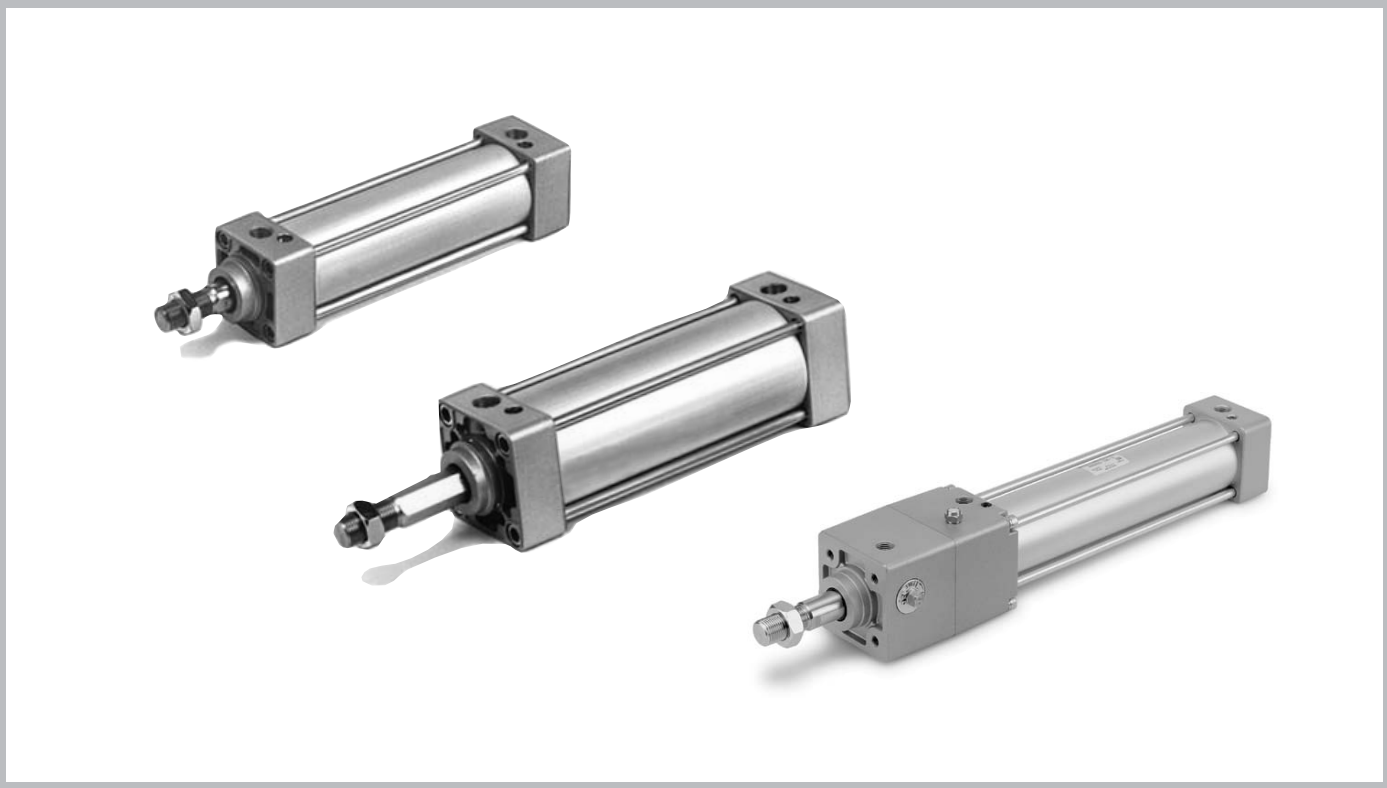
ISO/VDMA Cylinder

Series C95

ø32, ø40, ø50, ø63, ø80, ø100

Conforming to ISO 6431/CETOP RP43P/VDMA 24562



Series Variations

Series	Action	Type		Basic	Standard variations: Built-in magnet	Standard variations: Stainless steel rod	Option: Heat resistant	Bore (mm)	Page
Standard *Series C95*	Double acting	Single rod	Non-lube	●	●	●	●	32, 40, 50, 63, 80, 100	6-12-2
		Double rod	Non-lube	●	●	●	●		
Non-rotating Rod *Series C95K*	Double acting	Single rod	Non-lube	●	●	(Standard)	●	32, 40, 50, 63, 80, 100	6-12-12
		Double rod	Non-lube	●	●	(Standard)	●		
With Lock *Series C95N*	Double acting	Single rod	Non-lube	●	●	●	●	32, 40, 50, 63, 80, 100	6-12-19

ISO/VDMA Cylinder: Standard Type
Double Acting, Single/Double Rod
Series C95
ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Without auto switch **C95S** **B** **32** — **100** **W**

With auto switch **C95SD** **B** **32** — **100** **W** — **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

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

Stroke (mm)
Refer to "Standard Stroke" on page 6-12-4.

