OPERATION MANUAL

6LPA-STP2
6LPA-STZP2

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1. FOR SAFE OPERATION

Following the precautions described in this manual will enable you to use this engine with complete satisfaction. Failure to observe any of the rules and precautions, however, may result in injury, burns, fires, and engine damage. Read this manual carefully and be sure you fully understand it before beginning operation.

1.1 Warning Symbols

These are the warning signs which are used in this manual and on the products. Pay special attention to them.

⚠ DANGER

DANGER- Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠ WARNING

WARNING- Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

⚠ CAUTION

CAUTION- Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.

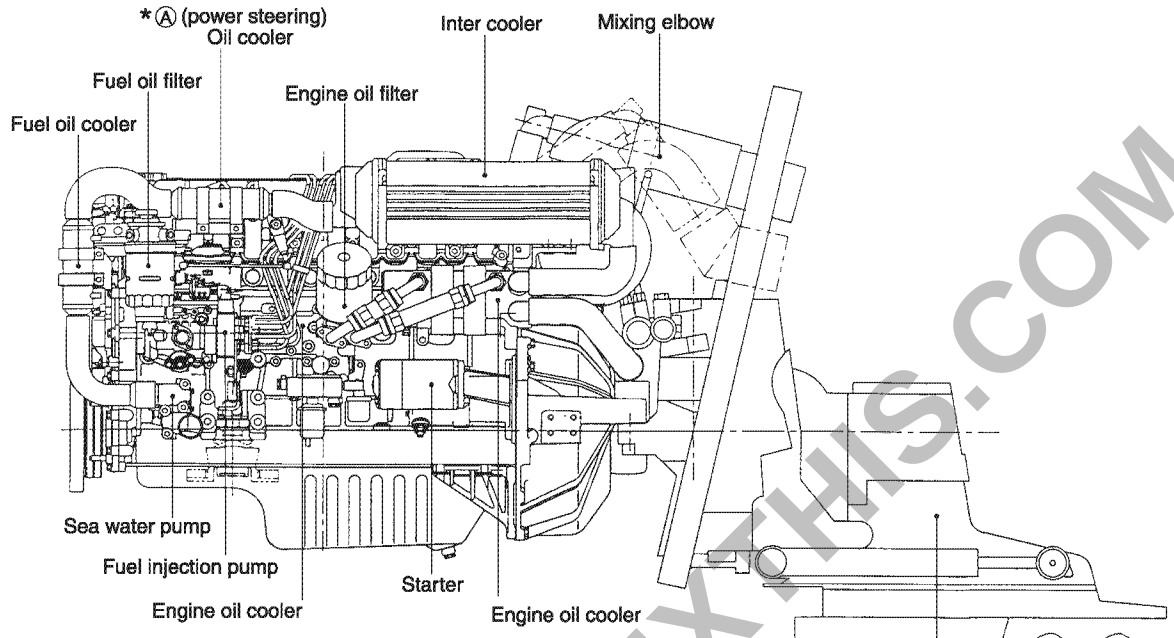
● The descriptions captioned by **[NOTICE]** are for the particularly important cautions for handling. If you ignore them, the performance of your machine may deteriorate leading to trouble.

