YOUR TOHATSU OUTBOARD MOTOR

OWNER REGISTRATION AND IDENTIFICATION
Upon purchasing this product, be sure that the WARRANTY CARD is correctly and completely filled out and mailed to the addressee noted there on. This WARRANTY CARD identifies you as the legal owner of the product and serves as your warranty registration. TO THE EXTENT PERMITTED BY APPLICABLE LAW, YOUR OUTBOARD MOTOR WILL NOT BE COVERED BY THE APPLICABLE LIMITED WARRANTY, IF THIS PROCEDURE IS NOT FOLLOWED.

PRE-DELIVERY CHECK
Be sure that the product has been checked by an authorized TOHATSU dealer before you take delivery.

Limited Warranty
Please refer to the TOHATSU outboard motor Limited warranty provided to you with this product, the terms and conditions of which, as amended from time to time, are incorporated by reference into the manual.
Serial Number
In the space below, please record the outboard motor’s serial number (indicated both on the lower motor cover and on the cylinder block). The serial number will be needed in the event of theft or to quickly identifying the outboard motor type.

Serial Number:

To You, Our Customer
Thank you for selecting a TOHATSU outboard motor. You are now the proud owner of an excellent outboard motor that will service you for many years to come. This manual should be read in its entirety and the inspection and maintenance procedures described later in this manual should be followed carefully. Should a problem arise with the outboard motor, please follow the troubleshooting procedures listed at the end of this manual. If the problem persists, contact an authorized TOHATSU service shop or dealer.

We hope you will enjoy your outboard motor and wish you good luck in your boating adventures.

TOHATSU CORPORATION
## CONTENTS

GENERAL SAFETY INFORMATION ................................................................. 8

1. SPECIFICATIONS ...................................................................................... 10

2. NAMES OF PARTS .................................................................................... 13

3. LOCATIONS OF WARNING LABELS ......................................................... 15

4. INSTALLATION ......................................................................................... 19
   1. Mounting the outboard motor on boat .................................................. 19
   2. Installing the remote control devices .................................................... 22
   3. Installing the battery .............................................................................. 26

5. PRE-OPERATING PREPARATIONS ......................................................... 27
   1. Recommended gasoline types ............................................................... 27
   2. Low permeation fuel hose requirement ................................................. 28
      EQUIPPED FOR UNITED STATES AND CANADA MODEL
   3. EPA pressurized portable fuel tank requirements ............................... 29
      EQUIPPED FOR UNITED STATES AND CANADA MODEL
   4. EPA approval primer valve/hose assembly .......................................... 29
      EQUIPPED FOR UNITED STATES AND CANADA MODEL
   5. Recommended engine oil ....................................................................... 30
   6. Altitude adjustment kit requirement ..................................................... 30
   7. Break-In ................................................................................................ 31
   8. Engine oil warning lamp ....................................................................... 32
   9. ESG (A device preventing over revolution) ......................................... 32

6. ENGINE OPERATION .................................................................................. 33
   Before starting .......................................................................................... 33
   1. Filling the fuel ........................................................................................ 33
   2. Feeding the fuel ..................................................................................... 34
   3. Starting .................................................................................................. 36
   4. Warming up the engine ......................................................................... 41
   5. Forward and reverse .............................................................................. 41
   6. Stopping .................................................................................................. 43
   7. Trim angle ............................................................................................... 44
   8. Tilt up, tilt down and shallow water operation ..................................... 49
   9. Shallow water operation ...................................................................... 52

7. REMOVING AND CARRYING THE OUTBOARD MOTOR .................. 54
   1. Removing the outboard motor ............................................................... 54
   2. Carrying the outboard motor ................................................................. 54
   3. Storing the outboard motor ................................................................... 54

8. TRAILERING ............................................................................................. 55

9. ADJUSTMENT ............................................................................................ 56
   1. Steering friction ..................................................................................... 56
   2. Throttle grip ........................................................................................... 56
   3. Remote Control Lever Load ................................................................... 56
   4. Trim Tab Adjustment ............................................................................. 57

10. INSPECTION AND MAINTENANCE ..................................................... 58
1. Daily Inspection ................................................................. 59
2. Periodic Inspection ............................................................. 65
3. Off-season storage ............................................................... 69
4. Pre-season check ................................................................. 70
5. Motor submerged in water ..................................................... 70
6. Cold weather precautions ..................................................... 71
7. Checking after striking underwater object ............................... 71
11. TROUBLESHOOTING ............................................................. 72
12. TOOL KIT AND SPARE PARTS .................................................. 74
13. OPTIONAL ACCESSORIES ....................................................... 75
14. PROPELLER TABLE .............................................................. 76
GENERAL SAFETY INFORMATION

1. SPECIFICATIONS

2. NAMES OF PARTS

3. LOCATIONS OF WARNING LABELS

4. INSTALLATION

5. PRE-OPERATING PREPARATIONS

6. ENGINE OPERATION

7. REMOVING AND CARRYING THE OUTBOARD MOTOR

8. TRAILERING

9. ADJUSTMENT

10. INSPECTION AND MAINTENANCE

11. TROUBLESHOOTING

12. TOOL KIT AND SPARE PARTS

13. OPTIONAL ACCESSORIES

14. PROPELLER TABLE
GENERAL SAFETY INFORMATION

NOTICE: DANGER/WARNING/CAUTION/Note
Before installing, operating or otherwise handling your outboard motor, be sure to thoroughly read and understand this Owner’s Manual and carefully follow all of the instructions. Of particular importance is information preceded by the words “DANGER,” “WARNING,” “CAUTION,” and “Note.” Always pay special attention to such information to ensure safe operation of the outboard motor at all times.

EMERGENCY STOP SWITCH
The Emergency Stop Switch will stall the outboard motor when the stop switch tether is pulled off. This stop switch tether can be attached to the operator of the outboard motor to minimize or prevent injuries from the propeller in case the operator falls overboard. We highly recommend use of the Emergency Stop Switch tether.

WARNING
Accidental activation of the Emergency Stop Switch (such as the tether being pulled out in heavy seas) could cause passengers to lose their balance and even fall overboard, or it could result in loss of power in heavy seas, strong currents, or high winds. Loss of control while mooring is another potential hazard.
To minimize accidental activation of the Emergency Stop Switch, the 500 mm (20 inch.) stop switch tether is coiled and can extended to a full 1300 mm (51 inch.).
SAFE OPERATION OF BOAT
As the operator/driver of the boat, you are responsible for the safety of those aboard and those in other boat around yours, and for following local boating regulations. You should be thoroughly knowledgeable on how to correctly operate the boat, outboard motor, and accessories. To learn about the correct operation and maintenance of the outboard motor, please read through this manual carefully.
It is very difficult for a person standing or floating in the water to take evasive action should he or she see a power boat heading in his/her direction, even at a slow speed. Therefore, when your boat is in the immediate vicinity of people in the water, the outboard motor should be shifted to neutral and shut off.

SERIOUS INJURY IS LIKELY IF A PERSON IN THE WATER MAKES CONTACT WITH A MOVING BOAT, GEAR HOUSING, PROPELLER, OR ANY SOLID DEVICE RIGIDLY ATTACHED TO A BOAT OR GEAR HOUSING.

SERVICING, REPLACEMENT PARTS & LUBRICANTS
We recommend that only an authorized service shop perform service or maintenance on this outboard motor. Be sure to use genuine parts, genuine lubricants, or recommended lubricants.

MAINTENANCE
As the owner of this outboard motor, you should be acquainted with correct maintenance procedures. It is the operator’s responsibility to perform all safety checks and to ensure that all lubrication and maintenance instructions are complied with for safe operation. Please comply with all instructions concerning lubrication and maintenance. You should take the engine to an authorized dealer or service shop for periodic inspection at the prescribed intervals.
Correct periodic maintenance and proper care of this outboard motor will reduce the chance of problems and limit overall operating expenses.

MOUNTING
Outboard motor mounting must be performed by trained service person(s) using lift or hoist with sufficient capacity.
## SPECIFICATIONS

### 6A3Z (Available in specific region)

<table>
<thead>
<tr>
<th>Item</th>
<th>MODEL</th>
<th>MF</th>
<th>EF</th>
<th>EP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>mm (in)</td>
<td>975 (38.4)</td>
<td>590 (23.2)</td>
<td></td>
</tr>
<tr>
<td>Overall Width</td>
<td>mm (in)</td>
<td>354 (13.9)</td>
<td>320 (12.6)</td>
<td></td>
</tr>
<tr>
<td>Overall Height S·L·UL</td>
<td>mm (in)</td>
<td>1035 (40.7)</td>
<td>1162 (45.7)</td>
<td>1289 (50.7)</td>
</tr>
<tr>
<td>Transom Height S·L·UL</td>
<td>mm (in)</td>
<td>435 (17.1)</td>
<td>562 (22.1)</td>
<td>689 (27.1)</td>
</tr>
<tr>
<td>Weight</td>
<td>S kg (lb)</td>
<td>37.0 (81.5)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>L kg (lb)</td>
<td>38.0 (84.0)</td>
<td>41.0 (90.5)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>UL kg (lb)</td>
<td>39.5 (87.0)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Output</td>
<td>kW (ps)</td>
<td>4.4 (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Operating Range</td>
<td>rpm</td>
<td>5000–6000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Forward Gear</td>
<td>rpm</td>
<td>900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Neutral Gear</td>
<td>rpm</td>
<td>950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Type</td>
<td></td>
<td>4-Stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Cylinder</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bore × Stroke</td>
<td>mm (in)</td>
<td>55 × 44 (2.17 × 1.73)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piston Displacement</td>
<td>mL (Cu in)</td>
<td>209 (12.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust System</td>
<td></td>
<td>Through hub exhaust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
<td></td>
<td>Water cooling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Lubrication</td>
<td></td>
<td>Trochoid pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starting System</td>
<td></td>
<td>Manual</td>
<td>Electric starter motor*</td>
<td></td>
</tr>
<tr>
<td>Ignition System</td>
<td></td>
<td>Flywheel Magneto C.D. Ignition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark Plug</td>
<td></td>
<td>NGK DCPR6E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trim Position</td>
<td></td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Engine Oil</td>
<td>mL (fl.oz.)</td>
<td>NMMA FC-W certified 10W-30 or API SF, SG, SH, SJ, SL or SM, 10W-30/40, Approx. 800 (27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear Oil</td>
<td>mL (fl.oz.)</td>
<td>Genuine Gear Oil or API GL5, SAE #80-90, Approx. 320 (10.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
<td>Unleaded regular gasoline : Pump posted 87 Octane (research octane rating of 91)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Tank Capacity</td>
<td>L (US gal)</td>
<td>12 (3.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear Reduction Ratio</td>
<td></td>
<td>2.08 (13 : 27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission Control System</td>
<td></td>
<td>EM (Engine modification)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Sound Pressure (ICOMIA 39/94) dB (A)</td>
<td></td>
<td>77.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand Vibration Level (ICOMIA 39/94) m/sec²</td>
<td></td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* with manual

