

DA03 || Differential Pressure Gauge

The DA 03 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.



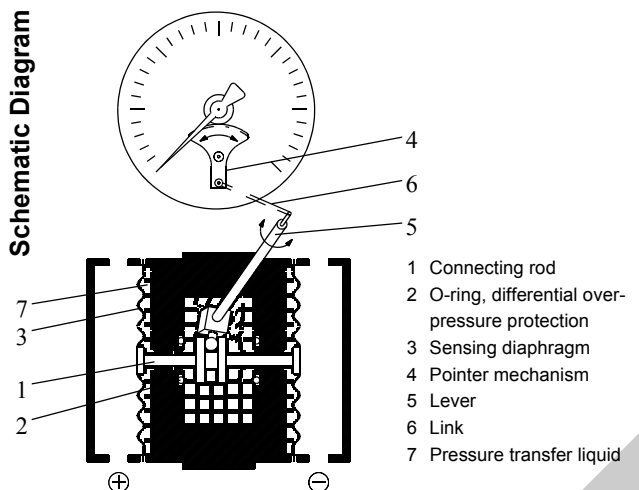
Important Features

- 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



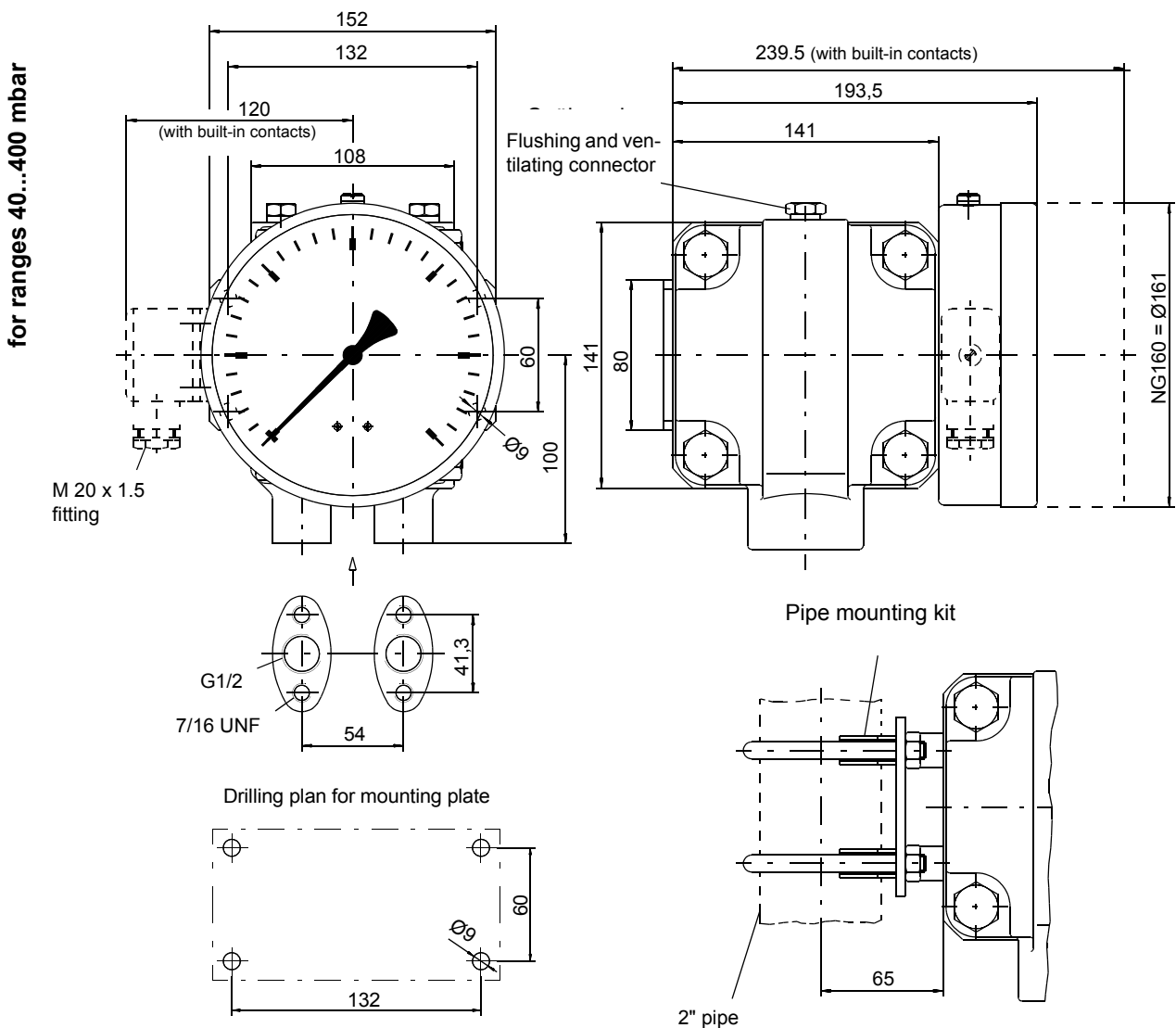
Specifications DA 03

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 19213 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“	Stainless steel 1.4404 (316L)
	Pressure chamber (wetted part)	dP ≤ 400 mbar: stainless steel 1.4571
	Diaphragm (wetted part)	dP ≥ 0.6 bar: Duratherm (stainless steel)
	Type „H“ (1)	Hastelloy C4
	Pressure chamber (wetted part)	dP ≤ 2.5 bar: Hastelloy C 276
	Diaphragm (wetted part)	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, fluoroelastomer)	
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)	
Mounting / Installation	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.	

