OMC® Cobra to SEI16™ Conversion Kit

9D-116

Removal & Installation Guide

For Sales & Technical Support
813.925.7127
www.ShopSEI.net

Conversion Kit Instructions

Installation & Removal Guide

This kit is designed to replace OMC Cobra drives that use a clutch dog in the lower. We only recommend and warrants use in applications not exceeding 300 HP.

Note: It is recommended to disconnect the battery before starting this conversion.

These instruction will be categorized in 8 main steps.

Step 1: Removing the old drive.
Step 2: Removing old bell housing.
Step 3: Preparing old transom assembly for installation of the new bell housing
Step 4: Installing new bell housing
Step 5: Installing SE116™ drive.
Step 6: Adjusting the shift.
Step 7: Bypassing OMC® ESA module
Step 8: Optional and untested additions.

(Patent Pending)

Disclaimer

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STEP 1 Removing the old drive

Step 1.1: With the drive trimmed down, remove the trim cylinders. If it has plastic caps over the nuts, remove them first by unscrewing them, then take the nuts and washers off both sides and then remove each trim cylinder. Once removed you can support them with a bungee cord or a length of rope. It may be necessary to gently pry it off evenly with a large screwdriver or other suitable tool. You may find that your trim pins are corroded into place. The rear pin must be re-used, so if it is not removable you will need to purchase a new pin.

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STEP 1 Removing the old drive (continued)

Step 1.2: Remove the six nuts and washers holding the upper unit to the bell housing. Once this hardware is removed the drive will be ready to remove. Simply pull back on the drive to remove it. If it is stuck you can tilt the unit up by hand and place a 2x4 between the drive and the transom assembly. Then let the drive rest on the 2x4. Now apply down pressure to the back of the drive to pop it loose.

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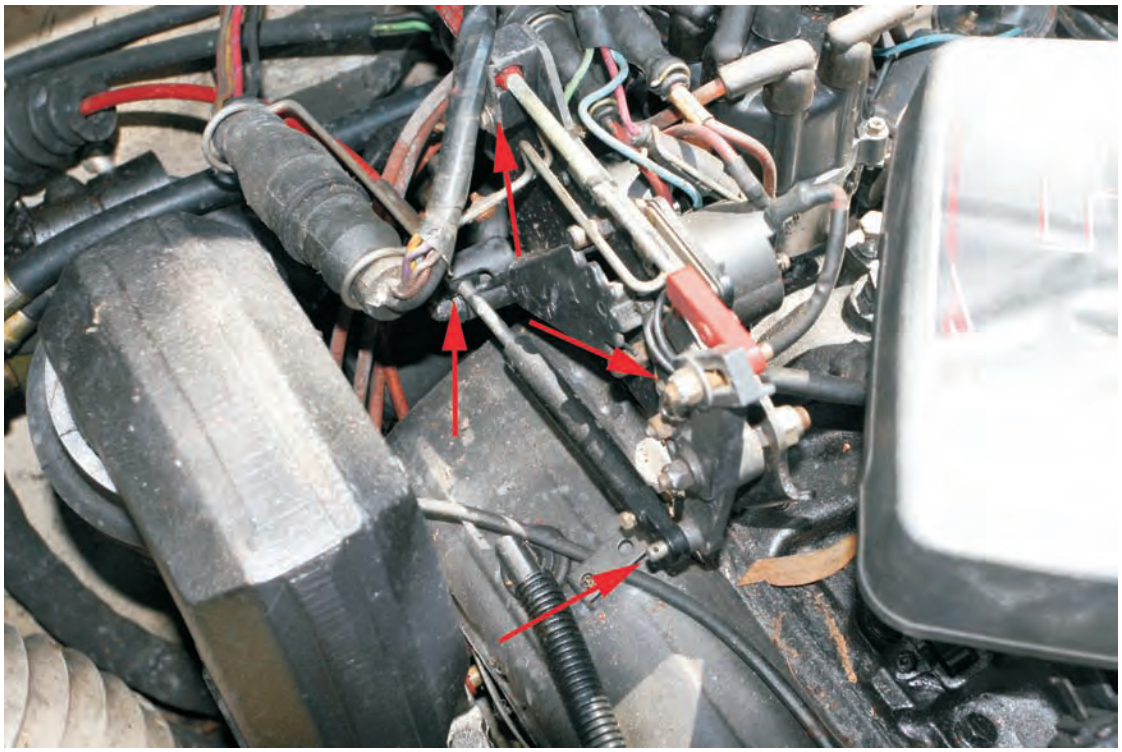
STEP 2 Removing the old bell housing



Step 2.1: To prepare the bell housing for removal. First we will go into the boat and disconnect both the intermediate cable (Bracket to Drive) and the remote control cable. We will remove the remote control cable at this point since it should be off when setting the shift adjustment. Remove any nuts or pins holding the cable on and then slide the cables off the pins. Retain the hardware for reassembly.

