




### Specification




Model	MDHB, MDHD, MDHN	
Tube I.D. (mm)	40, 50, 63	80, 100, 125, 150
Standard stroke (mm)	50, 100, 150, 200, 250, 300, 350, 400, 450, 500	
The range of stroke	Max.1500 mm	Max.1900 mm
Power fluid	Filtered oil	
Material of cylinder barrel	Carbon steel STKM 13C	
Operating pressure range	14 MPa	
Ambient temperature	-10~+60°C (No freezing)	

Model	MDMB, MDMD, MDMN		
Tube I.D. (mm)	40, 50	63	80, 100
Standard stroke (mm)	50, 100, 150, 200, 250, 300, 350, 400, 450, 500		
Power fluid	Filtered oil		
Material of cylinder barrel	SUS304 Stainless steel		
Operating pressure range	7 MPa		
Proof pressure	10.5 MPa		
Speed range (mm/sec)	0.5~300 mm/sec		
Ambient temperature	-10~+60°C		
Sensor switch	LN01P	LN02P	LN03P

### Double acting cylinders

<b>MDHB</b>	Standard type	
<b>MDHD</b>	Double end rod type	
<b>MDHN-A/B</b>	Adjustable forward stroke cylinder	


### Double acting cylinders-with magnet


<b>MDMB</b>	Standard type	
<b>MDMD</b>	Double end rod type	
<b>MDMN-A/B</b>	Adjustable forward stroke cylinder	


• The series of hydraulic cylinder can be with cushion.


### Order example


1 - MDHB - 50 - N - 100 - B C - A - LB - Y


**STANDARD**  **MDHB**

**WITH MAGNET**  **MDMB**

 **MDHD**

 **MDMD**

 **MDHN**

 **MDMN**

**TUBE I.D.**

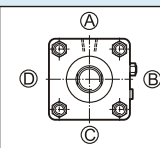
**STROKE**

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

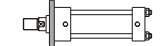
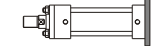


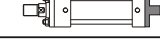


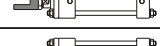
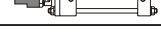
**ADJUSTABLE STROKE**  
Blank : Standard type  
A : Adjustable 25mm  
B : Adjustable 50mm  
(Only for MD\*N type)

**PORT & CUSHION ADJ. LOCATION**  
※Change port & cushion adj. location:  
Port location **B** **C** Cushion adjustment location

Blank : Standard type  
A Port location  
B Cushion adjustment location



**MOUNTING TYPE**

	<b>FA</b>
	<b>FB</b>
	<b>LA</b>
	<b>LB</b>
	<b>CA</b>
	<b>CB</b>
	<b>TC</b>
	<b>Y</b>
	<b>I</b>

**SEAL MATERIAL**

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 Polyurethane rubber	○	×	×	△	△
3	VITON Fluoro elastomer	○	×	○	○	○

Note: ○allowable ×unallowable △consult us

### MDHB, MDHD, MDHN Standard stroke

unit: mm

Tube I.D.	50	100	150	200	250	300	350	400	450	500
$\phi 40$	●	●	●	●	●	●	—	—	—	—
$\phi 50$	●	●	●	●	●	●	—	—	—	—
$\phi 63$	●	●	●	●	●	●	●	●	●	●
$\phi 80$	●	●	●	●	●	●	●	●	●	●
$\phi 100$	●	●	●	●	●	●	●	●	●	●
$\phi 125$	●	●	●	●	●	●	●	●	●	●
$\phi 150$	●	●	●	●	●	●	●	●	●	●

Note: May to order of unstandard stroke.

### MDMB, MDMD, MDMN Standard stroke


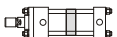



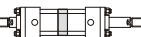
unit: mm

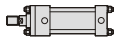


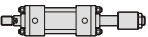
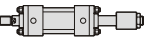
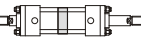
Tube I.D.	50	100	150	200	250	300	350	400	450	500
$\phi 40$	●	●	●	●	●	●	—	—	—	—
$\phi 50$	●	●	●	●	●	●	—	—	—	—
$\phi 63$	●	●	●	●	●	●	●	●	●	●
$\phi 80$	●	●	●	●	●	●	●	●	●	●
$\phi 100$	●	●	●	●	●	●	●	●	●	●











Note: May to order of unstandard stroke.

### Cylinder weight

unit: kg

Model	Basic weight MDHB	Stroke 25 mm MDHB	Basic weight MDHD	Basic weight MDHN-A	Basic weight MDHN-B	Stroke 25 mm MDHD/MDHN
Tube I.D.						
$\phi 40$	3.7	0.155	4.8	5.5	5.8	0.21
$\phi 50$	6.2	0.244	8.0	9.1	9.6	0.34
$\phi 63$	8.9	0.421	11.2	12.8	13.4	0.60
$\phi 80$	14.6	0.546	17.3	19.5	20.3	0.80
$\phi 100$	24.2	0.895	28.2	31.3	32.3	1.28
$\phi 125$	40.9	1.462	49.4	53.2	54.4	2.01
$\phi 150$	64.5	2.337	80.5	87.6	89.4	3.31

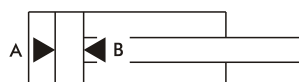
Model	Basic weight MDMB	Stroke 25 mm MDMB	Basic weight MDMD	Basic weight MDMN-A	Basic weight MDMN-B	Stroke 25 mm MDMD/MDMN
Tube I.D.						
$\phi 40$	3.66	0.14	4.8	5.5	5.8	0.21
$\phi 50$	6.15	0.22	8.0	9.1	9.5	0.32
$\phi 63$	8.70	0.34	11.0	12.6	13.2	0.53
$\phi 80$	14.60	0.54	17.3	19.5	20.3	0.80
$\phi 100$	23.80	0.75	27.8	30.9	32.0	1.14

Model	FA	FB	LA	LB	CA	CB+Pin	TC	Y+Pin	I	Nut (Rod)
Tube I.D.										
$\phi 40$	0.3	0.6	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.02
$\phi 50$	0.8	1.2	0.9	0.8	1.0	1.1	1.0	0.9	0.9	0.04
$\phi 63$	1.3	1.8	1.0	1.4	1.8	2.1	1.2	1.5	1.2	0.08
$\phi 80$	1.4	2.7	1.6	1.8	3.0	3.6	2.1	1.8	1.8	0.08
$\phi 100$	2.2	4.8	1.9	3.0	5.1	6.6	3.8	4.2	3.3	0.18
$\phi 125$	3.6	8.1	3.6	6.0	10.2	12.9	6.2	6.9	6.0	0.22
$\phi 150$	6.2	13.5	5.1	8.4	16.2	20.4	10.9	10.8	9.6	0.57

### Stroke tolerance

unit: mm

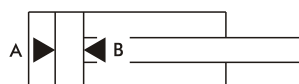
stroke	~100	101~250	251~630	631~1000	1001~1600	1601~2000
Tolerance	+0.8	+1.0	+1.25	+1.4	+1.6	+1.8
	0	0	0	0	0	0



