

Bourdon Tube Pressure Gauges

with Limit Switch Contact Assemblies

Bayonet Ring Case Stainless Steel, Standard (RCh) or Liquid Filled (RChOe)

NCS 100 (4") Models
160 (6")

RCh
RChOe

This data sheet contains ordering information, minimum pressure ranges of bourdon tube pressure gauges models RCh and RChOe with limit switch contact assemblies, as well as dimensional drawings of the position of the electrical connection.

Data sheet 1201 contains all important details and ordering information for these basic models without limit switch contact assemblies. These information are also valid for the version with limit-switch contact assembly, as far as these are not listed below.

But the model code for fluid filled pressure gauges with limit switch contact assemblies is **RChOe**. Special oil as **case filling** is used instead of glycerine.

Detailed descriptions on the function and the use of our limit switch contact assemblies can be found on **general information leaflet 9000**.

Further information, especially on the the different switching functions can be seen on the data sheets of the corresponding limit switch contact assemblies:

Mechanical limit switch contact assemblies Data sheet **9100**
(standard- and magnetic contacts)
Inductive limit switch contact assemblies Data sheet **9200**
Electronic limit switch contact assemblies Data sheet **9201**
Pneumatic limit switch contact assemblies Data sheet **9300**

Minimum Pressure Ranges

Every pressure gauge needs a sufficient amount of torque to operate the limit switch contact assemblies. Therefore the following minimum pressure ranges have to be regarded ¹⁾:

Limit Switch Type:	Pressure Ranges bar (psi) ¹⁾	
	NCS 100 (4")	NCS 160 (6")
1 x Standard	1.0 (15)	1.0 (15)
2 x Standard	1.6 (30)	1.6 (30)
3 x Standard	2.5 (40)	2.5 (40)
4 x Standard ²⁾	—	2.5 (40)
1 x Magnetic	1.6 (30)	1.6 (30)
2 x Magnetic	2.5 (40)	2.5 (40)
3 x Magnetic	4.0 (60)	4.0 (60)
4 x Magnetic ²⁾	—	4.0 (60)
1 x Inductive	1.0 (15)	1.0 (15)
2 x Inductive	1.6 (30)	1.6 (30)
3 x Inductive ³⁾	2.5 (40)	2.5 (40)
1 x Electronic	1.0 (15)	1.0 (15)
2 x Electronic	1.6 (30)	1.6 (30)
3 x Electronic ³⁾	2.5 (40)	2.5 (40)
1 x Pneumatic	1.0 (15)	1.0 (15)
2 x Pneumatic	—	1.6 (30)

¹⁾ lower pressure ranges upon request

²⁾ 4 contacts for pressure gauges NCS 100 mm (4") upon request

³⁾ 4contacts for limit switch contact assemblies upon request

For pressure gauges with 3 or 4 contacts it is not always possible to set all set pointers one above the other. Therefore you should always state, which contacts resp. set pointers have to be set one above the other resp. where the switching points are.

Window

Acrylic resp. polycarbonate if
wetted parts brass / bronze (-1) or alloy steel (-2)
Laminated safety glass if
wetted parts 1.4571 (316 stainless steel) (-3) or Monel (-6)

Ventilation

Model RChOe: direct ventilation on the top of the case



Electrical Connection

for electromechanical limit switch contact assembly (M, S):
(standard- and magnetic contact)

RCh 100-1:

Connection cable is passing through the back of the case, resp. the right side ⁴⁾ of the case for case configurations Rh and rRh, 1 m (3 ft) connection cable.

all other versions:

Universal plug connector on the right side ⁴⁾ of the case, resp. the back of the case for case configurations Fr, rFr and rBFr.

for inductive / electronic limit switch contact assembly (I, E):
Terminal box on the right side ⁴⁾ of the case, resp. the back of the case for case configurations Fr, rFr and rBFr.

The plug connector has 6 terminals and a ground terminal. The terminal box has 6 terminals.

The precise positions of the electrical connection are shown on the dimensional drawings on the reverse side of the data sheet. Other than standard installations are only available upon request and at additional charges.

for pneumatic limit switch contact assembly

For each limit value a PP/PE-converter is mounted on the back of the case (NCS 100 : max. 1 limit value)
NCS 100 (4") only with bottom process connection,
NCS 160 (6") all case configurations except rBFr available, dimensional drawings upon request

Blow-out

When installing an universal plug connector, terminal box or PP/PE-converter on the back of the case, a blow-out is not possible for NCS 100.

