## 6-25 (2-CYCLE) OUTBOARD <br> - Steering Cable Installation <br> - Control Cable Installation <br> - Remote Wiring Harness Connection <br> - 20 Hp Jet Installation

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## Notice to Installer and Owner

This manual as well as safety labels posted on the outboard use the following safety alerts to draw your attention to special safety instructions that should be followed.

## A. DANGER

DANGER - Immediate hazards which WILL result in severe personal injury or death.

## A WARNING

WARNING - Hazards or unsafe practices which COULD result in severe personal injury or death.

## A CAUTION

CAUTION - Hazards or unsafe practices which could result in minor injury or product or property damage.

## Boat Horsepower Capacity

| U.S. COAST GUARD CAPACITY |  |
| :--- | :--- |
| MAXIMUM HORSEPOWER xxx <br> MAXIMUM PERSON  <br> CAPACITY (POUNDS)  | xxx |
| MAXIMUM WEIGHT <br> CAPACITY | xxx |

Do not overpower or overload your boat. Most boats will carry a required capacity plate indicating the maximum acceptable power and load as determined by the manufacturer following certain federal guidelines. If in doubt, contact your dealer or the boat manufacturer.

## A WARNING

Using an outboard that exceeds the maximum horsepower limit of a boat can: 1. cause loss of boat control 2. place too much weight at the transom altering the designed flotation characteristics of the boat or 3. cause the boat to break apart particularly around the transom area. Overpowering a boat can result in serious injury, death, or boat damage.

## Outboard Remote Control

The remote control connected to your outboard must be equipped with a start-in-gear protection device. This prevents the engine from starting when the outboard is in gear.

## A WARNING

Avoid serious injury or death from a sudden unexpected acceleration when starting your engine. The design of this outboard requires that the remote control used with it must have a built in start-in-gear protection device.

## Selecting Accessories For The Outboard

Genuine Mercury Marine Quicksilver Accessories have been specifically designed and tested for your outboard.

Mercury Marine Quicksilver accessories are available from Mercury Marine dealers.

Some accessories not manufactured or sold by Mercury Marine are not designed to be safely used with your outboard or outboard operating system. Acquire and read the installation, operation, and maintenance manuals for all your selected accessories.

## A WARNING

Check with your dealer before installation of accessories. The misuse of acceptable accessories or the use of unacceptable accessories can result in serious injury, death, or product failure.

## 6-15 HP Outboard

Refer to Outboard Operation and Maintenance Manual for instructions on outboard installation on boat.

## Ride-Guide Steering Cable Installation To the Outboard

Install steering mount and steering wheel in accordance with installation instructions that accompany each.

IMPORTANT: Steering cable must be correct length. Sharp bends on too-short of a cable result in "kinks;" too-long of a cable require unnecessary bends and/or loops. Both conditions place extra stress on the cable.

1. Refer to "Quicksilver Accessories Guide" to determine correct length of steering cable.
IMPORTANT: Before installing steering cable into tilt tube, lubricate entire cable end with Quicksilver 2-4-C w/Teflon Marine Lubricant (92-825407A12).
2. Lubricate seal inside of outboard tilt tube and entire cable end (b) with Quicksilver 2-4-C w/Teflon Marine Lubricant.
3. Insert steering cable end thru outboard tilt tube and secure steering cable to tilt tube with steering cable attaching nut as shown. Torque nut to 35 lb . ft . (47.5 N•m).


