

NISSAN OUTBOARD MOTOR



NS 50
NS 60
NS 70



OWNER'S

OPERATING MANUAL

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I PREFACE

Thank you very much for selecting our Nissan Marine Outboard Motor.

This operator's manual contains information on the operating procedures, preventive maintenance and inspection procedures of the Nissan Marine Outboard Models NS50, NS60 and NS70. Please read this manual thoroughly before operating your Nissan outboard motor. You should become familiar with the correct operating procedures so as to assure many years of safe and pleasant boating.

CONTENTS

I	PREFACE	
	SPECIFICATIONS	1
	ACCESSORIES	2
	OPTIONAL PARTS	2
II	DAILY (PRESAILING) AND PERIODIC INSPECTION AND SERVICE	3
	1. PERIODIC INSPECTION AND SERVICE	3
	2. DAILY (PRESAILING) INSPECTION	3
	3. NORMAL MAINTENANCE SERVICE PARTS	3
	4. PERIODIC REPLACEMENT PARTS	4
	5. INSPECTION ITEMS AND INTERVALS	5
	6. DAILY INSPECTION	6
	(1) Inspection before starting engine	6
	(2) Inspection with engine running	7
III	HANDLING	9
	1. MOUNTING OUTBOARD MOTOR	9
	(1) Transom	9
	(2) Mounting position	9
	(3) Installation	10
	(4) Mounting angle	11
	(5) Adjustment of natural deviation	12
	2. PREPARATORY OPERATION AND MOTOR OPERATION	12
	(1) Preparatory operation	12
	① Fuel	12
	② Preparation	13
	③ Starting	14
	(2) Operation	17
	① Type F	17
	② Type P	18
	③ Engine rpm	19
	④ Stopping the engine	20
	⑤ Steering operation	21
	⑥ Hanger bolt	21
	⑦ Removal and installation of the upper cover of the motor	21
	(3) Lifting the motor	22
	① Type F	22
	② Power trim & tilt	22
	(4) Running-in operation	22
	① Procedure	24
	② Inspection after running-in	24
	(5) Handling after operation	25
	① When the motor is removed from the boat	25
	② After operation in salt water or muddy water	25
	③ Mooring	25
	④ When the motor is immersed in water	26
IV	DRIVE UNIT	27
	① Gear oil	27
	② Selection of propeller	27
	③ Replacement of propeller	28
	④ Replacement of anode (corrosion preventing zinc electrode)	29
	⑤ Inspection of drive unit for damage and rust	30
V	SERVICING/BEFORE AND AFTER STORAGE	31
	1. PRESTORAGE INSPECTION AND SERVICE	31
	2. POST-STORAGE INSPECTION AND SERVICE	32
	TRUBLE-SHOOTING	33
	WIRING DIAGRAM	35

SPECIFICATIONS

Item	Model	NS50C				NS60A				NS70A			
		EF	EFT	EP	EPT	EF	EFT	EP	EPT	EF	EFT	EP	EPT
Overall length × overall width × overall height	F	1,135 × 355 × 1,317 (44.68 × 13.98 × 51.85)				1,135 × 355 × 1,317 (44.68 × 13.98 × 51.85)				1,135 × 355 × 1,317 (44.68 × 13.98 × 51.85)			
	P	705 × 355 × 1,317 (27.76 × 13.98 × 51.85)				705 × 355 × 1,317 (27.76 × 13.98 × 51.85)				705 × 355 × 1,317 (27.76 × 13.98 × 51.85)			
Weight	kg (lb)	93 (205)				94 (207)				94 (207)			
Engine model		2WT81A				2WT86A				2WT86A			
Max. output	PS/rpm (HP/rpm)	50/5,000 (49.3/5,000)				60/5,000 (59.2/5,000)				70/5,500 (69.0/5,500)			
Max. speed range	rpm	4,500 - 5,500				4,500 - 5,500				5,000 - 5,500			
Displacement	cm ³ (cu in)	749 (45.70)				845 (51.56)				845 (51.56)			
No. of cylinders × bore × stroke	mm (in)	2 × 81 × 72.7 (2 × 3.19 × 2.86)				2 × 86 × 72.7 (2 × 3.39 × 2.86)				2 × 86 × 72.7 (2 × 3.39 × 2.86)			
Cooling system		Water-cooled, rubber impeller rotating type											
Starting system		Starting motor											
Spark plug		B8HS-10, *BR8HS-10 (NGK), L78C (Gap 1 mm: 0.039 inch) (CHAMPION)											
Clutch type, gear shift range		Dog clutch, Forward/neutral/reverse											
Reduction ratio		12:23											
Speed control system		Hand grip type		Remote control type		Hand grip type		Remote control type		Hand grip type		Remote control type	
Fuel and mixture ratio		Gasoline, oil (2-cycle oil) 50:1											
Tilt method		Tilt pin	Power tilt	Tilt pin	Power tilt	Tilt pin	Power tilt	Tilt pin	Power tilt	Tilt pin	Power tilt	Tilt pin	Power tilt
Gear oil	Recommended	SAE #80											
	Capacity	cc (US pt, Imp pt)	900 (1-7/8, 1-5/8)										
Fuel tank capacity	ℓ (US gal, Imp gal)	24 (6-3/8, 5-1/4), *25 (6-5/8, 5-1/2) (Separate)											

* For Canada

ACCESSORIES

Service tools	Quantity
(1) Tool bag	1
(2) Pliers	1
(3) Wrench (17 × 19 mm) (0.67 × 0.75 in)	1
(4) Socket wrench (21 mm) (0.83 in)	1
(5) Socket wrench handle	1
(6) Screwdriver	1
Spare parts	
(1) Starter rope	1
(2) Spark plug	1
(3) Cotter pin	2
(4) Stern bracket tightening bolt set	1 set
(5) Remote control box (P type)	1 set
(6) Drag link assembly (P type)	1 set
Others	
(1) Vinyl motor cover	1
(2) Flushing plug	1
(3) Fuel tank	1
(4) Owner's Operating Manual	1

OPTIONAL PARTS

(1) Tachometer
(2) Hour meter
(3) Speedometer
(4) Fuel meter
(5) Water temperature meter
(6) Tilt handle bar (for EP & EF)
(7) Tilt assistant spring (for EP & EF)
(8) Twin kit parts
(9) Twin remote control
(10) Drive cleaner

II DAILY (PRESAILING) AND PERIODIC INSPECTION AND SERVICE

1. PERIODIC INSPECTION AND SERVICE

In order to maintain your Nissan Marine outboard motor in peak operating condition, and to assure safety during operation, Nissan Motors recommends that periodic inspection and service be performed on your outboard motor to check for abnormalities and worn or damaged parts. If any abnormalities are detected, they should be repaired and corrected immediately.

This periodic inspection and service is the purchaser's responsibility and is conducted at his expense.

It is strongly recommended that this inspection and service be conducted periodically, because it is indispensable for the safe and economical operation of your outboard motor.

It is also recommended that the Nissan Marine dealer conduct each periodic inspection and service on your motor.

2. DAILY (PRESAILING) INSPECTION

The daily or presailing inspection should be conducted by the user before starting the outboard motor. This will avoid problems and assure safe boating. In other words, the user should inspect his motor and ensure that it is free from defects and in good condition before sailing.

Nissan Motor Co. Ltd. strongly recommends that this daily inspection be conducted before sailing to ensure trouble-free motor operation and safe and pleasant boating. Remember that neglecting this inspection and minor troubles may lead to unexpected occurrence of serious problems. If any abnormalities are detected during this inspection, a Nissan Marine dealer should repair or service your outboard motor before you operate it.

When conducting this daily inspection, please follow the procedure described in the section "Daily Inspection Procedure".

3. NORMAL MAINTENANCE SERVICE PARTS

Some parts of the outboard motor must be replaced after a certain period of operation. These parts cannot be repaired and thus are called normal maintenance service parts.

Normal maintenance service Nissan Marine parts are as follows:

- ① Wires, cables and harnesses
- ② Screws, nuts and washers
- ③ Gaskets
- ④ Paint and plating
- ⑤ Hoses, oil seals, grommets, rubber mounts, impeller and rubber parts
- ⑥ Spark plugs, contact points, arms, brushes, fuses and other electrical items
- ⑦ Oil and grease
- ⑧ Shearpins, cotter pins, drive pins and plugs
- ⑨ Thrust washers and propeller nuts
- ⑩ Propeller
- ⑪ Corrosion-proof zinc
- ⑫ Starter rope
- ⑬ Resin parts

4. PERIODIC REPLACEMENT PARTS

Some maintenance parts of the outboard motor are designated as periodic replacement parts. Periodic replacement parts are those parts that do not show external indications of deterioration in quality or function even after the motor has been used for a long time. It is difficult to estimate the remaining life of these parts and to check whether they are functioning normally. These parts should be replaced after a certain period of operation so as to assure safe outboard motor operation. These parts should be replaced at the time of periodic inspection at the expense of the user.

Periodic replacement

Part	Replacement interval
1 Fuel hose	Every 2 years
2 Fuel tank	Every 3 years

When the motor has been operated for a long time, or storage conditions are poor, it is recommended that these parts be replaced early, even before the predetermined replacement period has expired. Periodic replacement parts of the Nissan Marine outboard motor and their replacement time are shown below.

5. INSPECTION ITEMS AND INTERVALS (Outboard motor)

Inspection item	Inspection after running-in	Daily check	Periodic inspection		Remarks
			Every 50 hours or 3 months	Every 100 hours or 6 months	
1. Fuel strainer for contamination	O	O	O	O	
2. Fuel pump for operation			O	O	
3. Spark plug for condition	O	(When motor fails to start) O	O	O	
4. Bolts and nuts for tightness as necessary	O		O	O	
5. Electrical connections for looseness or damage		O	O	O	
6. Battery cable and terminals for condition		O			
7. Battery electrolyte level		O			
8. Specific gravity of battery electrolyte				O	
9. Stop switch for operation				O	
10. Outboard motor for proper installation		O			
11. Drive unit for damage and rust				O	
12. Propeller for damage and proper installation		O	O	O	
13. Fuel tank and hoses for leaks for damage (including cocks)		O	O	O	Replace fuel hose every two years and fuel tank every three years.
14. Choke valve for operation		O		O	
15. Carburetor overhauling				O	
16. Throttle grip for operation		O		O	
17. Remote control lever for operation		O		O	
18. Clutch lever for operation		O		O	
19. Ignition timing check				O	
20. Idling for condition	O	O		O	
21. Safety switch for operation		O			
22. Steering for operation		O		O	
23. Replacement of gear oil (Every 100 hrs)	O (Replace)		O (Replenish)	O (Replace)	
24. Lubrication of sliding and rotating parts			O	O	
25. Anode (or trim tab) for corrosion		O			Check every week.
26. Power trim and tilt for operation			O	O	
27. Safety equipment and spare parts for condition		O			
28. Mixture ratio & quantity of fuel		O			

6. DAILY INSPECTION

Conduct a daily inspection in the sequence described below. If any abnormality or damage is noted, contact the nearest dealer for inspection and servicing.

