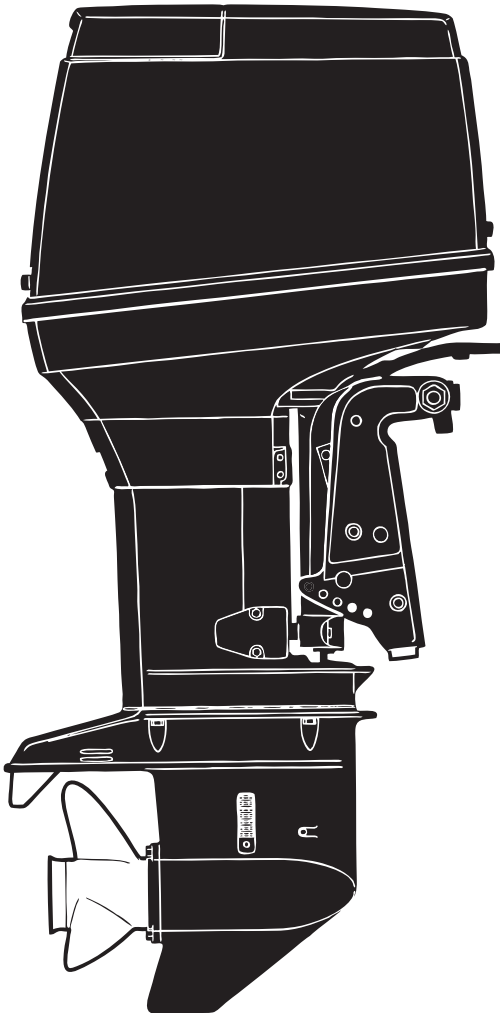


TOHATSU

OWNER'S MANUAL



**M 60C
M 70C
M 70CX
M 90A₂
M 115A₂
M 140A₂**

OB No.003-11039-EAH1

ENOM00001-0



READ THIS MANUAL BEFORE USING THE OUTBOARD MOTOR. FAILURE TO FOLLOW THE INSTRUCTIONS AND SAFETY PRECAUTIONS IN THIS MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH. KEEP THIS MANUAL IN A SAFE LOCATION FOR FUTURE REFERENCE.

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YOUR TOHATSU OUTBOARD MOTOR

ENOM00006-A

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.

All information in this manual is based on the latest product information available at the time of approval for printing.

Tohatsu Corporation reserves the right to make changes at any time without notice and without incurring any obligation.

Please always keep this manual together with the outboard motor as a reference to everyone who uses the outboard motor. If the outboard motor is resold, make sure the manual is passed on to the next owner.

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

TOHATSU CORPORATION

ENOM00003-0

PRE-DELIVERY CHECK

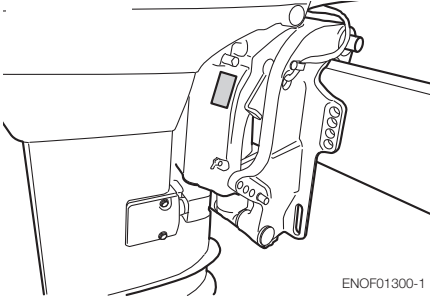
Be sure that the product has been checked by an authorized TOHATSU dealer before you take delivery.

ENOM00005-A

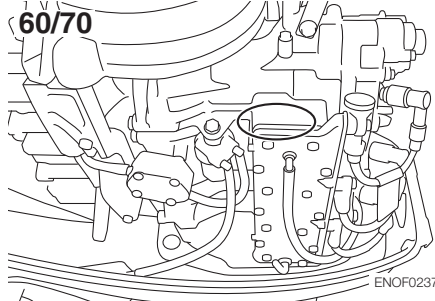
Serial Number

In the space below, please record the outboard motor's serial number. The serial number will be needed when ordering parts, and when making technical or warranty inquiries.

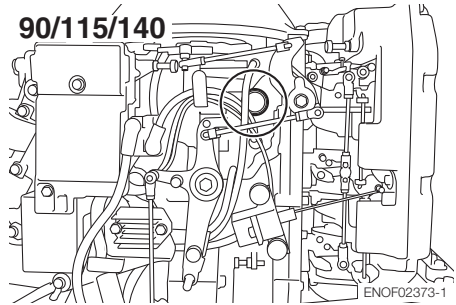
Serial Number:



ENOF01300-1



ENOF02371-1



ENOF02373-1

Serial Number:

Date of purchase:

ENOM00007-0

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.

ENOW00001-0

 **DANGER**

Failure to observe will result in severe personal injury or death, and possibly property damage.

ENOW00002-0

 **WARNING**

Failure to observe could result in severe personal injury or death, or property damage.

ENOW00003-0

 **CAUTION**

Failure to observe could result in personal injury or property damage.

ENON00001-0

Note

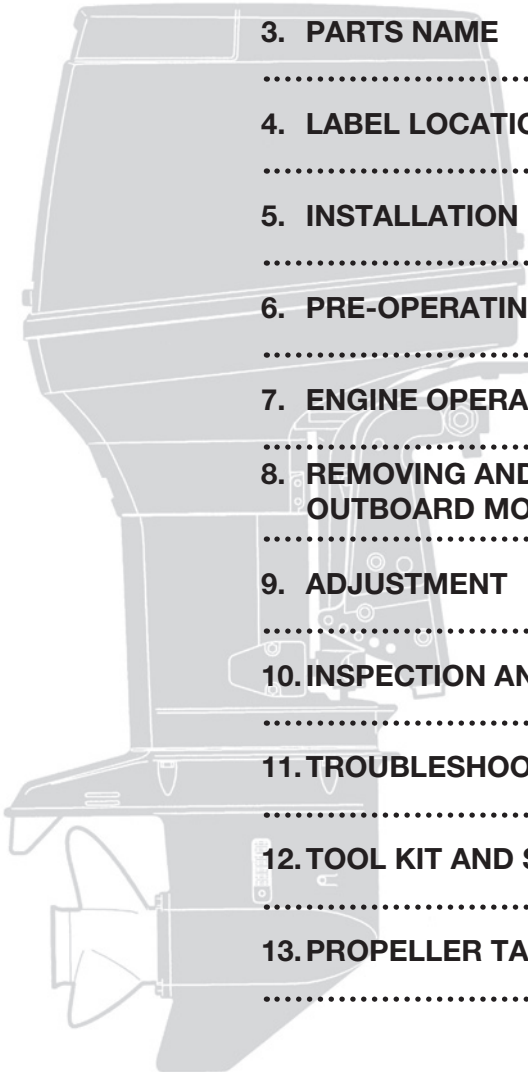
This instruction provides special information to facilitate the use or maintenance of the outboard motor or to clarify important points.

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GENERAL SAFETY INFORMATION

ENOM00009-0

SAFE OPERATION OF BOAT

As the operator/driver of the boat, you are responsible for the safety of those aboard and those in other boats 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.

ENOW00005-0



WARNING

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.

ENOM00008-A

EMERGENCY STOP SWITCH

The Emergency Stop Switch will stall the outboard motor when the stop switch lanyard is pulled off. This stop switch lanyard has to be attached to the operator of the outboard motor to minimize or prevent injuries from the propeller in case the operator falls overboard.

It is operator's responsibility to use the Emergency Stop Switch Lanyard.

ENOW00004-A



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 lanyard is coiled and can be extended to a full 1300 mm (51 inch.).

ENOM00800-A

PERSONAL FLOATATION DEVICE

As the operator/driver and passenger of the boat, you are responsible to wear a PFD (Personal Flotation Device) while on the boat.

ENOM00010-0

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.

ENOM00011-A

MAINTENANCE

As the owner of this outboard motor, you should be acquainted with correct maintenance procedures following maintenance section of this manual (See page 68). 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.

Carbon Monoxide Poisoning Hazard

Exhaust gas contains carbon monoxide, a colorless and odorless gas which can be fatal if inhaled for any length of time.

Never start or operate the engine indoors or in any space which is not well ventilated.

Gasoline

Gasoline and its vapors are very flammable and can be explosive. Use extreme care when handling gasoline. You should be thoroughly knowledgeable on how to correctly handle gasoline by reading this manual.

SPECIFICATIONS

ENOM00810-A

MODEL FEATURE

Model		M60C	M70C		M70CX
Type		EPTO	MFG	EPTO	MFG
Transom heights	S				
	L	●	●	●	●
	UL		●	●	●
Tiller handle			●		●
Remote control		●		●	
Power tilt		●		●	
Gas-assisted tilt			●		●
Manual tilt					

Model		M90A2	M115A2	M140A2
Type		EPTO	EPTO	EPTO
Transom heights	S			
	L	●	●	●
	UL	●	●	●
Tiller handle				
Remote control		●	●	●
Power tilt		●	●	●
Gas-assisted tilt				
Manual tilt				

ENOM00811-B

MODEL NAME EXAMPLE

M140A2 EPTOL

M	140	A	2	E	P	T	O	L
Model description	Horse power	Product generation	Minor change	Starter system	Steering system	Tilt system	Lubrication system	Shaft length
M (X) = Two stroke F= Four stroke D= Two stroke DI	-	A and up	2 and up	E= Electrical start M= Manual start	P=Remote control (Pleasure) F=Tiller handle (Fisher)	T= Power trim&tilt G= Gas assist Blank= Manual tilt	O= Oil auto-mxing Blank= Oil Pre-mixing	S= Short 15 in L= Long 20 in UL= Ultra long 25 in

ENOM01721-0

60C/70C EPTO, 70C/70CX MFG

2

Item	MODEL	60C/70C EPTO	70C/70CX MFG
Overall Length	mm (in)	Approx. 720 (28.3)	Approx. 1280 (50.4)
Overall Width	mm (in)	Approx. 360(14.2)	
Overall Height	L mm (in)	1415 (55.7)	1455 (57.3)
	UL mm (in)	1542 (60.7)	1582 (62.3)
Transom Height	L mm (in)	517 (20.4)	
	UL mm (in)	644 (25.4)	
Weight	L kg (lb)	115 (254)	105.5 (233)
	UL kg (lb)	117.5 (259)	108 (238)
Output	kW (Hp)	60C: 44 (60) / 70C/70CX: 52 (70)	
Max. Operating Range	min ⁻¹ (rpm)	5150-5850	
Idle Speed in Neutral Gear	min ⁻¹ (rpm)	900	
Trolling Speed in Forward Gear	min ⁻¹ (rpm)	750	
Engine Type		2-Stroke	
Number of Cylinder		3	
Bore x Stroke	mm (in)	74 x 72.7 (2.91 x 2.86)	
Piston Displacement	cm ³ (Cu in)	938 (57.23)	
Exhaust System		Through hub exhaust	
Cooling System		Forced water cooling	
Lubrication System		Auto-oil mixing	Engine oil mixed gasoline
Starting System		Electric starter motor	Manual
Ignition System		Flywheel Magneto C.D. Ignition	
Spark Plugs		NGK B8HS-10 or BR8HS-10	
Alternator		12V, 130W (12V, 11A)	
Trim Position		2	5
Fuel		Unleaded Regular Gasoline : R+M/2: 87 or higher RON: 91 or higher	
Fuel Tank Capacity	L (US gal)	25 (6.6)	
Engine Oil		Genuine motor oil or recommended one (TCW-III)	
Fuel : Engine oil Mixing Ratio		120 : 1-50 : 1	50 : 1
Gear Oil	mL (fl. oz)	Genuine Gear Oil or API GL5, SAE #80 to #90, approx. 900 (30.4)	
Gear Reduction Ratio		2.33 (12 : 28)	

Remark: Specifications subject to change without notice.

Tohatsu outboard is power rated in accordance with ISO8665 (propeller shaft output).

ENOM01722-0

90A2, 115A2/140A2 EPTO

2

Item	MODEL	90A2 EPTO	115A2 EPTO	140A2 EPTO
Overall Length	mm (in)	Approx. 690 (27.2)	Approx. 747 (29.4)	
Overall Width	mm (in)	Approx. 360 (14.2)	Approx. 390 (15.4)	
Overall Height	L mm (in)	1435 (56.5)	1560 (61.4)	
	UL mm (in)	1562 (61.5)	1687 (66.4)	
Transom Height	L mm (in)	516 (20.3)		
	UL mm (in)	643 (25.3)		
Weight	L kg (lb)	135 (298)	164 (362)	
	UL kg (lb)	137.5 (303)	166.5 (367)	
Output	kW (Hp)	66 (90)	85 (115)	103 (140)
Max. Operating Range	min ⁻¹ (rpm)	5000-5500	5200-5700	
Idle Speed in Neutral Gear	min ⁻¹ (rpm)	900		
Trolling Speed in Forward Gear	min ⁻¹ (rpm)	750		
Engine Type		2-Stroke		
Number of Cylinder		3	4	
Bore x Stroke	mm (in)	86 x 72.7 (3.39 x 2.86)	88 x 72.7 (3.46 x 2.86)	
Piston Displacement	cm ³ (Cu in)	1267 (77.3)	1768 (107.9)	
Exhaust System		Through hub exhaust		
Cooling System		Forced water cooling		
Lubrication System		Auto oil mixing		
Starting System		Electric starter motor		
Ignition System		Flywheel Magneto C.D. Ignition		
Spark Plugs		NGK B8HS-10 or BR8HS-10		
Alternator		12V, 130W (12V, 11A)	12V, 330W (12V, 27.5A)	
Trim Position		2		
Fuel		Unleaded Regular Gasoline : R+M/2: 87 or higher RON: 91 or higher		
Fuel Tank Capacity	L (US gal)	25 (6.6)		
Engine Oil		Genuine motor oil or recommended one (TCW-III)		
Fuel : Engine oil mixing Ratio		120 : 1-50 : 1		
Gear Oil	mL (fl. oz)	Genuine Gear Oil or API GL5, SAE #80 to #90, approx. 900 (30.4)		
Gear Reduction Ratio		2.00 (13 : 26)		

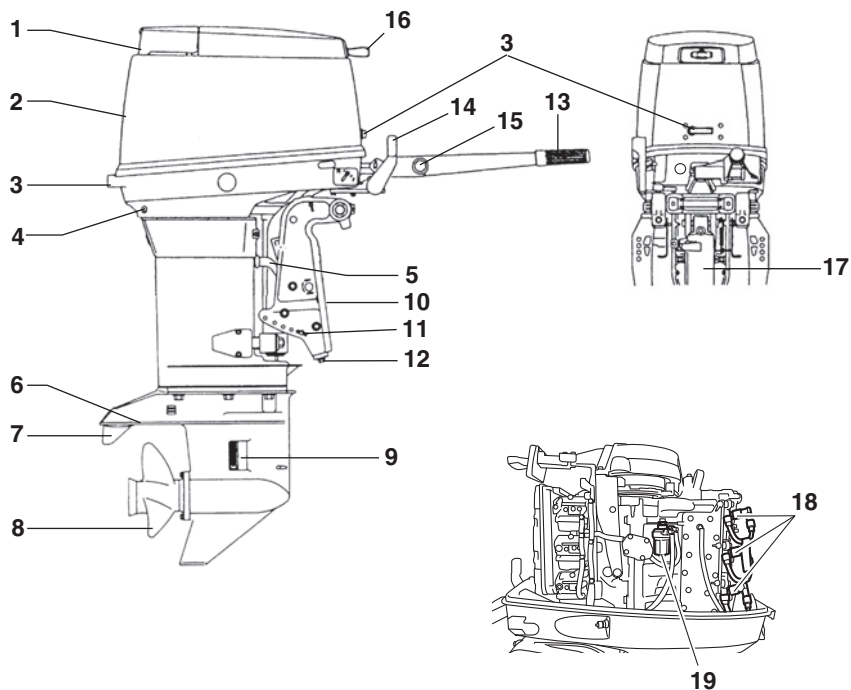
Remark: Specifications subject to change without notice.

Tohatsu outboard is power rated in accordance with ISO8665 (propeller shaft output).

PARTS NAME

ENOM01700-0

70 MFG



- 1 Tilt Handle
- 2 Top Cowl
- 3 Hook Lever
- 4 Water Check Port
- 5 Reverse Lock Lever
- 6 Anti-ventilation Plate
- 7 Trim Tab
- 8 Propeller
- 9 Water Inlet

- 10 Clamp Bracket
- 11 Thrust Rod
- 12 Anode
- 13 Throttle Grip
- 14 Shift Lever
- 15 Stop Switch
- 16 Starter Handle
- 17 Gas Assistant
- 18 Spark Plug