### MDHB, MDHD, MDHN Theoretic force

unit: KN

Tube I.D. (mm)	Rod (mm)	Area (mm <sup>2</sup> )	Operating pressure (MPa)									
			6	7	8	9	10	11	12	13	14	
$\phi 40$	$\phi 20$	A	1256	7.54	8.79	10.05	11.30	12.56	13.82	15.07	16.33	17.58
		B	942	5.65	6.59	7.54	8.48	9.42	10.36	11.30	12.25	13.19
$\phi 50$	$\phi 25$	A	1963	11.78	13.74	15.70	17.67	19.63	21.59	23.56	25.52	27.48
		B	1472	8.83	10.30	11.78	13.25	14.72	16.19	17.66	19.14	20.61
$\phi 63$	$\phi 35$	A	3116	18.70	21.81	24.93	28.06	31.18	34.28	37.39	40.51	43.62
		B	2154	12.92	15.08	17.23	19.39	21.54	23.69	25.85	28.00	30.16
$\phi 80$	$\phi 40$	A	5024	30.14	35.17	40.19	45.22	50.24	55.26	60.29	65.31	70.34
		B	3768	22.61	26.38	30.14	33.91	37.68	41.45	45.22	48.98	52.75
$\phi 100$	$\phi 50$	A	7850	47.10	54.95	62.80	70.65	78.50	86.35	94.20	102.05	109.90
		B	5887	35.32	41.21	47.10	52.98	58.87	64.76	70.64	76.53	82.42
$\phi 125$	$\phi 60$	A	12266	73.60	85.86	98.13	110.39	122.66	134.93	147.19	159.46	171.72
		B	9440	56.64	66.08	75.52	84.96	94.40	103.84	113.28	122.72	132.16
$\phi 150$	$\phi 80$	A	17662	105.97	123.63	141.30	158.96	176.62	194.28	211.94	229.61	247.27
		B	12638	75.83	88.47	101.10	113.74	126.38	139.02	151.66	164.29	176.93



### MDMB, MDMD, MDMN Theoretic force

unit: N

Tube I.D. (mm)	Rod (mm)	Area (mm <sup>2</sup> )	Operating pressure (MPa)									
			2	3	4	5	6	7	8	9	10	
$\phi 40$	$\phi 20$	A	1256	2512	3768	5024	6280	7536	8792	10048	11304	12560
		B	942	1884	2826	3768	4710	5652	6594	7536	8478	9420
$\phi 50$	$\phi 25$	A	1963	3926	5889	7852	9815	11778	13741	15704	17667	19630
		B	1472	2944	4416	5888	7360	8832	10304	11776	13248	14720
$\phi 63$	$\phi 35$	A	3116	6232	9348	12464	15580	18696	21812	24928	28062	31180
		B	2154	4308	6462	8616	10770	12924	15078	17232	19386	21540
$\phi 80$	$\phi 40$	A	5024	10048	15072	20096	25120	30144	35168	40192	45216	50240
		B	3768	7536	11304	15072	18840	22608	26376	30144	33912	37680
$\phi 100$	$\phi 50$	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<sup>2</sup>)

f: Friction drag (N)

**HYDRAULIC CYLINDERS**

**How to order the seal kit**

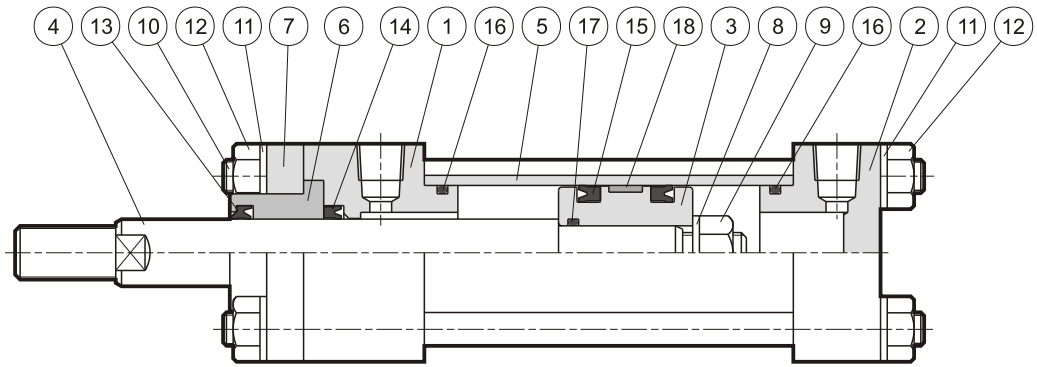
**MDHBSK**

Tube I.D.	Seal kit
40	MDHBSK40 - Including No.13,14,15,16,17,18
50	MDHBSK50 - Including No.13,14,15,16,17,18
63	MDHBSK63 - Including No.13,14,15,16,17,18
80	MDHBSK80 - Including No.13,14,15,16,17,18
100	MDHBSK100 - Including No.13,14,15,16,17,18
125	MDHBSK125 - Including No.13,14,15,16,17,18
150	MDHBSK150 - Including No.13,14,15,16,17,18

**MDHDSK**

Tube I.D.	Seal kit
40	MDHDSK40 - Including No.10,11,12,13,14,15
50	MDHDSK50 - Including No.10,11,12,13,14,15
63	MDHDSK63 - Including No.10,11,12,13,14,15
80	MDHDSK80 - Including No.10,11,12,13,14,15
100	MDHDSK100 - Including No.10,11,12,13,14,15
125	MDHDSK125 - Including No.10,11,12,13,14,15
150	MDHDSK150 - Including No.10,11,12,13,14,15

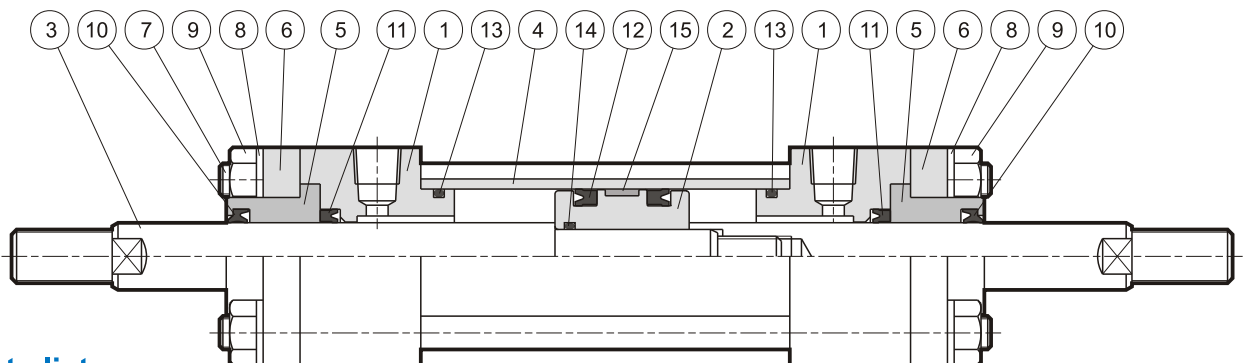
**MDHB**



**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	Piston 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	Wearing ring	1

