



Standard cylinder—SAI Series

In accordance with ISO15552 standard

Compendium of SAI Series

ISO15552 Standard cylinder
Bore size: 32, 40, 50, 63, 80
100, 125, 160, 200

Adjustable air buffer
With adjustable air buffer on the front and back cover

Four kinds of cylinder joints

I Knuckle Y Knuckle Floating Joint Universal Joint

Extruded body with switch groove
With switch groove on the two sides of body, the counterpart sensor switch type is: CMSE \ DMSE.

Multi-type cylinder

SAI: Double acting type SAID: Double rod type SAIJ: Adjustable stroke type

SAIL: Double acting with locker type SAIF: With valve type

Multi-mounting accessories

LB

FA

FB

CA

CB

CR

FTC

TCM1

TCM2

TC

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type	Pressure area(mm ²)	Operating pressure(MPa)									
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
32	12	Double acting	Push side	804	80.4	160.8	241.2	321.6	402.0	482.4	562.8	643.2	723.6
			Pull side	690	69.0	138.0	207.0	276.0	345.0	414.0	483.0	552.0	621.0
40	16	Double acting	Push side	1256	125.6	251.2	376.8	502.4	628.0	753.6	879.2	1002.4	1130.4
			Pull side	1055	105.5	211.0	316.5	422.0	527.5	633.0	738.5	844.0	949.5
50	20	Double acting	Push side	1963	196.3	392.6	588.9	785.2	981.5	1177.8	1374.1	1570.4	1766.7
			Pull side	1649	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1399.2	1484.1
63	20	Double acting	Push side	3117	311.7	623.4	935.1	1246.8	1558.5	1870.2	2181.9	2493.6	2805.3
			Pull side	2803	280.3	560.6	840.9	1121.2	1401.5	1681.8	1962.1	2242.4	2522.7
80	25	Double acting	Push side	5026	502.6	1005.2	1507.8	2010.4	2513.0	3015.6	3518.2	4020.8	4523.4
			Pull side	4536	453.6	907.2	1360.8	1814.4	2268.0	2721.6	3175.2	3628.8	4082.4
100	25	Double acting	Push side	7853	785.3	1570.6	2355.9	3141.2	3926.5	4711.8	4288.2	6282.4	7067.7
			Pull side	7362	736.2	1472.4	2208.6	2948.6	3681.0	4417.2	5153.4	5889.6	6625.8
125	32	Double acting	Push side	12272	1227.2	2454.4	3681.6	4908.8	6136.0	7363.2	8590.4	9817.6	11044.8
			Pull side	11468	1146.8	2293.6	3440.4	4587.2	5734.0	6880.8	8027.6	9174.4	10321.2
160	40	Double acting	Push side	20106	2010.6	4021.2	6031.8	8042.4	10053.0	12063.6	14074.2	16084.8	18095.4
			Pull side	18849	1884.9	3769.8	5654.7	7539.6	9424.5	11309.4	13194.3	15079.2	16964.1
200	40	Double acting	Push side	31416	3141.6	6283.2	9424.8	12566.4	15708.0	18849.6	21991.2	25132.8	28274.4
			Pull side	30157	3015.7	6031.4	9047.1	12062.8	15078.5	18094.2	21109.9	24125.6	27141.3

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 μm 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.



ISO15552 Standard cylinder

SAI Series



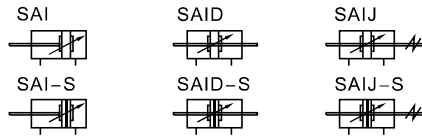
Specification

Bore size(mm)	32	40	50	63	80	100	125	160	200
Acting type	Double acting								
Fluid	Air(to be filtered by 40 μm filter element)								
Mounting type	SAI	Basic FA FB CA CB CR LB TC FTC TCM1 TCM2							
	SAID, SAIJ	Basic FA LB TC FTC TCM1 TCM2							
Operating pressure	0.15~1.0MPa(22~145psi)(1.5~10.0bar)								
Proof pressure	1.5MPa(215psi)(15bar)								
Temperature °C	-20~70								
Speed range mm/s	30~800						30~500		
Stroke tolerance	0~250 ^{+1.0} ₀		251~1000 ^{+1.5} ₀			1001~1500 ^{+2.0} ₀			
Cushion type	Variable cushion								
Adjustable cushion stroke	27		30		36		40		50
Port size [Note1]	1/8"		1/4"		3/8"		1/2"		3/4"

[Note1] PT thread, G thread are available.

Add) Refer to P353 for detail of sensor switch.

Symbol



Product feature

1. ISO15552 (original ISO6431) standard cylinder;
2. The piston seal is composed of two Y-shape one-way seal structure, which has compensation function, long service life and low start-up pressure;
3. The aluminum profile without tie rod has good corrosion resistance. With sensor switch groove on the two sides of body;
4. The buffer adjustment of cylinder is smooth and steady;
5. Cylinders and accessories for installation with several specifications are optional.

Stroke

Bore size (mm)	Standard stroke (mm)												Max.std stroke	Max. stroke									
32	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	1000	1800					
40	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	1200	1800		
50	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1800
63	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	1800
80	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	1800
100	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	1800
125	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	1800
160	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	2000
200	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	2000

[Note] Consult us for non-standard stroke.

Ordering code

SAI 160 x 50 S

SAID160 x 50 S

SAIJ 160 x 50-20 S

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

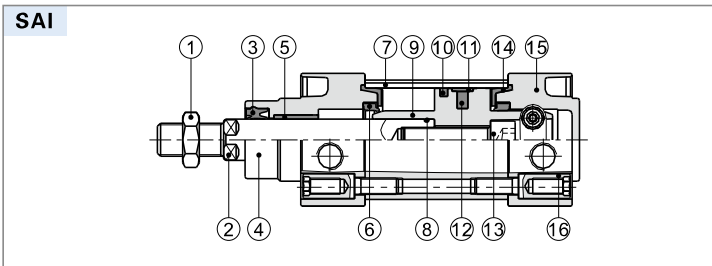
① Model	② Bore size	③ Rod Material	④ Stroke	⑤ Adjustable stroke	⑥ Magnet	⑦ Mounting type[Note1]	⑧ Seals Material	⑨ Thread type
SAI: Double acting type	32 40 50 63 80 100 125 160 200	Blank: Medium carbon steel A: SUS420J2 B: SUS304	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank	Blank: TPU H: Viton N: NBR	Blank: PT G: G
						LB		
						FA		
						FB		
						CA		
						CB		
						CR		
SAID: Double rod type						Blank		
						LB		
						FA		
SAIJ: Adjustable stroke type				10 20 30 40 50 75 100		FTC		
						TC		
						TC		
						TC		

[Note1] CR is used with CB; FTC、TC are used with TCM1、TCM2.

ISO15552 Standard cylinder

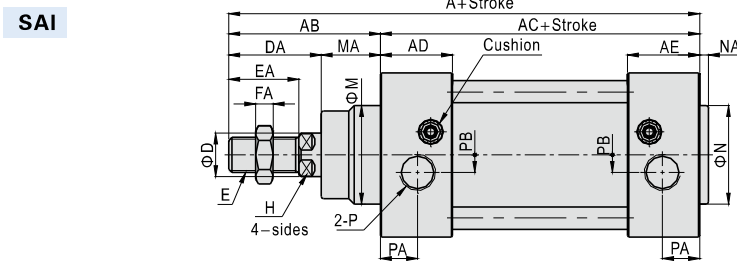
SAI Series

Inner structure and material of major parts



NO.	Item	Material
1	Rod nut	Carbon steel\Stainless steel
2	Piston rod	Carbon steel with 20μm chrome plated or Stainless steel
3	Front cover packing	TPU
4	Front cover	Aluminum alloy
5	Bushing	Wear resistant material
6	Cushing O-ring	TPU
7	Barrel	Aluminum alloy
8	O-ring	NBR
9	Piston	Aluminum alloy
10	Piston Seal	NBR
11	Wear ring	Wear resistant material
12	Magnet	Plastic(Φ 100 and below)\Rubber(Others)
13	Bolt	Carbon steel
14	Buffer gasket	TPU
15	Back cover	Aluminum alloy
16	Screw	Carbon steel\Stainless steel

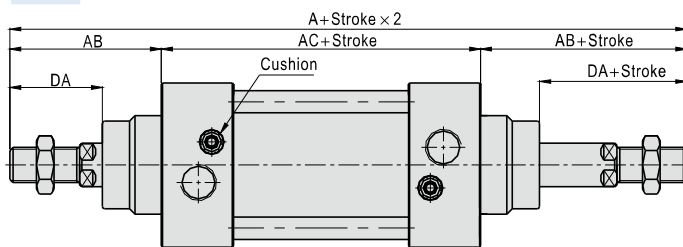
Dimensions



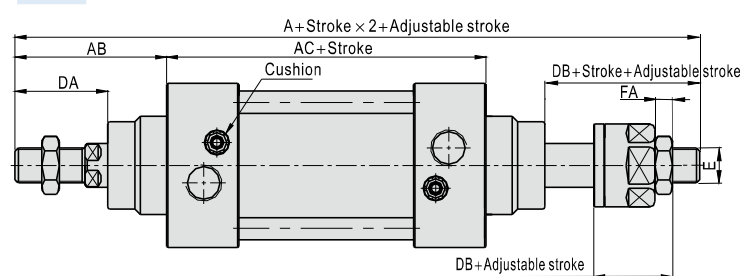
Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA	F	FA	M	MA	H	K	KA	KB	N	NA	P	PA	PB
32	142	48	94	27.5	27.5	47	12	29	M10×1.25	22	17	6	30	19	10	M6	16	32.5	30	3	1/8"	13	5.5
40	159	54	105	32	32	53	16	33	M12×1.25	24	17	7	35	21	13	M6	17	38	35	3.5	1/4"	17	6
50	175	69	106	31	31	65	20	42	M16×1.5	32	23	8	40	27	17	M8	17	46.5	40	3.5	1/4"	15.5	7.5
63	190	69	121	33	33	75	20	42	M16×1.5	32	23	8	45	27	17	M8	17	56.5	45	4	3/8"	16.5	7.5
80	214	86	128	33	33	95	25	53	M20×1.5	40	26	10	45	33	22	M10	19	72	45	4	3/8"	16.5	9
100	229	91	138	37	37	115	25	55	M20×1.5	40	26	10	55	36	22	M10	19	89	55	4	1/2"	18.5	9.5
125	279	119	160	46	46	140	32	74	M27×2.0	54	41	13.5	60	45	27	M12	22	110	60	4	1/2"	23	14
160	332	152	180	50	50	180	40	94	M36×2.0	72	55	18	65	58	36	M16	30	140	65	4	3/4"	25	15
200	347	167	180	50	50	220	40	100	M36×2.0	72	55	18	75	67	36	M16	30	175	75	5	3/4"	25	15

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

SAID



SAIJ



Bore size\Item	A		AB	AC	DA	DB	E	FA
	SAID	SAIJ						
32	190	188	48	94	29	27	M10X1.25	6
40	213	208	54	105	33	28	M12X1.25	7
50	244	231	69	106	42	29	M16X1.5	8
63	259	246	69	121	42	29	M16X1.5	8
80	300	282.5	86	128	53	35.5	M20X1.5	10
100	320	300.5	91	138	55	35.5	M20X1.5	10
125	398	366.5	119	160	74	42.5	M27X2.0	13.5
160	484	458	152	180	94	68	M36X2.0	18
200	514	482	167	180	100	68	M36X2.0	18

