






EVINRUDE[®]
Johnson[®]

**1999/2000 200/225 Evinrude
Enhancement Package**

SAFETY

For safety reasons, this kit must be installed by an authorized *Evinrude* or *Johnson* dealer. These installation instructions contain information that can help prevent personal injury and damage to equipment. Understand the following symbols before proceeding:

 DANGER	Indicates an imminently hazardous situation, which if not avoided, WILL result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, CAN result in severe injury or death.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate personal injury or property damage. It also may be used to alert against unsafe practices.
Important	Identifies information that will help prevent damage to machinery and appears next to information that controls correct assembly and operation of the product.

TO THE OWNER

The assembly procedures outlined in this sheet should be performed by a skilled technician. If you have questions, see your DEALER. Save these instructions in your owners kit. This sheet contains information important to the future use and maintenance of your engine.

TO THE INSTALLER

Give this sheet to the owner. Advise the owner of any special operation or maintenance information contained in the instructions. This kit is designed for specific applicable models only. It is not recommended for units other than those for which it was sold.

APPLICATION

This kit includes important new parts and upgrades for 1999/2000 (EE/SS) 200/225 *Evinrude* outboards.



REVB 9/04



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Contents of Kit

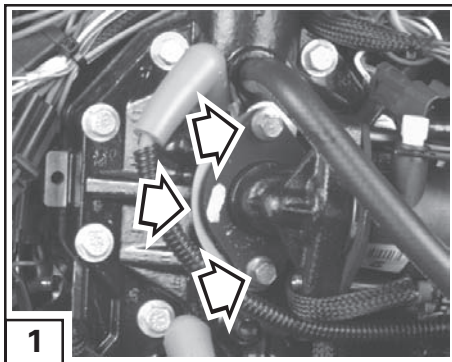
Ref	P/N	Name of Part	Qty
1	348878	Caplug - Large	1
2	350045	Screw, Flange to Head	12
3	321465	Washer, Screw-Flange to Head	12
4	349412	Flange, Injector to Cylinder Head	6
5	348877	Caplug - Small	1
6	5001901	Spring Assembly	6
7	348496	O-ring, Spring Assembly	6
8	5004270	Cap & Sleeve Assy., Injector	6
9	348224	Washer, Screw - Cap & Sleeve Assy.	24
10	347386	Screw, Cap & Sleeve Assy.	12
11	349080	Clip, Fuel Tube to Injector	6
12	349090	Screw, Clip to Cap and Sleeve	12
13	349002	Guard, Fuel Line	6
14	349424	Boot, #1 Cylinder	1
15	#	Convoluted Tubing, Fuel Tubes	12
16	3010823	Convoluted Tubing, Spark Plugs	6
17	348925	Roll Pin, Air Bleed Hole	2
18	##	Template	2
19	5004551	Valve Assembly	2
20	324005	Orifice, Vapor Separator-Vent Hose	1
21	907833	Tie Strap, Engine Harness and Fuel Lines	5
22	3030231	Disk, ECU	1
22	3030238	Disk, EMM	1
23	349729	Clamp	2
24	*	Warranty Claim Form	1
◆	*	Part Return Shipping Label	1

◆ Not Shown

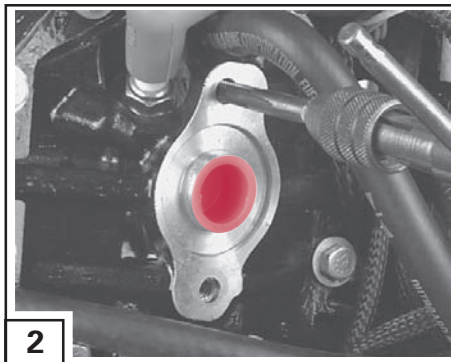
Refer to Page 11

Refer to Page 13

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⚠ WARNING Disconnect battery cables at battery. Do not smoke during this procedure. Do not remove fuel tubes from injector. Wear safety glasses when using compressed air.

Relieve system fuel pressure – see **Fuel Component Servicing, Section 5** in your 2000 (SS) 90° Evinrude **Service Manual**.

Remove the lower engine covers.

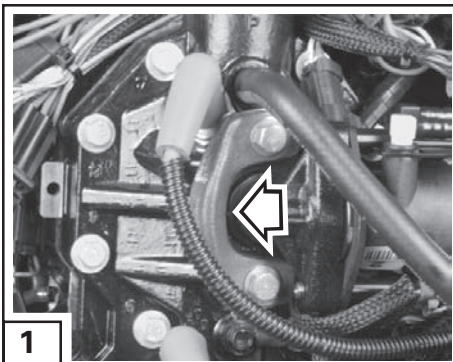
Important Work on one injector at a time. Start at the lowest injector of each cylinder bank and work toward the top injector. Do not remove any of the spark plugs during any part of this procedure. The threads in the cylinder head **must be cleaned** to achieve proper torque on injector adaptor to cylinder head mounting screws.

