# 2.2 Engine Specifications

## 2.2.1 4JH3-TE

| | |
|---|---|
| Engine model | 4JH3-TE |
| Use | Pleasure boat |
| Type | Vertical water-cooled 4-cycle diesel engine |
| No. of cyl.-bore×stroke | 4-ϕ84×90 |
| Displacement L | 1.995 |

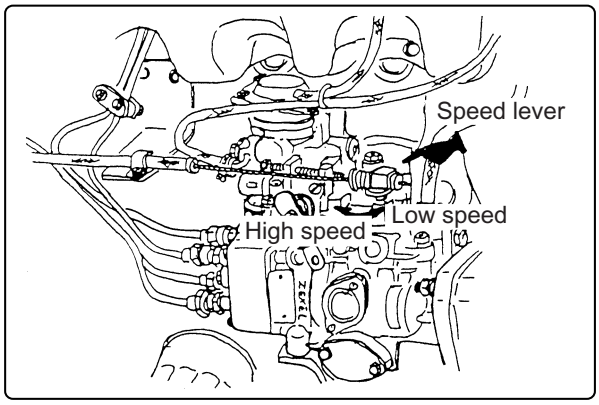
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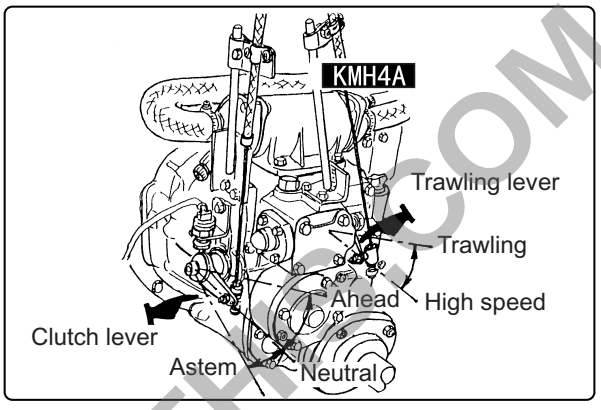
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## 2.5.2 Remote Control Handle

This engine is controlled by the remote control handle located in the cockpit. The speed control lever on the engine side and clutch lever on the marine drive are connected by remote control cable with the various remote control handles in the cockpit (We reccomend you a single hanrdle remote control device). There are the following kinds of remote control handles. When using other kinds of remote control devices, consult their operation manuals.



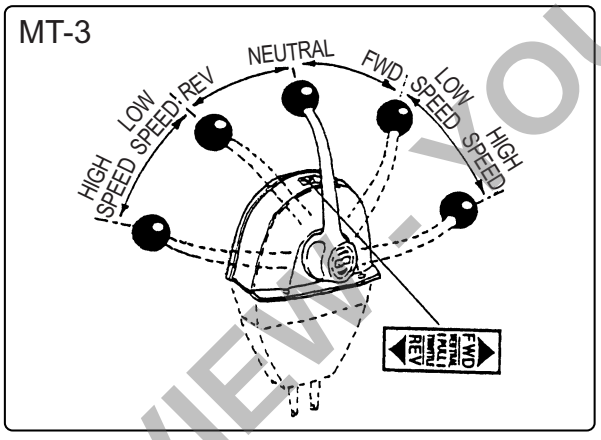




### (1) Morse Remote Control Handle

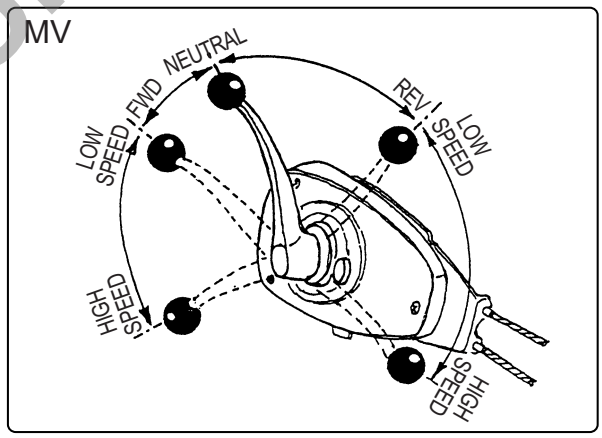
**OPTION**

This is a single-handle remote control device connected by a remote control cable. It operates the clutch to neutral, forward, and reverse and controls the engine speed.

