INSTRUCTIONS

J05237 2010-12-20

ELECTRONIC CONTROL MODULE - USB

GENERAL

Kit Number

41000012A

Models

1995-2001 EFI Touring models

Additional Parts Required

The ECM included in this kit has not been programmed. The following items are required to program the ECM before the motorcycle can be operated:

- A PC capable of running the included ProTune II software (see minimum requirements in installation section).
- A standard USB-A to 5-pin mini-B cable.

NOTE

IMPORTANT: *ECM must be programmed with a calibration from the included CD (P/N 41000013) before being placed in service.*

⚠ 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 15 and Table 2.

ECM, Data Link Tag and wire tie, USB port cover with O-ring and screws, ProTune II Software CD.

INSTALLATION

NOTE

Important: *The ECM included in this kit has not been programmed. Before attempting to operate the motorcycle, be sure to install the ProTune II software on a PC and program the ECM. A standard USB A to 5-pin Mini B cable is required to connect the PC and ECM. You must have the following minimum PC specifications to install and run ProTune II:*

- *Microsoft® Windows® XP Service Pack 2 or later, Microsoft Windows Vista™, Microsoft Windows 7 or later operating system.*
- *1.0 GHz or faster processor. Intel® Core Duo or faster/equivalent recommended.*
- *128Mb System RAM, 256 Mb or more recommended.*
- *A desktop resolution of at least 1024x768 pixels. Higher desktop resolution is recommended for optimum use.*
- *A modern graphics system with 3D acceleration and 64 MB or greater on-board RAM is required.*

If you are new to the ProTune II program, you should load it on a computer and familiarize yourself with the screen and the controls. All required information for the installation is explained below. For additional information on ProTune II, see the User Manual installed with the software.

ATTENTION: *Included on this installation CD is a link to the complete ProTune II Manual. Print out and keep it with you as you work with the software.*

ProTune Software Installation

1. To install Pro Tune II for the first time or to update Pro-Tune II, perform the following:

   a. Close all applications.

   b. Insert the Pro Tune II installation CD into your CD or DVD drive. After a few moments the ProTune II Setup Wizard should appear on your screen and you can skip to step e. If this does not happen automatically, proceed with steps c and d.

   c. From the Start menu of your computer, select "Run".

   d. See Figure 1. In the box marked **Open**: type D:\setup.exe and press enter or click **OK**. Most PCs have the CD-ROM drive letter "D". Replace this with the appropriate letter if your CD drive is installed differently. If done correctly the ProTune II Setup Wizard will open.

   e. See Figure 2. The ProTune II Setup Wizard will appear on your screen. From the ProTune II Setup Wizard click **Next** and the **Ready to Install** window will open.

   f. See Figure 3. If you are installing ProTune II on a PC that does not already have a copy of it installed or are updating an older version of ProTune II, click **Install**.

   g. See Figure 4. ProTune II will now install and copy files to your computer. If a warning message appears during driver installation click **Install/Continue Anyway**.

   h. When the ProTune II installation is completed select **Finish** to exit the Setup Wizard

