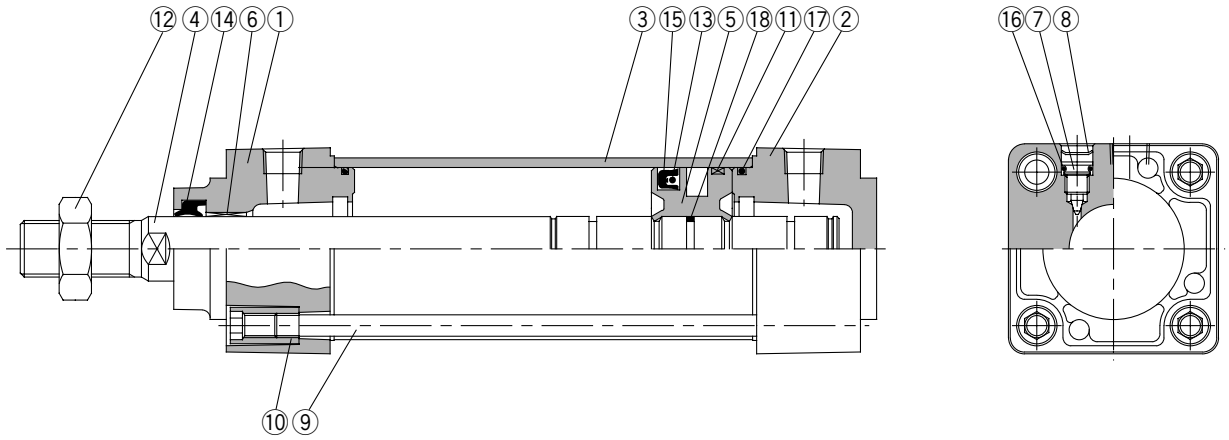
For Dimensions, Weight, Accessories see C95S

Application Example

Low friction cylinder used in combination with precision regulator (Series IR)



Construction



Component Parts

No.	Description	Material	Note
①	**Rod cover**	Aluminum die-cast	Metallic painted
②	**Head cover**	Aluminum die-cast	Metallic painted
③	**Cylinder tube**	Aluminum alloy	Hard anodized
④	**Piston rod**	Carbon steel	Hard chrome plated
⑤	**Piston**	Aluminum alloy	Chromated
⑥	**Bushing**	Lead bronze cast	
⑦	**Cushion valve**	Steel wire	Nickel plated
⑧	**Snap ring**	Steel for spring	ø40 to ø100
⑨	**Tie rod**	Carbon steel	Uni-chromated
⑩	**Tie rod nut**	Carbon steel	Nickel plated
⑪	**Wear rod**	Resin	
⑫	**Rod end nut**	Carbon steel	Nickel plated
⑬ *	**Back up O ring**	NBR	
⑭ *	**Rod seal**	NBR	
⑮ *	**Piston seal**	NBR	
⑯	**Cushion valve seal**	NBR	
⑰ *	**Cylinder tube gasket**	NBR	
⑱	**Piston gasket**	NBR	

Replacement Parts: Seal Kits

Bore (mm)	Kit No.	Contents
32	CQ95-32	Set of the No. ⑬, ⑭, ⑮, and ⑰.
40	CQ95-40	
50	CQ95-50	
63	CQ95-63	
80	CQ95-80	
100	CQ95-100	

∗ The seal kit includes 1 rod seal, 1 piston seal, and 2 tube gaskets.

Series C95P

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95PD [B] [32] — [100] — [A53] [S]

Built-in magnet

Mounting

B	Basic/without bracket
L	Axial foot
G	Rear flange
C	Single rear clevis
D	Double rear clevis

Bore size

50	50mm
63	63mm
80	80mm
100	100mm

Stroke (mm)
Refer to standard stroke table on p.6-4 maximum 300mm

Auto switch

—	Without auto switch

∗ Refer to table below for selection of applicable auto switch.

Number of auto switches

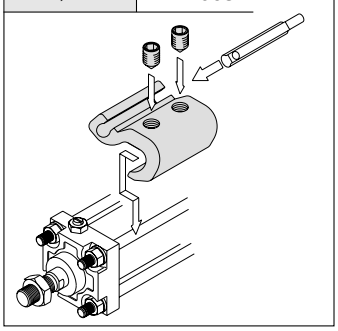
—	2
S	1
3	3
n	n

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage: Wiring (Output)	DC		AC	Auto switch model	Lead wire (m)∗: 0.5 (—)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	**A56**	●	●	—	IC	—	ø32,ø40 BT-03
				2 wire	24V	12V	—	**A53**	●	●	●	—	Relay PLC	
						5V,12V	100V,200V	**A54**	●	●	●			
			No			5V,12V	—	**A67**	●	●	—	IC		
						12V	200V or less	**A64**	●	●	—			
	Diagnosis indication (2 colour)		Yes			—	—	**A59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**F59**	●	●	○	IC	Relay PLC	ø50,ø63 BT-05
				3 wire (PNP)				**F5P**	●	●	○			
				2 wire	—	—	100V,200V	**J51**	●	●	○	—		
	Diagnosis indication (2 colour)				24V	12V	—	**J59**	●	●	○			ø80,ø100 BT-06
				3 wire (NPN)		5V,12V		**F59W**	●	●	○	IC		
				3 wire (PNP)				**F5PW**	●	●	○			
	Water resistant (2 colour)			2 wire		12V		**J59W**	●	●	○	—		
	With timer							**F5BA**	—	●	○			
	Diagnosis output (2 colour)			3 wire (NPN)		5V,12V		**F5NT**	—	●	○	IC		
	Latch diagnosis output (2 colour)			4 wire (NPN)		—		**F59F**	●	●	○			
								F5LF	●	●	○	—		

Table ①
Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage: DC		AC	Auto switch model: Electrical entry direction: Vertical	Lateral	Lead wire length (m) Note): 0.5 (Nil)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	**Z76**	●	●	—	IC circuit	—	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	**Z73**	●	●	●	—	Relay PLC	
			No			5V, 12V	100V or less	—	**Z80**	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	IC circuit	Relay PLC	ø50,ø63 BMB4-050
				3 wire (PNP)				**Y7PV**	**Y7P**	●	●	○			
				2 wire		12V		**Y69B**	**Y59B**	●	●	○	—		
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V, 12V	—	**Y7NWV**	**Y7NW**	●	●	○	IC circuit		ø80,ø100 BA4-063
				3 wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○			
				2 wire		12V		**Y7BWV**	**Y7BW**	●	●	○	—		
	Water resistant (2 colour indicator)							—	**Y7BA**	—	●	—			
	——	Connector and Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**M9NV**	**M9N**	●	●	○	IC circuit	Relay PLC	See Table ①
				3 wire (PNP)				**M9PV**	**M9P**	●	●	○			
				2 wire		12V		**M9BV**	**M9B**	●	●	○			

∗ Lead wire length 0.5m····· — (Example: A53)
3m····· L (Example: A53L)
5m····· Z (Example: A53Z)

○: Manufactured upon receipt of order.

Specifications

Application:
The positioner IP200 is capable of pneumatic positioning of the piston. Adjustable positions can be reached with high repeating accuracy. The piston stroke is in proportion to the air pressure input signal (0.02-0.01MPa). External forces on the position of the piston are reduced to a minimum by a special control system and an integrated function to revert the set position.
The IP200 shows excellent performance in remote control or standard control of flaps, proportioning devices, pumps, gears usw.

Specifications
- The bleed pressure acts directly onto the flapper plate. A change of the input signal will cause an instantaneous movement of the piston rod.
- easy and simple adjustment of neutral point and operation band from outside.
- Return spring is potected against accidental touches
- Positioner cylinder conforms to ISO and CETOP recommendations
- No change in dimensions with auto switch capability

Specifications

Fluid	Air 5μm filtration
Supply pressure "SUP" (MPa)	0.3 ~ 0.7
Signal pressure "SIG" (MPa)	0.02 ~ 0.1
Fluid temperature (ºC)	+5 to +60
Linearity	< 2%*
Hystereses	< 1%*
Repeatability	< 1%*
Sensitivity	< 1%*
Port size	G1/4
Gauge port	G1/8
Primary pressure	0.5% with 0.5MPa
Flow rate (l/min)	250 with 0.5MPa
Leakage	< 18 with 0.5MPa
Bore Size (mm)	40 to 100
Cylinder stroke (mm)	25 to 300
Standard stroke (mm)	50/100/150/200/250/300
Max. possible stroke (mm)	300

*different in % related to full span.



Part No: Mounting Bracket, Mounting Accessories

Description	ø50	ø63	ø80	ø100
L	L5050	L5063	L5080	L5100
F,G	F5050	F5063	F5080	F5100
C	C5050	C5063	C5080	C5100
D	D5050	D5063	D5080	D5100
DS	DS5050	DS5063	DS5080	DS5100
ES	ES5050	ES5063	ES5080	ES5100
E	E5050	E5063	E5080	E5100
GKM	GKM16_32	GKM16-32	GKM20-40	GKM20-40
KJ	KJ16D	KJ16D	KJ20D	KJ20D
JA	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) GKM according to ISO 8140
Note 4) KJ according to ISO 8139
Note 5) Piston rod nut is standard

Weight accessories (kg)

Ø	50	63	80	100
L	0.38	0.46	0.89	1.09
F	0.47	0.58	1.30	1.81
C	0.37	0.60	1.07	1.73
D	0.45	0.71	1.28	2.11
E	0.42	0.52	0.94	1.40

Weight Table

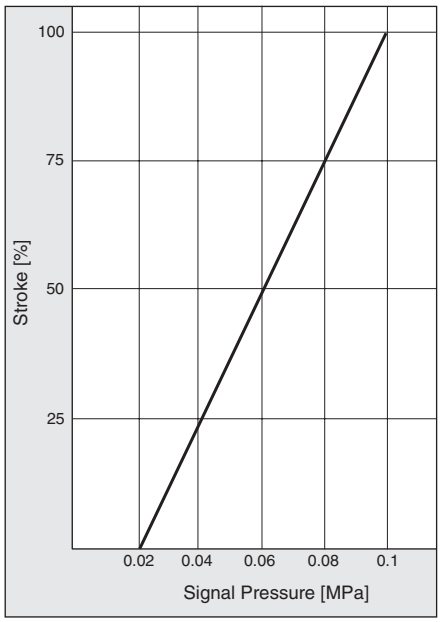
Weight (kg)					
	Ø	50	63	80	100
	B	2.27	2.79	4.11	5.13
Weight each 50mm stroke		0.32	0.33	0.48	0.62

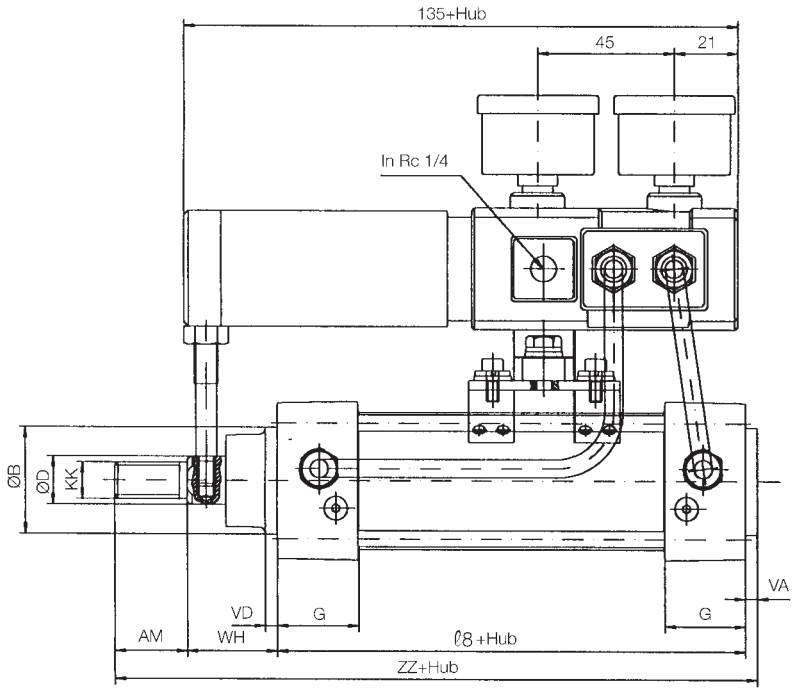
Example: C95PDB50-200
Cylinder Ø50mm, stroke 200mm
Bracket L
Weight = 2.72kg + (0.31kg x $\frac{200}{50}$) = 3.96kg

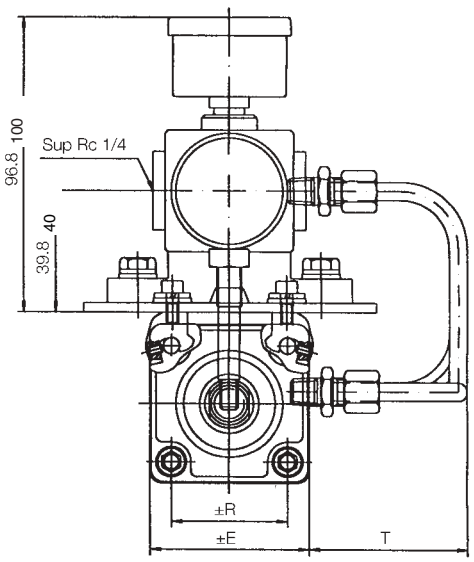
For dimensions of the brackets and accessories, please see C95S, page 1-206

Dimensions

Signal Pressure/Stroke Diagram







Ø	AM	ØB	ØD	±E	G	KK	l 8	±R	T	VA	VD	WH	ZZ
50	32	40	20	65	31.5	M16 x 1.5	106	46.5	53	4	6	37	179
63	32	45	20	75	31.5	M16 x 1.5	121	56.5	54	4	6	37	194
80	40	45	25	95	38	M20 x 1.5	128	72	54	4	8	46	218
100	40	55	30	114	38	M20 x 1.5	138	89	26	4	8	51	233

ISO Cylinder/Standard: Double Acting with Lock

Series C95N

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95ND [B] [32] — [100] [W] — [A53] [S]

Built-in magnet

Mounting

B	Basic/without bracket
L	Axial foot
G	Rear flange
C	Single rear clevis
D	Double rear clevis
T	Trunion

Bore size

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

Stroke (mm)
Refer to standard stroke table on p.6-23.

Rod specifications

—	Hard chrome as standard
W	Double/through rod

Auto switch

—	Without auto switch

∗ Refer to table below for selection of applicable auto switch.

