AFIT DMU Adapter and Cable Instructions

For SIDI and Duramax Kits

Operating System Requirements

A computer with one of the following Microsoft® operating systems:

- Windows® 10 Professional
- Windows® 11 Professional
- Administrator level access to the Microsoft® Windows operating system.

Hardware Requirements

- Minimum 100 MB free hard disk space
- Minimum 1 GB of RAM
- CD-ROM drive
- Available serial port or USB port (*Requires using the USB to Serial Port Adapter when connecting to the computer's USB port)*
- For SIDI Engines CH-47976-500A Adapter Kit (includes DMU and 2 cables) *Note: Add Duramax Engine coverage with CH-47976-505 (2 cables)*
- For Duramax Diesel Engines CH-47976-510 Adapter Kit (includes DMU and 2 cables) *Note: Add SIDI Engine coverage with CH-47976-508A (2 cables)*

Additional Information

To view a video on testing GM SIDI Engines using the AFIT Direct Injection Fuel System Adapter see ***Using AFIT Direct Injection Fuel System Adapter to Diagnose SIDI Vehicles*** at:

YouTube and search HickokWaekon for our channel. Catagory Product Demonstrations.

For assistance in diagnosing test results for a Duramax Diesel engine, see the Diagnostic Manual located in the Duramax PC Application's help file.

Safety Information

IMPORTANT! Before you begin, make sure the test environment is safe and the vehicle meets these testing conditions:

- Test area should be well ventilated and Vehicle should have normal exhaust flow
- Vehicle should be in park or neutral and the wheels should be blocked
- Keep all tester cables clear of exhaust manifolds and radiator fan blades
- Use caution when testing on a vehicle while the engine is running (surfaces may become hot, electric cooling fans may turn on unexpectedly, etc.)
- To avoid serious injury or death, before cranking the engine, make sure the vehicle is in NEUTRAL or PARK and the parking BRAKE IS SET. If the vehicle has a manual transmission, PRESS IN THE CLUTCH PEDAL. Press ENTER to continue.

Firmware, Database & PC Application Installation Instructions.

⚠ **IMPORTANT—Please read before you begin the installation.**

- The installation instructions are located on the AFIT Software and Documentation CD. It is an Adobe© Portable Document Format (PDF) document and requires Adobe© Acrobat© Reader version 6.0 or higher. If you need to install this software you can download it from Adobe's web site at www.adobe.com.
- To avoid errors, you ***must*** install all of the updates as described in the instructions.
- The update will take approximately 15 minutes to complete. To avoid data loss and the need to re-install the update, do not interrupt the installation once you begin. Also, do not minimize or move the utility window after beginning the update.
- If the AFIT PC Application is not installed on your computer, you may need to install the driver software in order for the serial communication cable to operate properly.
- Make sure to close all open programs, except for your internet browser before you begin.
- The graphics in this document are for reference only and may vary slightly (such as version numbers) from the actual screen displayed. Also, version numbers may be displayed as X.XX instead of the actual version number.

Procedure

IMPORTANT! Do not connect the Direct Injector Adapter (DIA) cables to the vehicle until instructed to by AFIT.

Step 1—Connect to Power

a. Place the AFIT Main Control Unit (MCU) into the vehicle's cab and plug the power adapter into the vehicle's power port (cigarette lighter) socket.

Note: With some vehicle's, the power port may only work with KEY ON. If that is the case, use the AFIT battery power adapter.

b. Place the Drive and Measurement Unit (DMU) in the engine compartment and connect the power clips to the vehicle's 12 volt battery.

c. Connect the DMU to the AFIT MCU.

d. Press the ON/OFF button to power on the AFIT MCU.
Note: The MCU performs a self-test and checks the vehicle's battery voltage. If there is a low amount of voltage in the battery, the tester flashes LOW BATTERY. To avoid losing power during a test, it is recommended to properly charge the battery before proceeding.

e. After the self-test is complete, press ENTER to continue to VEHICLE SELECTION.

