Duplex-Pressure Gauges with Bourdon Tube
Differential Pressure Gauges with Bourdon Tube

DR
DiR

Selection
The pressure gauges are to be selected that the highest appearing pressure in the system will not raise higher than the full scale value. The instruments are loadable up to full scale, but not overrange protected. To ensure accurate reading of the differential pressure, especially for type DiR, the differential pressure should not be lower than approximately 20% of the full scale value. Is the differential pressure essentially lower, other instrument types with e.g. diaphragm measuring system or with two bourdon tubes and one pointer are more suitable.

Construction
The instruments are provided with two independently working bourdon tube measuring units. Each system has an own pressure connection. The connections are stamped with + and –
(+ for the higher pressure, – for the lower pressure). Both pressures are transferred into a dual movement with two concentrically into each other mounted pointer shafts.

Duplex-Pressure Gauge Type DR
- the pressures are indicated separately with each a pointer
- the pressure difference can be calculated
- black pointer = pressure indicator for + connection
- red pointer = pressure indicator for – connection

Differential-Pressure Gauge Type DiR
- dial with dual scale bar/mWS
  for the reading of the pressure in every system
- additional swiveling dial bar/mWS as direct plus- and minus-differential pressure indicator
  (each 50% of the pressure range)
- black knife edge pointer = pressure indicator for + connection
- red pointer
  (at the swiveling dial) = pressure indicator for – connection

Pressure Limitations
at steady load:	scale value
at dynamic load:	0.9 x scale value
maximum load:	scale value

Temperature Limitations
Storage temperature:		- 40 to + 70 °C (-40...158 °F)
Ambient temperature:		- 40 to + 60 °C (-40...140 °F)
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
The error caused by temperatures differing from the reference temperature + 20 °C (+ 68 °F) is significant. In correspondence with EN 837-1 it can be up to .4 % per each + 10 °C (+18 °F).

Standard Versions

Accuracy (EN 837-1)
Class 1.6 each measuring unit

Case
Polyamide 6 B with bezel ring steel black

Case Protection Type (EN 60 529 / IEC 529)
IP 43

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

Wetted Parts
Type –3:	Connection:	1.4571 (316 stainless steel),
	Bourdon tubes:	1.4571 (316 stainless steel), argon arc welding, ≤ 60 bar (1,000 psi) c-form, ≥ 100 bar (1,500 psi) helical
Type –1:	Connection:	brass,
	Bourdon tubes:	≤ 60 bar (1,000 psi) bronze, soft soldered, c-form ≥ 100 bar (1,500 psi) 1.4571 (316 stainless steel), silver brazed, helical

Case Configuration
Connection:	screwed
Position of the connection:	bottom connection, parallel one behind the other
Mounting device:	without, optional front flange for panel mounting(Fr)/ back flange (Rh), see page 2

Pressure Ranges (EN 837-1)
0-0.6 (0-10 psi) bar to 0-600 bar (0-10,000 psi) for NCS 100 (4")
0-1 (0-15 psi) bar to 0-600 bar (0-10,000 psi) for NCS 160 (6")

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Standard Versions

Process Connections
2 x G ½ B (½" BSP)
Stamped with **+** (higher pressure) and **–** (lower pressure)

Window
Instrument glass

Movement
Brass / German silver

Dial
Aluminum, black figures, white background

Pointer
Aluminum black, second pointer painted red

Ordering Information, Standard-Pressure Ranges, Options:

see page 3

Special Versions and further Options

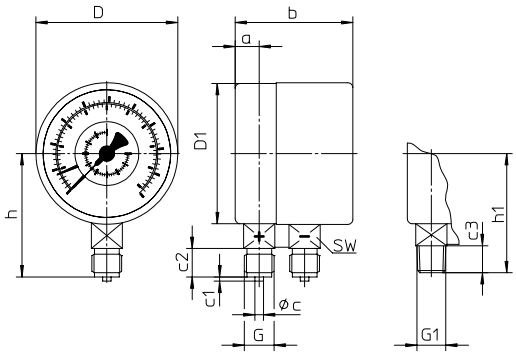
- Special adjustment, other pressure ranges, other units upon request
- Other than vertical installation (90°) upon request
- Position of connection radial at 3 o´clock, 9 o´clock or 12 o´clock or other upon request
- GOST-version for Russia, Ukraine, Kazakhstan

Case Configurations, Code Letters, Dimensional Data and Weights

Bottom Process Connection, parallel one behind the other

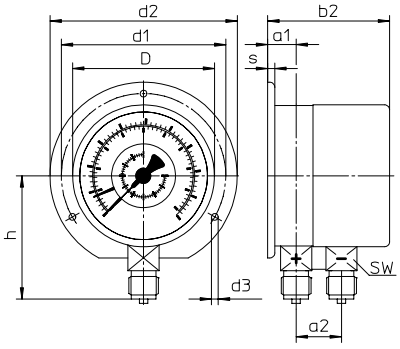
No mounting device

(no additional code letter)



