



Mini cylinder(Stainless steel)——MA Series

■ 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 larger humidity, much dust or water drops, oil dust and welding dregs;
- 4、 Dirty substances in the pipe must be cleared away before cylinder is connected with pipeline to prevent the entrance of sundries into the cylinder;
- 5、 The medium used by cylinder shall be filtered by the filter core of above 40um;
- 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 to conduct anti-rust treatment to the surface. Anti-dust jam cap shall be added in air intake and outlet orifices. 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	
16	6	Single acting-Push type	201.0	-	-	20.1	40.2	60.3	80.4	100.5	
		Single acting-Pull type	172.7	-	-	11.6	23.9	35.8	47.7	59.6	
		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 type	314.0	-	-	15.7	31.4	47.1	62.8	78.5	
		Single acting-Pull type	263.8	-	-	5.7	11.4	17.1	22.8	28.5	
		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	184.6
25	10	Single acting-Push type	490.6	-	-	24.6	49.1	73.7	98.2	122.8	
		Single acting-Pull type	412.1	-	-	8.9	17.8	26.7	35.6	44.5	
		Double acting	Push side	490.6	49.1	98.1	147.2	196.3	245.3	294.4	343.4
			Pull side	412.1	41.2	82.4	123.6	164.9	206.1	247.3	288.5
32	12	Single acting-Push type	803.8	-	-	40.2	80.4	120.6	160.8	200.9	
		Single acting-Pull type	690.8	-	-	17.6	35.2	52.8	70.4	88.0	
		Double acting	Push side	803.8	80.4	160.8	241.2	321.5	401.9	482.3	562.7
			Pull side	690.8	69.1	138.2	207.2	276.3	345.4	414.5	483.6
40	16	Single acting-Push type	1256.0	-	-	62.8	125.6	188.4	251.2	314.0	
		Single acting-Pull type	1055.0	-	-	22.6	45.1	67.7	90.3	112.9	
		Double acting	Push side	1256.0	125.6	251.2	376.8	502.4	628.0	753.6	879.2
			Pull side	1055.0	105.5	211.0	316.5	422.0	527.5	633.0	738.5
50	16	Double acting Push side	1962.5	196.3	392.5	588.8	785.0	981.3	1177.5	1373.8	
		Double acting Pull side	1761.5	176.2	352.3	528.5	704.6	880.8	1056.9	1233.1	
63	16	Double acting Push side	3115.7	311.6	623.1	934.7	1246.3	1557.8	1869.4	2181.0	
		Double acting Pull side	2914.7	291.5	582.9	874.4	1165.9	1457.4	1748.8	2040.3	

■ Product series

Series name	Mounting type				Acting type	Bore size	Collocation of sensor switch			
	Basic	FA	LB	SDB			CS1-M	CS1-MX	CS1-MN	CS1-MP
Double acting type: MA Double acting with cushion: MAC 	●	●	●	●	Double acting Double acting (with cushion)	16	●	●	●	●
Single acting type: MSA, MTA 	●	●	●	●		Single acting	20	●	●	●
Double rod type: MAD, MACD 	●	●	●	●	Double acting	25	●	●	●	●
Adjustable stroke type: MAJ, MACJ 	●	●	●	●		40	●	●	●	●
Other series: MAR, MARC 	●	●	●	●	Double acting (with cushion)	16	●	●	●	●
	●	●	●	●		20	●	●	●	●
	●	●	●	●		25	●	●	●	●
	●	●	●	●		32	●	●	●	●
	●	●	●	●		40	●	●	●	●
	●	●	●	●		50	●	●	●	●
	●	●	●	●		63	●	●	●	●

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Mini cylinder(Stainless steel)

MA Series

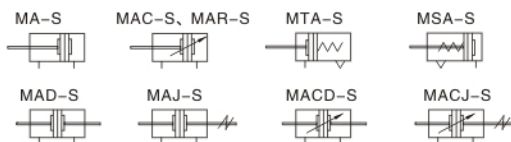


Specification

Bore size (mm)		16	20	25	32	40	50	63		
Acting type	MSA, MTA	Single acting type						-		
	MAR	-	Double acting type						-	
	MA, MAD, MAJ	Double acting type						-		
	MAC, MACD, MACJ	-	Double acting with cushion type						-	
Fluid		Air (to be filtered by 40um filter element)								
Operating pressure	Double acting	0.1~1.0MPa(15 ~145Psi)								
	Single acting	0.2~1.0MPa(28 ~145Psi)								
Proof pressure		1.5MPa(215Psi)								
Temperature °C		-20~70								
Speed range		Single acting type: 50~800 mm/s				Double acting type: 30~800mm/s				
Stroke tolerance		0~150 ^{+1.0} ₀				>150 ^{+1.4} ₀				
Cushion type		MAC, MACD, MACJ Series: Variable cushion;						Other series: Bumper		
Port size ①		M5 x 0.8			1/8"			1/4"		

① PT thread, NPT thread and G thread are available;
Add: Refer to PVI-39-VI-50 for detail of sensor switch.

