



INSTRUCTIONS

J04998

2009-07-10



XL 1200 CC HIGH COMPRESSION PISTON KITS

GENERAL

Kit Number

22711-04B

Models

For model fitment information, see the P&A Retail Catalog or the Parts and Accessories section of www.harley-davidson.com (English only).

Additional Parts Required

Service Gasket Kit 17049-04A is required for assembly and must be purchased separately.

Piston Pin Retaining Ring Installer HD-34623-C is required for assembly and must be purchased separately.

Carbureted models: Screamin' Eagle Pro Ignition Race Tuner or Screamin' Eagle Pro Ignition Module is required and must be purchased separately.

EFI models: Screamin' Eagle Pro EFI Race Tuner is required and must be purchased separately.

⚠ WARNING

Rider and passenger safety depend upon the correct installation of this kit. Use the appropriate service manual procedures. If the procedure is not within your capabilities or you do not have the correct tools, have a Harley-Davidson dealer perform the installation. Improper installation of this kit could result in death or serious injury. (00333b)

NOTE

This instruction sheet references service manual information. A service manual for your model motorcycle is required for this installation and is available from a Harley-Davidson dealer.

Kit Contents

See Figure 4 and Table 1.

NOTE

This engine related performance part is intended for High Performance or Racing applications and is not legal for sale or use on pollution controlled motor vehicles. This kit reduces or voids the limited vehicle warranty. Engine related performance parts are intended for the experienced rider only.

DISASSEMBLY

⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect battery cables (negative (-) cable first) before proceeding. (00307a)

⚠ WARNING

Disconnect negative (-) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00049a)

1. Disconnect battery cables, negative (-) cable first.
2. Refer to appropriate ENGINE sections of service manual to remove cylinder heads, cylinders, and pistons.

INSPECTION

After removing the cylinders:

- Check the head gasket and base gasket surfaces for flatness.
- Remove burrs from all gasket surfaces.

Before installing the new pistons:

- Check the clearance between the new piston pin and the connecting rod bushing.
- Replace the bushing if pin clearance is 0.002 in. or more.

BORING AND HONING PROCEDURE

1. Check again for burrs on the cylinder gasket surfaces and remove burrs before continuing to Step 2.
2. Install the following components:
 - a. Original head and base gaskets.
 - b. Cylinder torque plates HD-33446-B.
 - c. Evolution bolts and washers HD-33446-4.
3. Tighten the bolts. Refer to CYLINDER HEAD INSTALLATION section in Service Manual.

NOTE

Torque plates, properly tightened and installed with gaskets, simulate engine operating conditions. Measurements vary as much as 0.001 in. without torque plates.

4. Bore the cylinder with gaskets and torque plates attached. Bore the cylinder to 0.003 in. under the desired finished size.

NOTE

Use the piston to determine finished size. Piston fit to the cylinder must be within the range 0.0025 in. to 0.0035 in.



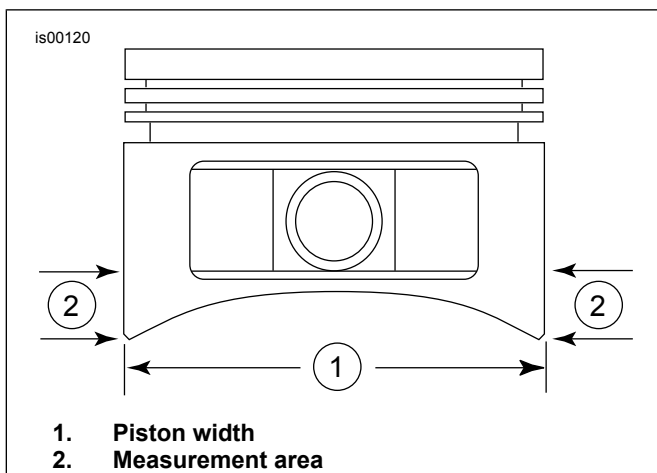


Figure 1. Piston Measurements

5. See Figure 1. Measure the piston width (1), 90 degrees horizontally from both sides of the pin piston pin hole and at 1/2 in. above (2) the lowest portion of the skirt above the chamfer.
6. Hone the cylinder to its finished size using a 280 grit rigid hone followed by a 240 grit flexible ball hone. Honing must be done with torque plates attached. All honing must be done from the bottom (crankcase) end of the cylinder. Maintain a 60 degree crosshatch pattern in the piston travel area.
7. See Figure 2. After machining and honing, chamfer the bottom inner edge (1) of the cylinder liner. The chamfer provides a beveled surface for easier installation of the cylinder over the piston rings. Break leading edge of liner to a flat surface. The bottom edge of the liner (2) will be somewhat sharp after machining. This sharp edge could easily cause damage during installation of the cylinder.

