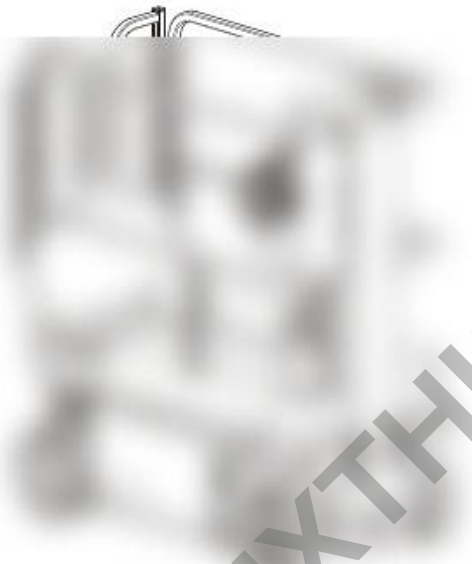
SECTION 1. MACHINE SPECIFICATIONS



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4.4 REAR WHEEL HUB - INSTALLATION



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Values for Zinc Yellow Chromate Fasteners (Ref 4150707)
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8.4 DTC CHECK TABLES

0-0 Help Comments

DTC	FAULT MESSAGE	DESCRIPTION	CHECK
001	EVERYTHING OK	The normal help message in platform mode. Displays on the analyzer only.	
002	GROUND MODE OK	The normal help message in ground mode. Displays on the analyzer only.	
003	ALARM SOUNDING - TILTED & ABOVE ELEVATION	Control system senses that the platform is elevated and the vehicle is tilted, and the machine not configured to cutout.	• Check that the machine is tilted. If so, lower the platform and reposition the machine to a level surface. • Fully stow the platform. • The tilt sensor is part of the ground control box. Check that the ground control box is secured to the machine. • Check that the pothole protection switches are securely mounted. • Check that the elevation angle sensor is securely mounted. • Check the ANALYZER -> MACHINE SETUP -> MARKET configuration. • If MARKET is set to CE, ensure ANALYZER -> MACHINE SETUP -> TILT CUTOUT parameter is set as desired. • Backprobing ground board J1-18 should show about 0 volts. • Backprobing ground board J1-10 should show about 0 volts. • Check pothole protection switch adjustment. • Calibrate the elevation sensor, see Section 5.5. • Calibrate the tilt sensor, see Section 5.2.
004	DRIVING AT CUTBACK - ABOVE ELEVATION	The platform is elevated and the machine is driving.	• Fully stow the platform. • Check that the elevation angle sensor is securely mounted. • Check that the pothole protection switches are securely mounted. • Check the lift/drive switch. • Backprobing ground board J1-18 should show about 0 volts. • Backprobing ground board J1-10 should show about 0 volts. • Check function of elevation angle sensor. ANALYZER -> DIAGNOSTICS -> ELEV SENSOR -> ZEROED should be about 0V when stowed and about 0.15V at cutback.
005	DRIVE & LIFT UP PREVENTED - TILTED & ELEVATED	Driving is not possible since the platform is elevated and the chassis is not level.	• Check that the machine is tilted. If so, lower the platform and reposition the machine to a level surface. • Fully stow the platform. • The tilt sensor is part of the ground control box. Check that the ground control box is secured to the machine. • Check that the pothole protection switches are securely mounted. • Check that the elevation angle sensor is securely mounted. • Check the ANALYZER -> MACHINE SETUP -> MARKET configuration. • If MARKET is set to CE, ensure ANALYZER -> MACHINE SETUP -> TILT CUTOUT parameter is set as desired. • Check pothole protection switch adjustment. • Backprobing ground board J1-18 should show about 0 volts. • Backprobing ground board J1-10 should show about 0 volts. • Calibrate the elevation sensor, see Section 5.5. • Calibrate the tilt sensor, see Section 5.2.

