

50,60,70 TOHATSU



OUTBOARD MOTOR

OWNER'S HAND BOOK

M50C

M60A

M70A2

TOHATSU CORPORATION

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Thank you for purchasing the Tohatsu Outboard Motor.
This manual describes how to operate and maintain the motor. Before use, please read the manual thoroughly to keep your motor operating at peak performance for many years.

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INSPECTION AND MAINTENANCE

1. DAILY INSPECTION

Perform inspection and maintenance by consulting the following check list before and after use.

Check item	Check point	What to do
Electric system	<ul style="list-style-type: none">● Check spark plugs for fouling, wear and carbon bridge. NGK B8HS-10 or Champion L78C (gap 1.0 mm)● Check cords for loose connection and damage.● Check if main switch functions normally.● Check if safety switch functions normally and lock plate is present (EP and EPT types).● Check starter pinion for malfunction and wear.● Check if battery liquid is stored in the specified range.● Check battery cables for loose connections at terminals. ● Check if fuse (20 A) is blown.	<p>Clean or replace.</p> <p>Remedy or replace. Remedy or replace. Remedy or replace.</p> <p>Remedy or replace. Replenish or charge. Retighten, remedy or replace. Replace.</p>
Throttle	<ul style="list-style-type: none">● Check if throttle magneto functions normally when operated by the control lever on the remote control box (EP/EPT types) or the throttle grip (EF/EFT types), and if linkage connection is loosened.● Check if choke valve functions normally.	<p>Repair.</p> <p>Readjust.</p>
Clutch and propeller	<ul style="list-style-type: none">● Confirm that clutch engagement is sound when control lever (EP/EPT types) is operated.● Check propeller for deformation or damage.● Check if the propeller nuts are loosened or split pins are lost.	<p>Readjust</p> <p>Replace. Retighten or supply.</p>
Others	<ul style="list-style-type: none">● Check the reverse lock (EP/EF types).	<p>Remedy.</p>

2. PERIODIC INSPECTION

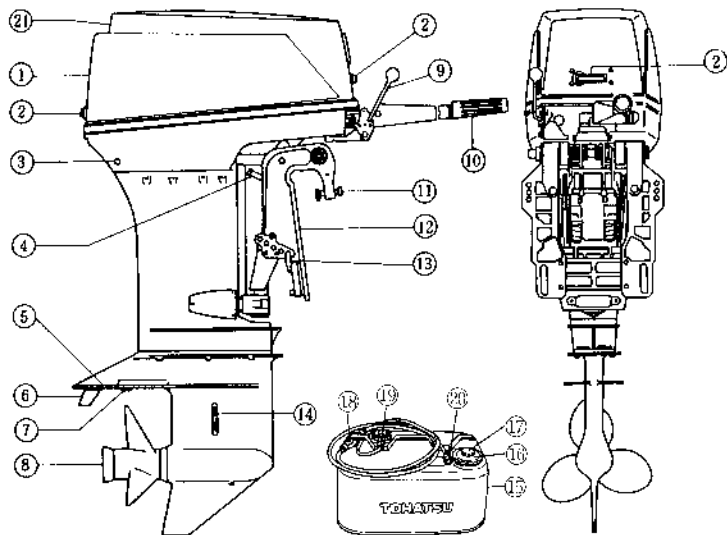
For periodic servicing, please contact your local
Tohatsu dealer.

Inspection items	Servicing intervals							Description
	Every 10 hrs and semi-monthly	Every 30 hrs and monthly	Every 50 hrs and 3 months	Every 100 hrs and 6 months	Every year	Every one and a half years	Every 2 years	
Retightening of bolts and nuts	○	○	○		○			Bolts and nuts on cylinder head, exhaust cover, carburetor, inlet manifold and starter
Fuel system		○	○	○	○	○	○	Carburetor, fuel filter, piping, tank, etc.
Electric system		○		○	○	○	○	Plug, ignition timing, wiring, starter motor, battery, etc.
Cooling water system		○		○	○		○	Water pump, thermostat, etc.
Gear oil	○ Replace		○	○	○	○	○	About 900 l gear oil change, full oil change or replenish, water entry check, etc.
Greasing		○	○	○	○	○	○	Sliding parts, rotating parts and grease nipples
Power trim and tilt	○	○	○	○	○	○	○	Power unit oil

NOTE: After engine disassembly, follow the servicing procedure for a new machine.

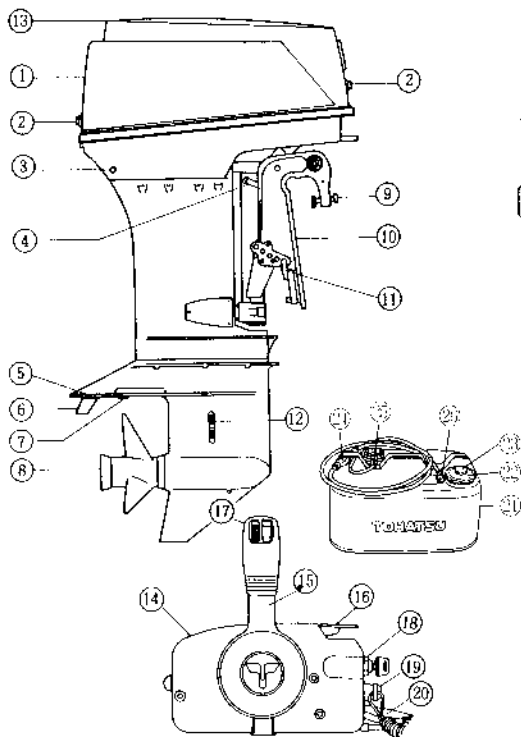
NOMENCLATURE

M50CEF/M60AEF/M70A2EF



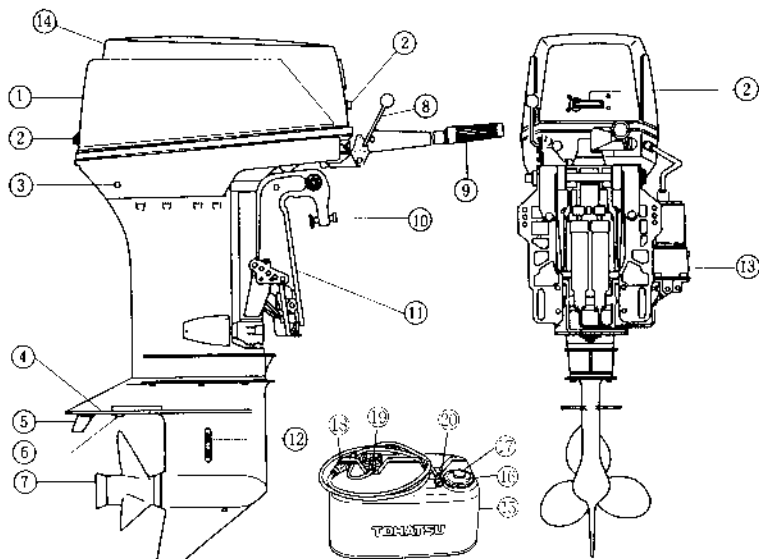
- 1 Upper motor cover
- 2 Cover hook
- 3 Cooling water check port
- 4 Reverse lock lever
- 5 Anti-cavitation plate
- 6 Trim tab
- 7 Sub water strainer
- 8 Propeller
- 9 Shift lever
- 10 Throttle grip
- 11 Clamp screw
- 12 Stern bracket
- 13 Thrust rod
- 14 Water strainer
- 15 Fuel tank
- 16 Fuel tank cap
- 17 Air vent screw
- 18 Primer bulb
- 19 Connector B
- 20 Connector A
- 21 Tilt handle

M50CEP/M60AEP/M70A2EP



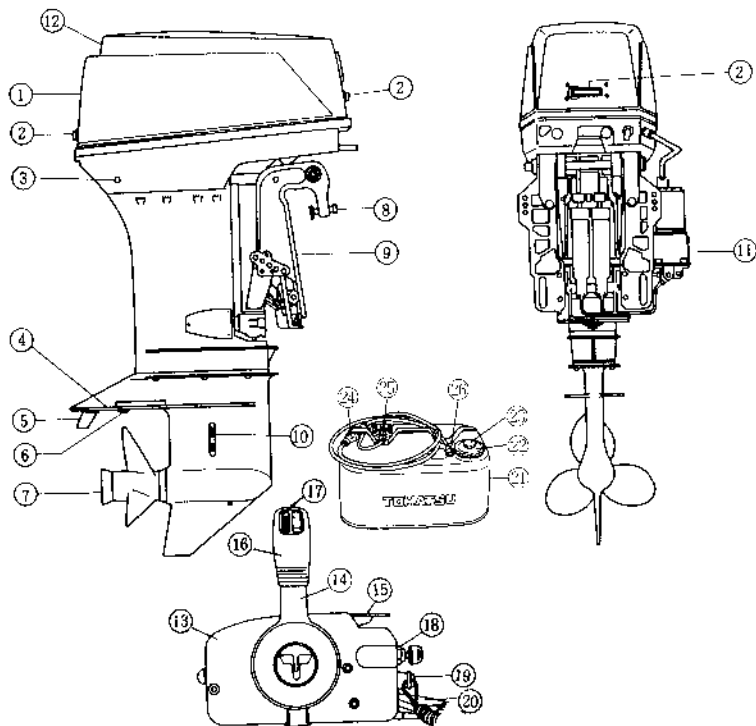
- 1 Upper motor cover
- 2 Cover hook
- 3 Cooling water check port
- 4 Reverse lock lever
- 5 Anti-cavitation plate
- 6 Trim tab
- 7 Sub water strainer
- 8 Propeller
- 9 Clamp screw
- 10 Stern bracket
- 11 Thrust rod
- 12 Water strainer
- 13 Tilt handle
- 14 Remote control box (RC3B)
- 15 Control lever
- 16 Free accel lever
- 17 Grip
- 18 Main switch
- 19 Safety switch
- 20 Cord ass'y B
- 21 Fuel tank
- 22 Fuel tank cap
- 23 Air vent screw
- 24 Primer bulb
- 25 Connector B
- 26 Connector A

M50CEFT/M60AEFT/M70A2EFT (OPTIONAL)



- 1 Upper motor cover
- 2 Cover hook
- 3 Cooling water check port
- 4 Anti-cavitation plate
- 5 Trim tab
- 6 Sub water strainer
- 7 Propeller
- 8 Shift lever
- 9 Throttle grip
- 10 Clamp screw
- 11 Stern bracket
- 12 Water strainer
- 13 Power trim and tilt
- 14 Tilt handle
- 15 Fuel tank
- 16 Fuel tank cap
- 17 Air vent screw
- 18 Primer bulb
- 19 Connector B
- 20 Connector A

M50CEPT/M60AEPT/M70A2EFP (OPTIONAL)



- 1 Upper motor cover
- 2 Cover hook
- 3 Cooling water check port
- 4 Anti-cavitation plate
- 5 Trim tab
- 6 Sub water strainer
- 7 Propeller
- 8 Clamp screw
- 9 Stern bracket
- 10 Water strainer
- 11 Power trim and tilt
- 12 Tilt handle
- 13 Remote control box (RC3A)
- 14 Control lever
- 15 Free accel lever
- 16 Grip
- 17 Power trim and tilt switch
- 18 Main switch
- 19 Safety switch
- 20 Cord ass'y B
- 21 Fuel tank
- 22 Fuel tank cap
- 23 Air vent screw
- 24 Primer bulb
- 25 Connector B
- 26 Connector A

SPECIFICATIONS

Models	M50C				M60A				M70A2			
	EF	EFT	EP	EPT	EF	EFT	EP	EPT	EF	EFT	EP	EPT
Overall length, mm	1,135		705		1,135		705		1,135		705	
Overall width, mm	355											
Overall height, mm					L: 1,317		UL: 1,444					
Transom height, mm					L: 530		UL: 657					
Weight (L), kg	90.5	96.5	90	96	94.5	100.5	94	100	94.5	100.5	94	100
Max. output, PS	50				60				70			
Full-throttle speed range, rpm					4,500 – 5,500				5,000 – 5,500			
Fuel consumption, ℓ/h	21.5				25.5				29			
No. of cylinders	2											
Piston displacement, cc	749				845							
Bore x stroke, mm	81 x 73				86 x 73							
Exhaust system	Through hub exhaust											
Lubrication	Mixed gasoline											
Cooling system	Forced water cooling											
Starting system	Electric											
Ignition	Contactless C.D. ignition											
Ignition plug	NGK B8HS-10 or Champion L78C (gap 1.0 mm)											
Alternator	12 V, 80 W											
Fuel mixing ratio	Regular gasoline 50 : genuine Tohatsu engine oil 1											
Fuel tank capacity, ℓ	24											
Gear reduction ratio	13 : 23											
Gear oil	Genuine Tohatsu gear oil (GL5 SAE #80~90)											
Gear oil volume, cc	About 900											

NOTE: EF type – bar handle, EP type – remote control, EFT/EPT types – optional (power trim and tilt)

INSTALLATION

1. INSTALLATION

- Position the outboard motor at the center of the stern using cushion or pad plate. (Fig. 1)

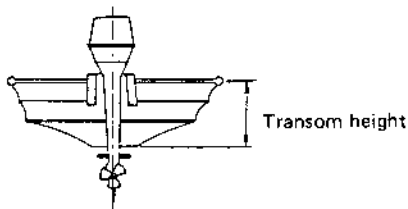


Fig. 1

- Clearance between anti-cavitation plate of the motor and bottom of the boat must be 10 to 30 mm. (Fig. 2)
- NOTE: Select an outboard motor whose dimensions allow the clearance shown below.

Installation height can be changed at 17 mm pitches, using fixing holes provided on the stern bracket.

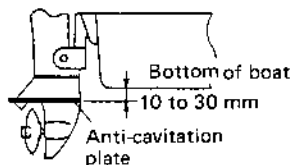


Fig. 2

- Attaching the stern bracket:**
After positioning, fix the motor securely to the transom with the associated clamp screw and bolts. Then, tilt up the outboard motor. Drill 4 holes in the transom hull according to the holes of the stern bracket, and then fix the motor with the associated bolts (M12 x 85 mm) and nuts. To drill the holes previously, refer to dimensional drawings (Fig. 3 and Fig. 4).

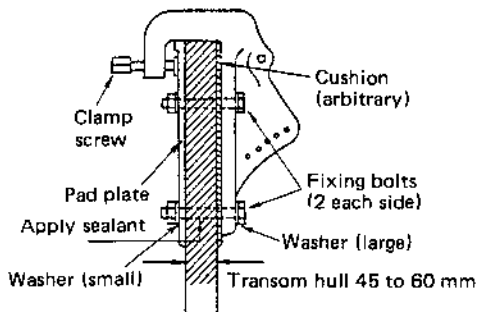


Fig. 3

- Stern bracket fixing holes

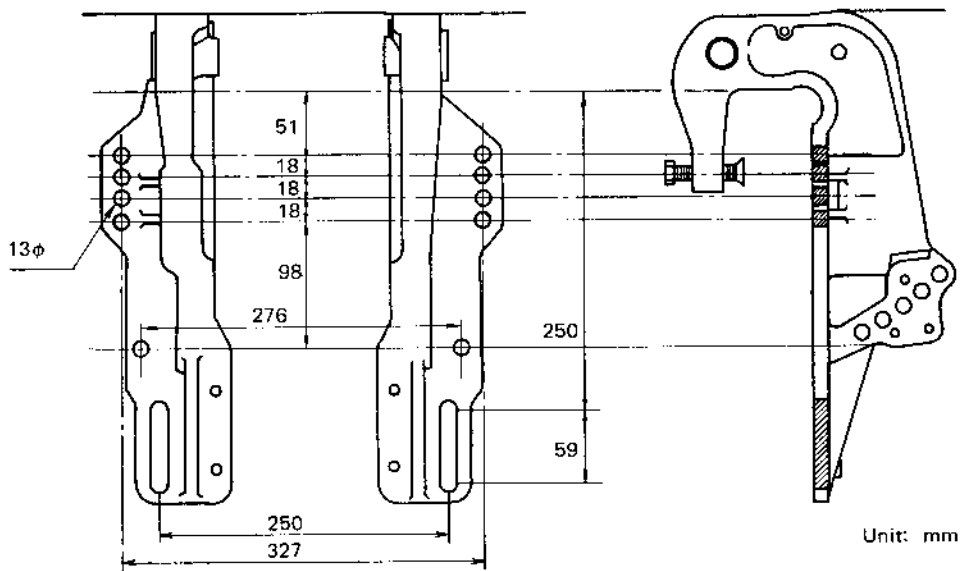


Fig. 4

NOTES:

- Apply silicon sealant between bolts and transom hull holes when tightening bolts.
- Be sure to fix the motor securely with the clamp screw, and associated fixing bolts and nuts. Installation with the clamp screw only is not enough for safe cruising.

- **Bracket (EP and EF types)**

Tilt adjustment:

Tilt must be adjusted by the thrust rod to maintain the anti-cavitation plate parallel to water level during full-speed cruising. (Fig. 5 – Fig. 7)

NOTE: For details of the EPT and EFT types, refer to pages 35 and 36.

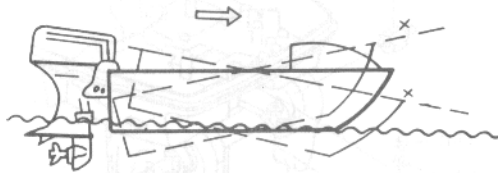


Fig. 5

Tilt down:

If the bow rises too high, causing unstable cruising, or if cavitation of the propeller is likely to be caused, tilt the thrust rod down in arrow direction. (Fig. 6)

Tilt up:

If the bow falls into water level when cruising, tilt the thrust rod up in arrow direction. (Fig. 7)

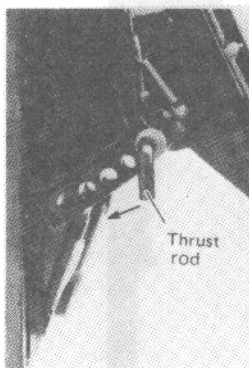


Fig. 6

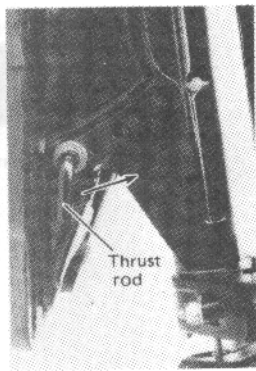


Fig. 7

- **Adjusting trim tab position:**

If the boat cannot cruise straight, causing curving, adjust the position of the trim tab located below the anti-cavitation plate.

If the boat is likely to turn to the left, loosen the central fixing bolt, then turn the trim tab to the left. In case of turning to the right, turn the trim tab to the right. (Fig. 8)

Find an adequate position by test cruising.

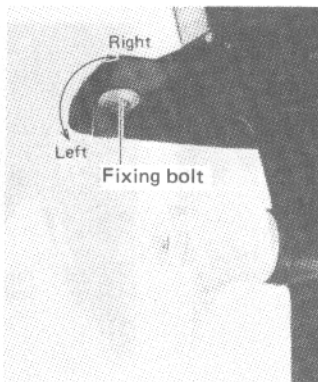


Fig. 8

- **Steering connection kit:**

The drag link assembly, shown in Fig. 9, is available for the EP/EPT types. Spacers may and may not be required according to boat makers.

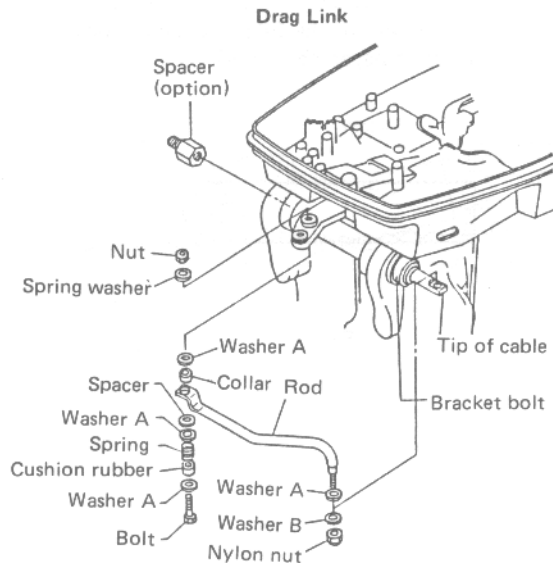


Fig. 9

2. INSTALLING THE REMOTE CONTROL BOX (EP/EPT TYPES ONLY)

(See the Operating Manual for the remote control box)

- Thread the remote control cables through the terminal eyes at a distance of more than 11 mm. Securely lock the terminal eyes with lock nuts. At this time, apply Tohatsu grease to the holes of the terminal eyes.

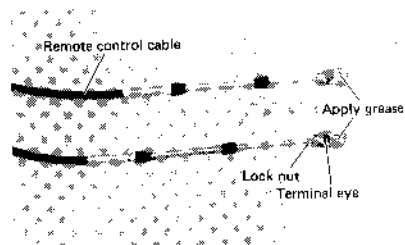


Fig. 10

- Connect the terminal eyes of the shift remote control cable to the tip of the shift arm with pin and E-ring.
- Insert a grommet, supplied with the remote control box, into the clamp groove.

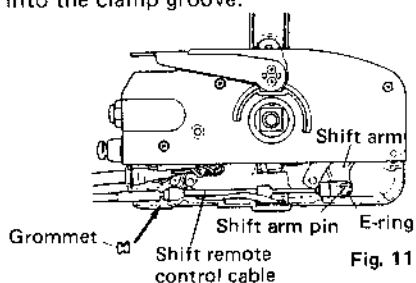


Fig. 11

- Connect the throttle remote control cable to the throttle arm in a manner similar to the shift remote control cable.
- Reinstall the back panel with two screws.

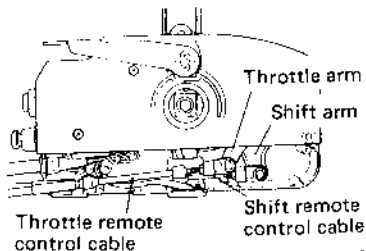


Fig. 12

3. INSTALLING THE OUTBOARD MOTOR

- Remove the upper motor cover.
- Remove a grommet (A), a cable clip (B) and two cable joints (C) from the lower motor cover.

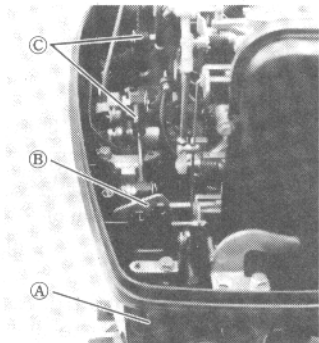
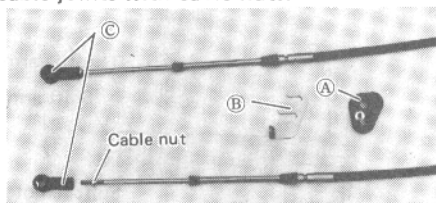


Fig. 13

- Thread the remote control cables into the cable joints at a distance of more than 15 mm, and lock the cable joints with cable nuts.



Upper: Throttle remote control cable
Lower: Shift remote control cable

Fig. 14

- Connect the throttle remote control cable to the advancer arm (D) and the shift remote control cable to the top of the shift arm (E) with clip pins.
- Fix the remote control cables with cable clip (B) at the cable outer groove, with bolt at the lower motor cover, and grommet (A) as shown in Fig. 15. After installing, check if the free accel lever and control lever on the remote control box can be smoothly shifted to full open and close positions.

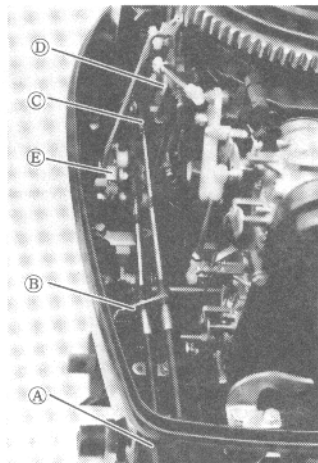


Fig. 15

4. CONNECTING CORDS AND WIRES

Cord assembly B:

- Connect the 10-core connector of the cord assembly B to the cord assembly A in the cowling of the out-board motor.
- Connect pink and blue cords of the cord assemblies A and B.

Meter lead wires (supplied with EPT):

- Connect black, red, white and yellow-green meter lead wires to corresponding lead wires coming from the remote control box. (Fig. 16)
- Connect other black and red meter lead wires to the trim meter.

NOTE: Blue lead wire coming from the trim meter is not used normally; it is used only when the meter lamp switch (option) is installed.

Use of idle meter lead wires:

- White and yellow lead wires are for connections to a tachometer when used.
- Yellow-green lead wire is not used.
- Red lead wire is for connection to a meter lamp (option) when used.

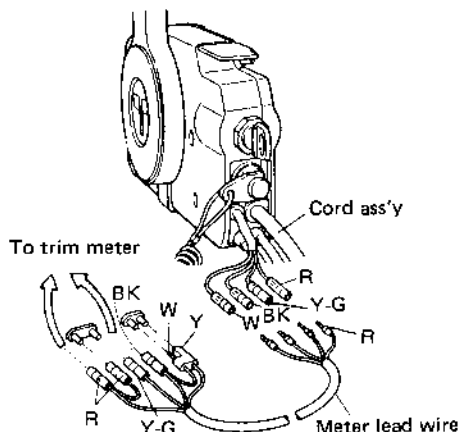


Fig. 16

5. FIXING THE BATTERY

Fix the battery securely to the hull in a place free from splashing water.

Connect a red cable to positive (+) terminal first and then a black cable to negative (–) terminal of the battery. Then put a red cap on the positive terminal. When disconnecting battery cables, be sure to disconnect the black cable first, and then the red cable.

Battery capacity: 12 V, 70 AH

NOTES:

- Battery cables must be long enough to allow free steering.
- Battery cables must be arranged and protected from damage during steering, etc.
- With poor cable connections, the starter will fail to start.
- Battery will be damaged if the red and black cables are connected to the wrong terminals (reverse-connected).
- Battery must be fully charged before running the motor.

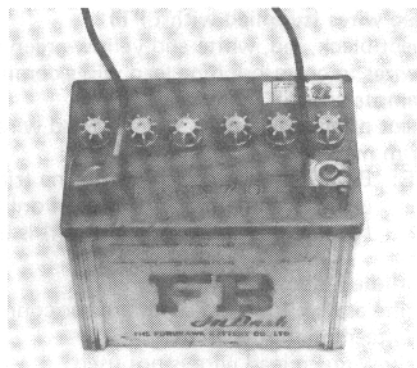


Fig. 17

BEFORE USE

Precautions:

Add genuine Tohatsu engine oil to gasoline as follows.

1. FUEL (GASOLINE/ENGINE OIL MIXTURE)

- Check that the fuel in the fuel tank is enough for planned cruising. It is recommended to carry extra fuel to avoid running out while on the water, which can lead to accidents.
- Recommended fuel is a mixture of gasoline and genuine Tohatsu engine oil at a ratio of 50:1.

NOTE: For the first 10-hour break-in running of a new engine, use a fuel mixture at a ratio of 20:1.

- If other two-cycle engine oil is used, mixing ratio should be 20:1 for ordinary running, and 15:1 for 10-hour break-in running.
- The use of poor quality fuel will shorten the life of a motor and cause trouble, including starting failure. It is recommended to use a high quality gasoline and genuine Tohatsu engine oil.

2. REQUIRED ITEMS AND GEAR TO BE CARRIED

- Legal onboard gear
- Tool kit, spare spark plugs and split pins
- Spare fuel [when cruising for one hour or longer (M50C), and for 45 minutes or longer (M60A and M70A2)]

Fuel consumption at full speed:

M50C – about 21.5 l/h, M60A – about 25.5 l/h,
M70A2 – about 29 l/h



Fig. 18

STARTING

1. EP AND EPT TYPES

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

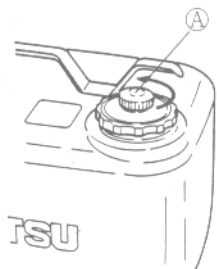


Fig. 19

2)

- Connect a fuel tank pipe (C) to the connector (D) on the lower motor cover.
- Feed the fuel to the carburetor by squeezing a pump bulb (E).

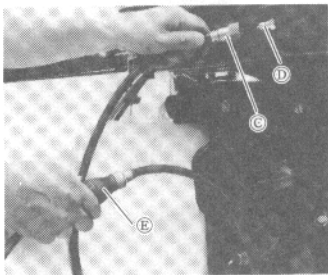


Fig. 20

3)

- Place the control lever of the remote control box in Neutral (N).
- Move the free accel lever up slightly.

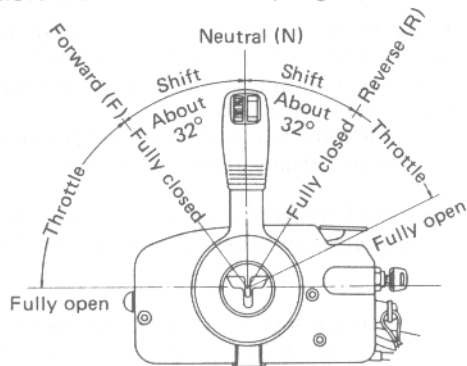


Fig. 21

NOTE: The engine is of completely water-cooled type: so prepare cooling water for test operation on the ground.

4) Insert the lock plate into the safety switch. (Fig. 22)

NOTES:

- If the lock plate is not inserted into the safety switch, the starter motor does not start, although it can be rotated.
- If the lock plate is withdrawn during running, the engine will stop immediately.
- After inserting, if the lock plate is pressed continuously, the engine will stop.

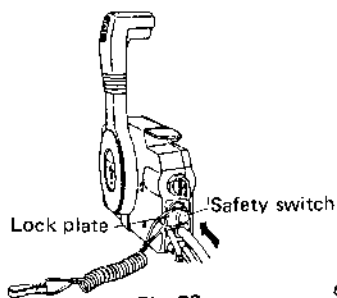


Fig. 22

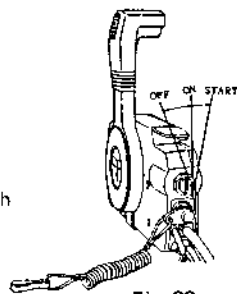


Fig. 23

5) (See Fig. 23.)

- Insert the key into the main switch.
- Turn the key to ON position and press it to make the choke operate, resulting in its full open.
- While keeping the key pressed, turn it to START position from ON position to start the engine.
- When the engine is warm, merely turn the key to START position without pressing.
- After the engine starts, release the key, and it will return automatically to ON position.

NOTE: Perform starting operation for three seconds. If the engine does not start, wait five seconds before repeating the starting procedure. Longer starting operation will deteriorate the battery.

6) After the engine starts, move the free accel lever down, keeping the engine running, confirm that cooling water discharges from the cooling water check port, and then run the engine for a few minutes for warm-up operation.

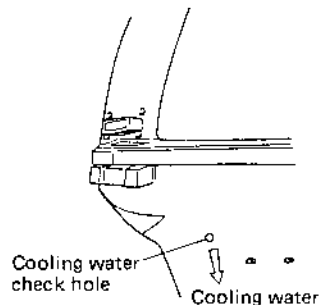


Fig. 24

2. EF AND EFT TYPES

1)

- Perform Steps 1) and 2) of EP and EPT types.
- Shift the shift lever to Neutral (N).

NOTE: Starting is impossible unless the shift lever is in Neutral (N) due to the neutral switch mechanism.

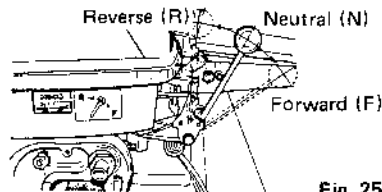


Fig. 25

2)

- Turn the throttle grip of the bar handle to START position.
- Fully pull the choke knob toward you to fully shut the choke, except when the engine is warm.

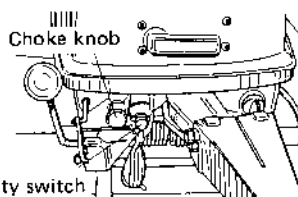


Fig. 26

3)

- Insert the key into the main switch, and turn it to ON position from STOP position.
- Operate the starter for three seconds. If the engine does not start, wait for five seconds before operating the starter again.
- After the engine starts, release the key, and it will return automatically to original position.
- Press the choke knob back to original position.
- Turn the grip to a low speed position, and run the engine for a few minutes for warm-up operation.
- Confirm that cooling water is discharged.

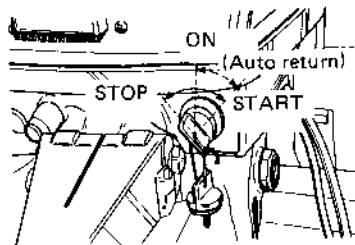


Fig. 27

3. STARTER TROUBLE

- 1)
 - Confirm that the control lever is in Neutral (N).
 - Confirm that the lock plate is inserted into the safety switch (EP and EPT types).
 - Insert the key into the main switch, then turn it to ON position.
 - Raise the free accel lever slightly (EP and EPT types), or turn the throttle grip to START position (EF and EFT types).

- 2)
 - Remove the upper motor cover.
 - Wind the associated starter rope around the starter pulley at the flywheel clockwise, and give it a sharp tug to start the engine.

NOTE: Be careful that your clothing or the like is not caught by a rope or the motor parts.

- Return the free accel lever or throttle grip to the slow speed position.

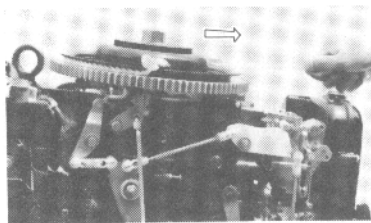


Fig. 28

- 3)
 - After the engine starts, reinstall the upper motor cover with care.
 - Run the engine for a few minutes for warm-up operation.
 - When the engine runs, confirm that cooling water is discharged from its check port.

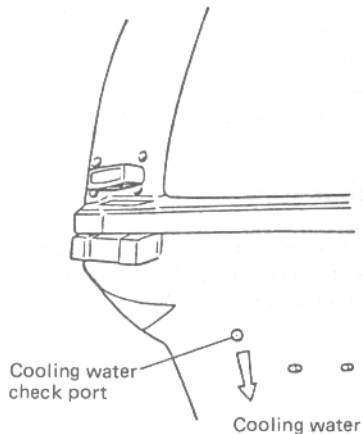


Fig. 29

RUNNING

1. PRECAUTIONS

- **Be sure to perform warm-up operation.**

Run the engine for a few minutes to warm up the engine uniformly and to circulate the oil throughout the machine: otherwise, the life of the engine will be shortened greatly.

- **Be sure to check the discharge of cooling water.**

If the engine runs on condition that cooling water is not discharged, it will be overheated, leading to engine trouble.

If cooling water is not discharged, stop the engine and check the cooling water system including its inlet.

- **Avoid excessive idling.**

With the shift lever in Neutral, excessive idling will damage the engine or break the drive shaft, gear, etc. Also, the fuel will be wasted.

- **Perform the first 10-hour break-in running, using a mixture of gasoline and genuine Tohatsu engine oil at a ratio of 20:1.**

This break-in running is made to smoothen the sliding surfaces of new parts such as pistons, cylinders, bearings and gears, thus preventing partial wear and extending the life of the machine. In break-in running, set the speed to about 80% full engine speed, avoiding high speed operation.

2. FORWARD AND REVERSE

● EP AND EPT TYPES

Shift the control lever to Forward (F) or Reverse (R) at 32° where the lever is latched automatically. Further shifting will open the throttle.

NOTES:

- When shifting the control lever from Neutral to Forward (F) or Reverse (R), be sure to swiftly shift it while holding the neutral lock.
- The remote control box is inoperative unless the free accel lever is returned to Fully Closed position.

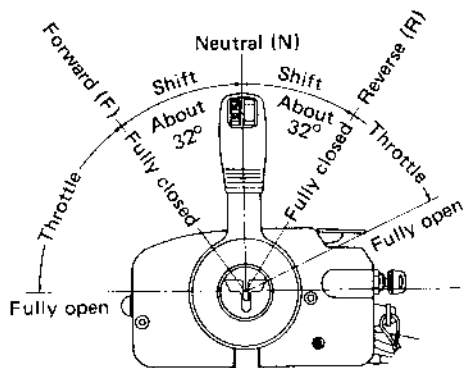


Fig. 30

● EF AND EFT TYPES

- Turn the throttle grip to Low Speed position to reduce engine speed, then swiftly shift the control lever to Forward (F) or Reverse (R).
- When the shift lever is in Neutral (N) or Reverse (R), the throttle opening is regulated automatically.
- Speed control can be made by turning the throttle grip on the bar handle. (Turn counterclockwise for increased speed.)
- Steering can be made by shifting the bar handle left and right. (Shift right for steering to port.)

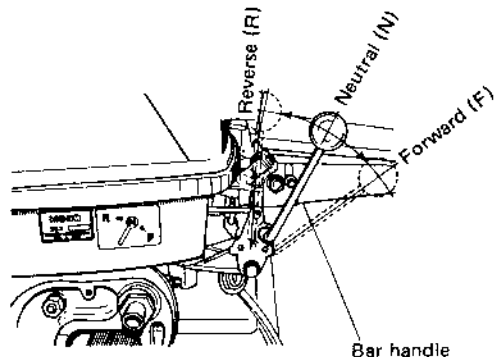


Fig. 31

- **Avoid a sudden turn:** be sure to lower the speed significantly before turning.
- In reverse running, lower the speed and then make a turn with care. Rapid acceleration in reverse direction will incur water entry, or breakage of the propeller, bracket and stern when running against an obstruction.

- **Engine speed**

- If the engine speed is out of the full-throttle speed range listed below, the propeller is inadequate. In this case, replace the propeller with an adequate one. (Refer to the table below.)
Note that the electric safety governor (ESG) will function if the engine speed exceeds 5,600 rpm.
- ESG and overspeed prevention device are provided. ESG prevents over-revolution caused when the out-board motor jumps up from water. (Fig. 37)
- The engine overheat buzzer, provided in the remote control box (EP and EPT types), sounds when engine cooling water temperature is increased abnormally during running. Immediately stop the engine, and check cooling water inlets (on both sides of the gear case and two locations below the cavitation plate). Clean the inlets if clogged. Restart the engine after engine temperature drops sufficiently. If the buzzer sounds again after restarting, there is the fear of other abnormality, so contact your local Tohatsu dealer.
- Propellers:
Propellers having unspecified transoms are optionally available.

Trolling	M50C – M70A2	700 – 800 rpm
Full-throttle speed range	M50C/M60A	4,500 – 5,500 rpm
	M70A2	5,000 – 5,500 rpm

- **Available propellers**

Propellers which do not specify transoms are optionally available.

Unit: mm

	Light duty ←————→ Heavy duty								
Nominal	17.5	16.5	15	14	13	12	11	10	9
D x P*	276 x 447	273 x 417	280 x 381	289 x 356	292 x 330	295 x 305	292 x 279	292 x 251	305 x 229
M50C	Option	Option	Option	Option	Option	Transom L	Transom UL	Option	Option
M60A	Option	Option	Option	Option	Transom L	Option	Transom UL	Option	Option
M70A2	Option	Option	Option	Transom L	Option	Option	Transom UL	Option	Option

*D: Propeller O.D., mm P: Propeller pitch, mm

3. STOPPING

After cruising, idle the engine for about one minute, then stop the engine.

- **Stop the engine with the main switch:**
Turn the main switch key from ON to OFF position. After the engine stops, withdraw the key from the main switch. (Fig. 32)
- **Stop the engine with the safety switch (EP and EPT types):**
Withdraw the lock plate from the safety switch on the remote control box, or keep the safety switch pressed until the engine stops.

When stopping the engine with the safety switch, be sure to turn the main switch key to OFF position and withdraw it.

NOTES:

- After stopping the engine, disconnect the fuel pipe from the engine.
- Disconnect cables from the battery when not in use for extended periods. (Disconnect negative (-) cable first, then positive (+) cable.)

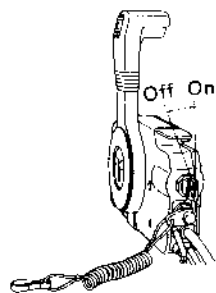


Fig. 32

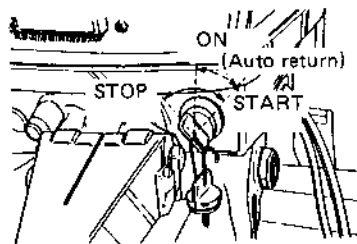


Fig. 33

4. STEERING FORCE

Steering force can be adjusted according to your preference with the steering adjust bolt. (Fig. 34)

Turn clockwise for heavier steering

Turn counterclockwise for lighter steering



Fig. 34

5. TILT-UP AND TILT-DOWN (EP AND EF TYPES)

● Tilt-up (Fig. 35)

Black Reverse lock lever

Orange Tilt lever

- Remove the mechanical steering cable and drag link.
- Lower the black-colored reverse lock lever.
- Raise the orange-colored tilt lever.

NOTE: Operating procedure is indicated on a pink tag fitted to the reverse lock lever.

- While holding a grip, located at the tilt handle on the rear of the upper motor cover, tilt up the motor by pulling it fully toward you, and it will be tilt-locked automatically. (Fig. 36)

● Tilt down

- Lower the orange-colored tilt lever.
- Pull up the motor toward you once, then lower it gradually.
- Reverse lock will be applied automatically.

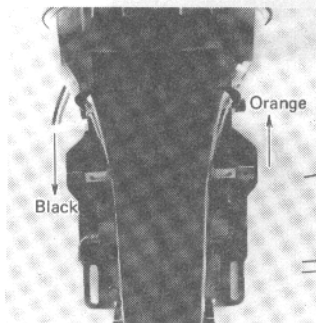


Fig. 35

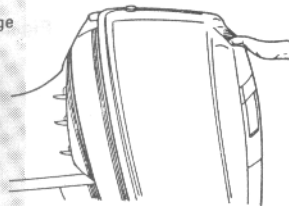


Fig. 36

6. INSPECTION AND MAINTENANCE

The thermostat is provided to always maintain the engine temperature properly.

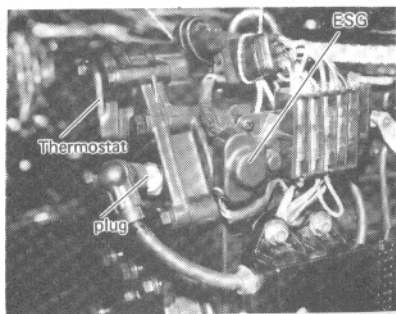


Fig. 37

- **Spark plug**

If the spark plug is fouled heavily or does not conform to our recommendation, clean or replace it. Note that the deposit of dirt on the electrodes will prevent ignition, so please keep them clean.

Excessive fuel suction:

Excessive fuel suction will dampen the plug, causing poor ignition. Wipe damp off the plug. Run the starter motor at full throttle to blow off the deposited gasoline.

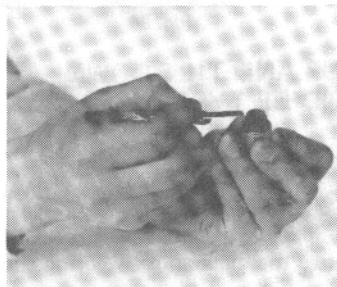


Fig. 38

● Propeller

Worn-out or bent propeller will deteriorate the motor's performance, and cause engine trouble.

If you find any abnormality of the propeller at a time of inspection, it is recommended to replace it as soon as possible.

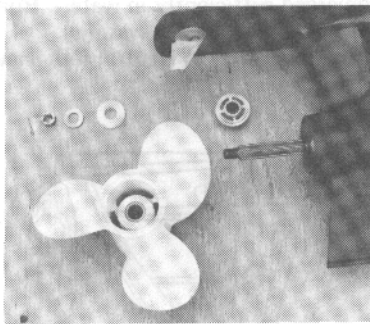


Fig. 39

● Fuel system

Check the fuel system for the following:

- Presence of fuel in the fuel tank
- Clogging of ventilation port of the tank cap.
- Crack or breakage of primer bulb
- Bend or collapse of fuel pipe
- Dirt or water caught by or deposited at fuel filter

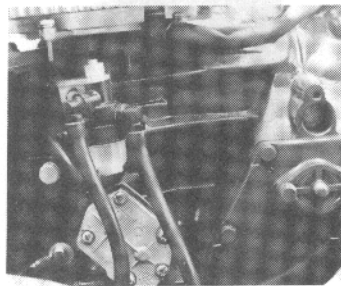


Fig. 40

● Changing gear oil

- Remove oil plugs (upper and lower), and drain gear oil completely.
- Insert an oil tube nozzle into the lower oil plug hole, and fill gear oil by squeezing the oil tube until oil flows out of the upper plug hole.
- Install the upper oil plug, and then remove the oil tube nozzle and reinstall the lower oil plug.

NOTE: Use genuine Tohatsu gear oil (heavy-duty GL5 SAE #80~90). Required volume: 900 cc

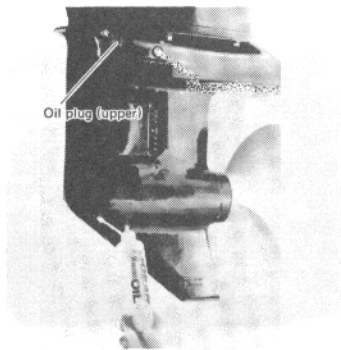


Fig. 41

● Washing

- After use in sea water or polluted water, wash all enclosures and water cooling system with fresh water.
- Remove the propeller and upper motor cover. Remove the bolt from the exhaust cover, and screw in the associated flushing plug. Then connect a hose to the flushing plug to flush out the inside of the motor with fresh water. Be sure to seal the water strainer and sub water strainer, located in the gear case, with tape.
- When a water tank is used to wash the motor inside, its depth must be such that the anti-cavitation plate is submerged sufficiently in water. Run the engine at idle speed in water for washing.
- Keep the shift lever in Neutral (N): never operate the propeller.

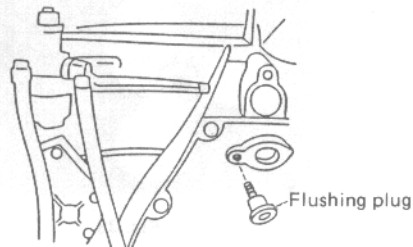


Fig. 42

7. TROUBLESHOOTING

If you encounter a problem, consult the check list below to find its cause and to take the proper measure.

Your local Tohatsu dealer will always happy to give you assistance and information.

Engine fails to start.	Engine starts but stops soon.	Poor idling	Poor acceleration	Engine speed abnormally high	Engine speed abnormally low	Slow speed	Overheating of engine	Possible cause
●	●							Empty fuel tank
●	●	●	●		●	●	●	Incorrect connection of fuel system
●	●	●	●		●	●	●	Air entry in fuel line
●	●	●	●		●	●	●	Deformed or damaged fuel pipe
●	●	●	●		●	●	●	Fuel tank cap and air vent screw left open
●	●	●	●		●	●	●	Clogged fuel tank, fuel connector and carburetor
		●	●		●	●	●	Use of improper engine oil
●		●	●			●	●	Use of improper gasoline
●	●	●	●		●	●		Excessive oil in mixture
							●	Shortage of oil in mixture
●			●					Excessive supply of fuel
●	●	●	●		●	●	●	Poor carburetor adjustment
●	●	●	●			●	●	Recirculation pipe broken
●	●	●	●		●	●	●	Spark plugs other than specified
●	●	●	●		●	●		Dirts or bridge on spark plugs

Engine fails to start.	Engine starts but stops soon.	Poor idling	Poor acceleration	Engine speed abnormally high	Engine speed abnormally low	Slow speed	Overheating of engine	Possible cause
●	●	●	●		●	●		No or weak spark
				●		●	●	No circulation or insufficient cooling water
		●		●		●	●	Faulty thermostat
			●	●		●	●	Cavitation
			●	●	●	●	●	Incorrect propeller selection
		●	●	●	●	●	●	Damaged or bent propeller
			●	●		●	●	Improper thrust rod position
			●	●	●	●	●	Unbalanced load position on boat
			●	●	●	●	●	Transom too high or too low
●								No lock plate in safety switch or short circuit Control lever off Neutral
●		●	●		●	●		Poor adjustment of throttle linkage
●		●	●		●	●		Inadequate ignition timing
●								Discharged battery or blown fuse

8. IF THE MOTOR FALLS INTO WATER

If the motor is completely submerged in water, immediately reassemble it, and take the following countermeasures before handing over to your local Tohatsu dealer. Otherwise, the motor will be corroded, becoming inoperative.

- 1) Immediately take it out of the water, and wash it with fresh water to remove salt or dirt.
- 2) Remove the spark plug, and completely drain water from the engine by pulling the recoil starter several times.
- 3) Sufficiently inject genuine Tohatsu engine oil through the spark plug hole and into the crank case from the carburetor side. Pull the recoil starter several times to circulate the oil throughout the motor.

9. PRECAUTIONS IN COLD WEATHER

If you cruise and moor your boat in cold weather at sub-zero temperatures, there is a danger of water freezing in the cooling water pump, which may damage the pump, impeller, etc. To avoid this, submerge the lower half of the motor into water, or pull the recoil starter several times to drain water completely, with the motor tilted up.

10. OFF-SEASON STORAGE

The off-season gives you a good opportunity to have your motor serviced or overhauled by your Tohatsu 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.

Storage procedures are as follows:

- 1) Wash the outboard motor externally, and flush the cooling system completely with fresh water and drain water completely. Dry and wipe over with an oily rag.
- 2) Drain fuel from tank, piping, fuel pump and carburetor, and clean them. For corrosion protection, add a small amount of rich gasoline/engine oil mixture into the fuel tank.
- 3) Remove the spark plug, feed genuine Tohatsu engine oil through the spark plug hole, and pull the recoil starter several times.
- 4) Apply grease to the propeller shaft.
- 5) Change the gear case oil.
- 6) Apply grease to sliding parts, joints, bolts, nuts, etc.
- 7) Spray anti-corrosive (WD-40 or equivalent) to the entire outside of a boat.
- 8) Disconnect battery cables.
- 9) Clean the outside of the battery with fresh water or compressed air. Wipe sulfate, dirt and grease off the battery with a dry waste cloth.
- 10) Apply grease or vaseline to battery terminals.
- 11) Before storing, be sure to charge the battery completely. During storage, charge the battery completely and check its liquid level monthly. Charging current is 5 A or less.
- 12) Liberally apply grease to the starter shaft and pinion of the starter motor.
- 13) Store the battery with its cover attached in a dry place.
- 14) Before reuse, charge the battery completely.

11. POWER TRIM AND TILT (EPT AND EFT TYPES)

The power trim and tilt is a device that hydraulically tilt the motor up and down, and adjusts the trim angle (motor attaching angle) during cruising according to wave and loading conditions. This means the power trim and tilt provides excellent fuel economy and cruising safety, and allows shallow water cruising by optimum trim and tilt setting. When using with the remote control box (EPT type), the power trim and switching can be controlled with the grip on the control lever.

1) Tilt-up and tilt-down

EPT TYPE

- Set the main switch on the remote control box to ON position.
- Press the UP side of the switch, provided at the control lever grip on the remote control box, for tilt-up, and press its DOWN (DN) side for tilt-down.
- The switch will return automatically to original position after released.

Power trim and tilt switch (EFT type)

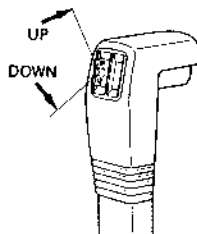


Fig. 43

EFT TYPE

- Set the main switch on the motor to ON position.
- Shift the switch lever on the switch panel toward UP position for tilt-up, and shift it toward DOWN position for tilt-down.
- The switch lever will return to original position after released.
- The sudden change of motor sound while the switch lever is being shifted tells maximum tilt-up and -down.

Switch panel and switch lever (EFT type)

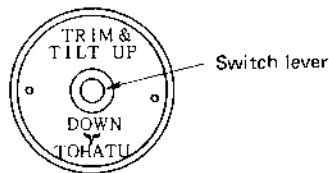


Fig. 44

NOTES:

- In case of simple tilt-up or tilt-down for mooring, stop the engine, then operate the switches.
- If the power trim and tilt switch is pressed too long (about 30 seconds) after trim setting, or tilt-up or -down operation in overloaded condition, the safety device (breaker) will be activated to stop the motor. The breaker will be closed automatically (10 to 20 seconds later). If you want to run the motor further, wait three minutes to avoid deterioration of the motor.
- When mooring a boat with the motor tilted up, press the UP side of the switch to tilt the motor up, and raise the tilt stopper for tilt lock.

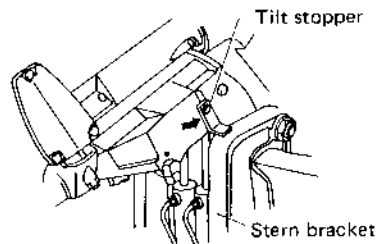


Fig. 45

2) Power trim

During cruising, trim can be adjusted as follows.

- If the bow rises too high (A), causing unstable cruising and capsizing, press the DOWN side of the switch.
- If the bow falls (B), increasing cruising resistance and receiving spindrift, press the UP side of the switch.

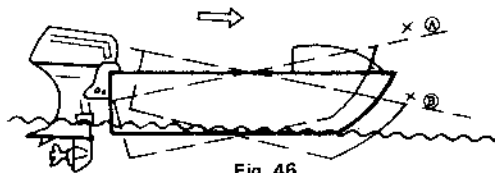


Fig. 46

3) Operation in shallow water

When cruising in shallow water, run the engine at a speed that the propeller does not cavitate, with the motor set at the shallow water operating position. In this case, high-speed cruising is very dangerous.

NOTE: Confirm that cooling water is discharged from its check port. If not, tilt the motor down slightly.

4) Manual operation

If battery becomes discharged, or the power trim and tilt fails, tilt the motor up or down manually as follows. (Refer to the caution plate and nameplate too.)

Turn the manual release valve, located below the power unit and marked with M. VALVE at the bottom of the case, one turn counterclockwise with a straight edge screwdriver, so you can tilt the motor up or down manually. After this manual operation, be sure to fully shut the valve by turning clockwise.

NOTE: Do not turn the manual release valve two or more turns counterclockwise.

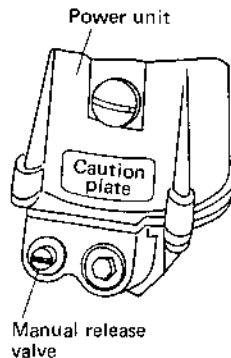


Fig. 47

5) Checking and refilling power unit oil

● Oil level check

Check the power unit oil level when the power unit is placed in vertical position as shown, with the motor tilted down. Remove the oil plug by turning counterclockwise, then check if the oil level is at the bottom of the plug hole as shown.

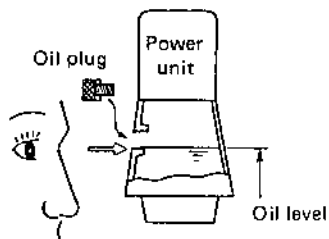


Fig. 48

● Oils recommended

Automatic transmission gear oils for automobiles.

If the air is entrapped into the oil, tilt-up and -down operation cannot be done smoothly. Take the following countermeasures:

- Remove the oil plug.
- Tilt the motor up with the power trim and tilt switch, open the manual release valve by turning counterclockwise (one turn), and manually tilt the motor down by gravity.

Tighten the manual release valve by turning clockwise (one turn), and tilt the motor up with the power trim and tilt switch.

In this way, repeat power tilt-up and manual tilt-down procedures four or more times.

NOTE: The oil will flow out when manual down speed is fast. In this case, regulate the speed by tightening the manual release valve adequately.

- Tighten the manual release valve.
- Tilt the motor down, and check the oil level. Replenish the oil when it is insufficient, or drain an excessive oil.

6) Others

- Use a battery rated at 12 V and 70 AH. Pay attention to avoid discharge conditions because of considerable current consumption.
- Cables and cords must be arranged and fixed in safe position on a boat for protection against damage and being caught by foats.
- Be careful not to strike and scratch the power unit and piping for the power trim and tilt.
- Power trim angle can be adjusted with the aid of the associated trim meter (EPT type). The first scale division on the meter corresponds to the first stage of the thrust rod. Similarly, the second scale division corresponds to the second stage of the thrust rod. The power trim angle can be set in five stages.

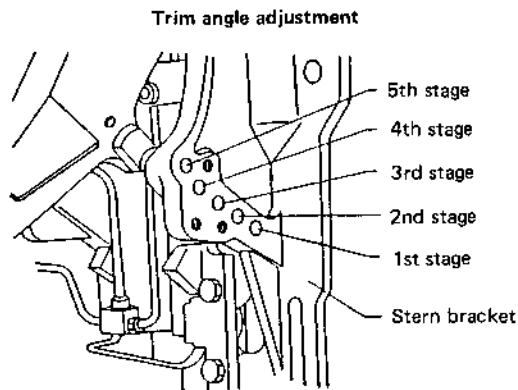


Fig. 49

Trim meter

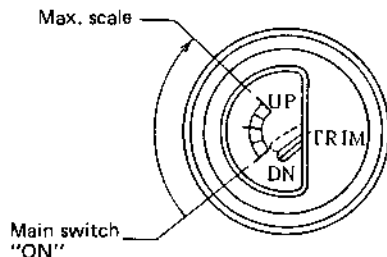


Fig. 50

12. HANDLING THE BATTERY

- Always keep the battery liquid at the specified level, and confirm charging condition.
- Fix the battery to the hull securely.
- Positively make connections of cables, and protect them from damage and wear during cruising. Apply grease to battery terminals for corrosion protection.
- Do not run the starter motor continuously. Run it for three seconds, and wait five seconds before restarting.
- Keep the battery clean.
- Be sure to charge the battery before being stocked. Also, completely charge the battery before reuse when the new season opens. Store the battery in a dry place.
- Inspection procedure:

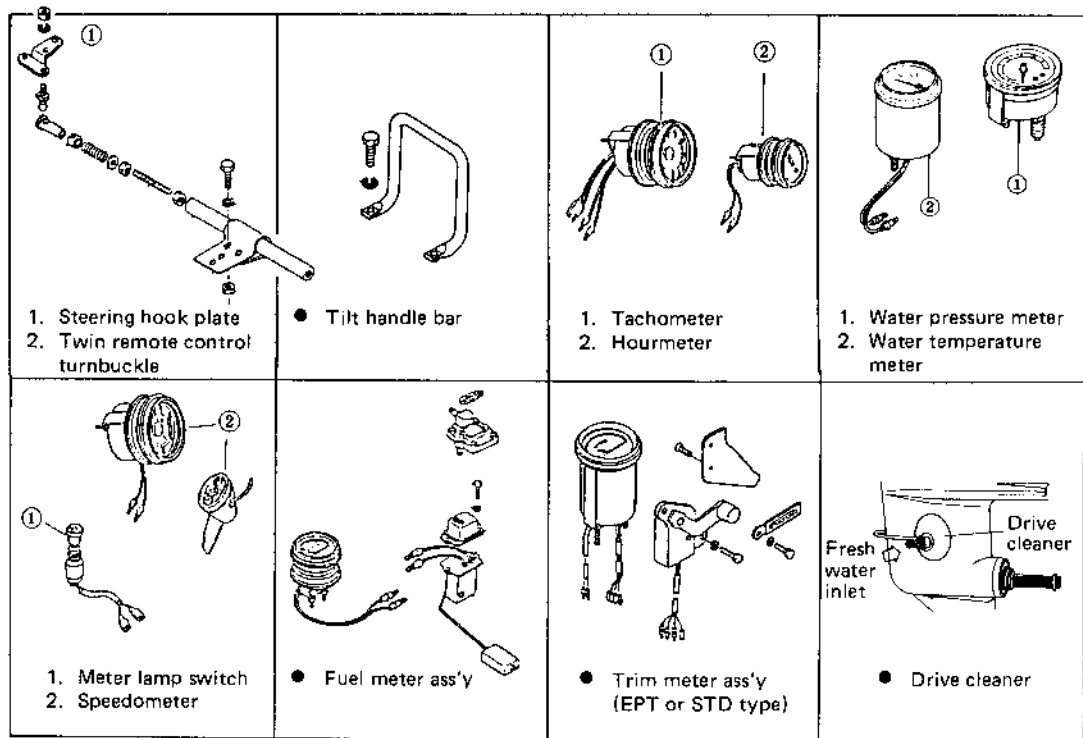
Inspection item	Inspection intervals	Inspection procedure	Remarks
Battery capacity	Every 3 months	Using a hydrometer, measure specific gravity of battery liquid. Normally, 1.23 or greater at liquid temperature of 20°C. In case of lower specific gravity, charging is required, avoiding overcharging.	12 V – 70 AH
Battery liquid volume	Everytime	Check if the liquid level is within the specified range. If shortage, be sure to add with distilled water.	

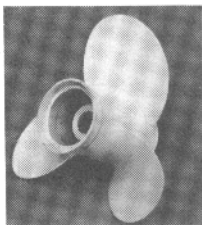
ASSOCIATED PARTS

	Parts	M50CEF M60AEF M70A2EF	M50CEP M60AEP M70A2EP	M50CEFT M60AEFT M70A2EFT	M50CEPT M60AEPT M70A2EPT	Remarks
Service tools	Tool bag	1	1	1	1	
	Socket wrench (21 mm)	1	1	1	1	
	Socket wrench handle	1	1	1	1	
	Pliers	1	1	1	1	
	+ & - edge screwdriver	1	1	1	1	Adapter type
	Screwdriver grip	1	1	1	1	
	Wrench (17 x 19 mm)	1	1	1	1	
Spare parts	Starter rope	1	1	1	1	
	Spark plug	1	1	1	1	NGK B8HS-10
	Split pin	2	2	2	2	3 x 25 mm
Others	Bracket fixing bolts	4	4	4	4	12 mm
	Bracket fixing nuts	4	4	4	4	12 mm
	Washers A, B	4 each	4 each	4 each	4 each	A (large), B (small)
	Fuel tank	1	1	1	1	Separate type, 24 ℓ
	Primer bulb	1	1	1	1	
	Flushing plug	1	1	1	1	For cleaning outboard motor
	Remote control box	—	1 (RC3B)	—	1 (RC3A)	
	Drag link	—	1	—	1	
Trim meter	—	—	—	1		

OPTIONS

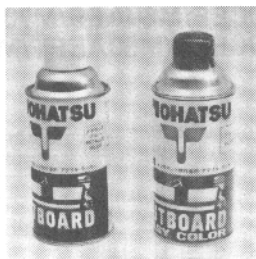
For detailed information, contact your local Tohatsu dealer.





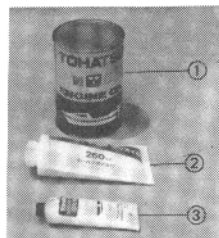
- Propeller

Fig. 52



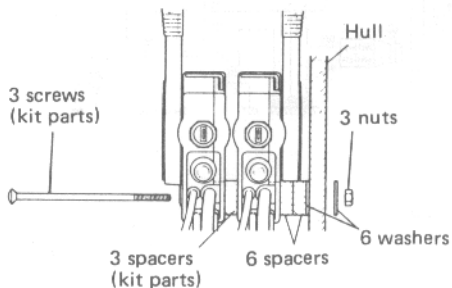
- Touch-up paint (metallic blue, blue)

Fig. 53



1. Genuine Tohatsu engine oil (0.5 and 1 l)
2. Gear oil (250 and 500 cc)
3. Grease (50 and 250 g)

Fig. 54

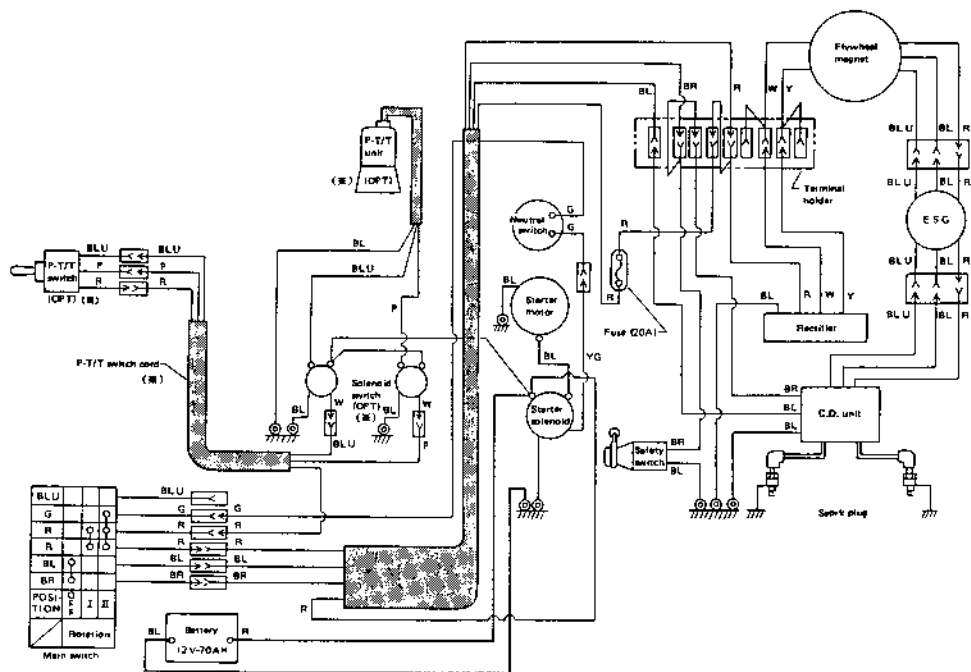


Twin remote control kit

Fig. 55

WIRING DIAGRAMS

M50CEF/M60AEF/M70A2EF M50CEFT/M60AEFT/M70A2EFT



M50CEP/M60AEP/M70A2EP M50CEPT/M60AEP/M70A2EPT

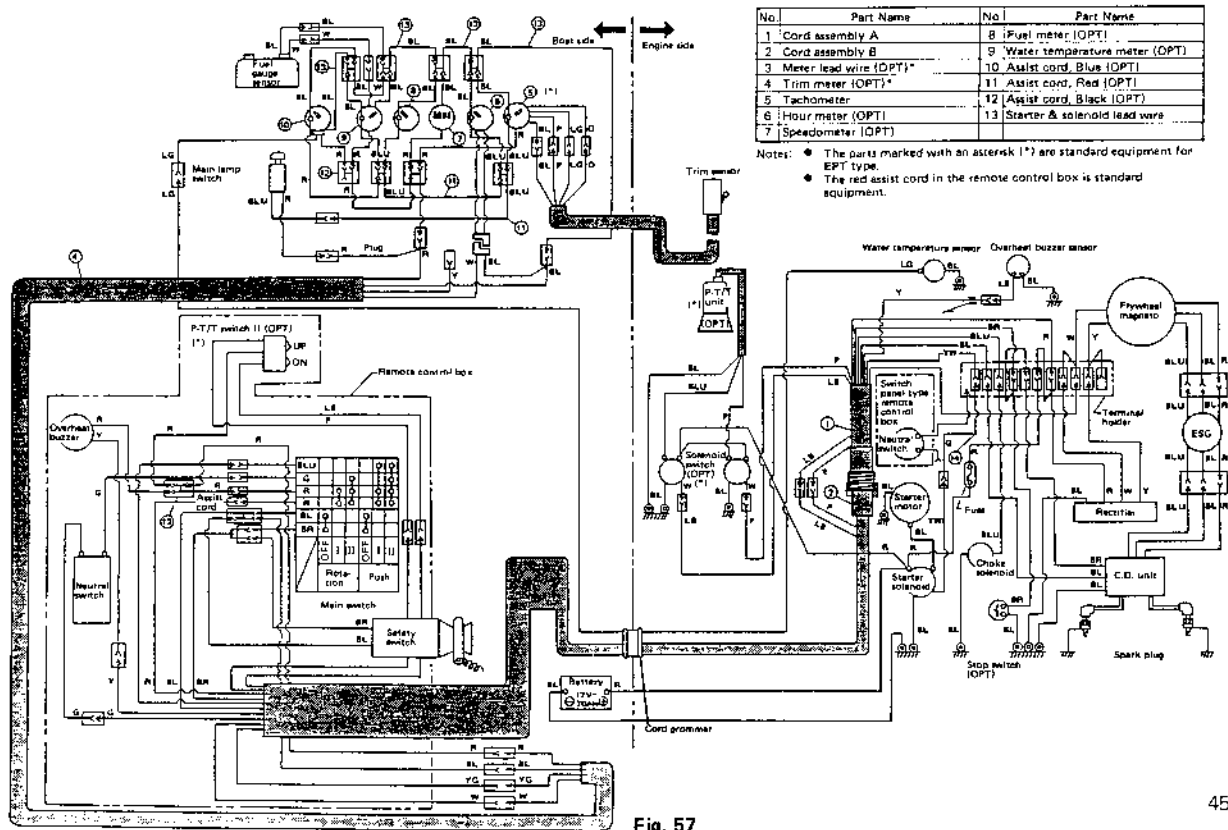


Fig. 57



TOHATSU CORPORATION

Address: 4-9, 3-chome, Azusawa, Itabashi-ku, TOKYO 174, Japan

Cable: "TOHATSU TOKYO"

Telex: 272-2051 THT J

Facsimile: TOKYO (03) 3969-7885 (GII·GIII)

Phone: TOKYO (03) 3966-3111

003-11022-3

Jan. '91

Printed in Japan (三)