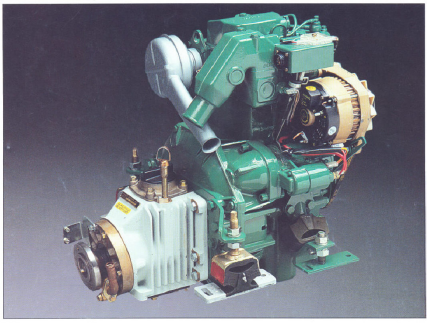
Ref. no. 9110
Eng.

VOLVO PENTA

2001



1-cylinder, 4-stroke, direct injected marine diesel with reverse gear, V-drive or S-drive. Propeller shaft output, – 6,6 kW (9 hp) at 3200 r/min.

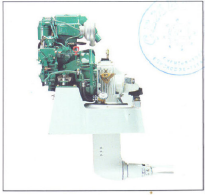
2001 is the designation of the 1-cylinder variants of Volvo Penta's 2000 Series. Shorter and narrower than previously available. Designed and manufactured for marine use ensuring long service life and high standards of comfort.

Direct injected, easily started and fuel efficient. With electric and manual starting as standard. Large flywheel, decompression lever and fuel enrichment device for easy starting. A 12-volt marine electrical system with a 14V/50A alternator ensure adequate charging. The engine is carried in vibration-damping rubber mounts.

Cast-iron block and cylinder head with sacrificial anode for additional protection.

All essential service points are easily accessible at the front of the engine: Oil filler cap, oil filter, fuel filter and sea waterpump impeller. The drive belt adjustment, and bleeding of the fuel system are also all done from the front of the engine.

There are three transmission alternatives for the 2000 Series engines, all with an easily operated cone clutch with an anti-slip feature. The R-version is angled down at 7° to facilitate installation and save space. In the V-version (output shaft angled at 20°), the transmission comes complete with bevel gears and a through-running



shaft feature for simple alignment. Last but by no means least, the S-version with its very compact and extremely quiet-running concept.

2000 DIESEL SERIES

ELECTRICAL SYSTEM

12 V marine electrical system complete with instrumentation. Alternator (17) with charging capacity 14 V/50 A designed for marine operation. Alternator prepared for installation of double diode unit which automatically distributes the charging current to two independent battery banks.

STARTING SYSTEM

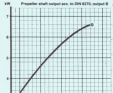
Starter motor (18) output 0,8 kW (1 hp). Manual back-up starting (19) for extra safety with starting handle and decompression lever (20) for easier operation.

INSTRUMENT PANEL

Complete with key switch. Control displays for high engine temperature, low oil pressure and low charge. Acoustic alarm for low oil pressure and high engine temperature. Test button for alarm functions. Switch operated instrument lighting. Extension cable 3 m with plug-in connector. Prewired to accept tachometer (extra accessory).

TOOL KIT

Adequate for minor repairs.

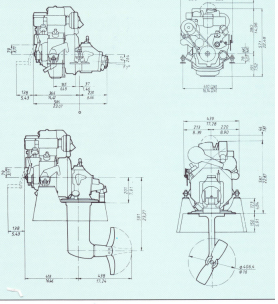


The diagram shows propeller shaft output of a run-in engine of R, V and S types according to DIN 6270 B.

Data

Configuration	4-stroke diesel engine with direct injection
Propeller shaft output*	
2001 R.V.S.	6,6 kW (9 hp) at 3200 r/min
No. of cylinders	1
Bore/Stroke mm (in)	79/87 (3.1/3.4)
Displacement, dm³ (cu. in)	0.43 (26)
Valve mechanism	Overhead
2001 R.V. (model MS2B) ratio	2.4:1 or 3.0:1
2001 S (model 120B) ratio	2.2:1
Weight 2001 R approx kg (lbs)	112 (247)
Weight 2001 V approx kg (lbs)	118 (260)
Weight 2001 S approx kg (lbs)	126 (278)

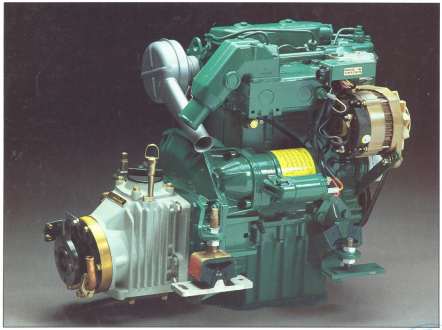
* Acc. to DIN 6270 B.



