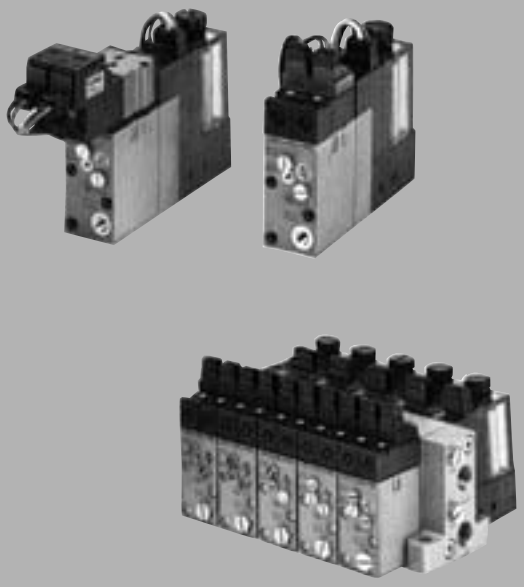
Adsorption Confirmation Switch

Series ZSP1

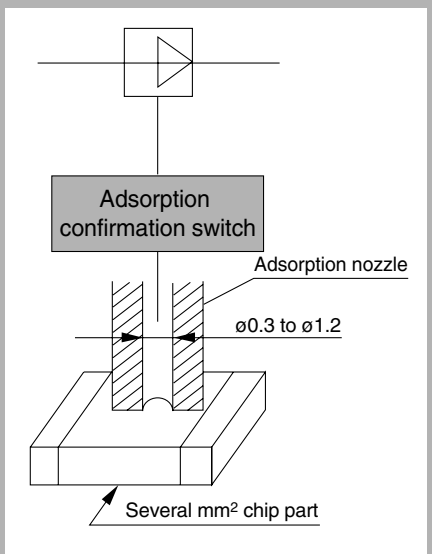
For General Pneumatics

Can be integrated with ZX ejector system



Best suited for small diameter nozzles

ø0.3 to ø1.2



Suction filter comes as standard

Adsorption Confirmation Switch
Series ZSP1

How to Order

Vacuum **ZSP1 – □ □ – 15 □**

Available nozzle diameter

S	ø0.3 to ø0.7
B	ø0.5 to ø1.2

Connection

0X	With suction filter M5 x 0.8 (For mounting on ZX ejector)
0XY	With suction filter M6 x 1 (For mounting on ZX ejector)

Output specifications

15	NPN open collector

Wiring specifications

Nil	Grommet type (Lead wire: 0.6 m)
L	Grommet type (Lead wire: 3 m)
C	Connector type (Lead wire: 0.6 m)
CL	Connector type (Lead wire: 3 m)
CN	Without connector

With Connector/How to Order

- Without lead wire (Connector 1 pc. Socket 3 pcs.) ····· **ZS-10-A**
- With lead wire ····· **ZS-10-5A-□**

Lead wire length

Nil	0.6 m
30	3 m
50	5 m

Note) When ordering switch with 5 m long lead wire, Indicate both part numbers.
Ex.) ZSP1-□0X-15CN····· 1 pc.
ZS-10-5A-50····· 1 pc.

⚠ Precautions

Be sure to read before handling. Refer to front matters 58 and 59 for Safety Instructions and pages 687 to 691 for Pressure Switch Precautions.

⚠ Caution

If a positive pressure is applied to the switch, such as a vacuum break, the output will turn ON (illuminating the indicator light). Make sure that the output will not negatively affect the equipment.

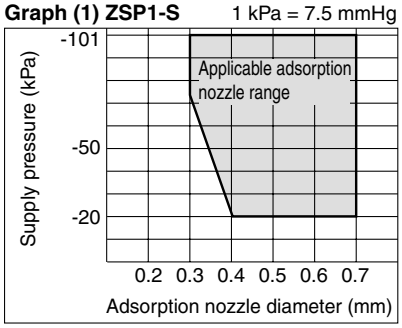
Specifications

Model		ZSP1-S	ZSP1-B
Fluid		Air	
Rated pressure range		–20 to –101 kPa	
Applicable adsorption nozzle dia.		ø0.3 to ø0.7 (Refer to “Graph (1)” on page 789.)	ø0.5 to ø1.2 (Refer to “Graph (2)” on page 789.)
Hysteresis		0.5 kPa	
Internal orifice		ø0.5	ø0.8
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (With power supply polarity protection)	
Switch output		NPN open collector 30 V, 80 mA	
Indicator light		ON: When output is ON.	
Current consumption		17 mA or less at 24 VDC	
Operating temperature range		0 to 60°C (With no condensation)	
Port size		M5 x 0.8	
Lead wire	**Grommet type**	Grommet oil-resistant vinyl cabtire code 3 cores, ø3.4, Cross section: 0.2 mm², Insulator O.D.: 1.1 mm	
	Connector type	Heat-resistant vinyl electric wire, 3-wire, Cross section: 0.31 mm², Insulator O.D.: 1.55 mm	

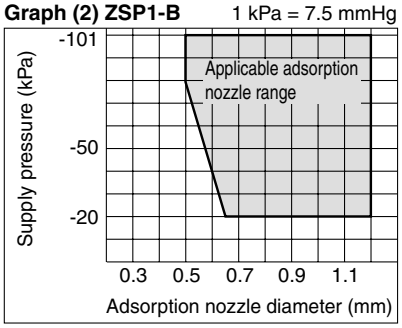
Applicable Adsorption Nozzle Range

Relation between supply pressure and adsorption nozzle diameter is shown in the below graph.