(1) Inspection before starting engine

- ① Check outboard motor for proper installation.
 - 1) Check that the clamp handle and stern bracket mounting bolts are properly tightened. Check transom mount for damage.

NOTE:

Be careful not to tighten the clamp screw to such an extent that the transom is damaged. Do not use a tool for tightening. Over-tightening of the clamp screw will damage the transom of boat.

- ② Check propeller for damage and proper installation.
 - 1) Ensure that the main switch key is in the "STOP" position (for F type) or in the "OFF" position (for P type). Then check propeller for damage while turning slowly by hand.
 - 2) Check propeller for proper installation, cotter pin for damage, and seals for oil leaks.

- 3) Check condition of anode or trim tab (anticorrosion zinc electrode) attached to anticavitation plate. Retighten if necessary.

NOTE:

Be sure to check the zinc electrode every week for corrosion. Replace if it is reduced to approximately 50% of original size. See p.30.

- ③ Check electrical connections for looseness or damage.

Check high-tension cord and wire harness connectors for looseness or rust. Check harness surface for scratches or damage.

- ④ Check condition of battery cables and terminals.

Check battery cable connections for looseness, cables for damage and terminals for rust.

- ⑤ Check the level of battery fluid.

Check that battery electrolyte is at the specified level, or 5 to 10 mm (0.20 to 0.39 in) above the electrode if such a level mark is not provided. If the level is below the specification, add distilled water.

- ⑥ Check fuel strainer for contamination. Check fuel filter for contamination and clogging, and filter cup for collection of water.

NOTES:

▲ **If the fuel filter is clogged with dirt, or there is water in the filter cup, remove the filter cup by removing the bottom nut with a wrench. Clean both the filter and cup.**

▲ **Also clean the inside of the fuel tank.**

- ⑦ Check fuel tank and hoses for leaks or damage.

Check carefully all surfaces of the fuel tank for damage. Check the fuel hose for damage, loose connections or fuel leakage.

NOTES:

- ▲ **Replace the fuel hoses every two years.**
- ▲ **If damage or cracks are noted, replace the hoses immediately.**
- ▲ **Replace the fuel tank every three years.**

- ⑧ Check choke valve for proper operation. Push and pull the choke rod to check for binding. Also check the rod for damage.

⑨ Check throttle grip for proper operation. (EF)

1) Turn the hand grip to adjust the throttle and check for excessive play. Check the linkage for proper operation.

2) Shift the clutch lever to "F" (Forward) and then to "R" (Reverse).

Check for proper operation of the neutral switch.

⑩ Remote control lever operation.(EP)

1) Move the remote control lever to the neutral position. Operate the free accelerating lever to see if free play is excessive. Also check that interconnections operate properly.

2) Check that the remote control lever operates smoothly when the free accelerating lever is set to "RUN" (the lowest position); and that the remote control lever is locked when the free accelerating lever is set higher than the "RUN" position.

⑪ Check steering for proper operation.

Move the motor to the left and then to the right using the handle. Check for binding or unsmooth movement. Also check that the handle is not loose.

After completing the above inspection install the upper motor cover.

(2) Inspection with engine running

① Start engine and perform warm-up operation for 3 to 5 minutes.

NOTES:

▲ Do not race the engine under no-load conditions.

▲ After starting the engine, check whether cooling water flows normally from the drain port and the small water telltale port.

② Check condition of spark plug (only when motor fails to start)

Remove the upper motor cover and remove the spark plug. Check for carbon deposits or other contamination near the electrode.

NOTE:

Wipe contamination from around the electrode. If heavy carbon deposits are found, check the inside of the cylinder through the spark plug hole. If a heavy carbon deposit is noted inside, contact the nearest dealer for inspection and servicing.

③ Check idling operation.

After warm-up, idle the engine and check for rough idling or other irregularities.

④ Check clutch lever for proper operation. (EF)

After making a safety check in front and behind the boat and making sure that the boat is moored safely with rope, shift clutch lever to "F" and then to "R". Increase engine speed slightly at each position to check whether shift lever operation is normal.

NOTES:

▲ The clutch lever should be shifted quickly.

▲ Before checking for proper operation, reduce engine speed to idle immediately after the boat starts to move.

▲ If thrust force sufficient to move the boat is transmitted before engine speed increases, or if the transmission of thrust force does not correspond with increases in engine speed, have the engine checked and repaired by your dealer.

⑤ Clutch remote control lever for shifting. (EP)

After making a safety check in front and behind the boat and making sure that the boat is moored safely with rope, shift remote control lever to "F" and then to "R". Increase engine speed slightly at each position to check whether remote control lever operation is normal.

NOTES:

- ▲ The remote control lever should be shifted quickly.
 - ▲ When checking remote control lever operation, decrease engine speed to idling as soon as thrust force is transmitted to the boat.
 - ▲ If thrust force is transmitted to the boat before engine speed is increased or if no thrust force is transmitted when engine speed is increased, contact the nearest dealer for inspection and servicing.
- ⑥ Check safety switch for operation. (EP)
After completing the above-mentioned inspection, remove lock plate from safety switch to see whether the engine stops.

NOTE:

If the engine is stopped by means of the safety switch, be sure to turn the main switch key to the "STOP" position.

⑦ Spare parts and accessories

Check spare parts, service tools and safety parts for damage. Ensure that none are missing.

⑧ Fuel level in fuel tank.

Ensure fuel tank contains enough fuel for your boating schedule.

III HANDLING

1. MOUNTING OUTBOARD MOTOR

(1) Transom

Nissan Marine outboard motors are available in two sizes to fit different transom heights. Generally, long shaft types which permit the freeboard to be maintained at a higher level are popular for safety reasons. The transom height is listed below.

Height of transom on boat	Height of outboard motor transom
L	530 mm (20.86 in)
XL	657 mm (25.87 in)

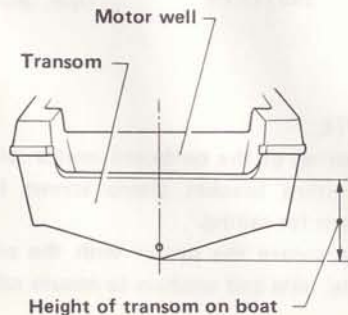
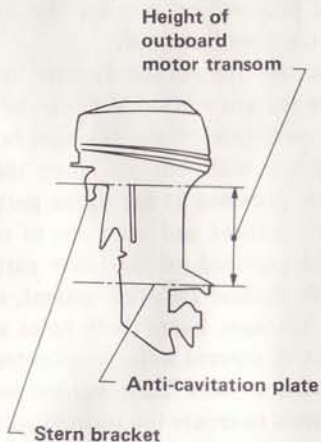


Fig. 1



(2) Mounting position

The mounting position of the outboard motor affects the performance of the boat. It should be installed on the center line.

The height of the anti-cavitation plate determines whether cavitation will be generated. The distance between the anti-cavitation plate and the bottom of the boat should be as small as possible within a range where no cavitation is generated.

Install your Nissan Marine outboard motor so that the distance between the bottom of the boat and the anticavitation plate is 10 to 30 mm (0.39 to 1.18 in).

NOTES:

- ▲ If proper transom height is unobtainable due to boat design, adjust the height by inserting a wooden block between the upper portion of the transom and the stern bracket.
- ▲ The distance between the bottom of the boat and the anticavitation plate can also be adjusted in increments of 17 mm (0.67 in) by utilizing the three bolt holes in the stern bracket.

Fig. 2

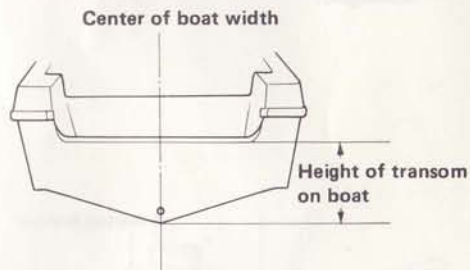


Fig. 3

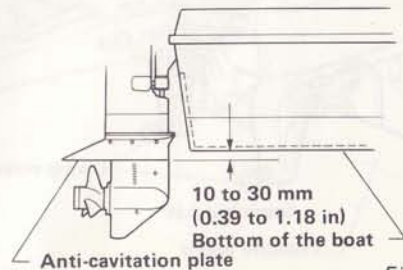


Fig. 4

(3) Installation

- ① Install the outboard motor correctly to the transom and securely tighten the stern bracket clamp screws with a wrench.

NOTES:

- ▲ To prevent damage to the transom, insert a transom pad or other similar material between the stern bracket and the transom.
- ▲ Do not tighten the clamp screws with excessive force, or the transom may be damaged.

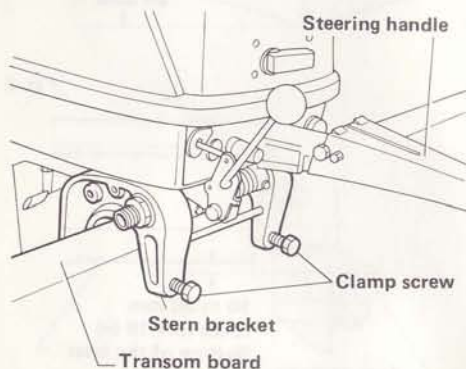


Fig. 5

- ② After tightening the stern bracket clamp screws, tighten the accessory bolts, nuts and washers to prevent the outboard motor from falling off. First, tilt the outboard motor up to prepare for installation, drill two bolt holes on each side of the transom board by aligning with one of three mounting holes provided at the upper part of the stern bracket and with one of the long holes provided on the lower part. Next, apply sealant (silicone sealant, etc.) to the transom board bolt holes and the bolts to prevent water from entering the mounting holes. Then, tighten nuts with washers to secure the stern bracket.

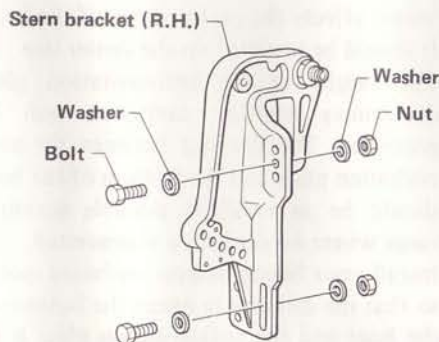


Fig. 6

- ③ If the outboard motor is equipped with a power trim mechanism, drill bolt holes in the transom board according to the "Stern bracket bolt hole dimensions" diagram before mounting the outboard motor. Insert bolts in advance in the left stern bracket, and install the outboard motor to the transom board according to the method explained above.