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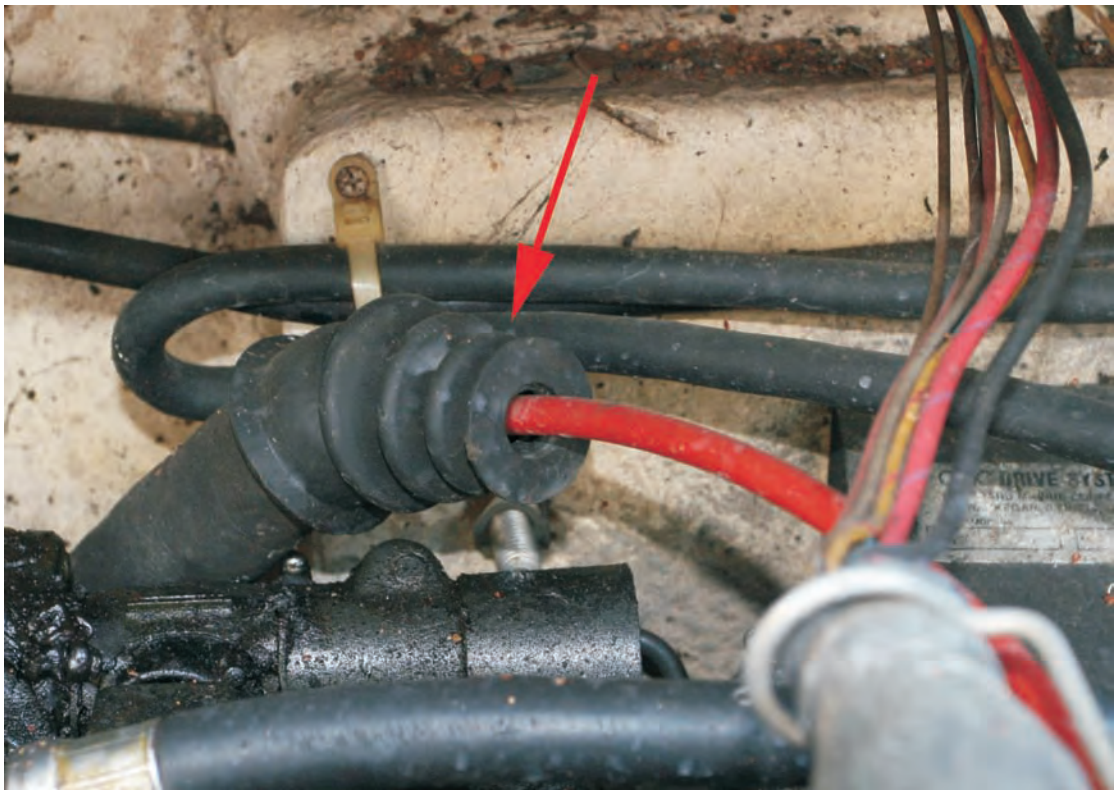
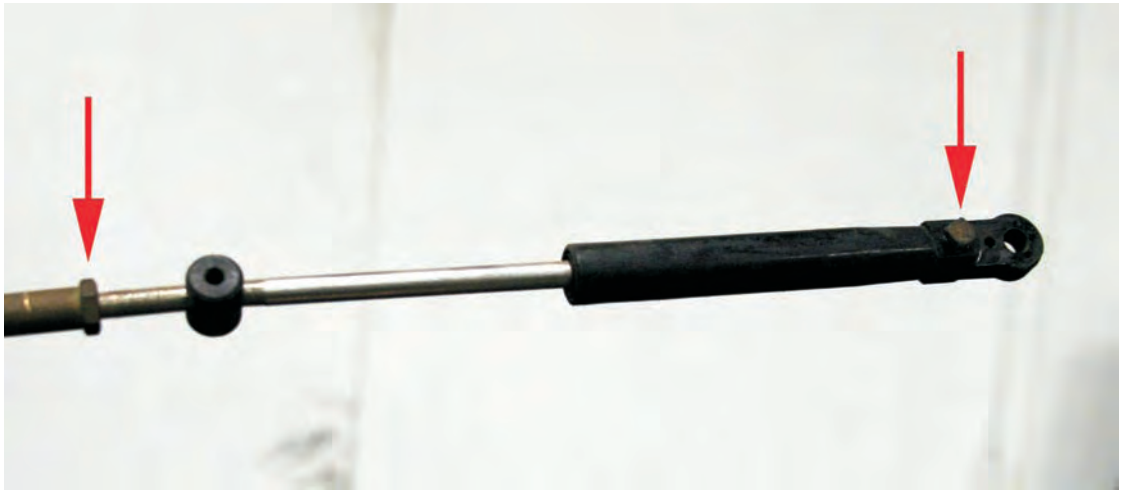
STEP 2 Removing the old bell housing (continued)



Step 2.2: Remove any clamps or nylon ties holding the shift cable bellows to the shift cable and the hose. ***Be aware of the small plastic or rubber insert at the end of the bellows, sealing the bellows to the cable.*** It is important to reinstall this properly to avoid water leaking into the boat. At this point you may want to also pull the shift cable hose down and lay it into the bilge to make the shift cable easier to slide out and back in upon removal and installation of the bell housing. Note the routing of the hose so you can route it exactly the same way on reassembly.

STEP 2 Removing the old bell housing (continued)



Step 2.3: Disassemble the cable end from the intermediate cable. Remove the small set screws and the cable end should slide off. Then loosen the jam nut and unscrew the barrel. Then the shift cable bellows can be removed.

