



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)			
Double rod type: MFD, MFCD	●	●	●		●		20	●	●
Adjustable stroke type: MFJ, MFCJ	●	●	●		●		25	●	●
	●	●	●		●		32	●	●
Single acting type: MSF, MTF	●	●	●	●	●	Single acting	40	●	●
	●	●	●	●	●				
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MF

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40 μ m or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. 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.
8. 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.
9. 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
			Pull side	263.8	-	14.3	40.6	67.0	93.4	119.8
		Double acting	Push side	314.0	31.4	62.8	94.2	125.6	157.0	188.4
			Pull side	263.8	26.4	52.8	79.1	105.5	131.9	158.3
25	10	Single acting	Push side	490.6	-	45.6	94.7	143.8	192.8	241.9
			Pull side	412.1	-	29.9	71.1	112.4	153.6	194.8
		Double acting	Push side	490.6	49.1	98.1	147.2	196.2	245.3	294.4
			Pull side	412.1	41.2	82.4	123.6	164.8	206.1	247.3
32	12	Single acting	Push side	804.3	-	82.2	162.6	242.9	323.3	403.7
			Pull side	691.2	-	59.6	128.6	197.7	266.8	335.9
		Double acting	Push side	804.3	80.4	160.9	241.3	321.7	402.2	482.6
			Pull side	691.2	69.1	138.2	207.4	276.5	345.6	414.7
40	16	Single acting	Push side	1256.6	-	158.5	284.1	409.7	535.3	660.9
			Pull side	1055.6	-	118.3	223.8	329.3	434.8	540.3
		Double acting	Push side	1256.6	125.7	251.3	377.0	502.6	628.3	754.0
			Pull side	1055.6	105.6	211.1	316.7	422.2	527.8	633.4



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 ℃		-20~70			
Speed range	mm/s	Double acting: 30~800 Single acting: 50~800			
Stroke tolerance		0~150 ^{+1.0} ₀ >150 ^{+1.0} ₀			
Cushion type		MFC、MFCD、MFCJ Series: Adjustable cushion			Other series: Bumper
Port size (1)		1/8"			1/4"

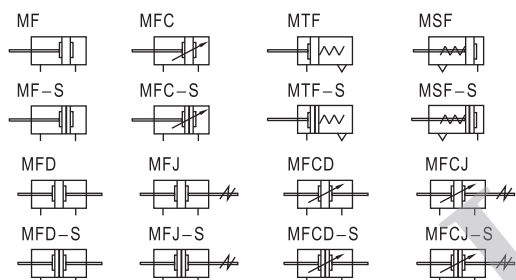
① PT thread, NPT thread and G thread are available.
Add) Refer to P397~420 for detail of sensor switch.

Stroke

Bore size (mm)		Standard stroke (mm)																				Max. std stroke	Max. stroke	Bore size (mm)		Standard stroke (mm)																				
MF MFC	20	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	800	MSF MTF	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	160	175	200	250	300	350	400	450	500	500	800		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	160	175	200	250	300	350	400	450	500	500	800		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	160	175	200	250	300	350	400	450	500	500	800		40	10	15	20	25	30	40	50	60	75	80	100	125	150						
MFD	20	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300											300	—	MFCJ	20	10	15	20	25	30	40	50	60	75	80	100	125	150
MFJ	25	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300											300	—		25	10	15	20	25	30	40	50	60	75	80	100	125	150
MFCJ	32	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	—	32	10	15	20	25	30		40	50	60	75	80	100	125	150						
MFCJ	40	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	—	40	10	15	20	25	30		40	50	60	75	80	100	125	150						

Note) Consult us for non-standard stroke.