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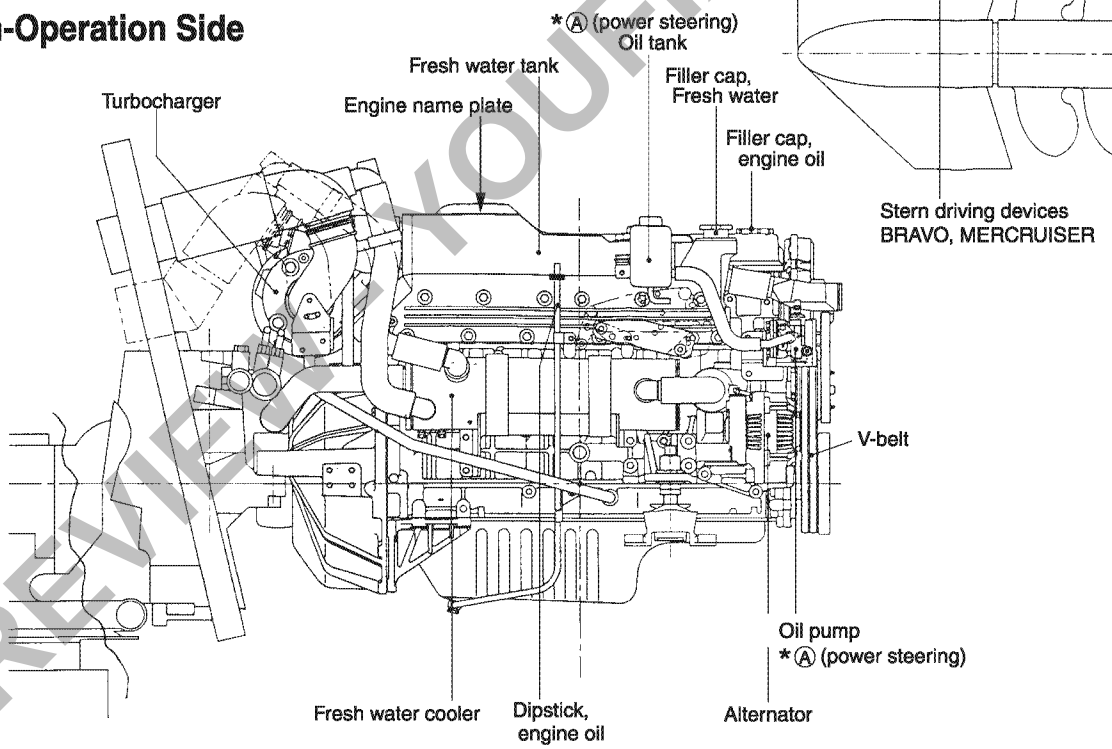
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2.3 Names of Parts

Operation Side (Left side as viewed from the propeller.)



Non-Operation Side



[NOTE]
This illustration shows the **6LPA-STZP2** engine (stern driving device : **BRAVO, MERCRUISER**)
* Ⓐ (indicated) power-steering oil pump, oil tank, oil cooler are parts for the **6LPA-STZP2** engines. **6LPA-STP2** engines do not have them.

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2.5 Control Equipment

The control equipment consists of the control panel and remote control handle, which are connected by the wires and cables to the control levers for remote control operation.

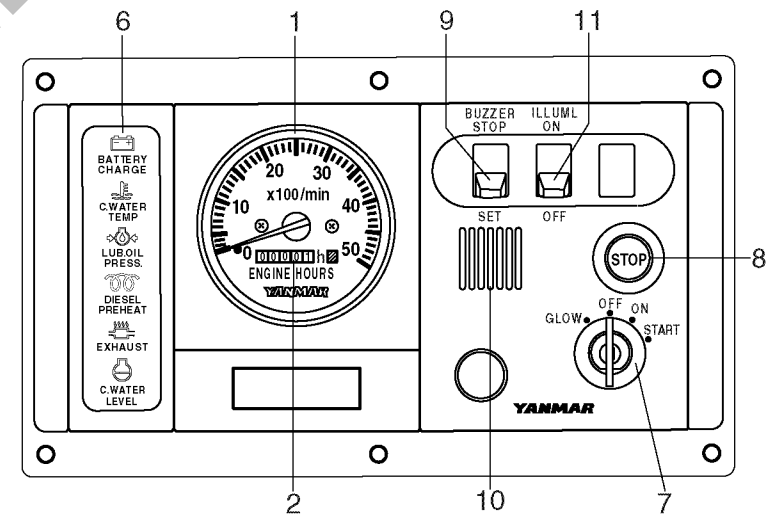
2.5.1 Control Panel (Optional)

The control panel has the following gauges and alarm devices (optional accessories):

