MDM* series

HYDRAULIC WITH PISTON SENSING CYLINDER

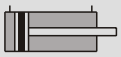
Mindman



Specification

Model	MDMB, MDMD
Tube I.D. (mm)	40, 50, 63, 80, 100
Power fluid	Filtered oil
Material of cylinder barrel	SUS304 Stainless steel
The range of pressure (MPa)	7 (70 kgf/cm^2)
Proof pressure (MPa)	10.5 (105 kgf/cm^2)
Speed range (mm/sec)	0.5~300
The range of temperature (℃)	-10~+60

Double acting cylinders

MDMB Double acting - Standard type 

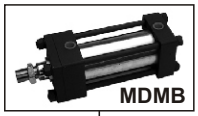
MDMD Double acting - Double end rod type 

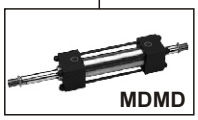
Order example:

1 — MDMB — 50 — N — 100 — LB — Y — LN01P × 2

SEAL MATERIAL

MODEL



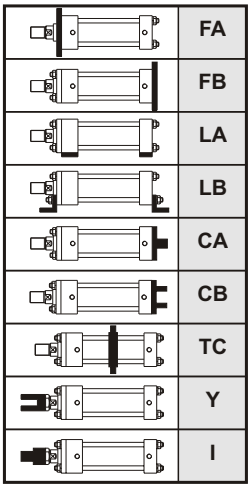


TUBE I.D.

CUSHION
R: Rod end with cushion
H: End cap with cushion
B: Both end with cushion
N: No cushion

STROKE

ACCESSORIES



SENSOR SWITCH



LN01P: Suited for MDM* ϕ40, ϕ50
LN02P: Suited for MDM* ϕ63
LN03P: Suited for MDM* ϕ80, ϕ100

QUANTITY

Symbol	Seal material	Kind of fluid				
		Petroleum - based fluid	Water - glycol fluid	Phosphate - ester fluid	Water in oil fluid	Oil in water fluid
1	NBR Nitrile rubber	○	○	×	○	○
2	PU Polyurethone rubber	○	×	×	△	△
3	VITON Fluoro elastomer	○	×	○	○	○

Note: ○allowable ×unallowable △consult us

MDM*

HYDRAULIC WITH PISTON SENSING CYLINDER

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Standard stroke

unit: mm

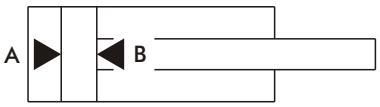
Tube I.D.	50	100	150	200	250	300	350	400	450	500
ϕ40	●	●	●	●	●	●	–	–	–	–
ϕ50	●	●	●	●	●	●	–	–	–	–
ϕ63	●	●	●	●	●	●	●	●	●	●
ϕ80	●	●	●	●	●	●	●	●	●	●
ϕ100	●	●	●	●	●	●	●	●	●	●

Note: May to order of unstandard stroke

Stroke tolerance

unit: mm

stroke	~100	101~250	251~630	631~1000	1001~1600	1601~2000
Tolerance	+0.8	+1.0	+1.25	+1.4	+1.6	+1.8
	0	0	0	0	0	0



Theoretic force

unit: N

Tube I.D. (mm)	Rod (mm)	Area (mm^2)		Operating pressure (MPa)								
				2	3	4	5	6	7	8	9	10
ϕ40	ϕ20	A	1256	2512	3768	5024	6280	7536	8792	10048	11304	12560
		B	942	1884	2826	3768	4710	5652	6594	7536	8478	9420
ϕ50	ϕ25	A	1963	3926	5889	7852	9815	11778	13741	15704	17667	19630
		B	1472	2944	4416	5888	7360	8832	10304	11776	13248	14720
ϕ63	ϕ35	A	3116	6232	9348	12464	15580	18696	21812	24928	28062	31180
		B	2154	4308	6462	8616	10770	12924	15078	17232	19386	21540
ϕ80	ϕ40	A	5024	10048	15072	20096	25120	30144	35168	40192	45216	50240
		B	3768	7536	11304	15072	18840	22608	26376	30144	33912	3768
ϕ100	ϕ50	A	7850	15700	23550	31400	39250	47100	54950	62800	70650	78500
		B	5887	11774	17661	23548	29435	35322	41209	47196	52983	58870

