

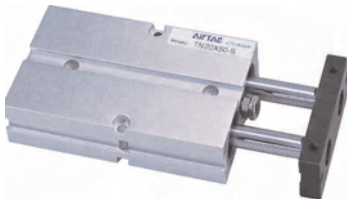



# Twin-rod cylinder——TN, TR Series



## Product series

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Series name		Acting type	Bore size	Collocation of sensor switch	
TN Series		Double acting	10 16 20 25 32	CS1-J	DS1-J
				●	●
				●	●
				●	●
				●	●
				●	●
TR Series		Double acting	6 10 16 20 25 32	CS1-G	DS1-G
				●	●
				●	●
				●	●
				●	●
				●	●
				●	●
Page	308	310		457	

## 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 eliminated 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. As both the front cover and piston are short, too large stroke can not be selected.
7. Anti-freezing measure shall be adopted under low temperature environment to prevent moisture freezing.
8. The cylinder shall avoid radial load in operation to maintain the normal and extend service life.
9. 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

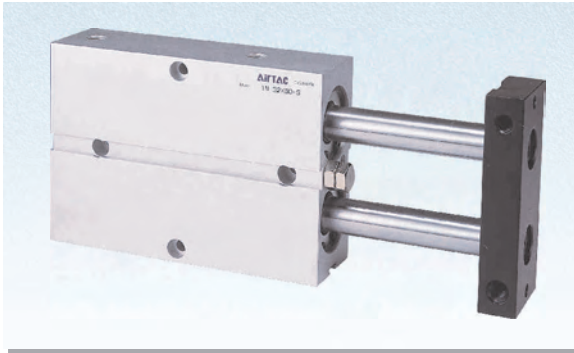
Unit: Newton(N)

Bore size (mm)	Rod size (mm)	Acting type	Pressure area (mm <sup>2</sup> )	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

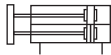


# Twin-rod cylinder

## TN Series



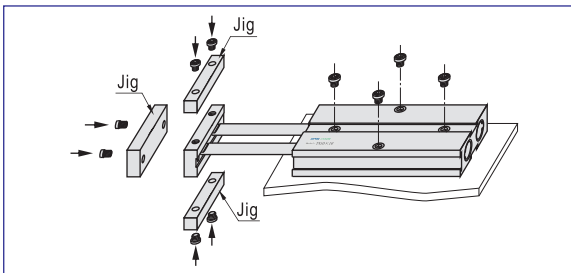
### Symbol



### 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 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	-10~0				
Stroke tolerance	0~100 <sup>+1.0</sup> <sub>0</sub> >100 <sup>+1.5</sup> <sub>0</sub>				
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, 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
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

TN 20 × 50 S		
Model	Thread type ②	
TN: Twin-rod cylinder(Double acting type)	Blank: PT	
	G: G	
	T: NPT	
Bore size		
10 16 20 25 32		
Stroke	Magnet ①	
Refer to stroke table for details	S: With magnet	

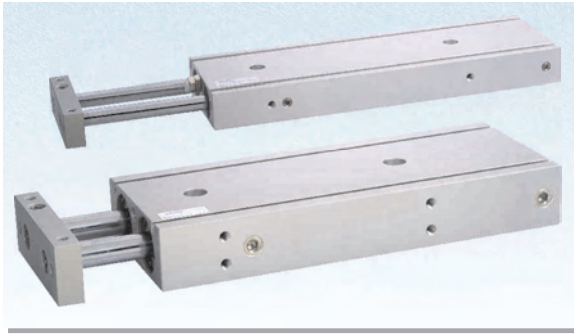
① TN Series are all with magnet.

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			





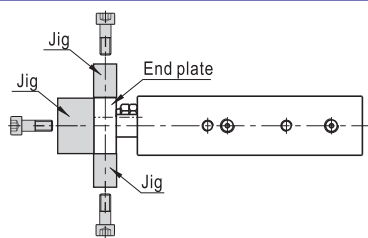
### Symbol



### 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.

### 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   ℃	-20~70					
Speed range   mm/s	30~500					
Adjustable stroke   mm	-5~0					
Stroke tolerance	0~100 <sup>+1.0</sup> <sub>0</sub> >100 <sup>+1.5</sup> <sub>0</sub>					
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, 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	10	20	25	30	40	50	60	70	75	80	90	100					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

TR 20 × 50 S	
Model	Thread type ②
TR: Twin-rod cylinder(Double acting type)	Blank: PT
	G: G
	T: NPT
Bore size	Magnet ①
6 10 16 20 25 32	S: With magnet
Stroke	
Refer to stroke table for details	

① TR Series are all with magnet.

