





Twin-rod cylinder——TN, TR Series

Product series

Series name	Acting type	Bore size	Collocation of sensor switch	
			CS1-J DS1-J	CS1-G DS1-G
 <p>TN Series</p>	Double acting	10	●	●
 <p>TR Series</p>		16	●	●
		20	●	●
		25	●	●
		32	●	●
			CS1-G DS1-G	
	Double acting	6	●	●
		10	●	●
		16	●	●
		20	●	●
		25	●	●
		32	●	●
Page	308	310	419	



TN,TR

Installation and application

- When load changes in the work, the cylinder with abundant output capacity shall be selected.
- Relative cylinder with high temperature resistance or corrosion resistance shall be chosen under the condition of high temperature or corrosion;
- Necessary protection measure shall be taken in the environment with higher humidity, much dust or water drops, oil dust and welding dregs.
- Dirty substances in the pipe must be eliminated before cylinder is connected with pipeline to prevent the entrance of particles into the cylinder;
- The medium used by cylinder shall be filtered to 40 μ m or below.
- As both the front cover and piston are short, too large stroke can not be selected.
- Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
- The cylinder shall avoid radial load in operation to maintain the normal and extend service life.
- 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, Please do not dismantle the fixed block or cylinder cover .

Criteria for selection: Cylinder thrust

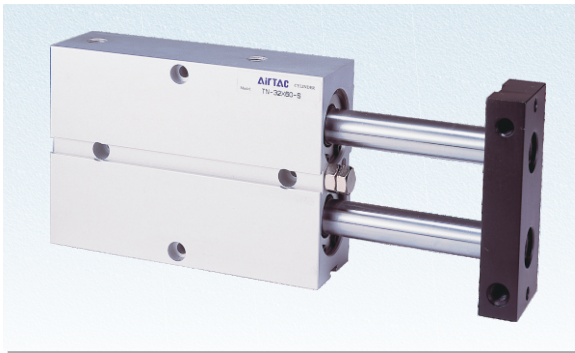
Unit: Newton(N)

Bore size (mm)	Rod size (mm)	Acting type	Pressure area (mm ²)	Operating pressure(MPa)							
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	
6	4	Double acting	Push side	56.5	5.7	113.	17.0	22.6	28.3	33.9	39.6
			Pull side	31.4	3.1	6.3	9.4	12.6	15.7	18.8	22.0
10	6	Double acting	Push side	157.1	15.7	31.4	47.1	62.8	78.6	94.3	110.0
			Pull side	100.5	10.1	20.1	30.2	40.2	50.3	60.3	70.4
16	8	Double acting	Push side	402.1	40.2	80.4	120.6	160.8	201.1	241.3	281.5
			Pull side	301.6	30.2	60.3	90.5	120.6	150.8	181.0	211.1
20	10	Double acting	Push side	628.3	62.8	125.7	188.5	251.3	314.2	377.0	439.8
			Pull side	471.2	47.1	94.2	141.4	188.5	235.6	282.7	329.8
25	12	Double acting	Push side	981.7	98.2	196.4	294.5	392.7	490.9	589.0	687.2
			Pull side	755.6	75.6	151.1	226.7	302.2	377.8	453.4	528.9
32	16	Double acting	Push side	1608.5	160.9	321.7	482.6	643.4	804.3	965.1	1126.0
			Pull side	1206.4	120.6	241.3	361.9	482.6	603.2	723.8	844.5



Twin-rod cylinder

TN Series



Symbol

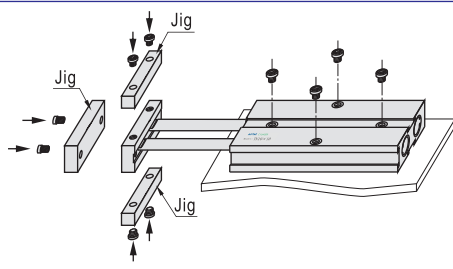


Product feature

1. Enterprises standard is implemented.
2. Embedded 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.



How to mount



Specification

Bore size(mm)	10	16	20	25	32
Acting type	Double acting				
Fluid	Air(to be filtered by 40 μm filter element)				
Operating pressure	0.1~1.0MPa(14~145psi)				
Proof pressure	1.5MPa(215psi)				
Temperature °C	-20~70				
Speed range mm/s	30~500				
Adjustable stroke mm	-10~0				
Stroke tolerance	+1.0 0				
Cushion type	Bumper				
Non-rotating tolerance ①	± 0.4°		± 0.3°		
Port size ②	M5 × 0.8				1/8"

① Retract position.

