FISCHER MESS- UND REGELTECHNIK

DA03 || Differential Pressure Gauge

The DA03 is a versatile differential pressure gauge which can be configured with various optional features, such as:

- Adjustable limit contacts: delayed action or magnet actuated type
- Proximity type (NAMUR) non-contact limit detector
- Pointer position transducer, with electrical signal output

Principles of Operation

The pressures to be compared act on flexible stainless steel diaphragms on either side of the sensing capsule. The two diaphragms are mechanically linked by a rigid connecting rod. To compensate for high static pressures, the cavity between the two diaphragms is filled with hydraulic fluid. When pressures are equal on both diaphragms, they are at zero position. When there is a difference in pressures acting on the two diaphragms, they are deflected away from the high pressure side, towards the lower pressure side, causing a displacement of the connecting rod.

A precision mechanism translates the linear displacement of the diaphragm connecting rod to angular movement of the gauge's dial pointer. The pointer's displacement range of 270° corresponds to the full scale differential pressure. The connecting rod has intermediate flanges on either side, which protects the diaphragms against excess differential pressure. When differential pressure exceeds the specified limit, the flange towards the lower pressure side is pressed against the sealing O-ring on the inside of the sensing capsule. This action isolates the fluid adjacent to the diaphragm exposed to lower pressure, from the fluid at higher pressure on the other side. This limits the pressure differential across the lower pressure diaphragm, and equalizes the pressure across the higher pressure diaphragm. Thus both diaphragms are protected against excess deflection and risks of rupturing.

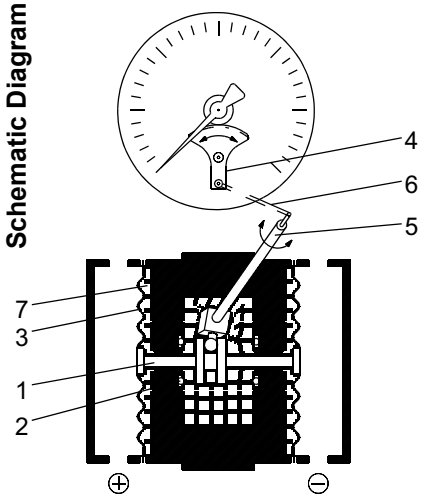
Important Features

- Corrosion resistant
- Rugged, wear resistant mechanism
- Unaffected by fouling
- Easily cleaned pressure chamber

Applications

- Chemical, pharmaceutical industries
- Process industries
- Marine and off-shore

Schematic Diagram



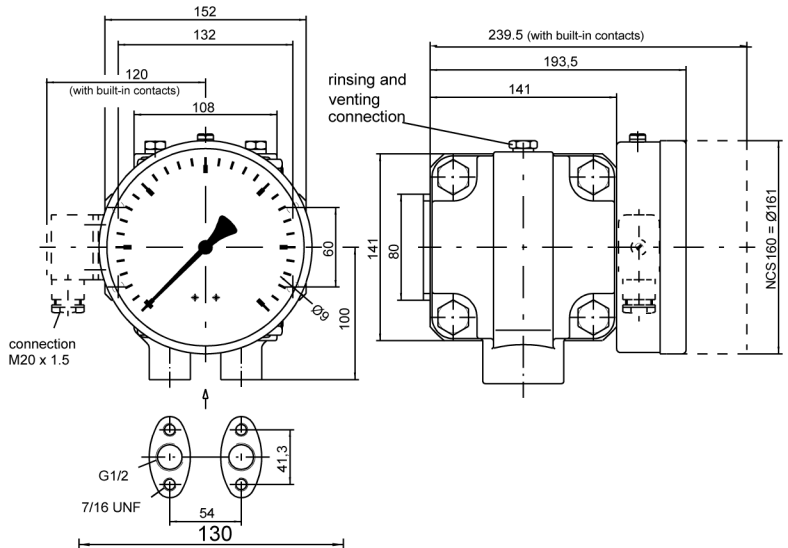
1 Connecting rod
2 O-ring, differential over-pressure protection
3 Sensing diaphragm
4 Pointer mechanism
5 Lever
6 Link
7 Pressure transfer liquid

