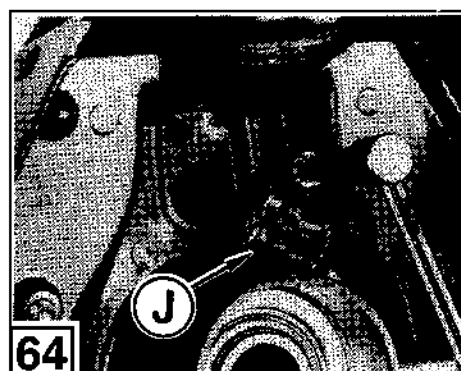
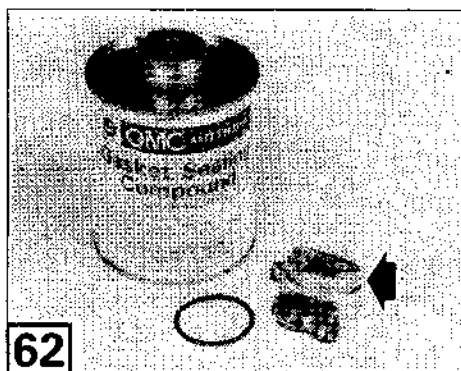




Hydraulic Lines and Manifold Installation

62 1. Coat a new O-ring with *OMC Gasket Sealing Compound* and place it on the manifold.

2. Lubricate two new O-rings with hydraulic fluid and place them on the hydraulic line tips.

63 3. Hold the manifold as shown and attach the lines. Make sure the tagged line goes in its proper location. Route both lines parallel and at the angle shown. Line routing is important otherwise manifold will be difficult or impossible to install. Tighten the fittings to a torque of 14-18 ft. lbs. (19-24 N-m) and discard the reference tag.

⚠ Note Tagged line must attach to the correct inlet. **If lines are switched, trim/tilt mechanism will malfunction.** When properly connected, the lower manifold line will attach to the "UP" inlet on the pump valve body, and the upper manifold line will connect to the starboard inlet on the pump body.

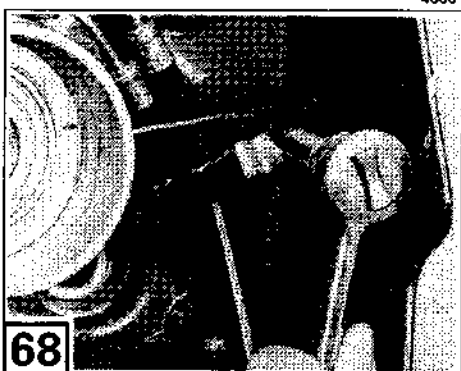
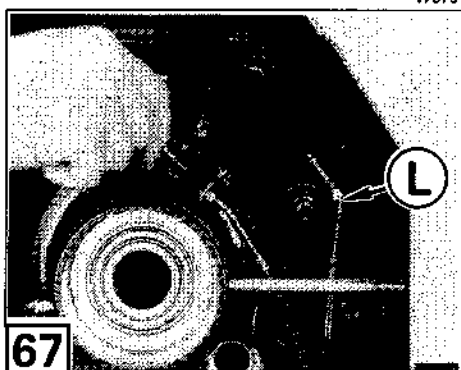
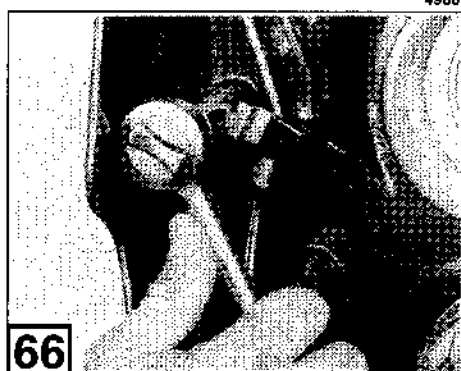
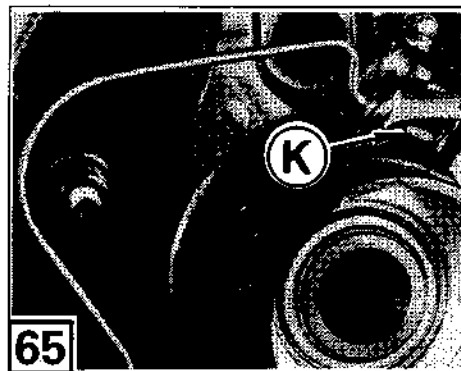
64 4. Feed the lines through the manifold opening, pulling them from inside the transom if necessary. Seat the manifold **J** over its mounting studs, and a new elastic locknut. Tighten the nut to a torque of 108-132 in. lbs. (12-15 N-m).

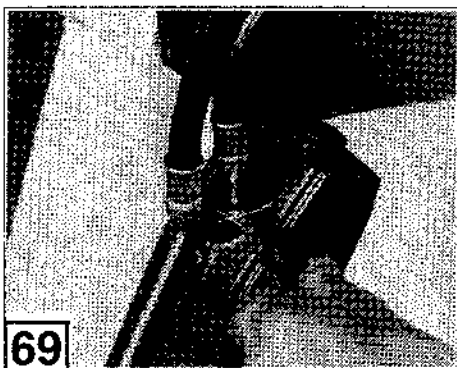
65 5. Coat new O-rings with hydraulic fluid and place them on both port hydraulic lines. Attach the lower line to the manifold **K** first, then the upper one. Tighten the fittings to a torque of 14-18 ft. lbs. (19-24 N-m).

66 6. Route the lines together down the side of the housing. Install the clamp, screw and washer, and tighten the clamp securely. Coat new O-rings with hydraulic fluid, and place them on both starboard lines.

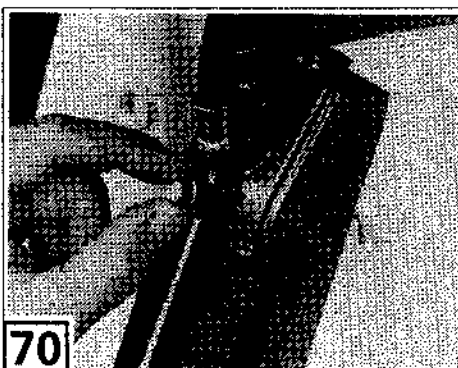
67 7. Slide the longest starboard line **L** up under the grease extension tube. Position it off to the side as shown so it will be out of the way. Slide the short line under the tube and attach it to the manifold. Tighten the fitting to a torque of 14-18 ft. lbs. (19-24 N-m).

68 8. Route the lines together down the side of the housing. Install the clamp, screw and washer, and tighten clamp.

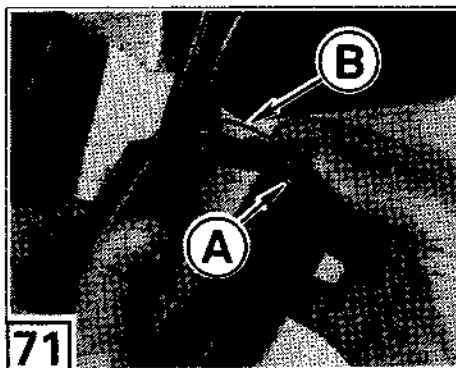




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Trim/Tilt Cylinder Hydraulic Line Attachment

69 1. If not already done, install new oiled O-rings on the ends of each hydraulic line. Attach the short line first, and tighten the fitting to a torque of 14-18 ft. lbs. (19-24 N·m).

70 2. Attach the long line and tighten the fitting to 14-18 ft. lbs. (19-24 N·m). Screw on the line retainer and tighten the screw securely.

71 3. Clip on the cylinder cover. Attach the retainer **A** with a screw and ground wire **B**. Tighten the screw securely.

4. Install the remaining cylinder following steps 1 thru 3. Fill and purge the hydraulic system as described in **Section 9, Power Trim/Tilt System**.

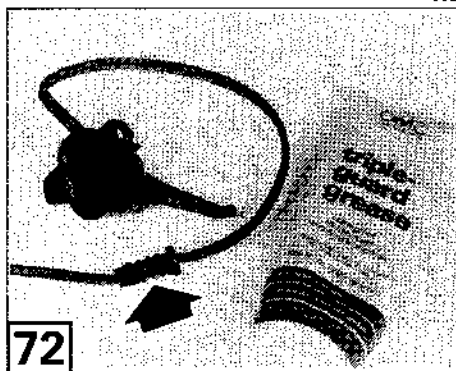
Trim Sender Installation

72 **73** 1. Apply *OMC Triple-Guard* grease to the sender lead grommet. Feed the wires through the opening in the rear of the gimbal housing, and out through the transom plate. Push the grommet into the hole until it seats.

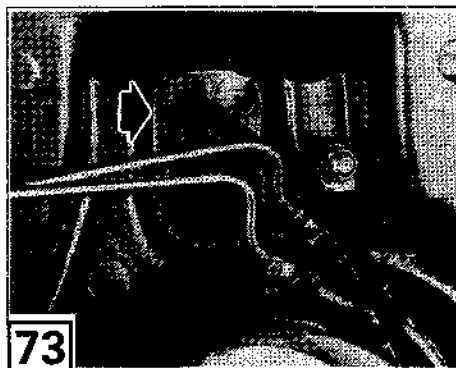
Note Do not route sender leads under extension tube or hydraulic lines. Leads must be free to move when drive unit steers, otherwise sender or wire will be damaged.

74 2. Attach the retaining clip to the grommet inside the transom plate.

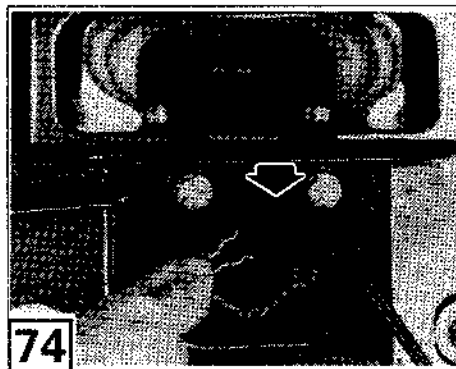
75 3. Use OMC Socket Installer P/N 322697 to push the wire sockets into the rubber plug until they seat.