Remark: Specifications subject to change without notice.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length mm (in)</td>
<td></td>
<td>975 (38.4)</td>
<td>590 (23.2)</td>
<td></td>
<td>1035 (40.7)</td>
<td>1162 (45.7)</td>
<td>1289 (50.7)</td>
</tr>
<tr>
<td>Overall Width mm (in)</td>
<td></td>
<td>354 (13.9)</td>
<td></td>
<td>320 (12.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Height S·L·UL mm (in)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>435 (17.1)</td>
<td>562 (22.1)</td>
<td>689 (27.1)</td>
</tr>
<tr>
<td>Transom Height S·L·UL mm (in)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>370 (14.6)</td>
<td>400 (15.7)</td>
<td>430 (16.9)</td>
</tr>
<tr>
<td>Weight S kg (lb)</td>
<td>37.0 (81.5)</td>
<td>40.0 (88.0)</td>
<td></td>
<td></td>
<td>38.0 (84.0)</td>
<td>41.0 (90.5)</td>
<td></td>
</tr>
<tr>
<td>Weight L kg (lb)</td>
<td>37.0 (81.5)</td>
<td>40.0 (88.0)</td>
<td></td>
<td></td>
<td>38.0 (84.0)</td>
<td>41.0 (90.5)</td>
<td></td>
</tr>
<tr>
<td>Weight UL kg (lb)</td>
<td>39.5 (87.0)</td>
<td>42.5 (93.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output kW (ps)</td>
<td>5.9 (8)</td>
<td></td>
<td></td>
<td></td>
<td>7.2 (9.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Operating Range rpm</td>
<td>5000–6000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Forward Gear rpm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Neutral Gear rpm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Type</td>
<td>4-Stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Cylinder</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bore × Stroke mm (in)</td>
<td>55 × 44 (2.17 × 1.73)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piston Displacement mL (Cu in)</td>
<td>209 (12.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust System</td>
<td>Through hub exhaust</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
<td>Water cooling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Lubrication</td>
<td>Trochoid pump</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starting System</td>
<td>Manual Electric starter motor*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition System</td>
<td>Flywheel Magneto C.D. ignition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark Plug</td>
<td>NGK DCRPR6E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trim Position</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Oil mL (fl.oz.)</td>
<td>NMMA FC-W certified 10W-30 or API SF, SG, SH, SJ, SL or SM, 10W-30/40, Approx. 800 (27)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear Oil mL (fl.oz.)</td>
<td>Genuine Gear Oil or API GL5, SAE #80-90, Approx. 320 (10.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>Unleaded regular gasoline : Pump posted 87 Octane (research octane rating of 91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Tank Capacity L (US gal)</td>
<td>12 (3.17)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear Reduction Ratio</td>
<td>2.08 (13 : 27)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission Control System</td>
<td>EM (Engine modification)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Sound Pressure (ICOMIA 39/94) dB (A)</td>
<td>77.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand Vibration Level (ICOMIA 38/94) m/sec2</td>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*: with manual

Remark: Specifications subject to change without notice.
## SPECIFICATIONS

**8A3, 9.8A3**

<table>
<thead>
<tr>
<th>Item</th>
<th>MODEL</th>
<th>8A3</th>
<th>9.8A3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ET</td>
<td>EPT</td>
<td>EPT</td>
</tr>
<tr>
<td>Overall Length</td>
<td>mm (in)</td>
<td>975 (38.4)</td>
<td>590 (23.2)</td>
</tr>
<tr>
<td>Overall Width</td>
<td>mm (in)</td>
<td>354 (13.9)</td>
<td>320 (12.6)</td>
</tr>
<tr>
<td>Overall Height S-L-UL</td>
<td>mm (in)</td>
<td>1035 (40.7)</td>
<td>1162 (45.7)</td>
</tr>
<tr>
<td>Transom Height S-L-UL</td>
<td>mm (in)</td>
<td>435 (17.1)</td>
<td>562 (22.1)</td>
</tr>
<tr>
<td>Weight S kg (lb)</td>
<td>46.5 (102.5)</td>
<td>46.0 (101.4)</td>
<td></td>
</tr>
<tr>
<td>Weight L kg (lb)</td>
<td>47.5 (104.7)</td>
<td>47.0 (103.6)</td>
<td></td>
</tr>
<tr>
<td>Weight UL kg (lb)</td>
<td>49.0 (108)</td>
<td>48.5 (106.9)</td>
<td></td>
</tr>
<tr>
<td>Weight ET kg (lb)</td>
<td>5.9 (8)</td>
<td>7.2 (9.8)</td>
<td></td>
</tr>
<tr>
<td>Weight EPT kg (lb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Operating Range rpm</td>
<td></td>
<td>5000–6000</td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Forward Gear rpm</td>
<td></td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>Idle Speed in Neutral Gear rpm</td>
<td></td>
<td>950</td>
<td></td>
</tr>
<tr>
<td>Engine Type</td>
<td></td>
<td>4-Stroke</td>
<td></td>
</tr>
<tr>
<td>Number of Cylinder</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Bore x Stroke</td>
<td>mm (in)</td>
<td>55 x 44 (2.17 x 1.73)</td>
<td></td>
</tr>
<tr>
<td>Piston Displacement mL (Cu in)</td>
<td>209 (12.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust System</td>
<td></td>
<td>Through hub exhaust</td>
<td></td>
</tr>
<tr>
<td>Cooling System</td>
<td></td>
<td>Water cooling</td>
<td></td>
</tr>
<tr>
<td>Engine Lubrication</td>
<td></td>
<td>Trochoid pump</td>
<td></td>
</tr>
<tr>
<td>Starting System</td>
<td></td>
<td>Electric starter motor*</td>
<td></td>
</tr>
<tr>
<td>Ignition System</td>
<td></td>
<td>Flywheel Magneto C.D. ignition</td>
<td></td>
</tr>
<tr>
<td>Spark Plug</td>
<td></td>
<td>NGK DCP60E</td>
<td></td>
</tr>
<tr>
<td>Trim Position</td>
<td></td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Engine Oil</td>
<td>mL (fl.oz.)</td>
<td>NMMA FC-W certified 10W-30 or API SF, SG, SH, SJ, SL or SM, 10W-30/40, Approx. 800 (27)</td>
<td></td>
</tr>
<tr>
<td>Gear Oil</td>
<td>mL (fl.oz.)</td>
<td>Genuine Gear Oil or API GL5, SAE #80-90, Approx. 320 (10.8)</td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
<td>Unleaded regular gasoline : Pump posted 87 Octane (research octane rating of 91)</td>
<td></td>
</tr>
<tr>
<td>Fuel Tank Capacity</td>
<td>L (US gall)</td>
<td>12 (3.17)</td>
<td></td>
</tr>
<tr>
<td>Gear Reduction Ratio</td>
<td></td>
<td>2.08 (13 : 27)</td>
<td></td>
</tr>
<tr>
<td>Emission Control System</td>
<td></td>
<td>EM (Engine modification)</td>
<td></td>
</tr>
<tr>
<td>Operator Sound Pressure (ICOMIA 39/94) dB (A)</td>
<td></td>
<td>77.2</td>
<td></td>
</tr>
<tr>
<td>Hand Vibration Level (ICOMIA 38/94) m/sec²</td>
<td></td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

*: with manual

Remark: Specifications subject to change without notice.
NAMES OF PARTS

MF, EF, EP

1 Tilt Handle
2 Top Cowl
3 Cowl Latch
4 Cooling Water Check Port
5 Oil Drain Bolt
6 Water Plug
7 Anti Ventilation Plate
8 Anode/Trim Tab
9 Water Inlet
10 Propeller
11 Oil Plug (Lower) (Fill)
12 Oil Plug (Upper) (Level)
13 Drive Shaft Housing
14 Thrust Rod
15 Clamp Bracket
16 Clamp Screw
17 Shift Lever
18 Throttle Grip
19 Starter Handle
20 Warning Lamp
21 Fuel Connector
22 Starter Switch
23 Stop Switch
24 Choke Knob
25 Primer Bulb
26 Fuel Tank Cap
27 Air Vent Screw
28 Fuel Connector
29 Fuel Pick up Elbow
30 Fuel Tank
31 Remote Control Box
32 Main Switch
33 Stop Switch
34 Cord Assembly
35 Engine Stop Switch Cord

*1: MF and EF type only.
*2: EF type only.
*3: EP type only.
1  Tilt Handle
2  Top Cowl
3  Cowl Latch
4  Cooling Water Check Port
5  Oil Drain Bolt
6  Water Plug
7  Anti Ventilation Plate
8  Anode/Trim Tab
9  Water Inlet
10 Propeller
11 Oil Plug (Lower) (Fill)
12 Oil Plug (Upper) (Level)
13 Drive Shaft Housing
14 Clamp Bracket
15 Clamp Screw
16 Power Tilt Switch *1
17 Throttle Grip *1
18 Shift Lever *1
19 Starter Handle
20 Oil warning Lamp
21 Fuel Connector
22 Starter Switch *2
23 Stop Switch
24 Choke Knob *1
25 Primer Bulb
26 Fuel Tank Cap
27 Air Vent Screw
28 Fuel Connector
29 Fuel Pick up Elbow
30 Fuel Tank
31 Power Tilt Switch
32 Remote Control Box
33 Main Switch
34 Stop Switch
35 Cord Assembly
36 Engine Stop Switch Cord

*1: EFT type only.
*2: EPT type only.
Locations of warning labels

1. Warning label regarding owner’s manual, top cowl, engine stop switch, engine oil level and unleaded gasoline.

2. Only for EU remote control model
   Warning label regarding installation of remote control system (See page 22).

3. Warning label regarding oil pressure (See page 32).
LOCATIONS OF WARNING LABELS

4. Warning label on position of outboard motor when setting down.

5. Only for EU model
Warning label regarding emergency starting (See page 38).

6. Warning label regarding rotating parts, electrical shock and high temperature.

7. Warning label on engine stop switch.

8. Only for USA and CANADA models
Warning regarding fuel tank cap (See pages 26, 33–36).

9. Only for USA and CANADA models
Warning regarding combination of fuel tank and primer bulb ass’y.

10. Only for USA and CANADA models
When opening or closing fuel tank cap, be sure to observe warning note on fuelling.

11. Only for USA and CANADA models
Warning regarding fuel connector (See pages 26, 33–36).
Symbols
Individual symbol marks means as described below.

Warning/Caution

Read manual thoroughly

Check oil level

Use unleaded gasoline only

Lay as indicated

Flammable - Keep Fire Away

Gear shift lever operation direction, dual direction

Engine start/Engine cranking

Warning, rotating object

Warning, high voltage
Warning, high temperature
Most boats are rated and certified in terms of their maximum allowable horsepower, as shown on the boat’s certification plate. Do not equip your boat with an outboard motor that exceeds this limit. If in doubt, contact your dealer. Do not operate the outboard motor until it has been securely mounted on the boat in accordance with the instructions below.

