

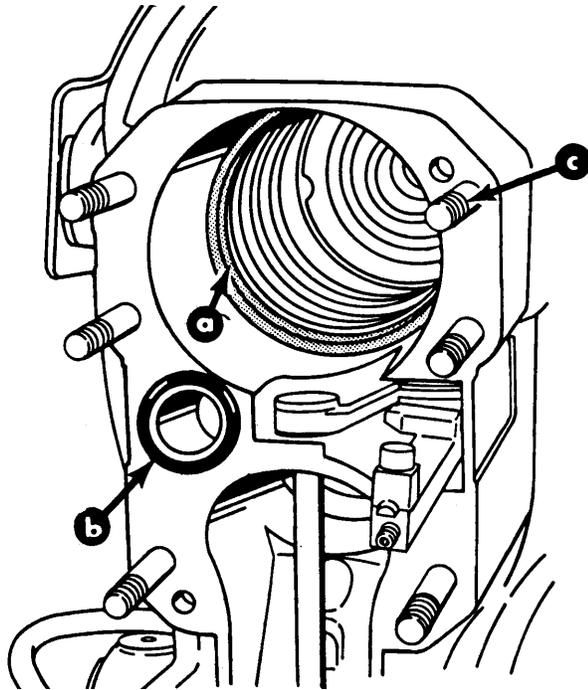
Sterndrive Unit Installation

1. Install and align engine. (Refer to appropriate Engine Service Manual).

IMPORTANT: Rubber gasket must be properly positioned in bell housing bore before installing drive unit, or water may leak into boat.

2. Ensure that rubber gasket and water passage O-ring are properly positioned in bell housing.

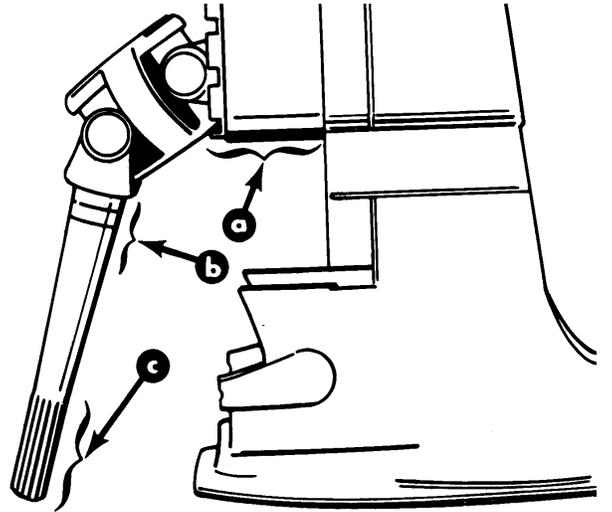
3. Coat entire stud and threads with 2-4-C Marine Lubricant.



50636

- a - Rubber Gasket
- b - Water Passage O-ring
- c - Studs

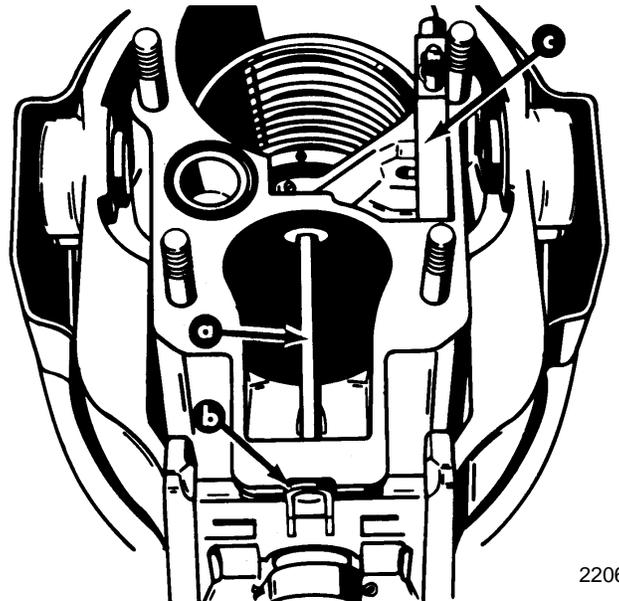
4. Coat drive unit pilot and drive shaft O-rings with 2-4-C Marine Lubricant. Coat the driveshaft splines with Engine Coupler Spline Grease.



22061

- a - Drive Shaft Pilot
- b - Drive Shaft O-rings
- c - Drive Shaft Splines

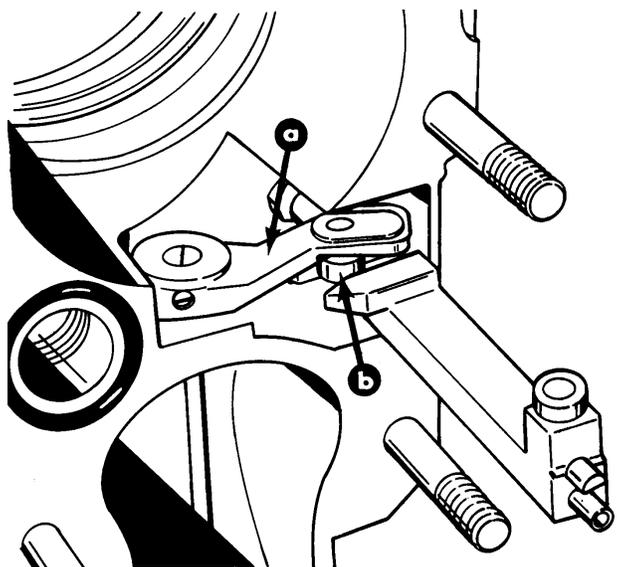
5. Position bell housing shift shaft coupler so that slot in coupler is positioned straight fore and aft. Do this by placing remote control shift lever in: **Forward gear position for RH drive or Reverse gear position for LH drive unit.**



