

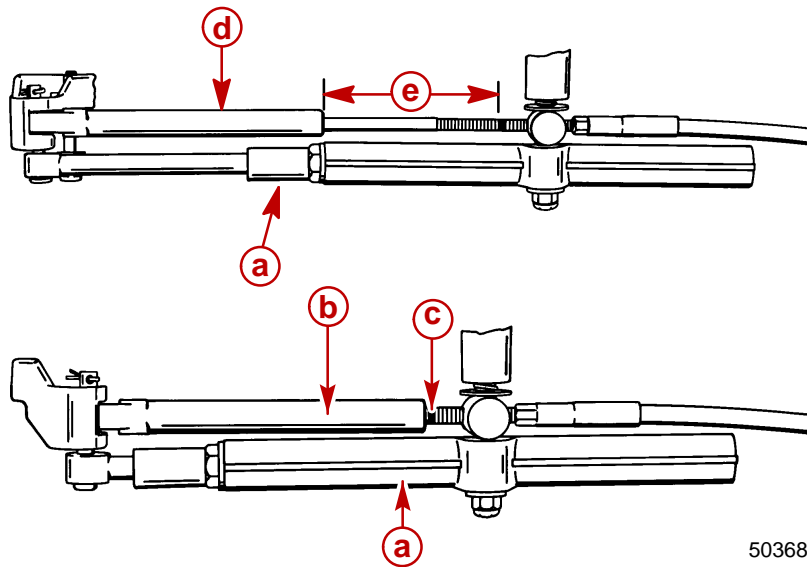
Shift Cable Installation

Alpha Models - Drive Unit Not Installed

We recommend the use of a Quicksilver remote control and cable. Refer to *Mercury Precision Parts / Quicksilver Accessories Guide* for selection. However, if a control other than Quicksilver is to be used, control must provide a shift cable travel (at the shift plate end) of 2-7/8 in. (73 mm) to 3-1/8 in. (80 mm) with a 15-20 lb. (6.8-9 kg) load applied to the cable end guide.

NOTE: On engines with Alpha drives, the measurement indicated above can be taken by installing the remote control shift cable and using the shift assist assembly (provided) to place the proper load on the shift cable.

1. Place a mark on the tube against the edge of the cable end guide.

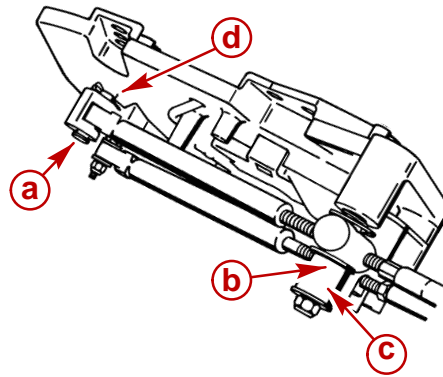


- a** - Shift Assist Assembly
- b** - Remote Control Shift Cable - In FORWARD Gear Position
- c** - Edge Of Cable End Guide
- d** - Remote Control Shift Cable - In REVERSE Gear Position
- e** - Measurement Taken From Mark To Edge Of Cable End Guide:
2-7/8 in. (73 mm) to 3-1/8 in. (80 mm)

IMPORTANT: If boat is being equipped with a REMOTE CONTROL THAT HAS SEPARATE SHIFT AND THROTTLE LEVERS, the shift assist assembly that is shipped with the engine should NOT be used. The use of the shift assist assembly with this type of remote control can cause the shift lever to move out of gear unexpectedly.

The following kit will have to be ordered to connect remote control shift cable when shift assist assembly is not used.

Spacer Kit 23-11284A1



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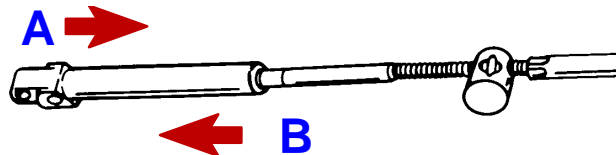
- a - Clevis Pin
- b - Washer
- c - Spacer
- d - Cotter Pin

NOTE: Do not discard shift assist assembly until after it is used in step 3., following.

IMPORTANT: Shift cable must be connected at the remote control for the appropriate rotation (LH or RH) drive unit, as explained following:

RIGHT HAND ROTATION - Control cable will have to be installed in remote control so that cable end will move in direction "A" when shift handle is placed in the FORWARD position.