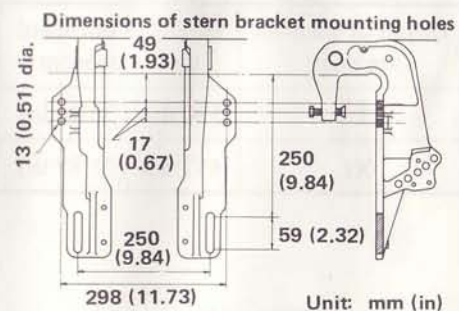


Fig. 7

NOTE:

Securing of the outboard motor with only the stern bracket clamp screws is insufficient for sailing. Also secure the motor with the accessory bolts, nuts and washers to ensure safety.

(4) Mounting angle

A. Manual tilt

If the boat is operated at maximum speed with the outboard motor installed, the motor will be at a right angle to the surface of the water. However, if the position of the boat is unsatisfactory due to design or load, raise the locking lever located at the end of the thrust rod to make it parallel with the rod. Pull up on the thrust rod. Be careful that the spring does not fall off the rod. Change the position of the stern bracket tilt angle adjusting hole so that the motor is vertical in the water.

1) If the bow tends to rise while sailing:

If the boat is unstable while underway due to up and down motion of the bow, set the stern bracket thrust rod in a mounting hole closer to the transom board.

2) If the bow tends to lower while sailing:

If the bow of the boat is too low, the boat is apt to be covered with waves. To correct, set the thrust rod in a mounting hole apart from the transom board.

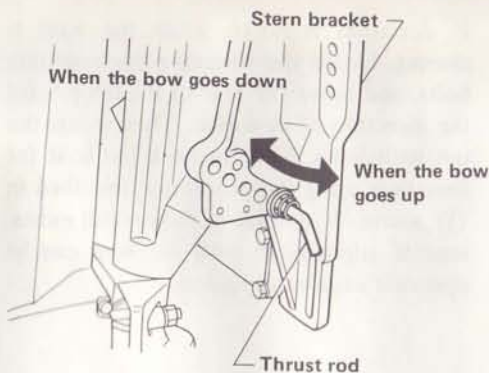


Fig. 8

B. Power trim

The outboard motor equipped with the power trim mechanism permits adjustment of the trim angle during sailing. Run at full speed after installing the outboard motor to check the mounting angle of the motor. If the sailing position of the boat is not proper for the boat design, load, and other conditions, adjust the trim angle by using the tilt switch built into the remote control lever. (Keep the main switch key in the "ON" position.) Release the tilt switch; the trimming operation will stop, and the switch will return to its original position.

1) If the bow tends to rise while sailing:

If the boat is unstable while underway due to up and down motion of the bow, adjust the sailing position of the boat by manipulating the "DN" side of the tilt switch several times, a little at a time.

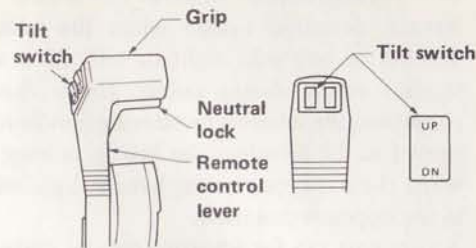


Fig. 9

2) If the bow tends to lower while sailing:

If the bow of the boat is too low, the boat is apt to be covered with waves from the front. To correct, adjust the sailing position of the boat by manipulating the "UP" side of the tilt switch several times, a little at a time.

NOTE:

Incorrect handling of the tilt switch and a large change in the trim angle at one time may lead to an overthrow accident. Be sure to change the angle gradually in several steps by operating the switch several times momentarily, to adjust a little at a time.

(5) Adjustment of natural deviation

Natural deviation occurs when the boat deviates to one side, right or left, from a straight course during sailing. Under this condition, the wheel-type steering handle is turned in the direction the boat is moving, while the bar type steering handle is pulled in the opposite direction.

A trimming tab for adjusting natural deviation is attached at the lower rear side of the anticavitation plate. This trimming tab also serves as the zinc electrode (anode). If deviation is noted during sailing, loosen the trimming tab mounting bolts, and move the rear of the tab toward the direction of deviation.

① How to determine direction of deviation

Run the boat at cruising speed, and set the handle in the straight ahead position. Remove your hand from the handle, and you can determine whether the boat deviates and the direction of deviation.

② Adjustment

A trimming tab for adjusting natural deviation is attached at the rear lower side of the anti-cavitation plate. This trimming tab also serves as the zinc electrode (anode).

If deviation is noted while the boat is moving, loosen the trimming tab mounting bolts, and move the rear of the tab toward the direction of deviation. Then secure the tab with bolts. Next, recheck the boat for deviation using the procedure described in ① above. If natural deviation still exists, repeat adjustment until the boat can be operated without deviation.

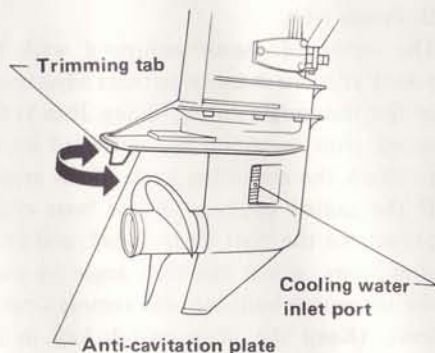


Fig. 10

2. PREPARATORY OPERATION AND MOTOR OPERATION

(1) Preparatory operation

① Fuel

1) Gasoline

Use automotive gasoline for the outboard motor. Octane rating of more than 86.

2) Lubricating oil (Engine oil)

Use 2-cycle motor oil conforming to B.I.A. standard.

3) Mixing of fuel

a) The recommended fuel mixture ratio for gasoline and engine oil is 50:1. (Volume ratio)

b) Proper handling and operation during the initial run-in period, using the correct fuel mixture will extend engine life and maintain the original high performance and durability of the motor for a long time.

PRECAUTIONS:

1. During the first five hours of the run-in operation, use a fuel mixture ratio of 20:1.
2. During the next five hours of run-in, use a fuel mixture ratio of 50:1.

3. Stop the engine before filling with fuel.
4. When filling fuel, clean the fuel inlet port and surrounding area so foreign matter does not enter the fuel tank.
5. When supplying fuel from a portable container, make sure that the fuel in the container is clean. Do not use the fuel in the bottom of the container as it may contain impurities.
6. Wipe up any fuel that is spilled.
7. After fueling, securely install the cap so that water and other foreign matter will not enter the tank.
8. Put enough fuel in the tank to complete your boating schedule with a safety margin.
9. Do not use a polyethylene container as a spare fuel tank, because polyethylene will eventually deteriorate and crack.

② Preparation

1) Connection of fuel tank

After ensuring that the fuel tank contains enough fuel, properly position the tank in the boat and fix it securely so that it will not move during sailing. Route the fuel hose correctly avoiding sharp bends and the possibility of it being crushed by a hatch or other heavy equipment. Attach the fuel hose to the engine connector by pulling its outer ring. Return the ring to its original position to lock.

2) Preparation for feeding fuel

Open the air vent screw located on top of the fuel tank filler cap and the fuel cock located at the fuel hose mount by turning them counterclockwise.

3) Feeding of fuel

After completing the above, squeeze the priming valve located in the middle of the fuel hose to supply fuel to the carburetor. When you feel the priming valve begin to harden, stop the priming action.

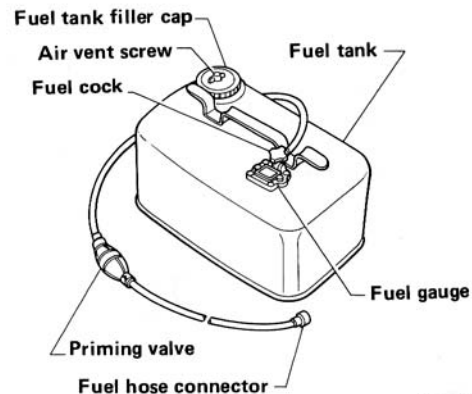


Fig. 11

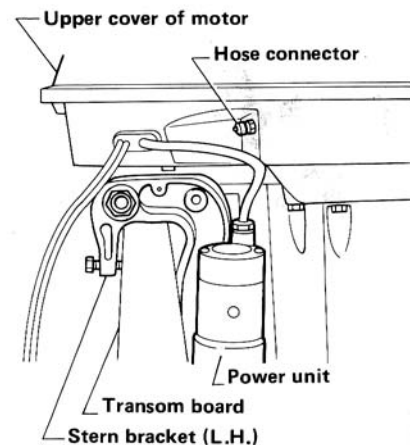


Fig. 12

③ Starting

1) F type

a) Set clutch lever located on the right front side of the engine to "N".

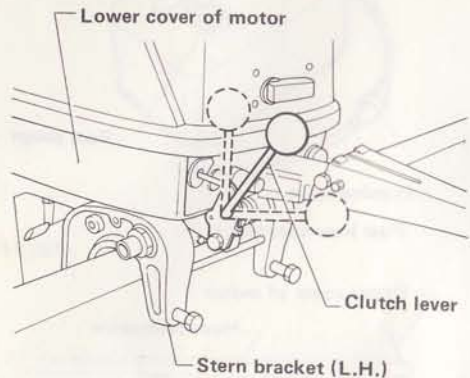


Fig. 13

NOTE:

If the clutch is not at "N" (Neutral), the engine will not start even if the starting procedure is executed; the neutral switch will prevent the starter motor from rotating.

b) Fit the lock plate into the groove of the safety switch located on the front of the lower motor cover (optional for F type). Then, attach the hook on the other end of the lock plate to a proper part of the operator's clothing, such as his belt, etc.

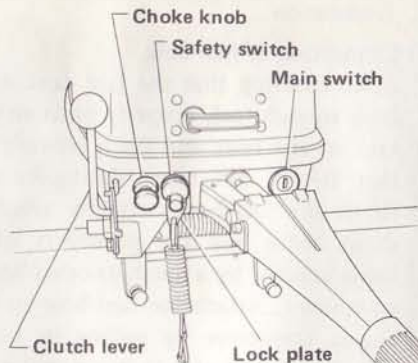


Fig. 14

NOTES:

- ▲ The safety switch is provided for ensuring security of the operator. If the operator leaves his normal operating position while sailing, the lock plate will pull off and the engine will stop. Therefore, it is important always to connect the hook on the opposite end of the lock plate to the operator.
- ▲ If the lock plate is not inserted into the safety switch, the engine will not start though the starter motor can be operated.
- ▲ The engine will stop if the lock plate is pulled off the safety switch.

c) Turn the grip of the bar handle until the mark on the grip is aligned with the "START" position of the indicator plate located on the upper side of the handle. Then pull the choke knob all the way out to fully close the choke.