 Symbol



Product feature

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

Ordering code

MF	32 × 50	S CM	☐	☐
MFD	32 × 50	S	☐	☐
MFJ	32 × 50-20	S	☐	☐

Model

- MF: Mini cylinder(Double acting)
- 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)
- MFCD: Mini cylinder
(Double rod with cushion)
- MFCJ: Mini cylinder
(Adjustable stroke with cushion)

Thread type

- Blank: PT
- T: NPT
- G: G

Mounting type

- Model: Mounting type
- MF: Blank: No accessories
- MFC: FA: FA type
- MSF: SDB: SDB type
- MTF: LB: LB type
- TC: TC type
- MFD: Blank: No accessories
- MFCD: FA: FA type
- MFJ: LB: LB type
- MFCJ: TC: TC type

Bore size

- 20 25 32 40

Stroke

- Refer to stroke table for details

Adjustable stroke

- Model: Adjustable stroke
- MFJ: 10: 10mm
- MFCJ: 20: 20mm
- 30: 30mm
- 40: 40mm
- 50: 50mm
- 75: 75mm
- 100: 100mm
- Others: No this code

Back cover

- Model: Back cover
- MF,MFC: CA: Pivot type
- MSF: U: Flat-end type
- MTF: CM: Round-end type
- Others: No this code

Magnet

- Blank: Without magnet
- S: With magnet

① Please refer to page 225 for accessory parts.



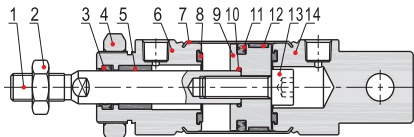
Mini cylinder(Stainless steel)

MF Series

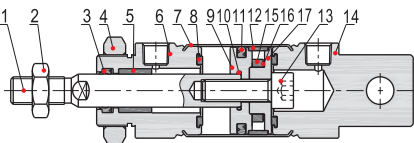
Inner structure and material of major parts

MF

Double acting without magnet type



Double acting with magnet

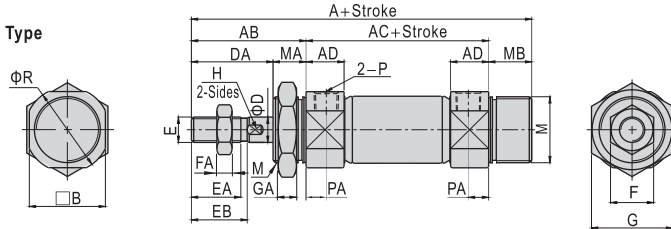


NO.	Item	Material
1	Piston rod	Carbon steel with 20 μ m chrome plated
2	Rod nut	Carbon steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Bushing	Wear resistant material
6	Front cover	Aluminum alloy
7	Barrel	SUS304
8	Bumper	TPU
9	Piston	Aluminum alloy
10	O-ring	NBR
11	Piston seal	NBR
12	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

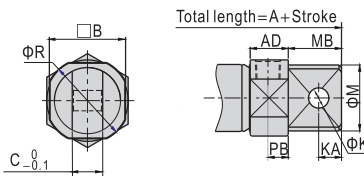
Dimensions

MF, MFC

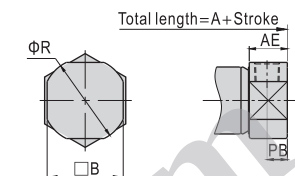
CM Type



CA Type



U Type



Bore size\Item	A			AB	AC	AD	AE	B	C	M			MA	CA	MB
	CM	CA	U							CM	CA	CM			
Back cover	CM	CA	U												
20	116	124	103	41	62	14.5	14.5	25	12	M20×1.5	20	14	21	13	
25	120	128	108	45	62	14.5	15.5	30	12	M26×1.5	26	14	21	13	
32	122	136	110	45	64	14.5	15.5	34.5	20	M26×1.5	26	14	27	13	
40	154	165	138.5	50	88	21.5	22	42.5	20	M32×2.0	32	16	27	16	

