

12-62 STERN DRIVE – COBRA AND KING COBRA

TRANSOM ASSEMBLY

Description

† See Figures 231,232,233 and 234

The transom assembly consists of four main components: the pivot housing, gimbal ring, gimbal housing and the inner transom plate.

The pivot housing connects to the upper housing of the stern drive unit at its aft side and rides in the gimbal ring via pivot bolts. The pivot housing also serves as the aft terminus of the exhaust bellows, U-joint bellows and water tube. Tilt capability, via the trim/tilt cylinders is enabled by the pivot housing.

The gimbal ring, aside from holding the pivot housing, rides in the gimbal housing and allows for side-to-side motion of the drive assembly. The steering arm and a lower pivot shaft control this motion.

The gimbal housing is attached to the vessels transom and the inner transom plate.

Pivot Housing

REMOVAL & INSTALLATION



◆ See Figures 231 thru 241

1. Remove the stern drive unit as detailed elsewhere in this section.
2. Turn the steering wheel so the transom assembly is hard over to Port. Loosen the shift cable anchor bracket bolt and then slide out the bracket, disengaging the shift cable. Push (or pull) the shift cable through the pivot and gimbal housings and then pull it all the way through the inner sleeve and connector tube. Remove the seals.

■ If you only intend to remove the pivot housing and have no need for shift cable service, simply push the cable through the pivot housing and then secure it out of the way.

3. Use a magic marker and draw a line across the trim sender and the gimbal ring. Remove the 2 mounting screws, but do not pull out the sender unit.
4. Reach into the housing and disengage the U-joint bellows from the housing lip and then push the bellows out of the housing.
5. On all models except the King Cobra, insert a pair of snap-ring pliers into the exhaust bore and remove the exhaust bellows retaining ring—wear safety glasses and make sure you are very careful when releasing the ring from the pliers. Push the bellows out of the housing.
6. Disconnect the water hose if you haven't already and then the water line nipple nut. Press the nipple as far through the case as you able at this time.
7. Turn the steering wheel hard over to Starboard this time and then find the ground strap bolt on the side of the gimbal ring. Loosen the bolt and remove the ground strap(s). On early models, there may be two bolts; if so, remove the strap from the upper bolt.
8. Straighten out the steering wheel so the housing is centered and then remove the pivot pin from each side of the gimbal ring using a 112 in. hex drive and ratchet. Although it is unlikely that the housing will fall out of the ring on its own, support it while removing the pins just to be safe. Otherwise, grasp the bottom of the housing and pull up on it while swiveling it free of the gimbal ring. Pull the friction and thrust washers off of the pivot pin lugs in the housing.

If you are simply removing the pivot housing to get to another component, ignore the following steps if you wish, but we recommend performing them either way—once again, cheap insurance!

9. Pick the water passage seal (O-ring) out of its recess and throw it away.
10. Unscrew the small water passage drain plug on the port side of the housing and throw away the O-ring.

To install:

11. Clean the housing thoroughly in solvent and allow it to air dry completely.
12. Carefully remove any sealant or adhesive from the coolant passage and bellows openings. Clean all threads and drain holes thoroughly.

13. Check the ground strap connectors for frayed or loose ends. Inspect the friction and thrust washers for any damage and replace them if necessary, although it's not a bad idea to do it anyway while you have the unit apart—your call.

14. Coat a new drain screw O-ring with sealing compound, slide it onto the screw and then thread in the screw. Tighten it to 50-60 inch lbs. (6-7 Nm).

15. Run a bead of 3M adhesive around the water passage recess and then press in a new seal.

16. Install the friction and pivot washers onto each lug. Coat the thrust washer with grease.

17. Position the housing into the gimbal ring while guiding the water line nipple into the housing. Make sure that each bellows is in place directly behind the opening in the housing.

18. Align one side of the housing so that the hole lines up with the hole in the gimbal ring. Look through the hole to ensure that the neither of the washers has moved and is blocking the hole. Insert the pivot pin and screw it in until it just seats itself, but do not tighten it yet.

19. Repeat the previous step for the other side of the housing. When the pin is in place, tilt the housing up and down with your hand to ensure freedom of movement. If OK, tighten each pin to 105-120 ft. lbs. (142-163 Nm). Make sure that you hold the housing while tightening the pins, because it will have a tendency to swivel in the direction that you are tightening.

20. Push, and pull, the nipple all the way through the housing. Make sure that the drain hole is facing down and then install the nut and tighten it to 96-120 inch lbs. (11-14 Nm). Ensure that the nipple does not spin while tightening the nut and make sure that the nipple threads extend past the end of the nut. If they do not, loosen the nut and check the positioning of the square nipple collar on the other side of the housing.

21. Coat the entire surface of the V-shaped lip for the U-joint bellows with Gasket Sealing compound. Pull the bellows through the opening in the housing and press it into the groove until it seats around its entire circumference. Any flat spots on the bellows will indicate that it has not completely engaged the V-groove.

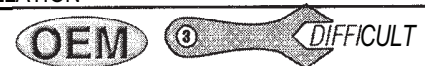
22. Reach into the exhaust bore and pull the top of the bellows into the bore. Tilt the housing, reach around and push the rest of the bellows into the bore. Make sure that it seats in the bellows channel around the lip of the housing bore and there are no flat spots indicating that the bellows has not engaged the lip fully. Reinstall the retaining clip with snap-ring pliers so the opening is at the top of the bellows. Don't forget to wear safety glasses.

23. Reconnect the ground strap(s) on the port side of the gimbal ring.

24. Feed the shift cable through its opening and install the retainer. Install the stern drive.

Gimbal Ring

REMOVAL & INSTALLATION



◆ See Figures 231,232,233 and 242

1. Remove the stern drive unit and pivot housing as detailed elsewhere in this section. If you left the trim/tilt cylinders connected to the gimbal ring when removing the drive, remove them now.

2. Turn the steering wheel hard over to port. Use a magic marker and draw a small line across the trim sender and gimbal ring on the starboard side of the ring. Remove the 2 mounting screws, but do not yet remove the unit itself.

3. Remove the bolt, washer and ground wire on the side of the ring (if equipped).

4. Reach under the gimbal housing and remove the 3 mounting bolts (4 on the King Cobra) for the steering support bracket. Disconnect any ground straps that may be attached to the bolts and then pry down the bracket—your ma); have to persuade it with a few taps on a drift so be careful.

5. Working inside the boat, pull the cotter pin out of the steering arm pin and then remove the pin. Loosen the bolt on the steering arm and disconnect the ground strap.

6. Remove the 2 bolts and lift off the gimbal housing cover (1998 models may use 4 bolts). Now remove the 2 bolts and lift off the steering cavity cap, throwing away the small foam gasket.

