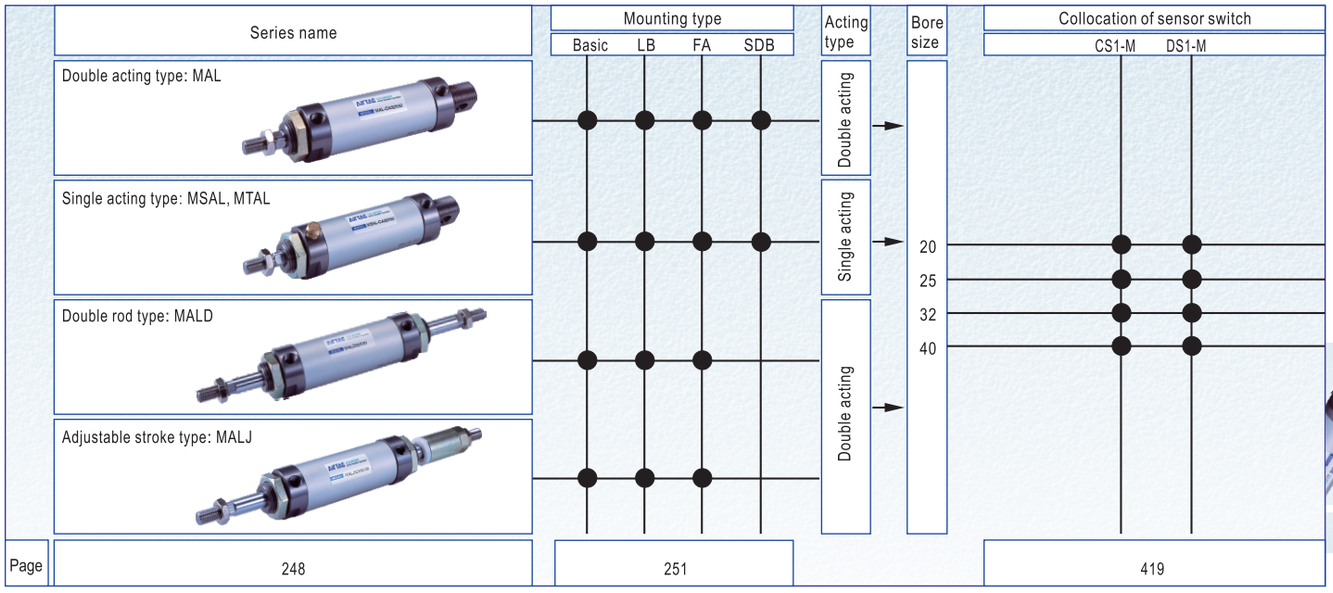
Product series



MAL

Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40 μ m or below.
6. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
7. To avoid side load, otherwise, piston rod will be bent and deformed and damage the thread at the end of the rod. Single-acting type can not be added in return;
8. If the cylinder is dismantled and stored for a long time, please to conduct anti-rust treatment to the surface. Anti-dust caps shall be added in air inlet and outlet ports. The front and back cover can not be dismantled, which shall be especially noticed.

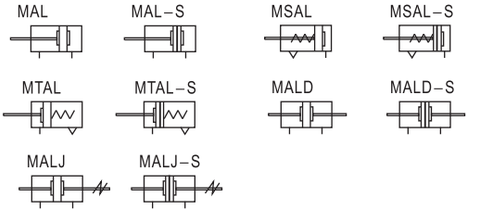
Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size (mm)	Rod size (mm)	Acting type		Pressure area (mm^2)	Operating pressure(MPa)						
					0.1	0.2	0.3	0.4	0.5	0.6	0.7
20	8	Single acting	Push side	314.0	-	12.6	44.0	75.4	106.8	138.2	169.6
			Pull side	263.8	-	2.6	28.9	55.3	81.7	108.1	134.4
		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	-	29.2	78.3	127.4	176.4	225.5	274.5
			Pull side	412.1	-	13.5	54.7	96.0	137.2	178.4	219.6
		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	-	76.6	157.0	237.3	317.7	398.1	478.5
			Pull side	691.2	-	54.0	123.0	192.1	261.2	330.3	399.4
		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	37.5	163.1	288.7	414.3	539.9	665.5	791.1
			Pull side	1055.6	17.4	122.9	228.4	333.9	439.4	544.9	650.4
		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

MAL

Symbol



Product feature

1. Manufactured by our enterprise.
2. Front and back cover and cylinder tube are connected by threads.
3. Piston adopts heterogeneous two-way seal structure. It has compact size and has the function of grease reservation.
4. Front cover adopts self-lubrication bearing guide that has good performance of lubrication and guide.
5. There are several modes of back cover, which makes the installation of cylinder more convenient.
6. There are cylinders and mounting accessories with several specifications for your choice.

