

PX ENGINEERING CC

PRAX ENGINEERING CC

Company Profile

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PRAX ENGINEERING CC

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PX ENGINEERING CC

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Overview

The Corporation was incorporated in 2014. Prax Engineering is an organization that offers various mechanical engineering services. The company's primary goal is to establish a premier mechanical workshop in Walvis Bay. The company is operating its workshop in Walvis Bay which is closer to 80% of its target customers.

Prax Engineering CC is providing dynamic customer driven services in the following fields:

- Diesel Mechanic
- Industrial repairs
- Mining mechanics
- Supply of all mechanical spares for vessels

We are a market and technology driven company. Our core competence is in diesel, mining mechanics and supply of vessel spares. We offer unmatched services to our clients. Our team of professionals are dedicated to provide solutions adapted to local clients.

We are very focused on our core competencies. We strive to be the best at everything we do. This focus has allowed us to become true "Masters of our Trade".





Human Resources Capacity

Prax Engineering CC is operated in Walvis Bay. We understand your business concerns; we are engaged in diesel mechanics and other related services. In regards with teamwork we have the best team ready to work the way clients want. The company director is a qualified Lead Mechanical Diesel Engineer with more than 5 years of experience in the same industry. Our team consists of 100% highly trained personnel

Our core competence is in diesel, mining mechanics and supply of vessel spares. We offer unmatched service to our clients. Our team of professionals is dedicated to provide solutions adapted to local clients.

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Brief Resumes of Key Employees

Samuel Helao

Director

Tel: +264812787467

Academic qualifications cert. of Competency marine engineer officer 1999 National Trade certificate Diessel engine mechanics, Motor vehicle mechanic 2001, Technical ship management M.T.A. Maritime Training Academy Diploma for Technical ship Management 2018.

Positions held:

Positions held Mr: Samuel Helao has over 15 years experience in the Diessel mechanical engineering industry he been worked Singapore MITSUBISHI marine engine company 2004, he joined MAN Diesel e turbo Brasil Ltda 2008. including BP Offshore in 2011. decade's worth of experience in the Diessel mechanical Engineering industry, he is founding member of the corporation and will act as the managing member responsible for operations.

Mustaffa Bin Jakaram

Lead Mechanical Commissioning Engineer

Tel: +264812316566

Academic Qualifications: Cert. of COmpetency Marine Engineer Officer 1987; National Trade Certificate Diesel Engine Mechanics; Motor Vehicle Mechanic 1982; National Trade Certificate in Marine fitting 1983

Positions held:

Mr. Mustaffa Bin Jakaram is an industry expert in Marine engineering. He boasts of over a decade's worth of experience in the Diesel Mechanical Engineering industry. He worked for more than twelve companies amassing a lot of experience along the way.

JJS Accounting Services

P.O.Box 1757, Walvis Bay, Namibia

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Our Mission:

To ensure that we exceed the expectations of our customers for a loyal and consistent flow of operations

Our Vision:

To establish premier marine diesel engine repairs, diagnose electrical marine engines and industrial services in Walvis Bay and beyond.

Core Values:

Honesty and Integrity build effective long-term relationships; offering a high-degree of professionalism and efficient services to our clients.



Prax Engineering cc is the Mitsubishi marine engine, spare parts and industrial diesel engine distributor in Namibia, in Southern Africa as well as the service centre in Africa. Prax Engineering cc also has a dealership certificate from Nanni marine diesel engine and all our parts are genuine, internationally B.V certified. Prax Engineering cc is serviced and accredited with a ISO 9001:2015 Standard certificate.

Our Company renders its services to the following customer groups

- Private companies
- Individuals
- Government institutions

We deliver through:

Specialized technologies and equipment. We go above and beyond your expectations, our clients are part of the Prax family.





