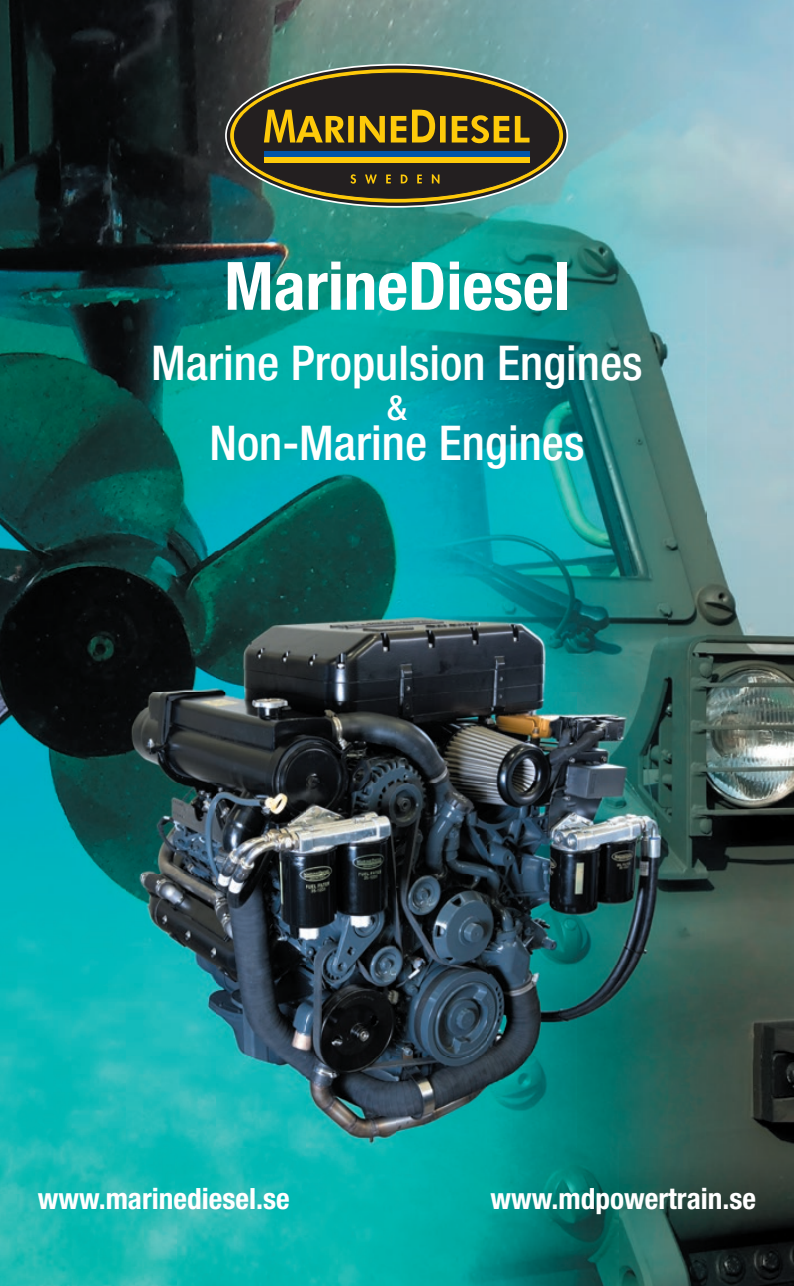
MARINEDIESEL
SWEDEN

MarineDiesel

Marine Propulsion Engines
&
Non-Marine Engines



www.marinediesel.se

www.mdpowertrain.se

MDPT Group

1992

MD GROUP
SWEDEN

Company registered

1997

Start of remanufacturing plant of V8 gasoline and diesel engines.

1998

Moved in to new facilities at Metallgatan 6 in Angelholm, Sweden.

1999

Agreement with AM General Corporation for supply on new 6.5L diesel engines for marine production.

2001

The 6.5L marine engine is introduced as the world's first super-charger 4-stroke production diesel engine.

2003

MD starts production of marine engines in the US.

2004

Start supply of engine packages with sterndrives.

2006

Start of development of the new 6.6L VGT series.

2008

MD Engineering is formed for external engineering and R&D consulting work. www.*marinedieselengineering.com*

More than 20 years of history

2009

Production start of VGT series engines.

2010

MD buys shares in MDS Marine Ltd.
www.mdsmarine.co.uk

2011

MD Powertrain is formed for the industrial market.
www.mdpt.se

2011

Agreement for MD to supply SOLAS engines to Bukh AS in Denmark.

2012

MD buys shares in SafeAt Sea, manufacturer of the Rescue-runner.
www.safeatsea.se

2012

CIMCO Marinediesel AB JV is formed.
www.diesel-outboard.com

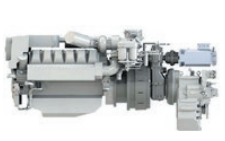
2017

CIMCO/OXE Nasdaq listing.

2019

New facility in Angelholm, Sweden.

2022



Development of hybride Marine System.

2023

Range of small diesel outboard introduction.

2023

Extended renge 2L - 13L.

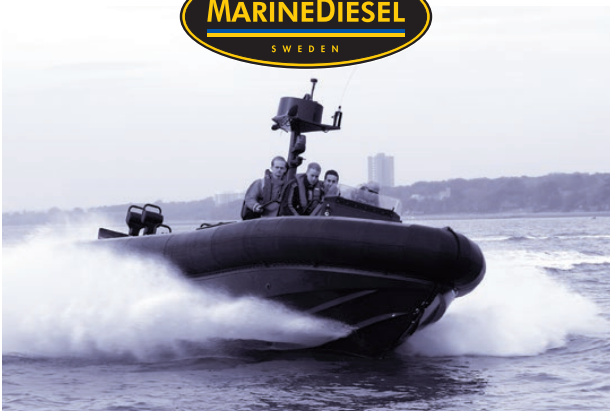
MD Powertrain AB

MAIN BUSINESS

MD Powertrain can supply a wide range of engines and transmissions for a variety of applications. Apart from supply of products MDPT can also assist with:

- Application engineering
- Mechanical engineering and design
- Certifications
- On-site training
- Setting up support organizations
- Factory replacement programs for engines and transmissions
- Field support work
- Custom calibration work

For us it's very important to assist clients through the design and validation phase of programs and also through the life of the platform in order to maximize performance and minimize support burden over time. With our qualified and experienced team we are able to support any platforms being on-road, industrial or specialized applications.



