

NISSAN OUTBOARD MOTOR

NS40C



OWNER'S OPERATING MANUAL

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YOUR NISSAN OUTBOARD MOTOR

OWNER REGISTRATION AND IDENTIFICATION

Upon purchasing this product, be sure your dealer* fills out the WARRANTY CARD correctly and completely and mails it to the distributor. This card identifies you as the legal owner of the product and serves as your warranty registration.

If this procedure is not followed, your outboard motor will not be covered by warranty.

*: In this manual, “dealer” always means an authorized NISSAN dealer.

PRE-DELIVERY CHECK

Be sure that the product has been checked by the dealer before the delivery.

Warranty

This NISSAN product is fully guaranteed against defective materials and workmanship for the period from the date of purchase, provided that the purchase has been registered in accordance with the above.

The warranty will not apply to the normal wear and tear of parts, adjustments, tune-ups, or to any damage caused by:

- 1) Use or operation NOT conforming to the instructions described in this owner's manual,
- 2) Participation in or preparation for racing or other competitive activities,
- 3) Water entering the engine or the engine room,
- 4) Any other careless use or operation.

The warranty will become void if the product has been altered, modified, or repaired by anyone other than a company or service firm authorized by NISSAN.

The warranty will cover only your NISSAN product and will not cover the boat the product is mounted on, the trailer, equipment, or accessories associated with the product.

Serial Number

In the space below, please record the engine's serial number (indicated both on the lower motor cover and on the cylinder block). This number will come in handy in the event of theft or to help in quickly identifying the product type.

Serial Number: _____

To You, Our Customer:

Thank you for selecting a NISSAN product. You are now the proud owner of an excellent outboard engine that will serve you for many years to come.

We would like to point out that carefree usage can only be assured on condition that this manual is read through in its entirety and the maintenance routines described later in this manual are followed carefully. Should difficulty arise with the engine, please follow the troubleshooting procedures listed at the end of this manual. If the problem persists, contact an authorized NISSAN service shop or your dealer.

We hope you will get much enjoyment from this product and wish you good luck in your boating adventures.

NISSAN MOTOR CO., LTD.

NOTICE

PAY ATTENTION TO ALL WARNINGS AND CAUTIONS IN THIS MANUAL. THEY HAVE BEEN INCLUDED FOR YOUR SAFETY, AND MUST BE READ CAREFULLY. NEGLIGENCE IN OBSERVING THE WARNINGS AND CAUTIONS COULD RESULT IN SEVERE INJURY OR DEATH.

EMERGENCY STOP SWITCH

The stop switch will cut off the engine when the stop switch line is pulled out. This line can be attached to the body of the operator, effectively preventing injuries from the propeller in case he/she falls overboard.

We highly recommend use of the stop switch line because it can save the life of the operator if something bad happens. However, we would also like to point out the drawbacks of the switch. Accidental activation of the switch (such as the line 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 prevent such hazardous situations, the 500 mm line is coiled and can extend to a full 1,300 mm.

WARNINGS

As the operator/driver of the boat, you are responsible for the safety of those aboard and those in other crafts around yours and for following local boating regulations. Therefore you should possess thorough knowledge of correct operation of the boat, its accessories, and the engine. To learn about the correct operation and maintenance of the engine, 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 engine should be shifted to neutral and shut off.

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

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. It is also the operator's responsibility to return the unit to the local dealer for periodic inspection.

Correct periodic maintenance and good care of this outboard engine will lessen the chance of problems and keep overall operating expenses at a minimum.

SERVICING, REPLACEMENT PARTS, & LUBRICANTS

Only let an authorized NISSAN service shop perform servicing or maintenance on this product. Be sure to use genuine parts and genuine lubricants or recommended lubricants.

MAINTENANCE

As the owner of this outboard engine, you should be acquainted with its correct maintenance. Please comply with all instructions on lubrication and maintenance, and return the engine to the dealer or service shop for periodic inspection at the prescribed intervals.

Troublefree operation cannot be expected unless the engine receives adequate periodic maintenance. If maintenance is performed periodically, it is not likely that a costly overhaul will ever be required.

USE OF SERVICE SHOP

When subjecting your NISSAN product to a check or repair, please be sure to use a NISSAN dealer authorized by NISSAN or a NISSAN agent.

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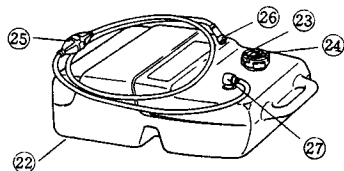
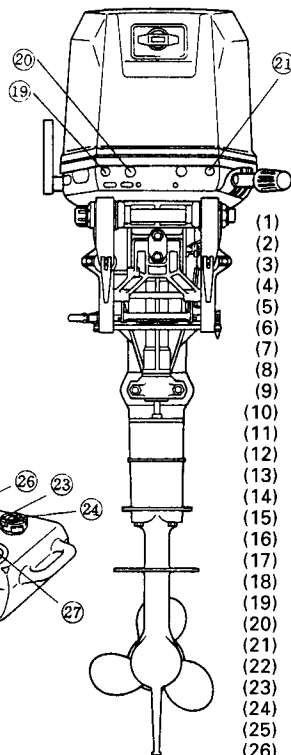
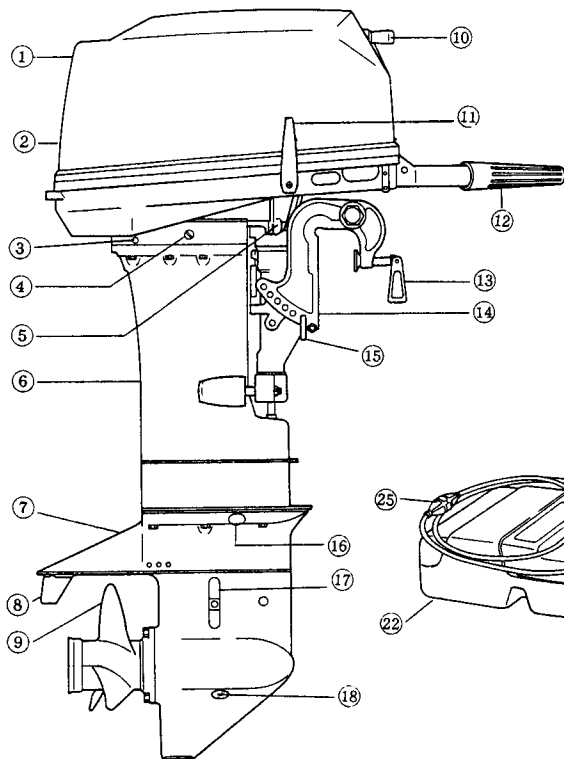
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1. SPECIFICATIONS

Model	40C	40CEF	40CEP
Overall length	919 mm (36.18")		600 mm (23.6")
Overall width	415 mm (16.3")		355 mm (14")
Overall height	S: 1118 mm (44") L: 1245 mm (49") LL: 1321 mm (52") UL/XL: 1372 mm (54")		
Transom height	S: 435 mm (17") L: 562 mm (22") LL: 638 mm (25") UL/XL: 689 mm (27")		
Weight (S transom)	59 kg (129.95 lb)	61.5 kg (135.46 lb)	60.3 kg (132.82 lb)
Max. output PS (kW)	40 (28.8)		
Max. rpm range	5,200~5,700		
Number of cylinders	2		
Piston displacement	493 cc		
Bore & stroke	2.76"×2.52" (70 mm×64 mm)		
Exhaust system	Through hub		
Fuel mixing ratio	Gasoline/oil mixture 50 : 1		
Cooling system	Water cooling (Rotary rubber impeller)		
Ignition system	C.D. ignition		
Starter	Manual recoil starter	Manual recoil starter, electric starter	
Spark plug	NGK B7HS-10 or CHAMPION L82YC (gap 1.0)		
Tilt stage	6		
Gear oil	Genuine gear oil, API GL5 (SAE #80 to #90)		
Fuel tank capacity	25 l (6.6 US gals.)		
Gear reduction ratio	13 : 25		

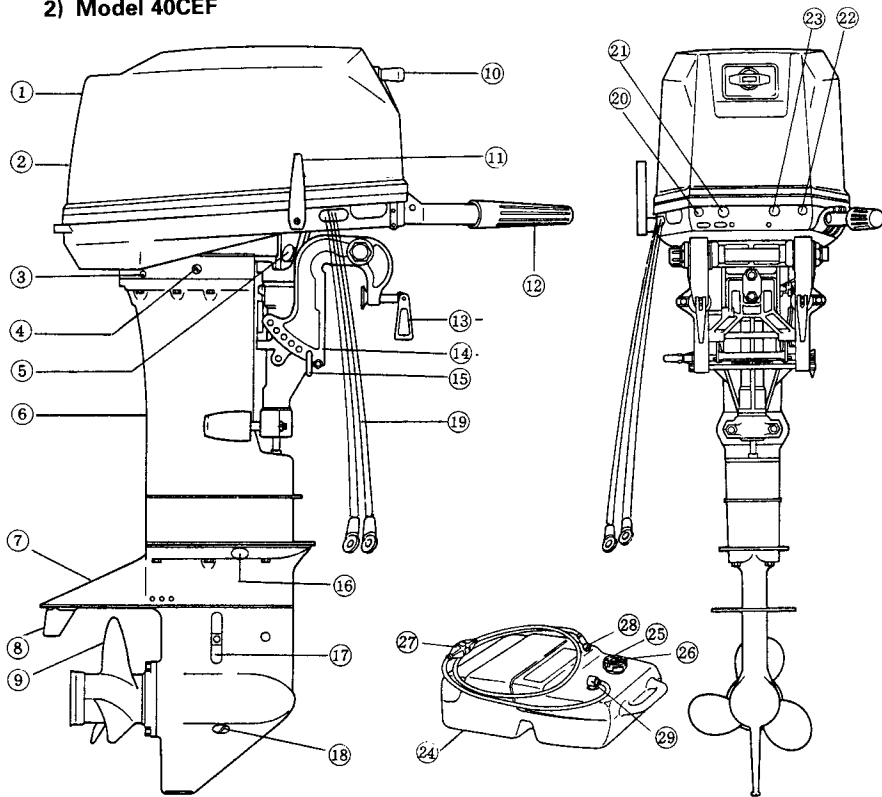
2. MAIN PARTS

1) Model 40C



- (1) Tilt Handle
- (2) Motor Cover Upper
- (3) Water Check Port
- (4) Water Plug
- (5) Reverse Lock Lever
- (6) Drive Shaft Housing
- (7) Anti-Cavitation Plate
- (8) Trim Tub
- (9) Propeller
- (10) Starter Handle
- (11) Shift Lever
- (12) Throttle Grip
- (13) Clamp Screw Handle
- (14) Stern Bracket
- (15) Thrust Rod
- (16) Oil Plug (upper)
- (17) Water Strainer
- (18) Oil Plug (lower)
- (19) Stop Switch
- (20) Choke Knob
- (21) Connector B
- (22) Fuel Tank
- (23) Fuel Tank Cap
- (24) Air Vent Screw
- (25) Primer Valve
- (26) Fuel Connector A
- (27) Fuel Pick Up Elbow

