INSTRUCTIONS

-J03331 2006-11-07

ONE AND ONE-HALF INCH VOLTMETER GAUGE KIT

GENERAL

Kit Number

74507-04

Models

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

Additional Parts Required

To complete installation, each 1.5 inch gauge will require an additional gauge housing kit.

Installation of this kit will also require the use of special tools and additional parts and supplies which are available from any Harley-Davidson dealer.

⚠ WARNING

Rider and passenger safety depend upon the correct installation of this kit. 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. (00308b)

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

It is possible to overload your vehicle's charging system by adding too many electrical accessories. If the combined electrical accessories operating at any one time consume more electrical current than the vehicle's charging system can produce, the electrical consumption can discharge the battery and cause damage to the vehicle's electrical system. See an authorized Harley-Davidson dealer for advice about the amount of current consumed by additional electrical accessories or for necessary wiring changes. (00211c)

⚠ WARNING

When installing any electrical accessory, be certain not to exceed the maximum amperage rating of the fuse or circuit breaker protecting the affected circuit being modified. Exceeding the maximum amperage can lead to electrical failures, which could result in death or serious injury. (00310a)

NOTE

This kit requires up to 65 milliamps additional current from the electrical system.

Kit Contents

See Figure 9 and Table 1.

INSTALLATION

Prepare the Motorcycle

⚠ WARNING

To prevent spray of fuel, purge system of high-pressure fuel before supply line is disconnected. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00275a)

1. **For EFI models:** Follow the instructions found in the Service Manual to purge the fuel supply of high pressure gasoline and remove the fuel supply line.

2. **For all models:** Follow the instructions found in the Service Manual to remove the seat and any side covers.

⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

3. Disconnect the negative (-) battery cable from the battery.

⚠ WARNING

Gasoline can drain from the carburetor fuel line when disconnected from fuel valve fitting. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. Wipe up spilled fuel immediately and dispose of rags in a suitable manner. (00256a)

4. **For carbureted models:** Turn the fuel supply valve to OFF. Remove the fuel line from the valve.

5. Follow the instructions in the Service Manual to remove the fuel tank.

NOTE

Up to three 1.5" gauges may be installed in a single gauge cluster bracket. Follow the instructions sheets found in the additional gauge kits to prepare the motorcycle. Continue to follow the instructions thru routing the wire harness, installing the gauges, wiring the power, sensor and ground leads, returning the motorcycle to service and testing the operation of each gauge.

6. Follow the instructions in the Service Manual to remove the headlamp housing.

Many Harley-Davidson® Parts & Accessories are made of plastics and metals which can be recycled. Please dispose of materials responsibly.

Install the Voltmeter Bracket Kit and the Voltmeter

1. Follow the instructions in the bracket kit to install the voltmeter bracket.
2. See Figure 9. Obtain from kit, the rubber isolation gasket (7) and voltmeter (8).
3. Fit the perimeter groove in the rubber isolation gasket to the inside edge of the bracket and the tab of the isolation gasket to the square cutout in the bracket.
4. Rotate the voltmeter to align the face legend horizontal to the rider and push in the voltmeter. The locating tab on the gauge will align with the locating notch in the gasket.

NOTE

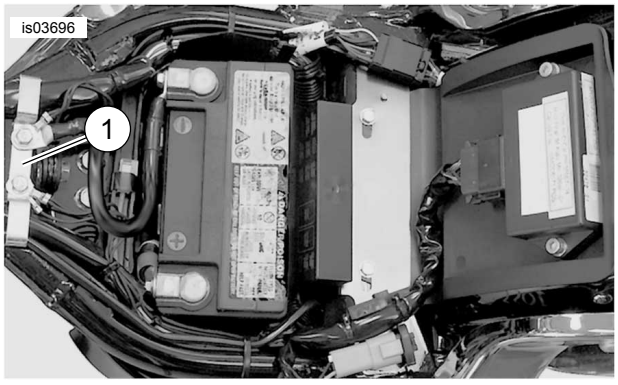
Lubricating the gasket with soap and water will make installation of the gasket and the voltmeter easier.