1 Remove the shim(s), screws, and washers used to fasten injector adapter to cylinder head. Pull injector away from cylinder head. Discard shim(s) and washers. The screws must be returned with warranty claim form.

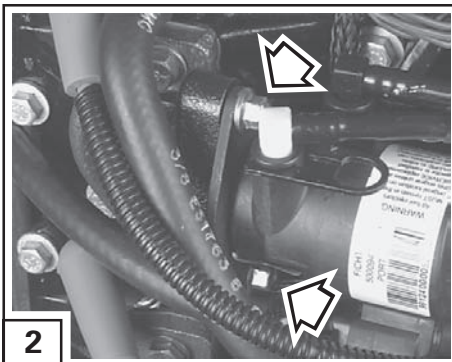
2 Important Cover injector with a clean plastic bag and plug injector inlet on cylinder head with large plastic *Caplug* provided in kit to prevent contamination.

Clean cylinder head injector threads using a 5/16-18 bottoming tap (PN 787147), *Cleaning Solvent*, and compressed air. Remove *Caplug*.

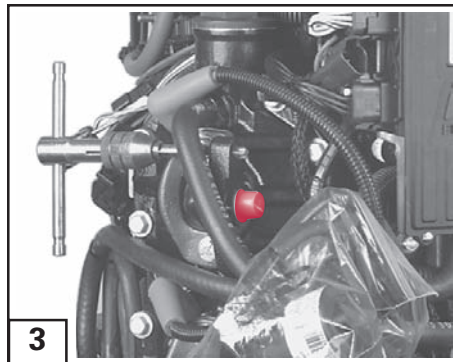
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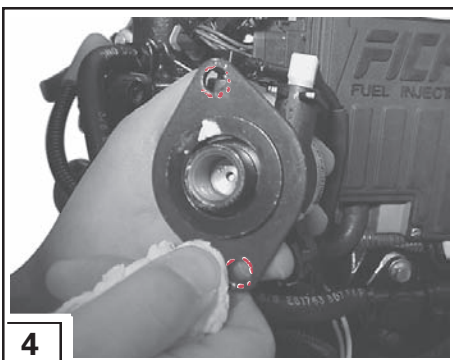
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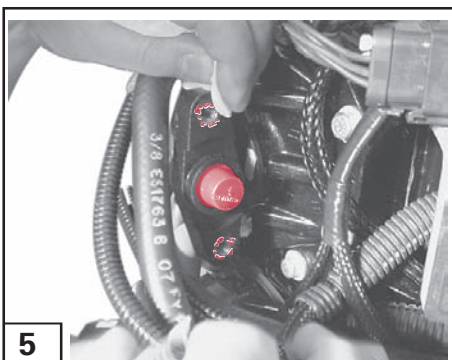
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1 Position new washers on new flange to cylinder head screws. Apply *Locquic Primer* and *Nut Lock* to threads of screws. Install injector to cylinder head with screws and flange. **You must torque the screws in this sequence:** lower, then upper in steps, 10 ft. lbs. (13,6 N·m), 15 ft. lbs. (20,3 N·m), finally 24 ft. lbs. (32,6 N·m).

2 Remove screws and washers retaining injector to adapter. Discard washers. Screws must be returned with warranty claim form.

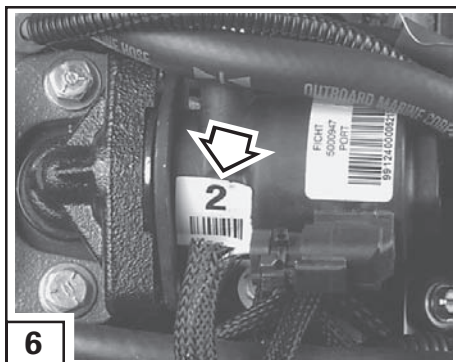
3 Important Pull injector away from adapter. Cover injector with a clean plastic bag to prevent contamination. Injector inlet must be covered with caplug provided in kit.

4 5 Important **Clean all original Loctite material from injector flange surface and adapter surface.**

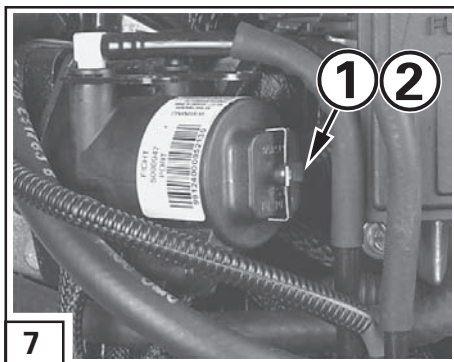
Clean adapter injector threads using a 5/16-18 bottoming tap, (PN 787147), *Cleaning Solvent*, and compressed air. Remove *Caplug*.

