

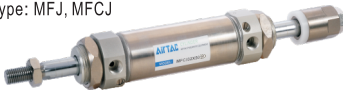





Mini cylinder(Stainless steel)——MF Series

Product series

Series name	Mounting type					Acting type	Bore size	Collocation of sensor switch		
	Basic	LB	FA	SDB	TC			CS1-M	DS1-M	
Double acting type: MF Double acting with adj. cushion: MFC 	●	●	●	●	●	Double acting Double acting (with adj. cushion)	20 25 32 40			
Double rod type: MFD, MFCD 	●	●	●	●	●					
Adjustable stroke type: MFJ, MFCJ 	●	●	●	●	●					
Single acting type: MSF, MTF 	●	●	●	●	●			Single acting		
Page	240					243		403		MF

Installation and application

- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
- Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
- Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
- The medium used by cylinder shall be filtered to 40 μ m or below.
- Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
- The cylinder shall be carried out test run without load before application. Prior to run, buffer shall be turned to the minimum and gradually released to avoid the damage on cylinder caused by excessive impact.
- To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return.
- If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size (mm)	Rod size (mm)	Acting type	Pressure area (mm ²)	Operating pressure (MPa)							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	
20	8	Single acting	Push side	314.0	-	24.3	55.7	87.1	117.5	149.9	181.3
			Pull side	263.8	-	14.3	40.6	67.0	93.4	119.8	146.1
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4	219.8
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3	184.7
25	10	Single acting	Push side	490.6	-	45.6	94.7	143.8	192.8	241.9	290.9
			Pull side	412.1	-	29.9	71.1	112.4	153.6	194.8	236.0
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3	288.5
32	12	Single acting	Push side	804.3	-	82.2	162.6	242.9	323.3	403.7	484.1
			Pull side	691.2	-	59.6	128.6	197.7	266.8	335.9	405.0
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6	563.0
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7	483.8
40	16	Single acting	Push side	1256.6	-	158.5	284.1	409.7	535.3	660.9	786.5
			Pull side	1055.6	-	118.3	223.8	329.3	434.8	540.3	645.8
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0	879.6
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4	738.9



Mini cylinder(Stainless steel)



MF Series

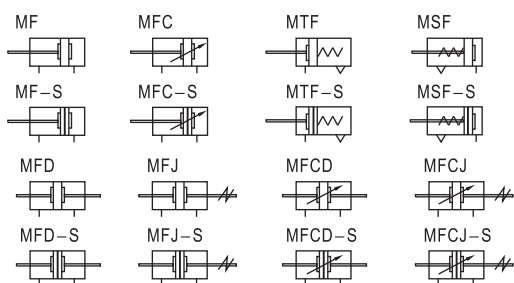


Specification

Bore size(mm)	20	25	32	40
Acting type	Double acting, Double acting with cushion, Single acting_push, Single acting_pull			
Fluid	Air(to be filtered by 40 μ m filter element)			
Operating pressure	Double acting	0.1~1.0MPa(15~145psi)(1.0~10.0bar)		
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)		
Proof pressure	1.5MPa(215psi)(15bar)			
Temperature °C	-20~70			
Speed range mm/s	Double acting: 30~800 Single acting: 50~800			
Stroke tolerance	0~150 ^{+1.0} ₀ >150 ^{+1.4} ₀			
Cushion type	MFC、MPCD、MFCJ Series: Adjustable cushion			Other series: Bumper
Port size ①	1/8"			1/4"

① PT thread, NPT thread and G thread are available.
Add) Refer to P403~426 for detail of sensor switch.

Symbol



Stroke

Bore size (mm)	Standard stroke (mm)																Max. std stroke	Max. stroke			
	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200			250	300	
Double acting	20	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	500	600
	25	350 400 450 500																		600	700
	32	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	600	700
	40	350 400 450 500 600																		600	700
Single acting	20	10	15	20	25	30	40	50	60	75	80	100	125	150	-	-					
	25	10	15	20	25	30	40	50	60	75	80	100	125	150	-	-					
	32	10	15	20	25	30	40	50	60	75	80	100	125	150	-	-					
	40	10	15	20	25	30	40	50	60	75	80	100	125	150	-	-					

Note) Consult us for non-standard stroke.

