

## ■ FEATURES

In pressure switch type SPL-550,650 carrying section of air or liquids such as water and oil, bellows are used to transfer the displacement of the bellows to the actuating lever. The On/Off of quick action type switch is achieved reliably and quickly by means of quick action mechanism which is actuated by the stress of a coil spring installed at the top of the lever. The actuating lever does not stop between the low limit and the upper limit of its travel. It does not produce error in movement in response to drastic rise or drop in pressure because the actuating lever moves rapidly. This pressure switch, which has a narrow pressure gap for adjustment compared with other types, is a highly accurate and reliable pressure control device.

## ■ MOUNTING AND ADJUSTING METHODS

Mount the body of pressure switch to panel board by means of bracket with three(3) M5 or M6 bolts. Mount it vertically wherever possible.

Mounting of the pressure switch vertically horizontally or on a left slant is acceptable but it should not be mounted any other way. If oil is used as the working fluid, mount the switch as far from hydraulic pump as possible so that pulse pressure will not affect it.

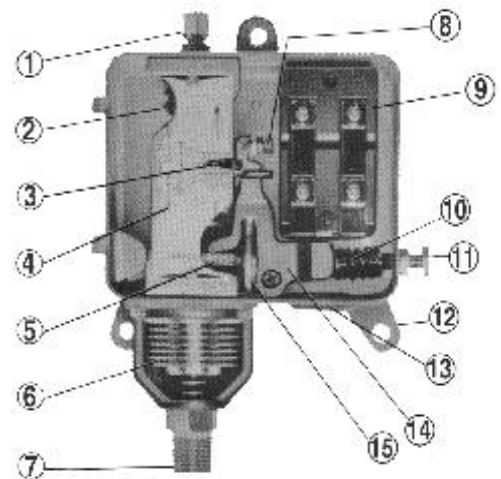
**(Method of adjustment of setting value)** For the pressure switch of type SPL-550 and 650 series. this upper and lower limits can be set, dependent on the purpose of control, in between pressure regulating range scale. The pressure is set at the factory at as required by the user but is can also be adjusted by turning the pressure regulating bolt. Should it become necessary to change, the setting of pressure, it should be done by measuring the actual pressure applied by means of a pressure gauge. If no pressure difference is found, simply turn the regulating bolt (1-A) in accordance with the scale range.

The pointer on the pressure scale is advanced to the higher scale by turning Range A (1-pressure regulating bolt) to the clockwise direction, and is also advanced to lower scale is advanced to the lower scale by turning it counterclockwise. This regulating bolt cannot be adjusted for pressure differential. The pressure differential is set wide by turning Diff B(12-On/Off pressure differential regulating bolt) to the clockwise direction and is set narrow by turning is counterclockwise. Pressure differential is set wide to both the upper and lower limits, and can also be set narrow for both.

**(On/Off pressure difference)** When narrowing the differential amplitude, be sure not to make it narrower than the range of pressure loosened too much, the movement of the actuating lever will become faulty, causing quick action malfunction followed by adverse increases in differential amplitude. Particular caution should be paid to this fact, for this will lead to unstable movement of the actuating lever that will be a cause of complaints from the user.

\*The indicator, in accordance with the application, is set at upper limit value for upper limit warning and is set at lower limit value for lower limit warning. For pump and compressor operation the indicator is set at the upper limit value.

SPL-550



- ① - Set temperature adjusting bolt(Range)
- ② - Set temperature adjusting(Range) spring
- ③ - Indicator
- ④ - Scale
- ⑤ - Main Operation lever
- ⑥ - Bellows, bellows cover(assembly)
- ⑦ - Flexible protection tube
- ⑧ - Switch push gap adjusting bolt
- ⑨ - (1a+ 1b) type snap switch
- ⑩ - Differential temperature(On-Off width) adjusting spring
- ⑪ - Differential temperature(On-Off width) adjusting bolt(Diff)
- ⑫ - Mounting bracket
- ⑬ - Through bushing (internal dia Ø17) for electric wires
- ⑭ - Connecting lever for actuating switch
- ⑮ - Stopper for operation lever



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#### ■ METHOD OF CONNECTING WIRES

- A) Type SPL-550, 650 are fitted with the snap switch (1-2 3-4) shown in Fig. B and the contacts consist of 1a and 1b. Terminal numbers 3-4 are normally closed, but open (Off) as pressure rises. 1-2 are normally open, but close (On) as pressure rises.
- B) Types SPL-550W, SPL-650W are fitted with snap switch (1)-(2)-(3) shown in Fig. B, to which 2 sets of 1ab contacts are built-in, and construction of contacts is 2ab. Terminal numbers (1)-(2) and (4)-(5) are normally closed, but open(Off) as pressure rises, and terminals (1)-(3) and (4)-(6) are normally open, but close (On) as pressure rises.
- C) Particular caution should be paid while connecting wires so as to prevent a loose part of wiring from contacting the connecting lever(15) in Fig. D. The return of snap switch will be interrupted if the wire, a cause of faulty operation of the whole switch. Terminal screws should also be tightened sufficiently. Particular caution should be paid so as not leave these screws loose as it may cause the snap switch to burn out. For use in connections with heavy loads such as motors. etc. use magnetic switches or relays.