The method of calculation (Hydraulic cylinders' force)

$$F = P \times A - f$$

F:	Cylinders' force	(N)
P:	Operating pressure	(MPa)
A:	Piston area	(mm^2)
f:	Friction drag	(N)

MDM* Inside structure and parts list

HYDRAULIC WITH PISTON SENSING CYLINDER

Mindman

How to order the seal kit

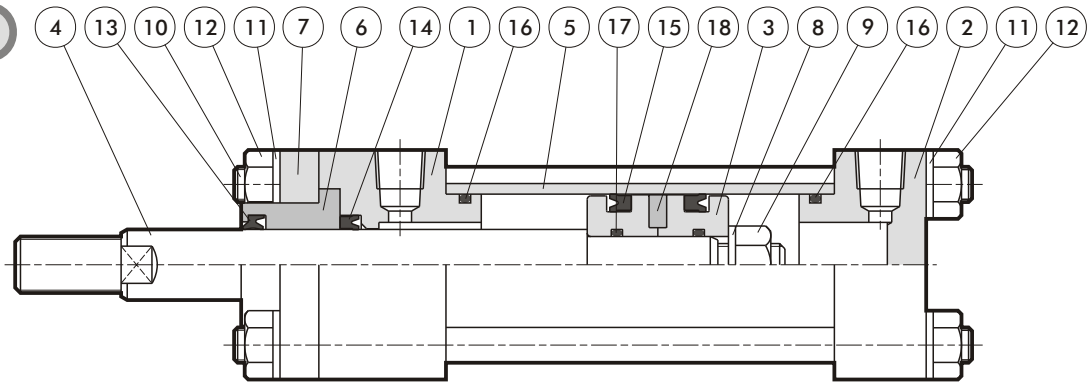
MDMBSK ☐

Tube I.D.	Seal kit
40	MDMBSK40 - Including No.13,14,15,16,17,18
50	MDMBSK50 - Including No.13,14,15,16,17,18
63	MDMBSK63 - Including No.13,14,15,16,17,18
80	MDMBSK80 - Including No.13,14,15,16,17,18
100	MDMBSK100 - Including No.13,14,15,16,17,18

MDMDSK ☐

Tube I.D.	Seal kit
40	MDMDSK40 - Including No.10,11,12,13,14,15
50	MDMDSK50 - Including No.10,11,12,13,14,15
63	MDMDSK63 - Including No.10,11,12,13,14,15
80	MDMDSK80 - Including No.10,11,12,13,14,15
100	MDMDSK100 - Including No.10,11,12,13,14,15

