Verify the piston is at Top Dead Center (TDC) of it's compression stroke (both valves closed). The cold valve clearance specification is 0.05-0.1mm (0.002-0.004 in).

NOTE: A small non-metallic object, such as a plastic straw, can be inserted through the spark plug opening and rested on the piston. Piston movement will cause the object to move up and down, giving a visual indication of TDC.

Adjust Valve Clearance

See ***Figure 4-77*** ***Figure 4-78***. Check and adjust the valve to rocker arm clearance as follows:

1. Remove the four screws attaching the valve cover and remove valve cover.
2. Discard valve cover gasket.
3. Loosen the rocker jam nut (C) using a 10 mm wrench (9-11 kW units) or 13 mm wrench (16-22 kW units.)
4. Turn the pivot ball stud (D) using a 14 mm wrench (9 kW units), 8 mm wrench (11 kW units), or 10 mm Allen wrench (16-22 kW units) while checking clearance between the rocker arm (E) and the valve stem (F) with a feeler gauge. Adjust clearance as per Section 1.1 ***Specifications***.

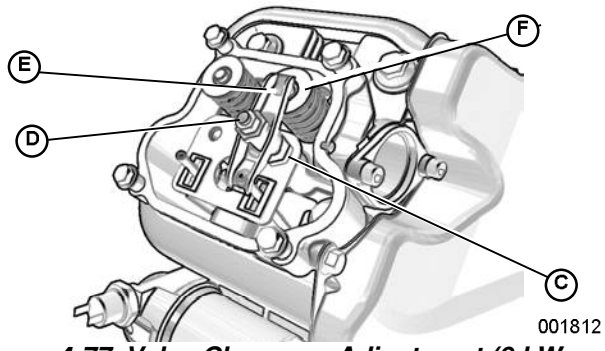

Figure 4-77. Valve Clearance Adjustment (9 kW - 426cc engine)

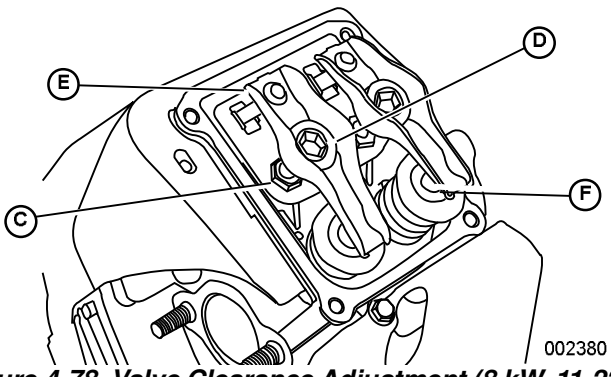

Figure 4-78. Valve Clearance Adjustment (8 kW, 11-22 kW - 530cc through 999cc)

NOTE: Hold the rocker arm jam nut in place as the pivot ball stud is turned.

5. When valve clearance is correct, hold the pivot ball stud (D) in place with a wrench and tighten the rocker arm jam nut. Tighten the jam nut according to the following torque specifications:

7-8 kW	174 **in-lbs** (19.68 Nm)
9 kW	53 **in-lbs** (6.0 Nm)
11 kW	72 **in-lbs** (8.2 Nm)
16–22kW	174 **in-lbs** (19.68 Nm)

6. After tightening the jam nut, check valve clearance again to verify it did not change.
7. Install new valve cover gasket.
8. Install the valve cover. Tighten fasteners in a cross pattern to:

7-8 kW	48 **in-lbs** (5.4 Nm)
9 kW	80 **in-lbs** (9.0 Nm)
11–22kW	60 **in-lbs** (6.8 Nm)

9. Repeat the process for the other cylinder if unit is a V-Twin.

Test 64 – Check Wire 18 Continuity

General Theory

During cranking and running, the controller receives a pulse from the ignition magneto(s) via Wire 18. During cranking, this signal has an AC voltage of approximately 3-6 Volts on V-twin engines, and approximately 2-3 Volts on single cylinder engines. If the controller does not receive this signal, the unit will shut down due to no rpm sensing.

Procedure

1. Set the DMM to measure AC voltage.
2. See ***Figure 4-79***. Back probe the harness connector.
3. Set the controller to MANUAL.
4. While unit is cranking measure and record the voltage.
   a. If the DMM indicated approximately 3-6 VAC for V-twin or 2-3 VAC for single cylinder, proceed to Step 6.
   b. If the DMM did NOT indicate the appropriate voltage, go to the Step 5.

