

# MCMOC series

## OVAL MICRO-CYLINDER

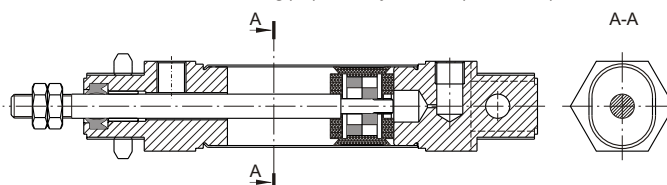


### Features:

- An innovating range from size 8 to 25(8,10,12,16,20,25), with a wide choice of magnetic sensors, reed or solid state.
- The flat oval design matching piston shape prevents no-rotating rod ( self guidance).
- Dimensions for cylinder are compatible with ISO standard.
- Mounting are identical for round and oval cylinders with ISO 6432 ( Piston as standard goes automatically with magnet).

### Options

- Hole - rod with cylinders double end rod
- Pneumatic cushioning( A ) with cylinders ( 16,20,25)



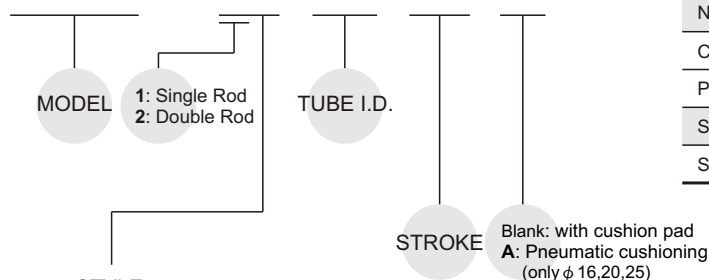
### Material

Oval tube	Stainless steel
End cover	Anodized aluminium
Piston rod	Stainless steel
Piston	Composit polyurethan
Piston rod bearing	Bronze & PTFE
Seals	Polyurethan
Spring	Bronze & PTFE
Magnet	Ferrite
Spacer spring	Brass & Acetal resin

Model		MCMOC				
Acting type	Double acting / Single acting					
Tube I.D. (mm)	8	10	12	16	20	25
Port size Rc(PT)	M5 × 0.8			G 1/8		
Medium	Filter air 50 μm lubricated or not					
Operating pressure kgf/cm <sup>2</sup>	Double acting	1~10	0.8~10	0.8~10		
	Single Push acting	2.0~10	2.3~10	2.1~10	1.5~10	
	Pull	3~10	2.5~10	2~10		
Stocking temperature °C	-10~70°C (No freezing)					
Speed	m/sec	0.6			0.7	
Tolerance of stroke	mm	0~+1.5				
Work temperature °C	-10~60°C					
Non-rotating accuracy	±3.5°		±2.5°			
Cushioning of end stroke	Elastic by polyurethan internal stop built into piston					
Pneumatic cushioning	No		Yes (option)			
Sensor switch	RCS					
Sensor switch band	BK-81					

### Order example:

MCMOC - 11 - 20 - 25 - A

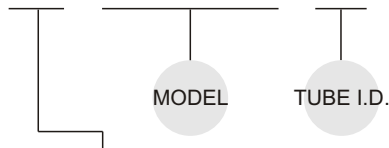


### STYLE:

Code	Symbol	Description
1 1		Double acting / Male thread
1 3		Single acting / Normally extended male thread
1 5		Single acting / Normally returned male thread
2 1		Dual rod / Male thread
2 3		Single action / Dual rod male thread
2 5		Dual rod / Male thread hole-rod
2 6		Single action / Dual rod / Male thread hole-rod

### Mounting accessories:

FA - MCMOC - 20















### MOUNTING TYPE:






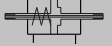

	LB
	FA
	FB
	SDB

### Forces for oval cylinder

(unit: kg)

