

# Adsorption Confirmation Switch

## Series ZSP1

For General Pneumatics

RoHS



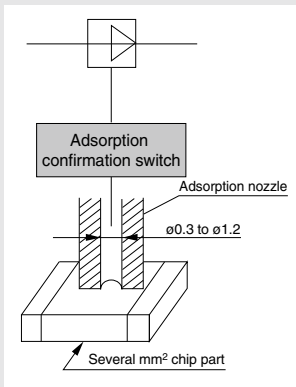
Can be integrated with ZX ejector system



**Best suited for small diameter nozzles**

$\phi 0.3$  to  $\phi 1.2$

**Suction filter comes as standard**



# Adsorption Confirmation Switch Series ZSP1

RoHS

## 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 (Semi-standard) (For mounting on ZX ejector)

### 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

### Output specifications

15	NPN open collector
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## With Connector/How to Order

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

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.

### Lead wire length

Nil	0.6 m
30	3 m
50	5 m

## Replacement Element (Filter) Part Number (Refer to page 860)

- Filter vessel assembly ..... **ZX1-FK-PC**  
(Filter vessel, filter element)
- Filter element ..... **ZX1-FE**
- Filter gasket ..... **ZX1-FG**

## Specifications

For details about the Pressure Switch Precautions, refer to pages 763 and 764. For details about the Specific Product Precautions, refer to the Operation Manual at SMC website.

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 860.)	ø0.5 to ø1.2 (Refer to "Graph (2)" on page 860.)
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 Oilproof heavy-duty vinyl cable 3 cores, ø3.4, Conductor area: 0.2 mm <sup>2</sup> , Insulator O.D.: 1.1 mm	
	Connector type	Heat-resistant vinyl electric wire, 3-wire, Conductor area: 0.31 mm <sup>2</sup> , Insulator O.D.: 1.55 mm	
Standard		RoHS	

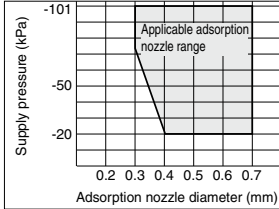
ZSE30  
ISE30  
ZSE40  
ISE40  
ZSE10  
ISE10  
ISE70  
ZSE80  
ISE80  
ZSE□  
ISE□  
ZSP  
PS  
ISA2  
PSE  
IS  
ISG  
ZSM1

# Series ZSP1

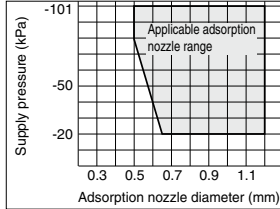
## Applicable Adsorption Nozzle Range

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

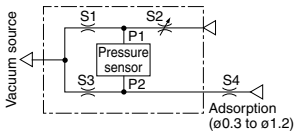
Graph (1) ZSP1-S 1 kPa = 7.5 mmHg



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



## Pneumatic Circuit and Principle

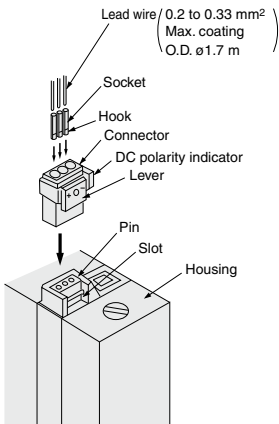


The air pressure forms a bridge circuit inside the unit with a vacuum applied to the circuit, but with the adsorption nozzle "S4" open, adjust needle "S2" so that (P1 = P2). When parts are absorbed by nozzle "S4", the resulting (P2 - P1) differential will be detected by the pressure sensor.

## How to Use Connector

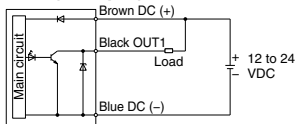
### 1. Attaching and detaching connectors

- 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.



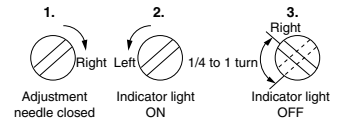
## Internal Circuits and Wiring Examples

### -15 NPN (1 output)

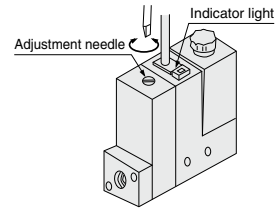


## How to Set Adsorption Confirmation Adjustment Needle

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

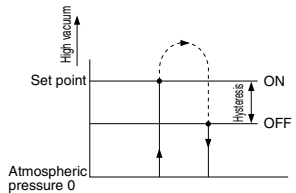


- Re-adjust the needle so the indicator light turns ON only when the work adsorption is steady.



