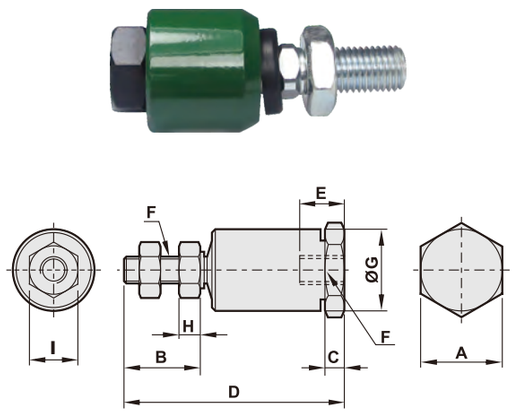
Dimensions

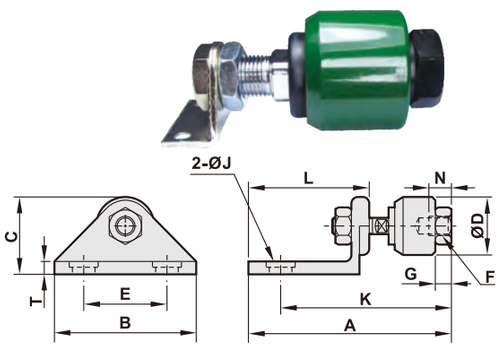
Basic type floating joint (T)



(Unit: mm)

Order code	A	B	C	D	E	F	G	H	I
ZNFT-M4	5	10	4	26	5	M4xP0.7	12	-	-
ZNFT-M6	10	12.5	5	37	7	M6xP1.0	18	-	-
ZNFT-M8	13	18	7	50	8	M8xP1.25	24	-	-
ZNFT-M10	17	20	8	58	9	M10xP1.25	26	6	17
ZNFT-M12	17	21.5	8	58	9	M12xP1.25	28	7	19
ZNFT-M16	27	27	12	90	14	M16xP1.5	45	8	24
ZNFT-M20	33	29	14	102	18	M20xP1.5	53	8	27
ZNFT-M27	-	54	16	147	39	M27xP2.0	62	14	-
ZNFT-M36	-	72	42	251	80	M36xP2.0	80	18	-

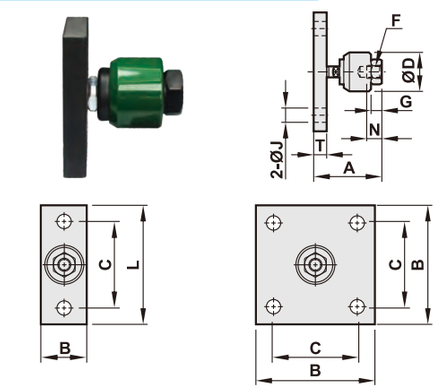
Axial foot type floating joint (L)



(Unit: mm)

Order code	A	B	C	D	E	G	J	K	L	N	T	F
ZNFL-M8	63	44	15	24	26	7	9	53	29	8	4	M8xP1.25
ZNFL-M10	74	44	19	26	26	8	9	63	35	9	5	M10xP1.25
ZNFL-M12	71	45	19	28	26	8	9	63	35	9	5	M12xP1.25
ZNFL-M16	151	60	28	45	32	13	11	105	90	15	15	M16xP1.5
ZNFL-M20	178	68	35	53	36	15	14	124	106	18	20	M20xP1.5

Flange type floating joint (F)



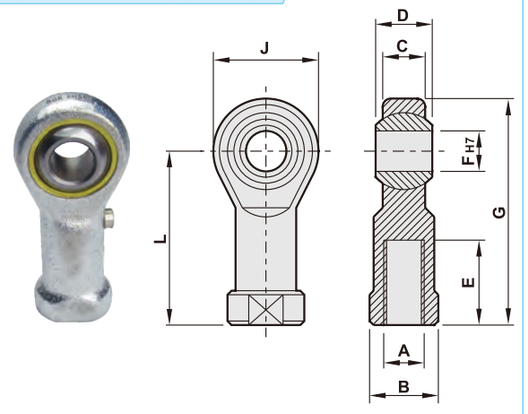
ZNFF-M8~M12　　ZNFF-M16~M36

(Unit: mm)

Order code	A	B	C	D	F	G	J	L	N	T
ZNFF-M8	39	25	40	24	M8xP1.25	7	Ø6.6	52	8	6
ZNFF-M10	48	32	44	26	M10xP1.25	8	Ø6.6	56	9	9
ZNFF-M12	45	32	44	28	M12xP1.25	8	Ø6.6	80	9	9
ZNFF-M16	76	74	45	45	M16xP1.5	13	Ø11	-	23	15
ZNFF-M20	87	87	100	50	M20xP1.5	15	Ø14	-	27	18
ZNFF-M27	117	100	70	63.5	M27xP2	20	Ø14	-	33	21
ZNFF-M36	133	130	95	75	M36xP2	22	Ø16	-	40	25

Dimensions

Eyebolt floating joint (P)

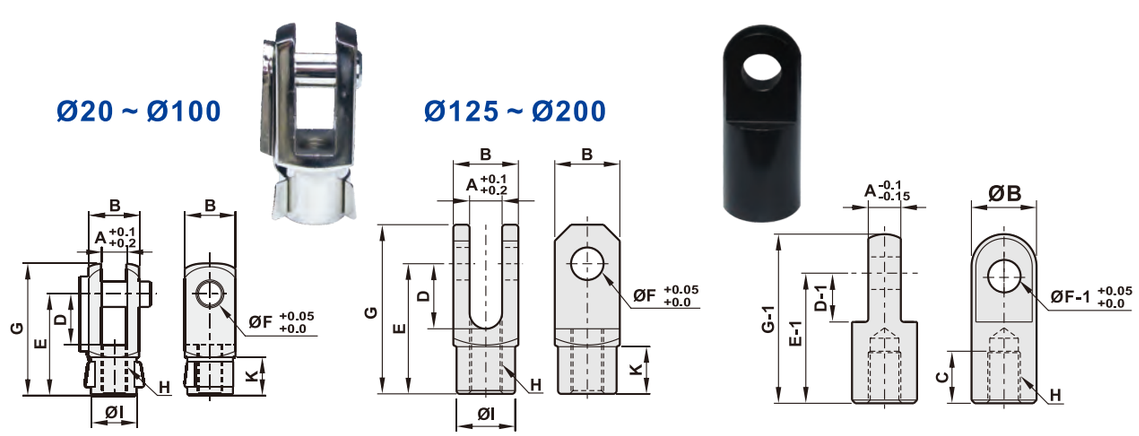


(Unit: mm)

Order code	A	B	C	D	E	F	G	J	L
ZNFP-M6	M6xP1.0	11	6.75	9	12	Ø6	39	18	30
ZNFP-M8	M8xP1.25	14	9	12	16	Ø8	47	22	36
ZNFP-M10	M10xP1.25	17	10.5	14	20	Ø10	56	26	43
ZNFP-M12	M12xP1.25	19	12	16	22	Ø12	65	30	50
ZNFP-M16	M16xP1.5	22	15	21	28	Ø16	84	40	64
ZNFP-M20	M20xP1.5	30	18	25	33	Ø20	102	50	77
ZNFP-M27	M27xP2.0	41	26	35	53	Ø28	143.5	67	110
ZNFP-M36	M36xP2.0	50	28	43	60	Ø35	165	80	125

Double knuckle joint (ZNFY)

Single knuckle joint (ZNFI)



(Unit: mm)

Order code	A	B	C	D	D-1	E	E-1	F	F-1	G	G-1	I	K	H
ZNFY(I)-M6	6	12	12	12	8.5	24	21	Ø6	Ø5	31.3	28	10	8.5	M6XP1.0
ZNFY(I)-M8	8	16	-	10	10	35	35	Ø8	Ø8	45	45	14	10	M8XP1.25
ZNFY(I)-M10	10	20	16	20	14	40	40	Ø10	Ø10	52	52	18	14.5	M10XP1.25
ZNFY(I)-M12	12	25	18	24	16	48	48	Ø12	Ø12	62	62	22	16	M12XP1.25
ZNFY(I)-M16	16	32	26	32	20	65	56	Ø16	Ø16	83	70	28	22	M16XP1.5
ZNFY(I)-M20	20	40	30	40	30	80	68	Ø20	Ø20	105	88	38	30	M20XP1.5
ZNFY(I)-M27	30	54	45	55	40	110	110	Ø30	Ø30	151.8	155	48	42	M27xP2.0
ZNFY(I)-M36	35	70	55	73	65	144	144	Ø35	Ø35	195.8	195	62	52	M36xP2.0

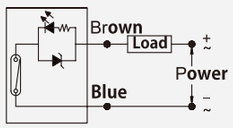
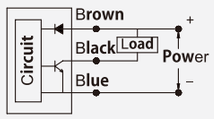
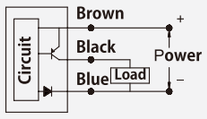
Sensor Switch

Applicable cylinder

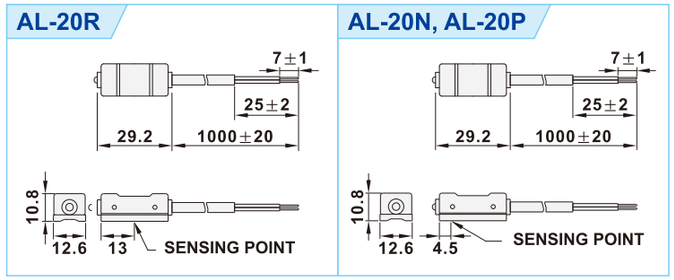
1. Applicable to cylinder IC, ICL, TC, STC, PC, PCL, PMA, PMAL, GC series.
2. Wire length: 1M,2M,3M.

