

Spatter Resistant Cylinder for Arc Welding Air Cylinder: Single Rod

MB-XC88/XC89 -XC91

ø32, ø40, ø50, ø63, ø80, ø100

RoHS

How to Order

Cylinder stroke (mm)
Refer to "Standard Strokes" on page 48.

Rod material

XC88	Stainless steel 304
XC89	S45C

Bore size

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

Accessories 1

Nil	No bracket
N	Pivot bracket

* Only for D and T mounting types.
* Pivot bracket is shipped together with the product.

Accessories 2

Nil	No bracket
V	Single knuckle joint
W	Double knuckle joint

* A knuckle joint pin is not provided with the single knuckle joint.
* Rod end bracket is shipped together with the product.

Auto switch

Nil	Without auto switch
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* For applicable auto switches, refer to the table below.

Number of auto switches

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

Mounting

B	Basic
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis
T	Center trunnion

Built-in auto switch magnet

Rod material

XC91	S45C
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Made to Order

Part no.	Piston rod material (Hard chrome plated)		Coil scraper	Lube- retainer	Grease for welding
	S45C	Stainless steel 304			
-XC88	—	●	●	●	●
-XC89	●	—	●	●	●
-XC91	●	—	●	—	●

Note) Use the -XC91 in a place where the distance from the welding portion is far and the spatter scattering is minimized.

Built-in Auto Switch Magnet Cylinder Model

If a built-in auto switch magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) MDBB40-100Z-XC89

Applicable Auto Switches/Refer to the WEB catalog or the Best Pneumatics No.2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)				Pre-wired connector	Applicable load		
					DC			AC	Tie-rod mounting	0.5 (Nil)	1 (M)		3 (L)	5 (Z)	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	○	IC circuit	Relay, PLC
	3-wire (PNP)			5 V, 12 V		M9P		●	●	●	○	○			
	2-wire					M9B		●	●	●	○	○			
	3-wire (NPN)					M9NW		●	●	●	○	○			
	Diagnostic indication (2-color indication)			3-wire (PNP)	24 V	5 V, 12 V		M9PW	●	●	●	○	○	IC circuit	
	2-wire			M9BW				●	●	●	○	○			
	2-wire (Non-polar)			P3DWA				●	—	●	●	●			
	Magnetic field resistant (2-color indication)			P4DW	—	—		●	●	●	—	—			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96	●	—	●	—	—	IC circuit	—
	No			24 V	12 V	100 V	A93	●	—	●	—	—	—	Relay, PLC	
			100 V or less			A90	●	—	●	—	—	—	IC circuit	—	

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

* Solid state auto switches marked with "○" are produced upon receipt of order.
* For D-P3DWA/P4DW, ø40 to ø100 are available.

* Please contact SMC for auto switches, auto switch proper mounting positions and operating ranges other than the above.
* The D-A9□/M9□□□/P3DWA auto switches are shipped together, (but not assembled).
(However, auto switch mounting brackets are assembled for the D-A9□/M9□□□ before shipment.)



Specifications

Bore size (mm)	32	40	50	63	80	100
Action	Double acting, Single rod					
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					
Stroke length tolerance	Up to 250: $^{+1.0}_0$, 251 to 1000: $^{+1.4}_0$, 1001 to 1500: $^{+1.8}_0$					
Cushion	Air cushion					
Port size (Rc)	1/8	1/4	3/8	1/2		
Mounting	Basic, Foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion					

Standard Strokes

Bore size (mm)	Standard stroke (mm)	Max. stroke
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	700
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	800
50	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	1000
63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	1000
80	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000
100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1000

Manufacture of intermediate strokes is possible. (Spacers are not used.) Produced upon receipt of order.

Accessories

Mounting		Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●	●

Mounting Brackets/Part No.

