

VOLVO PENTA ADVANCED PROPULSION SYSTEM

TAMD42WJ/K22

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* 169 kW (230 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.

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.

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.

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:

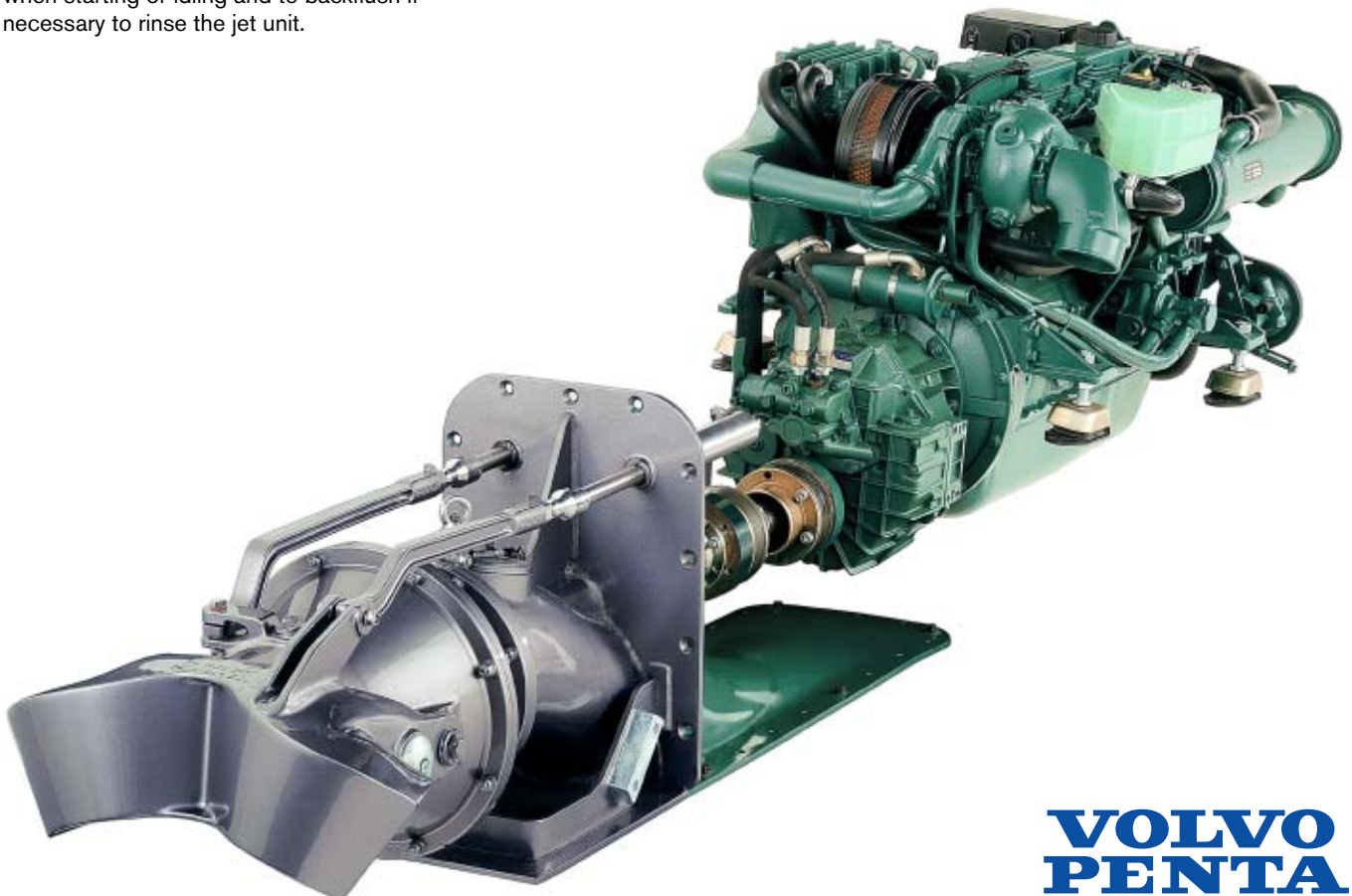
- All parts matched to each other
- Reduced installation time
- Easy commissioning of the boat

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.



**VOLVO
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TAMD42WJ/K22

Technical Description Complete System

The Volvo Penta Advanced Propulsion System TAMD42WJ/K22 is an optimized complete waterjet propulsion system based on the Volvo Penta TAMD42WJ diesel engine and Kamewa K22 mixed flow waterjet. The system comprises a marine gearbox HSW630HE and a CV shaft type CV30 as standard.

