

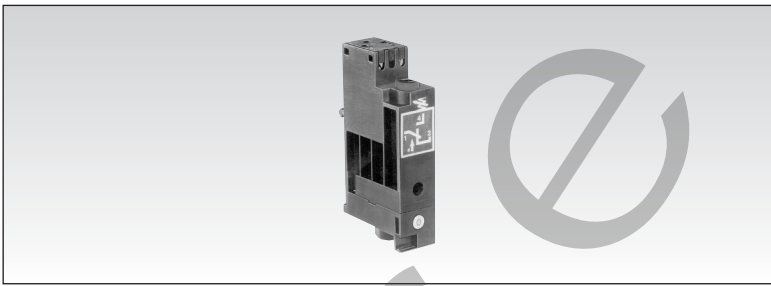
# Pressure Switches Amplifiers

# EC Crouzet

Products and specifications subject to change without notice.

# Pressure switches

- Conform to the Low Voltage Directive
- Can be used without enclosure according to IEC 664-1 pollution group III



1

## Part numbers

Pressure and vacuum switches	81 513 552	81 513 502	81 513 501	81 513 522
Mounting	DIN rail	DIN rail	DIN rail	DIN rail
	EN 50022	EN 50022	EN 50022	EN 50022
Actuators	Pressure	Pressure	Low pressure	Vacuum
Manual override	with	without	without	without

## Symbol



## Characteristics

		Ø 4 ext.	Ø 4 ext.	Ø 4 ext.	Ø 4 ext.
Pneumatic connection	Push-in connection for semi-rigid tubing (NFE 49100)				
	Tapped BSP via connector				
		mm	mm	mm	mm
		IEC 529	IEC 529	IEC 529	IEC 529
Protection		IP 20	IP 20	IP 20	IP 20
Permissible fluid:	air, inert gases and liquids	•	•	•	•
Adjustment of switching pressure (* adjusted to 0.3)	bar	2 → 8	2 → 8	0.3 → 1.2 *	-0.3 → -0.8
Hysteresis	at 1 bar	0.5	0.5	—	—
	at 2 bars	0.6	0.6	—	—
	at 4 bars	0.8	0.8	—	—
	at 6 bars	1	1	—	—
	max. 200 mb	—	—	•	—
	max. 250 mb	—	—	—	•
Pressure to break		—	—	—	—
Mechanical life (operations)		10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
Contact rating (V resistive)		5A - 220-230 V	5A - 220-230 V	5A - 220-230 V	5A - 220-230 V
Wire cross-section	mm <sup>2</sup>	0.75	0.75	0.75	0.75
Operating temperature	°C	-10+70	-10+70	-10+70	-10+70
Weight	g	48	46	46	46
Standard electrical contact		V4 83 170 4   W2	V4 83 170 4   W2	V4 83 170 4   W2	V4 83 170 4   W2
UL and cUL approval		MH15213 (R)	MH15213 (R)	MH15213 (R)	MH15213 (R)

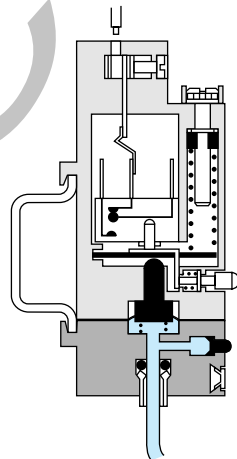
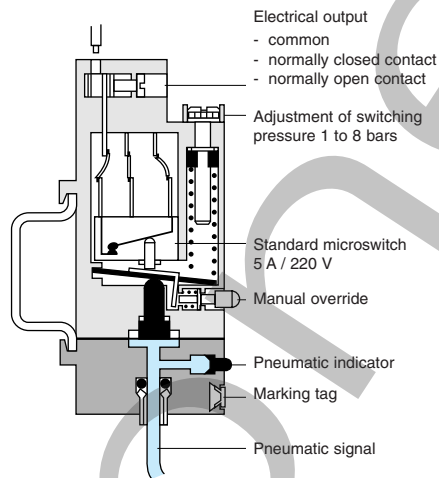
## Operation

