



Certificate No:
TAS00003VV

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Lifting Gear

with type designation(s)
Tower gripper

Issued to

ENABL A/S
Hedensted, Denmark

is found to comply with

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

Application :

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

Issued at **Høvik** on **2024-01-10**

This Certificate is valid until **2029-01-09**.

for **DNV**

DNV local unit: **Esbjerg Verification**

Approval Engineer: **Florian Teica**

Per Esvall
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.



Form code: TA 251

Revision: 2022-12

www.dnv.com

Page 1 of 3

Product description

Equipment use: Lifting tool for Monopile handling

Application/Limitation

Category: offshore, lifting beam/tool

It is the end user's responsibility to ensure that adequate control of magnitude of load is maintained during all operations (ref DNV-ST-0378 sec 5.2.9.6)

Self-weight: 46.0 tonnes

Operational limitations:

Safe working load (SWL) @ lifting clamps: 1500 tonnes (tower self-weight)

Design dynamic factor (DAF): 1.2 (in air lifting) (see *Approval Limitations #3*)

Maximum sling angle to vertical: 8.1 deg.

Sidelead/offlead angles: N/A (see *below conditions*)

minimum clamping length per clamp: 213mm (ref drg no A-00-13001 Rev A; see *Approval Limitations #1*)

Wind speed: 16 m/s (10 min mean and 3 sec. gust)

Minimum design temperature: -20 deg. C

The approval is based on the following conditions:

1. The tower gripper shall not be used for pile up-ending
2. During operation, the tower gripper shall not be subject to any radial loads other than wind loads and tag lines applying a maximum of 100kN radial load.
3. The tower gripper verticality is maintained through-out the entire lifting operations
4. The tower gripper is operated as per doc no P315769_BDC02 Rev 09 *User instruction_Tower Gripper*

Approval limitations

The approval is not covering the following:

1. The lifting flange inside the pile. It is the end user's responsibility to ensure the proper fabrication of the flange, thus ensuring an adequate and symmetrical contact surface for each of the 3 Tower gripper lifting clamps. Maximum monopile ovality +/-2mm or a minimum clamping length of 213mm for 1 of 3 clamps.
2. Since the tower gripper does not have the functionality enabling an emergency disconnection, it is the end user's responsibility to ensure that this limitation is accounted for during operations.
3. It has been confirmed by the designer that the payload will be subject to in-air lifting only and it will not be deployed through the splash zone.
4. The transit case: sea fastening, support legs, deck strength are not included in the review
5. The platform or access to the platform. It has been confirmed by the designer that no persons will be allowed on the platform during lifting operations. The platform and access are not covered by this Type approval.
6. The adequacy of the sliding material between the sliding rings, ref drg no A-A-12731 and 32; inspections, maintenance and service shall be performed as per ENABL specifications.

Type Approval documentation

Certification

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, the following shall apply:

- The manufacturing survey shall be followed-up by a DNV Surveyor
- Each Tower gripper shall be subject to load, functional and failure mode testing as per DNV-ST-0378 sec 14 and DNV approved test procedures.

Marking of product

Tower gripper shall be marked in accordance with DNV-ST-0378 Section 14.

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