② PT thread, NPT thread and G thread are available. Add) Refer to P419~442 for detail of sensor switch.

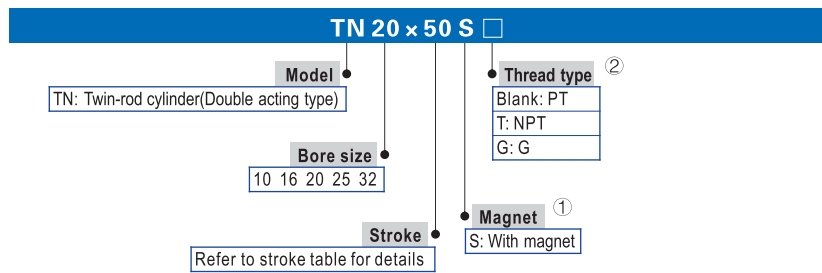
Stroke

Bore size (mm)	Standard stroke (mm)															Max. 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) 1. Please contact the company for other special strokes.

2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

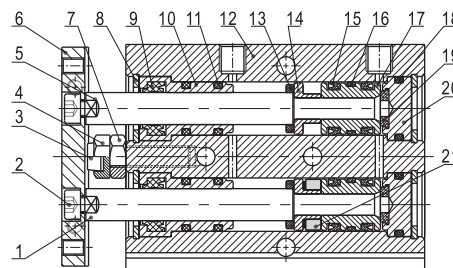
Ordering code



① TN Series are all with magnet.

② When the thread is standard, the code is blank.

Inner structure and material of major parts



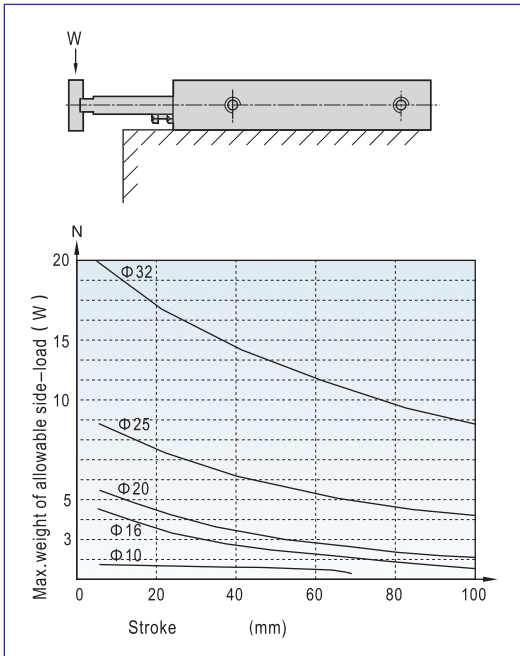
NO.	Item	Material	NO.	Item	Material
1	Piston rod B	Φ 32 S45C Other SUS304	12	Body	Aluminum alloy
2	Screw	Carbon steel	13	Bumper	TPU
3	Bumper	POM	14	Magnet holder	Φ 10 SUS303 Other Aluminum alloy
4	Adjustable nut	Carbon steel	15	Piston seal	NBR
5	Piston rod A	S45C	16	Wear ring	Wear resistant material
6	Fixing plate	Free cutting steel	17	Piston	Φ 10 SUS303 Other Aluminum alloy
7	Screw	Carbon steel	18	Seal ring	NBR
8	C clip	Spring steel	19	Bumper	TPU
9	Wiper seal	NBR	20	Back cover	Aluminum alloy
10	Front cover	Aluminum alloy	21	Magnet	Sintered metal(Neodymium-iron-boron)
11	O-ring	NBR			