Tube I.D.	Rod $\phi$	Function	Area mm <sup>2</sup>	Pressure kgf/cm <sup>2</sup>					
				2	3	4	5	6	7
8	4	 Push	63	0.63	1.13	1.77	2.52	3.15	3.78
		 Pull	51	0.42	0.93	1.44	1.95	2.46	2.97
		Double Push action	63	1.26	1.89	2.52	3.15	3.78	4.41
		Pull	51	10.2	1.53	2.04	2.55	3.06	3.57
10	4	 Push	100	1.25	2.37	3.63	4.12	5	6.12
		 Pull	88	0.91	1.79	2.67	3.55	4.43	5.31
		Double Push action	100	2.00	3.00	4.00	5.00	6.00	7.00
		Pull	88	1.76	2.64	3.52	4.40	5.28	6.16
12	6	 Push	150	2.44	4.08	5.40	6.88	8.37	10.12
		 Pull	123	1.61	2.84	4.07	5.30	6.53	7.76
		Double Push action	150	3.00	4.50	6.00	7.50	9.00	10.5
		Pull	123	2.46	3.69	4.92	6.15	7.38	8.61
16	6	 Push	200	3.50	5.00	7.40	8.20	9.10	12.00
		 Pull	173	1.51	3.25	4.95	6.75	8.45	10.15
		Double Push action	200	4.00	6.00	8.00	10.00	12.00	14.00
		Pull	173	3.46	5.20	6.90	8.70	10.40	12.10
20	8	 Push	380	4.63	8.78	12.93	15.98	19.52	24.15
		 Pull	330	3.70	5.88	10.30	13.6	16.9	20.20
		Double Push action	380	7.60	11.4	15.2	19.00	22.80	26.60
		Pull	330	6.60	9.90	13.20	16.5	19.80	23.10
25	10	 Push	430	6.40	11.70	16.20	21.50	26.30	31.20
		 Pull	352	3.52	4.14	7.66	11.18	14.70	18.22
		Double Push action	430	8.60	12.90	17.20	21.50	25.80	30.10
		Pull	352	7.04	10.56	14.08	17.60	21.12	24.64

