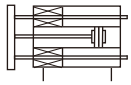
Tri-rod cylinder——TCL, TCM Series

Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100



Ordering code

TC	M	50×50	S	T
①	②	③	④	⑤	⑥

① Model
TC: Tri-rod cylinder(Double acting type)

② Bearing type
M: Brass bearing
L: Linear bearing

③ Bore size	Adapt bearing type
6	Brass bearing(M Type)
10	
12	Linear bearing(L Type) Brass bearing(M Type)
16	
20	
25	
32	
40	
50	
63	
80	
100	

⑤ Magnet [Note1]
S: With magnet

⑥ Thread type [Note 2]
T:NPT

④ Stroke [Note3]		
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 80 100	25 30 40 50 60 70 75 80 90 100 125 150 175 200 225 250	250

[Note1] TC Series are all with magnet.

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

[Note3] 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 shout be ordered by non-standard stroke.

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		29~100psi(0.2~0.7MPa)		22~145psi(0.15~1.0MPa)									
Proof pressure		175psi(1.2MPa)		215psi(1.5MPa)									
Temperature ℃		-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.

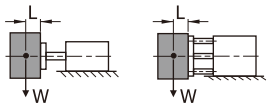
[Note2] NPT thread is available.

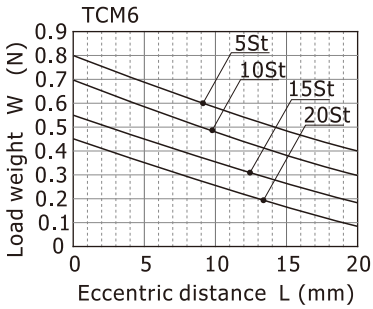
TCL, TCM Series Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100

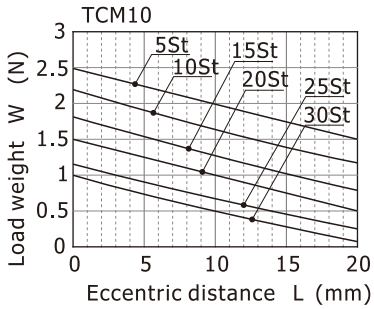
Safe load and torque

1. Max. safe load

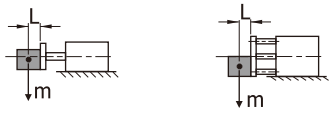
TCM6,10 Max. safe load



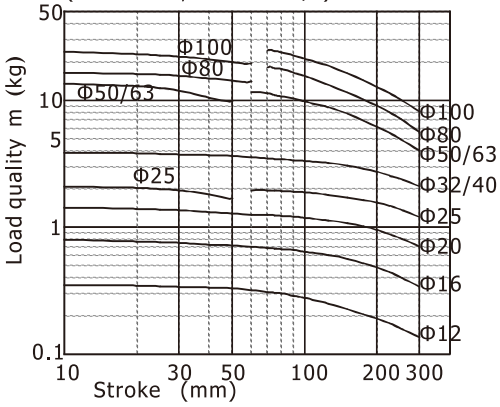




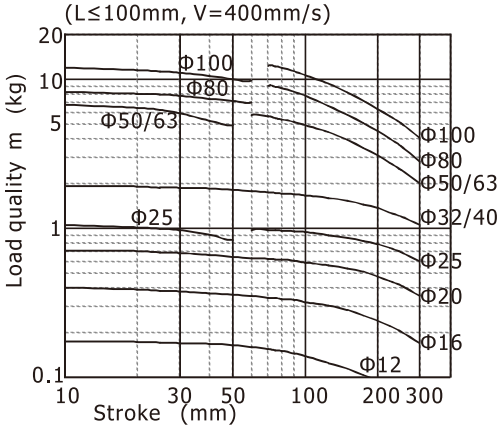
TC12~100 Max. safe load



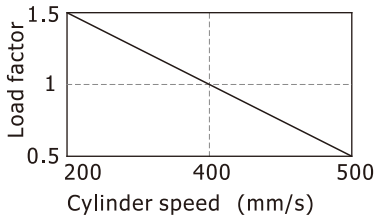
TCM(Brass bearing)Horizontal action
(L≤100mm, V=400mm/s)



TCL(Linear bearing)Horizontal action
(L≤100mm, V=400mm/s)

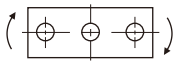


For other operating speeds of the cylinder, multiply the value of the graph when V=400mm/s by the coefficient in the following table, and the obtained value is the approximate value of the allowable load mass.