Twin-rod cylinder

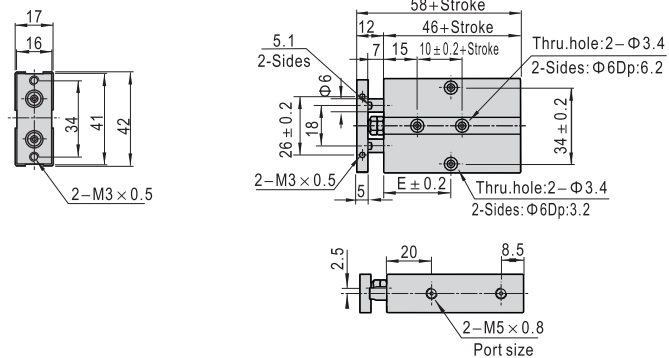
TN Series

Max. weight of allowable side-load



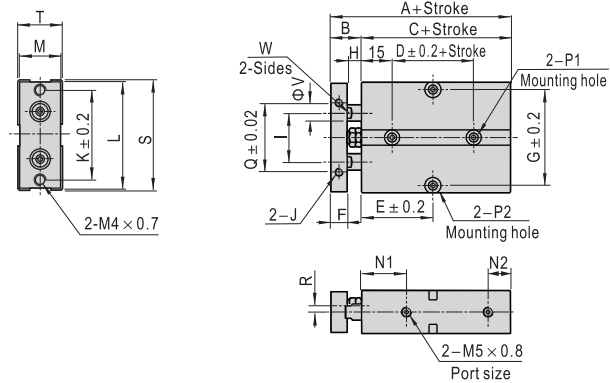
Dimensions

Φ 10



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

Φ 16- Φ 25

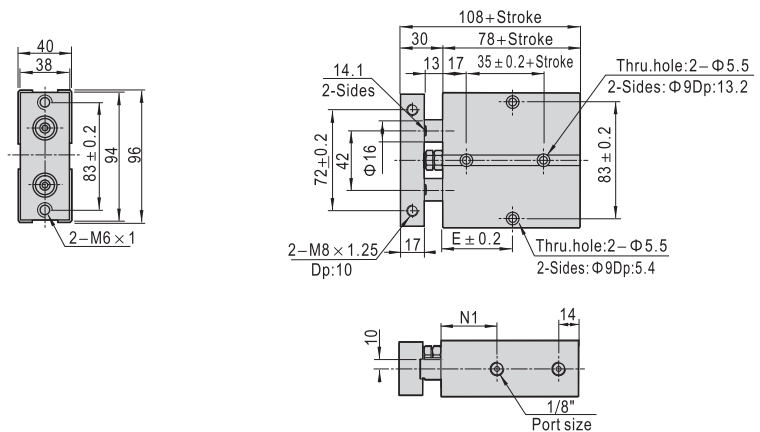


Bore size\Item	E											F					G		H		I		K	
Stroke ≤	A	B	C	D	10	20	30	40	50	60	70	80	90	100	125	150	175	200	F	G	H	I	K	
16	68	15	53	20	30	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	8	47	7	24	47	
20	78	20	58	20	35	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	10	55	10	28	55	
25	81	19	62	30	40	40	45	50	55	60	65	70	75	80	92.5	105	117.5	130	10	66	9	34	66	

Bore size\Item	J	L	M	N1	N2	P1
16	M4×0.7Dp:5	53	20	22	11	2-Sides: Φ 7.5Dp:7.2Thru.hole: Φ 4.5
20	M4×0.7Dp:5	61	24	25	12	2-Sides: Φ 7.5Dp:7.2Thru.hole: Φ 4.5
25	M4×0.7Dp:6	72	29	27	12	2-Sides: Φ 7.5Dp:7.2Thru.hole: Φ 4.5

Bore size\Item	P2	Q	R	S	T	V	W
16	2-Sides: Φ 8Dp:4.5Thru.hole: Φ 4.5	34	3	54	21	8	6.1
20	2-Sides: Φ 8Dp:4.5Thru.hole: Φ 4.5	44	3.5	62	25	10	8.1
25	2-Sides: Φ 8Dp:4.5Thru.hole: Φ 4.5	56	6	73	30	12	10.1

Φ 32



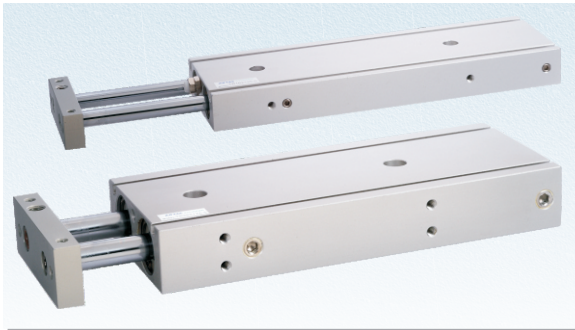
Item\Stroke	10	20	30	40	50	60	70	80	90	100	125	150	175	200
E	45	50	55	60	65	70	75	80	85	90	102.5	115	127.5	140
N1	35	40												



