DNV·GL

Certificate No:
TAM000013R

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Universal Shaft

with type designation(s)
390.60, 390.65, 390.70, 587.50, 587.55, 688.40, 688.45, 688.65

Issued to
Spicer Gelenkwellenbau GmbH
Essen, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.4 Rotating machinery – power transmission
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.

Type	Max nom. torque (Nm)	Max speed (RPM)
390.60, 390.65, 390.70	see page 2	see page 2
587.50, 587.55	see page 2	see page 2
688.40, 688.45, 688.65	see page 2	see page 2

Issued at **Hamburg** on **2019-06-30**

This Certificate is valid until **2024-06-29**.

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Christof Kotzmann-Bendrien**

Olaf Drews
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
Universal shaft

Application/Limitation
The approval is valid for propulsion and auxiliary duty with the following limitations:

Type:	Max.torque (Nm):	Max.speed (RPM)
390.60	18000	3000
390.65	25000	3000
390.70	36000	2500

Type	Max.torque (Nm)	Max.speed (RPM)
587.50	7300	3500
587.55	13000	3500

Type	Max. torque (Nm)	Max speed (RPM)
688.40	2180	3500
688.45	2902	3500
688.65	5711	3500

Type Approval documentation

Marking of product
Identification: Manufacturers name or trademark.
Type number identification.

Periodical assessment
For retention of the Type Approval, a DNV GL surveyor shall perform a survey after 2 and 3,5 years and also 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.

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

The selection of correct size of universal shaft is to be done according to procedures described in the Spicer Catalogue.

- All weldings are to be examined by X-ray or Ultrasonic.
- The spline, weldings and cross pins are to be tested for cracks and surface defects by MPI.
- The connection to driven and driving side has to be approved in each separate case.
- Material 41CrS4 and GS42CrMo4 are accepted as alternative materials.

END OF CERTIFICATE