Pressure operated

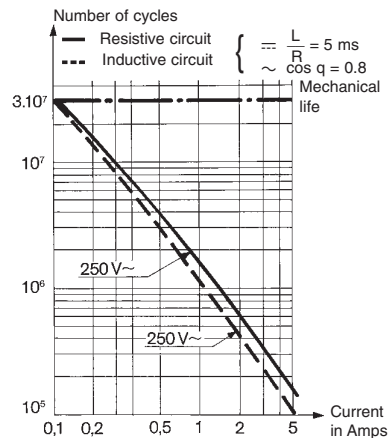
Vacuum operated

## Electrical life

(Crouzet microswitch "V4" ref 83 170 4-1-W2)



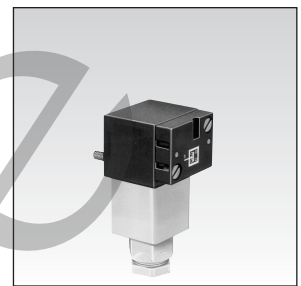
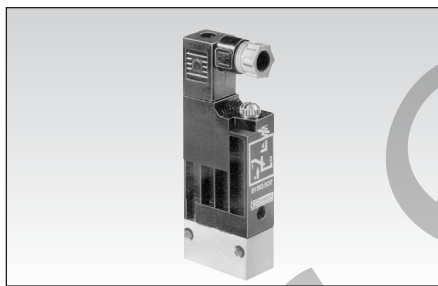
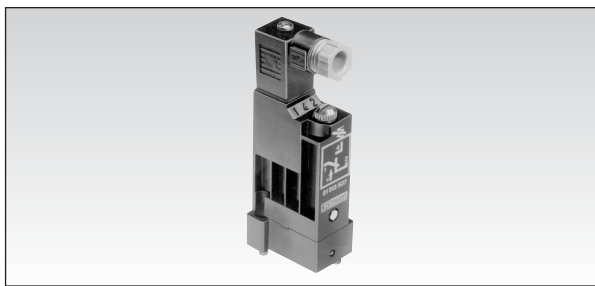
For continuous vacuum applications, please consult us.



## Other information

- On request :
- Microswitch V4 ref. 83 170 0 | W2 high current
  - Microswitch V4 ref. 83 170 9 | W2 low current

Products and specifications subject to change without notice.



<b>81 513 516</b> Base mounted page 5/44 Pressure without	<b>81 513 510</b> Base mounted page 5/45 Pressure with	<b>81 513 527</b> Base mounted page 5/44 Vacuum without	<b>81 513 533</b> 2 screws M4 Pressure without	<b>81 513 523</b> 2 screws M4 Vacuum without	<b>81 509 080</b> Base mounted page 5/44 Pressure without	<b>81 509 085</b> Base mounted page 5/45 Pressure with
---	--	---	---	---	---	--



Ø 4 ext.	Ø 4 ext.	Ø 4 ext.	—	—	—	—
IP 54	IP 54	IP 54	1/8 BSP IP 54	1/8 BSP IP 54	Via sub-base IP 54	Via sub-base IP 54
•	•	•	•	•	•	•
2 → 8	2 → 8	-0.3 → -0.9	2 → 8	-0.3 → -0.8	1.4 ± 0.5	1.4 ± 0.5
0.5	0.5	—	0.5	—	—	—
0.6	0.6	—	0.6	—	—	—
0.8	0.8	—	0.8	—	—	—
1	1	—	1	—	—	—
—	—	•	—	•	—	—
—	—	—	—	—	0.6 ± 0.2	0.6 ± 0.2
10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
5A - 220-230 V	5A - 220-230 V	5A - 220-230 V	5A - 220-230 V	5A - 220-230 V	5A - 220-230 V	5A - 220-230 V
0.75	0.75	0.75	0.75	0.75	1.5	1.5
-10+70	-10+70	-10+70	-10+70	-10+70	-10+70	-10+70
56	58	56	65	65	80	80
V4 83 170 4   W2	V4 83 170 4   W2	V4 83 170 4   W2	V4 83 170 4   W2	V4 83 170 4   W2	83 133 004	83 133 004
MH15213 (R)	MH15213 (R)	MH15213 (R)	MH15213 (R)	MH15213 (R)		