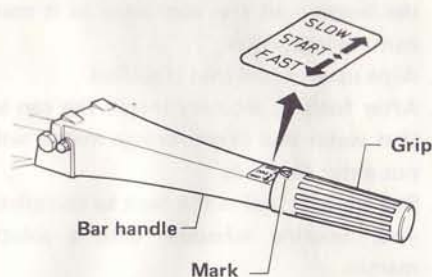


Fig. 15

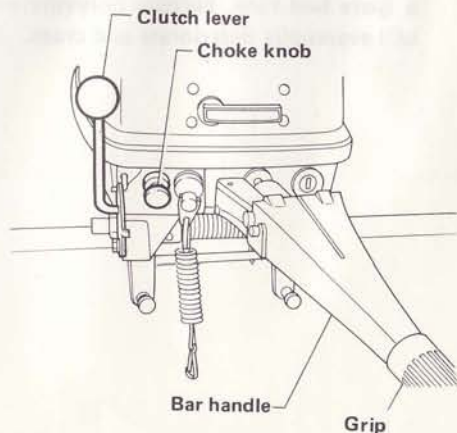


Fig. 16

NOTE:

When restarting the engine while it is still warm, it is not necessary to use the choke. In such a case, perform the starting operation with the choke pushed in.

- d) The main switch is located on the front left side of the engine. The engine stops when the main switch is turned to "STOP", and the switch key can be inserted or pulled out only at this position.

To start the engine, insert the key and turn it from "STOP" to "START" position. The starter motor will rotate as long as the key is held in the "START" position. Release the key as soon as the engine starts. The key will automatically return to the "ON" (run) position.

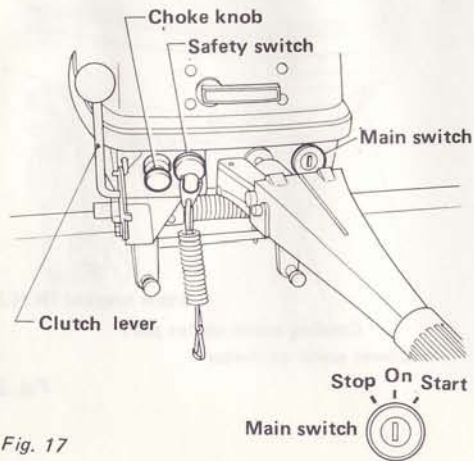


Fig. 17

NOTE:

Do not rotate the starter motor for more than five seconds at a time to start the engine. Wait about 10 seconds before trying again.

- e) After the engine has been started, push in the choke knob and turn the throttle grip gradually outward to bring the engine speed close to idling, taking care not to stop the engine.

Next, check that the cooling water is being discharged from the small outlet located on the right rear side of the engine.

NOTE:

If there is no water flow, immediately stop the engine and check to see if the cooling water inlet port is clogged. If so, unclog.

If no clogging is detected, the engine may be faulty. Consult the nearest dealer for repair.

- f) If the engine is operating normally, warm up the engine for three to five minutes until idling speed is stabilized. Note that proper warm-up will extend the service life of the engine.

2) Type P

- a) After ensuring the remote control box control lever is in "N" (neutral) position, slightly raise the free accelerator lever (to open the throttle valve slightly).

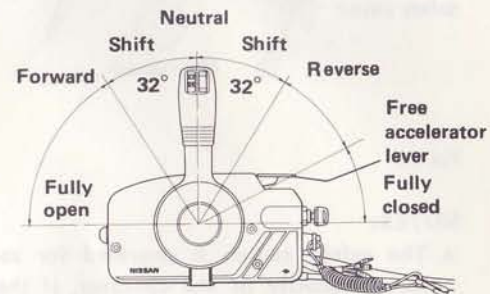


Fig. 18

NOTE:

Engine rpm can be controlled by the free accelerator lever only when the control lever is in the "N" position.

- b) Next, insert the lock plate into the groove of the safety switch located on the front side of the remote control box, and attach the other end to the operator's belt or other suitable part of his clothing.

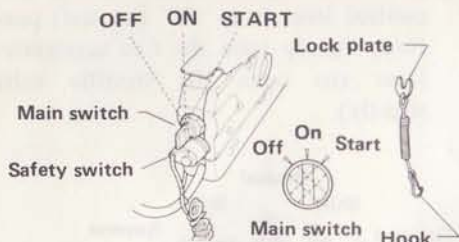


Fig. 19

NOTES:

- ▲ The safety switch is provided for assuring security of the operator. If the operator leaves his normal operating position while sailing, the lock plate will pull off and the engine will stop. Therefore, it is important always to connect the hook on the other end of the lock plate to the operator.
- ▲ If the lock plate is not inserted into the safety switch, the engine will not start though the starter motor can be operated.
- ▲ The engine will stop if the lock plate is pulled off the safety switch.
- ▲ The engine will stop if the safety switch is pushed in with the lock plate inserted into the safety switch.

c) The main switch is located on the right side of the upper remote control box. The "OFF" position is for inserting and removing the switch key and for stopping the engine.

To start the engine, insert the key. Turn it from "OFF" to the "ON" position and press the key. This will activate the choke solenoid and fully close the choke. Then, while pressing the key, turn it to the "START" position. The starter motor will rotate and start the engine. Release the key as soon as the engine starts. The key will automatically return to the "ON" position.

NOTES:

- ▲ To restart the engine while it is still warm, turn the key directly to the "START" position without pressing the key at the "ON" position.
 - ▲ Do not rotate the starter motor for more than five seconds at a time to start the engine. Wait about 10 seconds before trying again.
- d) After the engine has been started, gradually lower the free accelerating lever located in the remote control box until engine rpm is lowered to idling. Next, check that cooling water is being discharged from the small outlet located on the right rear side of the engine.

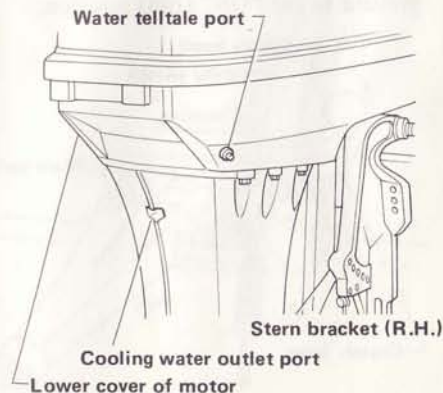


Fig. 20

NOTE:

If there is no water flow, immediately stop the engine and check to see if the cooling water inlet is clogged. If so, unclog. If no clogging is detected, the engine may be faulty. Consult the nearest dealer for repair.

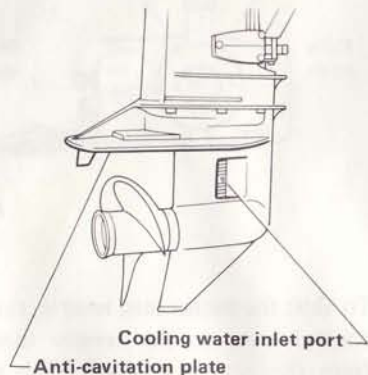


Fig. 21

e) Continue engine warm-up for three to five minutes until stable idling speed is obtained. Note that proper warm-up will extend the service life of the engine.

(2) Operation

① Type F

1) Clutch lever

The clutch lever is located on the front right side of the engine on the lower motor cover.

To move the boat forward, shift the clutch lever from the "N" (Neutral) position to the "F" (Forward) position after placing the bar handle throttle grip in the low speed position. To move the boat in reverse, shift the clutch lever from the "N" to "R" (Reverse) position, after placing the throttle grip in the low speed position.

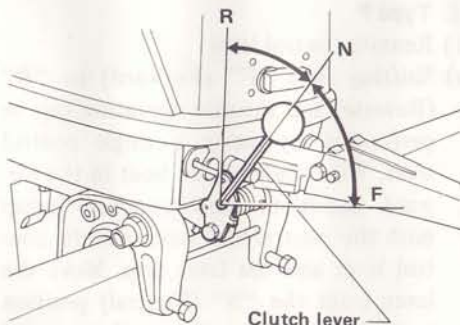


Fig. 22

CAUTIONS:

- ▲ Before shifting the clutch lever, be sure to lower engine speed to idle. If engine speed is high, the boat will begin to move the moment the clutch lever is shifted. This may cause an accident.
- ▲ When shifting the clutch lever from "N" to "F", or from "N" to "R", move the lever quickly.
- ▲ Never attempt to shift the clutch lever from "F" to "R", or from "R" to "F"; otherwise, the clutch mechanism may be damaged.

2) Throttle grip

The throttle grip is an integral part of the bar-type steering handle. When the throttle grip is rotated inward with the clutch lever shifted to either "F" or "R" position, the engine speed will increase and the boat will begin to move. When the clutch lever is set in the "N" position, engine speed can be controlled by rotating the throttle grip. When the clutch lever is set in the "N" or "R" position, the throttle opening is restricted to 1/2 the full opening by the throttle opening controller. However, the engine must not be operated at high speed under no-load conditions.

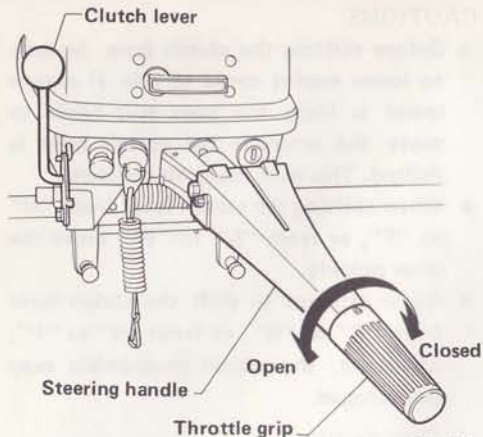


Fig. 23

CAUTIONS:

- ▲ When the clutch lever is in "N" (Neutral) do not race the engine; otherwise, the engine may be damaged.
- ▲ When moving the boat in reverse, engine speed is limited by the throttle opening controller. However, use a low speed and pay particular attention to safety around the boat. Never attempt to start or accelerate suddenly in reverse position, as this may lead to a dangerous situation.
- ▲ Do not operate the engine in the full-throttle position for extended periods except in emergencies. Cruising speed is considered to be 60 - 80% of maximum speed. Maximum fuel economy and

engine performance is attained at this speed.

- ▲ While cruising, avoid jerky operation of the throttle and sudden changes in clutch lever position.

3) Steering operation

Steer the boat using the steering bar handle to which the throttle grip is attached.

When the steering bar handle is moved to starboard, the bow of the boat will turn to port; when moved to port, the bow will turn to starboard.

CAUTION:

Steering with the bar-type steering handle can cause large directional changes in a short period of time. Jerky steering at high speeds is very dangerous. Before making a turn, be sure to slow the boat.

② Type P

1) Remote control lever

- a) Shifting into "F" (Forward) or "R" (Reverse) and throttle operation can be performed by using a single control lever. When moving the boat in the forward direction, simultaneously grasp both the neutral lock built into the control lever and the lever grip. Move the lever from the "N" (Neutral) position toward the "F" mark on the control box by tilting it about 32 degrees until

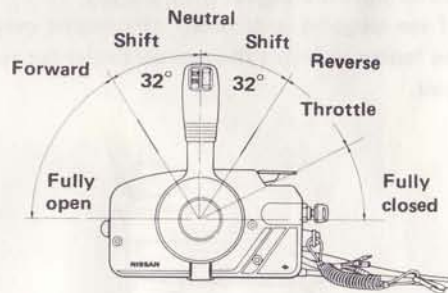


Fig. 24

locked. Then tilt the control lever down further toward "F"; the throttle will open and the boat will begin to move.

