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Introduction

In 1997 Marinediesel Sweden developed the first true direct replacement diesel for gasoline/petrol V8 marine I/O or inboard engines as well as one of the most durable yet lightweight commercial engines on the market. This model was and is based on the GM 6.5L V8 diesel engine, that was renamed to Optimizer 6500 when it was taken over by GEP in 1999, the base engine has one of the most impressive commercial and military histories of all engines and is used in the military Humvee and Hummer H1 to mention a few, www.amgmil.com.

From a commercial standpoint the Humvee V8 diesel engine was chosen by Marinediesel as the base platform from a standpoint of its proven durability record in all imaginable environments around the globe. The basic mechanical Stanadyne fuel system makes the engines more durable, reliable and easy to maintain than any other competitor on the world market today. The new cast iron “Moly” engine block’s combined with taller/wider bearing caps and improved head bolt bosses adds even more durability to satisfy customer demands. This engine will remain in production for the foreseeable future and meets all current emission standards.

Most durable and innovative engines in the industry

“Marinediesel is recognized as a performance leader and our engines are the most durable and innovative in the industry. The engines have already set world records and have unique advantages that provide the kind of superior, world-class performance that the commercial/military diesel market has been asking for.”

Common-rail engines

The GM based 6.6L VGT and later TSC engines continue where the 6.5L engine ends in power range but with even better power to weight ratio. These engines as the 6.5L have been developed and designed specifically for the commercial and military markets unlike most other brands that have been developed for the high-volume pleasure market.

New products

MD Group has a large in-hose R&D department that pushes the envelope of the marine industry with new products such as the new X1 commercial/military sterndrive and other products that will be released in the near future.
Marinediesel is not encumbered by 40 years of history that says engine designs have to be flat and featureless. Conversely, starting with a clean sheet, Marinediesel's engines are the freshest in the industry. They feature state of the art technology, power and performance oriented design. Marinediesel's engines are among the fastest, most efficient and highest performing on the marine diesel market today.

Marinediesel engines start out as base engines from the GEP and GM factories in the US. Engines are then modified for marine use, calibrated, painted with high heat marine paint, assembled by skilled diesel technicians before dynorun and a final run in a test station with checklists before being boxed and ready to ship.

For the 6.5L range Marinediesel uses a positive displacement 4-stage intercooled supercharger system to maximize torque and performance at low and mid rpm as well as remove any black smoke tendency. The performance of a supercharged and intercooled 6.5 litre V8 diesel is incomparable to anything else on the market today.

The 6.6L common rail engines use Marinediesel/NIRA ECU which allows the engines to be reconfigured with unique features as required by clients. The engines also incorporate a variable geometry turbo system to provide the low rpm torque and fast throttle response that Marinediesel is known for.

» Marinediesel use the same base engine as in the proven military Hummer Humvee platform
» Base engine has exceeded production numbers of 2,000,000 and is hence a very proven platform
» V8 6.5L or 6.6L displacements displacement compare to many competitors smaller displacement 4 or 6 cylinder versions
» All engines are dyno tested before delivery
» Full application manual available on request and includes information such as; Critical component limits, electromagnetic compatibility, operating environment information, vibration powertrain bending, shock impact limits etc.
» Factory field application engineers and/or installation technicians available on request
» Factory led project management available on request
» Factory project presentations available on request
» Technical training programs available in different stages, languages and locations
» Comprehensive technical material available, such as; owners manuals, service books, workshop manuals, parts books etc.

Please contact Marinediesel Sweden headquarters or your local representative for additional information.
# Engine Reference Table

<table>
<thead>
<tr>
<th>ENGINE MODEL</th>
<th>MD170</th>
<th>MD200</th>
<th>MD250SC</th>
<th>MD300SC</th>
<th>VGT-350</th>
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<tr>
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<td>103/97</td>
<td>103/97</td>
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<td>150 (200)</td>
<td>187 (250)</td>
<td>224 (300)</td>
<td>261 (350)</td>
<td>299 (400)</td>
<td>336 (450)</td>
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</table>
Marinediesel MD170

"Barracuda" 127 bkW (170 bhp) @3600 rpm

The MD170 is a naturally aspirated 6.5L displacement V8 engine with mechanical injection system. With an output of below 20kW/L this engine is rated for medium duty commercial use and a durability that will surpass any competitor. As it is a naturally aspirated engine it has a very low operational and service cost.

Standard Engine Equipment

AIR INTAKE SYSTEM
Air filter with integrated crankcase ventilation system.

ALTERNATOR
12 volt 105 ampere standard, 24 volt systems available as option.