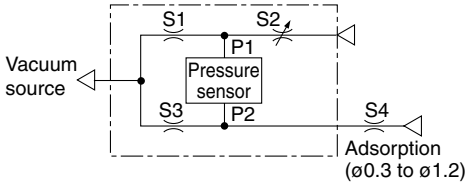
Graph (1) ZSP1-S 1 kPa = 7.5 mmHg



Graph (2) ZSP1-B 1 kPa = 7.5 mmHg

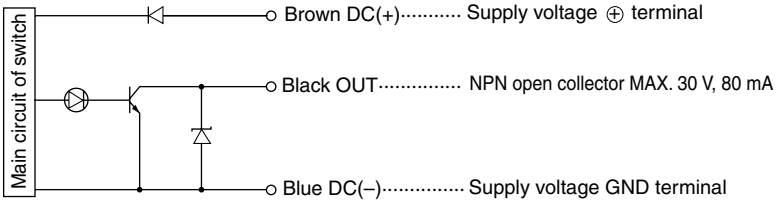


Pneumatic Circuit and Principle



The air pressure forms a bridge circuit inside the unit with a vacuum applied to the circuit, but with the adsorption nozzle "S4" open, adjust needle "S2" so that (P1 ≅ P2). When parts are absorbed by nozzle "S4", the resulting (P2 – P1) differential will be detected by the pressure sensor.

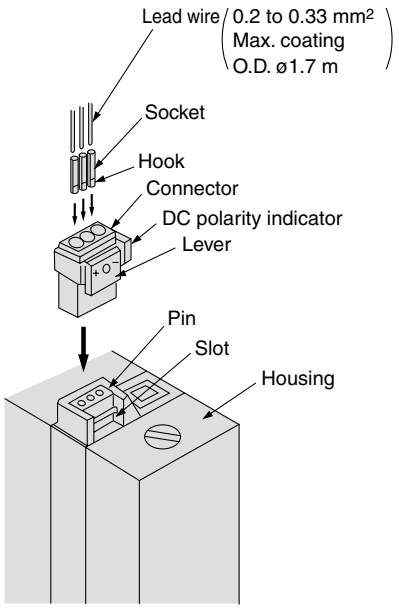
Internal Circuit and Wiring Example



How to Use Connector

1. Attaching and detaching connectors

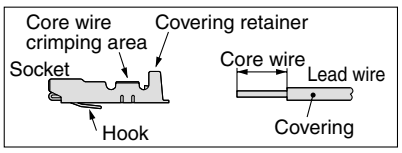
- When assembling the connector to the switch housing, push the connector straight onto the pins until the lever locks into the housing slot.
- When removing the connector from the switch housing, push the lever down to unlock it from the slot and then withdraw the connector straight off of the pin.



2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm at the end of hte lead wires, insert the ends of the core wires evenly into the sockets, and then crimp with a crimping tool. When this is done, take care that the coverings of the lead wires do not enter the core wire crimping area.

(Crimping tool: model no. DXT170-75-1)

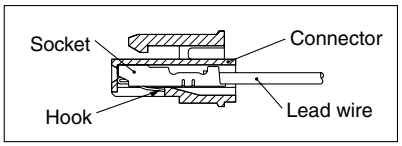


3. Attaching and detaching lead wires with sockets

- Attaching

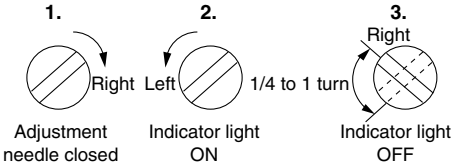
  Insert the sockets into the square holes of the connector (with +, 0, – indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.
- Detaching

  To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (about 1 mm). If the socket will be used again, first spread the hook outward.

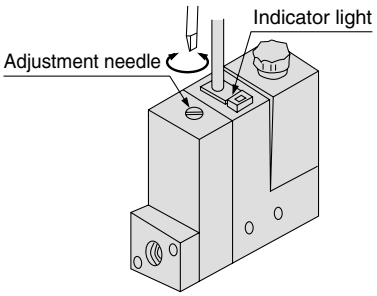


How to Set Adsorption Confirmation Adjustment Needle

1. Supply the vacuum and electrical power source to the unit. Rotate an adjustment needle clockwise until it stops.
2. With the adsorption nozzle away from a workpiece (open), turn the adjustment needle counterclockwise until the indicator light turns on.
3. From the above 2. position, turn the adjustment needle 1/4 to 1 turn clockwise.