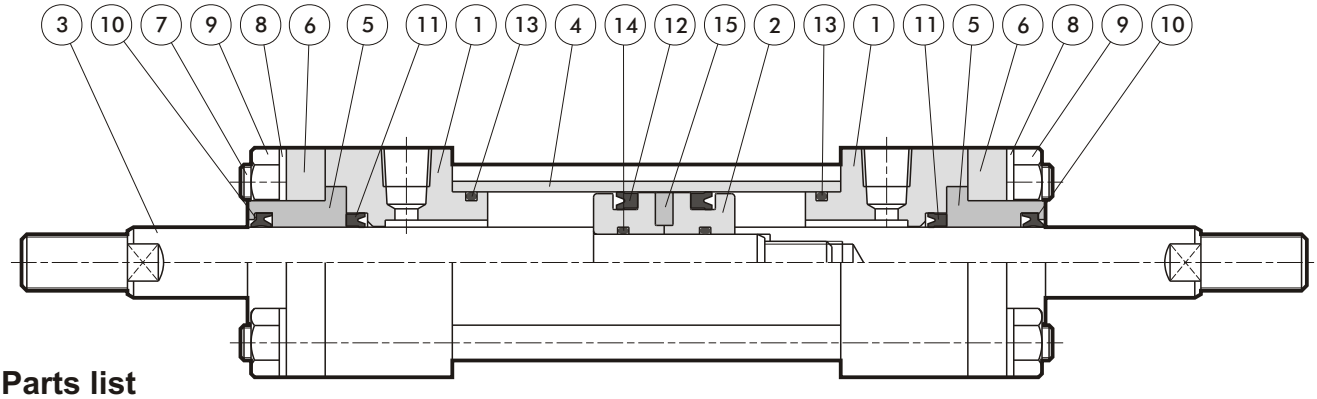
MDMB



Parts list

No.	Part name	Quantity	No.	Part name	Quantity	No.	Part name	Quantity
1	Rod cover	1	7	End plate	1	13	Dust wiper	1
2	Head cover	1	8	Spring washer	1	14	Rod packing	1
3	Piston	1	9	Nut	1	15	Piston packing	2
4	Piston rod	1	10	Tie bolt	4	16	Cylinder gasket	2
5	Cylinder tube	1	11	Spring washer	8	17	Piston gasket	1
6	Rod bush	1	12	Nut	8	18	Magnet	1

MDMD



Parts list

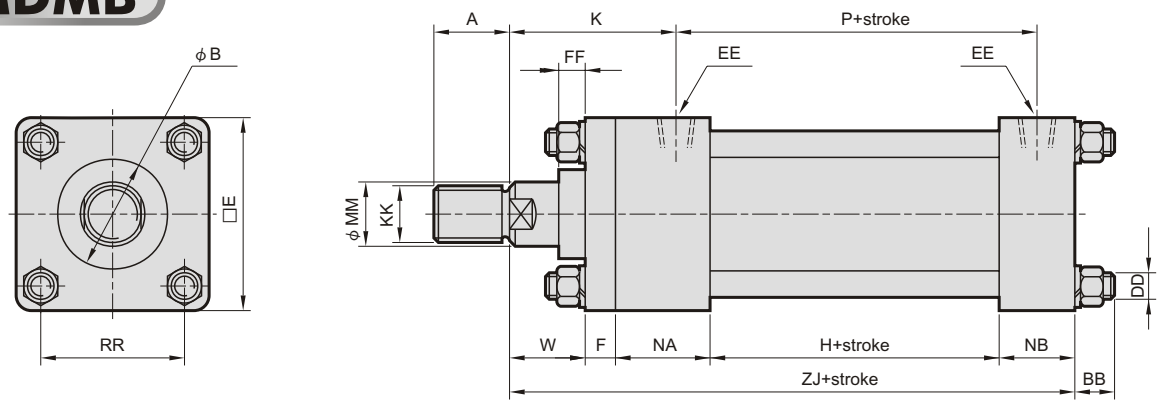
No.	Part name	Quantity	No.	Part name	Quantity	No.	Part name	Quantity
1	Rod cover	2	6	End plate	2	11	Rod packing	2
2	Piston	1	7	Tie bolt	4	12	Piston packing	2
3	Piston rod	1	8	Spring washer	8	13	Cylinder gasket	2
4	Cylinder tube	1	9	Nut	8	14	Piston gasket	1
5	Rod bush	2	10	Dust wiper	2	15	Magnet	1