Product feature

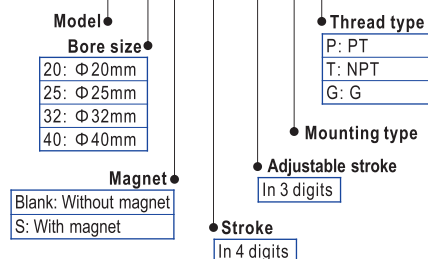
- JIS standard is implemented.
- Piston adopts heterogeneous two way seal structure. It has compact size and has the function of oil reservation.
- Front cover owns fixed anti-impact pad which can reduce the impact of direction-change of the cylinder.
- There are several modes of back cover, which makes the installation of cylinder more convenient.
- Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.
- The cylinder body has stainless steel pipes with high precision to produce high strength and corrosion resistance.
- With the same bore size and stroke, cylinders of MF series are shorter than ISO6432 standard cylinders.
- There are cylinders and mounting accessories with several specifications for your choice.

Ordering code

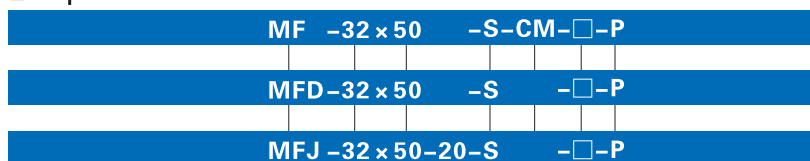
Model can be changed Ordering code. Example:
Production type: MFJ
Bore size: 32mm
Stroke: 150mm
Adjustable stroke: 100mm
Magnet: With magnet
Mounting type: TC
Thread type: NPT

Model: MFJ-32 × 150-100-S-TC-T

Ordering code: MFJ 32 S 0150 100 TC T



Explain of model



Model	Thread type	Mounting type	Back cover	Magnet
MF: Mini cylinder(Double acting)	P: PT T: NPT G: G	Blank: No accessories FA: FA type SDB: SDB type LB: LB type TC: TC type	Blank: No accessories FA: FA type LB: LB type TC: TC type	Blank: Without magnet S: With magnet
MSF: Mini cylinder(Single acting_push)				
MTF: Mini cylinder(Single acting_pull)				
MFD: Mini cylinder(Double rod)				
MFJ: Mini cylinder(Adjustable stroke)				
MFC: Mini cylinder(Double acting with cushion)				
MPCD: Mini cylinder(Double rod with cushion)				
MFCJ: Mini cylinder(Adjustable stroke with cushion)				

① Please refer to page 243 for accessory parts.



Mini cylinder(Stainless steel)

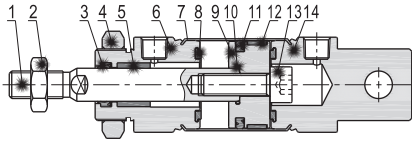


MF Series

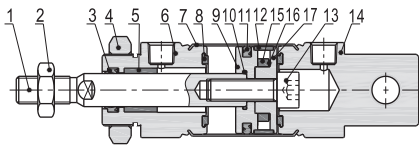
Inner structure and material of major parts

MF

Double acting without magnet type



Double acting with magnet

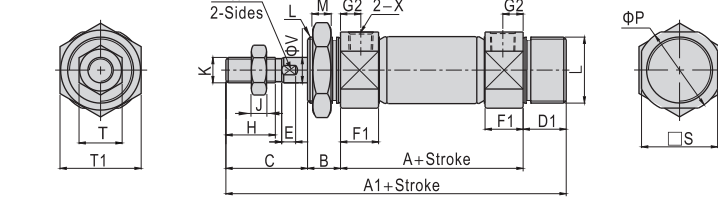


NO.	Item	Material
1	Piston rod	Carbon steel with 20 μ m chrome plated
2	Rod nut	Carbon steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Bushing	Wear resistant material
6	Front cover	Aluminum alloy
7	Barrel	SUS304
8	Bumper	TPU
9	Piston	Aluminum alloy
10	O-ring	NBR
11	Piston seal	NBR
12	Wear ring	Wear resistant material
13	Screw	Carbon steel
14	Back cover	Aluminum alloy
15	Magnet	Sintered metal (Neodymium-iron-boron)
16	Magnet washer	NBR
17	Magnet holder	Aluminum alloy

