



ISO Cylinder *Series C95*

ø32, ø40, ø50, ø63, ø80, ø100

Dimensions conform to ISO 6431, VDMA 24562, CETOP RP43P.



CJ1
CJP
CJ2
CM2
C85
C76
CG1
MB
MB1
CP95
C95
C92
CA1
CS1

Series C95

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	●	●	●	●	●	●	●	●	○	—	—
	C95 NDT	●	●	●	●	●	●	●	●	○	—	—
With Positioner	C95 PB	—	—	●	●	●	●	●	●	—	—	—
	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

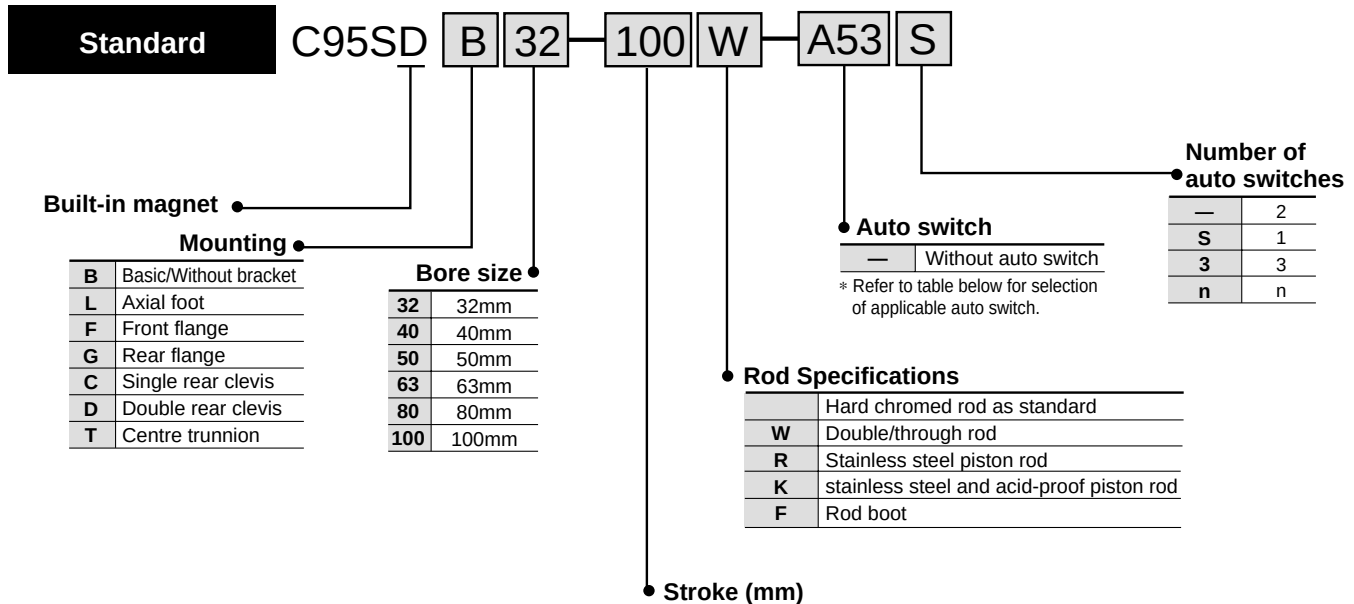
○ Options
● Standard

ISO Cylinder/Standard: Double Acting

Series C95S

ø32, ø40, ø50, ø63, ø80, ø100

How to Order



Applicable Auto Switches/Tie rod mounting

Refer to standard stroke table on p.1.11-4

Style	Special function	Electrical entry	Indicator	Load voltage			Auto switch model	Lead wire (m)*			Applicable load		Mounting bracket		
				Wiring (Output)	DC	AC		0.5 (—)	3 (L)	5 (Z)					
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	●	●	●	—					
	5V,12V		—			A67	●	●	—	—					
	12V		200V or less			A64	●	●	—	—					
Diagnosis indication (2 colour)	Yes	—	—	A59W	●	●	—	—	—						
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	F59	●	●	○	IC	ø50,ø63 BT-05		
				3 wire (PNP)		—	—	100V,200V	J51	●	●	○		—	
	2 wire			—	12V	—	J59	●	●	○	—	Relay PLC			
					5V,12V		F59W	●	●	○	IC				
	3 wire (NPN)			24V	12V	—	J59W	●	●	○	—	ø80,ø100 BT-06			
	3 wire (PNP)				—		F5BA	—	●	○	—				
	2 wire				5V,12V		F5NT	—	●	○	IC				
							4 wire (NPN)	—	F59F	●	●			○	—
	Diagnosis indication (2 colour)			Water resistant (2 colour)	With timer	Diagnosis output (2 colour)	Latch diagnosis output (2 colour)	—	—	—	—	—		—	—
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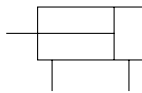
* Lead wire length 0.5m..... — (Example: A53)
3m..... L (Example: A53L)
5m..... Z (Example: A53Z)

○: Manufactured upon receipt of order.

Series C95



ISO Symbol
Double acting



Minimum Strokes for Auto Switch Mounting

Refer to p.1.11-32 for "Minimum Strokes for Auto Switch Mounting".

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, Floating joint, single rear clevis, double rear clevis, center trunnion					

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. * stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2560
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	2540
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2520
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2510
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2430
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	2470

Intermediate strokes are available.

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

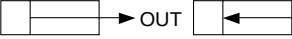
Note 3) C95-S: Set of 2 pcs.

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) 

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 (mm²)

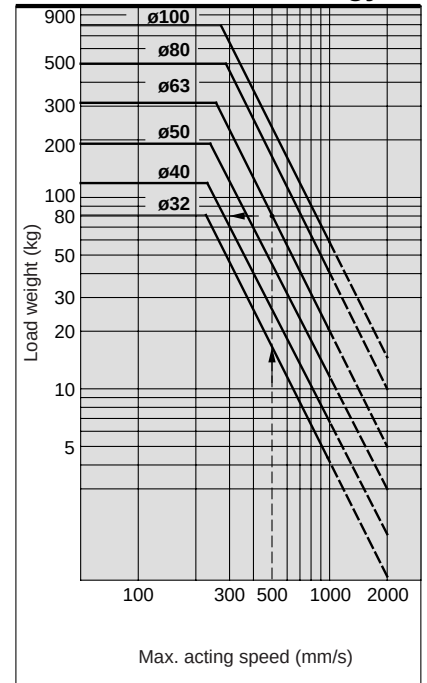
Weight Table

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	0.71	1.10	1.73	2.48	4.25	5.95
Additional weight per 50 stroke		All mounting brackets	0.11	0.16	0.26	0.27	0.42
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.

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

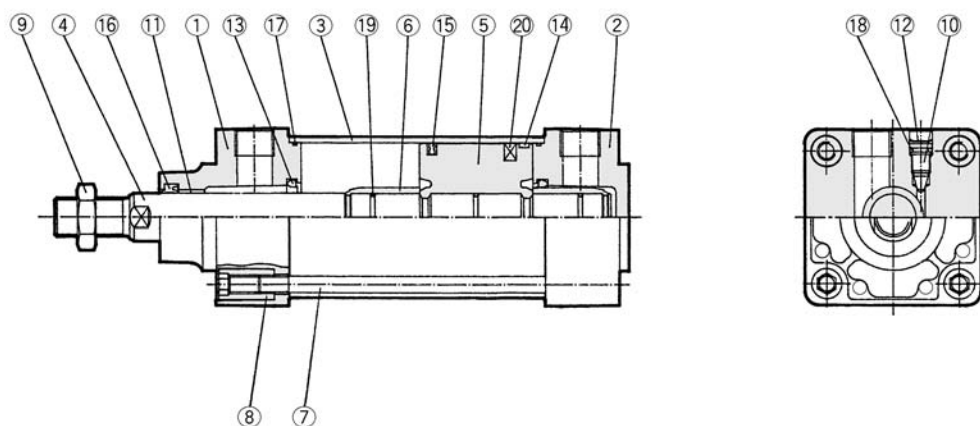
C92

CA1

CS1

Series C95

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		

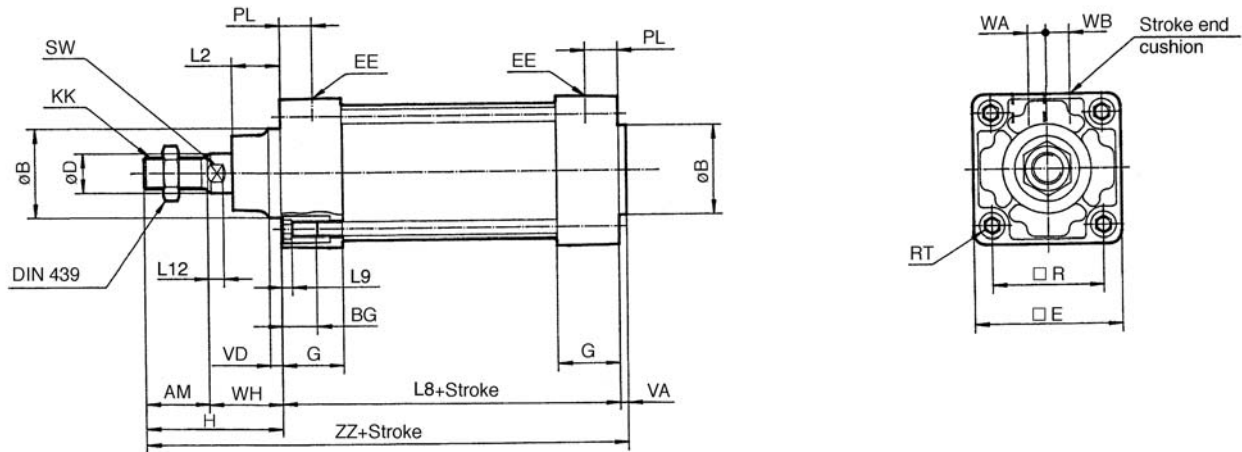
Seal Kits

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	

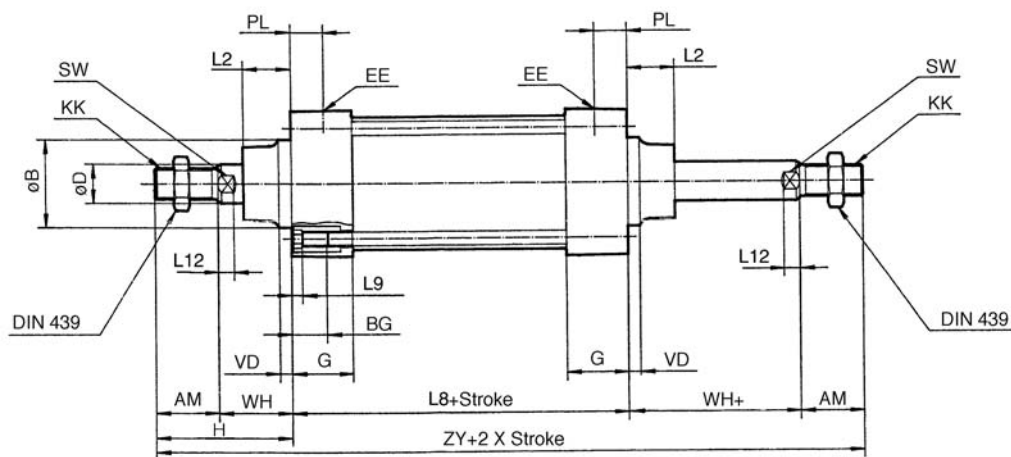
* Seal kits consist of items 13 to 17 for ø32, items 12 to 18 for ø40 to ø100 contained in one kit, and can be ordered using the order number for each respective tube bore size.