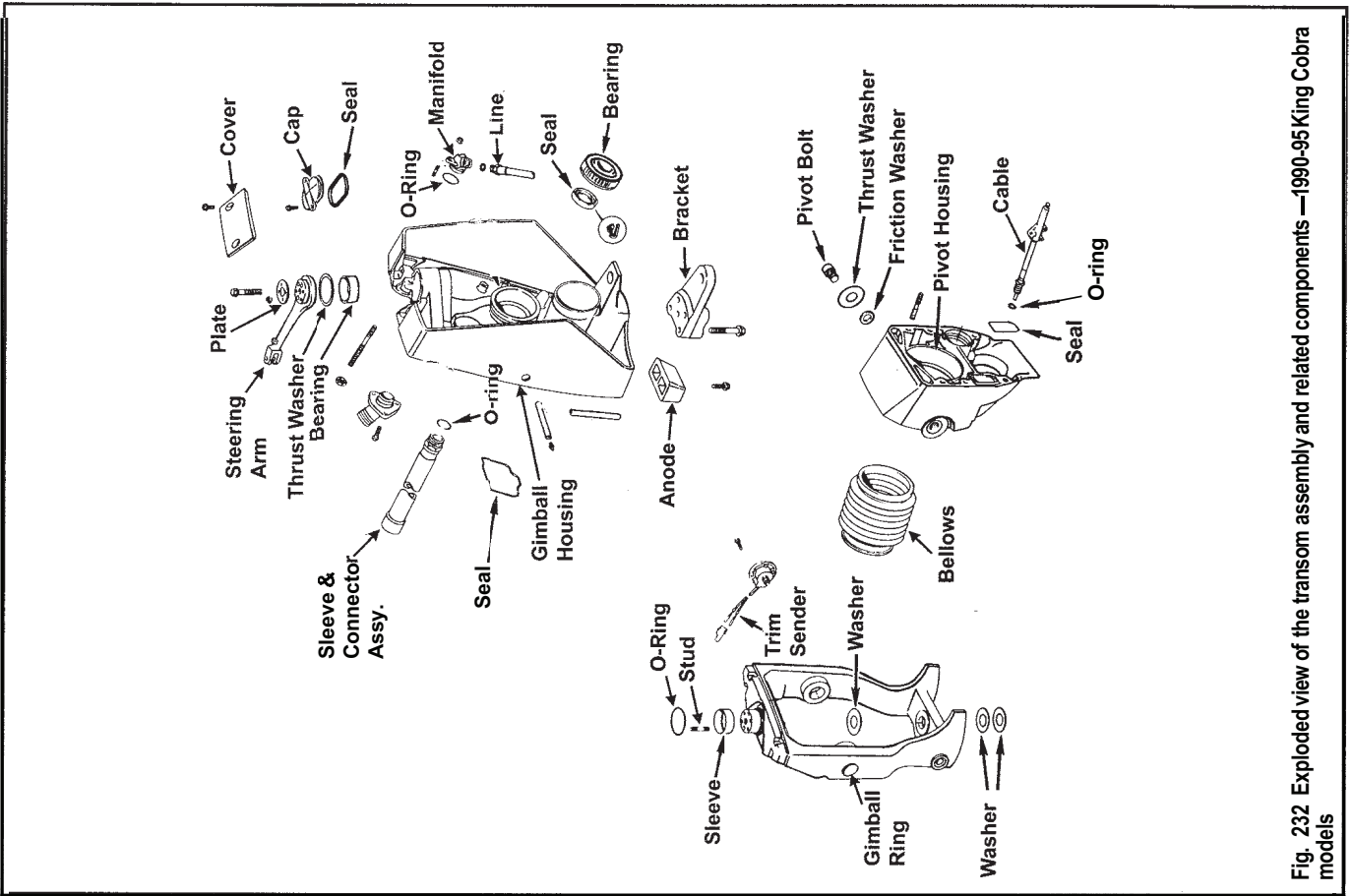


Fig. 232 Exploded view of the transom assembly and related components —1990-95 King Cobra models

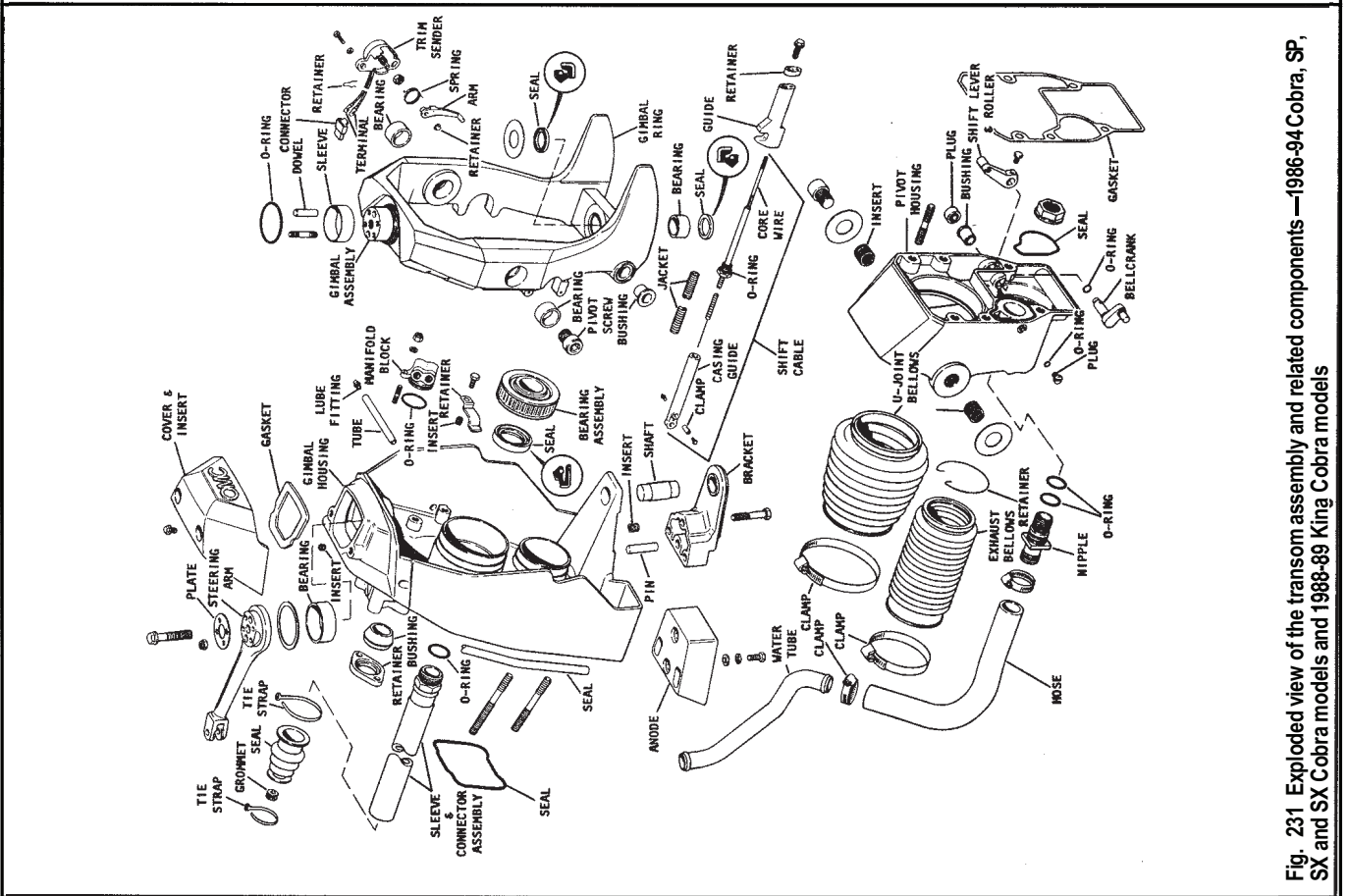


Fig. 231 Exploded view of the transom assembly and related components —1986-94 Cobra, SP, SX and SX Cobra models and 1988-89 King Cobra models