Specification

Bore size(mm)		20	25	32	40
Acting type	MSAL, MTAL	Single acting			
	Others	Double acting			
Fluid		Air(to be filtered by 40 μ m filter element)			
Operating pressure	Double acting	0.1~1.0MPa(15~145psi)(1.0~10.0bar)			
	Single acting	0.2~1.0MPa(28~145psi)(2.0~10.0bar)			
Proof pressure		1.5MPa(215psi)(15bar)			
Temperature ℃		-20~70			
Speed range mm/s		Double acting: 30~800 Single acting: 50~800			
Stroke tolerance		$0\sim150^{+1.0}_{0}$ $>150^{+1.4}_{0}$			
Cushion type		Bumper			
Port size ①		1/8"			1/4"

① PT thread, NPT thread and G thread are available. Add) Refer to P419~442 for detail of sensor switch.

Stroke

Bore size (mm)		Standard stroke (mm)	Max. std stroke	Max. stroke
MAL	20	25 50 75 80 100 125 150 160 175 200 250 300	500	800
	25	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	800	1200
	32	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	800	1200
	40	25 50 75 80 100 125 150 160 175 200 250 300 350 400 450 500	1200	1500
MSAL	20	25 50 75 100 125 150	150	-
	25	25 50 75 100 125 150	150	-
	32	25 50 75 100 125 150	150	-
	40	25 50 75 100 125 150	150	-
MTAL	20	25 50 75 100	100	-
	25	25 50 75 100	100	-
	32	25 50 75 100	100	-
	40	25 50 75 100	100	-
MALD MALJ	20	25 50 75 80 100 125 150 160 175 200	200	300
	25	25 50 75 80 100 125 150 160 175 200 250	250	300
	32	25 50 75 80 100 125 150 160 175 200 250	250	300
	40	25 50 75 80 100 125 150 160 175 200 250	250	300

Note) Consult us for non-standard stroke.

Ordering code

MAL 20×50 S CM □ □

MALD20×50 S □ □

MALJ 20×50-20 S □ □

Model

MAL: Mini cylinder(Double acting)
MSAL: Mini cylinder(Single acting_push)
MTAL: Mini cylinder(Single acting_pull)
MALD: Mini cylinder(Double rod)
MALJ: Mini cylinder(Adjustable stroke)

Thread type

Blank: PT
T: NPT
G: G

Bore size

20 25 32 40

Stroke

Refer to stroke table for details

Mounting type ①

Model	Mounting type
MAL MSAL MTAL	Blank: No accessories
	FA: FA type
	SDB: SDB type
	LB: LB type
MALD MALJ	Blank: No accessories
	FA: FA type
	LB: LB type

Adjustable stroke

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

Back cover

Model	Back cover
MAL MSAL MTAL	CA: Pivot type
	U: Flat-end type
	CM: Round-end type
Others	No this code

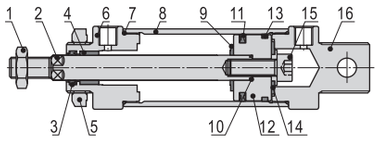
Magnet

Blank: Without magnet
S: With magnet

① Please refer to page 251 for accessory parts.

Inner structure and material of major parts

MAL-CA

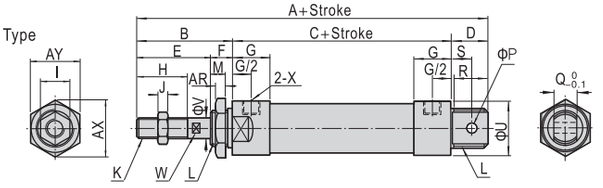


NO.	Item	Material
1	Rod nut	Carbon steel
2	Piston rod	Carbon steel with 20 μ m chrome plated
3	Front cover packing	NBR
4	Bushing	Wear resistant material
5	Front cover nut	Carbon steel
6	Front cover	Aluminum alloy
7	O–ring	NBR
8	Barrel	Aluminum alloy
9	Bumper	NBR
10	O–ring	NBR
11	Piston seal	NBR
12	Piston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