Special Versions

Case ventilation for **outdoor installation** on the top of the case coverage

-no. 20: without pressure equalizing element, IP 54
-no. 22: with pressure equalizing element, IP 65

Ordering Information

The ordering code of the particular gauge model RCh / RChOe (compare data sheet 1201) is extended by the

CODE LETTER for the model of the limit switch contact assembly :

S, M, I, E or **P** and the

CODE NUMBER for the switching function, e.g. **1, 2, 11, 12, 21, 22**

Examples: RCh 160-3, 40 bar, **M 12**
RChOe 100-3, -1/+9 bar, 1/2" NPT, **I 1**

⁴⁾ "right side" from the viewer's perspective when looking on the dial



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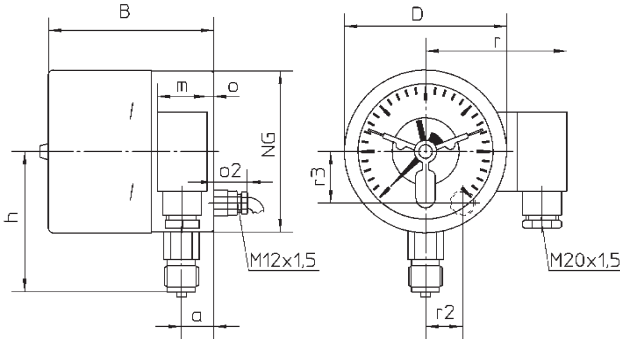
Case Configurations, Electrical Connection, Dimensional Data and Weights

Deviations compared to basic models (see data sheet 1201):
 Dimensional data **B, B1 (front-to-back-size)**, see table below
 Versions with u-clamp for panel mounting **rBFR³⁾** (see below)
 also available for NCS 100 with bayonet ring case, (dimension D1).
 The remaining measurements can be found on data sheet 1201.

The precise position of the connection cable or the plug connector, resp. the terminal box are shown in the dimensional drawings below.
 Other than standard installations are only available upon request and at additional charges. The front-to-back size for pressure gauges with pneumatic limit switch contact assembly is identical to the below listed details. A dimensional drawing for the PP/PE-converter is available upon request.

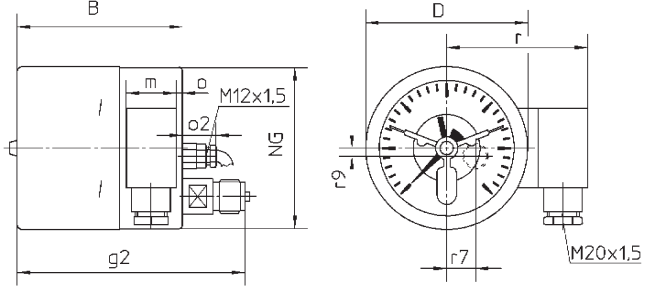
Bottom connection

Connection cable or universal plug connector / terminal box



Lower back connection (code letter: r)

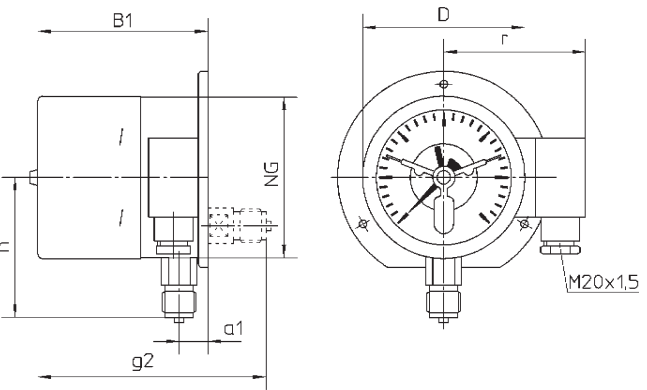
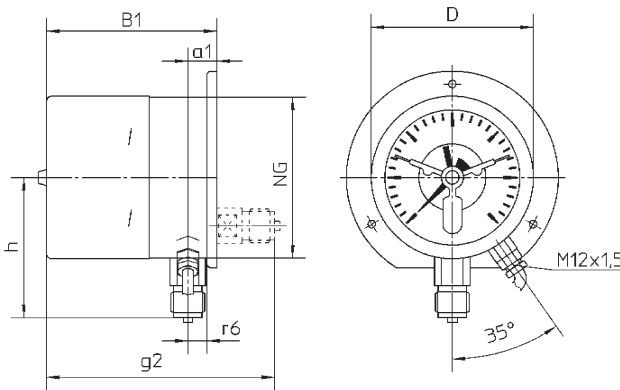
Connection cable or universal plug connector / terminal box



