







Mini cylinder(Stainless steel)——MI Series

In accordance with ISO6432 standard

Product series

Series name	Mounting type					Acting type	Bore size	Collocation of sensor switch						Meno	
	Basic	LB	FA	SDB	TC			CS1-M	DS1-M	CS1-F	DS1-F	CS1-U	DS1-U		
Double acting type: MI Double acting with adj. cushion: MIC 	●	●	●	●	●	Double acting Double acting(with adj. cushion)	8	●	●	●	●	●	●	The bore size of double acting with cushion type is $\Phi 16 \sim \Phi 40$	
Double rod type: MID, MICD 	●	●	●	●	●			10	●	●	●	●	●		●
Adjustable stroke type: MIJ, MICJ 	●	●	●	●	●	12	●	●	●	●	●	●			
Single acting type: MSI, MTI 	●	●	●	●	●	16	●	●	●	●	●	●			
	●	●	●	●	●	20	●	●	●	●	●	●			
	●	●	●	●	●	25	●	●	●	●	●	●			
	●	●	●	●	●	32	●	●	●	●	●	●			
	●	●	●	●	●	40	●	●	●	●	●	●			
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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.
- The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
- 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	
8	4	Single acting	Push side	50.2	-	3.6	8.6	13.6	18.6	23.6	28.7
			Pull side	37.7	-	1.0	4.8	8.6	12.3	16.1	19.9
		Double acting	Push side	50.2	5.0	10.1	15.1	20.1	25.1	30.1	35.2
			Pull side	37.7	3.7	7.5	11.3	15.1	18.8	22.6	26.4
10	4	Single acting	Push side	78.5	-	5.9	13.8	21.6	29.5	37.3	45.2
			Pull side	65.9	-	3.4	10.0	16.6	23.2	29.8	36.4
		Double acting	Push side	78.5	7.9	15.7	23.6	31.4	39.3	47.1	55.0
			Pull side	65.9	6.6	13.2	19.8	26.4	33.0	39.5	46.1
12	6	Single acting	Push side	113.0	-	10.1	21.4	32.7	44.0	55.3	66.6
			Pull side	84.8	-	4.5	12.9	21.4	29.9	38.4	46.9
		Double acting	Push side	113.0	11.3	22.6	33.9	45.2	56.5	67.8	79.1
			Pull side	84.8	8.5	17.0	25.4	33.9	42.4	50.9	59.4
16	6	Single acting	Push side	201.0	-	14.6	34.7	54.8	74.9	95.0	115.1
			Pull side	172.7	-	8.9	26.2	43.5	60.8	78.0	95.3
		Double acting	Push side	201.0	20.1	40.2	60.3	80.4	100.5	120.6	140.7
			Pull side	172.7	17.3	34.5	51.8	69.1	86.4	103.6	120.9
20	8	Single acting	Push side	314.0	-	25.3	56.7	88.1	119.5	150.9	182.3
			Pull side	263.8	-	15.3	41.6	68.0	94.4	120.8	147.1
		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	-	43.1	92.2	141.3	190.3	239.3	288.4
			Pull side	412.1	-	27.4	68.6	109.8	151.1	192.3	233.5
		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	30.2	110.9	191.3	277.1	352.1	432.6	513.0
			Pull side	691.2	19.1	88.2	157.4	226.5	295.6	364.7	388.8
		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	64.7	190.3	316.0	441.7	567.3	693.0	818.7
			Pull side	1055.6	44.6	150.1	255.7	361.2	466.8	572.4	677.9
		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, ISO6432)

MI Series



Specification

Bore size(mm)	8	10	12	16	20	25	32	40
Acting type	Double acting, Single acting_push, Single acting_pull							
	Double acting with cushion							
Fluid	Air(to be filtered by 40 μm 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	MIC Series: Variable cushion				Other series: Bumper			
Port size ①	M5 × 0.8				1/8"		1/4"	

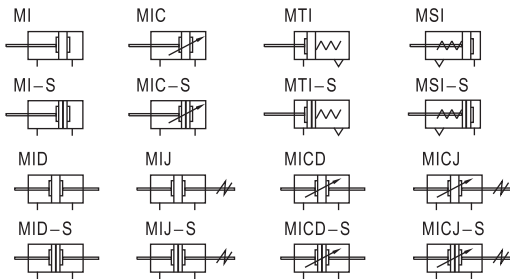
① G thread is available. Add Refer to P397~420 for detail of sensor switch.

