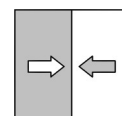


Operating manual

DA10

Differential pressure measuring device
Standard model



Masthead

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Subject to technical amendments.



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Version history

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1 Safety guidelines

1.1 General



WARNING

This operating manual contains instructions fundamental to the installation, operation and maintenance of the device that must be observed unconditionally. It must be read by the assembler, operator and the specialized personnel in charge of the instrument before it is installed and put into operation.

This operating manual is an integral part of the product and therefore needs to be kept close to the instrument in a place that is accessible at all times to the responsible personnel.

The following sections, in particular instructions about the assembly, commissioning and maintenance, contain important information, non-observance of which could pose a threat to humans, animals, the environment and property.

The instrument described in these operating instructions is designed and manufactured in line with the state of the art and good engineering practice.

1.2 Personnel Qualification

The instrument may only be installed and commissioned by specialized personnel familiar with the installation, commissioning and operation of this product.

Specialized personnel are persons who can assess the work they have been assigned and recognize potential dangers by virtue of their specialized training, their skills and experience and their knowledge of the pertinent standards.

1.3 Risks due to Non-Observance of Safety Instructions

Non-observance of these safety instructions, the intended use of the device or the limit values given in the technical specifications can be hazardous or cause harm to persons, the environment or the plant itself.

The supplier of the equipment will not be liable for damage claims if this should happen.

1.4 Safety Instructions for the Operating Company and the Operator

The safety instructions governing correct operation of the instrument must be observed. The operating company must make them available to the installation, maintenance, inspection and operating personnel.

Dangers arising from electrical components, energy discharged by the medium, escaping medium and incorrect installation of the device must be eliminated. See the information in the applicable national and international regulations.

Please observe the information about certification and approvals in the Technical Data section.

1.5 Unauthorised Modification

Modifications of or other technical alterations to the instrument by the customer are not permitted. This also applies to replacement parts. Only the manufacturer is authorised to make any modifications or changes.

1.6 Inadmissible Modes of Operation

The operational safety of this instrument can only be guaranteed if it is used as intended. The instrument model must be suitable for the medium used in the system. The limit values given in the technical data may not be exceeded.

The manufacturer is not liable for damage resulting from improper or incorrect use.

1.7 Safe working practices for maintenance and installation work

The safety instructions given in this operating manual, any nationally applicable regulations on accident prevention and any of the operating company's internal work, operating and safety guidelines must be observed.

The operating company is responsible for ensuring that all required maintenance, inspection and installation work is carried out by qualified specialized personnel.

1.8 Pictogram explanation



DANGER

Type and source of danger

This indicates a **direct** dangerous situation that could lead to death or **serious injury** (highest danger level).

- a) Avoid danger by observing the valid safety regulations.



WARNING

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to death or **serious injury** (medium danger level).

- a) Avoid danger by observing the valid safety regulations.



CAUTION

Type and source of danger

This indicates a **potentially** dangerous situation that could lead to slight or serious injury, damage or **environmental pollution** (low danger level).

- a) Avoid danger by observing the valid safety regulations.



NOTICE

Note / advice

This indicates useful information of advice for efficient and smooth operation.

2 Product and functional description

2.1 Delivery scope

- Differential pressure measuring device DA10
- Operating Manual

2.2 Intended use

The differential pressure manometer DA10 serves to measure and display differential pressures in gaseous, fluid and aggressive media. The unit is completely made of CrNi-steel and is suitable for use in aggressive environments. If used with aggressive media, the media compatibility with the materials used must be checked (see Techn. data).

2.3 Equipment versions

The appearance of the available models differs in terms of the mounting method. Wall mounting version is shown as an example. The measuring system differs because it uses CrNi steel and/or Hastelloy. For more information, please see the technical data.

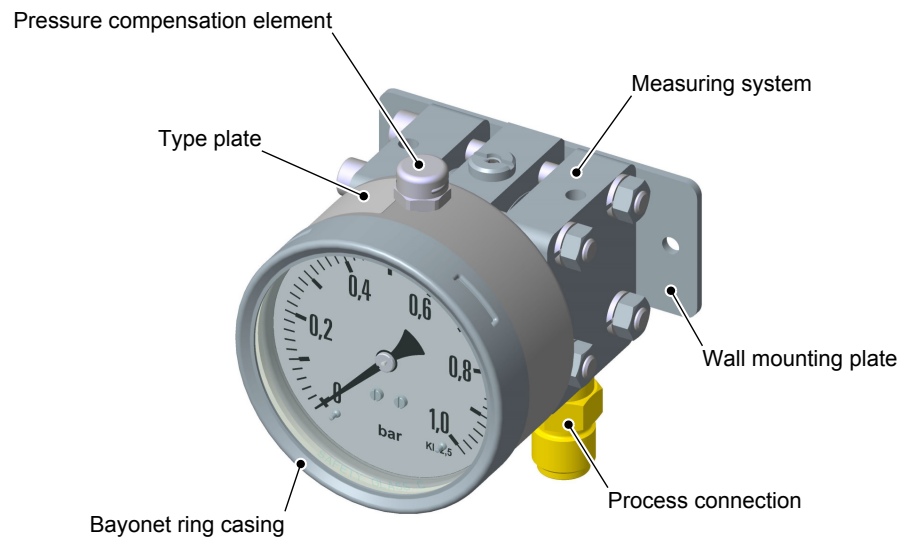


Fig. 1: Device overview

2.3.1 Nameplate

This type plate serves as an example of the information that is stated. The data shown is purely fictive, but does correspond to the actual conditions. For more information, please see the order code at the end of these instructions.

