

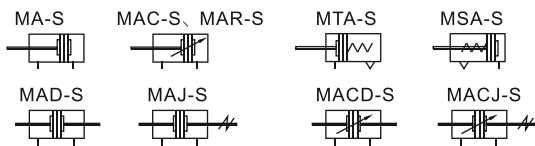
# Mini cylinder(Stainless steel)



## MA Series



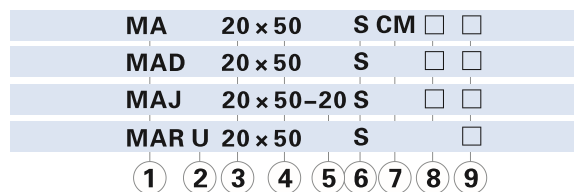
### Symbol



### 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 grease 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.

### Ordering code



① Model	② Front cover	③ Bore size	④ Stroke	⑤ Adjustable St.	⑥ Magnet	⑦ Back cover	⑧ Mounting type[Note1]	⑨ Thread type[Note2]
MA: Mini cylinder(Double acting) MAC: Mini cylinder(Double acting with cushion) MSA: Mini cylinder(Single acting_push) MTA: Mini cylinder(Single acting_pull)	No this code	Model	Refer to stroke table for details	No this code	S: With magnet	CA: Pivot type U: Flat-end type CM: Round-end type	Blank: No accessories FA: FA type SDB: SDB type LB: LB type	Blank: PT G: G T: NPT
		Bore size						
MAD: Mini cylinder(Double rod) MACD: Mini cylinder(Double rod with cushion)		MA 16 MSA 20 MTA 25 MAD 32 MAJ 40						
MAJ: Mini cylinder(Adjustable stroke) MACJ: Mini cylinder(Adjustable stroke with cushion)		20 MAC 25 MAR 32 MACD: 40 MACJ: 50 63						
MAR: Mini cylinder(Double acting with cushion)	F: Front mounting U: Up mounting			10 20 30 40 50 75 100	No this code	No this code		

[Note1] Please refer to page 93~94 for accessory parts.

[Note2] Standard thread is blank here.

### Specification

Bore size(mm)	16	20	25	32	40	50	63
Acting type	MSA/MTA Single acting						-
	MA/MAD/MAJ Double acting						-
	MAR Double acting						-
	MAC/MACD/MACJ Double acting with cushion						-
Fluid	Air(to be filtered by 40 μm filter element)						
Operating pressure	Double acting		0.15~1.0MPa(22~145psi)(1.5~10.0bar)				
	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 <sup>+1.0</sup> <sub>0</sub>			>150 <sup>+1.5</sup> <sub>0</sub>			
Cushion type	MAC/MACD/MACJ Series: Variable cushion; Other series: Bumper						
Port size [Note1]	M5×0.8		1/8"			1/4"	

[Note1] PT thread, G thread thread and NPT thread are available.

Add) Refer to P313 for detail of sensor switch.

### Stroke

Bore size (mm)	Standard stroke (mm)																Max.std stroke	Max. stroke							
MA	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	600
MA	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
MAC	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
MAR	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
	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
MAC	50	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	800
MAR	63	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	800
MAD/MAJ	16	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300					300	-
MAD	20	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300					300	-
MAJ	25	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300					300	-
MACD	32	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	-
MACJ	40	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	-
MACD	50	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	-
MACJ	63	10	15	20	25	30	40	50	60	75	80	100	125	150	160	175	200	250	300	350	400	450	500	500	-
	16	10	15	20	25	30	40	50	60	75	80	100												-	-
	20	10	15	20	25	30	40	50	60	75	80	100	125	150										-	-
MSA	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										-	-
	50	10	15	20	25	30	40	50	60	75	80	100	125	150										-	-
	63	10	15	20	25	30	40	50	60	75	80	100	125	150										-	-
	16	10	15	20	25	30	40	50	60	75	80	100												-	-
	20	10	15	20	25	30	40	50	60	75	80	100												-	-
MTA	25	10	15	20	25	30	40	50	60	75	80	100												-	-
	32	10	15	20	25	30	40	50	60	75	80	100												-	-
	40	10	15	20	25	30	40	50	60	75	80	100												-	-

[Note] Consult us for non-standard stroke.