2. Max. safe torque

Max. safe torque **Unit: Newton·Meter(N·m)**



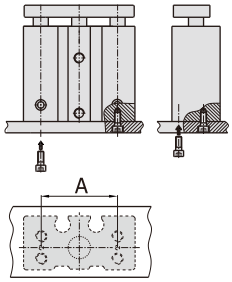
Bore size	Type	Stroke(mm)																			
		5	10	15	20	25	30	40	50	60	70	75	80	90	100	125	150	175	200	225	250
6	TCM	0.008	0.007	0.006	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	TCM	0.045	0.039	0.033	0.028	0.024	0.021	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	TCM	-	0.39	-	0.32	0.29	0.27	0.24	0.21	0.49	0.46	0.43	0.42	0.39	0.36	0.31	0.27	-	-	-	-
	TCL		0.35	-	0.29	0.26	0.24	0.22	0.19	0.44	0.39	0.37	0.35	0.32	0.29	0.24	0.20	-	-	-	-
16	TCM	-	0.69	-	0.58	0.54	0.49	0.43	0.38	0.75	0.72	0.69	0.65	0.61	0.58	0.50	0.44	0.40	0.36	-	-
	TCL	-	0.62	-	0.52	0.49	0.44	0.39	0.34	0.68	0.65	0.62	0.59	0.55	0.52	0.43	0.37	0.32	0.28	-	-
20	TCM	-	-	-	1.05	0.99	0.93	0.83	0.75	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	-	-	-	0.95	0.89	0.84	0.75	0.68	1.77	1.59	1.52	1.46	1.33	1.25	1.30	1.15	1.03	0.93	0.88	0.76
25	TCM	-	-	-	1.76	1.65	1.55	1.38	1.25	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	-	-	-	1.58	1.49	1.40	1.24	1.13	2.71	2.42	2.38	2.33	2.19	1.97	2.03	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	-	-	-	-	5.72	5.40	5.16	4.62	5.38	5.15	5.11	5.02	4.60	4.47	3.98	3.58	3.25	2.98	2.67	2.56
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	-	-	-	-	6.30	5.94	5.50	5.09	5.99	5.67	5.62	5.58	5.27	4.93	4.30	3.94	3.58	3.29	3.01	2.82
50	TCM	-	-	-	-	13.00	12.60	11.00	10.80	13.70	12.70	12.00	11.80	11.10	10.60	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	8.55	7.74	7.07	6.52	6.12	5.62
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	17.46	14.00	11.00	10.60	10.20	9.74	9.63	8.72	7.97	7.34	6.77	6.34
80	TCM	-	-	-	-	21.90	20.80	19.70	18.60	15.80	24.00	22.90	21.70	21.00	20.50	18.60	17.00	15.60	14.50	13.50	12.60
	TCL	-	-	-	-	15.10	14.30	13.60	12.90	12.20	21.60	20.61	19.53	18.90	18.45	16.74	15.30	14.04	13.05	12.15	11.34
100	TCM	-	-	-	-	38.80	36.80	35.00	33.50	28.50	39.40	37.50	35.60	34.50	33.80	30.90	28.40	26.20	24.40	22.50	21.40
	TCL	-	-	-	-	27.10	25.70	24.40	30.15	25.65	35.46	33.75	32.04	31.05	30.42	27.81	25.56	23.58	21.96	20.25	19.26

