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Torque Specifications

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<td>Bellows Expander Tool</td>
<td>91-45497A1</td>
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<tr>
<td>Slide Hammer Puller</td>
<td>91-34569A1</td>
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<td>Shift Cable Removal and Installation Tool</td>
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<tr>
<td>Driver, Needle Bearing</td>
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<td>Drive Shaft Nut Wrench</td>
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<td>Mandrel</td>
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# Lubricants / Sealers / Adhesives

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<td>Loctite 27131</td>
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<td>Quicksilver Special Lubricant 101</td>
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Special Information

Trim Limit Switch

The trim limit switch has a sealing system for improved water resistance and durability. The trim limit switch leads are connected internally to help ensure good electrical integrity.

Trim Limit Switch - Port

Trim Position Sender

The trim position sender has a sealing system for improved water resistance and durability. The trim limit leads are connected internally to help ensure good electrical integrity.

Trim Position Sender - Starboard

Shift Cable

A Drive Unit Shift Cable Removal and Installation Tool 91-12037 is required for cable removal and installation.

a - Shift Cable Retaining Nut
IMPORTANT: The shift cable should be replaced as an assembly only.

Gear Lube Monitor Kit Access Plug Locations

This model has the option to be equipped with a remote oil monitor. These plugs only need to be removed during installation of that kit.

a - Bell Housing
b - Hex Head Plug

a - Gimbal Housing
b - Allen Head Pipe Plug
Alpha One Transom Assembly Exploded View

Bell Housing Components
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### Lubricants/Sealers/Adhesives

- **A** - 3M Brand Adhesive
- **B** - Loctite 27131
- **C** - Quicksilver Perfect Seal
- **D** - Quicksilver High Performance Gear Lube

### Torque Specifications

- **a** - Tighten Securely Approximately 35 lb-in. (4 Nm)
- **b** - 50 lb-ft (68 Nm)
- **c** - 8 lb-ft (11 Nm)
Gimbal Housing Components
1 - Gimbal Housing
2 - Stud
3 - Lower Bushing
4 - Oil Seal
5 - Upper Bushing
6 - Grease Fitting
7 - Lubricap
8 - Grease Seal
9 - Bearing Assembly
10 - Tolerance Ring
11 - O-Ring
12 - Stud
13 - Seal
14 - Pipe Plug
15 - Water Tube
16 - Bushing
17 - Cover
18 - Screw
19 - Lower Swivel Pin
20 - Cotter Pin
21 - Washer
22 - Bolt
23 - Washer
24 - Washer
25 - Nut
26 - Bellows
27 - Clamp
28 - Clamp
29 - Washer
30 - Nut
31 - Gasket
32 - Connector
33 - Lock Washer
34 - Nut
35 - Anodic Plate
36 - Seal
37 - Gasket
38 - Screw
39 - Lock Washer
40 - Hose
41 - Clamp
42 - 90° Fitting
43 - Nut
44 - Washer
45 - O-Ring
46 - Connector
47 - Continuity Wire
48 - Continuity Wire Connection
49 - Hose Clamp

Lubricants/Sealers/Adhesives

A - 3M Brand Adhesive
B - Quicksilver Perfect Seal
C - Loctite 27131
D - Quicksilver U-Joint And Gimbal Bearing Grease

Torque Specifications

a - 80 lb-in. (9 Nm)
b - 12 lb-ft (16.5 Nm)
c - Approximately 35 lb-in. (3.96 Nm)
d - 25 lb-ft (34 Nm)
Inner Transom Plate Components

1 - Transom Plate Assembly
2 - Pivot Bolts
3 - Tab Washers
4 - Screw Engine Mounting
5 - Washer
6 - Spacer
7 - Washer - Fiber
8 - Lockwasher - Double Wound
9 - Locknut
10 - Washer
11 - Locknut
12 - Shift Cable Outer Casing
13 - End Guide
14 - Core Wire Anchor
15 - Anchor Screws
16 - Core Wire
17 - Shift Slide
18 - Screw - Core Wire Cavity
19 - Gimbal Housing Eyelet
20 - Cable Wrapping

Torque Specifications

a - 25 lb-ft (34 Nm)
b - 37 lb-ft (50 Nm)
Gimbal Ring and Steering Lever Components

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(O.D.)