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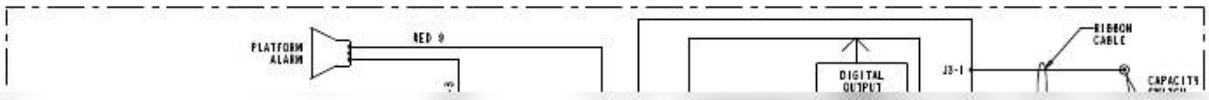

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9.12 HYDRAULIC SCHEMATIC

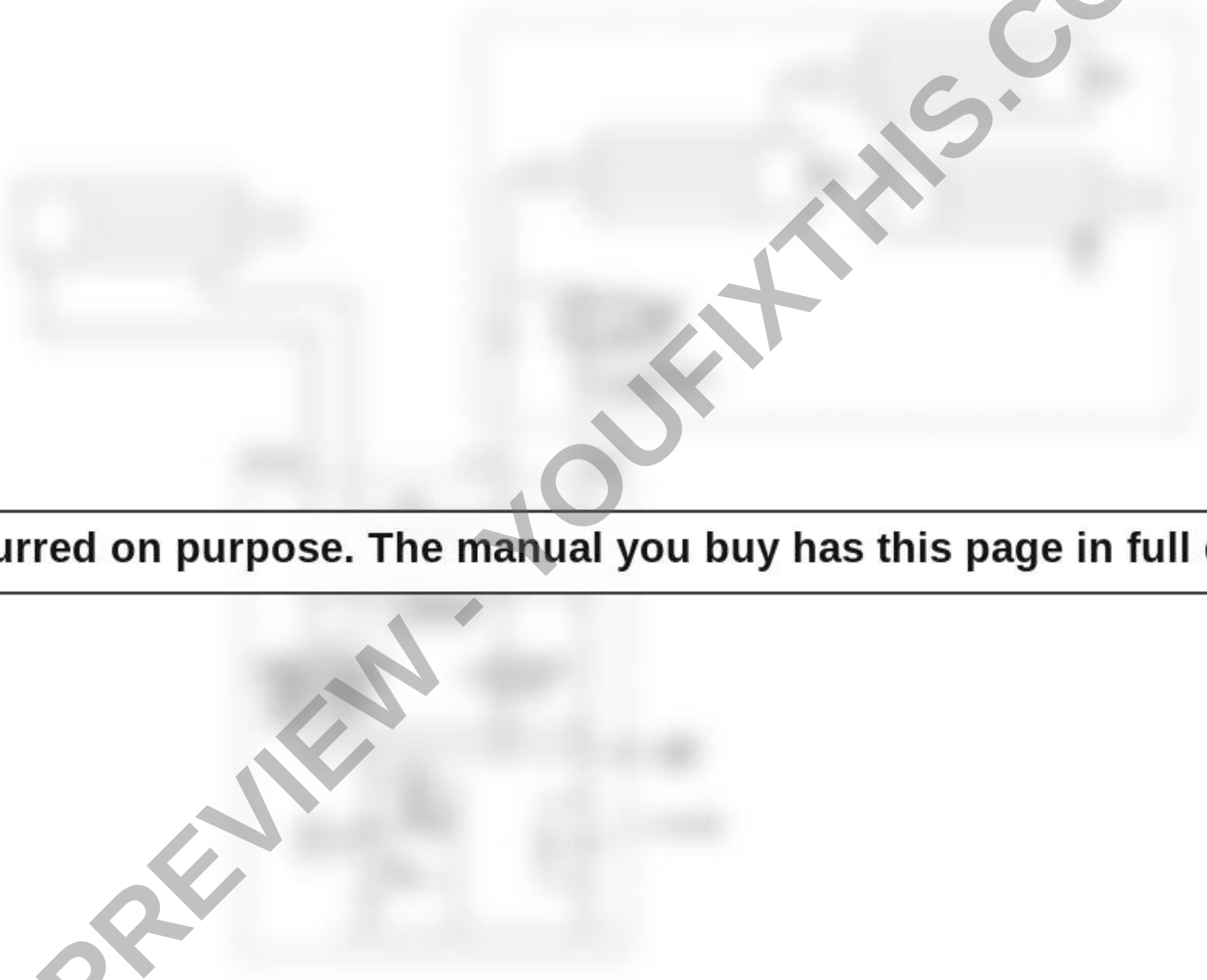

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TABLE OF CONTENTS

SUBJECT - SECTION, PARAGRAPH **PAGE NO.**

MAINTENANCE SAFETY PRECAUTIONS . . . . . A
A GENERAL . . . . . A
B HYDRAULIC SYSTEM SAFETY . . . . . A
C MAINTENANCE . . . . . A
REVISION LOG . . . . . B

