

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Hoisting, Rotation and Pipehandling Equipment**with type designation(s)
BONDURA® PIN SYSTEM

Issued to

Bondura® Technology AS
, Vardheivegen 56b, 4340 Bryne, Norway

is found to comply with

DNVGL-OS-E101 – Drilling plant, Edition July 2015**DNV Standard for Certification No. 2.22 "Lifting Appliances"****API Spec 8C/ISO 13535, Specification for Drilling and Production Hoisting Equipment (PLS1), 4th Edition****API Spec 8C/ISO 13535, Specification for Drilling and Production Hoisting Equipment (PLS2), 4th Edition****Application :****See "DESIGN, FABRICATIONS, INSTALLATION AND MAINTANANCE SPECIFICATION OF BONDURA BOLT SYSTEM", Rev. H, 20.10.2004 and 24.06.2013**Issued at **Høvik** on **2017-11-17**for **DNV GL**This Certificate is valid until **2022-11-16**.DNV GL local station: **Stavanger**Approval Engineer: **Chenyu Sun****Inger-Helene Hals**
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

The Bondura® Technology AS pins are designed to replace existing conventional round bolts with the same diameter and similarly material quality. The dimensions and material quality shall be chosen in order to meet the safety factor, material requirements, fatigue and other design criteria applicable to the equipment where the pins are used. The Bondura® Technology AS pivot pins covers a range of sizes up to 500 mm diameter.

BONDURA® PIVOT PIN TYPE 3.1
BONDURA® PIVOT PIN TYPE 3.2
BONDURA® PIVOT PIN TYPE 3.3
BONDURA® PIVOT PIN TYPE 3.4
BONDURA® PIVOT PIN TYPE 4.4
BONDURA® PIVOT PIN TYPE 6.1
BONDURA® PIVOT PIN TYPE 6.2
BONDURA® PIVOT PIN TYPE 6.6
BONDURA® PIVOT PIN TYPE 66.dual
BONDURA® PIVOT PIN TYPE BX
BONDURA® PIVOT PIN TYPE 3.6.dual
BONDURA® PIVOT PIN TYPE 6.6 LC
BONDURA® PIVOT PIN TYPE 3.3 LC
BONDURA® PIVOT PIN TYPE 6.2 LC

According to "Design, Fabrication, Installation and Maintenance Specification of Bondura® Pivot Pin System", date: 15.04.2013 and 24.06.2013.

Material Quality 1: High strength hardened steel
Material Quality 2: Corrosion high strength hardened steel
Material Quality 3: High strength induction steel with hard chrome surface
Material Quality 4: High impact alloyed structural steel
Material Quality 5: High breaking strength induction hardened steel with hard chrome surface

For traceability to this type certificate the products are to be marked with Bondura® technology AS sales order and item number.

Type Approval documentation

The approval is based on the following documentation:

Specifications:

"Design, Fabrication, Installation and Maintenance Specification of Bondura® Pivot Pin System ",date 15.04.2013.

"Design, Fabrication, Installation and Maintenance Specification of Bondura® Pivot Pin System, 500mm diameter", 24.06.2013.

Drawings:

<u>Drwg.No.</u>	<u>Rev.</u>	<u>Title</u>
GA-0310	D	bondura 3.3. Ø010-Ø500 GENERAL ARRANGEMENT
GA-0300	D	bondura 3.1. Ø30-Ø500 GENERAL ARRANGEMENT
GA-4517	B	bondura 6.1. Ø140-Ø500 GENERAL ARRANGEMENT
GA-0370	C	bondura DUAL 36 Ø25-Ø500 GENERAL ARRANGEMENT
GA-0364	A	bondura 6.2-LC Ø55-Ø500 (Load Cell) GENERAL ARRANGEMENT

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GA-0362	B	bondura 3.3-LC. Ø50-Ø500 (Load Cell) GENERAL ARRANGEMENT
GA-0360	B	bondura 6.6-LC Ø40-Ø500 (Load Cell) GENERAL ARRANGEMENT
GA-0350	C	bondura BX Ø20-Ø140 GENERAL ARRANGEMENT
GA-0345	C	bondura DUAL 66 Ø30-Ø500 GENERAL ARRANGEMENT
GA-0339	D	bondura 6.2. Ø25-Ø69 GENERAL ARRANGEMENT
GA-0338	D	bondura 6.2. Ø55-Ø500 GENERAL ARRANGEMENT
GA-0332	D	bondura 6.1. Ø59-Ø275 GENERAL ARRANGEMENT
GA-0330	D	bondura 6.1. Ø59-Ø99 GENERAL ARRANGEMENT
GA-0328	D	bondura 6.1 Ø20-Ø59 GENERAL ARRANGEMENT
GA-0326	D	bondura 6.6. Ø50-Ø500 GENERAL ARRANGEMENT
GA-0324	D	bondura 6.6. Ø25-Ø69 GENERAL ARRANGEMENT
GA-0322	C	bondura 4.4. Ø010-Ø500 GENERAL ARRANGEMENT
GA-0320	C	bondura 3.2. Ø025-Ø500 GENERAL ARRANGEMENT
GA-0318	C	bondura 3.4. Ø010-Ø500 GENERAL ARRANGEMENT

Type Testing:

Scana Supply & Services as, Load Test Report, ID.No.BN-1075/WO.93-050, dated 93.02.17
Bolt Norge AS, Load Test ID.No.BN-1075, dated 93.07.15
Scana Supply & Services as, Load Test Report, ID.No.BN-1101/WO.93-105, dated 93.06.22
Bolt Norge AS, Load Test, ID.No.BN-1101, dated 93.07.15.

NDE tests:

According to design rules or specifications.

Documents, etc. which are to accompany each product/delivery:

Bondura® Technology AS Certificate of Conformity
Bondura® Technology AS Material Traceability List
GA drawings with relevant dimensions
NDT reports (Documentation type A only)
Installation procedure
Maintenance procedure

Documents to be kept by BONDURA® TECHNOLOGY AS over a period of at least 10 years:

Material certificates traceable to each bolt
Relevant GA drawings and production drawings
Bondura® Technology AS Certificate of Conformity
Bondura® Technology AS Material Traceability List
Installation procedure
Maintenance procedure.

Certificate retention survey

For retention of Type approval, DNVGL Surveyor shall perform a survey every second and half year and before the expiry date of this certificate in order to verify that the conditions for the type approval are complied with.



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Other conditions/Comments

- This document may be used as part of the documentation required to comply with European Union (EU) Directives referenced in PSA's Acts, regulations and provisions for the petroleum activities.
- The pins shall be furnished with an appropriate material certificate in accordance with the relevant standard, as specified above. No product certificate is required for the pins.

THIS CERTIFICATE REPLACES PREVIOUS TYPE APPROVAL CERTIFICATE NO. D-5176.

End of Certificate