Symbol



Product feature

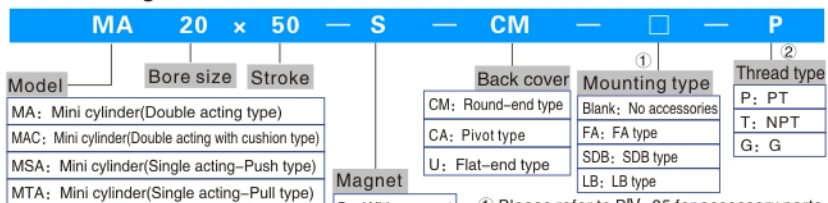
- 1、Standard cylinder manufactured by our enterprise;
- 2、Piston adopts heterogeneous two-way seal structure. It has compact size and has the function of oil reservation;
- 3、Front cover has fixed bumper which can reduce the impact of direction change of the cylinder;
- 4、There are several modes of back 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、There are cylinders and mounting accessories with several specifications for your choice;
- 8、All cylinders of this series have magnet.

Stroke

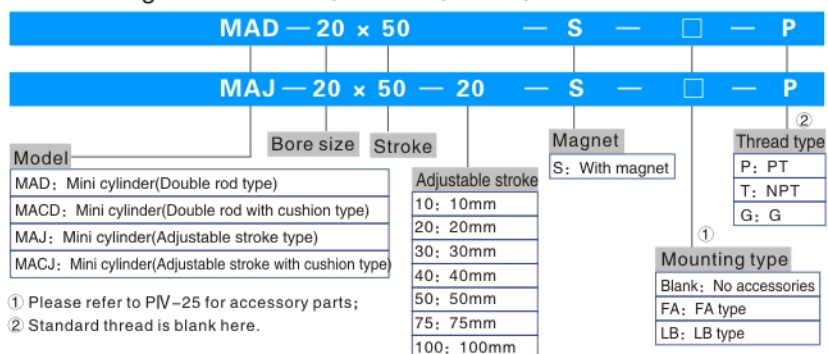
Bore size (mm)	Standard stroke (mm)						Max. stroke	Available stroke		
	16	20	25	32	40	50				
MA MAC	16	25 50 75 80 100 125 150 160 175 200						200	500	
	20	25 50 75 80 100 125			MAR	25 50 75 80 100 125			300	600
		150 160 175 200 250 300				150 160 175 200 250 300				
	25	25 50 75 80 100 125			MAR	25 50 75 80 100 125			500	700
	32	25 50 75 80 100 125				25 50 75 80 100 125			500	700
	40	150 160 175 200 250				150 160 175 200 250			500	700
50	300 350 400 450 500			300 350 400 450 500			500	700		
63								500	700	
MSA	16	25 50 75 100				MTA			-	-
	20								-	-
	25	25 50 75 100 125 150					25 50 75 100		-	-
	32								-	-
	40								-	-
MAD MACD MAJ MACJ	16	25 50 75 80 100 125 150 160						-	-	
	20	25 50 75 80 100 125 150 160 175 200						-	-	
	25							-	-	
	32							-	-	
	40	25 50 75 80 100 125 150 160 175 200 250						-	-	
	63							-	-	

Remark: Contact us for non-standard stroke.