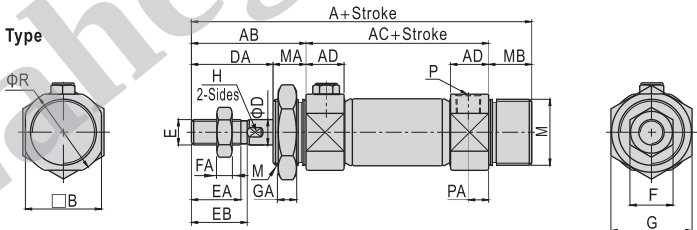
Bore size\Item	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	P	PA	PB	R
20	8	27	M8×1.25	15.5	18	13	5	26	8	6	8	9	1/8"	7.5	7.5	29
25	10	31	M10×1.25	19.5	22	17	6	32	8	8	8	9	1/8"	7.5	8	33.5
32	12	31	M10×1.25	19.5	22	17	6	32	8	10	10	12	1/8"	7.5	8	37.5
40	16	34	M14×1.5	21	24	19	8	41	10	14	10	12	1/4"	11	11.5	46.5

Remark:

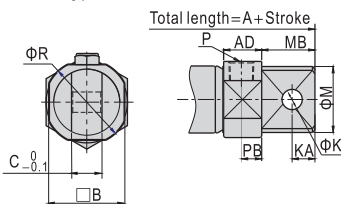
- The dimensions of magnet type cylinder are the same as non-magnet type cylinder.
- The dimensions of MFC series are the same as MF series.

MSF

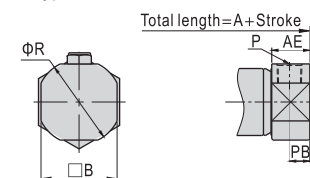
CM Type



CA Type



U Type



Bore size\Item	A						AC					
Back cover	CM			CA			U					
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	141	166	191	149	174	199	128	153	178	87	112	137
25	145	170	195	153	178	203	133	158	183	87	112	137
32	147	172	197	161	186	211	135	160	185	89	114	139
40	179	204	229	190	215	240	163.5	188.5	213.5	113	138	163

Bore size\Item	AB	AD	AE	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA
20	41	14.5	14.5	25	12	8	27	M8×1.25	15.5	18	13	5	26	8	6	8	9
25	45	14.5	15.5	30	12	10	31	M10×1.25	19.5	22	17	6	32	8	8	8	9
32	45	14.5	15.5	34.5	20	12	31	M10×1.25	19.5	22	17	6	32	8	10	10	12
40	50	21.5	22	42.5	20	16	34	M14×1.5	21	24	19	8	41	10	14	10	12

Bore size\Item	M			MA		MB		P	PA	PB	R
Back cover	CM		CA		CA	CM					
20	M20 × 1.5	20	14	21	13	1/8"	7.5	7.5		29	
25	M26 × 1.5	26	14	21	13	1/8"	7.5	8		33.5	
32	M26 × 1.5	26	14	27	13	1/8"	7.5	8		37.5	
40	M32 × 2.0	32	16	27	16	1/4"	11	11.5	46.5		

Remark:

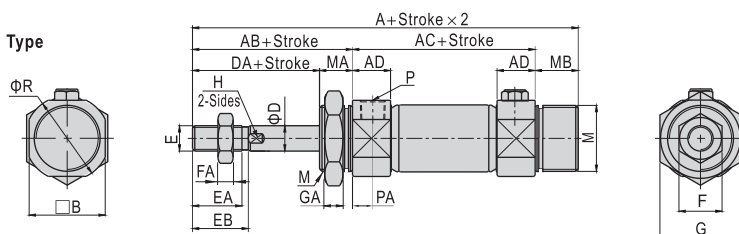
- The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Mini cylinder(Stainless steel)