**MDHD**



**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	Wearing ring	1

HYDRAULIC CYLINDERS

How to order the seal kit

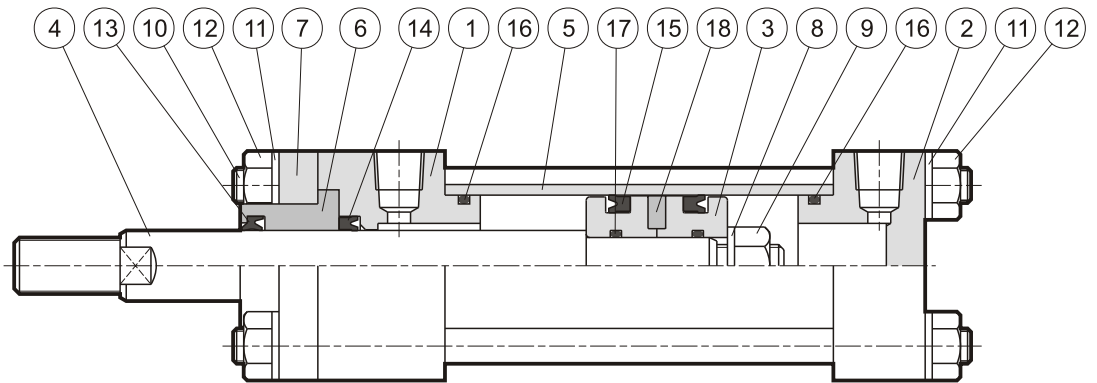
MDMBSK

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

MDMDSK

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

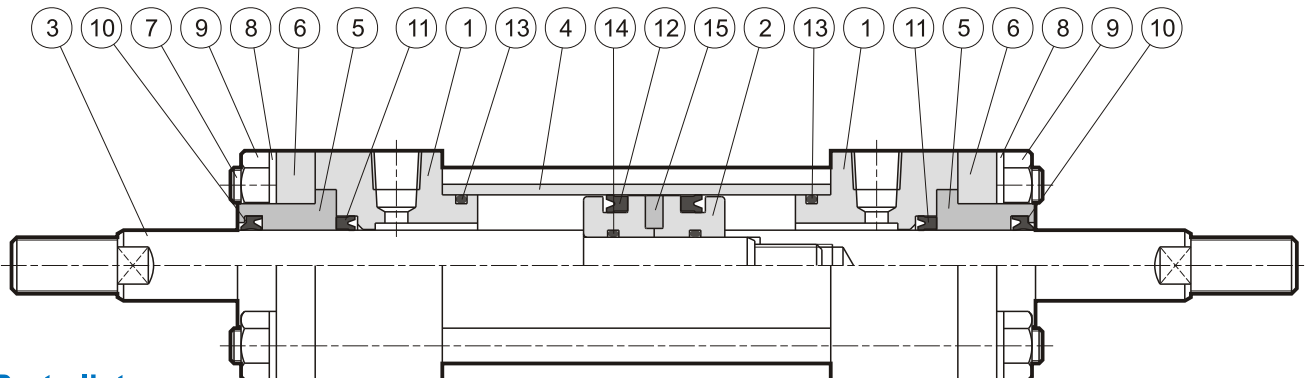
MDMB



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

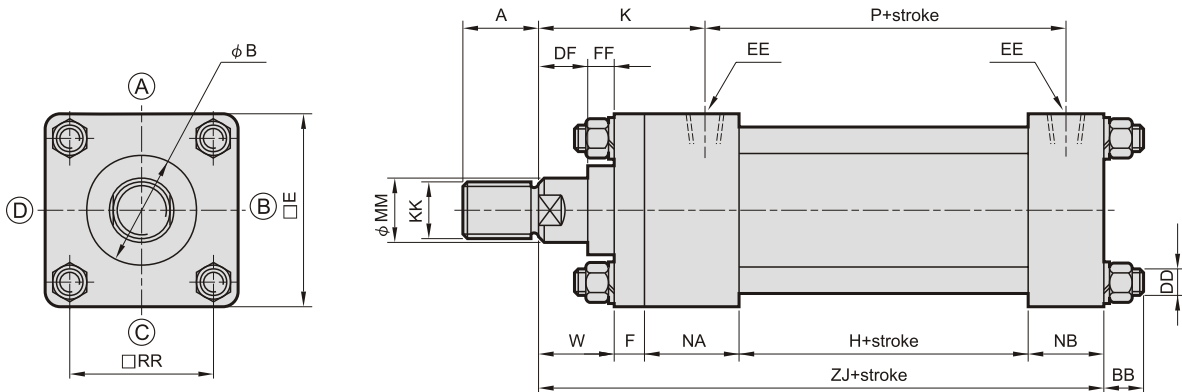
MDMD



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

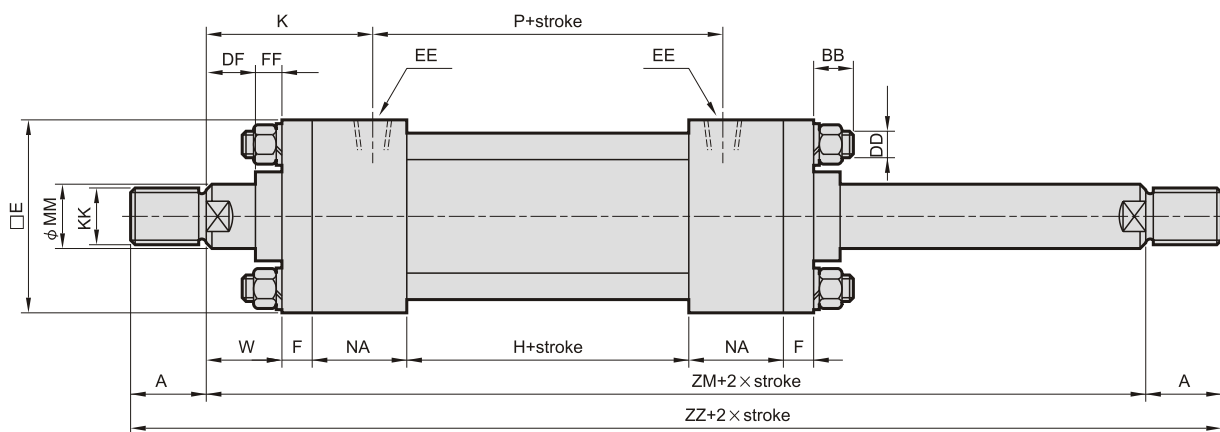
### MDHB / MDMB Standard type



Note : (A) Port location  
(B) Cushion adjustment location

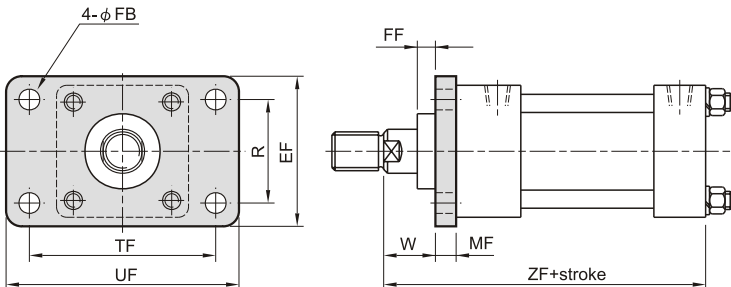
Code Tube I.D.	A	B	BB	DD	DF	E	EE	F	FF	H	K	KK	MM	NA	NB	P	RR	W	ZJ
$\phi 40$	30	35	16	M10 $\times$ 1.25	14	65	Rc1/4	11	11	60	60	M16 $\times$ 1.5	20	36	26	84	45	25	158
$\phi 50$	35	40	16	M10 $\times$ 1.25	16	75	Rc3/8	13	9	60	66	M22 $\times$ 1.5	25	42	34	88	52	25	174
$\phi 63$	40	50	18	M12 $\times$ 1.5	21	90	Rc3/8	15	9	65	73	M30 $\times$ 1.5	35	42	34	93	63	30	186
$\phi 80$	45	55	18	M16 $\times$ 1.5	23	110	Rc1/2	18	7	65	79	M30 $\times$ 1.5	40	46	39	95	80	30	198
$\phi 100$	50	65	25	M18 $\times$ 1.5	33	135	Rc1/2	20	7	74	95	M40 $\times$ 2.0	50	50	40	104	102	40	224
$\phi 125$	60	75	30	M22 $\times$ 1.5	38	165	Rc3/4	25	7	74	109	M48 $\times$ 2.0	60	58	47	112	122	45	249
$\phi 150$	70	95	30	M26 $\times$ 1.5	43	195	Rc3/4	30	7	90	119	M72 $\times$ 2.0	80	58	48	128	148	50	276

### MDHD / MDMD Double end rod type



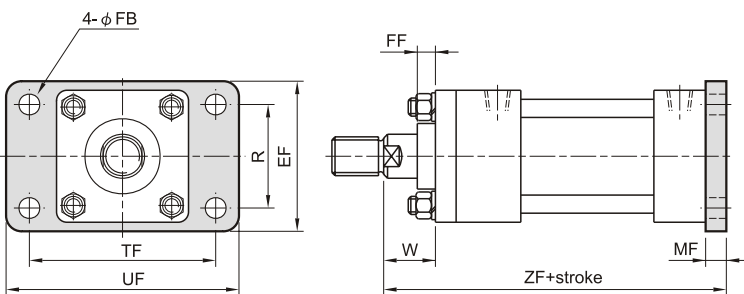
Code Tube I.D.	A	B	BB	DD	DF	E	EE	F	FF	H	K	KK	MM	NA	P	RR	W	ZM	ZZ
$\phi 40$	30	35	16	M10 $\times$ 1.25	14	65	Rc1/4	11	11	60	60	M16 $\times$ 1.5	20	36	84	45	25	204	264
