

For Harmonious Living with Global Environment

Normally, when NOx emissions are reduced, the fuel consumption and smoke generation will increase, adversely affecting both the environment and management. As a solution to this, YANMAR has developed "Eco Diesel", which is designed so as to comply with marine environmental protection.

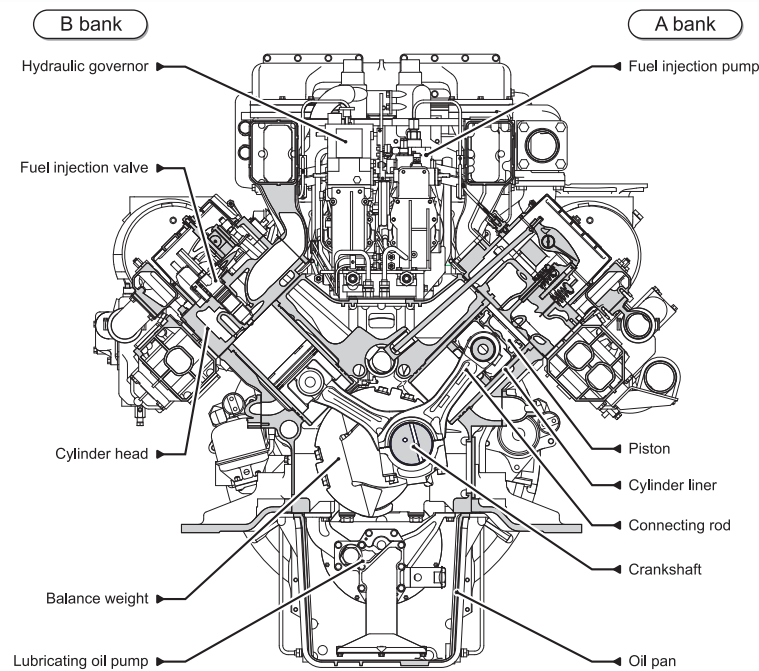
It improves the fuel consumption and smoke generation in addition to reducing NOx emissions.



Lower fuel consumption
Lower NOx emissions

Reborn V12 power you can rely on, developed from years of experience with the latest technology

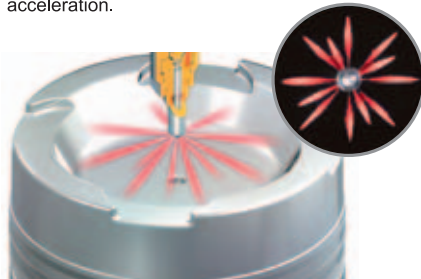
Since the 12LA and 16LA series engines were first sold in 1980's, Yanmar has supplied more than 2,000 of them around the world. Based on this success, we have developed the new 12AY series, a reliable, high-performance V12 engine reborn as our 1,000 hp-plus high-power model. We use the same proven technology from our best-selling 6AY series, meeting IMO Tier II exhaust emission standards without electronic engine control. With its stable high torque, this engine features a prolonged lifecycle design that boasts low NOx and fuel consumption thanks to a new, efficient combustion method, improved durability, and ease of maintenance. This engine will help cut costs and reduce downtime.



Performance

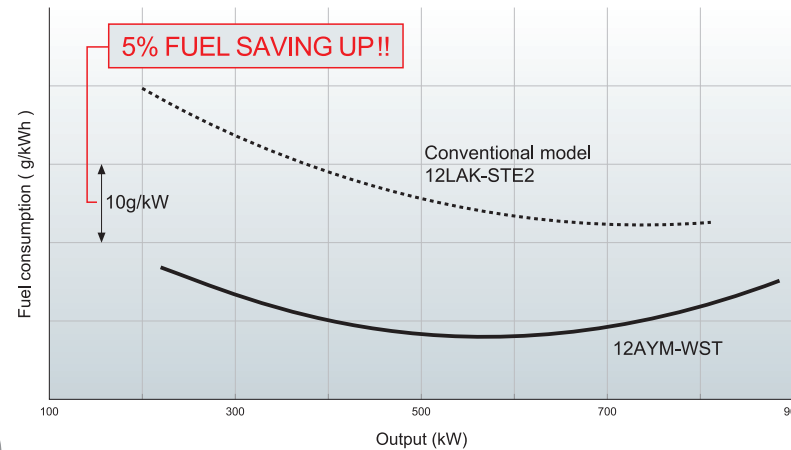
Good Fuel Economy together with Lower Emissions

The micro-sized multiple holes in the all-new injectors produce an even finer fuel-oil mist and, combined with deep combustion chambers and new cylinder head shapes, produce even more power. It is power delivered smoothly, due to optimum combustion conditions being maintained across a far wider operating range. And it leads directly to the bonus of lower exhaust emissions and lower fuel consumption. The boost compensator dramatically reduces black smoke under hard acceleration.