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

### Inner structure and material of major parts

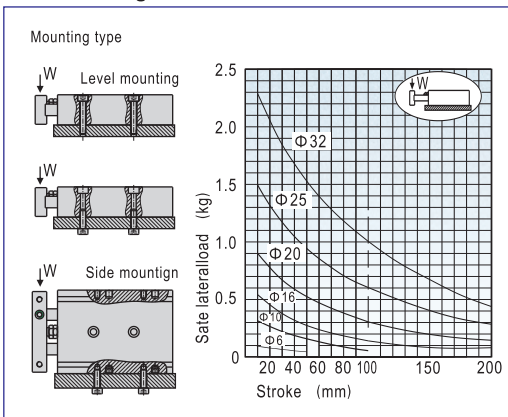
NO.	Item		Material	NO.	Item		Material
1	Screw		Carbon steel	10	Piston	Φ 6,10	SUS304
2	Fixing plate		Aluminum alloy			Other	Aluminum alloy
3	Bumper		POM	11	Wear ring		Nylon 6
4	Screw		Free cutting steel	12	Back cover		Aluminum alloy
5	Nut		Carbon steel	13	Bumper		TPU
6	Piston rod	Φ 25,32 Other	Carbon steel SUS304	14	Piston seal		NBR
7	C clip		Spring steel	15	Magnet holder	Φ 6,10 Other	SUS304 Aluminum alloy
8	Front cover		Aluminum alloy	16	Screw		Carbon steel
9	Magnet	Φ 32	Plastic	17	Body		Aluminum alloy
		Other	Sintered metal(Neodymium-iron-boron)	18	Back cover O-ring		NBR
				19	Wiper seal		NBR



