Specification sheet

Deltapi N Series Pneumatic Transmitters Model NBC Absolute pressure transmitter

GENERAL CHARACTERISTICS

The blind type absolute pressure transmitter, mod. NBC, is used to measure an absolute 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 detects the absolute-pressure variation and consists of two forged bodies and a measuring capsule.
A diaphragm capsule is placed within two halfbodies to releve the absolute pressure applied to the positive chamber.
The capsule is available in two versions: 2in or 3in diameter diaphragms inside of which is obtained the vacuum. The structure of the diaphragm capsule can withstand the maximum overrange without damage.

the transmission unit converts the 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

Special feedback bellows allow to reduce the standard calibration span to a lower value (see table)

A zero suppression device allows to set as a zero of the transmitter a measured variable value different from the absolute zero.
The sum of the zero suppression value (S) plus the calibrated span cannot exceed the upper range limit (M) suitable for the diaphragm 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, 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 bodies; AISI 316L measuring element with silicone oil filling; gasket: PTFE;
calibration span : 18 kPa - 180 mbar (for 3in diaphragm), 70 kPa - 700 mbar (for 2in diaphragm)

MEASURING CAPSULE (DIAPHRAGM DIA.)	SPAN LIMITS (absolute) min. and max.	RANGE LIMITS (absolute) lower and upper (M)	MAXIMUM ZERO SUPPRESSION (S)	OVERRANGE LIMIT
2 in	30 and 170 kPa 300 and 1700 mbar	0 and 170 kPa 0 and 1700 mbar	140 kPa 1400 mbar	2.5 MPa 25 bar
3 in	5 and 52 kPa 50 and 520 mbar	0 and 52 kPa 0 and 520 mbar	47 kPa 470 mbar	
3 in with special feedback bellows	2.5 and 7.5 kPa 25 and 75 mbar	0 and 52 kPa 0 and 520 mbar	49.5 kPa 495 mbar	

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)
- **with 2in diaphragm**
  - span 30 to 80 kPa (300 to 800 mbar): 0.4%/10°C
  - span 80 to 170 kPa (800 to 1700 mbar): 0.3%/10°C
- **with 3in diaphragm**
  - span 5 to 10 kPa (50 to 100 mbar): 0.6%/10°C
  - span 10 to 52 kPa (100 to 520 mbar): 0.4%/10°C

Maximum displacement
- with 2in diaphragm: 1 cm^3
- with 3in diaphragm: 1.5 cm^3

Degree of protection in accordance with IEC 529
IP55

Ambient temperature limits
-40 and + 120°C

Bodies material
Carbon steel, Monel (*), AISI 316L (*), Hastelloy C (*),

(*) Only the positive halfbody

Body bolts and nuts material
High tensile carbon steel;
AISI 316 Class A4-50 per ISO3506, in compliance with NACE MR0175

Cover material
thermoplastic resin

Diaphragm material
AISI 316L, Monel (*), Hastelloy C (*)

(*) Maximum overrange pressure reduced to 1MPa (10 bar)

Gaskets material
PTFE, Viton

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)
- on flange: 1/2 in NPT-F
- on adapter: 1/4 in NPT-F
- center distance: 54 mm.

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)
10 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
MEASURING ELEMENT
GASKETS
OUTPUT
EXTRAS

Code

abc **BASE MODEL**

Absolute pressure transmitter	**NBC**

de **VERSION**

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

fg **BODY**

Positive side	Negative side	
Carbon steel	Carbon steel	**01**
Monel	AISI 316L	**21**
AISI 316L	AISI 316L	**41**
Hastelloy C	AISI 316L	**51**

