# SERVICE BULLETIN

M-899 November 30, 1984

## MID-YEAR PRODUCTION CHANGES TO XL PISTONS AND OILING SYSTEM

### General (See Figures 1 and 2)

XL model vehicles, starting with crankcase number 785 306 029, manufactured after November 1, 1984 have a new late style piston/ring package.

XL model vehicles, starting with crankcase number 785 303 002, manufactured after October 29, 1984, include a cam gear oiler.

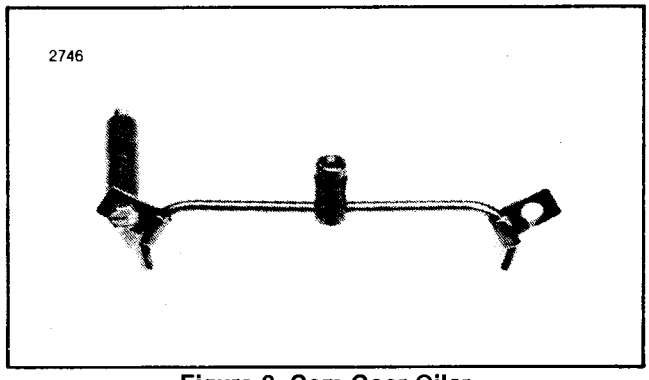


Figure 2. Cam Gear Oiler

### Piston/Ring Package

See Figure 1. The new style pistons have a cam ground, barrel shape.

Because of their complex shape, the pistons must be measured 90° from the piston pin and .890 in. above the bottom of the piston.

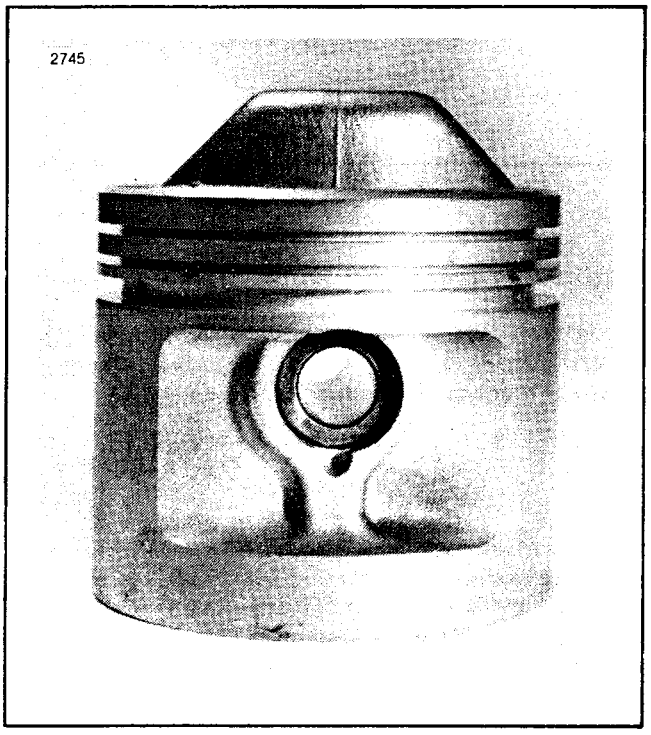


Figure 1. New Style Piston with Pin

See Figure 3. Piston rings include a moly-filled top ring, a taper-faced second ring, and a three-piece oil control ring with two chrome plated rails and a corrugated expander.