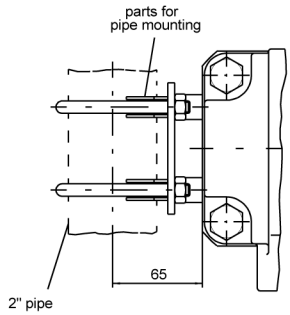
Specifications DA03

General	Measuring ranges	0...40 mbar to 0...25 bar (see Ordering Code)
	Nominal pressure rating	40 bar or 100 bar (max. static pressure)
	Accuracy	± 1.6% of span
	Max. differential overpressure	Safe up to max. static pressure; pressure differential in either direction
	Indicator	Circular dial type, 100 mm or 160 mm diameter
	Operating temperature	Ambient: -20°C to +80°C Media: +100°C, maximum
	Temperature coefficient	Approx. 0.3% / 10°C
	Zero adjustment	Screw through hole on top of dial housing. ±25% FS.
	Protection class	IP 54, per DIN EN 60529
	Pressure chambers	Smooth internal surfaces without recesses; flush sensing diaphragms; easy to clean
	Pressure connections	DIN EN 61518 connecting flanges with 2x G½ (F) threaded sockets. Various bite type ferrule connectors (see Ordering Code)
	Purge ports	2x G 1/8 (F) threaded sockets, in flanged pressure chamber casing; screw plugs fitted
Materials	*Type „R“*	
	Pressure chamber (wetted part)	Stainless steel 1.4404 (AISI 316L)
	Diaphragm (wetted part)	dP ≤ 400 mbar: stainless steel 1.4571 dP ≥ 0.6 bar: DURATHERM® (stainless steel)
	Type „H“ (1)	
	Pressure chamber (wetted part)	Hastelloy® C4
	Diaphragm (wetted part)	dP ≤ 2.5 bar: Hastelloy® C 276 dP ≥ 4 bar: Standard diaphragm with separating foil made from Hastelloy® C 276 **NB: Models with separating foil not useable for vacuum application.**
	Intermediate plate	Aluminium alloy (AlMgSiPb); hard coated
	Dial mechanism, gauge housing	Stainless steel 1.4301
	Dial window	Laminated safety glass
	Dial scale and pointer	Aluminium
	O-ring gasket	Viton® (FKM, flourocarbon elastomere)
Options and Accessories	Electrical accessories	Limit signalling contacts: delayed action / magnet actuated switch type / non-contact proximity type limit detector. Pointer rotation transducer: capacitance type, with output signal proportional to the pointer position (uses deeper gauge housing: see Dimensions) For details of electrical accessories, see Data Sheet KE.
	Liquid filling	For operating conditions involving vibration, pressure fluctuations, and/or moisture condensation inside, the gauge can be supplied with glycerine filling.
	Reference pointer	Adjustable pointer for visual marking of limit / reference value.
	Peak registering pointer	Separate pointer without spring, friction holding: dragged by the measuring pointer as the measured value increases. Stays put when the measuring pointer recedes, thereby registering peak value. Manual re-setting.
	Options (on special order)	Special materials: PTFE coated or Hastelloy-C diaphragm and pressure chamber casing Special dial scales
	Accessories	Pipe mounting kit (Model DZ 10) for 2" pipe Direct fitting 3-spindle blocking/equalizing valves unit. Installs directly on the gauge flanges. Rating PN 100; size DN 5; stainless steel 1.4571 (Model DZ 36-00LV0300)
	Pressure connections	Process pipe connection to be erected by using bite type ferrule connectors or direct fitting of pipe into G½ F thread. Make sure that the connection is firmly sealed.
Mounting	Wall mounting (Type „W“) Pipe mounting (Type „R“)	With mounting plate on back of instrument With mounting parts for vertical or horizontal mounting on 2“pipes
	Panel mounting (2)	Due to the instruments heavy weight the small measuring cell only is suitable for direct panel mounting: measuring ranges ≥ 0.6 bar, dial NCS 100 and NCS 160, without contacts or transmitters. The instrument factory prepared for panel mounting and the necessary mounting parts may be ordered with code „T“.
	Panel mounting with front cover ring and support (3)	All models may be fitted with a costumer made support construction and the front cover ring to be used for panel mounting (Ordering Code „G“).