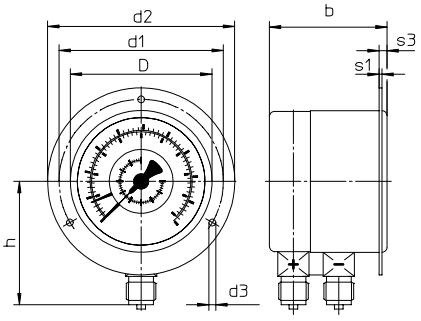
Back flange for surface mounting

code letters: **Rh**



Front flange for panel mounting

code letters: **Fr**



recommended panel cut out
NCS 100 (4"): Ø 104 ± 0.5 mm (0.02") NCS 160 (6"): Ø 164 ± 0.5 mm (0.02")

Dimensional data (mm / inches) and weights (kg / lb)

NCS	a	a1	a2	b	b2	c	c1	c2	c3	D	D1	d1	d2	d3	G	G1	h ±1	h1 ±1	SW	s	s1	s3
100	17	20	32	83	86	6	3	20	19	100	99	116	132	4,8	G ½ B[2]	½" NPT	87	84	22	5	2	5,5
4"	**.67**	**.79**	**1.25**	**3.27**	**3.39**	**.24**	**.12**	**.79**	**.75**	**3.94**	**3.90**	**4.57**	**5.20**	**.19**	**½"BSP[2]**		**3.43**	**3.31**	**.87**	**.20**	**.08**	**.22**
160	19	21	32	85	87	6	3	20	19	160	159	178	196	5,8	G ½ B[2]	½" NPT	115	114	22	5	2	5,5
6"	**.75**	**.83**	**1.26**	**3.35**	**3.43**	**.42**	**.12**	**.79**	**.75**	**6.30**	**6.26**	**7.01**	**7.72**	**.23**	**½"BSP[2]**		**4.53**	**4.49**	**.87**	**.20**	**.08**	**.22**

NCS	approx. Weight[1]
100	.75
4"	**1.66**
160	1,10
6"	**2.43**

[1] Information for versions without mounting device
[2] optional M 20 x 1.5

Ordering Information with Standard-Pressure Ranges, Options

Measuring Group:	Pressure Gauges with two Pressure Connections for Duplex- resp. Differential Pressure Measuring		D
Basic Version:	indication of 2 pressures		**R**
	indication of 2 pressures and differential pressure indicator		**iR**
Case:	with bezel ring steel, black		without code letters
Nominal Case Size:	case-Ø 100, 160 (mm) (4", 6")		**100, 160**
Wetted Material:	copper alloy		**–1**
	stainless steel		**–3**
Case Configuration/ Mounting:	bottom connection, parallel one behind the other		without code letters
	mounting device:	without	without code letters
		back flange for surface mounting, black	**Rh**
		front flange for panel mounting, black	**Fr**
Pressure Ranges:	-1 – 0.6 bar		
	-1 – 1.5 bar		
	-1 – 3 bar		
	-1 – 5 bar		
	-1 – 9 bar		
	-1 – 15 bar		
	0 – 0.6 bar		
	0 – 1 bar		
	0 – 1.6 bar		
	0 – 2.5 bar		
	0 – 4 bar		
	0 – 6 bar		e.g. **0-6 bar**
	0 – 10 bar		
	0 – 16 bar		
	0 – 25 bar		
	0 – 40 bar		
	0 – 60 bar		
	0 – 100 bar		
	0 – 160 bar		
	0 – 250 bar		
	0 – 400 bar		
	0 – 600 bar		
Process Connection:	standard thread	G ½ B (½" BSP)	**G ½ B**
	options:	½" NPT	**½" NPT**
		M 20 x 1.5	**M 20 x 1,5**
Options:	front flange for panel mounting chrome plated for case configuration Fr		*(order at the moment still as clear text)*
	splash protection (rubber seal between window / bezel)		
	red mark on the dial		
	window	laminated safety glass	
		acrylic glass (PMMA)	
		polycarbonate (PC)	
	blow-out plug Ø 1" (25 mm) in the back of the case		
	restrictor screw in the inlet ports of the connection, for type –1 brass, for type –3 stainless steel	orifice Ø 0,8 mm (.03")	
		orifice Ø 0,6 mm (.02")	
		orifice Ø 0,3 mm (.01")	
	measuring point marking	with stainless steel-plate 12 mm x 55 mm (0.47" x 2.17"), wire mounting	
		with sticker on case coverage	
Example:			**DiR 100-3 Fr, 0-6 bar, G ½ B**

Technical changes and errors excepted