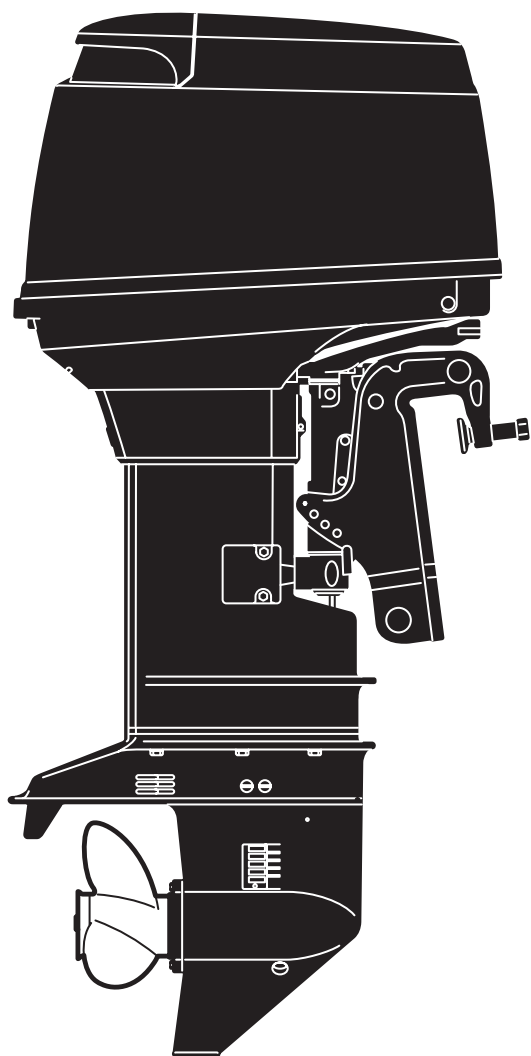


OWNER'S MANUAL



TOHATSU
Outboards

M 40D₂
50D₂
MW 50D₂

OB No.003-11038-B

⚠ 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

OWNER REGISTRATION AND IDENTIFICATION

Upon purchasing this product, be sure that the WARRANTY CARD is correctly and completely filled out and mailed to the addressee noted there on. This WARRANTY CARD identifies you as the legal owner of the product and serves as your warranty registration.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, YOUR OUTBOARD MOTOR WILL NOT BE COVERED BY THE APPLICABLE LIMITED WARRANTY, IF THIS PROCEDURE IS NOT FOLLOWED.

PRE-DELIVERY CHECK

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

Limited Warranty

Please refer to the TOHATSU outboard motor Limited warranty provided to you with this product, the terms and conditions of which, as amended from time to time, are incorporated by reference into the manual.

Serial Number

In the space below, please record the outboard motor's serial number (indicated both on the bottom cowl and on the cylinder block). The serial number will be needed in the event of theft or to quickly identifying the outboard motor type.

Serial Number :

To You, Our Customer

Thank you for selecting a TOHATSU outboard motor. You are now the proud owner of an excellent outboard motor that will service you for many years to come.

This manual should be read in its entirety and the inspection and maintenance procedures described later in this manual should be followed carefully. Should a problem arise with the outboard motor, please follow the troubleshooting procedures listed at the end of this manual. If the problem persists, contact an authorized TOHATSU service shop or dealer.

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

TOHATSU CORPORATION

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GENERAL SAFETY INFORMATION

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10. TROUBLESHOOTING

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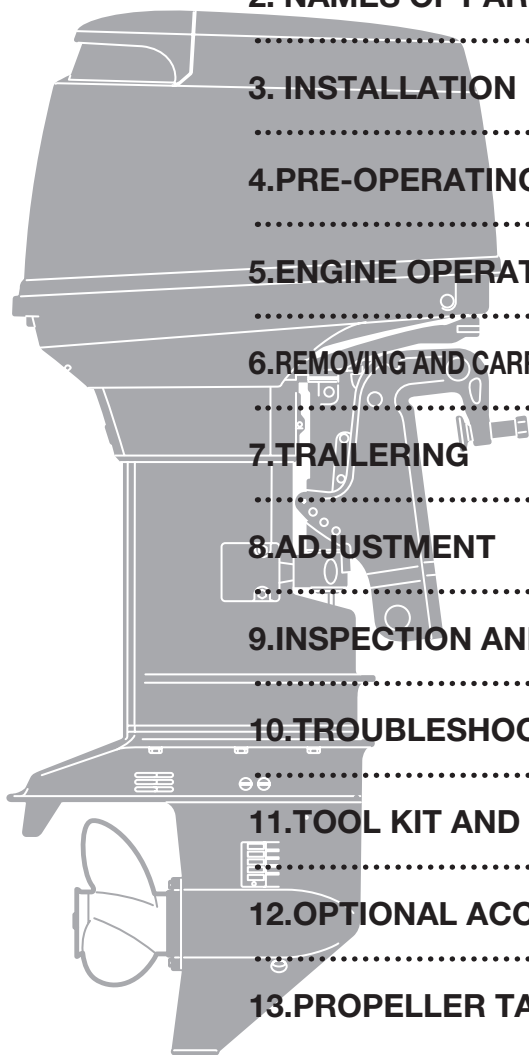
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12. OPTIONAL ACCESSORIES

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GENERAL SAFETY INFORMATION

NOTICE : DANGER/WARNING/CAUTION/Note

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

DANGER

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

WARNING

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

CAUTION

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

Note

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

EMERGENCY STOP SWITCH

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

We highly recommend use of the Emergency Stop Switch tether.

WARNING

Accidental activation of the Emergency Stop Switch (such as the tether being pulled out in heavy seas) could cause passengers to lose their balance and even fall overboard, or it could result in loss of power in heavy seas, strong currents, or high winds. Loss of control while mooring is another potential hazard.

To minimize accidental activation of the Emergency Stop Switch, the 500 mm (20 inch.) stop switch tether is coiled and can extended to a full 1,300 mm (51 inch.).

SAFE OPERATION OF BOAT

As the operator/driver of the boat, you are responsible for the safety of those aboard and those in other boat around yours, and for following local boating regulations. You should be thoroughly knowledgeable on how to correctly operate the boat, outboard motor, and accessories. To learn about the correct operation and maintenance of the outboard motor, please read through this manual carefully.

It is very difficult for a person standing or floating in the water to take evasive action should he or she see a power boat heading in his /her direction, even at a slow speed. Therefore, when your boat is in the immediate vicinity of people in the water, the outboard motor should be shifted to neutral and shut off.



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.

SERVICING, REPLACEMENT PARTS & LUBRICANTS

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

MAINTENANCE

As the owner of this outboard motor, you should be acquainted with correct maintenance procedures. It is the operator's responsibility to perform all safety checks and to ensure that all lubrication and maintenance instructions are complied with for safe operation. Please comply with all instructions concerning lubrication and maintenance. You should take the engine to an authorized dealer or service shop for periodic inspection at the prescribed intervals.

Correct periodic maintenance and proper care of this outboard motor will reduce the chance of problems and limit overall operating expenses.

MOUNTING

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

SPECIFICATIONS

40D2 50D2 MF, EF, EFO

Item		MODEL	40D2 50D2		
			MF	EF	EFO
Overall Length	mm (in)	1,143 (45.0)			
Overall Width	mm (in)	384 (15.1)			
Overall Height S-L-UL	mm (in)	1,225 (48.2) · 1,352 (53.2) · 1,479 (58.2)			
Transom Height S-L-UL	mm (in)	403 (15.9) · 530 (20.9) · 657 (25.9)			
Weight	S kg (lb)	72 (159)	-	-	
	L kg (lb)	73.5 (162)	78.5 (173)	80 (176)	
	UL kg (lb)	75 (165)	-	81.5 (180)	
Output	kW (Hp)	40D2 : 29.4 (40), 50D2 : 36.8 (50)			
Max. Operating Range	rpm	40D2 : 5,000-5,700, 50D2 : 5,150-5,850			
Number of Cylinders		3			
Piston Displacement	mL (Cu in)	697 (42.53)			
Bore x Stroke	mm (in)	68 × 64 (2.68 × 2.52)			
Exhaust System		Through hub exhaust			
Engine Lubrication		Premixed Fuel		Auto mixing	
Fuel mixing Ratio		50 : 1		120 : 1-50 : 1	
Cooling System		Forced water cooling			
Starting System		Manual	Electric starter motor		
Ignition System		Flywheel Magneto C.D. Ignition			
Spark Plugs		40D2 : NGK B7HS-10/BR7HS-10 50D2 : NGK B8HS-10/BR8HS-10			
Alternator		12V, 130W (12V, 11A)			
Trim Position		6			
Engine Oil		Genuine Motor Oil or recommended one (TCW-III)			
Gear Oil		Genuine Gear Oil or API GL5, SAE #80 to #90, approx. 500mL			
Fuel Tank Capacity	L (US gal)	25 (6.6)			
Engine Oil Capacity	L (US gal)	-		Approx. 2.0 (0.53)	
Gear Reduction Ratio		1.85 (13 : 24)			
Fuel		Unleaded regular gasoline pump posted 87 Octane (research octane rating of 91)			

Remark: This specifications might change without a previous notice.

40D2 50D2 EFTO, EPO, EPTO

Item		MODEL	40D2 50D2		
			EFTO	EPO	EPTO
Overall Length	mm (in)	1,143 (45.0)	630 (24.8)		
Overall Width	mm (in)	384 (15.1)	340 (13.4)	355 (14.0)	
Overall Height S-L-UL	mm (in)	1,225 (48.2) · 1,352 (53.2) 1,479 (58.2)	1,212 (47.7) · 1,339 (52.7) · 1,466 (57.7)		
Transom Height S-L-UL	mm (in)	403 (15.9) · 530 (20.9) · 657 (25.9)			
Weight	S kg (lb)	87.5 (193)	74.5 (164)	83.5 (184)	
	L kg (lb)	89 (196)	76 (168)	85 (187)	
	UL kg (lb)	90.5 (200)	77.5 (171)	86.5 (191)	
Output	kW (Hp)	40D2 : 29.4 (40), 50D2 : 36.8 (50)			
Max. Operating Range	rpm	40D2 : 5,000-5,700, 50D2 : 5,150-5,850			
Number of Cylinders		3			
Piston Displacement	mL (Cu in)	697 (42.53)			
Bore x Stroke	mm (in)	68 x 64 (2.68 x 2.52)			
Exhaust System		Through hub exhaust			
Engine Lubrication		Auto mixing			
Fuel mixing Ratio		120 : 1-50 : 1			
Cooling System		Forced water cooling			
Starting System		Electric starter motor			
Ignition System		Flywheel Magneto C.D. Ignition			
Spark Plugs		40D2 : NGK B7HS-10/BR7HS-10 50D2 : NGK B8HS-10/BR8HS-10			
Alternator		12V, 130W (12V, 11A)			
Trim Position		4	6	4	
Engine Oil		Genuine Motor Oil or recommended one (TCW-III)			
Gear Oil		Genuine Gear Oil or API GL5, SAE #80 to #90, approx. 500mL			
Fuel Tank Capacity	L (US gal)	25 (6.6)			
Engine Oil Capacity	L (US gal)	Approx. 2.0 (0.53)			
Gear Reduction Ratio		1.85 (13 : 24)			
Fuel		Unleaded regular gasoline pump posted 87 Octane (research octane rating of 91)			

Remark: This specifications might change without a previous notice.

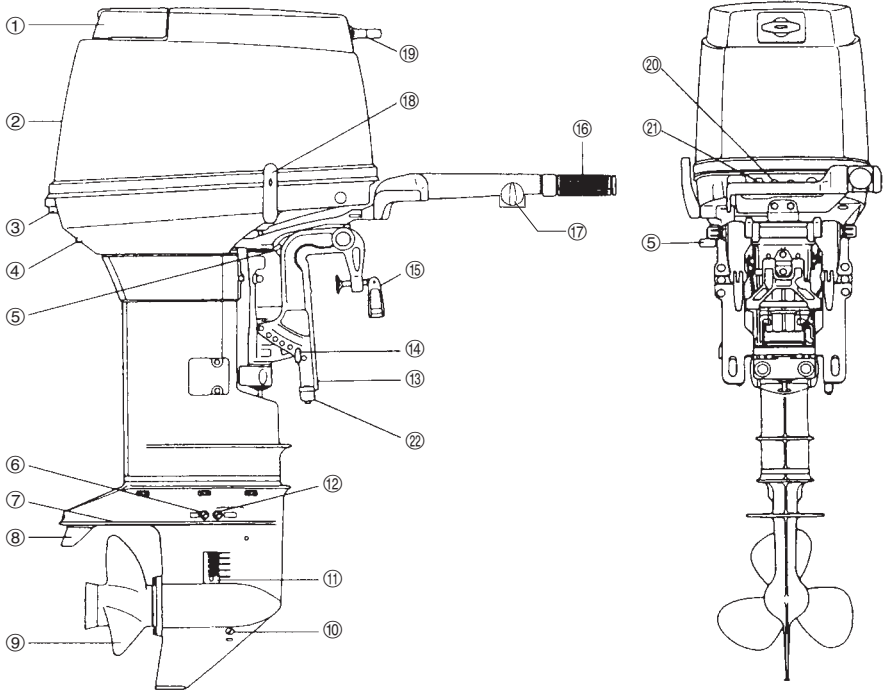
W50D2 MF, EPT, EPO

Item	MODEL	50D2		
		MF	EPT	EPO
Overall Length	mm (in)	1,145 (45.1)	630 (24.8)	
Overall Width	mm (in)	384 (15.1)	355 (14.0)	340 (13.4)
Overall Height L	mm (in)	1,413 (55.6)	1,410 (55.1)	
Transom Height L	mm (in)	550 (21.7)		
Weight L	kg (lb)	79 (174)	84 (185)	81.5 (180)
Output	kW (Hp)	36.8 (50)		
Max. Operating Range	rpm	5,150-5,850		
Number of Cylinders		3		
Piston Displacement	mL (Cu in)	697 (42.53)		
Bore x Stroke	mm (in)	68 x 64 (2.68 x 2.52)		
Exhaust System		Through hub exhaust		
Engine Lubrication		Premixed Fuel		Auto mixing
Fuel mixing Ratio		50 : 1		120 : 1-50 : 1
Cooling System		Forced water cooling		
Starting System		Manual	Electric starter motor	
Ignition System		Flywheel Magneto C.D. Ignition		
Spark Plugs		NGK B8HS-10/BR8HS-10		
Alternator		12V, 130W (12V, 11A)		
Trim Position		6	4	6
Engine Oil		Genuine Motor Oil or recommended one (TCW-III)		
Gear Oil		Genuine Gear Oil or API GL5, SAE #80 to #90, approx. 700mL		
Fuel Tank Capacity	L (US gal)	25 (6.6)		
Engine Oil Capacity	L (US gal)	-		Approx. 2.0 (0.53)
Gear Reduction Ratio		1.92 (12 : 23)		
Fuel		Unleaded regular gasoline pump posted 87 Octane (research octane rating of 91)		

Remark: This specifications might change without a previous notice.