GOVERNOR CONTROL SYSTEM
Mechanical governor

OIL LUBRICATION SYSTEM
Remote twin oil filters, closed crankcase ventilation system.

MOUNTING SYSTEM
Adjustable mounts

WARNING SYSTEMS
Water temperature and oil pressure alarm system.

COOLING SYSTEM
Belt driven seawater pump, 9” oil cooler, closed cooling system.

FLYWHEEL HOUSING
Borg Warner

BOOST SYSTEM
Naturally aspirated

STARTING SYSTEM
Electric starter motor 12 volt (24 v optional). Topmount starter available as option.

OTHER
MD Marine paint (grey standard, others available), front and rear lifting eyes.

General Data

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<thead>
<tr>
<th>Engine type</th>
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<tr>
<td>Injection type</td>
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<td>Displacement</td>
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<td>Compression ratio</td>
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<td>Firing order</td>
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<td>Oil pressure (hot)</td>
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<tr>
<td>Oil pressure (hot)</td>
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<td>Operating Temperature</td>
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<td>Injection System</td>
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<td>Boost system</td>
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<td>Exhaust system</td>
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<td>Emissions</td>
<td>EC 2003/44, EPA &amp; IMO</td>
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</table>

Marinediesel Marine propulsion applications. Revised data October 2009
The MD200 is a naturally aspirated 6.5L displacement V8 engine with mechanical injection system. With an output of below 25kW/L this engines is rated for medium duty commercial use and a durability that will surpass any competitor. As it is a naturally aspirated engine is has a very low operational and service cost.

Standard Engine Equipment

**AIR INTAKE SYSTEM**
Air filter with integrated crankcase ventilation system.

**ALTERNATOR**
12 volt 105 ampere standard, 24 volt systems available as option.

**GOVERNOR CONTROL SYSTEM**
Mechanical governor

**OIL LUBRICATION SYSTEM**
Remote twin oil filters, closed crankcase ventilation system.

**MOUNTING SYSTEM**
Adjustable mounts

**WARNING SYSTEMS**
Water temperature and oil pressure alarm system.

**COOLING SYSTEM**
Belt driven seawater pump, 9” oil cooler, closed cooling system.

**FLYWHEEL HOUSING**
Borg Warner

**BOOST SYSTEM**
Naturally aspirated

**STARTING SYSTEM**
Electric starter motor 12 volt (24 v optional). Topmount starter available as option.

**OTHER**
MD Marine paint (grey standard, others available), front and rear lifting eyes.

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**General Data**

- **Engine type**: V8
- **Injection type**: IDI
- **Displacement**: 6.5L
- **Bore X stroke**: 103 X 97 mm
- **Compression ratio**: 18:1
- **Firing order**: 1-8-7-2-6-5-4-3
- **Rotation from flywheel**: Counterclockwise
- **Oil pressure (hot)**: 6psi min@idle
- **Oil pressure (hot)**: 30-43psi min@2000rpm
- **Operating Temperature**: 70°C
- **Injection System**: Stanadyne Mechanical
- **Cooling system**: Closed cooling
- **Boost system**: Naturally aspirated
- **Exhaust system**: 356 alu w A4 ss raiser
- **Dry weight**: 410 kg
- **Oil Change intervals**: 100 hrs
- **Emissions**: EC 2003/44, EPA & IMO

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**Power / Torque Curve**

-Marinediesel Marine propulsion applications. Revised data October 2009

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www.marinediesel.se
The MD250SC is the lowest rated engine in Marinediesels supercharged model program. The engine is highly suitable for medium performance planning craft and has a light duty rating (medium duty as option). The engine is based on the same proven 6.5L platform with mechanical fuel injection system. The twin screw Swedish made Lysholm supercharger provide unequalled low and midrange torque while maintaining low operational and service costs.