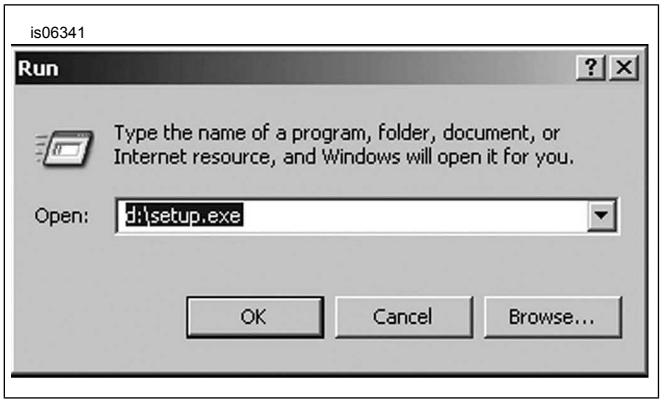

Figure 1. Setup

Figure 2. Setup Wizard

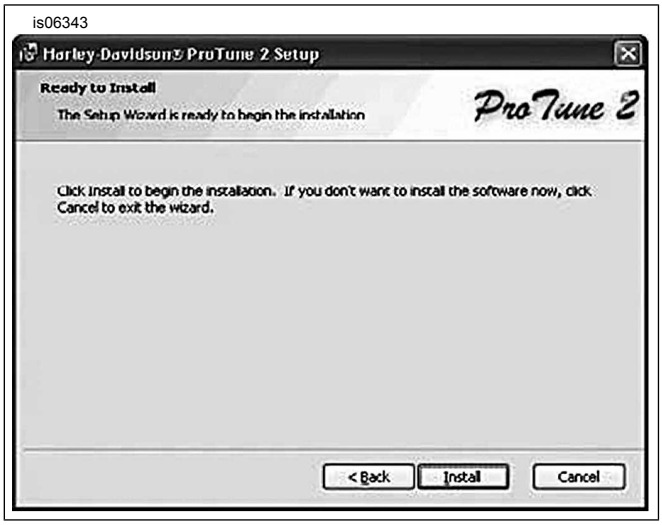

Figure 3. Ready to Install

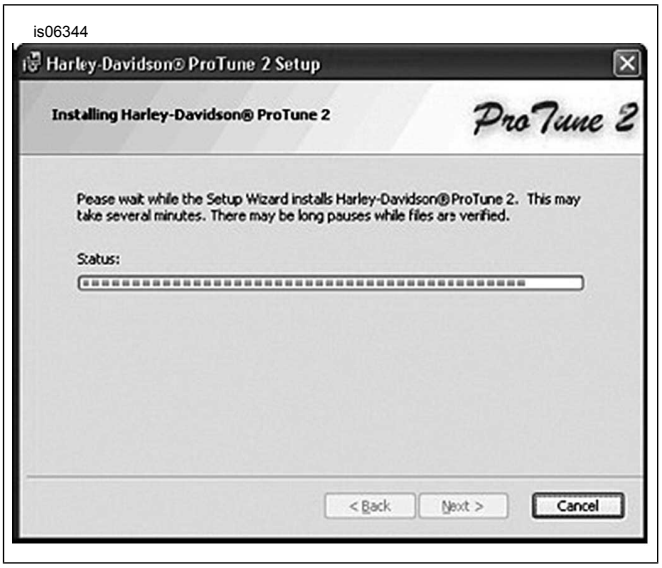

Figure 4. Installing Pro Tune 2

2. See Figure 5. After the installation, the ProTune II program and user manual icons will appear on your desktop. ProTune II can be opened by double-clicking on the program icon. This will be used later to load a calibration into the ECM.

Figure 5. Protune II Program and Manual Icons

ECM Installation

NOTE

*The ECM included in this kit is **has not been** programmed. Before attempting to operate the motorcycle, install the ProTune II software on a PC and program the ECM.*

Included in this kit are components used to cover the USB port of the ECM (o-ring, cover, and 2 screws). After the ECM is installed and programmed, install these components before the module is put into service. This is required to protect the ECM from the elements.

1. Disconnect the negative battery cable.

2. Refer to the service manual to remove the original ECM. Save the hardware for reuse.

3. Insert the hook on the left side of the 35-position connector into the hinge on the service ECM. Push the connector onto the contacts of the ECM until the connector fully engages the latch on the ECM.

4. Install the service ECM in the same location as the original ECM using the original mounting hardware.

5. Connect the negative battery cable.

6. See Figure 6. Install the Data Link Tag using the supplied wire tie.

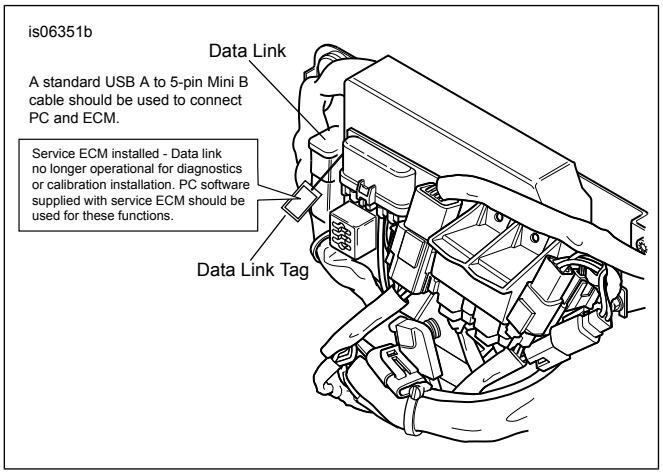

Figure 6. Data Link Tag

7. Before starting the motorcycle, proceed with **Installing USB Drivers** and **Loading a Calibration**.

Install USB Drivers

NOTE

*The first time the ECM is connected to a PC, the USB drivers will need to be installed for ProTune II to communicate with the ECM. If drivers have already been installed, proceed to **Loading a Calibration**.*

The ECM comes with a green temporary label stating that the ECM must be programmed. This label may be blocking a portion of the USB port and can be removed at this time.