■ NAMES OF PARTS

40D2MF/W50D2MF

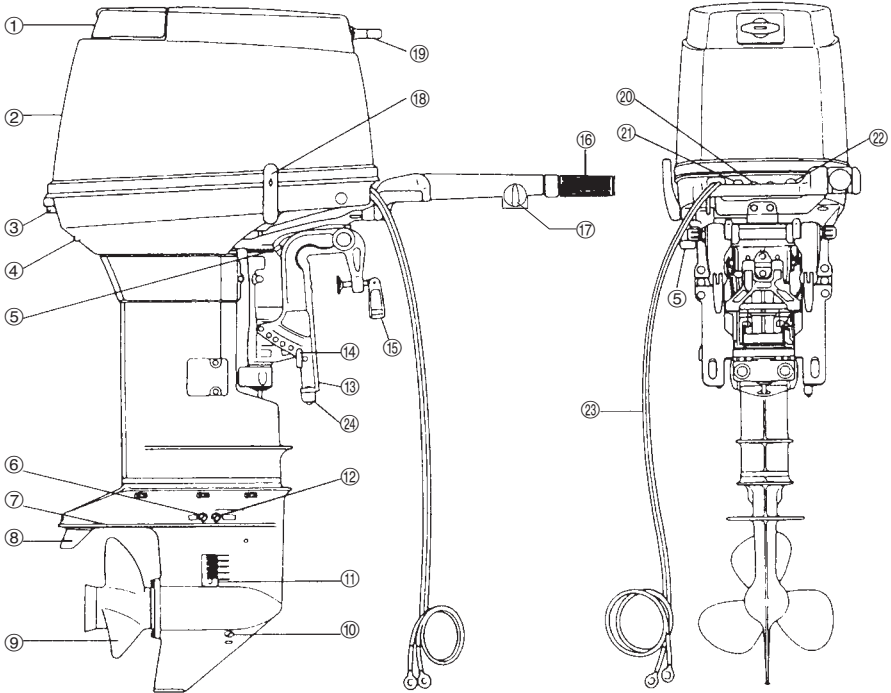


- ① Tilt Handle
- ② Top Cowl
- ③ Hook Lever
- ④ Water Check Port
- ⑤ Reverse Lock Lever
- ⑥ Water Plug
- ⑦ Anti-ventilation Plate
- ⑧ Trim Tab
- ⑨ Propeller

- ⑩ Oil Plug (lower)
- ⑪ Water Strainer
- ⑫ Oil Plug (upper)
- ⑬ Clamp Bracket
- ⑭ Thrust Rod
- ⑮ Clamp Screw
- ⑯ Throttle Grip
- ⑰ Adjust Nut
- ⑱ Shift Lever

- ⑲ Starter Handle
- ⑳ Stop Switch
- ㉑ Choke Knob
- ㉒ Anode

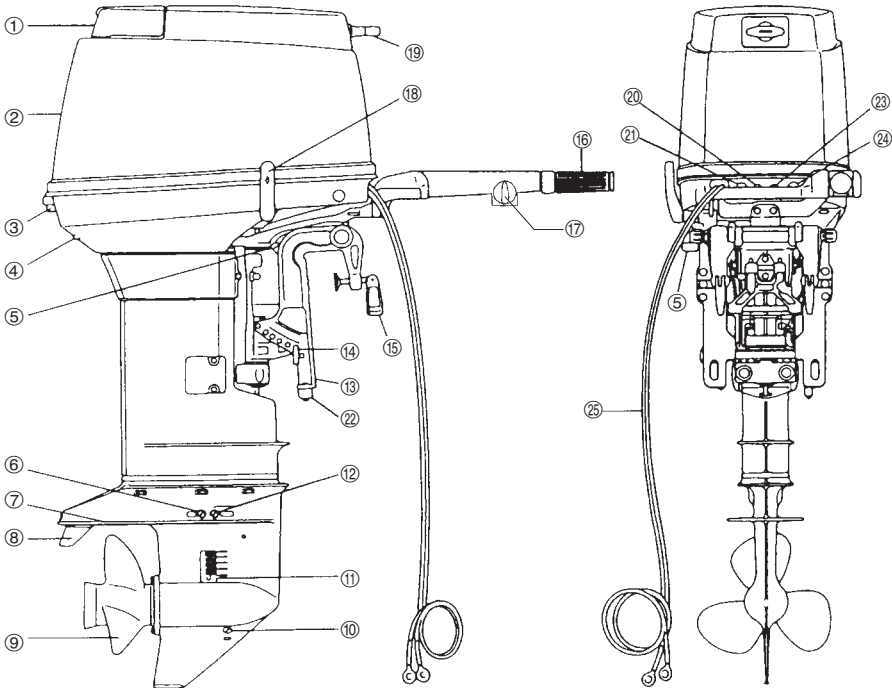
40D2EF/50D2EF



- | | | |
|--------------------------|--------------------|------------------|
| ① Tilt Handle | ⑩ Oil Plug (lower) | ⑲ Starter Handle |
| ② Top Cowl | ⑪ Water Strainer | ⑳ Stop Switch |
| ③ Hook Lever | ⑫ Oil Plug (upper) | ㉑ Choke Knob |
| ④ Water Check Port | ⑬ Clamp Bracket | ㉒ Main Switch |
| ⑤ Reverse Lock Lever | ⑭ Thrust Rod | ㉓ Battery Cords |
| ⑥ Water Plug | ⑮ Clamp Screw | ⑳ Anode |
| ⑦ Anti-ventilation Plate | ⑯ Throttle Grip | |
| ⑧ Trim Tab | ⑰ Adjust Nut | |
| ⑨ Propeller | ⑱ Shift Lever | |

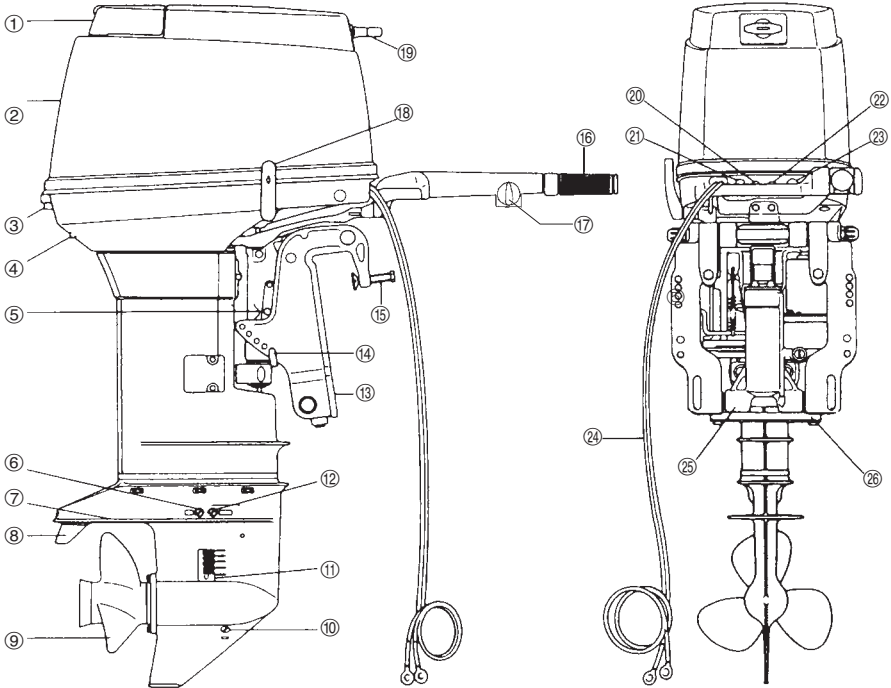
40D2EFO/50D2EFO

2



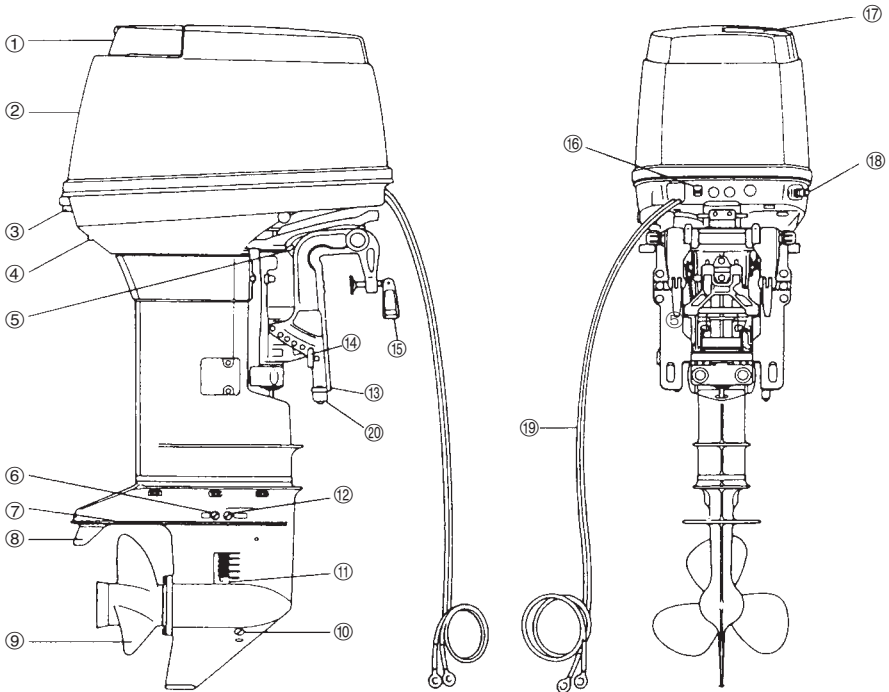
- | | | |
|--------------------------|--------------------|------------------|
| ① Tilt Handle | ⑩ Oil Plug (lower) | ⑲ Starter Handle |
| ② Top Cowl | ⑪ Water Strainer | ⑳ Stop Switch |
| ③ Hook Lever | ⑫ Oil Plug (upper) | ㉑ Choke Knob |
| ④ Water Check Port | ⑬ Clamp Bracket | ㉒ Anode |
| ⑤ Reverse Lock Lever | ⑭ Thrust Rod | ㉓ Pilot Lamp |
| ⑥ Water Plug | ⑮ Clamp Screw | ㉔ Main Switch |
| ⑦ Anti-ventilation Plate | ⑯ Throttle Grip | ㉕ Battery Cords |
| ⑧ Trim Tab | ⑰ Adjust Nut | |
| ⑨ Propeller | ⑱ Shift Lever | |

40D2EFTO/50D2EFTO



- | | | |
|--------------------------|--------------------|---------------------|
| ① Tilt Handle | ⑩ Oil Plug (lower) | ⑲ Starter Handle |
| ② Top Cowl | ⑪ Water Strainer | ⑳ Stop Switch |
| ③ Hook Lever | ⑫ Oil Plug (upper) | ㉑ Choke Knob |
| ④ Water Check Port | ⑬ Clamp Bracket | ㉒ Pilot Lamp |
| ⑤ Reverse Lock Lever | ⑭ Thrust Rod | ㉓ Main Switch |
| ⑥ Water Plug | ⑮ Clamp Screw | ㉔ Battery Cords |
| ⑦ Anti-ventilation Plate | ⑯ Throttle Grip | ㉕ Power Trim & Tilt |
| ⑧ Trim Tab | ⑰ Adjust Nut | ㉖ Anode |
| ⑨ Propeller | ⑱ Shift Lever | |

40D2EPO/50D2EPO



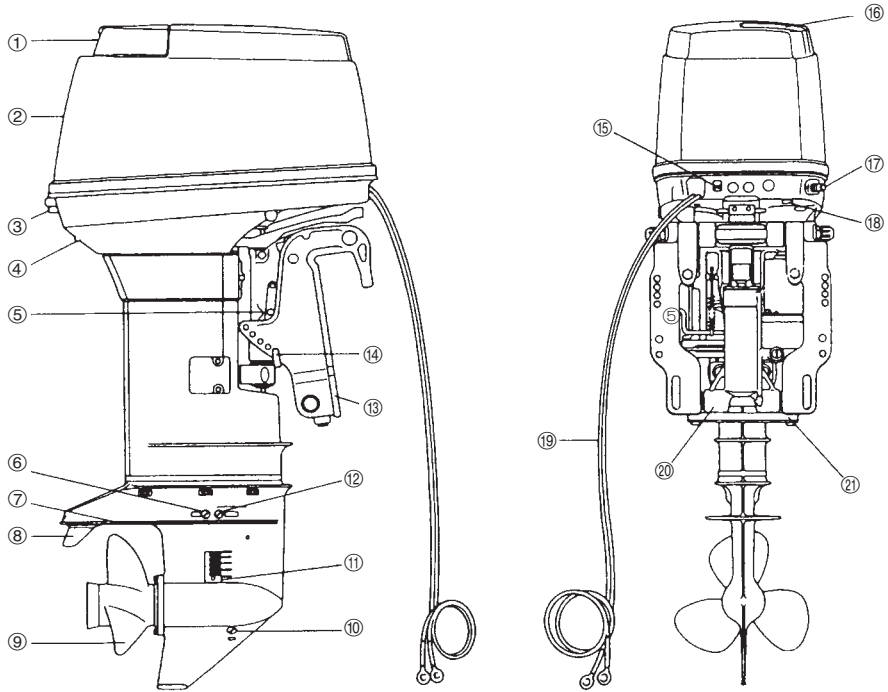
2

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

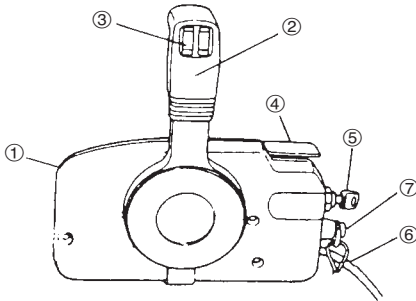
- ⑩ Oil Plug (lower)
- ⑪ Water Strainer
- ⑫ Oil Plug (upper)
- ⑬ Clamp Bracket
- ⑭ Thrust Rod
- ⑮ Clamp Screw
- ⑯ Choke Knob
- ⑰ Filler Lid
- ⑱ Fuel Connector

- ⑲ Battery Cords
- ⑳ Anode

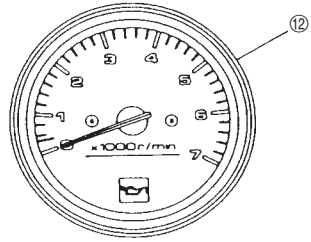
40D2EPTO/50D2EPTO



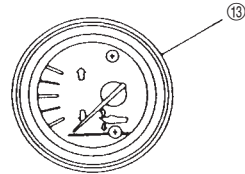
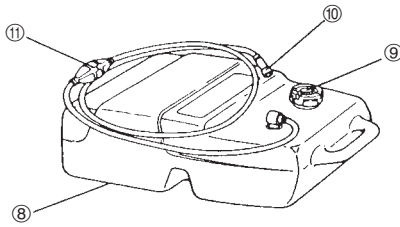
- | | | |
|--------------------------|----------------------------|---------------------|
| ① Tilt Handle | ⑩ Oil Plug (lower) | ⑲ Battery Cords |
| ② Top Cowl | ⑪ Water Strainer | ⑳ Power Trim & Tilt |
| ③ Hook Lever | ⑫ Oil Plug (upper) | ㉑ Anode |
| ④ Water Check Port | ⑬ Clamp Bracket | |
| ⑤ Reverse Lock Lever | ⑭ Thrust Rod | |
| ⑥ Water Plug | ⑮ Choke Knob | |
| ⑦ Anti-ventilation Plate | ⑯ Filler Lid | |
| ⑧ Trim Tab | ⑰ Fuel Connector | |
| ⑨ Propeller | ⑱ Power Trim & Tilt Switch | |



for P Type



for P Type



for T Type

- | | |
|----------------------------|------------------|
| ① Remote Control Box | ⑩ Fuel Connector |
| ② Remote Control Lever | ⑪ Primer Bulb |
| ③ Power Trim & Tilt Switch | ⑫ Tachometer |
| ④ Neutral Warm-up Lever | ⑬ Trim meter |
| ⑤ Main Switch | |
| ⑥ Harness B | |
| ⑦ Stop Switch | |
| ⑧ Fuel tank | |
| ⑨ Air Vent Screw | |

INSTALLATION

1. Mounting the outboard motor on boat

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.

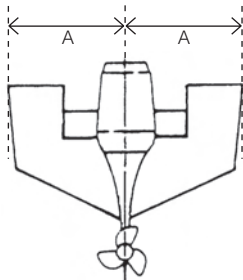
Note

Consult your authorized dealer to receive the proper instructions or ask your dealer to mount the motor as necessary.

Installation

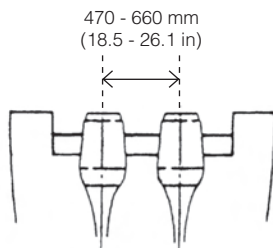
■ Single-engine Installation

Position the outboard engine at the exact center of the stern, and mount it using a cushioning pad or plate.



■ Twin-engine Installation

When installing two outboard engines, be sure to keep an interval of approximately 470 - 660 mm (18.5 - 26 in) between the two.

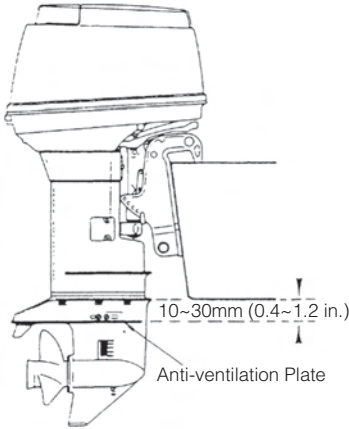


CAUTION

- 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 engine to such conditions for extended periods can lead to severe engine damage.

■ Transom Height

Install the engine with the Anti-ventilation Plate at a level 10~30mm(0.4~1.2in.) below the bottom of the boat.



■ Transom Matching

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

! CAUTION

Overheating may occur if the Anti-ventilation Plate is at a level higher than the bottom of the boat, as a result of a lack of cooling water.

If the height difference exceeds 10~30mm (0.4~1.2 in) engine power performance is likely to be reduced as a result of increased water resistance to the gear case assembly.

■ Attaching the Clamp Bracket

After positioning the Clamp Bracket, fix it with clamp screw then drill four holes in the transom board, matching the holes in the Clamp Bracket. Secure the engine with the supplied bolts (M12×105mm) and nuts. Be sure to use the washers. Use the larger diameter washers inside of the transom board and use the small diameter washers outside of the clamp bracket.

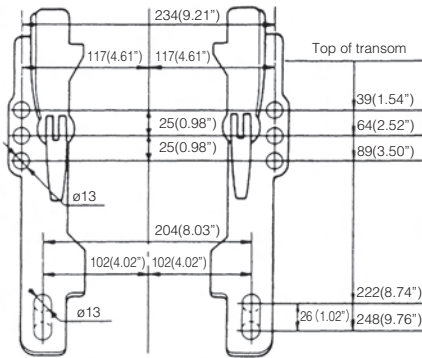
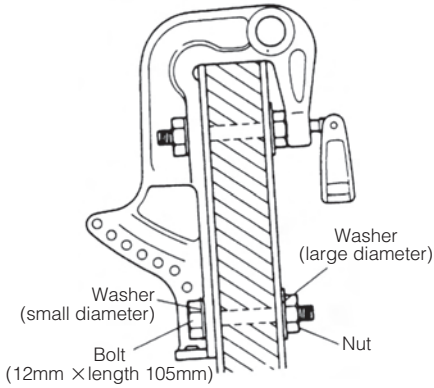
The mounting holes may be drilled beforehand by referring to the dimensional drawing.

! WARNING

- Mounting the outboard motor without following this manual can lead to unsafe conditions such as poor maneuverability, going out of control or fire disaster.
- 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 (3.0kgf) 13ft-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 (3.0kgf) 13ft-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.

Clamp Bracket
Dimensional Drawing

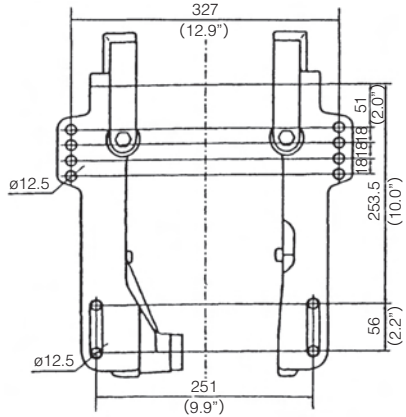
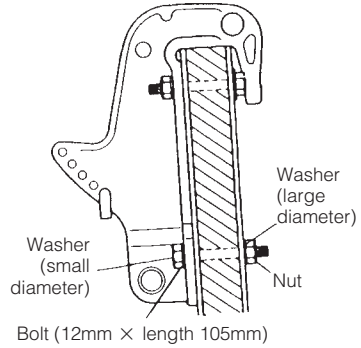
■ Manual tilting type
F, EF, EFO, EPO



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.

■ with the Power Trim and Tilt type
EFTO, EPTO



○ Notes

1. Apply sealing agent such as silicon sealer between bolts and transom board holes before tightening bolts.
2. Be sure to tighten mounting bolt nuts to specified torque.

2. Propeller Selection

A propeller must be selected so that the engine rpm measured at wide open throttle while cruising is within the max. operating range;

40D2 : 5,000 to 5,700 rpm

50D2 : 5,150 to 5,850 rpm

For genuine propellers, refer to Propeller Table of this manual.

3. Installing the remote control devices

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.

■ Installation of the Remote Control Cables (Box side) :

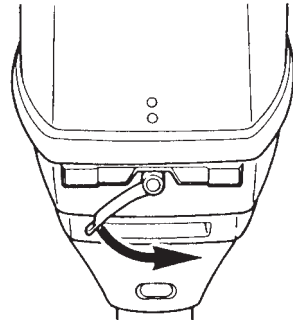
Follow the instruction manual provided with the remote control box.

■ Installation of the Remote Control Box on your boat :

Follow the instruction manual provided with the remote control box.

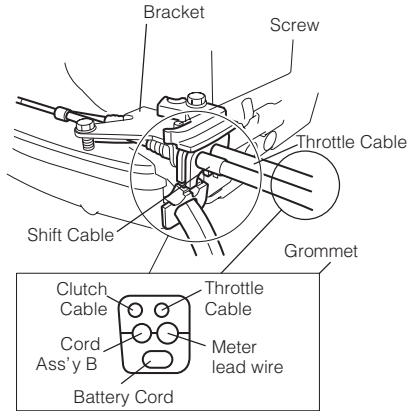
■ Connecting the Remote Control Cable to the engine :

- ① Detach the top cowl by turning the lever.



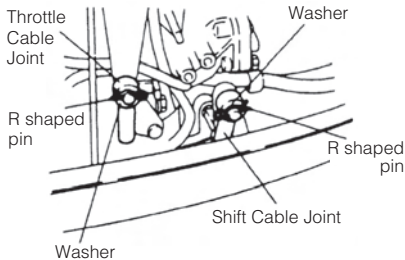
- ② Detach the bracket and set Cable Harness B and Remote Control Cables.

Having fixed the Remote Control Cables to the bracket, tie them to the bottom cowl.

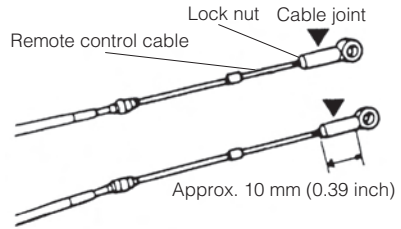


CAUTION
Be careful not to loop the remote control cables to a diameter of 406 mm (16 inches) or less.

- ③ Detach the throttle and shift cable joints by removing the R-shaped pins.

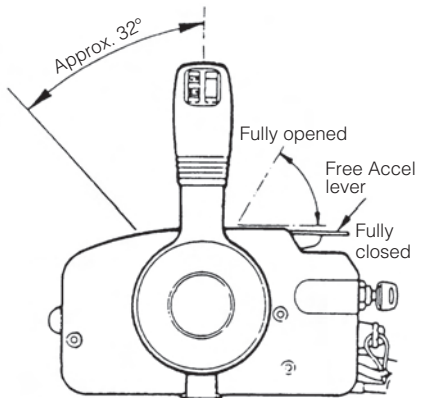


- Thread at least 15mm (0.59 in.) of the remote Control Cables through the terminal eyes. Securely lock the terminal eyes with lock nuts.



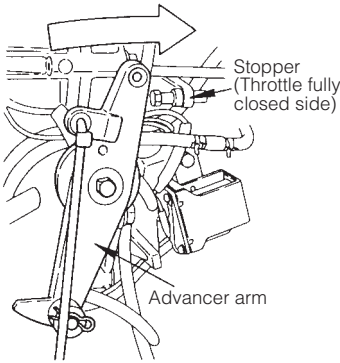
- ④ Move the Remote Control lever Forward, to Neutral and to Reverse to confirm the shift is working, and then set the lever no Neutral.

- Double-check that the Remote Control Cables, the throttle cable and shift cable have been connected correctly. Move the Remote Control Lever Forward until the first engaging point (approx 32°). The cable which is moved first when the lever is turned is a shift cable. Check that the shift lever is in Neutral and the Free

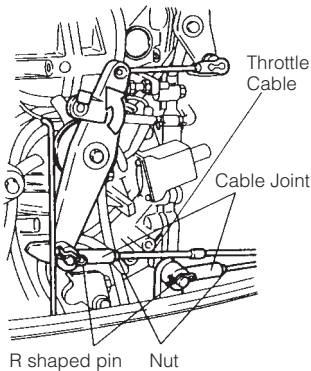


Accel lever is fully closed when the remote control cables have been connected.

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

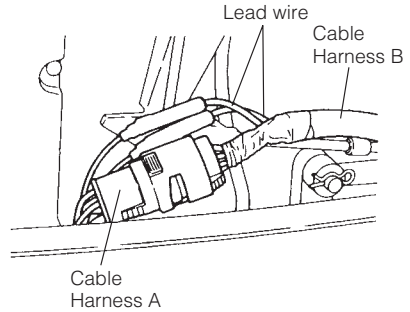



- ⑤ Adjust cable joint until the hole meets with the Advancer Arm pin. After adjustment lock a cable joint with a nut and secure with R-shaped pin.



Connecting Cords and cable

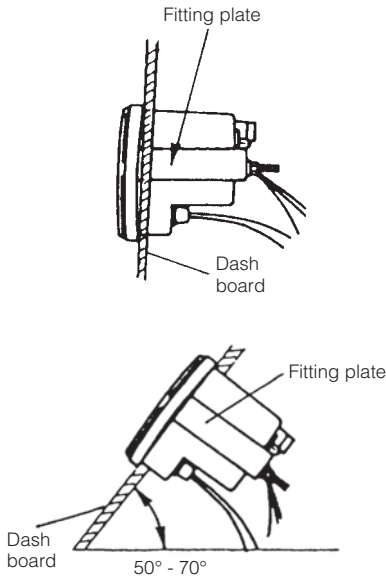
- ① Connect cable harness B to cable harness A.
- ② Connect pink and light blue leads from cable harness A and B to each other.



 CAUTION
<p>Do not disconnect the electric couplers while the engine is running, as this will damage the C.D. unit and could result in a serious electric shock.</p>

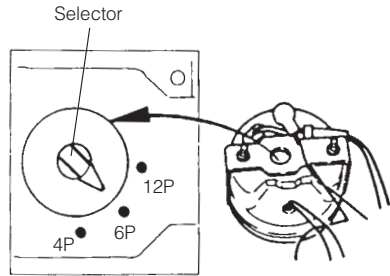
4. Installing the meters

Install the meters securely in the dashboard where they can be easily read and are not exposed to water splashes. The recommended dashboard thickness is 2~11mm(0.08~0.4 in.). For dashboards thicker than 11mm(0.4 in.), the fitting plate should be cut accordingly. Be sure to tighten the fitting nuts on the fitting plate evenly.

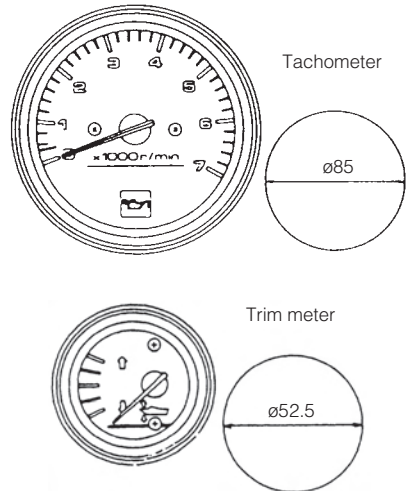


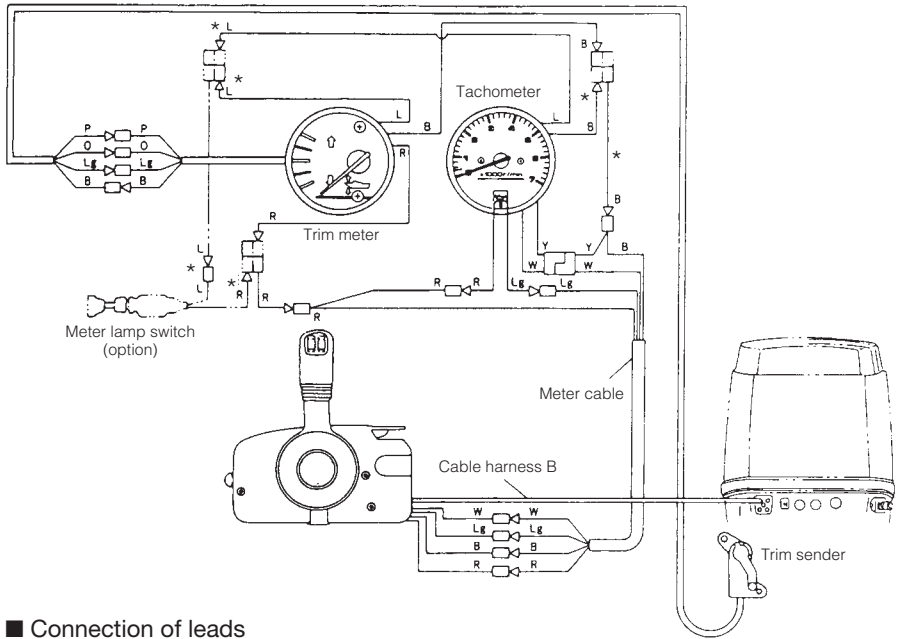
The dashboard inclination should be 50°~70°

All models of the 40D2 and 50D2 series have six electric poles. Set the tachometer selector knob to "6P".



Cut holes with 85mm (3.346 in.) diameter for the tachometer and 52.5mm (2.067 in.) for the trim meter.





■ Connection of leads

Tachometer : EPO EPTO

Trim meter : EPTO

Trim sender : EPTO

■ Color Code

- B : black
- L : blue
- Lg : light green
- O : orange
- P : pink
- R : red
- Sb : sky blue
- W : white
- Y : yellow

○ Note

The parts of * mark is to be wired when a Meter Lamp Switch (option) is fixed.

5. Installing the drag link assembly

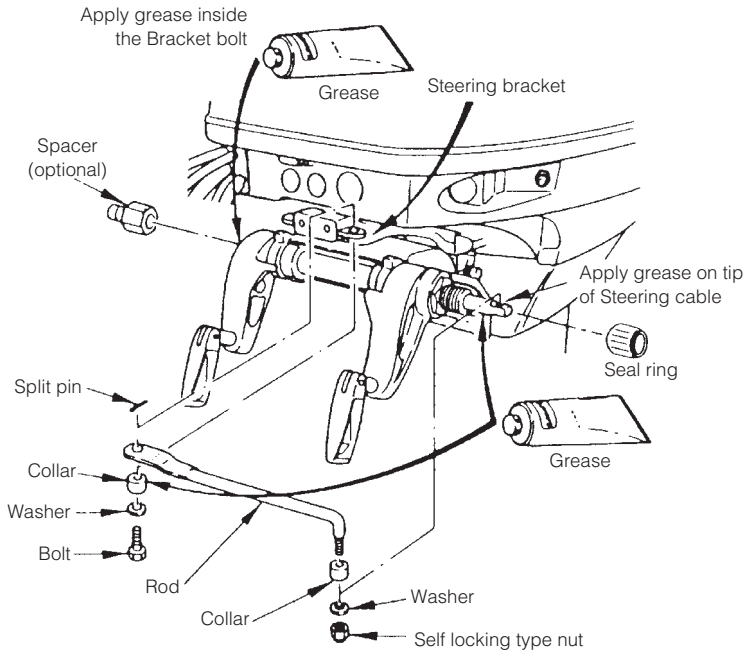
Incorrect or unstable installation of the Drag Link Assembly can result in accidents while riding the boat or breakage of the hull.

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

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

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

Note
Apply grease in required places. (Refer to the illustration below)
Apply grease inside the bracket bolt.



6. Installing the battery

- 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.

Note

Minimum recommended battery : 12V, 70AH (800 Marine Cranking Amps (MCA) or 650 Cold Cranking Amps (CCA))

Specifications and features of batteries vary among the manufacturers. Consult the manufacturer for details.

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 attached to eye, loss of sight. Use safety glasses and rubber gloves.

In case battery electrolyte is comes in contact with:

- Skin, flush thoroughly with water.
- Eye, flush thoroughly with water, and then seek immediate receive medical treatment.

In case battery electrolyte is swallowed:

- Seek immediate medical treatment.

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 when handling the battery.
- Do not smoke near the battery when the battery is charging.

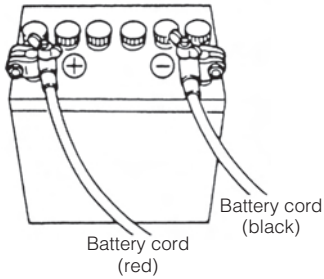
CAUTION

- Make sure that the battery cords do not get stuck between the outboard motor and boat when turning, etc.
- The starter motor may fail to operate if the cords are incorrectly connected.
- Be sure to correctly connect the (+) and (-) cords. If not, the charging system will be damaged.
- Do not disconnect the battery cords from battery while the engine is operating, the electrical parts could be damaged.
- Always use a fully charged battery.

CAUTION

Do not use a battery that is not recommended. Use of a battery not recommended can lead to poor performance of, and/or damage to, the electrical system.

- 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.



3



PRE-OPERATING PREPARATIONS

DANGER

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

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

When carrying a fuel tank containing gasoline:

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

When or before refueling :

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

When or before cleaning the gasoline tank :

- Dismount fuel tank from the boat.
- Place the fuel tank away from every source of ignition, such as sparks or open flames.
- Do the work outdoors or in well ventilated area.
- Wipe up any spilled gasoline immediately.

After cleaning gasoline tank :

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

1. Recommended gasoline types

CAUTION

Use of low-quality gasoline results in a short engine life as well as starting difficulties and other engine problems. We recommend use for Fuel stabilizer.

Use of unleaded gasoline

Use a major brand of automotive unleaded gasoline with a minimum posted octane rating of 91RON. Automotive gasoline that contain fuel injector cleaner are preferred for added internal engine cleanliness. Leaded gasoline is acceptable in areas where unleaded gasoline is not available.ere unleaded gasoline is not available.

Use of alcohol free gasoline

CAUTION

Use of gasoline containing alcohol can cause engine starting and/or operating difficulties, wear of and damages to engine parts, and deterioration of chemical parts, which may lead to shortening of your outboard motor's life.

Note

The adverse effect caused by the alcohol content is more severe with methanol than with ethanol.

TOHATSU recommend the use of gasoline if its ethanol content is less than 10% or methanol content is less than 5%, only in case alcohol free gasoline is not available.

The alcohol component of the gasoline absorbs moisture from the air, which may disturb regular fuel flow in the fuel system, and also accelerate rusting of engine parts.

Mixing of the moisture in the engine oil can also deteriorate the properties of the lubricant.

If the use of gasoline containing alcohol is inevitable, or presence of alcohol is suspected in the gasoline, it is strongly recommended to add a filter that has water separating capability, and check the fuel system for leaks and mechanical parts for corrosion and abnormal wear more frequently.

And, in case any of such abnormality is found, discontinue the use of such gasoline and contact our dealer immediately.

Damages resulting from the use of gasolines that contain alcohol are not covered under the limited warranty.

Fuel tank capacity : 25 liters (6.6 U.S. gal)

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

WARNING

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

2. Recommended engine oil

Use a genuine engine oil or recommended one. Refer to your Distributor.

Will not recommend use of other two stroke engine oil.

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.

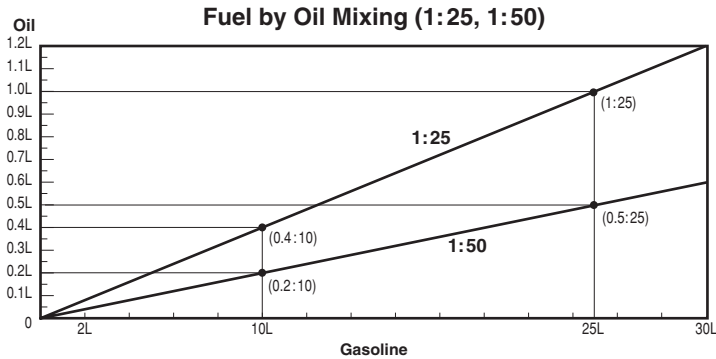
Note

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

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

Mixing Ratio

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



Engine oil – gasoline mixing procedure

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

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.

■ 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.

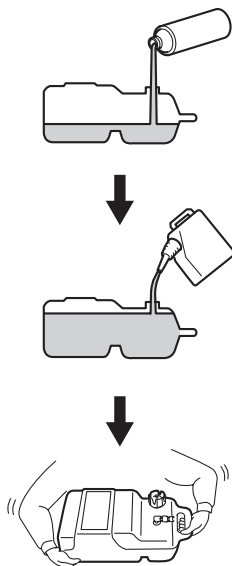
WARNING

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.



- 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.

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.

2 Auto-mixing model
EFO/EFTO/EPO/EPTO

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.

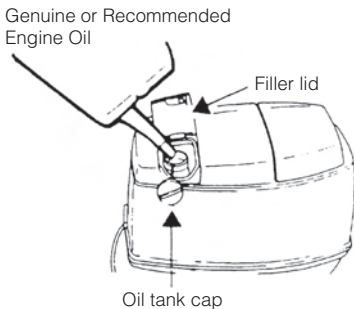
⚠ CAUTION
During break-in of the engine, engine oil must be added to the fuel gasoline in addition to the oil which is automatically supplied from the oil tank.

Mixing Ratio (during break-in on auto-mixing models)

	Engine Oil : Gasoline
During break-in	1 : 25
After break-in	Automatic. Fill up engine oil tank regularly

■ Replenishing oil in the engine oil tank.

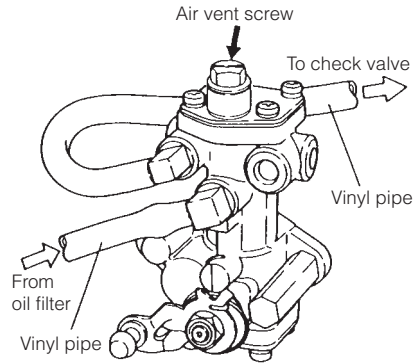
- ① Open the filler lid of the upper cowl.
- ② Remove the oil tank cap.
- ③ Fill up the tank with Genuine Engine Oil or recommended oil.



■ 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.




○ Note

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

3. 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.

 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.

	1-10min	10min-2hrs	2-3hrs	3-10hrs	After 10hrs
Throttle Position	Idle	Less than 1/2 throttle	Less than 3/4 throttle	3/4 throttle	Full throttle available
Speed		Approx. 3,000 rpm max	Full throttle run allowed for 1 min every 10 min	Approx. 4,000 rpm. Full throttle run allowed for 2 min every 10 min	


Note

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

Fuel mix ratio for break-in

Gasoline 25: Genuine Engine Oil 1

- 25:1 when using genuine engine oil or the recommended one (TCW3).

 DANGER

Do not operate the outboard motor in closed area or area with no forced ventilation.

Exhaust gas emitted by this outboard motor contains carbon monoxide that will cause death if inhaled continuously. Inhaling the gas initially causes symptoms such as feeling of sickness, drowsiness and headache.

During operation of the outboard motor :

- Keep peripheral area well ventilated.
- Always attempt to stay on the windward side of emission.

4. Warning system

■ Alarm for Low Engine Oil Level

If the level in the oil tank falls below 0.4 liters (0.105 U.S. gal.) the Low Engine Oil alarm will be triggered.

The engine oil tank capacity is 2 liters (0.53 U.S. gal.)

EPO/EPTO

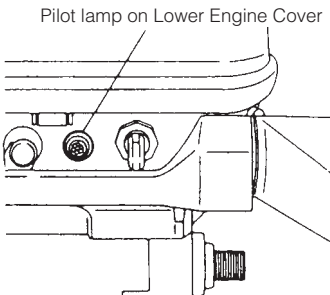
The pilot lamp in the tachometer lights and the buzzer in the Remote Control Box sounds if the engine oil level falls below 0.4 liters (0.105 U.S. gal.)

EFO/EFTO

The pilot lamp on the front portion of the lower engine cover lights if the engine oil level falls below 0.4 liters (0.105 U.S. gal.)



Pilot lamp in tachometer



Pilot lamp on Lower Engine Cover

■ Resetting the low oil level alarm

Reduce engine speed to trolling rpm and steer towards a safe area with calm water. Set the Remote Control Lever to Neutral (buzzer will stop).

Turn off the ignition switch, and fill up the oil tank with recommended engine oil.

Start the engine, and move the Remote Control Lever Forward carefully.

Confirm that the indicator lamp goes out and the buzzer does not sound.

■ Overheat buzzer and sensor (OPTION)

The overheat buzzer will sound if the engine temperature exceeds the preset level. The engine speed will drop automatically.

If the buzzer sounds, indicating overheating, immediately move the Remote Control Lever to Neutral. Confirm that cooling water is discharged from the check port, and then stop the engine. Turn the main switch key "OFF".

Remove dirt and other foreign matter clogging the water inlets on the gear case.

○ Note

If the buzzer sounds frequently after restarting the engine, please contact your service shop.

ENGINE OPERATION

1. Starting

WARNING

In case engine starts in gear, do not start cruising. Stop engine immediately and consult an authorized dealer.

Note

The engine will not start unless the switch lock has been properly connected into the emergency stop switch.

WARNING

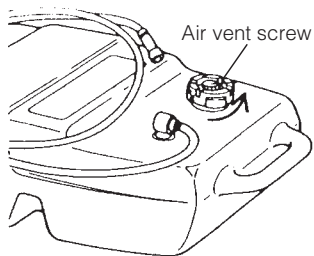
Do not operate the engine with gear case out of water.
Severe personal injury, or engine damage will result.