Rod

Nil	Single rod
W	Double rod

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	24 V	12 V	—	**A53**	—	●	●	●	—	Relay, PLC
							100 V, 200 V	**A54**	—	●	●	●		
			No			5 V, 12 V	—	**A67**	—	●	●	—	IC	
						12 V	200 V or less	**A64**	—	●	●	—	—	
	Diagnostic indication (2-color)		Yes			—	—	**A59W**	—	●	●	—		
	—			3-wire	—	5 V	—	**Z76**	—	●	●	—	IC	—
				2-wire	24 V	12 V	AC 100	**Z73**	—	●	●	●	—	Relay, PLC
			No			5 V, 12 V	100 V or less	**Z80**	—	●	●	—	IC	
		Terminal conduit	Yes			12 V	—	—	**A33**	—	—	—	—	PLC
		DIN terminal					100 V, 200 V	—	**A34**	—	—	—	—	Relay, PLC
								—	**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**	—	●	●	○		
				2-wire		12 V		**J59W**	—	●	●	○	—	
	Water resistant (2-color)							**F5BAL**	—	—	●	○		
	With timer			3-wire (NPN)		5 V, 12 V		**F5NTL**	—	—	●	○	IC	
	Diagnostic output (2-color)			4-wire (NPN)				**F59F**	—	●	●	○		
	Strong magnetic field resistant (2 color)			2-wire		—		**P5DW**	—	—	●	●	—	
	—			3-wire (NPN)		5 V, 12 V	—	**Y59A**	—	●	●	○	IC	Relay, PLC
				2-wire		—		**Y59B**	—	●	●	○	—	
				3-wire (PNP)		5 V, 12 V		**Y7P**	—	●	●	○	IC	
	Diagnostic indication (2-color)			3-wire (NPN)				**Y7NW**	—	●	●	○		
				3-wire (PNP)				**Y7PW**	—	●	●	○		
				2-wire		—		**Y7BW**	—	●	●	○	—	
	Water resistant (2-color)							**Y7BAL**	—	—	●	○		
	—	Terminal conduit		3-wire (NPN)		5 V, 12 V		—	**G39**	—	—	—	IC	
				2-wire		12 V		—	**K39**	—	—	—	—	

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

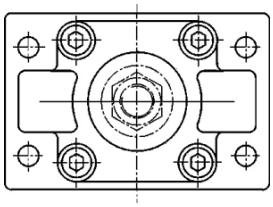
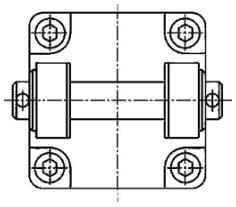
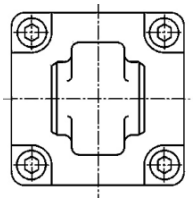
○: Manufactured upon receipt of order.
Refer to page 6-16-1 for details of applicable auto switches in addition to those listed above.

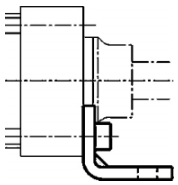
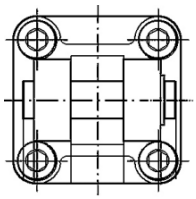
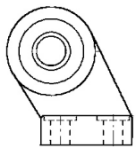
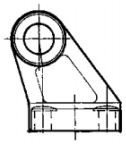
Auto Switch Mounting Bracket Part No.

