

# Bourdon Tube Test Gauges

## Bayonet ring case stainless steel

RFCh  
RFChG

### Standard Versions

Information on general and metrological features (e.g. load limits/temperature resistance) and standard pressure ranges/scale divisions can be found in model overview 2000.

**Accuracy** (DIN EN 837-1)  
Class 0.6

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

**Degree of Protection** (DIN EN 60 529/IEC 529)  
IP54  
IP65 for model RFChG 100 and  
model RFChG 160 (measuring spans  $\geq 2.5$  bar)

**Blow-out Device**

Model RFCh	blow-out plug at the back of the case, $\varnothing 1''$
Model RFChG 100	blow-out plug at the back of the case, $\varnothing 40$ mm (1 1/2")
Model RFChG 160	blow-out device at the top of the case coverage

**Case Ventilation**  
Model RFChG via blow-out device

**Case Filling**  
For model RFChG: glycerin

**Nominal Case Size**

Model RFCh:	100, 160, 250 mm (4, 6, 10")
Model RFChG:	100, 160 mm (4, 6")

**Wetted Parts**

Type – 1: connection:	brass	
Bourdon tube: $\leq 40$ bar (600 psi)	bronze, c-form soft-soldered	
60 bar (800 psi)	CuBe, c-form silver brazed	
$\geq 100$ bar (1500 psi)	stainless steel 316L (1.4404) helical form silver brazed	
600 bar (10000 psi)	NiFe-alloy helical form silver brazed	

Type – 3: connection:	stainless steel 316L (1.4404)
Bourdon tube:	stainless steel 316L (1.4404) gas-shielded arc welding
$\leq 40$ bar (600 psi)	c-form
$\geq 60$ bar (800 psi)	helical form
$\geq 600$ bar (10000 psi)	NiFe-alloy helical form

**Case Configuration**

Connection:	screwed
Position of the connection:	- bottom connection - lower back connection (r)
Mounting device:	- without - back flange for surface mounting (Rh) - front flange for panel mounting (Fr) - u-clamp for panel mounting (BFr)



**Pressure Ranges** (DIN EN 837-1)

RFCh	0 – 0.6 to 0 – 600 bar (0 – 10 to 0 – 10000 psi) for type – 1 0 – 0.6 to 0 – 1600 bar (0 – 10 to 0 – 20000 psi) for type – 3
RFChG	0 – 2.5 to 0 – 600 bar (0 – 30 to 0 – 10000 psi) for type – 1 0 – 2.5 to 0 – 1600 bar (0 – 30 to 0 – 20000 psi) for type – 3

**Process Connection**  
G 1/2 B (1/2" BSP)

**Window**

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

**Movement**  
Brass/German silver, low friction

**Dial**  
Aluminum white, scale black

**Pointer**  
Knife edge pointer, aluminum black

**Safety Category According to DIN EN 837-1**  
S1 pressure gauges with blow-out device

### Ordering Information, Standard Pressure Ranges, Options

See pages 3 and 4

### Special Versions and Further Options

- Other process connections upon request
- Other pressure ranges and/or special scales, e.g. dual scale bar/psi, coloured fields or ranges, dial inscriptions, negative scale
- Stationary pointer or drag indicator with window made of polycarbonate or laminated safety glass upon request for NCS 160
- Case parts 316L (1.4404) upon request
- Increased degree of protection, e.g. IP65 without case filling, upon request
- Other case fillings upon request
- Bleeding port at the Bourdon tube tip (only unfilled instruments)
- Position of connection radial at 3 o'clock, 9 o'clock, 12 o'clock (others upon request) or other than vertical installation (90°), for unfilled instruments
- GOST version for Russia, Kazakhstan
- Sealable upon request

### Accessories

Upon request

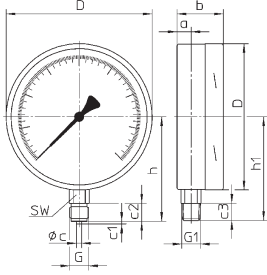
[www.armano-messtechnik.com](http://www.armano-messtechnik.com)

# Case Configurations, Code Letters, Dimensional Data and Weights, Blow-out Device

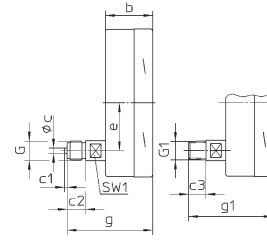
## Bottom Connection Lower Back Connection

without mounting device

(without code letters)

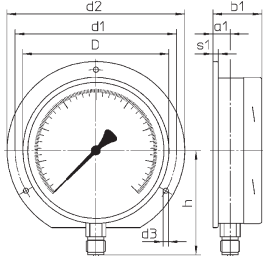


code letter: r



### with back flange for surface mounting

code letters: Rh



for NCS 250 (10")  
with 3 brackets

NCS 100 (4") back flange for  
surface mounting  
optionally available with  
slotted holes according to  
DIN EN 837-1

code letters: rRh

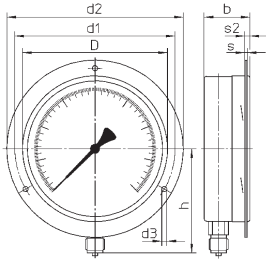
for NCS 250 (10")  
with 3 brackets

(available upon request,  
however not recommended  
according to DIN EN 837-1)



