GM-47976

ACTIVE FUEL™ INJECTOR TESTER

User Guide

HICKOK WAEKON

GM-47976-11

ACTIVE FUEL™ INJECTOR TESTER

User Guide

HICKOK WAEKON

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Safety Information

Before using this tester, carefully read, understand and follow instructions and safety messages on equipment and in this manual.

The manual cannot anticipate or provide advice and cautions for all situations encountered by technicians. With this in mind, always follow and refer to the manuals provided by the manufacturer or the vehicle or equipment being tested or used for all information and testing procedures whenever diagnosing, repairing or operating such vehicle or equipment.

Failure to follow the instructions, cautions and warnings provided here as well as those provided by the vehicle and equipment manufacturers can result in fire, explosion, bodily injury and property damage.

In addition to the information listed here, additional warnings and cautions are listed throughout the manual. Please read them carefully.

Safety Information

⚠ Fuel vapors are toxic and explosive, which can cause severe injury or death

- Use proper ventilation to avoid breathing fuel vapors.
- Ethanol fuel and gasoline mixed with ethanol are highly poisonous and chemically active. Blindness and death are possible if exposure to these substances is extensive.
- Minimize prolonged exposure to ethanol as a liquid or vapor. Remember, symptoms of ethanol exposure can occur after a delay of several days.
- Minimize contact with the skin with the use of gloves (such as nitrile gloves) when there is possibility of getting ethanol fuel on your hands. If the skin is directly exposed, wash the area immediately and change any clothes that have become wet with fuel.
- Always wear appropriate protective glasses when testing the pressure of the fuel system or gas caps. Should fuel get into eyes, flush eyes immediately with water and consult your physician.
- Follow all federal, state and local regulation for the safe storage and use of the compressed nitrogen gas used or stored at site.

⚠ Vehicles emit flammable vapors which can ignite

- Keep flames, sparks, cigarettes and other ignition sources away from the vehicle at all times.
- In case of fire, never use water to fight flames caused by gasoline or ethanol blended gasoline. This will cause the flames to spread instead of extinguishing them.
- Use a dry chemical extinguisher to fight flames (preferably one marked ABC, though BC is acceptable). A foam extinguisher is acceptable only if it is ARF grade, which is resistant to alcohol.

⚠ Before beginning any tests, make sure the equipment and the test environment are safe

- Test area should be well ventilated.
- When working on and underneath the vehicle, make sure it is properly supported on a hoist or jack stands.
- When removing the fuel cap , make sure to turn the vehicle off.
- When removing the fuel cap, do so slowly. Allow any pressure to decay before fully removing the cap.
- When connecting or disconnecting to a fuel line, always make sure to relieve the system fuel pressure.

⚠ Ensure you have proper leak-free connections

- Check all equipment connections before, during and after testing.
- Do not pinch or kink tubing.
- Secure hose clamps when using hose adapters.
- Before connecting fuel lines and hose fittings, apply a few drops of clean engine oil to male ends to ensure proper connection with female connectors.
- Tug firmly on quick-connect fittings to check for proper connection.
- Make sure the safety catch is seated the adapter groove of any quick-connect couplers.

⚠ Use the equipment properly

- Do not use this tester on diesel high pressure fuel lines (100 psi is max.)
- Do not disassemble the FMU. This can cause damage leakage and will void your warranty.
- Do not disassemble the Control Unit except to access the fuse and EPROMs during replacement. This will void your warranty.

Safety Information

⚠ Check all parts periodically, clean and replace if necessary.

Make sure the equipment is in good working condition. This tester is a precision instrument—keep it clean and repair (or replace) any damaged parts. This includes:

- Fuel injection parts for signs of wear.
- O-ring seal retainers at the FMU/FAH connections for signs of wear; make sure the connection is tight.
- Glass housing at the FMU/FAH connection for chips or cracks, especially at the edges.

1

AFIT Hardware

This section illustrates and describes the items included with the Active Fuel Injector Tester (AFIT). Be sure you familiarize yourself with all of the equipment and procedures before conducting any tests.

For your reference, the following is a list of acronyms used throughout this guide:

AFIT—Active Fuel Injector Tester

DLC—Diagnostic Link Connector

FAH—Fuel Access Hose

FMU—Fuel Management Unit

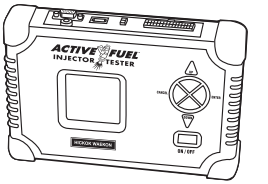
FPEA—Fuel Pump Electrical Access

MCU—Main Control Unit

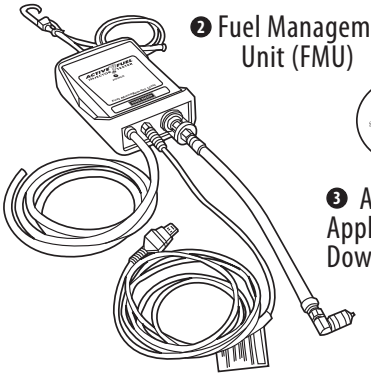
AFIT Hardware

AFIT Unit and Accessories

❶ Main Control Unit (MCU)



❷ Fuel Management Unit (FMU)



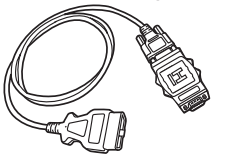


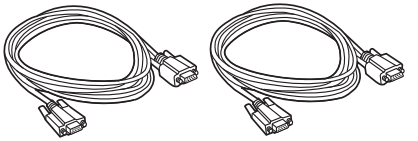
❸ AFIT PC Application Software Download



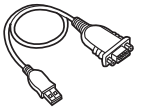
❹ Fuel Schrader Connector Seal Replacement Kit

❺ DLC Adapter

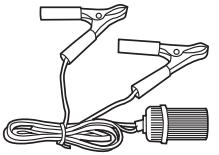




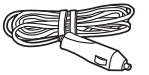
❻ (2) 6′ Serial Cables



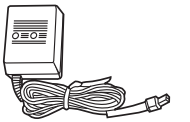
❼ USB to Serial Port Adapter



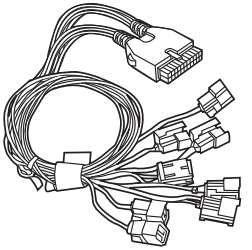
❽ Power Adapter



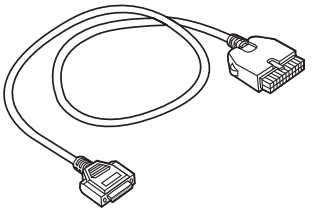
❾ 12V Power Cord



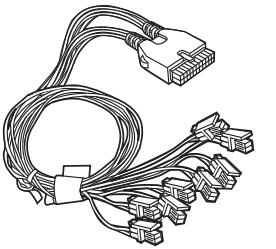
❿ 12 V Power Cord



⓫ Cable A Injector Harness



⓬ J-Tool Cable Adapter



⓭ Cable B Injector Harness

	Component	Part Number
①	Main Control Unit	GM-47976-1
②	Fuel Management Unit	GM-47976-2
③	AFIT PC Application Software Download	–
④	Fuel Schrader Connetor Seal Replacement Kit	GM-47976-13
⑤	DLC Adapter	GM-47976-4b
⑥	(2) 6' Serial Cables	GM-47976-10
⑦	USB to Serial Port Adapter	GM-47976-3a
⑧	Power Adapter (alligator clips)	GM-47976-7
⑨	12V Power Cord	GM-47976-6
⑩	12V Power Cord (wall outlet)	GM-47976-8
⑪	Cable A Injector Harness	GM-47976-50
⑫	J-Tool Cable Adapter	GM-47976-60
⑬	Cable B Injector Harness	GM-47976-55
	User Guide (not shown)	GM-47976-11
	Carrying Case (not shown)	GM-47976-12
	Quick Reference Guide (not shown)	GM-47976-14

AFIT Hardware

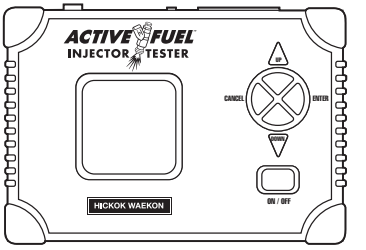
The Main Control Unit (MCU)

The Main Control Unit (MCU) is used for functions such as selecting and starting tests, monitoring the status of a test, interfacing with the vehicle, and controlling the Fuel Management Unit (FMU).

