



Quality / Technology / Service / Value

PRESSURE SWITCH FOR WATER PUMP, AIR COMPRESSOR AND REFRIGERATION SYSTEMS RP- 44 Series



Main Characteristic of the Pressure Switch

- ✓ Wide regulating range
- ✓ Compact, space-saving design – easy to install in panels
- ✓ Shock and impact resistance
- ✓ Ultra-short contact bounce times – minimizes wear and increases reliability
- ✓ Front-facing electrical connection – simplifies rack mounting and saves space
- ✓ Suitable for both alternating current (AC) and direct current (DC)
- ✓ Manual trip function allows electrical testing without tools
- ✓ High reliability in both electrical and mechanical performance
- ✓ Compact and durable construction



INSTALLATION AND INSTRUCTION MANUAL
Warranty guide pressure switch



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Product Description

The RP44 Series Pressure Controls are designed for various functions in commercial refrigeration and air-conditioning systems, including high and low-pressure cut-out control, pump-down control, condenser fan cycling, and capacity control. They are compatible with most common refrigerants and can also be used with other non-corrosive fluids. Additionally,

The controls are available with different electrical ratings and Single-Pole, Double-Throw (SPDT) switch configurations.

The RP44 Series are designed to enhance system efficiency, provide reliable equipment protection, and offer proactive system monitoring for commercial refrigeration and HVAC applications. They are available in various configurations, including single and dual function electromechanical pressure controls suitable for low and high-pressure applications, such as low and high-pressure cut-out, pump-down control, and condenser fan cycling.

Applications

RP44 Series Controls provide both high- and low-pressure control on industrial, residential and commercial refrigeration and air conditioning applications.

General terms and conditions

The mechanical pressure switch described in the operating instructions has been designed and manufactured using state-of-the-art technology. All components undergo stringent quality and environmental checks during production.

These operating instructions contain important information for handling the instrument. Working safely requires observing all safety and operational instructions.

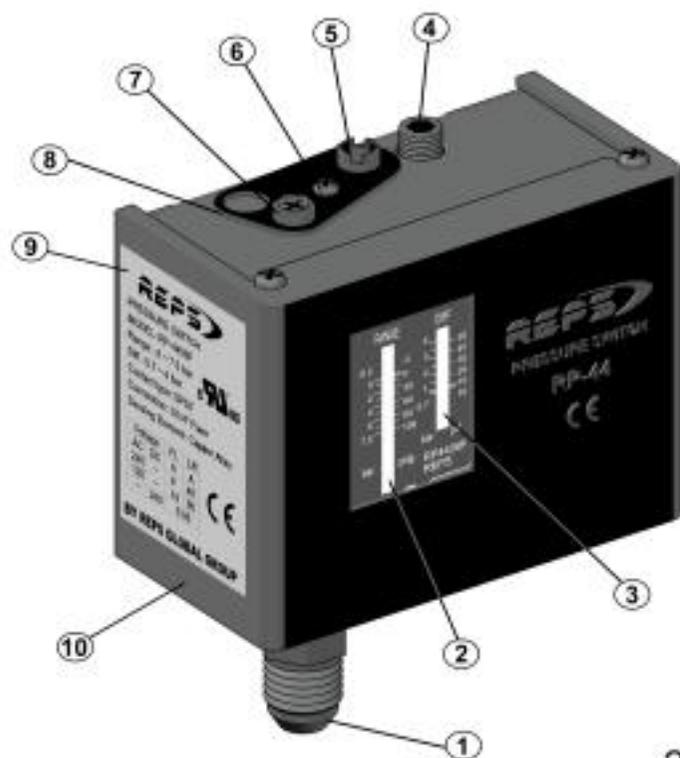
Observe the relevant local accident prevention regulations and general safety guidelines for the instrument's intended range of use.

The operating instructions are part of the product and must be kept in close proximity to the instrument and readily accessible to skilled personnel at all times.

Skilled personnel must have carefully read and understood the operating instructions before starting any work.

The manufacturer's liability is void in the event of damage caused by using the product for purposes other than its intended use, failure to comply with these operating instructions, assignment of inadequately qualified personnel, or unauthorized modifications to the instrument.

Overview



- 1) Process connection
- 2) Display range set point
- 3) Display differential set point
- 4) Forbidden to twist
- 5) Differential adjustment screw
- 6) Lock plate screw
- 7) Range adjustment screw
- 8) Lock plate
- 9) Specification label
- 10) ABS plastic cover

Safety and Explanation of Symbols

**WARNING!**

Indicates a potentially dangerous situation that could result in serious injury or death if not avoided.

**CAUTION!**

It indicates a potentially dangerous situation that could result in minor injuries or damage to property or the environment if not avoided.

**DANGER!**

Identifies hazards caused by electrical power. Failure to observe The safety instructions may result in serious or fatal injuries.

**WARNING!**

It indicates a potentially dangerous situation that could result in burns caused by hot surfaces or liquids if not avoided.

**Information:**

Provides useful tips, recommendations, and information for efficient and trouble-free operation.