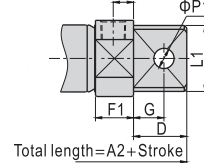
Dimensions

MF, MFC

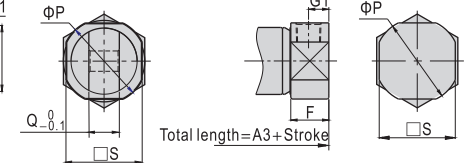
CM Type



CA Type



U Type



Bore size\Item	A	A1	A2	A3	B	C	D	D1	E	F	F1	G	G1	G2	H	J
20	62	116	124	103	14	27	21	13	5	14.5	14.5	12	7.5	7.5	15.5	5
25	62	120	128	108	14	31	21	13	5.5	15.5	14.5	12	8	7.5	19.5	6
32	64	122	136	110	14	31	27	13	5.5	15.5	14.5	15	8	7.5	19.5	6
40	88	154	165	138.5	16	34	27	16	7	22	21.5	15	11.5	11	21	8

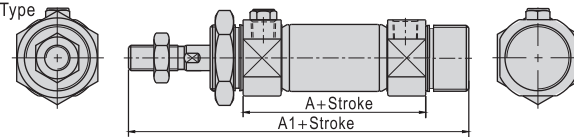
Bore size\Item	K	L	L1	M	P	P1	Q	S	T	T1	X	V
20	M8 × 1.25	M20 × 1.5	20	8	29	8	12	25	13	26	1/8"	8
25	M10 × 1.25	M26 × 1.5	26	8	33.5	8	12	30	17	32	1/8"	10
32	M10 × 1.25	M26 × 1.5	26	8	37.5	10	20	34.5	17	32	1/8"	12
40	M14 × 1.5	M32 × 2.0	32	10	46.5	10	20	42.5	19	41	1/4"	16

Remark:

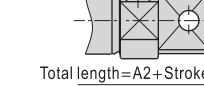
- The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
- The dimensions of MFC series are the same as MF series.

MSF

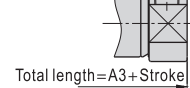
CM Type



CA Type



U Type



Bore size\Item	A			A1			A2			A3		
Stroke	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150
20	87	112	137	141	166	191	149	174	199	128	153	178
25	87	112	137	145	170	195	153	178	203	133	158	183
32	89	114	139	147	172	197	161	186	211	135	160	185
40	113	138	163	179	204	229	190	215	240	163.5	188.5	213.5

Remark:

- The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
- The unmarked dimension is the same as MF standard type.



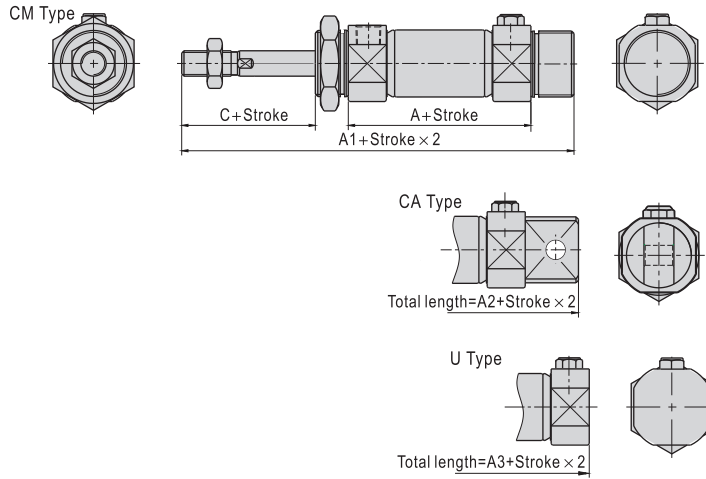
MF

Mini cylinder(Stainless steel)



MF Series

MTF

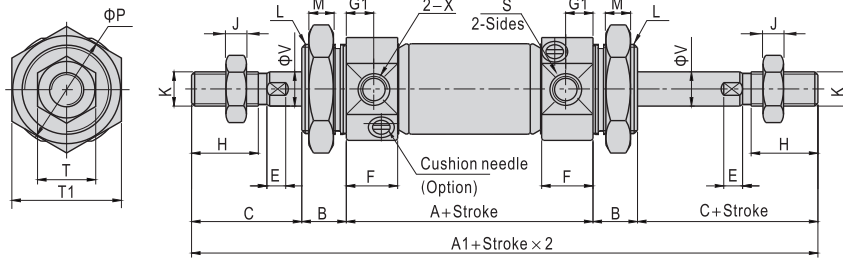


Bore size\Item	A			A1			A2			A3			C
Stroke	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150	
20	87	112	137	141	166	191	149	174	199	128	153	178	27
25	87	112	137	145	170	195	153	178	203	133	158	183	31
32	89	114	139	147	172	197	161	186	211	135	160	185	31
40	113	138	163	179	204	229	190	215	240	163.5	188.5	213.5	34