**Standard Engine Equipment**

**AIR INTAKE SYSTEM**
Air filter with integrated crankcase ventilation system.

**ALTERNATOR**
12 volt 105 ampere standard, 24 volt systems available as option.

**GOVERNOR CONTROL SYSTEM**
Mechanical governor

**OIL LUBRICATION SYSTEM**
Remote twin oil filters, closed crankcase ventilation system.

**MOUNTING SYSTEM**
Adjustable mounts

**WARNING SYSTEMS**
Water temperature and oil pressure alarm system.

**COOLING SYSTEM**
Belt driven seawater pump, 9” oil cooler, closed cooling system.

**FLYWHEEL HOUSING**
Borg Warner

**BOOST SYSTEM**
Lysholm mechanical positive displacement supercharger system, sea water intercooler.

**STARTING SYSTEM**
Electric starter motor 12 volt (24 v optional). Topmount starter available as option.

**OTHER**
MD Marine paint (grey standard, others available), front and rear lifting eyes.

---

**General Data**

- **Engine type**: V8
- **Injection type**: IDI
- **Displacement**: 6.5L
- **Bore x stroke**: 103 x 97 mm
- **Compression ratio**: 18:1
- **Firing order**: 1-8-7-2-6-5-4-3
- **Rotation from flywheel**: counterclockwise
- **Oil pressure (hot)**: 6psi min@idle
- **Oil pressure (hot)**: 30-43psi min@2000rpm
- **Operating Temperature**: 70°C
- **Injection System**: Stanadyne Mechanical
- **Cooling system**: Closed cooling
- **Boost system**: Lysholm Supercharger
- **Exhaust system**: 356 alu w A4 ss raiser
- **Dry weight**: 430 kg
- **Oil Change intervals**: 100 hrs
- **Emissions**: EC 2003/44, EPA Tier 2 pending, IMO

Marinediesel Marine propulsion applications. Revised data October 2009
The MD250SC is the highest commercially rated engine in Marinediesels supercharged model program. The engine is highly suitable for high performance planning craft and has a light duty rating. The engine is based on the same proven 6.5L platform with mechanical fuel injection system. The twin screw Swedish made Lysholm supercharger provide unequalled low and midrange torque while maintaining low operational and service costs.

**Standard Engine Equipment**

**AIR INTAKE SYSTEM**
Air filter with integrated crankcase ventilation system.

**ALTERNATOR**
12 volt 105 ampere standard, 24 volt systems available as option.

**GOVERNOR CONTROL SYSTEM**
Mechanical governor

**OIL LUBRICATION SYSTEM**
Remote twin oil filters, closed crankcase ventilation system.

**MOUNTING SYSTEM**
Adjustable mounts

**WARNING SYSTEMS**
Water temperature and oil pressure alarm system.

**COOLING SYSTEM**
Belt driven seawater pump, 9” oil cooler, closed cooling system.

**FLYWHEEL HOUSING**
 Borg Warner

**BOOST SYSTEM**
Lysholm mechanical positive displacement supercharger system, sea water intercooler.

**STARTING SYSTEM**
Electric starter motor 12 volt (24 v optional). Topmount starter available as option.

**OTHER**
MD Marine paint (grey standard, others available), front and rear lifting eyes.

---

**General Data**

Engine type .................................................. V8
Injection type .................................................. IDI
Displacement ............................................... 6.5L
Bore X stroke .............................................. 103 x 97 mm
Compression ratio ........................................... 18:1
Firing order .................................................... 1-8-7-2-6-5-4-3
Rotation from flywheel .................. counterclockwise
Oil pressure (hot) ....................... 6psi min@idle
Oil pressure (hot) ..................... 30-43psi min@2000rpm
Operating Temperature ............... 70°C
Injection System ................. Stanadyne Mechanical
Cooling system .................. Closed cooling
Boost system .................... Lysholm Supercharger
Exhaust system .................... 356 alu w A4 ss raiser
Dry weight .............................................. 430 kg
Oil Change intervals ..................... 100 hrs
Emissions .......................... EC 2003/44, EPA Tier 2 pending, IMO

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Marinediesel Marine propulsion applications. Revised data October 2009
MD – Engine Drawing
VGT-series High-Output engines

Marinediesels new VGT-series High-Output engines are finally available after over four years of intensive development.

The design goals have been:

» High Power output
» Commercial rating
» Best power to weight ratio on the market
» EPA, EU and IMO compliant
» Drastically reduced noise level at idle and through the entire rpm range
» Variable geometry turbo technology to continue with Marinediesels tradition of low end torque and very fast throttle response
» Improved fuel economy
» Instant start-up in cold weather
» Marinediesels new common rail marine grade ECU system

Durability, diesel economy and dependable power will be synonymous with the new VGT-series. All maintenance items have been integrated at an early design stage to these components easily accessible.

Quick acceleration
The variable geometry turbo system will allow vessels to accelerate quicker and with faster throttle response than any other conventional turbo engines on the market. The technology also improves the fuel economy over the entire rpm-range of the engine. The Bosch common rail system in conjunction with Marinediesels own ECU system reduces the noise levels at idle with up to 80%.

CAN-bus J1939 system allows for full integration with the vessels electronic systems.

A large corrosion resistant after cooling system.

Small package with low weight
The new VGT engines are all based on the 6.6L 32-valve V8 configuration, a much larger displacement platform than other engines in the same power range. Even with its large displacement it is at the same time a much smaller package and with a lower weight.
Laptop diagnostics tool available.

