

Duplex and Differential Pressure Gauges With 2 Bourdon Tubes

Bayonet ring case stainless steel

DRCh / DRChG
DiRCh / DiRChG

Application

Duplex and differential pressure gauges with 2 Bourdon tubes are economic solutions for the measurement of two different pressures, with or without direct indication of the differential pressure, depending on the model. They are used, for example, in heating systems (flow and return) or filter systems.

Duplex and differential pressure gauges have to be selected so that the highest pressure occurring in the system does not exceed the full scale value. The pressure gauges are loadable up to full scale, but they are not overrange protected. To ensure good readability of the differential pressure, especially for the models DiRCh / DiRChG, the differential pressure should not be smaller than about 20 % of the full scale value. If the differential pressure is considerably lower, other instrument models are more suitable, e.g. with diaphragm measuring system or with two Bourdon tubes and one pointer (DiRZ..).

Construction

The instruments are equipped with two independently operating Bourdon tube measuring systems, each system with its own pressure connection. The connections are marked with "+" and "-" (+ for the higher pressure, - for the lower pressure). Both pressures are transferred to a duplex movement with pointer shafts positioned coaxially within each other.

Duplex Gauge Models DRCh, DRChG

- The pressures are indicated separately, each with one pointer
- The pressure difference can be calculated
- Black pointer = pressure indicator for + connection
- Red pointer = pressure indicator for - connection

Differential Pressure Gauge Models DiRCh, DiRChG

- Dial with dual scale bar / mWS (mH₂O) for reading the pressure prevailing in each system
- Additional rotatable dial bar / mWS (mH₂O) as direct indication of + and - differential pressures (50 % of the display range each)
- Black knife-edge pointer = pressure indicator for + connection
- Red pointer (at the rotatable dial) = pressure indicator for - connection

Standard Versions

Accuracy (DIN EN 837-1)
Class 1.6

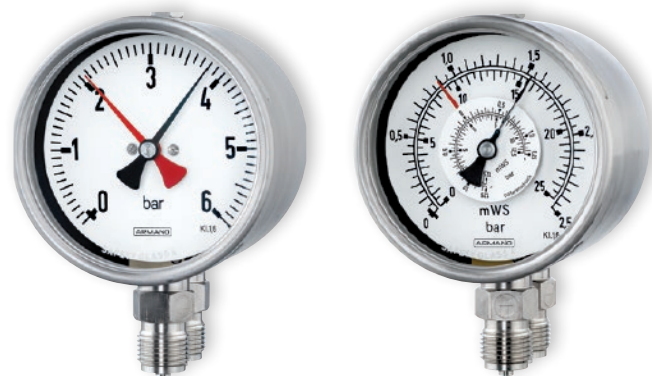
Case
With bayonet ring stainless steel 304 (1.4301), raw

Degree of Protection (DIN EN 60529 / IEC 60529)
IP54
IP65 for models DRChG, DiRChG

Case Ventilation
Models DRCh, DiRCh blow-out plug in the back of the case, 1" (Ø 25 mm)
Models DRChG, DiRChG blow-out device at the top of the case coverage

Case Filling
Model DRChG, DiRChG glycerin

Nominal Case Size
100, 160 mm (4, 6")



Wetted Parts

Type - 3	connections	stainless steel 316Ti (1.4571)
	Bourdon tubes	stainless steel 316L (1.4404) gas-shielded arc welding ≤ 60 bar (800 psi) c-form ≥ 100 bar (1500 psi) helical form
	sealings	Viton
Type - 1	connections	brass
	Bourdon tubes	≤ 60 bar (800 psi) bronze, c-form soft soldered ≥ 100 bar (1500 psi) stainless steel 316L (1.4404) helical form silver brazed
	sealings	NBR

Case Configuration

Connection	screwed
Position of the connection	bottom connection, parallel one behind the other
Mounting device	- without - back flange for surface mounting (Rh) - front flange for panel mounting (Fr)

Pressure Range (DIN EN 837-1)

NCS 100	0 - 0.6 bar to 0 - 600 bar (0 - 10 psi to 0 - 10000 psi)
NCS 160	0 - 1 bar to 0 - 600 bar (0 - 15 psi to 0 - 10000 psi)

Process Connection

2 x G 1/2 B
Marked with "+" (higher pressure) and "-" (lower pressure)

Window

Laminated safety glass for type - 3
Instrument glass for type - 1

Movement

Brass / German silver

Dial

Aluminum white, scale black

Pointer

DRCh, DRChG 1 pointer aluminum black and
1 pointer aluminum red
DiRCh, DiRChG 1 knife-edge pointer aluminum black
and 1 pointer aluminum red,
connected to the rotatable dial

