

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP0000142
Revision No:
2

This is to certify:

That the Pressure Gauge

with type designation(s)
**RCh 63, RChG 63, RChg 63, RChgG 63,
RChg 80, RChgG 80,
RCh 100, RChG 100, RChg 100, RChgG 100, RSCh 100, RSChG 100,
RCh 160, RChG 160, RChg 160, RChgG 160, RSCh 160, RSChG 160**

Issued to
ARMANO Messtechnik GmbH
Grünhain-Beierfeld, Sachsen, Germany

is found to comply with
EN 837:1996/AC:1998 Pressure gauges – Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing (Corrigendum AC:1998 incorporated)
DNV class guideline DNV-CG-0339 – Environmental test specification for electrical, electronic and programmable equipment and systems

Application :

Pressure gauges according to EN 837-1

Type:	Temperature range:	Max. working press.:	Sizes:
RCh 63, RChG 63, RChg 63, RChgG 63	B; D	0,6 to 1000 bar	63 mm (2,5")
RChg 80, RChgG 80	B; D	0,6 to 1000 bar	80 mm (3")
RCh 100, RChG 100; RChg 100, RChgG 100, RSCh 100, RSChG 100	B; D	0,6 to 2500 bar	100 mm (4")
RCh 160, RChG 160; RChg 160, RChgG 160, RSCh 160, RSChG 160	B; D	0,6 to 2500 bar	160 mm (6")

Issued at **Hamburg** on **2022-10-18**

for **DNV**

This Certificate is valid until **2027-10-17** .

DNV local unit: **Essen**

Approval Engineer: **Malta Frederik Niederstadt**

Jonathan Struwe
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Series of pressure gauges according to EN837-1.

Burdon Tube Pressure Gauge for measuring pressure and or vacuum for fluid and gaseous media. They are equipped with crimped-on ring case or bayonet ring case consisting of the following main parts: Burdon tube, socket with thread connection, movement, dial and pointer, case and window. Standard case filling for filled versions (models ... G) is Glycerine. Accuracy and technical conformity according to EN 837-1.

Types and additional technical data, range of application and test standard, based on DNV Class Guideline DNV-CG-0339 "Environmental test specification for electrical, electronic and programmable equipment and systems" (Aug. 2021)

Model		Temperature Class	Vibration Class	NACE MR0175	NACE MR0103	Pressure ranges [bar]	Tube type form	Tube pressure [bar]	Material	
RCh	63-1	D	A	-	-	0 to 0,6 bar	C-form	≤40	Bronze, brazed 316 SS, silver soldered	
RChg	63-1	D	A	-	-	0 to 600 bar	Spiral form	≥60		
RChG	63-1	B	B	-	-					
RChgG	63-1	B	B	-	-					
RCh	63-3	D	A	√	-	0 to 0,6 bar	C-form	≤60	316 SS, argon arc welded 316 SS, argon arc welded	
RChg	63-3	D	A	√	-	0 to 1000 bar	Spiral form	≥100		
RChG	63-3	B	B	√	-					
RChgG	63-3	B	B	√	-					
RChgG	63-3v	B	B	√	-					
RCh	63-6	D	A	√	√	0 to 0,6 bar	C-form	≤60	Monel, argon arc welded Monel, argon arc welded	
RChg	63-6	D	A	√	√	0 to 1000 bar	Spiral form	≥100		
RChG	63-6	B	B	√	√					
RChgG	63-6	B	B	√	√					
RChg	80-1	D	A	-	-	0 to 0,6 bar	C-form	≤40	Bronze, brazed 316 SS, silver soldered	
RChgG	80-1	B	B	-	-	0 to 600 bar	Spiral form	≥60		
RChg	80-3	D	A	-	-	0 to 0,6 bar	C-form	≤60	316 SS, argon arc welded 316 SS, argon arc welded	
RChgG	80-3	B	B	-	-	0 to 1000 bar	Spiral form	≥100		
RCh	100-1	D	A	-	-	0 to 0,6 bar	C-form	≤40	Bronze, brazed 316 SS, silver soldered	
RChg	100-1	D	A	-	-	0 to 1000 bar	Spiral form	≥60		
RChG	100-1	B	B	-	-					
RChgG	100-1	B	B	-	-					
RSCh	100-1	D	A	-	-					
RSChG	100-1	B	B	-	-					
RCh	160-1	D	A	-	-					
RChg	160-1	D	A	-	-					
RChG	160-1	B	B	-	-					
RChgG	160-1	B	B	-	-					
RSCh	160-1	D	A	-	-					
RSChG	160-1	B	B	-	-					
RCh	100-3	D	A	√	-	0 to 0,6 bar	C-form	≤40		316 SS, argon arc welded 316 SS, argon arc welded NiSpanC, argon arc welded
RChg	100-3	D	A	√	-	0 to 1000 bar	Spiral form	≥60 <1000		
RChG	100-3	B	B	√	-	0 to 2500 bar	Spiral form	≥1000≤2500		
RChgG	100-3	B	B	√	-					
RChgG	100-3v	B	B	√	-					
RSCh	100-3	D	A	√	-					
RSChG	100-3	B	B	√	-					
RCh	160-3	D	A	√	-					
RChg	160-3	D	A	√	-					
RChG	160-3	B	B	√	-					
RChgG	160-3	B	B	√	-					
RChgG	160-3v	B	B	√	-					
RSCh	160-3	D	A	√	-					
RSChG	160-3	B	B	√	-					
RCh	100-6	D	A	√	√	0 to 0,6 bar	C-form	≤40	Monel, argon arc welded Monel, argon arc welded	
RChg	100-6	D	A	√	√	0 to 600 bar	Spiral form	≥60		
RChG	100-6	B	B	√	√					
RChgG	100-6	B	B	√	√					
RSCh	100-6	D	A	√	√					
RSChG	100-6	B	B	√	√					
RCh	160-6	D	A	√	√					
RChg	160-6	D	A	√	√					
RChG	160-6	B	B	√	√					
RChgG	160-6	B	B	√	√					
RChgG	160-6	B	B	√	√					
RSCh	160-6	D	A	√	√					
RSChG	160-6	B	B	√	√					