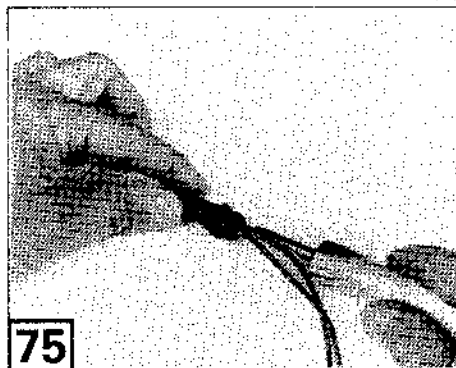
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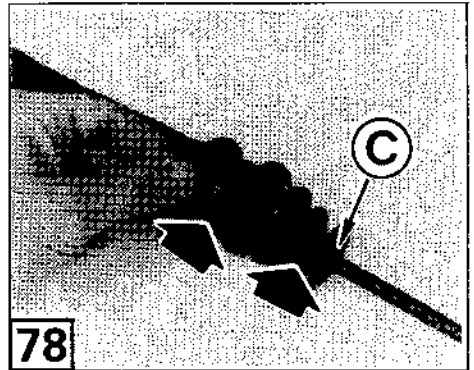
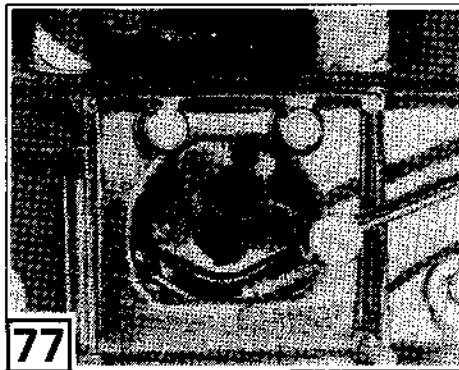
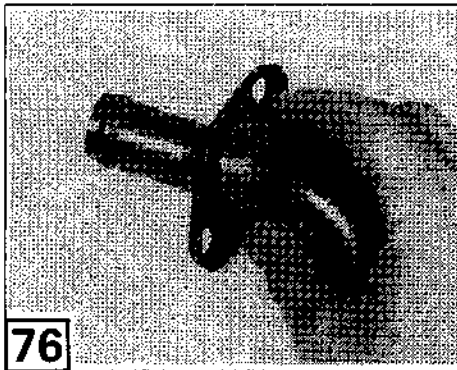
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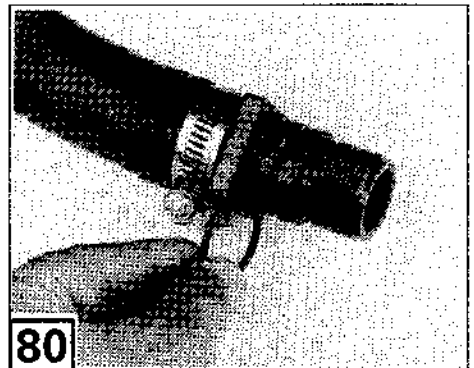
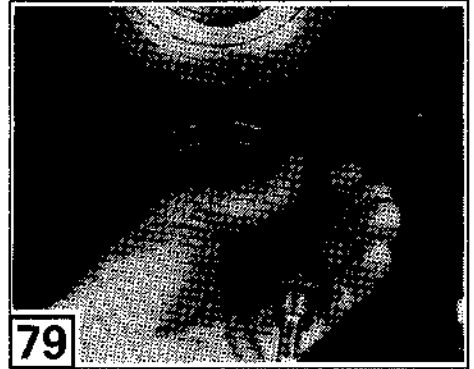


Water Tube Installation

- 76** 1. If the grommet was discarded, face the tapered end of a new one toward the hooked end of the tube and slide it up against the flange.
- 77** 2. From inside the transom, insert the hooked end of the tube through the gimbal housing. Hold the tube vertically, then install the two mounting screws and tighten them to a torque of 10-12 ft. lbs. (14-16 N·m).

Shift Cable Installation

- 78** 1. Push rubber boot onto engine end of shift cable. Attach small grommet © to cable, then push it into the boot.
- 78** 2. Slide cable into sleeve. Apply a bead of *Scotch Grip™ rubber adhesive 1300* around end of sleeve, and pull boot onto sleeve. Attach two tie straps at the points shown to seal boot to sleeve, and boot to grommet.
- 79** 3. Wrap plastic tubing around shift cable and push it into sleeve. End of tubing should contact back of hex fitting when in place.

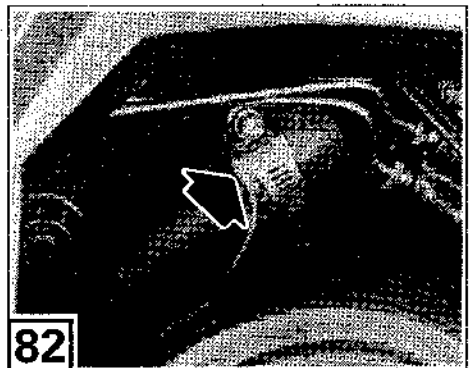
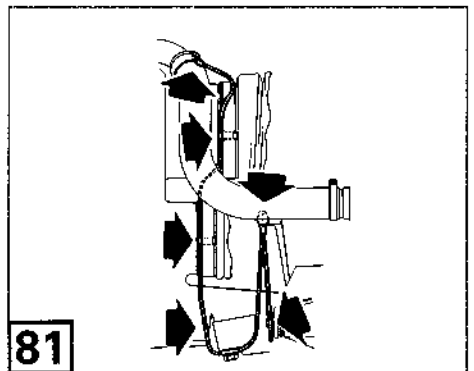


Water Hose Installation

1. Remove and discard the nipple O-ring. Clean all grease from the nipple making sure the drain hole is clear. If the nipple needs to be replaced, unclamp it and pull it out of the hose.
- 80** 2. Coat a new O-ring with *OMC Triple-Guard* grease. Slide it onto the nipple and position it in the groove closest to the square at the end of the fitting. Clean excess grease out of drain hole and drain groove.

Note Do not place an O-ring in the drain hole groove. This would prevent water draining out during winterization, and could result in freeze damage.

- 81** **82** 3. Slide a clamp onto the upper end of the hose. Position the screw head so that it will be behind the port hydraulic lines as shown. Push the hose onto the water tube, then rotate it until the nipple points directly outward. Slide the ground strap clip under the hose clamp. Tighten the clamp securely.



Note Clamp's screw head must be behind hydraulic lines to prevent it contacting the pivot housing when drive is in a full tilt position. This may limit tilt range, and damage clamp and hose.

4. Check the position of the nipple drain hole. If it's not facing down, loosen the nipple clamp and twist the nipple until it's facing that direction. Tighten clamp securely.

Bellows, Exhaust and U-Joint Installation

83 1. Coat the outside surface of the gimbal bearing bore with *OMC Gasket Sealing Compound*. Do not put sealer on the outside of the exhaust opening.

84 **85** 2. Place a worm clamp on the small end of the U-joint bellows. There is an internal rib that must engage a corresponding groove around the opening's surface. Push the bellows on and engage the groove, then rotate the clamp until the screw fitting is in the one or two o'clock position. Slide ground strap clip under hose clamp. Tighten the clamp securely.

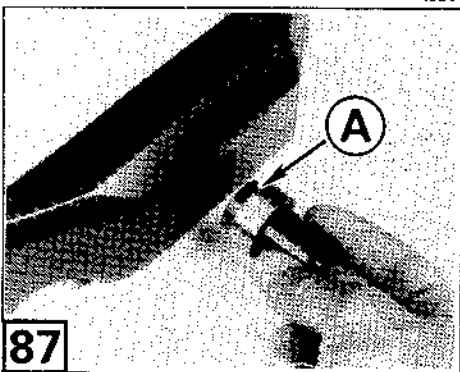
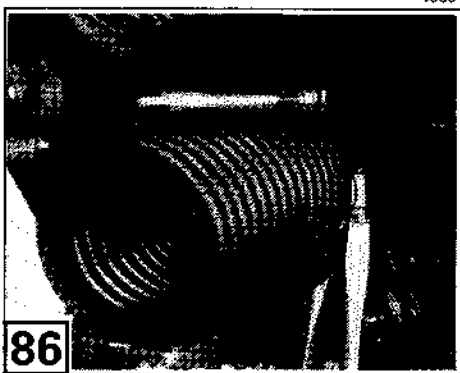
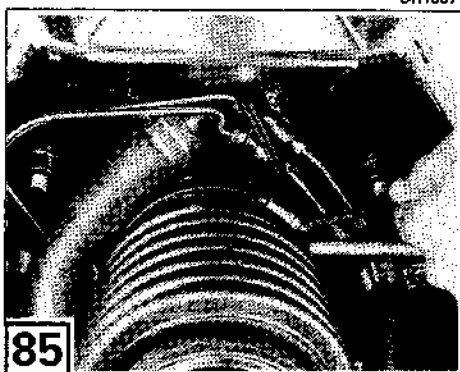
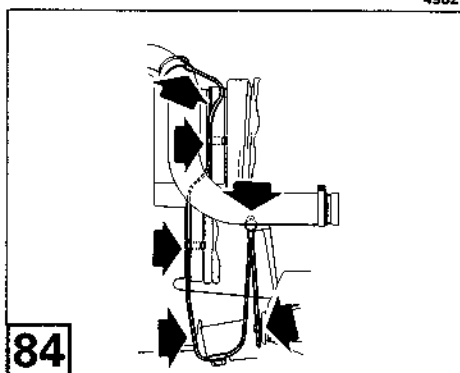
Note Clamp's screw position is important. If not properly positioned, steering radius will be reduced because of gimbal ring contacting clamp head when turning.

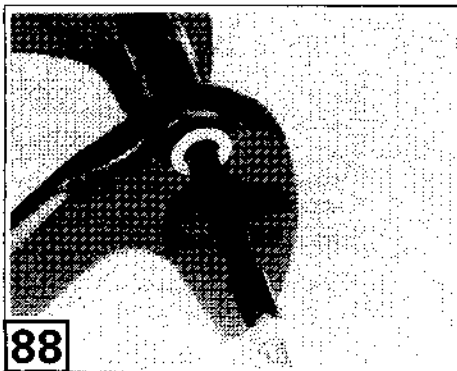
84 **86** 3. The large end of the exhaust bellows has an internal rib similar to the U-joint bellows. Place a worm clamp on this end, then push the bellows onto the exhaust tube until it engages the groove. Bellows must be positioned with exhaust relief cutout facing down. Turn the clamp screw to the three o'clock position. Slide ground strap clip under hose clamp and tighten the clamp securely.

