

Danfoss KP 1

Danfoss KP 1 Manual Pressure Switch User Manual

Model: KP 1 | Brand: Danfoss

1. INTRODUCTION AND OVERVIEW

The Danfoss KP 1 is a robust manual pressure switch designed for a wide range of industrial applications. It is suitable for use in systems requiring precise pressure monitoring and control, such as boilers, gas compressors, automotive systems, pumps, steam turbines, and steam power plants. This device operates within a pressure range of -2.90 to 108 PSI, providing reliable performance in demanding environments. Its compact design and durable construction ensure long-term stability and accuracy.

2. SAFETY INFORMATION

Before installation, operation, or maintenance, read and understand all instructions and safety warnings. Failure to follow these instructions may result in property damage, serious injury, or death.

- **Qualified Personnel Only:** Installation and servicing must be performed by qualified and authorized personnel familiar with electrical and pressure systems.
- **Disconnect Power:** Always disconnect power to the system before performing any installation, wiring, or maintenance.
- **Pressure Release:** Ensure all pressure is safely released from the system before attempting to install or remove the switch.
- **Proper Wiring:** Adhere to all local and national electrical codes. Ensure correct wiring connections to prevent electrical hazards.
- **Environmental Conditions:** Do not expose the switch to conditions beyond its specified operating limits (e.g., extreme temperatures, corrosive environments) unless specifically designed for such use.
- **Personal Protective Equipment (PPE):** Wear appropriate PPE, including safety glasses and gloves, during installation and maintenance.

3. PRODUCT FEATURES

The Danfoss KP 1 pressure switch incorporates several features for reliable and precise pressure control:

- **Wide Pressure Range:** Capable of operating from -2.90 PSI to 108 PSI.
- **SPDT Switch Type:** Single Pole Double Throw (SPDT) contact for versatile control applications.
- **Surface Mount Design:** Facilitates easy and secure installation.
- **Push Button Actuator:** For manual reset or testing functions.
- **IP30 International Protection Rating:** Provides protection against solid objects larger than 2.5mm.
- **Durable Construction:** Made with copper material for longevity and performance.

4. SETUP AND INSTALLATION

Proper installation is crucial for the accurate and safe operation of the Danfoss KP 1 pressure switch.

4.1 Mounting

The KP 1 is designed for surface mounting. Select a stable, vibration-free location that is easily accessible for adjustments and maintenance. Use appropriate fasteners to secure the switch firmly to the mounting surface.



Figure 1: Danfoss KP 1 Pressure Switch, illustrating the surface mount design and pressure connection port.

4.2 Pressure Connection

Connect the pressure line from your system to the inlet port of the pressure switch. Ensure a leak-tight connection using appropriate sealing materials (e.g., PTFE tape or thread sealant) and tools. Avoid overtightening to prevent damage to the switch or piping.



Figure 2: Bottom view of the Danfoss KP 1, highlighting the pressure inlet connection.

4.3 Electrical Wiring

Wire the pressure switch according to the system's electrical schematic and local codes. The KP 1 features an SPDT (Single Pole Double Throw) terminal, allowing for flexible control configurations (e.g., normally open or normally closed operation). Ensure all connections are secure and insulated.

5. OPERATING INSTRUCTIONS

The Danfoss KP 1 pressure switch is designed for automatic operation once the set points are configured.

5.1 Setting Pressure Points

The switch features adjustable set points for both cut-in (ON) and cut-off (OFF) pressures. These adjustments are typically made using a screwdriver on the internal adjustment screws, visible through the transparent cover. Refer to the scale on the device for precise settings.



Figure 3: Top view of the Danfoss KP 1, showing the 'CUT IN' and 'OFF' pressure setting scales in bar and psig.

- **Cut-in Pressure:** This is the pressure at which the switch will activate (e.g., turn on a pump).
- **Cut-off Pressure:** This is the pressure at which the switch will deactivate (e.g., turn off a pump).
- **Differential:** The difference between the cut-in and cut-off pressures. This can often be adjusted independently or is fixed.

After setting, carefully observe the system's behavior to ensure the switch operates as intended within the desired pressure range.

5.2 Manual Reset/Test

If equipped with a push-button actuator, this can be used for manual reset or to test the switch's operation. Consult your system's specific requirements for when a manual reset might be necessary.

6. MAINTENANCE

Regular maintenance ensures the longevity and accurate performance of your Danfoss KP 1 pressure switch.

- **Visual Inspection:** Periodically inspect the switch for any signs of physical damage, corrosion, or loose connections.
- **Cleanliness:** Keep the switch free from dust, dirt, and moisture. Use a soft, dry cloth for cleaning. Do not use abrasive cleaners or solvents.
- **Connection Integrity:** Check pressure and electrical connections for tightness and absence of leaks.
- **Functional Test:** If possible and safe to do so, periodically test the switch's operation by simulating pressure changes to verify its cut-in and cut-off points.

7. TROUBLESHOOTING

This section provides guidance for common issues. For complex problems, contact qualified service personnel.

- **Switch Not Activating/Deactivating:**
 - Verify system pressure is within the switch's operating range and set points.
 - Check electrical connections for continuity and proper wiring.
 - Inspect for blockages in the pressure sensing line.
 - Ensure power supply to the control circuit is present.
- **Inaccurate Switching:**
 - Recalibrate the set points using a known accurate pressure gauge.
 - Check for pressure fluctuations or pulsations in the system that might affect readings.
 - Ensure the switch is not exposed to excessive vibration.
- **Leakage at Pressure Connection:**
 - Ensure proper thread sealant was used during installation.
 - Tighten the connection, but do not overtighten.
 - Inspect the threads for damage.

8. SPECIFICATIONS

Specification	Detail
Model	KP 1
Brand	Danfoss
Operation Mode	Auto
Switch Type	Pressure Switch, SPDT
Terminal	SPDT
Material	Copper
Mounting Type	Surface Mount
Actuator Type	Push Button
International Protection Rating	IP30
Connectivity Protocol	X-10
Pressure Range	-2.90 to 108 PSI (approx. -0.2 to 7.5 bar)

9. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or service, please contact Danfoss customer service or visit the official Danfoss website. Keep your purchase receipt and product model information readily available when seeking support.

Danfoss Official Website: www.danfoss.com