TCL, TCM Series Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100

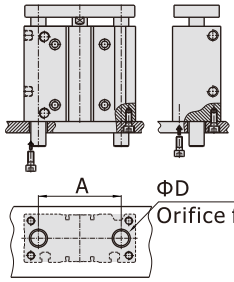
How to mount

Fixation of screw at back side(Φ6~Φ63)

Φ6\Φ10



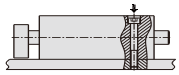
Φ12~Φ100



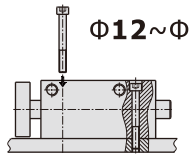
Bore size\Item		6	10	12	16	20	25	32	40	50	63	80	100
A		20.5	23	41	46	54	64	78	86	110	124	156	188
D (Min)	TCM	X	X	10	12	13	20	20	20	20	20	30	-
	TCL	-	-	8	10	10	13					–	30

Fixation of screw on top surface(Φ6~Φ63)

Φ6\Φ10

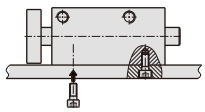


Φ12~Φ100



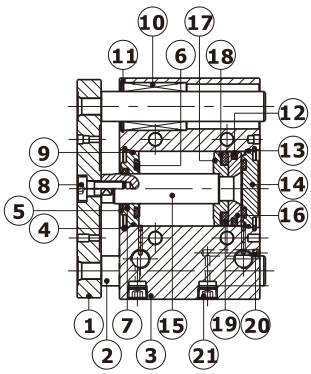
Fixation of T slot at bottom(Φ12~Φ100)

Fixation of screw at bottom surface(Φ12~Φ100)

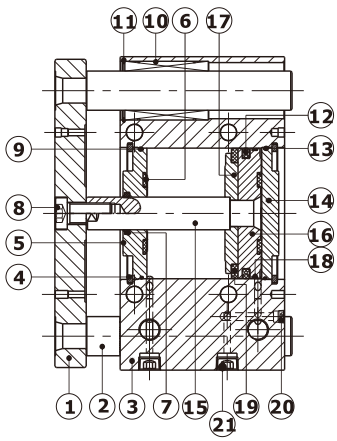


Inner structure

Φ12~Φ63



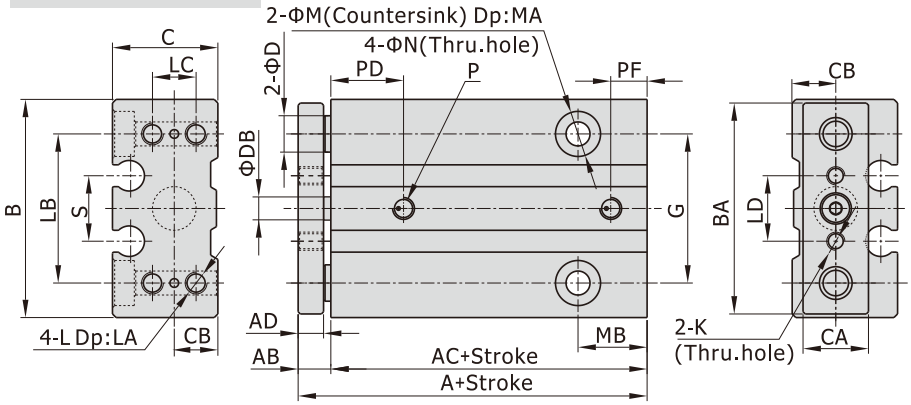
Φ80~Φ100



NO.	Item	NO.	Item
1	Fixing plate	12	Piston seal
2	Guide rod	13	O-ring
3	Body	14	Back cover
4	C clip	15	Piston rod
5	Front cover	16	Piston
6	Bumper	17	Magnet holder
7	Piston rod O-ring	18	Magnet washer
8	Screw	19	Magnet
9	O-ring	20	Screw
10	Bearing	21	Screw
11	C clip		

Dimensions

TCM6\TCM10



[Unit: mm]

