

Differential pressure gauge with switch contacts

All welded construction

Models DPGS43.1x0, stainless steel version

WIKA data sheet PV 27.05



switchGAUGE

Applications

- Control and regulation of process values
- Monitoring of plants and switching of electric circuits
- For measuring points with increased differential overpressure
- Monitoring and control of pumps
- Filter monitoring
- Level measurement in closed tanks

Special features

- Differential pressure measuring ranges from 0 ... 16 mbar
- High working pressure (static pressure) and high overpressure safety up to 40 bar
- Also available with liquid-filled case for high dynamic pressure loads or vibrations
- Gauges with inductive contacts for use in hazardous areas with ATEX approval
- Gauges with electronic contact for PLC applications



Differential pressure gauge model DPGS43.100 with switch contact model 831.2

Description

Wherever the process pressure has to be indicated locally, and, at the same time, circuits are to be made or broken, the model DPGS43.1x0 switchGAUGE can be used.

Switch contacts (electrical alarm contacts) make or break an electric control circuit dependent upon the position of the instrument pointer. The switch contacts are adjustable over the full extent of the scale range (see DIN 16085), and are mounted predominantly below the dial, though also partly on top of the dial. The instrument pointer (actual value pointer) moves freely across the entire scale range, independent of the setting.

The set pointer can be adjusted using a removable adjustment key in the window.

Switch contacts consisting of several contacts can also be set to a single set point. Contact actuation is made when the actual value pointer travels beyond or below the desired set point.

The pressure gauge is manufactured in accordance with DIN 16085 and fulfils all requirements of the relevant standards (EN 837-3) and regulations for the on-site display of the working pressure of pressure vessels. As switch contacts magnetic snap-action contacts, reed switches, inductive contacts - for requirements to ATEX - or electronic contacts for triggering a PLC are available. For further information on the different switch contacts please see data sheet AC 08.01.

Standard version

Design

Lower mount pressure connections,
highly corrosion-resistant all-metal construction,
measuring cell secured against unauthorised intervention,
pressure connection location adjustable to mounting
conditions,
WIKA trade pattern DT - GM 86 08 176

Nominal size in mm

100, 160

Accuracy class

1.6 (2.5 at 0 ... 16 mbar and 0 ... 25 mbar)

Scale ranges

0 ... 16 mbar to 0 ... 25 bar

Scale range 0 ... 16 mbar: Scale length approx. 180 °
or all other equivalent vacuum or combined pressure and
vacuum ranges

Pressure limitation

Steady: Full scale value

Fluctuating: 0.9 x full scale value

Overpressure safety

see table on page 3

Max. working pressure (static pressure)

see table on page 3

Permissible temperature

Ambient: -20 ... +60 °C

Medium: +100 °C maximum

Temperature effect

When the temperature of the measuring system deviates
from the reference temperature (+20 °C):
max. ±0.5 %/10 K of full scale value

Measuring chamber with process connection (wetted)

Stainless steel 1.4571,

lower mount,

2 x G ¼ female

Pressure elements (wetted)

≤ 0.25 bar: Stainless steel 1.4571

> 0.25 bar: NiCr-alloy (Inconel)

Sealing bellows (wetted)

Stainless steel 1.4571

Venting of the media chambers (wetted)

Stainless steel 1.4571 for scale ranges ≤ 0.25 bar

(option for scale ranges ≥ 0.4 bar!)

Movement

Stainless steel

Dial

Aluminium, white, black lettering

Pointer

Aluminium, black

Case

Stainless steel, with blow-out device

Window

Laminated safety glass

Bezel ring

Cam ring (bayonet type), stainless steel

Mounting

according to affixed symbols

⊕ high pressure,

⊖ low pressure

Mounting by means of:

- Rigid measuring lines
- Mounting holes in measuring flange
- Panel mounting flange (option)
- Mounting bracket for wall or pipe mounting (option)

Electrical connection

Terminal box

Ingress protection

IP 54 per EN 60529 / IEC 529 (with liquid filling IP 65)

Switch contacts

Magnetic snap-action contact model 821

- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- Up to 4 switch contacts per measuring instrument

