These generator sets operate using natural gas or LP vapor fuel. The multi-fuel system allows conversion from natural gas to LP vapor (or vice versa) in the field while maintaining emissions-standard compliance. A trained technician can convert the fuel system. Generator sets with multi-fuel systems are CARB- and EPA-certified for both natural gas and LP vapor fuels.

Fuel Supply

Comply with local, state, and federal codes regarding the correct storage of fuel. Because of variable climates and geographical considerations, contact an authorized service technician for fuel system planning and installation. Figure 1 lists the recommended fuel ratings for natural gas and LP vapor fuels. Contact the natural gas utility for flow rate information or a gas meter upgrade.

Bring the fuel supply lines through the rear access opening. Use flexible sections to prevent fuel line breakage caused by vibration. Remove the housing end panel and hold the fuel solenoid valve with a wrench when tightening the fuel connections. Protect all fuel lines from machinery or equipment contact, adverse weather conditions, and environmental damage.

Verify that the output pressure from the primary gas utility (or LP tank) pressure regulator is 1.7–2.7 kPa (7–11 in. water column) and that the utility gas meter flow rate is sufficient to supply the generator set plus all other gas-consuming appliances. Figure 2 shows the flow rate required for the generator set.

Fuel System		
Fuel types	Natural Gas or LP Vapor	
Fuel supply inlet	1/2 NPT	
Fuel supply pressure, kPa (in. H_2O)	1.7–2.7 (7-11)	
Nominal Fuel Rating	**Btu/ft.^{3}**	**MJ/m^3**
Natural gas	1000	37
LP vapor	2500	93

Figure 1 Fuel Supply

	Gas Flow Rate	
Generator Set Model	**Btu/hr.**	**MJ/hr.**
8.5RES	132,000	139
12RES	202,000	213

Figure 2 Natural Gas Flow Rate

Fuel Pipe Size

Ensure that the natural gas pipe size and length meet the specifications in Figure 3. Measure the pipe length from the primary gas pressure regulator to the pipe connection on the generator set fuel inlet. Add 2.4 m (8 ft.) to the measured length for each 90 degree elbow. Compare the pipe size and length with the chart in Figure 3. If the piping is longer than the maximum length shown for that size, replace it with the specified size before proceeding.

	Maximum Pipe Length m (ft.)	
Pipe Size	**8.5RES**	**12RES**
3/4 in. NPT	18.3 (60)	9.2 (30)
1 in. NPT	61 (200)	30 (100)
1 1/4 in. NPT	91.5 (300)	68.6 (225)

Figure 3 Maximum Natural Gas Pipe Length

Fuel Conversion

The multi-fuel system allows conversion from natural gas to LP vapor (or vice versa) in the field while maintaining emissions-standard compliance. A trained technician can convert the fuel system.

Two fuel connections on the fuel block allow field-conversion between natural gas and LP vapor. The fuel metering valves are factory-set and sealed to comply with applicable emission standards and to provide the best possible hot and cold starting.

Note: Do not adjust the factory-sealed fuel-metering adjustments on the fuel block. Changing the fuel-metering adjustments may violate federal or state laws.

Use the following procedure to convert from natural gas to LP vapor, moving the fuel connection from the natural gas to the LP port, plugging the natural gas port, and connecting the digital spark-advance module (DSAM) leads. See Figure 4 for the fuel system component locations.

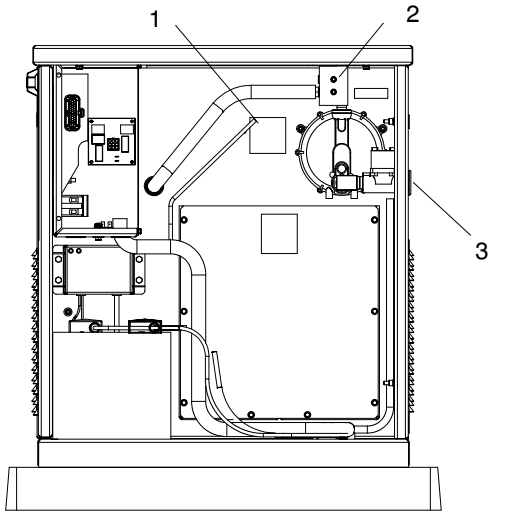
Fuel Conversion Procedure

1. Place the generator set master switch in the OFF position.
2. Disconnect the power to the battery charger.
3. Disconnect the generator set engine starting battery, negative (–) lead first.
4. Turn off the fuel supply.

5. Remove the hose clamp and fuel hose from the hose fitting in the fuel block. See Figure 5.

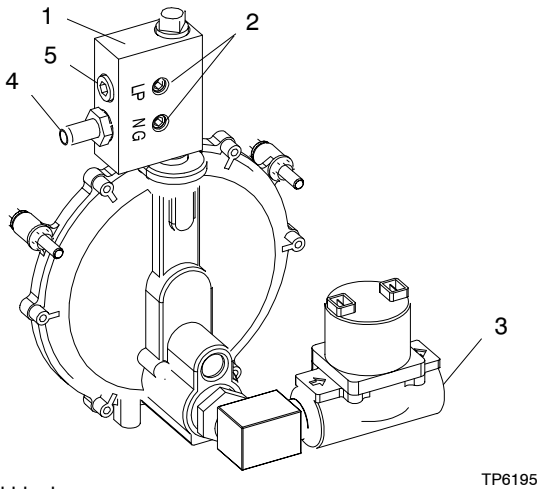
6. Remove the hose fitting from the natural gas outlet port in the fuel block. See Figure 5.

7. Remove the plug from the LP port in the fuel block. See Figure 5. Clean the plug with a dry cloth or brush, apply fresh pipe sealant, and install the plug into the natural gas outlet port.



1. DSAM connector location
2. Fuel block
3. Fuel inlet, 1/2 in. NPT female

Figure 4 Fuel System Locations, Air Inlet Side



1. Fuel block
2. Fuel metering valves—*factory-sealed, do not adjust*
3. Fuel inlet, 1/2 in. NPT
4. Hose fitting
5. Plug

Figure 5 Fuel Block Connections, Natural Gas System Shown

8. Clean the hose fitting with a dry cloth or brush, apply fresh pipe sealant to the threads, and install the fitting into the LP port.

   Note: Do not adjust the fuel metering valves.

9. Slide the hose onto the hose fitting and secure it with the clamp.

10. For the 12RES only: Connect the DSAM leads together for natural gas. (Disconnect the leads for LP.) See Figure 6.

11. Connect and turn on the new fuel supply.

12. Check that the generator set master switch is in the OFF position.

13. Reconnect the generator set engine starting battery leads, negative (–) lead last.

14. Reconnect power to the battery charger.

15. Start the generator set by moving the generator set master switch to the RUN position.

16. Check for leaks using a gas leak detector.

17. Move the generator set master switch to the AUTO position.

To convert from LP vapor to natural gas, follow the same fuel conversion procedure, moving the hose fitting to the natural gas port and plugging the LP port. For the 12RES model, disconnect the DSAM leads for LP vapor. See Figure 6.

1. DSAM leads: connect for natural gas, disconnect for LP.

Figure 6 Digital Spark Advance Module (DSAM) Leads (located in generator set air intake area)