



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. M-10879

This Certificate consists of 4 pages

This is to certify that the

Toothed Coupling

with type designation

MT, MTD, MTX, MTV, MTDV, MTXV, MTDVD, MTCO

Manufactured by

JAURE,S.A.

Zizurkil Guipúzcoa, Spain

is found to comply with

Det Norske Veritas' Rules for Classification of Ships/High Speed and Light Craft

Application

The approval is given for main propulsion and auxiliary duty.

Type

MT, MTD, MTX, MTV, MTDV, MTXV,

MTDVD, MTCO

Nominal torque

see page 2

Place and date

Høvik, 2008-02-28

for DET NORSKE VERITAS AS

Egil Alling
Head of Section



Local Office
DNV Bilbao

This Certificate is valid until

2011-12-31

Hans-Kristian Eriksen
Surveyor

Notice: 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.



Cert. No.: M-10879

File No.: 714.70

Product description

Crowned tooth gear couplings.

Application/Limitation

Type MT, MTD, MTV, MTDV, MTDVD, MTCO

Approved torques are nominal catalogue torques (*ref. table below*) divided with actual service application factor (*service factor*) as given by Jaure in catalogue no. 1705-I.

I.e for commercial marine use the following service factors apply:

- 2.25 for diesel drive
- 1.80 for electric/turbine drive

Size	Nominal Catalogue Torque (Nm)	Max rotational speed (RPM) (1)	Size	Nominal Catalogue Torque (Nm)	Max rotational speed (RPM) (1)
42	1025	8600	185	51200	2580
55	2150	6600	205	67300	2320
70	4200	5600	230	88000	2200
90	7200	4700	260	134500	2000
100	11700	4200	280	180000	1800
125	17200	3600	310	250000	1600
145	27500	3150	345	320000	1500
165	38000	2860			

- (1) Maximum rotational speeds for the coupling types MTX, MTD, ref.catalogue no. 1705-I

The nominal catalogue torques are approved for 0,5 degrees angular misalignment per gear mesh. Nominal rating to be reduced according to curve in Jaure coupling catalogue for greater angular misalignment.

Couplings made of material 42CrMo4 are approved for the following torques:

- Quenched and tempered: 1.65 x Nominal catalogue torque.
- Quenched and tempered and nitrided: 2.5 x Nominal catalogue torque

Couplings made of carbon steel (C45N/C55N or similar):

- Quenched and tempered and induction hardened: 1.8 x Nominal catalogue torque.



Type MTX, MTVX

1. For couplings where the spacer is welded or made of one piece only, the a.m. ratings apply.
2. For couplings where the spacer consist of two flanges bolted to a tube, the following ratings apply (*service factors included*):

Type	Bolt, class 12.9	No. of Bolts:	Bolt Pitch Diameter	Approved torques (Nm)
MTX-42	M6	13	63	298
MTX-55	M6	19	84	580
MTX-70	M8	18	98	1185
MTX-90	M10	16	113	1930
MTX-100	M14	14	132	3940
MTX-125	M14	17	150	5440
MTX-145	M14	20	175	7460
MTX-165	M16	20	214	12690
MTX-185	M16	22	242	15780
MTX-205	M16	24	270	19200
MTX-230	M16	28	294	24400
MTX-260	M20	26	328	39470
MTX-280	M20	29	368	49360
MTX-310	M22	29	405	67660
MTX-345	M24	30	430	85820

Weight limitation for MTV, MTDV and MTXV

The vertical permissible load on the vertical couplings are:

Type	kg	type	kg	Type	Kg
42	770	125	4350	230	14850
55	1100	145	5950	260	17500
70	1450	165	7800	280	20800
90	1900	185	9850	310	23650
100	3000	205	12250	345	27100

Type Approval documentation

Jaure – Project Technical Specification dated 2008-01-04.



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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

The following are to be approved case-by-case for each delivery:

- Connections to adjacent shafts
- For the coupling series MTD, the floating shaft

END OF CERTIFICATE