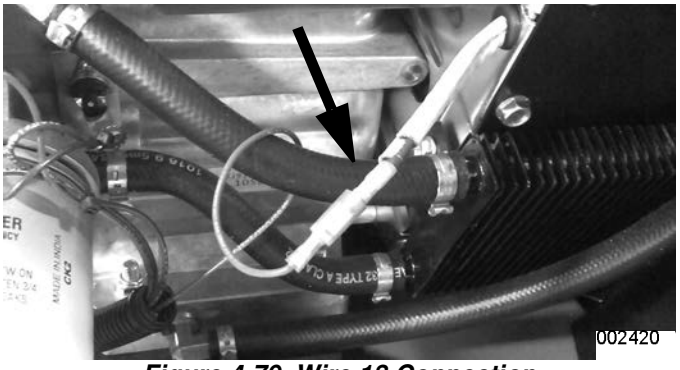

Figure 4-79. Wire 18 Connection

5. Disconnect Wire 18 from magneto sensing lead.

a. Connect one meter test lead to an engine ground and connect the other meter test lead to the magneto lead terminal.
b. Set the controller to MANUAL and while unit is cranking measure and record the voltage.
c. If the DMM indicated approximately 3-6 VAC for V-Twin and 2-3 VAC for single cylinder, proceed to Step 6.
d. If the DMM did NOT indicate the appropriate voltage, go back to the flow chart (Problem 14) and follow "No Signal" (**Test 60**).

6. Set the DMM to measure resistance.
7. Disconnect the harness connector containing Wire 18 from the controller.
8. Connect one meter test lead to an engine ground and connect the other meter test lead to Wire 18.
   a. If the DMM indicated low resistance (.01), check for a short to ground in the Wire 18 circuit.
   b. If the DMM indicated O/L OPEN circuit proceed to Step 9.
9. Connect one meter test lead to harness side of Wire 18 that went to the magneto and connect the other meter test lead to Wire 18 at the controller connector.
   a. If the DMM indicated CONTINUITY, refer back to the flow chart (Problem 14, RPM Sense Loss).
   b. If the DMM indicated INFINITY repair or replace Wire 18 between the magneto connector and the controller connector.

Test 65 – Test Exercise Function

General Theory

The following parameters must be met in order for the weekly exercise to occur:

- Exercise Time set in controller.
- Controller set to AUTO.

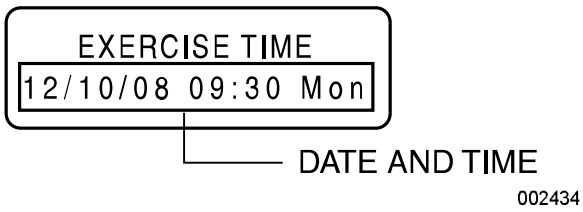

Figure 4-80. The Exercise Screen

Procedure: 8 kW-14 kW

NOTE: Utility voltage must be present.

Make a record of the date and time the generator is set to exercise.

1. Record the current date and time of the unit.
2. Navigate to the Exercise settings screen of the controller being worked on.
3. Press "Enter".
4. Adjust exercise time to 5 minutes ahead of the date and time noted in Step 1.
5. Return to the Main Display where "READY TO RUN" is displayed. The controller must be in AUTO mode for the unit to exercise.
6. Watch the generator display and note the time. When the date and time reaches the time that was programmed for exercise the unit should crank and run. "Running in Exercise" will display if the exercise feature is working properly.

Evolution Procedure: 15-20 kW (11-20 kW Honeywell™)

NOTE: Utility voltage must be present.

1. Set the controller to AUTO.
2. Enter the Dealer Password to enter the Dealer Edit Menu.
3. Select "Test."
4. Press ENTER.
5. Press arrow key until "IN AUTO PRESS ENTER FOR QT-TEST" is displayed.
6. Press ENTER.
7. The generator should start and run the low speed exercise.
8. To stop test press ENTER.

Results

1. In all models, if the unit starts in MANUAL, but fails to exercise without any ALARMS present, replace the controller.

Test 66 – Test Cranking and Running Circuits

General Theory

This test will check all of the circuits that are "Hot" with battery voltage and which could cause the Main Fuse to blow. Refer to ***Table 4-11*** throughout the procedure for the known resistance values of components.

Figure 4-81 shows the DMM in two different states. The left DMM indicates an OPEN circuit or INFINITY. The right DMM indicates a dead short or CONTINUITY. Throughout the troubleshooting, refer to ***Figure 4-81*** as needed to understand what the meter is indicating about the circuit being tested.