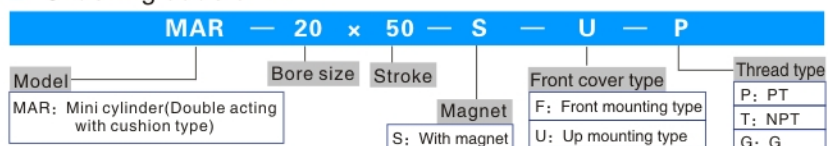
Ordering code of MA, MAC, MSA, MTA



Ordering code of MAD, MACD, MAJ, MACJ



Ordering code of MAR

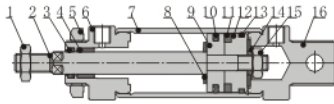


Mini cylinder(Stainless steel)

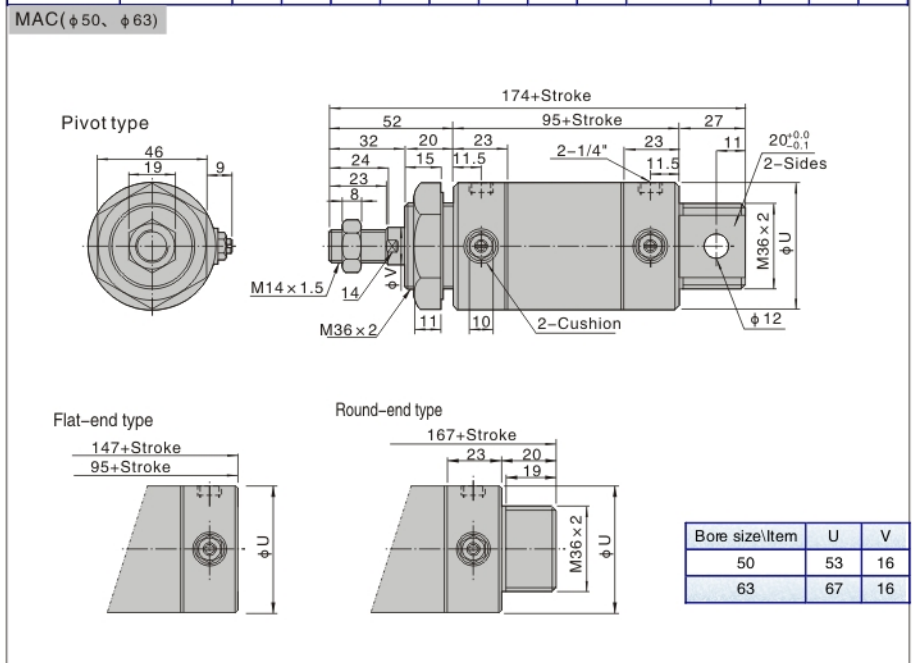
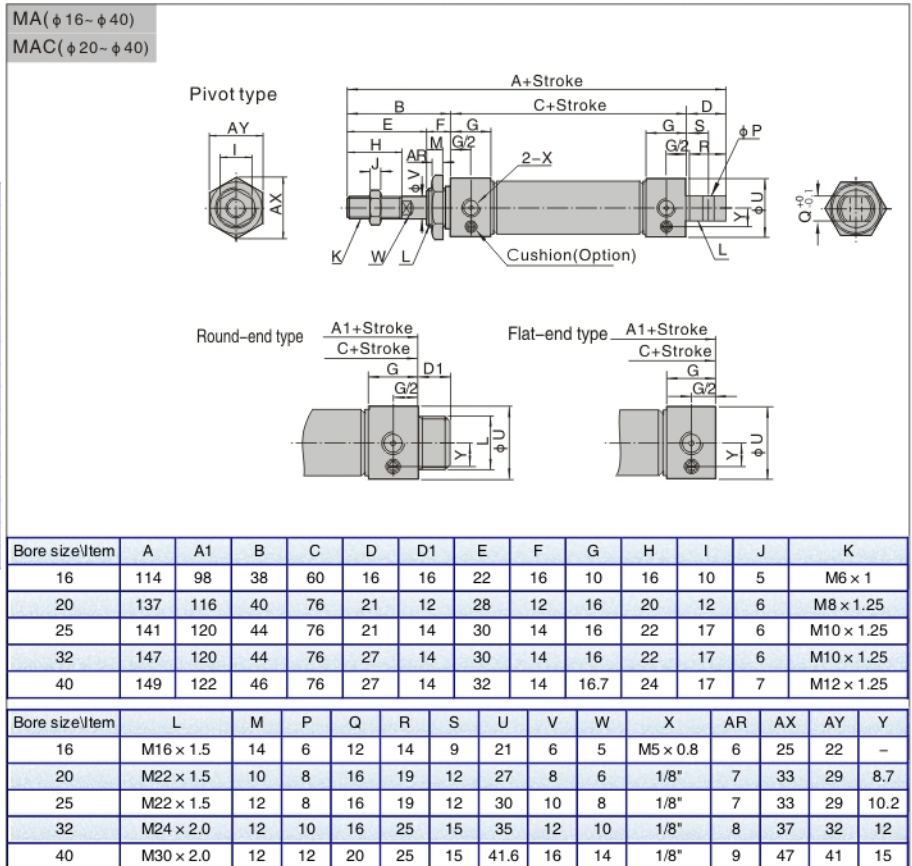
MA Series