Using the Keypad

The main functions of the keypad are:

- **UP** and **DOWN**—scroll within a screen
- **CANCEL**—return to the previous screen or to cancel a test
- **ENTER**—start or continue a test
- **ON/OFF**—power the unit on or off



Main Control Unit — Front View

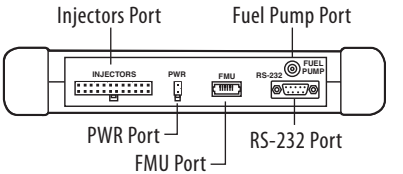
Note: For certain screens, the buttons may have additional functions, such as turning the fuel pump on during pressure leak down.

Using the Connector Panel

Use the connector panel on the MCU for power and communication connections:

- **Injectors Port**—connect the 24-pin end of the injector harness or J-Cable adapter to this port when testing on vehicles without DLC injector control.
- **PWR Port**—connect the selected power cord (12V adapter or wall outlet adapter) here to provide power to the unit.

Main Control Unit—Connector Panel

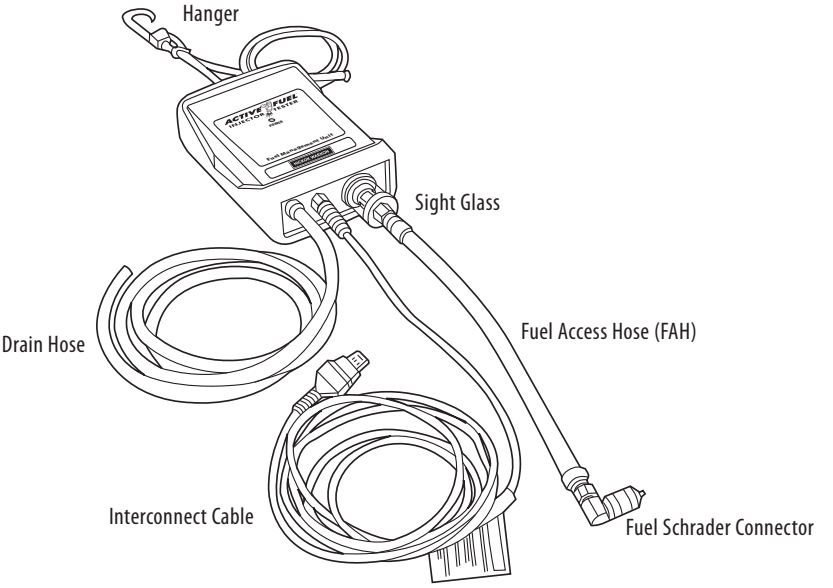


- **FMU Port**—connect the interconnect cable from the FMU to this port to provide power to the FMU and to send test signals to and from the MCU.
- **RS-232 Port**—connect the 9-pin serial cable here to link with the vehicle or to connect the MCU to a computer .
- **Fuel Pump**—connect the fuel pump electrical access (FPEA) cable here when testing on vehicles without DLC fuel pump control.

The Fuel Management Unit (FMU)

The FMU handles fuel and pressure measurement. The power LED indicates when it is receiving power from the MCU.

- **Hanger**—use to hang the unit from the hood of the vehicle to allow for proper fuel flow through the FMU.
- **Drain Hose**—use to capture drained fuel. Make sure to use a container approved for collecting fuel.
- **Interconnect Cable**—connect to the MCU to provide power to the FMU and to send and receive test signals.
- **Sight Glass with Replaceable Filter**—use to visually monitor the fuel flow and to examine the fuel for contamination.
- **Fuel Access Hose (FAH)**—use to connect the FMU directly to the vehicle's fuel test port.



AFIT Hardware

Cables, Software and Adapters

- **AFIT PC Application Software**—install onto the shop computer. Use to analyze and save the test data uploaded to the computer from the MCU. Also use to download software update files to the MCU.
- **9-pin Serial Cables (2) 6′ length)**—use the cable (along with the DLC adapter) to connect the MCU to the vehicle's OBDII connector. Use the other cable to connect the MCU to the shop computer.
- **USB to Serial Port Adapter**—if a serial port is not available, use to connect the 9-pin serial cable to a USB port on your computer. Will require installing driver software.
- **DLC Adapter**—use along with the 9-pin serial cable and the Serial to OBDII Cable to connect to the vehicle's OBDII connector.
- **Serial to OBDII Cable**—connect to the DCL Adapter and then to the vehicle's OBDII connector.
- **Power Cords**—use the 12V power adapter to supply power to the MCU when testing the vehicle. *Only* use the wall outlet adapter to supply power to the MCU when connected to your computer.
- **Injector Harness Cables** —when needed, use to connect the MCU to the vehicle's injectors.
- **J-Cable Adapter**—when needed, use with existing SPX Kent Moore J-Cables to connect the MCU to the vehicle's injector.

> ⚠ **IMPORTANT**
> Do not use the AC wall outlet adapter for testing the vehicle.

2
Software Installation

Before you begin to use AFIT for the first time, you will need to install the AFIT PC Application Software and, depending on your computer, the USB to Serial Port software driver. This section defines the computer requirements and how to install the software on to your computer.

Software Installation

Step 1—Verify Requirements

Operating System Requirements

It is recommended that you only install the AFIT PC Application Software on computers with one of the following Microsoft® operating systems (64-bit):

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

Hardware Requirements

It is recommended that you only install the AFIT PC Application on computers with the following hardware requirements:

- Minimum 500 MB free hard disk space
- Minimum 2 GB of RAM
- Available serial port or USB port. (USB Requires using the USB to Serial Adapter when connecting to the computer's USB port)

Before You Begin

In order for the update to install properly, you must set the User Account Control (UAC) to the lowest possible setting:

1. Type **UAC** in the search field on the task bar or right click **START** and click **SEARCH**.
2. Under **ALL** click **CHANGE USER ACCOUNT CONTROL SETTING**.
3. Make a note of the current setting then move the slider to **NEVER NOTIFY**.
4. Click **OK**.
5. Reboot the computer for the change to take effect .
6. After installation return UAC to previous setting.
7. Restart your computer.

Step 2—Download/Install AFIT Update Utility Program

Download the update utility:

1. Shut down any applications that you may have running on your computer except for your internet browser.
    - Go to www.hickokwaekon.com and click on **Software Updates**.
    - Click the appropriate link to download the upgrade utility.
    - When prompted, click **OPEN** or **RUN** (varies depending on browser and operating system). Note: for some browsers, you may only be prompted to save the file. If this is the case, save the file to your desktop and then double click the file to run it.
    - If a security warning is displayed asking if your are sure you want to run the software, click **RUN** or **INSTALL** (varies depending on browser and operating system).
    - If a security warning is displayed asking if you are sure you want to run an .exe file, click **OK**.
    - If a Windows Defender warning is displayed protecting your PC click **More info** then click **Run anyways**.
    - After the file is downloaded, click **CLOSE** when prompted.

