

TMD31A

4-cylinder, 4-stroke, direct-injected turbocharged marine diesel – crankshaft output* 74 kW (100 hp).

A compact 2.4 litre direct-injected marine diesel. Direct injection means lower thermal stresses and simultaneously lower fuel consumption and longer engine service life. Noteworthy characteristics of the engine also include good fuel economy as a consequence of its high volumetric efficiency. Up to 15% lower fuel consumption throughout the entire engine speed range.

The high torque of the engine, together with the Volvo Penta MS4A reverse gear, make up a combination giving excellent performance. The torque curve shows very good acceleration resources. Since the torque rise occurs as engine speed drops under increasing load, speed losses caused by mounting seas etc, are reduced.

The engine block and cylinder head of cast iron, aluminium-alloy pistons and replaceable, wet cylinder liners lengthen service life and facilitate servicing. The pistons are oil-cooled to minimize the risk of deposits, particularly on the top piston ring, thereby increasing engine service life.

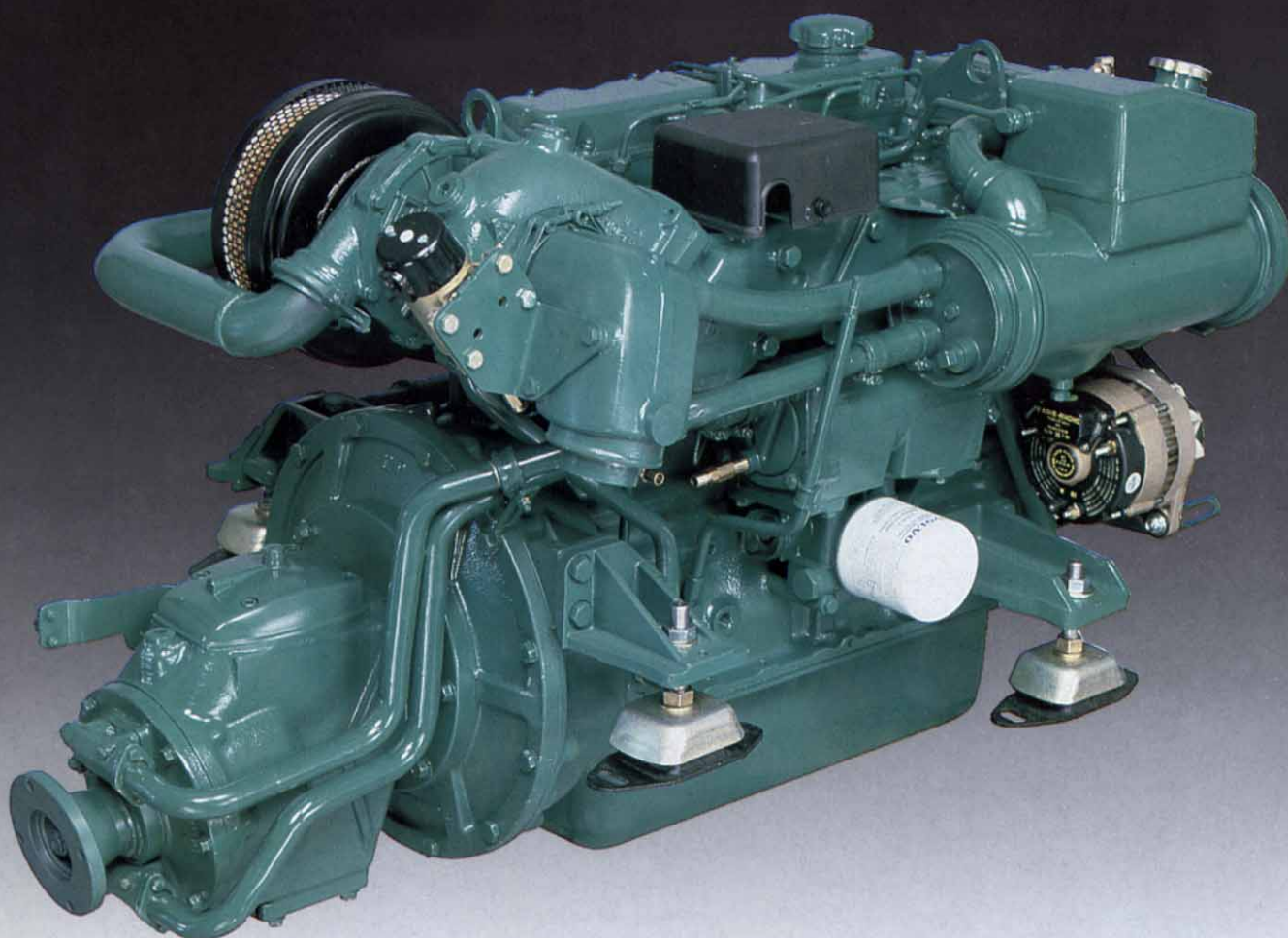
The injection pump has a smoke limiter to reduce black fumes when accelerating.