Remark:

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

SAI Series—Accessories

List for ordering code of accessories

Accessories Bore size	Mounting accessories								
	LB	FA/FB	CA	CB	CR	TC	FTC	TCM1	TCM2
32	F-SI32LB	F-SI32FA	F-SE32CA	F-SE32CB	F-SI32CR	F-SAI32TC	F-SI32FTC	F-SI32TCM1	F-SI32TCM2
40	F-SI40LB	F-SI40FA	F-SE40CA	F-SE40CB	F-SI40CR	F-SAI40TC	F-SI40FTC	F-SI40TCM1	F-SI40TCM2
50	F-SI50LB	F-SI50FA	F-SE50CA	F-SE50CB	F-SI50CR	F-SAI50TC	F-SI50FTC	F-SI40TCM1	F-SI40TCM2
63	F-SI63LB	F-SI63FA	F-SE63CA	F-SE63CB	F-SI63CR	F-SAI63TC	F-SI63FTC	F-SI63TCM1	F-SI63TCM2
80	F-SI80LB	F-SI80FA	F-SE80CA	F-SE80CB	F-SI80CR	F-SAI80TC	F-SI80FTC	F-SI63TCM1	F-SI63TCM2
100	F-SI100LB	F-SI100FA	F-SE100CA	F-SE100CB	F-SI100CR	F-SAI100TC	F-SI100FTC	F-SI125TCM1	F-SI125TCM2
125	F-SI125LB	F-SI125FA	F-SE125CA	F-SE125CB	F-SI125CR	F-SAI125TC	F-SI125FTC	F-SI125TCM1	F-SI125TCM2
160	F-SI160LB	F-SI160FA	F-SI160CA	F-SI160CB	F-SI160CR	F-SI160TC	F-SI160FTC	F-SI160TCM1	F-SI160TCM2
200	F-SI200LB	F-SI200FA	F-SI200CA	F-SI200CB	F-SI200CR	F-SI200TC	F-SI200FTC	F-SI200TCM1	F-SI160TCM2

Accessories Bore size	Knuckle				Sensor switch	
	I	Y	F	U	CMSE	DMSE
32	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U	CMSE	DMSE
40	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U		
50	F-M16X150I	F-M16X150Y	F-M16X150F	F-M16X150U		
63	F-M16X150I	F-M16X150Y	F-M16X150F	F-M16X150U		
80	F-M20X150I	F-M20X150Y	F-M20X150F	F-M20X150U		
100	F-M20X150I	F-M20X150Y	F-M20X150F	F-M20X150U		
125	F-M27X200I	F-M27X200Y	F-M27X200F	F-M27X200U		
160	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		
200	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		

Accessory selection

Accessories Cylinder model	Mounting accessories											Knuckle [Note1]				Sensor switch	
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U	F	CMSE	DMSE	
SAI	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×	
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
SAIL	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×	
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
SAIF	Standard	●	●	●	●	●	●	●	●	●	●	●	●	●	×	×	
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
BSAI	Standard	●	●	●	●	●	●	×	●	●	●	●	●	●	×	×	
	With magnet	●	●	●	●	●	●	×	●	●	●	●	●	●	●	●	
SAID	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	×	×	
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	
BSAID	Standard	●	●	×	×	×	×	●	×	●	●	●	●	●	×	×	
	With magnet	●	●	×	×	×	×	●	×	●	●	●	●	●	●	●	
SAIJ	Standard	●	●	×	×	×	×	●	●	●	●	●	●	●	×	×	
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●	●	

[Note1] Please refer to P349~352 for knuckle detail.

Material of accessories

Accessories Bore size	Mounting accessories											Knuckle			
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	F	U	
32~100	○	●	●	◇	◇	◇	◇	■	■	●	□	□	□	□	
125~200	□	□	□	□	□	□	□	□	□	●	□	□	□	□	

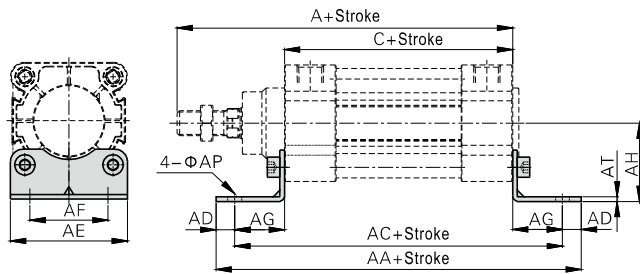
●—Aluminum alloy, ■—Cast steel, ○—Low carbon steel, ◇—Nodular cast iron, □—Carbon steel.

ISO15552 Standard cylinder

SAI Series—Accessories

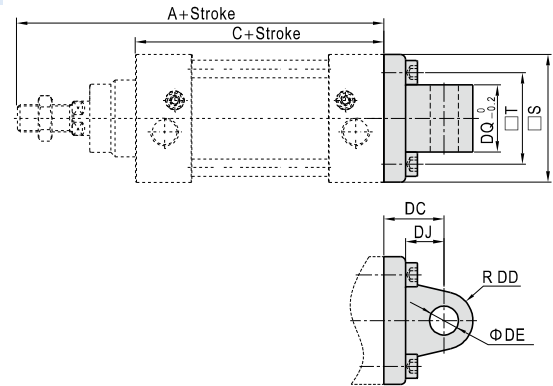
Dimensions

LB



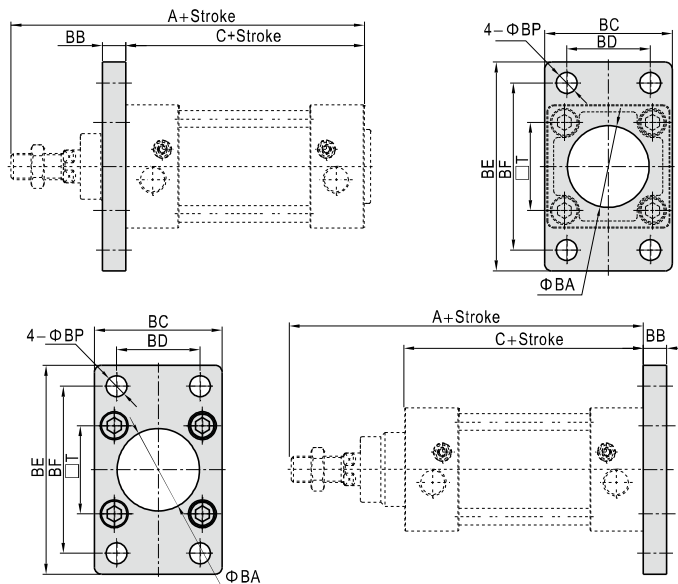
Bore size/Item	A	C	AA	AC	AD	AE	AF	AG	AH	AP	AT
32	142	94	158	142	8	47	32	24	32	7	3
40	159	105	179	161	9	53	36	28	36	9	3
50	175	106	190	170	10	65	45	32	45	9	3
63	190	121	209	185	12	75	50	32	50	9	3
80	214	128	248	210	19	95	63	41	63	12.5	4
100	229	138	266	220	19	115	75	41	71	14.5	4
125	279	160	290	250	20	140	90	45	90	16.5	8
160	332	180	340	300	20	180	115	60	115	18.5	8
200	347	180	380	320	30	220	135	70	135	24	9

CA



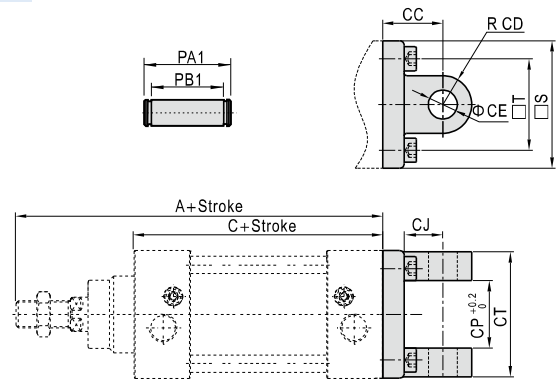
Bore size/Item	A	C	S	T	DC	DD	DE	DJ	DQ
32	142	94	47	32.5	22	9	10	13	25.8
40	159	105	52	38	25	10.5	12	16	27.8
50	175	106	64	46.5	27	11	12	17	31.7
63	190	121	74	56.5	32	13.5	16	22	39.7
80	214	128	94	72	36	14.5	16	22	49.7
100	229	138	113	89	41	17	20	27	59.7
125	279	160	139	110	50	22	25	33	69.7
160	332	180	180	140	55	30	30	35.5	89.7
200	347	180	220	175	60	30	30	37	89.7

FA/FB



Bore size/Item	A	C	BA	BB	BC	BD	BE	BF	BP	T
32	142	94	30.5	10	47	32	80	64	7	32.5
40	159	105	35.5	10	53	36	90	72	9	38
50	175	106	40.5	12	65	45	108	90	9	46.5
63	190	121	45.5	12	75	50	118	100	9	56.5
80	214	128	45.5	16	95	63	150	126	12.5	72
100	229	138	55.5	16	115	75	176	150	14.5	89
125	279	160	60.5	20	139	90	218	180	16.5	110
160	332	180	65.5	20	180	115	280	230	18.5	140
200	347	180	75.5	25	220	135	320	270	24	175

CB

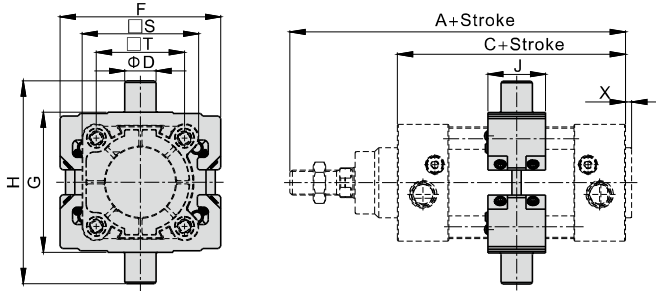


Bore size/Item	A	C	CC	CD	CE	CJ	CP	CT	PA1	PB1	S	T
32	142	94	22	9	10	13	26	45	51	45.5	47	32.5
40	159	105	25	10.5	12	16	28	52	59	52.5	52	38
50	175	106	27	11	12	17	32	60	67	60.5	64	46.5
63	190	121	32	13	16	22	40	70	77	70.5	74	56.5
80	214	128	36	14	16	22	50	90	97	90.5	94	72
100	229	138	41	17.5	20	27	60	110	119	110.5	113	89
125	279	160	50	21.5	25	33	70	130	139	130.5	139	110
160	332	180	55	30	30	35.5	90	170	181	170.5	180	140
200	347	180	60	30	30	36	90	170	181	170.5	220	175

