

Twin-Rod cylinder——TN Series



Product feature

1. Enterprises standard is implemented.
2. Embeded installation and fixation mode saves the installation space.
3. It is good resistance to bending and twisting moments.
4. Mounting holes on three sides facilitates multi-position mounting.
5. Bumper in front of the barrel can adjust the stroke of cylinder and relieve impact.
6. Standard configuration of this series has magnet and the type without magnet is not available.

Symbol



Specification

Bore size(mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40μm filter element)				
Operating pressure	0.15~1.0MPa(22~145psi)				
Proof pressure	1.5MPa(215psi)				
Temperature □	-20~70				
Speed range mm/s	30~500				
Adjustable stroke mm	-10~0				
Stroke tolerance	≤100 ^{+1.0} ₀ > 100 ^{+1.5} ₀				
Cushion type	Bumper				
Non-rotating tolerance [Note 1]	±0.4°	±0.3°			
Port size	M5×0.8				G1/8

[Note 1] Retract position.

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
10	10 20 30 40 50 60 70 80 90 100	100
16	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
20	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
25	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200
32	10 20 30 40 50 60 70 80 90 100 125 150 175 200	200

[Note] When the stroke less then or equal to 100mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 35mm stroke cylinder has the same dimensions of 40 std. stroke cylinder.

Twin-Rod cylinder——TN Series

Ordering code

TN - 25 × 50 - S - □

① ② ③ ④ ⑤

① Model

TN: Twin-rod cylinder (Double acting type)

② Bore size

10 16 20 25 32

③ Stroke

Refer to stroke table for details

④ Magnet [Note1]

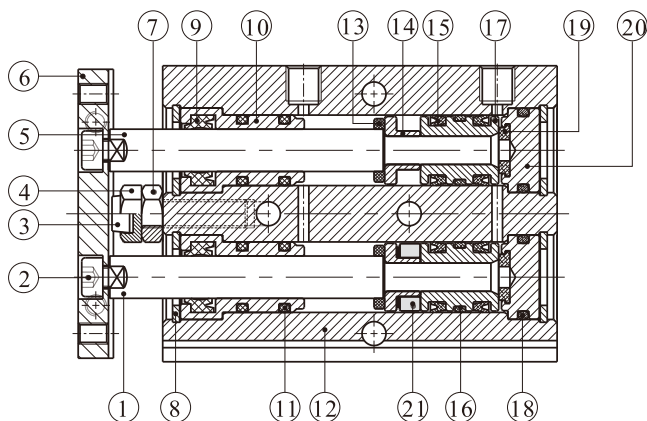
S: With magnet

⑤ Thread type [Note2]

Blank: G thread

[Note1] TN Series are all with magnet. [Note2] When the thread is standard, the code is blank.

Inner structure and material of major parts

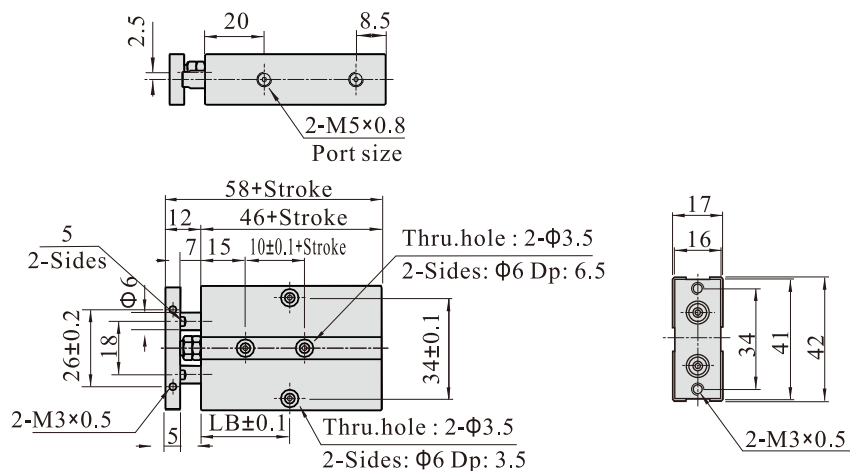


NO.	Item	Material	NO.	Item	Material
1	Piston rod B	Φ32 S45C	12	Body	Aluminum alloy
		Other SUS304	13	Bumper	TPU
2	Screw	Carbon steel	14	Magnet holder	Φ10 SUS303
3	Bumper	POM			Other Aluminum alloy
4	Adjustable nut	Carbon steel	15	Piston seal	NBR
5	Piston rod A	S45C	16	Wear ring	Wear resistant material
6	Fixing plate	Free cutting steel	17	Piston	Φ10 SUS303
7	Screw	Carbon steel			Other Aluminum alloy
8	C clip	Spring steel	18	Seal ring	NBR
9	Wiper seal	NBR	19	Bumper	TPU
10	Front cover	Aluminum alloy	20	Back cover	Aluminum alloy
11	O-ring	NBR	21	Magnet	Sintered metal(Neodymium-iron-boron)