The 12-volt electrical system has a brushless alternator with integral electronic regulator for high charging capacity (14V/50A) and high reliability. The regulator is equipped with a sensor cable which can be used to compensate for voltage-drop in the battery cables. In most installations, this means a significantly improved charging capacity.

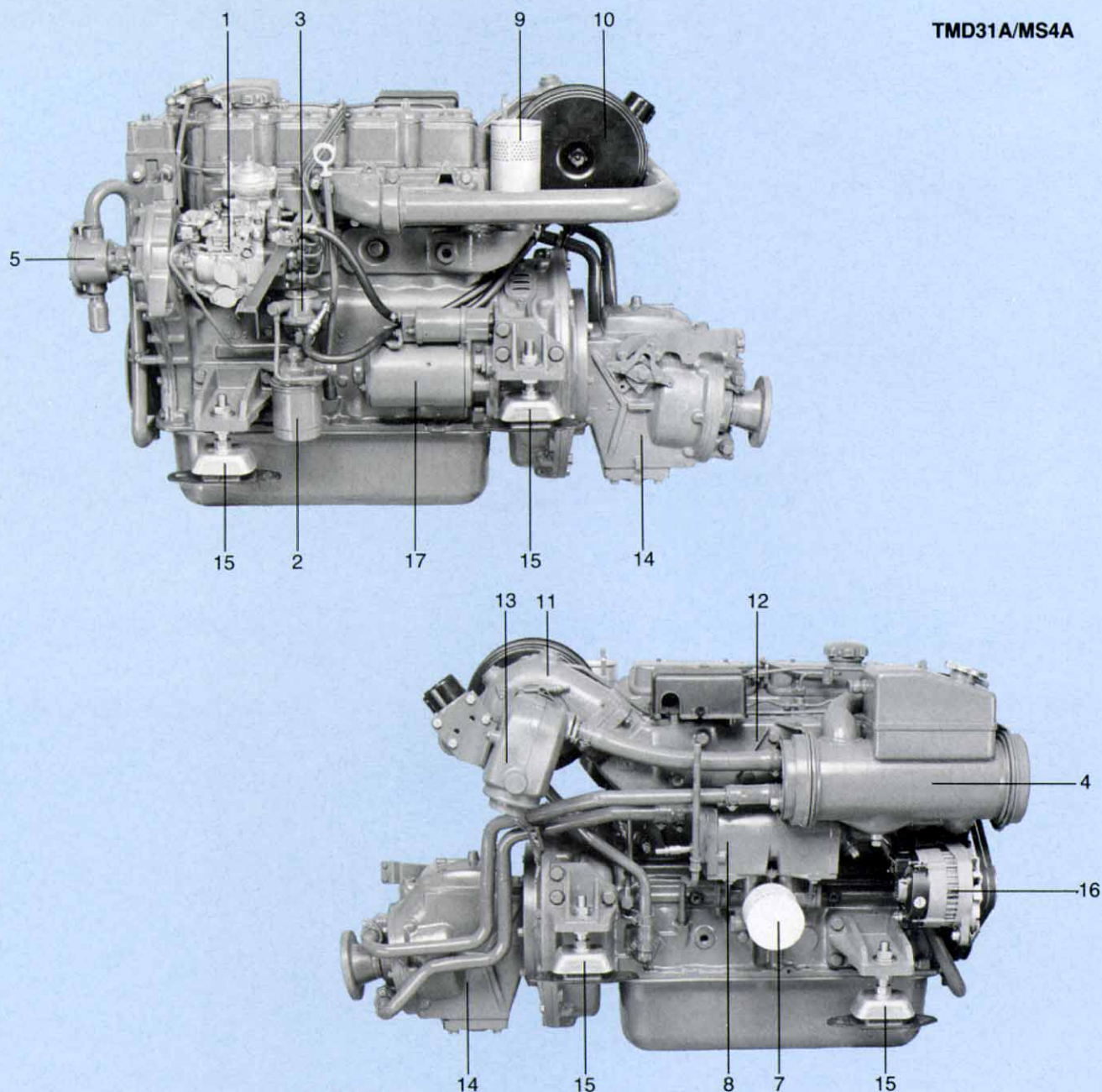
To give a lower installation height, the output shaft of the MS4A reverse gear has been angled 8° downwards.