ISO1552 Standard cylinder

SAI Series—Accessories

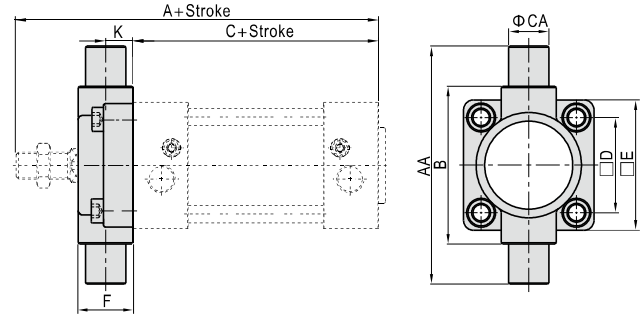
TC



Bore size\Item	A	C	D	F	G	H	J	S	X	T
32	142	94	12	65	52	76	31	47	3	32.5
40	159	105	16	75	63	95	31	53	3.5	38
50	175	106	16	91	75	107	35	65	3.5	46.5
63	190	121	20	103	90	130	35	75	4	56.5
80	214	128	20	126	110	150	45	95	4	72
100	229	138	25	145	132	182	45	115	4	89
125	279	160	25	175	160	210	51	140	4	110
160	332	180	32	210	200	264	50	180	4	140
200	347	180	32	255	250	314	50	220	5	175

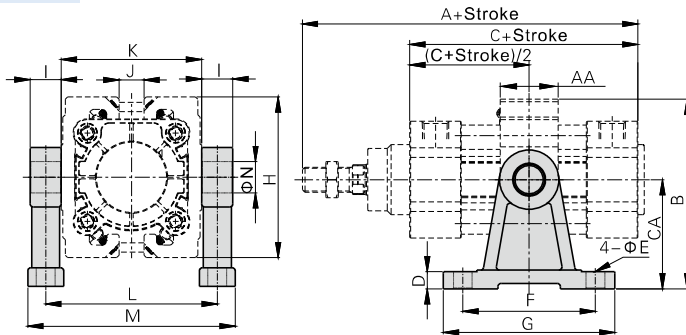
[Note] 160 and 200 TC accessory has been installed on the barrel of cylinder before it worked off, and the position of the accessories can not be adjusted arbitrarily. If consumer orders the TC solely, he will not install it on the barrel of standard cylinder directly.

FTC



Bore size\Item	A	C	AA	B	CA	D	E	F	K
32	142	94	74	50	12	32.5	46	19	10
40	159	105	95	63	16	38	52	21	10
50	175	106	107	75	16	46.5	64	26	12
63	190	121	130	90	20	56.5	74	28	12
80	214	128	150	110	20	72	94	31	16
100	229	138	182	132	25	89	114	35	16
125	279	160	210	160	25	110	139	43	20
160	332	180	264	200	32	140	179	56	20
200	347	180	314	250	32	175	218	64	20

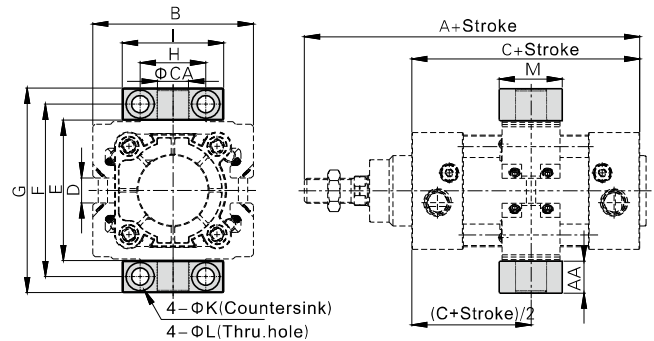
TCM1



Bore size\Item	A	C	AA	B	CA	D	E	F	G	H	I	J	K	L	M	N
32	142	94	31	72.5	40	11	9	60	80	65	12	5	52	64	79	12
40	159	105	31	91.5	54	11	12	75	100	75	16	8	63	79	98	16
50	175	106	35	99.5	54	11	12	75	100	91	16	10	75	91	110	16
63	190	121	35	121.5	70	11	12	85	110	103	20	16	90	110	133	20
80	214	128	45	133	70	11	12	85	110	126	20	20	110	130	153	20
100	229	138	45	162.5	90	19	18	115	155	145	25	28	132	157	185	25
125	279	160	51	177.5	90	19	18	115	155	175	25	40	160	185	213	25
160	332	180	50	215	110	24	22	140	190	210	32	100	200	232	267	32
200	347	180	50	262.5	135	27	22	150	200	255	32	125	250	282	317	32

[Note] 160/200 installation position of the accessories can not be adjusted arbitrarily. When TCM1 be used with FTC, please refer to page 32.

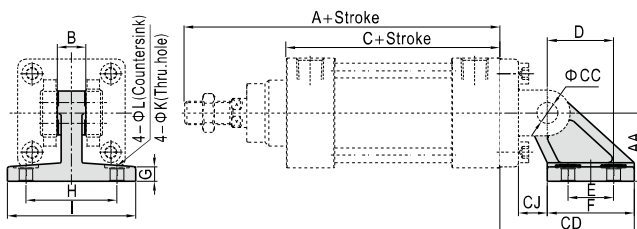
TCM2



Bore size\Item	A	AA	B	C	CA	D	E	F	G	H	I	K	L	M
32	142	14	65	94	12	5	52	68	82	32	46	11	7	30
40	159	17	75	105	16	8	63	82	99	36	55	15	9	36
50	175	17	91	106	16	10	75	94	111	36	55	15	9	36
63	190	20.5	103	121	20	16	90	113.5	134	42	65	18	11	40
80	214	20.5	126	128	20	20	110	133.5	154	42	65	18	11	40
100	229	24.5	145	138	25	28	132	159.5	184	50	75	20	14	50
125	279	24.5	175	160	25	40	160	187.5	212	50	75	20	14	50
160	332	30	210	180	32	100	200	234	264	60	92	26	18	60
200	347	30	255	180	32	125	250	284	314	60	92	26	18	60

[Note] 160/200 installation position of the accessories can not be adjusted arbitrarily. When TCM2 be used with FTC, please refer to page 32.

CR



Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
32	142	32	26	94	10	49	10	21	18	30	8	38	50	6.5	10.5
40	159	36	28	105	12	55	12	24	22	34	10	41	53	6.5	10.5
50	175	45	32	106	12	67	13	33	30	44	12	50	64	9	14
63	190	50	40	121	16	76	17	37	35	49	12	52	66	9	14
80	214	63	50	128	16	92.5	19.5	47	40	59	14	66	85	11	17
100	229	71	60	138	20	105.5	22.5	55	50	69	15	76	95	11	17
125	279	90	70	160	25	134	29	70	60	88	20	94	122	13.5	20
160	332	115	90	180	30	171	25.5	97	88	126	25	118	156	13.5	20
200	347	135	90	180	30	185	31	105	90	130	30	122	162	18	26

[Note] CR can't be used alone, it must be used with CB.



Standard cylinder—SGC Series

In accordance with ISO15552 standard

Compendium of SGC Series

ISO15552(Original ISO6431) Standard cylinder

Bore size:125, 160, 200, 250

Multi-kinds of Seals Material



Adjustable air buffer

With adjustable air buffer on the front and back cover

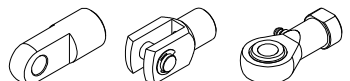
Tie rod cylinder

The cylinder barrel and front/rear cap is jointed by tie rods with high reliability.

Convenient and fast fix sensor switch

Sensor switch can be directly fixed onto the cylinder, which is convenient and fast.
the counterpart sensor switch type is: CMSG、DMSG(S)

Three kinds of cylinder joints



I Knuckle Y Knuckle Universal Joint

Multi-type cylinder



SGC: Double acting type

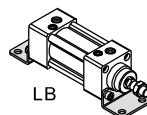


SGCD: Double rod type

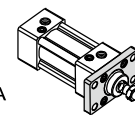


SGCJ: Adjustable stroke type

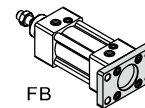
Multi-mounting accessories



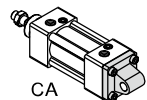
LB



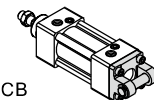
FA



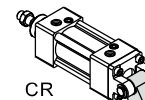
FB



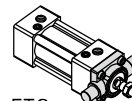
CA



CB



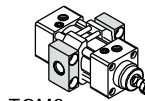
CR



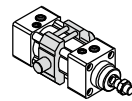
FTC



TCM1



TCM2



TC

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type	Pressure area(mm ²)	Operating pressure(MPa)									
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
125	32	Double acting Push side	12272	1227.2	2454.4	3681.6	4908.8	6136.0	7363.2	8590.4	9817.6	11044.8	
		Double acting Pull side	11468	1146.8	2293.6	3440.4	4587.2	5734.0	6880.8	8027.6	9174.4	10321.2	
160	40	Double acting Push side	20106	2010.6	4021.2	6031.8	8042.4	10053.0	12063.6	14074.2	16084.8	18095.4	
		Double acting Pull side	18849	1884.9	3769.8	5654.7	7539.6	9424.5	11309.4	13194.3	15079.2	16964.1	
200	40	Double acting Push side	31416	3141.6	6283.2	9424.8	12566.4	15708.0	18849.6	21991.2	25132.8	28274.4	
		Double acting Pull side	30157	3015.7	6031.4	9047.1	12062.8	15078.5	18094.2	21109.9	24125.6	27141.3	
250	50	Double acting Push side	49086	4908.6	9817.2	14725.8	19634.4	24543.0	29451.6	34360.2	39268.8	44177.4	
		Double acting Pull side	47123	4712.3	9424.6	14136.9	18949.5	23762.1	28574.7	33387.4	38199.8	43012.2	

Installation and application



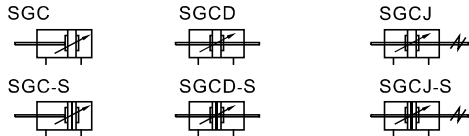
- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
- Necessary protection measure shall be taken in the environment 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 40μm 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.



SGC Series



Symbol



Product feature

- ISO15552 (original ISO6431) standard cylinder.
- The piston seal is composed of two Y-shape seals of single-direction structure, which has compensation function, long service life and low start-up pressure.
- SGC series cylinders are made of aluminum pipe.
- The buffer adjustment of cylinder is smooth and steady.
- Cylinders and accessories for installation with several specifications are optional.
- The seal material with high temperature resistance is adopted to guarantee the normal operation of cylinder at 150°C.

Specification

Bore size(mm)	125	160	200	250
Acting type	Double acting			
Fluid	Air(to be filtered by 40µm filter element)			
Mounting type	Basic FA FB CA CB CR LB TC FTC TCM1 TCM2			
	Basic FA LB TC FTC TCM1 TCM2			
Operating pressure	0.15~1.0MPa(22~145psi)(1.5~10.0bar)			
Proof pressure	1.5MPa(215psi)(15bar)			
Temperature °C	-20~70			
Speed range mm/s	30~500			
Stroke tolerance	0~250 ^{+1.0} ₀ 251~1000 ^{+1.5} ₀ 1001~1500 ^{+2.0} ₀			
Cushion type	Variable cushion			
Adjustable cushion stroke	40	50		60
Port size [Note1]	1/2"	3/4"		1"

[Note1] PT thread, G thread are available.

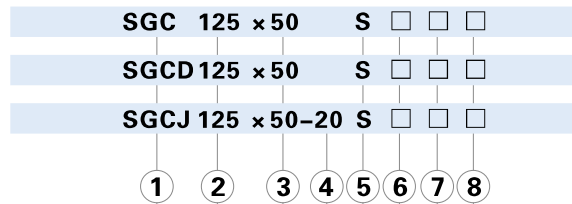
Add) Refer to P353 for detail of sensor switch.

