Lancing Marine

Official UK Distributor for Castoldi Waterjets

QUICK SELECTION GUIDE

WATERJET RANGE

CASTOLDI

Since 1962

Forerunners, always

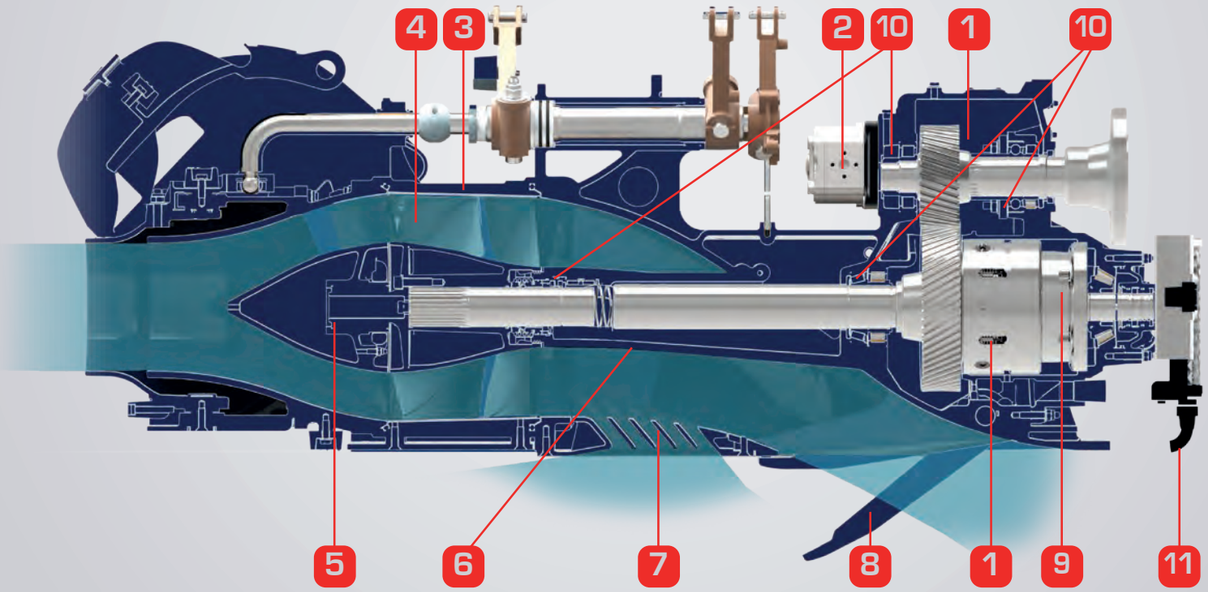
THE COMPANY

Since beginning this activity in 1962, more than 40,000 units have been delivered worldwide, and installed on various types of military, commercial and pleasure vessels.
The Castoldi Company has ISO 9001 certification, and all waterjet models comply with the requirements of the major Classification Registers such as ABS, BV, DNV, RINA, RMRS and RRR.

However, the challenge is never-ending; the waterjet design, range of models and control types are continuously being improved. This is possible through the work of the in-house R&D department, conducted by experienced engineers, using the latest software, working closely with a University, with the most sophisticated calculation tools.

CASTOLDI UNIQUE WATERJET DRIVE.

So different from all the competitors on the market, due to its many advanced exclusive features. Much more than a simple pump, it is a complete, integrated marine propulsion system.



1 INTEGRATED HEAVY DUTY GEARBOX with built-in hydraulic multi-disc clutch

The integrated heavy duty gearbox with its wide range of transmission ratio options (No. 17 to N. 25 depending on the waterjet drive model) is the ultimate solution for engine coupling system with multiple advantages at one stroke:

- A very fine r.p.m. matching for every selected engine. This means full power absorption without over or under-loading the engine regardless of boat speed, resulting in extended engine life.
- Less weight. The integrated Castoldi gearbox is very light and simple as it is contained in the waterjet casing. It does not require an oil heat exchanger because its lubrication oil is cooled through the waterjet surface contact with the surrounding water. Therefore, the propulsion system weight is lower, compared to that of competitors, where marine transmissions must be added to the engine.
- The use of a single unique stainless steel cast impeller, designed with the best geometry ever tested, without the constraints of having to modify it for adaptation to the engine. The impeller has optimized efficiency and cavitation resistance under any operating conditions and meets high standards of quality production processes.
- The lifting of the input flange allows for a shorter and better-aligned cardan shaft without the need to trim the unit, allowing a drastic reduction in the engine room length. This is a clear advantage, given that long transmissions and forward engine installations may reduce the top speed due to moving the boat centre of gravity forward.
- The lowering of the impeller shaft and, consequently the centre of thrust, results in better manoeuvrability and boat running stability; moreover this allows the design of a flat, straight duct enabling the water stream to flow smoothly with minimum hydrodynamic losses at high speed.

