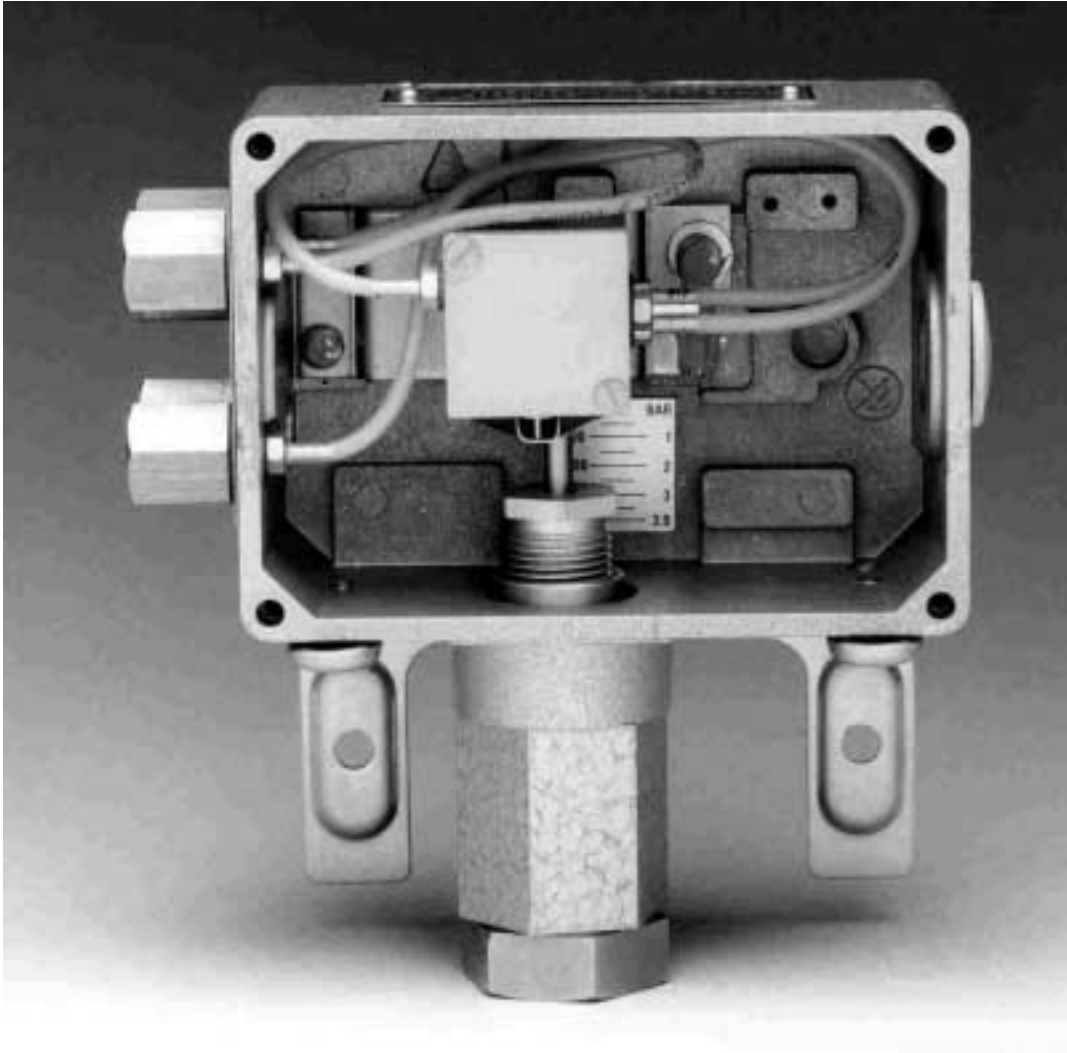


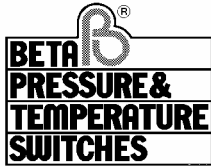
The "BETA AIR RELAY"



The pressure operated AIR RELAY

- Specially designed for:
- Valve Control
 - Offshore & Onshore
 - Zone 0 applications

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THE REAL SNAP-ACTING AIR RELAY

The "user friendly generation" pressure switches from BETA can also be supplied with a pneumatic switching element (Air Relay).

This pilot operated snap acting pneumatic switching element has very attractive features, such as:

- Snap acting (no throttling band)
- High accuracy
- Low dead band
- Very low range (45 mbar >)

Typical applications for the Air Relay are:

- Valve control
- Bleed-off-shut-down systems
- Alarm systems
- In hazardous area's; even in zone 0 (no spark)

HOW TO SELECT YOUR AIR RELAY ?

