Pressure switches
General purpose and industrial type

Refer Catalogue IPS

Introduction

As part of NHP's on-going policy to improve the range and quality of products the company has recently added a range of industrial pressure switches.

The new pressure switch range, manufactured in Japan, is both compact and robust and can be used for a wide range of pressure measurement applications.

What is a pressure switch?

A pressure switch is a device that automatically senses a change in pressure via sensing element (e.g. diaphragm, bellows or piston) which opens or closes an electrical switching element when a pre-determined pressure point is reached.

Catalogue number breakdown

I P S - B 0 1 6 - F N 4 - V D

IP = Industrial pressure switch
GP = General purpose pressure switch

Switch type
S = 1 N/O + 1 N/C (1a + 1b) or 1 C/O (or 1ab)
W = 2 C/O (or 2ab) Only available with IPS

Actuator type
B = Bellows

Pressure range
0 = 0-160 kPa
1 = 0-300 kPa
2 = 0-600 kPa 10-500 kPa
3 = 20-700 kPa
4 = 40-1000 kPa
5 = 200-2000 kPa
6 = 500-4000 kPa
7 = 1000-8000 kPa

Bellows material
0 = PBP-3 (phosphor bronze) 90 °C
1 = SUS316 (stainless steel) Above 100 °C

Enclosure
5 = IP 54 (GPS)
6 = IP 65 (IPS)

Connection port size
F = Female NPT 1/4"
M = Male NPT 1/4"

Differential scale
VD = Variable differentials

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GPS series – General purpose (IP 54)

Main features

- A quality switch at an affordable price
- Compact size, yet ruggedly constructed
- Wide selection of transducer wetted materials suitable for air, water, oil and for corrosive fluid.
- Field adjustable set points
- Field adjustable dead bands (differentials)
- All wiring terminals and adjustments are easily accessible from the front of the switch
- Internal components and bellows are treated and chrome plated to ensure long life
- Adjustment scales in kPa, are clearly visible from the front of the switch
- Provided with single C/O (1 ab) snap action switch
- 20 mm cable entry

Cat. No. GPS-B025-FN4-VD

Range of pressure setting (rising pressure)				ON/OFF pressure differential (falling pressure)				Maximum allowable pressure		Cat. No.
kPa Min.	PSi Min.	kPa Max.	PSi Max.	kPa Min.	PSi Min.	kPa Max.	PSi Max.	kPa	PSi	
0	-	300	43.5	50	7.25	250	36.2	1500	217	**GPS-B015-FN4-VD[1])**
0	-	600	87	60	8.7	350	50.72	1500	217	**GPS-B025-FN4-VD[1])**
100	14.5	1000	145	80	11.6	450	65.2	1500	217	**GPS-B045-FN4-VD[1])**

Note: [1]) Stainless steel bellows on available as an option.

IPS series – Industrial range (IP 65)

Main features

- Wide selection of transducer wetted materials suitable for air, water, oil and corrosive fluid
- Field adjustable set points
- Choice of full range adjustable dead band. (differential)
- Adjustment scale in kPa, is clearly visible from the front of the switch
- All wiring terminals and adjustments are easily accessible from the front of the switch
- The enclosure has IP rating of IP 65 and 20 mm cable entry
- Set point repeatability, ±1 % of operating range
- Available with one or two changeover snap action switches
- Ruggedly constructed for harsh environments
- Every internal part and bellows of the switch is chrome plated and treated to ensure long life
- Mounting bracket is provided with switch for ease of installation

