

Differential pressure gauge With integrated working pressure indication (DELTA-plus) Model DPG40

WIKA data sheet PM 07.20

for further approvals see
page 5**DELTA-plus**

Applications

Monitoring of filters, compressors and pumps for:

- Marine boilers, pressure vessels, bilge-water collection
- Drinking and cooling-water treatment plants
- Pressure-boosting stations
- Heating technology
- Fire-extinguishing systems

Special features

- Shatterproof window and robust aluminium or stainless steel measuring chamber for increased requirements
- Low scale ranges from 0 ... 160 mbar
- High accuracy down to 1.6 %
- Optionally with approvals for hazardous areas
- Helium leak tested



Fig. left: With aluminium measuring chamber

Fig. right: With stainless steel measuring chamber

Description

The differential pressure gauges of the DELTA-line product family are primarily used for the monitoring of low differential pressures where there are high requirements in terms of one-sided overload and static pressure.

Typical markets for these products are the shipbuilding industry, process heating technology, the heating, ventilation and air-conditioning industries, the water/wastewater industry, and machine building and plant construction. For these, the main function of the measuring instruments is the monitoring of filters, compressors and pumps.

Often in these applications, alongside the indication of the differential pressure, the current working pressure is also relevant. A version with integrated working pressure indication is therefore available for the model DPG40. The two easily readable, mechanical on-site displays enable the simultaneous reading of the working and the differential pressure.

Furthermore, this saves on an additional measuring and sealing point, reducing additional expense for piping and mounting.

As a result of the low scale range of 0 ... 160 mbar, the instrument can also be used for applications with low differential pressures. A further key feature is the high accuracy of down to 1.6 % which is important for most applications.

The measuring chamber, depending on the requirement and application, can be made from aluminium or stainless steel. Through the increased stability, the stainless steel measuring chamber is also suitable for gaseous media.

Operating principle

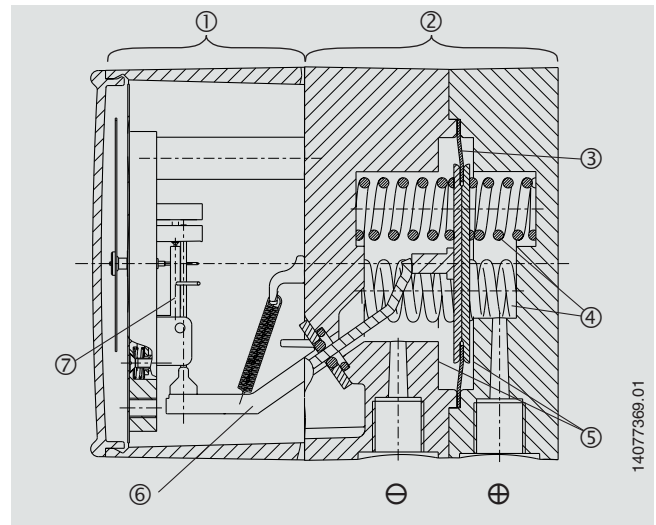
The display case (1) is connected directly with the measuring chamber (2) and the process connections integrated in it.

Pressures p_1 and p_2 act on the media chambers \oplus and \ominus , which are separated by an elastic diaphragm (3).

The differential pressure ($\Delta p = p_1 - p_2$) leads to an axial deflection of the diaphragm against the measuring range springs (4).

The deflection, which is proportional to the differential pressure, is transmitted to the movement (7) in the display case via a pressure-tight and low-friction rocker arm (6).

Overload safety is provided by metal bolsters (5) resting against the elastic diaphragm.



Overview of versions

Measuring chamber material		Working pressure indication		Ex approval
Aluminium	Stainless steel	Without	Ø 22 mm	
x		x		Option
x			x	-
	x	x		Option

→ For information on approvals, see page 5

Specifications

Basic information	
Nominal size	
Differential pressure display	Ø 100 mm
Working pressure indication	<ul style="list-style-type: none"> ■ Without ■ Ø 22 mm
Window	Plastic, with plug screw for switch point setting
Case version	Display case, aluminium, EN AC-Al Si9Cu3(Fe)
	→ Measuring chamber, see table "measuring element"