**Electrical connections**

81 513 501 - 81 513 502  
81 513 522 - 81 513 552

**Dimensions**

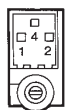
81 513 552 - 81 513 502  
81 513 501 - 81 513 522

**Pressure switch with connector**

81 513 516 - 81 513 510  
81 513 527

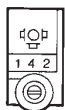
**81 516 082**

81 513 533  
81 513 523

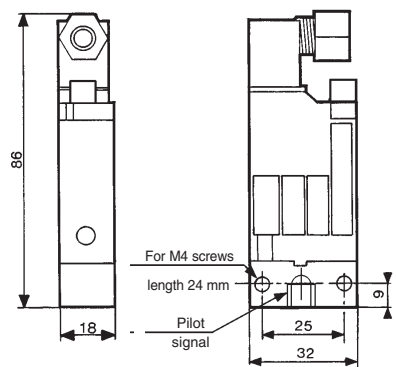
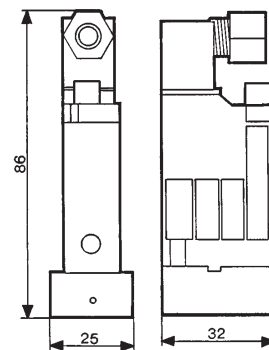
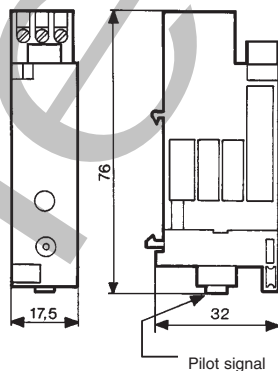


1 - Common  
4 - NO contact  
2 - NC contact

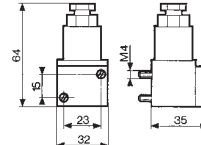
81 513 510 - 81 513 521  
81 513 516 - 81 513 527



81 513 533  
81 513 523 - 81 513 533



**81 509 080 - 81 509 085**



**To order, specify :**

Standard products

Standard products,  
non stocked

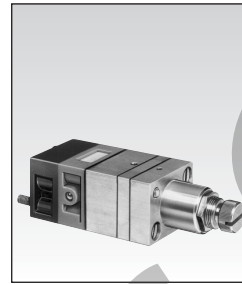
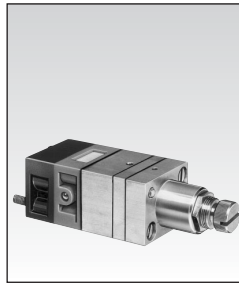
**1** Part number

Example : Pressure and vacuum switches 81 513 552

Products and specifications subject to change without notice.

# Adjustable pressure switches (manostats)

ORDER ONLINE



Yes

Yes

Counter balance leakage

## Part numbers (and adjustment ranges)

Adjustment range	0.7 to 8 psi (50 to 500 mb) 2 to 35 psi (0.1 to 2.5 b) 30 to 120 psi (2 to 8 b)	<b>81 505 140</b> <b>81 505 150</b> <b>81 505 160</b>	<b>81 502 140</b> <b>81 502 150</b> <b>81 502 160</b>
Version		Positive output (N.C.)	Negative output (N.O.)
Accuracy	0.7 to 8 psi (50 to 500 mb) 2 to 35 psi (0.1 to 2.5 b) 30 to 120 psi (2 to 8 b)	10 % 4 % 4 %	10 % 4 % 4 %

