Product series

Series name	Acting type	Bore size	Collocation of sensor switch CS1–J DS1–J	Collocation of sensor switch CS1–G DS1–G
TN Series 	Double acting	10 16 20 25 32		
TR Series 	Double acting	6 10 16 20 25 32		
Page	298	300		403

TN,TR

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 redial 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 .

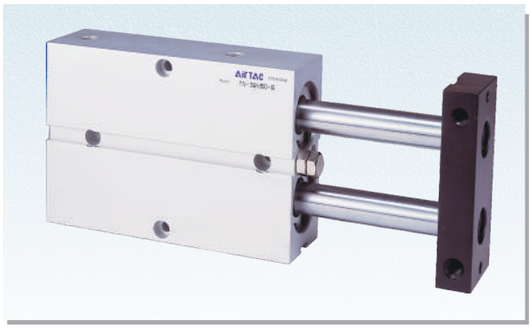
Criteria for selection: Cylinder thrust

Unit：Newton(N)

Bore size (mm)	Rod size (mm)	Acting type		Pressure area (mm^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



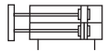
Specification

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 ℃	-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 P403~426 for detail of sensor switch.

Symbol



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.

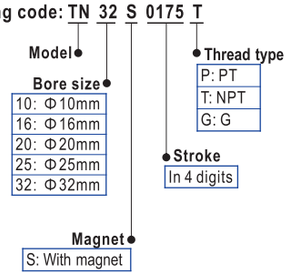
TN,TR

Ordering code

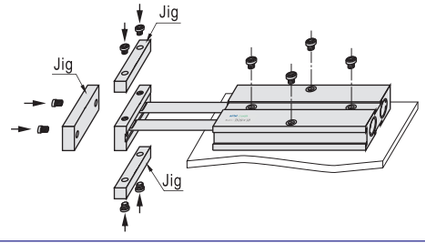
Model can to be changed Ordering code. Example:
Production type: TN
Bore size: 32mm
Stroke: 175mm
Magnet: With magnet
Thread type: NPT

Model:TN −32 × 175-S-T

Ordering code: TN 32 S 0175 T



How to mount



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.

Explain of model

TN−20 × 50−S−P

Model
TN: Twin-rod cylinder(Double acting type)

Bore size
10 16 20 25 32

Stroke
Refer to stroke table for details

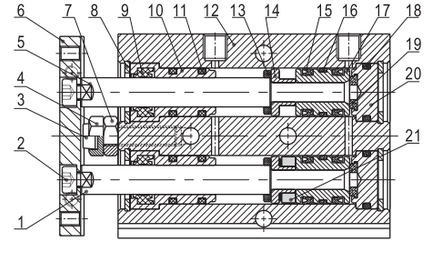
② **Thread type**
P: PT
T: NPT
G: G

① **Magnet**
S: With magnet

① TN Series are all with magnet.

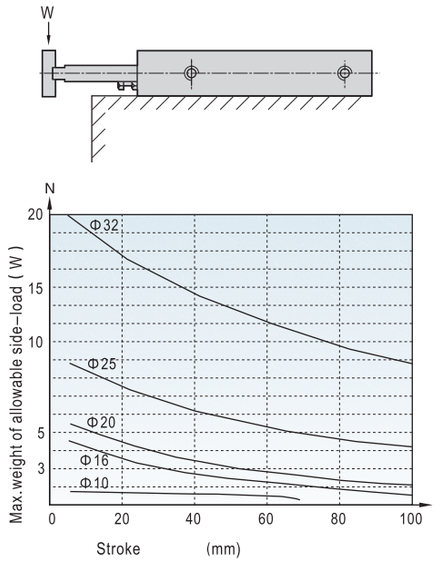
② When the thread is standard, the code is blank.