A

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INDEX

SERVICE PROCEDURES REQUIRING MAJOR DISASSEMBLY

1 - Gimbal Ring
2 - Bushing
3 - Grease Fitting
4 - Lubricap
5 - Hinge Pin
6 - Trim Limit Switch
7 - Washer
8 - Screw
9 - Lockwasher
10 - Retainer
11 - Trim Wire Clamp
12 - Screw
13 - Steering Lever
14 - Swivel Shaft
15 - Washer
16 - Washer
17 - Nut
18 - Screw
19 - Nut
20 - Screw
21 - Washer
22 - Washer
23 - Locknut
24 - Clevis Pin
25 - Cotter Pin
26 - Trim Position Sender

Lubricants/Sealers/Adhesives

- Resiweld Sealer

Torque Specifications

c - 60 lb-ft (81 Nm)
d - 55 lb-ft (74 Nm)
e - 110 lb-ft (148 Nm)
f - 95 lb-in. (10.5 Nm)
Component Disassembly

Bell Housing Removal

1. Remove sterndrive unit.
2. Remove trim position sender.

3. Remove trim limit switch.

---

**a** - Trim Position Sender
**b** - Screws (2) and Washers (2)
**c** - Retainers (2)
4. Disconnect shift cable from shift plate and remove cable end guide (b) by loosening anchor screws (a).

5. Remove threaded tube (b) by loosening locking nut (a).

6. Remove lock wire and set screw from shift slide.
7. Remove inner core wire and shift slide.

8. Remove and discard shift cable bellows crimp clamp.

a - Inner Core Wire
b - Shift Slide

da - Crimp Clamp
b - Shift Cable Bellows
c - Shift Cable
9. Remove shift cable wrapping from shift cable on inner transom.

10. Remove water tube cover and rubber grommet. Push water tube through gimbal housing.

Key:
a - Inner Transom
b - Shift Cable
c - Wrapping

Key:
a - Water Tube Cover
b - Screws
c - Water Tube
d - Rubber Grommet (Beneath Cover)
11. Insert removal tool into U-joint bellows and tighten nut until sleeve becomes dislodged from bellows.

![Diagram of U-joint bellows with removal tool and bell housing labeled.

- **a** - Removal Tool (91-818169)
- **b** - Bell Housing

12. Remove sleeve from universal joint bellows.

![Diagram of universal joint bellows with sleeve labeled.

- **a** - Sleeve

13. Loosen exhaust bellows clamps and remove bellows.

![Diagram of exhaust bellows with clamps labeled.

- **a** - Exhaust Bellows
- **b** - Hose Clamps
14. Remove speedometer tubing clip from bell housing.

15. Remove continuity wire from port side of bell housing.

16. Remove hinge pins.

17. Remove bell housing.
Trim Position Sender and Trim Limit Switch Wire Removal

1. Remove trim limit switch wires and trim position sender wires.

Gimbal Ring, Swivel Shaft and Steering Lever Removal

GIMBAL HOUSING ACCESS PLUG

This kit, available for use on MerCruiser Transom assemblies, allows for removal and installation of gimbal ring without having to remove engine and transom assembly. A template is also included in this kit to locate access holes.

NOTE: If steering lever cavity is not accessible, it will be necessary to drill access holes in gimbal housing. This procedure requires the following:

Access Plug Kit 22-88847A-1
1-1/8 in. Hole Saw (obtain locally)
1 in. NPT Pipe Tap #180 (obtain locally)

a - Plastic Plugs (2)
b - Swivel Shaft Nut
1. Use template at the end of this section as a guide for the correct location for cutting and drilling access holes. Align template with dimple located beneath decal on the gimbal housing.

![Diagram of a gimbal housing with labels a and b]

**a** - Dimple (Beneath Decal)

---

**CAUTION**

Be sure to drill and cut hole and tap threads perpendicular to gimbal housing surfaces in the following steps.

2. Drill pilot holes (port and starboard) using a drill that is the same size as the pilot rod being supplied with the hole saw (approximately 1/4 in.) (6 mm).

![Diagram showing a drill being used]

---

**CAUTION**

Eye Protection must be worn when performing the following procedure. Failure to do so may cause personal injury.
3. Cut holes in gimbal housing (port and starboard) using 1-1/8 in. hole saw and pilot rod. Remove metal chips with compressed air.