SECTION 1 - MACHINE SPECIFICATIONS

1.1 OPERATING SPECIFICATIONS 1-2
Platform Capacities 1-2
Dimensional Data 1-2
Tires 1-2
Batteries 1-2
Critical Stability Weights 1-2
1.2 LUBRICATION 1-2
Lubrication Capacities 1-2
Hydraulic Oil 1-2
Lubrication Specifications 1-3
Oil Check Procedure 1-3
1.3 CYLINDER SPECIFICATIONS 1-3
1.4 TORQUE REQUIREMENTS 1-3
1.5 SERIAL NUMBER LOCATIONS 1-3

SECTION 2 - GENERAL SERVICE INFORMATION

2.1 MACHINE PREPARATION, INSPECTION, AND MAINTENANCE 2-1
General 2-1
Preparation, Inspection, and Maintenance 2-1
Pre-Start Inspection 2-1
Pre-Delivery Inspection and Frequent Inspection 2-1
Annual Machine Inspection 2-1
Preventative Maintenance 2-1
2.2 PREVENTIVE MAINTENANCE AND INSPECTION SCHEDULE 2-2
Maintenance and Inspection Table Codes: 2-4
Footnotes: 2-4
2.3 SERVICING AND MAINTENANCE GUIDELINES 2-5
General 2-5
Safety and Workmanship 2-5
Cleanliness 2-5
Components Removal and Installation 2-5
Component Disassembly and Reassembly 2-5
Pressure-Fit Parts 2-5
Bearings 2-6
Gaskets 2-6
Bolt Usage and Torque Application 2-6
Hydraulic Lines and Electrical Wiring 2-6
Hydraulic System 2-6
Lubrication and Servicing 2-6
Batteries 2-6
2.4 LUBRICATION INFORMATION 2-6
Hydraulic System 2-6
Lubrication Specifications 2-7

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MAINTENANCE SAFETY PRECAUTIONS

A. GENERAL

This section contains the general safety precautions which must be observed during maintenance of the aerial platform. It is of utmost importance that maintenance personnel pay strict attention to these warnings and precautions to avoid possible injury to themselves or others or damage to the equipment. A maintenance program must be established by a qualified person and must be followed to ensure that the machine is safe to operate.

⚠ WARNING

MODIFICATION OF THE MACHINE WITHOUT CERTIFICATION BY A RESPONSIBLE AUTHORITY THAT THE MACHINE IS AT LEAST AS SAFE AS ORIGINALLY MANUFACTURED IS A SAFETY VIOLATION.

The specific precautions to be observed during machine maintenance are inserted at the appropriate point in the manual. These precautions are, for the most part, those that apply when servicing hydraulic and larger machine component parts.

Your safety, and that of others, is the first consideration when engaging in the maintenance of equipment. Always be conscious of component weight and never attempt to move heavy parts without the aid of a mechanical device. Do not allow heavy objects to rest in an unstable position. When raising a portion of the equipment, ensure that adequate support is provided.

⚠ WARNING

SINCE THE MACHINE MANUFACTURER HAS NO DIRECT CONTROL OVER THE FIELD INSPECTION AND MAINTENANCE, SAFETY IN THIS AREA IS THE RESPONSIBILITY OF THE OWNER/ OPERATOR.

B. HYDRAULIC SYSTEM SAFETY

1. It should be particularly noted that the machines hydraulic systems operate at extremely high and potentially dangerous pressures. Every effort should be made to relieve any system pressure prior to disconnecting or removing any portion of the system.
2. Relieve system pressure by lowering the platform completely to direct any line pressure back into the return line to the reservoir. Pressure feed lines to system components can then be disconnected with minimal fluid loss.

C. MAINTENANCE

⚠ WARNING

FAILURE TO COMPLY WITH SAFETY PRECAUTIONS LISTED IN THIS SECTION COULD RESULT IN MACHINE DAMAGE, PERSONNEL INJURY OR DEATH AND IS A SAFETY VIOLATION.