Position injector on adapter.

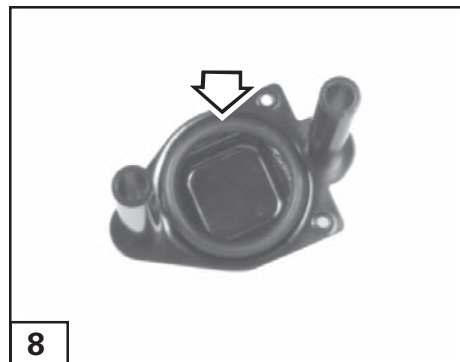
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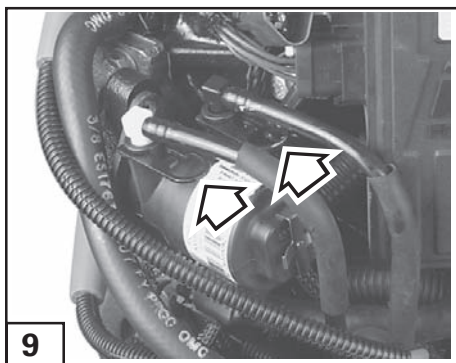
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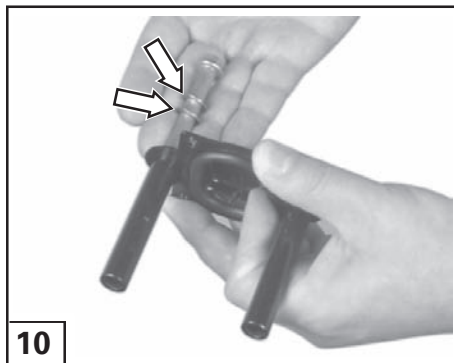
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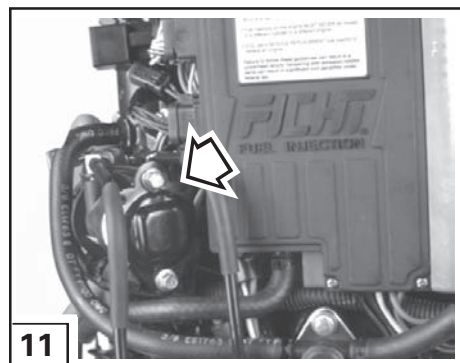
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6 If injector number label is located on end of injector, remove label and relocate on side of injector as shown.

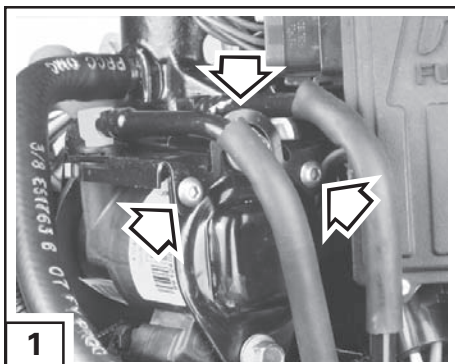
7 Position small o-ring ① on pin of spring assembly. Install spring assembly ② onto end of injector. The pin of the spring assembly must align with depression in end of injector.

8 Verify that large O-ring is positioned on the cap and sleeve assembly. If necessary, apply *Adhesive M™* to secure it.

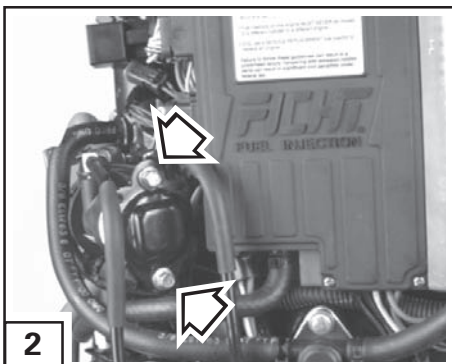
9 Remove and discard fuel tube retainers.
Do not remove fuel nipples from injector.

10 11 Install two new washers on each new cap and sleeve screw. Place screw through tube. Apply Locquic Primer and Nut Lock to threads of screws. Install cap and sleeve assembly onto injector. **Hand tighten only.**