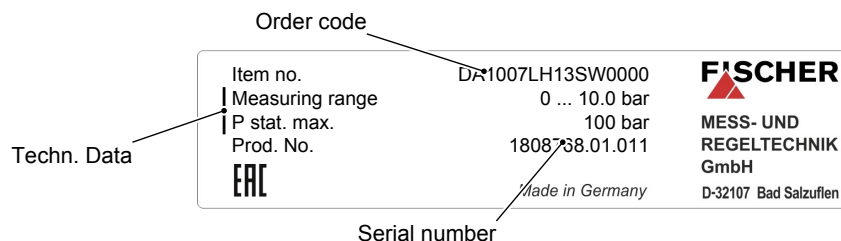


Fig. 2: Nameplate

2.3.2 Special functions

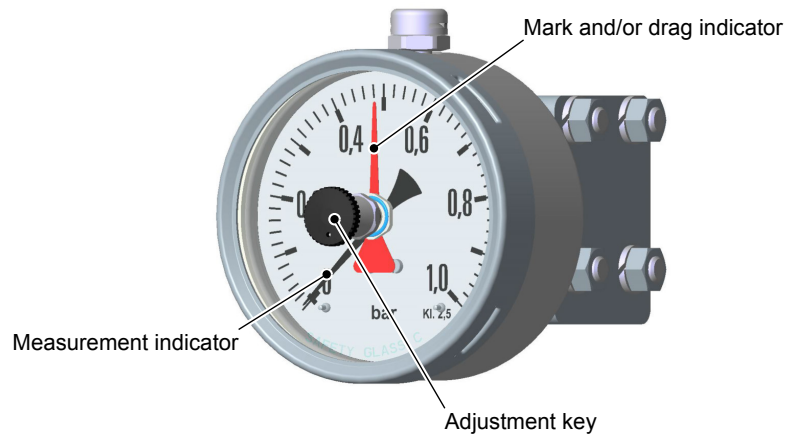
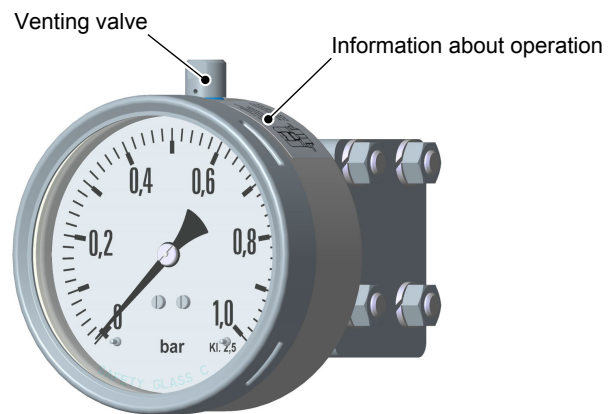


Fig. 3: Needle



Fluid fillings
<ul style="list-style-type: none"> • Glycerine, silicon oil

Fig. 4: Fluid charging

NOTICE! Fluid cannot be filled into models with a marker or drag indicator.

2.3.3 Process connection

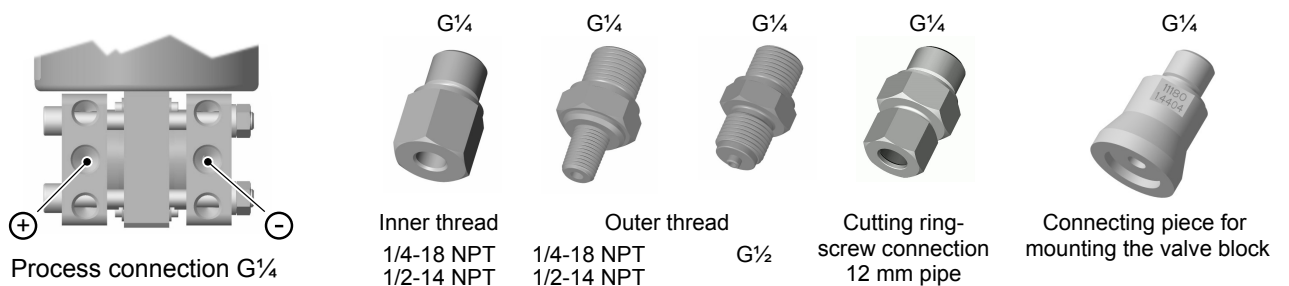
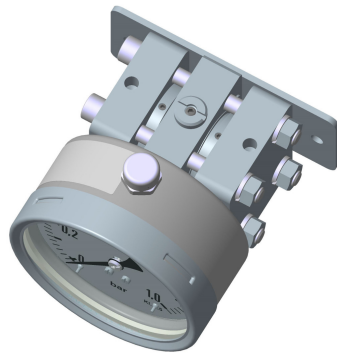
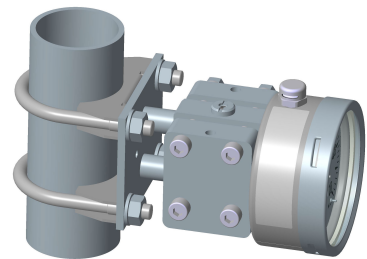


Fig. 5: Options for the process connection

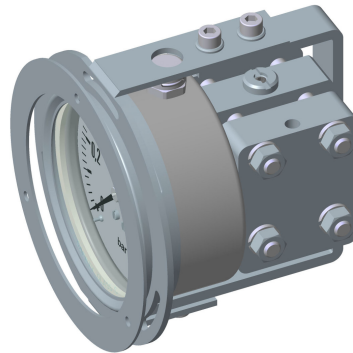
2.3.4 Assembly types



Wall mounting



Tube assembly



Panel mounting set
with panel mounting set

Fig. 6: Assembly types

2.4 Function diagram

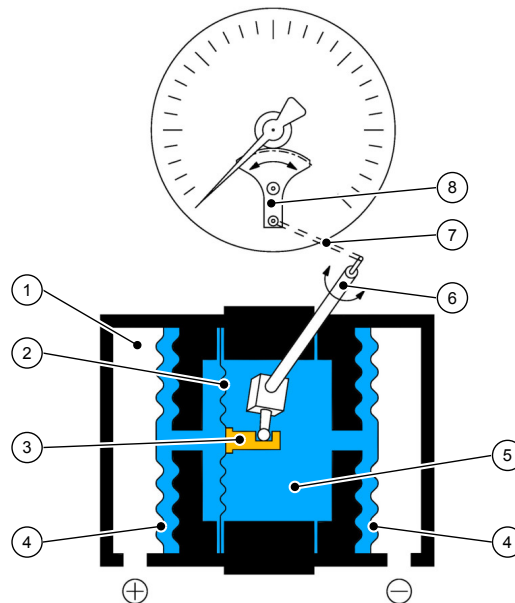


Fig. 7: Function diagram

1	Measuring chamber	2	Measuring diaphragm
3	Tie rod	4	Separating membrane
5	Pressure transfer fluid	6	Torsion tube
7	Transfer lever	8	Motion train