Volvo Penta has a well-established service network in more than 100 countries. Authorized workshops, with genuine parts and staffed by qualified personnel, make sure you get the best service.

*** Crankshaft ISO 3046 standard fuel stop power. Usable power will be reduced by transmission or gearbox losses. This power cannot be exceeded.**



VOLVO PENTA



Standard equipment

ENGINE BODY

Engine block and cylinder head of cast iron for good corrosion resistance and long service life. Replaceable wet cylinder liners. Oil-cooled pistons with two compression rings and one oil scraper ring. Replaceable valve seats in cylinder head. Crankshaft with 5 main bearings.

FUEL SYSTEM

Injection pump (1) of rotor type with mechanical regulator for accurate speed control and smoke limiter. Fine filter (2) with water trap. Feed pump (3) with hand pump. Flexible fuel pipe connections. Electrically operated stop device.

COOLING SYSTEM

Thermostatically-controlled freshwater cooling with tubular heat exchanger (4), expansion tank and circulation pump. Cooling system prepared for hot water supply. Raw water pump with neoprene impeller (5).

LUBRICATING SYSTEM

Pressurized lubricating system with full-flow oil filter of spin-on type (7). Oil cooler of tubular type that can be opened for cleaning (8). Filter for crankcase ventilation (9).

INTAKE SYSTEM

Intake silencer with replaceable filter (10).

TURBOCHARGING SYSTEM

Exhaust-powered turbocharger with freshwater cooled turbine housing (11).

EXHAUST SYSTEM

Freshwater cooled exhaust manifold (12). Raw water cooled exhaust riser of cast iron (13) with stainless steel insert and incorporating exhaust pressure regulator.

TRANSMISSION

Reverse gear MS4A ratio 1.93:1 or 2.63:1 (14). Raw water cooled. Output shaft angled 8° downwards. Supplied without propeller shaft flange.

ENGINE MOUNTS

Flexible mounting consisting of 4 adjustable rubber blocks (15) for insulation from noise and vibration.

ELECTRICAL SYSTEM

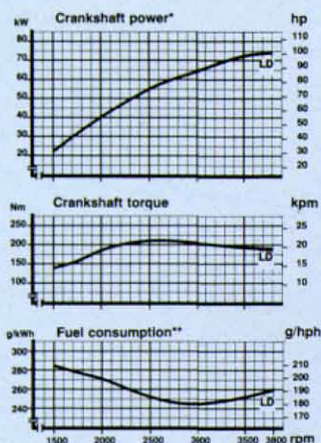
12V corrosion-protected electrical system complete with instrument panel. Alternator (16) with 14V/50A charging capacity. Designed for marine operation. Automatic fuse with resetting button mounted on engine. Starter motor output 2.6 kW (3.5 hp) (17).

INSTRUMENT PANEL



("Extra equipment" on selective markets)

Equipped with key-operated switch, tachometer, temperature gauge, oil pressure gauge, and voltmeter. Control displays for low oil pressure, high engine temperature and charging. Acoustical alarm for oil pressure and coolant temperature. Test button for alarm and switch for instrument lighting. Cable, length 5 m (16.4 ft), complete with plug-in contacts for connection of engine and instrument panel.



Curve LD: Light duty.

The use of rated power at rated speed is limited to short periods followed by extended cruising at reduced speed. In commercial applications operation is limited to 200 hours per year.

