

6.16 CALIBRATING LIFT CRACK POINT

1. Position the Platform/Ground select switch to the Ground position.

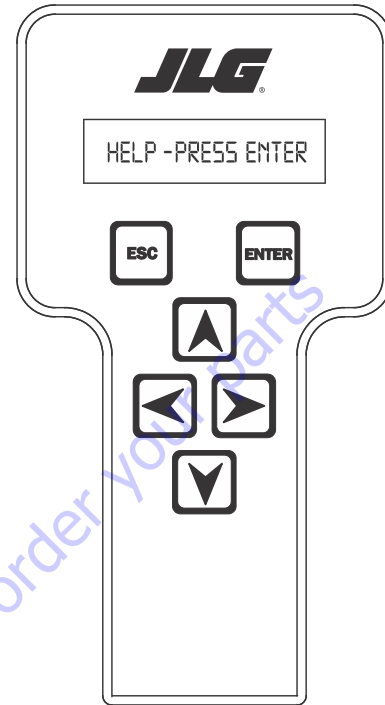


2. Plug the analyzer into the connector inside the Ground control box.



3. Pull out the Emergency Stop switch and start the engine.

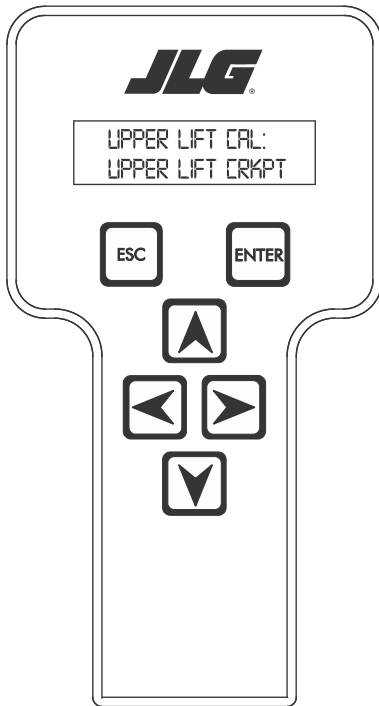
4. The analyzer screen should read:



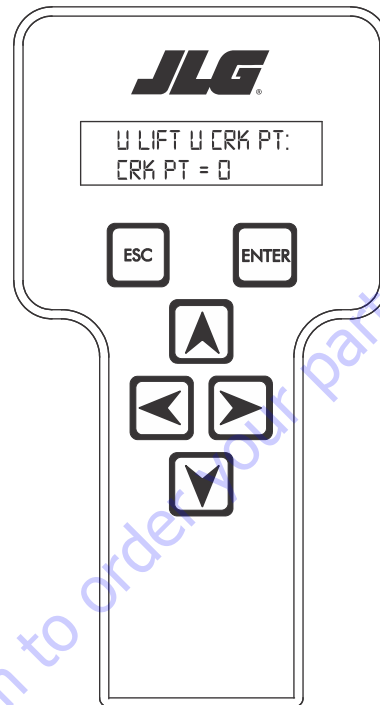
5. Use the arrow button to reach OPERATOR ACCESS. Hit Enter.
6. Enter the Access Code, 33271.
7. Use the right Arrow key to reach CALIBRATIONS. Hit Enter.

SECTION 6 - JLG CONTROL SYSTEM

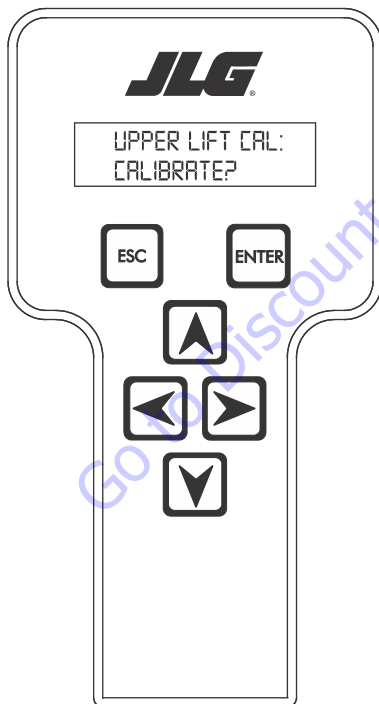
8. Use the arrow keys to reach Upper Lift Crack Point (UPPER LIFT CRKPT). The screen will read:



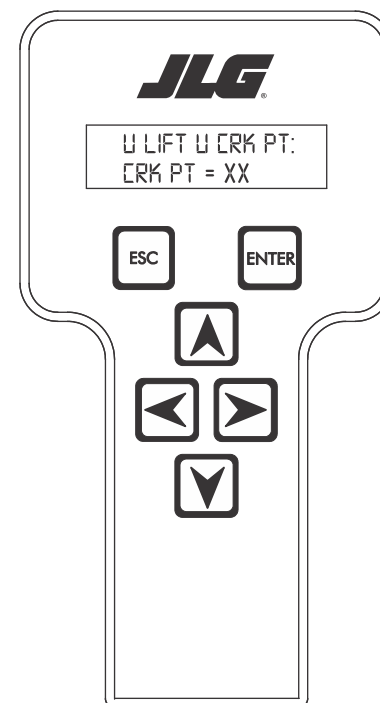
10. Hit Enter. The screen will read:



9. Hit enter. The screen will read:

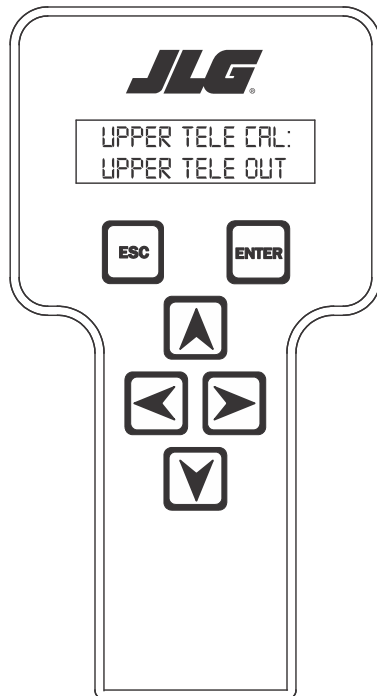


11. Hit Enter again. The screen will read:

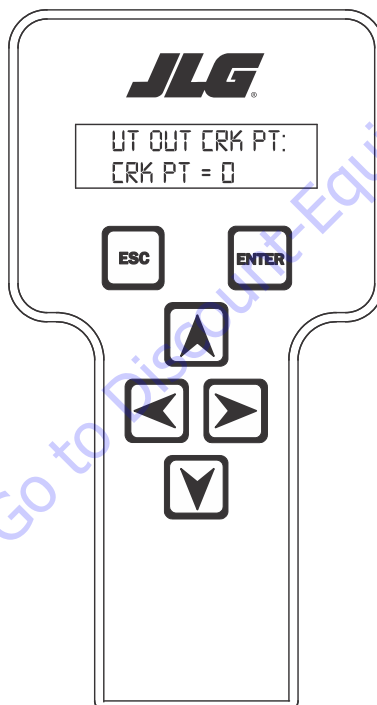


12. Activate the Lift Up function by fully stroking the joystick until the boom starts to move, then leave off immediately. The display will read CRK PT = and show the numeric crack point value.

10. Hit Enter. The screen will read:

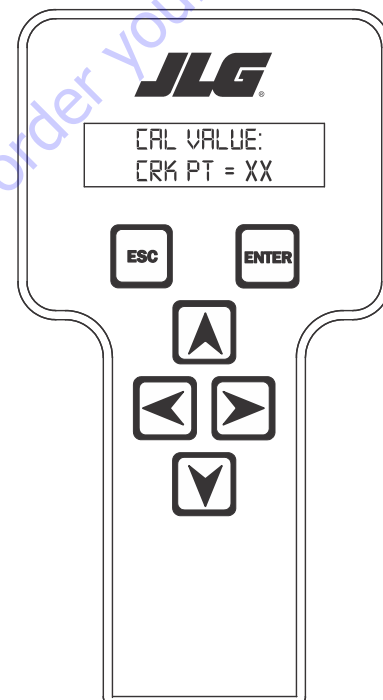


11. Hit enter again. The screen will read:

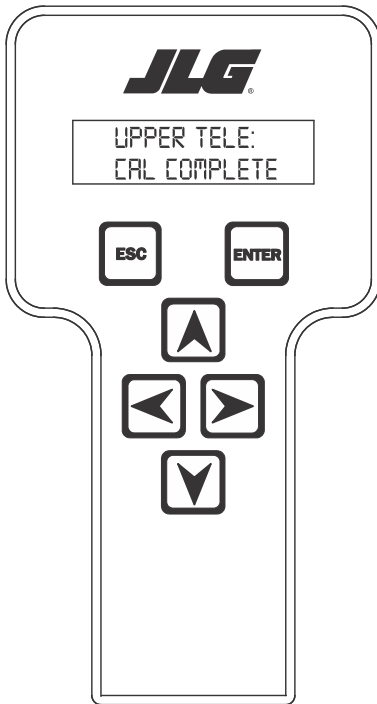


NOTE: In the following step, a minimum value of 10 must be indicated on the analyzer before the crack point can be set. The JLG Control System will not accept a value less than 10 and the analyzer will not advance to "CAL COMPLETE" if the crack point is set at a lesser value.

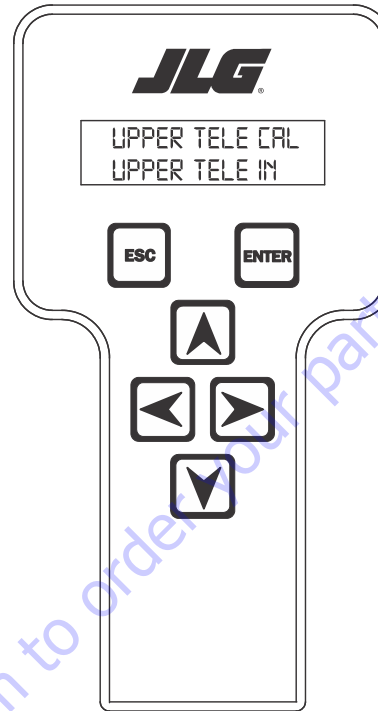
12. While reading the crack point setting on the analyzer, activate the Tele Out function until the boom starts to move or until the crack point setting reaches a value of 10 if the boom begins to move at a value lesser than 10, then leave off the control switch immediately. The display will read CRK PT = and show the numeric crack point value.
13. Hit enter. The number displayed will be the value that the crack point is set to. The screen will show:



14. Hit Enter. The screen will read:



15. Hit Enter. The screen will read:



16. Repeat steps 10 thru 12 for the Tele In function.

17. After completing all the Tele Calibrations, hit ESC twice to go back to CALIBRATIONS.

6.18 CALIBRATING TILT SENSOR

NOTICE

A NEW TILT MODULE WILL ACT AS IF IT IS TILTED ALL OF THE TIME UNTIL THE FOLLOWING PROCEDURE IS PERFORMED.

WARNING

DO NOT CALIBRATE THE LEVEL SENSOR EXCEPT ON A LEVEL SURFACE.

1. Use the following procedure to calibrate the tilt sensor.

Before the tilt sensor can be calibrated, the following conditions must be met:

- a. Steering previously calibrated.
- b. Axles extended.
- c. Wheels straight.
- d. Turntable centered.
- e. Boom fully retracted.
- f. Boom angle is less than 45°.
- g. Machine on firm, level ground.

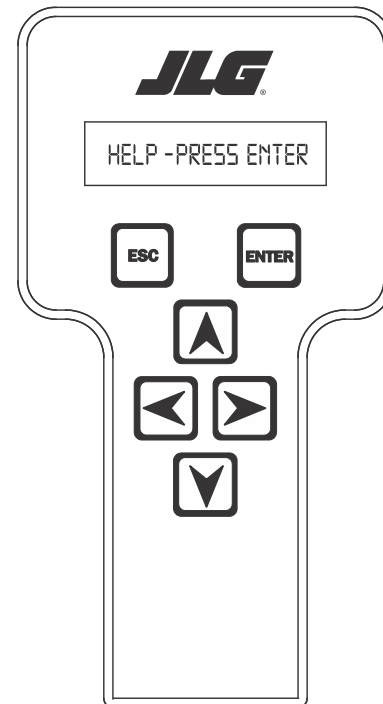
2. Position the Platform/Ground select switch to the Ground position.



3. Plug the analyzer into the connector inside the Ground control box.



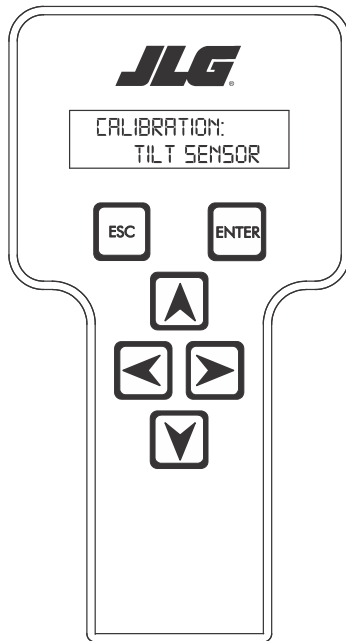
4. Pull out the Emergency Stop switch and start the engine.
5. The analyzer screen should read:



6. Use the arrow button to reach OPERATOR ACCESS. Hit Enter.
7. Enter the Access Code, 33271.
8. Use the right Arrow key to reach CALIBRATIONS. Hit Enter.

SECTION 6 - JLG CONTROL SYSTEM

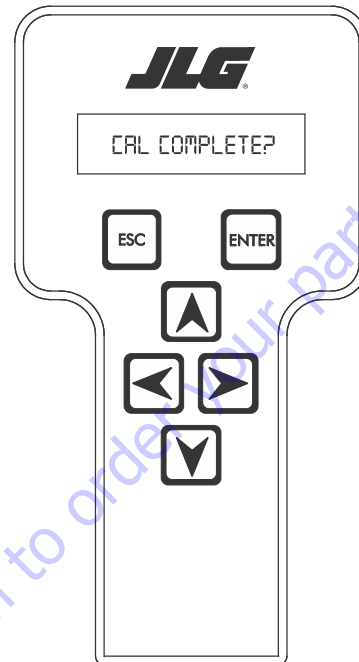
9. Use the arrow keys to reach the TILT SENSOR. The screen should read:



10. Press ENTER.

11. When prompted, swing turntable 180° to opposite end of chassis.

12. Press ENTER. The screen should read:



13. Upon completing swing calibration, swing turntable 180° back to the stowed position.

14. Hit ESC twice to go back to CALIBRATIONS.

6.19 JIB SENSOR CALIBRATIONS

To calibrate the jib sensors, the analyzer must be in access level 1. All jib sensors can be calibrated at one time or each calibration can be performed on an individual basis.

1. Position the Platform/Ground select switch to the Ground position.

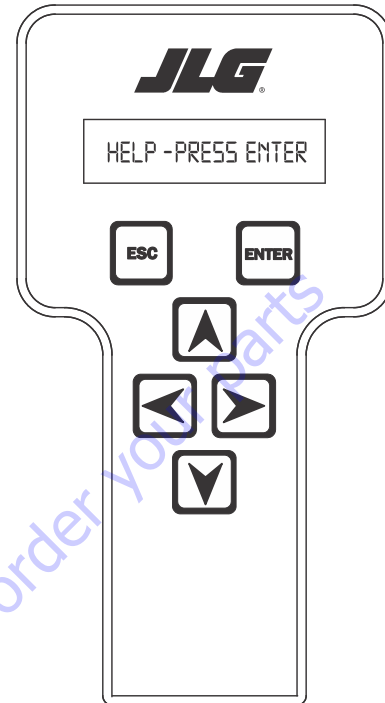


2. Plug the analyzer into the connector inside the Ground control box.



3. Pull out the Emergency Stop switch and start the engine.

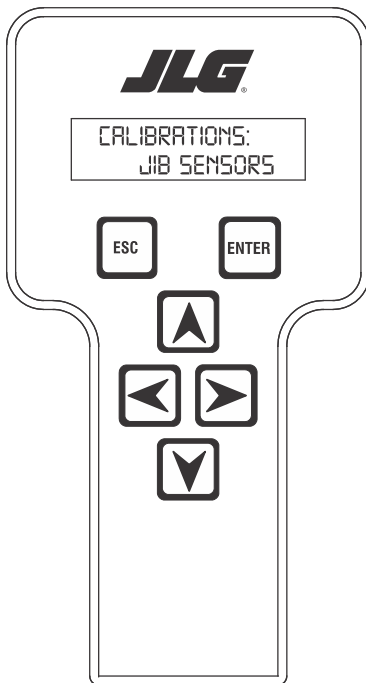
4. The analyzer screen should read:



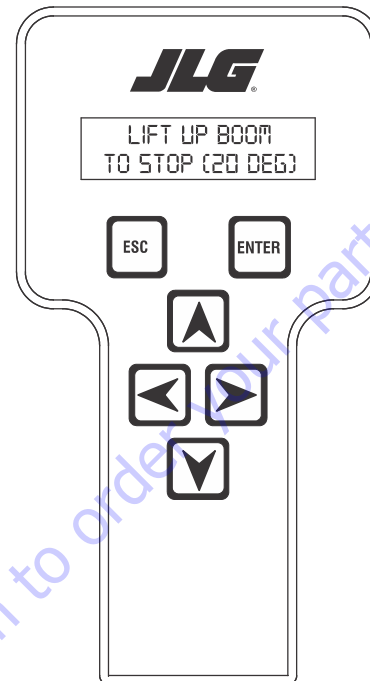
5. Use the arrow button to reach OPERATOR ACCESS. Hit Enter.
6. Enter the Access Code, 33271.
7. Use the right Arrow key to reach CALIBRATIONS. Hit Enter.

SECTION 6 - JLG CONTROL SYSTEM

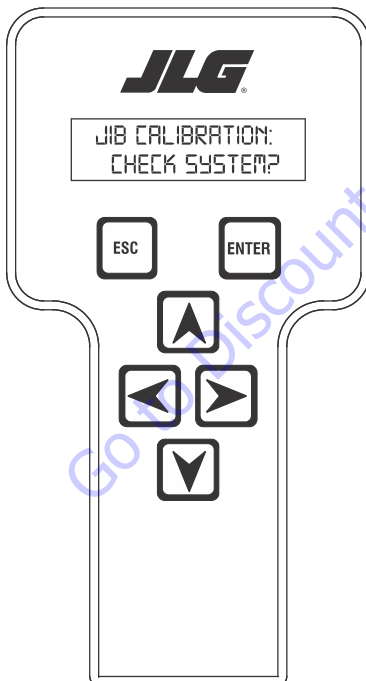
8. Use the arrow keys to reach the JIB SENSORS. The screen should read:



10. Press ENTER. The screen should read as shown below. When it does, activate boom lift until the control system stops it at 20 degrees boom angle.

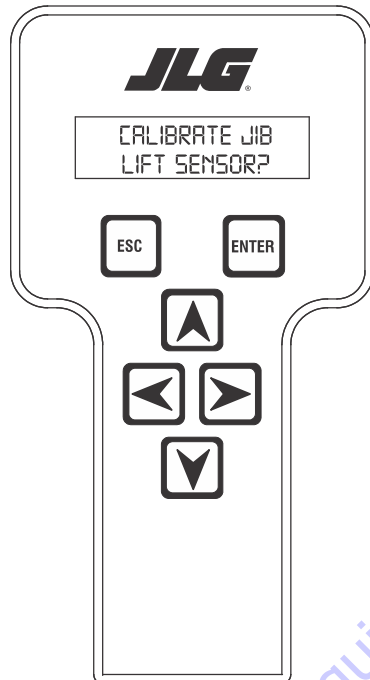


9. Press ENTER. The screen should read:

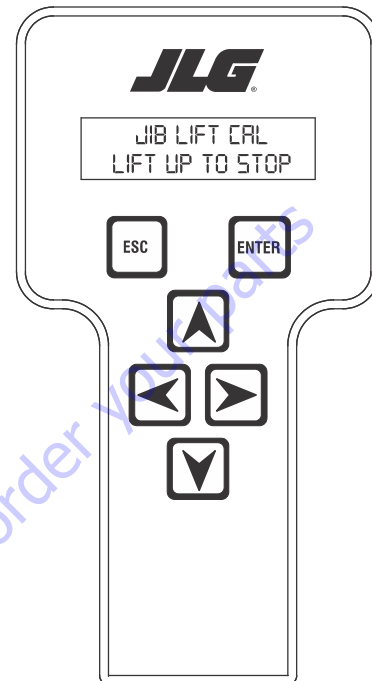


11. Press ENTER. The screen should read as shown below. When it does, the operator can either press enter to begin the jib lift sensor calibration, or use the right or left arrow key to locate the desired jib sensor calibration. The available sensor calibrations are:

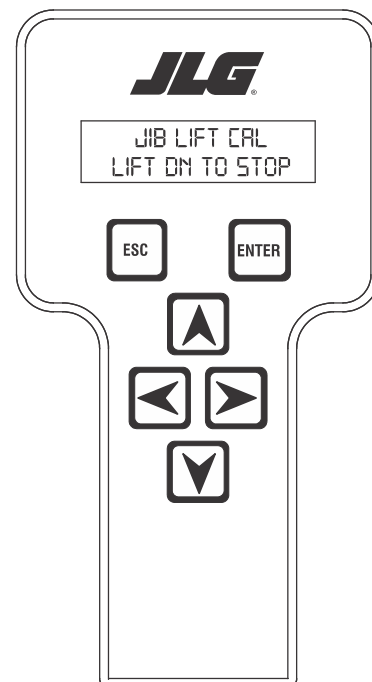
JIB LIFT
 JIB LEVEL
 JIB SWING
 PLATFORM LEVEL



12. If the operator presses enter at the jib lift sensor calibration prompt, the screen shown below will be displayed. At this point, lift the jib up to the mechanical stop.

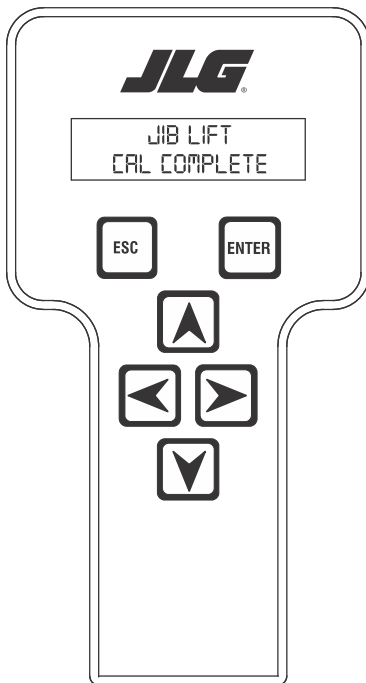


13. When the jib is at the mechanical stop, press ENTER. The screen shown below will be displayed. At that point, jib lift down until the control system stops the jib.

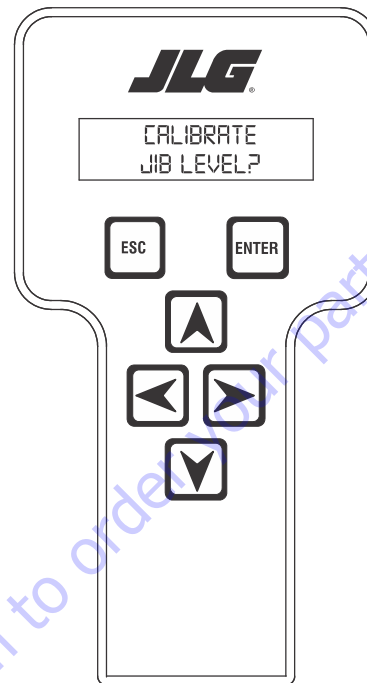


SECTION 6 - JLG CONTROL SYSTEM

14. Once the jib is stopped the screen shown below will be displayed.



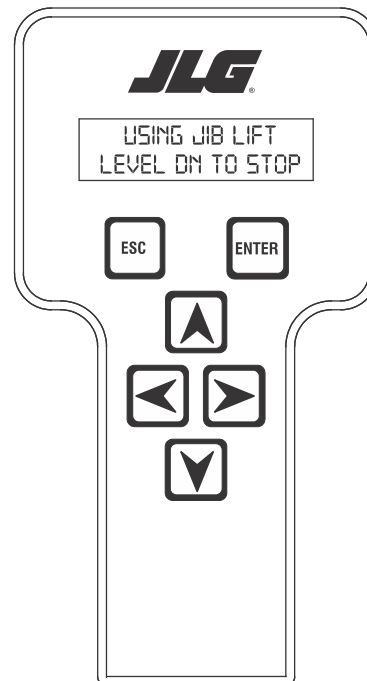
16. Hitting the ENTER key at this point will take the operator to the next jib sensor calibration. The screen will show:



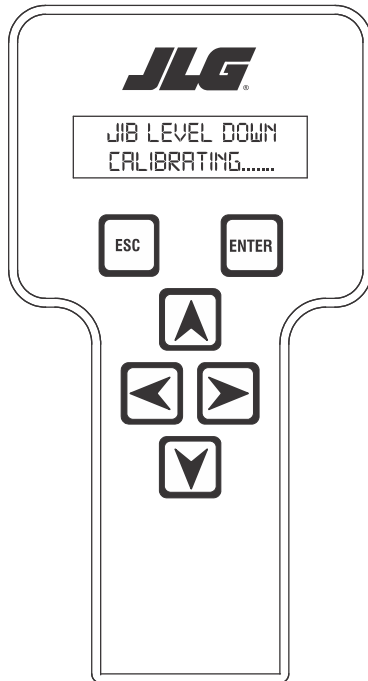
15. Hitting the escape key (ESC) will take the system back to the initial jib lift calibration display.

NOTE: At this point the left or right arrow key may be used to skip to any of the other jib sensor calibrations.

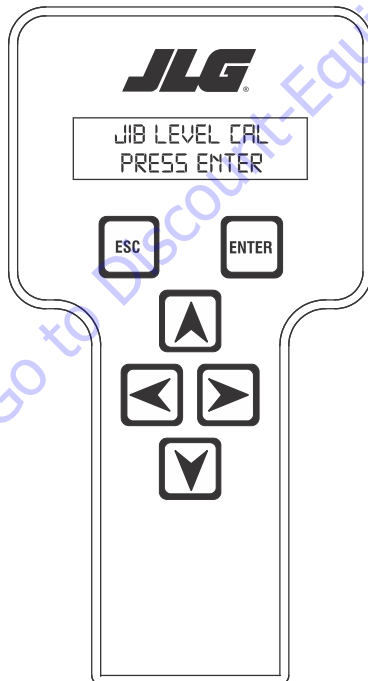
17. Press Enter. The screen will show:



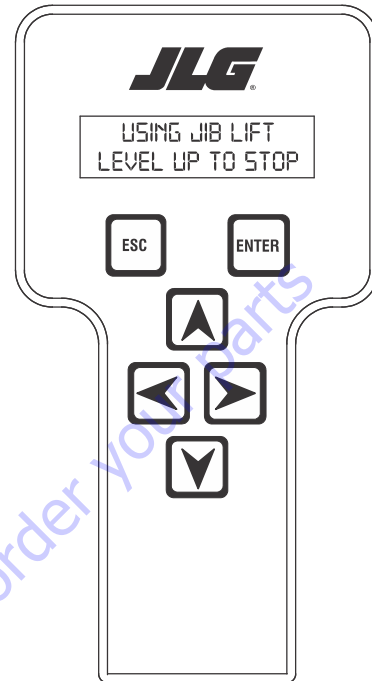
18. Operate jib lift down until the jib stops. When the jib is at the mechanical stop the operator must hit ENTER again. The screen will show:



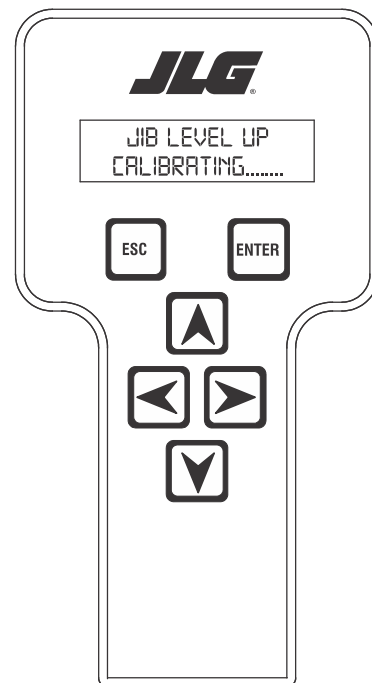
19. When the system completes this step, the next screen will show:



20. Press ENTER. The screen should read:

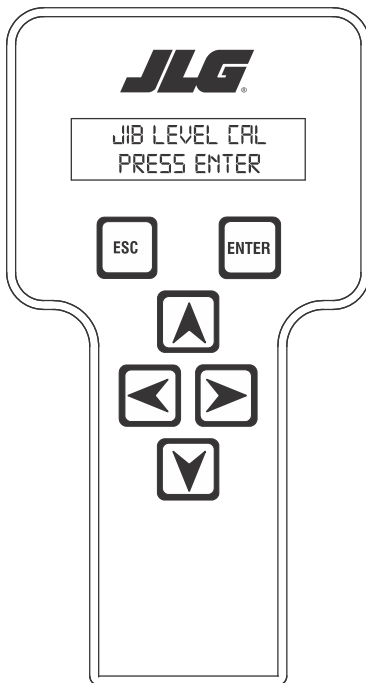


21. Operate jib lift up until the jib stops. When the jib is at the mechanical stop, Hit ENTER again. The screen will show:

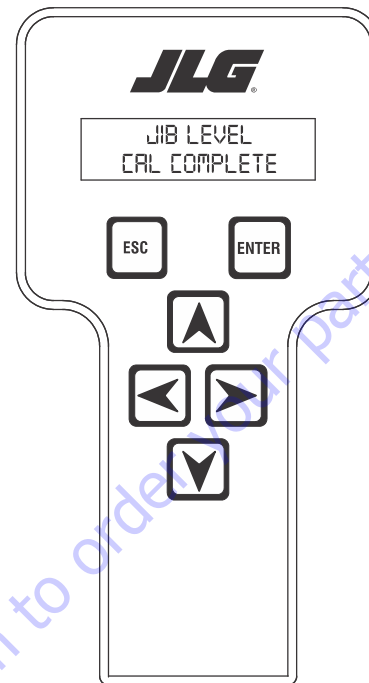


SECTION 6 - JLG CONTROL SYSTEM

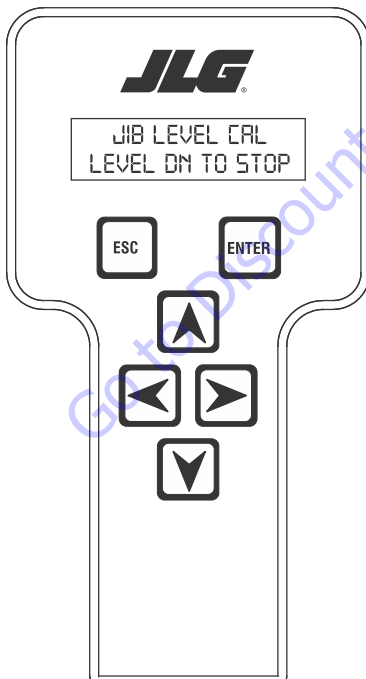
22. When the system completes this step, the next screen will show:



24. When the system completes the previous step, the screen will read:



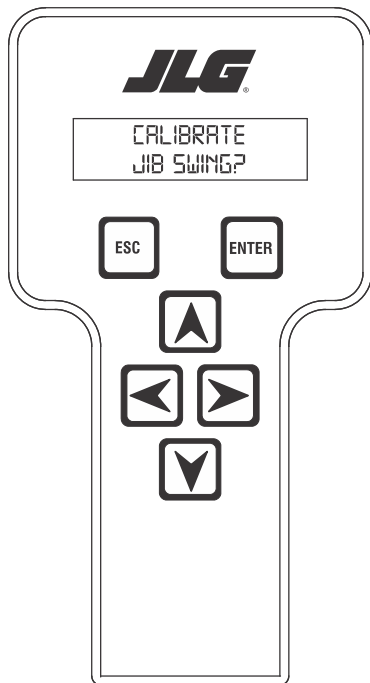
23. Press ENTER. The screen should read as shown below. The control system will jib level down and stop the jib leveling command.