Stroke

MI	Bore size (mm)	Standard stroke (mm)													Max. std stroke	Max. stroke						
		8	10	15	20	25	30	40	50	60	75	80	100	125			150					
MI	-	8	10	15	20	25	30	40	50	60	75	80	100	125	150	150	200					
		10	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	200	200		
		12	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	250	500	
	MIC	16														500	600					
		20														500	800					
		25	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	500	800
MID	-	8	10	15	20	25	30	40	50	60	75	80	100				100	-				
		10	10	15	20	25	30	40	50	60	75	80	100				100	-				
		12	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	200	-		
	MICD	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	300	-
		20	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	160	175	200	250	300	300	-
MICJ	32	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	500	-	
	40	350	400	450	500														500	-		

Note) Consult us for non-standard stroke.

Symbol



Product feature

- In accordance with ISO6432 standard(Φ8~Φ25).
- Front and back cover owns fixed bumper pad which can reduce the impact of direction-change of the cylinder.
- There are several mode 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.
- Piston rod and cylinder body with the material of stainless steel make the cylinder adapt general working environment with corrosivity.
- There are cylinders and accessories with several specifications for installation for your choice.

Ordering code

MI 10 × 40	SCA	<input type="checkbox"/>	G
MID 10 × 40	S	<input type="checkbox"/>	G
MIJ 10 × 40-30 S		<input type="checkbox"/>	G

Model

- MI: Mini cylinder(Double acting)
- MSI: Mini cylinder(Single acting_push)
- MTI: Mini cylinder(Single acting_pull)
- MID: Mini cylinder(Double rod)
- MIJ: Mini cylinder(Adjustable stroke)
- MIC: Mini cylinder (Double acting with cushion)
- MICD: Mini cylinder (Double rod with cushion)
- MICJ: Mini cylinder (Adjustable stroke with cushion)

Thread type

G: G ②

Mounting type ①

Model	Mounting type
MI	Blank: No accessories
MIC	FA: FA type
MSI	SDB: SDB type
MTI	LB: LB type
	TC: TC type
MID	Blank: No accessories
MICD	FA: FA type
MIJ	LB: LB type
MICJ	TC: TC type

Back cover

Model	Back cover	Bore size
MI	CA: Pivot type	Φ8~Φ25
MSI	U: Perpendicular 90°	Φ8~Φ40
MTI	R: Axial air-in	Φ16~Φ40
	CM: Round-end type	Φ16~Φ40
MIC	CA: Pivot type	Φ16~Φ25
	U: Perpendicular 90°	Φ16~Φ40
	CM: Round-end type	Φ16~Φ40
Others	No this code	

Bore size

Model	Bore size
MIC, MICD, MICJ	16 20 25 32 40
Others	8 10 12 16 20 25 32 40

Stroke

Refer to stroke table for details

Adjustable stroke

Model	Adjustable stroke
MIJ	10: 10mm
MICJ	20: 20mm
	30: 30mm
	40: 40mm
	50: 50mm
	75: 75mm
	100: 100mm
Others	No this code

Magnet

Blank: Without magnet
S: With magnet

① Please refer to page 211~212 for accessory parts.

② MI Series are all G thread. PT thread, NPT thread are unavailable.



