



# INSTRUCTIONS

-J05366

2011-07-14

## 49 STATE STAGE 2 BIG BORE KITS-TOURING

### GENERAL

#### Kit Number

27564-09A. This kit is only 49 state street legal and cannot be used in California.

#### Models

These kits are designed for installation on 2009 Touring models.

Table 1. 49 State Stage 2 Big Bore Kit

Description (Quantity)	Part Number
TOURING LEGAL, BLACK, 49 STATE	27564-09A

#### Additional Parts Required

Installation of the camshafts included in this kit requires the separate purchase of spacers from a Harley-Davidson Dealer. Refer to the parts catalog for the correct part number for the spacer needed.

#### 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.*

#### NOTICE

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

#### ▲ WARNING

**The rider's safety depends 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. (00333a)**

#### ▲ 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)**

#### ▲ 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)**

#### Kit Contents

See Figure 2, Figure 3, Figure 4 and Table 2, Table 3, Table 4.

#### INSTALLATION

Installation of this kit is divided into six steps:

1. Big Bore Cylinder and Piston Conversion
2. High Performance Camshafts
3. High Performance Clutch Diaphragm Spring
4. High Performance Air Cleaner
5. Calibrate the ECM
6. Exhaust

#### NOTE

*This Big-Bore Stage 2 kit is intended for High Performance applications only. Engine-related performance parts are intended for the experienced rider only.*

*The air cleaner contained in these kits is designed to perform with these kits only. Any other combination of components is not confirmed to be legal for street use.*

*Gaskets provided in the 1690 conversion kit eliminate the need for original head gasket O-rings. For this reason, DO NOT install the Original Equipment (OE) O-rings (Part Number 11273) to the top of cylinder dowels, or severe engine damage may occur.*

#### Big-Bore Cylinder and Piston Conversion

#### NOTE

*Installation of this kit requires removal of the cylinder heads, cylinders and pistons. Refer to Section 3, ENGINE: STRIPPING MOTORCYCLE FOR SERVICE and TOP END OVERHAUL of the applicable service manual for instructions.*

#### High Performance Camshafts

#### NOTE

*Installation of this kit requires removal and re-installation of the cam support plate. Refer to Section 3, ENGINE: BOTTOM END Cam Support Plate, Removal and Disassembly/Assembly (Camshaft, Camshaft Bearings) of the applicable Service Manual for instructions.*

#### Measuring Piston-to-Valve Clearance

After installing non-stock cams, check piston-to-valve clearance.



1. Apply 1/8-inch (3 mm) layer of clay to crowns of pistons in areas where valves meet pistons.
2. Refer to the appropriate service manual and assemble the heads and valve train, and tighten cylinder studs to torque specified.
3. Turn engine through two complete revolutions by hand.
4. Remove heads and measure clay at its thinnest point.

**NOTE**

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

**Measuring Valve-to-Valve Clearance**

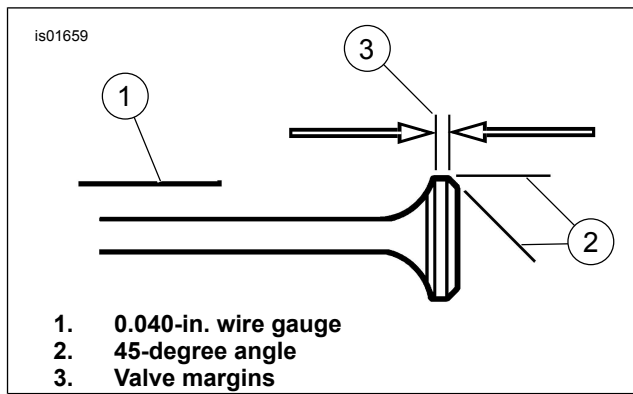
**NOTE**

Wait ten minutes before turning the engine after installing push rods. This allows tappets to bleed down and prevents you from bending push rods or valves.

**NOTE**

See Figure 1. If it is necessary after inspection to grind the intake and exhaust valves in order to meet the 0.040-inch (1.016 mm) clearance between the two valve heads, the margins (3) must be measured as follows: 0.031-inch (0.787 mm) minimum margin on exhaust valves and 0.015-inch (0.381 mm) minimum margin on intake valves.