Reed switch
AL-20R

Specifications

Model	AL-20R	AL-20N	AL-20P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~240 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	4.0φ, 2C, Gray PVC	4.0φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions

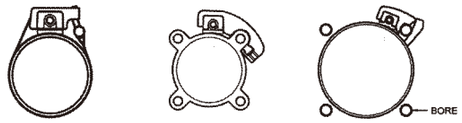


Mounting

Sensor band
For PC ISO6432 standard cylinders
φ12~φ40

Sensor bracket
For IC ISO15552 standard cylinders
φ32~φ100

Sensor bracket
For AIA tie-rod standard cylinders
φ32~φ150



Note

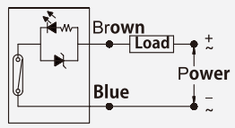
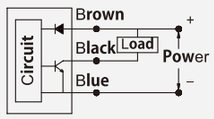
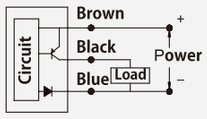
1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

Applicable cylinder

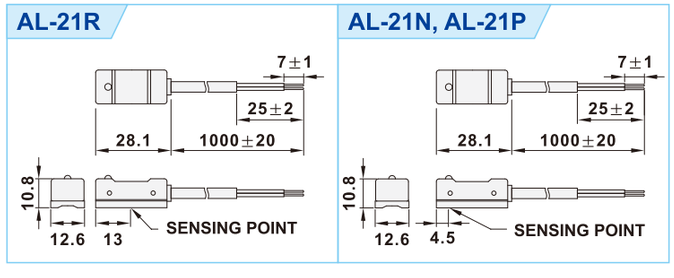
1. Applicable to cylinder IC, ICL, TC, STC, PC, PCL, PMA, PMAL, GC series.
2. Wire length: 1M,2M,3M.

Reed switch
AL-21R

Specifications

Model	AL-21R	AL-21N	AL-21P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~240 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	4.0φ, 2C, Gray PVC	4.0φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions

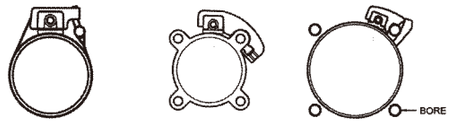


Mounting

Sensor band
For PC ISO6432 standard cylinders
φ12~φ40

Sensor bracket
For IC ISO15552 standard cylinders
φ32~φ100

Sensor bracket
For AIA tie-rod standard cylinders
φ32~φ150



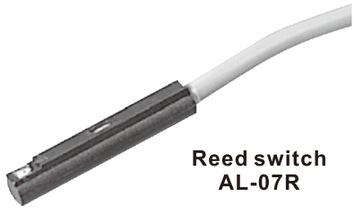
Note

1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

Sensor Switch

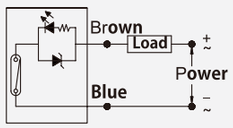
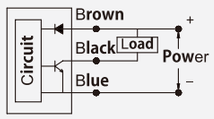
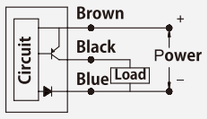
Applicable cylinder

1. Applicable to cylinder JC, JQ, DR, HC, MCFR, JQM, TRC, GC, HYS, HPC, HYC, RCQ, RCA, RCP series.
2. Wire length: 1M,2M,3M.



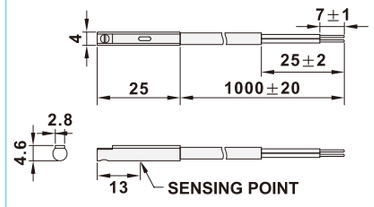
Reed switch
AL-07R

Specifications

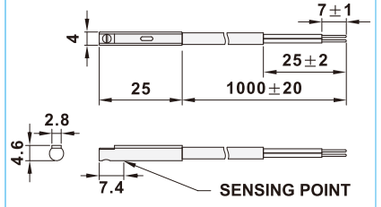
Model	AL-07R	AL-07N	AL-07P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~120 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	2.6φ, 2C, Gray PVC	2.6φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions

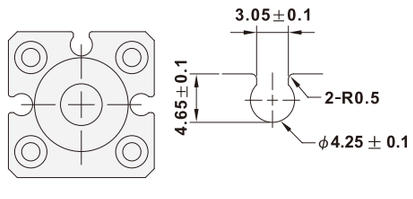
AL-07R



AL-07N, AL-07P



Applicably groove



Note

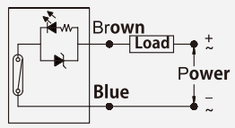
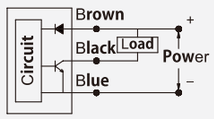
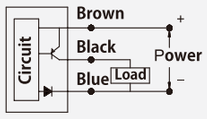
1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

Applicable cylinder

1. Applicable to cylinder JC, JQ, DR, JQM, RCA, RCP series.
2. Wire length: 1M,2M,3M.

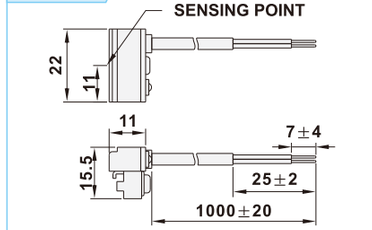
Reed switch
AL-11R

Specifications

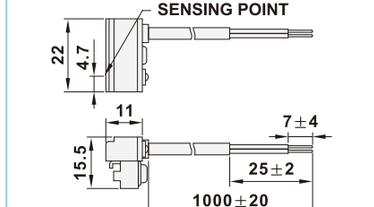
Model	AL-11R	AL-11N	AL-11P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~240 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	3.3φ, 2C, Gray PVC	3.3φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions

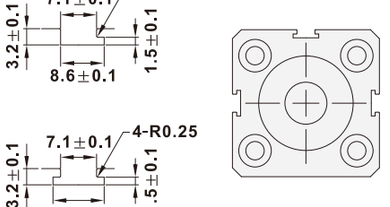
AL-11R



AL-11N, AL-11P



Applicably groove



Note

1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

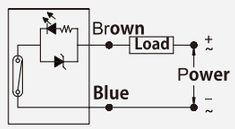
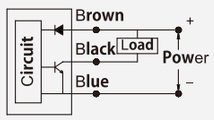
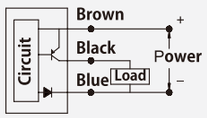
Sensor Switch

Applicable cylinder

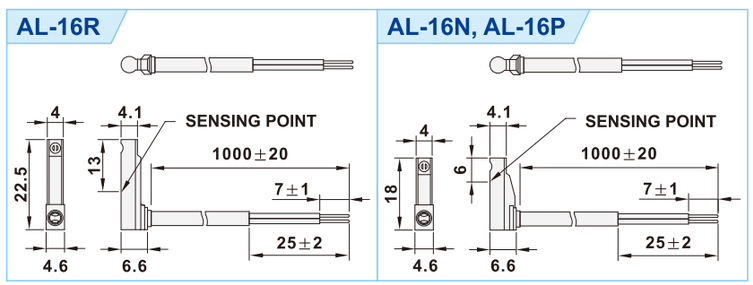
1. Applicable to cylinder JC, JQ, HC, MCFR, JQM, HPC, HYC, RCA series.
2. Wire length: 1M,2M,3M.

