DNV·GL

Certificate No:
TAM00000NU

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Reduction Gear for Diesel, Electrical and Hybrid Propulsion

with type designation(s)
HD 220 HL, HR, UR, UL

Issued to
Servogear AS
RUBBESTADNESET, Norway

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

Application :

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

Input torque	**3865**	**3865**	**3320**
Input speed	**2100**	**2100**	**2100**
Reduction ratio	**1:2,148**	**1:2,952**	**1:2,609**

Issued at **Høvik** on **2017-09-19**
This Certificate is valid until **2022-09-18**.
DNV GL local station: **Haugesund**

Approval Engineer: **Geir Olav Moen**

for **DNV GL**

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.

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Product description

Reduction gear with built-in clutch(es) and controllable pitch mechanism. Available in the following versions:

-H-drive - Engine forward
-U-drive - Engine aft

Both rotational directions of the output shaft are available.

Application/Limitation

The clutch pressure is to be set according to the type approval certificate for the Ortlinghaus 0-021-333-55-152 clutch.
Gear oil with FZG class 11 or better is to be used.

Application
Application factor KA=1,20
Max output 2x PTO: 200kW/2100 RPM

Input torque	Input speed	Reduction ratio
3865	2100	1:2,148
3865	2100	1:2,952
3320	2100	1:2,609

Type Approval documentation

Drawing list "Type Approval Documentation" in Servogear letter VCh120197, dated 2012-12-06
DNV ref.: TNANO373/ERIO/262.1-006140-J-13, and drawing list from Servogear dated 2017-07-03.

Marking of product

The product to be marked with the manufacturer's name or trademark and type number identification.

Other conditions

The following items are not covered by the Type Approval:

- Connections to external shafts
- Ice class notations
- Control and monitoring system and electrical wiring
- Mounting/installation of gearbox

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.

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.

END OF CERTIFICATE