Ref. No. 7787483-2 Eng.

VOLVO PENTA

2002



2-cylinder, 4-stroke, direct injected marine diesel with reverse gear, V-drive or S-drive. Propeller shaft output, – 13 kW (18 hp) at 3200 r/min.

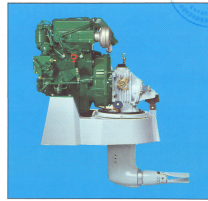
2002 is the designation of the 2-cylinder variants of Volvo Penta's 2000 Series. Shorter, narrower, and lower and therefore significantly lighter than previously available. Designed and manufactured for marine use ensuring long service life and high standards of comfort.

Direct injected, easily started and fuel efficient. A 12-volt marine electrical system with a 14V/50A alternator ensure adequate charging. The engine is carried in vibration-damping rubber mounts.

Cast-iron block and cylinder head with sacrificial anode for additional protection.

All essential service points are easily accessible at the front of the engine: Oil dipstick, oil filler cap, oil filter, fuel filter and sea waterpump impeller. The drive belt adjustment, bleeding of the fuel system and filling of oil are also all done from the front of the engine.

There are three transmission alternatives for the 2000 Series engines, all with an easily operated cone clutch with an anti-slip feature. The R-version is angled down at 7° to facilitate installation and save space. In the V-version (output shaft angled at 20°), the transmission comes complete with bevel gears and through-running shaft feature for simple alignment. Last but by no means least, the



S-version with its very compact and extremely quiet-running concept.

ELECTRICAL SYSTEM

12 V marine electrical system complete with instrumentation. Alternator (17) with charging capacity 14 V/50 A designed for marine operation. Alternator prepared for installation of double diode unit which automatically distributes the charging current to two independent battery banks.

STARTING SYSTEM

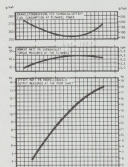
Starter motor (18) output 1.4 kW (1,9 hp).

INSTRUMENT PANEL

Complete with key switch. Tachometer, control displays for high engine temperature, low oil pressure and low charge. Acoustic alarm for low oil pressure and high engine temperature. Test button for alarm functions. Switch operated instrument lighting. Extension scable 3 m with plug-in connector.

TOOL KIT

Adequate for minor repairs.

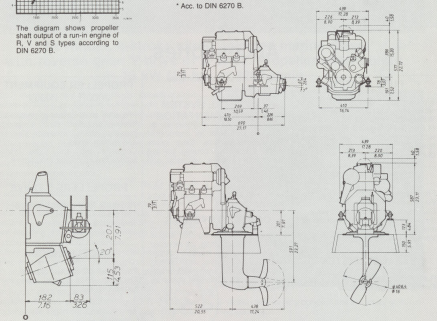


The diagram shows propeller shaft output of a run-in engine of R, V and S types according to DIN 6270 B.

Data

Configuration	4-stroke diesel engine with direct injection
Propeller shaft output*	
2002 R.V.S.	13 kW (18 hp) at 3200 r/min
No. of cylinders	2
Bore/Stroke mm (in)	79/67 (3.1/3.4)
Displacement, dm^3 (cu. in)	0.85 (52)
Valve mechanism	Overhead
2002 R.V. (model MS2B) ratio	2.4:1 or 3.0:1
2002 S (model 120B) ratio	2.2:1
Weight 2002 R approx kg (lbs)	139 (306)
Weight 2002 V approx kg (lbs)	145 (320)
Weight 2002 S approx kg (lbs)	153 (373)

* Acc. to DIN 6270 B.



Ref. No. 7787542-5 Eng.

2003

3-cylinder, 4-stroke, direct-injected marine diesel with reverse gear, V-drive or S-drive.