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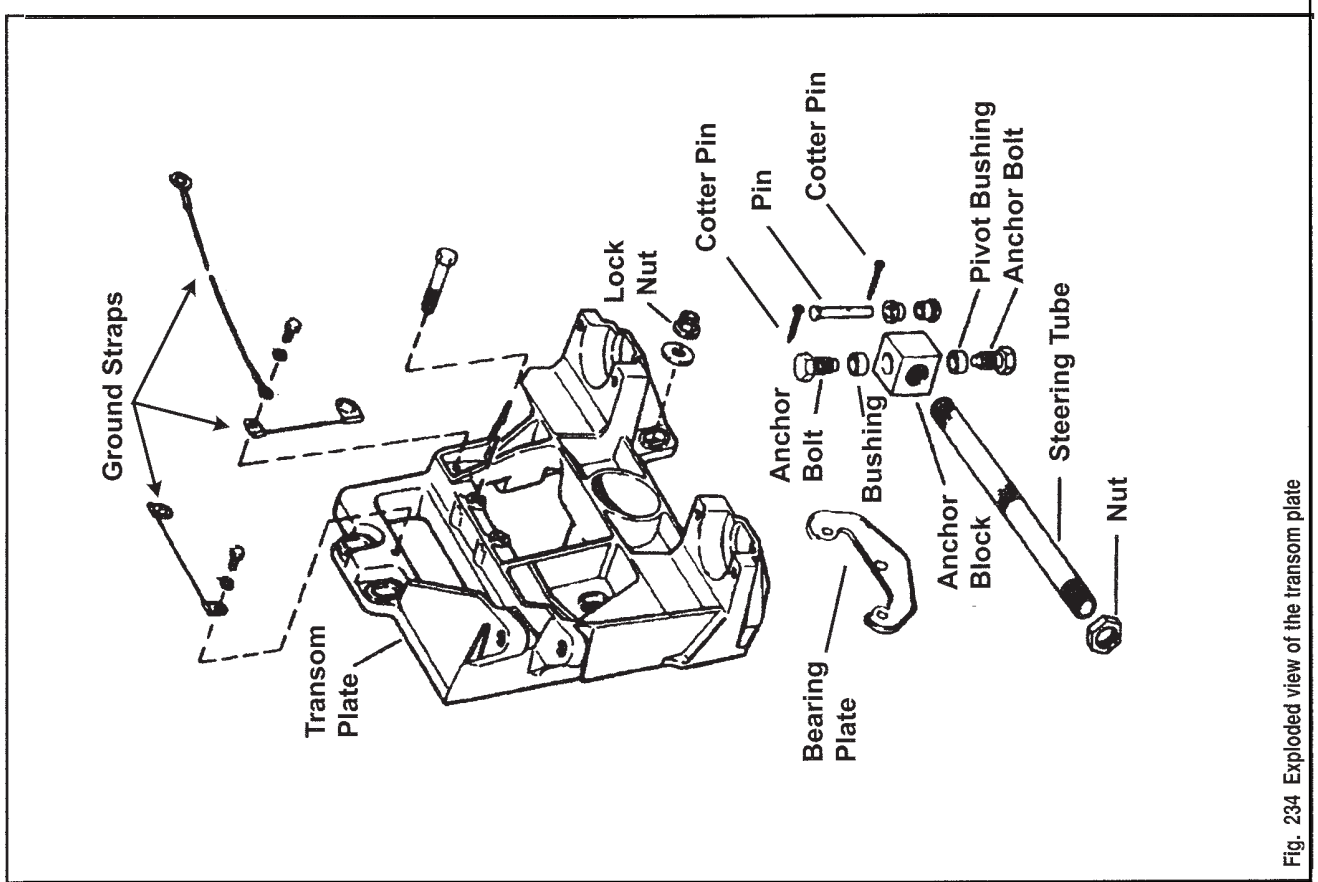


Fig. 234 Exploded view of the transom plate

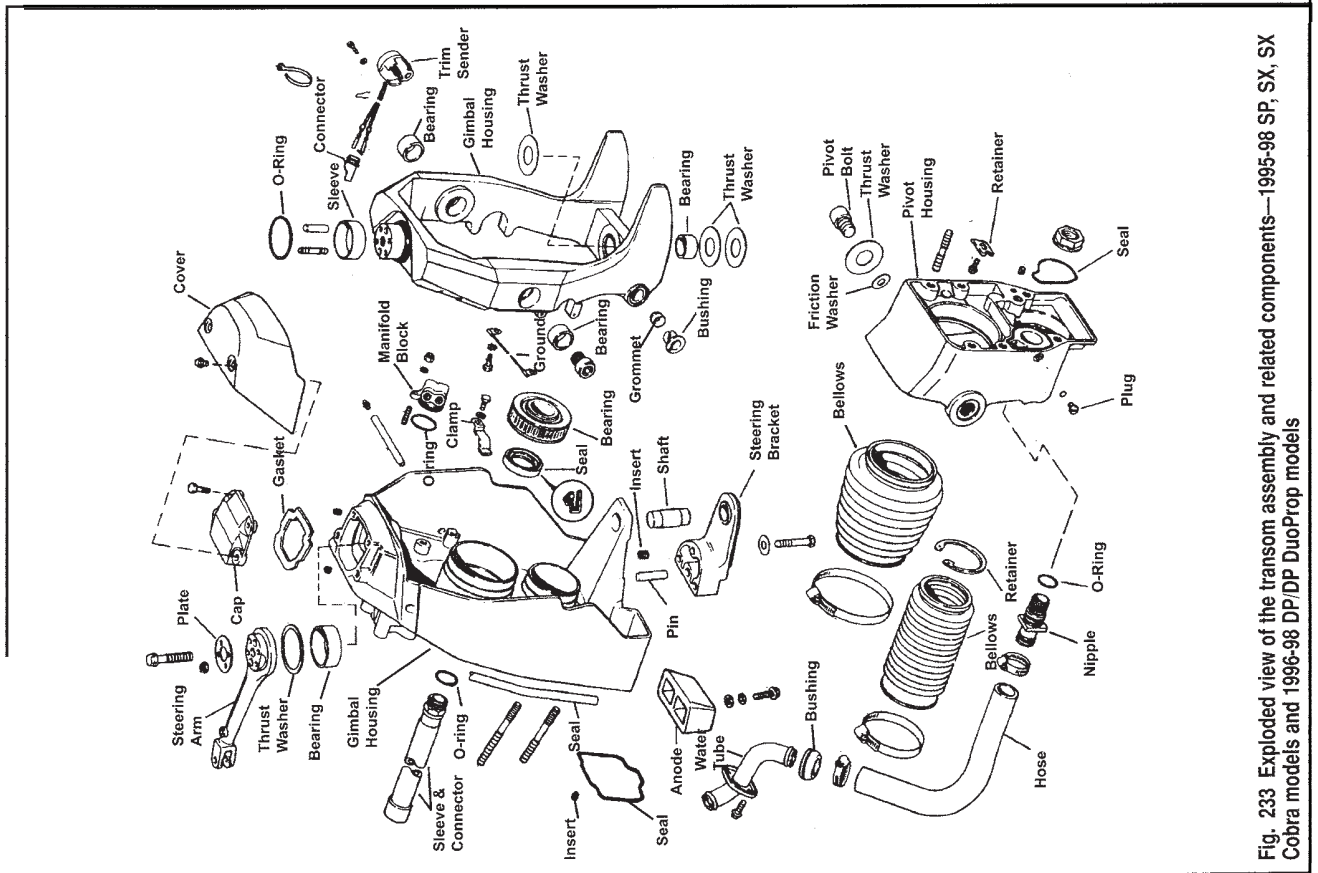


Fig. 233 Exploded view of the transom assembly and related components—1995-98 SP, SX, SX Cobra models and 1996-98 DP/DP DuoProp models

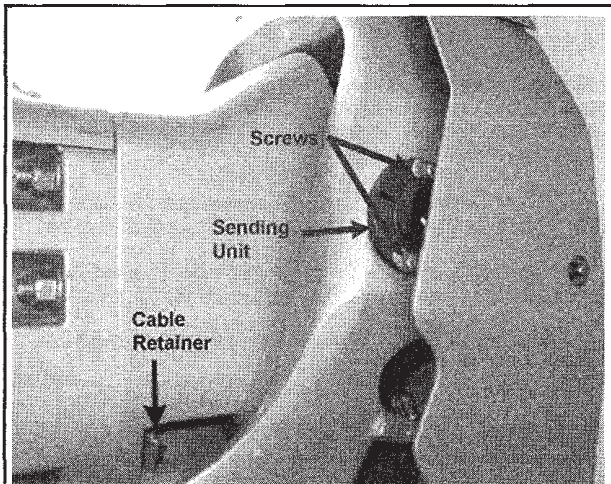


Fig. 235 The shift cable retainer is located on the starboard side of the unit

□ 1998 models may not use the inner steering cavity cap, so just pull out the inner sealing ring.