CAUTION

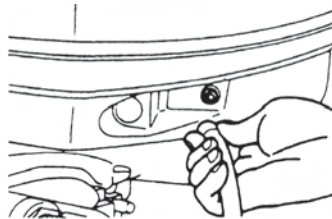
Never fill up portable fuel tanks on board to avoid fire or explosion resulting from spilled gasoline. If gasoline is ever spilled on board, wipe it up thoroughly. Fuel tanks must always be filled up on land.

Preparations

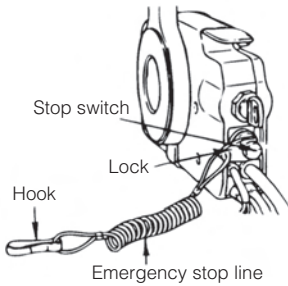
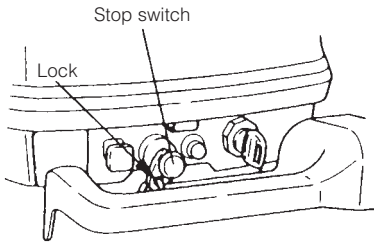
- ① Loosen the air vent screw on the tank cap.



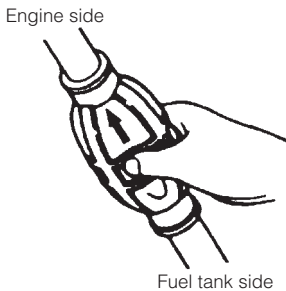
- ② Connect the fuel connector to the engine.



- ③ Install a lock in the stop switch.



- ④ Feed fuel to the carburetor by squeezing the primer bulb until firm.



Starting

■ F type

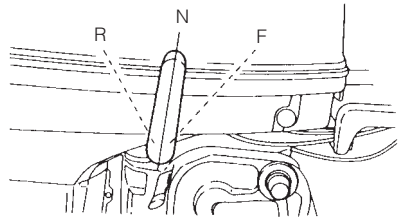
- ① Set the shift lever to Neutral

⚠ CAUTION

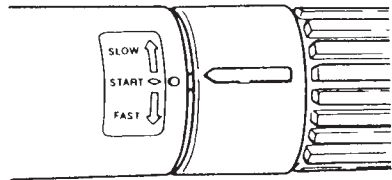
If the engine starts in gear, do not use it. Contact an authorized dealer.

○ Note

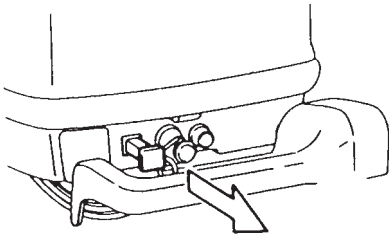
Start-in-gear protection prevents engine from starting at other than neutral shift. In-gear starting of engine will move the boat immediately, potentially leading to falling down or causing passenger(s) to be thrown overboard due to inertial force.



- ② Turn the throttle grip so that the indicator line meets the "START" mark.



- ③ Pull the choke knob fully.

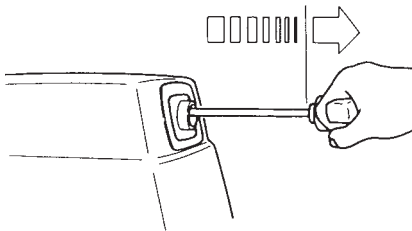


○ Note

Operation of the choke knob is not required if the engine is warm.

5

- ④ Pull the starter rope slowly until resistance is met. Give it a sharp tug to start the engine.



- ⑤ Turn the handle grip to its original position gradually once the engine has started.
- ⑥ Push back the choke knob slowly.
- ⑦ Carefully turn the throttle grip to "SLOW".

! WARNING

Do not operate the engine with gear case out of water. Severe personal injury, or engine damage will result.

■ EF, EFO, EFTO type

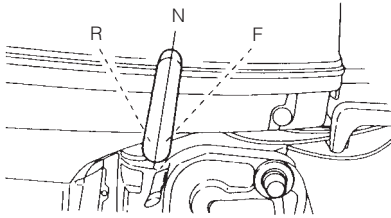
- ① Set the shift lever to Neutral

CAUTION

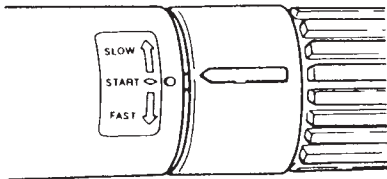
If the engine starts in gear, do not use it. Contact an authorized dealer.

○ Note

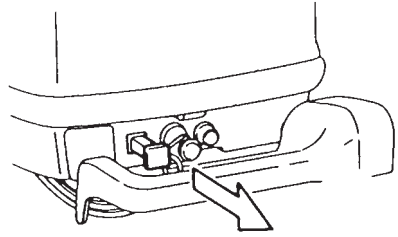
Start-in-gear protection prevents engine from starting at other than neutral shift. In-gear starting of engine will move the boat immediately, potentially leading to falling down or causing passenger(s) to be thrown overboard.



- ② Turn the throttle grip so that the indicator line meets the "START" mark.



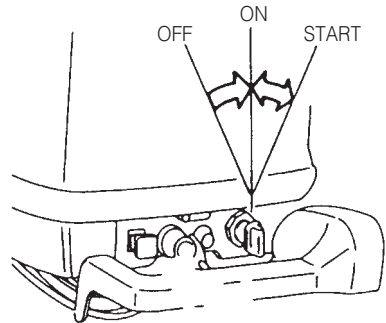
- ③ Pull the choke knob fully.



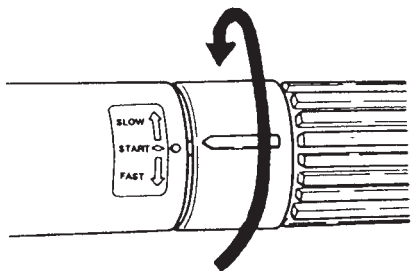
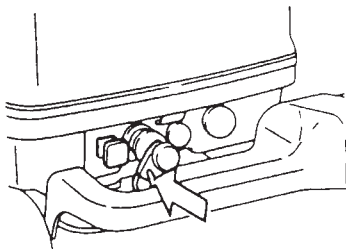
○ Note

Operation of the choke knob is not required if the engine is warm.

- ④ Turn the main switch key to ON. Continue turning the switch key clockwise to start the motor.



- ⑤ Release the main switch key as soon as the engine starts. The key will return to the "ON" position automatically.



5

⚠ WARNING

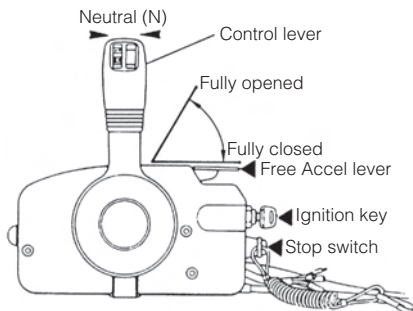
Do not operate the engine with gear case out of water. Severe personal injury, or engine damage will result.

⚠ 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.

■ EPO, EPTO type

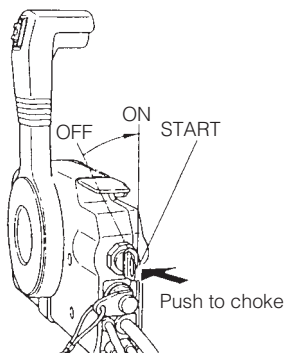
- ① Insert the key into the remote Control box.
- ② Set the Remote Control lever to Neutral (N), and move the Free Accel lever to Open.



○ Note

The free accel lever cannot be raised when the control lever shift is in Forward or Reverse.

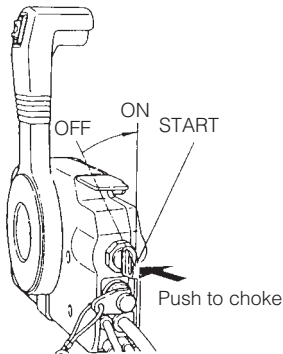
- ③ Turn the main switch key to "ON", and push on it for choke operation. (The key need not be pushed if the engine is warm.)



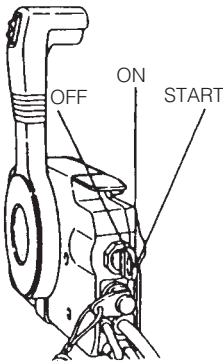
- ④ While keeping the key pressed, turn in to "START".

Note

If the engine is warm, there is no need to press the key for choking when turning it to "START".



- ⑤ When the engine starts, release the key and allow it to return to "ON".



WARNING

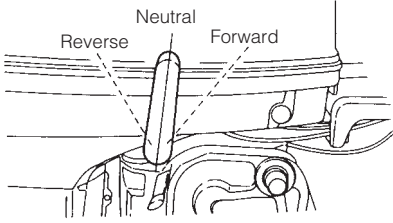
Do not operate the engine with gear case out of water. Severe personal injury, or engine damage will result.

CAUTION

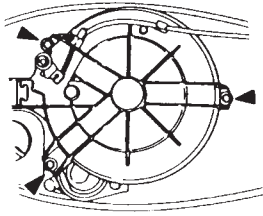
Do not keep turning starter motor for over 5 seconds, or the battery may be consumed, potentially making the engine starting impossible and/or damaging the starter. If cranking over 5 seconds fails to start engine, return main switch to "ON", and crank engine again after 10 seconds or more.

Manual Rope Start - - - in case of trouble with the Recoil Starter or the Electric Starter Motor

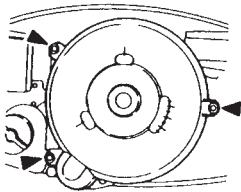
- ① Set the Shift lever or the Remote Control Lever to Neutral.



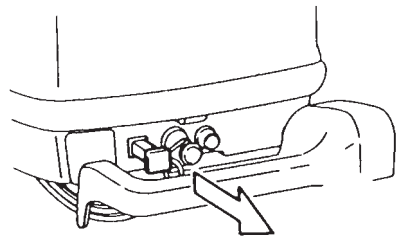
- ② Remove the Upper Engine Cover. Then,
 - Take off the Recoil Starter Assembly
F, EF, EFO, EFTO



- Take off the Flywheel Cover
EPO, EPTO

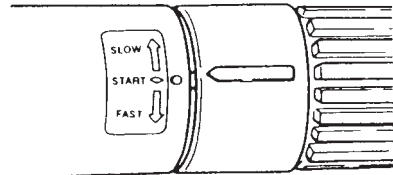


- ③ Pull the choke knob fully.



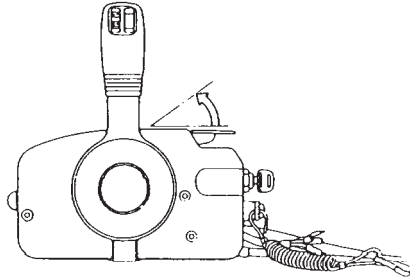
- ④-1 Turn the throttle grip so that the indicator line meets the "START" mark.

F, EF, EFO, EFTO



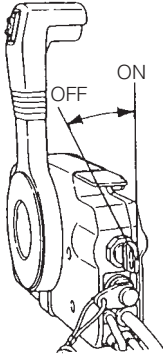
- ④-2 Lift up the free accelerator lever 1/3 to 1/2 of its stroke.

EPO, EPTO

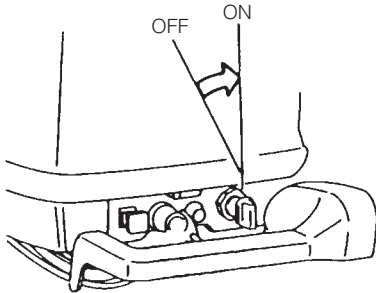


- ⑤ Turn the main switch key to "ON".

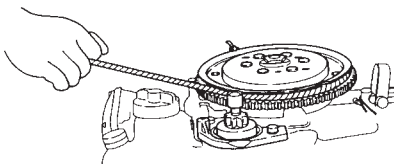
EPO, EPTO



F, EF, EFO, EFTO



- ⑥ Wind the starter rope around the flywheel a few turns. Give it a sharp tug to start the engine. Use a socket wrench or similar to get a firm grip on the end of the rope.



! WARNING

Be careful that your clothes or other items do not get caught in the rotating engine parts.

To prevent accident and injury, do not re-attach the recoil starter after the engine has been started using the emergency starter rope. Be sure to put the top cowl back on.

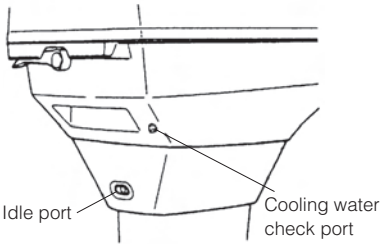
Immediately contact an authorized dealer when reaching shore.

! WARNING

- Be sure that no bystander(s) is within 2 meters from back of starting operator.
- Do not operate the outboard motor with top cowl removed from the power unit, or contacting turning flywheel which can lead to serious personal injury.

2. Warming up the engine

Before driving the boat, let the engine run at low speed for approximately three minutes to let it warm and allow the oil to circulate through the machine. If the engine is not warmed up beforehand, the engine life will shorten greatly. During the warm-up operation, confirm that cooling water is discharged from the check port and idle port.



! CAUTION

Be sure to warm up engine well before starting cruise. Operating cold engine can give damage to it.

Note

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

! 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.

■ Engine speed

Proper idle speed after warm-up operation.

Clutch in (In gear)	Clutch off (Out of gear)
750rpm	900rpm

! CAUTION

Do not shift to "F" or "R" until turning into proper idle speed.

Do not exceed the full-throttle engine speed.

Wide-open throttle rpm range
40D2 : 5,000~5,700rpm
50D2 : 5,150~5,850rpm

3. Forward and reverse

WARNING

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

WARNING

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

WARNING

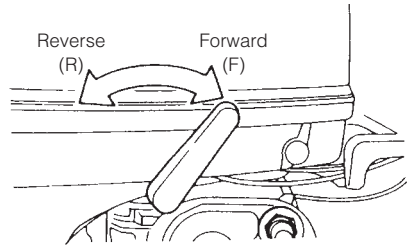
Be sure to connect the emergency tethered stop hook to your waist or clothing.
The engine will shut down when the switch lock becomes disconnected from the engine.

Note

Do not increase engine speed unnecessarily in reverse.

■ F, EF, EFO, EFTO type

Turn the throttle grip toward "SLOW" and move the Shift Lever quickly to Forward or Reverse when the engine speed has reached the lowest rpm.