1. Rotate the engine so that both valves of the front cylinder are partially open. Shine a light through the exhaust port and look through the spark plug hole to view the valves. Turn engine, if required, to the point where the exhaust and intake valve heads cross, where both valves are off their seats by an equal amount.
2. A 0.040-inch (1.016 mm) clearance is required between the two valve heads. Use a 0.040-inch wire gauge (1) to measure this. To adjust the clearance, grind the edges of the intake and exhaust valves at a 45-degree angle (2).
3. Repeat steps 1 and 2 for the rear cylinder.



**Figure 1. Beveling Valve Heads**

**Install New Pistons, Cylinders, and Cylinder Heads**

1. **Assembly** - Refer to the ENGINE section of the appropriate service manual for installing pistons, cylinders and cylinder heads.

**High Performance Clutch Diaphragm Spring**

1. **Disassembly** - Refer to the DRIVE section of the appropriate service manual to remove primary chain case, chain, diaphragm spring retainer and diaphragm spring.
2. **Assembly** - Refer to the DRIVE section of the appropriate service manual for installing diaphragm spring retainer, diaphragm spring, chain and primary chain case.

**High Performance Air Cleaner**

Follow the instructions included with the High Performance air cleaner in this kit for installation.

**Calibrate the ECM**

Have dealer recalibrate the ECM prior to starting vehicle.

**Exhaust**

Refer to the appropriate service manual for exhaust installation procedure, if required.

**⚠ 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)**

1. Connect the battery cables, positive (+) cable first.
2. Refer to the service manual, and follow instructions to install the seat.