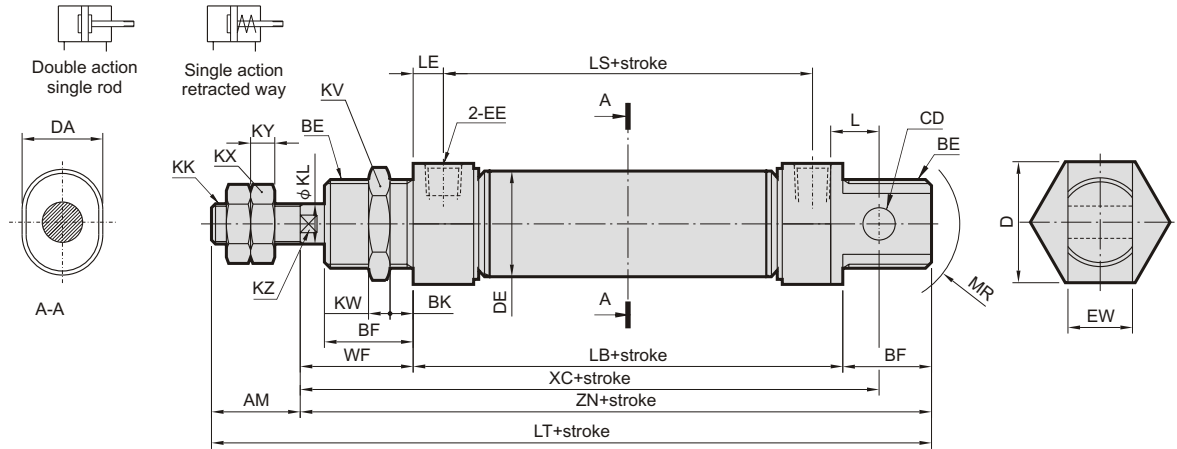
### Strokes

Function							
Tube I.D.			Hole-rod			Hole-rod	
8	5, 10, 15, 20, 25, 30, 40, 50, 80, 100		25, 50, 80, 100	10, 25, 50		25, 50	
10	5, 10, 15, 20, 25, 30, 40, 50, 80, 100		25, 50, 80, 100	10, 25, 50		25, 50	10, 25, 50
12	5, 10, 15, 20, 25, 30, 40, 50, 80, 100, 160		25, 50, 80, 100	10, 25		25	10, 25, 50
16	5, 10, 15, 20, 25, 30, 40, 50, 80, 100, 160, 200		25, 50, 80, 100, 160	10, 25, 50		25, 50	10, 25, 50
20	5, 10, 15, 20, 25, 30, 40, 50, 80, 100, 160, 200, 300		25, 50, 80, 100, 160, 200	10, 25, 50		25, 50	10, 25, 50
25	5, 10, 15, 20, 25, 30, 40, 50, 80, 100, 160, 200, 300, 400, 500, 650		25, 50, 80, 100, 160, 200	10, 25, 50		25, 50	10, 25, 50

Note: Special strokes are available on request

# MCMOC Dimensions $\phi 8 \sim \phi 25$

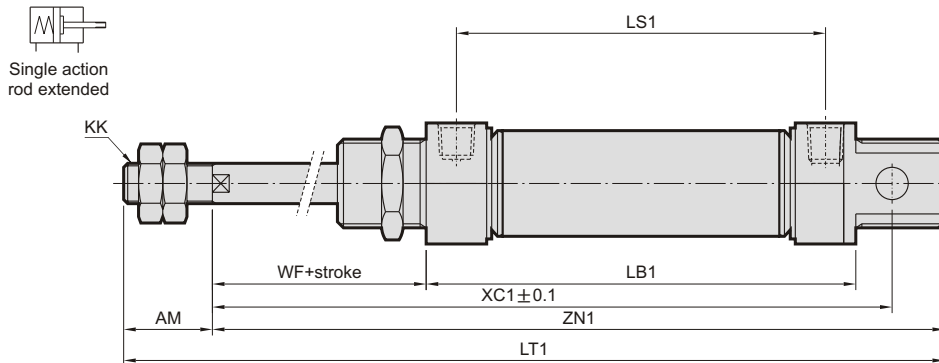
## OVAL MICRO-CYLINDER



Code Tube I.D.	AM	BE	BF	BK	CD (H9)	D	DA	DE	EE	EW (d13)	KL	KK	KV	KW	KX	KY	KZ
8	12	M12×1.25	13	7	4	14	8.3	11.8	M5	8	4	M4	19	6	7	2	-
10	12	M12×1.25	13	7	4	14	10.3	14.3	M5	8	4	M4	19	6	7	2	-
12	16	M16×1.5	17	8	6	20	12.3	17.3	M5	12	6	M6	23	8	10	3	5
16	16	M16×1.5	17	8	6	20	14.3	19.8	M5	12	6	M6	23	8	10	3	5
20	20	M22×1.5	20	9	8	27	20.5	25.5	G 1/8	16	8	M8	32	11	13	4	7
25	22	M22×1.5	22	11	8	27	22.5	26.5	G 1/8	16	10	M10×1.25	32	11	17	5	9

Code Tube I.D.	L	LB	LE	LS	LT	MR	WF $\pm 1.2$	XC $\pm 1$	ZC	ZN
8	6	45	6	33	86	18	16	64	20	73
10	6	45	6	33	86	18	16	64	20	73
12	9	46	6	34	102	22	22	75	20	85
16	9	53	6	41	107	22	22	82	20	92
20	12	67	8	51	132	25	24	95	20	112
25	12	72	8	56	143	25	28	104	20	121