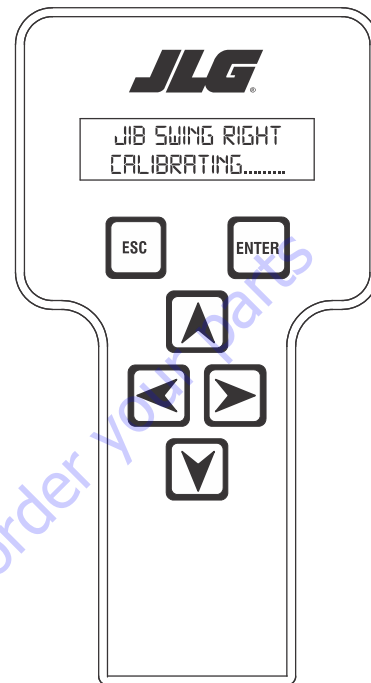
25. Hitting the escape key (ESC) will take the system back to the initial jib lift calibration display.

NOTE: At this point the left or right arrow key may be used to skip to any of the other jib sensor calibrations.

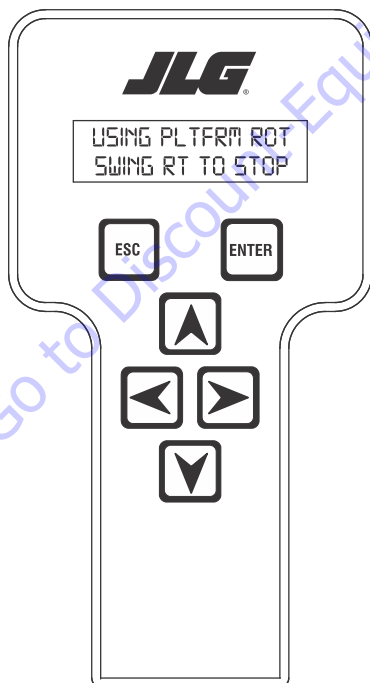
26. Hitting the ENTER key at this point will take the operator to the next jib sensor calibration. The screen will show:



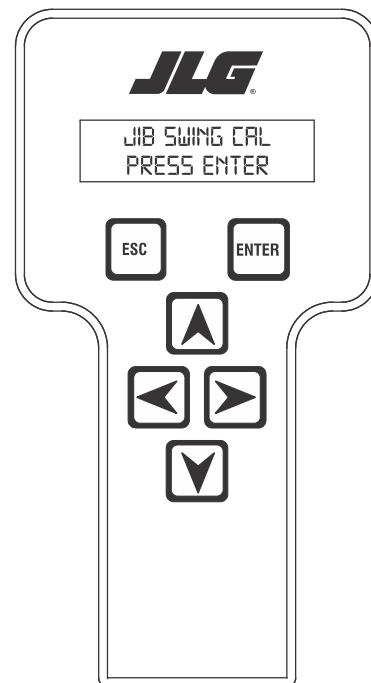
28. When the jib reaches the mechanical stop, press ENTER. The screen will show:



27. Press Enter. The screen shown below will be displayed. At this point, use the platform rotate right function switch to swing the jib right.

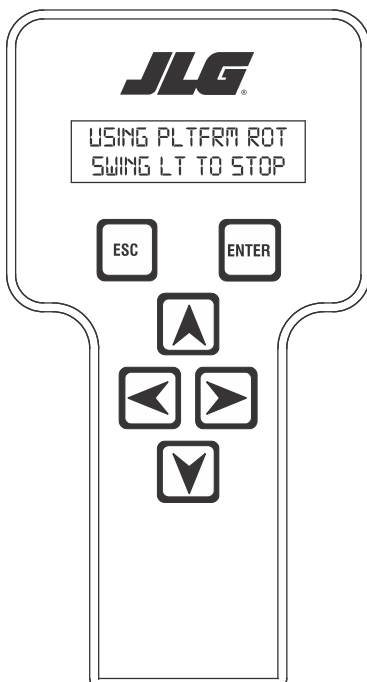


29. When the system is complete with this step, the screen below will be displayed.

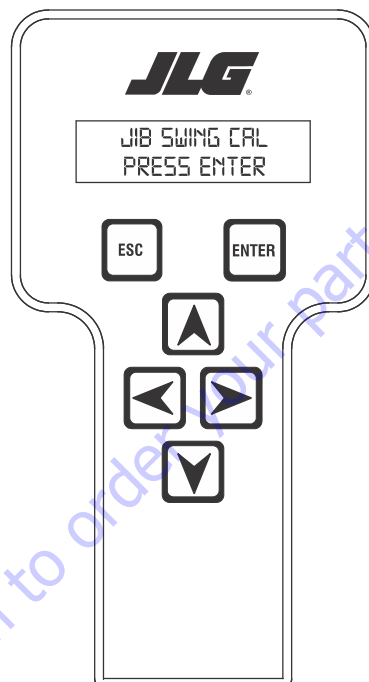


SECTION 6 - JLG CONTROL SYSTEM

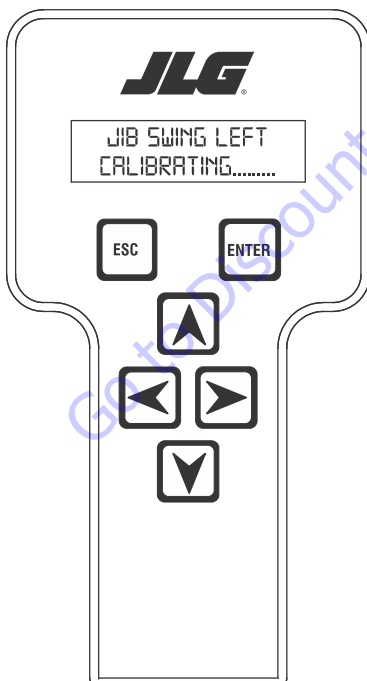
30. Press Enter. The screen shown below will be displayed. At this point, use the platform rotate left function switch to swing the jib left.



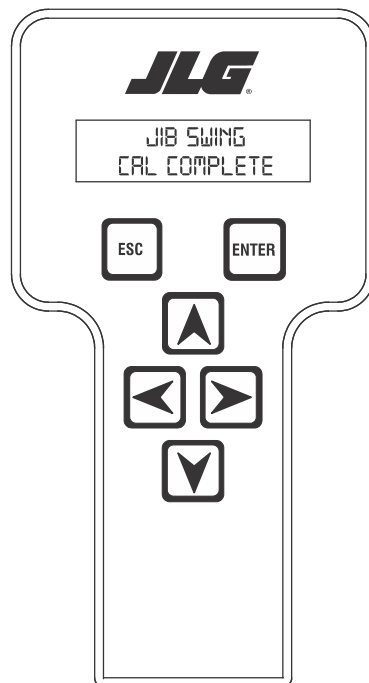
32. At the finish of the jib swing lift calibration the jib lock pin will be locked by the control system. The screen will read:



31. When the jib is at the mechanical stop, press ENTER. The screen will show:



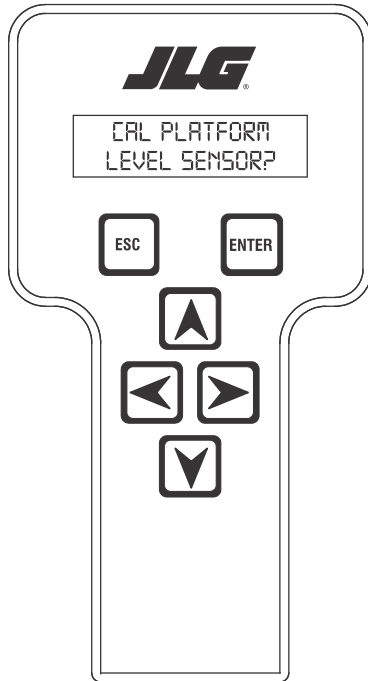
33. Press ENTER. The screen will show:



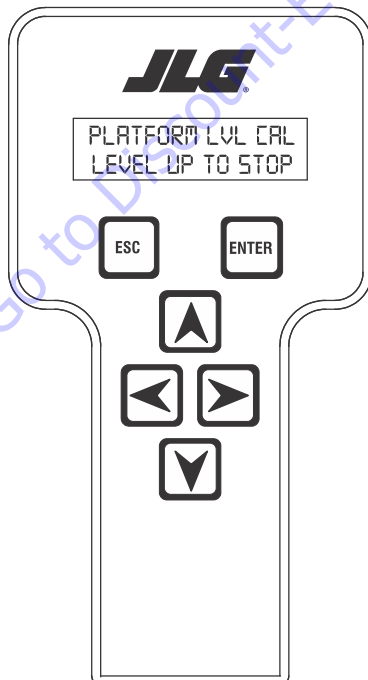
34. Hitting the escape key (ESC) will take the system back to the initial jib lift calibration display.

NOTE: At this point the left or right arrow key may be used to skip to any of the other jib sensor calibrations.

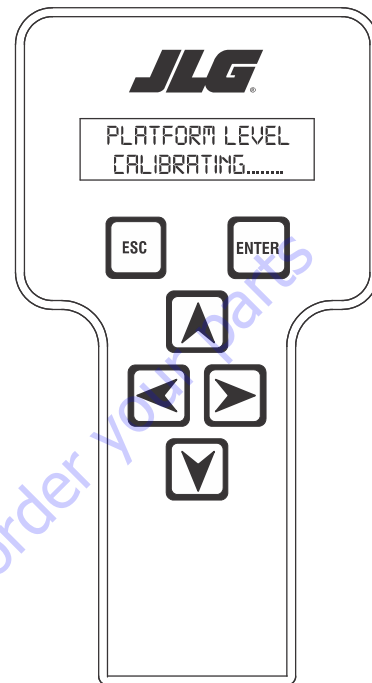
35. Hitting the ENTER key at this point will continue the calibration sequence. The screen will show:



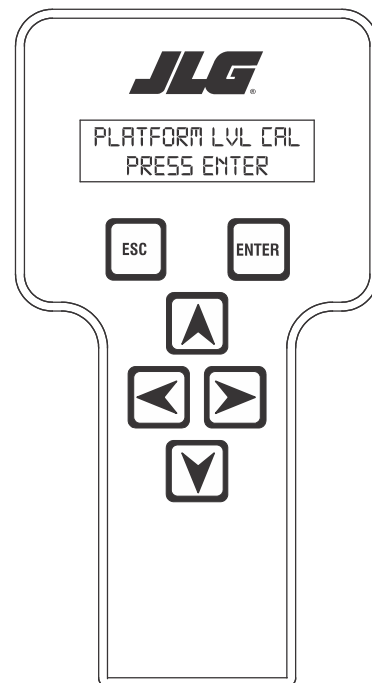
36. Press Enter. The screen shown below will be displayed. At this point, use the platform level up function switch to level up.



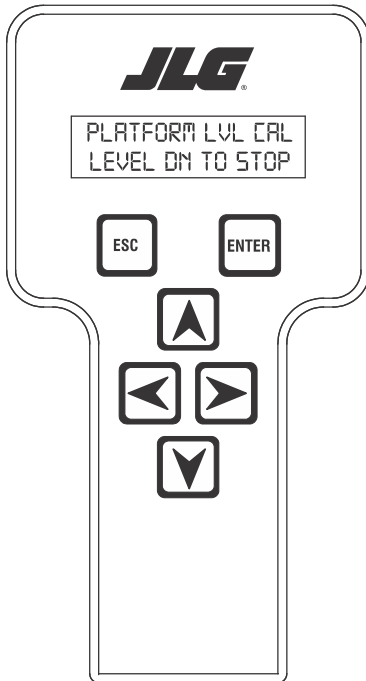
37. When the platform level up is at mechanical stop, Press ENTER. The screen will show:



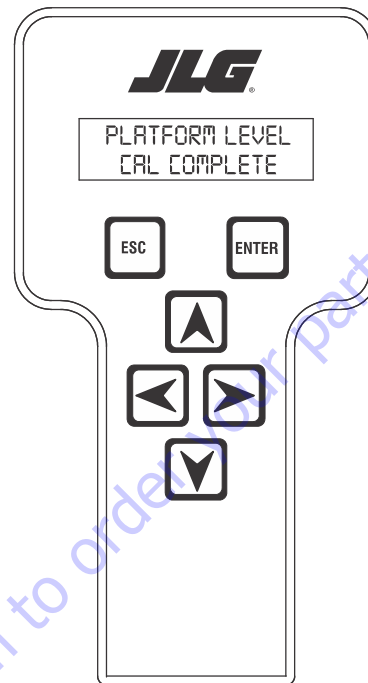
38. When the system is complete with this step, the screen below will be displayed.



39. Press ENTER. The display will then show:



40. The control system will stop the platform level and the screen will show:



41. Pressing ENTER will take you back to the beginning and escape (ESC) will take you to the initial screen.

Calibrating the Jib Level Up and Down Valve Crackpoints

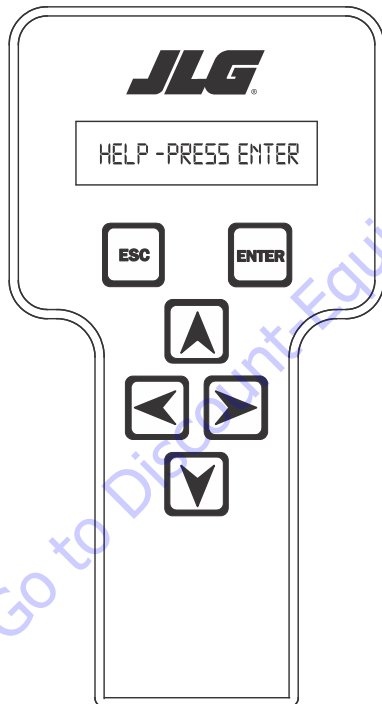
1. Position the Platform/Ground select switch to the Ground position.



2. Plug the analyzer into the connector inside the Ground control box.



3. Pull out the Emergency Stop switch and start the engine.
4. The analyzer screen should read:



5. Use the arrow button to reach OPERATOR ACCESS. Hit Enter.
6. Enter the Access Code, 33271.
7. Go to the CALIBRATIONS menu and hit ENTER.
8. Go to the JIB LVL UP CRKPT Screen. Hit ENTER.
9. CALIBRATE? prompt should appear. Hit ENTER again.
10. You will hear engine go to 1800 rpm.
11. Using UP ARROW, increase the value until you see the jib level movement.
12. Hit ENTER again. CAL. COMPLETE message should appear
13. Engine should again return to idle.
14. Hit ESC should return to JIB LVL UP CRKPT screen.
15. Hit RIGHT ARROW to get to the JIB LVL DN CRKPT screen. Hit ENTER.
16. CALIBRATE? prompt should appear. Hit ENTER again.
17. You will hear engine go to 1800 rpm.

Using UP ARROW, increase the value until you see the jib level down movement.

Hit ENTER again. CAL. COMPLETE message should appear

Engine should again return to idle.

Hit ESC to exit.

Cycle power to the machine.

6.20 CALIBRATING THE BOOM SENSORS

NOTICE

DURING THE BOOM SENSOR CALIBRATION PROCEDURE, IT IS NORMAL FOR THE REAR WHEEL TO LIFT FROM THE GROUND APPROXIMATELY 1 INCH (2.5 CM). IF THE WHEEL RAISES APPRECIABLY MORE THAN THIS (I.E. 4 INCHES [10 CM] OR MORE), CHECK THE AXLE OSCILLATION SYSTEM FOR PROPER OPERATION OR THE NEED FOR BLEEDING, THEN PROCEED WITH THE BOOM SENSOR CALIBRATION PROCEDURE.

Use the following step-by-step procedure to calibrate the boom sensors.

1. Before the boom sensors can be calibrated, the following conditions must be met:
 - a. Steering, telescope crack points, and tilt previously calibrated
 - b. Axles Extended
 - c. Wheels Straight
 - d. Platform Unloaded
 - e. Jib Horizontal
 - f. Jib Swing Centered
 - g. Platform Level
 - h. Platform Centered
 - i. Turntable Centered
 - j. Boom Fully Retracted
 - k. Level Ground (within 1.5°)

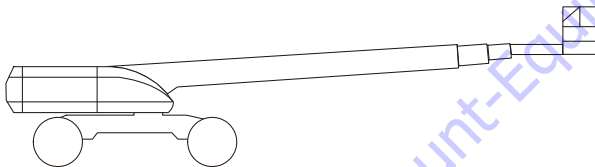


Figure 6-17. Boom Sensor Calibration Position 1

2. Position the Platform/Ground select switch to the Ground position.

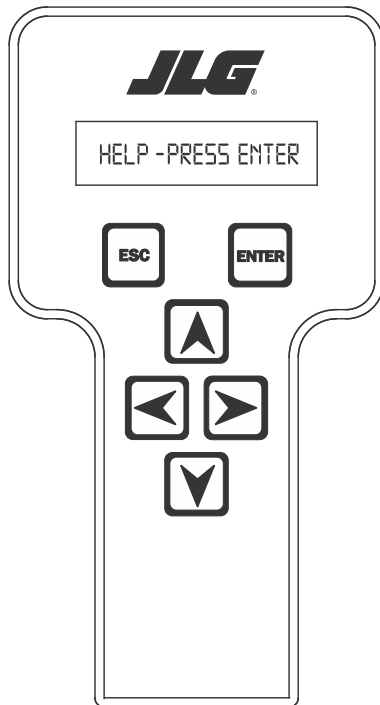


3. Plug the analyzer into the connector inside the Ground control box.

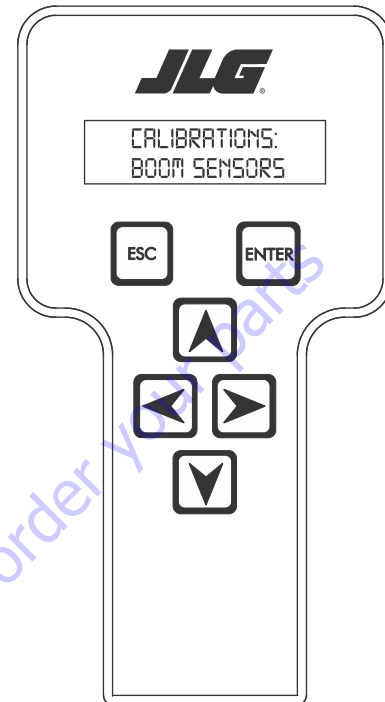


4. Pull out the Emergency Stop switch and start the engine.

5. The analyzer screen should read:

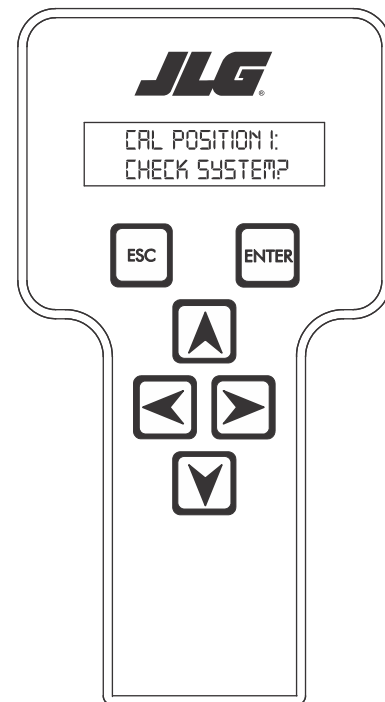


9. Use the arrow keys to reach BOOM SENSORS. The screen should read:



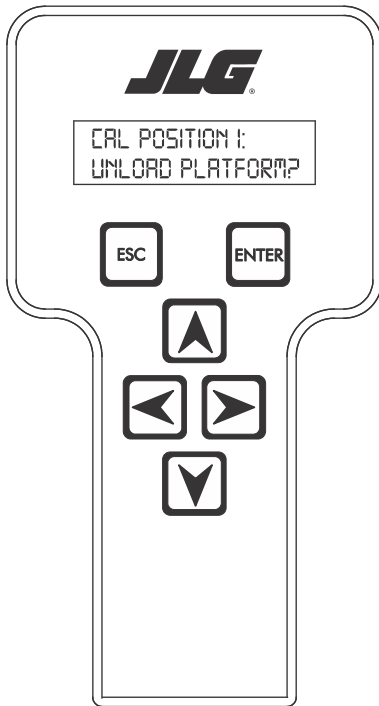
6. Use the arrow button to reach OPERATOR ACCESS. Hit Enter.
7. Enter the Access Code, 33271.
8. Use the right Arrow key to reach CALIBRATIONS. Hit Enter.

10. Hit Enter. The screen will read:

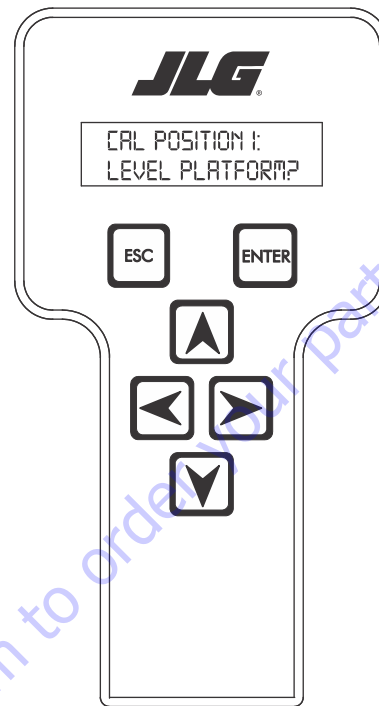


SECTION 6 - JLG CONTROL SYSTEM

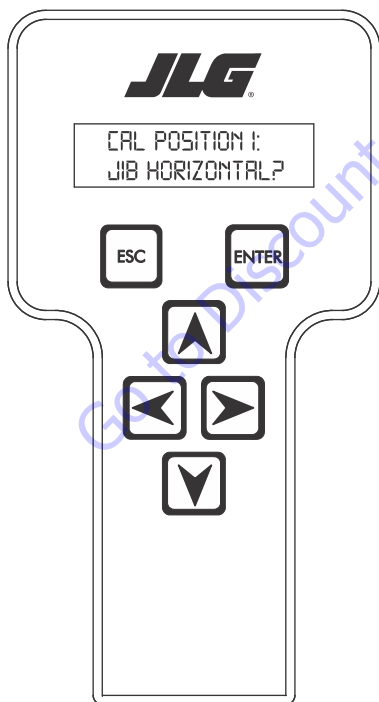
11. After verifying all the conditions listed in step 1 are met, hit Enter. The screen will read:



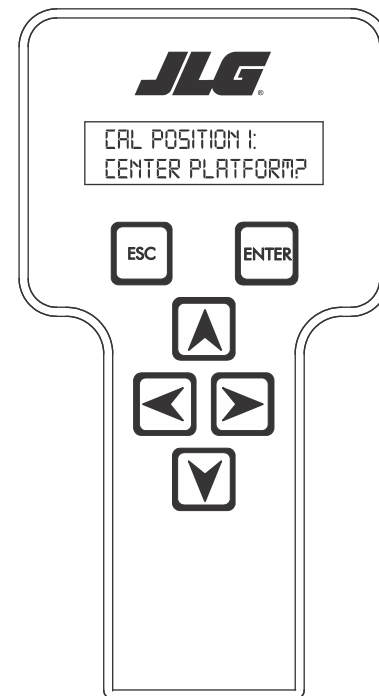
13. After visually verifying that the jib is horizontal, hit Enter. The screen will read:



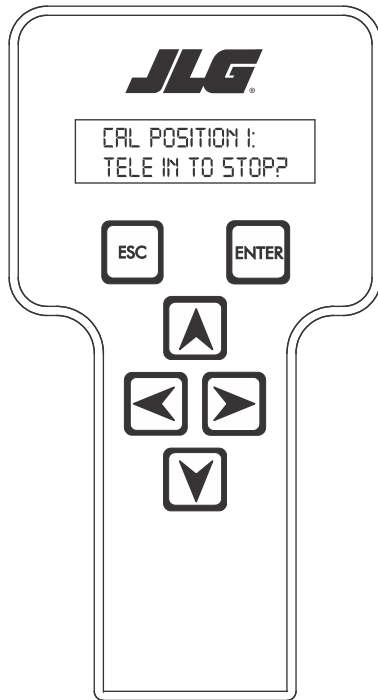
12. After verifying all load (personnel or material) is removed from the platform, hit Enter. The screen will read:



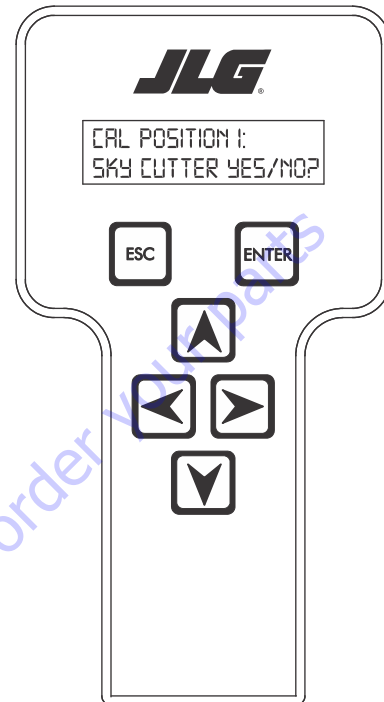
14. After visually verifying the platform is level, hit Enter. The screen will read:



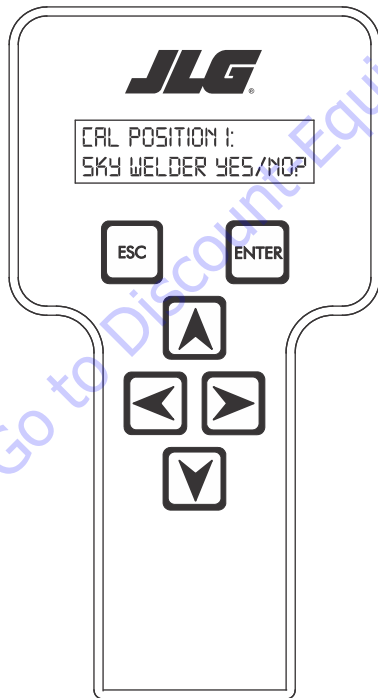
15. After visually verifying the platform is centered, hit Enter. The screen will read:



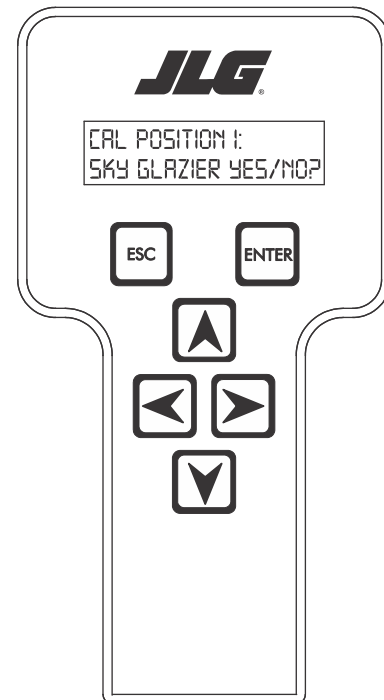
17. Use the up/down arrows to select YES if the accessory is installed, NO if it is not installed and hit enter. The screen will read:



16. After operating telescope in to verify the boom is fully retracted, hit Enter. The screen will read:

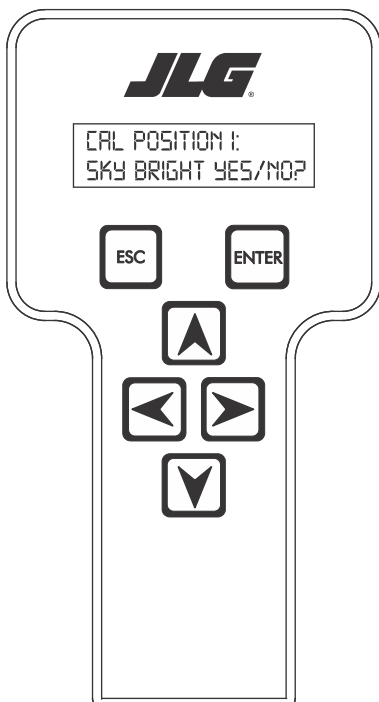


18. Use the up/down arrows to select YES if the accessory is installed, NO if it is not installed and hit enter. The screen will read:

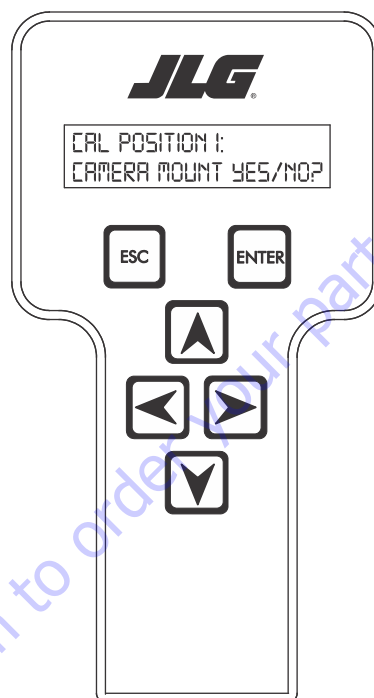


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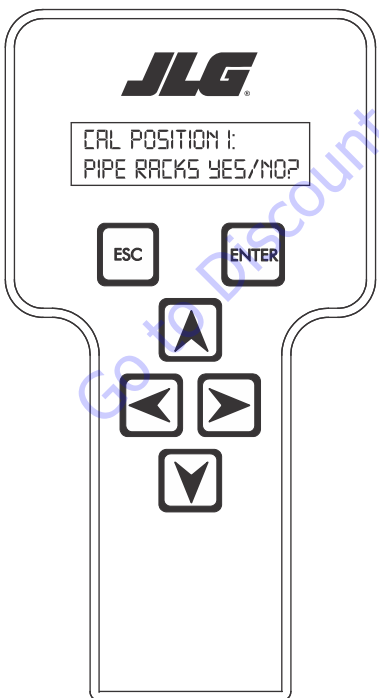
19. Use the up/down arrows to select YES if the accessory is installed, NO if it is not installed and hit enter. The screen will read:



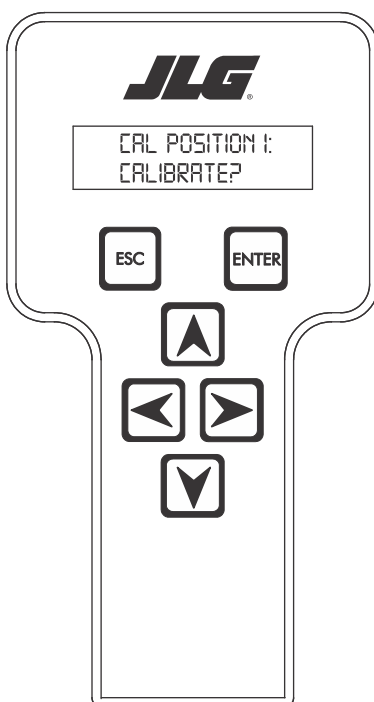
21. Use the up/down arrows to select YES if the accessory is installed, NO if it is not installed and hit enter. The screen will read:



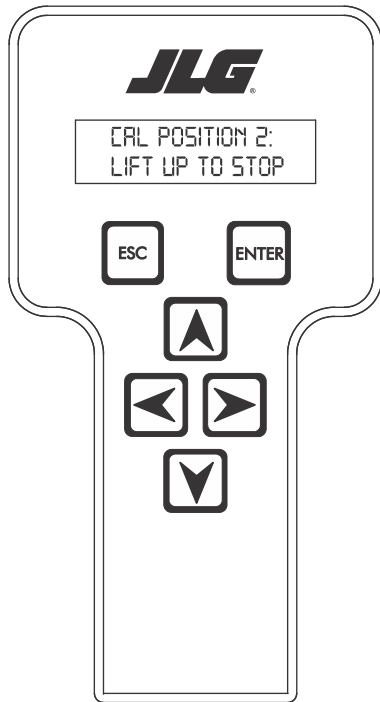
20. Use the up/down arrows to select YES if the accessory is installed, NO if it is not installed and hit enter. The screen will read:



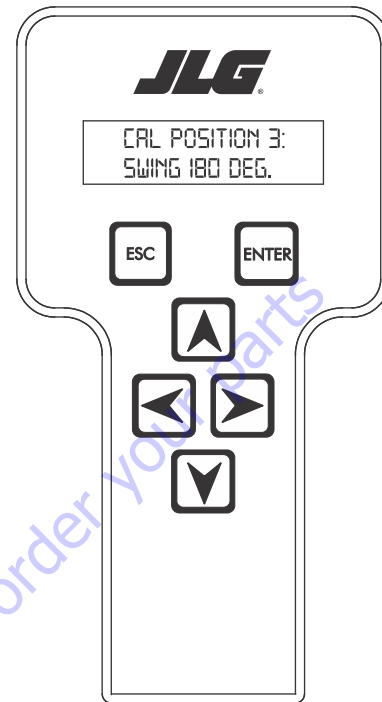
22. Use the up/down arrows to select yes if the accessory is installed, no if it is not installed and hit Enter. The screen will read:



23. After making sure the machine is in Calibration Position 1, hit Enter. The screen will read:



The screen will read:



24. Lift up to stop (full stroke of cylinder) for Calibration Position 2. When the machine is in that position, hit Enter.

