merCruiser
STERN DRIVES & INBOARDS

service bulletin

TO: SERVICE MANAGER ☐ MECHANICS ☐
PARTS MANAGER ☐

No. 86-14

MerCruiser I Gimbal Ring Inspection and Repair Procedure

All V-8 MerCruiser I Stern Drive units, with the spline-spline upper swivel shaft, which have the trim position sender and the trim limit switch (ear muff type) located on the gimbal ring (see Figure 1) may experience wear of the gimbal ring splines that join the steering lever to the drive unit. Owners of these V-8's are being directly contacted by Mercury Marine of this probability (see enclosed letter). The wear after this length of time can be attributed to use, corrosion, lack of maintenance, lack of lubricant and abuse, etc. Should the splines continue to wear, steering looseness will increase and could ultimately result in a total loss of steering. Units starting with the square spline upper swivel shaft in the gimbal ring will not be effected. You should also be alert to the probability of wear of this connection on in-line engines.

Periodic Inspection

The total steering system should be inspected periodically, including specifically the connection between the steering lever and gimbal ring, and all looseness should be tightened. The steering lever retaining screw nut can be readily tightened, or the gimbal ring can be replaced easiest by drilling holes in the gimbal housing according to instructions following.

Periodic inspection is critical--at least once a season, but more often on heavy-duty, commercial, high-performance (over 50 MPH), dual or salt water applications.

10-32995A1	Steering Lever Retaining Screw Kit
88302A1	Gimbal Ring Kit

IMPORTANT: Installation of gimbal ring kit and/or steering lever retaining screw kit requires the use of a 1" NPT (National Pipe Taper) tap and a 1-1/8" (28.6mm) hole saw. Tap and hole saw can be obtained from your local hardware store or machine shop.

Inspection for Worn Gimbal Ring Splines

1. Insert magnet end of Wear Indicator Gauge (a) between gimbal ring and bell housing on right side. Then guide magnet to top of gimbal ring and attach it to bottom end of upper swivel shaft (b). Position indicator gauge so that pointer is 1-1/2" (38mm) above trim position sender (e). Indicator gauge MUST NOT touch gimbal ring or bell housing.

NOTE: Wear Indicator Gauge 91-89095 is available from your service center.

2. Place a piece of masking tape (c) on gimbal ring at location shown.
3. Grasp aft end of drive shaft housing, move drive unit back-and-forth and draw a small vertical line on tape at extremes of travel in both directions (d). If 3/32" (2.4mm) or more movement is indicated, gimbal ring splines are worn, and gimbal ring must be replaced. Install new Gimbal Ring Kit 88302A1 in accordance with instructions which accompany it.

IMPORTANT: Gimbal Ring Kit contains all the necessary parts for installation on stern drive units with exhaust tubes. If kit is to be installed on units with exhaust bellows, a new bellows 32734A3 is required.

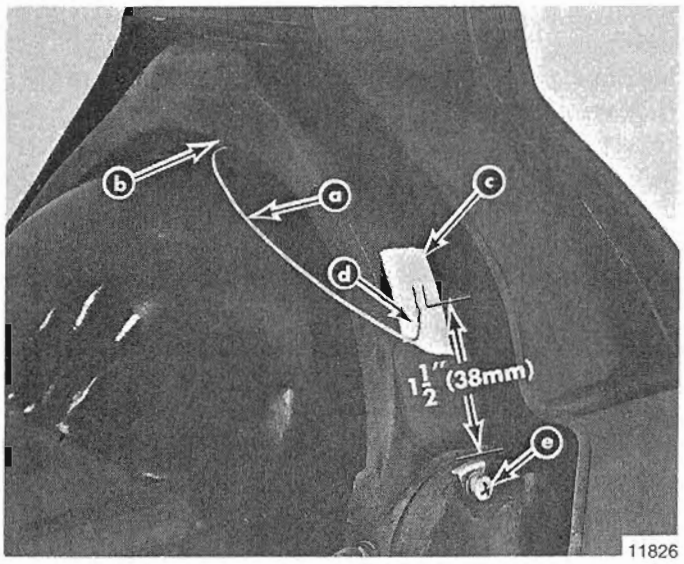
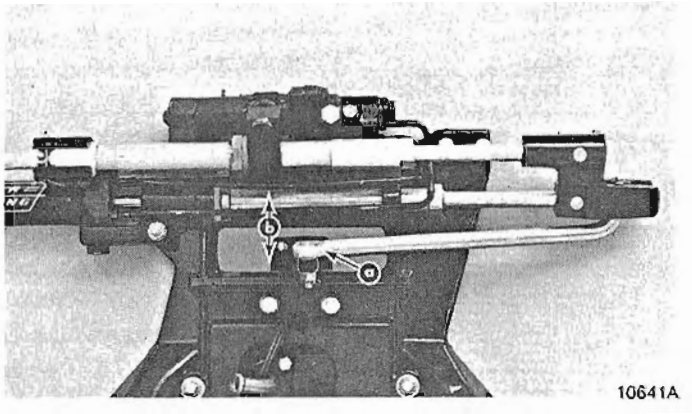


Figure 1. Checking for Worn Splines with Wear Indicator Gauge

Inspection for Loose Steering Lever

Grasp steering lever (a) and try to move it up and down (b). If any movement is felt, steering lever is loose and MUST BE tightened, using Steering Lever Retaining Screw Kit 10-32995A1.



a - Steering Lever
b - Try to Move Lever Up-and-Down

Figure 2. Checking For Loose Steering Lever

Steering Lever Retaining Screw Kit 10-32995A1 Installation Instructions

This kit contains all the necessary parts for tightening the steering lever and consists of the following:

1 - Retaining Screw 10-32995
1 - Nut 11-79857
1 - Plugs 22-88847

IMPORTANT: Installation of kit requires the use of a 1" NPT (National Pipe Taper) tap and a 1-1/8" (28.6mm) hole saw.

