DNV·GL

Certificate No:
TAM000010B

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Elastic Couplings

with type designation(s)
RATO S, RATO S+

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 :

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

Issued at **Hamburg** on **2018-11-21**
This Certificate is valid until **2023-11-07**.
DNV GL local station: **Essen**

for **DNV GL**

Approval Engineer: **Wolfgang Schütz**

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

Highly flexible coupling

Application/Limitation

The coupling series are approved for ship´s main propulsion, ship´s secondary drive, alternator drives, compressor drives, pump drives and blower drives. Ratings and coupling characteristics according to catalogues "RATO S" (edition 08/2016) and "RATO S+" (edition 08/2016).

Permissible damping power and other coupling characteristics to be adjusted for the actual application according to the guidelines given in the approved catalogues.

Couplings for single propulsion plants have either to be fitted with an emergency claw device or other approved arrangement which could be monitoring and alarm system according to RU-Ships Pt.4, Ch.4, Sec.5 [5].

Approved sizes of "RATO S":

RATO S			
Dimension Group	**Size**		
G 2110	G 211Z	G 211W	G 211Q
G 2120	G 212Z	G 212W	G 212Q
G 2310	G 231Z	G 231W	G 231Q
G 2320	G 232Z	G 232W	G 232Q
G 2510	G 251Z	G 251W	G 251Q
G 2520	G 252Z	G 252W	G 252Q
G 2710	G 271Z	G 271W	G 271Q
G 2720	G 272Z	G 272W	G 272Q
G 2910	G 291Z	G 291W	G 291Q
G 2920	G 292Z	G 292W	G 292Q
G 3110	G 311Z	G 311W	G 311Q
G 3120	G 312Z	G 312W	G 312Q
G 3310	G 331Z	G 331W	G 331Q
G 3320	G 332Z	G 332W	G 332Q
G 3410	G 341Z	G 341W	G 341Q
G 3420	G 342Z	G 342W	G 342Q
G 3810	G 381W	G 381T	
G 4610	G 461W	G 461T	
G 4810	G 481Z	G 481W	G 481Q
G 4820	G 482Z	G 482W	G 482Q
G 4910	G 491W	G 491T	
G 5110	G 511Z	G 511W	G 511Q
G 5120	G 512Z	G 512W	G 512Q
G 5310	G 531W	G 531T	
G 5410	G 541W	G 541T	
G 5610	G 561Z	G 561W	G 561Q
G 5620	G 562Z	G 562W	G 562Q
G 5720	G 572W	G 572T	G 572Y
G 5810	G 581Z	G 581W	G 581Y
G 5820	G 582Z	G 582W	G 582Y
G 6010	G 601Z	G 601W	G 601T
G 6210	G 621Z	G 621W	G 621T
G 6220	G 622Z	G 622W	G 622T

Dimension Group	Size		
G 6510	G 651Z	G 651W	G 651T
G 6810	G 681W	G 681T	
G 7010	G 701Z	G 701W	G 701T
G 7310	G 731W	G 731T	

Approved sizes of "RATO S":

RATO S+				
Dimension Group	**Size**			
G 4J10	G 4J1S	G 4J1M	G 4J1H	G 4J1X
G 4J20	G 4J2S	G 4J2M	G 4J2H	G 4J2X
G 5B10	G 5B1S	G 5B1M	G 5B1H	G 5B1X
G 5B20	G 5B2S	G 5B2M	G 5B2H	G 5B2X
G 5G10	G 5G1S	G 5G1M	G 5G1H	G 5G1X
G 5G20	G 5G2S	G 5G2M	G 5G2H	G 5G2X

Type Approval documentation / Tests carried out

Marking of product

The product to 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 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

This certificate is replacing GL certificate no. 42 596 - 02 HH.

END OF CERTIFICATE