Number of auto switches

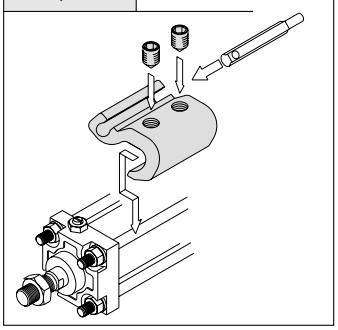
—	2
S	1
3	3
n	n

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage: Wiring (Output)	DC		AC	Auto switch model	Lead wire (m)∗: 0.5 (—)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	**A56**	●	●	—	IC	—	ø32,ø40 BT-03
				2 wire	24V	12V	—	**A53**	●	●	●	—	Relay PLC	
						5V,12V	100V,200V	**A54**	●	●	●			
			No			5V,12V	—	**A67**	●	●	—	IC		
						12V	200V or less	**A64**	●	●	—			
	Diagnosis indication (2 colour)		Yes			—	—	**A59W**	●	●	—	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**F59**	●	●	○	IC	Relay PLC	ø50,ø63 BT-05
				3 wire (PNP)				**F5P**	●	●	○			
				2 wire	—	—	100V,200V	**J51**	●	●	○	—		
					24V	12V	—	**J59**	●	●	○			
	Diagnosis indication (2 colour)			3 wire (NPN)		5V,12V		**F59W**	●	●	○	IC		ø80,ø100 BT-06
				3 wire (PNP)				**F5PW**	●	●	○			
				2 wire		12V		**J59W**	●	●	○	—		
	Water resistant (2 colour)							**F5BA**	—	●	○			
	With timer			3 wire (NPN)		5V,12V		**F5NT**	—	●	○	IC		
	Diagnosis output (2 colour)			4 wire (NPN)				**F59F**	●	●	○			
	Latch diagnosis output (2 colour)					—		**F5LF**	●	●	○	—		

Table ①
Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage: DC		AC	Auto switch model: Electrical entry direction: Vertical	Lateral	Lead wire length (m) Note): 0.5 (Nil)	3 (L)	5 (Z)	Applicable load		Mounting bracket
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	**Z76**	●	●	—	IC circuit	—	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	**Z73**	●	●	●	—	Relay PLC	
			No			5V, 12V	100V or less	—	**Z80**	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	**Y69A**	**Y59A**	●	●	○	IC circuit	Relay PLC	ø50,ø63 BMB4-050
				3 wire (PNP)				**Y7PV**	**Y7P**	●	●	○			
				2 wire		12V		**Y69B**	**Y59B**	●	●	○	—		
	Diagnostic indication (2 colour indicator)			3 wire (NPN)		5V, 12V		**Y7NWV**	**Y7NW**	●	●	○	IC circuit		ø80,ø100 BA4-063
				3 wire (PNP)				**Y7PWV**	**Y7PW**	●	●	○			
				2 wire		12V		**Y7BWV**	**Y7BW**	●	●	○	—		
	Water resistant (2 colour indicator)							—	**Y7BA**	—	●	—			
	——	Connector and Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**M9NV**	**M9N**	●	●	○	IC circuit	Relay PLC	See Table ①
				3 wire (PNP)				**M9PV**	**M9P**	●	●	○			
				2 wire		12V		**M9BV**	**M9B**	●	●	○			

∗ Lead wire length 0.5m····· — (Example: A53)
3m····· L (Example: A53L)
5m····· Z (Example: A53Z)

○: Manufactured upon receipt of order.

Series C95N
with lock

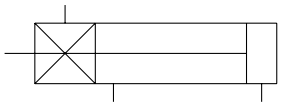
Cylinder Specifications

Bore Size [mm]	32, 40, 50, 63, 80, 100
Fluid	Air
Proof Pressure	1.5MPa
Max. operating pressure	1.0MPa
Min. operating pressure	0.08MPa
Piston speed	50 to 1000mm/s note)
Ambient and fluid temperature	Without autoswitch : -10ºC to 70ºC (without freezing) With autoswitch : -10ºC to 70ºC (without freezing)
Cushion	Double air side cushion
Stroke length tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$
Bracket type	Basic type, Axial foot type, Front flange type, Rear flange type, Single clevis type, Double clevis type

Note) Load limits exist depending upon piston speed when locked, mounting direction and operating pressure.



Cylinder with lock



Lock Specifications

Lock actuation	Spring lock (exhaust lock)
Unlocking pressure	≥0.25MPa
Locking pressure	≥0.20MPa
Max. operating pressure	1.0MPa
Locking direction	2 Two-way

Standard Stroke

Bore Size [mm]	Standard Stroke [mm]	Max. Stroke*
32	25,50,75,100,125,150,175,200,250,300,350,400,450,500	700
40	25,50,75,100,125,150,175,200,250,300,350,400,450,500	800
50	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600	1000
63	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600	
80	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600,700,800	
100	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600,700,800	

Intermediate strokes are available.
* Please consult with SMC for longer strokes.

Stopping Accuracy

[mm]

Locking system	Piston speed [mm/s]			
	100	300	500	1000
Spring lock	±0.3	±0.6	±1.0	±2.0

Conditions/Horizontal supply pressure P=0.5MPa
Load weight ..... Upper limit of allowable value
Solenoid valve for locking mounted on the locking pdr
Maximum value of stopping position dispersion from 100 measurements

Spring Lock Holding Power (Maximum static Load)

Bore size [mm]	**32**	**40**	**50**	**63**	**80**	**100**
Holding power [N]	552	882	1370	2160	3430	5390

C95N Cylinder

Part No: Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	Foot(1)	L5032	L5040	L5050	L5063	L5080	L5100
F,G	Flange	F5032	F5040	F5050	F5063	F5080	F5100
C	Single rear clevis	C5032	C5040	C5050	C5063	C5080	C5100
D	Double rear clevis	D5032	D5040	D5050	D5063	D5080	D5100
DS	Double rear clevis (for ES accessory)	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
ES	Angled rear clevis with ball joint	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100
E	Angled rear clevis	E5032	E5040	E5050	E5063	E5080	E5100
C95-S	Trunnion pivot bracket	C95-S03	C95-S04	C95-S04	C95-S06	C95-S06	C95-S10
GKM	Rod clevis	GKM10-20	GKM12-24	GKM16_32	GKM16-32	GKM20-40	GKM20-40
KJ	Piston rod ball joint	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D
JA	Floating joint	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150

Note 1) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows:Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) C95-S: Set of 2 pcs.
Note 4) GKM according to ISO 8140
Note 5) KJ according to ISO 8139
Note 6) Piston rod nut is standard

Single Rod Weight Table

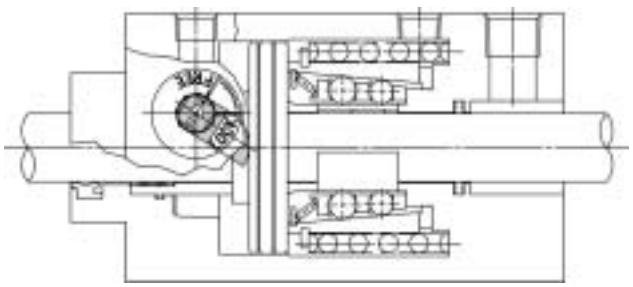
[kg]

Bore Size [mm]		32	40	50	63	80	100
Basic weight	Basic type B	1.40	2.15	3.53	5.18	8.99	12.72
	Trunnion T	0.15	0.26	0.34	0.57	1.03	1.71
Additional weight per 50mm of stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56

(Example) C95NDB32-100 (Standard, Ø32, 100er)
•Basic weight..... 1.40 (basic type, Ø32)
•Additional weight ..... 0.11/50mm stroke
•Cylinder stroke ..... 100mm stroke
1.40 + 0.11 x 100/50 = 3.02kg

Manual override for unlocking

In case the air supply is cut off or discharged, unlocking can be performed with a commercially available tool. The fail safe mechanism locks again when manual override is released.



Weight accessories [kg]

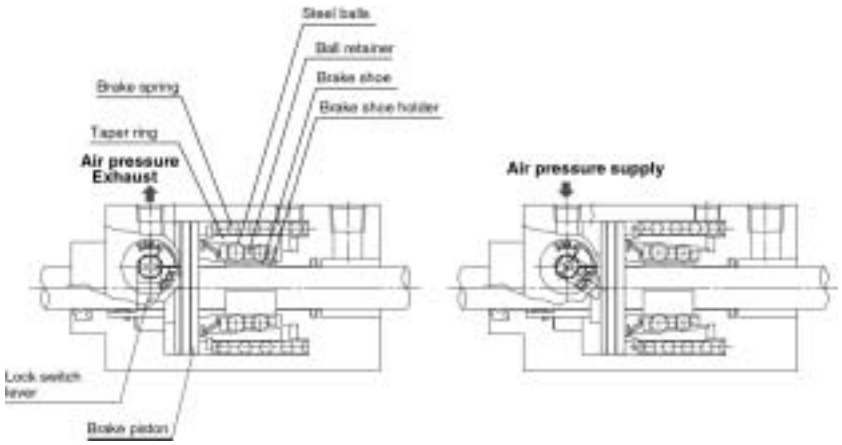
Ø	32	40	50	63	80	100
L	0.16	0.20	0.38	0.46	0.89	1.09
F	0.20	0.23	0.47	0.58	1.30	1.81
C	0.16	0.23	0.37	0.60	1.07	1.73
D	0.20	0.32	0.45	0.71	1.28	2.11

Example:

Cylinder Ø40 mm, Stroke 100 mm, bracket D

Weight = 0.84 kg + (0.16 kg x $\frac{100}{50}$) + 0.32 kg = 1.48 kg

Construction Principles



Locked condition

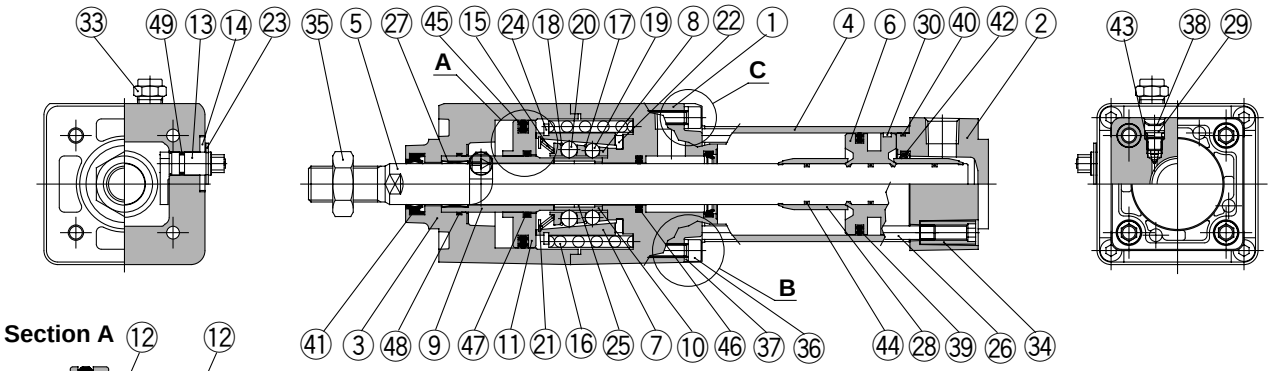
Unlocked condition

Spring lock (exhaust lock)

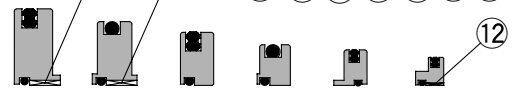
The spring force which acts upon the taper ring is magnified by a wedge effect, and is conveyed to all of the numeous steel balls which are arranged in two crcles. These act on the brake shoe holder and brake, which locks the piston rod by tightening against it with a large force.

Unlocking is accomplished when air pressure is supplied to the unlocking port. The brake piston and taper ring oppose the spring force, moving to the right side, and the ball retainer strikes the cover section A. The braking force is released as the steel balls are removed from the taper ring by the ball retainer.

Construction

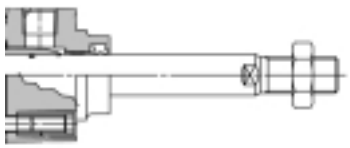


Section A 12 12

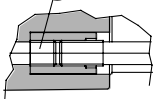


Ø100 Ø80 Ø63 Ø50 Ø40 Ø32

with through piston rod

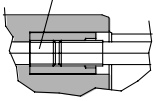


Section B 31



Ø80, Ø100

Section C 32



Ø80, Ø100

Parts list

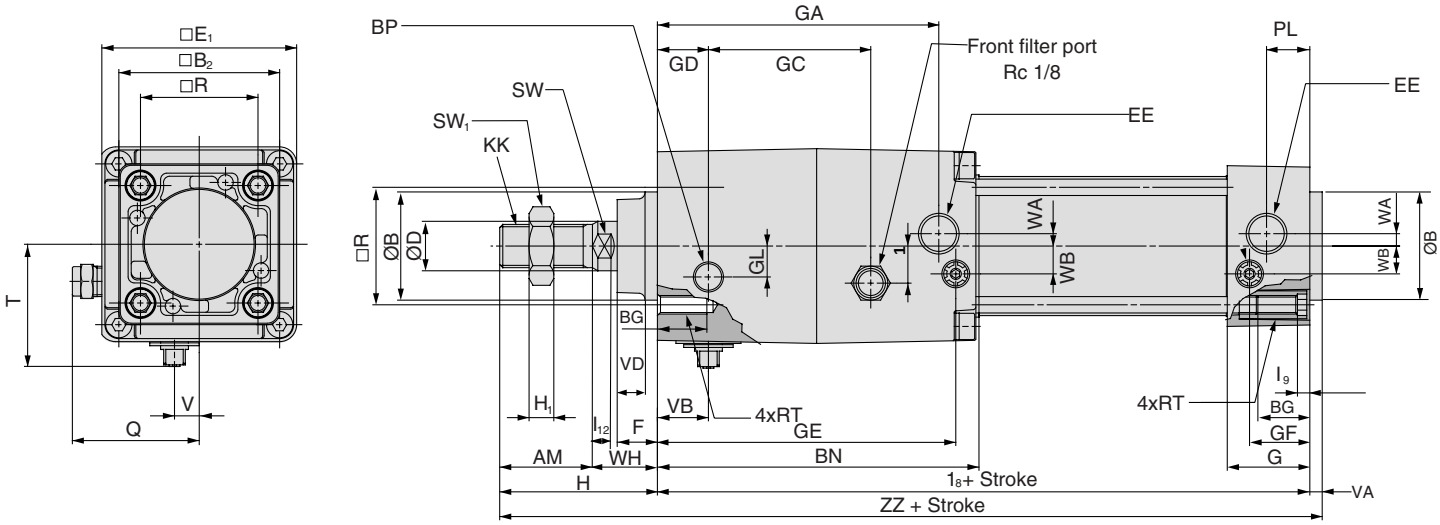
No.	Description		Material	Note
①	**Rod cover**		Aluminium alloy	Hard annodised & metallic coated
②	**Head cover**		Aluminium alloy	Chromated & metallic coated
③	**Cover**		Aluminium alloy	Hard annodised & metallic coated
④	**Cylinder tubing**		Aluminium alloy	Hard annodised
⑤	**Piston rod**		Carbon steel	Hard chrome plated
⑥	**Piston**		Aluminium alloy	Chromated
⑦	**Taper Ring**		Carbon steel	Heat treated
⑧	**Ball retainer**		Special resin	
⑨	**Piston guide**		Carbon steel	Zinc chromated
⑩	**Brake shoe holder**		Carbon steel	Heat treated
⑪	**Release piston**	Ø40	Aluminium alloy	Hard annodised
		Ø50		
		Ø63		
		Ø32	Carbon steel	Zinc chromated
		Ø80		
		Ø100		
⑫	**Release piston bushing**		Steel + special resin	Ø32, Ø80, Ø100 only
⑬	**Unlocking cam**		Carbon steel	Glossy chromated
⑭	**Washer**		Carbon steel	Black zinc chromated
⑮	**Retainer pre-load spring**		Carbon steel	Zinc chromated
⑯	**Brake spring**		Carbon steel	Zinc chromated
⑰	**Clip A**		Stainless steel	
⑱	**Clip B**		Stainless steel	
⑲	**Steel ball A**		Carbon steel	
⑳	**Steel ball B**		Carbon steel	
㉑	**Tooth ring**		Stainless steel	
㉒	**Damper**		Polyurethane rubber	
㉓	**C type retaining ring for unlocking cam shaft**		Carbon steel	
㉔	**C type retaining ring for taper ring**		Carbon steel	
㉕	**Brake shoe**		Special friction material	
㉖	**Tie rod**		Carbon steel	Chromated
㉗	**Bushing**		Lead-bronze casting	
㉘	**Cushion ring**		Brass	