53400
a - Cable End
b - Attaching Nut [Torque to 35 lb . ft. ( $47.5 \mathrm{~N} \cdot \mathrm{~m}$ )].
4. Place a mark on tilt tube $5 / 8 \mathrm{in}$. ( 15.9 mm ) from port end of tube. Slide plastic spacer, o-ring and cap over steering cable end, to tilt tube on engine.

a - Mark
b - Spacer
c - O-ring
d - Cap
5. Thread cap onto tilt tube up to mark.

a - Cap
b - Mark
6. Secure steering bracket to engine.

a - Steering Bracket
b - Bolt (2)
c - Flat Washer (2)
d - Locknut (2) [Torque to 140 lb in . (15.8 N.m)]
a - Steering Bracket
53398
7. Secure steering link rod between engine steering bracket and steering cable end.

a - Steering Link Arm
b - Ball Joint (Flat End Facing Up)
c - Steering Bracket
d - Spacer [3/8 in. (9.5mm)]
e - Rubber Spacer
f - Flat Washer [13/16 in. (20.6mm)]
g - Locknut [Torque to $20 \mathrm{lb} . \mathrm{ft} .(27.1 \mathrm{~N} \cdot \mathrm{~m})$ ]

## Quicksilver Lubrication/Sealant Application Points

首 A Do $2-4-\mathrm{C}$ w/Teflon (92-825407A12)
h - Flat Washer [5/8 in. (15.9mm)] (2)
i - Spacer
j - Locknut. Tighten Until Nut Seats. Do Not Exceed 120 lb. in. (13.6 N•m), Then Back Off 1/4-Turn

## Shift and Throttle Cable Installation to Outboard

IMPORTANT: Install control cables to remote control and mount control BEFORE attaching control cables to outboard.

Install throttle and shift cables to remote control and mount control as outlined in installation instructions which accompany the remote control.

NOTE: Attach shift cable to outboard first. Shift cable is the first cable to move when remote control handle is advanced from NEUTRAL position toward in-gear position.

Refer to "Quicksilver Accessories Guide" to determine correct length of remote control cables.
IMPORTANT: Remote control cables MUST BE THE CORRECT LENGTH. Sharp bends on tooshort cables result in "kinks". Too-long cables require unnecessary bends and/or loops. Both conditions place extra stress on the cables and control.

## INSTALLING CABLE RETAINERS ON CABLES

1. Slip cable retainer over the threaded metal end of control cables.

a - Retainer
2. Push cable retainer onto control cables so that the pointed ends are on the top side of hole.
3. Rotate cable retainer $90^{\circ}$ to position end of retainer over hole.

a - Retainer
b - Pointed Ends
c - Hole
4. Install sta-straps on control cables.

NOTE: Sta-straps will prevent retainers from slipping off cables whenever cables are removed from engine.

5. Place end of control cables on anchor pins and lock in place with retainers.

a - Pin

## SHIFT CABLE INSTALLATION

1. If remote control has a NEUTRAL lock release, secure the release in the depressed position using a piece of tape. The true NEUTRAL detent can now be located.

## A WARNING

To avoid accidental starting which could result in personal injury, remove and isolate high tension spark leads BEFORE working near propeller.


53258
a - Neutral Lock Release
b - Tape
2. Wrap rubber control cable grommet around shift cable.

a - Grommet
b - Cable
3. Push grommet with cable into opening in starboard bottom cowl.

a - Grommet
4. Manually shift outboard into NEUTRAL position (propeller will rotate freely in both directions).
5. Adjust barrel on shift cable to attain the same distance between barrel and hole in end of shift cable as exists between barrel recess of control cable anchor bracket and shift lever pin.
6. Slip barrel into barrel recess. Place end of shift cable on shift lever pin and lock in place with cable retainer. Secure barrel after throttle cable is installed.


53253
a - Barrel
b - Pin
c - Retainer
7. Check shift cable adjustment as follows:
a. Shift remote control into "FORWARD" gear. The propeller should not be able to rotate in a counterclockwise direction. If propeller does rotate counterclockwise, adjust barrel closer to end of cable and recheck.
b. Shift remote control into "NEUTRAL". Propeller should turn freely without drag. If not, adjust barrel away from end of cable and repeat STEPS "a" and "b".
c. While rotating propeller shaft, shift remote control into "REVERSE" gear. If propeller can be rotated, adjust barrel away from end of cable and repeat STEPS "a" through "c".
d. Shift remote control into "NEUTRAL". Propeller should turn freely without drag. If not, adjust barrel closer to end of cable and repeat STEPS "a" through "d".