- b) To shift the motor into reverse, turn the control lever in the reverse direction from the neutral position while simultaneously holding the neutral lock (built into the control lever) and the lever grip. Tilt the control lever about 32 degrees from the "N" (Neutral) position toward "R" mark on the control box until the lever is locked.

Then tilt the control lever down further toward "R"; the throttle will open and the boat will begin to move in reverse.

When moving the boat in reverse, do not open the throttle suddenly. Operate the control lever carefully so that the boat will move slowly.

CAUTIONS:

- ▲ When shifting the remote control lever from "N" to "F" or to "R", move the lever swiftly. Be careful not to jerk the lever.
- ▲ When shifting the lever from "F" to "R", or from "R" to "F", be sure to stop the movement of the lever at "N" for a moment.
- ▲ The remote control lever is locked and inoperative if the free accelerator lever is not in the "RUN" (lowest) position. Confirm the free accelerator lever position before sailing.
- ▲ When moving the boat in reverse, use a low speed and pay particular attention to safety around the boat. Sudden acceleration in the reverse position may lead to an accident and result in damage to the motor and boat.
- ▲ Do not operate the engine in the full-throttle position for extended periods except in emergencies. Cruising speed is considered to be 60 - 80% of maximum speed. Maximum fuel economy and engine performance is attained at this speed.
- ▲ While cruising, avoid jerky operation of the throttle and sudden changes in clutch lever position.

2) Free accelerator lever

The free accelerator lever is provided for controlling only engine rpm. Use this free accelerator lever for controlling engine speed when operating the throttle to start the engine, when adjusting the throttle opening in warm-up operation, or when checking and adjusting engine rpm.

The throttle opens wider as the free accelerator lever is moved upward, resulting in increased engine rpm. After using this lever, be sure to return it to the lowest position which corresponds to the specified idling rpm (900 to 950 rpm).

CAUTIONS:

- ▲ When the remote control lever is set in the "N" (Neutral) position, do not increase engine rpm under no-load conditions; otherwise, the engine and the driving mechanism may be adversely affected.
- ▲ When the free accelerator lever is not in the lowest "ON" position, the remote control lever remains locked, disabling the shifting and throttling mechanisms. After using the free accelerator lever, be sure to return it to the "RUN" position.

3) Overheat buzzer (P type)

A warning buzzer is built into the remote control box. It sounds when the temperature of engine cooling water rises abnormally during operation to warn that the engine is overheating. Immediately stop the engine and check for clogging of the water intake port. Remove all obstacles from the intake port. Allow the hot engine to cool off sufficiently before restarting.

If the buzzer sounds after restarting the engine, the problem may be in other areas; have the engine checked and repaired by your dealer.

③ Engine rpm

Optimum engine idling speed after warm-up is listed below:

Engine model	Clutch ON	Clutch OFF
NS50 NS60 NS70	700 to 800 rpm	900 to 950 rpm

The maximum permissible engine speed for each model is listed below. Be sure not to exceed these limits.

Engine model	Max. permissible engine rpm
NS50 NS60	4,500 to 5,500 rpm
NS70	5,000 to 5,500 rpm

To prevent trouble if engine speed exceeds the above-listed permissible range, the engines are equipped with an electronic safety governor (ESG). The ESG is capable of preventing engine overrunning even when the outboard motor bounces over waves.

This safety device automatically lowers engine rpm below 5,500 when engine speed exceeds the permissible range, so that normal operation can be continued.

CAUTION:

If engine speed tends to exceed the maximum permissible range under normal conditions, the propeller size may be mismatched. Replace with a propeller of a suitable size.

④ Stopping the engine

1) Type F

a) Stopping the engine with main switch (F)

To stop the engine, turn the throttle grip to the low-speed position and idle the engine. Then, set the clutch lever to the "N" (Neutral) position.

After idling the engine for two or three minutes, turn the key inserted in the main switch from the "ON" to the "STOP" position to stop the engine.

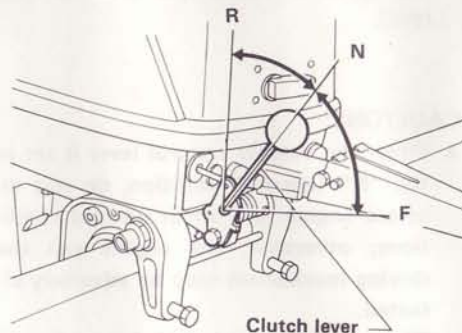


Fig. 25

b) Stopping the engine with safety switch (Type F: option)

To stop the engine using the safety switch located on the front side of the lower motor cover, pull the lock plate off the safety switch or depress the safety switch until the engine stops.

After stopping the engine with the safety switch, turn the main switch key to the "STOP" position.

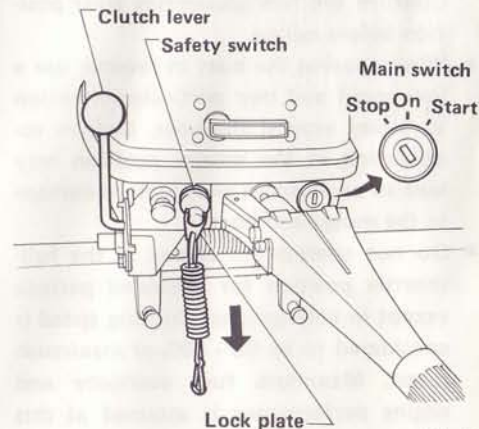


Fig. 26

CAUTION:

The safety switch is provided for use in an emergency. Use the main switch to stop the engine under normal conditions.

2) Type P

To stop the engine, return the remote control lever to the "N" (Neutral) position and idle the engine for two to three minutes.

- a) Stopping the engine with main switch
Turn the main switch key from the "ON" to "OFF" position.

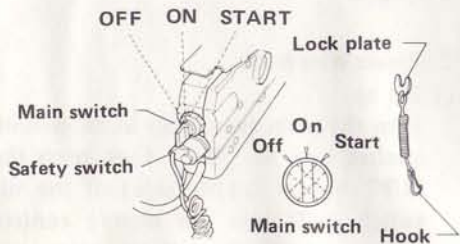


Fig. 27

- b) Stopping the engine with safety switch
To stop the engine using the safety switch located at the lower part of the remote control box, pull the lock plate off the safety switch, or depress the safety switch until the engine stops. After stopping the engine with the safety switch, turn the main switch key to the "OFF" position.

CAUTION:

The safety switch is provided for use in an emergency. Use the main switch to stop the engine under normal conditions.

⑤ Steering operation

If excessive resistance is felt in operating the steering handle, turn the adjusting bolt counterclockwise with a wrench or standard screwdriver until the steering handle can be operated by proper effort. The adjusting bolt is located on the upper portion of the swivel bracket on the left side of the engine. If there is not enough resistance, turn the adjusting bolt clockwise.

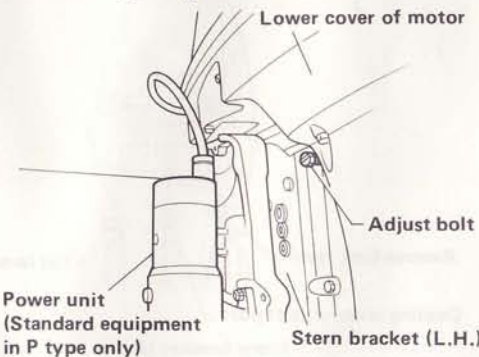


Fig. 28

⑥ Hanger bolt

A hanger bolt is used when installing the outboard motor, or removing it from the boat, or when transporting the motor for

maintenance. To remove the motor with a hoist, remove the upper motor cover. Then, attach the hook of the hoist to the bolt.

After installing or removing the motor, replace the upper motor cover.

⑦ Removal and installation of the upper cover of the motor

1) Removal

The upper cover of the motor is secured with hook levers on the front and back. Lift the right-hand end of each hook lever about 90 degrees until the lever is vertical. The hook will disengage from the cover stay fitted to the lower cover, and the upper cover can be removed.

After disengaging the hooks, hold the tilt handle on the rear top portion of the upper cover and lift the upper cover from the lower cover.

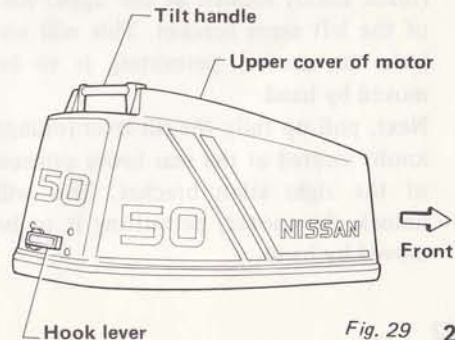


Fig. 29 21

2) Installation

After making sure that the hook levers on the front and back of the upper cover are vertical, place the upper cover on the lower cover. The tilt handle must be on the rear side.

After fitting the upper cover onto the lower cover, push the back hook lever down to the horizontal position while pressing the tilt handle down. Next, push the front hook lever down to the horizontal position while pressing down the front side of the upper cover.

Next, pull up fully the tilt lever (orange knob) located at the rear lower portion of the right stern bracket. The outboard motor will then lock automatically when it is tilted up.

After completing these preparations, hold the tilt handle located on the upper rear side of the upper cover of the motor, and pull it up until the motor tilts up (the motor set at the highest position). The tilt lock will be applied automatically when the outboard motor is tilted up to the highest position.

Next, unlock the motor by pulling down the tilt handle located on the down cover. Slowly lower the motor to the lowest position while holding the motor. The motor will lock automatically at that position.

CAUTION:

When tilting the motor up or down, do not support the motor with the grip handle; otherwise, the throttle mechanism may be damaged.

(3) Lifting the motor

① Type F

1) Tilt up

Push down fully the reverse lock lever (black knob) located at the upper rear of the left stern bracket. This will unlock the motor, permitting it to be moved by hand.

Next, pull up fully the tilt lever (orange knob) located at the rear lower portion of the right stern bracket. This will unlock the motor, permitting it to be moved by hand.

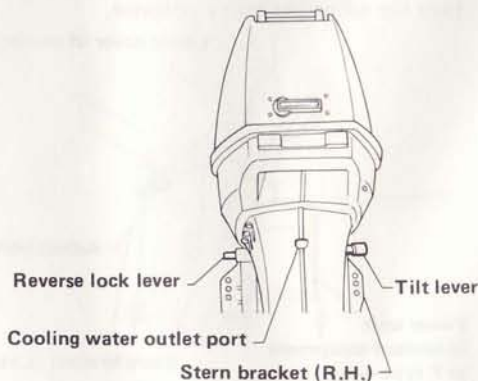


Fig. 30

2) Tilt down

To return the motor to the normal position from the tilted up position, push down fully the tilt lever on the back of the right stern bracket.