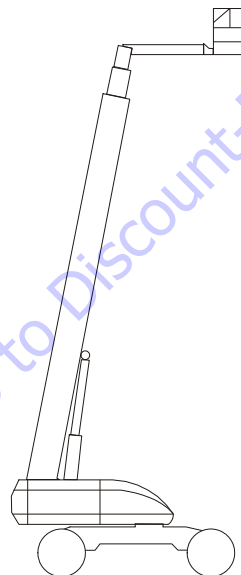


Figure 6-18. Boom Sensor Calibration Position 2

- 25. Swing 180 degrees (centered over opposite end of chassis) for Calibration Position 3.

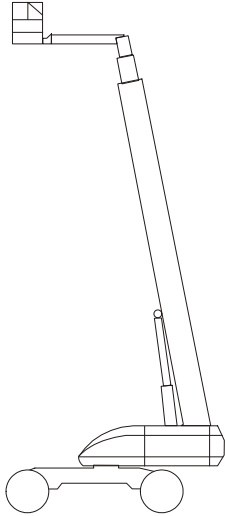
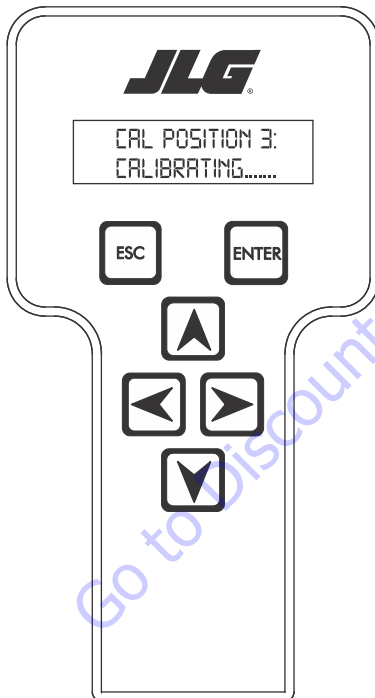
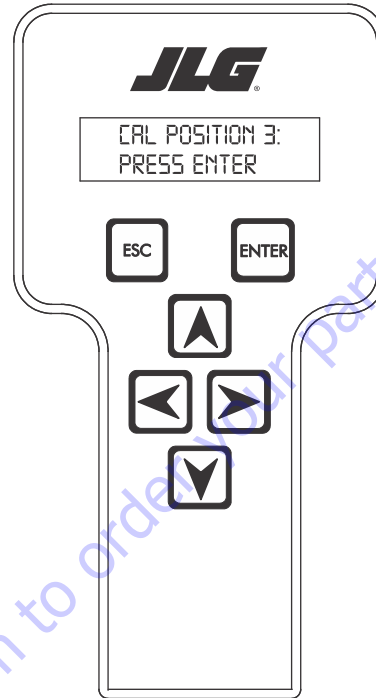


Figure 6-19. Boom Sensor Calibration Position 3

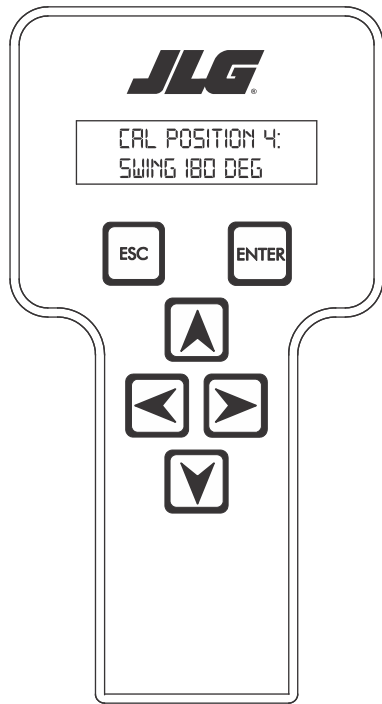
When the machine is in the proper position, hit Enter.
The screen will read:



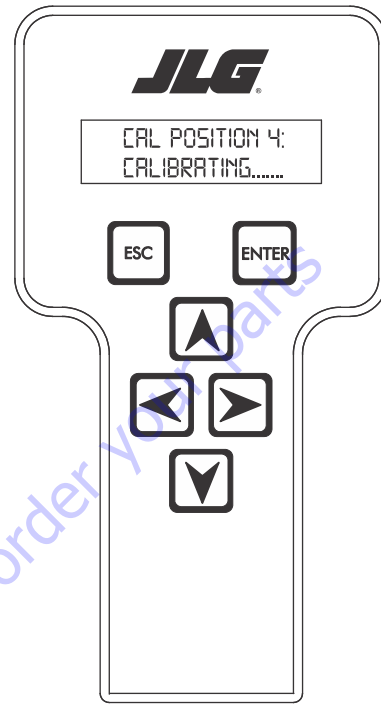
When Position 3 calibrating is complete the screen will read:



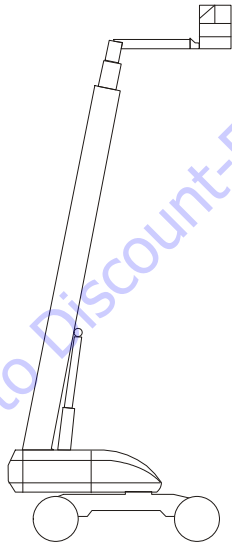
26. Press Enter. The screen will read:



When the machine is in the proper position, hit Enter. The screen will read:



Swing the machine back 180 degrees (centered over original end of chassis) for Calibration Position 4.



When Position 4 calibrating is complete, the screen will read:

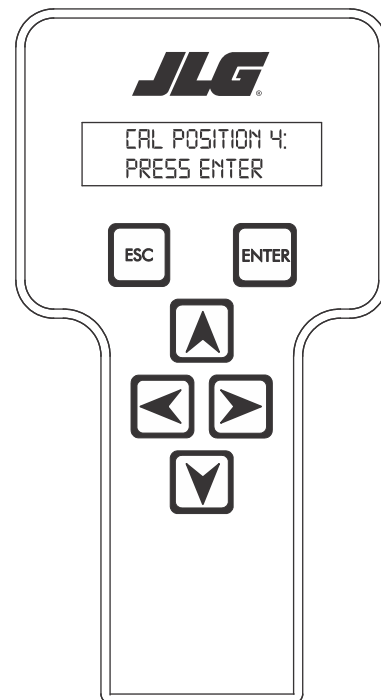
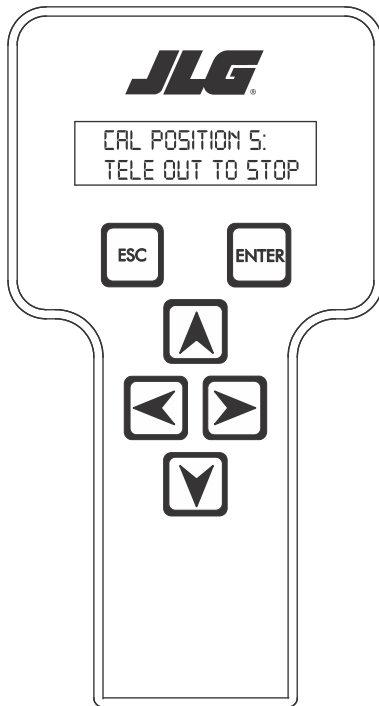


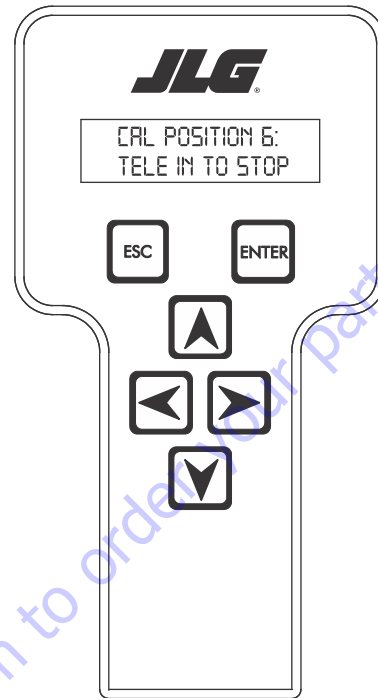
Figure 6-20. Boom Sensor Calibration Position 4

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27. Press Enter. The screen will read:



When the machine is in the proper position, hit Enter. The screen will read:



Telescope out to stop (boom must be fully extended) for Calibration Position 5.

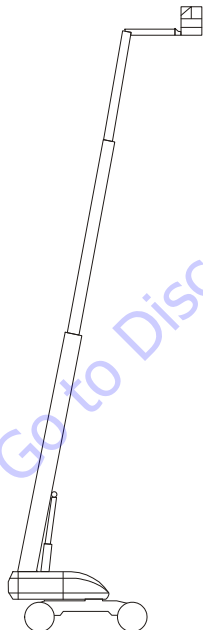


Figure 6-21. Boom Sensor Calibration Position 5

28. Retract to stop (boom must be fully retracted) for Calibration Position 6.

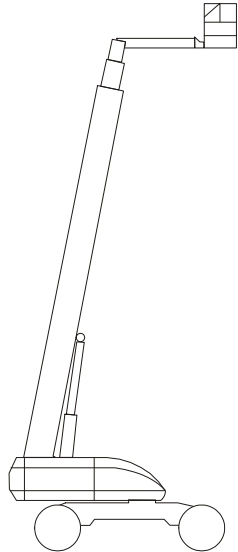
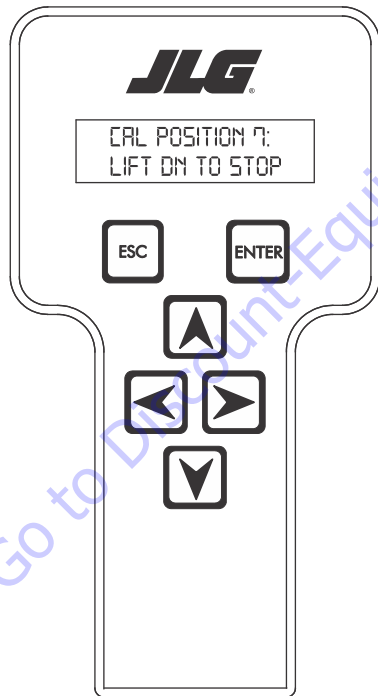


Figure 6-22. Boom Sensor Calibration Position 6

When the machine is in the proper position, hit Enter.
The screen will read:



29. Lift down to stop (boom must be on boom rest) for Calibration Position 7.

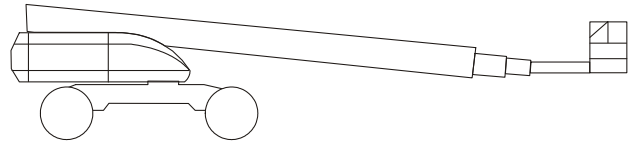
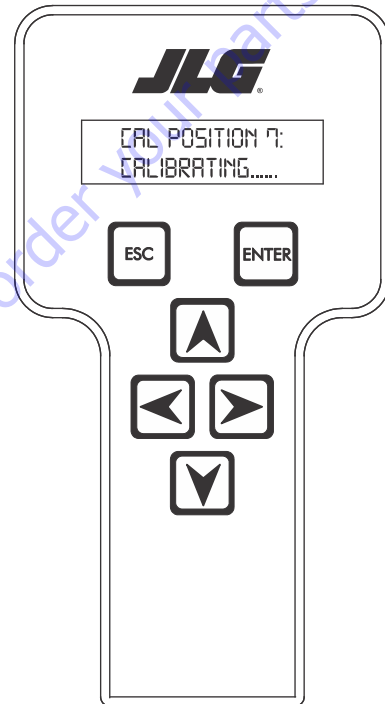
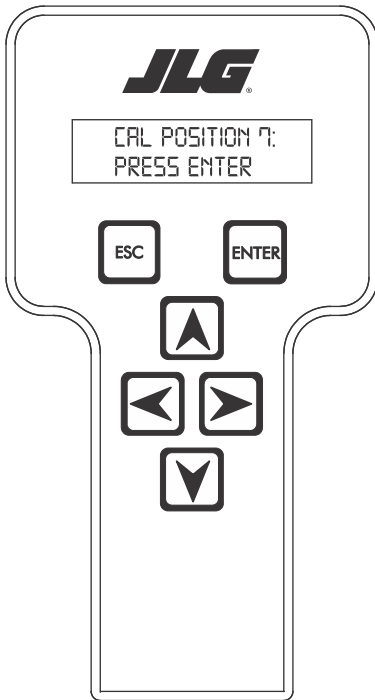


Figure 6-23. Boom Sensor Calibration Position 7

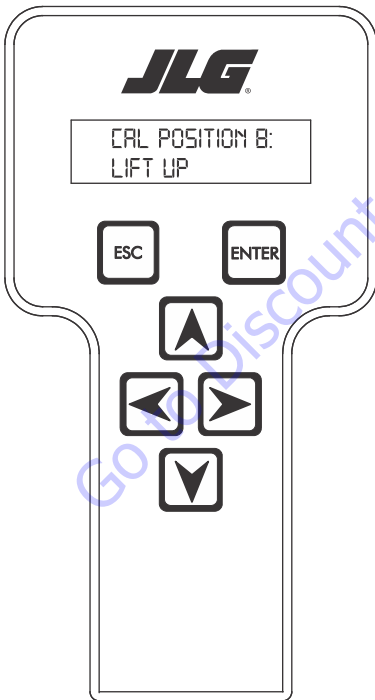
When the machine is in the proper position, hit Enter.
The screen will read as follows:



When Position 7 Calibrating is complete, the screen will read:



Press Enter. The screen will read:



- 30. Lift until the function stops (controller will stop at 5 degrees above horizontal) for Calibration Position 8.

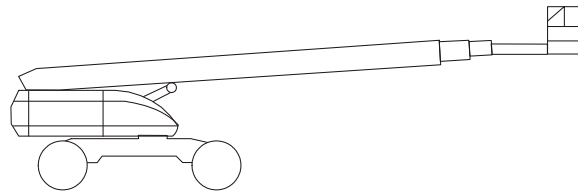
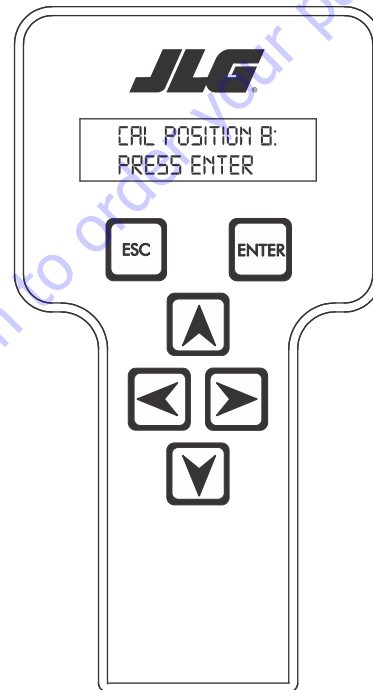
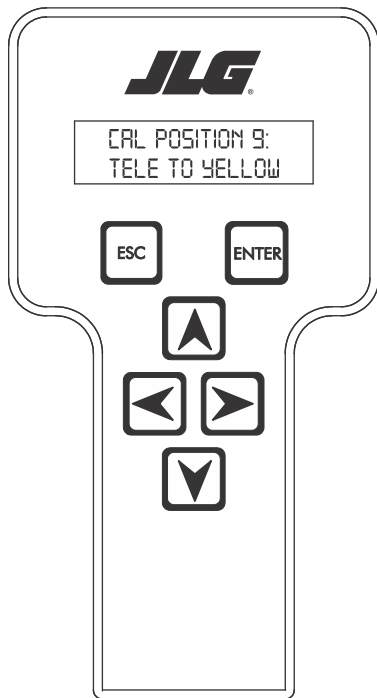


Figure 6-24. Boom Sensor Calibration Position 8

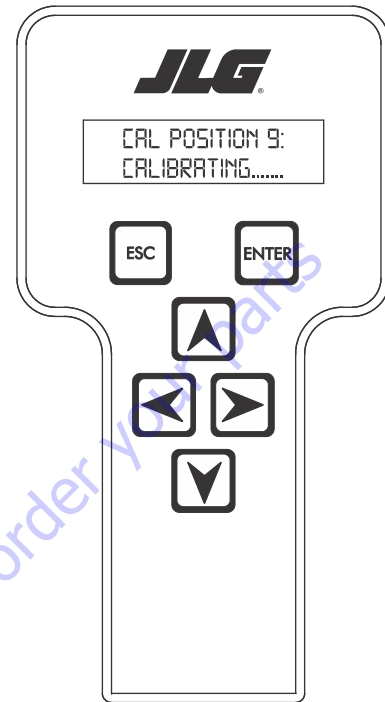
When the machine is in the proper position, hit Enter. The screen will read:



Press Enter. The screen will read:



When the boom is in the proper position, hit Enter. The screen will read:



31. Telescope to the yellow witness mark (controller will be close - operator must position the pointer to center line on decal within 0.25" [6 mm]) for Calibration Position 9.

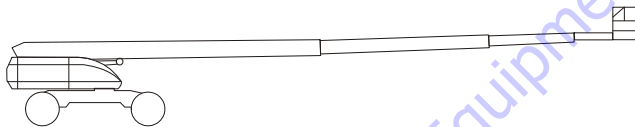
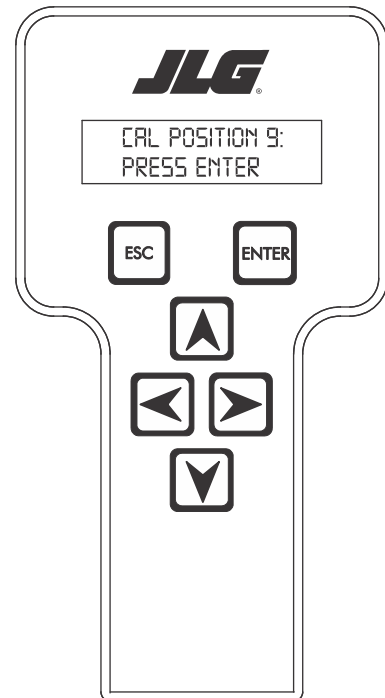


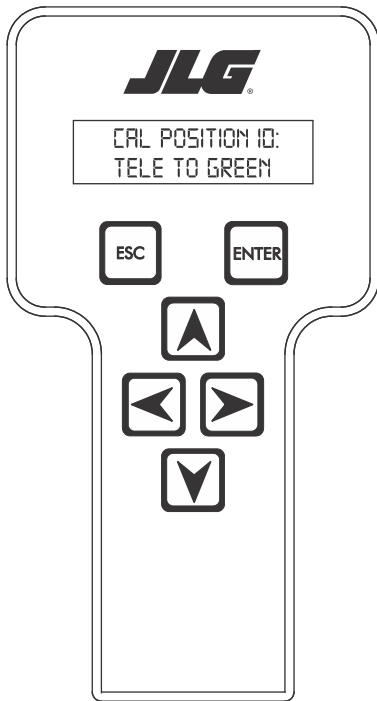
Figure 6-25. Boom Sensor Calibration Position 9



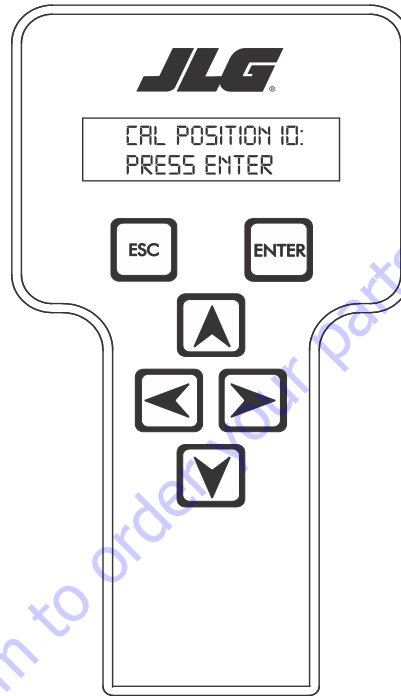
When Position 9 calibrating is complete, the screen will read:



Press Enter. The screen will read:



When the boom is in the proper position, the screen will read:



- 32. Telescope in to green witness mark (controller will find the position - operator must visually verify the position).

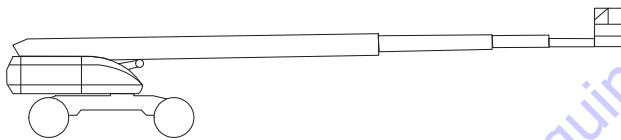
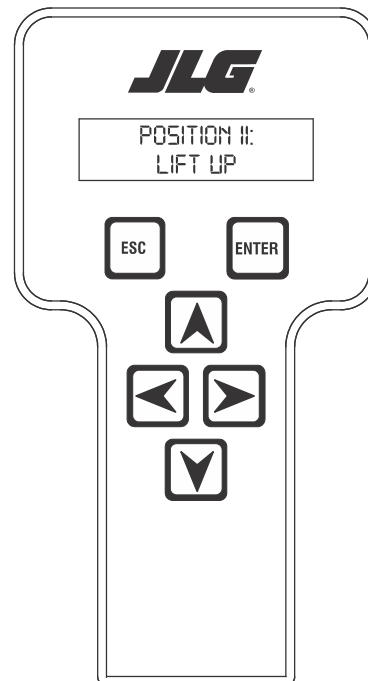
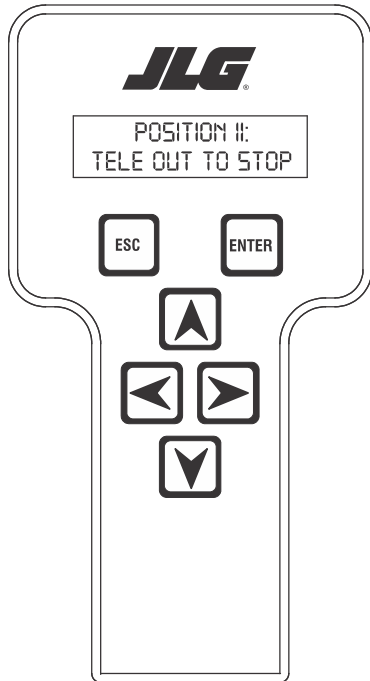


Figure 6-26. Boom Sensor Calibration Position 10

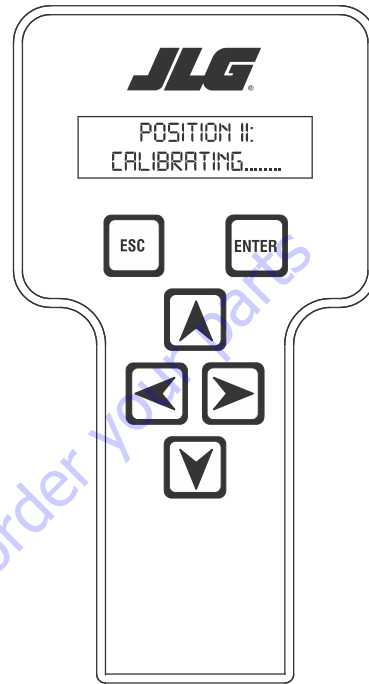
Pressing enter will bring up:



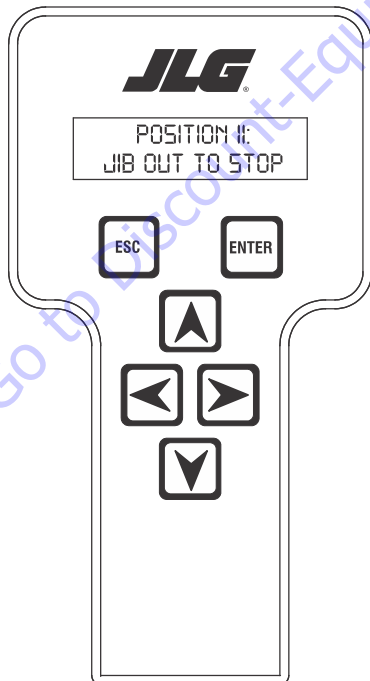
33. Operate the Lift Up function switch. The control system will stop the boom at the desired angle. The display will read:



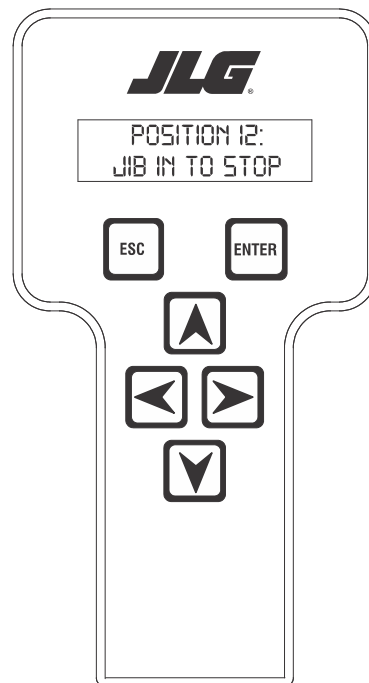
35. Operate the Jib Telescope Out function to the mechanical stop. Press ENTER. The display will read:



34. Operate the Telescope Out function switch. The control system will stop the boom at the desired length. The display will read:

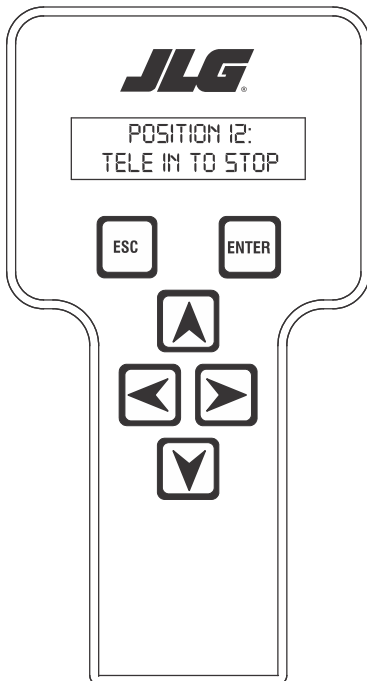


36. When the control system completes the calibration step the display will read:

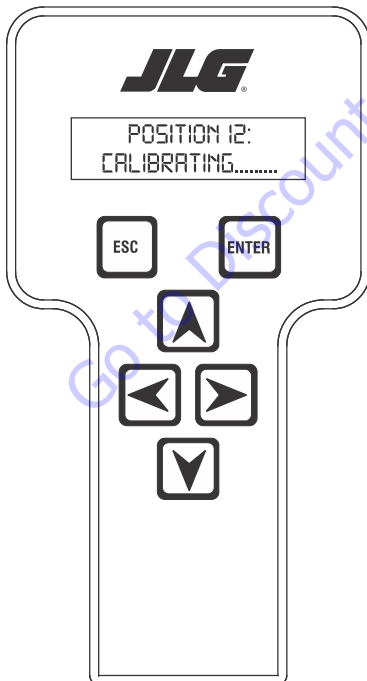


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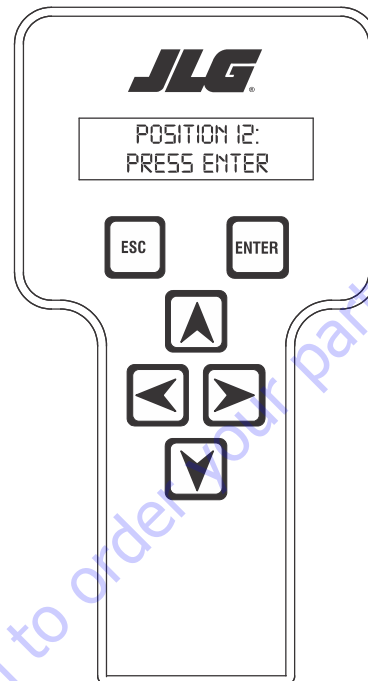
37. Operate the Jib Telescope In function switch until the jib is telescoped in to the mechanical stop. Press ENTER. The display will read:



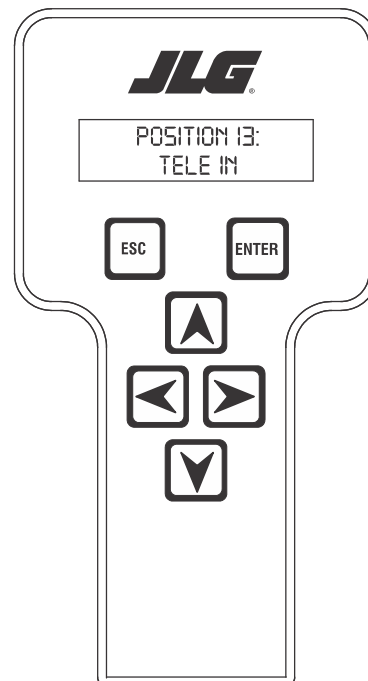
38. Operate the Boom Telescope In function switch. The control system will stop the boom at the desired length. The display will read:



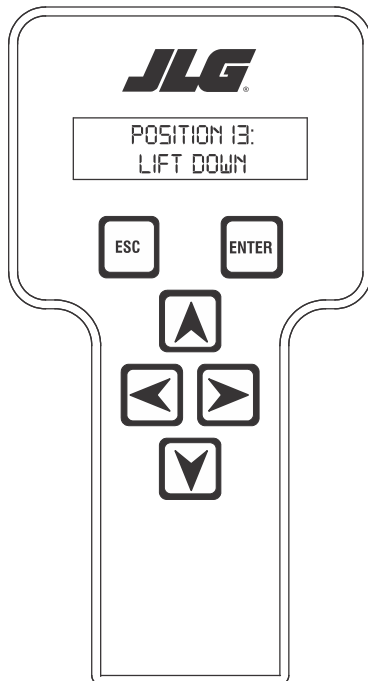
39. When the calibration step is done, the display will read:



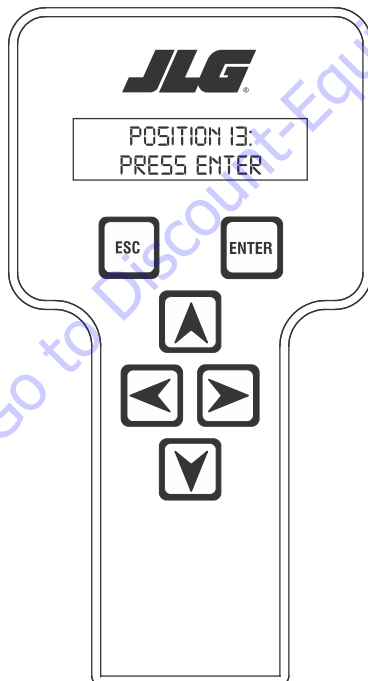
40. Press ENTER. The display will read:



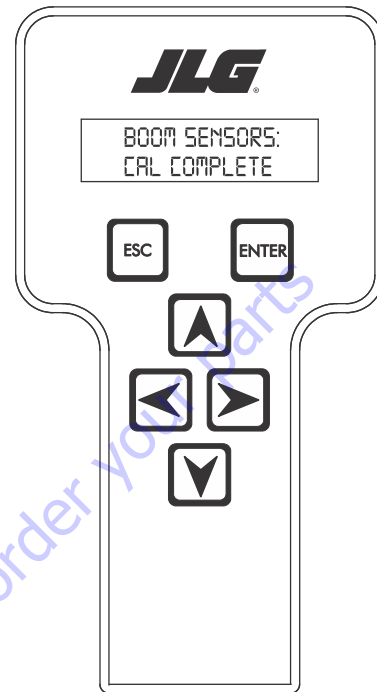
41. Operate the Main Boom Telescope function until the main boom is telescoped in to the stop. The display will read:



42. Operate the Boom Lift Down function until the main boom is lifted down to the rest. The display will read:



43. Press ENTER. The display will read:



44. After completing all the Boom Sensors Calibrations, hit ESC twice to go back to Calibrations.
45. Cycle the emergency stop switch.