WARNING

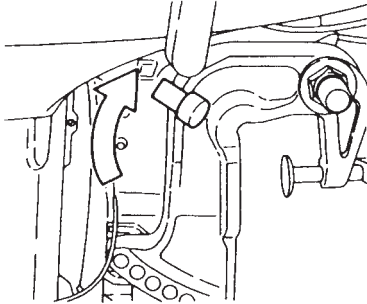
Severe damage, and personal injury, may occur if shifting at high engine speed.
Engine must be in the slow idle position before shifting is attempted.

WARNING

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

CAUTION

- Before moving the Shift Lever to Reverse, make sure the Reverse Lock is engaged (in up position).



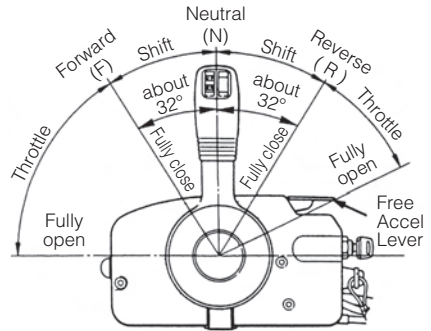
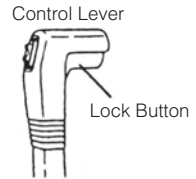
F, EF, EFO, EFTO

- Do not increase the engine speed unnecessarily while reversing.
- The Shift Lever cannot be turned from Neutral to Reverse unless the throttle grip has been turned fully toward "SLOW".

5

■ EPO, EPTO type

While pressing the lock button on the Remote Control lever upward, swiftly move the Lever to Forward (F) or Reverse (R) to the engaging point (approx.32° forward or backward from Neutral). If the lever is moved further forward or backward, the throttle will open.

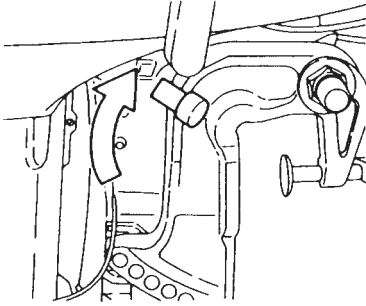


○ Note

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

⚠ CAUTION

- Before moving the Shift Lever to Reverse, make sure the Reverse Lock is engaged (in up position).



EPO, EPTO

- Do not increase the engine speed unnecessarily while reversing.

○ 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.

4. Shallow water running

WARNING

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

Note

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

WARNING

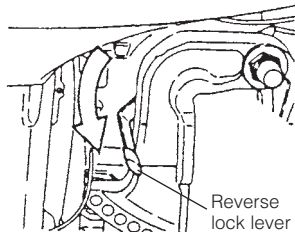
- Run at lowest possible speed during cruising using shallow water drive.
- Tilt lock is disabled when in shallow water drive position.
- When driving shallow water, be careful not to strike outboard motor against sea bottom, or propeller may be pushed out of water, resulting in loss of control.

CAUTION

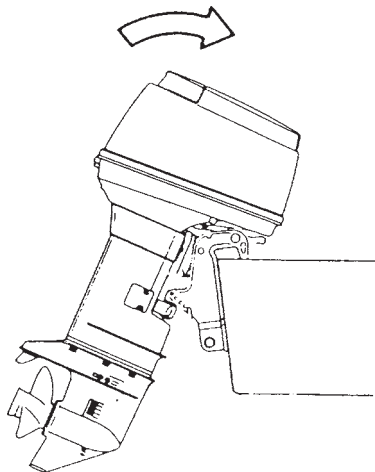
While in shallow water drive position, do not operate the outboard in reverse. Operate the outboard at slow speed and keep the cooling water intake submerged.

■ E, EF, EFO,EPO type

- ① Set the Reverse Lock Lever provided on the starboard side to "Release" by turning it downward.



- ② Tilt the engine up approx. 45° and lower it. The engine will now be set to the shallow water setting.



- ③ Releasing the shallow water setting
 - a. Turn the Reverse Lock Lever upward to set them in "LOCK" position.
 - b. Tilt up the engine slightly and then let it go down. The shallow water setting is then released.
 - c. The engine is released from shallow water setting, and locked at normal running position.

■ EFTO, EPTO type

Tilt up the engine using the Power Trim & Tilt system.

5. Stopping the engine

WARNING

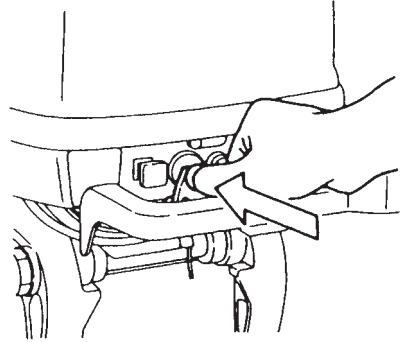
- Do not shift into Reverse during planning, or control will be lost leading to serious personal injury, boat may swamp, and/or hull may be damaged.
- Do not shift into Reverse during cruising, or control may be lost, falling down or causing passenger(s) to be thrown overboard. Leading to serious personal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

CAUTION

Never stop the engine immediately after a full throttle run. Keep it running for two or three minutes at idling speed (Shift Lever set to Neutral) to allow it to cool down.

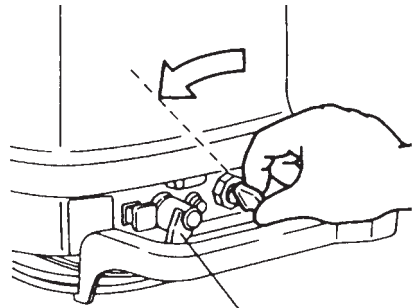
■ F type

- ① Reduce the engine speed to idling rpm.
- ② Keep pressing on the Stop Switch or pull out the lock plate/ The engine will then stop.



■ EF, EFO, EFTO type

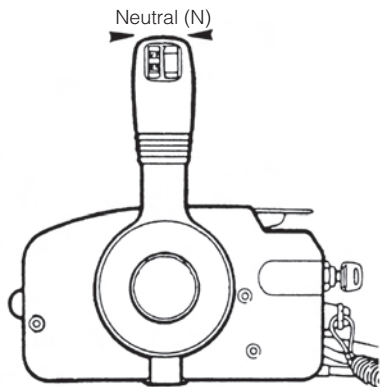
- ① Reduce the engine speed to idling rpm.
- ② Turn the Main Switch to "OFF", keep pressing on the Stop Switch or pull out the lock plate. The engine will then stop.



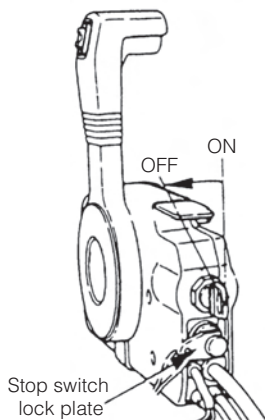
Stop switch lock plate

■ EPO, EPTO type

- ① Move the Remote Control lever to Neutral (N) and let the engine idle for 2-3 minutes to allow it to cool down.



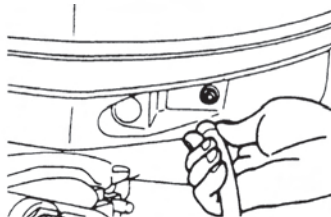
- ② Turn the main switch key counter-clockwise or pull out the stop switch. The engine will stop. The engine can also be stopped by pressing on the stop switch.



○ Notes

- After stopping the engine, close the air vent screw on the tank cap.
- Disconnect the fuel connector of the engine or the fuel tank.
- Disconnect the cables from the battery if the engine will not be used for an extended period of time.

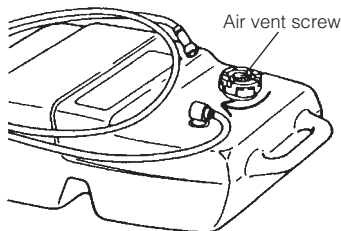
- ③ Disconnect the fuel connector from the engine.



⚠ CAUTION

Never fill up portable fuel tanks on board to avoid fire or explosion resulting from spilled gasoline. If gasoline is ever spilled on board, wipe it up thoroughly. Fuel tanks must always be filled up on land.

- ④ Close the air vent screw on the fuel tank cap.



6. Trim angle

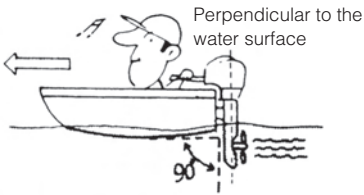
The following instructions explain how to set the best trim angle of the boat.

F, EF, EFO, EPO type

The trim angle is adjusted by setting the thrust rod in the correct thrust rod hole.

■ Proper trim angle

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



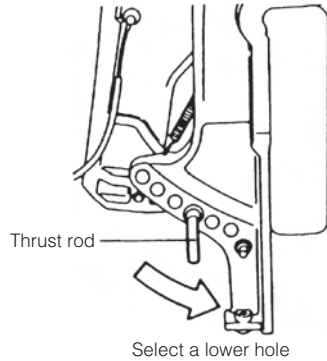
■ Improper trim angle (bow rises too high)

If the trim angle is excessive, the bow will rise out of the water and the speed will decrease.

Furthermore, the bow may sway or the bottom may slam the water while cruising.



In this case, decrease the trim angle by setting the thrust rod in a lower hole.

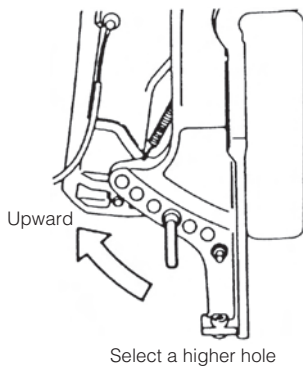


■ Improper Trim Angle (bow dips into the water)

If the trim angle is too small, the bow will dip into water, the speed will decrease, and water may enter the boat.

In this case, the trim angle should be increased by setting the thrust rod in a higher hole.





! WARNING

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

! WARNING

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

5

EFTO, EPTO type

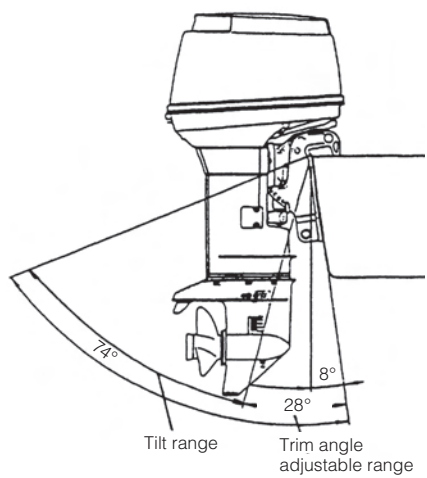
The Provided Power Trim & Tilt can be adjusted to set the desired trim angle of the outboard motor in relation to the transom shape, planing speeds and load. It is imperative that the trim angle is adjusted correctly. Incorrect adjustment will cause the boat to sway, deteriorate engine performance and may cause unsafe steering conditions.

! CAUTION

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

■ How to use the trim meter

When the trim angle is set as desired, take a reading off the trim meter, and record it for future reference.

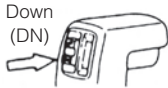


■ Improper Trim Angle (bow rises too high)

If the trim angle is excessive, the bow will rise out of the water and the speed will decrease.

Furthermore, the bow may sway or the bottom may slam the water while cruising.

In this case, decrease the trim angle by pressing the switch on the Remote control level to "DN".



■ Improper Trim Angle (bow dips into the water)

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



■ Proper Trim Angle

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

! WARNING

- Do not put hand or finger in between outboard motor body and clamp bracket when adjusting trim angle to prevent the body parts from being caught 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.

! WARNING

Excessive trim up or down may lead to unstable boat operation, potentially causing the steering difficulty that leads to accident during cruising.

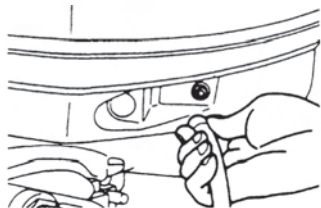
- Do not cruise at high speed if improper trim position is suspected. Stop the boat and readjust trim angle before continuing cruise.
- For outboard motor model with PTT switch on the bottom cowl, do not operate the switch during cruising, or control of boat may be lost.

7. Mooring with the engine tilted up

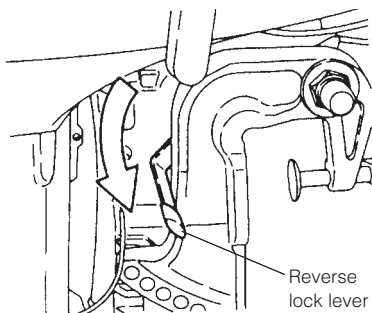
When the engine has been stopped and it will not be used for a long time or when mooring in shallow water, tilt the engine up to prevent damage to the propeller and gear case.

F, EF, EFO, EPO type

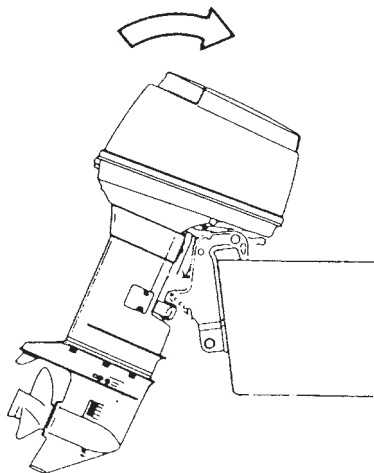
- ① Disconnect the fuel connector from the engine.



- ② Set the Reverse Lock Lever on the starboard side to "RELEASE" by turning it downward.



- ③ Tilt the engine up entirely. The tilt will lock in the raised position.



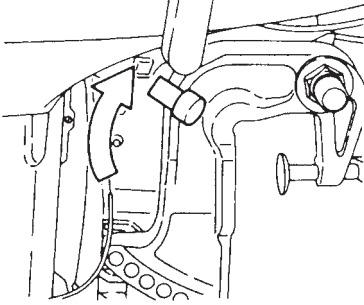
! WARNING

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

! CAUTION

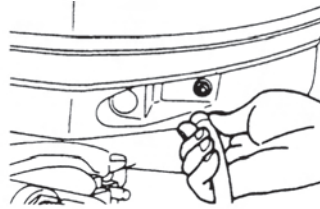
Do not tilt up outboard motor during operation, or engine may be damaged from overheating because of no feed of cooling water.

- ④ To tilt the engine down, Turn the Reverse Lock Lever upward (toward "LOCK"). Tilt the engine up slightly and then let it go down. (The Reverse Lock will be set automatically.)