Staggered Layout Injection System

Both mono-grade
and multi-grade
lubrication oil
can be used.



Cost of Saving (5%)
In the case of an engine
that consumed 200 liters
of fuel per hour.
Annual Operation hour — 3,000hrs



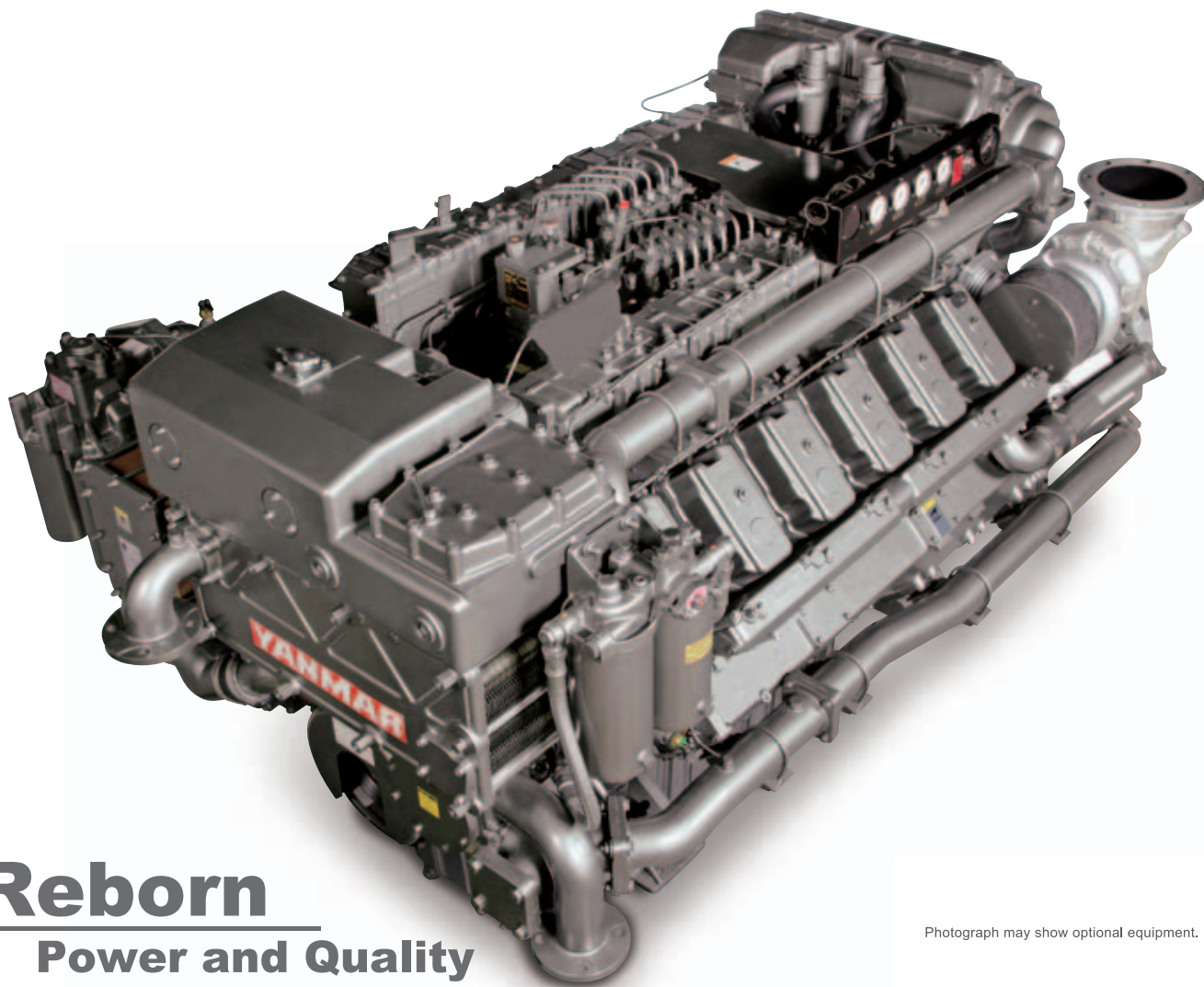
Annual saving=30,000 liters
200liters Drum×150

YANMAR
Solutioneering Together

MARINE DIESEL ENGINE

12AYM-WST

H-rating 1030kW [1400mhp] / H-rating 882kW [1200mhp]



Photograph may show optional equipment.

