



INSTRUCTION MANUAL

MODEL 120 / 122 — DIFFERENTIAL PRESSURE GAUGE

Principle of Operation

The Model 120 Differential Pressure Gauge is a rugged 150 mm dial, piston-type instrument with a Safe Working Pressure of 200 Kg/Cm². It is used to measure the pressure differential across filters, valves and other equipment.

Model 122, is same as Model 120 gauge, except for its smaller dial size viz., 65 mm.

Differential pressure is indicated by the travel of a free-floating precision piston with magnet (Fig.1) against a calibrated range spring, within the solid, high pressure housing. To indicate the pressure differential on the calibrated dial accurately, a magnet on the gauge pointer outside the housing tracks the magnetic piston inside the pressure housing.

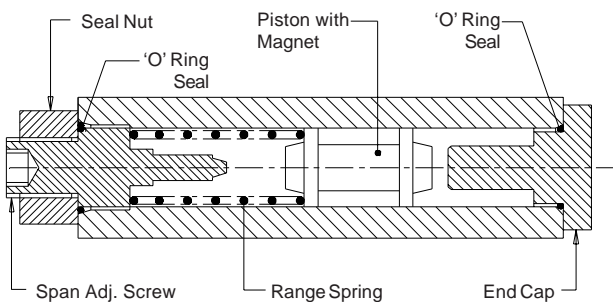
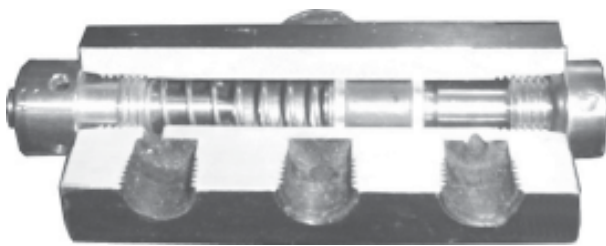


Fig.1

The switch option (Fig.2) can be used to switch an alarm or control circuit at any point. The switch is a hermetically

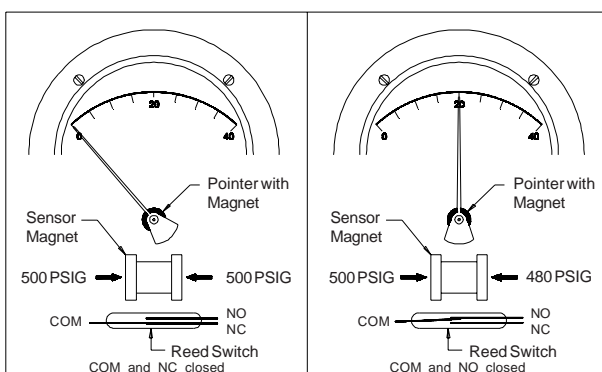


Fig.2

sealed Reed Switch which is not affected by vibration or shock. It is directly actuated by the piston magnet in the gauge's pressurised housing and therefore does not affect the accuracy of the gauge.

One or two independently adjustable Reed Switches are available. The switches can be set with an external screw arrangement and setpoints are adjustable from 10% to 90% of the operating range of the gauge. The switch schematic is shown in Fig.3.

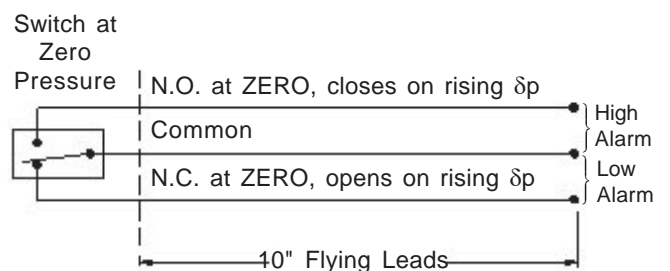


Fig. 3

The ratings of the Reed Switch are

Power	:	3 Watts
Maximum Current	:	0.25 Amps
Maximum Voltage	:	120V AC / DC

Caution : Do not exceed the above maximum limits. Product of Switching Voltage and Current shall not exceed the power rating.

For loads above the switch rating, SWITZER Power Relay should be used. The power relay is used to control high loads (Fig.4) and is housed in a weatherproof enclosure.

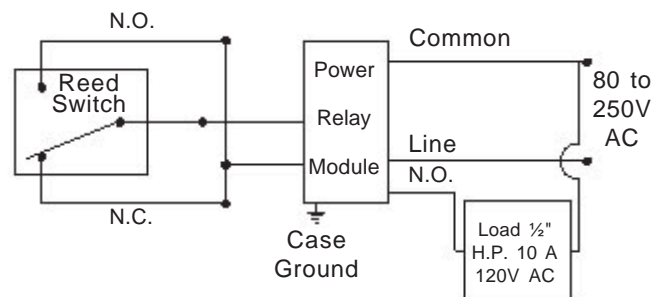


Fig. 4

Calibration

This instrument has a piston finely machined and matched to the cylinder bore without a 'O' ring.