# SERVICE PARTS

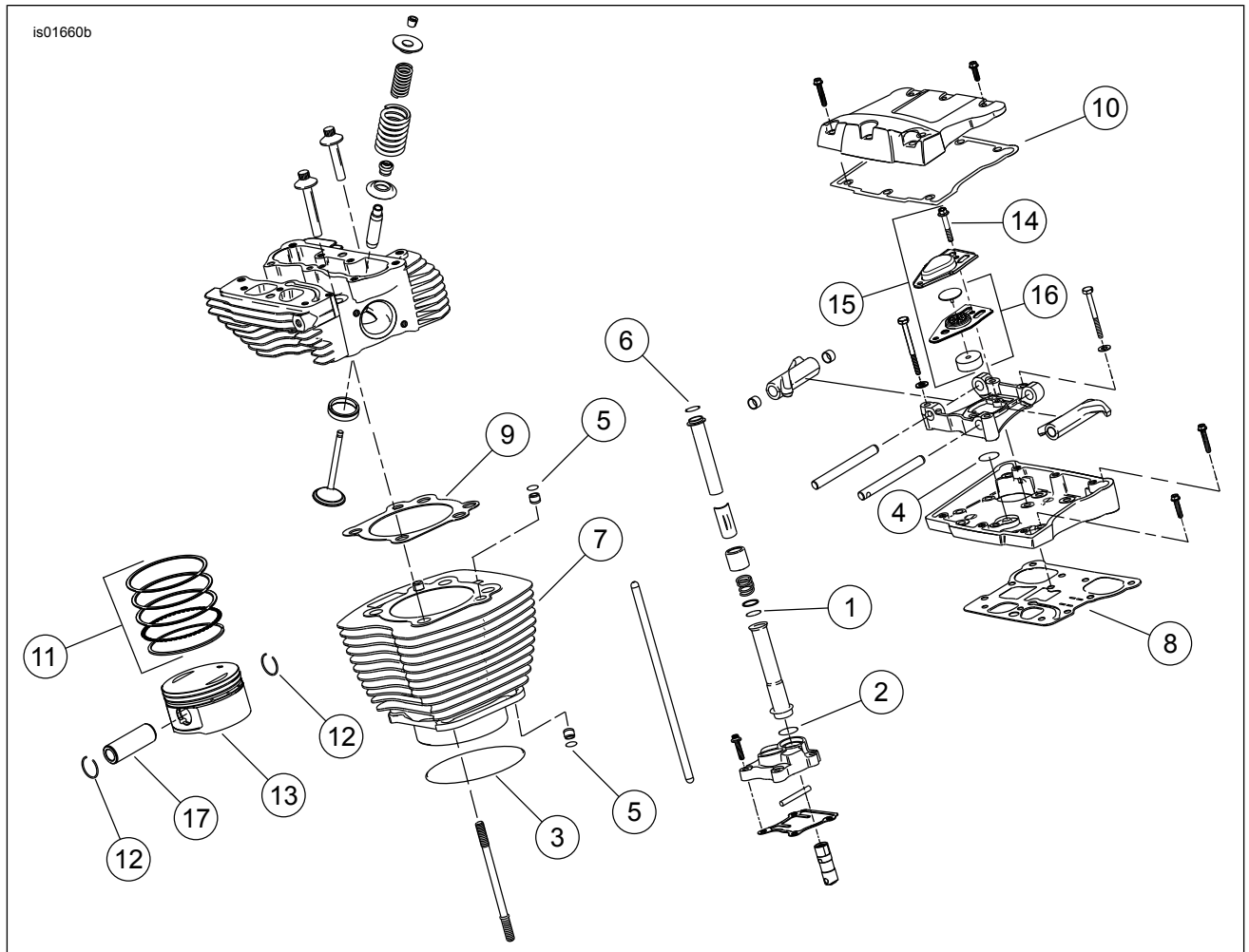


Figure 2. Service Parts: Screamin' Big-Bore EFI Stage 2 Kit

Table 2. Service Parts: 49 State Stage 2 Big Bore Kits

Item	Description (Quantity)	Part Number	Item	Description (Quantity)	Part Number
1	O-ring, middle push rod cover (4)	11132A	12	Lock wire, piston pin (4)	22097-99
2	O-ring, lower push rod cover (4)	11145A	13	Kit, Piston, 1690 standard (2)	21989-07
3	O-ring, cylinder spigot (2)	11256	14	Bolt (4)	4400
4	O-ring, rocker arm support (2)	11270	15	Breather assembly	17025-03A
5	O-ring, cylinder deck ring dowel (2)	11273	16	Baffle assembly	26500002
6	O-ring, upper push rod cover (4)	11293	17	Pin, piston (2)	22131-05
7	Assembly, 1690 cylinder, black (2)	16547-99A		Kit, exhaust gasket (not shown)	17048-98
8	Gasket, rocker cover base (2)	16719-99B		Seal, intake manifold (not shown) (2)	26995-86B
9	Kit, head gasket (2)	16787-99A		Performance A/C kit (not shown)	29260-08
10	Gasket, rocker cover top (2)	17386-99A		Clutch diaphragm spring, high performance (not shown)	37951-98
11	Ring set, piston, 1690 standard (2)	21918-99			