Twin-Rod cylinder——TN Series

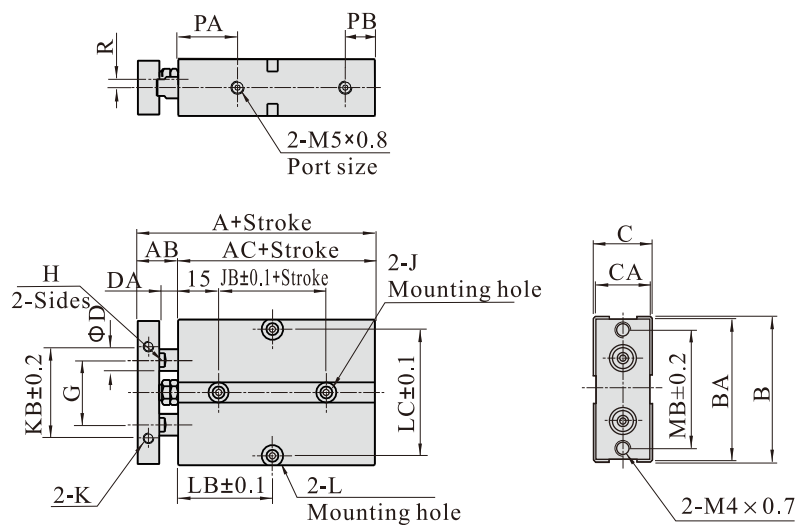
Dimensions

TN10



Item\Stroke	10	20	30	40	50	60	70	80	90	100
LB	30	30	35	40	45	50	55	60	65	70

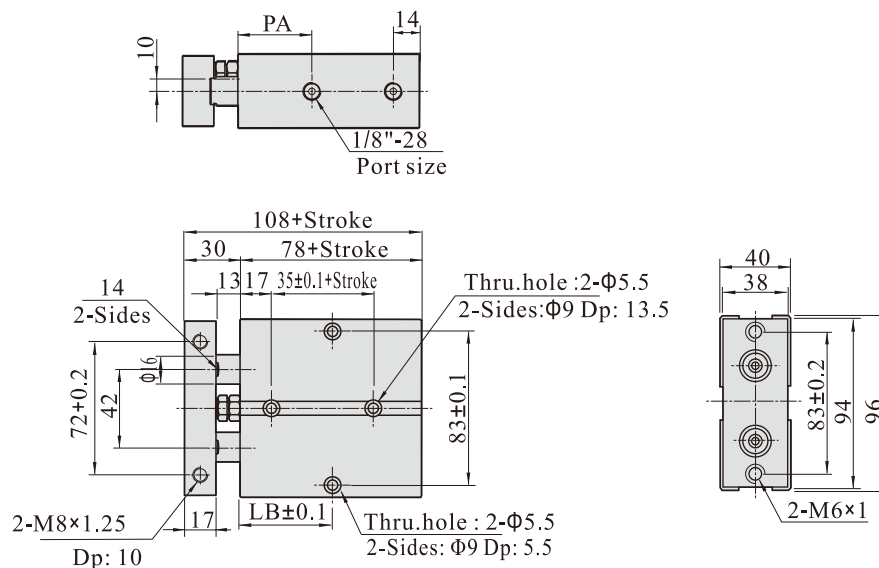
TN16~25



Bore size\Item	A	AB	AC	B	BA	C	CA	D	DA	G	H	J			
16	68	15	53	54	53	21	20	8	7	24	6	Both sides:Φ7.5Dp:7.5Thru.hole:Φ4.5			
20	78	20	58	62	61	25	24	10	10	28	8	Both sides:Φ7.5Dp:7.5Thru.hole:Φ4.5			
25	81	19	62	73	72	30	29	12	9	34	10	Both sides:Φ7.5Dp:7.5Thru.hole:Φ4.5			
Bore size\Item	JB	K			KB	PA	PB	L					LC	MB	R
16	20	M4×0.7Dp:5			34	22	11	Both sides:Φ8Dp:4.5Thru.hole:Φ4.5					47	47	3
20	20	M4×0.7Dp:5			44	25	12	Both sides:Φ8Dp:4.5Thru.hole:Φ4.5					55	55	3.5
25	30	M4×0.7Dp:6			56	27	12	Both sides:Φ8Dp:4.5Thru.hole:Φ4.5					66	66	6
Bore size\Item	LB														
Stroke≤	10	20	30	40	50	60	70	80	90	100	125	150	175	200	
16	30	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	
20	35	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	
25	40	40	45	50	55	60	65	70	75	80	92.5	105	117.5	130	

Twin-Rod cylinder——TN Series

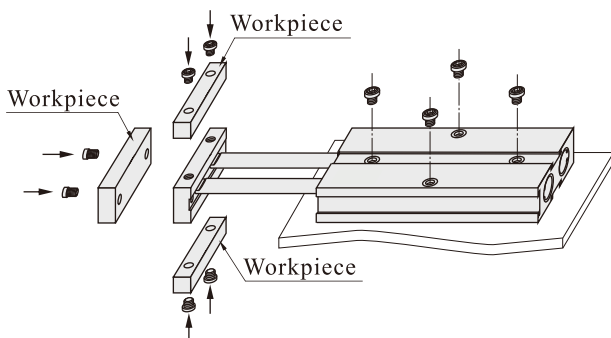
TN32



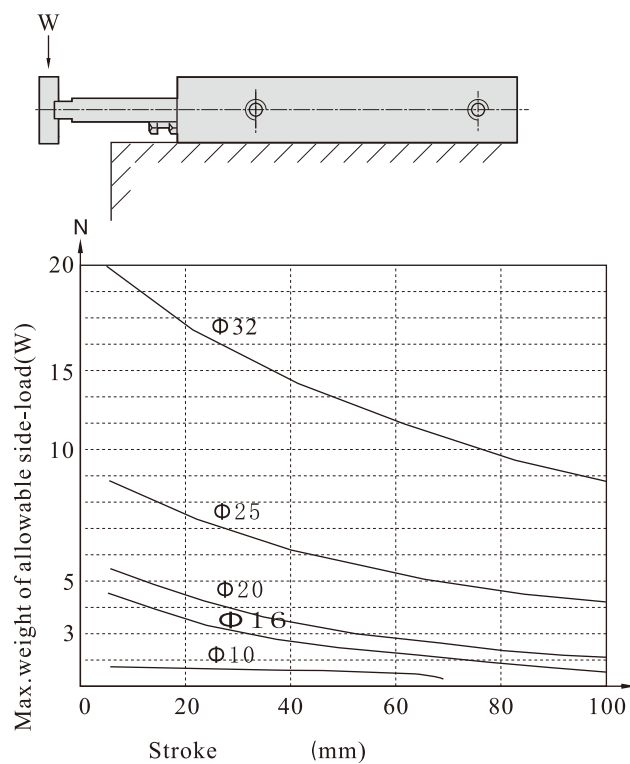
Item\Stroke	10	20	30	40	50	60	70	80	90	100	125	150	175	200
LB	45	50	55	60	65	70	75	80	85	90	102.5	115	127.5	140
PA	35	40												

Installation and application

1、How to mount workpiece:



2、Max. weight of allowable side-load



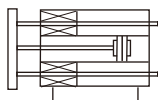
Tri-rod cylinder——TCL,TCM Series



Product feature

1. JIS standard is implemented.
2. Two guides of special bearing steel and linear bearing or bronze bearing guide are used to prevent rotating. They can bear high torque and radial load.
★Note: Steel ball linear bearing: It is suitable for elevation action of cylinder or the situation requiring high precision and high bearing ability, especially for the situation requiring low friction action process.
Bronze sliding bearing: it is suitable for the action that has radial load resistance. Compared with normal cylinder of same use, the horizontal impact resistance is doubled and it has stronger torsion rigidity.
3. Drive unit and guide unit are in the same barrel that no additional accessories are needed with minimal space required.
The air intake is optional and it is convenient to install.
4. The bottom, back side and fixing plate of main body respectively has two exact orientation orifices (See Φ PA orifice and the orifice in XX point), which can provide orientation installation with high precision for the special situation.
5. Options of switch mounting with provision 4 mounting slots.
6. Special design of main body provides multi-mount;

Symbol



Specification

Bore size(mm)		6	10	12	16	20	25	32	40	50	63	80	100
Acting type		Double acting											
Fluid		Air(to be filtered by 40μm filter element)											
Operating pressure		0.15~0.7MPa(22~100psi)				0.15~1.0MPa(22~145psi)							
Proof pressure		1.2MPa(175psi)				1.5MPa(215psi)							
Temperature °C		-20~70											
Speed range mm/s		50~500				30~500						50~400	
Stroke tolerance		≤100 ^{+1.0} ₀ >100 ^{+1.5} ₀											
Cushion type		Bumper											
Non-rotating tolerance [Note1]	TCL	-		±0.08°		±0.07°		±0.06°		±0.05°		±0.04°	
	TCM	±0.1°		±0.10°		±0.09°		±0.08°		±0.06°		±0.05°	
Port size [Note2]		M3×0.5		M5×0.8		1/8"				1/4"		3/8"	

[Note1] Retract position.

[Note2]PT thread, G thread and NPT thread are available.

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max.std stroke
6	5 10 15 20	20
10	5 10 15 20 25 30	30
12	10 20 25 30 40 50 60 70 75 80 90 100 125 150	150
16	10 20 25 30 40 50 60 70 75 80 90 100 125 150 175 200	200
20 25	20 25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250
32 40 50 63	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250
80 100	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250

[Note] When the discrepancy between non-standard stroke and standard stroke is 1~5mm, The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 86mm stroke cylinder has the same dimensions of 90 std. stroke cylinder. But 84mm stroke cylinder should be ordered by non-standard stroke.

