

Limit value switches

Pneumatic contact

General

Pneumatic limit value switches in pointer-type measuring instruments are equipped with pneumatic slot sensors.

The output signal is governed by the presence or absence of a control vane moved by the actual value pointer in the air jet of the slot sensor.

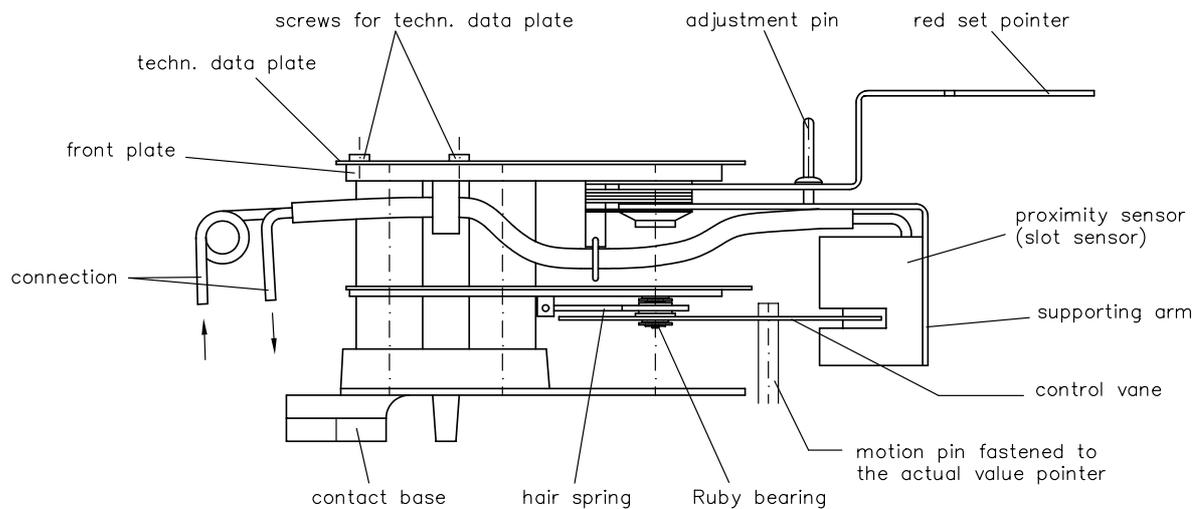
Pneumatic contacts essentially comprise

- an adjustable red set pointer
- a supporting arm which is connected to the red set pointer and carries the pneumatic slot sensor, and
- a control vane moved by the actual value pointer.

An adjusting lock provided with a separate or fixed key is used for external adjustment of the red set pointer of the built-in limit value switches to set the value at which the switching operation is to take place.

Our limit value switches are designed in such a way that the actual value pointer can move past the adjusted red set pointer after the contact has been made, but the switching condition will be maintained.

In our limit value switches, we use a non wearing jewel bearing consisting of a stainless steel shaft and 2 axially arranged synthetic rubies. This bearing is easy running, resistant against aggressive media, and guarantees optimum safety even under extreme conditions of applications.



Mode of operation

The slot sensors used in our pneumatic contacts operate according to the air jet cutting system. The slot sensors are designed in a way providing two jets on the two sides of the air gap in an axially opposed position. The jets are a jet nozzle and a target jet.

A constant air inlet of $1.4 \text{ bar} \pm 0.1 \text{ bar}$ is required as an auxiliary energy. A capillary pressure reducer arranged in the air inlet in front of the jet reduces the pressure to approx. 0.1 bar. The outlet pressure at the target jet is approx. 40 mbar. When the control vane enters into the slot sensor, the air jet is interrupted. The switching operation is without delay when the red set pointer and the actual value pointer are congruent.

An outlet pressure of 40 mbar is converted into a standard signal of 1.4 bar (P/P), or into an electric signal (P/E) via a back-end low pressure switch (binary converter P/P or P/E).

A technically perfect function will, of course, require an optimum adjustment of the contact. Kindly refer to our instructions on catalogue page K 14-10.040.

Application

Pneumatic contacts are used where air is already employed, where no electric current can be used or is not available.

On the other hand, the contact is used in rooms and for installations under a very high risk of explosion (zone 0), as the entire control circuit is operated by air.

To prevent the jet system from locking, and the front end capillary choke from being blocked, the fed-in air is subject to specific purity requirements. Pollution which is larger than 0.04 mm must be filtered out.

If the temperatures are below 0° C, air drying must keep the dew point of the operating air 10° C lower than the deepest temperature which is possible at the apparatus.

Available models

Standard pneumatic contacts are supplied with the following slot sensors:

DN 100 Pneumatic slot sensor type PN 100, slot width 2.0 mm

DN 160 Pneumatic slot sensor type PN 160, slot width 3.0 mm

Double contacts are only available in the P-12 types equipped with a centre vane, and P-21.

The effective direction of the output signal can be changed at the binary converter by a pluggable hose bridge. This is why e.g. type P-21 can likewise be used as P-11, P-12, or P-22.

Pneumatic slot sensors with a capillary pressure reducer may also be ordered individually (re. catalogue page K 05-00.020).

Free shoulder screws to fasten the contacts will be supplied upon request (re. catalogue page K 13-40.020).

Technical data:

Operating air pressure:	1.4 bar ± 0.1
Inlet pressure:	approx. 0.1 bar
Outlet pressure:	approx. 40 mbar
Internal air consumption:	approx. 30 l/h
Switching accuracy:	approx. 0.5% of the full scale value
Ambient temperature:	-20 °C to +70 °C
Adjusting range:	280° max.

Quality and operation of the contacts are subject to supervision within the scope of our internal inspections.

Availability:

- DN 100 single and double
- DN 160 single and double

Types P-1, P-2, and P-12 are likewise available with a centre vane which has almost no effect on the instrument in the given working range.