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MD Engineering AB

MAIN BUSINESS

MD Engineering specializes in power train related research, development and testing

- Reasearch & Development
- Application Engineering
- Project Management
- Protyping to Production
- Design, Analysis and Simulations
- ECU and TCU calibration
- Engine optimization
- Custom adaptation
- Tooling design
- Engine Development
- Field support Worldwide
- Know-How training
- Automotive, Industrial, non-road and specialty applications
- Emissions development, testing and certification
- Durability testing
- Classification Society certifications
- Technical manuals and documentation Flow/swirl testing

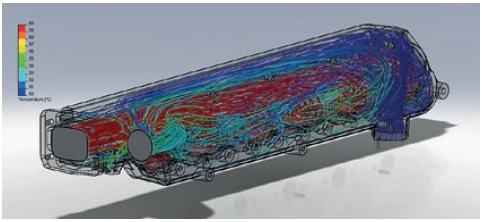
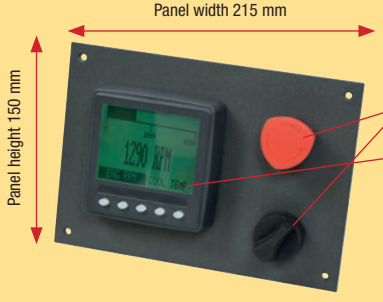


Table of Content

Controls & Displays

- CAN-based display with fully modular design
- Easy-to-use configuration software Rugged/Reliable design
- Configurable control buttons
- Bonded LCD sreen, viewable in direct sunlight
- Customized bezel, buttons, i/o interface and more
- Multiple languages

All displays are compatible with analogue J1939 and NMEA2000



Compatible with both ECU (J1939) and non-ECU engines

Keyswitch

Emergency Stop button

Audiable alarm with mute/reset

Power View® PV101 Diagnostic Display

Marine Propulsion Engines

Engine Reference Table

ENGINE MODEL	Displ. L	Con-figu-ration	Bore/ stroke mm	Max Power kW/HP	at speed rpm.	Max Torque Nm	at speed rpm.	Weight dry kg	Min. fuel consumpt. g/kWh	Exhaust emissions
MD200	2.2	In-line 4	85/96	147 (200)	3800	431	2000	280	40 L/h.	EPA Tier III* IMO RCD 2003/44
MD270	2.0	V6	84/89	199 (270)	3800	500	3800	334	53 L/h.	EPA Tier III* IMO RCD 2003/44
VGT300	6.6	V8	103/98	223 (300)	3200	980	1400	510	220	EPA Tier III* IMO RCD 2003/44
VGT350	6.6	V8	103/98	261 (350)	3200	720	1400	500	215	EPA Tier III* IMO RCD 2003/44
VGT400	6.6	V8	103/98	299 (400)	3200	820	1400	500	215	EPA Tier III* IMO RCD 2003/44
VGT450	6.6	V8	103/98	336 (450)	3200	980	1400	510	220	EPA Tier III* IMO RCD 2003/44
VGT500	6.6	V8	103/98	373 (500)	3200	1130	1600	510	230	EPA Tier III* IMO RCD 2003/44
VGT550	6.6	V8	103/98	410 (550)	3200	1130	1600	530	230	EPA Tier III* IMO RCD 2003/44
VGT600	6.6	V8	103/98	447 (600)	3800	1130	1600	530	230	EPA Tier III* IMO RCD 2003/44
MD700	13	In-line 6	130/160	515 (700)	2300	2420	1200	1320	143 L/h.	EPA Tier III* IMO RCD 2003/44

*** Tier III Commercial E3**

Type approvals: Lloyds, RMR, RRR, CCS (2015)

Marine Emission

Marinediesel Sweden AB has always been at the front of current and future emissions regulations. All engines are designed with environmental concerns in mind while maintaining simple mechanical control and serviceability.

2013/53/EC

In effect in Europe from January 17th 2014. Only applies to Pleasure craft marine propulsion engines.

IMO

The international Maritime Organisation has issued regulation 13 to Annex VI of Marpol 73/78 which entered into effect on January 1, 2000 for diesel engines above 130 KW (175hp) installed on a ship. Tier 2 entered into effect in 2011 and Tier 3 entered into effect 2016 requiring after treatment of exhaust.

EPA

On January 1, 2004, emissions regulations mandated by the EPA entered into effect for new commercial marine diesel engines installed on a vessels flagged or registered in the United States. The EPA has set forth two Tiers of standards with a phased implementation based on per cylinder displacement. Tier 1 emission standards are set at the same level as Annex VI of MARPOL 73/78 (IMO), and regulate levels of Nitrogen Oxides (NOx). Tier 1 applies to all commercial propulsion and auxiliary diesel engines with a displacement above 2.5 liters per cylinder.

The more stringent Tier 2 standards entered into effect on January 1, 2004 for marine diesel engines with a displacement of 0.9 up to 2.5 liters per cylinder. Tier 2 regulates not only NOx, but also Hydrocarbons (HC), Carbon Monoxide (CO), and Particulate Matter (PM). Engines with a displacement of less than 0.9 liters per cylinder will be required to comply with Tier 2 standards beginning January 1, 2005 and engines at or above 2.5 liters per cylinder will be required to comply with Tier 2 standards beginning January 1, 2007.

Tier 3 entered into effect 2012 further reducing NOx+HC levels doen to 5.8 and particulates down to 0.15.