Parts list

No.	Description	Material	Note
㉙	**Cushion valve**	Carbon steel	Nickel plated
㉚	**Wear ring**	PUR	
㉛	**Unit holding tie-rod A**	Carbon steel	Chromated Ø80, Ø100 only
㉜	**Unit holding tie-rod B**	Carbon steel	Chromaed Ø80, Ø100 only
㉝	**BC element**		
㉞	**Tie-rod nut**	Carbon steel	Nickel plated
㉟	**Rod end nut**	Carbon steel	Nickel plated
㊱	**Hexagon socket head cap screw**	Carbon steel	Nickel plated Ø32, Ø63 only
㊲	**Spring washer for hex. socket head cap screw**	Carbon steel	Nickel plated Ø32, Ø63 only
㊳	**Retaining ring**	Carbon steel	
㊴	**Piston seal**	NBR	
㊵	**Cylinder tube gasket**	NBR	
㊶	**Rod seal A**	NBR	
㊷	**Cushion seal**	NBR	
㊸	**Cushion valve seal**	NBR	
㊹	**Piston gasket**	NBR	
㊺	**Release piston gasket**	NBR	
㊻	**Rod seal B**	NBR	
㊼	**Release piston gasket**	NBR	
㊽	**Piston guide gasket**	NBR	
㊾	**Unlocking cam gasket**	NBR	

Dimensions

Basic type (B)

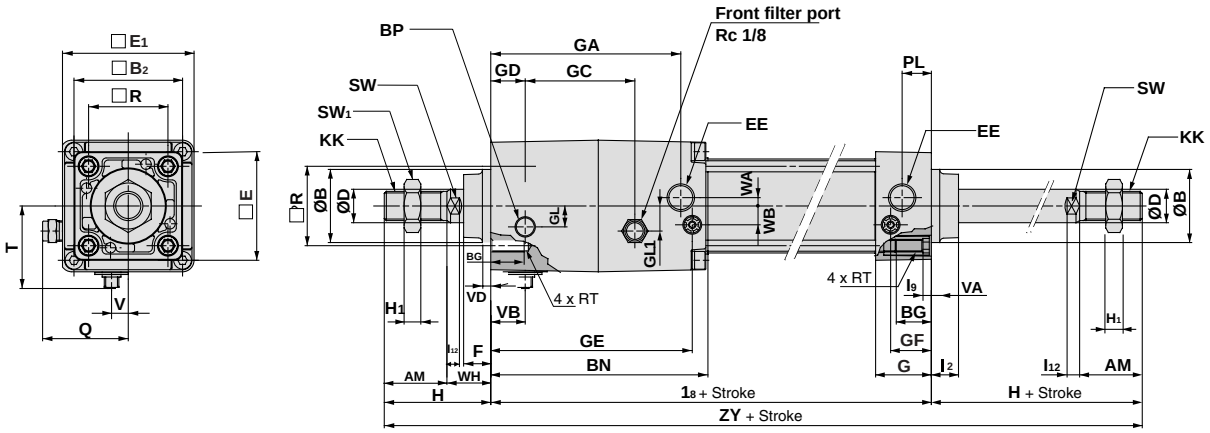


Bore size (mm)	AM	ØBe 11	□B2	BG	BN	BP	ØD	EE	□E	□E1	F	G	GA	GC	GD	GE	GF	GL	GL1	H	H1
32	22	30	46	16	97	G1/8	12	G1/8	46	54	13	27	83	45.5	13	88.5	18.3	7.5	12	48	6
40	24	35	52	16	104	G1/8	16	G1/4	52	63	13	27	91	52.5	16.5	96.5	19.5	10	12	54	8
50	32	40	65	16	120.5	G1/4	20	G1/4	65	75	14	31.5	104.5	58.5	19	111.2	22.4	11.5	15	69	11
63	32	45	75	16	134.5	G1/4	20	G3/8	75	90	14	31.5	119.5	68	23	123.5	20.7	17.5	12	69	11
80	40	45	95	16	169	G1/4	25	G3/8	95	102	20	38	150	81	33	157	26	22	18	86	13
100	40	55	114	16	189	G1/4	30	G1/2	114	116	20	38	170	96	37.5	177	26	25	20	91	16

Bore size (mm)	KK	I8	I9	I12	PL	Q	□R	RT	SW	SW1	T	V	VA	VB	VD	WA	WB	WH	ZZ
32	M10 x 1.25	164	4	6	13	37	32.5	M6	10	17	34	6.5	4	13	4	4	6.5	26	216
40	M12 x 1.25	182	4	6.5	14	41.5	38	M6	13	19	39.5	8	4	16.5	4	4	9	30	240
50	M16 x 1.5	195	5	8	15.5	47.5	46.5	M8	16	24	47	9	4	20	6	5	10.5	37	268
63	M16 x 1.5	224	5	8	16.5	55	56.5	M8	16	24	55.5	8.5	4	23	6	9	12	37	297
80	M20 x 1.5	259	5	10	19	61	72	M10	21	30	61.5	10.5	4	33	8	11.5	14	46	349
100	M20 x 1.5	289	5	10	19	68	89	M10	21	30	69.5	10.5	4	37.5	8	17	15	51	384

Dimensions

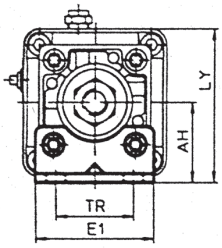
Double Rod (Option W)



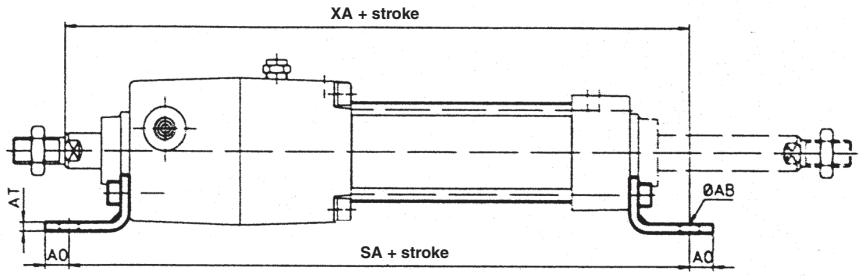
Bore size (mm)	AM	ØBe 11	□B_2	BG	BN	BP	ØD	EE	□E	□E_1	F	G	GA	GC	GD	GE	GF	GL	GL_1	H	H_1
32	22	30	46	16	97	G1/8	12	G1/8	46	54	13	27	83	45.5	13	88.5	18.3	7.5	12	48	6
40	24	35	52	16	104	G1/8	16	G1/4	52	63	13	27	91	52.5	16.5	96.5	19.5	10	12	54	8
50	32	40	65	16	120.5	G1/4	20	G1/4	65	75	14	31.5	104.5	58.5	19	111.2	22.4	11.5	15	69	11
63	32	45	75	16	134.5	G1/4	20	G3/8	75	90	14	31.5	119.5	68	23	123.5	20.7	17.5	12	69	11
80	40	45	95	16	169	G1/4	25	G3/8	95	102	20	38	150	81	33	157	26	22	18	86	13
100	40	55	114	16	189	G1/4	30	G1/2	114	116	20	38	170	96	37.5	177	26	25	20	91	16

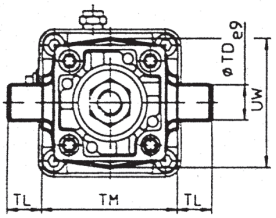
Bore size (mm)	KK	I_2	I_8	I_9	I_{12}	PL	Q	□R	RT	SW	SW_1	T	V	VA	VB	VD	WA	WB	WH	ZY
32	M10 x 1.25	15	164	4	6	13	37	32.5	M6	10	17	34	6.5	4	13	4	4	6.5	26	260
40	M12 x 1.25	17	182	4	6.5	14	41.5	38	M6	13	19	39.5	8	4	16.5	4	4	9	30	290
50	M16 x 1.5	24	195	5	8	15.5	47.5	46.5	M8	16	24	47	9	4	20	6	5	10.5	37	333
63	M16 x 1.5	24	224	5	8	16.5	55	56.5	M8	16	24	55.5	8.5	4	23	6	9	12	37	362
80	M20 x 1.5	30	259	5	10	19	61	72	M10	21	30	61.5	10.5	4	33	8	11.5	14	46	431
100	M20 x 1.5	32	289	5	10	19	68	89	M10	21	30	69.5	10.5	4	37.5	8	17	15	51	471

Dimensions Brackets on Cylinder

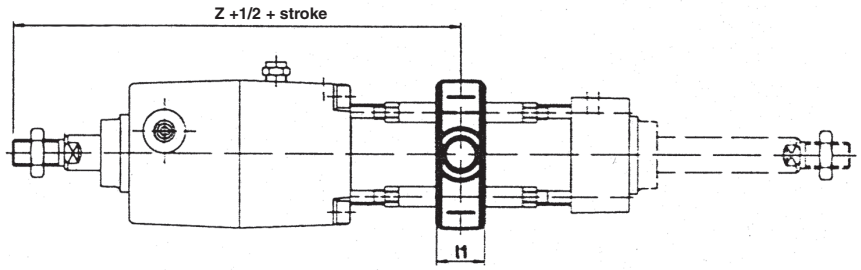


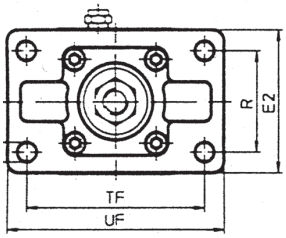
Axial Foot Type



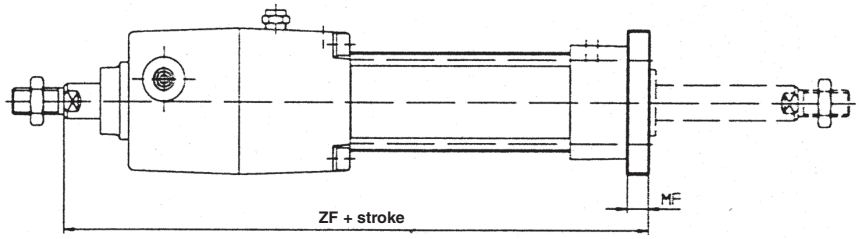


Trunnion Type

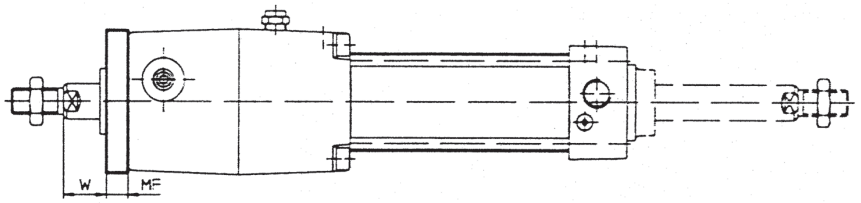




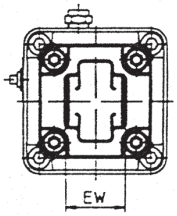
Rear Flange Type



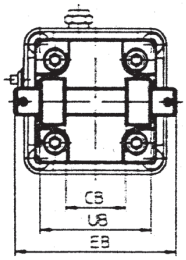
Front Flange Type

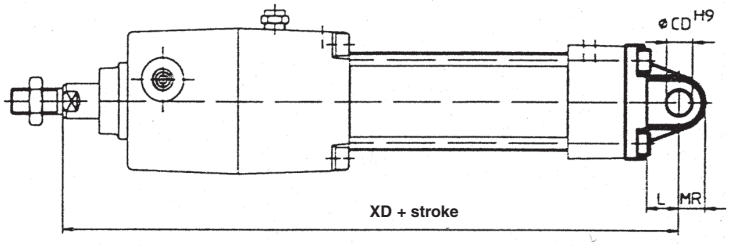


Single Clevis Type



Double Clevis Type





Bore size (mm)	Ø AB	AH	AD	AT	CB1)	ØCD H9	E1	E2	EB	EW 2)	ØFB	L	LY	MF	MR	R	SA	ØTD e9	TF	TL	TM
32	7	32	10	4	26	10	48	56	65	26	7	12	59	10	9.5	38	212	12	72	12	50
40	9	36	11	4	28	12	55	65	75	28	9	15	67.5	10	12	46	238	16	83	16	63
50	9	45	12	5	32	12	68	77	80	32	9	15	82.5	12	12	45	259	16	90	16	75
63	9	50	12	5	40	16	80	92	90	40	9	20	95	12	16	62	288	20	115	20	90
80	12	63	14	6	50	16	100	100	110	50	12	20	114	16	16	63	341	20	126	20	110
100	14	71	16	6	60	20	120	120	140	60	14	25	129	16	20	75	371	25	150	25	132

1) +0.03/+0.1 2) -0.2/-0.6

Bore size (mm)	TR	UB	UF	UW	W	XA	XD	Z	ZF	I1
32	32	45	87	49	16	214	212	165	200	18
40	36	52	101	58	20	240	237	183.5	222	22
50	45	60	120	71	25	264	259	211	244	24
63	50	70	135	87	25	293	293	232.5	273	28
80	63	90	153	110	30	346	341	281	321	34
100	75	110	178	136	35	381	381	311	356	40

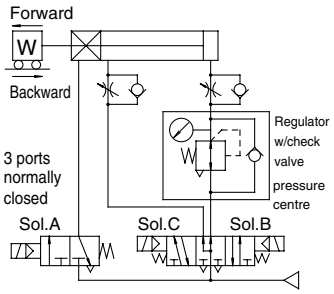
Specific Product Precaution

Air Pressure Circuits

⚠Warning

1. Basic Circuits

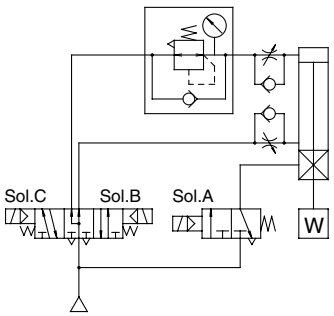
1. [Horizontal]



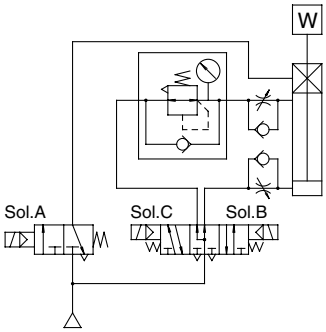
Sol.A	Sol.B	Sol.C	Action	
ON	ON	OFF	Forward	
OFF	OFF	OFF	Locked stop	0.5s or more
ON	OFF	OFF	Unlocked	0 to 0.5s
ON	ON	OFF	Forward	
ON	OFF	ON	Backward	
OFF	OFF	OFF	Locked stop	0.5s or more
ON	OFF	OFF	Unlocked	0 to 0.5s
ON	OFF	ON	Backward	

2. [Vertical]

[Load in direction of rod extension]

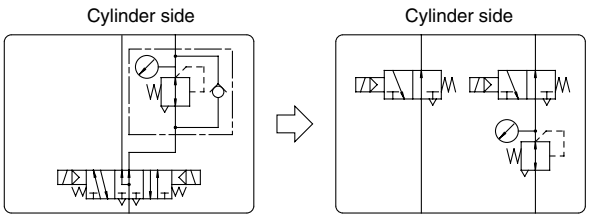


[Load in direction of rod retraction]



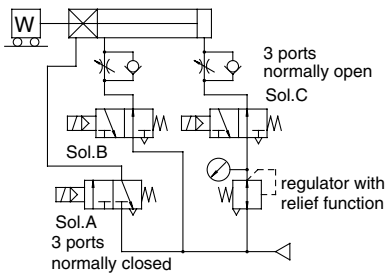
⚠Caution

1. A 3 position pressure centre solenoid valve and regulator with check valve can be replaced with two 3 port normally open valves and a regulator with relief function.