Reborn Power and Quality

IMO TierII Compliant / Mechanical Engine Control

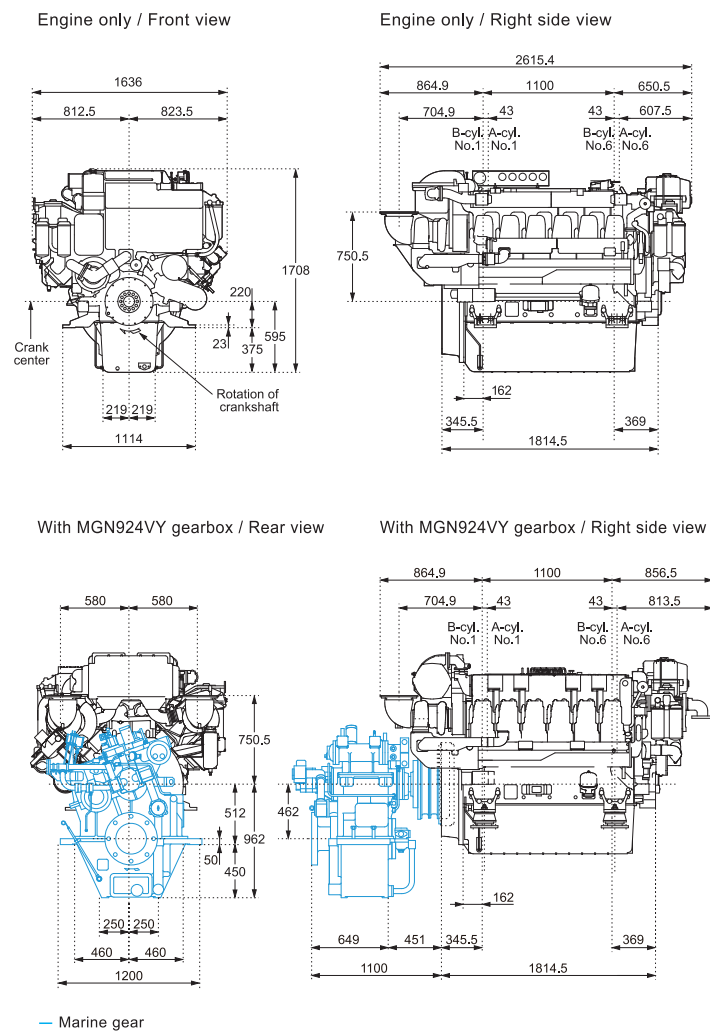
1200mhp 1400mhp

**LONG
STROKE**

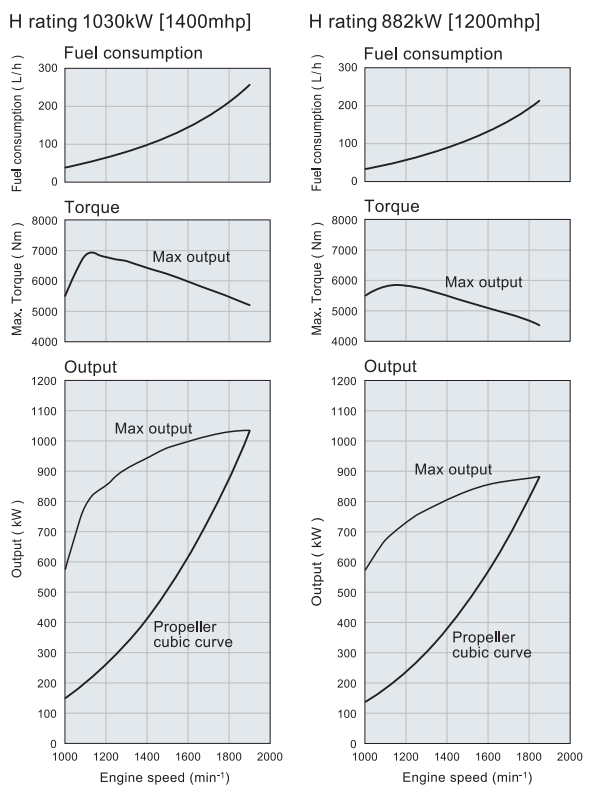
Engine Specifications

Model	12AYM-WST	
Type	V-type, vertical, water-cooled, 4-cycle diesel engine	
No. of cylinders, Bore × stroke mm	12, 155 × 180	
Displacement lit.	40.76	
Rated output kW(hp) / rpm	H: 1030 (1400) / 1900 (at flywheel)	H: 882 (1200) / 1850 (at flywheel)
Emission	IMO Tier II	
Fuel consumption gr/kW · hr	H: 211 ^{±5%} at rated output (without marine gear)	H: 205 ^{±5%} at rated output (without marine gear)
Direction of rotation	Counterclockwise, when viewed from the flywheel side (crankshaft)	
Combustion system	Direct injection	
Cooling system	Constant high temperature cooling system	
Cooling fresh water capacity lit.	211 (jacket)	
Lubricating system	Wet sump system, forced lubrication by gear pump	
Lubricating oil capacity lit.	Max.: 170 Min.: 110 (sump tank) (in engine piping line: 25)	
Lubricating oil grade	SAE40 or SAE15W-40	
Starting system	Electric starting motor DC24V-8.0kW×2 or air motor×2	
Flywheel housing size inch	SAE #00, 21	
Dry weight kg	4950 (without marine gear)	

Dimensions (Unit : mm)



Performance Curves



Rating definitions : hp=0.7355kW Ratings are based on conditions of 100kPa, 30% relative humidity at 25°C.
H=For applications where use of rated power is less than 24 hours continuous out of every 30 hours and operation is less than 4000 hours per year.
When combined with a correctly matched propeller which allows the engine rated speed to be achieved in a fully loaded vessel state, the reduced-power operation can be at or below 50 min⁻¹ of the rated speed.
Fuel rates : Specific gravity 0.835g/cc,
low calorific value 42700kJ/kg (10200kcal/kg), Cetane No.45.