1. Close all window applications including ProTune II.
2. Using a standard USB A to 5-pin Mini b cable, connect the mini-USB port on the case of the ECM to an available USB port on the PC.
3. Turn on the ignition switch of the motorcycle and set the run/stop switch to "Run". Do not start the motorcycle at this time.
4. The PC will now recognize it has been connected to an ECM and will start the process for installing the USB drivers. To complete the process follow the steps below for the operating system on your PC.
5. **Windows XP**
   a. See Figure 7. After a few moments the **Found New Hardware Wizard** will appear and ask if Windows can connect to the internet to search for driver. Select **No, not this time** and click **Next**.
   b. See Figure 8. Select **Install the software automatically (Recommended)** from the list of options and click **Next**.
   c. Windows will locate the correct driver file and copy the required files. Wait for this to complete.
   d. Depending on your security settings, a warning may appear indicating that the driver is 'unsigned'. Click **Continue Anyway**.
   e. See Figure 9. When the driver installation is complete click **Finish**. You can now use ProTune II to communicate with the ECM.

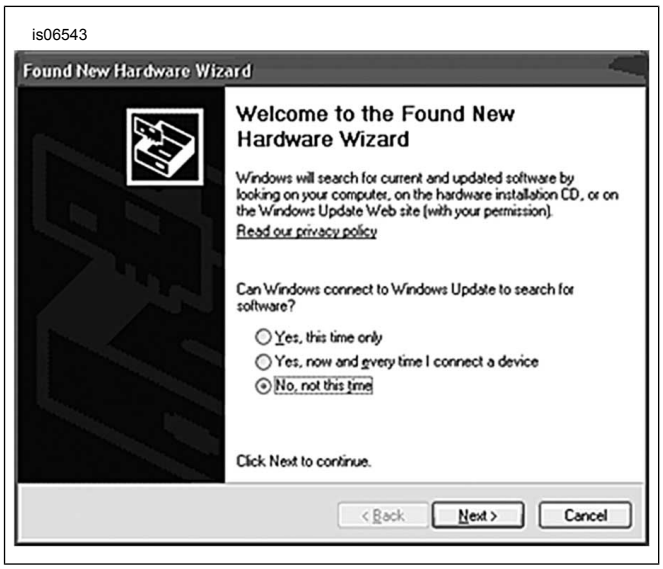

Figure 7. Found New Hardware Wizard

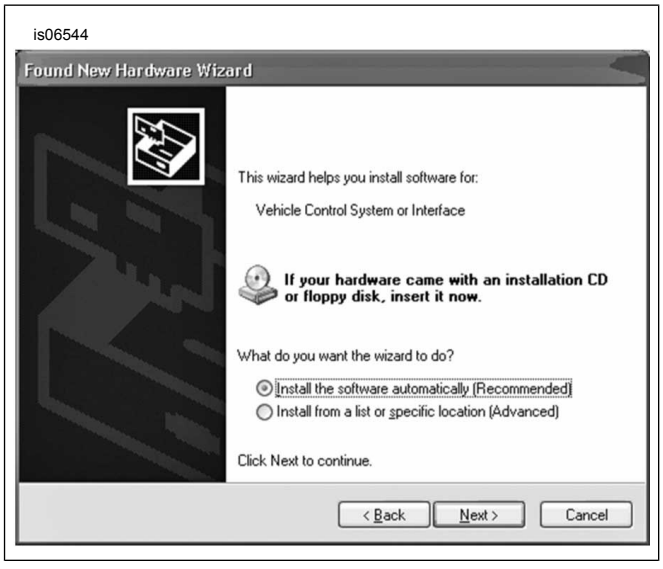

Figure 8. Install the Software Automatically

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Figure 9. Completing Hardware Wizard

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Figure 10. Found New Hardware

6. **Windows Vista and Windows 7**

   a. After a few moments Windows will detect the presence of the new device. A small balloon window in the lower-right corner should indicate this. Windows should automatically install the USB driver and you can skip to step d. If this does not occur, proceed with step b.

   b. See Figure 10. When the **Found New Hardware** dialog box appears, double-click the **Locate and install driver software (recommended)** option.

   c. Depending on your user account settings a security warning message may appear asking you to confirm the device installation. Allow the installation to continue.

   d. See Figure 11. Depending on your security settings, the warning message shown below may appear. Double-click on the **Install this driver software anyway** option.

   e. See Figure 12. When the installation is complete click **Close**. You can now use ProTune II to communicate with the ECM.

