



Certificate No:
TAM000019K

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Waterjet

with type designation(s)
X450

Issued to

Marine Jet Power AB
Uppsala, Sweden

is found to comply with

DNV rules for classification – Ships

DNV rules for classification – High speed and light craft

Application :

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

The approval is valid for propulsion duty with rating as given on page 2.

Issued at **Høvik** on **2023-05-31**

This Certificate is valid until **2028-05-30**.

DNV local station: **Sweden CMC**

for **DNV**

Approval Engineer: **Øystein Aagetvedt Larsen**

.....
Oddvar Deinboll
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: 2021-03

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Product description

Waterjet with built-in steering and reversing system.

Application/Limitation

The approval is valid for propulsion duty with the following rating:

Maximum input power	1680 kW
Maximum impeller speed	1937 rpm
Maximum torque	8543 Nm
Application factor, K_A	1.2

The waterjet is to be run within safe operation range (no harmful cavitation) to achieve a satisfactory lifetime. Service interval shall correspond with calculated lifetime of bearings.

Marking of product

The product shall be marked with the manufacturer's name or trademark and type designation.

Periodical assessment

For retention of the type approval, a DNV surveyor shall perform an assessment after 2 years and after 3.5 years, to verify that the conditions of the type approval are complied with. A renewal assessment will be performed at renewal of the certificate.

In cases where the type approved product is manufactured at other companies, the periodical assessment shall verify that the type approval applicant has a quality control system for consistent production at their licensees/subcontractors. Furthermore, periodical assessment shall be carried out randomly at these companies.

Other conditions

The following is not covered by this certificate and shall be submitted for approval for each delivery:

- Connection to hull (shipbuilders responsibility)
- Drive shaft flange coupling
- Connection to driving unit
- Hydraulic system diagram
- Controls and alarms, including set points and delays
- Remote control system
- Interceptor
- Hydraulic cylinders for steering and reversing shall be type approved or approved on a case-by-case basis
- Flexible hoses shall be type approved

END OF CERTIFICATE