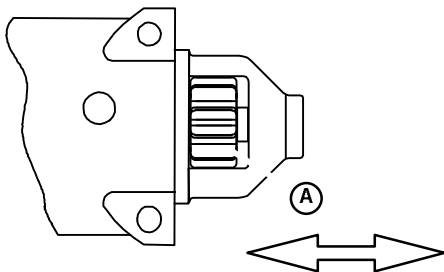


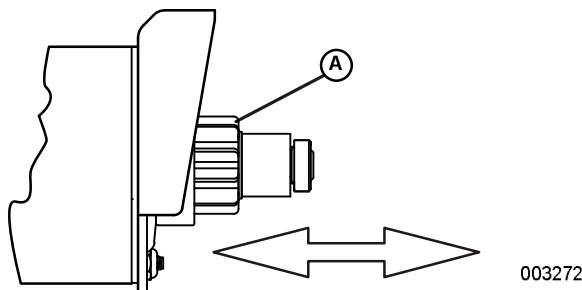
Checking The Pinion

When the starter motor is activated, the pinion gear should move and engage the flywheel ring gear. If the pinion does not move normally, inspect the pinion for binding or sticking.



A. Pinion

Figure 4-53. Check Pinion Gear Operation (V-Twins and units with 426cc Engine)



A. Pinion

Figure 4-54. Check Pinion Gear Operation (410cc Single Cylinder Engine Units Only)

Test 50 – Check Fuel Supply and Pressure

General Theory

The air-cooled generator was factory tested and adjusted using natural gas as a fuel. If desired, LP (propane) gas may be used. However, when converting to propane, some minor adjustments are required. The following conditions apply for a unit to operate correctly:

- An adequate gas supply and sufficient fuel pressure must be available or the engine will not start.
- Minimum recommended gaseous fuel pressure at the generator fuel inlet connection is 3.5 inches water column for natural gas (NG) or 10 inches water column for LP gas.
- Maximum gaseous fuel pressure at the generator fuel inlet connection is 7 inches water column for natural gas or 12 inches water column for LP gas.
- When propane gas is used, only a “vapor withdrawal” system may be used. This type of system utilizes the gas that forms above the liquid fuel. The vapor pressure must be high enough to ensure engine operation.
- The gaseous fuel system must be properly tested for leaks following installation and periodically

thereafter. No leakage is permitted. Leak test methods must comply strictly with gas codes.



DANGER

Explosion and fire. Fuel and vapors are extremely flammable and explosive. No leakage of fuel is permitted. Keep fire and spark away. Failure to do so will result in death or serious injury. (000192)

IMPORTANT NOTE: Verify that the fuel selector is properly set for the supplied fuel type.

Procedure

A water manometer or a gauge that is calibrated in “inches of water column” should be used to measure the fuel pressure. Fuel pressure at the inlet side of the fuel solenoid valve should be between 3.5-7 inches water column for natural gas (NG), or 10-12 inches water column for LP gas.

1. See [Figure 4-55](#), [Figure 4-56](#), and [Figure 4-57](#) for the gas pressure test point on the fuel regulator. The fuel pressure can be checked at Port 1 (A) on all fuel regulators, and at Port 3 (B) on 12-20 kW units.
2. With the manometer connected properly, crank the engine. Nominal fuel pressure should be measured. If pressure is not measured while cranking refer back to flow chart.

NOTE: Where a primary regulator is used to establish fuel inlet pressure, adjustment of that regulator is usually the responsibility of the fuel supplier or the fuel supply system installer.

NOTE: The static pressure port (before solenoid) is ALWAYS closest to the solenoid, regardless of the demand regulator/plenum tank configuration.

Units with a Plenum Tank Only

The Port 3 (B) below the fuel solenoid may be used to take a fuel pressure reading before the fuel solenoid. Consistent pressure should be measured at this port both while the generator is running and when the generator is off.

Results

1. If fuel supply and pressure are adequate, but engine will not start refer back to the flow chart.
2. If generator starts but runs rough or lacks power, repeat the above procedure with the generator running and under load. The fuel supply system must be able to maintain between 3.5-7 inches water column, or 10-12 inches water column for LP gas. If proper fuel supply and pressure is maintained, refer to [Problem 18 – Engine Starts Hard and/or Runs Rough / Lacks Power / Backfires / Hunting / Erratic Operation](#).

NOTE: If pressure is above specifications correct/adjust supply regulator to generator to maintain proper fuel pressure.

