VOLVO PENTA ADVANCED PROPULSION SYSTEM

TAMD74C/K28/K32

Complete optimized waterjet propulsion system based on 6-cylinder, 4-stroke direct-injected turbocharged aftercooled marine diesel engine with Kamewa mixed flow waterjet – crankshaft power* 294–331 kW (400–450 hp)

* Power rating – see Technical Data

True Waterjet Performance
Volvo Penta, in co-operation with Kamewa, has further developed the use of waterjets as an integrated part of a complete propulsion system. This comprises the Volvo Penta waterjet adapted diesel engine, matched marine gearbox, flexible but torsion stiff coupling and shafting, the high efficiency Kamewa mixed flow waterjet and a waterjet/engine control system.

Excellent maneuverability
The system gives excellent maneuverability in all kinds of sea and weather conditions. Superior control of the boat is achieved across the complete speed range, with small turning radius and quick stops. With the integrated maneuvering system the boat can rotate within its own length, and with two waterjets the boat can move sideways.

Marine gearbox as standard
To obtain good overall performance, good fuel economy and good thrust over the whole speed range, the Volvo Penta diesel engine and the Kamewa waterjet are correctly matched to each other at optimum impeller speed. Each combination of engine and jet has an optimized gear ratio as part of the standard Volvo Penta advanced propulsion system. Other important benefits with the marine gearbox are the possibility to disengage the jet unit when starting or idling and to backflush if necessary to rinse the jet unit.

Easy installation
A very compact and easy installation can be achieved thanks to the drop center marine gearbox and a drive shaft which is parallel to the baseline of the boat. A complete and carefully matched propulsion system from a single source gives a number of additional benefits:
– All parts matched to each other
– Reduced installation time
– Easy commissioning of the boat

Long service life
The correctly sized and matched waterjet gives very small torque variations and eliminates engine overload, regardless of the boat’s loading conditions and speed. The waterjet shaft is always rotating in one direction; the reversing of the boat is done by changing the jet stream direction with a split reverse bucket, without giving any significant load variations on the engine.

Safe and efficient operation
The Volvo Penta advanced propulsion system offers many benefits, including minimizing the draught. No underwater appendages reduce the drag of the hull and the risk of personal injury during rescue or diving operations. In addition, the inboard noise and vibration and the hydroacoustic noise are kept on a low level with the Kamewa mixed flow waterjet.
Technical Description

Complete System

The Volvo Penta Advanced Propulsion System TAMD74C/K28 and TAMD74C/K32 are optimised complete waterjet propulsion systems based on the Volvo Penta TAMD74C diesel engine, Kamewa K28 and Kamewa K32 mixed flow waterjet. The system comprises a marine gearbox MG5085SC-E and a CV shaft type CV42 as standard.

The TAMD74C/K28 and TAMD74C/K32 systems are designed for speed up to 50 knots and are suitable for single, twin or multi installations. For each application Volvo Penta produces accurate thrust curves for the complete system based on the nominal service speed of the vessel. The engine and the waterjet are matched to each other in the standard system with an optimum gear ratio.

Kamewa mixed flow waterjet with a flush intake parallel to shaft line and with a transom plate mounted 90° to bottom plate. The shaft line is designed to be parallel with the base line of the boat with the drive shaft placed approx. 50 mm (2 in.) below design water line to ensure safe priming. The waterjet is coupled to the engine with a flexible but torsion stiff shaft coupling and a marine gearbox with drop center.

Technical Data

Complete System

**Engine**
- TAMD74C
- MARINE DIESEL ENGINE 12 CYLINDER IN-LINE 6 CYLINDER DIRECT-INJECTED TURBOCHARGED
- No. of cylinders and config. in-line 6
- Method of operation 4-stroke
- Bore, mm (in.) 107 (4.21)
- Stroke, mm (in.) 135 (5.31)
- Displacement, l (US qts) 1910.5 (510.2)
- Compression ratio 17:2:1
- Dry weight, kg (lb) 860 (1896)
- Crankshaft power, kW (hp) 294 (400)
- Crankshaft power, Nm (lbf.ft) 3780 (2775)
- Torque, kW (hp) 294 (400)
- Torque, Nm (lbf.ft) 3780 (2775)
- Recommended fuel to EN 590 or JIS KK 2204
- Specific fuel consumption, g/kWh (lb/hph) 2500 rpm R3 294
- Specific fuel consumption, g/kWh (lb/hph) 2600 rpm R4 235 (0.382)
- Technical data according to ISO 3046 Fuel Stop Power and ISO 8665 Fuel with a lower calorific value of 12,700 kJ/kg and density of 840 g/liter at 15°C (60°F). Merchant fuel may differ from this specification which will influence engine power output and fuel consumption.
- Fuel temperature 5–55°C (41–131°F)
- The engine is certified according to IMO and IMO US/EPA.

**Gearbox**
- Type designation MG5085SC-E
- Vertical offset, mm (in.) 154.4 (6)
- Oil capacity, l (US qts) 38 (4)
- Dry weight, kg (lb) 131 (289)

**Shaft System**
- Type designation CV42
- Lengths:
  - Short shaft, mm (in.) 270 (10.62)
  - Medium shaft, mm (in.) 600 (23.62)
  - Long shaft, mm (in.) 1200 (47.24)
- Weights, K28/K32:
  - Short, kg (lb) 51.3/55.4 (113/122)
  - Medium, kg (lb) 58.7/62.9 (129/138)
  - Long, kg (lb) 67/71.1 (148/157)
- Weights include connection parts

**Kamewa waterjet propulsion single K28**

**Kamewa waterjet propulsion single K32**