Bore size (mm)	32	40	50	63	80	100
D-A3/A4/K3/G3	BMB2-032	BMB2-040	BMB1-050	BMB1-063	BMB1-080	BMB1-100
D-A5/A6/F5/J5	BT-03		BT-05		BT-06	
D-Z□/Y□	BMB4-032		BMB4-050		BMB4-063	
D-P5DWL	BMB3T-040		BMB3T-050		BMB3T-080	

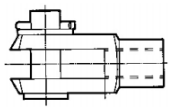
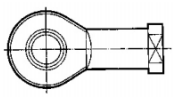
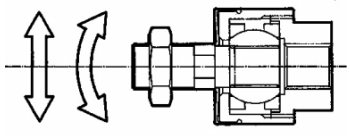
Accessory

Mounting Accessory, Cylinder

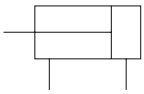
Bore size (mm)	**F** Rod/Head side flange	**D** Female head side clevis (Corresponds to E accessories)	**C** Male head side clevis
	 Supplied with 4 screws	 Supplied with bolt, safety device and 4 screws	 Supplied with 4 screws
32	Without lock: F5032 / With lock: MNB-F03	D5032	Plain: C5032 / With ball joint: CR5032
40	F5040 / MNB-F04	D5040	C5040 / CR5040
50	F5050 / MNB-F04	D5050	C5050 / CR5050
63	F5050 / MNB-F05	D5063	C5063 / CR6063
80	F5063 / MNB-F06	D5080	C5080 / CR5080
100	F5080 / F5080	D5100	C5100 / CR5100
	F5100 / F5100		
	See page 6-12-8 and 24 for dimensions.	See pages 6-12-8, 9 and 24 for dimensions	See pages 6-12-8, 9 and 24 for dimensions. Note) See page 6-12-9 for male head side clevis with swivel CR50.

Bore size (mm)	**L** Foot	**DS** Female head side clevis (for ES accessory)	**ES** Angled head side clevis with ball joint	**E** Angled head side clevis
	 Supplied with two pieces Supplied with 4 screws			
32	L5032	DS5032	ES5032	E5032
40	L5040	DS5040	ES5040	E5040
50	L5050	DS5050	ES5050	E5050
63	L5063	DS5063	ES5063	E5063
80	L5080	DS5080	ES5080	E5080
100	L5100	DS5100	ES5100	E5100
	See page 6-12-8 and 24 for dimensions.	See page 6-12-10 for dimensions.	See page 6-12-10 for dimensions.	See page 6-12-9 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		
32	GKM10-20	KJ10D	JA30-10-125
40	GKM12-24	KJ12D	JA40-12-125
50	GKM16-32	KJ16D	JA50-16-150
63	GKM16-32	KJ16D	JA50-16-150
80	GKM20-40	KJ20D	JAH50-20-150
100	GKM20-40	KJ20D	JAH50-20-150
	See page 6-12-11 for dimensions.	See page 6-12-11 for dimensions.	See page 6-12-11 for dimensions.

JIS Symbol
Double acting



Minimum Stroke for Auto Switch Mounting

Refer to page 6-12-16 for “Minimum Stroke for Auto Switch Mounting”.

Made to Order Specifications (For details, refer to page 6-17-19.)

Symbol	Specifications
-XB6	Heat resistant cylinder (150°C)
-XB13	Low speed cylinder (5 to 50 mm/s)
-XC4	With heavy duty scraper
-XC6	Piston rod and rod end nut made of stainless steel
-XC18	NPT finish piping
-XC22	Fluoro rubber seals
-XC35	With coil scraper

Specifications

Bore size (mm)	32	40	50	63	80	100
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 1000 mm/s					
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 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 1/2
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Center trunnion style					

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, 700, 800	1400
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1500

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

Accessory

Mounting		Basic style	Foot style	Rod side flange style	Head side flange style	Single clevis style	Double clevis style	Center trunnion style
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single clevis	●	●	●	●	●	●	●
	Double clevis (With pin)	●	●	●	●	●	●	●
	Rod boot	●	●	●	●	●	●	●

Theoretical Output

OUT IN (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 out put (N) = Pressure (MPa) x Piston area (mm^2)