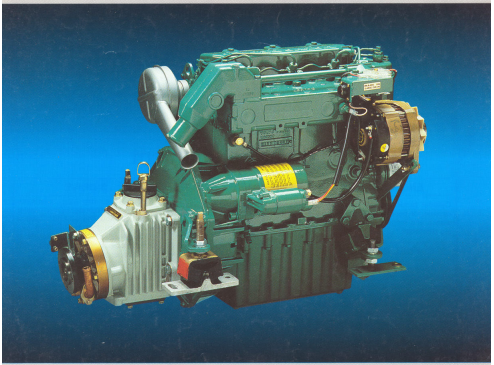
2003 is the designation of the 3-cylinder variants of Volvo Penta's 2000 Series. Shorter, narrower, and lower and therefore significantly lighter than the previously available model. Designed and manufactured for marine use ensuring long service life and high standards of comfort.

Direct-injected, easily started and fuel efficient. With electric starting as standard. Large flywheel, decompression lever and fuel enrichment device for easy starting. A 12-volt marine electrical system with 14V/50A alternator ensures adequate charging. The engine is carried in vibration-damping rubber mounts.

Castiron block and cylinder head with sacrificial anode for additional protection.

All essential service points are easily accessible at the front of the engine: Oil dipstick, oil filler cap, oil filter, fuel filter and sea water pump impeller. The drive belt adjustment, bleeding of the fuel system and filling of oil are also all done from the front of the engine.

There are three transmission alternatives for the 2000 Series engines, all with an easily operated cone clutch with an anti-slip feature. The R-version is angled down at 7° to facilitate installation and save space. In the V-version (output shaft angled at 20°), the transmisson comes complete with bevel gears and a through-running shaft feature for simple alignment. Last but by no means least, the S-version with its very compact and extremely quiet-running concept.



VOLVO PENTA

sive movement in case of running aground.

ELECTRICAL SYSTEM

12 V marine electrical system complete with instrumentation. Alternator (17) with charging capacity 14 V/50 A designed for marine operation. Alternator prepared for installation of double diode unit which automatically distributes the charging current to two independent battery banks.

STARTING SYSTEM

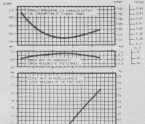
Starter motor (18) output 1.4 kW (1.9 hp).

INSTRUMENT PANEL

Complete with key switch. Tachometer, control displays for high engine temperature, low oil pressure and low charge. Acoustic alarm for low oil pressure and high engine temperature. Test button for alarm functions. Switch operated instrument lighting. Extension cable 3 m with plug-in connector.

TOOL KIT

Adequate for minor repairs.

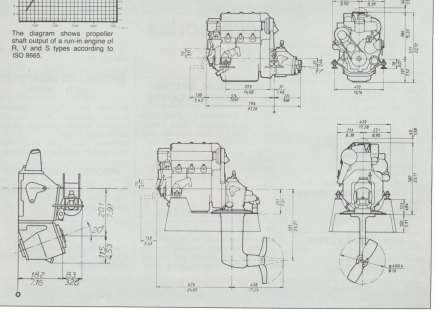


The diagram shows propeller shaft output of a run-in engine of R, V and S types according to ISO 8665.

Data

Configuration	4-stroke diesel engine with direct injection
Propeller shaft output*	
2003 R.V.S.	20.5 kW (28 hp) at 3200 r/min
No. of cylinders	3
Bore/Stroke mm (in)	79/87 (3.1/3.4)
Displacement, dm³ (cu. in)	1.28 (78)
Valve mechanism	Overhead
2003 R.V. (model MS2B) ratio	2.4:1 or 3.0:1
2003 S (model 120B) ratio	2.2:1
Weight 2003 R approx kg (lbs)	159 (351)
Weight 2003 V approx kg (lbs)	165 (364)
Weight 2003 S approx kg (lbs)	173 (381)

* Acc. to ISO 8665.

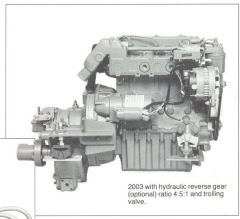


Volvo Penta 2002/2003
Work Boat Specification

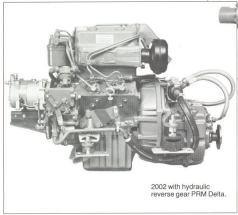
Data 2002/2003

Engine type	4-stroke diesel with direct injection
Propeller shaft output*	
2002	13 kW (18 hp) at 3200 r/min
2003	20,5 kW (28 hp) at 3200 r/min
Number of cylinders 2002	2
Number of cylinders 2003	3
Bore/stroke 2002, 2003	79/87
Displacement, dm^3 2002	0.850
Displacement, dm^3 2003	1.280
Valve layout	Overhead
Reverse gear (hydraulic) ratio	2.1:1 or 2.8:1
Reverse gear (hydraulic with trolling valve) ratio	3.8:1 or 4.5:1
Weight incl. reverse gear 2002	146 kg
Weight incl. reverse gear 2003	166 kg

* According to ISO 3046



2003 with hydraulic reverse gear (optional) ratio 4.5:1 and trolling valve.