Mini cylinder(Stainless steel, ISO6432)

MI Series

Inner structure and material of major parts

NO.	Item	Material
1	Rod	SUS304
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	Φ8-Φ12 Others SUS304 Aluminum alloy
10	Piston seal	NBR
11	Wear ring	Wear resistant material
12	Nut	Carbon steel
13	Back cover	Aluminum alloy

Dimensions

Bore size\Item	A															
	CA	U	R	CM	AB	AC	AD	CA	AE	AF	P	PA	CA	U/CM	R	
8	86	74	-	-	28	46	11.5	9.5	9.5	64	M5×0.8	7	5	5	17	
10	86	74	-	-	28	46	11.5	9.5	9.5	64	M5×0.8	7	5	5	17	
12	105	88	-	-	38	50	12.5	10.5	10.5	75	M5×0.8	8	6	6	20	
16	111	94	94	111	38	56	12.5	10.5	10.5	82	M5×0.8	8	6	6	22	
20	126	106	106	126	44	62	14.5	14.5	14.5	95	1/8"	7.5	7.5	7.5	29	
25	137	114.5	115	137	50	65	16	16	16	104	1/8"	8	8	8	33.5	
32	-	125	126	140	58	-	16.5	-	16.5	-	1/8"	9	-	9	37.5	
40	-	158	158	174	69	-	22	-	22	-	1/4"	12	-	12	46.5	

Bore size\Item	A																
	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB
8	15	8	4	16	M4×0.7	10.5	12	7	2.2	17	6	-	4	10	M12×1.25	12	12
10	15	8	4	16	M4×0.7	10.5	12	7	2.2	17	6	-	4	10	M12×1.25	12	12
12	18	12	6	21	M6×1.0	14	16	10	5	22	6	5(2-sides)	6	14	M16×1.5	17	17
16	20	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-sides)	6	13	M16×1.5	17	17
20	25	16	8	24	M8×1.25	18	20	12	6	29	7	6(2-sides)	8	11	M22×1.5	20	20
25	30	16	10	28	M10×1.25	20.5	22	17	6	29	7	8(4-sides)	8	11	M22×1.5	22	22
32	34.5	-	12	28	M10×1.25	17.5	20	17	6	36	7	10(4-sides)	-	-	M30×1.5	30	14
40	42.5	-	16	34	M12×1.25	21	24	17	7	46	8	14(4-sides)	-	-	M38×1.5	35	16

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

Bore size\Item	A															
	CA/CM	U	AB	AC	AD	CA/CM	AE	AF	B	C	D	DA	E	EA	EB	
16	111	94	38	56	12.5	12	12	82	20	12	6	21	M6×1.0	14.5	16	
20	126	106	44	62	14.5	14.5	14.5	95	25	16	8	24	M8×1.25	18	20	
25	137	113.5	50	65	16	16	14.5	104	30	16	10	28	M10×1.25	20.5	22	

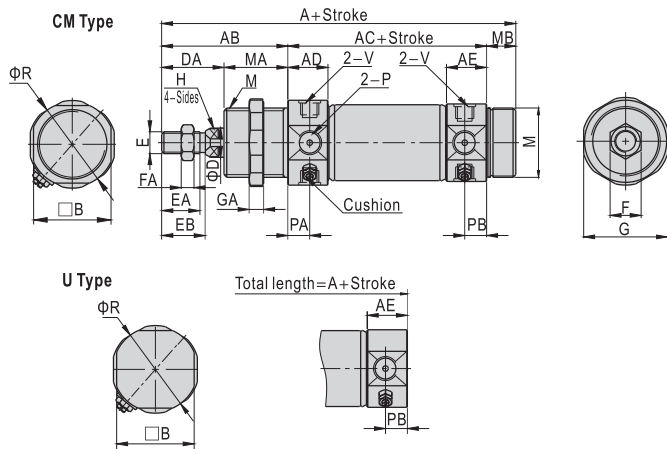
Bore size\Item	A															
	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB	R		
16	10	5	22	6	5(2-sides)	6	13	M16×1.5	17	17	M5×0.8	7.5	7	22		
20	12	6	29	7	6(2-sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	29		
25	17	6	29	7	8(4-sides)	8	11	M22×1.5	22	22	1/8"	8	8	33.5		

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

Mini cylinder(Stainless steel, ISO6432)

