

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Waterjet

with type designation(s)
HTX52

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 **2020-03-11**

This Certificate is valid until **2025-03-10**.

DNV GL local station: **Auckland**

for **DNV GL**

Approval Engineer: **Stanislav Avanesov**

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Olaf Drews
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.



Product description

Waterjet propulsion unit with steering and reversing system.

Application/Limitation

The waterjet is approved for the following rating:

Max engine power: 1950 kW
Impeller shaft speed: 1485 rpm
Max torque: 12,54 kNm

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

Type Approval documentation

		INSTALLATION DRAWING GRP HULL - HTX52
		REVERSE ASSY - STD OPTION - HTX52
		STEERING STD OPTION - HTX52
HTX52-120-01	B	BEARING HOUSING STD OPTION - HTX52
89959	A	HYDRAULIC HONED TUBE SPECIFICATION
89954	B	CAST STAINLESS STEEL SPECIFICATION SCHEDULE
89953	B	CAST ALUMINIUM SPECIFICATION SCHEDULE
89943	D	HAMJET LOW ALLOY STEEL SPECIFICATION
89942	F	HAMJET STAINLESS STEEL SPECIFICATION
89939	B	HAMJET COPPER ALLOY SPECIFICATION
89938	F	HAMJET ALUMINIUM SPECIFICATION SCHEDULE
61550	A	(JET) ROTARY SEALS 104.83mm METAL BELLOWS SiC/SiC (CS2-H2770RR)
334345	A	END CAP - TRUNNION Ø38.1 - MACHINED
334341	A	END CAP - Ø38.1 - MACHINED
325010	A	GASKET - INTAKE ANODE COVER - HTX52
324060	F	CLEVIS - M16X25 PIN OD25 - MACH
323996	A	INSPECTION HATCH - GASKET
323739	A	INSPECTION HATCH - FOR WATER SEAL - HTX52
323407	A	CYLINDER SUBASSY - SHAFTS AND PISTON DIA 38.1 X 19.05 BALANCED
323108	A	COUPLING - DIA 250 - 8 X M18 - HTX52
323107	A	COUPLING - DIA 240 - 8 X 15.5 - HTX52
323106	A	COUPLING - DIA 285 - 16 X M20 - HTX52
323088	A	COUPLING - DIA 285 - 8 X M20 - HTX52
323022	A	CYLINDER SHAFT - COMPENSATOR DIA 19.05 x 327
322950	A	INSPECTION HATCH - AFT - PNTA - HTX52

