Certificate No:
TAD00001JT

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Hoisting, Rotation and Pipehandling Equipment

with type designation(s)
SHEAVE PN: 3699160

Issued to
The Crosby Group LLC
Tulsa, OK, USA

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021
DNV statutory interpretations DNV-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2021

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV when accompanied by a DNV Product Certificate (PC).

Issued at **Houston** on **2023-05-05**
This Certificate is valid until **2028-05-04**.
DNV local unit: **Houston, Approval CMC**

Approval Engineer: **Bo Cui**

for **DNV**

Mark Miser
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.

Reference standards
API Specification 8C, 5th Edition, April 2012 “Drilling and Production Hoisting Equipment (PSL1 and PSL2)

Product description
Sheave, RF 60 UB 13.685 3.875-HB 3.500-RM 1.500 WL

Application/Limitation

Design Parameter	Value	(equivalent)
Minimum Design Temperature	-4°F	(-20°C)
Total Max. Load - 180° Wrap	225.0 kips	(102.0 tonne)
Safe Working Load - Single Line Pull	112.5 kips	(51.0 tonne)
Maximum Fleet Angle	2.5°	
Degree of Wrap	180°	
API 8C Safety Factor Applied	3	
Product Specification Level	PSL 1	
Service	Drilling	

Type Approval documentation

Testing
1. Qualification of welding procedures and qualification of welders shall be in accordance with DNV-OS-E101 Ch.2 Sec.8, 2.
2. Non-destructive examination (NDE) shall be carried out in accordance to with DNV-OS-E101 Ch.2 Sec.8, 3 and API 8C Ch.8.4.7 and Ch.8.4.9 (ref. DNV-OS-E101 Ch.2 Sec.8 3.1.1).

Marking of product
For traceability to this Type Approval Certificate the products are as a minimum to be marked as follows:
- Part Number
- Serial Number
- Load Rating
- Sheave Groove Size
- Sheave Outside Diameter
- Type Approval Certificate Number
- Manufacturer’s name and trademark

Periodical assessment
For retention of the Type Approval, DNV’s surveyor shall perform periodical assessment after 2 years (+/- 90 days) and after 3.5 years (+/- 90 days) in accordance with DNV’s Class Program DNV-CP-0338, Section 4.

END OF CERTIFICATE