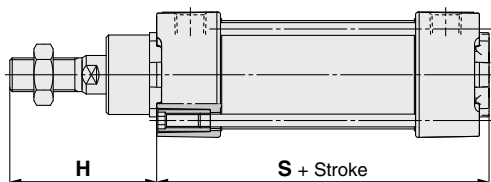
Bore size (mm)	32	40	50	63	80	100
Axial foot ^{Note 1)}	MB-L03	MB-L04	MB-L05	MB-L06	MB-L08	MB-L10
Flange	MB-F03	MB-F04	MB-F05	MB-F06	MB-F08	MB-F10
Single clevis	MB-C03	MB-C04	MB-C05	MB-C06	MB-C08	MB-C10
Double clevis	MB-D03	MB-D04	MB-D05	MB-D06	MB-D08	MB-D10

Note 1) Order two axial foot brackets per cylinder.

Note 2) Accessories for each mounting bracket are as follows:

Axial foot, flange, single clevis/body mounting bolt, double clevis/body mounting bolt, clevis pin, flat washers and split pins.

Comparison of the Dimensions of Each Series



Bore size (mm)	XC88, 89		XC91		XC35		Standard	
	H	S	H	S	H	S	H	S
32	50	88	47	88	47	88	47	88
40	61	88	58	88	58	88	51	88
50	67	98	67	98	67	98	58	98
63	67	98	67	98	67	98	58	98
80	82	118	81	118	81	118	72	118
100	82	118	81	118	81	118	72	118

* At 0 stroke

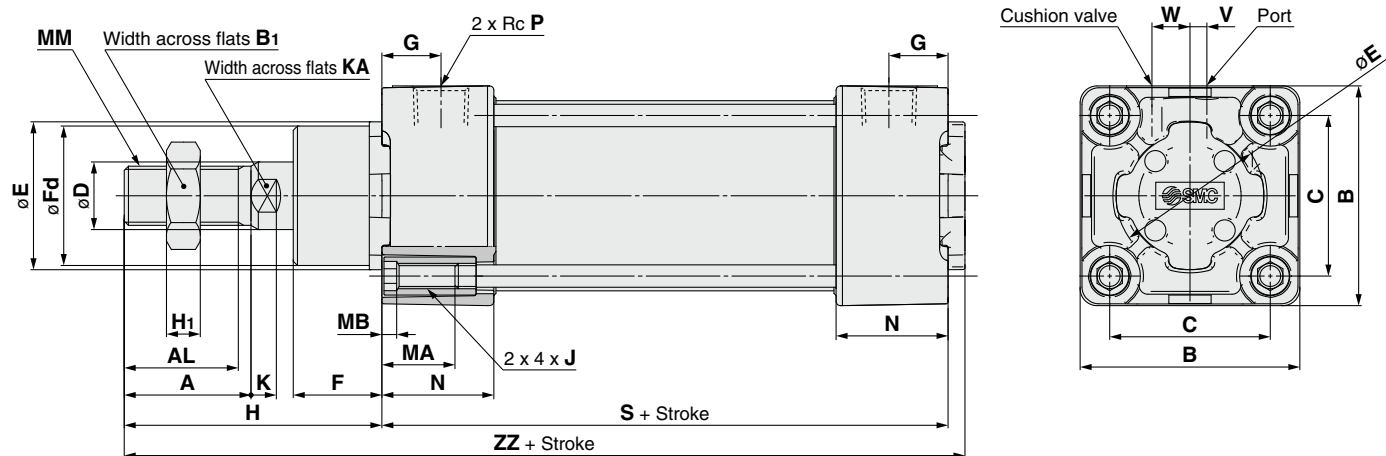
MB-XC88
MB-XC89

Bore Size

ø32 to ø100

M□B□-XC88
M□B□-XC89

Basic: MBB



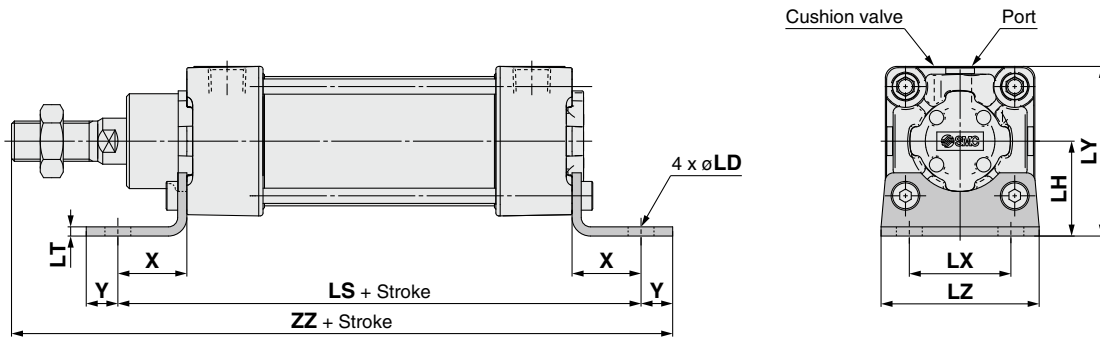
Dimensions

(mm)

