



Tri-rod cylinder——TCL, TCM Series

Product series

Series name	Acting type	Bore size	Collocation of sensor switch	
			DS1-H	DS1-HL
TCM6、TCM10	Double acting	6 10		
TCM(TCL)12~TCM(TCL)63				
TCM(TCL)80、TCM(TCL)100	Double acting	80 100		
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Installation and application

1. When load changes in the work, the cylinder with abundant output capacity shall be selected.
2. Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion.
3. Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
4. Dirty substances in the pipe must be cleared away before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder.
5. The medium used by cylinder shall be filtered to 40 μ m or below.
6. The cylinder shall avoid the influence of side load in operation to maintain the normal work of cylinder and extend the service life.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. If the cylinder is dismantled and stored for a long time, please conduct anti-rust treatment to the surface. Anti-dust cap shall be inserted into the inlet and outlet ports. As the precision of the manufacture and guide is high, never dismantle the fixed block or cylinder cover without permission.



Tri-rod cylinder

TCL,TCM Series

Airtac



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 40 μm filter element)												
Operating pressure	0.15~0.7MPa(23~100psi)						0.1~1.0MPa(14~145psi)						
Proof pressure	1.05MPa(152psi)						1.5MPa(215psi)						
Temperature °C	-20~70												
Speed range mm/s	50~500						30~500						50~400
Stroke tolerance							0~100 ^{+1.0} ₀						>100 ^{+1.5} ₀
Cushion type	Bumper												
Non-rotating tolerance ①	Linear bearing		± 0.08°		± 0.07°		± 0.06°		± 0.05°		± 0.04°		
	Bronze bearing		± 0.10°		± 0.09°		± 0.08°		± 0.06°		± 0.05°		
Port size ②	M3×0.5			M5×0.8			1/8"			1/4"		3/8"	

① Retract position.

② PT thread, G thread and NPT thread are available. Add) Refer to P457~480 for detail of sensor switch.

Stroke

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

Note) If non-standard stroke is ordered, backing plate will be added in the cylinder of standard stroke if the gap of the standard stroke and non-standard stroke is 1mm (Φ12~Φ32) or 5mm (Φ40~Φ63). For example, the non-standard stroke cylinder with a stroke of 28mm is transformed from the standard cylinder whose standard stroke is 30mm through adding a pad and their shape and dimension are the same.

Ordering code

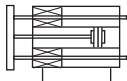
TC M 50 × 50 S □			
Model	TC: Tri-rod cylinder(Double acting type)	Thread type ①	Blank: PT G: G T: NPT
Bearing type	Adapt bore size L: Linear bearing 12~100 M: Bronze bearing 6~100	Magnet	S: With magnet
Bore size	6 10 12 16 20 25 32 40 50 63 80 100	Stroke	Refer to stroke table for details

① When the thread is standard, the code is blank. Add) TC Series are all with magnet.

How to mount

Fixation of screw on top surface(Φ6~Φ100)		Fixation of screw at bottom surface(Φ12~Φ100)	
Φ6/Φ10	Φ12~Φ100		
Fixation of T slot at bottom(Φ12~Φ100)		Fixation of screw at back side(Φ6~Φ100)	
Φ6/Φ10	Φ12~Φ100	Φ6/Φ10	Φ12~Φ100
		Orifice for leader	
Bore size\Item		A	D(Min) TCM TCL
6	20.5	X	-
10	23	X	-
12	41	8	
16	46	10	
20	54	12	
25	64	14	
32	78	18	
40	86	18	
50	110	22	
63	124	22	
80	156	30	25
100	188	32	30

Symbol



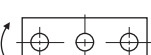
Product feature

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 ΦPA 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;



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)			
																									