Tri-rod cylinder——TCL,TCM Series

Ordering code

TC	M	50×50	S	□
①	②	③	④	⑤

① Model

TC: Tri-rod cylinder
(Double acting type)

② Bearing type

M: Bronze bearing
L: Linear bearing
M: Bronze bearing

④ Stroke

Refer to stroke table
for details

⑤ Magnet [Note1]

S: With magnet

⑥ Thread type [Note 2]

Blank: PT
G: G
T: NPT

③ Bore size

6, 10

10

12, 16, 20, 25, 32, 40

50, 63, 80, 100

Bearing type

M: Bronze bearing

L: Linear bearing

M: Bronze bearing

[Note1] TC Series are all with magnet.

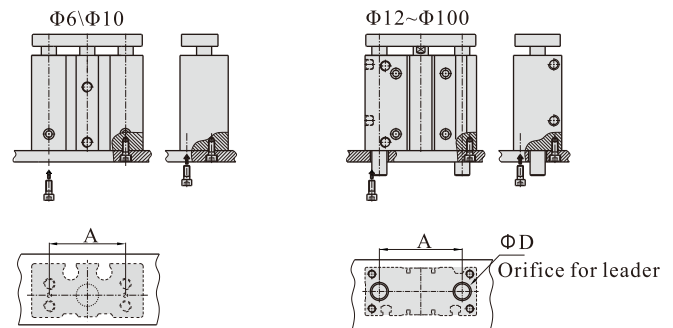
[Note2] When the thread is standard, the code is blank.

How to mount

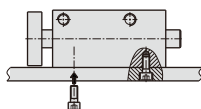
Fixation of screw on top surface(Φ6~Φ100)



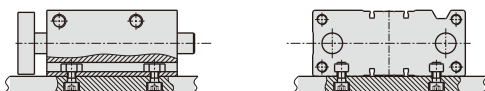
Fixation of screw at back side(Φ6~Φ100)



Fixation of screw at bottom surface(Φ12~Φ100)



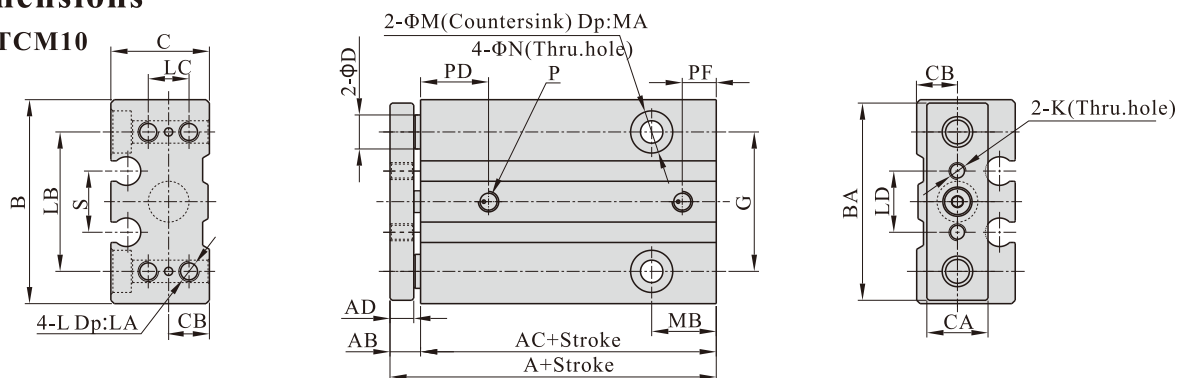
Fixation of T slot at bottom(Φ12~Φ100)



Bore size\Item	6	10	12	16	20	25	32	40	50	63	80	100
A	20.5	23	41	46	54	64	78	86	110	124	156	188
D (Min)	TCM	X	X	10	12	13	20	20	20	20	30	—
	TCL	—	—	8	10	10	13	20	20	20	—	30

Dimensions

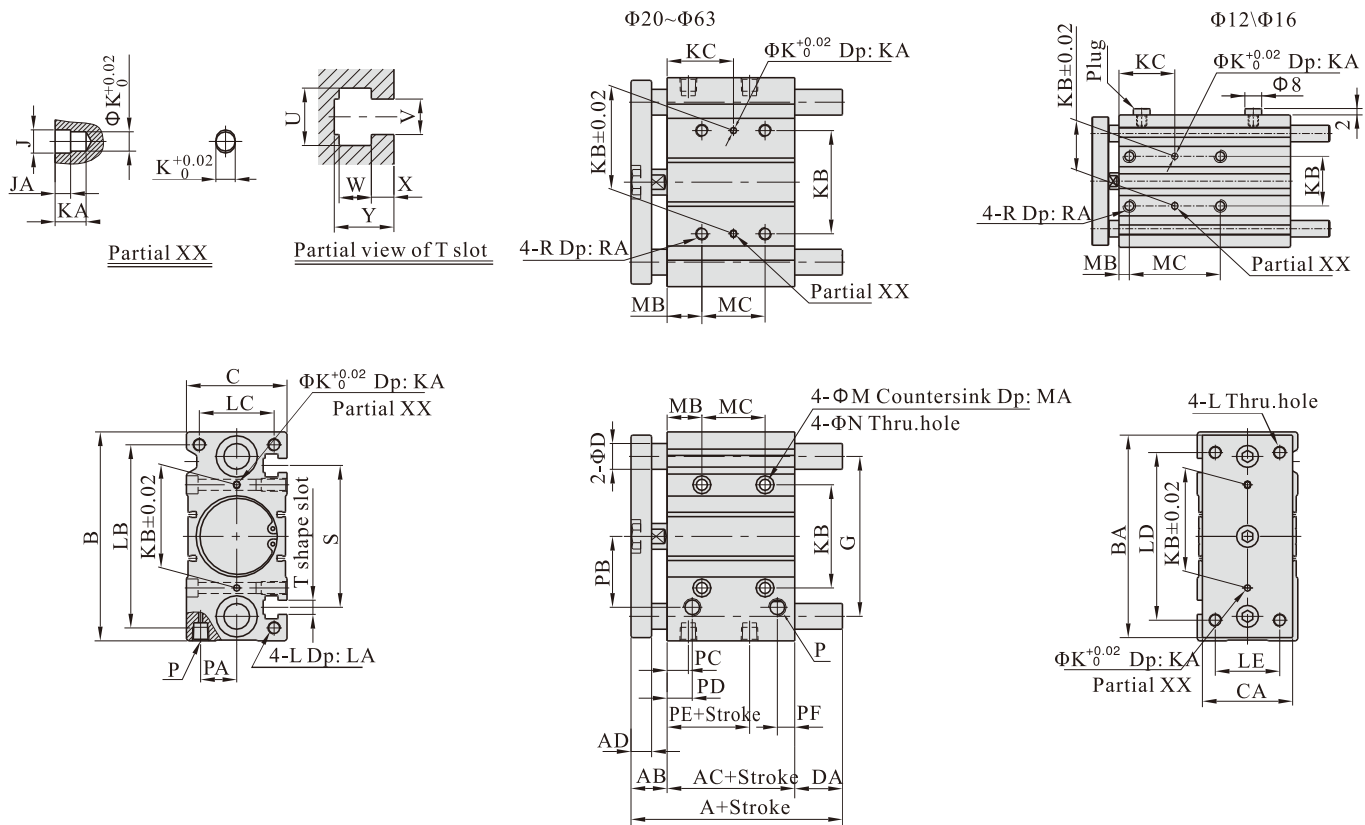
TCM6TCM10



Bore size\Item	A	AB	AC	AD	B	BA	C	CA	CB	D	G	K	L	LA	LB	LC	LD	M	MA	MB	N	P	PD	PF
6	29.5	6	23.5	5	30	29	14.5	9	6	5	20.5	M2.5X0.45	M3X0.5	5	20.5	6	9	6	3	9.5	3.5	M3X0.5	9.5	5.5
10	32	6	26	5	34	33	18	10	7.5	6	23	M3X0.5	M4X0.7	5	23	8	11	8	4	8.5	4.5	M3X0.5	11.5	5