Measuring element	
Type of measuring element	
Differential pressure display	Measuring chamber with diaphragm and media chambers \oplus and \ominus
Working pressure indication	<ul style="list-style-type: none"> ■ Without ■ Bourdon tube
Material	
Measuring chamber (differential pressure display)	<ul style="list-style-type: none"> ■ Aluminium, EN AC-Al Si9Cu3(Fe), black painted ■ Stainless steel 1.4571
Diaphragms, sealings	<ul style="list-style-type: none"> ■ FPM/FKM ■ NBR
Bourdon tube (working pressure indication)	Copper alloy
Leak tightness of measuring chamber	Helium tested, leakage rate: $< 5 \cdot 10^{-3}$ mbar l/s

Accuracy specifications

Accuracy class

Differential pressure display	<ul style="list-style-type: none"> ■ 2.5 ■ 1.6 (only selectable for scale ranges from 0 ... 1 bar to 0 ... 10 bar)
Working pressure indication	4
Temperature error	On deviation from the reference conditions at the measuring system: max. $\pm 0.8\%$ /10 K of full scale value
Zero point setting	External, via adjustment screw under the window
Reference conditions	
Ambient temperature	+20 °C

Scale ranges for differential pressure

Scale range	
mbar	psi
0 ... 160	0 ... 5
0 ... 250	0 ... 15
0 ... 400	0 ... 25
0 ... 600	0 ... 40
0 ... 1,000	0 ... 60
bar	kg/cm²
0 ... 0.25	0 ... 0.25
0 ... 0.4	0 ... 0.4
0 ... 0.6	0 ... 0.6
0 ... 1	0 ... 1
0 ... 1.6	0 ... 1.6
0 ... 2.5	0 ... 2.5
0 ... 4	0 ... 4
0 ... 6	0 ... 6
0 ... 10	0 ... 10
kPa	MPa
-12.5 ... +12.5	0 ... 0.025
0 ... 16	0 ... 0.04
0 ... 25	0 ... 0.06
0 ... 40	0 ... 0.1
0 ... 60	0 ... 0.16
0 ... 100	0 ... 0.25
0 ... 160	0 ... 0.4
0 ... 250	0 ... 0.6
0 ... 400	0 ... 1
0 ... 600	
0 ... 1,000	

Scale ranges for working pressure

Scale range
bar
0 ... 10
0 ... 16
0 ... 25

Further information on: Scale ranges	
Special scale ranges	Other scale ranges on request
Unit	<ul style="list-style-type: none"> ■ bar ■ psi ■ mbar ■ kg/cm² ■ MPa ■ kPa
Dial	
Scale colour	Black
Material	Aluminium
Special scales	Other scales on request
Pointer	Blue

Process connections	
Standard	<ul style="list-style-type: none"> ■ EN 837 ■ DIN EN ISO 8434-1
Size	
EN 837	<ul style="list-style-type: none"> ■ 2 x G ¼, female thread, centre distance 26 mm ■ 2 x G ¼ B, male thread, centre distance 26 mm
DIN EN ISO 8434-1	<ul style="list-style-type: none"> ■ 2 x compression fitting with ferrule for pipe Ø 6 mm ■ 2 x compression fitting with ferrule for pipe Ø 8 mm ■ 2 x compression fitting with ferrule for pipe Ø 10 mm
Materials (wetted)	
Measuring chamber (differential pressure display)	<ul style="list-style-type: none"> ■ Aluminium, Al Si9Cu3(Fe), black painted ■ Stainless steel 1.4571
Process connection	<ul style="list-style-type: none"> ■ Identical to measuring chamber (only 2 x G ¼ female thread) ■ Copper alloy ■ Stainless steel ■ Steel (only compression fittings with ferrule)
Diaphragms, sealings	<ul style="list-style-type: none"> ■ FPM/FKM ■ NBR
Bourdon tube (working pressure indication)	Copper alloy






Operating conditions	
Medium temperature	-10 ... +90 °C [14 ... 194 °F]
Ambient temperature	<ul style="list-style-type: none"> ■ -10 ... +70 °C [14 ... 150 °F] for Non-Ex instruments ■ -10 ... +60 °C [14 ... 140 °F] for Ex instruments
Storage temperature	-20 ... +60 °C [-4 ... +140 °F]
Pressure limitation	
Steady	Full scale value
Fluctuating	0.9 x full scale value
Overload safety	Max. 25 bar On one, both and alternatingly on the ⊕ and ⊖ side
Ingress protection per IEC/EN 60529	IP65