Without Mounting Bracket

C95SBø-Stroke



C95SBø-Stroke W

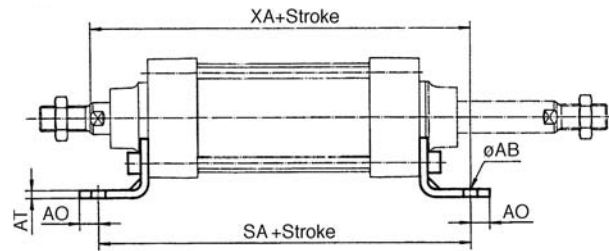
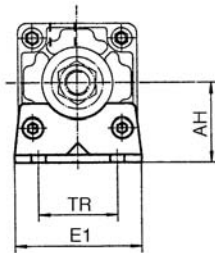


Bore (mm)	AM	øB e11	øD	EE	PL	RT	L12	KK	SW	G	BG	L8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	L2	L9	H
32	22	30	12	G1/8	13	M6	6	M10 X 1.25	10	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4	48
40	24	35	16	G1/4	14	M6	6.5	M12 X 1.25	13	27	16	105	4	4	4	9	30	163	213	52	38	17	4	54
50	32	40	20	G1/4	15.5	M8	8	M16 X 1.5	16	31.5	16	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

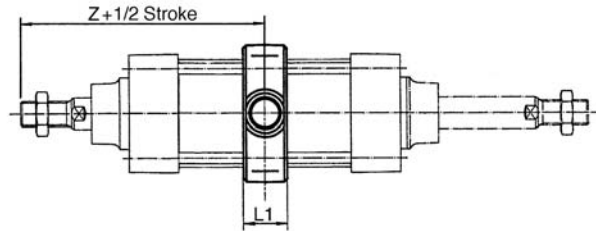
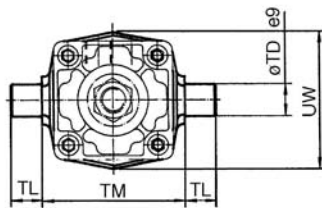
Series C95

With Mounting Bracket

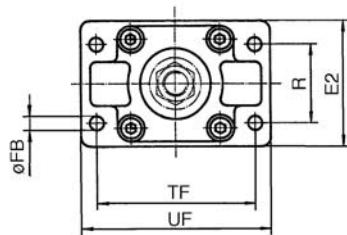
Foot L



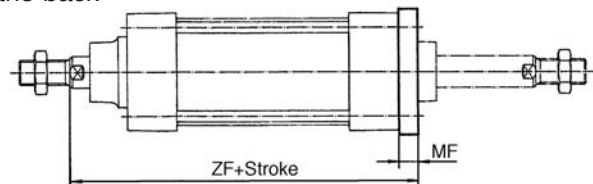
Centre Trunnion T



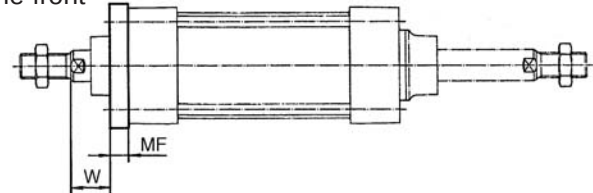
Flange F



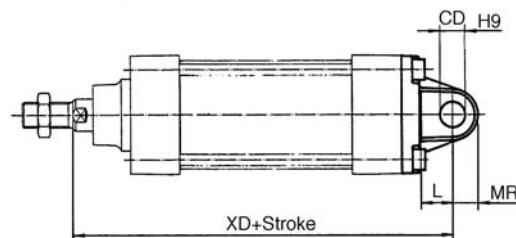
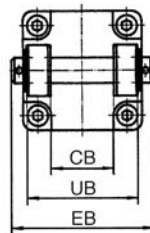
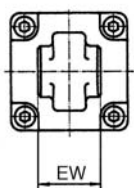
Mounting at the back



Mounting at the front

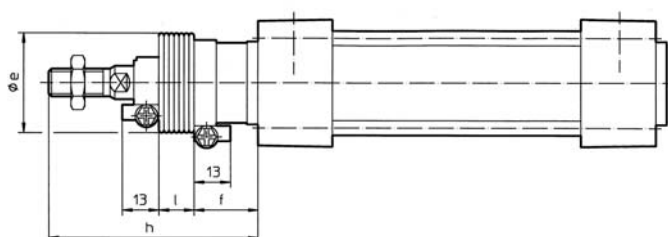


Rear single clevis C Rear double clevis D



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

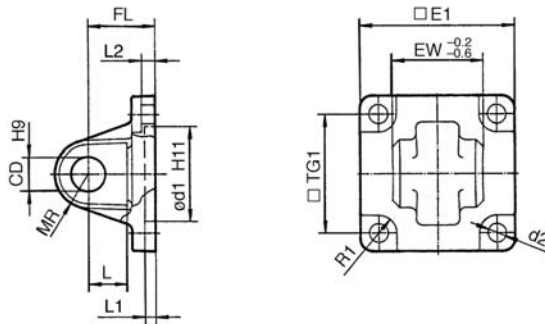
Rod boot (gaiter)



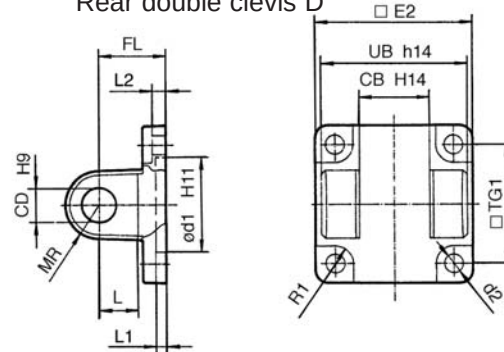
Bore (mm)	e max	f	Stroke 1-50	Stroke 51-100	Stroke 101-150	Stroke 151-200	Stroke 201-300	Stroke 1-50	Stroke 51-100	Stroke 101-150	Stroke 151-200	Stroke 201-300
32	42	23	12.5	25	37.5	50	75	75	88	100	113	138
40	43	23	12.5	25	37.5	50	75	75	88	100	113	138
50	52	25	12.5	25	37.5	50	75	87	100	112	125	150
63	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

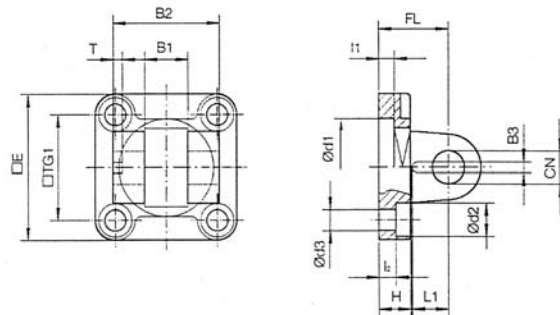


Rear double clevis D



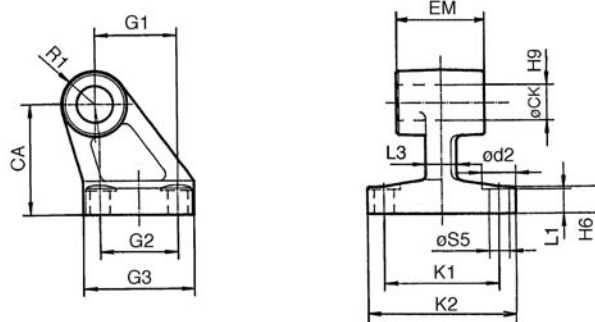
Bore (mm)	□E1	EW	□TG1	FL	L1	L	L2	ød1	CD	MR	d2	R1	□E2	UB	CB
32	45	26	32.5	22	5	12	5.5	30	10	9.5	6.6	6.5	48	45	26
40	51	28	38	25	5	15	5.5	35	12	12	6.6	6.5	56	52	28
50	64	32	46.5	27	5	15	6.5	40	12	12	9	8.5	64	60	32
63	74	40	56.5	32	5	20	6.5	45	16	16	9	8.5	75	70	40
80	94	50	72	36	5	20	10	45	16	16	11	11	95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

Rear Single Clevis DS



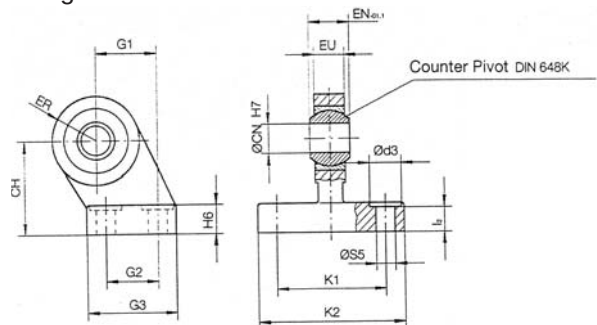
Bore (mm)	□E	B1	B2	B3	□TG1	T	L1	L3	I1	I2	FL	H	Ød1	Ød2	Ød3	CN	XD
32	45	14	34	3.3	32.5	3	11.5	41	5	5.5	22	10	30	10.5	6.6	10	142
40	55	16	40	4.3	38	4	12	48	5	5.5	25	10	35	11	6.6	12	160
50	65	21	45	4.3	46.5	4	14	54	5	6.5	27	10	40	15	9	16	170
63	75	21	51	4.3	56.5	4	14	60	5	6.5	32	12	45	15	9	16	190
80	95	25	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

Counter pivot E



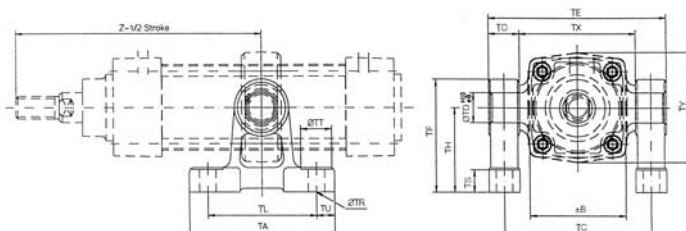
Bore (mm)	ød2	øCK	øS5	K1	K2	L3	G1	L1	G2	EM	G3	CA	H6	R1
32	11	10	6.6	38	51	10	21	7	18	26	31	32	8	10
40	11	12	6.6	41	54	10	24	9	22	28	35	36	10	11
50	15	12	9	50	65	12	33	11	30	32	45	45	12	12
63	15	16	9	52	67	14	37	11	35	40	50	50	12	15
80	18	16	11	66	86	18	47	12.5	40	50	60	63	14	15
100	18	20	11	76	96	20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

Angled rear clevis ES



Bore (mm)	Ød3	ØCN	ØS5	K1	K2	I2	G1	G2	G3	EN	EU	CH	H6	E
32	11	10	6.6	38	51	8.5	21	18	31	14	10.5	32	10	1
40	11	12	6.6	41	54	8.5	24	22	35	16	12	36	10	1
50	15	16	9	50	65	10.5	33	30	45	21	15	45	12	2
63	15	16	9	52	67	10.5	37	35	50	21	15	50	12	2
80	18	20	11	66	86	11.5	47	40	60	25	18	63	14	2
100	18	20	11	76	96	12.5	55	50	70	25	18	71	15	3