② Power trim & tilt

1) Tilt up

Turn the main switch key in the remote control box to "ON". Then press the "UP" button (upper side) of the tilt switch built into the remote control lever grip to tilt the outboard motor up. The trim meter monitors the tilted position of the outboard motor.

Release the tilt switch as soon as the pointer of the trim meter (located on the instrument panel) stops at the highest position on the scale. When the tilt switch is used to tilt the motor up, the tilt motor continues to run even after the outboard motor reaches the limit position, but the sound of the motor changes. Release the tilt switch when the change is heard.

After completing the tilt up operation, turn the main switch key to the "OFF" position.

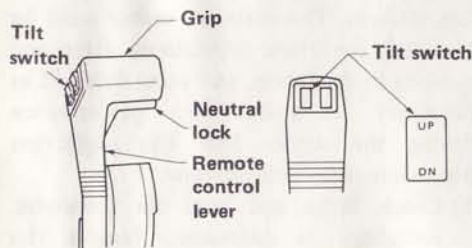


Fig. 31

2) Tilt down

Turn the main switch key to "ON". Then press the "DN" button (lower side) of the tilt switch in the remote control lever grip to tilt the outboard motor down. Release the tilt switch as soon as the pointer of the trim meter stops at the lowest position on the scale. When the tilt switch is used to tilt the motor down, the tilt motor continues to run even after the outboard motor reaches the limit position, but the motor sound changes. Release the tilt switch when this change in sound is heard.

After completing the tilt down operation, turn the main switch key to the "OFF" position.

CAUTIONS:

- ▲ Never attempt to tilt the outboard motor up or down when the engine is operating. Be sure to stop the engine before tilting.
- ▲ If the tilt switch is depressed for more than 30 seconds after the outboard motor has reached the tilt limit position, the breaker will automatically stop the tilt motor.

The tilt motor remains inoperative for 10 to 20 seconds after the breaker activates. To protect the related mechanisms, wait about three minutes before operating the tilt switch again.

3) Shallow water boating

- a) When sailing in shallow water with the motor trimmed up, ensure that the control box main switch key is set in "ON" (engine operation). Operate the "UP" button of the tilt switch built into the remote control grip in several small steps until the motor is set in the shallow water boating position. Ensure that the cooling water inlet port remains below water, and that the propeller is not too close to the surface.

- b) To return the motor from the shallow water position to the normal cruising position, ensure that the main switch key is in the "ON" position. Then press the "DN" button of the tilt switch to lower the outboard motor.

The tilt motor continues to run even after the outboard motor has reached the lowest limit position, but the motor sound changes. Release the tilt switch button when this change in sound is heard.

CAUTIONS:

- ▲ While sailing in shallow water, always check to see that the cooling water inlet port is under water. If it is above water, engine overheating and damage to the water pump impeller may result.
- ▲ If the propeller is too close to or above water when sailing in shallow water, cavitation or engine overheating may occur. Set the propeller at a proper position in the water.
- ▲ Sailing at high speeds in shallow water is quite dangerous; be sure to sail slowly by running the engine at idle or other low speed.

(4) Running-in operation

① Procedure

- 1) It is important to note that the service life of an outboard motor depends largely on how it is operated during its initial period. Operation under heavily loaded conditions causes abnormal wear on sliding components before proper contact is achieved. This impairs engine performance for the rest of its life. The purpose of running-in the engine is to provide proper contact between sliding parts by avoiding undue loading during its initial operation period. This will assure high engine performance for an extended period of time.
- 2) The engine should be run for at least ten hours, using the following procedure:
 - a) For the first 30 minutes, operate the motor at 1/4 throttle. After this period, gradually open the throttle to the 1/2 position, and continue motor operation for 2.5 hours.
During this three-hour running-in period, use fuel with a 20:1 gasoline-oil ratio.
 - b) During the subsequent two hours, continue to run-in the engine by gradually opening the throttle from 1/2 to 3/4 position. Every 30 minutes during this period, fully open the throttle once for about 30 seconds (be sure not to

exceed the allowable maximum engine rpm).

During this two-hour period, use the 20:1 fuel mixture ratio.

- c) After completing the first five hour period, change the fuel mixture to a 50:1 ratio, and conduct another five-hour running-in operation at 3/4 throttle. Every 30 minutes during this period, fully open the throttle once for about one minute (be sure not to exceed the allowable maximum engine rpm).

NOTES:

- ▲ **Be sure to conduct the daily inspection before starting the running-in operation.**
- ▲ **Be sure to warm up the engine before starting the running-in operation.**
- ▲ **After starting the engine, do not operate at high-speed under no-load conditions.**
- ▲ **Avoid prolonged full-throttle operation during the running-in period.**

② Inspection after running-in

The running-in operation is designed to achieve proper contact between rotating or sliding parts. This may result in some loosening of parts or production of metal shavings due to lapping action on the sliding surfaces. The outboard motor must be checked for these conditions after the running-in operation, and reconditioned as necessary to assure high performance during the service life. The inspection procedure is described below:

- 1) Check bolts and nuts for looseness. Retighten as necessary. Remove the motor upper cover. Check the mounting bolts and nuts of the following parts for looseness, and retighten as necessary with a wrench.
Cylinder head, exhaust cover, inlet manifold, crankcase, carburetor, starter motor, engine, drive shaft housing, gear case housing, propeller shaft housing
- 2) Check fuel strainer for contamination. Check the fuel strainer for contamination or clogging, and the strainer cup for water. Refer to the section "Daily inspection" for detailed procedures.
- 3) Check condition of spark plug. Remove the spark plug and check for contamination and spark condition. See "Daily inspection".

4) Change gear oil

Remove the drain plug (located at the left lower side of the gear case) and the level check plug (located on the upper part of the case) to drain thoroughly the gear oil. Using an oiler, fill with the specified quantity of new gear oil through the drain plug port.

Refer to "Gear oil" in section "Drive unit".

5) Check the idling condition.

After completing the above procedures, reinstall the motor cover, start the engine, and check the idling.

6) In case of problems

If any abnormality is noted during the above inspection, contact the nearest dealer for inspection and service.

(5) Handling after operation

① When the motor is removed from the boat

After removal, hold the motor in an upright position until the cooling water is thoroughly drained from the lower unit.

If it is necessary to lay the motor down, place it with the front side up. When storing the motor for long periods, be sure to use a stand and keep the motor in an upright position.

② After operation in salt water or muddy water

First, flush the cooling system with fresh water to prevent corrosion. Use the following procedure:

1) Remove the propeller and fill a tank or tub with fresh water. Immerse the lower portion of the motor in water. Run the engine at low speed for 10 to 15 minutes to remove salt and other contamination from the cooling system. Continue to supply fresh water to the tank while the engine is running.

2) Cleaning method using the flushing plug
Place the outboard motor near a water tap and in an area that has good drainage. First, remove the engine exhaust cover blind bolt, and attach the accessory flushing plug. Next, connect a water hose to the flushing plug and turn the water on so that a small flow exists from the water telltale port.

Upon completing the above preparations, set the clutch or remote control lever to "N" (Neutral), and start the engine. Allow the engine to run at low speed for approximately 10 minutes until all salty and muddy water is completely drained from the cooling system.

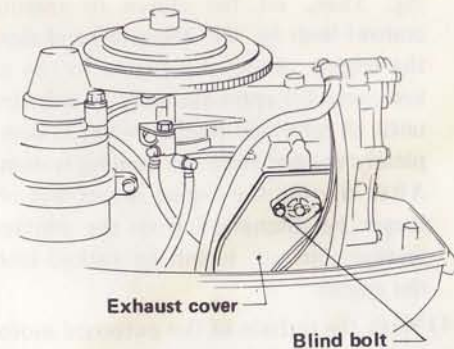


Fig. 32

3) Cleaning with drive cleaner (option)

Place the outboard motor near a water tap and in an area that has good drainage. Install the accessory "drive" cleaner on the front of the gear housing at the cooling water intake. Be sure the mating surface of the gear housing is in close contact with the drive cleaner.

Next, connect a water hose to the drive cleaner connector. Direct tap water so that water runs out at the contact surface of the drive cleaner and gear hous-

ing. Then, set the clutch or remote control lever to "N" (Neutral) and start the engine. Allow the engine to run at low speed for approximately 10 minutes until all salty and muddy water is completely drained from the cooling system. After starting the engine, water will no longer be discharged from the contact section; instead, it will be sucked into the engine.

- 4) Wash the outside of the outboard motor with water, and wipe the entire surface with nonflammable solvent. Apply paint to scratches or peeled sections, if any. Apply rust preventive to the entire surface, and lubricate the sliding portions.

③ Mooring

If the boat is moored with the outboard motor in the water, metal parts may corrode, or the propeller and lower case may be damaged by striking bottom. To avoid these problems, tilt the motor up as far as possible.

In winter, when the air temperature drops below 0°C (32°F), remove the lock plate from the safety switch and rotate the starter motor for several seconds with the motor tilted up. This will thoroughly drain the cooling water from the engine.

④ When the motor is immersed in water

If the outboard motor is dropped into water, it must be disassembled and serviced quickly. Delayed servicing may lead to rust formation inside the engine. Operation of a rusted motor will result in a damaged or disabled engine. Contact the nearest Nissan Marine dealer immediately and ask them to disassemble and service the motor, after conducting the following temporary procedure:

- 1) Remove the motor from the water as quickly as possible, and wash thoroughly with fresh water.
- 2) Remove the spark plugs. Attach the accessory starter rope to the flywheel starter pulley. Pull the rope to crank the engine for draining water from the engine cylinder through the spark plug holes.

- 3) After draining water from the engine, pour a sufficient amount of engine oil into the spark plug holes and into the carburetor. Attach the starter rope to the starter pulley and crank the engine so that the oil will coat the entire engine.
- 4) After completing the above procedure, take the motor to a Nissan Marine dealer and have it serviced.

IV DRIVE UNIT

① Gear oil

- 1) Use SAE No. 80 (API classification GL-4) gear oil. The amount of lubricant in the drive unit is specified for each model as follows:

Approx. 900 cc

(1-7/8, US pt, 1-5/8 Imp pt)

- 2) Be sure to replace the gear oil after completing the initial 10 hours of running-in operation. After this, check and replenish the gear oil every 50 hours of operation.

CAUTION:

- ▲ When replenishing or replacing gear oil, be sure to remove the high tension cord from the spark plugs in advance to eliminate the possibility of accidents.
- ▲ When replenishing gear oil, check the oil in the drive unit for contamination or deterioration (cloudiness). If the oil is cloudy, contact the nearest dealer for inspection and servicing.

- ▲ When replenishing or replacing oil, pour oil into the gear housing until it comes out of the oil level check plug hole.
- 3) To replenish gear oil, remove the oil drain plug located at the left upper portion of the gear housing. Connect the nozzle of the oiler to the plug hole. Next, remove the level check plug from the upper part of the gear case. Pour new gear oil into the gear case. Stop when oil flows out of the oil level hole. Insert the level check plug into the level check plug hole and tighten. Remove the nozzle of the oiler. At the same time, install the drain plug. Ensure that the upper and lower plugs are tightened securely.