MI Series

MIC $\phi 32, \phi 40$



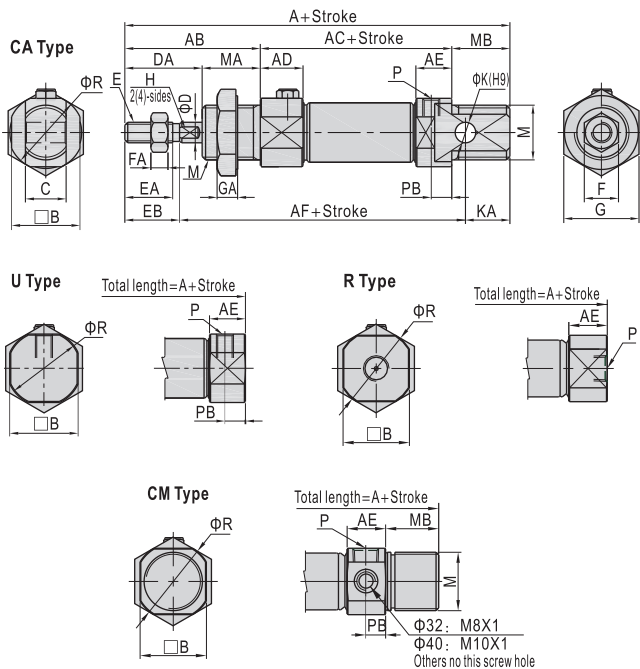
Bore size\Item	A		AB	AC	AD	AE		B	D	DA
Back cover	U	CM				U	CM			
32	124	140	58	68	16.5	14.5	16.5	34.5	12	28
40	157.5	174	69	89	22	21.5	22	42.5	16	32

Bore size\Item	E	EA	EB	F	FA	G	GA	H
32	M10 × 1.25	17.5	20	17	6	36	7	10(4-sides)
40	M12 × 1.25	21	24	17	7	46	8	24(4-sides)

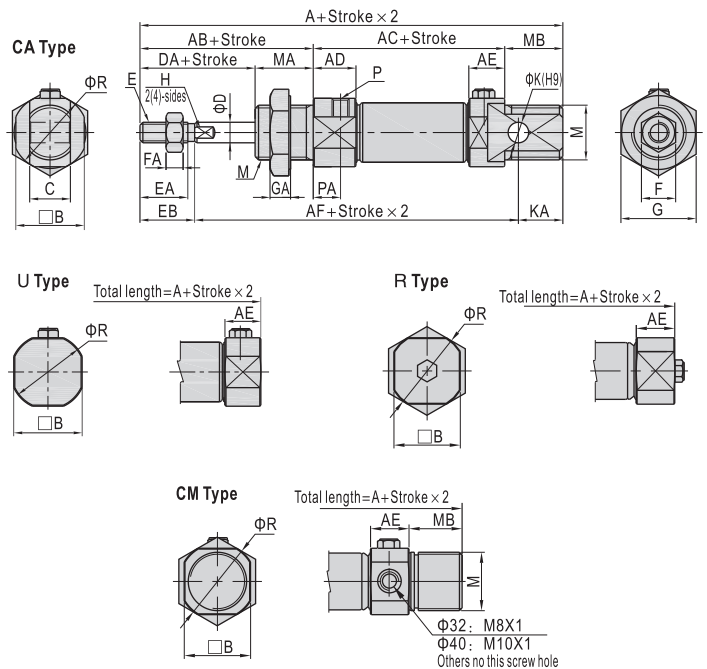
Bore size\Item	M	MA	MB	P	PA	U	PB	R	V
Back cover						CM			
32	M30 × 1.5	30	14	1/8"	9	7.5	9	37.5	M8X1
40	M38 × 1.5	35	16	1/4"	12	11.5	12	46.5	M10X1

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

MSI



MTI



Item	A																					
	CA			U			R			CM			AB	AC			AD			AF		
Back cover	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150		0-50	51-100	101-150	0-50	51-100	101-150	0-50	51-100	101-150
8	111	-	-	99	-	-	-	-	-	-	-	-	28	71	-	-	11.5	89	-	-	-	-
10	111	-	-	99	-	-	-	-	-	-	-	-	28	71	-	-	11.5	89	-	-	-	-
12	130	-	-	113	-	-	-	-	-	-	-	-	38	75	-	-	12.5	100	-	-	-	-
16	136	161	-	119	144	-	119	144	-	136	161	-	38	81	106	-	12.5	107	132	-	-	-
20	151	176	201	131	156	181	131	156	181	151	176	201	44	87	112	137	14.5	120	145	170	-	-
25	162	187	212	139.5	164.5	189.5	140	165	190	162	187	212	50	90	115	140	16	129	154	179	-	-
32	-	-	-	150	175	200	151	176	201	165	190	215	58	-	-	-	16.5	-	-	-	-	-
40	-	-	-	183	208	233	183	208	233	199	224	249	69	-	-	-	22	-	-	-	-	-