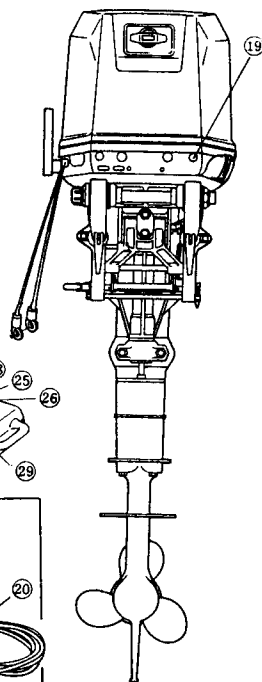
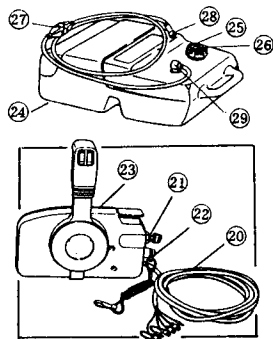
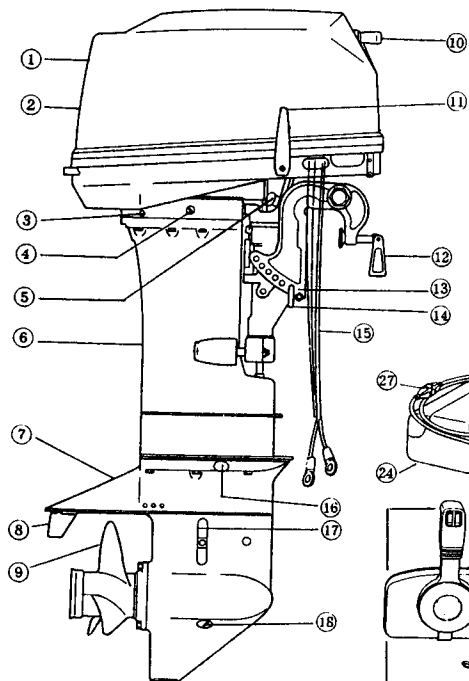
2) Model 40CEF



- (1) Tilt Handle
- (2) Motor Cover Upper
- (3) Water Check Port
- (4) Water Plug
- (5) Reverse Lock Lever
- (6) Drive Shaft Housing
- (7) Anti-Cavitation Plate
- (8) Trim Tub
- (9) Propeller
- (10) Starter Handle
- (11) Shift Lever
- (12) Throttle Grip
- (13) Clamp Screw Handle
- (14) Stern Bracket
- (15) Thrust Rod
- (16) Oil Plug (Upper)
- (17) Water Strainer
- (18) Oil Plug (Lower)
- (19) Battery Cord
- (20) Stop Switch
- (21) Choke Knob
- (22) Connector B
- (23) Main Switch
- (24) Fuel Tank
- (25) Fuel Tank Cap
- (26) Air Vent Screw
- (27) Primer Bulb
- (28) Fuel Connector A
- (29) Fuel Pick Up Elbow

3) Model 40CEP

40CEP



- (1) Tilt Handle
- (2) Motor Cover Upper
- (3) Water Check Port
- (4) Water Plug
- (5) Reverse Lock Lever
- (6) Drive Shaft Housing
- (7) Anti-Cavitation Plate
- (8) Trim Tub
- (9) Propeller
- (10) Starter Handle
- (11) Shift Lever
- (12) Clamp Screw Handle
- (13) Stern Bracket
- (14) Thrust Rod
- (15) Battery Cord
- (16) Oil Plug (Upper)
- (17) Water Strainer
- (18) Oil Plug (Lower)
- (19) Connector B
- (20) Cord Ass'y
- (21) Main Switch
- (22) Stop Switch
- (23) Remote Control Box
- (24) Fuel Tank
- (25) Fuel Tank Cap
- (26) Air Vent Screw
- (27) Primer Bulb
- (28) Fuel Connector A
- (29) Fuel Pick Up Elbow

3. INSTALLATION

WARNING

Most boats are rated and certified in terms of their maximum horsepower limit, and this is shown on the boat's certification plate. Do not equip your boat with an outboard that exceeds this limit. If in doubt, contact your dealer.

Do not operate at the engine unit it has been securely mounted on the boat in accordance with the instructions below.

3-1. Mounting the engine on boat

- (1) Setting position keel line
Distance between engines (Fig. 1)
approximately 580 mm (22.8")
- (2) Transom height
Fit the engines so that the anti-cavitation plate is 30 ~ 50 mm (1.2" ~ 2") lower than bottom of the boat by (30 ~ 50 mm) (Fig. 2).
- (3) Transom matching
Be sure that the anti-cavitation 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 a bottom shape of your boat, please consult the dealer.

- (4) Tighten engines to boat by clamp screw handle and bolt of engine bracket. Tighten engines to boat to prevent loss. (Fig. 3)

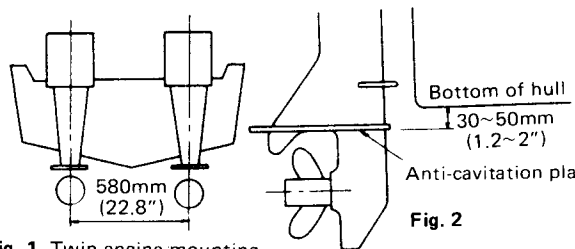


Fig. 1 Twin engine mounting

Fig. 2

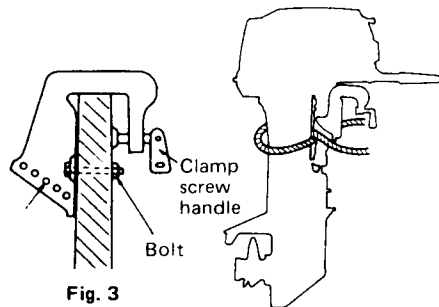


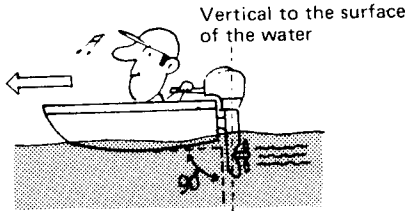
Fig. 3

(5) Trim angle

The outboard motor is adjustable its trim angle depending on stern angle of a boat and loading condition. Choose appropriate trim angle of the motor that the anti-cavitation plate is parallel to water face while running.

• Proper trim angle

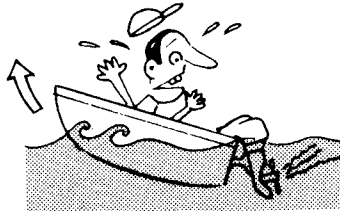
When the boat is horizontal while running, a position of the thrust rod is proper.



• Improper trim angle

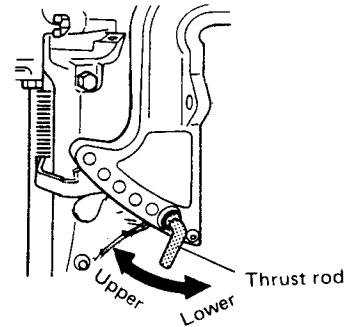
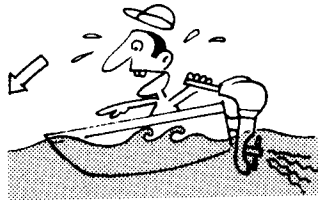
Set the thrust rod lower.

If a bow of a boat is rising, having heavy pitching or unstable straight running, set the thrust rod lower.



Set the thrust rod upper.

If a bow of a boat goes under a wave, set the thrust rod upper.



3-2. Installing the remote control device

Explanation of right hand Remote Control Box is written in this book.

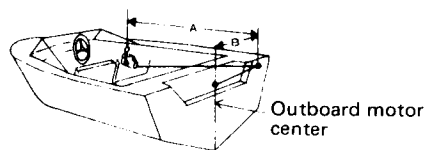
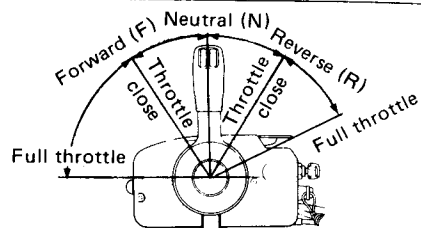
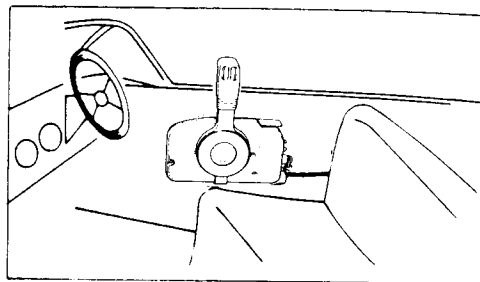
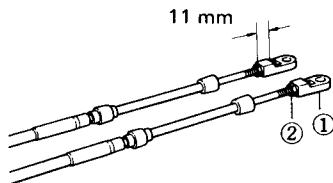
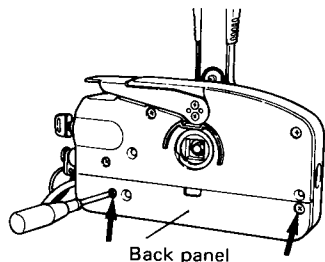
(1) Installation position of the Remote Control Box and length of the Remote Control Cable.