Inductive contact model 831

- Long service life due to non-contact sensor
- Additional control unit required (model 904.xx)
- With corresponding control unit suitable for use in zone 1 / 21 (2 GD) hazardous areas
- Low influence on the indication accuracy
- Fail-safe switching at high switching rates
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

Electronic contact model 830 E

- For direct triggering of a programmable logic controller (PLC)
- 2-wire system (option: 3-wire system)
- Long service life due to non-contact sensor
- Low influence on the indication accuracy
- Fail-safe switching at high switching rates
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

Reed switch model 851

- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- Also suitable for direct triggering of a programmable logic controller (PLC)
- Free from wear as without contact
- Up to two change-over contacts per measuring instrument

Switching function

The switching function of the switch is indicated by function index 1, 2 or 3.

Model 8xx.1: Contact makes (clockwise pointer motion)

Model 8xx.2: Contact breaks (clockwise pointer motion)

Models 821.3 and 851.3: Change over; one contact breaks and one contact makes simultaneously when pointer reaches set point

For further information please see data sheet AC 08.01, electrical switch contacts

Options

- Liquid filling
- Sealings (model 910.17, see data sheet AC 09.08)
- Safety version
- Higher max. working pressure (static pressure) and higher overpressure safety (see table)
- Indication accuracy better than class 1.6
- Venting of the media chambers (wetted) for scale ranges ≥ 0.4 bar
- Zero adjustment appliance
- Lateral connection location (right, left, front or back)
- Other threaded pressure connections, female or male
- Combined display of differential pressure and working pressure
- Medium temperature > 100 °C
- Permissible ambient temperature $-40 \dots +60$ °C (silicone oil filling)
- Mounting bracket for wall or pipe mounting
- Panel mounting flange
- Pressure compensating valve (data sheet AC 09.11)
- Inductive contacts also in safety version (SN, S1N)

Approvals

- **GOST-R**, import certificate, Russia
- **NEPSI**, ignition protection type "i", intrinsic safety, China

Certificates ¹⁾

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. material proof wetted parts metal component, indication accuracy)

¹⁾ Option

Approvals and certificates, see website

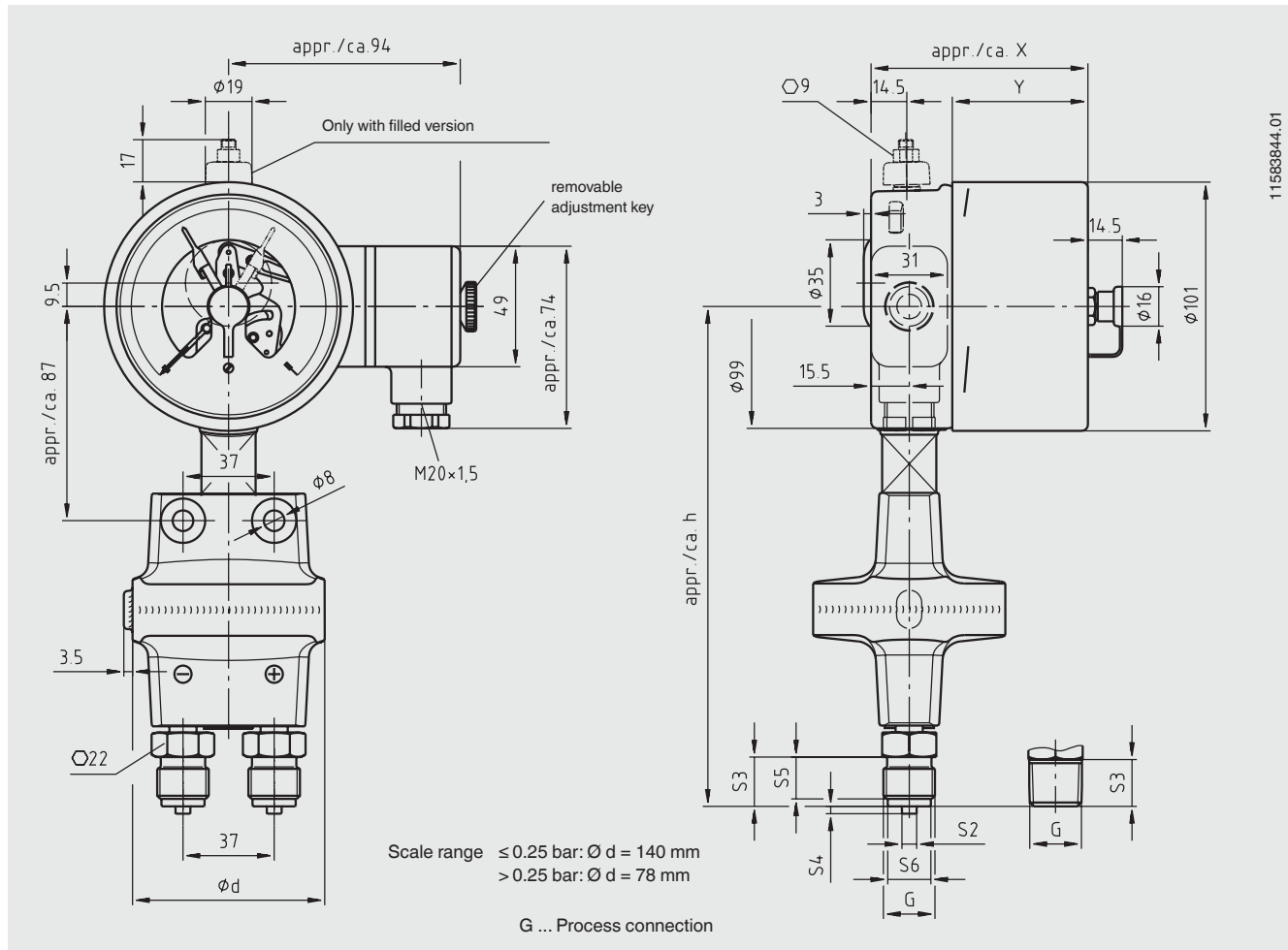
Max. working pressure, overpressure safety

