

YAMAHA

Marine

Outboards

WORLD WIDE

9.9F, 15F

USA/CANADA

9.9T, 15T

9.9T2, 15T2

SERVICE MANUAL

E

MANUEL D'ENTRETIEN

F

WARTUNGSANLEITUNG

D

MANUAL DE SERVICIO

ES

NOTICE

This manual has been prepared by the Yamaha Motor Company primarily for use by Yamaha dealers and their trained mechanics when performing maintenance procedures and repairs to Yamaha equipment. It has been written to suit the needs of persons who have a basic understanding of the mechanical and electrical concepts and procedures inherent in the work, for without such knowledge attempted repairs or service to the equipment could render it unsafe or unfit for use.

Because the Yamaha Motor Company Ltd has a policy of continuously improving its products, models may differ in detail from the descriptions and illustrations given in this publication. Use only the latest edition of this manual. Authorized Yamaha dealers are notified periodically of modifications and significant changes in specifications and procedures, and these are incorporated in successive editions of this manual.

A10001-0*

9.9F, 15F**SERVICE MANUAL****© 1995 Yamaha Motor Co., Ltd****1st Edition, June 1995****All rights reserved.**

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HOW TO USE THIS MANUAL

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.

In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

- Bearings
Pitting/Damage → Replace.

To assist you to find your way about this manual, the Section Title and Major Heading is given at the head of every page.

An Index to contents is provided on the first page of each Section.

MODEL INDICATION

Multiple models are shown in this manual. These indications are noted as follows.

Model name	9.9F	15F
USA and CANADA name	9.9MH 9.9EH	15MH 15EH
Indication	9.9	15

THE ILLUSTRATIONS

Some illustrations in this manual may differ from the model you have. This is because a procedure described may relate to several models, though only one may be illustrated. (The name of model described will be mentioned in the description).

REFERENCES

These have been kept to a minimum; however, when you are referred to another section of the manual, you are told the page number to go to.

WARNINGS, CAUTIONS AND NOTES

Attention is drawn to the various Warnings, Cautions and Notes which distinguish important information in this manual in the following ways.

 The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

WARNING

Failure to follow WARNING instructions could result in severe injury or death to the machine operator, a bystander, or a person inspecting or repairing the outboard motor.

CAUTION:

A CAUTION indicates special precautions that must be taken to avoid damage to the outboard motor.

NOTE:

A NOTE provides key information to make procedures easier or clearer.

HOW TO READ DESCRIPTIONS

1. A disassembly installation job mainly consists of the exploded diagram ①.
2. The numerical figures represented by the number ② indicates the order of the job steps.
3. The symbols represented by the number ③ indicates the contents and notes of the job. For the meanings of the symbols, refer to the next page(s).
4. The REMOVAL AND INSTALLATION CHART ④ is attached to the exploded diagram and explains the job steps, part names, notes for the jobs, etc.
5. The SERVICE POINTS, other than the exploded diagram, explains in detail the items difficult to explain in the exploded diagram or REMOVAL AND INSTALLATION CHART, the Service points requiring the detailed description ⑤ ,etc.

LOWR **PROPELLER SHAFT AND REVERSE GEAR**

PROPELLER SHAFT AND REVERSE GEAR EXPLODED DIAGRAM

①








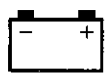















②

③

④

⑤

Step	Procedure/Part name	Qty	Service points
PROPELLER SHAFT AND REVERSE GEAR REMOVAL			
Gear set			Follow the left "Step" for removal.
Procedure			Refer to the "LOWER UNIT" section in chapter 3.
Refer to the "LOWER UNIT REMOVAL" section			
1	Bolt (with washers)	2	6 x 20 mm
2	Propeller shaft housing assembly	1	
3	Flare washer	1	
4	Propeller shaft	1	
5	Cross pin ring	1	
6	Cross pin	1	NOTE: By pushing the shift plunger, bring the cross pin hole in the dog clutch with the hole in the shift slider.
7	Dog clutch	1	NOTE: Install the clutch with "F" mark toward the forward gear side.
8	Shift plunger	1	
9	Spring	1	
PROPELLER SHAFT HOUSING DISASSEMBLY			
Ⓐ	O-ring	1	
Ⓑ	O-ring	1	
Ⓒ	Reverse gear	1	
Ⓓ	Reverse gear shim	1	
Ⓔ	Ball bearing	1	
Ⓕ	Oil seal	2	
Ⓖ	Nozzle housing	1	
Ⓗ	Propeller Shaft housing	1	Reverse the removal steps for installation.