- (1) Position of the Remote Control Box
Decide installation position for the Remote Control Box where there is no obstruction to operate the Remote Control Lever and switches.
Check if there is obstruction on the way of the Remote Control Cables.
- (2) Length of the Remote Control Cable

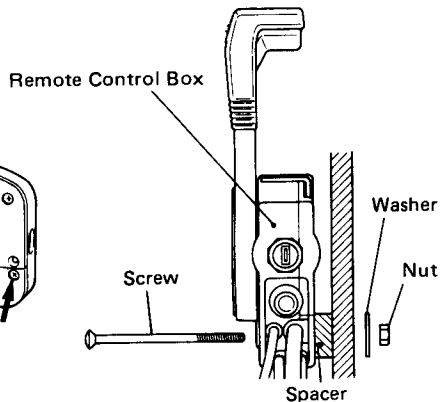
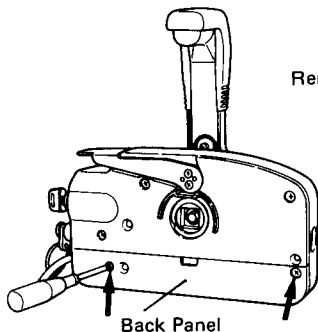
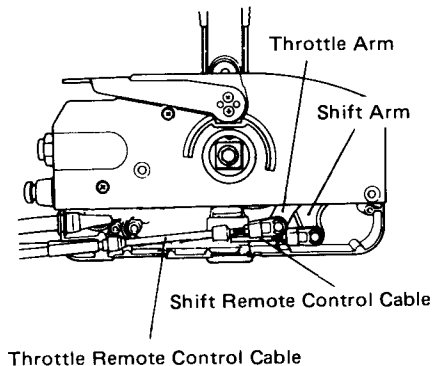
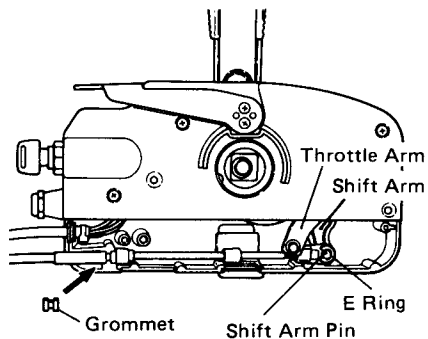
Note: Do not bend the Remote Control Cable smaller than 406 mm (16 inches) with a diameter.

(2) Installation of the Remote Control Cable (the Box side)

- (1) Take out the back panel of the Remote Control Cable by loosening two screws.
- (2) Screw the Remote Control Cable Terminal Eye ① more than 11 mm (0.43 inch).
Hold the Terminal Eye by a nut ② for not turn the Terminal Eye.



- (3) Set the Shift Remote Control Cable outer groove into the Housing groove.
Set the Terminal Eye on the pin of the Shift Arm and fix it with E-ring.
- (4) Insert attached grommet to the clamp groove of the Remote Control Box.
- (5) Install the Throttle Remote Control Cable to the Throttle Arm.
- (6) Install the Back Panel of the Remote Control Box.
- (7) After installation of the Remote Control Cable, mount the Remote Control Box by using attached screws, spacers, washers and nuts (each 3).



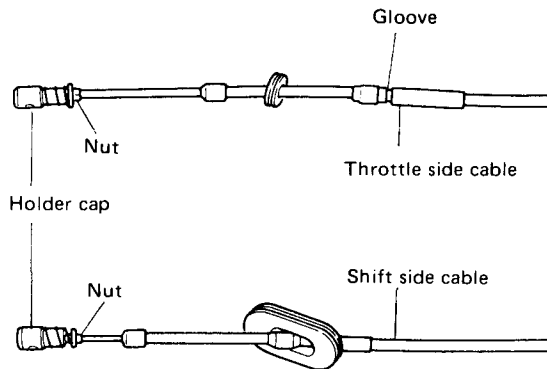
(3) Fitting of holders cap

(1) Throttle side

- Take out the grommet from the advancer arm side of the lower motor cover.
- Set the grommet on the cable after making a hole in grommet.
- Attach holder cap to cable and lock in position by nut.

(2) Shift side

- Take out the grommet from the shift lever side of the lower motor cover.
- Set grommet in position.
- Attach holder cap to cable and lock in position by nut.



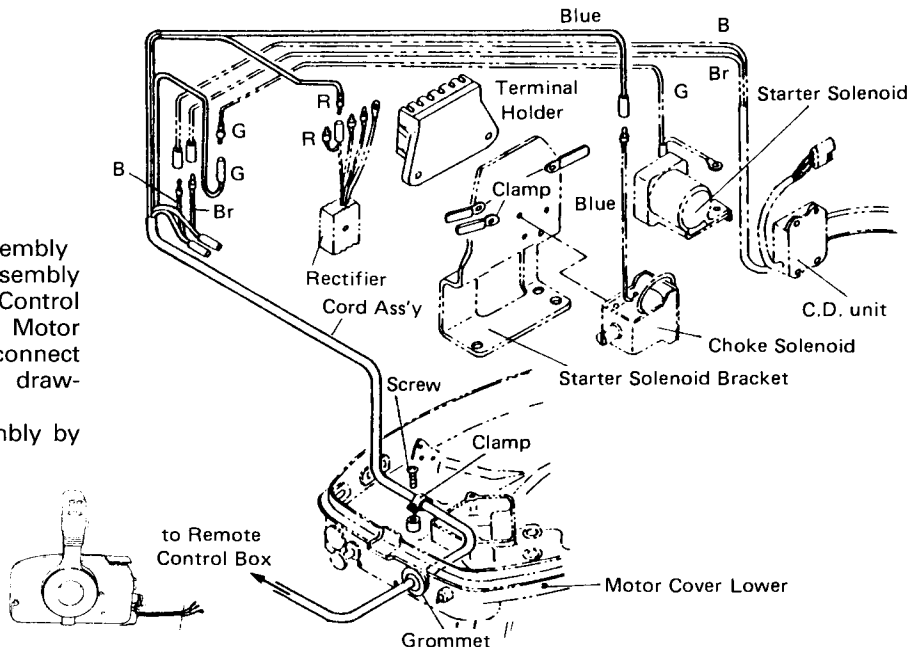
(4) Fitting on remote control cable to engine

Note: Position the control lever to Neutral with free accel lever is in the throttle 'closed' position.

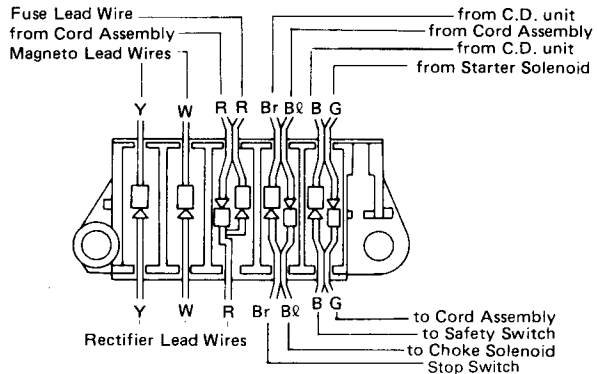
- Pass throttle cable through hole provided on the lower motor cover advancer arm side.
- Install the holder cap of end tip of the throttle cable on the ball joint.
- Fix the throttle cable by cable clip using groove of the cable.
- Install the grommet on the motor cover lower.

Note: Confirm if the Engine side shift is in when turn the control lever of the remote control box to first stopping position in Forward or Reverse direction (about 32°) and if the throttle of the carburetor is fully opened when turn the lever further.
 Confirm if the throttle of the carburetor is fully closed when turn the control lever to Neutral position. When the throttle of the carburetor will not be fully closed, adjust position of the holder cap and re-install it.

- (1) Fitting of Cord Assembly
- Pass the Cord Assembly from the Remote Control Box through the Motor Cover Lower and connect terminals referring drawing right.
 - Fix the Cord Assembly by a clamp.

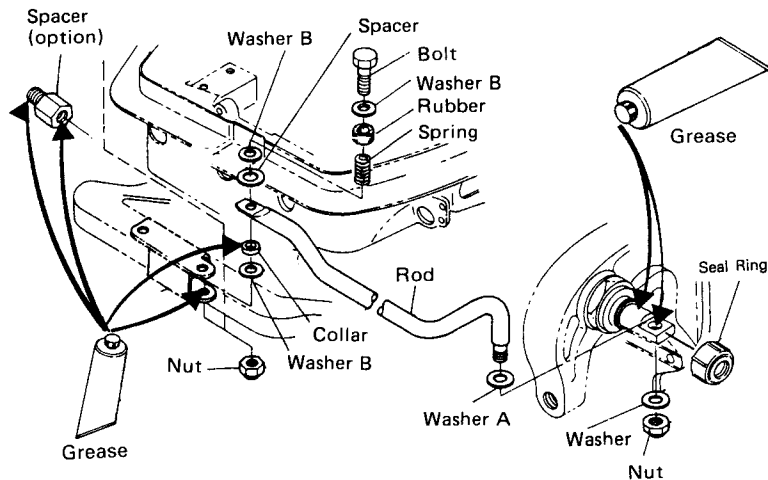


- Set the terminals of the Lead Wires in the Cable Terminal Holder.



3-3. Installing the Drag Link (attached to EP type)

Drag Link parts have been provided.
Refer to the drawing right for fitting.
The Spacer will be needed depending on kinds
of steering cables.



3-4. Mounting the battery

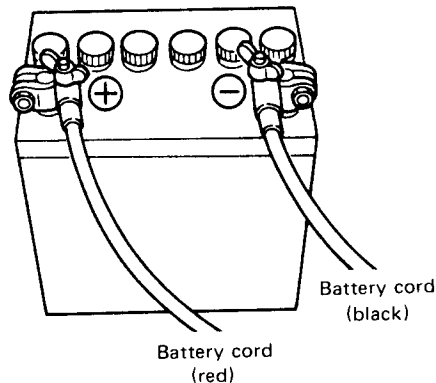
- (1) Locate the battery box in a convenient position away from possible spray damage. Securely fasten both the box and battery so they do not shake loose.

A 12 V battery with a recommended capacity of 70 AH or over is recommended.

Note:

- (1) Use battery leads having sufficient length.
- (2) Make sure that the battery leads are not trapped between motor and boat when turning, etc.
- (3) If leads are incorrectly connected, the starter may fail to operate.
- (4) Be sure to connect (+) and (-) leads correctly. If they are mis-connected, charging system will be damaged.
- (5) Keep battery fully charged at all times.

- (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 place a protective cover on the positive terminal (+) to prevent short circuits.



DANGER

- Hydrogen gas is generated when charging a battery. Thus, keep the battery well ventilated during charging. Remove from boat, this will protect your hull, interior from damage.

Electric sparks, cigarette smoking and other sources of fire must be avoided in the charging area to prevent explosion of the battery.

- The battery fluid (electrolyte) contains sulfuric acid.

If electrolyte is spilled on the skin, clothes, etc. wash with plentiful of water and consult a medical doctor. Always use safety glasses and rubber gloves when handling the battery.

3-5. Preparing the engine for operation and precautions

Use genuine or recommended engine oil in the fuel mixture.

[1] Fuel

- (1) Fuel is mixed in the ratio 50 parts gasoline and 1 part of genuine or recommended engine oil.

A new outboard motor should be broken-in by running for the first 10 hours on fuel having a 25:1 mixing ratio (gasoline and engine oil).

- (2) The use of poor quality gasoline and engine oil will shorten the life of an engine and also cause poor starting and other troubles. Be sure to use only high quality gasoline and genuine or recommended engine oil.
- (3) Check that a tank contains a sufficient amount of fuel before starting for the day's operation.

Always carry a spare tank (can) since running of fuel at sea may result in a serious accident.