Step 2—Select a Vehicle

a. When prompted on the AFIT MCU, do one of the following:

- Confirm a previously selected vehicle.
- Select a new vehicle to test. *Note: New vehicle selection includes model year (VIN 10th digit), manufacturer, model, body (VIN 5th digit), engine and engine VIN (VIN 8th digit).*
- Clear a previously selected vehicle.

b. If a previously selected vehicle is used:

- Proceed to ***Step 3—Select a Test***.

  Note: If you are unsure of which cable to use, from the AFIT main menu select Utility Functions, and then select View Test Specifications.

If a new vehicle is selected:

- AFIT displays the vehicle selected and the cables required to test the vehicle on the confirmation screen. *Important! Do not connect the cables to the engine ECM or disconnect the ECM from the harness at this time.*
- Connect the required Interface Cable to the DMU.
- Confirm the vehicle selected to proceed to the test selection menu.

Step 3—Select a Test

a. At the AFIT MCU Main Menu:

- Select **INJECTOR TEST**
- Select **RUN NEW TEST** when the test selection screen is displayed.

b. Follow the on-screen instructions/prompts to connect to the vehicle. This will include:

- Connect the MCU to the vehicle's OBD connector.
- Turn the ignition ON but ***do not*** crank the engine (ignition on/engine off).
- When asked if the vehicle *STARTS OR RUNS*:

  Press **ENTER** for YES or press **CANCEL** for NO.

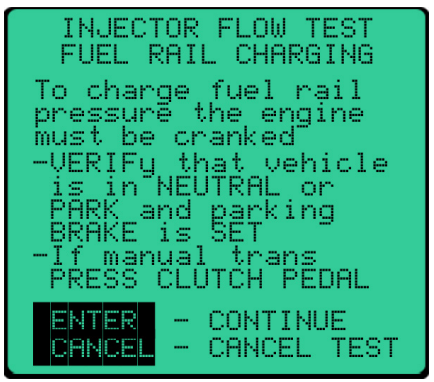
  If YES is selected, start the vehicle when prompted. ***Do not*** turn the vehicle off until instructed to do so.

- When prompted, with the ignition off, connect the DMU cable to the vehicle ECM harness connectors.

c. After connecting to the ECM harness, select **START TEST** when prompted.

d. Following the on-screen instructions/ prompts, crank the engine when required to build fuel pressure. An audible warning and text display on the tool will prompt you when to stop cranking.

Note: If AFIT detects the vehicle is not in park or neutral , the following screen is displayed:



⚠ WARNING

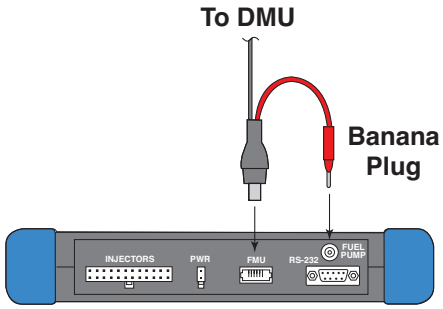
To avoid serious injury or death, make sure to verify that the vehicle is in neutral or park, the parking brake is set, and that wheels are blocked before you begin cranking.

e. Repeat the above step for each injector and the fuel rail leak test.

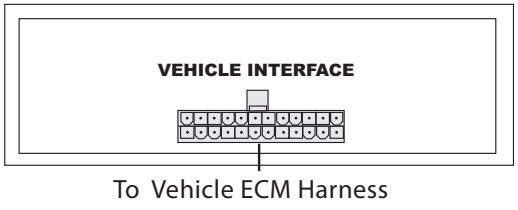
Hookup Diagrams

Special Note

When connecting the DMU to the AFIT MCU make sure to connect both ends of the cable as shown in the illustration below. If not connected properly, the engine will not crank and you will not be able to continue with the test procedure.