Weight/Aluminum Tube

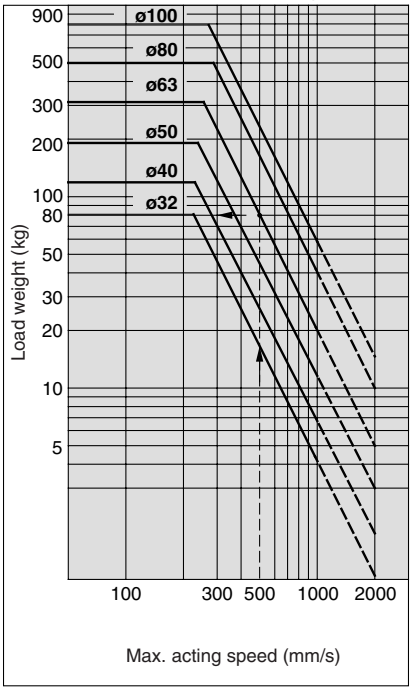
(kg)

Bore size (mm)		**32**	**40**	**50**	**63**	**80**	**100**
Basic weight	Basic style	0.56	0.84	1.39	1.91	3.22	4.24
	Foot style	0.16	0.20	0.38	0.46	0.89	1.09
	Flange style	0.20	0.23	0.47	0.58	1.30	1.81
	Single clevis style	0.16	0.23	0.37	0.60	1.07	1.73
	Double clevis style	0.20	0.32	0.45	0.71	1.28	2.11
	Trunnion style	0.71	1.10	1.73	2.48	4.25	5.95
Additional weight per each 50 mm of stroke	All mounting brackets	0.11	0.16	0.26	0.27	0.42	0.56
Accessory	Single rod clevis	0.07	0.11	0.22	0.22	0.40	0.40
	Double clevis (With pin)	0.09	0.15	0.34	0.34	0.69	0.69

Calculation: (Example) C95SD40-100
- Basic weight ····· 0.84 (kg) (Basic, ø40)
- Mounting ····· 0.32 (kg) (Double clevis)
- Additional weight ··· 0.16 (kg/50 st)
- Cylinder stroke ····· 100 (st)

0.84 + 0.16 x 100 ÷ 50 + 0.32 = 1.48 kg

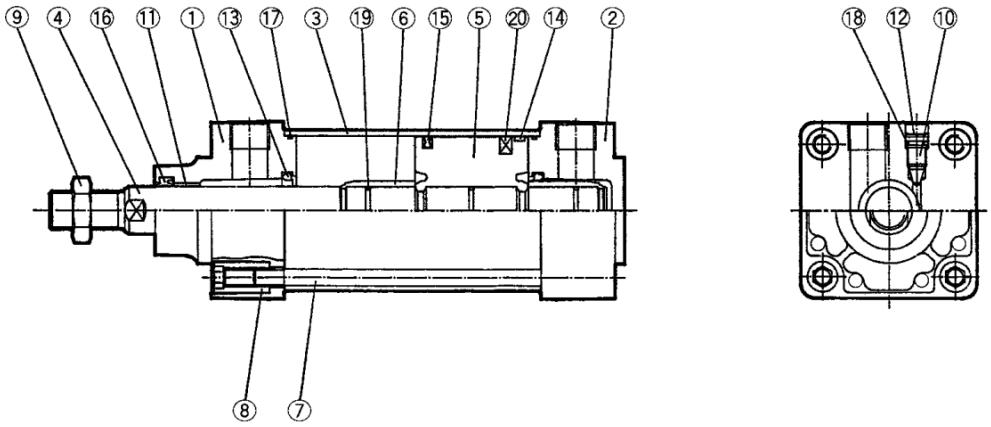
Allowable Kinetic Energy



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

Construction

[First angle projection]



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum die-casted	
②	Head cover	Aluminum die-casted	
③	Cylinder tube	Aluminum alloy	
④	Piston rod	Carbon steel	
⑤	Piston	Aluminum alloy	
⑥	Cushion ring	Brass	
⑦	Tie-rod	Carbon steel	
⑧	Tie-rod nut	Steel	
⑨	Rod end nut	Steel	
⑩	Cushion valve	Steel wire	
⑪	Bushing	Lead-bronze casted	
⑫	Snap ring	Steel for spring	ø40 to ø100
⑬	Cushion seal	Urethan rubber	

No.	Description	Material	Note
⑭	Wearing	Resin	
⑮	Piston seal	NBR	
⑯	Rod seal	NBR	
⑰	Cylinder tube gasket	NBR	
⑱	Cushion valve seal	NBR	
⑲	Piston gasket	NBR	
⑳	Magnet		