Bore size (mm)	A	AL	B	B ₁	C	D	E	F	Fd	G	H	H ₁	J	K	KA	MA	MB	MM	N	P	S	V	W	ZZ
32	22	19.5	46	17	32.5	12	30	21	28	13	50	6	M6 x 1	6	10	16	4	M10 x 1.25	27	1/8	84	4	6.5	138
40	30	27	52	22	38	16	35	23.5	33	14	61	8	M6 x 1	6	14	16	4	M14 x 1.5	27	1/4	84	4	9	149
50	35	32	65	27	46.5	20	40	23	39.5	15.5	67	11	M8 x 1.25	7	18	16	4	M18 x 1.5	31.5	1/4	94	5	10.5	165
63	35	32	75	27	56.5	20	45	23	39.5	16.5	67	11	M8 x 1.25	7	18	16	4	M18 x 1.5	31.5	3/8	94	9	12	165
80	40	37	95	32	72	25	45	29	44.5	19	82	13	M10 x 1.5	10	22	16	5	M22 x 1.5	38	3/8	114	11.5	14	200
100	40	37	114	41	89	30	55	29	54	19	82	16	M10 x 1.5	10	26	16	5	M26 x 1.5	38	1/2	114	17	15	200

* Refer to Basic (B) for other dimensions.

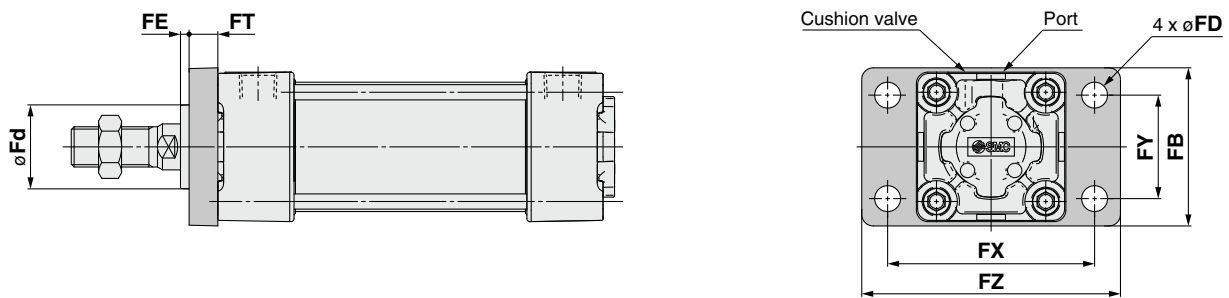
Axial foot: MBL



Axial Foot (mm)

Bore size (mm)	LD	LH	LS	LT	LX	LY	LZ	X	Y	ZZ
32	7	30	128	3.2	32	53	50	22	9	165
40	9	33	132	3.2	38	59	55	24	11	180
50	9	40	148	3.2	46	72.5	70	27	11	199
63	12	45	148	3.6	56	82.5	80	27	14	202
80	12	55	174	4.5	72	102.5	100	30	14	240
100	14	65	178	4.5	89	122	120	32	16	243

Rod flange: MBF



Rod Flange (mm)

Bore size (mm)	FB	FD	FE	FT	FX	FY	FZ	Fd
32	50	7	11	10	64	32	79	28
40	55	9	13.5	10	72	36	90	33
50	70	9	11	12	90	45	110	39.5
63	80	9	11	12	100	50	120	39.5
80	100	12	13	16	126	63	153	44.5
100	120	14	13	16	150	75	178	55