Boom Control System Check Procedure

Perform the following check with no load (personnel or material) in the platform from the ground control station.

1. With the boom fully retracted, raise the boom off the boom rest to horizontal.
2. Position the jib horizontal, jib straight, and platform level.
3. Extend the boom until it stops.
4. Boom must stop on colored stripe matching the capacity indicator. If the boom does not stop on the correct stripe, the system must be repaired by JLG authorized Service Personnel before the machine can be used.
5. Push and hold the gray Boom Control System Test Button on the ground control panel. The lighting of the green Boom Control System Calibrated indicator indicates the system is functioning properly. No indicator light or the lighting of the red Boom Control System Warning indicator indicates the system must be repaired by JLG authorized Service Personnel before the machine can be used.

Go to Discount-Equipment.com to order your parts

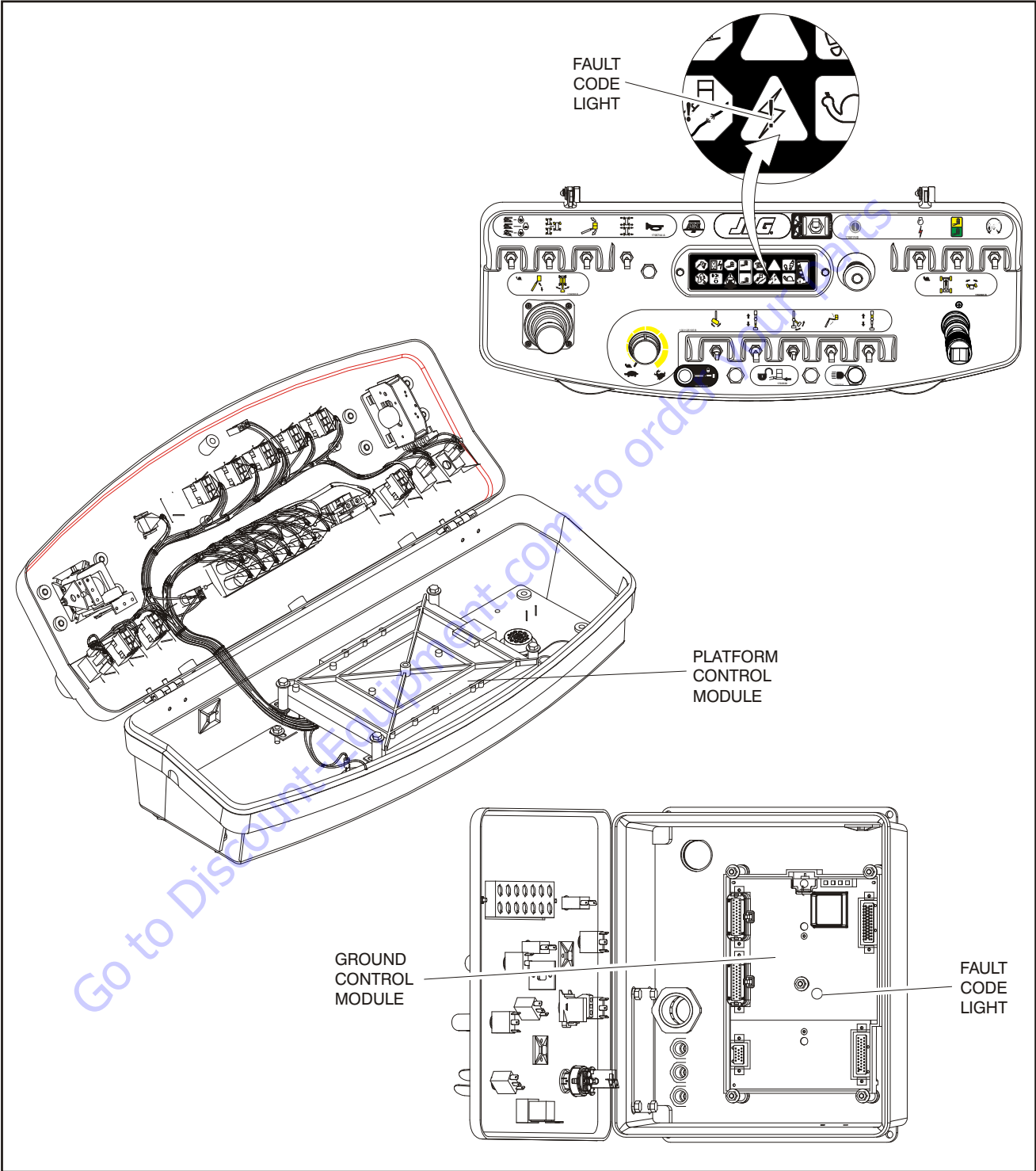


Figure 6-27. Fault Code Light Location

SECTION 6 - JLG CONTROL SYSTEM

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
001	0	1	EVERYTHING OK	The normal help message in Platform Mode.	
002	0	2	GROUND MODE OK	The normal help message in Ground Mode.	
0010	0	10	RUNNING AT CUTBACK - OUT OF TRANSPORT POSITION	Drive speed is limited to "ELEVATED MAX" while the vehicle is out of transport position.	
000	0	0	<<< HELP COMMENT >>>		
0011	0	11	FSW OPEN	A drive / boom function was selected with the Footswitch open.	
0012	0	12	RUNNING AT CREEP - CREEP SWITCH OPEN	All functions at creep while the Creep Switch is open.	
0013	0	13	RUNNING AT CREEP - TILTED AND ABOVE ELEVATION	All functions at creep while the Platform is elevated and the Chassis is tilted.	
0014	0	14	CHASSIS TILT SENSOR OUT OF RANGE	The Chassis is tilted > 19 degrees for more than 4 seconds.	- Not reported during power-up.
0015	0	15	LOAD SENSOR READING UNDER WEIGHT	LSS has been calibrated and the UGM has determined that the load sensing system reading is less than -50lbs for 2 seconds. If the load sensing system determines that the reading is greater than -50lbs for 5 seconds this fault will no longer be annunciated. No control system interlocks present when DTC is active.	Ensure platform is not resting on the ground or is not leveled at an extreme negative angle. Re-calibrate the load sensing system if the above items are not a factor.
0016	0	16	ENVELOPE ENCROACHED - HYDRAULICS SUSPENDED	There is an envelope violation.	- Envelope control system equipped vehicle only.
0017	0	17	OVER MOMENT - HYDRAULICS SUSPENDED	There is an over moment violation.	- Envelope control system equipped vehicle only.
0018	0	18	UNDER MOMENT - HYDRAULICS SUSPENDED	There is an under moment violation.	- Envelope control system equipped vehicle only.
0021	0	21	ADS 1213 REINITIALIZED		
0030	0	30	RUNNING AT CREEP - PLATFORM STOWED		
0031	0	31	FUEL LEVEL LOW - ENGINE SHUTDOWN		
0035	0	35	APU ACTIVE		
0037	0	37	JIB UNLOCKED OUT OF TRANSPORT - HYDRAULICS SUSPENDED		
0038	0	38	SWING ENVELOPE ENCROACHED - HYDRAULICS SUSPENDED		

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
210	2	1	<<< POWER-UP >>>		
211	2	1	POWERCYCLE	The normal help message is issued at each power cycle.	
212	2	1	KEYSWITCH FAULTY	Both Platform and Ground modes are selected simultaneously.	
213	2	1	FSW FAULTY	Both Footswitches are closed for more then one second.	
220	2	2	<<< PLATFORM CONTROLS >>>		
227	2	2	STEER SWITCHES FAULTY	Both Steer Left and Steer Right inputs are closed simultaneously.	
2211	2	2	FSW INTERLOCK TRIPPED	The Footswitch was closed for more then seven seconds.	- Can be reported during power-up.
2212	2	2	DRIVE LOCKED - JOYSTICK MOVED BEFORE FOOTSWITCH	A drive function was selected with Footswitch open.	- Can be reported during power-up.
2213	2	2	STEER LOCKED - SELECTED BEFORE FOOTSWITCH	A steer function was selected with Footswitch open.	
2215	2	2	D/S JOY. OUT OF RANGE LOW	The D/S Joystick reference voltage is low.	- Resistive joysticks, these faults do not occur.
2216	2	2	D/S JOY. OUT OF RANGE HIGH	The D/S Joystick reference voltage is > 8.1V.	- Resistive joysticks. - If the reference voltage is > 7.7V then the reference voltage is out of tolerance of a short to battery has occurred.
2217	2	2	D/S JOY. CENTER TAP BAD	The D/S Joystick center tap voltage is < 3.08V or > 3.83V.	- Resistive joysticks. - There is a +/- .1V range. around these values due to resistor tolerances
2218	2	2	L/S JOY. OUT OF RANGE LOW	The L/S Joystick reference voltage is low.	- Resistive joysticks, these faults do not occur.
2219	2	2	L/S JOY. OUT OF RANGE HIGH	The L/S Joystick reference voltage is > 8.1V.	- Resistive joysticks. - If the reference voltage is > 7.7V then the reference voltage is out of tolerance of a short to battery has occurred.
2220	2	2	L/S JOY. CENTER TAP BAD	The L/S Joystick center tap voltage is < 3.08V or > 3.83V.	- Resistive joysticks. - There is a +/- .1V range. around these values due to resistor tolerances
2221	2	2	LIFT/SWING LOCKED - JOYSTICK MOVED BEFORE FOOTSWITCH	A lift / swing function was selected with Footswitch open.	
2222	2	2	WAITING FOR FSW TO BE OPEN	The Footswitch was closed during Platform selection.	- Can be reported during power-up.
2223	2	2	FUNCTION SWITCHES LOCKED - SELECTED BEFORE ENABLE	A boom function was selected with Footswitch open.	
2224	2	2	FOOTSWITCH SELECTED BEFORE START	The Footswitch was closed during engine start.	

SECTION 6 - JLG CONTROL SYSTEM

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
240	2	4	<<< OTHER CONTROLS >>>		
250	2	5	<<< FUNCTION PREVENTED >>>		
259	2	5	MODEL CHANGED - HYDRAULICS SUSPENDED - CYCLE EMS	The model selection has been changed.	
2513	2	5	GENERATOR MOTION CUTOUT ACTIVE	Driving is not possible while the vehicle generator is running AND is configured to prevent drive.	
2514	2	5	BOOM PREVENTED - DRIVE SELECTED	Boom functions are not possible while the vehicle is being driven AND is configured to not allow simultaneous drive & boom operation.	
2515	2	5	DRIVE PREVENTED - BOOM SELECTED	Driving is not possible while the vehicle above elevation AND is configured to prevent drive while above elevation.	
2516	2	5	DRIVE PREVENTED - ABOVE ELEVATION	Driving is not possible while Boom functions are selected AND is configured to not allow simultaneous drive & boom operation.	
2517	2	5	DRIVE PREVENTED - TILTED & ABOVE ELEVATION	Driving is not possible while the vehicle is tilted and above elevation AND is configured to prevent drive while tilted and above elevation.	
2521	2	5	JIB SWING PREVENTED - IN 1000# MODE	JIB Swing is not possible while the vehicle is in 1000 LB Mode.	
2522	2	5	CAN DONGLE ATTACHED - HYDRAULICS NOT RESTRICTED	CAN Dongle attached. Very limited restrictions for all hydraulics systems.	
2546	2	5	MACHINE SETUP FAULT - JIB SWING		
2547	2	5	MACHINE SETUP FAULT - MODEL		
2587	2	5	RUNNING AT CREEP - PLATFORM LEVELED UNDER	The control system has determined that the platform is leveled under and is being considered to be in a loading/unloading position. Boom, Tower, and Level Override functions will operate at creep speed.	
330	3	3	<<< GROUND OUTPUT DRIVER >>>		
331	3	3	BRAKE - SHORT TO BATTERY	There is a Short to Battery to the Brake Valve.	
332	3	3	BRAKE - OPEN CIRCUIT	There is an Open Circuit to the Brake Valve.	
3311	3	3	GROUND ALARM - SHORT TO BATTERY	There is a Short to Battery to the Ground Alarm.	- Ground Alarm equipped vehicles only.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
3316	3	3	RIGHT FORWARD DRIVE PUMP - SHORT TO GROUND	There is a Short to Ground to the Right Forward Drive Valve.	- Chassis Module equipped vehicles only.
3317	3	3	RIGHT FORWARD DRIVE PUMP - OPEN CIRCUIT	There is an Open Circuit to the Right Forward Drive Valve.	- Chassis Module equipped vehicles only.
3318	3	3	RIGHT FORWARD DRIVE PUMP - SHORT TO BATTERY	There is a Short to Battery to the Right Forward Drive Valve.	- Chassis Module equipped vehicles only.
3320	3	3	RIGHT REVERSE DRIVE PUMP - SHORT TO GROUND	There is a Short to Ground to the Right Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3321	3	3	RIGHT REVERSE DRIVE PUMP - OPEN CIRCUIT	There is an Open Circuit to the Right Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3322	3	3	RIGHT REVERSE DRIVE PUMP - SHORT TO BATTERY	There is a Short to Battery to the Right Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3324	3	3	LEFT FORWARD DRIVE PUMP - SHORT TO GROUND	There is a Short to Ground to the Left Forward Drive Valve.	- Chassis Module equipped vehicles only.
3325	3	3	LEFT FORWARD DRIVE PUMP - OPEN CIRCUIT	There is an Open Circuit to the Left Forward Drive Valve.	- Chassis Module equipped vehicles only.
3326	3	3	LEFT FORWARD DRIVE PUMP - SHORT TO BATTERY	There is a Short to Battery to the Left Forward Drive Valve.	- Chassis Module equipped vehicles only.
3328	3	3	LEFT REVERSE DRIVE PUMP - SHORT TO GROUND	There is a Short to Ground to the Left Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3329	3	3	LEFT REVERSE DRIVE PUMP - OPEN CIRCUIT	There is an Open Circuit to the Left Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3330	3	3	LEFT REVERSE DRIVE PUMP - SHORT TO BATTERY	There is a Short to Battery to the Left Reverse Drive Valve.	- Chassis Module equipped vehicles only.
3336	3	3	ALTERNATOR/ECM POWER - SHORT TO GROUND	There is a Short to Ground to the Alternator/ECM.	
3338	3	3	ALTERNATOR POWER - OPEN CIRCUIT	There is an Open Circuit to the Alternator.	
3339	3	3	ALTERNATOR POWER - SHORT TO BATTERY	There is a Short to Battery to the Alternator	
3340	3	3	AUX POWER - SHORT TO GROUND	There is a Short to Ground to the Auxiliary Power Pump Relay.	
3341	3	3	AUX POWER - OPEN CIRCUIT	There is an Open Circuit to the Auxiliary Power Pump Relay.	
3342	3	3	AUX POWER - SHORT TO BATTERY	There is a Short to Battery to the Auxiliary Power Pump Relay.	
3343	3	3	COLD START ADVANCE SOLENOID - SHORT TO GROUND	There is a Short to Ground to the Cold Start Advance Solenoid.	- CAT engines only.
3344	3	3	COLD START ADVANCE SOLENOID - OPEN CIRCUIT	There is an Open Circuit to the Cold Start Advance Solenoid.	- CAT engines only.
3345	3	3	COLD START ADVANCE SOLENOID - SHORT TO BATTERY	There is a Short to Battery to the Cold Start Advance Solenoid.	- CAT engines only.
3349	3	3	ELECTRIC PUMP - SHORT TO GROUND	There is a Short to Ground to the Pump Relay.	- CAT engines only.
3350	3	3	ELECTRIC PUMP - OPEN CIRCUIT	There is an Open Circuit to the Pump Relay.	- CAT engines only.

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
3351	3	3	ELECTRIC PUMP - SHORT TO BATTERY	There is a Short to Battery to the Pump Relay.	- CAT engines only.
3358	3	3	MAIN DUMP VALVE - SHORT TO GROUND	There is a Short to Ground to the Main Dump Valve.	
3359	3	3	MAIN DUMP VALVE - OPEN CIRCUIT	There is an Open Circuit to the Main Dump Valve.	
3360	3	3	MAIN DUMP VALVE - SHORT TO BATTERY	There is a Short to Battery to the Main Dump Valve.	
3361	3	3	BRAKE - SHORT TO GROUND	There is a Short to Ground to the Brake Valve.	
3362	3	3	START SOLENOID - SHORT TO GROUND	There is a Short to Ground to the Start Relay.	- Diesel engines only.
3363	3	3	START SOLENOID - OPEN CIRCUIT	There is an Open Circuit to the Start Relay.	- Diesel engines only.
3364	3	3	START SOLENOID - SHORT TO BATTERY	There is a Short to Battery to the Start Relay.	- Diesel engines only.
3368	3	3	TWO SPEED VALVE - SHORT TO GROUND	There is a Short to Ground to the Two Speed Valve.	
3369	3	3	TWO SPEED VALVE - OPEN CIRCUIT	There is an Open Circuit to the Two Speed Valve.	
3370	3	3	TWO SPEED VALVE - SHORT TO BATTERY	There is a Short to Battery to the Two Speed Valve.	
3371	3	3	GROUND ALARM - SHORT TO GROUND	There is a Short to Ground to the Ground Alarm.	- Ground Alarm equipped vehicles only.
3372	3	3	GROUND ALARM - OPEN CIRCUIT	There is an Open Circuit to the Ground Alarm.	- Ground Alarm equipped vehicles only.
3373	3	3	GEN SET/WELDER - SHORT TO GROUND	There is a Short to Ground to the Generator Relay.	- Generator / Welder equipped vehicles only.
3374	3	3	GEN SET/WELDER - OPEN CIRCUIT	There is an Open Circuit to the Generator Relay.	- Generator / Welder equipped vehicles only.
3375	3	3	GEN SET/WELDER - SHORT TO BATTERY	There is a Short to Battery to the Generator Relay.	- Generator / Welder equipped vehicles only.
3376	3	3	HEAD TAIL LIGHT - SHORT TO GROUND	There is a Short to Ground to the Head Light Relay.	- Head Light equipped vehicles only.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
3377	3	3	HEADTAIL LIGHT - OPEN CIRCUIT	There is an Open Circuit to the Head Light Relay.	- Head Light equipped vehicles only.
3378	3	3	HEADTAIL LIGHT - SHORT TO BATTERY	There is a Short to Battery to the Head Light Relay.	- Head Light equipped vehicles only.
3379	3	3	HOUR METER - SHORT TO GROUND	There is a Short to Ground to the Hour Meter.	
3380	3	3	HOUR METER - OPEN CIRCUIT	There is an Open Circuit to the Hour Meter.	- Can be reported during power-up.
3381	3	3	HOUR METER - SHORT TO BATTERY	There is a Short to Battery to the Hour Meter.	
3385	3	3	PLATFORM LEVEL UP OVERRIDE VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Level Up Override Valve.	- Electronic leveling system equipped vehicles only.
3386	3	3	PLATFORM LEVEL UP OVERRIDE VALVE - OPEN CIRCUIT	There is an Open Circuit to the Platform Level Up Override Valve.	- Electronic leveling system equipped vehicles only.
3387	3	3	PLATFORM LEVEL UP OVERRIDE VALVE - SHORT TO BATTERY	There is a Short to Battery to the Platform Level Up Override Valve.	- Electronic leveling system equipped vehicles only.
3391	3	3	PLATFORM LEVEL DOWN OVERRIDE VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Level Down Override Valve.	- Electronic leveling system equipped vehicles only.
3392	3	3	PLATFORM LEVEL DOWN OVERRIDE VALVE - OPEN CIRCUIT	There is an Open Circuit to the Platform Level Down Override Valve.	- Electronic leveling system equipped vehicles only.
3393	3	3	PLATFORM LEVEL DOWN OVERRIDE VALVE - SHORT TO BATTERY	There is a Short to Battery to the Platform Level Down Override Valve.	- Electronic leveling system equipped vehicles only.
3394	3	3	PLATFORM ROTATE LEFT VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Rotate Left Valve.	
3395	3	3	PLATFORM ROTATE LEFT VALVE - OPEN CIRCUIT	There is an Open Circuit to the Platform Rotate Left Valve.	
3396	3	3	PLATFORM ROTATE LEFT VALVE - SHORT TO BATTERY	There is a Short to Battery to the Platform Rotate Left Valve.	
3397	3	3	PLATFORM ROTATE RIGHT VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Rotate Right Valve.	
3398	3	3	PLATFORM ROTATE RIGHT VALVE - OPEN CIRCUIT	There is an Open Circuit to the Platform Rotate Right Valve.	
3399	3	3	PLATFORM ROTATE RIGHT VALVE - SHORT TO BATTERY	There is a Short to Battery to the Platform Rotate Right Valve.	
33120	3	3	MAIN TELESCOPE IN VALVE - SHORT TO BATTERY	There is a Short to Battery to the Main Telescope In Valve.	

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
33123	3	3	MAIN TELESCOPE OUT VALVE - SHORT TO BATTERY	There is a Short to Battery to the Main Telescope Out Valve.	
33130	3	3	THROTTLE ACTUATOR - SHORT TO GROUND	There is a Short to Ground to the Throttle Actuator.	
33131	3	3	THROTTLE ACTUATOR - OPEN CIRCUIT	There is an Open Circuit to the Throttle Actuator.	
33132	3	3	THROTTLE ACTUATOR - SHORT TO BATTERY	There is a Short to Battery to the Throttle Actuator.	
33133	3	3	PLATFORM CONTROL VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Control Valve.	- Electronic leveling system equipped vehicles only.
33134	3	3	PLATFORM CONTROL VALVE - OPEN CIRCUIT	There is an Open Circuit to the Platform Control Valve.	- Electronic leveling system equipped vehicles only.
33135	3	3	PLATFORM CONTROL VALVE - SHORT TO BATTERY	There is a Short to Battery to the Platform Control Valve.	- Electronic leveling system equipped vehicles only.
33150	3	3	LIFT PILOT VALVE - SHORT TO GROUND	There is a Short to Ground to the Lift Pilot Valve.	- Gravity Lift Down equipped vehicles only.
33151	3	3	LIFT PILOT VALVE - OPEN CIRCUIT	There is an Open Circuit to the Lift Pilot Valve.	- Gravity Lift Down equipped vehicles only.
33152	3	3	LIFT PILOT VALVE - SHORT TO BATTERY	There is a Short to Battery to the Lift Pilot Valve.	- Gravity Lift Down equipped vehicles only.
33153	3	3	LIFT DOWN AUX VALVE - SHORT TO GROUND	There is a Short to Ground to the Lift Down Auxiliary Valve.	- Gravity Lift Down equipped vehicles only.
33154	3	3	LIFT DOWN AUX VALVE - OPEN CIRCUIT	There is an Open Circuit to the Lift Down Auxiliary Valve.	- Gravity Lift Down equipped vehicles only.
33155	3	3	LIFT DOWN AUX VALVE - SHORT TO BATTERY	There is a Short to Battery to the Lift Down Auxiliary Valve.	- Gravity Lift Down equipped vehicles only.
33173	3	3	RESTRICTED TO TRANSPORT - AXLE LOCKOUT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Axle Lockout Valve.	
33174	3	3	RESTRICTED TO TRANSPORT - BRAKE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Brake.	
33182	3	3	LIFT VALVES - SHORT TO BATTERY		
33186	3	3	MAIN TELESCOPE OUT VALVE - OPEN CIRCUIT	There is an Open Circuit to the Main Telescope Out Valve.	
33188	3	3	MAIN TELESCOPE OUT VALVE - SHORT TO GROUND	There is a Short to Ground to the Main Telescope Out Valve.	
33189	3	3	MAIN TELESCOPE IN VALVE - OPEN CIRCUIT	There is an Open Circuit to the Main Telescope In Valve.	
33190	3	3	MAIN TELESCOPE IN VALVE - SHORT TO GROUND	There is a Short to Ground to the Main Telescope In Valve.	
33207	3	3	HORN - OPEN CIRCUIT	There is an Open Circuit to the Horn.	
33208	3	3	HORN - SHORT TO BATTERY	There is a Short to Battery to the Horn.	
33209	3	3	HORN - SHORT TO GROUND	There is a Short to Ground to the Horn.	

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
33279	3	3	GLOWPLUG - OPEN CIRCUIT	There is an Open Circuit to the Glow Plugs.	- Glowplugs equipped vehicles only.
33280	3	3	GLOWPLUG - SHORT TO BATTERY	There is a Short to Battery to the Glow Plugs.	- Glowplugs equipped vehicles only.
33281	3	3	GLOWPLUG - SHORT TO GROUND	There is a Short to Ground to the Glow Plugs.	- Glowplugs equipped vehicles only.
33285	3	3	ALTERNATOR EXCITATION LINE - SHORT TO BATTERY		
33307	3	3	MAIN TELESCOPE FLOW CONTROL VALVE - SHORT TO GROUND	There is a Short to Ground to the Main Telescope Flow Control Valve.	
33308	3	3	MAIN TELESCOPE FLOW CONTROL VALVE - OPEN CIRCUIT	There is an Open Circuit to the Main Telescope Flow Control Valve.	
33309	3	3	MAIN TELESCOPE FLOW CONTROL VALVE - SHORT TO BATTERY	There is a Short to Battery to the Main Telescope Flow Control Valve.	
33311	3	3	MAIN LIFT FLOW CONTROL VALVE - SHORT TO GROUND	There is a Short to Ground to the Main Lift Flow Control Valve.	
33312	3	3	MAIN LIFT FLOW CONTROL VALVE - OPEN CIRCUIT	There is an Open Circuit to the Main Lift Flow Control Valve.	
33313	3	3	MAIN LIFT FLOW CONTROL VALVE - SHORT TO BATTERY	There is a Short to Battery to the Main Lift Flow Control Valve.	
33429	3	3	JIB LIFT UP OVERRIDE VALVE - SHORT TO GROUND		
33430	3	3	JIB LIFT UP OVERRIDE VALVE - OPEN CIRCUIT		
33431	3	3	JIB LIFT UP OVERRIDE VALVE - SHORT TO BATTERY		
33432	3	3	JIB LIFT DOWN OVERRIDE VALVE - SHORT TO GROUND		
33433	3	3	JIB LIFT DOWN OVERRRIDE VALVE - OPEN CIRCUIT		
33434	3	3	JIB LIFT DOWN OVERRIDE VALVE - SHORT TO BATTERY		
33435	3	3	JIB CONTROL VALVE - SHORT TO GROUND		
33436	3	3	JIB CONTROL VALVE - OPEN CIRCUIT		
33437	3	3	JIB CONTROL VALVE - SHORT TO BATTERY		
340	3	4	<<< PLATFORM OUTPUT DRIVER >>>		
343	3	4	PLATFORM LEVEL UP VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Level Up Valve.	
344	3	4	PLATFORM LEVEL UP VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Platform Level Up Valve.	- Electronic leveling system equipped vehicles only.
347	3	4	PLATFORM LEVEL DOWN VALVE - SHORT TO GROUND	There is a Short to Ground to the Platform Level Down Valve.	
348	3	4	PLATFORM LEVEL DOWN VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Platform Level Down Valve.	- Electronic leveling system equipped vehicles only.
3427	3	4	JIB LOCK VALVE - OPEN CIRCUIT		
3428	3	4	JIB LOCK VALVE - SHORT TO BATTERY		
3429	3	4	JIB LOCK VALVE - SHORT TO GROUND		
3430	3	4	JIB UNLOCK VALVE - OPEN CIRCUIT		

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
3431	3	4	JIB UNLOCK VALVE - SHORT TO BATTERY		
3432	3	4	JIB UNLOCK VALVE - SHORT TO GROUND		
350	3	5	<<< OTHER OUTPUT DRIVERS >>>		
351	3	5	JIB LEVEL UP VALVE - SHORT TO GROUND		
352	3	5	JIB LEVEL UP VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
353	3	5	JIB LEVEL DOWN VALVE - SHORT TO GROUND		
354	3	5	JIB LEVEL DOWN VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
355	3	5	JIB LIFT UP VALVE - SHORT TO GROUND		
356	3	5	JIB LIFT UP VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
357	3	5	JIB LIFT DOWN VALVE - SHORT TO GROUND		
358	3	5	JIB LIFT DOWN VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
359	3	5	JIB ROTATE LEFT VALVE - SHORT TO GROUND		
3510	3	5	JIB ROTATE LEFT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
3511	3	5	JIB ROTATE RIGHT VALVE - SHORT TO GROUND		
3512	3	5	JIB ROTATE RIGHT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
3513	3	5	JIB TELESCOPE IN VALVE - SHORT TO GROUND		
3514	3	5	JIB TELESCOPE IN VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
3515	3	5	JIB TELESCOPE OUT VALVE - SHORT TO GROUND		
3516	3	5	JIB TELESCOPE OUT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT		
430	4	3	<<< ENGINE >>>		
431	4	3	FUEL SENSOR SHORT TO BATTERY	The Fuel Sensor reading is > 4.3V.	
432	4	3	FUEL SENSOR SHORT TO GROUND	The Fuel Sensor reading is < 0.2V.	
433	4	3	OIL PRESSURE SHORT TO BATTERY	The Oil Pressure Sensor reading is > 6.6V.	- Deutz engine only.
434	4	3	OIL PRESSURE SHORT TO GROUND	The Oil Pressure Sensor reading is < 0.1V for more than 5 seconds.	- Deutz engine only. - Not reported during engine start.
435	4	3	COOLANT TEMPERATURE SHORT TO GROUND	The Coolant Temperature Sensor reading is < 0.1V.	- Deutz engine only.
437	4	3	ENGINE TROUBLE CODE	Displays engine SPN FMI code.	
438	4	3	HIGH ENGINE TEMP	(Ford engine only) The engine temperature is > 117 C. (Deutz engine only) The engine temperature is > 130 C.	- Ford / Deutz engine only.
439	4	3	AIR FILTER BYPASSED	The Air Filter is clogged.	
4310	4	3	NO ALTERNATOR OUTPUT	Battery voltage is < 11.5 volts for more than 15 seconds after engine start.	
4311	4	3	LOW OIL PRESSURE	(Ford engine only) The ECM has reported a low oil pressure fault. (Deutz engine only) Oil pressure is < 8 PSI for more than 10 seconds after engine start.	- Ford / Deutz engine only.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
4313	4	3	THROTTLE ACTUATOR FAILURE	The engine RPM is > XXX for more then XX seconds.	
4314	4	3	WRONG ENGINE SELECTED - ECM DETECTED	A ECM was detected with a non-ECM type engine selected.	
4322	4	3	LOSS OF ENGINE SPEED SENSOR	The engine RPM sensor indicates 0RPM AND the Oil Pressure Sensor indicates > 8 PSI for three seconds.	- Diesel engine only.
4323	4	3	SPEED SENSOR READING INVALID SPEED	The engine RPM sensor indicates > 4000 RPM.	- Diesel engine only.
4375	4	3	WATER IN FUEL	The engine has shut down because an unacceptable amount of water has been detected in the fuel or there is an issue with the water in fuel sensor. If operating in platform mode, platform alarm will sound continuously and low fuel indicator will flash. If operating in ground mode, the ground alarm will sound	Water in fuel filter for water or in fuel or water in fuel sensor.
4376	4	3	FUNCTIONS PREVENTED - ENGINE OIL WARM UP ACTIVE	Engine Oil Warm Up is active because the engine was started when the engine coolant was less than 32 deg F. Engine Oil Warm Up will remain active until the engine coolant is greater than 32 deg F for the engine has been running for 60s and the engine coolant is less than 32 deg F. Machine functions will be prevented until Engine Oil Warm Up is complete.	
440	4	4	<<< BATTERY SUPPLY >>>		
441	4	4	BATTERY VOLTAGE TOO LOW - SYSTEM SHUTDOWN	Battery voltage is < 9V.	
442	4	4	BATTERY VOLTAGE TOO HIGH - SYSTEM SHUTDOWN	Battery voltage is > 16V.	
443	4	4	LSS BATTERY VOLTAGE TOO HIGH	The load sensor has determined that its supply voltage is too high (> 16V). The machine will assume the platform is overloaded.	Check for issue with sensor supply voltage.