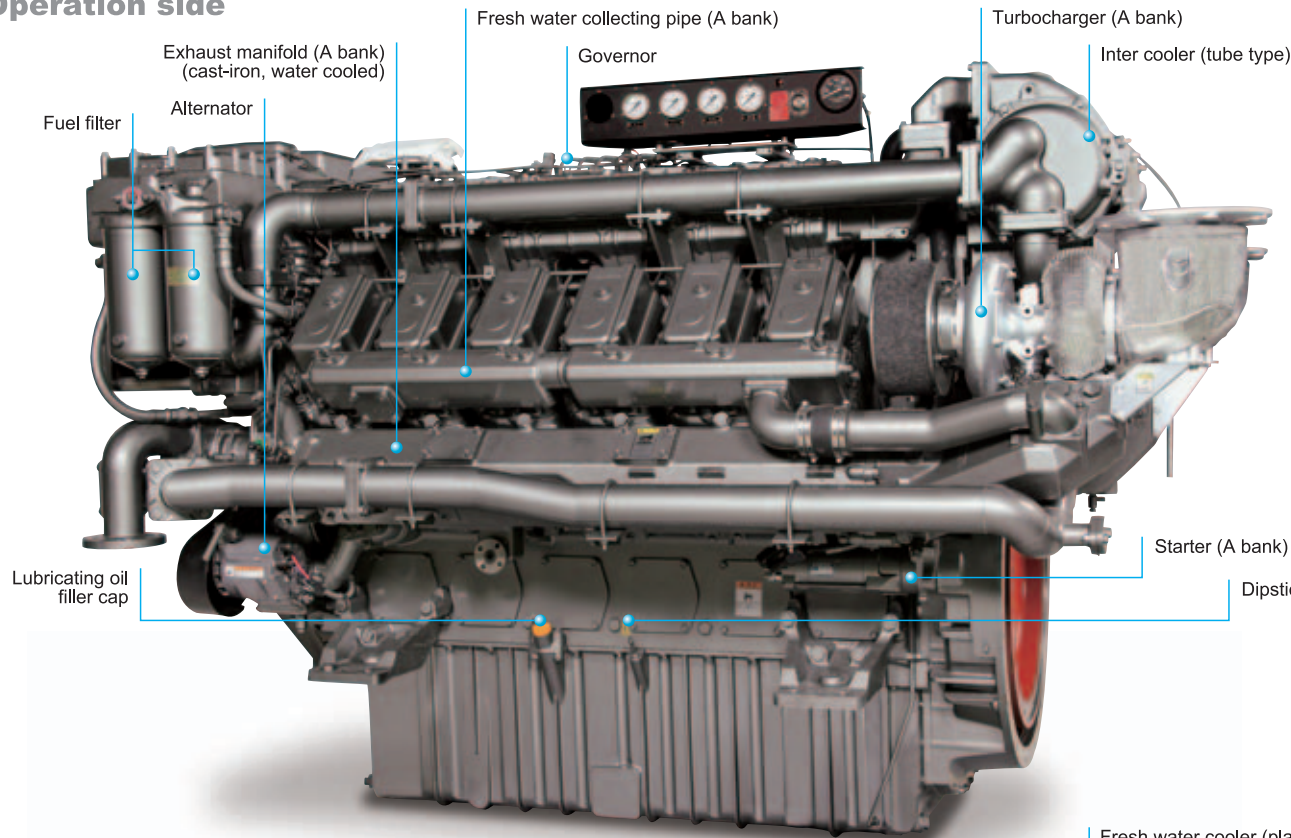
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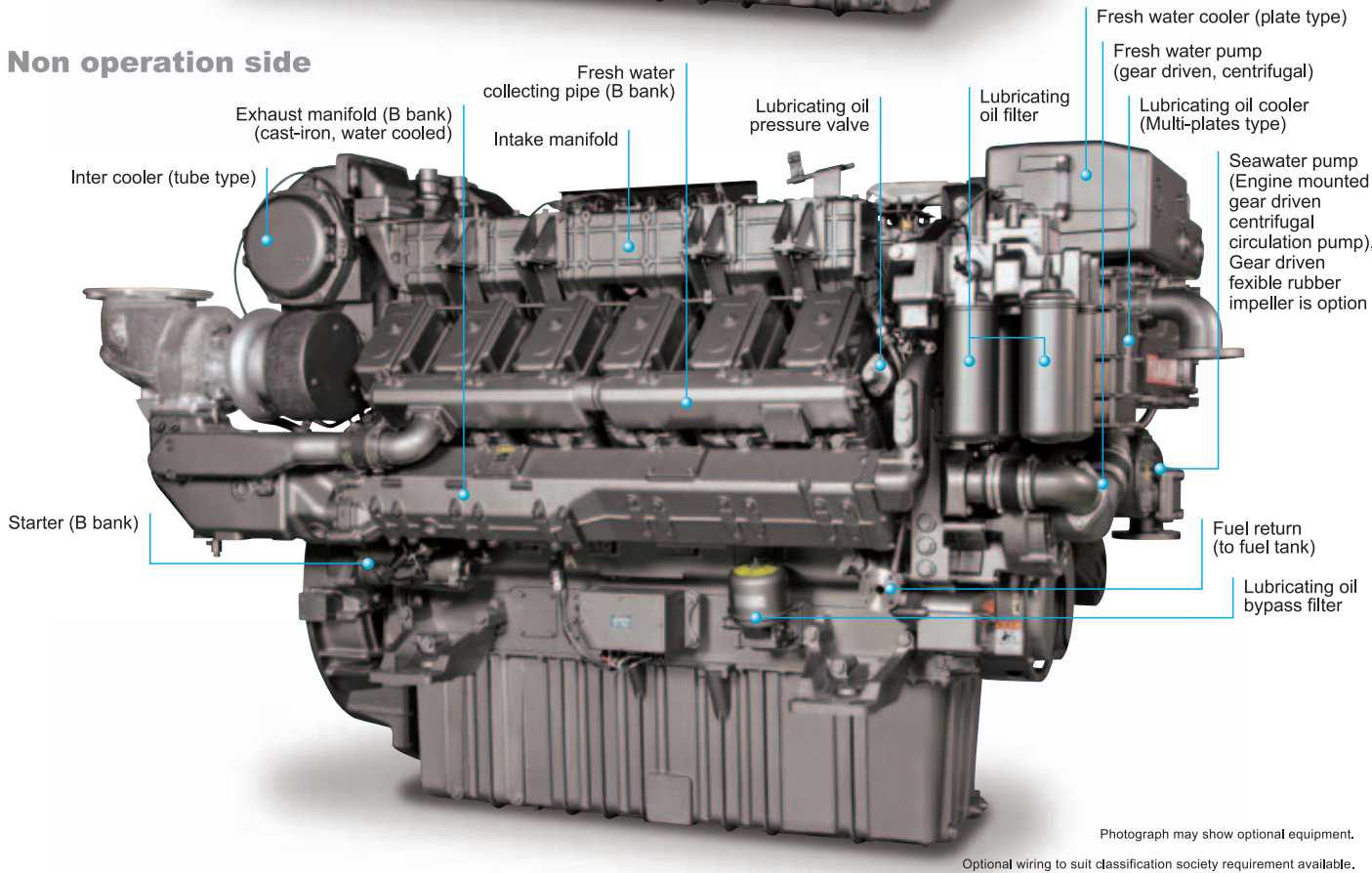
Note : All Data Subject to Change Without Notice.
Please contact YANMAR or local distributor
for the details of each model.