Bore size\Item	A	AB	AC	AD	B	BA	C
6	29.5	6	23.5	5	30	29	14.5
10	32	6	26	5	34	33	18

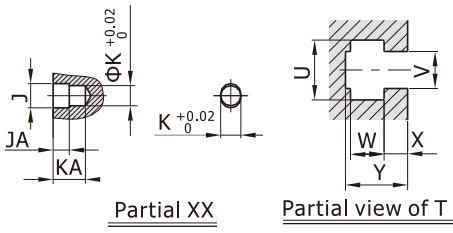
Bore size\Item	CA	CB	D	DB	G	K
6	9	6	5	3	20.5	M2.5X0.45
10	10	7.5	6	5	23	M3X0.5

Bore size\Item	L	LA	LB	LC	LD	M
6	M3X0.5	5	20.5	6	9	6
10	M4X0.7	5	23	8	11	8

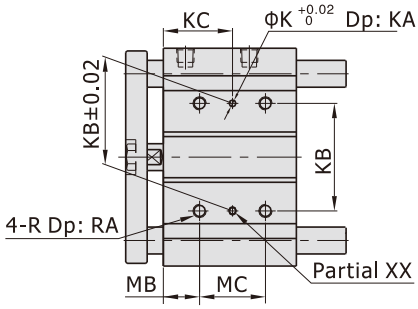
Bore size\Item	MA	MB	N	P	PD	PF
6	3	9.5	3.5	M3X0.5	9.5	5.5
10	4	8.5	4.5	M3X0.5	11.5	5

TCL, TCM Series Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100

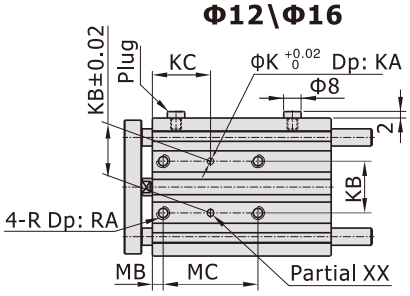
TCL/TCM12~63

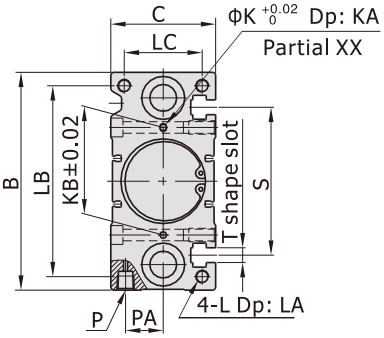


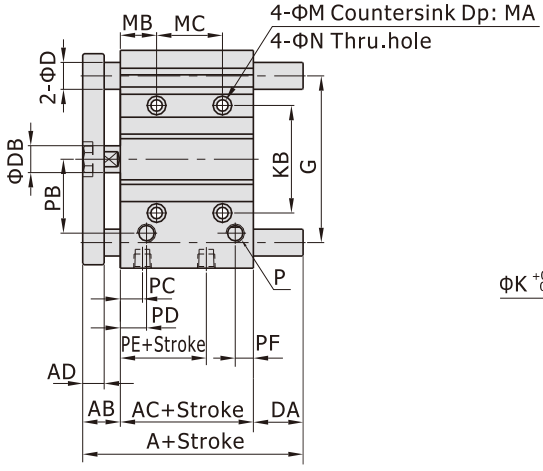
Φ20~Φ63

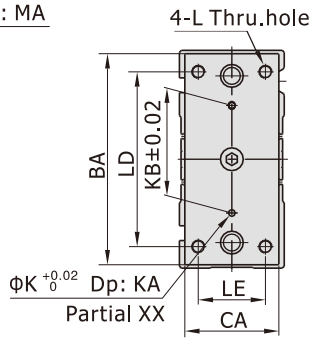


Φ12\Φ16









[Unit: mm]

Bore size\Item	A					DA								MC				KC			
	TCL	TCM	TCL\TCM			TCL				TCM											
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