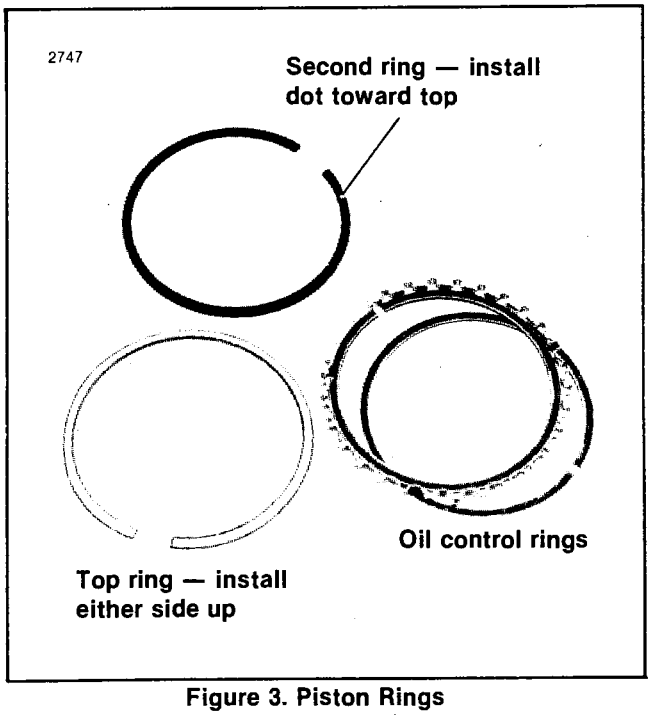


Figure 3. Piston Rings

| ROUTING: | SERVICE MANAGER | SALES MANAGER | PARTS MANAGER | CHIEF MECHANIC | MECHANIC NO. 1 | MECHANIC NO. 2 | MECHANIC NO. 3 | MECHANIC NO. 4 | RETURN THIS TO: |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL HERE | | | | | | | | | |

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*NOTE*

*Rings may be installed either side up, except the second ring which must be installed with the dot towards the top.*

Piston rings must be properly fitted to piston and cylinder.

The late style pistons are a retrofit for earlier XL model vehicles. Part numbers for the late style pistons, rings and piston, and cylinders are:

| SIZE | PISTON & RINGS | RINGS | PISTON & CYLINDER |
|---|---|---|---|
| Standard | 22251-83A | 22260-83 | Front-16464-73C |
| .005 O.S. | 22252-85 | 22265-83 | Rear-16465-73C |
| .010 O.S. | 22253-83A | 22261-83 | |
| .020 O.S. | 22254-83A | 22262-83 | |
| .030 O.S. | 22255-83A | 22263-83 | |
| .040 O.S. | 22256-83A | 22264-83 | |

The service procedures affected by this piston change are cylinder oversizing and final finishing (honing) and piston pin retaining ring installation.

When resizing cylinders to fit oversized pistons, the desired piston to cylinder clearance is .0025 to .0035 in. loose.

Service wear limits of piston to cylinder clearance is .0055 in.

The cylinder walls MUST be finished-honed with a No. 280 grit hone prior to installing the new style piston.

The piston pin to connecting rod bushing fit is unchanged at .0008 to .001 in. service wear limit is .002 in.

## Piston Pin Retaining Ring Installation Tool Modification

See Figure 4. The PISTON PIN RETAINING RING, Part No. 22589-83, is the same as used on the Evolution 1340cc and the XR-1000 pistons.

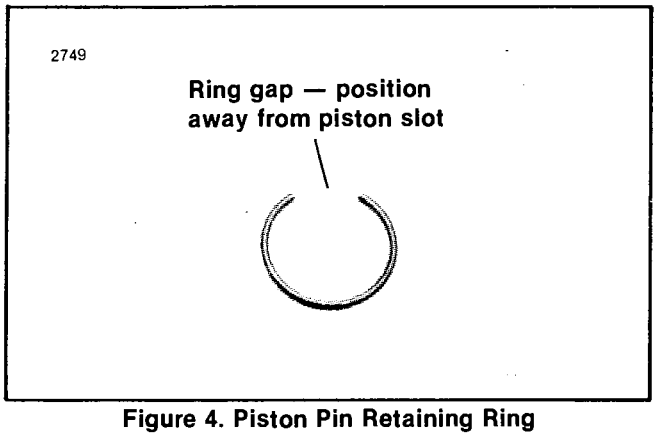


**Figure 4. Piston Pin Retaining Ring**

The PISTON PIN RETAINING RING INSTALLER, Part No. HD-34623, requires the following modification to extend its use to the new style XL pistons:

1. Secure the sleeve portion of the tool in a clamping device.

2. See Figure 5. Using a high speed die grinder, remove .250 in. from the sleeve as shown.

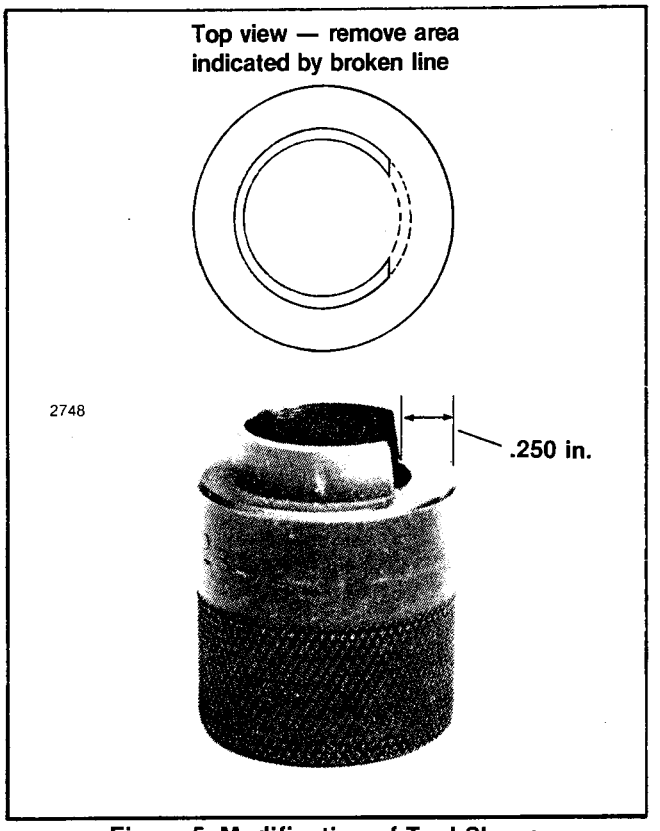


**Figure 5. Modification of Tool Sleeve**

## Piston Pin Retaining Ring Installation

The PISTON PIN RETAINING RING INSTALLER, Part No. HD-34623 (with the modification as described above) will facilitate installing the retaining ring.

**CAUTION**

**Always use new retaining rings. Make sure retaining ring groove is clean and that ring seats firmly in groove. If it doesn't, discard the ring. Never install a used retaining ring or a new one if it has been installed and then removed for any reason. A loosely installed ring will eventually come out of the piston groove, resulting in both piston and cylinder soon being damaged beyond repair.**

1. With the piston pin retaining ring in the slot of the tool handle, place the ring into the tool sleeve.

**CAUTION**

**Remove the tool handle and check that the retaining ring is positioned in the sleeve so that it will be installed with the gap away from the slot at the bottom of the piston retaining ring recess. If the retaining ring gap is installed too close to the slot, it will be difficult to remove the piston pin, should the need occur.**

2. See Figure 6. Place the tool handle into the sleeve and then into the piston pin, as shown.

3. Hold the sleeve tight against the piston and tap the end of the tool handle to install the retaining ring to the piston.

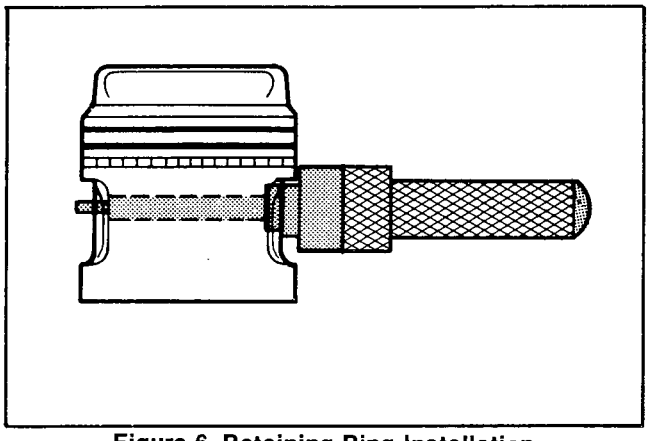

**Figure 6. Retaining Ring Installation**

## Cam Gear Oiler (See Figure 7)

The cam gear oiler directs oil from the top end oil passage to the gear mesh between first and second gears and third and fourth gears.

Direct lubrication of the gear teeth allows tighter gear fitment. Gear backlash and noise are reduced.

*NOTE*

*With tighter gear fitment, a slight gear whine is normal and does not indicate gears are too tightly fitted.*

The cam gear oiler is not a retrofit. Cam gear oiler service part numbers are:

| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 4819 | Hex head screw (2) |
| 2 | 26509-85 | Spacer (2) |
| 3 | 26505-85 | Oiler manifold |
| 4 | 11172 | O-ring |
| 5 | 45830-48 | Socket head pipe plug |
| 6 | 24484-85 | Crankcase set |

**REMOVAL**

1. Remove the gearcase cover and cam gears following the disassembly procedures under GEARCASE COVER AND CAM GEARS in the XL Service Manual.