### with front flange for panel mounting

code letters: Fr

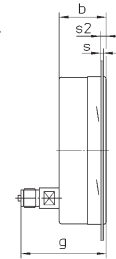


model RFChG:  
welded brackets and  
removable front flange

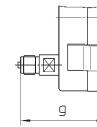
(available upon request, however not  
recommended according to DIN EN 837-1)

code letters: rFr

recommended panel cut out for  
NCS 100 (4")  $\text{Ø } 104 \pm 0.5 \text{ mm}$   
( $4.09 \pm 0.02$ ")  
NCS 160 (6")  $\text{Ø } 164 \pm 0.5 \text{ mm}$   
( $6.46 \pm 0.02$ ")  
NCS 250 (10")  $\text{Ø } 254 \pm 0.5 \text{ mm}$   
( $10 \pm 0.02$ ")

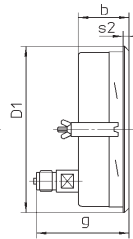
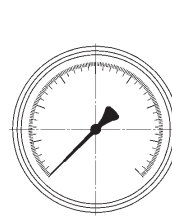


model RFChG:  
welded brackets and  
removable front flange



### with u-clamp for panel mounting

code letters: rBFr



RFCh 160 only  
(not available with  
case filling)

## Dimensional Data (mm/inch) and Weights (kg/lb)

NCS	a	a1	b	b1	c	c1	c2	c3	D	D1	d1	d2	d3	e	g	g1	G	G1	h <sup>±1</sup>	h1 <sup>±1</sup>
100	20	23.5	55	55	6	3	20	19	101	99	116	132	4.8	30	97	96	G ½B	½" NPT	87	84
4"	0.79	0.93	2.17	2.17	0.24	0.12	0.79	0.75	3.98	3.9	4.57	5.2	0.19	1.18	3.82	3.78	M20x1.5		3.43	3.31
160	15.5	19	51	54	6	3	20	19	161	167	178	196	5.8	52	92.5	91.5	G ½B	½" NPT	115	114
6"	0.61	0.75	2.01	2.13	0.24	0.12	0.79	0.75	6.34	6.57	7.01	7.72	0.23	2.05	3.64	3.6	M20x1.5		4.53	4.49
250	15.5	17.5	58	60	6	3	20	19	251	-	270	285	5.8	52	97	96	G ½B	½" NPT	165	164
10"	0.61	0.69	2.28	2.36	0.24	0.12	0.79	0.75	9.88	-	10.63	11.22	0.23	2.05	3.82	3.78	M20x1.5		6.5	6.46

## Blow-out Device

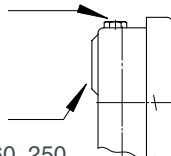
Blow-out device for model RFChG 160  
pressure range  $\leq 1.6$  bar blow-out device no.5  
 $\geq 2.5$  bar blow-out device no.3

Blow-out plug

Ø 1"

Ø 40 mm (1 ½")

for models RFCh 100, 160, 250  
for model RFChG 100  
with pressure equalizing membrane



s	s1	s2	s3	SW	SW1	approx. weight <sup>1)</sup>	
						RFCh	RFChG
6	1	2	6	22	17	0.60	0.95
0.24	0.04	0.08	0.24	0.87	0.67	1.32	2.09
2.5	6	6	1.5	22	17	1.10	1.95
0.1	0.24	0.24	0.06	0.87	0.67	2.43	4.3
2	2	7	2	22	17	2.10	-
0.08	0.08	0.28	0.08	0.87	0.67	4.63	-