hi **MEASURING ELEMENT**

Diaphragm material	Core material	Capsule diameter	Span limits kPa (mmHg) - (Note 1)	
AISI 316L	AISI 316L (*) (Note 2)	3 in	5 and 52 (37.5 and 390)	**04**
AISI 316L	AISI 316L (*) (Note 2)	2 in	30 and 170 (225 and 1275)	**05**
AISI 316L	AISI 316L (*) (Note 2)	3 in	2.5 and 7.5 (18.7 and 56.2)	**06**
Monel	Monel (**)	3 in	5 and 52 (37.5 and 390)	**21**
Monel	Monel (**)	2 in	30 and 170 (225 and 1275)	**22**
Monel	Monel (**)	3 in	2.5 and 7.5 (18.7 and 56.2)	**23**
AISI 316L	AISI 316L (Note 2)	3 in	5 and 52 (37.5 and 390)	**41**
AISI 316L	AISI 316L (Note 2)	2 in	30 and 170 (225 and 1275)	**42**
AISI 316L	AISI 316L (Note 2)	3 in	2.5 and 7.5 (18.7 and 56.2)	**43**
Hastelloy C	Hastelloy C (**)	3 in	5 and 52 (37.5 and 390)	**51**
Hastelloy C	Hastelloy C (**)	2 in	30 and 170 (225 and 1275)	**52**
Hastelloy C	Hastelloy C (**)	3 in	2.5 and 7.5 (18.7 and 56.2)	**53**
Hastelloy C	AISI 316L (**)	3 in	5 and 52 (37.5 and 390)	**54**
Hastelloy C	AISI 316L (**)	2 in	30 and 170 (225 and 1275)	**55**
Hastelloy C	AISI 316L (**)	3 in	2.5 and 7.5 (18.7 and 56.2)	**56**

Note 1: Multiply by 10 the value in kPa (MPa) to obtain mbar (bar).
Note 2: Hastelloy C for some wetted parts.
(*) Suitable for oxygen service (operating temperature limits reduced: -20°C to + 40°C; -4°F to 104°F)
(**) Maximum overrange reduced to 1 MPa (145 psi)

j **GASKETS**

Flange gasket	Capsule gasket	Fulcrum diaphragm gasket	
Viton	Viton	Viton	**4**
PTFE (*)	PTFE (*)	PTFE (*)	**5**

(*) Suitable for oxygen service.

k **OUTPUT**

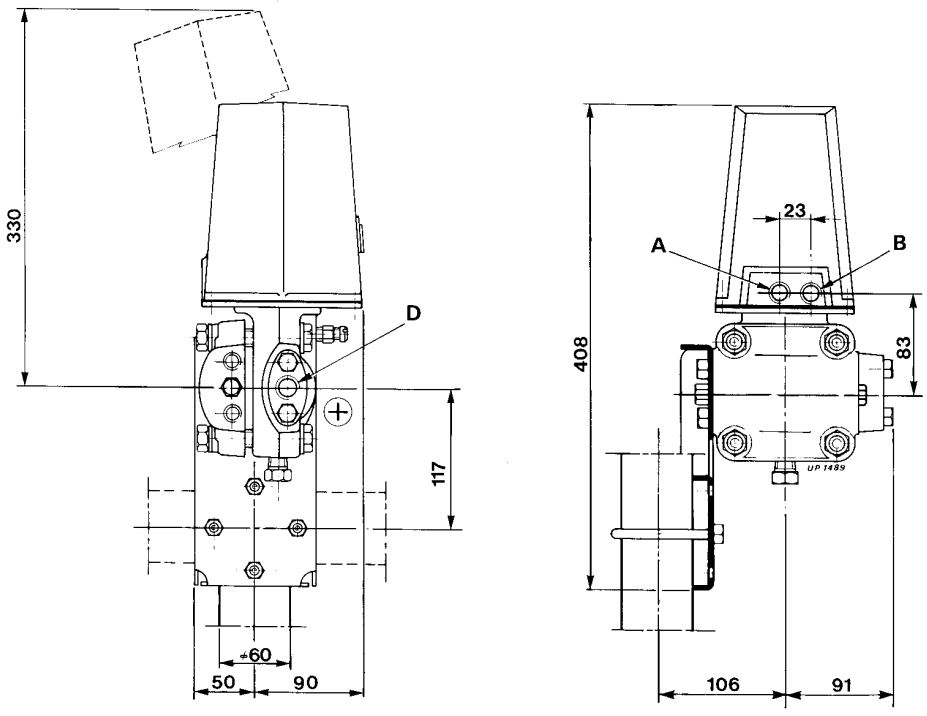
3 to 15 psi	According to ANSI/ISA S 51.1-1979 standard terminology	**1**
3 to 15 psi with zero suppression device		**3**
0.2 to 1.0 kg/cm^2		**4**
0.2 to 1.0 kg/cm^2 with zero suppression device		**6**
20 to 100 kPa / 0.2 to 1 bar		**7**
20 to 100 kPa / 0.2 to 1 bar with zero suppression device		**9**

lm **EXTRAS**

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/NBC 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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