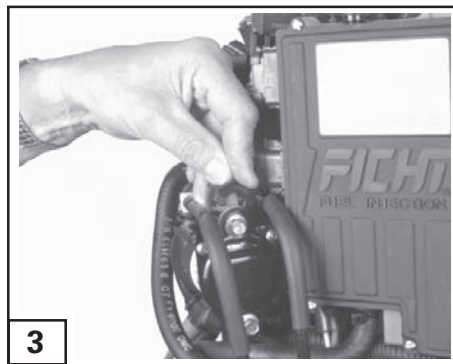
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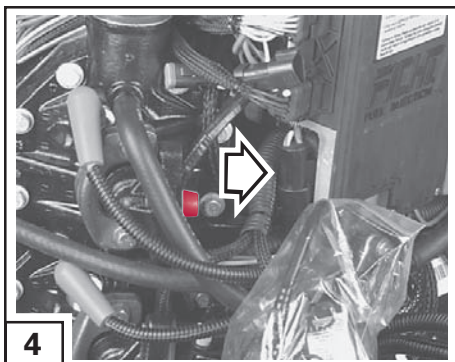
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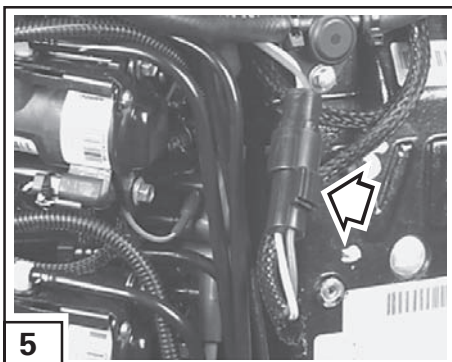
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1 Fuel tube nipples must be properly seated in injector. Install fuel tube retainer clip. Flanges on clip must engage grooves in fuel tube nipples. Fasten fuel tube adaptor clip to injector cap and sleeve assembly with screws provided. Torque screws to 25-30 in. lbs. (2,82 N·m - 3,39 N·m).

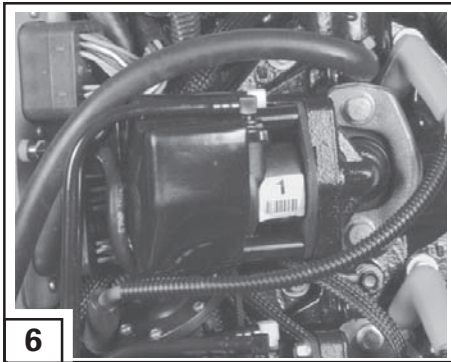
2 Torque the cap and sleeve screws in this sequence: lower, then upper in steps; 8 ft. lbs. (10,8 N·m), 10 ft. lbs. (13,6 N·m), finally 14 ft. lbs. (19 N·m).

3 Install fuel line guard onto cap and sleeve assembly. Make sure the fuel tubes are on top of the guard.

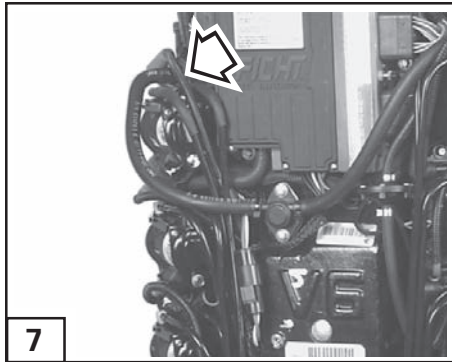
4 5 Important When the #2 injector is removed, re-route the power connector from behind the EMM to new location along the fuel tubes as shown.

Repeat procedure for remaining injectors.

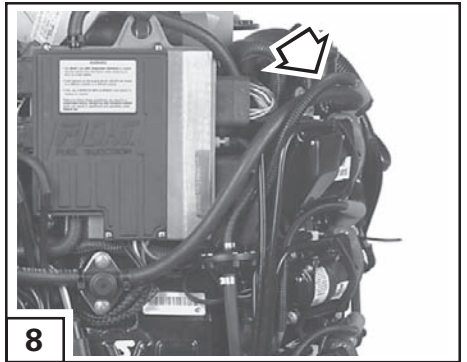
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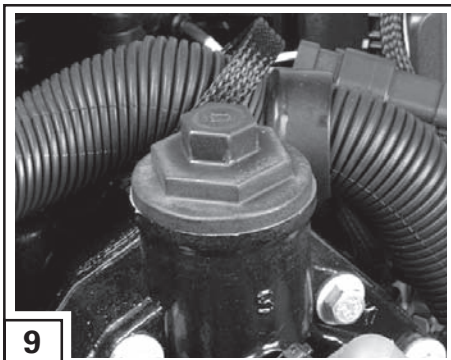
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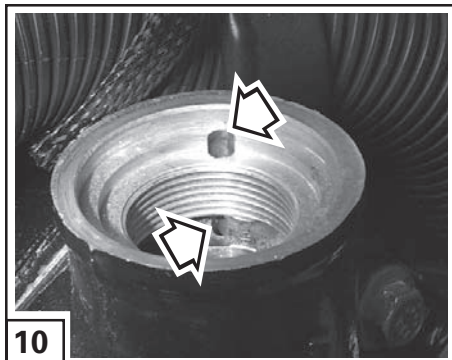
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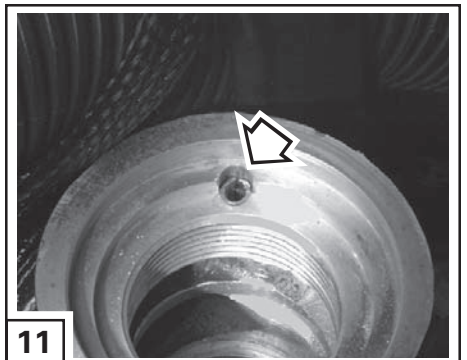
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6 Install injector boot on #1 cylinder injector.

