

Pinch Valve Life Test Report

1. Test purpose:

10 million switch cycles test for PV20NO12-3-32 and PV20NO12-1-8

2. Test samples

No.	Model	Test quantities
1	PV20NO12-1-8	5 pcs
2	PV20NO12-3-32	5 pcs

3. Test environment/parameters:

Environment temperature: 15+/-3°C

Medium: compressed air

Test pressure: 15PSI

4. Test tools and equipment:

DC power supply, air flow rate meter, and aging test fixture are used in the test.

5. Test criteria:

Test voltage 12V

Silicone tubing is placed in the positions of pinch valve PV20NO12-1-8, PV20NO12-3-32

Before test: minimum starting voltage 5.5–8V

Air flow deviation value less than 1L/min

Leakage standard: tubing immersed in water for 10s and no bubbles can be observed

6. Test method and acceptance criteria

Randomly pick 5 samples to run the intermittent power on and off test on the aging test fixture. Switch the valves on and off twice per second. Perform the qualification test after certain amount times of switch cycles

Qualification test method:

Under a pressure of 15 PSI, measure the air flow rate when the valve is open. Use the initial flow rate as a reference value. The deviation of the measured air flow rate from the reference value should be < 1L/min. Measure the minimum trigger voltage, and test the leakage when the pinch valve is turned off (no bubble is observed after the tubing is immersed in water for 10s)

Note: replace silicone tubing after every 1 million switch cycles

Table 1. Test Result of the Pinch Valves (Model PV20NO12-1-8)

	Sample #1	Sample #2	Sample #3	Sample #4	Sample #5
Accumulated switch 0 cycles					
Measured air flow rate (L/min)	8.51	7.81	8.79	8.13	8.39
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.5	8.0	7.0	7.1	7.3
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 1728000 cycles					
Measured air flow rate (L/min)	8.82	7.58	8.98	7.80	8.65
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.8	8.0	7.2	7.6	7.2
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 7056000 cycles					
Measured air flow rate (L/min)	8.21	7.46	8.12	7.50	7.47
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.6	7.7	6.9	7.5	6.8
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 8796000 cycles					
Measured air flow rate (L/min)	8.69	7.42	8.23	7.16	7.70
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.3	6.8	7.0	6.8	6.9
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 10524000 cycles					
Measured air flow rate (L/min)	8.91	7.42	8.44	7.79	8.53
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.6	7.4	7.0	7.1	6.9
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				

Table 2. Test Result of the Pinch Valves (PV20NO12-3-32)

	Sample #1	Sample #2	Sample #3	Sample #4	Sample #5
Accumulated switch 0 cycles					
Measured air flow rate (L/min)	6.83	6.92	6.58	6.82	7.13
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	7.5	7.0	7.1	7.5	7.1
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 5256000 cycles					
Measured air flow rate (L/min)	6.67	6.98	6.43	6.45	6.88
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	5.7	5.8	6.0	5.9	5.8
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 8496000 cycles					
Measured air flow rate (L/min)	6.3	6.73	6.59	6.25	6.55
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	6.1	5.6	5.9	6.0	5.7
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				
Accumulated switch 10404000 cycles					
Measured air flow rate (L/min)	6.26	6.54	6.47	6.34	6.22
Air flow rate deviation (<1L/min)	accepted				
Minimum trigger voltage 5.5~8 V	5.9	6.0	6.1	5.9	6.3
Minimum trigger voltage acceptance	accepted				
Leakage @15PSI	no				

7. Test conclusion

Pinch valve PV20NO12-1-8 and P20NO12-3-32 is able to run more than 10 million cycles.



Tested by:

Tim Z.

Date:

02/09/2019.