

O16 Single High and Low Pressure & O17 Dual Pressure Refrigeration Controls

A) FUNCTION

DESCRIPTION / APPLICATION

RANCO O16 and O17 Pressure Controls with adjustable set points are used in refrigeration and air conditioning systems to provide protection against excessively low suction pressure or excessively high discharge pressure. The Controls are used for starting and stopping refrigeration compressors, fans on air-cooled condensers and for pneumatic and hydraulic applications. These pressure controls are equipped with Single Pole Double Throw (SPDT) Contacts as shown in **Figure 1.a - 1.d**. The switch actuates or releases based on the set points that the "Range Adjustment" and "Differential" screws of the device is adjusted to.

O16 Single Pressure Control

-0.3 to 7 Bar

11-14: Close on Rise, Open on Drop

11-12: Open on Rise, Close on Drop

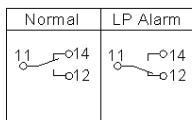


Figure 1.a

O16 Single Pressure Control

6 to 32 Bar

11-14: Close on Rise, Open on Drop

11-12: Open on Rise, Close on Drop

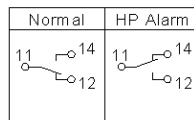


Figure 1.b

O17 Dual Pressure Control

- 0.3 to 7 Bar / 6 to 32 Bar

Left Side Operation

11-14: Close on Rise, Open on Drop

11-12: Open on Rise, Close on Drop

Right Side Operation

21-24: Close on Rise, Open on Drop

21-22: Open on Rise, Close on Drop

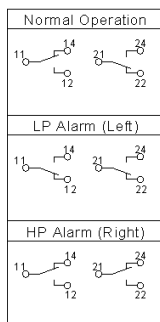


Figure 1.c

O17 Dual Pressure Control

6 to 32 Bar / 6 to 32 Bar

Left Side Operation

11-14: Close on Rise, Open on Drop

11-12: Open on Rise, Close on Drop

Right Side Operation

21-24: Close on Rise, Open on Drop

21-22: Open on Rise, Close on Drop

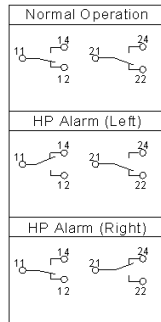


Figure 1.d

B) PRESSURE CONTROL MODELS

The device is available in "Automatic Reset" or "Manual Reset" options in configurations as listed below –

O16 Series (Single)

- 1) Low Pressure (Auto)
- 2) Low Pressure (Manual)
- 3) High Pressure (Auto)
- 4) High Pressure (Manual)

O17 Series (Dual)

- 5) Low Pressure / High Pressure (Auto/Auto, Auto/Manual, Manual/Auto, Manual/Manual)
- 6) High Pressure / High Pressure (Auto/Auto, Auto/Manual, Manual/Auto, Manual/Manual)

A multitude of pressure ports / fittings are available. A broad array of electrical connections can be provided with the pressure controls.

C) CONTROL BODY MOUNTING

- 1) RANCO O Controls can be mounted in any position, horizontally or vertically, except upside down.
- 2) Pressure controls may be wall mounted against a flat surface or installed with a mounting bracket provided as an accessory in the packaging box.
- 3) Only the standard mounting holes (universal thread M4 or UNC8-32) provided on the back of the Pressure control device or mounting bracket can be used during installation.
- 4) Use Mounting screws supplied with the pressure control.
- 5) Mounting screws must not penetrate control backside by more than 8mm to ensure proper operation.
- 6) Mounting to an uneven surface may cause improper control operation.
- 7) Avoid severe pressure pulsation on high pressure connections.

In order to achieve an IP44 rating on the pressure control device, the following instructions must be followed,

- IP44 only applies when the pressure control cover remains and fastened with the cover screw in the front.
- The pressure control must be mounted against a flat surface along with the white label on the device back plate in order to ensure all openings on the back plates are covered fully.

D) PRESSURE CONNECTION MOUNTING GUIDE

- 1) For Pressure Controls with Mechanical flare fittings, such as 7/16-20 UNF, do not over tighten / over torque the flare nuts on pressure connection fittings. Use two wrenches to apply the torque uniformly.
- 2) High Pressure Controls with 7/16-20 UNF fittings are equipped with a snubber component to dampen pulsations.
- 3) High Pressure Controls with Capillary tube fittings are available with and without Deflator component. The Deflator component acts as a snubber by providing pressure pulsation dampening. However, the customer is responsible to ensure they have the right mating fitting with Schrader ports to accommodate the deflator used on capillary tube fittings.
- 4) Pressure Controls with capillary or other flexible tube fittings should be at least 80mm or greater in length to avoid heat damage to the sensing element (bellows) during customer's installation process.

- With Pressure Controls with tube fittings, avoid excess heat during installation process. Do not aim torch toward the plastic body of the control, and use appropriate heat sinking methods to protect Pressure controls during brazing operation.

