



INSTRUCTIONS

-J03993

REV. 2006-07-27

EFI RACE FUELER

GENERAL

Kit Number

32136-05A, 32136-06A, and 32136-07

Models

These kits fit the following models:

Table 1. Models

Kits	Models
32136-05A	2001-2005 Twin Cam; 2003-2006 VRSC equipped with EFI
32136-06A	2006 EFI Models
32136-07	2007 XL 1200 and XL 883 equipped with EFI

⚠ 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)

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.

There are no Service Parts available with this kit.

INSTALLATION

Prepare Motorcycle

1. *Softail and Dyna models:* Remove seat according to the instructions in the Service Manual.
VRSC models: Open the seat.

⚠ 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)

2. *Softail and Dyna models:* Disconnect battery cables, negative (-) cable first.

VRSC models: Remove right side cover and maxi-fuse. Refer to MAXI-FUSE in Service Manual.

XL models: Remove left side cover and maxi-fuse. Refer to Maxi-Fuse in Service Manual.

Install Race Fueler Box on All EFI Models

⚠ 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)

1. Loosen the fuel tank mounts and rotate tank forward to gain access to the fuel injector connectors located on the induction module.

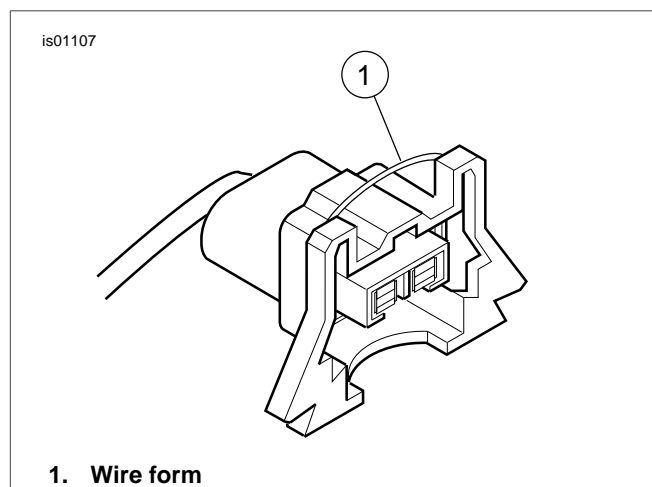


Figure 1. Connector With Wire Form

2. Remove fuel injector connector:
 - a. See Figure 1. *Kit 32136-05A*, press wire form to remove connector.
 - b. See Figure 2. *Kit 32136-06A*, press gray release tab to remove connector.
 - c. See Figure 3. *Kit 32136-07*, press release tabs to remove connector.