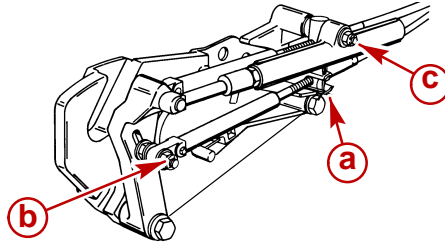
LEFT HAND ROTATION - Control cable will have to be installed in remote control so that cable end will move in direction "B" when shift handle is placed in the FORWARD position.



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IMPORTANT: Use the following procedure to temporarily install shift cables if boat will be shipped without drive unit installed. Refer to Shift Cable Installation for shift cable adjustment procedure once drive unit is installed.

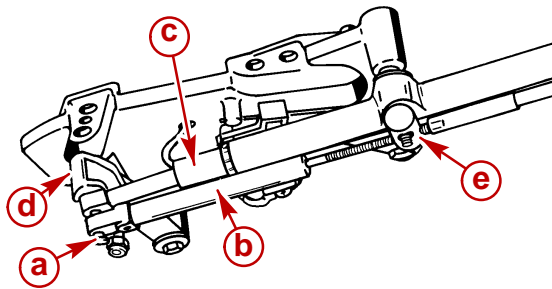
1. Remove shift cable attaching hardware.



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- a** - Cotter Pin
- b** - Clevis Pin And Cotter Pin
- c** - Washer And Locknut

2. Place remote control shift lever in NEUTRAL position.
3. Temporarily install clevis pin through remote control shift cable end guide, shift assist assembly end and into hole in shift lever. Then adjust brass barrel so that hole in barrel aligns with anchor stud.



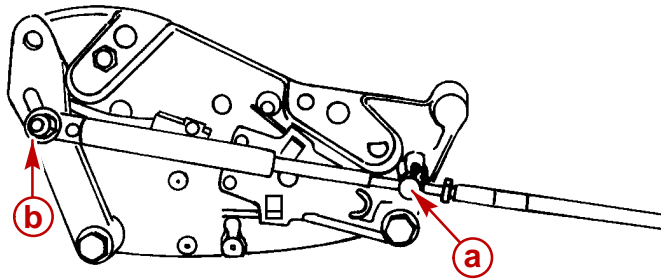
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- a** - Clevis Pin
- b** - Shift Cable End Guide
- c** - Shift Assist Assembly End
- d** - Shift Lever
- e** - Brass Barrel (On Stud)

4. Remove remote control shift cable and shift assist assembly.

IMPORTANT: Install the cotter pin through the top of the barrel retainer.

5. Install drive unit shift cable as shown. Secure brass barrel in barrel retainer with cotter pin and spread both prongs. Secure cable end guide with washers (one on each side of end guide) and locknut. Tighten locknut until it contacts, then loosen 1/2 turn.

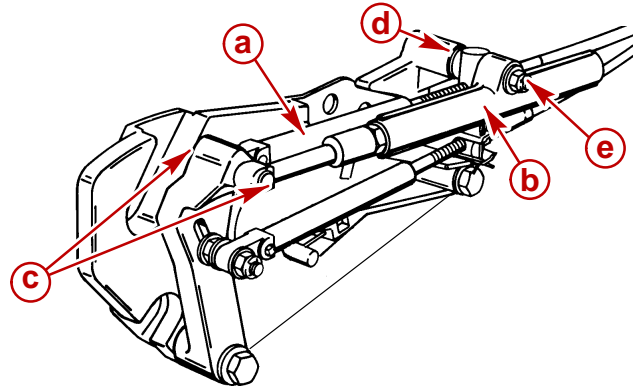


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Without Shift Assist Assembly