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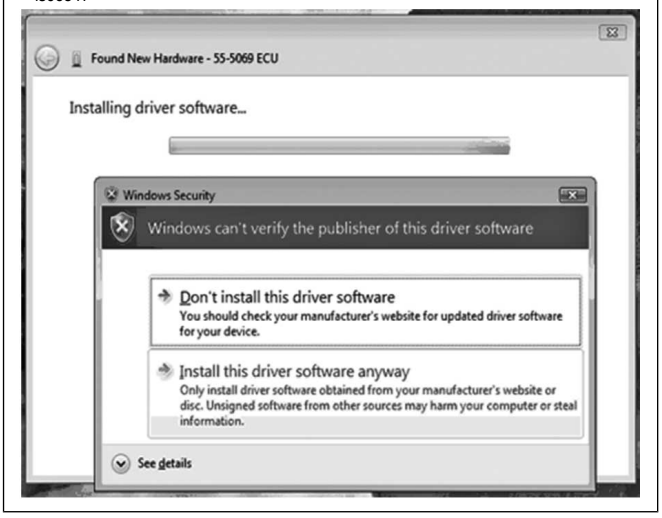

Figure 11. Install Driver Software

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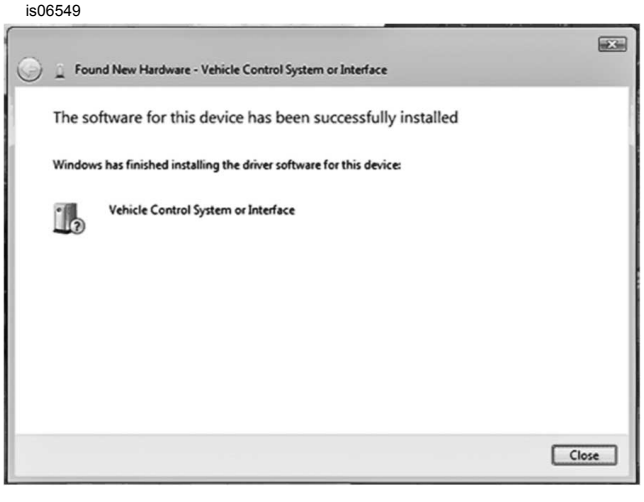

Figure 12. Close Installation

Loading a Calibration

1. **Connect to ECM**

   a. Using a standard USB A to 5-pin Mini b cable, connect the mini-USB port on the case of the ECM to the USB port on the PC.

   b. See Figure 13. Open ProTune II by double-clicking the ProTune II icon on the desktop. In the lower-right corner of the ProTune II window there is a communication status box. When there is no ECM communication this box will flash between blue and black and alternate between messages No ECM on USB and Checking USB.

   c. Turn on the ignition switch of the motorcycle and set the Stop-Run switch to Run. Do not start the motorcycle at this time.

   d. See Figure 14. The communication status box in the lower-right corner of ProTune II will illuminate green to show that ProTune II is communicating with the ECM. If it does not illuminate green see the Basic Troubleshooting section below.

Figure 13. ECM Check

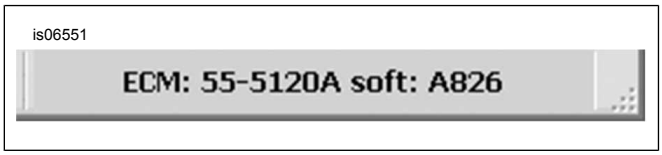

Figure 14. Communicating

2. **Sending Calibration File to the ECM**

   a. From the File menu of ProTune II, select **Send all data to ECM** or click on the motorcycle icon in the upper-left corner of the screen.

   b. A window will open showing the list of available calibrations. Select the calibration for the vehicle the ECM is installed on and click **Open** to start the calibration download process. Do not switch off power to the ECM during this time.

   c. After the calibration has loaded a message will appear advising you to cycle power on the ECM for at least 15 seconds. Select **OK** on the message and turn the key off on the motorcycle for at least 15 seconds.