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High speed propulsion Mitsubishi engines - 378 kW to 1885 kW IMO Tier II compliant

SB-series

SA-series

SR-series





- Powerful Performance
- Ideal for tug, work and fishing boats
- Compact, as well as as easy to install & maintain.
- Highly reliable mechanical and proven Mitsubishi diesel engines.
- Complete package including heat exchanger, sea water pump and panels



technical information

| | | S6B3-T2MPTK2 | S6A3-T2MPTK3 | S6R-T2MPTK | S6R2-T2MPTK | S6R2-T2MPTK3 |
|---------------------------------------|-----------|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Type | | ← 4-stroke cycle, watercooled, diesel engine with engine mounted heat exchanger and seawaterpump (rubber impellor type) → | | | | |
| Aspiration | | ← Turbocharged /intercooled (direct seawater) → | | | | |
| Number of cylinders | | 6 | 6 | 6 | 6 | 6 |
| Bore and Stroke | mm | 135x170 | 150x175 | 170x180 | 170x220 | 170x220 |
| Displacement | Litres | 14,6 | 18,56 | 24,51 | 29,96 | 29,96 |
| Combustion system | | ← Direct injection → | | | | |
| Output (MD rating) at flywheel | kWm/min-1 | 448/2001 | 558/1900 | 605/1800 | 610/1500 | 759/1406 |
| Output (HD rating) at flywheel | kWm/min-1 | 378/2001 | 502/1900 | 520/1650 | 530/1400 | 691/1406 |
| Output (UCD rating) at flywheel | kWm/min-1 | n.a. | n.a. | 470/1600 | 480/1350 | n.a. |
| Fuel injection pump | | ← Bosch type Mitsubishi PS type → | | | | |
| Fuel | | ← Diesel fuel oil (ISO 8217 DMX) → | | | | |
| Governor type | | ← Mechanical Hydraulic → | | | | |
| Starting system | V-kW | 24 - (6x1) | 24 - (6x1) | 24 - (7.5x1) | 24 - (7.5x1) | 24 - (7.5x1) |
| Recommended battery size | Ah | 200 | 200 | 200 | 200 | 200 |
| Lub.oil capacity (Oil Pan high level) | l | 70 | 90 | 140 | 150 | 150 |
| Fresh water capacity (engine) | l | 58 | 60 | 120 | 120 | 120 |
| Flywheel | | SAE 14 | SAE 14 | SAE 18 | SAE 18 | SAE 18 |
| Flywheel Housing | | SAE 1 | SAE 1 | SAE 0 | SAE 0 | SAE 0 |
| Emission compliance | | ← IMO Tier II → | | | | |
| Dimensions (LxHxW) | mm | 1967 x 984 x 1330 | 2189 x 1127 x 1421 | 2212 x 1202 x 1615 | 2111 x 1183 x 1685 | 2105 x 1183 x 1695 |
| Dry Weight | kg | 1400 | 2100 | 2950 | 3100 | 3130 |



Mitsubishi Propulsion Package, ideal for a wide range of applications

To date MHI has supplied more than 120,000 marine diesel engines for both main propulsion and auxiliary applications in vessels such as tug, work and fishing boats. The company's impressive record of engine deliveries is proof of MHI's close and unbroken relationship with marine industries.

Complete and Proven

We offer a complete package including built-up heat exchanger, sea water pump and panels for easy installation and maintenance. The engines are designed to be excellent in their performance and reliable, thereby meeting the most demanding IMO Tier II emission control regulations and requirements of major classification societies.

technical information

| | | S12A2-T2MPTK | S12R-T2MPTK | S16R-T2MPTK | S16R2-T2MPTK |
|---------------------------------------|-----------|---|-----------------------|-----------------------|-----------------------|
| Type | | ← 4-stroke cycle, watercooled, diesel engine with engine mounted heat exchanger and seawaterpump (rubber impellor type) → | | | |
| Aspiration | | ← Turbocharged /intercooled (direct seawater) → | | | |
| Number of cylinders | | 12 | 12 | 16 | 16 |
| Bore and Stroke | mm | 150x160 | 170x180 | 170x180 | 170x220 |
| Displacement | Litres | 33,93 | 49,03 | 65,37 | 79,9 |
| Combustion system | | ← Direct injection → | | | |
| Output (MD rating) at flywheel | kWm/min-1 | 858/1920 | 1210/1800 | 1610/1800 | 1885/1500 |
| Output (HD rating) at flywheel | kWm/min-1 | 776/1860 | 1040/1650 | 1380/1650 | 1600/1400 |
| Output (UCD rating) at flywheel | kWm/min-1 | 701/1800 | 940/1600 | 1250/1600 | 1450/1350 |
| Fuel injection pump | | Bosch type | | Mitsubishi PS type | |
| Fuel | | ← Diesel fuel oil (ISO 8217 DMX) → | | | |
| Governor type | | ← Hydraulic → | | | |
| Starting system | V-kW | 24 - (7.5x2) | 24 - (7.5x2) | 24 - (7.5x2) | 24 - (7.5x2) |
| Recommended battery size | Ah | 400 | 400 | 400 | 400 |
| Lub.oil capacity (Oil Pan high level) | l | 160 | 230 | 290 | 290 |
| Fresh water capacity (engine) | l | 152 | 227 | 280 | 280 |
| Flywheel | | SAE 18 | SAE 21 | SAE 21 | SAE 21 |
| Flywheel Housing | | SAE 0 | SAE 00 | SAE 00 | SAE 00 |
| Emission compliance | | ← IMO Tier II → | | | |
| Dimensions (LxHxW) | mm | 2439 x 1482 x 1596 | 2557 x 1622 x 1728 | 3086 x 1622 x 1960 | 2946 x 1525 x 2029 |
| Dry Weight | kg | 3720 | 5500 | 7000 | 7750 |

- Compliant with IMO Tier II emission regulations
- Equipped with complete built-up heat exchanger panels and sea water pump
- Equipped with high-performance proprietary Mitsubishi turbochargers
- Also optional: including marine gear and panels



Sea water pump



Heat exchanger

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Gas engine GS16R2-PTK



Common rail

Applications

- Power Generation and Cogeneration
- Durable and Reliable
- Heart of Modular Energy Packages

Features

- 1.5 MW* high-output & high-efficiency natural gas engine
- Range of Lean burn and Miller Cycle engines available
- Proven high-efficiency, high compression ratio proprietary turbocharger technology

Specifications

- 1.5 MW output at 1500rpm / 1 MW output at 1200rpm
- 42.1% efficiency, world's top level for 1.5 MW gas engine class



technical information

| | | GS6R-PTK | GS6R2-PTK | GS12R-PTK | GS16R-PTK | GS16R2-PTK |
|------------------------------------|--------------|--|--|--|--|--|
| Type | | 4-cycle, intercooled, Natural Gas engine | 4-cycle, intercooled, Natural Gas engine | 4-cycle, intercooled, Natural Gas engine | 4-cycle, intercooled, Natural Gas engine | 4-cycle, intercooled, Natural Gas engine |
| Aspiration | | Turbocharged | Turbocharged | Turbocharged | Turbocharged | Turbocharged |
| Number of cylinders | | 6 | 6 | 12V | 16V | 16V |
| Bore x stroke mm | | 170x180 | 170x220 | 170x180 | 170x180 | 170x220 |
| Displacement Ltr | | 24,52 | 29,96 | 49,03 | 65,37 | 79,9 |
| Combustion system | | Prechamber, Spark Ignited | Prechamber, Spark Ignited | Prechamber, Spark Ignited | Prechamber, Spark Ignited | Prechamber, Spark Ignited |
| Fuel | | Natural Gas | Natural Gas | Natural Gas | Natural Gas | Natural Gas |
| Dry weight | | 2400 / 2400 | 2650 / 2650 | 5350 / 5350 | 6770 / 6830 | 8105 / 7815 |
| Continuous 'C' power rating | 50Hz 1500rpm | 363 | na | 722 | 959 | 1563 |
| output kWm hp | 60Hz 1200rpm | 315 | 394 | 632 | 845 | 1031 |
| Emission compliance | | — | — | — | — | — |
| Dimensions mm | L x H x W | 1989 x 1638 x 1123 | 1989 x 1718 x 1123 | 2396 x 2137 x 1832 | 2876 x 2137 x 1820 | 3422 x 2122 x 2164 |

GS16R2-PTK , 1.5 MW high-output & high-efficiency natural gas engine

The newly developed 1.5 MW gas engine incorporates a Miller cycle system with larger compression which results in better thermal efficiency. By using computational fluid dynamics (CFD), a combustion strategy that can achieve both low NOx and high combustion, efficiency is assured.