REMOVAL

1. Loosen screws and nuts (not necessary to remove).

- a - Screws (2)
- b - Nuts (2)
- c - Washers (4)
- d - Gimbal Ring
2. Loosen steering lever clamping bolt and nut.

**With Engine And Transom Assembly Installed**
- a - Wrench
- b - Socket Wrench

**With Engine And Transom Assembly Removed**
- a - Wrench
- b - Wrench

With Engine And Transom Assembly Installed
a - Pin Punch

With Engine And Transom Assembly Removed
a - Locknut
b - 1-1/16 in. Wrench

4. Disconnect trim cylinders from gimbal ring (if not already done). Suspend cylinders to avoid damage to hoses using care not to break the continuity wires.

a - Plastic Cap
b - Clip
c - Flat Washer
d - Bushing
e - Anchor Pin
5. Disconnect continuity wire.

6. Remove cotter pin, lower swivel pin and anti-gauling washer.

7. Remove upper swivel shaft from gimbal ring, large I.D. washer, steering lever, small I.D. washer, and locknut.
IMPORTANT: If swivel shaft is seized, remove shaft using Slide Hammer Puller (91-34569A1) and Puller Head (91-63616). Bell housing and bellows must be removed.

- a - Swivel Shaft
- b - Puller Head
- c - Slide Hammer Puller
- d - Large I.D. Washer
- e - Steering Lever
- f - Small I.D. Washer
- g - Locknut
8. Remove upper swivel shaft, steering lever and hardware shown. Remove gimbal ring.

Gimbal Housing Servicing

U-Joint Bellows Removal

1. Remove U-joint bellows from gimbal housing.
2. If reusing bellows, remove old adhesive from inside diameter of U-joint bellows end using lacquer thinner, and inspect for possible damage.

3. Clean bellows mounting flange on gimbal housing with sandpaper and wipe clean with lacquer thinner.

**Shift Cable Bellows Removal**

1. Loosen hose clamp and remove shift cable bellows.
2. Clean old adhesive from shift cable bellows mounting surface using lacquer thinner, and inspect for possible damage.

![Diagram of shift cable bellows](image)

- Shift Cable Bellows
- Mounting Surface
- Hose Clamp

3. Clean shift cable bellows mounting flange with a wire brush or sandpaper and wipe clean with lacquer thinner.

![Diagram of mounting flange](image)

- Mounting Flange

**Bushings And Upper Seal Removal**

1. Remove oil seal and large bushing from gimbal housing using a two-jaw puller and slide hammer assembly.

![Diagram of bushings and seal](image)

- Two Jaw Puller And Slide Hammer Assembly
2. Remove small bushing from gimbal housing using a Bushing Removal Tool. (Snap On Tool Company P/N CG40CB)

![Diagram of bushing removal tool](image1)

**CAUTION**

Be careful not to damage bores when removing self-lubricating bushings in the following steps.

3. Remove gimbal ring lower swivel pin bushing using a suitable mandrel.

![Diagram of mandrel](image2)

**a** - Bushing Removal Tool (Snap On Tool Company P/N CG40CB)

**a** - Suitable Mandrel - Tap Out Lower Swivel Pin Bushing
Component Servicing

Bell Housing Disassembly

1. Pull bell housing away from gimbal housing and remove plastic clips from water hose.

![Diagram showing bell housing and water hose with annotations]

- a - Water Hose
- b - Plastic Clips

2. Loosen or cut small sta-strap around speedometer fitting. Remove speedometer fitting from tubing.

**NOTE:** It may be necessary to loosen hose in hot water to enable removal of speedometer fitting.

![Diagram showing speedometer fitting and sta-strap with annotations]

- a - Tubing
- b - Speedometer Fitting
- c - Sta-strap
3. Disconnect speedometer hose at transom and remove fitting and hose from unit.

4. Remove clamp and fitting from tubing.

   **NOTE:** It may be necessary to loosen hose in hot water to enable removal of fitting.

5. Remove water inlet hose from bell housing.
6. Clean bell housing mounting flange with a wire brush or sandpaper. Wipe clean with lacquer thinner.

![Diagram of bell housing with labels a, b, c, d indicating Bell Housing, Mounting Flange, Water Tube, Hose Clamp]

7. Loosen hose clamp and remove water tube from water hose.

![Diagram of water hose with labels a, b, c indicating Water Hose, Water Tube, Hose Clamp]

8. Remove water hose connector from bell housing.

![Diagram of bell housing with labels a, b indicating Bell Housing, Water Hose Connector]
9. Loosen shift cable using Shift Cable Removal And Installation Tool and remove shift cable.