| Scale ranges | Max. working pressure in bar (static pressure) | | Overpressure safety in bar either side max. | |
|----------------------------|--|-----------------|---|--------|
| | Standard | Option | Standard | Option |
| 0 ... 16 to 0 ... 40 mbar | 2.5 | 6 ¹⁾ | 2.5 | - |
| 0 ... 60 to 0 ... 250 mbar | 6 | 10 | 2.5 | 6 |
| 0 ... 400 mbar | 25 | 40 | 4 | 40 |
| 0 ... 0.6 bar | 25 | 40 | 6 | 40 |
| 0 ... 1 bar | 25 | 40 | 10 | 40 |
| 0 ... 1.6 bar | 25 | 40 | 16 | 40 |
| 0 ... 2.5 to 0 ... 25 bar | 25 | 40 | 25 | 40 |

¹⁾ Accuracy class 2.5

Dimensions in mm

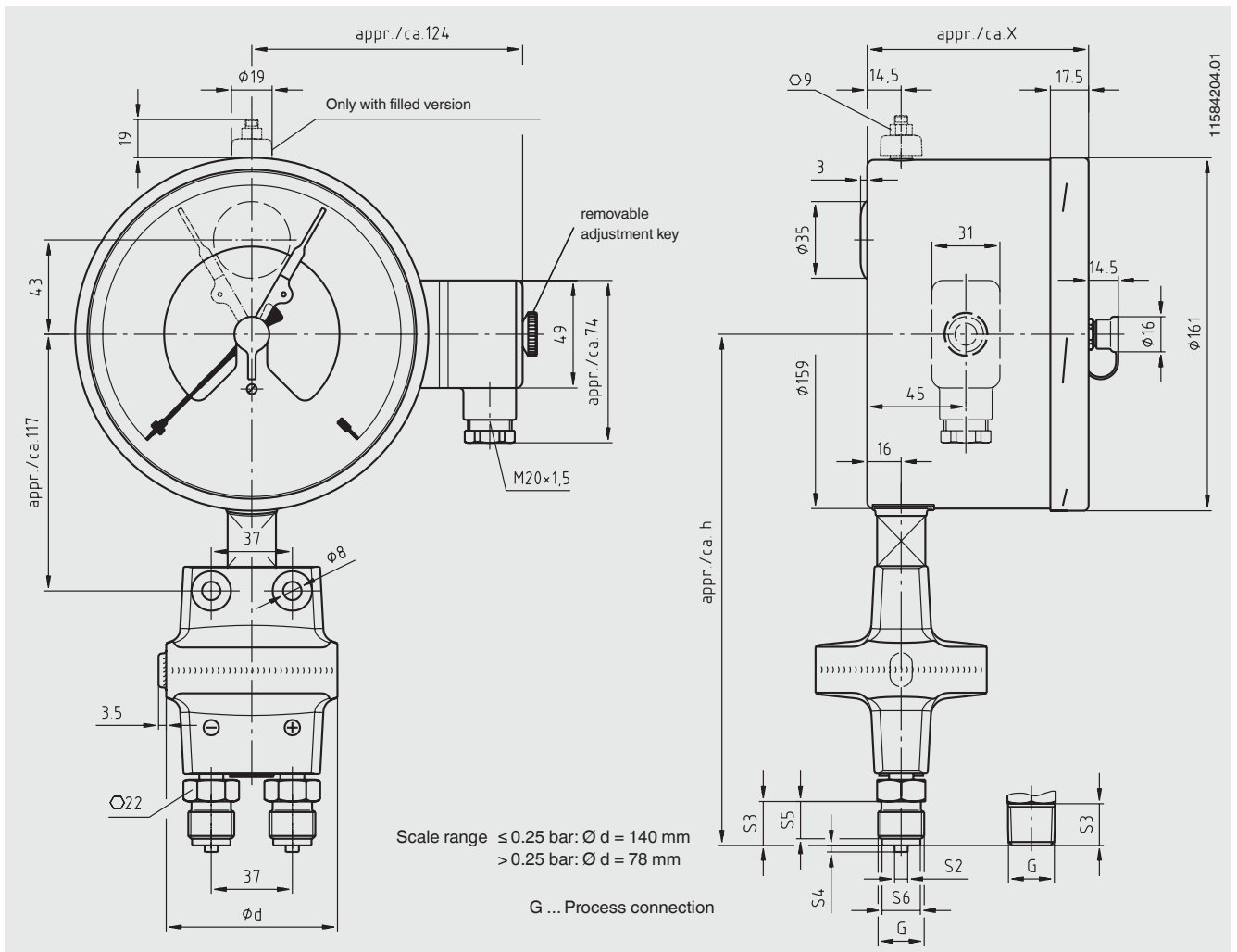
switchGAUGE model DPGS43.100 with switch contact model 821, 831 or 830 E



| Type of contact | Dimensions in mm | |
|------------------------------|------------------|----|
| | X | Y |
| Single or double contact | 88 | 55 |
| Double (change-over) contact | 113 | 80 |
| Triple contact | 96 | 63 |
| Quadruple contact | 113 | 80 |

| Process connection | Dimensions in mm | | | | | |
|--------------------|------------------|----|----|----|----|------|
| | h ± 1 | S2 | S3 | S4 | S5 | S6 |
| G 1/2 B | 203 | 6 | 20 | 3 | 17 | 17.5 |
| 1/2 NPT | 201 | - | 19 | - | - | - |