MDM*

HYDRAULIC WITH PISTON SENSING CYLINDER

Mindman

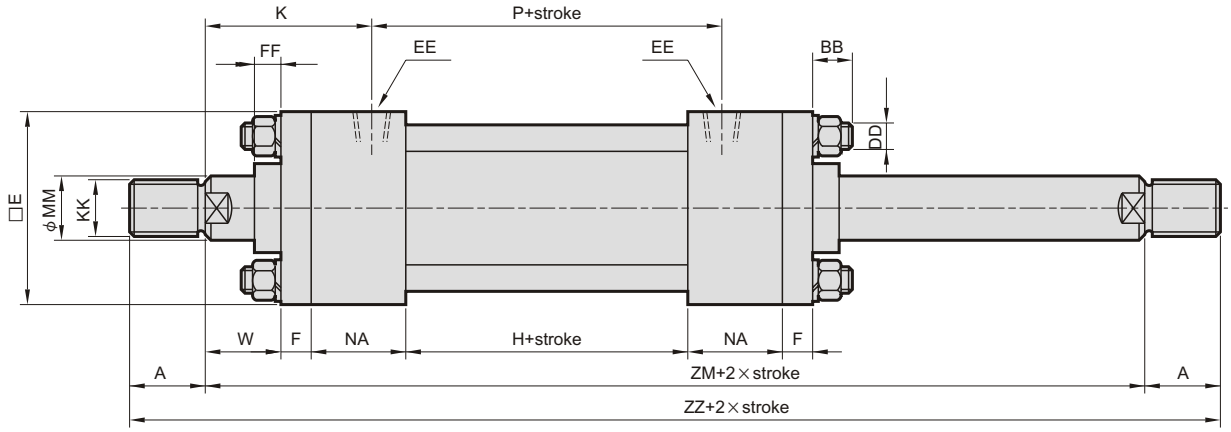
MDMB



Dimensional table

Code / Tube I.D.	A	B	BB	DD	E	EE	F	FF	H	K	KK	MM	NA	NB	P	RR	W	ZJ
ϕ40	30	35	16	M10×1.25	65	PT 1/4	11	11	60	60	M16×1.5	20	36	26	84	45	25	158
ϕ50	35	40	16	M10×1.25	75	PT 3/8	13	9	60	66	M22×1.5	25	42	34	88	52	25	174
ϕ63	40	50	18	M12×1.5	90	PT 3/8	15	9	65	73	M30×1.5	35	42	34	93	63	30	186
ϕ80	45	55	18	M16×1.5	110	PT 1/2	18	7	65	79	M30×1.5	40	46	39	95	80	30	198
ϕ100	50	65	25	M18×1.5	135	PT 1/2	20	7	74	95	M40×2.0	50	50	40	104	102	40	224

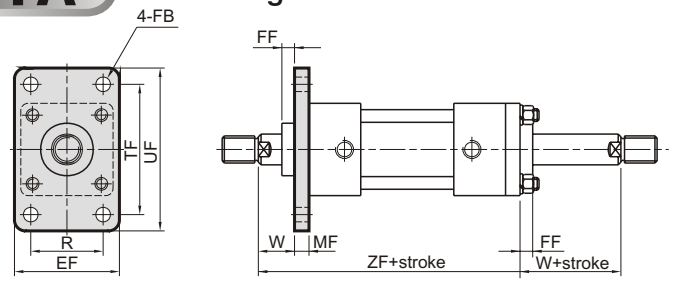
MDMD



Dimensional table

Code / Tube I.D.	A	B	BB	DD	E	EE	F	FF	H	K	KK	MM	NA	P	RR	W	W	ZJ
ϕ40	30	35	16	M10×1.25	65	PT 1/4	11	11	60	60	M16×1.5	20	36	84	45	25	204	264
ϕ50	35	40	16	M10×1.25	75	PT 3/8	13	9	60	66	M22×1.5	25	42	88	52	25	220	290
ϕ63	40	50	18	M12×1.5	90	PT 3/8	15	9	65	73	M30×1.5	35	42	93	63	30	239	319
ϕ80	45	55	18	M16×1.5	110	PT 1/2	18	7	65	79	M30×1.5	40	46	95	80	30	253	343
ϕ100	50	65	25	M18×1.5	135	PT 1/2	20	7	74	95	M40×2.0	50	50	104	102	40	294	394

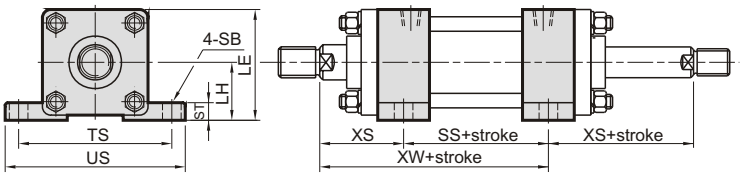
FA Front flange



Dimensional table

Code / Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
ϕ40	69	11	11	11	46	95	118	25	179
ϕ50	85	11	9	13	58	115	145	25	195
ϕ63	98	14	9	15	65	132	165	30	209
ϕ80	118	18	7	18	87	155	190	30	223
ϕ100	150	22	7	20	109	190	230	40	254