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- a - Shift Shaft
- b - Shift Shaft Coupler
- c - Shift Slide

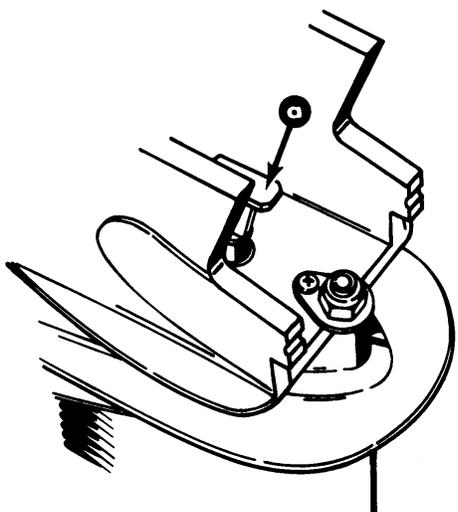
IMPORTANT: Shift slide assembly is free to rotate on core wire, therefore, be careful that shift slide remains in upright position and is properly engaged with shift shaft lever while installing drive unit.



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- a - Shift Shaft Lever
- b - Roller

6. Position drive unit shift shaft coupler so that is straight forward by turning coupler clockwise while simultaneously turning propeller shaft counterclockwise.



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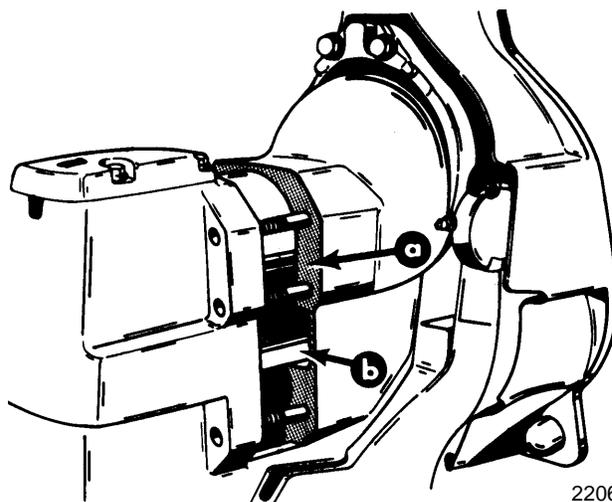
- a - Drive Unit Shift Shaft Coupler

IMPORTANT: Be sure to install RH or LH drive unit on the appropriate transom assembly when making dual engine installations. The LH rotation drive unit can be identified by the decal on the back side of the upper drive shaft housing, which states:
 “Alpha One-Counter Rotation”

7. Place gasket on bell housing.
8. Install sterndrive unit as follows:
 - a. Position trim cylinder straight back (over top of acceleration plate). Be careful not to scratch acceleration plate or trim cylinders.
 - b. Guide U-joint shaft through gimbal bearing and into engine coupler while simultaneously guiding shift slide into drive shaft housing. Make sure shift slide remains upright and engaged with bell housing shift shaft lever.

IMPORTANT: If drive unit will not slide all the way into bell housing, check shift shaft coupler to ensure they are positioned properly. Do not force drive unit into position.

- c. If necessary, rotate propeller shaft **counterclockwise** slightly to help align U-joint shaft splines with engine coupler splines, then, slide drive unit all-the-way into bell housing.

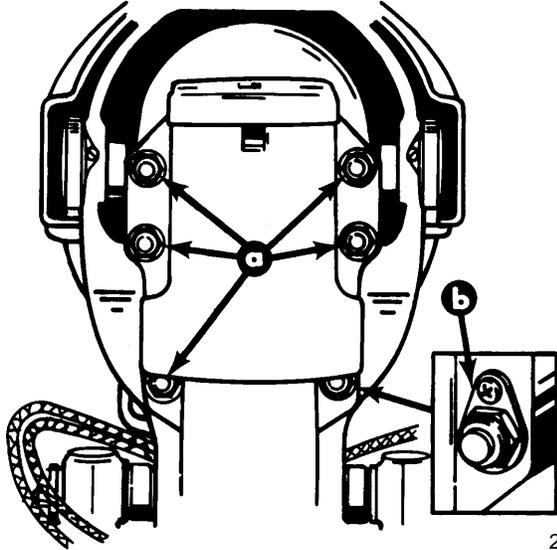


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- a - Gasket
- b - Shift Slide

d. Return remote control shift lever to the neutral position.

9. Fasten drive unit to bell housing with hardware shown. Torque evenly, starting from center, to 50 lb. ft. (68 N·m).

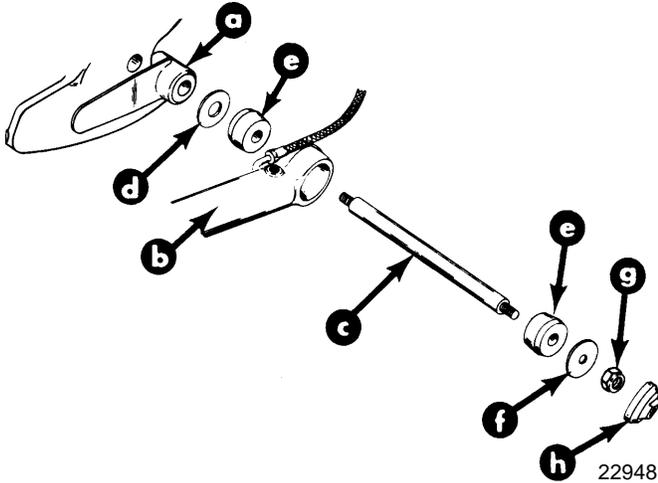


22062

- a - Locknuts And Flat Washers
b - Locknut And Ground Plate (Do NOT Use Flat Washer)

IMPORTANT: To aid in installing rubber bushings, use a water and soap solution.