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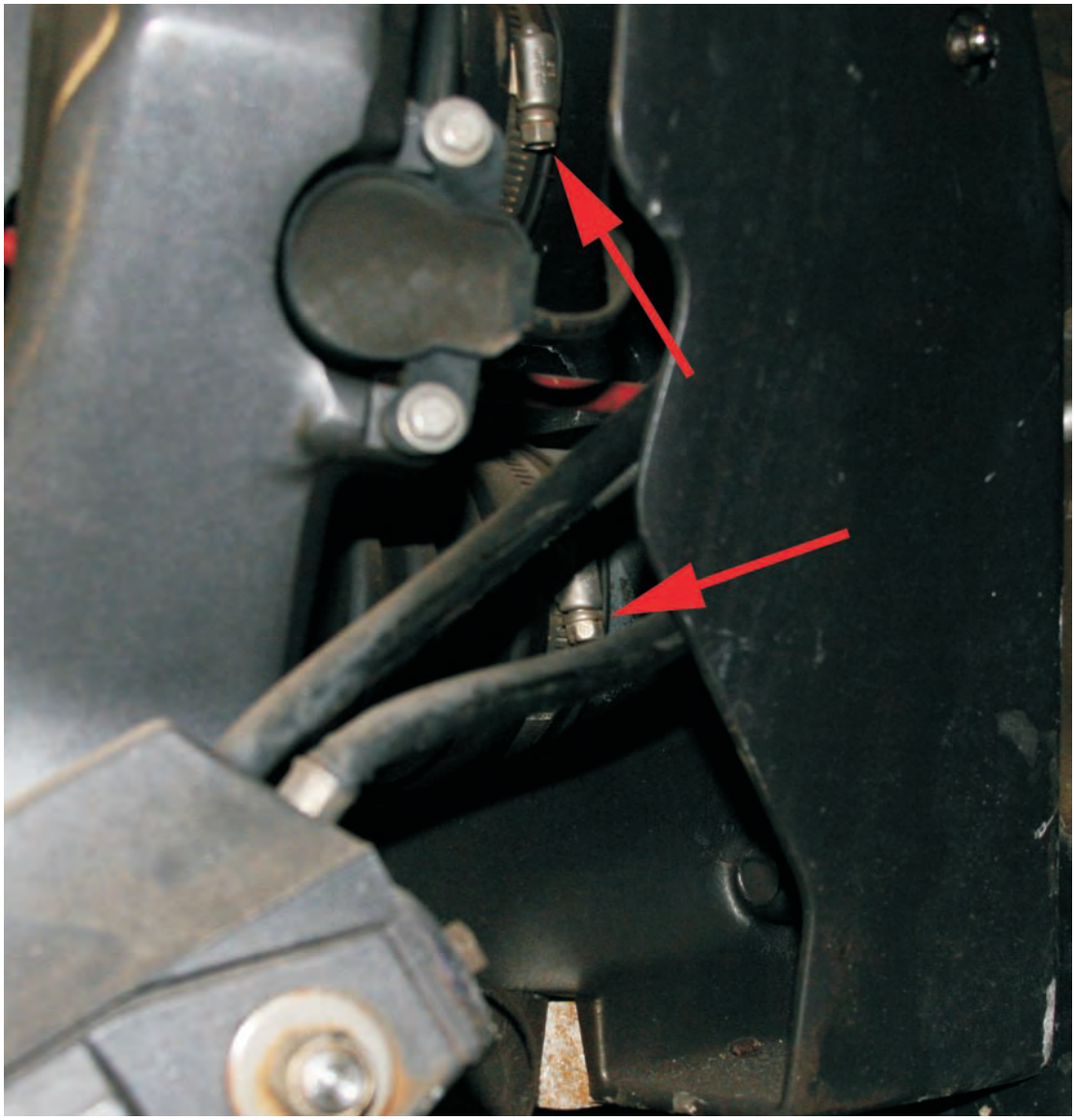
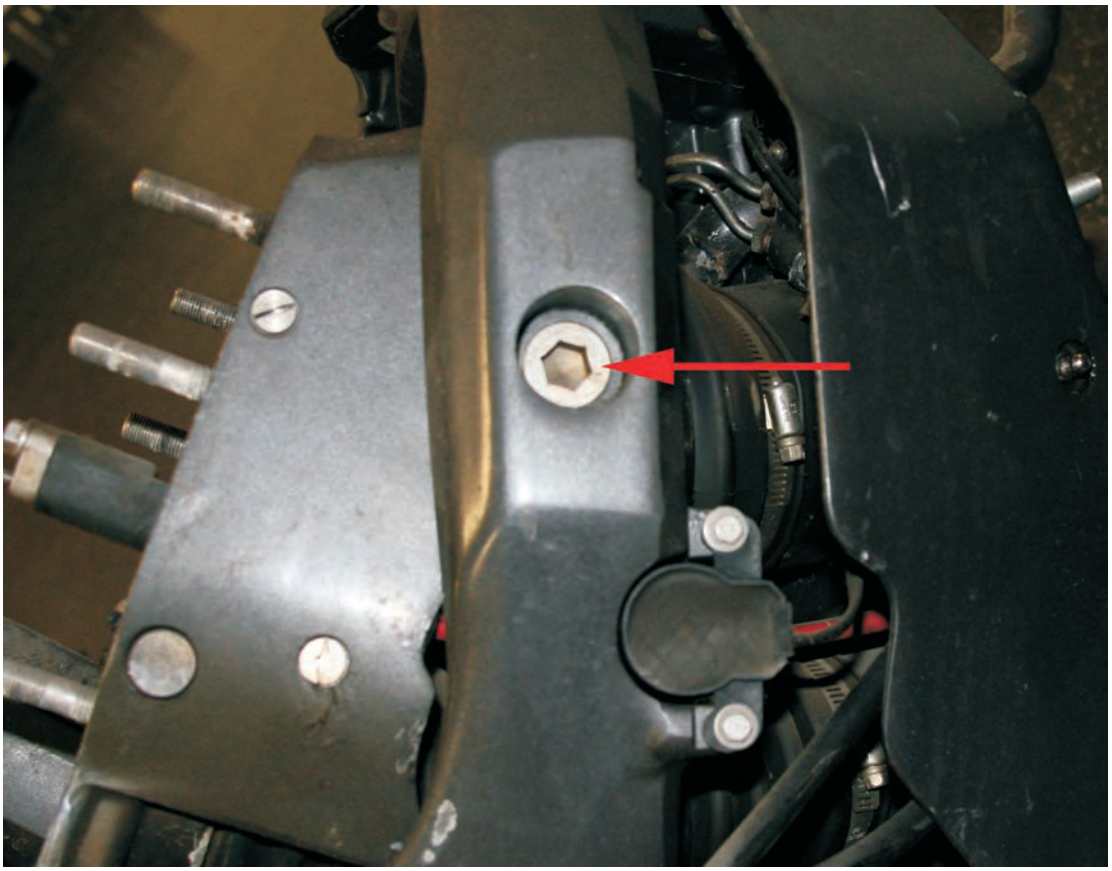
STEP 2 Removing the old bell housing (continued)



Step 2.4: Now we can go back outside the boat to remove the bell housing. You will need to turn the bell housing left or right depending on clamp orientation. You will notice that there are cables hooked under each of the clamps. ***These are for anti-corrosion purposes so you will want to reattach those when putting the SEI parts on.*** First loosen the clamp holding the u-joint bellows to the gimbal housing. Then loosen the clamp holding the exhaust bellows. Finally, raise the bell housing up as if in a trim up position and loosen the clamp holding the water hose(not shown) and then remove the hose from the nipple. This hose can be tough to remove. You can just
cut it off as we will be trimming this hose down when installing the new bell housing. Accessing the clamp screws may be easier by using a long extension
and a 5/16 or 1/4 swivel socket.

STEP 2 Removing the old bell housing (continued)



Step 2.5: Remove the hinge pins from both sides of the gimbal ring with a 1/2 inch allen socket and a breaker bar.

Step 2.6: If there is a ground wire attached to the bell housing, disconnect it at this time. ***This wire is for anti-corrosion purposes and should be reattached to the new SEI bell housing.*** Now the bell housing is ready to be removed. You may need to break the seal of the bellows to get them to release from the gimbal housing flanges by using a thin flat blade screwdriver or by just peeling them off with your fingers. Then just pull the bell housing straight out. It may help to have someone inside the boat to guide the shift cable out.