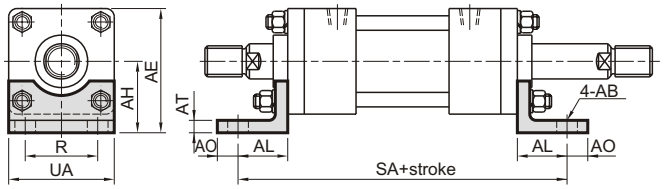
LA Side lugs



Dimensional table

Code / Tube I.D.	LE	LH	SB	SS	ST	TS	XS	XW	US
ϕ40	70	37.5	11	96	14	95	54	150	118
ϕ50	80	45	11	102	17	115	59	161	145
ϕ63	95	50	14	107	19	132	66	173	165
ϕ80	115	60	18	111	25	155	71	182	190
ϕ100	140	71	22	124	27	190	85	209	230

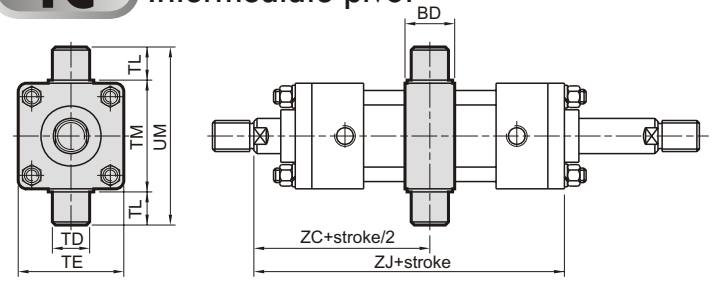
LB Foot mouting



Dimensional table

Code / Tube I.D.	AB	AE	AH	AL	AO	AT	R	SA	UA
ϕ40	11	77.5	45	32.5	13	8	46	219	65
ϕ50	11	87.5	50	32.5	15	8	58	235	75
ϕ63	14	105	60	37	18	10	65	253	90
ϕ80	18	125	72	49	20	12	87	291	110
ϕ100	22	157.5	85	58	23	12	109	330	135

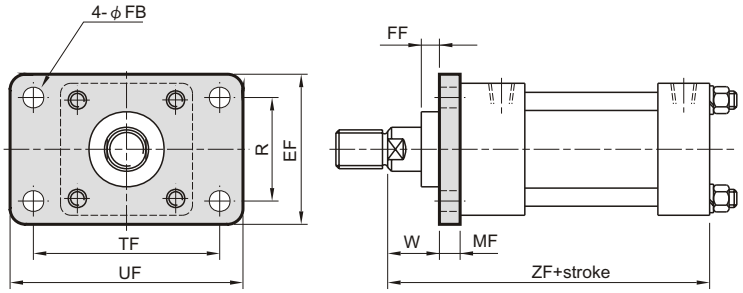
TC Intermediate pivot



Dimensional table

Code / Tube I.D.	BD	TE	TD	TL	TM	UM	ZC	ZJ
ϕ40	28	65	20	20	69	109	102	179
ϕ50	33	75	25	25	85	135	110	195
ϕ63	38	90	30	30	98	158	119.5	209
ϕ80	38	110	30	30	118	178	126.5	223
ϕ100	48	135	40	40	145	225	147	254

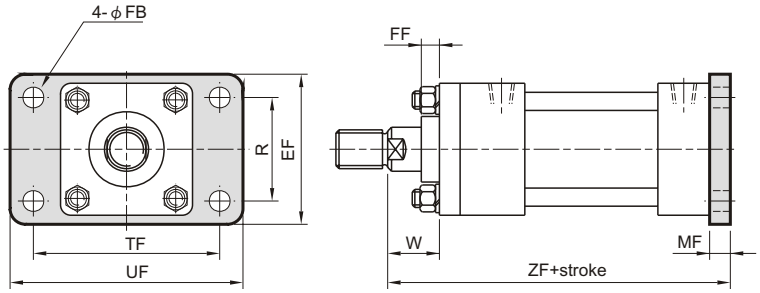
FA Front flange



Dimensional table

Code / Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
ϕ40	69	11	11	11	46	95	118	25	158
ϕ50	85	11	9	13	58	115	145	25	174
ϕ63	98	14	9	15	65	132	165	30	186
ϕ80	118	18	7	18	87	155	190	30	198
ϕ100	150	22	7	20	109	190	230	40	224