Approvals

Approvals included in the scope of delivery

Logo	Description	Country
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Optional approvals

Logo	Description	Country
	EU declaration of conformity	European Union
	ATEX directive Hazardous areas - Ex c Gas [II 2G c IIC TX X] Dust [II 2D c TX X]	
	EAC Hazardous areas	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	UkrSEPRO Metrology, measurement technology	Ukraine

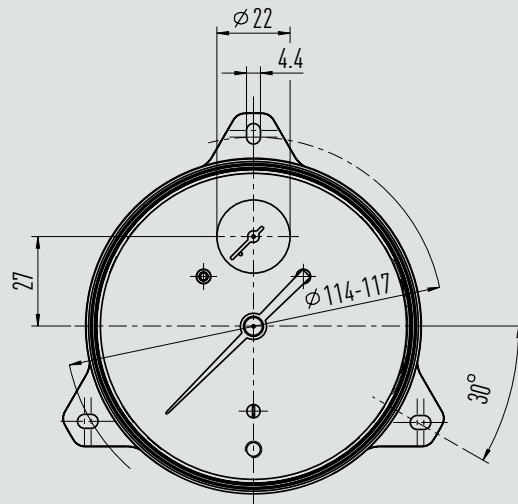
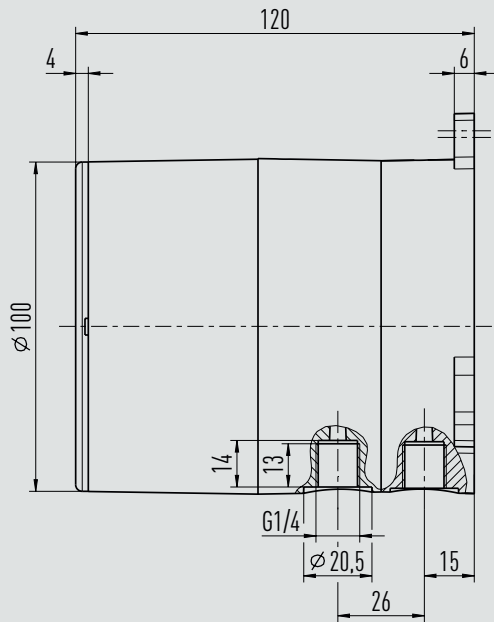
Certificates (option)

Certificates	
Certificates	<ul style="list-style-type: none"> ■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)
Recommended recalibration interval	1 year (dependent on conditions of use)

→ Approvals and certificates, see website

Dimensions in mm

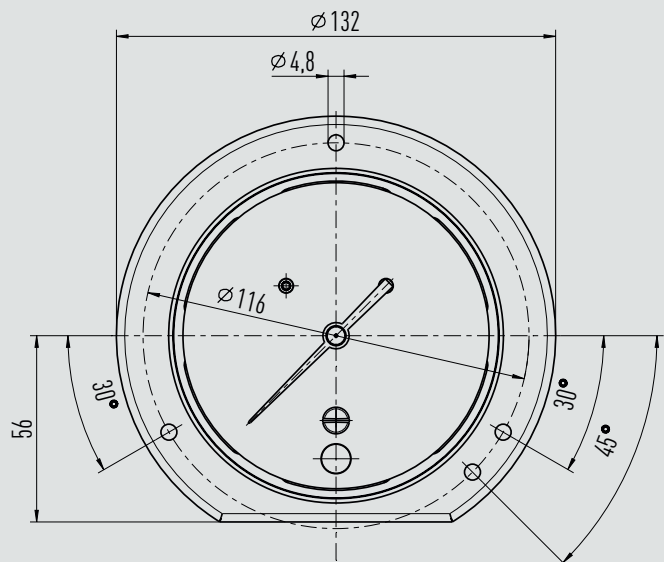
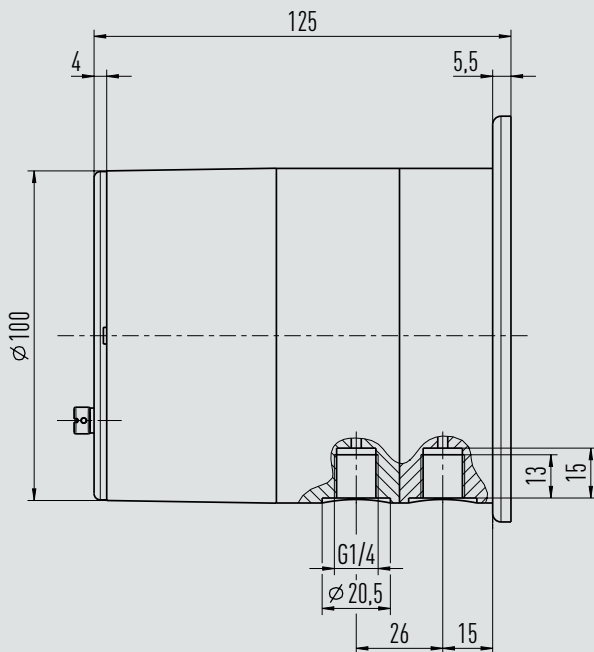
Model DPG40 with aluminium measuring chamber, 2 x G 1/4 female thread, centre distance 26 mm