Application Guidelines

The RP44 model mechanical pressure switch is equipped with an SPDT (Single Pole Double Throw) switch contact and is designed for use in industrial control, monitoring, and alarm applications. The switch point can be set up by the customer on-site. This instrument can switch electrically loads up to *AC 230 V, 50/60 Hz, 10 A.

The RP44 pressure switch is suitable for a variety of applications involving non-corrosive media such as oil, water, and air.

Only use the instrument in applications that fall within its technical performance limits (e.g., maximum ambient temperature, material compatibility, etc.).

WARNING! This instrument is not permitted for use in hazardous areas.

The instrument has been specifically designed and built for the intended use described here. It should only be used in accordance with these specifications.

The manufacturer shall not be liable for any claims resulting from improper operation outside of the intended use.

Inappropriate Use

WARNING!

Risk of injury due to improper use, Improper use of the instrument can lead to hazardous situations and cause injuries. Any use that exceeds or differs from the intended purpose is considered improper use.

- ✓ Do not make unauthorized modifications to the instrument.
- ✓ Do not use the instrument in hazardous areas.
- ✓ Do not use the instrument with abrasive or highly viscous media.

Personnel Qualification

WARNING! Risk of injury due to insufficient qualification!

Improper handling can lead to significant injury and equipment damage.

The activities described in these operating instructions must only be carried out by qualified personnel with the necessary qualifications outlined below.

Skilled electrical personnel are those who, based on their technical training, knowledge, experience, and understanding of country-specific regulations, Current standards, and directives, are capable of working on electrical systems. They are able to independently identify and avoid potential hazards. Skilled Electrical personnel are specifically trained for the work environment they are in and are familiar with the relevant standards and regulations. They must comply with all applicable legal accident prevention regulations.

Transport, Packaging, and Storage

Transport:

Before using it, inspect the instrument for any damage that may have occurred during transport. Any visible damage must be reported immediately.

CAUTION!

Improper handling during transport can cause significant property damage.

When unloading packed goods upon delivery or during internal transport, handle carefully and pay attention to the symbols on the packaging.

If the instrument is moved from a cold environment to a warmer one, condensation may form, which could cause malfunction. Before putting the instrument back into operation, allow the temperature of the instrument and the room to equalize.

Packaging and Storage

Do not remove the packaging until just before installation.

Keep the packaging, as it provides optimal protection during transport (e.g., in case of relocation or repair).

Permissible Conditions at the Place of Storage:

- Storage Temperature: -20 ... +80 °C (-4 ... +176 °F)
- Humidity: 35 ... 85% relative humidity (no condensation)

Avoid Exposure to the Following Factors:

- Direct sunlight or proximity to hot objects
- Mechanical vibration or shock (e.g., dropping the instrument)
- Soot, vapor, dust, and corrosive gases
- Hazardous environments or flammable atmospheres

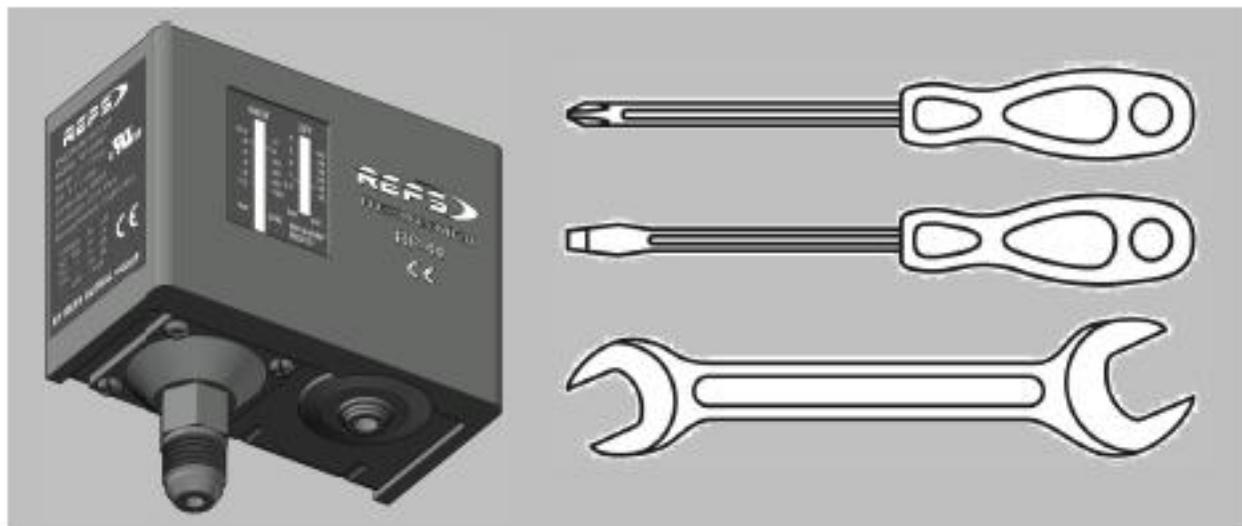
Store the instrument in its original packaging in a location that meets the conditions outlined above.

Commissioning and Operation

Before installation, commissioning, and operation, ensure that the correct instrument has been selected, taking into account the design specifications and the specific measuring conditions.