Centre trunnion



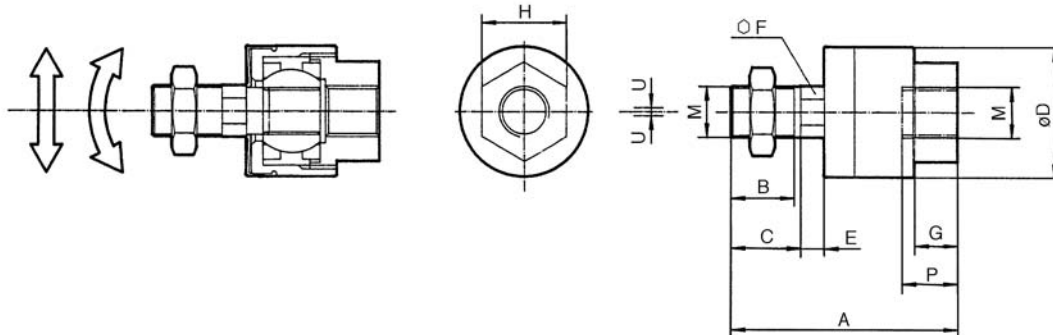
Part No.	Bore (mm)	±B	TA	TC	ØTD	TE	TF	TH	TL	TO	ØTR	TS	ØTT	TU	TX	TY
C95-S03	32	46	62	62	12	74	47	35	45	12	7	10	13	8.5	50	49
C95-S04	40	52	80	80	16	97	60	45	60	17	9	12	17	10	63	58
	50	65	80	92	16	109	60	45	60	17	9	12	17	10	75	71
C95-S06	63	75	100	110	20	130	80	60	70	20	11	14	22	15	90	87
	80	95	100	130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

Series C95

Accessories

Floating joint JA

Steel, zinc chromate plated

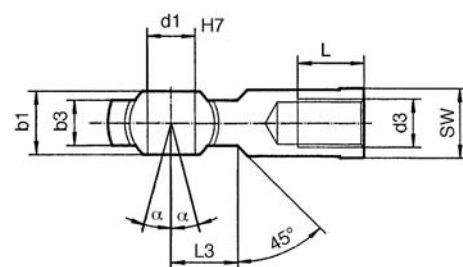
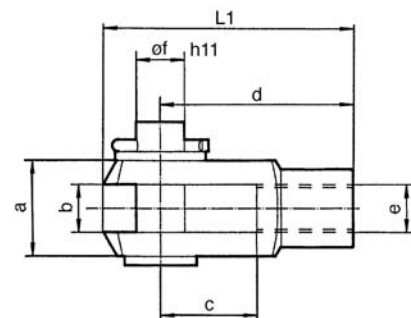


Bore (mm)	M	A	B	C	øD	E	F	G	H	P	U	Load (kn)	Weight (g)	Radial deflection
32	M10 X 1.25	49.5	19.5	—	24	5	8	8	17	9	0.5	2.5	70	±5
40	M12 X 1.25	60	20	—	31	6	11	11	22	13	0.75	4.4	160	
50/63	M16 X 1.5	71.5	22	—	41	7.5	14	13.5	27	15	1.0	11	300	
80/100	M20 X 1.5	101	28	31	59.5	11.5	24	16	32	18	2.0	18	1080	

Piston rod clevis GKM (ISO 8140)

Steel, zinc chromate plated

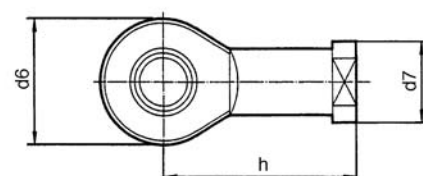
Bore (mm)	e	b	d	øf	L1	c	a
32	M10 X 1.25	10	40	10	52	20	20
40	M12 X 1.25	12	48	12	62	24	24
50/63	M16 X 1.5	16	64	16	83	32	32
80/100	M20 X 1.5	20	80	20	105	40	40



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

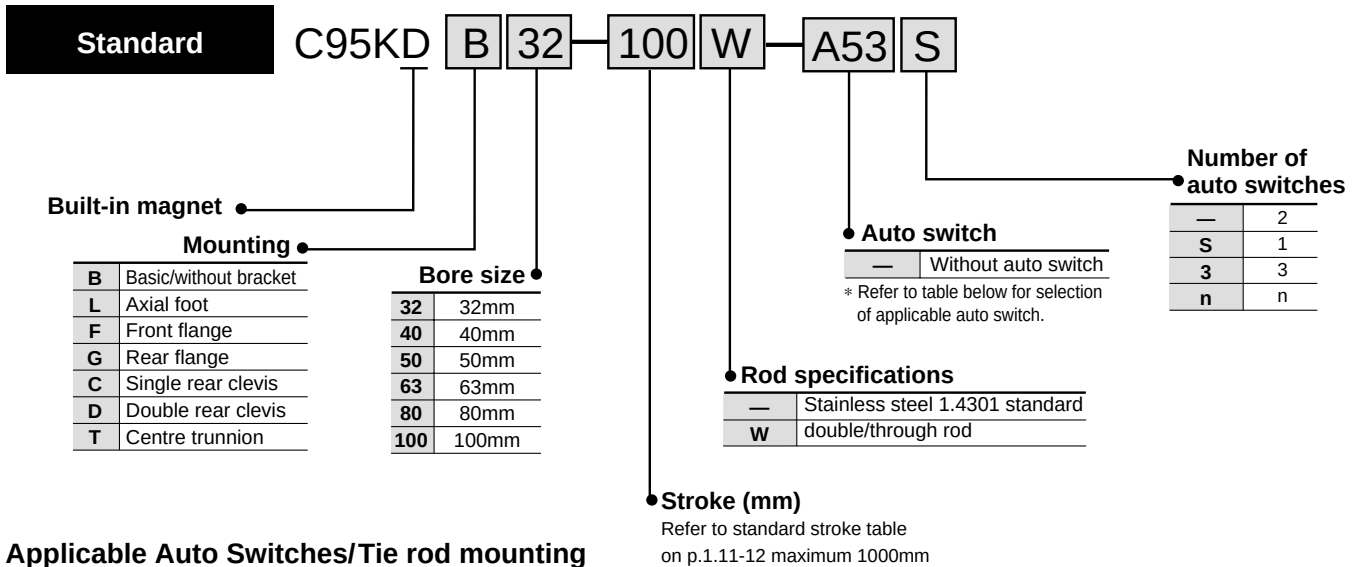


ISO Cylinder/Standard: Double Acting

Series C95K

ø32, ø40, ø50, ø63, ø80, ø100

How to Order



Applicable Auto Switches/Tie rod mounting

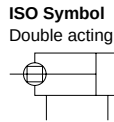
Style	Special function	Electrical entry	Indicator	Load voltage			Auto switch model	Lead wire (m)*			Applicable load	Mounting bracket
				Wiring (Output)	DC	AC		0.5 (—)	3 (L)	5 (Z)		
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	A56	●	●	—	IC	ø32,ø40 BT-03
				2 wire	24V	12V	A53	●	●	●	—	
			No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

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note)}			Applicable load		Mounting bracket	
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)				
							Vertical	Lateral							
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	Relay PLC	ø32,ø40 BMB4-032
				2 wire	24V	—	100V	—	Z73	●	●	●	—		
			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				Y69B	Y59B	●	●	○			
	3 wire (NPN)			Y7NWV				Y7NW	●	●	○				
	Diagnostic indication (2 colour indicator)			3 wire (PNP)	Y7PWV	Y7PW	●	●	○	IC circuit					
				2 wire	Y7BWV	Y7BW	●	●	○						
					—	Y7BA	—	●	—		—				

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

○: Manufactured upon receipt of order.

Series C95K



Minimum Strokes for Auto Switch Mounting

Refer to p.1.11-32 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 (mm²)

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.

Standard Stroke

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

Weight

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	0.71	1.10	1.73	2.48	4.25	5.95
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	JA50-20-150	JA50-20-150

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

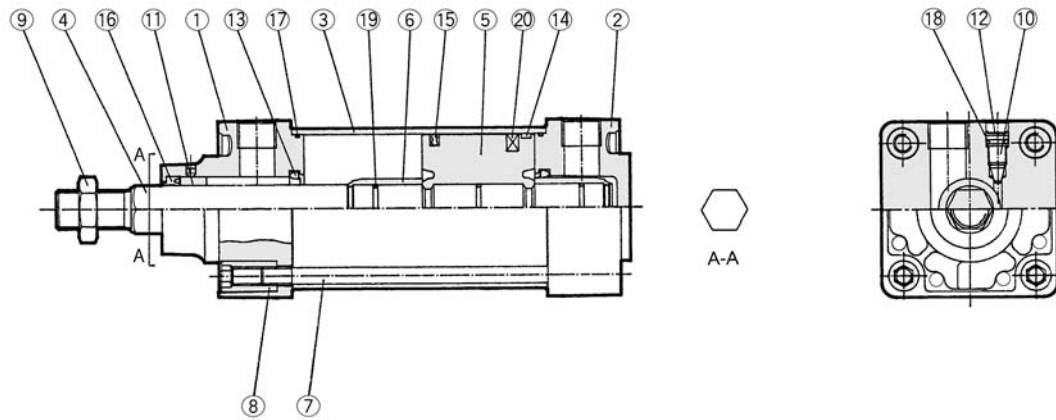
Note 3) C95-S: Set of 2 pcs.

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.

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

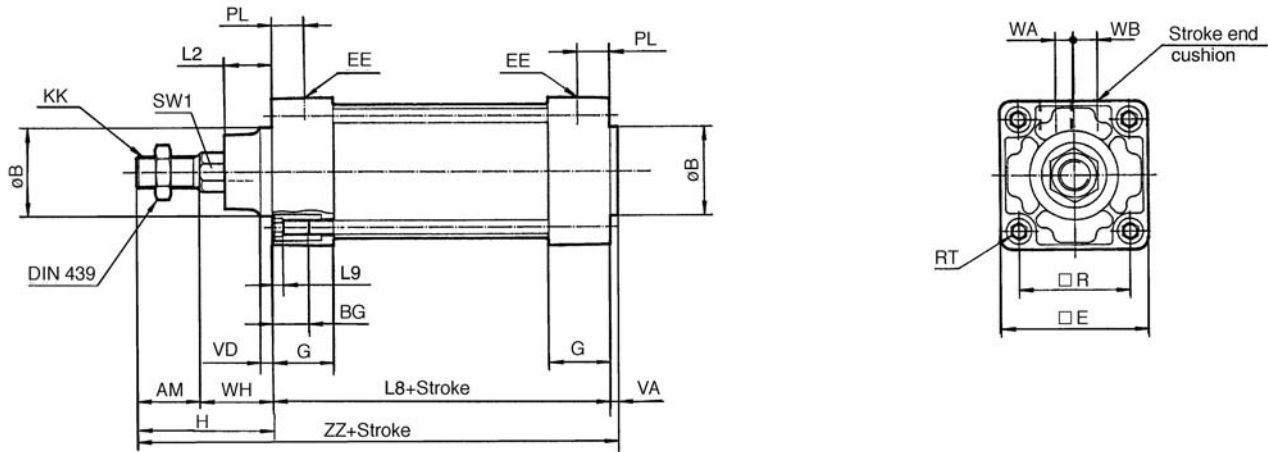
CA1

CS1

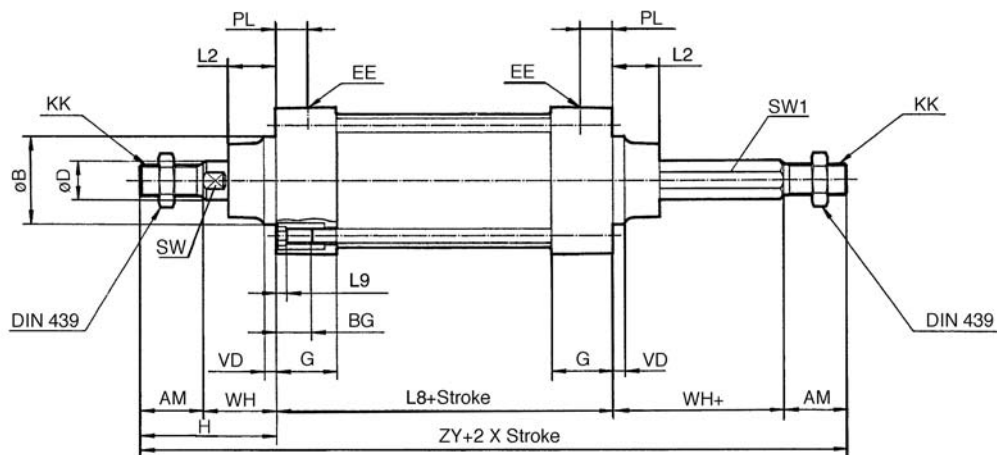
Series C95K

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.1.11-7 through 1.11-9 for dimensions with mounting bracket and accessories.