TN,TR

Twin-rod cylinder

TR Series



Symbol



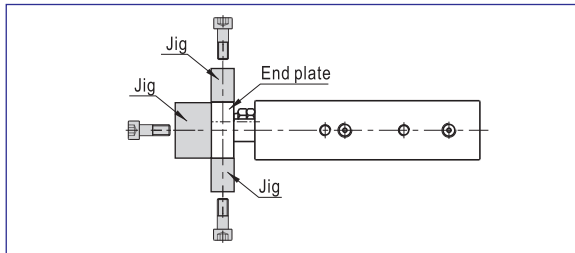
Product feature

1. JIS standard is implemented.
2. The non-rotating precision is high and deflection of the end of piston rod is low, which is suitable for precise guide.
3. It adopts lengthening type sliding supporting guide. No additional lubricant is needed and it has good performance of guide.
4. Mounting holes on three sides facilitates multi-position mounting.
5. It is good resistance to bending and twisting moments.
6. Except for the axial, each side of the cylinder has installation orifices to provide several installation and fixation ways for the customers.
7. There are two groups of air intake and outlet at two sides of the cylinder for the actual selection.
8. Bumper in front of the barrel can adjust the stroke of cylinder and relieve impact.
9. Standard configuration of this series has magnet and the type without magnet is not available.



TN,TR

How to mount



Specification

Bore size (mm)	6	10	16	20	25	32
Acting type	Double acting					
Fluid	Air(to be filtered by 40 μ m filter element)					
Operating pressure	0.1~1.0MPa(14~145psi)					
Proof pressure	1.5MPa(215psi)					
Temperature °C	-20~70					
Speed range mm/s	30~500					
Adjustable stroke mm	-5~0					
Stroke tolerance	+1.0 0					
Cushion type	Bumper					
Non-rotating tolerance ①	± 0.2°	± 0.15°			± 0.1°	
Port size ②	M5 × 0.8			1/8"		

① Retract position.

② PT thread, NPT thread and G thread are available. Add) Refer to P419~442 for detail of sensor switch.

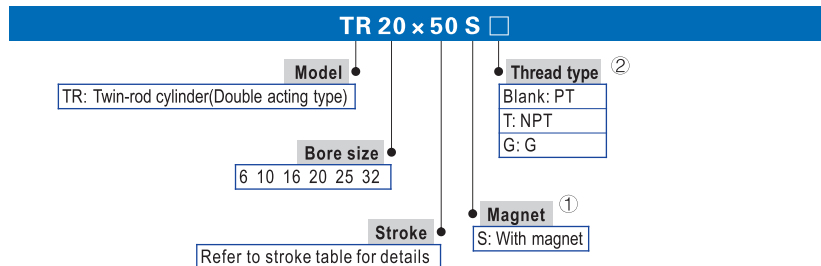
Stroke

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

Note) 1. Please contact the company for other special strokes.

2. The dimensions of non-std stroke cylinder has the same dimensions as the next longer stroke std. stroke cylinder. e.g. 23mm stroke cylinder has the same dimensions of 25 std. stroke cylinder.

Ordering code



① TR Series are all with magnet.

② When the thread is standard, the code is blank.

