

21WA

YAMAHA

Marine

Outboards

704

**REMOTE CONTROL BOX
OPERATION MANUAL**

**MODE D'EMPLOI DE BOÎTIER
DE COMMANDE À DISTANCE**

リモートコントロール操作取扱説明書



YAMAHA MOTOR CO.,LTD.

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NOTICE

This remote control box is so designed that both shift and throttle can be actuated by operating the remote control lever. For the correct operation and installation of the remote control box, please read this manual carefully and thoroughly.

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 remote control system.

WARNING:

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

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

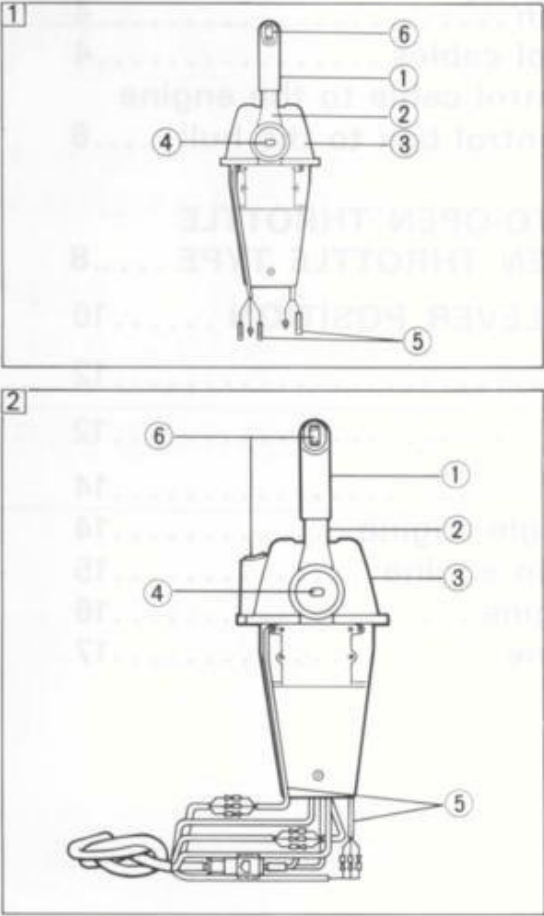
NOMENCLATURE

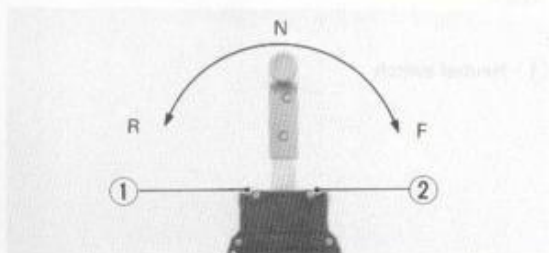
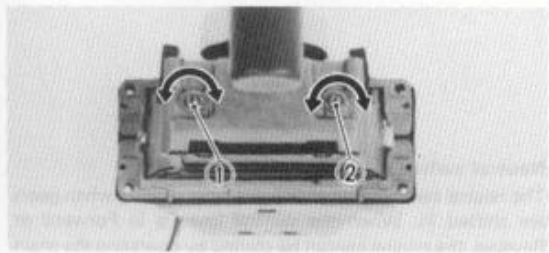
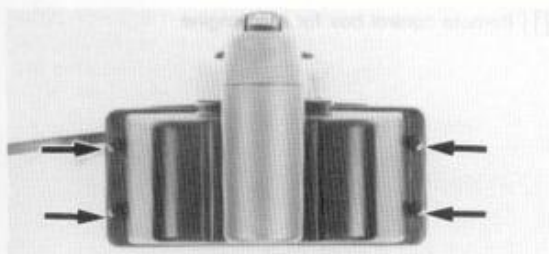
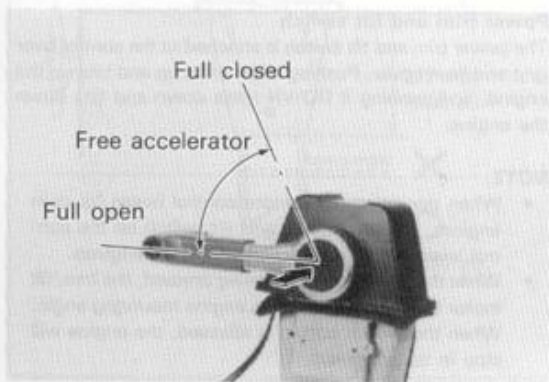
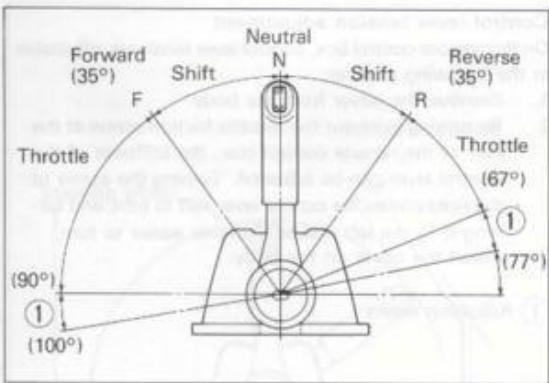
- ① Grip
- ② Control lever
- ③ Cover
- ④ Free accelerator button
- ⑤ Wire harness
- ⑥ Power trim and tilt switch

- ① Remote control box for single engine
- ② Remote control box for twin engine

NOTE:

Depending on the specification, some models are not equipped with the power trim and tilt switch.





OPERATION

Forward and reverse

To shift into forward and reverse, rotate the control lever downward about 35° (detent position) to the F side and R side, respectively. When the control lever is further rotated downward, the throttle opens.

① Throttle adjustable range

Free accelerator

Set the control lever to neutral (N) and while pushing the free accelerator button, rotate the control lever. The throttle can be opened without shifting into any gear.

NOTE:

The control lever must be rotated more than 35° from neutral; otherwise, the throttle cannot be opened.

CAUTION:

- It is impossible to operate the free accelerator button unless the control lever is in neutral.
- After operating the free accelerator button, set the control lever to neutral (N), and the free accelerator button will move automatically to its set position so that it can be freely turned to forward and reverse.

Throttle opening adjustment

The remote control box is capable of adjusting the throttle opening in the following manner:

- Loosen the four screws securing the cover and remove it from the body.
- Loosen the locknut, and adjust the throttle opening by turning the stopper bolt. Turning the bolt clockwise decreases the throttle opening. Turning the bolt counterclockwise increases the throttle opening.

① Stopper bolt on the reverse side

② Stopper bolt on the forward side

CAUTION:

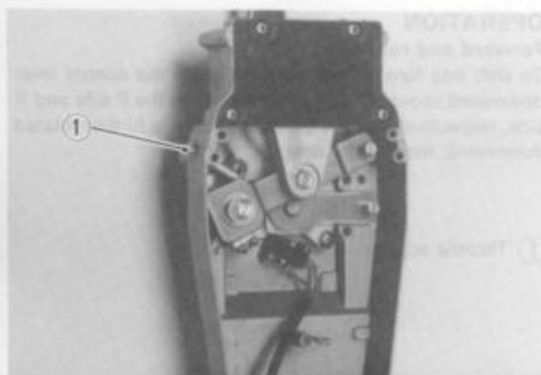
Do not allow the stopper bolt to project 8 mm (0.3 in) or more from the nut surface. Otherwise, the stopper contacts the cover.

- After adjusting, tighten the locknut.

TIGHTENING TORQUE:

5 ~ 8 Nm (0.5 ~ 0.8 m•kg, 3.6 ~ 5.8 ft•lb)

- Secure the cover to the body with the four screws.

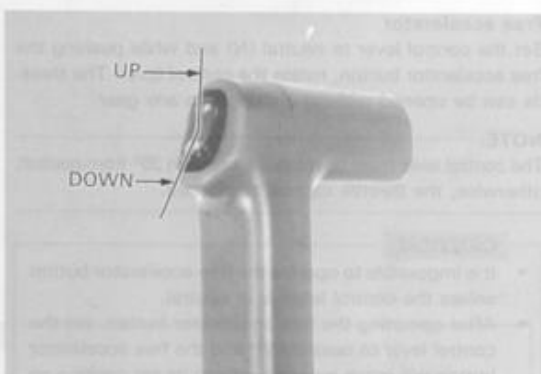


Control lever tension adjustment

On this remote control box, control lever tension is adjustable in the following manner:

1. Remove the cover from the body.
2. By turning in or out the throttle friction screw at the rear of the remote control box, the stiffness of the control lever can be adjusted. Turning the screw to the right makes the control lever stiff to turn, and turning it to the left makes the lever easier to turn.
3. Install the cover on the body.

① Adjusting screw

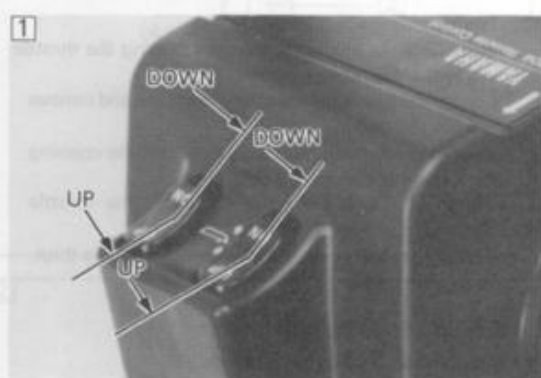


Power trim and tilt switch

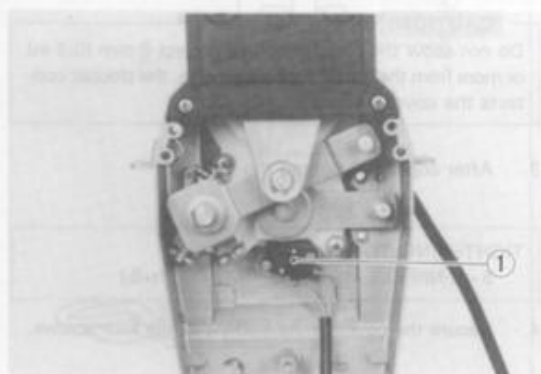
The power trim and tilt switch is attached to the control lever grip and twin cover. Pushing it UP trims up and tilts up the engine, and pushing it DOWN trims down and tilts down the engine.

NOTE:

- When operating the remote control boxes for twin engines, the power trim and tilt switch on the control lever grip is interlocked with both engines.
- While the switch button is being pressed, the trim/tilt motor turns and adjusts the engine mounting angle. When the switch button is released, the engine will stop in its position.



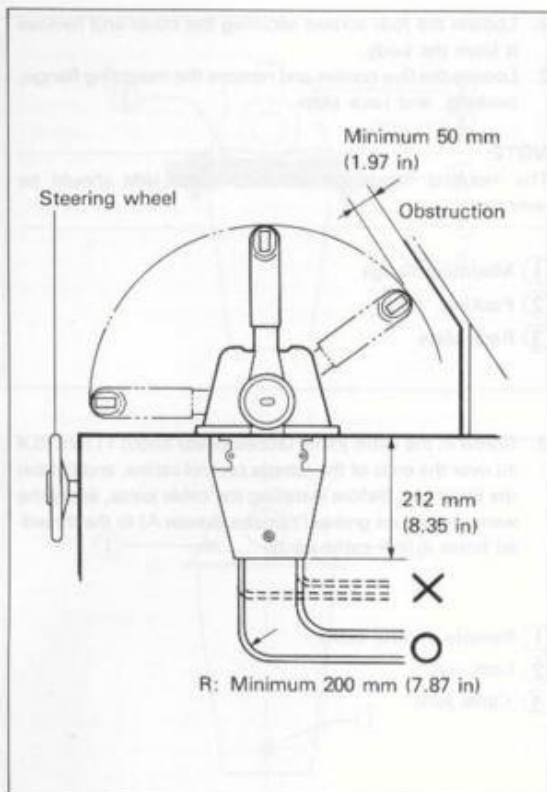
① Remote control box for twin-engine



Neutral switch

The neutral switch keeps the engine from starting when gears are shifted in. When the control lever is in Forward or Reverse, the engine cannot be started by operating the main switch.

① Neutral switch



INSTALLING THE REMOTE CONTROL BOX

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.

Remote control box position

Select the proper position for the remote control box, and stick the template on the selected position, then drill holes through it.

When selecting the control box position, keep the following in mind:

1. The remote control box should be set in a position in which it does not obstruct the operations of the control lever and switches. Make sure there is no obstruction on the path of the remote control cables.
2. Allow a space so that the bottom of the remote control box does not contact any other parts.
3. Provide a space so that the remote control cables can be routed without bending sharply. The radius of a cable bend should be more than 200 mm (7.87 in).

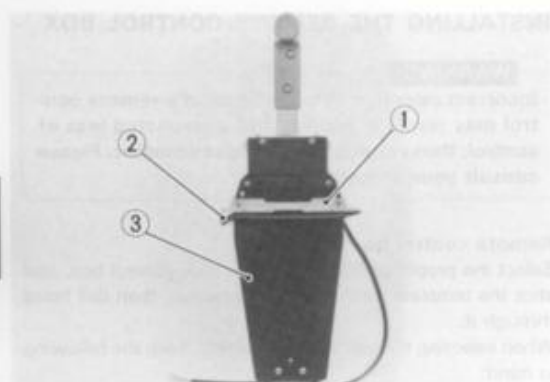
CAUTION:

Sharp bends (less than 200 mm (7.87 in) in radius) of the cables will obstruct a smooth movement of the cables and shorten cable life.

Installing the remote control cables

CAUTION:

Cable connection should be started first from the remote control box side. If started from the engine side, cable adjustment will be impossible in some cases.

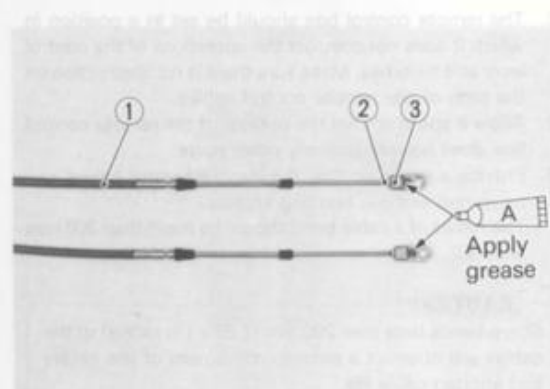


1. Loosen the four screws securing the cover and remove it from the body.
2. Loosen the five screws and remove the mounting flange, packing, and back plate.

NOTE:

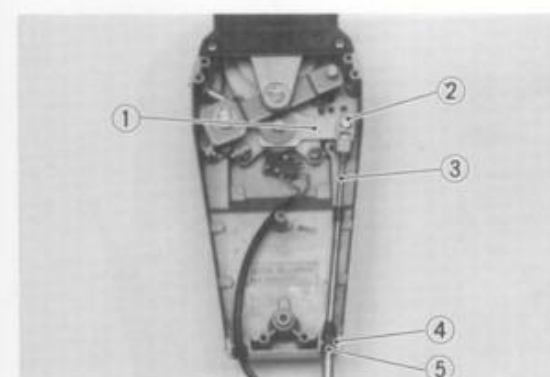
The mounting flange on the back plate side should be removed.

- ① Mounting flange
- ② Packing
- ③ Back plate



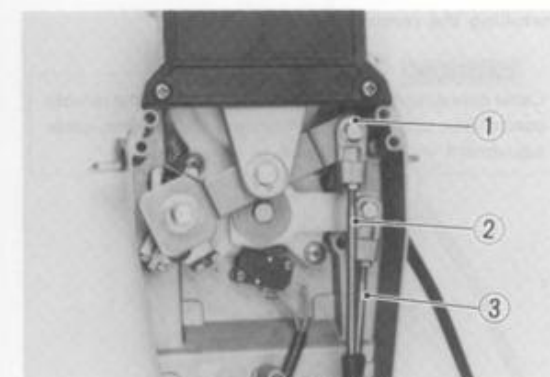
3. Screw in the cable joints (accessories) about 11 mm (0.4 in) over the ends of the remote control cables, and tighten the lock nuts. Before installing the cable joints, apply the water-resistance grease (Yamaha Grease A) to the threaded holes in the cable joints.

- ① Remote control cable
- ② Lock nut
- ③ Cable joint



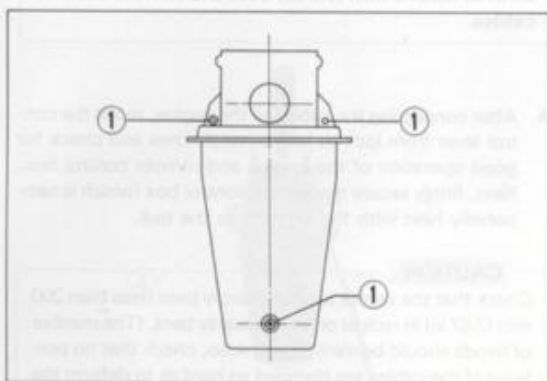
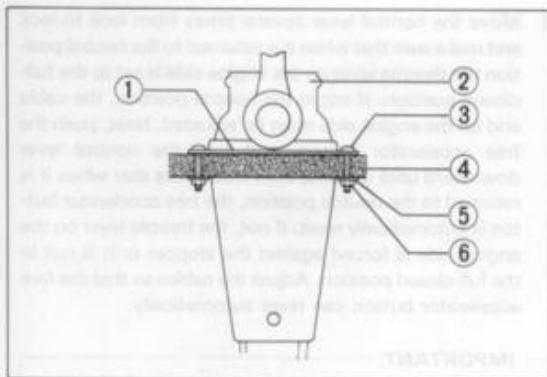
4. Insert the remote control cable outer for shifting into the housing clamp so that the groove on its end fits over the ridge in the clamp. Fit the cable joint over the pin on the end of the shift arm, and lock it with the circlip.
5. Fit the grommet (accessory) in the clamp groove.

- ① Shift arm
- ② Circlip
- ③ Remote control cable for shifting
- ④ Clamp groove
- ⑤ Grommet



6. Connect the remote control cable for the throttle to the throttle arm in the same manner.

- ① Circlip
- ② Remote control cable for throttle
- ③ Remote control cable for shifting



7. Hold the back plate and mounting flange firmly with the five screws, and fit the packing in place.
8. After installing the remote control cables, temporarily secure the remote control box to the predetermined position with the screws and nuts (accessories).

- | | |
|----------------------|----------|
| ① Packing | ④ Hull |
| ② Remote control box | ⑤ Washer |
| ③ Screw | ⑥ Nut |

9. Installing the remote control cables for twin engines. To install the remote control cables for twin engines, loosen the three screws securing the two remote control boxes and connect the cables in the same manner as in the case of the single engine model. After connecting the cables, secure the two remote control boxes with the three screws.

- ① Screw

Next, temporarily secure the remote control boxes to the predetermined position with the screws and nuts (accessories). Peel the paper off the back of packing, and adhere the packing to the boat hull so that the holes in the packing align with the remote control box mounting screw holes in the hull.

CONNECTING THE REMOTE CONTROL CABLE TO THE ENGINE AND FIXING THE REMOTE CONTROL BOX TO THE HULL

1. According to the instructions given in the respective owner's manuals of outboard motors, connect the remote control cables both for shifting and throttle and wire harness to the engine. When connecting, set the control lever to Neutral.
2. Operate the control lever a few times, check to see that the lever is turned to Forward or Reverse until it stops once (about 35°), the gear shifts, and that when the lever is turned further from this position to Forward, the throttle fully opens. Next, make sure that when the control lever is returned to Neutral, the throttle is completely closed. If not fully closed, adjust the positions of cable joints on the engine side, and install them again.

IMPORTANT:

The cable joints on the engine side must be screwed in at least 8 mm (0.3 in) over the remote control cables.

5. Move the control lever several times from lock to lock and make sure that when it is returned to the neutral position the throttle lever on the engine side is set to the full-closed position. If not in the neutral position, the cable end on the engine side must be adjusted. Next, push the free accelerator button, and turn the control lever downward until it stops, then make sure that when it is returned to the neutral position, the free accelerator button is automatically reset. If not, the throttle lever on the engine side is forced against the stopper or it is not in the full-closed position. Adjust the cables so that the free accelerator button can reset automatically.



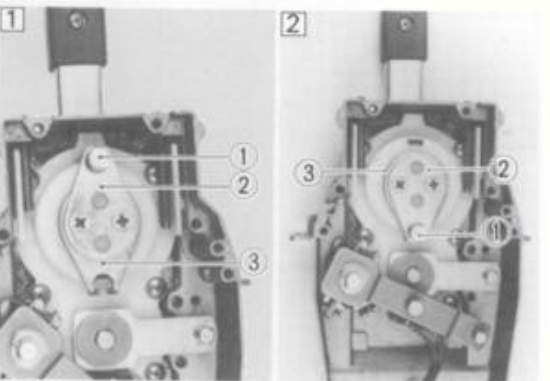
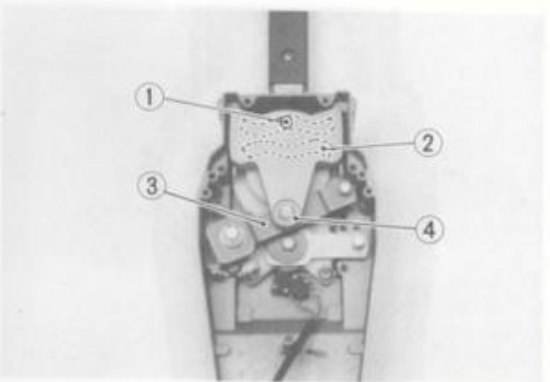
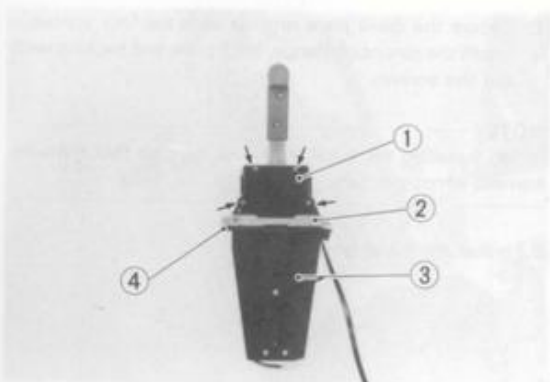
IMPORTANT:
The cable joints on the engine side must be screwed in at least 8 mm (0.3 in) over the remote control cables.

CAUTION:
Check that the cables are not sharply bent (less than 200 mm (7.87 in) in radius) or unnecessarily bent. (The number of bends should be minimized.) Also, check that no portions of the cables are clamped so hard as to deform the cable outers.

4. After connecting the cables to the engine, move the control lever from lock to lock several times and check for good operation of the engine and remote control box. Next, firmly secure the remote control box (which is temporarily held with the screws) to the hull.