E) GENERAL SAFETY INSTRUCTIONS

- CAUTION:** To prevent possible electrical shock, disconnect supply voltage from system and pressure control before installation or servicing. DO NOT restore electrical power to the unit until the control is properly installed and grounded. Failure to comply with safety and installation instructions can result in failure of the device, damage to the system or personal injury that the manufacturer is not responsible for.
- The supply voltage and current to the pressure control should not exceed what is rated on the device name plate.
- Do not exceed test pressure.
- Keep temperatures within nominal limits.
- For Pressure Controls certified to PED 2014/68/EU, pressure tests should be carried out in accordance with safety standard EN378. Failure to do so can result in loss of refrigerant charge and/or personal injury. The Pressure test can only be conducted by skilled, certified technicians as identified by the local safety regulating body.

F) ELECTRICAL RATINGS

The O16 and O17 controls are rated to,

AC1	16A / 400 VAC
AC3	16A / 400 VAC
AC15.....	10A / 400 VAC
DC13.....	12W, 220V

NOTE: DO NOT exceed the Electrical ratings specified on the controls name plate.

- Comply with local electrical regulations when conducting electrical wiring.
- Wire size must match the electrical load connected to the switch contacts.
- The cables/wires connected to the electrical mini-switch (SPDT Contacts) can be fed through the rubber grommet indicated in **Figure 2**.
- The rubber grommet may be replaced by a standard PG 13.5 cable gland based on customers mounting requirements.
- The Electrical contacts configuration shown in **Figure 1** should be considered while connecting the system to the pressure control device. **Figure 1** explains the device functionality under normal condition (factory shipped settings), and on pressure increase/decrease in the system.
- The terminal screws on the electrical mini-switch plastic should not exceed 1.2 Nm torque while fastening.
- For low voltage, low current AC applications or DC loads (< 50mA) gold plated contacts are recommended.

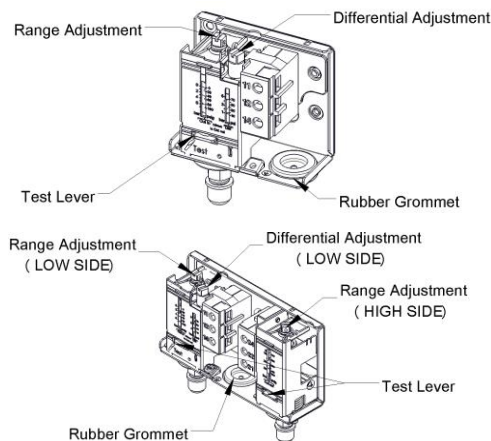


Figure 2

SETPOINT ADJUSTMENT (Figure 2)

- Pressure Controls are available in low and high pressure, "Auto-Reset", and "Manual-Reset" options.
- Depending on specific models, high and low pressure controls come with "Range Adjustment" and "Differential" screws for setpoint adjustment.
- Pressure controls with "Manual Reset" option always have fixed differential.
- With "Manual Reset" devices, resetting of the device must be performed by a trained service technician only.
- Use a flat screw driver or a 1/4" refrigeration (square) wrench to adjust setpoints as described below.
- Adjust upper setpoint using the "Range Adjustment" screw.
- Adjust lower setpoint by turning the "Differential" screw.

Upper Setpoint – Differential = Lower Setpoint

- The integrated analog display scale on the pressure controls provides approximate pressure setting values; additional gauge may be needed for exact adjustment of set points.
- After setting the upper set point and differential on the device, it is critical to verify the resulting lower setpoint.

MANUAL RESET (Figure 3)

- Manual reset (external): Press the reset button as indicated in **Figure 3.a**.
- Manual reset (internal): Remove the cover and press the reset button as indicated by **Figure 3.b**.
- Disconnect supply voltage from system and pressure control before troubleshooting.
- Note that the reset is 'trip-free', i.e. reset is only possible if the pressure has reached its reset threshold.

TEST LEVER (Figure 2)

The "Test" Lever is available on all Pressure Controls models. After completion of installation, check lever can be used to manually override the electrical contact position for testing out the system/device

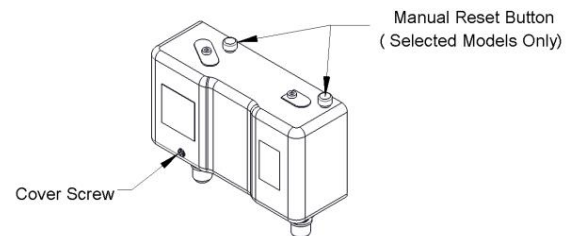


Figure 3.a

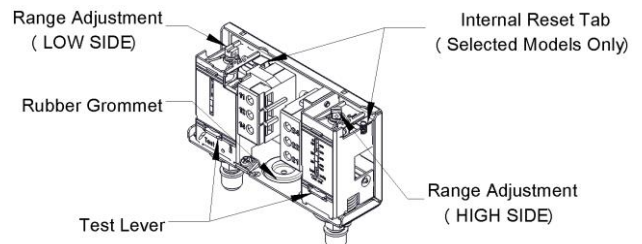


Figure 3.b