2.5 Design and mode of operation

The differential pressure that is to be measured acts on the separating diaphragms and is transferred hydraulically onto the measuring diaphragm. When the pressure is equalised, this is in its idle state. In case of pressure difference, the force acting on the measuring membrane causes it to be moved towards the side of the lower pressure. The deflection is transferred to the display mechanism as a rotary movement via a torison tube.

If the measuring system is loaded above the measuring range, the separating diaphragms are supported on parts of the system casing with the same contours. In this way, the measuring system is protected against overload.

3 Assembly

3.1 General information

The device can be mounted in one of the following ways:

1. **Wall mounting**

The device is designed for installation onto flat assembly plates. The unit is equipped with a wall mounting plate for this mounting type.

2. **Pipe assembly**

The device is equipped with a special pipe assembly set and is suitable for mounting to a 2" pipe (DN50).

3. **Panel fitting**

The device is equipped with a special front panel set and is suitable for mounting in front panels with a wall thickness of 2 to 3 mm.

At the factory, the device is calibrated for vertical installation, but the installation position is arbitrary. For any installation positions that are not vertical, the zero-point signal can be corrected via the installed offset correction.

To ensure safety during installation and maintenance, we recommend installing a suitable shut-off valve on the system (see accessories).

3.2 Process connection

- By authorized and qualified specialized personnel only.
- The pipes need to be depressurized when the instrument is being connected.
- Appropriate steps must be taken to protect the device from pressure surges.
- Check that the device is suitable for the medium being measured.
- Maximum pressures must be observed (cf. Tech. data)

All supply lines are arranged so that there are no mechanical forces acting on the device.

The pressure lines must be kept as short as possible and installed without any tight bends to avoid delays.

The pressure lines must be installed at an inclination so that when fluids are measured no air pockets are created or when measuring gases, no water pockets are created. If the required inclination is not reached, water or air filters must be installed at suitable places.

The pressure lines need to be vented for fluid measuring media..

If water is used as a measuring medium, the unit must be protected against frost.

If the pressure sensing lines are already pressurised at the time of commissioning, zero-point control and adjustment cannot be performed. In such cases, the device should be only connected to the mains without the pressure sensing lines.

The process connections are marked with (+) and (-) symbols on the device. The pressure lines must be mounted according to these symbols.

Differential pressure

- ⊕ Higher pressure
- ⊖ lower pressure

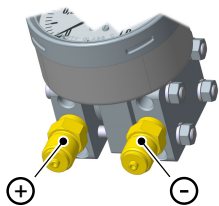


Fig. 8: Process connection

4 Commissioning

4.1 General

All pressure lines must have been correctly installed before commissioning. All connections are arranged so that there are no mechanical forces acting on the device.



⚠ CAUTION

Leak test

The pressure lines need to be checked for leaks before commissioning.

4.2 Zero point correction

The devices are set in the factory before delivery so that adjustment at the assembly site is usually unnecessary. Nevertheless, a zero-point correction on site is possible and is carried out as follows:



⚠ CAUTION

Fluid charging

No zero-point correction is possible on devices filled with fluids because the device needs to be opened and the fluid would leak out.

- Depressurize the pressure measuring line or only exert the existing static system pressure.
- Open the front of the device by releasing the bayonet ring. You may need a belt key for this.
- Hold the indicator tight and adjust the indicator bushing with a screwdriver until the indicator (after release) is in the correct zero position.

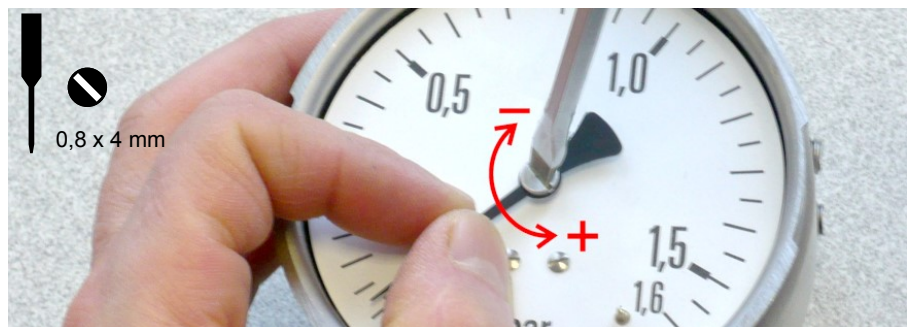


Fig. 9: Micro adjustment indicator

- Close the device again and ensure that the seal, gasket and bayonet ring are all in the correct position.

5 Servicing

5.1 Maintenance

The instrument is maintenance-free. We recommend the following regular inspection to guarantee reliable operation and a long service life:

- Check the function in combination with downstream components.
- Check the leak-tightness of the pressure connection lines.
- Check the electrical connections.

The exact test cycles need to be adapted to the operating and environmental conditions. In combination with other devices, the operating instructions for the other devices also need to be observed.

5.2 Transport

The measuring device must be protected against impacts. It should be transported in the original packaging or a suitable transport container.