The TAMD42WJ/K22 system is designed for speed up to 50 knots and is 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.....	TAMD42WJ
Marine gearbox.....	HSW630HE
Flex shaft.....	CV30
Control system.....	Mech/Hydraulic
Type designation.....	TAMD42WJ/K22
System dry weight:	
Single installation,	
kg (lb).....	638-648 (1407-1429)
Double installation,	
kg (lb).....	1285-1305 (2833-2877)
System weight depending on shaft length	

Waterjet

Type designation.....	K22
Dry weight with intake, kg (lb).....	110 (243)
Entrained water inside hull, approx. l (US qts).....	15 (16)
Material:	
Pump housing and intake:	Seawater resistant aluminum.
Impeller:	Stainless duplex steel.
Reverse bucket/nozzle:	Seawater resistant aluminum.
Pin shafts and links:	Stainless steel.
Drive shaft:	Stainless steel.

Engine

Engine designation.....	TAMD42WJ
No. of cylinders and config.....	in-line 6
Method of operation.....	4-stroke, direct-injected, turbocharged diesel engine with aftercooler
Bore, mm (in.).....	92 (3.62)
Stroke, mm (in.).....	90 (3.54)
Displacement, l ((in ³).....	3.6 (219)
Compression ratio.....	17.8:1
Dry weight, kg (lb).....	440 (970)
Freshwater system capacity incl. heat exchanger, l (US qts).....	20 (21)
Oil capacity, no engine inclination, l (US qts).....	11 (11.6)
Crankshaft power, kW (hp) 3900 rpm.....	169 (230)
Torque, Nm (lb.ft) 3900 rpm.....	427 (315)
Recommended fuel to conform to.....	ASTM-D975 1-D & 2-D, EN 590 or JIS KK 2204

Specific fuel consumption, g/kWh (lb/hph) 3900 rpm.....260 (0.421)
The engine is approved for life and rescue boats according to MED (SOLAS).

Rating: 5-4.
Fuel temperature 40°C (104°F)
Technical data according to ISO 3046 Fuel Stop Power and ISO 8665. Fuel with a lower calorific value of 42,700 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.
The engine is certified according to IMO and IMO US/EPA.

Gearbox

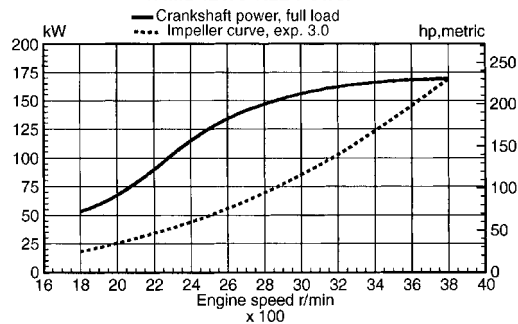
Type designation.....	HSW630HE
Vertical offset, mm (in.).....	127 (5.0)
Oil capacity, l (US qts).....	3.0 (3.2)
Dry weight, kg (lb).....	60 (132)
The marine gearbox is fixed mounted to the engine with a connection plate and a flexible coupling.	

Shaft System

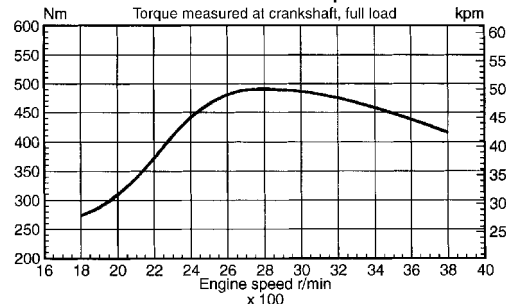
Type designation.....	CV30
Lengths:	
Short shaft, mm (in.).....	245 (10)
Medium shaft, mm (in.).....	660 (26)
Long shaft, mm (in.).....	1200 (47.24)
Weights:	
Short, kg (lb).....	19 (42)
Medium, kg (lb).....	21 (46)
Long, kg (lb).....	25 (55)