[Example]

1. [Horizontal]

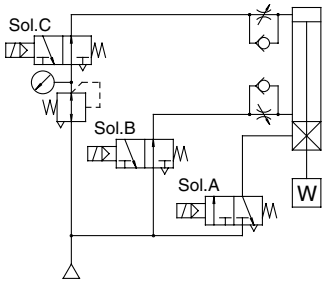


Air Pressure Circuits

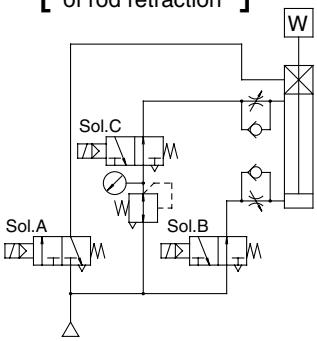
⚠Caution

2. [Vertical]

[load in direction of rod extension]



[Load in direction of rod retraction]



Manual Unlocking

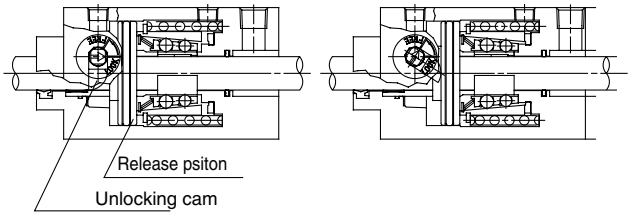
⚠Caution

1. The unlocking cam provided on the C95N Series is an emergency unlocking mechanism only.

During an emergency when the air supply is cut off, it is used to alleviate a problem by forcibly pushing the release piston back to release the lock. However, take note that the sliding resistance of the piston rod will be high compared to unlocking with air pressure.

2. When installing into equipment or machinery, etc., in cases where it will be necessary to hold an unlocked condition for an extended time, air pressure of 0.25MPa or more should be applied to the unlocking port.

3. Do not turn the unlocking cam (the arrow ⇐ on the unlocking cam head) past the FREE position. If it is turned too far there is a danger of damaging the unlocking cam.



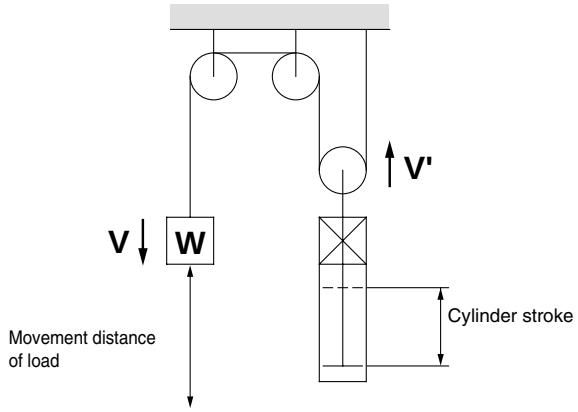
Locked condition　　Manually unlocked position

[Principle]
If the unlocking cam is turned counter clockwise with a tool such as an adjustable angle wrench, the release piston is pushed back and the lock is released. Since the lever will return to it's original position when released and become locked again, it should be held in this position for as long as unlocking is needed.

Precautions on Model Selection

⚠Caution

Example)



Selection Example

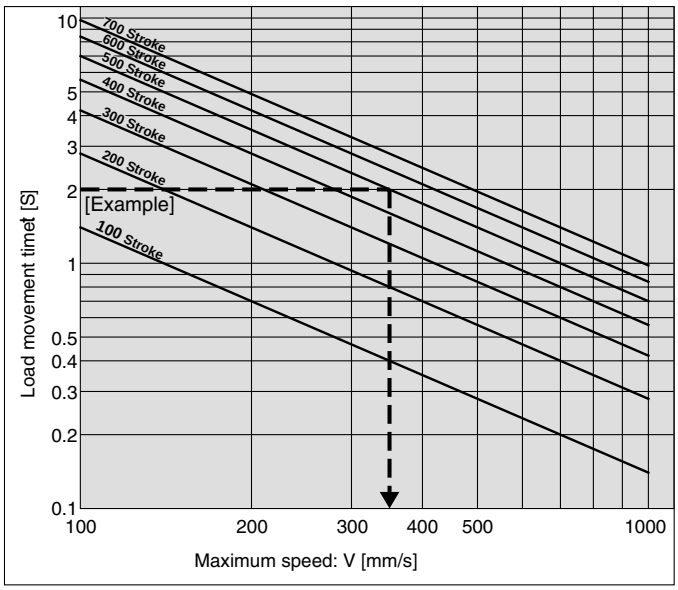
- **Load weight:** m=50kg
- **Movement distance:** Stroke=500mm
- **Movement time:** t=2s
- **Load condition:** Vertical downward=Load in direction of rod extension
- **Operating pressure:** P=0.4MPa

Step 1: From graph 1 find the maximum movement speed of the load
∴ Maximum speed V: approx 350mm/s

Step 2: Select graph 6 based upon the load condition and operating pressure, and then from the intersection of the maximum speed V=350mm/s found in step 1, and the load weight m=50kg
∴ **Ø63** →selecta C95NDB63 or larger bore size.

Step 1 Find the maximum load speed: V

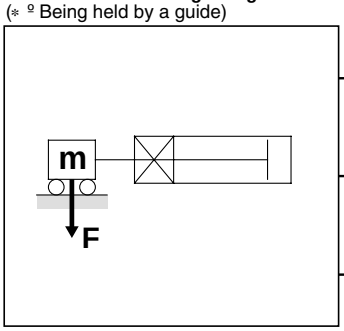
Graph 1



Step 2 Find the cylinder bore size

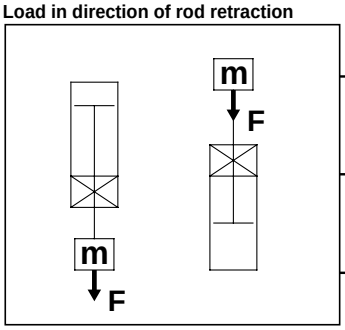
Load condition | Operating pressure

Direction of load at right angle to rod
(∗ º Being held by a guide)



- from 0.3MPa → **Graph 2**
- from 0.4MPa → **Graph 3**
- from 0.5MPa → **Graph 4**

Load in direction of rod extension
Load in direction of rod retraction

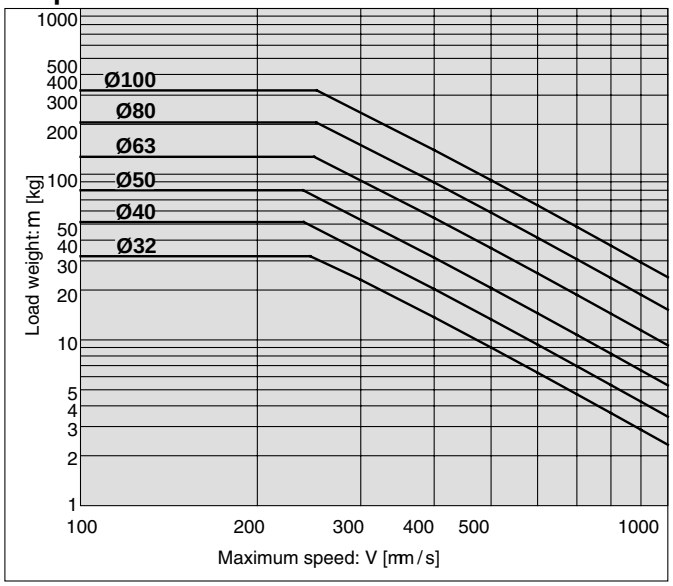


- from 0.3MPa → **Graph 5**
- from 0.4MPa → **Graph 6**
- from 0.5MPa → **Graph 7**

Selection Graphs

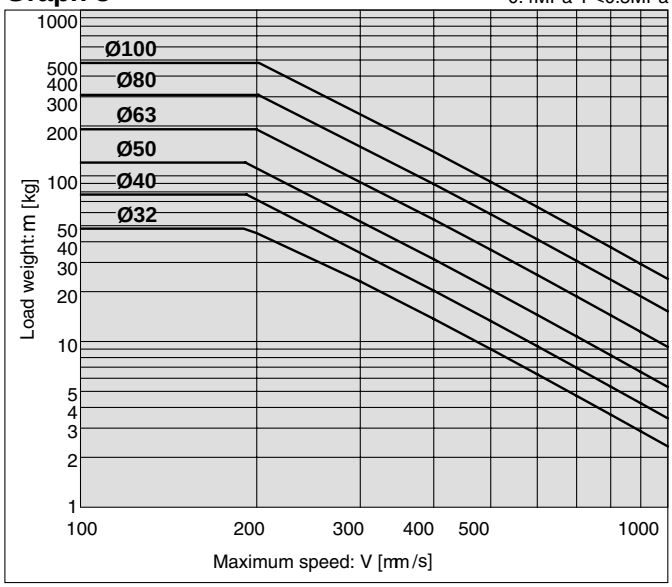
Graph 2

0.3MPa″ P<0.4MPa



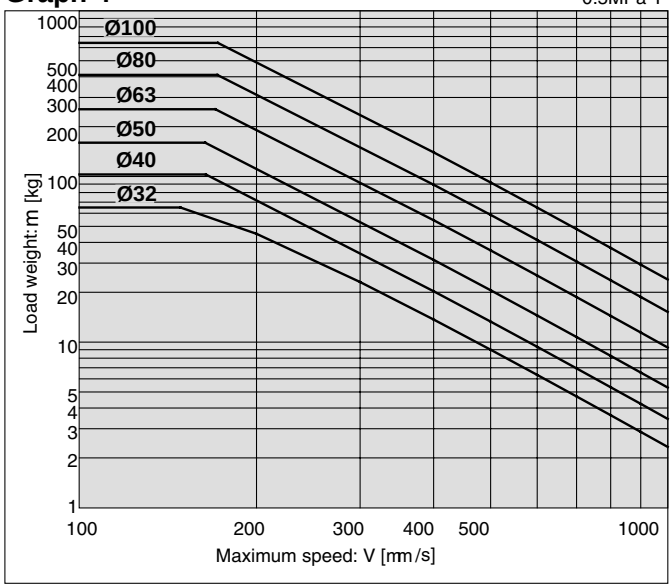
Graph 3

0.4MPa″ P<0.5MPa



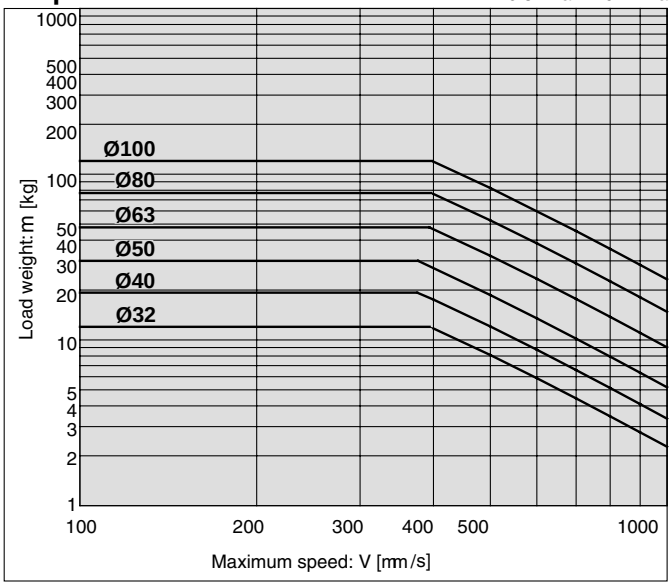
Graph 4

0.5MPa″ P



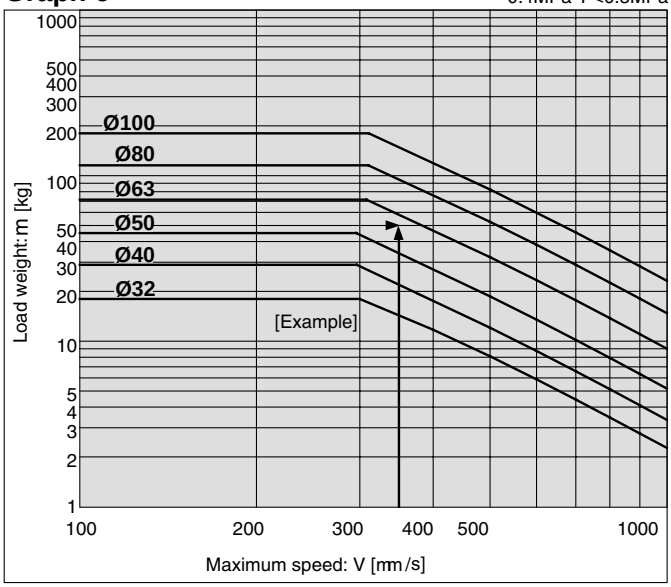
Graph 5

0.3MPa″ P<0.4MPa



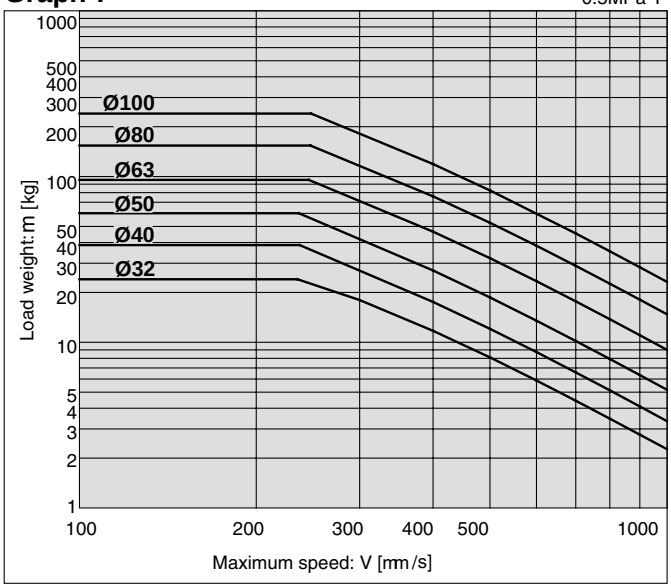
Graph 6

0.4MPa″ P<0.5MPa



Graph 7

0.5MPa″ P



Series C95
Auto Switch Specifications



Applicable Auto Switch

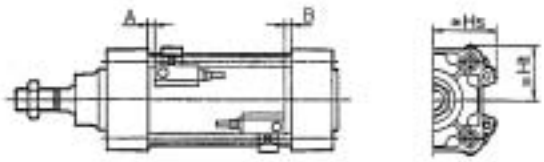
Style	Auto switch model	Electrical entry (function)
Reed switch	**D-A5□/A6**	Grommet
	D-A59W	Grommet (2 color indication)
Solid state switch	**D-F5□/J5**	Grommet
	D-F5□W/J59W	Grommet (2 color indication)
	D-F5BAL	Grommet (2 color indication, Water resistant)
	D-F5□F	Grommet (2 color indication, diagnostic output)
	D-F5NTL	Grommet (Timer)

