INTRODUCTION

The LCC107B (LCC) is a combination engine speed control (LCC107B-1) and generator excitor control (LCC107B-2). The LCC107B-1 was later changed to LCC107B with additional features covered in Section 4 for Cummins KTA950G engine powered locomotive applications. This design provides 8 speeds and 8 power levels from the engine generator to drive the diesel electric traction motor. The engine develops a specific power for each notch position.

Engine speed ramp to recalculate the magnetic excitation. The output current of the speed control module drives the ADB120E4 proportional electric actuator.

Speed selection is performed through a four wire coded speed selector system. This unit uses only one output for speed setting with a separate independent speed control circuit.

The speed controller feature equals Stability, Droop, Dead Time Compensation, and other functions such as a boost gain reduction under certain conditions, droop, dynamic braking, and speed ramp control (acceleration / deceleration) for smooth transitions between notch settings. The LCC2134 controller is in a sealed enclosure with internal relays for shutting off the fuel pump and starter motor.

The excitation circuits are designed to control the main generator field circuit to regulate engine power. The load control section has 8 adjustable power settings, one for each notch. The output of the load control section of the LCC is a fixed current control circuit consisting of a programmable 0.05 to 0.08 VA, and the control at terminals 11 & 12 is less than 1VA.

The AC power absorbed by the control at terminals 11 & 12 is less than 1VA.

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Once the wheel slip relay is opened, the excitation will respond and control at a new point, lower than the original excitation point. The excitation will then ramp up to the setting of the notch selected. The overall operating speed may not have reached the new speed setpoint when the slip relay is closed, but the speed excitation will be less than the original excitation. The lower the speed, the longer the time to ramp back to the original setting.

**WHEEL SLIP #1**

If the slip relay is not functioning properly, try an external sensitivity reset relay at Terminals 13(-) & 14(+). This will hold the field output at 0A until the RESET command is reset.

### ENVIRONMENTAL

- **Temperature Range:** -20°C to +50°C (4°F to 122°F)
- **Humidity:** 90% or less, non-condensing
- **Vibration:** 1G (10 vibrations per minute)
- **Shock:** 3G (15 times per minute)

**Specifications**

- **Power Input:** 24VDC ± 20% Minimum Voltage to Operate
- **Current Consumption (Power On & Engine Running):** 100mA
- **Nominal Pickup Resistance:** 80 - 200Ω
- **Magnetic Pickup Voltage Requirement:** 0.5 - 50VAC (10VAC suggested at 1800RPM)
- **Power Supply Requirements:** 24VDC ± 20%
- **Input / Output Parameters:**
  - **Voltage Limit and Current Limit Gains at Range Settings**
  - **VOLTAGE LIMIT and CURRENT LIMIT GAINS AT RANGE SETTINGS**

**FACTORY SETTINGS**

- **Power Input:** 24VDC ± 20% Minimum Voltage to Operate
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- **Power Supply Requirements:** 24VDC ± 20%
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**1. Apply 24VDC to the unit, set in the IDLE position, DO NOT crank the engine.
2. Crank the Engine
3. Check Engine Fuel System
4. Engine Overheats
5. Make measurements indicated in "Speed Control Diagnostics." If they are correct, replace the actuator by reaching the unit, if the engine control circuit board. (2) If the circuit board is not, replace the actuator by reaching the unit, if the engine control circuit board.
6. NOTE: Make sure that the load is stable and that the load or speed STABILITY functions are shut off, refer to the INTERNAL CONTROL.