7. Remove the 4 locknuts and lift the retaining plate off of the steering arm. Remove the center steering arm bolt. Position a steering arm puller (# 984146) over the 2 dowels inside the arm and then thread in the removal bolt. Tighten the bolt slowly while holding the gimbal ring; when the ring comes free, remove the tool and the steering arm.

8. Lift the thrust washer out of the top of the gimbal housing.

□ If you are simply removing the gimbal ring to get to another component, ignore the following steps if you wish, but we recommend performing them either way—once again, cheap insurance!

9. Remove the O-ring from the upper steering post and throw it away.

10. Insert the large diameter end of a removal tool (# 912281) into either of the tilt bearing holes on the sides of ring and drive out the bearing. Repeat the procedure on the opposite side.

11. Use a slide hammer and puller tool (# 432130) to pull out the trim/tilt cylinder nylon bushing on each side of the lower end of the ring.

12. Insert the smaller end of the removal tool used earlier into the lower steering support shaft bearing and drive out the pivot bearing.

13. If the upper steering post bushing appears to be damaged, use a small chisel and split one side of it until you can remove it.

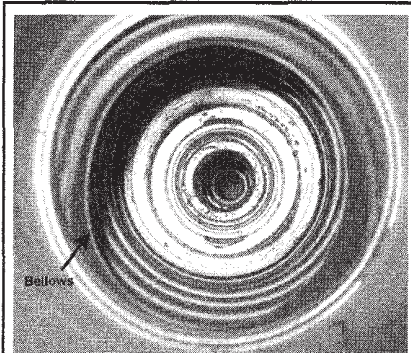


Fig. 236 Disengage the U-joint bellows from the lip and then push it through

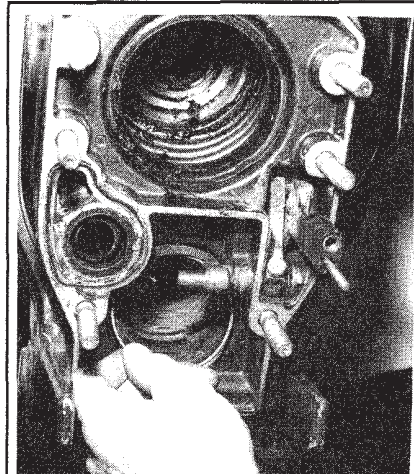


Fig. 237 Next, remove the exhaust bellows retaining clip (except on King Cobras)

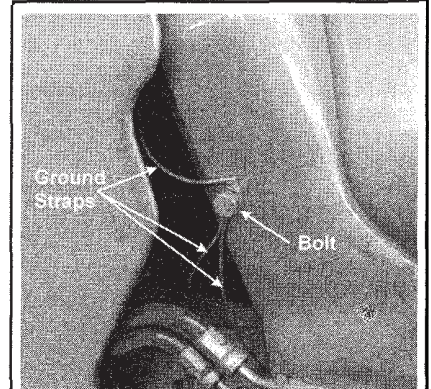


Fig. 238 Later models may have more than one ground strap attached here

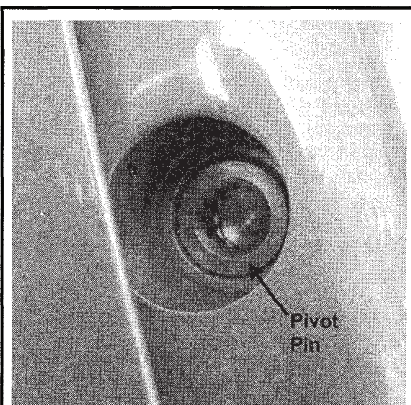


Fig. 239 Find the pivot pin...

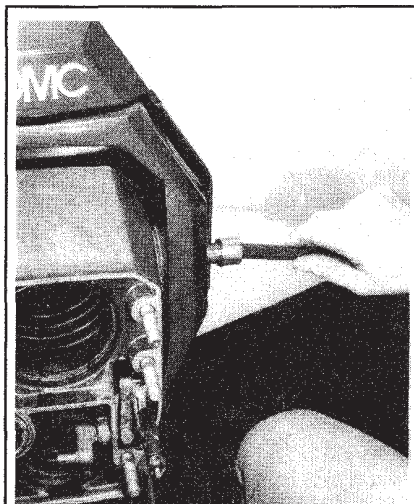


Fig. 240 ...and then remove it with a hew wrench

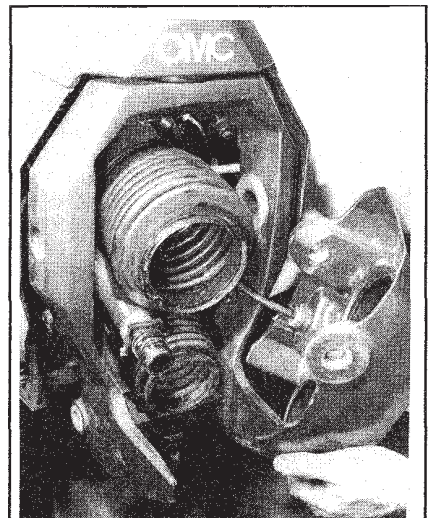


Fig. 241 Removing the pivot housing

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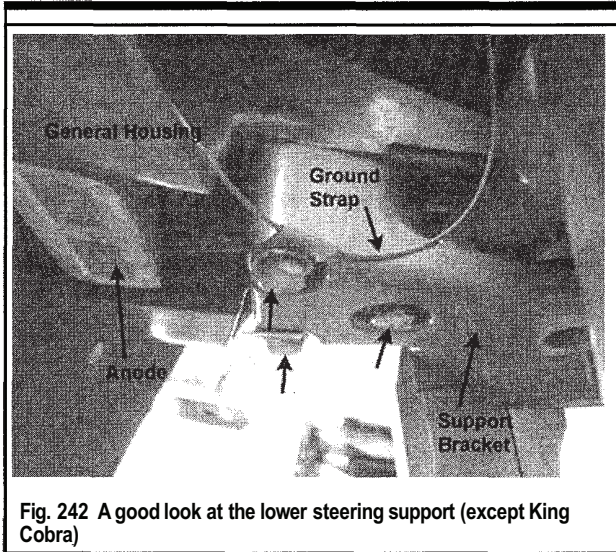


Fig. 242 A good look at the lower steering support (except King Cobra)

To install:

14. Coat the outer surface of a new lower pivot bearing with clean engine oil and position it into the bore on the bottom of the ring. Use the removal tool and drive it into the bore from the bottom of the ring.

15. Coat the outer surface of two lower bushings and then press them into the ring until they seat with the removal tool used earlier. Make sure you coat the inside of each bushing with grease.

16. Coat the outer surface of each new pivot pin bearing lightly with clean engine oil and position the bearings into the outside of the gimbal ring. Insert the blunt end of the removal tool into the bearing and drive it into the ring with a rubber mallet. The bearing must seat somewhere between being flush with the INNER edge of the gimbal ring and 0.010 in. (0.254mm) inside the edge.

17. If you had to cut off the upper steering post bushing, lubricate the inside of a new one with grease and then position it over the post. Thread the center steering arm and bolt in and tighten it until the bushing seats itself. Remove the arm and bolt. Coat a new O-ring with grease and install it over the post and into the recess at the base.

18. Coat the thrust washer with grease and position it over the upper pivot bearing in the top of the gimbal housing. Move the steering arm into position over the washer from inside the boat. Guide the gimbal ring up and into the gimbal housing until the post engages the steering arm and then install the center bolt so that it is finger-tight.

A good way to ensure that the ring is centered correctly in the upper bearing is to observe the gimbal studs—when the center bolt is still only finger-tight, the top of the studs should either flush or above the upper surface of the steering arm. If this is case, DO NOT tighten the center bolt or you will damage the bearing.