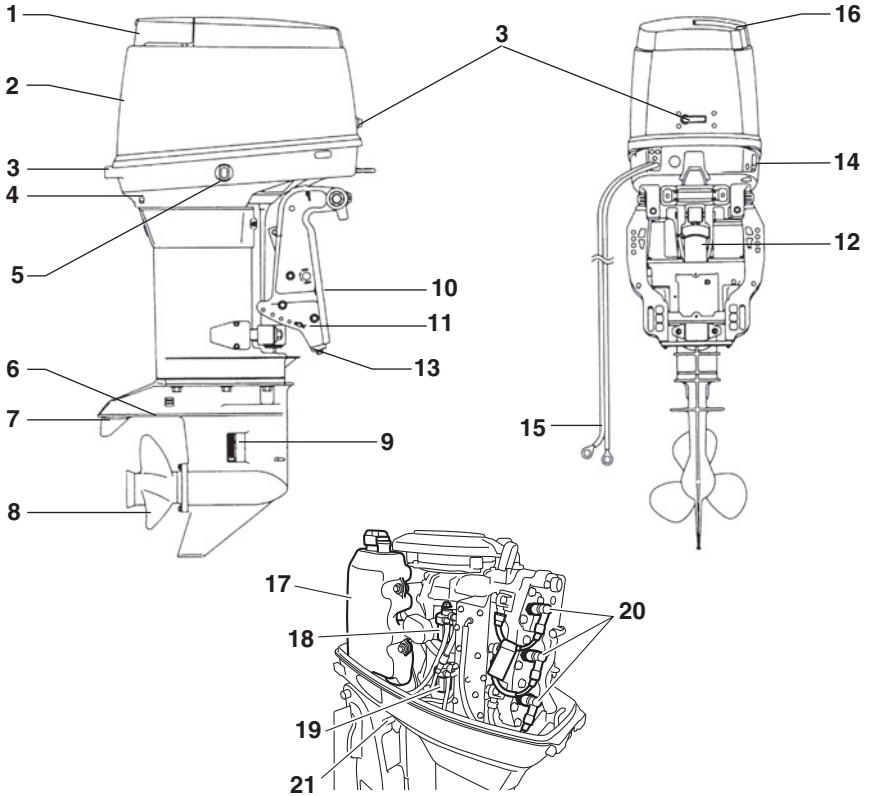
- 19 Fuel filter

ENOF02303-0

ENOM01701-0

60/70 EPTO

3



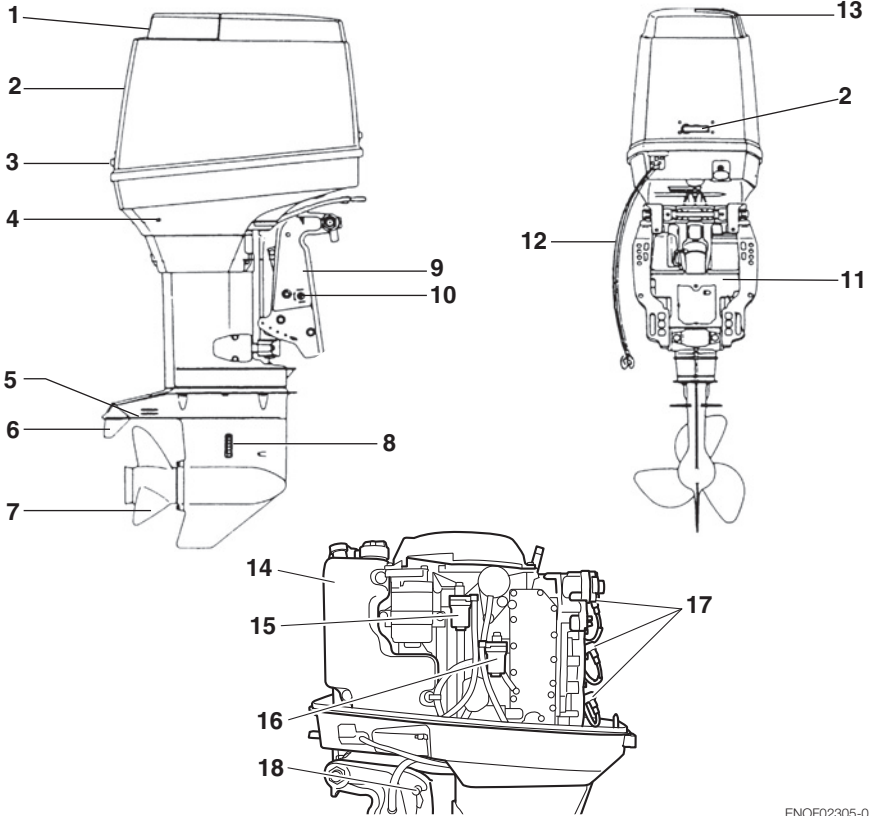
- 1 Tilt Handle
- 2 Top Cowl
- 3 Hook Lever
- 4 Water Check Port
- 5 PTT Switch
- 6 Anti-ventilation Plate
- 7 Trim Tab
- 8 Propeller
- 9 Water Inlet

- 10 Clamp Bracket
- 11 Thrust Rod
- 12 Power Trim & Tilt
- 13 Anode
- 14 Fuel Connector
- 15 Battery Cords
- 16 Filler Lid
- 17 Oil Tank
- 18 Fuel Filter

- 19 Oil Filter
- 20 Spark Plug
- 21 Tilt Stopper

ENOF02304-0

ENOM01702-0

90, 115/140 EPTO**3**

- 1 Top Cowl
- 2 Hook Lever
- 3 Water Check Port
- 4 Gear Case
- 5 Anti-ventilation Plate
- 6 Trim Tab
- 7 Propeller
- 8 Water Inlet
- 9 Clamp Bracket

- 10 Manual Valve (Port side)
- 11 Power Trim & Tilt
- 12 Battery Cords
- 13 Filler Lid
- 14 Oil Tank
- 15 Fuel Filter
- 16 Oil Filter
- 17 Spark Plug

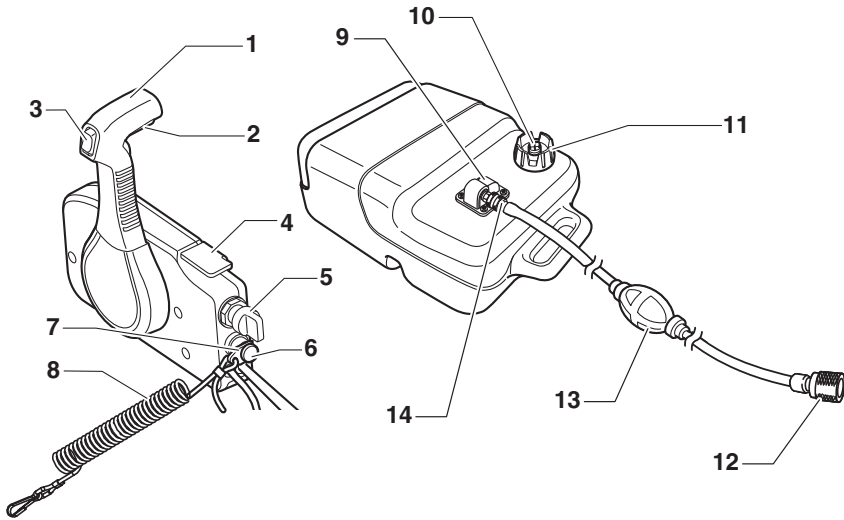
- 18 Tilt Stopper

ENOF02305-0

ENOM00822-0

Remote control box & Fuel tank

3



ENOF00127-F2

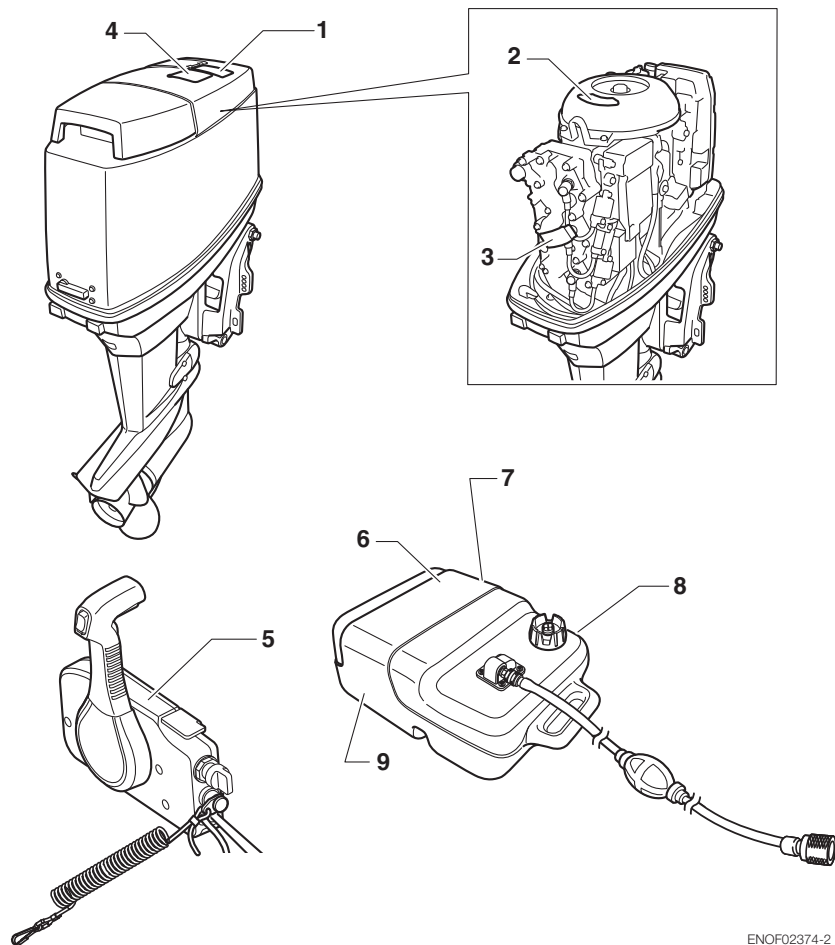
- 1 Control Lever
- 2 Neutral Lock Arm
- 3 PTT Switch
- 4 Free Throttle Lever
- 5 Main Switch
- 6 Stop Switch
- 7 Stop Switch Lock
- 8 Stop Switch Lanyard

- 9 Fuel Gauge
- 10 Air Vent Screw
- 11 Fuel Tank Cap
- 12 Fuel Connector (Engine Side)
- 13 Primer Bulb
- 14 Fuel Connector (Fuel Tank Side)

■ LABEL LOCATIONS

ENOM00019-A

Warning label locations



4

ENOF02374-2

1. Warning label urge to read the owner's manual.



3C7-72180-3

2. Warning regarding rotating object.



3C7-72182-2

3. Warning regarding high voltage.



3C8-72181-0

4. Warning regarding engine oil replenishment.



3T1-72043-0

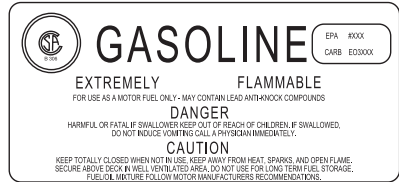
For RC model

5. Warning label regarding stop switch lanyard.



ENOF00005-D

6. Warning regarding gasoline. (See page 34)



ENOF00005-E

7. Warning regarding gasoline (See page 34).



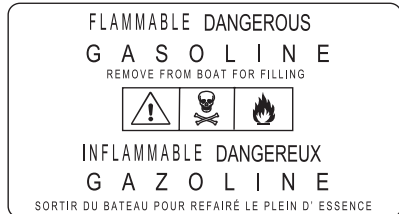
ENOF00005-L

8. Warning regarding gasoline (See page 34).



ENOF00005-M

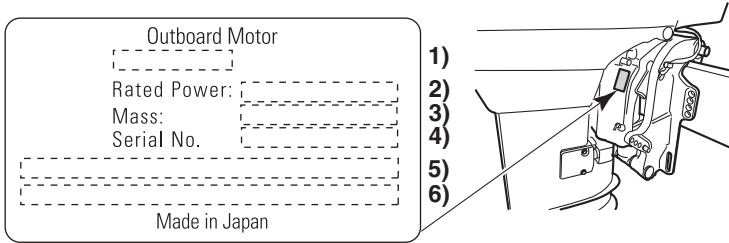
9. Warning regarding gasoline (See page 34).



ENOF00005-F

ENOM01001-A

Serial number label locations



4

1. Model code (Model name)
2. Rated power
3. Dry mass weight
4. Serial No.
5. Manufacturer name
6. Manufacturer address

ENOF02306-1

INSTALLATION

ENOM00024-A

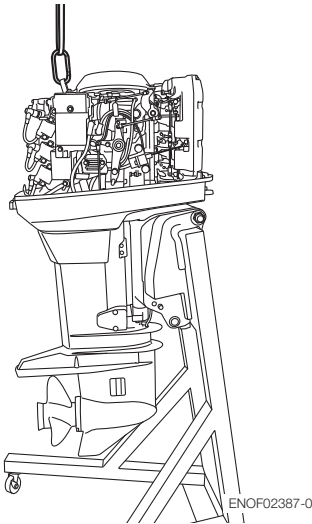
1. Mounting the outboard motor on boat

ENOW00006-B

! WARNING

Before installing the outboard motor on the boat, hang the outboard motor with the hoist or equivalent device by attaching the engine hanger to the outboard. Use the hoist with allowable load is 250 kg (550 lbs) or above.

5



ENOW00006-0

! WARNING

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.

ENOW00009-0

! 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.

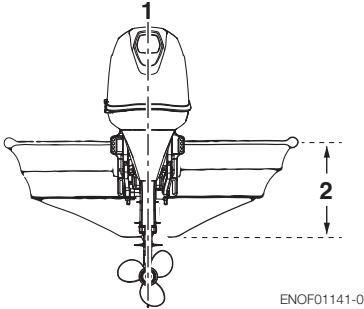
Outboard motor mounting must be performed by trained service person(s) using lift or hoist with sufficient capacity.

ENOM00025-A

Position ... Above keel line

■ Single-engine Installation

Set engine at center of boat.



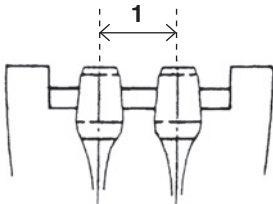
ENOF01141-0

1. Center of boat
2. Boat transom

ENOM01201-0

■ Twin-engine Installation

When installing two outboard engines, be sure to keep an interval of approximately 580 mm (22.8 in) between the two.



ENOF01823-0

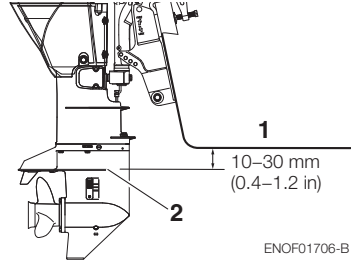
1. Approx 580 mm (22.8 in)

ENOM00026-0

Transom matching

Be sure that the anti ventilation plate of the outboard motor is 10–30 mm (0.4–1.2 in) below the bottom of hull.

If the above condition cannot be met due to the shape of the bottom of your boat, please consult your authorized dealer.



ENOF01706-B

1. Bottom of hull
2. Anti ventilation plate

ENOW00007-0

⚠ CAUTION

5

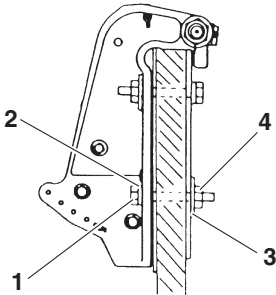
- Before beginning the running test, check that the boat with maximum capacity loading floats on the water in a proper attitude. Check the position of water surface on the driveshaft housing. If the water surface is near the bottom cowling, in high waves, water may enter the engine cylinders.
- Incorrect outboard motor mounting height or existence of underwater object(s), such as hull bottom design, bottom surface conditions or underwater accessories, can cause water spray possibly reaching the engine through an opening of the bottom cowling during cruising. Exposing the engine to such conditions for extended periods can lead to severe engine damage.

ENOM00830-A

Mounting bolts

Power trim and tilt type

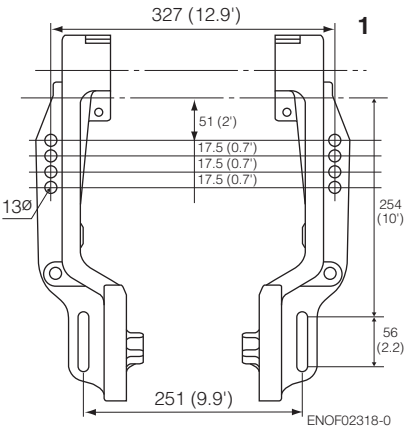
1. To attach the outboard motor to the boat, use the bolts to secure the outboard motor brackets on transom board.



ENOF02317-0

1. Bolt (12 mm x length 105 mm)
2. Washer (small diameter)
3. Washer (large diameter)
4. Nut

5



ENOF02318-0

1. Top of transom

ENOW00008-A

CAUTION

- Mounting bolts should be installed with the bolt head at inside surface of the transom. Mounting bolts installed with the threaded end at the inside surface of the transom can cause personal injury.

- Tighten the bolts sufficiency, otherwise falling down of outboard could be happened.

ENON00003-0

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)

ENOM00840-A

2. Remote control device installation

ENOW00944-A

WARNING

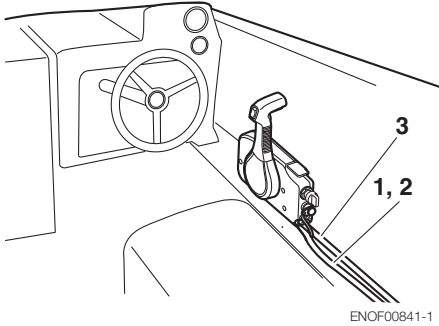
When using other than Tohatsu's genuine remote control box, **DO NOT** select the one without neutral safety switch that prevents in-gear start.

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 adjustment of the remote control device.

ENOM00850-0

Remote control box location



- 1. Shift cable
- 2. Throttle cable
- 3. Cord assembly B

Install the remote control box in a position where it is easy to reach and operate the controls.

Make sure there are no obstacles that can interfere with the operation of the remote control cable.

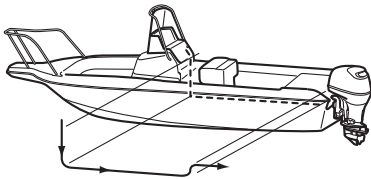
ENOM00850-0

Remote control cable length

ENOW00100-A



Be careful not to loop the remote control cables to a diameter of 406 mm (16 inches) or less. Otherwise, it affects the service life of the cable.



ENOF00842-0

Measure the distance from the remote control box to the outboard motor where the remote control cable should be routed.

Prepare a cable that is 300-450mm (11.8-17.7in) longer than the measured distance. Temporarily pull the cable along the intended cable route to check its length is sufficient.

Connect the remote control cable to the engine, then run the cable to the remote control box, making sure it is not sharply bent, too taut and free from obstructions that could interfere with steering.

ENOM01703-0

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

ENOW00100-A



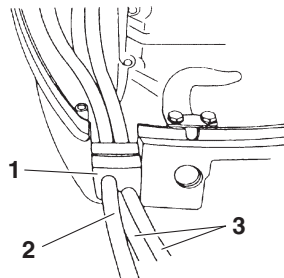
Be careful not to loop the remote control cables to a diameter of 406 mm (16 inches) or less. Otherwise, it affects the service life of the cable.

ENOM01704-0

60/70

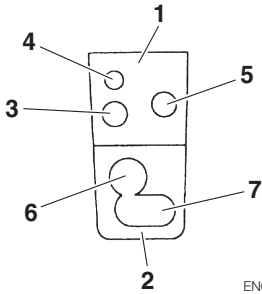
- 1. Detach the bracket and set cord assembly B and the remote control cables in position.

After fixing the remote control cables to the bracket, re-secure the bracket to the lower cowl.



ENOF02308-0

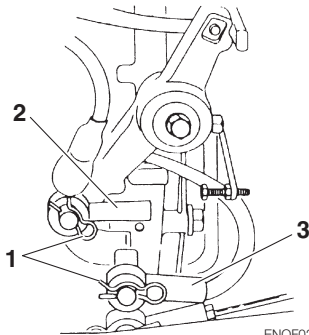
- 1. Cord grommet
- 2. Cord assembly B
- 3. Battery cord



ENOF02309-0

1. Remote control grommet
2. Battery cord grommet
3. Clutch cable
4. Extension cord
5. Throttle cable
6. Cord assembly B
7. Battery cord

2. Detach the throttle and shift cable joints by removing the R-pins.

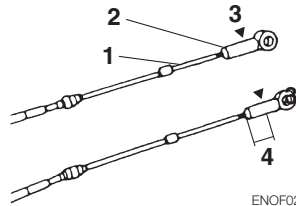


ENOF02310-0

1. R-pin
2. Throttle cable joint
3. Shift cable joint

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. Here, apply grease to the hole of the cable joint.

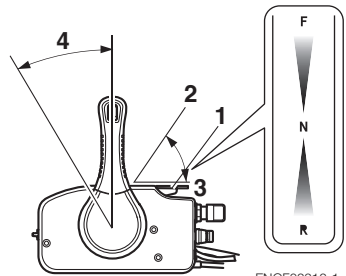
3. Move the remote control lever to the "FORWARD" "NEUTRAL" and "REVERSE" positions to confirm that the shift is working properly, then set the lever to "NEUTRAL".