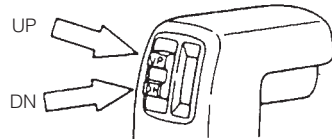


EFTO, EPTO type

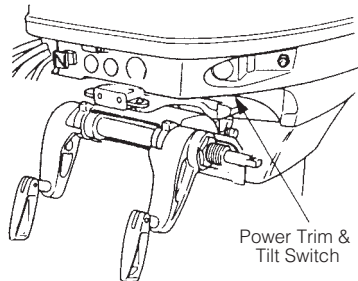
- ① Disconnect the fuel connector from the engine.



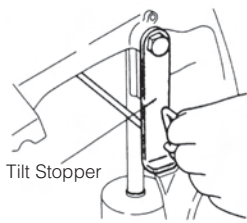
- ② Operate the Power Trim & Tilt switch on the Remote Control Lever and tilt the engine up. (The Main Switch need not be turned "ON".)



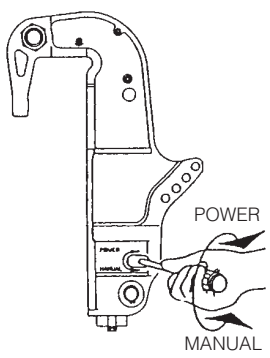
- ③ The engine can also be tilted up using the switch provided under the Lower Engine Cover. (The Main Switch need not be turned "ON".)



- ④ Lock the tilt with the Tilt stopper after the engine has been tilted up.



- ⑤ Manual tilting
If the battery is dead, and the Power Trim & Tilt Switch thus inoperative, turn the manual valve a few turns in the Manual direction. This will allow manual tilting of the engine.



! WARNING

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

! WARNING

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

! CAUTION

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

REMOVING AND CARRYING THE OUTBOARD MOTOR

1. Removing the outboard motor

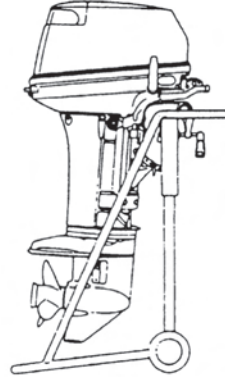
- ① Stop the engine.
- ② Disconnect the fuel connector, the remote control cables, the battery cords, bracket fixing bolts and nuts etc.
- ③ Remove the outboard motor from the hull and completely drain the water from the gear case.

CAUTION

Do not carry the outboard motor immediately after stopping engine when they are so hot that they burn hands if touched.

2. Carrying the outboard motor

Be sure to keep the engine vertical whenever you carry the outboard motor.

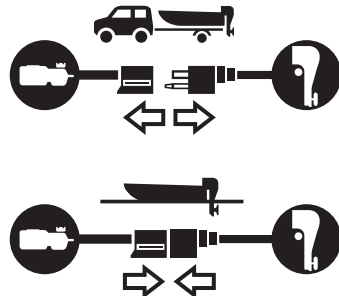


WARNING

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

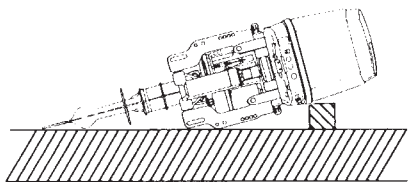
WARNING

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

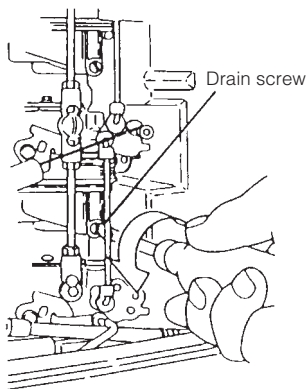


■ EF, EFTO, EPTO type

When carrying or putting the engine up for storage, make sure the side with the electric motor of the Power Trim and Tilt is down otherwise air will enter the pump system for the Power Trim and Tilt operation.

**○ Note**

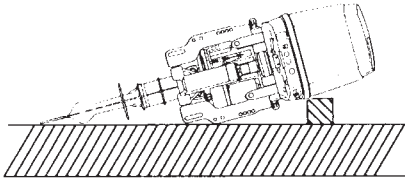
If you can not carry the engine in an upright position, loosen the drain screw on the carburetors to drain fuel from them.

**⚠ CAUTION**

Beware of explosion danger. Spilled and vaped gasoline may easily catch fire and explode. Be sure to fully discharge gasoline from the carburetors when transporting the engine. Wipe off spilled gasoline with a rag.

3. Storing the outboard motor

Keep the motor in a vertical position when you store it.



Note

If you store the motor in a horizontal position, lay the motor as shown in figure above.

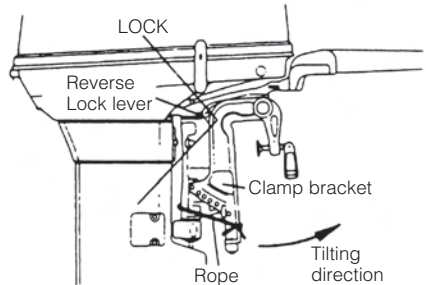
EF, EFO, EPO type

! WARNING

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

*Tie the clamp bracket to the outboard with a rope.

*Pay attention to the tilting direction so as not to be injured by the springing clamp bracket.



! WARNING

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

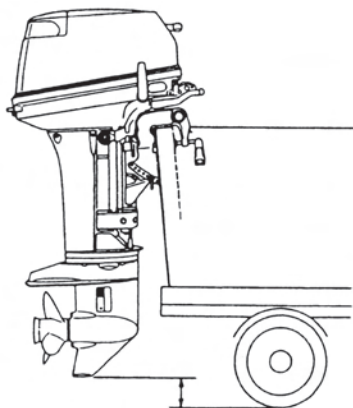
! WARNING

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

TRAILERING

CAUTION

When trailering the outboard motor should be in a vertical (normal running) position, fully down. Trailering in the tilted position may cause damage to the outboard motor, boat, etc. If trailering with outboard motor fully down is not available (the gear case skeg is too close to the road in a vertical position), fix the outboard motor securely using a device (like a transom saver bar) in the tilted position.



CAUTION

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

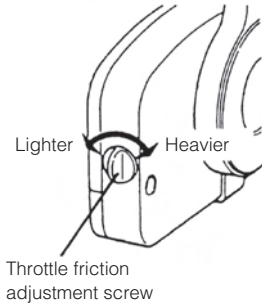
ADJUSTMENT

1. Remote control lever load

■ EPO, EPTO

(Throttle friction adjustment screw)

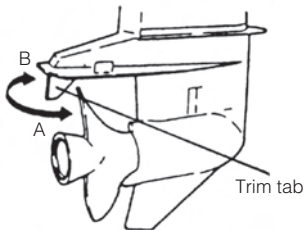
To adjust the load of the remote control lever, turn the throttle friction adjustment screw on the front of the remote control Box. Turn clockwise to increase the load and counter-clockwise to decrease it.



2. Trim tab adjustment

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

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



○ Notes

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

⚠ WARNING

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

⚠ WARNING

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

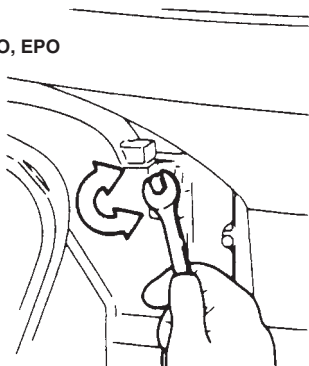
3. Steering load adjustment

Steering load can be adjusted by turning the steering adjust bolt on the Swivel Bracket.

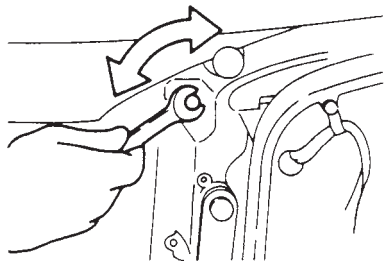
Turn clockwise to increase load

Turn counter-clockwise to decrease the load

E, EF, EFO, EPO

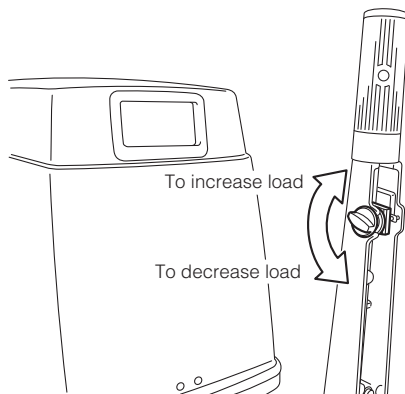


EFTO, EPTO



4. Throttle grip turning load adjustment

Turn the friction adjustment screw on the steering handle to adjust the turning load of the throttle grip.



⚠ WARNING

Do not increase throttle friction excessively, or heavy movement of throttle grip or remote control lever movement could cause loss of throttle control potentially leading to accident.

INSPECTION AND MAINTENANCE

Care of your outboard motor

To keep your outboard motor in the best operating condition, it is very important that you perform daily and periodic maintenance as suggested in the maintenance schedules that follow.

CAUTION

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

1. Daily inspection

Perform the following checks and inspection before and after use.



WARNING

Do not use outboard motor on which any abnormality is found during pre-operation check, or it could go into trouble during cruising potentially leading to accident.

Item	Points to Check	Action
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
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 40D2 : NGK B-7HS-10/NGK BR-7HS-10 Spark plugs 50D2 : NGK B-8HS-10/NGK BR-8HS-10 • 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 emergency 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 Replenish or recharge Retighten Remedy or replace Correct or replace
Throttle System	<ul style="list-style-type: none"> • Check if the choke solenoid and valve for the carburetor works normally. • Check if the carburetor and magneto work normally when turning the throttle grip, and also check links for looseness. 	Replace Correct
Recoil Starter	<ul style="list-style-type: none"> • Check ropes for wear and damage. • Check the ratchet for engagement. 	Replace Correct or replace
Clutch and Propeller System	<ul style="list-style-type: none"> • Check if the clutch engages correctly when operating the Remote Control. • Check the propeller for bent or damaged blades. • Check if the propeller nut is tightened and the split pin is present. 	Adjust 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. 	

Item	Points to Check	Action
Tools and Spares	<ul style="list-style-type: none"> • To be ready 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

Washing with fresh water

When the engine has been used in salt water or polluted water, wash the exterior and flush the cooling passage with fresh water using the flushing attachment.

Screw the included flushing attachment into the wash hole on the gear case.

Connect a water hose to the flushing attachment and flush out with water.

(Be sure to secure the water inlet and sub-water inlet on the gear case beforehand.)

⚠ CAUTION

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

⚠ WARNING

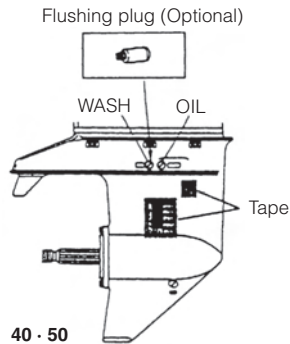
Do not start engine without removing propeller, or accidentally turning propeller could cause personal injury.

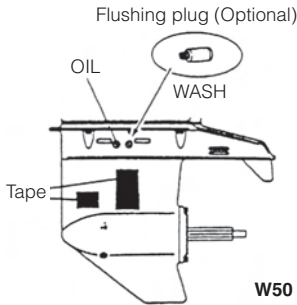
⚠ WARNING

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

○ Note

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





CAUTION
 Keep engine at idle speed during flushing.

Wash the engine before long-term storage.

Run the engine at low speed with the Remote Control lever (or Shift lever) set to Neutral to flush out fresh water from the cooling system and in the process remove salt, mud and other foreign particles.

Replacing the propeller

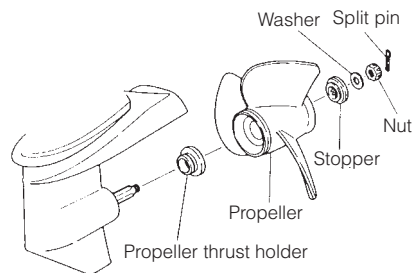
A worn-out or bent propeller will lower the motor's performance, and cause engine trouble.

Before removing the propeller, remove the spark plug caps from the spark plugs to protect against personal injury.

WARNING

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

- ① Pull out the split pin and remove the propeller nut and washer.
- ② Remove the propeller by pulling toward you.
- ③ Apply genuine grease to the propeller shaft before mounting the new propeller.
- ④ Fit the washer, securely tighten the nut and insert the split pin.



⚠ 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.

⚠ CAUTION

- Do not install propeller without thrust holder, or propeller boss could be damaged.
- Do not reuse split pin.
- After putting split pin, open the end to prevent it from coming off which could lead to coming off of propeller.

Replacing the spark plugs

⚠ WARNING

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

○ Note

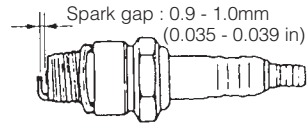
When inspecting the plug, always clean the gasket surface and use a new gasket. Wipe off any dirt from the threads and screw in the spark plug to the correct torque.

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.

- ① Remove the top cowl.
- ② Remove the spark plugs by turning counter-clockwise with the socket wrench (21 mm: 13/16 in) fitted with the handle. Tap lightly on the spark plugs if they are hard to turn.

Use spark plug NGK B7HS-10 or BR7HS-10 for M40D2 and B8HS-10 or BR8HS-10 for M50D2.



○ Notes

- Spark plug torque :
27.0Nm (20ft-lb) (2.7kgf-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.

⚠ CAUTION

Do not touch the high tension cords running from the ignition coil to the spark plugs while the engine is running or is turned by the electric starter motor, not even for testing the high tension cords or the spark plugs. The high tension cords and the spark plugs generate very high electric voltage, which can cause a serious electric shock if touched.

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	●		●	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.	
	*Ignition timing	●		●	Adjust timing.	
Starting System	*Starter motor			●	Check for salt deposits and battery cable condition.	
	Battery	●	●	●	Installation, fluid quantity, gravity	
	Starter rope	●	●	●	Check for wear or damage	

○ 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.

Item		Servicing Interval			Action	Remarks
		10 hours or 1 month	50 hours or 3 months	Every 100 hours or 6 months		
Lower Unit	Propeller	●	●	●	Bend of blades damage, wear	
	Gear oil	●	●	●	Change of oil or replenishment and water leak.	
	Water pump		●	●	Check for wear or damage.	Replace impeller every 12 months.
Bolt and Nuts		●	●	●	Retighten	
Sliding and Rotating Parts. Grease Nipples			●	●	Apply and pump in grease.	
*Power Trim & Tilt		●		●	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 corrosion	
Anode			●	●	Check corrosion and deformation.	Replace

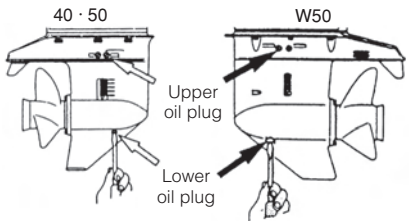
For checking the items marked with *, consult with your dealer.

