DNV·GL

Certificate No:
TAM00000GK

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Elastic Couplings

with type designation(s)
VULKARDAN L

Issued to
Vulkan Kupplungs- und Getriebebau Bernhard Hackforth GmbH & Co. KG
Herne Nordrhein-Westfalen, Germany

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

Application :

The approval is valid for propulsion and auxiliary duty with ratings according to VULKARDAN L catalogue Issue 08/2016 and with limitations and deviations from the catalogue values as given in the data sheet mentioned in the certificate.
Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Issued at **Hamburg** on **2017-04-03**
This Certificate is valid until **2022-04-02**.
DNV GL local station: **Essen**

Approval Engineer: **Erich Rüde**

for **DNV GL**

Burkhard Lilienthal
Head of Section

Product description

Highly flexible rubber couplings.

Application/Limitation

Stiffness and damping properties as per Technical Data in Catalogue Issue 08/2016 and for other ambient temperatures, vibratory torques and mean load as per documentation in the below mentioned test reports.

Nominal torque T_{KN}, permissible maximum torque T_{Kmax1}, permissible torque range ΔT_{Kmax} and permissible vibratory torque T_{KV} according to data sheet for Vulastik-L according to Type Approval, dated 03-05-20 Version 01.

Permissible catalogue power loss ($P_{KV\ 50}$) are valid for 50 °C ambient temperature for 1 hour. The permissble value for steady state condition is the catalogue value multiplied with 0.5.

Permissible power loss for couplings in bell housing and/or at higher ambient temperatures than 50 °C to be calculated according to the following formula:

$$P_{KV} = P_{KV50}\frac{110 - t}{60}$$ t : ambient temperature.

Max. ambient temperature 70° C.

Couplings for single propulsion duty have either to be fitted with an emergency claw device or other approved arrangement which could be monitoring and alarm system, ref. DNVGL-RU-SHIP-Pt.4, Ch4, Sec.5, 2.2.10.

The maximum rotational speed of Vulkardan L Type 4814 can be increased to 2400 rpm for light to medium service, i.e.:

- Intermittent operation with some variations in engine speed and/or power
- With up to 4000 operating hours per year
- Average load factor is 60 – 80 % of T_{KN}
- Marine Medium service rated, i.e. charter and commercial crafts, workboats, naval and government vessels etc.
- Power Generation in Prime Duty – with variable load

For continuous service, the maximum rotational speed of Vulkardan L Type 4814 is, as stated in the technical data, 2300 rpm.

Type Approval documentation

Tests carried out

Test report No. 369L dated 94-01-28 for VULKARDAN-L 3415
Test report No. 368L dated 94-01-28 for VULKARDAN-L 3411

Marking of product

The product to be marked with the 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.

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.

DNV GL product certificate is not required for couplings according to DNV GL Rules for auxiliary duty with rating up to 500 kW and rated torque less than 5 kNm, where torsional vibration calculations are not required.

The Type Approval Certificate No. TAM00000GK is replacing the following DNV GL Certificate:

- DNV GL Certificate No. TAM000000U, Rev. 1

END OF CERTIFICATE