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
444	4	4	LSS BATTERY VOLTAGE TOO LOW	The load sensor has determined that its supply voltage is too low (> 8V). The machine will assume the platform is overloaded.	Check for issue with sensor supply voltage.
445	4	4	BATTERY VOLTAGE LOW	Battery voltage is < 11V for more then 5 seconds.	
4479	4	4	LSS BATTERY VOLTAGE - INITIALIZATION ERROR	The shear beam is reporting a Sensor Supply Voltage Initialization Error The machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.	Possible sensor hardware issue.
4480	4	4	LSS BATTERY VOLTAGE - NOT CALIBRATED	The shear beam is reporting a Sensor Supply Voltage calibration error. The machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.	Possible sensor hardware issue.
660	6	6	<<< COMMUNICATION >>>		
662	6	6	CANBUS FAILURE - PLATFORM MODULE	Platform Module CAN communication lost.	
663	6	6	CANBUS FAILURE - LOAD SENSING SYSTEM MODULE	The control system has lost communication with the load sensing system load pin. The machine will assume the platform is overloaded.	Check wiring to load sensor.
666	6	6	CANBUS FAILURE - ENGINE CONTROLLER	Engine Control Module CAN communication lost.	- ECM equipped engine only.
6610	6	6	CANBUS FAILURE - BLAM	BLAM CAN communication lost.	- BLAM equipped vehicles only.
6611	6	6	CANBUS FAILURE - CHASSIS MODULE	Engine Control Module CAN communication lost.	- ECM equipped engine only.
6612	6	6	CANBUS FAILURE - CYLINDER LOAD PIN	Cylinder Load Pin CAN communication lost.	- Cylinder Load Pin equipped engine only.
6613	6	6	CANBUS FAILURE - EXCESSIVE CANBUS ERRORS	There has been > 500 Bus Off errors or > 500 Bus Passive Errors.	
6622	6	6	CANBUS FAILURE - TCU MODULE	Machine Setup/ Telematics=YES, No device heartbeat for 30 sec	

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
6623	6	6	CANBUS FAILURE - GATEWAY MODULE	Machine Setup/Telematics=YES, No device heartbeat for 30 sec	
6629	6	6	CANBUS FAILURE - TELEMATICS CANBUS LOADING TOO HIGH	X	-Telematics only
6639	6	6	CANBUS FAILURE - JIB CONTROL MODULE		
6640	6	6	CANBUS FAILURE - JIB LIFT ANGLE SENSOR		
6641	6	6	CANBUS FAILURE - PLATFORM LEVEL ANGLE SENSOR		
680	6	8	<<< TELEMATICS >>>		
681	6	8	REMOTE CONTRACT MANAGEMENT OVERRIDE - ALL FUNCTIONS IN CREEP	X	-Telematics only
810	8	1	<<< TILT SENSOR >>>		
813	8	1	CHASSIS TILT SENSOR NOT CALIBRATED	The Chassis Tilt Sensor has not been calibrated.	
815	8	1	CHASSIS TILT SENSOR DISAGREEMENT	X	
820	8	2	<<< PLATFORM LOAD SENSE >>>		
821	8	2	LSS CELL #1 ERROR		
8211	8	2	LSS READING UNDER WEIGHT	LSS has been calibrated and the UGM has determined that the load sensing system reading is underweight while a period of time while operating drive or boom lift up at speeds greater than creep OR the UGM has determined that the load sensing system reading is less than -1.5 x Gross Platform Weight. The machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.	Ensure platform is not resting on the ground or is not leveled at an extreme negative angle. Re-calibrate the load sensing system if the above items are not a factor.
8218	8	2	LSS SENSOR DISAGREEMENT	The control system has determined that the difference between the calculated load for sensor 1 and sensor 2 differ by more than 50lbs OR the internal strain gauge sensor 1 gross platform weight reading and the internal strain gauge sensor 2 gross platform weight reading differ by more than 200lbs. If the platform is not considered to be overloaded boom functions will be restricted to creep. This fault, once annunciated is latched within a given key cycle.	Attempt to re-calibrate the load sensing system. Possible sensor hardware issue.
822	8	2	LSS CELL #2 ERROR822822		

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8222	8	2	LSS STRAIN GAUGE 1 - STAGNANT	<p>The control system has determined that the strain gauge 1 reading in the load sensor is stagnant (not changing).</p> <p>If the platform is not considered to be overloaded boom functions will be restricted to creep.</p> <p>If DTC 8223 is active in combination with DTC 8222 the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8223	8	2	LSS STRAIN GAUGE 2 - STAGNANT	<p>The control system has determined that the strain gauge 2 reading in the load sensor is stagnant (not changing).</p> <p>If the platform is not considered to be overloaded boom functions will be restricted to creep.</p> <p>If DTC 8222 is active in combination with DTC 8223 the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8224	8	2	LSS STRAIN GAUGE 1 - OUT OF RANGE LOW	<p>The shear beam is reporting an out of range low issue with the strain gauge 1 reading.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8225 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8225	8	2	LSS STRAIN GAUGE 2 - OUT OF RANGE LOW	<p>The shear beam is reporting an out of range low issue with the strain gauge 2 reading.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8224 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.
8226	8	2	LSS STRAIN GAUGE 1 - OUT OF RANGE HIGH	<p>The shear beam is reporting an out of range high issue with the strain gauge 1 reading.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8227 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.
8227	8	2	LSS STRAIN GAUGE 2 - OUT OF RANGE HIGH	<p>The shear beam is reporting an out of range high issue with the strain gauge 2 reading.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8226 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8228	8	2	LSS STRAIN GAUGE 1 - INITIALIZATION ERROR	<p>The shear beam is reporting an initialization issue with the strain gauge 1 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8229 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8229	8	2	LSS STRAIN GAUGE 2 - INITIALIZATION ERROR	<p>The shear beam is reporting an initialization issue with the strain gauge 2 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8228 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8230	8	2	LSS STRAIN GAUGE 1 - NOT CALIBRATED	<p>The shear beam is reporting a calibration issue with the strain gauge 1 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8231 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
823	8	2	LSS CELL #3 ERROR823823		

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8231	8	2	LSS STRAIN GAUGE 2 - NOT CALIBRATED	<p>The shear beam is reporting a calibration issue with the strain gauge 2 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8230 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.
8232	8	2	LSS STRAIN GAUGE 1 - SENSOR DEFECT	<p>The shear beam is reporting a sensor defect issue with the strain gauge 1 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8233 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.
8233	8	2	LSS STRAIN GAUGE 2 - SENSOR DEFECT	<p>The shear beam is reporting a sensor defect issue with the strain gauge 2 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8232 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8234	8	2	LSS STRAIN GAUGE 1 - NOT INSTALLED	<p>The shear beam is reporting a not installed issue with the strain gauge 1 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8235 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8235	8	2	LSS STRAIN GAUGE 2 - NOT INSTALLED	<p>The shear beam is reporting a not installed issue with the strain gauge 2 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8234 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8236	8	2	LSS NOT DETECTING CHANGE	<p>The control system has determined that the load sensor reading has not deviated by more than 1lb for 5s while operating drive or boom functions at greater than creep speed.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.
8237	8	2	LSS STRAIN GAUGE 1 - A/D DEFECT	<p>The shear beam is reporting an internal issue with the strain gauge 1 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8238 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once annunciated is latched within a given key cycle.</p>	Possible sensor hardware issue.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8238	8	2	LSS STRAIN GAUGE 2 - A/D DEFECT	<p>The shear beam is reporting an internal issue with the strain gauge 2 sensor.</p> <p>If the platform is not overloaded the machine will be placed in to creep.</p> <p>If DTC 8237 is also active the machine will assume the platform is overloaded.</p> <p>This fault, once announced is latched within a given key cycle.</p>	Possible sensor hardware issue.
824	8	2	LSS CELL #4 ERROR 824824		
825	8	2	LSS HAS NOT BEEN CALIBRATED	<p>The load sensing system is configured but has not been calibrated.</p> <p>The machine will assume the platform is overloaded.</p>	Calibrate the load sensing system.
826	8	2	RUNNING AT CREEP - PLATFORM OVERLOADED	All functions at creep, the Load Sensing System indicates the Platform is overloaded AND is configured to warn only while the Platform is overloaded.	
827	8	2	DRIVE & BOOM PREVENTED - PLATFORM OVERLOADED	Driving and boom functions are not possible while the Load Sensing System indicates the Platform is overloaded AND is configured to prevent drive and boom functions while the Platform is overloaded.	
828	8	2	LIFT UP & TELE OUT PREVENTED - PLATFORM OVERLOADED	Lift up and telescope out are not possible while the Load Sensing System indicates the Platform is overloaded AND is configured to prevent Lift up and telescope out while the Platform is overloaded.	
830	8	3	<<< PLATFORM LEVELING >>>		
831	8	3	PLATFORM LEVELING OVERRIDE ON	Platform Leveling forced on with Access Level 0 selection.	
832	8	3	PLATFORM LEVELING OVERRIDE OFF	Platform Leveling forced off with Access Level 0 selection.	
833	8	3	PLATFORM LEVEL UP CRACKPOINT - NOT CALIBRATED	The Platform Level Up Valve Crackpoint has not been calibrated.	- Electronic leveling system equipped vehicles only.
834	8	3	PLATFORM LEVEL DOWN CRACKPOINT - NOT CALIBRATED	The Platform Level Down Valve Crackpoint has not been calibrated.	- Electronic leveling system equipped vehicles only.

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
837	8	3	PLATFORM LEVEL SENSOR #1 - SHORT TO BATTERY	There is a Short to Battery to the Platform Level Sensor #1.	- Electronic leveling system equipped vehicles only.
838	8	3	PLATFORM LEVEL SENSOR #1 - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Platform Level Sensor #1.	- Electronic leveling system equipped vehicles only.
8311	8	3	PLATFORM LEVEL SENSOR #2 - SHORT TO BATTERY	There is a Short to Battery to the Platform Level Sensor #2.	- Electronic leveling system equipped vehicles only.
8312	8	3	PLATFORM LEVEL SENSOR #2 - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Platform Level Sensor #2.	- Electronic leveling system equipped vehicles only.
8313	8	3	PLATFORM LEVEL SENSOR #1 - REFERENCE VOLTAGE OUT OF RANGE	Platform Level Sensor #1 reference voltage is outside acceptable range (4.9 to 5.1 volts).	- Electronic leveling system equipped vehicles only.
8314	8	3	PLATFORM LEVEL SENSOR #2 - REFERENCE VOLTAGE OUT OF RANGE	Platform Level Sensor #2 reference voltage is outside acceptable range (4.9 to 5.1 volts).	- Electronic leveling system equipped vehicles only.
8315	8	3	PLATFORM LEVELING SENSOR - DISAGREEMENT	The Control System reads the sensor values at power-up. The fault is triggered when there is a ± 5 degree difference from the initial reading.	- Electronic leveling system equipped vehicles only.
8316	8	3	PLATFORM LEVEL SENSOR #1 - COMMUNICATIONS LOST	Platform Level Sensor #1 serial communication lost.	
8317	8	3	PLATFORM LEVEL SENSOR #2 - COMMUNICATIONS LOST	Platform Level Sensor #2 serial communication lost.	
8318	8	3	PLATFORM LEVELING SYSTEM TIMEOUT	The Platform was unable to maintain desired level within range for the allotted time.	
8319	8	3	JIB LEVEL SENSOR #1 - OUT OF RANGE LOW		
8320	8	3	JIB LEVEL SENSOR #1 - OUT OF RANGE HIGH		
8321	8	3	JIB LEVEL SENSOR #2 - OUT OF RANGE LOW		
8322	8	3	JIB LEVEL SENSOR #2 - OUT OF RANGE HIGH		
8323	8	3	JIB LEVEL SENSORS - NOT CALIBRATED		
8324	8	3	JIB LEVEL SENSORS - DISAGREEMENT		
8325	8	3	JIB SWING SENSOR #1 - OUT OF RANGE LOW		
8326	8	3	JIB SWING SENSOR #1 - OUT OF RANGE HIGH		
8327	8	3	JIB SWING SENSOR #2 - OUT OF RANGE LOW		
8328	8	3	JIB SWING SENSOR #2 - OUT OF RANGE HIGH		
8329	8	3	JIB SWING SENSORS - NOT CALIBRATED		
8330	8	3	JIB SWING SENSORS - DISAGREEMENT		
8331	8	3	JIB LOCK PIN SENSOR - DISAGREEMENT		
8332	8	3	JIB TRANSPORT SENSOR #1 - DISAGREEMENT		
8333	8	3	JIB TRANSPORT SENSOR #2 - DISAGREEMENT		
8334	8	3	JIB LIFT ANGLE SENSOR - NOT CALIBRATED		
8335	8	3	JIB LEVEL UP CRACKPOINT - NOT CALIBRATED		
8336	8	3	JIB LEVEL DOWN CRACKPOINT - NOT CALIBRATED		

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8337	8	3	JIB LEVELING SYSTEM TIMEOUT		
8338	8	3	WRONG JIB LOCK PIN RESPONSE		
8339	8	3	PLATFORM LEVEL ANGLE SENSOR - NOT CALIBRATED		
840	8	4	<<<< ENVELOPE >>>>		
841	8	4	BOOM ANGLE SENSOR DISAGREEMENT	There is a disagreement between the Boom Angle Sensors.	- Envelope Control equipped vehicles only.
842	8	4	BOOM LENGTH SWITCH FAILED	The Boom Length Switches are reporting the same state.	- Envelope Control equipped vehicles only.
843	8	4	BOOM LENGTH SWITCH/SENSOR DISAGREEMENT	There is a disagreement between the Boom Length Switch and the Boom Length Sensor.	- Envelope Control equipped vehicles only.
844	8	4	BOOM LENGTH SENSOR NOT DETECTING LENGTH CHANGE	The Boom Length Sensor is not changing during a boom telescope command.	- Envelope Control equipped vehicles only.
845	8	4	BOOM LENGTH SENSOR - OUT OF RANGE HIGH	Boom Length Sensor out of range high.	- Envelope Control equipped vehicles only.
846	8	4	BOOM LENGTH SENSOR - OUT OF RANGE LOW	Boom Length Sensor out of range low.	- Envelope Control equipped vehicles only.
847	8	4	BOOM LENGTH SENSOR - VALUE OUT OF RANGE HIGH	Boom Length out of range high.	- Envelope Control equipped vehicles only.
848	8	4	BOOM LENGTH SENSOR - VALUE OUT OF RANGE LOW	Boom Length out of range low.	- Envelope Control equipped vehicles only.
849	8	4	BOOM ANGLE SENSOR #1 - COMMUNICATIONS FAULT	Boom Angle Sensor #1 communications lost.	- Envelope Control equipped vehicles only.
8410	8	4	BOOM ANGLE SENSOR #2 - COMMUNICATIONS FAULT	Boom Angle Sensor #2 communications lost.	- Envelope Control equipped vehicles only.
8411	8	4	BOOM ANGLE SENSOR #1 - INVALID ANGLE	Boom Angle Sensor #1 out of range.	- Envelope Control equipped vehicles only.
8412	8	4	BOOM ANGLE SENSOR #2 - INVALID ANGLE	Boom Angle Sensor #2 out of range.	- Envelope Control equipped vehicles only.
8413	8	4	WRONG TELESCOPE RESPONSE	Boom telescope is moving in the opposite direction of the command.	- Envelope Control equipped vehicles only.
8414	8	4	WRONG LIFT RESPONSE	Boom lift is moving in the opposite direction of the command.	- Envelope Control equipped vehicles only.
8479	8	4	MAIN CYLINDER ANGLE SENSOR #1 - OUT OF RANGE LOW		
8480	8	4	MAIN CYLINDER ANGLE SENSOR #1 - OUT OF RANGE HIGH		
8492	8	4	MAIN CYLINDER ANGLE SENSOR #2 - OUT OF RANGE LOW		
8493	8	4	MAIN CYLINDER ANGLE SENSOR #2 - OUT OF RANGE HIGH		
8494	8	4	MAIN CYLINDER ANGLE SENSORS - DISAGREEMENT		
8495	8	4	TURN TABLE SENSOR #1 - FREQUENCY OUT OF RANGE LOW		
8496	8	4	TURN TABLE SENSOR #1 - FREQUENCY OUT OF RANGE HIGH		
8497	8	4	TURN TABLE SENSOR #2 - FREQUENCY OUT OF RANGE LOW		
8498	8	4	TURN TABLE SENSOR #2 - FREQUENCY OUT OF RANGE HIGH		

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8499	8	4	CHASSIS TURN TABLE SENSORS - DISAGREEMENT		
84100	8	4	CHASSIS TURN TABLE SENSORS AND DRIVE ORIENTATION SWITCH - DIS- AGREEMENT		
84101	8	4	CHASSIS TURN TABLE SENSORS - NOT CALIBRATED		
84102	8	4	MAIN CYLINDER ANGLE SENSOR - NOT DETECTING CHANGE		
84103	8	4	JIB LEVEL ANGLE SENSOR - NOT DETECTING CHANGE		
84104	8	4	JIB LIFT ANGLE SENSOR - NOT DETECTING CHANGE		
84105	8	4	PLATFORM LEVEL ANGLE SENSOR - NOT DETECTING CHANGE		
84106	8	4	JIB LEVEL MOVEMENT WITHOUT COMMAND		
84107	8	4	JIB LIFT MOVEMENT WITHOUT COMMAND		
84108	8	4	PLATFORM LEVEL MOVEMENT WITHOUT COMMAND		

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
84151	8	4	TOWER LENGTH SENSOR 1 FAULTY	<p>There are three ways (a, b, c) that these faults can be set:</p> <p>(a) If the length sensor voltage changes more than 0.0168 volts within 40 milliseconds a counter for the respective length sensor shall be incremented to aid service in diagnosing bad sensor performance. The counter below shall be incremented anytime the description above is met. It is cleared/reset by a power cycle TwrLenSnsr(1/2)Fault-Counter_PowerCycle > 30</p> <p>(b) The counter below shall be incremented every time TwrLenSnsr(1/2)Fault-Counter_PowerCycle (described above) reached its threshold. This value is stored in EEPROM in order to track the history of the issue. (A successful Boom Sensor Calibration will reset this counter – this is reflected in the boom sensor calibration document) TwrLenSnsr(1/2)Fault-Counter_EEPROM > 3</p> <p>(c) The fault counter below shall be incremented every time the trigger condition described in section (a) is observed during certain steps during Boom Sensor Calibration (please see that document section for further details) TwrLenSnsr(1/2)Fault-Counter_BmSnsrCal > 20</p> <p>If (a) or (b) or (c) are met (fault triggered) the machine will be put into Electrical Retrieval Fault, once triggered, is maintained within a given key-cycle Machine will be trapped in transport</p>	Check Hardware, Wiring

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
84152	8	4	TOWER LENGTH SENSOR 2 FAULTY	<p>There are three ways (a, b, c) that these faults can be set:</p> <p>(a) If the length sensor voltage changes more than 0.0168 volts within 40 milliseconds a counter for the respective length sensor shall be incremented to aid service in diagnosing bad sensor performance. The counter below shall be incremented anytime the description above is met. It is cleared/reset by a power cycle TwrLenSnsr(1/2)Fault-Counter_PowerCycle > 30</p> <p>(b) The counter below shall be incremented every time TwrLenSnsr(1/2)Fault-Counter_PowerCycle (described above) reached its threshold. This value is stored in EEPROM in order to track the history of the issue. (A successful Boom Sensor Calibration will reset this counter – this is reflected in the boom sensor calibration document) TwrLenSnsr(1/2)Fault-Counter_EEPROM > 3</p> <p>(c) The fault counter below shall be incremented every time the trigger condition described in section (a) is observed during certain steps during Boom Sensor Calibration (please see that document section for further details) TwrLenSnsr(1/2)Fault-Counter_BmSnsrCal > 20</p> <p>If (a) or (b) or (c) are met (fault triggered) the machine will be put into Electrical Retrieval Fault, once triggered, is maintained within a given key-cycle Machine will be trapped in transport</p>	Check Hardware, Wiring

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
84153	8	4	BOOM LENGTH SENSOR 1 FAULTY	<p>There are three ways (a, b, c) that these faults can be set:</p> <p>(a) If the length sensor voltage changes more than 0.0168 volts within 40 milliseconds a counter for the respective length sensor shall be incremented to aid service in diagnosing bad sensor performance. The counter below shall be incremented anytime the description above is met. It is cleared/reset by a power cycle BmLenSnsr(1/2)Fault-Counter_PowerCycle > 30</p> <p>(b) The counter below shall be incremented every time BmLenSnsr(1/2)Fault-Counter_PowerCycle (described above) reached its threshold. This value is stored in EEPROM in order to track the history of the issue. (A successful Boom Sensor Calibration will reset this counter – this is reflected in the boom sensor calibration document) BmLenSnsr(1/2)Fault-Counter_EEPROM > 3</p> <p>(c) The fault counter below shall be incremented every time the trigger condition described in section (a) is observed during certain steps during Boom Sensor Calibration (please see that document section for further details) BmLenSnsr(1/2)Fault-Counter_BmSnsrCal > 20</p> <p>If (a) or (b) or (c) are met (fault triggered) the machine will be put into Electrical Retrieval Fault, once triggered, is maintained within a given key-cycle Machine will be trapped in transport</p>	Check wiring and hardware

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
84154	8	4	BOOM LENGTH SENSOR 2 FAULTY	<p>There are three ways (a, b, c) that these faults can be set:</p> <p>(a) If the length sensor voltage changes more than 0.0168 volts within 40 milliseconds a counter for the respective length sensor shall be incremented to aid service in diagnosing bad sensor performance. The counter below shall be incremented anytime the description above is met. It is cleared/reset by a power cycle BmLenSnsr(1/2)Fault-Counter_PowerCycle > 30</p> <p>(b) The counter below shall be incremented every time BmLenSnsr(1/2)Fault-Counter_PowerCycle (described above) reached its threshold. This value is stored in EEPROM in order to track the history of the issue. (A successful Boom Sensor Calibration will reset this counter – this is reflected in the boom sensor calibration document) BmLenSnsr(1/2)Fault-Counter_EEPROM > 3</p> <p>(c) The fault counter below shall be incremented every time the trigger condition described in section (a) is observed during certain steps during Boom Sensor Calibration (please see that document section for further details) BmLenSnsr(1/2)Fault-Counter_BmSnsrCal > 20</p> <p>If (a) or (b) or (c) are met (fault triggered) the machine will be put into Electrical Retrieval Fault, once triggered, is maintained within a given key-cycle Machine will be trapped in transport</p>	Check wiring and hardware

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
850	8	5	<<< MOMENT/LOAD PINS >>>		
851	8	5	MOMENT PIN - HORIZONTAL FORCE OUT OF RANGE	The Moment Pin horizontal force is out of range.	
852	8	5	MOMENT PIN - VERTICAL FORCE OUT OF RANGE	The Moment Pin vertical force is out of range.	
855	8	5	MOMENT PIN - SENSOR FAULT	The Moment Pin has reported a fault.	
857	8	5	NEW MOMENT PIN DETECTED	A new Moment Pin has been detected.	
860	8	6	<<< STEERING/ AXLE >>>		
861	8	6	RESTRICTED TO TRANSPORT - OSCILLATING AXLE PRESSURE SWITCH DIS-AGREEMENT	The Oscillating Axle Pressure Switch indicates pressure while not driving or does not indicate pressure while driving and restricted to transport.	- Electrically released Oscillated Axles equipped vehicles only.
862	8	6	AXLE EXTEND VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Axle Extend Valve.	
863	8	6	AXLE EXTEND VALVE - SHORT TO GROUND	There is a Short to Ground to the Axle Extend Valve.	
864	8	6	AXLE RETRACT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Axle Retract Valve.	
865	8	6	AXLE RETRACT VALVE - SHORT TO GROUND	There is a Short to Ground to the Axle Retract Valve.	
866	8	6	RIGHT FRONT STEER RIGHT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Right Front Steer Right Valve.	
867	8	6	RIGHT FRONT STEER RIGHT VALVE - SHORT TO GROUND	There is a Short to Ground to the Right Front Steer Right Valve.	
868	8	6	RIGHT FRONT STEER LEFT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Right Front Steer Left Valve.	

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Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
869	8	6	RIGHT FRONT STEER LEFT VALVE - SHORT TO GROUND	There is a Short to Ground to the Right Front Steer Left Valve.	
8610	8	6	LEFT FRONT STEER RIGHT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Left Front Steer Right Valve.	
8611	8	6	LEFT FRONT STEER RIGHT VALVE - SHORT TO GROUND	There is a Short to Ground to the Left Front Steer Right Valve.	
8612	8	6	LEFT FRONT STEER LEFT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Left Front Steer Left Valve.	
8613	8	6	LEFT FRONT STEER LEFT VALVE - SHORT TO GROUND	There is a Short to Ground to the Left Front Steer Left Valve.	
8614	8	6	RIGHT REAR STEER RIGHT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Right Rear Steer Right Valve.	
8615	8	6	RIGHT REAR STEER RIGHT VALVE - SHORT TO GROUND	There is a Short to Ground to the Right Rear Steer Right Valve.	
8616	8	6	RIGHT REAR STEER LEFT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Right Rear Steer Left Valve.	
8617	8	6	RIGHT REAR STEER LEFT VALVE - SHORT TO GROUND	There is a Short to Ground to the Right Rear Steer Left Valve.	
8618	8	6	LEFT REAR STEER RIGHT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Left Rear Steer Right Valve.	
8619	8	6	LEFT REAR STEER RIGHT VALVE - SHORT TO GROUND	There is a Short to Ground to the Left Rear Steer Right Valve.	
8620	8	6	LEFT REAR STEER LEFT VALVE - SHORT TO BATTERY OR OPEN CIRCUIT	There is a Short to Battery or an Open Circuit to the Left Rear Steer Left Valve.	
8621	8	6	LEFT REAR STEER LEFT VALVE - SHORT TO GROUND	There is a Short to Ground to the Left Rear Steer Left Valve.	
8622	8	6	FRONT RIGHT STEER SENSOR - DECOUPLED	The Front Right Steer Sensor has become decoupled.	
8623	8	6	FRONT LEFT STEER SENSOR - DECOUPLED	The Front Left Steer Sensor has become decoupled.	
8624	8	6	REAR RIGHT STEER SENSOR - DECOUPLED	The Rear Right Steer Sensor has become decoupled.	
8625	8	6	REAR LEFT STEER SENSOR - DECOUPLED	The Rear Left Steer Sensor has become decoupled.	
8626	8	6	FRONT LEFT STEER SENSOR - NOT RESPONDING	The Front Right Steer Sensor is not responding to steer commands.	
8627	8	6	FRONT RIGHT STEER SENSOR - NOT RESPONDING	The Front Left Steer Sensor is not responding to steer commands.	
8628	8	6	REAR LEFT STEER SENSOR - NOT RESPONDING	The Rear Right Steer Sensor is not responding to steer commands.	

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
8629	8	6	REAR RIGHT STEER SENSOR - NOT RESPONDING	The Rear Left Steer Sensor is not responding to steer commands.	
8630	8	6	FRONT RIGHT STEER SENSOR - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Front Right Steer Sensor.	
8631	8	6	FRONT RIGHT STEER SENSOR - SHORT TO BATTERY	There is a Short to Battery to the Front Right Steer Sensor.	
8632	8	6	FRONT LEFT STEER SENSOR - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Front Left Steer Sensor.	
8633	8	6	FRONT LEFT STEER SENSOR - SHORT TO BATTERY	There is a Short to Battery to the Front Left Steer Sensor.	
8634	8	6	REAR RIGHT STEER SENSOR - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Rear Right Steer Sensor.	
8635	8	6	REAR RIGHT STEER SENSOR - SHORT TO BATTERY	There is a Short to Battery to the Rear Right Steer Sensor.	
8636	8	6	REAR LEFT STEER SENSOR - SHORT TO GROUND OR OPEN CIRCUIT	There is a Short to Ground or an Open Circuit to the Rear Left Steer Sensor.	
8637	8	6	REAR LEFT STEER SENSOR - SHORT TO BATTERY	There is a Short to Battery to the Rear Left Steer Sensor.	
8651	8	6	ENGINE SHUTDOWN - AXLE LOCKOUT VALVE FAULT	Engine Start is prevented while there is an Oscillating Axle fault and vehicle is out of transport position	
876	87	6	WIRE ROPE SERVICE REQUIRED	MACHINE SETUP → CABLE SWITCH = YES; Wire Rope Service = Enabled	
990	9	9	<<< HARDWARE >>>		
991	9	9	LSS WATCHDOG RESET		
992	9	9	LSS EEPROM ERROR		
993	9	9	LSS INTERNAL ERROR - PIN EXCITATION		
994	9	9	LSS INTERNAL ERROR - DRDY MISSING FROM A/D		
998	9	9	EEPROM FAILURE - CHECK ALL SETTINGS	The Ground Module has reported an EEPROM failure.	
9910	9	9	FUNCTIONS LOCKED OUT - PLATFORM MODULE SOFTWARE VERSION IMPROPER	The Platform Module software version is not compatible with the rest of the system.	
9911	9	9	FUNCTIONS LOCKED OUT - LSS MODULE SOFTWARE VERSION IMPROPER		
9914	9	9	PLATFORM MODULE SOFTWARE UPDATE REQUIRED	The Platform Module software requires an updated.	
9915	9	9	CHASSIS TILT SENSOR NOT GAIN CALIBRATED	The Chassis Tilt Sensor gain calibration has been lost.	
9916	9	9	CHASSIS TILT SENSOR GAIN OUT OF RANGE	The Chassis Tilt Sensor gain calibration has become corrupted.	