Stroke

Bore size (mm)	Standard stroke (mm)											Max.std stroke	Max. stroke										
125	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	1800
160	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	2000
200	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	2000
250	25	50	75	80	100	125	150	160	175	200	250	300	350	400	450	500	600	700	800	900	1000	1500	2000

[Note] Consult us for non-standard stroke.

Ordering code

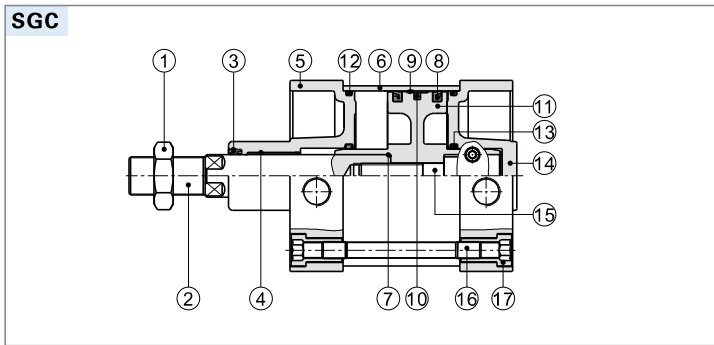


① Model	② Bore size	③ Stroke	④ Adjustable stroke	⑤ Magnet	⑥ Mounting type[Note1]	⑦ Seals Material	⑧ Thread type
SGC: Double acting type (Aluminum barrel)	125 160 200 250	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank	Blank: TPU [Note2] H: Viton N: NBR	Blank: PT G: G
SGCD: Double rod type (Aluminum barrel)					LB		
SGCJ: Adjustable stroke type (Aluminum barrel)					FA		
			10 20 30 40 50 75 100		FB		
					CA		
					CB		
					CR		
					FTC		
					TC		
					Blank		
					LB		
					FA		
					FTC		
					TC		

[Note1] CR is used with CB. FTC, TC are used with TCM1, TCM2. [Note2] TPU seals are not available for SGC250.

SGC Series

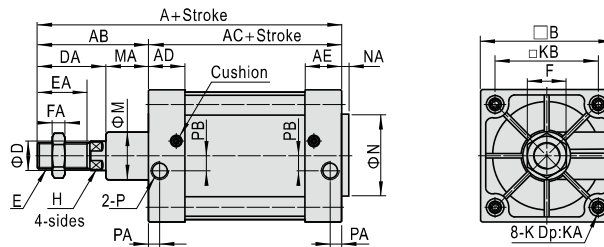
Inner structure and material of major parts



NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20μm chrome plated
3	Front cover packing	NBR(SGC250)\TPU(Other)
4	Bushing	Wear resistant material
5	Front cover	Aluminum alloy
6	Aluminum pipe	Aluminum alloy
7	O-ring	NBR
8	Piston Seal	NBR
9	Wear ring	Wear resistant material
10	Magnet	Rubber
11	Piston	Aluminum alloy
12	O-ring	NBR
13	Buffer gasket	NBR(SGC250)\TPU(Other)
14	Back cover	Aluminum alloy
15	Screw	Carbon steel
16	Tie-rod	Carbon steel
17	Tie-rod nut	Carbon steel

Dimensions

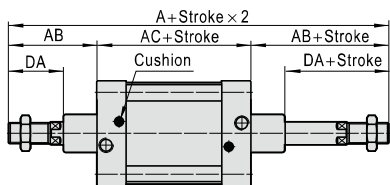
SGC



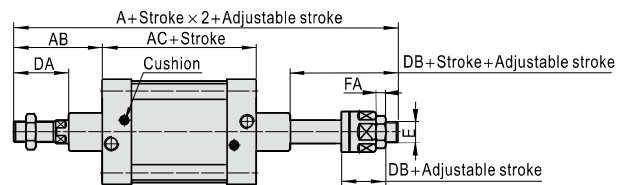
Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA	F	FA	H	K	KA	KB	M	MA	N	NA	P	PA	PB
125	279	119	160	46	46	140	32	74	M27×2.0	54	41	13.5	27	M12	31	110	60	45	60	4	1/2"	23	14
160	332	152	180	50	50	180	40	94	M36×2.0	72	55	18	36	M16	30	140	65	58	65	4	3/4"	25	15
200	347	167	180	50	50	220	40	100	M36×2.0	72	55	18	36	M16	30	175	75	67	75	5	3/4"	25	15
250	389	189	200	58	58	282	50	111	M42×2.0	84	65	21	46	M20	35	220	90	78	90	8	1"	31	22

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

SGCD



SGCJ



Bore size\Item	A		AB	AC	DA	DB	E	FA
	SGCD	SGCJ						
125	398	366.5	119	160	74	42.5	M27X2.0	13.5
160	484	458	152	180	94	68	M36X2.0	18
200	514	482	167	180	100	68	M36X2.0	18
250	578	547	189	200	111	80	M42X2.0	21

Remark:

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

ISO15552 Standard cylinder

SGC Series—Accessories

List for ordering code of accessories

Accessories Bore size	Mounting accessories								
	LB	FA/FB	CA	CB	CR	TC	FTC	TCM1	TCM2
125	F-SI125LB	F-SI125FA	F-SE125CA	F-SE125CB	F-SI125CR	F-SG125TC	F-SI125FTC	F-SI125TCM1	F-SI125TCM2
160	F-SI160LB	F-SI160FA	F-SI160CA	F-SI160CB	F-SI160CR	F-SG160TC	F-SI160FTC	F-SI160TCM1	F-SI160TCM2
200	F-SI200LB	F-SI200FA	F-SI200CA	F-SI200CB	F-SI200CR	F-SG200TC	F-SI200FTC	F-SI200TCM1	F-SI160TCM2
250	F-SG250LB	F-SG250FA	F-SG250CA	F-SG250CB	-	F-SG250TC	-	F-SG250TCM1	F-SG250TCM2

Accessories Bore size	Knuckle				Sensor switch	
	I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle	CMSG	DMSG(S)
125	F-M27X200I	F-M27X200Y	F-M27X200F	F-M27X200U	CMSG	DMSG(S)
160	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		
200	F-M36X200I	F-M36X200Y	F-M36X200F	F-M36X200U		
250	F-M42X200I	F-M42X200Y	-	-		

Accessory selection

Accessories Cylinder model	Mounting accessories										Knuckle [Note1]			Sensor switch	
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U	CMSG	DMSG(S)
SGC	Standard	●	●	●	●	●	●	●	●	●	●	●	●	×	×
	With magnet	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SGCD	Standard	●	●	×	×	×	×	●	●	●	●	●	●	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●
SGCJ	Standard	●	●	×	×	×	×	●	●	●	●	●	●	×	×
	With magnet	●	●	×	×	×	×	●	●	●	●	●	●	●	●

[Note1] Please refer to P349~352 for knuckle detail.

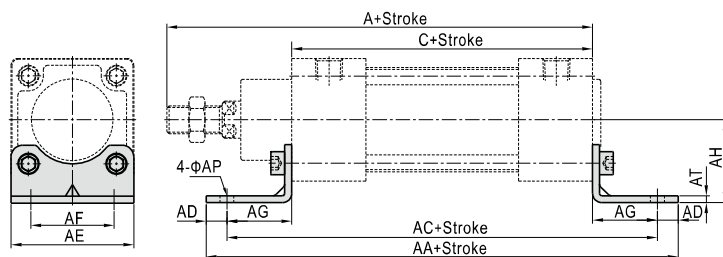
Material of accessories

Accessories Bore size	Mounting accessories										Knuckle		
	LB	FA	FB	CA	CB	CR	TC	FTC	TCM1	TCM2	I	Y	U
125~200	■	■	■	■	■	■	■	■	■	■	□	□	□
250	■	■	■	■	■	×	■	×	■	■	■	■	×

●—Aluminum alloy, ■—Cast steel, □—Carbon steel, ×—No this type.

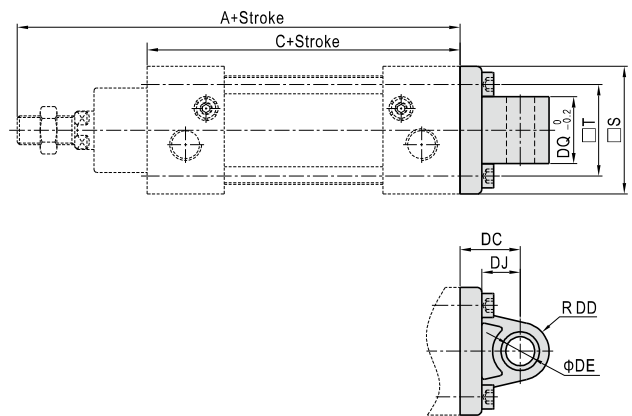
Dimensions

LB



Bore size\Item	A	C	AA	AC	AD	AE	AF	AG	AH	AP	AT
125	279	160	290	250	20	140	90	45	90	16.5	8
160	332	180	340	300	20	180	115	60	115	18.5	8
200	347	180	380	320	30	220	135	70	135	24	9
250	389	200	410	350	30	275	165	75	165	28	19

CA



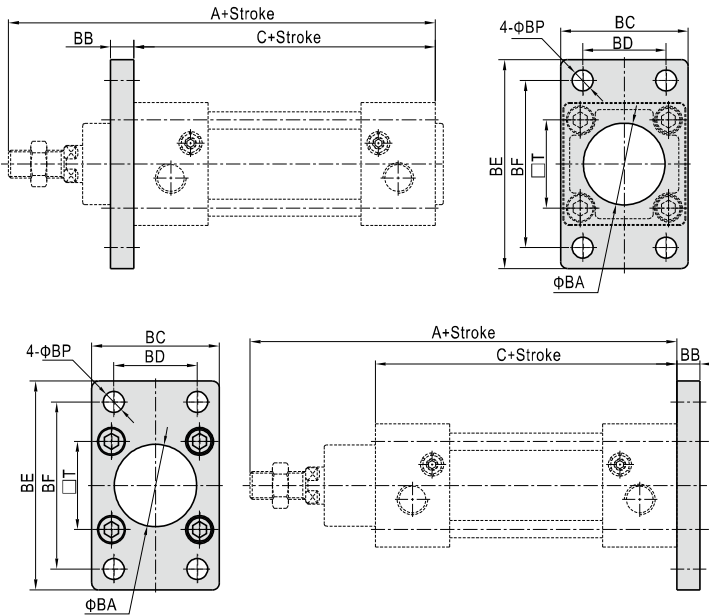
Bore size\Item	A	C	S	T	DC	DD	DE	DJ	DQ
125	279	160	139	110	50	22	25	33	69.7
160	332	180	180	140	55	30	30	35.5	89.7
200	347	180	220	175	60	30	30	37	89.7
250	389	200	270	220	70	35	40	46	109.5

