

# Bourdon Tube Pressure Gauges

With integrated pressure transmitter DMU

Bayonet ring case stainless steel, safety category S3 according to EN 837-1

RSCh/RSChOe

100/160-3

Bourdon tube pressure gauges RSCh resp. RSChOe with integrated pressure transmitter DMU are suitable for the measurement of liquid and gaseous media of 0-0.6 bar up to 0-1600 bar.

## Application

Beside the analogue display of the pressure gauge, the pressure transmitter DMU which is integrated into a bourdon tube pressure gauge allows an electrical long-distance transmission of the pressure measuring values for further processing.

Available output signals are 4-20 mA, 0-20 mA or 0-10 V.

## Construction and Function

The measuring point of the pressure transmitter is separated from the measuring unit of the bourdon tube pressure gauge, so that both measurements are independent from each other. A defective movement of the pressure gauge does not influence the measurement of the pressure transmitter.

## Sensors of the pressure transmitter DMU

≤ 0- 60 bar piezoresistive sensor  
≥ 0- 100 bar to 0-1600 bar thin film sensor

## Technical Data Pressure Transmitter DMU

### Piezoresistive sensor (up to including 60 bar)

output signal	auxiliary supply	resistance (Ohm)
4...20 mA (2-wire)	10...40 VDC	(UB-10V)/ 0.02 A
0...20 mA (3-wire)	8...28 VDC	(UB- 8V)/ 0.02 A
0...10 V (3-wire)	13...28 VDC	min. 10 kOhm

### Thin Film Sensor (100 bar and above)

output signal	auxiliary supply	resistance (Ohm)
4...20 mA (2-wire)	9...30 VDC	(UB- 9V)/ 0.02 A
0...20 mA (3-wire)	9...30 VDC	(UB- 9V)/ 0.02 A
0...10 V (3-wire)	14...30 VDC	min. 10 kOhm

## Measuring Accuracy

± 0.5 % of full scale value, including linearity and hysteresis

## Temperature Ranges for Pressure Gauges with DMU

Storage temperature: -40 °C...+70 °C  
-20 °C...+70 °C (for oil filling)  
Rated temperature: -40 °C...+60 °C  
-20 °C...+60 °C (for oil filling)  
Medium temperature: max. +80 °C

## Rated Temperature Range for DMU

Piezoresistive sensor: -10 °C...+60 °C  
Thin film sensor: -25 °C...+60 °C

## Temperature Influence in the Rated Temperature Range

Zero point < 0.3 % of full scale value / 10K  
Span < 0.2 % of full scale value / 10K

## Reference Temperature

+ 20 °C

## Long-term Stability of Zero Point and Span

Better than 0.25 % p. a.

## Installation Option

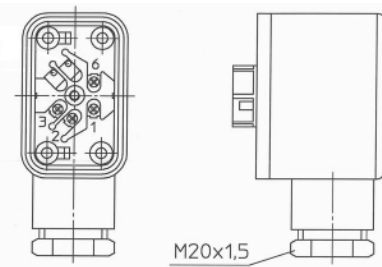
The installation is possible for the following pressure gauges:  
Models RSCh / RSChOe 100/160-3



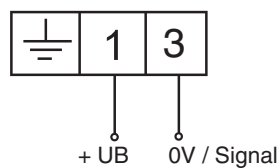
## Electrical Connection

Terminal box; the terminals are numbered according to the wiring diagrams. A protective conductor terminal is provided. The terminal box is equipped with a screwed cable gland M 20 x 1.5 with a pull relief.

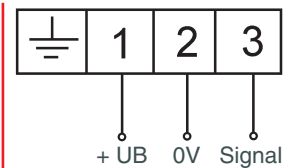
## Terminal Box



## 2-wire-connection 4-20mA



## 3-wire-connection 0-20mA/0-10V



For assuring the electromagnetic compatibility (EMC) please use a shielded cable (e.g. LP/LiMYCY). The shield has to be connected to the case resp. to the ground terminal of the terminal box.