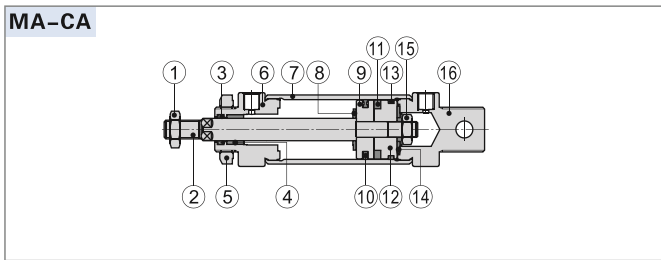


# Mini cylinder(Stainless steel)



## MA Series

### Inner structure and material of major parts

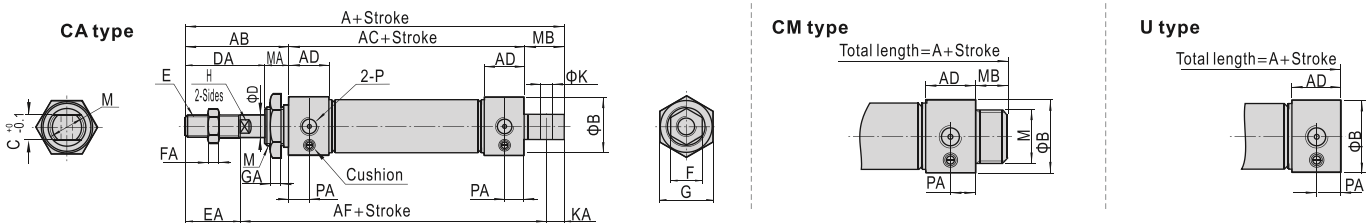


NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20 μ mchrome plated
3	Front cover packing	NBR
4	Bushing	Wear resistant material
5	Front cover nut	Carbon steel
6	Front cover	Aluminum alloy
7	Barrel	Stainless steel
8	Bumper	NBR
9	Piston	Aluminum alloy
10	Piston seal	NBR
11	Magnet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

### Dimensions

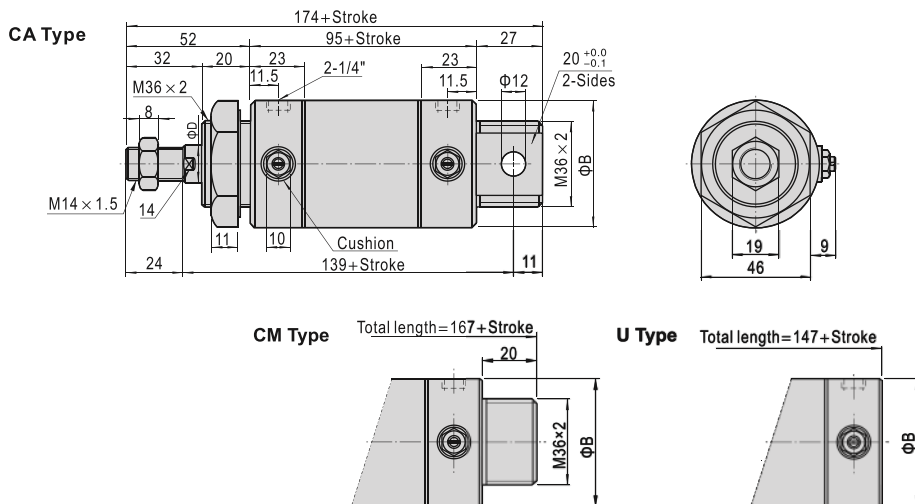
MA  $\Phi 16 \sim \Phi 40$

MAC  $\Phi 20 \sim \Phi 40$



Bore size\Item Back cover	A			AB	AC	AD	AF	B	C	D	DA	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB			P	PA
	CA	CM	U																				CA	CM	P		
16	114	114	98	38	60	10	91	21	12	6	22	M6×1.0	16	10	5	22	6	5	6	7	M16×1.5	16	16	16	M5×0.8	5	
20	137	128	116	40	76	16	108	27	16	8	28	M8×1.25	20	12	6	29	7	6	8	9	M22×1.5	12	21	12	1/8"	8	
25	141	134	120	44	76	16	110	30	16	10	30	M10×1.25	22	17	6	29	7	8	8	9	M22×1.5	14	21	14	1/8"	8	
32	147	134	120	44	76	16	113	35	16	12	30	M10×1.25	22	17	6	32	8	10	10	12	M24×2.0	14	27	14	1/8"	8	
40	149	136	122	46	76	16.5	113	41.5	20	16	32	M12×1.25	24	17	7	41	9	14	12	12	M30×2.0	14	27	14	1/8"	8	

