

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Waterjet**

with type designation(s)
X310

Issued to

Marine Jet Power AB
Uppsala, Sweden

is found to comply with
DNV GL rules for classification – High speed and light craft

Application :

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

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

Issued at **Høvik** on **2020-07-13**

This Certificate is valid until **2025-07-12**.

DNV GL local station: **Sweden CMC**

for **DNV GL**

Approval Engineer: **Terje Sollie**

.....
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-033733-1**
Certificate No: **TAM0000166**

Product description

Waterjet unit with built in steering and reversing system, and six-bladed impeller.

Application/Limitation

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

Input power	800 kW
Impeller speed	2776 rpm
Maximum torque	2866 Nm
Application factor, contd.	1.3

The waterjet is to run within safe operation range (no harmful cavitation) to achieve a satisfactory lifetime.

Service interval shall correspond with calculated lifetime of roller 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 GL 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)
- Connection to driving unit
- Hydraulic system diagram
- Controls and alarms, including set points and delays
- Remote control system
- Hydraulic cylinders for steering and reversing shall be type approved or approved on a case-by-case basis
- Flexible hoses shall be type approved
- Interceptor

END OF CERTIFICATE