Replacement Parts: Seal Kit

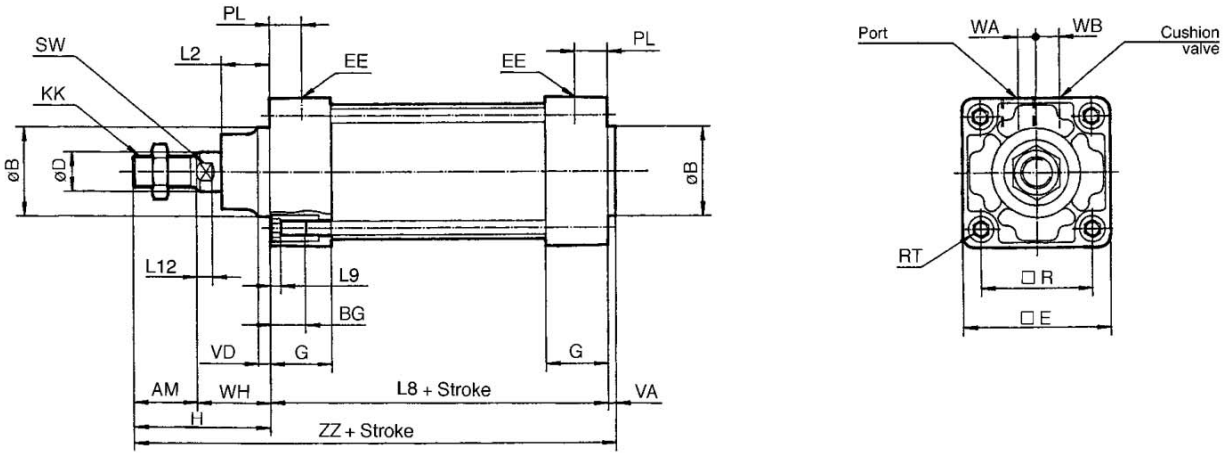
Bore size (mm)	Kit no.	Contents
32	CS95-32	Kits include items ⑬ to ⑰.
40	CS95-40	
50	CS95-50	
63	CS95-63	
80	CS95-80	
100	CS95-100	

∗ 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.

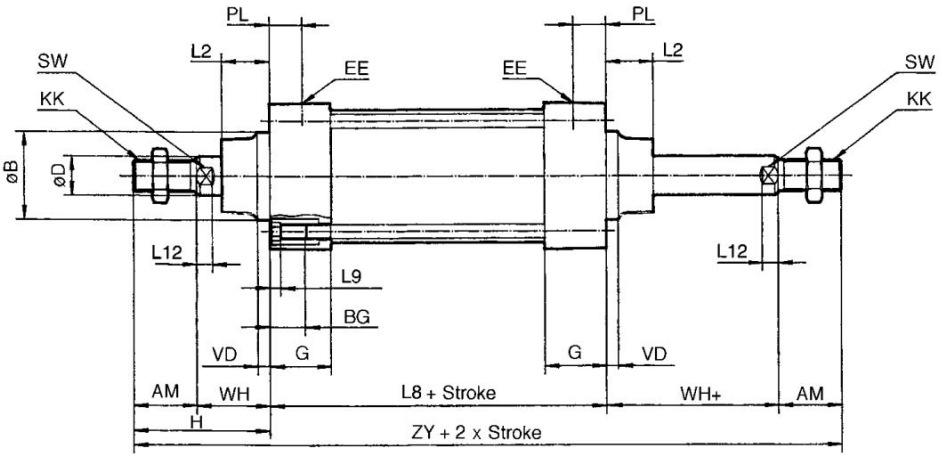
Dimensions: Without Mounting Bracket

[First angle projection]