ENOF02311-0

1. Remote control cable
2. Lock nut
3. Cable joint
4. Approx. 10 mm (0.39 in)

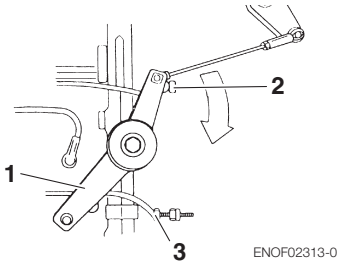
4. Double-check that the remote control cables (i.e., the throttle cable and shift cable) have been connected correctly. Move the remote control lever forward to the first point at which it engages (approx. 32°). The cable which moves first when the lever is turned should be the shift cable. Check that the shift lever is in "NEUTRAL" position and that the free throttle lever is fully closed when the remote control cables have been connected.



ENOF02312-1

1. Free throttle lever
2. Fully opened
3. Fully closed
4. Approx. 32°

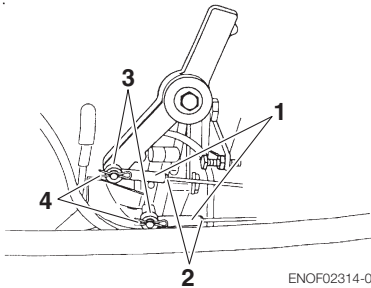
* The advancer arm on the engine should be contact with the stopper of the cylinder crank case assembly so that the throttle valve of the carburetor is to be fully closed condition.



1. Advancer arm
2. Stopper (Throttle fully closed side)
3. Stopper (Throttle fully opened side)

ENOF02313-0

5. Adjust the cable joints until the hole of each is aligned with the advancer arm pin.
After adjustment, lock each cable joint with the nut and secure it with the R-pin.

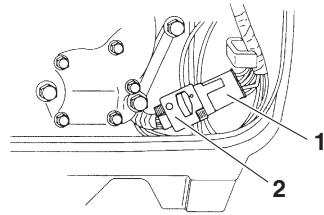


1. Cable joint
2. Nut
3. Washer
4. R-pin

ENOF02314-0

6. Connect cord assembly B to cord assembly A

Connect the pink and light-blue leads from cord assembly A and B together.



ENOF02315-0

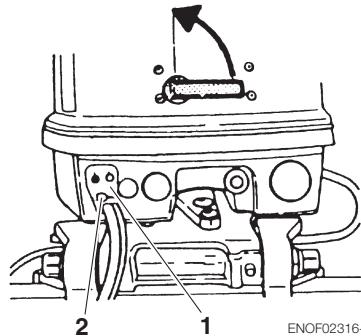
1. Cord assembly A
2. Cord assembly B

ENOW01705-0

90

1. Detach the upper engine cover.

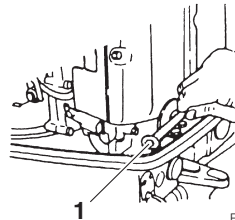
5



ENOF02316-0

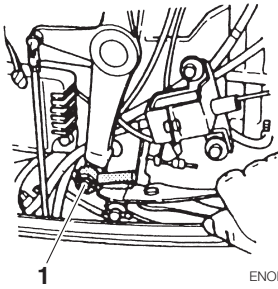
1. Upper grommet
2. Cord assembly B hole

2. Detach the upper grommet cord clamp bolt.



ENOF02320-0

1. Cord clamp
3. Detach the throttle and shit cable joints by removing the R-pins.



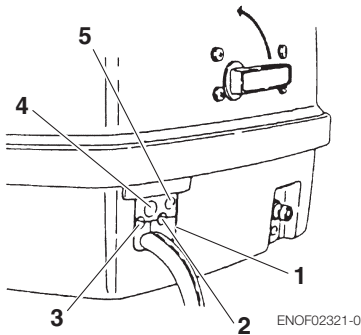
ENOF02319-0

1. Cable joint
4. Move the remote control lever to the "FORWARD" "NEUTRAL" and "REVERSE" positions to confirm that the shift is working properly, then set the lever to "NEUTRAL".

5

ENOW01706-0
115/140

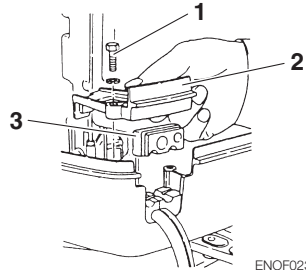
1. Detach the upper engine cover.



ENOF02321-0

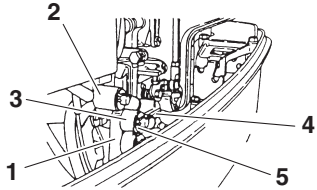
1. Upper grommet
 2. For throttle cable
 3. For shift cable
 4. For cord assembly B
 5. For engine cable harness
2. Detach the upper grommet cord clamp bolt.
 3. Detach the throttle and shift cable joints by removing the R-pins.

4. Move the remote control lever to the "FORWARD" "NEUTRAL" and "REVERSE" positions to confirm that the shift is working properly, then set the lever to "NEUTRAL".



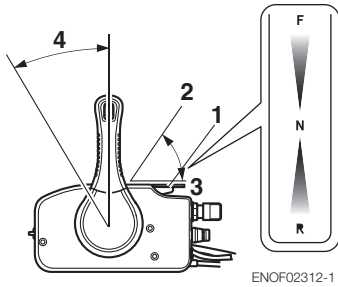
ENOF02322-0

1. Bolt
2. Cord clamp
3. Upper grommet



ENOF02323-0

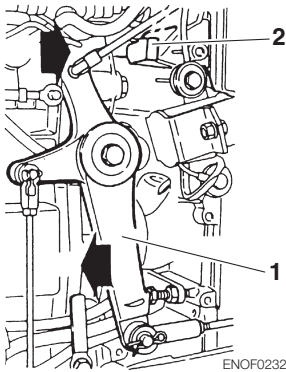
1. Shift arm
 2. Throttle cable joint
 3. Shift cable joint
 4. R-pin
 5. Washer
5. Double-check that the remote control cables (i.e., the throttle cable and shift cable) have been connected correctly. Move the remote control lever forward to the first point at which it engages (approx. 32). The cable which moves first when the lever is turned should be the shift cable. Check that the shift lever is in "NEUTRAL" position and that the free throttle lever is fully closed when the remote control cables have been connected.



- 1. Free throttle lever
- 2. Fully opened
- 3. Fully closed
- 4. Approx. 32°

ENOF02312-1

* The advancer arm on the engine should be contact with the stopper of the carburetor throttle valve to enable it to be fully closed.



- 1. Advancer arm
- 2. Carburetor throttle valve (fully closed side)

ENOF02324-0

- 6. Connect cord assembly B to cord assembly A, and connect the meter cord assembly.
- 7. Connect the pink and light-blue leads from cord assembly A and B to each other.

- 8. Using the washers and R-pins to adjust the thread length, connect the throttle and shift cables to the pins on the engine-side.
- 9. Insert the outer groove of each cable into the cable grip provided in the lower engine cover. (115, 140)
Attach the cord clamps and fix the cables securely with the bolts.

ENOM01707-0

3. Drag link installation

5

(Standard accessories for EPTO types)
Incorrect or unstable installation of the Drag Link assembly can result in accidents while riding the boat or breakage of the hull.

Installation of the Drag Link Assembly by your dealer is highly recommended.

ENON00932-0

Note

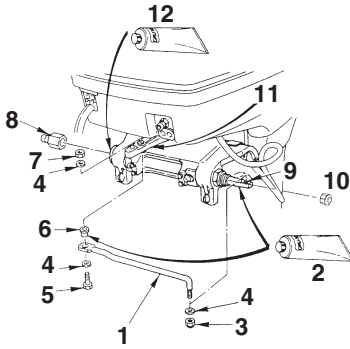
Depending on the steering cable manufacture, spacers (optional) may be required.

- 1. Connect the Drag Link rod to the tip of the steering cable. Tighten the rod using the nylon nut, making sure the rod can swing freely.
- 2. Connect the other tip of the rod to the steering bracket with a bolt, first applying a collar and washer. The bolt head must face downward.

ENON00933-0

Note

Apply grease in required places.



ENOF02325-0

5

1. Drag link rod
2. Grease
3. Nylon nut
4. Washer
5. Bolt
6. Collar
7. Nut
8. Spacer (option)
9. Tip of cable
10. Seal ring
11. Steering bracket
12. Apply grease inside the bracket bolt

ENOM00029-A

4. Battery installation

ENOW00012-0

! WARNING

Battery electrolyte contains sulfuric acid and thus is hazardous, causing a burn if it comes in contact with your skin, or poisonous if swallowed.

Keep battery and electrolyte away from reach of children

When handling the battery, be sure to:

- Read all warnings shown on the battery case
- Prevent electrolyte from coming in contact with any part of your body. Contact can cause serious burn or, if it comes in contact with your eye, loss of sight. Use safety glasses and rubber gloves.

In case battery electrolyte comes in contact with:

- Skin, flush thoroughly with water.
 - Eye, flush thoroughly with water, and then seek immediate medical treatment.
- In case battery electrolyte is swallowed:
- Seek immediate medical treatment.

ENOW00013-A

! WARNING

Battery generates explosive hydrogen gas. Be sure to:

- Charge the battery in a well-ventilated place.
- Place the battery away from any source of fire, sparks and open flames such as burners or welding equipment.
- Do not smoke near the battery when the battery is charging.
- Do not charge the battery when the electrolyte level is low. Otherwise, the battery will be damaged and may cause malfunction.

ENOW00014-0

! CAUTION

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

ENOW00015-0

! CAUTION

Do not use a battery that is not recommended. Use of a battery not recom-

mended can lead to poor performance of, and/or damage to, the electrical system.

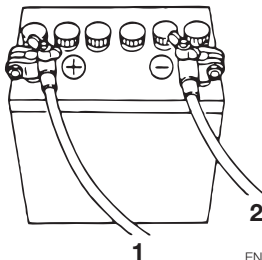
ENON00006-B

Note

Recommended battery: 12V 70AH/5HR, 800 (Cold Cranking Amps (CCA), In case of cold whether: 12V100AH/5HR (850CCA)) Specifications and features of batteries vary among the manufacturers. Consult the manufacturer for details.

* The battery should be purchased separately and is not supplied with the outboard motor.

1. Place the battery box in a convenient position away from possible water spray. Securely fasten both the box and the battery so they do not shake loose.
2. Connect the positive lead (+) to the positive terminal (+) of the battery, and then connect the negative lead (-). When disconnecting the battery always remove the negative lead (-) first. After connecting the positive terminal (+), securely place a cap on it to prevent short circuits.



ENOF00022-0

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

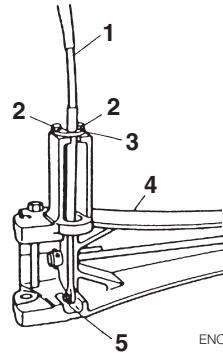
ENOM01708-0

5. Tiller handle installation

ENOW01706-0

MFG types

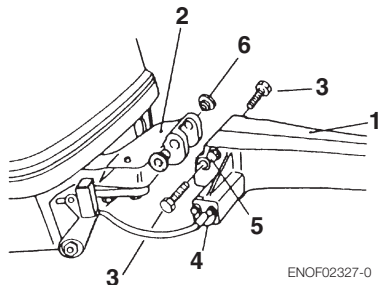
1. Connect the throttle cable coming from the motor to the handle, then fix it with a nylon nut. After that, place the plate in the outer groove, and fix it with screws.



ENOF02326-0

1. Throttle cable
2. Screw
3. Plate
4. Handle
5. Nylon nut

2. Install the steering handle to the motor with two bolts.



ENOF02327-0

1. Handle
2. Handle B
3. Bolt
4. Plate
5. Friction bolt
6. Bushing

ENOM00045-A

6. Propeller installation

ENOW00085-A

! 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 switch lock attached to the switch, and starter key attached, or engine could accidentally start leading to serious personal injury.

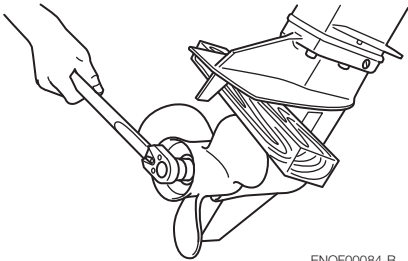
Disconnect battery cable if possible.

5

ENOW00085-0

! WARNING

Do not hold propeller with hand(s) when loosening or tightening propeller nut. Put a piece of wood block between propeller blade and anti-ventilation plate to hold propeller.



ENOF00084-B

ENOW00086-0

! 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

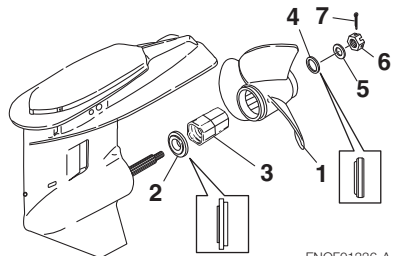
could lead to the propeller coming off during operation.

Propeller must be selected that will allow the engine to reach recommended min^{-1} (rpm) when cruising at wide-open throttle.

Wide-open throttle min^{-1} (rpm) range
60/70 : 5150 – 5850 min^{-1} (rpm)
90 : 5000 – 5500 min^{-1} (rpm)
115/140 : 5200 – 5700 min^{-1} (rpm)

Genuine propellers are listed on PROPELLER TABLE of this manual (See page 92).

1. Remove the split pin, propeller nut and washer.
2. Remove the propeller and thrust holder.
3. Apply water proof grease to the propeller shaft before installing a new propeller.
4. Install the thrust holder, propeller, stopper, washer and propeller nut onto the shaft.



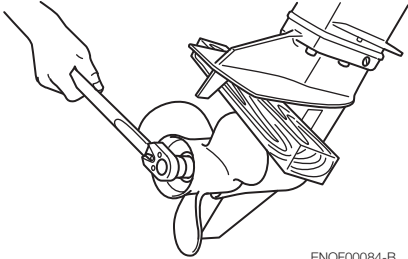
ENOF01336-A

1. Propeller
2. Thrust holder
3. Bush
4. Stopper
5. Washer
6. Propeller nut
7. Split pin

5. Tighten the propeller nut to specified torque with holding the propeller by wood block. And align one of grooves to propeller shaft hole.

Propeller nut torque:

35 Nm (25 ft-lb, 3.5kgf-m)



ENOF00084-B

6. Install a new split pin into the nut hole and bend it.

PRE-OPERATING PREPARATIONS

ENOM00030-A

1. Fuel handling

ENOW000017-0

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.

ENOM00031-A

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 91 RON or over. Use of premium gasoline of 98 RON is also allowed.

ENOM00032-A

GASOLINES CONTAINING ALCOHOL

The fuel system components on your TOHATSU engine will withstand up to 10% ethyl alcohol (hereinafter referred to as the "ethanol"), content in the gasoline. But if the gasoline in your area contains ethanol, you should be aware of certain adverse effects that can occur. Increasing the percentage of ethanol in the fuel can also worsen these adverse effects. Some of

these adverse effects are caused because the ethanol in the gasoline can absorb moisture from the air, resulting in a separation of the water/ethanol 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

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.

If the outboard motor will only be used infrequently, please see the remarks on fuel deterioration in the STORAGE chapter (P 84) for additional information.

ENOW00020-0

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 stor-

age if alcohol has washed protective oil films from internal components.

ENOW00018-0

! 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.

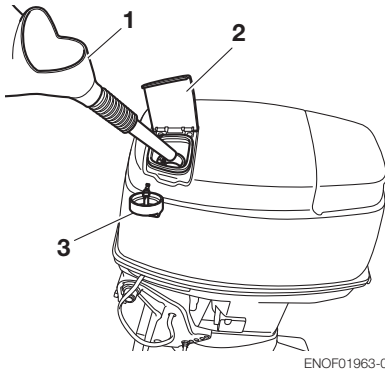
ENOM01660-0

2. Engine oil recommendation

ENOW00022-A

! CAUTION

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, See page 70)



ENOF01963-0

1. Genuine or recommended engine oil
2. Filler lid
3. Oil tank cap

ENOW0002A-A

! CAUTION

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

ENOW00603-0

! CAUTION

Do not mix different brands of oil. Mixing different brands of oil, or different types of oil even if the brand is the same, may cause gelling, resulting in possible filter screen blockage. This could result in serious engine damage because of impaired lubrication performance.

Use a genuine engine oil or recommended one (TCW3). Refer to your Distributor. Will not recommended use of other two stroke engine oil.

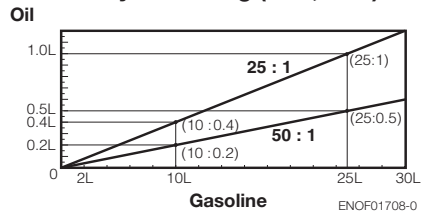
Pre-mixing type

Add engine oil into fuel oil tank. The mixing ratio with gasoline is 50 : 1 (50 parts gasoline and one part oil). Mix well by hand. The mixing ratio during break-in running is 25 : 1.

Mixing Ratio

	Gasoline : Engine Oil
During break-in	25 : 1
After break-in	50 : 1

Fuel by Oil Mixing (25:1, 50:1)



ENOF01708-0

ENOM01003-0

Engine oil – gasoline mixing procedure

ENOW00937-0

CAUTION

- Do not use other than two stroke engine oil with specified grade, or the engine may be damaged.
- Do not use fuel prepared in other than specified mixing ratio.
 - Lack of engine oil can cause severe engine trouble such as piston seizure.
 - Excess of engine oil can shorten spark plug life, and/or cause increase of noxious exhaust.

For quantities of engine oil and gasoline to be pre-mixed, refer to table in previous page.

When portable fuel tank is used for operation of outboard motor(s):

- 1 Pour engine oil into fuel tank, and then, gasoline.
- 2 Put cap on the tank, and close tightly.
- 3 Close air vent plug tightly.

ENOW00938-0

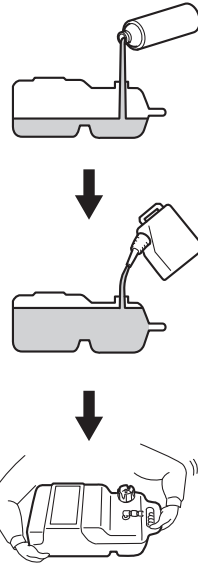
WARNING

Loose cap or air vent plug can cause leak of fuel during shaking the tank.

- 4 Shake the tank to mix engine oil and gasoline well and even.

When fuel tank built in the boat is used for operation of outboard motor(s):

- 1 Prepare separate fuel container for pre-mixing.