Required Tools:

- Phillips screwdriver (200 mm)
- Screwdriver (6x100 mm)
- Open-ended spanner (14 mm)



Requirements regarding the Measuring Point

1. **Process Pressure:**
The process pressure must not exceed the specified maximum operating pressure of the device.
2. **Temperature Limits:**
Ambient and medium temperatures must remain within the defined performance limits of the equipment.
3. **Weather Protection:**
The measuring point must be adequately protected from direct weather influences (e.g. rain, snow, UV exposure).
4. **Vibration and Shock:**
Vibrations or shocks occurring at the installation site must not exceed allowable limits within a frequency range of 10 to 150 Hz.
5. **Sealing Surfaces:**
All sealing faces must be clean, dry, and free from damage to ensure proper sealing.

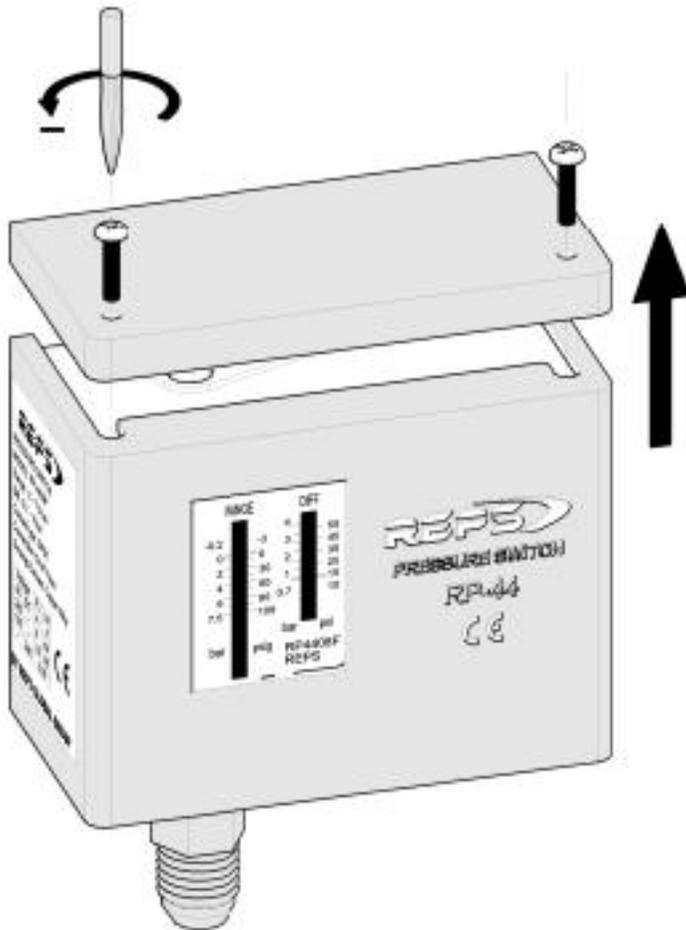
Mechanical Mounting

1. **Visual Inspection:**
After unpacking, visually inspect the instrument for any signs of damage. Do not proceed with installation if damage is detected.
2. **Depressurized State:**
Mounting is only allowed when the system is completely depressurized. Ensure the instrument is safely depressurized using appropriate valves and protective devices before beginning installation.
3. **Sealing Requirements:**
Use seals that are compatible with the type of process connection on the instrument to ensure leak-free operation.
4. **Proper Tightening:**
When screwing the instrument into place, apply tightening force only through the designated spanner flats on the process connection - not through the housing. Use a suitable tool and apply the correct tightening torque based on the type of connection used.

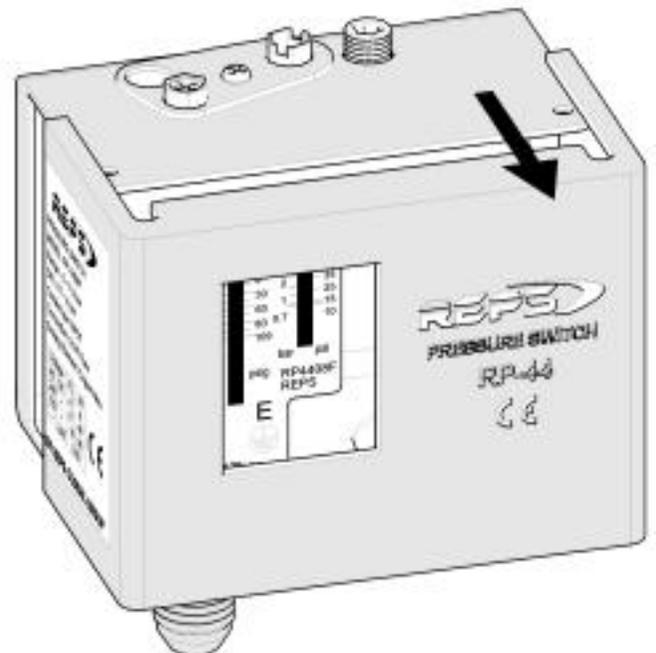
5. Panel Mounting:

For panel installation, the device provides three \varnothing 5.2 mm (0.2 in) mounting holes. To access these, the plastic cover must first be removed as previously described.