Not all regulations apply to every engine, rating or application. Other local certifications may be available. Consult your local Marinediesel representative for more information on current emissions regulations in your specific area.

Emission & Ratings

Ratings

Ratings are based on ISO 8665 conditions of 100 kPa (29.612 in Hg) and 25°C (77°F) and 30% relative humidity. Rated power represents the net power available at crankshaft.

Fuel consumption has a tolerance of +7% and is based on fuel of 35° API gravity at 16°C (60°F) having an LHV of 42,780 KJ/KG (18,390 BTU/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lb/US gal) with LTA when available.

L - Light Duty Commercial

For commercial vessels or craft with high demands on speed and acceleration, planing or semi-planing hulls in cyclical operation. Typical boats: Fast patrol, rescue, police, light fishing, fast passenger and taxi boats etc. Full power could be utilized maximum 2 h per 12 h operation period. Between full load periods, engine speed should be reduced at least 10 % from the obtained full load engine speed.

M - Medium Duty Commercial

For commercial vessels with semiplaning or displacement hulls in cyclical operation. Typical boats: Most patrol and pilot boats, coastal fishing boats in cyclical operation, light trawlers, passenger boats and coastal freighters with shorter trips. Full power could be utilized max 4 h per 12 h operation period. Between full load operation periods, engine speed should be reduced at least 10 % from the obtained full load engine speed.

C - Continuous Duty Commercial

For vessels operating at rated load and rated speed up to 100% of the time without interruption or load cycling (80% to 100% load factor (1)). This a SPE Special Purpose Engine option, please contact factory for information.

Generator Drive Engines

Engines with this rating are available for an unlimited number of hours per year in variable load applications. Variable load is not to exceed 70 percentage average of the rated power during any operating period of 250 hrs. Total operating time at 100 per cent prime power shall not exceed 500 hrs per year.

VGT500/550/600 HSC High Speed craft Rating

MDPT VGT500/550/600 is rated HSC for planning vessels, typically 35-60+ knots. HSC rating is for vessels operating at rated speed up to 5% of the time. Typical applications could include but not limited to vessels such as pleasure craft, high speed interceptors and other high speed governmental applications. Typical operation ranges from 250 to 700 hrs per year.

Further limiting specifications on HSC rating:

- Limitation in full power operation, 0,5 hrs per 10 hrs operation
- Maximum running hours per year is 700 hrs.
- Recommended maximum running hours per day is 10 hrs.
- Load factor [1] below 35 per cent (%).

[1] Load factor is the actual fuel burned over a period of time divided by the full-power fuel consumption for the same period of time. For example, if an engine burns 160 litres of fuel during an 8-hour operation, and the full-power fuel consumption is 60 litres per hours, the load factor is 160 litres/(60 litres per hour x 8 hours)=33,3%.

Services Summary

FRP – Factory Replacement Program

Marinediesel as a company has always looked at ways to assist clients and operators in meeting their long term targets. In this progress Marinediesel has developed the FRP or factory Replacement Program which allows the operator to get first grade quality service as well as reducing and scheduling operational costs. For a fixed cost Marinediesel will provide replacement engines according to the TBO schedule of the specific Marinediesel product.

EIC – Engine Installations & Commissioning

Marinediesel can provide engineers on site at client's location to assist, perform or train local staff to install Marinediesel products. The same service is provided with regards to commissioning of engines.

FACT – Customer Training

Operational performance and engine life can be significantly enhanced by raising the skill level of employees, the key to this is expert training. Courses can be held at Marinediesel's training centre in Sweden or on site at client's location of choice. There are different levels of FACT courses from basic service and maintenance to full overhauls. Training can also be tailored to client specific needs and provide essential knowledge of Marinediesels wide range of products.

RMC – Repair & Maintenance Contracts

As with the Factory Replacement Program Marinediesel look for ways to assist the operator with fixed costs and quality workmanship. For added assurance and easier budgeting, our planned servicing can be covered by a Repair & Maintenance Contract, tailored to the specific needs. Fixed price contracts are ideally suited for any operator looking for guaranteed servicing at competitive, predictable rates.

FES – Factory Express Service

Marinediesel understands the costs of vessel downtime and has responded to this with the FES program. Not only do we provide a comprehensive range of services and technical support for all Marinediesel products worldwide on land or at sea but the FES adds the fast response requirement of some clients. If the local representative is unable to assist with the high level of expertise required to solve a specific problem or the client wants factory direct service, the FES is set to have qualified engineers on site anywhere in the world within a very short timeframe.

GSP – Genuine Spare Parts

As the manufacturer we are the only supplier of OEM parts for the Marinediesel line of engines and all parts we provide are fully guaranteed and certified.

Stock is held at Marinediesel world headquarters in Sweden but normal stock is also held at select service stations around the world. Even with parts that are only in stock in Sweden we have a 24-hour turn-around in emergency situations.

Our service combines quality, cost-effectiveness and peace-of-mind assurance, helping you to improve operational efficiency and enhance long-term performance.

Duty Cycles

Duty Information MD Marine Engines

ENGINE MODEL	hp	RPM	Suitable Appl.*	Suitable max. weight. Single installation	Suitable max. weight. Twin installation	Suitable max. weight, Triple installation	TBO***	TBM**	RATING
MD200	200	3800	HSC	2500 kg	5000 kg	8000 kg	2500 hrs.	100 hrs.	Light Duty
MD270	270	3800	HSC	3000 kg	7000 kg	10 000 kg	2500 hrs.	100 hrs.	Light Duty
VGT350	350	3200	HSC	4000 kg	10 000 kg	15 000 kg	3000 hrs.	100 hrs.	Medium Duty
VGT400	400	3200	HSC	5000 kg	13 000 kg	16 000 kg	3000 hrs.	100 hrs.	Light Duty
VGT450	450	3200	HSC	5000 kg	12 000 kg	14 000 kg	2500 hrs.	100 hrs.	Light Duty
VGT500	500	3200	HSC	4000 kg	9000 kg	13 000 kg	2500 hrs.	100 hrs.	Spec. Duty HSC
VGT550	550	3200	HSC	4000 kg	9000 kg	13 000 kg	2500 hrs.	100 hrs.	Spec. Duty HSC
VGT600	600	3800	HSC	4000 kg	9000 kg	13 000 kg	2500 hrs.	100 hrs.	Spec. Duty HSC
MD700	700	2300	HSC	N/A	N/A	N/A	6500 hrs.	250 hrs.	Medium Duty