Inner structure and material of major parts

■ Dimensions



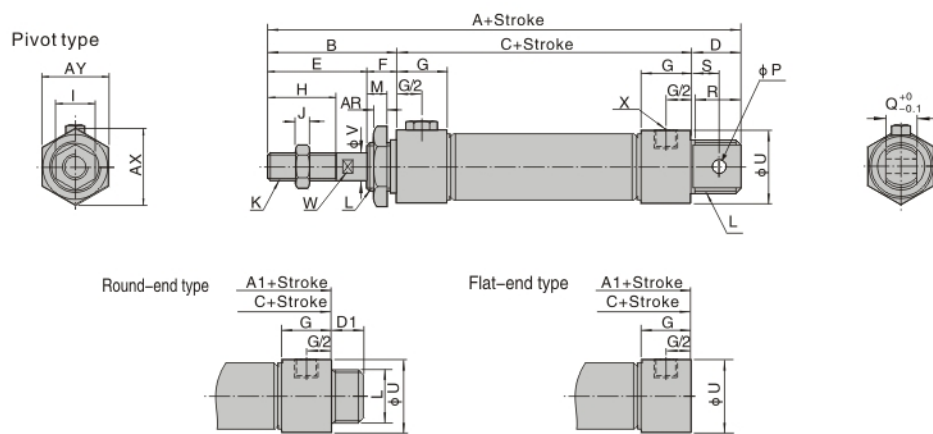
NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20um chrome plated
3	Front cover packing	NBR
4	Bushing	Wear resistant material
5	Front cover nut	Carbon steel
6	Front cover	Aluminum alloy
7	Barrel	Stainless steel
8	Bumper	NBR
9	Piston	Aluminum alloy
10	Piston O-ring	NBR
11	Magnet	Plastic
12	Magnet holder	Aluminum alloy
13	Wear ring	Wear resistant material
14	Washer	Free cutting steel
15	Nut	Carbon steel
16	Back cover	Aluminum alloy



Mini cylinder(Stainless steel)

MA Series

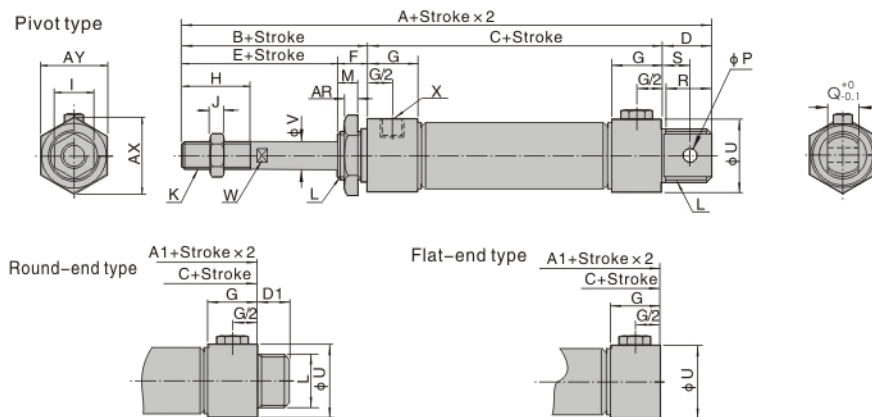
MSA $\phi 16 \sim \phi 40$



Item	A			A1			B	C			D	D1	E	F	G	H	I
	≤ 50	51-100	≥ 101	≤ 50	51-100	≥ 101		≤ 50	51-100	≥ 101							
16	139	164	-	123	148	-	38	85	110	-	16	16	22	16	10	16	10
20	162	187	212	141	166	191	40	101	126	151	21	12	28	12	16	20	12
25	166	191	216	145	170	195	44	101	126	151	21	14	30	14	16	22	17
32	172	197	222	145	170	195	44	101	126	151	27	14	30	14	16	22	17
40	174	199	224	147	172	197	46	101	126	151	27	14	32	14	16.7	24	17