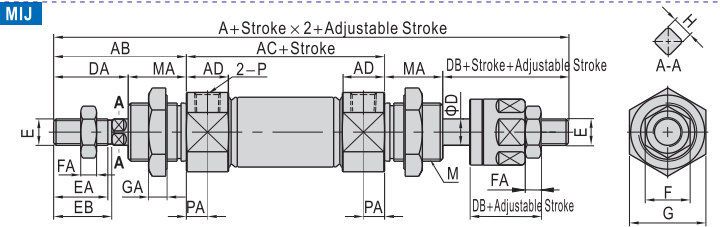
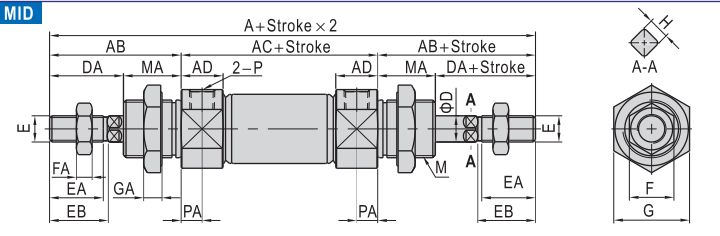
Bore size\Item	AE		B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB		R
	CA	U/R/CM																				CA	U/CM	
8	9.5	9.5	15	8	4	16	M4 × 0.7	10.5	12	7	2.2	17	6	-	4	10	M12 × 1.25	12	12	M5 × 0.8	7	5	5	17
10	9.5	9.5	15	8	4	16	M4 × 0.7	10.5	12	7	2.2	17	6	-	4	10	M12 × 1.25	12	12	M5 × 0.8	7	5	5	17
12	10.5	10.5	18	12	6	21	M6 × 1.0	14	16	10	5	22	6	5(2-sides)	6	14	M16 × 1.5	17	17	M5 × 0.8	8	6	6	20
16	10.5	10.5	20	12	6	21	M6 × 1.0	14.5	16	10	5	22	6	5(2-sides)	6	13	M16 × 1.5	17	17	M5 × 0.8	8	6	6	22
20	14.5	14.5	25	16	8	24	M8 × 1.25	18	20	12	6	29	7	6(2-sides)	8	11	M22 × 1.5	20	20	1/8"	7.5	7.5	7.5	29
25	16	16	30	16	10	28	M10 × 1.25	20.5	22	17	6	29	7	8(4-sides)	8	11	M22 × 1.5	22	22	1/8"	8	8	8	33.5
32	-	16.5	34.5	-	12	28	M10 × 1.25	17.5	20	17	6	36	7	10(4-sides)	-	-	M30 × 1.5	30	14	1/8"	9	-	9	37.5
40	-	22	42.5	-	16	34	M12 × 1.25	21	24	17	7	46	8	14(4-sides)	-	-	M38 × 1.5	35	16	1/4"	12	-	12	46.5

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



Mini cylinder(Stainless steel, ISO6432)

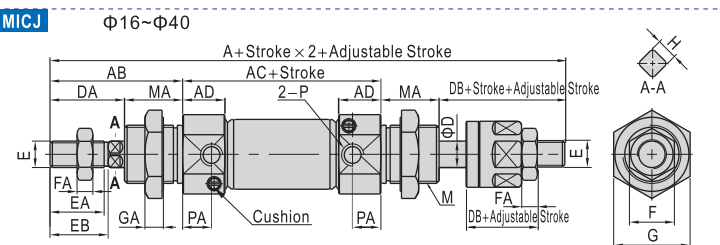
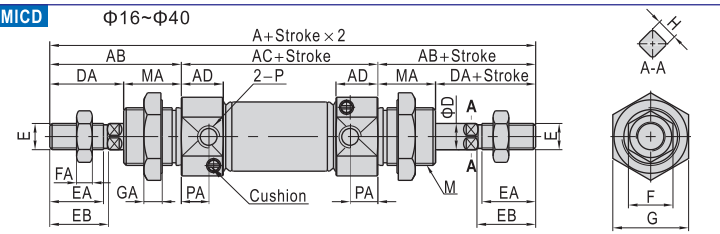
MI Series



