

YAMAHA

OWNER'S MANUAL



outboard
motor

20CM/20CE

25DM/25DE

30AM/30AE

A 510*

**20CM/20CE/25DM/25DE/30AM/30AE
OWNER'S MANUAL**

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TO THE OWNER

Thank you for choosing a Yamaha outboard motor. This manual contains the information required for proper maintenance, care and operation. A thorough understanding of these simple instructions will help you to obtain maximum enjoyment from your new Yamaha.

- * Specifications given in this manual may be subject to change without prior notice.

Yamaha Motor Co., Ltd

WARNING:

- Before operating this outboard motor, familiarize yourself with the regulations set forth by your state in relation to outboard motor operation.
- Gasoline is highly inflammable and explosive. Handle it with special care.
- Never attempt to modify this outboard motor.
- Be sure to wear life jackets on board.
- Exercise special care to protect the environment.

IMPORTANT:

Before operating this outboard motor, read this Owner's Manual thoroughly and carefully. It will give you a good grasp of the engine's characteristics and the technical information required for safe operation.

Particularly important information is distinguished in this manual by the following notations:

NOTE:

A NOTE provides key information to make procedures easier or clearer.

CAUTION:

A CAUTION indicates special procedures that must be followed to avoid damage to the outboard motor.

WARNING

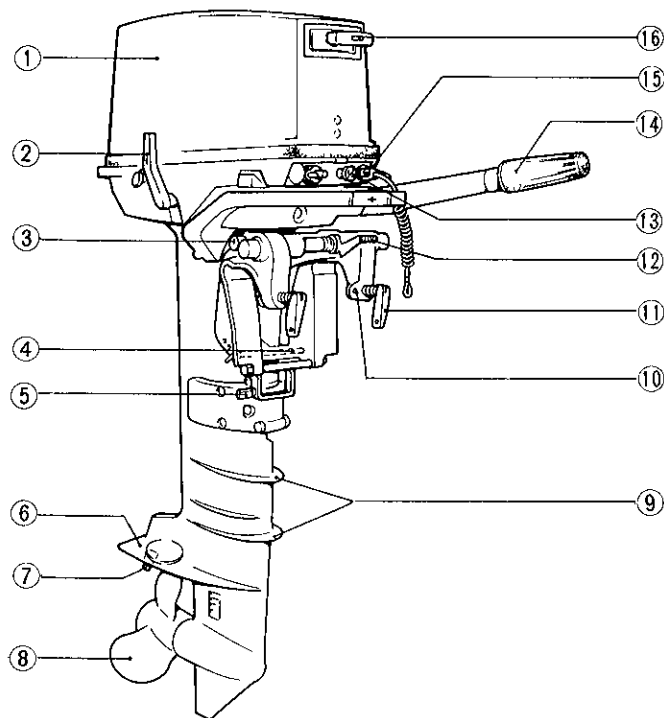
A WARNING indicates special procedures that must be followed to avoid personal injury or damage to the unit.

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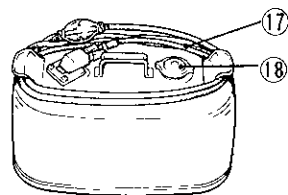
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LOCATION OF MAIN COMPONENTS

20CM/25DM/30AM



Fuel tank



Y-650
① Top cowling

Y 090
② Shift handle

Y-630
③ Tilt up lock

Y-590
④ Tilt pin

Y 065
⑤ Shallow water lever

V 090
⑥ Anti-cavitation plate

Y-720
⑦ Trim tab

X-600
⑧ Propeller

Y 235
⑨ Splash board

Y 020
⑩ Safety rope attachment

Y-680
⑪ Transom clamp handle

X-960
⑫ Reverse lock

V-560
⑬ Choke knob

Y-360
⑭ Steering handle/throttle control

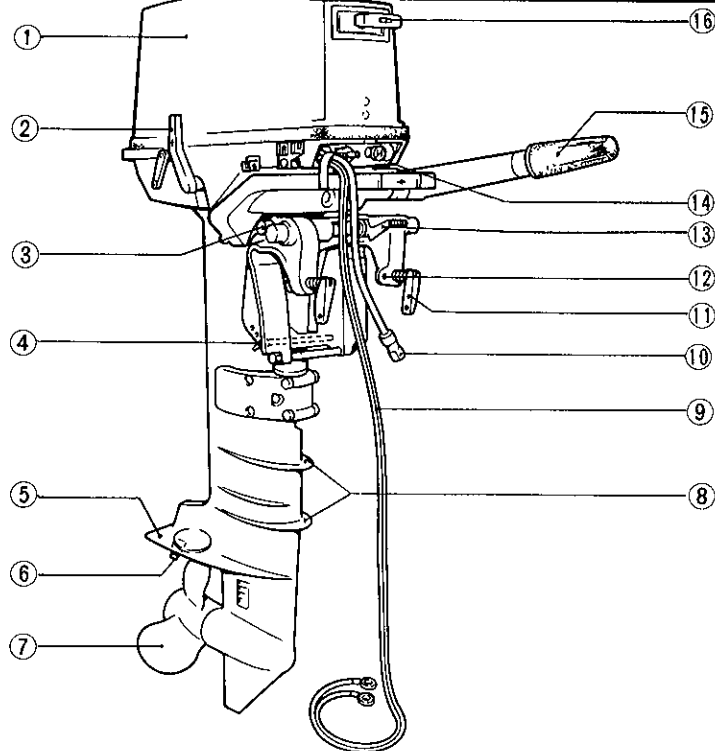
V 905
⑮ Emergency stop switch

Y-280
⑯ Recoil starter handle

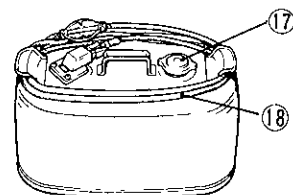
W-165
⑰ Fuel line

Y 510
⑱ Fuel tank cap

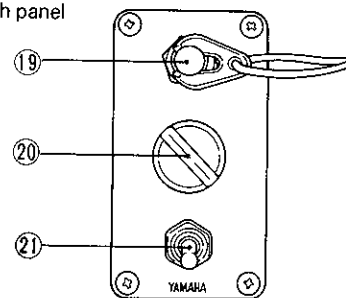
20CE/25DE/30AE



Fuel tank

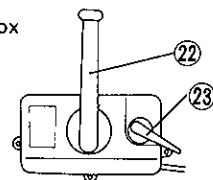


Switch panel



25DE/30AE

Remote control box



① Y-650
Top cowling

⑨ V-260
Battery wire

⑪ Y-510
Fuel tank cap

② Y-090
Shift handle

⑩ Z-110
Wire harness

⑫ W-165
Fuel line

③ Y-630
Tilt up lock

⑪ Y-680
Transom clamp handle

⑫ V-905
Emergency stop switch

④ Y-590
Tilt pin

⑫ Y-020
Safety rope attachment

⑫ X-010
Main switch

⑤ V-090
Anti-cavitation plate

⑬ X-960
Reverse lock

⑫ V-577
Choke switch

⑥ Y-720
Trim tab

⑭ V-560
Choke knob

⑫ X-900
Remote control lever

⑦ X-600
Propeller

20CE
⑮ Y-360
Steering handle/throttle control

⑫ X-210
Neutral throttle lever

⑧ Y-235
Splash board

⑮ Y-280
Recoil starter handle

SPECIFICATIONS

Item \ Model	Unit	YAMAHA 20CM	YAMAHA 20CE
DIMENSIONS			
•Overall length	mm (in)	600 (23 62)	600 (23 62)
•Overall width	mm (in)	360 (14 17)	360 (14 17)
•Overall height	mm (in)	S = 1,105 (43 5)	S = 1,105 (43 5)
•Boat transom height	mm (in)	S = 381 (15), L = 508 (20)	S = 381 (15), L = 508 (20)
•Weight	kg (lb)	S = 47 (103 6)	S = 53 (116 9)
PERFORMANCE			
•Full throttle operating range	r/min (RPM)	4,500 ~ 5,500	4,500 ~ 5,500
•Maximum output	kW (HP)/min ⁻¹ (RPM)	14 7 (20)/5,500	14 7 (20)/5,500
ENGINE			
•Type		Two stroke	Two stroke
•Number of cylinders		2	2
•Bore and stroke	mm (in)	67 × 61 (2 64 × 2 4)	67 × 61 (2 64 × 2 4)
•Total piston displacement	cm ³ (cu in)	430 (26 24)	430 (26 24)
•Cooling system		Water	Water
•Ignition system		CDI	CDI
•Spark plug	NGK	B-7HS	B-7HS
•Spark plug gap	mm (in)	0 5 ~ 0 6 (0 020 ~ 0 024)	0 5 ~ 0 6 (0 020 ~ 0 024)

Item \ Model	Unit	YAMAHA 20CM	YAMAHA 20CE
DRIVE UNIT			
• Gear shifting		Forward-Neutral-Reverse	Forward-Neutral-Reverse
• Gear ratio		1.84 (24/13)	1.84 (24/13)
FUEL AND OIL			
• Fuel-oil ratio		100 : 1	100 : 1
• Fuel tank capacity	L (US gal)	24 (6.34)	24 (6.34)
• Gear oil capacity	cm ³ (US oz)	180 (6.08)	180 (6.08)

SPECIFICATIONS

Model Item	Unit	YAMAHA 25DM	YAMAHA 25DE
DIMENSIONS			
•Overall length •Overall width •Overall height •Boat transom height •Weight	mm (in) mm (in.) mm (in) mm (in) kg (lb)	600 (23 62) 360 (14 17) S = 1,105 (43 5) S = 381 (15), L = 508 (20) S = 47 (103 6)	600 (23 62) 310 (12 2) S = 1,105 (43 5) S = 381 (15), L = 508 (20) S = 53 (116.9)
PERFORMANCE			
•Full throttle operating range •Maximum output	r/min (RPM) kW (HP)/min ⁻¹ (RPM)	4,500 ~ 5,500 18 4 (25)/5,000	4,500 ~ 5,500 18 4 (25)/5,000
ENGINE			
•Type •Number of cylinders •Bore and stroke •Total piston displacement •Cooling system •Ignition system •Spark plug •Spark plug gap	mm (in) cm ³ (cu in) Water CDI NGK mm (in)	Two stroke 2 67 × 61 (2 64 × 2 4) 430 (26 24) Water CDI B-7HS 0 5 ~ 0 6 (0 020 ~ 0.024)	Two stroke 2 67 × 61 (2.64 × 2 4) 430 (26 24) Water CDI B-7HS 0 5 ~ 0.6 (0 020 ~ 0 024)

Item \ Model	Unit	YAMAHA 25DM	YAMAHA 25DE
DRIVE UNIT			
• Gear shifting		Forward-Neutral-Reverse	Forward-Neutral-Reverse
• Gear ratio		1.84 (24/13)	1.84 (24/13)
FUEL AND OIL			
• Fuel-oil ratio		100 : 1	100 : 1
• Fuel tank capacity	L (US gal)	24 (6.34)	24 (6.34)
• Gear oil capacity	cm ³ (US oz)	180 (6.08)	180 (6.08)

SPECIFICATIONS

Item \ Model	Unit	YAMAHA 30AM	YAMAHA 30AE
DIMENSIONS			
• Overall length • Overall width • Overall height • Boat transom height • Weight	mm (in) mm (in) mm (in) mm (in) kg (lb)	600 (23 62) 360 (14 17) S = 1,140 (44 88) S = 381 (15), L = 508 (20) S = 48 6 (107 1)	600 (23 62) 310 (12 2) S = 1,140 (44 88) S = 381 (15), L = 508 (20) S = 54 6 (120 4)
PERFORMANCE			
• Full throttle operating range • Maximum output	r/min (RPM) kW (HP)/min ⁻¹ (RPM)	4,500 ~ 5,500 22 1 (30)/5,500	4,500 ~ 5,500 22 1 (30)/5,500
ENGINE			
• Type • Number of cylinders • Bore and stroke • Total piston displacement • Cooling system • Ignition system • Spark plug • Spark plug gap	mm (in) cm ³ (cu in) Water CDI NGK mm (in)	Two stroke 2 72 × 61 (2 83 × 2 4) 496 (30 27) Water CDI B-7HS 0 5 ~ 0 6 (0 020 ~ 0 024)	Two stroke 2 72 × 61 (2 83 × 2 4) 496 (30 27) Water CDI B-7HS 0 5 ~ 0 6 (0 020 ~ 0 024)

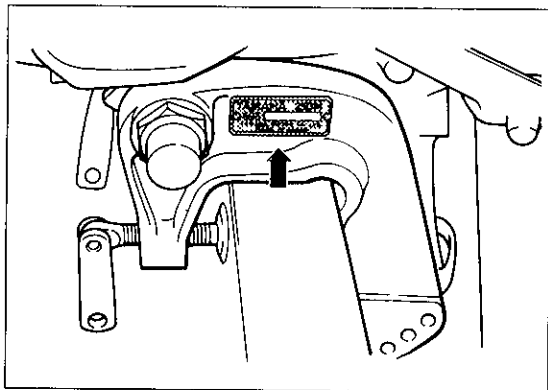
Item \ Model	Unit	YAMAHA 30AM	YAMAHA 30AE
DRIVE UNIT			
• Gear shifting		Forward-Neutral-Reverse	Forward-Neutral-Reverse
• Gear ratio		1.84 (24/ 13)	1.84 (24/ 13)
FUEL AND OIL			
• Fuel-oil ratio		100 : 1	100 : 1
• Fuel tank capacity	L (US gal)	24 (6.34)	24 (6.34)
• Gear oil capacity	cm ³ (US oz)	180 (6.08)	180 (6.08)

E-010

OUTBOARD MOTOR IDENTIFICATION

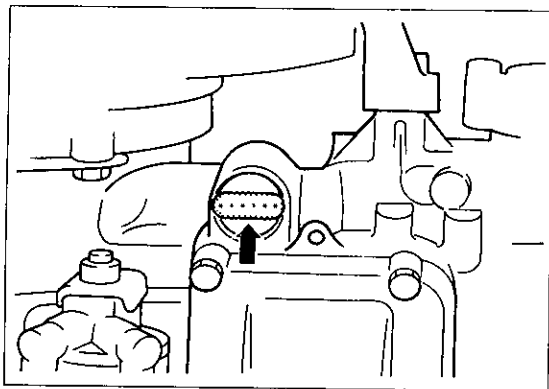
Outboard motor serial number

The outboard motor serial number is stamped on the plate attached to the port side of the clamp bracket



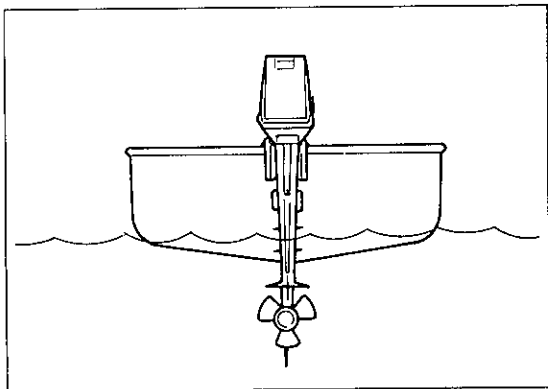
Engine serial number

The engine serial number is stamped on the port side of the cylinder body



NOTE

Both outboard motor and engine serial numbers are important when you want to have service performed or place an order for parts. Please take note of the numbers.



F 000

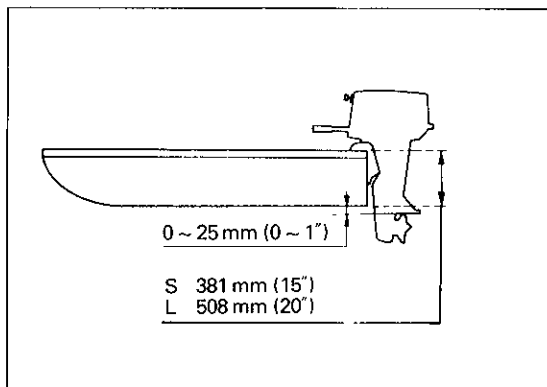
ENGINE MOUNTING

WARNING:

Never equip a boat with an outboard motor whose power exceeds the maximum rating shown on the capacity plate. Over-powering the boat may cause severe instability. If the boat has no capacity plate, consult your Yamaha dealer or the boat manufacturer.

Mounting position

The outboard motor must be mounted on the boat center line (keel line), and the boat must be well balanced so that the drafts are on the same level both on the starboard and the port side. Otherwise, the boat will be very hard to steer. For boats without keel or which are asymmetrical, consult your Yamaha dealer.



F-100

Mounting height

To run your boat with maximum efficiency, water resistance to the boat hull and outboard motor must be minimized. The mounting height of the outboard motor greatly affects the water resistance. If the mounting height is high, cavitation tends to occur, thus reducing propulsion by the engine. If the propeller tips are too high, they cut the air and the engine speed rises abnormally, thus causing the engine to overheat. If the mounting height is too low, splash resistance will increase and thereby reduce engine efficiency. The engine should be mounted so that the anti-cavitation plate is between the bottom of the boat and a level 25 mm (1") below it.

WARNING:

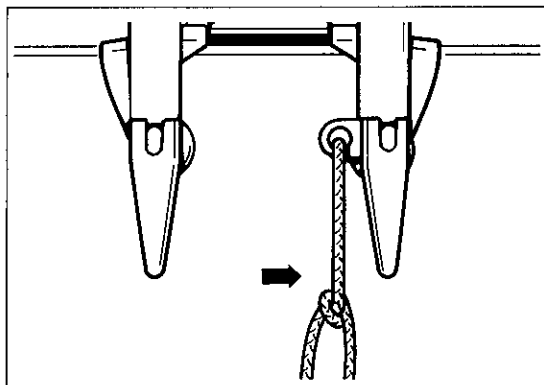
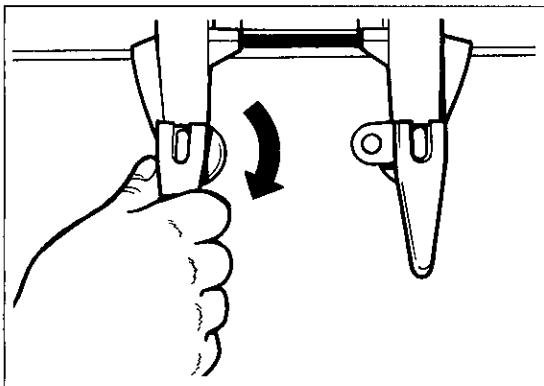
The mounting height varies depending on the purpose of the boat and the outboard motor. The proper height should thus be determined by making test-runs.

Clamp

Place the outboard on the transom so that it is positioned as close to the center as possible. Tighten the clamp screws evenly and securely. Occasionally check the screws for tightness during operation.

WARNING:

Be sure to tighten the transom clamp screws securely. Check the tightness of the screws while the motor is in operation because they can work loose due to engine vibration. Loose clamp screws may allow the engine to fall off into the water or cause serious injury.



When the boat makes a sharp turn with loose clamp screws, the engine may fall off into the water. The use of a safety chain or cable is recommended. Attach one end to the safety attachment (beside clamp screw) and the other to a secure mounting point on the boat.

Trim angle adjustment

To maintain steering stability and good performance, always maintain correct trim angle. The appropriate trim angle varies depending on the combination of the boat, engine, and propeller, as well as operating conditions, but it is safe to say that when the trim is 3° to 5° by stern, the boat is in a stable trim. If the trim angle is too large, the buoyancy center of the boat will shift toward the stern. If this happens and the stability moment at the bow is great, the boat will tend to "porpoise," possibly causing the operator and passengers to be thrown overboard. If the trim angle is too small, the bow will "plow," thus making the boat unstable. To adjust the trim angle, remove the tilt pin from the stern bracket assembly and, while tilting the motor, reposition the pin in the desired hole.

WARNING:

When mounting the outboard motor on a boat, be sure to make a test-run and set the proper trim angle.

NOTE:

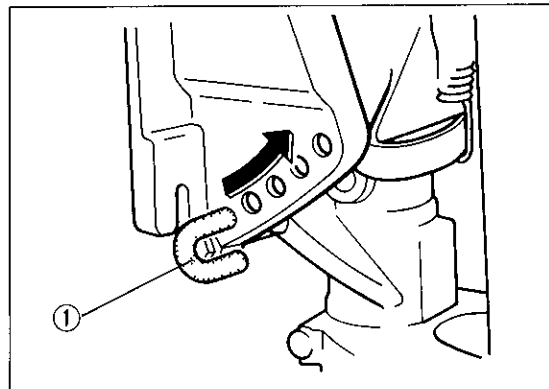
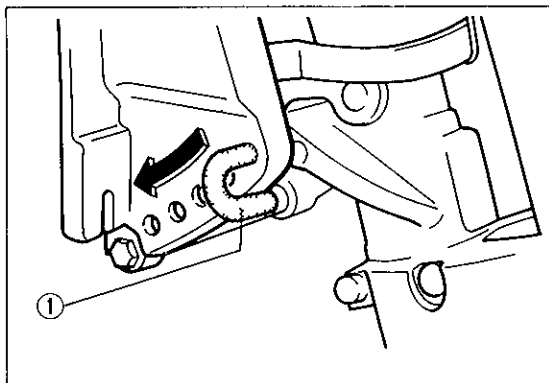
When operating against a strong wind, it is advisable to make the trim angle slightly smaller than the standard for steering stability. If the wind is favorable, the trim angle should be increased for better steering stability.

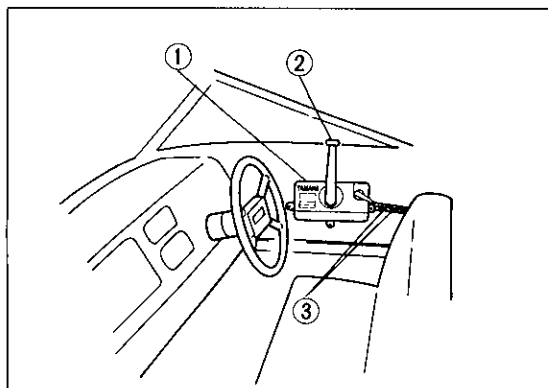
F-301

NOTE:

To lower the bow, move pin towards the mounting plate. To raise the bow, move pin towards the engine.

① Tilt pin





F 400

25DE/30AE

Remote control mounting

WARNING:

Incorrect selection or installation of a remote control may result in sudden and unexpected loss of control, thus resulting in a serious accident. Please consult your Yamaha dealer.

For installation of the steering system, see your nearest Yamaha dealer. It is also advisable to ask your Yamaha dealer to install the remote control box and cables. The remote control in this manual is designed for starboard side steering wheels.

F-410

Remote control box positioning

The remote control box should be set in a position in which it does not obstruct the operations of the remote control lever. Make sure there is no obstruction in the path of the remote control cables.

① Remote control box

② Remote control lever

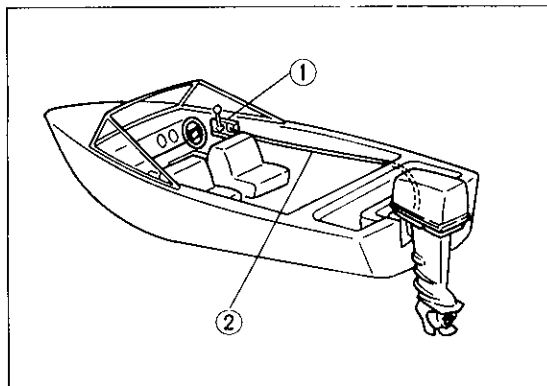
③ Remote control cable

Checking the remote control cable length

Position the remote control cables and check if they are long enough. Connect the cables to the engine and make sure they do not get tangled or bent when the steering wheel is turned.

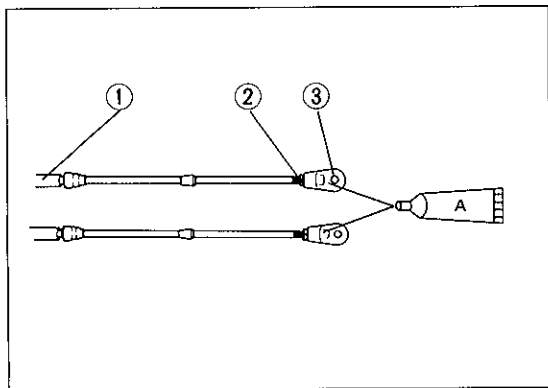
CAUTION.

Avoid bending the cables sharply, that is, make sure the cables do not form a loop with a diameter of less than 406 mm (16 in).



① Remote control box

② Remote control cable

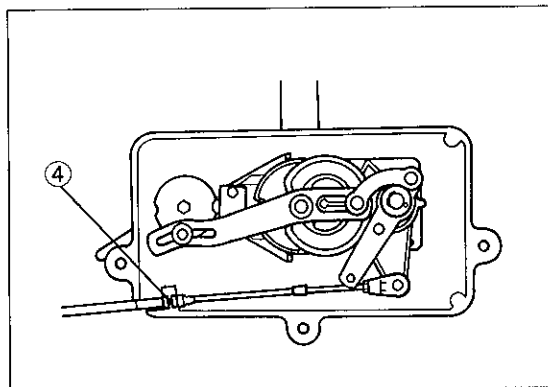


F 430

Remote control cable installation (On the remote control box side)

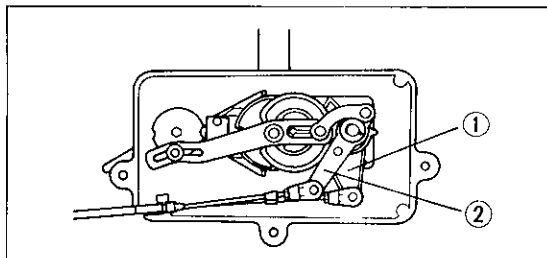
- 1) Loosen the screws securing the cover to the remote control box and remove the cover
- 2) Screw in the cable joints (accessories) about 11 mm (0.4 in) over the ends of the remote control cables, and tighten the lock nuts. Before installing the cable joints, apply the water-resistance grease (Yamaha Grease A) to the threaded holes in the cable joints

① Remote control cable ② Lock nut ③ Cable joint



- 3) Align the groove around one of the remote control cables with the projection on the remote control cable and connect the cable
- 4) Align the groove around the grommet (accessory) with the projection on the remote control box and install the grommet onto the box
Likewise, connect the other remote control cable to the remote control box

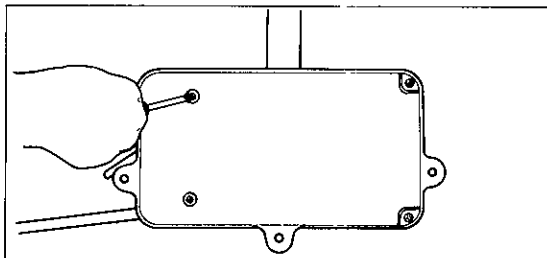
④ Grommet



- 5) Install the cable joints onto the shift arm and throttle arm and lock them with circlips

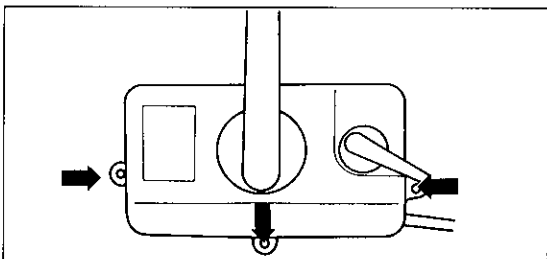
① Shift arm

② Throttle arm

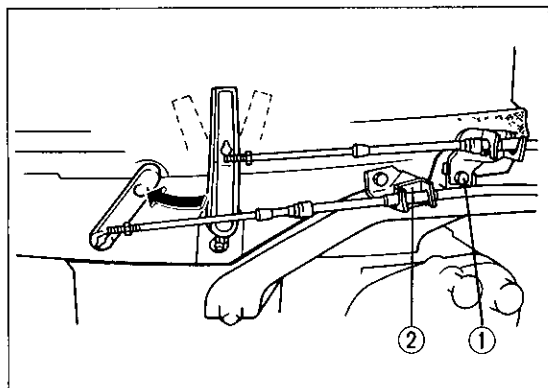


- 6) Install the cover onto the remote control box and secure it with screws

- 7) By operating the remote control lever, make sure the inner cables move smoothly



- 8) After connecting the remote control cables, install the remote control box in the previously determined position using the accessory fittings (screws, nuts, and washers)



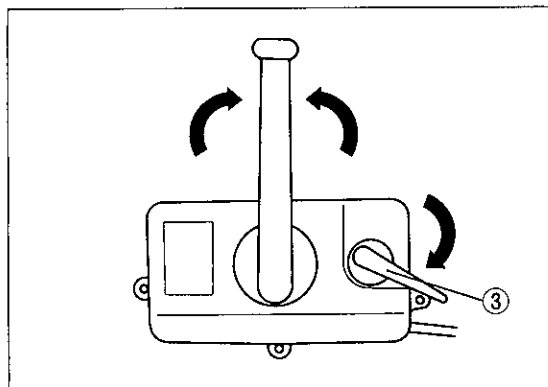
F 445

Remote control cable installation (on the motor side)

Connect the remote control cable (connected to the shift arm) to remote control bracket 1 (upper), and connect the other remote control cable (connected to the throttle arm) to remote control bracket 2

① Remote control bracket 1

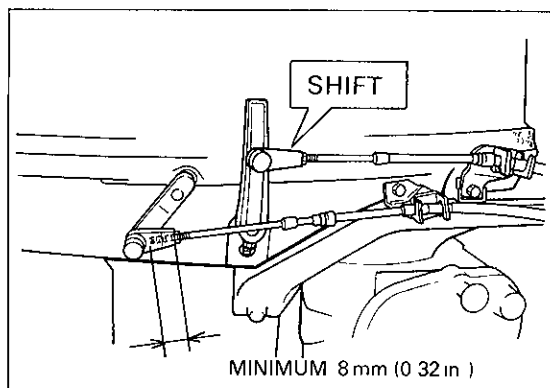
② Remote control bracket 2



Set the remote control lever of the remote control box to "N" Place the neutral throttle lever in the fully-closed position

Place the shift handle in "N" Set the throttle control lever in the fully-closed position

③ Throttle control lever



Screw the cable joints into the remote control inner cable ends. The cable joints marked "SHIFT" should be placed on the shifter side.

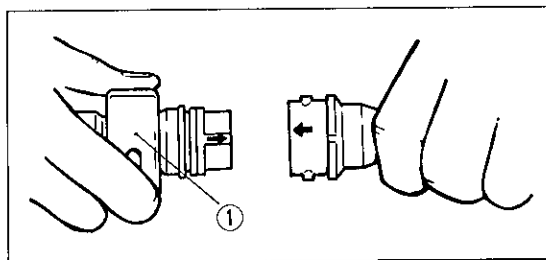
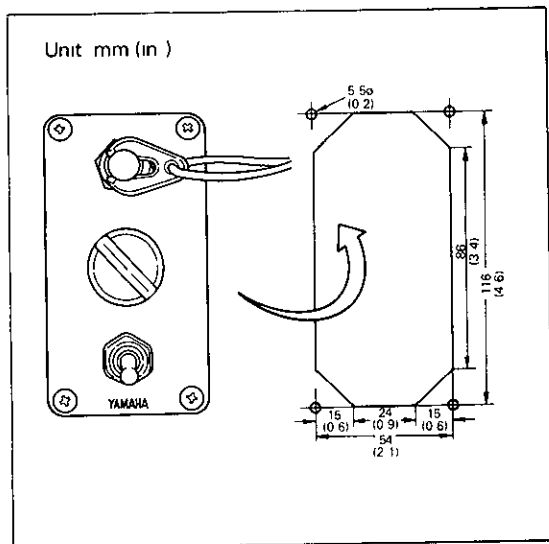
IMPORTANT

Screw the end of the remote control cables into the cable joints a minimum of 8 mm (0.32 in) and lock it with the lock nuts.

CAUTION:

To prevent the cable joints from coming loose, tighten the lock nuts.

Install the cable joint marked "SHIFT" to the shift handle, and install the other cable to the throttle control lever. To install, insert the cable joint into the slot first and turn it 90° in either direction.



F-500

Switch panel mounting

WARNING:

When installing or removing electrical parts, be sure to disconnect the battery wires from the battery terminals. When connecting the battery wires to the battery terminals, be sure to turn off the main switch and remove the switch key. Otherwise you may receive an electric shock, or sparks may ignite the fuel causing an explosion.

CAUTION:

Install the switch panel onto the dashboard. Select a location allowing easy access from the helmsman's seat. If the boat has no dashboard, the switch panel should be installed in a location protected from water spray.

Make an opening at the selected location.

Disconnect the wire harness at the connector on the motor side. Insert the wire harness through the opening, and secure the switch panel to the dashboard with four screws, nuts and washers.

Connect the wire harness to the coupler by aligning the marks on the coupler, and clamp the wire harness.

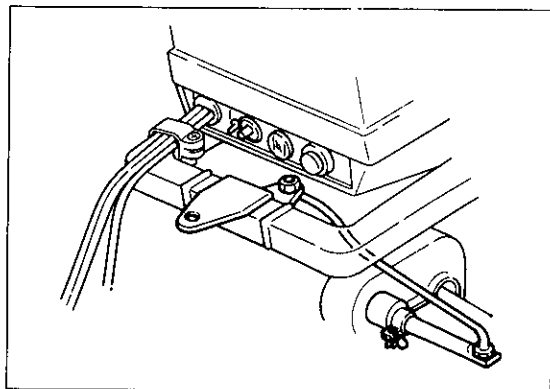
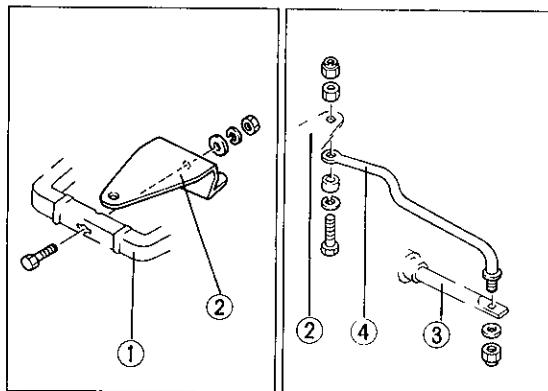
① Clamp

25DE/30AE**Installing the steering guide attachments**

Secure the steering hook to the steering bracket with the bolt, nut, and two washers. Hold one end of the steering link rod to the steering hook with the bolt, two washers, and two nuts, and hold the other end to the steering cable with the nut and washer.

NOTE

For details, consult your Yamaha dealer

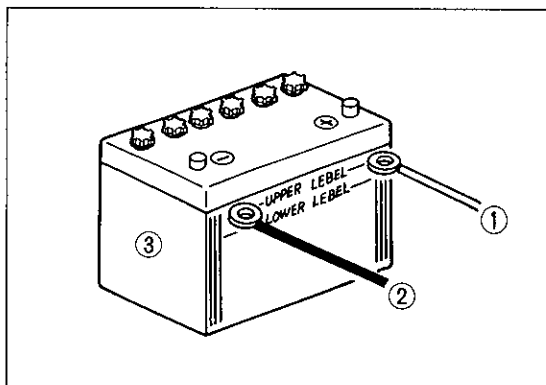


① Steering bracket

② Steering hook

③ Steering cable

④ Steering link rod



F-700

Battery mounting

20CE/25DE/30AE

WARNING:

When installing or removing electrical parts, be sure to disconnect the battery wires from the battery terminals. When connecting the battery wires to the battery terminals, be sure to turn off the main switch and remove the switch key. Otherwise, you may receive an electric shock, or sparks may ignite the fuel causing an explosion.

The battery should be securely mounted in a dry, vibration-free location in the boat. The battery should be a 12V, 144 kC (40AH).

To wire the battery, connect the red lead to the positive terminal of the battery and the black lead to the negative terminal.

① Red lead

② Black lead

③ Battery box

CAUTION:

- 1 If leads are incorrectly connected, starting failures may result
- 2 If the battery connections are reversed, the rectifier will be damaged

WARNING:

The battery fluid (electrolyte) is corrosive. If it gets in your eyes or on your skin, immediately wash the area with water and see your doctor. If the fluid spills on or around the engine, thoroughly wash it away. When the battery is being charged, explosive hydrogen gas is produced. The battery should therefore be charged in a well-ventilated area.

FUEL AND LUBRICATION OIL

WARNING:

- Gasoline is highly flammable and explosive. When mixing gasoline with oil or when refuelling, refrain from smoking and keep away from open flames or sparks
- When refuelling, be sure to stop the engine. Also take care not to spill gasoline or oil
- Be sure to wipe off any gasoline or oil spilt on board immediately and thoroughly with dry rags
- Never fill the fuel tank to more than the specified level. Safe filling level is 5 mm (0.2 inch) below bottom of filler neck
- After filling, tighten the tank filler cap securely.
- The mixing of fuel must be done offboard in a well-ventilated area

Fuel

Regular gasoline

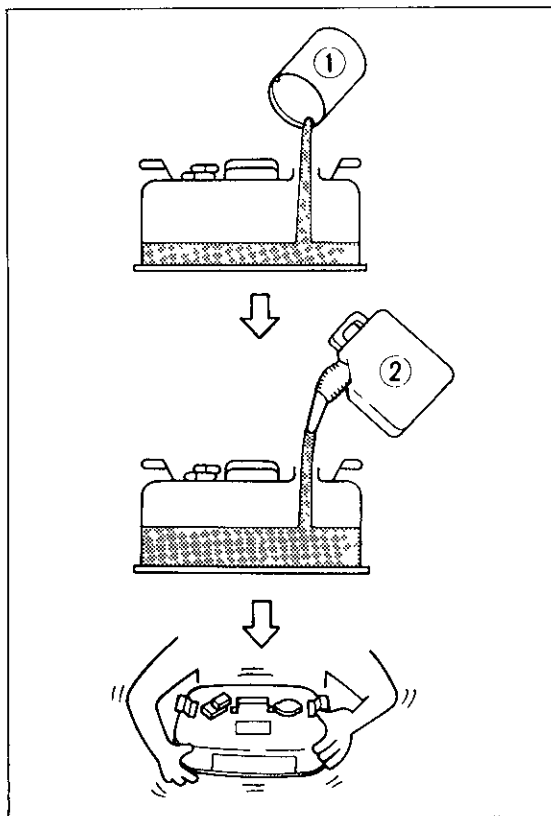
Lubrication oil

YAMAHA outboard motor oil or an equivalent two stroke outboard motor oil which meets the BIA rating TC-W

Mixing ratio

	Gasoline	Oil
Break-in period 1st 24 l	25	1
After break-in After 24 l	100	1

Fuel tank capacity 24 liters (6.34 US gal)



Mixture

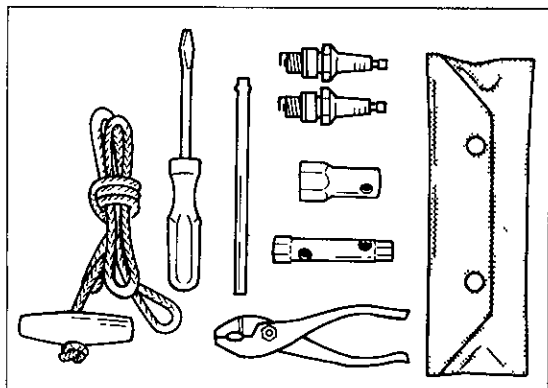
- 1) First pour oil into the fuel tank, and then gasoline
- 2) Mix the fuel thoroughly by shaking the fuel tank

CAUTION:

- Avoid using any oil other than that designated
 - Always use new gasoline
 - Use a thoroughly blended fuel-oil mixture
 - If the mixture is not thoroughly blended or the mixing ratio is incorrect, the following problems will occur
- | | |
|----------------|---|
| Low oil ratio | Due to lack of oil, major engine trouble such as seizure will result |
| High oil ratio | Fouled spark plugs, smoky exhaust, or heavy carbon deposits will result |

① Oil

② Gasoline



H-010

OPERATIONAL INSTRUCTIONS

Starting

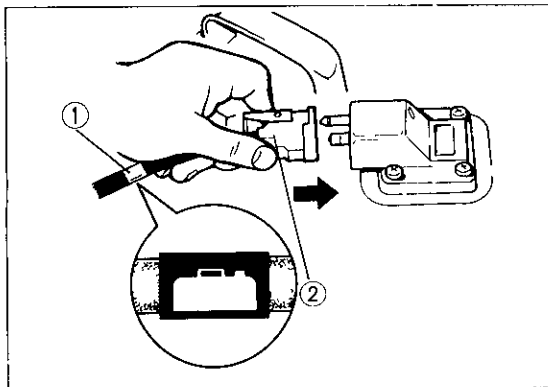
Before cranking the engine

WARNING:

Before starting the engine, make sure the boat is tightly tied to the jetty and can be steered clear of any obstacles. Also check to see that the throttle grip and shift handle operate smoothly.

CAUTION:

- Don't start the engine out of water
- Check that there is sufficient fuel in the tank
- The fuel tank should be placed on a flat area in the bottom of the boat
- Prior to operation, check to see that the necessary service tools and spare parts are on the boat
- The fuel line should be routed in such a way as to prevent any kinks or sharp bends and to allow full steering movement. Do not allow the fuel line to contact sharp objects or to become pinched.

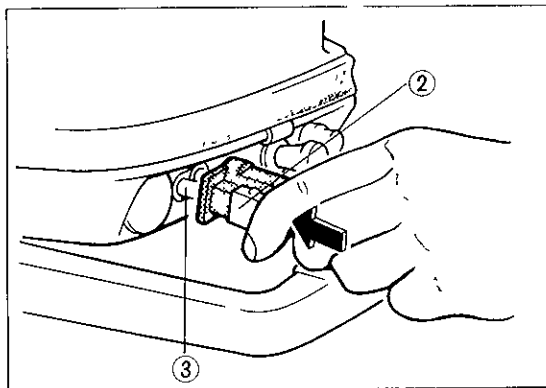


- 1) Firmly connect fuel hose connector 2 (positioned on the collar side) to the fuel tank

WARNING:

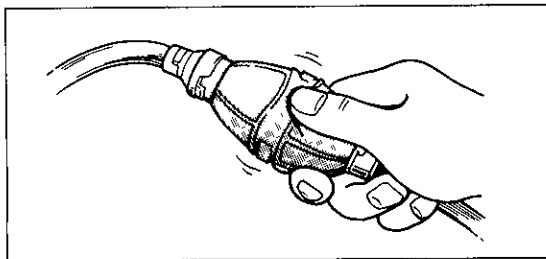
When inserting the fuel joint into the fuel tank, vaporized gasoline will squirt out of the air bleeding hole. Gasoline is highly inflammable and explosive under certain conditions. Refrain from smoking and keep away from open flames or sparks when inserting the fuel joint

- ① Collar ② Fuel hose connector 2



- 2) Firmly connect fuel hose connector 2 to fuel hose connector 1 on the motor

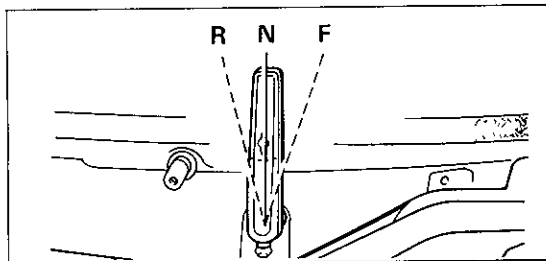
- ③ Fuel hose connector 1



3) Squeeze the primer bulb until firm pressure is felt

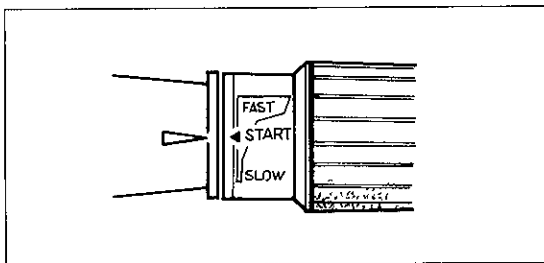
20CM/20CE/ 25DM/ 30AM

4-1) Place the shift handle in "N "

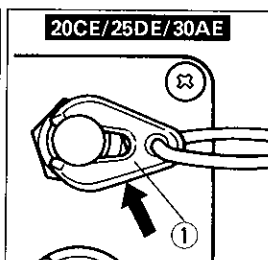
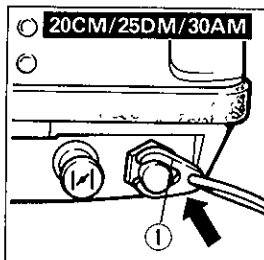
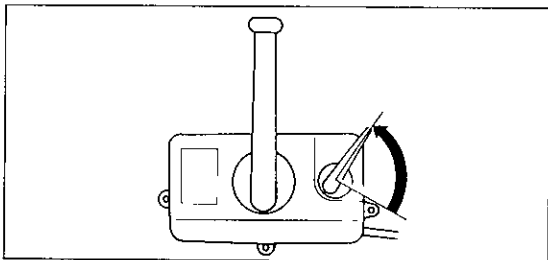
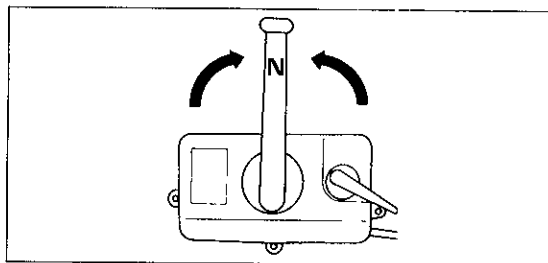


CAUTION:

The engine may only be started when the shift handle is in the "N" position



4-2) Place the throttle grip in the START position (The throttle opening must be adjusted slightly according to the engine temperature)



25DE/30AE

- 4-1) Place the remote control lever on the remote control box in "N "

CAUTION:

If the remote control lever is not in "N," the starter motor cannot be turned and the starter handle can not be pulled

NOTE.

If the remote control cables are connected to the engine, it cannot be operated manually

- 4-2) Turn the neutral throttle lever on the remote control box upward (It is necessary to change the throttle opening slightly depending on the engine temperature)

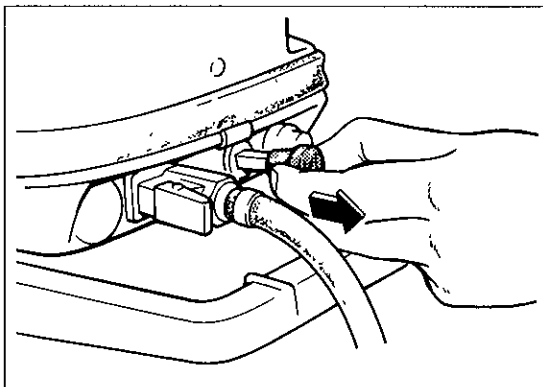
- 5) Install the lock plate firmly onto the emergency stop switch

Tie the rope attached to the lock plate to your wrist

- ① Lock plate

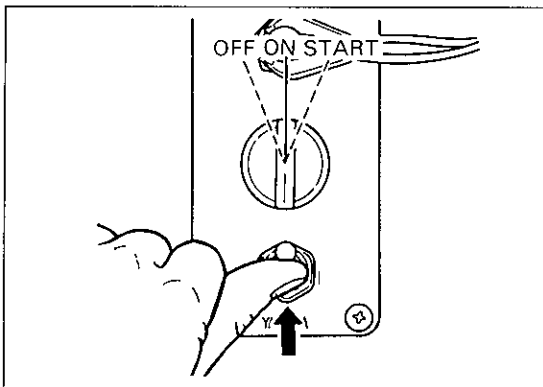
NOTE

The emergency stop switch is provided for the safety of the operator. When the lock plate is pulled out from the emergency stop switch, the engine stops immediately. The engine will not start when the lock plate is removed. Should the operator fall off the boat or lean too far over one side, the lock plate will pull out causing the engine to stop.



20CM/25DM/30AM

- 6) Pull the choke knob out completely

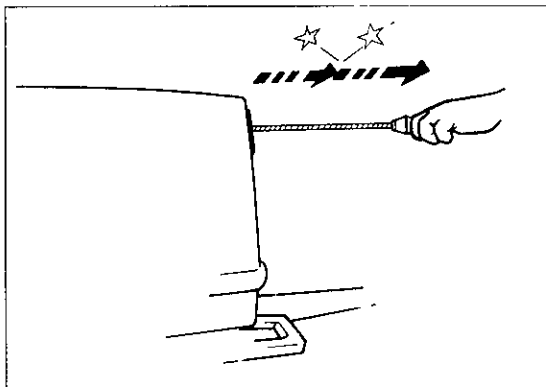


20CE/25DE/30AE

- 6) Turn the main switch to "ON," and turn the choke switch lever upward (The remote choke switch lever returns to its home position when it is released. Therefore, keep the lever pressed upward.)

NOTE

If the engine is still warm do not use the choke

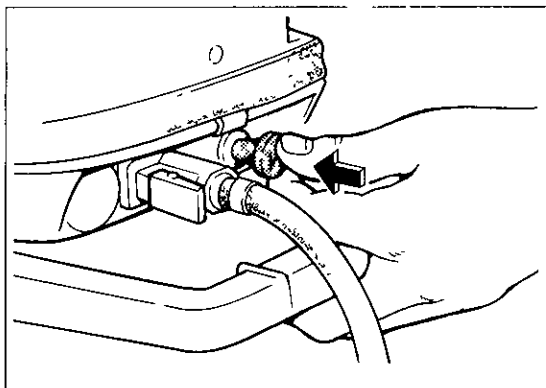
Cranking the engine

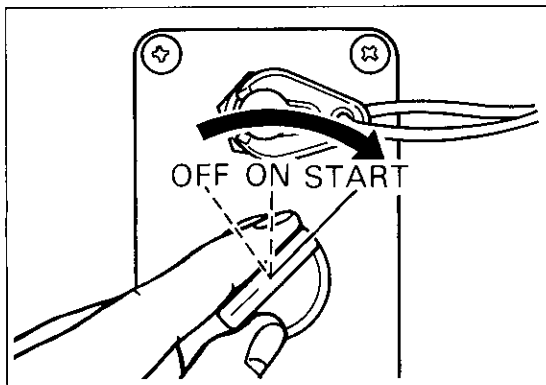
- 1) When the engine is ready for starting, slowly pull the starter handle
- 2) When engagement of the mechanism is felt, finish the stroke with a strong pull and the engine will start
- 3) After the engine has started, allow the starter handle to return slowly to its home position without letting go

- 4) If the choke knob has been pulled out, return it slowly to its home position so that the engine does not stop

NOTE

Should the engine fail to start on the first pull, repeat the above procedure several times. In the event that the engine will not start, refer to the section on troubleshooting



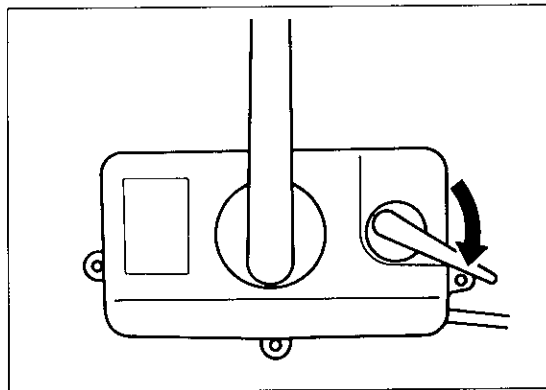


20CE/25DE/30AE

- 1) Set the main switch to "START" and the starting motor will turn
- 2) After making sure the engine has started, release the main switch and remote choke lever

25DE/30AE

- 3) Slowly return the neutral throttle lever to its home position so that the engine does not stop



CAUTION:

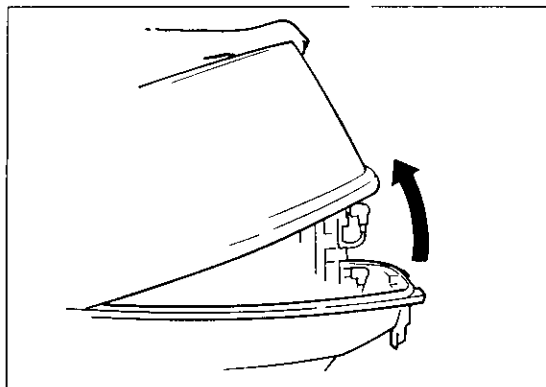
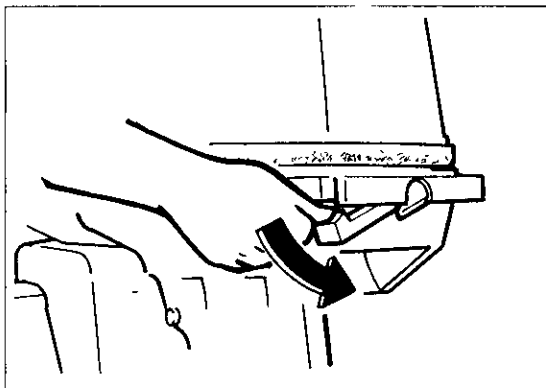
- 1 Never turn the main switch to the "START" position while the engine is running
- 2 Do not keep the starting motor turning for more than five seconds with the main switch in "START". If the engine will not start after five seconds return the main switch to "ON" and crank the engine again after waiting 10 seconds. If the starting motor is turned continuously for more than five seconds, the battery will quickly run dead making it impossible to start the engine

Starter Failure

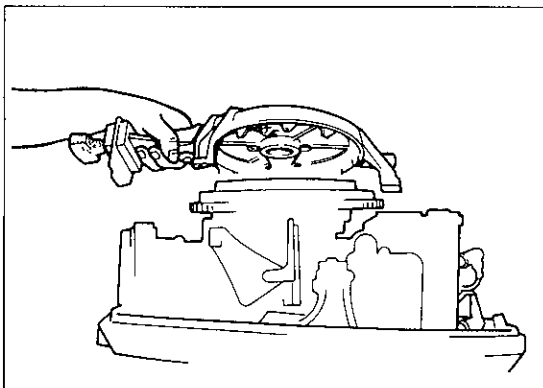
If the engine does not start due to starter failure, it can be started with the emergency starter rope

WARNING:

When the engine is started with an emergency rope, the start-in-gear protection system will not work. Be sure to check that the gear is in Neutral. Otherwise the boat may lurch ahead or astern, causing serious damage or personal injury



- 1) Remove the top cowling by depressing the latch at the rear of the cowling. Lift up and back to remove

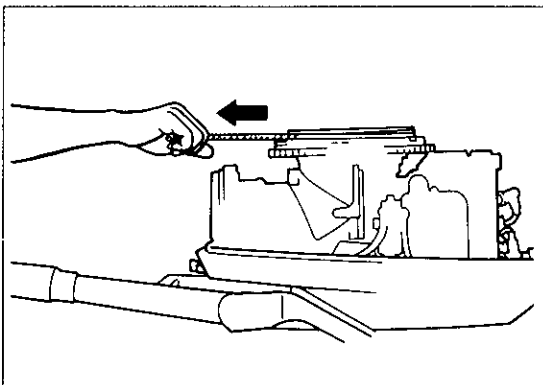


- 2) Remove the starter by removing the 3 bolts securing the rewind mechanism to the flywheel

- 3) Insert the knotted end of the rope into the notch in the flywheel rotor. Wind the rope 2 or 3 turns in a clockwise direction, then pull to start. Repeat if necessary

WARNING:

When starting or operating the engine, never touch the ignition coil, high-tension wire, spark plug cap or any other electrical parts to which high voltage is applied



WARNING:

When pulling the emergency starter rope, be sure to keep loose clothing and other objects away from the engine

A rotating flywheel is very dangerous. Never attempt to install the top cowl on the engine when it is in operation

Proceed to the nearest port to get the engine repaired as quickly as possible. Take care that no water splashes onto the flywheel

20CE/25DE/30AE

Starting the engine when the starter motor is inoperative

- 1) Turn the main switch to "ON" and install the lock plate firmly onto the emergency stop switch

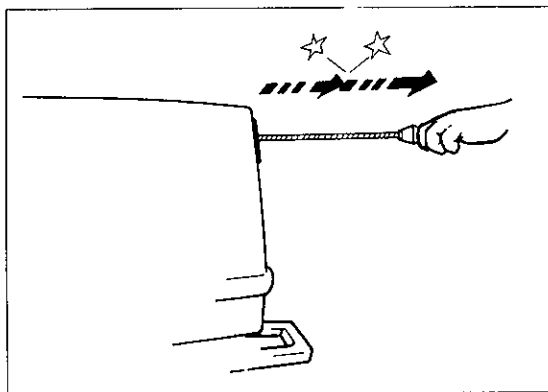
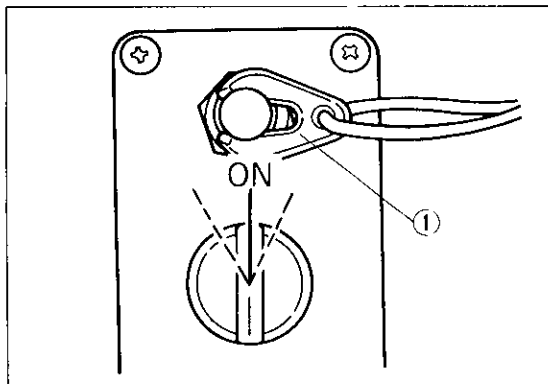
① Lock plate

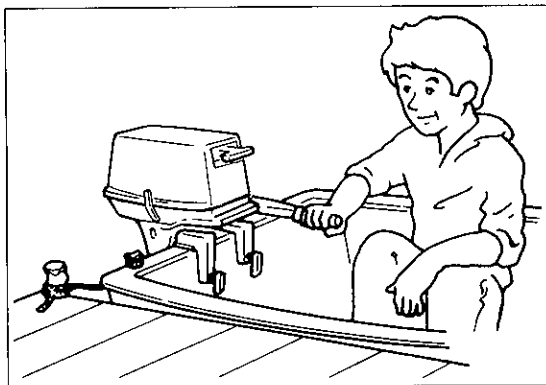
20CE

- 2-1) Place the shift handle in "N "
- 2-2) Place the throttle grip in the "START "

25DE/30AE

- 2) Place the remote control lever on the remote control box in "N "
- 3) Grip the starter handle and pull it slowly
- 4) When engagement of mechanism is felt, finish the stroke with a strong pull, and the engine will start



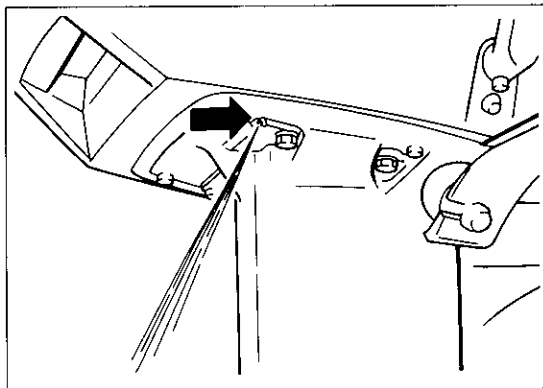


H-300

Engine Warm-up

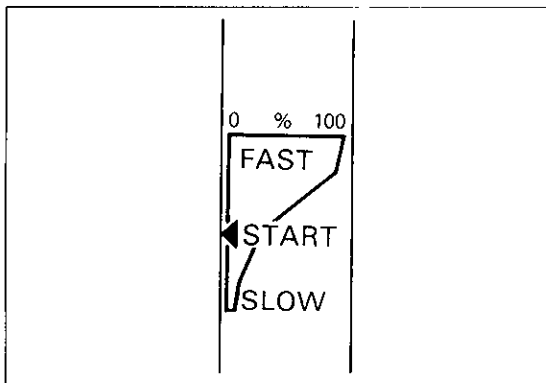
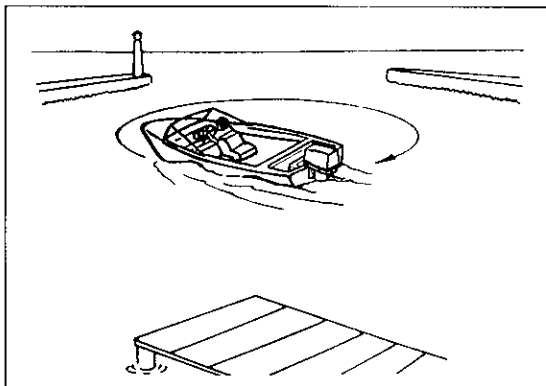
Before beginning operation, the engine should be warmed up at idle speed for three minutes. Failure to do so will shorten the life of the engine.

Make sure that water runs out from the cooling water pilot holes.



CAUTION:

If water does not run out during operation, the motor may overheat and be seriously damaged. Should this occur, stop the engine, and check that the water inlet on the lower casing is not blocked. (If not, take the engine to your nearest Yamaha dealer.)



H 400

Break-in

A period of break-in is required to allow the mating surfaces of all moving parts to wear evenly when new. This procedure will ensure proper performance and greater durability.

(1) Mixing ratio on first tankful

Gasoline Oil 25 1

(2) Procedure

- Run the engine at trolling speeds (the lowest possible speed) for the first five minutes
- Next, slowly open the throttle up to 1/2
- Continue operation with half-throttle or less until fuel is exhausted
- After first tankful, return to 100 : 1 ratio

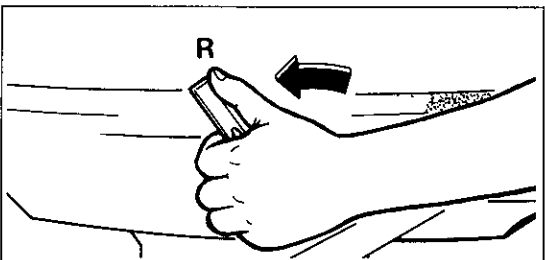
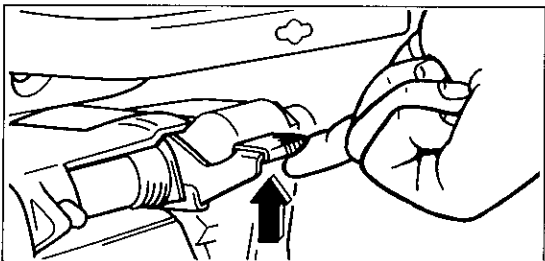
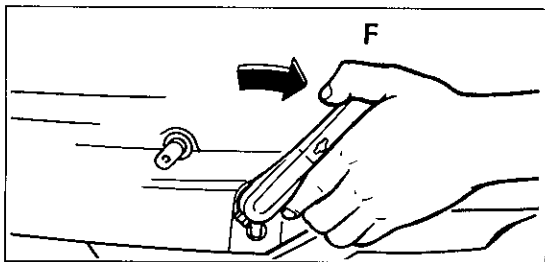
CAUTION:

Failure to follow the break-in operating procedure may result in severe engine damage.

20CM/ 20CE /25DM/30AM

NOTE:

A fuel consumption curve is shown on the throttle indicator. By referring to this curve, determine the best throttle position for the use you wish to make of the boat.



H 515

Gear Selection (Forward and Reverse)

WARNING:

Should the engine hit an underwater obstacle, be sure to check the gear case and brackets for damage.

20CM/20CE/25DM/30AM

A Forward (F)

Turn the shift handle to "F" quickly and firmly

B Reverse (R)

1) Lock the reverse lock

WARNING:

When operating in REVERSE, be sure to set the reverse lock to "LOCK" and keep the throttle at 1/2 or less. If this is not done, the reverse lock mechanism will not prevent the engine from lifting out of the water and loss of control may occur, possibly causing injury to the passengers.

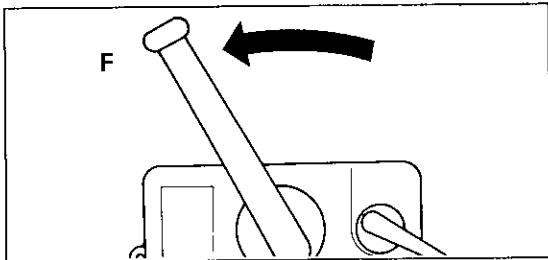
2) Turn the shift handle to "R" quickly and firmly

CAUTION:

To change the boat direction from forward to reverse or vice versa, close the throttle first so that the engine idles (or runs at low speeds)

CAUTION:

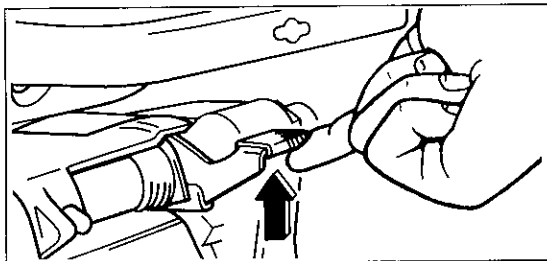
For additional safety, the throttle is designed not to open more than 1/2 when the motor is in NEUTRAL. Never attempt to force the throttle open more than 1/2



25DE/30AE

A Forward (F)

Turn the remote control lever to "F "



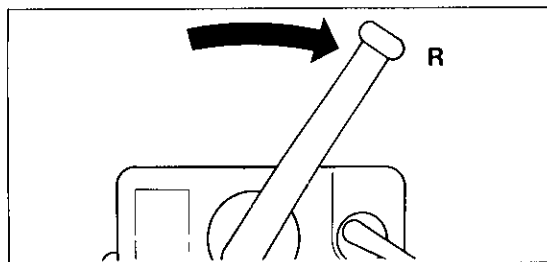
B Reverse (R)

1) Lock the reverse lock

2) Turn the remote control lever to "R "

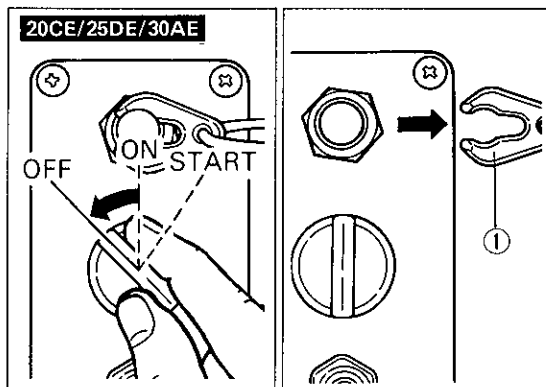
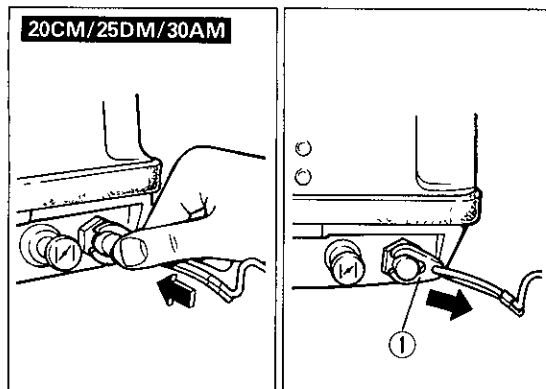
WARNING:

When operating in REVERSE, be sure to set the reverse lock to "LOCK" and keep the throttle at 1/2 or less. If this is not done, reverse lock mechanism will not prevent the engine from lifting out of the water and loss of control may occur, possibly causing injury to the passengers.



CAUTION:

For additional safety, the throttle is designed not to open more than 1/2 when operating in NEUTRAL. Never attempt to force the throttle to more than 1/2.



H 615

Stopping the engine

20CM/25DM/30AM

To stop the engine, push the emergency stop switch button or pull out the lock plate

- 1 Lock plate

20CE/25DE/30AE

Turn the main switch to OFF and the engine will stop
Pull out the lock plate from the emergency stop switch and the engine will stop

WARNING:

It is impossible to stop the engine by disconnecting the wire harness. Furthermore, when the wire harness is disconnected, the engine cannot be stopped by turning off the main switch or by pulling out the emergency stop switch lock plate. Be sure to keep the wire harness connected during operation.

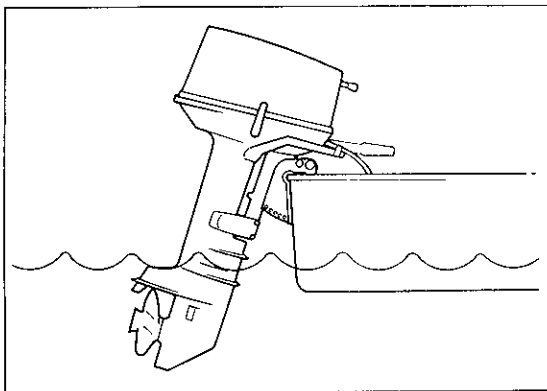
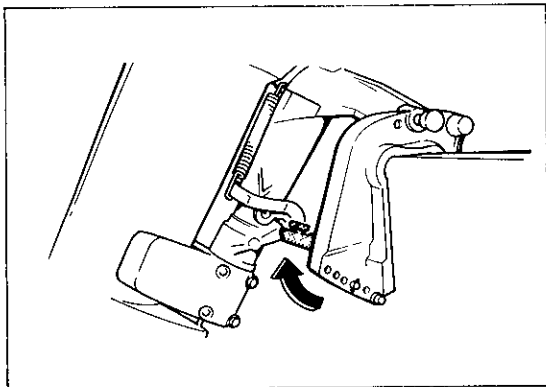
After stopping the engine, remove the fuel hose

CAUTION:

Before stopping the engine, reduce the engine temperature by running it at idle or low speeds for 2 or 3 minutes

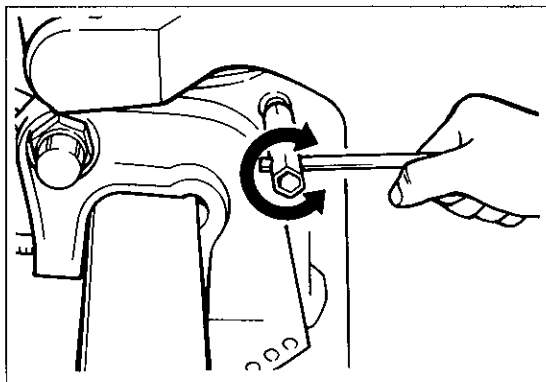
20CM/25DM/30AM**Shallow water cruising****WARNING:**

In shallows, run the boat at trolling speed or thereabouts. The reverse lock will not operate and may thus cause the engine to lift out of the water and the boat to lose control when the lower casing hits an underwater obstacle. Personal injury may result when the engine is operating in reverse, as it can easily be lifted by the force of reverse thrust.



To cruise in shallows, proceed as follows

- 1) Place the shift handle in "N "
- 2) Push the reverse lock down to "RELEASE"
- 3) Slightly tilt up the engine and pull the shallow water lever toward you
- 4) When bringing the engine from the shallow water position back to the home position, tilt it up a little, push the shallow water lever downward, and tilt the engine down slowly



H-710

Adjustments **Steering handle adjustment**

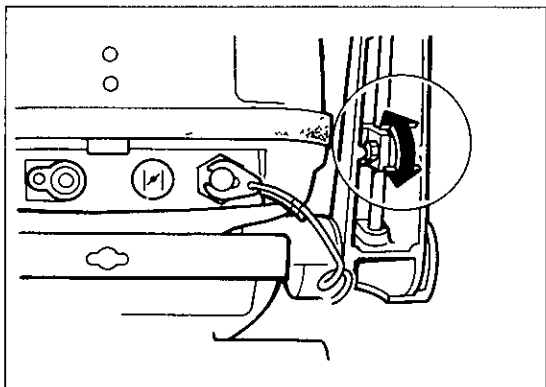
The tension of the steering handle can be adjusted by turning the adjusting bolt attached to the swivel bracket.

To increase tension

Turn the adjusting bolt clockwise

To decrease tension

Turn the adjusting bolt counterclockwise



20CM/20CE/25DM/30AM

H-730

Adjustment of throttle twist grip friction

The throttle twist grip has an adjustable friction device. The friction device is located in the steering handle, and friction can be adjusted by tightening or loosening the friction bolt.

To increase tension.

Turn the friction bolt clockwise

To decrease tension

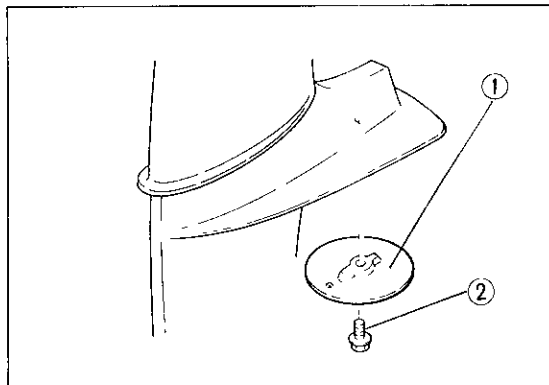
Turn the friction bolt counterclockwise

Trim tab adjustment

The trim tab should be adjusted so that the steering handle can be turned to either the right or left by applying the same amount of force

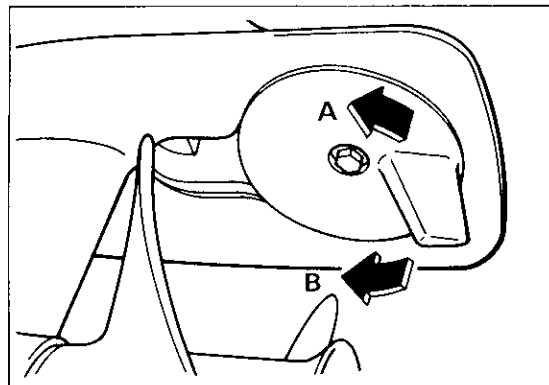
WARNING:

An improperly adjusted trim tab will cause loss of control Test run to determine proper adjustment



① Trim tab

② Trim tab screw

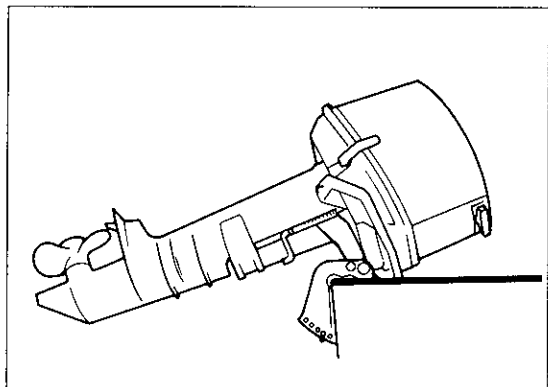
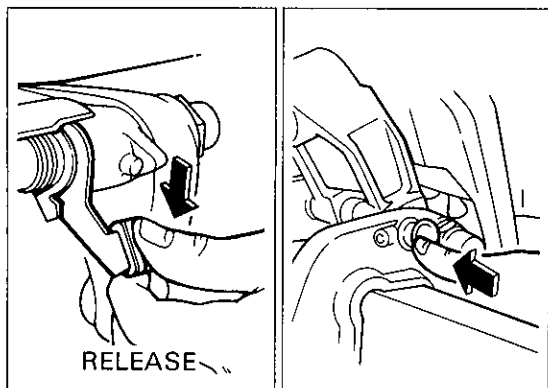


A When the boat tends to veer to port
Turn the rear end of trim tab to the left (port side)
"A" in the figure

B When the boat tends to veer to starboard
Turn the rear end of trim tab to the right (starboard side)
"B" in the figure

CAUTION:

The trim tab also serves as an anode to protect the engine from electrochemical corrosion. Never paint the trim tab as it will become ineffective as an anode



I 015

TILT UP AND MOORING

If the engine will be stopped for some time, or if the boat is moored in shallows, the engine should be tilted up. This protects the propeller and lower casing from damage by rocks or any other underwater obstacle when the tide is ebbing, and from fast corrosion by salt water.

WARNING:

When transporting the engine or keeping it tilted up for more than a few minutes, be sure to disconnect the fuel line linking the engine to the fuel tank. Otherwise, fuel may leak out.

CAUTION:

1. Do not tilt up the engine by pushing the steering handle, you may break it off. **20CM/20CE/25DM/30AM**
2. Make sure the power unit is kept higher than the propeller at all times. Otherwise, water may run into the engine and damage it.

Tilt up

- 1) Remove the fuel joint from the engine.
- 2) Push the reverse lock down to "RELEASE".
- 3) Fully tilt up the engine, and lock it with the tilt up lock.

CAUTION:

When the engine will not be used for a long time, be sure to disconnect the wire from the positive terminal of the battery in order to prevent the battery from running down by electrolysis.

PERIODIC MAINTENANCE

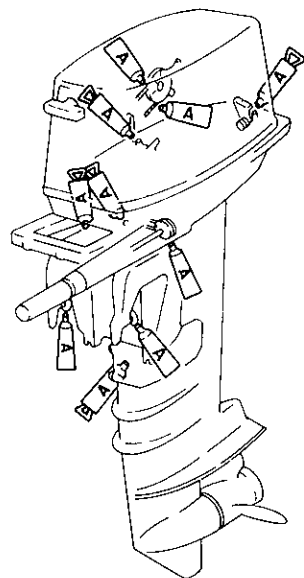
In the following check-up list, the mark (●) indicates the check-ups which may be done by yourself

The mark (○) indicates work to be carried out by your Yamaha dealer

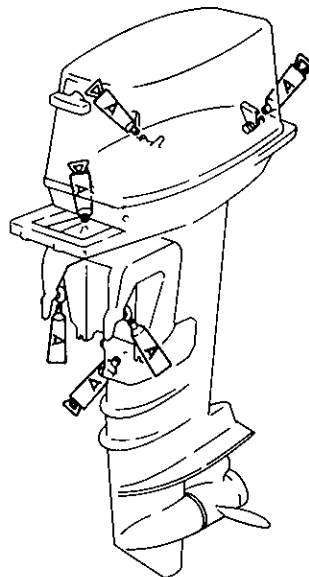
Check Point		Time interval					Procedure
		10 hours or 1 month	50 hours or 3 months	100 hours or 6 months	Every 100 hours or every 6 months	Off season (after the boating season)	
Fuel system	Carburetor setting	○	○	○	○	○	
	Fuel filter	●	●	●	●	●	Cleaning of filter
	Fuel hose			●	●	●	Checking for fuel leakage
	Fuel tank	●	●	●	●	●	Cleaning of tank interior
Electric system	Spark plug	●	●	●	●	●	Spark plug gap 0.5 ~ 0.6 mm (0.020 ~ 0.024")
	Ignition timing	○		○	○	○	
Drive system	Propeller	●	●	●	●	●	Checking for damage to blades
	Gear oil	Replacement ●	●	●	●	●	Checking for leaking in of water
Retighten bolts and nuts		○		○	○	○	
Outboard motor body		●	●	●	●	●	Checking for damage to exterior
Grease			●	●	●	●	Greasing

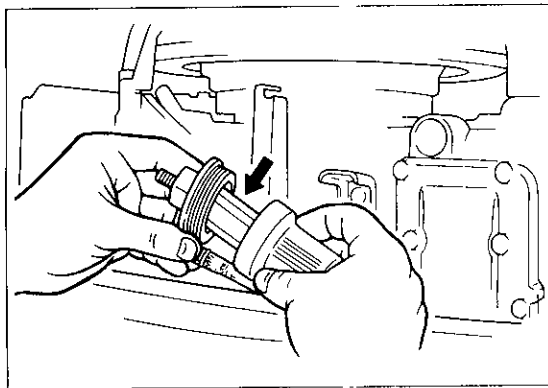
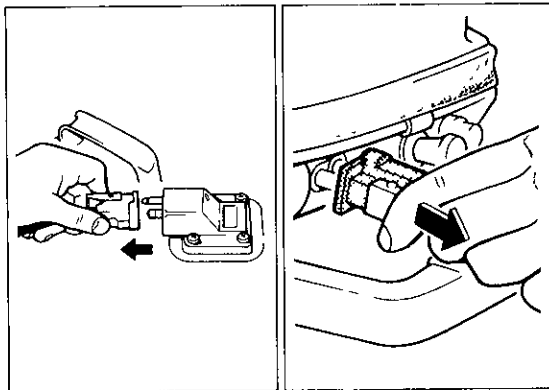
NOTE. The time intervals specified in this chart are based on general use and may vary depending on operating conditions

20CM/20CE/25DM/30AM



25DE/30AE





J 210

○ Fuel system

After operation, disconnect the fuel line linking the engine to the fuel tank and check for fuel leakage. If any fuel leakage is found, consult your Yamaha dealer

WARNING:

Failure to check for fuel leakage may result in fire or explosion

J-250

○ Cleaning the fuel filter

Remove the filter cup, remove the filter and wash it in suitable cleaning solvent. Blow it dry with compressed air.

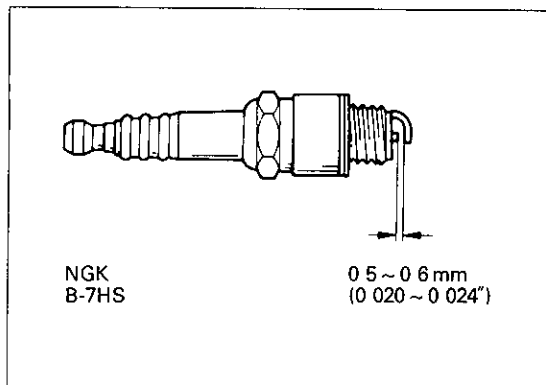
NOTE

Be careful not to lose the O-ring. Without the O-ring, fuel leakage may occur.

WARNING:

When cleaning the fuel filter be sure to stop the engine. Also refrain from smoking and keep away from open flames or sparks.

○ Electrical system

**WARNING:**

While starting or operating the engine, never touch the ignition coil, high-tension wire, spark plug cap, or any other electrical parts to which high voltage is applied

Checking spark plug

Use the specified spark plugs (B-7HS)

Check spark plugs periodically, and if the plug gap is larger than 0.5 to 0.6 mm (0.020 ~ 0.024 in), replace the spark plug

If carbon builds up on the spark plugs, decarbonize them with a wire brush

When installing a spark plug, first tighten it by hand until it stops and, using a spark plug wrench, tighten further about 1/4 turn

Do not overtighten

WARNING:

Make sure the engine is stopped when checking the spark plugs

WARNING:

When installing or removing a spark plug, be careful not to damage the insulator.

Replace any spark plug which shows signs of excessive wear or damage

J-360

Emergency stop switch

Keep the emergency stop switch in good working order. Before starting the engine, check the switch. If faulty, have it repaired by your nearest Yamaha dealer.

J 700

25DE/30AE

○ Installing the remote control system

Incorrect installation of the remote control system will immediately result in loss of control of the boat.

J 600

○ Replacement parts

Whenever the replacement of parts is necessary, be sure to use genuine Yamaha parts or equivalents of the same type and of equal strength and material. Any inferior quality part can malfunction and the resulting loss of control may endanger the operator and passengers.

J-400

○ Operation in turbid water

It is strongly recommended that the optional chrome-plated water pump kit be installed if the outboard is to be used in turbid water conditions.

J 450

○ Coating of the bottom of a boat

Avoid coating the boat bottom with anti-fouling paint containing copper. Such anti-fouling paint will corrode the engine faster.

J-510

○ Transportation of an outboard motor

• Transporting an outboard motor mounted on a boat

When transporting an outboard motor mounted on a boat, avoid tilting it up as the tilt up lock could be damaged by trailer vibration.

To protect the motor from damage, slightly raise the lower case off the ground by tilting the motor, and insert a piece of wood between the clamp and swivel brackets. Rope the lower case to the trailer so that it will not lift and the wooden piece will not fall off during transportation.

• Transporting an outboard motor not mounted on a boat

When transporting the engine, place it with the shift handle facing upward to protect the handle from damage.

OFF-SEASON STORAGE

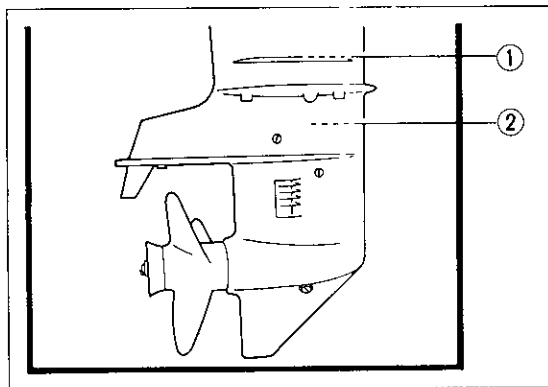
When storing your engine for a long period of time (for example, after the boating season is over), we recommend you have your engine checked by a Yamaha dealer

The following check-ups and service you may perform yourself

- Cooling system
 - Wash the cooling water passages with fresh water
- Fuel system
 - a Idle the engine until the carburetor is drained off
 - b Wash the fuel filter in suitable cleaning solvent
 - Refer to "Cleaning the fuel filter" in the "Periodic maintenance" section
- Lubrication system
 - a Replace the gear oil
 - b Add 5 to 10 cm³ of outboard motor oil through the spark plug holes in the cylinders
 - c Apply grease to the specified places

CAUTION:

For long periods of storage, the outboard motor should be placed on a stand or with its front facing downward
Avoid direct sunlight and humidity



K-110

○ **Cleaning the water intake passages**

- a Install the outboard motor on the water tank and add water up to above the anti-cavitation plate

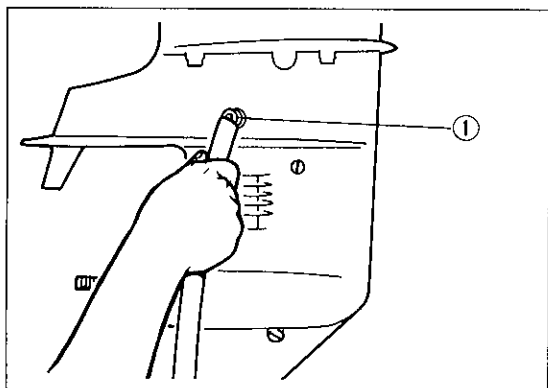
Next, shift into NEUTRAL, start the engine and run at low speed for a few minutes

CAUTION:

When the fresh water level is below the anti-cavitation plate or when water supply is insufficient, engine seizure may occur

① Water surface

② Lowest water level



- b Remove the screw located beside the "WASH" mark on the lower casing, install the water check plug (accessory), and connect it to a water faucet

① Water check plug

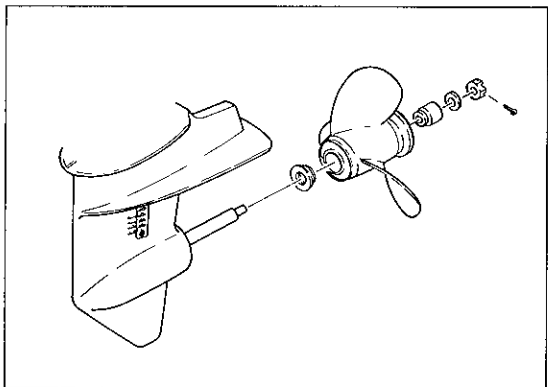
Next, shift into NEUTRAL, start the engine while supplying water, then run at low speed for a few minutes

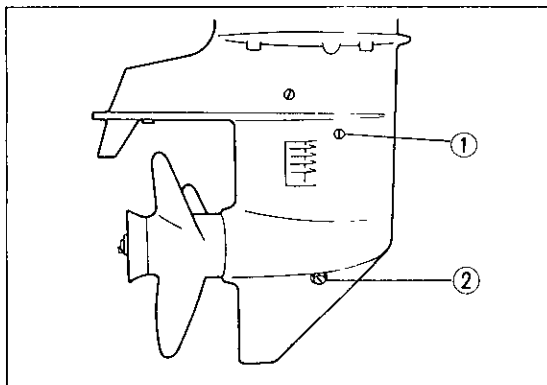
CAUTION:

Never operate the engine even momentarily without running cooling water. Either the water pump will become damaged or the engine will overheat. Before starting the engine, be sure to install the water check plug and feed water.

WARNING:

When using the water check plug, be sure to remove the propeller for safety.





K-300

○ **Draining the gear oil**

Place an empty oil can under the lower casing and remove the lower oil drain plug using a slotted-head screwdriver. Next, remove the upper oil level plug. With the outboard in an upright position, using a flexible or pressurized filling device, inject outboard motor hypoid gear oil SAE 90 into the lower oil drain plug hole. When the oil begins to flow out of the upper oil level plug hole, insert and tighten the plug. Next, screw in the lower oil drain plug.

CAUTION:

Replace the gear oil after the first 10 hours of operation and check the oil every 100 hours thereafter. If the gear oil becomes "milky," consult a Yamaha dealer.

① Oil level plug

② Oil drain plug

K-200

○ **Storage of the fuel tank**

When storing the fuel tank, thoroughly wash the tank interior and filter with suitable cleaning solvent and empty the fuel tank

WARNING:

Gasoline is highly inflammable and explosive.
Handle it with special care

20CE/25DE/30AE

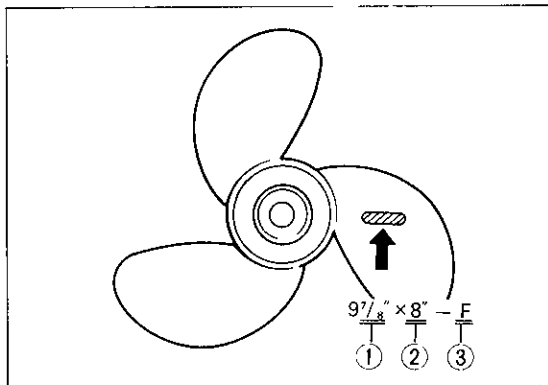
K 400

○ **Storage of the battery**

For battery storage, avoid places where open flames are present

CAUTION:

Follow the manufacturer's instructions on the battery



Z 540

1 $9\frac{7}{8}'' \times 8'' - F$
(251 mm $\times$ 203 mm)

2 $9\frac{7}{8}'' \times 9'' - F$
(251 mm $\times$ 229 mm)

3 $9\frac{7}{8}'' \times 10\frac{1}{2}'' - F$
(251 mm $\times$ 267 mm)

4 $9\frac{7}{8}'' \times 11\frac{1}{4}'' - F$
(251 mm $\times$ 286 mm)

5 $9\frac{7}{8}'' \times 13'' - F$
(251 mm $\times$ 330 mm)

6 $9\frac{7}{8}'' \times 14'' - F$
(251 mm $\times$ 356 mm)

L-010

PROPELLER SELECTION

The engine speed changes greatly depending on the propeller size and boat load. If the engine speed is extremely low or high, it will adversely affect the engine. Generally, a smaller-pitch type propeller is suitable for a greater load of operation, and a larger-pitch type for a smaller load. A list of propellers which can be used on your outboard motor is provided below. For the most suitable propeller, please consult your Yamaha dealer.

① Propeller diameter (in inches)

② Propeller pitch (in inches)

③ Type of bushing

WARNING:

When removing or installing the propeller, shift in to **NEUTRAL** and remove the spark plug caps. Otherwise, the engine may start suddenly resulting in a serious injury or accident. It is a good practice to insert a piece of wood between the anti-cavitation plate and the propeller to lock the propeller. This protects your hands from the propeller blades.



M-010

SUBMERGED MOTOR

An accidentally submerged motor must be completely overhauled as soon as possible. If not, rust and corrosion will develop. If your engine should be accidentally submerged, the following steps should be taken as emergency measures.

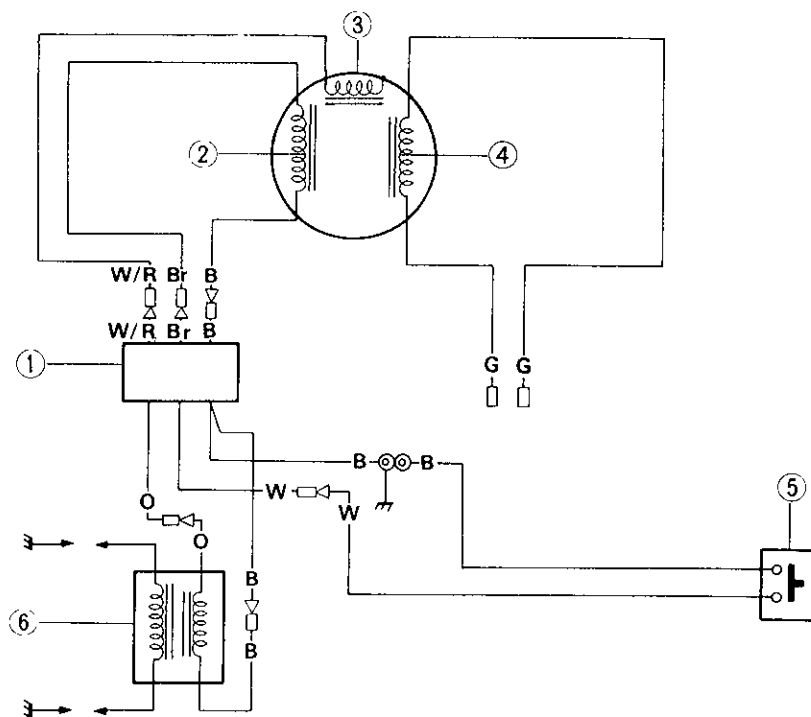
- 1) Bring the engine up out of the water as quickly as possible.
- 2) Wash it with fresh water. All salt, mud and seaweed should be completely removed.
- 3) Remove the spark plugs and drain the water from the cylinders through the spark plug holes. Also drain the carburetor and fuel line.
- 4) Pour engine oil into the motor through the spark plug holes and carburetor while turning the engine over repeatedly by operating the starter, so that oil spreads out over the surfaces of engine inner parts.
- 5) Have the engine overhauled by your Yamaha dealer as soon as possible.

TROUBLESHOOTING

Problem situations with your outboard motor can in most cases be prevented by ensuring proper, scheduled maintenance. Many problems result from careless handling and abuse. The situations listed and their possible causes are intended to assist the operator in identifying and rectifying such problems. Should you continue to experience any difficulties after following these procedures, please contact your Yamaha dealer.

- A The engine will not start
- B The engine runs irregularly or stalls
- C The engine idles roughly
- D The engine runs too fast
- E The engine runs too slow
- F The boat speed is too low

	A	B	C	D	E	F	Possible Cause
	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	Fuel tank is empty
	☐	☐	☐	☐	☐	☐	Fuel hoses are connected incorrectly.
	☐	☐	☐	☐	☐	☐	Fuel hose is flattened or kinked
	☐	☐	☐	☐	☐	☐	Fuel filter is clogged
	☐	☐	☐	☐	☐	☐	Fuel contains oil other than specified
	☐	☐	☐	☐	☐	☐	Spark plug is fouled or defective
	☐	☐	☐	☐	☐	☐	Spark plug is incorrect in heat range
	☐	☐	☐	☐	☐	☐	Cavitation takes place.
	☐	☐	☐	☐	☐	☐	Propeller is damaged
	☐	☐	☐	☐	☐	☐	Tilt pin position is incorrect
	☐	☐	☐	☐	☐	☐	Loads on boat are improperly distributed
	☐	☐	☐	☐	☐	☐	Transom is too low
	☐	☐	☐	☐	☐	☐	Transom is too high
	☐	☐	☐	☐	☐	☐	Propeller is incorrect in pitch or diameter
Models with electric starter	☐	☐	☐	☐	☐	☐	Starter motor is faulty
	☐	☐	☐	☐	☐	☐	Solenoid is faulty
	☐	☐	☐	☐	☐	☐	Wiring or wire connections are faulty
	☐	☐	☐	☐	☐	☐	Switch is faulty
	☐	☐	☐	☐	☐	☐	Battery is undercharged

20CM/25DM/30AM

B	Black
Br	Brown
G	Green
Gy	Gray
L	Blue
O	Orange
P	Pink
R	Red
Sb	Sky blue
W	White
Y	Yellow

① V 515
CDI unit

② V 535
Charge coil

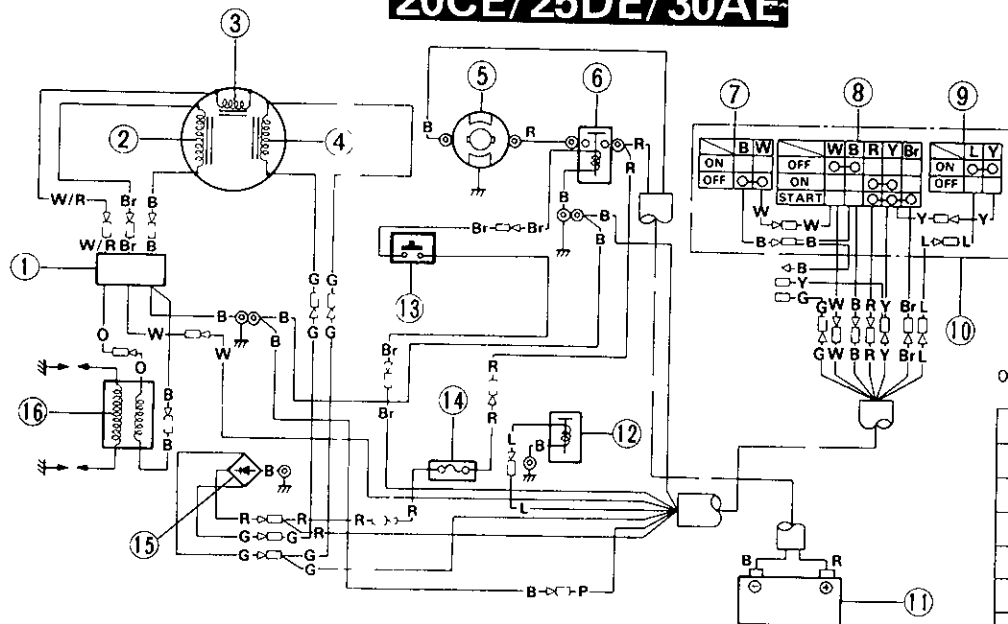
③ X 660
Pulser coil

④ W 820
Lighting coil

⑤ V 905
Emergency stop switch

⑥ W-505
Ignition coil

20CE/25DE/30AE



0 010

B	Black
Br	Brown
G	Green
Gy	Gray
L	Blue
O	Orange
P	Pink
R	Red
Sb	Sky blue
W	White
Y	Yellow

V 515
① CDI unit

V 905
⑦ Emergency stop switch

X-205
⑬ Neutral switch

V 535
② Charge coil

X 010
⑧ Main switch

W 235
⑭ Fuse (20A)

X 660
③ Pulser coil

V 577
⑨ Choke switch

X 800
⑮ Rectifier

W-820
④ Lighting coil

Y-390
⑩ Switch panel

W-50 5
⑯ Ignition coil

Y 315
⑤ Starting motor

V-235
⑪ Battery

Y-305
⑥ Starter relay

V 575
⑫ Choke solenoid



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