DNV·GL

Certificate No:
TAM00000UC

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Torsional Vibration Dampers

with type designation(s)
DXXX/N

Issued to
Geislinger GmbH
Hallwang Salzburg, Austria

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

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2018-04-04**
This Certificate is valid until **2023-04-03**.
DNV GL local station: **Augsburg**

Approval Engineer: **Stanislav Avanesov**

for **DNV GL**

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.

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Product description

Tuned torsional vibration damper with leaf springs of steel and hydrodynamic oil damping.

Example type designation:
D220/3/1/V/M *or* *D220/AB*

- *D:* damper
- *220:* outer diameter of centre part in [cm]
- *3*: version number of a specified type
- *1*: subversion
- *V / K*: adjustable damping ring / adjustable damping head (incorporated in damper design)
- *M*: damper with machined gear for GMS signal pick up
- *AB*: project designation – will be substituted by a number when an order is placed

Places of production

Geislinger Corporation, Battle Creek, Michigan, USA

Geislinger Ltd., Busan, Republic of Korea

Geislinger (Suzhou) Co., Ltd., Souzhou, P.R. China

Application/Limitation

The type approval is valid for all dampers listed in the catalogue version 15.7 of August 2016 as well as dampers of the same design but with other dimensions.

Determination of damping:

Standard dampers designed for particular engine types are to be measured and analysed with regard to the technical data of the system with focus on damper data at an engine test bed. The evaluation methods are to be according to the state of the art at Geislinger and DNV.

Dampers designed for shaftline damping (two-stroke crosshead engines) are to be provided with adjustable damping. The adjustment is to be based on torsional vibration measurements during sea trial. Sister ships may use the same adjustment as for the first vessel in a series. The adjustable damping is provided by a damping ring or by damping heads.

Type Approval documentation

Marking of product

Manufacturer’s name or trademark. Type number designation.

Periodical assessment

For retention of the Type Approval, a DNV surveyor shall perform a survey after 2 and 3,5 years and before the expiry date of this certificate to verify that the conditions of the type approval are complied with.

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.

Other conditions

DNV to be provided as early as possible with the following data for each application:

- Mass moment of inertia (kgm^2) of inner part
- Mass moment of inertia (kgm^2) of outer part
- Max permissible wear (mm) of grooves and spring tips
- Permissible elastic vibratory torque (kNm) for continuous operation
- Permissible elastic vibratory torque (kNm) for transient operation
- Torsional stiffness (kNm/rad)
- Damping coefficient (kNms/rad)
- Damping torque depending on oil pressure (kNm/bar) to damper
- Permissible thermal load (kW)
- Required oil flow (l/min) corresponding to permissible thermal load
- Counterweight mass and gravity radius (kgm)
- Counterweight influence number on radial bearing FD2/FS2

Each application means:

A damper developed as a standard damper for a specific engine type. Only in the case of alterations new data need to be forwarded.
For a two-stroke application where the damper is provided for protection of the intermediate shaft, the data have to be forwarded for each case (except further sister vessels).

END OF CERTIFICATE