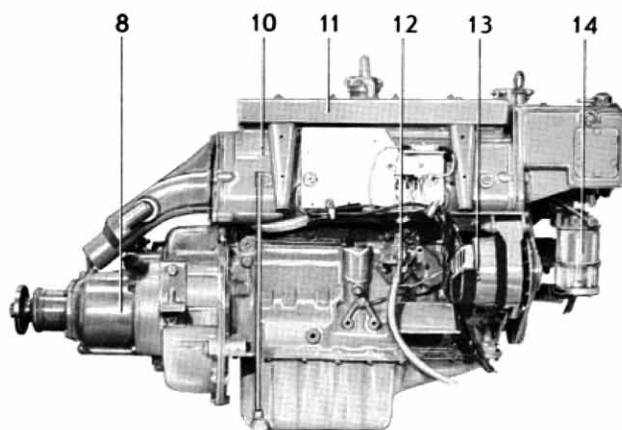
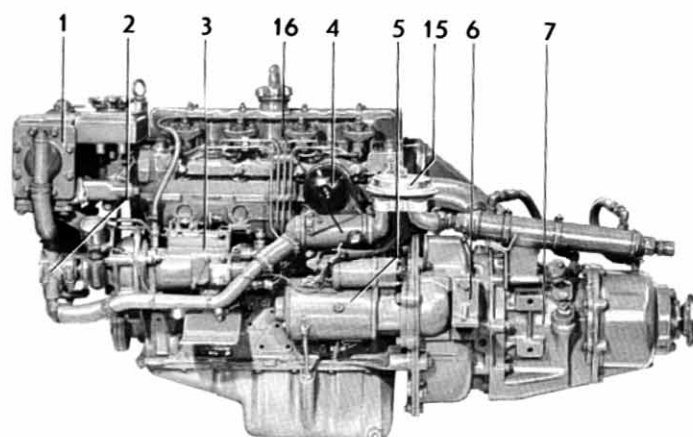




## MD 21A



4-cylinder, 4-stroke marine diesel engine with swirl chambers  
Propeller shaft output 45 kW (61 hp)



### STANDARD EQUIPMENT

**ENGINE BODY** – Cylinder block made of cast iron and cylinder head of light-alloy. Pistons made of light-alloy with three compression rings and one oil scraper ring. Crankshaft journalled in five bearings. Overhead valves with replaceable seats. Tool kit for minor adjustments supplied with engine.

**FUEL SYSTEM** – Rotor-type injection pump with mechanical governor for accurate speed regulation (3). Feed pump (12) with hand primer and flexible hoses with fuel pipe connection for suction and return lines. Fine filter (14) with water separator.

**COOLING SYSTEM** – Thermostat-controlled fresh-water cooling with heat exchanger (1) and circulation pump. Extra expansion tank for separate mounting is supplied. Sea-water pump with neoprene rubber impeller (2). Cleanable sea-water filter (15).

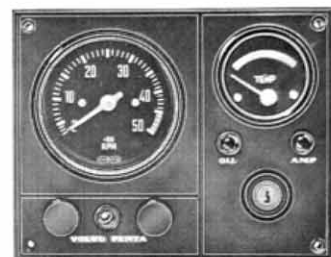
**LUBRICATING SYSTEM** – Pressure lubricating system with full-flow lubricating oil filter of the spin-on type (4). Cleanable, tubular-type oil cooler (16). Sealed crankcase ventilation.

**INTAKE SYSTEM** – Intake silencer (11) with filter.

**EXHAUST SYSTEM** – Sea-water cooled exhaust manifold and exhaust manifold elbow of cast iron (10).

**ELECTRICAL SYSTEM** – Corrosionsproof 12 V electrical system, with complete instrument panel. Main fusing with built-in spare fuse is mounted on engine. Brushless alternator with built-in transistor regulator, 35 A, 420 W (13). Starter motor output 1.3 kW (1.8 h.p.) (5). Automatic alarm for oil pressure and water temperature.

The instrument panel is provided with a key switch, rev counter, temperature gauge, warning lamps for battery charging, oil pressure and for connection of glow plugs, switch for instrument panel light and one extra switch. Cable harness, 7 m (23 ft.) in length, with plug-in contact already fitted.



**ENGINE MOUNTING** – The engine is supplied with engine brackets for fixed mounting (6).

**POWER TRANSMISSION** – Mechanical reverse gear RB type or Borg Warner hydraulic type. The engine is supplied with reverse gear as follows:

- Alt. 1 Reverse gear type RB red. ratio 1.91:1, L-H prop. (8)
- 2 Reverse gear type BW red. ratio 2:1, R-H prop. (7)
- 3 Reverse gear type BW red. ratio 2:1, L-H prop. (7)
- 4 Reverse gear type BW red. ratio 2.9:1, L-H prop. (7)

Propeller shaft flange for 30 mm propeller shaft – red. ratios 1.91:1 and 2:1

Propeller shaft flange for 35 mm propeller shaft – red. ratio 2.9:1

## EXTRA EQUIPMENT

### FUEL SYSTEM

Water-separating filter with or without flexible hoses  
 Fuel line kit with copper piping and installation parts

### COOLING SYSTEM

Cooling water intake complete with cock and hose

### EXHAUST SYSTEM

Exhaust manifold flange  
 Hull through fitting  
 Exhaust rubber hose  
 Exhaust boot