Gimbal Ring Disassembly

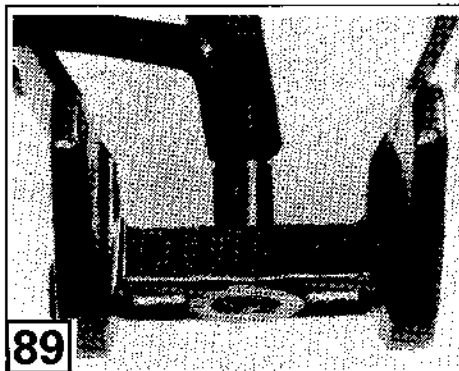
1. Remove and discard the O-ring around the upper steering post.

87 2. Face the large diameter end **A** of OMC Remover/Installer P/N 912281 toward the gimbal ring. Insert the tool into either tilt bearing and drive it out. Remove the other tilt bearing in a similar manner.

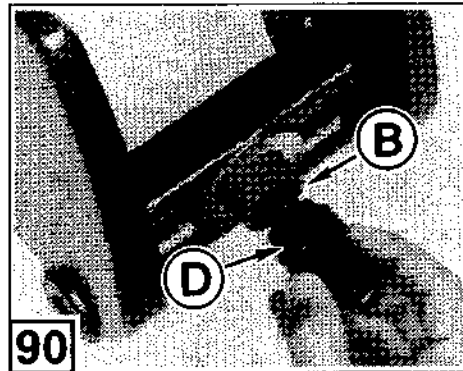




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88 3. Remove both nylon cylinder shaft bushings. Use OMC Two-Jaw Puller P/N 391010 and OMC Slide Hammer P/N 391008.

89 4. Insert small end of OMC Remover/Installer P/N 912269 into bearing, and drive out bearing.

94 5. If bushing © around upper steering post is damaged, it can be removed by splitting it down one side with a sharp tool.

Note When replacing steering post bushing, check upper bearing inside gimbal housing to see if it also needs replacement.

Gimbal Ring Assembly

90 1. Lightly oil the outside of a new lower pivot bearing © and place it in the bore. Use OMC Installer P/N 912281 © to drive the bearing into the bottom of the gimbal ring until the bearing seats.

91 2. Apply *OMC Triple-Guard* grease to the outside of two new nylon bushings. Use OMC Installer P/N 912281 to drive them into the cylinder shaft bore until they seat.

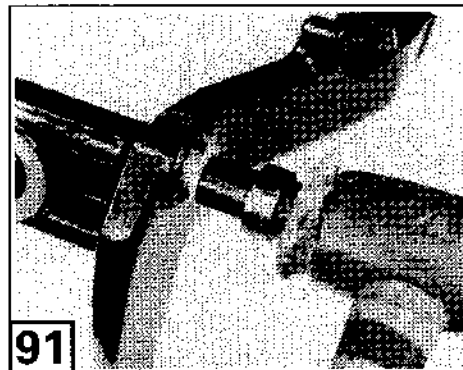
92 3. Apply *OMC Triple-Guard* grease to the inside of both nylon bushings ©.

4. Place a new tilt bearing on the blunt end of OMC Installer P/N 912281. Lightly oil the outside of the bearing, then insert tool and bearing into the gimbal from the outside.

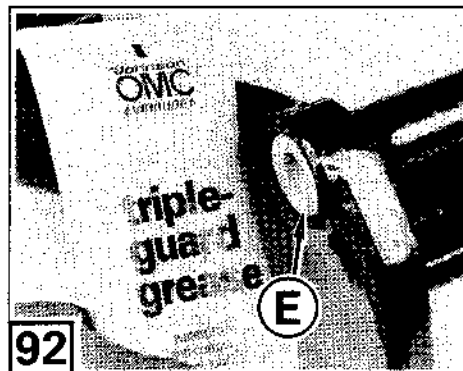
93 5. Place the gimbal and installer © in a vise as shown. Tighten the jaws until the bearing seats. Remove the gimbal and check to see that the bearing is flush to 0.010 in. below the gimbal's inner surface. Install the other tilt bearing in an identical manner.

6. If upper steering post bushing was removed, lubricate inside diameter of a new bushing with *OMC Triple-Guard* grease, and place bushing on top of steering post. Install steering arm and center bolt. Tighten center bolt until bushing seats, then pull off steering arm.

94 7. Coat a new O-ring with *OMC Triple-Guard* grease and place it around the base of the upper steering post.



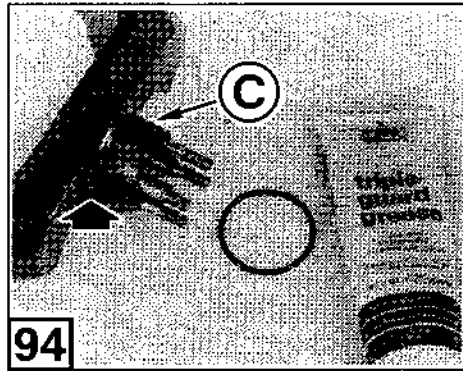
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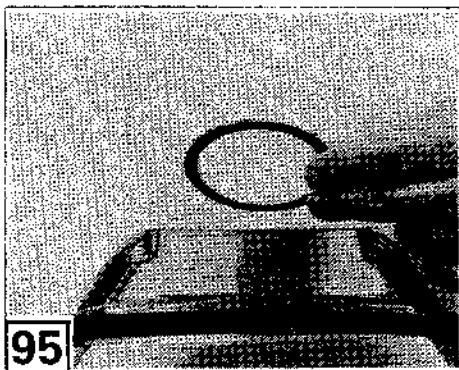
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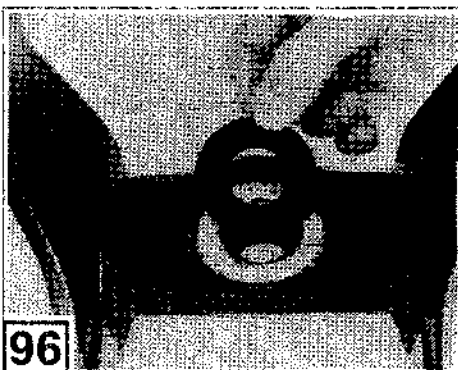
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Gimbal Ring Installation

95 1. Coat the thrust washer with *OMC Triple-Guard* grease and set it over the upper pivot bearing inside the top of the gimbal housing.

2. From inside the boat, position the steering arm over the upper steering bearing inside the gimbal housing.

96 3. Apply *OMC Triple-Guard* grease to the nylon thrust washer and place it on top of lower steering pivot seal.

97 4. If the lower pivot post came out during disassembly, reinsert it into the lower support.

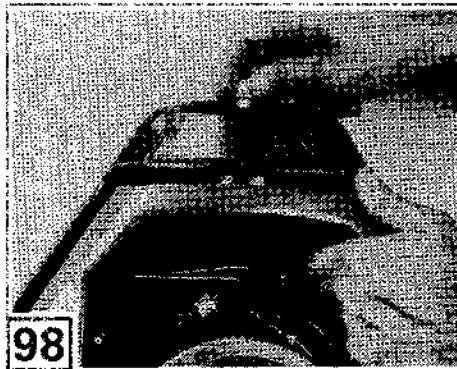
98 5. Slide the gimbal ring up over the lower steering post and into the upper steering bearing and steering arm. Screw in the center bolt by hand until it's finger tight.

Note When the gimbal ring is properly centered in the upper bearing, the gimbal studs will be flush with the top of the steering arm when the bolt is finger tight. If the studs are not at the position described, the upper bearing will be damaged when the center bolt is tightened.

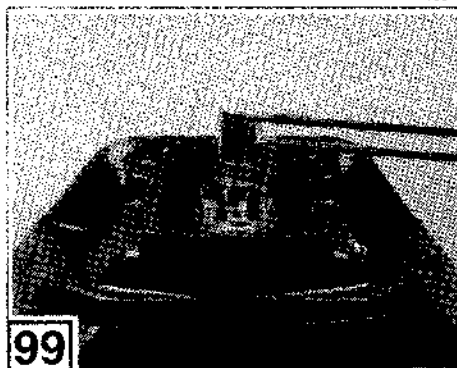
99 6. Torque the center bolt to 64-72 ft. lbs. (88-98 N·m).

1 7. Place the washer on top of the steering arm. Install four new elastic locknuts and tighten them to a torque of 12-14 ft. lbs. (16-19 N·m).

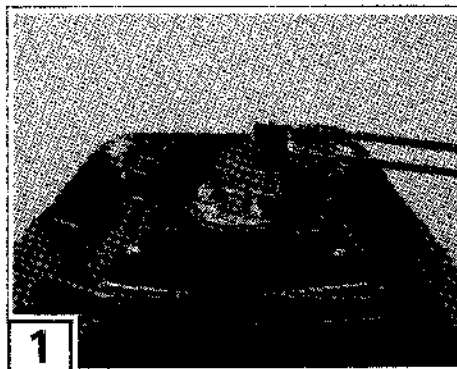
2 8. Install a new foam seal on the underside of the steering cavity cap. Carefully align the seal notches with those in the cap.