5. Secure the cover to the body with the four screws.

6. Check the operation of the engine and remote control box.



CHANGE FROM THE PUSH-TO-OPEN THROTTLE TYPE TO THE PULL-TO-OPEN THROTTLE TYPE

The remote control box permits the change from the push-to-open throttle type to the pull-to-open type by changing some of the parts positions.

This manual discusses the procedure for changing from the push-to-open throttle type to the pull-to-open type. Therefore, if it has to be changed from the pull-to-open type to the push-to open type, simply reverse the procedure.

CAUTION:

When reinstalling parts, apply the water-resistant grease (Yamaha Grease A) to moving parts and contact surfaces of parts.

1. Remove the cover from the body.
2. Loosen the five screws and remove the mounting flange, packing and back plate.
3. Remove the four screws and remove the dwell plate retainer.

- 1 Dwell plate retainer 3 Back plate
- 2 Mounting flange 4 Packing

4. Remove the circlips and remove the dwell plate. Position the throttle arm assembly so that it turns downward.

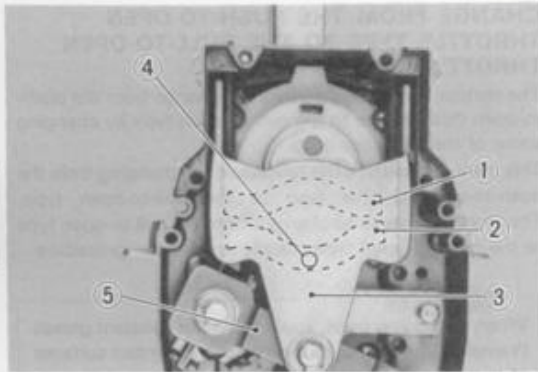
- 1 Roller 3 Throttle arm ass'y
- 2 Dwell plate 4 Circlip

5. Remove the two screws and remove the throttle lever assembly. Position the throttle lever assembly so that it faces downward and secure it with the two screws.

TIGHTENING TORQUE:
5 ~ 8 Nm (0.5 ~ 0.8 m•kg, 3.6 ~ 5.8 ft•lb)

- 1 Push-to-open throttle type
- 2 Pull-to-open throttle type

- 1 Roller
- 2 Throttle lever ass'y
- 3 Stopper



6. Align both the cam groove (for pull-to-open) in the dwell plate and the roller in the throttle lever assembly with the specific position, and lock the throttle arm assembly and dwell plate with the circlip.

NOTE:

Make sure the circlip are correctly fitted in place.

- | | |
|---------------------------|----------------------|
| ① Groove for push-to-open | ④ Roller |
| ② Groove for pull-to-open | ⑤ Throttle arm ass'y |
| ③ Dwell plate | |

IMPORTANT:

The cable points on the angles side must be adjusted to at least 5 mm (0.2 in) over the specified nominal.

7. Secure the dwell plate retainer with the four screws.
8. Install the mounting flange, back plate and packing with the five screws.

NOTE:

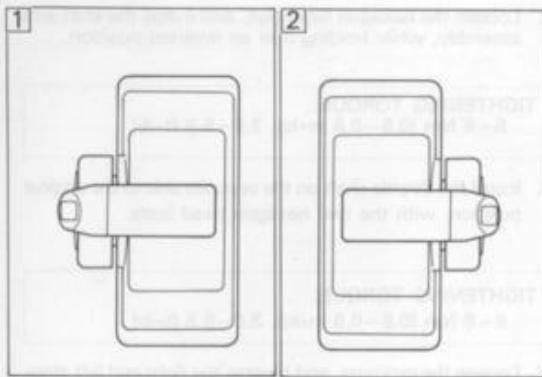
When installing the back plate, use care so that the wire harness is not pinched.

9. Install the cover on the body.

Check that the cable is not too tight. The cable should be adjusted so that it is not too tight. The cable should be adjusted so that it is not too tight. The cable should be adjusted so that it is not too tight.

10. Secure the cover of the body with the four screws.





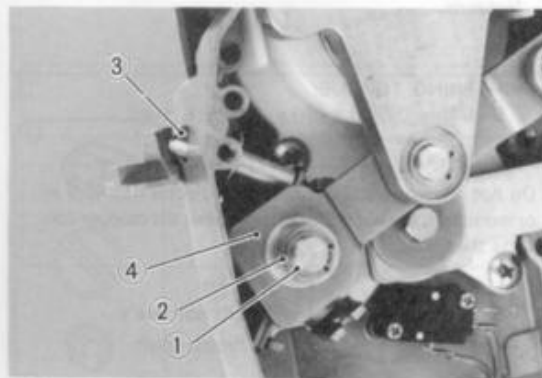
CHANGE IN THE CONTROL LEVER POSITION

WARNING:

When using the right hand remote control box as the left hand without changing the arrangement of the inner parts, do not forget that the control levers have to be moved in opposite directions to each other.

