



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. M-11739

This is to certify that the
Toothed Coupling

with type designation(s)
GEARex

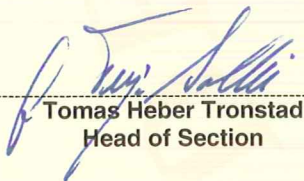
Manufactured by
KTR Kupplungstechnik GmbH
RHEINE, Germany

is found to comply with
Det Norske Veritas' Rules for Classification of Ships/High Speed and Light Craft

Application
The couplings are approved for auxiliary duty.

Nominal torque see page 2

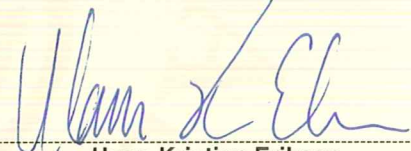
Høvik, 2011-07-26
for Det Norske Veritas AS


Tomas Heber Tronstad
Head of Section



DNV local office:
Essen

This Certificate is valid until
2015-12-31


Hans-Kristian Eriksen
Surveyor

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. If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: M-11739
File No.: 714.70
Job Id.: 262.1-011336-1

Product description

All-steel gear couplings

Application/Limitation

The couplings are approved for auxiliary duty with nominal torque as given in GEARex part of KTR main coupling catalogue.

The nominal torque in the catalogue is valid for coupling material C45+N

Nominal torque for coupling material 40Cr is 1.3 x torque for C45+N

Nominal torque for coupling material 42CrMo4+QT is 1.3 x torque for 40Cr

Coupling selection to be done according to procedure in the GEARex catalogue.

Maximum permissible misalignment per hub: 0,5°

Type Approval documentation

The following drawings:

| | |
|----------------|-------------------------------------|
| 455649 index 1 | Gearex 10- Bauart FA + Parts List |
| 455468 index 2 | Gearex 10 – Nabe |
| 455594 index 3 | Gearex 10 – S-Huelse |
| 489048 index 1 | Gearex 10 – 315 Zwizchenstück |
| 456153 index 1 | Gearex 50 – Bauart FA + Parts List |
| 456150 index 2 | Gearex 50 – Nabe |
| 456151 index 3 | Gearex 50 – S-Huelse |
| 481492 index 1 | Gearex 50 – 315 Zwizchenstück |
| 481671 index 1 | Gearex 100 – Bauart FA + Parts List |
| 481787 index 2 | Gearex 100 – Nabe |
| 481672 index 3 | Gearex 100 – S-Huelse |

Gearex- calculation of tooth root fatigue strength at maximum angular misalignment of coupling dated 2011-04-19

Gearex- calculation of toothing fatigue strength at maximum angular misalignment of coupling dated 2011-03-25

Gearex –calculation of fitting bolts at coupling sleeve dated 2011-03-21

Tests carried out

Test report – No. 90308002 Original Sample Inspection BoWex ST10/BoWex ST25

Marking of product

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

Certificate Retention Survey

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

Other conditions

Connection to driving and driven part is not included in this approval.

END OF CERTIFICATE