7 **8** Replace convoluted tubing on spark plug leads with convoluted tubing provided in kit. The tubing should protect the full length of the spark plug lead. Reroute the spark plug leads between the fuel tubes.

Important The procedure below is for engines in the serial number range of 4694680-4820727. Skip this procedure if roll pin has already been installed.

9 Remove starboard thermostat cover and thermostat.

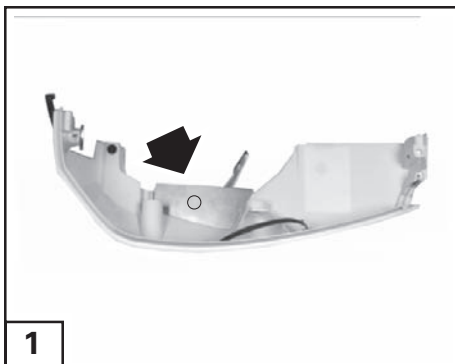
10 The air bleed hole machined in the cylinderhead must be enlarged. Apply *Triple-Guard*® Grease to a 3/16 inch diameter drill bit and enlarge hole. Make sure hole is free of debris.

11 Lubricate roll pin and hole with engine oil. Install pin with groove facing outside diameter of hole as shown. Top of pin must be flush with lower machined surface.

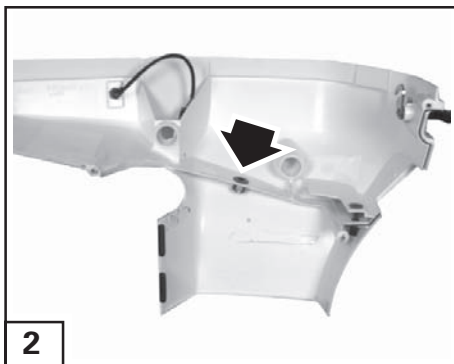
Install thermostat assembly and torque cover to 120-144 in. lbs. (13-14 N·m).

Repeat procedure on port side of engine.

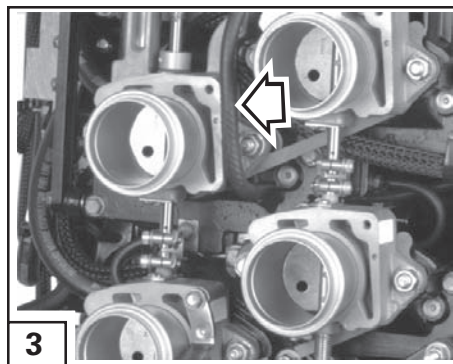
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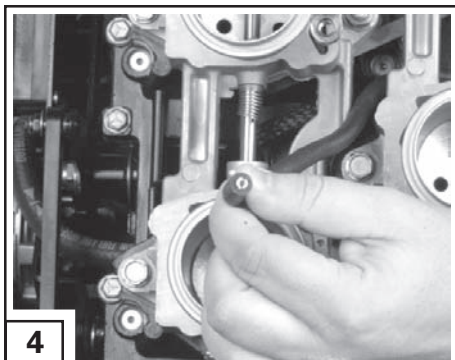
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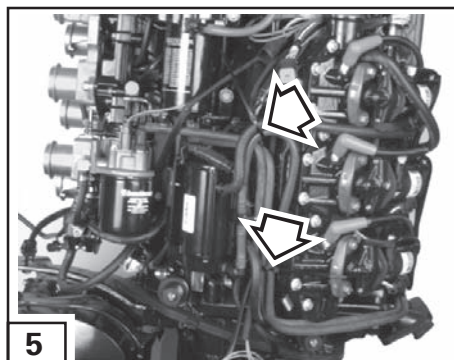
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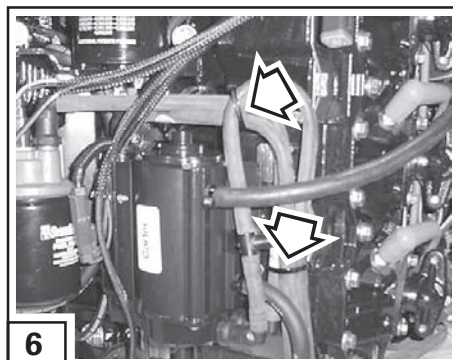
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All 1999 (EE) and 2000 (SS) model engines.