**Position … Above keel line**
Set engine at center of boat.

1. Center of boat
2. Boat transom

**Transom matching**
Be sure that the anti ventilation plate of the outboard motor is below the water surface when running with the throttle wide open. If the above condition cannot be met due to the shape of the bottom of your boat, please consult your authorized dealer.

**MF, EF, EP type**
1. To attach the outboard motor to the boat, tighten the clamp screws by turning their handles. Also, tighten the bolts. Secure the outboard motor with a rope to prevent loss overboard.
**Note**

A rope is not included in the standard accessories.

---

**EP**

1. Clamp screw
2. Bolt
3. Washer
4. Nut

---

**MF & EF**

1. Bolt (8 x 85)*
2. Washer*
3. Nut*
4. Clamp screw

*: Option

---

**Note**

It is recommended to install upper mounting bolts with bolt head at inside surface of transom. Bolts with threaded end at inside surface of transom can cause personal injury.

---

**Notes**

1. Apply sealing agent, such as silicone sealed between the bolts and the transom board holes before tightening the bolts.
2. Be sure to tighten the mounting bolt nuts to the specified torque.
(30 Nm (3.0 kgf) 13 ft-lb)

---

**WARNING**

- Mounting the outboard motor without following this manual can lead to unsafe conditions such as poor maneuverability, lack of control or fire.
- Loose clamp screws and/or mounting bolts can lead to the release or displacement of the outboard motor, possibly resulting in lost of control and/or serious personal injury. Be sure that fasteners are tightened to the specified torque (30
Nm (3.0 kgf) 13 ft-lb). Check the fasteners for tightness from time to time.

- Be sure to use outboard mounting fasteners included in the outboard motor package or their equivalents in terms of size, material, quality and strength. Tighten fasteners to the specified torque (30 Nm (3.0 kgf) 13 ft-lb). Test cruise to check if fasteners are tightened securely.

- Outboard motor mounting must be performed by trained service person(s) using lift or hoist with sufficient capacity.

\[
\begin{align*}
\textbf{ENOM00511-0} & \\
\textbf{EFT, EPT type (Power tilt model)} & \\
\end{align*}
\]

\[
\begin{align*}
\textbf{ENON00510-0} & \\
\textbf{Note} & \\
\text{It is recommended to install upper mounting bolts with bolt head at inside surface of transom. Bolts with threaded end at inside surface of transom can cause personal injury.} & \\
\textbf{ENON00003-0} & \\
\textbf{Notes} & \\
1. & \text{Apply sealing agent, such as silicone sealed between the bolts and the transom board holes before tightening the bolts.} & \\
2. & \text{Be sure to tighten the mounting bolt nuts to the specified torque.} & \\
& \text{(30 Nm (3.0 kgf) 13 ft-lb)} & \\
\end{align*}
\]

\[
\begin{align*}
\textbf{ENOW00009-0} & \\
\textbf{WARNING} & \\
\text{Mounting the outboard motor without following this manual can lead to unsafe conditions such as poor maneuverability, lack of control or fire.} & \\
\text{Loose clamp screws and/or mounting bolts can lead to the release or displacement of the outboard motor, possibly resulting in lost of control and/or serious} & \\
\end{align*}
\]
personal injury. Be sure that fasteners are tightened to the specified torque (30 Nm (3.0 kgf) 13 ft-lb). Check the fasteners for tightness from time to time.

- Be sure to use outboard mounting fasteners included in the outboard motor package or their equivalents in terms of size, material, quality and strength. Tighten fasteners to the specified torque (30 Nm (3.0 kgf) 13 ft-lb). Test cruise to check if fasteners are tightened securely.
- Outboard motor mounting must be performed by trained service person(s) using lift or hoist with sufficient capacity.

When using other than Tohatsu’s genuine remote control box, DO NOT select the one without neutral safety switch that prevents in-gear start.
Use of remote control box without neutral safety switch can allow start of engine with gear at other than neutral shift, potentially leading passengers to falling or causing passenger to be thrown overboard.

It is recommended that you consult with your authorized dealer for installation and adjustment of the remote control device.

Installation of the Remote Control Cables (Box side):
Follow the instruction manual provided with the remote control.

Installation of the Remote Control on your boat:
Follow the instruction manual provided with the remote control.

Installation of the Remote Control Cable (engine side) and the Cord Assembly (Wiring Harness):

1. Fitting of connecting parts to cables

Screw the tip of the remote control cable into the cable joint up to approx. 10 mm (0.39 inch), then lock them with a lock nut. Apply grease to the hole of the cable joint.

2. Fitting of Remote Control Cable to Engine.

Note
Put the control lever in the Neutral position and the Free Accel lever in the fully closed position.
1. Shift cable
2. Throttle cable
3. Cable harness

**CAUTION**
Be careful not to loop the remote control cables to a diameter of 406 mm (16 inches) or less.

**WARNING**
Do not disconnect the cord assembly when the outboard motor is in operation or you will lose control of the outboard motor.

**Note**
Confirm the outboard motor shifts correctly when the shift lever is placed in Forward and Reverse position, also confirm the throttle valve is closed at idle, in Neutral, Forward, and Reverse. Confirm the throttle valve is fully open when in Forward at the wide open position.

3. Connecting the Cord assembly (Wiring Harness)

Pass the Cord assembly from the Remote control box through the hole in the Lower motor cover and cover the wire ends with the Sleeve (provided in a tool bag) and then connect the electric terminals according to the drawing below.
**EP model**

1. From remote control box
2. Sleeve
3. Drag link
4. STOP SW
5. PULSER COIL
6. EXCITER COIL
7. OIL LAMP
8. ALTERNATOR
9. RC BOX
10. REC./REG.
11. STARTER SOLENOID
12. CHOKE
13. GROUND
14. STOP SW
15. CD UNIT
16. RC BOX
17. REC./REG.
18. FUSE

**Wire Color**

| B | Black  | L | Blue |
| B/R | Brown with White tracer | P | Pink |
| Y | Yellow | R/W | Red with White tracer |
| W | White | Br/W | Brown with White tracer |
| Br | Brown | B/R | Black with Red tracer |
| Sb | Sky Blue | L/R | Blue with Red tracer |
| G | Green | W/R | White with Red tracer |
| R | Red |
EPT model

- Make sure that the battery leads do not get stuck between the outboard motor and boat when turning, etc.

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Black</td>
</tr>
<tr>
<td>Or</td>
<td>Orange</td>
</tr>
<tr>
<td>Y</td>
<td>Yellow</td>
</tr>
<tr>
<td>W</td>
<td>White</td>
</tr>
<tr>
<td>Br</td>
<td>Brown</td>
</tr>
<tr>
<td>Sb</td>
<td>Sky Blue</td>
</tr>
<tr>
<td>G</td>
<td>Green</td>
</tr>
<tr>
<td>R</td>
<td>Red</td>
</tr>
<tr>
<td>L</td>
<td>Blue</td>
</tr>
<tr>
<td>P</td>
<td>Pink</td>
</tr>
<tr>
<td>R/W</td>
<td>Red with White tracer</td>
</tr>
<tr>
<td>Br/W</td>
<td>Brown with White tracer</td>
</tr>
<tr>
<td>B/R</td>
<td>Black with Red tracer</td>
</tr>
<tr>
<td>L/R</td>
<td>Blue with Red tracer</td>
</tr>
<tr>
<td>W/R</td>
<td>White with Red tracer</td>
</tr>
</tbody>
</table>

**CAUTION**

- The starter motor may fail to operate if the leads are incorrectly connected.
- Be sure to correctly connect the (+) and (−) leads. If not, the charging system will be damaged.
- Do not disconnect the battery leads from battery while the engine is operating, the electrical parts could be damaged.
- Always use a fully charged battery.
4. Connect the positive cord (+) to the positive terminal (+) of the battery, and then connect the negative cord (—). When disconnecting the battery always remove the negative cord (—) first. After connecting the positive terminal (+), securely place a cap on it to prevent short circuits.

1. Battery cord (red)
2. Battery cord (black)

1. Place the battery box in a convenient position away from water spray. Securely fasten both the box and the battery so they do not shake loose.

**Note**

Minimum recommended battery: 12V, 70AH or 12V, 40AH
Specifications and features of batteries vary among the manufacturers. Consult the manufacturer for details.

---

3. **Installing the battery**

**WARNING**

- Place the battery away from any source of fire, sparks and open flames such as burners or welding equipment.
- Do not smoke when handling the battery.
- Do not smoke near the battery when the battery is charging.

Battery generates explosive hydrogen gas. Be sure to:

- Charge the battery in a well-ventilated place.
**PRE-OPERATING PREPARATIONS**

**DANGER**

Consult an authorized dealer for details on handling gasoline, if necessary.

Gasoline and its vapors are very flammable and can be explosive.

When carrying a fuel tank containing gasoline:
- Close the air vent screw of fuel tank cap, or gasoline vapor will be emitted through the air vent screw, creating a fire hazard.
- Do not smoke.

When or before refueling:
- Stop the engine, and do not start the engine during refueling.
- Do not smoke.
- Be careful not to overfill fuel tank. Wipe up any spilled gasoline immediately.

When or before cleaning the gasoline tank:
- Dismount fuel tank from the boat.
- Place the fuel tank away from every source of ignition, such as sparks or open flames.
- Do the work outdoors or in a well-ventilated area.
- Wipe off gasoline well immediately if spilt.

After cleaning gasoline tank:
- Wipe off gasoline well immediately if spilt.
- If the fuel tank is disassembled for cleaning, reassemble carefully. Imperfect assembly may cause a fuel leak, possibly leading to fire or explosion.
- Dispose aged or contaminated gasoline in accordance with local regulations.

**1. Recommended gasoline types**

**CAUTION**

Use of improper gasoline can damage your engine. Engine damage resulting from the use of improper gasoline is considered misuse of the engine, and damage caused thereby will not be covered under the limited warranty.

**FUEL RATING**

TOHATSU engines will operate satisfactorily when using a major brand of unleaded gasoline meeting the following specifications:

**USA and Canada** — having a posted pump Octane Rating of 87 (R+M)/2 minimum. Premium gasoline (92 [R+M]/2 Octane) is also acceptable. Do not use leaded gasoline.

**Outside USA and Canada** — Use unleaded gasoline with declared octane rating of 90 RON or over. Use of premium gasoline of 98 RON is also allowed. Use of name-brand leaded gasoline may be allowed only if unleaded gasoline is not available.