※ Dimension ISO 6432

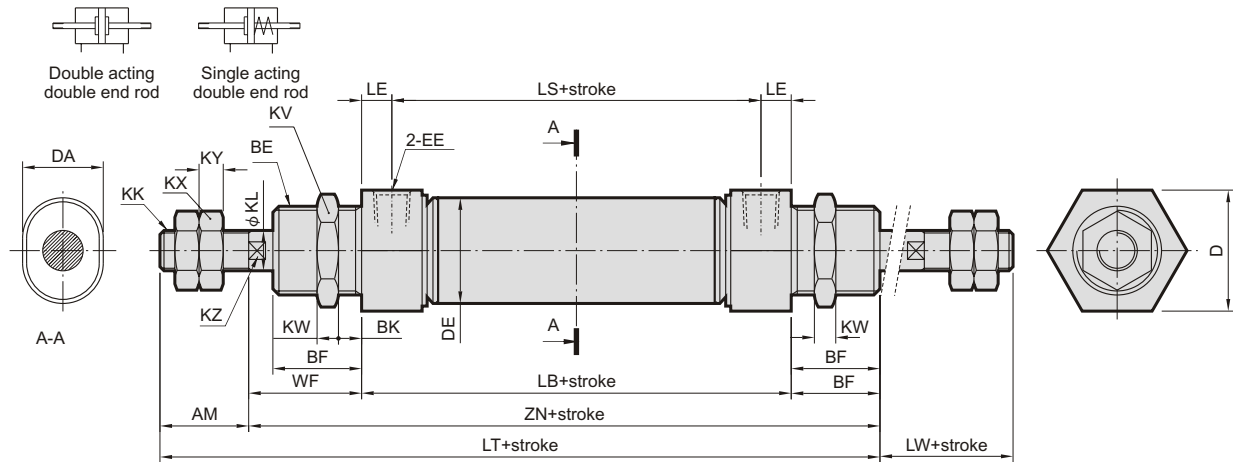


Code Tube I.D.	LB1			LS1			LT1			XC1			ZN1		
	10	25	50	10	25	50	10	25	50	10	25	50	10	25	50
8	65	95	145	53	83	133	116	161	236	94	139	214	103	148	223
10	65	95	145	53	83	133	116	161	236	94	139	214	103	148	223
12	66	96	146	54	84	134	132	177	252	105	150	225	115	160	235
16	73	103	153	61	91	141	137	182	257	112	157	232	122	167	242
20	87	117	167	71	101	151	162	207	282	125	170	245	142	187	262
25	92	122	172	76	106	156	173	218	293	134	179	254	151	196	281

# MCMOC Dimensions $\phi 8 \sim \phi 25$



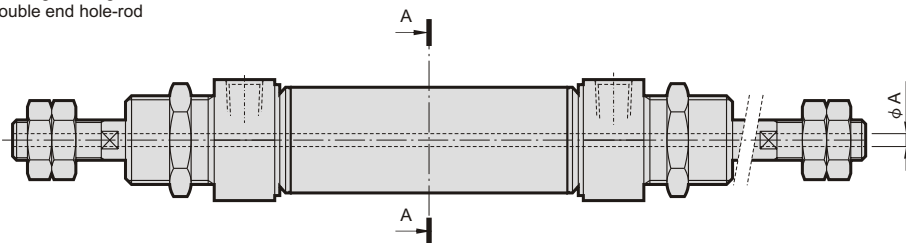
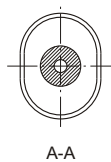
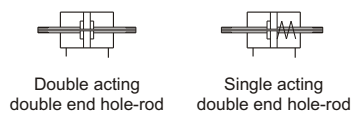
## OVAL MICRO-CYLINDER



Code Tube I.D.	AM	BE	BF	BK	D	DA	DE	EE	KL	KK	KV	KW	KX	KY	KZ
8	12	M12×1.25	13	7	14	8.3	11.8	M5	4	M4	19	6	7	2	-
10	12	M12×1.25	13	7	14	10.3	14.3	M5	4	M4	19	6	7	2	-
12	16	M16×1.5	17	8	20	12.3	17.3	M5	6	M6	23	8	10	3	5
16	16	M16×1.5	17	8	20	14.3	19.8	M5	6	M6	23	8	10	3	5
20	20	M22×1.5	20	9	27	20.5	25.5	G 1/8	8	M8	32	11	13	4	7
25	22	M22×1.5	22	11	27	22.5	26.5	G 1/8	10	M10×1.25	32	11	17	5	9