Default switch point setting

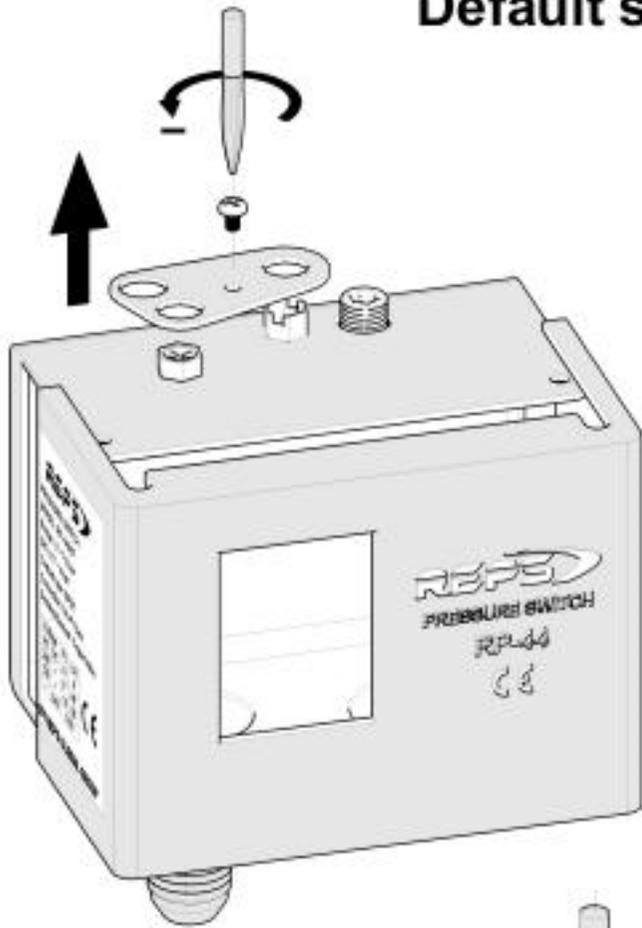


1- Remove the protection cap for switch point setting

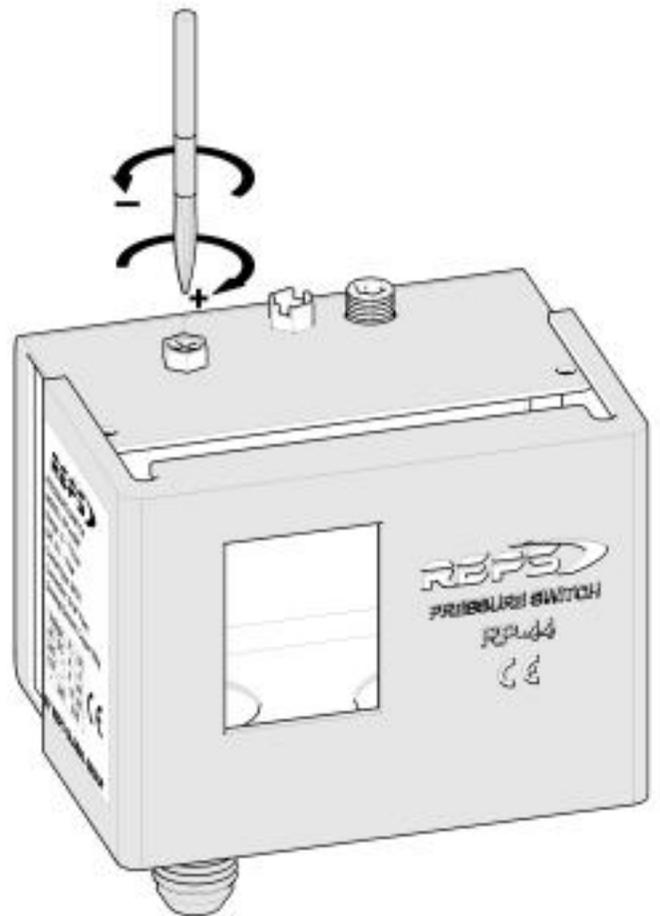


2- Remove the main cover

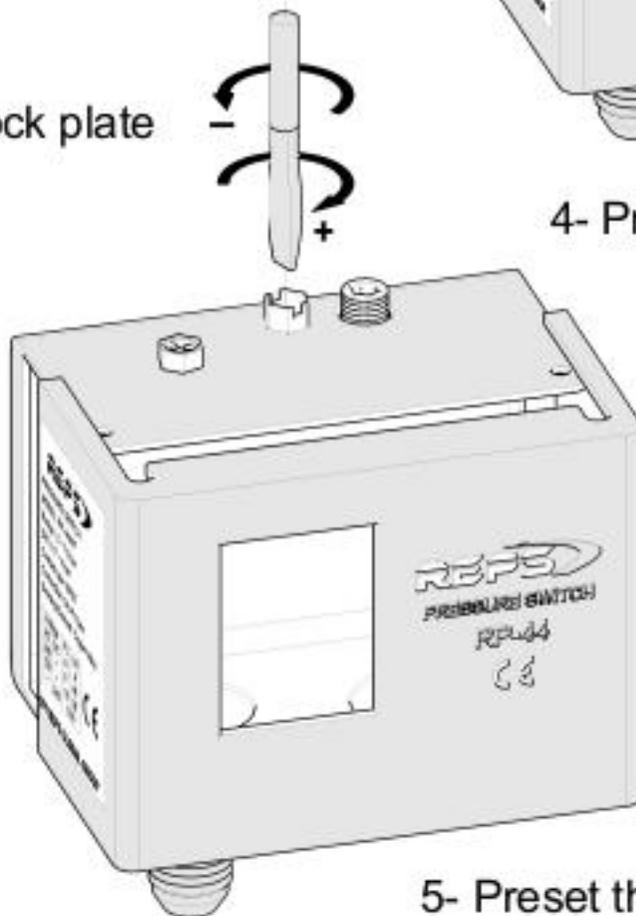
Default switch point setting- 2



3- Remove the lock plate



4- Preset the switch differential



5- Preset the switch point

Electrical mounting



DANGER!