① GEN INFO 	② SPEC 
③ INSP ADJ 	④ FUEL 
⑤ POWR 	⑥ LOWR 
⑦ BRKT 	⑧ ELEC 
⑨ TRBL ANLS ?	⑩ 
⑪ 	⑫ 
⑬ 	⑭ 
⑮ 	⑯ 
⑰ 	⑱ 
⑲ 	⑳ 
㉑ 	㉒ 
㉓ 	㉔ 

SYMBOLS

Symbols ① to ⑨ are designed as thumb-tabs to indicate the content of a chapter:

- ① General information
- ② Specifications
- ③ Periodic Inspection and Adjustment
- ④ Fuel system
- ⑤ Power unit
- ⑥ Lower unit
- ⑦ Bracket unit
- ⑧ Electrical system
- ⑨ Trouble-analysis

Symbols ⑩ to ⑮ indicate specific data:

- ⑩ Special tool
- ⑪ Specified liquid
- ⑫ Specified engine speed
- ⑬ Specified torque
- ⑭ Specified measurement
- ⑮ Specified electrical valve
[Resistance (Ω), Voltage (V), Electric current (A)]

Symbol ⑯ to ⑱ in an exploded diagram indicate grade of lubricant and location of lubrication point:










- ⑯ Apply Yamaha 2-stroke outboard motor oil
- ⑰ Apply water resistant grease
(Yamaha grease A, Yamaha marine grease)
- ⑱ Apply molybdenum disulfide grease

Symbols ⑲ to ㉔ in an exploded diagram indicate grade of sealing or locking agent, and location of application point:

- ⑲ Apply Gasket maker®
- ⑳ Apply Yamabond #4 (Yamaha bond No. 4)
- ㉑ Apply LOCTITE® No. 271 (Red LOCTITE)
- ㉒ Apply LOCTITE® No. 242 (Blue LOCTITE)
- ㉓ Apply LOCTITE® No. 572
- ㉔ Apply Silicon sealant

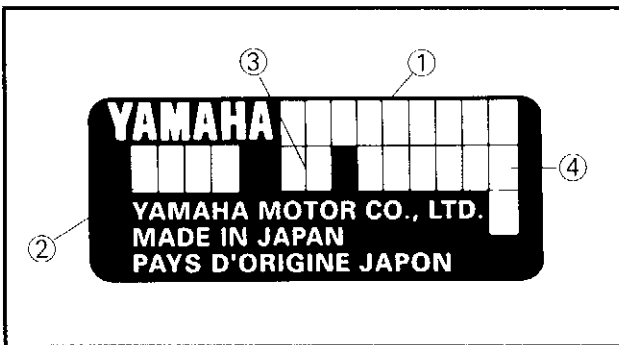
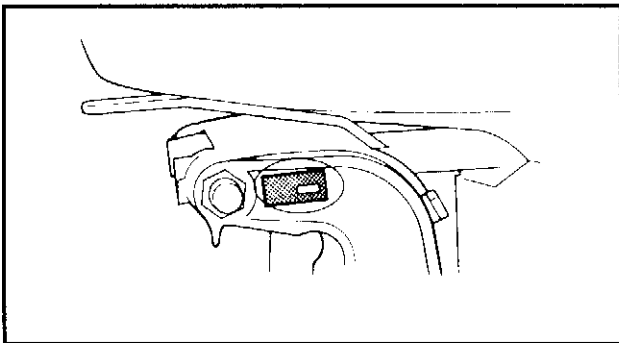
NOTE: _____
In this manual, the above symbols may not be used in every case.

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CHAPTER 1 GENERAL INFORMATION

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IDENTIFICATION

SERIAL NUMBER

The outboard motor serial number is stamped on the label attached to the port side of the clamp bracket.

NOTE: _____

For USA model:

As an antitheft measure, a special label on which the outboard motor serial number is stamped is bonded to the port side of the clamp bracket. The label is specially treated so that peeling it off causes cracks across the serial number.