Inner structure and material of major parts



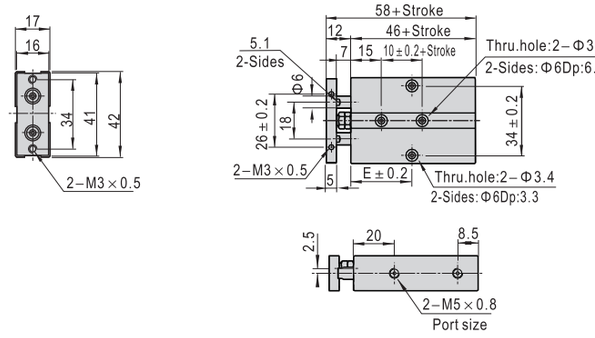
NO.	Item		Material	NO.	Item		Material
1	Piston rod B	Φ32	S45C	12	Body		Aluminum alloy
		Other	SUS304	13	Bumper		TPU
2	Screw		Carbon steel	14	Magnet holder	Φ10	SUS303
3	Bumper		POM			Other	Aluminum alloy
4	Adjustable nut		Carbon steel	15	Piston seal		NBR
5	Piston rod A		S45C	16	Wear ring		Wear resistant 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)

Max. weight of allowable side–load



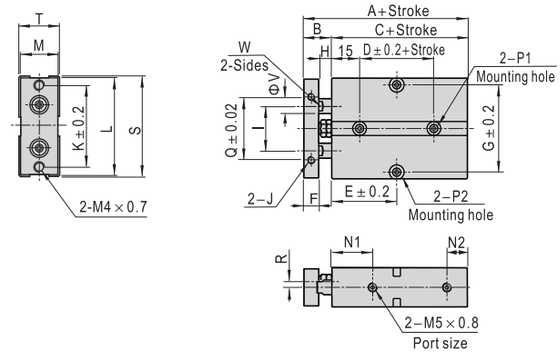
Dimensions

Φ10



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

Φ16~Φ25

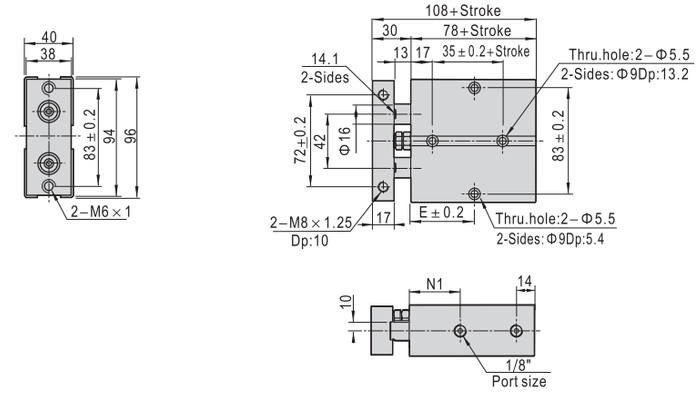


Bore size\Item Stroke≤	A	B	C	D	E 10	20	30	40	50	60	70	80	90	100	125	150	175	200	F	G	H	I	K
16	68	15	53	20	30	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	8	47	7	24	47
20	78	20	58	20	35	35	40	45	50	55	60	65	70	75	87.5	100	112.5	125	10	55	10	28	55
25	81	19	62	30	40	40	45	50	55	60	65	70	75	80	92.5	105	117.5	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:Φ7.5Dp:7.2Thru.hole:Φ4.5
20	M4×0.7Dp:5	61	24	25	12	2-Sides:Φ7.5Dp:7.2Thru.hole:Φ4.5
25	M4×0.7Dp:6	72	29	27	12	2-Sides:Φ7.5Dp:7.2Thru.hole:Φ4.5

Bore size\Item	P2	Q	R	S	T	V	W
16	2-Sides:Φ8Dp:4.5Thru.hole:Φ4.5	34	3	54	21	8	6.1
20	2-Sides:Φ8Dp:4.5Thru.hole:Φ4.5	44	3.5	62	25	10	8.1
25	2-Sides:Φ8Dp:4.5Thru.hole:Φ4.5	56	6	73	30	12	10.1