Risk of Fatal Injury from Electric Shock

The safety instructions may result in serious or fatal injuries.

- Installation and mounting must only be carried out by qualified personnel.
- Before starting any work, switch off the load circuit and ensure it is securely locked out to prevent unauthorized reactivation.

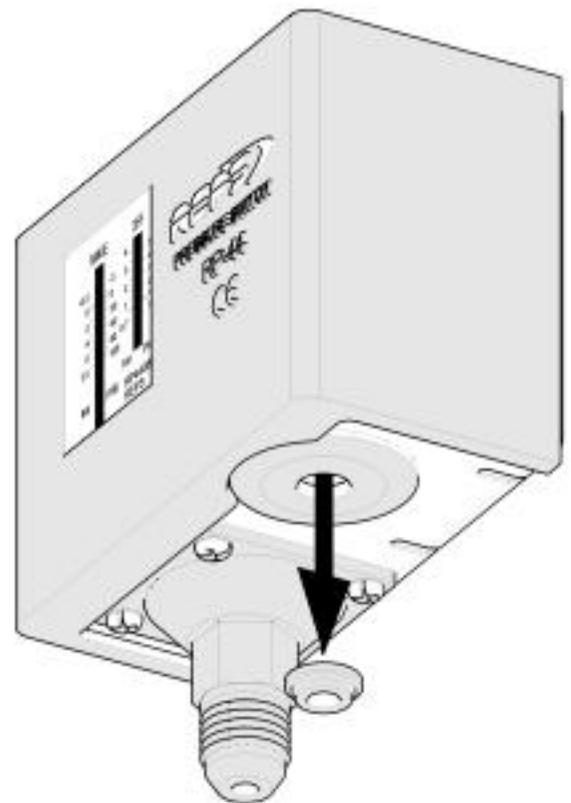
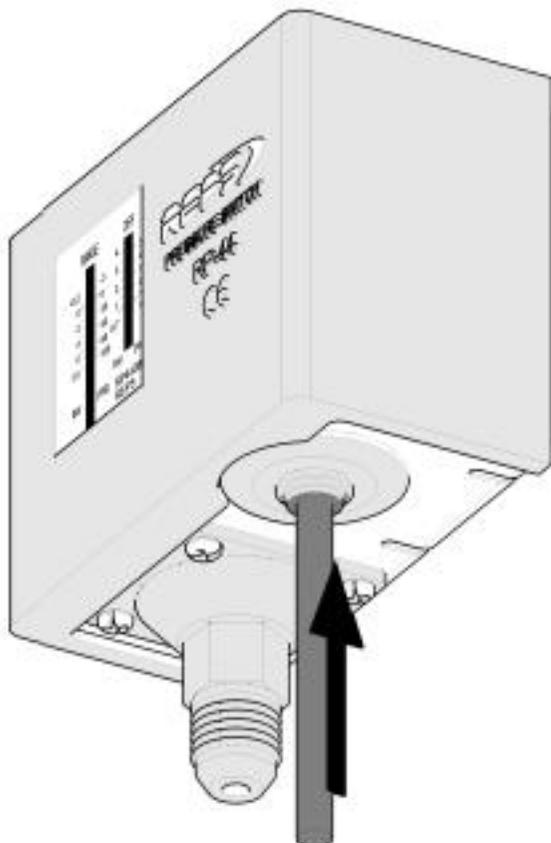
Cable Preparation

- Select cables based on the maximum current expected in the circuits.
- Ensure cables have adequate UV resistance and mechanical durability.

Recommended Cable Specifications:

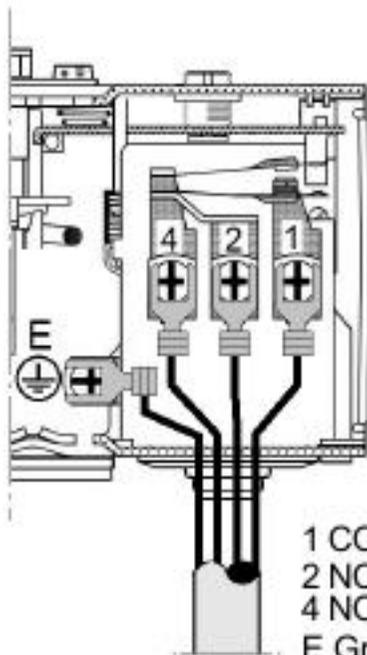
- Type: 4-wire cable
- Conductor Cross-Section: 1.5 mm²
- Maximum Outer Diameter: Ø 14 mm
- Wire Ends: Fitted with spade lugs