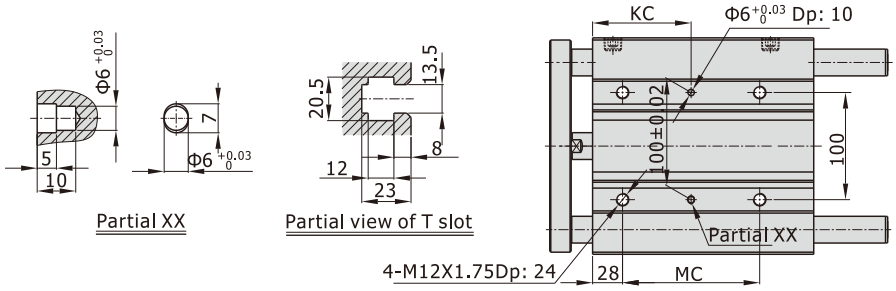
Stroke	≤50	≤50	51~100	101~200	>200	≤50	51~100	101~200	>200	≤50	51~100	101~200	>200	≤40	41~100	101~200	>200	≤40	41~100	101~200	>200
32	65	78	102	118	140	5.5	42.5	58.5	80.5	18.5	42.5	58.5	80.5	24	48	124	200	33	45	83	121
40	66	78	102	118	140	0	36	52	74	12	36	52	74	24	48	124	200	34	46	84	122
50	76	89	118	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

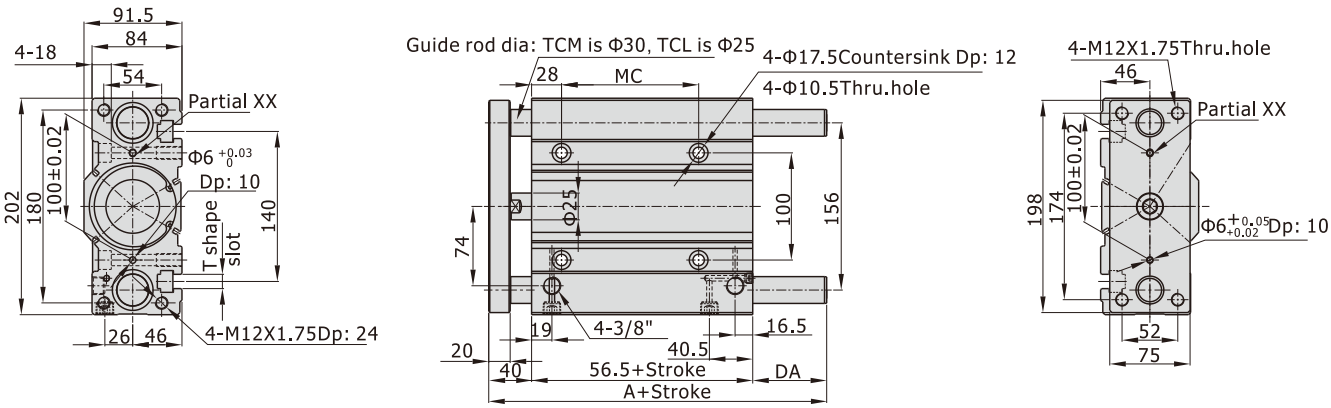
Bore size\Item	AB	AC	AD	B	BA	C	CA	D(TCL)	D(TCM)	DB	G	J	JA	K	KA	KB	L	LA	LB	LC	LD
12	13	29	8	58	56	26	22	6	8	6	41	3.5	3	3	6	23	M4×0.7	10	50	18	48
16	13	33	8	64	62	30	25	8	10	8	46	3.5	3	3	6	24	M5×0.8	12	56	22	54
20	16	37	10	83	81	36	30	10	12	10	54	3.5	3	3	6	28	M5×0.8	13	72	24	70
25	16	37.5	10	93	91	42	38	12	16	12	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	16	78	4.5	3	4	6	42	M8×1.25	20	98	34	96
40	22	44	12	120	118	54	44	16	20	16	86	4.5	3	4	6	50	M8×1.25	20	106	40	104
50	28	44	16	148	146	64	60	20	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	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	11	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