5.3 Service

All defective or faulty devices should be sent directly to our repair department. Please coordinate all shipments with our sales department.



WARNING

Process media residues

Process media residues in and on dismantled devices can be a hazard to people, animals and the environment. Take adequate preventive measures. If required, the devices must be cleaned thoroughly.

Return the device in the original packaging or a suitable transport container.

5.4 Disposal



WARNING

Incorrect disposal may pose a risk to the environment.

Please help to protect the environment by always disposing of the work pieces and packaging materials in compliance with the valid national waste and recycling guidelines or reuse them.

6 Technical Data

6.1 General

General information	
Type designation	DA10
Pressure type	Differential pressure
Measuring principle	Diaphragm measuring cell
Pressure transfer agent in the measuring cell	Silicon oil
Measuring medium	Neutral gaseous and fluid media; aggressive media according to the medium compatibility of the fitted materials.

6.2 Operating conditions

Ambient temperature range	-20 °C ... +80 °C
Storage temperature range	-40 °C ... +80 °C
Medium temperature range	Max. 100°C
Protection class IP	IP65 acc. to DIN EN 60529

6.3 Input variables

Rated pressure of the measuring system	PN100
Maximum static system pressure	100 bar
Durability	Over-pressure-proof on one side up to rated pressure of the measuring system, (+) and (-) sides, under-pressure-proof
Measurement accuracy	±2.5 % of the measuring range (±1.6 % FS on request)
Temperature sensor	0.3 % / 10 °C
Zero-point adjustment	±25 % of the measuring range

Measuring ranges

[bar]	[kPa]	[psi]
0 ... 1.0	0 ... 100	0 ... 15
0 ... 1.6	0 ... 160	0 ... 30
0 ... 2.5	0 ... 250	0 ... 60
0 ... 4.0	0 ... 400	0 ... 100
0 ... 6.0	0 ... 600	0 ... 160
0 ... 10.0	0 ... 1000	0 ... 200
0 ... 16.0	0 ... 1600	

6.4 Construction design

Materials

Measured value display	Material	Material no.	
		EU	AISI
Bayonet ring housing NG100	CrNi steel	1.4404	316L
Process connection (all models)	CrNi steel	1.4404	316L
Intermediate plate	AlMgSiPb	HARD-COAT®	
Motion train	CrNi steel		
Dial face and needle	Aluminium, painted, printed		
Inspection disk	Safety laminated glass		

MB = Measurement range

Materials (media-contacting)

Design of the measuring system (H)	Material	Material no.	
		EU	AISI
Pressure caps	Hastelloy	C276	
Separating membrane	Hastelloy	C276	
Seal	FKM O-rings		

Design of the measuring system (R)	Material	Material no.	
		EU	AISI
Pressure caps	CrNi steel	1.4404	316L
Separating membrane	Hastelloy	C276	
Seal	FKM O-rings		

Design of the measuring system (P)	Material	Material no.	
		EU	AISI
Pressure caps	Hastelloy	C276	
Separating membrane	Hastelloy	C276	
Seal	FEP sheathed FKM O-rings		

Design of the measuring system (V)	Material	Material no.	
		EU	AISI
Pressure caps	CrNi steel	1.4404	316L
Separating membrane	Hastelloy	C274	
Seal	FEP sheathed FKM O-rings		

Assembly

Wall mounting	Flanged assembly plate
Pipe mounting	Flanged assembly plate and attachment bracket
Panel mounting set	Front panel fitting set