Bottom connection or lower back connection, rear mounting flange (code letters: Rh, rRh)

Connection cable

Universal plug connector / terminal box



Bottom connection or lower back connection, front flange (code letter: Fr, rFr)

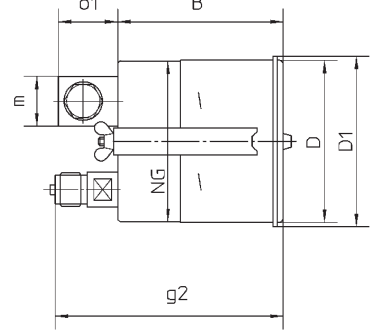
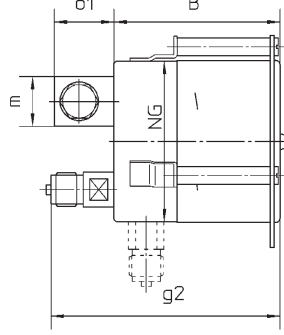
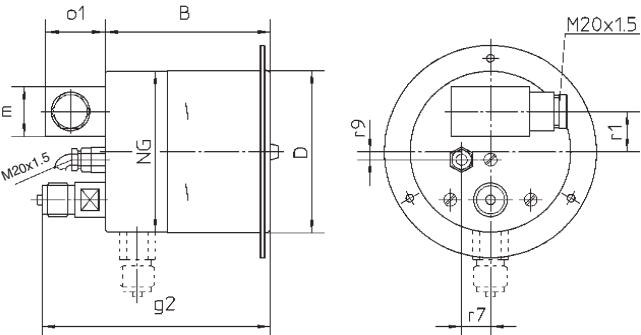
Connection cable or universal plug connector / terminal box

Lower back connection, U-Clamp for Panel Mounting (rBFR³⁾)

Connection cable (drawing upon request) / universal plug connector / terminal box

Standard version ("dry")

Liquid filled case version



Front flange with longholes attached to the case and a separate front flange

Mounting brackets welded to the case and separate cover front flange

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

NCS	a	a1	B	B1	D	D1	g2	h ±1	m	o	o1	o2	r	r1	r2	r3	r6	r7	r9	Weight (approx.) ⁴⁾	RCh	RChOe
100	20		99 ¹⁾	103 ¹⁾	101	106	142	87		3			88	25	23	32		18	0	.75	1.15	
4"	.79	18	3.89	4.05	3.98	4.17	5.59	3.42	31	.12	37	21	3.46	.98	.90	1.26	12	.71		1.65	2.53	
160	16	.71	105 ²⁾	108 ²⁾	161	167	146	115	1.22	6	1.46	.83	117	27	36	50	.47	36	50	1.50	2.90	
6"	.63		4.13	4.25	6.34	6.57	5.75	4.53		.24			4.61	1.06	1.42	1.96		1.42	.197	3.30	6.38	

¹⁾ Dimensions for 1, 2, 3 contacts; for laminated safety glass + 4mm (0.16")

²⁾ For two inductive or electronic limit switch contact assemblies with the same switching function (I resp. E11 and I resp. E22, also for three limit values, e.g. I 122 or E 112), as well as 4 contact standard or magnetic contact there have to be added + 10 mm (0.4") each!
 For laminated safety glass generally + 3 mm (0.12").

³⁾ Only available as dry version; RChaOe 100 and RChaOe 160 rBFR (data sheet 1290) are available alternatively.

⁴⁾ Approximate weight for case with bottom connection and with 2 contacts.

Our instruments are developed constantly, therefore changes are excepted.