Noise suppression
The rigidity of the cylinder block is a concern not only for durability but for noise suppression as well. This strength was accomplished with a deep-skirt cylinder block structure and by connecting the bearing caps to the lower part of the block with side bolts, in addition to the two main bolts. The block is manufactured from a special gray iron alloy. The 4340 forged steel crankshaft and six 14mm head bolts per cylinder all indicate the strength of the design.
Marinediesel VGT350

All Marinediesel VGT Common-Rail engines are based on the 6.6L V8 configuration and are designed to be as compact and lightweight as possible while maintaining durability and serviceability. The VGT350 is intended for medium to high speed vessels and has a light duty rating (Medium Duty as option). Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NEMA2000 CAN communication.

Power / Torque Curve

### General Data

- **Model**: MD-VGT32
- **Number of cyl.**: 8
- **Bore and stroke mm**: 103/98
- **Displacement L**: 6.6
- **Compression ratio**: 16.8:1
- **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
- **Engine crankcase vent syst.**: Closed
- **Max crankcase press kPa**: 0.5

### Physical Data

- **Length mm**: 779
- **Width mm**: 825
- **Height mm**: 969
- **Weight dry kg**: 450

### Air System

- **Max intake restriction kPa**: 6
- **Engine air flow m3/min**: 30
- **Rec air intake pipe diam mm (min)**: 100
- **Minimum intake air per eng (cm2)**: 600

### Cooling System

- **Cooling system**: Closed cooling
- **Closed system coolant flow L/min**: 304
- **Raw water pump flow L/min**: 180
- **Thermostat start to open °C**: 7
- **Thermostat fully open °C**: 93
- **Engine coolant capacity L**: 18
- **Recommended press cap psi**: 16

### Fuel System

- **Fuel injection pump**: Bosch common rail
- **Governor regulation**: 1%
- **Governor type**: Electronic

### Electrical System

- **Recommended battery capacity CCA**: 050
- **Maximum allowable start circuit resistance**: 0.001

### Maximum fuel transfer pump suction
- **Distance of fuel m**: 2.5
- **Fuel filter micron size**: 10

### Lubrication System

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

### Exhaust System

- **Exhaust flow m3/min (max)**: 60
- **Exhaust temperature °C(max)**: 700
- **Max allowable exh backpress kPa**: 7.5

Marinediesel Marine propulsion applications. Revised data October 2009
Marinediesel VGT400

299 bkW (400 bhp) @3500 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 and has a light duty rating. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NEMA2000 CAN communication.

**General Data**

- **Model**: MD-VGT32
- **Number of cyl.**: 8
- **Bore and stroke mm**: 103/98
- **Displacement L**: 6.6
- **Compression ratio**: 16.8:1
- **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
- **Engine crankcase vent syst**: Closed
- **Max crankcase press kPa**: 0.5

**Air System**

- **Max intake restriction kPa**: 6
- **Engine air flow m3/min**: 30
- **Rec air intake pipe diam mm (min)**: 100
- **Minimum intake air per eng (cm2)**: 600

**Cooling System**

- **Cooling system**: Closed cooling
- **Closed system coolant flow L/min**: 304
- **Raw water pump flow L/min**: 180
- **Thermostat start to open °C**: 7
- **Thermostat fully open °C**: 93
- **Engine coolant capacity L**: 18
- **Recommended press cap psi**: 16

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

**Exhaust System**

- **Exhaust flow m3/min (max)**: 60
- **Exhaust temperature °C(max)**: 700
- **Max allowable exh backpress kPa**: 7.5

**Electrical System**

- **Recommended battery capacity CCA 12 volt system – amp**: 50
- **Maximum allowable start circuit resistance 12 volt system – ohm**: 0.001

Marinediesel Marine propulsion applications. Revised data October 2009
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 and has a light duty rating. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NEMA2000 CAN communication.

### General Data

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>Number of cyl.</td>
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<tr>
<td>Bore and stroke mm</td>
<td>103/98</td>
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<tr>
<td>Displacement L</td>
<td>6.6</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>16.8:1</td>
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<tr>
<td>Valves per cyl.</td>
<td>4</td>
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<tr>
<td>Firing order</td>
<td>1-2-7-8-4-5-6-3</td>
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<tr>
<td>Combustion system</td>
<td>DI Common rail</td>
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<tr>
<td>Engine type</td>
<td>V8</td>
</tr>
<tr>
<td>Aspiration</td>
<td>Variable geometry turbo</td>
</tr>
<tr>
<td>Charge air cooling</td>
<td>Air to water</td>
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<td>Engine crankcase vent syst</td>
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<td>Max crankcase press kPa</td>
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### Physical Data