![Diagram showing shift cable removal](attachment:image.png)

- Shift Cable
- Retaining Nut - Use Tool (91-12037)

10. Remove upper shift shaft lever and shift shaft.

![Diagram showing upper shift shaft removal](attachment:image.png)

- Upper Shift Shaft Lever Screw
- Upper Shift Shaft Lever
- Washer (Beneath Lever)
- Upper Shift Shaft
11. Remove shift shaft upper bushing.

\[ \text{a - Upper Bushing} \]
\[ \text{b - Bushing (Below Seal)} \]

12. Remove shift shaft lower bushing.

\[ \text{a - Bushing} \]
Bell Housing Reassembly

All units built with serial numbers from 0D644651 to 0F094774 will have the following bushing installed. The seals were previously installed into the bell housing upper bore. They now are already installed in the bushing and can be installed with one procedure using Bushing Tool 91-805057A2.

Earlier Model Bushing and Seals

*NOTE:* It may be necessary to apply heat to shift shaft lever screw to aid in removing.

*NOTE:* The inner diameter of the later model bushing is much larger than the shift shaft.

All units with serial number 0F094775 and above have the following bushing and seal arrangement. Use Bushing Installation Tool 91-806928 A1 to install the later model bushing and seals.

Later Model Bushing and Seals

1. **Earlier Model Bushing and Seal:** Apply a small amount of Special Lubricant 101 to O.D. of shift shaft lower bushing. Install bushing flush with bottom of the bore in bell housing. (On units with later model bushing and seal arrangement, install the lower bushing in Step 6.)

   a - Bell Housing
   b - Bushing
2. **Later Model Bushing and Seal**: Use installation tool 91-806928T to install lower bushing flush with the bottom of the bore in the bell housing.

![Diagram of Later Model Bushing and Seal]

- Relief Cut Out

3. **Both Models**: Apply Lubricant 101 to O.D. of bushing and install shift shaft upper bushing in bore from bottom using appropriate bushing installation tool. **Later Model Bushing and Seal**: Install the upper bushing and seals individually.

![Diagram of Both Models]

- Upper Bushing
- Bushing Installation Tool (91-805057A2)
4. Install upper shift shaft lever and shift shaft. Apply Loctite 27131 or Type "A" to screw threads. Tighten securely.

![Diagram of upper shift shaft lever and shift shaft]

- a - Upper Shift Shaft Lever Screw
- b - Upper Shift Shaft Lever
- c - Washer (Beneath Lever)
- d - Upper Shift Shaft

5. Apply Perfect Seal to threads of shift cable retainer and install shift cable. Tighten retainer securely using shift cable removal and installation tool (until no more than two threads of retainer are showing).

![Diagram of shift cable and retainer]

- a - Shift Cable
- b - Retaining Nut - Use Tool (91-12037)
6. Apply Perfect Seal to threads of water hose connector and install in bell housing. On earlier style, tighten securely. Later models have connector casted in.

7. Connect water hose to water tube and position hose clamp as shown. Tighten securely.

8. Connect water hose to connector on bell housing. Position hose and clamp as shown. Tighten securely.
Gasket And O-Ring

1. Install U-joint bore rubber gasket and water passage O-ring.

   *NOTE:* It may be necessary to apply 3M Adhesive to help hold the rubber gasket in place.

   ![Diagram](image)

   **a** - O-ring  
   **b** - Rubber Gasket
Speedometer Tubing And Water Hose

1. Replace fitting inside speedometer tubing and secure in place with a small sta-strap.

**NOTE:** *It may be necessary to soften hose in hot water before replacing fitting.*

1997 1/2 And Earlier Model Speedometer Connector

- a - Tubing
- b - Fitting
- c - Sta-strap

1998 Model Speedometer Connector

- a - Topside Portion, Female End
- b - Bell Housing
- c - Sta-Strap
2. Apply Perfect Seal to threads of brass fitting. Tighten fitting securely into gimbal housing.