SPL-650W

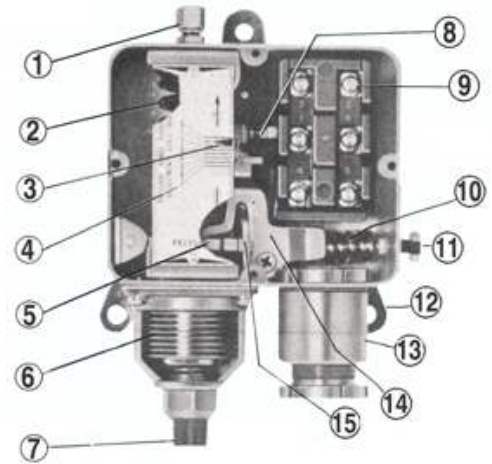
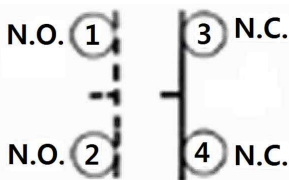


Fig. D

- ① - Set temperature adjusting bolt(Range)
- ② - Set temperature adjusting(Range) spring
- ③ - Indicator
- ④ - Scale
- ⑤ - Main Operation lever
- ⑥ - Bellows, bellows cover(assembly)
- ⑦ - Flexible protection tube
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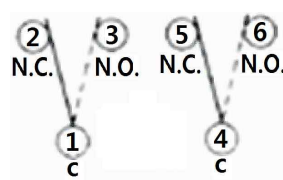
Fig A. (SPDT) 1a + 1b type Snap Switch



a. Contactor

As pressure rise  
①-② = On

Fig B (DPDT) 2ab type Snap Switch



b. Contactor

As pressure rise  
③-④ = Off

Electric rated capacity table				
Voltage (V)	Alternating current (AC)		Direct current (DC)	
	24	(A)	(A)	8(A)
48			6	1.5
110	30	12	4	0.5
220	20	10	2	0.25
440	15	6		
550	10	5		

- ◀ (3) Withstand voltage test  
AC2000V with commercially available frequency is applied for one minute.
- (2) Insulation resistance test  
Over 100MΩ (DC500V megger)



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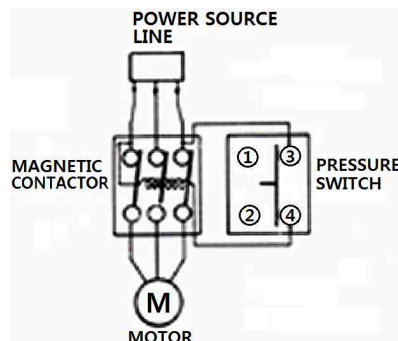
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## ■ SPECIFICATION

## ■ WIRING DIAGRAM

Common Type	Item #	Range of pressure regulation (kg/cm <sup>2</sup> )		On/Off pressure difference(kg/cm <sup>2</sup> )		Pressure resisting force kg/cm <sup>2</sup>	Pressure carrying part O.D of bellows
		Min	Max	Min	Max	Limit	
SPL-550	1	0	1.6	0.12	1	10	Ø36
SPL-550W	2	0	3	0.15	2	15	Ø36
SPL-550WF	3	0.1	5	0.2	3	15	Ø36
SPL-550-S	4	0.2	7	0.25	3.5	15	Ø36
SPL-650	5	0.5	10	0.3	4	15	Ø36
SPL-650W	6	2	22	0.8	5	30	Ø24×W
SPL-650WF	7	5	40	1.5	10	50	Ø19×W
SPL-551, 651,WF	11	0	2	0.05/0.09	1.5/1.5	5/10	Ø40
SPL-552, 650,WF	12	0.1	5	0.1	2.5	15	Ø40
SPH-550, 650,WF	8	5	60	2	10	100	Ø19×W,SUS304
	9	10	80	3.5	20	100	Ø19×W,SUS304



