



CERTIFICATE NUMBER	22-2293929-PDA
EFFECTIVE DATE	06-Oct-2022
EXPIRY DATE	05-Oct-2027
ABS TECHNICAL OFFICE	Hamburg Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

KTR SYSTEMS GMBH

located at

CARL-ZEISS STR. 25, , D-48432 RHEINE, Germany

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Couplings
Model: GEARex: Sizes 10, 15, 20, 35, 40, 45, 50, 55, 60, 70, 80, 85, 90, 100, 110, 120, 130, 140 150.
Endorsements:
Tier: 5 - Unit Certification Required

This Product Design Assessment (PDA) Certificate remains valid until 05/Oct/2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Efstratios Maliatsos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

KTR SYSTEMS GMBH

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Tier: 5 - Unit Certification Required

Product: Couplings

Model: GEARex: Sizes 10, 15, 20, 35, 40, 45, 50, 55, 60, 70, 80, 85, 90, 100, 110, 120, 130, 140 150.

Endorsements:

Intended Service:

For auxiliary equipment drive including bow thrusters, azimuth drives, hydraulic and mechanical winches.

Description:

GEARex all steel gear couplings are suitable for a positive torque transmission and they ensure to compensate for axial, radial and angular shaft displacements.

Coupling sizes are available for a torque transmission from 1.580 Nm to 2.750.000 Nm with bore diameters up to a maximum of 630 mm in diameter.

Rating:

For approved ratings click on link 'Additional Product Details'

Service Restriction:

- Unit Certification is required for this product as per 4-1-1/ Table 2 of the ABS Marine Vessels Rules.
- Couplings for generator set applications are to be capable of absorbing short time impact torque due to electrical short-circuit conditions up to six (6) times the nominal torque, or the couplings are to be evaluated for capability to absorb the torque generated by transient torsional vibration stresses.
- Use of subject couplings at ambient temperatures at or below -18 °C would require special impact testing.
- Ice-Class aspects remain to be specially considered on a case-by-case basis approval.
- If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

- The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- Order related details of the coupling hubs including key parameters (if any) and input/output connections remain to be submitted for case-by-case approval as well as any deviation from series production.
- The couplings are to be operated and mounted in accordance with manufacturer's operating-/ assembly instructions.

Notes/Drawing/Documentation:

See Attached File.

Terms of Validity:

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Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

KTR SYSTEMS GMBH

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ABS Rules:

2022 Rules for Conditions of Classification: 1-1-4/7.7, 1-1-A3 and A4, which covers the following:
2022 Rules for Building and Classing Marine Vessel Rules: 4-1-1/Table 2, 2-3-2/9, 4-3-2/1.1, /1.5, /3.1, /3.7, /5.1, /5.3, 5.19, 4-3-5/1.3, 1.5, 3.1, 3.3, 5.7.3.

2022 Rules for Conditions of Classification - Offshore Units and Structures: 1-1-4/9.7, 1-1-A2 and A3,
2022 Rules for Building and Classing Mobile Offshore Unit Rules: 6-1-4/1, 6-1-4/3, 6-1-4/Table 1

National:

NA

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

NA

22-2293929-PDA

KTR Systems GmbH

Attachment to 22-2293929-PDA revalidation covering
Couplings

Models: GEARex: Sizes 10, 15, 20, 35, 40, 45, 50, 55, 60, 70, 80, 85, 90, 100, 110, 120, 130, 140 150.

Issuance Date: 06-October-2022

Expiry Date: 05-October-2027

Intended Service:

For auxiliary equipment drive including bow thrusters, azimuth drives, hydraulic and mechanical winches.

Drawing List

Engineering Office:	Hamburg Engineering Department	
Submitter:	KTR SYSTEMS GMBH (626476)	
Drawing No	Revision No	Drawing Title
Act_On_Form	-	Act_On_Form
doc04755720220517140322	-	Declaration of Conformity
Fees Confirmation	-	Fees Confirmation

22-2293929-PDA

Drawing List as per 17-HG1627265-PDA, issuance date: 31-May-2017.