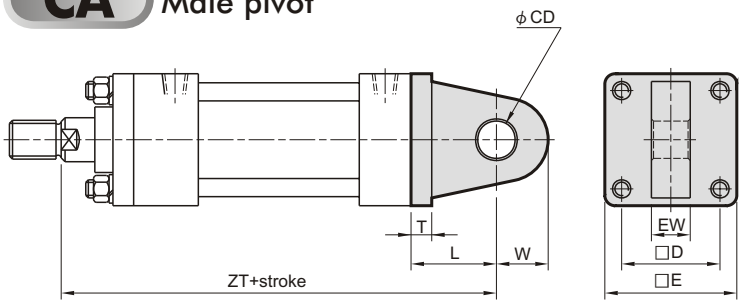
FB Rear flange



Dimensional table

Code / Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
ϕ40	69	11	11	11	46	95	118	25	169
ϕ50	85	11	9	13	58	115	145	25	187
ϕ63	98	14	9	15	65	132	165	30	201
ϕ80	118	18	7	18	87	155	190	30	216
ϕ100	150	22	7	20	109	190	230	40	244

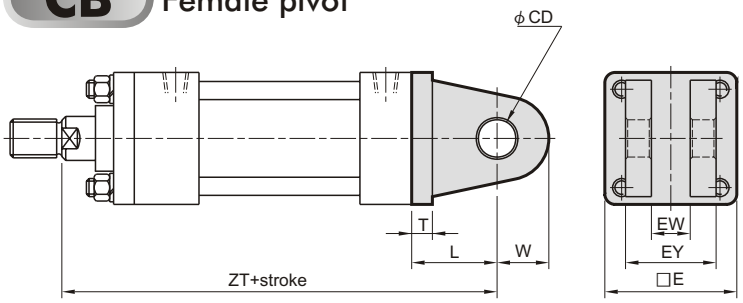
CA Male pivot



Dimensional table

Code / Tube I.D.	CD	D	E	EW	L	T	W	ZT
ϕ40	16	45	65	20	38	11	25	196
ϕ50	20	52	75	25	45	13	25	219
ϕ63	25	63	90	30	54	15	30	240
ϕ80	30	80	110	35	71	18	30	269
ϕ100	40	102	135	40	86	20	40	310

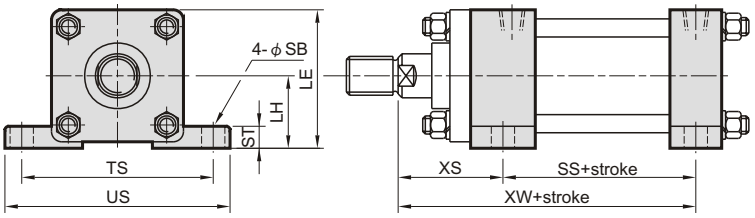
CB Female pivot



Dimensional table

Code / Tube I.D.	CD	E	EW	EY	L	T	W	ZT
ϕ40	16	65	20	50	38	11	25	196
ϕ50	20	75	25	57	45	13	25	219
ϕ63	25	90	30	70	54	15	30	240
ϕ80	30	110	35	80	71	18	30	269
ϕ100	40	135	40	100	86	20	40	310

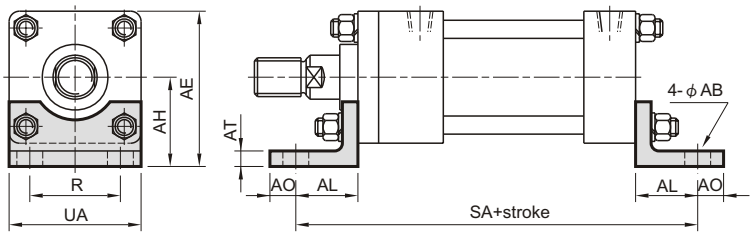
LA Side lugs



Dimensional table

Code / Tube I.D.	LE	LH	SB	SS	ST	TS	XS	XW	US
φ40	70	37.5	11	91	14	95	54	145	118
φ50	80	45	11	98	17	115	59	157	145
φ63	95	50	14	103	19	132	66	169	165
φ80	115	60	18	107.5	25	155	71	178.5	190
φ100	140	71	22	119	27	190	85	204	230