1

## Symbol

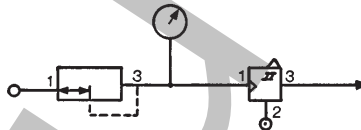


## Characteristics

Orifice diameter	inches (mm)	0.1 (2.5)	0.1 (2.5)
Flow at 90 psi (6 bars)	cfm (Nl/min)	6 (170)	6 (170)
Hysteresis	0.7 to 8 psi (50 to 500 mb)	0.9 (60 mb)	0.9 (60 mb)
	2 to 35 psi (0.1 to 2.5 b)	1.5 (100 mb)	1.5 (100 mb)
	30 to 120 psi (2 to 8 b)	5 (320 mb)	5 (320 mb)
Connection - sub-base page 5/44-5/45			
Operating temperature	°F(°C)	+20>+120 (-5 >+50)	+20>+120 (-5 >+50)
Mechanical life	operations	3 Million	3 Million
Weight	grams	160	160
Relay color		Light gray	Yellow

## Connections

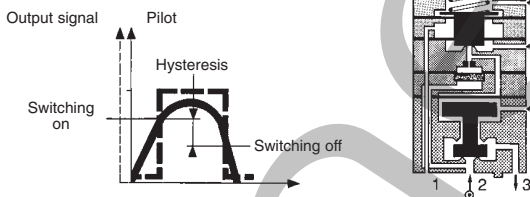
Example of pressure threshold adjustment (mini-regulator - manostat)



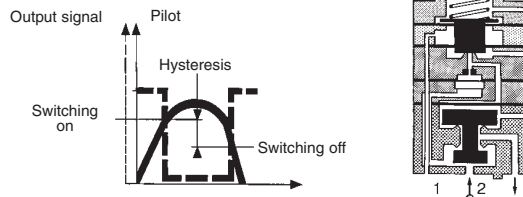
## Principle of operation

The manostats provide an on or off output signal when the input signal reaches a predetermined pressure threshold.

### Positive output (N.C.)

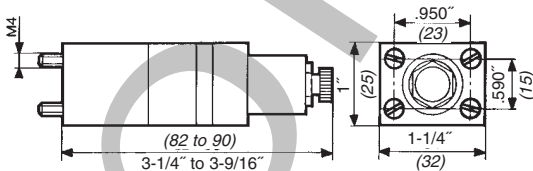


### Negative output (N.O.)



## Dimensions

81 502 140 - 81 502 150 - 81 502 160  
81 505 140 - 81 505 150 - 81 505 160



Use (metric) dimensions for critical data

## Other information

Pressure switches with electrical output on request.

## To order, specify :

Standard products

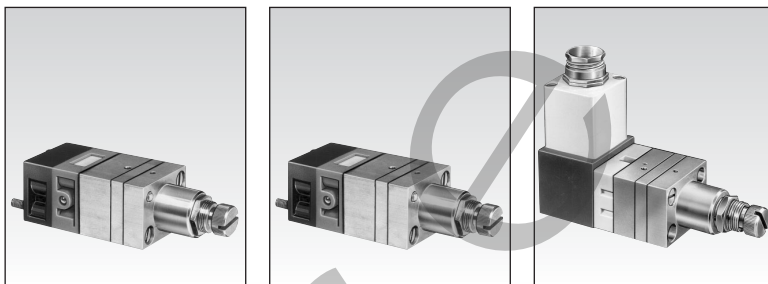
Standard products, non stocked

1 Part number

Example : Adjustable pressure switches (manostats) - 81 505 140

Products and specifications subject to change without notice.

# Adjustable vacuum switches (vacuostat)



Counter balance leakage

Yes

Yes

Part numbers

81 505 110

81 502 110

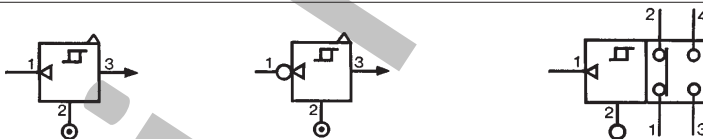
81 508 110

Positive output (N.C.)

