

# MITSUBISHI MARINE ENGINE

# SU SERIES



DNV



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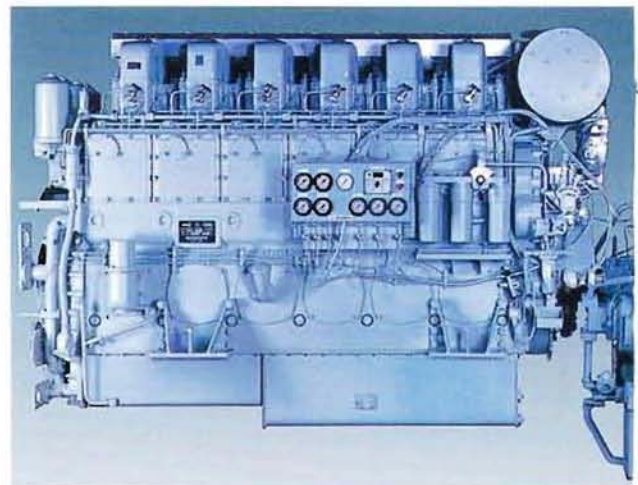


**MITSUBISHI  
DIESEL ENGINES**



## **A tough engine – The SU engine from Mitsubishi.**

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. 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.



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MARINE ENGINE  
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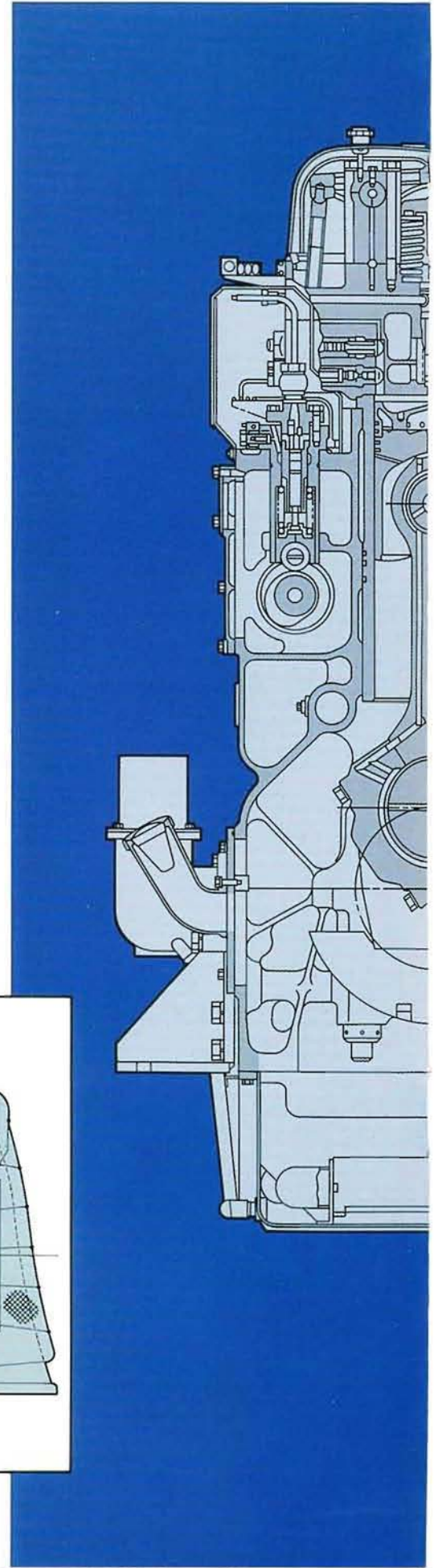
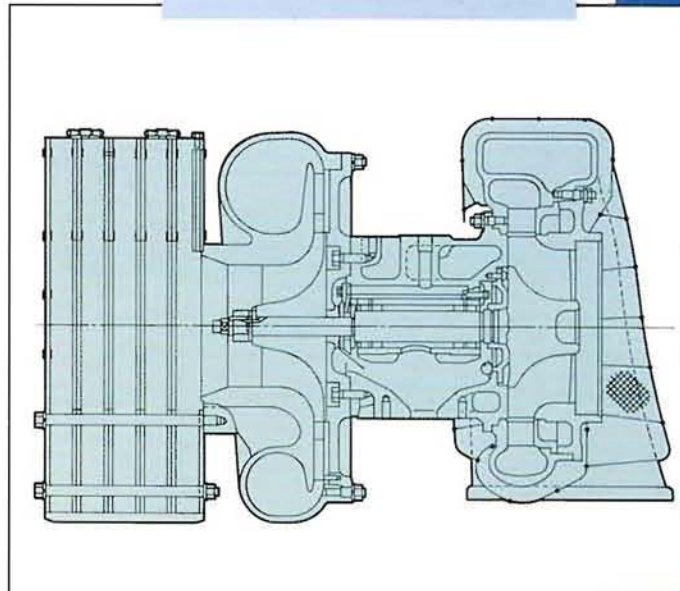
## High Reliability

1. An intermediate shelf is provided in the cylinder head to enhance rigidity and cool the combustion area efficiently.
2. 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. Tufflide treatment is applied to the cylinder liners for excellent wear resistance.
3. 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

1. Fuel consumption at rated output is only 145 g/PS•h.
2. The high-pressure injection pump together with optimum cam profiles and injection nozzles realizes high-pressure injection of 1500 kgf/cm<sup>2</sup> and reduces the injection period to further increase combustion efficiency.
3. NOx emissions and smoke have been reduced by improving the matching between the piston combustion chamber shape, compression ratio and fuel injection timing.