## THROTTLE CABLE INSTALLATION

NOTE: For easier installation of throttle cable into control cable grommet, apply a soap and water solution to top and inside of grommet.

1. Install throttle cable into control cable grommet.

a - Throttle Cable
b - Grommet
2. Move remote control handle FORWARD to wide-open-throttle position.
3. Slide barrel of throttle cable into barrel recess of control cable anchor bracket. Place end of cable on throttle lever pin.
4. With remote control in the wide-open-throttle position, a $1 / 16 \mathrm{in}$. ( 1.6 mm ) gap must exist between guide of anchor bracket and control cable end. Adjust throttle barrel as required.
5. Secure throttle cable end to throttle lever pin with retainer.

a - Barrel
b - Throttle Lever Pin
c - 1/16 in. (1.6mm) Gap
d - Guide
e - Cable End
f - Retainer

## SPECIAL INSTRUCTIONS

On installations where control cables will frequently be removed and reinstalled after the initial installation (i.e. inflatable boats), a barrel retaining plug has been supplied as an aid for installation. Using this plug allows the control cables to installed as a set without further cable adjustment. Install barrel retaining plug as follows:

1. Without allowing barrels of control cables to rotate, remove cables with cable grommet from outboard.
2. Install barrel retainer plug between control cable barrels.

a - Barrel Retainer Plug
b - Control Cable Barrels
3. Wrap cable grommet around control cables.

a - Grommet
b - Control Cables
4. Push grommet with control cables into opening in starboard bottom cowl.

a - Grommet
5. Place remote control in NEUTRAL position.
6. Manually shift outboard into NEUTRAL position.
7. Slide control cable barrels into barrel recess of anchor bracket.
8. Place ends of control cables onto pins of shift/ throttle levers and lock in place with cable retainers.

[^0]
## SECURING CABLES TO ANCHOR BRACKET

1. Position barrel retainer over barrels of control cables.

a - Retainer
b - Barrels
2. Secure barrel retainer with latch. Latch must snap onto barrel retainer.

a - Retainer
b - Latch
3. Align hole in latch with hooks of barrel retainer and secure with latch pin.

[^1]
## THROTTLE LINK ROD INSTALLATION

1. Adjust throttle link rod to a length of $8-1 / 2$ in. $(21.6 \mathrm{~cm})$ as measured between ball joint centerlines.
2. Install throttle link rod between ball joint of throttle control lever and ball joint of actuating lever.


## Remote Wiring Harness Connection to Engine

1. Apply Quicksilver Dielectric Grease inside the connection.
2. Plug the remote wiring connector into the outboard wiring harness connector. Secure the connection together with retainer, as shown.

a - Remote Wiring Connector
b - Outboard Wiring Harness Connector
c - Retainer
d - Quicksilver Dielectric Grease

## 20-25 HP Outboard

Refer to Outboard Operation and Maintenance Manual for instructions on outboard installation on boat.

## Ride-Guide Steering Cable Installation To the Outboard

Install steering mount and steering wheel in accordance with installation instructions that accompany each.
IMPORTANT: Steering cable must be correct length. Sharp bends on too-short of a cable result in "kinks;" too-long of a cable require unnecessary bends and/or loops. Both conditions place extra stress on the cable.

1. Refer to "Quicksilver Accessories Guide" to determine correct length of steering cable.
IMPORTANT: Before installing steering cable into tilt tube, lubricate entire cable end with Quicksilver 2-4-C w/Teflon Marine Lubricant (92-825407A12).
2. Lubricate seal inside of outboard tilt tube and entire cable end (b) with Quicksilver 2-4-C w/Teflon Marine Lubricant.
3. Insert steering cable end thru outboard tilt tube and secure steering cable to tilt tube with steering cable attaching nut as shown. Torque nut to 35 lb . ft . $47.5 \mathrm{~N} \cdot \mathrm{~m}$ ).

a - Cable End
b - Attaching Nut [Torque to 35 lb . ft. ( $47.5 \mathrm{~N} \cdot \mathrm{~m}$ )].
4. Place a mark on tilt tube $5 / 8 \mathrm{in}$. $(15.9 \mathrm{~mm})$ from port end of tube. Slide plastic spacer, o-ring and cap over steering cable end, to tilt tube on engine.

5. Thread cap up to the $1 / 4 \mathrm{in}$. $(6.4 \mathrm{~mm})$ mark.

a - Cap

IMPORTANT: The steering link rod that connects the steering cable to the engine must be fastened using special washer head bolt ("a" - Part Number 10-14000) and self locking nuts ("b" \& "c" Part Number 11-34863). These locknuts must never be replaced with common nuts (non locking) as they will work loose and vibrate off freeing the link rod to disengage.

## A. WARNING

Disengagement of a steering link rod can result in the boat taking a full, sudden, sharp turn. This potentially violent action can cause occupants to be thrown overboard exposing them to serious injury or death.
6. Assemble steering link rod to steering cable with two flat washers (d) and nylon insert locknut ("b" - Part Number 11-34863). Tighten locknut (b) until it seats, then back nut off $1 / 4$ turn.
7. Assemble steering link rod to engine with special washer head bolt ("a" - Part Number 10-14000) and nylon insert locknut ("c" - Part Number 11-34863). First torque bolt (a) to 20 lb . ft. (27.1 $\mathrm{N} \cdot \mathrm{m}$ ), then torque locknut (c) to 20 lb . ft. (27.1 $N \cdot m$ ).


## A WARNING

After installation is complete (and before operating outboard), check that boat will turn right when steering wheel is turned right and that boat will turn left when steering wheel is turned left. Check steering thru full range (left and right) and at all tilt angles to assure interference-free movement.

## Remote Wiring Harness Connection To The Engine

1. Remove wire retainer (a) from the bottom cowl.

2. Position the remote wiring harness and battery cables thru the bottom cowl rubber grommet (b) as shown.
3. Plug the remote wiring harness (c) into the engine wiring harness connector (d).
4. Secure the connection together using retainer(e).

5. Fasten the remote wiring harness and battery cables into the bottom cowl rubber grommet with retainer (f).


## Shift and Throttle Cable Installation To The Outboard

Install the shift cable and throttle cable into the remote control and mount the remote control following instructions which are provided with the remote control.
NOTE: Install the shift cable before the throttle cable. The shift cable is the first cable to move when the remote control handle is moved into gear.

## Shift Cable Installation

1. Move the remote control handle into full reverse position.
2. Place the engine shift lever (a) into reverse position (toward rear) while rotating propeller. The propeller shaft will not rotate in either direction when in reverse position.
3. Open up the cable retainer cover (b) and remove the barrel holder and front rubber grommet.
4. Install the shift cable (c) onto the shift lever pin (d). lock in place with retainer latch (e).
5. Adjust the shift cable barrel so it will fit into the bottom hole of the barrel holder (f)and that the barrel holder will slide freely into the retaining pocket without pre-loading the shift cable.

6. Check shift cable adjustments as follows:
a. With remote control shifted into forward the propeller shaft should lock solidly in gear. If it does not, adjust the cable barrel closer to the engine shift lever.
b. Shift remote control into neutral. The propeller shaft should turn freely without drag. If not, adjust the barrel away from the engine shift lever. Repeat steps a and b.
c. Shift remote control into reverse while turning the propeller shaft. The propeller shaft should lock solidly in gear. If not, adjust the barrel away from the engine shift lever. Repeat steps a thru c.
d. Return remote control handle to neutral. The propeller shaft should turn freely without drag. If not, adjust the barrel closer to the engine shift lever. Repeat steps a thru d.

## Throttle Cable Installation

NOTE: Attach Shift cable to engine prior to attaching throttle cable.

1. Position the remote control handle forward, to wide-open-throttle position.
2. Install the throttle cable (a) onto the throttle pin (b). lock in place with retainer latch (c).
3. Move throttle lever (i) until tab (e) contacts throttle stop (f). Adjust the barrel on the throttle cable so that the barrel will fit into the barrel holder (d).
4. Slip the barrel into the barrel holder and place the barrel holder into the retaining pocket.
5. Check the throttle cable adjustment as follows.
a. Move the remote control handle back to neutral a few times and then return the handle back to forward wide-open-position.
b. Recheck to make sure tab (e) is contacting throttle stop (f).

6. Place the rubber seal (" $g$ " side with holes towards front)) onto the control cables and install control cables, barrel holder and rubber seal into the cable holder as shown.
7. Lock the barrel holder in place with the cable retainer latch (h).


## 20 Hp Jet Installation

## Selecting A Boat That Is Best Suited For Jet Power

To obtain the best performance from the jet drive, the boat should have the following features:

1. The boat should be as light as possible.
2. The boat should have hull and transom that is designed for use with a jet drive.
3. The boat should be at least 13 feet in length.

## Engine Horsepower Selection

A boat operating at slow speed requires considerably more depth than one which is planing on the surface of the water. It is important therefore to use sufficient horsepower and not to overload your boat beyond its ability to plane. See the following table.

## Engine Horsepower Selection

The following table is based on experience obtained with sledtype boats using outboard jets. The gross weights shown includes the outboard, boat, people, and all the gear carried. For a given horsepower loading beyond these weights will give less than good performance.


## Transom Height Of The Boat

Outboards with jet drives will be mounted approximately 7 inches higher on the transom than propeller driven outboards. This requires outboards that have a 15 in . shaft length to be installed on boats having a 22 in. transom height and outboards that have a 20 in. shaft length to be installed on boats having a 27 in . transom height.
If the boat transom is of insufficient height, and the outboard cannot be installed to the recommended height, contact the boat manufacturer for recommended procedure to build up the boat transom.

## Locate Center Line Of The Outboard

Locate (and mark with pencil) the vertical centerline (a) of boat transom.

a - Centerline of Transom

## Outboard Mounting Height

The initial outboard mounting height setting will work good for most applications, however, because of different boat/hulls designs, the setting should be rechecked by test-running the boat. Refer to Water Testing.

- Installing the outboard too high on the transom will allow the water intake to suck in air and cause cavitation. (cavitation will cause the engine to overspeed in spurts and reduce thrust). This condition should be avoided by proper height setting.
- Installing the outboard too low on the transom will allow excessive drag.


## SETTING OUTBOARD MOUNTING HEIGHT ON BOATS WITH "V" BOTTOM HULLS

1. Measure the width of the leading edge on the water intake housing. Make a horizontal line (a) on the transom up from the " V " bottom the same length as the width of the water intake housing (b).

2. Place (center) the outboard on the boat transom so that the transom brackets are resting on top of the transom. Temporality fasten the outboard to the transom using two C-clamps.
3. Position the outboard in a vertical position.
4. Line-up a straight edge (c) along the bottom of the boat with the horizontal line made in Step 1 and measure the distance between the horizontal line and top front edge of the water intake housing (d).

5. Raise The outboard up on the transom the distance measured in Step 4. Use a straight edge and recheck the mounting height. The top edge of the water intake housing should be lined-up with the horizontal line made in Step 1.

6. Fasten outboard to the transom at this height. Refer to the Outboard Operation and Maintenance Manual for instructions on securing outboard to the transom.

