DNV·GL

Certificate No:
TAM000011H

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Locking Assembly and Element

with type designation(s)
CLAMPEX

Issued to
KTR Systems GmbH
Rheine, Germany

is found to comply with
DNV GL rules for classification – Ships

Application :

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

Issued at **Hamburg** on **2019-01-23**
This Certificate is valid until **2024-01-22**.
DNV GL local station: **Essen**

Approval Engineer: **Wolfgang Schütz**

for **DNV GL**

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

CLAMPEX – clamping elements

KTR 105, KTR 130, KTR 131, KTR 200 and KTR 203: Internal clamping sets, positioned between shaft and hub. Clamping sets are self centering, additional centering of hub is not required. Axial shifting of hub during assembly of the internal clamping set. Hub axially shiftable to meet the catalogue data is required.

KTR 400: Internal clamping sets, positioned between shaft and hub. Clamping sets are self centering, additional centering of hub is not required. Axial shifting of hub during assembly of the internal clamping set.

KTR 201, KTR 206, KTR 225 and KTR 250: Internal clamping sets, positioned between shaft and hub. Clamping sets are self centering, additional centering of hub is not required. No axial shifting of hub during assembly of the internal clamping set.

KTR 100 and KTR 150: Internal clamping sets, positioned between shaft and hub. Centering between shaft and hub required.

KTR 603 and KTR 620: External clamping sets. Positioned on the hub / hollow shaft.

KTR 700: Shaft couplings. Positioned on two opposing shaft ends.

Application/Limitation

The coupling series are approved for auxiliary duty. Ratings selection regarding and coupling characteristics according to catalogue "KTR – Drive Technology – Clamping elements.

For calculation of external diameter of hub also "DNV GL Rules for classification – Ships" to be observed. Safety factor according to "DNV GL Rules for classification – Ships" shall be applied. Applications factors and further restrictions mentioned in "DNV GL Rules for classification – Ships" to be observed. These requirements will overrule catalogue data.

In case of

- mounting of clamping element on shaft with key
- simultaneously transmission of torque and axial load
- radial load on clamping element
- bending load on clamping element
- high circumferential speed (> 30m/s)
- high ambient temperatures
- shaft with bore (hollow shaft)
- clamping element in corrosion-resistant layout

manufacturer should be contacted.

Applications factors and further restrictions mentioned in DNVGL RU-Ships have to observed. These requirements will overrule catalogue data.

Clampex - Series						
Internal clamping sets						
KTR 100	KTR 105	KTR 130	KTR 131	KTR 150*	KTR 200 KTR 201	KTR 203 KTR 206
17 x 47	5 x 16	5 x 14	5 x 12	6 x 9	20 x 47	18 x 47
18 x 47	6 x 16	6 x 14	6 x 12	7 x 10	22 x 47	19 x 47
19 x 47	6,35 x 16	8 x 16	8 x 14	8 x 11	24 x 50	20 x 47
20 x 47	7 x 17	9 x 20	10 x 18	9 x 12	25 x 50	22 x 47