MB-XC88
MB-XC89

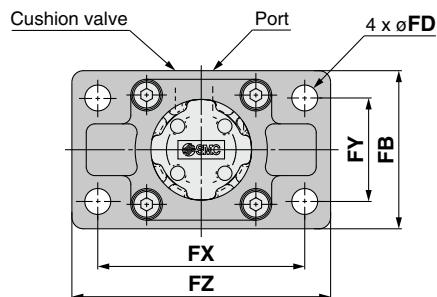
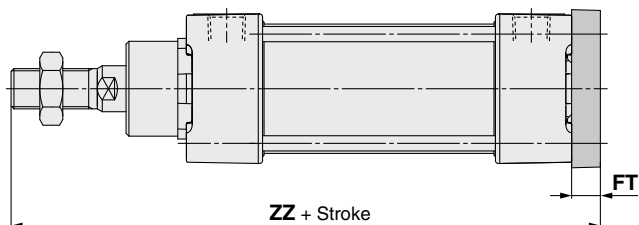
Bore Size

ø32 to ø100

* Refer to Basic (B) for other dimensions.

M□B□-XC88
M□B□-XC89

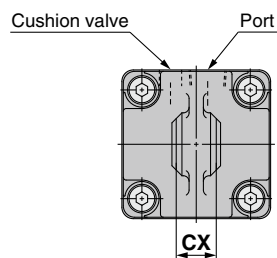
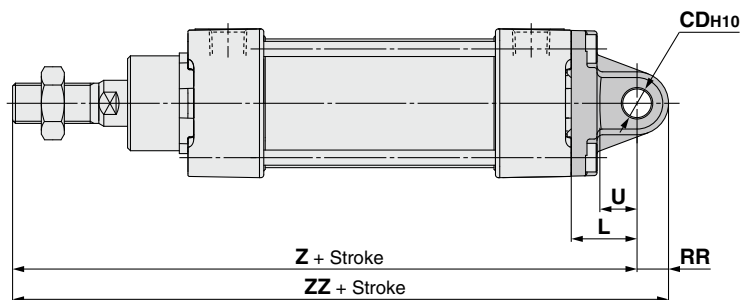
Head flange: MBG



Head Flange (mm)

Bore size (mm)	FB	FD	FT	FX	FY	FZ	ZZ
32	50	7	10	64	32	79	144
40	55	9	10	72	36	90	155
50	70	9	12	90	45	110	173
63	80	9	12	100	50	120	173
80	100	12	16	126	63	153	212
100	120	14	16	150	75	178	212

Single clevis: MBC

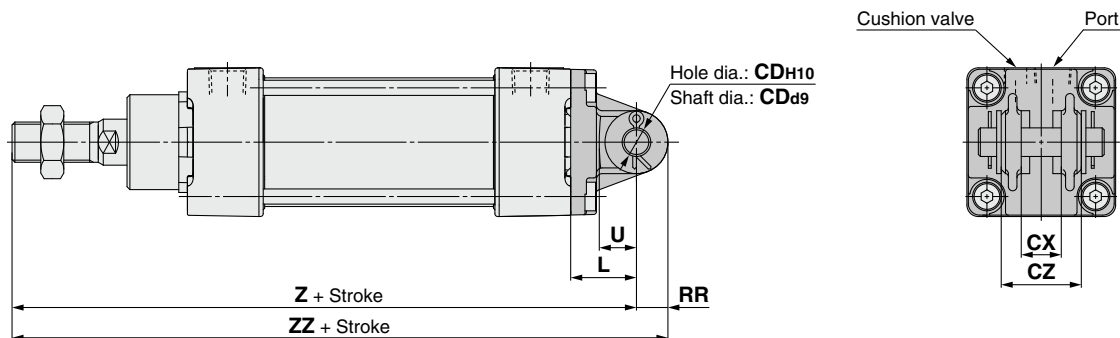


Single Clevis (mm)

Bore size (mm)	CD _{H10}	CX	L	RR	U	Z	ZZ
32	10 ^{+0.058} ₀	14 ^{-0.1} _{-0.3}	23	10.5	13	157	167.5
40	10 ^{+0.058} ₀	14 ^{-0.1} _{-0.3}	23	11	13	168	179
50	14 ^{+0.070} ₀	20 ^{-0.1} _{-0.3}	30	15	17	191	206
63	14 ^{+0.070} ₀	20 ^{-0.1} _{-0.3}	30	15	17	191	206
80	22 ^{+0.084} ₀	30 ^{-0.1} _{-0.3}	42	23	26	238	261
100	22 ^{+0.084} ₀	30 ^{-0.1} _{-0.3}	42	23	26	238	261

* Refer to Basic (B) for other dimensions.