NOTE:

Do not pour gear oil into the gear case from above. This will allow air to enter with the oil, preventing the specified amount of oil from being poured into the case.

② Selection of propeller

- 1) The propeller must be selected to suit the characteristics of the engine and boat, so that the original high performance of the engine and boat can be fully utilized.

Generally, propellers with a large diameter and small pitch are employed on large boats that need greater torque and are used for general-purpose cruising.

On the other hand, propellers having a small diameter and large pitch are employed on high speed boats. See page 28.

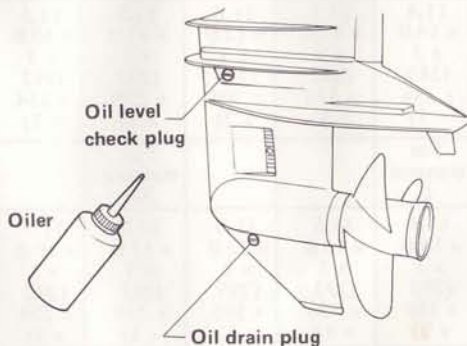


Fig. 33

A propeller that greatly exceeds the maximum allowable engine rpm must not be selected, otherwise, the motor may be damaged.

The propeller should be selected by taking the following conditions into consideration: Engine output, size of boat, its shape, loading capacity, speed,

usage, etc. It is recommended that a Nissan Marine dealer be consulted when selecting a propeller for your motor.

2) The propeller size is indicated by "Diameter × pitch × No. of blades".

The following propeller sizes are available for each model of the Nissan Marine outboard motor.

Propellers

(Diameter × Pitch × No. of blades)

Model	Item	High speed, Light-duty boat				Greater torque, Heavy-duty boat			
		Size in (mm)	10.8 × 17.5 × 3 (276 × 447 × 3)	10.7 × 16.4 × 3 (273 × 417 × 3)	11.0 × 15.0 × 3 (280 × 381 × 3)	11.4 × 14.0 × 3 (289 × 356 × 3)	11.5 × 13.0 × 3 (292 × 330 × 3)	11.6 × 12.0 × 3 (295 × 305 × 3)	11.5 × 11.0 × 3 (292 × 279 × 3)
	Use					For transom L			For transom XL
NS60	Size in (mm)	10.8 × 17.5 × 3 (276 × 447 × 3)	10.7 × 16.4 × 3 (273 × 417 × 3)	11.0 × 15.0 × 3 (280 × 381 × 3)	11.4 × 14.0 × 3 (289 × 356 × 3)	11.5 × 13.0 × 3 (292 × 330 × 3)	11.6 × 12.0 × 3 (295 × 305 × 3)	11.5 × 11.0 × 3 (292 × 279 × 3)	11.5 × 10.0 × 3 (292 × 254 × 3)
	Use				For transom L			For transom XL	
NS70	Size in (mm)	10.8 × 17.5 × 3 (276 × 447 × 3)	10.7 × 16.4 × 3 (273 × 417 × 3)	11.0 × 15.0 × 3 (280 × 381 × 3)	11.4 × 14.0 × 3 (289 × 356 × 3)	11.5 × 13.0 × 3 (292 × 330 × 3)	11.6 × 12.0 × 3 (295 × 305 × 3)	11.5 × 11.0 × 3 (292 × 279 × 3)	11.5 × 10.0 × 3 (292 × 254 × 3)
	Use				For transom L			For transom XL	

③ Replacement of propeller

1) Removing the propeller

a) To prevent accidental starting of the engine while changing the propeller, remove the lock plate from the safety switch and set the clutch lever in "N" (Neutral) position before starting operation.

b) Pull the cotter pin from the propeller nut using a screwdriver or pliers after straightening the pin.

c) Loosen the propeller nut with a wrench while holding the propeller to prevent rotation of the shaft.

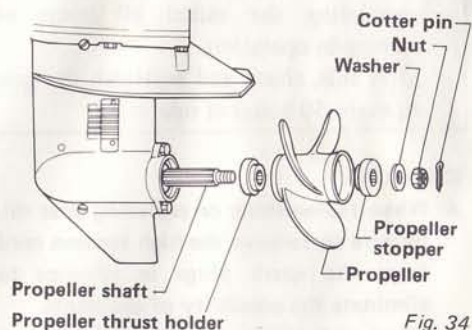


Fig. 34

d) After removing the nut, remove the plain washer, propeller stopper, propeller, and thrust holder, in this sequence, from the propeller shaft.

e) Check the propeller stopper and thrust holder for damage.

- 2) Installing the propeller
 - a) Before installing the propeller, wipe the propeller shaft and coat the entire surface of the shaft with a thin layer of grease.
 - b) Install the thrust holder, propeller, propeller stopper, and plain washer, in this sequence, on the propeller shaft, making sure that the propeller, holder and stopper are fitted securely.
 - c) After the propeller has been properly installed, tighten the propeller nut to the propeller shaft by hand. Then tighten the nut securely with a wrench while holding the propeller stationary.
 - d) After tightening the propeller nut, align the pin hole of the shaft with the groove on the nut. Insert a cotter pin and spread it open for locking.

NOTE:

Be sure to replace the cotter pin whenever the propeller has been removed.

④ Replacement of anode (corrosion preventing zinc electrode)

An anode (zinc electrode; the trim tab serves as the anode) is provided to prevent corrosion.

Check the anode weekly for the amount of corrosion. Replace the anode when it is reduced to about 50% of original size.

Replacement standards of anodes

If the anode (Zinc electrode) located on the anticavitation plate has eroded below replacement standards, immediately replace it. If left unheeded, rubber parts will deteriorate rapidly, resulting in a serious accident.



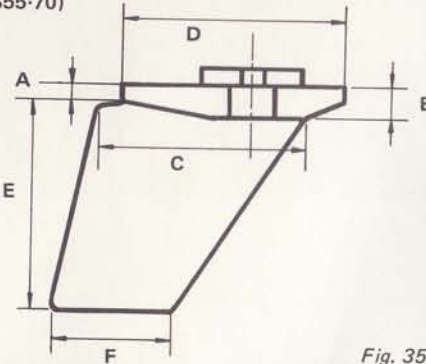
Anode by model	Dimensions	Standard dimensions					
		A	B	C	D	E	F
(NS55-70)							
	New mm (in)	3.0 (0.118)	8.0 (0.315)	51 (2.01)	50 (1.97)	49.5 (1.949)	25 (0.98)
	Replacement std. mm (in)	1.5 (0.059)	6.5 (0.256)	43 (1.69)	44 (1.73)	30 (1.18)	14 (0.55)

Fig. 35

NOTES:

- ▲ When replacing the anode, clean the mating surface on the anti-cavitation plate.
- ▲ Do not apply oil or paint to the anode or its mating surface.
- ▲ Be sure to retighten the anode mounting bolt when checking the anode for corrosion.

⑤ Inspection of drive unit for damage and rust

Carefully check the drive unit for collision damage, peeling of paint, and rust. If necessary, repair or repaint.

V SERVICING/BEFORE AND AFTER STORAGE

Before placing the outboard motor into long-term storage, it should be serviced to keep it in good condition and free from rust and corrosion. This is called prestorage service.

When starting the motor after long-term storage, it is necessary to perform post-storage service to ensure safety and to prevent problems.

Contact the nearest Nissan Marine dealer for these maintenance services before and after long-term storage.

1. Prestorage inspection and service

(1) Flushing the cooling system

① Flushing

1) Remove the propeller from outboard motor and clean the cooling system using either of the following methods:

a) Place the outboard motor in a container filled with clean water and operate it for approximately 10 to 15 minutes.

b) Install the drive cleaner to the cooling water intake. Direct tap water through the drive cleaner while operating the engine at low speed for approximately 10 minutes.

In either method, salty substances, scales, etc. should be completely drained from the cooling system.

2) After cleaning the cooling system, remove the lock plate from the safety switch and operate the starting motor until remaining water is completely discharged from the system.

3) Checking the propeller

a) Check the propeller for damage.

(2) Flushing of motor exterior, and prevention of rust

① Wash the exterior of the motor with water. Then, wipe the entire surface with nonflammable solvent.

② Check the exterior for damage, the mounting bolts and nuts for looseness, and the paint for peeling. Repaint where necessary.

③ Apply rust-preventive oil or wax to the entire surface of the motor, and apply grease to the propeller shaft.

(3) Lubrication of engine

① Check carbon accumulation.

Remove the spark plugs, and check the inside of each cylinder through the plug hole for carbon deposits. If an abnormal amount of carbon is noted, disassemble and remove carbon.

If no abnormality is noted, pour 2-cycle motor oil into the cylinder through the plug hole to lubricate the inside of the cylinder. Install the plug, and remove the lock plate from the safety switch. Operate the starter so that the oil will coat the entire cylinder inner wall.

(4) Replacement of gear oil

Drain the existing gear oil, and pour the specified amount of new oil into the gear case.

(5) Cleaning of fuel system and rust prevention

① Drain fuel from the carburetor, fuel pump, and fuel strainer. Remove these components from the engine, wash in nonflammable solvent, dry with compressed air and reinstall.

② Spray corrosion preventing agent CRC or WD40 on the metal parts of the carburetor, fuel pump, fuel strainer and linkage.

③ Drain fuel from the fuel tank and wash the inside of the tank with nonflammable solvent.

④ Wash the outer surface of the fuel tank with water, wipe clean with cleaning solvent, and dry. Apply rust-preventing oil to the exterior. Dry the inside of the

tank thoroughly, and keep it capped.

(6) Electrical devices

Spray corrosion-preventing agent CRC or WD40 on the metal parts of the electrical devices and on the electrical wiring connectors.

(7) Zinc electrode

Check the anode (zinc electrode which serves also as trim tab) for the amount of corrosion. Retighten the mounting bolts.

(8) Application of grease

Apply grease to each of the following linkages and sliding parts:

1. Starter motor pinion
2. Hook lever
3. Choke lever
4. Clutch lever
5. Throttle link
6. Handle grip
7. Bracket shaft bolt
8. Clamp screw
9. Tilt stopper
10. Reverse lock
11. Carburetor link
12. Control box

2. Post-storage inspection and service

(1) Inspection of motor exterior

- ① Wipe clean the motor exterior and thoroughly remove the rust-preventing oil.
- ② Check each portion of the outboard motor for damage or rust.

(2) Inspection of engine

- ① Remove the spark plugs and check the condition of each plug. If faulty, replace.
- ② Check the inside of the cylinder through the plug hole.
- (3) Inspection of electrical connections for looseness or damage
Check each electrical connection for looseness and rust formation. Check each harness for damage and other electrical parts for defects.