KTR 100	KTR 105	KTR 130	KTR 131	KTR 150*	KTR 200 KTR 201	KTR 203 KTR 206
22 x 47	8 x 18	10 x 20	12 x 20	10 x 13	28 x 55	24 x 50
24 x 50	9 x 20	12 x 22	14 x 24	12 x 15	30 x 55	25 x 50
25 x 50	9,53 x 20	14 x 26	15 x 24	13 x 16	32 x 60	28 x 55
28 x 55	10 x 20	15 x 26	16 x 24	14 x 18	35 x 60	30 x 55
30 x 55	11 x 22	16 x 26	18 x 30	15 x 19	38 x 65	32 x 60
32 x 60	12 x 22	18 x 35	19 x 30	16 x 20	40 x 65	35 x 60
35 x 60	14 x 26	19 x 35	20 x 30	17 x 21	42 x 75	38 x 65
38 x 65	15 x 28	20 x 35	22 x 38	18 x 22	45 x 75	40 x 65
40 x 65	16 x 32	22 x 42	24 x 38	19 x 24	48 x 80	42 x 75
42 x 75	17 x 35	24 x 42	25 x 38	20 x 25	50 x 80	45 x 75
45 x 75	18 x 35	25 x 42	30 x 42	22 x 26	55 x 85	48 x 80
48 x 80	19 x 35	30 x 47	32 x 50	24 x 28	60 x 90	50 x 80
50 x 80	20 x 38	32 x 55	35 x 50	25 x 30	65 x 95	55 x 85
55 x 85	22 x 40	35 x 55		28 x 32	70 x 110	60 x 90
60 x 90	24 x 47	40 x 62		30 x 35	75 x 115	65 x 95
65 x 95	25 x 47	45 x 65		32 x 36	80 x 120	70 x 110
70 x 110	28 x 50	48 x 75		35 x 40	85 x 125	75 x 115
75 x 115	30 x 55	50 x 75		36 x 42	90 x 130	80 x 120
80 x 120	32 x 55			38 x 44	95 x 135	85 x 125
85 x 125	35 x 60			40 x 45	100 x 145	90 x 130
90 x 130	38 x 65			42 x 48	110 x 155	95 x 135
95 x 135	40 x 65			45 x 52	120 x 165	100 x 145
100 x 145	42 x 75			48 x 55	130 x 180	110 x 155
110 x 155	45 x 75			50 x 57	140 x 190	120 x 165
120 x 165	48 x 80			55 x 62	150 x 200	130 x 180
130 x 180	50 x 80			56 x 64	160 x 210	140 x 190
140 x 190				60 x 68	170 x 225	150 x 200
150 x 200				63 x 71	180 x 235	160 x 210
160 x 210				65 x 73	190 x 250	170 x 225
170 x 225				70 x 79	200 x 260	180 x 235
180 x 235				71 x 80		190 x 250
190 x 250				75 x 84		200 x 260
200 x 260				80 x 91		220 x 285
220 x 285				85 x 96		240 x 305
240 x 305				90 x 101		260 x 325
260 x 325				95 x 106		280 x 355
280 x 355				100 x 114		300 x 375
300 x 375				110 x 124		320 x 405
320 x 405				120 x 134		340 x 425
340 x 425				130 x 148		360 x 455

KTR 100	KTR 105	KTR 130	KTR 131	KTR 150*	KTR 200 KTR 201	KTR 203 KTR 206
360 x 455				140 x 158		380 x 475
380 x 475				150 x 168		400 x 495
400 x 495				160 x 178		
420 x 515				170 x 191		
440 x 545				180 x 201		
460 x 565				190 x 211		
480 x 585				200 x 224		
500 x 605				210 x 234		
520 x 630				220 x 244		
540 x 650				230 x 257		
560 x 670				240 x 267		
580 x 690				250 x 280		
600 x 710				260 x 290		
620 x 730				270 x 300		
640 x 750				280 x 313		
660 x 770				290 x 323		
680 x 790				300 x 333		
700 x 810				320 x 360		
720 x 830				340 x 380		
740 x 850				360 x 400		
760 x 870				380 x 420		
780 x 890				400 x 440		
800 x 910				420 x 460		
820 x 930				440 x 480		
840 x 950						
860 x 970						
880 x 990						
900 x 1010						
920 x 1030						
940 x 1050						
960 x 1070						
980 x 1090						
1000 x 1110						

*****When more than one clamping element is used , the torque capacity of the connection is
1 clamping element T = $T_{catalogue}$ x 1,00
2 clamping elements T = $T_{catalogue}$ x 1,55
3 clamping elements T = $T_{catalogue}$ x 1,85
4 clamping elements T = $T_{catalogue}$ x 2,02