Minimum Strokes for Auto Switch Mounting

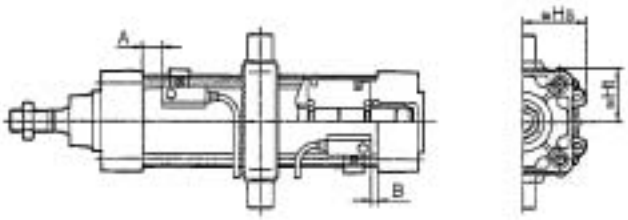
Style	Auto switch model	No. of auto switches	Support bracket except center trunnion						Center trunnion					
			ø32	ø40	ø50	ø63	ø80	ø100	ø32	ø40	ø50	ø63	ø80	ø100
Reed switch	**D-A5, D-A6**	2 (On different faces or same face)	15				20		60		80	105	110	115
		1												
	D-A59W	2 (On different faces or same face)	20				25		60	70	85	110	115	120
		1	15											
Solid state switch	**D-F5/J5**	2 (On different faces or same face)	15				25		60	70	85	110	115	120
		1	10											
	D-F5NTL	2 (On different faces or same face)	15				25		70	75	95	120	125	130
		1	10											
	D-F5□W D-J59W D-F5BAL D-F5□F D-F5LF	2 (On different faces or same face)	15				25		70	75	90	120	125	130
		1	10											

Auto Switch Mounting Position and Mounting Height

Reed switch



Solid state switch



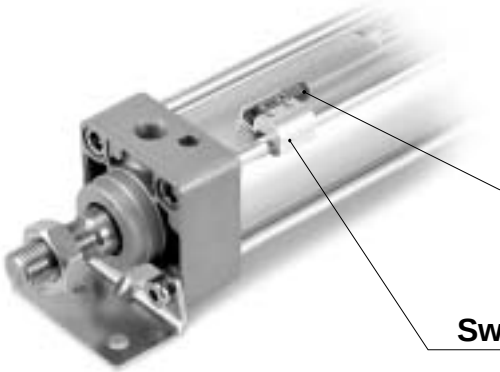
Auto Switch Mounting Position

Bore size (mm)	D-A5/D-A6		D-A59W		D-F5 D-J5		D-F5 W D-J59W D-F5BAL		D-F5NTL	
	A	**B**	**A**	**B**	**A**	**B**	**A**	**B**	**A**	**B**
ø32	10.5	0	14.5	2	17	4.5	21	8.5	22	9.5
ø40	21.5	0	25.5	2	28	4.5	32	8.5	33	9.5
ø50	23	0	27	2.5	29.5	5	33.5	9	34.5	10
ø63	28	0	32	2.5	34.5	5	38.5	9	39.5	10
ø80	28	2.5	22	6.5	24.5	9	28.5	13	29.5	14
ø100	28	2.5	32	6.5	34.5	9	38.5	13	39.5	14

Auto Switch Mounting Height

Bore size (mm)	D-A5 D-A6 D-A59W		D-F5, D-J5 D-F5 W, D-J59W D-F5BAL, D-F5NTL	
	Ht	**Hs**	**Ht**	**Hs**
ø32	24.5	35	25	32.5
ø40	27.5	38.5	27.5	36.5
ø50	34.5	43.5	34	41
ø63	39.5	48.5	39	46
ø80	46.5	55	46.5	52.5
ø100	55	62	55	59.5

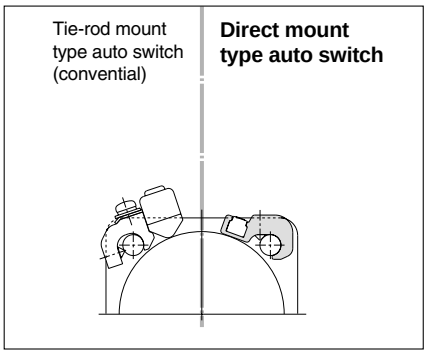
Direct mount auto switches can be installed on tie-rod type cylinders



Direct mount type auto switches can now be attached to the tie-rods by using a special switch mounting bracket.

Smaller size

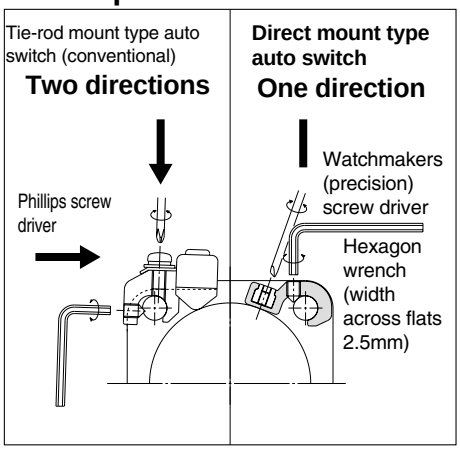
Protrusion of auto switches has been reduced





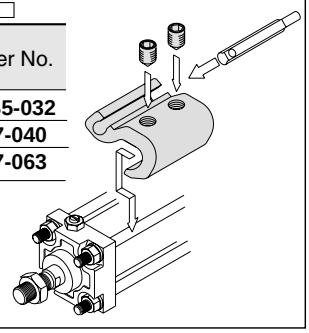
Easier handling

Auto switch mounting and positioning can be performed from one direction



Auto Switch Mounting Bracket for D-M9□

Bore size (mm)	Order No.
ø32, ø40	**BMB5-032**
ø50, ø63	**BA7-040**
ø80, ø100	**BA7-063**



Switch Mounting Bracket Models

Bore size [mm]	Mounting bracket model	Accessory	Auto switch
32, 40	**BMB4-032**	Screw (M4 x 6L) 2 pcs.	Reed-Switch D-Z7 D-Z80
50, 63	**BMB4-050**		Solid state D-Y5 D-Y6 D-Y7
80, 100	**BA4-063**		

Applicable Auto Switches

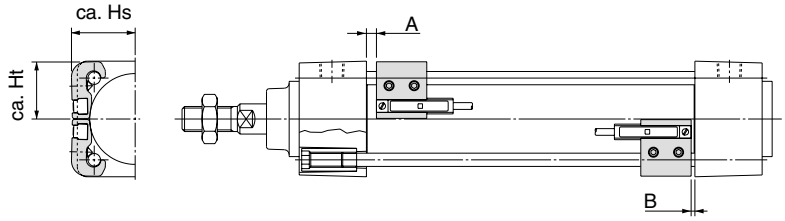
auto switch models		Model	Special function	Electrical Entry	Indicator light	Wiring (output)	Load voltage			Lead wire length [m]			Applicable loads	
Electrical entry direction							DC		AC	0.5 (–)	3 (L)	5 (Z)		
Vertical	In-line													
—	**Z76**	**Reed-Switch**	—	Grommet	Yes	3-wire	—	5V	—	●	●	—	IC	—
—	**Z73**					2-wire	24V	12V	100V	●	●	●	—	Relay, PLC
—	**Z80**				No			5V, 12V	100V	●	●	—	IC	
Y69A	**Y59A**	**Solid state Switch**	—	Grommet	Yes	3-wire (NPN)	24V	5V	—	●	●	○	IC	Relay, PLC
Y7PV	**Y7P**					3-wire (PNP)		12V		●	●	○		
Y69B	**Y59B**					2-wire		12V		●	●	○	—	
Y7NWV	**Y7NW**		Diagnostic indication (2-colour indicator)			3-wire (NPN)		5V		●	●	○	IC	
Y7PWV	**Y7PW**					3-wire (PNP)		12V		●	●	○		
Y7BWV	**Y7BW**					2-wire		12V		●	●	○	—	
—	**Y7BA**		Water resistant (2colour indicator)							—	●	—		
M9NV	**M9N**	**Solid state Switch**	—	Connector and Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	●	●	○	IC circuit	Relay PLC
M9PV	**M9P**					3 wire (PNP)				●	●	○		
M9BV	**M9B**					2 wire		12V		●	●	○		

∗ Lead wire length 0.5m····· — (Example: A53)
3m····· L (Example: A53L)
5m····· Z (Example: A53Z)

○: Manufactured upon receipt of order.

Auto Switches

How to install auto switches



Auto Switch mounting positions and dimensions [mm]

Bore Size [mm]	All models		D-Z7/Z8, D-Y5/Y7 (W)		D-Y6, D-Y7 (W) V		D-Y7BA	
	A	B	Hs	Ht	Hs	Ht	Hs	Ht
32	14	1.5	25.5	23	26.5	23	30	23
40	25	1.5	29.5	26	30	26	34	26
50	26.5	2	33.5	31	34.5	31	38	31
63	31.5	2	39	36	40	36	43	36
80	31.5	6	47.5	45	48.5	45	52	45
100	31.5	6	55.5	53.5	56.5	53.5	60	53.5

Auto switch operating ranges [mm]

Bore Size [mm]	D-Z7 D-Z8	D-Y5/Y7 (W) D-Y6/Y7 (W) V	D-Y7BA
32	7.5	5.5	3.5
40	8.5	5.5	3.5
50	7.5	7	3.5
63	9.5	7.5	4
80	9.5	6.5	4.5
100	10.5	5.5	5

Note) This is a standard including hysteresis, and is not guaranteed. (variations as much as 30%)
There may be large changes depending on the ambient environment.

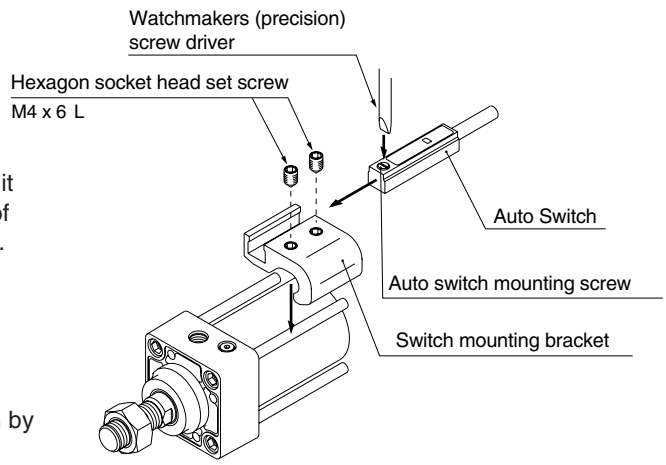
Minimum length [mm]

Auto Switch	with bracket T					
	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
D-Z7/Z8, D-Y5/Y7 (W)	80	85	90	90	95	100
D-Y6/Y7 (W) V	60	85	65	70	75	85
D-Y7BA	55	90	90	100	105	110

Mounting and Movement of Auto Switches

Caution!

When tightening the auto switch mounting screw, use a watchmakers screw driver with a handle diameter of about 5 to 6mm.
Furthermore, use a tightening torque of 0.05 to 0.1 Nm. As a rule, it should be turned about 90º from the point at which tightening can be felt. Use a tightening torque of 1 to 1.2 Nm for the hexagon socket head set screws (M4 x 0.7).



1. Place the mounting bracket on the cylinder tie-rod, and secure it in the detection position with the set screw so that the bottom of the mounting bracket makes firm contact with the cylinder tube. (Use a hexagon wrench)
2. Insert an auto switch into the switch mounting groove of the mounting bracket, and place it in the approximate auto switch mounting position.
3. After confirming the detection position, secure the auto switch by tightening the mounting screw which is included with it.
4. Return to step 2 to change the detection position.

Note) In order to protect the auto switch, install it so that its body is housed at least 15mm inside the switch mounting groove.

Adjustment

⚠ Warning

① **Do not open the cushion valve above the stopper.**
Cushionvalves are provided with a crimp (ø32) or a retaining ring (ø40 to ø100) as a stopping mechanism, and the cushion valve should not be opened above that point.
If air is supplied and operation started without confirming the above condition, the cushion valve may be ejected from the cover.

Bore size (mm)	Cushion valve	Width across flats	Socket wrench
32, 40, 50	MB-32-10-C1247	2.5	JIS 4648 Hex spanner wrench 2.5
63, 80, 100	MB-63-10-C1250	4	JIS 4648 Hex spanner wrench 4

②**When replacing brackets, use the hexagon wrenches shown below.**

Bore size (mm)		Bolt	Width across flats	Tightening torque (Nm)
32, 40		MB-32-48-C1247	4	4.9
50, 63		MB-50-48-C1249	5	11
80, 100	Foot	MB-80-48AC1251	6	25
	Others	MB-80-48BC1251		

With Non-rotating Rod (Double Acting: Single Rod)

Operating Precautions

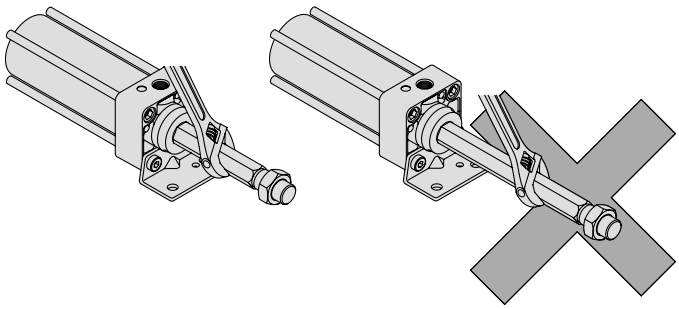
⚠ Caution

① **Do not apply more than the allowable rotating torque to the piston rod.**
If more than the allowable rotating torque is applied, the non-rotating guide will be deformed and there will be a significant loss of rotational accuracy. This may cause damage to the machinery.

Mounting & Piping

⚠ Caution

① **Mounting of a work piece at the rod end.**
When screwing a fitting or nut, etc. onto the threads at the end of the piston rod, push the piston rod into its fully retracted position, and grasp the protruding section with a wrench.
Furthermore, when tightening, take care that the torque is not applid to the non-rotating guide.



Made to Order Common Specifications
Standard Air Cylinder

Contact SMC for the detailed specifications, delivery and prices.