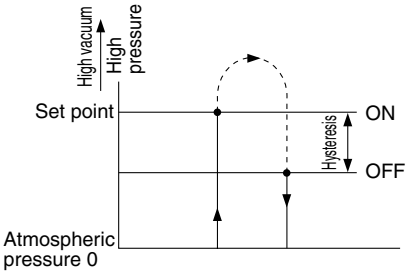


4. Re-adjust the needle so the indicator light turns ON only when the work adsorption is steady.



Hysteresis

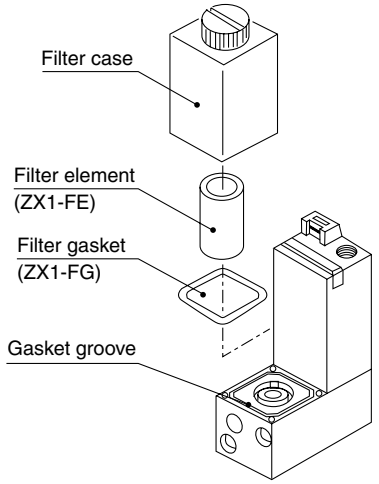
Hysteresis is the pressure difference between the ON pressure and the OFF pressure of the output signal. The set pressure is the pressure selected to switch from OFF to ON condition.



How ro Replace Filter Element

If the filter element becomes clogged, leading to a reduced adsorption force or delayed response time, stop the operation and re-place the element. (Element part number ZX1-FE) Verify that the filter gasket is placed properly in the gasket groove before installing an element.

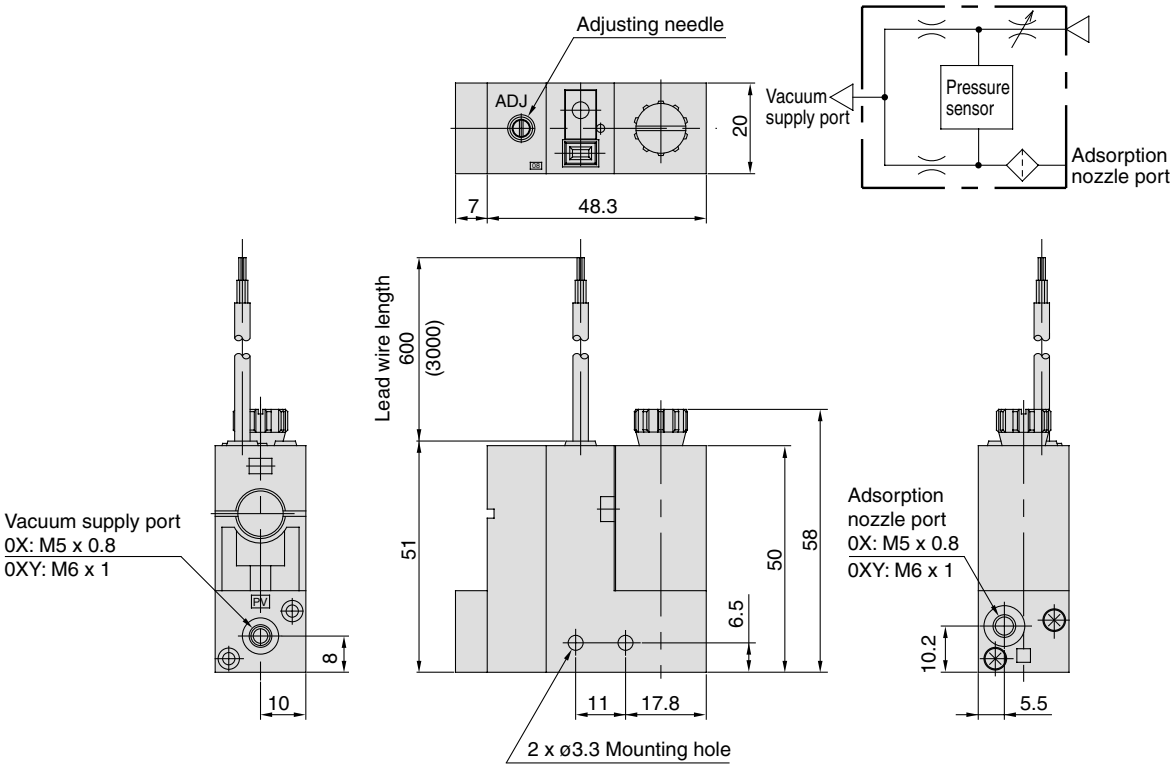
(Filter gasket part no.: ZX1-FG)



Dimensions

Grommet type:

ZSP1-□0X□-□



Connector type:

ZSP1-□0X□-□C