**GASOLINES CONTAINING ALCOHOL**

The fuel system components on your TOHATSU engine will withstand up to 10% alcohol content in the gasoline. But if the gasoline in your area contains either methanol (methyl alcohol) or ethanol (ethyl alcohol), you should be aware of certain
adverse effects that can occur. These adverse effects are more severe with methanol. Increasing the percentage of alcohol in the fuel can also worsen these adverse effects. Some of these adverse effects are caused because the alcohol in the gasoline can absorb moisture from the air, resulting in a separation of the water/alcohol from the gasoline in the fuel tank. These may cause increased:
- Corrosion of metal parts
- Deterioration of rubber or plastic parts
- Fuel permeation through rubber fuel lines
- Starting and operating difficulties

**WARNING**

Fuel leakage can cause fire or explosion, potentially leading to severe injury or loss of life. Every fuel system part should be checked periodically, and especially after long term storage, for fuel leak, change of hardness of rubber, expansion and/or corrosion of metals. In case any indication of fuel leakage or degradation of fuel part is found, replace relevant part immediately before continuing operation.

If the use of gasoline containing alcohol is inevitable, or presence of alcohol is suspected in the gasoline, it is recommended to add a filter that has water separating capability, and check the fuel system for leaks and mechanical parts for corrosion and abnormal wear more frequently. And, in case any of such abnormality is found, discontinue the use of such gasoline and contact our dealer immediately. Damages resulting from the use of gasolines that contain alcohol are not covered under the limited warranty.

**Fuel tank capacity:**
12 liters (3.17 U.S. gal)

**Fuel Tank:** When using a fixed fuel tank in place of genuine fuel tank, it is recommended to select a one with a structure facilitating interior cleaning.

**WARNING**

Do not fill the fuel tank over capacity. The rise of gasoline temperature may cause gasoline to expand which, if overfilled, may leak through air vent screw when it is open. Leaking gasoline is a dangerous fire hazard.

**CAUTION**

When operating a TOHATSU engine on gasoline containing alcohol, storage of gasoline in the fuel tank for long periods should be avoided. Long periods of storage, common to boats, create unique problems. In cars, alcohol blend fuels normally are consumed before they can absorb enough moisture to cause trouble, but boats often sit idle long enough for phase separation to take place. In addition, internal corrosion may take place during storage if alcohol has washed protective oil films from internal components.

**2. Low permeation fuel hose requirement**

**EQUIPPED FOR UNITED STATES AND CANADA MODEL**

Required for outboards manufactured for sale, sold, or offered for sale in the United States.
TOHATSU engine has used fuel hoses for The Environmental Protection Agency (EPA) requires from January 1, 2011.

ENOM00034-0
3. EPA pressurized portable fuel tank requirements

EQUIPPED FOR UNITED STATES AND CANADA MODEL
The Environmental Protection Agency (EPA) required portable fuel systems that are produced after January 1, 2011 for use with outboard engines to remain fully sealed (pressurized) up to 34.4 kPa (5.0 psi). These tanks may contain the following:
- An air inlet that opens to allow air to enter as the fuel is drawn out of the tank.
- An air outlet that opens (vents) to the atmosphere if pressure exceeds 34.4 kPa (5.0 psi). A hissing noise may be heard as the tank vents to the atmosphere. This is normal.
- When installing the fuel tank cap, turn the cap to the right until you hear two clicks. This signals that the fuel cap is fully seated. A built-in device prevents overtightening.
- The fuel tank has a manual vent screw which should be closed for transportation and full open for operation and cap removal.

Since sealed fuel tanks are not openly vented, they will expand and contract as the fuel expands and contracts during heating and cooling cycles of the outside air. This is normal.

ENOM00035-0
REMOVING THE FUEL CAP

1. Fuel cap
2. Manual vent screw
3. Tab lock

IMPORTANT: Contents may be under pressure. Rotate the fuel cap 1/4 turn to relieve pressure before opening.
1. Open the manual vent screw on top of the fuel cap completely.
2. Turn the fuel cap until it contacts the tab lock.
3. Press the tab lock and turn to remove cap.

ENOM00036-0
4. EPA approval primer valve/hose assembly

EQUIPPED FOR UNITED STATES AND CANADA MODEL
TOHATSU adopts Primer bulb/hose assembly approved by the Environment Protection Agency (EPA). Please use the EPA approved primer bulb/hose assembly with the identification mark on the fuel connector.
PRE-OPERATING PREPARATIONS

Be sure to use EPA approved tank and EPA approved primer bulb/hose assembly as a set. Confirm shapes of EPA approved tank and regular tank.

1. Except for U.S. model (regular tank)
2. For U.S. and Canada model (EPA approved tank)

Use only high quality 4-stroke engine oil to insure performance and prolonged engine life.
Use NMMA FC-W certified 4-stroke engine oil below.

- **10W-30**: is recommended for use in all temperature.
- **25W-40**: may be used at temperatures above 4°C (40°F).

You can also use oils that carry the API rating of SF, SG, SH, SJ, SL, or SM. Select the appropriate viscosity, based on atmospheric temperature, from the chart below.

Use of engine oils that do not meet these requirements will result in reduced engine life, and other engine problems.

For U.S.A. market only

**High altitude:**
When engine operates at high altitude engine may need to have a high altitude kit installed. Otherwise, operating the engine at high altitude may increase its emissions and decrease fuel efficiency and performance. Please see “LIMITED WARRANTY INFORMATION” for more detail.
7. Break-In

Your new outboard motor and lower unit require break-in for the moving components according to the conditions described in the following time table.

<table>
<thead>
<tr>
<th>1–10 min</th>
<th>10 min – 2 hrs</th>
<th>2–3 hrs</th>
<th>3–10 hrs</th>
<th>After 10 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throttle Position</td>
<td>Idle</td>
<td>Less than 1/2 throttle</td>
<td>Less than 3/4 throttle</td>
<td>3/4 throttle</td>
</tr>
<tr>
<td>Speed</td>
<td>Approx. 3000 rpm max</td>
<td>Full throttle run allowed for 1 min every 10 min</td>
<td>Approx. 4000 rpm. Full throttle run allowed for 2 min every 10 min</td>
<td></td>
</tr>
</tbody>
</table>

Note

Proper break-in allows outboard motor to deliver it full performance for longer service life.

**CAUTION**

Operating the outboard motor without break-in can shorten service life of the product. If any abnormality is experienced during the break-in:

- Discontinue the operation immediately.
- Have the dealer check the product and take proper action(s) if necessary.

**DANGER**

Do not operate the outboard motor in closed area or area with no forced ventilation. Exhaust gas emitted by this outboard motor contains carbon monoxide that will cause death if inhaled continuously. Inhaling the gas initially causes symptoms such as feeling of sickness, drowsiness and headache.

During operation of the outboard motor:

- Keep peripheral area well ventilated.
- Always attempt to stay on the windward side of emission.
8. Engine oil warning lamp

Oil pressure is required to lubricate internal engine parts. When the warning lamp (Red) is off, it indicates that oil pressure is present. Remark: When engine is first started, the red light will turn on for several seconds to confirm that it is working and then turn off.

ENOW00402-0

⚠️ CAUTION

Never run the engine if the warning lamp is on or blinking on and off.

When the warning lamp is on or blinking on and off, as an additional alert of the low oil pressure condition, the engine will run rough and not exceed 3000 rpm; *Stop the engine immediately and check the engine oil level.

If the oil level is lower than the appropriate level: Replenish engine oil.

If the oil level is within the appropriate level: Consult with your dealer.

ENOF00513-0

9. ESG (A device preventing over revolution)

ESG is a device to prevent over revolution of the engine (more than approximately 6250 rpm).

If you sense that the ESG is activated return to shore at a reduced speed (rpm). Possible causes of ESG activation are: Worn, broken, bent propeller. Slipping propeller rubber, Making sharp turns at high speeds.

ENON00202-0

Note

If the engine speed drops frequently after restarting the engine, please contact your dealer.
ENGINE OPERATION

Before starting

The engine oil is drained for shipping from the factory. Be sure to fill the engine to the proper level before starting engine. (To properly fill the engine with oil follow the instructions in section 10 of this manual)

Before starting engine for the first time after reassembling engine or off-season storage, disconnect stop switch lock and pull the starter handle completely out approximately 10 times in order to prime the oil pump.

1. Filling the fuel

When carrying a fuel tank containing gasoline:
- Close the fuel tank cap and air vent screw of fuel tank cap, or gasoline vapor will be emitted through the air vent screw, creating a fire hazard.
- Do not smoke.

When or before refueling:
- Stop the engine, and do not start the engine during refueling.

- Do not smoke.
- Be careful not to overfill fuel tank. Wipe up any spilled gasoline immediately.

When or before cleaning the gasoline tank:
- Dismount fuel tank from the boat.
- Place the fuel tank away from every source of ignition, such as sparks or open flames.
- Do the work outdoors or in a well ventilated area.
- Wipe off gasoline well immediately if spilt.

After cleaning gasoline tank:
- Wipe off gasoline well immediately if spilt.
- If the fuel tank is disassembled for cleaning, reassemble carefully. Imperfect assembly may cause a fuel leak, possibly leading to fire or explosion.
- Dispose aged or contaminated gasoline in accordance with local regulations.

When opening fuel tank cap, be sure to follow the procedure described below. Fuel could blast out through the fuel tank cap in case the cap is loosened by using another procedure when internal pressure of fuel tank is raised by heat from sources such as engine or sun light.

Except for USA and Canada model
1. Full open the air vent screw on the tank cap and release internal pressure.
1. Full open the air vent screw

2. Open the fuel tank cap slowly.
3. Fill the fuel carefully not to over flow.

4. After filling the tank, close the tank cap.

**For USA and Canada model**

1. Full open the air vent screw on the tank cap and release internal pressure.

2. Loosen the tank cap until it contacts the tab lock and release internal pressure completely. After that, press down the tab lock and open the tank cap.
3. Fill the fuel carefully not to over flow.

4. After filling the tank, close the tank cap until two clicks sound is heard.

**2. Feeding the fuel**

**Except for USA and Canada model**

1. Full open the air vent screw on the tank cap.
2. Open the fuel tank cap slowly and release internal pressure completely. After that, close the fuel tank cap.
3. Connect the fuel connector to the engine and squeeze primer bulb until it becomes stiff to feed fuel to carburetor. Direct arrow mark upward when priming.
1. Engine side
2. Fuel tank side

Do not squeeze primer bulb while engine running or when the outboard motor is tilted up. Otherwise, fuel could overflow.

**For USA and Canada model**

1. Full open the air vent screw on the tank cap.
2. Loosen the tank cap until contacts the tab lock and release internal pressure completely. After that, close the tank cap until two click sound is heard.
3. Connect the fuel connector to the engine and squeeze primer bulb until it becomes stiff to feed fuel to carburetor. Direct arrow mark upward when priming.

---

1. Engine side
2. Fuel tank side

Do not squeeze primer bulb while engine running or when the outboard motor is tilted up. Otherwise, fuel could overflow.

---

**CAUTION**

When using EPA approval fuel tank, only use a primer bulb/hose assembly that has a Fuel Demand Valve installed in the fuel hose or a sealing mechanism in the fuel connector as shown below. (FDV and fuel connector that has an sealing mechanism prevent pressurized fuel from entering the engine and causing a fuel system overflow or possible fuel spillage.)
1. FDV in fuel hose
2. Sealing mechanism in fuel connector
3. Identification

Do NOT use a primer bulb/hose assembly that does not contain a Fuel Demand Valve or a sealing mechanism as shown below: otherwise overflow the fuel system or fuel spillage may occur.