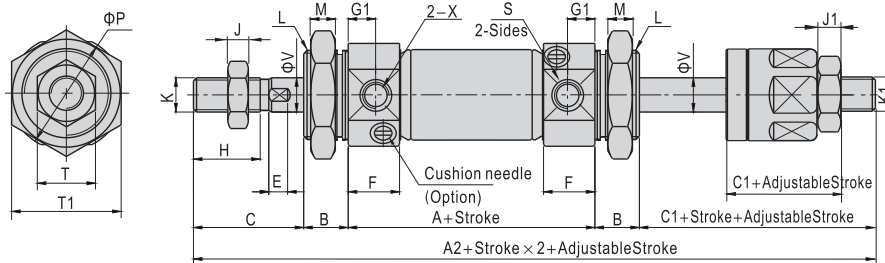
Remark:

1. The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
2. The unmarked dimension is the same as MF standard type.

MFD, MFCD



MFJ, MFCJ



Bore size\Item	A	A1	A2	B	C	C1	E	F	G1	H	J	J1
20	62	144	141	14	27	24	5	14.5	7.5	15.5	5	5
25	62	152	148	14	31	27	5.5	14.5	7.5	19.5	6	6
32	64	154	150	14	31	27	5.5	14.5	7.5	19.5	6	6
40	88	188	182	16	34	28	7	21.5	11	21	8	7

Bore size\Item	K	K1	L	M	P	S	T	T1	X	V
20	M8 x 1.25	M8 x 1.25	M20 x 1.5	8	29	25	13	26	1/8"	8
25	M10 x 1.25	M10 x 1.25	M26 x 1.5	8	33.5	30	17	32	1/8"	10
32	M10 x 1.25	M10 x 1.25	M26 x 1.5	8	37.5	34.5	17	32	1/8"	12
40	M14 x 1.5	M12 x 1.25	M32 x 2.0	10	46.5	42.5	19	41	1/4"	16

Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

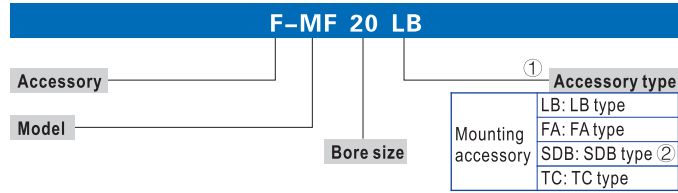


Mini cylinder(Stainless steel)



Accessories

Ordering code



- ① Please refer to accessory list for selection and ordering information.
- ② SDB is attached with relevant PIN.

Accessory selection

Cylinder model	MF, MFC	MSF, MTF	MFD, MFCJ, MFJ, MFCJ	
Accessories	Standard With magnet	Standard With magnet	Standard With magnet	
Mounting accessory	LB	●	●	●
	FA	●	●	●
	SDB	●	●	×
	TC	●	●	×
Knuckle ①	I	●	●	●
	Y	●	●	●
	U	●	●	●
	F	●	●	●
Sensor switch ②	CS1-M	×	×	×
	DS1-M	×	×	×

- ① Please refer to P397-402 for knuckle detail.
- ② Please refer to P403-426 for detail of sensor switch.

Material of accessories

Accessories	Mounting accessories				Knuckle			
Bore size	LB	FA	SDB	TC	I	Y	F	U
20-40	△	△	△	■	□	□	□	□

■ — Cast steel, △ — SPCC, □ — Carbon steel.

