

**FUEL SYSTEM CLEANING PROCEDURES**

1. Power up. Connect power cord to 12.0 VDC battery. Connect the positive lead of the equipment to the positive lead of the battery first. Connect the negative lead of the equipment to vehicle ground as far away from the battery as leads will allow to prevent sparking and igniting of battery gases. Unit will perform a self test and fuel pressure calibration.

**NOTE:** If connected incorrectly, the reversed polarity LED will light.

**TANK FILL & DIAGNOSTIC PROCEDURES**

1. Press diagnostic/FILL CYCLE key. Audible signal will sound and red LED will flash prompting to connect hoses and start engine procedures.
2. Disconnect return fuel line from regulator side of fuel rail.
3. Identify and connect adapters to the regulator side of the fuel rail and the return fuel line. (see diagram 1)
4. Connect black hose from FUEL PRO system to regulator side of fuel rail.
5. Connect red hose from FUEL PRO system to return line to tank.
6. Disconnect fuel supply (Pressure) line at desired location. Identify and connect adapters to the inlet (pressure) side of fuel rail and feed line from vehicle

fuel supply; connect 6016-02-11-1 "T" Adapter in series with fuel inlet line to engine (long hose with gate valve facing toward vehicle fuel tank). Block off "T" male quick coupler fitting by attaching 6016-01-01-1 Loop Hose to the open male quick coupler fitting.

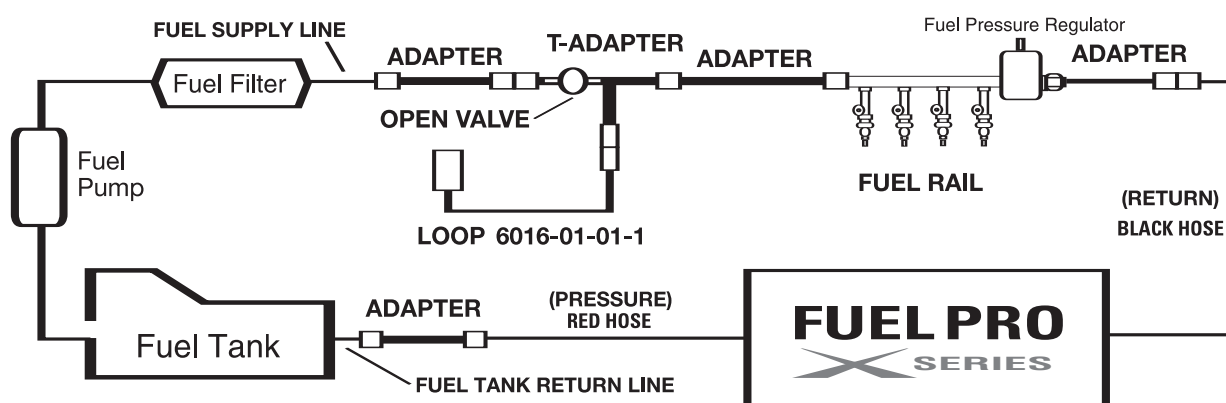
7. Connect vacuum hose from FUEL PRO system to a manifold vacuum source.
8. Start engine and check for leaks.
9. Press and Hold FILL TANK / FLOWRATE CHECK button until one (1) quart or thirty-two (32) ounces of gasoline is added to the tank's fluid level. The Flow Rate in seconds will show in the upper left display.

**NOTE:** If first time use or after installing a new filter, fill tank to 2 quart level.

10. Press and Release DEADHEAD PRESSURE CHECK button. Upper right display will show deadhead pressure. Audible signal will sound and FINISH CYCLE/STOP ENGINE LED will flash.
11. Press and release VACUUM TEST button. Upper right display will show vacuum (baseline).
12. Turn Off Engine. Press FINISH CYCLE / STOP ENGINE button before continuing to fuel system cleaning procedures. LEAKDOWN TEST LED will flash.

**NOTE:** All test values obtained during this diagnostic phase (flow rate, deadhead pressure and leakdown) can be recalled during the fuel system cleaning service by pressing and holding the appropriate diagnostic key. Values will display in the appropriate display.

**DIAGRAM 1: 2-LINE FILL AND DIAGNOSTICS**



Part No. 7702-35-01-2  
3/20/06

**ONE-LINE FUEL DELIVERY SYSTEMS**

(CERTAIN PORT FUEL INJECTION; CARBURETOR)

**FUEL SYSTEM CLEANING PROCEDURES**

1. Power up. Connect power cord to 12.0 VDC battery. Connect the positive lead of the equipment to the positive lead of the battery first. Connect the negative lead of the equipment to vehicle ground as far away from the battery as leads will allow to prevent sparking and igniting of battery gases. Unit will perform a self test and fuel pressure calibration.

**NOTE:** If connected incorrectly, the reversed polarity LED will light.

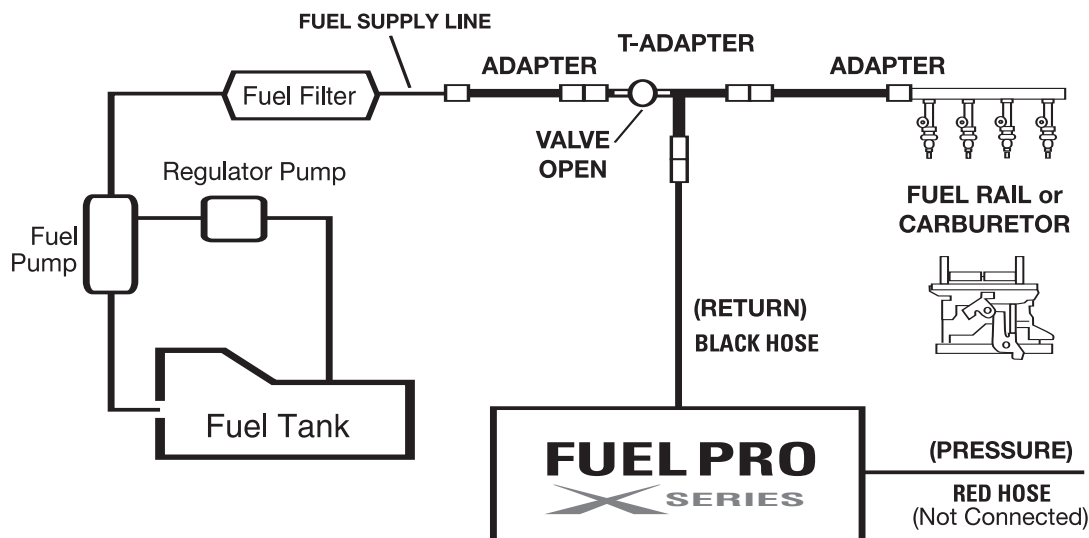
**TANK FILL & DIAGNOSTIC PROCEDURES**

1. Press diagnostic/FILL CYCLE key. Audible signal will sound and red LED will flash prompting to CONNECT HOSES and START ENGINE procedures.
2. Disconnect fuel line from carburetor or fuel rail. (See diagram 5A) Identify and connect adapters to line coming from fuel supply and carburetor or fuel rail.

3. Attach T-Adapter **as shown**.
4. Connect black hose from FUEL PRO system to the male plug of the T-Adapter with valve in open position as shown.
5. Start engine and check for leaks.
6. Press and Hold FILL TANK / FLOWRATE CHECK button until one (1) quart or thirty-two (32) ounces of gasoline is added to the tank's fluid level. The Flow Rate in seconds will show in the upper left display.

**NOTE:** If first time use or after installing a new filter, fill tank to 2 quart level and **when prompted (Card 1C, Step 5)**, add three (3) 250 ml bottles (approximately 24 ounces) of Advantage Engineering Petrol Fuel System Cleaning Solution to obtain the desired 4:1 mix ratio; gasoline to Cleaning Solution in FUEL PRO. The initial fill requires an additional bottle (or approximately 8 ounces) because the new Ultra Fine Filter is filled before any fuel comes into the FUEL PRO tank. This additional volume of fuel then becomes part of the total system volume and therefore needs to be recognized and accounted for on the initial fill. After the initial fill, the filter remains full and all volume brought into the machine is accurately represented in FUEL PRO tank readings and it is sufficient to then add one bottle of Solution for each quart of gasoline collected during the Flow Rate Check.

