



**TOHATSU** *OUTBOARDS*

**5**  
**B/BS**

**OWNER'S HAND BOOK**  
003-11002-7

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## FOREWORD

Thank you for choosing a TOHATSU OUTBOARD MOTOR .

This manual describes its workings and its main features. Before using the motor study these instructions and get to know what a fine engine it is. Like any other piece of machinery it requires careful and knowledgeable attention, and in return it will give you excellent service over the years. Our policy is one of continuous product improvement so we reserve the right to incorporate changes without prior notice.



TOHATSU CORPORATION

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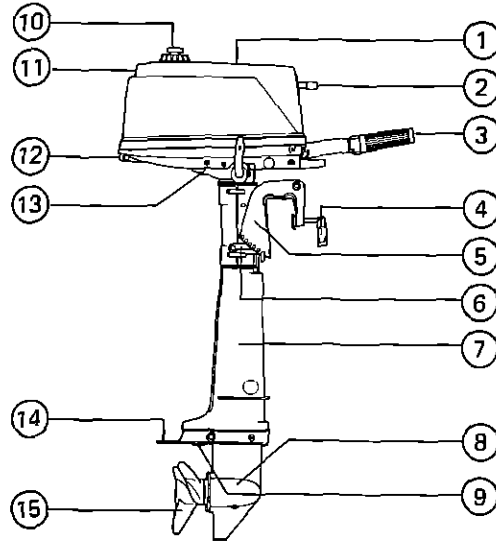
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# SPECIFICATIONS

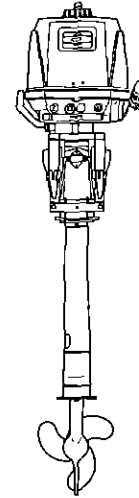
MODEL	M5B/M5BS
Overall Length	490mm
Overall Width	310mm
Overall Height	1,007mm (Transom S) 1,134mm (Transom L)
Weight	20Kg (Transom S) (M5B)
Piston Displacement	102cc
Output	5 PS
Lubrication	Gasoline/Oil Mixture (50:1)
Cooling Method	Water Cooling (Rotary Rubber Impeller)
Starting	Automatic Recoil Starter and Rope (Neutral Start)
Ignition	C.D. Ignition
Spark Plug	NGK BF7HS10 or CHAMPION L82YC10
Carburetor	Cross-shaft Butterfly Valve Type
Engine Rotation	Clockwise

Recommended Operating Range	4,500 ~ 5,500r.p.m.
Fuel Consumption at Maximum Speed	2.5 ℓ/hr
Gear Reduction Ratio	2.15 (28:13)
Speed Control	Twist Grip Type
Gear Shift	Dog Clutch (FORWARD, NEUTRAL, REVERSE)
Operation Method	Bar Handle
Fuel Tank Capacity	Integral Tank: 2.5 ℓ (M5B) Separate Tank: 13 ℓ (M5BS)
<b>OPTIONAL PARTS</b>	
Propeller	
Lighting Coil (12V – 40W)	
Rectifier Kit	

# MAIN PARTS



M5B



M5BS

1. Motor cover upper
2. Starter grip
3. Throttle grip
4. Clamp screw handle
5. Stern bracket

6. Reverse lock arm
7. Drive shaft housing
8. Gear case
9. Water strainer
10. Fuel tank cap (M5B)

11. Tilt handle
12. Hook lever
13. Cooling water checking port
14. Anti-cavitation plate
15. Propeller

# ( I ) OPERATING INSTRUCTIONS

## 1. PREPARATIONS BEFORE STARTING THE ENGINE

Gasoline with 86 OCTANE (A.K.I.) or over is recommended for easy starting and long life.

### (1) Fuel

- 1) Check that there is sufficient fuel for the day's operation. Carry additional fuel for use in an emergency and check it before running. Running out of fuel can cause both inconvenience and serious injury.
- 2) The fuel should be prepared using genuine TOHATSU engine oil. (Fig. 1) The normal mixture is 50 parts gasoline to 1 part oil (50:1). For initial break in of a new engine the mixture should be 20:1 for the first ten hours operation.



Fig. 1  
Tohatsu outboard motor oil

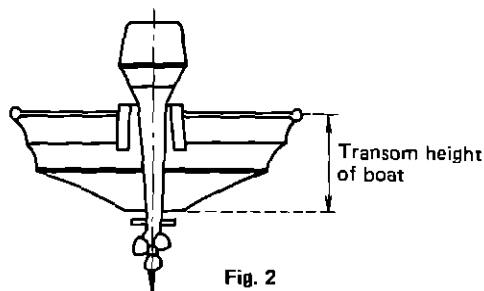


Fig. 2

- 3) If you are using commercial two stroke (2T) oil use the ratio 20:1 for normal running and 15:1 for the initial 10 hours running.
- 4) Do not use poor grade, dirty or stale gasoline or oil. This will cause poor starting, reduced power and may damage your motor. Use good quality fuel and lubricants at all times.