2002 with hydraulic reverse gear PRM Delta.

2002/2003 work boat engines are designed and built for use in arduous conditions. Uncomplicated and durable, they can be relied on even in the most difficult conditions.

Dry cylinder liners and piston ring carriers are standard features. Providing extra durability and long service life.

PRM Delta reverse gear with either of two ratios. Other Volvo Penta approved reverse/reduction gears can also be fitted. The engines are supplied without the reverse gear.

A 12-volt electrical system is standard. Instrument panel with tachometer and extension cable also included.

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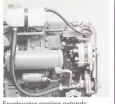
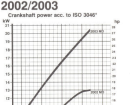
Volvo Penta 2002/2003
Work Boat Specification

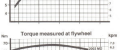
Power take-off mounting at front of engine for connection of hydraulic pump, compressor, etc. Max. power take-off 8.5 hp at 3,200 r/min. (Engine shown with fitted cooling compressor.)



Freshwater cooling extends engine service life, reduces the risk of corrosion and also provides for a hot water outlet.

Instrument panel with tachometer and alarm display for oil pressure, coolant temperature, and charging.





MD = Medium duty

* Crankshaft ISO 3046 standard fuel stop power. Usable power will be reduced by transmission or gear box losses.

** ISO-3046 specific fuel consumption referred to 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 wherein 1 kPa vapour pressure but the difference is negligible in most cases.

Standard equipment 2002/2003

Engine block and cylinder head of cast iron. Piston ring carriers and dry cylinder liners. Heavy-duty engine mountings. 3-bearing crankshaft on 2002, 4-bearing crankshaft on 2003. Flywheel casing according to SAE5.

12 volt electrical system with 14 V/50 A alternator. Instrument panel with tachometer and alarm display. Extention cable 3 m. Starter motor 12 V. Manual starting arrangements incl. starting crank and decompression lever.

Thermostatically controlled raw-water cooling of cylinder head. Corrosion protection by sacrificial zinc ~~de.

Pressure lubrication system with easily replaceable oil filter mounted on front of engine. Closed circuit crank case ventilation.

Front rubber mountings (rear mountings included in reverse gear add-on unit).

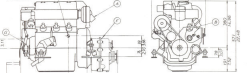
Equipment

Reverse gear PRM Delta, ratio 2.1:1 or 2.85:1.
Add-on kit for Nico reverse gear with trolling valve.
Universal front-mounting for e.g. hydraulic pump or bilge pump.
Keel cooling fittings for engine.
Freshwater cooling incl. expansion tank.
Dry exhaust riser.

For more information, please get in touch with your Volvo Penta dealer.

2002

2003



All specifications are subject to change without notice.

VOLVO PENTA
S-405 08 Göteborg

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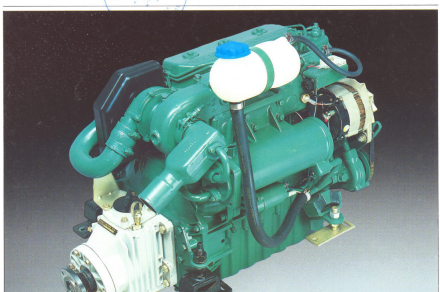
2003 TURBO



Three-cylinder, four-stroke, direct injected marine diesel with reverse gear or V-drive. Propeller shaft output for pleasure craft duty 32 kW (43 hp) at 3200 rpm.

The 2003 Turbo is the three-cylinder member of Volvo Penta's 2000 series – short, fuel-efficient, and powerful. Thanks to Turbo technology.

Direct injected, easily started, and reliable. A 12-volt marine electrical system with a 14 V/50 A alternator ensures adequate charging. The engine is supported in vibration-damping rubber mounts.