- a** - Cotter Pin
- b** - Locknut And Washers

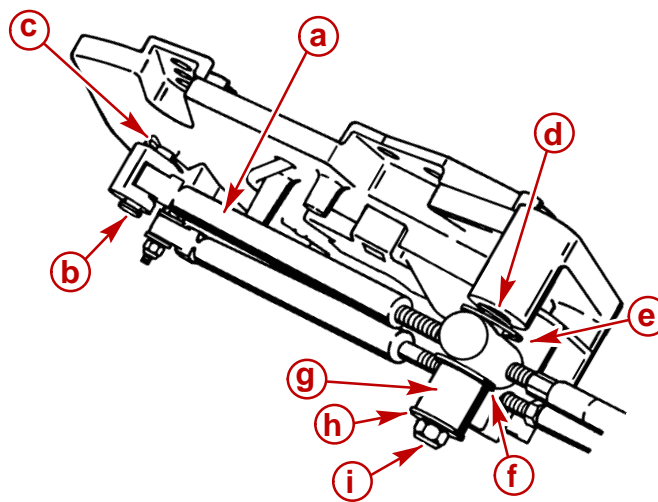
- Install remote control shift cable (with or without shift assist assembly as applicable) and secure with hardware as shown. Tighten locknut finger tight only and do not spread cotter pin completely. (Remote control shift cable fasteners will have to be removed again to properly adjust shift cables under Shift Cable Installation section of this manual.)



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With Shift Assist Assembly

- a** - Remote Control Shift Cable
- b** - Shift Assist Assembly
- c** - Clevis Pin And Cotter Pin
- d** - Large I.D. Washer
- e** - Small I.D. Washer And Locknut



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Without Shift Assist Assembly

- a** - Remote Control Shift Cable
- b** - Pin
- c** - Cotter Pin (Existing)
- d** - Spring (Existing)
- e** - Washer (Existing)
- f** - Washer
- g** - Spacer
- h** - Washer (Existing)
- i** - Locknut (Existing)

Shift Cable Installation

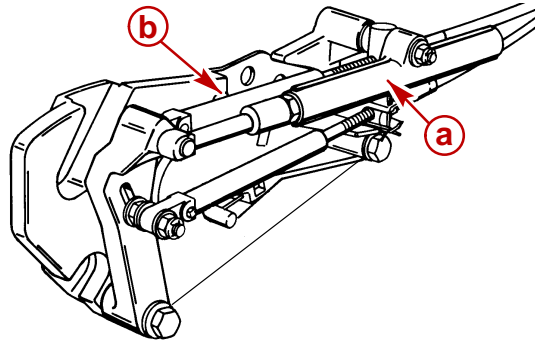
Alpha Models - Drive Unit Installed

IMPORTANT: Shift cable adjustment for a right hand (RH) rotation drive unit is different than the procedure for adjusting a left hand (LH) rotation drive unit. Be sure to refer to the appropriate procedure when performing the following steps.

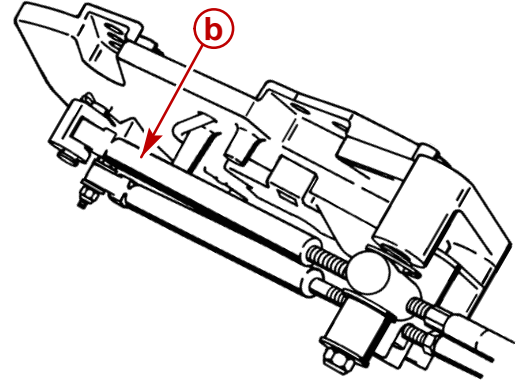
IMPORTANT: Drive unit must be installed.

IMPORTANT: DO NOT run engine.

1. Remove remote control shift cable and shift assist assembly (if installed).



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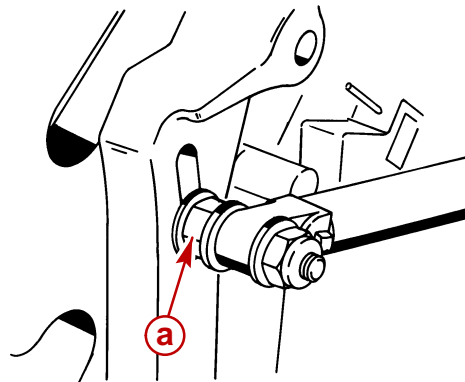


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With Shift Assist Assembly Without Shift Assist Assembly