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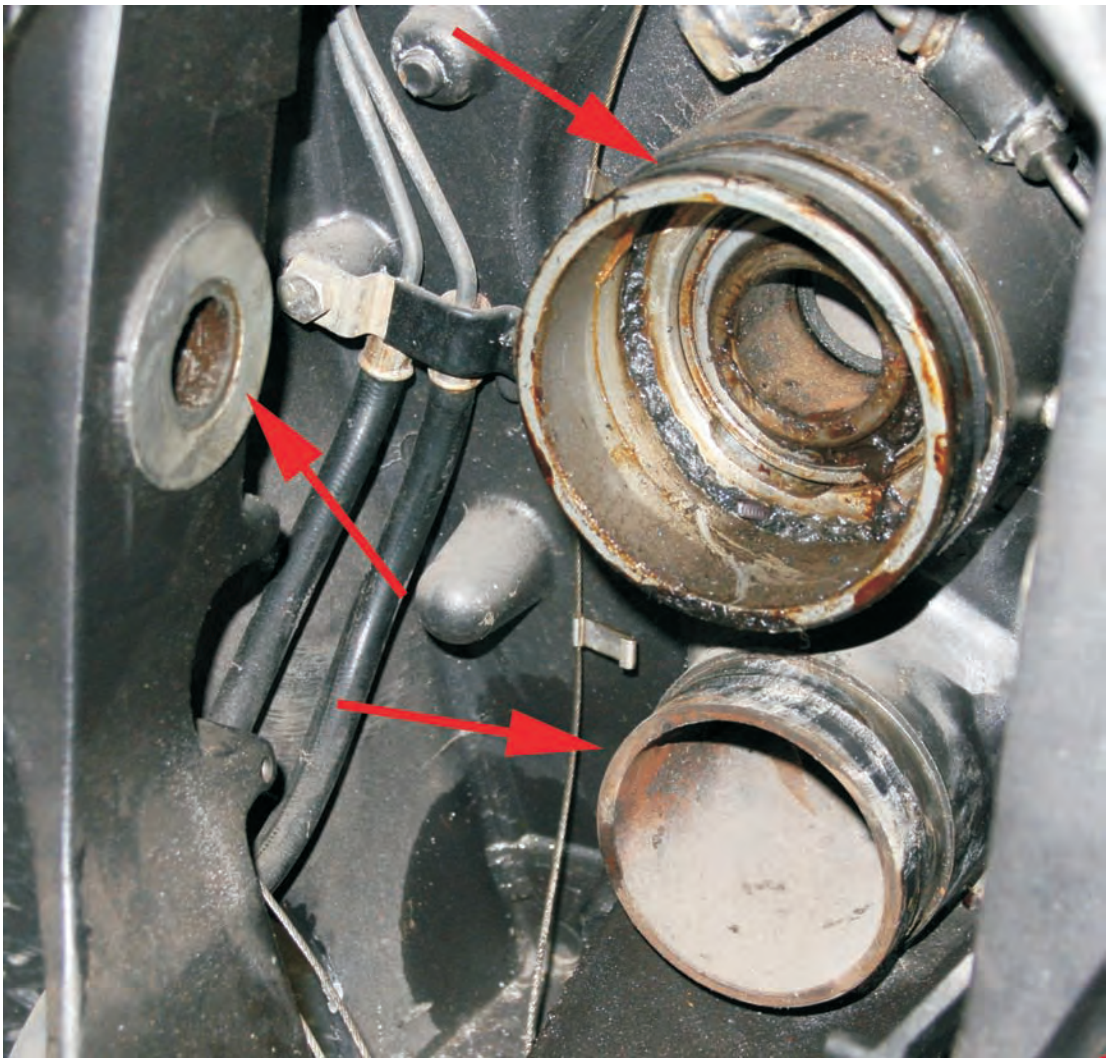
STEP 3 Preparing old transom assembly for installation of the new bell housing



Step 3.1: Now you will prepare the gimbal ring to accept the new SEI bell housing. Clean the area where the plastic washers will contact the gimbal ring to remove any corrosion and also the flanges for the bellows.

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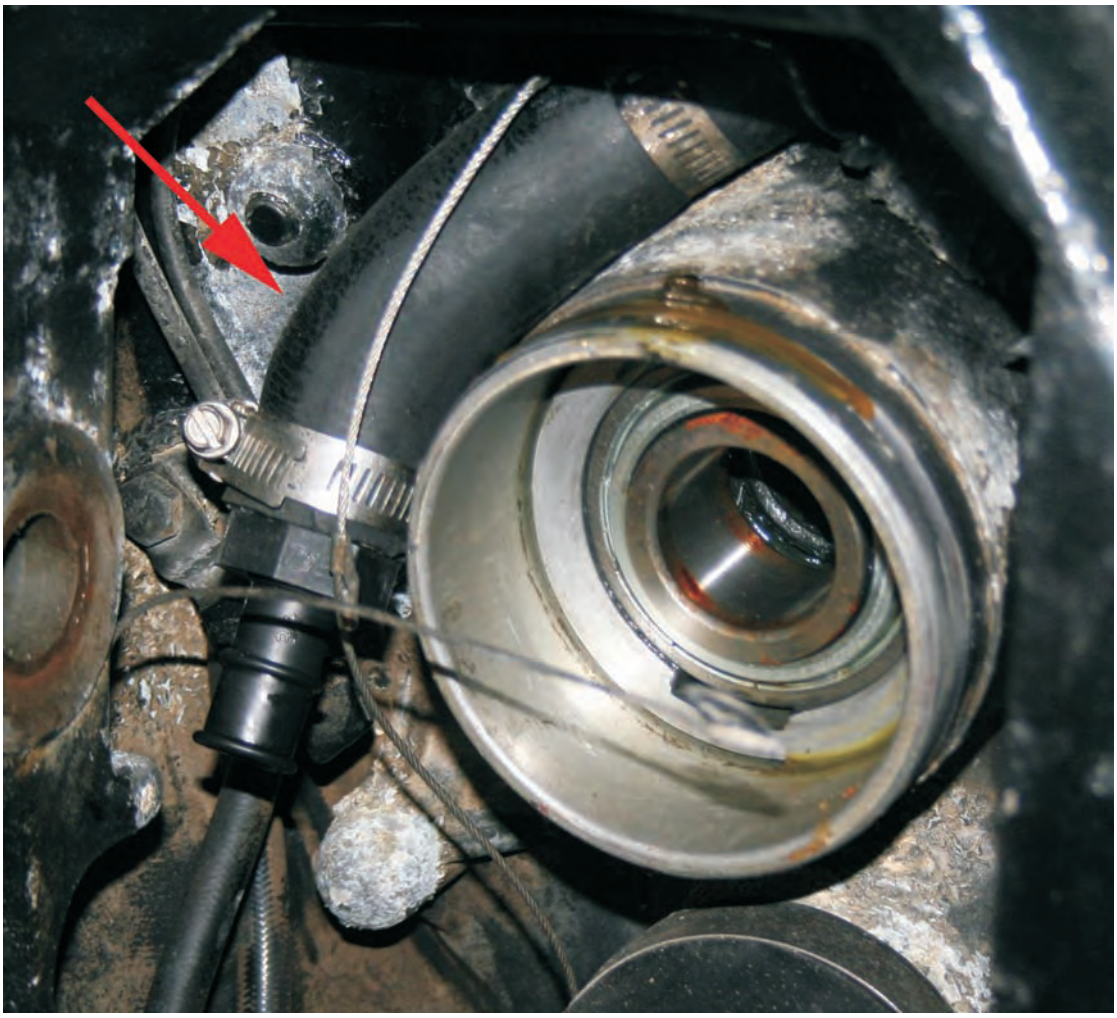
STEP 3 Preparing old transom assembly for installation of the new bell housing (continued)



Step 3.2: You need to modify the Cobra® water hose to accept the hose adapter nipple. You will leave approximately 4 inches of the original hose. Then slide a clamp over the hose, then install the nipple and tighten the clamp. Now you can install the new 3/4 hose to the nipple and clamp it on. Leave the hose dangling as you will custom fit it to the bell housing later. Make sure that the screws for the clamps are oriented away from the location the bellows will be as we don't want them to wear a hose in the bellows. You can also install bellows adhesive to the flange at this time. (Not Supplied)