Reed switch
AL-16R

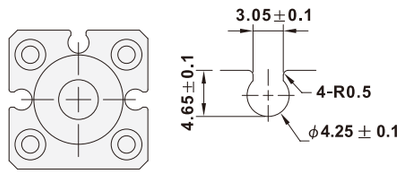
Specifications

Model	AL-16R	AL-16N	AL-16P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~120 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	2.6φ, 2C, Gray PVC	2.6φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions



Applicably groove

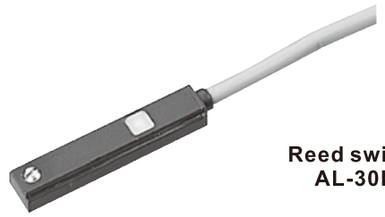


Note

1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

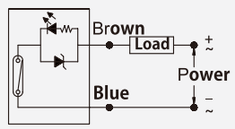
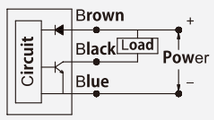
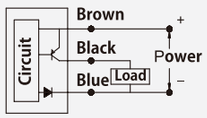
Applicable cylinder

1. Applicable to cylinder HPS, ZS, ZF, ZK series.
2. Wire length: 1M,2M,3M.

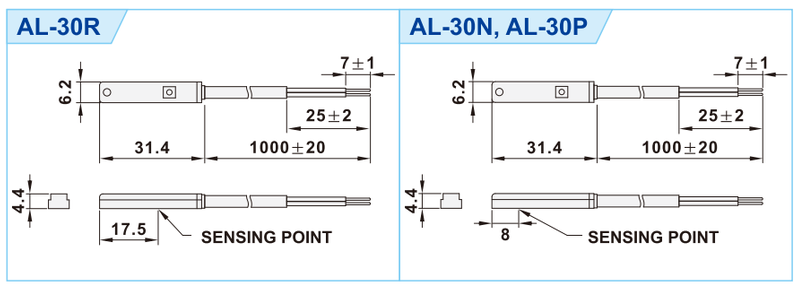


Reed switch
AL-30R

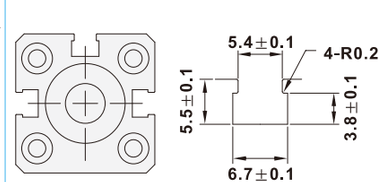
Specifications

Model	AL-30R	AL-30N	AL-30P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~240 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	2.8φ, 2C, Gray PVC	2.8φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions



Applicably groove



Note

1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

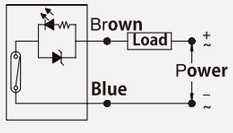
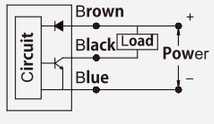
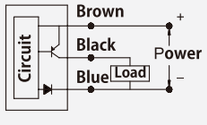
Sensor Switch

Applicable cylinder

1. Applicable to cylinder ICE, HPS, ZS, ZF, ZK series.
2. Wire length: 1M,2M,3M.

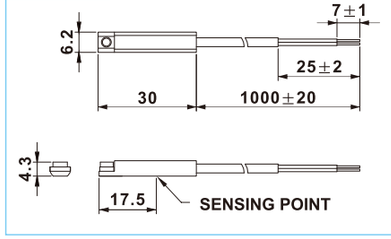
Reed switch
AL-76R

Specifications

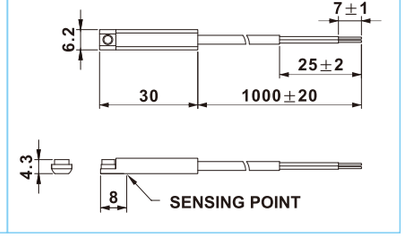
Model	AL-76R	AL-76N	AL-76P
Switching logic	SPST Normally open	Solid state output, Normally open	
Output	Reed switch	NPN current sinking	PNP current sourcing
Lead wire type	Horizontal		
Load voltage	5~240 VDC/AC	5~28 VDC	
Load current	100mA Max.	200mA Max.	
Switching rating	10W Max.	6W Max.	
Current consumption	---	20mA Max.@24V	18mA Max.@24V
Voltage drop	2.5V Max.@40mA DC	0.5V Max.@200mA(Resistive load)	
Leakage current	---	0.01mA Max.	
Frequency	200Hz	1000Hz	
Shock	30G	50G	
Vibration	90m/s²(9G) Double amplitude1.5mm		
Insulatlon resistant	DC 500V 100MΩ (Lead wire to case)		
Withstand voltage	AC 1000V (50/60Hz) 1 minute (Lead wire to case)		
CE & Protection IP	EN60947-5-2 IEC529 IP67 (NEMA6)		
Indicator	Red LED		Green LED
Cable	2.8φ, 2C, Gray PVC	2.8φ, 3C, Black PVC	
Temperature range	-10℃ ~ 70℃		
Protection circuit	---	Reverse polarity, short circuit, surge suppression	
Wiring	2Wire	3Wire	
Sensor circuit diagram			

Dimensions

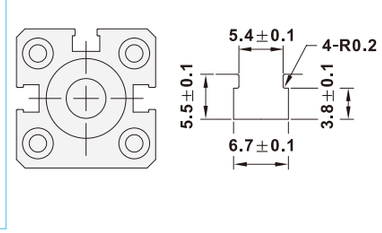
AL-76R



AL-76N, AL-76P



Applicably groove



Note

1. Measure standard target: φ15.5 x φ8.5 x t5(Anisotropy Rubber Magnet)
2. Sin wave/X.Y.Z 3 Dimensions/3 times each direction/ 11mS Each time.
3. Double amplitude 1.5mm/10 Hz~55Hz~10Hz(Sweep 1min)/X.Y.Z 3 Dimensions/ 1 Hour Each time.

Memo...

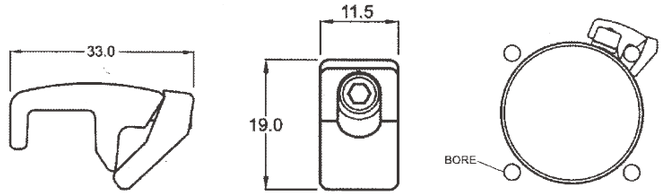
Mounting Bracket And Sensor Band

For Sensor Switch Use

Mounting bracket for tie-rod standard cylinder Ø32 ~ Ø200

How to order

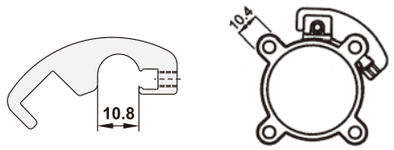
ZFAF32-1	STC Ø32, Ø40
ZFAF50-1	STC Ø50, Ø63
ZFAF80-1	STC Ø80, Ø100
ZFAF125-1	ICL Ø125
ZFAF160-1	ICL Ø160, Ø200



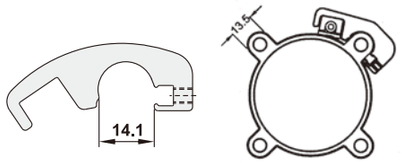
Mounting bracket for ISO6431 standard cylinder from Ø32 ~ Ø100

How to order

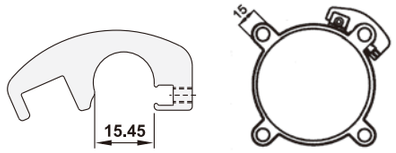
ZFAF32 Apply to IC Ø32, Ø40、TC Ø32, Ø40, Ø50



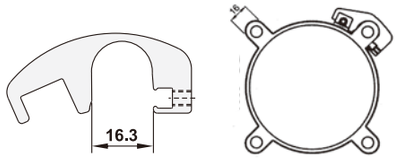
ZFAF50 Apply to IC Ø50, Ø63、TC Ø63



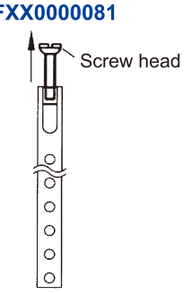
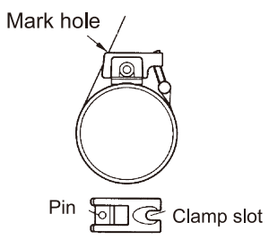
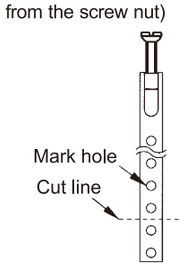
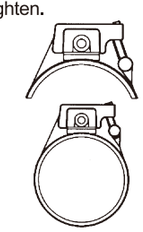
ZFAF80 Apply to IC Ø80



ZFAF100 Apply to IC Ø100、TCØ80, Ø100



Sensor band for round cylinder PC, PCL series from Ø12 ~ Ø40

Step 1	Step 2	Step 3	Step 4
Start by keeping screw 3 to 4 turns into barrel nut on the end of the band assembly. **How to order** **Ø8 ~ Ø32 : FXX0000080** **Ø40 : FXX0000081** 	Place the screw head into clamp slot and wrap the band around the cylinder.Position the pin with the nearest hole on the band and mark the hole with a permanent mark. 	Remove clamp assembly from the cylinder. Locate the marked hole that fits to the cylinder size , cut the band at midway between the next two adjacent hole. (The one that's further away from the screw nut) 	Insert cut end of the band into a flat slot opposite from the clamp slot. Place the chosen hole over the pin and bend the band firmly down with thumb pressure. Then wrap the band around cylinder barrel and re-insert screw head into clamp. Position the switch and tighten.  Do not over tighten, it could damages the switch or cylinder.