- a** - Shift Assist Assembly
- b** - Remote Control Shift Cable

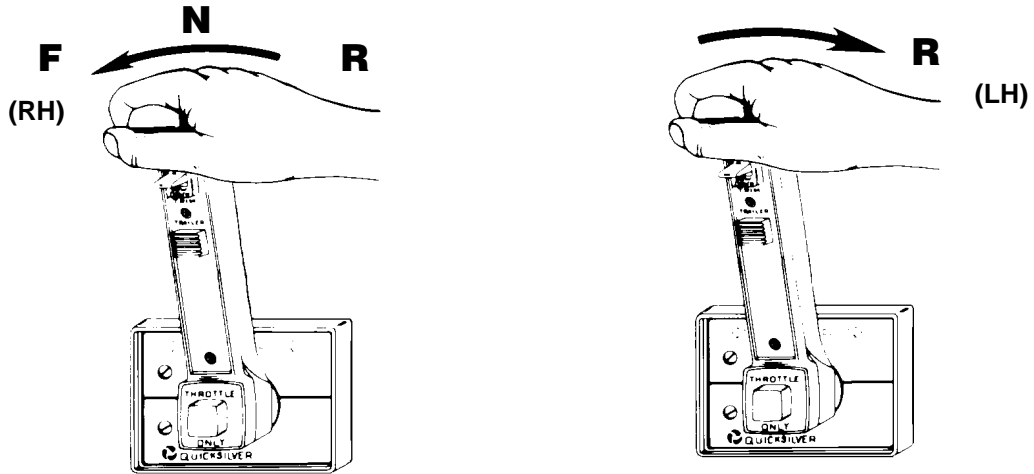
2. Ensure shift lever adjustable stud is at bottom of slot.



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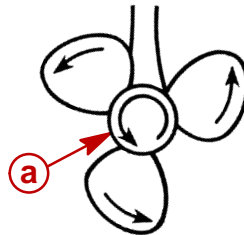
- a** - Adjustable Stud

3. Shift remote control as stated in a. or b. following:
 - a. **Right Hand (RH) Rotation Drive Unit** - FORWARD gear, past detent, into WOT position.
 - b. **Left Hand (LH) Rotation Drive Unit** - REVERSE gear, past detent, into WOT position.



4. Place drive unit into gear by pushing in on drive unit shift cable while simultaneously rotating propeller shaft COUNTERCLOCKWISE until shaft stops. This will ensure full clutch engagement. Maintain a light pressure on the drive unit shift cable to hold it at the end of its travel (this removes all slack from the cable).

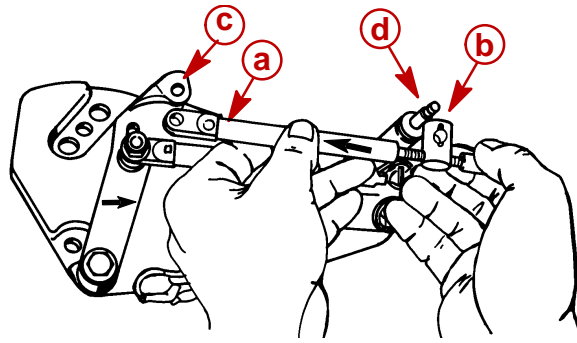
IMPORTANT: Do not use excessive force when holding pressure on the drive unit shift cable. Excessive force would be indicated by movement of the shift cutout switch.



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a - Propeller Shaft - Rotate COUNTERCLOCKWISE

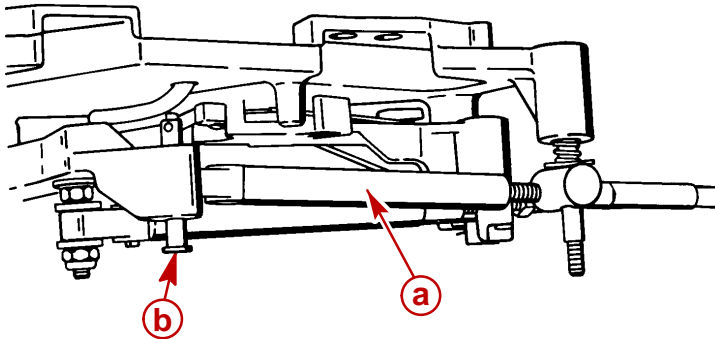
5. Lightly pull on remote control shift cable end guide (to remove slack from remote control and cable) and adjust brass barrel as necessary to align attaching points with shift lever clevis pin hole and stud. Be sure to maintain light pressure on drive unit shift cable.



