ENGINEERING TOMORROW

Data sheet

Pressure switches
KP

KP Pressure Switches
Danfoss KP switches are used for regulating, monitoring and alarm systems in the industry. They provide automatic limit protection or manual reset limit protection for pressure systems. Can be used with steam, air, gaseous and liquid media.

The pressure switches are fitted with single-pole changeover switch (SPDT). The position of the switch depends on the setting of the pressure switch and the pressure in the connector.

KP Thermostats
KP thermostats are temperature-operated electric circuit breakers. The thermostats are fitted with single-pole changeover switch (SPDT).

The position of the switch depends on the thermostat setting and sensor temperature. A KP thermostat can be connected and switch to single-phase alternating current motors of up to 2 kW.

Features

- Wide regulating range
- Small dimensions
  Space-saving, easy to install in panels
- Shock and impact resistant
- Ultra-short bounce time.
  Limits wear to an absolute minimum and increases reliability
- Snap action electrical contacts minimize chatter, bounce, and wear, and ensure long term electrical and mechanical reliability
- Electrical connection from front of the unit.
  Makes rack mounting easier and also saves space
- Suitable for alternating current and direct current
- Screwed wiring, makes rewiring easy
- Manual trip allows electrical function test without tools
- Versions with automatic and manual reset available

Approvals

UL listed for USA and Canada according to UL 353 and UL 873

CE marked in accordance to EN 60947-4/05

PRESSURE SWITCHES

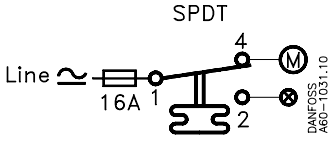
Technical data

Ambient temperature			-40 – 150 °F (175 °F for short period of time)
Media temperature			-40 – 212 °F
Sensor material			Tinned copper Cu/Sn5
Parts in contact with medium:		Bellows:	stainless steel
		Pressure connection:	free-cutting steel, nickel plated
Wire dimension			12 AWG max.
Contact system			SPST (close on temp. rise), SPDT
			Contact material AgCdO
Contac load	Alternating current	FLA	0.5 ~ 16 A/120 V AC 0.5 ~ 8 A/240 V AC
		LRA	96 A/120 V AC 48 A/240 V AC
	Direct current		240 V DC: 12W pilot duty
Enclosure			NEMA ~1 (when mounted on a flat surface with all unused holes covered)
Cable entry			Integral ½ in female NPSM swivel cable connector, allows direct attachenments of ½ in. male pipe thread connector

Ordering

Type	Range [psig]	Differential [psi]	Reset	Pressure connection	Max. operating pressure [psig]	Min. burst pressure [psig]	Code nos
KP 34	2 – 15	2 – 6	Autmatic	¼" 18 NPT	58	435	**060-214966**
KP 34	2 – 15	3 fixed	Manual	¼" 18 NPT	58	435	**060-214866**
KP 35	6 – 50	6 – 32	Automatic	¼" 18 NPT	145	1015	**060-215166**
KP 35	6 – 50	7 fixed	Manual	¼" 18 NPT	145	900	**060-215066**
KP 36	15 – 150	10 – 58	Automatic	¼" 18 NPT	245	1015	**060-214466**
KP 36	15 – 150	10 fixed	Manual	¼" 18 NPT	245	1015	**060-214566**
KP 37	58 – 300	26 – 45	Automatic	¼" 18 NPT	405	1450	**060-214666**
KP 37	58 – 300	43 fixed	Manual	¼" 18 NPT	405	1450	**060-214766**

Contact system and application

Switch type - single pole double throw	Switch action	Application
	1. Terminals 1 – 4 close high and open low Terminals 1 – 2 can be used as low pressure alarm	1. Low pressure cut-out
	2. Terminals 1 – 2 open high and close low Terminals 1 – 4 can be used as high pressure alarm	2. High pressure cut-out

Setting

Cut-in and cut-out pressures of the system should always be checked with an accurate pressure gauge.

Pressure setting for switches with automatic reset.
Set the cut-out pressure on RANGE scale and differential on DIFF scale.

Note:
Restart pressure is equal to cut-out pressure minus differential value.

Pressure switches with manual reset
Set the cut-out pressure on the RANGE scale. Pressure limiters can be manually reset by pressing reset button when the pressure is equal to the cut-out pressure minus fixed value of the differential.

Terminology

Set point
A predetermined value to which a switch is adjusted and at which it performs its intended function.

Reset
1. **Manual reset**
   Units with manual reset can only be restored to operational mode by activation of the external reset button.
2. **Automatic reset**
   Units with automatic reset is restored to operational mode automatically.

Maximum working pressure
The maximum permissible pressure for safe functioning of a heating system or any of its part.