Bore size/Item	J	K	L	M	P	Q	R	S	U	V	W	X	AR	AX	AY
16	5	M6 x 1	M16 x 1.5	14	6	12	14	9	21	6	5	M5 x 0.8	6	25	22
20	6	M8 x 1.25	M22 x 1.5	10	8	16	19	12	27	8	6	1/8"	7	33	29
25	6	M10 x 1.25	M22 x 1.5	12	8	16	19	12	30	10	8	1/8"	7	33	29
32	6	M10 x 1.25	M24 x 2.0	12	10	16	25	15	35	12	10	1/8"	8	37	32
40	7	M12 x 1.25	M30 x 2.0	12	12	20	25	15	41.6	16	14	1/8"	9	47	41

MTA $\phi 16 \sim \phi 40$



Item	A				A1				B	C				D	D1	E	F
	≤ 25	≤ 50	≤ 75	≤ 100	≤ 25	≤ 50	≤ 75	≤ 100		≤ 25	≤ 50	≤ 75	≤ 100				
16	129	139	154	164	113	123	138	148	38	75	85	100	110	16	16	22	16
20	152	162	177	187	131	141	156	166	40	91	101	116	126	21	12	28	12
25	156	166	181	191	135	145	160	170	44	91	101	116	126	21	14	30	14
32	162	172	192	192	135	145	165	165	44	91	101	121	121	27	14	30	14
40	164	174	194	204	137	147	167	177	46	91	101	121	131	27	14	32	14

Bore size/Item	G	H	I	J	K	L	M	P	Q	R	S	U	V	W	X	AR	AX	AY
16	10	16	10	5	M6 x 1	M16 x 1.5	14	6	12	14	9	21	6	5	M5 x 0.8	6	25	22
20	16	20	12	6	M8 x 1.25	M22 x 1.5	10	8	16	19	12	27	8	6	1/8"	7	33	29
25	16	22	17	6	M10 x 1.25	M22 x 1.5	12	8	16	19	12	30	10	8	1/8"	7	33	29
32	16	22	17	6	M10 x 1.25	M24 x 2.0	12	10	16	25	15	35	12	10	1/8"	8	37	32
40	16.7	24	17	7	M12 x 1.25	M30 x 2.0	12	12	20	25	15	41.6	16	14	1/8"	9	47	41



Mini cylinder(Stainless steel)

MA Series

MAD
MACD

$\phi 16 - \phi 40$

$\phi 50 - \phi 63$

Bore size/Item	A	B	C	E	F	G	H	I	J	K	L	M	U	V	W	X	AR	AX	AY	Y
16	136	38	60	22	16	10	16	10	5	M6 x 1	M16 x 1.5	14	21	6	5	M5 x 0.8	6	25	22	-
20	156	40	76	28	12	16	20	12	6	M8 x 1.25	M22 x 1.5	10	27	8	6	1/8"	7	33	29	8.7
25	164	44	76	30	14	16	22	17	6	M10 x 1.25	M22 x 1.5	12	30	10	8	1/8"	7	33	29	10.2
32	164	44	76	30	14	16	22	17	6	M10 x 1.25	M24 x 2.0	12	35	12	10	1/8"	8	37	32	12
40	168	46	76	32	14	16.7	24	17	7	M12 x 1.25	M30 x 2.0	12	41.6	16	14	1/8"	9	47	41	15
50	199	52	95	32	20	23	24	19	8	M14 x 1.5	M36 x 2.0	15	53	16	14	1/4"	11	53	46	-
63	199	52	95	32	20	23	24	19	8	M14 x 1.5	M36 x 2.0	15	67	16	14	1/4"	11	53	46	-