Clampex - Series					
Internal clamping sets			External clamping sets		Shaft couplings
KTR 225	KTR 250	KTR 400	KTR 603*	KTR 620*	KTR 700**
14 x 55	6 x 14	24 x 50	14 x 38	16 x 41	10 x 35
16 x 55	8 x 15	25 x 50	16 x 41	18 x 44	11 x 35
18 x 55	9 x 16	28 x 55	24 x 50	20 x 47	12 x 35
19 x 55	10 x 16	30 x 55	30 x 60	24 x 50	14 x 35
20 x 55	11 x 18	32 x 60	36 x 72	26 x 51,5	15 x 45
22 x 55	12 x 18	35 x 60	44 x 80	30 x 60	16 x 45
24 x 55	14 x 23	38 x 65	50 x 90	38 x 72	17 x 45
25 x 55	15 x 24	40 x 65	55 x 100	40 x 80	18 x 50
28 x 55	16 x 24	40 x 75	62 x 110	44 x 80	19 x 50
30 x 55	17 x 25	42 x 75	68 x 115	50 x 90	20 x 50
24 x 65	17 x 26	45 x 75	75 x 138	55 x 100	22 x 55
25 x 65	18 x 26	48 x 80	80 x 145	60 x 110	24 x 55
28 x 65	19 x 27	50 x 80	85 x 155	62 x 110	25 x 55
30 x 65	20 x 28	55 x 85	90 x 155	68 x 115	28 x 60
32 x 65	22 x 32	60 x 90	80 x 145	75 x 138	30 x 60
35 x 65	24 x 34	65 x 95	100 x 170	62 x 110	32 x 75
38 x 65	25 x 34	70 x 110	110 x 185	80 x 141	35 x 75
40 x 65	28 x 39	75 x 115	115 x 188	85 x 155	38 x 75
30 x 80	30 x 41	80 x 120	120 x 215	90 x 155	40 x 75
32 x 80	32 x 43	85 x 125	125 x 215	95 x 170	42 x 85
35 x 80	35 x 47	90 x 130	130 x 215	90 x 155	45 x 85
38 x 80	38 x 50	95 x 135	140 x 230	100 x 170	48 x 90
40 x 80	40 x 53	100 x 145	155 x 265	105 x 185	50 x 90
42 x 80	42 x 55	110 x 155	160x 265	110 x 185	55 x 95
45 x 80	45 x 59	120 x 165	165 x 290	115 x 197	60 x 100
48 x 80	48 x 62	130 x 180	170 x 290	120 x 197	65 x 105
50 x 80	50 x 65	140 x 190	165 x 290	125 x 215	70 x 115
	55 x 71	150 x 200	175 x 300	130 x 215	75 x 120
	60 x 77	160 x 210	180 x 300	130 x 230	80 x 125
	65 x 84	170 x 225	185 x 330	140 x 230	90 x 136
	70 x 90	180 x 235	190 x 330	150 x 263	100 x 158
	75 x 95	190 x 250	195 x 350	155 x 263	
	80 x 100	200 x 260	200 x 350	160 x 290	
	85 x 106	220 x 285	220 x 370	165 x 290	
	90 x 112	240 x 305	200 x 350	170 x 300	
	95 x 120	260 x 325	240 x 405	175 x 300	
	100 x 125	280 x 355	250 x 405	180 x 320	
	110 x 140	300 x 375	260 x 430	185 x 320	

KTR 225	KTR 250	KTR 400	KTR 603*	KTR 620*	KTR 700**
	120 x 155	320 x 405	280 x 460	190 x 340	
	130 x 165	340 x 425	300 x 485	195 x 340	
		360 x 455	320 x 520	200 x 340	
		380 x 475	330 x 520	220 x 370	
		400 x 495	340 x 570	240 x 405	
		420 x 515	350 x 580	260 x 430	
		440 x 535	360 x 590	280 x 460	
		460 x 555	380 x 645	300 x 485	
		480 x 575	390 x 660	320 x 520	
		500 x 595	400 x 680	340 x 570	
		520 x 615	420 x 690	360 x 590	
		540 x 635	440 x 750	390 x 650	
		560 x 655	460 x 770	420 x 670	
		580 x 675	480 x 800	440 x 710	
		600 x 695	500 x 850	460 x 750	
				470 x 705	
				480 x 770	
				500 x 820	
				530 x 850	
				560 x 885	
				590 x 950	
				560 x 885	
				620 x 960	
				660 x 1020	
				700 x 1085	
				750 x 1100	
				800 x 1230	

***** Hub material shall have a minimum yield strength of 350 N/mm². If in addition bending loads occur quench and tempered steel as 42CrMo4V should be used.
****** Roughness of shaft Rz ≤ 16 µm (h8).

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. 47 023 – 03 HH.

END OF CERTIFICATE