C95SB Bore size - Stroke



C95SB Bore size - Stroke W

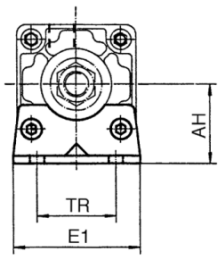


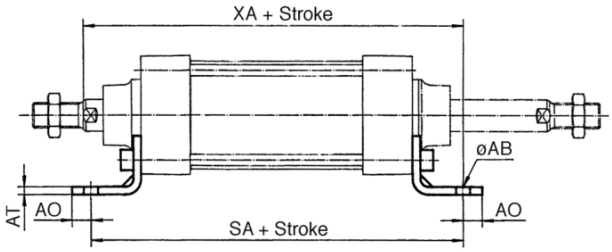
Bore size (mm)	AM	øB e11	øD	EE	PL	RT	L12	KK	SW	G	BG (MIN)	L8	VD	VA	WA	WB	WH	ZZ	ZY	□E	□R	L2	L9
32	22	30	12	G 1/8	13	M6 x 1	6	M10 x 1.25	10	27	16	94	4	4	4	6.5	26	146	190	46	32.5	15	4
40	24	35	16	G 1/4	14	M6 x 1	6.5	M12 x 1.25	13	27	16	105	4	4	4	9	30	163	213	52	38	17	4
50	32	40	20	G 1/4	15.5	M8 x 1.25	8	M16 x 1.5	16	31.5	16	106	6	4	5	10.5	37	179	244	65	46.5	24	5
63	32	45	20	G 3/8	16.5	M8 x 1.25	8	M16 x 1.5	16	31.5	16	121	6	4	9	12	37	194	259	75	56.5	24	5
80	40	45	25	G 3/8	19	M10 x 1.5	10	M20 x 1.5	21	38	16	128	8	4	11.5	14	46	218	300	95	72	30	5
100	40	55	30	G 1/2	19	M10 x 1.5	10	M20 x 1.5	21	38	16	138	8	4	17	15	51	233	320	114	89	32	5

Dimensions: Cylinder Mounting Accessory

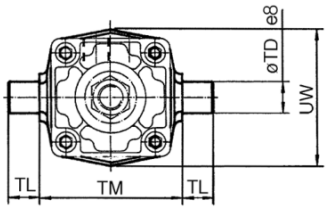
[First angle projection]

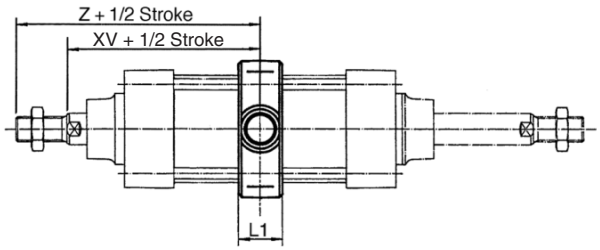
Foot style (L)



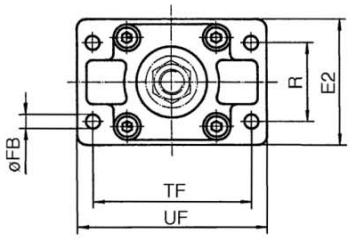


Center trunnion style (T)

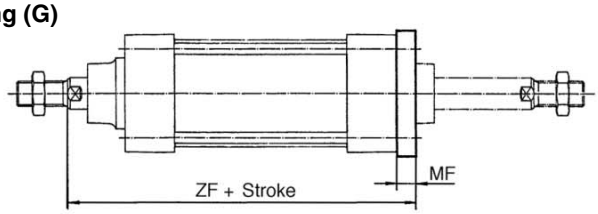




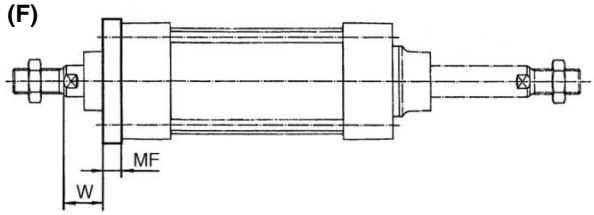
Flange style (F, G)



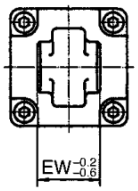
Head side mounting (G)



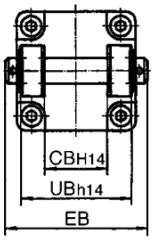
Rod side mounting (F)

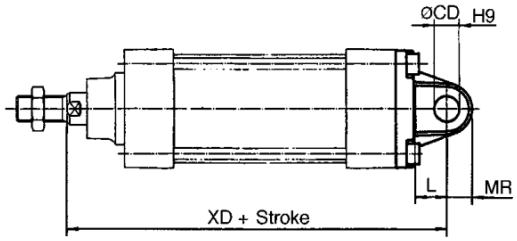


Head side single clevis style (C)



Head side double clevis style (D)