Weight
approx. 1.3 kg

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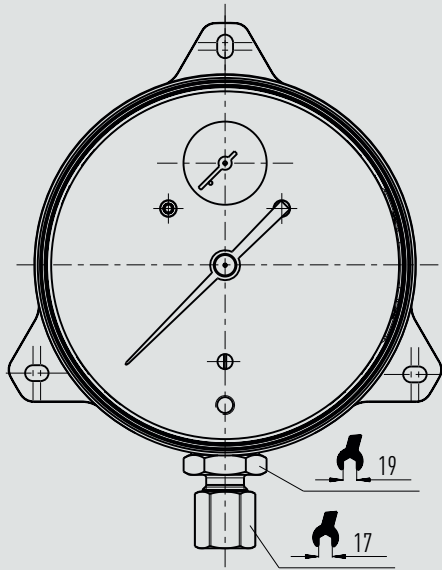
Model DPG40 with stainless steel measuring chamber, 2 x G 1/4 female thread, centre distance 26 mm



Weight
approx. 3.7 kg

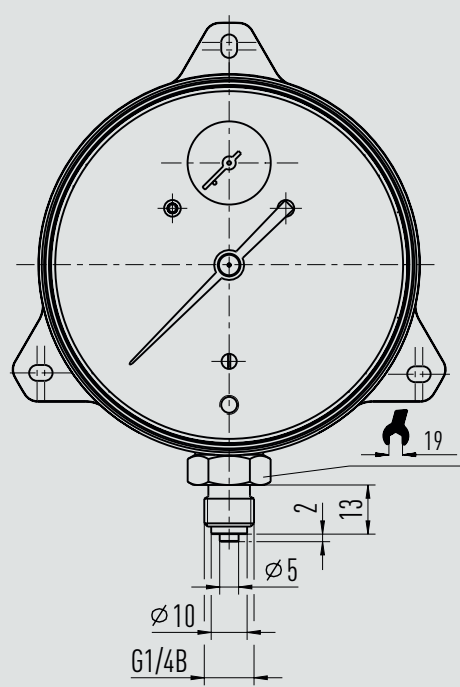
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Model DPG40, 2 x compression fitting with ferrule








for pipe \varnothing 6, 8 and 10 mm

Model DPG40, 2 x G 1/4 B, male thread



14077971.01

Accessories and spare parts

Model		Description	Order number
	-	Panel mounting flange, aluminium	14074004
	-	Panel mounting flange, stainless steel	14075088
	910.17	Sealings → see data sheet AC 09.08	-
	910.15	Syphons → see data sheet AC 09.06	-
	IV3x, IV5x	Valve manifold for differential pressure measuring instruments → see data sheet AC 09.23	-
	-	Compression fittings with ferrule or clamp ring for pipe diameters 6, 8 and 10 mm 6, 8 and 10 mm	On request

Ordering information

Model / Scale range / Process connection / Material of diaphragm and sealings / Options

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