## Hysteresis

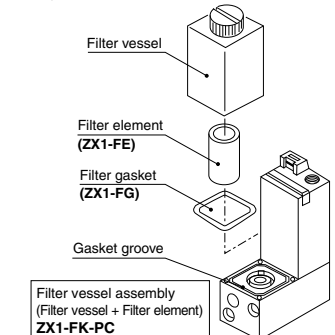
Hysteresis is the pressure difference between the ON pressure and the OFF pressure of the output signal. The set pressure is the pressure selected to switch from OFF to ON condition.



## How to 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.

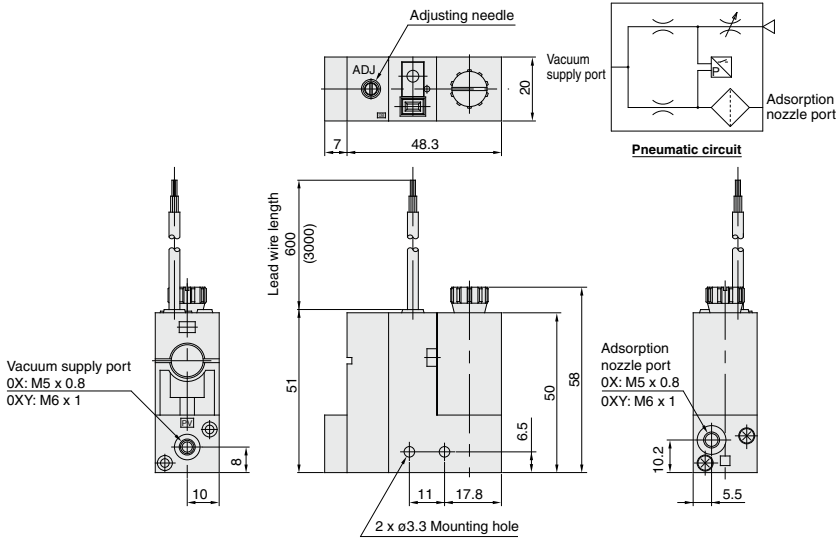
(Filter gasket part no.: ZX1-FG)



## Dimensions

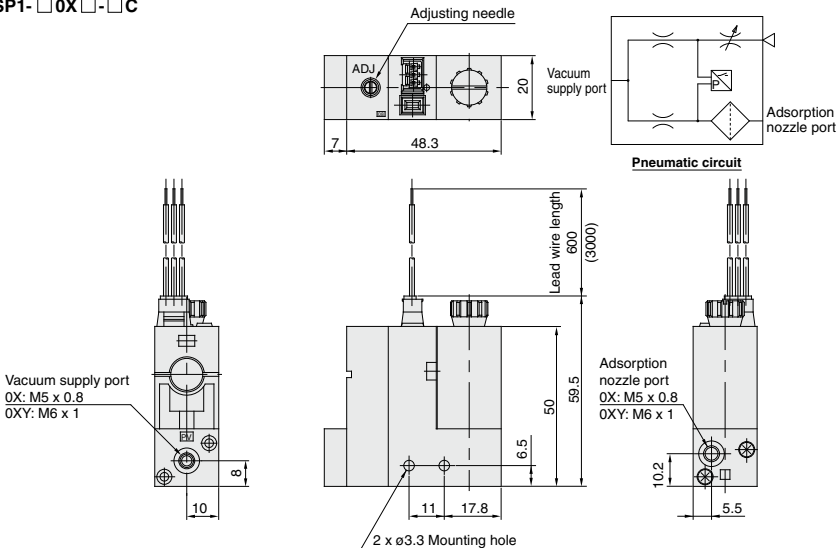
### Grommet type:

ZSP1-□OX□-□



### Connector type:

ZSP1-□OX□-□C



ZSE30  
ISE30

ZSE40  
ISE40

ZSE10  
ISE10

ISE70

ZSE80  
ISE80

ZSE□  
ISE□

ZSP

PS

ISA2

PSE

IS

ISG

ZSM1