Software Installation File

For more in depth updated installation instructions go to: hickokwaekon.com website and go to software downloads: AFIT Update instructions file.

For assistance or to order service parts go to: gmglobaltools.com or call: 844-742-8471.

Software Installation

Optional Software

An electronic version of this User Guide and the Quick Reference Guide are automatically installed on to your computer when installing the AFIT PC Application software. Viewing the Guides, which are in Adobe® Portable Document Format (PDF), requires Adobe® Reader®

To View the User Guide or Quick Reference Guide

1. Choose **Programs or Apps** from the Start menu.
2. Select **AFIT Suite Laucher**.
3. Select the proper Fuel Group and then Help.

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3

Hookup

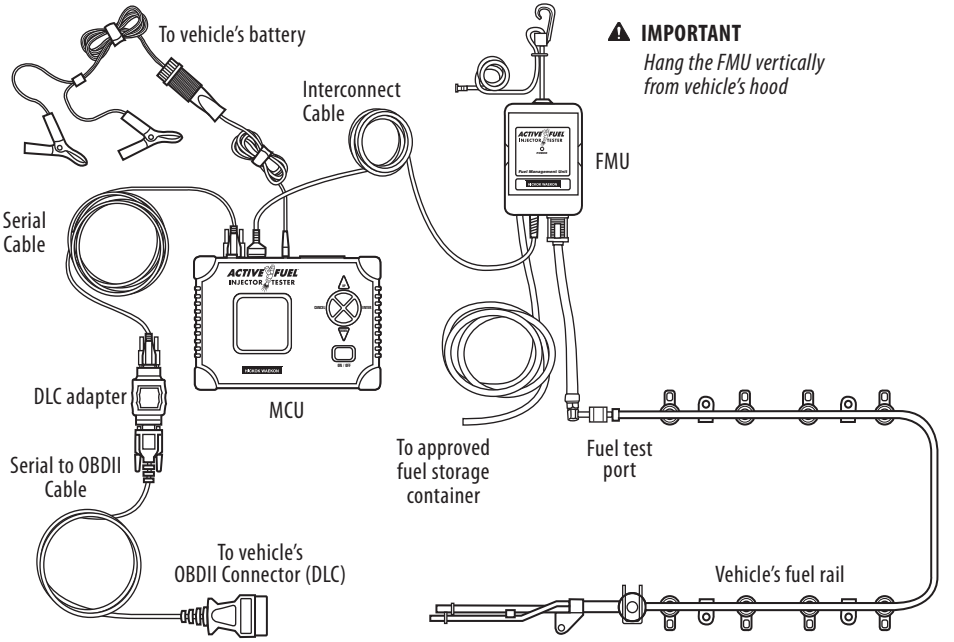
This section describes and illustrates the various hookup procedures. Several options are available to complete the basic hookup. Use this section along with the vehicle's Service Information/Shop Manual (or equivalent) to complete the hookup for your vehicle.

Step 1—Connect AFIT to the Vehicle

There are three ways to connect AFIT to the test vehicle: DLC Connection, Direct Injector Connection, and Direct Injector and Fuel Pump Connection. The connection you will use depends on the vehicle being tested.

DLC Connection

Used with most vehicles, this connection controls the injectors and the fuel pump through the DLC. Use this hookup when using the vehicle's diagnostic link for injector control. This connection *does not* require the use of an injector harness.

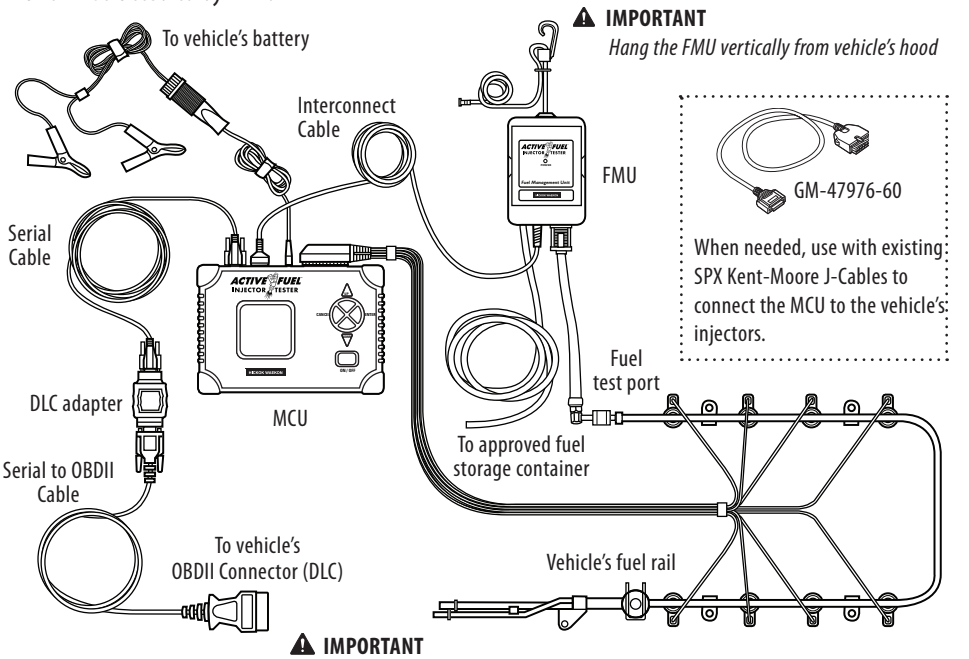


Procedure:

1. Connect one serial cable to the MCU and the DLC adapter.
2. Connect the DLC adapter to the Serial to OBDII cable.
3. Connect the Serial to OBDII cable to the vehicle's OBDII connector.
4. Connect the Fuel Schrader Connector to the vehicle's fuel rail at the fuel test port.
5. Insert the drain hose into an approved fuel storage container.

Direct Injector Connection

This connection directly controls the injectors from the MCU. The fuel pump is controlled through the DLC. Use this hookup when testing vehicles that do not support diagnostic link injector control. You must the use the injector harness (or J-Cable Adapter and existing J-Cables, depending on the vehicle) with this connection. However, *do not* connect the injector harness until instructed to by AFIT.



Procedure:

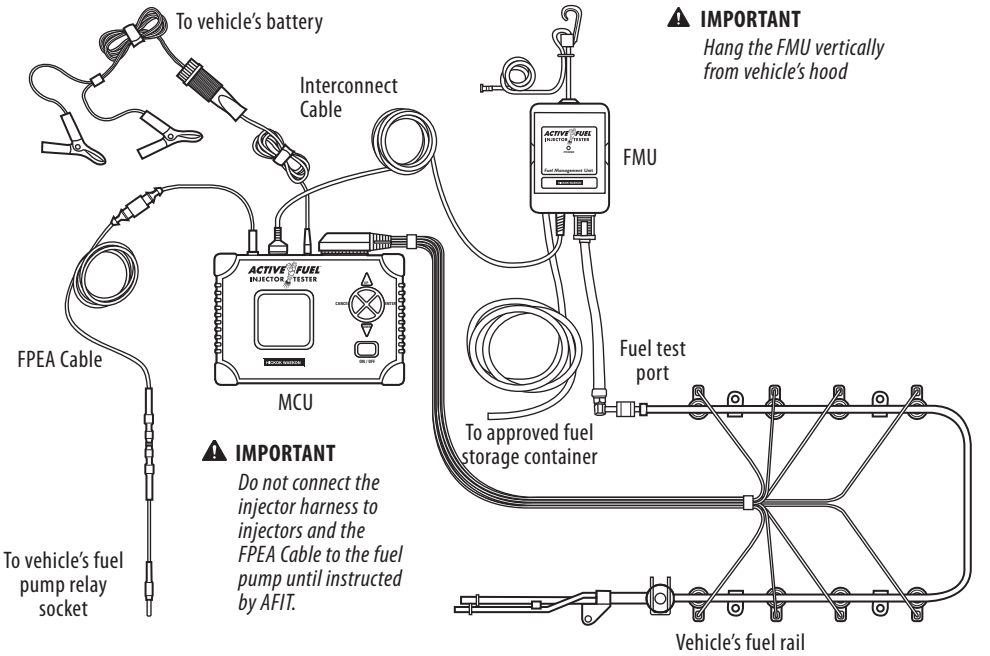
Note: To correctly match test results to the injector, use the injector locater when using this hookup.