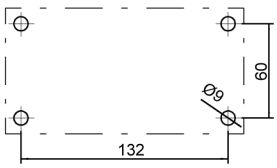
Dimensions DA03 (all units in mm unless stated otherwise)

for ranges 40...400 mbar

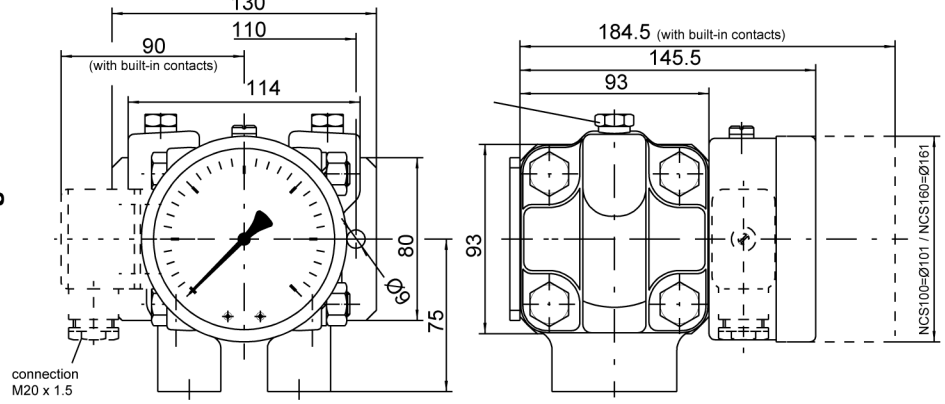




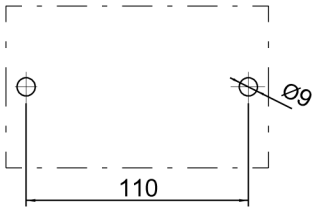
Drilling plan for mounting plate



for ranges 0.6...25 bar

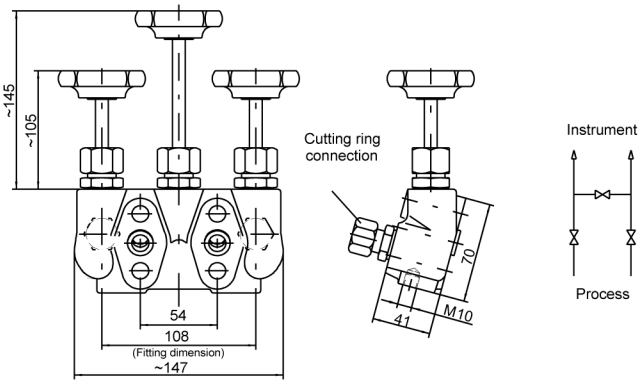


Drilling plan for mounting plate



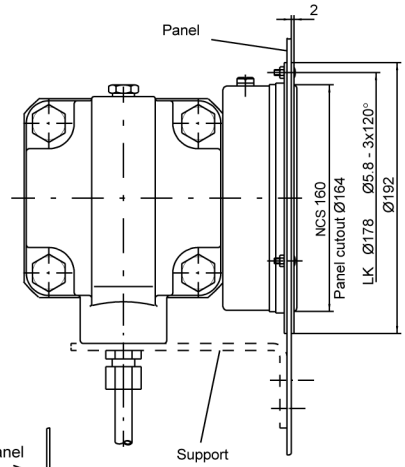
Three spindle blocking / equalising valves unit DZ 36-00 LV 0300