ISO15552 Standard cylinder

SGC Series—Accessories

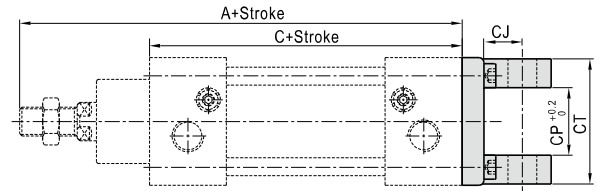
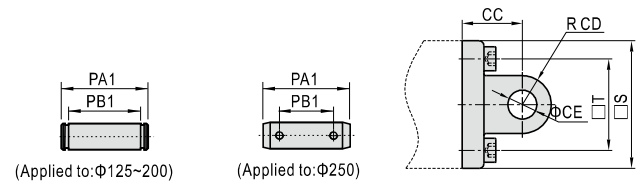
Dimensions

FA/FB



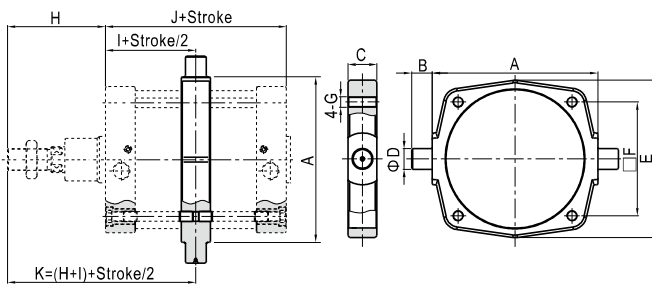
Bore size\Item	A	C	BA	BB	BC	BD	BE	BF	BP	T
125	279	160	60.5	20	139	90	218	180	16.5	110
160	332	180	65.5	20	180	115	280	230	18.5	140
200	347	180	75.5	25	220	135	320	270	24	175
250	389	200	90.5	25	267	165	376	330	26	220

CB



Bore size\Item	A	C	CC	CD	CE	CJ	CP	CT	PA1	PB1	S	T
125	279	160	50	21.5	25	31	70	130	139	130.5	139	110
160	332	180	55	30	30	35.5	90	170	181	170.5	180	140
200	347	180	60	30	30	36	90	170	181	170.5	220	175
250	389	200	70	35	40	46	110.3	200	230	208	270	220

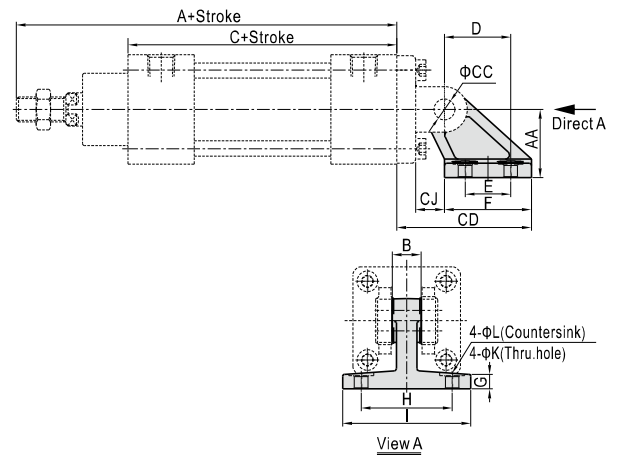
TC



Bore size\Item	A	B	C	D	E	F	G	H	I	J	K
125	160	25	40	25	158.5	110	M12	119	80	160	199
160	200	32	46	32	197.5	140	M16	152	90	180	242
200	250	32	46	32	245	175	M16	167	90	180	257
250	320	40	56	40	304	220	M20	189	100	200	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.

CR



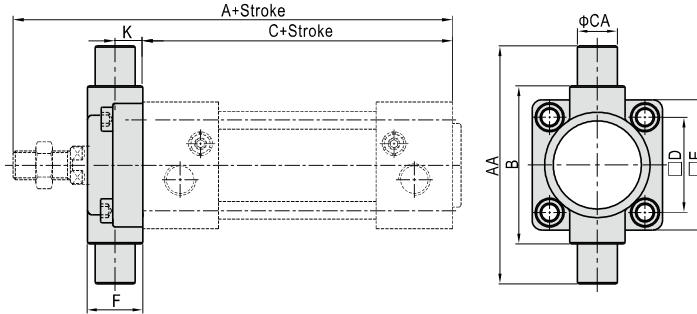
Bore size\Item	A	AA	B	C	CC	CD	CJ	D	E	F	G	H	I	K	L
125	279	90	70	160	25	135	26	70	60	90	20	94	124	14	20
160	332	115	90	180	30	171	25	97	88	126	25	118	156	14	20
200	347	135	90	180	30	185	31	105	90	130	30	122	162	18	26

[Note] CR can't be used alone, it must be used with CB.

ISO15552 Standard cylinder

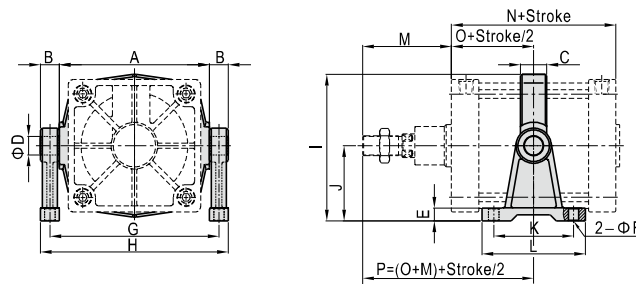
SGC Series—Accessories

FTC



Bore size\Item	A	C	AA	B	CA	D	E	F	K
125	279	160	210	160	25	110	139	43	20
160	332	180	264	200	32	140	179	56	20
200	347	180	314	250	32	175	218	64	20

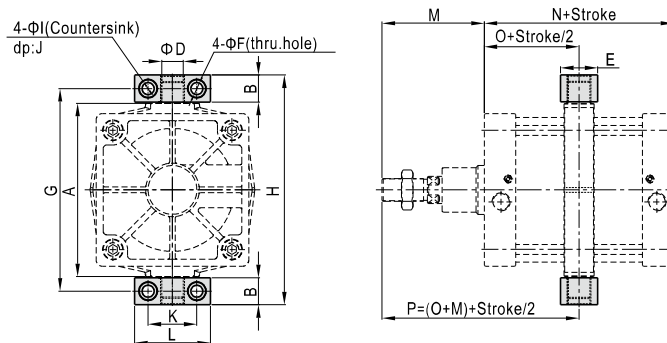
TCM1



Bore size\Item	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
125	160	25	40	25	19	18	185	213	169.3	90	115	155	119	160	80	199
160	200	32	46	32	24	22	232	267	208.8	110	140	190	152	180	90	242
200	250	32	46	32	27	22	282	317	257.5	135	150	200	167	180	90	257
250	320	40	56	40	28	22	360	400	312	160	170	220	189	200	100	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.
When TCM1 be used with FTC, please refer to page 41.

TCM2



Bore size\Item	A	B	D	E	F	G	H	I	J	K	L	M	N	O	P
125	160	24.5	25	50	14	187.5	212	20	14	50	75	119	160	80	199
160	200	30	32	60	18	234	264	26	17.5	60	92	152	180	90	242
200	250	30	32	60	18	284	314	26	17.5	60	92	167	180	90	257
250	320	50	40	70	22	374	424	33	22	90	140	189	200	100	289

[Note] The installation position of the accessories can not be adjusted arbitrarily.
When TCM2 be used with FTC, please refer to page 41.



Standard cylinder——SC Series

——Tie-rod type

Compendium of SC Series

Standard cylinder manufactured by our enterprise

Bore size:32, 40, 50, 63, 80, 100

Convenient and fast fix sensor switch

Sensor switch can be directly fixed on the cylinder, which is convenient and fast.

the counterpart sensor switch type is: CMSG、DMSG(S)

Tie-rod cylinder

The cylinder barrel and front/rear cap is jointed by tie rods with high reliability.

Adjustable air buffer

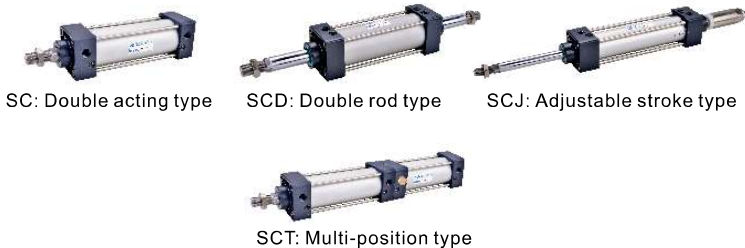
With adjustable air buffer on the front and back cover

Four kinds of cylinder joints



I Knuckle Y Knuckle Floating Joint Universal Joint

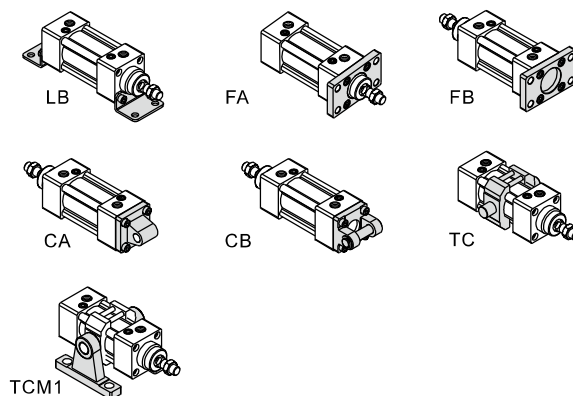
Multi-type cylinder



SC: Double acting type SCD: Double rod type SCJ: Adjustable stroke type

SCT: Multi-position type

Multi-mounting accessories



LB

FA

FB

CA

CB

TC

TCM1

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	Acting type	Pressure area(mm ²)	Operating pressure(MPa)								
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
32	12	Double acting Push side	804	80.4	160.8	241.2	321.6	402.0	482.4	562.8	643.2	723.6
		Pull side	690	69.0	138.0	207.0	276.0	345.0	414.0	483.0	552.0	621.0
40	16	Double acting Push side	1256	125.6	251.2	376.8	502.4	628.0	753.6	879.2	1004.8	1130.4
		Pull side	1055	105.5	211.0	316.5	422.0	527.5	633.0	738.5	844.0	949.5
50	20	Double acting Push side	1963	196.3	392.6	588.9	785.2	981.5	1177.8	1374.1	1570.4	1766.7
		Pull side	1649	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
63	20	Double acting Push side	3117	311.7	623.4	935.1	1246.8	1558.5	1870.2	2181.9	2493.6	2805.3
		Pull side	2803	280.3	560.6	840.9	1121.2	1401.5	1681.8	1962.1	2242.4	2522.7
80	25	Double acting Push side	5026	502.6	1005.2	1507.8	2010.4	2513.0	3015.6	3518.2	4020.8	4523.4
		Pull side	4536	453.6	907.2	1360.8	1814.4	2268.0	2721.6	3175.2	3628.8	4082.4
100	25	Double acting Push side	7853	785.3	1570.6	2355.9	3141.2	3926.5	4711.8	5497.1	6282.4	7067.7
		Pull side	7362	736.2	1472.4	2208.6	2944.8	3681.0	4417.2	5153.4	5889.6	6625.8
125	32	Double acting Push side	12272	1227.2	2454.4	3681.6	4908.8	6136.0	7363.2	8590.4	9817.6	11044.8
		Pull side	11468	1146.8	2293.6	3440.4	4587.2	5734.0	6880.8	8027.6	9174.4	10321.2
160	40	Double acting Push side	20106	2010.6	4021.2	6031.8	8042.4	10053.0	12063.6	14074.2	16084.8	18095.4
		Pull side	18849	1884.9	3769.8	5654.7	7539.6	9424.5	11309.4	13194.3	15079.2	16964.1
200	40	Double acting Push side	31416	3141.6	6283.2	9424.8	12566.4	15708.0	18849.6	21991.2	25132.8	28274.4
		Pull side	30159	3015.9	6031.8	9047.7	12063.6	15079.5	18095.4	21111.3	24127.2	27143.1
250	50	Double acting Push side	49087	4908.7	9817.4	14726.1	19634.8	24543.5	29452.2	34360.9	39269.6	44178.3
		Pull side	47124	4712.4	9424.8	14137.2	18849.6	23562.0	28274.4	32986.8	37699.2	42411.6

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 μm 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.