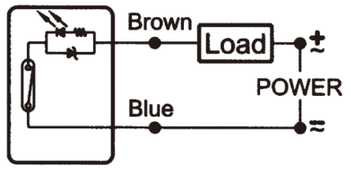
Operating Instructions Of Sensor Switch

How To Use Sensors Properly

Applicable cylinder

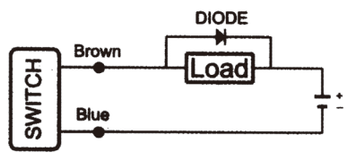
1. Particular attention must be paid not to exceed the working limits list.

2. Reed switch type connection polarities must be respected, that is the brown wire series load to the positive(+) and the blue to the negative(-) of power source. If these are inverted the sensor remains switched, the load connected and the LED turned off. However, this would not damage the circuit.

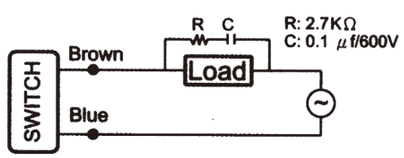


3. Solid state type connection polarities must be respected, that is the brown wire to the positive(+) and the blue to the negative(-) from DC power.
The black wire have to connect to the load.
If black wire was connected to power source, the sensor would be damaged.

4.The external protect element is required if sensor is used to switch conductive load.
In case of DC conductive load, e.g. relay, solenoid valve.
Attach an external diode parallel to the conductive load.
And use R-C circuit to replace diode for AC conductive load.



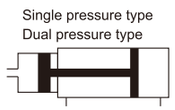
Applicably to DC Conductive Load



Applicably to AC Conductive Load

5. Keep out of the strong magnetic field to get rid of interference.

Symbol



Features

1. Shako booster is an efficient way of generating high pressure of hydraulic fluid.
2. Compact size design to save space and energy.
3. Suitable for shaping, forming, punching, riveting, shearing, welding, and testing industry.

How to order

AHS	110
Booster	**Intensified pressure ratio**
AHS : Single pressure type	**078** : 7.8
AHD : Dual pressure type	**110** : 11
	250 : 25

Repair kit

Model	Order code
AHS078	AHSSK078
AHD078	AHDSK078
AHS110	AHSSK110
AHD110	AHDSK110
AHS250	AHSSK250
AHD250	AHDSK250

Specifications

Model	AHS078	AHS110	AHS250	AHD078	AHD110	AHD250
Port size	3/8"	1/2"	1/2"	3/8"	1/2"	1/2"
Discharging volume	50cc	120cc	120cc	50cc	120cc	120cc
Fluid	Compressed air					
Working fluid	Hydraulic oil					
Operating pressure range	2 ~ 7 kgf/cm^2					
Max. operating pressure	7 kgf/cm^2					
Body material	Aluminum alloy					
Ambient temperature	5℃ ~ 60℃					
Mounting	Side foot type					
Weight	3.4 kg	10.1 kg	34.5 kg	3.1 kg	9.1 kg	33.5 kg

Acting theory

The booster can transform low pressure input to high pressure output in a efficient way.

The method of calculation (Hydraulic cylinder force)

Piston area of hydraulic cylinder A=(Bore size)^2 X $\frac{\pi}{4}$ mm^2

Booster output pressure P2=Intensified pressure ratio R X P (Air pressure MPa)

Hydraulic cylinder force F=A X P2 = _N

A : Piston area of hydraulic cylinder mm^2

D : Bore size

F : Hydraulic cylinder force

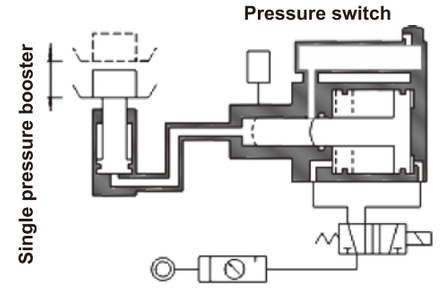
P : Air pressure

P2 : Booster output pressure

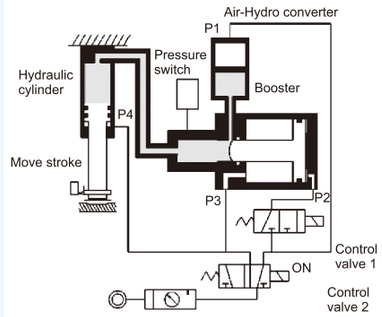
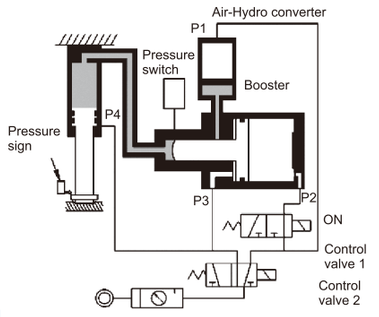
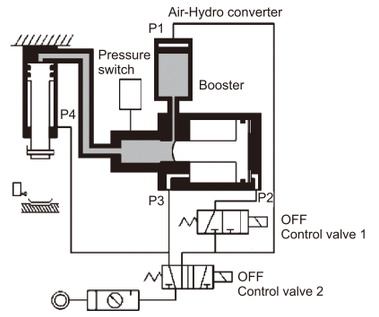
R : Intensified pressure ratio

Single pressure booster

Optimum for high output short stroke cylinder.



Dual pressure booster

Quick traverse	Intensified feeding	Swift reverse
		
When the air is charged from the port P1, the oil in the tank will forward the hydraulic cylinder quickly. The pressure is the same as the air pressure, but the inflow of oil is large in volume.	When the air is charged from the port P2, a ram will advance. The high pressured fluid will come in to the hydraulic cylinder which will be forwarded by large thrust.	When the air is send into port P4 and P3, the hydraulic cylinder is swiftly reversed and at the same time the ram goes back.

Points in usage

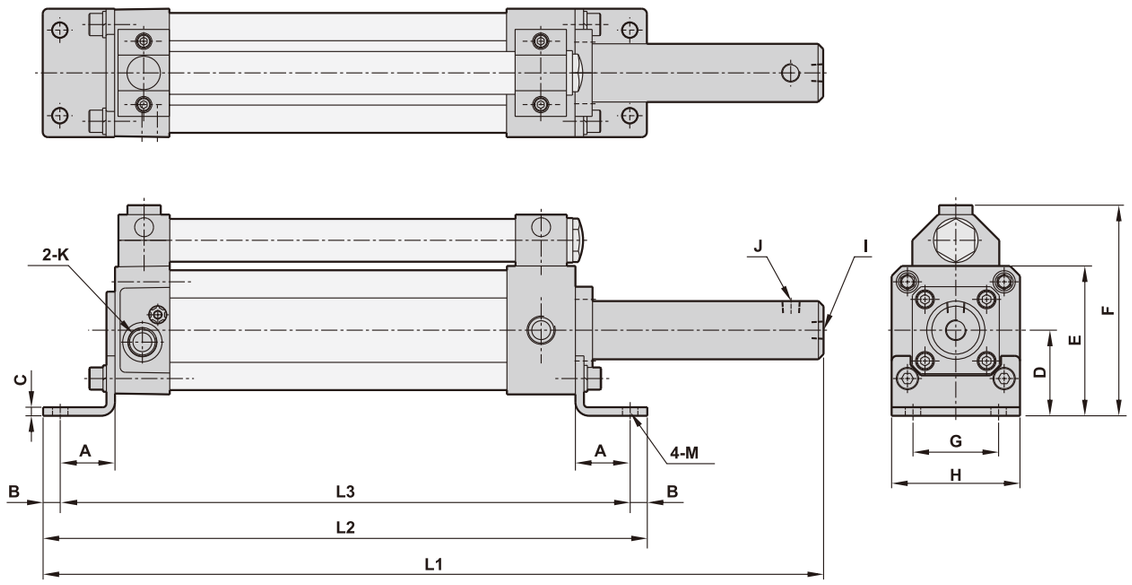
1. The booster must be leveled, otherwise, hydraulic oil will be overflowing from exhaust port.
2. Standard booster are designed for use with petroleum base hydraulic oil.
3. The booster must be higher than the work cylinder. when hydraulic oil is filled, the air bubble will be automatically drained. If the booster is lower than the work cylinder, it is necessary to wait until the air bubble completely drained before installing the work cylinder.
4. Fill hydraulic oil until the oil up to the mid of oil scale. Please do not overfill, this will make oil spray when booster operate.
5. Frequency of use should be 6 times/min or less.