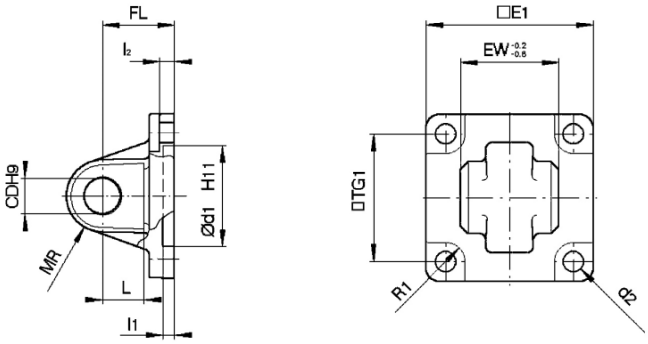


Bore size (mm)	E1	R	W	MF	ZF	øFB	øCD H9	EB	L	XD	UB h14	CB H14	EW -0.2 -0.6	MR	TR	AO	AT	XA	SA	AH	øAB	L1	XV	Z	TL	øTD e8	TM	UW	TF	UF	E2
32	48	32	16	10	130	7	10	65	12	142	45	26	26	9.5	32	10	4.5	144	142	32	7	17	73	95	12	12	50	49	64	79	50
40	55	36	20	10	145	9	12	75	15	160	52	28	28	12	36	11	4.5	163	161	36	10	22	82.5	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	90	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	97.5	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	110	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	120	160	25	25	132	136	150	178	120

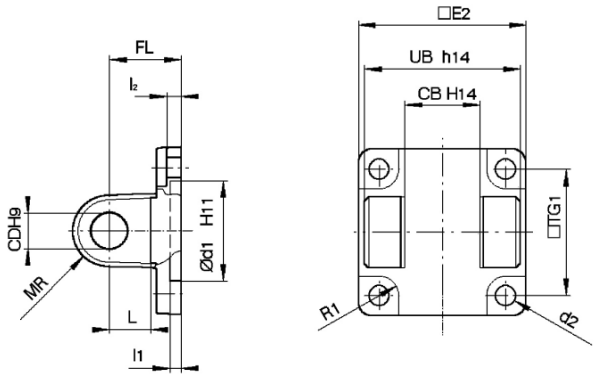
Dimensions: Cylinder Mounting Accessory C, D, E and CR

[First angle projection]

Mounting style (C)

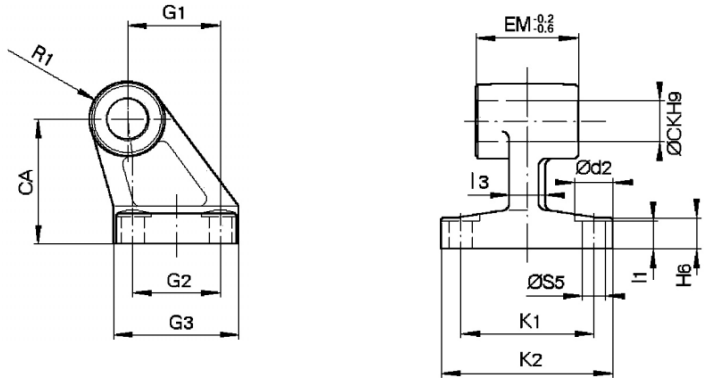


Mounting style (D)



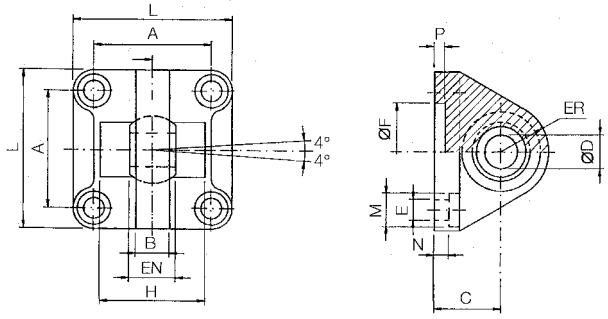
Bore size (mm)	□E1	EW	□TG1	FL	l1	L	l2	ød1	CD	MR	d2	R1	□E2	UB	CB
32	45	26	32.5	22	5	12	5.5	30	10	9.5	6.6	6.5	48	45	26
40	51	28	38	25	5	15	5.5	35	12	12	6.6	6.5	56	52	28
50	64	32	46.5	27	5	15	6.5	40	12	12	9	8.5	64	60	32
63	74	40	56.5	32	5	20	6.5	45	16	16	9	8.5	75	70	40
80	94	50	72	36	5	20	10	45	16	16	11	11	95	90	50
100	113	60	89	41	5	25	10	55	20	20	11	12	115	110	60