2 HYDRAULIC PUMP

Directly splined to the input shaft, thus avoiding any vulnerable belts.

3 TITANIUM IMPELLER HOUSING LINER (standard on large models).

Best resistance to marine corrosion and wear, for the longest operational life.

4 IMPELLER

The Castoldi impeller is a true axial inducer type design and is recognized as having the best efficiency, cavitation resistance and lowest weight compared to any other type of pump.It operates on a volume system with high flow rate and low pressure. Because of its volume design, increased blade tip clearance due to wear, does not significantly compromise its efficiency. This can be contrasted to what happens to mixed flow impellers, operating with low flow rate and high pressure, which are much more vulnerable to this type of clearance issue, leading to fast and dramatic speed loss.

5 IMPELLER VIBRATION RUBBER DAMPER

This item damps vibrations if any transitory cavitation occurs at the impeller. Because this device has no shaft bearing function, it can withstand a large degree of wear without affecting the waterjet integrity.

6 SHAFT HOUSING

The impeller shaft rotates safely inside a protective housing, oil immersed; and is thus perfectly protected from any debris that might enter the duct and entwine around it.

7 B.P.R. (optional)

This unique patented device provides an auxiliary water flow by-pass to the main water intake allowing an increase in the power operational range and thrust on low speed heavy boats, as well as a take-off improvement for middle speed heavy boats. It never affects full speed efficiency and can easily be retrofitted.

8 MOVABLE PROTECTION GRID ON WATER INTAKE

The inlet grid protects the water intake from the suction of floating debris. It performs self-cleaning operations by rejecting the same through the shift opening of the flush mounted hydrodynamically profiled set of bars. The helmsman can activate the system, when the pressure gauge indicates a pressure drop in the waterjet duct.

9 CLEAR-DUCT superior unclogging system (optional)

The waterjet duct and intake cleaning system are assured through the synchronized simultaneous electrically controlled operations of impeller rotation reversing and the intake grid opening. This generates a back flushing, which is ejected through the water intake without any obstruction caused by the grid bars. The whole operation is feasible using special parts, all included in the Castoldi integrated gearbox.

10 ALL BEARINGS OIL LUBRICATED

All the bearings are lubricated by the same gearbox oil. They never come into contact with seawater and are sized for several thousand hours of life.

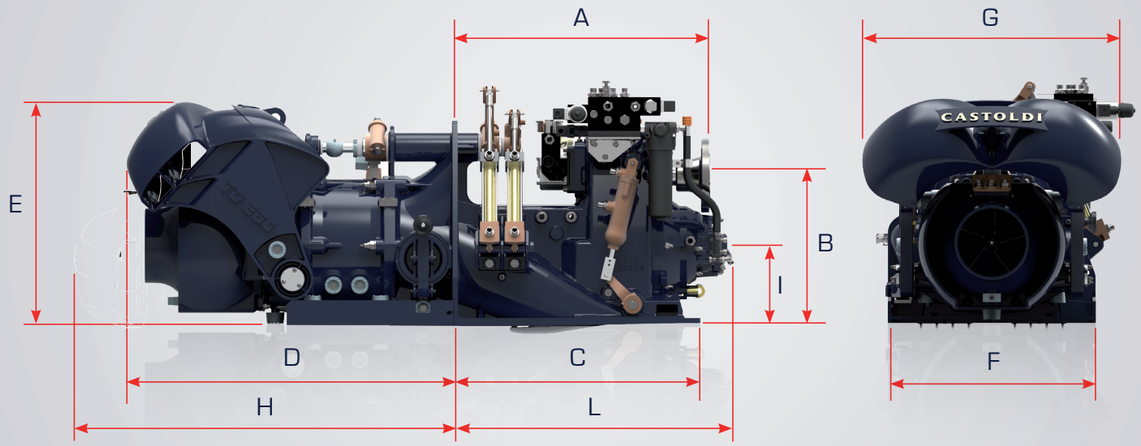
11 OIL LEVEL TRANSDUCER (standard and available only on large models)

The oil level transducer allows for remote level control.

FULL PROTECTION AGAINST MARINE CORROSION

All the aluminium alloy components are protected by a hard anodizing treatment with 60 microns thickness of aluminum oxide (ceramic), three layers of special paint and cathodic protection by sacrificial anodes.