Our own combustion control technology, with minimum knock margin improving thermal efficiency in combination with an optimized air-fuel ratio control technology, enables an initial load accep-

tance of 30%. This is the world's highest level for lean-burn engines. Our engine control technology enables a 100% load acceptance within two minutes after Blackout Start.

In addition to a conventional cooling tower, a combustion technology which also works with a remote radiator was employed to ensure reliable operation even during water outages.



GSR-series

* 1500rpm / 50Hz



GL Systems Certification



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Marine Engine



Marine Engine S16R2-T2MPTAW, highest power in its class

Applications

- Tugboats
- Offshore supply and Cargo Vessels

Features

- High power
- Compact in size
- Applicable in many different areas

S16R2-T2MPTAW

Specifications

- Hydraulic/ Electronic Governor
- Equipped with high-performance proprietary turbochargers



Commercial Rating

| | kW | BHP | RPM | Rating | Emissions |
|-----------------------------------|-------|-------|-------|--------|-----------|
| Propulsion | 1,450 | 1,944 | 1,350 | HD | IM02 |
| | 1,600 | 2,146 | 1,400 | MD | IM02 |
| | 1,885 | 2,528 | 1,500 | LD | IM02 |
| Diesel-Electric Propulsion | 1,568 | 2,103 | 1,200 | 60HZ | IM02 |
| | 1,960 | 2,628 | 1,500 | 50HZ | IM02 |
| Auxiliary Generator | 1,568 | 2,103 | 1,200 | 60HZ | IM02 |
| | 1,960 | 2,628 | 1,500 | 50HZ | IM02 |

Marine Engine S16R2-T2MPTAW: Long Stroke, High Power, and Fuel Efficient

Mitsubishi Heavy Industries (MHI) boasts a long tradition in manufacturing engines, tracing back to the production of Japan's first unit for commercial use in 1917 and spanning both diesel and gasoline types in two- and four-stroke configurations.

To date MHI has supplied more than 120,000 marine diesel engines for both main propulsion and auxiliary applications in ships and boats. The company's impressive record of engine deliveries is proof of MHI's close and unbroken relationship with marine industries.

The S16R2-T2MPTAW engine is designed and built in Japan, received the latest IMO2 certification, and delivers among the longest stroke and highest displacement available in its class. With a piston stroke of 220mm and 79.9L displacement, it is a challenging competitor achieving high power and fuel efficiency. In fact, its bore, stroke and engine speed are the same as Mitsubishi's longtime bestseller, the S6R2.

We take pride in offering you marine engines which are compact in design, providing advantages in both installation and maintenance. The engine's cylinder heads are individually divided by cylinder, and large inspection covers are available on the crankcase and the oil pan. Its original Mitsubishi fuel injection pump and turbocharger bring superb combustion matching, and a hydraulic or electronic governor is available to provide optimum control of the engine in your application. This is the perfect engine for your Tugboat, Offshore- and Cargo Vessel.

Product Dimensions & Dry Weight

L (mm): 2,946
 W (mm): 1,525
 H (mm): 2,030
 Dry Weight (kg): 7,750

16-cylinder, 4-cycle, Water cooled, Diesel Engine
 Direct-injection, Turbocharged with Air-cooler

Bore x Stroke (mm) : 170 x 220
 Displacement (L) : 79.9



S16R2-T2MPTAW



Marine Engines | MAS Series



Mitsubishi Auxiliary Sets

The long-term solution for your vessel's power needs



PX ENGINEERING CC
PRAX ENGINEERING CC

Marine Engine



1623 hp
1800rpm



Standby power
S12R-T2MPTK

- Durable
- Highly reliable
- Compact in size
- Easy access points
- Balanced emission

Mitsubishi Auxiliary Sets, designed and built to last

We offer highly reliable marine generator sets and cogeneration energy packages.