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- a** - End Guide
- b** - Brass Barrel
- c** - Shift Lever Clevis Pin Hole
- d** - Stud

6. Temporarily install remote control shift cable on stud and install clevis pin.

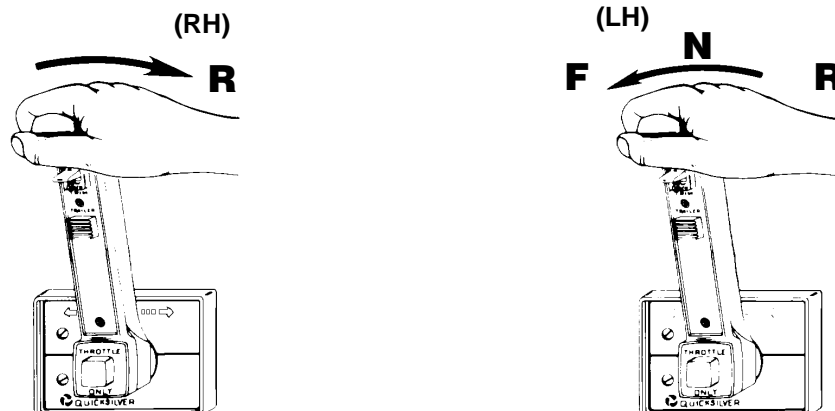


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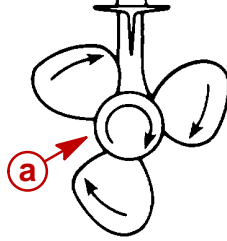
- a** - Remote Control Shift Cable
- b** - Clevis Pin

7. Shift remote control as stated in a. or b. following:

- a. **Right Hand (RH) Rotation Drive Unit** - REVERSE gear, past detent, into WOT position.
- b. **Left Hand (LH) Rotation Drive Unit** - FORWARD gear, past detent, into WOT position.



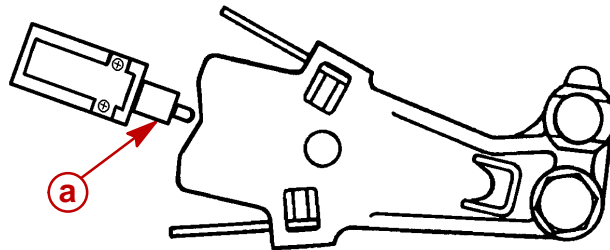
8. To ensure full clutch engagement, simultaneously rotate propeller shaft **CLOCKWISE** until shaft stops.



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a - Propeller Shaft - Rotate **CLOCKWISE**

9. Check shift cutout switch plunger position. Pin must be centered.



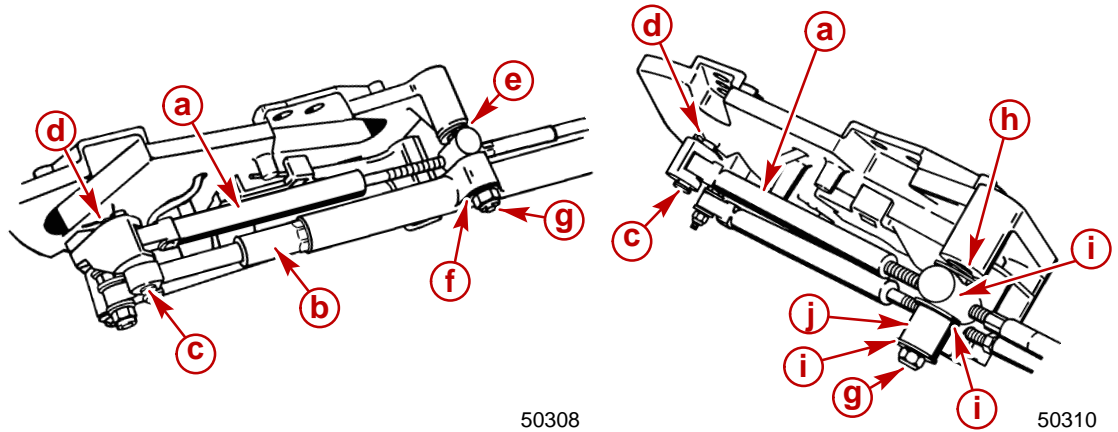
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a - Shift Cutout Switch Plunger Pin

10. If plunger pin is not centered:
 - a. Ensure adjustable stud is at bottom of slot in shift lever.
 - b. Check remote control for proper shift cable output [3 in. (76 mm) \pm 1/8 in. (3 mm)].
 - c. If a. and b. are correct, ensure drive unit shift cable is not crushed or kinked. (If drive unit shift cable is binding, the shift cutout switch plunger pin will move off center when shifting into and out of FORWARD and REVERSE.)