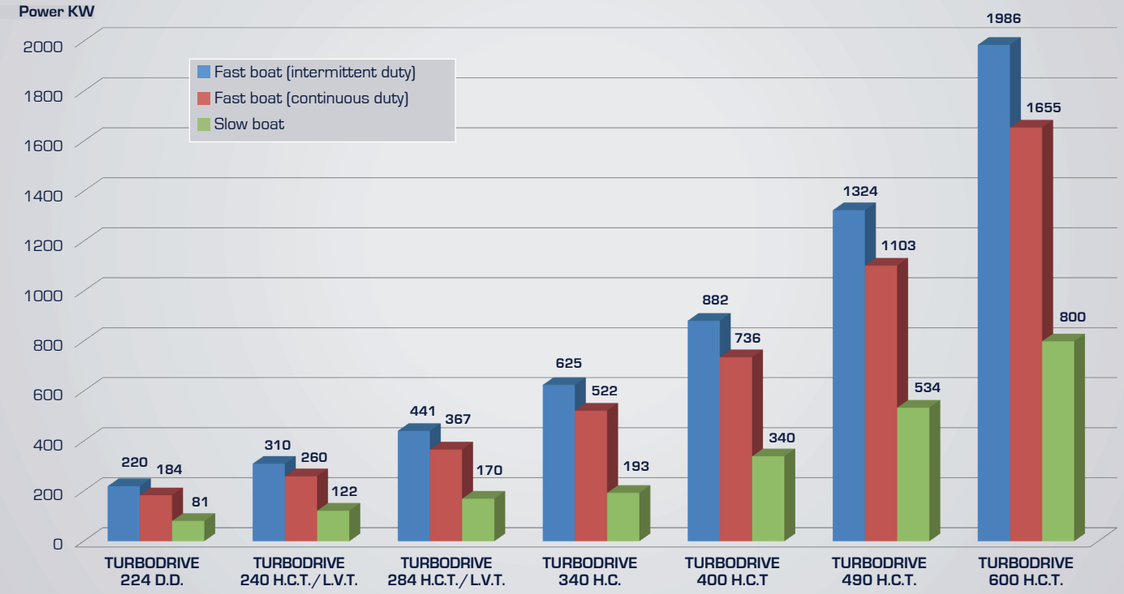
DIMENSIONS



TURBODRIVE MODELS	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)
224 D.D.	521,5	206	773	606	384	470	379	604	-	-
240 H.C.T. / L.V.T.	358	295,5	358	822,5	433	420	445	892,5	155,5	358 431,5 (CLEAR-DUCT)
284 H.C.T. / L.V.T.	598,5	353	578	795	535	500	624	903	185	572 651 (CLEAR-DUCT)
340 H.C.	737	418	715	991,5	645	600	722,4	1033,5	220	727 813,5 (CLEAR-DUCT)
400 H.C.T	870	491	874	1190	715	680	885	1200	261	947 1063 (CLEAR-DUCT)
490 H.C.T.	1080	582,5	1161	1378	892	858	1080	1525	320	1062 1310 (CLEAR-DUCT)
600 H.C.T.	1560	737	1703	1470	1180	1160	1275	1605	392	1702

TURBODRIVE MODELS	IMPELLER DIAMETER AT THE INLET (mm)	DRY WEIGHT (kg)	IMPELLER HOUSING MATERIAL	MOVABLE DEBRIS SCREEN GRID	INTEGRATED GEAR BOX RATIOS NUMBER
224 D.D.	224	61,7	STAINLESS STEEL	FIXED	-
240 H.C.T.	238	130	STAINLESS STEEL / TITANIUM (OPT.)	MECHANICALLY OPERATED / ELECTRICALLY OPERATED (OPT.) + CLEAR-DUCT (OPT.)	18
240 L.V.T.	238	125	STAINLESS STEEL / TITANIUM (OPT.)	MECHANICALLY OPERATED	18
284 H.C.T.	282	190	STAINLESS STEEL / TITANIUM (OPT.)	ELECTRICALLY OPERATED + CLEAR-DUCT (OPT.)	25
284 L.V.T	282	180	STAINLESS STEEL / TITANIUM (OPT.)	MECHANICALLY OPERATED	25
340 H.C.	337	307	STAINLESS STEEL / TITANIUM (OPT.)	ELECTRICALLY OPERATED + CLEAR-DUCT (OPT.)	25
400 H.C.T	400	509	TITANIUM	ELECTRICALLY OPERATED + CLEAR-DUCT (OPT.)	21
490 H.C.T.	490	941	TITANIUM	ELECTRICALLY OPERATED + CLEAR-DUCT (OPT.)	20
600 H.C.T.	600	1580	TITANIUM	ELECTRICALLY OPERATED + CLEAR-DUCT (OPT.)	13