---

3. Starting

Be sure to install the stop switch lock to the stop switch.

---

**CAUTION**

If the engine starts in gear, do not use it. Contact an authorized dealer.

---

**Note**

Start-in-gear protection prevents engine from starting at other than neutral shift. In-gear starting of engine will move the boat immediately, potentially leading to falling down or causing passenger(s) to be thrown overboard.

1. Set the stop switch lock
2. Set the throttle grip to “START” position.
3. Pull the choke knob fully.

1. Choke knob

Note

Choke is not necessary when the engine is warm. Set the throttle grip to “RE-START” position.

Note

If engine does not start with 4 or 5 times starting operation, push the knob back and restart.

MF type

4. Pull the starter handle slowly until you feel engagement, keep pulling till you feel less resistance. Then pull it quickly. Repeat if necessary until started.

5. When starting the engine, push the choke knob back.

1. Slowly
2. Quickly

EF and EFT type

4. Push the starter switch button.

5. Release the button when the engine has started.

6. When starting the engine, push the choke knob back.

EP and EPT type

4. Insert the main switch key.
1. Neutral (N)
2. Control lever
3. Fully open
4. Fully closed
5. Free accel lever
6. Main switch key
7. Stop switch

5. Set the control lever in the Neutral position.
6. Raise the Free accel lever a little (both of cold engine and warm engine).
7. Turn the main switch key to “START” position. Then, continuously push the key to operate the choke.

**Note**
Choke operation is not necessary if the engine is warm.

8. Stop pushing the key when the engine has started.
The key returns to the original position, automatically.
9. Return the Free accel lever to closed position.

1. Lock button
2. Push to operate choke

**Note**
The free accel lever can not be raised when the control lever shift is in Forward or Reverse.

---

**CAUTION**
Do not keep turning starter motor for over 5 seconds, or the battery may be consumed, potentially making the engine starting impossible and/or damaging the starter.
If cranking over 5 seconds fails to start engine, return main switch to “ON”, and crank engine again after 10 seconds or more.

**If the recoil starter fails to operate**
- Remove the top cowl and the recoil starter.
1. Remove the starter lock cam.

2. Loosen the screw for starter lock wire.

3. Remove the upper portion of the starter lock wire.

4. Remove the lower portion of the starter lock wire.

5. Remove the bolts (3cps) and remove the recoil starter assembly.

- Confirm that the shift lever is at neutral position.
- Wrap a rope around the starter pulley then pull quickly to start.
- Use a 10 mm socket wrench as a rope handle.
- Reinstall top cowl after engine starts.
When the emergency starter rope is used for starting engine;
- Start in gear protection does not work. Be sure to shift is at neutral position. Otherwise the engine will move the boat immediately and cause personal injury.
- Be careful that your clothes or other items do not get caught in the rotating engine parts.
- To prevent accident and injury by rotating parts, do not re-attach the recoil starter after the engine has been started.
- Do not pull starter rope if any bystander is behind. The action can injure the bystander.
- Attach engine stop switch lanyard to clothing or any part of body like arm before starting engine.
- Be careful not to remove engine stop switch lanyard from engine accidentally while boat is running. Sudden stop of engine can cause loss of steering control. It can also cause loss of boat speed, possibly leading the crew(s) and or objects on the boat to be thrown forward due to inertial force.
- Do not touch electrical components such as ignition coils, spark plug cables or spark plug caps when starting engine or while engine is in operation. Touching any of these parts can cause electrical shock.

If the choke solenoid fails to operate (EP and EPT type only)

1. Remove the top cowl.
2. Close the choke plate by finger.
3. Raise the Free accel lever a little.
4. Turn the main switch key to start position.
5. Stop pushing the key when the engine has started.
6. Return the choke plate to open position.
4. Warming up the engine

Warm the engine at low engine speeds for about three minutes. This allows the lubricating oil to circulate to all parts of the engine. Operating the engine without warm up shortens the engine’s life. Be sure to check that cooling water is coming out of the cooling water check port during warm up.

⚠️ CAUTION

If the engine is operated without water discharging from the check port, the engine may over heat.

1. Cooling water check port

⚠️ CAUTION

Be sure to stop engine immediately if cooling water check port is not discharging water, and check if cooling water intake is blocked. Operating engine could lead to overheating potentially leading to engine damage. Consult an authorized dealer if the cause cannot be found.

---

5. Forward and reverse

⚠️ WARNING

Before shifting into forward or reverse, make sure that boat is properly moored and outboard motor can be steered fully to the right and left. Make sure that no swimmer(s) is ahead or astern of the boat.

⚠️ WARNING

- Attach other end of emergency stop switch tether to the operator’s clothing or arm and keep it attached during cruising.
- Do not attach the tether to a part of clothing that can be torn easily when pulled.
- Arrange the tether so that will not be caught by any object when pulled.
Be careful not to pull the tether accidentally during cruising. Unintentional stop of engine can cause loss of control of outboard motor. Rapid loss of engine power can lead to falling down or causing passenger(s) to be thrown overboard.

**Note**
Do not increase engine speed unnecessarily in reverse.

**MF, EF and EFT type**

**WARNING**
Severe damage, and personal injury, may occur if shifting at high engine speed. Engine must be in the slow idle position before shifting is attempted.

**Forward**
Turn the throttle grip to reduce engine speed. When the engine reaches trolling (or idling) speed, quickly push the shift lever to the Reverse position.

**WARNING**
Before shifting, make sure that no swimmer(s) or obstacle(s) is ahead or astern of the boat.

**CAUTION**
Be sure to warm up engine well before starting cruise. Operating cold engine may cause damage to your motor.

**Note**
Idle speed may be higher during warming up of engine. If shifted to Forward or Reverse during warming up, it may be difficult to shift back to neutral. In such case, stop engine, shift to neutral, and restart engine to warm up.

**Note**
Frequent shifting to forward or reverse can accelerate wear or degradation of parts. In such case, replace gear oil earlier than the period specified.
ENOM00524-0

EP and EPT type

1. Forward (F)
2. Neutral (N)
3. Reverse (R)
4. Shift
5. Throttle
6. Fully open
7. Fully close
8. Neutral warm-up lever
9. Control lever
10. Lock button

ENOM00528-0

MF, EF and EFT type

1. Stop switch
2. Stop switch lock

1. Turn the throttle grip to the slow position.
2. Put the shift lever in the Neutral position.
Run the engine for 2-3 minutes at idling speed if it has been running at full speed.
3. Push the stop switch to stop the engine or release the stop switch lock.

ENON00015-0

Note
The control lever is inoperative unless the free accel lever is in the fully closed position.

ENON00016-0

Note
Reduce the engine speed when the control lever is in Neutral and do not increase the engine speed unnecessarily.

1. Forward (F) quickly push the control lever to the Forward (F) position 32°, where the gear is connected, while lifting up on the lock button located at the bottom of the control lever grip. Further shifting will open the throttle.

Reverse
Quickly pull the control lever to the Reverse (R) position at 32°, where the gear is connected, while lifting up on the lock button located at the bottom of the control lever grip. Further shifting will open the throttle.

ENOM00527-0

6. Stopping
WARNING

- Do not shift into Reverse during planing, or control will be lost leading to serious personal injury, boat may swamp, and/or hull may be damaged.
- Do not shift into Reverse during cruising, or control may be lost, falling down or causing passenger(s) to be thrown overboard. Leading to serious personal injury, and steering system and/or shifting mechanism may be damaged.

Notes

- After stopping the engine, close the air vent screw on the tank cap.
- Disconnect the fuel connector of the engine or the fuel tank.
- Disconnect the battery cord of the EF, EP, EFT or EPT type engine, if the engine will not be used for more than 3 days.

PROPER TRIM ANGLE

- The position of the thrust rod (or preset knob) is correct if the hull is horizontal during operation.

1. Stop switch lock

2. Turn the main switch key to the OFF position.

The trim angle of the outboard motor can be adjusted to suit the transom angle of the hull, and load conditions. Choose an appropriate trim angle that will allow the anti-ventilation plate to run parallel to the water surface during operation.

1. Perpendicular to the water surface
Improper trim angle
Set the thrust rod (or preset knob) lower if the bow of the boat rises above horizontal.

1. Set the thrust rod lower

Remark: Thrust rod is for MF and EF, and preset knob is for EP.

**WARNING**
- Do not put hand or finger in between outboard motor body and clamp bracket when adjusting trim angle to prevent injury in case the outboard motor body falls.
- Unsuitable trim position can cause loss of control of boat.
  When testing a trim position, run boat slow initially to see if it can be controlled safely.

Excessive trim up or down may lead to unstable boat operation, potentially causing the steering difficulty that leads to accident during cruising.
- Do not cruise at high speed if improper trim position is suspected. Stop the boat and readjust trim angle before continuing cruise.
- For outboard motor model with PTT switch on the bottom cowl, do not operate the switch during cruising, or control of boat may be lost.

Improper trim angle
Set the thrust rod (or preset knob) higher if the bow of the boat is below horizontal.

1. Set the thrust rod higher

**WARNING**
If the trim angle is excessive, the bow will rise out of the water and the speed will
decrease. Furthermore, the bow may sway or the bottom may slam the water while cruising. In this case, decrease the trim angle by pressing the switch on the remote control level to “DN”.

- **EFT type**

- **EPT type**

**Improper trim angle (bow dips into the water)**

If the trim angle is too small, the bow will dip into the water, the speed will decrease, and water may enter the boat. In this case, the trim angle should be increased by pressing the switch on the remote control lever to “UP”.

**Proper trim angle**

The trim angle is optimum when the boat is parallel to the water surface while running.

**MF, EF type**

1. Stop the engine.
2. Shift the outboard into neutral.
3. Raise the engine to the tilt up position.
4. Change the thrust rod position.
5. Gently lower the outboard.
1. Thrust rod
2. Higher
3. Lower

ENOM00533-0

■ EP type

1. Stop the engine.
2. Shift the outboard into forward.
3. Raise the engine to the tilt release position (b).
4. Change the preset knob position.
5. Gently lower the outboard.

1. Preset knob

ENOF00536-0

A. Transom angle settings
B. Tilt release position

ENOW00046-0

WARNING

- Do not put hand or finger in between outboard motor body and clamp bracket when adjusting trim angle to prevent injury in case the outboard motor body falls.
- Unsuitable trim position can cause loss of control of boat. When testing a trim position, run boat slow initially to see if it can be controlled safely.

ENOM00534-0

■ EPT type

1. Operate the Power Tilt switch and tilt the outboard motor up. (The Main Switch must be “ON”.)
The outboard motor can also be tilted up using the switch provided under the bottom cowl. (The Main Switch need not be turned “ON” in this case.)