Bore size\Item	A		AB	AC	AD	D	DA	DB	E	EA	EB
Model	MID	MIJ									
8	104	103	28	48	11.5	4	16	15	M4 × 0.7	10.5	12
10	104	103	28	48	11.5	4	16	15	M4 × 0.7	10.5	12
12	128	128	38	52	12.5	6	21	21	M6 × 1.0	14	16
16	134	134	38	58	12.5	6	21	21	M6 × 1.0	14.5	16
20	150	151	44	62	14.5	8	24	25	M8 × 1.25	18	20
25	165	164	50	65	16	10	28	27	M10 × 1.25	20	22
32	184	183	58	68	16.5	12	28	27	M10 × 1.25	17.5	20
40	227	221	69	89	22	16	34	28	M12 × 1.25	21	24

Bore size\Item	F	FA	G	GA	H	M	MA	P	PA
8	7	2.2	17	6	-	M12 × 1.25	12	M5 × 0.8	7
10	7	2.2	17	6	-	M12 × 1.25	12	M5 × 0.8	7
12	10	5	22	6	5(2-Sides)	M16 × 1.5	17	M5 × 0.8	8
16	10	5	22	6	5(2-Sides)	M16 × 1.5	17	M5 × 0.8	8
20	12	6	29	7	6(2-Sides)	M22 × 1.5	20	1/8"	7.5
25	17	6	29	7	8(4-Sides)	M22 × 1.5	22	1/8"	8
32	17	6	36	7	10(4-Sides)	M30 × 1.5	30	1/8"	9
40	17	7	46	8	14(4-Sides)	M38 × 1.5	35	1/4"	12

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



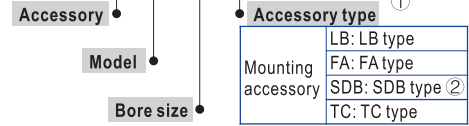
Bore size\Item	A		AB	AC	AD	D	DA	DB	E	EA	EB
	MICD	MICJ									
16	132.5	132.5	38	56.5	12.5	6	21	21	M6 × 1.0	14.5	16
20	150	151	44	62	14.5	8	24	25	M8 × 1.25	18	20
25	165	164	50	65	16	10	28	27	M10 × 1.25	20.5	22
32	184	183	58	68	16.5	12	28	27	M10 × 1.25	17.5	20
40	227	221	69	89	22	16	34	28	M12 × 1.25	21	24

Bore size\Item	F	FA	G	GA	H	M	MA	P	PA
16	10	5	22	6	5(2-Sides)	M16 × 1.5	17	M5 × 0.8	7.5
20	12	6	29	7	6(2-Sides)	M22 × 1.5	20	1/8"	7.5
25	17	6	29	7	8(4-Sides)	M22 × 1.5	22	1/8"	8
32	17	6	36	7	10(4-Sides)	M30 × 1.5	30	1/8"	9
40	17	7	46	8	14(4-Sides)	M38 × 1.5	35	1/4"	12

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

Ordering code

F-MI 10 LB



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

Accessory selection

Cylinder model	MI, MIC		MSI, MTI		MID, MICD, MIJ, MICJ	
	Standard	With magnet	Standard	With magnet	Standard	With magnet
Accessories						
Mounting accessory	LB	●	●	●	●	●
	FA	●	●	●	●	●
	SDB	●	●	●	●	×
	TC	●	●	●	●	●
Knuckle	I	●	●	●	●	●
	Y	●	●	●	●	●
	U	●	●	●	●	●
	F	●	●	●	●	●
Sensor switch	CS1-M	×	●	×	●	×
	DS1-M	×	●	×	●	×
	CS1-F	×	●	×	●	×
	DS1-F	×	●	×	●	×
	CS1-U	×	●	×	●	×
	DS1-U	×	●	×	●	×

- Please refer to P393~396 for knuckle detail.
- Please refer to P397~420 for detail of sensor switch.