MAX POWER INPUT

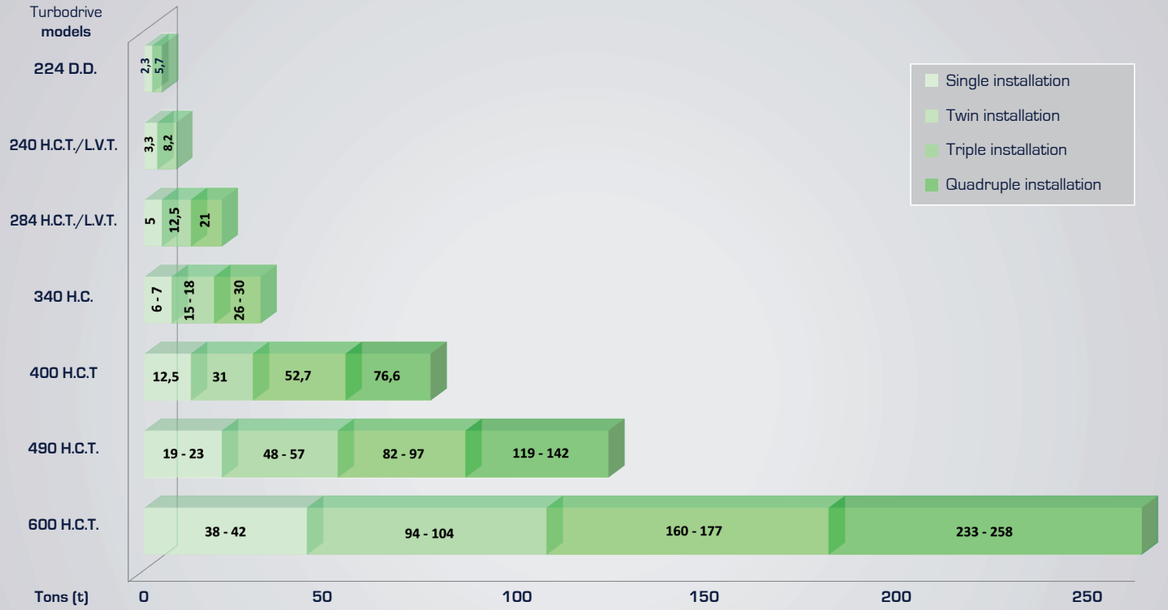


A conventional stempost hull with minimum deadrise of 3° at transom is recommended to prevent trapped air from entering the waterjet drive.

The minimum waterjet immersion must be with the waterline at the level of the impeller shaft.

For displacement boats the speed depends more on efficient hull shape than displacement or input power. Best efficiency will be obtained using low input power at, or below, the craft natural displacement speed.

MAXIMUM SUGGESTED DISPLACEMENT



The maximum suggested displacement is purely indicative as this depends on hull shape, LCG, installed power etc...

Please contact Castoldi for advice on any application.

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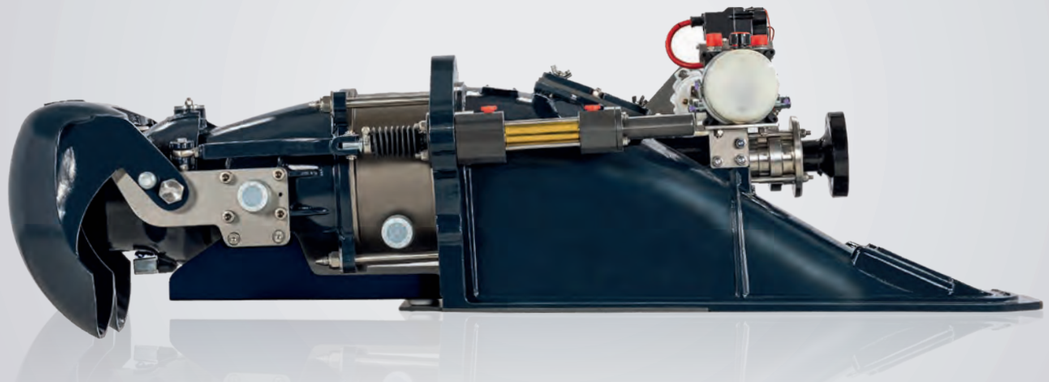
WATERJET RANGE >>

CASTOLDI

TURBODRIVE 224 D.D.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 224 mm at the inlet

Stator: N. 5 blades

Input flange: Suit up to 170 mm diameter drive shaft flange

Max power input (intermittent duty): 220 kW (300 mHP)

Max power input (continuous duty): 184 kW (250 mHP)

Impeller disconnecting/connecting system: Directly driven

Transom angle: 93°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" GAS

Hydraulic power unit and accessories: Electric oil pump for bulkhead mounting (11 kg)