ISO Cylinder/Standard: Double Acting, Low Friction

Series C95Q

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Standard C95QD B 32 100 R CA A53 S

Built-in magnet •

Mounting •

Mounting	Description
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 •

Bore size	Description
32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm

Auto switch •

Auto switch	Description
—	Without auto switch

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

Direction of low friction •

Direction of low friction	Description
CA	With pressure at head side
CB	With pressure at rod side

Number of auto switches

Number of auto switches	Description
—	2
S	1
3	3
n	n

Rod specifications

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

Stroke (mm)
Refer to standard stroke table on p.1.11-16 maximum 1000mm

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage			Auto switch model	Lead wire (m)*			Applicable load	Mounting bracket			
				Wiring (Output)	DC	AC		0.5 (—)	3 (L)	5 (Z)					
Reed switch	—	Grommet	Yes	3 wire (Equiv. to NPN)	—	5V	—	A56	●	●	—	IC	ø32,ø40 BT-03		
					12V	—	A53	●	●	●	—	Relay PLC			
			No	2 wire	24V	5V,12V	100V,200V	A54	●	●				●	
					5V,12V	—	A67	●	●	—					
Solid state switch	Diagnosis indication (2 colour)	Grommet	Yes	2 wire	24V	5V,12V	—	A59W	●	●	—	ø50,ø63 BT-05			
	3 wire (NPN)							3 wire (PNP)	F59	●	●		○	IC	
									F5P	●	●		○		
	2 wire							—	100V,200V	J51	●		●	○	—
										J59	●		●	○	
	3 wire (NPN)							3 wire (PNP)	5V,12V	F59W	●		●	○	IC
										F5PW	●		●	○	
	2 wire							24V	12V	J59W	●		●	○	—
										F5BA	—		●	○	
	3 wire (NPN)							5V,12V	F5NT	—	●		○	IC	
									F59F	●	●		○		—
	4 wire (NPN)							—	F5LF	●	●		○	—	
Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note)}			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	
						5V, 12V	100V or less	—	Z80	●	●	—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	ø50,ø63 BMB4-050	
				3 wire (PNP)		Y7PV		Y7P	●	●	○	—	Relay PLC		
				2 wire		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		—	●	—	—				

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

○: Manufactured upon receipt of order.



Specifications

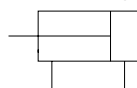
Bore size (mm)	32	40	50	63	80	100
Action	Double acting single rod					
Direction of low friction	One direction					
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.01MPa					
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing)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

Standard Stroke

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

ISO Symbol
Double acting



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

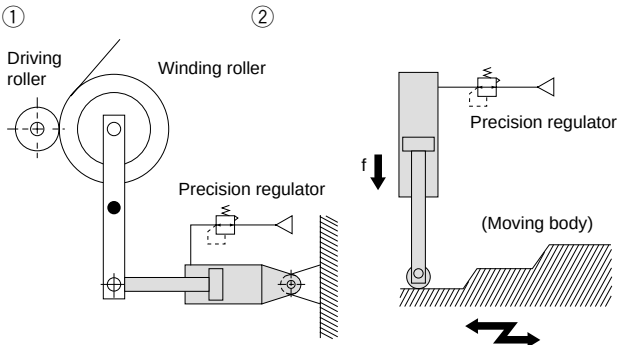
For Dimensions, Weight, Accessories see C95S, page xxxx

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 application①)
 - With pressure at head cover port
..... Low friction side CA (Example of application②)
- 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 the above 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

Application Example

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



CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

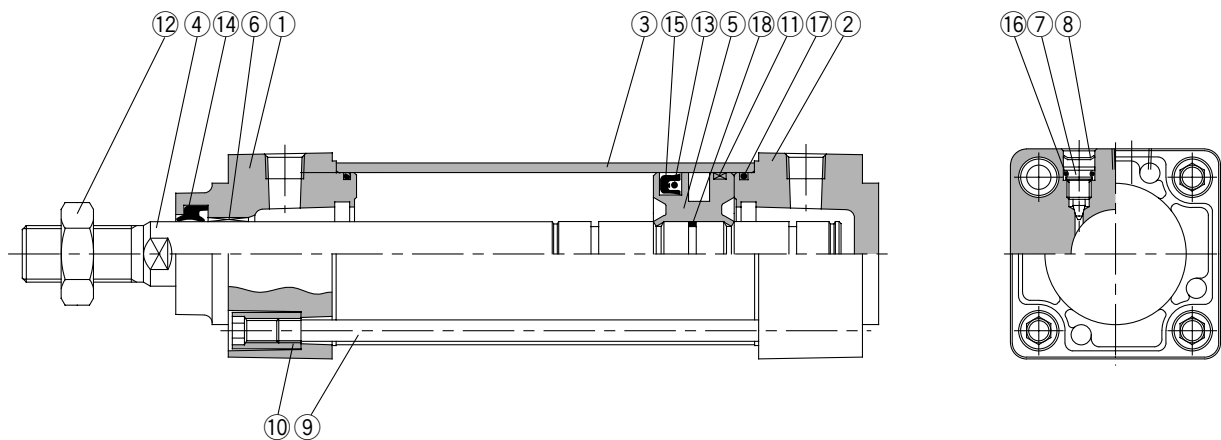
C92

CA1

CS1

Series C95Q

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.

ISO Cylinder/Standard: Double Acting with Positioner

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.1-11-4 maximum 300mm

Auto switch

—	Without auto switch
S	1
3	3
n	n

Number of auto switches

—	2
S	1
3	3
n	n

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

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage			Auto switch model	Lead wire (m)*			Applicable load		Mounting bracket		
				Wiring (Output)	DC	AC		0.5 (—)	3 (L)	5 (Z)					
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	●	●	●	—				
			5V,12V	—			A67	●	●	—	—				
	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	●	●	○	—				
					12V	J59	●	●	○	—					
				3 wire (NPN)	5V,12V	F59W	●	●	○	IC	ø80,ø100 BT-06				
						F5PW	●	●	○	—					
				2 wire	24V	12V	—	J59W	●	●		○		—	
								F5BA	—	●		○		—	
				3 wire (PNP)	5V,12V	F5NT	—	●	○	IC					
						F59F	●	●	○	—					
				4 wire (NPN)	—	F5LF	●	●	○	—					

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note)}			Applicable load		Mounting bracket		
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)					
							Vertical	Lateral								
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●	—	IC circuit	—	ø32,ø40 BMB4-032	
				2 wire	24V	—	100V	—	Z73	●	●	●	—			Relay PLC
						5V, 12V	100V or less	—	Z80	●	●	—	IC circuit			
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	—	ø50,ø63 BMB4-050	
				3 wire (PNP)				Y7PV	Y7P	●	●	○	—			
				2 wire				Y69B	Y59B	●	●	○	—			
				3 wire (NPN)				Y7NWV	Y7NW	●	●	○	—			
	Diagnostic indication (2 colour indicator)			3 wire (PNP)	Y7PWV	Y7PW		●	●	○	IC circuit					
				2 wire	12V	Y7BWV		Y7BW	●	●	○	—				
						Y7BA		—	●	—						

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

○: Manufactured upon receipt of order.

Series C95P

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 protected against accidental touches
- Positioner cylinder conforms to ISO and CETOP recommendations
- No change in dimensions with auto switch capability

How to order, page 1.11-19

Specifications

Fluid	Air 5µm filtration
Supply pressure "SUP" (MPa)	0.3 ~ 0.7
Signal pressure "SIG" (MPa)	0.02 ~ 0.1
Fluid temperature (°C)	+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	JA50-20-150	JA50-20-150

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		0.32	0.33	0.48	0.62
50mm stroke					

Example: C95PDB50-200

Cylinder Ø50mm, stroke 200mm

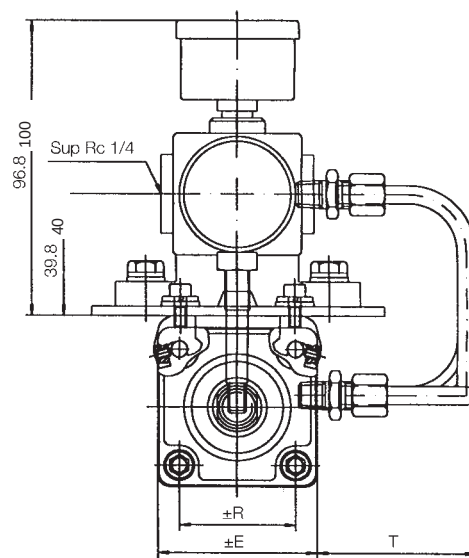
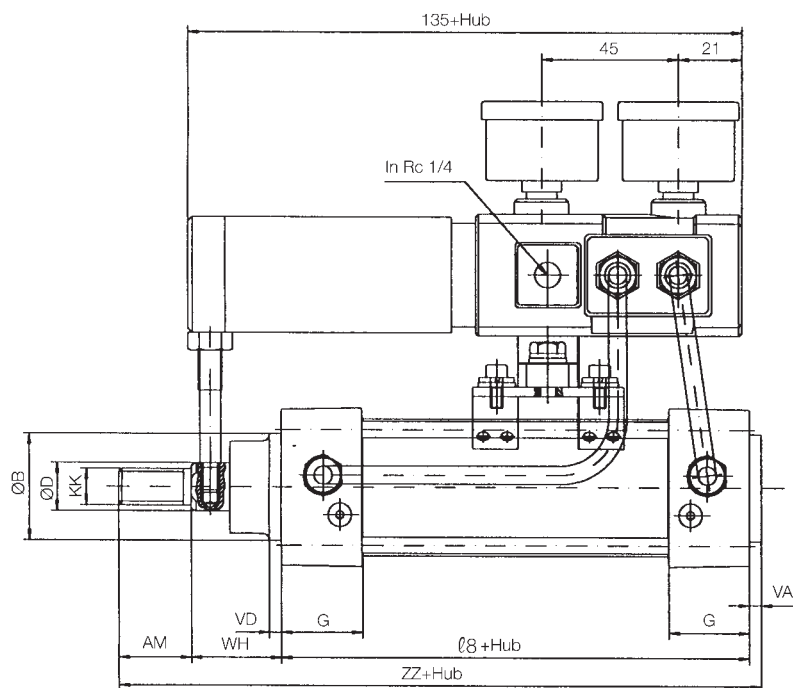
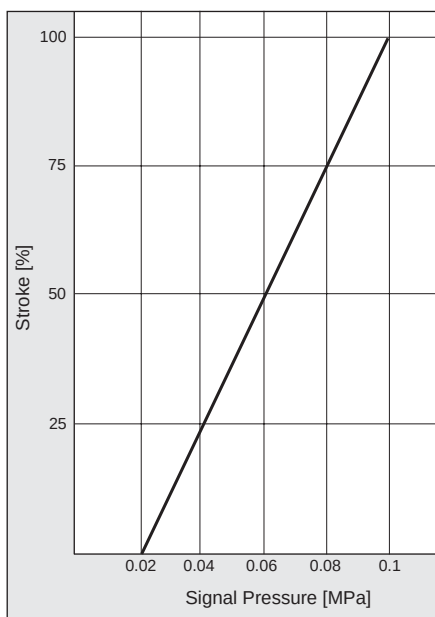
Bracket L