Technical Data

Diameters	63 mm (2,5") ; 80 mm (3")
Accuracy	Pressure ranges 0 to 0,6 bar ... 0 to <600 bar: ±1,6%, optional ±1,0% Pressure ranges 0 to 600 bar ... 0 to 1000 bar: ±2,5%, optional ±1,6%
Connections	model Ø63 mm (2,5"): ¼" BSP, ¼"NPT, M12x1,5 model Ø80 mm (3"): ¼" or ½" BSP ¼" or ½"NPT, M12x1,5, M20x1,5
Diameters	100 mm (4") ; 160 mm (6")
Accuracy	±1,0%
Connections	¼" or ½" BSP ¼" or ½"NPT, M12x1,5, HP-Connection M16x1,5 and 9/16"-18 UNF

Place of production

ARMANO Messtechnik GmbH
Grünhain-Beierfeld & Wesel-Ginderich
Germany

Application/Limitation

The a.m. pressure gauges are approved and may be used in piping systems on ships, offshore units and other structures classed by DNV. All gauges without electrical accessories are according ATEX directive.

The selection of the pressure gauges for the intended service conditions (pressure, temperature, medium) as well as the proper assembly and installation is to be carried out in accordance with the instructions of the manufacturer.

Type Approval documentation

The type approval is a merger of TAP0000142 together with TAP00001JT and TAP00001RF and based on the following technical documentation:

Data sheet No#, Date, Subject:
1000 – 01/22 Overview 1000
1211 – 07/22 RCh 63, RChG 63
1212 – 07/22 RChg 63, RChgG 63
1203 – 07/22 RChg 80, RChgG 80
1201 – 07/22 RCh 100, RCh 160, RChG 100, RChG 160
1202 – 07/22 RChg 100, RChg 160, RChgG 100, RChgG 160
1600 – 07/22 RSCh 100, RSCh 160, RSChG 100, RSChG 160

Test reports

Tests carried out

- Humidity test (acc. to DNV-CG-0339)
- Vibration test (acc. to DNV-CG-0339)
- IP-Test acc. to IEC 60529
- Pressure measurements acc. to EN 837-1
- NACE MR0175 / TM 0177 / EN ISO 15156-3

Marking of product

For traceability to this type examination, the products are to be marked in accordance with EN837-1:1996 [9.6.7]:

- Individual serial number
- Name / logo of the manufacturer
- Pressure range & unit
- Wetted material
- Accuracy class
- Pressure gauges for special applications:
 - o Use with oxygen or acetylene
 - o Safety pattern gauges
 - o Gas or liquid applications only
 - o Subject to state metrological control

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

The main scope of the periodical assessment will normally include:

- Verification of the TA applicant's production and quality system with relation to ensuring continue consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products,
- Review of the TA documentation and that this is still used as basis for the production,
- Review of possible changes to the design, the material and the performance of the product,
- Verification of the product marking.

Periodical assessments for TA with a validity period of five years will be required after two years (+/- 90 days) and after 3.5 years (+/- 90 days).

Unscheduled assessments for retention of the TA may be carried out when there is reason to believe that the TA applicant has not adhered to the obligations stipulated in the TA certificate or in the applicable requirements.