*

LMS WB Low to medium speed Work boats (typically 10-30 knots, displacement or planing)
MS PC Medium speed planing crafts (typically 25-35 knots)
HSC High Speed Craft (typically 35-60 knots)

**

Extended TBM available

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Based on E5 cycle, TBO may be extended depending on usage

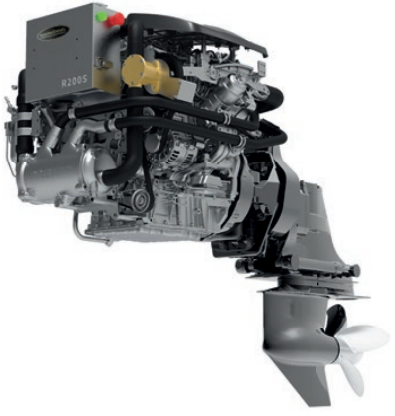
Notes:
Above based on E5 duty cycle.
Other applications may be suitable, please consult MD Integration Engineer.
For installations with four or more engines, please consult MD Integration Engineer.
TBO - Time Between Overhaul
TBM - Time Between Maintenance

MarineDiesel MD200

147 kW (200 bhp) @3800 rpm

Solenoid Common Rail Direct Injection System (CRDi) delivers 200hp from the 2.2 litre In-line 4 CRDI engine.

The MD200 features a strong cast iron cylinder block mated to a light-weight aluminum 16 valve cylinder head. Service-friendly features include a re-usable air filter, water-in-fuel alarm, easily accessible seawater pump, one-button used oil drain system and easily replaced engine anodes.



Specifications

Propulsion System . . . . . .Shaftdrive, Waterjet, ...Sterndrive
Engine Duty Rating . . . . . Special Light . . . . . Commercial (S4)/Pleasure Duty (S5)
Configuration. . . . . 4-stroke, 16-valve DOHC . . . . . .E-VGT with intercooler, Water Cooling
Output {PS (kW)} 200 (147)
Rated RPM. 3.800
Cylinders . . . . . In-line 4
Displacement {cc} 2.199
Bore x Stroke {mm} . . . . . 85.4 x 96
Compression Ratio . . . . . .16.0 : 1
Max. Torque . . . . . .44.0 kg . m @ 2.000 rpm
Injection System . . . . . Common Rail Direct . . . . . .injection (CRDi) - Solenoid Injector
Alternator 12V-150A
Engine Diagnosis. . . . . .YES
Max. Fuel Consump. {l/h}. 39.9
Dry Weight {kg} 280
Flywheel. . . . . Unique
Flywheel Housing. . . . . .BorgWarner Flange

Engine Operating Indicator (EOI)

- Cast iron engine cylinder block
- Aluminum head
- Oil cooled pistons
- In-line 4, 16-valve DOHC
- Hydraulic lash adjusters
- Integrated water jacket
- Balance shaft
- Drive belt auto a tensioner
- Single serpentine belt system

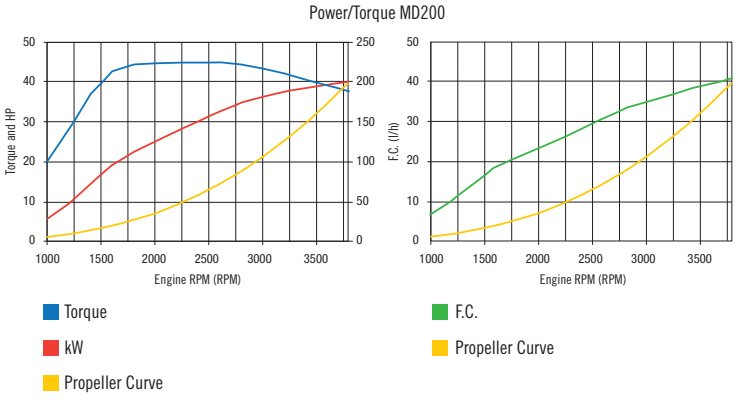
Engine Mounting

- Adjustable engine mounts

Lubrication System

- Electric oil extraction pump
- Easily exchangeable oil filter cartridge
- Seawater cooled transmission oil cooler

Power / Torque Curve



Fuel System
- Common Rail Direct Injection (CRDi) - Solenoid injector with 2.000 bar
- Fuel filter with sensor detecting water in fuel
- Dual pressure control valve

Electrical System
- V12 volt system and 150A alternator
- Auxiliary engine stop button
- Ceramic glow plugs for a trouble - free cold start
- NMEA2000 Converter (Optional)
- Electronic control system (Optional)

Cooling System
- V-ribbed drive belt for seawater pump
- Seawater cooled intercooler, heat exchanger
- Easily exchangeable rubber impeller
- Corrosion resistant material for the seawater circuit

Turbocharger
- E-VGT, Electrical Vaiable Geometry Turbocharger

Engine Operating Indicator (EOI)
- Engine self protection and diagnosis
- Displays CAN information
- Displays engine diagnostic error codes
- Audible alarm and control lamps

Air Inlet System
- Oil wetted and reusable air filter
- Crankcase gas vented into the air inlet

Exhaust System
- Engine coolant cooled exhaust manifold
- Seawater cooled exhaust elbow

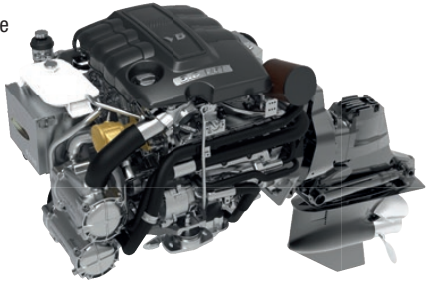
Emissions
- EPA Tier-III
- IMO Tier-II
- RCD II
- RINA (Type Approval - Yacht)

MarineDiesel MD270

199 kW (270 bhp) @3800 rpm

Piezo controlled common rail injection system delivers 270 hp from the 3.0 litre V6 Common Rail Direct Injection(CRDi) engine. The advanced design makes it ultralight, quiet and fuel efficient with extremely compact dimensions.