Unit dry weight: 61,7 kg

Entrained water volume: 32 l

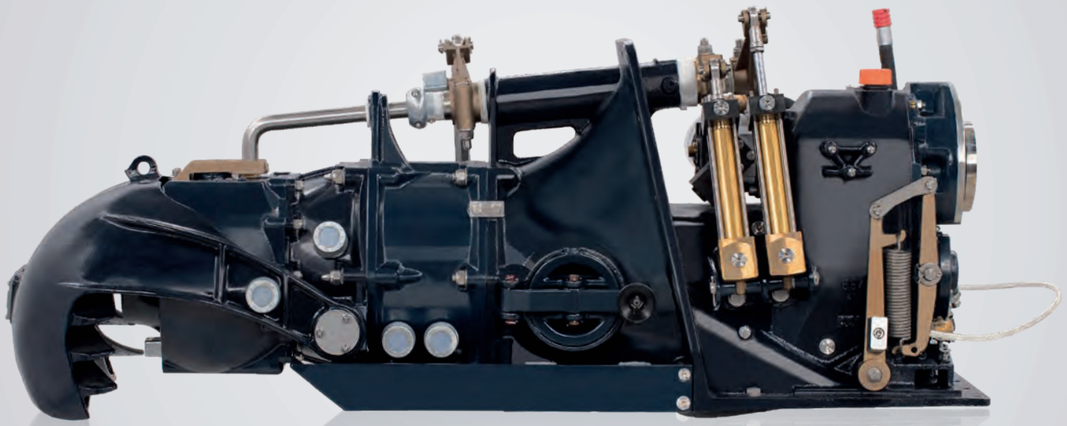
B.P.R.: Additional water intake for take-off improvement

Water intake protection: Fixed debris screen grid with hydrodiynamically profiled bars

Reversing system: Castoldi compact reversing bucket

Steering system: Castoldi steering nozzle

TURBODRIVE 240 H.C.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 238 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.18 gear wheels ratio available

Input flange: Suit up to 150 mm diameter drive shaft flange

Max power input (intermittent duty): 309 kW (420 mHP)

Max power input (continuous duty): 258 kW (350 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 12°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Outboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" 1/4 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 130 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 21 kg

Entrained water volume: 26 l

Oil volume: 6 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

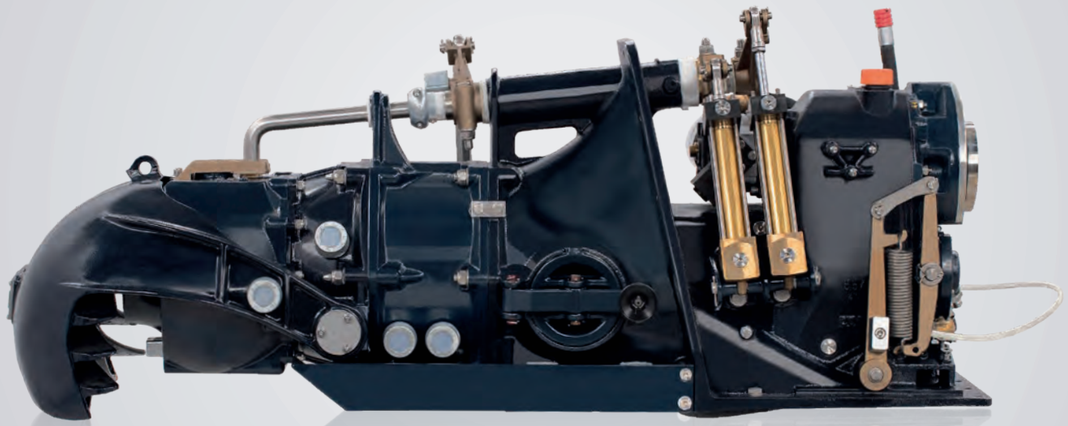
Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening, 12 kg

Reversing system: Castoldi compact "Multi-Duct" reversing bucket. (65% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 240 L.V.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 238 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.18 gear wheels ratio available

Input flange: Suit up to 150 mm diameter drive shaft flange

Max power input (intermittent duty): 309 kW (420 mHP)

Max power input (continuous duty): 258 kW (350 mHP)

Impeller disconnecting/connecting system: Directly driven

Transom angle: 12°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Outboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" 1/4 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, water intake, grid, duct, anodes etc.): 125 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 21 kg