**DIAGRAM 5A: 1-LINE FILL AND DIAGNOSTICS**



Part No. 7702-35-01-2  
3/20/06

## TWO-LINE FUEL DELIVERY SYSTEMS

(CERTAIN PORT FUEL INJECTION, CIS, AND THROTTLE BODY INJECTION SYSTEMS)

### LEAKDOWN TEST

1. Press LEAKDOWN key. This will initiate auto purge. Display will show "PURGE." Auto purge will evacuate air from the FUEL PRO internal lines.
2. CONNECT HOSES red LED will flash. Disconnect FUEL PRO Red Hose from Return Line adapter; connect Loop Hose 6016-01-01-1 open female quick coupler to the now open Return Line adapter (male) going to vehicle fuel tank. This allows existing pressure on fuel supply line to safely bleed off to vehicle fuel tank. Next, disconnect Loop Hose female quick coupler connected to T-Adapter and connect FUEL PRO Red Hose to the now open male quick coupler on T-adapter. Connect hoses (see diagram 2).
3. Press LEAKDOWN key. Pump will ramp up,

pressurizing the fuel system. Once stabilized Pressure/Vacuum display will alternate between baseline pressure and current pressure. Timer display will show elapsed time in minutes. This step is repeatable until the FINISH CYCLE key is depressed.

**NOTE:** A pressure differential over time indicates a leak somewhere in the system. To determine source of leak, turn valve on T-Adapter to closed position to isolate rail and repeat step by depressing LEAKDOWN key again. If pressure again drops excessively, the leak is somewhere in the fuel rail and/or pressure regulator. To determine which, pinch off black return hose to FUEL PRO. If pressure continues to drop, check for leaky diaphragm on fuel pressure regulator (remove vacuum line to fuel pressure regulator. If gasoline is present in vacuum hose, diaphragm is bad; fuel and pressure is

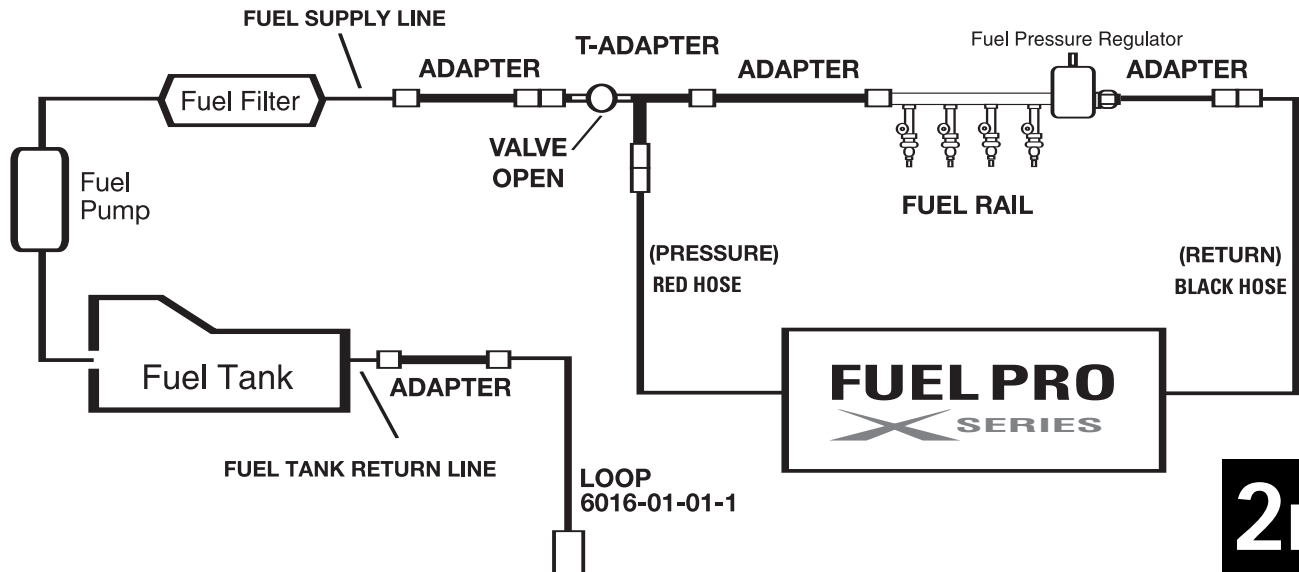
leaking past diaphragm), leaky connections and/or fittings; if everything looks good, chances are good that you have leaky injectors. Perform injector pressure drop test per industry standard procedures.