Important Use caution while drilling the lower motor covers. Proper template placement and drilling should not damage the outer finish of the covers.

1 Apply template from Page 13 to lower covers as shown. Drill 1 inch diameter hole.

2 Press vent assembly into holes.

3 4 Remove vapor separator vent hose. Install orifice into vent hose and reinstall hose.

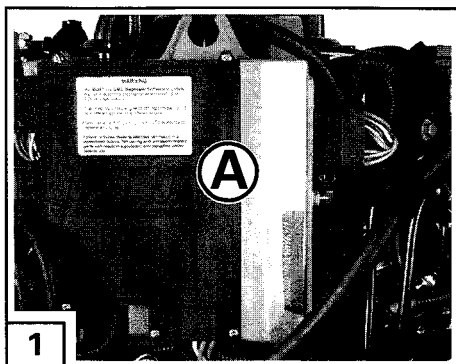
5 **For 2000 models** use tie straps to secure fuel lines as shown. Trim straps after installation. Install air temperature sensor in air silencer and reattach air silencer.

6 **For 1999 models** use tie straps to secure fuel lines as shown. Trim straps after installation. Install air temperature sensor in air silencer and reattach air silencer.

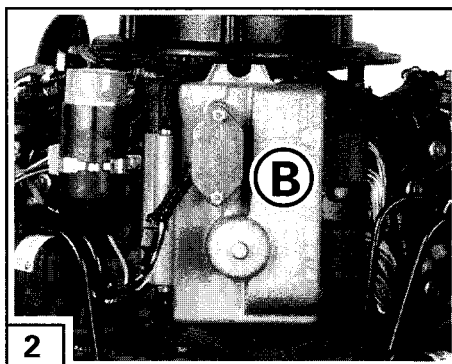
Reconnect the battery.

⚠ WARNING When installation is complete, momentarily pressurize the fuel system and check for leaks. Fuel leaks can result in fire or explosion if ignition source is present.

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Important Follow the next procedure completely. Be sure the battery in the laptop computer is fully charged. Downloading the disk may take up to 12 minutes.

1 **2** Identify whether the engine uses an EMM **A** or an ECU **B** for engine control.

1. With computer turned OFF, insert the appropriate floppy disk into the computer's floppy drive.

2. Connect the computer to the engine using the **Diagnostic Cable**.

Important Do not install boot strap harness on ECU engines at any time. For EMM engines, follow the on-screen instructions.

3. Turn engine key switch to RUN position.

4. Turn computer on. The computer will display A:\>.

5. At the A:\> prompt, type either ECU or EMM (depending on what was identified above) and then press ENTER. Follow on screen instructions exactly. Some computers may display date and time before the A:\> prompt is displayed.

6. Program will start update. Update may take several minutes.

7. Upon completion, turn key switch to OFF position. Remove disk from computer.

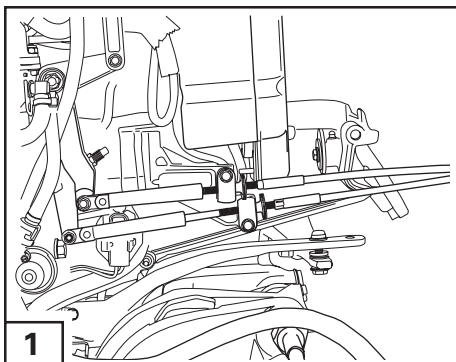
Important This is a one-time use disk. Attempting to start the engine with the boot strap harness (PN 5000901) connected will result in a **NO-START** condition.

Leave the diagnostic cable connected.

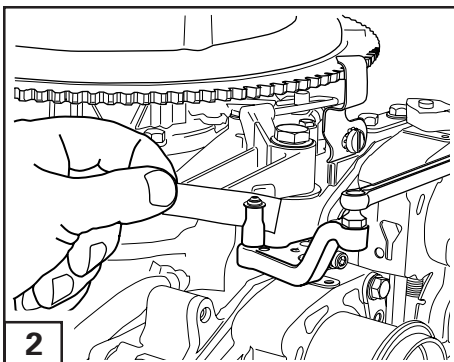
Use Diagnostic Software, Version 1.41 as outlined in the Software User's Guide to check engine timing.

Important If running on a hose, do not increase RPM above idle. This can cause powerhead failure.

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Refer to Menu **Option 4 – Engine Monitoring** in **Diagnostic Software** to view appropriate window for following procedure.