$\phi 50$	35	40	16	M10 $\times$ 1.25	16	75	Rc3/8	13	9	60	66	M22 $\times$ 1.5	25	42	88	52	25	220	290
$\phi 63$	40	50	18	M12 $\times$ 1.5	21	90	Rc3/8	15	9	65	73	M30 $\times$ 1.5	35	42	93	63	30	239	319
$\phi 80$	45	55	18	M16 $\times$ 1.5	23	110	Rc1/2	18	7	65	79	M30 $\times$ 1.5	40	46	95	80	30	253	343
$\phi 100$	50	65	25	M18 $\times$ 1.5	33	135	Rc1/2	20	7	74	95	M40 $\times$ 2.0	50	50	104	102	40	294	394
$\phi 125$	60	75	30	M22 $\times$ 1.5	38	165	Rc3/4	25	7	74	109	M48 $\times$ 2.0	60	58	112	122	45	330	450
$\phi 150$	70	95	30	M26 $\times$ 1.5	43	195	Rc3/4	30	7	90	119	M72 $\times$ 2.0	80	58	128	148	50	366	506

### FA Front flange



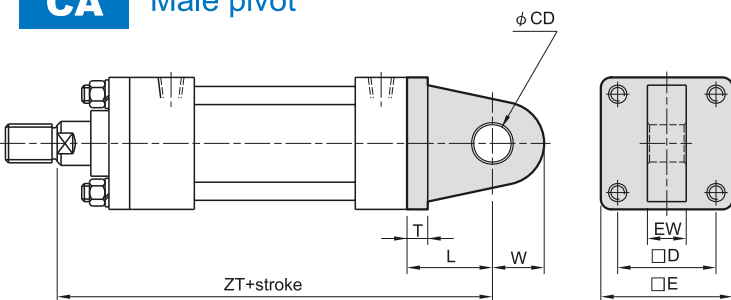
Code Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
$\phi 40$	69	11	11	11	46	95	118	25	158
$\phi 50$	85	11	9	13	58	115	145	25	174
$\phi 63$	98	14	9	15	65	132	165	30	186
$\phi 80$	118	18	7	18	87	155	190	30	198
$\phi 100$	150	22	7	20	109	190	230	40	224
$\phi 125$	175	24	7	25	130	224	272	45	249
$\phi 150$	210	28	7	30	155	270	320	50	276

### FB Rear flange



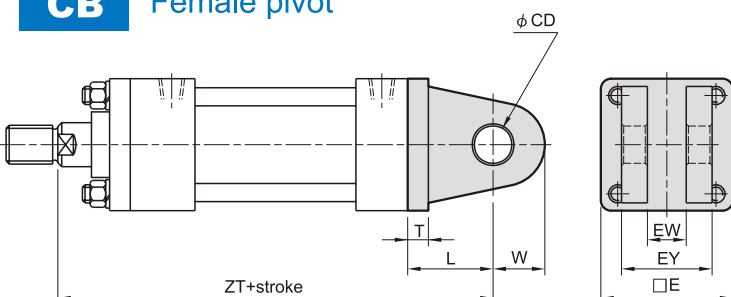
Code Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
$\phi 40$	69	11	11	11	46	95	118	25	169
$\phi 50$	85	11	9	13	58	115	145	25	187
$\phi 63$	98	14	9	15	65	132	165	30	201
$\phi 80$	118	18	7	18	87	155	190	30	216
$\phi 100$	150	22	7	20	109	190	230	40	244
$\phi 125$	175	24	7	25	130	224	272	45	274
$\phi 150$	210	28	7	30	155	270	320	50	306

### CA Male pivot



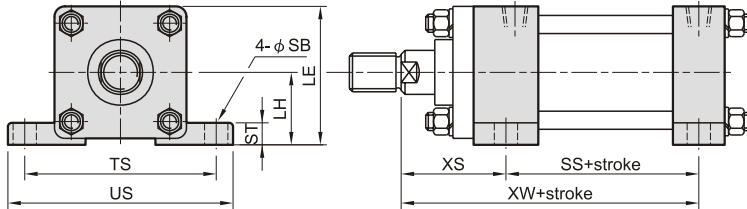
Code Tube I.D.	CD	D	E	EW	L	T	W	ZT
$\phi 40$	16	45	65	20	38	11	16	196
$\phi 50$	20	52	75	25	45	13	20	219
$\phi 63$	25	63	90	30	54	15	25	240
$\phi 80$	30	80	110	35	71	18	30	269
$\phi 100$	40	102	135	40	86	20	40	310
$\phi 125$	50	122	165	50	110	25	50	359
$\phi 150$	60	148	195	60	109	30	60	385