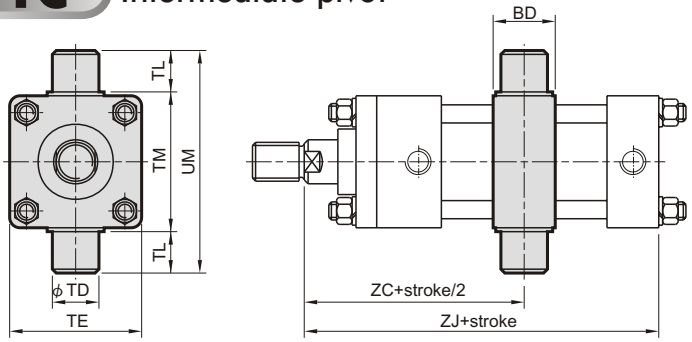
LB Foot mouting



Dimensional table

Code / Tube I.D.	AB	AE	AH	AL	AO	AT	R	SA	UA
φ40	11	77.5	45	32.5	13	8	46	198	65
φ50	11	87.5	50	32.5	15	8	58	214	75
φ63	14	105	60	37	18	10	65	230	90
φ80	18	125	72	49	20	12	87	266	110
φ100	22	157.5	85	58	23	12	109	300	135

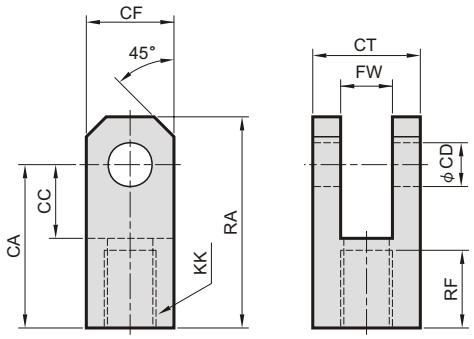
TC Intermediate pivot



Dimensional table

Code / Tube I.D.	BD	TE	TD	TL	TM	UM	ZC	ZJ
φ40	28	65	20	20	69	109	102	158
φ50	33	75	25	25	85	135	110	174
φ63	38	90	30	30	98	158	119.5	186
φ80	38	110	30	30	118	178	126.5	198
φ100	48	135	40	40	145	225	147	224

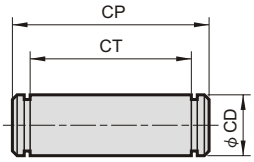
Y connector



Dimensional table

Model	Tube I.D.	CA	CC	CD	CF	CT	FW	KK	RA	RF
Y-M16×1.5	φ40	50	26	16	35	45	20	M16×1.5	66	24
Y-M22×1.5	φ50	60	30	20	40	50	25	M22×1.5	80	30
Y-M30×1.5	φ63	80	40	25	50	60	30	M30×1.5	105	40
Y-M30×1.5	φ80	80	40	30	60	65	35	M30×1.5	110	40
Y-M40×2.0	φ100	90	50	40	80	90	40	M40×2.0	130	40

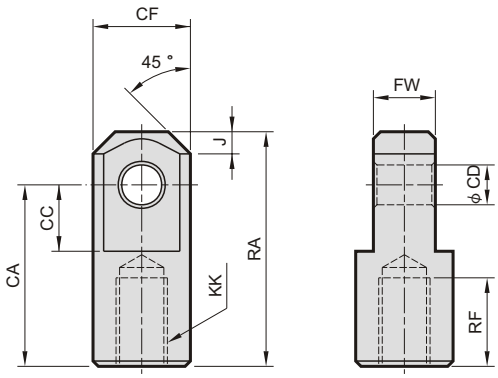
Pin



Dimensional table

Model	Tube I.D.	CD	CP	CT
P1659	ϕ 40	16	59	46
P2066	ϕ 50	20	66	51
P2576	ϕ 63	25	76	61
P3081	ϕ 80	30	81	66
P40114	ϕ 100	40	114	91