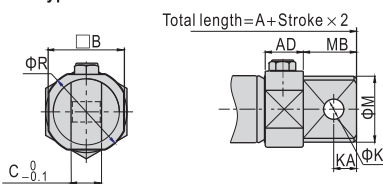
MF Series

MTF

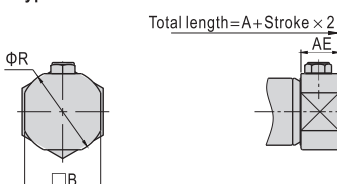
CM Type



CA Type



U Type

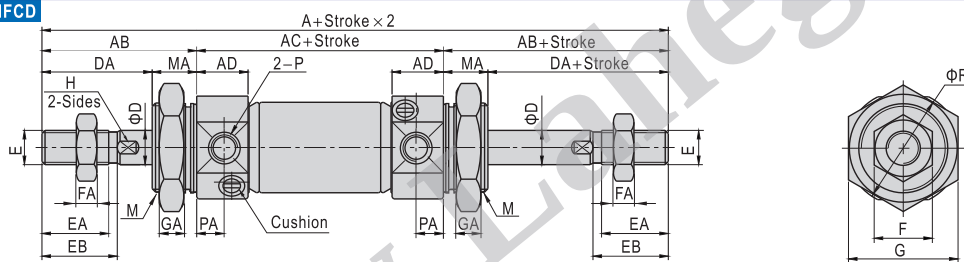


Bore size\Item	A			AC			M			MB		
Back cover	CM			CA			CM			CA		
Stroke	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150	1~50	51~100	101~150
20	141	166	191	149	174	199	128	153	178	87	112	137
25	145	170	195	153	178	203	133	158	183	87	112	137
32	147	172	197	161	186	211	135	160	185	89	114	139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

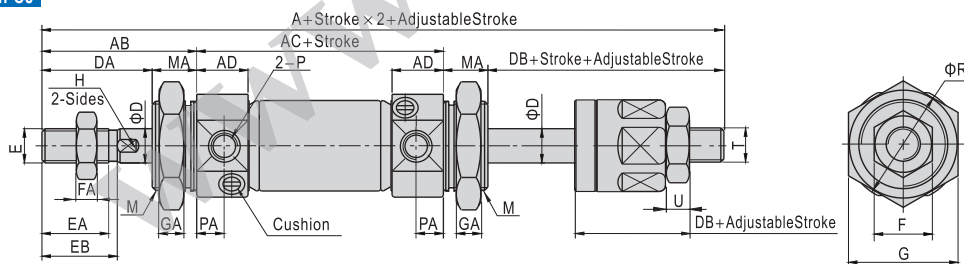
Bore size\Item	AB	AD	AE	B	C	D	DA	E	EA	EB	F	FA	G	H	K	KA	P	PA	R
20	41	14.5	14.5	25	12	8	27	M8 × 1.25	15.5	18	13	5	26	8	6	8	9	1/8"	7.5
25	45	14.5	15.5	30	12	10	31	M10 × 1.25	19.5	22	17	6	32	8	8	8	9	1/8"	7.5
32	45	14.5	15.5	34.5	20	12	31	M10 × 1.25	19.5	22	17	6	32	8	10	10	12	1/8"	7.5
40	50	21.5	22	42.5	20	16	34	M14 × 1.5	21	24	19	8	41	10	14	10	12	1/4"	11

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

MFD, MFCD



MFJ, MFCJ



Bore size\Item	A			AC			M			MB		
Model	MFD\MFCD	MFJ\MFCJ	AB	AC	AD	D	DA	DB	E	EA	EB	F
20	144	141	41	62	14.5	8	27	24	M8 × 1.25	15.5	18	13
25	152	148	45	62	14.5	10	31	27	M10 × 1.25	19.5	22	17
32	154	150	45	64	14.5	12	31	27	M10 × 1.25	19.5	22	17
40	188	182	50	88	21.5	16	34	28	M14 × 1.5	21	24	19