Inner structure and material of major parts

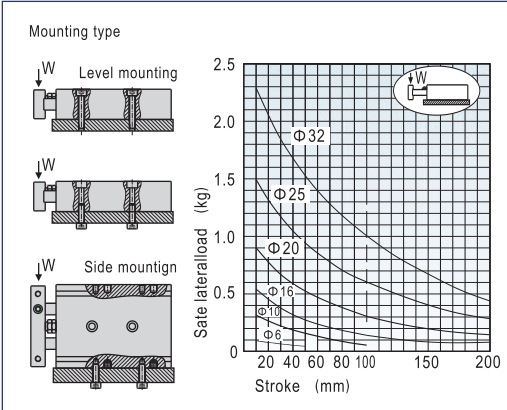
NO.	Item	Material	NO.	Item	Material
1	Screw	Carbon steel	10	Piston	Φ6,10 SUS304
2	Fixing plate	Aluminum alloy		Other	Aluminum alloy
3	Bumper	POM	11	Wear ring	Nylon 6
4	Screw	Free cutting steel	12	Back cover	Aluminum alloy
5	Nut	Carbon steel	13	Bumper	TPU
6	Piston rod	Φ25,32 Carbon steel Other SUS304	14	Piston seal	NBR
7	C clip	Spring steel	15	Magnet holder	Φ6,10 SUS304 Other Aluminum alloy
8	Front cover	Aluminum alloy	16	Screw	Carbon steel
9	Magnet	Φ32 Plastic Other Sintered metal(Neodymium-iron-boron)	17	Body	Aluminum alloy
			18	Back cover O-ring	NBR
			19	Wiper seal	NBR



