

# Duplex and Differential Pressure

## Gauges with 2 Bourdon Tubes,

Bayonet ring case stainless steel,

Standard (DRCh, DiRCh) or Filled Case (DRChG, DiRChG)

Models

# DRCh/DRChG DiRCh/DiRChG

Class 1,6

NCS 100

160

### Application

Duplex and differential pressure gauges with 2 Bourdon tubes are cost-effective solutions for measuring two different pressures, models DiRCh and DiRChG additional with direct indication of the differential pressure. They are applied e. g. at heating installations (flow and return pipes) and at filter systems.

Duplex and differential pressure gauges have to be selected so that the highest pressure in the system does not exceed the full scale value. These pressure gauges are not overpressure withstanding. To guarantee a comfortable reading, especially for models DiRCh/DiRChG, the differential pressure should not fall below 20% of the full scale value. For applications with substantial lower differential pressures other models are to prefer, e.g. with diaphragm measuring system, or with 2 Bourdon tubes and one pointer (DiRZ..).

### Construction

The instruments are provided with two independently working measuring systems, each system with its own pressure connection. The connections are marked with + and - (+ for the higher pressure, - for the lower pressure). A special duplex movement with the pointer arbors seated co-axial into each other transfers the pressure proportional motions of both Bourdon tubes to the pointers.

### Duplex pressure gauges models DRCh / DRChG

- The pressures are indicated separately, each with one pointer.
- The differential pressure is to calculate.
- Black pointer = Pressure indication for + connection
- Red pointer = Pressure indication for - connection

### Differential pressure gauges models DiRCh / DiRChG

- Dial with dual scale bar/mWS for the reading of the pressures in each system
- Additionally provided with turnable scale disc bar/mWS for direct indication of the positive or negative differential pressure (each 50% of the full scale value)
- Black knife-edge pointer = Pressure indication for + connection
- Red pointer (at the turnable scale disc) = Pressure indication for - connection

### Nominal Case Size (NCS)

100 (4"), 160 (6")

### Accuracy Class (EN 837-1)

1,6 (better than  $\pm 1,6\%$  of full scale value)

### Pressure Ranges (EN 837-1)

0-0.6 bar to 0-600 bar, NCS 160: 0-1bar and up

### Pressure Limitations

Steady pressure: full scale value  
Cyclic pressure: 90% of full scale value  
Overpressure: max. full scale value

### Storage Temperature

-40 to +70 °C (-40 to +158 °F), if filled -20 to +70 °C (-4 to +158 °F)

### Ambient Temperature

-40 to +60 °C, (-40 to +140 °F), if filled -20 to +60 °C (-4 to +140 °F)

### Medium Temperature

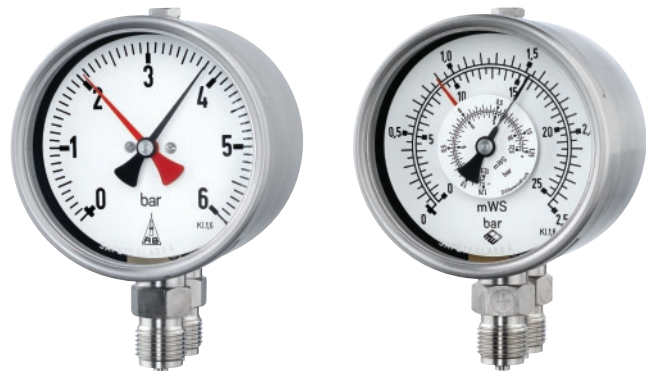
Version -1: +60 °C (+140 °F, soft soldered),  
+100 °C (+212 °F, silver brazed)  
Version -3: +100 °C (+212 °F)

### Temperature Caused Error

Operating temperatures of the measuring systems (elastic elements and movement) different from +20 °C (+68 °F) will cause additional deviations of the pressure indication. These can be up to 0.4% f.s. per each 10 K (18 °F) in accordance with EN 837-1.

