

TYPE APPROVAL CERTIFICATE

Certificate No:
TAM000007C

This is to certify:

That the Steering Gear

with type designation(s)

PMH SG-500

Issued to

Nik Haugrønning AS

BOSBERG, Norway

is found to comply with

DNV GL rules for classification – Ships

Application :

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

This Certificate is valid until **2021-05-19**.

Issued at **Høvik** on **2016-05-26**

DNV GL local station: **Trondheim**

Approval Engineer: **Maria Madigan** _ _ _ _ _

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.

Product description

Linked cylinder type steering gear comprising of two cylinders acting on a tiller.
The following parts are covered by this type approval:

- Tiller,
- Mounting plate,
- Hydraulic System,
- Cylinder bracket and
- Mounting bracket.

The following parts are not covered:

- Hydraulic cylinders,
- Connection to rudderstock,
- Electric system and
- Control system.

Application/Limitation

PMH-SG-500	Unit		
Max Design pressure		100	Bar
Max Working pressure		80	Bar
Max. Rudder angle		2x35	Deg
Max Design torque		7.14	kNm
Max MTR		7.14	kNm
Max Working torque		5.71	kNm
Max Cylinder force		31.2	kN
Min. Elongation		12	%
Max Pump capacity ³⁾		5	l/min

Steering gear is not in compliance with requirements for tankers.

Type Approval documentation

Marking of product

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

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every second year and before the expiry date of this certificate to verify that the conditions of the type approval are complied with.

In cases where the Type Approved product is manufactured at other companies, these are also subject to periodical assessment.

Other conditions

The approval includes the tiller and hydraulic system only.

For approval of the complete steering gear the following shall be complied with:

- A steering test is to be carried out under normal working conditions to demonstrate compliance with requirements. {Pt.4 Ch.10 Sec.9}
- Hydraulic piping diagram and electric wiring to be submitted for approval.
- Connection of rudder stock-rotor to be submitted for approval.
- Arrangement drawing of steering gear to be submitted for information, including specification of hydraulic cylinder type and max cylinder force.
- Foundation arrangement to be submitted for approval (yard supply)
- Operation instructions for steering shall be submitted for information (yard supply).

END OF CERTIFICATE