19. After confirming correct positioning, tighten the center bolt to 64-72 ft lbs (88-98 Nm). Position the plate over the arm and studs and then thread on 4 new locknuts. Tighten them to 13-15 ft lbs. (18-20 Nm).

20. On models using a cap, position a new foam gasket into the cap so that the notches align correctly. Install the cap and tighten the bolts to 60-84 inch lbs (7-9 Nm). If you have a drive that does not use a cap, run a bead of 3M adhesive along the seal groove and then press in a new sealing ring.

21. Install the gimbal housing cover and tighten the bolts to 60-84 inch lbs (7-9 Nm). On models with only 2 mounting bolts, make sure that the dowels under the cover align with the holes in the gimbal housing BEFORE tightening the bolts.

22. Working inside the boat, connect the ground strap to the steering arm and tighten the bolt securely. Slide the hydraulic ram assembly over the steering arm so that the holes line up. Coat the steering pin with grease and insert it down through the top of the arm. Install a new cotter pin and bend back the arms around the pin.

23. Coat a new nylon washer and the lower pivot post with grease. Slide the washer between the gimbal ring and housing, ensure that all three holes line up and then slide the pivot post up through the holes until it is seated.

24. Now position the lower steering support bracket and seat it by tapping it a few times with a rubber mallet. Apply a light upward pressure to the bracket and the gimbal ring and then use the thrust washers to estimate

how many you'll need to fit between the upper surface of the bracket and the lower surface of the ring.

□ **The support bracket will have lip that protrudes from its upper surface that fits over the pivot pin. This is where the thrust washer estimation must be done, anywhere else will lead to an incorrect estimate and the wrong preload.**

25. Add one extra thrust washer to your estimate from the previous step and then slide them into position, never using less than one or more than five.

26. Connect the ground straps to the steering support mounting bolts and then tighten the bolts (with new lock washers) to 18-20 ft. lbs. (24-27 Nm).

27. Adjust the trim sender as detailed in the Trim/Tilt section and then tighten the screws to 18-24 inch lbs. (2-3 Nm).

28. Install the pivot housing and stern drive.

Gimbal Housing And Transom Plate

REMOVAL & INSTALLATION



◆ See Figures 231,232,233,243 and 244

It is not necessary to remove the pivot housing and gimbal ring when removing the gimbal housing/transom plate assembly, although you may find it easier if you do. Because the housing is attached to the trim lines and pump, you'll need to decide whether to disconnect the lines at the manifold or to disconnect the pump and feed it through—neither way is preferred.

1. Remove the engine, drive unit, lower exhaust pipe and the steering cylinder as detailed in their appropriate sections.

2. Remove the bolt and washer attaching the ground strap to the steering arm (if equipped).

3. Working inside the boat, remove the 2 bolts and 4 nuts (and washers) and then lift the transom plate off of the studs. If you are doing anything other than laying the plate aside, disconnect the shift cable sleeve as detailed in the next procedure. On 1990-95 King Cobra models and 1998 7.4L/8.2L models, there are two additional bolts and washers.

■ **Remember that the hydraulic lines will be routed ABOVE the upper stud on the port side and through a recess in the inner plate.**

4. Pry out the exhaust bore O-ring seal and throw it away.

5. Remove the 2 remaining nuts and their washers and then pull off the transom bearing plate. Lift off the gimbal housing assembly.

6. Pry the large gimbal housing seal out of the inner mating surface recess.

To install:

7. Clean the outer transom-to-gimbal housing mating surfaces. Coat the entire seal groove in the inner edge of the housing with 3M Scotch Grip Rubber Adhesive 1300. Start at the top of the housing and work the seal into the groove as you move around the housing. When you get back to the top, cut the seal to fit and coat each end with adhesive before pressing them together.

8. Install the gimbal housing onto the transom. If you left the pump and lines attached, make sure that you feed them through the cut-out in the transom first.

Do not apply sealer between the transom and the housing seal.

9. If the trim lines had been disconnected, reinstall them at this time as detailed in the Disassembly procedure and paying attention to the Note in the Removal portion of this procedure regarding line routing.

10. Coat the threads of each of the housing studs lightly with Gasket Sealing Compound. Coat the inside of the transom plate alignment tube lightly with grease.

11. Make sure that the two hydraulic lines are positioned over the upper port stud and then install the inner transom plate.

12. Position the transom bearing plate over the two lowest studs so the flat side is against the transom. Install the washers and new locknuts;

tightening the nuts until they just make contact with the plate.

13. Install the remaining 4 washers with new locknuts; tightening the nuts until they just make contact with the plate. Don't forget the ground strap on the upper port stud!

14. Coat the threads of the 2 upper alignment bolts lightly with Gasket Sealing Compound and screw them in until they are finger-tight.

15. Tighten the 6 locknuts, in the sequence shown, to 20-25 ft. lbs. (27-34 Nm). Now tighten the 2 upper bolts to 12-14 ft. lbs. (16-19 Nm). On 1998 7.4/8.2L models, use the same torque figures, but refer to the second illustration for the tightening sequence.

16. Install the ground strap to the steering arm on models so equipped and tighten the bolt securely.

17. Run a bead of the 3M Scotch Grip around the exhaust bore seal recess and then install a new O-ring, lightly pressing it into the groove all the way around the bore.

18. Install all remaining components

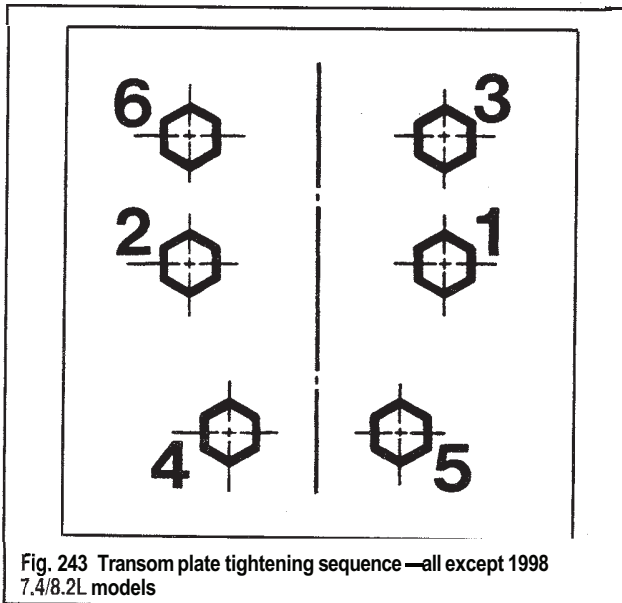


Fig. 243 Transom plate tightening sequence—all except 1998 7.4/8.2L models

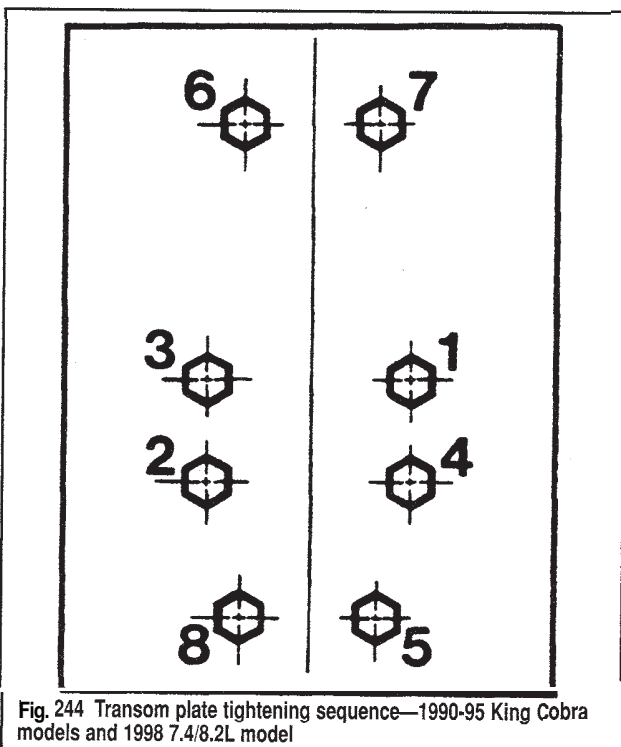


Fig. 244 Transom plate tightening sequence—1990-95 King Cobra models and 1998 7.4/8.2L model

SHIFT CABLE SLEEVE REPLACEMENT



1. Using a crows-foot adapter on your wrench, unscrew the sleeve connector at the transom plate, pull away the sleeve and throw away the O-ring.