<sup>1)</sup> data for version without mounting device

## Ordering Information

Basic Model:		Bourdon Tube Test Gauge with Bayonet Ring Case		RFCh
<b>Case filling:</b>	without glycerin fillable version			without code letters <b>G</b> <b>(G)</b>
<b>Nominal case size:</b>	case Ø 100, 160, 250 mm (4, 6, 10")			<b>100, 160, 250</b>
<b>Wetted material:</b>	copper alloy			<b>- 1</b>
	stainless steel			<b>- 3</b>
	Monel, 0 – 0.6 bar to 0 – 400 bar, movement stainless steel, laminated safety glass, Bourdon tube Monel gas-shielded arc welding, ≤40 bar c-form, ≥60 bar helical form, bottom connection, optionally r			<b>- 6</b>
<b>Case configuration:</b>	case/connection	screwed	without code letters	
	position of the connection	bottom connection	without code letters	
		lower back connection	<b>r</b>	
	mounting device	without	without code letters	
		back flange for surface mounting	<b>Rh</b>	
		front flange for panel mounting	<b>Fr</b>	
		u-clamp for panel mounting	<b>BFr</b>	
<b>Pressure ranges:</b>	-1200 / 0 mbar	30" hg vac.	-	0 psi
	-0.6 / 0 bar			
	-1 / 0 bar			
	-1 / +0.6 bar	30" hg vac.	-	15 psi
	-1 / +1.5 bar	30" hg vac.	-	30 psi
	-1 / +3 bar	30" hg vac.	-	60 psi
	-1 / +5 bar	30" hg vac.	-	100 psi
	-1 / +9 bar	30" hg vac.	-	160 psi
	-1 / +15 bar	30" hg vac.	-	200 psi
		30" hg vac.	-	300 psi
	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
	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	-	1,000 psi
	0 – 100 bar	0	-	1,500 psi
	0 – 160 bar	0	-	2,000 psi
		0	-	3,000 psi
	0 – 250 bar	0	-	4,000 psi
		0	-	5,000 psi
	0 – 400 bar	0	-	6,000 psi
	0 – 600 bar for type – 1, – 3	0	-	10,000 psi
	0 – 1000 bar for type – 3	0	-	15,000 psi
	0 – 1600 bar for type – 3	0	-	20,000 psi
<b>Process connection:</b>	standard thread	G ½B	- 1 and - 6	max. 0 – 600 bar
	options	½" NPT	- 3	max. 0 – 1600 bar
		M20x1.5		
		G ¼B <sup>1)</sup>	- 1 and - 6	max. 0 – 600 bar
		¼" NPT <sup>1)</sup>	- 3	max. 0 – 1000 bar
		M12x1.5 <sup>1)</sup>		
<b>Options:</b>	see page 4			
<b>Example:</b>	RFCh 100 – 1, 0 – 6 bar, G ½B			

<sup>1)</sup> not for NCS 250 (10")

## Ordering Information, Further Options

Basic Model: Bourdon Tube Test Gauge with Bayonet Ring Case		RFCh
Model code:		see page 3
Options:	red mark	on the dial
	plastic clip	red or green, external at the bayonet ring (NCS 100, 160)
stationary red pointer		on the dial
		adjustable with removable ring
stationary red pointer (NCS 160)		adjusting mechanism brass, nickelplated with window made of acrylic glass, screwed
		adjustable externally removable key non-removable key
		adjusting mechanism stainless steel with window made of acrylic glass, screwed
		adjustable externally removable key non-removable key
min./max. drag indicator measuring spans 2.5 bar onwards (NCS 160)		adjusting mechanism brass, nickelplated with window made of acrylic glass, screwed
		adjustable externally removable key non-removable key
		adjusting mechanism stainless steel with window made of acrylic glass, screwed
		adjustable externally removable key non-removable key
parallax-free mirror scale		
Test Gauge Grade 3A (indication accuracy $\pm 0.25\%$ ), mirror scale		
indication accuracy	cl. 0.25 according to DIN EN 837-1, mirror scale for model RFCh 250 – 1	
zero adjustment	via turnable dial $\pm 5$ scale graduation marks adjusting mechanism on the front side for model RFCh (NCS 160, 250)	
special adjustment	for liquid media (pressure ranges up to 0 – 25 bar)	
	for gaseous media (pressure ranges from 0 – 40 bar to 0 – 400 bar)	
movement	stainless steel with jewel bearing	
case ventilation no. 22 for outdoor installation (NCS 100, 160)		
case polished		
bayonet ring polished		
leak test of the measuring unit	with helium leak detection up to $10^{-9}$ mbar l/s for types – 3 and – 6	
wetted parts free of grease and oil up to 0 – 400 bar (0 – 6000 psi)	adjustment $\leq 40$ bar (600 psi) with dry air, $\geq 60$ bar (800 psi) with distilled water, dial marking: symbol crossed out oil can	
oxygen version up to 0 – 400 bar (0 – 6000 psi) <sup>1)</sup>	free of grease and oil as above, additional restrictor screw in the inlet port, orifice $\varnothing 0.3$ mm (0.01"), dial inscription: oxygen, no version according to DIN EN 837-1 <sup>2)</sup>	
silicone-free version		
restrictor screw in the pressure inlet port, material: like process connection brass, stainless steel or Monel	orifice $\varnothing 0.8$ mm (0.03")	
	orifice $\varnothing 0.6$ mm (0.02") (not for Monel)	
	orifice $\varnothing 0.3$ mm (0.01") (not for Monel)	
instrument tag	stainless steel plate 12 x 55 mm (0.47 x 2.17"), wire mounting sticker on the case coverage	
flame arrester Adapt FS	variant 5 according to data sheet 11001	

**Special Versions:** Please describe your requirements in cleartext!

<sup>1)</sup> for instruments without case filling

<sup>2)</sup> DIN EN 837-1 in connection with oxygen version requires safety category S3