Compressed air consumption

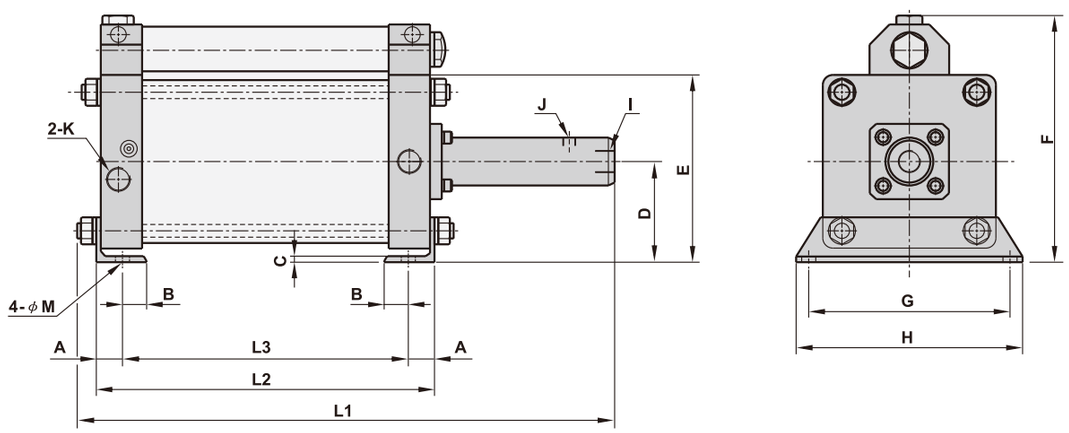
Model		Air pressure (MPa)					
		0.2	0.3	0.4	0.5	0.6	0.7
AHS078	AHD078	2.4	3.19	3.98	4.78	5.56	6.36
AHS110	AHD110	7.58	10.07	12.57	15.07	17.57	20.06
AHS250	AHD250	18.09	24.06	30.02	35.99	41.95	47.92

Dimensions

AHS078, AHS110



AHS250

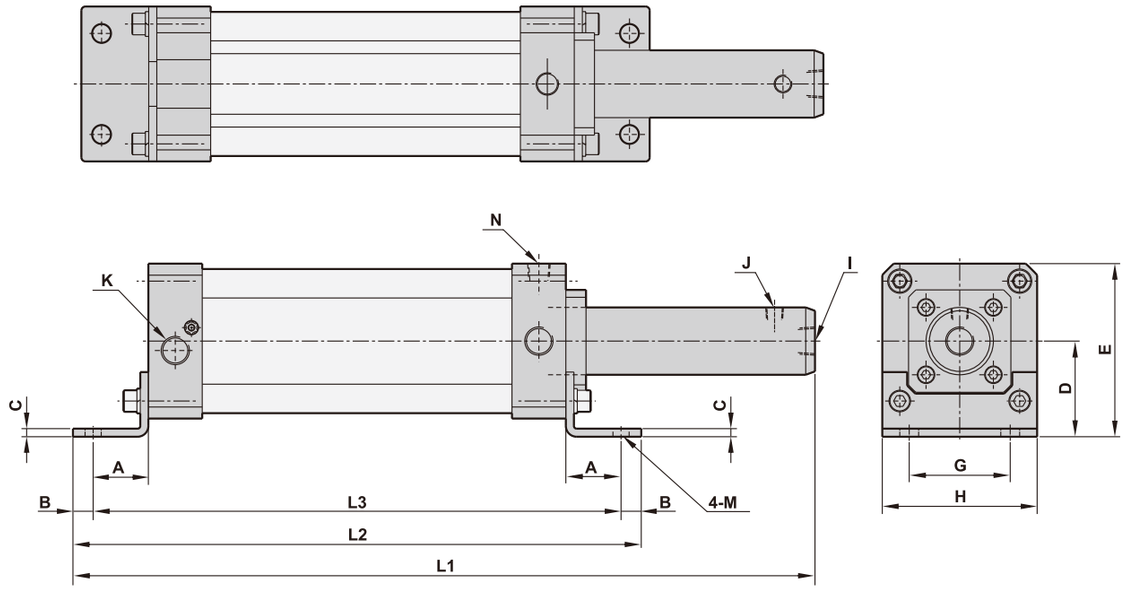


(Unit : mm)

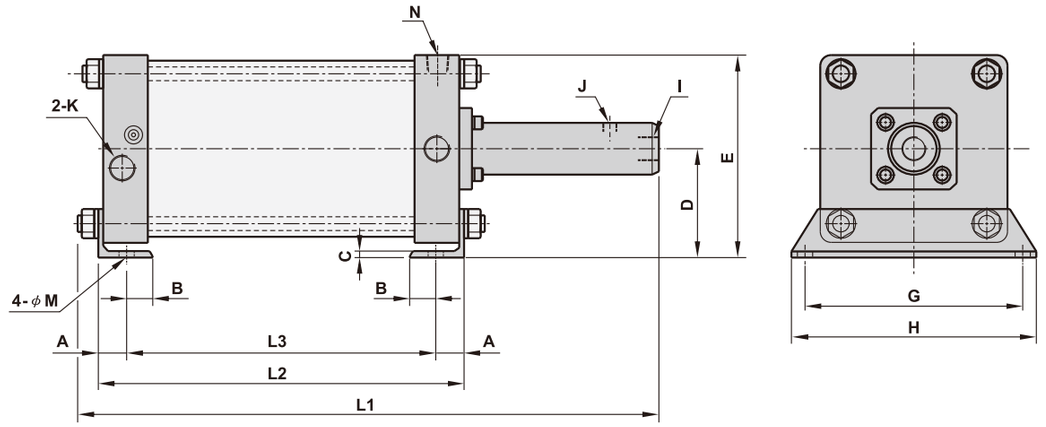
Model	A	B	C	D	E	F	G	H	I	J	K	L1	L2	L3	M
AHS078	32	10	5	50	87.5	123	50	75	PT 1/4	PT 1/4	PT 3/8	456	353	333	ϕ 9
AHS110	41	15	6	71	128.5	187.5	75	115	PT 1/2	PT 1/4	PT 1/2	551	422	392	ϕ 14
AHS250	26	24	6	100	186	245	200	225	PT 1/2	PT 1/4	PT 1/2	534	336	284	ϕ 11

Dimensions

AHD078, AHD110



AHD250

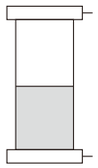


(Unit : mm)

Model	A	B	C	D	E	G	H	I	J	K	L1	L2	L3	M	N
AHD078	32	10	5	50	87.5	50	75	PT 1/4	PT 1/4	PT 3/8	456	353	333	ϕ 9	PT 1/4
AHD110	41	15	6	71	128.5	75	115	PT 1/2	PT 1/4	PT 1/2	551	422	392	ϕ 14	PT 3/8
AHD250	26	24	6	100	186	200	225	PT 1/2	PT 1/4	PT 1/2	534	336	284	ϕ 11	PT 1/4

Air-Hydro Converter

Symbol



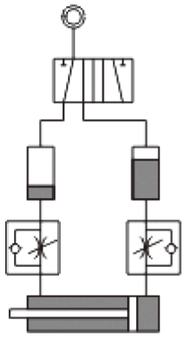
Features

1. Air/Oil systems combine the speed and low cost of air operation with the smooth.
2. Hydraulic cylinder is motivated by standard air line source.

How to order

AOF	110	B150
Air-Hydro converter	**Bore size**	**Stroke**
AOF : Flange mounting	**40** : ϕ40	**150** : 150mm
AOL : Foot mounting	**63** : ϕ63	**175** : 175mm
	80 : ϕ80	**200** : 200mm
	100 : ϕ100	**Max. length** : 500mm

Example



Air/Oil systems combine the speed and low cost of air operation with the smooth, even actuator control of oil from a standard air line source.