The engine features a unique Compacted Graphite Iron(CGI) cylinder block. The CGI block is lighter and quieter than conventional grey cast iron and demonstrates at least 85 percent higher tensile strength.



Specifications

Propulsion System . . . . . .Shaftdrive, Waterjet, ...Sterndrive
Engine Duty Rating . . . . . Special Light . . . . . Commercial (S4)/Pleasure Duty (S5)
Configuration. . . . . 4-stroke, 16-valve DOHC . . . . . .E-VGT with intercooler, Water Cooling
Output {PS (kW)} 270 (199)
Rated RPM. 3.800
Cylinders V6
Displacement {cc} 2.959
Bore x Stroke {mm} . . . . . 84 x 89
Compression Ratio . . . . . .16.0 : 1
Max. Torque . . . . . 55.6 kg . m @ 2.000 rpm
Injection System . . . . . Common Rail Direct . . . . . injection (CRDi) - Piezo Injector
Alternator 12V-150A
Engine Diagnosis. . . . . .YES
Max. Fuel Consump. {l/h}. 53.8
Dry Weight {kg} 334
Flywheel. . . . . Hyundai Unique
Flywheel Housing. . . . . BorgWarner Flange

Engine

- Compacted Graphite Iron (CGI) cylinder block
- Aluminum head
- Nine balance weight crankshaft
- Oil cooled pistons
- V6, 24-valve DOHC
- Hydraulic lash adjusters
- Integrated water jacket
- Low noise duplex timing chain
- Hydraulic timing chain tensioner
- Single serpentine belt system
- Drive belt auto-tensioner

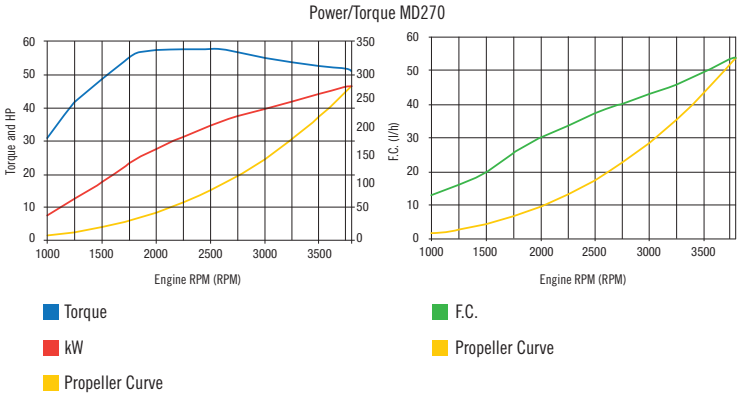
Engine Mounting

- Adjustable engine mounts

Lubrication System

- Electric oil extraction pump
- Easily exchangeable oil filter cartridge
- Seawater cooled transmission oil cooler
- Chain drive engine oil pump

Power / Torque Curve



Fuel System
- Common Rail Direct Injection (CRDi) - 1.800 bar new generation Piezo injectors
- Fuel filter with sensor detecting water in fuel
- Electric low pressure pump
- Dual pressure control valve
- High pressure fuel pumps

Electrical System
- V12 volt system and 150A alternator
- Auxiliary engine stop button
- Glow plugs for a trouble - free cold start
- NMEA2000 Converter (Optional)
- 2 Pole system (Optional)
- Electronic control system (Optional)

Cooling System
- Seawater pump driven directly from the camshaft
- Seawater cooled intercooler, heat exchanger
- Auxiliary connector for cabin heating
- Corrosion resistant material for the seawater circuit

Turbocharger
- E-VGT, Electrical Vaiable Geometry Turbocharger

Engine Operating Indicator (EOI)
- Engine self protection and diagnosis
- Displays CAN information
- Displays engine diagnostic error codes
- Audible alarm and control lamps

Air Inlet System
- Oil wetted and reusable air filter
- Crankcase gas vented into the air inlet
- Intake silencer (Optional)

Exhaust System
- Engine coolant cooled exhaust manifold
- Seawater cooled exhaust elbow
- Seawater cooled Hi-Riser (Optional)

Emissions
- IMO NOx Tier-II
- EU RCD II
- EPA Tier-III
- RINA (Type Approval - Yacht)

MarineDiesel VGT300

223 kW (300 bhp) @3200 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT300 is intended for medium to high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

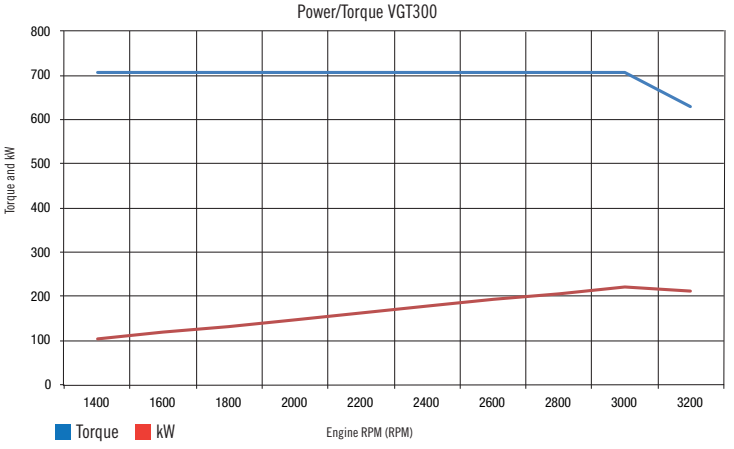
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	500