Route the Wire Harness

NOTE

Before shortening the wire harness by trimming the sensor, ground or the power wire, route the wire harness to all three locations and adjust as necessary to achieve a tight but flexible arrangement.

1. Route the voltmeter wire harness conduit along the frame backbone and up through the upper triple clamp to the voltmeter and bracket.

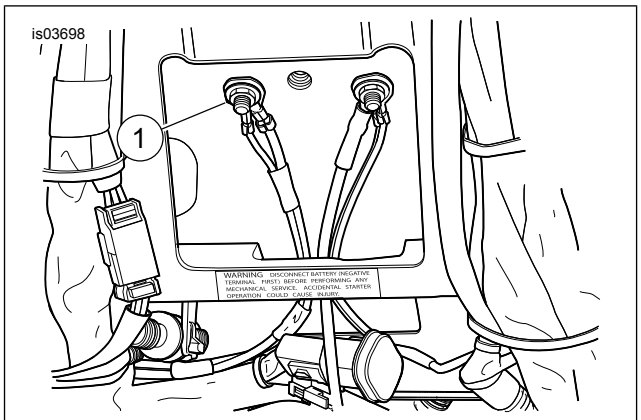


1. Frame strap ground

Figure 1. 2004 Softail Ground

1. Ground studs

Figure 2. 2004 and Later Dyna Ground



1. Ground stud

Figure 3. 2004 FLHR Ground

NOTE

On some XL models the ignition module must be removed to access the orange/white power lead.

2. Route the black ground lead to the ground location for the model motorcycle. Follow the instructions in the Service Manual to locate the ground terminal: **For 2000 to 2003 XL:** The wire harness ground screws can be in several locations including under the seat at the junction of the frame backbone and the extensions for the shock mounts, on the left side of the frame under the tank, or on the left side of frame near the swing arm. **For 2004 and later XL:** On the backside of the primary case at the rear of the engine. **For 2004 and later Softail:** See Figure 1. On the frame strap under the seat directly in front of the battery. **For 2004 and later Dyna:** See Figure 2. At either of the rear ground studs under the fuse block. **For 2000 to 2003 Dyna:** On top of the frame under the seat toward the tank. **For 2000 to 2003 Softail:** Top of the frame under the seat toward the front. **For 2004 and later FLHR/I:** See Figure 3. Under seat directly in front of battery. **For 2000 to 2003 FLHR/I:** In the well underneath the seat under the circuit breaker.

3. Route the orange/white power lead lead underneath and down a rear frame rail to the power location for the year and model. **For 2004 and later XL:** Behind the left side cover, locate the orange/white power lead from the main harness to the diagnostic pin connector [91A]. **For 1996 to 2003 XL:** See Figure 4. A main harness orange/white power lead inside the side cover or under the seat to power the gauge. **For 2004 and later Dyna:** The fuse block inside the left side cover will be fitted with an adapter to the fuse socket labeled OPEN to provide a main harness power lead. **For 1996 to 2003 Dyna:** Locate the orange/white power lead in the taillamp harness pin connector (7A) under the seat. **For 2004 and later Softail:** The fuse block under the seat behind the battery will be fitted with an adapter to the fuse socket labeled P&A IGN to provide a main harness power lead. **For 1996 to 2003 Softail:** Locate the orange/white power lead in the taillamp harness pin connector (7A) under the seat behind the right rear corner of the battery. **For 2004 and later FLHR:** The fuse block will be fitted with an adapter to the fuse socket labeled P&A IGN to provide a main harness orange/white power lead. **For 1996 to 2003 FLHR:** A main harness orange/white power lead inside the right side cover near the top.

4. Verify the position and length of the wire harness and the wire leads to the voltmeter and to the ground.

5. Bundle the voltmeter harness to the main wiring harness and any additional gauge harness along frame backbone by using cable straps to support wires so they do not chafe or contact hot or moving points.