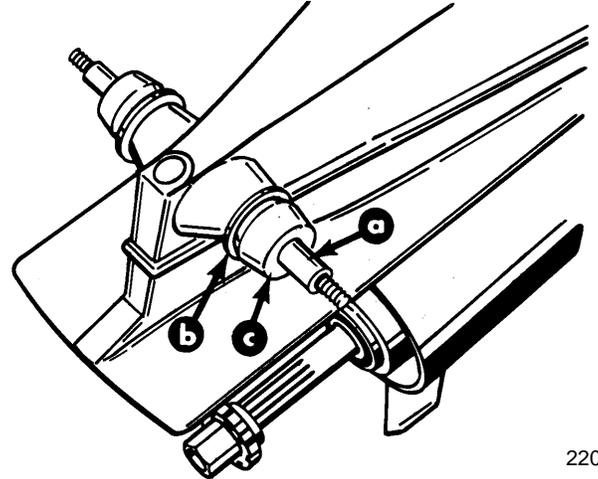
10. If removed, install trim cylinders on gimbal ring. Tighten until locknuts bottom on anchor pin shoulder.



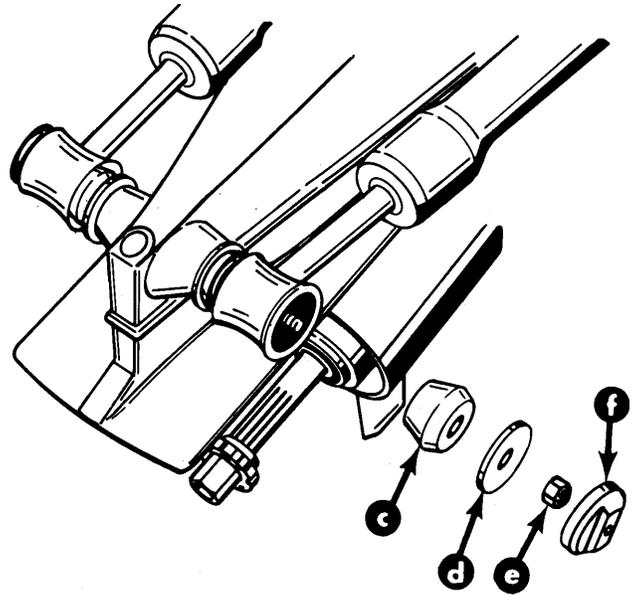
22948

- a - Gimbal Ring
b - Trim Cylinders (Port And Starboard)
c - Anchor Pin
d - Flat Washers (2)-Large I.D.
e - Rubber Bushings (4)
f - Flat Washers (2)-Small I.D.
g - Locknuts (2)
h - Plastic Caps (2)

11. Install trim cylinders (Aft End) on drive shaft housing. Tighten locknuts until they bottom on anchor pin shoulder.



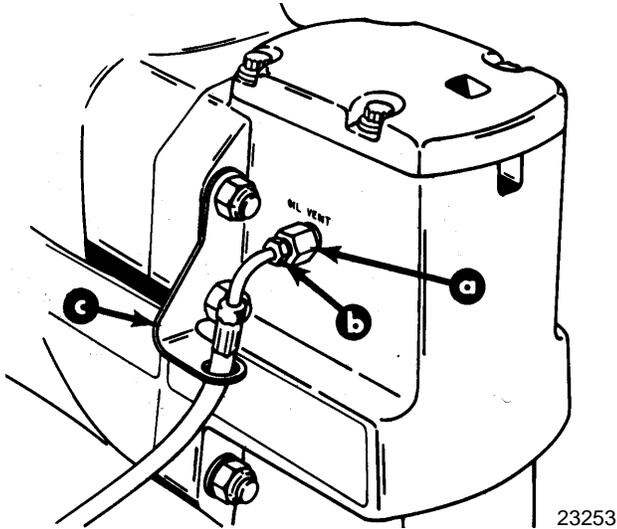
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22441

- a - Anchor Pin
b - Washers (2)-Large I.D.
c - Rubber Bushings (4)
d - Washers (2)-Small I.D.
e - Locknuts (2)
f - Plastic Caps (2)

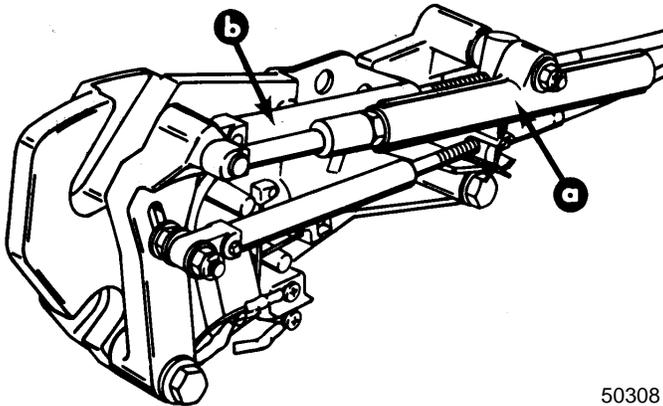
12. If equipped, reinstall remote oil reservoir hose.
(Refer to Section 1B for filling instructions).