Example:

<u>ENCLOSURE</u>	<u>RANGE</u>	PROCESS <u>CONN.</u>	DIAPHR. <u>/O-RING</u>	SWITCH <u>ELEMENT</u>	<u>OPTION</u>	<u>SPECIAL</u>
<u>C1</u>	-	<u>P504H</u>	-	<u>S1N</u>	-	<u>V2</u>
<u>SA</u>	-	<u>..</u>	-	<u>..</u>		
1		2		3		4
		5		6		7

1. ENCLOSURE

Enclosure code	Classification / Material	Air relay ²⁾ connections	Type of		Sensor	
			press.	vac.	diff.	temp.
C1	Weathertight Aluminium ¹⁾	4x external 1/4"NPT (F) conn. in brass	√	CF	CF	CF
C8	Weathertight 316 SS	4x external 1/4"NPT (F) conn. in 316 SS	√	CF	CF	CF

- 1) Silumin (alloy 231) according to DIN 1725
- 2) Air Relay connection see page 9.

CF = Consult Factory.

2. RANGES for Pressure Switches

Ranges given here are valid for set points at increasing pressure in (m)bar and at 1,5 bar Pilot pressure.

Dead band values are the max. possible values for the pressure switch with Air Relay switching element and elastomer diaphragm/O-ring combination and varies nearly linear with set point between limits of range.

For ranges and dead band values at higher Pilot pressures (up to max. 7 bar) and/or in case of metal diaphragm: Consult your BETA switch Representative.

2. RANGES for Pressure Switches

RANGE CODE	ADJUSTABLE RANGE MAX. DEADBANDS		MAX. OVERRANGE PRESSURE	PROOF PRESS.
P301L P302L	<i>NOT APPLICABLE WITH AIR RELAY</i>		30 bar	35 bar
P304L	45 - 240 mbar	13-----17,5 mbar		
P306L P308L	45 - 560 mbar 50 - 1300 mbar	13-----22,0 mbar 14,5---26,0 mbar		
P402M	<i>NOT APPLICABLE WITH AIR RELAY</i>		125 bar	125 bar
P404M	200 - 950 mbar	40-----60 mbar		
P406M P408M	220 - 2300 mbar 240 - 5400 mbar	40-----90 mbar 40----150 mbar		
P502H	<i>NOT APPLICABLE WITH AIR RELAY</i>		200 bar	600 bar
P504H	0,8 - 3,5 bar	0,15----0,30 bar		
P506H	0,9 - 9,0 bar	0,15----0,55 bar		
P508H	1,0 - 21,5 bar	0,15----1,30 bar		
P708H	4,0 - 76 bar	0,70----5,85 bar	400 bar	
P808H P908H	6,0 - 170 bar 14 - 300 bar	1,8----14,5 bar 4,3----30,0 bar		

For Vacuum, Differential and/or Temperature switches with Air Relay please consult factory.

3. PROCESS CONNECTION

PROCESS CONN. SIZE	AVAILABLE ON SENSOR	316 SS		MONEL		ALUMINIUM	
		NPT	BSP	NPT	BSP	NPT	BSP
1/4 "F	L & M	S1N	S1B	M1N	M1B	A1N	A1B
	H						
1/2 "F	L & M	S2N	S2B	M2N	M2B	A2N	A2B
	H						
1" F	L	S4N	S4B	M4N	M4B	A4N	A4B
2" F	L	S6N	S6B	M6N	M6B	A6N	A6B
1/2" M	L & M	S7N	S7B	M7N	M7B		
	H						
1" M	M	S8N	S8B	M8N	M8B	A8N	A8B
	H						

For more complete summary of process connections, see also our General Bulletin "BETA Pressure & Temperature Switches", SP 210.

4. DIAPHRAGM / O-RING

DIAPHRAGM / O-RING CODE	DIAPHRAGM	O-RING	DEAD BAND MULTIPLIER
B1	Buna-N	Buna-N	1.0
E6	EPR	EPR	1.0
K5	Kalrez	Kalrez	1.5
N3	Neoprene	Neoprene	1.0
P1	Teflon (polyimide coated with teflon)	Buna-N	1.5
P2		Viton-A	
P4		Teflon ¹⁾	
P5		Kalrez	
S1	SS316	Buna-N	2.0
S2		Viton-A	
S3		Neoprene	
S4		Teflon ¹⁾	
S5		Kalrez	
S6		EPR	
T1	Tantalum	Buna-N	2.0
T2		Viton-A	
T3		Neoprene	
T4		Teflon ¹⁾	
T5		Kalrez	
V2	Viton-A	Viton-A	1.5
S0	SS316,welded	None ²⁾	3.0
M0	Monel, welded	None ²⁾	3.0

- 1) Teflon O-ring not suitable for vacuum switches or conditions.
- 2) In combination with x1N/x1B or x2N/x2B only. For other sizes and materials,consult your BETA representative.