MAC  $\Phi 50 \setminus \Phi 63$



Bore size\Item	B	D
50	53	16
63	67	16



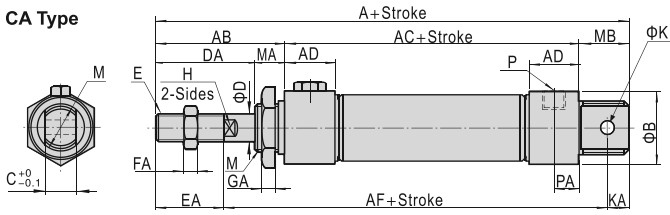
# Mini cylinder(Stainless steel)



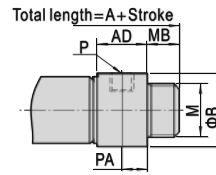
## MA Series

MSA  $\Phi 16\sim\Phi 40$

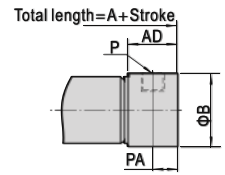
### CA Type



### CM Type



### U Type



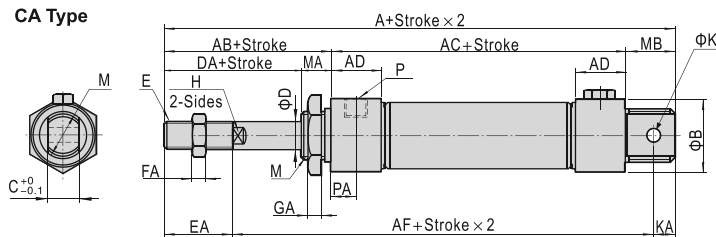
Item	A									AB	AC			AD	AF		
	CA			CM			U				-	-	-		-	-	-
Bore size\Stroke	$\leq 50$	51~100	$\geq 101$	$\leq 50$	51~100	$\geq 101$	$\leq 50$	51~100	$\geq 101$	-	$\leq 50$	51~100	$\geq 101$	-	$\leq 50$	51~100	$\geq 101$
16	139	164	-	139	164	-	123	148	-	38	85	110	-	10	116	141	-
20	162	187	212	153	178	203	141	166	191	40	101	126	151	16	133	158	183
25	166	191	216	159	184	209	145	170	195	44	101	126	151	16	135	160	185
32	172	197	222	159	184	209	145	170	195	44	101	126	151	16	138	163	188
40	174	199	224	161	186	211	147	172	197	46	101	126	151	16.5	138	163	188

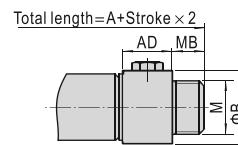
Bore size\Item	Back cover	B	C	D	DA	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB		P	PA
		CA	CM																	
16		21	12	6	22	M6×1.0	16	10	5	22	6	5	6	7	M16×1.5	16	16	16	M5×0.8	5
20		27	16	8	28	M8×1.25	20	12	6	29	7	6	8	9	M22×1.5	12	21	12	1/8"	8
25		30	16	10	30	M10×1.25	22	17	6	29	7	8	8	9	M22×1.5	14	21	14	1/8"	8
32		35	16	12	30	M10×1.25	22	17	6	32	8	10	10	12	M24×2.0	14	27	14	1/8"	8
40		41.5	20	16	32	M12×1.25	24	17	7	41	9	14	12	12	M30×2.0	14	27	14	1/8"	8