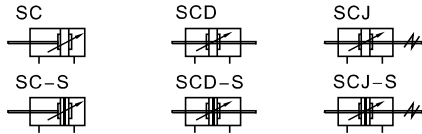


Standard cylinder(Tir-rod)

SC Series



Symbol



Product feature

- Standard cylinder manufactured by our enterprise.
- The seal of piston adopts heterogeneous two way seal structure. It's dimension is tight and it has the function of grease reservation.
- It is tie rod cylinder. The cylinder barrel and front/rear cap is jointed by tie rods with high reliability.
- Compared with ISO15552 standard cylinder, SC series cylinder with the same bore size is shorter.
- The buffer adjustment of cylinder is smooth and steady.
- Cylinders and mounting accessories with several specifications are optional.
- The seal material with high temperature resistance is adopted to guarantee the normal operation of cylinder at 150°C.

Ordering code

SC	50 x 50	S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCD	50 x 50	S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SCJ	50 x 50-20	S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Model	② Bore size	③ Stroke	④ Adjustable stroke	⑤ Magnet	⑥ Mounting type[Note1]	⑦ Seals Material	⑧ Thread type
SC: Double acting type	32 40 50 63 80 100	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Blank	Blank: TPU H: Viton N: NBR	Blank: PT G: G
SCD: Double rod type	Blank						
SCJ: Adjustable stroke type	Blank						
			10 20 30 40 50 75 100		LB		
					FA		
					TC		

[Note1] The accessories are the same as SAU series, please refer to page 49~52 for details; TC is used with TCM1.

Specification

Bore size(mm)	32	40	50	63	80	100
Acting type	Double acting					
Fluid	Air(to be filtered by 40 μ m filter element)					
Mounting type	Basic FA FB CA CB LB TC TCM1					
Mounting type	SCD、SCJ Basic FA LB TC TCM1					
Operating pressure	0.15~1.0MPa(22~145psi)(1.5~10.0bar)					
Proof pressure	1.5MPa(215psi)(15bar)					
Temperature °C	-20~70					
Speed range mm/s	30~800					
Stroke tolerance	0~250 ^{+1.0} ₀ 251~1000 ^{+1.5} ₀ 1001~1500 ^{+2.0} ₀					
Cushion type	Variable cushion					
Adjustable cushion stroke	21			28		29
Port size [Note1]	1/8"	1/4"	3/8"		1/2"	

[Note1] PT thread, G thread are available.

Add) Refer to P353 for detail of sensor switch.

Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke	Max. stroke
32	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	1000	2000
40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1200	2000
50	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1200	2000
63	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
80	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000
100	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500 600 700 800 900 1000	1500	2000

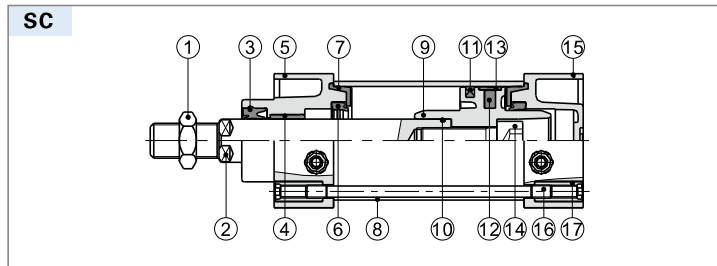
[Note] If the stroke is ≥1600mm within the maximum stroke scope, it is treated as non-standard one.

Please contact the company for other special strokes.

Standard cylinder(Tir-rod)

SC Series

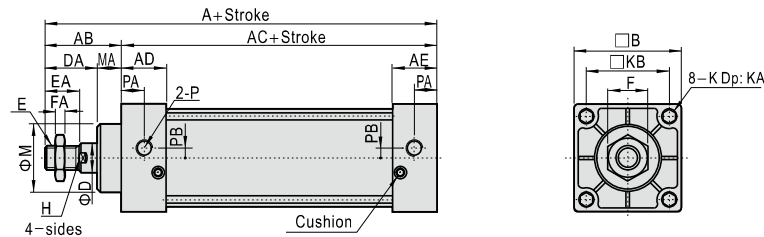
Inner structure and material of major parts



NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20 μ m chrome plated
3	Front cover packing	TPU
4	Bushing	Wear resistant material
5	Front cover	Aluminum alloy
6	Cushing O-ring	NBR
7	Cushion gasket	TPU
8	Barrel	Aluminum alloy
9	Piston	Aluminum alloy
10	Piston rod O-ring	NBR
11	Piston seal	NBR
12	Magnet	Plastic
13	Wear ring	Wear resistant material
14	Bolt	Carbon steel
15	Back cover	Aluminum alloy
16	Tie-rod	Carbon steel
17	Tie-rod nut	Carbon steel

Dimensions

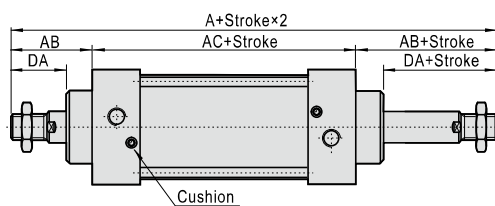
SC



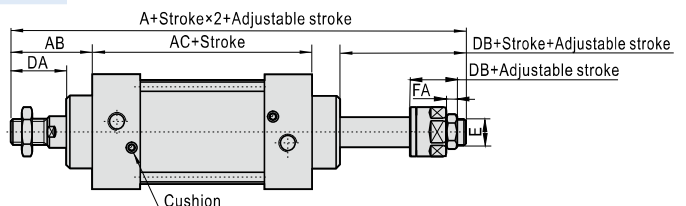
Bore size\Item	A	AB	AC	AD	AE	B	D	DA	E	EA	F	FA	H	K	KA	KB	M	MA	P	PA	PB
32	140	47	93	27.5	27.5	45	12	32	M10×1.25	22	17	6	10	M6×1.0	14.5	33	28	15	1/8"	14	5.5
40	142	49	93	27.5	27.5	50	16	34	M12×1.25	24	17	7	13	M6×1.0	14.5	37	32	15	1/4"	15	6
50	150	57	93	27.5	27.5	62	20	42	M16×1.5	32	23	8	17	M6×1.0	14.5	47	38	15	1/4"	17	8.5
63	153	57	96	27.5	27.5	75	20	42	M16×1.5	32	23	8	17	M8×1.25	14.5	56	38	15	3/8"	15	9.5
80	182	75	107	33	33	94	25	54	M20×1.5	40	26	10	22	M10×1.5	17	70	47	21	3/8"	19.5	10
100	188	75	113	33	33	112	25	54	M20×1.5	40	26	10	22	M10×1.5	17	84	47	21	1/2"	16.5	11

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

SCD



SCJ



Bore size\Item	A(SCD)	A(SCJ)	AB	AC	DA	DB	E	FA
32	187	182	47	93	32	27	M10X1.25	6
40	191	185	49	93	34	28	M12X1.25	7
50	207	194	57	93	42	29	M16X1.5	8
63	210	197	57	96	42	29	M16X1.5	8
80	257	238.5	75	107	54	35.5	M20X1.5	10
100	263	244.5	75	113	54	35.5	M20X1.5	10

Remark:

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



Mini cylinder(Stainless steel)—MI Series

In accordance with ISO6432 standard

Compendium of MI Series

Multi-mounting accessories

LB Type FA Type SDB Type TC Type

Multi-type cylinder

MI: Mini cylinder (Double acting) MIC: Mini cylinder (Double acting with cushion)

MSI: Mini cylinder (Single acting_push) MTI: Mini cylinder (Single acting_pull)

MID: Mini cylinder(Double rod)

MICD: Mini cylinder(Double rod with cushion)

MIJ: Mini cylinder(Adjustable stroke)

MICJ: Mini cylinder(Adjustable stroke with cushion)

Rolling packed structure

Front and back cover and stainless steel block adopt riveted rolling packed structure to form a reliable connection.

Eight bore size are available

Bore size: 8, 10, 12, 16, 20, 25, 32, 40

Four kinds of back cover type

CA: Pivot type U: Perpendicular 90° R: Axial air-in CM: Round-end type

Multi-kinds of stroke

Two kinds of cushion type

Variable cushion or Bumper

Criteria for selection: Cylinder thrust

Unit: Newton(N)

Bore size	Rod size	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	438.8
		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

Installation and application



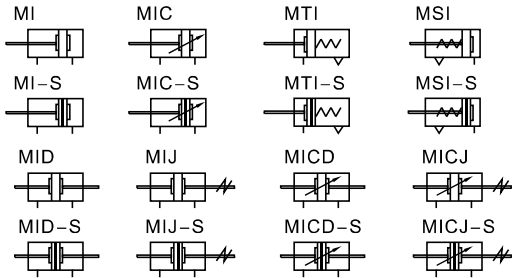
- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
- Necessary protection measure shall be taken in the environment 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 μm 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.



MI Series



Symbol



Product feature

- In accordance with ISO6432 standard($\Phi 8\sim\Phi 25$).
- 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.

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 μ m 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 $^{\circ}$ C	-20~70							
Speed range mm/s	Double acting: 30~800 Single acting: 50~800							
Stroke tolerance	0~150 $^{+1.0}_0$ >150 $^{+1.5}_0$							
Cushion type	MIC Series: Variable cushion				Other series: Bumper			
Port size [Note1]	M5 \times 0.8				1/8"		1/4"	

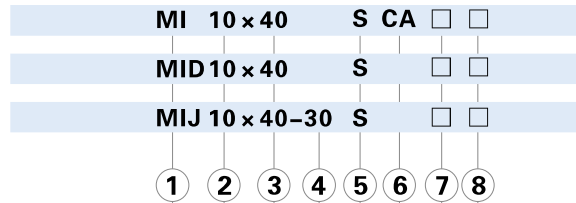
[Note1] PT thread, G thread thread are available.
Add) Refer to P353 for detail of sensor switch.

Stroke

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

[Note] Consult us for non-standard stroke.