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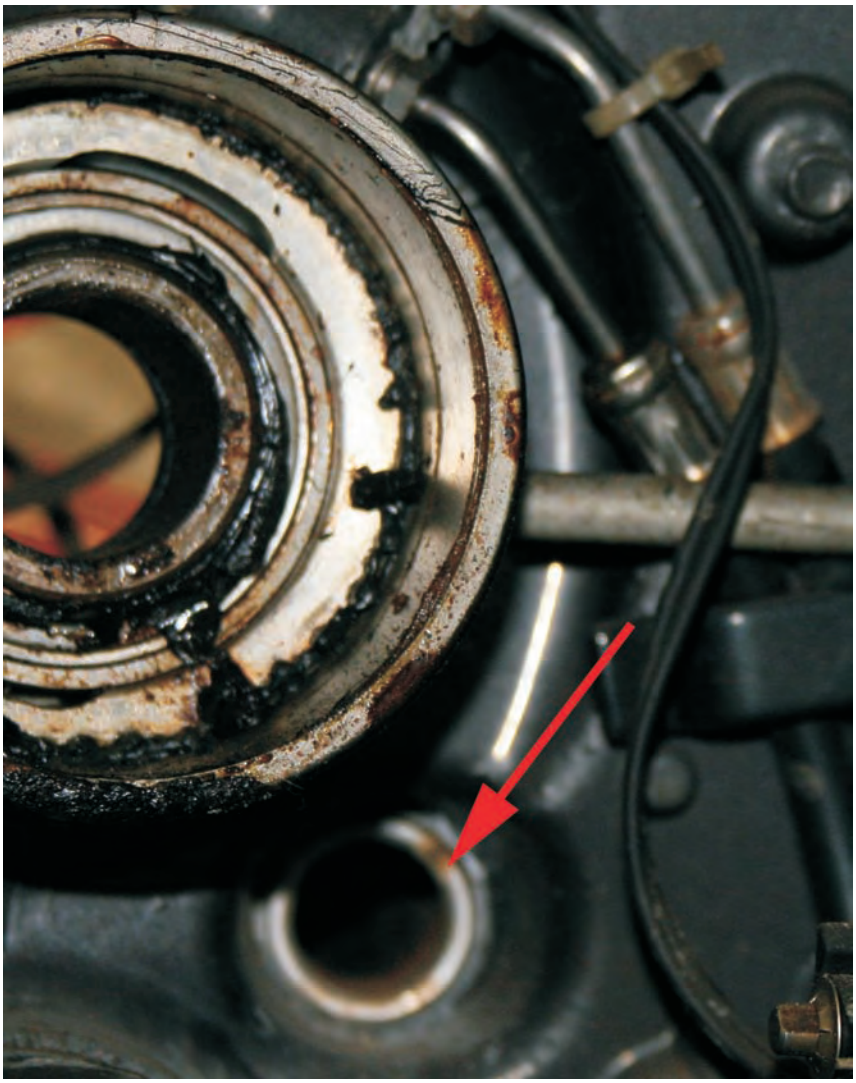
STEP 3 Preparing old transom assembly for installation of the new bell housing (continued)



Step 3.3: Feed the shift cable of the new bell housing through the shift cable tube which is located just below and to the right of the u-joint bellows flange.

Step 3.4: As an optional step, you can modify your old exhaust bellows by cutting off about 4 inches off of it to reattach to the flange on the gimbal housing using the old clamp.

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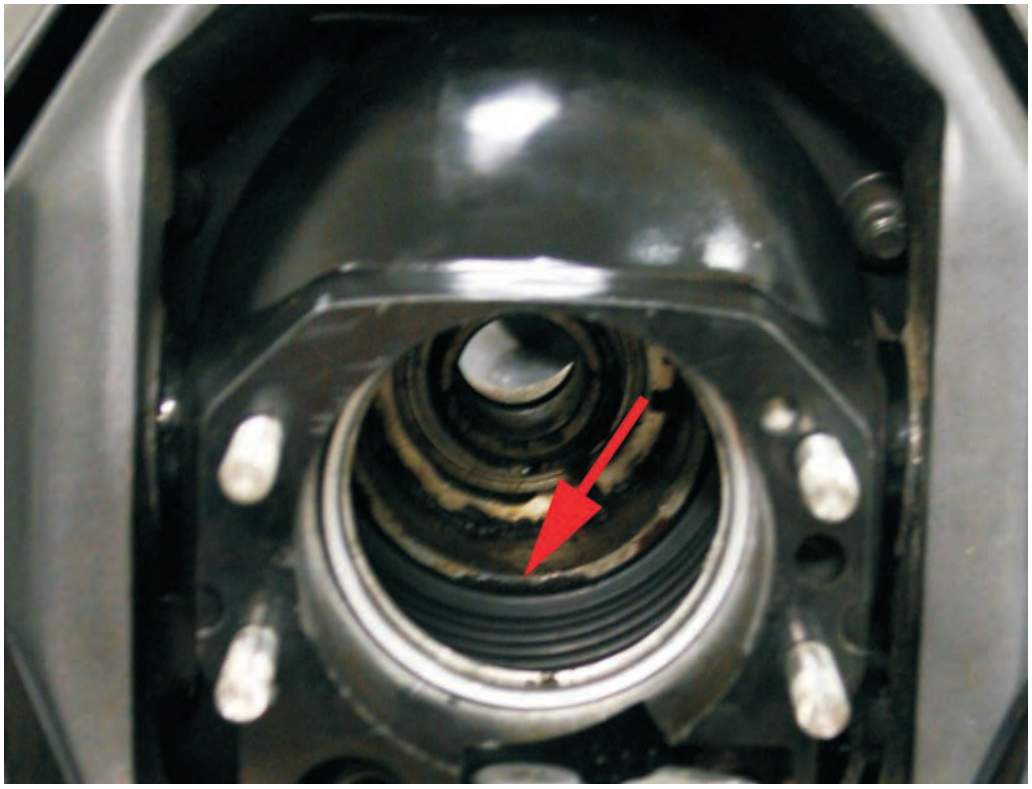
STEP 4 Installing new bell housing



Step 4.1: Now you are ready to guide the new bell housing into place. Make sure to have the clamp loosely on the u-joint bellows at this time with the clamp bolt at roughly the 2 or 3 o'clock position. You should also put some grease on the plastic washers that go between the bell housing and the gimbal ring. You may need to help guide the shift cable through the hose as the bell housing gets closer to the gimbal ring. Then as you get close, guide the u-joint bellows around the flange. It may be necessary to push the bell housing past the gimbal ring to get the u-joints bellows to seat fully into the groove.