MTA  $\Phi 16\sim\Phi 40$

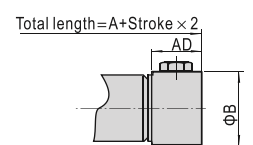
### CA Type



### CM Type



### U Type



Item	A												AC				AF			
	CA				CM				U				-		-		-		-	
Bore size\Stroke	$\leq 25$	$\leq 50$	$\leq 75$	$\leq 100$	$\leq 25$	$\leq 50$	$\leq 75$	$\leq 100$	$\leq 25$	$\leq 50$	$\leq 75$	$\leq 100$	$\leq 25$	$\leq 50$	$\leq 75$	$\leq 100$	$\leq 25$	$\leq 50$	$\leq 75$	$\leq 100$
16	129	139	154	164	129	139	154	164	113	123	138	148	75	85	100	110	106	116	131	141
20	152	162	177	187	143	153	168	178	131	141	156	166	91	101	116	126	123	133	148	158
25	156	166	181	191	149	159	174	184	135	145	160	170	91	101	116	126	125	135	150	160
32	162	172	192	202	149	159	179	189	135	145	165	175	91	101	121	131	128	138	158	168
40	164	174	194	204	151	161	181	191	137	147	167	177	91	101	121	131	128	138	158	168

Bore size\Item	Back cover	AB	AD	B	C	D	DA	E	EA	F	FA	G	GA	H	K	KA	M	MA	MB		P	PA
		CA	CM																			
16		38	10	21	12	6	22	M6×1.0	16	10	5	22	6	5	6	7	M16×1.5	16	16	16	M5×0.8	5
20		40	16	27	16	8	28	M8×1.25	20	12	6	29	7	6	8	9	M22×1.5	12	21	12	1/8"	8
25		44	16	30	16	10	30	M10×1.25	22	17	6	29	7	8	8	9	M22×1.5	14	21	14	1/8"	8
32		44	16	35	16	12	30	M10×1.25	22	17	6	32	8	10	10	12	M24×2.0	14	27	14	1/8"	8
40		46	16.5	41.5	20	16	32	M12×1.25	24	17	7	41	9	14	12	12	M30×2.0	14	27	14	1/8"	8



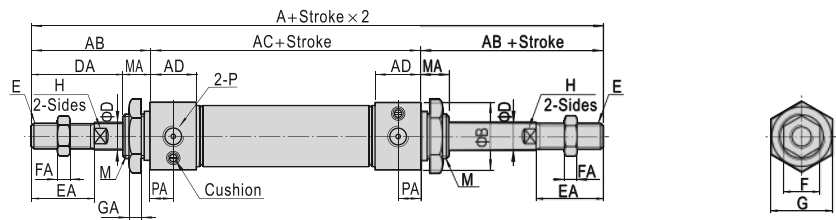
# Mini cylinder(Stainless steel)