IMPORTANT: When using 1-1/8" hole saw, fit it with a pilot rod in place of drill bit to prevent hole saw from wandering when cutting holes. Pilot rod must be installed so that it protrudes a MAXIMUM of 1/4" (6.35mm) from cutting teeth on hole saw, as shown in Figure 3.

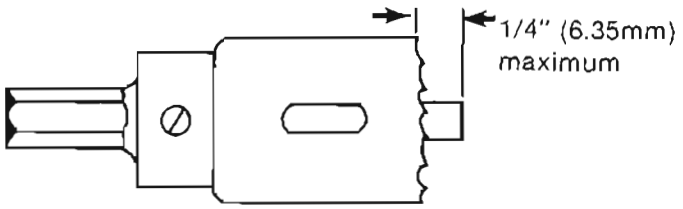


Figure 3. Pilot Rod Installed on Hole Saw

Figure 4. Template in Position on Gimbal Housing (Left Side)

1. Cut out template from last page of this bulletin.

⚠CAUTION

Be sure to position template accurately when marking access hole locations in the following step. If holes are not located properly, it will not be possible to tighten steering lever.

2. Place template on left side of gimbal housing (Figure 4) and mark gimbal housing with a center punch at location indicated. Repeat same procedure on right side of gimbal housing, using proper template.

⚠CAUTION

Be sure to drill and cut holes perpendicular to gimbal housing surfaces in the following steps.

3. Position drive unit so that it is straight ahead, then drill same size holes as pilot rod (in hole saw being used) thru gimbal housing at locations marked with punch. When using hole saw drill 1/4" holes, first.
4. Using 1-1/8" hole saw, cut holes thru gimbal housing at pilot hole locations. DO NOT use excessive force. Remove metal chips.

5. Turn steering wheel, as required, so that head on steering lever retaining screw is accessible thru one of the access holes. While holding nut on other end of retaining screw with a box end wrench, loosen retaining screw with a socket and remove screw and nut thru access holes. (Discard nut)

IMPORTANT: Inspect center portion of steering lever retaining screw. If screw is grooved (from rubbing on upper swivel shaft), steering lever MUST BE replaced and new Gimbal Ring Kit 88302A1 must be installed. (Discard screw after inspection.)

6. Install NEW retaining screw 10-32995 in steering lever and thread on NEW locknut 11-79857. Torque retaining screw to 60 lbs. ft. (81 N.m).

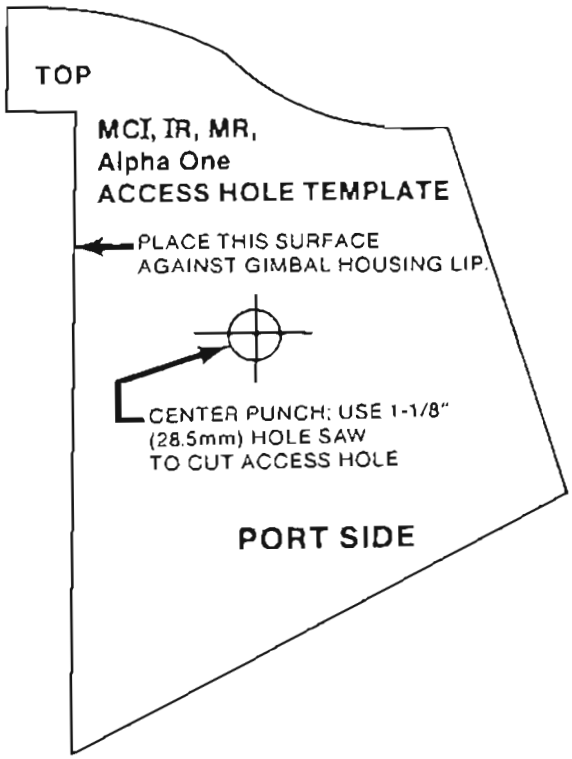
7. Grease upper swivel shaft with Quicksilver 2-4-C Marine Lubricant thru fitting on top of gimbal housing until lubricant appears under steering lever. Swivel shaft should be greased at this time to prevent metal chips from getting into swivel shaft needle bearings in next step.

⚠CAUTION

Use extreme care when tapping holes and installing plugs (in the following steps) to ensure that it is done correctly. If holes are threaded incorrectly, or if plastic plugs are not installed properly, water leakage into boat may result.

8. Place drive unit in a FULL RIGHT TURN. Coat cutting portion of 1" NPT tap with grease and thread access hole in gimbal housing, using ONLY first 1/2" (13mm) of tap. (Mark tap with a piece of tape to indicate depth.) Be sure to tap hole perpendicular to housing.

   Place drive unit in a FULL LEFT TURN and thread access hole in same manner. Remove metal chips with compressed air or a cloth.



9. Clean grease from threads in gimbal housing with solvent, then coat threads of 2 plastic plugs 22-88847 with Quicksilver Perfect Seal 92-34227 and install in access holes (using a 5/8" allen wrench) until 3/8" (10mm) is exposed. Use care to prevent cross-threading plugs.

IMPORTANT: If a 5/8" allen wrench is not available, plugs can be installed with a bolt that has a 5/8" hex head. Thread 2 nuts onto bolt and tighten one against the other to allow bolt to be turned with a wrench or a socket.

10. Touch up any scratches on gimbal housing, using a Q-Tip saturated with Quicksilver Black Spray Paint.

⚠WARNING

With boat in the water and engine running, turn steering wheel thru entire steering range and check for binding. Also, check gimbal housing for water leakage in area where plastic plugs were installed.