**Model MT-3** : Top mounting type.




**Model MV** : Side mounting type.




The labels for operation on the handle are:

∆**FWD:** Forward
**NEUTRAL:** Clutch disengaged position
**THROTTLE:** Position to reduce engine speed
∇**REV:** Reverse

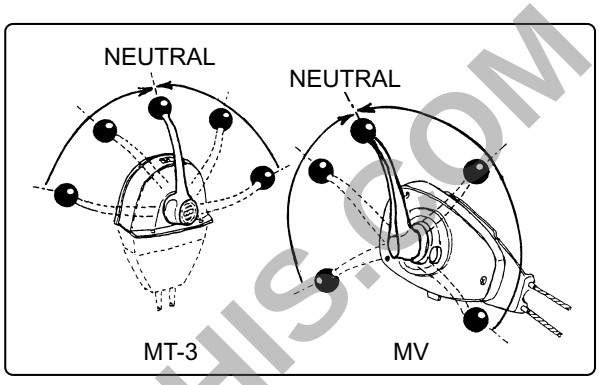
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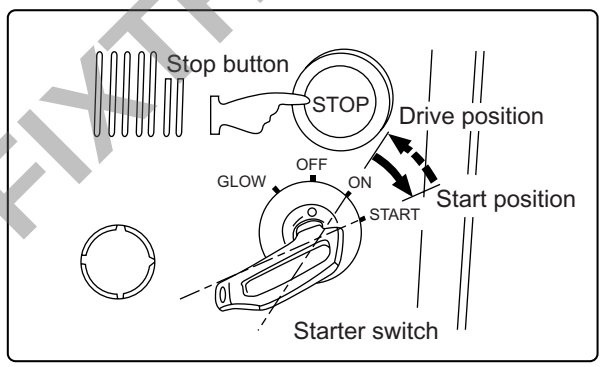
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# 3.6 Cranking

When the engine is being used for the first time or if it has not been used for a long period of time, perform cranking before starting to distribute oil to all of the parts. Using an engine which has been stored for a long period of time without the cranking procedure may result in engine seizure, since there will no longer be oil on the moving parts after storage.

1. Open Kingston cock.
2. Cut off all clutches and the main switch, making sure that all auxiliary machines are in a no-load position.
3. Put marine gear in **NEUTRAL**
4. Crank the engine.
   Push the stop button to stop fuel injection while crawling.
   1) Put the key into the starter switch.
   2) While pushing the stop button, turn the key to the **START** position and hold it there. The engine will begin turning. If you remove your hand from the stop button, the engine will start. Do not take your hand off the button.
5. Continue cranking the engine for about 5 seconds, checking for abnormal sounds.
6. Return the key to the OFF position. The engine will stop.




# 3.7 Checking the Lube Oil and Cooling Water

When engine lube oil, marine gear lube oil, and cooling water are put in for the first time, or after they have been replaced, their levels should be checked after a trial operation. Oil and water will be distributed to the various parts during the operation, lowering the levels of oil and water. Replenish to the proper amounts.

- Supplying engine lube oil → See 3.3
- Supplying clutch lube oil → See 3.4
- Supplying cooling water → See 3.5

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## 4.8 Operation Procedure

The following diagram shows the procedures for operation explained up to this point.
Parts of the operation may differ depending on the remote control system being used.
Accompanying operation manuals should be read carefully and understood.




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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.<br>♦Alarm buzzer sounds and alarm lamps come on. | ***NOTICE:***<br>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<br>(Alarm buzzer does not sound.) | Faulty battery<br>V-belt is loose or damaged<br>Alternator is not generating electricity | Check battery fluid.<br>Adjust V-belt tension or replace belt.<br>Ask for repairs. | 5.2.2(3)<br>5.2.3(7) |
| C.W. Temp. Lamp goes on. | Insufficient cooling water in fresh water tank<br>Leakage in fresh water cooling system<br>Fresh water cooling pump is damage<br>Inside of C.W. system is dirty. | Check and replenish cooling water.<br>Ask for repairs for water leakage<br>Ask for repairs.<br>Ask for repairs. | 3.5 |
| L.O. Press. Alarm Lamp goes on. | Insufficient engine oil | Replenish engine oil. | 3.3 |
| Fuel Filter Alarm Lamp goes on. | Increased fuel filter drain | Drain the fuel filter. | 5.2.2(2) |
| Fuel Oil Alarm Lamp goes on. | Insufficient fuel oil | Replenish fuel oil. | 3.2 |
| Faulty Alarm Devices | ***NOTICE:***<br>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.** | | | **4.2.2** |
| 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 is turned from START→ON, alarm devices do not work.** | | | **4.2.2** |
| Alarm buzzer does not stop | Short circuit | Ask for repairs. | - |
| Some alarm lamps do not go off | Damaged sensor or switch | Ask for reptairs. | - |