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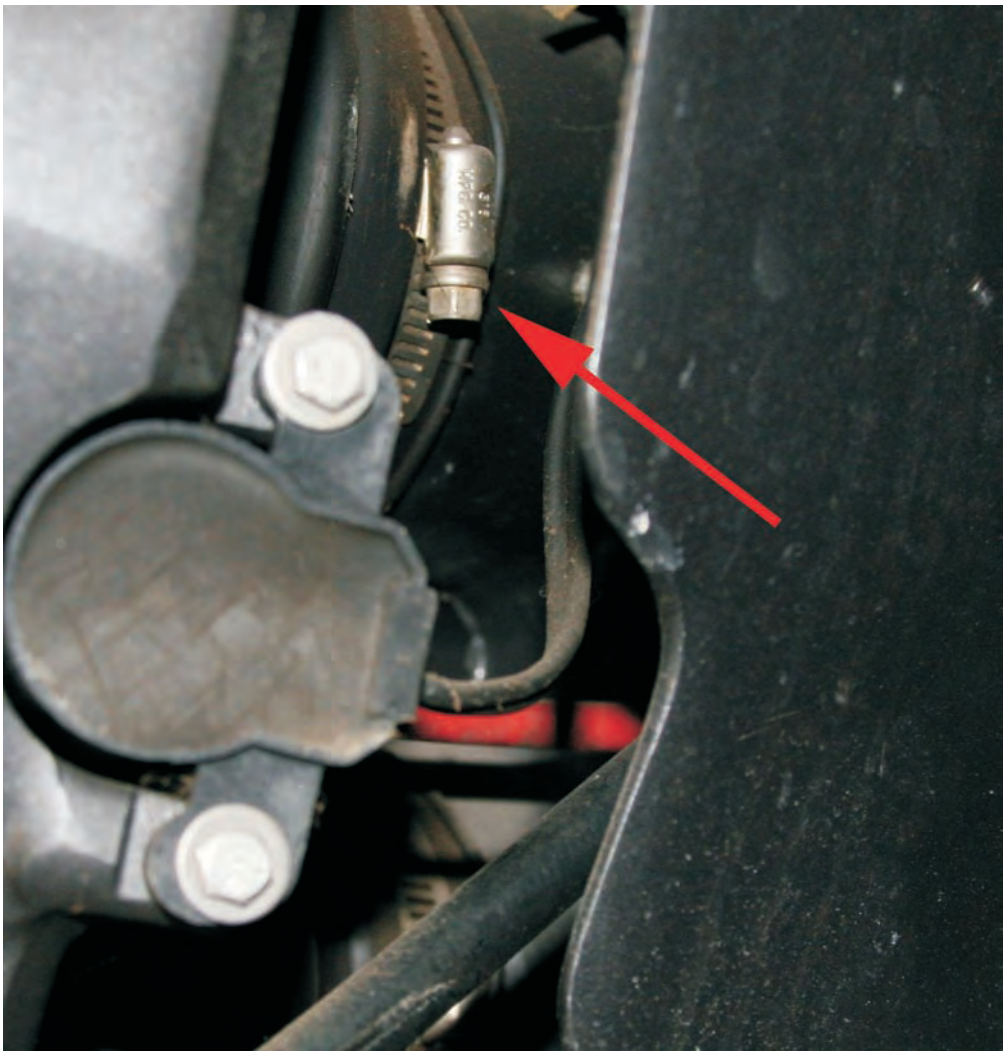
STEP 4 Installing new bell housing (continued)



Step 4.2: Now you can tighten down the u-joint bellows clamp by turning the steering wheel to the left to access the clamp.

STEP 4 Installing new bell housing (continued)

Step 4.3: We are now ready to install the hinge pins. Use the included Loctite on the threads and insert the hinge pin and Allen wrench into the hinge pin hole on either side. Be careful not to cross thread the hinge pin. Torque these to 80 Ft. Lbs.

Step 4.4: Now you will modify and attach the new 3/4 water hose to the previously installed adapter nipple. It is important to custom fit this hose. If you have the hose too long it may kink when turning. You should leave a little extra at first, and then install the hose and move the bell housing through it's range of motion and also turn left and right to make sure the hose doesn't kink. If the hose does kink, then shorten it a little at a time until it does not kink.

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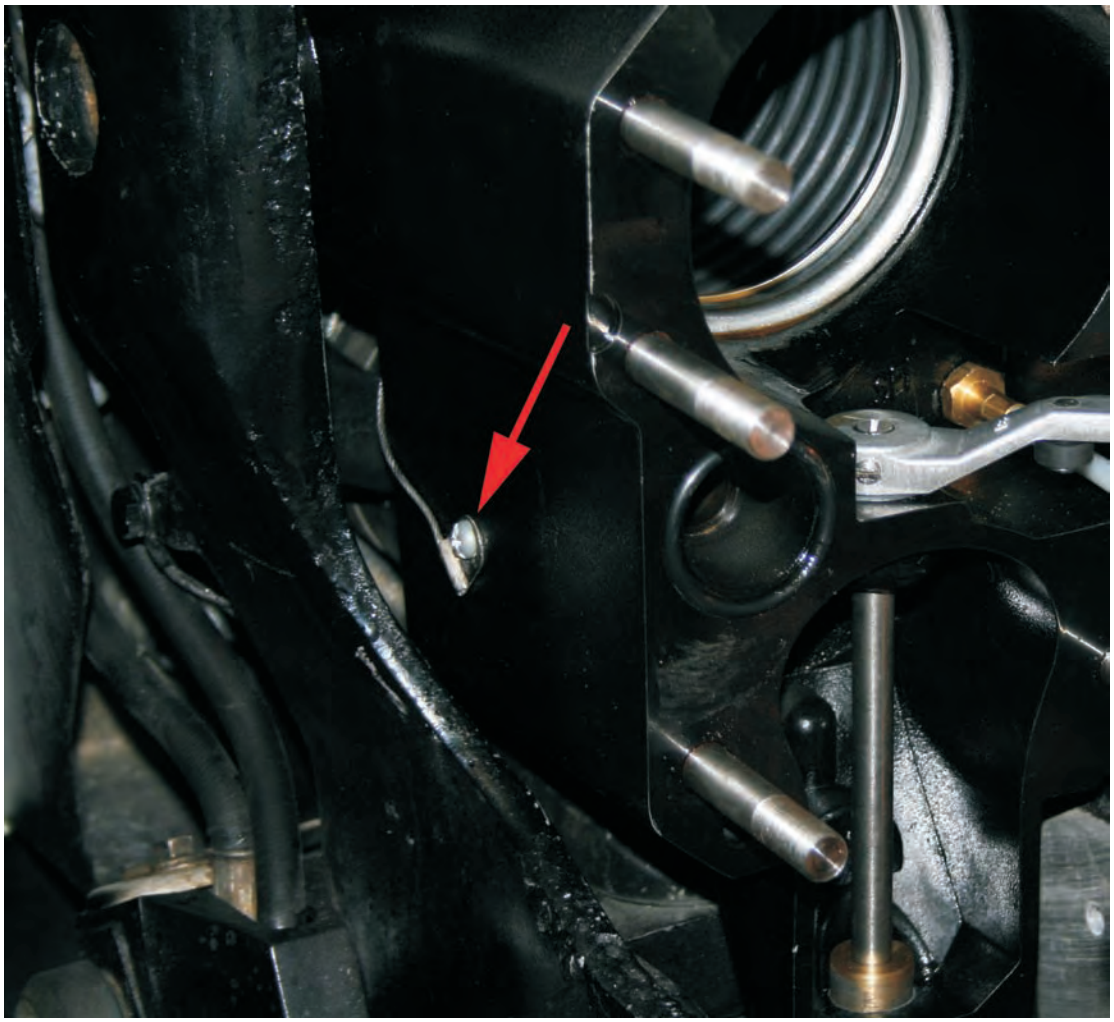
STEP 4 Installing new bell housing (continued)



Step 4.5: If you had a ground wire attached to the old bell housing, you can now attach it using the small screw to the bell housing attachment spot on the port side of the bell housing near the bottom.

STEP 5 Installing SE116™ drive

Step 5.1: Please assemble and install the drive per the instructions found at http://www.sterndrive.cc/techspace.htm. The only notable differences are that you will install the 5/8" plastic spacers between the cylinders and the upper housing to make up the width difference between the SE116™ and the Cobra® drive, and install the plastic spacer guides on the side of the upper housing in the hole provided. Put the bolt head to the outside and the nut on the inside.

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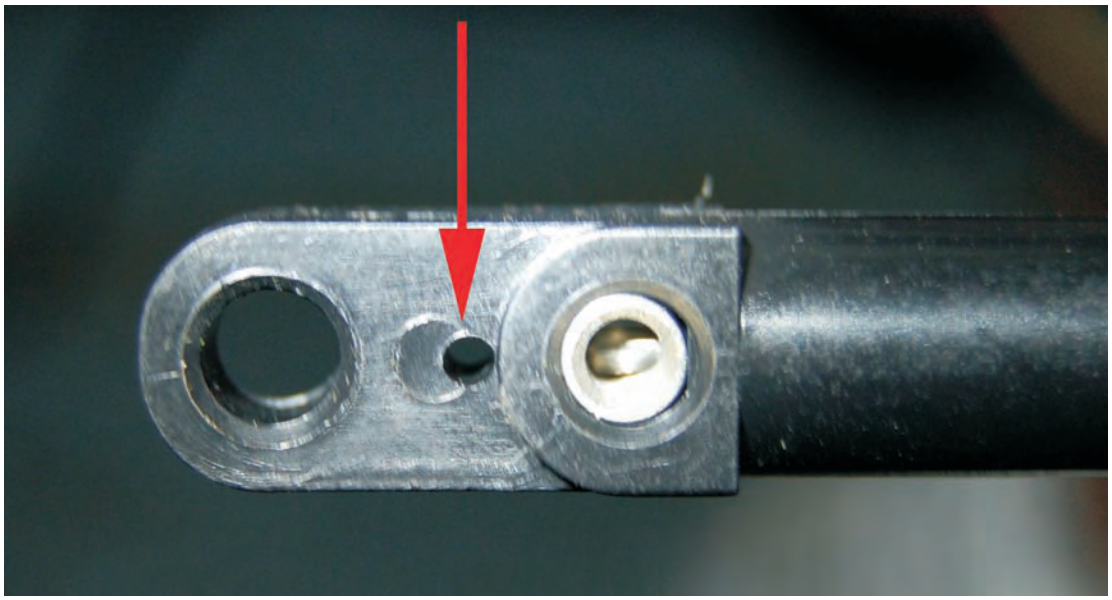
STEP 6 Adjusting the shift



Step 6.1: Now that the drive is installed we will finish assembling the shift cable. First install sht shift slide and inner cable. Then reverse the steps of disassembling the old cable. First reinstall the shift cable bellows and a couple of nylon ties to hold it in place. Now screw the jamb nut onto the barrel all the way, then thread the barrel onto the shift cable housing. Now tighten the jamb nut. Insert the small metal sleeve and set screws into the plastic cable end with the hole mating the internal hole in the plastic cable end. Then insert the cable through the plastic cable end and through the metal sleeve and make sure it goes all the way into the small indicator hole.

Step 6.2: ***Note: The OMC® drive requires the remote control to throw the cable the opposite direction as the SE116™ drive. Before continuing you will need to change the throw of the shift cable at the remote control. Please refer to the appropriate manual for your remote control to accomplish this step.*** Once the cable is assembled it is time to adjust the shift. First put the drive in full forward by pushing in on the cable while someone rotates the prop shaft counter clockwise. The prop should lock. This indicates full forward. Now measure between the brass barrel and the eyelet on the plastic cable end. This measurement should be exactly 6 inches. If it is not, rotate the brass barrel until it it is. Now install the cable onto the shift bracket while leaving the drive in full forward. Then with the remote control in forward, and the drive in forward, adjust the barrel on the remote control cable to match the shift bracket.

Step 6.3: Install your prop, and ***with the motor not running*** have a helper verify that the prop is locking counter clockwise while you are in forward. Then the prop should rotate freely in both directions in neutral. With the remote control in reverse the prop should lock when you rotate it clockwise.

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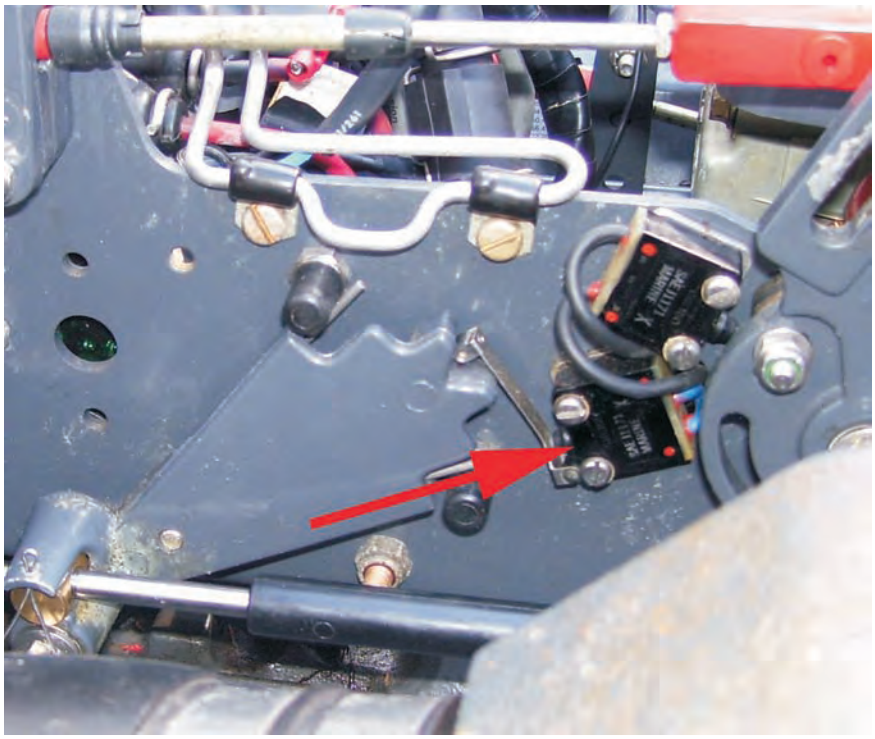
STEP 7 Bypassing OMC® ESA module