![Brass Fitting and Gimbal Housing Diagram]

- a - Brass Fitting (Apply Perfect Seal)
- b - Gimbal Housing

3. Replace sta-strap on the hose at the connector.

4. Install water tube through gimbal housing and install rubber grommet over tube. Push grommet into cavity.

![Water Tube and Rubber Grommet Diagram]

- a - Water Tube
- b - Rubber Grommet

5. Install water tube cover and tighten screws securely.

![Water Tube Cover and Screws Diagram]

- a - Water Tube Cover
- b - Screws
6. Secure tubing to water hose using sta-straps. **Do not** overtighten or kink tubing.

7. Replace speedometer tubing clip onto tubing and replace in hole in bell housing.
Reassembly

Gimbal Ring Bushing Installation

1. Install gimbal ring lower swivel pin bushing as follows:
   a. Apply Resiweld Sealer (92-65150-1) to O.D. of bushing (a) and position bushing on bearing and seal driver (b).

   ![Diagram of Gimbal Ring Bushing Installation](image)

   b. Inspect bore for cleanliness and damage before installing bushing.
   c. Install bushing in gimbal ring (c) by pressing or tapping in place with a brass hammer. (Pressing is preferred).

2. Install upper swivel shaft small bushing as follows:
   a. Place bushing on bearing and seal driver.

   ![Diagram of Upper Swivel Shaft Bushing Installation](image)
b. Install bushing by tapping it in place with a brass hammer.

3. Install upper swivel shaft large bushing as follows:
   a. Place bushing on bearing and seal driver.

   a - Brass Hammer
   b - Seal Driver

b. Install bushing by tapping it in place with a brass hammer.

   a - Brass Hammer

\[ Image: Service Procedures Requiring Major Disassembly \]
1. If synthane washers are worn, remove and clean any excess adhesive from surface. Peel backing off of washer and apply to gimbal ring.

Oil Seal Installation

1. Install upper swivel shaft oil seal as follows:
   a. Place oil seal on bearing and seal driver with lip facing the small diameter end of tool. Apply Loctite 271 to O.D. of seal.
b. Install oil seal by tapping it in place with a brass hammer.

2. Install shift cable bellows on gimbal housing. Position hose clamp as shown. Tighten securely.

a - Shift Cable Bellows
b - Hose Clamp
Exhaust Bellows Installation

1. If old exhaust bellows will be reinstalled, remove old adhesive from exhaust bellows mounting surfaces, using lacquer thinner, and inspect for possible damage.

![Diagram of Exhaust Bellows Mounting Surface]

a - Exhaust Bellows Mounting Surface

2. Clean exhaust bellows mounting flange with sandpaper and wipe clean with lacquer thinner.

![Diagram of Exhaust Flange]

a - Exhaust Flange

⚠️ WARNING

Be sure to read and follow package label directions when using bellows adhesive.
3. Position grounding clips on bellows. Use bellows P/N 18654 only.

   ![Diagram of bellows with labels](image)

   - a - Apply 3M Brand Adhesive
   - b - Grounding Clips
   - c - Bellows Part Number

4. Apply bellows adhesive to exhaust bellows mounting surface. Allow to dry (approximately 10 minutes), before installing.

   ![Diagram of bellows with labels](image)

   - a - Exhaust Bellows Mounting Surface

5. Install exhaust bellows on gimbal housing flange. Position hose clamp as shown. Torque to 30-40 lb-in. (3.3-4.5 Nm).

   ![Diagram of bellows with labels](image)

   - a - Gimbal Housing Flange
   - b - Hose Clamp
Trim Position Sender and Trim Limit Switch Wire Installation

1. Install trim limit switch wires and trim position sender wires. DO NOT pinch wires.

![Diagram showing a and b wires]

- **a** - Trim Limit Switch Wires
- **b** - Trim Position Sender Wires

2. Apply Perfect Seal to threads of screw and install trim harness clamp and screw.

![Diagram showing a clamp and b screw]

- **a** - Trim Harness Clamp
- **b** - Screw-Torque 90-100 lb-in. (10.2-11.3 Nm)
Gimbal Ring, Swivel Shaft and Steering Lever Installation

1. If removed, install gimbal ring screws with hardware shown. Do not tighten.

   a - Gimbal Ring Screws (2)
   b - Washers (4)
   c - Nuts (2)
   d - Gimbal Ring

2. Install lower swivel pin and washer and secure with cotter pin. Spread both ends.

   a - Lower Swivel Pin
   b - Washer
   c - Cotter Pin
3. If removed, install clamping screw and nut on steering lever.

![Diagram showing a - Screw and b - Nut]

4. Thread new, grooved nut all the way onto swivel shaft to cut threads. Remove nut.

![Diagram showing a - Nut and b - Swivel Shaft]

5. Place large I.D. washer, steering lever, small I.D. washer, and locknut into steering lever cavity in gimbal housing.

![Diagram showing a - Locknut, b - Small I.D. Washer, c - Steering Lever, and d - Large I.D. Washer]
6. Install upper swivel shaft through gimbal ring and up into and through washers, steering lever and locknut. Start locknut on upper swivel shaft threads. DO NOT tighten at this time.

![Diagram](image1.png)

**a** - Upper Swivel Shaft  
**b** - Gimbal Ring

**IMPORTANT:** When installing upper swivel shaft through gimbal ring and steering lever, be sure that gimbal ring is straight and steering lever is pointed straight forward.

7. Install swivel shaft through gimbal rings and up through steering lever. Start nut on swivel shaft.

![Diagram](image2.png)

**a** - Swivel Shaft  
**b** - Nut  
**c** - Steering Lever (Washer On Top And Bottom)
8. If installing new upper swivel shaft or gimbal ring, ensure that upper swivel shaft fits all the way into gimbal ring. Shoulder on shaft must rest against ring. If necessary, clean up mating surfaces with a file.

**Diagram:**

- a - Gimbal Ring
- b - Upper Swivel Shaft
9. Tighten nut until a clearance of .002 - .010 in. (0.05 - 0.25 mm) exists between lower swivel pin washer and gimbal housing mount.

**Engine And Transom Assembly Installed**
- a - Pin Punch
- b - Nut

**Engine And Transom Assembly Removed**
- a - Nut
- b - Wrench (1-1/16in.)
10. Strike down on gimbal ring flanges using a rawhide mallet. Recheck clearance and tighten swivel shaft nut as necessary.

11. Torque gimbal ring screws to 55 lb-ft (74 Nm).

**a** - Feeler Gauge - 0.001 - 0.010 in. (0.05 - 0.25 mm)

**b** - Washer

**c** - Gimbal Housing Mount

**d** - Gimbal Ring
12. Tighten steering lever clamping screw and nut. Torque to 60 lb-ft (81 Nm).

![Diagram](image1)

**Engine And Transom Assembly Installed**
- a - Wrench
- b - Socket Wrench

![Diagram](image2)

**Engine And Transom Assembly Removed**
- a - Wrench
- b - Wrench

13. Install steering lever ground wire. Wire must be positioned exactly as shown.

![Diagram](image3)

- a - Ground Wire
- b - Screws
14. Connect continuity wire from gimbal housing to gimbal ring.

- Continuity Wire

15. Install trim cylinders on gimbal ring.

- Plastic Cap
- Clip
- Flat Washer
- Bushing
- Anchor Pin
16. Mark 1 in. (25 mm) pipe tap with a piece of tape 1-1/8 in. (28 mm) from end of tap. Cut threads in access holes. Coat pipe tap with grease to aid in picking up metal chips.

17. Coat threads of plastic plugs (from kit) with Perfect Seal before installing into access hole. Install plug so that it is flush with gimbal housing.

18. Touch up any bare metal spots with primer and “Phantom Black” spray paint.

**Shift Cable Bellows Installation**

1. Clean shift cable bellows mounting flange with a wire brush or sandpaper and wipe clean with lacquer thinner.

2. Apply adhesive to shift cable bellows mounting surface, using proper adhesive.
3. Install the shift cable bellows and tighten bellows clamp.

- Shift Cable Bellows
- Hose Clamp
Bell Housing Installation

1. Prepare U-joint bellows for installation as follows:
   a. Clean gimbal housing mounting flange with sandpaper and wipe clean with lacquer thinner.
   b. Apply bellows adhesive to mounting surface on inside of bellows.
   c. Position grounding clip and hose clamp over bellows end.

2. Lubricate the end of the shift cable with Quicksilver 2-4-C Marine Lubricant with Teflon.

3. Carefully insert the cable through the small opening in the bellows and through the gimbal housing.

4. Then insert the cable into the engine compartment. Route the cable as shown in the following illustrations.

Be sure to read and follow package label directions when using bellows adhesive.
5. Install bell housing between gimbal ring. Push on bell housing and guide U-joint bellows onto gimbal housing mounting flange.