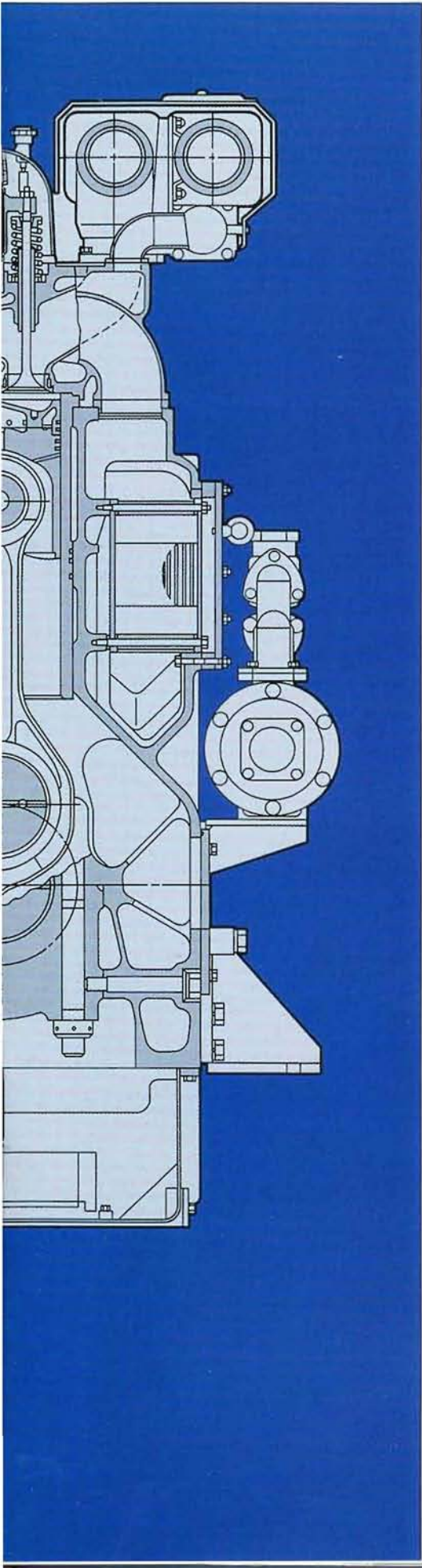
## Easy maintenance



1. All the 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.
2. The main bearing and cylinder head can be tightened easily and securely using a hydraulic device. A large inspection open is provided so that assembly and disassembly of the piston and main bearing can be done inboard and the major component parts are light enough and split into smaller components for easier handling.
3. Rocker arms, pumps and turbochargers are forced lubricated with oil from the engine oil pan to lessen the daily maintenance.

## Space-saving

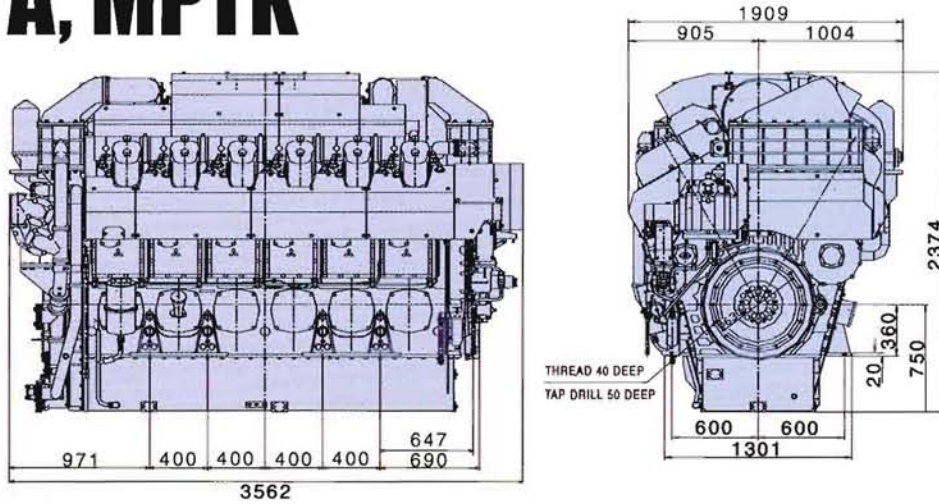
1. All pumps, oil coolers and filters in the cooling water, lubrication and fuel systems are compactly installed on the engine which enhance comfort in the working area and provide an affordable space.
2. The overlap distance between the crankshaft main journal and pins has been increased to reduce the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



