DNV·GL

Certificate No:
TAM00000MX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Waterjet

with type designation(s)
HM461

Issued to
C W F Hamilton & Co. Ltd.
Christchurch CAN, New Zealand

is found to comply with
DNV GL rules for classification – High speed and light craft
DNV GL rules for classification – Ships

Application :

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

Issued at **Hamburg** on **2017-08-24**
This Certificate is valid until **2022-08-23**.
DNV GL local station: **Auckland**

Approval Engineer: **Stanislav Avanesov**

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
Waterjet propulsion unit with steering and reversing system.

Application/Limitation
The waterjet is approved for the following rating:

Max engine power: 1100 kW
Impeller shaft speed: 1800 rpm
Max torque: 5,84 kNm

The application factor, K_A, shall be less to or equal to 1,1

Type Approval documentation

		REVERSE GROUP (HYDRAULIC)
		JT STEERING GROUP STANDARD & NON ROTATED (JT) LESS THAN 10 d
		BASE JET STANDARD
CTSJK01020	C	STEERING KIT (N40-120) NPT FITTINGS PORT ROTATION
30700	AB	(STUDS) METRIC (SAF-2205) CHART M16
30692	AJ	(STUDS) METRIC (SAF-2205) CHART M20
30647	L	M8 STUD MATRIX DRAWING
30639	AJ	Stud Chart M12 316
30634	R	(STUDS) METRIC (316-STST) M16 Dwg Matrix
207917	H	IMPELLER HM461 TYPE 195 LH ROTATION ONE PIECE CAST
203502	D	TAILPIPE (STD) SERIES 2 C/W STST Inserts
203196	C	SHAFT (STEERING CRANK)
203161	E	STEERING CRANK Mk.2
112569	E	SEAL FACE HOLDER
112480	B	PIVOT BUSH REVERSE DUCT
111853	B1	BACKHEAD
110906	C	PIVOT PIN - JT STEERING DEFLECTOR
110867	0	NOZZLE - BOOSTER JET for JT STEERING.
110814	A	BUSH - NOZZLE - DEFLECTOR PIVOT PIN.
110805	G	BRACKET - NOZZLE - JT STEERING
110804	A	NOZZLE - JT STEERING
110803	C	NOZZLE HOUSING - JT STEERING
110802	A	NOZZLE INSERT - JT STEERING
110004	C	COUPLING (225 - 8 x M16) LARGE PULLEY (NOT EXCEEDING 1520 SHAF
109415	E	CLEVIS (REV/STG)
108656	H	SHAFT (120mm) STROKE
108655	C	FRONTHEAD CAP
108654	E	FRONTHEAD
108652	B	CYLINDER (120mm) STROKE
108651	E	BACKHEAD

108643	B	STEERING CYLINDER ASSEMBLY (HAMILTON 120 STROKE)
108505	C	COUPLING (240 - 8 xM16) (JAURE MTD 100)
108385	B	COUPLING (250 - 8 x M18)
108382	E	COUPLING (225 - 8 x M16)
107776	H	REVERSE DUCT PIVOT PIN,
107712	G	CRANK ROD
107705	E	PUSH ROD
107704	J	DEFLECTOR ROD
107679	G	ROD END
107678	E	PIN - CLEVIS
107677	P	CLEVIS (STG)
107609	E	PILLOW BLOCK (REV/STG CYLINDERS)
107594-4	B	REAR PLATE 461 TRANSITION DUCT ALUMINIUM WELDED ASSY.
107594-2	B	SIDE PLATE STBD 461 TRANSITION DUCT ALUMINIUM WELDED ASSY.
107594-1	B	TOP PLATE 461 TRANSITION DUCT ALUMINIUM WELDED ASSY.
107594	E	TRANS DUCT ASSEMBLY (ALUMINIUM)
107470	D	DUCT SIDE ARM PORT
107422	E	IMPELLER KEY
107364	A	DRILLED TRANSDUCT (GRP)
107359	I	CLEVIS (REV/STG)
107358	D	ROD END (REV)
107353	M	PUSH ROD REVERSE
107345	J	MAINSHAFT (REV/STG CYL)
107342	A	REVERSE DUCT HALF (CASTING)
107341	M	REVERSE DUCT STANDARD
107334	F	IMPELLER RACE
107333	C	MAINSHAFT
107331	H	TRANS DUCT (CASTING)
107330	S	INTAKE
107087	C	COUPLING KEY
107001	D	INSPECTION COVER (ROTARY SEAL)
106756	E	INSPECTION COVER (SHAFT)
106264	R	MARINE WATER BEARING 70x50x200
105793	G	INSPECTION COVER (MAIN)
105761	G	PIN (CLEVIS)
105608	G	END CAP (REV/STG CYLINDER)
105607	O	CYLINDER
105606	J	BACKHEAD
105603	K	COMPENSATOR SHAFT
104653	L	ROD END
105604	G	PISTON
108660	A	PISTON FOR STEERING CYLINDER ASSEMBLY
108658	J	PISTON AND SHAFT ASSEMBLY FOR STEERING CYLINDER
CTHSE10071	E	HOSE KITS
		HM461 OPERATING SPECIFICATION

		HM461 THRUST CURVES
		REFERNCE LIST

Tests carried out

Full scale waterjet testing has to be carried out on the vessel. Factory tests consist of a water pressure test and hydraulic pressure and function tests. These are witnessed by the surveyor. A folder of Material Test Certificates, chemical analysis, mechanical properties, NDT tests etc. is compiled for each waterjet built.

Marking of product

The product shall be marked with the manufacturer's name or trademark and type number identification.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every second and half year and 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.

Other Conditions

The following items are not covered by this type approval and shall be submitted for approval on a case-by-case basis:

- Connection to hull (shipbuilder's responsibility)
- Hydraulic system diagram, including set points and alarms

Flexible hoses shall be type approved.

END OF CERTIFICATE