- a - Adaptor Fitting
b - Hose Fitting
c - Bracket

Shift Cable Adjustment

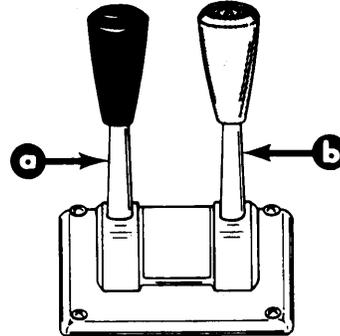
NOTE: Some models may be equipped with a shift assist assembly. The only difference with these models is that the remote control shift cable attaching hardware is slightly longer. Shift cable adjustment is the same as all other versions.



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

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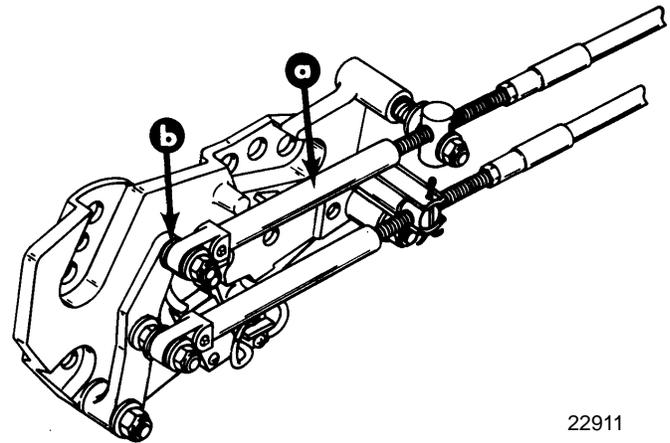
IMPORTANT: If boat is equipped with A REMOTE CONTROL THAT HAS SEPARATE SHIFT AND THROTTLE LEVERS, this shift assist assembly should NOT be used. The use of the shift assist assembly with this type of remote control can cause the shift lever to move out of gear unexpectedly.



- a - Shift Lever
b - Throttle Lever

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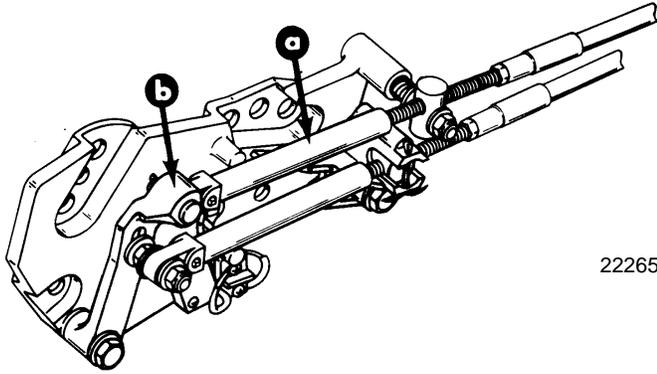
NOTE: A difference exists between earlier and later model shift plates, in that the later models have a pin and cotter pin to secure the remote control shift cable to the shift lever, whereas the earlier models used a stud with washers and locknut. However, adjustment procedures are the same.



22911

Earlier Models (With Metal Shift Lever)

- a - Remote Control Shift Cable
b - Stud, Washers and Locknut



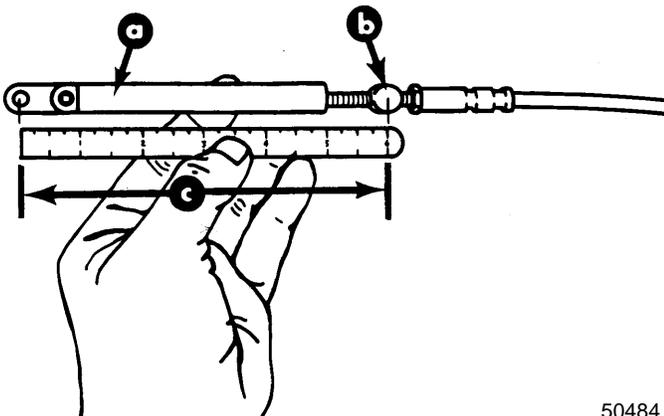
22265

Later Models (With Plastic Shift Lever)

- a - Remote Control Shift Cable
- b - Pin and Cotter Pin

Installing Shift Cables

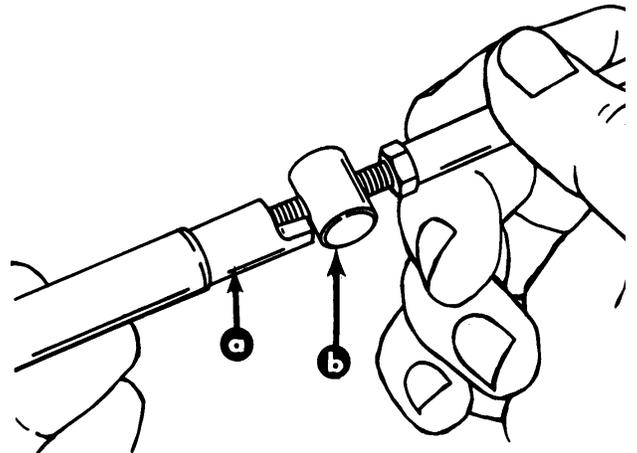
1. Push in on drive unit shift cable while simultaneously turning propeller shaft counterclockwise until shaft stops, to ensure drive unit is completely in gear. Maintain pressure on propeller shaft with a suitable device (elastic strap).
2. Measure distance between center of hole in shift cable end guide and center of brass barrel. Measurement should be 6 in. (153 mm).



