PRESSURE SWITCH

Technical data and ordering

KPS 31, KPS 33

KPS 35, KPS 37, KPS 39

KPS 43, KPS 45, KPS 47

When ordering, please state type and code number

1. Pressure switches

Type	Setting range P_e [bar]	Adjustable/ fixed differetial [bar]	Permissible operating pressure P_e [bar]	Max. test pressure [bar]	Pressure connection	Code no.
KPS 31	0 – 2.5	0.1	6	6	G 1/4	**060-311066**
KPS 31	0 – 2.5	0.1	6	6	G 3/8 A	**060-310966**
KPS 33	0 – 3.5	0.2	10	10	G 1/4	**060-310466**
KPS 33	0 – 3.5	0.2	10	10	G 3/8 A	**060-310366**
KPS 35	0 – 8	0.4 – 1.5	12	12	G 1/4	**060-310566**
KPS 35	0 – 8	0.4 – 1.5	12	12	G 3/8 A	**060-310066**
KPS 35	0 – 8	0.4	12	12	G 1/4	**060-310866**
KPS 37	6 – 18	0.85 – 2.5	22	27	G 1/4	**060-310666**
KPS 37	6 – 18	0.85 – 2.5	22	27	G 3/8 A	**060-310166**
KPS 39	10 – 35	2.0 – 6	45	53	G 1/4	**060-310766**
KPS 39	10 – 35	2.0 – 6	45	53	G 3/8 A	**060-310266**

2. Pressure switches for high pressure and strongly pulsating media

Type	Setting range P_e [bar]	Adjustable diff. see also figs. 1, 2, and 3 [bar]	Permissible overpressure [bar]	Max. test pressure [bar]	Min. burst pressure [bar]	Pressure connection	Code no.
KPS 43	1 – 10	0.7 – 2.8	120	180	240	G 1/4	**060-312066**
KPS 45	4 – 40	2.2 – 11	120	180	240	G 1/4	**060-312166**
KPS 47	6 – 60	3.5 – 17	120	180	240	G 1/4	**060-312266**

Terminology

Range setting
The pressure range within which the unit will give a signal (contact changeover).

Differential
The difference between make pressure and break pressure (see also fig. 5 & 6, page 6).

Permissible overpressure
The highest permanent or recuiring pressure the unit can be loaded with.

Max. test pressure
The highest pressure the unit may be subjected to when, for example, testing the system for leakage. Therefore, this pressure must not occur as a recurring system pressure.

Min. bursting pressure
The pressure which the pressure-sensitive element will withstand without leaking.

Technical data and ordering *(continued)*

Switch	Single pole changeover (SPDT)	Contact material: Gold-plated silver contact	
Contact load (when Au surface is burnt away)	Alternating current	Ohmic	10 A, 440 V, AC-1
		Inductive	6 A, 440 V, AC-3
			4 A, 440 V, AC-15
		Starting current	max. 50 A (locked rotor)
	Direct current	12 W, 220 V, DC-13, see curve, fig. 4, page 5	
Ambient temperature	KPS 31 – 39	-40 – 70 °C	
	KPS 43 – 47	-25 – 70 °C	
Temperature of medium [1]	KPS 31 – 39	-40 – 100 °C	
	KPS 43 – 47	-25 – 100 °C	
Vibration resistance	Vibration-stable in the range 2 – 30 Hz, amplitude 1.1 mm og 30 – 300 Hz, 4 g.		
Enclosure	IP67 (including IPX6) according to EN 60529. The pressure switch housing is enamelled pressure die cast aluminium (GD-AlSi 12). The cover is fastened by four screws which are anchored to prevent loss. The enclosure can be sealed with wire.		
Cable entry	Pg 13.5 for cable diameters from 5 – 14 mm.		
Identification	The type designation and code no. of the unit is stamped in the side of the housing.		

[1] For water and seawater, max. 80 °C.