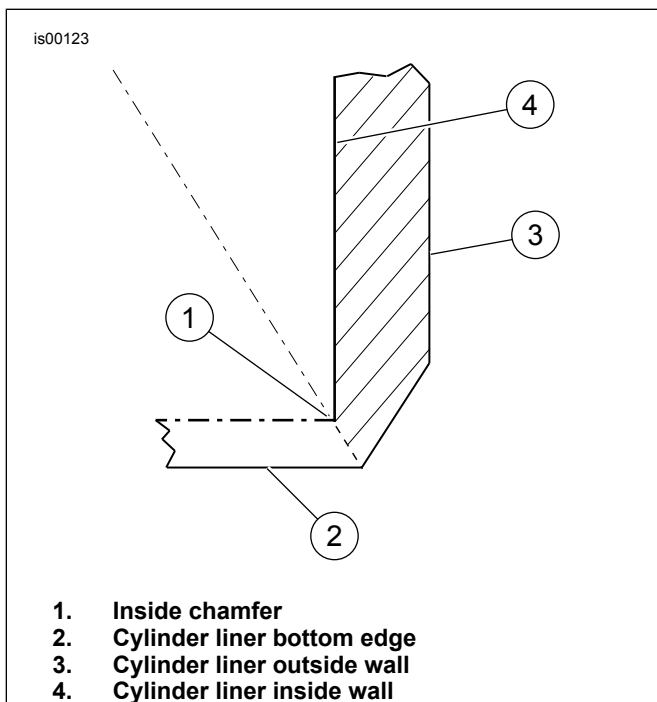


Figure 2. Inside Chamfer and Bottom Edge of Cylinder Liner

PISTON INSTALLATION

NOTE

The 1200 cc pistons in this kit are coated with electrolysis nickel coating. The pistons are directional and the arrow must point forward. These pistons are not specific to front or back cylinders and can be installed in either of the two cylinders.

1. Check the piston rings for proper side clearance and end gap. Refer to appropriate ENGINE sections in service manual. The end gaps of adjacent rings must be installed 90 degrees apart.
2. Install the top ring (barrel-faced) and second ring (taper-faced) with the "N" marking facing up. Oil ring rails can be installed either side up.

PISTON PIN CIRCLIP INSTALLATION

1. See Figure 3. Insert the circlip (4) onto the Piston Pin Retaining Ring Installer.
2. Squeeze handles of tool together and insert circlip into slot of the piston. Release the handles and remove tool.
3. Repeat steps for remaining circlips.

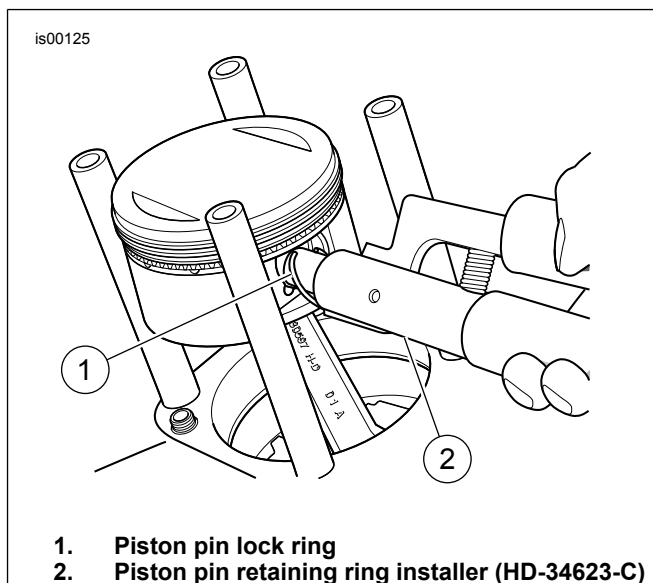


Figure 3. Seating Circlip

CHECK VALVE-TO-PISTON CLEARANCE

NOTE

It is important to check valve-to-piston clearance as described in the following steps. We recommend that this inspection be performed by a Harley-Davidson dealer.

1. Apply a 1/8 in. (3.2 mm) thick layer of clay to the crowns of both pistons (in the areas where the valves meet the pistons).
2. Install the cylinder heads per the service manual procedures, using the new gaskets from the Gasket Kit (purchased separately). Assemble the heads and valve train, and tighten the internal-threaded cylinder screws to the torque specifications listed in the service manual.
3. Turn the engine (by hand) through two complete revolutions.

4. Remove the heads and measure the clay at its thinnest point.

NOTE

Clay must measure 0.080 in. (2.03 mm) at the thinnest point. If this measurement does not meet the minimum thickness, the depth of the valve notches must be increased; however, the depth of the notches must not exceed 0.135 in. (3.43 mm).

Valve radial clearance should also be checked. Radial clearance of 0.050 in. (1.27 mm) is recommended.

ASSEMBLY

1. Refer to appropriate ENGINE sections of service manual to assemble the engine.

NOTE

Engine re-jetting or re-timing may be required to achieve full potential of this performance product.

