

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Clutch and Friction Brake Coupling for Shaft**

with type designation(s)

Hybrid modules HM560, HTM700, HM2000, HM3350, HM6300

Issued to

**Transfluid SpA
Gallarate VA, Italy**

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – High speed and light craft****DNV GL rules for classification – Yachts****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Input torque see page 2****Input speed see page 2**Issued at **Hamburg** on **2019-06-04**This Certificate is valid until **2024-06-03**.DNV GL local station: **Milan**for **DNV GL**Approval Engineer: **Olaf Richter**

**Burkhard Lilienthal
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.



Product description

Hybrid modules with elastic coupling, master clutch and auxiliary PTO

Application/Limitation

Main propulsion for ships with multiple propulsion. Diesel / hydraulic / electric drive.
Maximum application factor $K_A = 1.20$.

Unit type	max power [kW]	max speed [rpm]	max torque [Nm]
HM560 Variant 1	180	4000	448
HM560 Variant 2 (HTM700)	140	3500	448
HM2000	435	3000	1600
HM3350	620	2200	2680
HM6300	1100	2100	5040

Type Approval documentation

Tests carried out

Friction torque testing as per reports filed.

Marking of product

Manufacturer's name or trademark. Type number 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.

The objective of the Periodical Assessment is to verify that the conditions for the Type Approval are not altered since the Type Approval Certificate was issued. The main scope of the Periodical Assessment will normally include:

- Verification of the Type Approval applicant's production and quality system w.r.t. ensuring continued consistent production of the Type Approved products at the Type Approval applicant's own premises and at other companies that are given the responsibility for manufacturing of the products
- Review of the Type Approval documentation and that this is still used as basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking

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.

When a Type Approved product is manufactured at other companies, the Type Approval applicant takes the sole responsibility for the conformity of the product to the applicable requirements.

Other conditions

The approval does not cover:

Job Id: **262.1-022226-1**
Certificate No: **TAM00000XY**

- Revertomatic reduction gear unit (review not necessary for HM560 / HTM700 ratings, see DNVGL RU-SHIP Pt.4 Ch.4 Sec.2 [1.1.1])
- Fastening and foundation of the unit incl. chocking calculations
- Lubrication / hydraulic diagram incl. instrumentation (measuring devices, sensors and alarms)

END OF CERTIFICATE

Original document available upon request