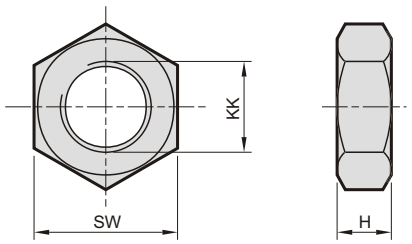
I connector



Dimensional table

Model	Tube I.D.	CA	CC	CD	CF	FW	J	KK	RA	RF
I-M16×1.5	ϕ 40	55	30	16	40	20	8	M16×1.5	75	20
I-M22×1.5	ϕ 50	65	35	20	50	25	10	M22×1.5	90	25
I-M30×1.5	ϕ 63	80	40	25	55	30	12.5	M30×1.5	110	35
I-M30×1.5	ϕ 80	90	45	30	60	35	15	M30×1.5	125	35
I-M40×2.0	ϕ 100	105	55	40	80	40	20	M40×2.0	145	40

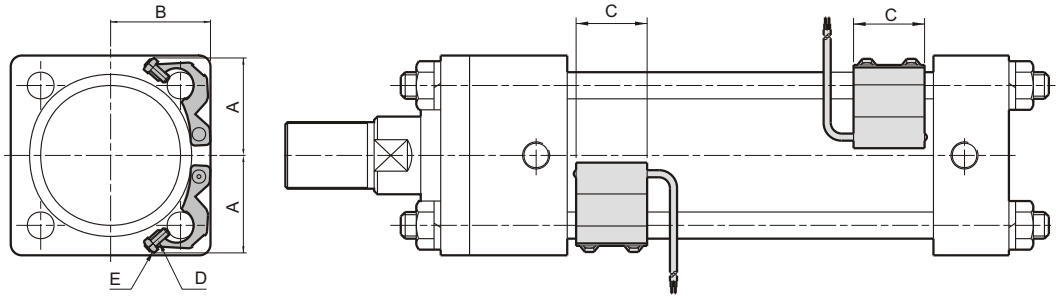
Mounting nut



Dimensional table

Model	Tube I.D.	H	KK	SW
N-M16×1.5	ϕ 40	13	M16×1.5	24
N-M22×1.5	ϕ 50	10	M22×1.5	32
N-M30×1.5	ϕ 63	13	M30×1.5	41
N-M30×1.5	ϕ 80	13	M30×1.5	41
N-M40×2.0	ϕ 100	15	M40×2.0	57

Installation of sensor switchs



Dimensional table

Tube I.D.	Sensor switch	A	B	C	D	E
40	LN01P	33.7	33	32	M4×12L	M4
50	LN01P	36.6	37	32	M4×12L	M4
63	LN02P	44	45	32	M4×12L	M4
80	LN03P	54	56	32	M4×12L	M4
100	LN03P	65	67	32	M4×12L	M4

MDM* Sensor Switchs

HYDRAULIC WITH PISTON SENSING CYLINDER



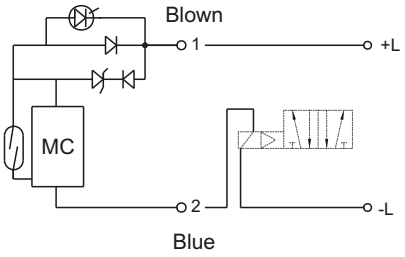
Sensor switchs

LN01P Suited for MDM series (tube I.D. ϕ 40, ϕ 50)

LN02P Suited for MDM series (tube I.D. ϕ 63)

LN03P Suited for MDM series (tube I.D. ϕ 80, ϕ 100)

Sensor circuit diagram:

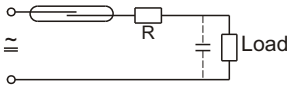


Specification:

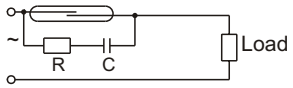
Model	LN01P, LN02P, LN03P
Switching voltage	DC/AC 10~220V
Contact capacity	20W/30VA
Switching current	0.5A
Response frequency	300Hz
Delay time	≦2ms
Contact	Normal open
Life	$>10^7$
Temperature	−25℃~75℃
Protection grade	IP66
Lead wire	2m 2-Core cable

Protect electric circuit:

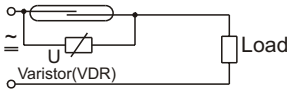
Capacitive load
DC/AC



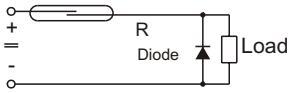
Inductive load
AC



Inductive load
DC/AC



Inductive load
DC



Dimensions:

