



YANMAR

MARINE DIESEL ENGINE

6AYEM-ET / 6AYEM-ST



Photograph may show optional equipment.

- Cammon Rail
- EPA Tier III Compliant

803 mhp

599 kW

**LONG
STROKE**

Control System

6AYEM Control System for VC10

| Control system | VC10 | | |
|-----------------------|---|--------------------------|--------------------------|
| Classification | Non-Classified | | |
| System type | Type 2 | Type 3 | Type 4 |
| Bridge (Remote) | | | |
| Engine room (Local) | | | |
| | To M/G To engine | To M/G To engine | To M/G To engine |
| Function | YXH-240-7(12V) or other electrical gear | | |
| Remote monitor size | 7 inch | 7 inch | 7 inch |
| Gear shift | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shield harness | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Monitor in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Start / Stop in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| R/L change in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Override | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Safety relay for SCS | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6AYEM Control System for Automaskin Panel

| Control system | Automaskin Panel | | |
|-----------------------|---|--|--|
| Classification | Non-Classified | Classified | |
| System type | Type 0 | Type 1 (Basic, Premium) | Type 2 (Basic, Premium) |
| Bridge (Remote) | | | |
| Engine room (Local) | | | |
| | To engine To M/G | To engine To M/G Additional sensor/switch | To engine To M/G Additional sensor/switch |
| | | Note: Sensor is danfoss sensor. (For classification) | Note: Sensor is danfoss sensor. (For classification) |
| Function | YXH-240-7(24V) or other electrical gear | | |
| Remote monitor size | 5.7 inch | Basic: 5.7 inch Premium: 8.4 inch | Basic: 5.7 inch Premium: 8.4 inch |
| Gear shift | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shield harness | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Monitor in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Start / Stop in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| R/L change in local | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Override | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Safety relay for SCS | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

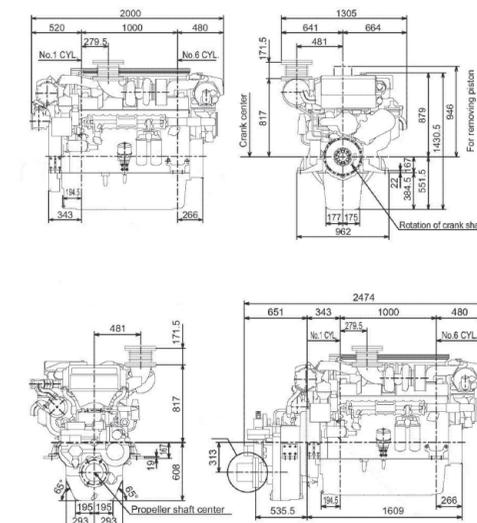
Engine Specifications

| Model | 6AYEM-ET | 6AYEM-ST |
|--|--|------------|
| Type | 4-cycle, Vertical, Turbo-charged with sea water cooled inter cooler diesel engine | |
| No. of cylinders, Bore x Stroke mm | 6 in-line, 155x180 | |
| Displacement lit. | 20.38 | |
| Rated Output kW(mhp)/min ⁻¹ | 599(803) / 1900 | 485 / 1900 |
| Emission | EPA Tier III | |
| Fuel consumption gr/kW · hr | 215+5% | 214+5% |
| Direction of rotation | Counterclockwise | |
| Combustion system | Direct Injection | |
| Cooling system | Constant High temperature cooling system [Optional]Dual circuit keel cooling system | |
| Cooling water capacity lit. | 35(engine only) [optional HE:68] | |
| Lubricating system | Forced lubrication with gear pump | |
| Lubricating oil capacity lit. | Normal type: 91, Shallow type: 53 | |
| Lubricating oil grade | SAE40 or SAE15W-40 | |
| Starting system | Electric start(DC24C-8kW) [Optional Air starting] | |
| Flywheel housing size inch | SAE#0 and 18 | |
| Dry weight kg | 2418 | |