- REMOVE ALL RINGS, WATCHES, AND JEWELRY WHEN PERFORMING ANY MAINTENANCE.
- DO NOT WEAR LONG HAIR UNRESTRAINED, OR LOOSE FITTING CLOTHING AND NECKTIES WHICH ARE APT TO BECOME CAUGHT ON OR ENTANGLED IN EQUIPMENT.
- OBSERVE AND OBEY ALL DANGER, WARNING, CAUTION AND OTHER INSTRUCTIONS ON MACHINE AND IN SERVICE MANUAL.
- KEEP STANDING SURFACES AND HAND HOLDS FREE OF OIL, GREASE, WATER, ETC.
- NEVER WORK UNDER AN ELEVATED PLATFORM UNTIL PLATFORM HAS BEEN SAFELY RESTRAINED FROM ANY MOVEMENT BY BLOCKING OR OVERHEAD SLING.
- BEFORE MAKING ADJUSTMENTS, LUBRICATING OR PERFORMING ANY OTHER MAINTENANCE, SHUT OFF ALL POWER CONTROLS.
- BATTERY SHOULD ALWAYS BE DISCONNECTED DURING REPLACEMENT OF ELECTRICAL COMPONENTS.
- KEEP ALL SUPPORT EQUIPMENT AND ATTACHMENTS STOWED IN THEIR PROPER PLACE.
- USE ONLY APPROVED, NONFLAMMABLE CLEANING SOLVENTS.