Clamping the cable

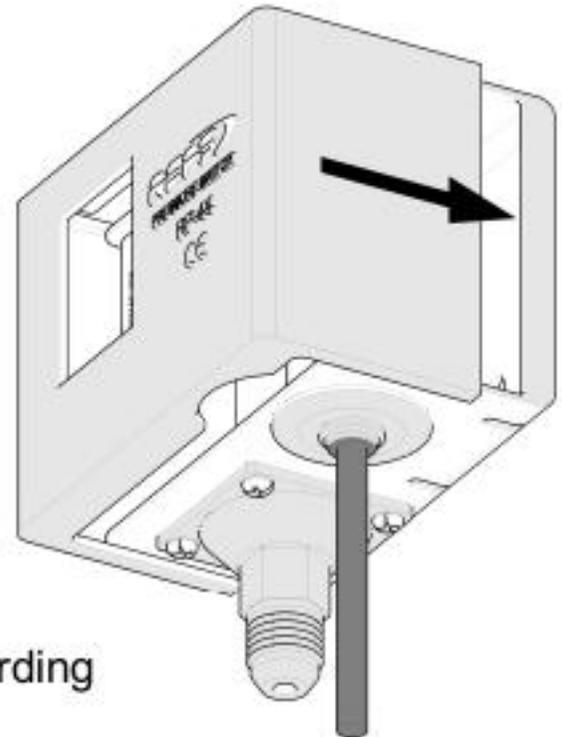


1. Remove the rubber grommet and select the appropriate insert to match the cable diameter.

2. Reinsert the grommet and route the cable as illustrated in the wiring diagram.



1 COM Common contact
2 NC Normally closed
4 NO Normally open
E Ground connection



3. Connect the wires to the terminal according to the required switching function.

- Maximum tightening torque:
2 Nm (18 lbf·in)

4. Close the plastic cover and secure it using the screw.

Faults

CAUTION!

Risk of injury and damage to property or the environment

If faults cannot be resolved using the corrective measures listed, the instrument must be taken out of service immediately.

- * Ensure that the instrument is depressurized, and the load circuit is switched off.
- * Take appropriate measures to prevent accidental reactivation.
- * Contact the manufacturer.
- * If a return is necessary, please follow the instructions in page 13 "Return".

WARNING!

Risk of injury and damage due to hazardous media

In the event of contact with hazardous substances—such as corrosive, toxic, or carcinogenic media—as well as with systems like refrigeration plants and compressors, there is a significant risk of injury and environmental or property damage. In case of failure, aggressive media at extremely high temperatures and under high pressure or vacuum may be released from the instrument.

- * In addition to standard safety regulations, ensure compliance with all relevant industry codes and local safety regulations when handling such media.

Fault	Cause	Measure
Contact dose not switch in accordance with the set switch / reset point	Electrical connection interrupted.	Perform a continuity test on the electrical wiring.
	Wiring err (or, e.g. short circuit)	Check the pin assignment and correct if necessary
	Electrical load unsuitable for the switch contact model	Ensure the electrical load is within the permissible range for the switch contact.
	Contact contamination	
	Switch differential greater than the switch point.	Adjust switch point using the appropriate test setup.
	Vibrations	Mechanically decouple the instrument.
Short circuit	Due to moisture ingress	Ensure usage only within the specified environmental conditions (check IP rating).
Contact chatter (repeated, short-duration opening and closing).	Vibrations	Mechanically decouple the instrument.
Switching status remains unchanged despite reaching the switch point / reset point.	Incorrect switch point setting.	Adjust switch point using the appropriate test setup.
	Defective contacts (e.g. fused contact zone)	Replace the instrument. Before recommissioning, install a protective circuit for the contact.
	Blocked pressure port	Replace instrument.
Leakage	Faulty sealing or connection	Perform a leak test. Reseal the process connection or replace the instrument.

Maintenance and Cleaning

Maintenance

The instrument is maintenance-free.

However, the switch point setting must be verified after 2 years of operation.

Perform this check using an appropriate test assembly.

Note:

Repairs must only be performed by the manufacturer. Unauthorized repairs may affect safety and functionality.

Cleaning



CAUTION!

Risk of injury, property damage, and environmental harm

Improper cleaning can result in personal injury, equipment damage, or environmental hazards. Residual media inside the dismantled instrument pose risks.

* Follow the cleaning instructions below carefully:

1. Properly disconnect the instrument from the pressure supply and switch off the load circuit before cleaning.
2. Use appropriate personal protective equipment (PPE).
3. Clean the instrument using a moist cloth.

Important: Do not allow moisture to contact electrical connections!



CAUTION!

Instrument damage due to improper cleaning

* Do not use aggressive cleaning agents.

* Do not use hard or pointed tools for cleaning.

4. Thoroughly wash or clean the dismantled instrument to prevent any exposure to residual media, ensuring safety for personnel and the environment.

Dismounting, Return, and Disposal



WARNING!

Risk of injury, property damage, and environmental harm due to residual media

Residual media in the dismantled instrument can pose hazards to people, the environment, and equipment.

