

**Section 6.10
DUAL 12 OR 24 VOLTS DC CONTROL**

Introduction

Sections 6.5, 6.6 and 6.7 provide information on DC control systems that are no longer being manufactured. Those older control consoles housed a DC control/latch-crank circuit board that required 12 volts DC for its operation. Other console components were also rated 12 volts DC.

On those older units, engines with a 24 volts DC electrical system required that a DC converter be installed to reduce the 24 volts DC battery voltage to 12 volts DC. Later production units have been equipped with a dual (12 or 24 volts) control system and do not require this DC converter.

In the last quarter of 1991, the following changes were incorporated:

- All control console components, including the DC control/latch-crank circuit board, were changed to dual voltage type. That is, all control console components can now be operated on either 12 or 24 volts DC.
- These later production control consoles can be installed on units with 24 volts DC engine electrical system without requiring a 24-to-12 volts DC converter.
- Units with a 24 volts DC engine system no longer require an engine run relay.
- Later production units with Option A or B control consoles are equipped with a dual voltage (12 or 24 volts) engine control circuit board (Part No. 82495).
- Later production units with Option C control console are equipped with a dual voltage engine control circuit board Part No. 83089.

NOTE: The new style dual voltage engine control circuit board will be shipped as a replacement part. This new board will work with any old or new style system, since it will operate on either 12 or 24 volts DC.

Schematic Diagrams

Figure 2 is a schematic diagram for a typical Option C console when the engine electrical system is rated 12 volts DC.

Figure 3 is a schematic diagram for a typical Option C control console when the engine is equipped with a 24 volts DC system.

Adjusting Overspeed Shutdown

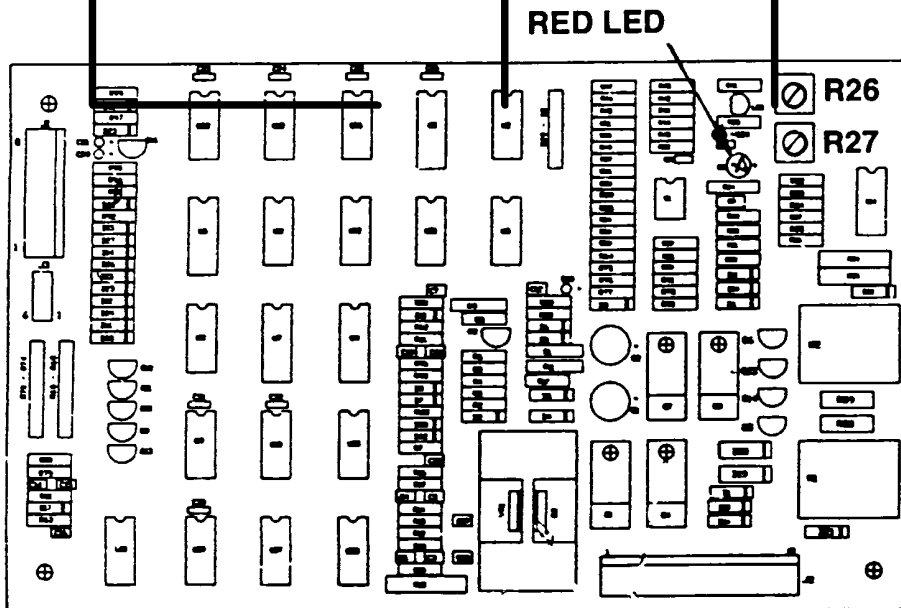
The dual voltage circuit board (Figure 1) must be calibrated each time it is replaced, for the following reasons:

- The circuit board must be matched to the specific engine flywheel or speed sensing errors will result.
- The board must be calibrated to establish an overspeed shutdown setting that is about 10 Hertz above the unit's normal operating speed.
- When the overspeed shutdown setting is correct, starter cutout speed during automatic startup will also be correct.

To calibrate the engine control circuit board, proceed as follows:

1. On the circuit board, locate potentiometers R26 and R27. See Figure 1. Also, locate the red LED.

Figure 1. Option C Engine Control Circuit Board



Adjusting Overspeed Shutdown (Continued)

2. Turn the COARSE (R26) pot all the way clockwise (CW). *CCW*
3. Turn the FINE (R27) pot all the way counterclockwise (CCW). *CW*

CAUTION: Steps 2 and 3 MUST be completed BEFORE THE ENGINE IS STARTED. If the engine is started before the steps are completed, an overspeed shutdown may occur at normal rated operating speed.

4. Start the generator engine manually, using the Start/Stop switch. Let the engine stabilize and warm up at no-load. If necessary, adjust the engine governor to obtain normal rated operating speed.
5. With the unit running at no-load and at its normal rated speed, slowly turn the COARSE (R26) pot counterclockwise (CCW) until the red LED just turns on.
6. Slowly turn the FINE (R27) pot clockwise (CW) until the red LED just goes out.
7. Slowly, turn the FINE (R27) pot counterclockwise (CCW) until the red LED just turns on.

With the board properly calibrated, overspeed shutdown will occur at approximately 10 Hertz above the unit's normal operating frequency. For example, if the engine no-load speed is 62 Hertz, overspeed shutdown will occur at approximately 72 Hertz.

Terminal Strip J1 on Engine Control Circuit Board

UNITS WITH 12 VDC ENGINE SYSTEM:

PIN NO.	WIRE NO.	FUNCTION(S)
1	15A	Fused battery voltage to circuit board (12 Volts DC)
2	0	Common Ground
3	86	From engine high coolant temperature & low coolant level shutdown switch
4	85	From engine low oil pressure shutdown switch
5	79	From engine RPM sensor
6	183A	Automatic start/stop circuit
7	17	Manual start signal from start/stop switch
8	18	Manual stop circuit
9	228	Auto enable- circuit is hot when Auto-Off- Manual switch is set to "Auto"
10	221	Engine preheat circuit (diesel only)
11	14	Engine run circuit
12	56	Starter circuit

UNITS WITH 24 VDC ENGINE SYSTEM:

PIN NO.	WIRE NO.	FUNCTION(S)
1	220A	Fused battery voltage to circuit board
2	0	Common Ground
3	86	From engine low coolant level/high coolant temperature switches
4	85	From engine low oil pressure switch
5	79	From engine RPM sensor
6	183A	Automatic start/stop circuit
7	17	Manual cranking circuit
8	18	Manual stop circuit
9	228	Auto enable- circuit is hot when Manual-Off-Auto switch is at "Auto"
10	221	Engine preheat circuit (diesel only)
11	219	Engine run circuit
12	56	Engine starter circuit