### Protection Type (EN 60529 / IEC 529)

Models DRCh, DiRCh: IP 54 / Models DRChG, DiRChG: IP 65



### Standard Configuration

#### Process Connections

2 x G 1/2 B (1/2" BSP) bottom connection parallel one behind the other, marked with + and -

#### Wetted Parts

Ordering code - 1: Connections: brass

#### Bourdon tubes:

≤ 60 bar = bronze, C-form, soft soldered

≥ 100 bar = 316 Ti, helical, silver brazed

Sealing: NBR (nitrile rubber)

Ordering code - 3 Connections: stainless steel 316 Ti

#### Bourdon tubes: argon arc welded,

≤ 60 bar = 316 Ti, C-form

≥ 100 bar = 316 Ti, helical

Sealing: FPM (Viton, fluor caoutchouc)

#### Movement

Brass/German silver

#### Dial

Aluminum alloy, black figures, white background

#### Pointer

DRCh/DRChG: 1 pointer aluminum alloy black and

1 pointer aluminum alloy red

DiRCh/DiRChG: 1 knife-edge pointer aluminum alloy black and

1 pointer aluminum alloy red fixed to the turnable scale disc

#### Case and Ring

304 stainless steel (1.4301), bayonet ring

#### Case filling

Models DRChG and DiRChG only: Glycerine

#### Window

For version -1: single strength glass, version -3: laminated safety glass

#### Safety Features

DRCh/DiRCh: 1"-blow-out in the back of the case

DRChG/DiRChG: blow-out device at the top of the case

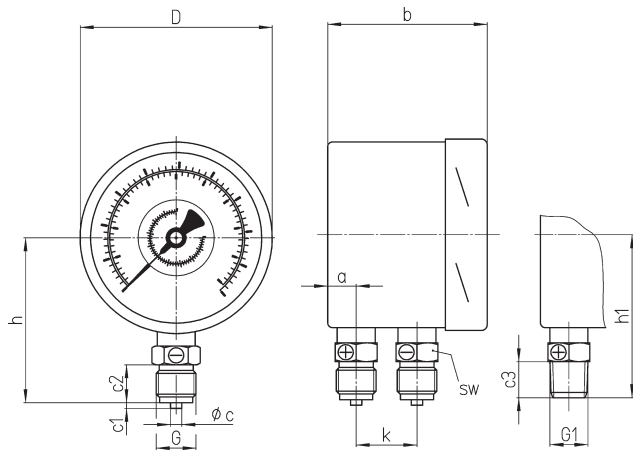
### Special Options e.g.

- Process connections 1/2" NPT, M 20 x 1,5, others upon request
- Special scales
- Acrylic glass window, or laminated safety glass for version -1
- Version -3 for higher medium temperatures, max. +130 °C (+266 °F)
- other filling liquids, e.g. silicone oil for temperatures to -40 °C (-40 °F), or fillable versions
- Mounted to chemical seals (catalogue heading 7) upon request (for versions -3 only)