Replacing gear oil

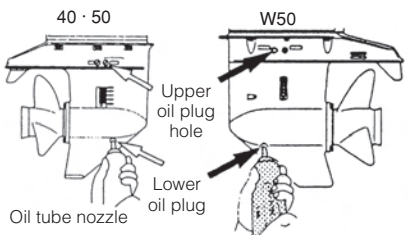
⚠ WARNING

- 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.

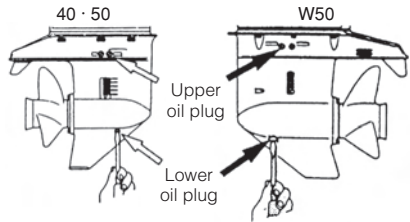
① Remove the oil plugs (upper and lower), and completely drain the gear oil into a pan.



② Insert the oil tube nozzle into the lower oil plug hole, and fill with gear oil by squeezing the oil tube until oil flows out of the upper plug hole.



③ Install the upper oil plug, and then remove oil tube nozzle and install the lower oil plug.



⚠ CAUTION

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

Note

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

Note

Use only genuine or recommended gear oil or, if not available, an API (American Petroleum Institute) oil grade of GL5 SAE #80~SAE#90.

Required volume

- : 40, 50 approx. 500mL (16.89 U.S. fluid oz)
- : W50 approx. 700mL (23.65 U.S. fluid oz)

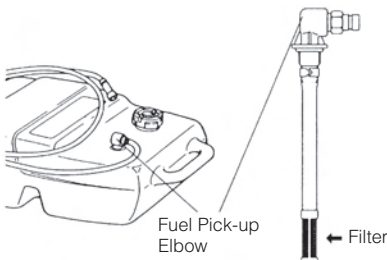
Cleaning Tanks and Filters

! WARNING

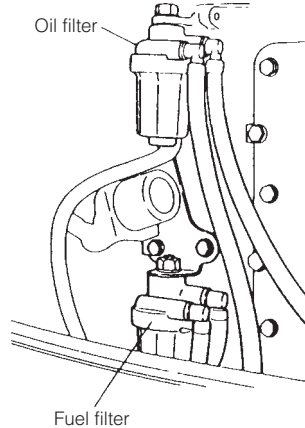
Gasoline and its vapors are very inflammable and can be explosive.

- 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.
- 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 Tohatsu dealer for fuel system services. Services by unqualified person could lead to engine damage.

- Fuel filters are provided inside the fuel tank and on the engine. Loosen a Fuel Pick-up Elbow and remove it. Then clean the Fuel Filter.
- Cleaning Fuel Tank
Water or dirt in the fuel tank may cause engine trouble. Clean the tank at specified times or after long time storage (over three months).



- Clean the filters on the engine after removing the fuel filter cases.

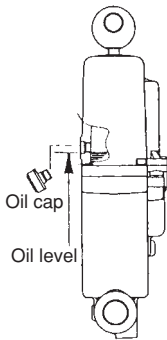


- Oil filter and oil tank. Check the oil tank and/or filter for entrapped water and dust.
 - ① Disconnect all pipes between the oil tank and oil pump.
 - ② Clean out foreign matter.
 - ③ Refit the pipes to the oil tank and pumps, and then fill up with new engine oil.
 - ④ For air purging, refer to Item No.5 Fuel and Engine Oil.

Checking and Refilling Oil in the Power Trim & Tilt.

- ① Check the oil level of the reservoir tank as shown on the right while the tank is kept in a vertical position. Tilt the engine up to check the oil level in the tank.

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



WARNING

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

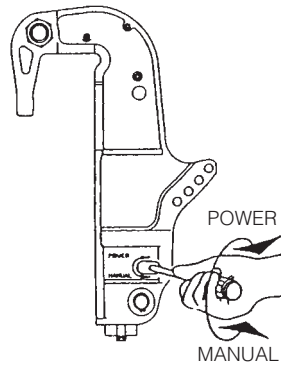
CAUTION

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

- ② Recommended oil
Use an automatic transmission fluid or equivalent.
Recommended oils are as shown below.
ATF Dexron III

- ③ Air purging from the Power Trim and Tilt unit.

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



3. Off-season storage

WARNING

- When the motor is out of the water, being transported, or in storage, always remove the negative (-) battery cable to prevent accidental starting of the engine. Accidental starting when the motor is out of the water will cause water pump failure, overheating and damage to the engine due to a lack of cooling water.
- DO NOT disconnect the electrical harness when operating the motor. This model will continue to run and can be started with the electrical harness disconnected. Remove all spark plug connectors from the spark plugs when servicing the engine or propeller.

When your outboard motor is in storage, this is a good opportunity to have it serviced or overhauled by your dealer.

■ Engine

- ① Wash the engine exterior and flush the cooling water system thoroughly with fresh water. Let the water drain completely.
Wipe off any surface water with an oily rag.
- ② Drain all fuel from the fuel pipes, fuel pump and carburetor, and clean these parts. To prevent corrosion of the fuel tank, fill it up with engine oil-rich gasoline.

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

- ③ Remove the spark plugs and feed genuine engine oil or storage fogging oil through the spark plug holes.

The oil will be fed into the crank case from the air silencer attached to the carburetors. Turn the engine over several times while feeding the oil into it and make sure it is evenly distributed.

- ④ Apply grease to the propeller shaft.
- ⑤ Change the gear oil in the gear case.
- ⑥ Apply grease to all sliding parts, joints, nuts, and bolts.
- ⑦ Use a dry cloth to completely wipe off water and salt from the electrical components.
- ⑧ Remove the fuel connector from the engine.
- ⑨ Stand the outboard motor up vertically in a dry place.

WARNING

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

■ Battery

- ① Disconnect the battery cords.
- ② Clean the exterior of the battery with fresh water or compressed air. Wipe off any chemical deposits, dirt and grease from the battery.
- 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 with its cover attached.

CAUTION

- Do not allow the battery to discharge, since it can be damaged by freezing.
- When storing your outboard for the winter, open up all the water drain holes in the gear case to permit any remaining water to drain out. If a speedometer is installed, disconnect the pickup tube and allow it to drain, then reconnect it after draining. Trapped water may crack the gear case or water pump case as a result of expansion when frozen. Check and replenish the gear case with case specified Gear Oil before storing the motor, to avoid water leakage into the gear case due to a loose lubricant vent plug or grease fill plug. Inspect the gaskets under the lubricant vent and grease plugs, replace them if necessary, and reinstall the plugs.

■ Electric Starter Motor

Coat the pinion gears and the shaft of the electric starter motor with grease.

4. Pre-season check

Have your dealer check the engine before the season starts, or if you prefer, be sure to check the following items yourself:

- ① Check the electrolyte level, and measure the voltage and specific gravity of the battery.

Specific Gravity at 20 °C	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	12.0	3/4 charged
1.280	13.2	Fully charged

- ② Check that the battery is secure and the battery cables are properly installed.
- ③ Clean the engine oil filter.
- ④ Purge air in the vinyl pipe connecting the oil tank to the oil pump.
- ⑤ 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.)

CAUTION

The following steps must be taken when first using the engine after pre-season storage.

- In addition to the oil in the oil tank, mix engine oil with the fuel in the following mixing ratio and fill up the fuel tank completely with 25 liters (6.6 U.S. gal.):
Mixing ratio : Gasoline 50 : 1 Engine oil
Use unleaded gasoline and genuine Outboard Motor oil. If this oil is not available, use another NMMA TC-W3 certified outboard motor oil from another manufacture.
- Purge any air from the oil filter assembly.
- Warm up the engine for 3 minutes with the remote control lever in "NEUTRAL" position.
- Run the engine for 5 minutes at the slowest speed.
- Run the engine for 10 minutes at the half speed,
In steps 2 and 3 above, the oil used for winter storage inside the engine will be cleaned out, and optimum performance will be assured.
- When the full volume, 25 liters (6.6 U.S. gal.), of gasoline mixed with oil has been used, fill up the tank with pure gasoline only. (For the auto-mixing types)

5. Checking after striking underwater object

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

Immediately bring the outboard motor to your dealer and ask for the following checks.

- ① Looseness or damage of power unit installation bolts, gear case and extension case bolts, propeller or propeller shaft, upper and lower mount rubber bolts and nuts, power trim and tilt bolts, and mount rubber cap bolts.

Ask to tighten loose bolts and nuts, and to replace damaged parts.

- ② Deformation and damage of mount rubber, tilt stopper, thrust rod, gears and clutch, and propeller.

Ask to replace damaged or deformed parts.

6. If the engine becomes submerged in water

After pick up, immediately bring the outboard to your dealer.

Following are the emergency measures to be taken on the submerged outboard.

- ① Take it out of water immediately and wash it with fresh water to remove all traces of salt and dirt.
- ② Remove the spark plugs, and drain the engine completely of water.
Turn the flywheel several times, using the starter rope.
- ③ Inject a liberal amount of genuine engine oil or storage fogging oil into the engine through the spark plug holes and the air silencer.
Turn the flywheel several times with the starter rope while injecting the oil to make sure the oil is evenly distributed.
- ④ After the above steps, it is still possible for the internal engine parts to be damaged. The electrical components and carburetors will soon deteriorate and become inoperative. Therefore, be sure to have the engine completely overhauled by a service shop immediately.



CAUTION

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

7. Precautions in cold weather

When morning in cold weather at sub-zero temperatures the water in the cooling water pump may freeze and severely damage the pump, impeller, and associated parts. To avoid this, submerge the lower half of the engine into the water, or tilt the engine and operate the electric starter motor for 5 seconds with the stop switch lock plate taken away to allow the water to drain completely.

■ TROUBLESHOOTING

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 professionals 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

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	
		●	●			●	●		Faulty thermostat
				●		●	●		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

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

Name		Quantity	Remark
Servicing Tools	Tool Bag	1	Adapter-type
	Socket Wrench (21mm)	1	
	Socket Wrench (10×13)	1	
	Socket Wrench Handle	1	
	Pliers	1	
	Screwdriver (Phillips-type and flat head)	1	
Spare Parts	Emergency starter rope (1,600mm)	1	NGK BR7HS-10 40D2 NGK BR8HS-10 50D2 Diameter×Length 3×25mm
	Spark Plug	2	
	Slit Pin	1	
Parts Packaged with Engine*	Bracket Fixing Bolts	4	12mm 12mm A (large), B (small)] for EPO & EPTO type] EPTO type only]
	Bracket Fixing Nuts	4	
	Washers A, B	4 each	
	Fuel Tank (with primer bulb)	1	
	Remote Control Box	1	
	Drag Link	1	
	Tachometer	1	
	Trim meter	1	
Lead Wire for Meter	1		

* Not included as standard accessories in some markets.

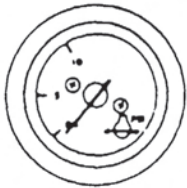
OPTIONAL ACCESSORIES



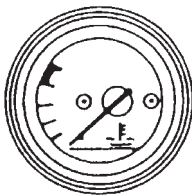
Speedometer
(50MPH)



Speedometer
(75MPH)



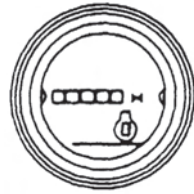
Water Pressure Meter



Water Temperature Meter



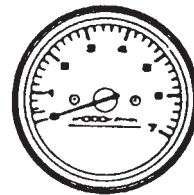
Voltmeter



Hour Meter
(engine operation hour counter)



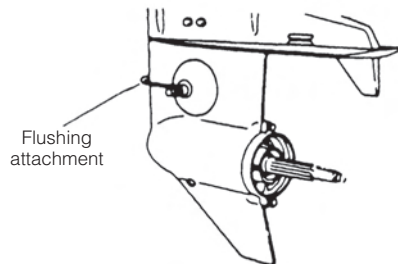
Fuel Meter



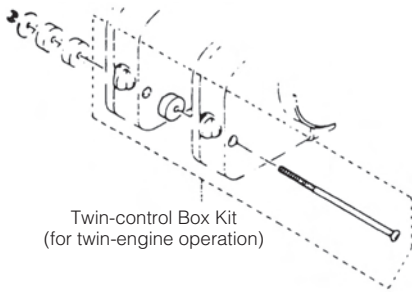
Tachometer



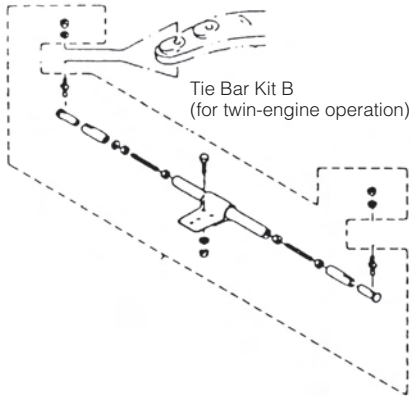
Flushing plug



Flushing
attachment



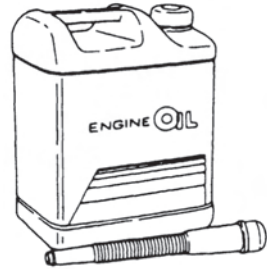
Twin-control Box Kit
(for twin-engine operation)



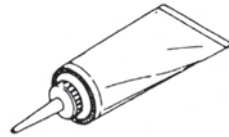
Tie Bar Kit B
(for twin-engine operation)



Propeller



Engine oil (0.4L, 1L, 4L, 20L)



Genuine gear oil (500ml)



Touch-up Spray Paint

PROPELLER TABLE

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 rpm measured at wide open throttle, while cruising, is within the recommended range.

40D2 5,000 to 5,700 rpm

50D2 5,150 to 5,850 rpm

40 50

	Mark	40	50
Heavier Load	*7		
	8.5		
	9		
	10		
	11		
	12	UL transom	
	C 12.5	S•L transom	U•L transom
	13		
	C 13.5		SL transom
	14		
Lighter Load	C14.5		
	C 16		

W50

Mark	W50
9	
10	
11	
12	L transom
13	
14	
15	
16.5	
17.5	

* shows propeller with four blades.

MEMO

A series of horizontal dashed lines for writing.

MEMO

A series of horizontal dashed lines for writing.



OWNER'S MANUAL
M 40D₂
50D₂
MW 50D₂

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