### (2) Mounting the outboard motor

- 1) Position: The center of the stern (Fig. 2)
- 2) Height: Fit the outboard so that the anti-cavitation plate is lower than the bottom of the boat by 3 – 5cm (1.2 ~ 2in.). (Fig. 3)

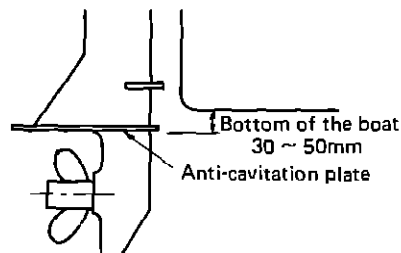


Fig. 3

3) After mounting the motor on the boat see that the clamp screws are hand tight.

Check tightness from time to time when under power. As a safety precaution fasten a safety rope from outboard to the boat through the hole of the clamp bracket so that the engine is not lost in the event of an accident.

4) Attaching angle

The outboard is positioned by locking the thrust rod in the appropriate hole of the bracket so that the drive shaft housing at maximum speed, is vertical to the surface of the water. (Fig. 5 & 6)

**Note:** When set or remove the motor on the boat by hand, hold the lower motor cover but do not hold the tilt handle of the upper motor cover.

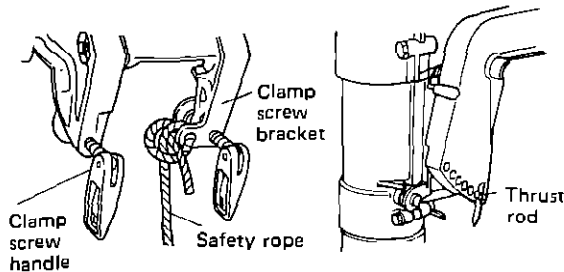
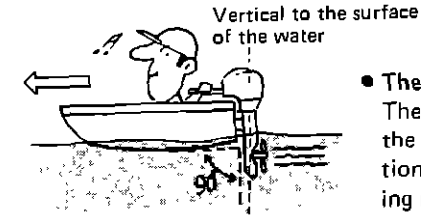


Fig. 4

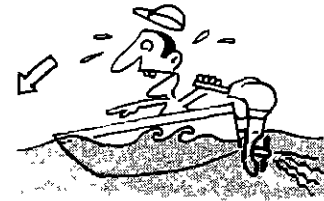
Fig. 5



- **The tilt is proper.**  
The boat is level and the thrust rod is positioned properly during running.



- **The tilt is not proper.**  
The bow rides high and it is deflected or hit during running. In this case the position of thrust rod shall be lowered.



- **The tilt is not proper.**  
The bow rides low during running and it is washed by the waves. In this case the position of thrust rod shall be upper.

Fig. 6

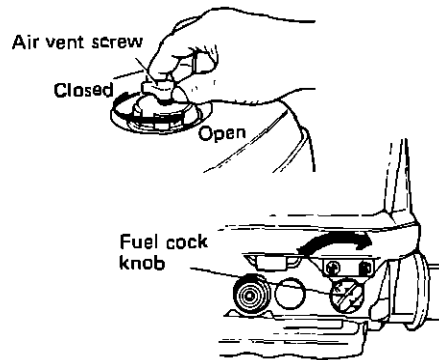


**Note: Do not operate Engine without cooling water.**

## 2. STARTING & WARM-UP

### 1. 1) M5B (Integral tank type):

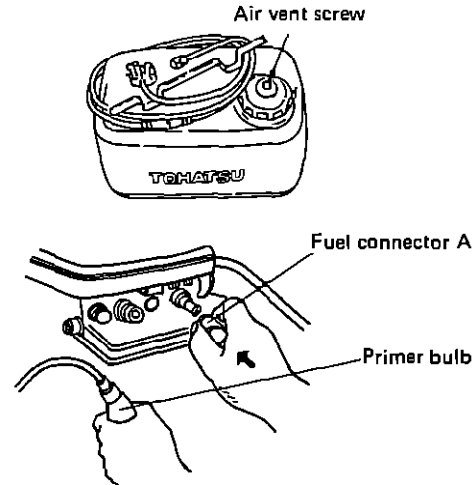
Turn the air vent screw to open on the fuel tank and open the fuel cock knob (Fig. 7)



**Fig. 7** Opening the fuel line  
(Integral tank type)

### 2) M5BS (Separate tank type):

Plug in the fuel connector A. Open the fuel cock and the air vent screw on the fuel tank cap and squeeze the primer bulb about 10 times to fill the carburetor bowl. (Fig. 8)



**Fig. 8** Opening the fuel line  
(Separate tank type)

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.

2. Place the shift lever in the NEUTRAL position.  
The engine cannot be started unless the shift lever is in the NEUTRAL position. (Fig. 9)

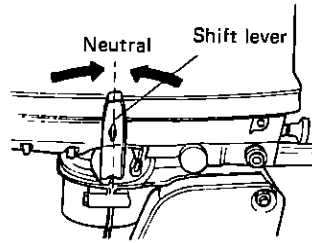


Fig. 9 The shift lever position when starting the engine

3. Turn the throttle grip on the steering handle to the START (arrow marked) position.  
Pull out the choke knob.  
**Note:** Do not pull out the choke when restarting a warm engine. (Fig. 10)

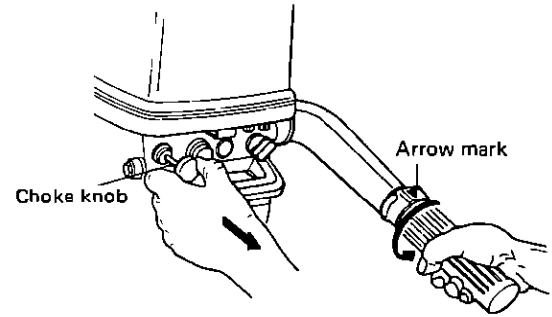


Fig. 10 Positioning the throttle grip to the start position.

Gently pull the starter rope until you feel the ratchet engage. Then give it a sharp tug.

When starting the engine, push the choke knob back then return the grip to SLOW position and run the engine to warm up for several minutes.

(Fig. 11)

**Note:** When warming up the engine in a cold weather, set the choke knob in the half opened position.

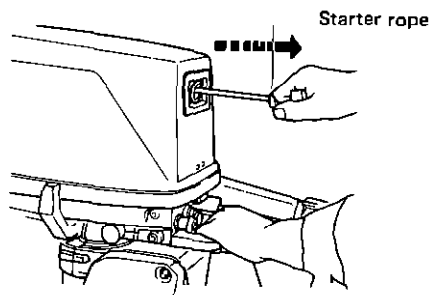


Fig. 11 Pulling the starter rope

Confirm that cooling water is discharged from the cooling water checking port.

(Fig. 12)

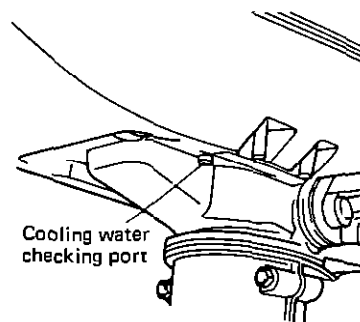


Fig. 12 Confirming the cooling water discharged

The clutch must only be operated when the engine is operating at idling speeds. To change from FORWARD to REVERSE, first idle the engine and shift into NEUTRAL. With the engine still running slowly engage and gradually increase REVERSE speed. (Fig. 13)

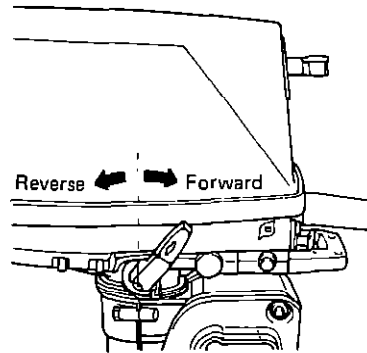


Fig. 13 Operation of the shift lever

### 3. BREAKING IN A NEW ENGINE

“Break-in” is the most important stage in the life of your new outboard motor. Care in the first 10 hours of running of the engine will be repaid by better performance, a longer service life and increased pleasure and more economical operation. During this period it is extremely important to pay attention to the following points.

- a) Warm-up the engine for several minutes at slow RPM after starting.
- b) Do not race the engine but cruise at low to medium speeds. Never fully open the throttle for the first 5 hours.
- c) Do not accelerate or stop suddenly.
- d) Follow oil change and fuel recommendations.

The fuel-mixture for the engine running period is 20 parts gasoline to one part genuine TOHATSU engine oil. Commercial two stroke oil 15:1.

### 4. HOW TO OPERATE

#### (1) Precautions to be taken when beginning operation

When running increase speed gradually, make sure that the cooling water is circulating correctly through the engine. You can check this by noting the flow of water from the port on the starboard side of the

motor. (Fig. 11)

**Note:** If water is not flowing the engine will quickly overheat and abnormal wear and break down of the engine will result. The Intake Port for the cooling water is situated on the rear part of the engine under the Anti-Cavitation Plate. Beware of floating debris such as rags, vinyls, etc., so it will not plug up the ports.

## (2) Clutch operation

The clutch must only be operated when the engine is operating at idling speeds. To change from FORWARD to REVERSE, first idle the engine and shift into NEUTRAL. With the engine still running slowly shift into REVERSE and gradually increase speed.

Do not change the shift lever when running at high speed. This will result in damage to the engine.

Note that if you hit an obstacle while running in REVERSE with full throttle you can easily damage the propeller, swivel bracket and stern bracket.

## (3) Precautions to be taken when running

- 1) Always reduce speed before making sharp turns.
- 2) Adjustment of steering

If the steering feels too tight or too loose, it may be adjusted by the friction adjust screw. (Fig. 14)

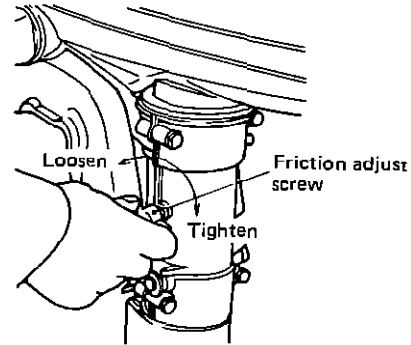


Fig. 14 Adjusting the steering tightness

- 3) The throttle grip controls engine speed. Turning it counterclockwise increases the engine speed.
- 4) Engine speed  
The engine should idle at approx. 850 rpm on forward and approx. 1000 rpm in NEUTRAL. And this should be checked by the Tohatsu dealer.
- 5) The maximum engine speed should be between 4500–5500 rpm at wide open throttle.  
In case that the given range of rpm cannot be maintained, check whether the Propeller is suitable

for your boat or not. If necessary change to the correct type. Your Tohatsu dealer can assist.

- 6) When the operation of Throttle Grip feels too tight or too loose, adjust it by turning the adjust screw. (Fig. 15)

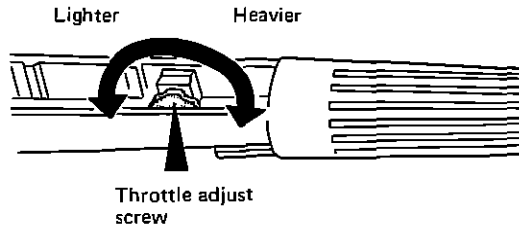


Fig. 15 Adjusting the throttle grip tightness

- 7) The position of the handle can be adjusted by means of the 6mm set screw in the hinge.

#### (4) Operation in shallow water

With the shift lever in Neutral or Forward, tilt the motor up slowly by about  $40^\circ$  and then return the motor down, the motor will be automatically set at the shallow water operation angle. (Fig. 16)

**Cautions:** In a case of operation in a shallow water, run at slow trolling speeds when running in reverse and do not increase the engine speed unnecessarily. (Excess speed will cause jump up of the engine which is very dangerous.)

When running in forward, operate the engine in a condition that the propeller does not cavitate.

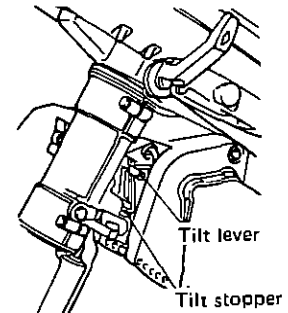


Fig. 16 Setting at the shallow water operation angle

### (5) Stopping

Reduce speed to idle and then place shift lever at NEUTRAL. Then press the safety switch until the engine completely stops. (Fig. 17)

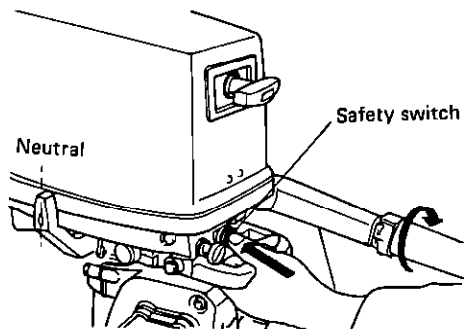


Fig. 17 Stopping the engine

### (6) Tilt adjustment

With the shift lever in Neutral or Forward, tilt the motor fully up using the tilt handle. The motor will be automatically tilt-locked. (Fig. 18)

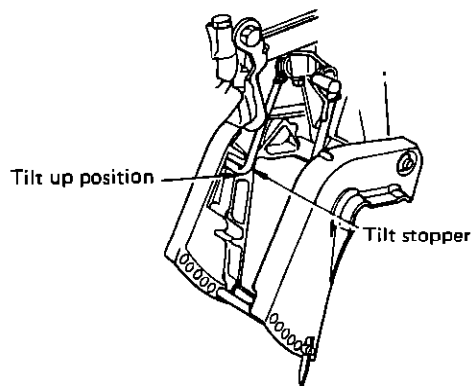


Fig. 18 Adjustment for tilt up

## (7) Tilt down

Tilt the motor fully up and pull the tilt lever up ward to release the tilt lock. Then lower the motor slowly. (Fig. 19)

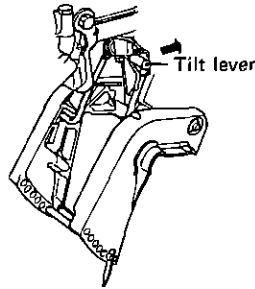


Fig. 19 Adjustment for tilt down

## 5. INSPECTION & ADJUSTMENT

### (1) Fuel system

- Check the fuel tank to see that it contains sufficient fuel.
- Check that the air vent of the tank cap is clear.
- Check the primer bulb and integral tank for cracks or damage.
- Check the fuel filter in the fuel cock nut for dirt. (Fig. 20)
- Check the strainer in the fuel tank. (M5BS) (Fig. 21)

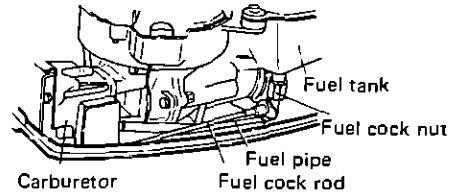


Fig. 20 Fuel line in the engine

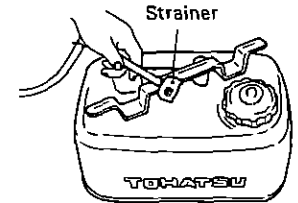


Fig. 21 Checking the strainer



## (2) Spark plug

Replace the spark plug if it is damaged. If the insulator portion of the plug is covered with dirt it will short or weak the spark and the engine will not fire.

Keep the plug clean at all times. (Fig. 22)

### Too much fuel:

If the cylinder is flooded with fuel, the plug cannot ignite as it is wet with fuel. Wipe the plug and dry it. Remove excessive fuel from the cylinder by turning the engine with the spark plug removed. After replacing the plug, the engine should start properly.

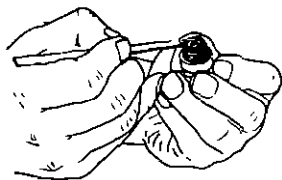


Fig. 22 Cleaning the spark plug

## (3) Starter trouble . . . for emergency

- 1) Remove the recoil starter.
- 2) Wind the pull rope around the flywheel.  
(Fig. 23)

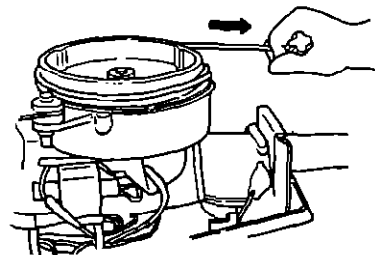


Fig. 23 Starting with the pull rope

**(4) Be sure that cooling water is being discharged.**

If the engine runs continuously without the circulation of cooling water, the engine may seize up due to overheating.

If cooling water is not being discharged, stop the engine and check the cooling water system. (Fig. 24)

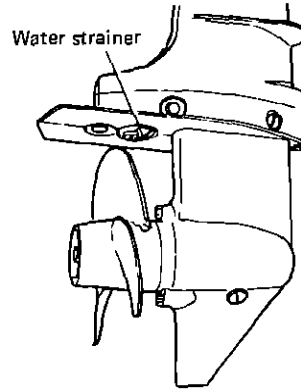


Fig. 24 Checking the cooling water system

**(5) When increasing vibration abnormally**

- 1) Check the clamp screws for tightness.
- 2) Check the propeller for deformation by hitting a obstacle.
- 3) Check the bolts and nuts for bracket and others for tightness. (Fig. 25)

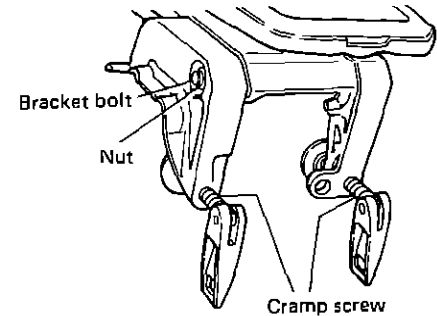


Fig. 25 Checking the bolts and nuts

## **(II) INSPECTION & SERVICING**

### **1. TROUBLE SHOOTING**

The following check list will help you to locate the source of trouble and to take the necessary repair action. Remember your local TOHATSU dealer will always be happy to give you assistance and information.

<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine fails to start.	<b>Likely cause</b>
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine starts but soon stops.	
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine will not idle.	
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Poor acceleration	
	The engine rotates at abnormally high.	
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine rotates at abnormally low.	
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine runs slowly.	
<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	The engine overheats.	
<p>Empty fuel tank</p> <p>Fuel system incorrectly connected</p> <p>Air leak in fuel system</p> <p>Pipe twisted</p> <p>Fuel cock of fuel tank or air vent in fuel tank cap closed</p> <p>Fuel filter, fuel pump or carburetor clogged</p> <p>Low quality engine oil</p> <p>Low quality gasoline</p> <p>Incorrect gasoline/oil mixture (too much oil)</p> <p>Incorrect gasoline/oil mixture (too little oil)</p>		

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>The engine fails to start.</b>	<b>Likely cause</b>  Excessive fuel consumption Poorly adjusted carburetor Incorrect spark plug Dirty spark plug or carbon bridge Very poor or no spark Cooling water blockage Cavitation Unsuitable propeller Damaged propeller Incorrect tilt angle Unbalanced load Transom at incorrect height Stop switch lead grounded
									<input type="radio"/>	<input type="radio"/>	<b>The engine starts but soon stops.</b>	
										<input type="radio"/>	<b>The engine will not idle.</b>	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>Poor acceleration</b>	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<b>The engine rotates at abnormally high.</b>	
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<b>The engine rotates at abnormally low.</b>	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<b>The engine runs slowly.</b>	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	<input type="radio"/>		<b>The engine overheats.</b>	

## 2. AFTER COMPLETING DAY'S RUNNING

### (1) When removing motor from boat

- 1) Completely drain water from engine before laying it on the ground.
- 2) When you lay the motor onto the ground, make sure that the drive unit is lower than the power head to drain water. Otherwise, if the power head is lower there is the danger of water entering the cylinder.
- 3) When you lay the motor onto the ground, make sure that the barhandle side is upward.

**Caution:** Do not lay the motor on the shift lever side or front side facing to the ground.  
(Fig. 26)

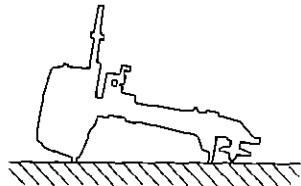


Fig. 26

### (2) After use in salt or polluted water

- 1) Wash all external surfaces with fresh water, dry and wipe with an oily rag. Oil all sliding parts.

- 2) To wash out the cooling system first remove the propeller and place the unit vertically in a large bucket or tank containing more than 40cms (depth) of fresh water. Start the engine and allow to run at a low speed so that the fresh water flushes out the cooling system. Remove the water plug on the Drive Shaft Housing and screw the flushing plug. Connect a hose to this adaptor and flush out the system with fresh water. (Fig. 27)

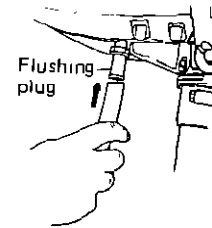


Fig. 27 Flushing out the cooling system

- 3) The carburetor and magneto have been carefully adjusted at the factory to give the best results, and therefore should not be touched. If any adjustment is needed please contact your local TOHATSU dealer for information and assistance.

#### 4) Precautions in cold weather.

The motor should always be stored in a dry condition, especially where there is the danger of freezing.

After removing the motor from the boat wash in fresh water and pull the starter rope one or two times to drain the water from the cooling system. Water remaining in the cooling system cavities could freeze and cause damage.

### (3) Submerged motor

If the engine is completely submerged in water it will have to be stripped down and reassembled. Please carry out the following first aid action before handing over to your local dealer for service.

- 1) Take out of the water and completely wash with fresh water. If it dropped into sea water remove all traces of salt.
- 2) Remove the Spark Plug and drain all the water.
- 3) Inject 2 cycle engine oil into the cylinder from the spark plug hole, and into the Crank Case from the carburetor side at the same time, and rotate the engine slowly with the Starter Rope five or six times.
- 4) Even if the engine runs after being dropped in water it should still be serviced by your TOHATSU dealer.

### (4) Changing gear oil and propeller

#### 1) Changing gear oil

- Remove oil plugs (upper and lower) and drain gear oil completely. (Fig. 28)

**Only use Tohatsu genuine gear oil  
(Heavy-duty SAE #80)**

The amount of gear oil needed is approx. 195cc.

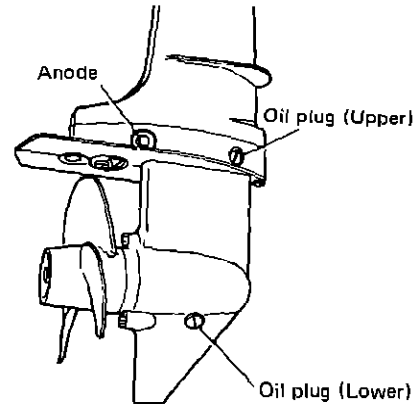


Fig. 28 Draining the gear oil

- Insert the nozzle of an oil tube into the lower oil plug and inject oil by squeezing the tube until gear oil flows out of the upper plug. (Fig. 29)
- Install the upper oil plug and then remove the oil filler and install the lower oil plug.

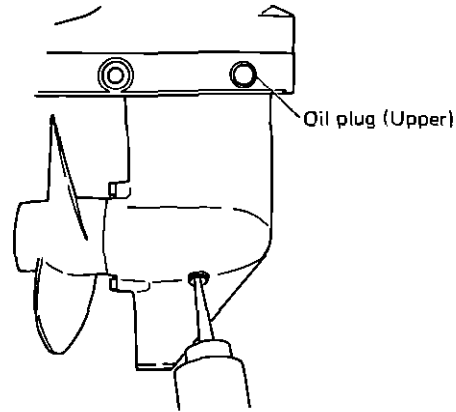


Fig. 29 Filling up the gear oil

### (5) Changing the propeller

If the propeller is worn out or bent, the motor is not able to display its full performance or it may become the cause of engine trouble. Replace the propeller if it is found abnormal at the time of inspection. (Fig. 30)

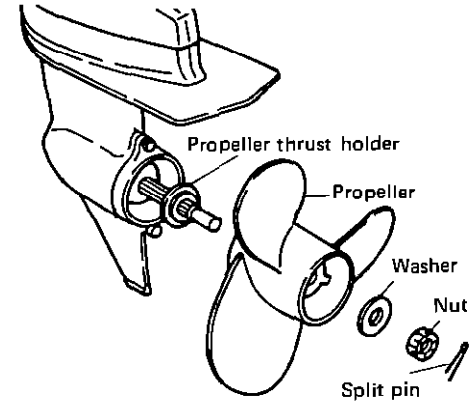


Fig. 30 Replacing the propeller



### (III) OUT-OF-SEASON STORAGE

The off-season gives you a good opportunity to have your TOHATSU serviced or overhauled by your dealer. Not only will the motor be better preserved in storage, but it will also be ready for immediate use as soon as the new season opens.

Storing procedures are as follows:-

- 1) Wash outboard motor externally and flush cooling system completely with fresh water.  
Dry and wipe over with an oily rag.
- 2) Drain fuel from tank, pipe lines, fuel pump and carburetor and clean them with air blast. To prevent internal rusting of the separate fuel tank while out of service, add a little 2 cycle engine oil and turn the tank over so that it covers all surfaces, or completely fill the tank with fuel which has a greater than normal ratio of oil. (M5BS)
- 3) Ask your dealer to clean carbon deposit on cylinder head, piston, exhaust port and manifold. Add 2 cycle engine oil through the spark plug hole and inject oil into crank case and cylinder from the carburetor and turn the engine a few times by turning the recoil starter.
- 4) Apply grease to the propeller shaft.
- 5) Change the gearcase oil.
- 6) Apply grease to all sliding parts, mechanical joints, bolts, nuts, etc.
- 7) Store the outboard motor on a stand in a vertical position in a dry place covered by a sheet.
- 8) When an outboard motor is going to be re-used after long period store.
  - ① Run an engine with slow speed for 5 minutes.
  - ② Run an engine with half throttle for 10 minutes.These are for cleaning of fitting engine oil inside of engine that was changed in quality.  
(: lowered performance by storing long period).
- 9) For daily using outboard motor.  
Be sure to carry warming-up engine for at least 3 minutes to supply engine oil on required position.

## (IV) OPTIONAL EQUIPMENT

### (1) REMOTE CONTROL

This equipment permits you to shift gears and control its speed without going side the outboard motor. (Fig. 31)

#### The Steering Systems:

The following systems can be attached;  
the Rope System;  
the Ball-Post System;

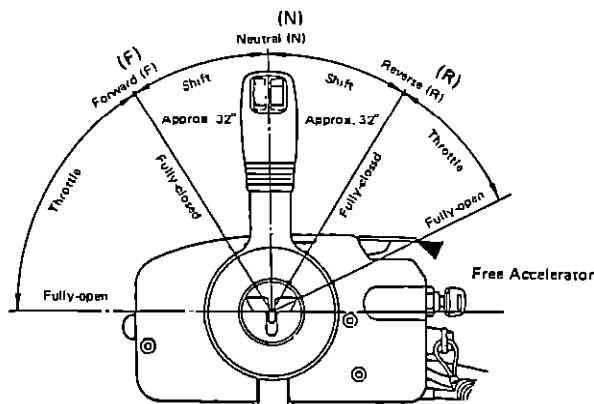


Fig. 31 Remote control box

### (2) LIGHTING COIL

Use as lighting at night. The lighting capacity is 12V – 40W.

### (3) RECTIFIER

Use for battery charging with the electricity generated from the magneto.

### (4) SAFETY SWITCH

An equipment for preventing a dangerous running by cutting the electric current to stop the engine instantly.

### (5) VERTICAL STARTING ACCESSORIES

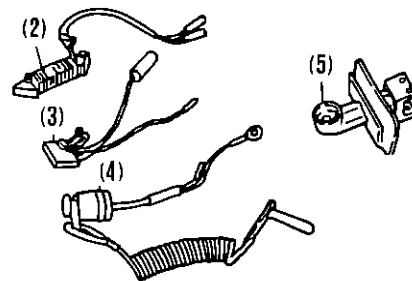


Fig. 32

- 6) TOUCH-UP PAINT (300ml)
- 7) TOHATSU ENGINE OIL (For 50:1 use)  
(0.5 ℓ, 1 ℓ, 20 ℓ contained in can)
- 8) TOHATSU GENUINE GEAR OIL  
(500cc & 260cc)
- 9) TOHATSU GREASE (50g & 250g)

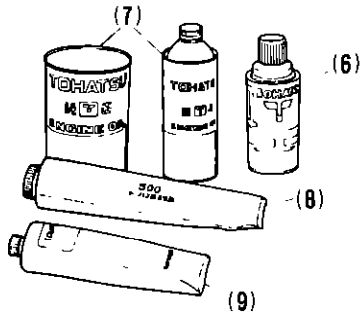


Fig. 33

## (V) SERVICING TOOLS AND ACCESSORIES

### 1. TOOLS AND SPARE PARTS

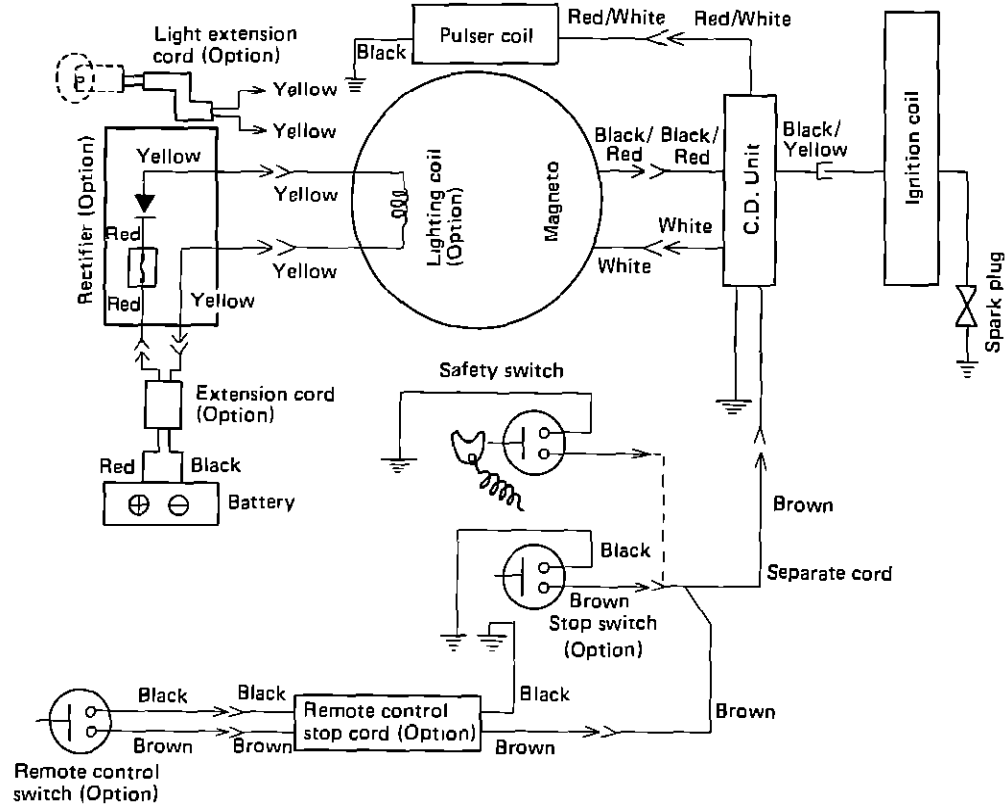
NAME	SIZE	NOS.
Tool bag		1
Pliers		1
Double-ended socket wrench	10mm x 13mm	1
Socket wrench	21mm	1
Handle for socket wrench		1
Screw driver (+) & (-)		1
Grip for driver		1
Safety rope	$\phi 4 \times 1000\text{mm}$	1
Spark plug spare		1
Split Pin		1
Flushing plug		1

(Note) The split pin is attached on the damper rubber of the C.D. unit in the engine.

## 2. AVAILABLE PROPELLER

Light duty ←→ Heavy duty (Size (Blade x Dia x Pitch) mm.)			
Mark Size	9 3 x 200 x 229	8 3 x 200 x 200	7 3 x 200 x 178
Application	Option	Transom S, L	Option

# (VI) WIRING DIAGRAM











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