Φ32

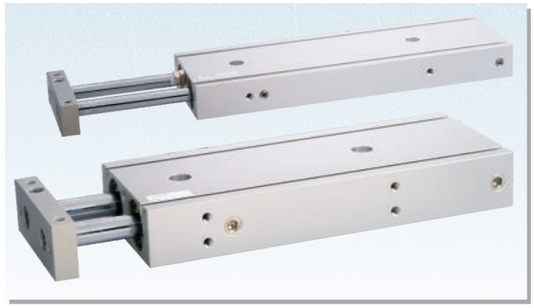


Item\Stroke	10	20	30	40	50	60	70	80	90	100	125	150	175	200
E	45	50	55	60	65	70	75	80	85	90	102.5	115	127.5	140
N1	35	40												

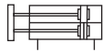
TN,TR

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

Ordering code

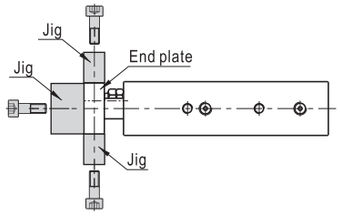
Model can to be changed Ordering code. Example:
Production type: TR
Bore size: 32mm
Stroke: 175mm
Magnet: With magnet
Thread type: NPT

Model:TR－32×175-S-T

Ordering code: TR 32 S 0175 T

- Model
- Bore size
  - 06: Φ6mm
  - 10: Φ10mm
  - 16: Φ16mm
  - 20: Φ20mm
  - 25: Φ25mm
  - 32: Φ32mm
- Stroke: In 4 digits
- Magnet: S: With magnet
- Thread type
  - P: PT
  - T: NPT
  - G: G

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	$^{+1.0}_{0}$					
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 P403~426 for detail of sensor switch.

Stroke

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

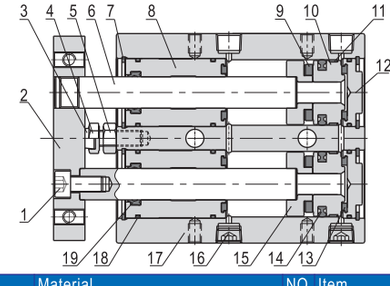
Explain of model

TR−20×50−S−P

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

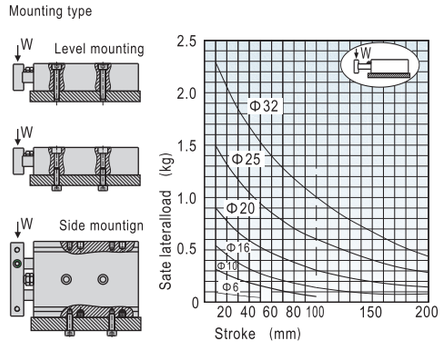
① TR Series are all with magnet.
② When the thread is standard, the code is blank.

Inner structure and material of major parts

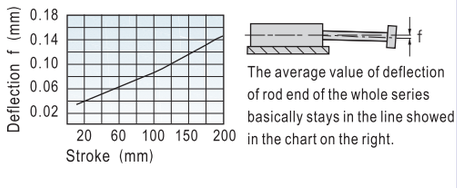


NO.	Item		Material	NO.	Item		Material
1	Screw		Carbon steel	10	Piston	Φ6,10	SUS304
2	Fixing plate		Aluminum alloy			Other	Aluminum alloy
3	Bumper		POM	11	Wear ring		Nylon 6
4	Screw		Free cutting steel	12	Back cover		Aluminum alloy
5	Nut		Carbon steel	13	Bumper		TPU
6	Piston rod	Φ25,32	Carbon steel	14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