12	TCM	-	44	-	33	29	26	41	36	30	28	26	25	24	22	19	17	-	-	-	-				
	TCL	-	37	-	27	25	22	35	30	27	24	23	21	19	18	15	12	-	-	-	-				
16	TCM	-	67	-	51	42	37	63	58	49	41	37	35	33	32	27	24	22	20	-	-				
	TCL	-	54	-	40	37	32	54	47	42	38	35	32	30	28	23	20	17	15	-	-				
20	TCM	-	-	-	78	61	57	123	112	99	91	67	84	79	75	66	59	54	49	45	42				
	TCL	-	-	-	58	52	48	101	90	83	74	70	69	63	58	62	54	48	43	39	35				
25	TCM	-	-	-	93	89	76	142	131	119	107	101	97	90	85	68	79	71	65	61	55				
	TCL	-	-	-	82	79	68	132	118	109	99	93	88	81	77	80	70	62	55	50	45				
32	TCM	-	-	-	-	203	190	179	164	221	197	182	172	163	157	142	127	116	106	98	91				
	TCL	-	-	-	-	191	182	166	157	207	178	164	156	150	144	203	186	171	158	146	137				
40	TCM	-	-	-	-	203	190	179	164	221	197	182	172	163	159	142	127	116	106	97	91				
	TCL	-	-	-	-	190	182	166	157	210	179	163	156	150	144	203	185	171	158	146	137				
50	TCM	-	-	-	-	296	283	268	245	303	288	273	266	253	241	216	195	179	164	155	142				
	TCL	-	-	-	-	208	196	185	173	259	232	223	212	207	199	264	242	224	207	195	181				
63	TCM	-	-	-	-	296	283	268	245	303	288	273	266	253	241	216	195	179	164	153	142				
	TCL	-	-	-	-	206	196	180	171	259	232	221	212	205	196	262	240	221	205	191	178				
Max. safe torque																						Unit: Newton · Meter(N · m)			
																									
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	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				



TC

Tri-rod cylinder

TCL, TCM Series

Inner structure

Φ6

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

Φ10

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

Φ12~Φ63

Stroke ≥ 50mm

TCL

Bore size Φ12、Φ16mm
Stroke ≤ 30mm

Bore size Φ20~Φ63mm
Stroke ≤ 50mm

Bore size Φ12、Φ16mm
30 < Stroke ≤ 100mm

Bore size Φ20~Φ63mm
50 < Stroke ≤ 100mm

Bore size Φ12、Φ16mm
Stroke > 100mm

Bore size Φ20~Φ63mm
Stroke > 100mm

TCM

Bore size Φ12~Φ63mm
Stroke ≤ 50mm

Bore size Φ12~Φ63mm
50 < Stroke ≤ 100mm

Bore size Φ12~Φ63mm
Stroke > 100mm

Φ80, Φ100

TCL

Stroke S=25~60mm

Stroke S=70~150mm

Stroke S=175~250mm

TCM

Stroke S=25~250mm

NO.	Item	NO.	Item
1	Fixing plate	13	O-ring
2	Leader	14	Back cover
3	Body	15	Piston rod
4	C clip	16	Piston
5	Front cover	17	Magnet holder
6	Bumper	18	Magnet washer
7	Piston rod O-ring	19	Magnet
8	Screw	20	Screw
9	O-ring	21	Screw
10	Bearing	22	Bearing
11	C clip	23	Spacer
12	Piston seal		

NO.	Item	NO.	Item
1	Fixing plate	12	Piston seal
2	Leader	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	22	Spacer

