Specification sheet

Deltapi N Series
Pneumatic Transmitters
Model NDB
Gauge pressure transmitter

GENERAL CHARACTERISTICS

The blind type pressure transmitter, mod. NDB, is used to measure a pressure and convert it into a proportional pneumatic signal.
The instrument works on the force-balance principle and consists of two main units:

the measuring unit comprises a main body which houses a bellows unit, clamped in the main body forging by means of a flange. The bellows unit releves the pressure applied to the positive connection port. The negative connection port is open to atmosphere. The bellows unit can withstand the maximum overrange on positive side without damage.

the transmission unit converts the differential force applied to the measuring element into a proportional output pneumatic signal.
The output pressure, generated by a flapper nozzle relay, is fed to a feedback bellows with a rising pressure until the bellows force balances that of the measuring element.

Span value continuously adjustable by an internal micrometric screw.

Zero value adjustable by an external screw.

Mounting in a vertical position on 2in diameter pipe by a special bracket.

OPTIONAL EXTRA FEATURES

A zero elevation or suppression device allows to set as a zero of the transmitter a measured variable value different from zero.
The sum of the zero suppression value (S) plus the calibrated span cannot exceed the upper range limit (M) suitable by the bellows capsule : S + span ≤ M (see table).

Air filter regulator can be directly mounted on the transmitter, with or without pressure gauge, and connected with piping and fittings either in stainless steel or copper.
Special versions of air filter regulator and gauges, in stainless steel, are available on request.

Oxygen measurements a special degreasing and final test operations can be required on the oxygen measuring transmitter.

SPECIFICATIONS

The data were obtained from laboratory tests on standard instruments with:
carbon steel or AISI 316L body and flange; AISI 316L bellows unit; gasket: Viton;
calibration span: 800 kPa - 8 bar (bellows A), 1700 kPa - 17 bar (bellows B), 3500 kPa - 35 bar (bellows C),
7000 kPa - 70 bar (bellows D).

MEASURING BELLOWS	SPAN LIMITS min. and max.	RANGE LIMITS lower and upper (M)	MAXIMUM ZERO SUPPRESSION (S)	MAXIMUM ZERO ELEVATION	OVERRANGE LIMIT
A	170 and 1700 kPa 1.7 and 17 bar	- 100 and 2500 kPa - 1 and 25 bar	2330 kPa 23.3 bar	100 kPa 1 bar	3.5 MPa 35 bar
B	350 and 3500 kPa 3.5 and 35 bar	- 100 and 5000 kPa - 1 and 50 bar	4650 kPa 46.5 bar	100 kPa 1 bar	7 MPa 70 bar
C	700 and 7000 kPa 7 and 70 bar	- 100 and 10000 kPa - 1 and 100 bar	9300 kPa 93 bar	100 kPa 1 bar	14 MPa 140 bar
D	1400 and 14000 kPa 14 and 140 bar	- 100 and 20000 kPa - 1 and 200 bar	18600 kPa 186 bar	100 kPa 1 bar	28 MPa 280 bar

Air supply
nom. 140 kPa (1.4 bar, 20 psi); min. 125 kPa (1.25 bar, 18 psi); max. 175 kPa (1.75 bar, 25 psi)

Output signal
20 to 100 kPa/0.2 to 1 bar, 3 to 15 psi or 0.2 to 1 kg/cm^2

Static air consumption
350 Nl/h

Maximum output flow
- with rising output pressure: 30 Nl/min.
- with falling output pressure: 40 Nl/min.

Accuracy
± 0.5% F.S.D. (typical)

Thermal drift (for ambient temperature variation between -20°C and +65°C)
Bellows A
- span 1.7 to 3.4: 0.6% / 10°C
- span 3.4 to 17: 0.3% / 10°C

Bellows B
- span 3.5 to 7: 0.6% / 10°C
- span 7 to 35: 0.3% / 10°C

Bellows C
- span 7 to 14: 0.8% / 10°C
- span 14 to 70: 0.4% / 10°C

Bellows D
- span 14 to 28: 1% / 10°C
- span 28 to 140: 0.5% / 10°C

Pressure effect for variation of :
- Bellows A - 1.75 MPa (17.5 bar): 0.25%
- Bellows B - 3.5 MPa (35 bar): 0.25%
- Bellows C - 5 MPa (50 bar): 0.3%
- Bellows D - 5 MPa (50 bar): 0.3%

Degree of protection in accordance with IEC 529
IP55

Ambient temperature limits
-40 and + 120°C

Body and flange material
Carbon steel, AISI 316L, Monel

Body bolts and nuts material
high tensile carbon steel;
AISI 316 Class A4-70 per ISO 3506;
high tensile stainless steel, in compliance with NACE MR0175

Measuring bellows material
AISI 316L, Monel

Gaskets material
PTFE, Viton

Cover material
thermoplastic resin

Surface protections
- carbon steel body and flange: zinc plating and chrome passivation
- AISI 316L body and flange: no protection

Process connections (see figure ref. D)
1/2 in NPT-F

Pneumatic connections
- Air supply (in figure ref. A): 1/4 in NPT-F
- Output (in figure ref. B): 1/4 in NPT-F

Pressure gauge
Brass with stainless steel case (all stainless steel on request) external diameter 51 mm; 0-200 kPa, 0-2 bar and 0-30 psi indication on 82 mm/260° scale.

Air filter regulator
with copper or stainless steel piping, as specified.
Die cast aluminium alloy with light grey epoxy finish.

Net weight (maximum)
7 kg approx

Packing
expanded polythene box

ORDERING INFORMATION

Select one character or set of characters from each category and specify complete catalog number.