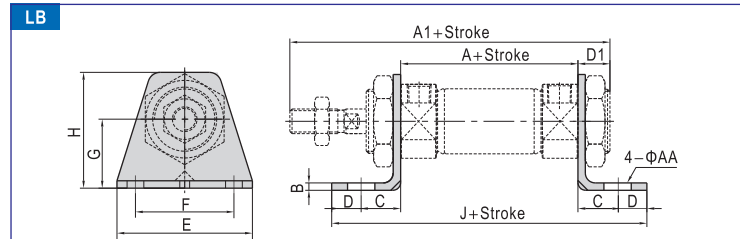
List for ordering code of accessories

Accessories	Mounting accessory			
Bore size	LB	FA	TC	SDB
20	F-MF20LB	F-MF20FA	F-MF20TC	F-MF20SDB
25	F-MF25LB	F-MF25FA	F-MF25TC	
32	F-MF32LB	F-MF32FA	F-MF32TC	F-MF32SDB
40	F-MF40LB	F-MF40FA	F-MF40TC	

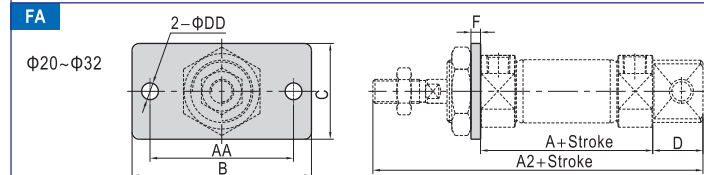
Accessories	Knuckle			
Bore size	I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle
20	F-M08125IF	F-M08125YF	F-M08125F	F-M08125U
25	F-M10125IF	F-M10125YF	F-M10125F	F-M10125U
32	F-M14150IF	F-M14150YF	F-M14150F	F-M14150U

Accessories	Sensor switch	
Bore size	CS1-M□	DS1-M□
20	CS1-M-S20	DS1-M-S20
25	CS1-M-S25	DS1-M-S25
32	CS1-M-S32	DS1-M-S32
40	CS1-M-S40	DS1-M-S40

Dimensions

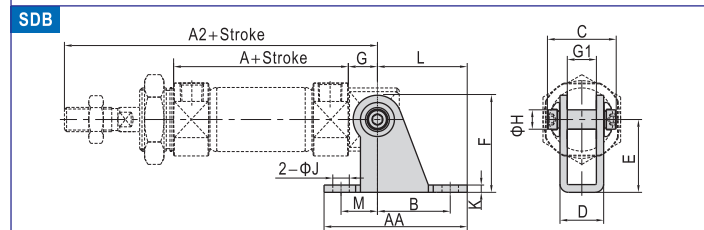


Bore size\Item	A	A1	AA	B	C	D	D1	E	F	G	H	J
20	62	116	7	3	20	8	13	55	40	25	40	118
25	62	120	7	3	20	8	13	55	40	25	47	118
32	64	122	7	3	20	8	13	55	40	28	47	120
40	88	154	7	3	23	10	16	75	55	30	54	154

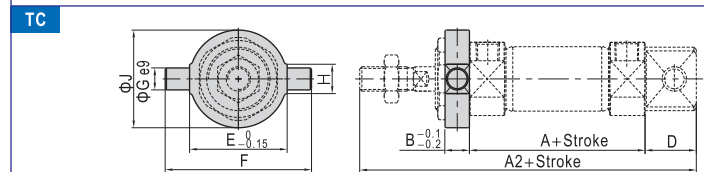


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Bore size\Item	A	A2	AA	B	C	D	DD	F	G
20	62	124	60	75	34	21	7	4	-
25	62	128	60	75	40	21	7	4	-
32	64	136	60	75	40	27	7	4	-
40	88	165	66	82	52	27	7	5	36



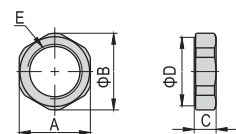
Bore size\Item	A	A2	AA	B	C	D	E	F	G	G1	H	K	J	L	M
20	62	115	59	30	32	18.1	30	40	12	12.1	8	3	6.8	37	15
25	62	119	59	30	32	18.1	30	40	12	12.1	8	3	6.8	37	15
32	64	124	75	40	44	28.1	40	53	15	20.1	10	4	9	50	15
40	88	153	75	40	44	28.1	40	53	15	20.1	10	4	9	50	15



Bore size\Item	A	A2	B	D	E	F	G	H	J
20	62	124	10	21	32	52	8	12	32
25	62	128	10	21	40	60	9	12	40
32	64	136	10	27	40	60	9	12	40
40	88	165	11	27	53	77	10	14	53

Special nut for TC

Bore size\Item	A	B	C	D	E
20	26	28	8	25	M20×1.5
25	32	34	8	31	M26×1.5
32	34	34	8	31	M26×1.5
40	41	45	10	40	M32×2.0



MF