Wire the Ground

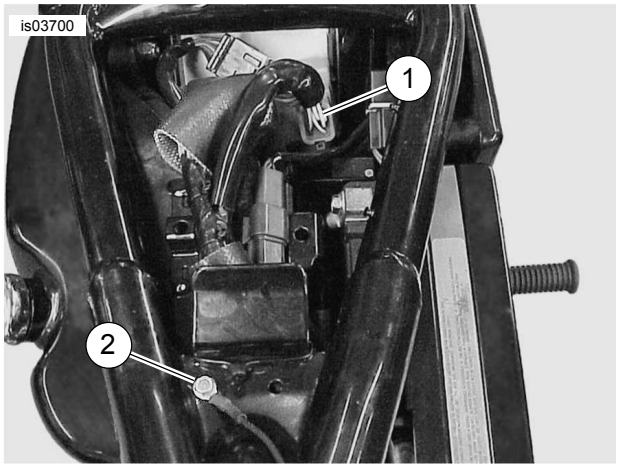
1. When the correct length of ground wire has been established, cut the harness ground wire as necessary.

2. Strip 3/8 inch of insulation from end of the ground wire.

3. **For all models except the 1996 to 2003 Dyna:** See Figure 9. Crimp the 1/4 inch ring terminal (3) to the voltmeter ground wire. **For 1996 to 2003 Dyna:** Crimp the 5/16 inch ring terminal (2) to the ground wire.

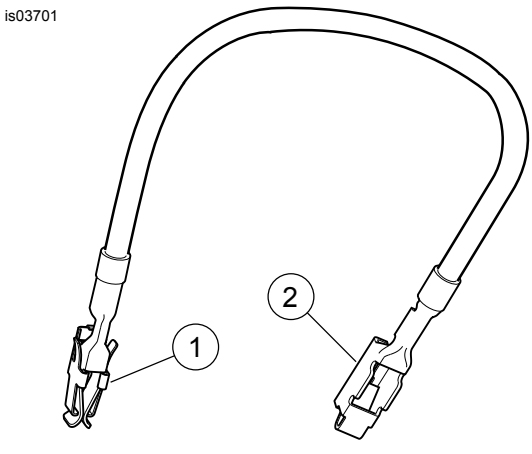
4. Remove the ground wire fastener and add the ring terminal to the stud.

5. Install the ground fastener and tighten to the torque found in the Service Manual.



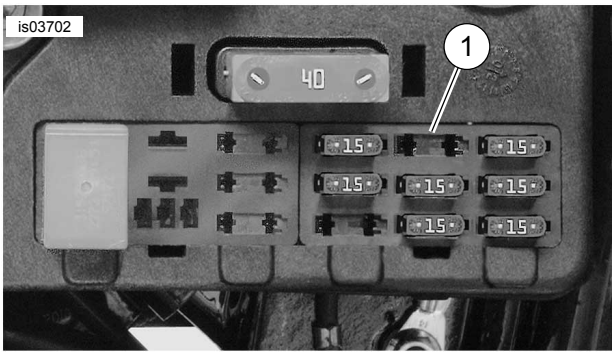
1. Orange/white power lead
2. Ground terminal

Figure 4. Wire Harness and Ground Location Under 2003 or Earlier XL Seat



1. 2004 Softail/Dyna
2. 2004 Road King

Figure 5. Fuse Block Adapter



1. 2 amp fuse location

Figure 6. Socket for 2 Amp Fuse (2004 Dyna Shown)

Adapting a Fuse Block to a Power Lead

1. **For all 2004 models except XL:** Access the fuse block and remove the fuse block cover.
2. See Figure 5. Select the fuse block adapter from the kit and cut off the end that does **not** fit the **P&A IGN (OPEN)** socket terminal on the back of the fuse block.
3. Install the end of the kit adapter wire into the socket on the back of the fuse block marked as **P&A IGN (OPEN).**

NOTE

There should be a wire connected to one side of this socket on the back of the fuse block, but no wire exiting the socket and no fuse in the fuse holder on the front of the fuse block.