Sizing the air-hydro converter

Determine the volume of fluid displaced by the work cylinder by multiplying stroke by piston area.

$$V = \frac{\pi D^2}{4} \times L \times 10^{-3}$$

D : Inner diameter (mm)

L : Stroke of work cylinder (mm)

V : Volume of work cylinder (cm^3)

Specifications

Model	AOF, AOL			
Bore size	ϕ40	ϕ63	ϕ80	ϕ100
Port size	1/4"	3/8"	3/8"	1/2"
Fluid	Hydraulic oil (ISO VG32 oil)			
Standard length	From 150~500 mm with every 25mm as an unit increased			
Max. pressure	10.5 kgf/cm^2			
Body material	Anodized aluminum alloy			
Ambient temperature	-10℃ ~ 60℃			

Volume of cylinder (Table 1)

Unit: cm^3

Bore size mm	Cylinder stroke (mm)										
	25	50	75	100	125	150	200	250	300	350	400
ϕ 20	7.9	15.7	23.6	31.4	39.3	47.1	26.8	78.5	94.2	109.9	125.6
ϕ 25	12.3	24.5	36.8	49	61.3	73.5	98	122.5	114.7	171.5	196
ϕ 32	20.1	40.2	60.2	80.3	100.4	20.5	60.6	200.8	240.9	281.1	321.2
ϕ 40	31.4	62.8	94.2	125.6	157	88.4	251.2	314	376.8	439.6	502.4
ϕ 50	49	98	147.2	196.3	245	294	393	491	589	687	785
ϕ 63	62	156	238	311.7	390	468	623	780	935	1091	1247
ϕ 80	125	251	377	502	628	753	1005	1256	1507	1759	2010
ϕ 100	196	293	589	785	981	1178	1570	1962	---	---	---

Maximum useable capacities(Table 2)

Bore size mm	Converter length (mm)														
	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500
ϕ 40	94	110	125	141	157	172	188	204	220	235	251	267	282	298	314
ϕ 63	237	277	316	356	395	435	475	514	554	594	633	673	712	752	791
ϕ 80	377	440	502	565	628	691	754	816	880	942	1005	1068	1131	1194	1256
ϕ 100	589	687	785	883	981	1080	1178	1276	1374	1472	1570	1696	1767	1865	1963

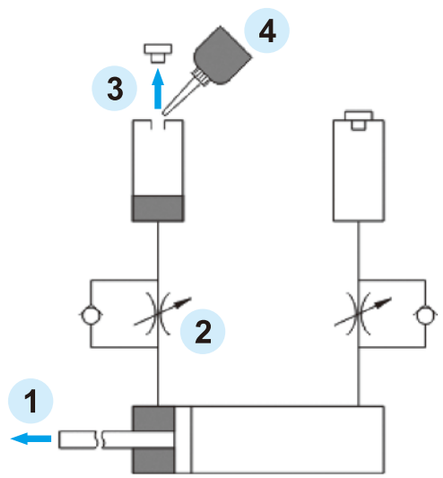
Note: Above volume have keep 50% space in advance.

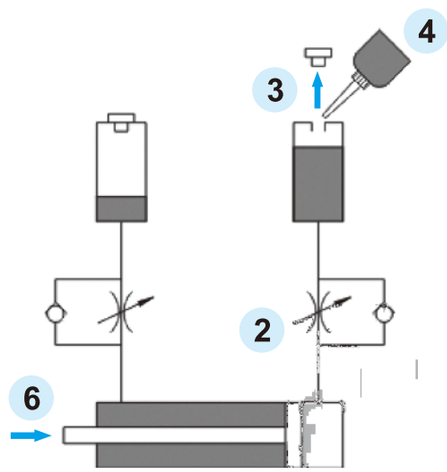
Remark

1. Refer to table 2 to find the bore and length equal to or greater than this volume. In general, longer converter with smaller bore size are the most economical.
2. Suggested minimum internal length is 150mm.
3. AIR-HYDRO converter should be sized so that the coil level does not change more than 150mm/sec.
4. AIR-HYDRO converter should be mounted vertically at the highest point in the system to allow self-bleeding of the converter.

Lubricating procedure

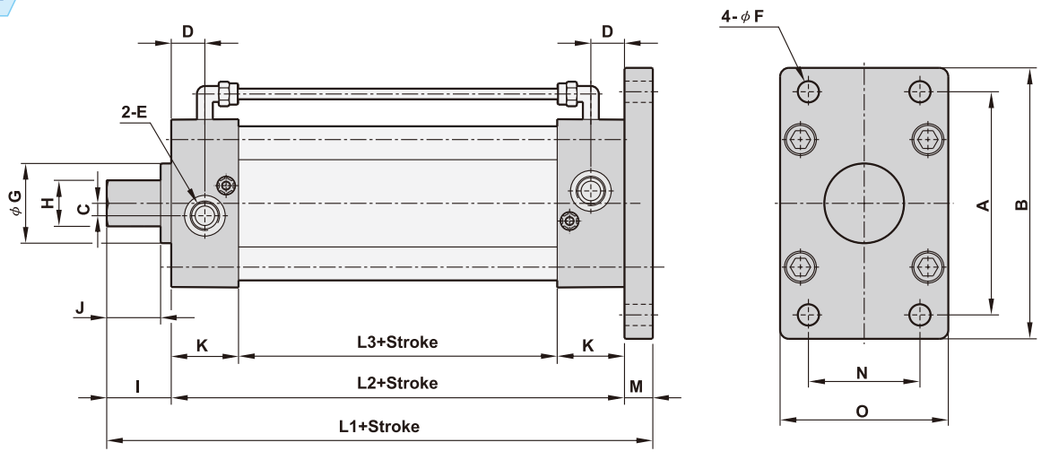
1. Please pull the piston to the location of oil supply.
2. Throttle valve opens fully.
3. Open the bolt of oil hole between the top center of Air-Hydro converter.
4. Pour into oil from down side inlet by power.
5. Feed the oil to max. of oil tank capacity and lock bolt (Close oil hole).
6. Use about 0.2MPa pressure to pour oil into and push piston to another side.
7. Repeat step 2 to step 5 on the other end.
8. Use about 0.2 MPa pressure to return piston about 2~3, times after completion the work of oil pouring into.





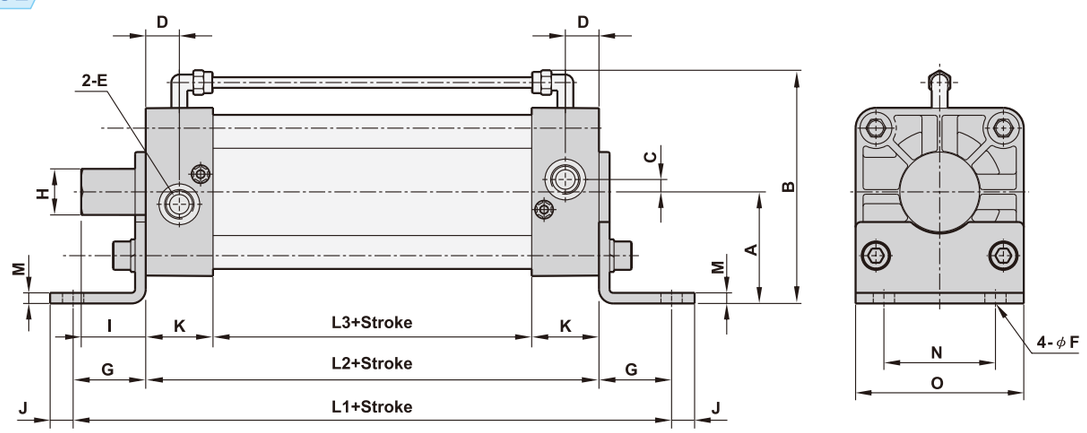
Dimensions

AOF



Model	A	B	C	D	E	F	G	H	I	J	K	L1	L2	L3	M	N	O
ϕ**40**	72	90	5.3	13.5	G1/4	9	34.7	28	33.5	26	34	141.5	98	30	10	36	55
ϕ**63**	100	120	8	16	G3/8	9	40.7	34	37.2	26	32.6	144.7	95.2	30	12	50	75
ϕ**80**	126	153	9	20.5	G3/8	12	44.7	40	46	27.5	35.5	163	101	30	16	63	95
ϕ**100**	150	178	13.5	19	G1/2	14	55.3	40	50.5	27.5	37	170.5	104	30	16	75	115

AOL



Model	A	B	C	D	E	F	G	H	I	J	K	L1	L2	L3	M	N	O
ϕ**40**	36	84	5.3	13.5	G 1/4	9	28	28	33.5	10	34	154	98	30	4	36	53
ϕ**63**	50	109	8	16	G 3/8	9	32	34	37.2	10	32.6	159.2	95.2	30	4	50	75
ϕ**80**	63	132	9	20.5	G 3/8	12	41	40	46	13	35.5	183	101	30	5	63	95
ϕ**100**	71	150	13.5	19	G 1/2	14	41	40	50.5	13	37	186	104	30	6	75	115

Memo...