⚠ WARNING

Connect positive (+) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00068a)

⚠ WARNING

When servicing the fuel system, do not smoke or allow open flame or sparks in the vicinity. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00330a)

2. Connect battery cables, positive (+) cable first.

NOTICE

You must recalibrate the ECM when installing this kit. Failure to properly recalibrate the ECM can result in severe engine damage. (00399b)

3. *Carbureted models:* Use Screamin' Eagle Pro Ignition Race Turner or Screamin' Eagle Pro Ignition Module to verify proper installation of kit. *EFI models:* Use Screamin' Eagle Pro EFI Race Turner to verify proper installation of kit.

NOTE

This diagnostic equipment must be purchased separately and are available at a Harley-Davidson dealer.

BREAK-IN RIDING RULES

Refer to BREAK-IN RIDING RULES in the owner's manual for instructions to break-in the motorcycle.

SERVICE PARTS

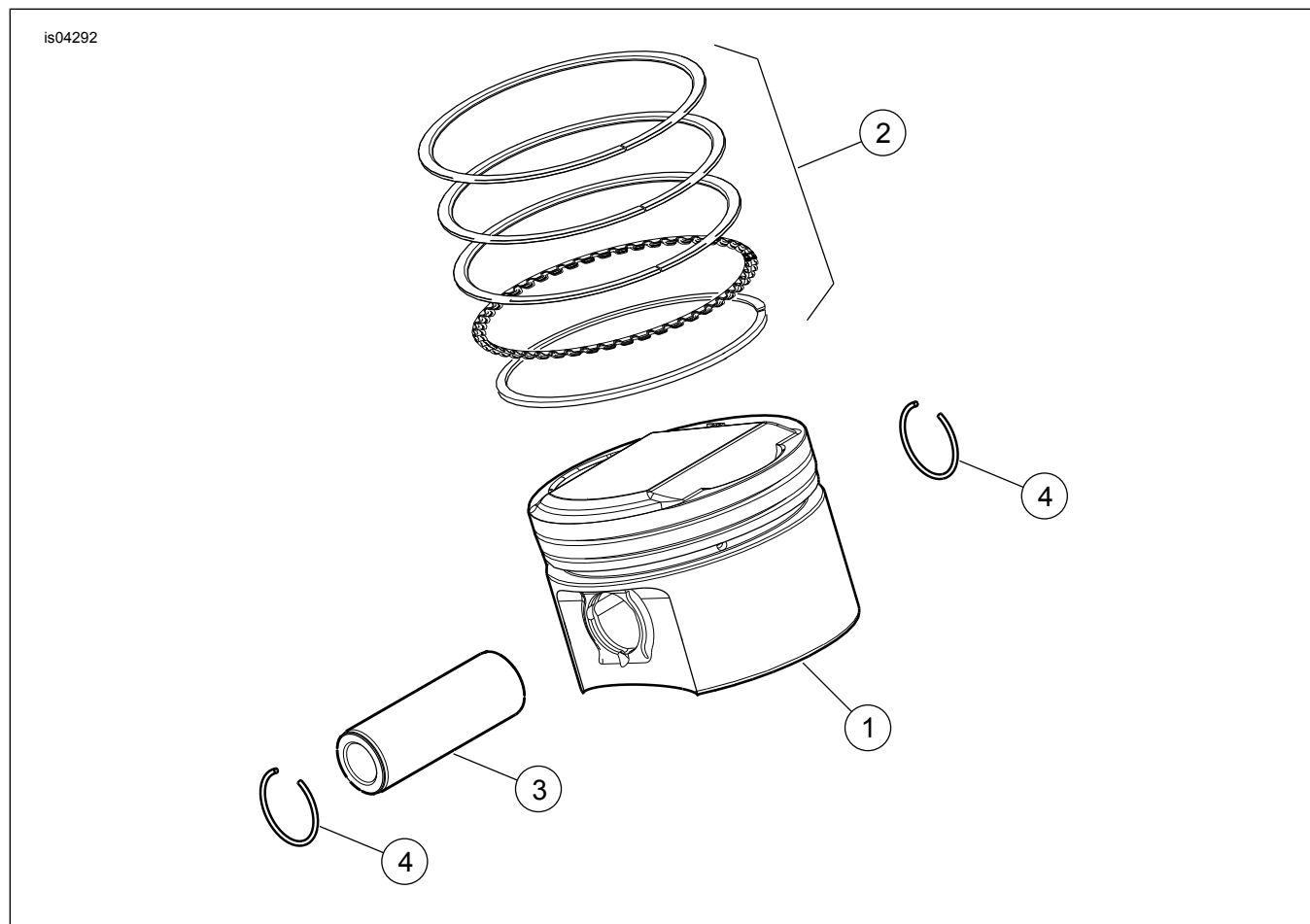


Figure 4. Service Parts: XL 1200 cc High Compression Piston Kits

Table 1. Service Parts: XL 1200 cc High Compression Piston Kits

Kit	Item	Description (Quantity)	Part Number
Kit 22711-04B Standard	1	Piston, front and rear	Not Sold Separately
	2	Piston Ring Set (2)	21925-10
	3	Pin, piston (2)	22481-04
	4	Circlip, piston pin (4)	22482-04