PRODUCT CODE

abc de fg hi j k lm

BASE MODEL
VERSION
BODY AND FLANGE
MEASURING ELEMENT
GASKETS
OUTPUT
EXTRAS

abc **BASE MODEL**

	Code
Gauge pressure transmitter	NDB

de **VERSION**

Standard with body bolts and nuts in high tensile carbon steel	01
Standard with body bolts and nuts in AISI 316	11
Standard with body bolts and nuts in high tensile stainless steel	21

fg **BODY AND FLANGE (*)**

Carbon steel / Carbon steel	01
Carbon steel / AISI 316L	03
AISI 316L / AISI 316L	11
AISI 316L / Monel	21

(*) Only the flange is in contact with fluid

hi **MEASURING ELEMENT**

Bellows material	Range limits - 0 and kPa	psi	Span limits kPa (psi) - (Note 1)	
AISI 316L	2500	362	170 and 1700 (24.6 and 246)	01
AISI 316L	5000	725	350 and 3500 (50.7 and 507)	02
AISI 316L	10000	1450	700 and 7000 (101.5 and 1015)	03
AISI 316L	20000	2900	1400 and 14000 (203 and 2030)	04
Monel	2500	362	170 and 1700 (24.6 and 246)	21
AISI 316L (*)	2500	362	170 and 1700 (24.6 and 246)	41
AISI 316L (*)	5000	725	350 and 3500 (50.7 and 507)	42

Note 1: Multiply by 10 the value in kPa (MPa) to obtain mbar (bar).
(*) Suitable for oxygen service

j **GASKETS**

Measuring element gasket	Fulcrum diaphragm gasket (**)	
Viton	Viton	2
PTFE (*)	PTFE	3

(*) Suitable for oxygen service
(**) Not in contact with process fluid

k **OUTPUT**

3 to 15 psi	According to ANSI/ISA S 51.1-1979 standard terminology	1
3 to 15 psi with zero elevation device		2
3 to 15 psi with zero suppression device		3
0.2 to 1.0 kg/cm^2		4
0.2 to 1.0 kg/cm^2 with zero elevation device		5
0.2 to 1.0 kg/cm^2 with zero suppression device		6
20 to 100 kPa / 0.2 to 1 bar		7
20 to 100 kPa / 0.2 to 1 bar with zero elevation device		8
20 to 100 kPa / 0.2 to 1 bar with zero suppression device		9

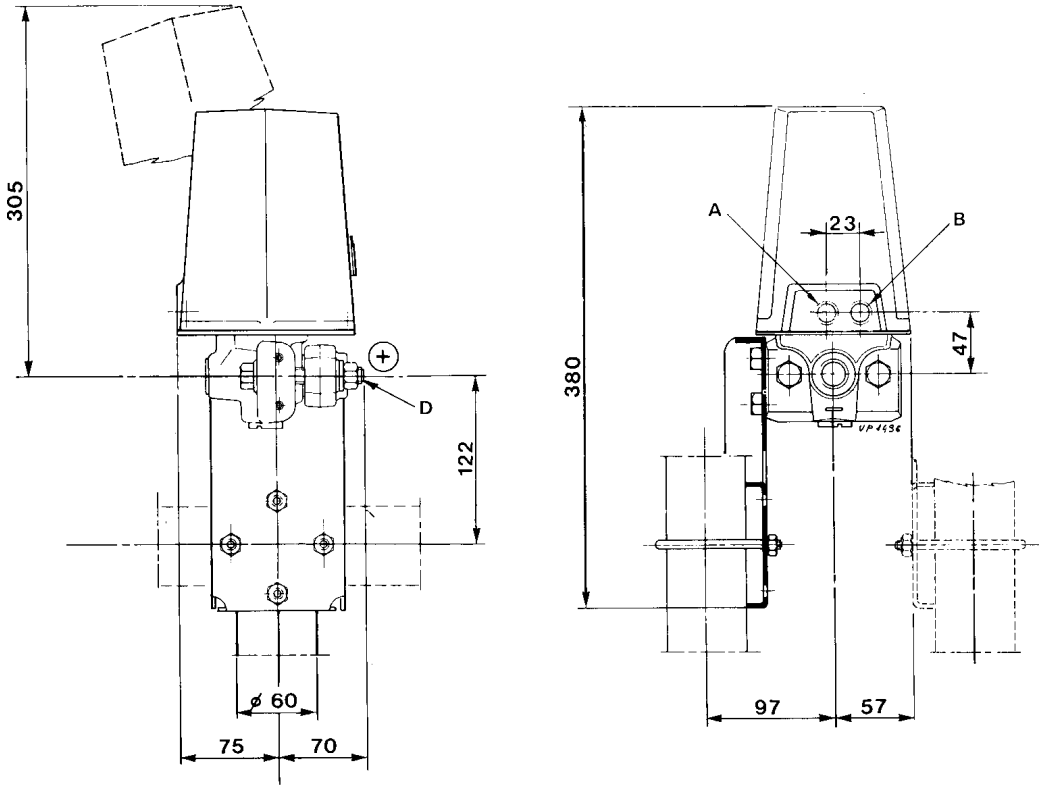
EXTRAS

lm

Identification tag material	Piping material	Air filter regulator	Pressure gauge	
Stainless Steel	- -	- -	- -	02
Stainless Steel	Stainless Steel	with	- -	10
Stainless Steel	Copper	with	- -	11
Stainless Steel	Stainless Steel	with	with	13
Stainless Steel	Copper	with	with	14

■ Compliance to NACE class II bolting, according to specification MR0175, latest revision

MOUNTING DIMENSIONS



SS/NDB Rev 7

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.

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