Dimensions

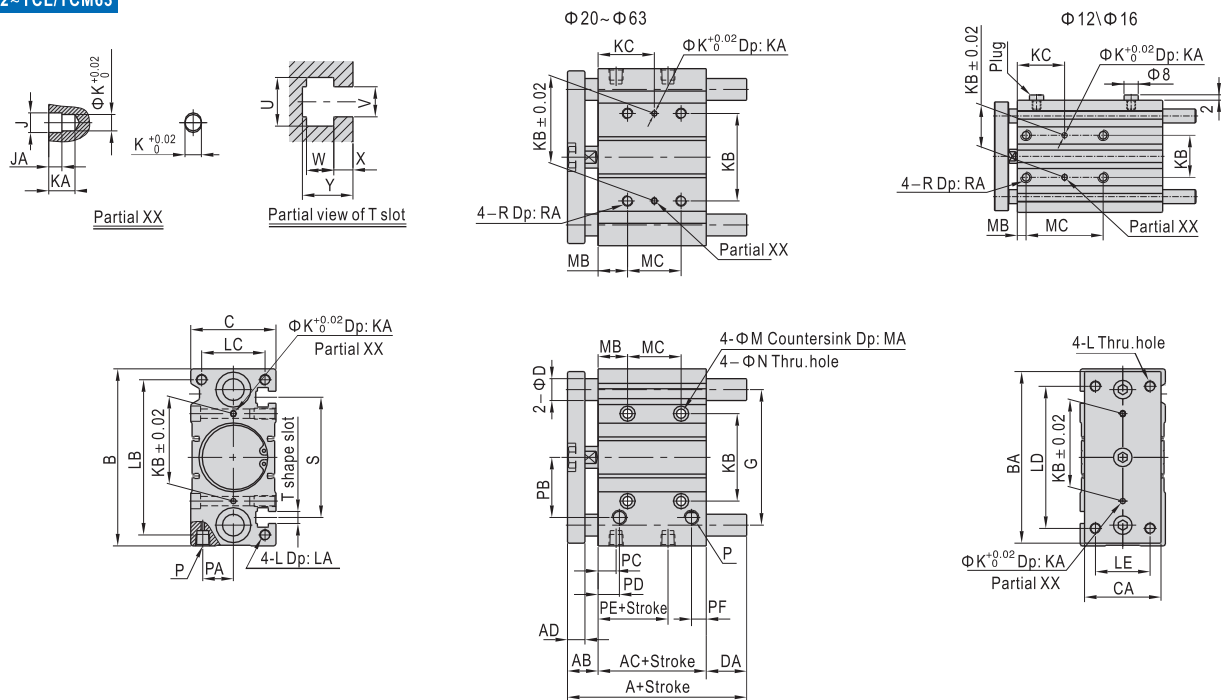
TCM6, TCM10

Bore size\Item	A	AB	AC	AD	B	BA	C	CA	D	G	K	L	LA	LB	LC	LD
6	29.5	6	23.5	5	30	29	14.5	9	5	20.5	M2.5X0.45	M3X0.5	5	20.5	6	9
10	32	6	26	5	34	33	18	10	6	23	M3X0.5	M4X0.7	5	23	8	11

Bore size\Item	M	MA	MB	N	P	PD	PF
6	6	3	9.5	3.3	M3X0.5	9.5	5.5
10	8	4	8.5	4.3	M3X0.5	11.5	5

■ Dimensions

TCL/TCM12~TCL/TCM63



Item	A					DA								MC				KC			
Bore size	TCL	TCM	TCL		TCM	TCL				TCM				MC				KC			
Stroke	≤30	≤30	31~100	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

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	≤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	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	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	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	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	10	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"	15	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