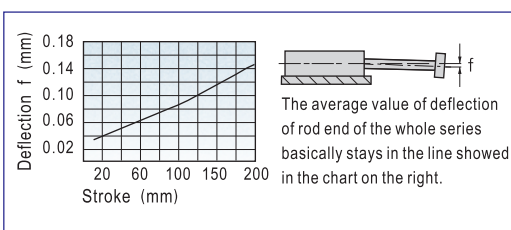
# Twin-rod cylinder

## TR Series

### Max. weight of allowable side-load

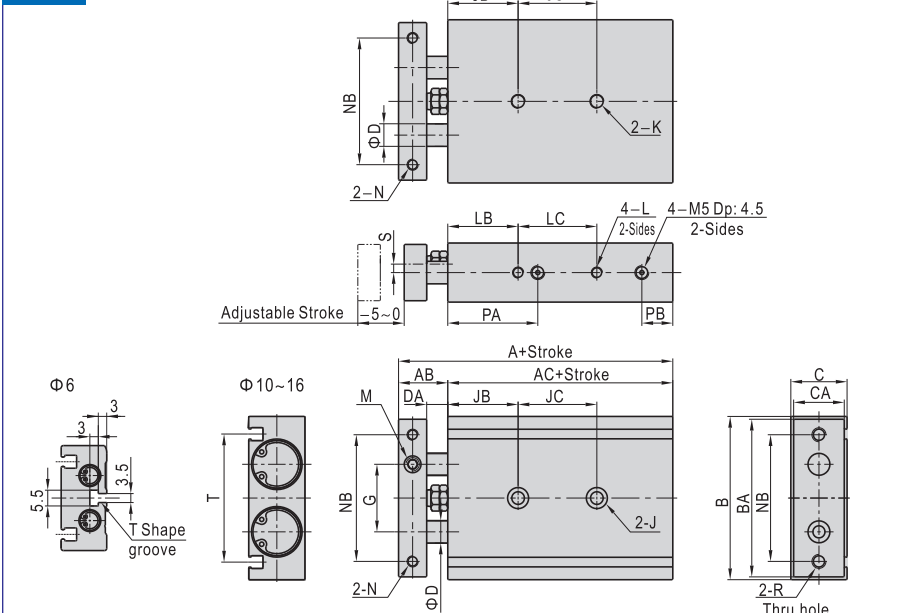


### Safe deflection



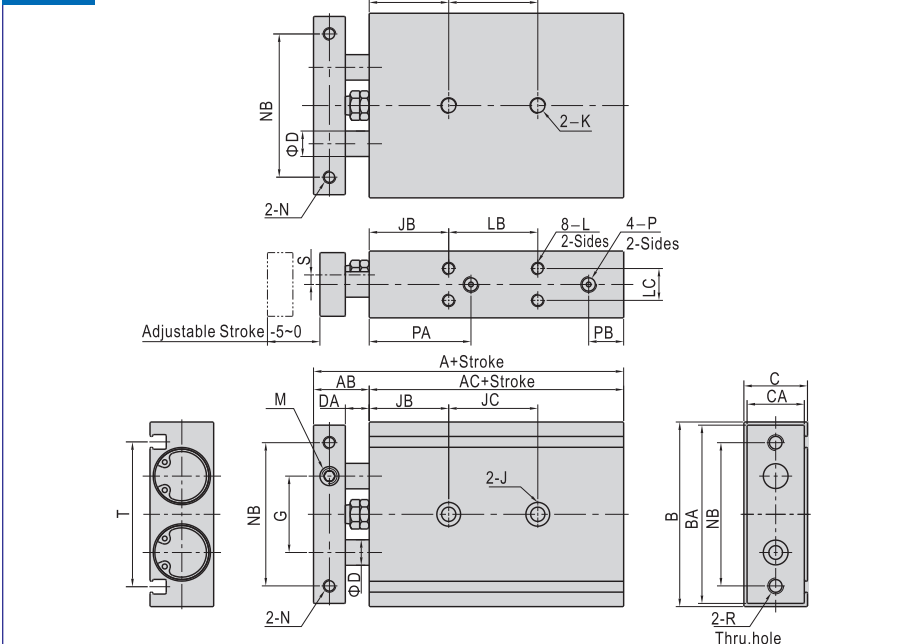
### Dimensions

#### Φ6~Φ16



Bore size\Item Stroke	A	AB	AC	B	BA	C	CA	D	DA	G	JC LC										PA	PB	S	T
											10~25	30~50	60~80	90~100	125	150	175	200						
6	58.5	13.5	45	37	35	16	14	4	8	16	JC=10+Stroke/2	-	-	-	-	-	-	24.5	6.5	4.5	26			
10	72	17	55	46	44	17	15	6	9	20	30	40	50	60	-	-	-	30	8	3.5	36.5			
16	79	19	60	58	56	20	18	8	9	25	35	45	55	65	75	145	145	38	8	5	46.5			
Bore size\Item J											JB	K	L	LB	M	N	NB R							
6	One-side: Φ 6.5 Dp: 3.5 Thru.hole : Φ 3.5										13	-	M3×0.5 Dp: 4.5		10	M3×0.5	M3×0.5 Thru.hole		28	M3×0.5				
10	One-side: Φ 6.5 Dp: 3.5 Thru.hole : Φ 3.5										20	M4×0.7 Dp: 7		M3×0.5 Dp: 5		20	M5×0.8		M3×0.5 Thru.hole		35	M4×0.7		
16	One-side: Φ 8.0 Dp: 4.5 Thru.hole : Φ 4.5										30	M5×0.8 Dp: 8		M4×0.7 Dp: 5		30	M6×1.0		M4×0.7 Thru.hole		45	M5×0.8		

#### Φ20~Φ32



Bore size\Item Stroke	A	AB	AC	B	BA	C	CA	D	DA	G	JB	JC LB								P			PA	PB	S
												10~25	30~50	60~100	125	150	175	200							
20	94	24	70	64	62	25	23	10	12	28	30	30	40	60	80	80	100	100	M5×0.8	46	9	6.5			
25	96	24	72	80	78	30	28	12	12	35	30	30	40	60	80	80	100	100	1/8"	43	9	9			
32	112	30	82	98	96	38	36	16	14	44	30	40	50	70	90	90	110	110	1/8"	53	10	11.5			
Bore size\Item	J	K										L		LC	M	N			NB		R	T			
20	One-side: Φ 9.5 Dp: 5.5 Thru.hole : Φ 5.5										M6×1.0 Dp: 10		M4×0.7 Dp: 7		9.5	M8×1.25	M4×0.7 Dp: 6			50	M5×0.8		52		
25	One-side: Φ 11 Dp: 6.5 Thru.hole : Φ 7										M8×1.25 Dp: 12		M5×0.8 Dp: 7		13	M8×1.25	M5×0.8 Dp: 7.5			60	M6×1.0		61		
32	One-side: Φ 11 Dp: 6.5 Thru.hole : Φ 7										M8×1.25 Dp: 12		M5×0.8 Dp: 7		20	M10×1.5	M5×0.8 Dp: 8			75	M6×1.0		73		