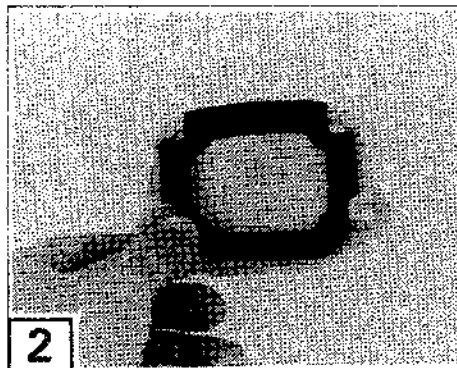
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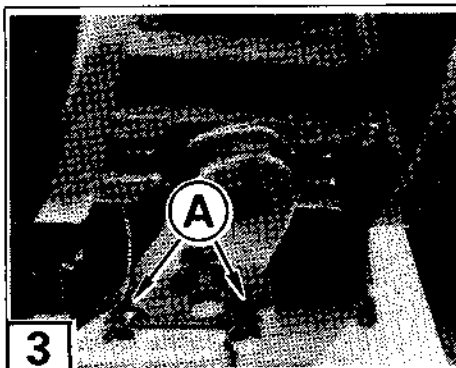


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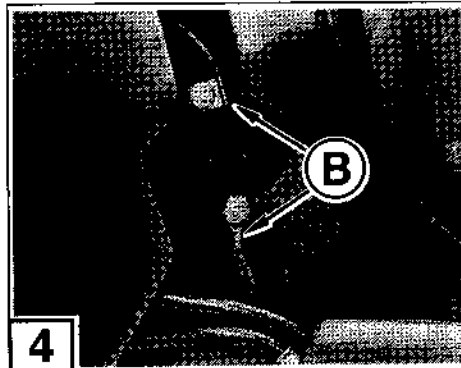


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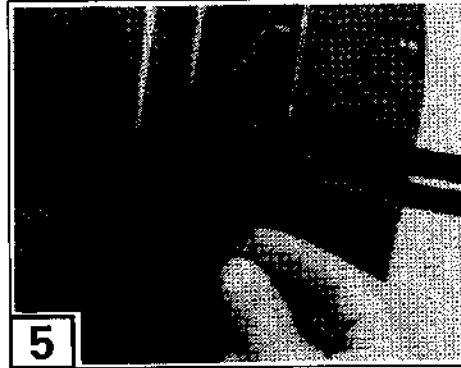
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9. Install cap and tighten two mounting screws to 60-84 in. lbs. (7-9 N·m). Set the gimbal housing cover in place. Install two mounting screws and tighten them to a torque of 60-84 in. lbs. (7-9 N·m).

3 10. Install the lower steering support bracket. Seat it with a mallet if necessary. Attach the trim cylinder ground wires to the two forward screws A, then install the lock washers. Screw in all three mounting screws and tighten them to a torque of 18-20 ft. lbs. (24-27 N·m).

4 11. Turn gimbal ring and attach ground wires B to gimbal ring.

5 12. Turn gimbal ring to port and attach the trim sender. Tighten the screws to a torque of 18-24 in. lbs. (2-3 N·m).

Trim/Tilt Cylinders Installation

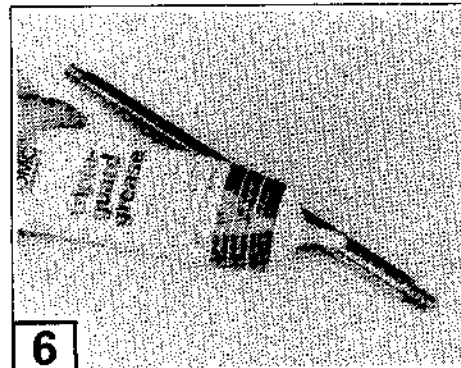
6 1. Clamp the trim/tilt cylinder rod in a soft-jaw vise and remove the remaining locknut and washer. Clean the rod, then coat it with *OMC Triple-Guard* grease.

7 2. Replace the cylinder's nylon bushings if they're damaged, then slide the rod through the cylinders and gimbal ring.

8 3. Center the rod, then lightly coat the threaded ends with *OMC Gasket Sealing Compound*.

9 4. Install both washers and two new elastic locknuts. Hold one nut and tighten the other to a torque of 32-34 ft. lbs. (43-46 N·m).

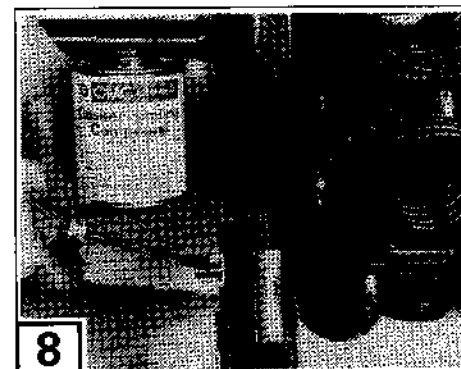
9 5. Route the trim cylinder ground wire between the cylinder lines and the gimbal ring. Slide the ground wire onto the ground screw, then install the lockwasher. Attach the screw to the port side B of the gimbal ring and tighten it securely.



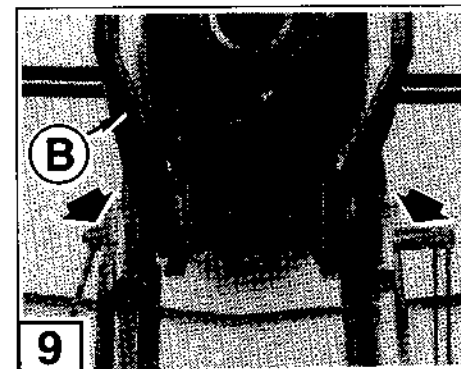
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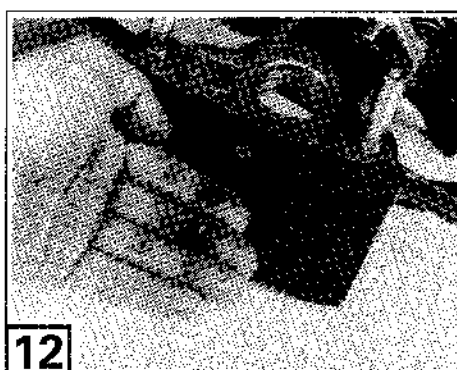
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Pivot Housing Disassembly

10 1. Lift out the shift cable guide if you haven't already done so.

11 2. Remove and discard the cooling passage O-ring.

12 3. Unscrew the three water drain and vent plugs and discard the seals.

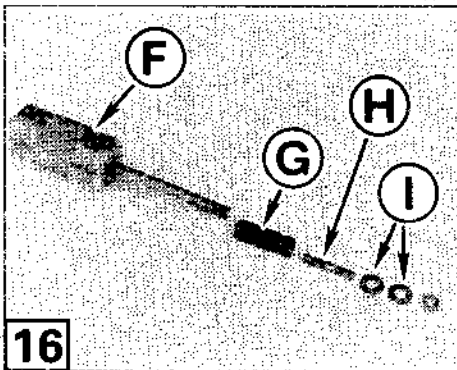
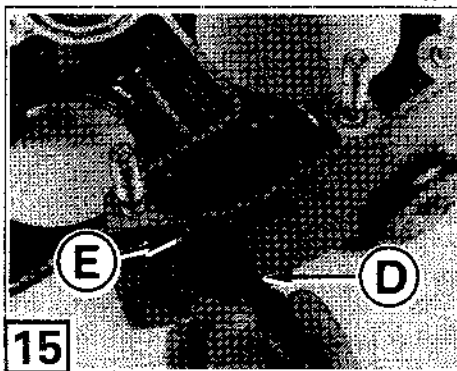
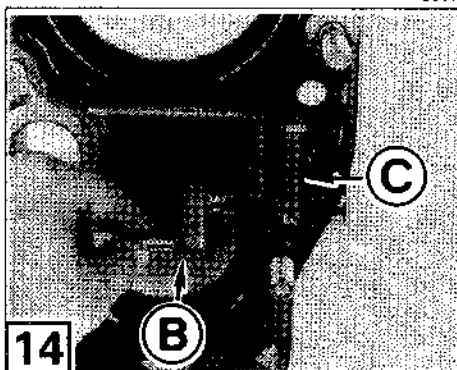
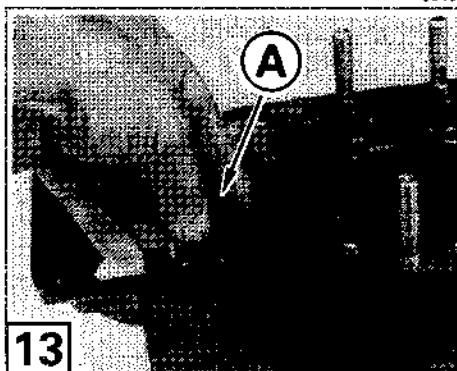
13 **14** 4. Remove the shift lever screw **A** and discard it. Pull out the bellcrank **B** and lift out the shift lever and roller assembly **C**. Discard the bellcrank O-ring.

Note Do not remove the bellcrank bushing or bearing unless they're damaged, corroded or binding the shift lever.

15 5. Place the large end of OMC Driver P/N 912270 **D** against the bearing **E**. Use a hammer and drive the bearing through the housing until it's free.

16 6. To remove the bushing, you'll need OMC Puller P/N 391008 **E**, OMC Adapter P/N 390898 **G**, the adapter stud **H**, two 1/4" I.D. x 5/8" O.D. flat washers **I**, and a 1/4" - 20 nut.

17 7. Assembly the puller, adapter and stud. Insert the tool through the bushing **J**, then attach the washers and nut **K**. Tighten the adapter so that the adapter, nut and washers are pulled tightly against the bushing. Pull the bushing out of the housing.



- 18** 8. Inspect the nylon friction washer on the pivot bosses. Peel them off and discard them if they're damaged. Remove and inspect the thrust washer **L** underneath.

Pivot Housing Cleaning and Inspection

Clean housing in solvent and dry thoroughly. Remove sealer and/or adhesive from the cooling passage opening, U-joint bellows opening, the bellcrank, the pivot bosses, and the shift lever bearing and bushing.

Note Clean screw holes with solvent only. A thread tap would damage the *Heli-Coil* inserts and force their replacement.