Pneumatic Press

Features

1. The cylinder is identical to ISO15552 standard.
2. Magnet is optional accessory, and sensor switch is available to be installed.
3. Model no. P100 is light and compact, suitable for small size press.
4. The cushions are installed on both ends for stable operation.
5. We accept the order without cushions, please make a note of it on purchase order.
6. Strong body and simple maintenance.
7. It is available to install quick exhaust valve for speed up operation.
8. Guide rod is installed for prevention of piston rod rotate.
9. Hand control or foot control at your selection.

How to order

P100 – 60 S 9

Pneumatic press	Stroke	Solenoid	Voltage
P100 **P200A,B,C** **P300**	**60** :50mm **100** :50mm **200** :100mm **300** :100mm **500** :100mm **900** :100mm	**S**:Single solenoid	**1** :100VAC **2** :220VAC **9** :24VDC

Specifications

Model	P100-60	P100-100	P200-100	P200-200	P200-300	P300-500	P300-900
Port size	1/4"		3/8"			1/2"	
Fluid	Compressed air						
Stroke	50mm		100mm				
Cylinder bore size	Ø50mm	Ø63mm	Ø63mm	Ø80mm	Ø100mm	Ø125mm	Ø160mm
Stroke adjustment	25.5mm						
Air consumption liter	1.2	2	4	6	10	15	32
Operating pressure range	1.5 ~ 9.5 kgf/cm²						
Working height	150		A:200/B:270/C:270			250	
Ambient temperature	-10°C ~ 60°C						
Voltage tolerance	±10%						
Standard voltage	220VAC, 110VAC, 24VDC						
Weight	20 kg	20.3 kg	39/28/29 kg	43/32/33 kg	47/36/37 kg	90 kg	105 kg

Theoretic force of press

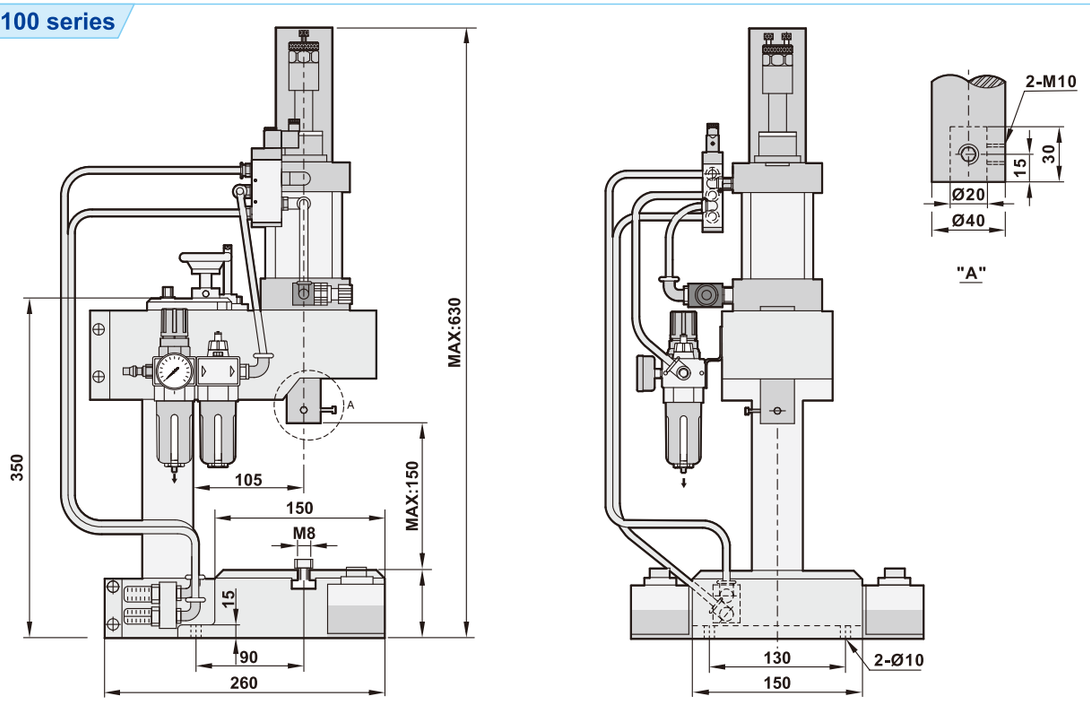
Operating pressure			P100-60 Theoretic force of press			P100-100 Theoretic force of press		
MPa	KG	PSI	N	KG	LB	N	KG	LB
0.4	4	57	774	79	174	1255	125	275
0.5	5	71	960	98	216	1523	156	344
0.6	6	85	1156	118	260	1833	187	412
0.7	7	100	1343	137	302	2136	218	480

Operating pressure			P200-100 Theoretic force of press			P200-200 Theoretic force of press			P200-300 Theoretic force of press		
MPa	KG	PSI	N	KG	LB	N	KG	LB	N	KG	LB
0.4	4	57	1225	125	275	1775	181	400	2883	294	649
0.5	5	71	1523	156	344	2226	227	500	3609	368	811
0.6	6	85	1833	187	412	2668	272	600	4335	442	974
0.7	7	100	2136	218	480	3109	317	700	5051	415	1136

Operating pressure			P300-500 Theoretic force of press			P300-900 Theoretic force of press		
MPa	KG	PSI	N	KG	LB	N	KG	LB
0.4	4	57	4413	450	992	7879	804	1771
0.5	5	71	5521	563	1241	9849	1105	2213
0.6	6	85	6620	675	1488	11819	1206	2656
0.7	7	100	7728	788	1737	13789	1407	3099