1. Connect the one serial cable to the MCU and the DLC adapter.
2. Connect the DLC adapter to the Serial to OBDII cable.
3. Connect the Serial to OBDII cable to the vehicle's OBDII connector.
4. Connect the Fuel Schrader Connector to the vehicle's fuel rail at the fuel test port.
5. Connect the injector harness (or J-Cable Adapter and J-Cable) to the MCU and the vehicle's injectors. IMPORTANT! Do not perform this step until instructed to (AFIT will prompt for the correct injector harness).
6. Insert the drain hose into an approved fuel storage container.

Direct Injector and Fuel Pump Connection

Note: This connection requires the use of additional accessories not included with the kit.

This connection directly controls the injectors and the fuel pump from the MCU. Use this connection for vehicles not listed in the AFIT database (older GM and other manufacturer's vehicles without a Data Link Connector).



Procedure

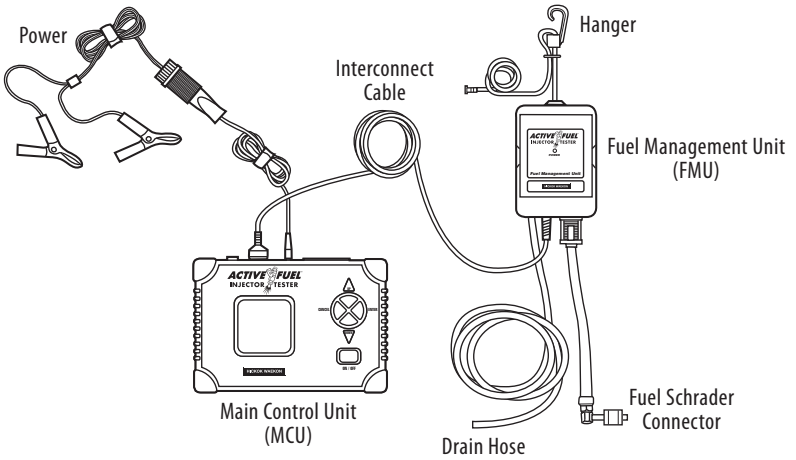
Note: To correctly match test results to the injector, use the injector locater when using this hookup.

1. Connect the Fuel Schrader Connector to the vehicle's fuel rail at the fuel test port.
2. After purging the fuel rail and when instructed by AFIT, connect the FPEA cable to the fuel pump relay socket. IMPORTANT! Do not perform this step until instructed to (AFIT will prompt for the cable).
3. Connect the injector harness to the MCU and the vehicles injectors. IMPORTANT! Do not perform this step until instructed to (AFIT will prompt for the correct injector harness).
4. Insert the drain hose into an approved fuel storage container.

Step 2—Connect the Tester to Power

After connecting the tester to the vehicle, you will need to supply power. There are two options for supplying power to AFIT:

- 12V power cable
- Battery hookup (alligator clip adapter)



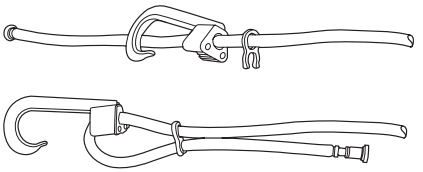
Procedure:

1. Make sure the vehicle's ignition key is in the OFF position.
2. Connect the interconnect cable from the FMU to the MCU.
3. Connect the power cord to the MCU and then connect to power.

   Note: If using the alligator clips make sure to connect the red clip to the battery's positive (+) terminal, and the black clip to the negative (–) terminal.

Adjusting the Hanger

1. Unhook the bungee cord from the open end of the clip.
2. Slide the hook along the bungee cord to the desired position.
3. Reattach the bungee cord to the open end of the clip.



4

Testing

This section explains the AFIT test procedures and the screens you will use to navigate to the tests:

Injector Test—tests the fuel injector flow characteristics

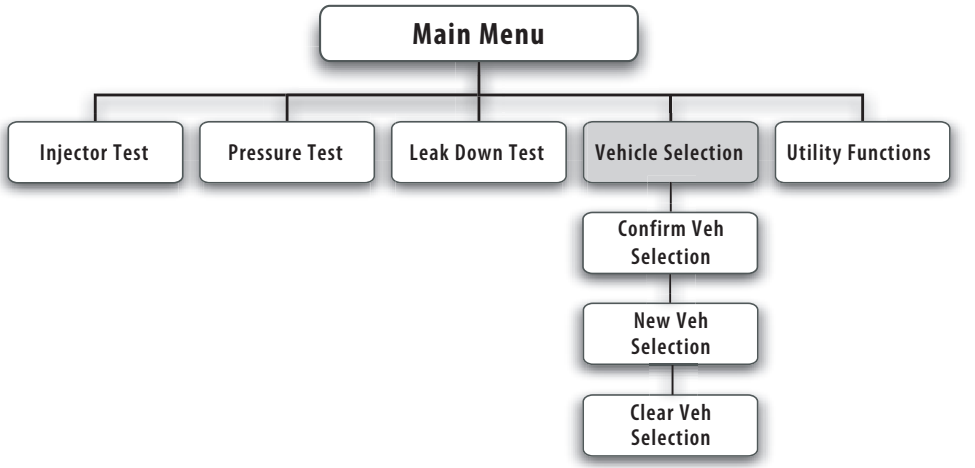
Pressure Test—tests the fuel system pressure

Leak Down Test—pressurizes the fuel system and allows a leak down test to the vehicle's Service Information/Shop Manual specifications

Step 1—Connect and Power-up AFIT

1. Complete the hookup for the vehicle you are testing. If you are using one of the Direct Connection methods, make sure you have the required injector harness (or J-Cable Adapter and J-Cable) and, if required, FPEA cable available, but do not connect it to the vehicle until instructed to by AFIT.
2. Hang the FMU from the vehicle's hood.
3. Connect the MCU to the vehicle's 12V power port or battery.
4. Turn the MCU **ON**. AFIT displays the following screens during power-up:
   - AFIT screen
   - Version information screen
   - Power-up/self-test screen
     - —If AFIT displays *CHECK FUSE*, unplug the fuel pump cable (if attached). If still displaying *CHECK FUSE*, check the fuse inside the rear compartment on the MCU.
     - —If AFIT indicates *FMU NOT Connected*, connect the FMU.
     - —If AFIT's database (dbase verify) displays *FAIL*, you will need to restore it using the AFIT PC Application software.
     - —If the vehicle's battery is below 10.5 volts AFIT flashes *LOW BATTERY.* Recharge the vehicle's battery before continuing.
5. Press **ENTER** to continue to *Vehicle Selection*.

