

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM00000XY
Revision No:
2

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 S.p.A.
Gallarate, VA, Italy

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

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.
Input torque see page 2
Input speed see page 2

Issued at **Høvik** on **2019-06-04**

This Certificate is valid until **2024-06-03**.

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Olaf Richter**

for **DNV**

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.



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	670	2400	2680
HM6300	1210	2300	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 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:

- Revertomatic reduction gear unit (review not necessary for HM560 / HTM700 ratings, see DNV 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