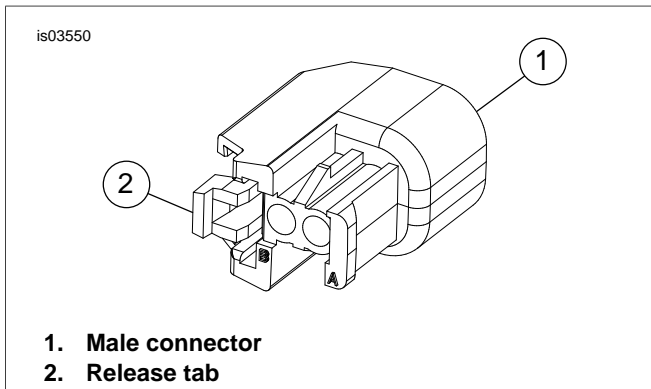


Figure 2. Connector With One Release Tab

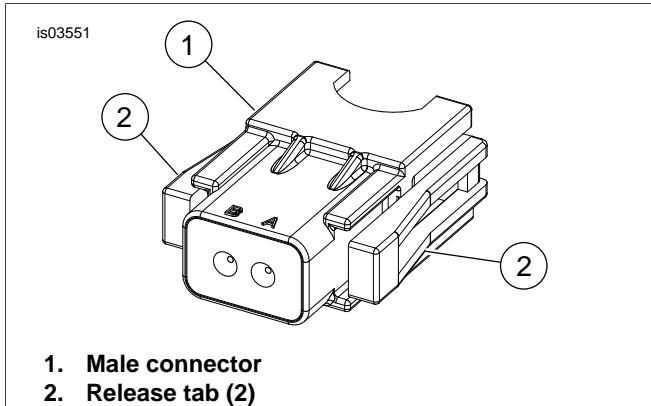


Figure 3. Connector With Two Release Tabs

- See Figure 4. Determine best location for mounting race fueler box (1). The location will vary depending on motorcycle model. The race fueler box must be mounted with the wires facing down. The connections from the race fueler box will connect to each fuel injector and harness.
- Determine best routing for the race fueler box wires between the induction module and mounting location. This will vary depending on motorcycle model.
- Attach hook and loop strip (2) to back of race fueler box and attach box with wires down to desired location (near fuse box or in front of battery, etc.). Do not mount to battery.

NOTE

Connect black (gnd) lead to ground only. If black lead is connected to positive side of battery, the EFI race fueler box will fail.

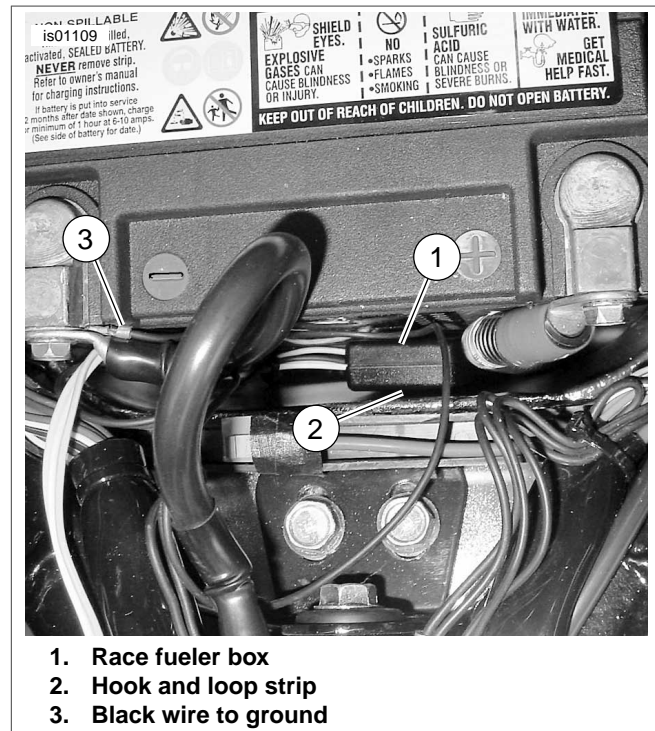


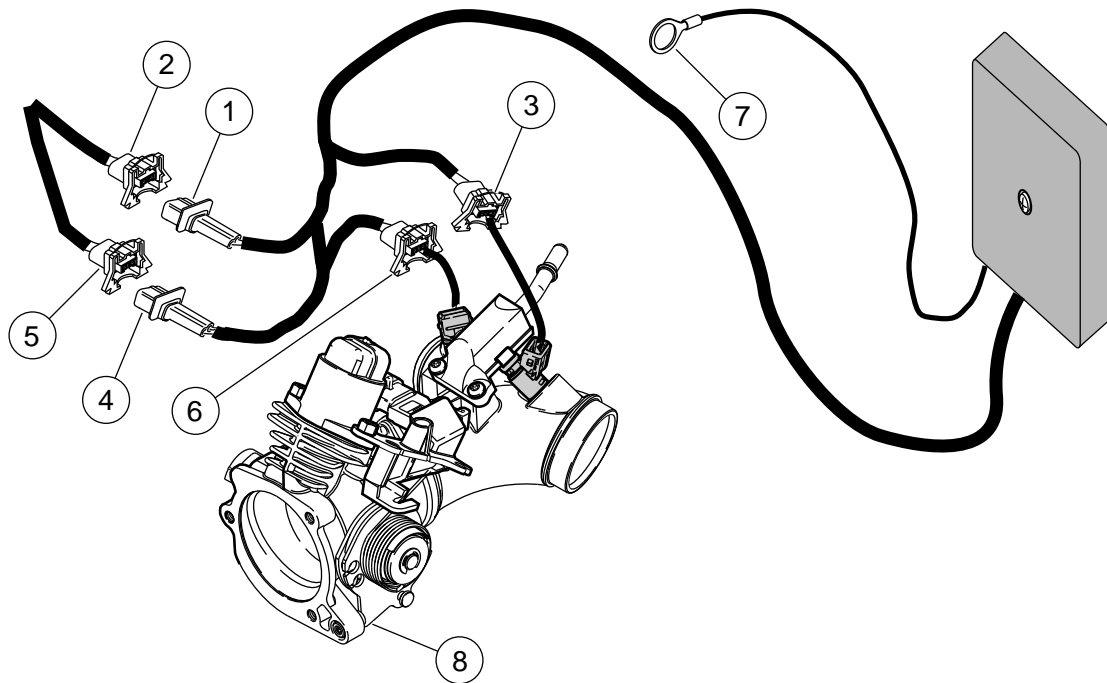
Figure 4. Racer Fueler Box (Typical)