> ⚠ **Important**
> *If the engine is hot, or after cleaning the injectors, make sure you allow for a cool down period **before** you begin testing. A hot soaked engine condition may affect the test results. Please refer to the vehicle's Service Information/Shop Manual for recommended temperature ranges during testing.*



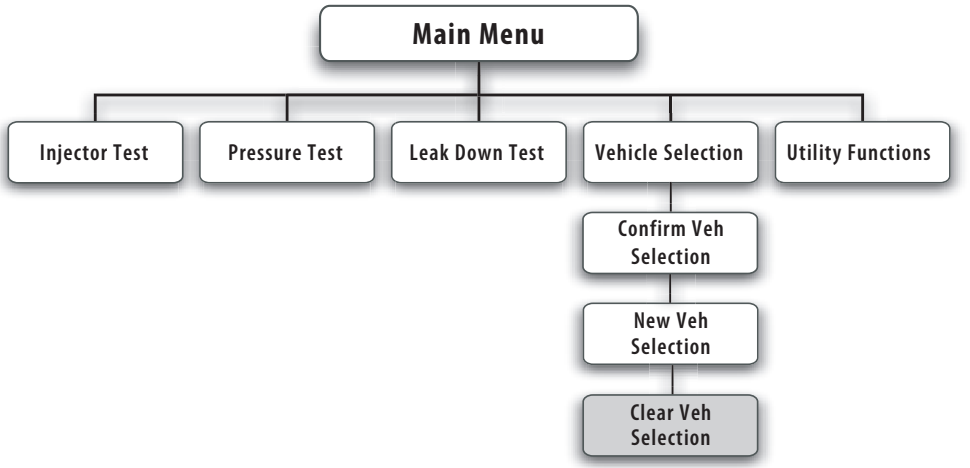
Step 2A—Select Vehicle

IMPORTANT! Only use this procedure for DLC Connections and Direct Injector Connection. Proceed to Step 2B if you are using the Direct Injector and Fuel Pump Connection hookup.

Selecting a vehicle tells AFIT how to communicate with the vehicle. ***IMPORTANT! If the correct vehicle is not selected, the tests will not work***. From the *Vehicle Selection* screen you can do the following:

- **Confirm Veh Selection**—select to accept the vehicle AFIT currently displays (AFIT displays the last vehicle selected near the bottom of the *Vehicle Selectio*n screen).
- **New Veh Selection**— go to this screen to select a new vehicle. From this screen you are typically prompted to select the following vehicle information:
  - Vehicle model year
  - Vehicle model
  - Vehicle engine size
  - Vehicle manufacturer
  - Vehicle body VIN code
  - Vehicle engine VIN code

Note: If the vehicle you are testing is not listed in the database you will need to test using the Direct Injector and Fuel Pump Connection hookup. Press Cancel until you return to the Vehicle Selection screen and then select Clear Veh Selection to clear the currently selected vehicle information.

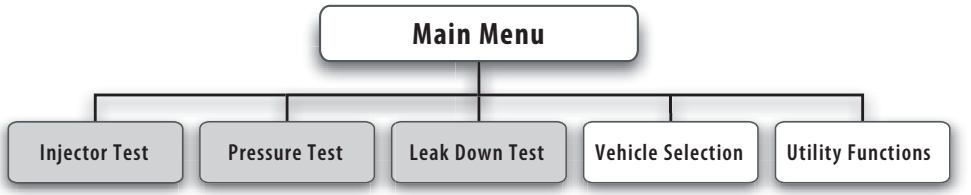


Step 2B—Clear Vehicle Selection

IMPORTANT! Only use this procedure for the Direct Injector Connection or the Direct Connection hookup. Return to Step 2A if you are using DLC Connections .

When using either of the direct connection methods, no vehicle can be selected. Make sure to clear any selected vehicle before proceeding. From the *Vehicle Selection* screen, select the following:

- **Clear Veh Selection—**Clears the currently selected vehicle information. ***IMPORTANT! Only use this for vehicles not available in the AFIT database.***



Step 3—Select a Test

Once a vehicle is selected or cleared, AFIT returns to the Main Menu. You will start the Injector test, Pressure test, and Leak Down test from this screen. Utility Functions and Vehicle Selection are also accessed from this screen (see *Utilities* or *Step 2—Select Vehicle* for further information).

Injector Test

There are three options to choose from:

- **Run New Test**—tests the fuel injector flow characteristics.

  After selecting *Run New Test*, follow the on-screen directions to complete the test procedure. ***Note: it is important to follow these directions for AFIT to successfully complete the fuel injector flow tests.***

  The directions will vary slightly depending on the vehicle selected, however, they will basically follow these steps:

  1. Start the vehicle and run at idle until instructed by AFIT to turn the engine off. This will take approximately one to two minutes.
  2. Turn the key to the ON position, but do not start the vehicle. AFIT begins the test.

     After a 30 second Leak Down Test, AFIT instructs you to connect the injector harness cable (or J-Cable Adapter and cable), and if required, the fuel pump cable if a direct connection is required.

     If the engine coolant temperature (ECT) is 204°F or higher: AFIT displays a message notifying you that the temperature is above the injector test's recommended range. You are given the option to cancel the test, or continue with the test.

     If the tester cannot communicate with the vehicle: AFIT displays a screen with the following options for you to select: *Try Again*, *Cancel Test*, and *Continue Anyway*.
  3. AFIT runs a complete flow test that lasts two to four minutes depending on the number of cylinders. When the test is complete, AFIT returns to the *Injector Test* screen.

Injector Test (cont.)

- **View Test Results**—displays the results of the last completed test. For further information, see the section *Viewing Test Results*.
- **Upload Test Results**—use to upload test results to the shop computer to analyze and save the data with the AFIT PC Application Software. For further information, see the section *Viewing Test Results*.

AFIT saves the last test results in memory even when power is disconnected. The saved results are overwritten when a new injector test is completed.

Pressure Test

This test graphs the fuel pressure over time with approximately 10 seconds of pressure reading displayed on the screen at one time. It also provides a real time digital reading, and the minimum/maximum pressures since the last time the **ENTER** key was pressed. Use the keypad during the pressure test to do the following:

- **UP**—to freeze the current screen
- **ENTER**—to reset the min/max
- **CANCEL**—to exit/stop the test and return to the main menu

Leak Down Test

This test provides you with the following information:

- Current fuel pressure
- The time since the fuel pump was last run after a brief settling time or you pressed the **DOWN** button to de-pressurize the system
- The pressure difference between the current pressure and the pressure immediately after the pump was run or the **DOWN** button was pressed

Use the keypad during the leak down test to do the following:

- **UP**—to run the fuel pump from the tester
- **DOWN**—to de-pressurize the system
- **CANCEL**—to exit/stop the test and return to the Main menu

During the test, *Fuel pump is ON* and *Fuel pump is OFF* is displayed to let you know when the fuel pump is running.