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	900
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120
Thermostat fully open °C. 93

Exhaust System

Exhaust flow m^3/min (max) 60
Exhaust temperature °C (max) 700
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT350

261 kW (350 bhp) @3200 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT350 is intended for medium to high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

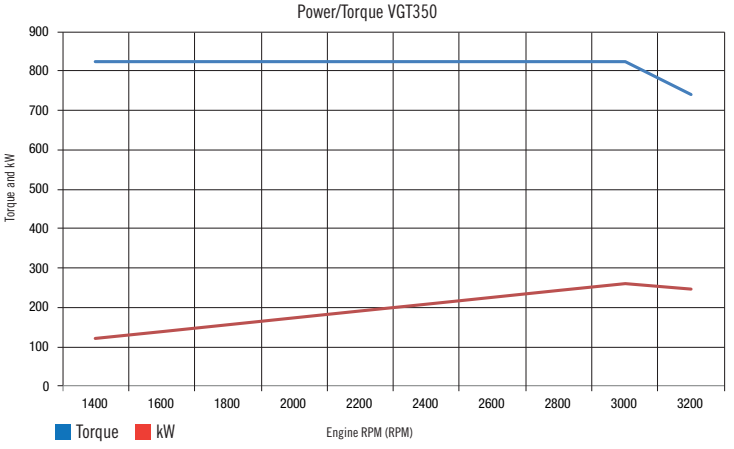
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	500

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	900
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120
Thermostat fully open °C. 93

Exhaust System

Exhaust flow m^3/min (max) 60
Exhaust temperature °C (max) 700
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT400

299 kW (400 bhp) @3200 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT400 is intended for light high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

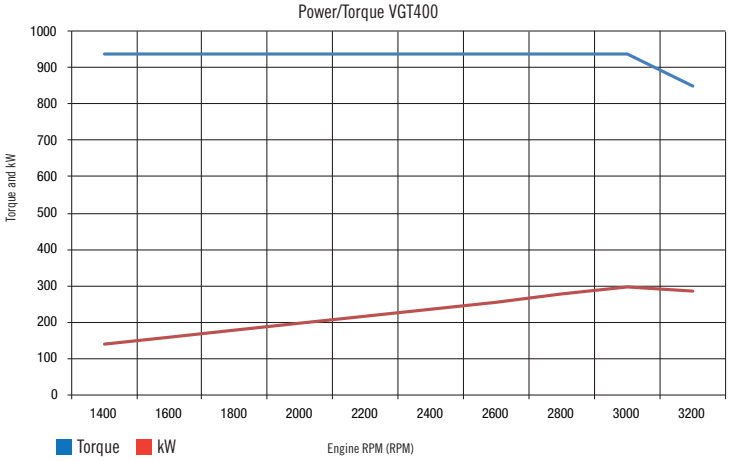
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	500

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	1000
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120

Exhaust System

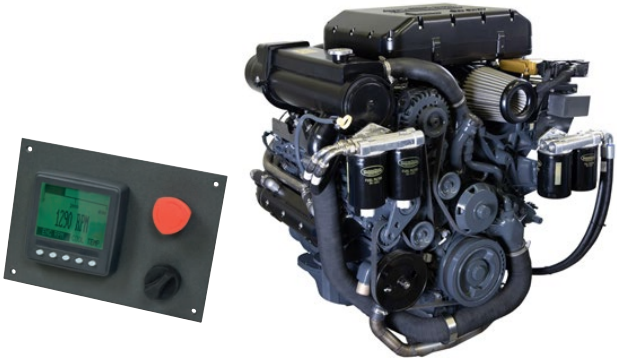
Exhaust flow m³/min (max) 65
Exhaust temperature °C (max) 700
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT450

336 kW (450 bhp) @3200 rpm



All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT450 is intended for light high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

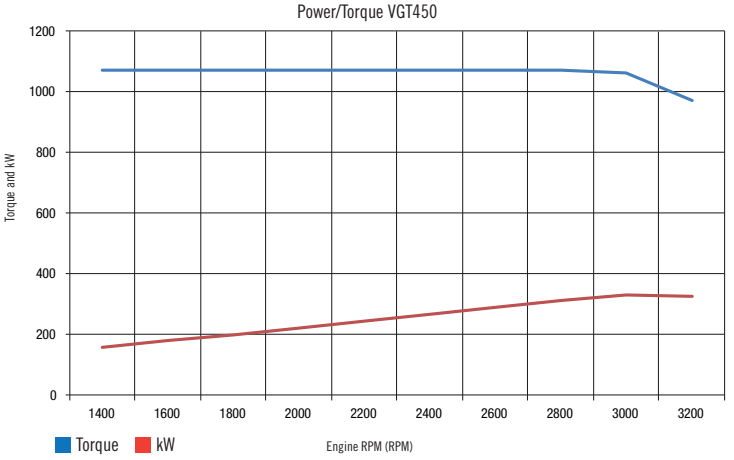
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	510

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	1200
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120

Exhaust System

Exhaust flow m³/min (max) 70
Exhaust temperature °C (max) 750
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT500

373 kW (500 bhp) @3200 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT500 is intended for light, very high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

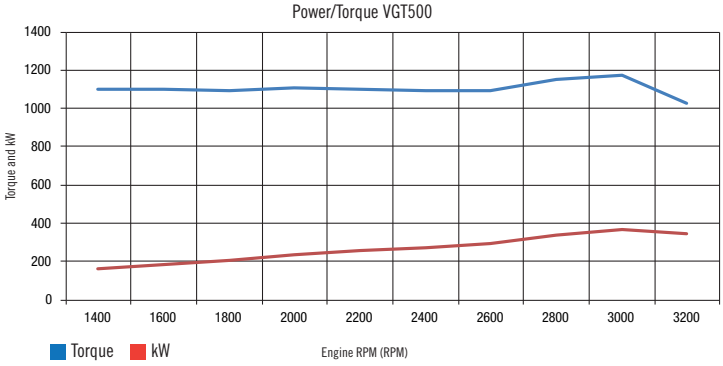
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	510

