



ADM SYSTEMS GROUP

ABN:28006516 767

T 1300 236 467

admin@admtech.com.au

Test Report - TSA-622PS-0010AB-MA5

Date: 28 November 2019

Introduction

The TSA-622PS-0010AB-MA5 is an adjustable pressure switch with the output being contacts of a change-over relay.

The setpoint is adjusted by a trim pot that is concealed behind a water-tight Phillips screw located alongside the electrical connector.

A visual indication of the state of the relay is given by an LED also alongside the electrical connector.

The pressure switch was put under test to determine:

1. How accurately the set point could be adjusted
2. How accurately the pressure switch could hold its setpoint
3. What was the drop in pressure below the set point for the relay to change state
4. How well the pressure switch functioned after it had been over-pressured to its maximum overload pressure
5. How it performed whilst being submerged
6. At which current/voltage the relay contacts would fail

Pressure Test Procedure

1. The pressure switch was connected to the Lutron PS-9302 pressure meter and hand-held pump.
2. The pressure was adjusted to various pressures and the setpoint was set accordingly.
3. At each pressure measurement the pressure was slowly decreased to check at what pressure the relay dropped out.
4. The pressure in the system was dropped right down and then increased again slowly to check at what pressure the relay re-activated.
5. The system was taken up several times to the maximum overload pressure value and the above steps repeated to determine there was no change in the set point pressure and that the pressure switch behaved normally.
6. The pressure switch was also submerged in a bucket of water for 20 minutes during the final stages to check conformance with IP67.
7. It was found that it was best way to set the setpoint was by reducing it down to the desired pressure. Turning the setpoint screw clockwise reduced the setpoint.





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Pressure Test Results

The sensor under test came pre-set at 4.85 bar.

The relay contact resistance was 2.5 Ohms.

Test 9 & 10 were done over a 20-minute period.

Test	Pressure & Setpoint adjustment	Relay deactivation pressure	Relay activation pressure	Relay deactivation pressure
1	4.85	4.75	4.85	4.75
2	1.00	0.90	1.00	0.90
3	2.00	1.90	2.00	1.90
4	3.00	2.90	3.00	2.90
5	4.00	3.90	4.00	3.90
6	10.00	9.85	9.95	9.85
7	6.00	5.90	6.00	5.90
8	9.00	8.90	9.00	8.90
9	15 (setpoint=9bar)	8.90	15	8.90
10	15 (setpoint=9bar)	8.90	15	8.90

Contact Load Test Procedure

1. The set point pressure was set to 5 bar.
2. A power supply was connected in series with the Normally Closed contact as well as an active load.
3. The power supply was set to 30 volts and maximum current as this was the specified maximum DC Voltage.
4. The active load was used to control the magnitude of the current in the circuit, initially 1 Amp as this was the specified maximum contact current.
5. The hand-held pump was pumped to 5 bar and the adjustable diaphragm adjusted above and below the set point pressure to manually switch in and out the relay contact.
6. As the relay contacts were opened and closed the active load current was increased incrementally until the contact failed.
7. It was decided not to undertake the test with 230 VAC due to the inherent risk of connecting high and low voltage circuits through the same connector. The maximum current test was deemed adequate to assess the maximum load the contact was able to sustain.





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Contact Load Test Results

1. The contact performed satisfactorily until just less than 2 Amps and then the contact remained in short circuit despite the relay operation.

Conclusion

The pressure switch performed well within its stated specification.

No change in its functional behaviour was detected despite it being over pressured 4 times.

The multi-turn setpoint adjustment enabled very fine adjustment of the setpoint to be achieved.

The relay contact was able to carry almost double its rated load, however, it should be avoided marketing the pressure switch to switch loads that exceed its 1-amp rating. For example, the relay contact should not be used to directly drive a DC motor, which is essentially a short-circuit at start up.