Types	Scale accuracy [bar]	Mean value of snap point variation after 400 000 operations [bar]
KPS 31	±0.2	±0.1
KPS 33	±0.3	±0.2
KPS 35	±0.5	±0.3
KPS 37	±1.0	±0.4
KPS 39	±3.0	±0.7
KPS 43	±1.0	±0.2
KPS 45	±4.0	±1.0
KPS 47	±6.0	±1.5

Materials in contact with the medium

Type	Materials	
KPS 31, KPS 33	Bellows capsule	Deep-drawn plate, material no. 1.0524 (DIN 1624)
	Bellows	Stainless steel, material no. 1.4306 (DIN 17440)
	Pressure connection	Steel C20, material no. 1.0420 (DIN 1652)
KPS 35, KPS 37, KPS 39	Bellows	Stainless steel, material no. 1.4306 (DIN 17440)
	Pressure connection	Brass, W. no. 2.0401 (DIN 17660)
KPS 43, KPS 45, KPS 47	Diaphragm capsule	Nickel-plated brass, DIN 50 968 Cu/Ni 5 (DIN 1756)
	Diaphragm	Nitrile-Butadien rubber

Technical data and ordering
(continued)

KPS 43

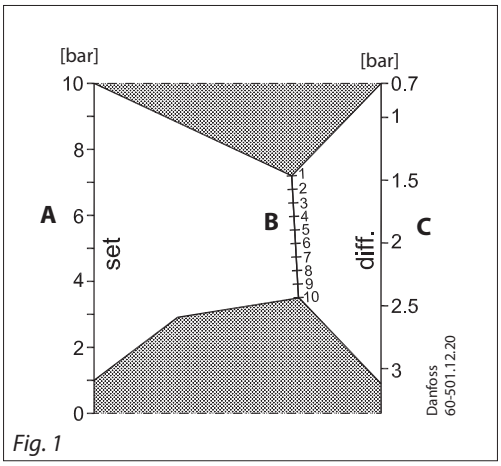


Fig. 1

KPS 45

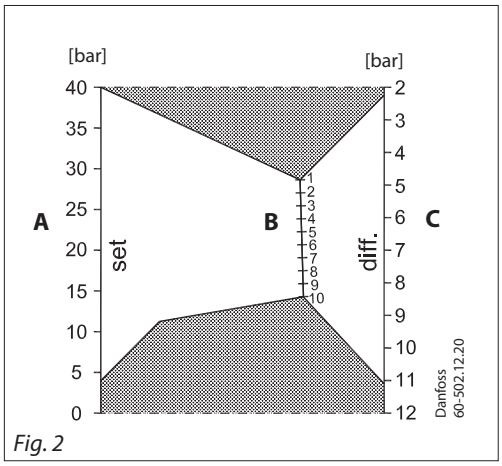


Fig. 2

KPS 47

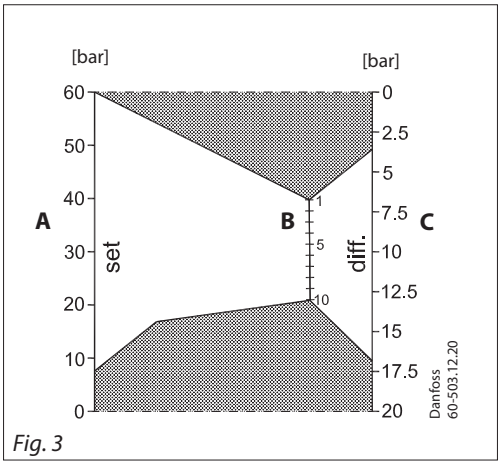


Fig. 3

