CEBM006502

Shop Manual

930E-2

DUMP TRUCK

SERIAL NUMBERS **A30156 thru A30180**
w/ Cummins QSK60 Engine

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SECTION A

GENERAL INFORMATION

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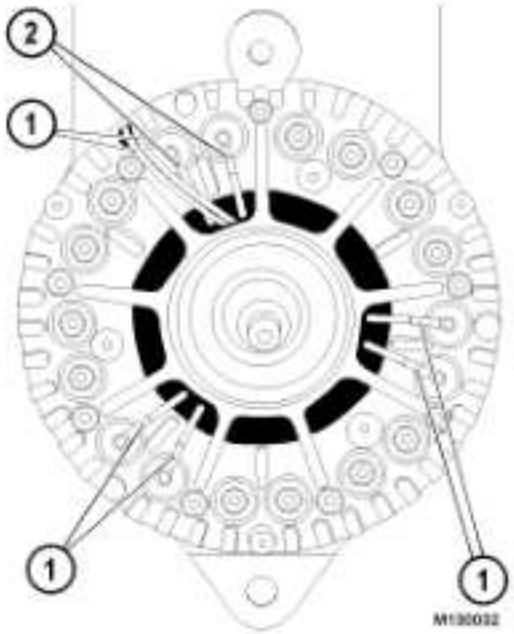


FIGURE 10-33.
1. Field Leads 2. Phase Leads

Control Unit Assembly Replacement

Refer to Figures 13-34 and 13-35 for the following steps:

1. Hold the new regulator connector harness in its approximate installation position and bend wires into their proper position.
2. Solder both the regulator connector lead "3", and the output lead from "B+" buss, to the terminal block, "B+" position. (right of center)
3. Position nuts on the terminal block attaching screws about 2 threads from the tip of the screw.

NOTE: These nuts are used as spacers.

4. Attach the terminal block to the alternator housing.

CAUTION: Thread both screws in evenly so as not to cock the terminal block. Failure to keep the terminal block parallel to the housing may break the terminal block.

5. Attach the ground lead from the regulator harness (lead "2") to the housing.
6. Route the regulator harness under "B+" buss leads. Care should be taken to keep the regulator connector flat with "A" pin properly positioned.

NOTE: Wires in steps 7 & 8 should slant away from both "E" & "R" terminals (down and left, as viewed from outside).

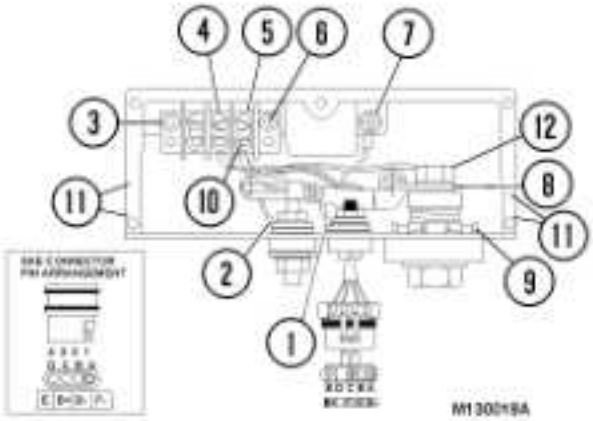


FIGURE 10-34.
1. Ignition (E) (Harness Lead #4)
2. Relay (R)
3. Terminal Block
4. F- (Harness Lead #1)
5. F+ (Harness Lead #3); **10 in. lbs. (1.3 Nm)** torque
6. Terminal Block Screw; **30 in. lbs. (3.5 Nm)** torque
7. Ground Wire from Regulator (Harness Lead #2)
8. **24 in. lbs. (2.7 Nm)** torque
9. B+ Buss Leads to Rectifier
10. When replacing output stud only; tighten to **12-15 ft.lbs. (16-20 N.m)** torque, coat with epoxy.

10. Solder here.
10. Apply RTV here.
10. Tighten to **180 in.lbs. (20 N.m)** torque.

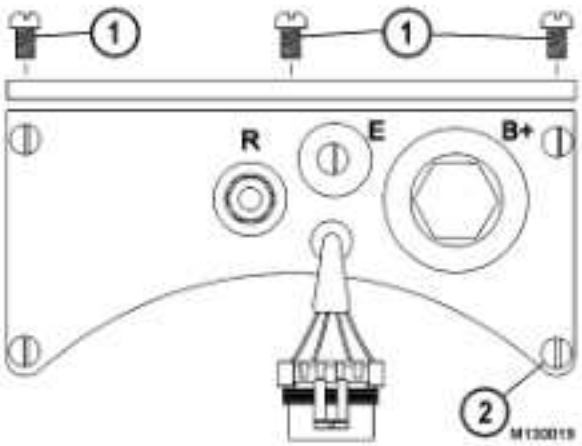


FIGURE 10-35.