Marine Gear Specifications

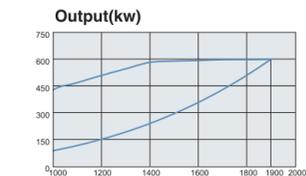
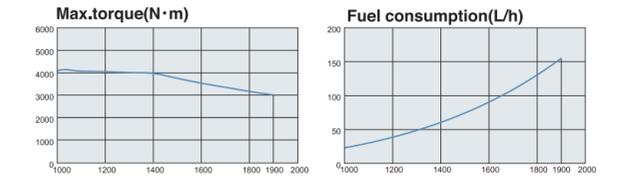
| Marine Gear Model | YXH-240-7 | | | | | |
|-----------------------|--------------------------------|------|------|------|------|------|
| Type | Hydraulic multi-disc clutch | | | | | |
| Reduction ratio | Ahead | 1.95 | 2.27 | 2.56 | 3.03 | 3.48 |
| | Astern | 1.95 | 2.27 | 2.56 | 3.03 | 3.48 |
| Direction of rotation | Clockwise or Counter-clockwise | | | | | |
| Dry weight kg | 632 | | | | | |

Dimensions [Unit : mm (in.)]



Performance Curves

EPA(599kW / 1900min⁻¹)



Rating definitions: hp=0.7355kW ratings are based on conditions of 100kPa, 30% relative humidity at 25°C

Fuel rates: Specific gravity 0.835g/cc, low calorific value 42700kj/kg(10200kcal/kg), Cetane No.45

Yanmar Power Solutions Co., Ltd.

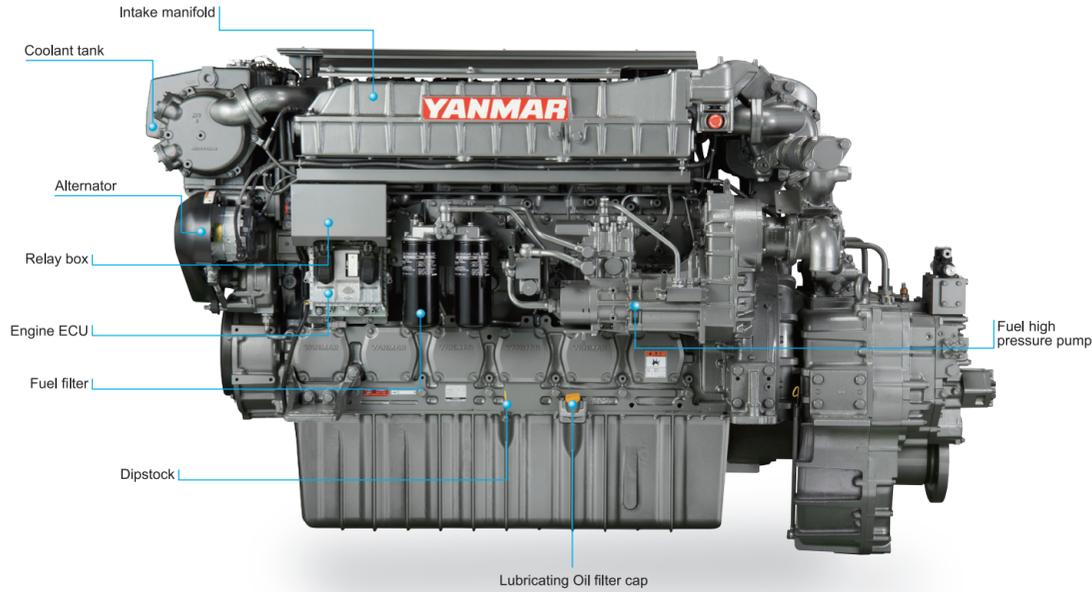
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Tel : +81-6489-8069 Fax : +81-6489-1082
yanmar.com

Note : All Data Subject to Change Without Notice.

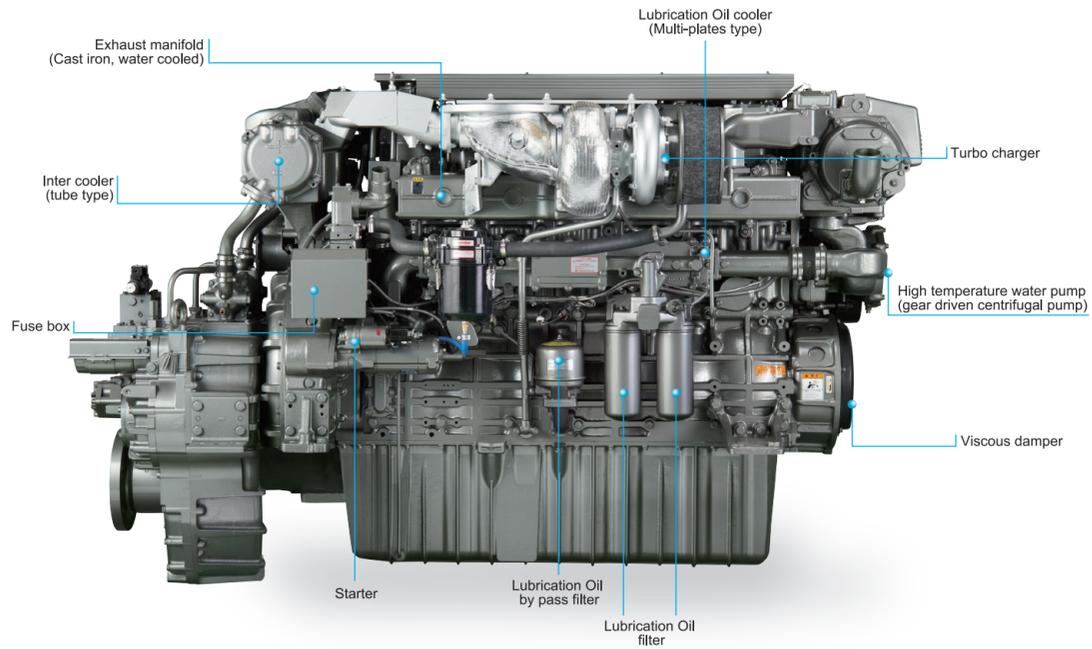
Please consult YANMAR or local distributors for the details.

Born for "Pure Marine" By Over 60 years experience.

Operation side



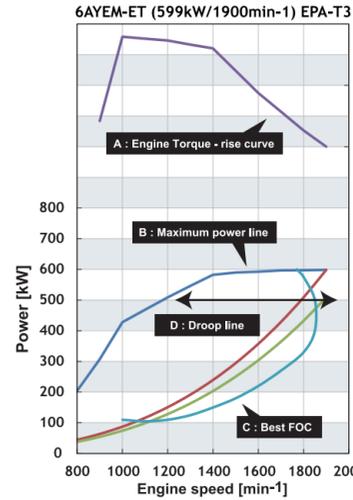
Non operation side



Photograph may show optional equipment.

High Torque

Excellent Torque-Rise Characteristics in High Speed and High Load Range Enable Stable Performance of Job Duties even at High Load.

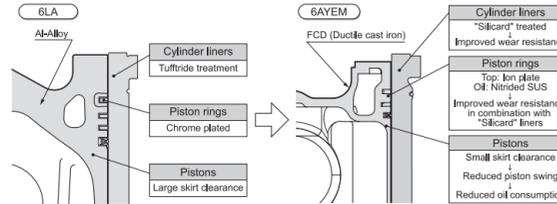


The Engine Performance Gives the Following Advantages:

- The engine torque-rise characteristics having much in reserve, (Line A)
→Stable cruising with least speed reduction against sudden load changes.
- Wide Max. Power Range, (Line B)
→A wide range propeller matching, from the passenger ship (light/medium duty) to tug boat (heavy duty), is possible.
- Min. Fuel Consumption Range is Wide, (Line C)
→Economical with wide min. fuel consumption range both during cruising or performing job duties.
- Wide Medium Load Range, (Line D)
→Produces stable engine performance even when doing other job duties.

Toughness

1. Low, stable LOC (Lubricating Oil Consumption) and long overhaul interval, thanks to sillicard** (kind of artificial ceramic) treatment cylinder liner and nitrided stainless steel rings and the finely judged clearance between piston and liner. No cylinder kit replacement concept in YANMAR overhaul program.
2. Purpose built marine engine with long stroke, optimized flywheel weight, water cooled exhaust manifold and special treatment injection nozzle. A Leak-free engine.