5

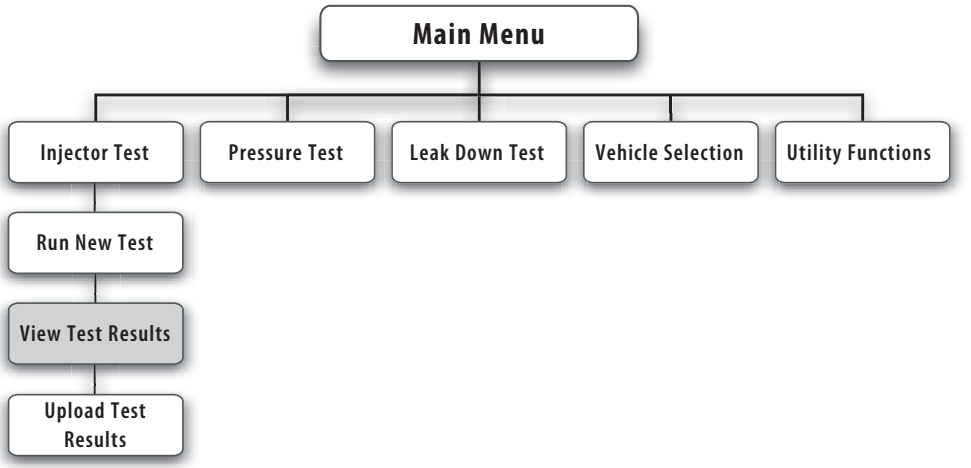
Viewing Test Results

This section explains how to view the results of the last completed test by viewing the data on the MCU, or uploading the results to the shop computer and viewing the data with the AFIT PC Application.

Note:

DLC connections results are displayed as Injector 1, 2, 3 etc. corresponding to engine cylinder numbers.

Direct connection results are displayed as Injector A, B, C etc. and the AFIT Injector Locator function (page 36) should be used to match the results to the injector.



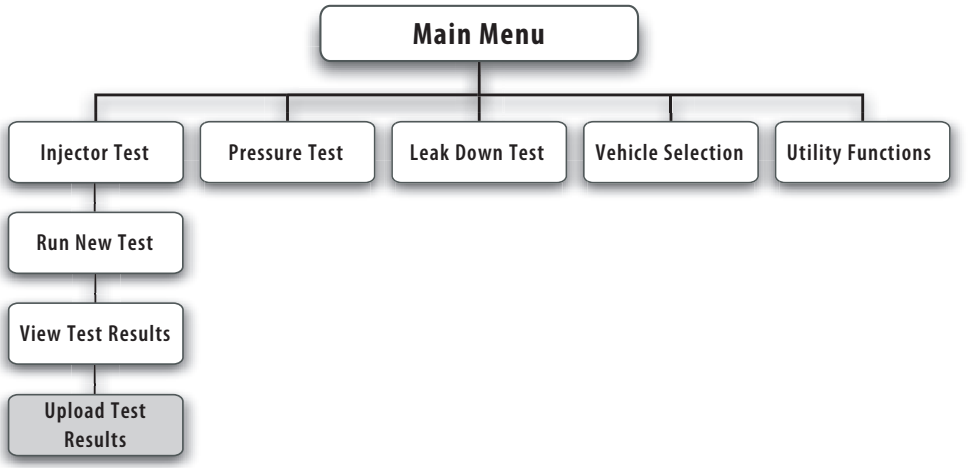
Viewing Results on AFIT

You can view the results of the last completed test by navigating to, and selecting, **View Test Results**. Press **UP** or **DOWN** to scroll through the following results:

- **Injector Balance Graph**—displayed in a +/- percent of average flow of injectors, this screen shows the flow of each injector relative to the other injectors in a bar graph format. If there is a recommended tolerance, it is shown as a horizontal dotted line. If any injector exceeds the tolerance, consult the vehicle's Service Information/Shop Manual for servicing procedures.
- **Injector Balance Table**—displayed in a +/- percent of average flow of injectors, this screen shows the flow of each injector relative to the other injectors in a table format.
- **Injector Flow Graph**—displayed in unit flow per second (UF/s), this screen shows the "unit flow" of each injector in a bar graph format. This value is an indicator of the actual flow of the individual injectors for this vehicle.
- **Injector Flow Table**—displayed in unit flow per second (UF/s), this screen shows the "unit flow" of each injector in a table format.
- **Vehicle Information**—displays information on the last vehicle tested, such as the year, model, body VIN, etc.

Note: When using a direct connection, the Injector Locator can be used to physically locate the injector associated with the test results.

Viewing Test Results



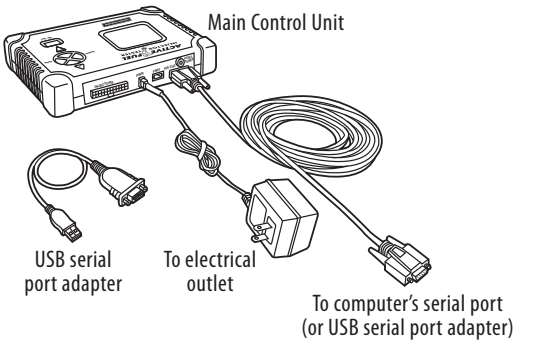
Uploading Test Data to a Shop Computer

You will use the AFIT PC application software to upload the test data to the shop computer, view, print, and save the tests results. Before you begin, make sure the software is installed on the computer. ***Note: If you need to use the USB serial port adapter, you will need to install the USB serial port adapter software driver if you have not already installed it***.

Step 1—Connect the Main Control Unit to the Computer

Prior to connecting to the computer for download, you may (but not required) disconnect the FMU, DLC adapter, injector harness (if used), and FPEA cable (if used) from the MCU.

1. Connect a serial cable to the MCU and to the computer.
   Note: If the computer does not have an available serial port, connect the USB adapter to the serial cable and connect to an available USB port on the computer.
2. Use vehicle power or connect the wall outlet adapter to the MCU and plug into an electrical outlet.



Step 2—Upload the Data to the Shop Computer

1. Turn the MCU on.
2. Start the **AFIT Suite Launcher** Application and select the appropriate Fuel System (DMAX, MFI, or GDI).
3. Check the **Selected COM Port Num** and **Connectivity Status** at the bottom of the application window.
   - If the Connectivity Status indicator is *green*, proceed to step 4.
   - If the Connectivity Status indicator is *red* or a message is displayed, you need to free the selected COM Port from another application or select another *available* port:

     From the Setup menu select **Choose Port** and select one of the available ports.
4. Select **ADD NEW**, or **EDIT** existing customer/vehicle information.

   ADD NEW—use to save first record to a new customer file

   EDIT—use for adding second test data to an existing customer

   Note: the AFIT PC application stores only two test data records for each customer info record—Balance 1/Flow 1 and Balance 2/Flow 2.

   The first set of test results uploaded to a customer record are displayed in the BALANCE 1/FLOW 1 graph and table. The second set of test results uploaded are displayed in the BALANCE 2/FLOW 2 graph and table. Additional uploads to that customer record will overwrite the BALANCE 2/FLOW 2 data. *TIP: To store additional test results, create a new customer record for that particular customer.*
5. Click **Load Injector Data** in the AFIT PC application. **IMPORTANT! To avoid corrupting the data, make sure the MCU is powered on before selecting.**
6. On the MCU navigate to, and select **Upload Test Results**. Once AFIT completes the upload, the unit returns to the *Injector Test* menu and the AFIT PC application displays the uploaded test results.
7. In the AFIT PC application, click **SAVE** to retain information, or **CANCEL** to discard. Retained customer records may be printed as reports at anytime.

   For further details on using the AFIT PC application, please refer to the application's help file.

Viewing Test Results

Step 3—Viewing the Test Results on the AFIT PC Application

You can view the results of any saved test by navigating to, and selecting, **Customer/Vehicle Info Search**. Select the line for the customer or vehicle you wish to view. By default, the most recent upload is displayed. ***Note: the AFIT PC application stores only two test data records for each customer info record—Balance 1/Flow 1 and Balance2/Flow 2.***

The first test results uploaded to a customer record are displayed in the BALANCE 1/FLOW 1 graph and table. The second test results uploaded are displayed in the BALANCE 2/FLOW 2 graph and table. Additional uploads to that customer record will overwrite the BALANCE 2/FLOW 2 data.