1. Cover Screws (TOP) 2. Control Unit Screw

NOTE: Tighten nine screws to 20 in.lbs. (2 Nm) torque.

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NOTE: This screen is the only place that the value of the G_I gain potentiometer can be checked.

There are two gain factors that can be applied to the payload measurement. The first is the G_I gain factor and the other is the UP gain factor. They are not applied uniformly to all payload calculations.

Example Calculation of Payload

These calculations used a 13" front suspension diameter and 10" rear suspension diameter.

$$\text{Sprung Weight} = \frac{3.14}{4} \text{ Suspension Diameter}^2 \text{ (Psi Left + Psi Right)}$$

$$\text{Sprung Weight} = \text{Axle Weight(lbs)}/2000$$

Front Weight (6)	106.00	Rear Weight (7)	75.10
x Incline Factor (9)	0.95	x Incline Factor (10)	0.98
	100.70		73.90
x Link Factor (11)	1.00	x Link Factor (12)	1.53
Front Weight	100.70	Rear Weight	113.70
Front Weight	100.70		
Rear Weight	113.70		
Total Weight	214.40		
x Gain Factor (14)	1.00		
	214.40		
- Calibration (13)	-70.60		

FIGURE 20-5.

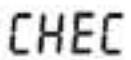
Viewing Payload Calculation Inputs

The PLM II™ estimates payload by monitoring suspension pressures when the truck is loaded and compares them to truck empty pressure values. The PLM II™ uses one empty truck weight for all payload calculations. This empty truck weight is called the 'tare weight'. It is not the empty vehicle weight (EVW). It is an estimate of the empty weight of all the truck components suspended above the suspensions. The process of making the PLM II™ calculate the tare weight is called the calibration procedure.

This calibration weight is used as item #13 from the manual calculation procedure in Figure 20-4.

1. Press and hold the LIGHT/INC and MODE switches until "CHEC" is flashing on the display. 
2. Press and hold the CAL/CLR switch until "CALL0" is flashing on the display. 
3. Press the CAL/CLR switch to cycle through the following data. The sequence repeats.

Item and Description	Units
1. Year of Calibration	Last 2 digits of year
2. Month: Day of Calibration	XX:XX
3. Hour: Minute of Calibration	XX:XX
4. Truck Model Setting	
5. Pressure Front Left	Psi
6. Pressure Front Right	Psi
7. Pressure Rear Left	Psi
8. Pressure Rear Right	Psi
9. Front Sprung Weight	Tons
10. Rear Sprung Weight	Tons
11. Degree of Incline	±° Nose Up Positive
12. Incline Factor - Front Axle	
13. Incline Factor - Rear Axle	
14. Link Factor Front Axle	
15. Link Factor Rear Axle	
16. Calibration Weight	Tons

4. Press MODE once and "CHEC" will flash on the display. 
5. Press MODE once and the meter will return to normal operation.

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Speed Signal

The speed signal triggers the payload meter to display the time of day when the truck begins moving. If this does not happen or the payload meter does not count up the distance from the shovel after loading, the speed signal may be missing. This can be confirmed by checking the inputs to the payload meter. Refer to "Monitoring Input Signals". Verify the payload meter is not receiving a speed signal before following the troubleshooting fault tree.

NOTE: The payload meter will ignore speed signal input if the brake lock appears to be on. Confirm the payload meter correctly reads the brake lock input.

930E Speed Signal

On the 930E, the speed signal comes from a speed sensor mounted on the left-front wheel. Occasionally, this sensor is damaged by debris, impact during tire mounting, or misalignment during repair of the spindle. The wheel must be removed to replace the sensor. Since the sensor is an active device, it requires an 18v power supply to power the electronics that convert the electromagnetic pulses into signals for the payload meter. In addition, because the sensor is active and not just a simple coil, it is not possible to measure the resistance across the contacts of the harness to determine if the sensor has failed.

To troubleshoot, confirm that the 18v power supply is reaching the sensor. The speed signal can be monitored in the control cabinet to confirm the wiring from the sensor to the cabinet. Checking the signal at the back of the payload meter will confirm the wiring from the control cabinet. It is also possible to check the speed signal at the back of the payload meter to confirm the entire wiring route. A signal generator may be used at the wheel to generate a signal back to the payload meter. The speed signal input can be monitored from the payload meter using the procedure outlined in "Monitoring Input Signals".

Adjusting the Speed Sensor

1. Align a tooth on the speed sensor gear with the tip of the speed sensor.
2. Check the distance between the speed sensor and gear tooth with a feeler gauge.
3. Adjust the gap to 0.060 in. (1.5 mm) and lock the sensor in place.
4. Rotate the wheel hub 180° and verify that the gap has remained within specifications.

730E/830E Speed Signal

The speed signal for the 730E/830E model trucks comes from a passive speed sensor mounted on the left wheel motor. This signal travels on the 714/714A circuits to an isolation transformer in the control cabinet. From the transformer, the signal travels through the connector at the back of the cab up to the payload meter.

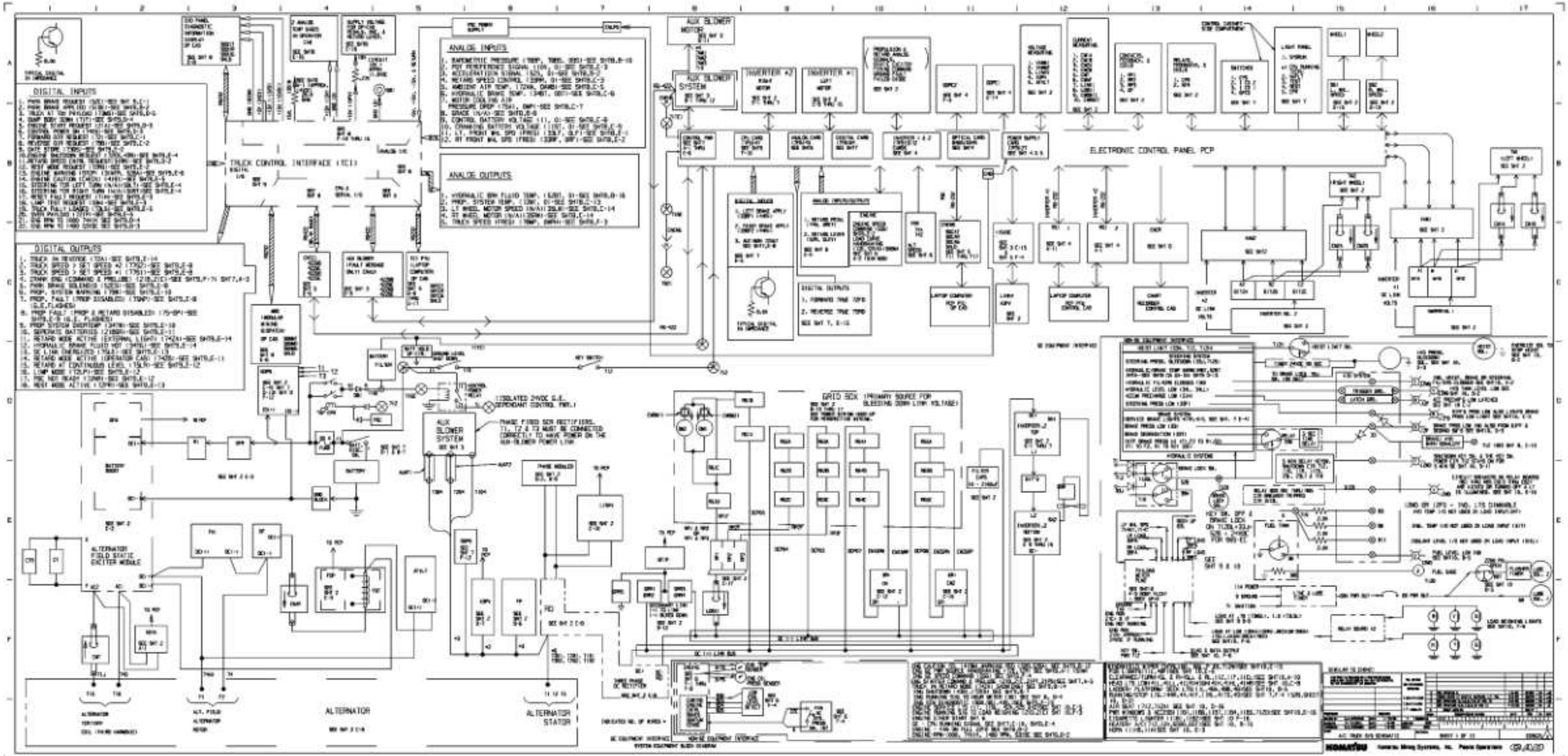
Confirm that the sensor at the wheel motor is working properly. This is a passive, coil-type speed sensor and its electrical integrity can be checked using an ohmmeter. Confirm the speed signal in the control cabinet at the transformer. A signal generator may be used at the wheel motor to generate a signal back to the payload meter. The speed signal input can be monitored from the payload meter using the procedure outlined in "Monitoring Input Signals".

HD1500/530M Speed Signal

The speed signal runs from a speed sensor on the transmission output shaft to the PMC and to the payload meter. You can confirm the speed sensor by checking the speed input to the PMC. Confirm the speed signal wiring from the PMC to the payload meter. The speed signal input can be monitored from the payload meter using the procedure outlined in "Monitoring Input Signals".

Refer to the following page for the fault tree diagram.

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