Tri-rod cylinder——TCL,TCM Series

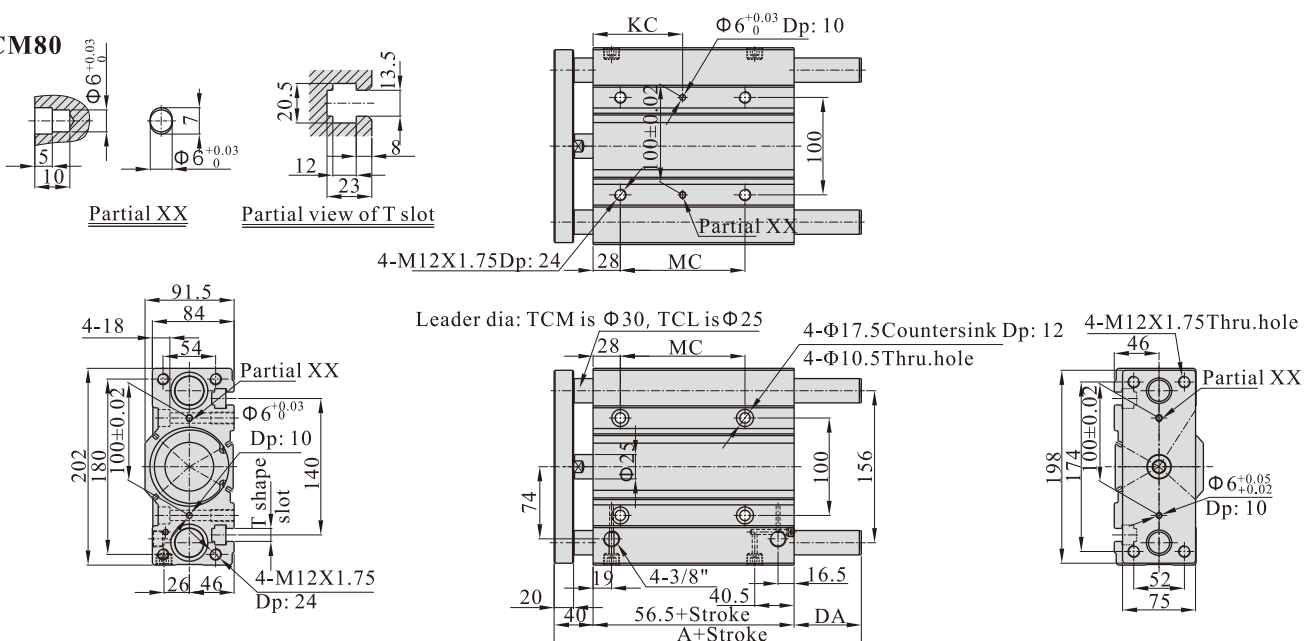
TCL/TCM12~63



Bore size\Item	A					DA								MC				KC			
	TCL		TCM			TCL			TCM				MC			KC					
Stroke	≤30	≤50	31(51)~100	101~200	>200	≤30	31~100	101~200	>200	≤50	51~100	101~200	>200	≤30	31~100	101~200	>200	≤30	31~100	101~200	>200
12	42		55	85	—	0	13	43	—	0	13	43	—	20	40	110	—	15	25	60	—
16	46		65	95	—	0	19	49	—	0	19	49	—	24	44	110	—	17	27	60	—
20	53		80	104	122	0	27	51	69	0	27	51	69	24	44	120	200	29	39	77	117
25	53.5		82	104.5	122	0	28.5	51	68.5	0	28.5	51	68.5	24	44	120	200	29	39	77	117
Stroke	≤50	≤50	51~100	101~200	>200	≤50	51~100	101~200	>200	≤50	51~100	101~200	>200	≤40	41~100	101~200	>200	≤40	41~100	101~200	>200
32	65	78	102	118	140	5.5	42.5	58.5	80.5	18.5	42.5	58.5	80.5	24	48	124	200	33	45	83	121
40	66	78	102	118	140	0	36	52	74	12	36	52	74	24	48	124	200	34	46	84	122
50	76	89	118	134	161	4	46	62	89	17	46	62	89	24	48	124	200	36	48	86	124
63	77	89	118	134	161	0	41	57	84	12	41	57	84	28	52	128	200	38	50	88	124
Bore size\Item	AB	AC	AD	B	BA	C	CA	D(TCL)	D(TCM)	G	J	JA	K	KA	KB	L	LA	LB	LC	LD	
12	13	29	8	58	56	26	22	6	8	41	3.5	3	3	6	23	M4×0.7	10	50	18	48	
16	13	33	8	64	62	30	25	8	10	46	3.5	3	3	6	24	M5×0.8	12	56	22	54	
20	16	37	10	83	81	36	30	10	12	54	3.5	3	3	6	28	M5×0.8	13	72	24	70	
25	16	37.5	10	93	91	42	38	12	16	64	4.5	3	4	6	34	M6×1.0	15	82	30	78	
32	22	37.5	12	112	110	48	44	16	20	78	4.5	3	4	6	42	M8×1.25	20	98	34	96	
40	22	44	12	120	118	54	44	16	20	86	4.5	3	4	6	50	M8×1.25	20	106	40	104	
50	28	44	16	148	146	64	60	20	20	110	6	4	5	8	66	M10×1.5	22	130	46	130	
63	28	49	16	162	158	78	70	20	20	124	6	4	5	8	80	M10×1.5	22	142	58	130	
Bore size\Item	LE	M	MA	MB	N	P	PA	PB	PC	PD	PE	PF	R	RA	S	U	V	W	X	Y	
12	14	8	4.5	5	4.5	M5×0.8	8	18	11	11	13	7.5	M5×0.8	12	37	7.5	4.5	4	2	6.5	
16	16	8	4.5	5	4.5	M5×0.8	10	19	11	11	15	8	M5×0.8	10	38	7.5	4.5	4	2.5	7	
20	18	9.5	5.5	17	5.5	1/8"	10.5	25	10.5	10.5	12.5	9	M6×1.0	12	44	8.5	5.5	4.5	3	8	
25	26	9.5	5.5	17	5.5	1/8"	13.5	28.5	11.5	11.5	12.5	9	M6×1.0	12	50	8.5	5.5	4.5	3	8.5	
32	30	11	7.5	21	6.5	1/8"	16	34	12.5	12.5	7	9	M8×1.25	16	63	10.5	6.5	5.5	3.5	9.5	
40	30	11	7.5	22	6.5	1/8"	18	38	14	14	13	10	M8×1.25	16	72	10.5	6.5	5.5	4	11	
50	40	14	9	24	8.5	1/4"	21.5	47	12	14	9	11	M10×1.5	20	92	13.5	8.5	7.5	4.5	13.5	
63	50	14	9	24	8.5	1/4"	28	55	16.5	16.5	14	13.5	M10×1.5	20	110	18	11	10	7	18.5	