ENOF01709-0

- 2 Pour engine oil into fuel container, and then, gasoline.
- 3 Put cap on the container, and close tightly.
- 4 Shake the container to mix engine oil and gasoline well and even.
- 5 Pour the mixture into fuel tank.

ENON00922-0-0

Notes

- It is recommended to pre-mix by using separate fuel container. Attempting to pre-mix in the fuel tank built-in the boat can make the mixture uneven.
- If built-in fuel tank is used for mixing, pour engine oil into the tank little by little while putting gasoline into the tank.

ENOM01003-0

Auto mixing type

ENOW00604-0

⚠ CAUTION

- In the unlikely event that gasoline by mistake is filled into the oil tank, drain the oil tank completely, and consult an authorized service shop for advice.
- Check the amount of oil in the oil tank visually before starting the engine. Running out of oil at sea is a cause for potential disaster.

The required amount of engine oil is automatically supplied from the oil tank, through the oil pump, according to the engine running conditions. Gasoline is fed over a separate feeding line.

■ **During break-in**

Add engine oil into fuel tank. The mixing ratio with gasoline during break-in is 50:1 (50 parts oil and one part gasoline). Mix well by hand.

	Gasoline : Engine Oil
During break-in	50 : 1

ENOM00644-1

Replenishing oil in the engine oil tank.

1. Open the filler lid from the top cowl.
2. Open the oil tank cap.
3. Fill the oil tank with the genuine engine oil.
4. After replenishment of the oil tank, be sure to close the oil tank cap tightly.

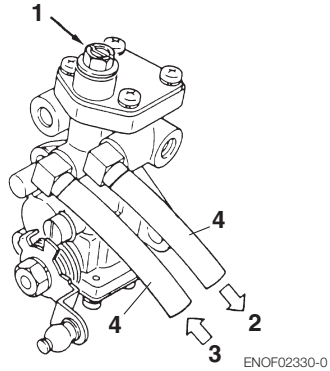
ENOM00645-0

Oil pump air vent

Visually check whether there is air in the oil through the vinyl pipe connecting the oil tank with the oil pump. If present, Purge the air as follows:

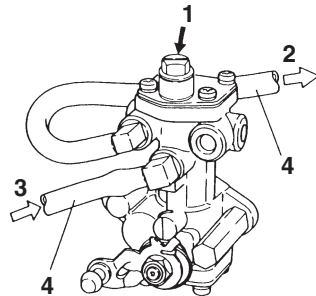
Loosen the air vent screw on the oil pump to purge the air, and tighten it when all air, as seen through the vinyl pipe on the oil pump side, has been purged.

60/70



1. Air vent screw
2. To check valve
3. From oil filter
4. Vinyl pipe

90, 115/140



1. Air vent screw
2. To check valve
3. From oil filter
4. Vinyl pipe

ENON00608-0

Note

Wipe off any spilled oil with a rag, and dispose of it.

ENOM00043-B

3. Fuel filling

ENOW00019-0

! 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.

ENOW00028-A

! WARNING

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 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:

- Be sure to remove the static electricity charged in your body before refueling.
- The sparks due to static electricity may cause explosion of flammable gasoline.
- 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 spilled.

After cleaning gasoline tank:

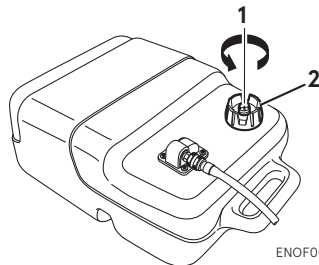
- Wipe off gasoline well immediately if spilled.
- If the fuel tank is disassembled for cleaning, reassemble carefully. Imperfect assembly may cause a fuel leak, possibly leading to fire or explosion.
- Dispose aged or contaminated gasoline in accordance with local regulations.

ENOW00029-A

! WARNING

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 sun light.

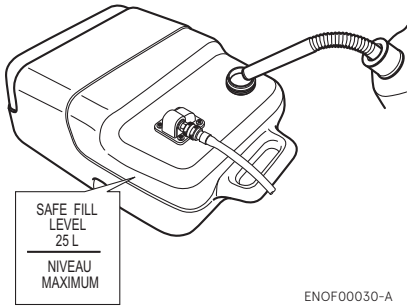
1. Full open the air vent screw on the fuel tank cap and release internal pressure.



ENOF00027-B

1. Air vent screw
 2. Fuel tank cap
2. Open the fuel tank cap slowly.

3. Fill the fuel carefully not to over flow.



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

ENOM00033-A

4. 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.

Please refer to ENGINE OPERATION section (See page 44) to learn how to correctly start and operate the outboard motor.

ENOW00024-A

WARNING

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.**

ENOW00023-0

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.**

ENOM01004-A

Fuel mixing ratio for break-in

■ **Pre-mixing type**

Gasoline 25: Genuine Engine Oil 1

■ **Auto-mixing type**

Gasoline 50: Genuine Engine oil 1

ENON00935-0

Note

When using genuine engine oil or the recommended one (TCW3).

ENON00008-0

Note

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

	1-10 min	10 min - 2 hrs	2-3 hrs	3-10 hrs	After 10 hrs
Throttle Position	Idle	Less than 1/2 throttle	Less than 3/4 throttle	3/4 throttle	Full throttle available
Speed		Approx. 3000 min ⁻¹ (rpm) max	Full throttle run allowed for 1 min every 10 min	Approx. 4000 min ⁻¹ (rpm). Full throttle run allowed for 2 min every 10 min	

ENOM00039-0

5. Warning system

If outboard motor encounters an abnormal condition of fault, the warning buzzer will emit a continuous beep or intermittent short beeps and the warning lamp (LED) will synchronize with the buzzer and engine speed will be limited (engine will not be stopped).

See next page for conditions which will lead to an abnormal condition or fault.

ENOM00040-C

Location of warning buzzer and lamp

■ Warning buzzer

RC model: Located inside the remote control.

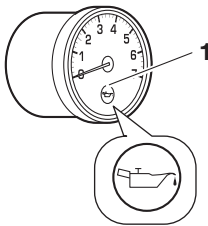
Tiller handle model (Oil auto mixing type only): Located inside of the top cowl.

■ Warning lamp (LED)

RC model: Located in the tachometer.

Tiller handle model : none

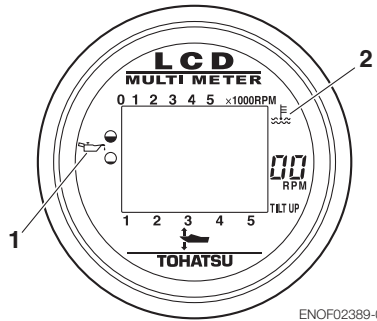
60/70, 90



ENOF00851-A

1. Warning lamp

115/140




ENOF02389-0

1. Warning lamp (Oil)
2. Warning lamp (Over heat)

ENOM01711-0

Warning indicators, faults and remedy
60/70, 90

Warning indicators				Description of faults	Remedy
Sound		Low speed ESG	High speed ESG		
	Lamp				
Off	-	-	ON 5900 min ⁻¹ (rpm) (90) 6150 min ⁻¹ (rpm) (60/70)	Engine speed exceeds maximum allowable min ⁻¹ (rpm)	1
Continuous *1	ON *1	-	-	Low oil level *1	2
Continuous *1	-	ON 3500 min ⁻¹ (rpm)	-	Over heating	3
Continuous *2	-	ON 3500 min ⁻¹ (rpm)	-	Low cooling water pressure	3

*1 Except for MF type

*2 Equip this function with 90 model

6

115/140

Warning indicators				Description of faults	Remedy
Sound	Lamp	Low speed ESG	High speed ESG		
Off	-	-	ON 6000 min ⁻¹ (rpm)	Engine speed exceeds maximum allowable min ⁻¹ (rpm)	1
Continuous	ON	ON 2800 min ⁻¹ (rpm)	-	Remaining oil, less than 1.5 L	2
Off	ON	-	-	Remaining oil, less than 3 L	2
Continuous	ON	-	-	Over heating	3
Continuous *1	-	ON 2800 min ⁻¹ (rpm)	-	Low cooling water pressure	3
Off	-	ON 1500 min ⁻¹ (rpm)	-	Incorrect connection of cord	4

*1 Activate at over 2800 min⁻¹ (rpm)

High speed ESG (Electronic Safety Governor)

High speed ESG is a device to prevent over revolution of the engine. If the load to the engine becomes light for some reason, it runs at a higher speed than the usual. In such the case, the buzzer sounds and the ESG is activated not to ignite the spark plug, therefore, the engine speed varies and be controlled under 6000min⁻¹ (rpm).

Low speed ESG

Low speed ESG is a device to prevent the engine from getting damage. If the engine has problems regarding cooling water, oil pressure, and sensors, the low speed ESG is activated not to ignite the spark plug, and disable fueling therefore, the engine speed varies and be controlled under 3000min-1 (rpm).

Remedy

1. Reduce the throttle to less than half opening, and move to safe place quickly, and stop the engine.
Check the propeller for bent or damaged blades.
Consult an authorized dealer if engine shows the same result even after replacing propeller with new one.
2. Move to safe place quickly, and set the Remote Control Lever to Neutral (buzzer will stop). And then, stop the engine.
Check the engine oil level, and add engine oil if necessary.
Start the engine, and move the Remote Control Lever Forward carefully. Confirm that the indicator lamp goes out.
3. Move to safe place quickly, and check the discharge of cooling water from the water check port at idle speed and stop engine.
Remove any foreign matter on the gear case and propeller if necessary. Consult an authorized dealer if no discharge of cooling water.
4. Consult an authorized dealer.

ENGINE OPERATION

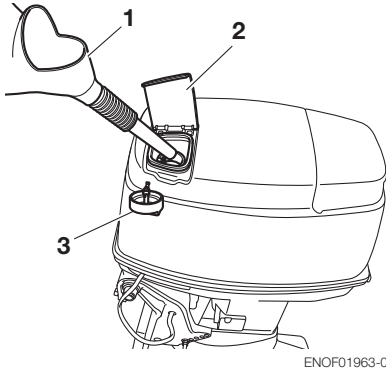
ENOM00042-0

Before starting

ENOW00022-C

CAUTION

The engine oil is drained for shipping from the factory. Be sure to fill the engine oil to the proper level before starting engine. (Follow the instruction. See page 35)

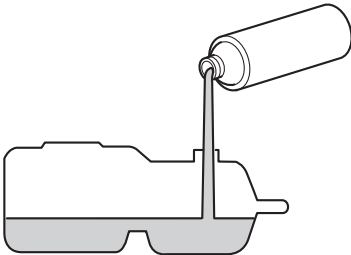


1. Genuine of recommended engine oil
2. Filler lid
3. Oil tank cap

ENOW00022-B

CAUTION

Be sure to mix the engine oil with gasoline (Follow the instruction. See page 35)



ENOW00027-C

CAUTION

Before starting engine for the first time after reassembling engine or off-season storage, disconnect stop switch lock and crank approximately 10 times in order to circulate the engine oil.

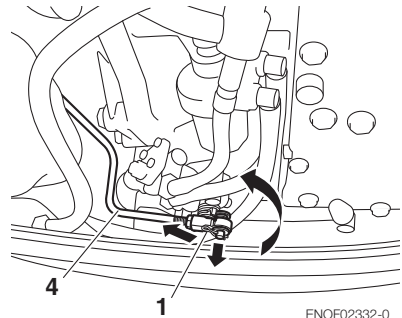
ENOM00856-A

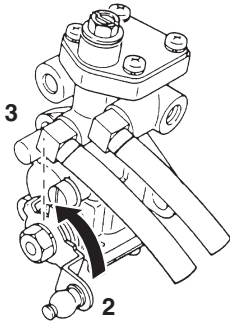
1. Engine oil feeding

When the engine is new or have been left without operation for a long time, or just after the engine is overhauled, be sure to execute the following operation for forcibly feeding the engine oil to the oil line before starting the engine.

- a. Disconnect the link rod by turning the rod snap (1) interlocking with the oil pump as shown in the figure.
- b. Make sure that the oil pump control lever (2) is set at open side position (3).
- c. Idle the engine for more than 30 minutes.
- d. Reset the link rod (4) to the advancer arm (5).

60/70

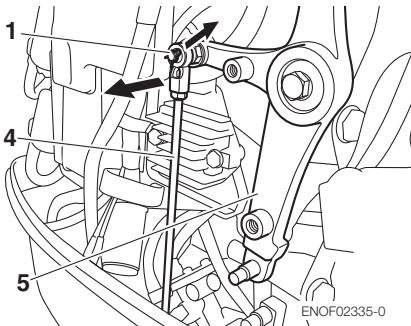




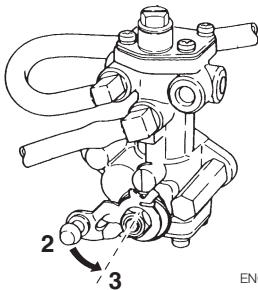
ENOF02333-0

- 1. Rod snap
- 2. Control lever
- 3. Open side position
- 4. link rod

90/115/140



ENOF02335-0



ENOF02334-0

- 1. Rod snap
- 2. Control lever
- 3. Open side position
- 4. link rod
- 5. Advancer arm

ENOM00044-C

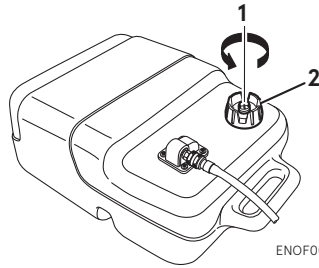
2. Fuel feeding

ENOW00029-A

⚠ WARNING

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 sun light.

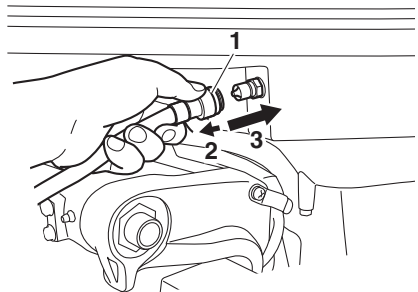
1. Full open the air vent screw on the fuel tank cap.



ENOF00027-B

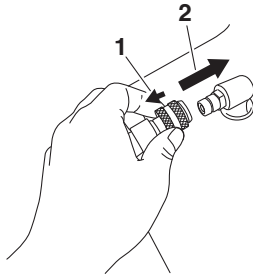
1. Air vent screw
2. Fuel tank cap

2. Connect the fuel connector to the engine and fuel tank.



ENOF02388-0

1. Fuel connector
2. Pull
3. Insert



ENOF00861-A

1. Pull
2. Insert
3. Squeeze primer bulb until it becomes stiff to feed fuel to carburetor. Direct arrow mark upward when priming.



ENOF00862-0

1. Engine side
2. Fuel tank side

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

ENOM00045-A

3. Starting the engine

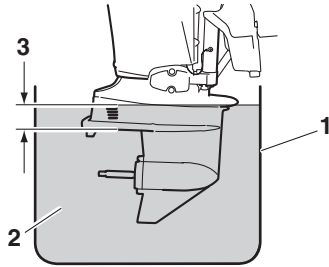
ENOW00036-A

CAUTION

When the engine is started in the test tank, to avoid over heating and water pump damage, be sure the water level is at least 10 cm (4 in.) above the anti ventilation plate.

And be sure to remove the propeller, when starting the engine in the test tank. (See page 78)

Run the engine only at idling.



ENOF00863-0

1. Test tank
2. Water
3. Over 10 cm (4 in.)

ENOW00036-0

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.

ENOW00032-A

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.

Do not try to crank after engine has started.

This model is provided with start in gear protection.

ENON00010-0

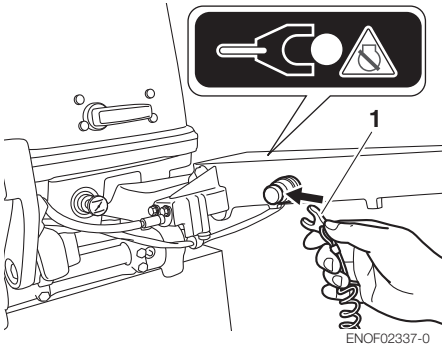
Note

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.

ENOM01710-0

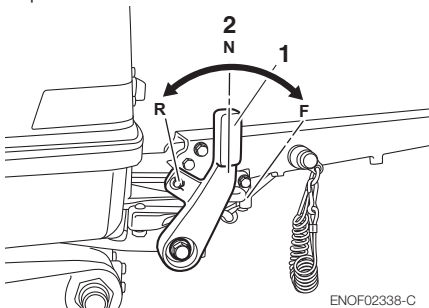
Tiller handle type

1. Be sure to install the stop switch lock to the stop switch, and attach the stop switch lanyard securely to the operator or to the operator's PFD (Personal Flo-tation Device.)



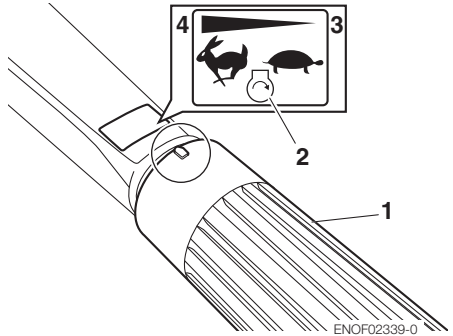
ENOF02337-0

1. Stop switch lock
2. Set the control lever in the Neutral position.



ENOF02338-C

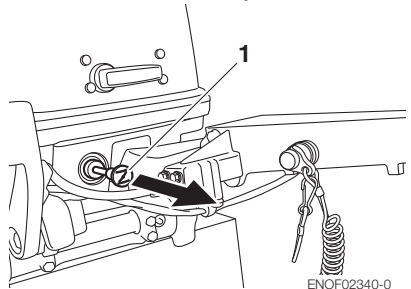
1. Shift lever
2. Neutral
3. Set the throttle grip to START position.



ENOF02339-0

1. Throttle grip
2. START position
3. Fully closed
4. Fully opened

4. Pull the choke knob fully.



ENOF02340-0

1. Choke knob

ENON00501-0

Note

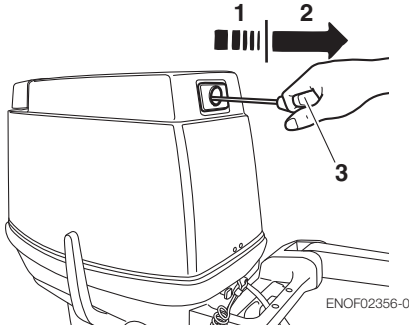
Choke is not necessary when the engine is warm. Set the throttle grip to "START" position.

ENON00502-0

Note

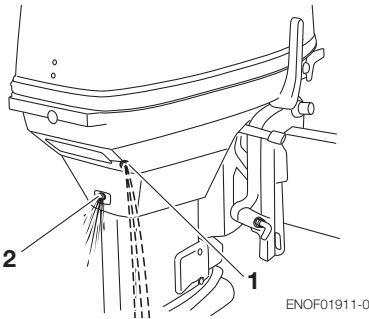
If engine does not start with 4 or 5 times starting operation, push the knob back and restart.