Specifications DA 03

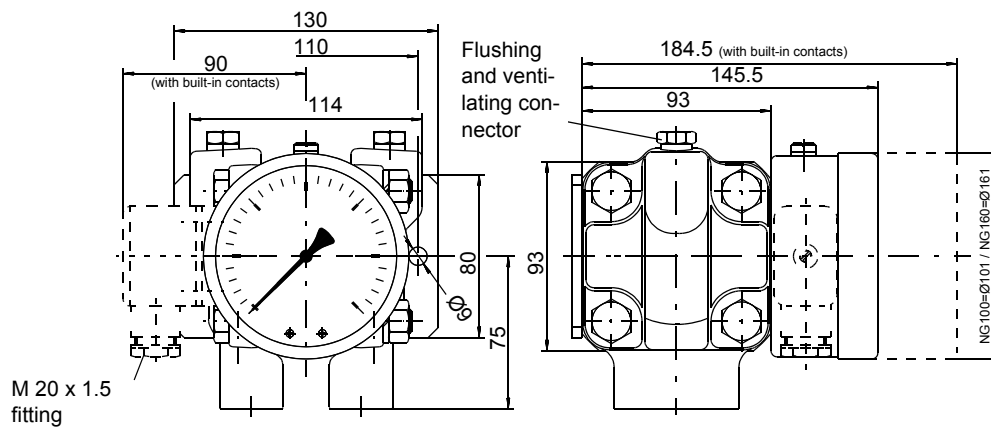
Mounting	Wall mounting (Type „W“)	With mounting plate on back of instrument
	Pipe mounting (Type „R“)	With mounting parts for vertical or horizontal mounting on 2" pipes
	Panel mounting (2)	Due to the instruments heavy weight the small measuring cell only is suitable for direct panel mounting: measuring ranges ≥ 0.6 bar, dial ND 100, 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 customer made support construction and the front cover ring to be used for panel mounting (Ordering Code „G“).

Dimensions DA 03

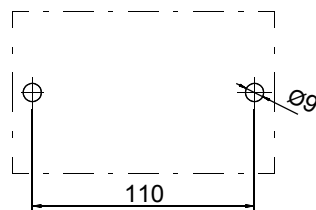


Dimensions DA 03

for ranges 0.6...25 bar

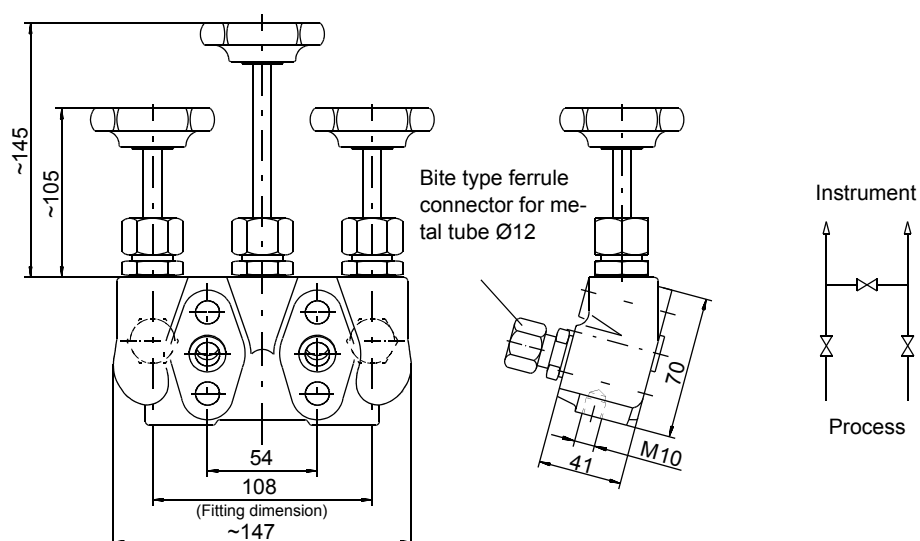


Drilling plan for mounting plate



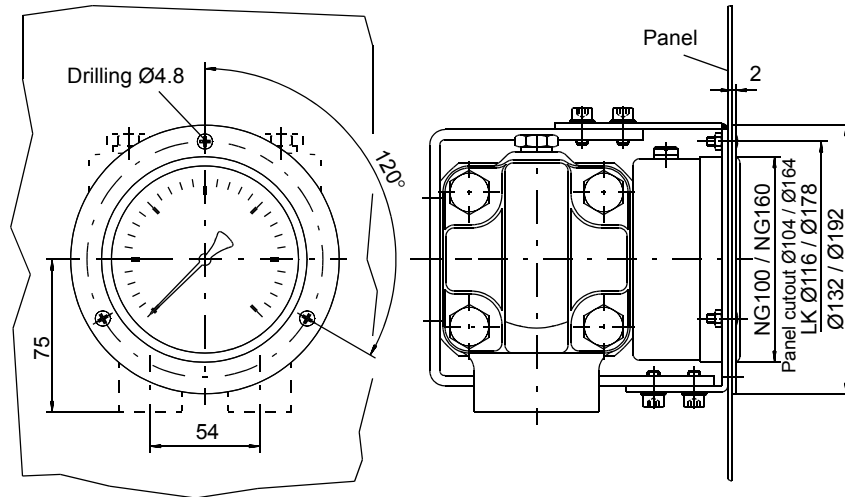
Three spindle blocking / equalising valves unit DZ 36-00 LV 0300

fits directly onto the DIN 19209 flanges



Dimensions DA 03

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



Panel mounting with customer prepared support
(Ordering Code „G“)