Cat. No. IPS-B046-FN4-VD

Range of pressure setting (rising pressure)				ON/OFF pressure differential (falling pressure)				Maximum allowable pressure		Cat. No.
Kpa Min.	Psi Min.	Kpa Max.	Psi Max.	Kpa Min.	Psi Min.	Kpa Max.	Psi Max.	Kpa	Psi	
0	-	160	23.20	12	1.74	120	17.5	1000	145	**IPS-B006-FN4-VD**
0	-	300	43.5	15	2.17	200	29	1500	217	**IPS-B016-FN4-VD**
10	1.45	500	72.5	20	2.90	400	58	1500	217	**IPS-B026-FN4-VD**
20	2.90	700	101.45	25	3.60	400	58	1500	217	**IPS-B036-FN4-VD**
40	5.80	1000	145	30	4.35	600	87	1500	217	**IPS-B046-FN4-VD**
200	29	2000	290	80	16.60	1000	145	2500	362	**IPS-B056-FN4-VD**
500	72.5	4000	580	150	21.75	1500	217	5000	725	**IPS-B066-FN4-VD**
1000	145	8000	1160	350	50.70	3000	435	10000	1449	**IPS-B176-FN4-VD**

For double pole (240) add 'W' instead of 'S' eg. **IPW-B046-FN4-VD.** **Note:** [1]) Stainless steel bellows on available as an option.

Extras

Adaptor plate for mounting IPS series to existing installations (not required for new installations) Cat No. **PS-AP**

Refer Flyer FNPS-L

Pressure switch suitable for compressors

Technical information

Furnas pressure switches consist of a diaphragm assembly, switch mechanism, terminal block and enclosure. Adequate grounding means are provided. The diaphragm assembly includes diaphragm, enclosure and a means of connection to the system – either pipe fitting, tube or flare fitting. The diaphragm is the means of transmitting system pressures to the switch mechanism, it also serves as a seal between switch and diaphragm enclosures.

The basic switch mechanism comprises a lever assembly (operated by the diaphragm), a snap action toggle and movable contacts. The silver cadmium oxide single break contacts develop maximum pressure to resist vibration common to air compressors. All ferrous metal switch parts are zinc plated and dichromate treated to resist corrosion. Pressure adjustments and wiring connections are made from the top with a screwdriver.

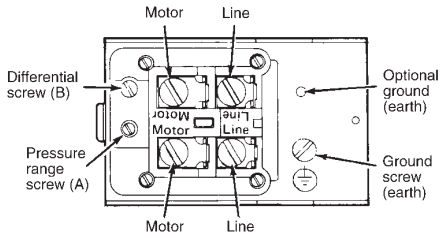
Specifications

Electrical rating			Pressure range				Factory set pressure	
		kW	On/cut in (min)		Off/cut out (max)		On	Off
120 V	240 V	(approx.)	Kpa	Psi	Kpa	Psi	Kpa Psi	Kpa Psi
20 A (F.L.)	12 A (F.L.)	1.5	241	35	1034	150	586 85	793 115

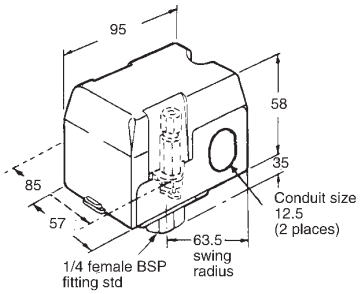
Ordering details

Description	Cat. No.
Standard switch without manual cut off lever and unloader valve	i CPS-B [1]
Fitted with manual cut off lever only	i CPS-BL [1]
Fitted with unloader valve only	i CPS-BY [1]
Fitted with manual cut off lever and unloader valve	i CPS-BLY [1]
Fitted with manual cut off lever, unloader valve and 4 port manifold	CPS-BLY4P [1]

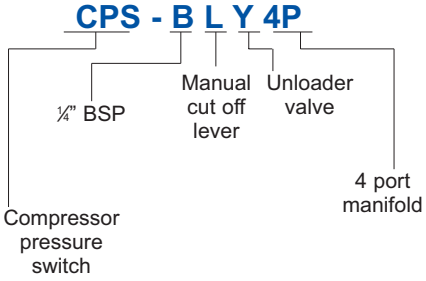
Adjustment diagram



Dimensions (mm)



Catalogue number breakdown



Notes:
Reset pressure range
(A) Turn clockwise to increase and counter-clockwise to decrease pressure. Differential adjustment.
(B) Turn clockwise to increase and counter-clockwise to decrease pressure.

Notes: [1]) ¼" BSP hole plug available Cat. No. **CPS-6109 P.O.A.**
i Available on indent only.