4. See Figure 6. Install a 2-Amp fuse in the **P&A IGN (OPEN)** slot.

Splice Orange/White Power Lead

NOTE

If the installation includes more than one gauge, the orange/white power leads for the other gauge(s) will be butt spliced with the voltmeter orange/white power lead and the orange/white power lead from the motorcycle ignition. Follow the instructions in any additional gauge kits to complete installation up to this procedure.

1. When the correct length of orange/white power lead from the gauge to the main harness or fuse block adapter lead has been established, cut the lead as necessary.

2. Strip 3/8 inch of insulation from ends of the orange/white leads (including if required, the fuse block adapter lead).

NOTE

The butt splice connector (Part Number 70586-93) is blue for 14-16 gauge wire.

3. See Figure 7. Identify the splice configuration required.

⚠ WARNING

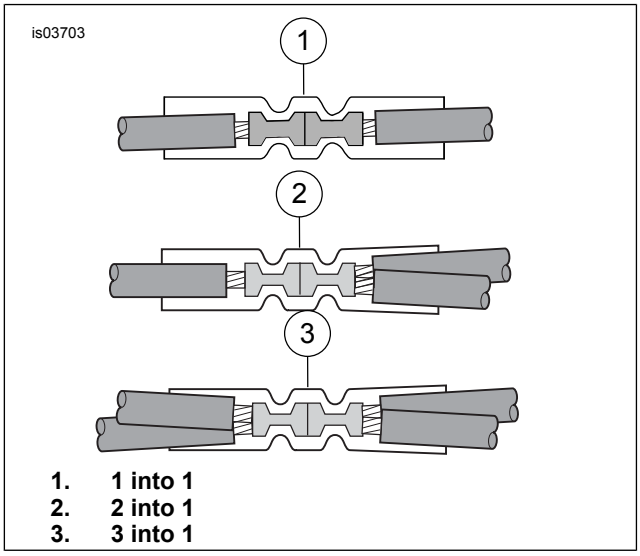
Be sure to follow manufacturer's instructions when using the UltraTorch UT-100 or any other radiant heating device. Failure to follow manufacturer's instructions can cause a fire, which could result in death or serious injury. (00335a)

NOTE

See Figure 8. Gently hold the butt splice from the kit in the "blue" jaws of the Packard Crimp Tool (HD-38125-18). Feed the stripped lead(s) up to the wire stop inside the metal insert in one half of the connector. Squeeze the tool to crimp the

metal insert. The tool automatically opens when finished. Repeat for the other end of the connector to capture one or two stripped leads including, if required, the fuse block adapter.

4. See Figure 9. Insert the leads and crimp the metal insert of the butt splice (1).



1. 1 into 1
2. 2 into 1
3. 3 into 1

Figure 7. Splice Configurations

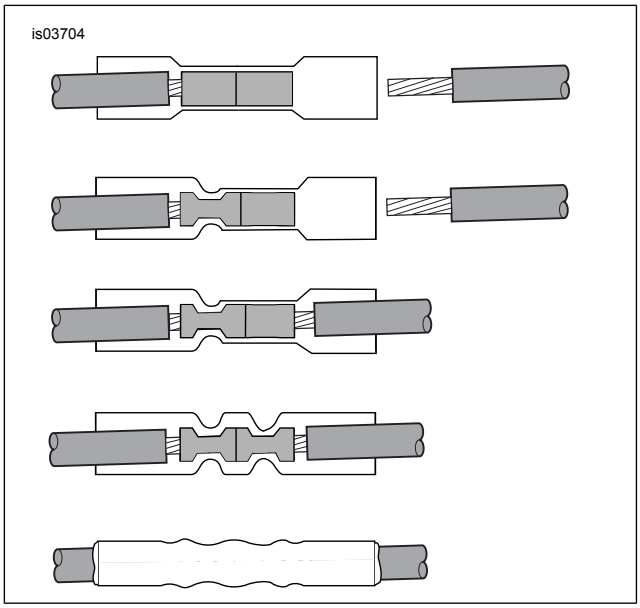


Figure 8. Butt Splice Sequence (1 into 1 configuration)