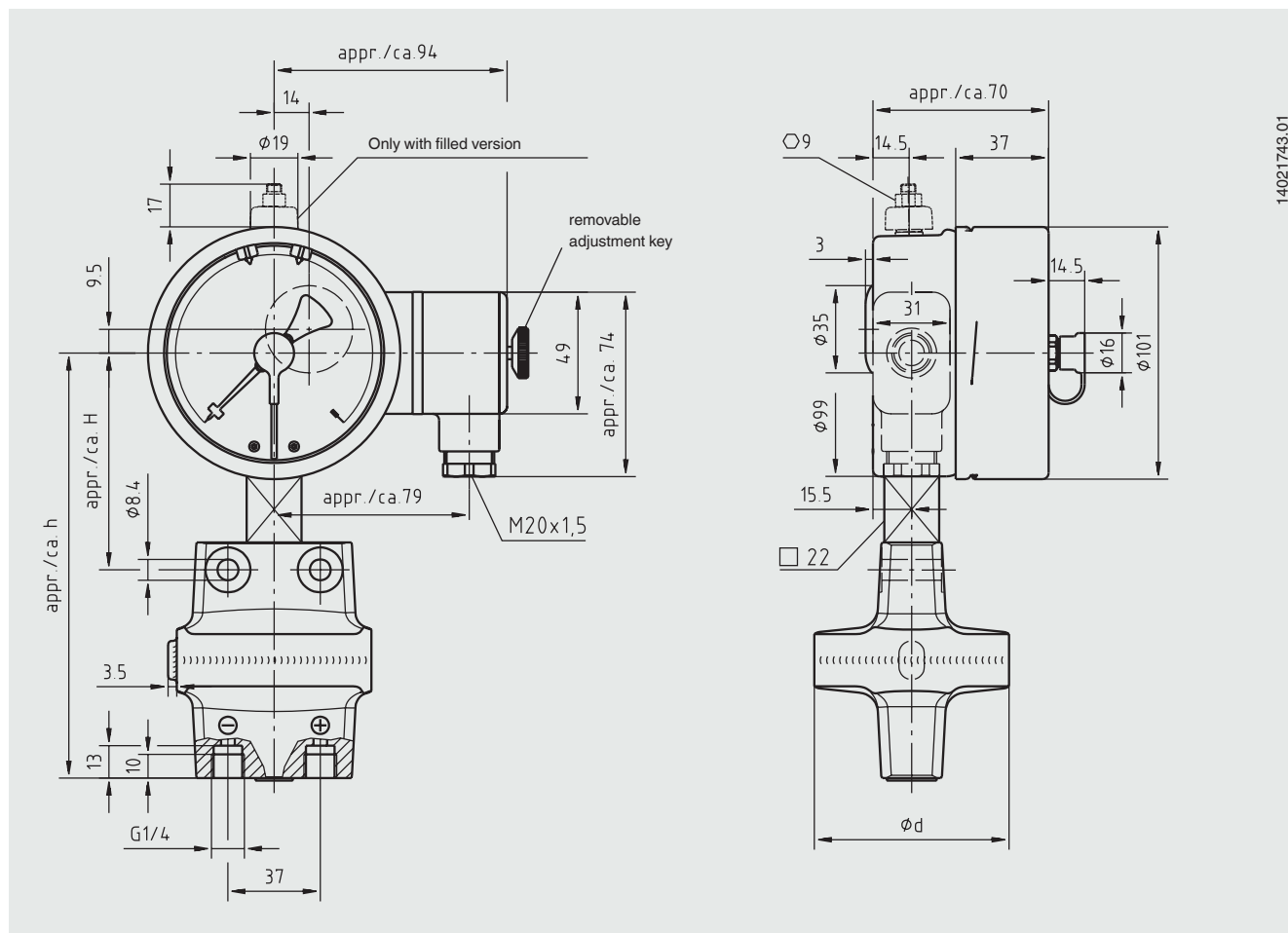
switchGAUGE model DPGS43.160 with switch contact model 821, 831 or 830 E



| Type of contact | Dimensions in mm X |
|------------------------------|-----------------------|
| Single or double contact | 102 |
| Double (change-over) contact | 116 |
| Triple contact | 102 |
| Quadruple contact | 116 |