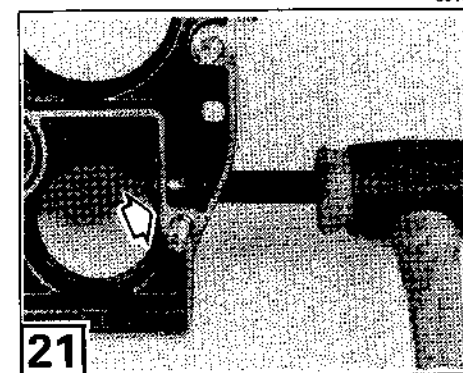
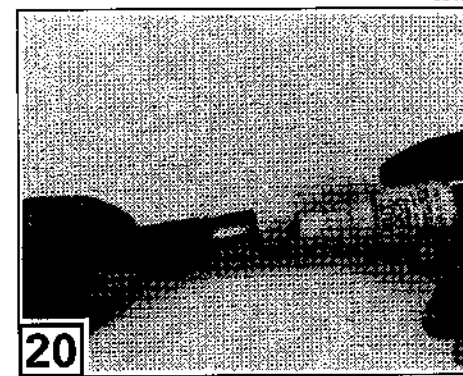
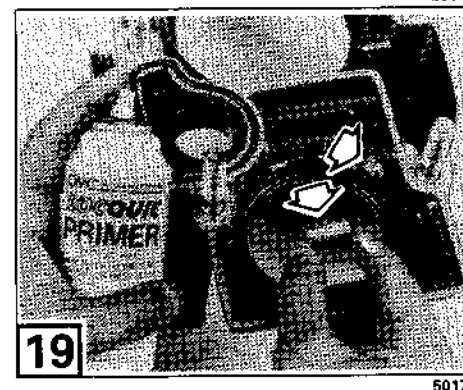
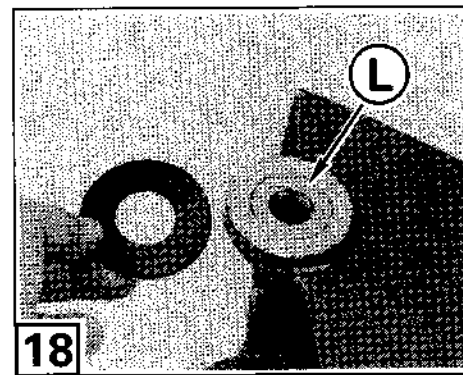
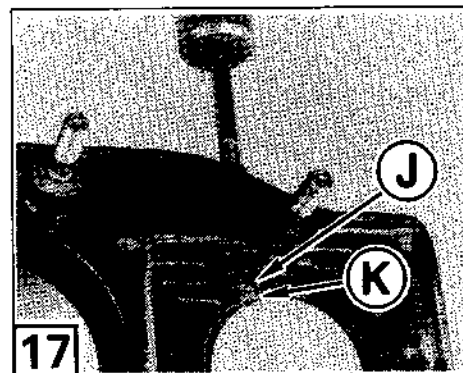
- **Bellcrank** - Inspect O-ring groove for sharp edges; check shaft length for burrs or corrosion that would hinder shift movement.
- **Shift Lever** - Check roller for freedom of movement; inspect screw hole for damaged threads.
- **Bushing and Bearing** - Inside diameter must be free from burrs, corrosion, etc. that would restrict bellcrank movement. Clearance between bearing and bushing must allow free shift lever movement after lever and bellcrank are installed.
- **Drain Hole** - Clean thoroughly to allow complete water drainage.
- **O-ring Seal Groove** - Check for sharp edges that would prevent O-ring sealing water passage.
- **Mounting Studs** - Look for damaged threads and looseness.

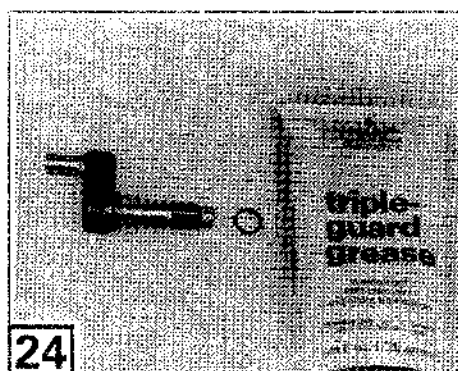
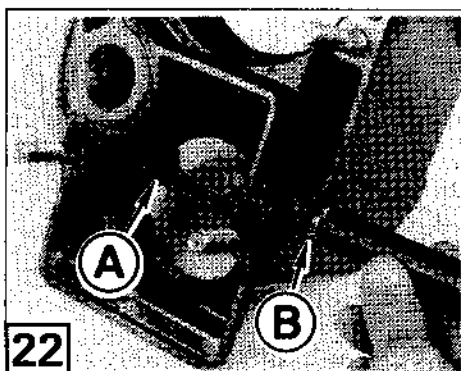
Repair or replace all suspect components.

Pivot Housing Assembly

- 19** 1. Spray a new bellcrank bushing and the housing bore with *OMC Locquic Primer*. Allow to air dry.

- 20** **21** 2. If replaced, slide a new bushing onto OMC Driver P/N 912170, and apply *OMC Nut Lock* to the outside of the bushing. Insert the bushing and tool into the bore and tap in the bushing until it seats.





- 22** 3. Place OMC Stop Gauge P/N 984322 (A) on the housing and push it up against the studs. The gauge will set the clearance for the shift lever by limiting the depth of the bellcrank bearing (B).

Note Clean bushing with *OMC Locquic Primer* and apply *OMC Nut Lock* adhesive to outside of bearing. Use the large end of OMC Driver P/N 912270 to tap in the bearing until it contacts the stop gauge.

- 23** 4. Coat new O-rings with *OMC Gasket Sealing Compound* and place them on the three drain and vent screws. Install the screws and tighten them to a torque of 50-60 in. lbs. (6-7 N·m).

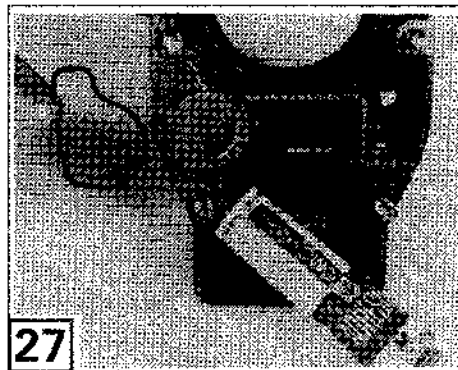
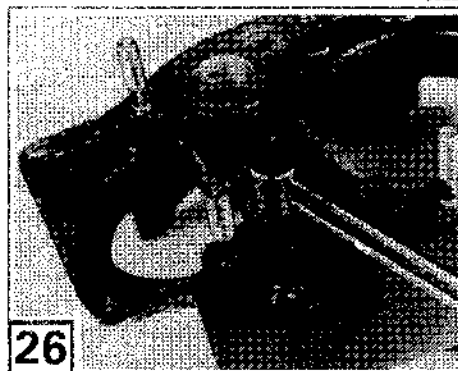
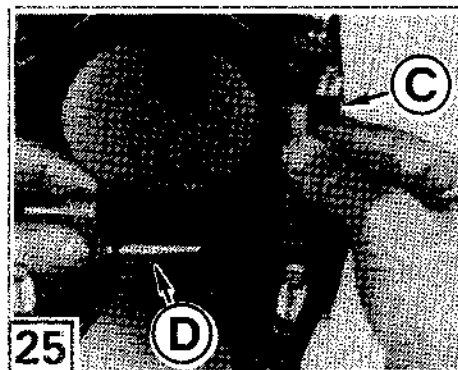
- 24** 5. Coat a new O-ring with *OMC Triple-Guard* grease and slide it into the bellcrank groove, then apply *OMC Triple-Guard* grease to the shaft.

- 25** 6. Hold the shift lever and roller (C) between the bushing and bearing. Insert the bellcrank (D), engage the shift lever keyway, then seat the bellcrank.

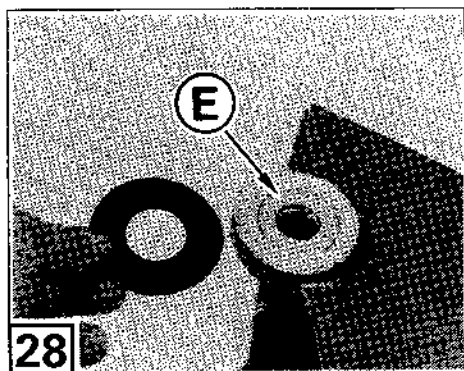
- 26** 7. Position shift lever screw hole over recess in bellcrank. Install a new lockpatch screw and tighten it to a torque of 5-7 ft. lbs. (7-9 N·m).

⚠ Note Always use a new lockpatch screw, and do not substitute other hardware for this part. Apply torque only as specified. If bellcrank and shift lever disengage, there will be a sudden and unexpected loss of control over forward and reverse movement of boat.

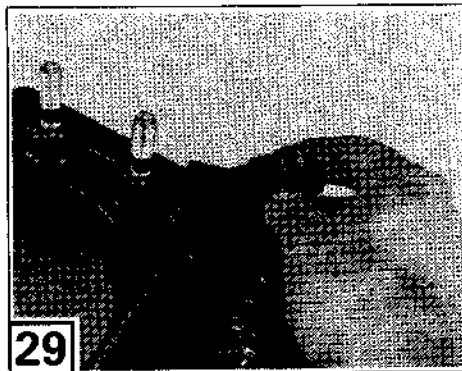
- 27** 8. Apply *OMC Adhesive M* sealant to the groove around the water passage, and install a new O-ring seal.



Safety Related



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28 9. If the old pivot boss friction washers were removed, make sure a thrust washer **E** is installed in each pivot. Install two new friction washers and coat them with *OMC Triple-Guard* grease.

29 10. Lubricate shift lever roller and cable guide pocket with *OMC Triple-Guard* grease. Pivot the shift lever and slip the cable guide under the roller. Push in the shift lever all the way to hold the cable guide in place.

Pivot Housing Installation

30 1. Apply *OMC Gasket Sealing Compound* to a new shift cable O-ring. Slide it onto the cable end and position it against the fitting hex.

31 2. Wipe excess sealer off the cable end, then coat the entire length with *OMC Triple-Guard* grease.

32 3. Insert the cable end through the rear of the housing and into the guide. Screw in the fitting and use a crowfoot adapter to tighten it to a torque of 35-37 ft. lbs. (47-50 N·m). Attach the crowfoot to the torque wrench at a 90° angle to ensure an accurate reading.

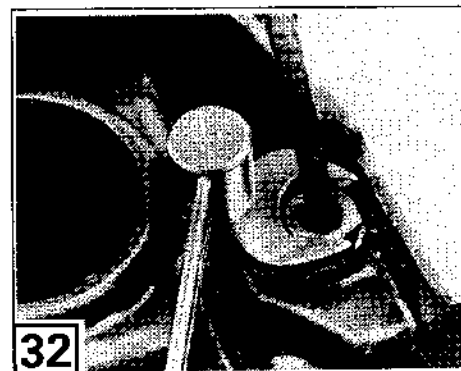
4. Push the pivot housing into the gimbal ring. Guide the water tube nipple through the housing, and position the bellows behind their respective openings.

33 5. Align one gimbal ring pivot pin hole with the hole in the pivot housing. Look inside to see if the thrust washer is still in position and not blocking the hole. Screw in the pivot pin until it seats, **but do not torque it at this time.**

34 6. Align and install the other pivot pin. Tilt the housing up and down to see if it moves freely. Use a ½" hex socket and tighten the pivot screws to a torque of 105-120 ft. lbs. (142-163 N·m).