2. Coat a new O-ring with Gasket Sealing compound and then slide it onto the connector until it sits against the inner side of the hex head.

3. Coat the connector threads lightly with sealing compound, thread it into the plate and tighten it to 46-52 ft. lbs. (62-71 Nm).

DISASSEMBLY & ASSEMBLY



◆ See Figures 231, 232, and 233

Disconnect the battery cables. Remove the trim/tilt cylinders, pivot housing and gimbal ring as previously detailed. Once these procedures are accomplished, move through the following procedures as necessary to remove or disassemble what is necessary.

Disassembly of the gimbal housing really consists of removing those remaining components that are attached to it and we suggest that you perform each of these procedures in the order that they are shown here; reverse the order when assembling everything.

U-Joint & Exhaust Bellows

◆ See Figures 231, 232, 233, 245 and 246

■ 1990-95 King Cobra models have no exhaust bellows.

1. Loosen the hose clamp screws and pull out the ground strap.
2. Pull off the two bellows.

To install:

3. Coat the outer surface of the gimbal bearing flange with Gasket Sealing Compound.

■ It is not necessary to coat the exhaust flange with sealer,

4. Slide a clamp ring over the smaller side of the U-joint bellows and then slip the bellows over the bearing flange so that the rib on the inner surface of the bellows end rides in the groove on the surface of the flange.

5. Insert the ground strap under the clamp ring at the 9 o'clock position and then spin the clamp until the screw mechanism is between the 1 and 2 o'clock position; with the screw head facing down. Tighten the clamp ring securely.

6. The larger end of the exhaust bellows also has a rib on the inner side; slide a clamp ring over this end and then push the bellows onto the flange until the rib seats into the groove on the flange. Make sure that the exhaust relief cut-out is facing down.

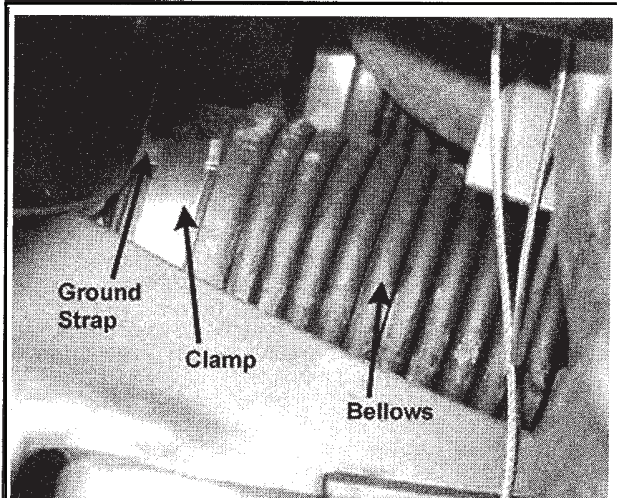


Fig 245 A close view of the bellows

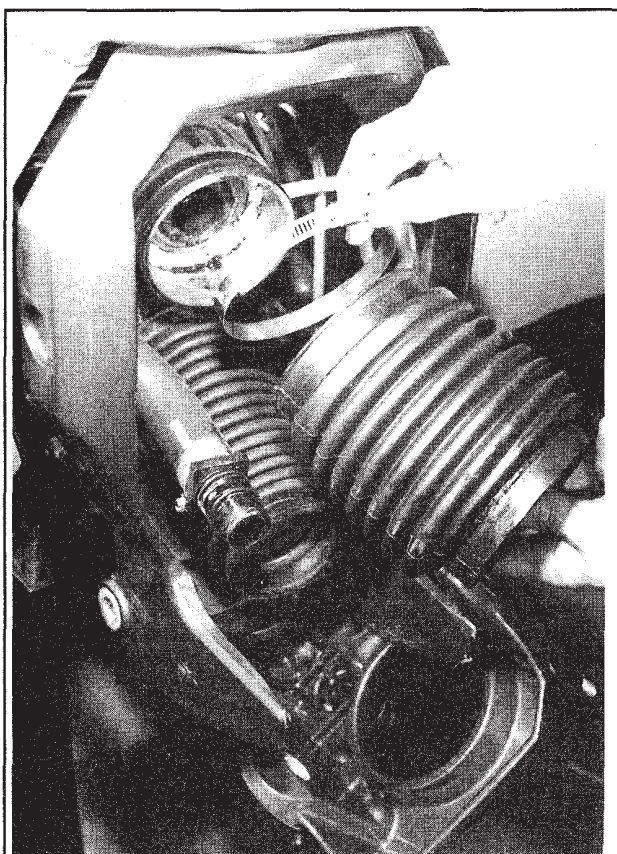


Fig. 246 Make sure that you slide the clamp on first

7. Insert the ground strap under the clamp ring at the 9 o'clock position and then spin the clamp until the screw mechanism is at the 3 o'clock position; with the screw head facing upward. Tighten the clamp ring securely.

Water Hose And Tube

◆ See Figures 231,232,233 and 247

1. Remove the exhaust and U-joint bellows.
2. Working through the two hydraulic lines attached to the trim manifold, loosen the water line hose clamp and wiggle the end of the hose off of the water tube in the housing. Don't forget to pull off the ground strap and position it out of the way.
3. Working from inside the boat loosen the 2 (or 3) water tube-to-transom plate mounting bolts and then pull the tube and its grommet out of the housing and through the transom. If you have trouble with the grommet, push it through from the gimbal housing side.

To install:

4. Check the grommet on the water tube for any cracks or other obvious signs of deterioration or wear. If necessary to replace it, slide a new one onto the tube so that the tapered end is facing the hooked side of the water tube.
5. Push the water tube and grommet through the transom plate and into the gimbal housing so that the hooked end goes in first and is pointing upward. Hold the tube in place and insert the 2 bolts, tightening them to 120-144 inch lbs. (14-16 Nm). On the 1990-95 King Cobra, tighten the 3 bolts to 60-84 inch lbs. (7-9 Nm).
6. Check the water hose for any cracks or other obvious signs of deterioration or wear; pay particular attention to the hose clamp seating areas on each end.
7. Check the nipple in the aft end of the hose; clean it thoroughly and then pull off the O-ring and replace it with a new one. Coat the O-ring with grease and make sure that it seats into the groove closest to the square on the inner side of the nipple. If the nipple requires replacement, simply loosen the hose clamp and pull it from the end of the hose.