SECTION 6 - JLG CONTROL SYSTEM

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
9917	9	9	HIGH RESOLUTION A2D FAILURE - INTERRUPT LOST	The Platform Module has reported that its ADS1213 chip has stopped asserting its interrupt.	
9918	9	9	HIGH RESOLUTION A2D FAILURE - REINIT LIMIT	The Platform Module has reported that its ADS1213 chip had to be reset 3 or more times.	
9919	9	9	GROUND SENSOR REF VOLTAGE OUT OF RANGE	The Ground Module has reported that its sensor reference voltage is outside acceptable range.	- Not reported during power-up.
9920	9	9	PLATFORM SENSOR REF VOLTAGE OUT OF RANGE	The Platform Module has reported that its sensor reference voltage is outside acceptable range.	- Not reported during power-up.
9921	9	9	GROUND MODULE FAILURE - HIGH SIDE DRIVER CUTOFF FAULTY	The Ground Module has reported that its high side driver cutoff failed.	
9922	9	9	PLATFORM MODULE FAILURE - HWFS CODE 1	The Platform Module has reported that the V(Low) FET has failed.	
9923	9	9	GROUND MODULE FAILURE - HWFS CODE 1	The Ground Module has reported that the V(Low) FET has failed.	
9924	9	9	FUNCTIONS LOCKED OUT - MACHINE NOT CONFIGURED		
9925	9	9	FUNCTIONS LOCKED OUT - CHASSIS MODULE SOFTWARE VERSION IMPROPER	The Chassis Module software version is not compatible with the rest of the system.	
9926	9	9	FUNCTIONS LOCKED OUT - BLAM MODULE SOFTWARE VERSION IMPROPER	The BLAM software version is not compatible with the rest of the system.	
9927	9	9	GROUND MODULE CONSTANT DATA UPDATE REQUIRED	The Ground Module constant data requires an updated.	
9928	9	9	ENVELOPE CONTROL DISABLED	Envelope Control has been disabled by the user from Access Level 0.	- Envelope Control equipped vehicles only.
99285	9	9	LSS - FACTORY CALIBRATION ERROR	The load sensor is reporting a factor calibration issue (internal error) The machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.	Possible sensor hardware issue.
9929	9	9	MOMENT CONTROL DISABLED	Moment Control has been disabled by the user from Access Level 0.	- Envelope Control equipped vehicles only.

Table 6-13. Diagnostic Trouble Code Chart

DTC	Flash Code	Sequence	Fault Message	Fault Description	Check
9930	9	9	STEER SENSORS NOT CALIBRATED	The Steer Sensors have not been calibrated.	
9931	9	9	BOOM SENSORS NOT CALIBRATED	The Boom Sensors have not been calibrated.	- BLAM equipped vehicles only.
9932	9	9	LIFT CRACKPOINTS NOT CALIBRATED	The Lift Crackpoints have not been calibrated.	
9933	9	9	TELESCOPE CRACKPOINTS NOT CALIBRATED	The Telescope Crackpoints have not been calibrated.	
9934	9	9	DRIVE CRACKPOINTS NOT CALIBRATED	The Drive Crackpoints have not been calibrated.	
9935	9	9	BLAM SENSOR SUPPLY OUT OF RANGE HIGH	The Boom Angle Sensors supply voltage is high.	- BLAM equipped vehicles only.
9936	9	9	BLAM SENSOR SUPPLY OUT OF RANGE LOW	The Boom Angle Sensors supply voltage is low.	- BLAM equipped vehicles only.
9937	9	9	LENGTH SENSOR REF VOLTAGE HIGH	The Boom Length Sensors supply voltage is high.	
9938	9	9	LENGTH SENSOR REF VOLTAGE LOW	The Boom Length Sensors supply voltage is low.	
9939	9	9	BLAM HIGH RES A/D FAILURE	The BLAM high resolution analog to digital converter has failed.	- BLAM equipped vehicles only.
9940	9	9	CHASSIS SENSOR SUPPLY OUT OF RANGE HIGH	The Chassis Sensors supply voltage is high.	
9941	9	9	CHASSIS SENSOR SUPPLY OUT OF RANGE LOW	The Chassis Sensors supply voltage is low.	
9944	9	9	CURRENT FEEDBACK GAINS OUT OF RANGE	The factory set current feedback gains are out of range.	
9945	9	9	CURRENT FEEDBACK CALIBRATION CHECKSUM INCORRECT	The factory set current feedback checksum is not correct.	
99155	9	9	JIB CONTROL MODULE - HIGH RESOLUTION A2D FAILURE		
99156	9	9	JIB CONTROL MODULE - HIGH RESOLUTION A2D REFERENCE LOW		
99157	9	9	JIB CONTROL MODULE - HIGH RESOLUTION A2D REFERENCE HIGH		
99158	9	9	PLATFORM LEVEL ANGLE SENSOR - INTERNAL ERROR		
99159	9	9	JIB LIFT ANGLE SENSOR - INTERNAL ERROR		
99160	9	9	FUNCTIONS LOCKED OUT - JIB CONTROL MODULE SOFTWARE VERSION IMPROPER		

SECTION 7. BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

7.1 GENERAL

This section contains basic electrical information and schematics to be used for locating and correcting most of the operating problems which may develop. If a problem should develop which is not presented in this section or which is not corrected by listed corrective actions, technically qualified guidance should be obtained before proceeding with any maintenance.

NOTE: Some of the procedures/connectors shown in this section may not be applicable to all models.

7.2 MULTIMETER BASICS

A wide variety of multimeters or Volt Ohm Meters (VOM) can be used for troubleshooting your equipment. This section shows diagrams of a common, digital VOM configured for several different circuit measurements. Instructions for your VOM may vary. Please consult the meter operator's manual for more information.

Grounding

"Grounding the meter" means to take the black lead (which is connected to the COM (common) or negative port) and touch it to a good path to the negative side of the Voltage source.

Backprobing

To "backprobe" means to take the measurement by accessing a connector's contact on the same side as the wires, the back of the connector. Readings can be done while maintaining circuit continuity this way. If the connector is the sealed type, great care must be taken to avoid damaging the seal around the wire. It is best to use probes or probe tips specifically designed for this technique, especially on sealed connectors. Whenever possible insert probes into the side of the connector such that the test also checks both terminals of the connection. It is possible to inspect a connection within a closed connector by backprobing both sides of a connector terminal and measuring resistance. Do this after giving each wire a gentle pull to ensure the wires are still attached to the contact and contacts are seated in the connector.

Min/Max

Use of the "Min/Max" recording feature of some meters can help when taking measurements of intermittent conditions while alone. For example, you can read the Voltage applied to a solenoid when it is only operational while a switch, far from the solenoid and meter, is held down.

Polarity

Getting a negative Voltage or current reading when expecting a positive reading frequently means the leads are reversed. Check what reading is expected, the location of the signal and that the leads are connected to the device under test correctly. Also check that the lead on the "COM" port goes to the Ground or negative side of the signal and the lead on the other port goes to the positive side of the signal.

Scale

M = Mega = 1,000,000 * (Displayed Number)

k = kilo = 1,000 * (Displayed Number)

m = milli = (Displayed Number) / 1,000

μ = micro = (Displayed Number) / 1,000,000

Example: 1.2 kW = 1200 W

Example: 50 mA = 0.05 A

Voltage Measurement

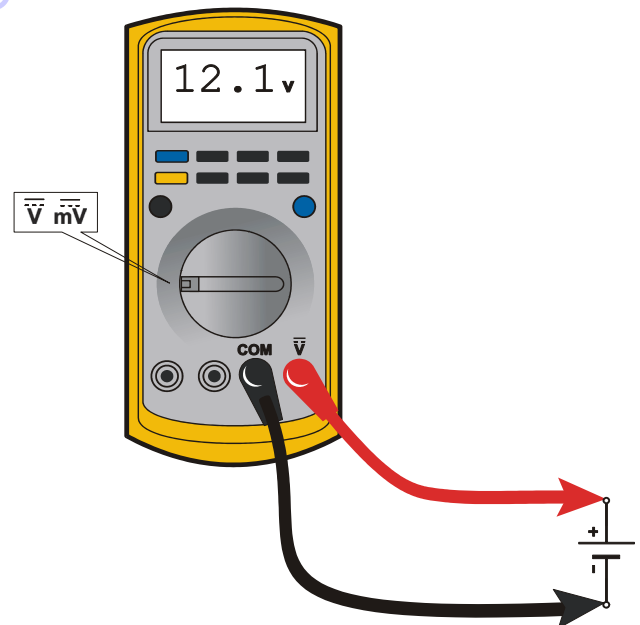


Figure 7-1. Voltage Measurement (DC)

- If meter is not auto ranging, set it to the correct range (See multimeter's operation manual)
- Use firm contact with meter leads

Resistance Measurement

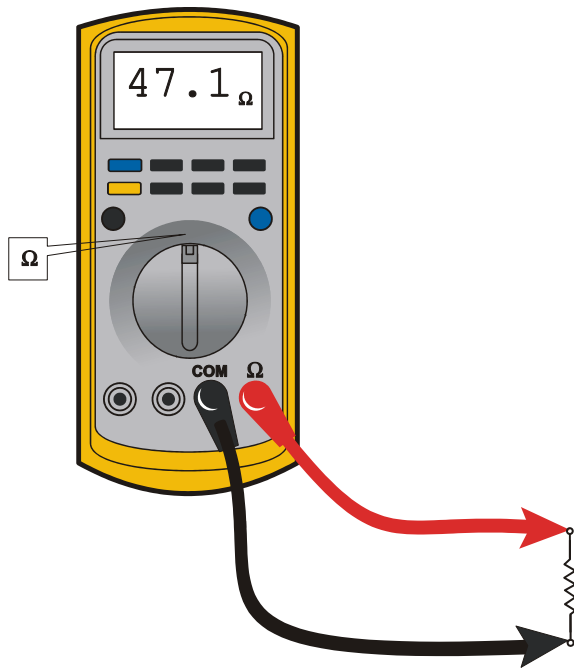


Figure 7-2. Resistance Measurement

- First test meter and leads by touching leads together. Resistance should read a short circuit (very low resistance)
- Circuit power must be turned OFF before testing resistance
- Disconnect component from circuit before testing
- If meter is not auto ranging, set it to the correct range (See multimeter's operation manual)
- Use firm contact with meter leads

Continuity Measurement

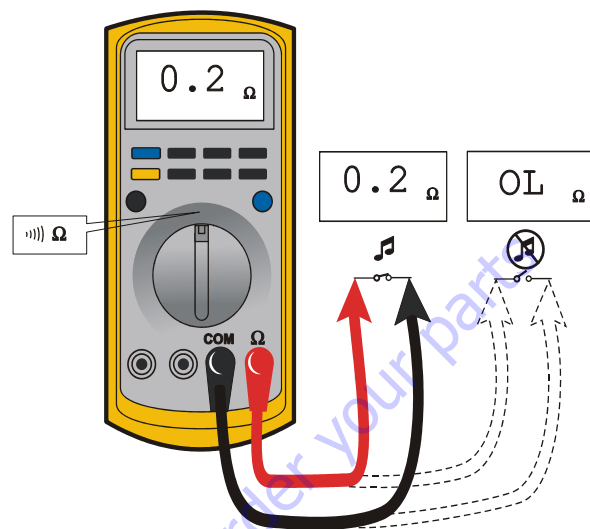


Figure 7-3. Continuity Measurement

- Some meters require a separate button press to enable audible continuity testing
- Circuit power must be turned OFF before testing continuity
- Disconnect component from circuit before testing
- Use firm contact with meter leads
- First test meter and leads by touching leads together. Meter should produce an audible alarm, indicating continuity

Current Measurement

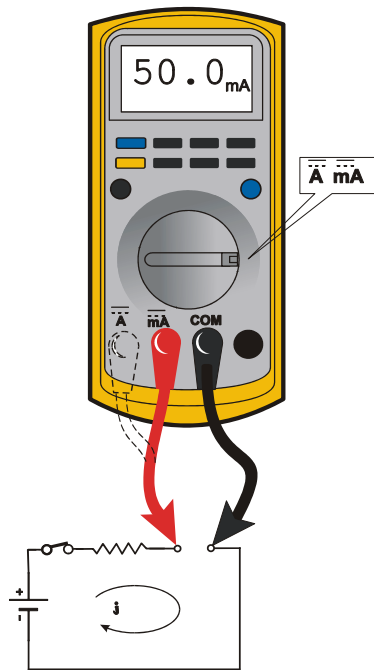


Figure 7-4. Current Measurement (DC)

- Set up the meter for the expected current range
- Be sure to connect the meter leads to the correct jacks for the current range you have selected
- If meter is not auto ranging, set it to the correct range (See multi meter's operation manual)
- Use firm contact with meter leads

7.3 APPLYING SILICONE DIELECTRIC COMPOUND TO ELECTRICAL CONNECTIONS

NOTE: This section is not applicable for battery terminals.

NOTICE

JLG PN 0100048 DIELECTRIC GREASE (NOVAGARD G661) IS THE ONLY MATERIAL APPROVED FOR USE AS A DIELECTRIC GREASE.

NOTE: Do NOT apply dielectric grease to the following connections:

- Main Boom Rotary sensor connections (on Celesco Sensor),
- LSS Modules connections,
- Deutz EMR 2 ECM connection.

Silicone Dielectric Compound must be used on all electrical connections except for those mentioned above for the following reasons:

- To prevent oxidation at the mechanical joint between male and female pins.
- To prevent electrical malfunction caused by low level conductivity between pins when wet.

Use the following procedure to apply Silicone Dielectric Compound to the electrical connectors. This procedure applies to all plug connections not enclosed in a box. Silicone grease should not be applied to connectors with external seals.

1. To prevent oxidation, silicone grease must be packed completely around male and female pins on the inside of the connector prior to assembly. This is most easily achieved by using a syringe.

NOTE: Over a period of time, oxidation increases electrical resistance at the connection, eventually causing circuit failure.

2. To prevent shorting, silicone grease must be packed around each wire where they enter the outside of the connector housing. Also, silicone grease must be applied at the joint where the male and female connectors come together. Any other joints (around strain reliefs, etc.) where water could enter the connector should also be sealed.

NOTE: This condition is especially common when machines are pressure washed since the washing solution is much more conductive than water.

- Anderson connectors for the battery boxes and battery chargers should have silicone grease applied to the contacts only.

NOTE: *Curing-type sealants might also be used to prevent shorting and would be less messy, but would make future pin removal more difficult.*

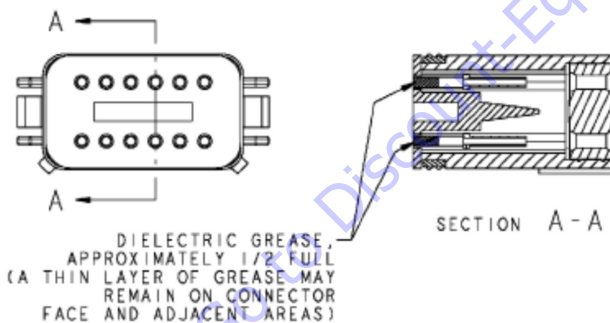
When applied to electrical connections, dielectric grease helps to prevent corrosion of electrical contacts and improper conductivity between contacts from moisture intrusion. Open and sealed connectors benefit from the application of dielectric grease.

Dielectric grease shall be applied to all electrical connectors at the time of connection (except those noted under Exclusions).

Installation of Dielectric Grease

Before following these instructions, refer to excluded connector types (See Exclusions below).

- Use dielectric grease in a tube for larger connection points or apply with a syringe for small connectors.
- Apply dielectric grease to the female contact (fill it approximately 1/2 full; see example below)
- Leave a thin layer of dielectric grease on the face of the connector
- Assemble the connector system immediately to prevent moisture ingress or dust contamination
- Pierce one of the unused wire seals prior to assembly if the connector system tends to trap air (i.e. AMP Seal) and then install a seal plug.



Deutsch HD, DT, DTM, DRC Series

The Deutsch connector system is commonly used for harsh environment interconnect. Follow the installation instructions.



AMP Seal

The AMP Seal connector system is used on the Control ADE Platform and Ground Modules.

Apply dielectric grease to the female contact. If trapped air prevents the connector from latching, pierce one of the unused wire seals. After assembly, install a seal plug (JLG #4460905) in that location to prevent moisture ingress.

Note that seal plugs may be installed by the wire harness manufacturer if an unused wire seal becomes compromised (wire inserted in the wrong cavity during assembly and then corrected).



Figure 7-5. Application to plug/male connector housing

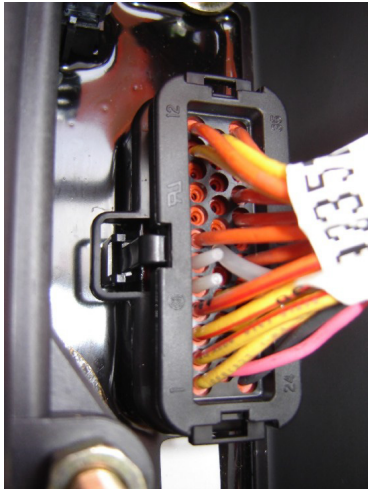
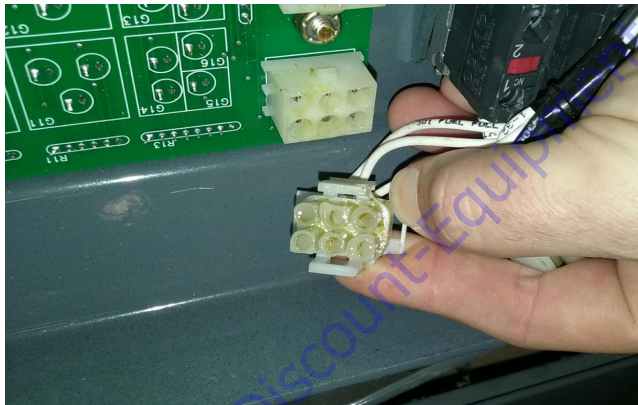


Figure 7-6. Use of Seal Plugs

AMP Mate-N-Lok

This connector system is widely used inside enclosures for general purpose interconnect. Follow the installation instructions.



DIN Connectors

This connector is typically used on hydraulic valves. Follow the installation instructions.



Exclusions

A limited number of connectors do not benefit from dielectric grease, or may be permanently damaged by application. Dielectric grease may not be required in properly sealed enclosures.

BRAD HARRISON / PHOENIX CONTACT M12

The connector uses gold contact material to resist corrosion and an o-ring seal for moisture integrity. If dielectric grease is mistakenly applied to this connector system, the low-force contacts cannot displace the grease to achieve electrical contact. Once contaminated, there is no practical way to remove the dielectric grease (replacement of female contacts required). The JLG Load Sensing System and Rotary Angle Sensors are examples of components with the M12 connector system.



Figure 7-7. Brad-Harrison M12



Figure 7-8. Phoenix Contact M12

ENGINE CONTROL UNIT CONNECTORS

These connectors use back-seals for moisture integrity. However, the low-force contacts cannot displace dielectric grease and create electrical contact. It is possible to use solvents (i.e. contact cleaner or mineral spirits) for the removal of improperly applied dielectric grease. The EMR4 engine control module from Deutz employs this connector system (for example).



SEALED ENCLOSURES

Application of dielectric grease is not required in properly sealed enclosures. To meet criteria, the enclosure must be rated to at least IP66 (dust tight; protected from powerful jets of water). The enclosure must be fitted with a high quality, continuous gasket and all wiring must pass through cable entrances.



MIL-C-5015 SPEC CONNECTOR'S

Crown Connector Inc's recommendation is to not use dielectric grease for this series connector. For similar model series connectors, the manufacturer should be contacted for confirmation before applying dielectric grease. A typical application for this connector is on David Clark Intercom connections in Mobile Elevating Work Platform.



MOLEX CMC SERIES CONNECTORS

The CMC connector family is a sealed, high-density connection system using matte-seal technology for CP 0.635 and 1.50 mm terminals. To guarantee IP6K7 and IP6K9 sealing, a seal plug option is used. However, the low-force contacts cannot displace dielectric grease and create electrical contact. It is possible to use solvents (i.e. contact cleaner or mineral spirits) for the removal of improperly applied dielectric grease. The flexbox control modules from JDES employ this connector system (for example).



7.4 AMP CONNECTOR

Assembly

Check to be sure the wedge lock is in the open, or as-shipped, position (See Figure 7-9.). Proceed as follows:

2. Pull back on the contact wire with a force of 1 or 2 lbs. to be sure the retention fingers are holding the contact (See Figure 7-11.).

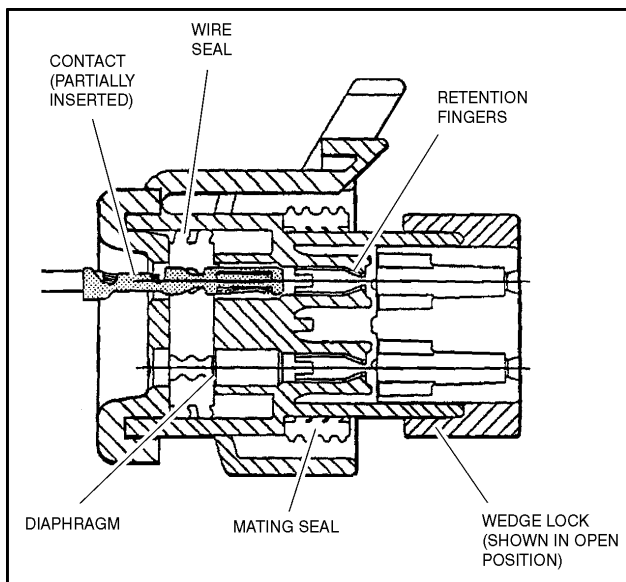


Figure 7-9. Connector Assembly Figure 1

1. To insert a contact, push it straight into the appropriate circuit cavity as far as it will go (See Figure 7-11.).

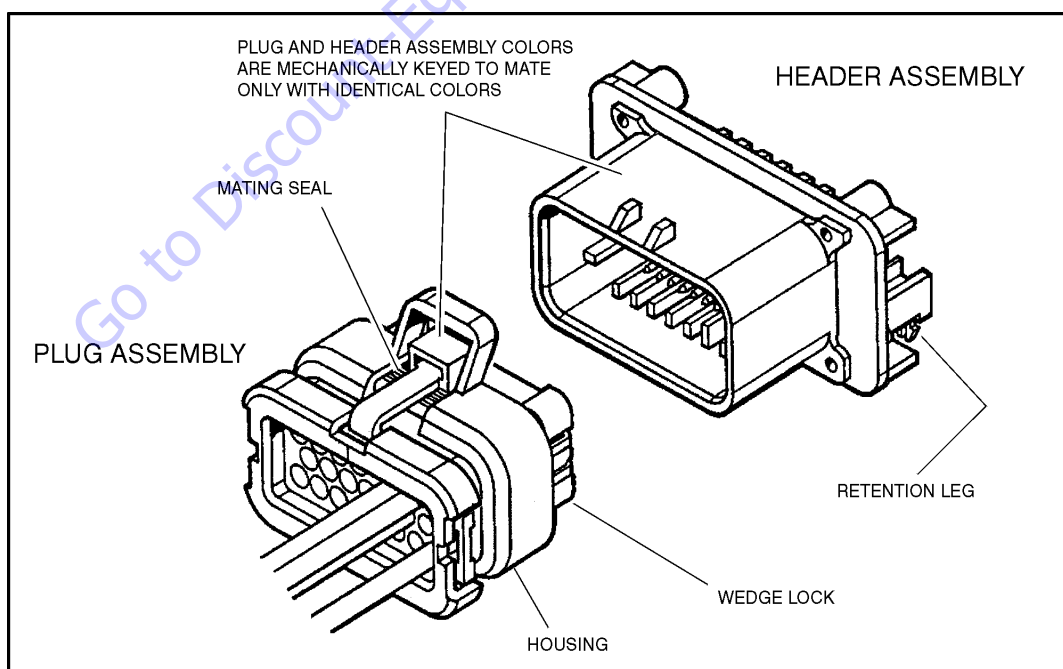


Figure 7-10. AMP Connector

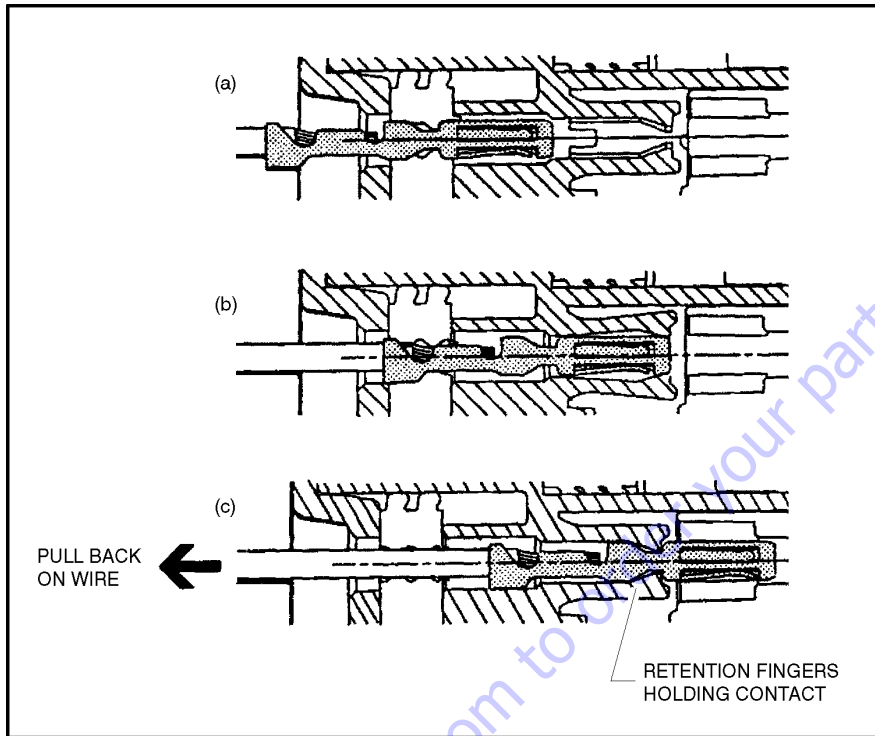


Figure 7-11. Connector Assembly Figure 2

3. After all required contacts have been inserted, the wedge lock must be closed to its locked position. Release the locking latches by squeezing them inward (See Figure 7-12.).

4. Slide the wedge lock into the housing until it is flush with the housing (See Figure 7-13.).

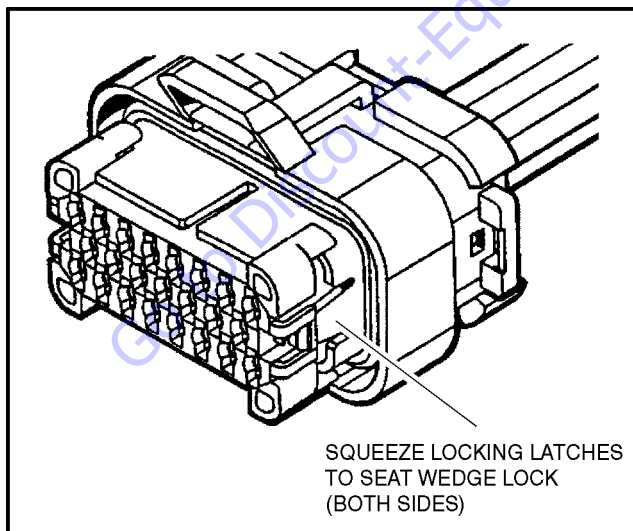


Figure 7-12. Connector Assembly Figure 3

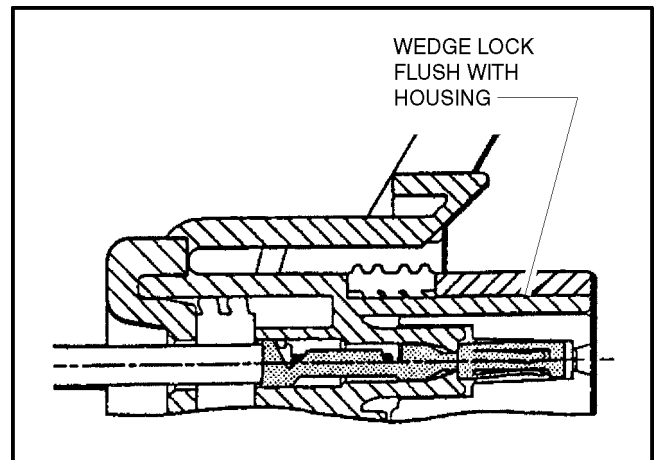


Figure 7-13. Connector Assembly Figure 4

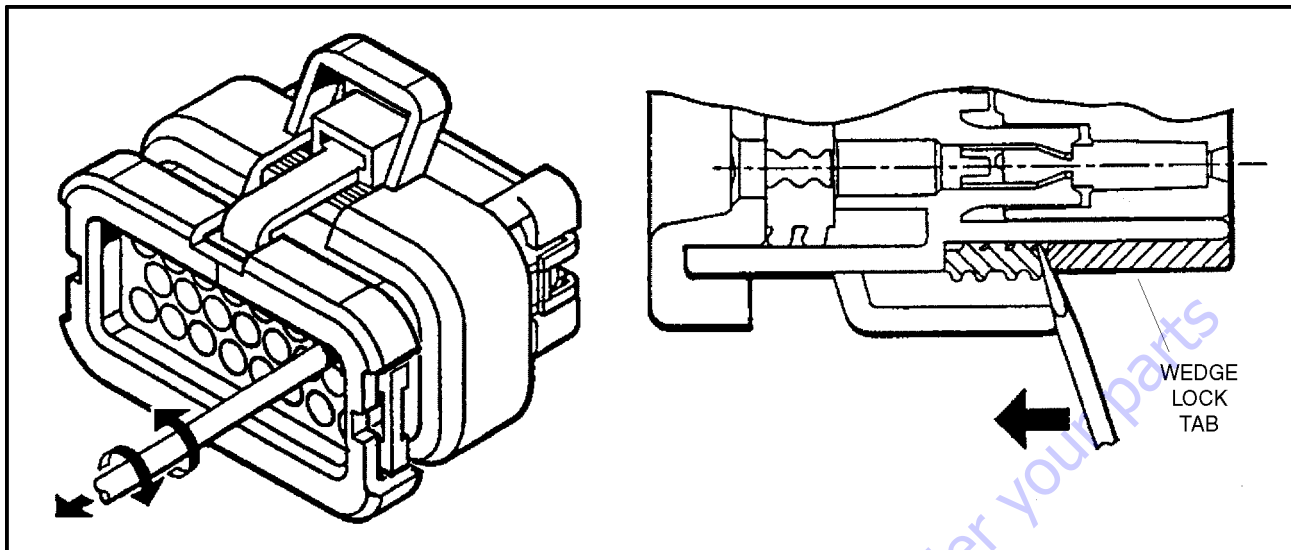


Figure 7-14. Connector Disassembly

Disassembly

5. Insert a 4.8 mm (3/16") wide screwdriver blade between the mating seal and one of the red wedge lock tabs.
6. Pry open the wedge lock to the open position.
7. While rotating the wire back and forth over a half turn (1/4 turn in each direction), gently pull the wire until the contact is removed.