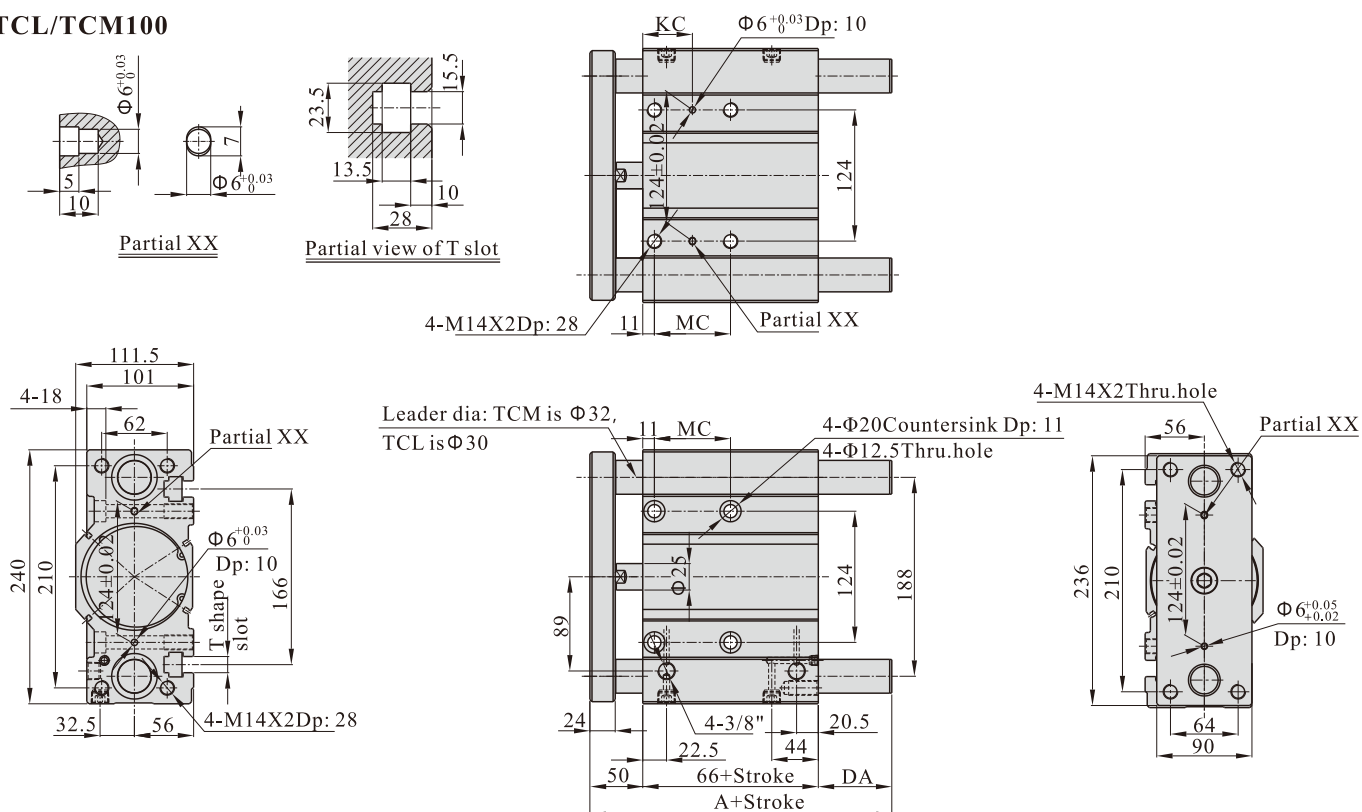
Tri-rod cylinder——TCL,TCM Series

TCL/TCM80



Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
A	TCM=112.5/TCL=106.5					165.5					187.5				
DA	TCM=16/TCL=10					69					91				
KC	42					54					92				
MC	28					52					128				

TCL/TCM100



Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
A	TCM=128/TCL=122					186					208				
DA	TCM=12/TCL=6					70					92				
KC	35					47					85				
MC	48					72					148				

Tri-rod cylinder——TCL,TCM Series

Safe load and torque



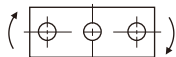
Bore size	Type	Stroke(mm)																							
		5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250				
Max. safe load																						Unit: Newton(N)			
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6	TCM	0.4	0.3	0.18	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
10	TCM	1.5	1.2	0.8	0.5	0.25	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
12	TCM	-	3	-	3	3	3	3	3	3	3	3	3	3	3	2	2	-	-	-	-				
	TCL	-	2	-	2	2	2	2	2	2	1	1	1	1	1	1	1	-	-	-	-				
16	TCM	-	7	-	7	7	7	7	7	7	7	7	7	6	6	6	6	5	5	-	-				
	TCL	-	4	-	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	-	-				
20	TCM	-	-	-	14	14	14	13	12	12	12	12	12	12	12	11	10	10	9	8	7				
	TCL	-	-	-	7	7	7	7	6	6	6	6	6	6	6	5	5	5	5	4	4				
25	TCM	-	-	-	20	20	20	18	16	19	19	19	19	19	19	18	17	16	15	14	13				
	TCL	-	-	-	10	10	10	9	8	10	10	10	10	10	9	9	8	8	7	7	7				
32	TCM	-	-	-	-	37	37	37	36	35	35	34	34	34	33	33	31	29	27	26	24				
	TCL	-	-	-	-	19	19	19	18	17	17	17	17	17	17	16	15	15	14	13	12				
40	TCM	-	-	-	-	37	37	37	36	35	35	34	34	34	33	33	31	29	27	26	24				
	TCL	-	-	-	-	19	19	19	18	17	17	17	17	17	17	16	15	15	14	13	12				
50	TCM	-	-	-	-	140	130	120	105	165	160	155	155	150	145	130	115	100	80	70	60				
	TCL	-	-	-	-	70	65	60	50	80	80	75	75	75	70	65	55	50	40	35	30				
63	TCM	-	-	-	-	140	130	120	105	165	160	155	155	150	145	130	115	100	80	70	60				
	TCL	-	-	-	-	70	65	60	50	80	80	75	75	75	70	65	55	50	40	35	30				
80	TCM	-	-	-	-	220	210	200	190	180	220	210	205	195	185	165	155	135	120	105	80				
	TCL	-	-	-	-	110	105	100	95	90	110	105	100	100	95	85	80	70	60	55	40				
100	TCM	-	-	-	-	280	265	250	235	220	280	270	260	250	240	230	210	180	160	140	120				
	TCL	-	-	-	-	140	130	125	120	110	140	135	130	125	120	115	105	90	80	70	60				
Max. safe torque																						Unit: Newton · Meter(N · m)			
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6	TCM	0.008	0.007	0.006	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
10	TCM	0.045	0.039	0.033	0.028	0.024	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
12	TCM	-	0.90	-	0.79	0.71	0.65	0.77	0.72	0.65	0.53	0.50	0.47	0.41	0.36	0.31	0.27	-	-	-	-				
	TCL	-	0.61	-	0.45	0.40	0.35	0.58	0.50	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	-	-	-	-				
16	TCM	-	1.21	-	1.04	0.94	0.88	1.23	1.11	0.99	0.72	0.69	0.65	0.61	0.58	0.50	0.44	0.40	0.36	-	-				
	TCL	-	0.99	-	0.74	0.66	0.59	0.99	0.86	0.77	0.69	0.65	0.61	0.57	0.52	0.43	0.37	0.32	0.28	-	-				
20	TCM	-	-	-	1.57	1.42	1.31	2.39	2.15	1.97	1.90	1.88	1.86	1.72	1.63	1.44	1.28	1.16	1.06	1.01	0.90				
	TCL	-	-	-	1.26	1.14	1.03	2.17	1.94	1.79	1.59	1.52	1.46	1.33	1.25	1.34	1.17	1.03	0.93	0.88	0.76				
25	TCM	-	-	-	2.40	2.22	2.01	3.66	3.35	3.17	3.06	2.96	2.91	2.77	2.57	2.26	2.02	1.83	1.67	1.57	1.42				
	TCL	-	-	-	2.11	1.96	1.75	3.37	3.02	2.71	2.42	2.38	2.33	2.19	1.97	2.05	1.78	1.58	1.41	1.22	1.16				
32	TCM	-	-	-	-	6.35	6.00	5.73	5.13	5.98	5.74	5.69	5.62	5.11	4.97	4.42	3.98	3.61	3.31	2.97	2.84				
	TCL	-	-	-	-	5.95	5.73	5.44	4.89	5.43	5.15	5.11	5.02	4.70	4.51	6.34	5.79	5.33	4.93	4.33	4.29				
40	TCM	-	-	-	-	7.00	6.60	6.11	5.66	6.66	6.31	6.27	6.23	5.86	5.48	4.78	4.38	3.98	3.65	3.34	3.13				
	TCL	-	-	-	-	6.55	6.21	5.77	5.39	6.17	5.67	5.62	5.58	5.33	4.96	6.98	6.38	5.87	5.43	5.00	4.72				
50	TCM	-	-	-	-	13.00	12.60	11.00	10.80	13.70	12.70	12.00	11.80	11.10	10.80	9.50	8.60	7.86	7.24	6.80	6.24				
	TCL	-	-	-	-	9.17	8.75	8.30	7.62	10.30	9.94	9.83	9.77	8.82	8.74	11.60	10.70	9.83	9.12	8.95	7.95				
63	TCM	-	-	-	-	14.70	13.60	12.90	12.10	19.40	16.20	13.50	12.70	12.10	11.90	10.70	9.69	8.86	8.16	7.52	7.04				
	TCL	-	-	-	-	10.20	9.74	9.20	8.48	17.50	14.00	11.00	10.60	10.20	9.74	13.00	11.90	11.00	10.20	9.63	8.84				
80	TCM	-	-	-	-	21.9	20.8	19.7	18.6	15.8	24	22.9	21.7	21	20.5	18.6	17	15.6	14.5	13.5	12.6				
	TCL	-	-	-	-	15.1	14.3	13.6	12.9	12.2	23.8	22.7	21.6	21	20.6	18.9	17.3	16	14.8	13.5	12.9				
100	TCM	-	-	-	-	38.8	36.8	35.0	33.5	28.5	39.4	37.5	35.6	34.5	33.8	30.9	28.4	26.2	24.4	22.5	21.4				
	TCL	-	-	-	-	27.1	25.7	24.4	23.6	26	39.8	37.9	36	35.2	34.6	31.8	29.3	27.2	25.3	23.5	22.1				