Ordering code



① Model	② Bore size	③ Stroke	④ Adjustable stroke	⑤ Magnet	⑥ Back cover	⑦ Mounting type[Note1]	⑧ Thread type		
MI: Mini cylinder(Double acting)	8 10 12 16 20 25 32 40	Refer to stroke table for details	No this code	Blank: Without magnet S: With magnet	Refer below table for details	Blank: No accessories FA: FA type SDB: SDB type LB: LB type TC: TC type	Blank: PT G: G		
MIC: Mini cylinder (Double acting with cushion)	16 20 25 32 40								
MSI: Mini cylinder(Single acting_push)	8 10 12 16 20 25 32 40								
MTI: Mini cylinder(Single acting_pull)									
MID: Mini cylinder(Double rod)	8 10 12 16 20 25 32 40				10 20 30 40 50 75 100	No this code		No this code	Blank: No accessories FA: FA type LB: LB type TC: TC type
MICD: Mini cylinder (Double rod with cushion)									
MIJ: Mini cylinder(Adjustable stroke)	8 10 12 16 20 25 32 40								
MICJ: Mini cylinder(Adjustable stroke with cushion)	16 20 25 32 40								

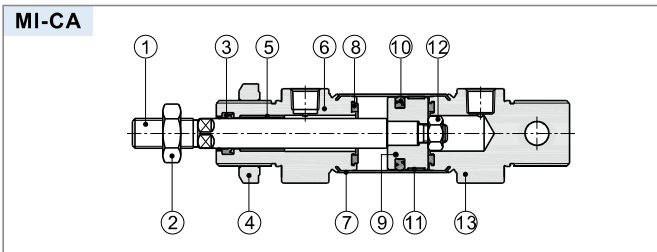
[Note1] Please refer to page 69~70 for accessory parts.

Model	Back cover	Bore size
MI MSI MTI	CA: Pivot type	$\Phi 8\sim\Phi 25$
	U: Perpendicular 90 $^{\circ}$	$\Phi 8\sim\Phi 40$
	R: Axial air-in	$\Phi 16\sim\Phi 40$
	CM: Round-end type	$\Phi 16\sim\Phi 40$
MIC	CA: Pivot type	$\Phi 16\sim\Phi 25$
	U: Perpendicular 90 $^{\circ}$	$\Phi 16\sim\Phi 40$
	CM: Round-end type	$\Phi 16\sim\Phi 40$
Others	No this code	

Mini cylinder(Stainless steel, ISO6432)

MI Series

Inner structure and material of major parts

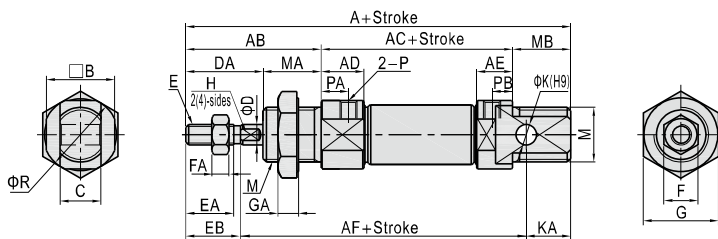


NO.	Item	Material
1	Rod	SUS304
2	Rod nut	Carbon steel
3	Front cover packing	NBR
4	Front cover nut	Carbon steel
5	Bushing	Wear resistant material
6	Front cover	Aluminum alloy
7	Barrel	SUS304(Φ8~Φ12)\SUS316L(Others)
8	Bumper	TPU
9	Piston	SUS304(Φ8~Φ12)\Aluminum alloy(Others)
10	Piston seal	NBR
11	Wear ring	Wear resistant material
12	Nut	Carbon steel
13	Back cover	Aluminum alloy

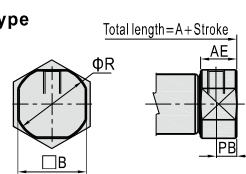
Dimensions

MI

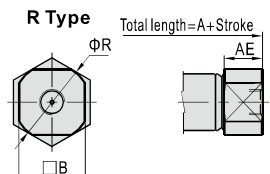
CA Type



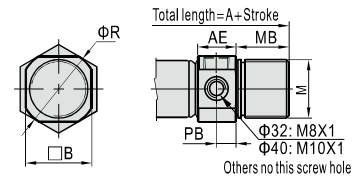
U Type



R Type



CM Type

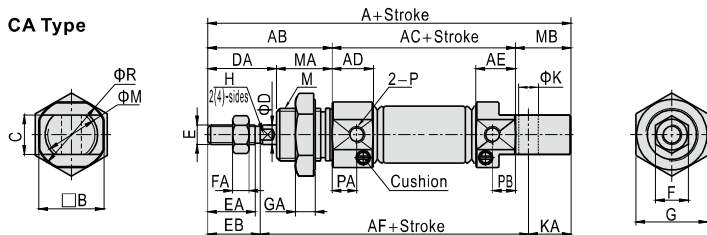


Bore size/Item	A				AB	AC	AD	AE		AF	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB		R
	CA	U	R	CM				CA	U/R/CM																					CA	U/CM	
8	86	74	-	-	28	46	11.5	9.5	9.5	64	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
10	86	74	-	-	28	46	11.5	9.5	9.5	64	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17
12	105	88	-	-	38	50	12.5	10.5	10.5	75	18	12	6	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	6	14	M16×1.5	17	17	M5×0.8	8	6	6	20
16	111	94	94	111	38	56	12.5	10.5	10.5	82	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	126	106	106	126	44	62	14.5	14.5	14.5	95.5	25	16	8	24	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	7.5	29
25	137	114.5	115	137	50	65	16	16	16	104.5	30	16	10	28	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	8	11	M22×1.5	22	22	1/8"	8	8	8	33.5
32	-	125	126	140	58	-	16.5	-	16.5	-	34.5	-	12	28	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	-	-	M30×1.5	30	14	1/8"	9	-	8/9	37.5
40	-	158	158	174	69	-	22	-	22	-	42.5	-	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	-	-	M38×1.5	35	16	1/4"	12	-	11.5/12/46.5	

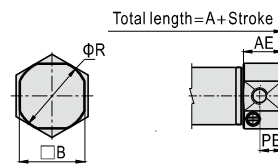
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MIC Φ16~Φ25

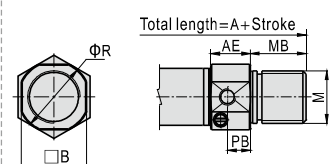
CA Type



U Type



CM Type



Bore size/Item	A			AB	AC	AD	AE		AF	B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB	R
	CA/CM	U	U				CA/CM	U																						
16	111	94	38	56	12.5	12	12	82	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	7.5	7	22	
20	126	106	44	62	14.5	14.5	14.5	95.5	25	16	8	24	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	8	11	M22×1.5	20	20	1/8"	7.5	7.5	29	
25	137	113.5	50	65	16	16	14.5	104.5	30	16	10	28	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	8	11	M22×1.5	22	22	1/8"	8	8	33.5	

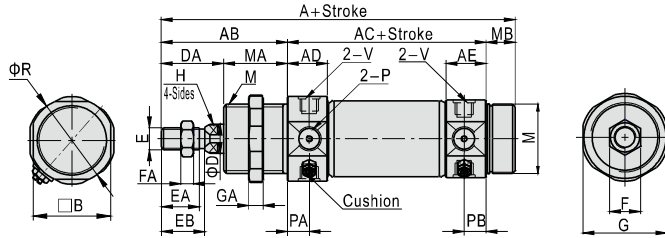
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

Mini cylinder(Stainless steel, ISO6432)

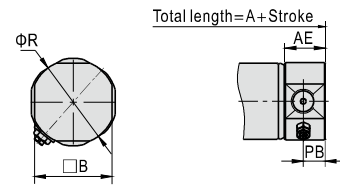
MI Series

MIC $\phi 32/\phi 40$

CM Type



U Type

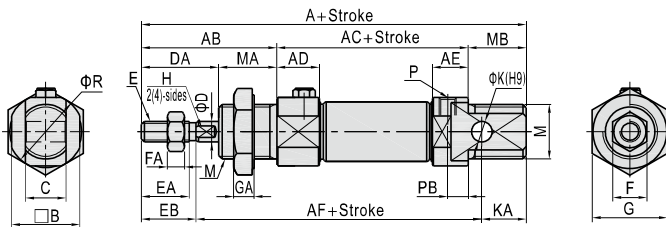


Bore size\Item Back cover	A		AB	AC	AD	AE		B	D	DA	E	EA	EB	F	FA	G	GA	H	M	MA	MB	P	PA	PB				R	V
	U	CM				U	CM																	U	CM	U	CM		
32	124	140	58	68	16.5	14.5	16.5	34.5	12	28	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	14	1/8"	9	7.5	9	37.5	M8X1		
40	157.5	174	69	89	22	21.5	22	42.5	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	M38×1.5	35	16	1/4"	12	11.5	12	46.5	M10X1		

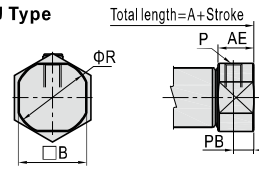
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MSI

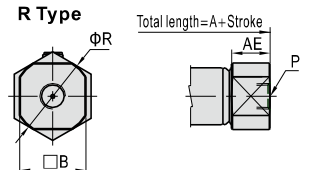
CA Type



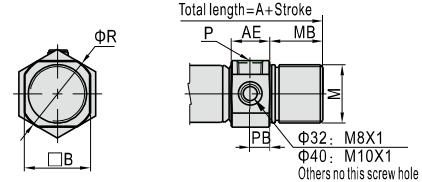
U Type



R Type

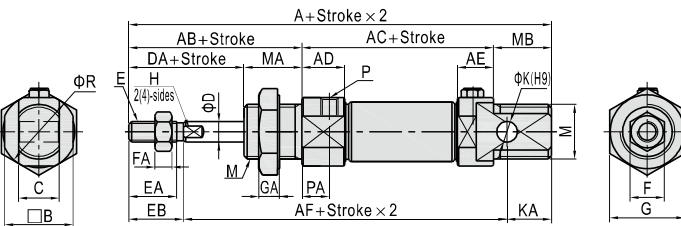


CM Type

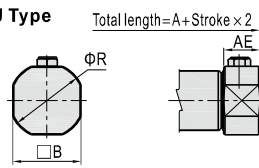


MTI

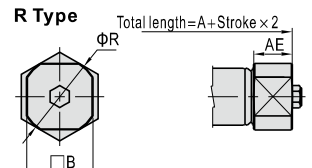
CA Type



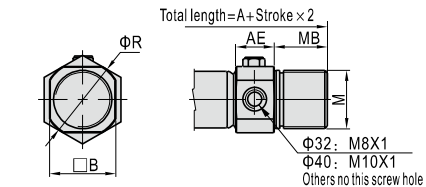
U Type



R Type



CM Type



Item Back cover	A												AB	AC			AD	AF					
	CA			U			R			CM				-	-	-		-	-				
Bore size\Stroke	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	120.5	145.5	170.5	-	-	-
25	162	187	212	139.5	164.5	189.5	140	165	190	162	187	212	50	90	115	140	16	129.5	154.5	179.5	-	-	-
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	-	-	-	-	-	-

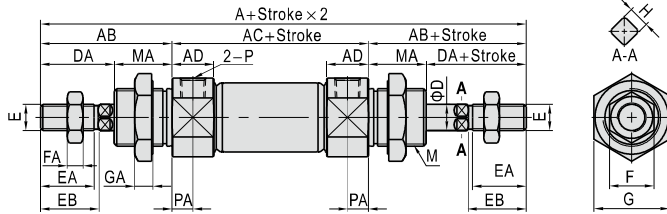
Bore size\Item Back cover	AE		B	C	D	DA	E	EA	EB	F	FA	G	GA	H	K	KA	M	MA	MB	P	PA	PB			R
	CA	U/R/CM																				CA	U/CM	R	
8	9.5	9.5	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17	
10	9.5	9.5	15	8	4	16	M4×0.7	10.5	12	7	3	17	6	-	4	10	M12×1.25	12	12	M5×0.8	7	5	5	17	
12	10.5	10.5	18	12	6	21	M6×1.0	14.5	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	19.5	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	21.5	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	18.5	20	17	6	36	7	10(4-Sides)	-	-	M30×1.5	30	14	1/8"	9	-	8/9	37.5	
40	-	22	42.5	-	16	34	M12×1.25	22.5	24	17	7	46	8	14(4-Sides)	-	-	M38×1.5	35	16	1/4"	12	-	11.5/12	46.5	