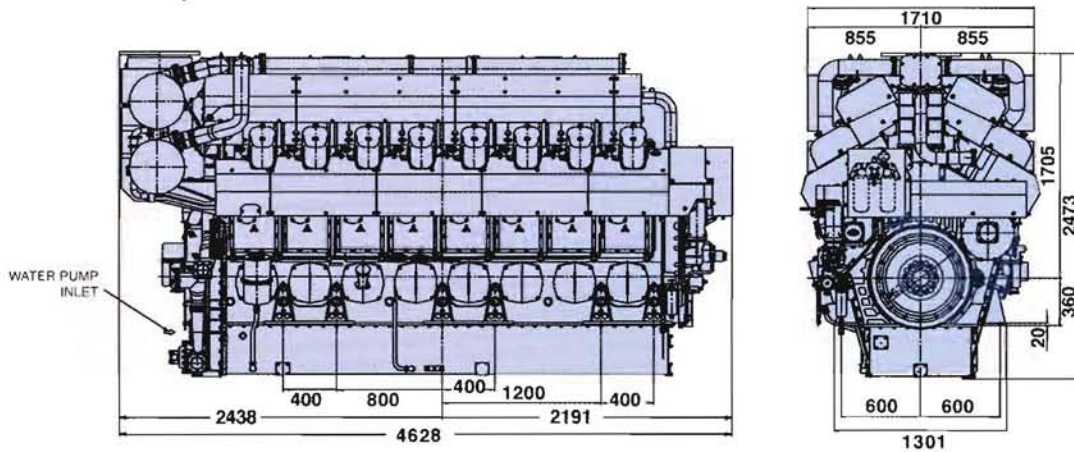




# S12U-MPTA, MPTK



# S16U-MPTA, MPTK





Output Selection List for MITSUBISHI Medium Speed Diesel Engines,  
SU Models, for Marine Auxiliary Use and Marine Propulsion Use

Engine type		S6UM	S6U2M	S8UM	S12UM	S16UM						
Type	4 stroke cycle, water cooled, diesel engine turbocharged with air-cooler (inter-cooler type)											
Combustion type	Direct injection											
Application	Engine speed (rpm)	TA	TK	TA	TK	TA	TK	TA	TK	TA	TK	
Generator drive, marine auxiliary use. Overload permitted 10% for max. 1 hr/12 hrs	750	809	890	947	1015	1079	1187	1618	1780	2059	2373	
	900	1027	1104	1141	1216	1370	1472	2054	2209	2739	2945	
	1000	1143	1220	1268	1350	1524	1627	2286	2440	3048	3254	
	1200	1212	1290			1617	1720	2425	2579	3233	3439	
Propulsion use (General)	light duty	1000			1268							
		1200	1120	1230			1491	1641	2240	2462	2982	3282
	medium duty	960			1156							
		1100	1007	1118			1342	1492	2014	2238	2684	2984
	heavy duty	920			1040							
		1060	910	1007			1216	1343	1820	2014	2432	2686
Propulsion use (Harbour tugboat)	continuous rating	1150		1103				1470		2205		2940
Fuel oil	Diesel fuel oil (ASTM No.2-D)											
Engine starting	Compressed air starting											
Lubricating system	Forced lubrication by gear pump											
Cylinder arrangement	In-line 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			
Cylinder volume	71		81		94		141		188			
Compression ratio	12,5		12,5		12,5		12,5		12,5			
Fuel injection pump	Bosch type unit pump. 1 unit per cylinder											
Fuel injection lines	dual walled, equal shaped											
Fuel consumption at heavy duty load g/kWh (+5%)		202	197	199	194	202	197	202	197	202	197	
Total lub. oil capacity	ltr.	370		370		490		450		600		
Total coolant capacity	ltr.	270		270		360		520		700		
Max. inclination angle, std. oil pan	front down	14°										
	front up	14°										
	side to side	25°										

Rating information: all outputs mentioned in kW, valid up to 40°C without derating.

**Propulsion use:**

**Light duty** rating is intended for use under variable load applications during a limited time of annual operating hours, such as pleasure boats, high performance vessels and patrol boats. The average load shall not exceed the heavy duty output.

**Medium duty** rating is intended for variable load applications during an unlimited time of annual operating hours, such as for work boats, passenger vessels and ferry boats.

**Heavy duty** rating is intended for 24 hours running without load changing, such as for cargo vessels, fishing boats having little load cycling.

**Generator use:** continuous duty under variable load conditions, 10% overload is available for max. 1 hr per every 12 running hours.

The MITSUBISHI SU type engines are 4 stroke diesel engines with direct fuel injection and 4 valves per cylinder. The combination of MITSUBISHI'S own designed turbochargers, high efficient charge air coolers and high pressure fuel injection system, guarantees a perfect combustion, resulting in a low fuel consumption and excellent follow up characteristics on load changings.

The engine block and the hanger type main bearing supports have a very rigid design, the camshaft lies high in the engine block. Wide inspection doors makes inspection and maintenance of main bearings, crankshaft, camshaft and tappets very easy.