6.4.1 Dimensional drawings

All dimensions in mm unless otherwise stated

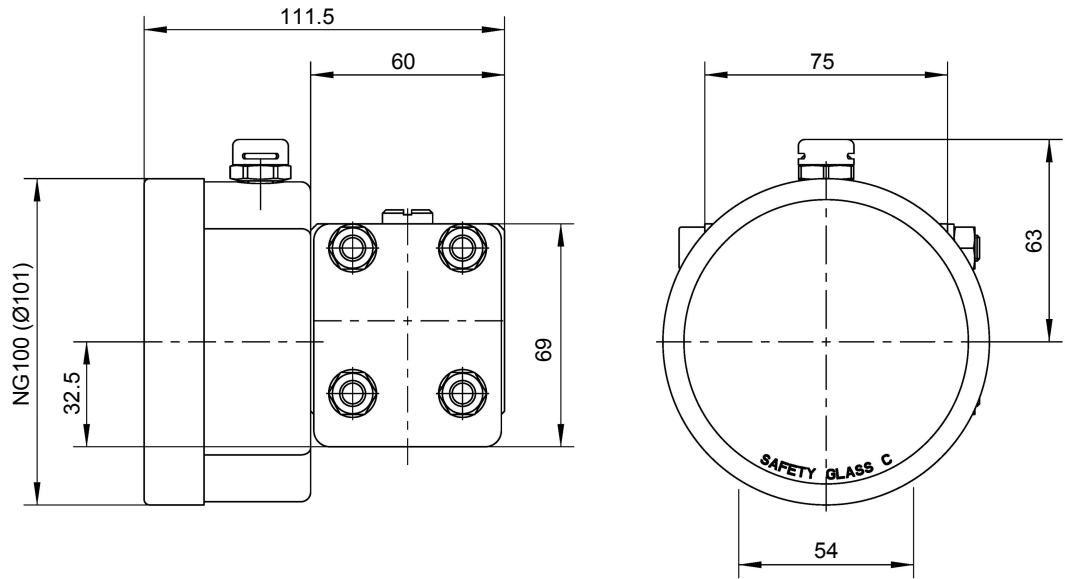


Fig. 10: Dimension drawing

6.4.1.1 Wall mounting

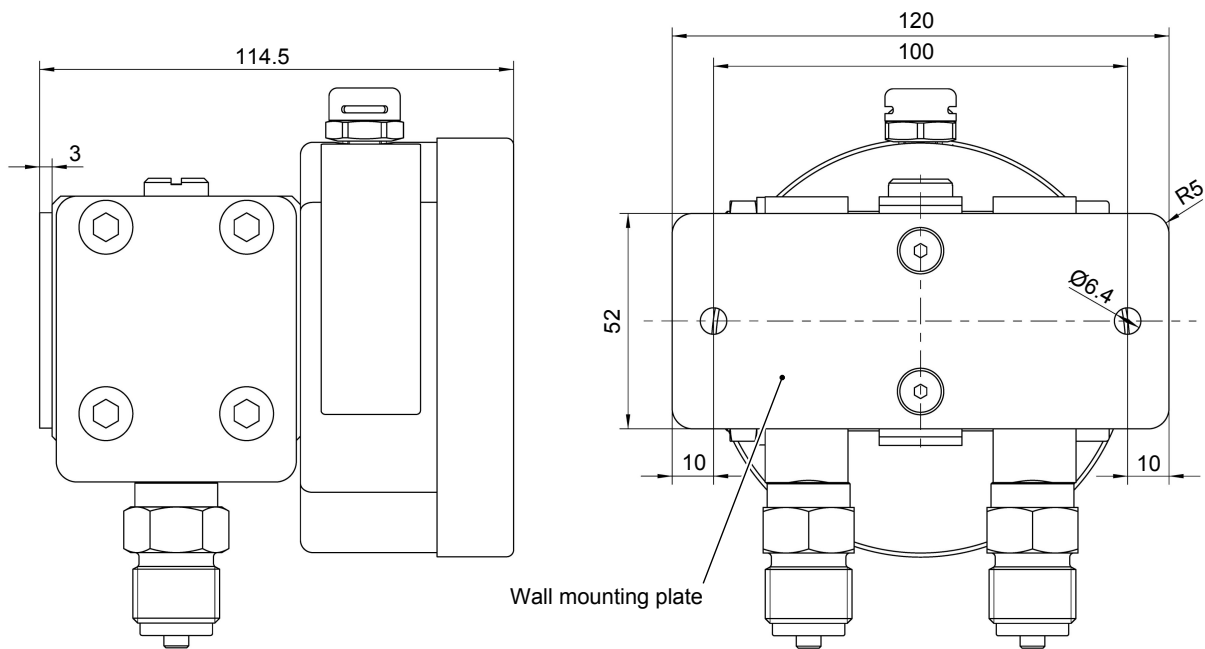


Fig. 11: Wall mounting

6.4.1.2 Pipe mounting

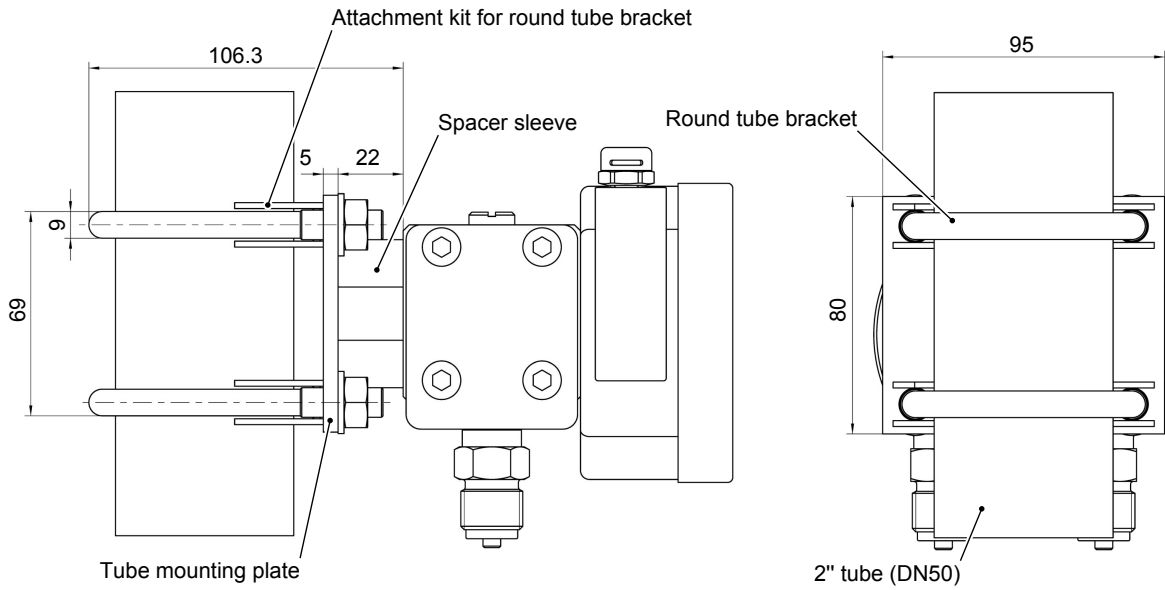


Fig. 12: Pipe mounting

6.4.1.3 Installation of front panel

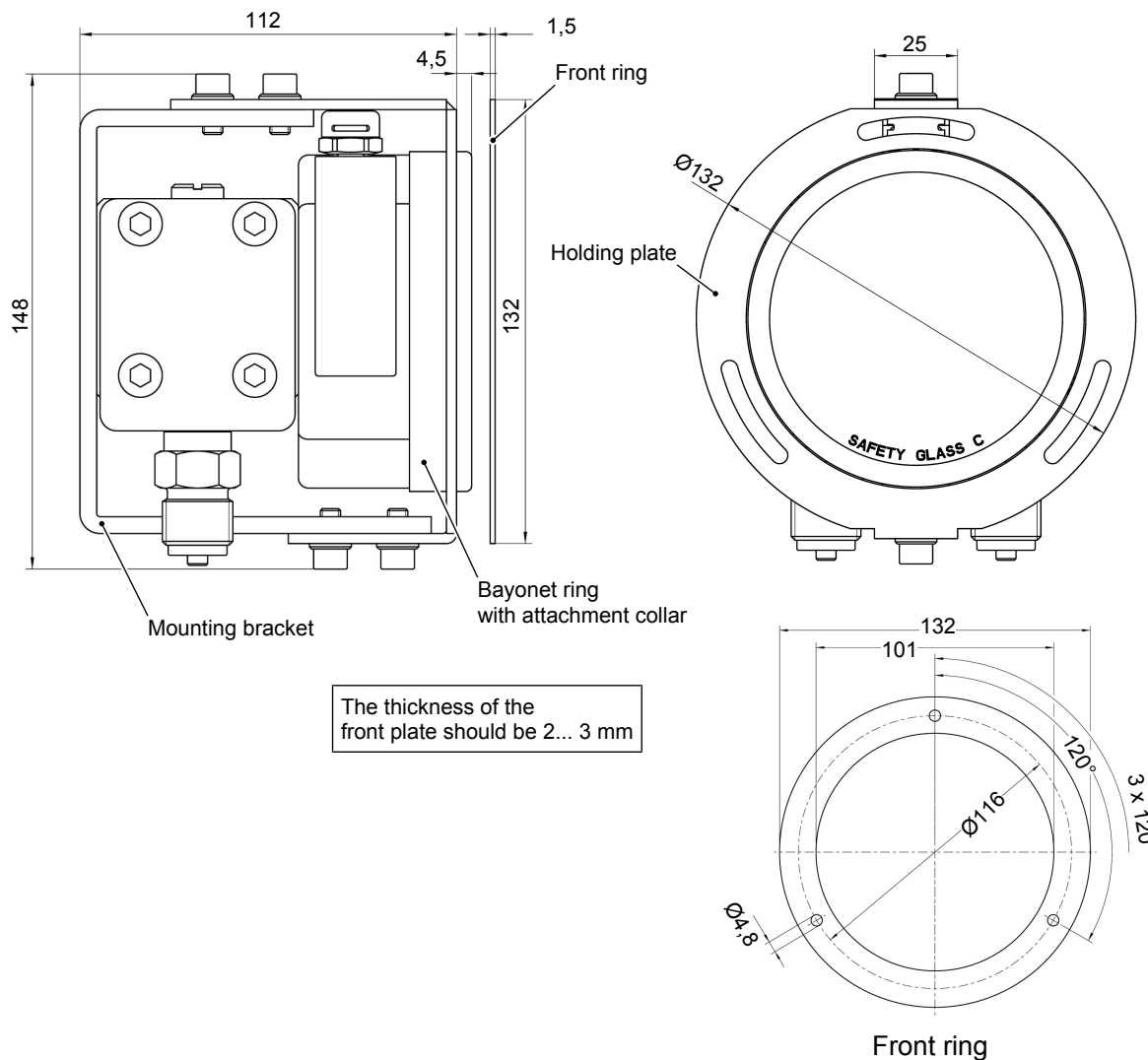


Fig. 13: Installation of front panel

6.4.1.4 Process connection

6.4.1.4.1 Connection port with cylindrical external thread

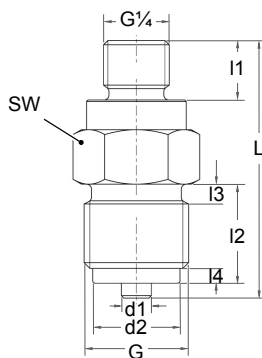


Fig. 14: Connecting port G

G	d1	d2	L	I1	I2	I3	I4	SW