1 Make sure the remote control is in NEUTRAL and the fast idle lever is at the lowest setting. Remove the throttle cable trunnion anchor. With the throttle linkage in the lowest idle position, pull to remove slack from the cable and adjust the throttle cable trunnion until 0.25-0.30 volt (TPS Act) is indicated.

Turn key switch OFF/ON; 0% open (TPS Cal) should be indicated. If not, turn key OFF/ON until 0% open is achieved.

2 The clearance between the throttle cam and roller should be approximately .002-.003 in. (.05 -.08 mm) A strip of paper can be used to gauge the clearance.

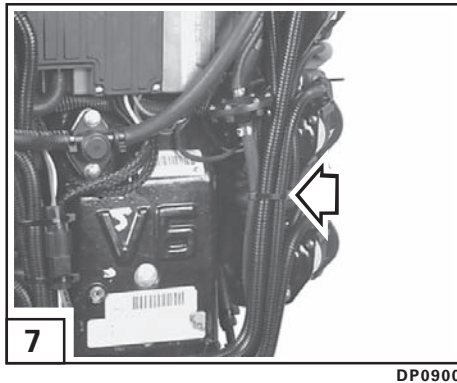
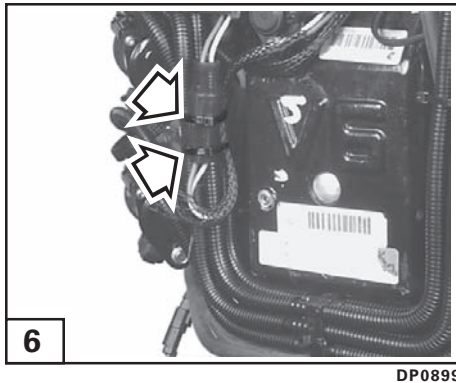
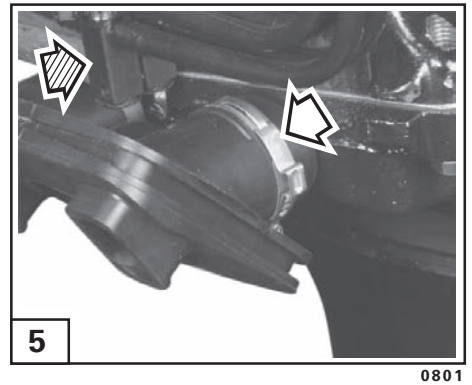
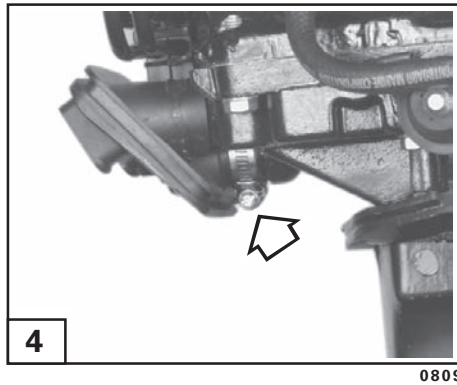
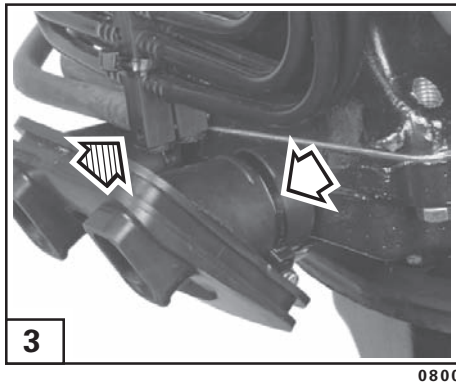
Important If a foot throttle is used, a positive stop must be provided to prevent TP sensor from being pulled out of range causing service codes.

Hold cables in position and install trunnion anchor and screw.

WARNING When installation is complete, momentarily pressurize the fuel system and check for leaks. Fuel leaks can result in fire or explosion if ignition source is present.

Turn key switch OFF.

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- 3** Remove the tie straps from the exhaust grommet.
- 4** Loosen clamp securing the grommet to exhaust adapter. Remove grommet.
- 5** Position new clamps onto grommet and install grommet onto exhaust housing. Tighten center clamp first. Then, tighten new clamps using Crimping Pliers, P/N 787145.
- 6** Install convoluted tubing onto all fuel tubes from the injector to the fuel tube manifold as shown. Use the chart to determine part number, size and location of tubing. Secure power connector to the #2, #4 and #6 fuel tubes.
- 7** Secure #1, #3, and #5 fuel tubes with tie straps

Install lower covers.