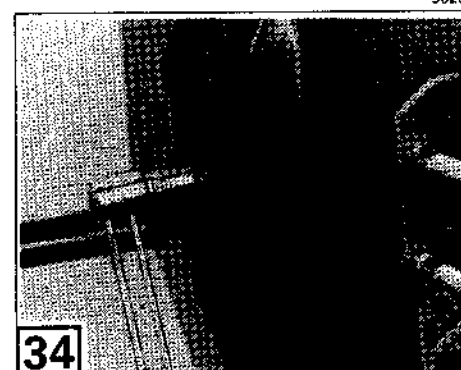
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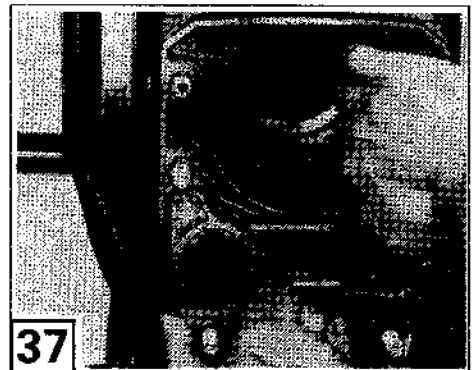
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35 7. Pull the water tube through the pivot housing as far as it will go. Screw on the water nipple nut. If the nipple turns with the nut, or nipple end does not protrude through nut when it's seated, then the square nipple collar is not located properly behind the housing. Rotate nipple right or left to reposition it. Tighten nut to a torque of 96-120 in. lbs. (11-14 N-m).

36 8. Apply *OMC Gasket Sealing Compound* around the V-shaped lip inside the U-joint bellows opening. This will seal the bellows against water entry.

37 **38** 9. Pull the U-joint bellows through the opening and seat the lip in the groove. Tilt the pivot housing and reach through the exhaust opening to help engage the lip. Bellows must seal the entire circular openings; any flat spot on the lip indicates the bellows has not engaged the V-groove.

39 **40**  10. Pull the exhaust bellows through the pivot housing. Seat the bellows channel around the lip of the pivot housing opening. **Wear safety glasses.** Insert the retaining ring inside the bellows. Position the opening upward as shown for secure attachment. No sealer is required on the exhaust bellows lip.

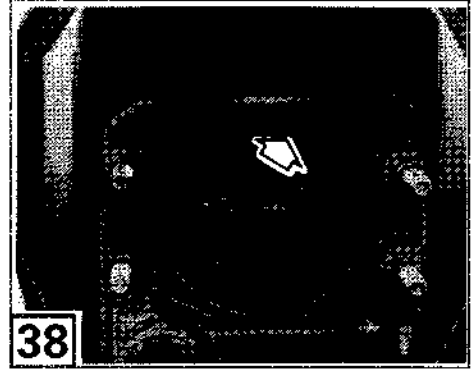
Transom Bracket Shift Cable Adjustment

Note Whenever the shift cable is replaced, the cable must be adjusted prior to attachment at the engine shift bracket to ensure full range of travel and proper neutral position.

41 1. Screw cable anchor onto end of core wire until it's flush with end of wire.

42 2. Place OMC Bellcrank Alignment Plate **A** P/N 914017 on the two lowest pivot housing studs. Slide shift cable guide **B** in or out until bellcrank pin **C** is captured by slot in alignment plate.

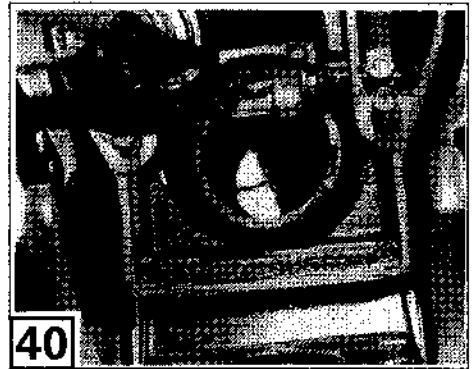
43 3. Install three 1/8" (3,18mm) thick 7/16" (11,11mm) I.D. flat washers **D** (OMC P/N 312972), and one 7/16 hex nut **E**, on each stud. Tighten nuts so there is no movement in alignment plate.



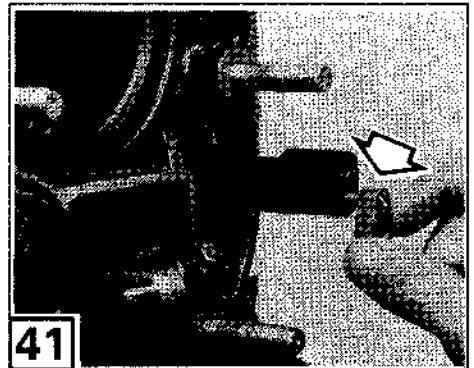
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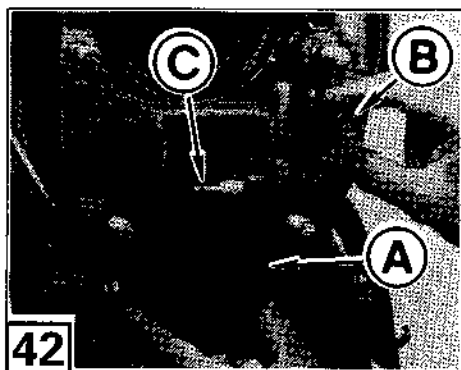
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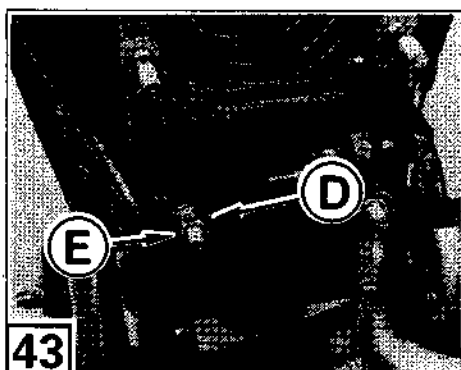
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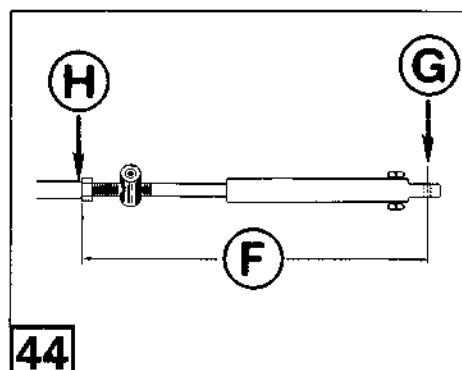
Safety Related



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Important This is a critical dimension. Use care to make certain dimension is maintained while making the following adjustments.

44 4. Slide casing guide at engine end of cable in or out to set a $7 \frac{9}{16}'' \pm \frac{1}{32}''$ (19,23 cm $\pm$ 0,79 mm) dimension **F** as measured from the center of shift pin hole **G** to the edge of brass cable fitting **H**.

45 5. Being careful not to disturb cable setting, screw on swivel retainer **I** until it just contacts the shift cable guide, then install screw finger tight.

6. Remove alignment plate.

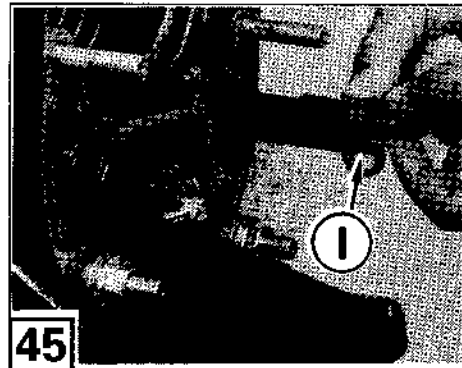
46 **!** 7. To fully engage shift cable guide and prevent binding of shift cable, push cable all the way forward into pivot housing. Hold cable guide vertical with a $\frac{9}{16}''$ wrench, then **tighten the screw to 10-12 ft. lbs. (14-16 N.m)**. Holding guide prevents it from twisting when screw is tightened.

Note Failure to hold guide vertical when tightening screw will cause cable to stick at farthest end of travel, in or out. Cable actuation force must not exceed 5 lbs. when extending or retracting casing guide (engine end) $1\frac{1}{4}$ in. in either direction from neutral position ($2\frac{1}{2}$ in. total travel).

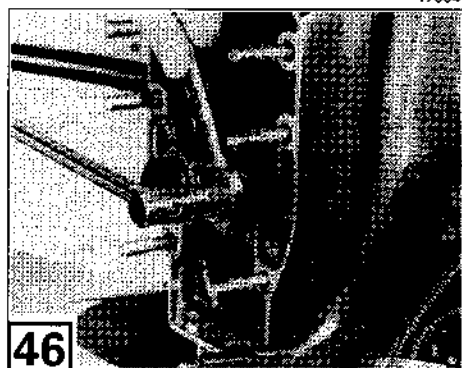
47 8. Install collared retainer nut **J** and tighten to a torque of 24-36 in. lbs. (.23-.34 N.m).

44 9. Recheck dimension of casing guide at engine end of cable to verify the $7 \frac{9}{16}'' \pm \frac{1}{32}''$ (19,23 cm $\pm$ 0,79mm) dimension was maintained. Repeat steps 1 thru 8 if this dimension was not correct.

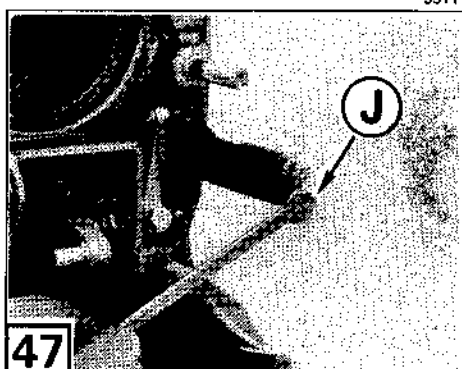
48 10. Lightly coat the bellcrank pin with *OMC Triple-Guard* grease.



