

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pressure Indicator**

with type designation(s)
A28 & A29 Pressure Gauges

Issued to

TEMPRESS A/S
Hørning, Midtjylland, Denmark

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	D
Humidity	B
Vibration	B
EMC	Not relevant
Enclosure	B

Issued at **Høvik** on **2020-03-18**

This Certificate is valid until **2025-03-17**.

DNV GL local station: **Denmark CMC**

for **DNV GL**

Approval Engineer: **Nils Jarem**

.....
Marta Alonso Pontes
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.



Product description

Type A28 is designed to measure pressure and vacuum in systems with aggressive, high viscous, high solid or corrosive fluids.

The gauge uses a flexible concentric corrugated diaphragm that through a ball joint translates pressure to a dial movement.

Specifications	
Type A28	Diaphragm Pressure gauge w. threaded connection
Case diameter	DN100
Case material	Stainless steel AISI 316
Glass face	Hardened glass
Liquid filling	Glycerine
<i>Option:</i>	Silicone oil or dry
Connection	Bottom
Diaphragm with ball-joint	Stainless steel AISI 316L
Process connection	Stainless steel AISI 316L, PTFE coated
Elastic element	Stainless steel AISI 316 diaphragm, PTFE coated
Ambient temperature	0°C/+60°C (glycerine filled)
<i>Option</i>	-25°C/+55°C (silicone oil filled) -25°C/+120°C (dry version)
Accuracy	Cl. 1.0 (±1% FS)
Measuring units	Bar, kPa, mbar, customized

A29 is a safety pattern instrument that is designed with an additional protective baffle between the bourdon tube and the scale, so that a defective bourdon tube cannot cause a user to be hit by the medium under pressure. In the event of a defect, the overpressure is deflated backwards by the temperature compensation.

Specifications	
Type A29	Pressure Gauge w. safety pattern DN100
Safety Pressure Gauges	DN100 type A2903
Case material	Stainless steel AISI 316
Glass face	Hardened glass
Front ring	AISI 316
Liquid filling	Glycerine or Silicone oil
Connection	AISI 316, G1/2B, 1/2" NPT, G3/8B, 3/8" NPT
Measuring system	AISI 316
Measuring range:	From -1 bar through 1600 bar
Min. span:	1 bar
Ambient temperature	0°C/+60°C (glycerine filled)
<i>Option</i>	-25°C/+55°C (silicone oil filled) -25°C/+120°C (dry version)
Accuracy	Cl. 1.0 (±1% FS)
Measuring units	Bar, kPa, mbar, customized

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, December 2019, including 5g mechanical shock test.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE