



M25D

A series of horizontal lines, including a thick double-line border and several thinner lines, are positioned below the 'M25D' text, creating a decorative frame for the model name.

OWNERS MANUAL

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TOHATSU M25D

OWNER REGISTRATION AND IDENTIFICATION

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

Warranty

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

The warranty does not extend to faults arising from incorrect installation or maltreatment and becomes void if the unit is altered, modified or repaired by any other than the company or service center appointed by Tohatsu.

Please note that the warranty covers only your Tohatsu product. It does not extend to your boat, trailer, associated equipment or other accessories.

Please read this manual carefully, and use the product in accordance with the instructions set forth herein.

Serial Number

Please record the serial number of the engine (indicated on the lower engine cover and cylinder block) in the space below. This number will come in handy in the event of theft or to quickly help identify the product type.

Serial Number : _____

To you the Customer

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

We would like to point out that carefree usage can only be assured on the condition that this manual is read through in its entirety and maintenance, as described later in this manual, are followed carefully. Should difficulty arise with the engine, please check the trouble against the troubleshooting list at the end of this manual, and if it can not be remedied, contact an authorized Tohatsu service shop or your dealer.

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

Tohatsu Corporation

NOTICE

HEED ALL WARNINGS AND CAUTIONS AS SET FORTH HEREIN. THEY HAVE BEEN INCLUDED FOR YOUR SAFETY AND MUST BE READ CAREFULLY. NEGLIGENCE IN OBSERVING SUCH WARNINGS AND CAUTIONS COULD RESULT IN SEVERE INJURY OR DEATH.

EMERGENCY STOP SWITCH

A safety switch in the steering Handle or in the Remote Control Box will cut off the engine when the safety switch line is pulled out. This line connects to the wrist of the operator, effectively preventing injuries from the propeller if he falls overboard. We highly recommend use of the safety switch line, since it can save the life of the operator if bad things come to worse. However, we would also like to point out the drawbacks of the switch to the operator. Accidental activation of the switch (such as the line being pulled in heavy seas), could cause passengers to lose their balance, fall overboard, and could result in loss of power in heavy seas, strong currents or high winds. Loss of control while mooring is another potential hazard.

To prevent such hazardous situation, the line is curled and will extend to a full 1,300mm.

WARNING

As the operator/driver of the boat, you are responsible for the safety of those aboard, other crafts around you and that local boating regulations are followed. As such you should possess thorough knowledge of correct operation of the boat, its accessories and the engine. Thus, to learn about correct operation and maintenance of the engine, please read through this manual carefully.

WARNING

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

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

It is the operator's responsibility to perform all safety checks and to ensure that all lubrication and maintenance instructions are complied with for safe operation. It is also the operator's responsibility to return the unit to the local dealer for periodic inspection.

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

SERVICING, REPLACEMENT PARTS & LUBRICANT.

Only let an authorized TOHATSU service shop perform servicing or maintenance on this product. Be sure to use original Tohatsu parts and Tohatsu lubricants only.

MAINTENANCE

As the owner of this outboard engine, you should have acquainted yourself with the correct maintenance of the same. Please comply with all instructions on lubrication and maintenance, and return the engine to the dealer for periodic inspection at the prescribed intervals.

Troublefree operation cannot be expected unless the engine receive correct periodic maintenance and is taken good care of. Moreover, if such maintenance is performed periodically, it is not likely that a costly overhaul would ever be required.

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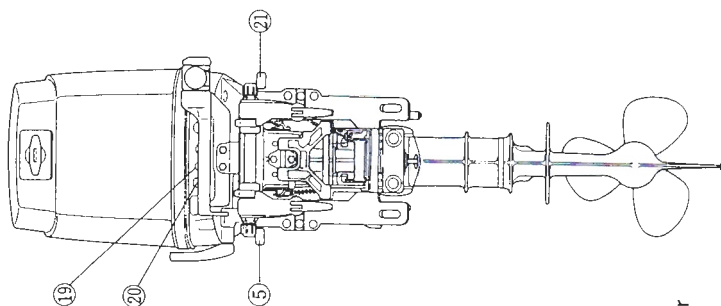
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SPECIFICATIONS

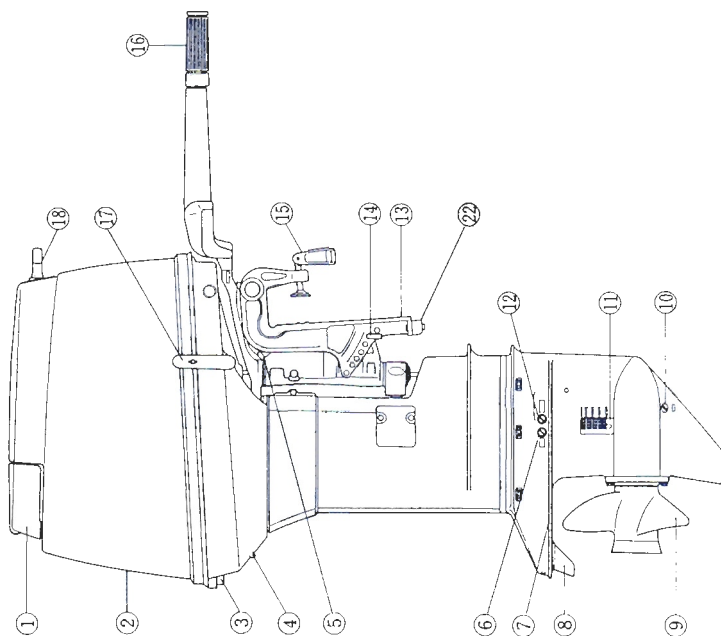
MODEL		M25D S
Overall Length,	mm (in.)	1107 (43.58)
Overall Width,	mm (in.)	381 (15.00)
Overall Height,	mm (in.)	1225 (48.23)
Weight,	Kg (lbs)	72.5 (32.88)
Transom Height,	mm (in.)	403 (15.87)
Max. Output,	KW (PS)	18.39 (25)
Full Throttle Speed Range		25PS : 4500 ~ 5500
No. of cylinders		3
Piston displacement,	cc (in ³)	697 (42.53)
Bore × Stroke,	mm (in.)	68 × 64 (2.68 × 2.52)
Exhaust System		Through Propeller Hub Exhaust
Lubrication		Manual Mixing in Fuel Oil Tank
Fuel Mixing Ratio		50 : 1 (After Completing Break-in)
Cooling System		Forced Water Cooling
Starting System		Recoil Hand Starter
Ignition		Break Pointless C.D Ignition
Spark Plugs		NGK B7HS-10 or Champion L-82C (1.0mm Gap)
Trim Stage		6
Engine Oil		Genuine TOHATSU Engine Oil "Super Gold"
Gear Oil		TOHATSU Gear Oil (API GL5, SAE#80 or #80W)
Fuel Tank Capacity		22.7 Liters (6 U.S. gal)
Gear Reduction Ratio		13 : 24

NOMENCLATURE

M25D



1. Tilt Handle
2. Upper Motor Cover
3. Hook Lever
4. Water Check Port
5. Tilt Stopper Lever
6. Water Plug
7. Anti Cavitation Plate
8. Trim Tab
9. Propeller
10. Oil Plug (lower)
11. Water Strainer
12. Oil Plug (upper)
13. Stern Bracket
14. Thrust Rod
15. Clamp Screw
16. Throttle Grip
17. Shift Lever
18. Starter Handle
19. Safety Switch
20. Choke knob
21. Reverse locking Lever
22. Anode



1. ENGINE INSTALLATION ON BOAT

⚠ ⚠ WARNING

The maximum horsepower rating of the engine is indicated on the CERTIFICATION PLATE on the engine itself. Be sure that the maximum engine horsepower rating does not exceed that recommended for your boat. It is very DANGEROUS to operate a boat with an overpowered engine.

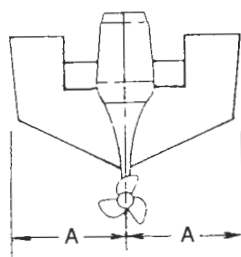
⚠ ⚠ WARNING

Do not operate the engine until it has been securely mounted on the boat in accordance with the instruction below.

1 Installation

① Single-engine Installation

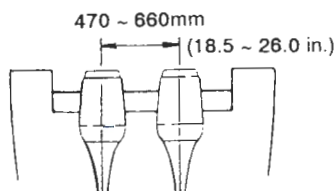
- Position the outboard engine at the exact center of the stern, and mount it using a cushioning pad or plate. (Fig. 1)



(Fig. 1)

② Twin-engine Installation

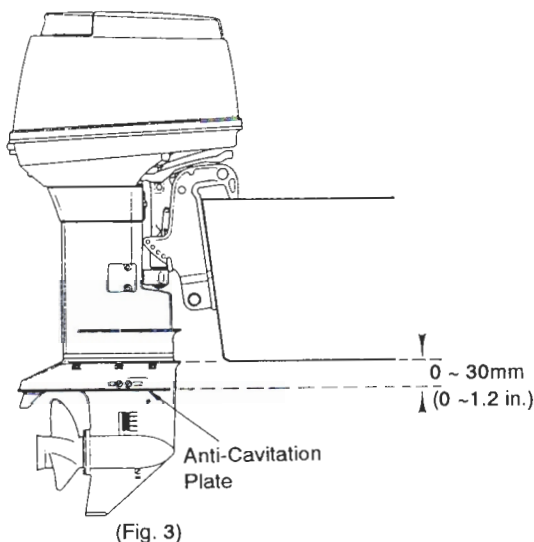
- Position the outboard engines 470~660mm (18.5 ~ 26.0 in.) apart, measured from an imagined center line of each engine, in the exact center of the stern. (Fig. 2)



(Fig. 2)

③ Transom Height

Install the engine with the Anti-cavitation Plate at a level 0 ~ 30mm (0 ~ 1.18 in.) below the bottom of the boat. (Fig. 3)



▲ CAUTION

Overheating may occur if the Anti-cavitation Plate is at a level higher than the bottom of the boat, as a result of air sucking.

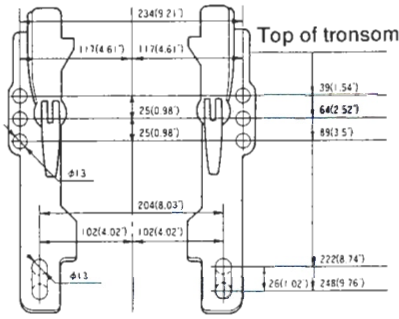
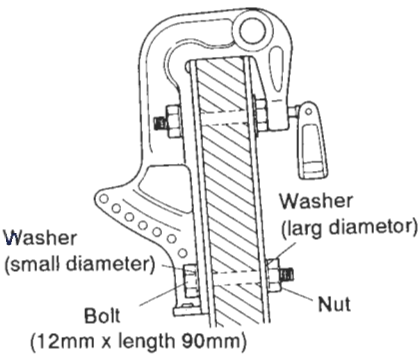
- If the height difference exceeds 0 ~ 30mm (0 ~ 1.18 in.) engine power performance is likely to be reduced as a result of increased water resistance to the gear case assembly.

④ Attaching the Stern Bracket

After positioning the Stern Bracket, fix it with clamp screws then drill four holes in the transom board, matching the holes in the Stern Bracket. Secure the engine with the supplied bolts (M12 x 90mm) and nuts. Be sure to use the washers. The small diameter washers go with the bolts and the larger diameter washers go with the nuts.

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

2 Stern Bracket Dimensional Drawing



NOTE

We recommend that the bolt head of the upper bolts face inward while the nuts are kept on the outside of the boat to prevent injury to the passengers.

NOTES

1. Apply sealing agent, such as silicon sealer, between the bolts and the transom board holes when tightening the bolt.
2. Be sure to fix the engine securely with the bolts.

2. Fuel & Engine Oil

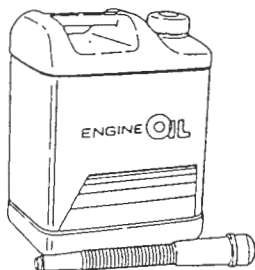
NOTES

1. Use of Premium-rated gasoline (Super brand) is recommended.
The minimum octane rating is 89 (research octane rating 91).
2. Do not use gasoline containing alcohol, methanol. (methyl) or ethanol (ethyl).
Use of such gasoline brands will void the warranty and repair costs will be at the owner's expense.
3. Do not use white gasoline.
4. Do not use gasoline pre-mixed with oil, sold at gas stands, since the octane rating and oil grade are unknown

Fuel tank capacity --- 22.7 liters (6 U.S. gal)

Engine oil ----- Use genuine TOHATSU Outboard Engine Oil. If this oil is not available, use another NMMA TC-W II certified Outboard Engine Oil from another manufacturer.

TOHATSU Engine Oil
"Super Gold"



▲ CAUTION

DO NOT mix different brands of oil.

Mixing different brand of oil, or different type of oil even if the brand is the same, may cause gelling, resulting in possible filter screen blockage. This could result in serious engine damage because of impaired lubrication performance.

3. Running

1 Break-in

① Perform break-in run according to the table below.

step	1 →	2 →	3 →	4 →	completion of break-in
throttle position	slow	under 1/2	1/2 to 3/4	approx. 3/4	
fuel to be consumed (U.S. gal.)	10minutes	1.5 liters (0.4)	4liters (1.06)	7liters (1.85)	—
engine speed	cruising at minimum speed	2,500 rpm to 3,000 rpm	3,000 rpm to 4,000 rpm	3,500 rpm to 4,500 rpm Apply full throttle run for one minute in every 30 minutes	Max. speed must not exceed 5,500 rpm.

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

Mixing Ratio

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

2 Starting

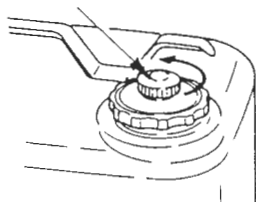
⚠ CAUTION

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

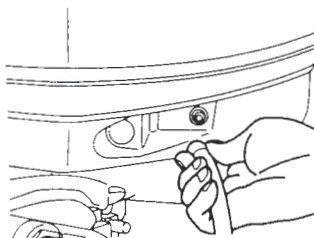
① Preparations

- (1) Loosen the air vent screw on the fuel tank cap.

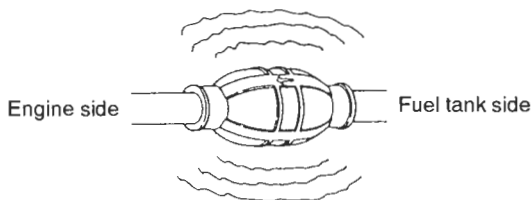
Air vent screw



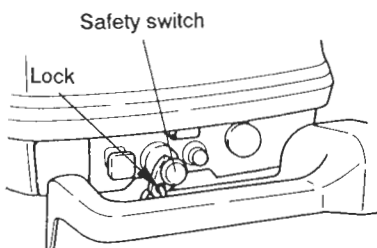
- (2) Connect the fuel connector to the engine.



- (3) Feed fuel to the carburetor by squeezing the primer bulb.



- (4) Install a lock in a safety switch.



▲ CAUTION

Be sure to connect the emergency stop line to your wrist. The engine is shut down if the stop line switch is disconnected.

This is a safety measure, designed to protect the driver from propeller injury if he is thrown overboard.

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

▲▲ WARNING-DAILY CHECK

Before moving out with the boat, confirm if the safety switch works normally by repeating the engine start and stop in several times.

▲ CAUTION

Do not drive engine without ample supply of cooling water.

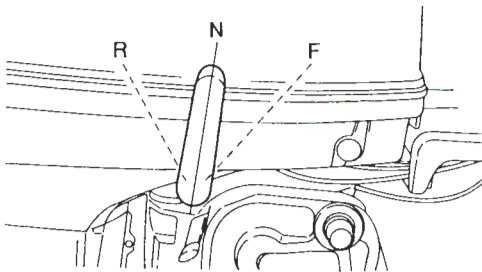
If the cooling water supply is insufficient, cylinder wall scratch and damage of water pump impeller are likely.

②-1. Starting

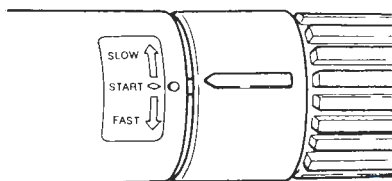
- A. Set the shift lever to Neutral

NOTE

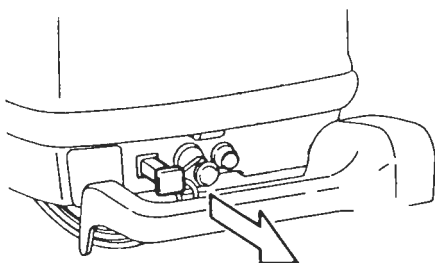
Engine will only start when the shift lever is set to Neutral position.



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



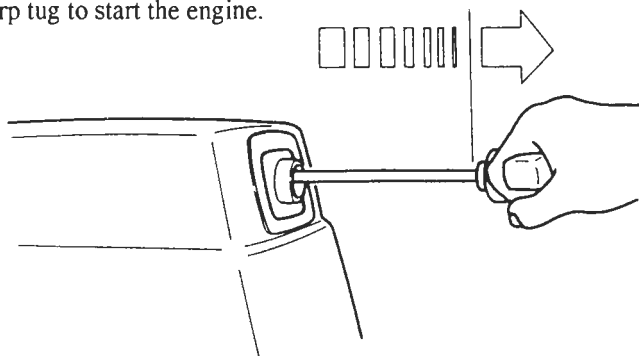
C. Pull the choke knob fully



NOTE

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

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



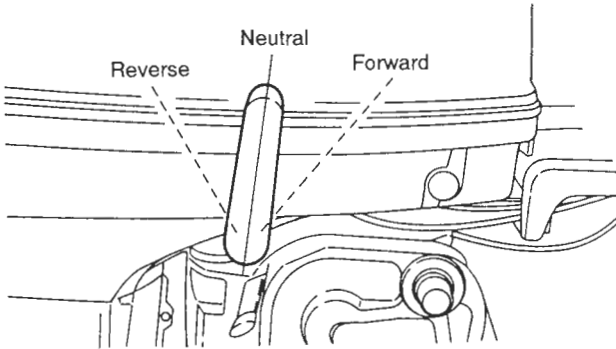
E. Turn the handle grip to its original position gradually once the engine has started.

F. Push back the choke knob slowly.

G. Carefully turn the throttle grip to "SLOW".

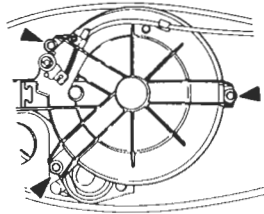
3 Manual Start - - - in case of trouble with the Recoil Starter or the Electric Starter Motor

(1) Set the Shift Lever or the Remote Control Lever to Neutral.

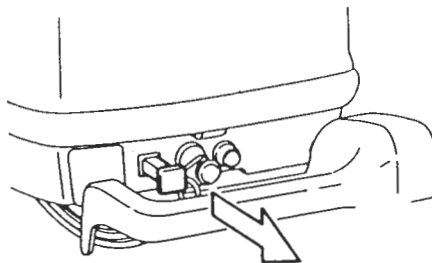


(2) Remove the Upper Engine Cover. Then,

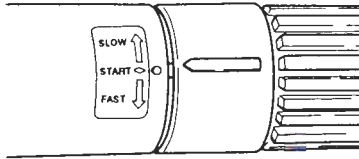
take off the Recoil
Starter Assembly



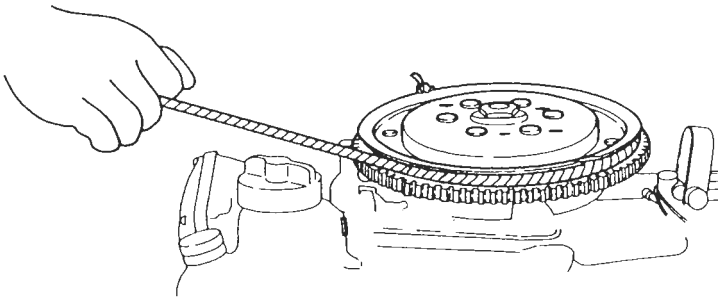
(3) Pull the choke knob



(4) Turn the throttle grip so that the indicator line meets the "START" mark.



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



▲ CAUTION

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

To prevent your clothes and other items to get caught in the engine, do not reinstall the flywheel cover nor the Upper Engine Cover after the engine is started with the starter rope. In this case be sure nobody sits in the vicinity of the engine, and run carefully.

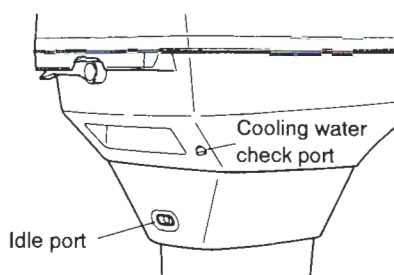
Immediately contact an authorized TOHATSU dealer when reaching shore.

4 Warm-up

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

⚠ CAUTION

If cooling water is not discharged and engine operation is continued, the engine will overheat and damage occur.



■ Engine speed

Proper idle speed for warm-up operation

Clutch engaged	Clutch disengaged (reference)
650 ~ 700 rpm	850 ~ 900 rpm

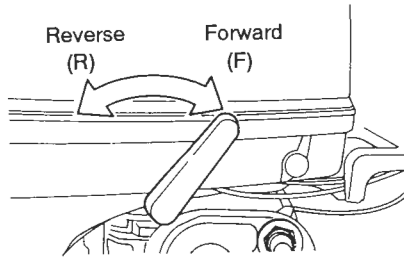
Do not exceed the full-throttle engine speed

Full-throttle engine speed
4,500 ~ 5,500 rpm

4. OPERATION

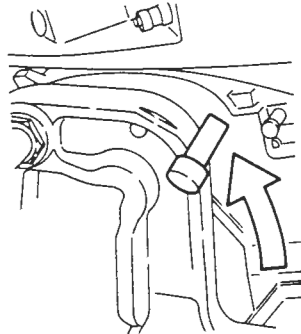
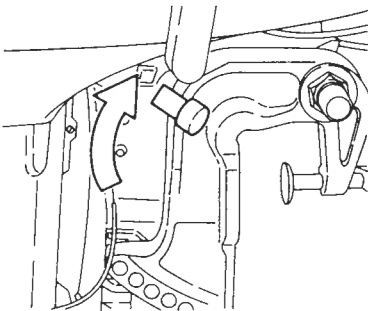
1 Forward/Reverse Running

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



▲ CAUTION

1. The engine must be at idling speed when the shift Lever is moved from Forward to Reverse, or vice versa.
2. Before moving the Shift Lever to Reverse, make sure the Reverse Lock and the Tilt Stopper are engaged (in up position).



3. Do not increase the engine speed unnecessarily while reversing. To limit half throttle at max. is recommended when running to reverse.
4. The Shift Lever cannot be turned from Neutral to Reverse unless the throttle grip has been turned fully toward "SLOW".

NOTE

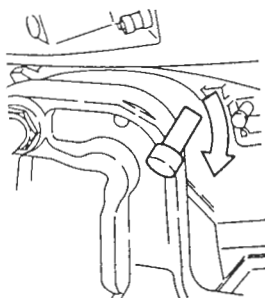
The Remote Control Lever becomes inoperative unless the free accelerator lever is in the fully closed position.

2 Shallow water running

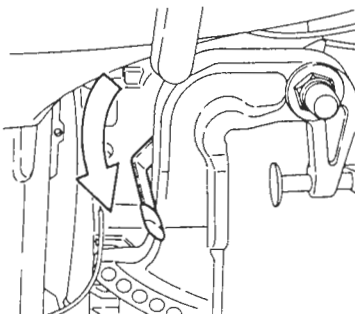
⚠ CAUTION

1. Run the engine at trolling speed in shallow water.
2. Pay attention that the cooling water inlet port on the gear case assembly is always below water level when running using the shallow water setting.

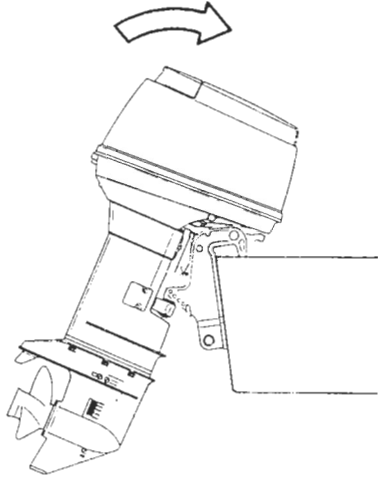
- ① Set the Reverse Lock Lever on the port side to "RELEASE" by turning it downward.



- ② Set the Tilt Stopper Lever provided on the starboard side to "Release" by turning it downward.



-
- ③ Tilt the engine up approx. 45° and lower it. The engine will now be set to the shallow water setting.



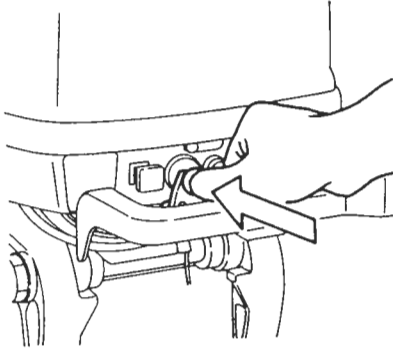
- ④ Releasing the shallow water setting
- Turn the Reverse Lock Lever and the Tilt Stopper Lever upward to set them in "LOCK" position.
 - Tilt up the engine slightly and then let it go down. The shallow water setting is then released.
 - The engine is released from shallow water setting, and be locked at normal running position.

3 Stopping the engine

⚠ CAUTION

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

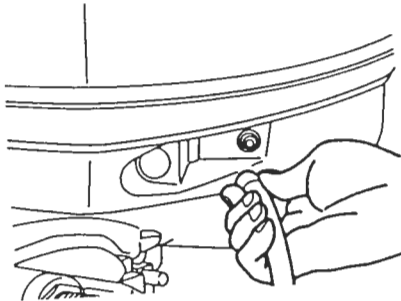
-
- ① Reduce the engine speed to idling rpm.
 - ② Keep pressing on the Safety Switch or pull out the lock plate. The engine will then stop.



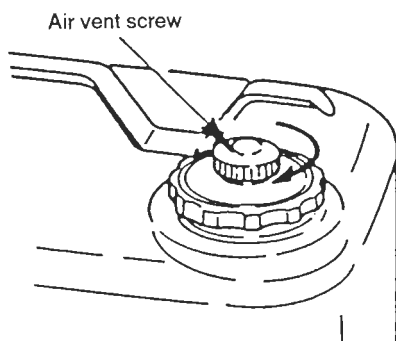
NOTES:

1. When the engine stopped, close the air vent screw on the fuel tank.
2. Disconnect the fuel connector from the engine.

- ③ Disconnect the fuel connector from the engine.



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



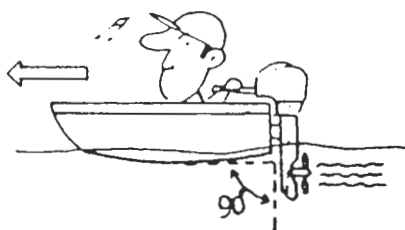
5. TRIM ADJUSTMENT

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

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

■ Proper Trim Angle

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



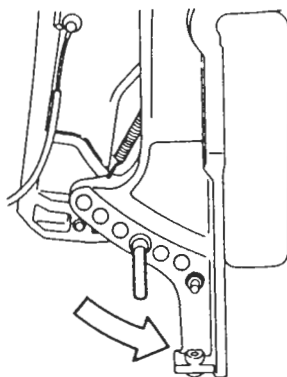
■ Improper Trim Angle (bow rises too high)

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

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



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

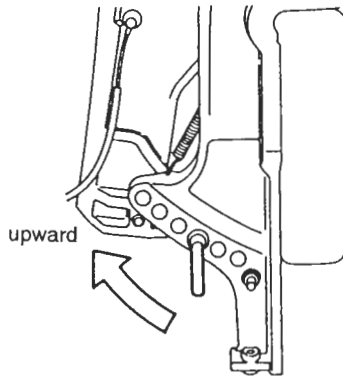


Select a lower hole

■ Improper Trim Angle (bow dips into the water)

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

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

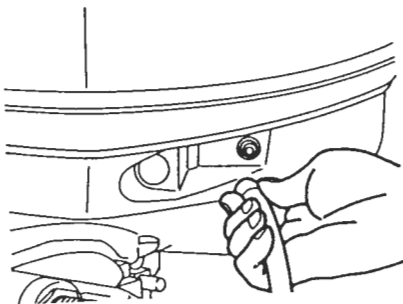


Select a higher hole

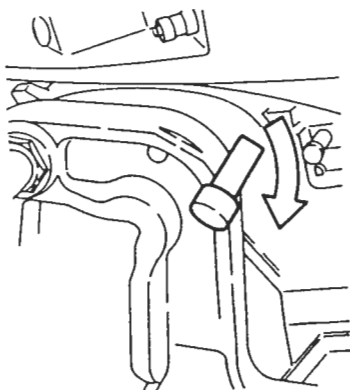
6. MOORING WITH THE ENGINE TILTED UP

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

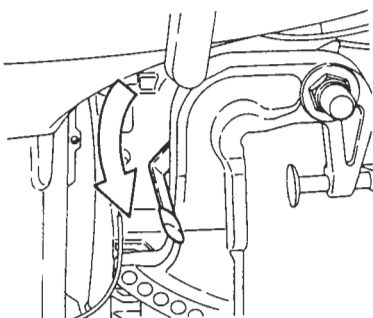
- ① Disconnect the fuel connector from the engine.



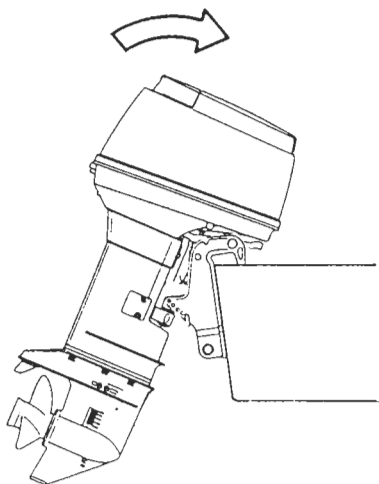
- ② Set the Reverse Lock Lever on the port side to "RELEASE" by turning it downward.



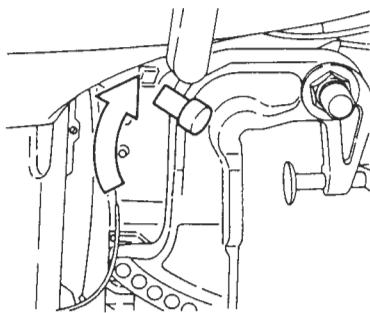
-
- ③ Set the Tilt Stopper Lever on the starboard side to "RELEASE" by turning it downward.



- ④ Tilt the engine up entirely. The tilt will lock in the raised position.



- ⑤ To tilt the engine down. Turn the Tilt Stopper Lever upward (toward "LOCK"). Tilt the engine up slightly and then let it go down. (The Reverse Lock will be set automatically.)

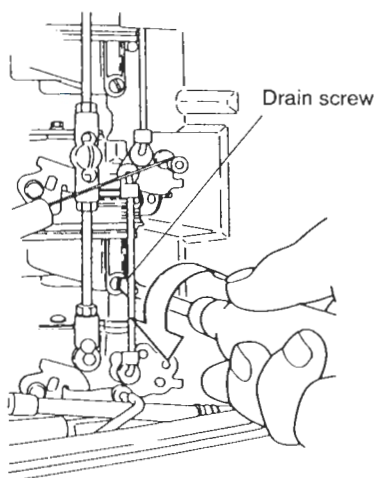
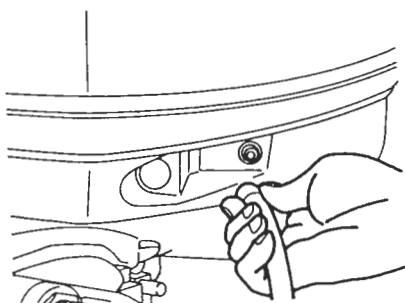


7. DISMOUNTING THE ENGINE FROM THE BOAT

- ① Stop the engine, disconnect the fuel connector and loosen the drain screws on the carburetors to discharge fuel from them.

▲ CAUTION

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



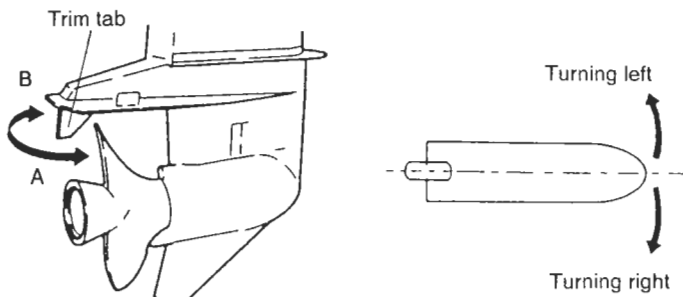
- ② Disconnect the Steering Cable, the Remote Control Cables, the electrical cables and the battery cables.
- ③ Remove the engine from the boat. Keep the engine in an upright position until water stops dripping from the gear case. Always carry the engine at a higher position than the propeller when carrying the unit.

8. ADJUSTMENT

1 Trim Tab Adjustment

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

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



NOTES:

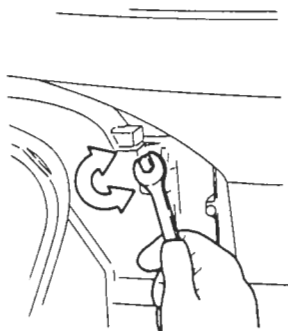
1. The trim tab also acts as an anode to prevent electrolytic corrosion. Thus do not paint or grease this part.
2. After adjustment securely tighten the trim tab fixing bolt.
3. Check for looseness of the bolt and the trim tab at regular intervals. Due to corrosion, the trim tab will over time wear down.

2 Steering Load Adjustment

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

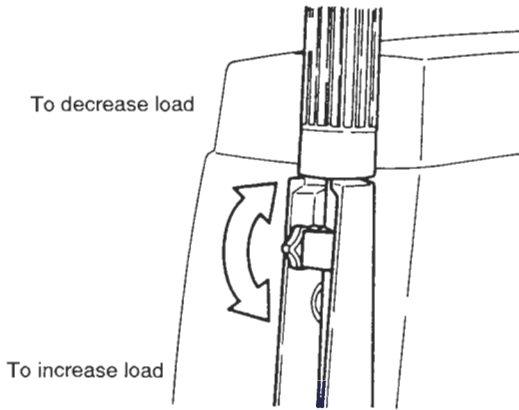
Turn clockwise to increase the load

Turn counter-clockwise to decrease the load



3 Throttle Grip Turning Load Adjustment

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



9. INSPECTION AND MAINTENANCE

Perform the following checks and inspection before and after use.

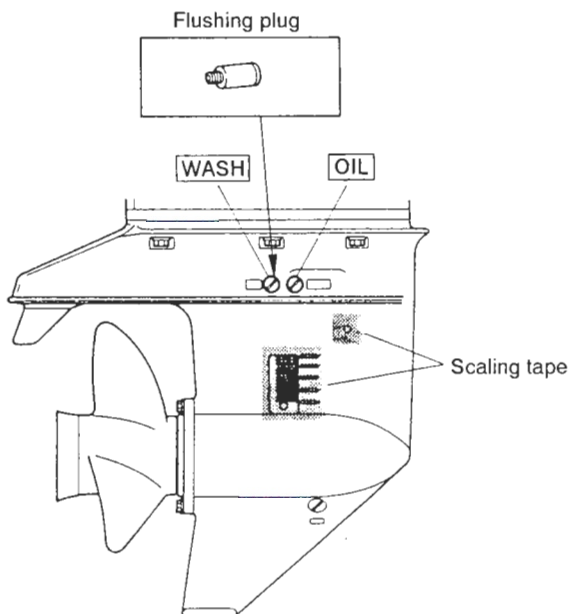
1 Daily Inspection

Item	Check	What to do
Fuel System	<ul style="list-style-type: none"> ● Check the amount of fuel in the tank. ● Dust or water in the fuel filter. 	Replenish Clean
Electrical Equipment	<ul style="list-style-type: none"> ● Check the spark plugs for dirt, wear and carbon built-up. Spark plugs: NGK B-7HS-10 or CHAMPION L-82C (1.0 mm gap) ● Check if the ignition switch functions normally. ● Check if the battery electrolyte level and specific gravity are normal. ● Check for loose connections on battery terminal. ● Check if the safety switch functions normally and make sure the lock plate is present. 	Clean or replace Remedy or replace Replenish or recharge Retighten Remedy or replace
Throttle System	<ul style="list-style-type: none"> ● Check if the choke solenoid for the carburetor works normally. 	Replace
Clutch and Propeller System	<ul style="list-style-type: none"> ● Check if the clutch engages correctly when operating the Remote Control. ● Check the propeller for bent or damaged blades. ● Check if the propeller nut is tightened and the split pin is present. 	Adjust Replace
Others	<ul style="list-style-type: none"> ● Check the anode for wear and/or deformation. ● Check if the bolts on the stern bracket are security tightened. ● Check if cooling water is discharged from the cooling water check port. 	Tighten or replace Tighten Remove clogging

■ Washing with fresh water

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

Screw the included flushing plug (hose adapter) into the wash hole on the gear case. Connect a water hose to the flushing plug and flush out with water. (Be sure to secure the water strainer and sub-water strainer on the gear case beforehand.)



⚠ ⚠ WARNING

To prevent rotation of the propeller, remove it before flushing the passage.

Wash the engine before long-term storage.

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

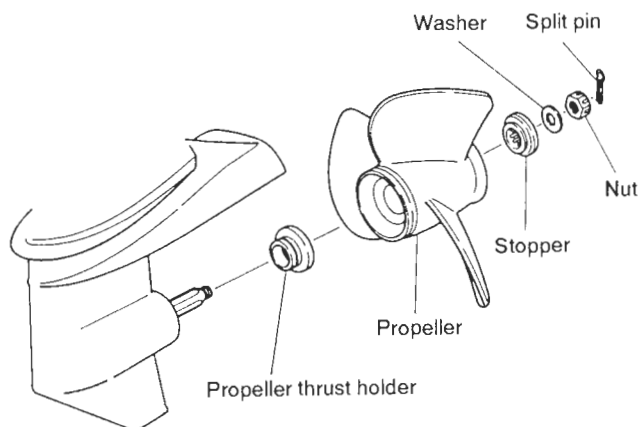
NOTE:

Run the engine at low speed when flushing the cooling system.

① Replacing the propeller

A worn or bent propeller will affect engine performance and may cause engine trouble.

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

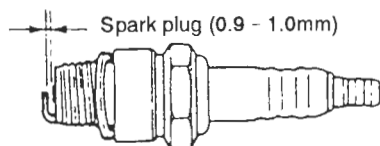


⚠ CAUTION

Before removing the propeller, remove the spark plug caps from the spark plugs for your safety.

② Replacing the spark plugs

1. Remove the upper engine cover.
2. Remove the spark plugs by turning counter-clockwise with the socket wrench (21mm) fitted with the handle. Tap lightly on the spark plugs if they are hard to turn.



⚠ CAUTION

Do not touch the high tension cords running from the ignition coil to the spark plugs while the engine is running or it is turned by the electric starter motor, not even for testing the high tension cords or the spark plugs.

The high tension cords and the spark plugs generate very high electric voltage, which can cause a serious electric shock if touched.

2 Periodic Inspection

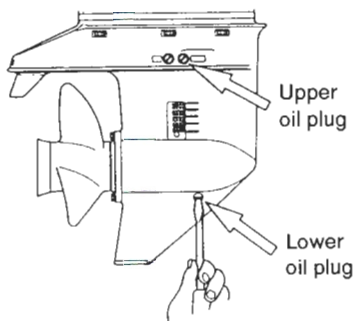
For periodic servicing, please contact your local Tohatsu dealer.

Item	Servicing Interval							What to do	Remarks
	Every 10 hours or 2 weeks	Every 30 hours or 1 month	Every 50 hours or 3 months	Every 100 hours or 6 months	Every year	Every 18 months	Every 2 years		
Carburetor *	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strip, clean and adjust. * idling adjustment.	
Fuel System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check and clean.	
Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check and clean.	
Fuel tank			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Clean	
Spark plugs	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check gaps. Remove carbon deposits.	0.9 – 1.0mm
Ignition timing			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Adjust the timing.	
Starting System	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check for salt deposits and battery cable condition.	

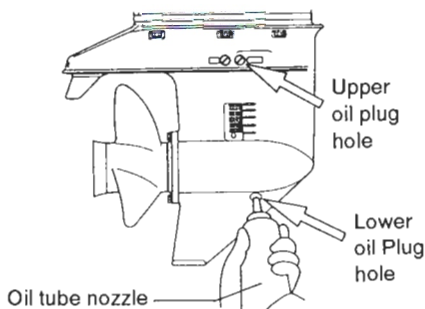
Lower System	Pro-peller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Check for bending, damage and blade wear.	
	Gear oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Replenish or change if required. Check for water entry.	TOHATSU gear oil 500cc
	Bolt and Nuts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tighten properly.	
	Sliding and Rotating Parts. Grease Nipples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Apply and pump in grease.	

3 Changing Gear Oil

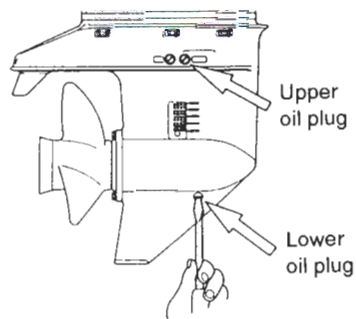
- ① Remove the oil plugs (upper and lower), and drain the gear oil completely.



- ② Insert the oil tube nozzle into the lower oil plug hole, and squeeze the tube until the oil flows out of the upper plug hole.



- ③ Install the upper oil plug. Then remove the oil tube nozzle and install the lower oil plug.

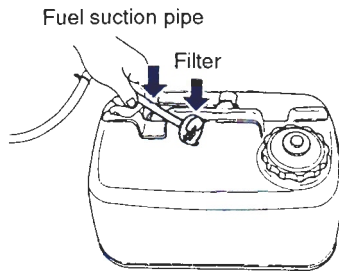


NOTE

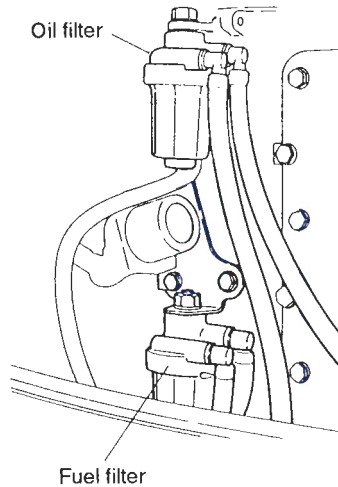
Use only genuine TOHATSU gear oil or, if not available, an API (American Petroleum Institute) oil grade of GL5, or SAE #80 or SAE #80W.
Required volume: approx. 500cc (16.89 U.S. fluid oz)

4 Cleaning the Filters

- ① Fuel filters are provided inside the fuel tank and on the engine.
1. Remove the fuel tank housing by loosening the four screws. Then clean the fuel filter.



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



10. WINTER STORAGE

When the boating season is over, this is good opportunity to have your engine serviced and overhauled by a TOHATSU service shop.

1 Engine

- ① Wash the engine exterior and flush the cooling water system thoroughly with fresh water. Let the water drain completely.
Wipe off water with an oily rag.
- ② Drain all fuel from the fuel pipes, fuel pump and carburetor, and clean these parts. To prevent corrosion of the fuel tank, fill it up with engine oil-rich gasoline.
Keep in mind that if gasoline is kept in the carburetor for a long time, gum will be generated, causing the float valve to stick.
- ③ Remove the spark plugs and feed TOHATSU Engine Oil. "SUPER GOLD" brand or storage fogging oil through the spark plug holes.
Storage fogging oil will be fed into the crank chamber from the air silencer attached to the carburetors, Turn the engine over several times while feeding oil into it to make sure it is evenly distributed.
- ④ Drain all oil from the engine oil tank and the engine oil filter cup. Clean the filter element with kerosene or a special cleaning liquid before storage.
Otherwise the oil in the cup will deteriorate over the winter.
- ⑤ Apply grease to the propeller shaft.
- ⑥ Change the gear oil in the gear oil assembly.
- ⑦ Apply grease to all sliding parts, joints, bolts and nuts.
- ⑧ Use a dry cloth to completely wipe off water and salt from the electrical components.
- ⑨ Attach the upper engine cover, and then stand the engine vertically in a dry place.

11. PRE-SEASON CHECK

Have a TOHATSU service shop check the engine before the season starts. If you would like to start using the engine without this check-up, at least be sure to check the following items yourself:

- ① Check that the shift and throttle function properly.
(Be sure to turn the propeller shaft when checking the shift function or else the shift linkage may be damaged.)

⚠ CAUTION

The following steps must be taken when taking the engine into use after winter storage.

1. In addition to the oil in the oil tank, use fuel and engine oil with the following mixing ratio and fill up the fuel tank completely with 22.7 liters (6 U.S. gal.):

Mixing ratio: 50:1

Use Premium (Super) gasoline and genuine TOHATSU Outboard Motor Oil. If this oil is not available, use another NMMA TC-WII certified Outboard Motor Oil from another manufacturer.

2. Warm up the engine for 3 minutes while keeping the Control lever at Neutral.
3. Run the engine for 5 minutes at slow speed
4. Run the engine for 10 minutes at half speed.
In steps 2 and 3 above, the oil used for winter storage inside the engine will be cleaned out, and optimum performance will be assured.
5. When the full volume, 22.7 liters (6 U.S. gal.), of gasoline mixed with oil has been used, fill up the tank with pure gasoline only.

If the above caution is not followed, SERIOUS DAMAGE may result on pistons, piston rings, bearings, and other parts.

12. IF THE ENGINE BECOMES SUBMERGED IN WATER

In case the engine becomes completely submerged in water, take the following counter-measures before handing it in for service at you TOHATSU service shop.

- ① Take it out of water immediately and wash it with fresh water to remove all traces of salt and dirt.
- ② Remove the spark plugs, and drain the engine completely of water.
Turn the flywheel several times, using the starter rope.
- ③ Inject plentiful of TOHATSU engine oil "SUPER GOLD" brand or storage fogging oil into the engine through the spark plug holes and the air silencer.
Turn the flywheel several times with the starter rope while injecting the oil to make sure the oil is evenly distributed.
- ④ After the above steps, it might be possible to start the engine. However, the electrical components and carburetors will soon deteriorate and become inoperative. Therefore, be sure to have the engine overhauled by a TOHATSU service shop as soon as possible.

13. PRECAUTIONS IN COLD WEATHER

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

14. TROUBLESHOOTING

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

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

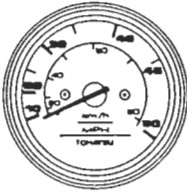
Difficult to start engine	Engine starts, but stops soon	Poor idling	Unstable engine running speed or engine stops	Abnormally high engine speed	Abnormally low engine speed	Cannot obtain high engine speeds	Overheating of engine	
●	●		●					Empty fuel tank
●	●	●	●		●	●	●	Incorrect connection of fuel system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

Difficult to start engine	Engine starts, but stops soon	Poor idling	Unstable engine running speed or engine stops	Abnormally high engine speed	Abnormally low engine speed	Cannot obtain high engine speeds	Overheating of engine	
		●		●	●	●	●	Damaged or bent propeller
				●	●	●	●	Unbalanced load in boat
				●		●	●	Transom too high
					●	●	●	Transom too low
●	●	●			●	●	●	Incorrect adjustment of throttle link
●	●	●			●	●	●	Incorrect adjustment of ignition timing

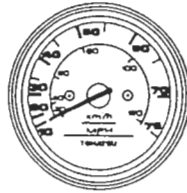
15. ACCESSORIES

Name			Remark
Servicing Tools	Tool Bag	1	Adapter-type
	Socket Wrench (21mm)	1	
	Socket Wrench (10 x 13)	1	
	Socket Wrench Handle	1	
	Pliers	1	
	Screwdriver (Phillips-type and flat head)	1	
	Wrench (10 × 13mm)	1	
	Wrench (17 × 19mm)	1	
Spare Parts	Emergency starter rope (1,600mm)	1	NGK B7HS-10
	Spark Plug	3	
	Slit Pin	2	
Parts Packaged with Engine	Bracket Fixing Bolts	4	12 mm
	Bracket Fixing Nuts	4	12 mm
	Washers A, B	4 each	A (large), B (small)
	Fuel Tank (with primer bulb)	1	
	Flushing Plug	1	For flushing cooling water passage
	Vinyl Engine Cover	1	

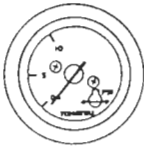
16. OPTIONAL ACCESSORIES



1. Speedometer
(50MPH)



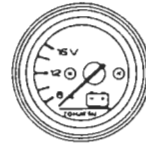
2. Speedometer
(75MPH)



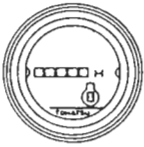
3. water Pressure
Meter



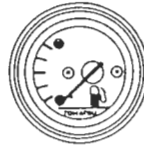
4. Water Temperature
Meter



5. Voltmeter



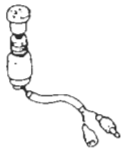
6. Hour Meter
(engine operation
hour counter)



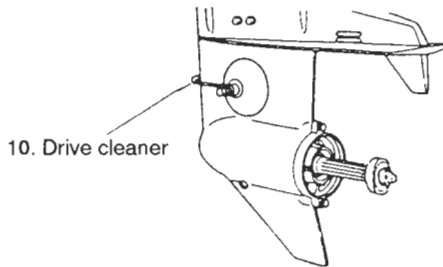
7. Fuel Meter

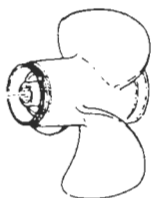


8. Tachometer

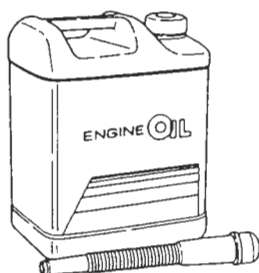


9. Meter Lamp Switch





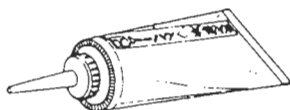
11. Propeller



12. TOHATSU Engine Oil "SUPER GOLD"
brand 5 liters (1.3 U.S. gallons)



13. TOHATSU Grease
(50g, 250g)



14. TOHATSU Gear Oil
(260cc, 500)



15. Touch-up Spray

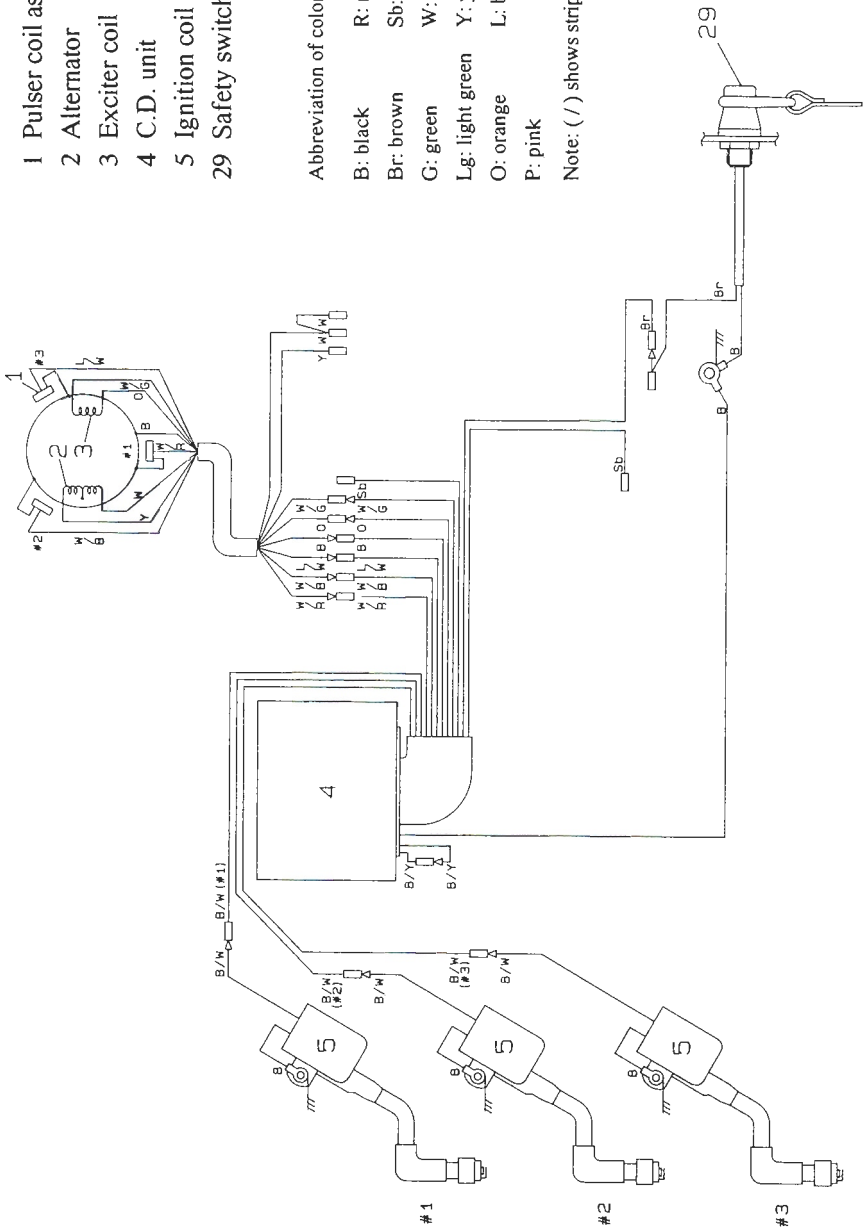
18. WIRING DIAGRAM

- 1 Pulsar coil assembly
- 2 Alternator
- 3 Exciter coil
- 4 C.D. unit
- 5 Ignition coil
- 29 Safety switch

Abbreviation of color of lead

- B: black
- Br: brown
- G: green
- Lg: light green
- O: orange
- P: pink
- R: red
- Sb: Sky blue
- W: white
- Y: yellow
- L: blu

Note: (/) shows striped color





Note:

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