- **Balance 1/Balance 2 Graphs**—displayed in a +/- percent of average flow of injectors, this screen shows the flow of each injector relative to the other injectors in a bar graph format. If there is a recommended tolerance, it is shown as a horizontal dotted line. If any injector exceeds the tolerance line, its color turns red (consult the vehicle's Service Information/Shop Manual for servicing procedures).
- **Balance 1/Balance 2 Tables**—displayed to the left and right of the balance graphs, in a +/- percent of average flow of injectors.
- **Flow Rate 1/Flow Rate 2 Graphs**—displayed in unit flow per second (UF/s), this screen shows the "unit flow" of each injector in a bar graph format. This value is an indicator of the actual flow of the individual injectors for this vehicle. If there is a recommended tolerance, it is shown as a horizontal dotted line. If any injector exceeds the tolerance line, its color turns red (consult the vehicle's Service Information/Shop Manual for servicing procedures)
- **Flow Rate 1/Flow Rate 2 Tables**—displayed to the left and right of the flow rate graphs, in unit flow per second (UF/s).
- **Vehicle and customer Information**—always shown above the graphs, along with any comments entered by the technician.

For further details on using the AFIT PC application, please refer to the application's help file.
Note: If the following message is displayed when you open the help file for the first time:

Cannot find the AFITHELP.HLP file. Do you want to try to find this file yourself?

click **Yes** to display the *File Selection* dialog box. Navigate to the AFIT folder, and select **AFITHELP.HLP** and then click **Open**.

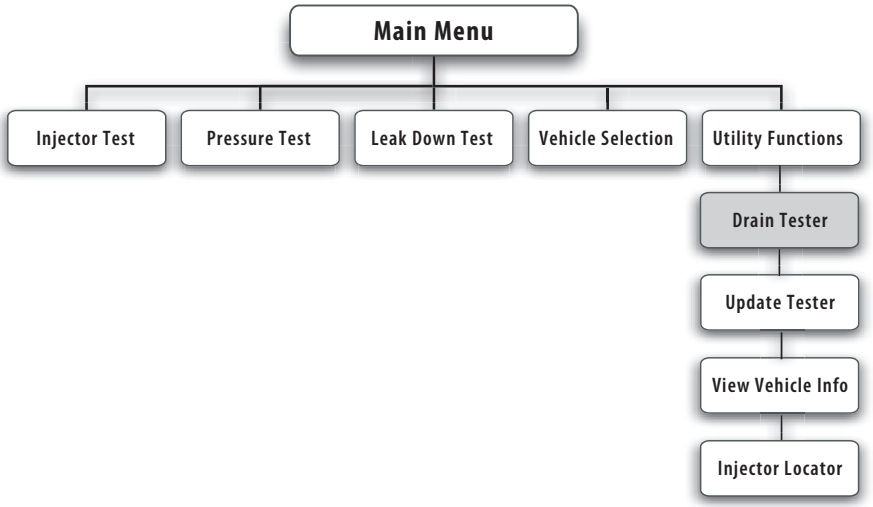
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6

Utilities

This section explains the AFIT utility functions:

- Drain Tester
- Update Tester
- Injector Locator



Draining the FMU

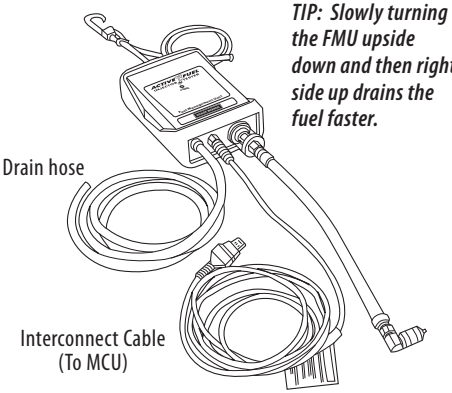
⚠ CAUTION!

It is recommended that you drain the fuel Management Unit after each use to avoid hazardous situations.

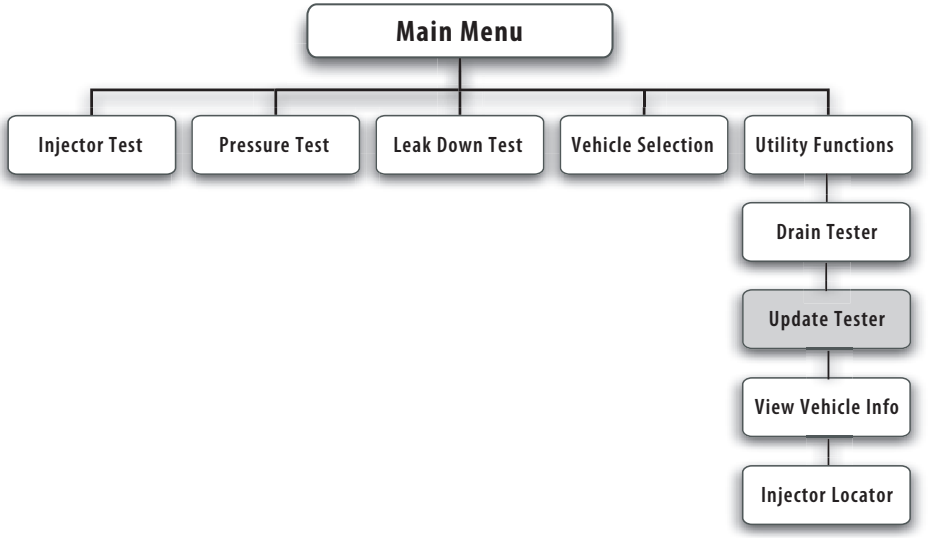
- *Do not over tighten the fuel filter*
- *Do not loosen the filter to drain the Fuel Management Unit*

Note: To complete this procedure, the FMU must be connected to the MCU before you begin.

1. Disconnect the FMU from the vehicle's fuel rail.
2. Navigate to and select **Drain Tester**. Follow the on-screen instructions:
   - Place drain hose in approved container.
   - Select **Continue** to start draining. *Draining Tester* is displayed. To stop draining and return to the Main menu, select **Cancel**.



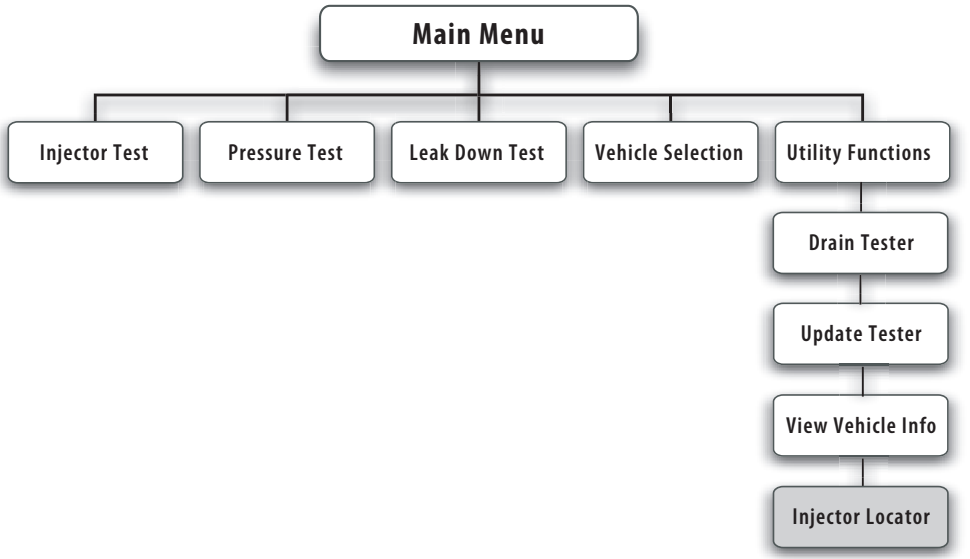
TIP: Slowly turning the FMU upside down and then right side up drains the fuel faster.