3. ECM calibration is now complete. Before placing the vehicle back into service, install the O-ring and port cover to the ECM using the 2 screws provided. this is required to protect the ECM from the elements.

Basic Troubleshooting

1. **Problem: ProTune is not communicating with the ECM.**

   a. Check that the ECM is powered. The ECM must be supplied with vehicle power in order to operate. Your motorcycle ignition and kill switch should be set to the ON and RUN positions. Make sure that the battery voltage is normal. Try cycling the power to the ECM (switch off the ignition for 15 seconds and then switch on).

   b. Check that the cable is connected firmly to the ECM and the PC.

   c. Try disconnecting and reconnecting the USB connection to the ECM. This will reset the ECM connection and allow Windows to relocate the device.

   d. Was the USB driver installed correctly? Review the "Installing USB Drivers" section of this instruction. Additional troubleshooting information can be found in the ProTune II Manual installed with the software on your PC.

2. **Problem: The correct calibration is loaded, but the motorcycle will not start or idle properly.**

   a. See Throttle body and Idle Adjustment procedure.

ProTune II Diagnostics

1. The recommended method for checking the ECM for diagnostic trouble codes (DTCs) is by using the ProTune II software. DTCs can be read and cleared by clicking on the DTCs button on the upper left of the ProTune II screen with the module connected and the motorcycle powered up. Refer to the ProTune II manual or help files for more information on DTCs.

Check Engine Lamp Diagnostics

NOTE

If you have set your motorcycle to use the check engine lamp as a shift-light, this function will be disabled.

1. The ECM has a feature which can report engine faults by flashing a code via the Check Engine lamp on the motorcycle. Use the following procedures to activate and read the check engine lamp.

   a. Turn the ignition switch to the ON position for three seconds (one second pause after the fuel pump stops), and then switch back to the OFF position for three seconds. Repeat this procedure one more time and then turn the ignition to the ON position and wait for eight seconds for the check engine lamp to start flashing.

   b. The transmission of a code is always preceded by a series of rapid flashes (about 3 per second). This "intermission" is followed by a 2 second pause in which the lamp is off. The lamp will then flash one or more times to indicate the first digit of the trouble code. The length of time the lamp is illuminated and the length of time in which it is off are each about 1 second in duration. The number of times the lamp flashes indicated the first digit of the trouble code.

   c. Following the transmission of the first digit, there is another 2 second pause in which the lamp is off. The lamp will then flash one or more times to indicate the second digit of the trouble code. The number of times the lamp flashes indicates the second digit of the trouble code.

   d. Following the transmission of the second digit, there is a third 2 second pause in which the lamp is off. After the pause comes an "intermission", followed by transmission of the next recorded trouble code. All subsequent codes are sent in the same manner, each separated from the next by an "intermission". Once all the trouble codes have been sent the data string is repeated. See Table 1 in the manual for a list of the trouble codes supported.

   e. Turn the ignition key switch to OFF. Wait 10 seconds for the ECM relay to click. The vehicle can now be started normally.

Table 1. Check Engine Lamp - Fault Flashing Codes

Check Engine Lamp Flash Code	Fault Condition
11	Throttle Position Sensor
12	Barometric Pressure Sensor
14	Engine Temperature Sensor
15	Intake Air Temperature Sensor
16	System Voltage (Battery) High
23	Front Injector
32	Rear Injector
34	Stepper Motor
42	Camshaft Position Sensor
54	EEPROM Error

Throttle Position and Idle Adjustment Procedure

NOTE

Before performing these steps, verify there are no Diagnostic Trouble Codes (DTCs), intake manifold leaks, leaky fuel injectors, cruise and throttle cables have been adjusted properly, clean throttle body bores, and check for air screw tampering. If the air screws have been tampered with, lightly seat them, back out 1-1/2 turns, and seal. Also, be sure that throttle body components such as linkage arm and bearing are not worn and are in good, operable condition. If this ECM is being installed on a vehicle with a known good throttle body and Throttle Position Sensor (TPS) it is not necessary to go through the base TPS setup procedure and you can skip to step 4 below for final idle speed adjustment. If the TPS has been replaced or random adjustments made to the idle speed screws, the steps below can be used to get back to the base settings.

Base Throttle Position Sensor (TPS) Setting.