Double clevis: MBD

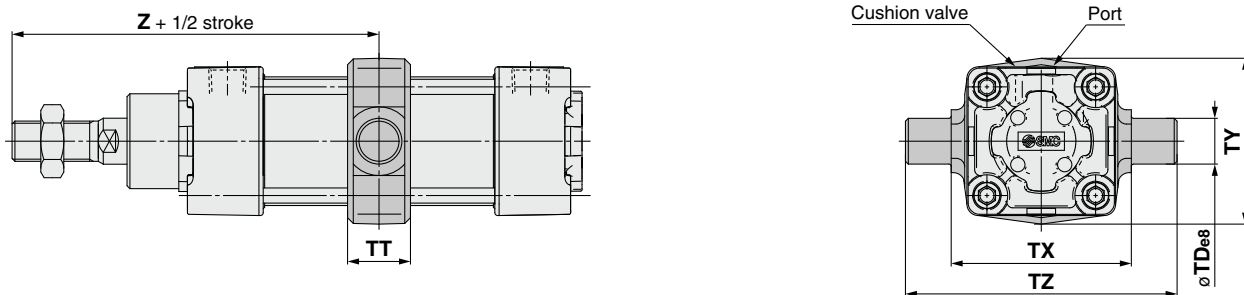


Double Clevis

(mm)

Bore size (mm)	CD _{H10}	CD _{d9}	CX	CZ	L	RR	U	Z	ZZ
32	10 ^{+0.058} ₀	10 ^{-0.040} _{-0.076}	14 ^{+0.3} _{+0.1}	28	23	10.5	13	157	167.5
40	10 ^{+0.058} ₀	10 ^{-0.040} _{-0.076}	14 ^{+0.3} _{+0.1}	28	23	11	13	168	179
50	14 ^{+0.070} ₀	14 ^{-0.050} _{-0.093}	20 ^{+0.3} _{+0.1}	40	30	15	17	191	206
63	14 ^{+0.070} ₀	14 ^{-0.050} _{-0.093}	20 ^{+0.3} _{+0.1}	40	30	15	17	191	206
80	22 ^{+0.084} ₀	22 ^{-0.065} _{-0.117}	30 ^{+0.3} _{+0.1}	60	42	23	26	238	261
100	22 ^{+0.084} ₀	22 ^{-0.065} _{-0.117}	30 ^{+0.3} _{+0.1}	60	42	23	26	238	261

Center trunnion: MBT



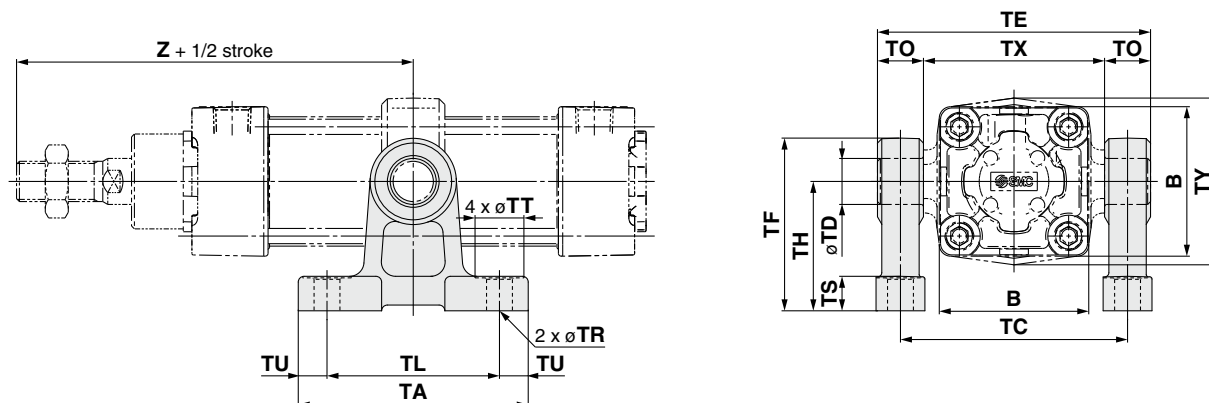
Center Trunnion

(mm)