Negative output (N.O.)

Electrical output

Symbol

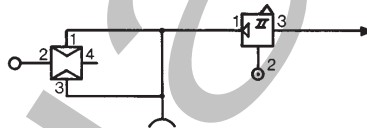


Characteristics

Adjustment range	"hg (bar)	3 > 23 (-0.1 > -0.9)	3 > 23 (-0.1 > -0.9)	-0.1 • -0.9
Flow at 6 bars	cfm (Nl/min)	6 (170)	6 (170)	6 (170)
Hysteresis	"hg (mb)	3 (80)	3 (80)	80
Connection - sub-base page 5/44-5/45				
Operating temperature	°F (°C)	+20 > +120 (-5 > +50)	+20 > +120 (-5 > +50)	-5 +50
Mechanical life	operations	3 Million	3 Million	3 x 10 <sup>6</sup>
Weight	grams	160	160	180
Relay color		Light gray	Yellow	

Connections

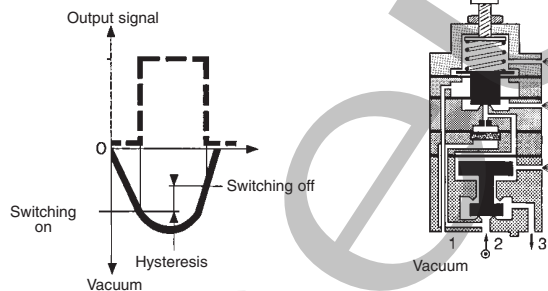
Example of use:  
Vacuum handling (vacuum generator, vacuum pad, vacuostats).



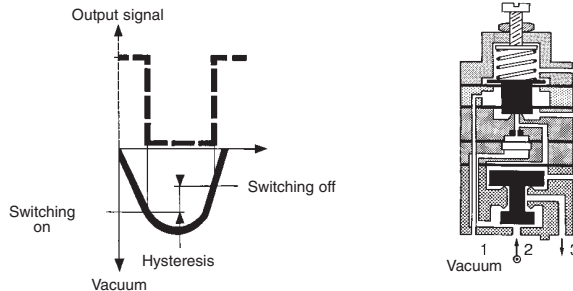
Principle of operation

Vacuostats provide an on or off output signal when the input signal reaches a predetermined pressure threshold.

Positive output (N.C.)

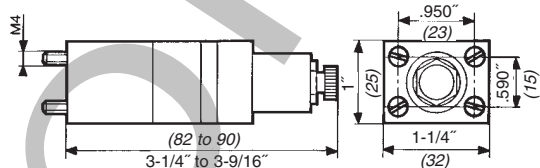


Negative output (N.O.)

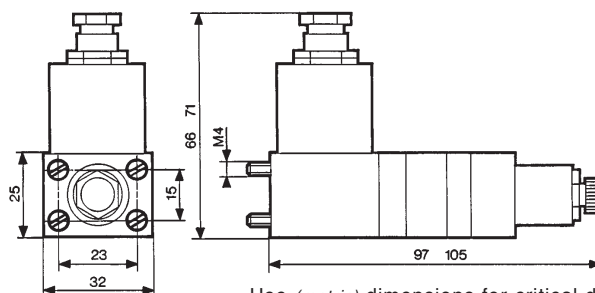


Dimensions

81 502 110 - 81 505 110



81 508 110

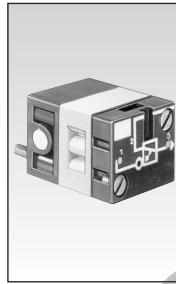
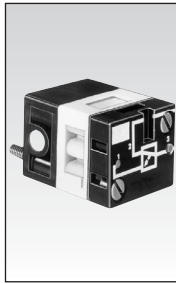


Use (metric) dimensions for critical data

Other information	To order, specify :
	<p>Standard products</p> <p>Standard products, non stocked</p>
	<p><b>1</b> Part number</p> <p>Example : Adjustable vacuum switches (vacuostat) - 81 505 110</p>

Products and specifications subject to change without notice.