5. SWITCHING ELEMENT "AIR RELAY"

For the BETA Pressure (Vacuum or Temperature) switches the Air Relay is available in two configurations:

Type "SA" for Normally Closed (N.C.) operations

This Air Relay opens a pneumatic circuit when the process pressure (or temperature) exceeds the set point (Actuated). It shuts-off the pneumatic circuit at decreasing pressure (or temperature). (De-actuated)

(Fig. 1)

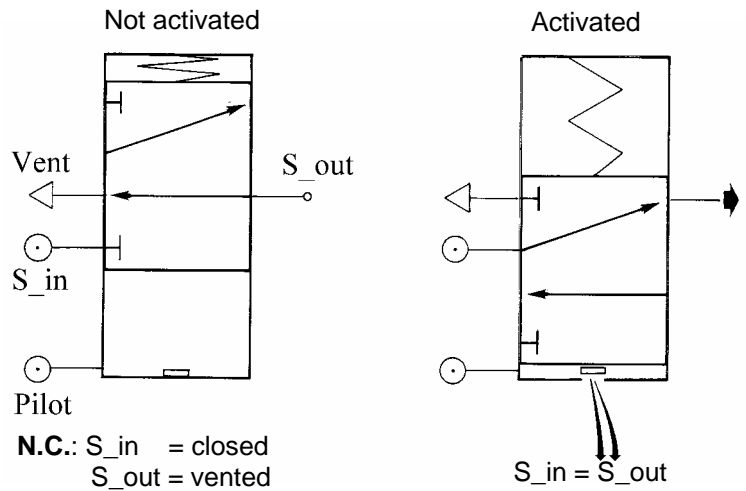


Fig. 1: Air Relay SA, Schematic N.C.

Type "SB" for Normally Open (N.O.) operations

This Air Relay shuts-off a pneumatic circuit when the process pressure (or temperature) exceeds the set point. It opens the pneumatic circuit at decreasing pressure (or temperature).

(Fig. 2)

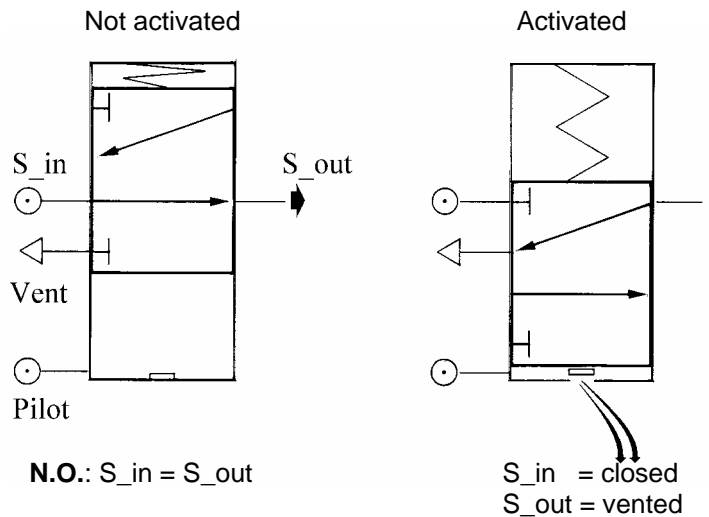


Fig. 2: Air Relay SB, Schematic N.O.

SPECIFICATIONS

Pilot supply pressure	: 1.5 to 7.0 bar
Pilot air consumption	: less then 1 l/ min. at 1.5 bar supply
Signal in pressure	: up to 7.0 bar
Media for Pilot supply and Signal in supply	: clean, dry air or inert gas
Signal flow capacity	: max. 20 l/min. at 1.2 bar

IMPORTANT

The signal pressure should **NOT EXCEED** the pilot supply pressure.
Changing the signal or pilot pressure will result in a change in the adjustable range and the dead band. Consult your BETA Representative.

AIR RELAY CONNECTION (Fig. 3)

The Air Relay connections are situated and clearly marked at one side of the switch enclosure. Standard connections include 1/4" NPTF threaded brass or 316 SS connections.

The external connections are connected to the Air Relay through plastic tubes.

The switch has been provided with a venting port to avoid overpressure in the enclosure.

The "Signal In" pressure connection and the "Pilot Supply" connection may be connected to each other inside the switch enclosure as an option (provided that "Signal In" pressure is > 1.5 bar).