Perfectly engineered and reliable Mitsubishi Diesel Engines, integrated with Europe's best alternators and Mitsubishi's monitoring systems, offer you the best longterm solution for your vessel's power needs. Each generator set is assembled at our own factory in France, adapted to your requirements, fully tested and ready for installation onboard. Its efficient and fail-free operation makes the generator set the perfect choice where durability and top performance are a must.

Certifications and Balanced Emission

Mitsubishi generator sets are IMO2 certified and they are type approved by the major classification societies. The engines are well balanced and have an excellent performance, thereby meeting the most demanding emission control regulations, contributing to the preservation of our planet and creating savings on fuel consumption.

Low Vibration and Noise

The vibration absorbers in the base frame eliminate noise resonance, high-frequency vibrations and they reduce stress on the foundation.

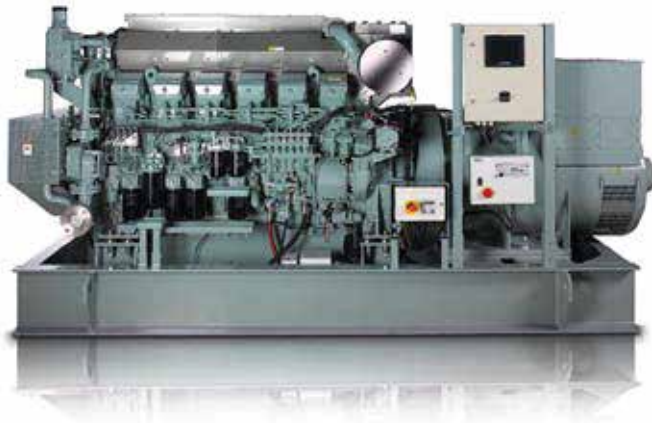
High Load Tolerances

Mitsubishi diesel engines have a generous margin by design, enabling them to drive alternators. A hydraulic or electronic governor assures the frequency stability in order to easily meet the international standards.

Alternator

The double bearing AC alternator is self-regulating, drip-proof and brush-less. It has Automatic Voltage Regulator (AVR) for accurate Voltage regulation, a heavy damper cage for parallel operation and very low sub transient reactance values.





Individual cylinders heads, large inspection and maintenance covers on both sides of the engine enable easy access to all main parts. Turbochargers, injection pumps and water pumps have a fully integrated lubricating oil system with changeover lubricating oil filters. Compact in design, the generator set occupies less space in the engine room and its good accessibility makes service and maintenance easy.

technical information

| Model* | Engine type | Diesel-Electric Propulsion KvA | | | Auxiliary Generator KvA | | |
|------------|---------------|--------------------------------|----------------|----------------|-------------------------|----------------|----------------|
| | | 1200rpm / 60Hz | 1500rpm / 50Hz | 1800rpm / 60Hz | 1200rpm / 60Hz | 1500rpm / 50Hz | 1800rpm / 60Hz |
| MAS 650-S | S6R-(Z3)MPTAW | | 652 | 684 | | 652 | 753 |
| MAS 760-S | S6R2-T2MPTK | 594 | 765 | | 594 | 765 | |
| MAS 850-S | S12A2-MPTAW | | 847 | 898 | | 847 | 988 |
| MAS 1350-S | S12R-MPTAW | 999 | 1351 | 1385 | 999 | 1351 | 1529 |
| MAS 1795-S | S16R-MPTAW | 1337 | 1796 | 1857 | 1337 | 1796 | 2041 |
| MAS 2350-S | S16R2-T2MPTAW | 1881 | 2358 | | 1881 | 2358 | |

* Mitsubishi generator set models:

- Are IMO2 certified.
- Are type approved by the major classification societies.
- Combine a Mitsubishi Diesel Engine with a high quality alternator and a Mitsubishi monitoring system.
- Have double bearing, IP23 louvers and a Voltage of 400 at 50HZ or 440 at 60Hz.
- Are designed to connect to a heat exchange or keel cooling system.
- Are mounted on a steel frame with vibration dampers underneath.