# Leak sensor relay



## Part numbers

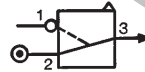
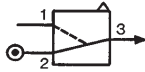
**1**

Output

**81 502 435**  
Positive (N.C.)

**81 505 435**  
Negative (N.O.)

Symbol

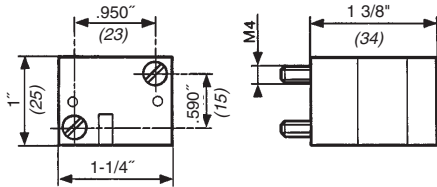


## Characteristics

Operating pressure	psi (bar)	30 > 120 (2 > 8)	30 > 120 (2 > 8)
Sensor consumption for relay supply at 90 psi (6 bar)	cfm (Nl/min)	0.2 (5)	0.2 (5)
The distance between relay and sensor must be less than 45 ft (15 m) using a 5/32" (.06) O.D. tubing			
Connection - sub-base see page 5/44-5/45			
Operating temperature	°F (°C)	+20 > +120 (-5 > +50)	+20 > +120 (-5 > +50)
Mechanical life	operations	10 Million	10 Million
Weight	grams	35	35
Relay color		Yellow	Light gray

## Dimensions

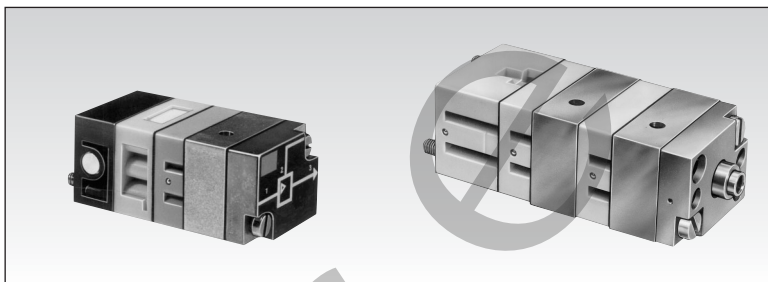
81 502 435 - 81 505 435



Other information	To order, specify :
Bases for mounting components see page 5/44-5/45	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-color: black; margin-right: 5px;"></div> <p>Standard products</p> </div> <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 15px; height: 15px; background-color: black; margin-right: 5px; display: flex; align-items: center; justify-content: center; font-weight: bold; font-size: 10px;">1</div> <p>Part number Example : Leak sensor relay - 81 502 435</p> </div>

Products and specifications subject to change without notice.

# Amplifier relays



## Part numbers

Simple amplifiers	<b>81 502 230</b>	<b>81 505 230</b>	—	—
Sensitive amplifiers	—	—	<b>81 502 320</b>	<b>81 505 320</b>
Version	positive (N.C.)	negative (N.O.)	positive (N.C.)	negative (N.O.)

## Symbol

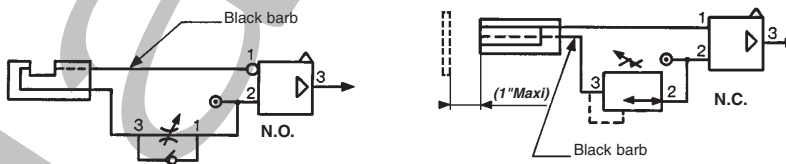


## Characteristics

Pressure to make	psi (mb)	0.15-0.30 (10>20)	0.15-0.30 (10>20)	0.15-0.30 (10>20)	0.15-0.30 (10>20)
Operating pressure (non-lubricated air)	psi (bar)	30>120 (2>8)	30>120 (2>8)	30>90 (2>6)	30>90 (2>6)
Orifice diameter	inches (mm)	0.1 (2.5)	0.1 (2.5)	0.1 (2.5)	0.1 (2.5)
Average consumption at 60 psi (mb) (4 bar)	cfm (Nl/min)	0.18 (5)	0.18 (5)	0.18 (5)	0.18 (5)
Permissible overload for 1 hour	psi (mb)	12 (800)	12 (800)	12 (800)	12 (800)
Operating temperature	°F (°C)	+20>+120 (-5>+50)	+20>+120 (-5>+50)	+20>+120 (-5>+50)	+20>+120 (-5>+50)
Mechanical life	operations	3 Million	3 Million	3 Million	3 Million
Weight	grams	150	150	185	185
		yellow	light grey	yellow	light grey