### CB Female pivot



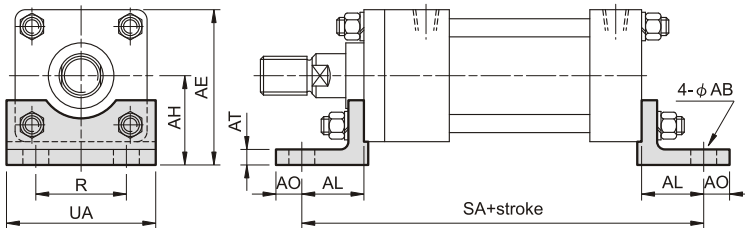
Code Tube I.D.	CD	E	EW	EY	L	T	W	ZT
$\phi 40$	16	65	20	50	38	11	16	196
$\phi 50$	20	75	25	57	45	13	20	219
$\phi 63$	25	90	30	70	54	15	25	240
$\phi 80$	30	110	35	80	71	18	30	269
$\phi 100$	40	135	40	100	86	20	40	310
$\phi 125$	50	165	50	126	110	25	50	359
$\phi 150$	60	195	60	160	109	30	60	385

### LA Side lugs



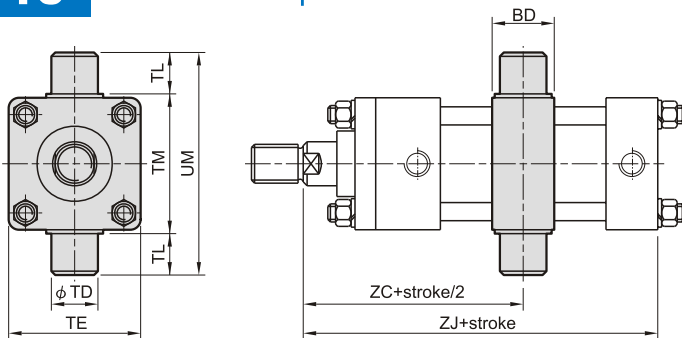
Code Tube I.D.	LE	LH	SB	SS	ST	TS	XS	XW	US
$\phi 40$	70	37.5	11	91	14	95	54	145	118
$\phi 50$	82.5	45	11	98	17	115	59	157	145
$\phi 63$	95	50	14	103	19	132	66	169	165
$\phi 80$	115	60	18	107.5	25	155	71	178.5	190
$\phi 100$	138.5	71	22	119	27	190	85	204	230
$\phi 125$	167.5	85	24	126.5	32	224	99	225.5	272
$\phi 150$	203.5	106	28	143	37	270	109	252	320

### LB Foot mouting



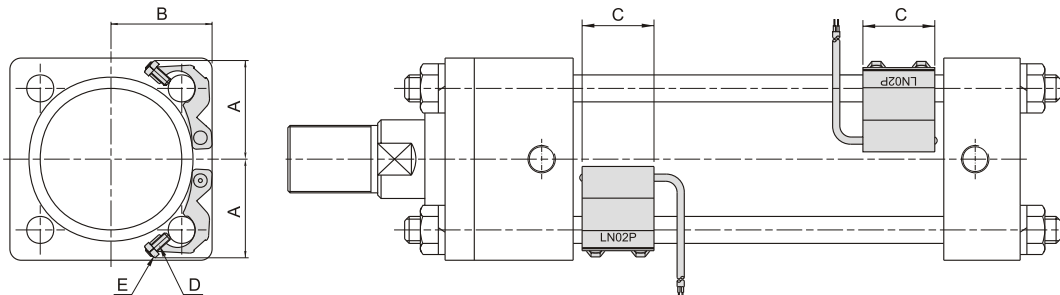
Code Tube I.D.	AB	AE	AH	AL	AO	AT	R	SA	UA
$\phi 40$	11	75.5	43	32.5	13	8	46	198	69
$\phi 50$	11	87.5	50	32.5	15	8	58	214	85
$\phi 63$	14	105	60	37	18	10	65	230	98
$\phi 80$	18	127	72	49	20	12	87	266	118
$\phi 100$	22	152.5	85	58	23	12	109	300	150
$\phi 125$	24	187.5	105	68.5	29	15	130	341	175
$\phi 150$	28	220.5	123	74.5	30	18	155	375	210

### TC Intermediate pivot



Code Tube I.D.	BD	TE	TD	TL	TM	UM	ZC	ZJ
$\phi 40$	28	65	20	20	69	109	102	158
$\phi 50$	33	75	25	25	85	135	110	174
$\phi 63$	38	90	30	30	98	158	119.5	186
$\phi 80$	38	110	30	30	118	178	126.5	198
$\phi 100$	48	135	40	40	145	225	147	224
$\phi 125$	58	165	50	50	175	275	165	249
$\phi 150$	73	195	60	63	205	331	183	276

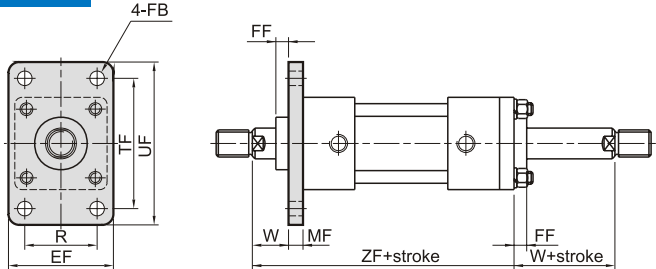
### Installation of sensor switches



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

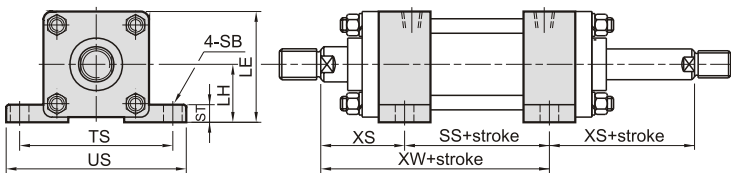


### FA Front flange



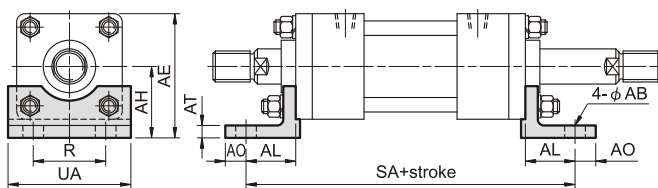
Code Tube I.D.	EF	FB	FF	MF	R	TF	UF	W	ZF
$\phi 40$	69	11	11	11	46	95	118	25	179
$\phi 50$	85	11	9	13	58	115	145	25	195
$\phi 63$	98	14	9	15	65	132	165	30	209
$\phi 80$	118	18	7	18	87	155	190	30	223
$\phi 100$	150	22	7	20	109	190	230	40	254
$\phi 125$	175	24	7	25	130	224	272	45	285
$\phi 150$	210	28	7	30	155	270	320	50	316