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REVISION LOG

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Drive Motor Disassembly

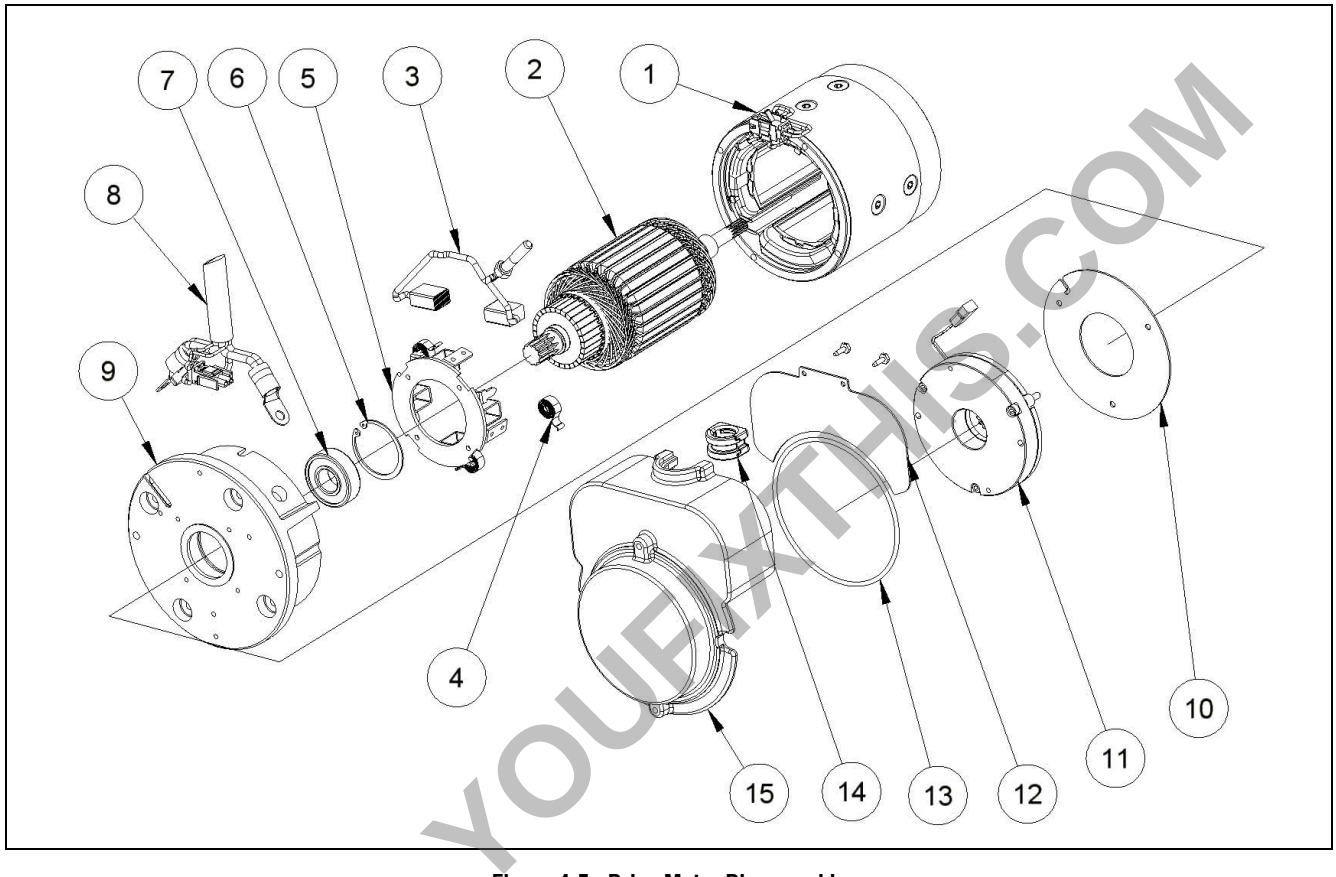

Figure 4-5. Drive Motor Disassembly

1. Remove the 2 (#8-32UNC x .500in long) screws holding the cover plate (12) in place (See Figure 4-6.) and remove the cover plate from the motor.
2. Remove the 2 (M5 x 0.8 x 20mm long) screws holding the cover (15) in place and set aside. These screws are needed later to manually release the brake. Slide the strain relief bushing (14) and wire harness out of the cover and remove the cover from the motor. Remove strain relief bushing from wire harness and set aside.
3. Discard the O-ring (13) located inside the cover.
4. Remove the wire harness (8) from the motor by disconnecting the field connection, brake connection, and armature connections. (See Figure 4-7.).
5. Install the 2 cover mounting screws into the threaded holes in the brake assembly and tighten to manually release the brake. (See Figure 4-7.) or image in the "Manual Disengage Procedure" (See Figure 4-4.).
6. Remove the 3 screws holding the brake assembly (11) to the motor. Carefully remove the brake assembly and friction disk (10) from the motor by sliding off of the shaft. (See Figure 4-7.).
7. Remove the screws holding the commutator end head (9) in place and remove the commutator end head from the frame and field assembly (1). The armature (2) will be attached to the commutator end head.
8. Pull back the brush springs (4) in the commutator end head, pull the brush back and rest the springs on the side of the brush. The brushes should move freely within the holders.
9. Use an arbor press or a bearing puller to remove the armature from the commutator end head assembly.
10. Remove the snap ring (6) and bearing (7) from the commutator end head. Discard the bearing.

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Excessive Battery Watering Requirements or Strong Sulphur (Rotten Egg) Smell

These symptoms indicate over-charging or high battery temperature. These symptoms are unlikely to be caused by too high a charge current since the maximum charge current of the charger will be small compared to even a moderately sized battery pack. The most likely cause for this problem is incorrect charge algorithm setting and/or high ambient temperatures.

1. Confirm that the battery pack is not too small - usually > 50Ah.
2. Confirm that the nominal battery voltage matches the charger output voltage.
3. Confirm the correct battery charge algorithm. If the battery pack is new, the algorithm will need to be changed if the pack is not the same as the old one. for instructions on how to determine and change the battery charge algorithm see the following sub-section.
4. If the output voltage of the charger seems excessive, return the charger for service. Contact JLG to get the expected battery voltage settings for the charger in question. Be sure to have the charger's serial number and charge algorithm setting available when calling.

Checking/Changing the Battery Charge Algorithm

The charger is pre-loaded with programming algorithms for the specific batteries detailed in Table 5-5, Battery Algorithms. Contact JLG if your specific battery model is not listed.
Each time AC power is applied with the battery pack not connected, the charger enters an algorithm select/display mode for approximately 11 seconds. During this time, the current Algorithm # is indicated on the Yellow Charging LED. A single digit Algorithm # is indicated by the number of blinks separated by a pause. A two digit Algorithm # is indicated by the number of blinks for the first digit followed by a short pause, then the number of blinks for the second digit followed by a longer pause.