- Avoid directing the heat toward any fuel system component. Extreme heat can cause fuel ignition/ explosion resulting in death or serious injury.
- Avoid directing heat toward any electrical system component other than the connectors on which heat-shrink work is being performed.
- Always keep hands away from tool tip area and heat shrink attachment.

5. Using the UltraTorch Ut-100 (HD-39969) or other suitable radiant heating device, heat the crimped splice from the center of the crimp out to each end until the sealant exudes out both ends of the connector and the tubing assumes a smooth cylindrical appearance.

Wire the Voltmeter Harness to the Voltmeter

NOTE

Before stripping or crimping the ring terminals on to the gauge wire leads, inspect steering clearance, suspension clearance and look for any pinch points along wire path. Turn forks lock to lock as part of inspection.

1. See Figure 9. Lubricate the voltmeter conduit with soap and water and pull the wires and conduit through the housing grommet (6).
2. Strip 3/8 inch of wire from the ends of orange/white power and black ground wires.
3. Crimp the #6 ring terminal (5) to the wires.
4. Thread the standoff from the gauge housing kit into the bottom of the gauge and tighten.

NOTE

At the gauge cluster bracket, the wire conduit for the voltmeter can be identified as the wire conduit with only a ground (BK) and a power (O/W) lead. Conduits for additional gauges can be identified by the color of the signal wire.

5. Thread the ring terminated wires and conduit into the gauge housing.
6. Fit the grommet to the housing.
7. Match wire colors to terminal posts on back of voltmeter:
   a. Orange/white (power) to positive (+) terminal.
   b. Black (ground) to negative (-) terminal.

NOTE

From the front of the motorcycle looking at the back of the gauges, the power terminal post (+) will be at 9:00 o'clock, the negative terminal post (-) will be at 12:00 o'clock (noon) and the signal terminal post (S) will be at 3:00 o'clock.

8. Install a nut to secure the ring terminal over the post s and nuts on the back of the gauge.
9. Verify that the ring terminals or wires are not grounding against each other.
10. Push the gauge housing into the isolation gasket and install the flat head screw from the gauge housing kit.
11. Tighten the flat head screw to snug the housing up against the gasket.
12. Inspect the seal of isolation gasket around the perimeter of the housing.

Wiring Inspection

1. With the wire harness along frame and to the gauge, bounce motorcycle to look for pinch points between suspension components and gauge wires.
2. Cable wrap the gauge harness wires together at the back of the gauge housings.
3. To look for pinch points in the steering, turn front forks lock to lock.
4. Verify absence of pinch points or clearance from heat sources along wiring harness.

Return the Motorcycle to Service

1. **For 2004 and later models except XL:** Install the fuse block.

2. Follow the instructions in the Service Manual to install the headlamp assembly.

3. Follow the instructions in the Service Manual to replace fuel tank, attach fuel line or fittings and add fuel.

4. Connect the negative (-) battery cable to the battery.

⚠ 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)

5. Install the seat and any side covers.

6. Follow instructions in Service Manual to align headlamp.

Test Installation

1. To test voltmeter, turn ignition to ON. Voltmeter should illuminate and read battery voltage (approx.12.5 volts).
2. Start engine. With engine running, voltmeter should read approximately 13.8 volts at a fast idle.

