Results

1. If the meter indicated 59-61 Hertz, refer back to flow chart.
2. If the meter indicated a value outside the accepted range, refer back to flow chart.

Test 12 – Check Stepper Motor Control

Procedure: V-Twin and Single Cylinder

1. Remove air cleaner cover to access stepper motor and/or visually see throttle plates.
2. Physically move the throttle and verify the stepper motor, linkage and throttle do not bind in any way. If any binding is felt repair or replace components as needed. The stepper motor will have resistance as it moves through its travel.
3. Physically and visually move the throttle to the closed position by pulling the Stepper motor arm towards the idle stop. See ***Figure 2-12***, ***Figure 2-13***, ***Figure 2-14***, and ***Figure 2-15***.
4. Set the controller to MANUAL.
5. Observe and record the stepper motor movement.
   a. The stepper motor will sweep the mixer to a full open throttle position (which opens both venturis), back to a closed position and then to the starting position, which is a slight opening of the throttle in the small venturi.
6. Set the controller to OFF.
7. Physically move the throttle to the open position by pulling the stepper motor arm away from the idle stop.
8. Set the controller to MANUAL.
9. Observe and record the stepper motor movement.
10. Set the controller to OFF.
11. If no movement was seen in Steps 5 or 9 remove the controller and verify the six pin connector on the controller is seated properly. Remove the connector and then connect it and test again. If problems persist, proceed to Step 12.

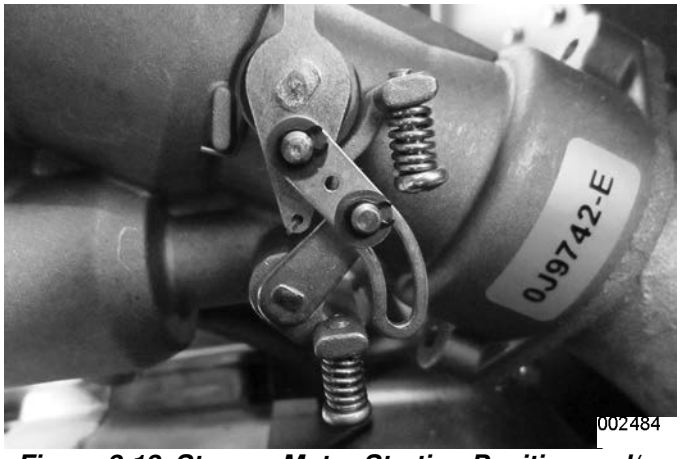

Figure 2-12. Stepper Motor Starting Position and/or Mid-point

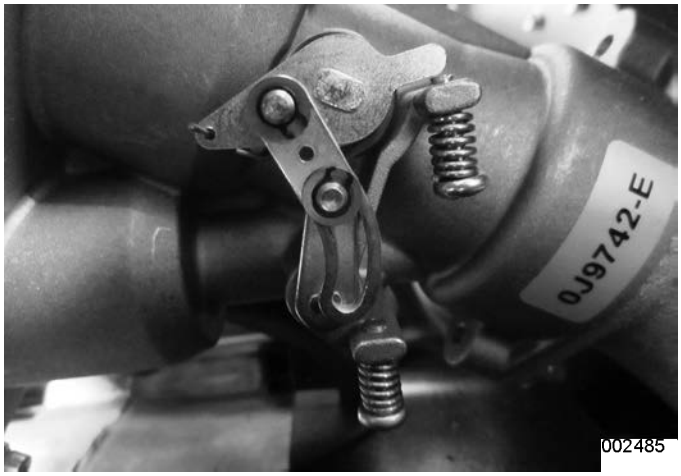

Figure 2-13. Stepper Motor Wide Open = Opens Both Venturis

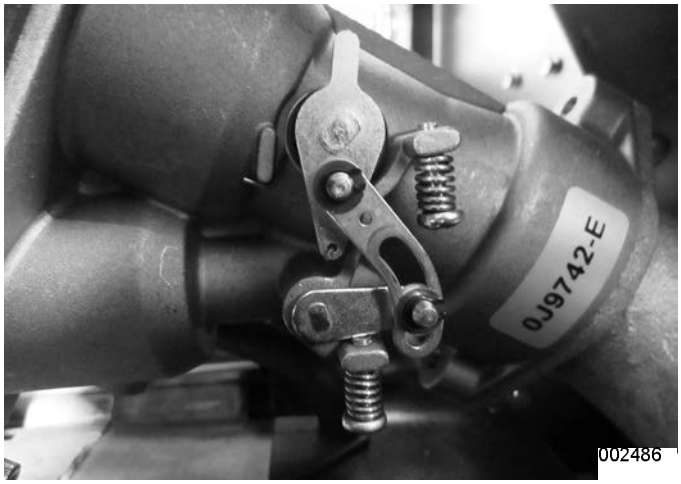

Figure 2-14. Stepper Motor Closed – Closes Both Venturis

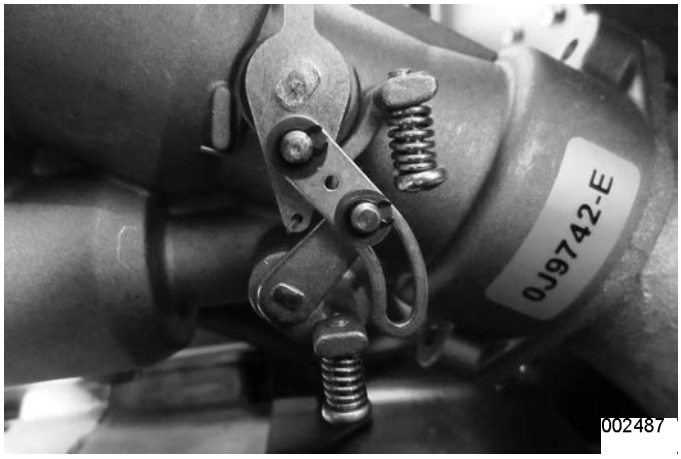

Figure 2-15. Stepper Motor Mid-point = Starting Point, Smaller Venturi Partially Open

12. Set the DMM to measure resistance.

NOTE: Press down with the meter leads on the exposed terminals of the connector. Do not probe into the connector.

13. Connect the meter test leads across points A and B as shown in *Table 2-12* and compare to the specified value.

Table 2-12. Stepper Motor Testing

Test Point A	Test Point B	Resistance Value
Red wire	Orange wire	approx. 10-11Ω
Red wire	Yellow wire	approx. 10-11Ω
Red wire	Brown wire	approx. 10-11Ω
Red wire	Black wire	approx. 10-11Ω
Red wire	Ground	INFINITY

Results

1. If the stepper motor moved to the wide-open position in Step 5, and to the closed position in Step 9, and the DMM indicated appropriate resistance values, refer back to flow chart.
2. If the stepper motor failed to change the throttle position in Steps 5 or 9, replace stepper motor.
3. If the stepper motor moved to the wide-open position in Step 5, and to the closed position in Step 9, and the DMM indicated inappropriate resistance values, replace Stepper motor.

Test 14 – Check Voltage and Frequency Under Load

General Theory

It is possible for generator AC output frequency and voltage to be good at no-load, but they may drop excessively when electrical loads are applied. This condition, in which voltage and frequency drop excessively when loads are applied can be caused by (a) overloading the generator, (b) loss of engine power or performance, or (c) a shorted condition in the stator windings or in one or more connected loads.

Procedure

1. Set a DMM to measure AC voltage.
2. Connect an accurate AC frequency meter and an AC voltmeter across the stator AC power winding leads.
3. Start the engine. Let it stabilize and warm-up.
4. Apply electrical loads to the generator equal to the rated capacity of the unit. Measure and record the frequency and the voltage.

Results

1. If the DMM indicated 60 Hz and approximately 248 VAC during full load, discontinue testing.
2. If the DMM indicated a frequency and voltage that dropped while under full load, refer back to flow chart.

Test 15 – Check for an Overload Condition

General Theory

An “overload” condition exists when the generator rated wattage/amperage capacity has been exceeded. To test for an overload condition on an installed unit, the recommended method is to use an ammeter.

Procedure

1. Connect the clamp-on ammeter to the generator according to the ammeter manufacturer’s specifications.
2. Transfer all normal electrical loads to the generator. Measure and record the amperage.

Results

1. If the ammeter indicated amperage readings that were above the unit’s specified ratings, reduce loads to the rated capacity of the unit.
2. If the ammeter indicated amperage readings that were below the unit’s specified ratings, but rpm and frequency dropped excessively refer back to flowchart.

Test 16 – Check Engine Condition

General Theory

If engine speed and frequency drop excessively under load, the engine may be underpowered. An underpowered engine can be the result of a dirty air cleaner, loss of engine compression, faulty fuel settings, or incorrect ignition timing, etc. A decrease in available horsepower will proportionally lead to a decrease in kW.

Procedure

For engine testing, troubleshooting, and repair procedures refer to **Section 4.6** ***Diagnostic Tests***. For further engine repair information, refer to the appropriate engine service manual.

Test 17 – Current Calibration

General Theory

An Evolution unit monitors load (current) through two Current Transformers (CT) mounted in the AC connection box area. The CTs provide an AC output signal proportional to the current flowing in the load leads 11 and 44.

CT1 and CT2 have identical functions, diagnostic procedures and calibration process. CT1 wire circuits 398A and 399A monitor the current flow on Wire 11. CT2 wire circuits 398B and 399B monitor the current flow on Wire 44. The CTs are calibrated using the Evolution control panel. A password is required to access the Dealer Edit menu when performing calibrations.