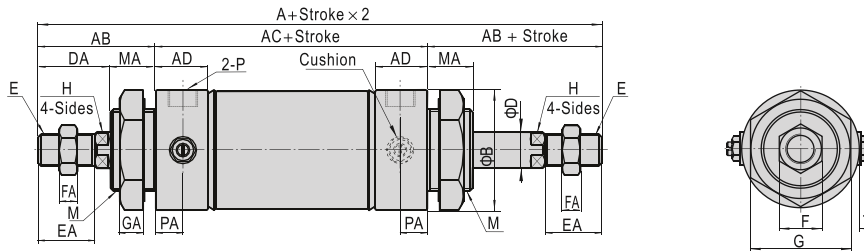
## MA Series

### MAD/MACD

Φ 16~Φ 40



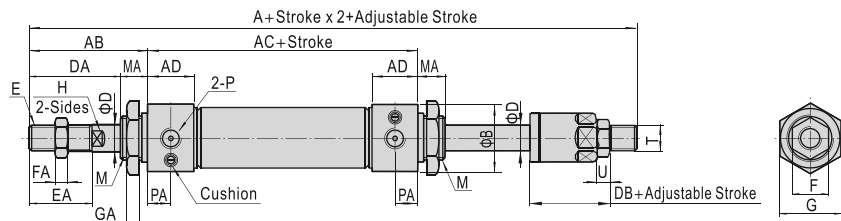
Φ 50/Φ 63



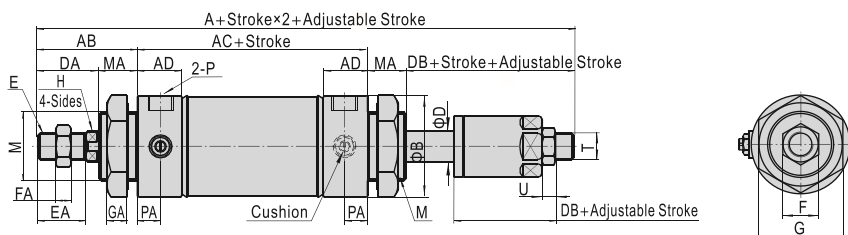
Bore size\Item	A	AB	AC	AD	B	D	DA	E	EA	F	FA	G	GA	H	M	MA	P	PA
16	136	38	60	10	21	6	22	M6 × 1.0	16	10	5	22	6	5	M16 × 1.5	16	M5 × 0.8	5
20	156	40	76	16	27	8	28	M8 × 1.25	20	12	6	29	7	6	M22 × 1.5	12	1/8"	8
25	164	44	76	16	30	10	30	M10 × 1.25	22	17	6	29	7	8	M22 × 1.5	14	1/8"	8
32	164	44	76	16	35	12	30	M10 × 1.25	22	17	6	32	8	10	M24 × 2.0	14	1/8"	8
40	168	46	76	16.5	41.5	16	32	M12 × 1.25	24	17	7	41	9	14	M30 × 2.0	14	1/8"	8
50	199	52	95	23	53	16	32	M14 × 1.5	24	19	8	46	11	14	M36 × 2.0	20	1/4"	11.5
63	199	52	95	23	67	16	32	M14 × 1.5	24	19	8	46	11	14	M36 × 2.0	20	1/4"	11.5

### MAJ/MACJ

Φ 16~Φ 40



Φ 50/Φ 63



Bore size\Item	A	AB	AC	AD	B	D	DA	DB	E	EA	F	FA	H	M	MA	P	PA	G	GA	T	U	
16	135	38	60	10	21	6	22	21	M6 × 1.0	16	10	5	5	M16 × 1.5	16	M5 × 0.8	5	22	6	6	M6 × 1.0	5
20	153	40	76	16	27	8	28	25	M8 × 1.25	20	12	6	6	M22 × 1.5	12	1/8"	8	29	7	7	M8 × 1.25	6
25	161	44	76	16	30	10	30	27	M10 × 1.25	22	17	6	8	M22 × 1.5	14	1/8"	8	29	7	7	M10 × 1.25	6
32	161	44	76	16	35	12	30	27	M10 × 1.25	22	17	6	10	M24 × 2.0	14	1/8"	8	32	8	8	M10 × 1.25	6
40	164	46	76	16.5	41.5	16	32	28	M12 × 1.25	24	17	7	14	M30 × 2.0	14	1/8"	8	41	9	9	M12 × 1.25	7
50	195	52	95	23	53	16	32	28	M14 × 1.5	24	19	8	14	M36 × 2.0	20	1/4"	11.5	46	11	11	M12 × 1.25	7
63	195	52	95	23	67	16	32	28	M14 × 1.5	24	19	8	14	M36 × 2.0	20	1/4"	11.5	46	11	11	M12 × 1.25	7



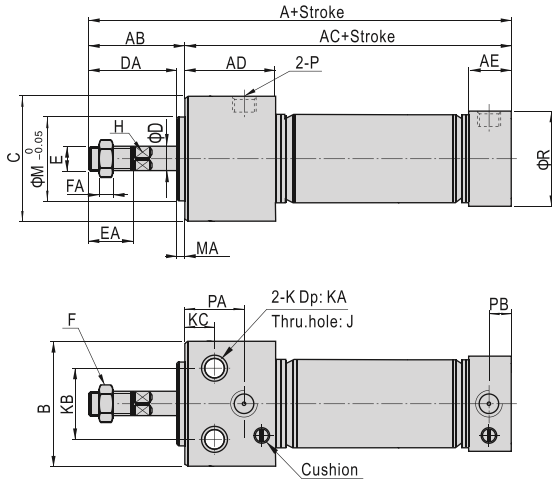
# Mini cylinder(Stainless steel)