A: *Range setting*
B: *Differential scale*
C: *Obtained differential*

Direct current (DC) -load

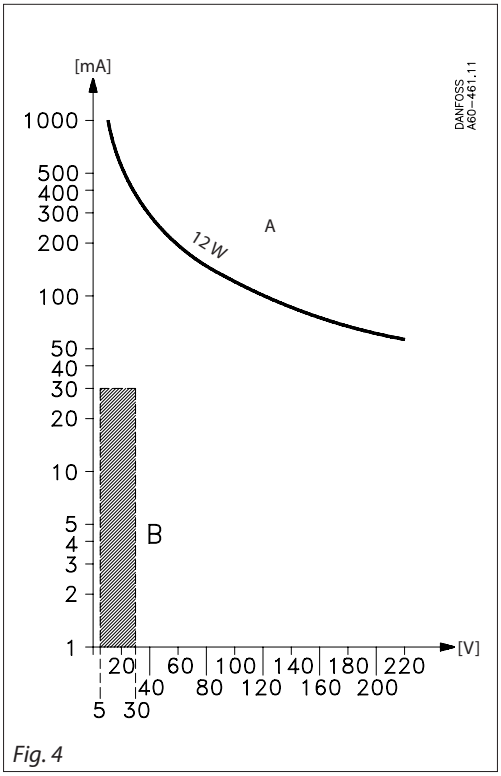


Fig. 4

Curve A:
gives the maximum load

Hatched area B:
Acceptable load for the gold plating of the contact

Function

1. KPS 31
Contacts 1-2 make and contacts 1-4 break when the pressure falls under the set range value. The contacts changeover to their initial position when the pressure again rises to the set range value plus the differential (see fig. 5).

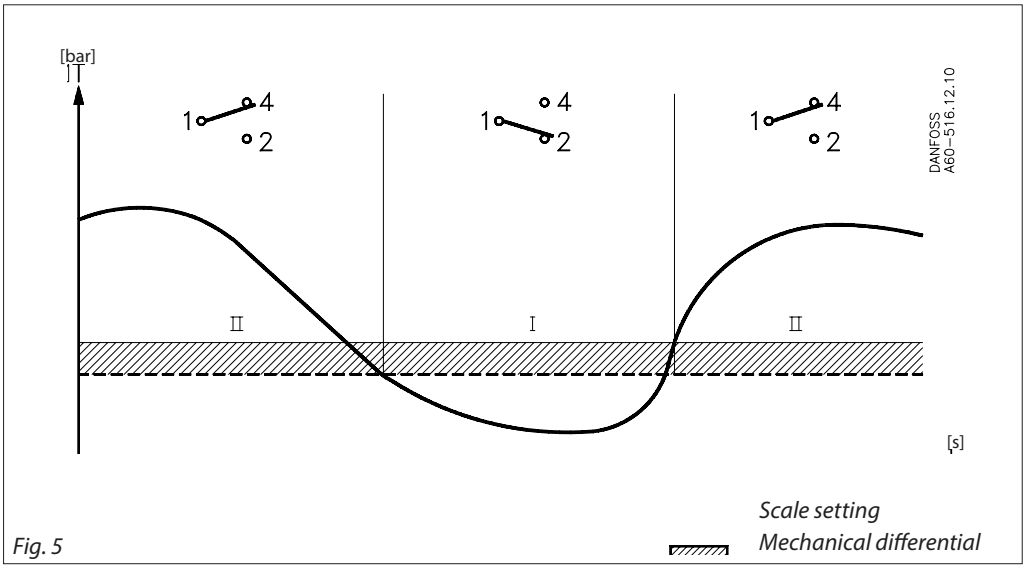


Fig. 5

I. *Alarm for falling pressure given at the set range value*
II. *Alarm for rising pressure given at the set range value plus the differential.*

2. All other KPS pressure SWITCHES
Contacts 1-4 make and contacts 1-2 break when the pressure rises above the set range value. The contacts changeover to their initial position when the pressure again fails to the range value minus the differential (see fig. 6).