Ex: Pleasure boats, fireboats, certain patrol boats and rescue boats.

Mentioned outputs are crankshaft outputs. The propeller shaft output is approx 5% lower.

DATA

Type designation TMD31A
Configuration 4-stroke, direct-injected diesel engine.

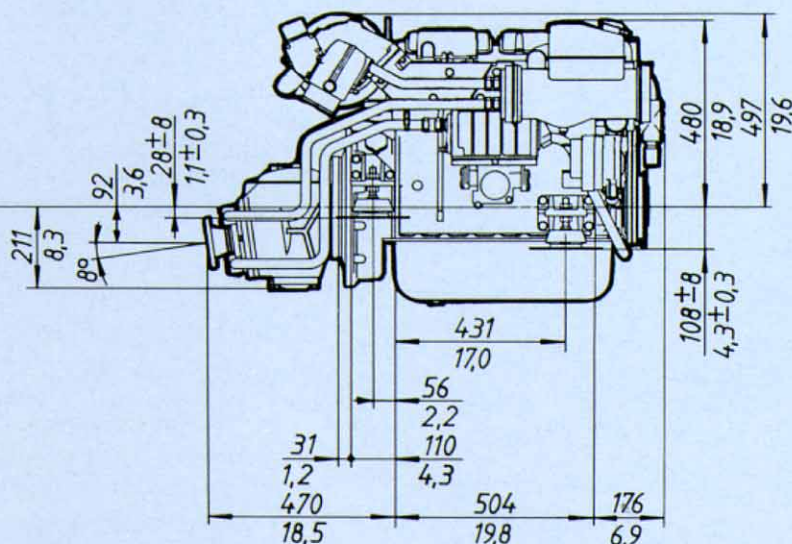
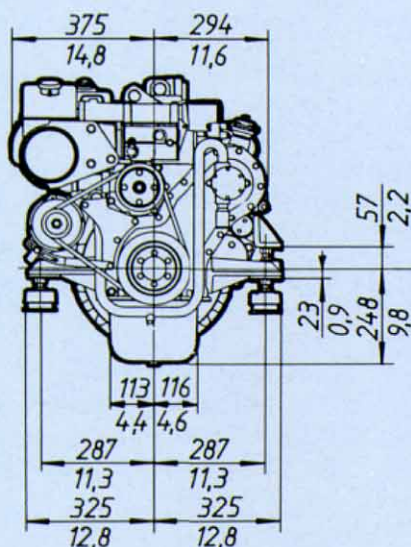
Crankshaft output* 74 kW (100 hp)
Propeller shaft output*** 69 kW (94 hp)
Engine speed r/min 3800
Number of cylinders 4
Bore/stroke mm (in) 92/90 (3.62/3.54)
Displacement, litres (in³) 2.4(146)
Valve system Overhead
Dry weight, engine with MS4A reverse gear approx kg (lb) 375 (827)

* Crankshaft ISO 3046 standard fuel stop power. Usable power will be reduced by transmission or gearbox losses. This power cannot be exceeded.