## MA Series

### MARU(Up mounting type)

Φ 20~ Φ 40



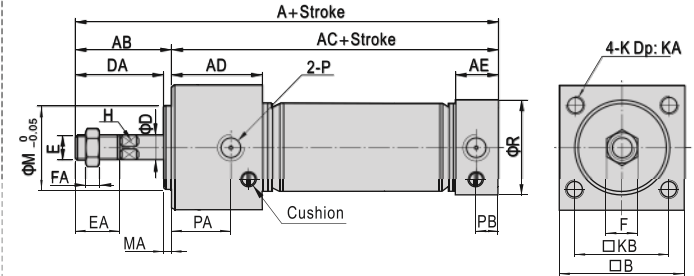
Bore size\Item	A	AB	AC	AD	AE	B	C	D	DA	E	EA	F	FA
20	120	31	89	29	16	33.5	30.5	8	28	M8 × 1.25	20	13	5
25	122	33	89	29	16	39	36.5	10	30	M10 × 1.25	22	17	6
32	122	33	89	29	16	47	42.5	12	30	M10 × 1.25	22	17	6
40	132.5	35	97.5	37.5	16.5	58.5	52.5	16	32	M14 × 1.5	24	19	8

Bore size\Item	H	J	K	KA	KB	KC	M	MA	P	PA	PB	R
20	6	Φ5.5	Φ9.5	6.5	21	12	20	3	1/8"	22	8	27
25	8	Φ6.5	Φ11.0	7.5	25	12	26	3	1/8"	22	8	30
32	10	Φ9.0	Φ14.0	10	30	12	26	3	1/8"	22	8	35
40	14	Φ11	Φ17.5	12.5	38	15	32	3	1/8"	27	8	41.5

### MARF(Front mounting type)

Φ 20~ Φ 40

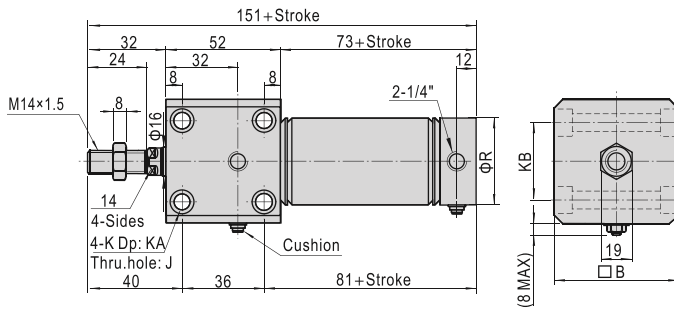


Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA
20	120	31	89	29	16	30.5	8	28	M8 × 1.25	20
25	122	33	89	29	16	36.5	10	30	M10 × 1.25	22
32	122	33	89	29	16	42.5	12	30	M10 × 1.25	22
40	132.5	35	97.5	37.5	16.5	52.5	16	32	M14 × 1.5	24

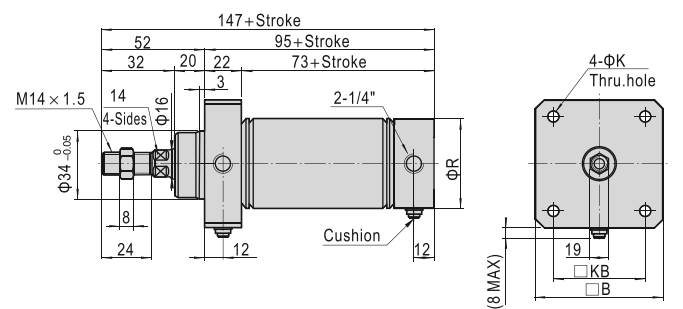
Bore size\Item	F	FA	H	K	KA	KB	M	MA	P	PA	PB	R
20	13	5	6	M5 × 0.8	9	22	20	3	1/8"	22	8	27
25	17	6	8	M6 × 1.0	11	26	26	3	1/8"	22	8	30
32	17	6	10	M6 × 1.0	11	30	26	3	1/8"	22	8	35
40	19	8	14	M8 × 1.25	14	36	32	3	1/8"	27	8	41.5

Φ50/Φ63



Bore size\Item	B	J	K	KA	KB	R
50	62	Φ6.5	2-Sides: Φ11.0	6.5	44	53
63	74	Φ9.0	2-Sides: Φ14.0	8.5	48	67