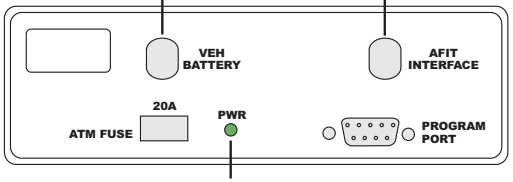
Drive and Measurement Unit (DMU)



To Vehicle ECM Harness

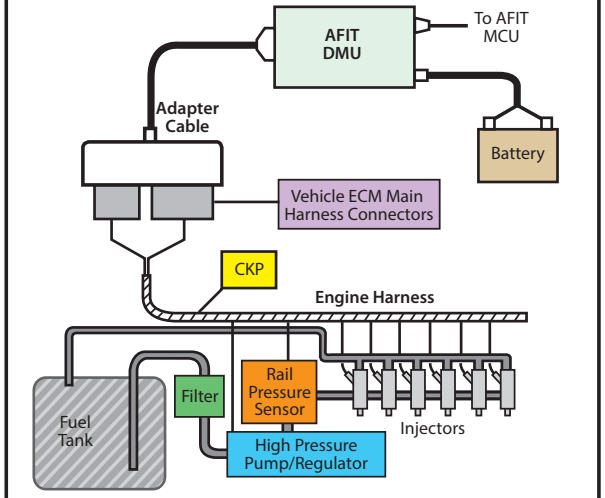
Connect to the vehicle's battery

Connect to AFIT MCU

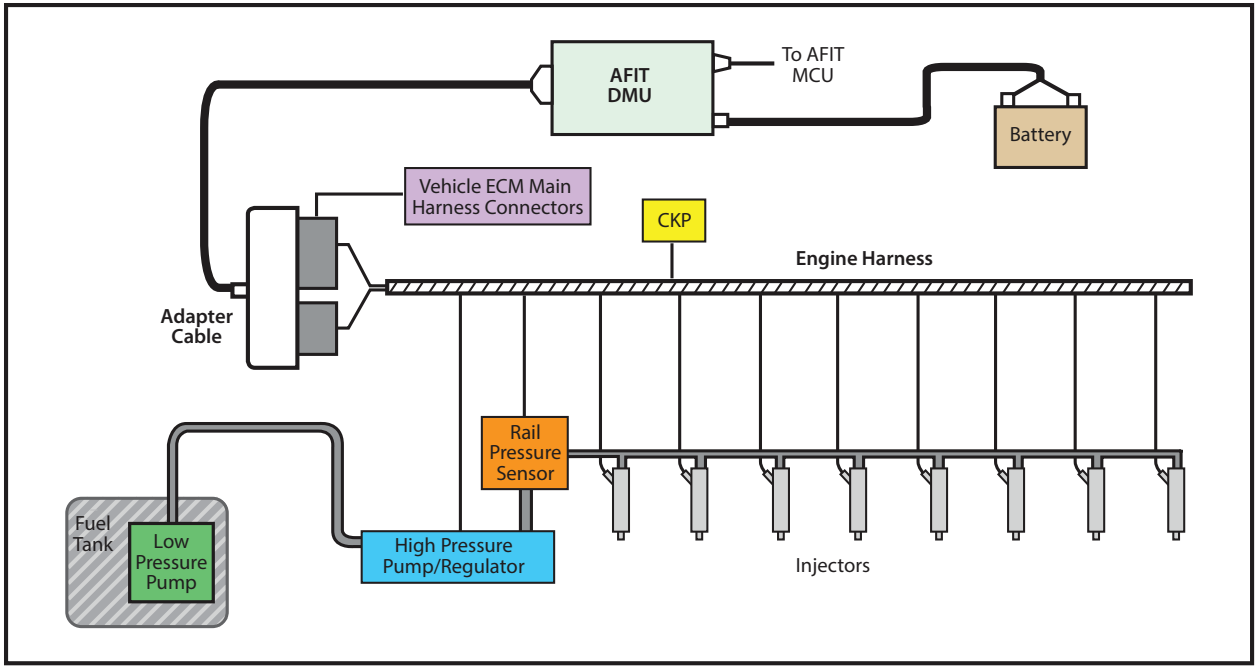


Green LED lights when the DMU is powered on

Duramax Engine Hookup



SIDI Engine Hookup



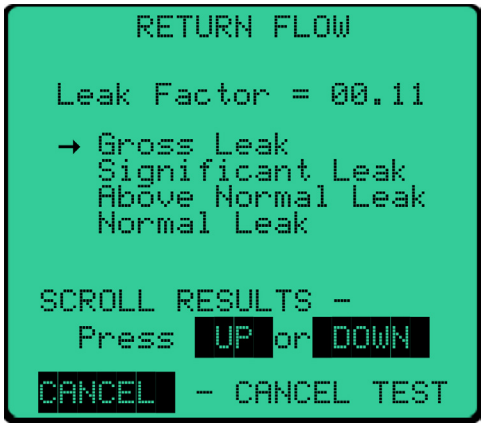
Interpreting Test Results

Return Flow Diagnostics—Duramax Engines

Return flow measures leakage into the return flow caused by the following:

- Injector ball valve seats/internal leaks
- Pump check valve

Note: When AFIT calculates the return flow it compensates for fuel viscosity/temperature.



Leak Factor—If the leak factor is less than 1.5, run a beaker test per the vehicle's shop manual to pinpoint the leak.

Gross Leak—Indicates a leak large enough to cause severe performance symptoms and no/hard start

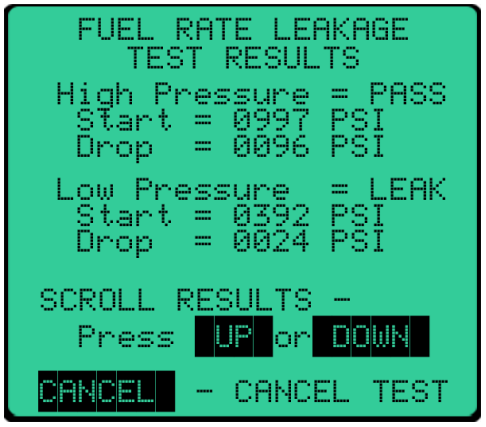
Significant Leak—Indicates leaks large enough to cause performance symptoms