1. Operate the Power Tilt switch and tilt the outboard motor up.

2. Lock the tilt with the Tilt stopper after the outboard motor has been tilted up.

3. Manual tilting
   If the battery is dead, and the Power Tilt Switch inoperative, turn the manual valve to counter-clockwise. This will allow manual tilting of the outboard motor.

**WARNING**

Excessive trim up or down may lead to unstable boat operation, potentially causing the steering difficulty that leads to accident during cruising.
- Do not cruise at high speed if improper trim position is suspected. Stop the boat and readjust trim angle before continuing cruise.
- For outboard motor model with PTT switch on the bottom cowl, do not operate the switch during cruising, or control of boat may be lost.

**Note**

Stop the engine before adjusting trim angle.

The provided Power tilt makes tilt-up/
down electrically. It may be used as a power trim and tilt when the outboard motor is used with the light load condition. In this case, it can be adjusted to set the desired trim angle of the outboard motor in relation to the transom shape, planing speeds and load. It is imperative that the trim angle is adjusted correctly. Incorrect adjustment will cause the boat to sway, deteriorate engine performance and may cause unsafe steering conditions.

**CAUTION**

The power Tilt can be set to any trim angle, however, avoid cruising with the outboard motor tilted in the tilt range. Operating the boat in this manner, the outboard motor may ingest air into the water cooling system, resulting in engine overheating.

---

**WARNING**

When tilting up or down, be careful not to place your hand between the swivel bracket and the stern bracket. Be sure to tilt the outboard motor down slowly.

**Note**

Stop the engine before tilting up.

---

**MF, EF type**

Tilt up

With the shift lever in Neutral or Forward, fully tilt the motor up toward you by holding the tilt handle provided at the rear of the top cowl. Then slightly lower the motor for locking in the up position.
1. Tilt lever
2. Tilt up position
3. Shallow water operating position

**Tilt down**
Slightly tilt the motor up, and pull the tilt lever toward you to release the tilt-lock. Then lower the motor slowly.

3. Take hold of the tilt handle and raise the engine to the full up position and release.
4. Pull out the tilt lock knob and move it to the lock position.

**EP type**

**Tilt up**
1. Stop the engine.
2. Shift the outboard into Neutral.
**ENGINE OPERATION**

**Tilt down**
1. Move the tilt lock knob to the unlock position.
2. Raise the outboard to the tilt release position.
3. Gently lower the outboard.

**WARNING**
- Do not put hand or finger in between outboard motor body and clamp bracket when adjusting trim angle to prevent injury in case the outboard motor body falls.
- When tilting up outboard motor with fuel joint for over a few minutes, be sure to disconnect fuel hose or close fuel cock, or fuel may leak, potentially catching fire.

**CAUTION**
Do not tilt up outboard motor during operation, or engine may be damaged from overheating due to lack of sufficient cooling water.
9. Shallow water operation

**WARNING**

During shallow water operation, be careful not to place your hand between the swivel bracket and the stern bracket. Be sure to tilt the outboard motor down slowly.

**Note**

Slow down to trolling speed, and shift into neutral before setting outboard motor to shallow water drive position.

**WARNING**

- Run at lowest possible speed when using shallow water drive.
- Tilt lock is disabled when in shallow water drive position.
- When driving shallow water, be careful not to strike outboard motor against sea bottom, or propeller may be pushed out of water, resulting in loss of control.

**CAUTION**

While in shallow water drive position, do not operate the outboard motor in reverse. Operate the outboard motor at slow speed and keep the cooling water intake submerged.

**EP type**

Setting shallow water drive
1. Stop the engine.
2. Shift the outboard into forward.
3. Tilt the outboard up to one of the shallow water drive positions.

**MF, EF type**

Shallow water running position

With the shift lever in Neutral or Forward, tilt the motor up slowly by about 40° and then lower the tilt lever for setting at the shallow water running position.

Tilt down from shallow water running position

Tilt the motor up fully and then return the motor down slowly to the normal running position.
1. Shallow water drive position

**WARNING**

Do not tilt up or down outboard motor when swimmer(s) or passenger is near to prevent them from being caught between outboard motor body and clamp bracket in case the outboard motor body falls.

**WARNING**

When tilting up outboard motor with fuel joint for over a few minutes, be sure to disconnect fuel hose or close fuel cock, or fuel may leak, potentially catching fire.

**CAUTION**

Do not tilt up outboard motor while engine operates, or no cooling water may be fed, leading to engine seizure due to overheating.

---

**Releasing shallow water drive**

1. Stop the engine.
2. Tilt the outboard up to the tilt release position.
3. Gently lower the outboard.
1. Removing the outboard motor

1. Stop the engine.
2. Disconnect the fuel connector, the remote control cables and the battery cords from the outboard motor.
3. Remove the outboard motor from boat and completely drain the water from the gear case.

2. Carrying the outboard motor

Keep the outboard motor in a vertical position when carrying.

WARNING

- Close air vent screw of fuel tank and fuel cock before carrying or storing outboard motor and fuel tank, or fuel may leak, potentially catching fire.
- Do not give a shock to an outboard motor during transportation. It becomes a cause of breakage.

CAUTION

Engine may be hot immediately after operating and could cause burns if touched. Allow Engine to cool down before attempting to carry the outboard.

3. Storing the outboard motor

Outboard motor should be stored in a vertical position.

Note

If the outboard motor must be laid down be sure the tiller handle faces down as shown in the drawing above. Elevate power unit 2 inches to 4 inches if traveling to avoid oil spillage.

CAUTION

Do not carry or store outboard motor in any of positions described below. Otherwise, engine damage or property damage could result from leaking oil.
**TRAILERING**

**WARNING**

Do not go under outboard motor tilted up even if it is supported by support bar, or accidental fall of outboard motor could lead to severe personal injury.

**WARNING**

Close air vent screw of fuel tank and fuel cock before carrying or storing outboard motor and fuel tank, or fuel may leak, potentially catching fire.

**WARNING**

When taking outboard motor from package or removing outboard motor from the boat, never release the lock lever. If the lock lever is released, it will very easy for the clamp bracket to spring up to the tilting direction because it is not fixed.

**CAUTION**

When trailering the outboard motor should be in a vertical (normal running) position, fully down. Trailering in the tilted position may cause damage to the outboard motor, boat, etc.

If trailering with outboard motor fully down is not available (the gear case skeg is too close to the road in a vertical position), fix the outboard motor securely using a device (like a transom saver bar) in the tilted position.

**CAUTION**

The tilt support device supplied on your outboard motor is not intended for towing. It is intended to support the outboard motor while the boat is docked, beached, etc.

**WARNING**

Please disconnect fuel connector except when operating engine. Fuel leakage is a fire or explosion hazard, which can cause serious injury or death.
1. Steering friction

**MF, EF type**
The steering friction can be adjusted in accordance with your preference by turning the steering adjust bolt.

1. Steering adjust screw
   A. Lighter
   B. Heavier

**Note**
The steering adjustment bolt is used to adjust the friction load of the steering, but not to fix the steering. Excess tightening of the adjustment bolt may cause damage to the swivel bracket.

**EFT, EP and EPT type**

2. Throttle grip

**MF, EF and EFT type**
The turning force of the throttle grip can be adjusted with a throttle adjust screw.

**WARNING**
Do not overtighten the throttle grip or remote control tensioner or it could result in difficulty of movement resulting in the loss of control causing an accident and could lead to severe injury.

3. Remote Control Lever Load

**EP and EPT type**
(Throttle friction adjustment screw)
To adjust the load of the remote control...
lever, turn the throttle friction adjustment screw on the front of the remote control. Turn clockwise to increase the load and counter-clockwise to decrease it.

1. Throttle friction adjustment screw
   A. Lighter
   B. Heavier

4. Trim Tab Adjustment

If straight-line cruising cannot be achieved, adjust the trim tab located under the anti-ventilation plate.

1. Tilt tab
   - If the boat veers toward the right, direct the trim tab towards A.
   - If the boat veers toward the left, direct the trim tab towards B.

**Notes**
- The trim tab also acts as an anode to prevent electrolytic corrosion. Therefore do not paint or grease this part.
- After adjustment securely tighten the trim tab fixing bolt.
- Check for looseness of the bolt and the trim tab at regular intervals.

**Note**
Due to corrosion, the trim tab will wear down over time. The trim tab should be replaced when it has eroded 2/3 of its regular size.

**WARNING**
- Inappropriate adjustment of trim tab could cause steering difficulty. After installing or readjusting trim tab, check if steering load is even.
- Tighten trim tab bolt to specified torque.

**WARNING**
- Be sure that outboard motor is secured to transom or service stand, or accidental drop or fall of outboard motor could lead to severe personal injury.
- Be sure to lock outboard motor if it is tilted up, or accidental fall of outboard motor could lead to severe personal injury.
- Do not go under outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury.
Care of your outboard motor
To keep your outboard motor in the best operating condition, it is very important that you perform daily and periodic maintenance as suggested in the maintenance schedules that follow.

CAUTION

- Your personal safety and that of your passengers depends on how well you maintain your outboard motor. Carefully observe all of the inspection and maintenance procedures described in this section.
- The maintenance intervals shown in the checklist apply to an outboard motor in normal use. If you use your outboard motor under severe conditions such as frequent full-throttle operation, frequent operation in brackish water, or for commercial use, maintenance should be performed at shorter intervals. If in doubt, consult your dealer for advice.
- We strongly recommend that you use only genuine replacement parts on your outboard motor. Damage to your outboard motor arising from the use of other than genuine parts is not covered under the warranty.

EPA Emissions Regulations
EPA (United States Environmental Protection Agency) has emission regulations regulating air pollution from new outboard motors. All new outboard motors manufactured by us are certified to EPA as conforming to the requirements of the regulations. This certification depends upon factory standards. Therefore, factory specifications must be followed when servicing emission related controls, or making adjustments. Maintenance, replacement, or repair of the emission control devices and systems may be performed by any marine SI (Spark Ignition) engine repair establishment or individual.
1. Daily Inspection

Perform the following checks before and after use.