TCL, TCM Series Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100

TCL/TCM80

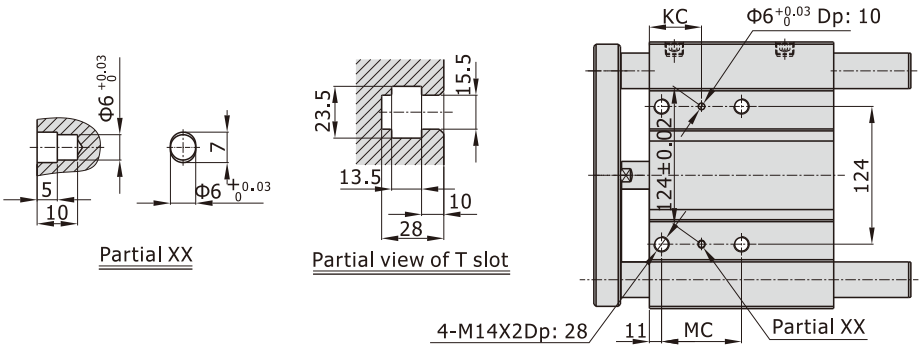


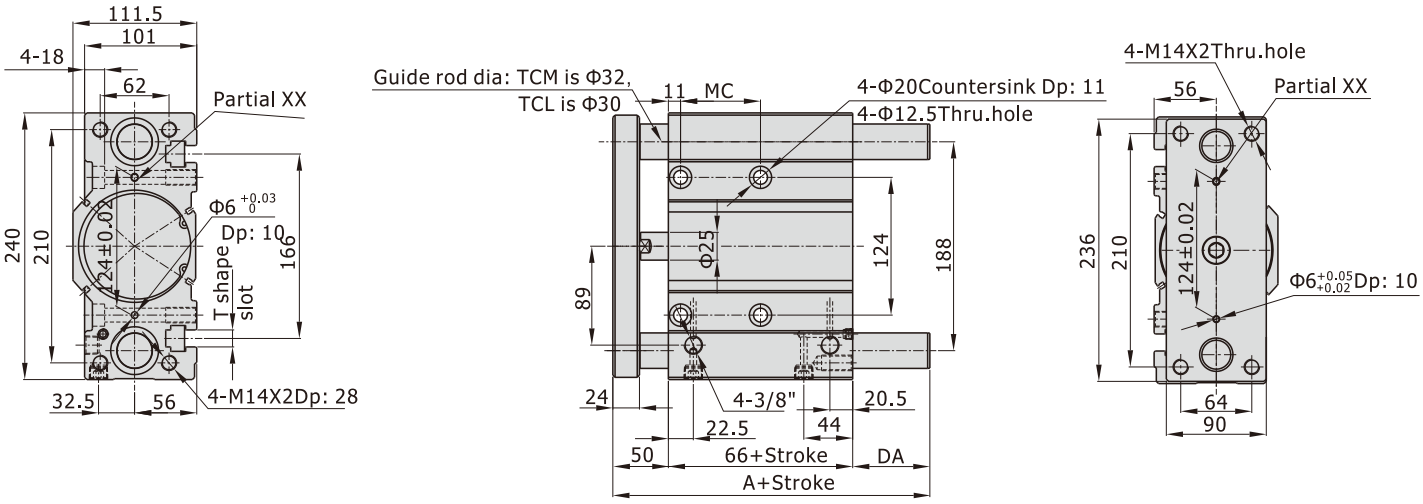


Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
A	TCM=112.5/TCL=106.5					165.5						187.5			
DA	TCM=16/TCL=10					69						91			
KC	42			54						92				128	
MC	28			52						128				200	

TCL, TCM Series Bore size: Φ6, Φ10, Φ12, Φ16, Φ20, Φ25, Φ32, Φ40, Φ50, Φ63, Φ80, Φ100

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				121	
MC	48			72						148				220	