● Available , — Not available

No.	Model		New B-type	New C-type	New D-type
7	Switch unit	Key switch (Starter switch)	●	●	●
8		Engine stop switch	●	●	●
10		Alarm buzzer	●	●	●
9		Alarm buzzer stop switch	●	●	●
11		Illumination switch for meters	●	●	●
6	Alarm lamp unit	Battery not charging	●	●	●
		C.W. high temperature	●	●	●
		L.O. low pressure (engine)	●	●	●
		C.W level	—	●	●
		Exhaust (C.S.W.flow)	●	●	●
		Fuel filter	●	●	●
		Gear oil (stern drive)	—	●	●
1	Tachometer uni	Tachometer with hour meter	●	●	●
4	Sub meter unit	LO. pressure meter	—	●	●
3		C.W. temperature meter	—	●	●
5		Boost meter (Turbo)	—	—	●
12	Clock unit	Quartz clock	● (option)	● (option)	●

● **New B-type**



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2.2 Engine Specifications

• 6LPA-STP2/-STZP2

Engine model		6LPA-STP2	6LPA-STZP2
Type		Vertical water cooled 4-cycle diesel engine	
No. of clinders		6	
Bore × Stroke	mm	94 × 100	
Displacement	ℓ	4.164	
Fuel stop power at crankshaft	kw(hp)/rpm	*232 (315) / 3800	
Cont. power at crankshaft.	kw(hp)/rpm	211 (286) / 3682	
High idling	rpm	4280 ± 25	
Low idling	rpm	$750\ ^{+25}_{0}$	
Combustion system		Direct injection	
Starting system		Electric starting (12V-2.5kW)	
Charging system	kg	Regulator built in Alternator DC12V-80A	
Cooling system		Constant high temperature fresh water cooling (2 systems : sea & fresh water)	
Lubrication system		Forced lubrication system with trochoidal gear pump	
Direction of rotation		Counter-clockwise (viewed from flywheel side)	
Lube oil capacity	All ℓ	10.5	
	Oil pan ℓ	8.4	
Cooling water capacity	ℓ	13.5 (Engine) , 1.6 (Sub-tank)	
Turbochager	Model	RHE62W (IHI made)	
	Type	Water cooled turbine housing	
Dimension (L × W × H) (gear less)	mm	1065 × 671 × 729	1145 × 752 × 799
Dry mass (gear less)	kg	408	428
Recommended battery capacity		12V × 120Ah	
Recommended type of remote control handle		Single lever type only	
Engine installation style		On the flexible engine mount	

(Note) 1. Rating condition : ISO 3046-1, 8665 2. 1hp = 0.7355 kW
3. Fuel condition : Density at 15℃ = 0.840, Fuel oil temperature *: 25℃ at the fuel injection pump inlet

• Notation of Output Power

Fuel Temp. / Specific Gravity	25℃	40℃
0.860	323	306
0.840	315	299

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3.2 Supplying Fuel

⚠ DANGER



Fires from Oil Ignition

- **Be sure to use the correct type of fuel when refueling. Mistakenly filling with gasoline or the like will result in ignition.**
- **Be sure to stop the engine before refueling. If you spill fuel, wipe such spillage carefully.**
- **Never place oils or other flammable material close to the engine as this could result in ignition.**

3.2.1 Filling the Fuel Tank

Before supplying fuel, flush the fuel tank and the fuel system parts with diesel fuel or kerosene.

Fill the tank with clean fuel which has not been contaminated with water or dust.

Fill the tank to approximately 90% of its capacity, and take care not to let the fuel spill over during operation.

3.2.2 Bleeding the Fuel System

Bleed the fuel system according to the following procedure. When there is air in the fuel system, the fuel injection pump will not be able to function.

①Check the amount of fuel in the fuel tank, if insufficient replenish.