YANMAR, Providing Quality Propulsion Engine Packages for Over 60 Years.

Operation side

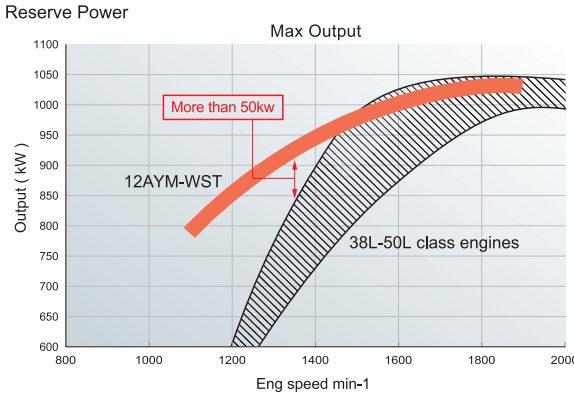
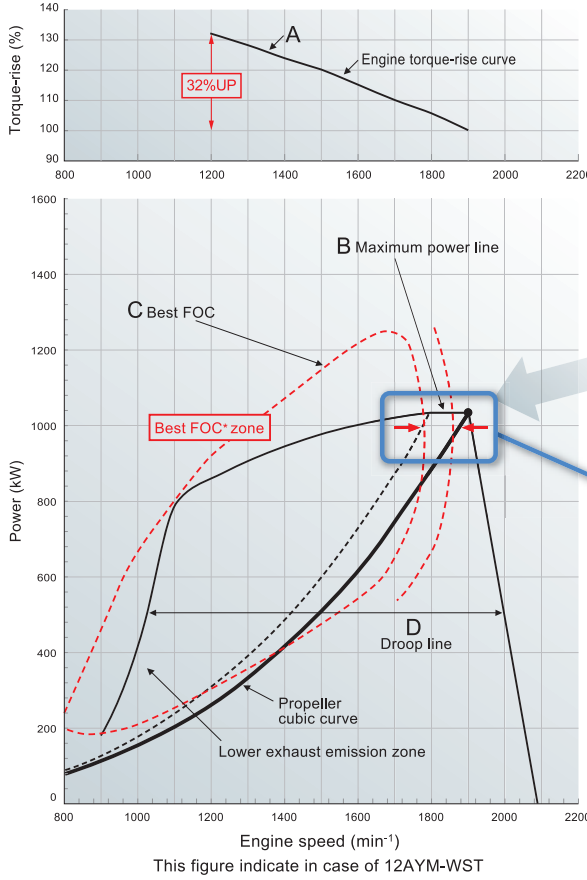


Non operation side



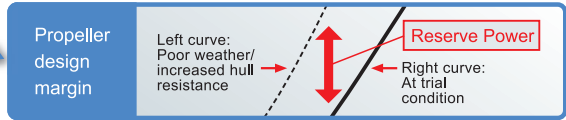
High Torque

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



Wider Propeller (FPP) design margin with further fuel economy (ferry boat applications, except Tug, Trawler)