Φ50/Φ63



Bore size\Item	B	K	KB	R
50	62	6.5	48	53
63	74	9.0	58	67



# Mini cylinder(Stainless steel)



## MA Series—Accessories

### List for ordering code of accessories

Accessories Bore size	Mounting accessories			Knuckle				Sensor switch					
	LB	FA	SDB	I	Y	F	U	CS1-M	DS1-M	CS1-F	DS1-F	CS1-U	DS1-U
16	F-MA16LB	F-MA16FA	F-MA16SDB	F-MA16I	F-MA16Y	F-M6X100F	F-M6X100U	CS1-M-S16	DS1-M-S16				
20	F-MA20LB	F-MA20FA	F-MA20SDB	F-MA20I	F-MA20Y	F-M8X125F	F-M8X125U	CS1-M-S20	DS1-M-S20				
25								CS1-M-S25	DS1-M-S25	-	-	-	-
32	F-MA32LB	F-MA32FA	F-MA32SDB	F-MA25I	F-MA25Y	F-M10X125F	F-M10X125U	CS1-M-S32	DS1-M-S32				
40	F-MA40LB	F-MA40FA		F-MA40I	F-MA40Y	F-M12X125F	F-M12X125U	CS1-M-S40	DS1-M-S40				
50	F-MA50LB	F-MA50FA	F-MA40SDB	F-MAC50I	F-MAC50Y	F-M14X150F	F-M14X150U	CS1-M-S50	DS1-M-S50	CS1-F	DS1-F	CS1-U	DS1-U
63	F-MA63LB							CS1-M-S63	DS1-M-S63				

### Accessory selection

Accessories Cylinder model	Mounting accessories			Knuckle[Note1]				Sensor switch					
	LB	FA	SDB	I	Y	U	F	CS1-M	DS1-M	CS1-F	DS1-F	CS1-U	DS1-U
MA\MAC	●	●	●	●	●	●	●	●	●	●	●	●	●
MSA\MTA	●	●	●	●	●	●	●	●	●	●	●	●	●
MAD\MACD	●	●	×	●	●	●	●	●	●	●	●	●	●
MAJ\MACJ	●	●	×	●	●	●	●	●	●	●	●	●	●
MARF\MARU	×	×	×	●	●	●	●	●	●	●	●	●	●

### Material of accessories

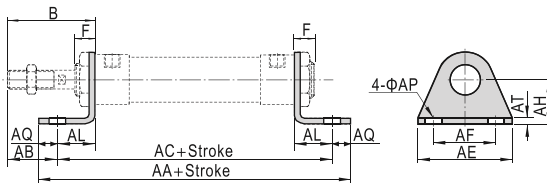
Accessories Bore size	Mounting accessories			Knuckle			
	LB	FA	SDB	I	Y	F	U
16~63	○	○	○	□	□	□	□

○—Lower carbon steel; □—Carbon steel;

[Note1] Please refer to P302~305 for knuckle detail.

### Dimensions

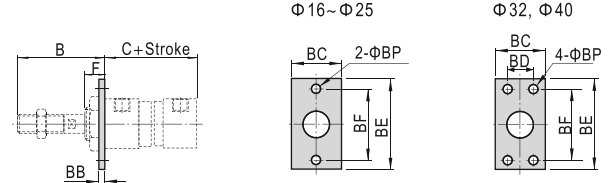
#### LB



Bore size\Item Stroke	AA	AA(MSA)			AC	AC(MSA)		
	(MA\MAC)	0~50	51~100	101~150	(MA\MAC)	0~50	51~100	101~150
16	98	123	148	-	86	111	136	-
20	122	147	172	197	106	131	156	181
25	122	147	172	197	106	131	156	181
32	142	167	192	217	126	151	176	201
40	142	167	192	217	126	151	176	201
50	175	-	-	-	151	-	-	-
63	183	-	-	-	157	-	-	-

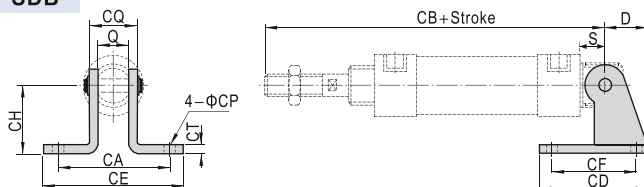
Bore size\Item Stroke	B	F	AB	AE	AF	AL	AQ	AP	AT	AH
	16	38	16	25	44	32	13	6	5.5	2.5
20	40	12	25	54	40	15	8	6.5	3	25
25	44	14	29	54	40	15	8	6.5	3	25
32	44	14	19	59	45	25	8	7	3.5	32
40	46	14	21	64	50	25	8	7	3.5	36
50	52	20	24	86	66	28	12	11	4.5	40
63	52	20	21	106	82	31	13	11	4.5	45