50484

- a - End guide
- b - Brass Barrel
- c - 6 in. (153 mm)

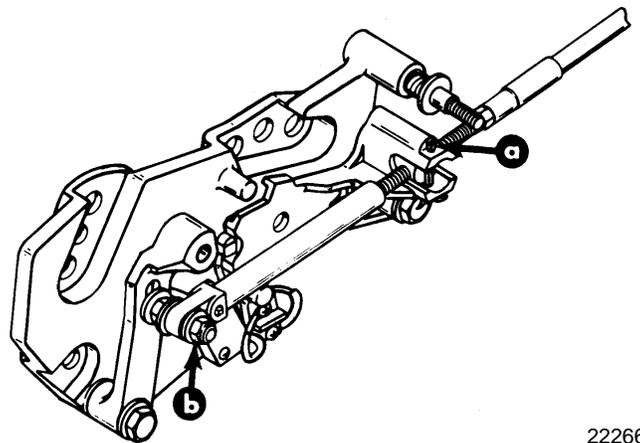
3. **If equipped with shift assist assembly:** Once brass barrel adjustment is correct, install end guide "stop clip" on threaded tube. Position as shown, with tang touching brass barrel.



50484

- a - Stop Clip
- b - Brass Barrel

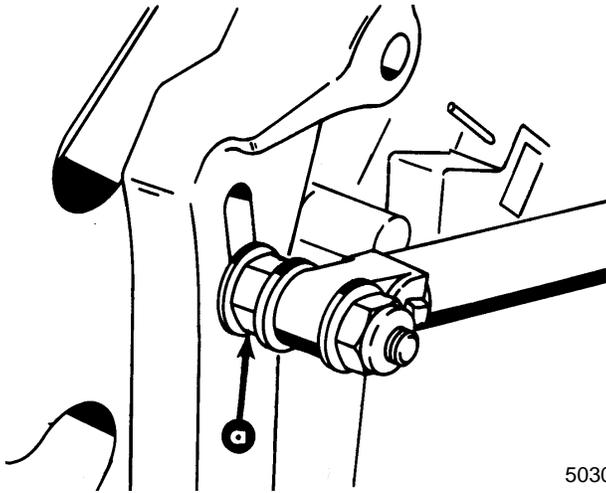
4. Install drive unit shift cable as shown. Secure brass barrel in barrel retainer with cotter pin and spread both prongs. Secure cable end guide with washers (one on each side of end guide) and locknut. Tighten locknut until it bottoms out, then back off 1/4-1/2 turn.



22266

- a - Cotter Pin
- b - Locknut And Washers

5. Ensure shift lever adjustable stud is at bottom of slot. If necessary, loosen stud and move it to bottom of slot, then retighten stud.



50309

a - Adjustable Stud

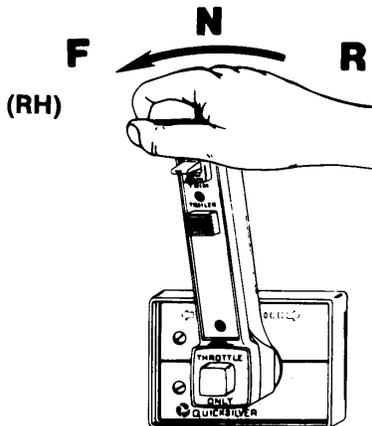
IMPORTANT: Shift cable adjustment for a right hand (RH) rotation drive unit is different than the procedure for adjusting a left hand (LH) rotation drive unit. Be sure to refer to the appropriate procedure when performing the following steps.

IMPORTANT: Drive unit must be installed.

IMPORTANT: DO NOT run engine.

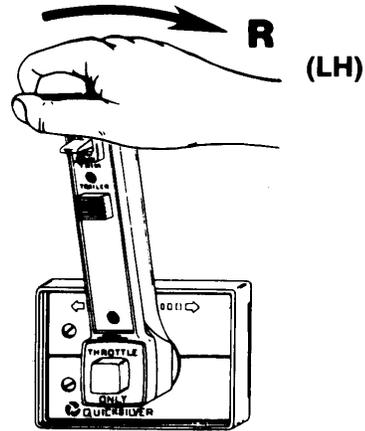
6. Shift remote control as stated in "a" or "b" following:

- a. **Right Hand (RH) Rotation Drive Unit**-forward gear, past detent, into wide-open-throttle position.



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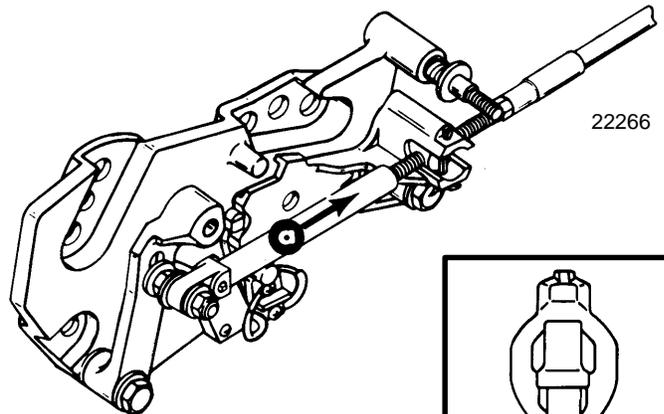
- b. **Left Hand (LH) Rotation Drive Unit**-reverse gear, past detent, into wide-open-throttle position.