Convoluted Tubing Chart

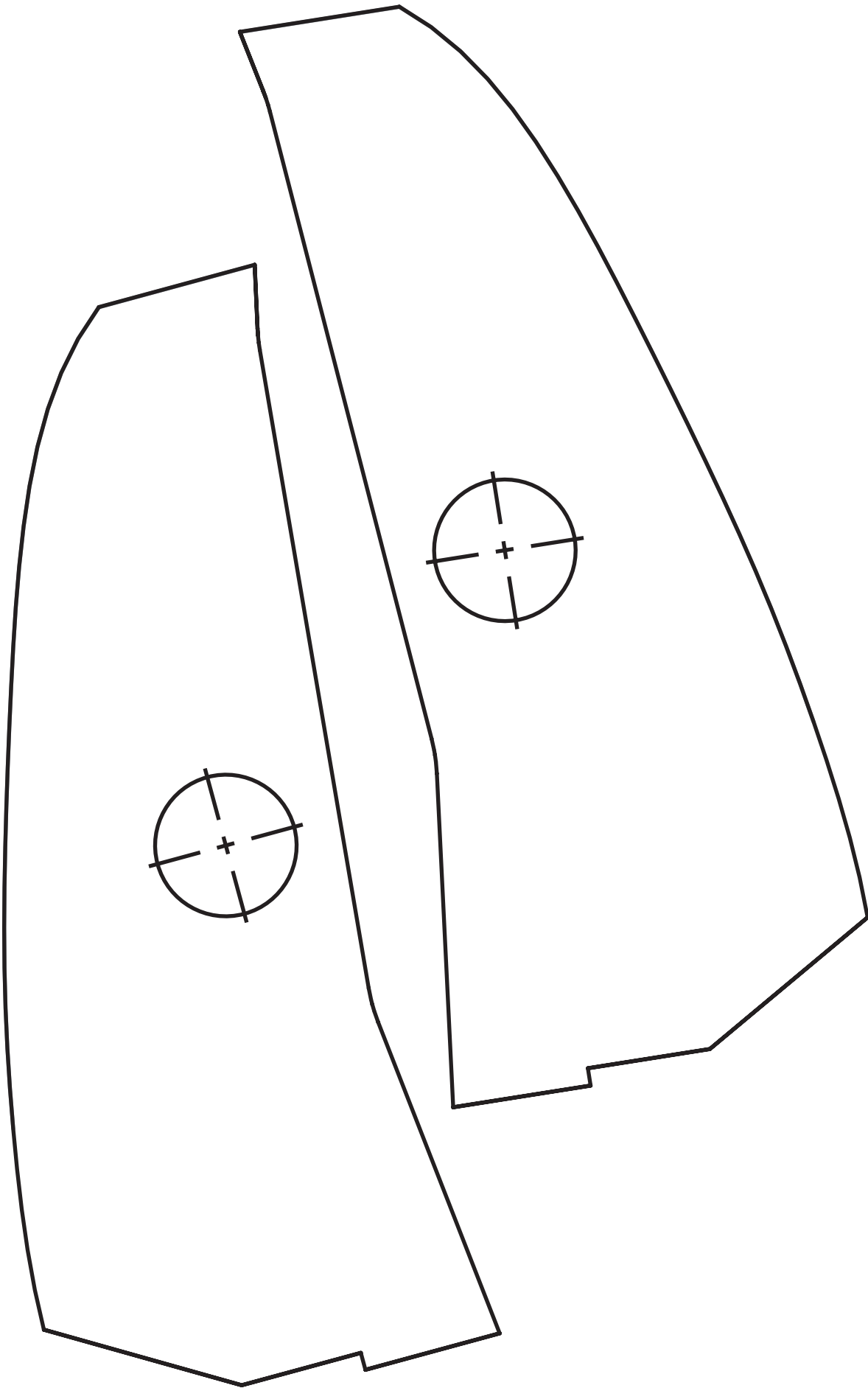
OMC P/N	Length	inches/millimeters	Injector Number	Qty.
348496		19.50/495	#1	2
349497		18.00/457	#2	2
349498		15.63/397	#3	2
349499		14.00/356	#4	2
349500		11.75/298	#5	2
349501		10.25/260	#6	2

Lengths are ± .25 inch (6,4 mm)

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Warranty Reimbursement Information

1. Complete enclosed Warranty Claim Form.
2. The following components must be returned with the completed Warranty Claim:
 - 12 - Original screws, injector adapter to cylinder head.
 - 12 - Original screws, injector to adapter.
3. You must return the claim form with the screws for warranty credit. Please place the 24 screws in a plastic bag to protect them from damaging the claim form.
4. Use the enclosed return shipping label to return the parts and claim form.
5. Discard all other parts. Do not reuse them.



10.00
(254 mm)

9.00
(228,6mm)

8.00
(203,2mm)

7.00
(177,8mm)

6.00
(152,4mm)

5.63
(143 mm)

5.00
(127 mm)

4.00
(101,6mm)

3.00
(76,2mm)

2.00
(50,8 mm)

1.00
(25,4 mm)