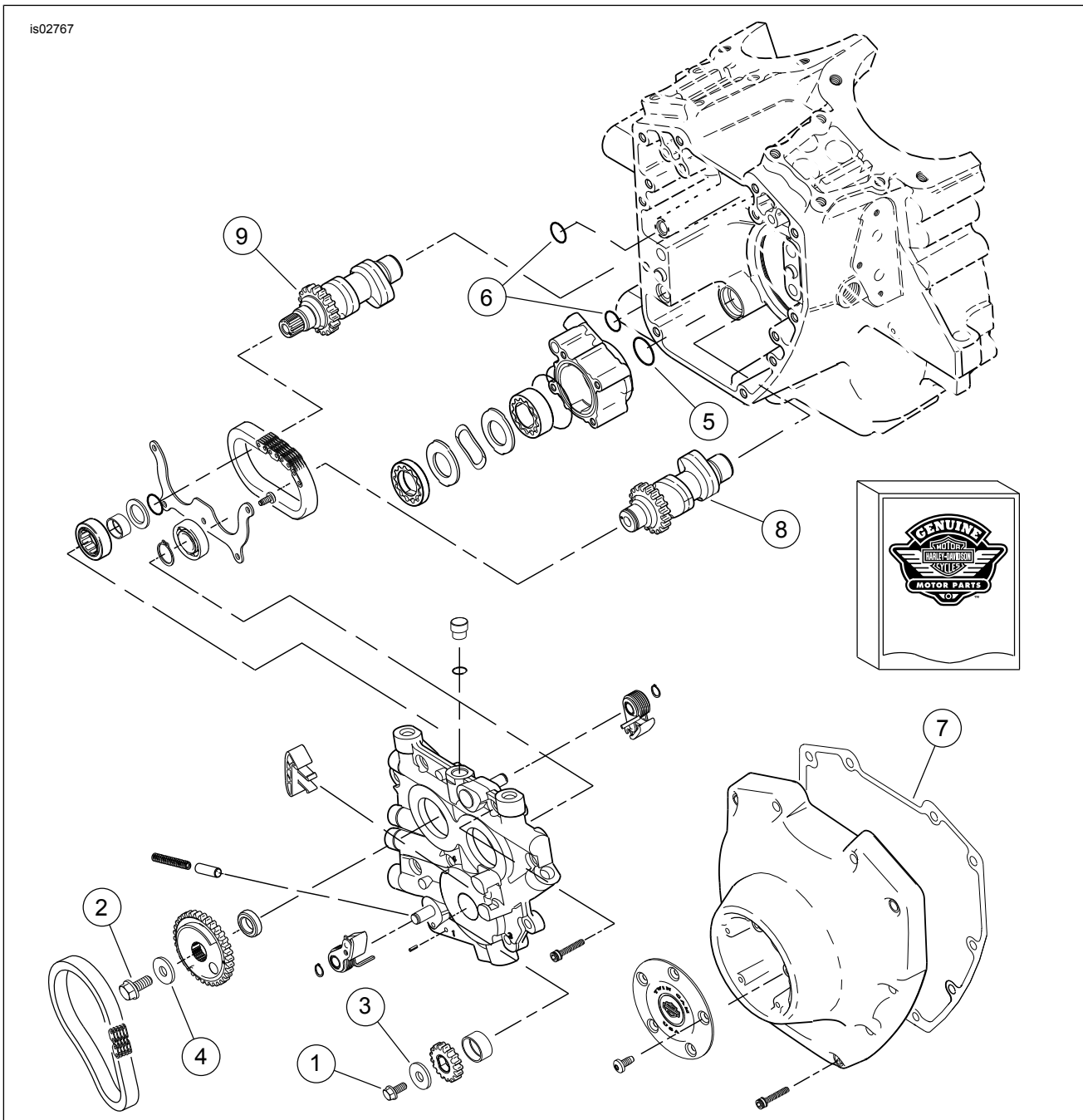
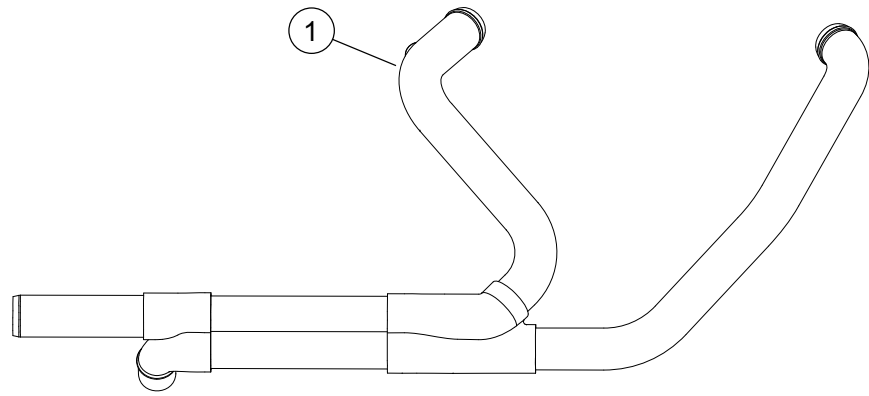


Figure 3. Service Parts: Screamin' Eagle Big-Bore EFI Stage 2 Kit

Table 3. Service Parts: 49 State Stage 2 Big Bore Kits

Item	Description (Quantity)	Part Number	Item	Description (Quantity)	Part Number
1	Capscrew, flanged (crank)	1038	6	O-ring, cam plate-to-crankcase (2)	11301
2	Capscrew, flanged (cam)	1037	7	Gasket, cam cover	25244-99A
3	Washer (crank)	6278A	8	Camshaft, front, SE255	25417-07
4	Washer (cam)	6294	9	Camshaft, rear, SE255	25427-07
5	O-ring, oil pump-to-cam plate	11286			



**Figure 4. Service Parts: 49 State Stage 2 Big Bore Kits**

**Table 4. Service Parts: 49 State Stage 2 Big Bore Kits**

<b>Model</b>	<b>Item</b>	<b>Description (Quantity)</b>	<b>Part Number</b>
Touring	1	Catalytic exhaust pipe assembly	66855-09