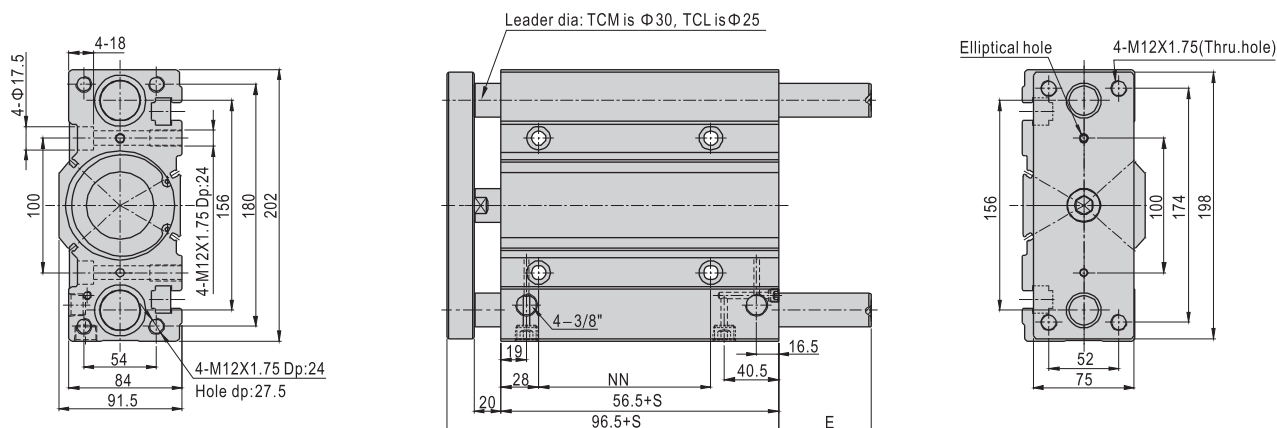
TC

Tri-rod cylinder

TCL,TCM Series

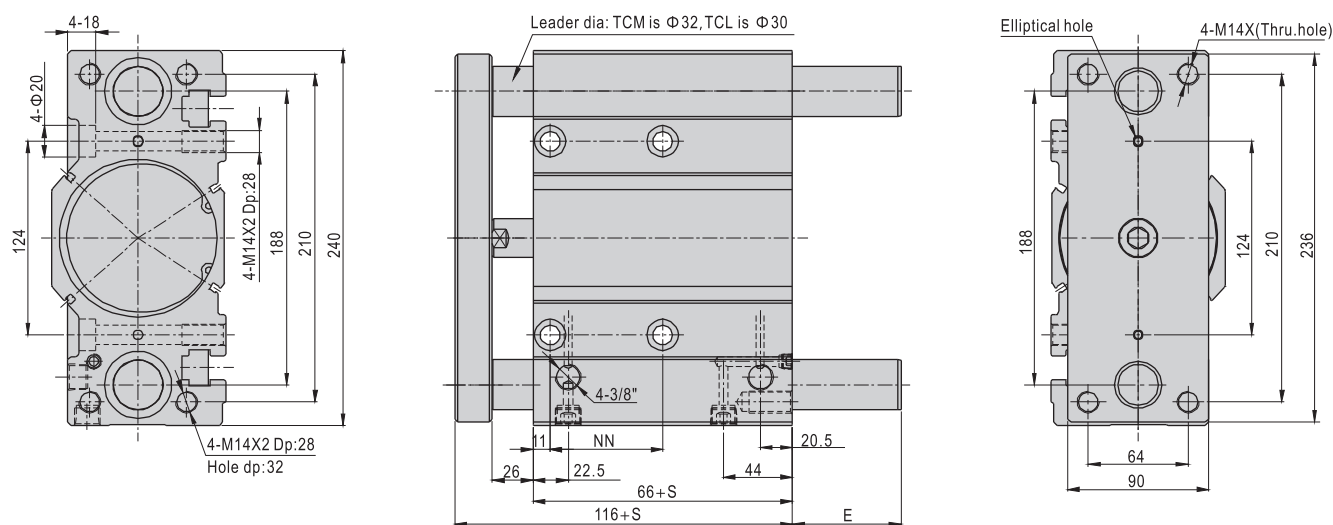
■ Dimensions

TCL/TCM80



Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
NN		28				52					128			200	
E		TCM=16/TCL=10						69					91		

TCL/TCM100



Item\Stroke	25	30	40	50	60	70	75	80	100	125	150	175	200	225	250
NN		48				72					148			220	
E		TCM=12/TCL=6						70					92		