

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Elastic Couplings**

with type designation(s)

CENTAX - SEC - system: Series G, L, N, NL, B, V and CENTALINK

Issued to

CENTA Antriebe Kirschey GmbH
Haan 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. Valid for propulsion and auxiliary purposes with ratings as given in the catalogues mentioned in the certificate and with limitations as given on the following pages of the certificate.

Issued at **Hamburg** on **2017-05-30**This Certificate is valid until **2022-05-29**.DNV GL local station: **Essen**for **DNV GL**Approval Engineer: **Erich Rüde**

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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.



Product description

Flexible rubber couplings, alternatively combined with the CENTALINK shafts.

The approval is also valid for the following CX versions for MTU:

CX-66-GFS2-3C0-xx-0021	MTU 8V4000 M60
CX-71-GFS2-3A0-xx-0021	MTU 12V4000 M60/61R
CX-72-GFS2-3A0-xx-0021	MTU 16V4000 M63R

Application/Limitation

The approval is valid for propulsion and auxiliary purposes.

Couplings for single propulsion have to fulfill the requirements in the DNVGL Rules for Ships Pt.4, Ch.4, Sec.5.

Ratings according to the following catalogues:

CX-V-11-12 (series V)
CL-07-08 (Centalink)
CX-SEC-EN-13-17

Maximal ambient temperature 70°C.

Explanation of technical data and correction factors: Catalogue CX-SEC-EN-13-17.

Permissible maximum torque for repetitive loads T_{Kmax1} is limited to:

$1.1 \times T_{Kn}$ (45 shore), $1.2 \times T_{Kn}$ (50 shore), $1.4 \times T_{Kn}$ (60 shore) and $1.5 \times T_{Kn}$ (70 shore).

Permissible maximum torque range T_{max} is limited to:

$1.3 \times T_{Kn}$ (45 shore), $1.45 \times T_{Kn}$ (50 shore), $1.7 \times T_{Kn}$ (60 shore) and $1.8 \times T_{Kn}$ (70 shore).

Type Approval documentation

Tests carried out

Type Testing Report dated 10. Aug. 1990

Test report V - M - 005/94

Test report V - M - 006/94

Test report V-CX-001/02 dated 01-12-21

Test reports V-SEC-006-03, V-M-001-03 and CX-7351 for series 100 size CX-181

Test reports V-SEC-007-03, V-M-002-03, CX-7352 for series 200 size CX-281

Test reports V-SEC-0010-02, V-SEC-0009-02, CX-V-0005-02, V-CX-0003-01 for series 300 size CX-394

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 a survey every 2 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

To CENTAXLINK, Catalogue CL-07-08:

1. Link material: Al Zn Mg Cu 0.5 F48 alt. 42CrMo4V is allowed for all sizes.
2. For flexible shaft arrangements where the rubber element carries the shaft weight, lateral vibration calculation may be required.

To Centax - V, Catalogue CX-V-11-12:

The friction torque to be considered in accordance to the ammendment CX-001 (dated January 1991) to the type testing report (dated August 10 th.1990).

The temperature factor S_{t2} on page 9 is to be replaced with the S_{t4} curves in catalogue CX- SEC-EN-13-17 (page APP-12).

To Centax-G:

1. Alternative materials C45/St60/St52-2/GGG50/GGG60 is accepted for the part: "Aufnahme für membran".

The connection to the driving and driven member is not included in this type approval.

DNV GL product certificate is not required for couplings according 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. TAM00000FF is replacing the following Certificates:

DNV GL Certificate No.	M-12725 acc. to DNV Rules,
GL Certificate	4255002 HH acc. to GL Rules,
GL Certificate	2098704 HH acc. to GL Rules, and
GL Certificate	4288002 HH acc. to GL Rules

END OF CERTIFICATE