Standard Air Cylinder/Made to Order Common Specifications

Spec.	No.	Symbol	Specifications/Descriptions	Standard air cylinder									Page
				CJP	CJ2	CM2	CG1	MB	CA1	CS1	C95	CP95	
Made to order common specifications	①	-XA0 to A30	Change of rod end shape		■	■	■	■	■	■	(4)	(4)	CD
	②	-XB5	Oversized rod cylinder					■	■	■			
	③	-XB6	Heat resistant cylinder (150°C)	(1)	(2)	■	■	■	■	■	(4)	(4)	
	④	-XB7	Cold resistant cylinder	(3)	(2)	■	■						
	⑤	-XB9	Low speed cylinder (10 to 50 mm/s)	(1)	(1)	■	■						
	⑥	-XB10	Intermediate stroke (Exclusive body use)										
	⑦	-XB11	Long stroke										
	⑧	-XB12	External stainless steel			■							
	⑨	-XB13	Low speed cylinder (5 to 50 mm/s)		(1)	■	■	■					
	⑩	-XC3	Special port position		(1)	■		■	■	■			
	⑪	-XC4	With heavy duty scraper			■	■	■	■	■	■	■	
	⑫	-XC5	Heat resistant cylinder (110°C)			■		■	■	■			
	⑬	-XC6	Piston rod and rod end nut made of stainless steel			■	■	■	■	■			
	⑭	-XC7	Tie rod, cushion valve, tie rod nut, etc. made of stainless steel					■	■				
	⑮	-XC8	Adjustable stroke cylinder/Adjustable extend stroke		■	■	■	■	■	■			
	⑯	-XC9	Adjustable stroke cylinder/Adjustable retract stroke		■	■	■	■	■	■			
	⑰	-XC10	Dual stroke cylinder/Double rod		■	■	■	■	■	■			
	⑱	-XC11	Dual stroke cylinder/Single rod		■	■	■	■	■	■			
	⑲	-XC12	Tandem cylinder			■	■	■	■	■			
	⑳	-XC13	Auto switch rail mounting			■	■						
	㉑	-XC14	Change of trunnion bracket mounting position					■	■	■	■		
	㉒	-XC15	Change of tie rod length						■	■			
	㉓	-XC17	Pin cylinder with rod quenched	(3)									
	㉔	-XC18	NPT port			■	■	■	■	■			
	㉕	-XC20	Head cover axial port			■	■						
	㉖	-XC22	Fluorine rubber seals	■	■	■	■	■	■				
	㉗	-XC24	With magnet shielding plate										
	㉘	-XC25	Without Air cushion valve			■							
	㉙	-XC27	Double clevis pin and double knuckle pin made of stainless steel			■			■	■			
	㉚	-XC28	Compact flange made of SS400						■				
	㉛	-XC29	Double knuckle joint with spring pin			■			■				
	㉜	-XC30	Front trunnion					■	■	■			
	㉝	-XC34	Rod does not extend beyond non-rotating plate										
	㉞	-XC35	With coil scraper			■	■	■	■	■	■	■	
	㉟	-XC36	With front guide boss										
	㊱	-XC37	Larger throttle diameter of connecting port				■						
	㊲	-XC38	Vacuum (Rod through hole)			■							
	㊳	-XC42	Built-in rear shock absorber				■						
	㊴	-XC51	With hose nipple		■								
	㊵	-XC52	Mounting nut with set screw			■							
	㊶	-XC56	With knock pin hole										
	㊷	-XC57	Rodless cylinder with floating joint										

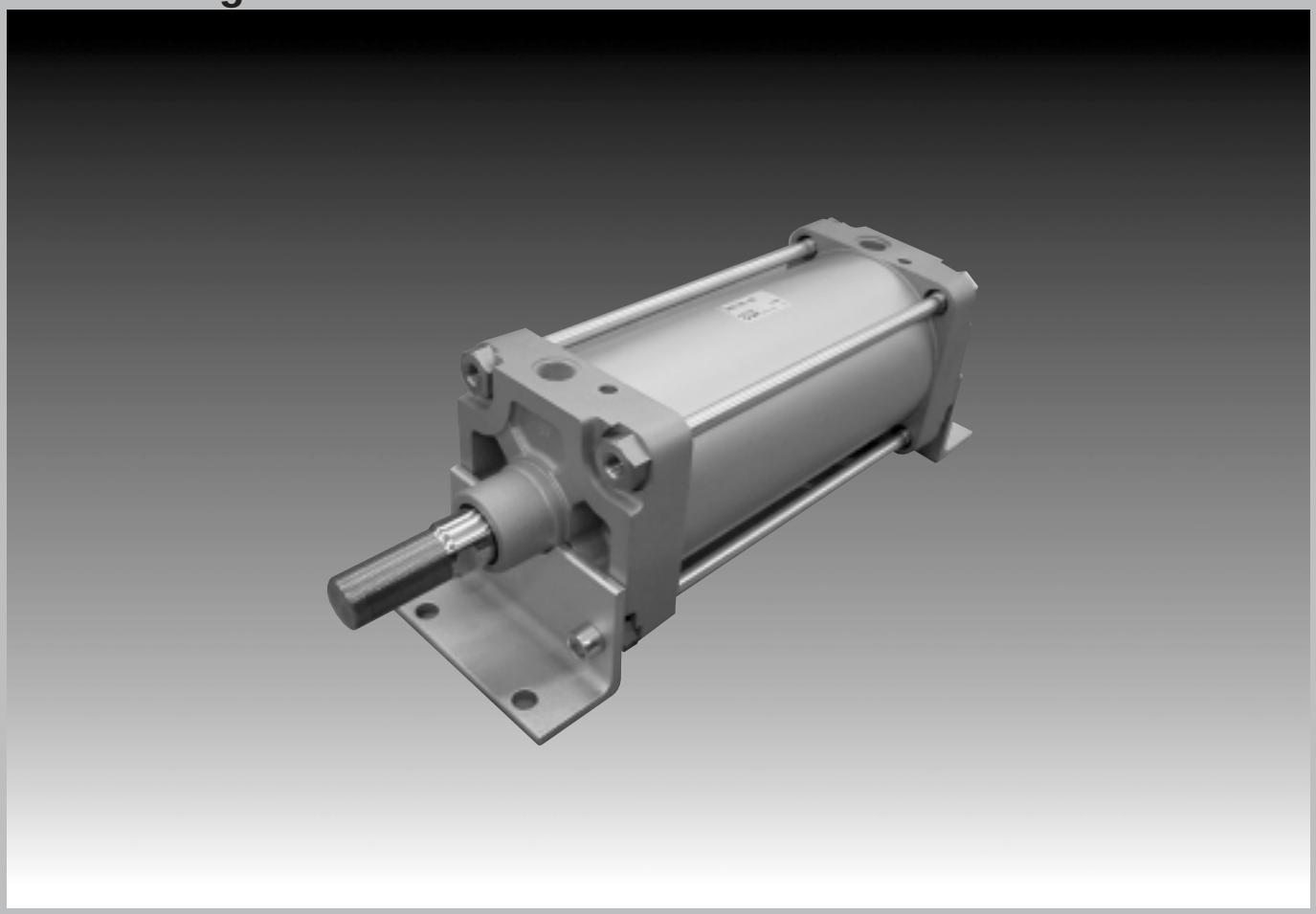
∗ Except air-hydro style for each cylinder
Note 1) Only double acting
Note 2) Only double acting (without switch)
Note 3) Only single acting
Note 4) Only for C95S-type

ISO/VDMA Cylinder: Large Bore Size Type

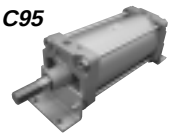
Series C95

ø125, ø160, ø200, ø250

Conforming to ISO 6431/CETOP RP43P/VDMA 24562



Series Variations

Series	Action	Type		Basic	Standard variations		Option	Bore (mm)	Page
					Built-in magnet	Stainless steel rod	Heat resistant		
Large Bore Size *Series C95* 	Double acting	Single rod	Non -lube	●	●	○	○	125 160 200 250	6-38

ISO/VDMA Cylinder: Large Bore Size Type
Double Acting, Single Rod
Series C95
ø125, ø160, ø200, ø250

How to Order

Without auto switch C95S **B** **125** – **100**

With auto switch C95SD **B** **125** – **100** – **A53** **S**

Built-in magnet

Mounting style

B	Basic/without bracket style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
C	Single clevis style
D	Double clevis style
T	Center trunnion style

Bore size

125	125 mm
160	160 mm
200	200 mm
250	250 mm

Stroke (mm)
Refer to "Standard Stroke" on page 6-40.

Auto switch

Nil	Without auto switch

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

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

Applicable Auto Switch/Tie-rod Mounting

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mounting	Auto switch model: Band mounting	Lead wire length (m): 0.5 (Nil)	3 (L)	5 (Z)	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (Equiv. to NPN)	5 V	—	**A56**	—	●	●	—	IC	—
				2-wire	12 V	—	**A53**	—	●	●	●	—	Relay, PLC
						100 V, 200 V	**A54**	—	●	●	●		
			No		24 V	5 V, 12 V	—	**A67**	—	●	●	—	IC	Relay, PLC
						12 V	200 V or less	**A64**	—	●	●	—	—
	Diagnostic indication (2-color)					—	—	**A59W**	—	●	●	—	
	—		Yes	3-wire	—	5 V	—	**Z76**	—	●	●	—	IC	— Note)
				2-wire	24 V	12 V	AC 100	**Z73**	—	●	●	●	—	Relay, PLC Note)
			No			5 V, 12 V	100 V or less	**Z80**	—	●	●	—	IC	
		Terminal conduit	Yes			12 V	—	—	**A33**	—	—	—	—	PLC Note)
							100 V, 200 V	—	**A34**	—	—	—	—	Relay, PLC Note)
		DIN terminal						—	**A44**	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**F59**	—	●	●	○	IC	Relay, PLC
				3-wire (PNP)				**F5P**	—	●	●	○		
				2-wire	—	—	100 V, 200 V	**J51**	—	●	●	○	—	
					24 V	12 V	—	**J59**	—	●	●	○		
	Diagnostic indication (2-color)			3-wire (NPN)		5 V, 12 V		**F59W**	—	●	●	○	IC	
				3-wire (PNP)				**F5PW**	—	●	●	○		
	Water resistant (2-color)			2-wire		12 V		**J59W**	—	●	●	○	—	
								F5BAL	—	—	●	○		
	With timer			3-wire (NPN)		5 V, 12 V		**F5NTL**	—	—	●	○	IC	
	Diagnostic output (2-color)			4-wire (NPN)				**F59F**	—	●	●	○		
	—			3-wire (NPN)		5 V, 12 V	—	**Y59A**	—	●	●	○	IC	
				2-wire		12 V		**Y59B**	—	●	●	○	—	
				3-wire (PNP)		5 V, 12 V		**Y7P**	—	●	●	○	IC	Note) Relay, PLC
	Diagnostic indication (2-color)			3-wire (NPN)				**Y7NW**	—	●	●	○		
				3-wire (PNP)				**Y7PW**	—	●	●	○		
	Water resistant (2-color)			2-wire		12 V		**Y7BW**	—	●	●	○	—	
								Y7BAL	—	—	●	○		
	—	Terminal conduit		3-wire (NPN)		5 V, 12 V		—	**G39**	—	—	—	IC	
				2-wire		12 V		—	**K39**	—	—	—	—	
	——	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	**M9NV**	**M9N**	●	●	○	IC	Note) Relay PLC
				3 wire (PNP)				**M9PV**	**M9P**	●	●	○		
				2 wire		12V		**M9BV**	**M9B**	●	●	○		

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

○: Manufactured upon receipt of order.
Note) Switch can not be mounted on ø250

Mounting Bracket Part No.

Bore size (mm)	125	160	200	250
Foot (1)	L5125	L5160	L5200	L5250
Flange	F5125	F5160	F5200	F5250
Single clevis	C5125	C5160	C5200	C5250
Double clevis	D5125	D5160	D5200	D5250

Note 1) Two foot brackets and mounting bolts (4 pieces) are included in this no. (ø125 to ø250)
Note 2) Accessories for mounting brackets are as follows
Foot, Flange, Single clevis: Mounting bolts
Double clevis : Clevis pin, Retaining rings, Mounting bolts

Auto Switch Mounting Bracket Part No.

Bore size (mm)	125	160	200	250
D-A3/A4/K3/G3	BS1-125	BS1-160	BS1-200	—
D-A5/A6/F5/J5	BT-08	BT-16	BT-16	BT-20
D-Z□/Y□	BA4-080	BS4-160	BS4-160	—
D-M9□	BA7-080	BS5-160	BS5-160	—

Accessory

Mounting Accessory, Cylinder

Bore size (mm)	**F** Rod/Head side flange	**D** Female head side clevis (Corresponds to E accessories)	**C** Male head side clevis
	Supplied with 4 screws	Supplied with bolt, safety device and 4 screws	Supplied with 4 screws
125	F5125	D5125	C5125
160	F5160	D5160	C5160
200	F5200	D5200	C5200
250	F5250	D5250	C5250
	See page 6-43 for dimensions.	See page 6-43 for dimensions	See page 6-44 for dimensions.

Bore size (mm)	**L** Foot
	Supplied with two pieces Supplied with 4 screws
125	L5125
160	L5160
200	L5200
250	L5250
	See page 6-43 for dimensions.

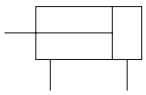
Mounting Accessory, Rod

Bore size (mm)	**GKM** Rod clevis ISO 8140	**KJ** Piston rod ball joint ISO 8139	**JA** Floating joint
	Supplied with bolts and safety devices		
125	GKM30-54	KJ27D	JA125-27-200
160	GKM35-54	KJ36D	JA160-36-200
200	GKM35-54	KJ36D	JA160-36-200
250	GKM40-84	KJ42D	
	See page 6-45 for dimensions.	See page 6-45 for dimensions.	See page 6-45 for dimensions.

Specifications

Bore size (mm)	125	160	200	250
Action	Double acting			
Fluid	Air			
Proof pressure	1.5 MPa			
Max. operating pressure	1.0 MPa			
Min. operating pressure	0.05 MPa			
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)			
Lubrication	Not required (Non-lube)			
Operating piston speed	50 to 700 mm/sec	50 to 500 mm/sec		
Allowable stroke tolerance	Up to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$, 1001 to 1500: $^{+1.8}_{0}$			
Cushion	Both ends (Air cushion)			
Thread tolerance	JIS Class 2			
Port size	G 1/2	G 3/4		G 1
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Center trunnion style			

JIS Symbol
Double acting



Minimum Stroke for Auto Switch Mounting

Refer to page 12 f or “Minimum Stroke for Auto Switch Mounting”.

Standard Stroke

Bore size (mm)	Max. * stroke
125	1600
160	1600
200	2000
250	2400

Intermediate strokes are available.
* Please consult with SMC for longer strokes.