fits directly onto the DIN 19209 flanges

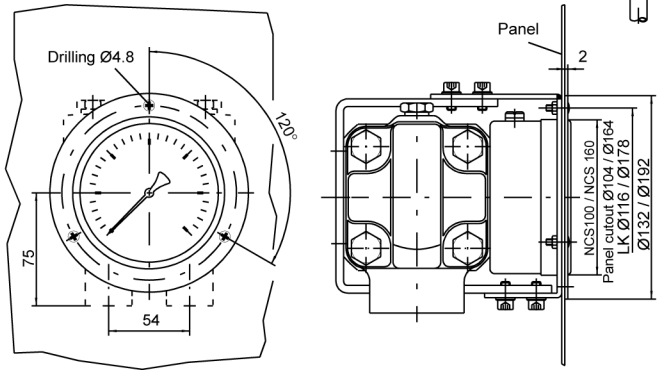


Panel mounting with customer prepared support

(Ordering Code „G“)



Panel mounting accessories only for bar ranges (Ordering code „T“)



Ordering Code DA03

Differential Pressure Gauge DA03

											0

Range

0 . . . 40 mbar	5	7
0 . . . 60 mbar	5	8
0 . . . 100 mbar	5	9
0 . . . 160 mbar	6	0
0 . . . 250 mbar	8	2
0 . . . 400 mbar	8	3
- 40 . . . 60 mbar	7	0
- 60 . . . 100 mbar	7	2
-100 . . . 150 mbar	7	4
-150 . . . 250 mbar	7	6
0 . . . 0.6 bar	0	1
0 . . . 1 bar	0	2
0 . . . 1.6 bar	0	3
0 . . . 2.5 bar	0	4
0 . . . 4 bar	0	5
0 . . . 6 bar	0	6
0 . . . 10 bar	0	7
0 . . . 16 bar	0	8
0 . . . 25 bar	0	9
- 1 . . . 0.6 bar	3	2
- 1 . . . 1.5 bar	3	3
- 1 . . . 3 bar	3	4
- 1 . . . 5 bar	3	5

Nominal Pressure Rating

40 bar	H
100 bar	L

Measuring System Material

Pressure chamber Hastelloy® C4 / diaphragm Hastelloy C276® *(1)*	H
Pressure chamber chrome alloy 1.4404 / AISI 316 L / standard diaphragm	R

Pressure Connections

DIN EN 61518 flanges with threaded sockets: 2x G1/2 (F)	0	3
Threaded connectors: 2x NPT 1/4-18 (F)	0	4
Threaded connectors: 2x NPT 1/2-14 (F)	0	5
Threaded connectors: 2x G1/2 (M) stainless steel	1	3
Threaded connectors: 2x NPT 1/4 (M) stainless steel	1	4
Threaded connectors: 2x NPT 1/2 (M) stainless steel	1	5
Bite type ferrule connectors (1.4571) for 12 mm tube	2	7

Dial Size

Bayonet ring case 100 mm dia. only for range ≥ 0.6 bar	L
Bayonet ring case 160 mm dia.	M

Mounting

Wall mounting	W
Pipe mounting	R
Panel mounting **(only for bar ranges / without additional superstructual parts)** *(2)*	T
Front cover ring for panel mounting *(3)*	G

Dial Liquid Filling

Without liquid filling	0
Dial with liquid filling: glycerine	1
Dial with liquid filling: compatible with built-in contacts	2
Dial with liquid filling: compatible with built-in inductive contacts (Silicone oil)	4
Dial with liquid filling (Silicone oil)	5

Additional Pointer

Without additional pointer	0
Adjustable reference pointer	1
Peak registering pointer, resettable (only for ranges ≥ 60 mbar)	2

Signalling Accessories: Contacts / Transmitters

Without contacts / transmitter	0
Built-in limit contacts, per Data Sheet KE... (ranges ≥ 100 mbar)	1
Built-in pointer position transducer, per Data Sheet KE09 (ranges ≥ 100 mbar)	2
Built-in contacts with plug-in connector (power plant type)	5

(1), (2), (3) see notes Specifications

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