Specifications other than the standard specifications mentioned above may be available on request.



Cylinder heads



Air filter

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Marine Engines

Output Selection (IMO Tier 2 compliant)

High Speed Engines

| Applications | Propulsion kW/rpm | | | Diesel-Electric Propulsion kW | | | Auxiliary Generator kW | | |
|------------------------|-------------------|-------------|------------|-------------------------------|----------------|----------------|------------------------|----------------|----------------|
| | Heavy duty | Medium duty | Light duty | 1200rpm / 60Hz | 1500rpm / 50Hz | 1800rpm / 60Hz | 1200rpm / 60Hz | 1500rpm / 50Hz | 1800rpm / 60Hz |
| S6B3 - T2MPTAW | 320/1940 | 350/2000 | | | | | | 335 | 375 |
| S6A3-MPTAW | 360/1840* | 385/1800 | 221/1530 | | | | | | |
| S6R-(Z3)MPTAW | 470/1600** | 520/1650 | 605/1800** | | 545 | 577 | | 545 | 635** |
| S6R2-T2MPTK | 480/1350 | 530/1400 | 610/1500 | 500 | 640 | | 500 | 640 | |
| S12A2-(Z3)MPTAW | 701/1940** | 776/2000 | | | 709 | 752 | | 709 | 828 |
| S12R-(Z3)MPTAW | 940/1600** | 1040/1650 | | 840 | 1120 | 1154 | 840 | 1120 | 1270 |
| S16R-(Z3)MPTAW | 1250/1600** | 1380/1650 | | 1120 | 1500 | 1536 | 1120 | 1500 | 1690 |
| S16R2-T2MPTAW | 1450/1350 | 1600/1400 | 1885/1500 | 1568 | 1960 | | 1568 | 1960 | |

*Also CCNR Stage II compliant ** Also EU Stage IIIA compliant

Specifications other than the standard specifications mentioned above may be available on request.

Propulsion

Heavy Duty

Typical Operation:

- Allowable Load Factor is less than 100% of Rated Power.
- Allowable Cruising Speed is less than 100% of Rated Speed.
- Operating hours are unlimited per year.

Typical Vessel Application:

- Cargo Vessels and Fishing Boats.

Medium Duty

Typical Operation:

- Allowable Load Factor is up to 83% of Rated Power.
- Allowable Cruising Speed is up to 94% of Rated Speed.
- 100% of Rated Power is available intermittently for 8hrs per every 24hrs operation.
- Operating hours are less than 6,000hrs per year.

Typical Vessel Application:

- Working Boats, Passenger Vessels and Ferry Boats.

Light Duty

Typical Operation:

- Allowable Load Factor is up to 75% of Rated Power.
- Allowable Cruising Speed is up to 91% of Rated Speed.
- 100% of Rated Power is available intermittently for 1hr per every 6hrs operation.
- Operating hours are less than 3,000hrs per year.

Typical Vessel Application:

- Pleasure Boats, High Performance Vessels, and Patrol Boats.

Diesel-Electric Propulsion

Typical Operation:

- Average Load Factor is 60-80% of Rated Power.
- Operating hours: 3,000- 6,000hrs per year.
- Momentary overload: 110% is available for less than 25hrs per year on emergency basis.
- 100% of Rated Power is available for maximum of 3hrs per every 12hrs operation.

Typical Vessel Application:

- Offshore Vessels, Inland Cargo Vessels, and Ferries.

Auxiliary Generator

Main Power Supply

Typical Operation:

- Average Load Factor is 60-80% of Rated Power.
- Operating hours: 3,000- 4,000hrs per year.
- Momentary overload: 110 % is available for governing purpose.

Emergency Power Supply

Typical Operation:

- Average Load Factor is 60% of Rated Power.
- Operating hours: up to 500hrs per year.
- Overload: 110% can be used for less than 25hrs per year.

