

Case Study 145: Patrol Boat

SPECIFICATIONS

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| Waterjet: | DJ170HP x2 |
| Engine: | Volvo Penta D13-800 515kW @ 2300rpm |
| Gearbox: | ZF325-1 (1.459:1) |
| Vessel: | 18m L.O.A 15.84m L.W.L 26.5t (fully laden) |
| Performance: | 38 knots |



Vietnam Border Guard

DOEN DJ170HP waterjets drive this high-speed fiberglass 18m monohull that was commissioned by Vietnam Border Guard Force (Ministry Of Defence). The vessel was built locally in Vietnam and successfully launched in December 2015 to exceed all performance expectations.

Power is provided by twin Volvo D13 diesel engines, which are coupled to the DOEN waterjets through ZF325-1 marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection. The gearbox also provides the vessel with disengagement and a back flushing capability.

The DJ170HP is a 17" (432mm) single stage compact high performance waterjet that uses Doen's latest impeller technology to delivers mixed flow type, high speed performance, within an axial build. This approach combines the key benefits of excellent high-speed efficiency with superior cavitation margins and efficiency at lower speeds and cruise conditions. This waterjet model incorporates many innovative features that enhance its application into high-speed craft. The lightweight fabricated intake tunnel for instance enabled DOEN to accommodate the requirement for tailor-made intake design to suit the hull form for this particular vessel.

Steering is by conventional helm using a power assisted hydraulic steering system. An inboard cylinder is directly connected to the waterjets inboard steering tiller. This provides the vessel with exceptional and easy control at all speeds, especially for pursuit and high-speed maneuvers. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ170HP waterjets are fitted with DOEN's Rotary Servo Control (RSC), which is a proportional hydraulic control system providing simple and exact follow up control of the waterjets reverse buckets, by conventional lever. This system has fully integrated hydraulics with in-built cooling; bulkhead mounted reverse cylinders with all hydraulic connections inboard and protected from corrosion. Conventional control levers using push pull cables operate this system.