SERVICE PARTS

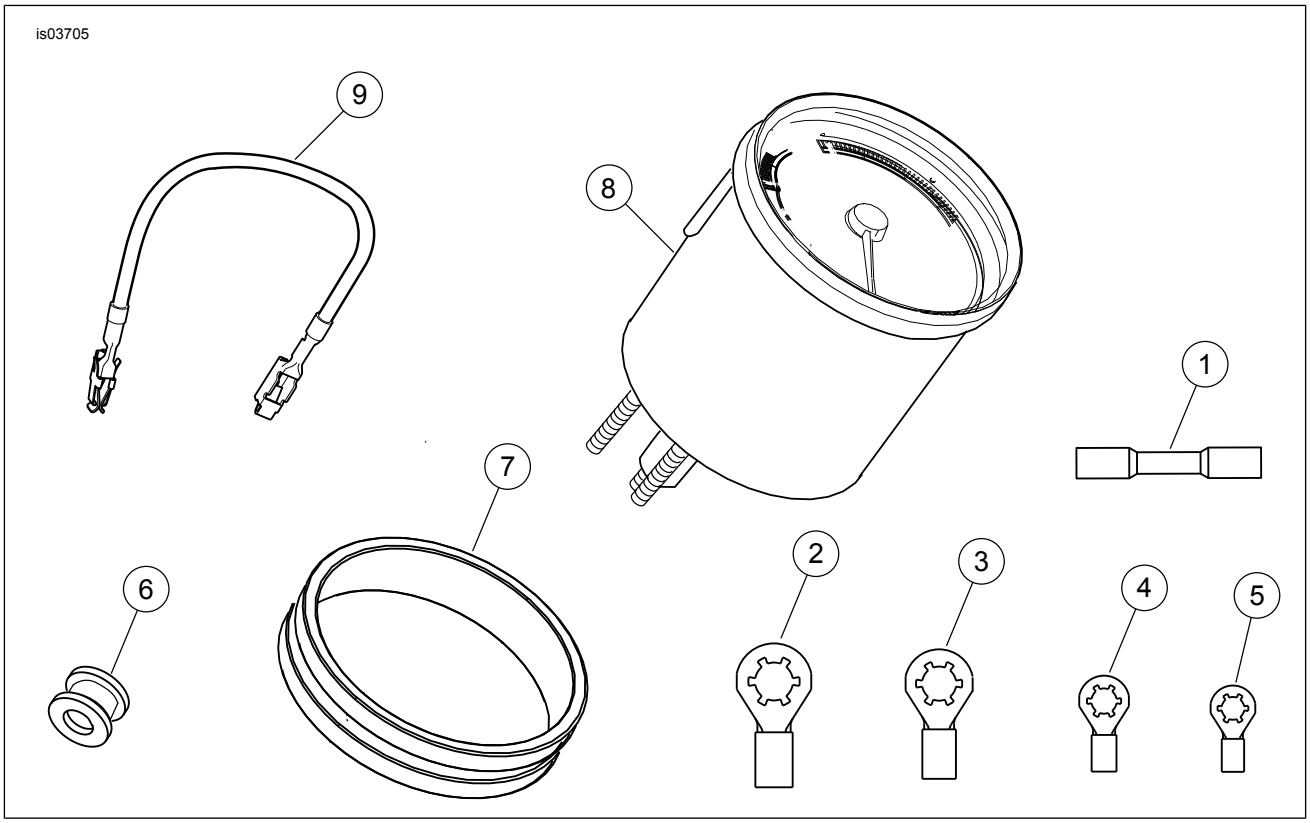


Figure 9. Service Parts: One and One-Half Inch Voltmeter Gauge

Table 1. Service Parts Table

Item	Description (Quantity)	Part Number
1	Butt splice, 14-16 gauge	70586-93
2	Ring terminal, 5/16 inch	9859
3	Ring terminal, 1/4 inch	9858
4	Ring terminal, #10	9857
5	Ring terminal, #6 (2)	9856
6	Grommet	11431
7	Isolation gasket	75260-04
8	Voltmeter gauge	Not Sold Separately
9	Fuse block adapter	70329-04
10	Wiring Harness (not shown)	70285-04