TYPE APPROVAL CERTIFICATE

Certificate No:
TAM00000ME

This is to certify:

That the Diesel Engine

with type designation(s)
1163 Mx4

Issued to
MTU Friedrichshafen GmbH
88045 Friedrichshafen, Germany

is found to comply with
DNVGL Rules for Classification: Ships/ High Speed and Light Craft

Application :

propulsion, multi engine plant

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **23rd February, 2020**.

Issued at **Hamburg** on **27th July, 2017**
DNV GL local station: **Augsburg** for **DNV GL**

Approval Engineer: **Ralph Michael**

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.

Job Id: **262.1-014879-3**
Certificate No: **TAM00000ME**

Product description
four stroke, v-engine, non-reversible, trunk-piston, with supercharging, with charge air cooling, constant-pressure charging system, direct injection, injection operation electronically controlled, valve operation by cams, liquid fuel

Cylinder bore :	230
Piston stroke :	280
No. of cylinders :	16, 20

Additional place of production
not applicable

Application/Limitation

Rated power [kW/cyl.]	370	370	336.5	336.5
Rated speed [rpm]	1325	1275	1285	1235
Mean effective pressure [bar]	28.8	29.9	27	28
Max. firing pressure [bar]	185	185	185	185
Definition	1DS	1DS	cont.	cont.

Type Approval documentation

Tests carried out
Documentation:

Test report titel	Type Test of the MTU Diesel Engine 20V 1163 M84L
Place of test	Friedrichshafen, 130 in Works 1
Date of test	2014-09-04 until 2014-09-10

Test engine:

Model	20V 1163 M84L
Serial no.	514 0011
No. of cylinders	20
Power [kW/cyl.]	336.5
Speed [rpm]	1285

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

Periodical assessment
Periodical assessment is to be performed after 2 years and after 3.5 years. 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.
In case 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.

Other Conditions
Engine safety, control and monitoring systems, including sensors, cables and actuators are not covered by this type approval certificate. Documentation for engine safety, control including speed governing and monitoring systems shall be submitted for approval according to DNV GL Rule Pt.4 Ch.9 Sec.1

END OF CERTIFICATE