Tol.	± 0.1	± 0.2	± 0.3	± 0.2	± 0.2	± 0.1	± 0.1	
G$\frac{1}{2}$	6	17.5	52	12	23	4	3	22
G$\frac{1}{4}$	5	9.5	39	12	15	3	2	19

SW:= Key width

6.4.1.4.2 Connection shanks with tapered external thread

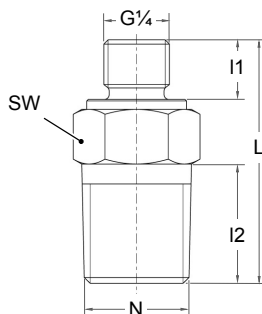


Fig. 15: Connecting port NPT

N	L	I1	I2	SW
Tol.	± 0.3	± 0.2	± 0.2	
$\frac{1}{2}$-14 NPT	49	12	24	22
$\frac{1}{4}$-18 NPT	42	12	18	19

SW:= Key width

6.4.1.4.3 Connecting port with inner thread

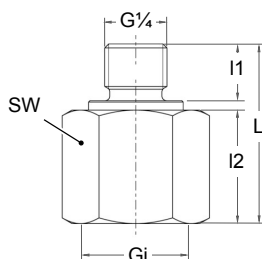


Fig. 16: Connecting port Gi

Gi	L	I1	I2	SW
Tol.	± 0.3	± 0.2	± 0.2	
G$\frac{1}{2}$	38	12	24	27
$\frac{1}{2}$-14 NPT	38	12	24	27
$\frac{1}{4}$-18 NPT	32	12	18	19