Weights include connection parts

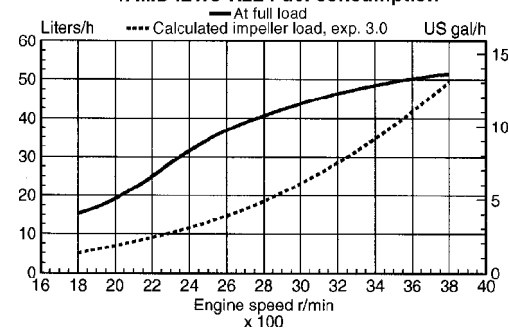
TAMD42WJ-K22 Power



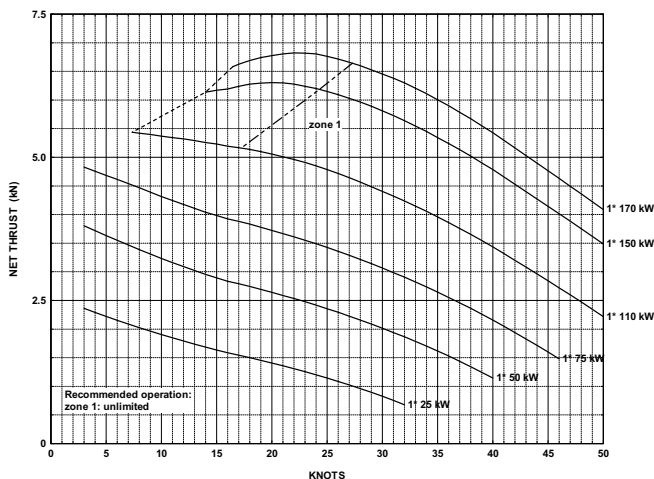
TAMD42WJ-K22 Torque



TAMD42WJ-K22 Fuel consumption



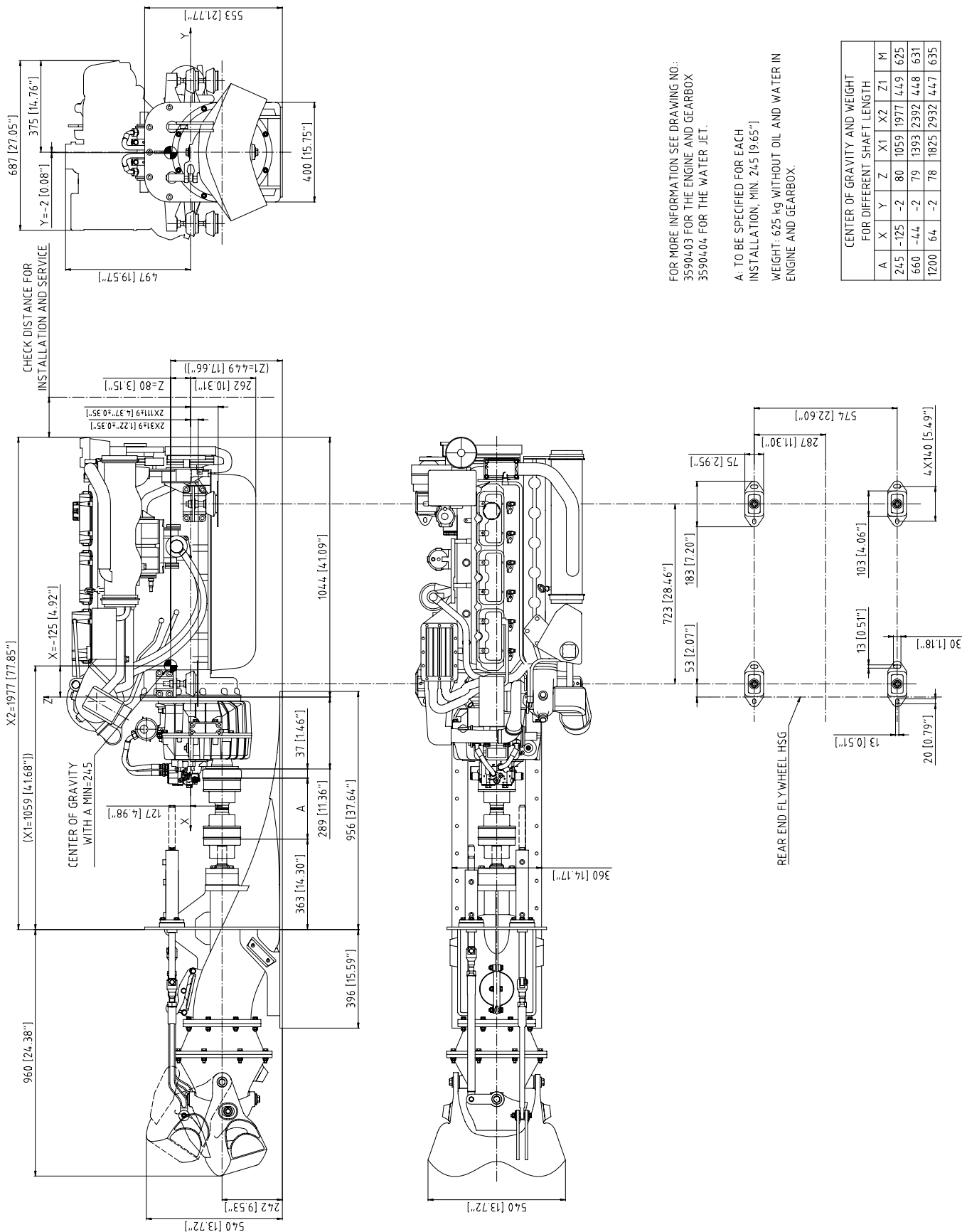
KAMEWA WATERJET PROPULSION
SINGLE K22



TAMD42WJ/K22

3590405-02

Not for installation



CENTER OF GRAVITY AND WEIGHT FOR DIFFERENT SHAFT LENGTH						
A	X	Y	Z	X1	X2	Z1
245	-125	-2	80	1059	1977	449
625	660	-44	-2	79	1393	2392
448	631	1200	64	-2	78	1825
2932	447	635				

TAMD42WJ/K22

Contact your local Volvo Penta dealer for further information.

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