Weight = 2.72kg + (0.31kg × $\frac{200}{50}$) = 3.96kg

For dimensions of the brackets and accessories, please see C95S, page 1.11-4

Dimensions

Signal Pressure/Stroke Diagram



Ø	AM	ØB	ØD	±E	G	KK	I 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

CJ1
CJP
CJ2
CM2
C85
C76
CG1
MB
MB1
CP95
C95
C92
CA1
CS1

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

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

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

Rod specifications

—	Hard chrome as standard
W	Double/through rod

Stroke (mm)

Refer to standard stroke table on p.1.11-23 maximum 1000mm

Applicable Auto Switches/Tie rod mounting

Style	Special function	Electrical entry	Indicator	Load voltage			Auto switch model	Lead wire (m)*			Applicable load		Mounting bracket			
				Wiring (Output)	DC	AC		0.5 (—)	3 (L)	5 (Z)						
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	●	●	●						
			5V,12V			—	A67	●	●	—						
	Diagnosis indication (2 colour)	No	12V	200V or less	A64	●	●	—	IC							
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V,12V	—	F59	●	●	○	IC	ø50,ø63 BT-05			
				3 wire (PNP)	—	—	100V,200V	F5P	●	●	○	—				
				2 wire	24V	12V	J51	●	●	○	—					
				3 wire (NPN)		5V,12V	F59W	●	●	○		IC				
				3 wire (PNP)		F5PW	●	●	○	—						
				2 wire	12V	J59W	●	●	○		—					
				Water resistant (2 colour)	3 wire (NPN)	5V,12V	F5NT	—	●	○		IC				
					Diagnosis output (2 colour)	4 wire (NPN)	—	F59F	●	●	○			—		
					Latch diagnosis output (2 colour)	—	F5LF	●	●	○	—					
					Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) ^{Note}		
	Reed switch	—	Grommet	Yes	3 wire	—	5V	—	—	Z76	●	●		—	IC circuit	ø32,ø40 BMB4-032
2 wire					24V	—	100V	—	Z73	●	●	●	—	Relay PLC		
						5V, 12V	100V or less	—	Z80	●	●	—	IC circuit			
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Y69A	Y59A	●	●	○	IC circuit	ø50,ø63 BMB4-050		
				3 wire (PNP)		12V		Y7PV	Y7P	●	●	○	—			
				2 wire		5V, 12V		Y69B	Y59B	●	●	○			IC circuit	
				3 wire (NPN)		Y7NWW		Y7NW	●	●	○	—				
	3 wire (PNP)			Y7PWV	Y7PW	●		●	○	—						
	Diagnostic indication (2 colour indicator)			2 wire	12V	Y7BWV		Y7BW	●		●	○	—			
				Water resistant (2 colour indicator)	—	Y7BA		—	●	●	—	—				

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

○: Manufactured upon receipt of order.

Cylinder

Series C95N

with lock

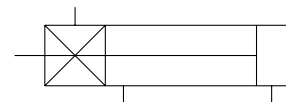
Cylinder Specifications

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 : -10°C to 70°C (without freezing) With autoswitch : -10°C to 70°C (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
max. possible stroke [mm]	1000

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	$\geq 0.25\text{MPa}$
Locking pressure	$\geq 0.20\text{MPa}$
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	1000
40	25,50,75,100,125,150,175,200,250,300,350,400,450,500	
50	25,50,75,100,125,150,175,200,250,300,350,400,450,500,600	
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	

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

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

CA1

CS1

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

Bore Size [mm]		[kg]					
Basic weight	Basic type B	1.40	2.15	3.53	5.18	8.99	12.72
	Trunnion T	1.55	2.41	3.87	5.75	10.02	14.41
Additional weight per 50mm of stroke		All mounting brackets	0.11	0.16	0.26	0.27	0.56

(Example) C95NDB32-100 (Standard, Ø32, 100er)

•Basic weight..... 1.40 (basic type, Ø32)

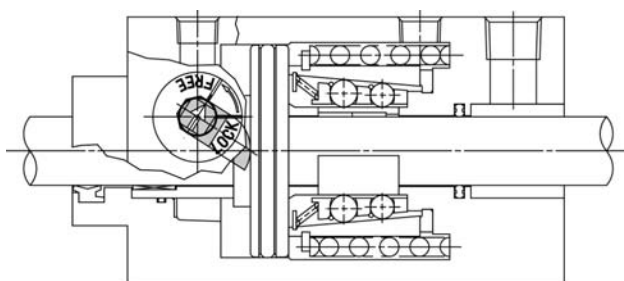
•Additional weight 0.11/50mm stroke

•Cylinder stroke 100mm stroke

$1.40 + 0.11 \times 100/50 = 3.02\text{kg}$

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]

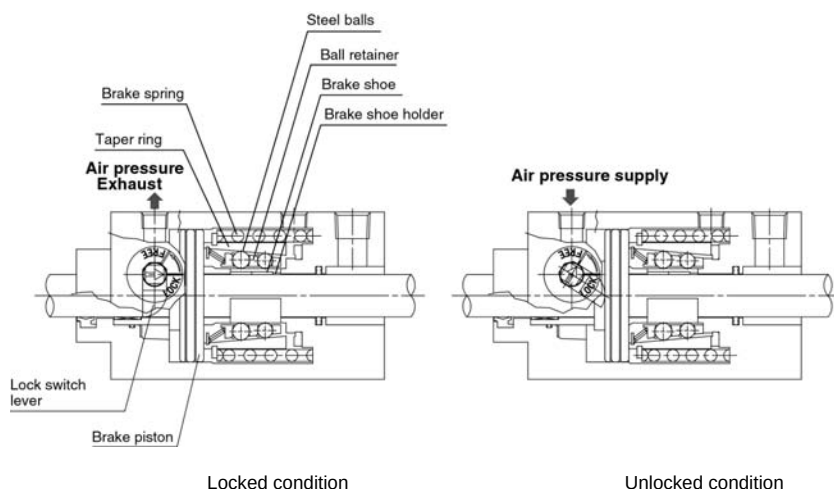
Ø	32	40	50	63	80	100
L	0.16	0.20	0.38	0.46	0.89	1.09
F	0.20	0.23	0.47	0.58	1.30	1.81
C	0.16	0.23	0.37	0.60	1.07	1.73
D	0.20	0.32	0.45	0.71	1.28	2.11

Example:

Cylinder Ø40 mm, Stroke 100 mm, bracket D

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

Construction Principles

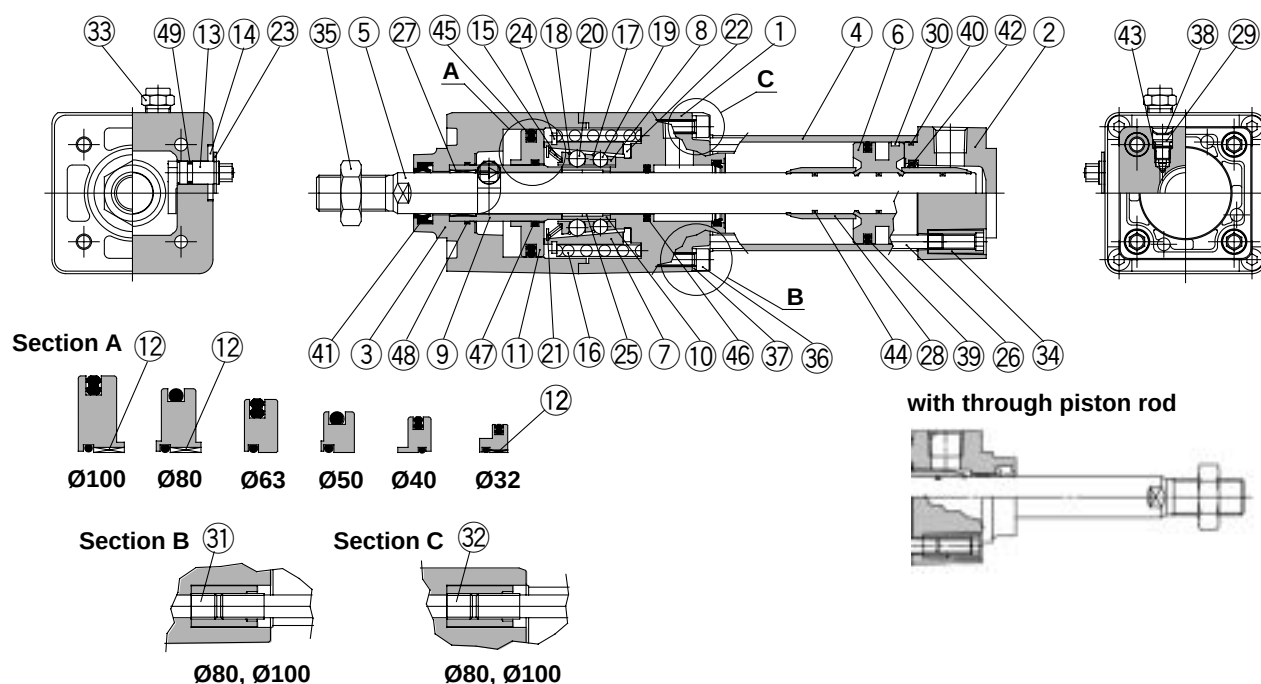


Spring lock (exhaust lock)

The spring force which acts upon the taper ring is magnified by a wedge effect, and is conveyed to all of the numerous steel balls which are arranged in two circles. 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



Parts list

No.	Description	Material	Note
①	Rod cover	Aluminium alloy	Hard anodised & metallic coated
②	Head cover	Aluminium alloy	Chromated & metallic coated
③	Cover	Aluminium alloy	Hard anodised & metallic coated
④	Cylinder tubing	Aluminium alloy	Hard anodised
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
		Ø50	
		Ø63	
		Ø32	Carbon steel
		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	Chromated 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	