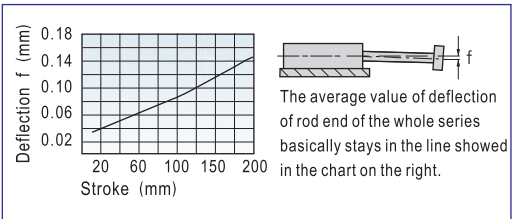
Twin-rod cylinder

TR Series

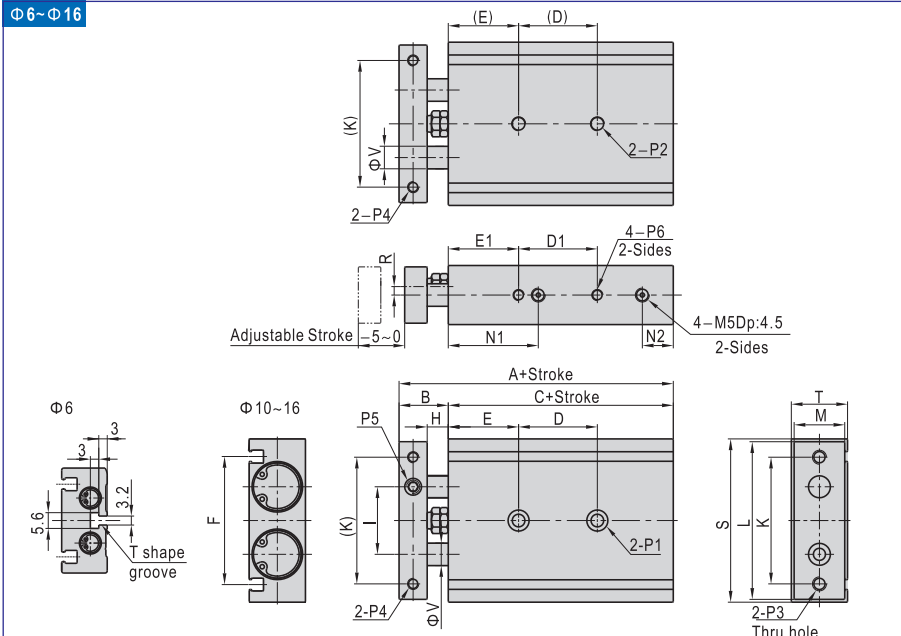
Max. weight of allowable side-load



Safe deflection



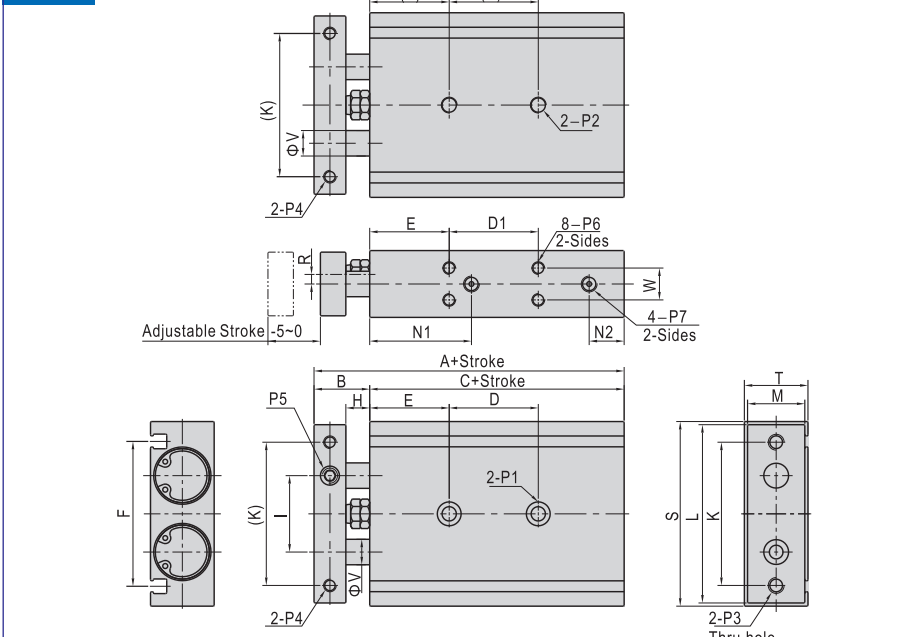
Dimensions



Bore size\Item Stroke	A B C			D D1								E E1 F		H I		K L M		N1 N2				
	10~25	30~50	60~80	90~100	125	150	175	200	13	10	25.8	8	16	28	35	14	24.5	6.5				
6	58.5	13.5	45	D=10+Stroke/2 D1=13+Stroke				-	-	-	-	-	13	10	25.8	8	16	28	35	14	24.5	6.5
10	72	17	55	30	40	50	60	-	-	-	-	20	20	36.5	9	20	35	44	15	30	8	
16	79	19	60	25	35	45	55	65	75	145	145	30	30	46.5	9	25	45	56	18	38	8	

Bore size\Item Stroke	R S T V				P1		P2		P3		P4		P5		P6	
	4.5	37	16	4	One-side: Φ 6.5Dp:3.3Thru.hole: Φ 3.4		-		M3×0.5		M3×0.5Thru.hole		M3×0.5		M3×0.5Dp:4.5	
6	4.5	37	16	4	One-side: Φ 6.5Dp:3.3Thru.hole: Φ 3.4		-		M3×0.5		M3×0.5Thru.hole		M3×0.5		M3×0.5Dp:4.5	
10	3.5	46	17	6	One-side: Φ 6.5Dp:3.3Thru.hole: Φ 3.4		M4×0.7Dp:7		M4×0.7		M3×0.5Thru.hole		M5×0.8		M3×0.5Dp:5	
16	5	58	20	8	One-side: Φ 8.0Dp:4.4Thru.hole: Φ 4.3		M5×0.8Dp:8		M5×0.8		M4×0.7Thru.hole		M6×1.0		M4×0.7Dp:5	

Φ20-Φ32



Bore size\Item Stroke	A B C			D D1								E F		H I		K L		M N1 N2		R S T V			
	20~25	30~50	60~100	125	150	175	200	30	61	12	35	60	78	28	43	9	9	6.5	64	25	10		
20	94	24	70	30	40	60	80	80	100	100	30	52	12	28	50	62	23	46	9	6.5	64	25	10
25	96	24	72	30	40	60	80	80	100	100	30	61	12	35	60	78	28	43	9	9	80	30	12
32	112	30	82	40	50	70	90	90	110	110	30	73	14	44	75	96	36	53	10	11.5	98	38	16

Bore size\Item Stroke	W P1		P2		P3		P4		P5		P6		P7	
	9.5	13	One-side: Φ 9.5Dp:5.3Thru.hole: Φ 5.2		M6×1.0Dp:10		M5×0.8		M4×0.7Dp:6		M8×1.25		M4×0.7Dp:7	
20	9.5	13	One-side: Φ 9.5Dp:5.3Thru.hole: Φ 5.2		M6×1.0Dp:10		M5×0.8		M4×0.7Dp:6		M8×1.25		M4×0.7Dp:7	
25	9.5	13	One-side: Φ 11Dp:6.3Thru.hole: Φ 6.8		M8×1.25Dp:12		M6×1.0		M5×0.8Dp:7.5		M8×1.25		M5×0.8Dp:7	
32	20	20	One-side: Φ 11Dp:6.3Thru.hole: Φ 6.8		M8×1.25Dp:12		M6×1.0		M5×0.8Dp:8		M10×1.5		M5×0.8Dp:7	



TN,TR