## SETTING OUTBOARD MOUNTING HEIGHT ON BOATS WITH FLAT BOTTOM HULLS

1. Place (center) the outboard on the boat transom so that the transom brackets are resting on top of the transom. Temporary fasten the outboard to the transom using two C-clamps.
2. Position the outboard in a vertical position.
3. Place a straight edge (a) along the bottom of the boat as shown and measure the distance between the bottom of the boat and top front edge of the water intake housing (b).

4. Raise The outboard up on the transom the distance measured in Step 3. Use a straight edge and recheck the mounting height. The top edge of the water intake housing should be in line with the bottom of the boat as shown.

5. Fasten outboard to the transom at this height. Refer to the Outboard Operation and Maintenance Manual for instructions on securing outboard to the transom.

## Water Testing

## Checking for Cavitation

Making the initial outboard height setting should be close to the optimum setting for the outboard. However because of the hull design of some boats, obstructions or imperfections in the hull ahead of the water intake may require this setting to change in order to prevent cavitation at running speeds.
When operating the boat, the outboard drive shaft housing should be vertical when planing or tilted toward the boat in order to provide a scooping angle on the water intake. Tilting the outboard out beyond a vertical position reduces the scoop angle and can cause impeller slippage and cavitation.

IMPORTANT: If the angle of the boat transom does not allow the drive shaft housing to be positioned vertical, a Wedge kit should be installed behind the transom brackets to increase the tilt-in angle.

NOTE: Slight cavitation in sharp turns and rough water is acceptable but excessive cavitation is harmful to the outboard and should be avoided.

Test run the boat. If cavitation occurs (air enters the pump), the first thing to try is lowering the outboard height $1 / 4 \mathrm{in}$. This can be accomplished by elongating the drilled mounting holes in the boat transom by $1 / 4$ in.

If cavitation still exists after lowering the outboard $1 / 4$ in, it maybe helpful to seek advice from the boat manufacturer.

A number of other options are available to further reduce cavitation.

1. Water intake fin kit (a) - Available from Quicksilver Accessories for the jet 20. The purpose of these fins is to ram more water into the intake and shield the forward sides of the intake from the entrance of air. This kit will help reduce cavitation when running with the wind in a chop.

a - Intake Fin Kit (Part No. 62-809864A1)
Continued on next page

## Water Testing

## Checking for Cavitation (Continued)

2. Rough Water Plate (b) - Using this type of plate may be helpful in reducing cavitation when running in windy rough water conditions where air is sucked-in the water intake when jumping waves. Install a $1 / 32$ in. metal plate that extends from the hull bottom to the top of the water intake housing. This plate tends to reduce air intake as well as reduce spray.


Shift Link Rod Adjustment

a - Shift Link Rod
b - Shift Cam
c - Roller
d - Reverse Gate

## A WARNING

The shift link rod must be adjusted to lock the reverse gate against unexpected engagement (caused by water pressure hitting the gate) while operating the boat in forward. Activation of the reverse gate will cause sudden unexpected stopping of the boat. Sudden stopping may cause occupants to be thrown within the boat or even out of the boat. This action may result in serious injury or death.

## Checking Shift Link Rod Adjustment

1. Check the shift link rod (a) adjustment in forward shift position. The correct adjustment will position the shift cam (b) far enough on the roller (c) in order to lock the the reverse gate (d) into forward position. You should not be able to forcibly push up the reverse gate toward neutral. Pull on the reverse gate by hand to verify this.

## Adjusting Shift Link Rod

1. Place the shift handle into full forward shift position.
2. Adjust the length of the shift link rod (a) so that roller (c) is at the full end of travel (bottom) in the shift cam (c) when the shift handle is in full forward.

[^0]:    a - Control Cable Barrels (2)
    b - Shift Cable/Lever
    c - Throttle Cable/Lever
    d - Cable Retainers

[^1]:    a - Latch
    b - Retainer
    c - Pin