Max. weight of allowable side–load



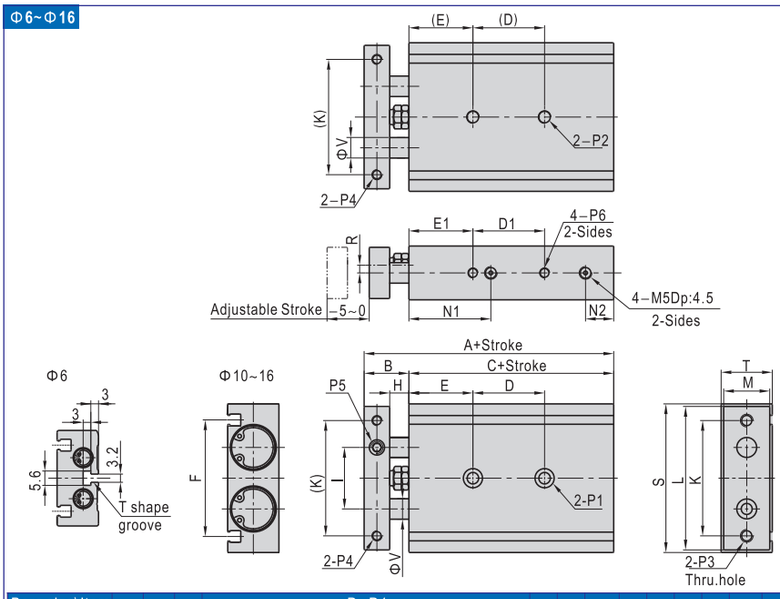
Safe deflection



The average value of deflection of rod end of the whole series basically stays in the line showed in the chart on the right.

Dimensions

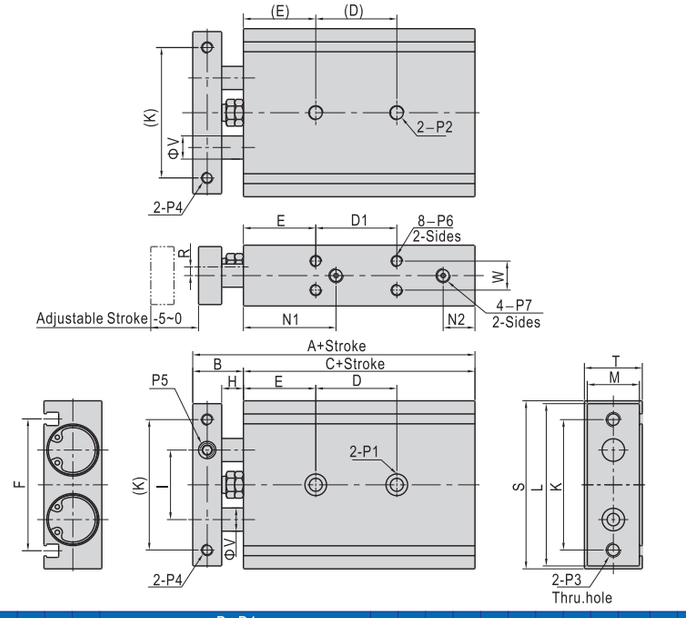
Φ6~Φ16



Bore size\Item / Stroke	A	B	C	D D1 10~25 30~50	60~80 90~100	125 150 175 200	E	E1	F	H	I	K	L	M	N1	N2
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	R	S	T	V	P1	P2	P3	P4	P5	P6
6	4.5	37	16	4	One-side: Φ6.5Dp:3.3Thru.hole: Φ3.4	-	M3×0.5	M3×0.5Thru.hole	M3×0.5	M3×0.5Dp:4.5
10	3.5	46	17	6	One-side: Φ6.5Dp:3.3Thru.hole: Φ3.4	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: Φ8.0Dp:4.4Thru.hole: Φ4.3	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 10~25 30~50	60~100	125 150 175 200	E	F	H	I	K	L	M	N1	N2	R	S	T	V
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	W	P1	P2	P3	P4	P5	P6	P7
20	9.5	One-side: Φ9.5Dp:5.3Thru.hole: Φ5.2	M6×1.0Dp:10	M5×0.8	M4×0.7Dp:6	M8×1.25	M4×0.7Dp:7	M5×0.8
25	13	One-side: Φ11Dp:6.3Thru.hole: Φ6.8	M8×1.25Dp:12	M6×1.0	M5×0.8Dp:7.5	M8×1.25	M5×0.8Dp:7	1/8"
32	20	One-side: Φ11Dp:6.3Thru.hole: Φ6.8	M8×1.25Dp:12	M6×1.0	M5×0.8Dp:8	M10×1.5	M5×0.8Dp:7	1/8"