## Connections

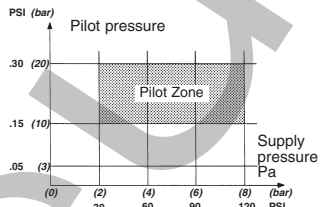
used for gaps up to 1" (25 mm).  
The supply to the sensor should be made via a pressure regulator or one-way flow restrictor  
Connection - sub-base see page 5/44-5/45.



## Principle of operation

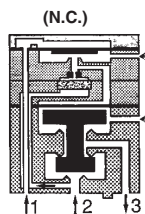
### Simple amplifiers

An output at normal industrial pressure is delivered on a low pressure input.  
Note: Hysteresis is 20% of the pilot pressure.



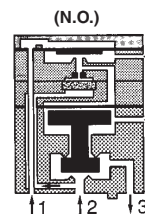
81 502 230

Positive output (N.C.)



81 505 230

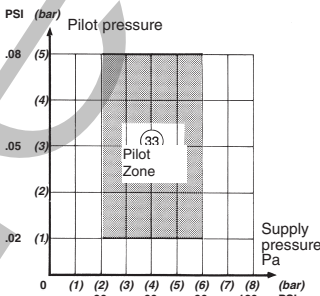
Negative output (N.O.)



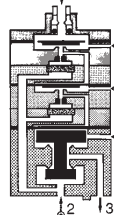
1- pilot  
2- supply  
3- output

### Sensitive amplifiers

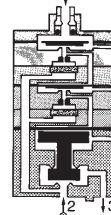
An output at normal industrial pressure is delivered on a very low pressure input.



81 502 320



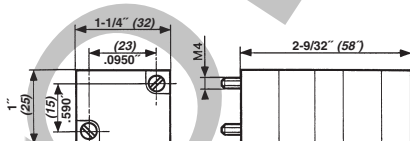
81 505 320



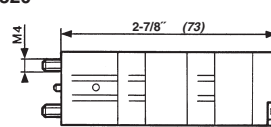
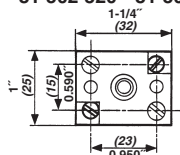
Note: The specifications are given for a supply pressure of 90 psi, and for detection at the mid-point of the gap.

## Dimensions

81 502 230 - 81 505 230 - 81 502 234 - 81 505 234



81 502 320 - 81 505 320



Port #1 for sensor. Push-in connection for semi-rigid tubing O.D. 5/32" (Ø 4 mm) (NFE 49100)

Use (metric) dimensions for critical data

## Other information

With gap sensors, use an amplifier with negative output if a signal on interruption of the jet is required.

## To order, specify :

Standard products

**1** Part number

Standard products, non stocked

Example : Amplifier relays - 81 502 230

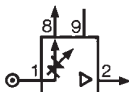
Products and specifications subject to change without notice.