Plate cylinder——MU Series

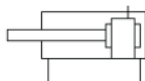


Specifications

Bore size (mm)	25	32	40	50	63
Action	Double acting, Single rod				
Fluid	Air				
Proof pressure	1.05 MPa				
Maximum operating pressure	0.7 MPa				
Minimum operating pressure	0.05 MPa				
Ambient and fluid temperature	-10 to 60°C				
Lubrication	Not required (Non-lube)				
Piston speed	50 to 500 mm/s				
Stroke length tolerance	$^{+1.4}_0$				
Cushion	Rubber bumper				
Mounting	Foot, Rod flange, Head flange, Single clevis, Double clevis				
Rod end configuration	Rod end male thread, Rod end female thread				
Allowable rotational torque	0.25 N·m		0.55 N·m	1.25 N·m	2.0 N·m
Rod non-rotating accuracy	$\pm 1^\circ$	$\pm 0.8^\circ$	$\pm 0.5^\circ$		

Symbol

Rubber bumper (Oval piston)



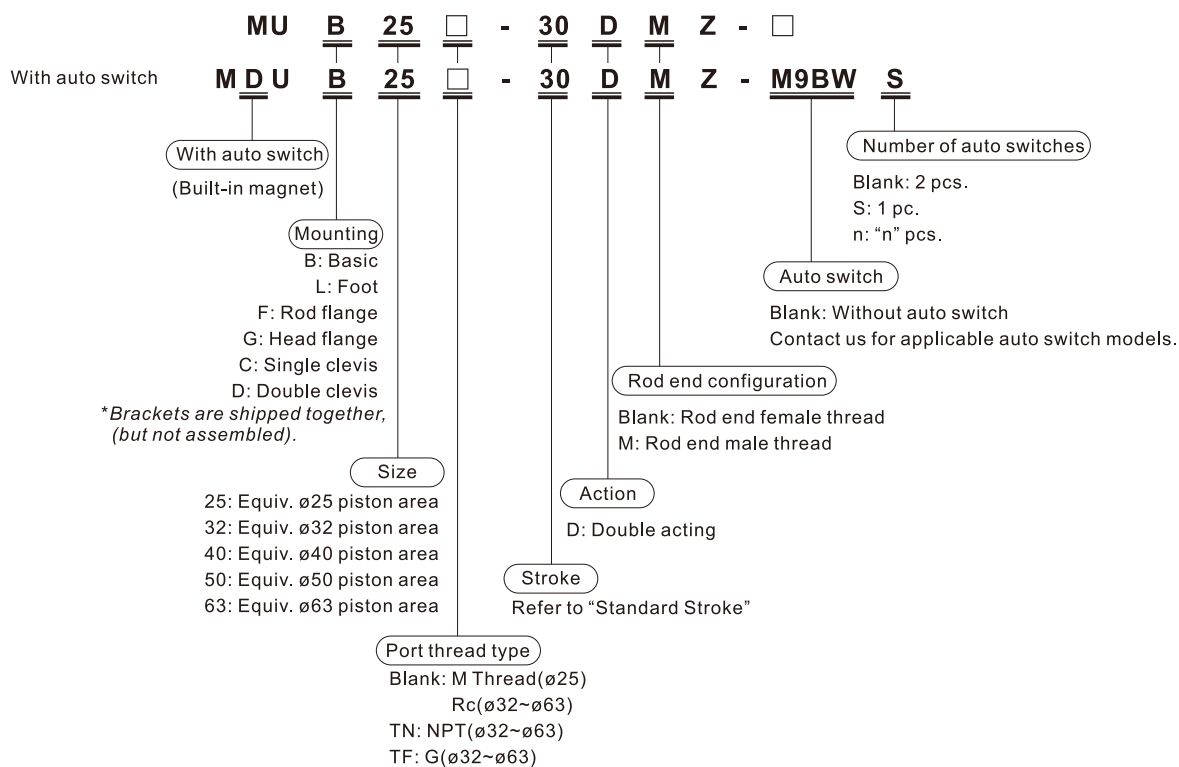
Standard Stroke

Bore size (mm)	Standard stroke (mm)	Maximum manufacturable stroke
25, 32, 40, 50, 63	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 125, 150, 175, 200, 250, 300	300

*Other intermediate strokes can be manufactured upon receipt of order. Please contact us.