<table>
<thead>
<tr>
<th>Item</th>
<th>Points to Check</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel System</td>
<td>• Check the amount of fuel in the tank.</td>
<td>Replenish</td>
</tr>
<tr>
<td></td>
<td>• Check for debris or water in the fuel filters.</td>
<td>Clean or Replace</td>
</tr>
<tr>
<td></td>
<td>• Check the rubber hoses for fuel leakage.</td>
<td>Replace</td>
</tr>
<tr>
<td>Fuel Tank Cap</td>
<td>• Check for crack, leakage, damage in the fuel tank cap.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check for crack, damage in the gasket and tether.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check for leakage at full close.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check for ratchet performance.</td>
<td>Replace</td>
</tr>
<tr>
<td>Engine Oil</td>
<td>• Check the oil level.</td>
<td>Fill to the upper level mark on dipstick</td>
</tr>
<tr>
<td>Electrical Equipment</td>
<td>• Check that the main switch functions normally.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check that the battery electrolyte level and specific gravity are normal.</td>
<td>Replenish or recharge</td>
</tr>
<tr>
<td></td>
<td>• Check for loose connections on the battery terminal.</td>
<td>Relighten</td>
</tr>
<tr>
<td></td>
<td>• Check that the stop switch functions normally and make sure the lock plate is there.</td>
<td>Remedy or replace</td>
</tr>
<tr>
<td></td>
<td>• Check cords for loose connections and damage.</td>
<td>Correct or replace</td>
</tr>
<tr>
<td></td>
<td>• Check the spark plugs for dirt, wear and carbon build-up.</td>
<td>Clean or replace</td>
</tr>
<tr>
<td>Throttle System</td>
<td>• Check carburetor linkage is working normally when turning the throttle grip.</td>
<td>Correct</td>
</tr>
<tr>
<td>Recoil Starter</td>
<td>• Check the rope for wear and chafing.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check the ratchet engagement.</td>
<td>Correct or replace</td>
</tr>
<tr>
<td>Clutch and Propeller System</td>
<td>• Check that clutch engages correctly when operating the shift lever.</td>
<td>Adjust</td>
</tr>
<tr>
<td></td>
<td>• Visually Check propeller for bent or damaged blades.</td>
<td>Replace</td>
</tr>
<tr>
<td></td>
<td>• Check the propeller nut is tightened and the split pin is present.</td>
<td></td>
</tr>
<tr>
<td>Installation of Motor</td>
<td>• Check all the bolts attaching the motor to the boat.</td>
<td>Tighten</td>
</tr>
<tr>
<td></td>
<td>• Check the thrust rod installation.</td>
<td></td>
</tr>
<tr>
<td>Cooling Water</td>
<td>• Check that cooling water is discharged from the cooling water check port after the engine has started.</td>
<td>Repair</td>
</tr>
<tr>
<td>Tools and Spares</td>
<td>• Check that there are tools and spare parts for replacing spark plugs, the propeller, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Check that you have the spare rope.</td>
<td></td>
</tr>
<tr>
<td>Steering Devices</td>
<td>• Check the operation of the steering handle.</td>
<td>Repair</td>
</tr>
<tr>
<td>Other parts</td>
<td>• Check if the anode is securely installed.</td>
<td>Repair if necessary</td>
</tr>
<tr>
<td></td>
<td>• Check the anode for corrosion and deformation.</td>
<td>Replace</td>
</tr>
</tbody>
</table>
Maintaining engine oil

If the engine oil is low, the life of the engine will be shortened significantly.

Checking oil level

1. Stop the engine and set it in a vertical position.
2. Remove the top cowl.
3. Remove the dipstick.
4. Wipe oil off the oil dipstick with a clean rag.
5. Put in the dipstick.
6. Take out the dipstick and check the oil level.
7. Replace the dipstick.

Replenishing engine oil

If the oil level is low, or at lowest mark, add recommended oil to the upper dipstick mark.

Note

The oil level should be checked when the engine is cold.

Consult with an authorized dealer if the engine oil is milky color, or appears contaminated.

Washing outboard motor

If outboard motor is used in salt water, brackish water or water with a high acidic level, use fresh water to remove salt, chemicals or mud from exterior and cool-
ing water passage after every cruising or before storing outboard motor for long time. Before flushing, remove the propeller and the forward thrust holder.

**CAUTION**

Keep cooling water passage free of clogs, or lack of cooling water flow could lead to engine overheating, potentially resulting in engine trouble.

**Note**

It is recommended to check chemical properties of water on which your outboard motor is regularly used.

**WARNING**

Do not start engine without removing propeller, or accidentally turning propeller could cause personal injury.

**WARNING**

Never start or operate the engine indoors or in any space which is not well ventilated. Exhaust gas contains carbon monoxide, a colorless and odorless gas which can be fatal if inhaled for any length of time.

**Use flushing attachment.**

1. Remove propeller (refer to Propeller Replacement). Remove the water plug from the motor, and screw in the flushing attachment.

2. Attach a water hose to the flushing attachment. Turn on the water and adjust the flow. (Be sure to seal the water inlet, located in the gear case, with tape.)

3. Start the engine and run it at idle speed in neutral shift position.

4. Check for a steady stream of water flowing out of the water pump indicator hole. Continue flushing the outboard motor for 3 to 5 minutes, carefully monitoring water supply at all times.

5. Stop the engine, turn off the water supply, and remove the flushing attachment and tape. Reinstall the propeller.

**CAUTION**

Keep engine at idle speed during flushing.

**Replacing the propeller**

A worn-out or bent propeller will lower the motor’s performance, and cause engine
Before removing the propeller, remove the spark plug caps from the spark plugs to protect against personal injury.

**WARNING**

Do not begin propeller removal and installation procedure with spark plug caps attached, shift in forward or reverse, main switch at other than “OFF”, engine stop cord attached to the switch, and starter key attached, or engine could accidentally start leading to serious personal injury. Disconnect battery cable if possible.

1. Remove the split pin, propeller nut and washer.
2. Remove the propeller and thrust holder.
3. Apply genuine grease to the propeller shaft before installing a new propeller.
4. Install the thrust holder, propeller, washer and propeller nut onto the shaft.
5. Install a new split pin into the nut hole and bend it.

**CAUTION**

- Do not install propeller without thrust holder, or propeller boss could be damaged.
- Do not reuse split pin.
- After installing split pin, spread the pin apart to prevent it from falling out which could lead to the propeller coming off during operation.

Replacing the spark plugs

**WARNING**

- Do not reuse spark plug with damaged insulation, or sparks can leak through crack, potentially leading to electric shock, explosion and/or fire.
- Do not touch spark plugs immediately after stopping engine as they will be hot and could cause severe burns if touched. Allow motor to cool down first.

If the spark plug(s) is fouled, has carbon build up, or is worn, it should be replaced. When reusing spark plugs, remove dirt from the electrodes and adjust spark gap to specification.

**Note**

When inspecting the plug, always clean the gasket surface and use a new gasket. Wipe
off any dirt from the threads and screw in the spark plug to the correct torque.

1. Stop the engine.
2. Remove the top cowl.
3. Remove the spark plug caps.
4. Remove the spark plugs by turning it counter-clockwise, using a 5/8" socket wrench and handle.
5. Attach spark plug and tighten to specified torque.

Use spark plug NGK DCPR-6E.

- At each inspection re-tighten the anode attaching bolt. As it is likely to be subjected to electrolytic corrosion.

Replacing the anode
A sacrificial anode protects the outboard motor from galvanic corrosion. Anode is located on the gear case and the cylinder. When the anode is eroded more than 2/3, replace it.

- Never grease or paint the anode.

Checking and Refilling Oil in the Power Tilt.
1. Check the oil level of the reservoir tank as shown on the right while the tank is kept in a vertical position. Tilt the outboard motor up to check the oil level in the tank.

Remove the oil cap by turning counter-clockwise, then check if the oil level reaches the bottom line of the plug hole.
1. **CAUTION**

Do not unscrew the oil plug with the outboard motor tilted down. Pressurized oil in the oil tank may spurt out.

2. **Recommended oil**
   Use an automatic transmission fluid or equivalent.

   Recommended oils are as shown below.
   
   **ATF Dexron III**

3. **Air purging from the Power Tilt unit.**

   Entrapped air in the Power Tilt unit will cause poor tilting movement. With the outboard motor mounted on the boat, set the manual release valve to the Manual side, and tilt the outboard motor manually up/down 5-6 times while checking the oil level. When done, close the valve by turning it clockwise towards the Power side.
2. Periodic Inspection

It is important to inspect and maintain your outboard motor regularly. At each interval on the chart below, be sure to perform the indicated servicing. Maintenance intervals should be determined according to the number of hours or number of months, whichever comes first.

<table>
<thead>
<tr>
<th>Description</th>
<th>Inspection intervals</th>
<th>Inspection procedure</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuel System</strong></td>
<td>First 20 hours of 1 month</td>
<td>Every 50 hours of 3 months</td>
<td>Every 100 hours of 6 months</td>
</tr>
<tr>
<td>Carburetor*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fuel filter</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Piping/Hoses*2</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fuel tank*2</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fuel tank cap*2</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Fuel pump*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Ignition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark plug</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ignition timing*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Starting System</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starter rope</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Starter Motor*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Battery</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Engine</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine oil</td>
<td>Replace ●</td>
<td>Replace ●</td>
<td>Replace ●</td>
</tr>
<tr>
<td>Valve Clearance*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Timing Belt*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Thermostat*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Lower Unit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propeller</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Gear oil</td>
<td>Replace ●</td>
<td>Replace ●</td>
<td>Replace ●</td>
</tr>
<tr>
<td>Water pump*1</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Bolts and Nuts</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Sliding and Rotating Parts, Grease Nipples</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Outer Equipment</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Anode</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

*1: Have this handled by your dealer.
*2: In USA, you have to use EPA approved part (See pages 28–30).
Your outboard motor should receive careful, and complete inspection at 300 hours. This is the best time for major maintenance procedures to be carried out.

Replacing engine oil

Engine oil mixed with dust or water will dramatically shorten the life of the engine.

To change engine oil:
1. Stop the engine and set it in a tilted position.
2. Remove the top cowl and oil filler cap. Allow it to cool.
3. Turn the steering on the outboard motor so that the drain hole is facing downward.
4. Put a oil drain pan under the oil drain screw.
5. Remove the oil drain screw and completely drain oil from the engine.
6. Tighten the oil drain screw.
7. Reset the engine in a vertical position.
8. Repeat 3 to 7 procedures two or three times to drain the oil completely.
9. Fill the engine through filler port with recommended oil (see chart below) to the upper dipstick mark.
10. Tighten the oil filler cap.

2. Filler port

Use only high quality 4-stroke engine oil to insure performance and prolonged engine life. Use oils that carry the API rating of SF, SG, SH, SJ, SL, or SM. Select the appropriate viscosity, based on atmospheric temperature, from the chart below.

You can also use NMMA FC-W certified 4-stroke outboard oil below.
10W-30: is recommended for use in all temperature.
25W-40: may be used at temperatures above 4°C (40°F).

Use of engine oils that do not meet these requirements will result in reduced engine life, and other engine problems.
You may be injured due to high engine temperatures if you fill engine oil just after stopping. Changing engine oil should be done after the engine has been cooled.

**CAUTION**

- Do not overfill engine oil, or engine oil could leak and/or engine could be damaged. If engine oil level is over upper limit marks of oil gauge, drain oil to level lower than upper limit.
- Be sure that outboard motor is in upright and level position when checking or changing oil.
- Stop engine immediately if low oil pressure warning lamp is lit or oil leak is found, or engine could be severely damaged. Consult dealer.

Notes

- If any amount of water is found in engine oil, making it milky white, consult dealer.
- If engine oil is contaminated with fuel, emitting strong fuel smell, consult dealer.
- Some oil dilution is normal if engine is idled or trolled for long periods, especially in cooler water temperatures.