- 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.



- Slowly
- Quickly
- Starter handle

- Check the cooling water from cooling water check port.

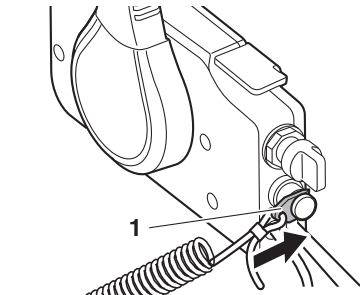


- Idle port
- Cooling water check port

ENOM01663-0

Side mount RC type

- Be sure to install the stop switch lock to the stop switch, and attach the stop switch lanyard securely to the operator or to the operator's PFD (Personal Flotation Device.)



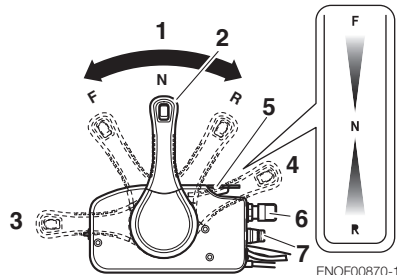
ENOF00869-1

- Stop switch lock
- Insert the main switch key.
- Set the control lever in the Neutral position.
- Raise the free throttle lever a little (both of cold engine and warm engine).

ENON00504-0

Note

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



ENOF00870-1

- Neutral (N)
- Control lever
- Fully opened (Forward)
- Fully opened (Reverse)
- Free throttle lever
- Main switch key
- Stop switch

- Turns the main switch key to START position. Then, continuously push the key to operate the choke.

ENON00503-0

Note

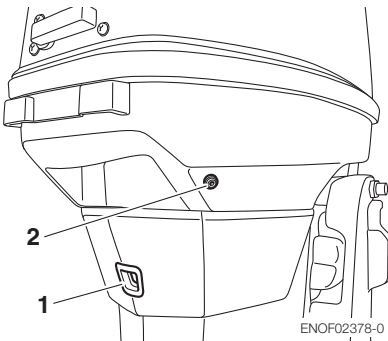
Choke operation is not necessary if the engine is warm.

- Stop pushing the key when the engine has started.
The key returns to the original position, automatically.
- Returns the Free accel lever to close position.
- Check the cooling water from cooling water check port.

ENON00035-A

Note

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



- Idle port
- Cooling water check port

ENOM00042-B

Emergency starting

ENOW00099-A

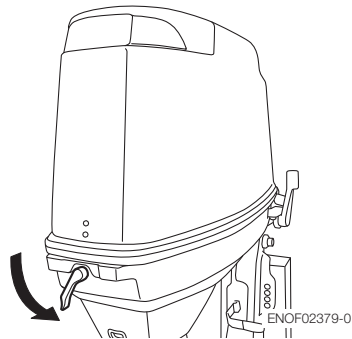


When the emergency starter rope is used for starting engine;

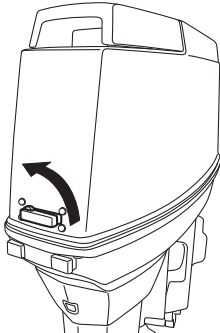
- Start in gear protection does not work. Be sure to shift is at neutral position. Otherwise the engine will move the boat immediately and cause personal injury.
- Be careful that your clothes or other items do not get caught in the rotating engine parts.
- To prevent accident and injury by rotating parts, do not re-attach flywheel cover and the top cowl 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.

- Remove the top cowl.

60/70



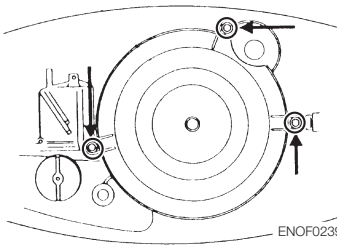
90, 115/140



ENOF02380-0

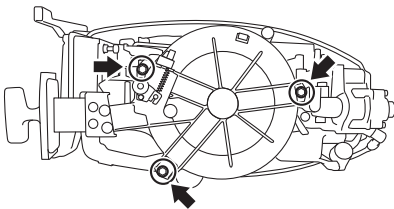
2. Remove the flywheel cover or recoil starter.

60/70 EPTO



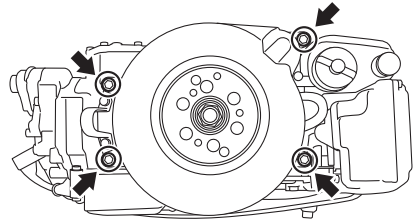
ENOF02392-0

70 MFG



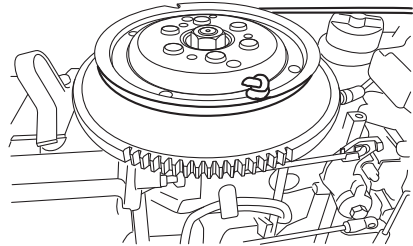
ENOF02381-0

90, 115/140



ENOF02382-0

3. Insert the knotted end of the starter rope into the notch in the flywheel and wind the rope around the flywheel several turns clockwise.



ENOF02390-0

4. Tie a loop in the other end of the emergency starter rope and attach socket wrench that is included in the tool kit.

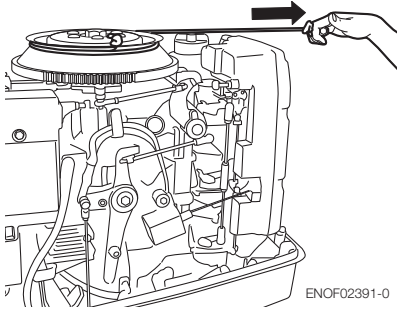
ENOW00860-0

⚠ CAUTION

Be sure to keep the harness away from the rotation parts.

5. Be sure to install the stop switch lock to the stop switch, and attach the stop switch lanyard securely to the operator or to the operator's PFD (Personal Flo-tation Device.)

6. Set the control lever in the Neutral position.
7. Pull the starter handle slowly until you feel engagement, keep pulling till you feel less resistance. Then pull it quickly.



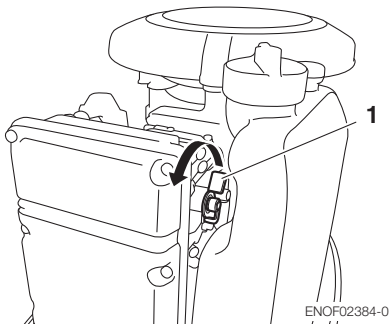
8. After engine starts, do not reinstall fly-wheel cover and top cowl.

ENOM00518-0

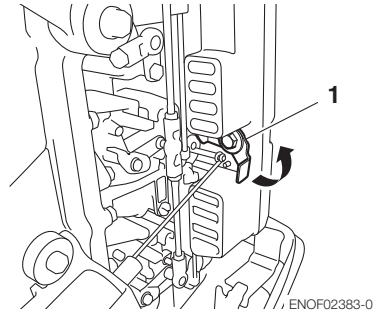
If the choke solenoid fails to operate (EP type only)

1. Remove the top cowl.
2. Close the choke plate by finger.

60/70



90, 115/140



1. Choke plate
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.

ENOM0004B-0

4. Warming up the engine

ENOW00932-0

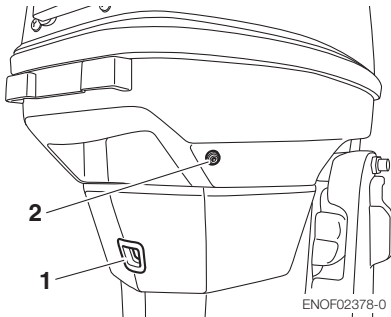


Be sure to check that cooling water is coming out of the cooling water check port during warm up.

Warm the engine at low engine speeds for about

- 3 minutes : above 41°F (5 °C)
- 5 minutes at 2000 min⁻¹ (rpm) : above 41°F (5 °C)

This allows the lubricating oil to circulate to all parts of the engine. Operating the engine without warm up shortens the engine's life.



1. Idle port
2. Cooling water check port

ENOF02378-0

ENOM0004A-A

Engine speeds

Idling speed after warming up.

Model	Idling speed (in Neutral)	Trolling speed (in Forward)
60/70	900 min ⁻¹ (rpm)	750 min ⁻¹ (rpm)
90		
115/140		

ENOM00972-0

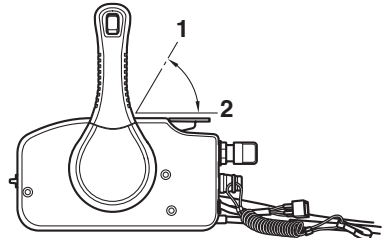
Free throttle lever (Side mount RC type)

ENOW00956-0

CAUTION

- Keep the free throttle lever fully closed when start the engine.
- The free throttle lever is inoperative unless the control lever is in neutral.
- Also, the control lever is inoperative unless the free throttle lever is returned to the fully-closed position.

The free throttle lever is for warm-up operation. (Not required for engine starting) With the control lever in neutral, move the free throttle lever upward to open the throttle.



ENOF00934-0

1. Fully-open
2. Fully-closed

ENOM00046-A

5. Forward, reverse, and acceleration

ENOW00037-0

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.

ENOW00038-A

WARNING

- Attach other end of emergency stop switch lanyard to the operator's PFD (Personal Flotation device) 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 caus-

ing passenger(s) to be thrown overboard.

ENOW00042-0

⚠ 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.

ENOW00861-0

⚠ WARNING

Do not shift at high boat speed, or control may be lost, falling down or causing passenger(s) to be thrown overboard. Leading to serious personal injury.

ENOW00862-0

⚠ CAUTION

Gear and clutch damage may occur if shifting at high engine speed. Engine must be in the slow idle position before shifting is attempted.

ENOW00863-0

⚠ CAUTION

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.

ENON00014-0

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.

ENOW00864-0

⚠ CAUTION

Do not increase engine speed unnecessarily when the shift is in neutral and reverse, or engine damage may occur.

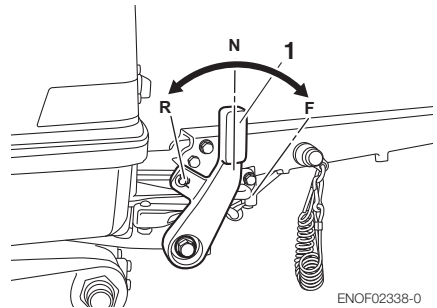
ENOM00890-B

Tiller handle type

ENOW00867-0

⚠ WARNING

Sudden acceleration and deceleration may cause passenger(s) to be thrown overboard or falling down.



ENOF02338-0

1. Shift lever

Forward

1. Turn the throttle grip to reduce engine speed.
2. When the engine reaches trolling (or idling) speed, quickly pull the shift lever to the Forward position.

Reverse

1. Turn the throttle grip to reduce engine speed.

- When the engine reaches trolling (or idling) speed, quickly pull the shift lever to the Reverse position.

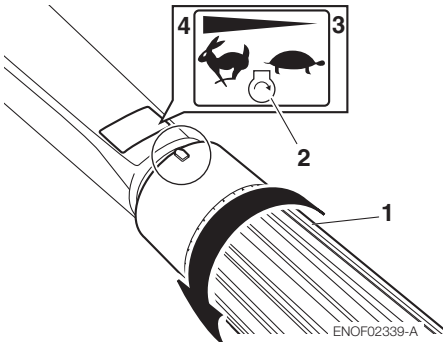
Acceleration

ENOW00867-0



Sudden acceleration and deceleration may cause passenger(s) to be thrown overboard or falling down.

Open throttle grip gradually.



- Throttle grip
- Start position
- Fully closed
- Fully opened

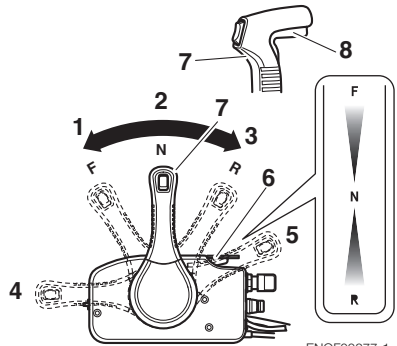
ENOM0900-0

Side mount RC type

ENOW00867-0



Sudden acceleration and deceleration may cause passenger(s) to be thrown overboard or falling down.



ENOF00877-1

- Forward (F)
- Neutral (N)
- Reverse (R)
- Fully opened (Forward)
- Fully opened (Reverse)
- Free throttle lever
- Control lever
- Lock button

Forward

- Quickly push the control lever to the Forward (F) position 32°, where the gear is connected, while lifting up on the lock button located under the control lever grip.
- Further forward motion 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 under the control lever grip.
- Further rearward motion will open the throttle.

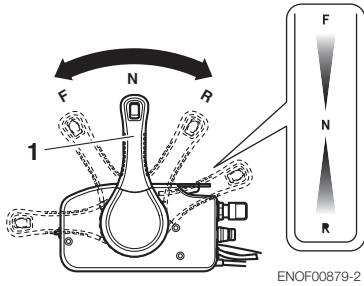
Acceleration

ENOW00867-A

CAUTION

Sudden acceleration and deceleration may cause passenger(s) to be thrown overboard or falling down.

Open control lever gradually.



- 1. Control lever

ENOM00049-D

6. Stopping the engine

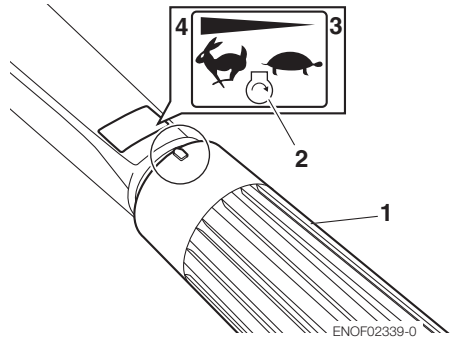
ENOW00868-0

WARNING

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.

Tiller handle type

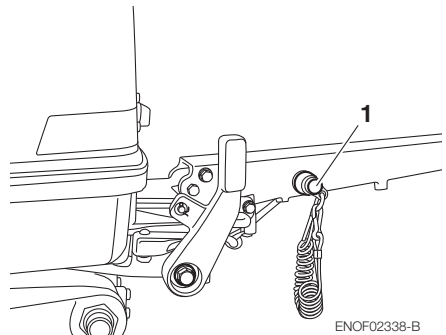
- 1. Turn the throttle grip to the slow position.



- 1. Throttle grip
- 2. Start position
- 3. Fully closed
- 4. Fully opened

- 2. Put the shift lever in the Neutral position. Run the engine for 2-3 minutes at idling speed for cooling down if it has been running at full speed.
- 3. Push the stop switch.

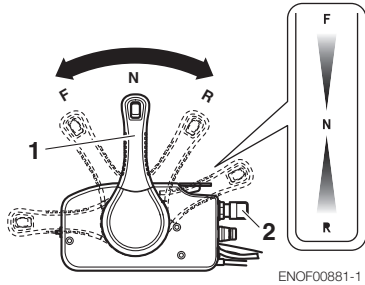
7



- 1. Stop switch

Side mount RC type

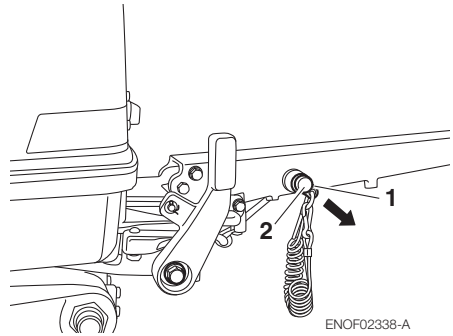
- 1. Put the control lever in the Neutral position and run the engine for 2-3 minutes at idling speed for cooling down if it has been running at full speed.



ENOF00881-1

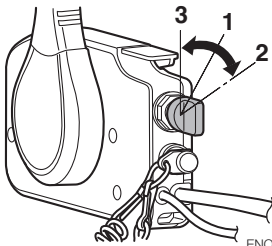
1. Control lever
2. Mine switch key

2. Turn the main switch key to the OFF position or push the stop switch. (Do not forget to turn the key off).



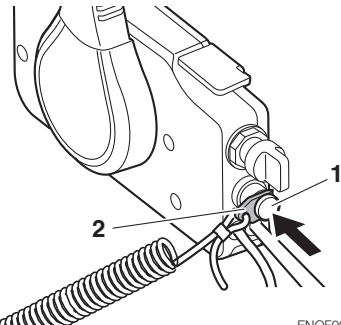
ENOF02338-A

1. Stop switch
2. Stop switch lock



ENOF00871-1

1. ON
2. START
3. OFF



ENOF00869-A

1. Stop switch
2. Stop switch lock

ENOM00910-0

**Spare emergency stop switch lock
(For CE marking model)**

A spare emergency stop switch lock is provided in the tool bag.

When used as described, the emergency stop switch clip and emergency stop switch lanyard system stops the engine if the operator falls away from the controls.

When an operator falls into water, be sure to use emergency stop switch lock of the spare.

Be sure to confirm the spare stop switch lock is in the tool bag before begin to operate.

7

ENOW00869-0

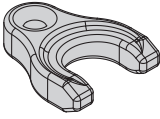
⚠ WARNING

After stopping the engine:

- Close the air vent screw on the fuel tank cap.
- Disconnect the fuel connector of the engine and the fuel tank.
- Disconnect the battery cord, after each use.

Emergency engine stopping

Remove stop switch lock to stop the engine.



ENOF00891-0

ENOM00920-0

7. Steering

ENOW00870-0

WARNING

Sudden steering may cause passenger(s) to be thrown overboard or falling down.

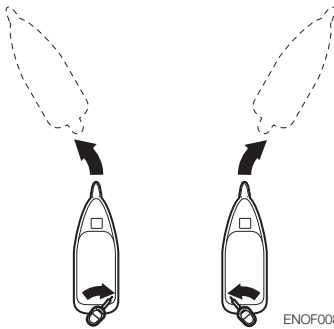
Tiller handle type

Right turn

Move the tiller handle to the left

Left turn

Move the tiller handle to the right.



ENOF00892-0

Remote control type

Right turn

Turn the steering wheel to the right.

Left turn

Turn the steering wheel to the left.



ENOF00893-0

ENOM00050-0

8. Trim angle

ENOW00043-A

WARNING

- Adjust the trim angle when the engine is stopped.
- 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.

ENOW00044-0

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 oper-

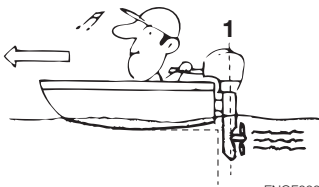
ate the switch during cruising, or control of boat may be lost.

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.

ENOM00052-0

Proper trim angle

The position of the thrust rod is correct if the hull is horizontal during operation.



ENOF00051-1

1. Perpendicular to the water surface

ENOM00053-0

Improper trim angle (bow rises too high)

Set the thrust rod lower if the bow of the boat rises above horizontal.



ENOF00052-0

ENOM00054-A

Improper trim angle (bow dips into the water)

Set the thrust rod higher if the bow of the boat is below horizontal.

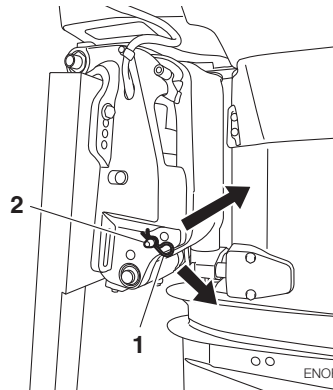


ENOF00053-0

Trim angle adjustment

The transom angle adjustment

1. Stop the engine
2. Operate the Power Tilt switch or Gas assisted tilt raise the outboard motor to the tilt up position.
3. Lock the tilt with the Tilt stopper.
4. Change the trim lock pin position as following picture.



ENOF023350-0

1. Snap pin
2. Thrust rod
5. Reinstall the thrust rod securely.
6. Operate the Power Tilt switch and lower the outboard.

ENOM00060-A

9. Tilt up and down

ENOW00055-0

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.

ENOW00048-0

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.

ENOW00056-A

WARNING

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

ENOW00057-0

CAUTION

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

ENON00921-0

Note

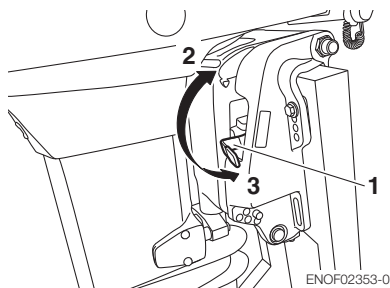
Before tilting the outboard motor up, after stopping the motor leave it in the running position for about a minute to allow water to drain from inside the engine.

ENOM01712-0

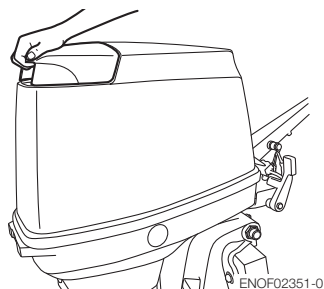
Gas assist tilt type (70 MFG only)

Tilt up

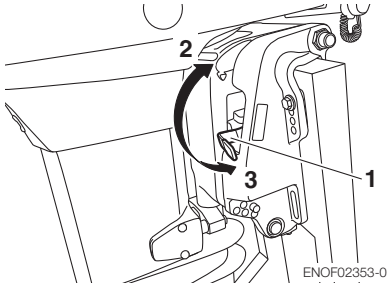
1. Pull the reverse lock lever upward until it stops. (This is the tilt FREE position.)
2. Now, tilt the outboard motor all the way up.



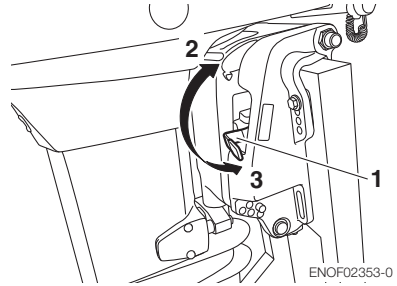
1. Reverse lock lever
2. Tilt up position (FREE)
3. Tilt down position (LOCK)



3. Push the reverse lock lever downward until it stops. (this is the tilt LOCK position.)



1. Reverse lock lever
2. Tilt up position (FREE)
3. Tilt down position (LOCK)
4. Lock the tilt with the Tilt stopper after the outboard motor has been tilted up.



1. Reverse lock lever
2. Tilt up position (FREE)
3. Tilt down position (LOCK)

ENOM00069-A

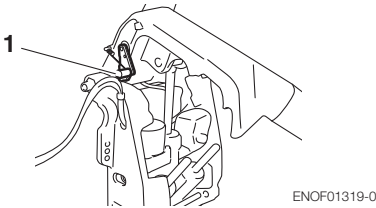
Power Trim & Tilt type

Tilt up

1. Operate the Power Trim & Tilt switch and tilt the outboard motor up.
2. Lock the tilt with the Tilt stopper after the outboard motor has been tilted up

Tilt down

1. Release the tilt stopper from the set-up position while slightly tilting up outboard motor.
2. Operate the Power Trim & Tilt switch and tilt the outboard motor down until the motor touches to the thrust rod.

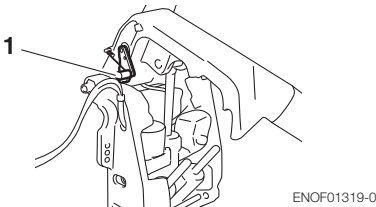


1. Tilt stopper

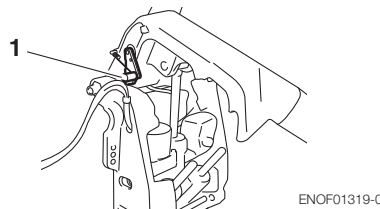
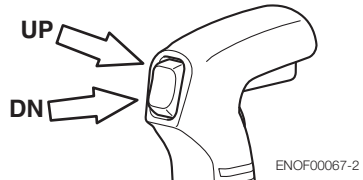
ENOM01713-0

Tilt down

1. Release the tilt stopper.

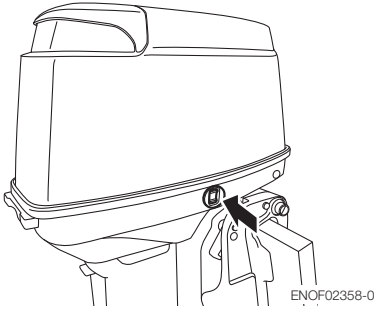


1. Tilt stopper
2. Pull the reverse lock lever upward until it stops. (This is the tilt FREE position.)
3. Allow gravity to lower the outboard motor.
4. Push the reverse lock lever downward until it stops.



1. Tilt stopper

The outboard motor can also be tilted up and down using the switch provided under the bottom cowl.



It is possible to tilt up or down in spite of main switch "ON" or "OFF".

ENOM00940-0

Manual relief valve

If the battery is dead, and the power tilt switch thus inoperative, open the manual valve completely in the Manual direction. This will allow manual tilting of the outboard motor.

ENOW00872-0



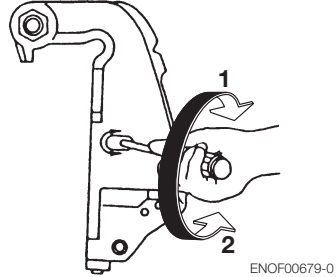
Make sure the manual relief valve is closed before operating the outboard motor. If the manual relief valve is not closed, the outboard motor will tilt up when operated in reverse.

ENOW00873-0



Before opening the manual relief valve, make sure nobody is under the outboard motor. If the outboard motor is in the tilted up position, it will tilt down suddenly if the

manual relief valve is loosened in the "Manual" direction.



- 1. POWER
- 2. MANUAL

ENOM00068-A

10. Shallow water operation

ENOW00051-0



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

ENOW00053-0

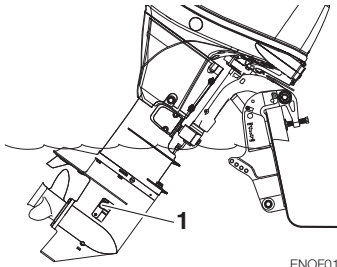


While in shallow water drive position, do not operate the outboard motor in Reverse. Operate the outboard motor at slow speed and keep the cooling water intake submerged.

ENOW00054-0



Do not overtilt outboard motor when driving shallow water, or air may be sucked through water inlet, potentially leading to engine overheating.



ENOF01144-A

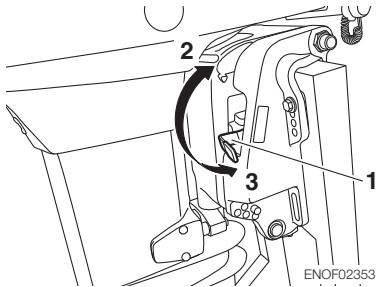
1. Water inlet

ENOM01714-0

Gas assisted tilt type

1. Close the throttle to reduce the engine speed and shift into neutral.
2. Put the reverse lock lever in the FREE position.

7



ENOF02353-0

1. Reverse lock lever
 2. Tilt up position (FREE)
 3. Tilt down position (LOCK)
3. Tilt the outboard motor up into desired shallow water running position and put the reverse lock lever in the LOCK position.

REMOVING AND CARRYING THE OUTBOARD MOTOR

ENOM00070-A

1. Removing the outboard motor

ENOW00890-A

WARNING

Before removing the outboard motor on the boat, hang the outboard motor with the hoist or equivalent device by attaching the engine hanger to the outboard.

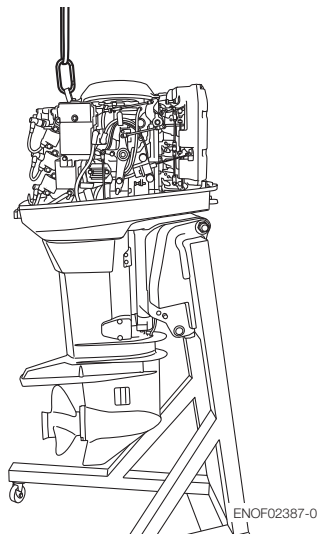
Use the hoist with allowable load is 250 kg (550 lbs) or above.

ENOW00064-0

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.

1. Stop the engine.
2. Remove the top cowl.
3. Disconnect the fuel connector, the remote control cables and the battery cords from the outboard motor.
4. Attach the hoist hooks to the engine hanger.
5. Remove the outboard motor from boat and completely drain the water from the gear case.



ENOF02387-0

ENOM00071-A

2. Carrying the outboard motor

ENOW00933-0

WARNING

Be sure to disconnect fuel connector except when operating engine.

Fuel leakage is a fire or explosion hazard, which can cause serious injury or death.

ENOW00065-0

WARNING

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

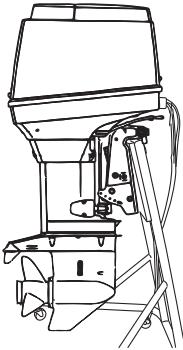
ENOW00066-A

CAUTION

Do not give a shock to an outboard motor during transportation. It becomes a cause of breakage.

Keep the outboard motor in a vertical position when carrying.

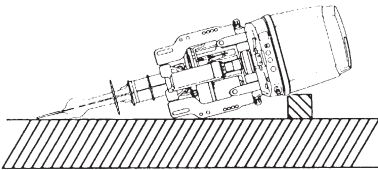
The optional outboard motor stand is recommended for keeping the outboard motor vertical both during transport and storage.



ENOF02361-0

ENON00021-A
Note

- If the outboard motor must be laid down be sure drain the fuel and engine oil, then the port side faces down as shown in the following drawing.
- Elevate power unit 2 inches to 4 inches if traveling to avoid oil spillage.



ENOF00680-0

ENOM00072-A

3. Trailing

ENOM00072-0

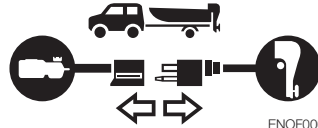
CAUTION

Trailing in the tilted position may cause damage to the outboard motor, boat, etc.

ENOW00073-A

WARNING

Be sure to disconnect fuel connector except when operating engine. Fuel leakage is a fire or explosion hazard, which can cause serious injury or death.



ENOF00075-1

ENOW00068-0

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.

ENOM00071-0

CAUTION

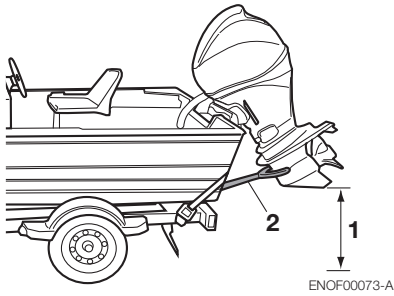
The tilt support device supplied on your outboard motor is not intended for towing. It is intended to support the outboard motor while the boat is docked, beached, etc.

When transporting a boat on a trailer with the outboard motor still attached, disconnect the fuel line from the outboard motor beforehand and keep the outboard motor in the normal running position or on a tran-

som saver bar.

Tiller handle type

To prevent the outboard motor from moving when it is attached on a boat during transport on a trailer, properly tighten the steering friction lever (page 66).



- 1. Ground clearance should be provided sufficiently.
- 2. Transom saver bar

ENOW00067-0

⚠ 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.

ADJUSTMENT

ENOM00074-A

1. Throttle grip friction

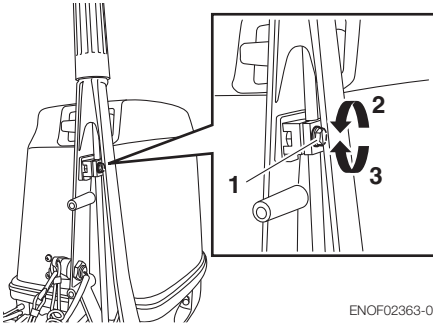
70MFG type

ENOW00074-B

! WARNING

Do not overtighten the throttle adjustment screw or it could result in difficulty of movement resulting in the loss of control causing an accident and could lead to severe injury.

Friction adjustment of the throttle grip can be made with the throttle adjustment screw.



ENOF02363-0

1. Throttle friction adjustment screw
2. Lighter
3. Heavier

ENOM00075-0

2. Remote control lever friction

ENOW00074-C

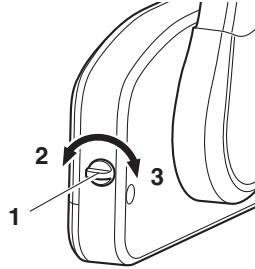
! WARNING

Do not overtighten the remote control throttle friction adjustment screw or it could result in difficulty of movement resulting in the loss of control causing an accident and could lead to severe injury.

To adjust the friction of the remote control lever, turn the throttle friction adjustment

screw on the front of the remote control. Turn clockwise to increase the friction and counter-clockwise to decrease it.

Side mount type



ENOF00078-2

1. Throttle friction adjustment screw
2. Lighter
3. Heavier

ENOM00076-0

3. Trim tab adjustment

ENOW00076-0

! 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.

ENOW00075-0

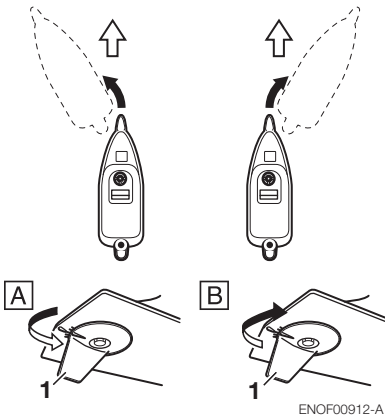
! WARNING

Inappropriate adjustment of trim tab could cause steering difficulty. After installing or

readjusting trim tab, check if steering fiction is even.

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

- If the boat veers toward the left direct the trim tab towards A (left from rear of boat).
- If the boat veers toward the right direct the trim tab towards B (right from rear of boat).



1. Trim tab

ENON00022-A

Notes

- After adjustment securely tighten the trim tab fixing bolt.
- Check for looseness of the bolt and the trim tab at regular intervals.

INSPECTION AND MAINTENANCE

ENOM00077-0

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.

ENOW00077-0



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.**
-

ENOM0716-0

1. Daily inspection

Perform the following checks and inspection before and after use.

ENOW00078-0

 **WARNING**

Do not use outboard motor if any abnormality is found during pre-operation check or it could result in severe damage to the motor or severe personal injury.

Item	Points to Check	Remedy
Fuel System	<ul style="list-style-type: none"> • Check the amount of fuel in the tank. • Check for dust or water in the fuel filter. • Check rubber pipes for oil leakage. 	Replenish Clean Replace *1
Lubrication System	<ul style="list-style-type: none"> • Check the amount of engine oil in the oil tank. • Check for dust or water in the oil filters. 	Replenish Clean
Electrical Equipment	<ul style="list-style-type: none"> • Check the spark plugs for dirt, wear and carbon built-up. Spark plugs NGK B8HS-10 or BR8HS-10 (1.0 mm gap) (0.0394 in) • Check if the main switch functions normally. • Check if the battery electrolyte level and specific gravity are normal • Check for loose connections on battery terminal. • Check if the stop switch functions normally and make sure the lock plate is present. • Check cords for loose connections and damage. 	Clean or replace Remedy or replace *1 Replenish or recharge Retighten Remedy or replace *1 Correct or replace *1
Throttle System	<ul style="list-style-type: none"> • Check that the choke solenoid and valve for the carburetor works normally. 	Replace *1
	<ul style="list-style-type: none"> • Check if the carburetor and magneto work normally when turning the throttle grip, and also check links for looseness. 	Correct *1
Clutch and Propeller System	<ul style="list-style-type: none"> • Check if the clutch engages correctly when operating the Remote Control. (or Shift lever) • Check the propeller for bent or damaged blades. • Check if the propeller nut is tightened and the split pin is present. 	Adjust *1 Replace
Installation of Motor	<ul style="list-style-type: none"> • Check all the motor installation bolts with the boat. • Check the thrust rod installation. 	Tighten Tighten
Power Trim & Tilt	<ul style="list-style-type: none"> • Check working of the tilt up and down of the motor. 	
Cooling Water	<ul style="list-style-type: none"> • Check that cooling water is discharged from the cooling water check port after the engine has started. 	
Tools and Spares	<ul style="list-style-type: none"> • To be prepare tools and spare parts for replacing spark plugs, propeller, etc. • Check if the spare rope is provided. 	
Steering Devices	<ul style="list-style-type: none"> • Check working of steering handle and remote control. 	
Other parts	<ul style="list-style-type: none"> • Check if the anode and trim tab are securely installed. • Check the anode and trim tab for corrosion and deformation. 	Repair if necessary Replace

*1 Have this handled by your dealer.

ENOM00082-A

Engine oil replenishing

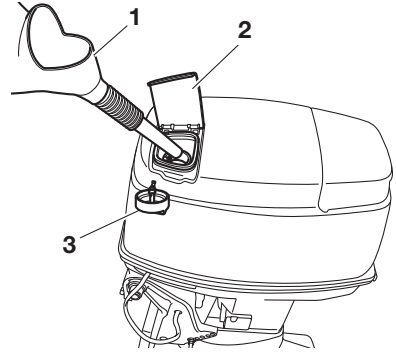
ENOW00079-A

CAUTION

- Do not add engine oil of brand and grade other than existing one. In case engine oil of other brand or grade is added, drain all oil and ask dealer for treatment.
- In case other than engine oil such as gasoline is put in the oil chamber, empty the chamber and ask dealer for treatment.
- When replenishing engine oil, be careful not to allow entry of foreign matters such as dust and water into oil chamber.
- Wipe off engine oil well immediately if spilled and dispose of it in accordance with local fire prevention and environment protection regulations.
- Do not replenish engine oil over upper limit. If overfilled, remove oil to upper limit. If engine oil is over the upper limit, it can leak potentially leading to engine damage.