SW:= Key width

6.4.1.4.4 Screw-in connection

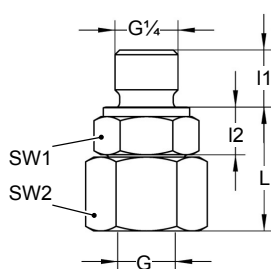


Fig. 17: Screw-in connection

g	L	I1	I2	SW1	SW2
Tol.		± 0.2	± 0.2		
12	26	12	12	19	22

SW:= Key width

6.4.1.4.5 Shut-off fitting (accessories)

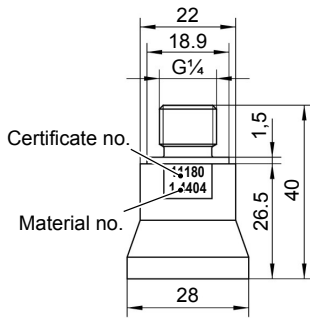


Fig. 18: Connecting piece

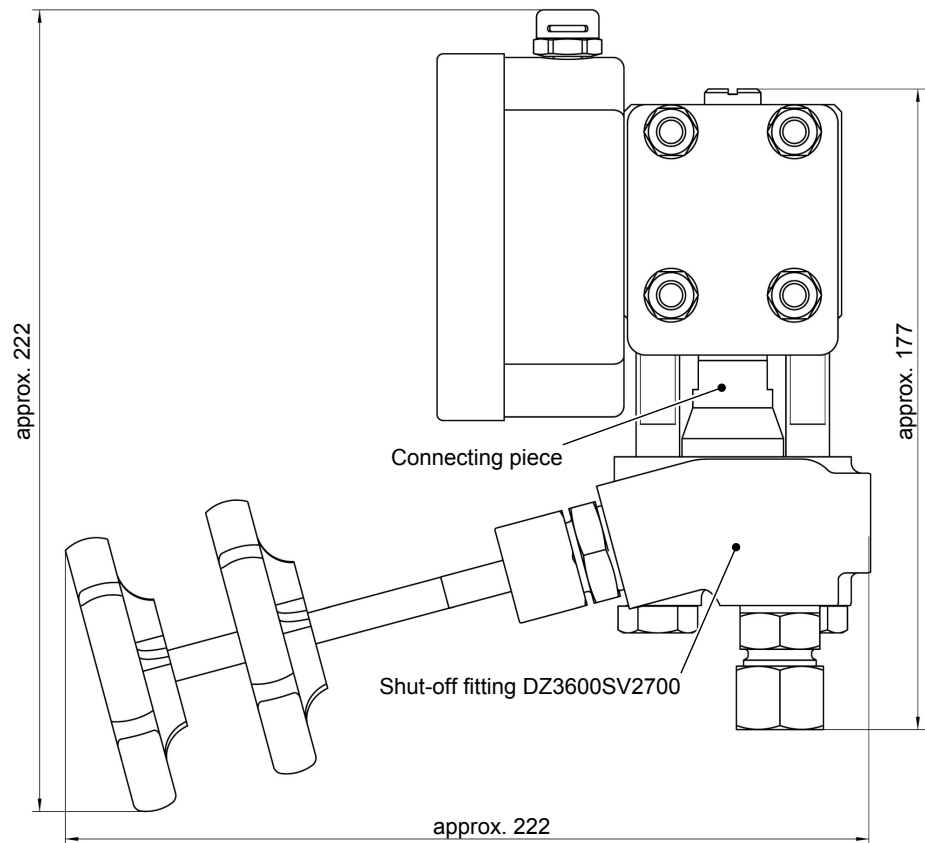


Fig. 19: DA10 with shut-off fitting

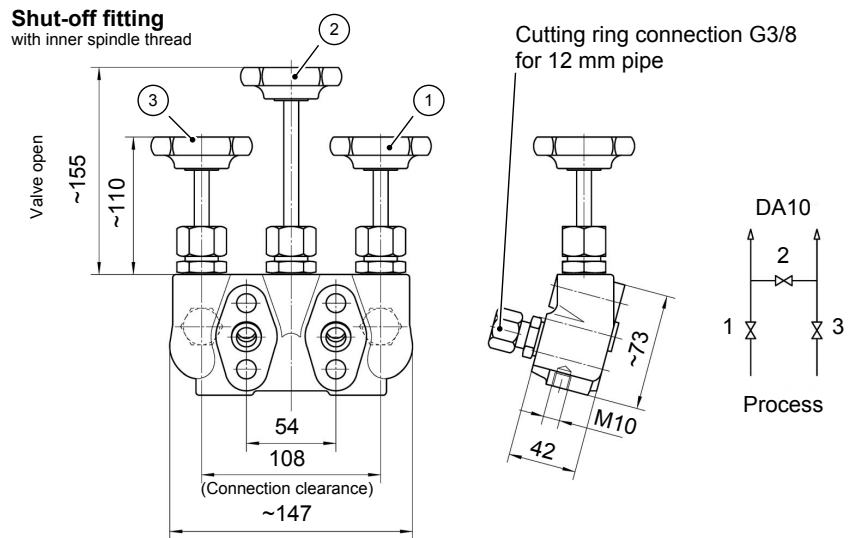
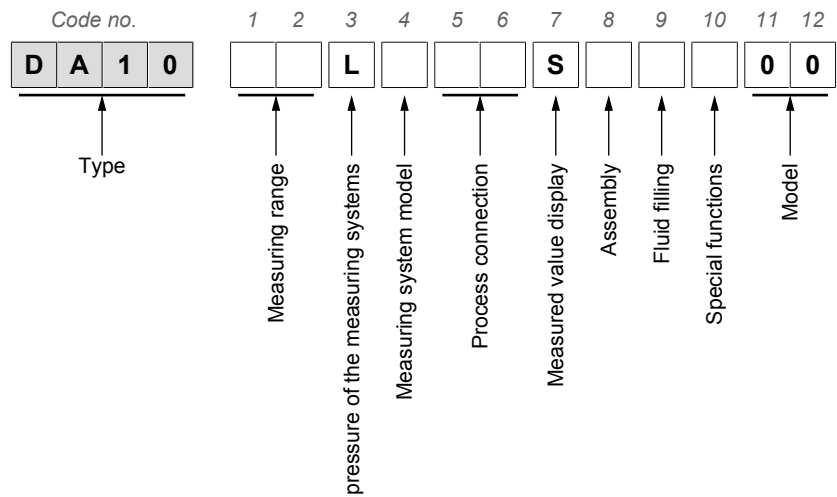


Fig. 20: Shut-off fitting DZ3600SV2700

7 Order Codes



Measuring range:

[1.2]	(Code no.)
02	0 ... 1.0 bar
03	0 ... 1.6 bar
04	0 ... 2.5 bar
05	0 ... 4.0 bar
06	0 ... 6.0 bar
07	0 ... 10.0 bar
09	0 ... 16.0 bar
F2	0 ... 100 kPa
F3	0 ... 160 kPa
F4	0 ... 250 kPa
F5	0 ... 400 kPa
F6	0 ... 600 kPa
F7	0 ... 1000 kPa
F8	0 ... 1600 kPa
H4	0 ... 15 psi
H5	0 ... 30 psi
H6	0 ... 60 psi
H7	0 ... 100 psi
H8	0 ... 200 psi
H9	0 ... 160 psi

Rated pressure of the measuring system

[3]	(Code no.)
L	PN100

Design of the measuring system:

[4]	(Code no.)	Material
H	Pressure caps	Hastelloy C276
	Separating membrane	Hastelloy C276
	Seal	FKM O-rings
R	Pressure caps	Stainless steel 1.4404
	Separating membrane	Hastelloy C276
	Seal	FKM O-rings
P	Pressure caps	Hastelloy C276
	Separating membrane	Hastelloy C276
	Seal	FKM O-rings
V	Pressure caps	Stainless steel 1.4404
	Separating membrane	Hastelloy C276
	Seal	FKM O-rings

Process connection:

[5.6]	(Code no.)
01	Inner thread G 1/4
04	Connecting piece G $\frac{1}{4}$ with inside thread 1/4 -18 NPT
05	Connecting piece G $\frac{1}{4}$ with inside thread 1/2 -14 NPT
13	Connection shanks G $\frac{1}{4}$ with external thread G $\frac{1}{2}$
14	Connecting port G $\frac{1}{4}$ with outer thread 1/4-18 NPT
15	Connecting port G $\frac{1}{4}$ with outer thread 1/2-14 NPT
27	Cutting ring connection in brass for 12 mm pipe
VM	Connecting piece for mounting the valve block

Measured value display:

[7]	(Code no.)
S	Bayonet ring housing NG100

Assembly:

[8]	(Code no.)
W	Wall mounting
R	Pipe mounting
D	Panel mounting set

Fluid filling:

[9]	(Code no.)
0	Without fluid filling
1	Glycerine
5	Silicon oil

Fluid cannot be filled into models with a marker or drag indicator.

Special function:

[10] (Code no.)	
0	Without special function
1	Adjustable marker needle
2	Resettable drag needle

Design:

[11.12] (Code no.)	
00	Standard version

7.1 accessories

Order no.	Planned measures	Material
DZ3600SV2700	Triple valve block DN5 PN420 <ul style="list-style-type: none"> • Flange connection acc. to DIN EN 61518 • Cutting ring screw connections 12 mm pipe • Including assembly set 	1.4571

8 Attachments

8.1 EAC Declaration



ЕВРАЗИЙСКИЙ ЭКОНОМИЧЕСКИЙ СОЮЗ ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ

Заявитель Общество с ограниченной ответственностью «МАТИС-М». Место нахождения: 117261, город Москва, улица Вавилова, дом 70, корпус 3, комната правления, Российская Федерация. Адрес места осуществления деятельности: 109029, город Москва, город, Сибирский проезд, дом 2, корпус 12, Российская Федерация, Основной государственный регистрационный номер: 1037739575125, телефон: +7 495 725-23-09, адрес электронной почты: info@matis-m.ru

в лице Генерального директора Шарова Александра Анатольевича

заявляет, что Прибор - манометр для измерения дифференциального давления, тип DA01, DA03, DA08, DA09, DA10, DA12

Продукция изготовлена в соответствии с директивой 2014/30/EU

Изготовитель "FISCHER Mess- und Regeltechnik GmbH"

Место нахождения: Bielefelder Straße 37a, D-32107 Bad Salzuflen, Германия. Филиал завода-изготовителя: "FISCHER Mess- und Regeltechnik GmbH" место нахождения: Bielefelder Straße 37a, D-32107 Bad Salzuflen, Германия.

Код ТН ВЭД ЕАЭС 9026 20 400 0, серийный выпуск

Соответствует требованиям Технического регламента Таможенного союза ТР ТС 020/2011 "Электромагнитная совместимость технических средств"

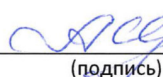
Декларация о соответствии принята на основании протокола № 01228-02/2017-06 от 14.06.2017 года.

Испытательной лаборатории (центра) продукции народного потребления "Отдел 101" Общества с ограниченной ответственностью "Межрегиональный центр исследований и испытаний", регистрационный номер аттестата аккредитации № RA.RU.21AO47 Схема декларирования: 3д

Дополнительная информация ГОСТ 30804.3.2-2013 Совместимость технических средств электромагнитная. Эмиссия гармонических составляющих тока техническими средствами с потребляемым током не более 16 А (в одной фазе). Нормы и методы испытаний

ГОСТ 30804.3.3-2013 Совместимость технических средств электромагнитная. Ограничение изменений напряжения, колебаний напряжения и фликера в низковольтных системах электроснабжения общего назначения. Технические средства с потребляемым током не более 16 А (в одной фазе), подключаемые к электрической сети при несоблюдении определенных условий подключения. Нормы и методы испытаний
Условия хранения продукции в соответствии с ГОСТ 15150-69. Срок хранения (службы, годности) указан в прилагаемой к продукции товаросопроводительной и/или эксплуатационной документации.

Декларация о соответствии действительна с даты регистрации по 14.06.2022 включительно


(подпись)



М.П.

Шаров Александр Анатольевич

(Ф. И. О. заявителя)

Регистрационный номер декларации о соответствии: ЕАЭС N RU Д-ДЕ.АЛ16.В.77754

Дата регистрации декларации о соответствии: 15.06.2017

Fig. 21: ЕАЭС N RU Д-ДЕ.АЛ16.В.77754