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	1400
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120

Exhaust System

Exhaust flow m³/min (max) 70
Exhaust temperature °C (max) 750
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT550

410 kW (550 bhp) @3600 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT550 is intended for light, very high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

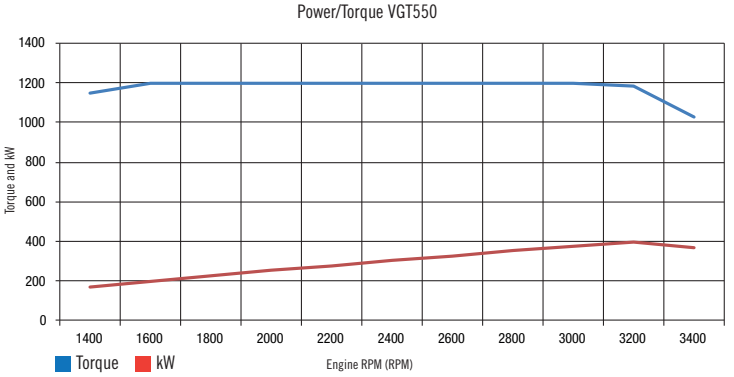
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	510

Air System

Max intake restriction, kPa	6
Engine air flow m^3/min	30
Rec air intake pipe diam, mm (min)	100
Minimum intake air per engine (cm^2)	1400
Engine bay temp. vs. amb. temp. ΔT max °C.	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



High rpm version available (3800 rpm).

Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120

Exhaust System

Exhaust flow m³/min (max) 70
Exhaust temperature °C (max) 750
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel VGT600

447 kW (600 bhp) @3800 rpm

All MarineDiesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and light weight as possible while maintaining durability and serviceability. The VGT600 is intended for light, very high speed vessels. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NMEA2000 CAN communication.

General Data

Model	MD-VGT32
Number of cyl	8
Displacement	6.6L
Bore X stroke	103 X 98 mm
Compression ratio	16:18:1
Valves per cyl.	4
Firing order	1-2-7-8-4-5-6-3
Combustion system	DI Common rail
Engine type	V8
Aspiration	Variable geometry turbo
Charge air cooling	Air to water
Max crankcase press kPa	0.5

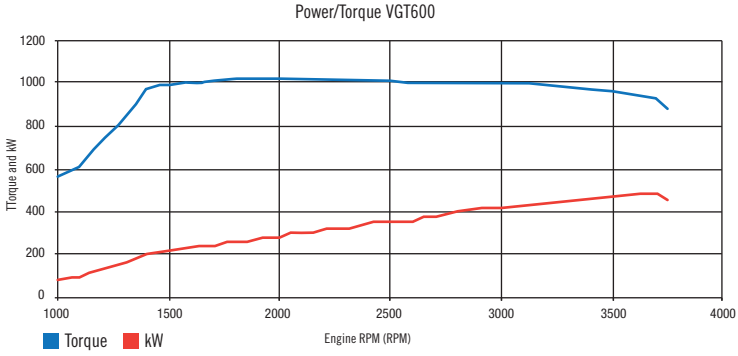
Physical Data

Length, mm	779
Width, mm	825
Height, mm	973
Weight dry, kg.	510

Air System

Max intake restriction, kPa.	6
Engine air flow m^3/min.	30
Rec air intake pipe diam, mm (min).	100
Minimum intake air per engine (cm^2)	1400
Engine bay temp. vs. amb. temp. ΔT max °C	15
Emission	RCD, IMO, EPA, Tier 3 and CE3

Power / Torque Curve



Cooling System

Cooling System . . . . . .closed cooling
Closed system coolant flow L/min 304
Raw water pumpflow L/min. 150
Thermostat start to open °C 70
Thermostat fully open °C. 78
Engine coolant capacity L 18
Recommended press ca psi. 16
Raw water intake Ø, mm 38

Fuel System

Fuel injection pump. . . . . .Bosch common rail
Governor regulation. 1%
Governor type. . . . . Electronic
Maximum fuel transfer pump suction
Distance of fuel m. 2.5
Fuel filter micron size 10

Lubrication System

Oil pressure at 2000 rpm - psi 30-45
Oil pressure at low idle - psi 12
In pan oil max temperature °C 120

Exhaust System

Exhaust flow m³/min (max) 70
Exhaust temperature °C (max) 750
Max. allowable exhaustion backpress kPa. . 7.5
Exhaust hose ID, mm. 127

Electrical System

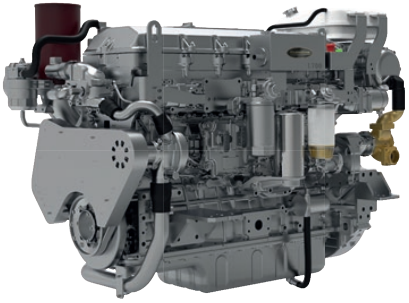
Recommended battery capacity CCA
12 volt system - amp. 1050
Maximum allowable start circuit resistance
12 volt system - ohm. 0.001

MarineDiesel MD700

515 kW (700 bhp) @2300 rpm

The Electronic Unit Injection system on the MD700 delivers 700PS from the 12.7 liter in-line 6 cylinder engine.

This robustly-designed unit was specifically designed to serve the professional and commercial markets. It has stable performance at high load and responds well to sudden load changes.