Entrained water volume: 26 l

Oil volume: 6 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

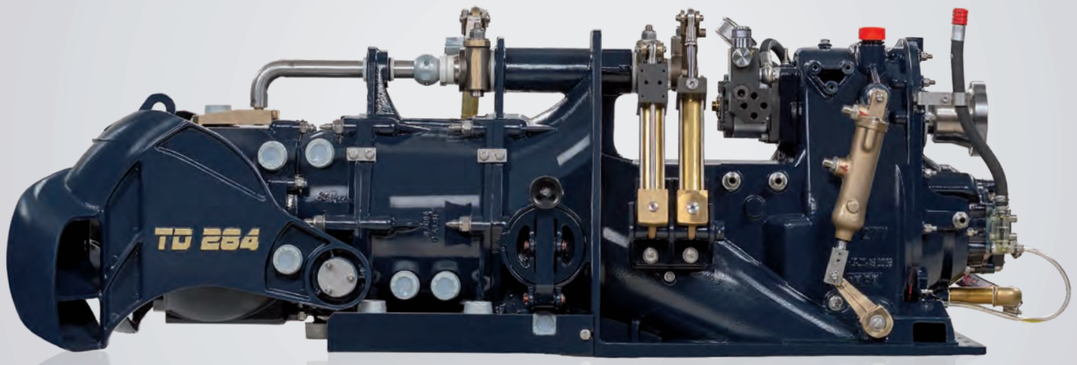
Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

Bearings: All oil lubricated

Reversing system: Castoldi compact "Multi-Duct" reversing bucket. (65% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 284 H.C.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 282 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.25 gear wheels ratio available

Input flange: Suit up to 180 mm diameter drive shaft flange

Max power input (intermittent duty): 441 kW (600 mHP)

Max power input (continuous duty): 367 kW (500 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Outboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" 1/2 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 190 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 31 kg

Entrained water volume: 45 l

Oil volume: 9 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

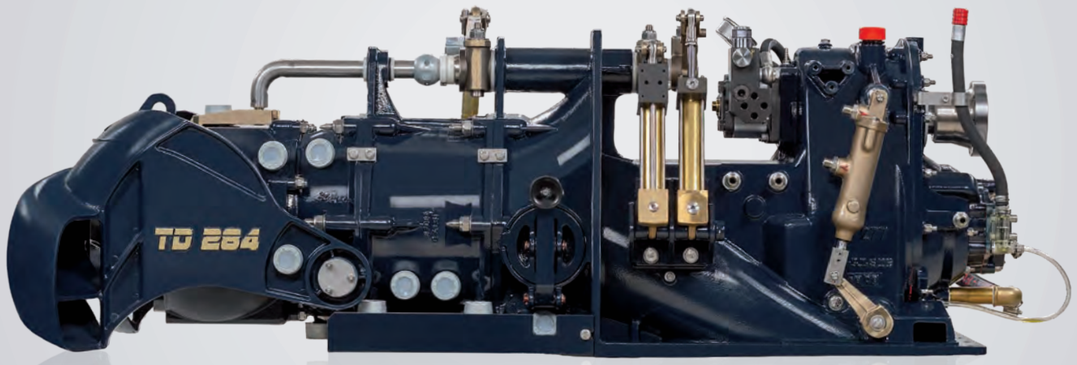
Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening, 15 kg

Reversing system: Castoldi compact "Twin-Duct"reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 284 L.V.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 282 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.25 gear wheels ratio available

Input flange: Suit up to 180 mm diameter drive shaft flange

Max power input (intermittent duty): 441 kW (600 mHP)

Max power input (continuous duty): 367 kW (500 mHP)

Impeller disconnecting/connecting system: Directly driven

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Outboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" 1/2 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, water intake, grid, duct, anodes etc.): 180 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 31 kg

Entrained water volume: 45 l

Oil volume: 9 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

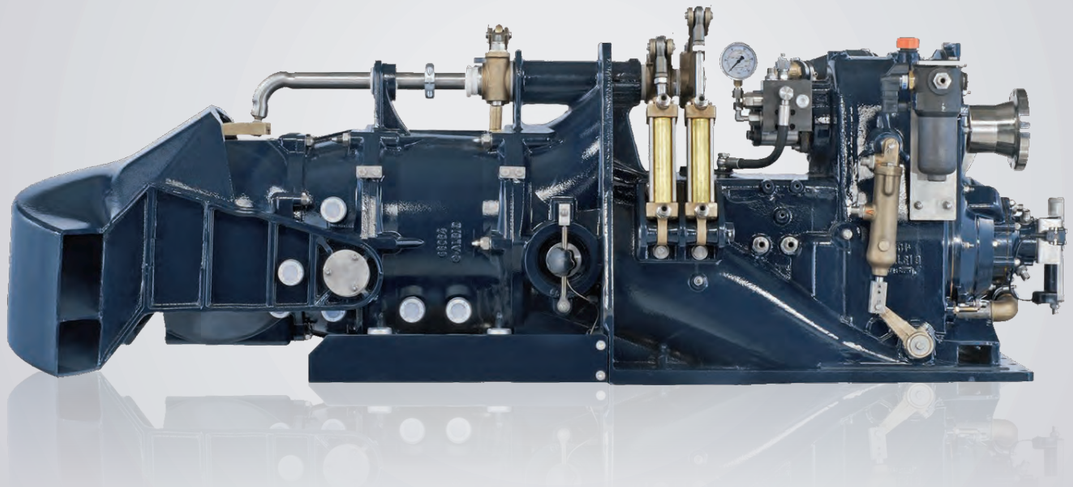
Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