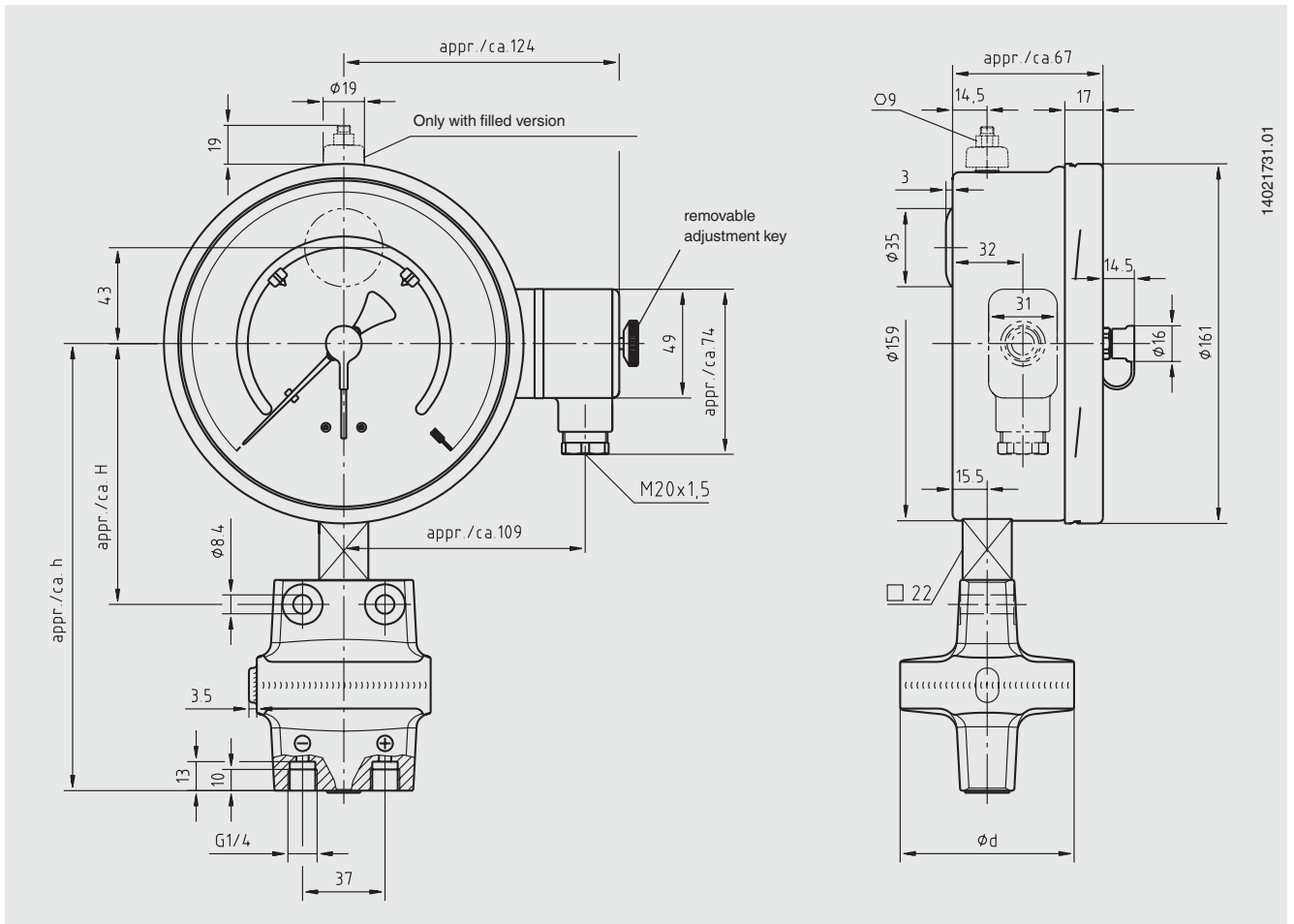
| Process connection | Dimensions in mm h ± 1 | S2 | S3 | S4 | S5 | S6 |
|--------------------|-------------------------------|----|----|----|----|------|
| G 1/2 B | 233 | 6 | 20 | 3 | 17 | 17.5 |
| 1/2 NPT | 231 | - | 19 | - | - | - |

switchGAUGE model DPGS43.100 with switch contact model 851.3 or 851.33



| Scale range | Dimensions in mm | | |
|-----------------|------------------|-----------|-----------|
| | ϕd | $h \pm 1$ | $H \pm 1$ |
| ≤ 0.25 bar | 140 | 171 | 87 |
| > 0.25 bar | 78 | 161 | 90 |

switchGAUGE model DPGS43.160 with switch contact model 851.3 or 851.33



| Scale range | Dimensions in mm | | |
|-------------|------------------|------|------|
| | Ø d | h ±1 | H ±1 |
| ≤ 0.25 bar | 140 | 201 | 117 |
| > 0.25 bar | 78 | 190 | 120 |

Ordering information

Model / Nominal size / Type of contact and switching function / Scale range / Scale layout (linear pressure or square root incrementation) / Max. working pressure (static pressure) / Connection size / Connection location / Options

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