- ① Model name
- ② Approved model No.
- ③ Transom height
- ④ Serial number

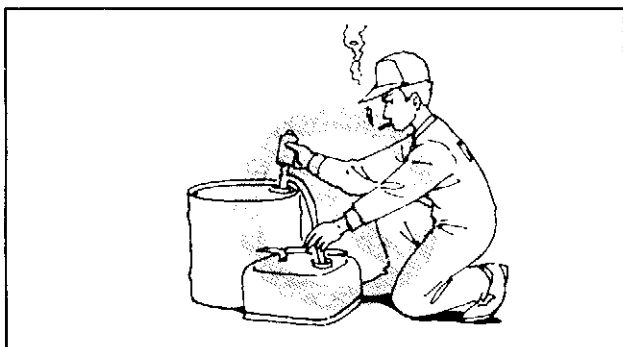
STARTING SERIAL NUMBERS

The starting serial number blocks are as follows:

Model	Approved model No.	STARTING SERIAL No.
9.9FMH (9.9MH)	682C	S:150101~ L:450101~ SUL:850101~
9.9FEMH (9.9EH)		S:350101~ L:600101~ SUL:900101~
9.9FEMHR		S:630101~ L:660101~
15FMH (15MH)	684C	S:400101~ L:150101~ SUL:830101~
15FEMH (15EH)		S:300101~ L:600101~ SUL:900101~
15FEMHR		S:380101~ L:650101~

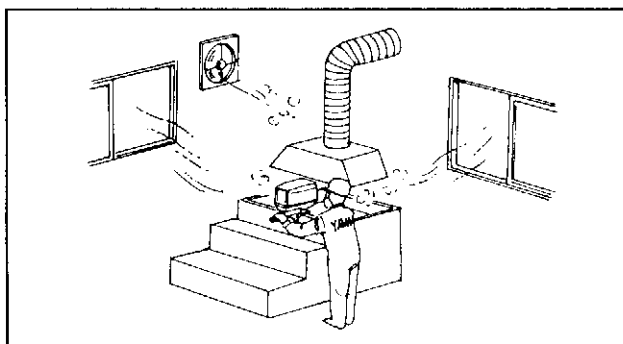
SAFETY WHILE WORKING

The procedures given in this manual are those recommended by Yamaha to be followed by Yamaha dealers and their mechanics.



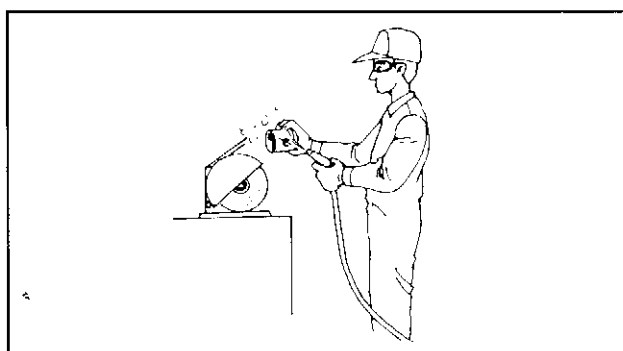
FIRE PREVENTION

Gasoline (petrol) is highly flammable. Petroleum vapor is explosive if ignited. Do not smoke while handling gasoline (petrol), and keep it away from heat, sparks, and open flames.



VENTILATION

Petroleum vapor is heavier than air and it inhaled in large quantities will not support life. Engine exhaust gases are harmful to breathe. When test-running an engine indoors, maintain good ventilation.



SELF-PROTECTION

Protect your eyes with suitable safety spectacles or safety goggles when using compressed air, when grinding or when doing any operation which may cause particles to fly off. Protect hands and feet by wearing safety gloves or protective shoes if appropriate to the work you are doing.



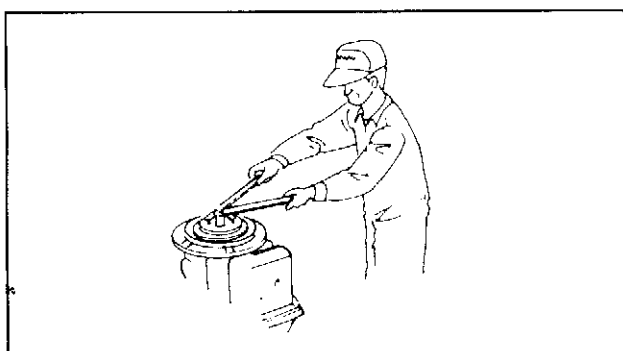
OILS, GREASES AND SEALING FLUIDS

Use only genuine Yamaha oils, greases and sealing fluids or those recommended by Yamaha.