Code Tube I.D.	LB	LE	LS	LT	LW	WF $\pm 1.2$	ZC	ZN
8	45	6	33	86	15	16	20	73
10	45	6	33	86	15	16	20	73
12	46	6	34	102	22	22	20	85
16	53	6	41	107	20	22	20	92
20	67	8	51	132	23	24	20	112
25	72	8	56	143	29	28	20	121

※ Dimension ISO 6432



Code Tube I.D.	LB1 $+0.15$ $+0$
8	1
10	1
12	1.2
16	1.2
20	3.2
25	3.2

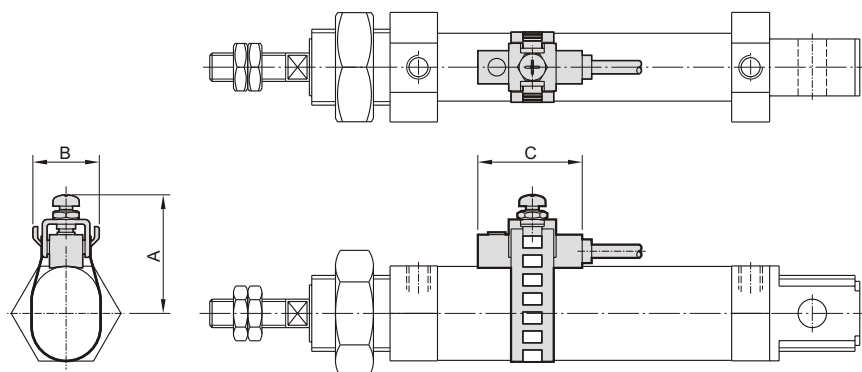
# MCMOC Installation of sensor switch $\phi 8 \sim \phi 25$



## OVAL MICRO-CYLINDER

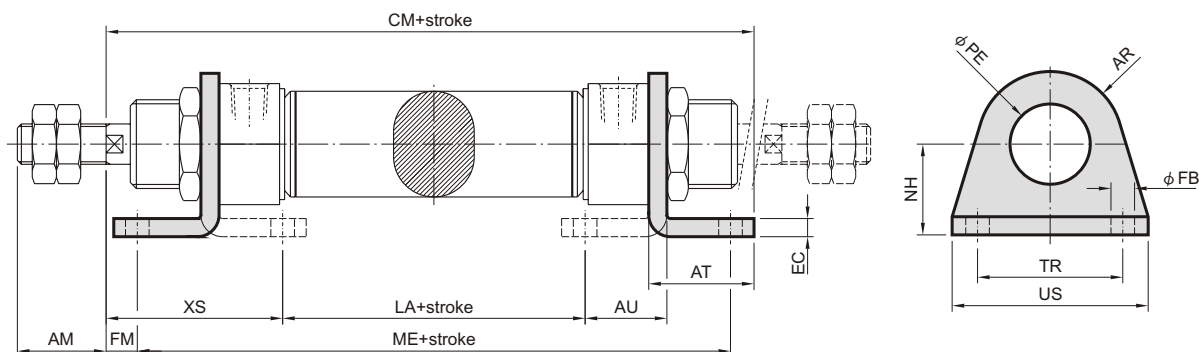
Sensor switch: RCS  
Sensor switch band: BK-81

Code Tube I.D.	A	B	C
8	19.5	15	22
10	21	15	22
12	22.5	15	22
16	23.5	15	22
20	26.5	15	22
25	27	15	22