Safety Category According to DIN EN 837-1

NCS 100 S1 pressure measuring instruments
with blow-out device

www.armano-messtechnik.com

ARMANO

ARMANO Messtechnik GmbH

Location Beierfeld
Am Gewerbeplatz 9 • 08344 Grünhain-Beierfeld
Tel.: +49 3774 58 - 0 • Fax: +49 3774 58 - 545
mail@armano-beierfeld.com

Location Wesel
Manometerstraße 5 • 46487 Wesel-Ginderich
Tel.: +49 2803 9130 - 0 • Fax: +49 2803 1035
mail@armano-wesel.com

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General Information, Options, Special Versions

General Information

Pressure Limitation

At steady load	full scale value
At dynamic load	0.9 x full scale value
Overpressure	max. full scale value

Storage Temperature

-40 °C / +70 °C (-40 °F / +158 °F)	
-20 °C / +70 °C (-4 °F / +158 °F)	with glycerin filling

Ambient Temperature

-20 °C / +60 °C (-4 °F / +140 °F)	
-20 °C / +60 °C (-4 °F / +140 °F)	with glycerin filling

Medium Temperature

Type - 3	+100 °C (+212 °F)	
Type - 1	+60 °C (+140 °F)	soft soldered
	+100 °C (+212 °F)	silver brazed

Temperature Caused Error

In accordance with DIN EN 837-1, the additional error per 10 °C (18 °F) temperature deviation from the reference temperature +20 °C (+68 °F) (based on the measuring system) can be up to 0.4 %.

Ordering Information, Standard Pressure Ranges, Options

See page 4

Further Options

- Connections ½" NPT, M 20x1.5
- Type - 3 for higher medium temperatures, max. +130 °C (+266 °F)
- Type - 3 for ambient temperatures down to -40 °C (-40 °F)

Special Versions Upon Request

- Other process connections
- Other pressure ranges and / or special scales, e.g. dual scale bar / psi, coloured fields or ranges, dial inscriptions, negative scale
- Certificates and approvals, e.g. GOST (see also website)

Accessories

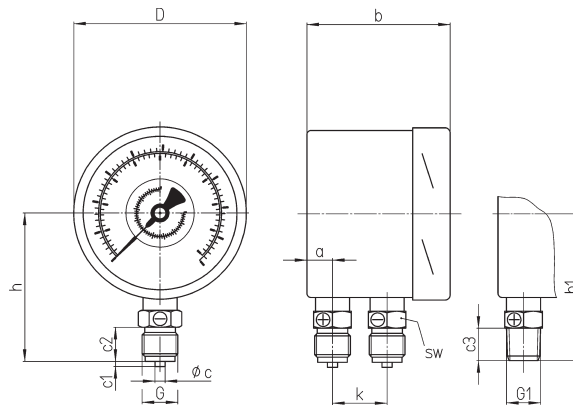
Mounting to chemical seals see catalogue heading 7