### LA Side lugs



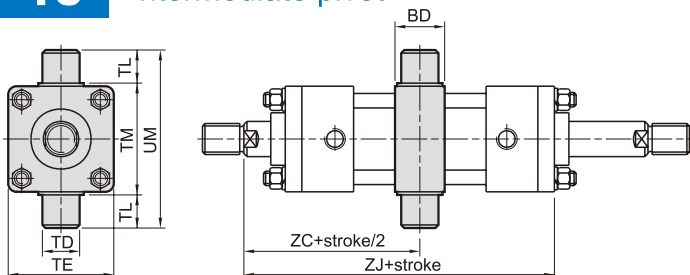
Code Tube I.D.	LE	LH	SB	SS	ST	TS	XS	XW	US
$\phi 40$	70	37.5	11	96	14	95	54	150	118
$\phi 50$	82.5	45	11	102	17	115	59	161	145
$\phi 63$	95	50	14	107	19	132	66	173	165
$\phi 80$	115	60	18	111	25	155	71	182	190
$\phi 100$	138.5	71	22	124	27	190	85	209	230
$\phi 125$	167.5	85	24	132	32	224	99	231	272
$\phi 150$	203.5	106	28	148	37	270	109	257	320

### LB Foot mounting



Code Tube I.D.	AB	AE	AH	AL	AO	AT	R	SA	UA
$\phi 40$	11	75.5	43	32.5	13	8	46	219	69
$\phi 50$	11	87.5	50	32.5	15	8	58	235	85
$\phi 63$	14	105	60	37	18	10	65	253	98
$\phi 80$	18	127	72	49	20	12	87	291	118
$\phi 100$	22	152.5	85	58	23	12	109	330	150
$\phi 125$	24	187.5	105	68.5	29	15	130	377	175
$\phi 150$	28	220.5	123	74.5	30	18	155	415	210

### TC Intermediate pivot



Code Tube I.D.	BD	TE	TD	TL	TM	UM	ZC	ZJ
$\phi 40$	28	65	20	20	69	109	102	179
$\phi 50$	33	75	25	25	85	135	110	195
$\phi 63$	38	90	30	30	98	158	119.5	209
$\phi 80$	38	110	30	30	118	178	126.5	223
$\phi 100$	48	135	40	40	145	225	147	254
$\phi 125$	58	165	50	50	175	275	165	285
$\phi 150$	73	195	60	63	205	331	183	316

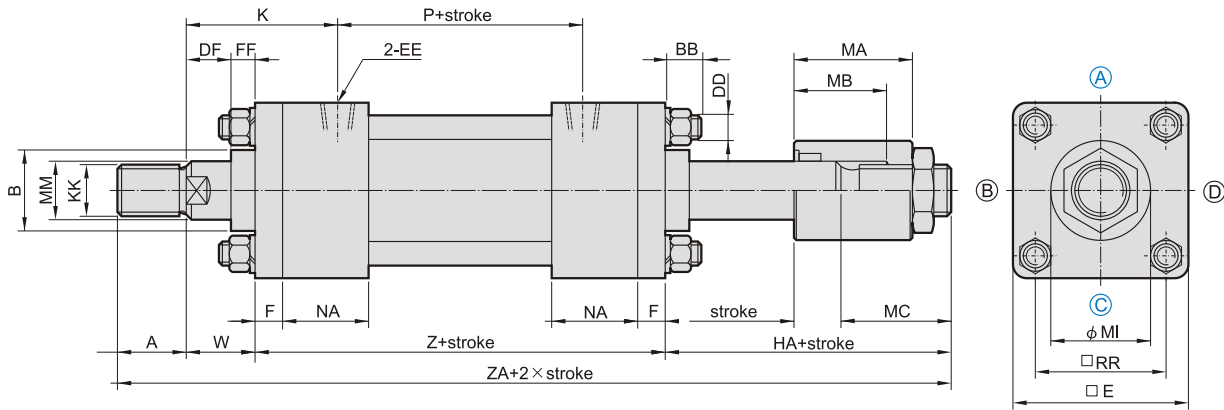
# MDHN/MDMN Adjustable stroke $\phi 40 \sim \phi 150$



## HYDRAULIC CYLINDERS

### MDHN / MDMN (A: adjustable stroke 25 mm)

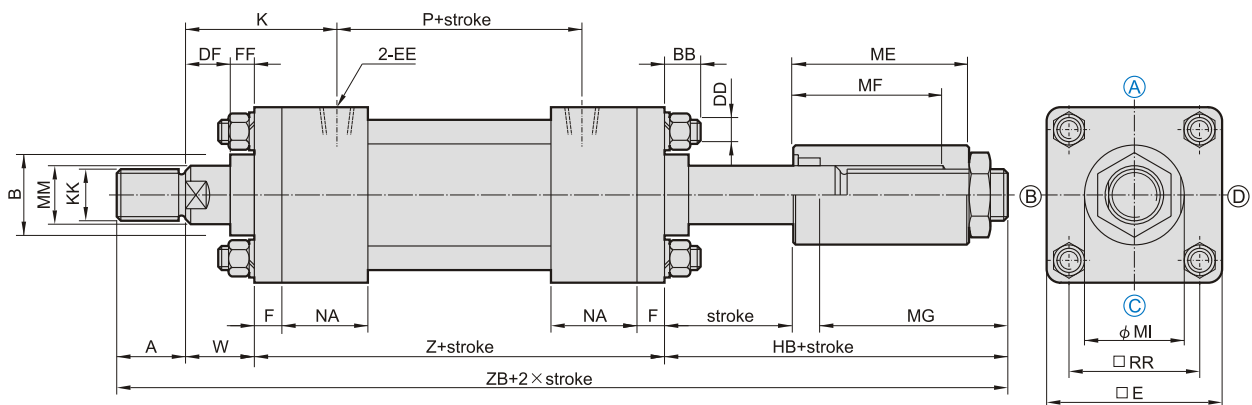
Note : (A) Port location  
(B) Cushion adjustment location



Code Tube I.D.	A	B	BB	DD	DF	E	EE	F	FF	HA	K	KK	MA	MB	MC	MI	MM	NA	P	RR	W	Z	ZA
$\phi 40$	30	35	14	M10 $\times$ 1.25	14	65	Rc1/4	11	11	71	59	M16 $\times$ 1.5	60	45	51	42	20	36	86	45	25	154	280
$\phi 50$	35	40	14	M10 $\times$ 1.25	16	75	Rc3/8	13	9	77	65	M22 $\times$ 1.5	63	45	57	50	25	42	90	52	25	170	307
$\phi 63$	40	50	16	M12 $\times$ 1.5	21	90	Rc3/8	15	9	81	72	M30 $\times$ 1.5	65	45	61	60	35	42	95	63	30	179	330
$\phi 80$	45	55	19	M16 $\times$ 1.5	23	110	Rc1/2	18	7	81	76	M30 $\times$ 1.5	65	45	61	70	40	46	101	80	30	193	349
$\phi 100$	50	65	25	M18 $\times$ 1.5	33	135	Rc1/2	20	7	88	92	M40 $\times$ 2.0	70	45	68	80	50	50	110	102	40	214	392
$\phi 125$	60	75	30	M22 $\times$ 1.5	38	165	Rc3/4	25	7	97	108	M48 $\times$ 2.0	76	46	73	85	60	58	114	122	45	240	442
$\phi 150$	70	95	30	M26 $\times$ 1.5	43	195	Rc3/4	30	7	112	118	M72 $\times$ 2.0	86	46	92	110	80	58	130	148	50	266	498