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

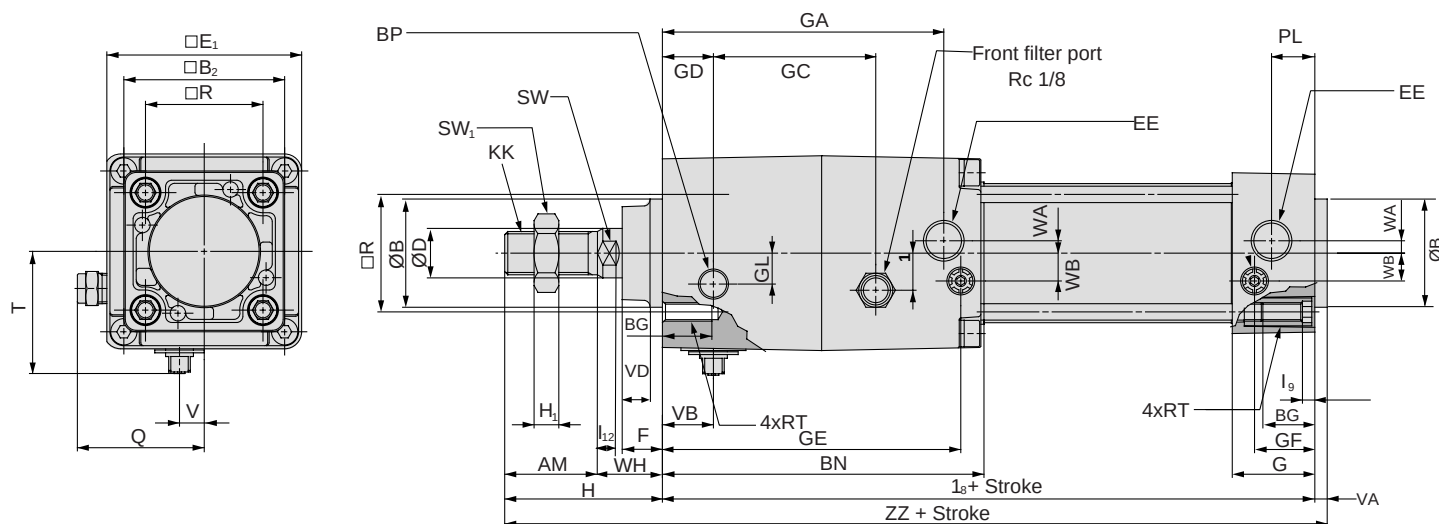
CA1

CS1

Series C95N

Dimensions

Basic type (B)

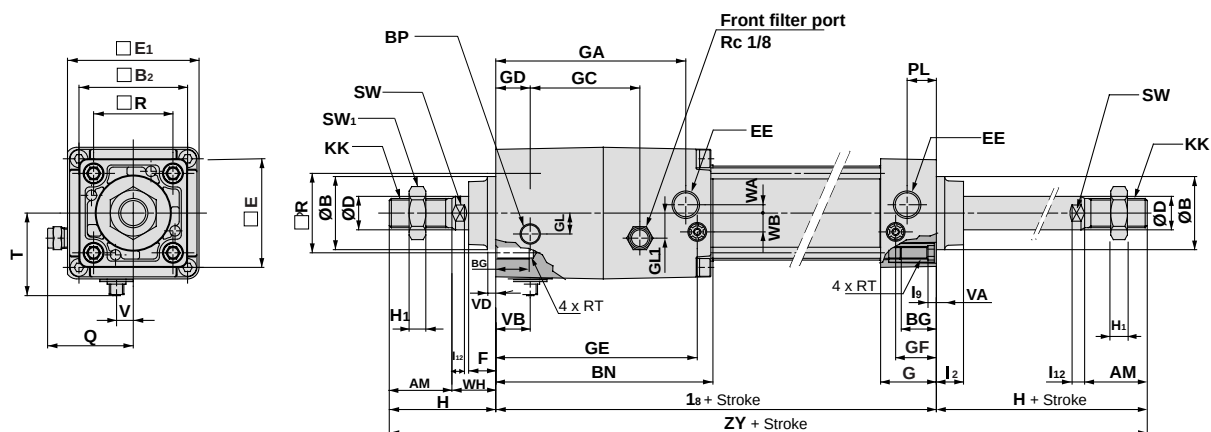


Bore size (mm)	AM	ØBe 11	□B ₂	BG	BN	BP	ØD	EE	□E	□E ₁	F	G	GA	GC	GD	GE	GF	GL	GL ₁	H	H ₁
32	22	30	46	16	97	G1/8	12	G1/8	46	54	13	27	83	45.5	13	88.5	18.3	7.5	12	48	6
40	24	35	52	16	104	G1/8	16	G1/4	52	63	13	27	91	52.5	16.5	96.5	19.5	10	12	54	8
50	32	40	65	16	120.5	G1/4	20	G1/4	65	75	14	31.5	104.5	58.5	19	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 ₈	I ₉	I ₁₂	PL	Q	□R	RT	SW	SW ₁	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

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

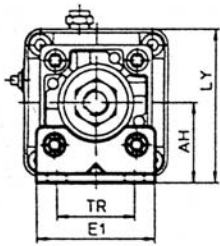
C92

CA1

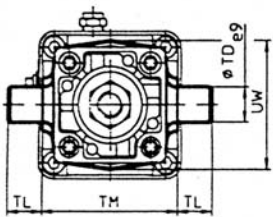
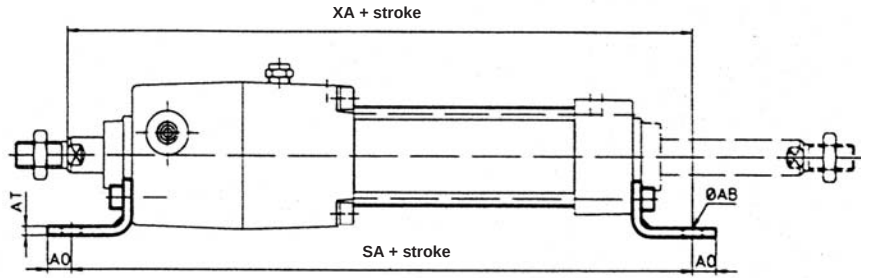
CS1

Series C95N

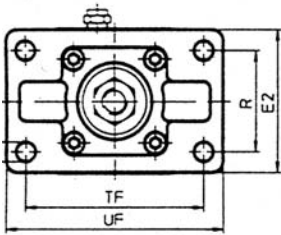
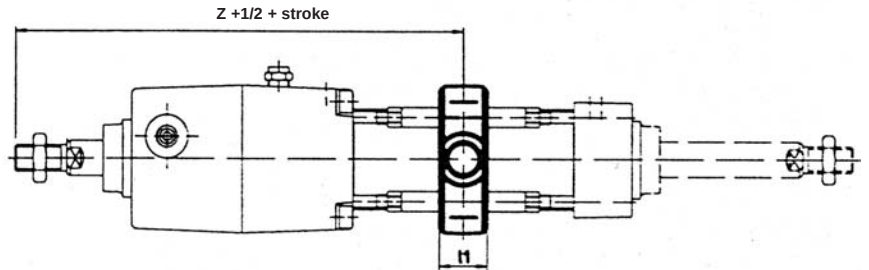
Dimensions Brackets on Cylinder



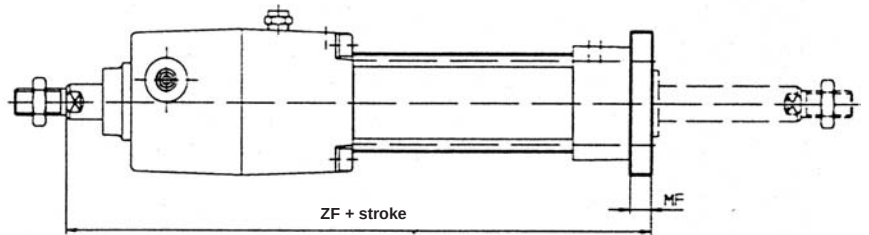
Axial Foot Type



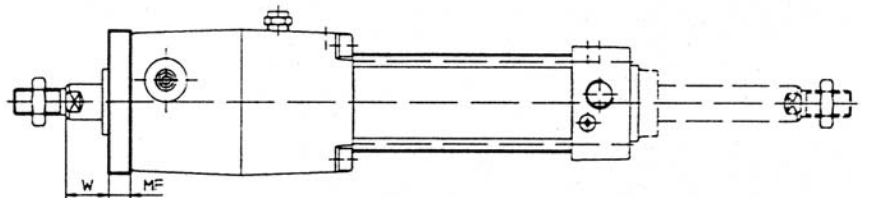
Trunnion Type



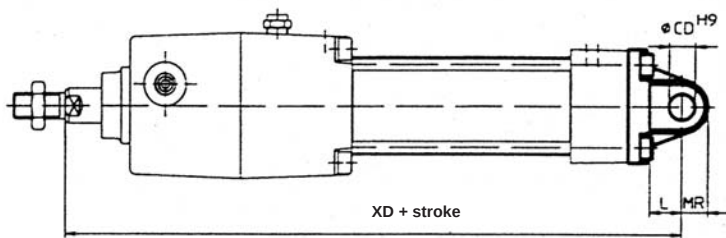
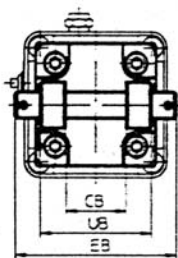
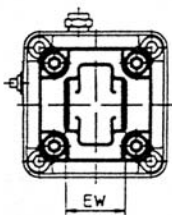
Rear Flange Type



Front Flange Type



Single Clevis Type Double Clevis Type



Bore size (mm)	Ø AB	AH	AD	AT	CB ₁	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	52	259	16	100	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	l1
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



Series C95N Specific Product Precaution

Air Pressure Circuits

Warning

1. Basic Circuits

1. [Horizontal]

Forward

Backward

3 ports
normally
closed

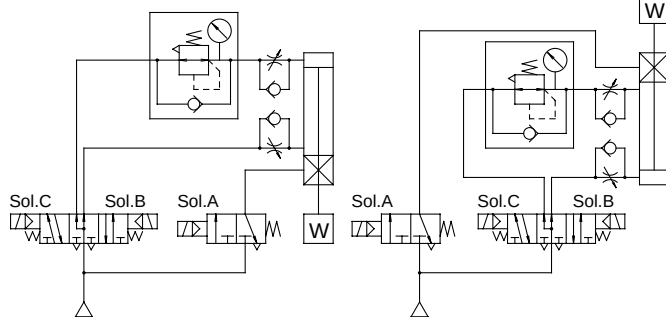
Regulator
w/check
valve
pressure
centre

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]

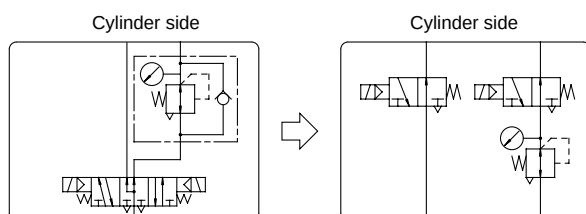
[Load in direction
of rod extension]

[Load in direction
of rod retraction]



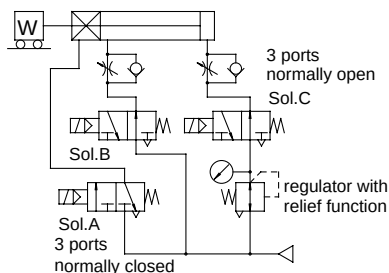
Caution

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]



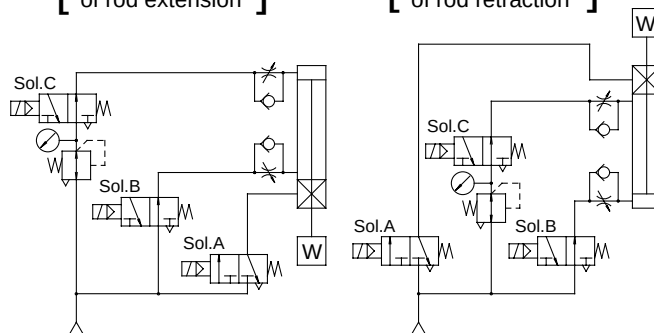
Air Pressure Circuits

Caution

2. [Vertical]

[load in direction
of rod extension]

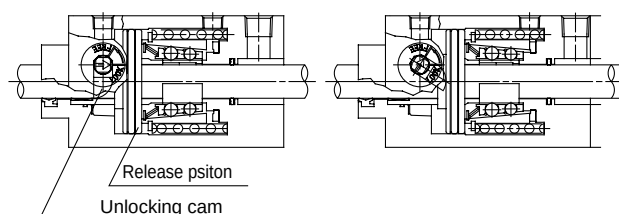
[Load in direction
of rod retraction]



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 its original position when released and become locked again, it should be held in this position for as long as unlocking is needed.

CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

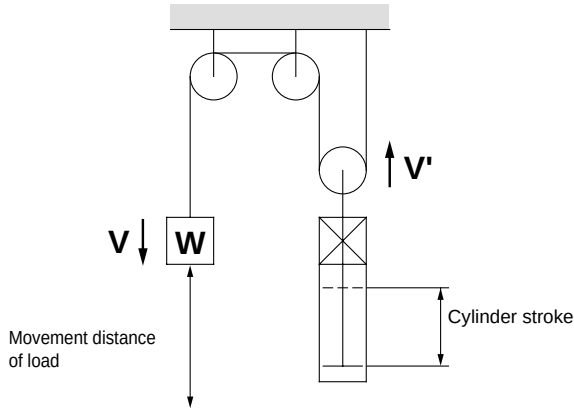
CA1

CS1

Precautions on Model Selection

⚠ Caution

Example



Selection Example

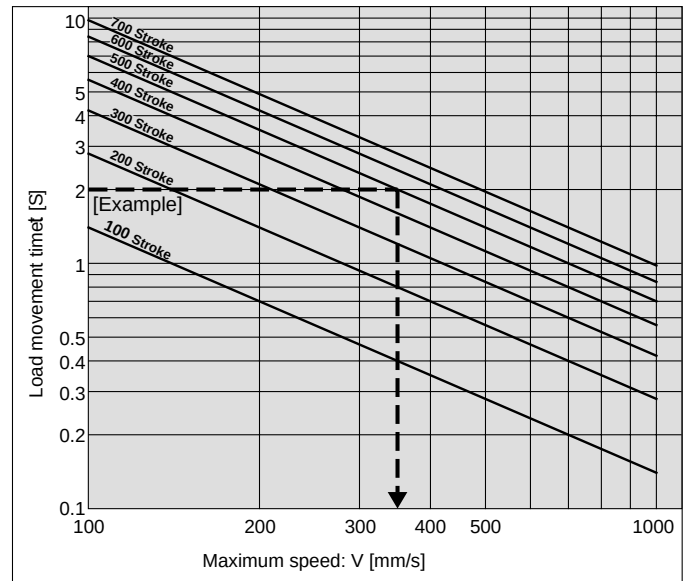
- **Load weight:** $m=50\text{kg}$
- **Movement distance:** Stroke=500mm
- **Movement time:** $t=2\text{s}$
- **Load condition:** Vertical downward=Load in direction of rod extension
- **Operating pressure:** $P=0.4\text{MPa}$

Step 1: From graph 1 find the maximum movement speed of the load
 $\therefore$ 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 $V=350\text{mm/s}$ found in step 1, and the load weight $m=50\text{kg}$
 $\therefore \text{ } \varnothing 63 \rightarrow$ select a C95NDB63 or larger bore size.

Step 1 Find the maximum load speed: V

Graph 1

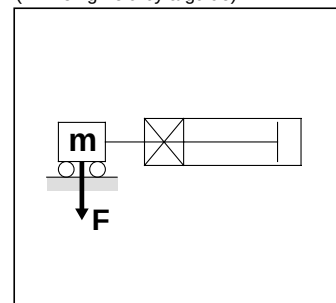


Step 2 Find the cylinder bore size

Load condition

Operating pressure

Direction of load at right angle to rod
 (* $\circ$ Being held by a guide)

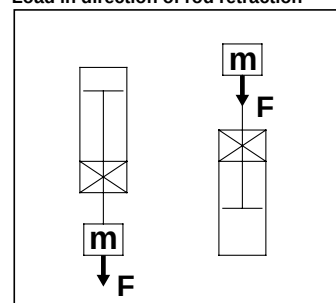


from 0.3MPa $\rightarrow$ Graph 2

from 0.4MPa $\rightarrow$ Graph 3

from 0.5MPa $\rightarrow$ Graph 4

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



from 0.3MPa $\rightarrow$ Graph 5

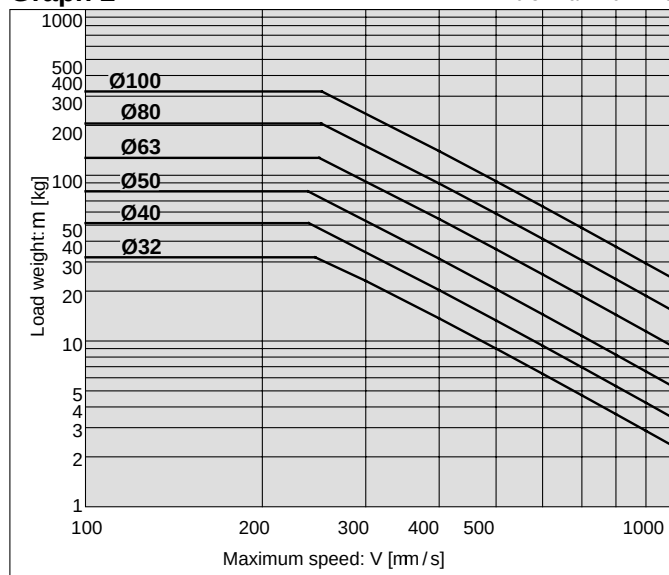
from 0.4MPa $\rightarrow$ Graph 6

from 0.5MPa $\rightarrow$ Graph 7

Selection Graphs

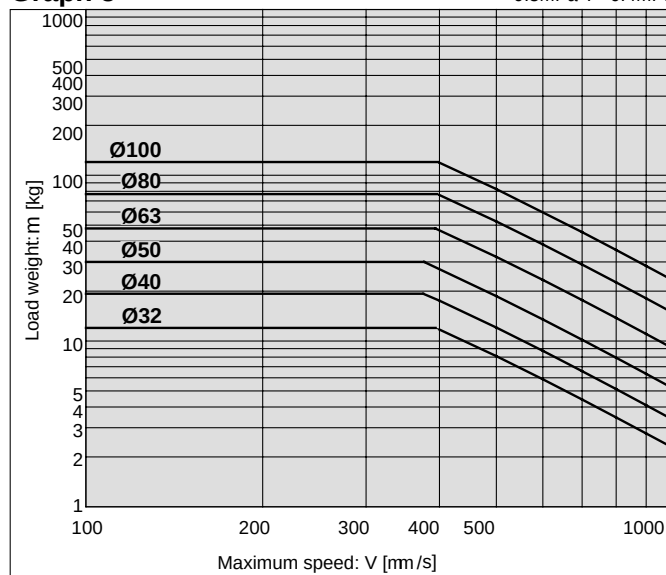
Graph 2

0.3MPa''P<0.4MPa



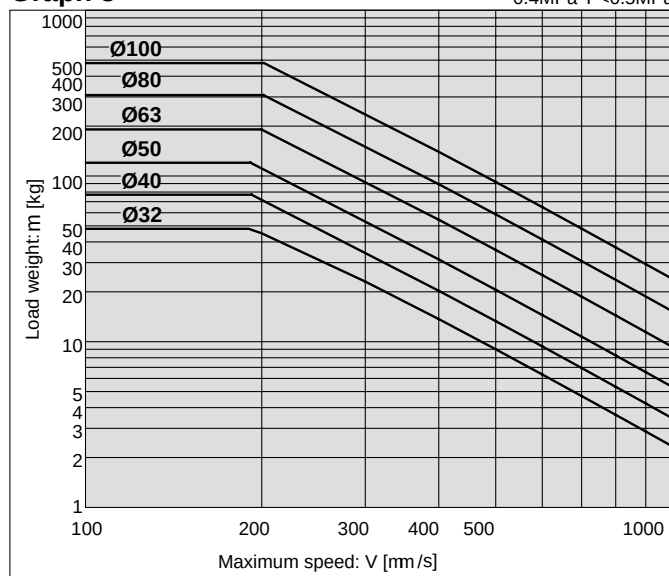
Graph 5

0.3MPa''P<0.4MPa



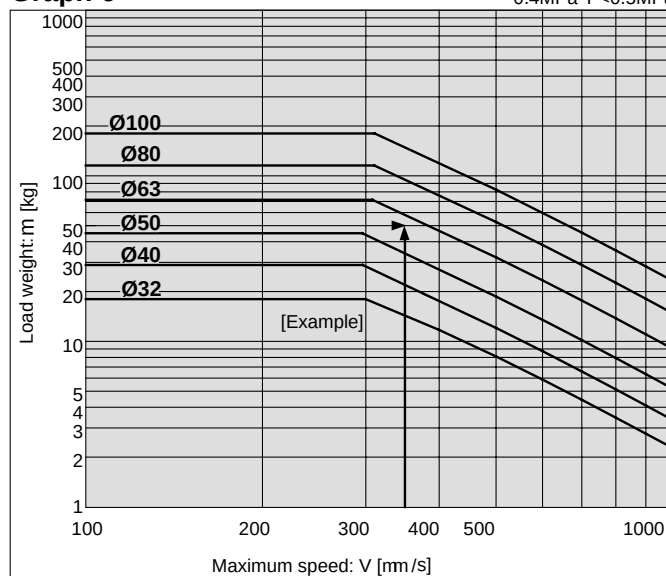
Graph 3

0.4MPa''P<0.5MPa



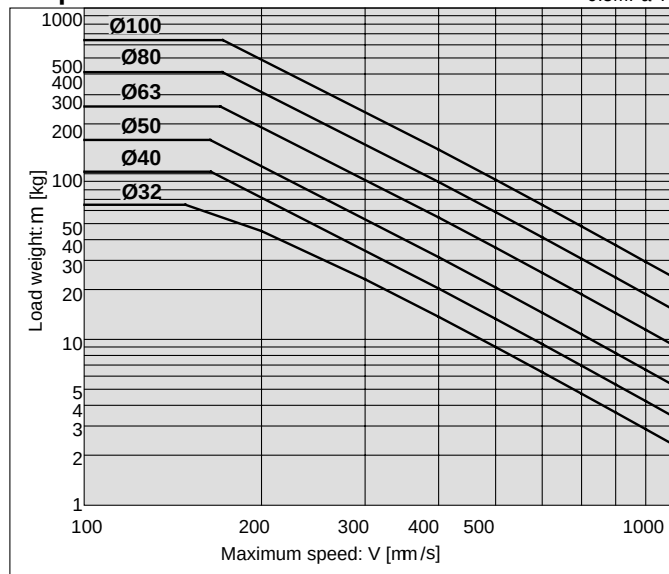
Graph 6

0.4MPa''P<0.5MPa



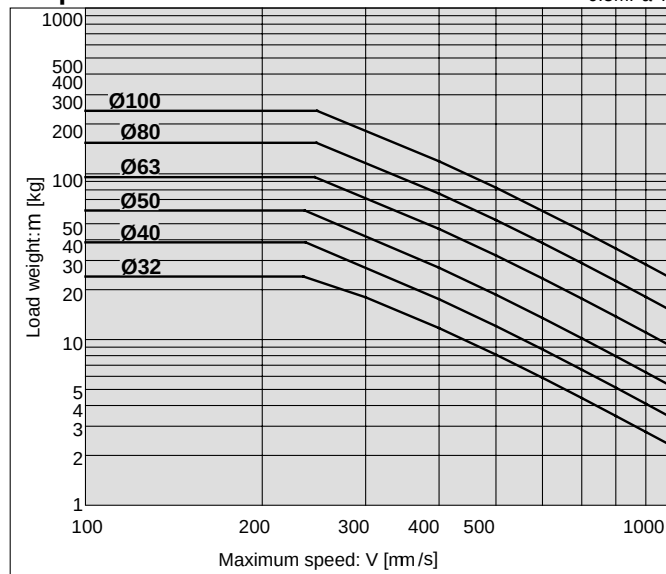
Graph 4

0.5MPa''P



Graph 7

0.5MPa''P



CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

CA1

CS1



Refer to P.5.3-17, 27, 37, 46, 54, 58 and 61 for details on auto switches.

