

## Deltapi N Series Pneumatic Transmitters Model NDA Differential pressure transmitter

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### GENERAL CHARACTERISTICS

The blind type differential pressure transmitter, mod. NDA, is used to measure a differential 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 relieves the differential pressure between the negative and positive connection ports; it can withstand the maximum rated static pressure on either 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

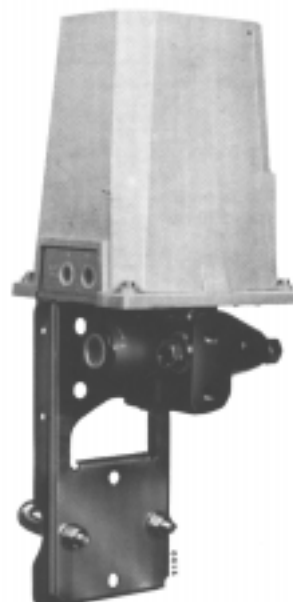
**A zero elevation or suppression device** allows to set as a zero of the transmitter a measured variable value different from zero.

The sum of the zero suppression value (S) plus the calibrated span cannot exceed the upper range limit (M) suitable by the diaphragm capsule :  $S + \text{span} \leq M$  (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: PTFE;  
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	STATIC PRESSURE LIMITS Full vacuum and
A	170 and 1700 kPa 1.7 and 17 bar	-2500 and +2500 kPa -25 and +25 bar	2330 kPa 23.3 bar	2500 kPa 25 bar	2.5 MPa (•) 25 bar (•)
B	350 and 3500 kPa 3.5 and 35 bar	-5000 and +5000 kPa -50 and +50 bar	4650 kPa 46.5 bar	5000 kPa 50 bar	5 MPa (•) 50 bar (•)
C	700 and 7000 kPa 7 and 70 bar	-10000 and +10000 kPa -100 and +100 bar	9300 kPa 93 bar	10000 kPa 100 bar	10 MPa (•) 100 bar (•)
D	1400 and 10000 kPa 14 and 100 bar	-10000 and +10000 kPa -100 and +100 bar	8600 kPa 86 bar	10000 kPa 100 bar	10 MPa (•) 100 bar (•)

(•) Equal to Maximum Working pressure as well as Overrange Limit

### 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<sup>2</sup>

### 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 170 to 340 kPa (1.7 to 3.4 bar): 0.6%/10°C
- span 340 to 1700 kPa (3.4 to 17 bar): 0.3%/10°C

#### Bellows B

- span 350 to 700 kPa (3.5 to 7 bar): 0.6%/10°C
- span 700 to 3500 kPa (7 to 35 bar): 0.3%/10°C

#### Bellows C

- span 700 to 1400 kPa (7 to 14 bar): 0.8%/10°C
- span 1400 to 7000 kPa (14 to 70 bar): 0.4%/10°C

#### Bellows D

- span 1400 to 2800 kPa (14 to 28 bar): 1%/10°C
- span 2800 to 10000 kPa (28 to 100 bar): 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 ISO3506;  
high tensile stainless steel, in compliance with  
NACE MR0175

### Measuring bellows material

AISI 316 L, Monel

### Gasket 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 and E)

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							

Code

abc	BASE MODEL	
	Differential pressure transmitter	NDA

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
	AISI 316L / AISI 316L	11
	Monel / Monel	21

hi	MEASURING ELEMENT	Range limits		Span limits	
		kPa	psi		
	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	± 10000	± 1450	1400 and 10000 (203 and 1450)	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 seal	Fulcrum diaphragm seal
	Viton	Viton
	PTFE (*)	PTFE (*)
		2
		3

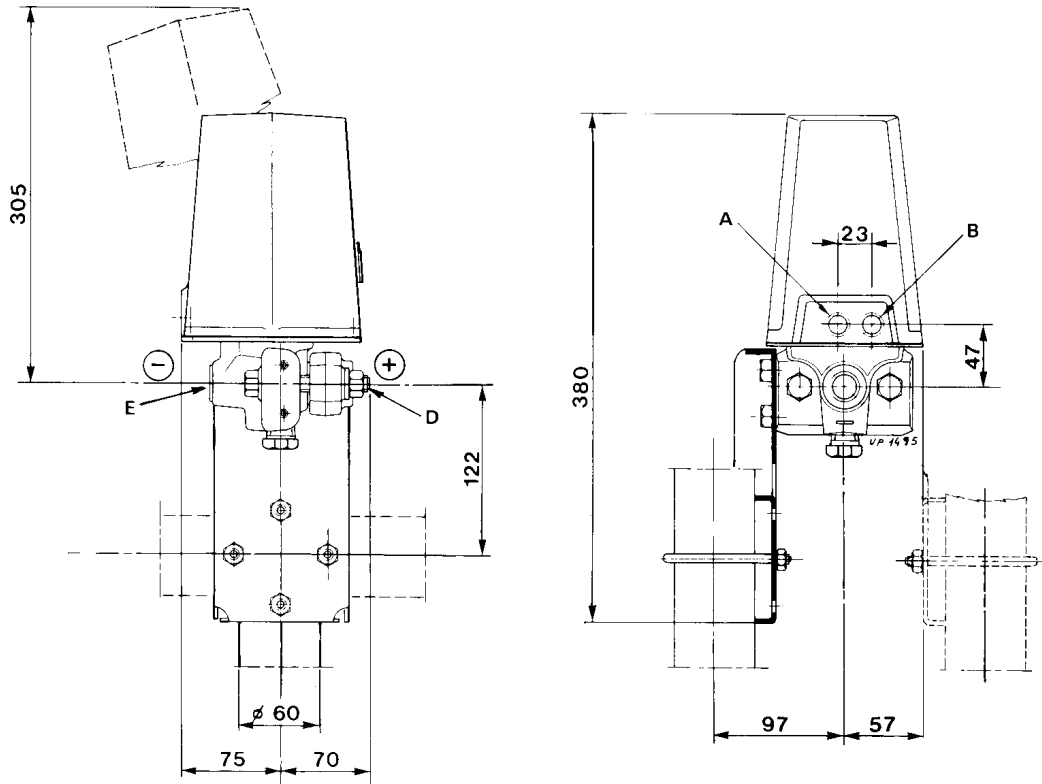
(\*) Suitable for oxygen service

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

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

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

## MOUNTING DIMENSIONS



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