The 2003 Turbo engine can be equipped with two alternative transmissions, both with an easily operated cone clutch with anti-slip feature. The R version is angled down at 7 degrees to facilitate installation and save space. The V version is angled down at 20 degrees for the same purpose. The transmission comes complete with a bevel gear with through shaft and clutch sleeve.

The cast-iron engine block and cylinder head, the closed circuit crankcase ventilation, and the thermostat controlled fresh water cooling system with tubular heat-exchanger contribute to long life and comfort.

The flywheel casing, oil sump, valve cover and transmission case are of aluminium.

All essential servicing points are accessible from the front of the engine: dipstick, oil filler, oil filter, fuel filter, and impeller. V-belt adjustment and oil filling are also done from the front. Provision for driving refrigeration compressor, extra alternator, bilge pump, etc, can be fitted on the front of the engine.

STARTING SYSTEM

Starting motor output 1.4 kW.

INSTRUMENT PANEL

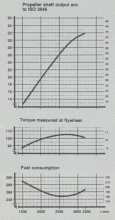
Complete with key switch, tachometer, warning indicators for high engine temperature, low oil pressure and low battery. Acoustic warning signal for oil pressure and engine temperature, test button for alarm functions, and switch operated panel lighting. Five metre extension cable with plug-in connector.

The engine may alternatively be ordered with the "De Luxe" instrument panel. This incorporates all the functions of the standard model plus

water temperature gauge, oil pressure gauge and voltmeter.

TOOL KIT

Adequate for minor repairs.

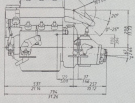


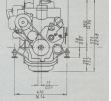
The curves show propeller shaft output of run-in engines of R and V types according to ISO 3046.

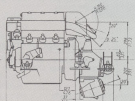
Data

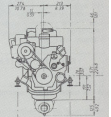
Configuration	4-stroke diesel engine with direct injection
Propeller shaft output* for pleasure craft duty	
2003 Turbo R/V	32 kW (43 hp) at 3200 rpm
No. of cylinders	3
Bore/stroke mm (in)	79/87 (3.1/3.4)
Displacement dm³ (cu.in)	1.280 (78)
Valve mechanism	Overhead
2003 R/V (model MS2B) ratio	2.4:1 or 3.0:1
Weight, 2003 Turbo R, approx. kg (lbs)	176 (388)
Weight, 2003 Turbo V, approx. kg (lbs)	182 (401)

*Acc. to ISO 3046.





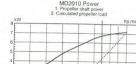


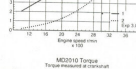


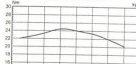
General data

	MD2010
Type designation	
Crankshaft power [1] kW (hp)	7.5 (10)
Prop shaft power [2] [3] kW (hp)	7.1 (10)
Max engine speed, r/min	3200–3600
Displacement, litres (in³)	0.45 (27.5)
No of cylinders	2
Bore, mm (in)	67 (2.64)
Stroke, mm (in)	64 (2.52)
Compression ratio	23.5:1
Dry weight with MS2A/MS2L kg (lb)	121 (267)
Dry weight with sail drive 120S kg (lb)	129 (284)

1) Crankshaft power in accordance with ISO 8665 or SAE J 1228
2) Propshaft power in accordance with ISO 8665 or the basically compatible standards SAE J 1228 and ICOMIA 28-83
3) With MS2







Engine equipped with

Freshwater cooling
Engine brackets in front
Seawater-cooled exhaust elbow
Seawater pump with rubber impeller
12 V electrical system
Alternator 14 V/60 A
Flexible flywheel coupling
Electrical insulation to prevent galvanic corrosion

Technical description

Engine and block

- Engine block and cylinder head manufactured from high grade cast iron. Crankcase features a rigid tunnel block design.
- Chrome molybdenum forged crankshaft, statically and dynamically balanced with integral counterweights.
- Pistons are cast from high silicon aluminum, are heat treated and fitted with two cast iron, chromium faced compression rings and a single oil ring.
- Replaceable, hardened valve seats
- Flexible flywheel coupling

Fuel system

- Flange mounted, cam driven in-line injection pump
- Feed pump with hand primer
- Spin-on fine fuel filter