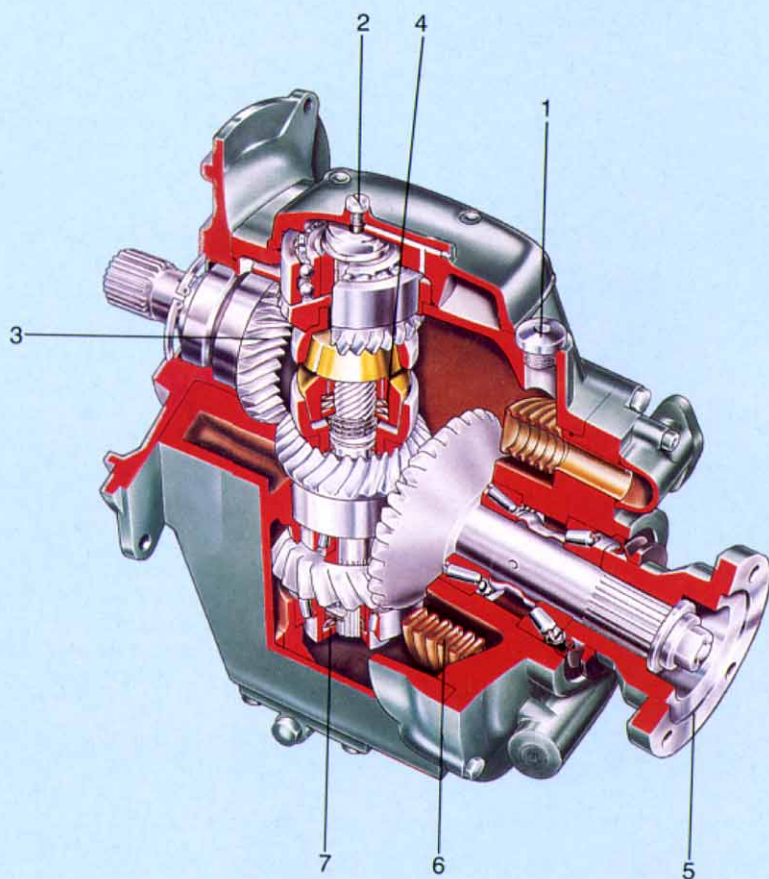
** ISO 3046 specific fuel consumption referred to crankshaft ISO standard fuel stop power.

Power, torque and fuel consumption ratings are based on run in engine at ISO standard atmospheric conditions, 27°C, 100 kPa and 60% relative humidity. The same data apply to DIN 6271, BS 5514 and SAE J 1228. SAE J 1349 uses slightly different conditions, 25°C, 100 kPa whereof 1 kPa vapour pressure, but the difference is negligible in most cases. Ratings are based on diesel fuel having LHV 42000 kJ/kg, density 835 g/litre and fuel temperature 40°C.

*** Propeller shaft ISO 3046 standard fuel stop power. This power cannot be exceeded.



Reverse gear MS4A



1. Easily accessible oil filler cap.
2. Oil dipstick.
3. Helically-cut gearwheels for quiet operation.
4. Sprung cone clutch for light and smooth engagement.
5. Output shaft is angled 8° downwards.
6. Supply pipe for oil cooling.
7. Built-in slip clutch gives protection from overloads (i.e. blocked propeller) for safety of integral components.
8. Choice of counterclockwise or clockwise propellers.

Accessories

FUEL SYSTEM

Suction and return pipes of copper. Fuel filter with water separator. Fuel valve. Separate connecting cover for fuel tank. Electric fuel pump.

EXHAUST SYSTEM

Rubber exhaust hose. Water-cooled silencer. Exhaust elbow 45°, wet exhaust system. Hull pass-through for wet exhaust system. Silencer, dry. Compensator (for dry exhaust system)

COOLING SYSTEM

Raw water intake incl. valve. Hose for raw water intake. Raw water filter. Vacuum valve. Hose for vacuum valve. Hot water outlet. Water heater. Hose for water heater. Separate expansion tank. Hull pass-

through for coolant discharge (dry exhaust system).

ELECTRICAL SYSTEM

Mirror-image instrument panel (main panel). Instrument panel for upper station "Flying Bridge". T-connector "Flying Bridge". Display for alarm panel. Panel for extra instruments. Extra instruments: Hour meter. Rudder indicator incl. sensor. Fuel tank gauge. Water tank gauge. Extension cable, instrument panel. Extra alternator. Double diode charging distributor. Main switch. Battery.

TRANSMISSION

Universal console on engine front for extra power take-off. Extra crankshaft belt pulley. Propeller shaft coupling with clamp. Propeller shaft coupling with tapered locking

pin and keyway. Flexible propeller shaft coupling. Rubber packbox. Propellers.

CONTROLS

Single-lever control for single installations. Single-lever control for twin installations. Control cables. DS-units (mechanical units which combine control cables from two control stations to a joint outgoing control cable). Manual stop control. Wheel steering incl. cables.

MISCELLANEOUS

Tool kit. On-board kit. Oil scavenging pump. Bilge pump. Genuine paints. Lubricants. For other accessories, see "Accessories Catalogue".

**VOLVO
PENTA**

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Not all models, standard equipment, and accessories are available in all countries. All specifications are subject to change without notice.