NOTE: If shift cable was damaged during installation, install new shift cable assembly in accordance with instructions contained in sterndrive service manual, then repeat shift cable adjustment procedure.

11. After remote control shift cable has been properly adjusted, reinstall cable and shift assist assembly (if applicable) and secure with hardware as shown. If shift assist assembly attaching points will not align, push in or pull out on end of shift assist assembly to install. Do not attempt to readjust shift cable.



With Shift Assist Assembly

Without Shift Assist Assembly

- a** - Remote Control Shift Cable
- b** - Shift Assist Assembly
- c** - Clevis Pin
- d** - Cotter Pin (Spread Both Prongs)
- e** - Large I.D. Washer
- f** - Small I.D. Washer
- g** - Locknut (Tighten Until Contacts, Then Loosen 1/2 Turn)
- h** - Spring (Existing)
- i** - Washer (Existing)
- j** - Spacer

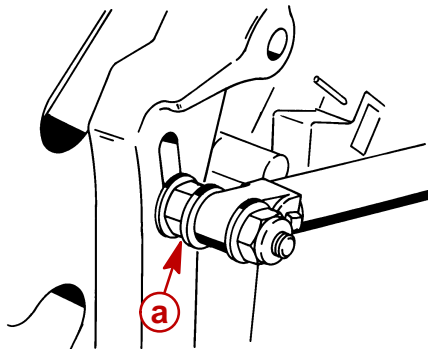
IMPORTANT: If an extra long remote control shift cable is used, there are a large number of bends in remote control shift cable or remote control has inadequate output travel, an additional adjustment may be necessary. Refer to step 12. or 13. as applicable.

12. Remote Control with Single Lever Shift/Throttle Control:

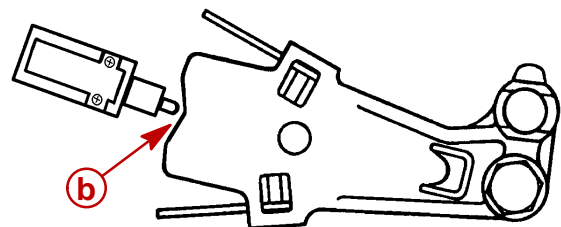
- a. **RIGHT HAND (RH) propeller rotation drive unit** - Shift remote control into REVERSE gear, WOT position while simultaneously rotating propeller shaft CLOCKWISE. Clutch should engage and cause propeller shaft to lock. If clutch does not engage, loosen adjustable stud on shift lever and move it up in slot until clutch engages with REVERSE gear. Retighten stud. Shift remote control several times and stop in REVERSE to recheck shift cutout switch position. Pin must be centered.
- b. **LEFT HAND (LH) propeller rotation drive unit** - Shift remote control into FORWARD gear, WOT position while simultaneously rotating propeller shaft CLOCKWISE. Clutch should engage and cause propeller shaft to lock. If clutch does not engage, loosen adjustable stud on shift lever and move it up in slot until clutch engages with FORWARD gear. Retighten stud. Shift remote control several times and stop in FORWARD to recheck shift cutout switch position. Pin must be centered.

13. Two Lever Remote Control with Separate Shift and Throttle Levers:

- a. **RIGHT HAND (RH) propeller rotation drive unit** - While turning propeller shaft CLOCKWISE, move remote control shift handle into full REVERSE position. Clutch should engage before shift lever comes to a stop. If clutch does not engage, loosen adjustable stud on shift lever and move it up in slot until clutch engages with REVERSE gear. Retighten stud. Shift remote control several times and stop in REVERSE to recheck shift cutout switch position. Pin must be centered.
- b. **LEFT HAND (LH) propeller rotation drive unit** - While turning propeller shaft CLOCKWISE, move remote control shift handle into full FORWARD position. Clutch should engage before shift lever comes to a stop. If clutch does not engage, loosen adjustable stud on shift lever and move it up in slot until clutch engages with FORWARD gear. Retighten stud. Shift remote control several times and stop in FORWARD to recheck shift cutout switch position. Pin must be centered.