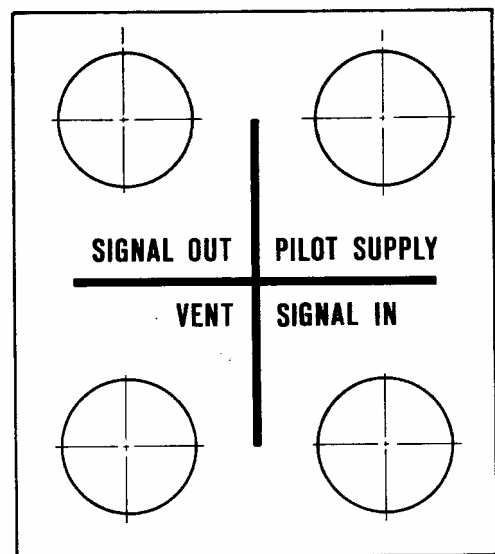


Fig. 3: Indication plate Air Relay connection



6. OPTION

OPTION CODE	OPTION DESCRIPTION
B	Industrial cleaning for oxygen services
M	Vacuum protector plate (not on vacuum switch)
R	Oversized nameplate. Extra: electr. Rating and 2 lines (14 char.) for tag no.
S	Stainless Steel Tag* - wired to enclosure
T	Stainless Steel Tag* - permanently attached
V	Fungicidal varnish coating (internal)
Y	Epoxy coating of switch (external)

- * Stainless steel tag has 3 lines, 18 characters or spaces per line.
Standard nameplate has 1 line for tag no. with 18 characters or spaces.

Note: On request we add your tag no. on standard nameplate,
free of charge, if information is given on your order.

7. SPECIALS

We can incorporate numerous specials to meet your requirements. These special requirements are indicated by the letter X at the end of the model number, followed by a figure showing the number of specials.

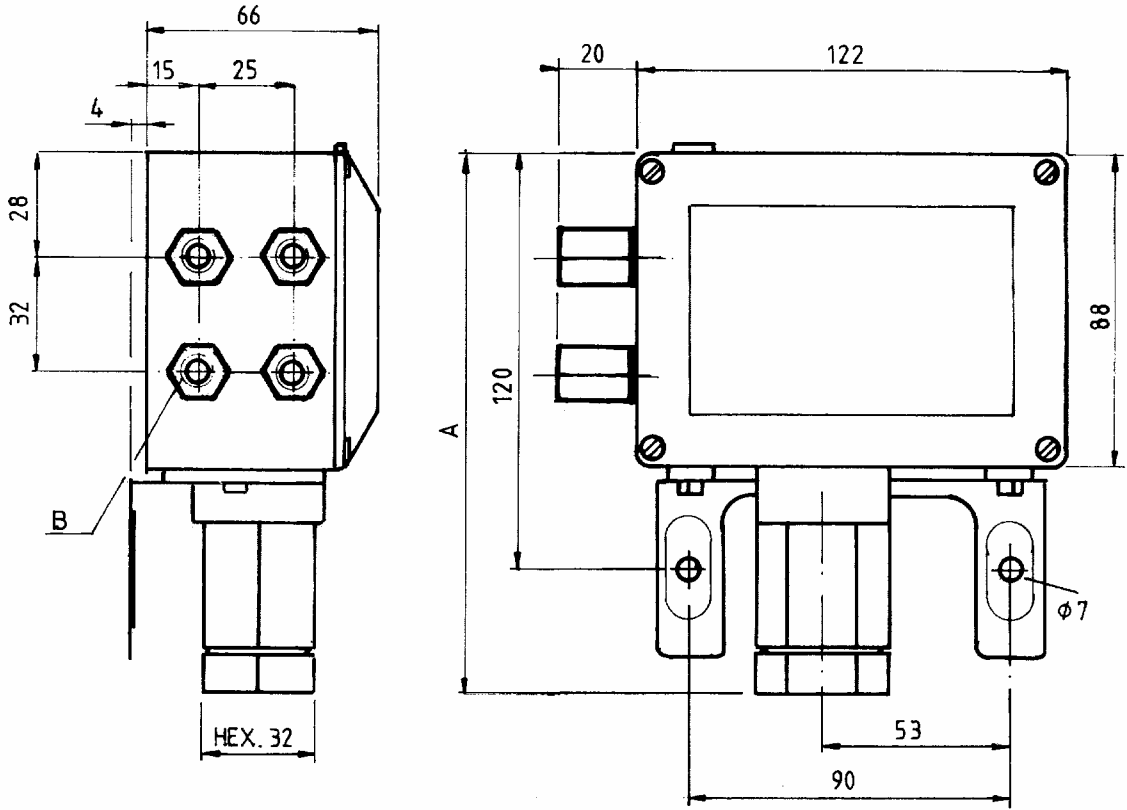
Example:

“X1” at the end of the model reference means **one** special.

“X2” at the end of model reference means two specials have been incorporated.

Details of each special must always be specified in full on enquiries and orders.

DIMENSIONAL DRAWING
(figures are in mm)



TYPE	P...L	P...M	P...H	P...F
1/4" F	152	152	152	160
1/2" F	152	152	156	166
1" F	159	-	-	-
2" F	165	-	-	-
1/2" M	165	165	172	-
1" M	173	173	177	-

Size A in mm ($\pm 1,5$ mm)