### ELECTRICAL SYSTEM

Charging distributor for charging 2-battery system  
 Instrument panel for extra instrument  
 Master switch  
 Cable harness extension for instrument panel

### ENGINE MOUNTING

Flexible engine mounting

### POWER TRANSMISSION

Extra belt pulley

### BOAT ACCESSORIES

Electrically operated bilge pump  
 Original paint  
 Oils  
 Electro-mechanical trim tabs

### CONTROLS AND CONTROL SYSTEM

VP single-control lever for both speed and forward-reverse operation, top-mounted or side-mounted. Single or twin installation.  
 Neutral position switch — automatic safety interlock, VP controls  
 Two levers control — side mounted  
 Control cables  
 Steering gears  
 Steering wheels  
 Steering cables  
 Ball joint and fork kit for steering cable

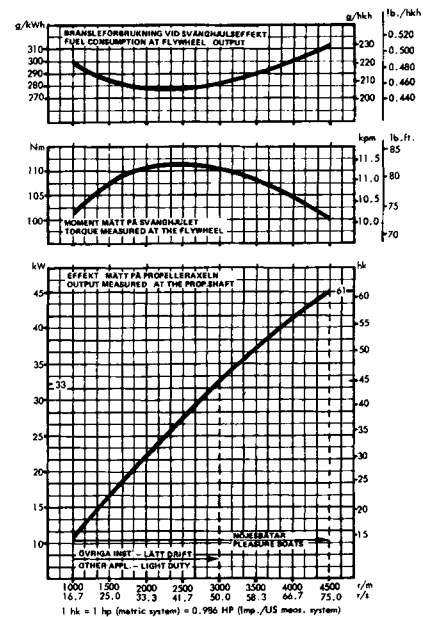
### PROPELLER EQUIPMENT

Flexible coupling  
 Clamp coupling  
 Propeller shaft  
 Propeller shaft sleeves  
 Propellers

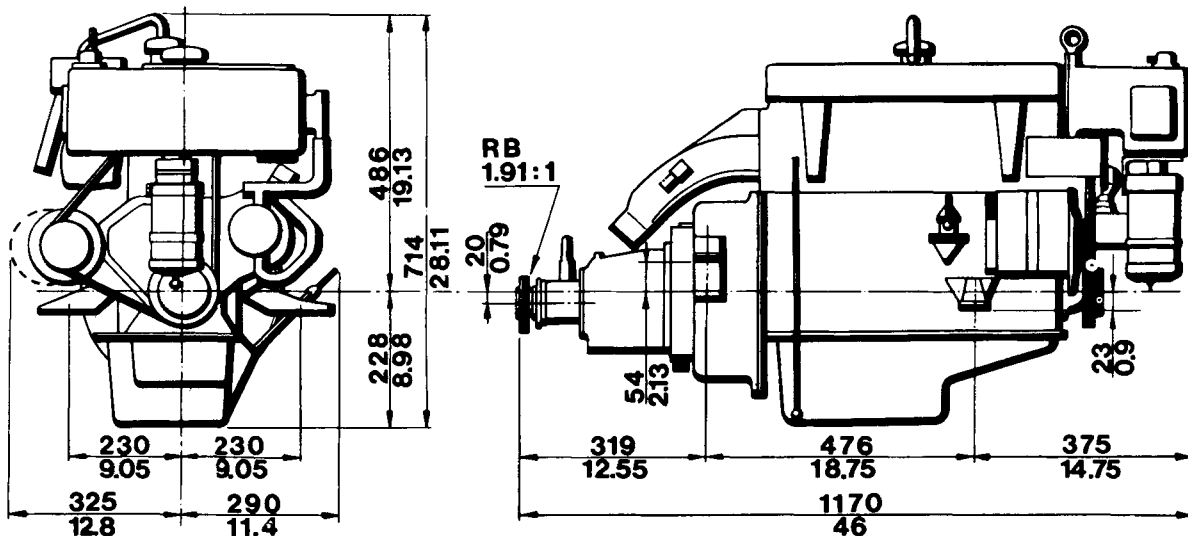
## DATA

Type of operation	4-stroke diesel engine with swirl chambers
Designation	MD21A
Propeller shaft output <sup>1)</sup>	45 kW at 75 r/s (61 hp at 4500 rpm) 33 kW at 50 r/s (45 hp at 3000 rpm)
Number of cylinders	4 in-line
Capacity, dm <sup>3</sup> (in <sup>3</sup> )	2.112 (129)
Bore/stroke, mm (in)	90.0/83.0 (3.54/3.27)
Valves	overhead
Weight, engine with RB rev. gear, approx. kg (lb)	290 (640)

1) The diagram indicates the propeller shaft output for a run-in engine with mechanical reverse gear according to DIN 6270 Leistung B. The engine flywheel output is approx. 5% higher. To calculate the propeller shaft output with a hydraulic reverse gear type BW, reduce the indicated output by 17% at maximum speed. The engine is delivered to be used for pleasure boats adjusted to 75 r/s (4500 rpm). For other installations — light operation, the engine is adjusted to 50 r/s (3000 rpm) according to the adjacent curve.



## DIMENSION DRAWING



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We reserve the right to carry out modifications