Bore size\Item	G	GA	H	M	MA	P	PA	R	T	U
20	26	8	6	M20 × 1.5	14	1/8"	7.5	29	M8 × 1.25	5
25	32	8	8	M26 × 1.5	14	1/8"	7.5	33.5	M10 × 1.25	6
32	32	8	10	M26 × 1.5	14	1/8"	7.5	37.5	M10 × 1.25	6
40	41	10	14	M32 × 2.0	16	1/4"	11	46.5	M12 × 1.25	7

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

Mini cylinder(Stainless steel)

Accessories

Ordering code

F-MF 20 LB			
Accessory	Model	Bore size	Accessory type
			LB: LB type
			FA: FA type
			SDB: SDB type ②
			TC: TC type
			I: I Knuckle
			Y: Y Knuckle

① Please refer to accessory list for selection and ordering information.

② SDB is attached with relevant PIN.

③ Please refer to page 395, 396 for other knuckles.

Accessory selection

Cylinder model		MF, MFC		MSF, MTF		MFD, MFCD, 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 switch②	CS1-M	×	●	×	●	×	●
	DS1-M	×	●	×	●	×	●

① Please refer to P393~396 for knuckle detail.

② Please refer to P397~420 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				
32	F-MF32LB	F-MF32FA	F-MF32TC	F-MF32SDB
40	F-MF40LB	F-MF40FA	F-MF40TC	F-MF32SDB

Accessories	Knuckle			
Bore size	I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle
20	F-MF20I	F-MF20Y	F-M8X125F	F-M8X125U
25				
32	F-MF25I	F-MF25Y	F-M10X125F	F-M10X125U
40	F-MF40I	F-MF40Y	F-M14X150F	F-M14X150U

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

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

FA											
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		

SDB											
Bore size\Item	A	A2	AA	B	C	D	E	F	G		
20	62	115	59	30	32	18.1	30	40	12	12.1	8
25	62	119	59	30	32	18.1	30	40	12	12.1	8
32	64	124	75	40	44	28.1	40	53	15	20.1	10
40	88	153	75	40	44	28.1	40	53	15	20.1	10

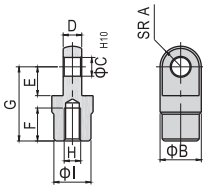
TC														
Bore size\Item	A	A2	B	D	E	F	G	H	J					
20	62	124	10	21	32	52	8	12	32					
25	62	128	10	21	40	60	9	12	40					
32	64	136	10	27	40	60	9	12	40					
40	88	165	11	27	53	77	10	14	53					

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	32	34	8	31	M26×1.5						
40	41	45	10	40	M32×2.0						

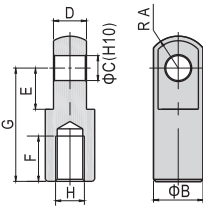
Accessories

I Knuckle

F-MF20I、F-MF25I



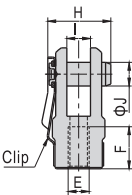
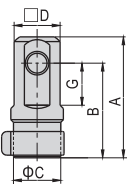
F-MF40I



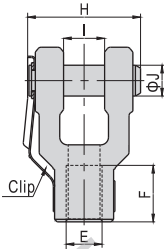
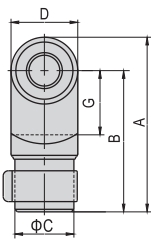
Type\Item	A	B	C	D	E	F	G	H	I
F-MF20I	9.5	20	9	9	14	16	36	M8×1.25	18
F-MF25I	9.5	20	9	9	14	18	38	M10×1.25	18
F-MF40I	15	24	12	16	20	22	55	M14×1.5	-

Y Knuckle

F-MF20Y
F-MF25Y



F-MF40Y



Type\Item	A	B	C	D	E	F	G	H	I	J
F-MF20Y	46	36	18	17.5	M8×1.25	16	16	24	9	9
F-MF25Y	48	38	18	17.5	M10×1.25	18	16	24	9	9
F-MF40Y	68	55	23	26	M14×1.5	22	25	44	16	12