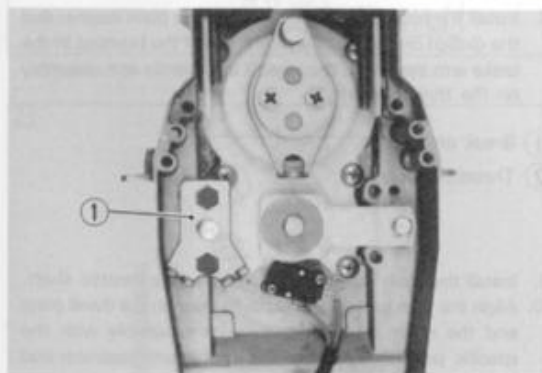
The remote control box permits to change the control lever position from the right side to the left side or vice versa.

- 1 Right hand remote control box
- 2 Left hand remote control box



1. Remove the cover, packing, mounting flange, back plate, and dwell plate out of the remote control box according to steps 1 to 4 on page 8.
2. Remove the circlip and plain washer from the throttle shaft, loosen the adjusting screw, and remove the throttle arm assembly and bushing.

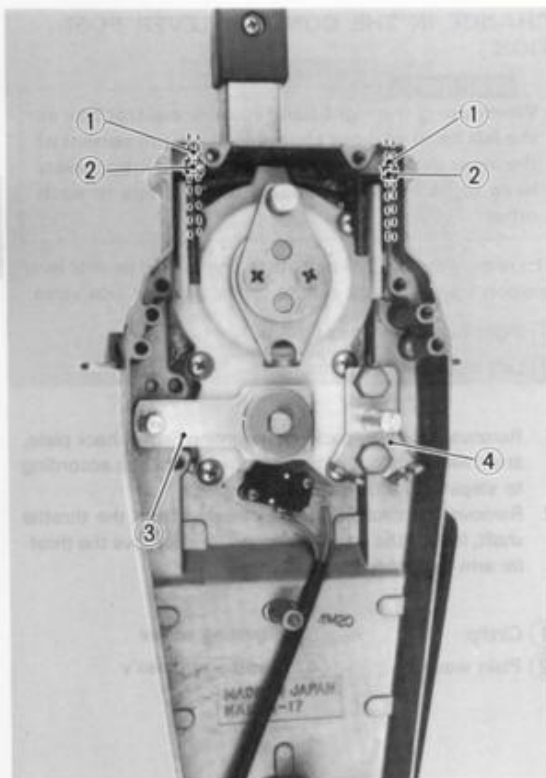
- 1 Circlip
- 2 Plain washer
- 3 Adjusting screw
- 4 Throttle arm ass'y



3. Remove the brake arm assembly, together with the plain washer and circlip.
4. Loosen the two hexagon head bolts and remove the throttle shaft.

- 1 Throttle shaft





5. Loosen the hexagon head bolt, and install the shift arm assembly, while holding it in an inverted position.

TIGHTENING TORQUE:
5 ~ 8 Nm (0.5 ~ 0.8 m•kg, 3.6 ~ 5.8 ft•lb)

6. Install the throttle shaft on the opposite side to the original position, with the two hexagon head bolts.

TIGHTENING TORQUE:
5 ~ 8 Nm (0.5 ~ 0.8 m•kg, 3.6 ~ 5.8 ft•lb)

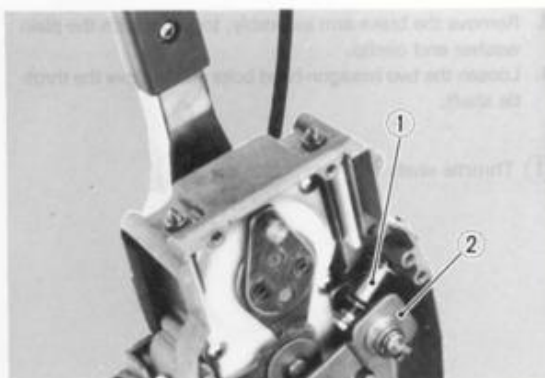
7. Loosen the locknuts, and reverse the right and left stopper bolt positions, and secure the bolts with the two locknuts.

TIGHTENING TORQUE:
5 ~ 8 Nm (0.5 ~ 0.8 m•kg, 3.6 ~ 5.8 ft•lb)

CAUTION:

Do not allow the stopper bolt to project 8 mm (0.3 in) or more from the nut surface. Otherwise, the stopper contacts the cover.