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<td>Height mm</td>
<td>969</td>
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<tr>
<td>Weight dry kg</td>
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### Air System

| Max intake restriction kPa | 6 |
| Engine air flow m3/min     | 30 |
| Rec air intake pipe diam mm (min) | 100 |
| Minimum intake air per eng (cm2) | 600 |

### Cooling System

| Closed system coolant flow L/min | 304 |
| Raw water pump flow L/min       | 180 |
| Thermostat start to open °C     | 7 |
| Thermostat fully open °C        | 93 |
| Engine coolant capacity L        | 18 |
| Recommended press cap psi        | 16 |

### Fuel System

| Fuel injection pump           | Bosch common rail |
| Governor regulation           | 1%     |
| Governor type                 | Electronic |

### Power / Torque Curve

### Lubrication System

| Oil pressure@2000rpm – psi     | 30-45 |
| Oil pressure at low idle – psi | 12   |
| In pan oil max temperature ºC  | 120  |

### Exhaust System

| Exhaust flow m3/min (max)      | 60   |
| Exhaust temperature ºC(max)    | 700  |
| Max allowable exh backpress kPa | 7.5 |

### Electrical System

| Recommended battery capacity CCA | 12 volt system – amp | 050 |
| Max allowable start circuit resistance | 12 volt system – ohm | 0.001 |

Marinediesel Marine propulsion applications. Revised data October 2009
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 and has a light duty rating. Laptop based diagnostics tool is available for all VGT and TSC engines. J1939 and NEMA2000 CAN communication.

### Marinediesel VGT500

373 bkW (500 bhp) @3500 rpm

<table>
<thead>
<tr>
<th>Power / Torque Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed (rpm)</td>
</tr>
<tr>
<td>Power (bhp) / Torque (Nm)</td>
</tr>
</tbody>
</table>

### General Data

- **Model**: MD-VGT32
- **Number of cyl.**: 8
- **Bore and stroke mm**: 103/98
- **Displacement L**: 6.6
- **Compression ratio**: 16.8:1
- **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
- **Engine crankcase vent syst**: Closed
- **Max crankcase press kPa**: 0.5

### Air System

- **Max intake restriction kPa**: 6
- **Engine air flow m3/min**: 30
- **Rec air intake pipe diam mm (min)**: 100
- **Minimum intake air per eng (cm2)**: 600

### Cooling System

- **Cooling system**: Closed cooling
- **Closed system coolant flow L/min**: 304
- **Raw water pump flow L/min**: 180
- ** Thermostat start to open ºC**: 7
- ** Thermostat fully open ºC**: 93
- **Engine coolant capacity L**: 18
- **Recommended press cap psi**: 16

### Lubrication System

- **Oil pressure@2000rpm – psi**: 30-45
- **Oil pressure at low idle – psi**: 12
- **In pan oil max temperature ºC**: 120

### Exhaust System

- **Exhaust flow m3/min (max)**: 60
- **Exhaust temperature ºC(max)**: 700
- **Max allowable exh backpress kPa**: 7.5

### Electrical System

- **Recommended battery capacity CCA**: 50
- **Maximum allowable start circuit resistance**: 0.001

Marinediesel Marine propulsion applications. Revised data October 2009
VTG – Engine Drawing
## Scope of Supply

More options available - contact Marinediesel.

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<tr>
<th>ENGINE MODEL</th>
<th>MD170</th>
<th>MD200</th>
<th>MD250SC</th>
<th>MD300SC</th>
<th>VGT-350</th>
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O = Standard equipment  
X = Optional Equipment
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). 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 hours. Total operating time at 100 percent prime power shall not exceed 500 hours per year.

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.

2003/44/EC
In effect in Europe from January 1st 2006. 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.

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.

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.
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.

**MD X1**

For the higher engine- and duty- ratings there have not been many sterndrive options available and for this reason Marinediesel contracted MD Engineering to develop such a system. The MD X1 sterndrive will be available 2010, the system is commercially rated and is capable of 1000+ Nm. More information on this system is available in the Scandinavian Sterndrive Systems brochure.

**TSC-series**

With twin Lysholm superchargers this engine is not like anything the world propulsion market has ever witnessed. The engine is specifically designed for applications where ultra fast throttle and torque response is required such as boarding missions etc. The engine is scheduled for release 2011.
Marinediesel, its services and products are highly targeted towards the commercial and military markets starting from the day the engines where designed. This focus has resulted in Marinediesels market leading service and support programs. Marinediesel has an in-depth understanding of operational requirements in different regions of the globe and has adapted to meet and exceed the client demands. More information is available in the Diesel Service and Support folder.