Theoretical Output

(N) OUT IN

Bore size (mm)	Rod diameter (mm)	Operating direction	Piston area (mm^2)	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
125	32	OUT	12272	2454	3682	4909	6136	7363	8590	9818	11045	12272
		IN	11468	2294	3440	4587	5734	6881	8028	9174	10321	11468
160	40	OUT	20106	4021	6032	8042	10053	12064	14074	16085	18095	20106
		IN	18850	3770	5655	7540	9425	11310	13195	15080	16965	18850
200	40	OUT	31416	6283	9425	12566	15708	18850	21991	25133	28274	31416
		IN	30159	6032	9048	12064	15080	18095	21111	24127	27143	30159
250	50	OUT	49087	9817	14726	19635	24544	29452	34361	39270	44178	49087
		IN	47124	9425	14137	18850	23562	28274	32987	37699	42412	47124

Note) Theoretical force (N) = Pressure (MPa) x Piston area (mm^2)

Weight/Aluminum Tube

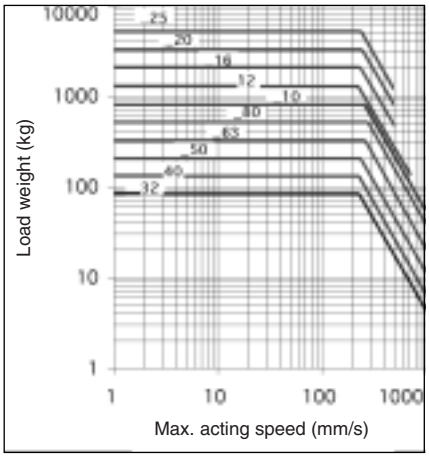
(kg)

Bore size (mm)		125	160	200	250
Basic weight	Basic style	7.45	14.54	20.20	37.17
	Foot style	2.60	4.90	7.76	15.00
	Flange style	4.10	2.45	11.75	20.29
	Single clevis style	4.15	6.90	9.10	18.60
	Double clevis style	4.25	6.30	9.25	18.46
	Trunnion style	2.98	4.50	7.23	14.40
Additional weight per each 50 mm of stroke	All mounting brackets	0.54	0.83	0.90	1.60
Accessory	Single rod clevis	1.20	1.62	1.62	2.76
	Double clevis (With pin)	1.84	3.92	3.92	6.69

Calculation: (Example) CP95SD160-100
- Basic weight ····· 14.54 (kg) (Basic, ø160)
- Mounting ····· 6.30 (kg) (Double clevis)
- Additional weight ··· 0.83 (kg/50 st)
- Cylinder stroke ····· 100 (st)

14.54 + 0.83 x 100 ÷ 50 + 6.30 = 22.50 kg

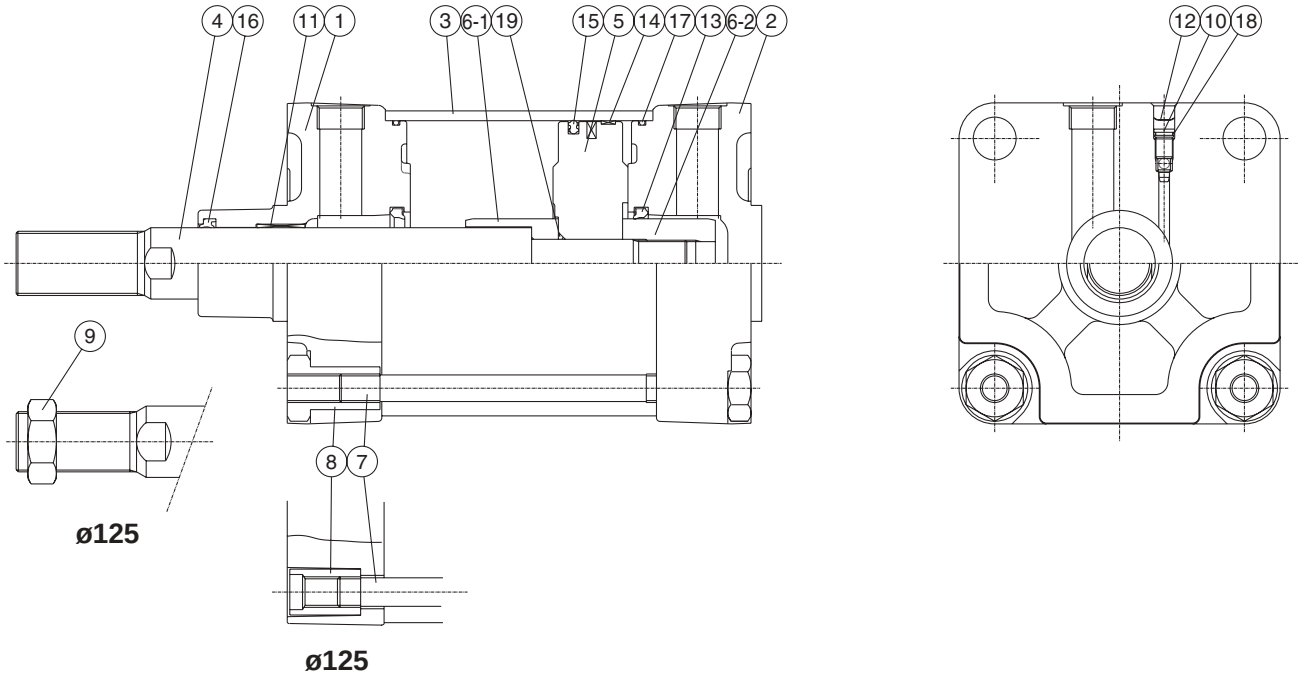
Allowable Kinetic Energy



Example: Load limit at rod end when air cylinder ø200 is actuated with max. actuating speed 500 mm/s. See the intersection of lateral axis 500 mm/s and ø200 line, and extend the intersection to left.
Thus the allowable load is 800 kg.

Construction

[First angle projection]



Component Parts

No.	Description	Material	Qty.	Note
①	Rod cover	Aluminum die-casted	1	Only ø125
②	Head cover	Aluminum die-casted	1	Only ø125
③	Cylinder tube	Aluminum alloy	1	
④	Piston rod	Carbon steel	1	
⑤	Piston	Aluminum alloy	1	
⑥-1	Cushion ring A	Rolled steel	1	
⑥-2	Cushion ring B	Rolled steel	1	
⑦	Tie-rod	Carbon steel	4	
⑧	Tie-rod nut	Steel	8	
⑨	Rod end nut	Steel	1	Only ø125
⑩	Cushion valve	Steel wire	2	
⑪	Bushing	Lead-bronze casted	1	
⑫	Snap ring	Steel for spring	2	
⑬	Cushion seal	Urethane	2	
⑭	Wear ring	Resin	1	
⑮	Piston seal	NBR	1	
⑯	Rod seal	NBR	1	
⑰	Cylinder tube gasket	NBR	2	
⑱	Cushion valve seal	NBR	2	
⑲	Piston gasket	NBR	1	
⑳	Magnet ring		1	

ø160 to ø250

No.	Description	Material	Qty.	Note
①	Rod cover	Aluminum casted	1	
②	Head cover	Aluminum casted	1	

Replacement Parts: Seal Kit

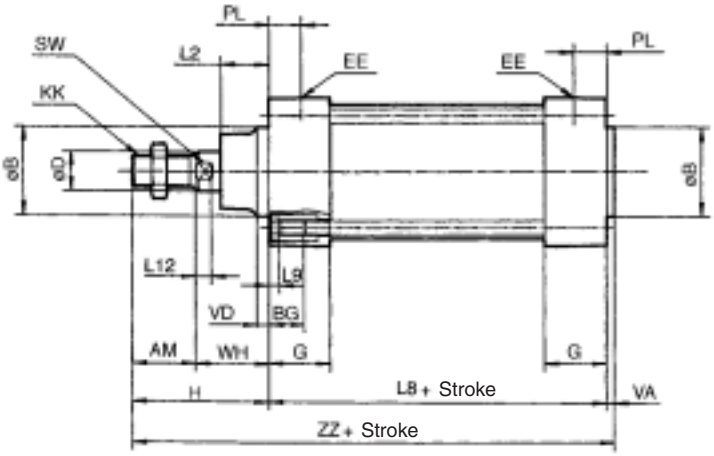
Bore size (mm)	Kit no.	Contents
125	CS95-125	Kits include items ⑬ to ⑰ from the table above.
160	CS95-160	
200	CS95-200	
250	CS95-250	

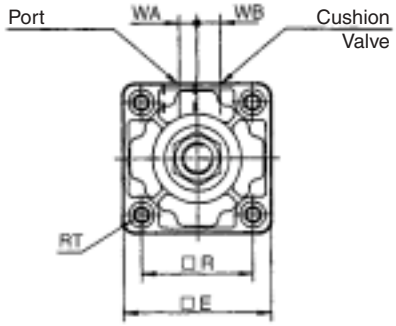
∗ Seal kits consist of items ⑬ to ⑰ contained in one kit, and can be ordered using the order number for each respective tube bore size.

Dimensions: Without Mounting Bracket

[First angle projection]

C95SB Bore size - Stroke



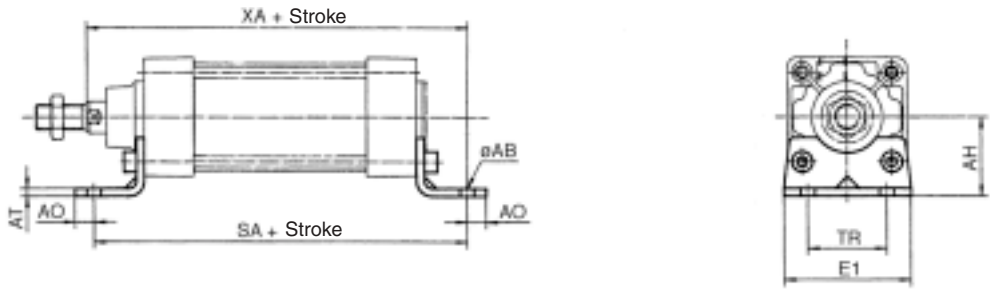


Bore size (mm)	AM	øB e11	øD	EE	PL	RT	L12	KK	SW	G	BG (Min.)	L8	VD	VA	WA	WB	WH	ZZ	□E	□R	L2	L9
125	54	60	32	G 1/2	19	M12 x 1.75	13	M27 x 2	27	38	20	160	10	6	17	15	65	285	136	110	40	6
160	72	65	40	G 3/4	30	M16 x 2	15	M36 x 2	36	55	27	180	8	6	15	25	80	338	180	140	50	0
200	72	75	40	G 3/4	35	M16 x 2	15	M36 x 2	36	57	27	180	15	6	18	25	95	353	220	175	55	0
250	84	90	50	G 1	31	M20 x 2.5	20	M42 x 2	46	59	29	200	20	10	20	28	105	399	270	220	65	0

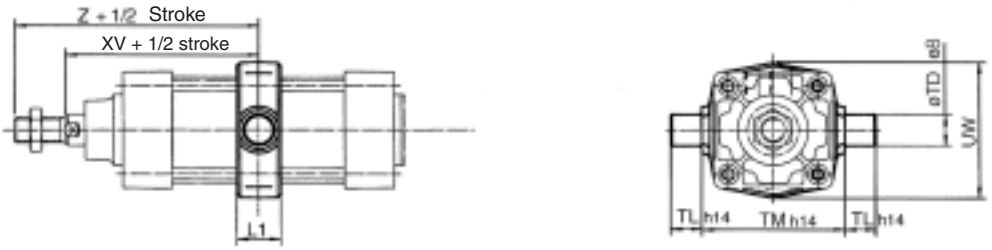
Dimensions: Cylinder Mounting Accessory

[First angle projection]

Foot style (L)

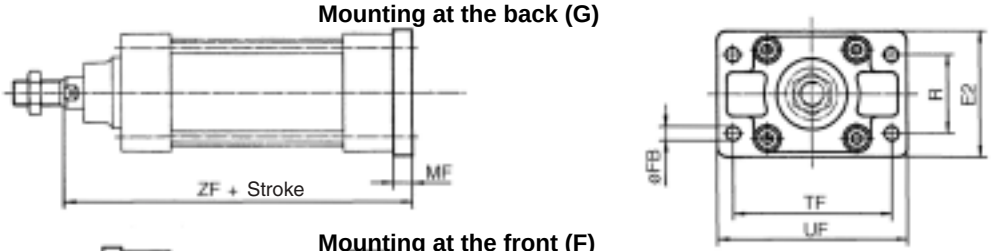


Center trunnion style (T)

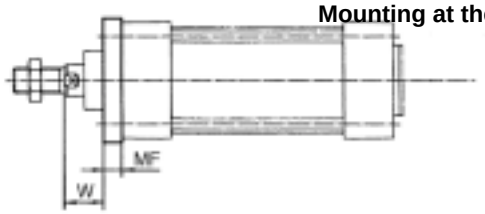


Flange style (F, G)

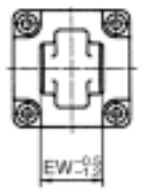
Mounting at the back (G)



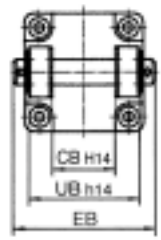
Mounting at the front (F)

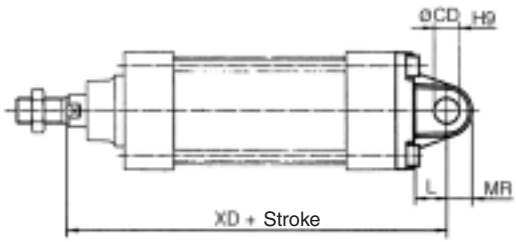


Head side single clevis style (C)



Head side double clevis style (D)



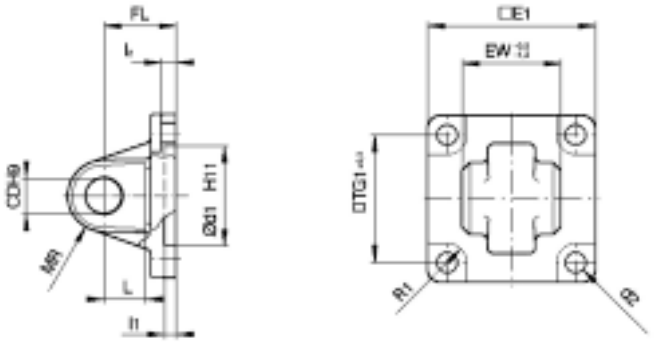


Bore (mm)	E1	R	W	MF	ZF	øFB	øCD H9	EB	L	XD	UB h14	CB H14	EW -0.5 -1.2	MR	TR	AO	AT	XA	SA	AH	øAB	L1	XV	Z	TL h14	øTD e8	TM h14	UW	TF	UF	E2
125	Max. 157	90	45	20	245	16	25	Max. 157	Min. 30	275	130	70	70	Max. 26	90	Max. 25	8	270	250	90	16	Max. 50	145	199	25	25	160	Max. 160	180	Max. 224	Max. 157
160	Max. 195	115	60	20	280	18	30	Max. 209	Min. 35	315	170	90	90	Max. 31	115	Max. 25	9	320	300	115	18	Max. 50	170	242	32	32	200	Max. 220	230	Max. 280	Max. 195
200	Max. 238	135	70	25	300	22	30	Max. 209	Min. 35	335	170	90	90	Max. 31	135	Max. 35	12	345	320	135	22	Max. 50	185	257	32	32	250	Max. 260	270	Max. 320	Max. 238
250	Max. 290	165	80	25	330	26	40	Max. 249	Min. 45	375	200	110	110	Max. 41	165	Max. 40	14.5	380	350	165	26	Max. 60	205	289	40	40	320	Max. 320	330	Max. 395	Max. 290