6. Apply Locquic Primer "T" to internal bell housing threads and external hinge pin threads and allow to dry. Apply Loctite 271 to bell housing threads and install hinge pins. Torque hinge pins to 100 lb-ft (136 Nm).

7. Install U-joint bellows on bell housing as follows:
a. Position U-joint bellows on bell housing. Ensure that the bell housing flange rests in the groove at the end of bellows.

b. Lubricate sleeve O.D. with engine cleaner (Quicksilver Power Tune works well and it evaporates quickly) and install sleeve with tool and suitable driving rod.

8. Install exhaust bellows on bell housing (one end was previously installed on gimbal housing) as follows:

a. Clean bell housing mounting flange with sandpaper and wipe clean with lacquer thinner.

b. Apply bellows adhesive to mounting surface on inside of bellows.

c. Position grounding clip on bellows.
d. Place hose clamp over bellows end.

- Exhaust Bellows
- Mounting Surface
- Ground Clip

e. Place expander tool (91-45497A1) into first bellows convolution.

- Expander Tool

f. Pull tool until tool touches the mounting flange on bell housing (bellows starts to slip onto flange); then, release tool.

- Expander Tool (91-45497A1)
- Bell Housing Flange

g. Reposition tool into the third bellows convolution.
h. Pull bellows onto bell housing flange.
i. Position hose clamp as shown and tighten securely. Remove tool.

IMPORTANT: Ensure shift cable bellows crimp clamp is not flattened out when compressing in the following step. Crimp clamp must be compressed evenly around bellows and shift cable to prevent water leakage.


**NOTE:** After inserting shift cable through shift bellows be sure that bellows is in relaxed position [2 1/2 in (63 mm) from bell housing] before crimping clamp.

10. Compress crimp clamp.
11. Install shift cable wrapping on shift cable from inner transom. Position approximately 2 inches from gimbal housing.

12. Install core wire through shift slide.

13. Install inner core wire through shift cable. Be sure and position shift lever roller between slot on shift slide.
14. Install set screw into shift slide. Tighten until contact with core wire. Then back off 1/8 turn max. Safety wire set screw to shift slide using a “figure 8” pattern. Twist until tight and cut off excess length of safety wire. Bend tail of wire in-between screw and tab.

15. Install threaded tube on shift cable and tighten until it bottoms out, **finger tight only**. Secure jam nut against shift cable end.

16. Install sterndrive unit.
17. Push in on drive unit shift cable core wire while simultaneously turning propeller shaft counterclockwise until shaft stops. To ensure that clutch is fully engaged maintain pressure on propeller shaft with a suitable device (elastic strap).

![Diagram of drive unit shift cable core wire and propeller shaft]

a - Inner Core Wire  
b - Propeller Shaft

**NOTE:** Clutch engagement will be in forward on standard rotation units and reverse for counter rotation.

18. Install shift cable end guide over core wire and insert core wire through cable anchor. Tighten screws securely.

![Diagram of shift cable end guide, core wire, cable anchor, and screws]

a - Shift Cable End Guide  
b - Core Wire  
c - Cable Anchor  
d - Screws (2)

19. While applying light pressure, measure distance between center of hole in shift cable end guide and center of brass barrel. Measurement should be 6 in. (153 mm).

![Diagram of measuring distance between hole in shift cable end guide and brass barrel]

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

20. Connect shift cable to shift plate and adjust.
Trim Limit Switch Installation

1. Align index marks on switch.

2. Install trim limit switch.

3. Adjust trim limit switch. (See Section 4A)
Trim Position Sender Installation

1. Align index marks.

2. Install trim position sender.

3. Adjust trim position sender. (See Section 4A)
ALPHA ONE (GENERATION II) ACCESS PLUG
- DRILLING TEMPLATE -

IMPORTANT: CAREFULLY CUT OUT TEMPLATE - USE STRAIGHT EDGE TO MAKE ACCURATE FOLDS. ALIGN CENTERLINE WITH CENTER LINE OF DIMPLE. WITH TEMPLATE ACCURATELY ALIGNED, TAPE TEMPLATE TO GIMBAL HOUSING SECURELY SO THAT IT CANNOT MOVE OR SHIFT.