Mounting style (E)



Bore size (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

Mounting style (CR): Head side clevis with ball joint

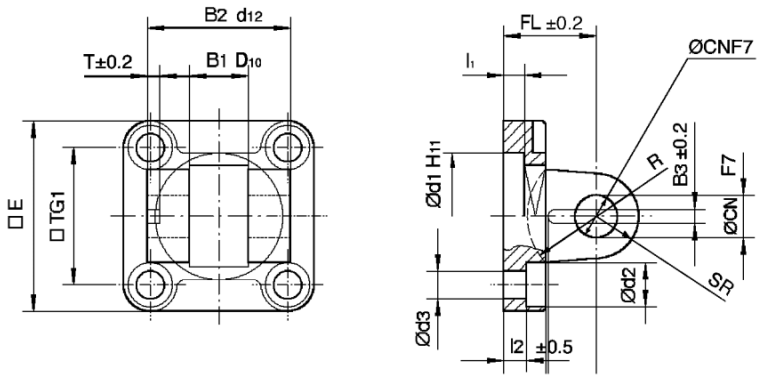


Bore size (mm)	A	B	C	D	EN	ER	F	E	L	M	N	P	H
	±0.2	max	±0.2	H7	–0.1	max	H11	H13		H13	±0.5		±0.5
32	32.5	10.5	22	10	14	15	30	6.6	45	10.5	5.5	5	—
40	38	12	25	12	16	18	35	6.6	55	11	5.5	5	—
50	46.5	15	27	16	21	20	40	9	65	15	6.5	5	51
63	56.5	15	32	16	21	23	45	9	75	15	6.5	5	—
80	72	18	36	20	25	27	45	11	95	18	10	5	—
100	89	18	41	20	25	30	55	11	115	18	10	5	—

Dimensions: Cylinder Mounting Accessory DS and ES

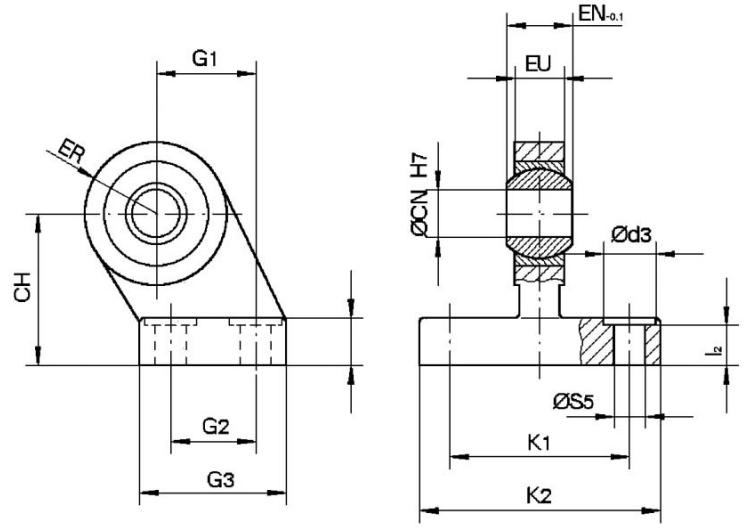
[First angle projection]

Mounting style (DS)



Bore size (mm)	□E	B_1	B_2	B_3	□TG_1	T	l_1 (min)	l_2	FL	H	ød_1	ød_2	ød_3	CN	SR (max)	R
32	45	14	34	3.3	32.5	3	5	5.5	22	10	30	10.5	6.6	10	11	17
40	55	16	40	4.3	38	4	5	5.5	25	10	35	11	6.6	12	13	20
50	65	21	45	4.3	46.5	4	5	6.5	27	10	40	15	9	16	18	22
63	75	21	51	4.3	56.5	4	5	6.5	32	12	45	15	9	16	18	25
80	95	25	65	4.3	72	4	5	10	36	16	45	18	11	20	22	30
100	115	25	75	6.3	89	4	5	10	41	16	55	18	11	20	22	32

Mounting style (ES)



Bore size (mm)	ød3	øCN	øS5	K1	K2	l_2	G_1	G_2	G_3	EN	EU	CH	H_6	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