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)



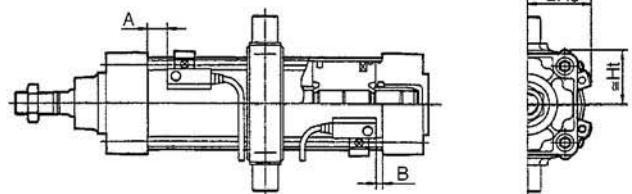
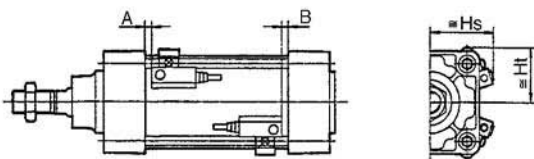
Minimum Strokes for Auto Switch Mounting

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) 1	15				20		60		80	105	110	115
	D-A59W	2 (On different faces or same face) 1	20				25		60	70	85	110	115	120
Solid state switch	D-F5/J5	2 (On different faces or same face) 1	15				25		60	70	85	110	115	120
	D-F5NTL	2 (On different faces or same face) 1	15				25		70	75	95	120	125	130
	D-F5 W D-J59W D-F5BAL D-F5 F D-F5LF	2 (On different faces or same face) 1	15				25		70	75	90	120	125	130
			10											

Auto Switch Mounting Position and Mounting Height

Reed switch

Solid state switch



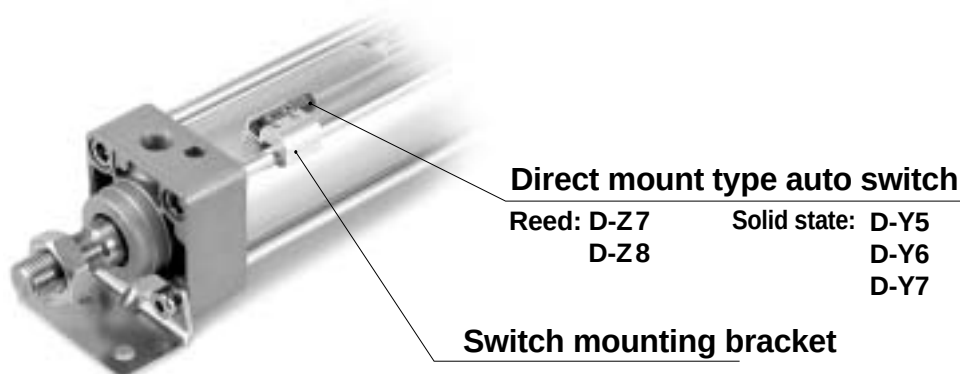
Auto Switch Mounting Position

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

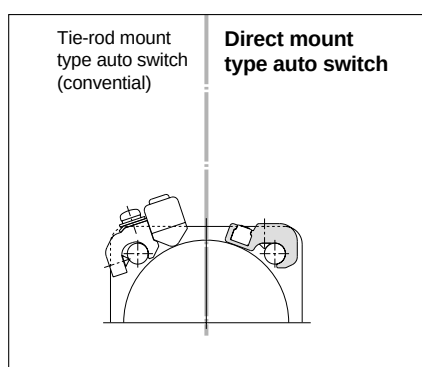


Reed: D-Z7 D-Z8
Solid state: D-Y5 D-Y6 D-Y7

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

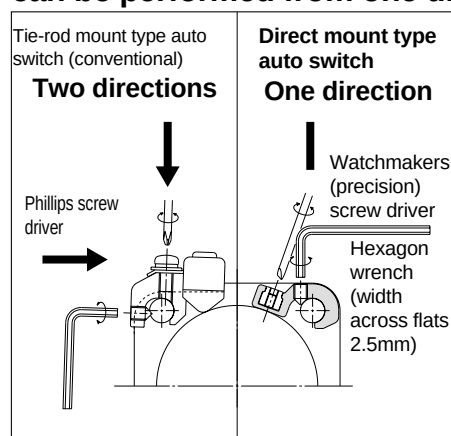
Smaller size

Protrusion of auto switches has been reduced



Easier handling

Auto switch mounting and positioning can be performed from one direction



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	Relay, PLC		
—	Z73				No	2-wire	24V	12V	100V					—	
—	Z80					2-wire	5V, 12V	100V				—			
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		3-wire (NPN)			5V									
Y7PWV	Y7PW		3-wire (PNP)			12V					IC				
Y7BWV	Y7BW		Diagnostic indication (2-colour indicator)			Water resistant (2-colour indicator)		2-wire		12V					—
—	Y7BA														
—	—														

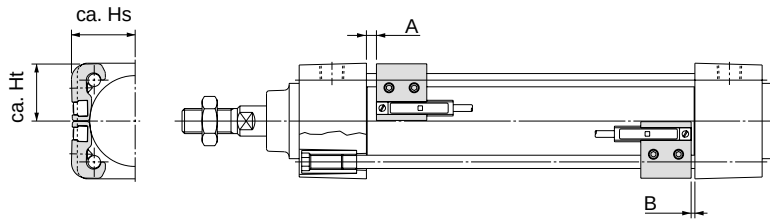
** Lead wire length symbols: 0.5m ... — (Example) Y69B
3m L Y69BL
5m Z Y69BZ

** Solid state switches marked with a " " symbol are produced upon receipt of order

Series C95

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!

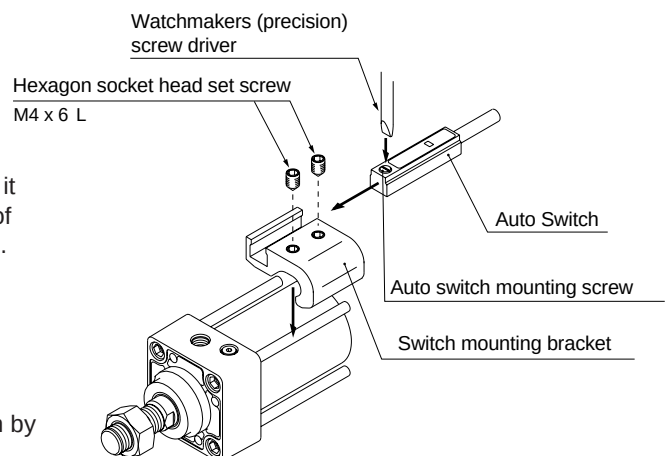
When tightening the auto switch mounting screw, use a watchmakers screw driver with a handle diameter of about 5 to 6mm.

Furthermore, use a tightening torque of 0.05 to 0.1 Nm.

As a rule, it should be turned about 90° 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.





Series C95

Specific Product Precautions

Besure to read before handling. Refer to p.0-39 through 0-46 for Safety Instructions, actuator precautions and auto switch precautions.

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,	Foot	MB-80-48AC1251	6	25
100	Others	MB-80-48BC1251		

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

Operating Precautions

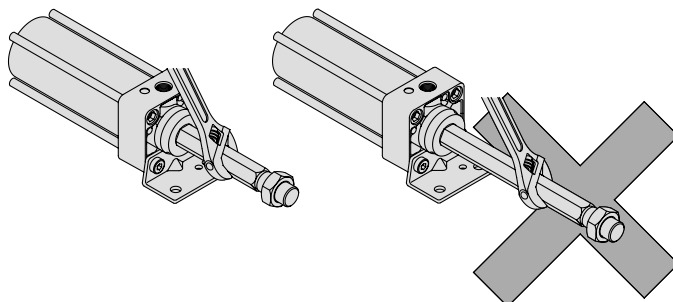
⚠ Caution

- 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 applied to the non-rotating guide.



CJ1

CJP

CJ2

CM2

C85

C76

CG1

MB

MB1

CP95

C95

C92

CA1

CS1

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)	5.4- 8
	②	-XB5	Oversized rod cylinder										5.4-11
	③	-XB6	Heat resistant cylinder (150°C)	(1)	(2)						(4)	(4)	5.4-12
	④	-XB7	Cold resistant cylinder	(3)	(2)								5.4-13
	⑤	-XB9	Low speed cylinder (10 to 50 mm/s)	(1)	(1)								5.4-14
	⑥	-XB10	Intermediate stroke (Exclusive body use)										5.4-15
	⑦	-XB11	Long stroke										5.4-18
	⑧	-XB12	External stainless steel										5.4-21
	⑨	-XB13	Low speed cylinder (5 to 50 mm/s)		(1)								5.4-22
	⑩	-XC3	Special port position		(1)								5.4-23
	⑪	-XC4	With heavy duty scraper										5.4-25
	⑫	-XC5	Heat resistant cylinder (110°C)										5.4-28
	⑬	-XC6	Piston rod and rod end nut made of stainless steel										5.4-28
	⑭	-XC7	Tie rod, cushion valve, tie rod nut, etc. made of stainless steel										5.4-29
	⑮	-XC8	Adjustable stroke cylinder/Adjustable extend stroke										5.4-30
	⑯	-XC9	Adjustable stroke cylinder/Adjustable retract stroke										5.4-36
	⑰	-XC10	Dual stroke cylinder/Double rod										5.4-41
	⑱	-XC11	Dual stroke cylinder/Single rod										5.4-46
	⑲	-XC12	Tandem cylinder										5.4-52
	⑳	-XC13	Auto switch rail mounting										5.4-54
	㉑	-XC14	Change of trunnion bracket mounting position										5.4-55
	㉒	-XC15	Change of tie rod length										5.4-57
	㉓	-XC17	Pin cylinder with rod quenched	(3)									5.4-57
	㉔	-XC18	NPT port										5.4-58
	㉕	-XC20	Head cover axial port										5.4-61
	㉖	-XC22	Fluorine rubber seals										5.4-62
	㉗	-XC24	With magnet shielding plate										5.4-63
	㉘	-XC25	Without Air cushion valve										5.4-64
	㉙	-XC27	Double clevis pin and double knuckle pin made of stainless steel										5.4-64
	㉚	-XC28	Compact flange made of SS400										5.4-65
	㉛	-XC29	Double knuckle joint with spring pin										5.4-66
	㉜	-XC30	Front trunnion										5.4-67
	㉝	-XC34	Rod does not extend beyond non-rotating plate										5.4-69
	㉞	-XC35	With coil scraper										5.4-70
	㉟	-XC36	With front guide boss										5.4-72
	㊱	-XC37	Larger throttle diameter of connecting port										5.4-72
	㊲	-XC38	Vacuum (Rod through hole)										5.4-74
	㊳	-XC42	Built-in rear shock absorber										5.4-74
	㊴	-XC51	With hose nipple										5.4-75
	㊵	-XC52	Mounting nut with set screw										5.4-75
	㊶	-XC56	With knock pin hole										5.4-76
	㊷	-XC57	Rodless cylinder with floating joint										5.4-77

* 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

Made to Order Individual Specifications

Refer to p.5.4-79 to 5.4-108 for made to order individual specifications.