NOTE: The wedge lock should never be removed from the housing for insertion or removal of the contacts.

Wedge Lock

The wedge lock has slotted openings in the forward, or mating end. These slots accommodate circuit testing in the field, by using a flat probe such as a pocket knife. DO NOT use a sharp point such as an ice pick.

Service - Voltage Reading

NOTICE

DO NOT PIERCE WIRE INSULATION TO TAKE VOLTAGE READINGS.

It has been common practice in electrical troubleshooting to probe wires by piercing the insulation with a sharp point. This practice should be discouraged when dealing with the AMP-SEAL plug assembly, or any other sealed connector system. The resulting pinholes in the insulation will allow moisture to invade the system by traveling along the wire strands. This nullifies the effectiveness of the connector seals and could result in system failure.

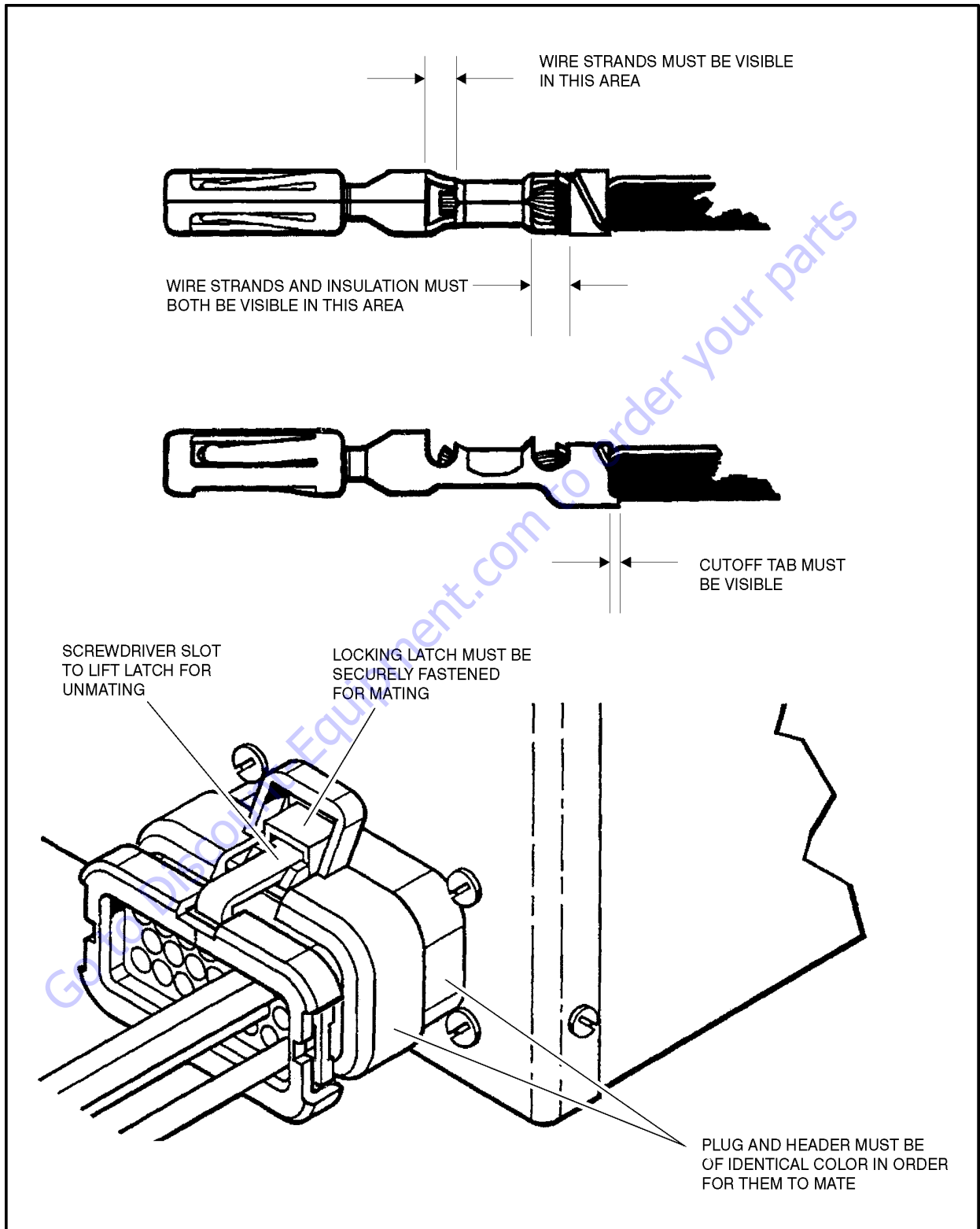


Figure 7-15. Connector Installation

7.5 DEUTSCH CONNECTORS

DT/DTP Series Assembly

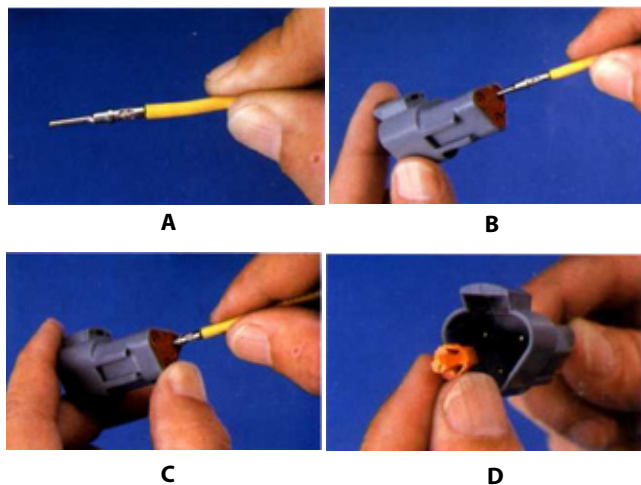


Figure 7-16. DT/DTP Contact Installation

1. Grasp crimped contact about 25mm behind the contact barrel.
2. Hold connector with rear grommet facing you.
3. Push contact straight into connector grommet until a click is felt. A slight tug will confirm that it is properly locked in place.
4. Once all contacts are in place, insert wedgelock with arrow pointing toward exterior locking mechanism. The wedgelock will snap into place. Rectangular wedges are not oriented. They may go in either way.

NOTE: The receptacle is shown - use the same procedure for plug.

DT/DTP Series Disassembly

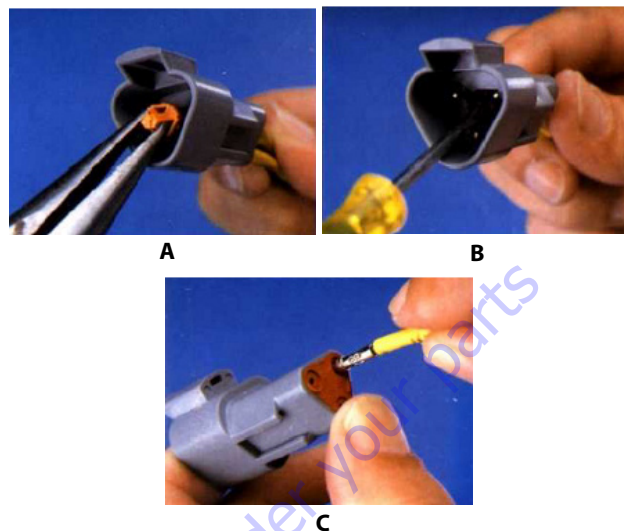


Figure 7-17. DT/DTP Contact Removal

5. Remove wedgelock using needlenose pliers or a hook shaped wire to pull wedge straight out.
6. To remove the contacts, gently pull wire backwards, while at the same time releasing the locking finger by moving it away from the contact with a screwdriver.
7. Hold the rear seal in place, as removing the contact may displace the seal.

HD30/HDP20 Series Assembly

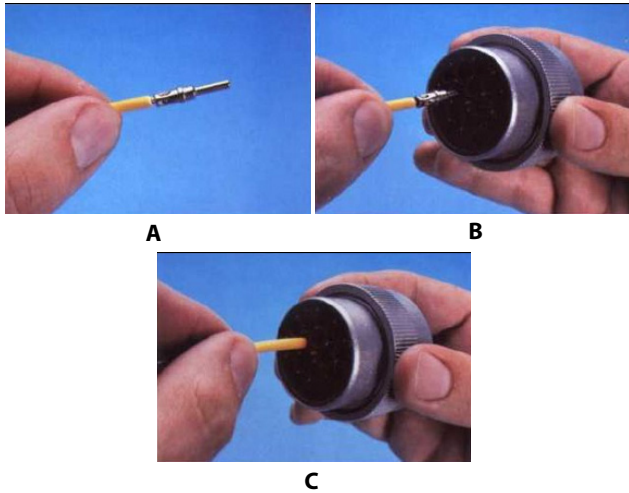


Figure 7-18. HD/HDP Contact Installation

8. Grasp contact about 25mm behind the contact crimp barrel.
9. Hold connector with rear grommet facing you.
10. Push contact straight into connector grommet until a positive stop is felt. A slight tug will confirm that it is properly locked in place.

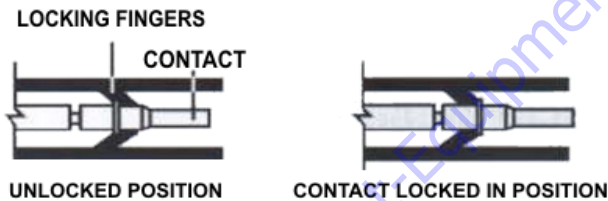


Figure 7-19. HD/HDP Locking Contacts Into Position

NOTE: For unused wire cavities, insert sealing plugs for full environmental sealing

HD30/HDP20 Series Disassembly

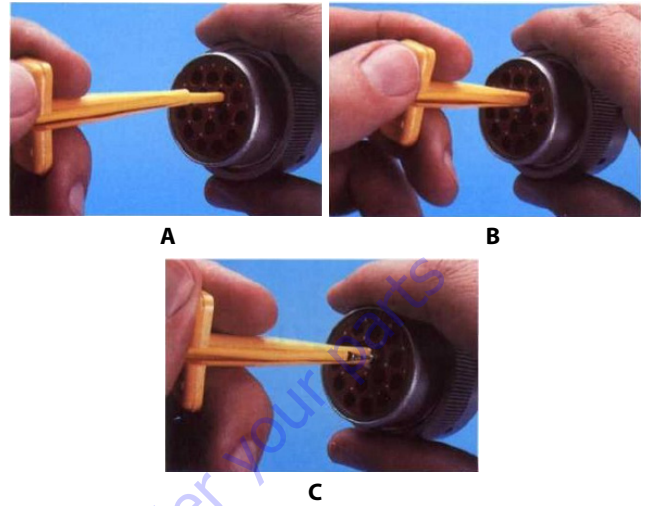


Figure 7-20. HD/HDP Contact Removal

11. With rear insert toward you, snap appropriate size extractor tool over the wire of contact to be removed.
12. Slide tool along into the insert cavity until it engages contact and resistance is felt.
13. Pull contact-wire assembly out of connector.

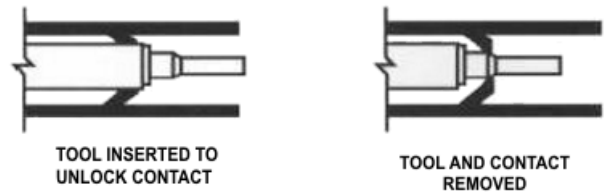


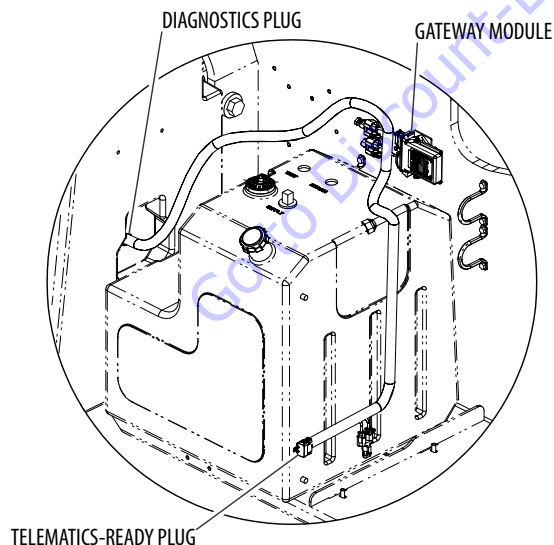
Figure 7-21. HD/HDP Unlocking Contacts

NOTE: Do Not twist or insert tool at an angle.

7.6 TELEMATICS GATEWAY

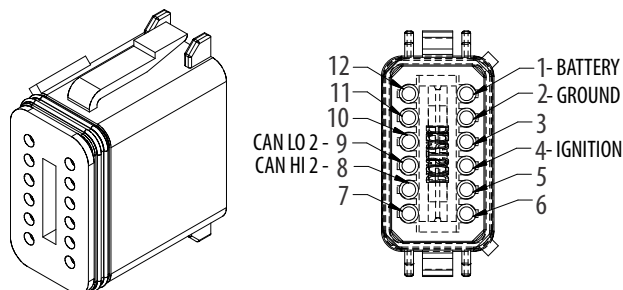
Personnel using machines equipped with an optional telematics gateway will be able to view the following data through their telematics device:

JLG LABEL	DESCRIPTION	UNIT
Engine Speed	Actual engine speed.	RPM
DEF Tank Level (If Equipped)	Indicates the level of DEF (diesel exhaust fluid) within the DEF tank if the machine is equipped with DEF tank. <ul style="list-style-type: none"> • 0% = Empty • 100% = Full 	Percentage (%)
JLG Machine Faults: Active / Not-Active	<ul style="list-style-type: none"> • 00 - No Machine Faults • 01 - Active Machine Fault • 10 - Error • 11 - Not available 	Bit
Total Idle Fuel Used	Total amount of fuel used during vehicle operation during idle conditions.	Liters
Total Idle Hours	Total time of engine operation during idle conditions.	Seconds
Total Engine Hours	Total time of engine operation.	Seconds
Total Fuel Used	Total amount of fuel used during vehicle operation.	Liters
Fuel Rate	Amount of fuel consumed by engine per unit of time.	Liters/Hour
Fuel Level	Ratio of fuel volume to the total volume of the fuel storage container. When a low fuel limit switch is present, the fuel level will indicate "full" until the switch opens, which will then indicate 10% fuel remaining. When Fuel Level 2 (SPN 38) is not used, Fuel Level 1 represents the total fuel in all fuel storage containers. When Fuel Level 2 is used, Fuel Level 1 represents the fuel level in the primary or left side fuel storage container.	Percentage (%)
DM1 Engine Faults	Shows actual engine fault codes.	N/A



Telematics-Ready (TCU) Plug

The telematics-ready (TCU) plug is a standard 12-pin Deutsch connector. Pin-out locations are shown below:



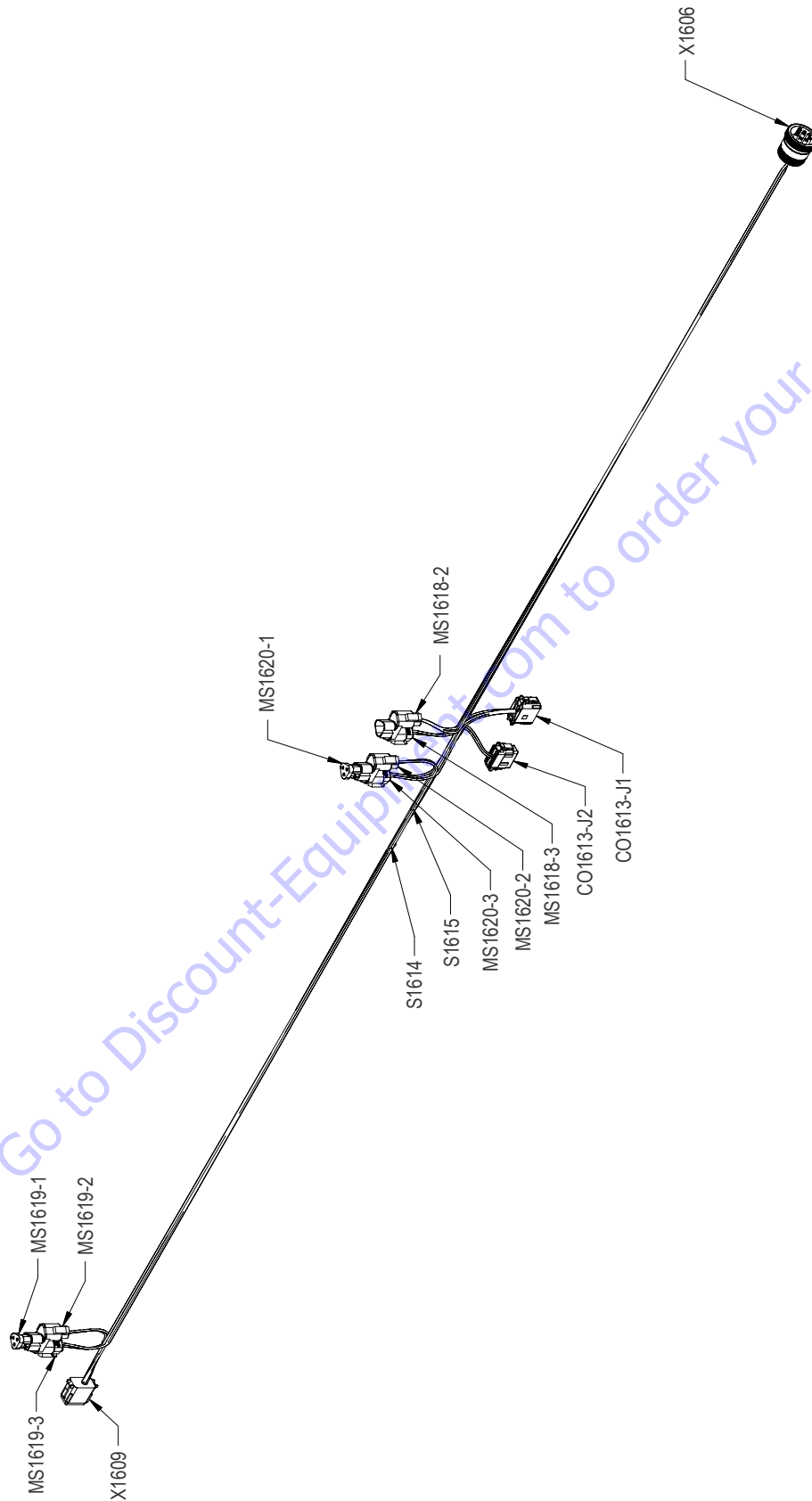


Figure 7-22. Telematics Gateway Harness - Sheet 1 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1609 (TCU)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-0 BAT	16 AWG	GXL	X1606 (B)
2	BLK	0-0 GND	16 AWG	GXL	S1615 (1)
4	ORN	2-0 IGN	16 AWG	GXL	S1614 (1)
9	GRN	CANL2	18 AWG	GXL	MS1619-2 (B)
10	YEL	CANH2	18 AWG	GXL	MS1619-2 (A)

MS1619-2 (CAN-T 2)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH2	18 AWG	GXL	X1609 (10)
B	GRN	CANL2	18 AWG	GXL	X1609 (9)

MS1619-3 (CAN-T 2)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH2	18 AWG	GXL	MS1620-2 (A)
B	GRN	CANL2	18 AWG	GXL	MS1620-2 (B)

CO1613-J1 (GATEWAY 1)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
9	GRN	CAN1	18 AWG	GXL	MS1618-2 (B)
10	YEL	CANH1	18 AWG	GXL	MS1618-2 (A)
11	BLK	0-2 GND	16 AWG	GXL	S1615 (2)
12	ORN	2-2 IGN	16 AWG	GXL	S1614 (2)

CO1613-J2 (GATEWAY 2)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
9	GRN	CANL2	18 AWG	GXL	MS1620-3 (B)
10	YEL	CANH2	18 AWG	GXL	MS1620-3 (A)

MS1620-2 (CAN-T 2)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH2	18 AWG	GXL	MS1619-3 (A)
B	GRN	CANL2	18 AWG	GXL	MS1619-3 (B)

MS1620-3 (CAN-T 2)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH2	18 AWG	GXL	CO1613-J2 (10)
B	GRN	CANL2	18 AWG	GXL	CO1613-J2 (9)

S1614					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	ORN	2-0 IGN	16 AWG	GXL	X1609 (4)
2	ORN	2-1 IGN	16 AWG	GXL	X1606 (H)
2	ORN	2-2 IGN	16 AWG	GXL	CO1613-J1 (12)

S1615					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-0 GND	16 AWG	GXL	X1609 (2)
2	BLK	0-1 GND	16 AWG	GXL	X1606 (A)
2	BLK	0-2 GND	16 AWG	GXL	CO1613-J1 (11)

MS1618-2 (CAN-T 1)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH1	18 AWG	GXL	CO1613-J1 (10)
B	GRN	CANL1	18 AWG	GXL	CO1613-J1 (9)

MS1618-3 (CAN-T 1)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANH1	18 AWG	GXL	X1606 (C)
B	GRN	CANL1	18 AWG	GXL	X1606 (D)

X1606 (DIAG)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	0-1 GND	16 AWG	GXL	S1615 (2)
B	RED	1-0 BAT	16 AWG	GXL	X1609 (1)
C	YEL	CANH1	18 AWG	GXL	MS1618-3 (A)
D	GRN	CANL1	18 AWG	GXL	MS1618-3 (B)
H	ORN	2-1 IGN	16 AWG	GXL	S1614 (2)

Figure 7-23. Telematics Gateway Harness - Sheet 2 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO.	COLOR	WIRE GAUGE	LENGTH (mm)	JACKET	FROM		TO	
					REFERENCE	PIN	REFERENCE	PIN
CAN L2	GRN	18 AWG	1151	GXL	MS1619-3	B	MS1620-2	B
CAN L2	GRN	18 AWG	151	GXL	X1609	9	MS1619-2	B
CAN L1	GRN	18 AWG	157	GXL	MS1618-2	B	CO1613-J1	9
CAN L2	GRN	18 AWG	225	GXL	MS1620-3	B	CO1613-J2	9
CAN L1	GRN	18 AWG	1076	GXL	MS1618-3	B	X1606	D
CAN H2	YEL	18 AWG	155	GXL	X1609	10	MS1619-2	A
CAN H2	YEL	18 AWG	233	GXL	MS1620-3	A	CO1613-J2	10
CAN H1	YEL	18 AWG	157	GXL	MS1618-2	A	CO1613-J1	10
CAN H2	YEL	18 AWG	1150	GXL	MS1619-3	A	MS1620-2	A
CAN H1	YEL	18 AWG	1079	GXL	MS1618-3	A	X1606	C
0-0 GND	BLK	16 AWG	1006	GXL	X1609	2	S1615	1
0-1 GND	BLK	16 AWG	1145	GXL	X1606	A	S1615	2
0-2 GND	BLK	16 AWG	223	GXL	CO1613-J1	11	S1615	2
1-0 BAT	RED	16 AWG	2150	GXL	X1609	1	X1606	B
2-0 IGN	ORN	16 AWG	939	GXL	X1609	4	S1614	1
2-1 IGN	ORN	16 AWG	1212	GXL	S1614	2	X1606	H
2-2 IGN	ORN	16 AWG	287	GXL	CO1613-J1	12	S1614	2

Figure 7-24. Telematics Gateway Harness - Sheet 3 of 3

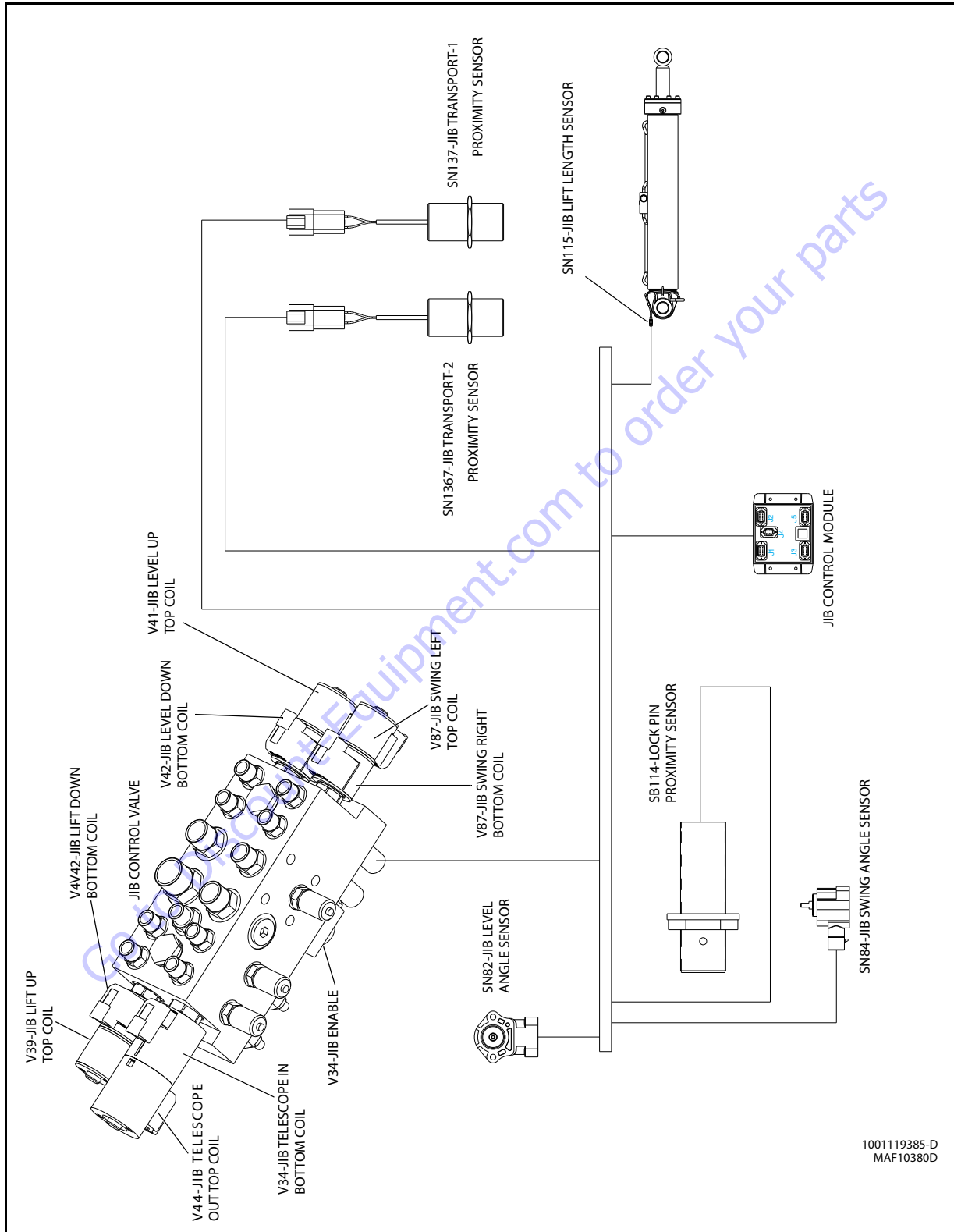
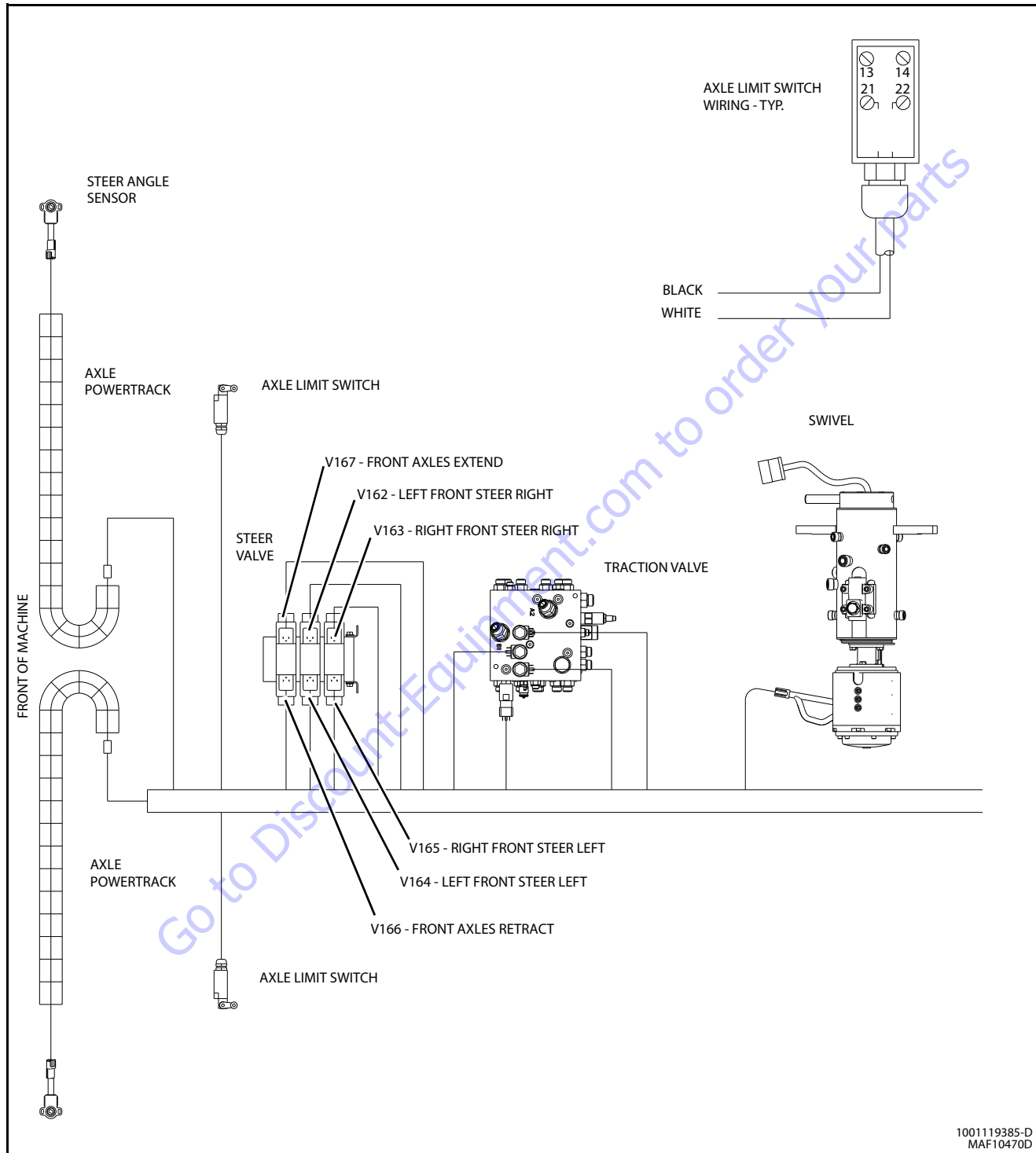