**Strokes longer than 300 mm are not available.

Ordering Code



Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) MDUL32-30DZ

Accessory (Option)

For details about the single knuckle joint, double knuckle joint, clevis pin, and knuckle pin, please contact us.

Plate cylinder——MU Series

Mounting Bracket/Part No.					
Mounting bracket\Bore size	25	32	40	50	63
Foot ^{Note 1)}	MU-L02	MU-L03	MU-L04	MU-L05	MU-L06
Flange	MU-F02	MU-F03	MU-F04	MU-F05	MU-F06
Single clevis	MU-C02	MU-C03	MU-C05	MU-C05	MU-C06
Double clevis ^{Note 3)}	MU-D02	MU-D03	MU-D04	MU-D05	MU-D06

Note 1) When ordering foot bracket, order 2 pieces per cylinder.

Note 2) Accessories for each mounting bracket are as follows.

Foot/Flange/Single clevis: Body mounting bolt

Double clevis: Clevis pin, Type C retaining ring for axis, Body mounting bolt

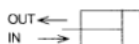
Note 3) Clevis pin and retaining ring are shipped together with double clevis.

Note 4) The tightening torque for body mounting bolts is shown in the below table.

Note 5) The application of a locking agent

(Example: Loctite 242) to body mounting bolts is recommended.

Recommended Tightening Torque for Mounting Bracket on Body		
Bore size	Thread size	Tightening torque (N·m)
MU25	M5X0.8	4.9 to 5.9
MU32	M6X1	8.28 to 10.12
MU40	M8X1.25	19.8 to 24.2
MU50	M10X1.5	39.6 to 48.4
MU63	M12X1.75	68.4 to 83.6



Theoretical Output (N)									
Bore size	Rod size	Operating direction	Piston area (mm ²)	Operating pressure (MPa)					
				0.2	0.3	0.4	0.5	0.6	0.7
25	12	OUT	491	98	147	196	246	295	344
		IN	378	76	113	151	189	227	265
32	14	OUT	804	161	241	322	402	482	563
		IN	650	130	195	260	325	390	455
40	16	OUT	1257	251	377	503	629	754	880
		IN	1056	211	317	422	528	634	739
50	20	OUT	1963	393	589	785	982	1178	1374
		IN	1946	330	495	660	824	989	1154
63	20	OUT	3117	623	935	1247	1559	1870	2182
		IN	2803	561	841	1121	1402	1682	1962

Weight (kg)						
Bore size		25	32	40	50	63
Basic weight	Basic	0.17	0.27	0.39	0.75	1.16
	Foot	0.24	0.41	0.60	1.09	1.79
	Flange/Rod end, Head end	0.27	0.41	0.52	1.21	1.99
	Single clevis	0.23	0.39	0.61	1.15	1.84
	Double clevis (With pin)	0.24	0.43	0.65	1.22	1.92
Additional weight per each 50 mm of stroke		0.09	0.14	0.19	0.28	0.38
Mounting bracket weight	Single clevis (Double clevis pivot bracket)	0.06	0.12	0.22	0.40	0.68
	Double clevis (With pin) (Single clevis pivot bracket)	0.07	0.16	0.26	0.47	0.76
	Single knuckle joint	0.03	0.04	0.07	0.16	0.16
	Double knuckle joint (With pin)	0.05	0.09	0.14	0.29	0.29

Additional Weight (g)						
Bore size		25	32	40	50	63
Rod end male thread	Male thread	12	23	27	53	53
	Nut	8	10	17	32	32

Note) Weight of single clevis and double clevis includes 2 bolts for mounting bracket.

Calculation:

(Example) MUL32-100DZ

Basic weight 0.41 (Foot, Equivalent to ø32)

Additional weight 0.14/50 stroke

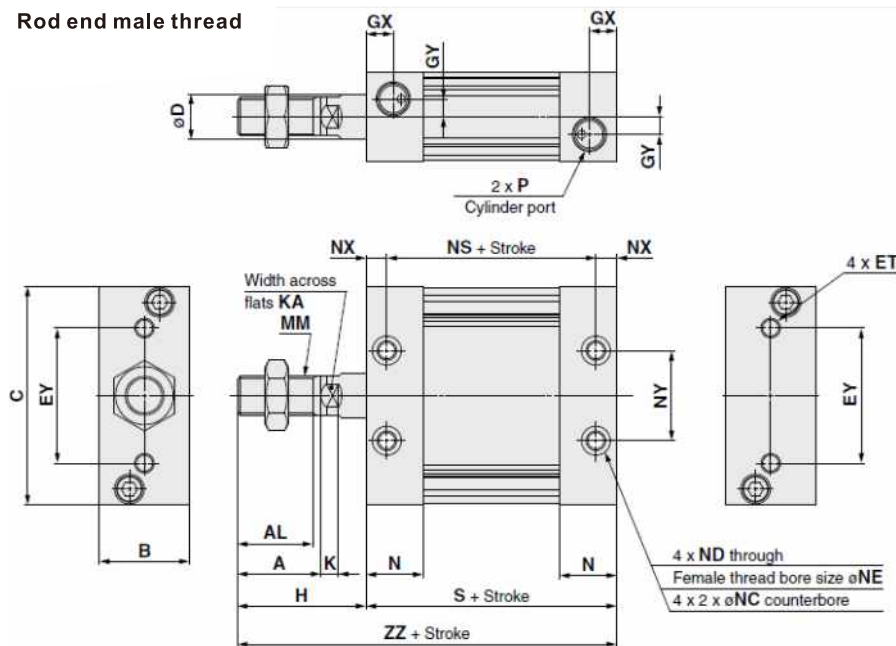
Stroke 100 stroke

$0.41 + 100/50 \times 0.14 = 0.69 \text{ kg}$

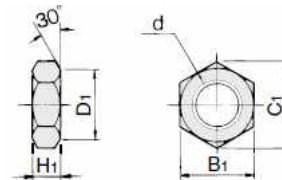
Plate cylinder——MU Series

Dimensions of Basic: MUB

Rod end male thread

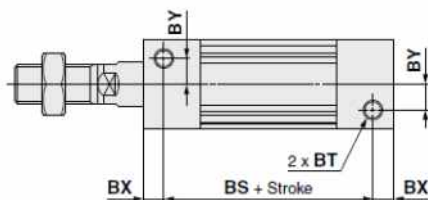


Rod end nut

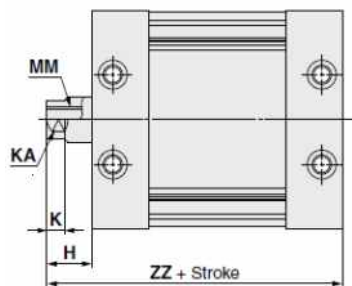


Part no.	Bore size	d	H1	B1	C1	D1
NT-03	25	M10 x 1.25	6	17	19.6	16.5
NT-MU03	32	M12 x 1.25	7	19	21.9	18
NT-04	40	M14 x 1.5	8	22	25.4	21
NT-05	50/63	M18 x 1.5	11	27	31.2	26

*A nut is attached to the rod end male thread as standard.
Rod end nut material: Carbon steel
Surface treatment: Chromated



Rod end female thread



*Dimensions except mentioned on the right are the same as male thread type.
However, K and KA dimensions are the same as male thread type.