Updating the Tester

Periodically, update files will be provided to you for download to AFIT.

1. Shut down any applications that you may have running on your computer except for your internet browser.
    - Go to www.hickokwaekon.com and click on Software Updates.
    - Click the appropriate link to download the upgrade utility.
    - When prompted, click **OPEN** or **RUN** (varies depending on browser and operating system). Note: for some browsers, you may only be prompted to save the file. If this is the case, save the file to your desktop and then double click the file to run it.
    - If a security warning is displayed asking if your are sure you want to run the software, click **RUN** or **INSTALL** (varies depending on browser and operating system).
    - If a security warning is displayed asking if you are sure you want to run an .exe file, click **OK**.
    - If a Windows Defender warning is displayed protecting your PC click **More info** then click **Run anyways**.
    - Follow software update utility instructions to complete updating tester.



Locating an Injector

Because it is possible to connect any injector harness connector to any injector when using a direct connection hookup, this utility is used to identify the physical location of the injector shown in the results screen. The selected injector is buzzed for easy identification.

1. While still connected to the injectors, select **INJECTOR LOCATOR**. AFIT displays an information screen.
2. Press **ENTER** to move to *Injector Selector* screen and select the injector.
3. Press **ENTER** to start buzzing the injector. Press **ENTER** again to stop buzzing the injector.

7

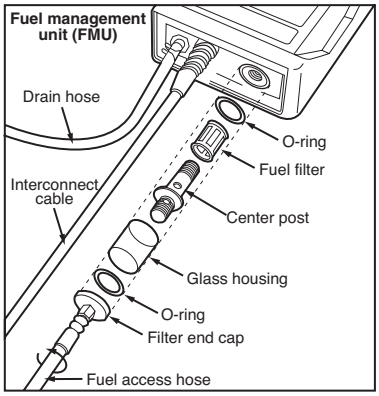
Maintenance

Periodically, AFIT may require maintenance, such as changing a fuse or a filter; or you may need to uninstall the AFIT PC Application software from the shop computer. This section describes those procedures.

Replacing the Fuel Filter

With use, you will need to periodically replace AFIT's fuel filter.

Procedure



1. Unscrew the filter end cap from the control unit with a ½" open-ended wrench.
2. Remove the glass housing.
3. Remove the center post that holds the filter.
4. Remove the fuel filter from the center post shaft.
5. Replace the filter.
6. Replace the center post with the knurled shoulder fitting securely to the fuel filter.
7. Replace the glass. *IMPORTANT! If removed, make sure the O-rings are in place.*
8. Replace the filter end cap.
9. After the O-ring contacts the glass housing, turn the filter end cap one full turn (12–15 inch pounds torque). *IMPORTANT! Make sure the glass housing is not offset from the o-rings and do not over tighten the fuel filter. Also, make sure to check the glass housing for chips or cracks, especially at the edges.*
10. Discard the old filter.

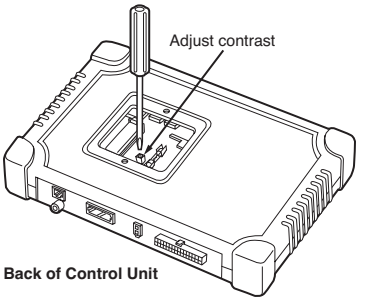
Maintenance

Adjusting the Contrast

Normally you will not need to adjust the LCD screen's contrast. However, over time, you may need to make a minor adjust.

Procedure

1. Unscrew the back panel of the control unit.
2. Locate the control screw.
3. Using a flathead screw driver, carefully rotate the adjustment screw to brighten or darken the LCD screen's contrast.
4. Replace the back panel.



Back of Control Unit

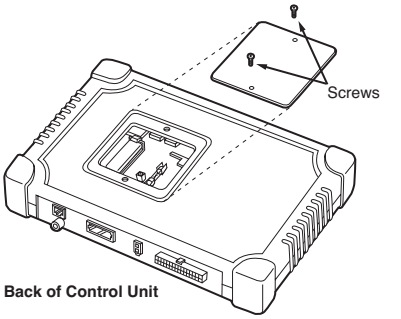
Replacing the Injector/Fuel Pump Fuse

This fuse is only used to protect the fuel injectors and fuel pump and does not interrupt power for the remainder of the circuitry of the MCU. Access the fuse from the back of the control unit.

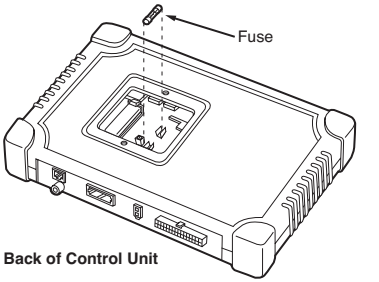
The fuse is an 8 amp fast blow AGC 8 fuse.

Procedure

1. Unscrew the back panel of the control unit.
2. Locate the fuse.
3. Carefully remove the old fuse from the clips.
4. Replace the old fuse with a new 8 amp fast blow AGC 8 fuse.
5. Replace the back panel.
6. Discard the old fuse.



Back of Control Unit

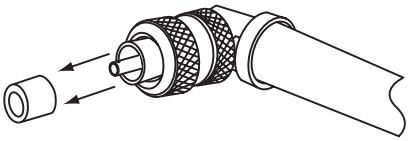


Back of Control Unit

Replacing the Fuel Schrader Connector Seal

With use, you will need to periodically replace the Fuel Schrader Connector Seal. Replace the seal whenever it becomes damaged, deformed, fails to seal, or leaks.

1. Using a flat head screw driver, or similar object, gently pry the old seal out of the connector.
2. Discard the old seal and install a new seal.



Uninstalling the AFIT PC Application Software

1. Delete the AFIT desktop shortcut (if any).
2. Choose **Settings** from the Start menu.
3. Select **Control Panel** from the displayed menu.
4. Double -click **Add** or **Remove** Programs.
5. Select **Active Fuel Injector Tester** from the list.
6. Click **Change/Remove**.
7. When asked if you are sure you want to remove the program, click **Yes** to start the uninstall.

   Note: If a dialog box is displayed asking if you want to delete shared files, select No.
8. When the removal is complete, Windows displays *Program Installation removed*. Click **OK**.
9. Close the Add or Remove Programs window.
10. Close the Control Pannel window.
11. Restart your computer.

Contact Information

For technical assistance
or to order service parts, contact:

gmglobaltools.com

(844-742-8471)

> ⚠ ***Important!***
> ***Make sure to drain ALL fuel from the unit(s) before returning for servicing.***

Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO ORIGINAL RETAIL BUYERS OF HICKOK WAEKON DIAGNOSTIC TOOLS ("UNITS").

Hickok Waekon Units are warranted against defects in materials and workmanship for one year (12 months) from date of delivery. This warranty does not cover any Unit that has been abused, altered, used for a purpose other than that for which it was intended, or used in a manner inconsistent with instructions regarding use. The sole and exclusive remedy for any Unit found to be defective is repair or replacement, at the option of Hickok Waekon. In no event shall Hickok Waekon be liable for any direct, indirect, special, incidental or consequential damages (including lost profit) whether based on warranty, contract, tort or any other legal theory. The existence of a defect shall be determined by Hickok Waekon in accordance with procedures established by Hickok Waekon. No one is authorized to make any statement or representation altering the terms of this warranty.

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US Patent. No. 5,020,362