Document No. TD GEARex10_FA, Technical Drawings GEARex10_FA, Revision: -, Pages: 6.
Document No. TD GEARex15_FA, Technical Drawings GEARex15_FA, Revision: -, Pages: 6.
Document No. TD GEARex20_DA_FA, Technical Drawings GEARex20_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex25_DA_FA, Technical Drawings GEARex25_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex30_DA_FA, Technical Drawings GEARex30_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex35_DA_FA, Technical Drawings GEARex35_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex40_DA_FA, Technical Drawings GEARex40_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex45_DA_FA, Technical Drawings GEARex45_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex50_DA_FA, Technical Drawings GEARex50_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex55_DA_FA, Technical Drawings GEARex55_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex60_DA_FA, Technical Drawings GEARex60_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex70_DA_FA, Technical Drawings GEARex70_DA_FA, Revision: -, Pages: 13.
Document No. TD GEARex80, Technical Drawings GEARex80, Revision: -, Pages: 7.
Document No. TD GEARex85, Technical Drawings GEARex85, Revision: -, Pages: 7.
Document No. TD GEARex90, Technical Drawings GEARex90, Revision: -, Pages: 7.
Document No. TD GEARex100, Technical Drawings GEARex100, Revision: -, Pages: 7.
Document No. TD GEARex110, Technical Drawings GEARex110, Revision: -, Pages: 7.
Document No. TD GEARex120, Technical Drawings GEARex120, Revision: -, Pages: 7.
Document No. TD GEARex130, Technical Drawings GEARex130, Revision: -, Pages: 7.
Document No. TD GEARex140, Technical Drawings GEARex140, Revision: -, Pages: 7.
Document No. TD GEARex150, Technical Drawings GEARex150, Revision: -, Pages: 7.
Document No. GEARex_ Calculation of fitting bolts at coupling sleeve, Calculation of GEARex Fitting Bolts, Revision: -, Pages: 1.
Document No. gearing_calculation_42CrMo4_QT_1, Gearing Calculation 42CrMo4_QT_1, Revision: -, Pages: 1.
Document No. gearing_calculation_C45_N_1, Gearing Calculation C45_N_1, Revision: -, Pages: 1.

Additional Product Details

Issuance Date: 06-10-2022

Expiry Date: 05-10-2027

Couplings

Model Name: GEARex Sizes: 10, 15, 20, 35, 40, 45, 50, 55, 60, 70, 80, 85, 90, 100, 110, 120, 130, 140 150

KTR, GEARex Abmessungen und Nenndrehmomente
KTR GEARex dimensions and nominal torque

Kupplungsgröße / coupling size	10	15	20	25	30	35	40	45	50	55	60	70	80	85	90	100	110	120	130	140	150	
$L_{\text{max } \Delta x}$ [mm]	89	103	127	157	185	216	246	276	308	358	388	450	570	597	623	673	715	864	905	940	1070	
$D_{\Delta x}$ [mm]	111	152	178	213	240	280	318	347	390	425,5	457	527	545	585	640	680	785	825	950	1020	1140	
$D_{\Delta z}$ [mm]	83	106	129	157	181	213	249	273	308	334	365,5	425	475	515	560	612	685	720	805	875	975	
D [mm]	67	87	108	130	153	180	214	233	260	283	312	371	384	430	464	512	560	608	684	750	850	
l_1 [mm]	43	50	62	76	90	105	120	135	150	175	190	220	260	292	305	330	350	420	440	460	530	
l_{vert} [mm]	105	115	130	150	170	185	215	245	295	300	305	310	-	-	-	-	-	-	-	-	-	
E [mm]	3	3	3	5	5	6	6	8	8	8	8	10	10	13	13	13	20	25	25	20	30	
$\Delta \Delta x$	± 1	± 1	± 1	± 1	± 1	± 1	± 1	$\pm 1,5$	$\pm 1,5$	$\pm 1,5$	$\pm 1,5$	$\pm 1,5$	± 2	± 2	± 2	± 2	± 2	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	
$\Delta \Delta z$	0,4	0,5	0,6	0,8	1	1	1,2	1,4	1,6	1,8	2	2,2	2,5	2,8	3	3,2	4,4	5,5	5,7	6	6,6	
ΔK	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	0,5*	
ΔK pro Nabe / per hub	26	26	31	38	44,5	46	52	60	80	90	100	100	140	160	180	220	220	260	300	360	460	
Vorbereitung / pre bore diameter [mm]	50	64	80	98	112	133	158	172	192	210	232	275	300	325	350	390	420	450	500	550	630	
max. Bohrung / max. bore diameter [mm]	8500	7700	6900	6200	5800	5100	4500	4000	3750	3550	3400	3200	1900	1900	1700	1600	1450	1350	1150	1050	950	
max. Drehzahl / max. speed [rpm]	930	2000	3500	6500	10000	17000	28500	37000	51000	65000	85000	135000	175000	225000	295000	380000	500000	620000	820000	1050000	1450000	2750000
T_{max} [Nm] C45	1200	2500	4700	8400	13000	22000	37000	49000	66000	84000	110000	165000	230000	295000	380000	500000	630000	820000	1050000	1450000	1950000	2750000
T_{max} [Nm] 40Cr	1580	3300	6300	11000	17400	28800	48500	62000	86000	110000	145000	240000	300000	380000	500000	650000	820000	1050000	1450000	1950000	2750000	3750000

- KTR-Deutschland Standardmaterial
- KTR-China Standardmaterial
- Bauart FA / FB / F...
- Bauart DA / DB / D...