● FUEL AND LUBRICANT FOR OUTBOARD MOTORS

Gasoline

Premium (super) gasoline is highly recommended for Outboard motors.

Gasoline should be a minimum pump posted octane rating of 87 (91 by research octane rating).

Note:

Gasoline containing alcohol, methanol (methyl), or ethanol (ethyl), may cause:

- Wear and damage on bearings, piston, piston rings and cylinder liners.
- Corrosion on metal parts.
- Deterioration of rubber parts and plastic parts.

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.

Engine Oil

Use genuine engine oil or recommended one (TCW3).

Will not recommended use of other two stroke engine oil.

Caution:

Do not mix different brands of oil.

The mixing of different brands of oil or different kinds of oil even in same brand may cause jelling (gel), resulting in blockage of filter screens.

This may lead to serious engine damage, due to the lack of powerhead lubrication.

[2] Break-in Running

1) Break-in running time 10 hours

Time	0 min.~	10 min.~	1 hr.~	2 hrs.~	10 hrs.~
Method of break-in run	Trolling or idling	Throttle opening <1/2 about 3,000 rpm	Throttle opening < 3/4 about 4,000 rpm	Throttle opening 3/4 about 4,000 rpm	Normal running
Running conditions	Cruising at minimum speed		Full-throttle run is allowed for 1 min. in 10 min.	Full-throttle run is allowed for a short time.	

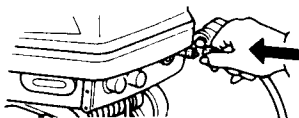
2) The gasoline-oil mixture ratio

- 25:1 when using genuine engine oil or recommended.
- Will not recommend use of other than genuine engine oil or recommended one (TCW3).
- The use of poor quality fuel will shorten the life of a motor and cause trouble, including starting failure. It is recommended to use a high quality gasoline.

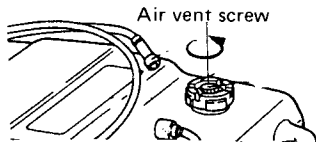
4. STARTING ENGINE

4-1. To Start

(1) Preparation to start

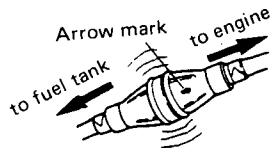


- (1) Set the fuel connector to the engine side connector. An arrow mark on the primer valve is to be lead to the engine.



- (2) Loose the air vent screw on the tank cap.

For tanks with a fuel tank auto air-vent. (optional)
There is no need to loosen the air vent screw. An air vent opens automatically when the connector is attached to the tank.



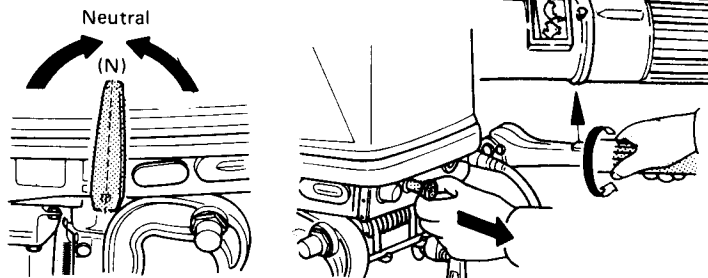
- (3) Feed fuel to the carburetor by squeezing the primer valve until firm.

Note: Do not operate Engine without cooling water.

Be sure that the shift is at neutral when starting the engine. This model is provided with start in-gear protection.

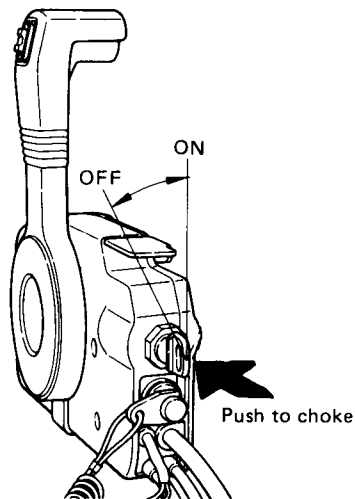
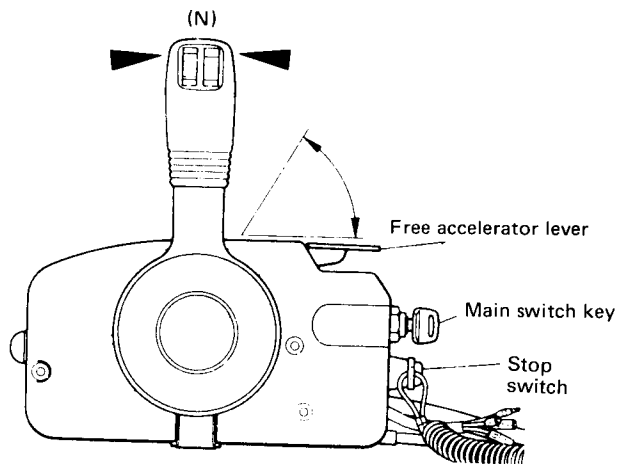
CAUTION:
If motor starts in gear, do not use, contact your authorized dealer.

40C/40C EF type



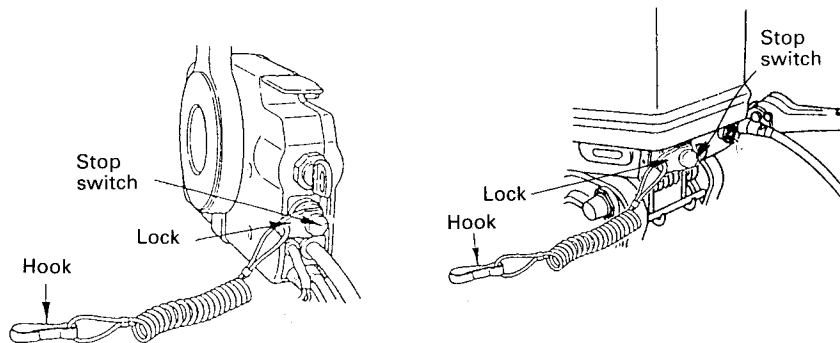
- (1) Confirm if the shift lever is in Neutral position.
- (2) Turn the handle grip until the bar mark on the grip faces the triangle mark on the steering handle.
- (3) Pull out the choke knob fully.
(No choke operation is necessary on warmed engine.)

40C EP type



- (1) Insert the main switch key.
- (2) Set the control lever in Neutral position.
Raise up the free accelerator lever.
- (3) Turn the main switch key one stage.
When the key is pushed in this condition, it works the choke.
(No choke operation is necessary on warmed engine.)

Fit the lock in the stop switch



WARNING

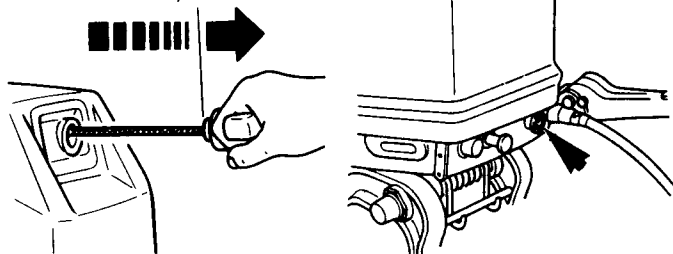
Be sure to connect the emergency stop lanyard to your body. The engine will shut down if the stop lanyard is disconnected.

Note: The engine will not start unless this switch has been properly connected and locked beforehand.

WARNING-Daily Check

Before moving out with the boat, confirm that the emergency stop switch works normally by starting and stopping the engine several times.

(2) **Starting** Slowly At a breath



40C type

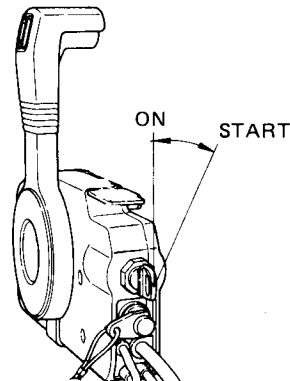
- Pull the starter handle slowly until you feel resistance, then pull it at a breath.

40CEF type

- Push the starter switch button.
- Release hand from the button when after the engine is started.

40CEP type

- Turn the main switch key to START position with keeping pushing the key to choke.
Note: On warmed engine, turn the main switch key without choke operation.
- Release hand from the key when after the engine is started.
The key returns to original position automatically.



NOTES EF-EP

"IMPORTANT"

1. Extended operation of the starter motor will run the battery down. Operate the starter motor for maximum 5 seconds. If the engine does not start, wait for 10 seconds before operating the starter motor again or starter will be damaged.
2. NEVER operate the starter motor once the engine has started.
3. If the starter motor won't turn over, check that the battery terminal connections are tight and the battery is fully charged.

(3) If the recoil starter or starter motor fails to operate

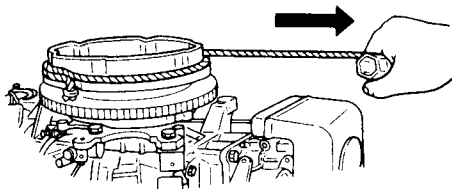
- (1) Remove recoil starter cover and pull starter rope directly.
- (2) Use a 10 m/m socket wrench as a hand on the rope grip.

CAUTION

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

To prevent your clothes and other items from getting caught in the engine, do not install the recoil starter and upper engine cover after the engine is started with the starter rope.

Immediately contact an authorized service shop when reaching shore.



4-2. Warming up engine

Warm the engine by running at low speed for about three minutes. This allows the lubricating oil to circulate to all parts of the engine. Careful warming up will prolong the life of the engine.

Note: If cooling water is not circulating over-heating will occur. This will cause erratic running followed by engine seizure.

- Engine speed
Idling speed when warming up.

Model	Clutch in	Clutch off
40C/EF/EP	850 rpm	950 rpm

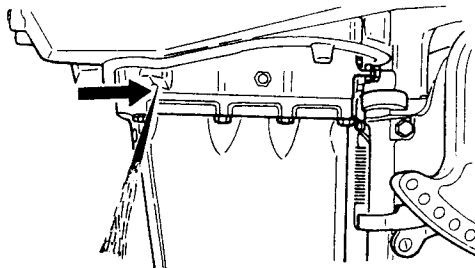
Maximum operating speed at full throttle.

Model	Full throttle rpm range
40C/EF/EP	5,200~5,700

PROPELLER SELECTION

A propeller must be selected so that the engine rpm measured at wide open throttle while cruising is within the recommended range, 5,200 to 5,700 rpm.

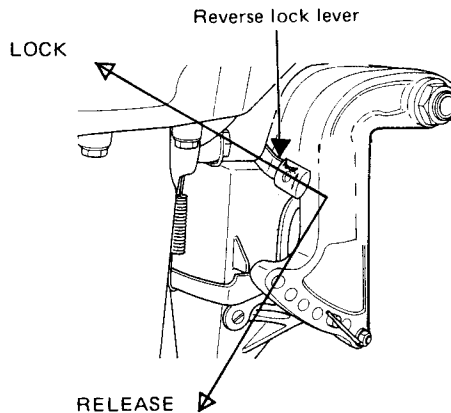
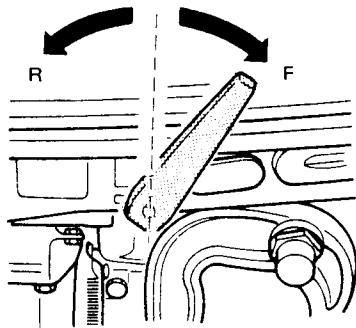
For genuine propellers, refer to page 47 of this manual.



4-3. Forward and reverse running

WARNING

It may be dangerous to attempt shifting at high RPM. Be sure to slow down to trolling or idling rpm before shifting.



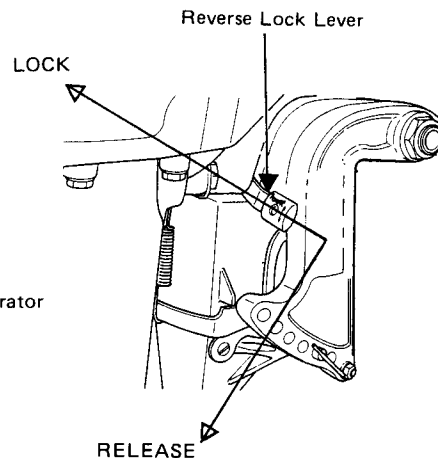
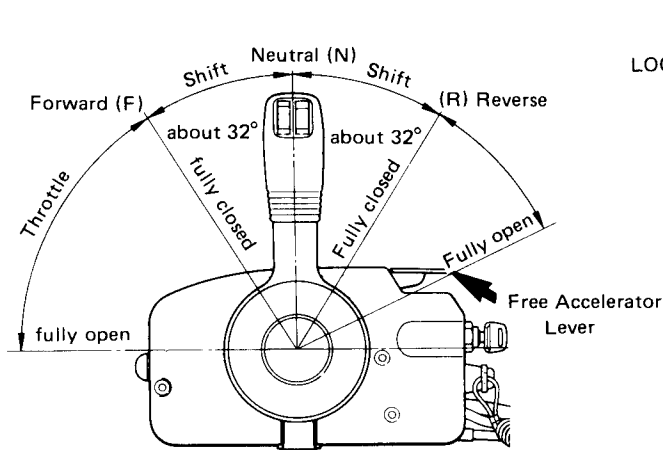
- (2) Reverse
Shift the lever quickly into Reverse position after engine revolution comes low enough.

40C/40CEF type

- (1) Forward
Shift the lever quickly into forward position when engine revolutions have slowed down.

Note: Check to see if the reverse lock lever is in "LOCK" position.

When running in reverse keep engine revolutions at the minimum.



40C EP type

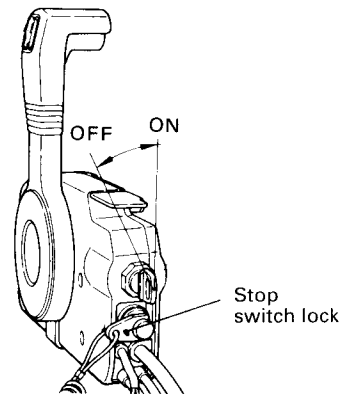
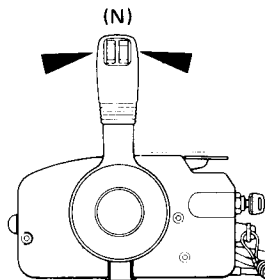
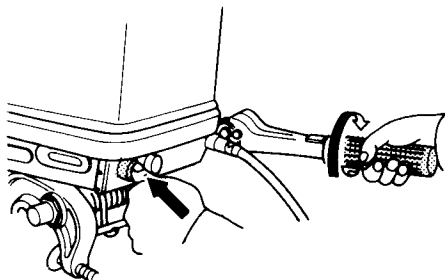
- (1) Forward
Swiftly shift the control lever to Forward (F) at 32° where the lever is latched automatically, while lifting up the lock button located at the bottom of the control lever grip. Further shifting will open the throttle.
- (2) Reverse
Swiftly shift the control lever to Reverse (R) at 32° where the lever is latched automatically, while lifting up the lock button located at the bottom of the control lever grip. Further shifting will open the throttle.

Note: The Control Lever is inoperative unless the Free Accelerator Lever is in the fully closed position.;

Note:

- Check if the Reverse Lock Lever is in "LOCK" position.
- Reduce the engine speed properly when the Control Lever is in "Neutral" position and do not increase the engine speed unnecessary.

4-4. Stopping



40C/40C EF type

- (1) Turn the throttle grip to low speed position.
- (2) Set the shift lever to Neutral position.
Run the engine for 2~3 minutes at idling speed if it has been running at full speed.
- (3) Press stop switch to stop engine, or pull out the stop switch lock.

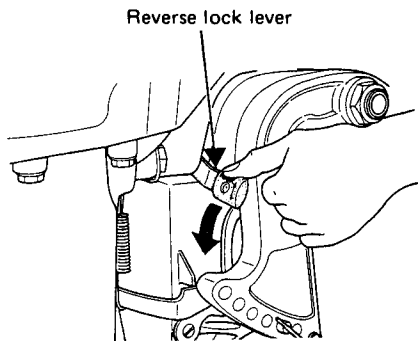
40C EP type

- (1) Set the shift lever to Neutral position and run the engine 2~3 minutes at idling speed.
- (2) Turn the main switch key to OFF position or pull out the stop switch lock.

Note:

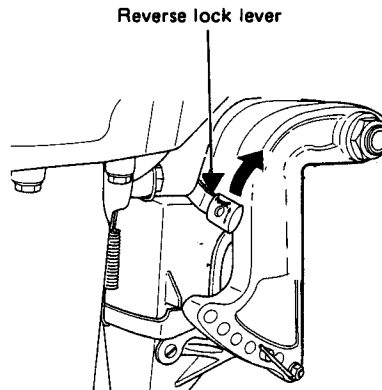
- After the engine stopped, close the air vent screw on the tank cap.
- Disconnect the fuel connector of the engine or the fuel tank.
- Disconnect the battery cord of EF or EP type engine, when the engine will not be used for days.

4-5. Tilt up and tilt down



(1) Tilt up

Turn the reverse lock lever to RELEASE side and tilt up the engine; the engine is set automatically.



(2) Tilt down

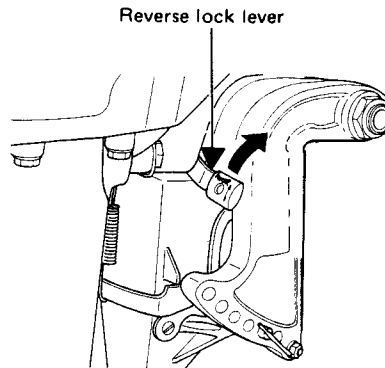
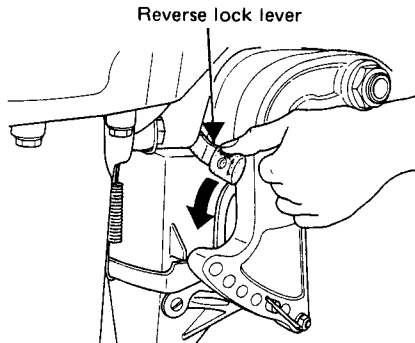
Turn the reverse lock lever to LOCK side, lift up the engine slightly, and put it down. (Reverse lock is done automatically.)

WARNING: Tilt up or down

When tilting up or down, be sure that no finger or hand is placed in between the swivel bracket and stern bracket.

Be sure to tilt down the outboard slowly.

4-6. Shallow water running



(1) Shallow water running position

Turn the reverse lock lever to RELEASE side, and tilt up the engine to set the engine to shallow water running position.

(2) Tilt down from shallow water running position

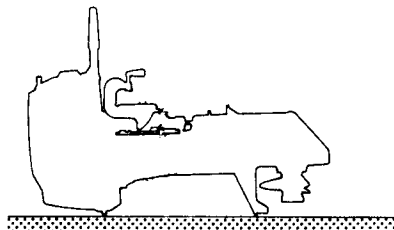
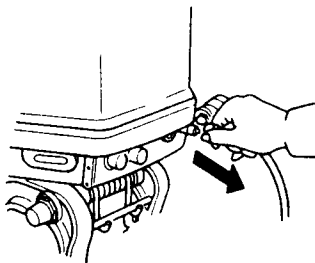
Turn the reverse lock lever to LOCK side, lift up the engine slightly, and put it down. (Reverse lock is done automatically.)

CAUTION

- When in shallow water running, take care that the water strainer is submerged at all times and that water is continuously running out of the cooling water check port.
- Be sure to run slowly when using the shallow water drive. Running at higher speeds will result in lack of control and may cause damage the gear case.
- Make sure that the motor does not strike the bottom, especially when running in REVERSE. If the motor strikes the bottom while reversing, the impact is transmitted to the transom, risking damage to both the motor and the boat.

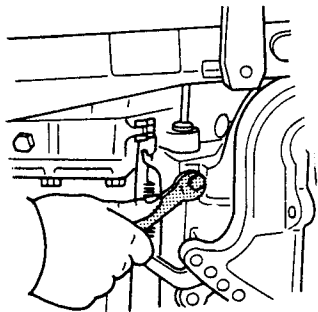
4-7. Removing the engine from the boat

- (1) Stop the engine.
- (2) Disconnect the fuel pipe connector from the engine.
- (3) Remove the engine from boat. Empty water from the gear case.
When moving the engine away keep the power head higher than the propeller.
- (4) When placing the engine on the ground again keep the power head on a higher level than the propeller and keep the steering handle uppermost.

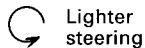


5. ADJUSTMENT

5-1. Adjusting steering resistance



- Adjust steering resistance by turning steering adjust bolt.



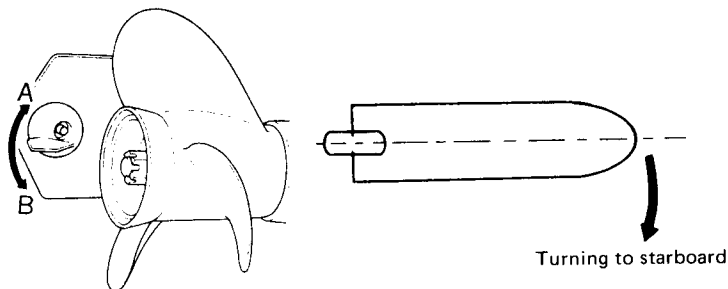
Lighter steering



Heavier steering

5-2. Adjusting a trim tab

If the boat fails to run straight, adjust the trim tab which you will find underneath anti-cavitation plate.



- (Example—1) If the boat has a tendency to pull to the right, move the trim tab in the direction A as shown in the drawing.
- (Example—2) Alternatively if it tend to pull to the left, move the trim tab towards B as shown in the drawing.

Note: A trim tab is also a sacrificial anode that protects against corrosion. Do not paint it as this would made it ineffective function.

6. INSPECTION AND ADJUSTMENT

6-1. Daily Inspection Checklist

Perform the following checks before and after use.

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 filters. Check rubber pipes for oil leakage 	Replenish Clean Replace
Electrical Equipment	<ul style="list-style-type: none"> Check that the main switch functions normally. Check that the battery electrolyte level and specific gravity are normal. Check for loose connections on battery terminal. Check that the emergency stop switch functions normally and makes sure the lock plate is present. Check cords for loose connections and damage. Check the spark plugs for dirt, wear and carbon built-up. 	Remedy or replace Replenish or recharge Retighten Remedy or replace Correct or replace Clean or replace
Throttle System	<ul style="list-style-type: none"> Check that 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

Item	Points to Check	Action
Recoil Starter	<ul style="list-style-type: none"> Check ropes for wear and damage. Check the latchet for engagement. 	Replace Correct or replace
Clutch and Propeller System	<ul style="list-style-type: none"> Check that the clutch engages correctly when operating the remote control or shift lever. Visually check the propeller for bent or damaged blades. Check that 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
Cooling Water	<ul style="list-style-type: none"> Check that cooling water is discharged from the cooling water check port after the engine has started. 	
Tools and Spares	<ul style="list-style-type: none"> To be 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

6-2. Periodic Inspection Checklist

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.

Item		Servicing Interval			Action	Remarks
		10 hours or 1 month	50 hours or 3 months	Every 100 hours or 6 months		
Fuel System	*Carburetor	<input type="radio"/>		<input type="radio"/>	Strip, clean and adjust, Adjust idling	
	Fuel filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Check and clean.	
	Piping			<input type="radio"/>	Check and clean.	
	Fuel tank	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Clean	
Ignition	Spark plugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Check gaps. Remove carbon deposits.	0.9-1.0 mm NGK B7HS10 CHAMPION L82YC (GAP1.0) NGK BR7HS10 CHAMPION RL82YC (GAP1.0)
	*Ignition timing	<input type="radio"/>		<input type="radio"/>	Adjust timing.	
Starting System	*Starter motor			<input type="radio"/>	Check for salt deposits and battery cable condition.	
	Battery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Installation, fluid quantity, gravity	
	Starter rope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Check for wear or damage	
Lower Unit	Propeller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Bend of blades damage, wear	
	Gear oil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Change of oil or replenishment and water leak	GENUINE gear oil GL5 (SAE#80-90) equivalent 470 cc
	Water pump		<input type="radio"/>	<input type="radio"/>	Check for wear or damage	Replace impeller every 12 months
Bolts and Nuts		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Retighten	
Sliding and Rotating Parts. Grease Nipples.			<input type="radio"/>	<input type="radio"/>	Apply and pump in grease.	
Anode and Trim Tab			<input type="radio"/>	<input type="radio"/>	Check corrosion and deformation	Replace

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

(1) Cleaning with fresh water

Wash down engine with fresh water to remove mud and salt from body casing. Flush out the cooling system with clean, fresh water after operating in salt or muddy water.

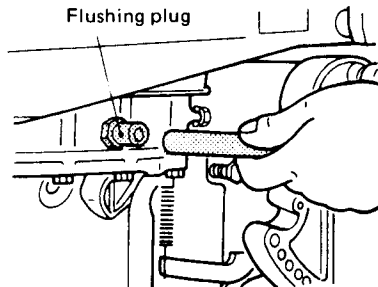
(1) Removing water plug from engine

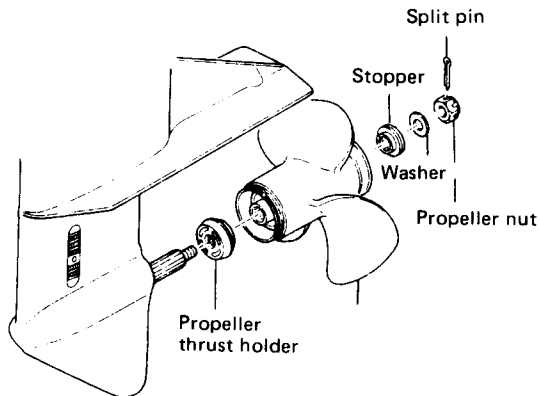
Replace drain plug with flushing plug on engine and wash out engine with fresh water. (Close water strainer and sub water strainer on gear case with tape etc., before washing out.)

Note: Take out a propeller from engine when use a flushing plug. Be sure to clean with fresh water before storage for long term.

(2) Start engine in neutral position and flush cooling water system to remove salty or muddy water.

Note: This work should be done with the engine turning over slowly.

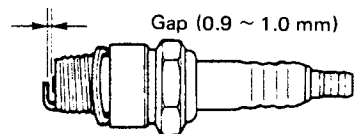




(2) Changing the propeller

Worn or bent propeller will cause both poor engine performance and eventually engine trouble.

- Take out the split pin and remove propeller nut and propeller thrust washer.
- Withdraw the propeller.
- Before re-assembling, apply Genuine Grease to the propeller shaft.



Spark Plugs

Note: Use genuine spark plugs (NGK B7HS-10 or BR7HS10) or recommended ones (CHAMPION L 82YC with gap 1.0).

(3) Checking spark plug

Remove carbon from around the center electrode. Replace with new if necessary.

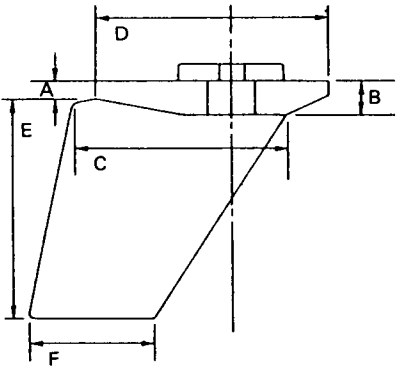
Note: Remove the ignition wire to the spark plug before removing the propeller in order to prevent accidents.

(4) Trim tab (anode)

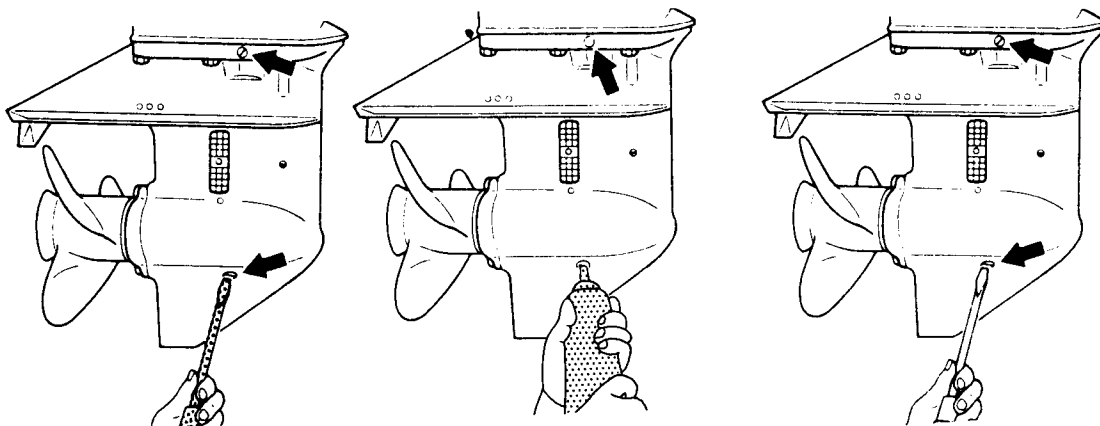
When the dimensions of the trim tab (anode), installed under the anti-cavitation plate, are reached replace it to a new immediately.

- Note:**
- Neither apply oil nor paint to the trim tab (anode).
 - Since the area around the mounting bolt for the trim tab tends to suffer from the electrical corrosion be sure to tighten the bolt properly.

Dimensional division (m/m)	Reference Dimensions					
	A	B	C	D	E	F
Dimensions of new product	3.0	8.0	51	50	49.5	25
Dimensions for replacement	1.5	6.5	43	44	30	14



(5) Changing gear oil



(1) Drain gear oil completely by removing both upper and lower plugs.

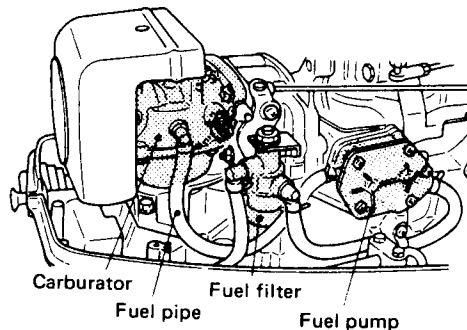
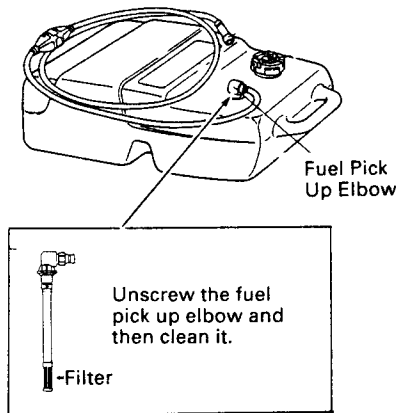
(2) Inject oil into lower oil plug hole until it flows from upper oil plug.

(3) Replace upper plug, then lower plug after withdrawing oil injector. Tighten lower oil plug.

Note: Use a genuine gear oil or recommended one (GL-5: SAE #80 to #90). capacity ... abt 470 cc

(6) Cleaning fuel tank and filter

Fuel filters are installed to both fuel tank and engine intake.



- When cleaning the filter on the tank side remove 4 mounting screws and housing.

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).

- When cleaning the fuel filter on the engine side remove the cap for the fuel filter.

6-3. Winter Storage

WARNING

1. When the motor is out of the water, being transported or in storage, always remove the positive (+) 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.
2. 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 and overhauled by your dealer.

1 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 engine vertically in a dry place.

2 Battery

- ① Disconnect the battery cables.
- 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 or baseline 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 discording and the electrolyte from deteriorating.
- ⑥ Store the battery in a dry place with its cover attached.

CAUTION

1. Do not allow the battery to discharge, since it can be damaged by freezing.
2. 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.

3 Electric Starter Motor

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

6-4. 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 installed properly.
- ③ Check that the shift and throttle function properly.
(Be surely 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 winter storage.

1. 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. gals.):
Mixing ratio: Gasoline 25:1 Engine oil
Use premium (super) gasoline and genuine Outboard Motor Oil. If this oil is not available, use NMMA TC-W3 certified outboard motor oil.
2. Warm up the engine for 3 minutes in "NEUTRAL" position.
3. Run the engine for 5 minutes at the slowest speed.
4. Run the engine for 10 minutes at half speed.
In steps 2 and 3 above, the oil used for winter storage inside the engine will be cleaned out, and optimum performance will be assured.

6-5. Checking after striking underwater object

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

(1) Looseness or damage of power unit installation bolts, gear case and extension case bolts, propeller shaft housing bolts, upper and lower mount rubber bolts and nuts and mount rubber retainer.

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.

6-6. The "SUBMERGED" motor in water

After picking up, immediately bring the outboard to the dealer.

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

(1) Remove the engine from water and wash seawater and mud from the engine with fresh water.

(2) Remove the spark plug and remove water from the cylinder by turning the engine over by the starter rope.

(3) After discharging water inject genuine engine oil into the cylinder through the spark plug holes and from the carburetor side and disperse the engine oil by turning the engine over again by recoil starter rope.

(4) After taking these emergency measures have your engine repaired at your dealer as soon as possible.

6-7. Laying up the engine in winter

If the boat with an outboard motor mounted is moored for some time under conditions where the air temperature falls below 0°C, water in the cooling water pump may freeze and damage the pump impeller. To prevent water from freezing, the lower part of the motor is kept in the water or discharge water completely from the pump by turning the engine by the starter rope when it is in the tilted up position.

7. TROUBLE SHOOTING

Possible causes of engine troubles are listed below.

For checking and repairing the engine, refer to this table. Contact your dealer as required.

Engine does not start	Engine starts but stops soon.	Poor idling	Poor acceleration	Engine revolutions abnormally high	Engine revolutions abnormally low	Cannot obtain high boat speed	Overheating of engine	Possible cause
•	•							Empty fuel tank
•	•	•	•		•	•	•	Incorrect connection of fuel system
•	•	•	•		•	•	•	Air entering fuel line
•	•	•	•		•	•	•	Distorted fuel pipe
•	•	•	•		•	•	•	Closed air vent of fuel tank cap
•	•	•	•		•	•	•	Clogged fuel filter, fuel pump or carburetor
		•	•		•	•	•	Improper engine oil
•		•	•				•	Improper gasoline
•	•	•	•		•	•		Excessive oil in mixture
							•	Shortage of oil in mixture
•			•					Excessive supply of fuel
•	•	•	•		•	•	•	Poor carburetor adjustment
•	•	•	•				•	Recirculation pipe broken
•	•	•	•		•	•	•	Incorrect spark plug used
•	•	•	•		•	•		Dirt or bridge on spark plug

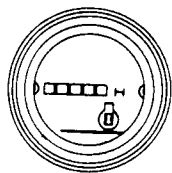
•	•	•	•		•	•		No or weak spark	
						•	•	(Insufficient cooling water flow) faulty pump, clogged pump	
		•				•	•	Faulty thermostat	
			•	•		•	•	Cavitation	
			•	•	•	•	•	Unsuitable propeller used	
		•	•	•	•	•	•	Damaged and bent propeller	
			•	•		•	•	Improper thrust rod position	
			•	•	•	•	•	Unbalanced load position	
			•	•	•	•	•	Transom too high or low	
•								Short-circuit of engine stop switch	
•		•	•		•	•		Incorrect adjustment of throttle link mechanism	
•		•	•		•	•		Incorrect adjustment of ignition timing	
•								Loose battery terminal connection, corrosion	(EP and EF types)
•								Excessive discharge of battery	
•								Faulty main switch	
•								Lock plate of stop switch absent	
•								Breaks of wires, loose grounding	
•								Insufficient battery capacity, loose terminal connection, corrosion	

8. ATTACHMENTS

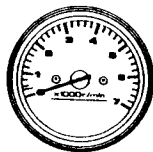
Name		Quantity	Dimensions	Remarks
Tools	Tool bag	1		
	Pliers	1		
	10×13 socket wrench	1	10 × 13 mm	
	21 socket wrench	1	21 mm	
	Socket wrench handle	1		
	Slotted-head screwdriver	1		
Spare parts	Starter rope	1	1000 mm	
	Spark plug	1	NGK B7HS-10 or CHAMPION L82YC (Gap: 1.0 mm)	
	Split pin	1		
*Other items packed	Fuel tank	1		
	Primer valve	A complete set		
	Remote control box	A complete set		(EP type only)
	Remote control fitting parts	A complete set		(EP type only)
	Drag link	A complete set		(EP type only)
	Flushing plug	1		

* Not included as standard accessories in some markets.

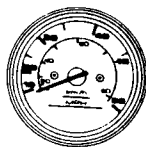
9. OPTIONAL ACCESSORIES



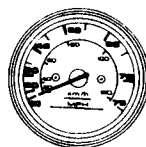
(1) Hour meter



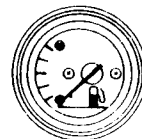
(2) Tachometer



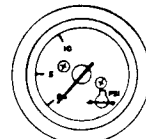
(3) Speedometer
(50 MPH)



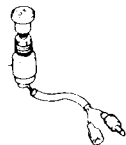
(4) Speedometer
(75 MPH)



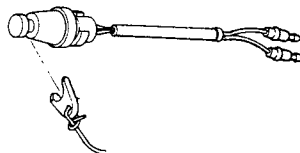
(5) Fuel meter



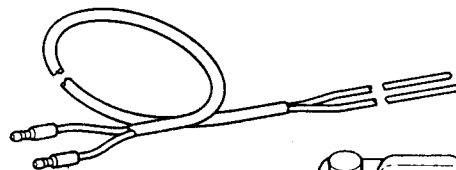
(6) Water pressure
meter



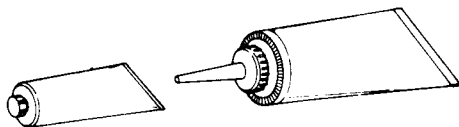
(7) Meter lamp switch



(8) Stop switch



(9) Extension
cord, light

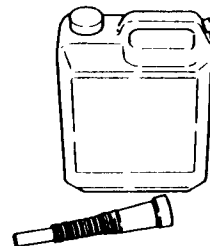


(10) Genuine grease
(50 g, 250 g)

(11) Genuine gear oil
(260 cc, 500 cc)



(12) Touch-up spray
paint (300 ml)



(13) Genuine engine oil

(15) Turn buckle ass'y
for twin remote
control

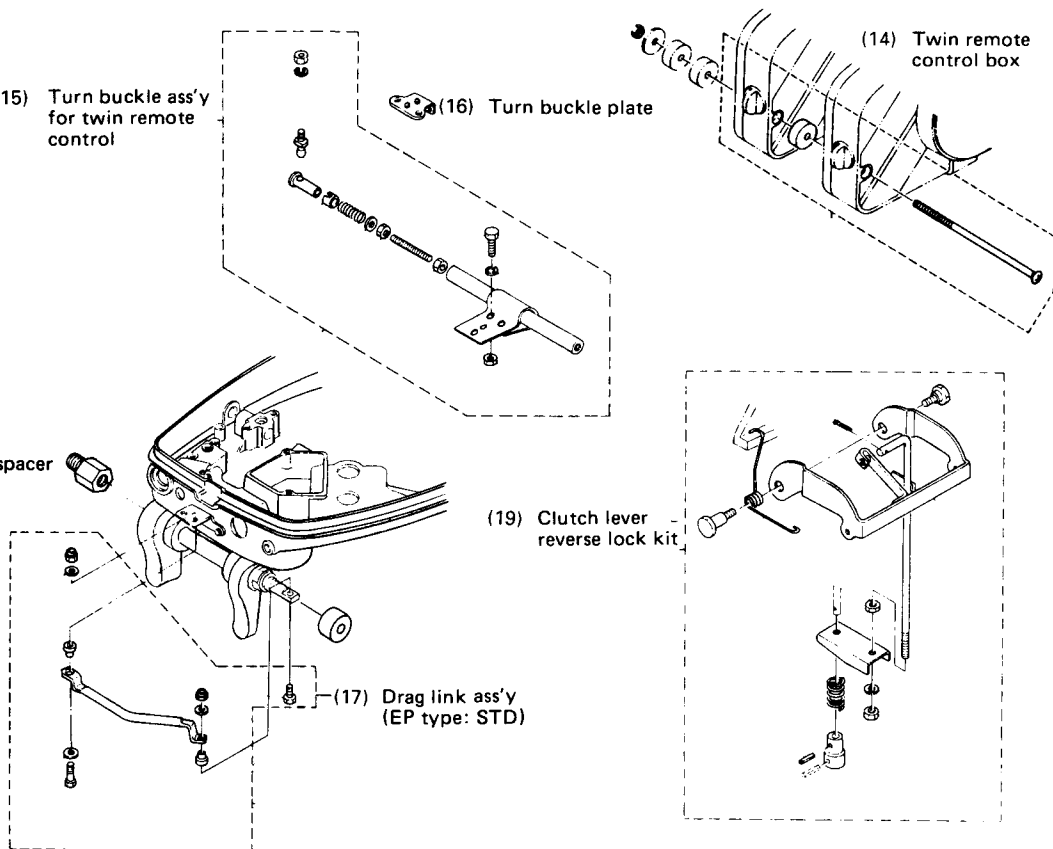
(16) Turn buckle plate

(14) Twin remote
control box

(18) Drag link spacer

(19) Clutch lever
reverse lock kit

(17) Drag link ass'y
(EP type: STD)



10. PROPELLER SELECTION

		Light duty boat ←				→ Heavy duty boat (propeller dimensions: D × P)				
Propeller Mark		16	14	13	12	11	10	9	8.5	7*
Size	(mm)	272 × 400	260 × 352	262 × 322	268 × 296	268 × 287	275 × 252	276 × 226	285 × 220	290 × 180
	(inch)	10.7 × 15.7	10.2 × 13.9	10.3 × 12.7	10.6 × 11.7	10.6 × 11.3	10.8 × 9.9	10.9 × 8.9	11.2 × 8.7	11.4 × 7.1

⧫ For S. L. LL.UL/XL

Note: Propellers are 3-blades type except *marked one.

*marked propeller has 4-blades.