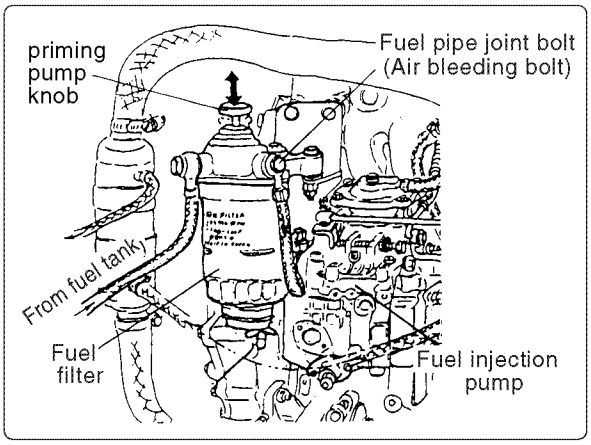
②Open the fuel cock of the fuel tank.

③Loosen the fuel pipe joint bolt on the fuel filter outlet by turning it 2～3 times with a spanner.

④Feed the fuel with the priming pump.
The priming pump is on the top of the fuel filter.
Move the priming pump knob up and down until fuel mixed with air bubbles flows out of the pipe joint bolt.

⑤When the fuel coming out is clear and not mixed with any bubbles, tighten the pipe joint bolt.

⑥Check no leakage of fuel oil from the seals of the pipe joint bolt during moving the priming pump knob up and down.



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6. TROUBLE AND TROUBLESHOOTING

6.1 Simple problems and the appropriate countermeasures

If you should encounter some difficulty during operation, refer to the following table for countermeasures.

Trouble	Probable Cause	Measure	Reference
Problem occurs during operation. ■Alarm buzzer sounds and alarm lamps come on.	**[NOTICE]** **When the alarm equipment indicates a problem, immediately put the clutch in neutral and run the engine at low speed. Check to see which alarm indicator is lit, then stop the engine and inspect. When you cannot determine the source of the problem, return to port at low speed and ask your Yanmar dealer for repairs.**		
●Charge Lamp (Alarm buzzer does not sound.)	Faulty battery V-belt is loose or damaged Alternator is not generating electricity	Check battery fluid. Adjust V-belt tension or replace belt. Ask for repairs.	5.2.2(3) 5.2.5(1)
●C.W. Temp. Lamp goes on.	Insufficient cooling water in fresh water tank Leakage in fresh water cooling system Fresh water cooling pump is damaged Inside of C.W. system is dirty.	Check and replenish cooling water. Ask for repairs for water leakage. Ask for repairs. Ask for repairs.	3.5
●L.O. Press. Alarm Lamp goes on.	Insufficient engine oil	Replenish engine oil.	3.3
●C.W. Level Alarm Lamp goes on.	Insufficient cooling water in fresh water tank	Check and replenish fresh cooling water.	4.1(5)
●Gear Oil Alarm Lamp goes on.	Insufficient drive oil	Replenish drive oil.	3.4
●Fuel Filter Alarm Lamp goes on.	Increased fuel filter drain	Drain water separator.	5.2.2(2)
●Exhaust Alarm Lamp goes on.	Insufficient discharge of cooling seawater Damaged cooling seawater pump	Kingston cock is closed. Kingston cock is clogged. Suction hose is damaged or joints loose Check seawater pump impeller.	 5.2.6(1)
Faulty Alarm Devices	**[NOTICE]** **Do not operate the engine if alarm devices are not working properly. Serious accidents may result if difficulties are not spotted due to faulty alarm lamps.**		
■Before starting when switch is turned from **OFF→ON**, alarm devices do not work.			2.5.1(2)
●Alarm buzzer does not sound.	Circuit broken or buzzer damaged	Ask for repairs.	
●Some alarm lamps do not light up.	Circuit broken or lamp burnt out.	Ask for repairs.	
■After starting when switch returns from **START →ON**, alarm devices do not work.			2.5.1(2)
●Alarm buzzer does not stop.	Short circuit	Ask for repairs.	
●Some alarm lamps do not go out.	Damaged sensor or switch	Ask for repairs.	

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