Above Normal Leak—Indicates normal increased leakage due to age/wear and tear but should not show performance symptoms.

Normal Leak—Indicates normal amount of leakage

High/Low Leak Tests—SIDI Engines

The High/Low Leak Tests checks for leakage in the fuel rail system by measuring pressure.



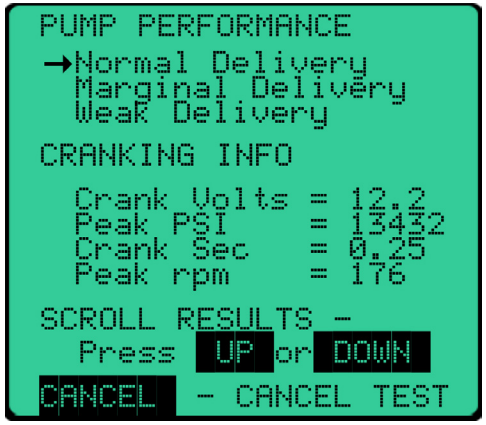
High Pressure—Fails when there is more than a 20% drop in high pressure (1000 psi) indicating a faulty check valve.

Low Pressure—Fails when there is more than a 10% drop in low pressure (350 psi).

When both the high and low pressure fail, check for a leak into a cylinder**.**

Pump Performances—SIDI and Duramax Engines

Pump performance results are displayed as Weak, Marginal, or Normal, and are based on pressure build-up during cranking. Cranking information related to the pump pressure is also displayed.



For technical assistance or to order service parts, contact:

gmglobaltools.com

(844-742-8471)

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