Model	Stroke range (mm)	A	AL	B	BS	BT	BX
MUB25	5 to 300	22	19.5	24	37	M5 x 0.8 depth 7.5	9
MUB32	5 to 300	26	23.5	28	45	M6 x 1 depth 12	6.5
MUB40	5 to 300	30	27	32	44	M8 x 1.25 depth 13	8
MUB50	5 to 300	35	32	39	54	M10 x 1.5 depth 14.5	10
MUB63	5 to 300	35	32	50	53	M12 x 1.75 depth 18	11

Model	Stroke range (mm)	BX	BY	C	D	ET	EY
MUB25	5 to 300	9	7	54	12	M5 x 0.8 depth 11	26
MUB32	5 to 300	6.5	8	68	14	M6 x 1 depth 11	42
MUB40	5 to 300	8	9	86	16	M8 x 1.25 depth 11	54
MUB50	5 to 300	10	9	104	20	M10 x 1.5 depth 15	64
MUB63	5 to 300	11	12	124	20	M12 x 1.75 depth 15	72

Model	GX	GY	H	K	KA	MM	N	NC	ND	NE	NS	NX	NY	P			S	ZZ
														-	TN	TF		
MUB25	10	5	36	5.5	10	M10 x 1.25	16.5	7.5 depth 4.5	M5 x 0.8	4.3	43	6	26	M5 x 0.8	-	-	55	91
MUB32	8.5	5.5	40	5.5	12	M12 x 1.25	18	9 depth 5.5	M6 x 1	5.1	45	6.8	28	Rc1/8	NPT1/8	G1/8	58	98
MUB40	9	7	45	6	14	M14 x 1.5	18.5	10.5 depth 6.5	M8 x 1.25	6.9	44	8	36	Rc1/8	NPT1/8	G1/8	60	105
MUB50	11.5	8	53	7	18	M18 x 1.5	24	13.5 depth 8.5	M10 x 1.5	8.7	54	10	42	Rc1/4	NPT1/8	G1/4	74	127
MUB63	11.5	10	56	7	18	M18 x 1.5	24	17 depth 10.5	M12 x 1.75	10.5	53	11	46	Rc1/4	NPT1/8	G1/4	75	131

*The position of the 4 flats of the piston rod is $\pm 3^\circ$ in relation to the cylinder side surface.

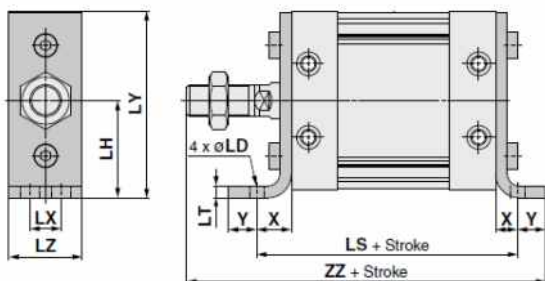
Rod end female thread

Model	H	MM	ZZ
MUB25	14	M6 x 1 depth 12	69
MUB32	15	M8 x 1.25 depth 13	72
MUB40	15	M8 x 1.25 depth 13	75
MUB50	18	M10 x 1.5 depth 15	92
MUB63	21	M10 x 1.5 depth 15	96

Plate cylinder——MU Series

Dimensions with Mounting Bracket: MUL

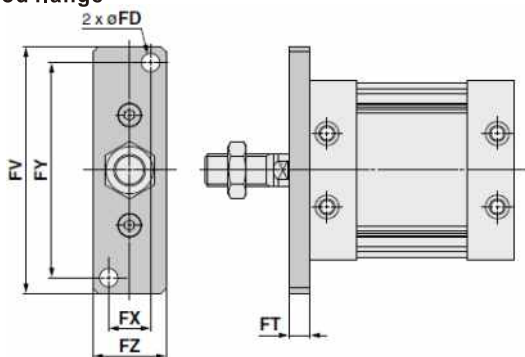
Foot



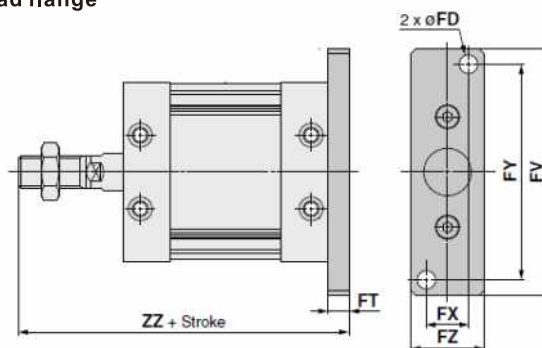
Model	LD	LH	LS	LT	LX	LY	LZ	X	Y	ZZ
MUL25	5.5	29	79	3.2	11	56	23	12	6	109
MUL32	6.6	37	90	4.5	12	71	27	16	8	122
MUL40	9	46	96	4.5	15	89	31	18	10	133
MUL50	11	57	116	5	18	109	37	21	11	159
MUL63	13.5	67	123	6	22	129	48	24	14	169

Foot bracket material: Rolled steel
Surface treatment: Nickel plated

Rod flange



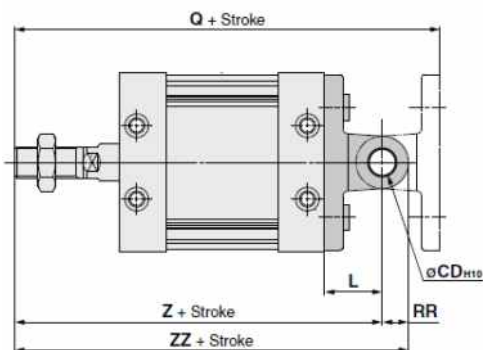
Head flange



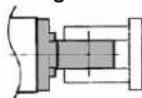
Model	FD	FT	FV	FX	FY	FZ	ZZ
MUF25, MUG25	5.5	8	76	14	66	24	99
MUF32, MUG32	7	8	94	16	82	28	106
MUF40, MUG40	9	9	118	18	102	32	114
MUF50, MUG50	11	12	144	22	126	39	139
MUF63, MUG63	13	14	168	30	148	50	145

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

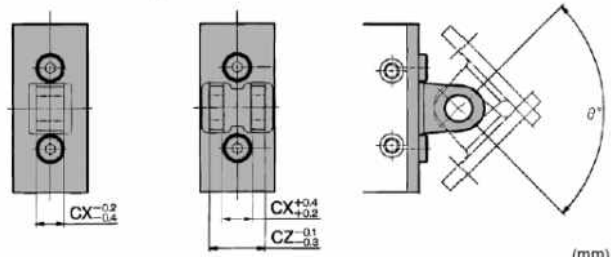
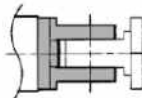
Single clevis Double clevis



Single clevis



Double clevis



Model	CDH10	CX	CZ	L	Q	RR	Z	ZZ	Rotation range (°θ)
MUC25, MUD25	8 ^{+0.058} ₀	9	18	17	125	8	108	116	100
MUC32, MUD32	10 ^{+0.058} ₀	11	22	22	142	10	120	130	90
MUC40, MUD40	10 ^{+0.058} ₀	13	26	27	159	10	132	142	80
MUC50, MUD50	14 ^{+0.070} ₀	16	32	32	191	14	159	173	80
MUC63, MUD63	14 ^{+0.070} ₀	16	32	38	207	16	169	185	80

Clevis pin and retaining ring are shipped together with double clevis.
Single/Double clevis material: Cast iron
Surface treatment: Painted