* Refer to the material safety data sheet (MSDS) for the specific medium.

* Thoroughly wash or clean the dismantled instrument to eliminate Residual media before handling or transport.

Dismounting



WARNING!

Risk of burns

Dangerously hot media may escape during dismantling.

* Allow the instrument to cool down completely before starting the dismantling process.

**DANGER!*****Risk to life from electric shock***

Contact with live electrical components can be fatal.

- * Dismounting must only be performed by qualified personnel.
- * Ensure the system is completely isolated from all power sources before removing the instrument.

WARNING!***Physical injury risk from aggressive media and pressure***

- * Always consult the MSDS for the medium used.
- * Only dismount the instrument when the system is depressurized.

Return

When shipping the instrument, strictly observe the following instructions:

- * All instruments returned to REPS must be completely free of hazardous substances (e.g. acids, bases, solutions).
- * Instruments must be thoroughly cleaned before return.

**WARNING!*****Risk of injury, environmental, or property damage due to residual media***

- * If the instrument was used with hazardous substances, include the Material Safety Data Sheet (MSDS) for the medium.
- * Clean the instrument thoroughly according to the procedure in page 12 "Cleaning".

Use the original packaging or other suitable protective packaging when returning the instrument to ensure safe transport.

Disposal**CAUTION!**

Improper disposal may harm the environment

- * Dispose of instrument components and packaging materials in an environmentally responsible manner.
- * Follow all local and country-specific waste disposal regulations.

Specifications

Operating conditions

Permissible temperature ranges

Ambient: -40 ... +70 °C (-40 ... +158 °F)

Medium: -20 ... +100 °C (-4 ... +212 °F)

Storage: -20 ... +80 °C (-4 ... +176 °F)

Ingress Protection

Rating: IP30

Note: The stated ingress protection is valid only if all mounting holes at the rear of the instrument are covered, or when the instrument is panel-mounted on a flat surface.

Reference Conditions

Relative humidity

o < 50 % r.h. at 40 °C (104 °F)

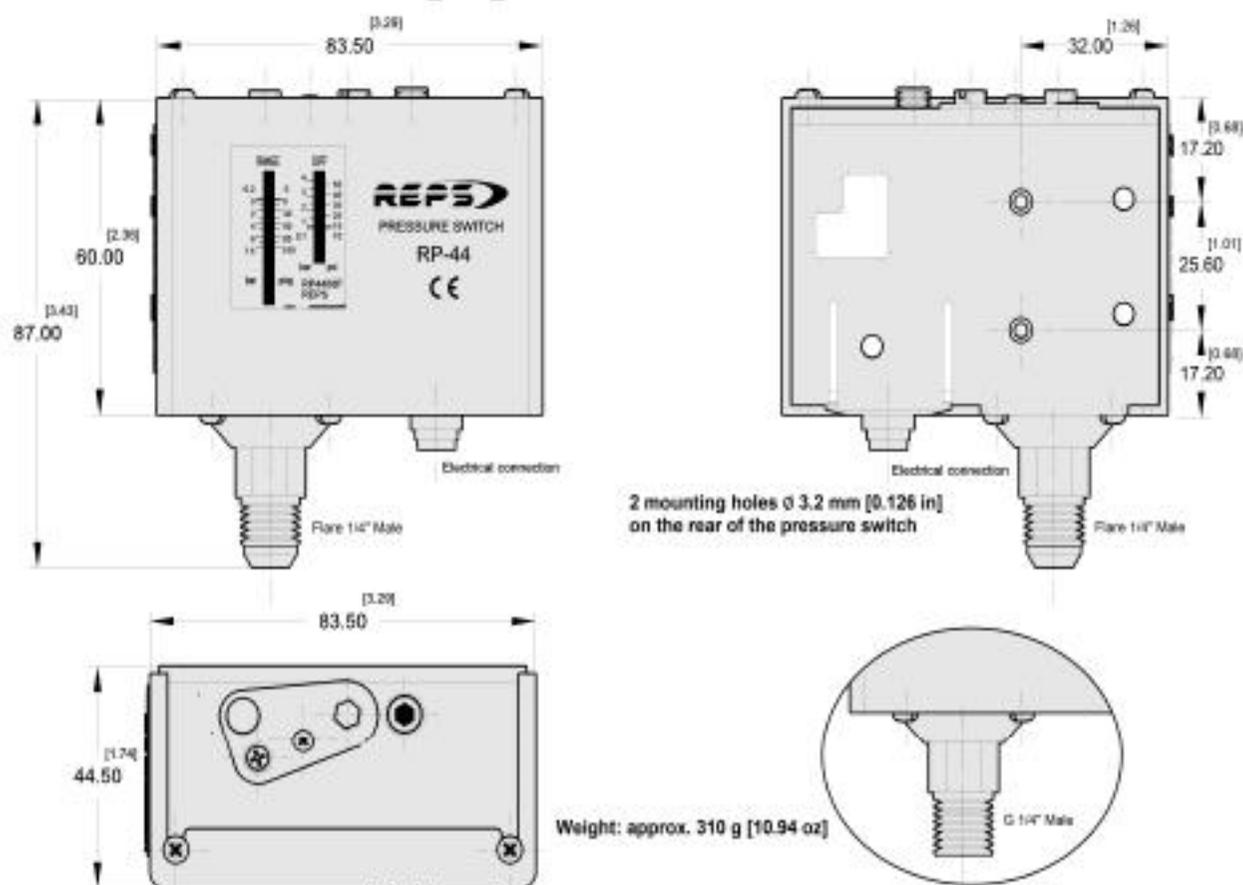
o < 90 % r.h. at 20 °C (68 °F)