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

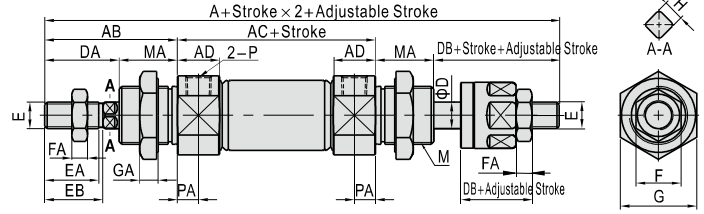
Mini cylinder(Stainless steel, ISO6432)

MI Series

MID



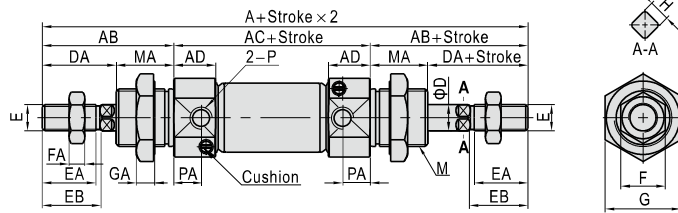
MIJ



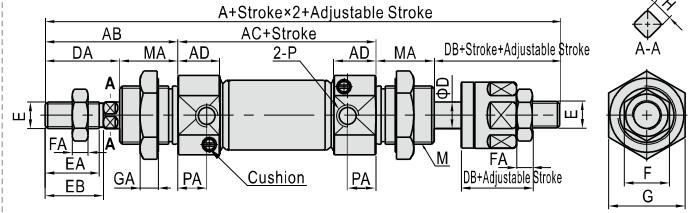
Bore size\Item	A(MID)	A(MIJ)	AB	AC	AD	D	DA	DB	E	EA	EB	F	FA	G	GA	H	M	MA	P	PA
8	104	103	28	48	11.5	4	16	15	M4×0.7	10.5	12	7	3	17	6	-	M12×1.25	12	M5×0.8	7
10	104	103	28	48	11.5	4	16	15	M4×0.7	10.5	12	7	3	17	6	-	M12×1.25	12	M5×0.8	7
12	128	128	38	52	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	8
16	134	134	38	58	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	8
20	150	151	44	62	14.5	8	24	25	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	M22×1.5	20	1/8"	7.5
25	165	164	50	65	16	10	28	27	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	M22×1.5	22	1/8"	8
32	184	183	58	68	16.5	12	28	27	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	1/8"	9
40	227	222	69	89	22	16	34	29	M12×1.25	22.5	24	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.

MICD Φ16~Φ40



MICJ Φ16~Φ40



Bore size\Item	A(MICD)	A(MICJ)	AB	AC	AD	D	DA	DB	E	EA	EB	F	FA	G	GA	H	M	MA	P	PA
16	132.5	132.5	38	56.5	12.5	6	21	21	M6×1.0	14.5	16	10	5	22	6	5(2-Sides)	M16×1.5	17	M5×0.8	7.5
20	150	151	44	62	14.5	8	24	25	M8×1.25	18	19.5	12	6	29	7	6(2-Sides)	M22×1.5	20	1/8"	7.5
25	165	164	50	65	16	10	28	27	M10×1.25	20	21.5	17	6	29	7	8(4-Sides)	M22×1.5	22	1/8"	8
32	184	183	58	68	16.5	12	28	27	M10×1.25	18.5	20	17	6	36	7	10(4-Sides)	M30×1.5	30	1/8"	9
40	227	222	69	89	22	16	34	29	M12×1.25	22.5	24	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.

List for ordering code of accessories

Accessories Bore size	Mounting accessories				Knuckle				Sensor switch	
	LB	FA	SDB	TC	I	Y	F	U	CMSG	DMSG(S)
8	F-MI10LB	F-MI8FA	F-MI8SDB	F-MI10TC	F-M4X070I	F-M4X070Y	F-M4X070F	F-M4X070U	CMSG	DMSG(S)
10										
12	F-MI12LB	F-MI12FA	F-MI12SDB	F-MI12TC	F-M6X100I	F-M6X100Y	F-M6X100F	F-M6X100U		
16										
20	F-MI20LB	F-MI20FA	F-MI20SDB	F-MI20TC	F-M8X125I	F-M8X125Y	F-M8X125F	F-M8X125U		
25										
32	F-MI32LB	-	F-MI32SDB	F-MI32TC	F-M10X125I	F-M10X125Y	F-M10X125F	F-M10X125U		
40										
	F-MI40LB	-	F-MI40SDB	F-MI40TC	F-M12X125I	F-M12X125Y	F-M12X125F	F-M12X125U		

Accessory selection

Accessories Cylinder model	Mounting accessories LB FA SDB TC	Knuckle [Note1] I Y U F				Sensor switch CMSG DMSG(S)	
		MI Standard	● ● ● ●	● ● ● ●	×	×	
MIC With magnet	● ● ● ●	● ● ● ●	● ● ● ●	● ●			
MSI Standard	● ● ● ●	● ● ● ●	● ● ● ●	×	×		
MTI With magnet	● ● ● ●	● ● ● ●	● ● ● ●	● ●			
MID Standard	● ● × ●	● ● ● ●	● ● ● ●	×	×		
MICD With magnet	● ● × ●	● ● ● ●	● ● ● ●	● ●			
MIJ Standard	● ● × ●	● ● ● ●	● ● ● ●	×	×		
MICJ With magnet	● ● × ●	● ● ● ●	● ● ● ●	● ●			

Material of accessories

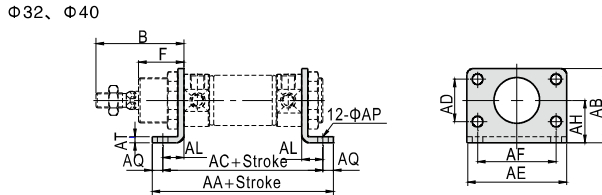
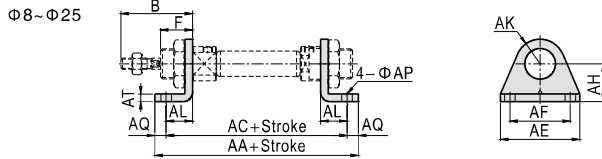
Accessories Bore size	Mounting accessories LB FA SDB TC				Knuckle I Y F U			
	8~40	△	△	△	▲	□	□	□

▲—SUS304; △—SPCC; □—Carbon steel;

[Note1] Please refer to P349~352 for knuckle detail.

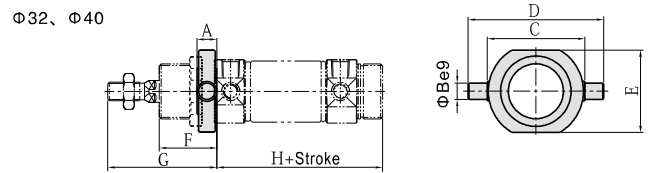
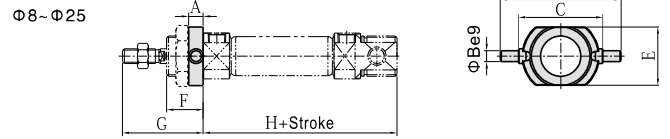
Dimensions

LB



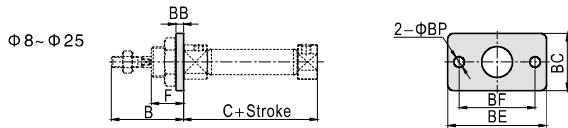
Bore size\Item	AA	AB	AC	AD	AE	AF	AH	AK	AL	AP	AQ	AT	B	F
8	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
10	78	-	68	-	35	25	16	10	11	4.5	5	2	28	12
12	90	-	78	-	42	32	20	13	14	5.5	6	2.5	38	17
16	96	-	84	-	42	32	20	13	14	5.5	6	2.5	38	17
20	112	-	96	-	54	40	25	20	17	7	8	3	44	20
25	115	-	99	-	54	40	25	20	17	7	8	3	50	22
32	110	49	96	28	66	52	28	-	14	7	7	3.5	58	30
40	149	58	129	30	80	60	33	-	20	9	10	3.5	69	35

TC



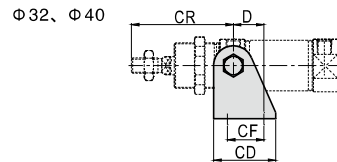
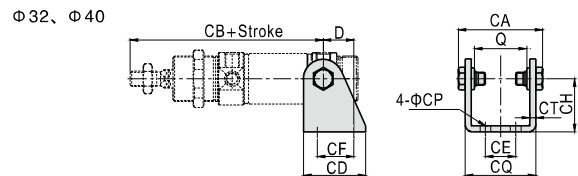
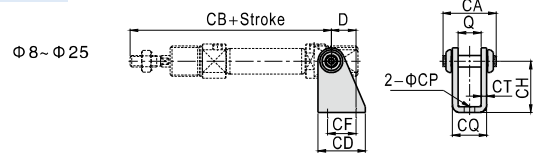
Bore size\Item	A	B	C	D	E	F	G	H
8	6	4	26	38	20	12	28	58
10	6	4	26	38	20	12	28	58
12	8	6	38	58	25	17	38	67
16	8	6	38	58	25	17	38	73
20	8	6	46	66	32	20	44	82
25	8	6	46	66	32	22	50	87
32	11	9	54	74	45	31.5	59.5	80.5
40	12	10	64	84	55	36.5	70.5	103.5

FA



Bore size\Item	B	C	BB	BC	BE	BF	BP	F
8	28	46	2	22	40	30	4.5	12
10	28	46	2	22	40	30	4.5	12
12	38	50	3	26	52	40	5.5	17
16	38	56	3	26	52	40	5.5	17
20	44	62	3.5	38	64	50	7	20
25	50	65	3.5	38	64	50	7	22

SDB



Bore size\Item	D	Q	CA	CB	CD	CE	CF	CH	CP	CQ	CT	CR
8	11	8.1	16.4	76	20	-	12.5	24	4.5	12.1	2	-
10	11	8.1	16.4	76	20	-	12.5	24	4.5	12.1	2	-
12	13	12.1	26	91	25	-	15	27	5.5	16.1	2	-
16	13	12.1	26	98	25	-	15	27	5.5	16.1	2	-
20	16	16.1	35	115	32	-	20	30	7	21.1	2.5	-
25	16	16.1	35	126	32	-	20	30	7	21.1	2.5	-
32	20	34.6	53.6	117	41	20	24	35	7	44.6	3	67
40	27	42.6	65.6	146	52	28	30	40	9	54.6	3	81

[Note] SDB is attached with relevant PIN.