For information on IMO1 and Medium Speed Engines, please contact your local distributor or Mitsubishi Turbocharger and Engine Europe B.V. Information is subject to change without notice



SU series

Output selection list for Mitsubishi medium speed diesel engines, SU models, for marine auxiliary generator and propulsion use.

| Engine Type | | S6U-MPTK | S6U2-MPTK | S8U-MPTK | S12U-MPTK | S16U-MPTK |
|--|--------------------------------|--|------------------|------------------|------------------|------------------|
| Type | | 4 stroke cycle, water cooled, diesel engine turbocharged with air-cooler (inter coolertype) | | | | |
| Combustion type | | Direct injection | Direct injection | Direct injection | Direct injection | Direct injection |
| Application | Engine speed (rpm) | MPTK | MPTK | MPTK | MPTK | MPTK |
| Generator drive, marine auxiliary use | 900 | 1,150 | 1,250 | 1,533 | 2,299 | 2,065 |
| | 1,000 | 1,270 | 1,363 | 1,693 | 2,541 | 3,388 |
| | 1,200 | 1,343 | N/A | 1,790 | 2,685 | 3,580 |
| Diesel electric continuous | 900 | 1,045 | 1,161 | 1,394 | 2,090 | 2,787 |
| | 1,000 | 1,142 | 1,234 | 1,522 | 2,283 | 3,045 |
| | 1,200 | 1,205 | N/A | 1,608 | 2,412 | 3,215 |
| Diesel electric intermittent | 900 | 1,150 | 1,250 | 1,533 | 2,299 | 3,065 |
| | 1,000 | 1,270 | 1,363 | 1,693 | 2,541 | 3,388 |
| | 1,200 | 1,343 | N/A | 1,790 | 2,685 | 3,580 |
| Propulsion use (General) | Medium Duty | 960 | - | 1,156 | - | - |
| | | 1,100 | 1,119 | N/A | 1,492 | 2,238 |
| | Heavy Duty | 930 | - | 1,040 | - | - |
| | | 1,060 | 1,007 | N/A | 1,343 | 2,014 |
| Propulsion use (Harbour tugboat) | Harbour Tug Boat rating | 1,150 | 1,103 | N/A | 1,470 | 2,205 |
| Fuel oil | | ISO8217, DMX-class | | | | |
| Engine starting | | Compressed air starting | | | | |
| Lubrication system | | Forced lubrication by gear pump | | | | |
| Cylinder arrangement | | In-line type | In-line type | In-line type | V-type | V-type |
| Number of cylinders | | 6 | 6 | 8 | 12 | 16 |
| Bore x Stroke | | 240 x 260 | 240 x 300 | 240 x 260 | 240 x 260 | 240 x 260 |
| Displacement ltr. | | 71 | 81 | 94 | 141 | 188 |
| Compression ratio | | 12.7 (13.5) | 12.4 (13.4) | 12.7 (13.5) | 12.7 (13.5) | 12.7 (13.5) |
| Fuel injection pump | | Bosch type unit pump, 1 unit per cylinder | | | | |
| Fuel injection lines | | Double walled, equal shaped | | | | |
| Total lub. oil capacity ltr. | | 370 | 370 | 490 | 450 | 600 |
| Total coolant capacity ltr. | | 270 | 270 | 260 | 520 | 700 |
| Max. inclination angle, std. oil pan | front down | 14° | 14° | 14° | 14° | 14° |
| | front up | 14° | 14° | 14° | 14° | 14° |
| | side to side | 25° | 25° | 25° | 25° | 25° |
| Dry weight kg | | 8,400 | 8,600 | 11,000 | 16,600 | 20,500 |

Specifications other than the standard specifications mentioned above may be available on request.

Rating information: all outputs mentioned in kW, valid up to 45°C without derating. Compression ratio related to engine application.