Step 7.1: An optional but highly recommended step is to bypass the OMC® ESA system. Basically we will connect the negative side of the coil to the shift interrupter switch. To do this we will use the wire included in the kit. Remove the nut from the negative side of the coil and attach the wire eyelet to the post, then reinstall the nut. The other side of the wire will connect to the side of the main interrupter switch that is open when the switch is not activated. Using a multi-meter hook one wire up to ground and touch each side of the switch with the other wire. The side that does not show continuity is the side you want to connect the additional wire to using the blue quick tap connector. Then cut and tape up the original wire on the other side of the blue quick tap connector so it does not back feed into the system. Clean up the wires using the nylon straps provided and cutting off any excess wire.

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STEP 8 Optional and untested additions

Step 8.1: There are a couple more items that have not been researched but are possible. The bell housing would allow for a remote oil reservoir if so desired with minimal modifications. You would need to purchase the nipple for the bell housing and also another nipple and a length of hose. Then the hose would be run through the same place as the shift cable into the engine compartment. Then it would hook to a remote oil bottle.

Step 8.2: The SE116™ drive does allow for a speedometer hook up on the shift bushing. You would need to purchase the appropriate connector and some hose and run it in a similar fashion as the remote oil hose.

With either of these additions, care would be needed to make sure that the large hose housing the cables and or hoses remains above the water line as the shift cable bellows would need to be removed and/or modified to facilitate the additional hoses.

Step 8.3: This kit could be modified to replace Cobra/Volvo cone clutch drives with the installation of a shift bracket and new cable to permit the use of a shift interrupter switch. This has not been tested so support would be limited in this application.

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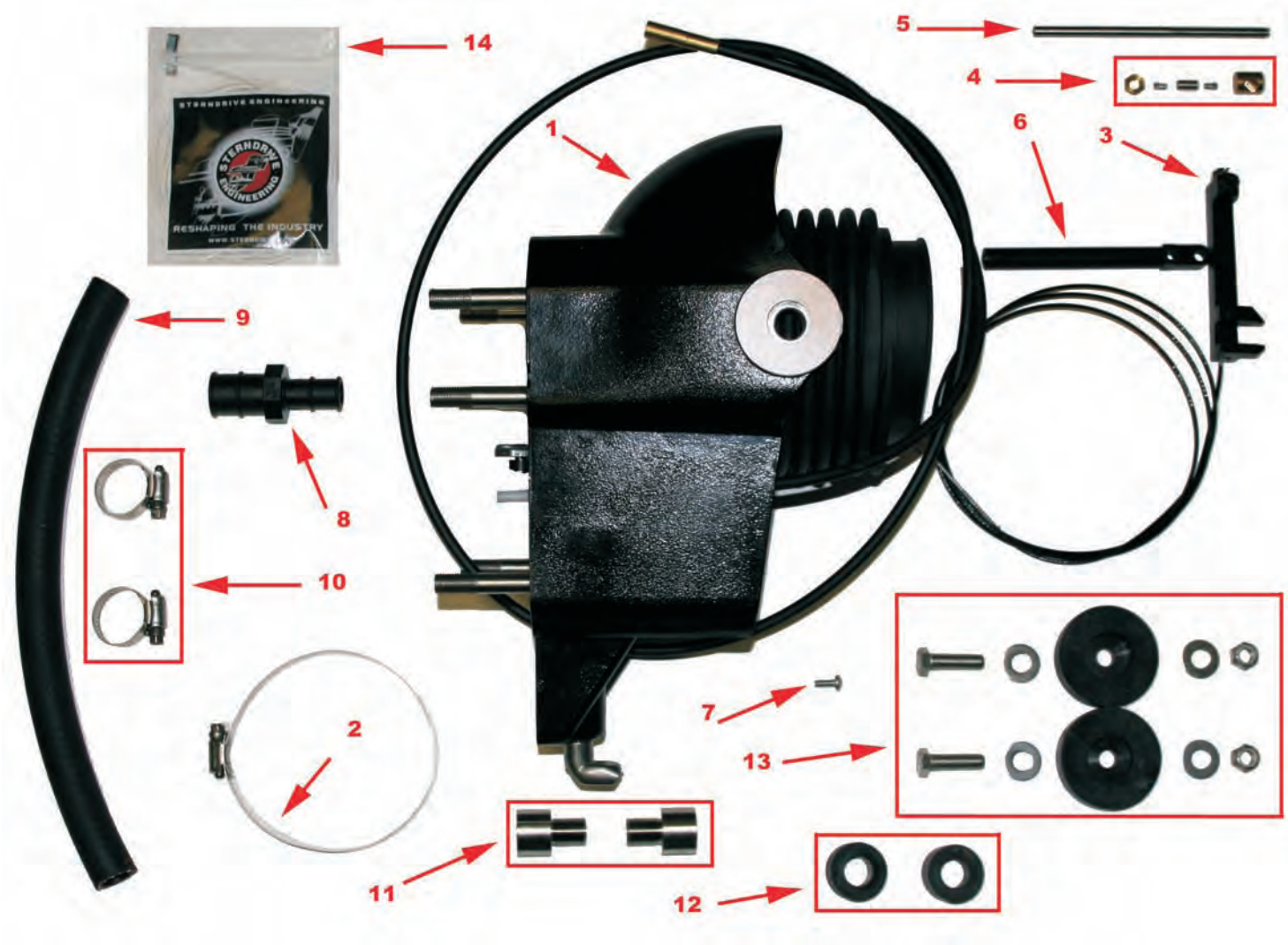
SEI Conversion Kit Contents:



1. Bell housing with shift cable and u-joint bellows pre-installed
2. U-joint bellows clamp
3. Shift slide
4. Cable end parts
5. Steel barrel for shift cable
6. Plastic cable end
7. Screw for continuity cable
8. Hose adapter
9. 3/4 water hose
10. Clamps for water hose
11. Hinge pins
12. Trim cylinder spacers
13. Upper housing spacer guides
14. ESA bypass kit

Patent Pending

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