Material of accessories

Accessories	Mounting accessories				Knuckle			
	LB	FA	SDB	TC	I	Y	F	U
Bore size								
8-40	△	△	△	▲	□	□	□	□

▲ — SUS304, △ — SPCC, □ — Carbon steel.

List for ordering code of accessories

Accessories	Mounting accessory			
	LB	FA	SDB	TC
Bore size				
8	F-MI10LB	F-MI8FA	F-MI8SDB	F-MI10TC
10				
12	F-MI12LB	F-MI12FA	F-MI12SDB	F-MI12TC
16				
20	F-MI20LB	F-MI20FA	F-MI20SDB	F-MI20TC
25				
32	F-MI32LB	-	F-MI32SDB	F-MI32TC
40	F-MI40LB	-	F-MI40SDB	F-MI40TC

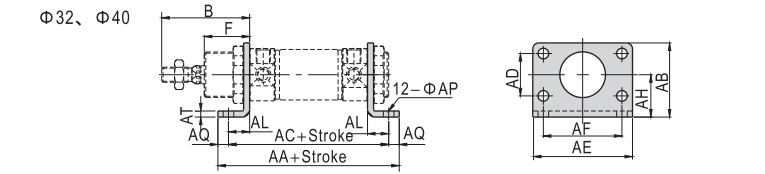
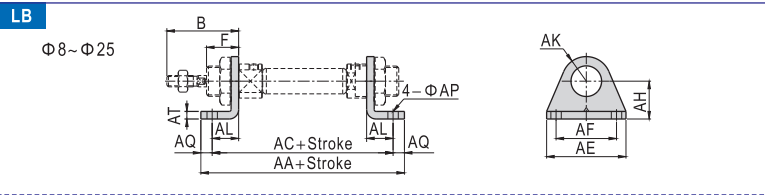
Accessories	Knuckle			
	I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle
Bore size				
8	F-M4X070I	F-M4X070Y	F-M4X070F	F-M4X070U
10				
12	F-M6X100I	F-M6X100Y	F-M6X100F	F-M6X100U
16				
20	F-M8X125I	F-M8X125Y	F-M8X125F	F-M8X125U
25				
32	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U
40	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U

Accessories	Sensor switch					
	CS1-M□	DS1-M□	CS1-F	DS1-F	CS1-U	DS1-U
Bore size						
8	CS1-M-S08	DS1-M-S08				
10	CS1-M-S10	DS1-M-S10				
12	CS1-M-S12	DS1-M-S12				
16	CS1-M-S16	DS1-M-S16				
20	CS1-M-S20	DS1-M-S20	CS1-F	DS1-F	CS1-U	DS1-U
25	CS1-M-S25	DS1-M-S25				
32	CS1-M-S32	DS1-M-S32				
40	CS1-M-S40	DS1-M-S40				

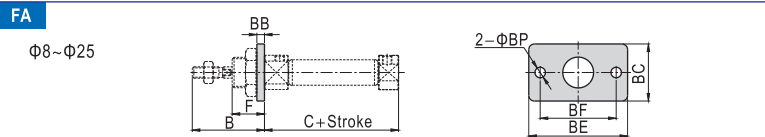
Mini cylinder(Stainless steel, ISO6432)