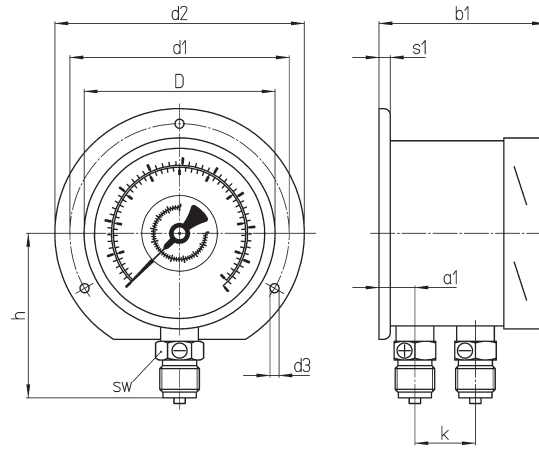
**How to order:** See overleaf

# Case Configurations, Code Letters, Dimensions and Weight

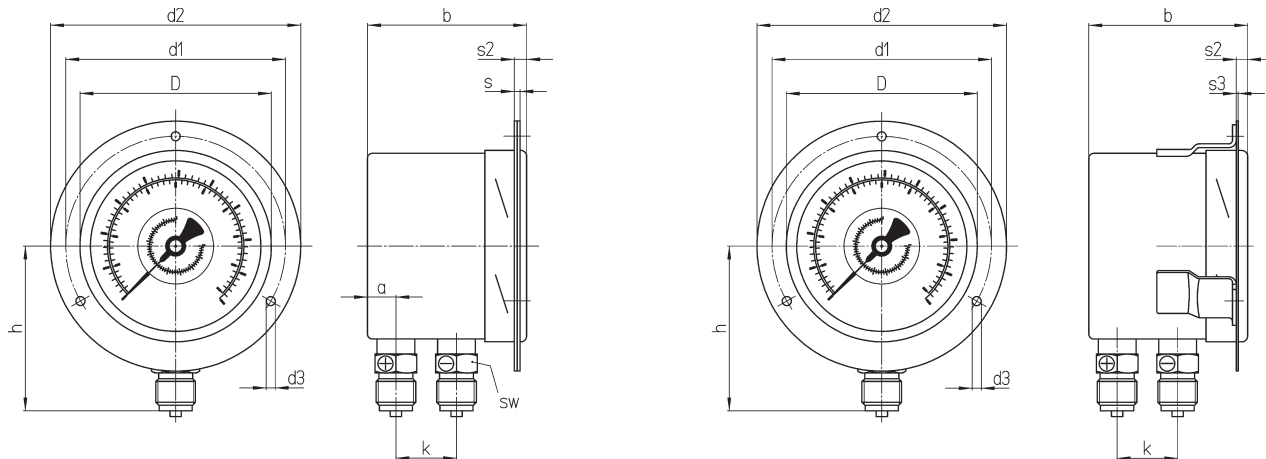
Bottom connections parallel one behind the other, **without** code letter



Bottom connections parallel one behind the other, rear mounting flange, code letters: **Rh**



Bottom connections parallel one behind the other, front mounting flange, code letters: **Fr**



Dry cases, versions DRCh and DiRCh:  
Front flange with longholes attached to the case and a separate cover front flange

Filled case versions, models DRChG and DiRChG:  
Mounting brackets welded to the case and a separate front flange

## Dimensional Data (mm / inches)

NCS	a	a1	b	b1	c	c1	c2	c3	D	d1	d2	d3	G	G1	h <sup>±1</sup>	h1 <sup>±1</sup>	k	SW	s	s1	s2	s3
100 4"	15 .59	19 .75	85 3.35	89 3.50	6	3	20	19	100 3.94	116 4.57	132 5.20	4.8 .19	G ½ B ½" BSP	½" NPT	87 3.43	86 3.39	32	22 .87	2 .08	6 .24	6 .24	1 .04
160 6"	33 1.30	37 1.46	104 4.09		.24	.12	.79	.75	160 6.30	178 7.00	196 7.72	5.8 .23			117 4.61	116 4.57	1.26	.87	.08	.24	.24	.04

## Weight (kg / lb) approx.:

NCS:	Dry versions		Filled versions	
100 4"	DRCh	0.90	DRChG	1.50
	DiRCh	1.98	DiRChG	3.31
160 6"	DRCh	1.50	DRChG	3.50
	DiRCh	3.31	DiRChG	7.72

## How to Order:

Model: **DRCh** or **DiRCh**  
**DRChG** or **DiRChG**

NCS: **100 (4")** or **160 (6")**

Wetted parts: **-1** or **-3** (compare page 1)

Case configuration: **without code letter** (without mtg. device),  
(compare above) **Rh** (rear mtg. flange) or **Fr** (front mtg. flange)

Pressure range: according to EN 837-1  
**e.g. 0-4 bar** or **0-60 bar**

Process connections: **G ½ B** (½" BSP, standard,  
others see "Special Options" on page 1)

Special options: see page 1

## Examples:

- DRCh 100-1, 0-6 bar, G ½ B
- DiRChG 160-3, Fr, 0-10 bar, ½" NPT