PROPELLER

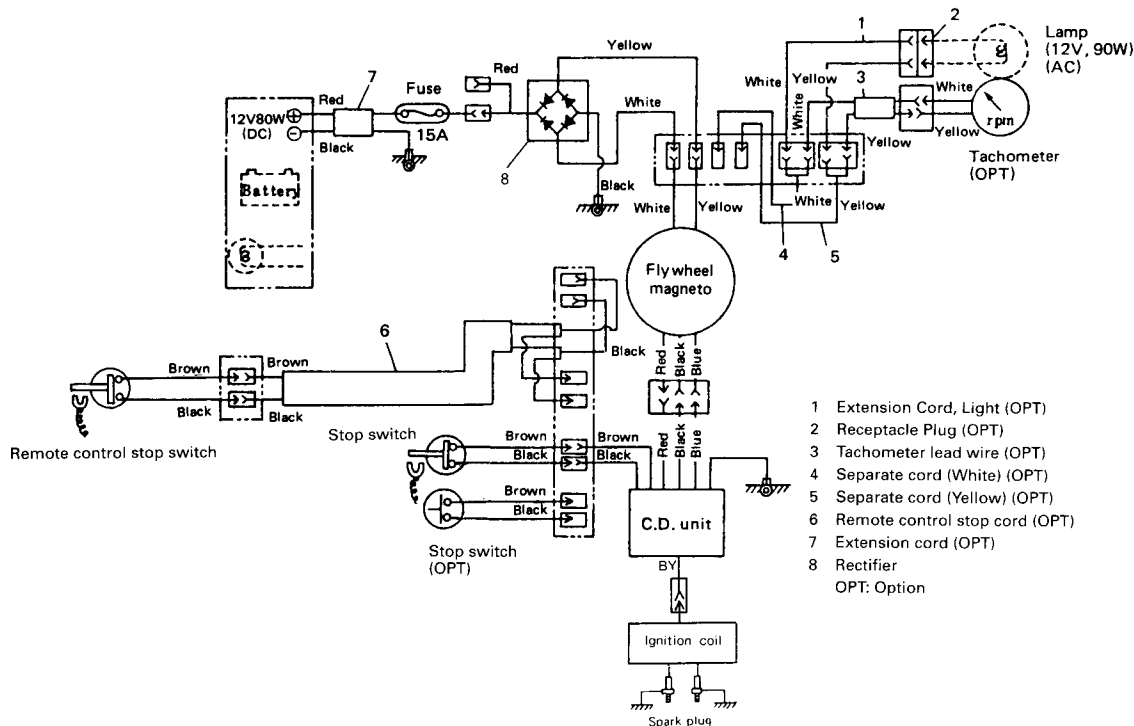
Note: Use a genuine propeller.

For a stainless propeller, use of the one designed specifically for outboard made by POWER TECH is recommended.

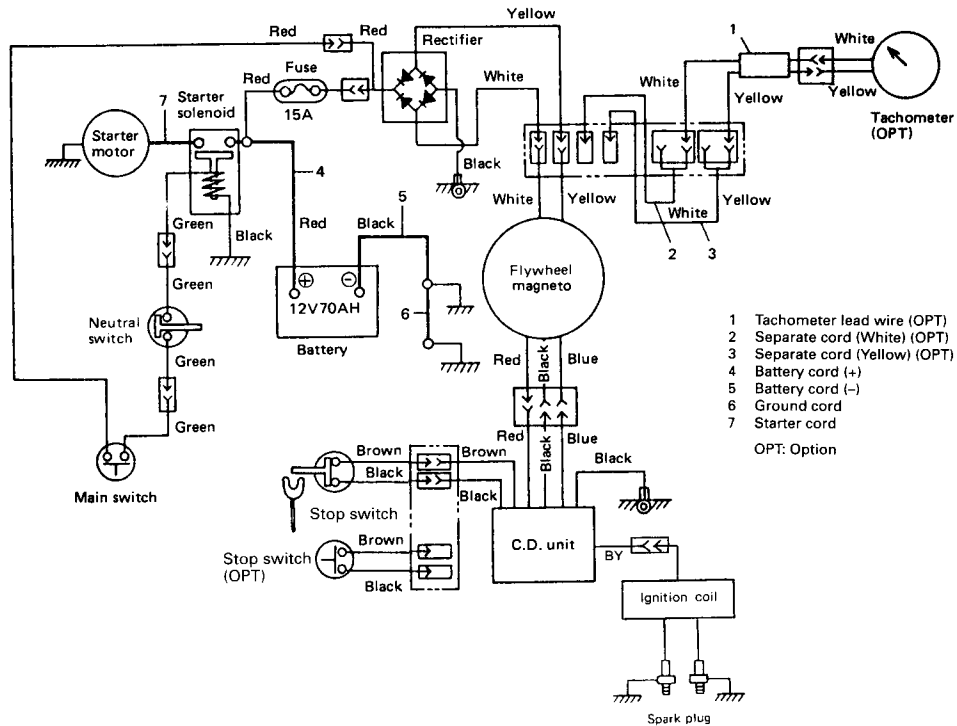
A propeller must be selected so that the engine rpm measured at wide open throttle while cruising is within the recommended range, 5,200 to 5,700.

11. WIRING DIAGRAM

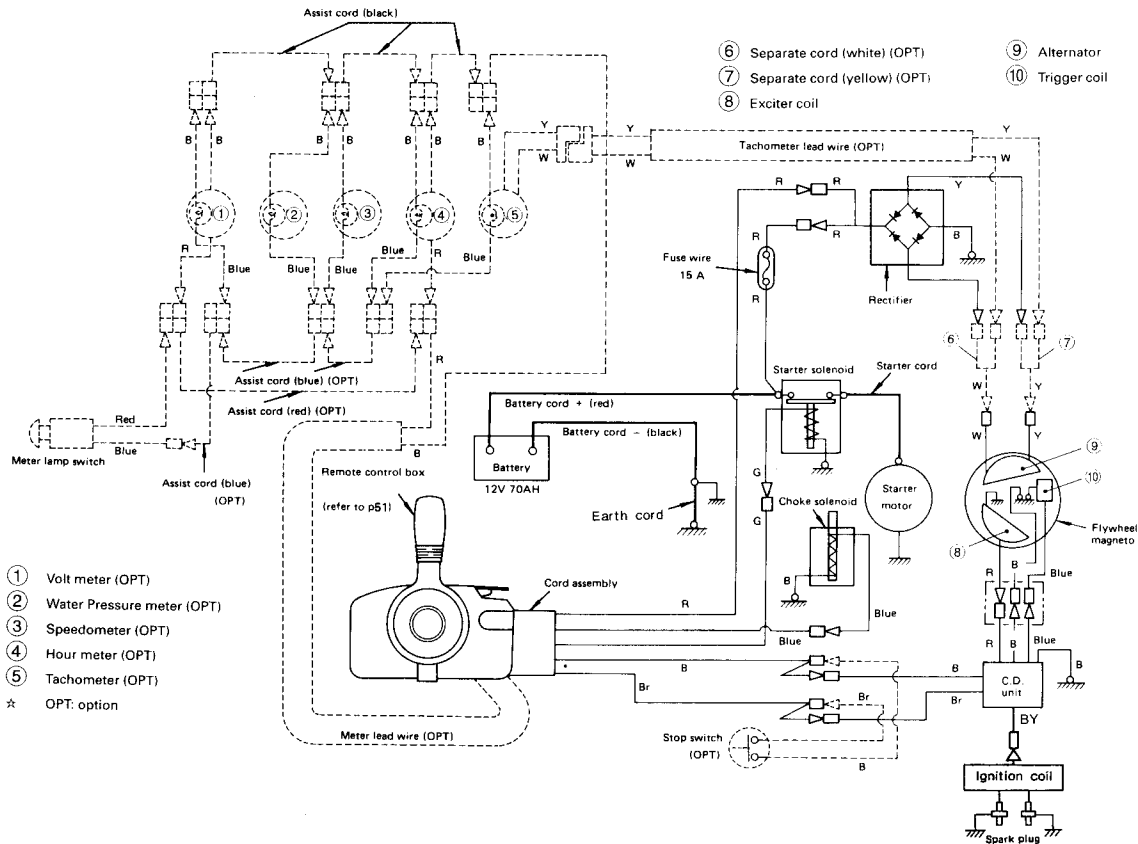
1. 40C TYPE



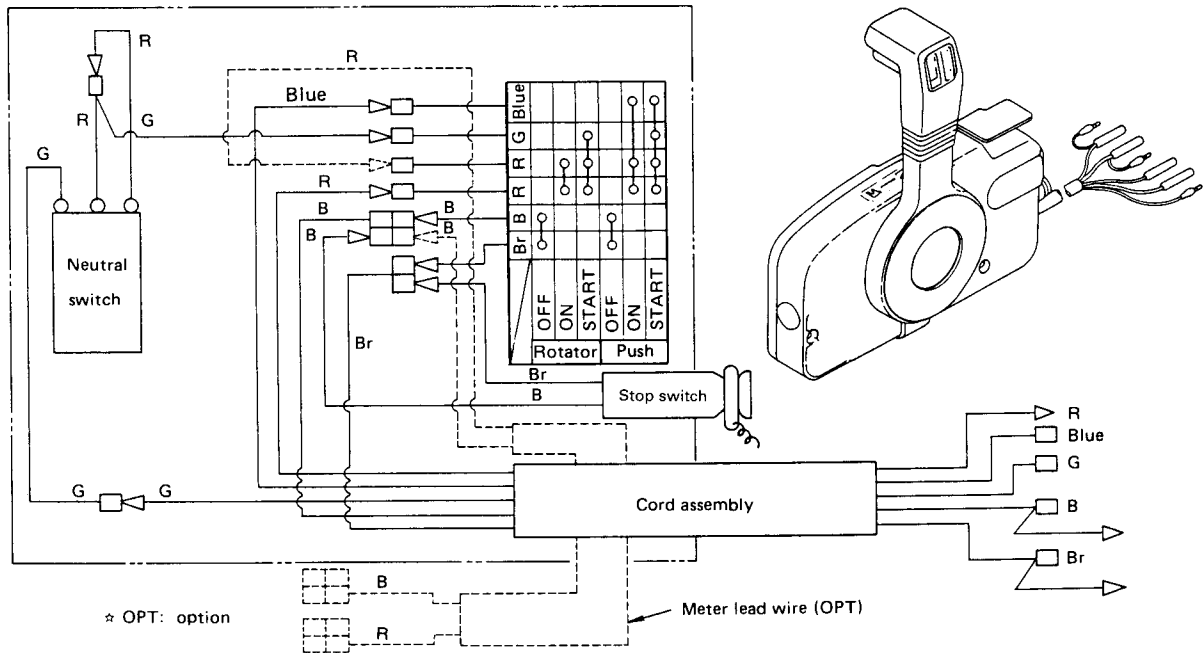
2. 40CEF TYPE



3. 40C EP TYPE



4. REMOTE CONTROL BOX





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