- Attach black wire (3) on EFI race fueler box to ground.
- See Figure 5. Connect male yellow/white lead (1) on fueler box to yellow/green and white/yellow injector wires (2).
- Connect female yellow/white lead (3) on fueler box to front cylinder injector.
- Connect male green/yellow lead (4) on fueler box to yellow/green and green/grey injector wires (5).
- Connect female yellow/green lead (6) on fueler box to rear cylinder injector.
- Keep wires out of the way of hot or moving parts with cable ties provided in kit.

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)

- Connect battery cables, positive (+) cable first.
- Verify initial power-up and monitor mode and make initial RPM threshold, fuel adjuster and accelerator enrichment settings. See "Tune Race Fueler Box" topic.
- Return fuel tank to its original position and tighten fuel tank mounts to specification.

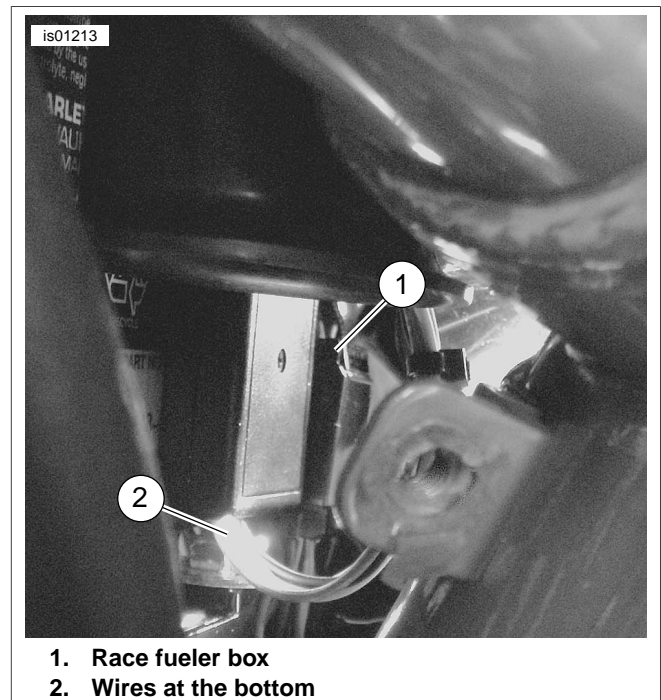


- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Male connector, front cylinder 2. Wiring harness, front connector (grey/yellow/white wire) 3. Female connector, front cylinder 4. Female connector, rear cylinder | <ol style="list-style-type: none"> 5. Wiring harness, rear connector (light green/yellow/dark green wire) 6. Male connector, rear cylinder 7. Battery ground (Do not attach to positive terminal) 8. Delphi injector body |
|---|---|

Figure 5. Race Fueler Box Connections (Typical)

Install Race Fueler Box on VRSC Models

1. Remove airbox cover following the instructions in the Service Manual.
2. Remove front side covers to gain access to wiring. Remove horn to access fuel injector.