### MDHN / MDMN (B: adjustable stroke 50 mm)

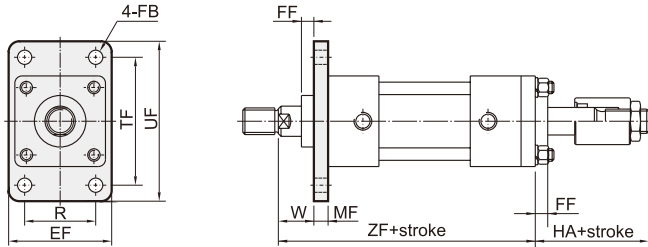
Note : (A) Port location  
(B) Cushion adjustment location



Code Tube I.D.	A	B	BB	DD	DF	E	EE	F	FF	HB	K	KK	ME	MF	MG	MI	MM	NA	P	RR	W	Z	ZB
$\phi 40$	30	35	14	M10 $\times$ 1.25	14	65	Rc1/4	11	11	96	59	M16 $\times$ 1.5	85	70	76	42	20	36	86	45	25	154	305
$\phi 50$	35	40	14	M10 $\times$ 1.25	16	75	Rc3/8	13	9	102	65	M22 $\times$ 1.5	88	70	82	50	25	42	90	52	25	170	332
$\phi 63$	40	50	16	M12 $\times$ 1.5	21	90	Rc3/8	15	9	106	72	M30 $\times$ 1.5	90	70	86	60	35	42	95	63	30	179	355
$\phi 80$	45	55	19	M16 $\times$ 1.5	23	110	Rc1/2	18	7	106	76	M30 $\times$ 1.5	90	70	86	70	40	46	101	80	30	193	374
$\phi 100$	50	65	25	M18 $\times$ 1.5	33	135	Rc1/2	20	7	113	92	M40 $\times$ 2.0	95	70	93	80	50	50	110	102	40	214	417
$\phi 125$	60	75	30	M22 $\times$ 1.5	38	165	Rc3/4	25	7	122	108	M48 $\times$ 2.0	101	71	98	85	60	58	114	122	45	240	467
$\phi 150$	70	95	30	M26 $\times$ 1.5	43	195	Rc3/4	30	7	137	118	M72 $\times$ 2.0	111	71	117	110	80	58	130	148	50	266	523

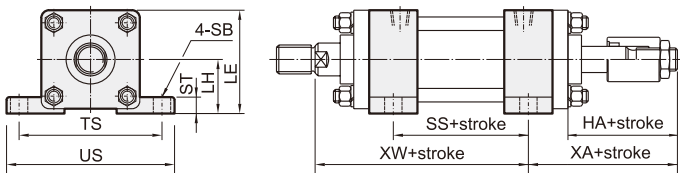


### FA (A: adjustable stroke 25 mm)



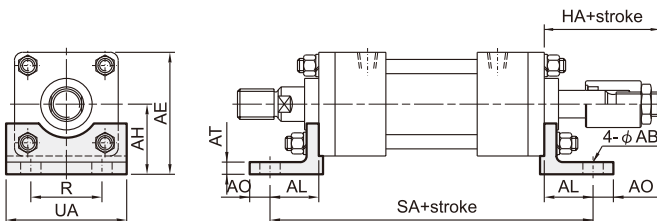
Code Tube I.D.	EF	FB	FF	HA	MF	R	TF	UF	W	ZF
$\phi 40$	69	11	11	71	11	46	95	118	25	179
$\phi 50$	85	11	9	77	13	58	115	145	25	195
$\phi 63$	98	14	9	81	15	65	132	165	30	209
$\phi 80$	118	18	7	81	18	87	155	190	30	223
$\phi 100$	150	22	7	88	20	109	190	230	40	254
$\phi 125$	175	24	7	97	25	130	224	272	45	285
$\phi 150$	210	28	7	112	30	155	270	320	50	316

### LA (A: adjustable stroke 25 mm)



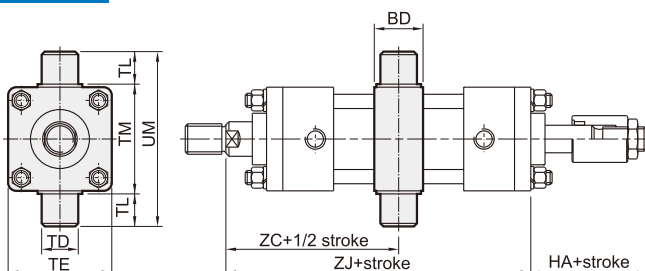
Code Tube I.D.	LE	LH	HA	SB	SS	ST	TS	XA	XW	US
$\phi 40$	70	37.5	71	11	96	14	95	100	150	118
$\phi 50$	82.5	45	77	11	102	17	115	111	161	145
$\phi 63$	95	50	81	14	107	19	132	117	173	165
$\phi 80$	115	60	81	18	111	25	155	122	182	190
$\phi 100$	138.5	71	88	22	124	27	190	133	209	230
$\phi 125$	167.5	85	97	24	132	32	224	151	231	272
$\phi 150$	203.5	106	112	28	148	37	270	171	257	320

### LB (A: adjustable stroke 25 mm)



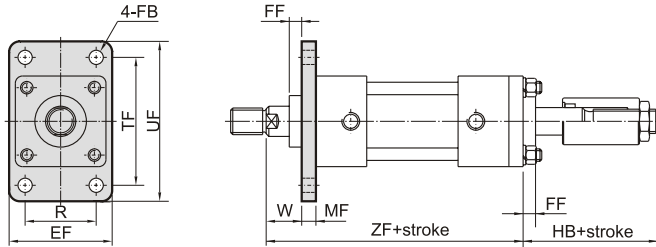
Code Tube I.D.	AB	AE	AH	AL	AO	AT	HA	R	SA	UA
$\phi 40$	11	75.5	43	32.5	13	8	71	46	219	69
$\phi 50$	11	87.5	50	32.5	15	8	77	58	235	85
$\phi 63$	14	105	60	37	18	10	81	65	253	98
$\phi 80$	18	127	72	49	20	12	81	87	291	118
$\phi 100$	22	152.5	85	58	23	12	88	109	330	150
$\phi 125$	24	187.5	105	68.5	29	15	97	130	377	175
$\phi 150$	28	220.5	123	74.5	30	18	112	155	415	210

### TC (A: adjustable stroke 25 mm)



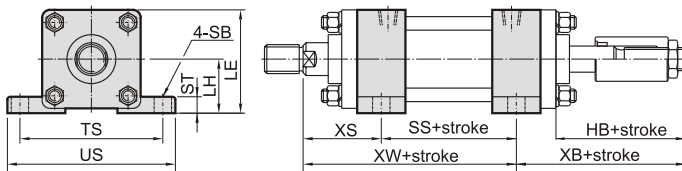
Code Tube I.D.	BD	HA	TE	TD	TL	TM	UM	ZC	ZJ
$\phi 40$	28	71	65	20	20	69	109	102	179
$\phi 50$	33	77	75	25	25	85	135	110	195
$\phi 63$	38	81	90	30	30	98	158	119.5	209
$\phi 80$	38	81	110	30	30	118	178	126.5	223
$\phi 100$	48	88	135	40	40	145	225	147	254
$\phi 125$	58	97	165	50	50	175	275	165	285
$\phi 150$	73	112	195	60	63	205	331	183	316