- ☑ Fuel economy less than 1850 min⁻¹
- ☑ Best fuel economy less than 1750min⁻¹

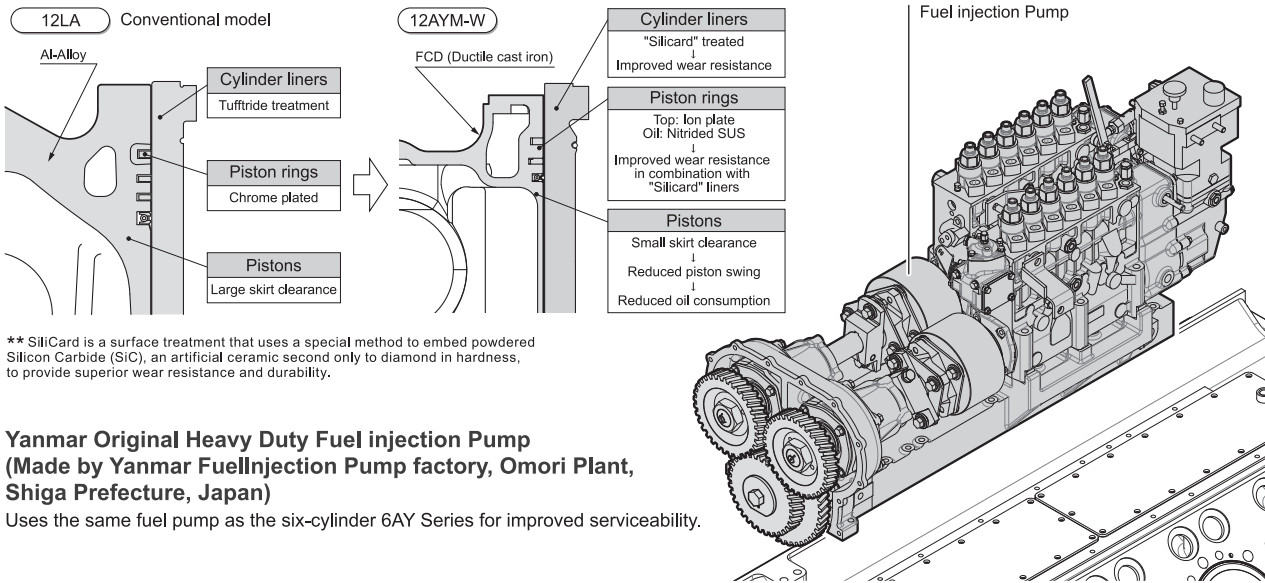


The Engine Performance Gives Following Advantages:

- 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 reserve power, 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. *FOC: Fuel Oil Consumption
- Wide Medium Load Range, (Line D)
→Produces stable engine performance even doing other job duties.

Toughness

- 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 inYANMAR overhaul program.
- Purpose built marine engine with long stroke, optimized flywheel weight, water cooled exhaust manifold and special treatment injection nozzle. A Leak-free engine.
- Type Approved by Marine Class Societies.



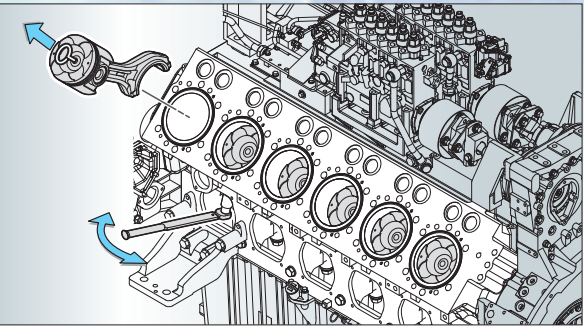
** Sillicard is a surface treatment that uses a special method to embed powdered Silicon Carbide (SiC), an artificial ceramic second only to diamond in hardness, to provide superior wear resistance and durability.

Yanmar Original Heavy Duty Fuel injection Pump
(Made by Yanmar FuelInjection Pump factory, Omori Plant, Shiga Prefecture, Japan)
Uses the same fuel pump as the six-cylinder 6AY Series for improved serviceability.