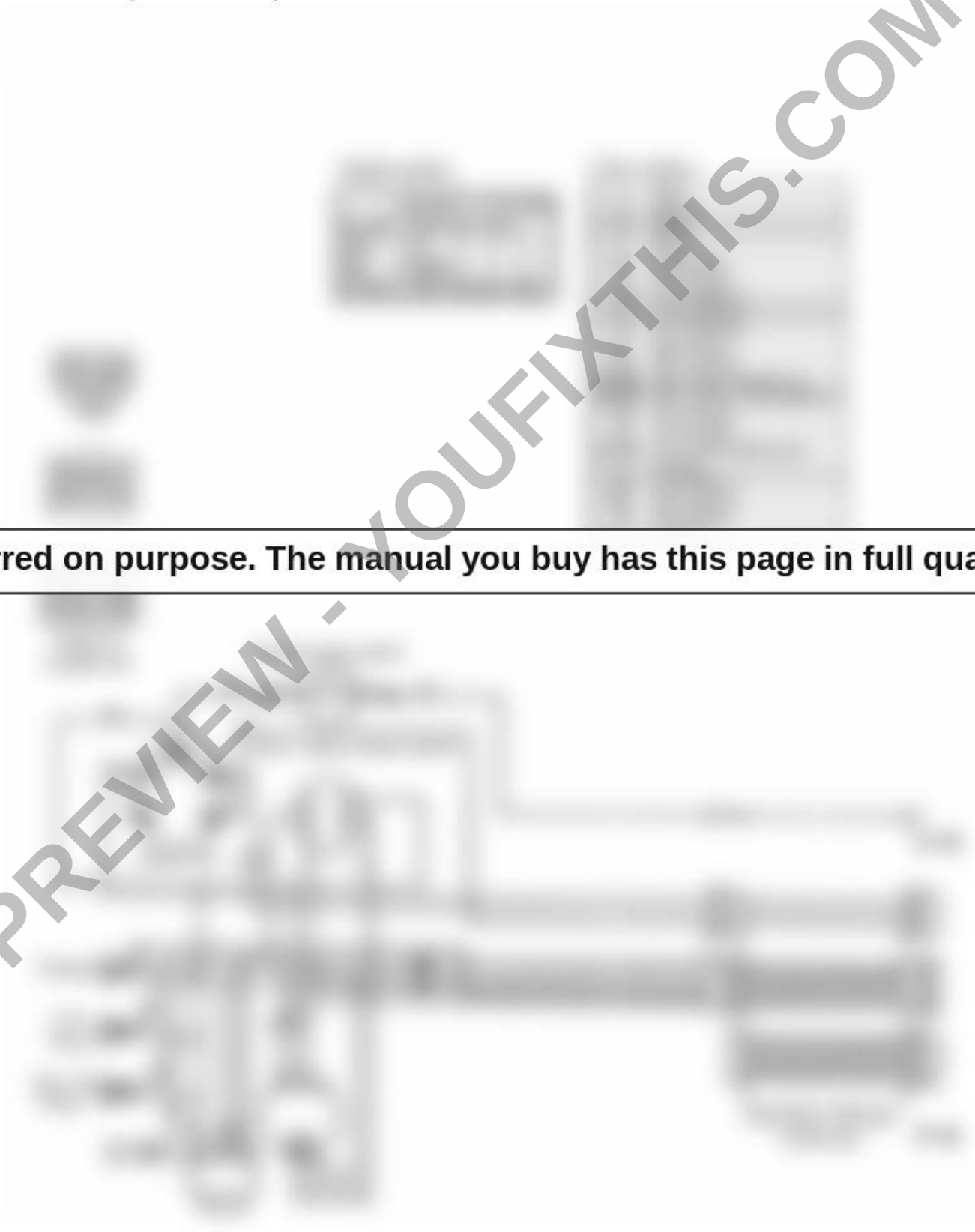
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# 7. SYSTEM DIAGRAM

## 7.1 Wiring diagram

### 7.1.1 B type Instrument Panel (Optional) 1/2 (Panel side)



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# 1.2 Safety Precautions

(Observe these instructions for your own safety.)

## Precautions for Operation

⚠ DANGER



**Burns from Scalding**

- Never remove the filler cap of the fresh water cooler while the engine is still hot. Steam and hot water will spurt out and seriously burn you. Wait until the water temperature has dropped, then wrap a cloth around the cap and loosen it slowly.
- After inspection, refasten the filler cap firmly. If the cap is not secure, steam or scalding water may be emitted during operation causing burns.

⚠ DANGER



**Proper Ventilation of the Battery Area**

- Be sure the area around the battery is well-ventilated and there is nothing which could start a fire. During operation and charging, hydrogen gas is emitted from the battery and can be easily ignited.

⚠ 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.

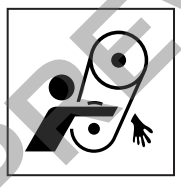
⚠ WARNING



**Exhaust Gas Poisoning**

- Be sure to establish good ventilation in the engine room with windows, vents, or other ventilation equipment. Check again during operation to be sure that ventilation is good. Exhaust gas contains poisonous carbon monoxide and should not be inhaled.

⚠ WARNING



**Moving Parts**

- Do not touch the moving parts of the engine (propeller shaft, V-belt, PTO-pulley, etc.) during operation or let your clothing get caught in them as this can result in injury.
- Never operate the engine without the covers on the moving parts.
- Check before starting the engine to see that any tools or cloths used in maintenance have been removed from the area.

⚠ CAUTION



**Burns from Contact with Hot Engine Parts**

- The whole engine is hot during operation and immediately after stopping.
  The turbocharger, exhaust manifold, exhaust pipe, and engine are very hot.
  Never touch these parts with your body or clothing.

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