If pressure drop stops when FUEL PRO return hose is pinched off, Pressure Regulator is leaking past flow valve (ball & seat). If pressure holds when valve on T-Adapter is turned to closed position, the leak is somewhere in fuel supply, most likely a bad check valve in the fuel pump, provided that system connections are good and no external leak exists.

4. To stop leakdown test press FINISH CYCLE key.

2 LINE SERVICE and 1 LINE/CARB/QUICK green LEDs will flash giving operator the option to perform either a 2 LINE service or 1 LINE/CARB/QUICK service.

DIAGRAM 2: 2-LINE LEAKDOWN



3/20/06

## ONE-LINE FUEL DELIVERY SYSTEMS

(CERTAIN PORT FUEL INJECTION; CARBURETOR)

(continued on following page)

### TANK FILL & DIAGNOSTIC PROCEDURES (continued)

7. Press and Release DEADHEAD PRESSURE CHECK button. Upper right display will show, in this case, regulated pressure. Audible signal will sound and FINISH CYCLE/STOP ENGINE LED will flash.
8. Press and release VACUUM TEST button. Upper right display will show vacuum (baseline).
9. Turn off engine; Press FINISH CYCLE / STOP ENGINE button before continuing. LEAKDOWN TEST LED will flash.

### LEAKDOWN TEST

1. Press LEAKDOWN key. This will initiate auto purge. Display will show "PURGE." Auto purge will evacuate air from the FUEL PRO

internal lines.

2. CONNECT HOSES red LED will flash. Connect hoses (see diagram 5B).
3. Disconnect FUEL PRO Black (Return) Hose from T-Adapter and connect FUEL PRO Red (Pressure) Hose to T-Adapter.
4. Press LEAKDOWN key. Pump will ramp up, pressurizing the fuel system. Once stabilized, the Pressure/Vacuum display will alternate between baseline pressure and current pressure. Timer display will show elapsed time in minutes. This step is repeatable until the FINISH CYCLE key is depressed.

**NOTE:** A pressure differential (difference between baseline and current pressures) over time indicates a leak somewhere in the system. Turn valve on T-Adapter to closed position and repeat step by depressing LEAKDOWN key

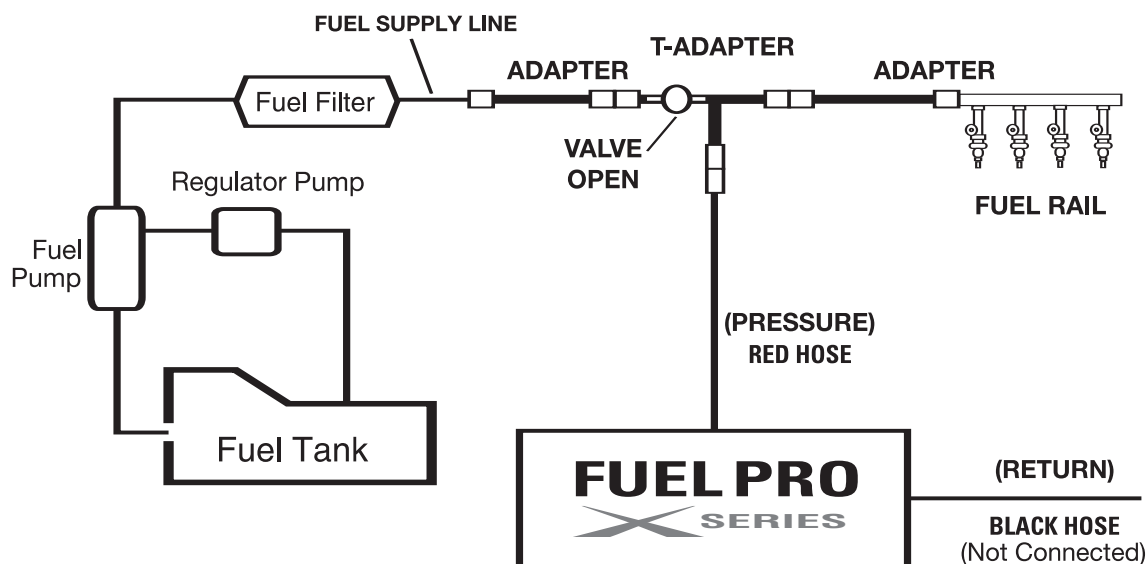
again. If pressure differential remains, the leak is somewhere in the fuel rail. If pressure differential does not remain, leak is somewhere in fuel supply.

5. To stop leakdown test press FINISH CYCLE key.

**NOTE:** All test values obtained during this diagnostic phase (flow rate, deadhead pressure and leakdown) can be recalled during the fuel system cleaning service by pressing and holding the appropriate diagnostic key. Values will display in the appropriate display.

2 LINE SERVICE and 1 LINE/CARB/QUICK green LEDs will flash giving operator the option to perform either a 2 LINE service or 1 LINE/CARB/QUICK service.

DIAGRAM 5B: 1-LINE LEAKDOWN (PFI ONLY - NOT FOR CARBURETOR)



3/20/06

## TWO-LINE FUEL DELIVERY SYSTEMS

(CERTAIN PORT FUEL INJECTION, CIS, AND THROTTLE BODY INJECTION SYSTEMS)

### FUEL SYSTEM CLEANING PROCEDURES FOR 2 LINE SERVICE

1. Press 2 LINE SERVICE button.
  2. See diagram 3. Disconnect long leg (with gate valve) of T-Adapter from vehicle fuel supply line coming from vehicle fuel tank.
  3. Loop fuel tank supply and return lines using 6016-01-01-1.
  4. Add Advantage Engineering Petrol Fuel System Cleaning Solution to tank. One 250 ml bottle, or eight (8) ounces are required for each one (1) quart [thirty-two (32) ounces], of gasoline collected during the Fill Tank/Flow Rate Check.
- NOTE:** The LED for SET TIME will flash. Soak time is preset for 10 minutes. This can be adjusted by depressing the SET TIME button. Five minutes will be added each time the button is depressed (i.e. 15, 20, 25...through 60 before reverting to 0).
5. Press and release START SOAK button. Check for leaks. The FUEL PRO is circulating the mixture of cleaning solution and gasoline through the rail.
- This process removes contaminants and deposits.

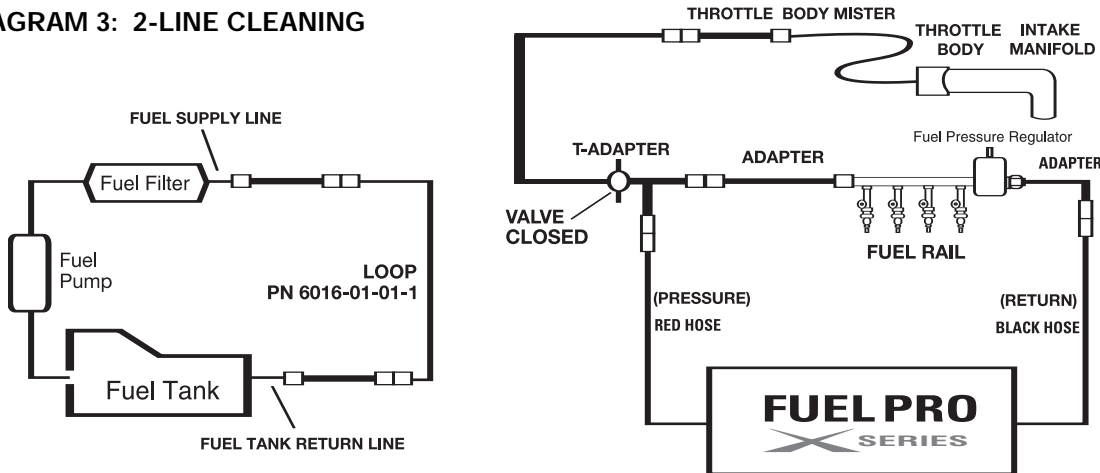
**OPTION: INDUCTION SYSTEM CLEANING** – If so desired, this is a convenient time to administer cleaning solution to the Throttle Plate Area, Idle Air Bypass