Cooling system

- Thermostatically controlled freshwater cooling system
- Tubular heat exchanger with integral expansion tank
- Cooling system prepared for fitting of hot water outlet
- Easily accessible sea water pump and impeller

Exhaust system

- Freshwater cooled exhaust manifold and seawater cooled exhaust elbow

Lubrication system

- Spin-on fullflow oil filter
- Separate pipe for pumped oil drainage
- Closed circuit crankcase ventilation

Electrical system

- 12 V, corrosion protected electrical system
- 14 V/60 A marine alternator
- Charging regulator with electronic sensor for voltage drop compensation
- Glow plugs for excellent cold starting
- Electric starter motor (0.7 kW output)
- Extension cable harness with plug-in connection available in 3, 5 or 7 m lengths

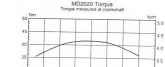
General data

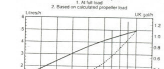
Type designation	MD2020
Crankshaft power [1] kW (hp)	13.8 (19)
Prop shaft power [2] [3] kW (hp)	13.3 (18)
Max engine speed, r/min	3200–3600
Displacement, litres (in³)	0.68 (41.3)
No of cylinders	3
Bore, mm (in)	67 (2.64)
Stroke, mm (in)	64 (2.52)
Compression ratio	24:1
Dry weight with MS2A/MS2L kg (lb)	139 (306)
Dry weight with sail drive 120S kg (lb)	147 (324)

1) Crankshaft power in accordance with ISO 8665 or SAE J 1228

2) Propshaft power in accordance with ISO 8665 or the basically compatible standards SAE J 1228 and ICOMIA 28-83

3) With MS2





Technical description

Engine and block

- Engine block and cylinder head manufactured from high grade cast iron. Crankcase features a rigid tunnel block design.
- Chrome molybdenum forged crankshaft, statically and dynamically balanced with integral counterweights.
- Pistons are cast from high silicon aluminum, are heat treated and fitted with two cast iron, chromium faced compression rings and a single oil ring.
- Replaceable, hardened valve seats
- Flexible flywheel coupling

Fuel system

- Flange mounted, cam driven in-line injection pump
- Feed pump with hand primer
- Spin-on fine fuel filter
- Freshwater cooling
- Engine brackets in front
- Seawater-cooled exhaust elbow
- Seawater pump with rubber impeller
- 12 V electrical system
- Alternator 14 V/60 A
- Flexible flywheel coupling
- Electrical insulation to prevent galvanic corrosion

Cooling system

- Thermostatically controlled freshwater cooling system
- Tubular heat exchanger with integral expansion tank
- Cooling system prepared for fitting of hot water outlet
- Easily accessible sea water pump and impeller

Exhaust system

- Freshwater cooled exhaust manifold and seawater cooled exhaust elbow

Lubrication system

- Spin-on fullflow oil filter
- Separate pipe for pumped oil drainage
- Closed circuit crankcase ventilation

Electrical system

- 12 V, corrosion protected electrical system
- 14 V/60 A marine alternator
- Charging regulator with electronic sensor for voltage drop compensation
- Glow plugs for excellent cold starting
- Electric starter motor (0.7 kW output)
- Extension cable harness with plug-in connection available in 3, 5 or 7 m lengths

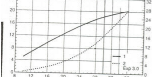
Volvo-Penta MD 20 30

General data

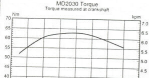
	MD2030
Type designation	
Crankshaft power [1] kW (hp)	20.9 (29)
Prop shaft power [2] [3] kW (hp)	20.2 (28)
Max engine speed, r/min	3200–3600
Displacement, litres (in³)	0.59 (58.2)
No of cylinders	3
Bore, mm (in)	75 (2.95)
Stroke, mm (in)	72 (2.83)
Compression ratio	23:1
Dry weight with MS2A/MS2L kg (lb)	152 (335)
Dry weight with sail drive 120S kg (lb)	160 (352)

1) Crankshaft power in accordance with ISO 8665 or SAE J 1228
2) Propshaft power in accordance with ISO 8665 or the basically compatible standards SAE J 1228 and ICOMIA 28-83
3) With MS2

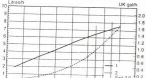
MD2030 Power
1. Propeller shaft power
2. Calculated propeller load