Model	Adjustable range ^[1]		Differential ^[2]		Factory setting		Max working pressure (Bar)
	(Bar)		(Bar)		(Bar)		
	Min.	Max.	Min.	Max.	OFF	ON	
RP4402	-0.5	2	0.2	0.7	1	0.5	16.5
RP4403	-0.5	3	0.35	1.5	2	1	16.5
RP4406	-0.5	6	0.6	4	3	2	16.5
RP4406M	-0.5	6	Reset Differential ≤ 1bar		3	Manual Reset	16.5
RP4408	-0.2	7.5	0.7	4	3	2	20
RP4410	1	10	1	3	6	5	16.5
RP4414	2	14	1	4	10	8	20
RP4416	3	16	1	4	10	8	35
RP4420	5	20	2	5	16	13	35
RP4430	8	30	Fixed at 3 to 5		20	15~17	35
RP4430M	8	30	Reset Differential ≤ 4bar		20	Manual Reset	35
RP4430D	5	30	3	10	20	15	35
RP4432	8	32	2	6	20	17	35
RP4442	8	30	4	10	30	25	46.5

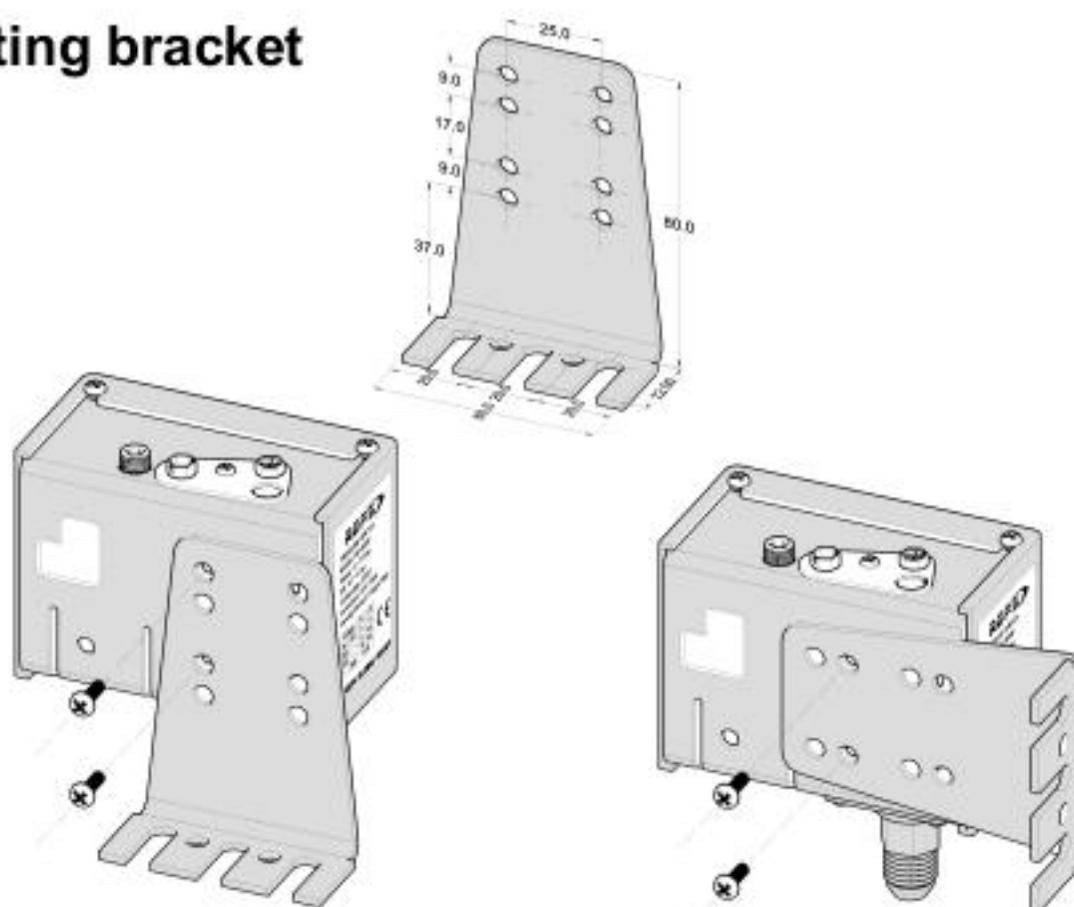
[1] Switch points and reset points must be set within the adjustable range of the instrument.

[2] The difference between the switch point and the reset point is referred to as the switching differential.

Dimensions in mm [in]



Mounting bracket



**PRESSURE SWITCH FOR
WATER PUMP, AIR COMPRESSOR
AND REFRIGERATION SYSTEMS
RP- 44 Series**



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