

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Pressure Relief Device**with type designation(s)  
**Annulus Pressure Relief Unit**

Issued to

**Mark & Wedell Ingeniør og Handelsfirma AS**  
**Kvistgård, Denmark**is found to comply with  
**DNVGL-OS-E201 – Oil and gas processing systems, Edition July 2018****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range: 0° F to 100° F (-18°C to 40°C)****Max. working press.: See certificate****Sizes: 2"**Issued at **Høvik** on **2020-08-28**for **DNV GL**This Certificate is valid until **2022-12-31**.DNV GL local station: **Copenhagen FIS**Approval Engineer: **Vishnumurthi Ragavendhra Rao****Zeinab Sharifi**  
**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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-000512-6**  
Certificate No: **TAP0000190**  
Revision No: **1**

## Product description

Pressure relief unit with bursting disc designed to protect annulus in an oil/gas system for pressure limitations. The product consists of bursting disc device contained in between two flanged pipes assembled with bolts and suitable RTJ gaskets.

This type approval covers two models/variants of the product:

<i>Model</i>	<i>Maximum allowable pressure</i>	<i>Test pressure</i>	<i>Assembly drawing no.</i>
6000 PSI	6,000 psig (420 barg)	9,000 psig (630 barg)	0143.01.G3-24902
10000 PSI	10,000 psig (690 barg)	15,000 psig (1035 barg)	0143.02.G3-28426

Reference standards:

Product design standard: ASME B31.3 (6000 PSI model) / API 6A (10000 PSI model)  
Flange and gasket groove dimensions: ASME B16.5, Class 2500 (6000 PSI model) /  
API 6A Type 6BX 2 1/16 in. for 69 MPa (10000 PSI model)  
Bursting disc standard: EN ISO 4126-2

Materials:

Flanged pipe: A182 Gr. F304  
Bursting Disc housing: A479 Gr. 304  
Bursting disc: A240 Gr. 316L  
Bolts: A320 L7

Operating fluid: hydrocarbon/oil/water

## Application/Limitation

The pressure relief unit shall be protected against corrosion (no corrosion allowed).

The bursting disc shall be designed to withstand back pressure, if any.

The burst disc device shall be supplied according to standard EN ISO 4126-2.

Relieving capacity calculation has not been checked as part of this type approval. The required relieving capacity shall be checked for each application.

The pressure relief device shall be categorized according to DNVGL-OS-E201 Ch.3 Sec.3 Table 15, and relevant requirements followed accordingly (category I for fluid with flash point below 100°C, otherwise category II)

Material certificates shall be according to DNVGL-OS-E201 Ch.2 Sec.9 [5.2.2].

## Type Approval documentation

### 6000 PSI model:

Document no.	Document title	Revision	Date
0143.01.G3-24902	Assembly 2"	-	2001-06-13
0143.01.D3-24903	Flange Pipe 2"	-	2001-06-13
01-08-11	Bursting Disc RR-LS-2	1	2011-08-01
0143-01_2013-11-29	Technical Design Qualification	-	2013-11-29

### 10000 PSI model:

Document no.	Document title	Revision	Date
0143.02.D3-28427	Flange pipe for BX152 – 10000 PSI	A	2020-08-28
20-07-59	Bursting disc device model: RR-STAR-LS-GG-2 1/16	1	2020-08-17
-	Annulus Pressure Relief (APR) unit - Description and Design Data	-	2020-07-21
0143.02.G3-28426	Annulus Pressure Relief Unit - Assembly 2 1/16" -	-	2020-08-27

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-	10000 PSI		
-	Annulus Pressure Relief System - User Manual	-	-
-	Technical clarification by REMBE regarding weld seam on rupture disc housing	-	-
2020-3182	Mark & Wedell APR – Analysis of 10 000 psi APR Unit	0	2020-08-28

### Marking of product

For traceability to this type approval each device is at least to be marked with:

- Manufacturer's name or trade mark.
- Type designation
- Size

### Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338