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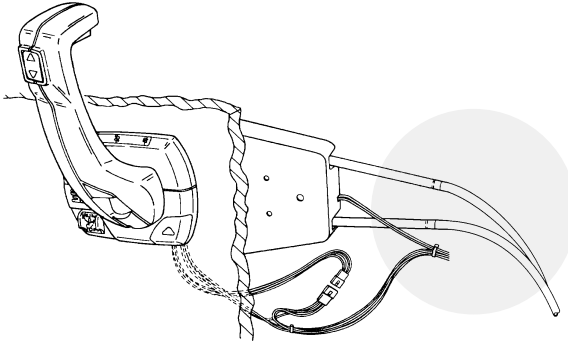
- a - Adjustable Stud
- b - Shift Cutout Switch Plunger Pin

Troubleshooting Shift Problems

NOTE: The following information is provided to assist an installer in troubleshooting if hard shifting or chucking/racheting is encountered when shifting into FORWARD gear.

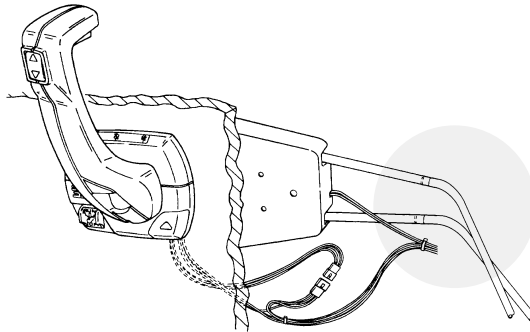
1. When installing the control box in the side panel of the boat, make sure that the cables have enough clearance to operate. This is necessary because the cables move up and down when the shift handle is moved. If the control box is mounted too far back toward any fiberglass structure, the cables will be interfered with; this will cause very hard shifting.

NOTE: The control box housing can be rotated in 30 degree increments to improve cable routing.



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Proper Cable Bend

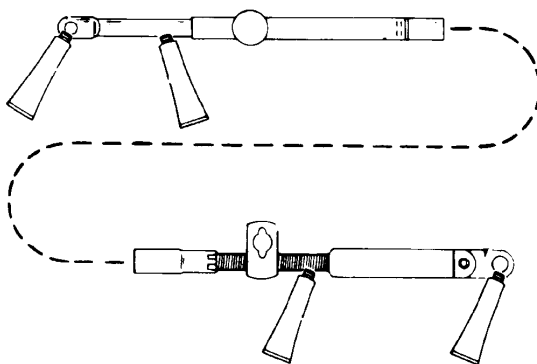


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Improper Cable Bend

2. Make sure that when the shift cable from the control box is led through the side gunnel of the hull, it does not have any extremely sharp bends in it as this will cause stiff shifting.

- Before installing the shift cable into the control box, extend the stainless rod eye end of the cable and grease it with 2-4-C Marine Lubricant with Teflon. Move it back and forth to allow even distribution of the grease.



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Description	Where Used	Part Number
2-4-C Marine Lubricant With Teflon	Shift Cable End	92-825407A3

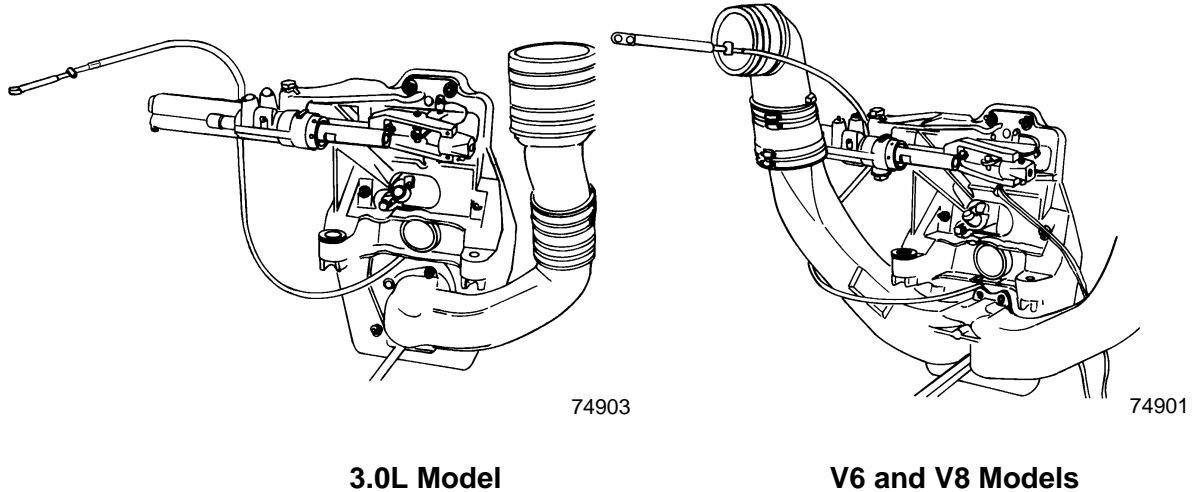
- Do not strap or clamp the control cables to any other cables or rigid structure within 3 ft. (914 mm) of the control box.
- Be sure the cable is not permanently kinked.
- Make sure there is proper clearance for cable movement when the control box is installed in the side panel. The cables must have room to move up and down when the control handle is shifted into either FORWARD or REVERSE.
- Ensure that the engine was not set down on the intermediate shift cable during installation, as this will crush the inner cable tubing and cause improper and / or stiff shifting.
- DO NOT fasten the shift cable with straps or clamps to any other cable within 5 ft. (1.5 m) of the shift plate.
- DO NOT fasten the shift cable to the transom with any type of plastic clips or fasteners within 5 ft. (1.5 m) of the shift plate.
- DO NOT overtighten the throttle or shift cable attaching nuts at the engine end. Barrel and cable end must be free to rotate on the mounting stud.

NOTE: Lubricate attaching points with engine oil.

Description	Where Used	Part Number
SAE 30W Engine Oil	Shift Cable Pivot Points	Obtain Locally

11. Check the intermediate shift cable routing from the transom assembly to the shift plate as follows:
 - a. The cable should come through the transom, above the exhaust pipe and make a turn toward the starboard side of the boat between the exhaust pipe and the engine flywheel housing.
 - b. The cable should then be routed under the starboard rear engine mount and turn toward the transom.
 - c. The cable should then go up behind the power steering valve and loop over to the shift plate on the engine, where it is connected to the anchor points on the shift plate.

Following this routing will prevent the engine coupler from damaging the cable.



NOTE: A final check of the adjustments should be made with the boat in the water and engine running. If this cannot be done or is not done at your manufacturing facility, arrangement should be made with the dealer to do this as part of the pre-delivery inspection.

Predelivery Preparation

Once the power package installation is complete, the following final steps should be taken to prepare power package for delivery to the customer. It is the boat manufacturer's responsibility to perform these procedures, or to make arrangement with the dealer to have these procedures completed.

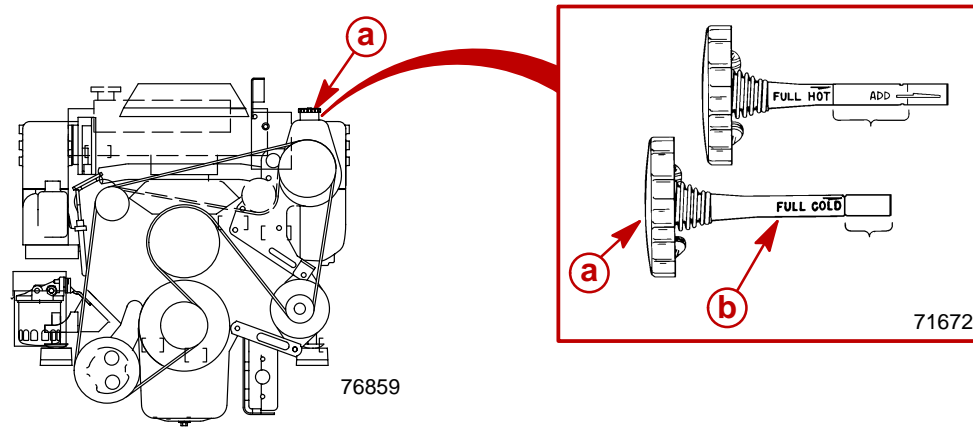
Power Steering Fluid

IMPORTANT: Use only specified lubricant.

⚠ CAUTION
DO NOT RUN POWER STEERING DRY or pump will be damaged.

1. Position sterndrive unit so that it is straight back.
2. Remove fill cap from power steering pump and check fluid level using dipstick. Add fluid as required.

NOTE: Be prepared to add fluid to pump when first starting engine.



- a** - Fill Cap
- b** - Dipstick

Description	Where Used	Part Number
Power Trim and Steering Fluid	Power Steering Pump	92-90100A12
Dexron III - Automatic Transmission Fluid		Obtain Locally