1. a. Connect the PC to the ECM and open Pro Tune II. With the bike turned on, open the Realtime ECM Gauges by selecting "Gauge" from the top row of icons in Pro Tune II.

   b. On the Realtime ECM Gauges screen, locate the gauge for "Throttle Voltage" and "Stepper Motor Position". The "Stepper Motor Position" gauge will display the number of steps the stepper motor (or Idle Air Control Motor) is currently holding the plates open and the "Throttle Voltage" gauge will display the current TPS voltage at that position.

   c. Turn the vehicle's ignition switch off and observe the Stepper Motor Position. It will close to 0 steps and then open to 96 steps (1995-1998 models) or 100 steps (1999-2001 models). This is the stepper park position and is the starting point for setting the TPS base settings and initial hot and cold idle screw settings.

   d. After 15 seconds the ECM will power down and communication will be lost. At this time, the Idle Air Control Motor (IAC) can be disconnected. TPS base adjustments will be made with the IAC motor disconnected and the stepper at its park position.

   e. Turn the key switch back to run and record the reading from the Throttle Voltage gauge. Remove the cold idle screw and record the TPS voltage. Remove the hot idle screw and record the TPS voltage.

   f. The Throttle Voltage gauge will now show the base TPS voltage. This should read 0.19 to 0.21 volts. If the reading is outside of this range, verify the throttle plates are shut by pressing on them gently. If the voltage remains outside of this range, adjust the TPS to correct. After adjustment, lightly open and close the plates a couple of times to verify the TPS voltage will return to the proper setting.

   g. Proceed to step 2 or 3 below based on your application.

Base Hot and Cold Idle Screw Settings for 1340 and 1450 cc

1. a. Apply a small amount of purple or blue Loctite® to the hot idle screw. Install the screw and adjust until the throttle voltage is showing 0.50 V (1995-1998 models) or 0.54 V (1999-2001 models) when viewed on the Realtime ECM Gauges screen in Pro Tune 2.

   b. Lightly open and close throttle to verify setting.

   c. Apply a small amount of purple or blue Loctite to the cold idle screw. Install the screw and adjust until the throttle voltage is showing 0.61-0.64 V (1995-1998 models) or 0.64-0.68 V (1999-2001 models).

   d. Lightly open and close throttle to verify setting.

   e. Reconnect the plug to the IAC motor.

Base Hot and Cold Idle Screw Settings for 1550 cc

1. a. Apply a small amount of purple or blue Loctite to the cold idle screw. Install the screw and adjust until the throttle voltage is showing 0.64-0.68 V when viewed on the gauge panel in Pro Tune 2.

   b. Lightly open and close throttle to verify setting.

   c. Apply a small amount of purple or blue Loctite to the hot idle screw. Install the screw and adjust until the throttle voltage is showing 0.70 V.

   d. Lightly open and close throttle to verify setting.

   e. Reconnect the plug to the IAC motor.

Final Idle Speed Adjustment

1. a. If the IAC motor was disconnected above verify it has been reconnected. If removed, install air cleaner back plate to support the throttle body.

   b. Connect the PC to the ECM and open Pro Tune II. With the bike turned on, open the Realtime ECM Gauges screen by selecting "Gauge" from the top row of icons in Pro Tune 2.

   c. On the Realtime ECM Gauges screen, locate the gauges for "Engine Speed", "Engine Temperature" and "Stepper Motor Position" The "Stepper Motor Position" panel will be displaying the number of steps the stepper motor is currently holding the plates open.

   d. Turn the vehicle's ignition switch to off and observe the Stepper Motor Position. It will close to 0 steps and then open to 96 steps (1995-1998 models) or 100 steps (1999-2001 models). Wait 15 seconds for the ECM to power down completely.

   e. Turn ignition switch to on and start the motorcycle. As the motorcycle warms up the stepper motor position will slowly close to 0 steps. Once it reaches 0 steps (at about 250 ° F engine temp) the hot idle screw may be adjusted to achieve an idle speed of 1,000 RPM.

   f. Once the hot idle speed is set, shut off the motorcycle, allow it to cool, and then test idle speed to verify it is correct.

   g. After completing the above, check and clear any Historic DTCs that may have been set during the procedure. This is done by connecting the ProTune II software to the ECM, clicking on the "DTCs" icon in the upper left of the screen, and hitting the "Clear Historic DTCs" button.

KIT CONTENTS

Figure 15. Kit Contents

Table 2. Kit Contents

Item	Component
1	Electronic Control Module
2	ProTune II software CD
3	Data link tag and wire tie
4	USB port cover with O-ring and screws