## ■ Mounting accessories

**LB**



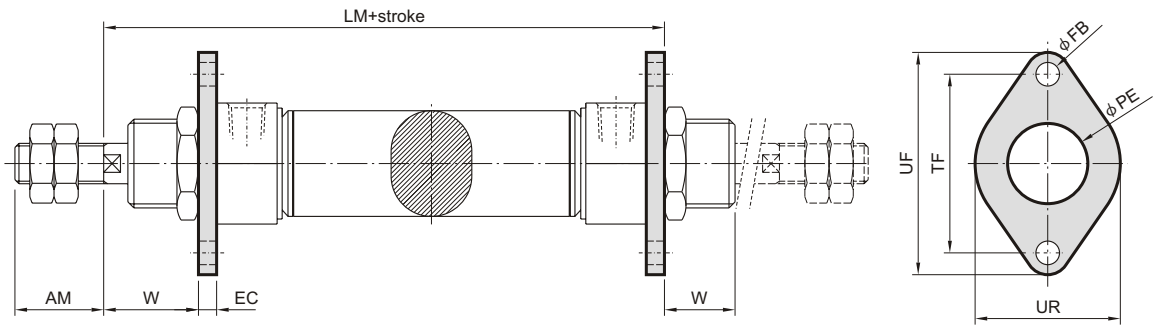
Code Tube I.D.	AM	AR	AT	AU	CM	EC	FB	FM	LA	ME	NH	PE	TR	US	XS
8	12	10	16	10.5	76	4.5	4.5	5	30	67	16	12.1	25	35	23.5
10	12	10	16	10.5	76	4.5	4.5	5	30	67	16	12.1	25	35	23.5
12	16	12	21	13	89	5.5	5.5	9	27	74	20	16.1	32	42	32
16	16	12	21	13	101	5.5	5.5	9.5	34	80.5	20	16.1	32	42	32.5
20	20	20	29	17	117	6.5	6.5	8.5	43.5	101.5	25	22.1	40	54	36.5
25	22	20	29	17	131.5	6.5	6.5	12.5	48.5	108	25	22.1	40	54	40

# MCMOC Mounting accessories $\phi 8 \sim \phi 25$

## OVAL MICRO-CYLINDER

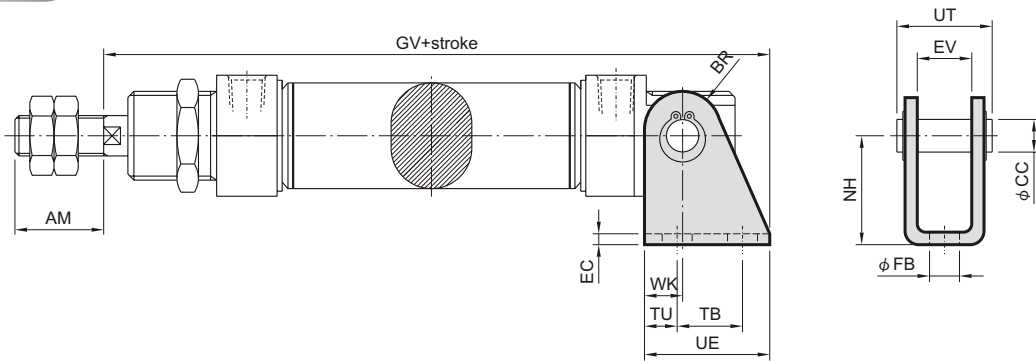


### FA



Code Tube I.D.	AM	EC	FB	LM	PE	TF	UF	UR	W
8	12	3	4.5	64	12.1	30	40	25	13
10	12	3	4.5	64	12.1	30	40	25	13
12	16	4	5.5	72	16.1	40	53	30	18
16	16	4	5.5	79	16.1	40	53	30	18
20	20	5	6.5	96	22.1	50	66	40	20
25	22	5	6.5	105	22.1	50	66	40	24

### SDB



Code Tube I.D.	AM	BR	CC	EC	EV	FB	GV	NH	TB	TU	UE	UT	WK
8	12	5	4	2.5	8.1	4.5	82	24	12.5	6.5	23	17	5
10	12	5	4	2.5	8.1	4.5	82	24	12.5	6.5	23	17	5
12	16	7	6	3	12.1	5.5	93	27	15	5	25	23	8
16	16	7	6	3	12.1	5.5	100	27	15	5	25	23	8
20	20	10	8	4	16.1	6.5	117	30	20	6	32.5	30	10
25	22	10	8	4	16.1	6.5	126.5	30	20	6	32.5	30	10