Bore size (mm)	TD _{e8}	TT	TX	TY	TZ	Z
32	12 ^{-0.032} _{-0.059}	17	50	49	74	92
40	16 ^{-0.032} _{-0.059}	22	63	58	95	103
50	16 ^{-0.032} _{-0.059}	22	75	71	107	114
63	20 ^{-0.040} _{-0.073}	28	90	87	130	114
80	20 ^{-0.040} _{-0.073}	34	110	110	150	139
100	25 ^{-0.040} _{-0.073}	40	132	136	182	139

Pivot Bracket/Trunnion and Double Clevis Pivot Bracket

Trunnion pivot bracket

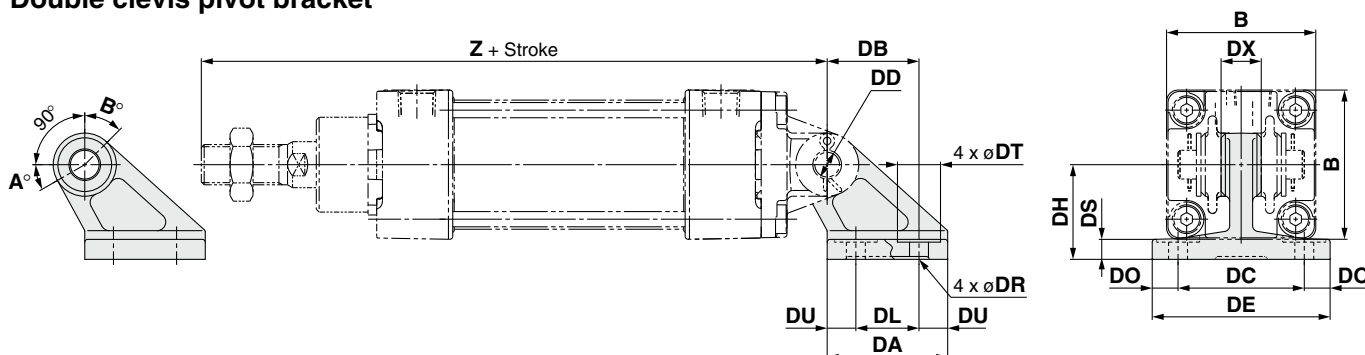


(mm)

Part no.	Bore size (mm)	B	TA	TL	TU	TC	TX	TE	TO	TR	TT	TS	TH	TF	Z	TD _{H10}
MB-S03	32	46	62	45	8.5	62	50	74	12	7	13	10	35	47	92	12 ^{+0.070} ₀
MB-S04	40	52	80	60	10	80	63	97	17	9	17	12	45	60	103	16 ^{+0.070} ₀
	50	65	80	60	10	92	75	109	17	9	17	12	45	60	114	16 ^{+0.070} ₀
MB-S06	63	75	100	70	15	110	90	130	20	11	22	14	60	80	114	20 ^{+0.084} ₀
	80	95	100	70	15	130	110	150	20	11	22	14	60	80	139	20 ^{+0.084} ₀
MB-S10	100	114	120	90	15	158	132	184	26	13.5	24	17	75	100	139	25 ^{+0.084} ₀

Note) Order 2 trunnion pivot brackets per cylinder.