Accessories

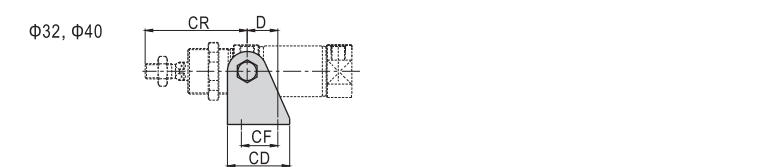
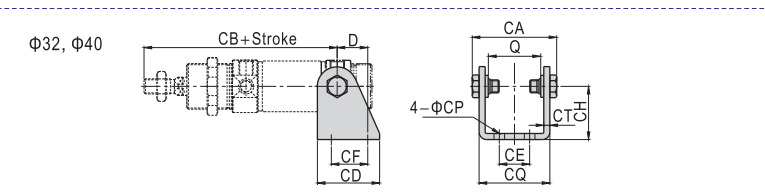
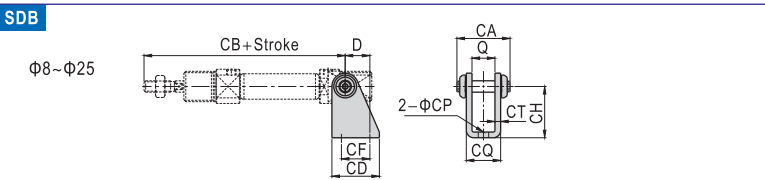
■ Dimensions



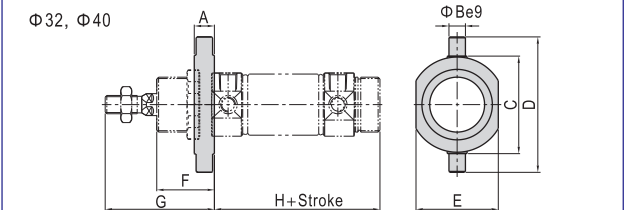
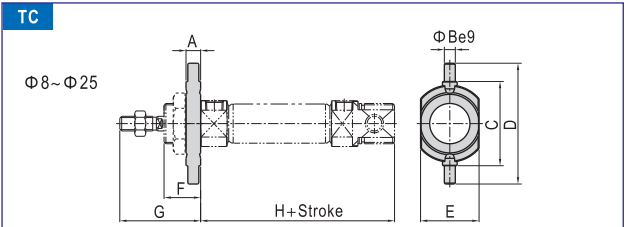
Bore size\Item	AA	AB	AC	AD	AE	AF	AH	AK	AL	AP	AQ	AT	B	F
8	78	-	68	-	35	25	16	10	11	4.5	5	3	28	12
10	78	-	68	-	35	25	16	10	11	4.5	5	3	28	12
12	90	-	78	-	42	32	20	13	14	5.5	6	4	38	17
16	96	-	84	-	42	32	20	13	14	5.5	6	4	38	17
20	112	-	96	-	54	40	25	20	17	6.6	8	5	44	20
25	115	-	99	-	54	40	25	20	17	6.6	8	5	50	22
32	110	49	96	28	66	52	28	-	14	7	7	4	58	30
40	149	58	129	30	80	60	33	-	20	9	10	5	69	35



Bore size\Item	B	C	BB	BC	BE	BF	BP	F
8	28	46	3	22	40	30	4.5	12
10	28	46	3	22	40	30	4.5	12
12	38	50	4	30	52	40	5.5	17
16	38	56	4	30	52	40	5.5	17
20	44	62	5	40	66	50	6.6	20
25	50	65	5	40	66	50	6.6	22



Bore size\Item	D	Q	CA	CB	CD	CE	CF	CH	CP	CQ	CT	CR
8	11	8.1	18.4	76	20	-	12.5	24	4.5	13.1	2.5	-
10	11	8.1	18.4	76	20	-	12.5	24	4.5	13.1	2.5	-
12	13	12.1	28	91	25	-	15	27	5.5	18.1	3	-
16	13	12.1	28	98	25	-	15	27	5.5	18.1	3	-
20	16	16.1	38	115	32	-	20	30	6.6	24.1	4	-
25	16	16.1	38	126	32	-	20	30	6.6	24.1	4	-
32	20	34.6	55.5	117	41	20	24	35	7	46.6	4	67
40	27	42.6	69.6	146	52	28	30	40	9	58.6	5	81



Bore size\Item	A	B	C	D	E	F	G	H
8	6	4	26	38	20	12	28	58
10	6	4	26	38	20	12	28	58
12	8	6	38	58	25	17	38	67
16	8	6	38	58	25	17	38	73
20	8	6	46	66	32	20	44	82
25	8	6	46	66	32	22	50	87
32	11	9	54	74	45	30	58	82
40	12	10	64	84	55	35	69	101