(4) Inspection of fuel system

- ① Check the fuel tank for rust or damage. If it is in good condition, pour fuel of the specified mixture into the fuel tank. Connect the fuel hose between the fuel tank and engine for proper supply of fuel to the fuel system.
- ② Check the fuel strainer, fuel pump and carburetor for fuel leakage. Check the hose joints for leaks, and the hoses for damage.

(5) Drive unit

- ① Check the gear oil level. Also check the drive unit for oil leaks.
- ② Check the zinc electrode for corrosion. If it has been reduced to 50% of its original size, replace with a new one.
- ③ Wipe the grease from the propeller shaft and apply new grease, then install the propeller.
- (6) Starting the engine and inspection
 - ① Start the engine. Check for normal starting. Check the operation of the choke. Check the operation of the neutral switch.
 - ② After warm-up, check engine idling, acceleration, throttle grip operation, remote control lever operation and steering operation.
 - ③ When starting the engine, check that cooling water is being discharged from the water outlet and from the telltale port. Check the engine cooling system for water leaks and the fuel system for fuel leaks.

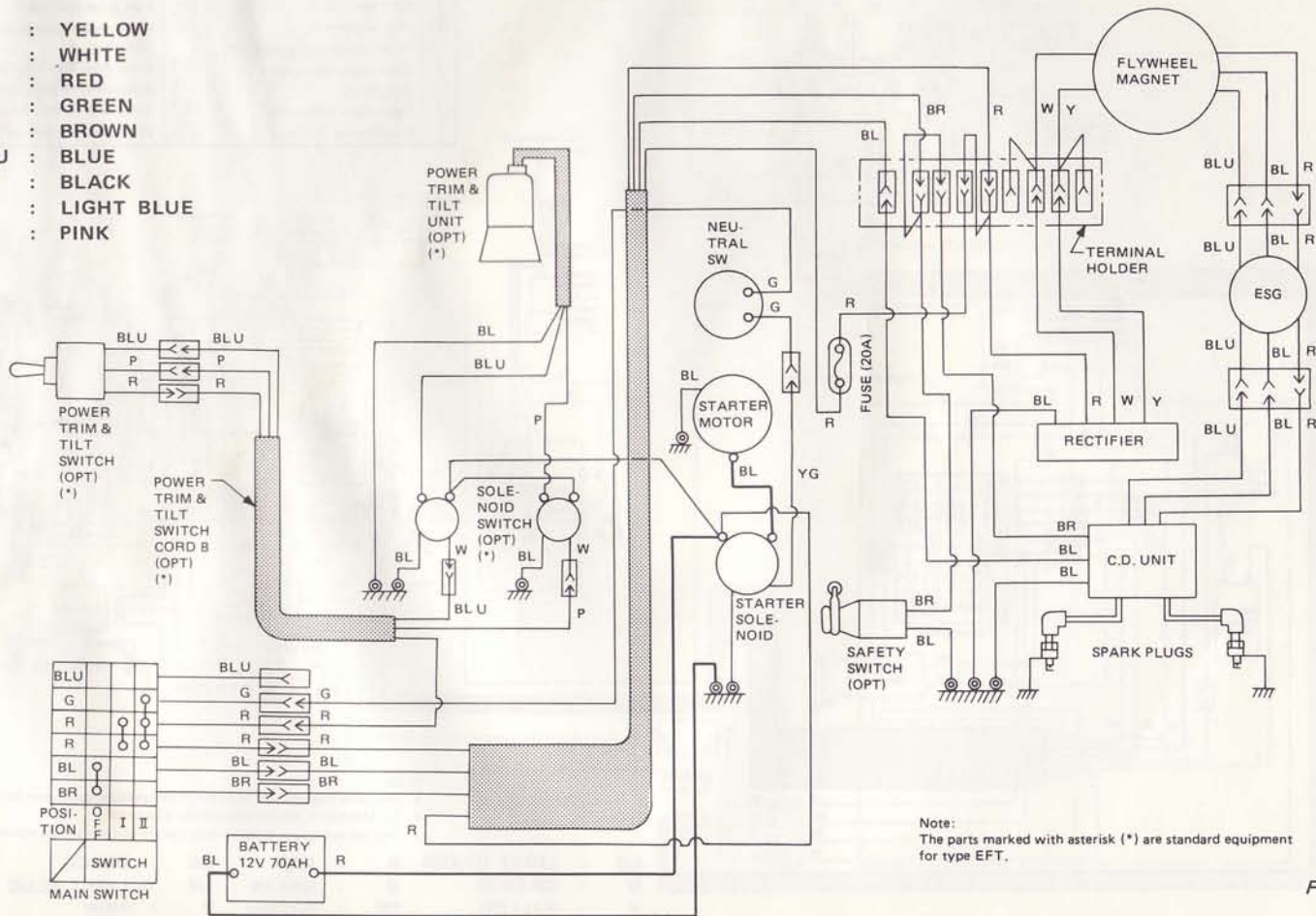
TROUBLE-SHOOTING

Symptom / Probable cause	Engine does not start	Engine starts but stops soon afterward	Engine idling is not stable	Acceleration is poor	Engine speed is abnormally high	Engine speed is abnormally low	Boat speed does not increase	Engine overheats
Outboard motor is out of fuel	<input type="radio"/>	<input type="radio"/>						
Fuel lines are not properly connected	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air is sucked into fuel line	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel hose is twisted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Air vent is open	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel filter, fuel pump or carburetor is clogged	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engine oil is of poor quality			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fuel is of poor quality	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mixture ratio of fuel oil is high			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Mixture ratio of fuel oil is low						<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excessive fuel is sucked in	<input type="radio"/>			<input type="radio"/>				
Carburetor is not properly adjusted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recirculation pipe is broken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	<input type="radio"/>
Spark plug of different specifications is used		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spark plug is fouled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Spark plug is faulty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Insufficient or no cooling water is supplied						<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thermostat does not operate properly			<input type="radio"/>					<input type="radio"/>
Cavitation occurs				<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>

Symptom / Probable cause	Engine does not start	Engine starts but stops soon afterward	Engine idling is not stable	Acceleration is poor	Engine speed is abnormally high	Engine speed is abnormally low	Boat speed does not increase	Engine overheats
Improper propeller is selected				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Propeller is broken or damaged				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thrust rod is not properly positioned				<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	
Cargo is loaded in improper position				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Transom height is not proper				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stop switch is short-circuited	<input type="radio"/>					<input type="radio"/>	<input type="radio"/>	
Throttle link is not properly adjusted	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Ignition timing is not properly adjusted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Battery is discharged or fuse is blown	<input type="radio"/>							

WIRING DIAGRAM (EF AND EFT TYPES)

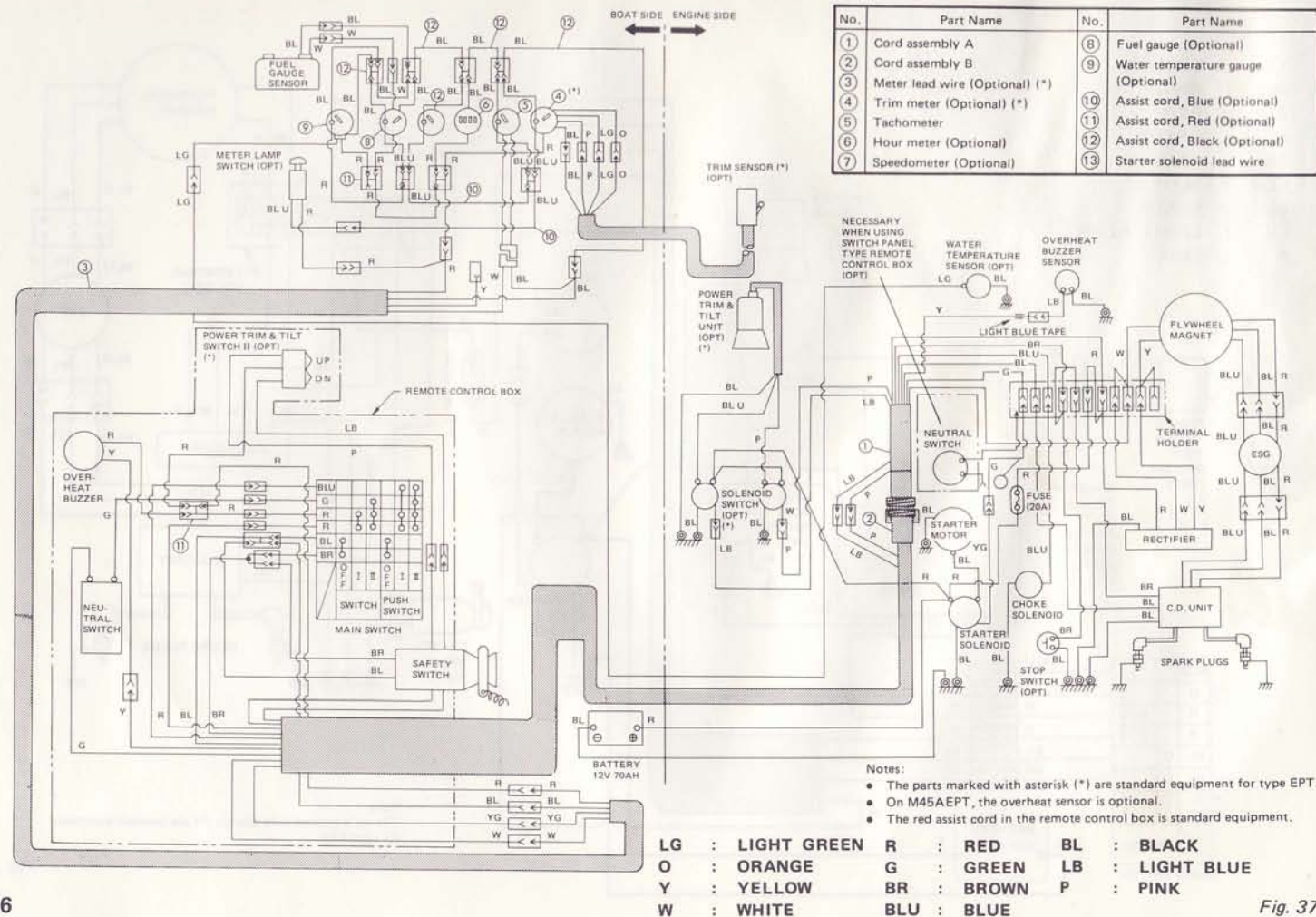
- Y : YELLOW
- W : WHITE
- R : RED
- G : GREEN
- BR : BROWN
- BLU : BLUE
- BL : BLACK
- LB : LIGHT BLUE
- P : PINK



Note:
The parts marked with asterisk (*) are standard equipment for type EFT.

Fig. 36

WIRING DIAGRAM (EP AND EPT TYPES)





NISSAN MOTOR CO., LTD.

Tokyo, Japan

Edition: March 1986
Printing: February 1992
Printed in Japan

Pub. No. M-243-A
M-2025200-TS