To check / change the charging algorithm:

1. Disconnect the charger positive connector from the battery pack. Apply AC power and after the LED test, the Algorithm # will display for 11 seconds.
2. To change the algorithm, touch the connector to the battery's positive terminal for 3 seconds during the 11 second display period and then remove. The Algorithm # will advance after 3 seconds. Repeat this procedure until the desired Algorithm # is displayed. A 30 second timeout is extended for every increment. Incrementing beyond the last Algorithm will recycle back to the first Algorithm. When the desired Algorithm is displayed, touch the charger connector to the battery positive terminal until the output relay makes a clicking noise (approx. 10 seconds). The algorithm is now in the permanent memory.
3. Remove the AC power from the charger and reconnect the charger's positive connector to the battery. It is recommended to check a newly changed algorithm by repeating the above steps 1 and 3.

Table 5-5. Battery Algorithms

Algorithm #	Battery Type
43	Harris Battery Discover EVGGC6A-A
35	JLG P/N 0400242
23	Douglas Flooded (JLG default) GES Battery A1055 Trojan T105 East Penn GC-110-WNL Trojan T105 PLUS Champion CHGC2 GC2 US BATT EV-145-WNL US BATT 2200 XC
8	Concorde 10xAh AGM
7	J305 DV/DT CP
6	DEKA 8G31 Gel
5	Trojan 30/31XHS
4	US Battery USB2200
3	T105 DV/DT CP
2	Trojan T105 tapped
1	Trojan T105

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6-6 Communication

DTC	FAULT MESSAGE	DESCRIPTION	CHECK
662	CANBUS FAILURE - PLATFORM MODULE	In platform mode, the control system failed to receive messages from the platform board.	• Turn on machine in ground mode. If DTC 661 is not present check for 24V between platform box connector terminals D and A. If not 24V, test continuity from platform box connector socket A to ground board connector socket J1-6 and test continuity from platform box connector socket D to ground board connector socket J1-7. • If DTC 661 was present in the previous check, disconnect armstack passthru connector located near the ladder on the left. Turn on in ground mode. If DTC 661 is not present then there is a problem in armstack harness. Armstack passthru socket 5 to platform box terminal E should have continuity. Armstack passthru socket 6 to platform box connector terminal F should have continuity. Armstack passthru socket 7 to platform box connector terminal G should have continuity. Armstack passthru socket 5 to armstack passthru socket 6 resistance should be 120 Ohms +/- 5%. Armstack passthru socket 5 to armstack passthru socket 7 should measure open circuit. Armstack passthru socket 6 to armstack passthru socket 7 should measure open circuit. • Disconnect armstack passthru and ground board J1. Armstack passthru pin 5 to ground board socket J1-11 should have continuity. Armstack passthru pin 6 to ground board socket J1-12 should have continuity. Armstack passthru pin 7 to ground board socket J1-13 should have continuity. Armstack passthru pin 5 to armstack passthru pin 6 should measure open circuit. Armstack passthru pin 5 to armstack passthru pin 7 should measure open circuit. Armstack passthru pin 6 to armstack passthru pin 7 should measure open circuit. • Disconnect ground board J1 and power module connector. Ground board socket J1-31 to power module connector socket 10 should have continuity. Ground board socket J1-32 to power module connector socket 11 should have continuity. Ground board socket J1-31 to J1-32 should measure open circuit. Ground board socket J1-31 to J1-33 should measure open circuit. Ground board socket J1-32 to J1-33 should measure open circuit. • Ensure all connections opened above are reconnected. Disconnect power module connector. Turn on in platform mode. If DTC 662 is no longer present replace power module. • If DTC 661 and 662 have been present through above steps replace ground board. *Continued Next Page*
662 (Cont.)	CANBUS FAILURE - PLATFORM MODULE (Continued)	In platform mode, the control system failed to receive messages from the platform board.	• Disconnect platform box connector. Open platform box. Disconnect platform board connector. Platform box socket E to platform board J1-3 should have continuity. Platform box socket F to platform board J1-4 should have continuity. Platform box pin E to pin F should measure open circuit. Platform box pin E to pin G should measure open circuit. Platform box pin F to pin G should measure open circuit. If these checks are OK replace platform board.

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