Technical data of the pressure gauge see page 2



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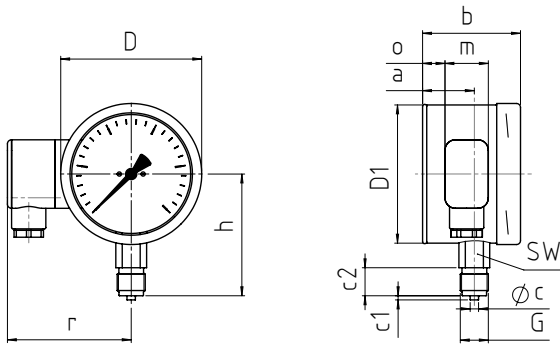
01/13

# Case Configuration, Code Letters, Dimensional Data and Weights

## Bottom Connection

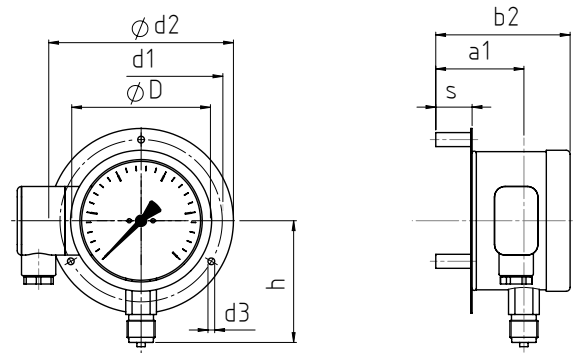
### without mounting device

(no additional code letter)



### back flange for surface mounting

Code letters: Rh



NCS	a	a1	b	b2	c	c1	c2	D	D1	d1	d2	d3	G	h <sup>±1</sup>	s	SW	r	o	m	approx. weight	
																				RSCh	RSChOe
100	40	66	73	99	6	3	20	101	99	116	132	4.8	G ½ B	87	26	22	88	16	31	0.83	1.20
4"	1.57	2.6	2.87	3.9	.24	.12	.79	3.98	3.9	4.57	5.2	.19	½ " BSP	3.43	1.02	.87	3.46	.63	1.22	1.83	2.65
160	40	70	78	108	6	3	20	161	159	178	196	5.8	G ½ B	115	31.5	22	119	16	31	1.70	3.20
6"	1.57	2.76	3.07	4.25	.24	.12	.79	6.34	6.26	7.01	7.72	.23	½ " BSP	4.53	1.24	.87	4.69	.63	1.22	3.75	7.1

# Standard Version Pressure Gauges

## Standard Version Pressure Gauges

Information on general and metrological features (load limits / temperature limitations) and standard pressure ranges / scale divisions of the pressure gauge models RSCh 100/160 and RSChOe\* 100/160 can be found in model overview 1000. The standard version is described detailed in data sheet 1600.

## Technical Data Pressure Gauges

### Accuracy (EN 837-1)

Class 1.0

### Case

With bayonet ring, 1.4301 (316 stainless steel)

### Protection Type for the Pressure Gauge (EN 60 529 / IEC 529)

IP 54

IP 55 for model RSChOe

### Blow-out Device

Blow-out back; should the bourdon tube rupture, the entire case back separates, allowing full relief.

### Case Ventilation

Model RSChOe by screw with ventilation bore.