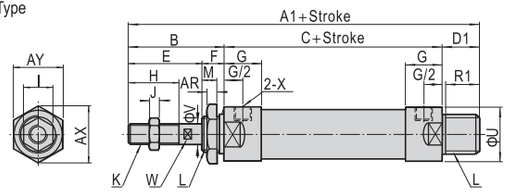
Dimensions

MAL

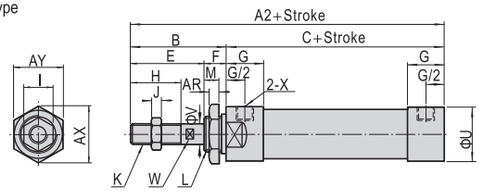
CA Type



CM Type



U Type



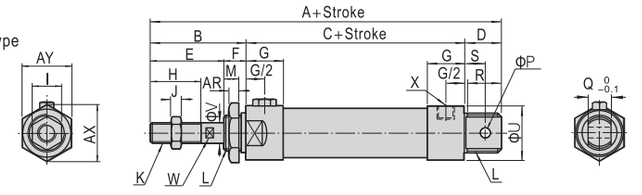
Bore size\Item	A	A1	A2	B	C	D	D1	E	F	G	H	I	J	K
20	131	122	110	40	70	21	12	28	12	16	20	12	6	M8×1.25
25	135	128	114	44	70	21	14	30	14	16	22	17	6	M10×1.25
32	141	128	114	44	70	27	14	30	14	16	22	17	6	M10×1.25
40	165	152	138	46	92	27	14	32	14	22	24	17	7	M12×1.25

Bore size\Item	L	M	P	Q	R	R1	S	U	V	W	X	AR	AX	AY
20	M22×1.5	10	8	16	19	10	12	29	8	6	1/8"	7	33	29
25	M22×1.5	12	8	16	19	12	12	34	10	8	1/8"	7	33	29
32	M24×2.0	12	10	16	25	12	15	39.5	12	10	1/8"	8	37	32
40	M30×2.0	12	12	20	25	12	15	49.5	16	14	1/4"	9	47	41

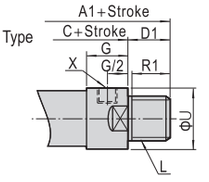
Remark: The dimensions of magnet type cylinder are the same as non-magnet type cylinder.

MSAL

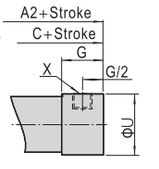
CA Type



CM Type



U Type

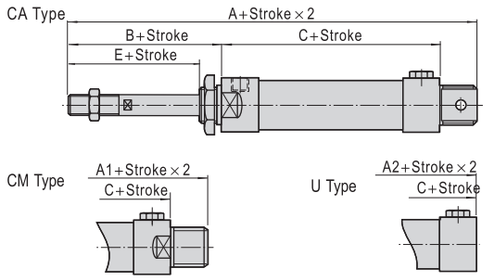


Item	A			A1			A2			B	C			D	D1	E	F
Bore size\Stroke	≤50	51~100	≥101	≤50	51~100	≥101	≤50	51~100	≥101		≤50	51~100	≥101				
20	156	181	206	147	172	197	135	160	185	40	95	120	145	21	12	28	12
25	160	185	210	153	178	203	139	164	189	44	95	120	145	21	14	30	14
32	166	191	216	153	178	203	139	164	189	44	95	120	145	27	14	30	14
40	190	215	240	177	202	227	163	188	213	46	117	142	167	27	14	32	14

Bore size\Item	G	H	I	J	K	L	M	P	Q	R	R1	S	U	V	W	X	AR	AX	AY
20	16	20	12	6	M8×1.25	M22×1.5	10	8	16	19	10	12	29	8	6	1/8"	7	33	29
25	16	22	17	6	M10×1.25	M22×1.5	12	8	16	19	12	12	34	10	8	1/8"	7	33	29
32	16	22	17	6	M10×1.25	M24×2.0	12	10	16	25	12	15	39.5	12	10	1/8"	8	37	32
40	22	24	17	7	M12×1.25	M30×2.0	12	12	20	25	12	15	49.5	16	14	1/4"	9	47	41