## Part numbers

Amplifiers with integral regulator **81 510 001**  
 Version Positive output (N.C)

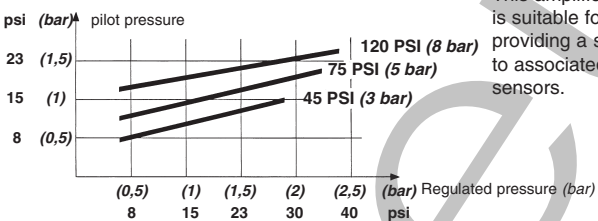
## Symbol



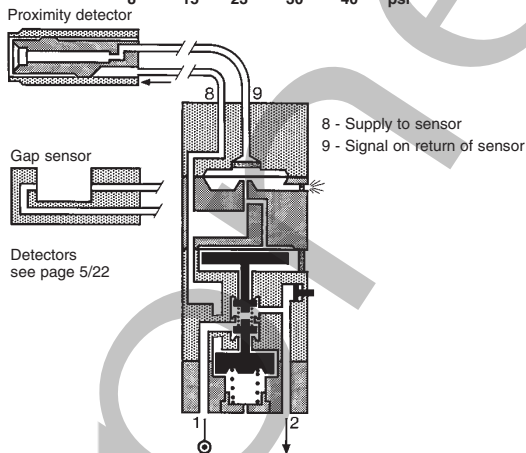
## Characteristics

Pressure to make	psi (mb)	0.008 > 0.023 (0.5 > 1.5)		
Reduced pressure supplied at port 8	psi (bar)	8 > 40 (0.5 > 2.5)		
Flow through port 8	cfm (Nm <sup>3</sup> /h)	0.06 > 1.50 (0.1 > 2.5)		
Consumption of amplifier only	(NI/h)	0.06 > 0.12 (100 > 200)		
Permissible overload for 1 hour	psi (mb)	4 (300)		
Operating temperature	°F (°C)	+30 to +120 (-5 to 50)		
Mechanical life	operations	3 Million		
Weight	grams	380		
Detectors	Proximity	Gap	Proximity	
	<b>81 371 401</b>	<b>81 372 201</b>	<b>81 372 401</b>	
Nominal range	inches (mm)	5/16" (8)	11/16" (18)	4" (100)
Min. total consumption for detection (8 psi (0.5 b regulated pressure))	cfm (NI/h)	0.52 (880)	0.08 (140)	-
Max. total consumption for short response time (40 psi (2.5 b regulated pressure))	cfm (NI/h)	1.65 (2750)	0.25 (400)	0.55 (920)
Min. detectable nominal sensing distance	inches (mm)	0.12 (3)	0.06 (1.5)	1/4" (6.5)
dimensions ±2	inches (mm)	0.08 (2)	-	-
Max. frequency of use	(Hz)	5	5	5
Force exerted by the jet on the parts to be detected	oz. (N)	0.1 > 2.5 (0.02 > 0.7)	0.05 to 0.11 (0.01 > 0.3)	0.36 (0.1)

## Principle of operation

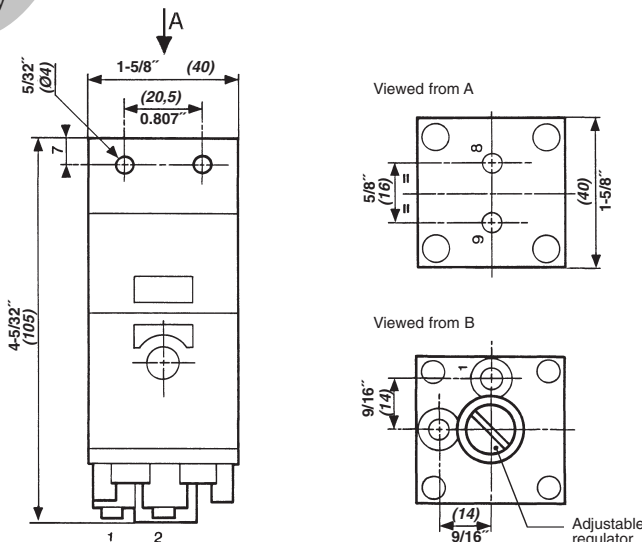


This amplifier is suitable for providing a supply to associated sensors.



## Dimensions

Push-in connection for semi-rigid tubing 5/32" O.D. (Ø 4 mm)(NFE 49100)



## To order, specify :

Standard products, non stocked

**1** Part number

Example : Amplifier relays 81 510 001

Products and specifications subject to change without notice.