Bearings: All oil lubricated

Reversing system: Castoldi compact "Twin-Duct" reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 340 H.C.



Impeller: N.3 blades, single stage, axial flow

Impeller diameter: 337 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.25 gear wheels ratio available

Input flange: Suit up to 180 mm diameter drive shaft flange

Max power input (intermittent duty): 625 kW (850 mHP)

Max power input (continuous duty): 522 kW (710 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Outboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: 1" 1/2 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 307 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 50 kg

Entrained water volume: 68 l

Oil volume: 17 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

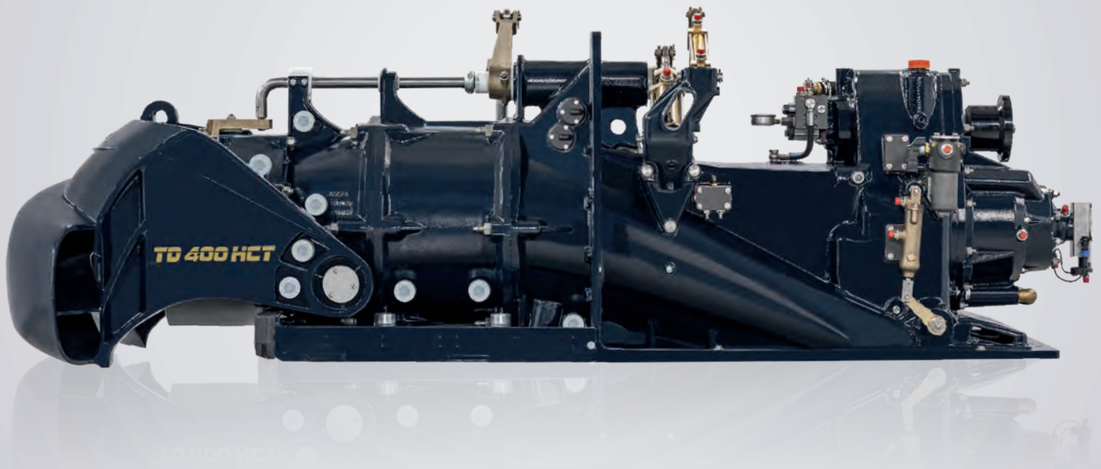
Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening, 20 kg

Reversing system: Castoldi compact "Twin-Duct"reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 400 H.C. T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 400 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.21 gear wheels ratio available

Input flange: Suit up to 225 mm diameter drive shaft flange

Max power input (intermittent duty): 882 kW (1.200 mHP)

Max power input (continuous duty): 736 kW (1.000 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: Inboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: Suit 2" 1/2 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 509 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 50 kg

Entrained water volume: 114 l

Oil volume: 22 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

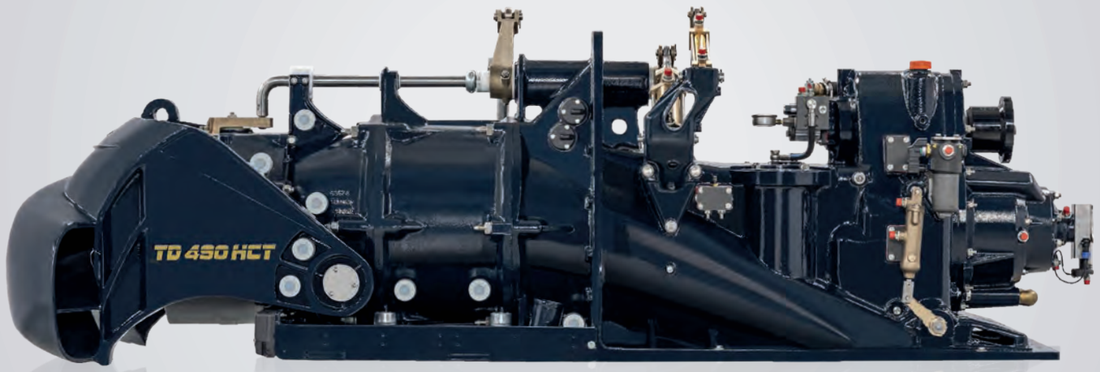
Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening, 31 kg

