YANMAR

H NSH - H10- 009

SERVI CE MANUAL

# MARI NE DI ESEL ENGI NE

## 4JH3 Series

4JH3- TE
4JH3- HTE
4JH3- DTE

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# Foreword

This book describes the procedures for servicing the 4JH3 series marine diesel engine. Use this manual to help you service the engine accurately, quickly and safely. The descriptions in this manual are for the standard engine. Therefore, the specifications or components of your engine may vary, depending on the exact engine installed in the ship.

For more specific details, also refer to the service manual for the ship.

Note that modifications may be made in the specifications or parts in order to improve the engine. Any such changes which affect the contents of this manual will be noted by issuing a modification report each time a change is made.

For details about the marine gear, see the service manual for it (HINSHI-H10-011).




These products have been developed, designed, and manufactured in the facilities certified by the Standards for Quality Systems of ISO 9001.



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# CONTENS


1. To Perform Service Safely ····· 1-1～1-6
1.1 Warning Symbols ····· 1-1
1.2 Safety Precautions ····· 1-2～1-5
1.3 Location of Product Safety Labels ····· 1-6
2. General Description ····· 2-1～2-14
2.1 Principal Particulars ····· 2-1～2-3
2.2 Appearance and Names of Parts ····· 2-4
2.3 Cross-sectional Drawing ····· 2-5
2.4 Piping Diagram ····· 2-6～2-7
2.5 Performance Curves ····· 2-8～2-10
2.6 Front Power Take-off ····· 2-11～2-12
2.7 Fuel Oil ····· 2-13
2.8 Lube Oil ····· 2-14
2.9 Cooling Water ····· 2-14
3. Overhaul ····· 3-1～3-73
3.1 Operating Cautions ····· 3-1
3.2 Overhaul Preparations ····· 3-2
3.3 Overhaul ····· 3-3～3-72
3.3.1 Cylinder Head ····· 3-3～3-7
(1) Combustion surface ····· 3-3
(2) Valve seat ····· 3-3～3-4
(3) Suction/exhaust valve and valve guide ····· 3-5～3-6
(4) Valve spring ····· 3-6
(5) Valve arm and push rod ····· 3-6～3-7
(6) Installing the cylinder head ····· 3-7
3.3.2 Piston ····· 3-8～3-10
(1) Piston ····· 3-8
(2) Piston pin ····· 3-8
(3) Piston ring ····· 3-9～3-10
3.3.3 Cylinder Block ····· 3-10～3-12
3.3.4 Connecting Rod ····· 3-13～3-15
(1) Connecting rod ····· 3-13
(2) Crank pin metal ····· 3-14
(3) Piston pin bushing ····· 3-14
(4) Assembling piston and connecting rod ····· 3-15
3.3.5 Crankshaft and Main Bearing ····· 3-15～3-17
(1) Crankshaft ····· 3-15～3-16
(2) Main bearing ····· 3-17
3.3.6 Camshaft and Tappet ····· 3-18～3-19
(1) Camshaft ····· 3-18
(2) Tappet ····· 3-19
3.3.7 Gear Train ····· 3-19～3-20
(1) Check on gears ····· 3-20
(2) Idler gear ····· 3-20




HINSH1 H10-009

APERÇU — Engine Manual — fichier complet disponible après achat

3.3.8 Lubrication System ····· 3-21~3-24
(1) Lubricating oil path diagram ····· 3-21
(2) Lubricating oil pump ····· 3-21~3-22
(3) Pressure regulating valve and lubricating oil filter ····· 3-22~3-23
(4) Lubricating oil cooler ····· 3-23
(5) Piston cooling oil nozzle ····· 3-24
3.3.9 Cooling Water System ····· 3-25~3-29
(1) Cooling water system ····· 3-25
(2) Sea water pump ····· 3-25~3-26
(3) Servicing standards for sea water pump ····· 3-27
(4) Fresh water pump and thermostat ····· 3-27
(5) Fresh water cooler ····· 3-28~3-29
3.3.10 Fuel System ····· 3-30~3-40
(1) Fuel Injection Pump ····· 3-30~3-37
(2) Fuel Injection Nozzle ····· 3-38~3-40
(3) Procedures for adjusting the injection timing ····· 3-40
3.3.11 Electrical Equipment ····· 3-41~3-46
(1) Wiring Diagram ····· 3-41~3-44
(2) Starter ····· 3-45
(3) Alternator ····· 3-46
3.3.12 Turbocharger ····· 3-47~3-50
(1) Particulars and structure ····· 3-47
(2) Checking and servicing procedures ····· 3-48~3-50

**4. Troubleshooting ····· 4-1~4-9**

4.1 Does not Start or Difficult to Start ····· 4-1
4.2 Unsmooth Revolution ····· 4-2
4.3 Sudden Engine Stop ····· 4-3
4.4 Poor Exhaust Gas Color ····· 4-4
4.5 Insufficient Output ····· 4-5
4.6 Uneven Cylinder Outputs ····· 4-6
4.7 Knocking ····· 4-7
4.8 Trouble with Breakdown ····· 4-8
4.9 Other Malfunctions ····· 4-9

**5. Periodic Checking List ····· 5-1**

**6. Tool and Measuring Instrument ····· 6-1~6-3**

(1) Tool ····· 6-1
(2) Measuring instrument ····· 6-2~6-3

**7. Service Specifications ····· 7-1~7-8**

7.1 Engine adjusting standards ····· 7-1
7.2 Service standards ····· 7-2~7-8

**8. Instrument Panel (Option) ····· 8-1~8-2**



APERÇU — Engine Manual — fichier complet disponible après achat 5/10

# 1. To Perform Service Safely

## 1.1 Warning Symbols

●Most accidents are caused by neglecting basic safety rules and precautions. To prevent this type of accident, always follow safe working practices.
Please read this manual carefully before starting repair or maintenances in order to gain a full understanding of the safety precautions and the appropriate inspection and maintenance procedures.
Do not attempt to perform repairs or maintenance if you don't have sufficient background knowledge, or it may result in an accident.