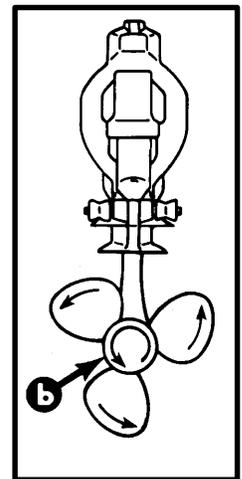
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7. Place drive unit into gear by pushing in on drive unit shift cable, while simultaneously rotating propeller shaft counterclockwise until shaft stops, to ensure full clutch engagement. Maintain a light pressure on the drive unit shift cable to hold 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.

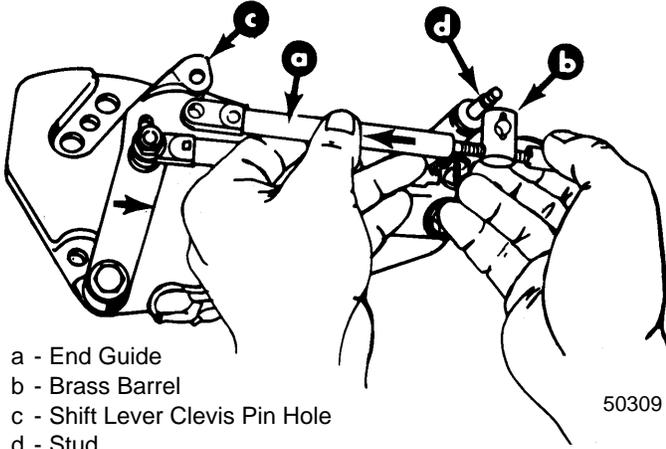


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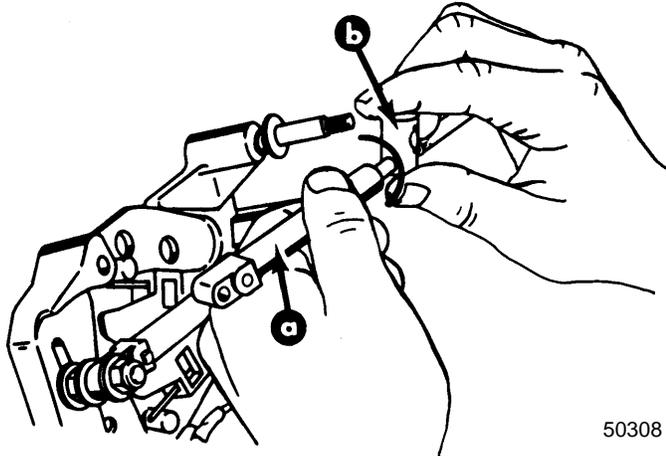
- a - Drive Unit Shift Cable
b - Propeller Shaft Rotation

8. 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.



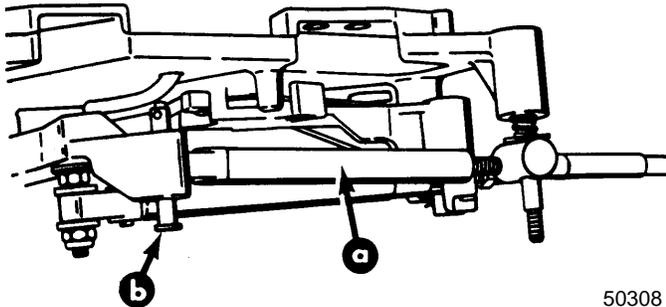
a - End Guide
b - Brass Barrel
c - Shift Lever Clevis Pin Hole
d - Stud

9. After cable has been aligned, turn brass barrel 4 turns **away** from cable end guide.



a - End Guide
b - Brass Barrel

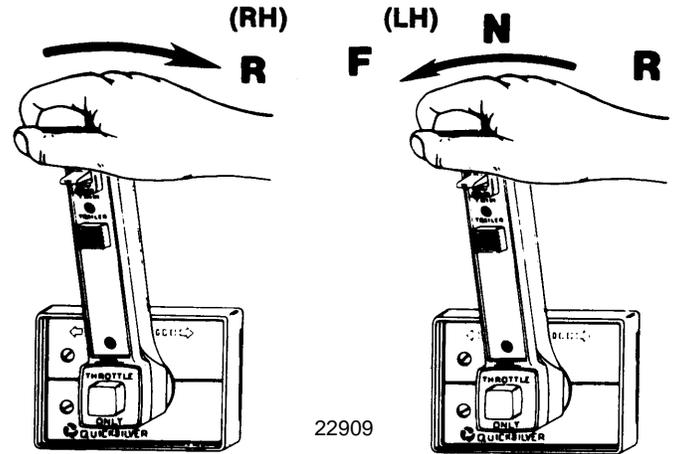
10. Temporarily install remote control shift cable on stud and install clevis pin.



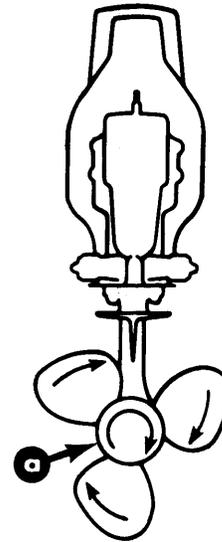
a - Remote Control Shift Cable
b - Clevis Pin

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

- a. **Right Hand (RH) Rotation Drive Unit** - reverse gear, past detent, into wide-open-throttle position.
- b. **Left Hand (LH) Rotation Drive Unit** - forward gear, past detent, into wide-open-throttle position.



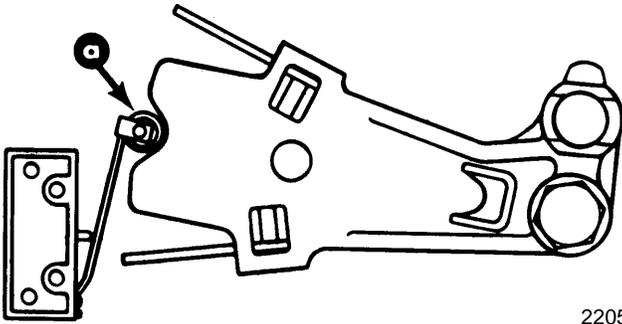
12. Simultaneously rotate propeller shaft clockwise until shaft stops to ensure full clutch engagement.



a - Propeller Shaft-Rotate Clockwise

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13. Check shift cutout switch lever position. Roller must be centered.



22058

a - Shift Cutout Switch Roller

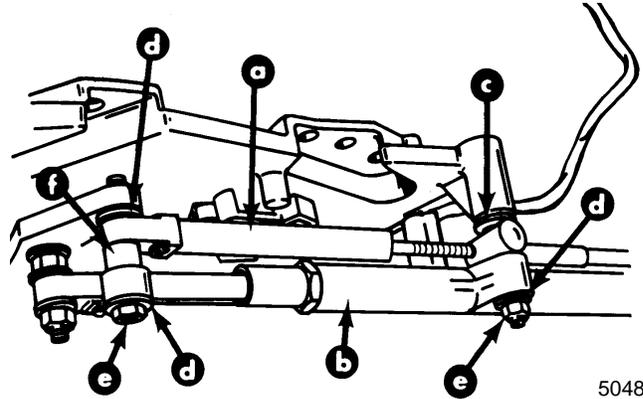
14. If roller is not centered:

- Ensure adjustable stud is at bottom of slot in shift lever.
- Check remote control for proper shift cable output [3 in. (76 mm) \pm 1/8 in. (3 mm)]. Refer to "Installation Requirements."
- 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 roller 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.

15. After remote control shift cable has been properly adjusted, reinstall cable and shift assist assembly (if applicable) and secure with hardware as shown.

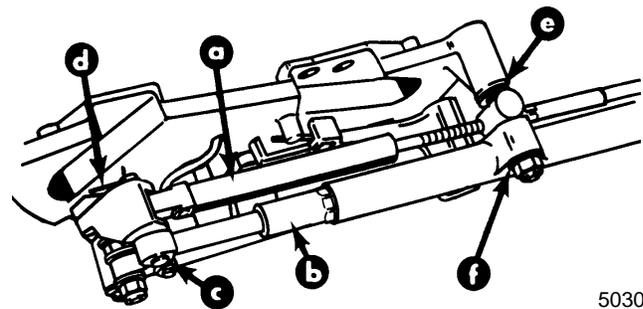
If shift assist assembly attaching points will not align, push in or pull out on end of shift assist assembly to install. Do not attempt to readjust shift cable.



50484

Earlier Models (With Metal Shift Lever) With Shift Assist Assembly

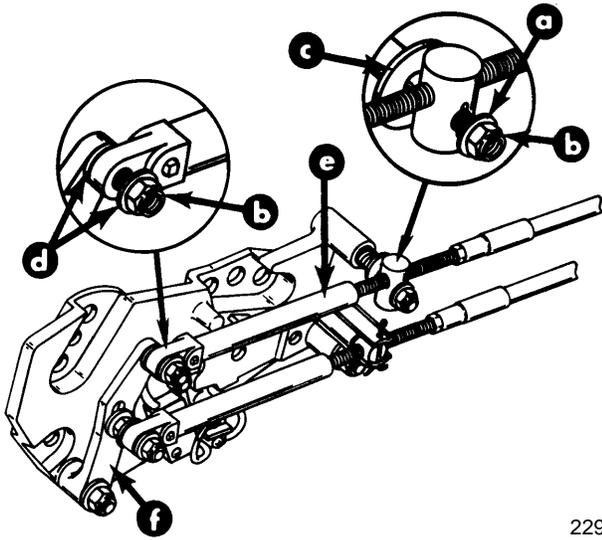
- a - Remote Control Shift Cable
- b - Shift Assist Assembly
- c - Large I.D. Washer
- d - Small I.D. Washer
- e - Locknut-Tighten Until Bottomed then Back Off 1/2 Turn
- f - Spacer



50308

Later Models (With Plastic Shift Lever) With Shift Assist Assembly

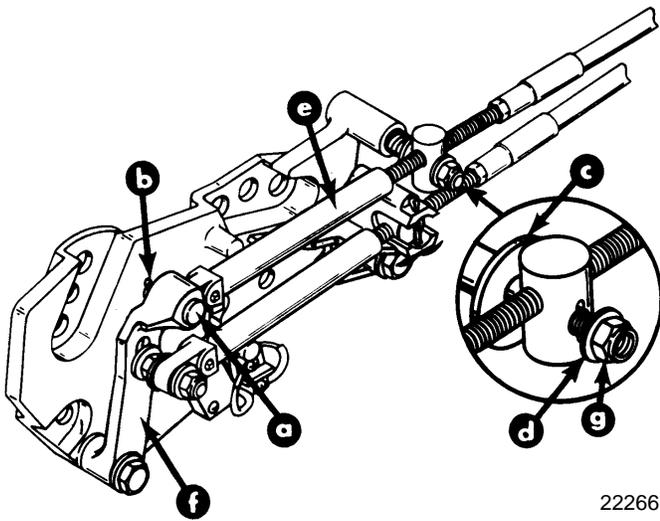
- a - Remote Control Shift Cable
- b - Shift Assist Assembly
- c - Clevis Pin
- d - Cotter Pin-(Spread Both Prongs)
- e - Large I.D. Washer
- f - Small I.D. Washer



22910

Earlier Models (With Metal Shift Lever) Without Shift Assist Assembly

- a - Washer (Same Size I.D.)
- b - Locknut
- c - Washer (Large I.D.)
- d - Washers (Small I.D.) (2)
- e - Cable End Guide
- f - Shift Lever



22266

Later Models (With Plastic Shift Lever) Without Shift Assist Assembly

- a - Pin
- b - Cotter Pin
- c - Washer (Large I.D.)
- d - Washer (Small I.D.)
- e - Cable End Guide
- f - Shift Lever
- g - Locknut

IMPORTANT: If an extra long remote control shift cable is used, or if 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 15 or 16 as applicable.

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

- a. **RIGHT HAND (RH) propeller rotation drive unit-**Shift remote control into reverse gear, wide open throttle 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 upward 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. Roller must be centered.
- b. **LEFT HAND (LH) propeller rotation drive unit-**Shift remote control into forward gear, wide open throttle 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 upward 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. Roller must be centered.

17. 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 upward 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. Roller 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 upward 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. Roller must be centered.

Propeller Installation

⚠ WARNING

Be sure that remote control is in neutral position and ignition key is removed from switch.

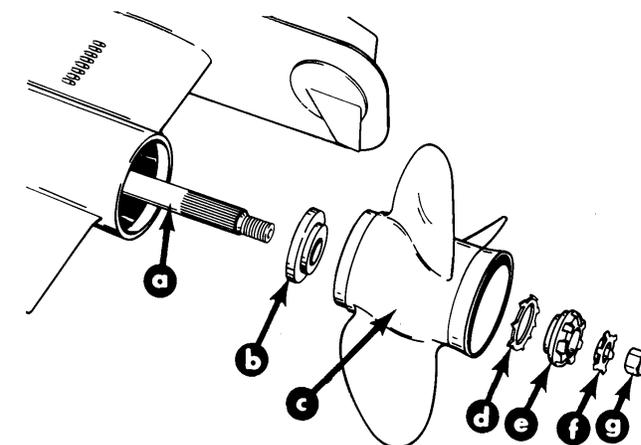
⚠ WARNING

Place a block of wood between the anti-ventilation plate and propeller to protect hands from propeller blades and to prevent propeller from turning.

1. To aid in future propeller removal, liberally coat the propeller shaft splines with one of the following lubricants. Install propeller as shown.

- Special Lubricant 101
- 2-4-C Marine Lubricant
- Perfect Seal

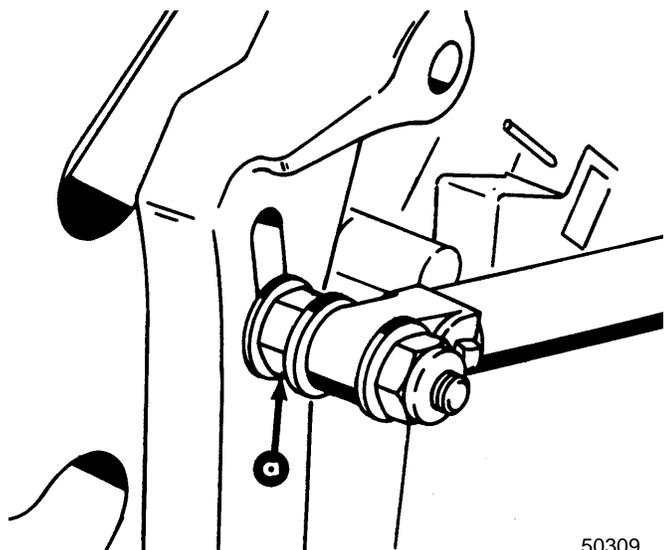
IMPORTANT: Installation is correct when at least 2 threads of propeller shaft are exposed through propeller nut.



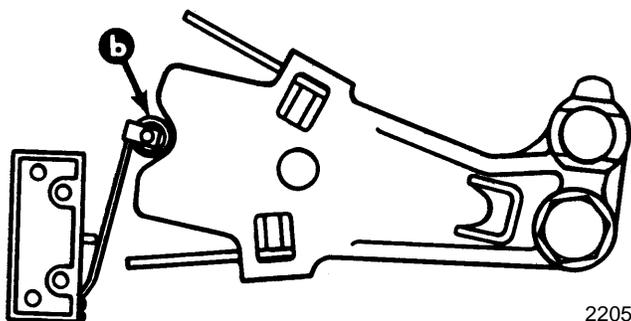
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- a - Propeller Shaft
- b - Forward Thrust Hub
- c - Propeller
- d - Continuity Washer
- e - Spline Washer
- f - Tab Washer
- g - Propeller Nut

2. Tighten propeller nut until a torque of 55 lb. ft. (75 N·m) is obtained and continue until 3 tabs on tab washer align with grooves on spline washer. Bend tabs into spline washer.



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- a - Adjustable Stud
- b - Shift Cutout Switch Roller

18. Place boat in water and start engine. Check the following:

- Shift into forward and reverse gear, making sure that clutch engages before engine begins to accelerate.
- Accelerate engine in forward and reverse gear to ensure engine does not shut down.
- Check that shift cutout switch roller is centered in notch of shift cutout lever, with drive unit in forward and reverse gear.
- Shifting from "in gear position" to neutral, ensure drive unit is in neutral before remote control shift lever comes to neutral detent position.