So leak is permitted across the piston which will not exceed 15SCFH air at 100 PSID at ambient conditions.

Therefore **do not use a Comparator or a Deadweight tester** for calibrating the instrument, but use a continuous air pressure source only.

Connect the source to HP port and leave the LP port open to atmosphere and check calibration at approximately 30%, 50% and 70% of full-scale pressure. If necessary, loosen

the adjustment locknut, reset the adjustment screw and retighten locknut. Recheck calibration at 30%, 50% and 70% of full-scale pressure.

Alarm Control Switch Adjustment

Switch setpoint is adjusted using the external adjustment screw (Fig.1). Turn screw clockwise to lower setpoint or counter clockwise to raise setpoint. Turning screw 1/2 turn will change the set point by approximately 1% of the full-scale.

INSTALLATION

Before Installation

Check gauge(s) against receiving paperwork; check for shipping damage and report immediately.

Model 120 / 122 Differential Pressure Gauges are fully adjusted, calibrated and scaled to exact specifications before shipment, and are ready for immediate installation and use. The gauge may be line mounted to inlet and outlet pressure connections, or flush mounted to a panel. An accessory is available to attach the gauge to a 2" support pipe for stanchion or wall mounting.

Tubing Connections

Connect the high pressure side of the system to the High port and the low pressure side of the system of the Low port of the gauge.

Note : A zero gauge reading when the system is pressurised, could indicate reversed High and Low connections.

Caution : *When used in a high temperature system, the tubing to the gauge ports should be as long as possible. To cool the fluid to less than 200°F (90°C), a tube length of 6 feet is usually adequate to prevent high temperature from damaging the gauge.*

Line Mounting

The gauge will be solidly supported if input nipples less than 3 inches in length are used. Use full-size 1/4" pipe whenever possible.

Panel Mounting (Fig.5)

1. Cut a 173.4 mm hole in panel.
2. Drill or punch 3 holes of 5.2 mm dia on 183.3 mm bolt circle diameter.
3. Remove 3 bezel screws.
4. Insert gauge into 173.4 mm hole from rear of panel.
5. Install and tighten 3 bezel screws through 3 holes drilled in Step 2.

Caution : *The tubing connections to the gauge ports should be of relatively flexible tubing, not rigid tubing. This will reduce the possibility of misalignment between the mounted gauge and the tubing, during installation.*

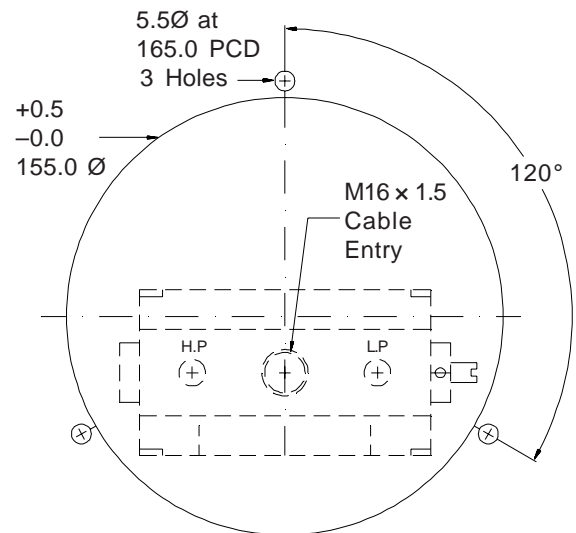


Fig.5

Disassembly

Before Attempting repairs

Contact SWITZER factory or nearest local office. Failure to do so will void any warranty

Bezel and Dial Chamber

1. Remove 3 bezel screws, bezel, lens /follower assembly, and lens gasket.
Remove two bridge-retaining screws, bridge and gauge pointer assembly.
Remove two dial-retaining screws and dial.
2. Separate dial chamber from pressure housing.

Pressure Housing

Caution : *When tightening or loosening tubing connections, seal plug or adjustment locknut, secure pressure housing using 1" wrench.*

1. Turn off pressure to any tubing connected to gauge and remove tubing connections from gauge ports.
2. Loosen adjustment locknut and remove adjustment screw with its 'O' ring.
3. Remove seal plug with its 'O' ring.
4. Using a pencil or wooden dowel, push the piston and spring out of the housing.

Reassembly

Before reassembling gauge, thoroughly clean the housing, piston and all metal parts with detergent solution or mild solvent.

Caution : *Do not use strong solvents (acetone, ether, toluene, etc.) to avoid damage to dial or bezel.*

Note : Use new seal 'O' rings when reassembling housing.

1. Lubricate 'O' rings and all sealing surfaces with silicone grease and apply a thick film to the piston and housing cylinder.
2. Reassemble gauge by reversing disassembly procedure.

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