Specifications

Propulsion System . . . . . Shaftdrive, Waterjet
Engine Duty Rating . . . . . Light Duty (S3)
Configuration. . . . . 4-stroke, 24-valve OHC
. . . . . WGT with intercooler, Water Cooling
Output {PS (kW)} 700 (515)
Rated RPM. 3.800
Cylinders . . . . . In-line 6
Displacement {cc} 12.742
Bore x Stroke {mm} . . . . . 130 x 160
Compression Ratio . . . . . 16.0 : 1
Max. Torque . . . . . 247.5 kg . m @ 1.200 rpm
Injection System. . . . Electronic Unit Injector (EUI)
Alternator 24V-90A
Engine Diagnosis. . . . . YES
Max. Fuel Consump. {l/h}. 143.4
Dry Weight {kg} 1.320
Flywheel. . . . . SAE 14
Flywheel Housing. . . . . SAE 1

Engine

- 6 cylnder in-line, 24-valve OHC
- Cast iron cylinder block and cylinder head
- Gallery oil-cooled long lasting mono steel pistons
- Integrated water jacket
- Single serpentine belt system
- Drive belt auto-tensioner

Engine Mounting

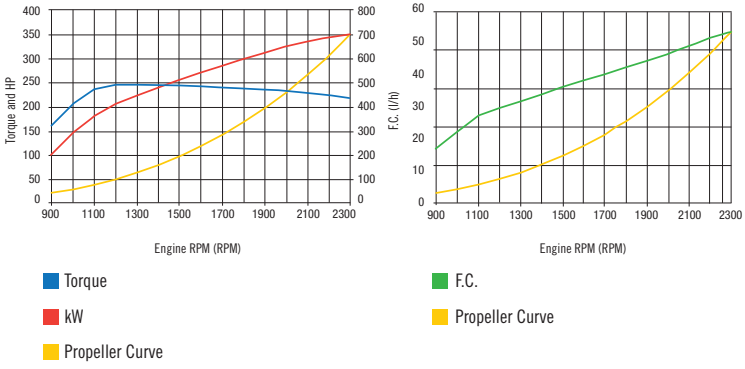
- Adjustable engine mounts (Optional)

Lubrication System

- Gear-driven engine oil pump
- Closed system with forced feeding
- Integrated oil-cooler in cylinder block
- Easily exchangeable oil filter cartridge
- Eco type oil filter
- Electric oil extraction pump

Power / Torque Curve

Power/Torque MD700



Fuel System
- Electronic Unit Injector (EUI)
- Gear-driven fuel pump
- Electriconally controlled injection timing
- Fine fuel filter and water separator
- High pressure six - hole injector nozzles

Electrical System
- 24 volt - 90A alternator
- Auxiliary engine stop button
- Air heating system for a trouble - free cold start
- NMEA2000 Converter (Optional)
- 2 Pole system (Optional)

Cooling System
- Gear-driven seawater pump
- Seawater cooled intercooler, heat exchanger
- Auxiliary connector for cabin heating
- Corrosion resistant material for the seawater circuit
- Easily accessible rear mounted sea-water pump

Instrument Box Assembly
- Engine self protection and diagnosis
- Displays CAN information
- Displays engine diagnostic error codes
- Audible alarm and control lamps
- Idle & PTO rpm adjustable switch

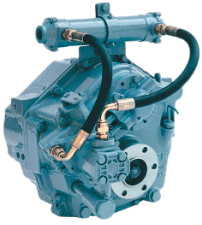
Air Inlet System
- Reusable air filter
- Intake Extension Kit (Optional)

Exhaust System
- Coolant cooled exhaust manifold
- Cast iron exhaust pipe
- WGT (Waste Gate Turbocharger)

Emissions
- IMO Tier-II
- RINA (Type Approval - Yacht)

Propulsion Engine System

Transmission



Water Jet

Surface Drive

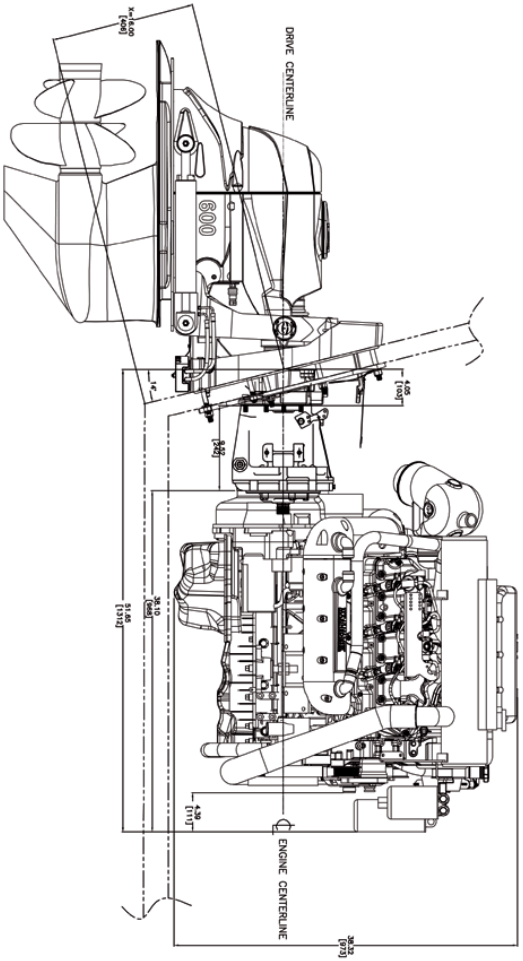
Sterndrive

MarineDiesel has vast experience with different types of drive systems and can supply these together with the MarineDiesel engines as complete packages to the client.

As an engine manufacturer we are not locked to any particular brand of supplier but can recommend a suitable unit should the client not have their own preference. It is highly beneficial for the client or operator to purchase the engine and drive system as one complete propulsion unit from one supplier as this will erase any concerns about fault should any issue arise.

The most common types of drive systems used with MarineDiesel engines are sterndrives, surface drives, water jets and conventional propeller shaft setups.

Propulsion Engine System



MDPT Representatives

MDPT represented by:

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