Under normal conditions of use, there should be no hazards from the use of the lubricants mentioned in this manual, but safety is all-important, and by adopting good safety practises, any risk is minimized. A summary of the most important precautions is as follows:

1. While working, maintain good standards of personal and industrial hygiene.
2. Clothing which has become contaminated with lubricants should be changed as soon as practicable, and laundered before further use.
3. Avoid skin contact with lubricants; do not, for example, place a soiled wiping-rag in one's pocket.
4. Hands, and any other part of the body which have been in contact with lubricants or lubricant-contaminated clothing, should be thoroughly washed with hot water and soap as soon as practicable.
5. To protect the skin, the application of a suitable barrier cream to the hands before working is recommended.
6. A supply of clean lint-free cloths should be available for wiping purposes.



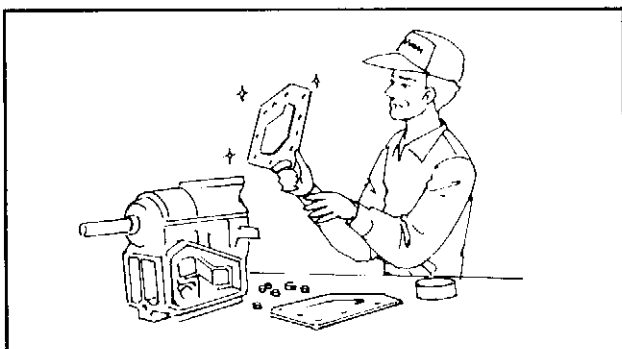
GOOD WORKING PRACTICES

1. The right tools

Use the special tools that are advised to protect parts from damage. Use the right tool in the right manner – don't improvise.

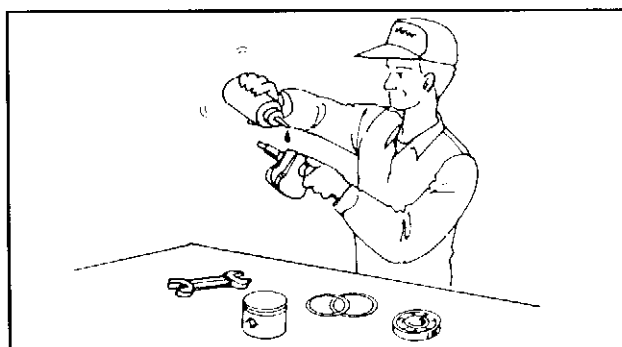
2. Tightening torque

Follow the torque tightening instructions. When tightening bolts, nuts and screws, tighten the larger sizes first, and tighten inner-positioned fixings before outer-positioned ones.



3. Nonreusable items

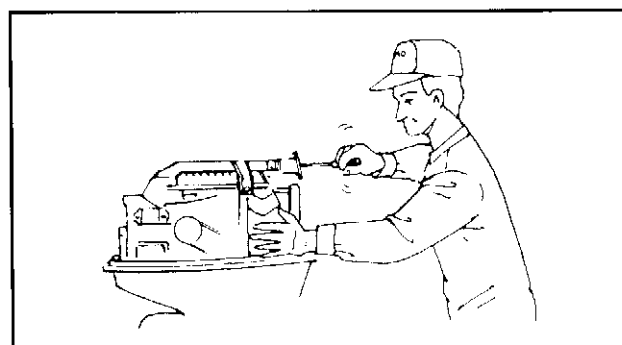
Always use new gaskets, packings, O-rings, oil seals, split-pins and circlips etc. on reassembly.



DISASSEMBLY AND ASSEMBLY

1. Clean parts with compressed-air on disassembling them.

2. Oil the contact surfaces of moving parts on assembly.



3. After assembly, check that moving parts operate normally.

4. Install bearings with the manufacturer's markings on the side exposed to view, and liberally oil the bearings.

CAUTION:

Do not use compressed air to spin the bearings dry. This causes damage to the bearing surfaces.

5. When installing oil seals, apply a light coating of water-resistant grease to the outside diameter.