circuit and the Intake Plenum with the optional Induction Cleaning System (ICS) Kit 6090-08-11-0. See Operator's Manual for additional details.

- When soak cycle is finished the LEDs next to the SET TIME and START ENGINE keys will flash.
6. Set cleaning service time. Cleaning service time is preset for 20 minutes. This can be adjusted by depressing the SET TIME button. Five minutes will be added each time the button is depressed (i.e. 25, 30, 35...through 60 before reverting to 5).
  7. At this point, it is recommended to tap the starter momentarily (as if to find the TDC mark) six or eight times. This process is intended to identify any potential hydrostatic lock condition that may exist. See Operator's Manual for additional details.
  8. Press START SERVICE / START ENGINE button. Start engine. Operating pressure is displayed on the upper right display during this fuel system cleaning procedure. After approximately ten (10) minutes, or enough time to bring engine back up to normal operation temperature and into closed loop operation, it is now possible to utilize the Throttle Body Mister to clean the induction system. See Operator's Manual for additional details.

9. Attach Throttle Body Mister to T-Adapter with valve in Closed Position. Affix Mister to Throttle Body as outlined in Operator's Manual.
  10. Increase engine speed to approximately 1200 to 1500 RPM and slowly open valve on T-adapter.
- NOTE:** Adjust valve to the point engine does not stall.
11. Hold throttle at 1200 to 1500 rpm for maximum of 60 seconds while using the Throttle Body Mister. Close valve on T-Adapter and reduce engine speed back to idle. Allow two to three minutes between additional applications.
  12. Continue with 2 line rail service until timer expires.
- NOTE:** An audible alarm will sound and the LED next to FINISH CYCLE / STOP ENGINE button will light when the fuel system cleaning is complete.
13. Stop engine. Depress FINISH CYCLE key. The FUEL PRO system automatically releases pressure from the hoses when stopped. (Be advised that system pressure will increase due to the normal heat soak cycle after the engine is turned off. Remember that you can relieve system pressure from FUEL PRO (as long as the power cables are connected to a sufficiently charged battery) by simply pressing and releasing the STOP SIGN button at the top, center of the display panel.

DIAGRAM 3: 2-LINE CLEANING



3/20/06

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## ONE-LINE FUEL DELIVERY SYSTEMS

(CERTAIN PORT FUEL INJECTION; CARBURETOR)