### Case Filling

For model RSChOe: special oil

### Nominal Case Size

100, 160 (mm) (4", 6")

### Wetted Parts

Connection: 1.4571 (316 stainless steel)  
Bourdon Tube: 1.4571 (316 stainless steel),  
argon arc welding,  
≤ 40 bar c-form  
≥ 60 bar helical  
1600 bar NiFe-alloy,  
helical

### Case Configuration

Connection: screwed  
Position of the connection: bottom connection  
Mounting device: without, optional back flange for  
surface mounting (**Rh**), see page 3

### Pressure Ranges (EN 837-1)

0–0.6 bar up to 0–1600 bar

### Process Connection

G ½ B (½ " BSP)

### Window

Laminated safety glass

### Movement

Stainless steel

### Dial

Aluminum, black figures, white background

### Pointer

Aluminum black

### Safety Category according to EN 837-1

S3, safety pressure gauge with break-proof solid front and blow-out back,  
proved: pressure ranges up to 1000 bar,  
bottom connection: RSCh and RSChOe  
marking 

## Options

See page 4

## Special Versions and further Options Pressure Gauge

- Other process connections upon request, e.g. high pressure connection with external male thread (0-60 bar and above)
- Other pressure ranges and / or special scales, e.g. double scale bar/psi, coloured fields or areas, dial inscriptions, negative scale etc.
- NCS 100 case parts 1.4404 (316 L stainless steel), NCS 160 upon request
- Increased case protection type, e. g. IP 65 without case filling, upon request
- Position of connection radial at 3 o'clock, 9 o'clock, 12 o'clock (others upon request)  
or other than vertical installation (90°):  
- for models without case filling  
- for filled models upon request
- GOST-version for Russia, Ukraine, Kazakhstan
- Sour gas-resistant version according to NACE

## Accessory

Chemical seals: see catalogue-heading 7  
Electrical: limit switch contact assembly DS 1690 and catalogue-heading 9.1  
Other accessory: see catalogue-heading 11

\* For installation of electrical additional accessories pressure gauges with case filling have the model code Oe instead of G, because a special oil is used as case filling.

## Options

Options:	Bourdon Tube Pressure Gauges	
	adjustable pointer, aluminum mechanism	
	red mark on the dial	
	plastic clip red or green external at bayonet ring	
	stationary on the dial	
	red pointer adjustable when removable ring	
	indication accuracy grade 2A ( $\pm 0,5\%$ ) according to ASME B 40.1 <sup>1)</sup>	
	special adjustment (reference points = odd values, e. g. 100 KN = 8.735 bar)	
	case ventilation no. 22 for outdoor use	
	case polished	
	bayonet ring polished	
	density examination with helium leak detection up to of the measuring unit $10^{-9}$ mbar l/s for types -3 and -6	
	wetted parts, free of grease and oil, up to adjustment $\leq 250$ bar (3,000 psi) with dry air, $\geq 400$ bar (5,000 psi) with 0-600 bar (0-10,000 psi) distilled water, dial marking: symbol cancelled oil can	<i>(order at the moment still as clear text)</i>
	oxygen version free of grease and oil, additional restrictor screw in the inlet port, up to 0-600 bar (0-10,000 psi) <sup>2)</sup> orifice $\varnothing 0.3$ mm, dial inscription: oxygen	
	silicone-free version	
	restrictor screw in orifice $\varnothing 0.8$ mm (0.03") pressure inlet port orifice $\varnothing 0.6$ mm (0.02") orifice $\varnothing 0.3$ mm (0.01")	
	measuring point stainless steel-plate 12 mm x 55 mm (0.47"x2.17"), wire mounting marking or sticker on case coverage	

Ordering Information (model construction)		
Please specify in your order:	basic model pressure gauge e.g. RSCh 100-3, 10 bar, G $\frac{1}{2}$ B or RSChOe 160-3, -1/9 bar, Rh, G $\frac{1}{2}$ B	
	and add e.g. DMU 4-20 mA	
	following ordering codes arise for example:	
		RSCh 100-3, 10 bar, G $\frac{1}{2}$ B, with DMU 4-20 mA
		RSChOe 160-3, -1/9 bar, Rh, G $\frac{1}{2}$ B, with DMU 0-20 mA
<b>If you request options, please specify in the clear text.</b>		

<sup>1)</sup> for pressure ranges  $\geq 10,000$  psi

<sup>2)</sup> for instruments without case filling