Double clevis pivot bracket



(mm)

Part no.	Bore size (mm)	B	DA	DB	DL	DU	DC	DX	DE	DO	DR	DT	DS	DH	Z	DD _{H10}
MB-B03	32	46	42	32	22	10	44	14	62	9	6.6	15	7	33	157	10 ^{+0.058} ₀
	40	52	42	32	22	10	44	14	62	9	6.6	15	7	33	168	10 ^{+0.058} ₀
MB-B05	50	65	53	43	30	11.5	60	20	81	10.5	9	18	8	45	191	14 ^{+0.070} ₀
	63	75	53	43	30	11.5	60	20	81	10.5	9	18	8	45	191	14 ^{+0.070} ₀
MB-B08	80	95	73	64	45	14	86	30	111	12.5	11	22	10	65	238	22 ^{+0.084} ₀
	100	114	73	64	45	14	86	30	111	12.5	11	22	10	65	238	22 ^{+0.084} ₀

Rotating Angle

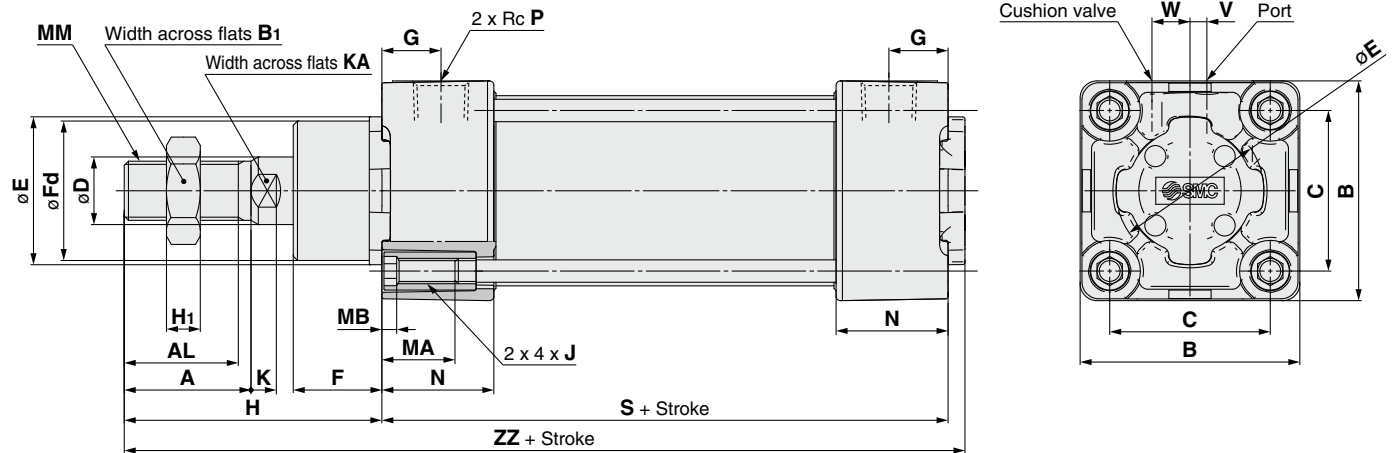
Bore size (mm)	A°	B°	A° + B° + 90°
32, 40	25°	45°	160°
50, 63	40°	60°	190°
80, 100	30°	55°	175°

Bore Size

ø32 to ø100

M□B□-XC91

Basic: MBB



Dimensions

Bore size (mm)	Stroke range	A	AL	B	B ₁	C	D	E	F	F _d	G	H	H ₁	J	K	KA	MA	MB	MM	N	P	S	V	W	ZZ
32	Up to 1000	22	19.5	46	17	32.5	12	30	13	28	13	47	6	M6 x 1	6	10	16	4	M10 x 1.25	27	1/8	84	4	6.5	135
40	Up to 1000	30	27	52	22	38	16	35	13	33	14	58	8	M6 x 1	6	14	16	4	M14 x 1.5	27	1/4	84	4	9	146
50	Up to 1000	35	32	65	27	46.5	20	40	14	39.5	15.5	67	11	M8 x 1.25	7	18	16	5	M18 x 1.5	31.5	1/4	94	5	10.5	165
63	Up to 1000	35	32	75	27	56.5	20	45	14	39.5	16.5	67	11	M8 x 1.25	7	18	16	5	M18 x 1.5	31.5	3/8	94	9	12	165
80	Up to 1000	40	37	95	32	72	25	45	20	44.5	19	81	13	M10 x 1.5	10	22	16	5	M22 x 1.5	38	3/8	114	11.5	14	199
100	Up to 1000	40	37	114	41	89	30	55	20	54	19	81	16	M10 x 1.5	10	26	16	5	M26 x 1.5	38	1/2	114	17	15	199