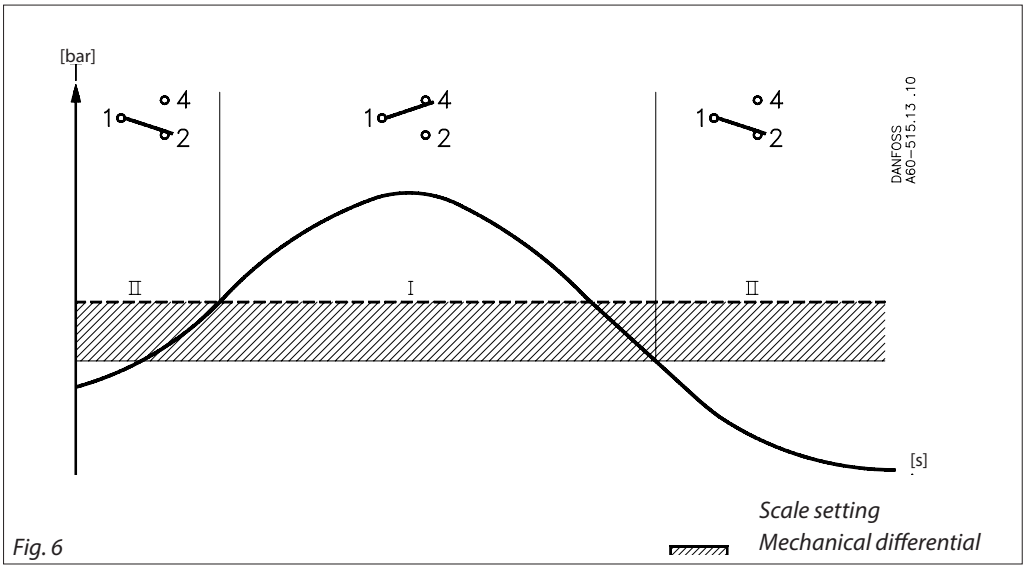


Fig. 6

I. *Alarm for rising pressure given at the set range value*
II. *Alarm for falling pressure given at the set range value minus the differential*

Function
(continued)

KPS 45

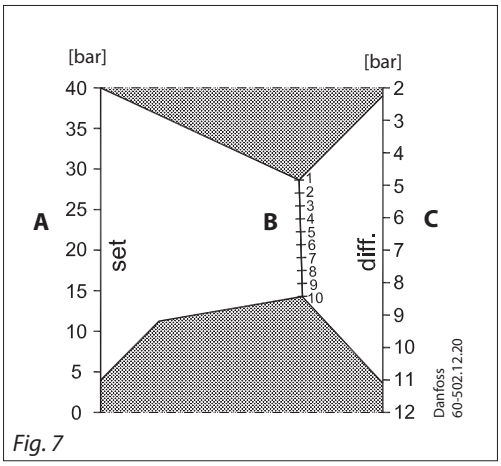


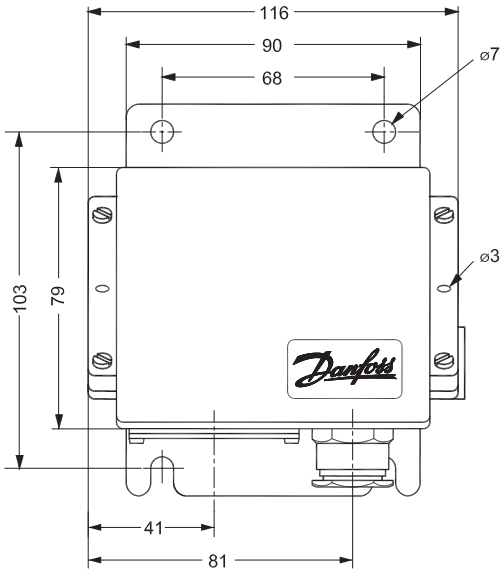
Fig. 7

Example 1
An alarm must be given when the lubricating oil pressure in an engine falls below 0.8 bar. The alarm is in the form of a lamp.
Choose a KPS 31 (range 0 – 2.5 bar).
The minimum permissible lubricating oil pressure of 0.8 bar must be set on the range spindle.
The differential is fixed at 0.1 bar, i.e. the alarm will not cut out before the pressure rises to 0.9 bar. The lamp must be connected to terminals 1 and 2 in the pressure switch.

Example 2
An alarm must be given by a bell when the pressure in a boiler rises to 10 bar. The normal operating pressure is 9 bar.
Choose a KPS 37 (range 6 – 18 bar).
The range value of the pressure switch must be set at 10 bar, the differential at 1 bar.
The bell must be connected to terminals 1 and 4.

Example 3
The pressure in a start air reservoir must be regulated with a compressor controlled by a KPS pressure switch so that it lies between 30 and 36 bar.
Choose a KPS 45 (range 4 – 40 bar).
The range value must be set at 36 bar.
The differential of 6 bar must be set in accordance with the nomogram, fig. 7, at approx. 2 on the differential scale.
The required start function is obtained by connection to terminals 1 and 2 in the pressure switch.

Dimensions [mm] and weights [kg]



Net weight:
KPS 31 – 39 approx. 1.0 kg
KPS 43 – 47 approx. 1.3 kg