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

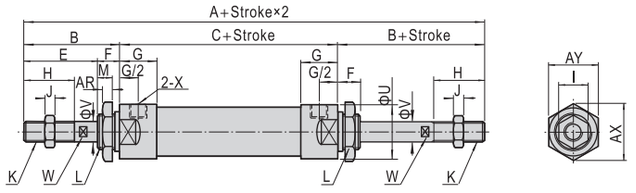
MTAL



Item	A				A1				A2				C			
Bore size\Stroke	0~25	26~50	51~75	76~100	0~25	26~50	51~75	76~100	0~25	26~50	51~75	76~100	0~25	26~50	51~75	76~100
20	146	156	171	181	137	147	162	172	125	135	150	160	85	95	110	120
25	150	160	175	185	143	153	168	178	129	139	154	164	85	95	110	120
32	156	166	186	196	143	153	173	183	129	139	159	169	85	95	115	125
40	180	190	210	220	167	177	197	207	153	163	183	193	107	117	137	147

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

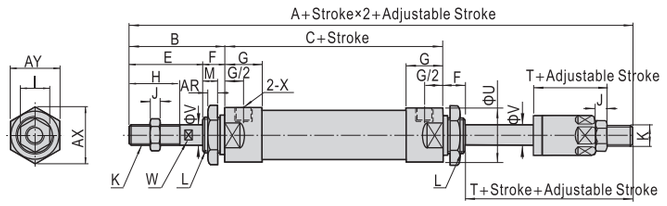
MALD



Bore size\Item	A	B	C	E	F	G	H	I	J	K	L	M	U	V	W	X	AR	AX	AY
20	150	40	70	28	12	16	20	12	6	M8×1.25	M22×1.5	10	29	8	6	1/8"	7	33	29
25	158	44	70	30	14	16	22	17	6	M10×1.25	M22×1.5	12	34	10	8	1/8"	7	33	29
32	158	44	70	30	14	16	22	17	6	M10×1.25	M24×2.0	12	39.5	12	10	1/8"	8	37	32
40	184	46	92	32	14	22	24	17	7	M12×1.25	M30×2.0	12	49.5	16	14	1/4"	9	47	41

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

MALJ



Bore size\Item	A	B	C	E	F	G	H	I	J	K	L	M	T	U	V	W	X	AR	AX	AY
20	147	40	70	28	12	16	20	12	6	M8×1.25	M22×1.5	10	25	29	8	6	1/8"	7	33	29
25	155	44	70	30	14	16	22	17	6	M10×1.25	M22×1.5	12	27	34	10	8	1/8"	7	33	29
32	155	44	70	30	14	16	22	17	6	M10×1.25	M24×2.0	12	27	39.5	12	10	1/8"	8	37	32
40	180	46	92	32	14	22	24	17	7	M12×1.25	M30×2.0	12	28	49.5	16	14	1/4"	9	47	41

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

Accessories

Ordering code

Accessories of MAL series cylinder are the same with that of MA series.
Please see accessory list for detail of selection and order information.

Accessory selection

Cylinder model / Accessories		MAL		MSAL, MTAL		MALD, MALJ	
		Standard	With magnet	Standard	With magnet	Standard	With magnet
Mounting accessory	LB	●	●	●	●	●	●
	FA	●	●	●	●	●	●
	SDB	●	●	●	●	×	×
Knuckle ①	I	●	●	●	●	●	●
	Y	●	●	●	●	●	●
	U	●	●	●	●	●	●
	F	●	●	●	●	●	●
Sensor switch ②	CS1−M	×	●	×	●	×	●
	DS1−M	×	●	×	●	×	●

① Please refer to P415~418 for knuckle detail,
② Please refer to P419~442 for detail of sensor switch.

Material of accessoriesselection

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

○——Low carbon steel, □——Carbon steel.