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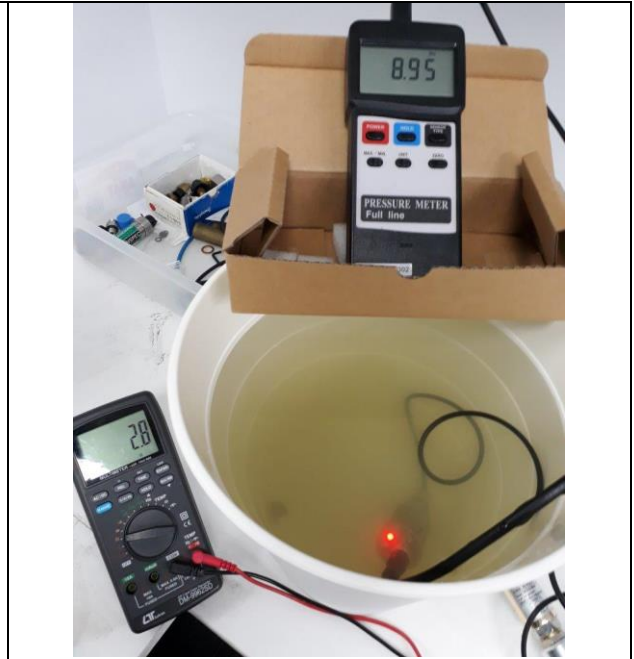
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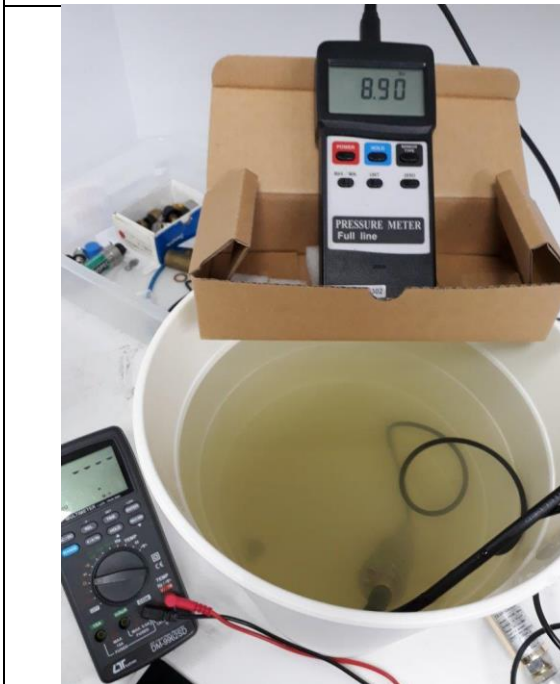
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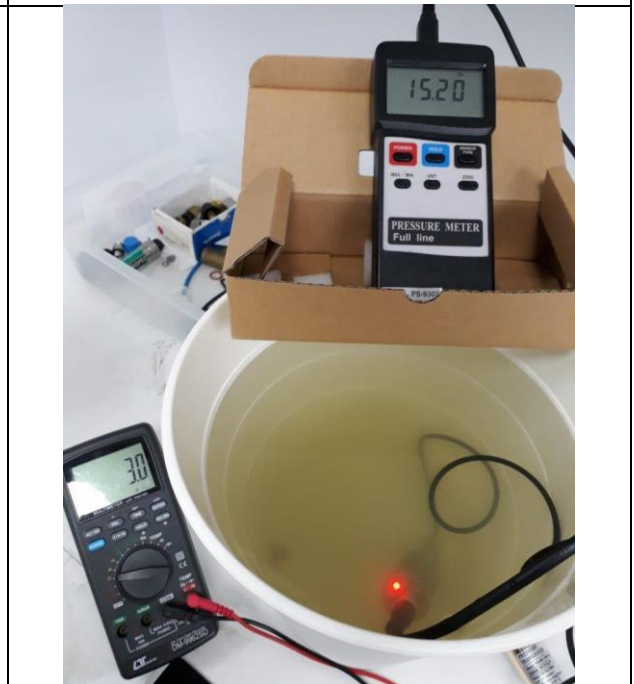
Relay switches in at 9.00 bar



Pressure starts dropping



Relay drops out at 8.90 bar



Over pressure