Lower Down Time

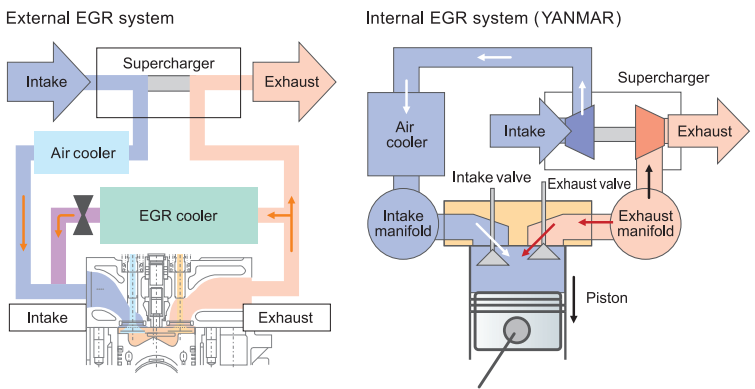
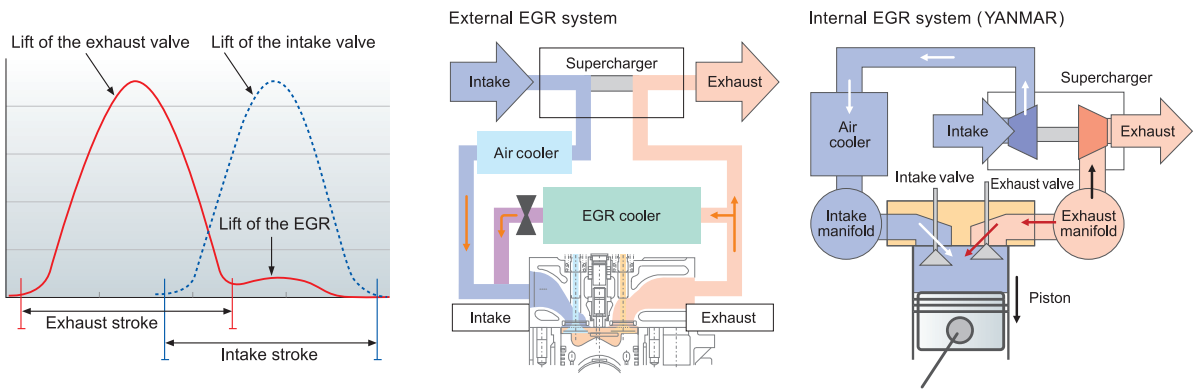
Easier Routine Inspection, Easier Maintenance.

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

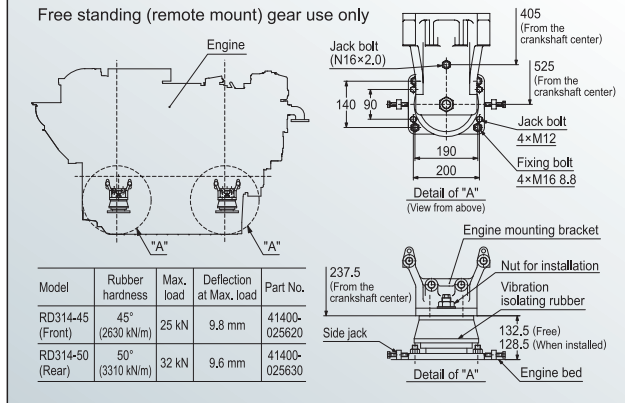


Techniques for Complying with IMO Tier II Emission Standards : Exhaust Gas Recirculation (EGR)

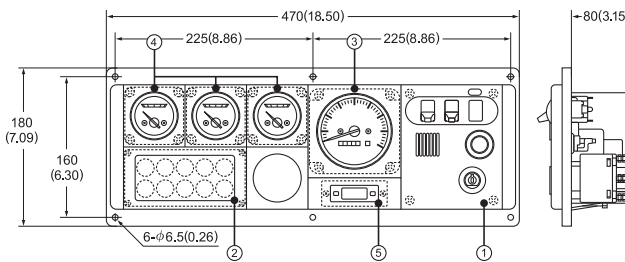
In the 12AY engine, the internal EGR system is used. This design does not require any external control devices or any significant changes to the engine structure. In external EGR, the line of the engine and supercharger must be equipped with devices such as EGR solenoid valves and coolers, and control must be performed for them. But in internal EGR, these functions can be performed by controlling the lift of the intake and exhaust valve.



Rubber mounts (option)



Detail of instrument panel D-type (Unit : mm)



- Switch unit**
 - Key switch
 - Alarm buzzer
 - Alarm buzzer stop switch
 - Illumination switch
 - Stop button (red button)
- Alarm lamp unit with Alarm monitor device**
 - Battery not charging
 - C.W. high temp.
 - L.O. low pressure
 - Clutch oil low pressure
 - L.O. filter clogged
 - C.W. low level
 - L.O. high temp.
- Tachometer unit**
 - Tachometer with hour meter
- Sub meter unit**
 - L.O. pressure meter
 - C.W. temp. meter
 - Boost meter (Turbo)
- Clock unit**
 - Clock