## ■ PRESSURE CARRYING BELLOWS

- A) Standard of quality of bellows is PBP-3. Bellows cover and bellows are soldered together, for which allowable temperature is up to 90°C. For steam pressure greater than that, the temperature could be brought down, in most of cases, to lower than 100°C by use of capillary tubes. The bellows made with SUS304 are also useful.
- B) Particular care should be exercised to limit maximum pressure to be applied on bellows within the value stamped as LIMIT OF PRESSURE on the name plate.  
Install surge reducer in the event water hammer or dynamic pulse pressure is imposed on working fluid.
- C) Due caution should be exercised not to drop the switch accidentally from a high place while mounting the switch body. If the switch should be dropped a bend at the part of screw at the top of bellows or a dent on the bottom of bellows case may occur, causing malfunction in return of the actuating lever. Therefore, the switch should be rechecked and the action confirmed as normal if dropped by accident.
- D) Other than the types described above, type SPL-650F, 650WF, etc. are available and the letters suffixed to numbers represent the diameter of connection for working fluid pipe. To the type that has suffixed letter F, 7/16×20 (Ø6 flared copper pipe) is connected. Other alphabetical letters may be used for ones made in compliance with special specifications.

\* For the types SPL-550 and SPL-550W water proof glands are not fitted Therefore, when tightening screws on one from which the bracket has been removed, insert washer as thick as the bracket before tightening the screws.

In outdoor use install suitable rain cover to protect switch from rain water



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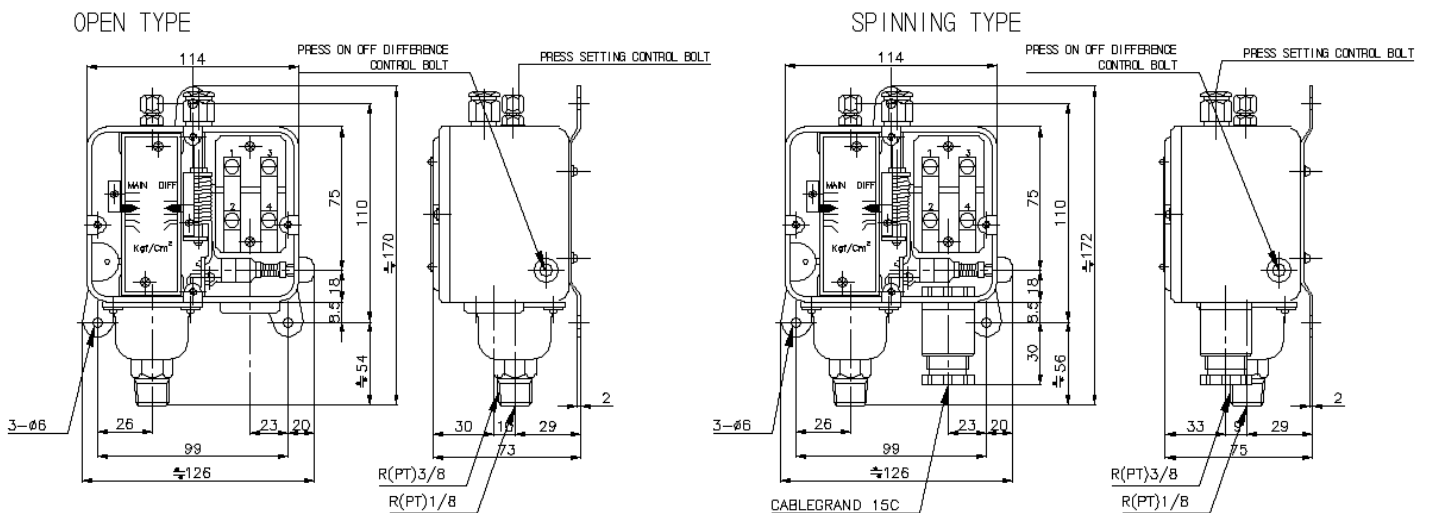
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# SHICO.

MODEL : SPL-550, 650 Series

## AUTOMATIC CONTROL SWITCHES (PRESSURE SWITCHES)

### ■ DIMENSIONS



### ■ ORDERING INFORMATION

SP	CODE	INSTALLATION TYPE
	P	Designation P of Pressure switch
	L	Initial letter of Low pressure
	H	Initial letter of High pressure
	CODE	
	550	Ordinary use type
	650	Non-drip proof type
	CODE	Item Number
	#	1 ~ 12
	CODE	Material
	F	Ø6 Copper tube flare coupling (PT <sub>3/8</sub> or PF <sub>3/8</sub> as standard)
	S	PT <sub>3/8</sub> SUS304 (Option mark)

SP□-□□□



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