MD2030 Torque
Torque measured at crankshaft



MD2030 Fuel consumption
1. At full load
2. Based on calculated propeller load



Engine equipped with

Freshwater cooling
Engine brackets in front
Seawater-cooled exhaust elbow
Seawater pump with rubber impeller
12 V electrical system
Alternator 14 V/60 A
Flexible flywheel coupling
Electrical insulation to prevent galvanic corrosion

Technical description

Engine and block

- Engine block and cylinder head manufactured from high grade cast iron. Crankcase features a rigid tunnel block design.
- Chrome molybdenum forged crankshaft, statically and dynamically balanced with integral counterweights.
- Pistons are cast from high silicon aluminium, are heat treated and fitted with two cast iron, chromium faced compression rings and a single oil ring.
- Replaceable, hardened valve seats
- Flexible flywheel coupling

Fuel system

- Flange mounted, cam driven in-line injection pump
- Feed pump with hand primer
- Spin-on fine fuel filter

Cooling system

- Thermostatically controlled freshwater cooling system
- Tubular heat exchanger with integral expansion tank
- Cooling system prepared for fitting of hot water outlet
- Easily accessible sea water pump and impeller

Exhaust system

- Freshwater cooled exhaust manifold and seawater cooled exhaust elbow

Lubrication system

- Spin-on fullflow oil filter
- Separate pipe for pumped oil drainage
- Closed circuit crankcase ventilation

Electrical system

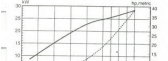
- 12 V, corrosion protected electrical system
- 14 V/60 A marine alternator
- Charging regulator with electronic sensor for voltage drop compensation
- Glow plugs for excellent cold starting
- Electric starter motor (1.2 kW output)
- Extension cable harness with plug-in connection available in 3, 5 or 7 m lengths

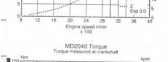
29 bhp 3600 rpm

General data

	MD2040
Type designation	
Crankshaft power [1] kW (hp)	29.1 (40)
Prop shaft power [2] [3] kW (hp)	28.3 (38)
Max engine speed, r/min	3200–3900
Displacement, litres (in³)	1.5 (91.3)
No of cylinders	3
Bore, mm (in)	84 (3.31)
Stroke, mm (in)	90 (3.54)
Compression ratio	22.5:1
Dry weight with MS2A/MS2L kg (lb)	202 (445)
Dry weight with sail drive 120S kg (lb)	210 (463)

1) Crankshaft power in accordance with ISO 8665 or SAE J 1228
2) Propshaft power in accordance with ISO 8665 or the basically compatible standards SAE J 1228 and ICOMIA 28-83
3) With MS2





Engine equipped with

Cooling system

- Thermostatically controlled freshwater cooling system
- Tubular heat exchanger with integral expansion tank
- Cooling system prepared for fitting of hot water outlet
- Easily accessible sea water pump and impeller

Exhaust system

- Freshwater cooled exhaust manifold and seawater cooled exhaust elbow

Lubrication system

- Spin-on fullflow oil filter
- Separate pipe for pumped oil drainage
- Closed circuit crankcase ventilation

Electrical system

- 12 V, corrosion protected electrical system
- 14 V/60 A marine alternator
- Charging regulator with electronic sensor for voltage drop compensation
- Glow plugs for excellent cold starting
- Electric starter motor (2.0 kW output)
- Extension cable harness with plug-in connection available in 3, 5 or 7 m lengths

Freshwater cooling
Engine brackets in front
Seawater-cooled exhaust elbow
Seawater pump with rubber impeller
12 V electrical system
Alternator 14 V/60 A
Flexible flywheel coupling
Electrical insulation to prevent galvanic corrosion

Technical description

Engine and block

- Engine block and cylinder head manufactured from high grade cast iron. Crankcase features a rigid tunnel block design.
- Chrome molybdenum forged crankshaft, statically and dynamically balanced with integral counterweights.
- Pistons are cast from high silicon aluminium, are heat treated and fitted with two cast iron, chromium faced compression rings and a single oil ring.
- Replaceable, hardened valve seats
- Flexible flywheel coupling

Fuel system

- Flange mounted, cam driven in-line injection pump
- Feed pump with hand primer
- Spin-on fine fuel filter