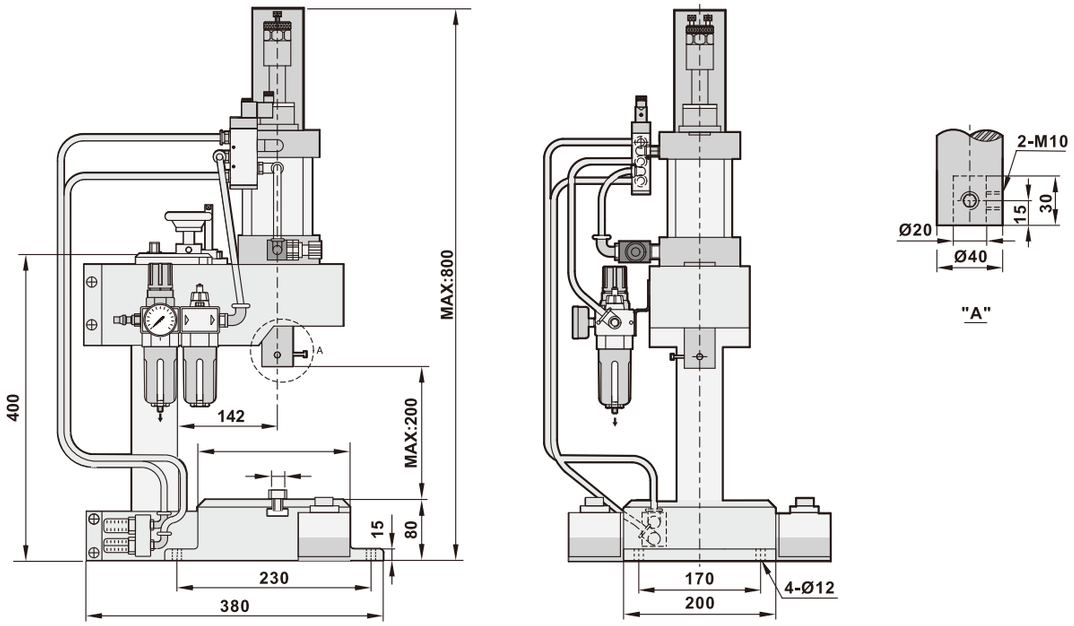
Dimensions

P100 series

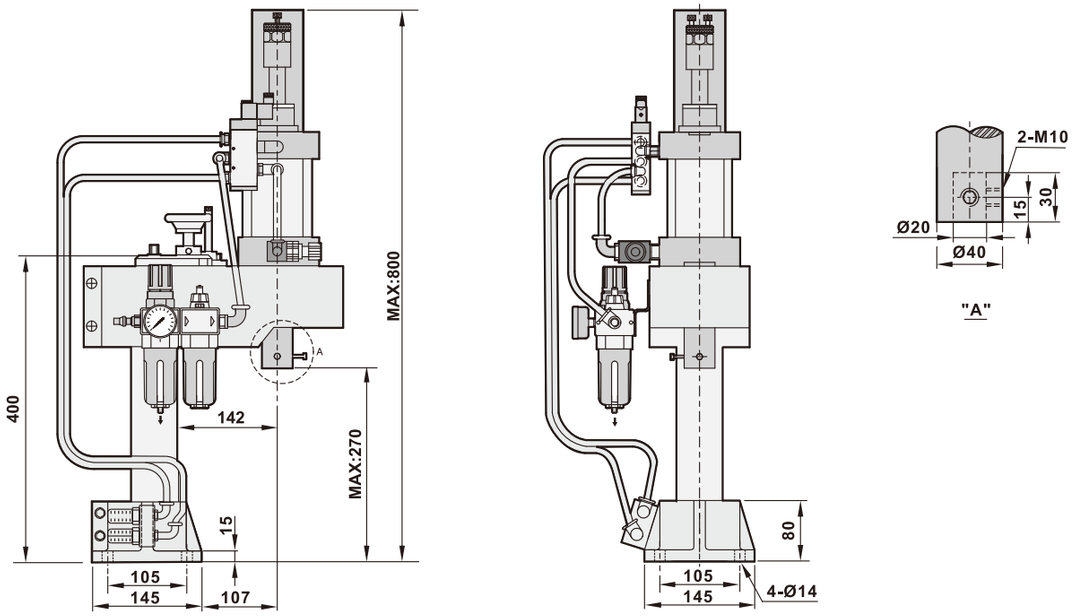


Dimensions

P200A series

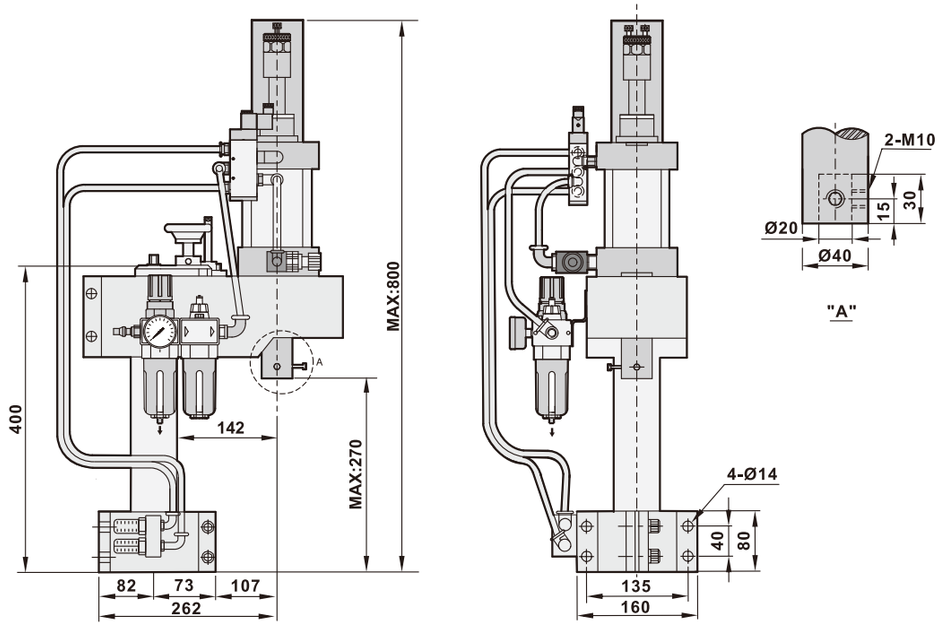


P200B series

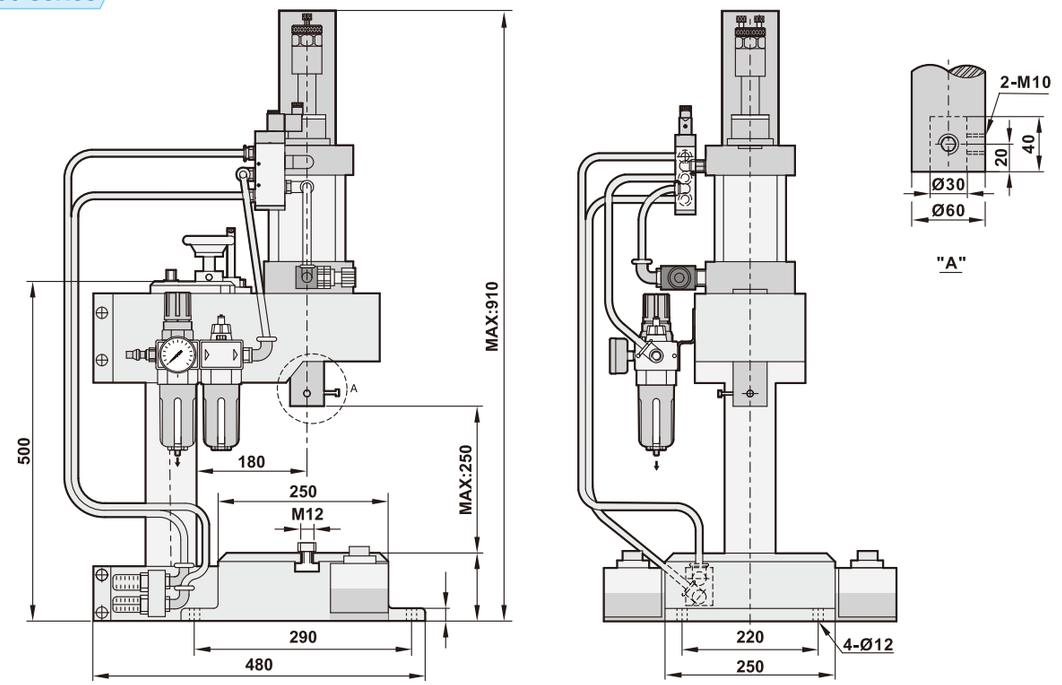


Dimensions

P200C series



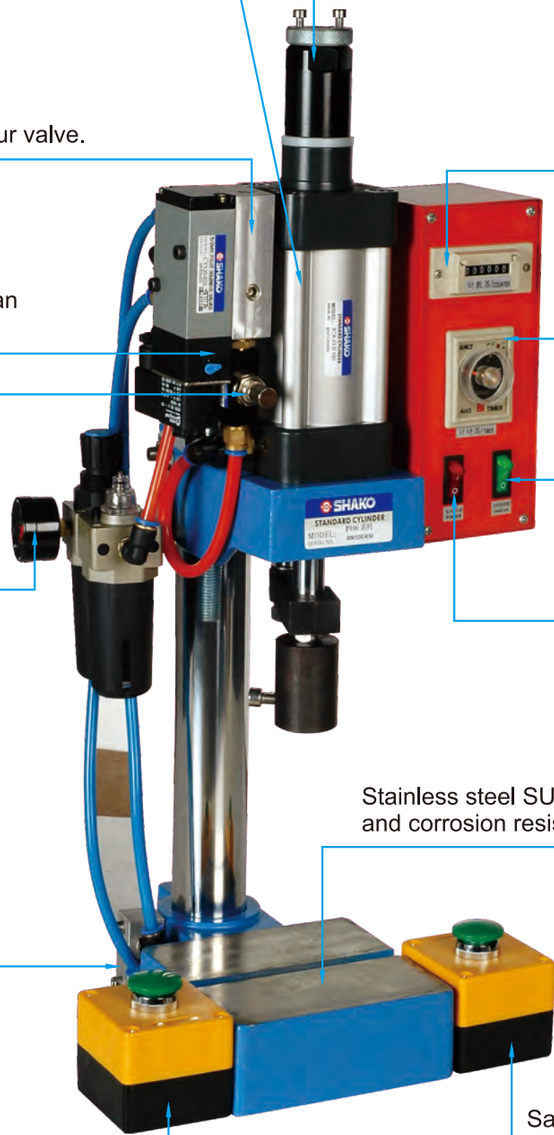
P300 series



Introduction

ISO15552 cylinder adopts high quality seals made in Germany, it features stable, smooth and durable operation.

For stroke adjustment, please loosen fixed screws, then lock screws after complete adjustment.



Specific manifold and Namur valve.

Counter for quantity control of production.

Solenoid valve operation can be automatic or manual.

Timer for working time control.

Speed control valve for working speed setting.

Timer switch. Switch on is for automatic operation,and switch off is for manual operation.

FRL air treatments ensure stable air quality.

Power switch.

Stainless steel SUS316 working table is strong and corrosion resistance.

Silencer is for pollution and noise reduction.

Safety button
(For safety concerns, press left and right button at same time to operate.)

Memo...