Application

Auxiliary generator - Main power supply: average load factor is 60 - 80% of rated power. 100% of rated power is available intermittently for less than 3 h per every 12 h operation. Operating hours: 3,000 - 4,000 h per year. Overload: 110% is available for max. 25 h per year on emergency basis.

Diesel-electric propulsion - Continuous operation: Allowable load factor is less than 100% of rated power. Operating hours are unlimited per year. Overload: 110% is available for max. 25 h per year on emergency basis.

Diesel-electric propulsion - Intermittent operation: Average load factor is 60 - 80% of rated power. 100% of rated power is available intermittently for less than 3 h per every 12 h operation. Operating hours: 3,000 - 4,000 h per year. Overload: 110% is available for max. 25 h per year on emergency basis.

Propulsion - Heavy duty: Allowable load factor is less than 100% of rated power. Allowable cruising speed is less than 100% of rated speed. Operating hours are less than 8,000 h per year.

Propulsion - Medium duty: Allowable load factor is up to 83% of rated power. Allowable cruising speed is up to 94% of rated speed. 100% of rated power is available intermittently for 4 h per every 12 h operation. Operating hours are less than 3,000 h per year.

Propulsion - Light duty: Allowable load factor is up to 75% of rated power. Allowable cruising speed is up to 90% of rated speed. 100% of rated power is available intermittently for 1 h per every 6 h operation. Operating hours are less than 1,000 h per year.

Propulsion - Heavy duty tugboat: 100% of rated power is available intermittently for 8 h per every 24 h operation. Operating hours are less than 6,000 h per year. Average load factor is 60 - 80% of rated power.

All information is subject to change without prior notice.





Mitsubishi medium speed marine engines: SU series 1,007 kWm to 3,580 kWm



- Robust
- Powerdul propulsion
- Highly reliable
- Easy to mount and maintain



SU series, tough marine engine solutions

The SU inherits all the very best of Mitsubishi's proprietary technologies which have been developed for over half a century. Mitsubishi's reliable mechanism generates a powerful propulsion, yet compact style makes the engine easy to mount and maintain.

Robust, rigid structure and low fuel consumption ratio - key requirements for the main engine of tugboats and other heavy applications. The SU engine is built to deliver reliable service for many years and to satisfy the exacting demands of professional boat

operators.

High Reliability

An intermediate shelf is provided in the cylinder head to enhance rigidity and efficiently cool the combustion area. The exhaust valve is made of heat-resistant alloys and its seat area is reinforced cobalt-based heat-resistant alloy to prevent high temperature corrosion and wear. Tufftlide treatment is applied to the cylinder liners for excellent wear resistance. The piston comprises a high strength, heat-resistant steel crown and a high strength, tough forged aluminum body. The durability of the piston at high outputs has been improved by the use of a forced cooling system. The constant temperature cooling system with thermostat gives optimum combustion.

Low Fuel Consumption

Fuel consumption at rated output is around 200 g/kWhr. The high-pressure injection

pump together with optimum cam profiles and injection nozzles realizes high-pressure injection of 1,500 kgf/cm² and reduces the injection period to further increase combustion efficiency. NOx emissions and smoke have been reduced by improving the integration between the piston combustion chamber shape, compression ratio and fuel injection timing.

Easy Maintenance

All maintenance and servicing of the equipment, including the fuel injection system, is located on one side while the exhaust and cooling water pipings are installed on the other for easier access. The main bearing and cylinder head can be tightened easily and securely using an hydraulic device. A large inspection area is provided to enable assembly and disassembly of the piston and main bearing inboard. The major component parts are light enough and split





Mitsubishi Marine Engines, S6U/S6U2/S8U/S12U/S16U-series

into smaller components for easier handling. Rocker arms, pumps and turbochargers are forced lubricated with oil from the engine oil pan to reduce the daily maintenance.

Space - Saving

All pumps, oil coolers and filters in the cooling water, lubrication and fuel systems are compactly installed on the engine enhancing comfort in the working area and provide an affordable space. The overlap distance between the crankshaft main journal and pins has been increased to reduce the cylinder pitch, thus reducing the overall engine length.



Cam chamber cover



Manual stop lever



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