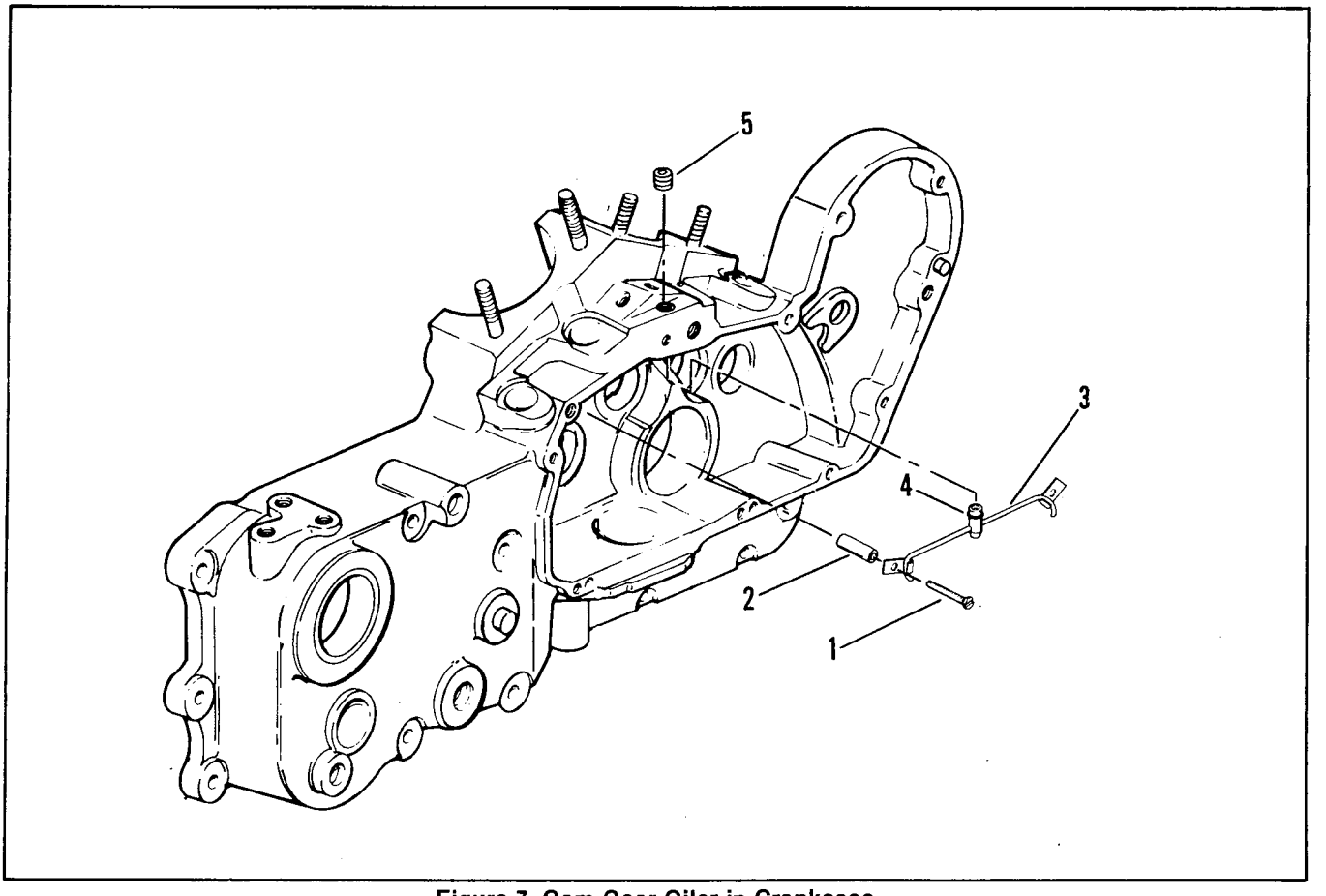


**Figure 7. Cam Gear Oiler in Crankcase**

2. Straighten the cam gear oiler clamps and remove the two screws (1) and spacers (2).

3. Remove the socket head pipe plug (5) from the gearcase.

4. Insert a 1/4 in. pin punch in the plug hole and tap the oiler out of the crankcase.

**INSTALLATION**

*NOTE*

*Check the o-ring for damage. Replace if necessary. Check that oil flows without restriction through the oiler (3).*

1. Install the pipe plug (5) to the crankcase using teflon thread sealant.

2. Install the oiler manifold to the crankcase as shown.

*NOTE*

*The oiler must be installed so that the oiler mounting tabs extend form behind the oiler tube.*

3. Place two drops of LOCTITE REMOVABLE THREAD LOCKER 242 (blue) on the screw threads. Install the screw (1) through the oiler clamps and into the spacer (2). Thread the screw into the crankcase and tighten using 5 to 7 in-lbs torque. Repeat for the other screw.

4. Bend a corner of each clamp to form a lock tab over the aligning screw flat.

5. Install the cam gears and gearcase cover. Refer to the XL Service Manaul for the proper procedure.