#### FA



Bore size\Item Stroke	B	C	C(MSA)			BB	BC	BD	BE	BF	BP	F
	(MA\MAC)	0~50	51~100	101~150								
16	38	60	85	110	-	3	26	-	52	40	5.5	16
20	40	76	101	126	151	3.5	38	-	64	50	7	12
25	44	76	101	126	151	3.5	38	-	64	50	7	14
32	44	76	101	126	151	4	47	33	72	58	6.5	14
40	46	76	101	126	151	4	50	36	84	70	6.5	14
50	54	147				4.5	65	47	104	86	9	22
63	54	147				4.5	65	47	104	86	9	22

#### SDB



Bore size\Item Stroke	D	S	Q	CA	CB	CB(MSA)			CD	CE	CF	CH	CT	CP	CQ
	(MA)	0~50	51~100	101~150											
16	16	9	12	-	107	132	157	-	23	-	12	20	2	5.5	16
20	21	12	16	51	128	153	178	203	48	67	32	32	2.5	7	22
25	21	12	16	51	132	157	182	207	48	67	32	32	2.5	7	22
32	27	15	16	51	135	160	185	210	52	67	36	36	3	7	24
40	27	15	20	55	137	162	187	212	56	71	40	40	3	7	28

[Note] SDB is attached with relevant PIN.

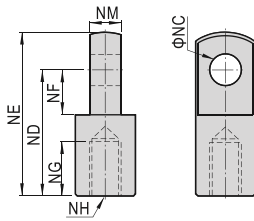


# Mini cylinder(Stainless steel)

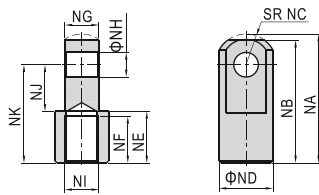


## MA Series—Accessories

### I Knuckle

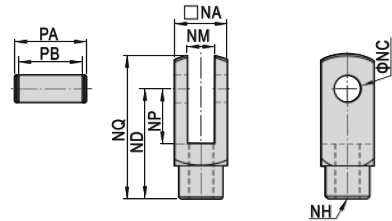


Type\Item	NC	ND	NE	NF	NG	NH	NM
F-MA16I	5	21	28	8.5	8	M6×1.0	6
F-MA20I	8	30	40	11	15	M8×1.25	8
F-MA25I	10	40	50	15	20	M10×1.25	10
F-MA40I	10	45	57	16	23	M12×1.25	14

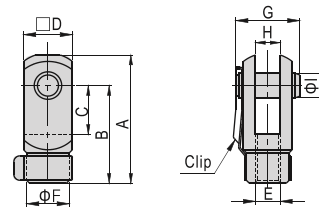


Type\Item	NA	NB	NC	ND	NE	NF	NG	NH	NJ	NK	NI
F-MAC50I	52.5	50	12.5	22	21	19	13.8	10	19	40	M14×1.5

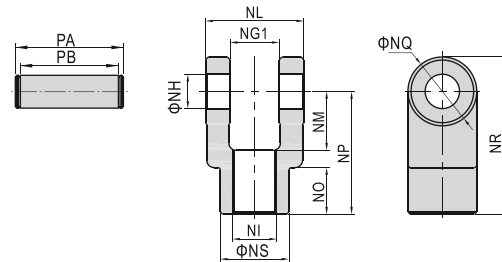
### Y Knuckle



Type\Item	NA	NC	ND	NP	NQ	NM	NH	PA	PB
F-MA16Y	12	5	21	8.5	27.4	6	M6×1.0	16.8	12.4
F-MA40Y	25.4	10	45	20	57	14	M12×1.25	32	26.2



Type\Item	A	B	C	D	E	F	G	H	I
F-MA20Y	42	32	16	16	M8×1.25	14	21	8	8
F-MA25Y	52	40	20	19	M10×1.25	18	25	10	10



Type\Item	Ng1	NH	NI	NL	NM	NO	NP	NQ	NR	NS	PA	PB
F-MAC50Y	14.2	10	M14×1.5	27.8	19	17	40	22	51	22	34.6	28.8