MAJ
MACJ

$\phi 16 - \phi 40$

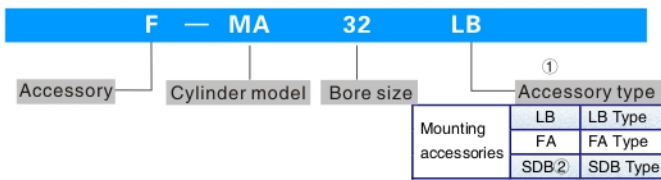
$\phi 50 - \phi 63$

Item Bore size	A	B	C	E	F	G	H	I	J	J1	K	K1	L	M	U	V	W	X	AR	AX	AY	Y	T
16	135	38	60	22	16	10	16	10	5	5	M6 x 1	M6 x 1	M16 x 1.5	14	21	6	5	M5 x 0.8	6	25	22	-	21
20	153	40	76	28	12	16	20	12	6	6	M8 x 1.25	M8 x 1.25	M22 x 1.5	10	27	8	6	1/8"	7	33	29	8.7	25
25	161	44	76	30	14	16	22	17	6	6	M10 x 1.25	M10 x 1.25	M22 x 1.5	12	30	10	8	1/8"	7	33	29	10.2	27
32	161	44	76	30	14	16	22	17	6	6	M10 x 1.25	M10 x 1.25	M24 x 2.0	12	35	12	10	1/8"	8	37	32	12	27
40	164	46	76	32	14	16.7	24	17	7	7	M12 x 1.25	M12 x 1.25	M30 x 2.0	12	41.6	16	14	1/8"	9	47	41	15	28
50	195	52	95	32	20	23	24	19	8	7	M14 x 1.5	M12 x 1.25	M36 x 2.0	15	53	16	14	1/4"	11	53	46	-	28
63	195	52	95	32	20	23	24	19	8	7	M14 x 1.5	M12 x 1.25	M36 x 2.0	15	67	16	14	1/4"	11	53	46	-	28

Mini cylinder(Stainless steel)

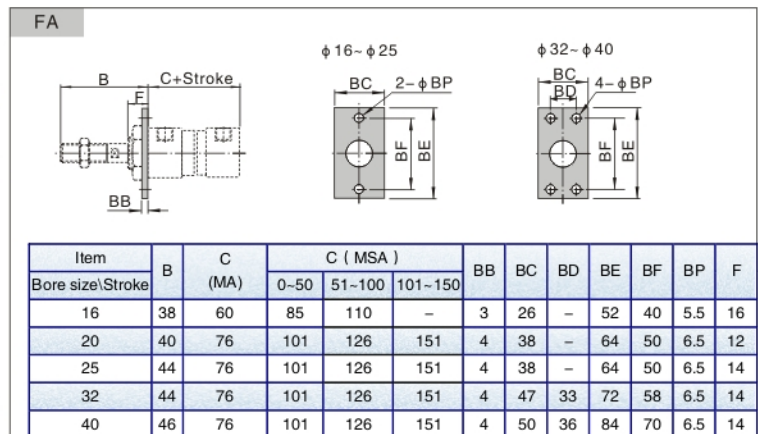
Accessories

Ordering code



- ① Please see accessory list for detail of accessory.
- ② SDB is attached with relevant PIN.

Dimensions



Accessories for choosing list

Accessories	Mounting accessory			Knuckle ①				Sensor switch ②	
	Cylinder model	LB	FA	SDB	I	Y	F	U	CS1-M
MA MAC	●	●	●	●	●	●	●	●	●
MSA MTA	●	●	●	●	●	●	●	●	●
MAD MACD	●	●	×	●	●	●	●	●	●
MAJ MACJ	●	●	×	●	●	●	●	●	●
MAR	×	×	×	●	●	●	●	●	●

- ①: Please refer to PVI-33-VI-38 for knuckle detail;
- ②: Please refer to PVI-39-VI-50 for detail of sensor switch.

Material of accessories

Accessories	Mounting accessories			Joint accessories			
	LB	FA	SDB	I	Y	F	U
Material	Low carbon steel			Carbon steel			

List for ordering code of accessories

Accessories	Mounting accessory			Sensor switch
	LB	FA	SDB	
Bore size	16	20	25	CS1-M
	F-MA16LB	F-MA16FA	F-MA16SDB	
	F-MA20LB	F-MA20FA	F-MA20SDB	
	F-MA32LB	F-MA32FA	F-MA32SDB	
	F-MA40LB	F-MA40FA	F-MA40SDB	
	-	-	F-MA40SDB	
	50	-	-	
	63	-	-	

Accessories	Knuckle			
	I:I Knuckle	Y:Y Knuckle	F:F Knuckle	U:U Knuckle
Bore size	16	20	25	32
	F-M06100I	F-M06100Y	F-M06100F	F-M06100U
	F-M08125I	F-M08125Y	F-M08125F	F-M08125U
	F-M10125I	F-M10125Y	F-M10125F	F-M10125U
	F-M12125IA	F-M12125YA	F-M12125F	F-M12125U
	F-M14150J	F-M14150YJ	F-M14150F	F-M14150U