●It is impossible to cover every possible danger when making repairs or performing maintenance. Therefore, you must always exercise sufficient general consideration for safety, in addition to the specific matters marked with ⚠ CAUTION, both in this manual and on the product. Especially when performing a repair or maintenance procedure not described in this manual, ask for some advice from a person who has experience in that area.

●The warning symbols used in this manual and their meanings are as follows:

| | |
|---|---|
| ⚠ **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 injury.** |

●Any issue marked with a [NOTICE] in this manual contains especially important information about servicing the engine. If the advice not followed, the product's performance and quality may not be guaranteed.



HINSHI H10-009

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## 1.2 Safety Precautions (Be sure to follow the cautions below for your own safety.)

(1) Service Shop (Place)

**⚠ WARNING**

### • Well-ventilated work area



Jobs such as running the engine, welding and polishing the paint with sandpaper should be done in a well-ventilated workplace.

【Otherwise】

It can be very dangerous to inhale poisonous gas or dust.

**⚠ CAUTION**

### • Sufficiently wide and flat place

The floor space in a service shop where inspections or maintenance are performed should be wide enough and completely flat, without any pits or holes.

【Otherwise】

An accident may occur.

**⚠ CAUTION**

### • Clean and orderly work area

No dust, mud, oil or parts should be left on the floor.

【Otherwise】

You may slip, trip or fall.

**⚠ CAUTION**

### • Bright and safely lighted workplace



The workplace should be well lit. When performing a job in a position that is dark or difficult to see, use a portable work lamp. The bulb must be covered with a wire or plastic cage.

【Otherwise】

If the light does not have a cage, the bulb may be broken and can cause a fire.

**⚠ CAUTION**

### • Workplace must have a fire extinguisher.



Keep a first-aid kit and a fire extinguisher close at hand, in case of injury or fire.



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(2) Work Clothing

⚠ CAUTION



**● Clothing for safe operation**

Wear a helmet, protective clothing, safety shoes and other safety devices according to the job being performed. Make sure to wear close-fitting work clothes.

【Otherwise】
A serious accident can happen if you get caught in a machine.

(3) Tools to Be Used

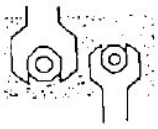
⚠ WARNING

**● Appropriate lifting and supporting devices**

Never try to work on the engine if it is only supported with wooden blocks or by a jack. To lift and support the engine, be sure to use a crane with a sufficient lifting capacity or use a fixed jack designed for the job.

【Otherwise】
A serious accident may occur.

⚠ WARNING



**● Use appropriate tools.**

Use the right tools for the job to be done. Always use the correct size tool to loosen or tighten parts.

【Otherwise】
A serious injury or engine damage may occur.

(4) Use Genuine Parts, and Lubricants.

⚠ CAUTION

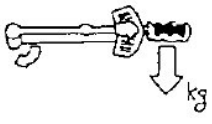


**● Always use genuine parts.**

【Otherwise】
The engine life may be shortened or an accident may occur.

(5) Tightening Nuts and Bolts

⚠ WARNING




**● Always tighten each part to the specified torque if it is given in the manual.**

【Otherwise】
Loose or falling parts may cause damage or injuries.



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## (6) Handling the Engine Parts

**⚠ WARNING** ● **Be very careful of hot parts.**



Do not touch the engine when it is running or immediately after it has stopped.

**[Otherwise]**
You may be badly burned.

**⚠ WARNING** ● **Be careful around rotating parts**



Keep your clothing and tools well away from any rotating parts.

**[Otherwise]**
You or the tools may be caught and you may be seriously injured.

**⚠ WARNING** ● **Electrical shorts**



Disconnect the terminal ⊖ at the battery before servicing the engine.

**[Otherwise]**
A short in the wires may cause a fire to break out.

**⚠ WARNING** ● **Battery charging**



Do not allow any open flame near the battery while it is charging.

**[Otherwise]**
When charging, the battery produces highly flammable gas and an explosion may occur.

**⚠ WARNING** ● **Battery acid**



The battery is filled with dilute sulfuric acid. Take special care to avoid getting it on your clothing or skin.

**[Otherwise]**
**The battery acid will eat through fabric and can give you a serious chemical burn.**



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### (7) Waste Disposal

**⚠ CAUTION**

**● Observe the following instructions with regard to waste disposal.**

【Otherwise】
The environment may be polluted.

- Waste liquids such as engine oil and cooling water must be discharged into a container. Any spills on the ground must be wiped up right away.
- Do not discharge any waste fluids into the sewerage, a river or the ocean.
- Harmful wastes such as oils, fuels, solvents, filter elements and batteries must be treated according to the applicable laws and regulations. Ask a qualified waste collection company for more information.

### (8) Safety Label

**⚠ CAUTION**

**● Pay attention to the safety label warning on the product.**

The safety label (caution plate) is placed on the product to improve safe operation.
If the safety label is missing or illegible, be sure to replace it with a new one.



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