Reversing system: Castoldi compact "Twin-Duct"reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 490 H.C.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 490 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.20 gear wheels ratio available

Input flange: Suit up to 250 mm diameter drive shaft flange

Max power input (intermittent duty): 1.324 kW (1.800 mHP)

Max power input (continuous duty): 1.103 kW (1.500 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: N. 2, inboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: Suit 2" 1/2 GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 941 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 54 kg

Entrained water volume: 256 l

Oil volume: 35 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with double set of hydrodiynamically profiled bars

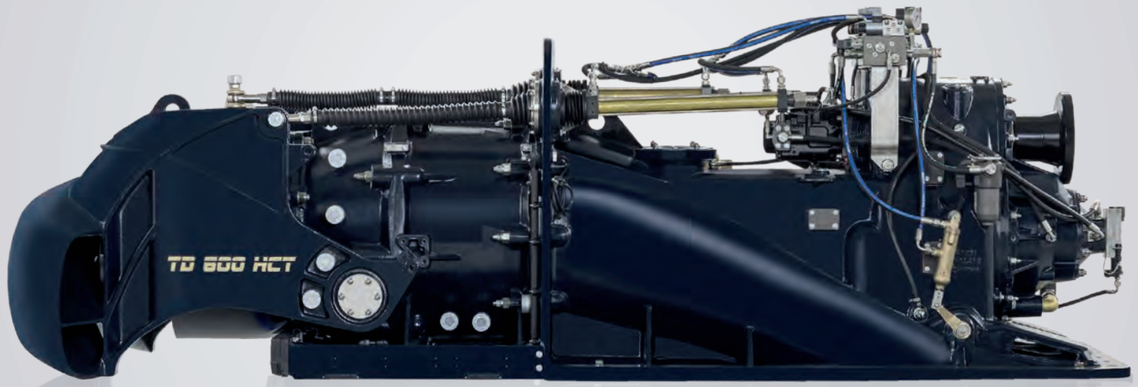
Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening, 45 kg

Reversing system: Castoldi compact "Twin-Duct"reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl

TURBODRIVE 600 H.C.T.



Impeller: N.4 blades, single stage, axial flow

Impeller diameter: 600 mm at the inlet

Stator: N. 5 blades

Integrated heavy duty gearbox: With N.13 gear wheels ratio available

Input flange: Suit up to 285 mm diameter drive shaft flange

Max power input (intermittent duty): 1.985 kW (2.700 mHP)

Max power input (continuous duty): 1.655 kW (2.250 mHP)

Impeller disconnecting/connecting system: Built-in multi-disc hydraulic clutch

Transom angle: 90°

Drive shaft rotation: Clockwise looking at the input driveshaft flange

Inspection hatch: N. 2, inboard

Hydraulic actuators: All inboard, waterjet mounted

Water pick-up for engine cooling: Suit 4" GAS

Hydraulic power unit and accessories: Incorporated hydraulic pump directly splined to the input shaft for the waterjet power controls. Solenoid valves and piping complete the hydraulic plant (all inboard, waterjet mounted)

Unit dry weight (including gearbox, hydraulic clutch, water intake, grid, duct, anodes etc.): 1.580 kg

Hydraulic weight (oil pump, actuators, solenoid valves, brackets): 102 kg

Entrained water volume: 450 l

Oil volume: 56 kg "SAE 30" Uni-Grade oil type (gearbox and hydraulics)

B.P.R.: Additional water intake for take-off improvement

Water intake protection: Movable debris screen grid with doubleset of hydrodiynamically profiled bars

Bearings: All oil lubricated

Clear-Duct unclogging system (optional): Superior unclogging system by simultaneous operations of impeller reversing and intake grid opening

Reversing system: Castoldi compact "Twin-Duct"reversing bucket. (75% of the forward static thrust)

Steering system: Castoldi steering nozzle integrated in a protective bowl


FISHERY CONTROL


SUPPORT


INLAND PATROL


UTILITY


FIRE FIGHTING
BELUGA - 18


S.A.R.
CHINA MSA
海巡06161


POLICE


INTERCEPTOR


COMBAT BOAT


AMPHIBIOUS
VIGILI DEL FUOCO


LANDING CARFT


CARABINIERI
112
CARABINIERI
N 106


BORDER PROTECTION
CARINA


NAVY RIB


CREW TRANSFER


ECO-DREDGE


PATROL


RIVER FERRY


TRANSPORT


FERRY

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