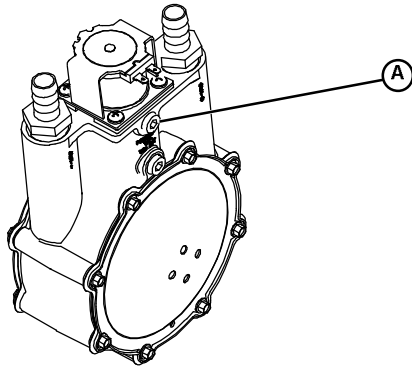


Figure 4-55. Gas Pressure Test points (8 kW)

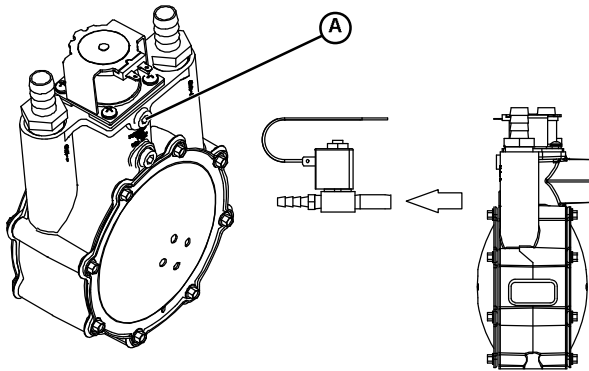


Figure 4-56. Gas Pressure Test points (10 kW)

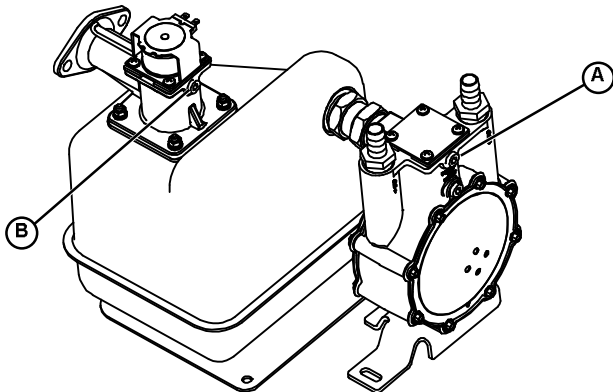


Figure 4-57. Gas Pressure Test points (12-20 kW)

Test 51 – Check Controller Wire 14 Outputs

General Theory

During any crank attempt, the controllers crank relay and run relays both are energized. When the run relay energizes, its contacts close and 12 VDC is delivered to the Wire 14 circuit and to the fuel solenoid. The solenoid energizes open to allow fuel flow to the engine. This test will determine if the controller is working properly.

Procedure

1. Set the controller to OFF.
2. Set a DMM to measure DC voltage.
3. Disconnect Wire 14 from the fuel solenoid (FS).

4. Connect the positive test lead to the disconnected Wire14 from Step 3 and connect the negative test lead to the negative battery post or an engine ground.
5. Set the controller to MANUAL. The meter should indicate battery voltage once the engine rotates. If the engine doesn't crank, refer to appropriate flow chart.
 - a. If battery voltage is indicated, refer back to flow chart.
 - b. If battery voltage is not measured, proceed to Step 6.
6. Navigate to the Digital Output display using the menu system for the controller.

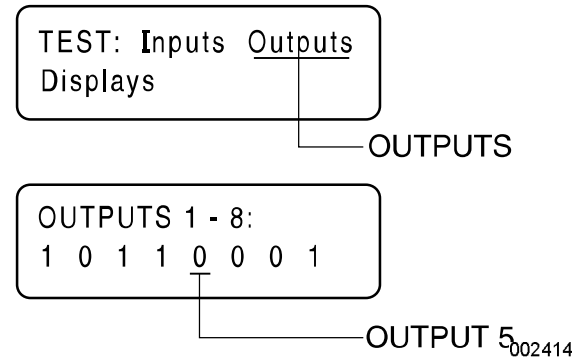


Figure 4-58. The Output Screens

7. Output 5 is Wire 14 out from the controller. If the controller is functioning properly, Output 5 will change from a "0" to a "1" while the unit is cranking.
 - a. If the DMM did NOT indicate voltage in Step 5 and output did not change in Step 7, replace the controller.
 - b. If the DMM did NOT indicate voltage in Step 5 and the output in Step 7 changed, proceed to Step 11.
8. Disconnect the 7.5 amp Fuse.
9. Disconnect the appropriate harness connector from the controller.
10. Set a DMM to measure resistance.
11. Connect one meter test lead to Wire 14 (disconnected in Step 3). Connect the other meter test lead to Wire 14 at the controller side of the harness connector (Wire 14). See "Appendix A" for proper wire and connector pin identification.
 - a. If the DMM indicated CONTINUITY repeat Step 5 and then retest.
 - b. If CONTINUITY is not measured, repair or replace Wire 14 between the controller harness connector and the fuel solenoid.

Results

Refer back to flow chart.