Applications

Compressor type

The CPS series pressure switch is used on air compressors and provides an automatic system of maintained pressure between the two preset pressure settings. An automatic unloader valve which prevents compressors from starting under load is also available.

Pump type

Furnas pressure switches for water systems are used on automatic water systems. An automatic water system is made up of a pump, a storage tank and a pressure switch. The pressure switch reacts to changes of system pressure. As water is used, the system pressure decreases until a preset level is reached, usually 20 lbs. The pressure switch closes (cut in) and starts the pump motor. The pump runs and builds up the system pressure to the higher preset level, usually 40 lbs. and the pressure switch opens (cut out) and stops the pump. The pressure switch is the key to an automatic system.

Reverse action type

The reverse action pressure switch for air or water systems provides protection on loss of pressure or initiates a cycle of operation on rising pressure. The contacts open on decreasing pressure.
Reverse action pressure switches are designed to earth the ignition on gas engine driven pumps and compressors when the maximum pressure has been reached, or to act as low pressure alarms, or to prevent pump operation at low pressure. This switch can be supplied with a reset lever. It is designed with 2 pole double break contacts.

Table 1
Pressure adjustment for compressor type

Cut in (A)		Cut out (B)		Cut out (B)	
On		Off	Min	Off	Max
Kpa	Psi	Kpa	Psi	Kpa	Psi
241	*35*	448	*65*	552	*80*
276	*40*	483	*70*	586	*85*
345	*50*	552	*80*	655	*95*
414	*60*	621	*90*	724	*105*
483	*70*	690	*100*	793	*115*
552	*80*	759	*110*	862	*125*
621	*90*	828	*120*	931	*135*
690	*100*	896	*130*	1000	*145*
759	*110*	965	*140*	1034	*150*
828	*120*	1034	*150*	1034	*150*

Table 2
Pressure adjustment for reverse action type

Cut in (A)		Cut out (B)		Cut out (B)	
On		Off	Min	Off	Max
Kpa	Psi	Kpa	Psi	Kpa	Psi
69	*10*	172	*25*	221	*32*
138	*20*	248	*36*	290	*42*
207	*30*	317	*46*	359	*52*
276	*40*	386	*56*	428	*62*
345	*50*	462	*67*	497	*72*
414	*60*	538	*78*	552	*80*
428	*62*	552	*80*	552	*80*

Table 3
Pressure adjustment for pump type

Cut in (A)		Cut out (B)		Cut out (B)	
On		Off	Min	Off	Max
Kpa	Psi	Kpa	Psi	Kpa	Psi
35	*5*	131	*19*	*207*	*35*
69	*10*	172	*25*	*276*	*40*
138	*20*	241	*35*	*345*	*50*
207	*30*	310	*45*	*414*	*60*
276	*40*	380	*55*	*483*	*70*
380	*55*	455	*66*	*552*	*80*
414	*60*	524	*76*	*552*	*80*
435	*63*	552	*80*	*552*	*80*

Specifications pump type

2 pole electrical rating. 120 V (FL) 20 A, 240 V (FL) 12 A, 1.5 kW

Pressure range

On cut in (min)		Off cut off (max)		Factory set pressure		Special features and	
Kpa	Psi	Kpa	Psi	ON	OFF	accessories fitted to the switch	Cat. No.
35	5	552	80	207(30)	345(50)	Standard switch without cut off lever	**PPS-N [1]**
35	5	552	80	207(30)	345(50)	Standard switch with manual cut off lever	[i] **PPS-NL [1]**
552	80	69	10	345(50)	207(30)	Reverse action switch with manual cut off lever	**PPS-NRL [2]**

Catalogue number breakdown

PPS - N R L

- **PPS** — Pump pressure switch
- **N** — 1/4" NPTF [3]
- **R** — Reverse action (compressor and pump type)
- **L** — Manual cut off lever

Notes:
1) Refer to pressure adjustment table 3 above.
2) Refer to pressure adjustment table 2 above.
3) All PPS models are fitted with 1/4" female NPT thread.
[i] Available on indent only.