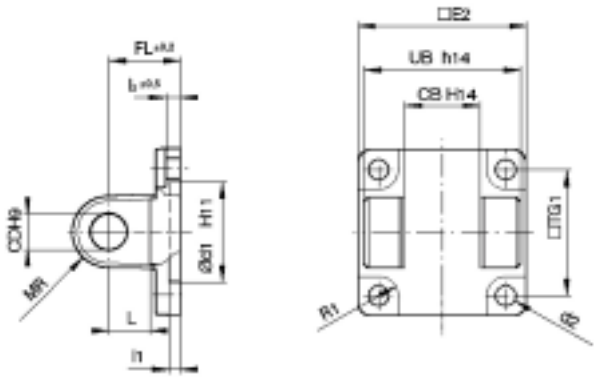
Dimensions: Cylinder Mounting Accessory C, D, E and CR

[First angle projection]

Mounting style (C)



Mounting style (D)



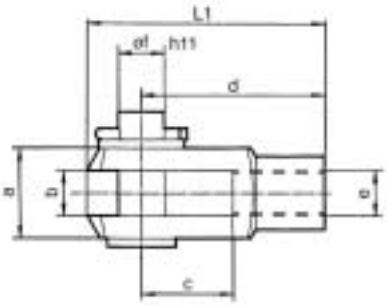
Bore size (mm)	□E1	EW	□TG1	FL	l1	l2	ød1	CD	MR	d2	R1	□E2	UB	CB
125	140	70	110	50	7	10	60	25	25	13.5	10	140	130	70
160	180	90	140	55	7	10	65	30	25	18	13	180	170	90
200	220	90	175	60	7	11	75	30	25	18	13	220	170	90
250	270	110	220	70	11	11	90	40	40	22	16.5	270	200	110

Dimensions: Piston Rod Mounting Accessory

[First angle projection]

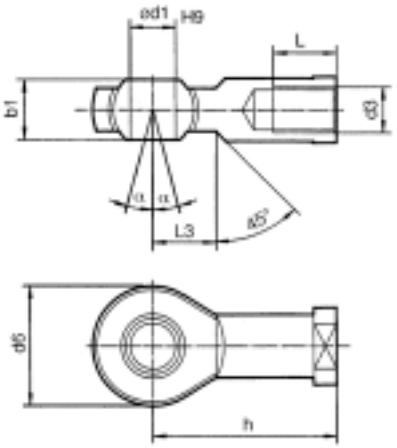
Piston Rod Clevis (ISO 8140)
Steel, Zinc Chromate Plated

Part no.	Bore size (mm)	e	b		d	øf h11	L1 max.	c min.	a max.	L min.
GKM30-54	**125**	M27 x 2	30	+0.60 +0.15	110	30	155	54	55	45
GKM35-54	**160/200**	M36 x 2	35	+0.60 +0.15	144	35	201	54	70	57
GKM40-84	**250**	M42 x 2	40	+0.60 +0.15	168	40	245	84	85	77



Piston Rod Ball Joint (ISO 8139)
Steel, Zinc Chromate Plated

Part no.	Bore size (mm)	d3	d1 H9	h	d6 max.	b1 h12	L min.	α	L3
KJ27D	**125**	M27 x 2	30	110	70	37	51	15°	35
KJ36D	**160/200**	M36 x 2	35	125	80	43	56	16°	55
KJ42D	**250**	M42 x 2	40	142	90	49	60	4°	46

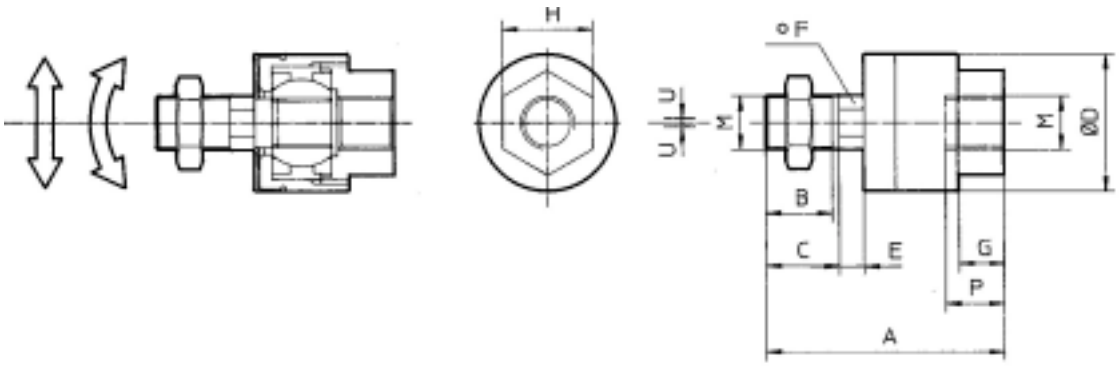


Dimensions: Piston Rod Mounting Accessory

[First angle projection]

Floating Joint JA
Steel

Bore size (mm)	M	Part no.	A	B	C	øD	E	F	G	H	P	U	Load (kN)	Weight (g)	Angle
125	M27 x 2	**JA125-27-200**	123	34	38	66	13	24	20	41	24	2	28	1500	± 5°
160, 200	M36 x 2	**JA160-36-200**	178	51	55	96	16	55	24	55	42	3	71	4700	



Auto Switch Specifications



Applicable Auto Switch

Type	Auto switch model	Electrical entry (Function)
Reed switch	**D-A5□/A6□**	Grommet
	D-A59W	Grommet (2-color indication)
	D-Z7□/Z80	Grommet
	D-A3□	Terminal conduit
	D-A44	DIN terminal
Solid state switch	**D-F5□/J5□**	Grommet
	D-F5□W/J59W	Grommet (2-color indication)
	D-F5BAL	Grommet (2-color indication, Water resistant)
	D-F59F	Grommet (2-color indication, Diagnostic output)
	D-F5NTL	Grommet (With timer)
	D-Y59□	Grommet (In-line)
	D-Y69□	Grommet (Perpendicular)
	D-Y7P	Grommet (In-line)
	D-Y7PV	Grommet (Perpendicular)
	D-Y7□W	Grommet (2-color indication, In-line)
	D-Y7□WV	Grommet (2-color indication, Perpendicular)
	D-Y7BAL	Grommet (Water resistant, In-line)
	D-G39/K39	Terminal conduit

Minimum Stroke for Auto Switch Mounting

Auto switch model	No. of auto switches	Support bracket except center trunnion				Center trunnion			
		ø125	**ø160**	**ø200**	**ø250**	**ø125**	**ø160**	**ø200**	**ø250**
A5□ **A6□**	1, 2	15	10	10	10	165	125	125	145
	n	15 + 55(n-2)/2 n = 2, 4, 6, 8···	10 + 55(n-2)/2 n = 2, 4, 6, 8···	←	←	165 + 55(n-4)/2 n = 4, 8, 12, 16···	125 + 55(n-4)/2 n = 4, 8, 12, 16···	125 + 55(n-4)/2 n = 4, 8, 12, 16···	145 + 55(n-4)/2 n = 4, 8, 12, 16···
A59W	2	20	←	←	←	175	135	135	155
	n	20 + 55(n-2)/2 n = 2, 4, 6, 8···	←	←	←	175 + 55(n-4)/2 n = 4, 8, 12, 16···	135 + 55(n-4)/2 n = 4, 8, 12, 16···	135 + 55(n-4)/2 n = 4, 8, 12, 16···	155 + 55(n-4)/2 n = 4, 8, 12, 16···
	1	20	15	15	15	175	135	135	155
F5□(W)/J5□/J59W **F5BAL/F59F**	1, 2	20	10	←	←	170	135	135	155
	n	20 + 55(n-2)/2 n = 2, 4, 6, 8···	10 + 55(n-2)/2 n = 2, 4, 6, 8···	←	←	175 + 55(n-4)/2 n = 4, 8, 12, 16···	135 + 55(n-4)/2 n = 4, 8, 12, 16···	135 + 55(n-4)/2 n = 4, 8, 12, 16···	155 + 55(n-4)/2 n = 4, 8, 12, 16···
F5NTL	1, 2	25	15	15	15	185	150	145	165
	n	25 + 55(n-2)/2 n = 2, 4, 6, 8···	15 + 55(n-2)/2 n = 2, 4, 6, 8···	←	←	185 + 55(n-4)/2 n = 4, 8, 12, 16···	150 + 55(n-4)/2 n = 4, 8, 12, 16···	145 + 55(n-4)/2 n = 4, 8, 12, 16···	165 + 55(n-4)/2 n = 4, 8, 12, 16...
A3□ **K3□** **G3□**	1	10	10	10	—	130	140	140	—
	2 (Same side)	100	100	100	—	130	140	140	—
	2 (Different sides)	35	35	35	—	130	140	140	—
	n (Same side)	100 + 100(n-2) n = 2, 3, 4, 5···	←	←	—	130 + 100(n-2) n = 2, 4, 6, 8···	140 + 100(n-2) n = 2, 4, 6, 8···	140 + 100(n-2) n = 2, 4, 6, 8···	—
	n (Different sides)	35 + 30(n-2) n = 2, 3, 4, 5···	←	←	—	130 + 100(n-2) n = 2, 4, 6, 8···	140 + 100(n-2) n = 2, 4, 6, 8···	140 + 100(n-2) n = 2, 4, 6, 8···	—
A44	1	10	10	10	—	135	100	100	—
	2 (Same side)	55	55	55	—	135	100	100	—
	2 (Different sides)	35	35	35	—	135	100	100	—
	n (Same side)	55 + 55(n-2) n = 2, 3, 4, 5···	←	←	—	135 + 100(n-2) n = 2, 4, 6, 8···	100 + 100(n-2) n = 2, 4, 6, 8···	100 + 100(n-2) n = 2, 4, 6, 8···	—
	n (Different sides)	35 + 30(n-2) n = 2, 3, 4, 5···	←	←	—	135 + 100(n-2) n = 2, 4, 6, 8···	100 + 100(n-2) n = 2, 4, 6, 8···	100 + 100(n-2) n = 2, 4, 6, 8···	—
Z7□/Z80	1, 2	10	10	10	—	150	120	110	—
	n	10 + 40(n-2)/2 n = 2, 4, 6, 8···	←	←	—	150 + 55(n-4)/2 n = 4, 8, 12, 16···	120 + 55(n-4)/2 n = 4, 8, 12, 16···	110 + 55(n-4)/2 n = 4, 8, 12, 16···	—
Y59□/Y7P **Y7□W**	1, 2	10	10	10	—	150	110	110	—
	n	10 + 40(n-2)/2 n = 2, 4, 6, 8···	←	←	—	150 + 55(n-4)/2 n = 4, 8, 12, 16···	110 + 55(n-4)/2 n = 4, 8, 12, 16···	110 + 55(n-4)/2 n = 4, 8, 12, 16···	—
Y69□/Y7PV **Y7□WV**	1, 2	10	10	10	—	120	85	80	—
	n	10 + 30(n-2)/2 n = 2, 4, 6, 8···	←	←	—	120 + 55(n-4)/2 n = 4, 8, 12, 16···	85 + 55(n-4)/2 n = 4, 8, 12, 16···	80 + 55(n-4)/2 n = 4, 8, 12, 16···	—
Y7BAL	1, 2	15	10	10	—	160	120	120	—
	n	10 + 45(n-2)/2 n = 2, 4, 6, 8···	←	←	—	160 + 55(n-4)/2 n = 4, 8, 12, 16···	120 + 55(n-4)/2 n = 4, 8, 12, 16···	120 + 55(n-4)/2 n = 4, 8, 12, 16···	—

Auto Switch Mounting Position and Mounting Height

[First angle projection]



Auto Switch Mounting Position

Bore size (mm)	D-A5□ D-A6□		D-A59W		D-F5□, D-F5□W D-J5□, D-J59W D-F59F, D-F5BAL		D-F5NTL		D-Z7□, D-Y59□, D-Y7BAL D-Z80, D-Y69□ D-Y7P(V), D-Y7□W(V)		D-A3□, D-G39 D-A44, D-K39	
	A	B	A	B	A	B	A	B	A	B	A	B
125	45.5	6.5	49.5	10.5	52	13	57	18	49	10	45.5	6.5
160	19.5	18.5	23.5	22.5	26	25	31	30	23	22	19.5	18.5
200	17	17	21	21	23.5	23.5	28.5	28.5	20.5	20.5	17	17
250	20	30	24	34	26.5	36.5	31.5	41.5	—	—	—	—

Auto Switch Mounting Height

Bore size (mm)	D-A5□ D-A6□ D-A59W		D-F5□, D-F5□W, D-F5NTL D-J5□, D-J59W D-F59F, D-F5BAL		D-A3□, D-G39 D-K39		D-A44		D-Z7□, D-Y59□ D-Z80, D-Y7P D-Y7□W		D-Y69□ D-Y7PV D-Y7□WV		D-Y7BAL	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
125	71.5	66.5	70.5	66.5	116	—	126	—	67.5	65	68.5	65	72	65
160	90	86	89	86	134.5	—	144.5	—	84.5	83	84.5	83	89.5	83
200	102.5	104	102	104	154	—	164	—	100.5	100.5	100.5	100.5	103	100.5
250	127	128	127	128	—	—	—	—	—	—	—	—	—	—

Switch Hysteresis

Bore size (mm)	ON-OFF switch hysteresis	
	Reed switch	Solid state switch
125 to 200	≤ 2 mm	≤ 1 mm
250	≤ 3 mm	≤ 1 mm

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 8-1.

Type	Model	Electrical entry	Features
Solid state switch	D-F5NTL	Grommet (In-line)	With timer
	D-Y69A/Y69B/Y7PV	Grommet (Perpendicular)	—
	D-Y7NWV/Y7PWV/Y7BWV		2-color indication

∗ With pre-wire connector is available for solid state auto switches. For details, refer to page 8-1.
∗ Normally closed (NC = b contact), solid state switch (D-Y7G/Y7H type) are also available. For details, refer to page 8-1.

Specific Product Precautions

Be sure to read before handling.

Adjustment

⚠Warning

1. Do not open the cushion valve above the stopper.

Cushion valves are provided with a retaining ring (ø125 to ø250) as a stopping mechanism, and the cushion valve should not be opened above that point.

If air is supplied and operation started without confirming the above condition, the cushion valve may be ejected from the cover.

Bore size (mm)	Cushion valve	Width across flats	Socket wrench
125, 160, 200, 250	MB-A2-10-EA064	4	JIS 4648 Hex spanner wrench 4

2. Be certain to activate the air cushion at the stroke end.

When it is intended to use the cushion valve in the fully opened position, select a style with a damper. If this is not done, the tie-rods or piston rod assembley will be damaged.

3. When replaceing brackets, use the hexagon wrench shown below.

Bore size (mm)		Bolt	Width across flats	Tightening torque (Nm)
125		M12 x 1.75 x 25ℓ	10	30.1
160, 200		M16 x 2 x 30ℓ	14	99
250	Foot	M20 x 2.5 x 35ℓ	17	193.5
	Others	M20 x 2.5 x 30ℓ	17	