- | | |
|----------------|-------------------|
| ① Stopper bolt | ③ Shift arm ass'y |
| ② Lock nut | ④ Throttle shaft |



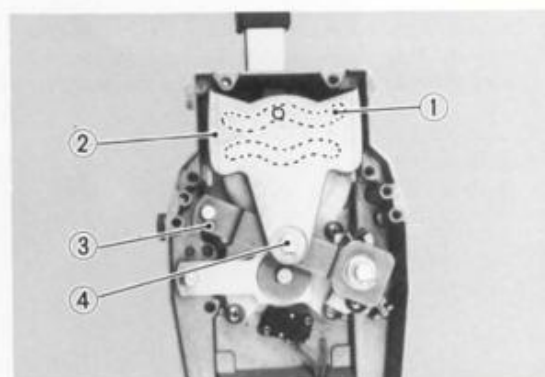
8. Install the brake arm assembly (with the plain washer and the circlip) on the throttle shaft, install the bushing in the brake arm assembly, then install the throttle arm assembly on the throttle shaft.

- | |
|----------------------|
| ① Break arm ass'y |
| ② Throttle arm ass'y |

9. Install the plain washer and circlip on the throttle shaft.
10. Align the cam groove (for push-to-open in the dwell plate and the roller in the throttle lever assembly with the specific position, and hold the throttle arm assembly and dwell plate with the circlip.

NOTE:

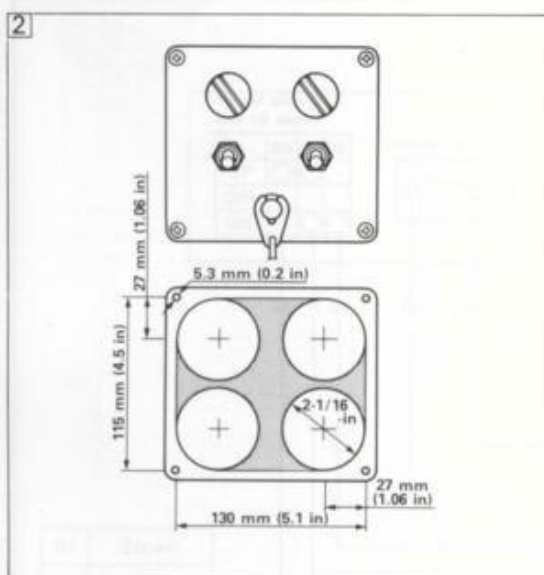
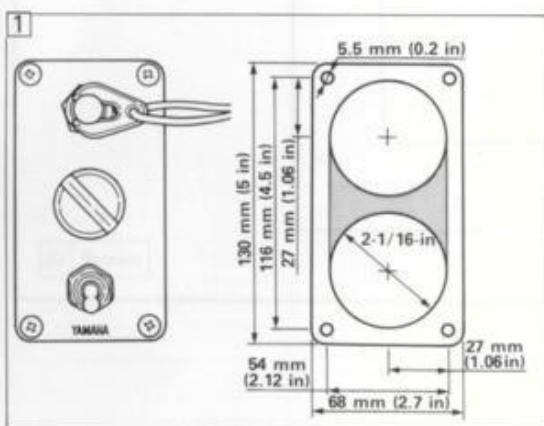
Make sure the circlip is correctly fitted in place.



- | | |
|---------------------------|----------------------|
| ① Groove for push-to-open | ③ Throttle arm ass'y |
| ② Dwell plate | ④ Circlip |

11. Install the dwell plate retainer, mounting flange, back plate, packing and cover according to steps 7 to 9 on page 9.

Remove the cable joints and apply water-resistant grease (Yamaha grease A) to the threaded portion of the inner cable.



NOTES ON STORAGE

To ensure a longer life of the remote control box, be sure to take the following steps when storing it for a long period of time.

- 1) Remove the cable joints and apply water-resistant grease (Yamaha grease A) to the threaded portion of the inner cable.
- 2) Also apply water-resistant grease (Yamaha grease A) to inner parts of the remote control box, particularly to contact surfaces of moving parts.
If any rust is found, remove it and apply the grease.
- 3) Avoid bending the cables into a loop as much as possible. But if they have to be looped, the loop diameter should be more than one meter (40 in).
- 4) Select a dry place for storage.

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.

- 1 Switch panel for single engine
- 2 Switch panel for twin engine

- 1) Cut a hole in the instrument panel as indicated in this mounting diagram. Using a 2-1/16-inch hole saw, make holes and then cut out the center portion as shown.
- 2) Connect the wire harness to the switch panel assembly, and pass it back through the hole.
- 3) Secure the switch panel assembly to the instrument panel with the bind screws, washers and nuts.