If the oil level is low, add recommended oil to the oil tank.

1. Open the filler lid from the top cowl.
2. Open the oil tank cap
3. Fill the oil tank with the genuine engine oil.
4. After replenishing of the oil tank, be sure to close the oil tank cap tightly.



1. Genuine of recommended engine oil
2. Filler lid
3. Oil tank cap

ENOM00083-A

Washing outboard motor

ENOW00081-0

WARNING

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

ENOW00082-0

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.

ENOW00920-0

CAUTION

When washing the outboard motor, be careful not to spray the water inside of the top cowl, especially electrical components.

ENON00026-0

Note

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

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 cooling water passage after every cruising or before storing outboard motor for long time. Before flushing, remove the propeller and the forward thrust holder.

ENOM00085-F

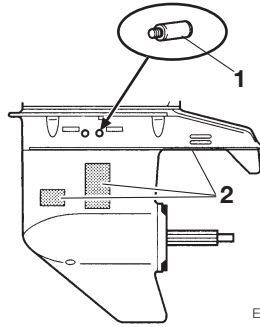
Flushing attachment

ENOW00922-0

CAUTION

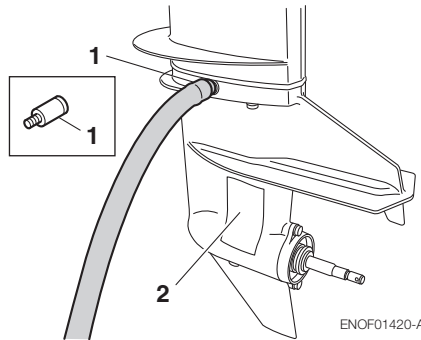
To prevent the engine from starting when you are near the propeller, remove the stop switch lock.

1. Tilt down the outboard motor.
2. Remove the water plug from the gear case, and screw in the flushing attachment.
3. Attach the flushing attachment and connect a water hose. Turn on the water and adjust the flow (Be sure to seal the water inlet and sub-water inlet (60/70 only), located in the gear case with tape)
4. Put the shift lever in the neutral position and start the engine.
Continue flushing the outboard motor for 3 to 5 minutes at idling.
5. Stop the engine and water supply.
Remove the flushing attachment and tape. After the flushing, be sure to reattach the water plug.



ENOF01325-A

1. Flushing attachment
2. Tape



ENOF01420-A

1. Flushing attachment
2. Water inlet

ENOM00085-A

Flushing by test tank

ENOW00081-0

WARNING

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

ENOW00082-0

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.

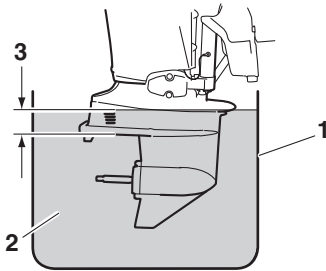
ENOW00036-A

CAUTION

When the engine is started in the test tank, to avoid over heating and water pump damage, be sure the water level is at least 10 cm (4 in.) above the anti ventilation plate.

And be sure to remove the propeller, when starting the engine in the test tank. (See page 78)

Run the engine only at idling.



ENOF00863-0

1. Test tank
2. Water
3. Over 10 cm (4 in.)

10

ENOM00950-0

Fuse replacement

ENOW00923-0

CAUTION

Before replacing a fuse, disconnect the battery cable from the battery negative (-) terminal. Failure to do so may cause a short-circuit.

ENOW00924-0

CAUTION

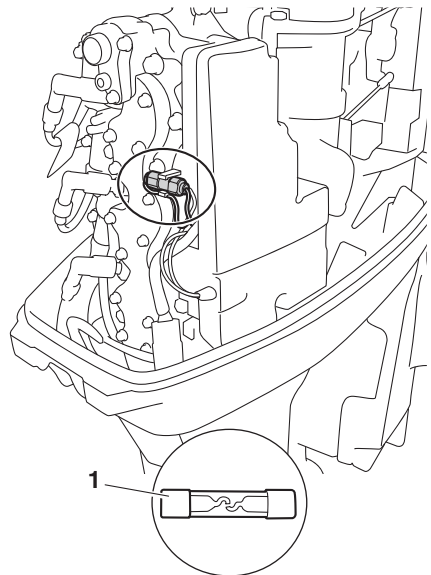
Never use a fuse with a rating that exceeds the specified rating as this could cause serious damage to the electrical system.

If a blown fuse is detected, try to determine the cause for this and correct it. If the cause for the problem is not corrected, the fuse will likely blow again.

If the fuse continues to blow, request an authorized Tohatsu dealer to inspect the outboard motor.

1. Stop the engine and disconnect the battery cable from the battery negative (-) terminal.
2. Remove the engine cover.
3. Remove the fuse box lid.
4. Remove the fuse and check it. If the fuse is blown, replace it with a fuse of the same specified rating. The outboard motor is supplied with spare fuses in the spare fuse holder.

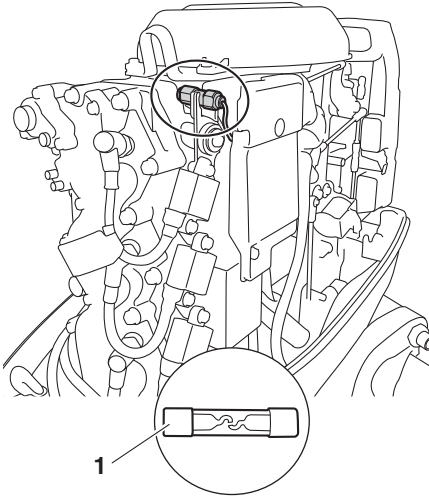
60/70



ENOF02364-0

1. Blown fuse

90, 115/140



ENOF02347-0

1. Blown fuse

ENOM01717-0

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.

For periodic inspection and maintenance, consult your servicing dealer.

Item		Servicing Interval			Action	Remarks
		10 hours or 1 month	50 hours or 3 months	Every 100 hours or 6 months		
Fuel System	Carburetor *1	●		●	Strip, clean and adjust. Adjust idling.	
	Fuel filter	●	●	●	Check and clean.	
	Piping			●	Check and clean.	
	Fuel tank	●	●	●	Clean	
Ignition	Spark plugs	●	●	●	Check gaps. Remove carbon deposits.	0.9-1.0 mm (0.035-0.039 in)
	Ignition timing *1	●		●	Adjust timing.	
Starting System	Starter motor *1			●	Check for salt deposits and battery cable condition.	
	Battery	●	●	●	Installation, fluid quantity, gravity	
	Starter rope	●	●	●	Check for wear or damage.	
Lower Unit	Propeller	●	●	●	Check for bend blades, damage, wear.	
	Gear oil	●	●	●	Change or replenish-oil and check for water leaks.	
	Water pump *1		●	●	Check for wear or damage.	Replace impeller every 12 months.
Bolt and Nuts		●	●	●	Re tighten.	
Sliding and Rotating Parts Grease Nipples			●	●	Apply and pump in grease.	
Power Trim & Tilt *1		●		●	Check power unit oil level and refill. Check function of manual release valve.	
Engine Oil System*	Oil Tank	●		●	Check for leakage, damage, position of clips and filter conditions	Repair or consult your dealer
	Oil Pipe					
	Oil Filter					
Outer Equipment		●	●	●	Check for corrosion.	
Anode			●	●	Check for corrosion and deformation.	Replace.

*1: Have this handled by your dealer

ENOM00030-0

Note

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.

ENOM00093-B

Fuel filters and fuel tank cleaning

ENOW00093-A


WARNING

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

Keep out of reach of children.

- **Avoid repeated or prolonged contact with skin or breathing of vapor.**
- **Do not start this procedure while engine is operating or hot even after stopping it.**
- **Place fuel filter away from every source of ignition such as sparks or open flames.**
- **Wipe off gasoline well immediately if spilled and dispose of it in accordance with local fire prevention and environment protection regulations.**
- **Install fuel filter with all related parts in place, or fuel leak could occur, leading to catching fire or explosion.**
- **Check fuel system regularly for leakage.**
- **Contact authorized dealer for fuel system services. Services by unqualified person could lead to engine damage.**

Water or dirt in the fuel tank will cause engine performance problems.

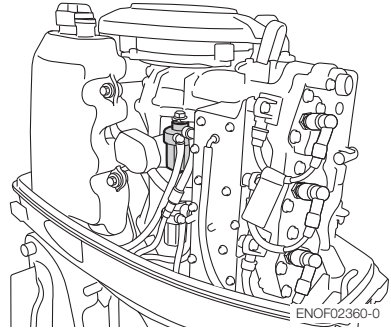
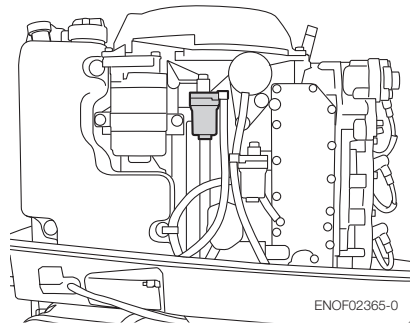
Check and clean the tank at specified times or after the outboard motor has been stored for a long period of time (over three months).

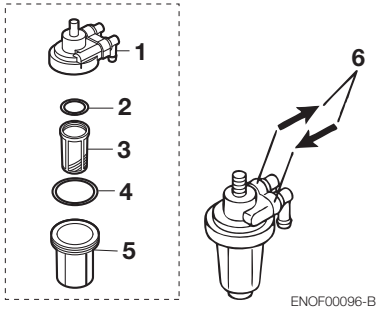
Fuel filters are provided inside the fuel tank and engine.

ENOM00094-0

Fuel filter (for engine)

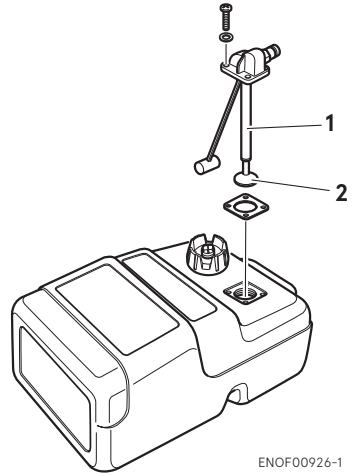
1. Check in the cup for water and debris.
- 60/70**

**90, 115/140**



ENOF00096-B

1. Body
2. O-ring
3. Filter
4. O-ring
5. Cup
6. Indication of Fuel Flow



ENOF00926-1

2. If present, disconnect hoses from the fuel connector (male) and the fuel pump.
3. Remove the cup, filter and O-rings from the fuel filter body.
4. Check the wear and clogging for each parts, and replace if necessary.
5. Remove fuel and any water or debris from the cup, filter and hoses.
6. Reassemble all parts.

1. Fuel pick-up
2. Filter

ENOM00718-0

Engine Oil Line Cleaning

Oil filter and oil tank. Check the oil tank and/or filter for entrapped water and dust.

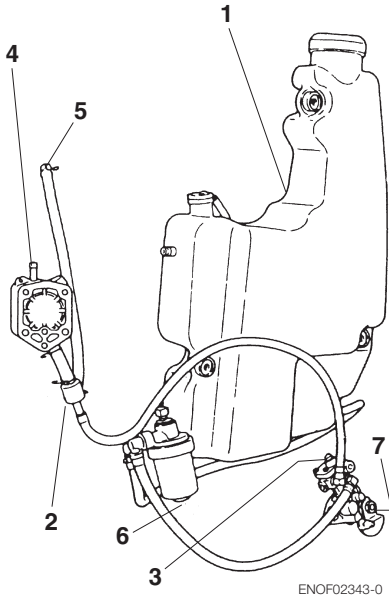
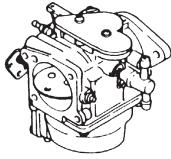
1. Disconnect all pipes between the oil tank and oil pump.
2. Clean out foreign matter.
3. Refit the pipes to the oil tank and pumps, and then fill up with new engine oil.
4. For air purging, refer to Item No. 5: Fuel and Engine Oil.

10

ENOM00096-A

Fuel filter (for fuel tank)

1. Remove four screws to remove the Fuel Pick-Up.
2. Clean the fuel filter and replace the gasket.
3. Reassemble all parts.



ENOF02343-0

1. Engine oil tank
2. Check valve
3. Air vent screw
4. To carburetor
5. From fuel tank
6. Filter for engine oil
7. Pump for engine oil.

ENOM00098-B

Gear oil replacement

ENOW00094-0

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.

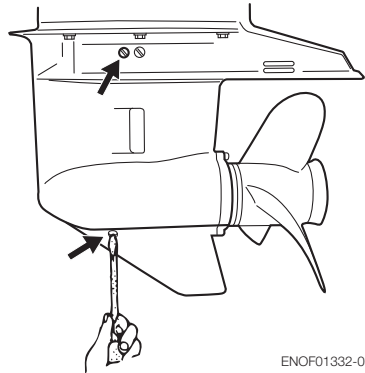
ENON00934-0

Note

Please dispose of used oil in a manner that is compatible with the environment.

We suggest you take it in a sealed container to your local service station for reclamation. Do not throw it in the trash, pour it on the ground or down a drain.

1. Tilt down the outboard motor.
2. Remove the oil plugs (lower and upper), and completely drain the gear oil into a pan.



ENOF01332-0

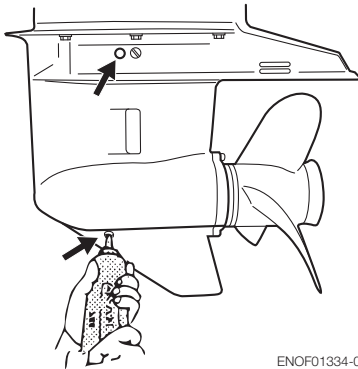
3. Insert the oil tube nozzle into the lower oil plug hole, and fill with gear oil by squeezing the oil tube until oil flows out of the upper plug hole and bubbles is disappeared to remove the air.

ENON00033-0

Note

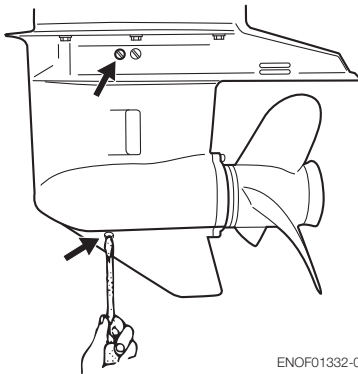
Use genuine gear oil or the recommended one (API GL-5: SAE #80 to #90).

Required volume: 60/70 700mL (23.6 fl.oz)
90/115/140 900mL (30.4 fl.oz)



ENOF01334-0

4. Install the upper oil plug, and then remove oil tube nozzle and install the lower oil plug.



ENOF01332-0

ENOW00095-0

! CAUTION

Do not reuse oil plug gasket. Always use new gasket and tighten oil plug properly to prevent entry of water into lower unit.

ENOW00928-0

! CAUTION

Wipe off gear oil well immediately if spilled and dispose of it in accordance with local fire prevention and environment protection regulations.

ENON00032-0

Note

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

ENOM00086-A

Propeller replacement

ENOW00084-0

! 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 switch lock attached to the switch, and starter key attached, or engine could accidentally start leading to serious personal injury. Disconnect battery cable if possible.
- The propeller edge is thin and sharp. Wear the grooves during replacement to protect your hands.

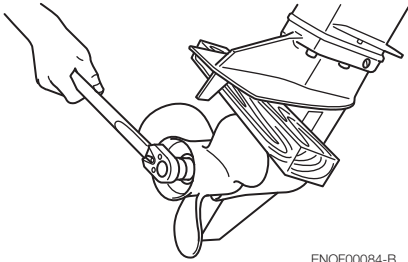
ENOW00086-0

! 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.

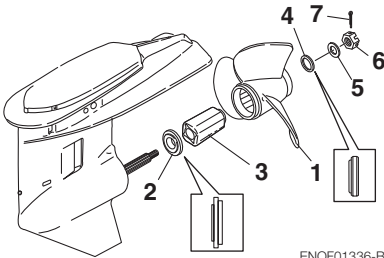
A worn-out or bent propeller will lower the motor's performance, and cause engine trouble.

- Put a piece of wood block between propeller blade and anti-ventilation plate to hold propeller.



ENOF00084-B

- Remove the split pin, propeller nut and washer.
- Remove the propeller and thrust holder.
- Apply water proof grease to the propeller shaft before installing a new propeller.
- Install the thrust holder, propeller, stopper, washer and propeller nut onto the shaft.



ENOF01336-B

- Propeller
- Thrust holder
- Bush
- Adapter
- Washer
- Propeller nut
- Split pin

- Tighten the propeller nut to specified torque, and align one of grooves to propeller shaft hole.

Propeller nut torque:

35 Nm (25 ft-lb, 3.25kgf-m)

- Install a new split pin into the nut hole and bend it.



ENOF00084-D

ENOM00087-A

Spark plugs replacement

ENOW00087-0



- 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.

ENOW00929-0

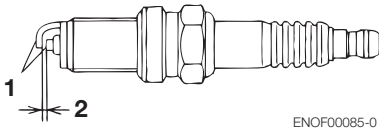


Use only the recommended spark plugs. Spark plugs which have an different heat range may cause engine damage.

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.

- 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 21 mm (13/16 in) socket wrench and handle that is provided in tool bag.
5. Inspect the spark plug. Replace the spark plug if the electrodes are worn or if the insulators are cracked or chipped.
6. Measure the spark plug electrode gap with a wire type feeler gauge. The gap should be 0.9-1.0 mm (0.035-0.039 inches). If the gap is different, replace the spark plug with a new one
Use spark plug: B8HS-10 or BR8HS-10



ENOF00085-0

1. Electrode
2. Spark gap (0.9–1.0 mm, 0.035–0.039 in)

10

7. Install the spark plug by hand and turn it carefully to avoid cross-threading.
8. Tighten the spark plug to the specified torque.

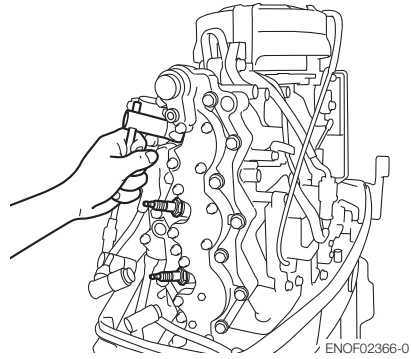
ENON00028-0

Note

- **Spark plug torque:**
27.0 Nm (20 ft-lb) [2.7 kgf-m]

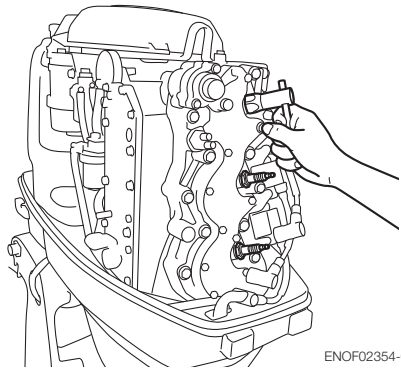
If a torque-wrench is not available when you are fitting a spark plug, a good estimate of the correct torque is 1/4 to 1/2 a turn past finger-tight. Have the spark plug adjusted to the correct torque as soon as possible with a torque-wrench.