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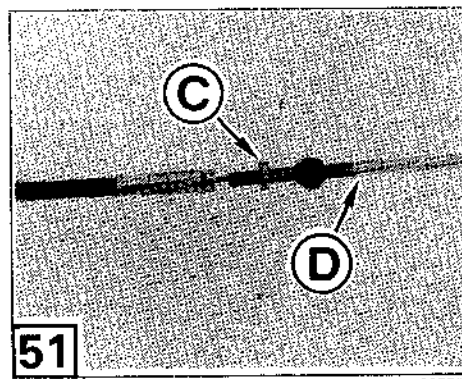
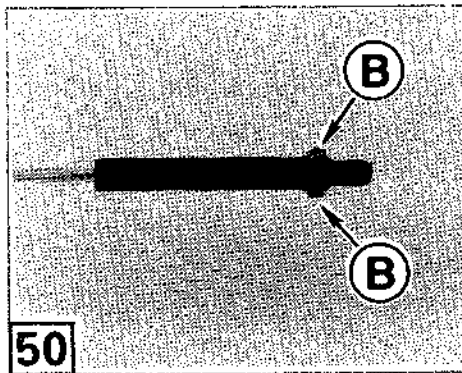
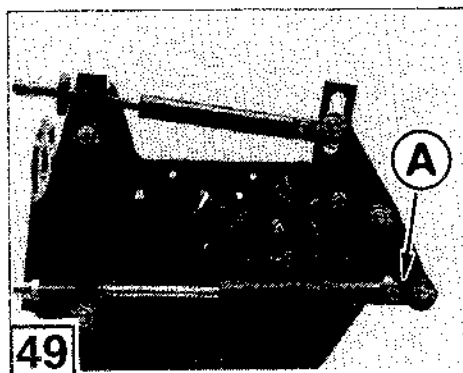
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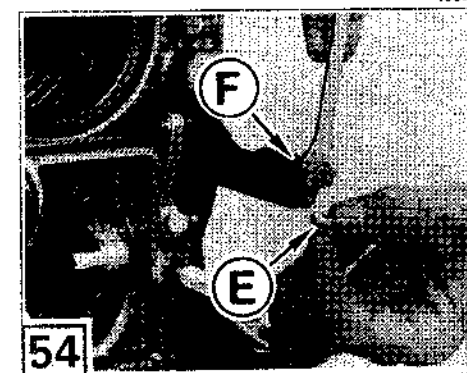
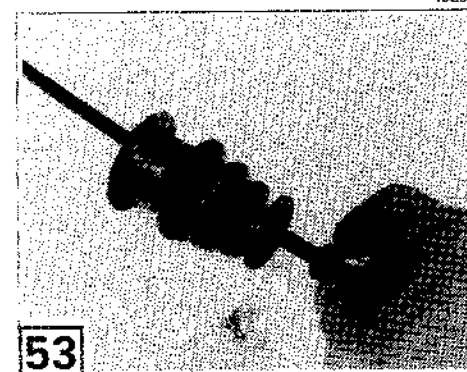
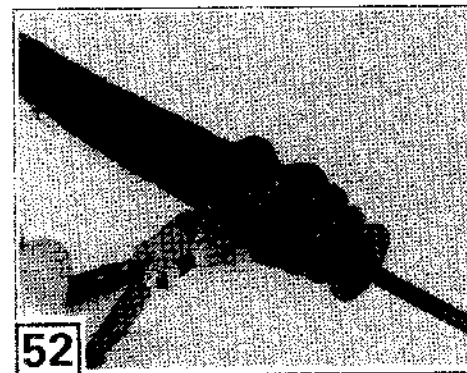
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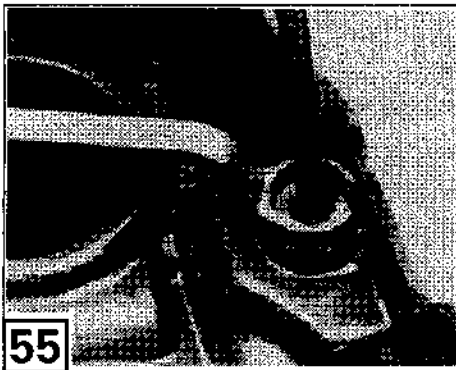


Transom Bracket Shift Cable Replacement

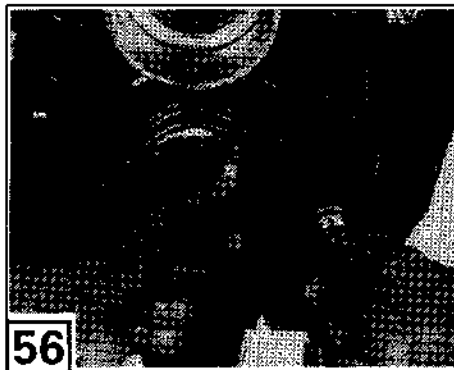
Removal

- 49** 1. Disconnect transom bracket shift cable **A** at engine.
- 50** 2. Loosen both set screws **B** and remove casing guide.
- 51** 3. Loosen lock nut **C** and unscrew casing guide jacket **D** from shift cable.
- 52** 4. Cut the two tie straps securing the boot to the end of the cable sleeve inside the boat. Pull the boot off the sleeve.
- 53** 5. Pull the split-ring grommet from the end of the boot and take it off the cable. Slide the boot off the end of the cable.
6. Remove the vertical drive following the procedure in **Section 17**.
- 54** 7. Remove collared retainer nut **E** from inner shift cable wire. Remove screw and unscrew retainer **F** at end of shift lever.

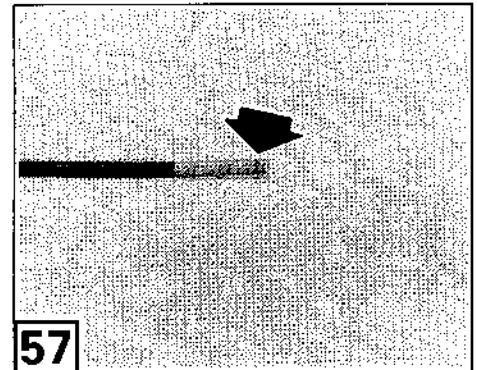




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8. Perform all procedures under Pivot Housing Removal.

55 9. Pull the pivot housing out as far as you can. Loosen the cable retaining nut, then remove pivot housing.

56 10. Slide the plastic corrugated casing off the shift cable and pull the cable out of the housing.

Installation

57 1. Push inner cable in flush with shift cable casing.

58 2. Wrap plastic tubing around shift cable. End of tubing should contact back of hex fitting when in place. Lubricate plastic tubing with soapy water and push cable casing through sleeve and connector.

59 3. Apply *OMC Gasket Sealing Compound* to a new shift cable O-ring. Slide it onto the cable end and position it against the fitting hex.

60 4. Wipe excess sealer off the cable end, then coat the entire length with *OMC Triple-Guard* grease.

61 5. Insert the cable end through the rear of the pivot housing and into the guide. Screw in the fitting and use a crowfoot adapter to tighten it to a torque of 35-37 ft. lbs. (47-50 N·m). Attach the crowfoot to the torque wrench at a 90° angle to ensure an accurate reading.

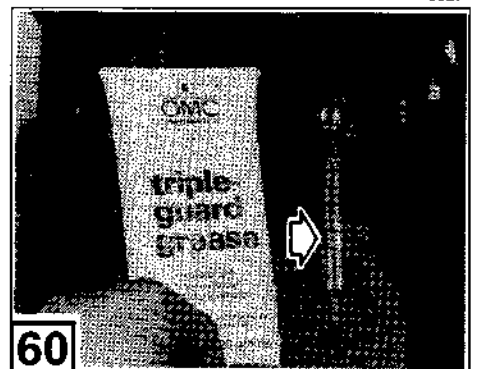
6. Perform all procedures under Pivot Housing Installation.



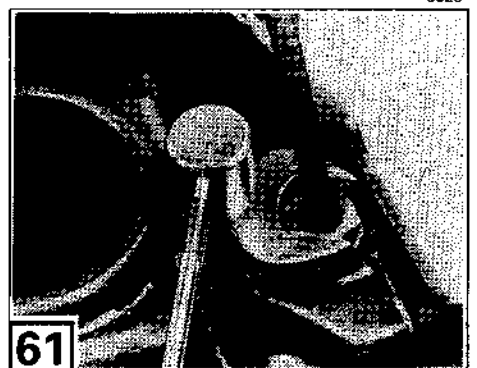
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62 7. Push rubber boot onto engine end of shift cable. Attach small grommet **(A)** to cable, then push it into the boot.

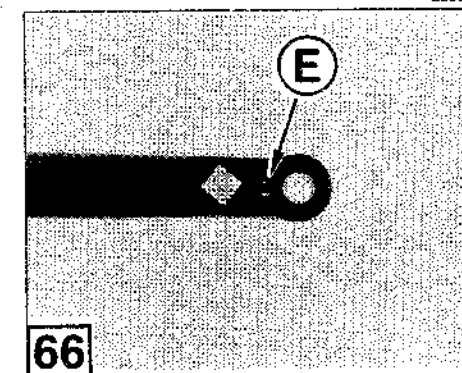
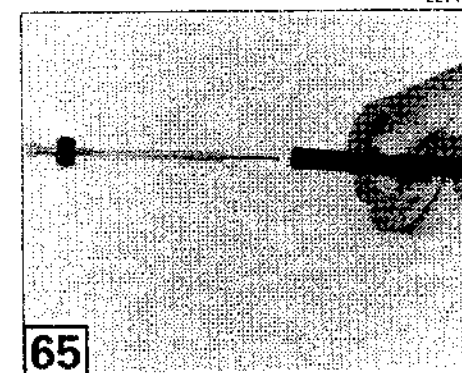
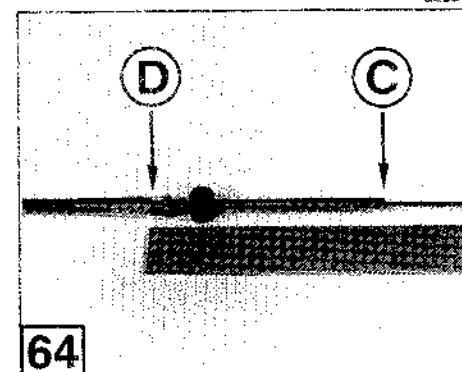
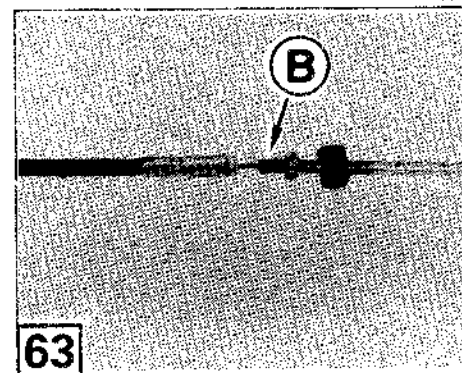
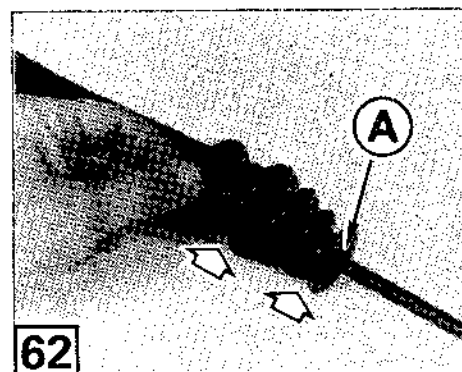
62 8. Apply a bead of *Scotch Grip™* rubber adhesive 1300 around end of sleeve, and pull boot onto sleeve. Attach two tie straps at the points shown to seal boot to sleeve, and boot to grommet.