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322932	C	NOZZLE HOUSING - HTX52
322928	C	STEERING ARM - HTX52
322927	B	NOZZLE - HTX52
322926	A	NOZZLE INSERT - HTX52
322676	B	CYLINDER SHAFT - MAIN DIA 19.05 x 365
322674	B	PISTON - DIA 38.1 x 30
322647	B	IMPELLER RACE ASSY - HTX52
322458	D	TRANSOM PLATE - PNTA - HTX52
322336	A	BEARING HOUSING ASSY - HTX52
322302	B	CYLINDER INTAKE MOUNT - HTX52
322203	C	WATER SEAL HOLDER - PNTA - HTX52
322087	B	INSPECTION HATCH - FOR WATER SEAL - CAST - HTX52
322037	B	MOUNT PLATE - STEERING CYLINDER TRUNNION - HTX52
322028	B	CYLINDER INTAKE MOUNT - CAST - HTX52
322025	C	MARINE BEARING - THORDON SXL - HTX52
321899	E	IMPELLER RACE - HTX52
321889	E	TRANSITION PROFILE - ROOF RIB 2 - HTX52
321860	B	PISTON - DIA 50.8 x 30
321859	C	CYLINDER SHAFT - MAIN DIA 25.4 x 463
321764	A	END CAP - DIA 50.8
321762	A	BUSH ID 57.37, OD 64.71, L65 - HTX52
321761	A	HEAD - DIA 50.8 - 3/8" PORT
321755	A	STEERING PIVOT PIN - HTX52
321723	B	REVERSE DUCT - PNTA - HTX52
321418	E	TRANSITION PROFILE - ROOF RIB1 - HTX52
321053	C	TRANSITION PROFILE - PLATE 3 - HTX52
321052	C	TRANSITION PROFILE - PLATE 2 - HTX52
321031	E	TRANSITION PROFILE - SIDE PLATE - HTX52
321020	A	TRANSITION PROFILE - ROOF PLATE - HTX52
320991	D	STEERING ARM - HTX52
320734	C	WATER SEAL HOLDER - CAST - HTX52
320722	B	TAILPIPE - HTX52
320715	A	CYLINDER TUBE - ID 38.1 x OD 48 x 260
320713	A	CYLINDER ASSY - DIA 38.1 X 206 BALANCED TRUNNION MOUNTED
320709	A	REVERSE PIVOT PIN - INSERT - HTX52
320704	A	CYLINDER ASSY - DIA 50.8 X 280 UNBALANCED CLEVIS MOUNTED
320702	A	HEAD - DIA 38.1 - 1/4" PORT
320698	B	CYLINDER TUBE - ID 50.8 x OD 64 x 334
320651	B	INSPECTION HATCH - INTAKE - HTX52
320516	B	TAILPIPE ASSEMBLY - HTX52
320458	A	REVERSE DUCT - CAST - HTX52
320440	A	WEAR RING - FAB - HTX52
320421	B	COVER - ANODE PLATE INTAKE - PNTG - HTX52
320420	C	COVER - ANODE PLATE INTAKE CAST - HTX52

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320417	A	TRANSITION DUCT AL - PAINTED - HTX52
320410	D	TRANSITION DUCT WA - WELDMENT - HTX52
320400	C	INTAKE - PNTA - HTX52
320342	B	TRANSITION CASTING - DUCT - HTX52
320259	B	INTAKE - CAST - HTX52
319934	A	IMPELLER RACE - CAST - HTX52
319925	B	TRANSOM PLATE - CAST - HTX52
319919	C	TAILPIPE - CAST - HTX52
319533	A	STEERING ASSY - AFT - HTX52
319528	C	NOZZLE INSERT - CAST - HTX52
319526	C	NOZZLE HOUSING - CAST - HTX52
319524	C	NOZZLE - CAST - HTX52
319389	D	HTX52 IMPELLERS
319368	A	KEY - IMPELLER - HTX52
319363	A	KEY - COUPLING - HTX52
319351	B	COUPLING HUB DETAIL - HTX52
319299	B	JET MAINSHAFT - HTX52
316014	A	WPS Al Plate Al Plate MIG single V, welded both sides
30864	F	STUD CHART M30 SAF2205
308462	B	STUD M20 x 2.5 - 3x THREAD DIA AT BOTH ENDS
308440	C	STUD M16 (48/48) HJ316A470 DWG 89942 (CUT)
308424	D	STUD M12x1.75 - 3X THREAD DIA BOTH ENDS
30705	M	STUD CHART M24 2205
30647	R	M8 STUD MATRIX DRAWING
30637	X	STUDS 316 M10
306268	A	WPS AlPlate AlCasting 40 MIG single V butt weld, welded both sides
113163	F	SPHERICAL SHAFT BUSH (STRG/REV)
113161	G	ROD END - PUSH ROD (STRG/REV)-
110816	B	BUSH SHLD ID 90.59, OD 104.27, L42.5 (REVERSE DUCT PIVOT PIN)
109415	F	CLEVIS - M20X35 PIN OD25 - MACH
107902	G	CLEVIS - M24x60 PIN ID25 - MACH
107359	J	CLEVIS - M24 X 60, PIN OD25 NARROW FORK - MACH
107353	N	PUSH ROD 1 3/8 OD
106693	E	REVERSE PIVOT PIN - HJ391 HM402 HM422 HM571
105761	J	PIN (CLEVIS)

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

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For retention of the Type Approval, a DNV GL surveyor shall perform a survey after 2 and 3,5years 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