Case Configurations, Code Letters, Dimensional Data and Weight

Bottom Connection, Parallel One Behind the Other

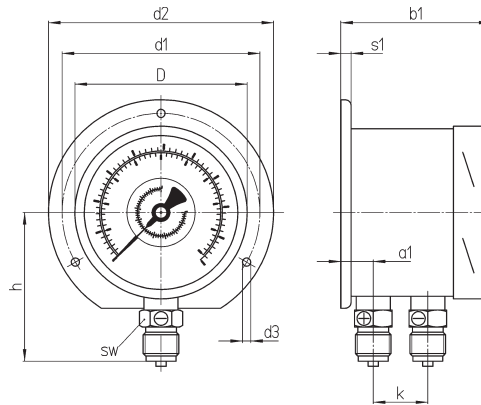
without mounting device

without code letters



with back flange for surface mounting

code letters Rh

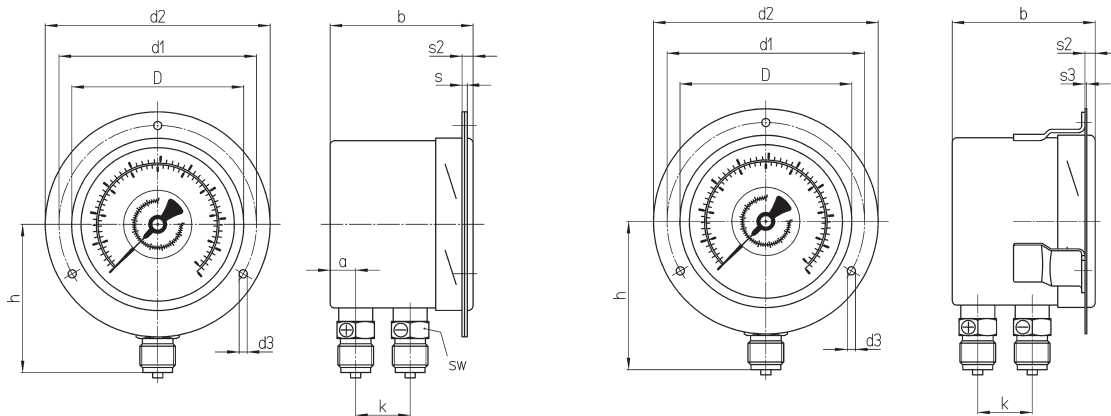


with front flange for panel mounting

code letters Fr

unfilled version

filled version



for dry (unfilled) version, models DRCh, DiRCh:
attached front flange with slotted holes and removable cover ring

for version with case filling, models DRChG, DiRChG:
brackets welded to the case and removable front flange

Dimensional Data (mm / inch) and Weight (kg / lb)

NCS	a	a1	b	b1	c	c1	c2	c3	D	d1	d2	d3	G	G1	h ^{±1}	h1 ^{±1}
100 4"	15 0.59	19 0.75	85 3.35	89 3.5	6	3	20	19	101 3.98	116 4.57	132 5.2	4.8 0.19	G ½ B ½" BSP	½" NPT	87 3.43	86 3.39
160 6"	33 1.3	37 1.46	104 4.09	106.5 4.19	0.24	0.12	0.79	0.75	161 6.34	178 7.01	196 7.72	5.8 0.23			117 4.61	116 4.57

k	SW	s	s1	s2	s3	weight ¹⁾	
						DRCh, DiRCh	DRChG, DiRChG
32 1.26	22 0.87	2 0.08	6 0.24	6 0.24	1 0.04	0.90	1.50
						1.98	3.31
						1.50	3.50
						3.31	7.72

¹⁾ data for version without mounting device

Ordering Information, Options

Basic Model	Duplex and Differential Pressure Gauge		D(i)RCh
Case filling	without glycerin fillable version		without code letters G (G)
Nominal case size	case Ø 100, 160 mm (4, 6")		100, 160
Wetted material	copper alloy stainless steel		- 1 - 3
Case configuration	case / connection	screwed	without code letters
	position of the connection	bottom connection, parallel one behind the other	without code letters
	mounting device	without	without code letters
		back flange for surface mounting	Rh
		front flange for panel mounting	Fr
Pressure ranges	0 - 0.6 bar	0 - 10 psi	
	0 - 1 bar	0 - 15 psi	
	0 - 1.6 bar		
	0 - 2.5 bar	0 - 30 psi	
	0 - 4 bar	0 - 60 psi	
	0 - 6 bar	0 - 100 psi	e.g. 0 - 6 bar
	0 - 10 bar	0 - 160 psi	
	0 - 16 bar	0 - 200 psi	
		0 - 300 psi	
	0 - 25 bar	0 - 400 psi	
	0 - 40 bar	0 - 600 psi	
	0 - 60 bar	0 - 800 psi	
		0 - 1000 psi	
	0 - 100 bar	0 - 1500 psi	
	0 - 160 bar	0 - 2000 psi	
		0 - 3000 psi	
	0 - 250 bar	0 - 4000 psi	
		0 - 5000 psi	
	0 - 400 bar	0 - 6000 psi	
	0 - 600 bar	0 - 10000 psi	
Process connection	standard thread	G ½ B	G ½ B
	option	½" NPT	½" NPT
		M20x1.5	M20x1.5

These options are to be ordered in written form. Please contact us to ensure compatibility when combining options.

Red mark	on the dial
Plastic clip	red or green
Window	laminated safety glass for type - 1
Case ventilation	no. 22 for outdoor installations
Restrictor screw in the pressure inlet port, material: brass or stainless steel	orifice Ø 0.8 mm (0.03") orifice Ø 0.6 mm (0.02") orifice Ø 0.3 mm (0.01")
Instrument tag	stainless steel plate 12 x 55 mm (0.47 x 2.17"), wire mounting sticker on the case

Example DRChG 100 - 3 Rh, 0 - 6 bar, G ½ B

Special Versions: Please describe your requirements in cleartext!