63 **64** 9. Screw casing guide jacket **(B)** into cable until it is seated. When properly installed, it must measure no more than 4 15/16" (12,5 cm) from forward end **(C)** to cable tip **(D)**.

64 10. Tighten locknut to a torque of 35-50 in. lbs. (4.0-5.6 N·m).

65 **66**  11. Lubricate cable and casing with *OMC Triple-Guard* grease. **Slide casing onto guide jacket until inner cable seats against sight hole **(E)**.** Turn one set screw against core wire and tighten to a torque of 18-20 in. lbs. (2-2,3 N·m). Turn other set screw against core wire and also tighten to a torque of 18-20 in. lbs. (2.0-2.3 N·m).

12. Proceed to "Transom Bracket Shift Cable Adjustment" (page 6-24).



Section 7

Upper Gear Housing

Table of Contents

Checking Gear Backlash	7-18	U-joint Shaft Assembly	
Impeller Shaft Replacement	7-12	Assembly	7-14
Pinion Bearing Carrier Assembly		Cleaning and Inspection	7-13
Assembly	7-9	Disassembly	7-12
Cleaning and Inspection	7-8	Installation	7-17
Disassembly	7-7	Removal	7-4
Installation	7-17	Shimming	7-15
Removal	7-4	Upper Gear Housing	
Rolling Torque Procedure	7-10	Assembly	7-16
Shimming	7-17	Cleaning and Inspection	7-6
Rear Bearing Cup		Disassembly	7-3
Installation	7-16	Installation	7-21
Removal	7-5	Removal	7-3
Rolling Torque		Rolling Torque Procedure	7-18
Pinion Bearing Carrier	7-10	Vertical Drive Removal	7-3
Upper Gear Housing	7-18	Water Pump	
Shimming		Assembly	7-20
Pinion Bearing Carrier	7-17	Cleaning and Inspection	7-19
Thrust Plates	7-5	Disassembly	7-19
U-joint Shaft	7-15	Installation	7-20
Specifications	7-22	Removal	7-3
Thrust Plates, Shimming	7-5	Water Tube and Cover	
U-joints		Installation	7-10
Assembly	7-11	Removal	7-5
Disassembly	7-11		
U-joint Bearing Carrier Assembly			
Assembly	7-14		
Cleaning & Inspection	7-13		
Disassembly	7-13		



Safety Warning

- Before working on any part of the upper gear housing, read the section called Safety, at the beginning of this manual.
- When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or passengers.

OMC Special Tools

P/N	Description
311875	Spline Socket
311880	Drive Handle
314429	Installer
314438	Socket
432129	Two Jaw Puller - Large
432127	Bridge Assembly
912269	Installer/Remover
912270	Driver
912272	Spanner Wrench
912276	Combination Installer
912278	Holding Block
912280	Alignment Plate
912281	Installer
912286	Installer
912287	Installer
912290	Shim Gauge
912291	Cup Remover
984329	Shim Gauge Kit
984330	Spanner
986265	U-Joint Adaptor Kit

Sealants, Lubricants and Adhesives

OMC Gasket Sealing Compound
OMC Hi-Vis® Gearcase Lubricant
OMC Locquic Primer
OMC Triple-Guard® Grease
OMC Ultra Lock Adhesive

O.T.C. Service Tools

T74P-4635-C U-joint Tool
OEM 1027 Universal Dial Indicator Set

Order From:
OTC Service Tools
2013 4th St. N.W.
Industrial Park
Owatonna, MN 55060

Toll free order line: 1-800-533-5338

Vertical Drive Removal

To service components of the upper gear housing, with the exception of the water pump assembly, remove vertical drive from transom bracket and completely drain it of oil. Follow the procedure in **Section 17**.

Upper Gear Housing Removal

To separate upper gear housing from lower gearcase, follow procedure in **Section 8**.

Upper Gear Housing Disassembly

1 1. Securely mount gear housing in a holding fixture. Remove water pump access cover by unscrewing three mounting screws.

2 2. Remove four screws securing upper gear housing cover and set them aside where they won't get intermixed with other screws.

⚠ Note These screws are the longest $\frac{5}{16}$ -18 screws (1 $\frac{1}{8}$ in. thread length) in the upper gear housing. Since the upper cover is the lifting point for the vertical drive, maximum thread engagement is necessary to ensure cover attachment. **Do not substitute any of the eleven shorter screws that are similar in appearance.**

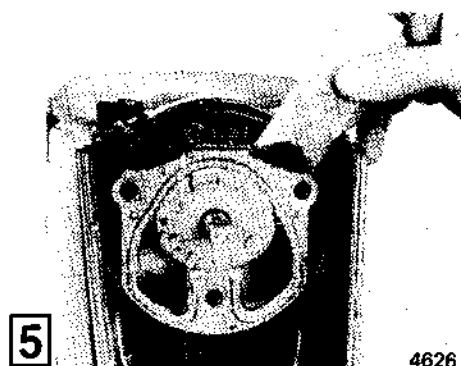
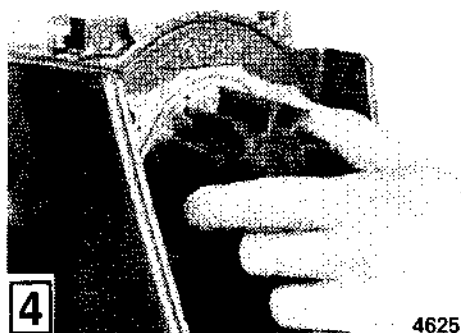
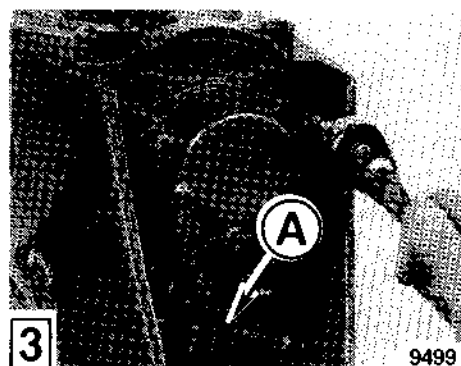
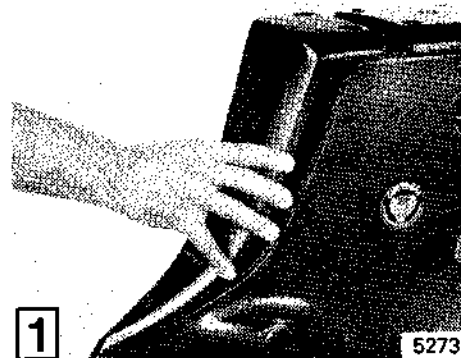
3. Lift off upper cover and discard O-ring underneath.

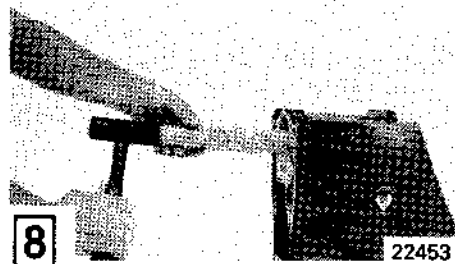
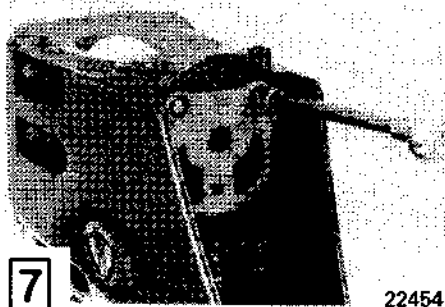
Water Pump Removal

3 1. Pull drain hose **A** out of housing.

3 **4** 2. Unscrew three screws and pull off water pump housing. Pull the impeller off pump shaft if it didn't come off with the housing.

5 3. Pry impeller plate off adaptor, then remove and discard the impeller plate gasket.





U-joint Shaft Assembly Removal

- 6** Unscrew four bearing carrier screws. Grasp U-joint shaft and pull shaft and bearing carrier assembly out of the gear housing.

Note Do not press against or strike impeller shaft while removing U-joint shaft assembly. Impeller shaft could change position and cause premature seal wear and inadequate engagement with impeller.

Water Pump Adaptor Removal

- 7** 1. Remove two screws holding the water pump adaptor.
- 8** **9** 2. The adaptor is held by two O-rings and sealer. A 1½ in. O.D. pipe can be inserted through rear bearing cup from inside housing to drive adaptor out. Discard the adaptor gasket and O-rings.

Pinion Bearing Carrier Removal

- 10** **11** 1. Use OMC Spanner P/N 984330 to unscrew lock ring that holds the pinion bearing carrier. Insert tool into housing. Use two upper gear housing cover screws **A** to secure the spring-loaded arm to top of gear housing. As the screws are turned down, alternate between the two every 3 or 4 turns. Seat screws completely and tighten them securely.

Note Tighten holding fixture securely. The lock ring is torqued to 145-165 ft. lbs. (197-224 N·m).

- 11** 2. Attach a ½ in. breaker bar to the spanner tool and break the lock ring free. After it turns easily, detach the spring-loaded arm from top of housing. Unscrew the lock ring and lift it out.

! Be careful removing the screws. The arm is under tension.

- 12** 3. Remove gear housing from fixture and turn it upside down on a bench. Put a shop cloth inside the housing, underneath the bearing carrier. Use a wooden dowel, 1 to 1½ in. (2,5 to 3,8 cm) in diameter, and drive carrier out with a mallet. Be careful not to damage the lock ring threads.