60/70



ENOF02366-0

90,115/140



ENOF02354-0

ENOM00088-A

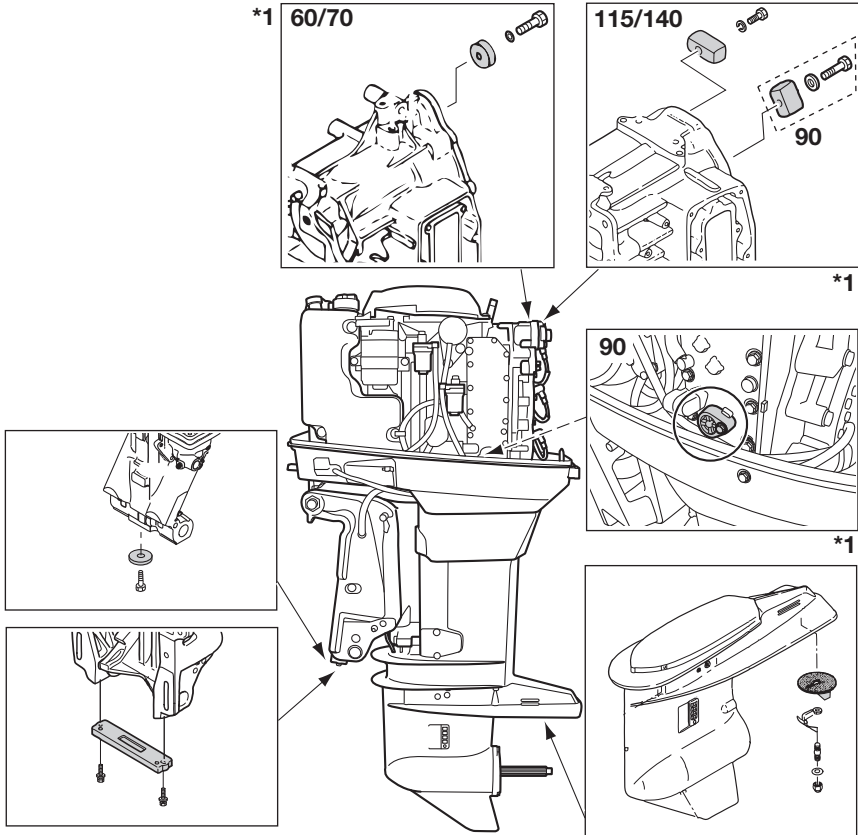
Anode replacement

A sacrificial anode protects the outboard motor from electrolytic corrosion. Anode is located on the gear case, cylinder etc.. When the anode is eroded more than 1/3 of original size, replace it.

ENON00029-0

Notes

- Never grease or paint the anode.
- At each inspection re-tighten the anode attaching bolt. As it is likely to be subjected to electrolytic corrosion.



ENOF02367-0

*1: Handle by your dealer

ENOM00089-B

Power Tilt oil checking

ENOW00088-0

⚠ 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.

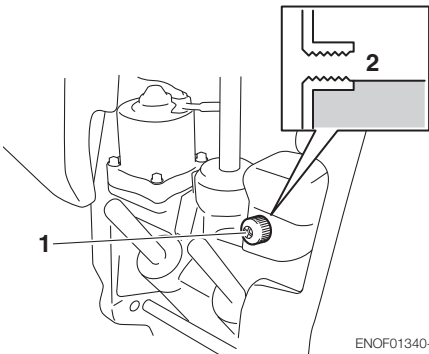
ENOW00089-A

⚠ CAUTION

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

Check the oil level in the reservoir tank while the tank is kept in a vertical position.

1. Tilt the outboard motor up and lock the tilt with the tilt stopper.
2. Remove the oil cap by turning counter clockwise, then check if the oil level reaches the bottom line of the plug hole.



ENOF01340-0

1. Oil cap
2. Oil level

Recommended oil

Use an automatic transmission fluid or equivalent.

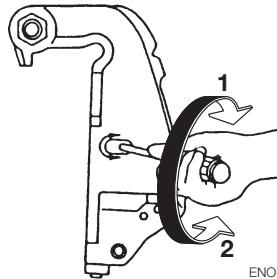
Recommended oils are as shown below.

ATF Dexron III

Air purging from the Power Trim and Tilt unit.

Entrapped air in the Power Tilt unit will cause poor tilting movement and increased noise.

1. 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.
2. When done, close the valve by turning it clockwise towards the Power side.



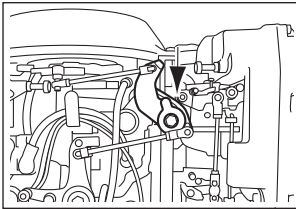
ENOF00679-0

1. POWER
2. MANUAL

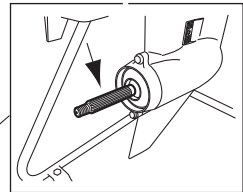
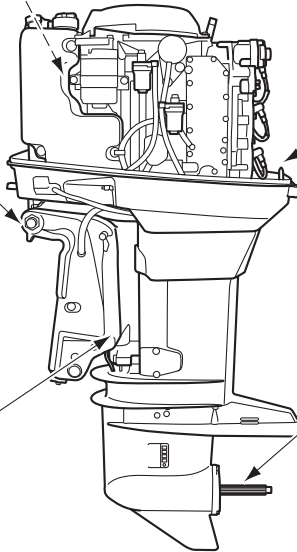
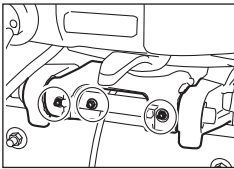
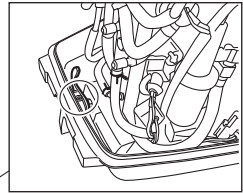
ENOM00960-0

Grease point

Apply water proof grease to the parts shown below.



60/70



ENOM00100-A

3. Off-season storage

ENOW00934-0

! WARNING

- Be sure to disconnect fuel connector except when operating engine.
- Fuel leakage is a fire or explosion hazard, which can cause serious injury or death.

ENOW00097-0

! 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.

ENOW00096-0

! CAUTION

Before servicing the motor for storage:

- Remove the battery cables.
- Remove the spark plug caps from the spark plugs.
- Do not run the motor out of the water.

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

Be sure to use fuel stabilizer while running the motor before storage. (See page 85)

ENOM00101-D

Engine

1. Wash the engine exterior and flush the cooling water system thoroughly with fresh water. Drain the water completely.
Wipe off any surface water with an oily rag.
2. Remove the fuel hose from the outboard motor.

3. Drain all fuel from the fuel hoses, fuel pump, fuel filter (See page 75) and vapor separator (See page 85), and clean these parts.

Keep in mind that if gasoline is kept in the carburetor for a long time, gum and varnish will develop, causing the float valve to stick, restricting the fuel flow.

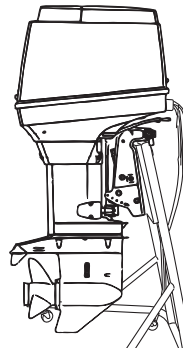
4. Remove the spark plugs and put a teaspoon of engine oil or spray storage oil into the combustion chamber through the spark plug holes.
5. Turn the starter motor several times or turn the starter motor to lubricate inside the cylinder.

ENOW00930-0

! WARNING

- Be sure to remove stop switch lock to prevent ignited the spark plugs.
- Put a cloth to spark plug hole and wipe up any spilled engine oil, when cranking the outboard motor.

6. Change the gear oil in the gear case (See page 77).
7. Apply grease to grease point (See page 83).
8. Stand the outboard motor up vertically in a dry place.

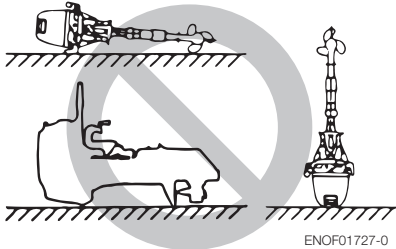


ENOF02361-0

ENOW00066-0

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.

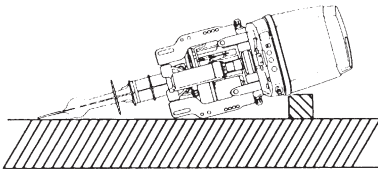


ENOF01727-0

ENON00021-A

Note

- If the outboard motor must be laid down be sure drain the fuel and engine oil, then the outboard motor on a cushion as shown in the following drawing (See page 64 and 85).
- Elevate power unit 2 inches to 4 inches if traveling to avoid air intrusion in the Power Trim and Tilt pump system.



ENOF00680-0

ENOM00950-A

Adding a fuel stabilizer

When adding a fuel stabilizer additive (commercially available), first fill the fuel tank with fresh oil and fuel. If the fuel tank is only partially filled, air in the tank can cause the fuel to deteriorate during storage.

1. Before adding fuel stabilizer additive, drain the carburetor (See page 85).
2. Follow the instructions on the label when adding the fuel stabilizer additive.
3. After adding the additive, let the outboard motor run in the water for 10 minutes to make sure any old fuel in the fuel system has been completely replaced by the fuel with additive.
4. Turn the engine OFF

ENON00891-0

Note

If your motor is used occasionally, it is recommended to use a good fuel stabilizer in every tank of fuel and keep the container full to reduce condensation and evaporation.

ENOM00970-A

Fuel system draining

ENOW00028-A

WARNING

For details on handling fuel, contact an authorized dealer.

Fuel and fuel vapors are extremely flammable and can be explosive.

- If fuel is spilled, wipe it up immediately.
- Keep the fuel tank well away from sources of ignition, e.g. sparks or open flames
- Perform all work outdoors or in a well ventilated place.

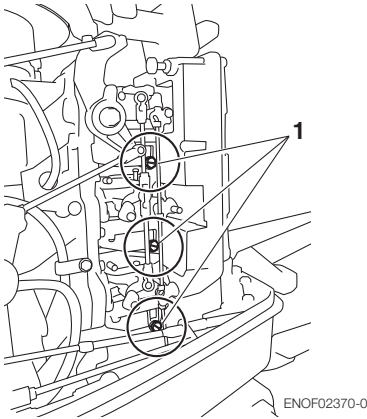
ENOW00097-0

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.

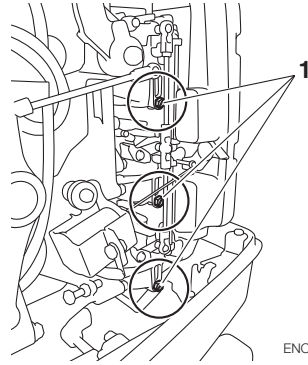
1. Disconnect the fuel hose from the outboard motor.
2. Remove the top cowl.
3. Place an appropriate rag under the drain screw.
4. Loosen the carburetor drain screw.
5. Leave the outboard motor until all fuel has been drained.
6. When thoroughly drained, retighten the drain screw securely.
7. Check the drained fuel for the presence of contaminants. If it either is present, check the fuel filter and fuel in the fuel tank.

60/70



ENOF02370-0

90, 115/140



ENOF02355-0

1. Carburetor drain screw

ENOM00102-0

Battery

ENOW00931-A

! WARNING

- Place the battery away from any source of fire, sparks and open flames such as burners or welding equipment.
- Place the battery away from fuel tank. Accidental sparks of battery may cause explosion of gasoline.

1. Disconnect the battery cables and be sure to remove the negative terminal first.
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.

ENOM00104-E

4. Pre-season check

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

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

Specific Gravity at 20°	Terminal Voltage (V)	Charge Condition
1.120	10.5	Fully discharged
1.160	11.1	1/4 charged
1.210	11.7	1/2 charged
1.250	12	3/4 charged
1.280	13.2	Fully charged

3. Check that the battery is secure and the battery cables are properly installed.
4. Fill the fuel tank with oil and fuel.
5. Connect the fuel line to the engine, and squeeze primer bulb.
6. Before starting the engine, disconnect stop switch lock and crank approximately 10 pulling the recoil starter (Manual start model) or 3times of 3sec. turning the starter motor (Electric start model) in order to circulate the oil.
7. Start the engine and warm up the engine for 3 minutes in the "NEUTRAL" position.
8. Run the engine for 5 minutes at the slowest speed.

9. Run the engine for 10 minutes at half throttle. The oil used for storage inside the engine will be circulated out to assure optimum performance.

5. Submerged outboard motor

ENOW00098-0

CAUTION

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

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 can not take it your dealer right away.

1. Wash the outboard motor with fresh water to remove salt or dirt.
2. Remove the spark plugs, and completely drain the water from the engine by pulling recoil starter several times.
3. Inject a sufficient amount of engine oil through the spark plug holes.
Pull the recoil starter rope several times to circulate the oil throughout the outboard motor.

ENOM00106-A

6. Cold weather precautions

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

ENOM00107-A

7. Striking underwater object

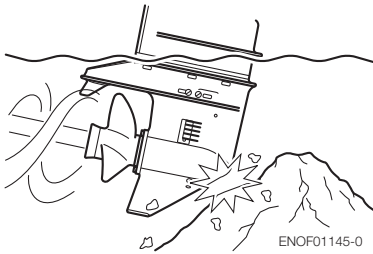
ENOW00935-0



Striking the sea bottom or an underwater object may severely damage the outboard motor.

Follow the procedure below and consult a dealer as soon as possible.

1. Stop the engine immediately.
2. Check the control system, gear case, boat transom etc.
3. Return to the nearest harbor slowly and carefully.
4. Consult a dealer check the outboard motor before operation again.



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ENOM00121-0

8. Operation with multiple outboard motors

When operating the outboard motors in reverse at more than the lowest speed, be sure that all engines are running.

If any engine has stopped, be sure to tilt the outboard motor up and keep its propeller out of the water.

Otherwise, water could enter the engine and cause damage to it.

TROUBLESHOOTING

ENOM01719-0

If you encounter problem with the engine, check the list below and locate the problem you are experiencing. Then follow the suggested remedies.

Do not hesitate to contact your dealer, as professional advice and assistance is the best way to keep the engine in optimum condition.

Difficult to start engine	Engine starts. but stops soon	Poor idling	Unstable engine running speed or engine stops	Abnormally high engine speed	Abnormally low engine speeds	Cannot obtain high engine speeds	Overheating of engine	Power Trim & Tilt inoperative	
●	●		●						Empty fuel tank
●	●	●	●		●	●	●		Incorrect connection of fuel system
●	●	●	●		●	●	●		Air enters fuel line
●	●	●	●		●	●	●		Deformed or damaged fuel pipe
●	●	●	●		●	●	●		Closed air vent on fuel tank cap
●	●	●	●		●	●	●		Clogged fuel filter, fuel pump or carburetor
		●	●		●	●	●		Use of improper engine oil
●	●	●	●			●	●		Use of improper gasoline
●	●								Excessive supply of gasoline
●	●	●	●		●	●	●		Poor carburetor adjustment
●	●	●	●			●	●		Recirculation pipe broken
●	●	●	●		●	●	●		Use of non-specified spark plugs
●	●	●	●		●	●			Dirt or carbon deposits on spark plugs
●	●	●	●		●	●			No sparks or weak sparks
			●		●	●	●		Insufficient cooling water flow
		●	●			●	●		Faulty thermostat

Difficult to start engine	Engine starts. but stops soon	Poor idling	Unstable engine running speed or engine stops	Abnormally high engine speed	Abnormally low engine speeds	Cannot obtain high engine speeds	Over-heating of engine	Power Trim & Tilt inoperative	
				●		●	●		Propeller cavitation
				●	●	●	●		Incorrect propeller selection
		●		●	●	●	●		Damaged or bent propeller
				●	●	●	●		Unbalanced load in boat
				●		●	●		Transom too high
					●	●	●		Transom too low
●	●	●			●	●	●		Incorrect adjustment of throttle link
●	●	●			●	●	●		Incorrect adjustment of ignition timing
●									Insufficient battery capacity, loose terminals, corrosion
●									Faulty ignition switch or Power Trim & Tilt switch
●									Remote Control lever not set to Neutral
●									Safety switch lock plate not fitted
●								●	Incorrect wiring disconnected or broken wire
●									Starter motor failure
●								●	Air in power trim & tilt unit

TOOL KIT AND SPARE PARTS

ENOM01720-0

The following a list of the tools and spare parts provided with the motor.

	Name	Quantity	Remark
Servicing Tools	Tool Bag	1	
	Pliers	1	
	Socket Wrench	1	10 x 13 mm
	Socket Wrench	1	21 mm
	Socket Wrench Handle	1	
	Screwdriver (Phillips-type and flat head)	1	Adapter-type
Spare Parts	Emergency starter rope	1	1600 mm
	Spare stop switch lock	1	
	Spark Plug	1 *2	NGK BR8HS-10 or B8HS-10
	Split Pin	1	Diameter x Length = 3 x 25mm
Parts Packaged with Engine *1	Bracket Fixing Bolts	4	12mm
	Bracket Fixing Nuts	4	12mm
	Washers A, B	4 each	A (large), B (small)
	Fuel Tank (with primer bulb)	1	Removeable
	Remote Control	1	
	Drag Link	1	
	Multi-purpose Meter	1	For 115/140
	Meter Harness	1	
	Lead Wire for Meter	1	
	Remote Control	1	
	Drag Link	1	
	Tachometer	1	For 60/70, 90 EPTO
	Trim meter	1	
	Lead Wire for Meter	1	

*1 Not included as standard accessories in some markets.

*2 Three pieces for 70CX

PROPELLER TABLE

ENOM01721-0

To ensure optimum performance, the propeller should match the boat type and its load.

Use a genuine propeller.

A propeller must be selected so that the engine min^{-1} (rpm) measured at wide open throttle, while cruising, is within the recommended range.

60/70: 5150 to 5850 min^{-1} (rpm)

90: 5000 to 5500 min^{-1} (rpm)

115/140: 5200 to 5700 min^{-1} (rpm)

60/70

	Pitch
Lighter load Heavier load	21
	19
	17
	15
	13
	11
	9

90

	Pitch
Lighter load Heavier load	21
	19
	17
	15
	13
	11
	9

115/140

	Pitch
Lighter load Heavier load	21
	19
	17
	15
	13
	11
	9



OWNER'S MANUAL

M 60C

M 70C

M 70CX

M 90A₂

M 115A₂

M 140A₂