### FA (B: adjustable stroke 50 mm)



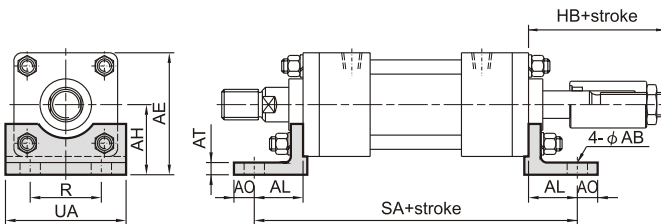
Code Tube I.D.	EF	FB	FF	HB	MF	R	TF	UF	W	ZF
$\phi 40$	69	11	11	96	11	46	95	118	25	179
$\phi 50$	85	11	9	102	13	58	115	145	25	195
$\phi 63$	98	14	9	106	15	65	132	165	30	209
$\phi 80$	118	18	7	106	18	87	155	190	30	223
$\phi 100$	150	22	7	113	20	109	190	230	40	254
$\phi 125$	175	24	7	122	25	130	224	272	45	285
$\phi 150$	210	28	7	137	30	155	270	320	50	316

### LA (B: adjustable stroke 50 mm)



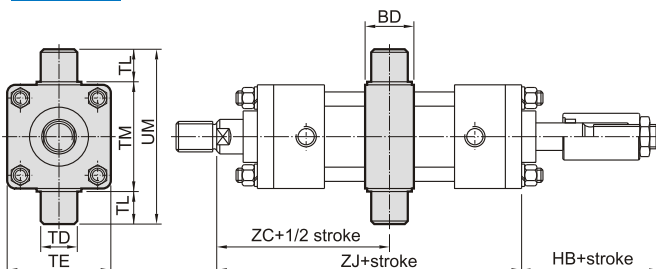
Code Tube I.D.	LE	LH	HB	SB	SS	ST	TS	XB	XW	US
$\phi 40$	70	37.5	96	11	96	14	95	125	150	118
$\phi 50$	82.5	45	102	11	102	17	115	136	161	145
$\phi 63$	95	50	106	14	107	19	132	142	173	165
$\phi 80$	115	60	106	18	111	25	155	147	182	190
$\phi 100$	138.5	71	113	22	124	27	190	158	209	230
$\phi 125$	167.5	85	122	24	132	32	224	176	231	272
$\phi 150$	203.5	106	137	28	148	37	270	196	257	320

### LB (B: adjustable stroke 50 mm)



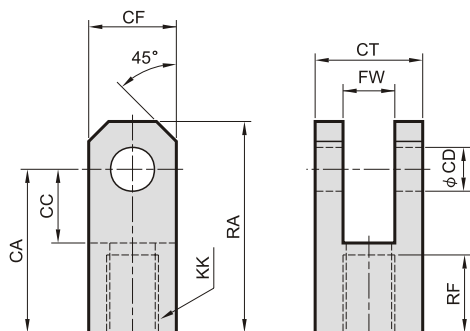
Code Tube I.D.	AB	AE	AH	AL	AO	AT	HB	R	SA	UA
$\phi 40$	11	75.5	43	32.5	13	8	96	46	219	69
$\phi 50$	11	87.5	50	32.5	15	8	102	58	235	85
$\phi 63$	14	105	60	37	18	10	106	65	253	98
$\phi 80$	18	127	72	49	20	12	106	87	291	118
$\phi 100$	22	152.5	85	58	23	12	113	109	330	150
$\phi 125$	24	187.5	105	68.5	29	15	122	130	377	175
$\phi 150$	28	220.5	123	74.5	30	18	137	155	415	210

### TC (B: adjustable stroke 50 mm)



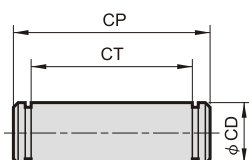
Code Tube I.D.	BD	HB	TE	TD	TL	TM	UM	ZC	ZJ
$\phi 40$	28	96	65	20	20	69	109	102	179
$\phi 50$	33	102	75	25	25	85	135	110	195
$\phi 63$	38	106	90	30	30	98	158	119.5	209
$\phi 80$	38	106	110	30	30	118	178	126.5	223
$\phi 100$	48	113	135	40	40	145	225	147	254
$\phi 125$	58	122	165	50	50	175	275	165	285
$\phi 150$	73	137	195	60	63	205	331	183	316

**Y connector**



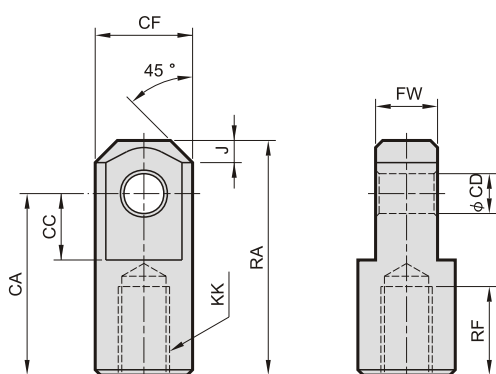
Model	Tube I.D.	CA	CC	CD	CF	CT	FW	KK	RA	RF
Y-M16×1.5	φ 40	50	26	16	35	45	20	M16×1.5	66	24
Y-M22×1.5	φ 50	60	30	20	40	50	25	M22×1.5	80	30
Y-M30×1.5	φ 63	80	40	25	50	60	30	M30×1.5	105	40
Y-M30×1.5	φ 80	80	40	30	60	65	35	M30×1.5	110	40
Y-M40×2.0	φ 100	90	50	40	80	90	40	M40×2.0	130	40
Y-M48×2.0	φ 125	110	60	50	100	100	50	M48×2.0	160	50
Y-M72×2.0	φ 150	130	70	60	120	120	60	M72×2.0	190	60

**Pin**



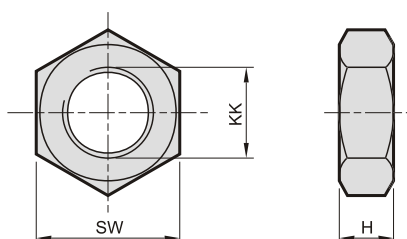
Model	Tube I.D.	CD	CP	CT
P1659	φ 40	16	59	46
P2066	φ 50	20	66	51
P2576	φ 63	25	76	61
P3081	φ 80	30	81	66
P40114	φ 100	40	114	91
P50124	φ 125	50	124	101
P60156	φ 150	60	156	121

**I connector**



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
I-M48×2.0	φ 125	120	65	50	100	50	30	M48×2.0	170	50
I-M72×2.0	φ 150	140	75	60	120	60	30	M72×2.0	200	55

**Mounting nut**



Model	Tube I.D.	H	KK	SW
N-M16×1.5	φ 40	8	M16×1.5	24
N-M22×1.5	φ 50	11	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
N-M48×2.0	φ 125	15	M48×2.0	65
N-M72×2.0	φ 150	20	M72×2.0	100