



Certificate no.:
TAS000044H

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Lifting Gear

with type designation(s)

Sheaves 4-59343, 4-59345, 4-59346 and 4-59347

issued to

GOSAN, S.A.

Ortuella, 48, Spain

is found to comply with

DNV standard DNV-ST-0378 – Offshore and platform lifting appliances

Application:

Offshore cranes

Issued at **Høvik** on **2024-02-26**

This Certificate is valid until **2029-02-25**.

for **DNV**

DNV local unit: **Area NB/CMC Iberia**

Approval Engineer: **Luisa Brites**

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.



Form code: TA 251

Revision: 2023-09

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Product description

The sheaves covered by this Type Approval certificate are to be installed permanently on a lifting appliance as part of the hoisting and/or luffing systems. They shall not be used as sub-components for loose gear.

Sheave	4-59343		4-59345	4-59346		4-59347
Design temperature [°C]	-20		-20	-20		-20
Sheave pitch diameter [mm]	1545		1545	719		719
Wire rope diameter [mm]	76		76	34		34
F.E.M. 1.001 component group	E5 (B6, P2)		E5 (B6, P2)	E5 (B5, P3)		E5 (B6, P2)
Load condition	Knuckle Boom	Boom Tip	Load Bolt	Main Boom Tip	Knuckle Boom Tip	Load Bolt
Maximum static line pull [mT]	174,6	80,5	174,6	21,4	21,4	21,4
Dynamic factor (DAF)	1,4	1,4	1,4	1,4	1,4	1,4
Maximum fleet angle [deg]	0,75	1,5	0,5	0,75	1,5	0,75
Maximum wrap angle [deg]	121,3	76,7	49	127,7	117,3	44

The maximum dynamic load shall include effects such as the weight of the hook/block, the weight of the wire rope and the lifting appliance's design dynamic factor.

Application/Limitation

1. All materials are to be delivered with 3.1 certificates, documenting mechanical properties and chemical composition in accordance with the Type Approval documentation.
2. Welding and NDT as specified in the Type Approval Documentation are to be carried out by certified personnel.
3. The sheave bearings are not covered by this Type Approval.
4. FAG bearings 24044-BE-XL-K30 (for sheaves 4-59343 and 4-59345) are to be delivered with manufacturer's CoC, confirming sufficient strength and capacity.
5. INA bearings SL045028-D-PP (for sheaves 4-59346 and 4-59347) are to be delivered with manufacturer's CoC, confirming sufficient strength and capacity.
6. Proper lubrication of the bearings is to be guaranteed during operation and use of the sheaves.

Type Approval documentation

Tests carried out

This Type Approval covers design(s) only, i.e. the Type Approval is not valid for the final product, but may be used as basis for obtaining a product certificate.

If a DNV Product Certificate is required, each sheave shall be subject to overload testing as per DNV-ST-0378 Table 14-1.

Marking of product

Each sheave shall be marked according to DNV-ST-0378, section 14 [14.5].

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338.

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>.

END OF CERTIFICATE