### FUEL SYSTEM CLEANING PROCEDURES FOR 1 LINE SERVICE

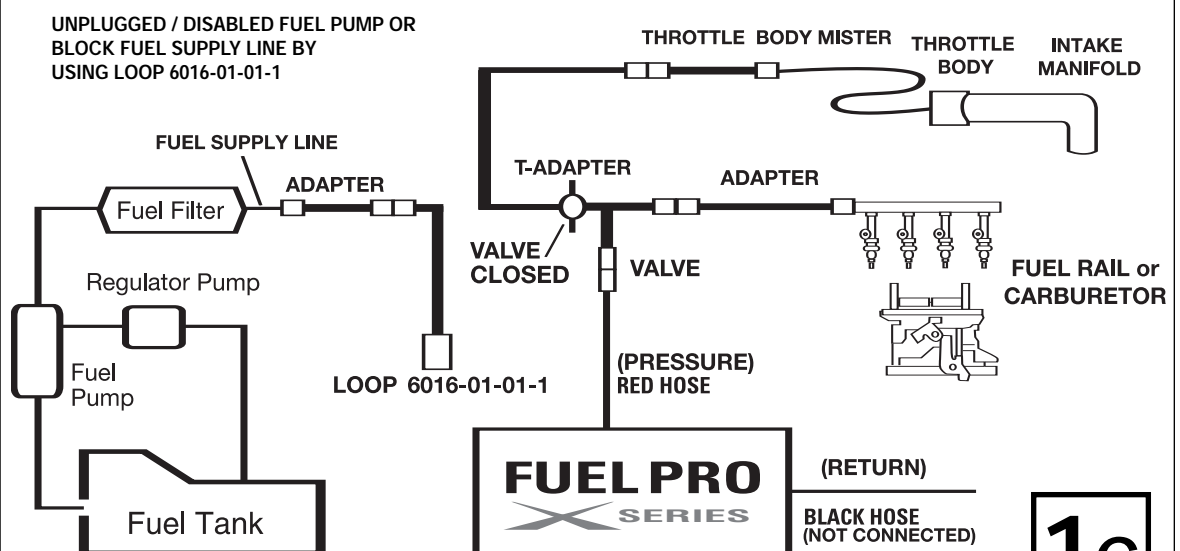
**OPTION: INDUCTION SYSTEM CLEANING** – If so desired, this is a convenient time to administer cleaning solution to the Throttle Plate Area, Idle Air Bypass circuit and the Intake Plenum with the optional Induction Cleaning System (ICS) Kit 6090-08-11-0. See Operator's Manual for additional details.

1. Press 1 LINE / CARB/QUICK SERVICE button.
2. Connect hoses per diagram 6.
3. Disconnect the long leg of T-Adapter (the one with the gate valve) from adapter going to vehicle fuel supply line. This frees the long leg of the T-Adapter and makes it available for Induction System Cleaning, using the Throttle Body Mister. Keep gate valve closed.
4. Add Advantage Engineering Petrol Fuel System Cleaning Solution to tank. One 250 ml bottle, or Eight (8) ounces are required for each one (1) quart, [thirty-two (32) ounces], of gasoline collected during the Fill Tank/Flow Rate Check.

5. Remove fuel pump relay or fuse and/or block fuel supply using 6016-01-01-1.
6. Press PRESSURE ADJUST buttons to set the required pressure. The PSI value will be shown in the upper right display.
7. Set cleaning service time. Cleaning service time is preset for 20 minutes. This can be adjusted by depressing the SET TIME button. Five minutes will be added each time the button is depressed (i.e. 25, 30, 35...through 60 before reverting to 5).

8. Press START SERVICE / START ENGINE button. Start engine. Operation pressure is displayed on the upper right display during this fuel system cleaning procedure. After approximately ten (10) minutes, or enough time to bring engine back up to normal operation temperature and into closed loop operation, it is now possible to utilize the Throttle Body Mister to clean the induction system. See Operator's Manual for additional details.
  9. Attach Throttle Body Mister to T-Adapter with valve in Closed Position.
  10. Affix Mister to Throttle Body as outlined in Operator's Manual.
  11. Increase engine speed to approximately 1200 to 1500 RPM and slowly open valve on T-adapter.
- NOTE:** Adjust valve to the point engine does not stall.
12. Hold throttle at 1200 to 1500 rpm for maximum of 60 seconds while using the Throttle Body Mister. Close valve on T-Adapter and reduce engine speed back to idle. Allow two to three minutes between additional applications.
  13. Continue with 1 Line Service until timer expires.
- NOTE:** An audible alarm will sound and the LED next to FINISH CYCLE/STOP ENGINE button will light.
14. Stop engine. Press FINISH CYCLE key.

DIAGRAM 6: 1-LINE CLEANING



3/20/06

1c