Cleaning the fuel filters and the fuel tank

Fuel filters are provided inside the fuel tank and engine.

**WARNING**

Gasoline and its vapors are very flammable and can be explosive.

---

**Fuel filter (for engine)**

Replace the fuel filter provided inside of engine cover if there is water or dirt inside.

---

**Fuel filter (for fuel tank)**

Loosen the fuel pickup elbow shown at left, remove it and clean the fuel filter.
1. Filter
2. Fuel pick up elbow

**Fuel tank**

Water or dirt in the fuel tank will cause engine performance problems. Check and clean the tank at specified times or after the outboard motor has been stored for a long period of time (over three months).

**Replacing gear oil**

1. Remove the oil plugs (upper and lower), and completely drain the gear oil.
2. Insert the oil tube nozzle into the lower oil plug hole, and fill with gear oil by squeezing the oil tube until oil flows out of the upper plug hole.
3. Install the upper oil plug, and then remove oil tube nozzle and install the lower oil plug.

**WARNING**

- Be sure that outboard motor is secured to transom or service stand, or accidental drop or fall of outboard motor could lead to severe personal injury.
- Be sure to lock outboard motor if it is tilted up, or accidental fall of outboard motor could lead to severe personal injury.
- Do not go under outboard motor tilted up and locked, or accidental fall of outboard motor could lead to severe personal injury.

**CAUTION**

Do not reuse oil plug gasket. Always use new gasket and tighten oil plug properly to prevent entry of water into lower unit.
1. Oil plug (Upper)
2. Oil plug (Lower)

**Note**
If water in the oil, giving it a milky colored appearance. Contact your dealer.

**Note**
Use genuine gear oil or the recommended one (API GL-5; SAE #80 to #90).
Required volume: approx. 320 mL (10.8 fl. oz.).

---

**3. Off-season storage**

Before you put your outboard motor in storage, it is a good opportunity to have it serviced and prepared by your dealer.

**WARNING**
Be sure to use cloth to remove fuel remaining in the cowl and dispose of it in accordance with local fire prevention and environment protection regulations.
**Battery**

1. Disconnect the battery cables.
2. Wipe off any chemical deposits, dirt, or grease.
3. Apply grease to the battery terminals.
4. Charge the battery completely before storing it for the winter.
5. Recharge the battery once a month to prevent it from discharging and the electrolyte from deteriorating.
6. Store the battery in a dry place.

**Electric Starter Motor**

Coat the internal pinion gears and the shaft of the electric starter motor with grease. Do not put grease on the teeth of the starter pinion or flywheel or increased wear or damage will occur.

---

**4. Pre-season check**

1. Check that the shift and throttle function properly.
   (Be sure to turn the propeller shaft when checking the shift function or else the shift linkage may be damaged.)

**Notes**

The following steps must be taken when first using the engine after winter storage.

1. Fill the fuel tank completely.
2. Warm up the engine for 3 minutes in the “NEUTRAL” position.
3. Run the engine for 5 minutes at the slowest speed.
4. Run the engine for 10 minutes at half speed.

In steps 2 and 3 above, the oil used for storage inside the engine will be flushed out to assure optimum performance.

2. Check the electrolyte level, and measure the voltage and specific gravity of the battery.

<table>
<thead>
<tr>
<th>Specific Gravity at 20°C</th>
<th>Terminal Voltage (V)</th>
<th>Charge Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.120</td>
<td>10.5</td>
<td>Fully discharged</td>
</tr>
<tr>
<td>1.160</td>
<td>11.1</td>
<td>1/4 charged</td>
</tr>
<tr>
<td>1.210</td>
<td>11.7</td>
<td>1/2 charged</td>
</tr>
<tr>
<td>1.250</td>
<td>12.0</td>
<td>3/4 charged</td>
</tr>
<tr>
<td>1.280</td>
<td>13.2</td>
<td>Fully charged</td>
</tr>
</tbody>
</table>

3. Check that the battery is secure and the battery cables are properly installed.

**5. Motor submerged in water**

After taking your outboard motor out of the water, immediately take it to your dealer. The following are the emergency measures to be taken for a submerged outboard motor, if you cannot take it to your dealer right away.

1. Wash the outboard motor with fresh water to remove salt or dirt.
2. Remove the engine oil drain screw and completely drain water and oil from the engine.
3. Remove the spark plugs, and completely drain the water from the engine by pulling the recoil starter several times.

Replace oil filter and oil to the correct
level.
The oil and filter may need to be changed again after running a short period to get all moisture completely out of the crankcase.

4. Inject a sufficient amount of engine oil through the spark plug holes.
   Pull the recoil starter several times to circulate the oil throughout the outboard motor.

5. Take outboard motor to your dealer.

ENOW00098-0

⚠️ CAUTION

Do not attempt to start submerged outboard motor immediately after it is recovered, or engine could be severely damaged.

ENOM00560-0

6. Cold weather precautions

If you moor your boat in cold weather at temperatures below 0°C (32°F), there is the danger of water freezing in the cooling water pump, which may damage the pump, impeller, etc. To avoid this problem, tilt down and submerge the lower unit under the water.

ENOM00107-0

7. Checking after striking underwater object

Striking the sea bottom or an underwater object may severely damage the outboard motor. Immediately bring the outboard motor to the dealer and ask for the following checks.

1. Looseness or damage of power unit installation bolts, gear case and extension case bolts, propeller shaft housing bolts, propeller or propeller shaft upper and lower mount rubber bolts, and/or mount bracket bolts.

   Ask an authorized dealer to tighten any loose bolts and nuts, and to replace damaged parts.

2. Damage to mount rubber, the tilt stopper, thrust rod, gears and clutch, and/or propeller.

   Ask an authorized dealer to replace damaged or defective parts.
If you encounter a problem, consult the check list below to determine the cause and to take the proper action.

An authorized dealer will always be happy to provide any assistance and information.

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Engine failing to start</th>
<th>Engine starting but stopping soon</th>
<th>Poor idling</th>
<th>Poor acceleration</th>
<th>Engine speed abnormally high</th>
<th>Engine speed abnormally low</th>
<th>Boat speed low</th>
<th>Overheating of engine</th>
<th>Warning lamp ON</th>
<th>Power tilt inoperative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empty fuel tank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect connection of fuel system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air entering fuel line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deformed or damaged fuel hose</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed air vent on fuel tank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clogged fuel filter, fuel pump, or carburetor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of improper engine oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of improper gasoline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excessive supply of fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor carburetor adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark plug other than specified</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dirt, soot, etc. on spark plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty oil pressure switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Spark or weak spark</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short circuit of engine stop switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition timing incorrect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lock plate not fitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disconnection of wire or loose ground connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blown 20 Amp fuse in the starting circuit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not shifted to neutral position</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak battery or battery connections are loose or corroded</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition key switch failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring or electrical connection faulty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starter motor or starter solenoid failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible cause</td>
<td>Engine failing to start</td>
<td>Engine starting but stopping soon</td>
<td>Poor idling</td>
<td>Poor acceleration</td>
<td>Engine speed abnormally high</td>
<td>Engine speed abnormally low</td>
<td>Boat speed low</td>
<td>Overheating of engine</td>
<td>Warning lamp ON</td>
<td>Power tilt inoperative</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------------------------</td>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>----------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Low compression</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon deposits in the combustion chamber</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect valve clearance</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low oil pressure/level</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low oil level</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of improper oil</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil deterioration</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clogged oil strainer</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty oil pump</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect adjustment of throttle link</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient cooling water flow, clogged or defective pump</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulty thermostat</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cavitation or ventilation</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect propeller selection</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Damaged or bent propeller</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improper thrust rod position</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbalanced load on boat</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transom too high or too low</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following is a list of the tools and spare parts provided with the motor.

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service tools</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool bag</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pliers</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Socket wrench</td>
<td>1</td>
<td>10 × 13 mm</td>
</tr>
<tr>
<td>Socket wrench</td>
<td>1</td>
<td>16 mm (spark plug)</td>
</tr>
<tr>
<td>Socket wrench handle</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Screwdrivers</td>
<td>1</td>
<td>Cross-and straight-point</td>
</tr>
<tr>
<td>Screwdriver handle</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Spare parts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency starter rope</td>
<td>1</td>
<td>1600 mm</td>
</tr>
<tr>
<td>Spark plug</td>
<td>1</td>
<td>NGK: DCPR6E</td>
</tr>
<tr>
<td>Split pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Parts Packaged with Engine</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel tank</td>
<td>1</td>
<td>12 L</td>
</tr>
<tr>
<td>Primer bulb</td>
<td>1 set</td>
<td></td>
</tr>
<tr>
<td>Remote control box</td>
<td>1 set</td>
<td>EP/EFT only</td>
</tr>
<tr>
<td>Harness sleeve</td>
<td>1</td>
<td>EP only</td>
</tr>
<tr>
<td>Bracket bolts, nuts and washers</td>
<td>1 set</td>
<td>EP only 12–90 mm (Tool bag)</td>
</tr>
<tr>
<td>Bracket fixing</td>
<td>4</td>
<td>8 mm</td>
</tr>
<tr>
<td>Bolt</td>
<td>4</td>
<td>8 mm</td>
</tr>
<tr>
<td>Nut</td>
<td>4 (big)</td>
<td>8 mm</td>
</tr>
<tr>
<td>Washer</td>
<td>4 (small)</td>
<td>8 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPT/EFT only</td>
</tr>
</tbody>
</table>
OPTIONAL ACCESSORIES

Selector

1. Selector

Genuine gear oil (500 mL)

Touch-up paint (300 mL)

Genuine engine oil (450 mL, 1 L)

Flushing attachment
Use a genuine propeller.
A propeller must be selected so that the engine rpm measured at wide open throttle while cruising is within the recommended range.

5000–6000 rpm

<table>
<thead>
<tr>
<th>Propeller Mark</th>
<th>No. of Blades</th>
<th>Inch</th>
<th>Millimeter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light boats</td>
<td>9.5</td>
<td>3</td>
<td>8.9 × 10</td>
</tr>
<tr>
<td></td>
<td>8.5</td>
<td>3</td>
<td>8.9 × 8.3</td>
</tr>
<tr>
<td></td>
<td>7.5</td>
<td>3</td>
<td>8.5 × 7.5</td>
</tr>
<tr>
<td></td>
<td>7.0</td>
<td>3</td>
<td>8.9 × 7.0</td>
</tr>
<tr>
<td></td>
<td>6.5</td>
<td>3</td>
<td>8.5 × 6.5</td>
</tr>
<tr>
<td>Heavy boats</td>
<td>7.0</td>
<td>4</td>
<td>8.7 × 7.0</td>
</tr>
<tr>
<td></td>
<td>5.0</td>
<td>4</td>
<td>8.7 × 5.0</td>
</tr>
</tbody>
</table>