Snap function
A specific contact force is maintained until snap is initiated. The time over which contact force reaches zero is a few milliseconds; therefore, contact bounce cannot occur as a result, for example, of slight vibrations before cut-out. The snap-action contact system will continue to function even when micro-welds are
created between the contacts during cut-in. The force created to separate the contacts is strong, and instantly shears off all contact surface welds that have been created as the result of cut-in action. These design features ensure that the cut-out point of the KP switch remains very accurate and completely
independent of the magnitude of the current load.

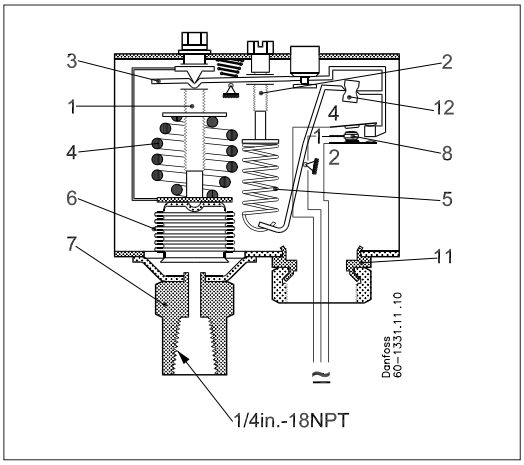
FLA -Motor Full Load Amperes
FLA is the largest current that a motor or other device is designed to carry at rated voltage and other specific conditions. Also often called current at rated conditions.

LRA - Locked Rotor Amperes
LRA is the current in amperes drawn by an electric motor with the shaft or rotor immobilized.

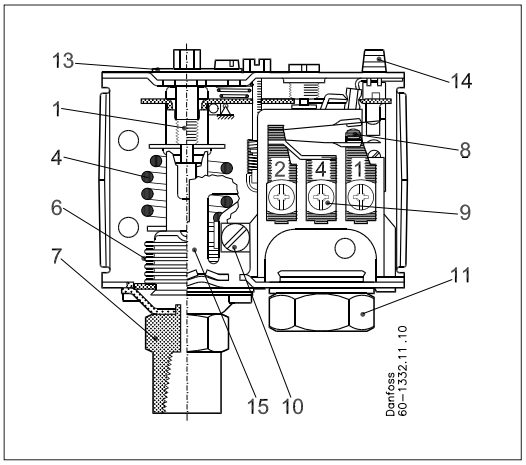
Design and function

1. Range setting spindle
2. Differential setting spindle
3. Main arm
4. Main spring
5. Differential spring
6. Bellows
7. Pressure connector
8. Contact system
9. Switch terminals
10. Ground terminal
11. Cable entry: ½ in female NPSM
12. Tumbler
13. Locking screw
14. Manual reset
15. Distance plate

Key sketch of KP pressure switch



Simplified drawing of KP pressure switch without front cover and scale. Version with manual reset

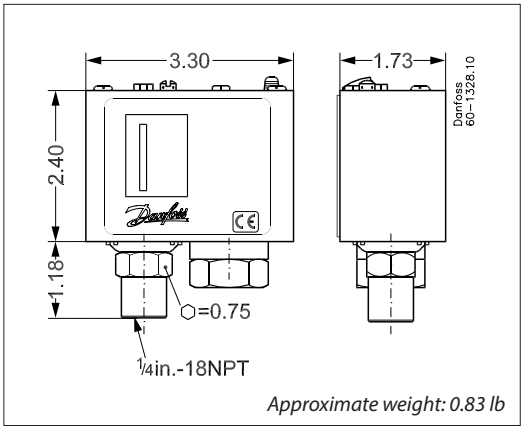


The contact system of KP switches has a snap-action function and the bellows moves only when cut-in or cut-out set point is reached.
The design has the following advantages:

- higher contact load
- ultra short bounce time
- long mechanical and electrical lifetime
- high resistance to vibrations and pulsations

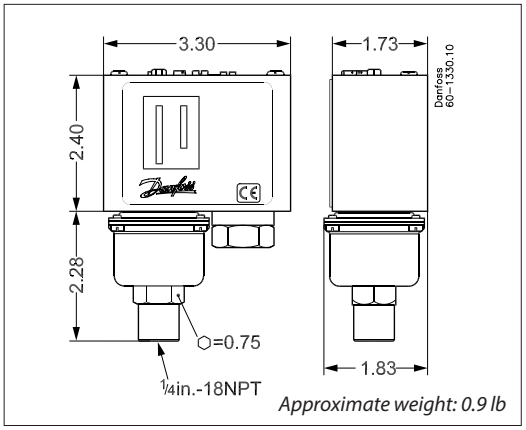
Dimensions [in]

KP 35, KP 36 and KP 37



Approximate weight: 0.83 lb

KP 34



Approximate weight: 0.9 lb