List for ordering code of accessories

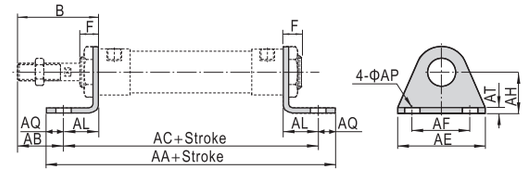
Accessories / Bore size	Mounting accessory		
	LB	FA	SDB
20	F-MA20LB	F-MA20FA	F-MA20SDB
25			
32	F-MA32LB	F-MA32FA	F-MA32SDB
40	F-MA40LB	F-MA40FA	F-MA40SDB

Accessories / Bore size	Knuckle			
	I: I Knuckle	Y: Y Knuckle	F: F Knuckle	U: U Knuckle
20	F-MA20I	F-MA20Y	F-M8X125F	F-M8X125U
25	F-MA25I	F-MA25Y	F-M10X125F	F-M10X125U
32				
40	F-MA40I	F-MA40Y	F-M12X125F	F-M12X125U

Accessories / Bore size	Sensor switch	
	CS1−M□	DS1−M□
20	CS1−M-A20	DS1−M-A20
25	CS1−M-A25	DS1−M-A25
32	CS1−M-A32	DS1−M-A32
40	CS1−M-A40	DS1−M-A40

Dimensions

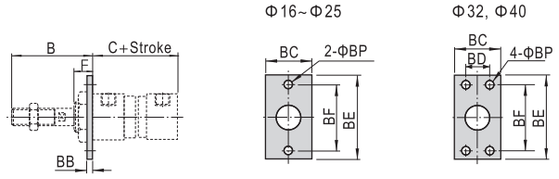
LB



Bore size\Item / Stroke	AA (MAL)	AA(MSAL) 0~50	AA(MSAL) 51~100	AA(MSAL) 101~150	AC (MAL)	AC(MSAL) 0~50	AC(MSAL) 51~100	AC(MSAL) 101~150
20	116	141	166	191	100	125	150	175
25	116	141	166	191	100	125	150	175
32	136	161	186	211	120	145	170	195
40	158	183	208	233	142	167	192	217

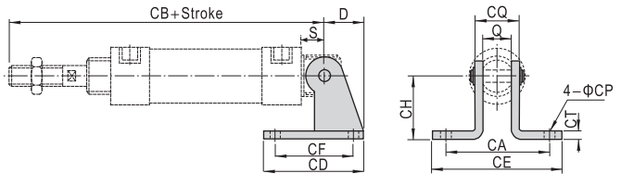
Bore size\Item	B	F	AB	AE	AF	AL	AQ	AP	AT	AH
20	40	12	25	54	40	15	8	6.5	3	25
25	44	14	29	54	40	15	8	6.5	3	25
32	44	14	19	59	45	25	8	6.5	4	32
40	46	14	21	64	50	25	8	6.5	4	36

FA



Bore size\Item / Stroke	B	C (MAL)	C(MSAL) 0~50	C(MSAL) 51~100	C(MSAL) 101~150	BB	BC	BD	BE	BF	BP	F
20	40	70	95	120	145	4	38	-	64	50	6.5	12
25	44	70	95	120	145	4	38	-	64	50	6.5	14
32	44	70	95	120	145	4	47	33	72	58	6.5	14
40	46	92	117	142	167	4	50	36	84	70	6.5	14

SDB

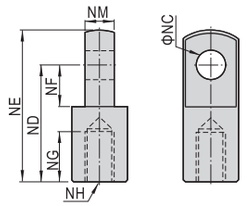


Bore size\Item / Stroke	D	S	Q	CA	CB (MAL)	CB(MSAL) 0~50	CB(MSAL) 51~100	CB(MSAL) 101~150	CD	CE	CF	CH	CT	CP	CQ
20	21	12	16	51	122	147	172	197	48	67	32	32	3	6.5	22
25	21	12	16	51	126	151	176	201	48	67	32	32	3	6.5	22
32	27	15	16	51	129	154	179	204	52	67	36	36	4	6.5	24
40	27	15	20	55	153	178	203	228	56	71	40	40	4	6.5	28

MAL

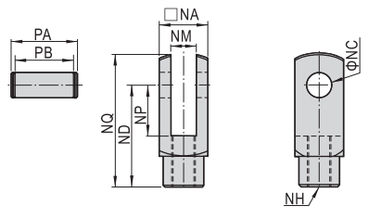
Accessories

I Knuckle



Type\Item	NC	ND	NE	NF	NG	NH	NM
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

Y Knuckle



Type\Item	NA	NC	ND	NP	NQ	NM	NH	PA	PB
F-MA20Y	16	8	30	15	40	8	M8×1.25	21.6	16.8
F-MA25Y	19	10	40	20	52	10	M10×1.25	25.6	19.8
F-MA40Y	25.4	10	45	20	57	14	M12×1.25	32	26.2

MAL