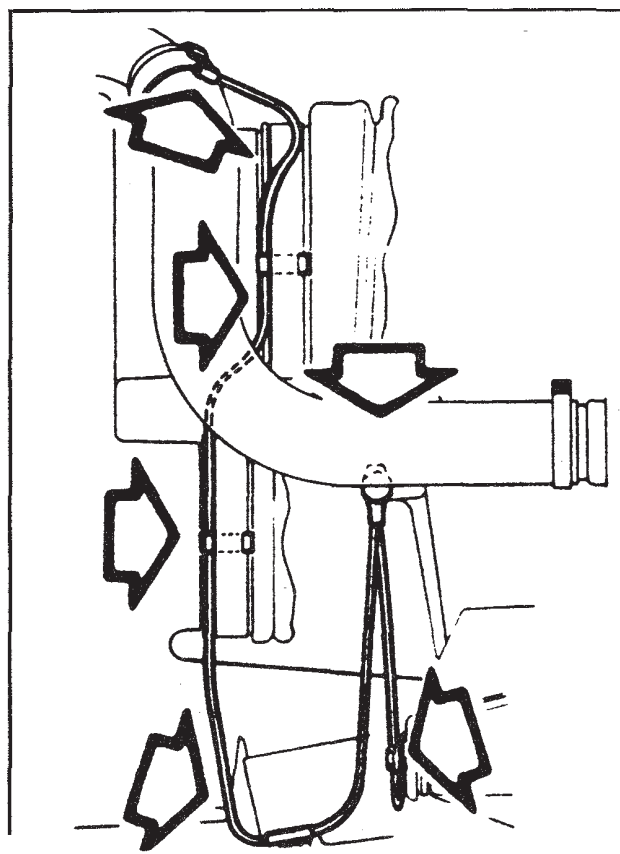


Fig. 247 Note the correct positioning of the water hose and ground strap (except King Cobra)

** CAUTION

Make sure that the O-ring is seated in the correct groove. The outer groove, the one closest to the threads, is for the drain hole and placing an O-ring into this groove will cause big problems.

8. Slide a new hose clamp over the upper end of the hose and then press the hose end onto the water tube. Swivel the hose so that the nipple (aft) end is pointing directly outward and to the rear. Slide the ground clamp under the hose clamp and then position the screw head on the clamp so that it is accessible between the 2 hydraulic lines before tightening it securely.

** WARNING

The hose clamp screw head must be behind, and between, the 2 hydraulic lines or else it will come in contact with the pivot housing and limit the tilt range. This contact will, obviously, also cause damage to the hose and clamp.

9. Check the nipple at the outer end of the hose and confirm that the drain hole is facing down. If not, loosen the hose clamp and rotate the nipple in the hose until achieving the correct position.

Gimbal Housing Anode

◆ See Figures 231,232,233 and 248

□ It should not be necessary to remove the lower anode unless you determine that it is less than 213 deteriorated and requires replacement.

1. Working underneath the gimbal housing, reach up and remove the 2 mounting bolts and their washers. Pull down the anode. 1998 7.4L and 8.2L engines may use two smaller anodes with 4 bolts here.

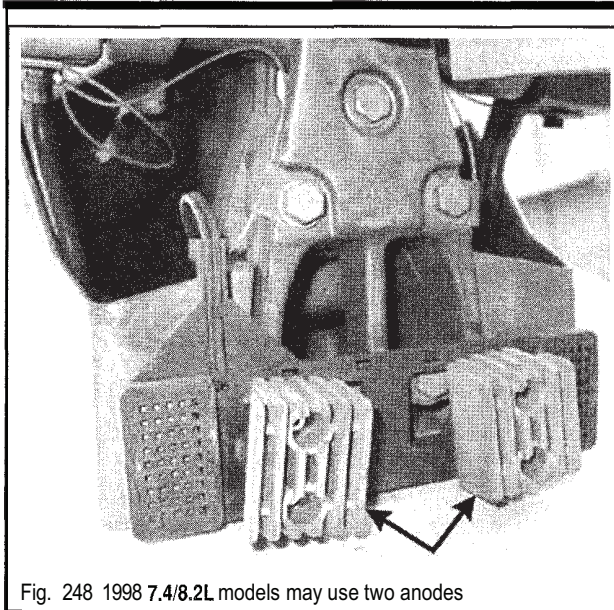


Fig. 248 1998 7.4/8.2L models may use two anodes

2. Clean the mounting surface thoroughly and then install a new anode(s). Use new lock washers and tighten the mounting bolts to 12-14 ft. lbs. (16-19 Nm) except on the 1998 7.4L/8.2L applications using two anodes where they should be tightened to 5-7 ft. lbs. (6-9 Nm).

Trim Sender

◆ See Figures 231,232,233 and 249

Remember that you removed the trim sender during gimbal ring removal but, did not disconnect it.

1. Working inside the boat, disconnect the trim sender harness connector at the engine.
2. Take note of the wire positioning inside of the plug and then use a socket removal tool (# 322699) and push the wire terminals out of the connector plug.
3. Now, back outside the vessel, locate the harness grommet where it feeds through the transom assembly—just above the water tube in the gimbal housing. Carefully pull off the retaining clip with a pair of needle nosed pliers.
4. Grasp the grommet and pull backward on it while prying it out with a small screwdriver. Once free of the housing, pull the wires all the way through the transom assembly. Cut any plastic ties securing the harness and then remove the trim assembly.

To install:

5. Coat the harness grommet with grease and then feed the leads through the hole in the gimbal housing and press the grommet into place until it is seated. Pop the retaining clip into position over the base of the grommet.

**** WARNING**

Make sure that you do not route the harness leads under the extension tube or hydraulic lines.

6. Coat the connector plug with alcohol or solvent and then use the special tool and press the leads back into the connector plug until they seat—make sure they go back in the same positions as they were prior to removal. On MOST models, the ribbed black wire goes into the A terminal, the white wire into the B terminal and the smooth black wire into the C terminal.
7. Reconnect the harness at the engine.
8. Use a new plastic tie and secure the harness to one of the hydraulic lines.
9. Install the sender unit into the gimbal ring when you install the ring.

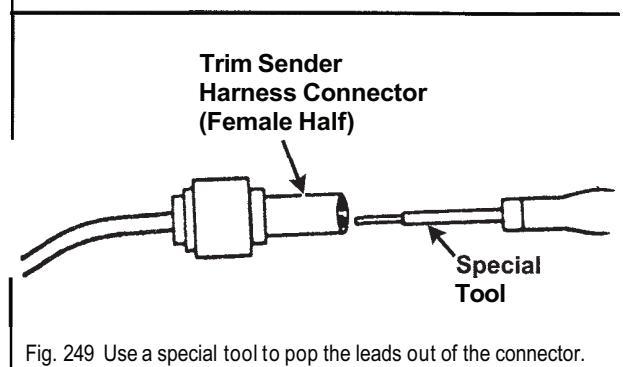


Fig. 249 Use a special tool to pop the leads out of the connector.

Hydraulic Lines & Manifold

◆ See Figures 231,232 and 233

1. Loosen and remove the hydraulic line retaining clamps on each side of the gimbal housing.
 2. Although not strictly necessary, we recommend removing the grease extension tube in order to gain access to the starboard hydraulic lines. Clamp a pair of vise grips onto the tube (not too tight please) as close to the gimbal bearing bore as possible. Insert a small prybar between the pliers and the bearing flange and then pry the tube out with the bar while rotating back and forth with the pliers.
 3. Loosen each of the hydraulic line nuts at the manifold and carefully pull each line out of its recess. Remove each O-ring and throw them away. It's a good idea to plug the line ends with a golf tee or something similar to minimize fluid leakage.
 4. Move inside the vessel and remove the 2 lines connected to the inner side of the manifold. Mark them for installation, plug them and secure them out of the way.
 5. Back outside the boat, loosen and remove the mounting nut on the upper side of the manifold from the stud. The manifold is a tight fit in the housing with an O-ring—you may be able to pull it right out, but you'll probably need to position a small drift on the back (inner) side and force it through.
- To install:
6. Coat a new manifold O-ring with Gasket Sealing compound and slide it onto the manifold flange. Coat 2 new O-rings for the inner hydraulic lines with hydraulic fluid and slide them over the line tips.
 7. Pull the 2 inside lines through the bore in the housing and then position the manifold near the bore so that the inner side is facing to Starboard. Route the lines to the manifold so they are parallel and then tighten the fittings to 14-18 ft. lbs. (19-24 Nm). It is imperative that the lines get reinstalled on the port from which they were detached! As a check, once installed, the lower line should be attached to the UP inlet on the trim pump valve body.