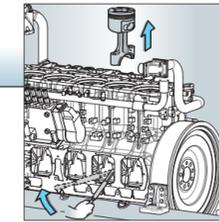


** Sillicard is a surface treatment that uses a special method to embed powdered Silicon Carbide (SiC), an artificial ceramic second only to diamond in hardness, to provide superior wear resistance and durability.

Lower Down Time

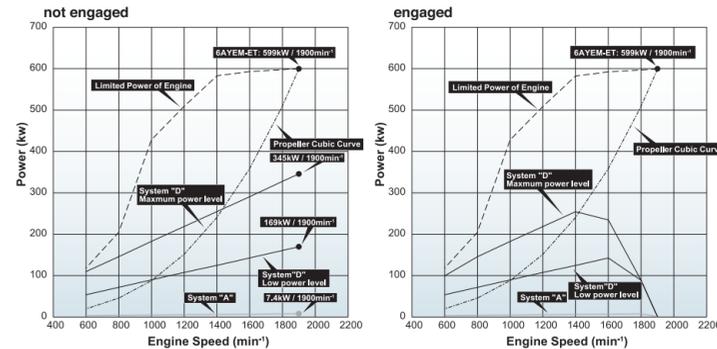
Easier Routine Inspection, Easier Maintenance.

1. Large inspection windows on the side of the block allow in-site replacement of pistons.
2. Full mechanical engine management avoids the chance of delicate and expensive electronics failing in hot, marine engine room conditions.
3. 500 hours service interval.
4. Individual cylinder heads for each cylinder.



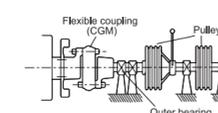
High capacity front PTO

6AYEM-ET(599kW) When propeller is not engaged.



Take Off Method

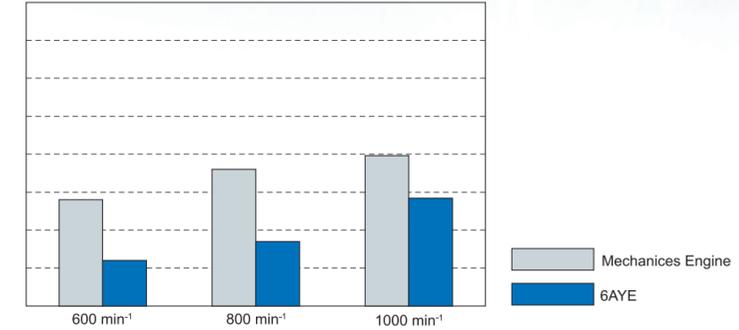
- A Bell-driven without an outer bearing
- D Shall have the support for bearing at both ends through the intermediary of flexible coupling (CS rubber coupling)



Strategies to obtain Low noise

- Realized the quietness at the low idle engine speed by multi-stage fuel injection pattern.

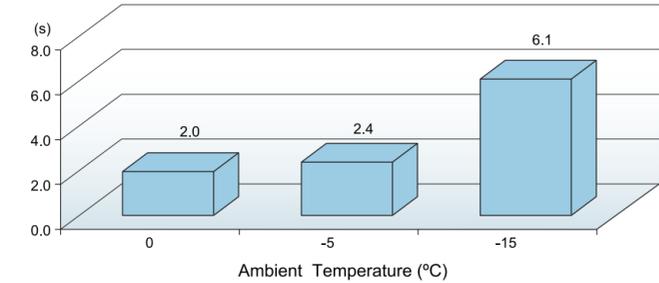
Comparison of Combustion Noise



Strategies to obtain good starting performance

- Ensured good starting performance by performing a normal or more multi-stage injection at start-up. So unrequired the heater was required in a conventional engine.

Reaching Time until the idle engine speed



Adoption of appropriate fuel injection pressure map

- Improve Fuel Economy
- Low CO₂ & Nox Emissions
- High power with low stroke

Multi-Stage Fuel Injection Pattern