1. Race fueler box
2. Wires at the bottom

Figure 6. Fueler Box Wire Location

3. Route race fueler box wires from injector connectors to front of vehicle by inserting wires under air box.

- See Figure 6. Mount race fueler box (1) with wires facing down (2) in most accessible location using hook and loop strip.

NOTE

Connect black (gnd) lead to ground only. If black lead is connected to positive side of battery, the EFI race fueler box will fail.

- See Figure 5. Connect male yellow/white lead (1) on fueler box to yellow/green and white/yellow injector wires (2).
- Connect female yellow/white lead (3) on fueler box to front cylinder injector.
- Connect male green/yellow lead (4) on fueler box to yellow/green and green/grey injector wires (5).
- Connect female yellow/green lead (6) on fueler box to rear cylinder injector.
- Keep wires out of the way of hot or moving parts with cable ties provided in kit.
- Install maxi-fuse and right side cover. Refer to MAXI-FUSE in Service Manual.
- Verify initial power-up and monitor mode and make initial RPM threshold, fuel adjuster and accelerator enrichment settings. See "Tune Race Fueler Box" topic.
- Install airbox cover following the instructions of the Service Manual.

TUNE RACE FUELER BOX

Initial Power-Up and Monitor Mode Operation

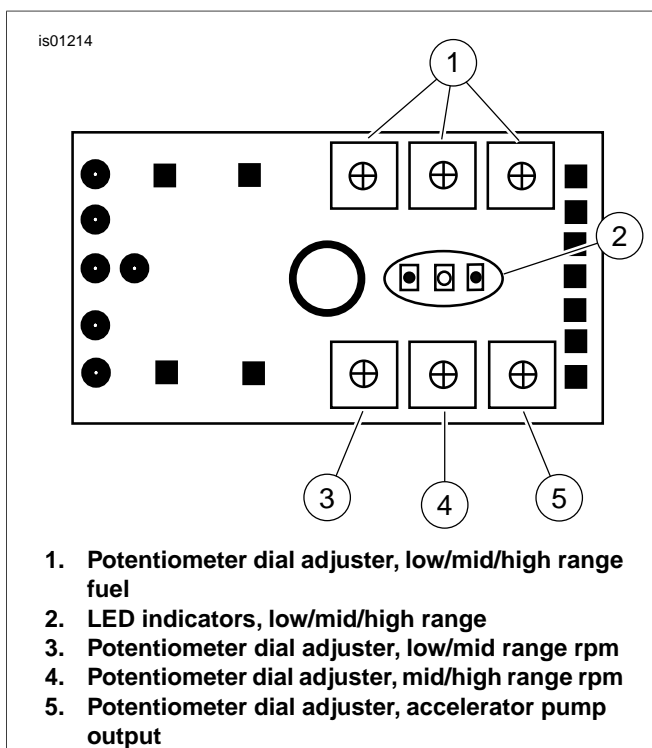


Figure 7. Race Fueler Box

- See Figure 7. The race fueler box is powered when the ignition key is turned to ON. All three LEDs (2) will flash rapidly together for about one second. This indicates that

the race fueler box has power and that all three LEDs are operating.

- The race fueler box will then enter the monitor mode, waiting for the engine to start running. During monitor mode, the center (yellow) LED will flash about twice per second.
- When the engine is first started, the monitor mode will track each engine revolution and flash the two outer (red and green) LEDs. Both the red and green LEDs should be flashing during this period; if not, turn off the engine and check the connections to the fuel injector.
- Monitor mode will be active while the engine stabilizes for the first 100 revolutions. After that time, the race fueler box will switch into run mode and the LEDs will no longer flash.

Run Mode Operation

In the run mode, the race fueler box is fully operational and may be adjusted by the user. During the run mode, only one LED will be active at a time and that LED will indicate which RPM range is active:

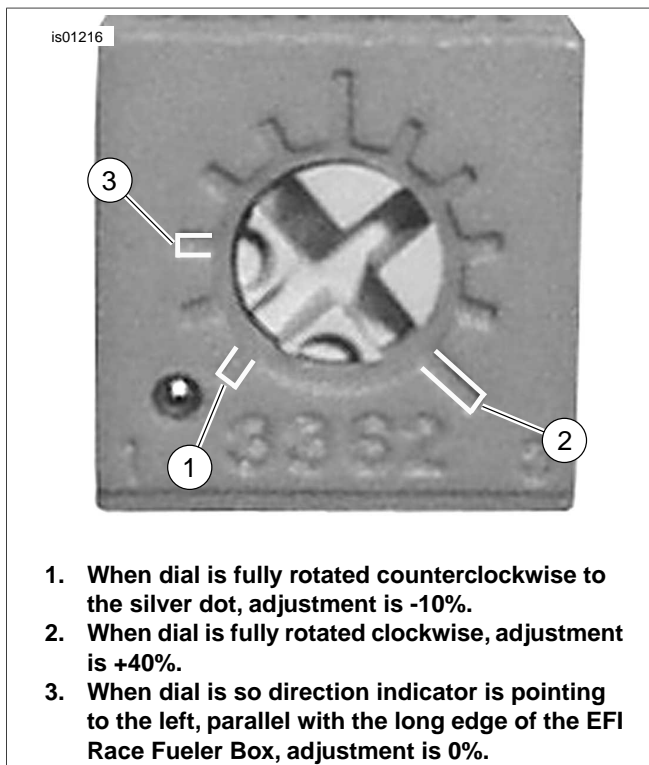
- Red - Low RPM range
- Yellow - Mid RPM range
- Green - High RPM range

Adjust RPM Ranges

NOTES

Ground yourself to the motorcycle by touching a metal portion of the vehicle before adjusting the Fueler potentiometers. For example, touch battery ground or the engine cases.

Solid state electronic components can be damaged by electrostatic discharge. Ground yourself to the motorcycle before adjusting any of the potentiometers to avoid electrostatic damage.



1. When dial is fully rotated counterclockwise to the silver dot, adjustment is -10%.
2. When dial is fully rotated clockwise, adjustment is +40%.
3. When dial is so direction indicator is pointing to the left, parallel with the long edge of the EFI Race Fueler Box, adjustment is 0%.

Figure 8. Potentiometer Dial

NOTE

If after adjustment the motorcycle does not start, you can simply remove the Fueler and re-connect the injectors. The motorcycle will function in the same manner as before installation of the Race Fueler.

1. See Figure 7. The race fueler box divides the engine rpm range into three segments, which are selected by two potentiometer dial adjusters. The RPM segment ranges are:
 - a. Low to mid potentiometer dial adjuster (3): 900 to 3500 RPM
 - b. Mid to high potentiometer dial adjuster (4): 4500 to 7100 RPM

2. The initial starting point threshold is set at:
 - a. Low to mid potentiometer dial adjuster: 2500 RPM
 - b. Mid to high potentiometer dial adjuster: 5000 RPM
3. With the engine idling (less than 1550 RPM), the red LED should be lit. As the engine is revved to a higher RPM, you will see the three LEDs light up in sequence as the RPM crosses each threshold.

Adjust Fuel Setting

See Figure 8. Each of three RPM ranges has a corresponding fuel adjuster (LOW, MID, and HIGH) (Figure 7, Item 1). When the engine is running in a particular RPM range, adjusting the fuel potentiometer dial adjuster for that range can change from -10% to +40% fuel. The race fueler box uses a load-based algorithm that tracks exactly how much fuel the PCM is calling for, and changes the fuel percentage based on the potentiometer dial adjuster setting. The fuel adjustment is linear.

Adjust Accelerator Enrichment (AE) Fuel

See Figure 7. Use the AE potentiometer dial adjuster (5) to eliminate stumble when opening the throttle. The AE fuel is added only when the race fueler box detects a sudden increase in engine load and acts like an accelerator pump on a carburetor. The fuel is added over a brief period of time and the amount of fuel is adjusted from 0% to 100% by the AE potentiometer dial adjuster.

Return Motorcycle to Service

1. *Softail and Dyna models:* Install seat according to the instructions in the Service Manual.

WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

CAUTION

When closing the seat, make sure the ignition switch is in the FUEL position. If the ignition switch is in any other position when the seat is closed, the seat latch mechanism could be damaged. (00196a)

2. *VRSC models:* Close and lock the seat.