■ Yes, we know it is unlikely that you will be able to get a torque wrench on the line nut—do it by feel, its about as tight as a spark plug, just don't over-tighten them.

8. Feed the lines and through the hole in the housing until the manifold seats on it's mounting stud. Install a new locknut onto the stud and tighten it to 108-132 inch lbs. (12-15 Nm).
9. Coat 4 new O-rings with hydraulic fluid and install them on each of the outer (gimbal housing side) hydraulic line tips. Attach the lower of the 2 Port lines and then the upper. The shorter of the 2 Starboard lines should be connected to the lower of the two fittings on the starboard side of the manifold and then connect the remaining (longer) line to the upper fitting. Tighten all lines to 14-18 ft. lbs. (19-24 Nm)—see the previous Note.
10. Route each pair of lines together and then install the retaining clamp on each side. Tighten the bolts securely.
11. If you removed the grease extension tube, pull the grease fitting off of the outer end of the tube. Coat the last 1/4 in. of the tube on the fitting side with Gasket Sealing compound and then insert the tube through the outer wall of the housing.

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12. Spray the tapered end of the tube and the hole in the housing with Loctite primer and allow it to dry completely. Once dry, coat the tapered end with Loctite and then drive the end of the tube into the bearing flange. Wipe off any excess Loctite and then install the grease fitting to the opposite end of the tube.

Gimbal Bearing/Seal & Steering Bearing

◆ See Figures 231,232 and 233



Gimbal and steering bearing removal is not necessary to remove the gimbal housing and transom plate. Do not remove these bearing unless absolutely necessary.

1. Insert a standard 3-jawed puller (Owatonna # OEM-4184 or the equivalent) into the gimbal bearing bore and position the jaws between the bearing and the inner seal. Expand the jaws tightly and then remove the bearing. The bearing will be damaged during removal so throw it away.
2. Reinsert the puller into the bearing bore again and position the jaws under the seal this time. Tighten the jaws and remove the seal.
3. Remove the thrust washer from the steering bearing in the top of the gimbal housing. Install a driver tool (# 912270) into a remover tool (# 912287) and position the tools underneath the bearing. Work the driver and press the bearing up and out of the housing bracket.

To install:

4. Position a new gimbal bearing seal onto the installer tool (# 912279) so the open end is facing the tool. Coat the metal casing with Gasket Sealing compound.
5. Thread the installer (and seal) onto a driver handle (# 311880) and then drive the seal into the bore until it seats. Remove the tools and coat the lip of the seal with grease.
6. Rotate the outer band of the gimbal bearing until the slot is aligned with the lubrication hole and scribe a reference mark across the bearing case.
7. Coat the exterior of the bearing with clean engine oil and then position it into the bore so that the reference mark is facing the extension tube opening.
8. Thread the raised side of a gimbal housing seal installer (# 912279) onto the driver handle (# 311880) and then drive the bearing in until it seats fully. Lubricate the bearing with grease through the grease fitting on the end of the extension tube—starboard side of the gimbal housing.
9. Slide a steering bearing installer (# 912287) onto the rod (# 326582) and then position the bearing over the rod and onto the installer. Coat the outside of the bearing lightly with clean engine oil.
10. Position a stopper (# 912286) over the bearing so the recessed side is against the bearing and the rod is threaded into the tool so that it's flush with the top of the stopper. Insert the tools and bearing into the steering cavity from inside the vessel, hold the rod and tighten the nut until the bearing seats fully.

STERN DRIVE – SP/SX/SX COBRA AND DP/DP DUOPROP 12-71

SPECIFICATIONS

TORQUE SPECIFICATIONS

Component			Torque		
			Ft. Lbs.	inch Lbs.	Nm
Anode	Gimbal Housing	All Except	12-14		16-19
	Lower Unit			60-84	6.8-9.5
Gimbal Ring	Bolts To Pivot Housing		105-120		142-163
	Support Bracket		18-20		24-27
Lower Unit - DP/DP DuoProp					
	Drain Plug		10-15		14-20
	Exhaust Plate		14-17		19.5-22.5
	Fill Plug		4-6		5.4-8.1
	Pinion Nut		72-87		98-118
	Propeller Nut	Front	45 ⁺		60
		Rear	50		70
	Upper Unit Bolts				
		3/8	22-24		30-33
		7/16	32-40		43-54
	Upper Unit Nuts		22-24		30-33
Lower Unit - SP, SX SX Cobra, King Cobra					
	Anode			60-84	6.8-9.5
	Anode Retainer		12-14		16-19
	Drain Screw		-	60-84	6.8-9.5
	Fill Screw		-	60-84	6.8-9.5
	Oil Level Gauge (Dipstick)		-	48-72	5.4-8.1
	Pinion Nut	King Cobra	175-185	-	237-251
		All Others	150-160	-	203-217
	Propshaft Bearing Housing		200-225	-	271-305
	Propshaft Bearing Housing Retainer		20-25	-	27-34
	Propeller Nut		70-80	-	95-108
	Upper Unit Bolts - King Cobra		32-40		43-54
	Upper Unit Bolts - SP/SX/SX Cobra				
		3/8-16	22-24	-	30-33
		7/16-14	32-40		43-54
	Set Screw			42-60	4.8-6.8
	Trim Tab		14-16	-	19-22
	Water Tube Guide		10-12		14-16
Manifold Nut			-	108-132	12-15
Pivot Housing	Bolts To Gimbal Ring		105-120		142-163
	Drain			50-60	6-7
Shift Cable Sleeve	1994-97		46-52		62-71
Steering Arm	Bolt		65-72		88-98
	Cover			60-84	7-9
	Studs		13-15		18-20
Transom Plate	Nuts		20-25		27-34
	Bolts		12-14		16-19
Transom Shield Cover				60-84	7-9
Trim Line Nut	1990-95 King Cobra		14-18		19-24
	All Others		-	84-108	9.5-12.2
Trim Sender			-	18-24	2.0-2.7

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TORQUE SPECIFICATIONS (Cont'd)

Component		Torque		
		Ft. Lbs.	Inch Lbs.	Nm
Trim/Tilt	Pivot Pin		120-144	14-16
Upper Housing	Bearing Retainer Ring	145-165		197-224
	Bellcrank	King Cobra		
	Drain Screw	DP/DP DuoProp	10-15	14-20
		All Others		60-84 6.8-9.5
	Fill Screw		60-84	6.8-9.5
	Impeller Plate	10-12		14-16
	Lower Unit Bolts - DP/DP DuoProp	3/8	23	- 31
		7/16	36	- 49
	Lower Unit Bolts - King Cobra	32-40		43-54
	Lower Unit Bolts - SP/SX/SX Cobra	3/8-16	22-24	- 30-33
		7/16-14	32-40	- 43-54
	Lower Unit Nuts - DP/DP DuoProp	23	-	31
	Oil Level Gauge/Plug	-	48-72	5.4-8.1
	Output Gear Housing	King Cobra	140-160	- 190-217
	Pinion Bearing Carrier		12-14	- 6.8-9.5
	Pinion Gear	Cobra/King Cobra	80-90	- 108-122
	Rear Cover		-	108-132 12-15
	Shift Shoe Stop Screw	King Cobra	15-20	- 20-27
		All Others	10-12	- 14-16
	Shift Housing	King Cobra	9-11	- 12-15
	Side Cover	King Cobra	12-14	- 16-19
	Top Cover	King Cobra	32-40	- 43-54
		All Others	16-18	- 22-24
	Upper Driveshaft Nut	96-110	-	130-149
	Water Passage Cover	-	60-84	6.8-9.5
	Water Pump Adapter	Cobra/King Cobra	10-12	- 14-16
	Water Pump Housing	Cobra/King Cobra	9-11	- 12-15
Water Nipple		-	96-120	11-14
Water Outlet	1990-95 King Cobra	-	60-84	7-9
	All Others	-	120-144	14-16