Figure 7-25. Jib Electrical Components

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



100119385-D
MAF10470D

Figure 7-26. Chassis Electrical Components - Sheet 1 of 2

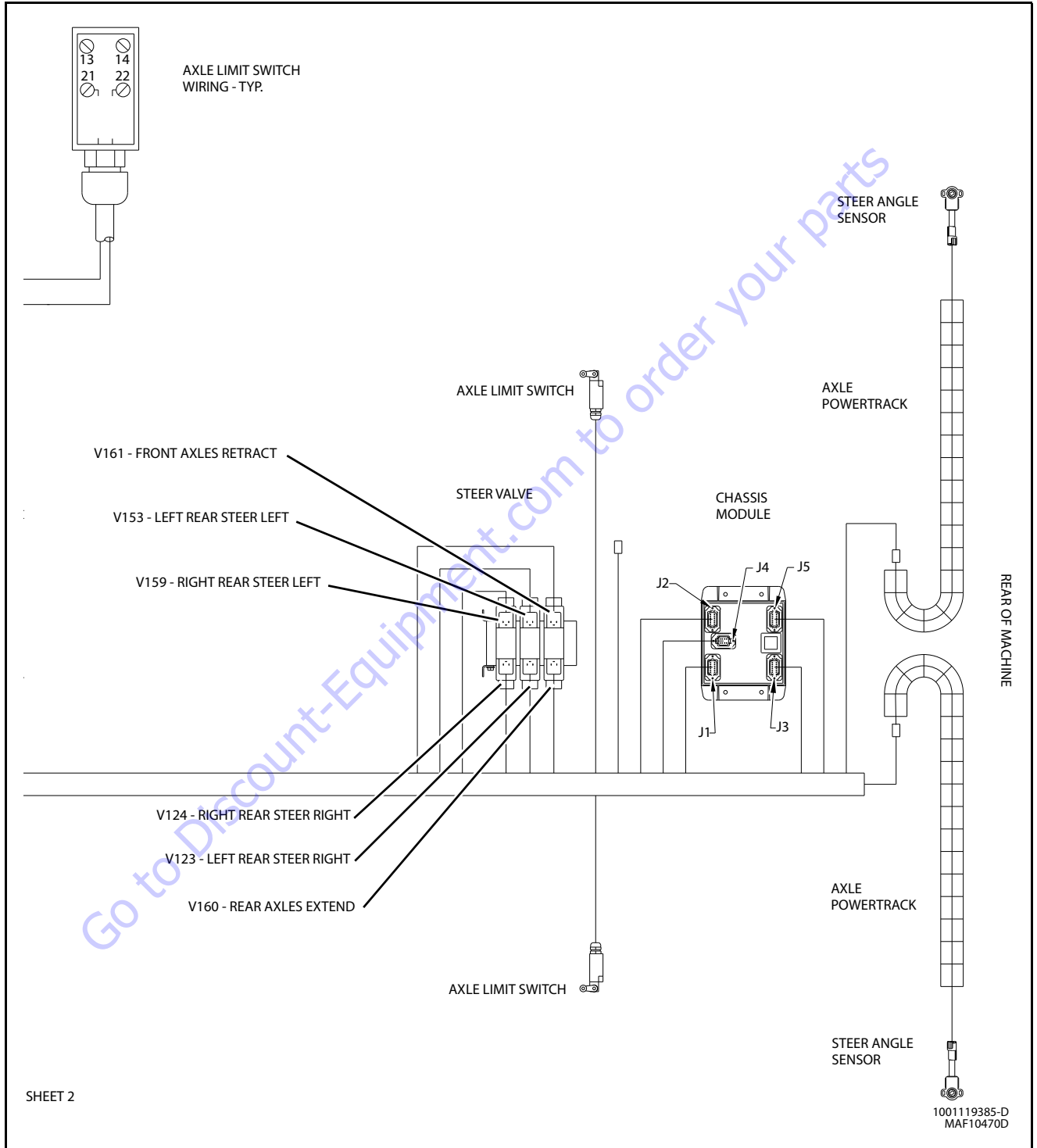


Figure 7-27. Chassis Electrical Components - Sheet 2 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

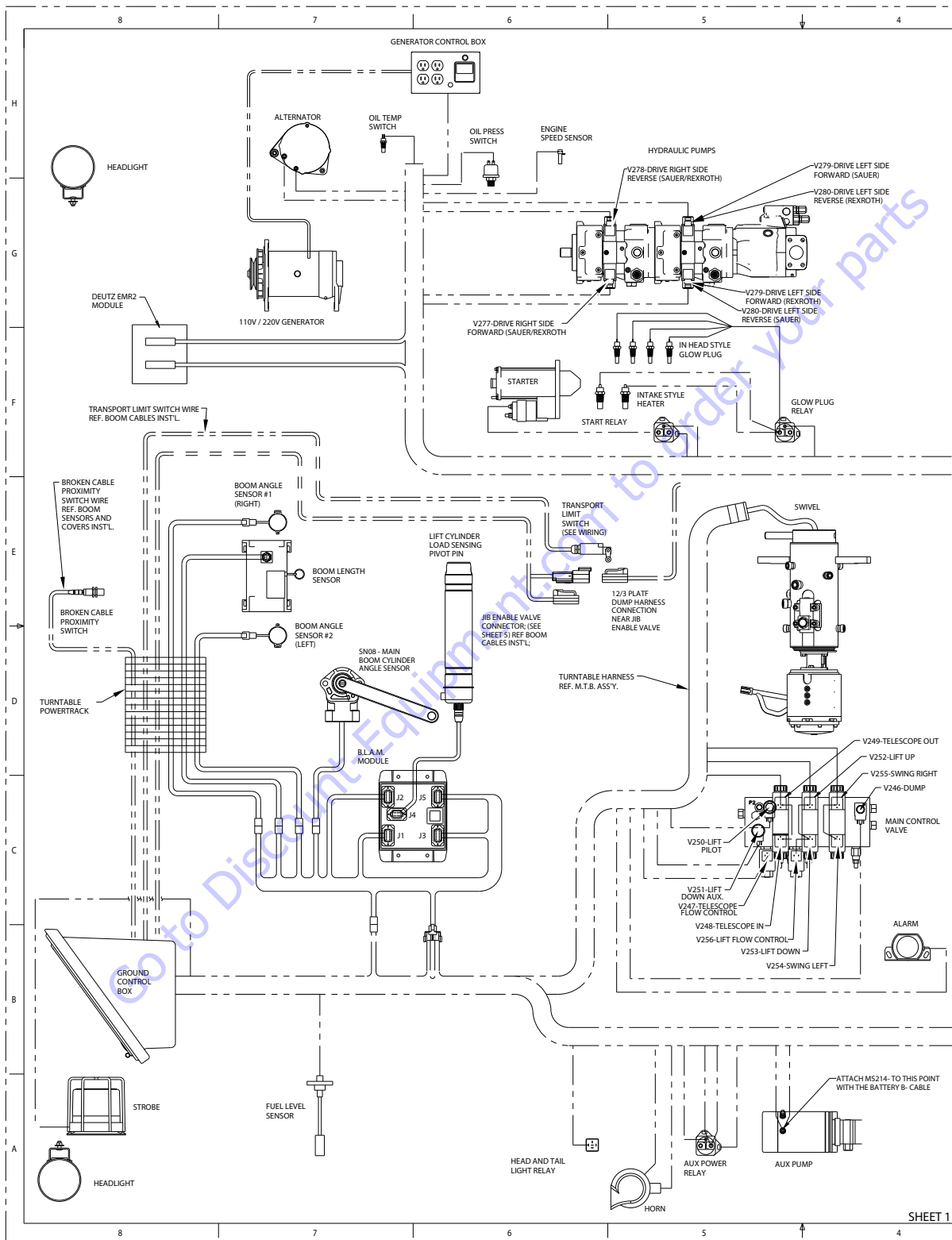


Figure 7-28. Turntable Electrical Components - Sheet 1 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

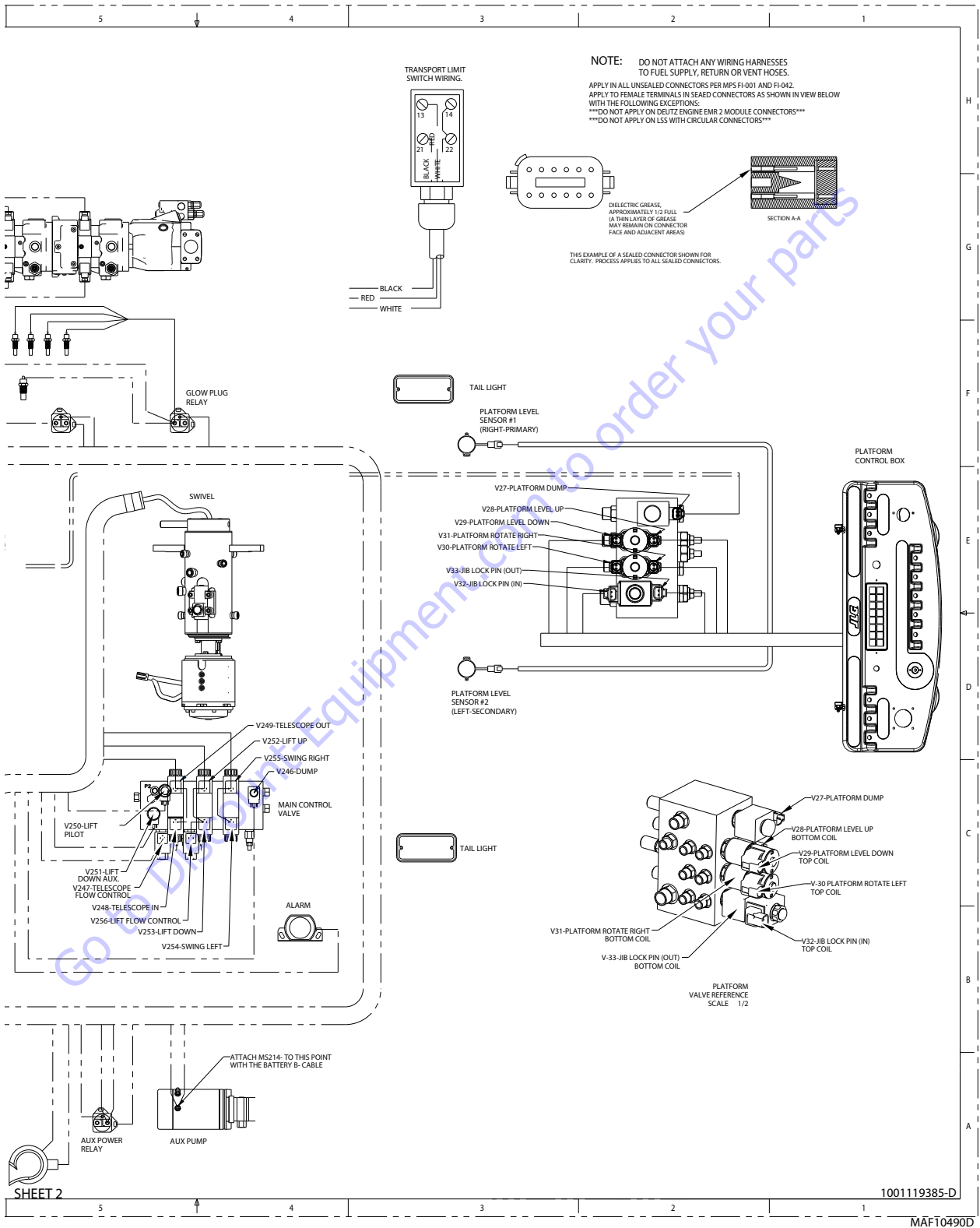


Figure 7-29. Turntable Electrical Components - Sheet 2 of 2

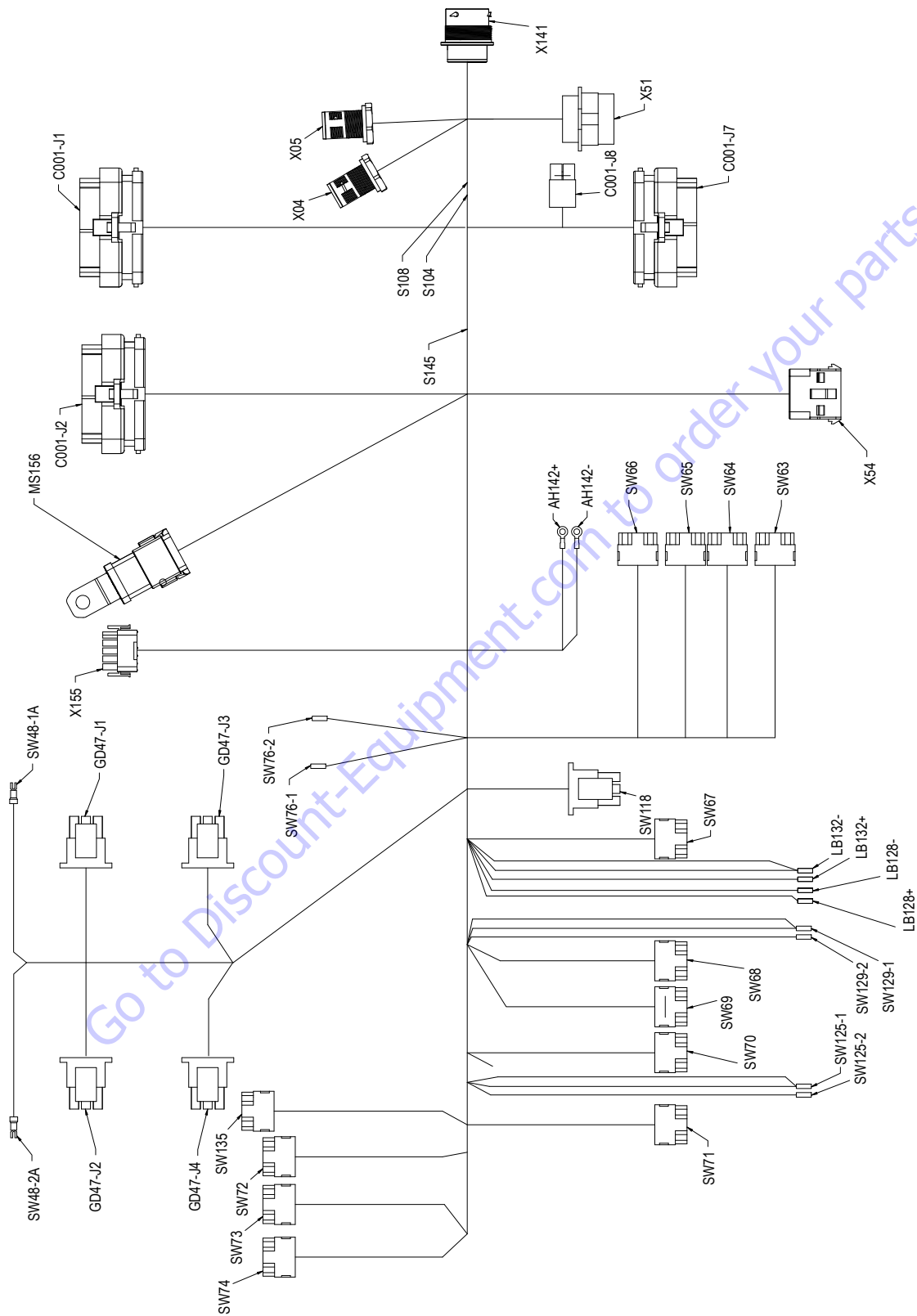


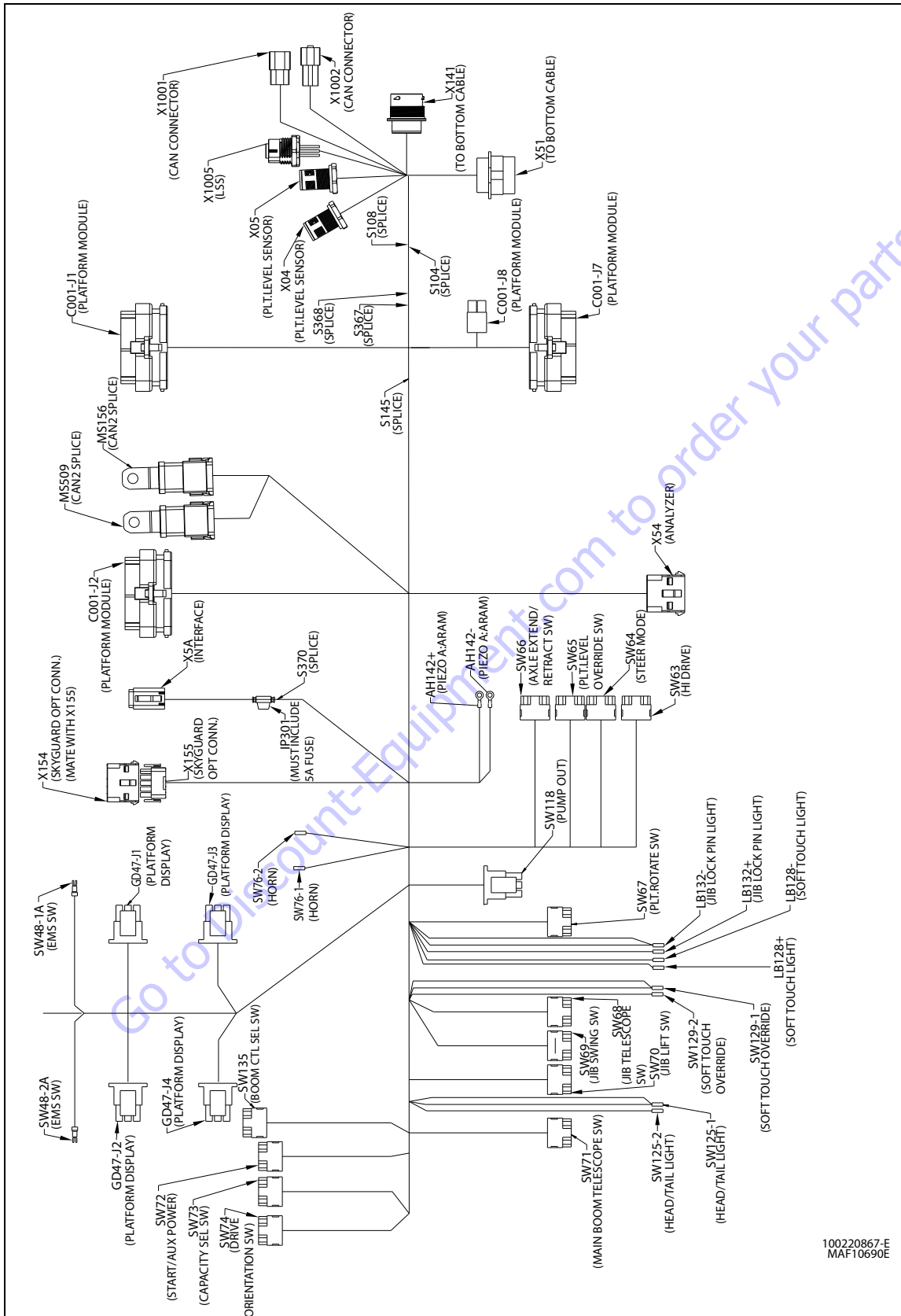
Figure 7-30. Console Box Harness (Without Skyguard) - Sheet 1 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	COLOR	WIRE GAUGE	LENGTH (in)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
000-24-3	BLK	12	21	X51	18	CO01-J8	1
000-46-1	BLK	18	21	X141	12	CO01-J7	29
000-49	BLK	12	21	X51	16	CO01-J8	1
000-51-1	BLK	18	15	LB132-	1	LB128-	1
000-51-2	BLK	18	22	LB128-	1	GD47-J1	4
000-51-3	BLK	18	45	GD47-J1	4	CO01-J2	25
000-52	BLK	18	45	GD47-J2	6	CO01-J2	18
000-53	BLK	18	38	SW118	5	CO01-J1	13
000-54	BLK	18	29	CO01-J7	20	AH142-	1
13-1	BRN	18	53	SW71	3	CO01-J1	5
14-1	BRN	18	53	SW71	1	CO01-J1	6
2-1-2	YEL/RED	12	21	X51	12	CO01-J8	2
2-8-13	YEL/RED	12	21	X51	10	CO01-J8	2
2-10-11	YEL/RED	18	15	SW125-1	1	SW71	2
2-10-13	YEL/RED	18	17.5	SW135	2	SW72	2
2-10-19	YEL/RED	18	13.5	SW129-1	1	SW69	2
2-10-12	YEL/RED	18	16.5	SW71	2	SW135	2
2-10-5	YEL/RED	18	16.25	SW66	2	SW118	3
2-10-15	YEL/RED	18	11	SW73	2	SW74	2
2-10-9	YEL/RED	18	12	SW68	2	SW69	2
2-10-10	YEL/RED	18	16	SW129-1	1	SW70	2
2-10-16	YEL/RED	18	58	SW74	2	CO01-J1	18
2-10-4	YEL/RED	18	14	SW76-1	1	SW66	2
2-10-6	YEL/RED	18	13.75	SW118	3	SW67	2
2-10-2	YEL/RED	18	12.75	SW64	2	SW65	2
2-10-18	YEL/RED	18	15	SW125-1	1	SW70	2
2-10-14	YEL/RED	18	14	SW72	2	SW73	2
2-10-3	YEL/RED	18	16	SW76-1	1	SW65	2
2-10-1	YEL/RED	18	13	SW63	2	SW64	2
2-10-8	YEL/RED	18	17	SW67	2	SW68	2
2-11-2	YEL/RED	18	13.75	X141	1	S145	2
2-11-3-1	YEL/RED	18	13.75	X141	15	S145	2
2-11-3-2	YEL/RED	18	7.75	CO01-J2	32	S145	1
2-16-1	YEL/RED	18	22	CO01-J2	3	X155	8
2-16-2	YEL/RED	18	3	X155	6	X155	8
2-2-1	YEL/RED	18	55.5	X51	5	SW48-2A	2A
2-21-1	YEL/RED	18	45	GD47-J2	2	CO01-J2	7
2-3-3	YEL/RED	18	21	X51	4	CO01-J7	3
2-3-5	YEL/RED	18	55.5	SW48-1A	1A	CO01-J7	2
2-30-1	YEL/RED	18	21	X51	11	CO01-J7	1
23-1	GRY	18	43.5	SW67	3	CO01-J1	7
23-3	GRY	18	21	X141	8	CO01-J7	5
24-1	GRY	18	43.5	SW67	1	CO01-J1	8
24-3	GRY	18	21	X141	9	CO01-J7	6
25-1	PNK	18	41	SW65	3	CO01-J1	9
25-3-1	PNK	18	9.25	X51	9	S104	2
25-3-2	PNK	18	12.75	S104	1	CO01-J7	15
25-3-3	PNK	18	9.25	X141	7	S104	1
26-1	PNK	18	41	SW65	1	CO01-J1	10
26-3-1	PNK	18	9.25	X51	7	S108	2
26-3-2	PNK	18	12.75	S108	1	CO01-J7	16
26-3-3	PNK	18	9.25	X141	6	S108	1
27-1	BLU	18	51	SW70	3	CO01-J1	11
28-1	BLU	18	51	SW70	1	CO01-J1	12
29-1	BRN	18	48.5	SW68	3	CO01-J1	3
30-1	BRN	18	48.5	SW68	1	CO01-J1	4
39-1	WHT/YEL	18	39	GD47-J3	2	CO01-J2	14
43-1	YEL/WHT	18	39	SW66	3	CO01-J1	23
44-1	YEL/WHT	18	39	SW66	1	CO01-J1	24
47-1	BRN/WHT	18	45	GD47-J1	1	CO01-J2	22
47-10	BRN/WHT	18	39	GD47-J4	1	CO01-J2	20
47-12	BRN/WHT	18	39	GD47-J3	6	CO01-J2	8
47-13	BRN/WHT	18	45	GD47-J2	3	CO01-J2	21
47-2	BRN/WHT	18	45	GD47-J1	2	CO01-J2	24
47-3	BRN/WHT	18	45	GD47-J1	3	CO01-J2	23
47-4	BRN/WHT	18	45	GD47-J1	6	CO01-J2	35
48-1	WHT/YEL	18	55	SW72	3	CO01-J1	14
48-5	WHT/YEL	18	42.75	SW63	1	CO01-J1	28
48-6	WHT/YEL	18	39	GD47-J4	6	CO01-J2	17

WIRE NO	COLOR	WIRE GAUGE	LENGTH (in)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
49-100	ORN/RED	18	39	GD47-J4	3	CO01-J2	11
49-1000	ORN/RED	18	39	GD47-J3	1	CO01-J2	19
49-101	ORN/RED	18	39	GD47-J3	5	CO01-J2	10
49-11	ORN/RED	18	39.25	SW118	2	CO01-J1	32
49-12	ORN/RED	18	17	X51	13	CO01-J1	33
49-120	ORN/RED	18	58.5	SW135	3	CO01-J1	22
49-13	ORN/RED	18	17	X51	15	CO01-J1	1
49-15	ORN/RED	18	45	GD47-J2	1	CO01-J2	9
49-3	ORN/RED	18	39	GD47-J4	5	CO01-J2	6
49-4	ORN/RED	18	29	CO01-J7	19	AH142+	1
49-40	ORN/RED	18	50	SW129-2	1	CO01-J1	29
49-42	ORN/RED	18	41.5	LB128+	1	CO01-J2	16
49-63	ORN/RED	18	17	X141	2	CO01-J1	25
49-67	ORN/RED	18	3	X155	4	X155	5
49-68	ORN/RED	18	21	X141	3	CO01-J7	21
49-69	ORN/RED	18	29.5	CO01-J7	18	X155	3
49-70	ORN/RED	18	29.5	CO01-J7	8	X155	7
49-80	ORN/RED	18	17	X141	16	CO01-J1	26
49-81	ORN/RED	18	21	X141	17	CO01-J7	33
49-89	ORN/RED	18	26	X54	4	CO01-J2	27
49-90	ORN/RED	18	26	CO01-J2	29	X54	3
49-91	ORN/RED	18	26	X54	2	CO01-J2	28
49-92	ORN/RED	18	26	X54	1	CO01-J2	26
52-1	BLU/ORN	18	37	SW76-2	1	CO01-J1	31
52-12	BLU/ORN	18	54	SW125-2	1	CO01-J1	30
52-3	BLU/ORN	18	22	CO01-J2	33	X155	2
52-4-1	BLU/ORN	18	39	GD47-J4	2	CO01-J2	15
52-4-2	BLU/ORN	18	29.5	CO01-J7	9	X155	1
53-1	BRN/ORN	18	55	SW72	1	CO01-J1	15
54-1	RED/YEL	18	58	SW73	3	CO01-J1	21
54-2	RED/YEL	18	39	GD47-J4	4	CO01-J2	12
54-3	RED/YEL	18	39	GD47-J3	4	CO01-J2	13
55-1	WHT	18	21	X141	10	CO01-J7	25
55-16	YEL	18	58	SW64	3	CO01-J1	16
55-17	YEL	18	58	SW64	1	CO01-J1	17
55-2	WHT	18	21	X141	11	CO01-J7	26
55-30	RED/WHT	18	44.25	SW118	4	CO01-J1	34
55-31	RED/WHT	18	44.25	SW118	6	CO01-J1	35
55-46	ORN	18	60	SW63	3	CO01-J1	27
55-50	ORN	18	58	SW74	1	CO01-J2	4
55-51	ORN	18	39	GD47-J3	3	CO01-J2	30
59-1	WHT	18	45	SW69	3	CO01-J2	1
59-60	WHT	18	41.5	LB132+	1	CO01-J2	31
60-4	WHT	18	45	SW69	1	CO01-J2	2
CANH	YEL	18	24.5	X51	3	MS156	2
CANH	YEL	18	23.5	MS156	1	CO01-J7	31
CANL	GRN	18	24.5	X51	2	MS156	4
CANL	GRN	18	23.5	MS156	3	CO01-J7	30
CANS	BLK	18	23.5	MS156	5	CO01-J7	32
CANS	BLK	18	24.5	X51	1	MS156	6
X04-CANH	BLUE	N/A	24	X04	3	MS156	12
X04-CANL	BLACK	N/A	24	X04	4	MS156	10
X04-CANS	GRAY	N/A	24	X04	5	MS156	8
X04-GND	WHITE	N/A	20.5	X04	2	CO01-J7	14
X04-PWR	BROWN	N/A	20.5	X04	1	CO01-J7	4
X05-CANH	BLUE	N/A	24	MS156	11	X05	3
X05-CANL	BLACK	N/A	24	MS156	9	X05	4
X05-CANS	GRAY	N/A	24	MS156	7	X05	5
X05-GND	WHITE	N/A	20.5	CO01-J7	14	X05	2
X05-PWR	BROWN	N/A	20.5	CO01-J7	7	X05	1

Figure 7-31. Console Box Harness - Sheet 2 of 2



100220867-E
MAF10690E

Figure 7-32. Console Box Harness - With Skyguard

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRENO	COLOR	WIRE GAUGE	FROM		TO	
			REFERENCE	PIN	REFER-ENCE	PIN
000-24-3	BLK	12	X51	18	C001-J8	1
000-46-1	BLK	18	X141	12	C001-J7	29
000-49	BLK	12	X51	16	C001-J8	1
000-51-1	BLK	18	LB132-	1	LB128-	1
000-51-2	BLK	18	LB128-	1	GD47-J1	4
000-51-3	BLK	18	GD47-J1	4	C001-J2	25
000-52	BLK	18	GD47-J2	6	C001-J2	18
000-53	BLK	18	SW118	5	C001-J1	13
000-54	BLK	18	C001-J7	20	AH142-	1
13-1	BRN	18	SW71	3	C001-J1	5
14-1	BRN	18	SW71	1	C001-J1	6
2-1-2	YEL/RED	12	X51	12	C001-J8	2
2-8-13	YEL/RED	12	X51	10	C001-J8	2
2-10-11	YEL/RED	18	SW125-1	1	SW71	2
2-10-13	YEL/RED	18	SW135	2	SW72	2
2-10-19	YEL/RED	18	SW129-1	1	SW69	2
2-10-12	YEL/RED	18	SW71	2	SW135	2
2-10-5	YEL/RED	18	SW66	2	SW118	3
2-10-15	YEL/RED	18	SW73	2	SW74	2
2-10-9	YEL/RED	18	SW68	2	SW69	2
2-10-10	YEL/RED	18	SW129-1	1	SW70	2
2-10-16	YEL/RED	18	SW74	2	C001-J1	18
2-10-4	YEL/RED	18	SW76-1	1	SW66	2
2-10-6	YEL/RED	18	SW118	3	SW67	2
2-10-2	YEL/RED	18	SW64	2	SW65	2
2-10-18	YEL/RED	18	SW125-1	1	SW70	2
2-10-14	YEL/RED	18	SW72	2	SW73	2
2-10-3	YEL/RED	18	SW76-1	1	SW65	2
2-10-1	YEL/RED	18	SW63	2	SW64	2
2-10-8	YEL/RED	18	SW67	2	SW68	2
2-11-2	YEL/RED	18	X141	1	S145	2
2-11-3	YEL/RED	18	X141	15	S145	2
2-11-1	YEL/RED	18	C001-J2	32	S145	1
2-16-1	YEL/RED	18	X155	6	X155	8
2-2	YEL/RED	18	X51	5	SW48-2A	2A
2-21	YEL/RED	18	GD47-J2	2	C001-J2	7
2-3-3	YEL/RED	18	X51	4	C001-J7	3
2-3-5	YEL/RED	18	SW48-1A	1A	C001-J7	2
2-30-1	YEL/RED	18	X51	11	C001-J7	1
23-1	GRY	18	SW67	3	C001-J1	7
23-3	GRY	18	X141	8	C001-J7	5
24-1	GRY	18	SW67	1	C001-J1	8
24-3	GRY	18	X141	9	C001-J7	6
25-1	PNK	18	SW65	3	C001-J1	9
25-3-1	PNK	18	X51	9	S104	2
25-3-2	PNK	18	S104	1	C001-J7	15
25-3-3	PNK	18	X141	7	S104	1
26-1	PNK	18	SW65	1	C001-J1	10
26-3-1	PNK	18	X51	7	S108	2
26-3-2	PNK	18	S108	1	C001-J7	16
26-3-3	PNK	18	X141	6	S108	1
27-1	BLU	18	SW70	3	C001-J1	11
28-1	BLU	18	SW70	1	C001-J1	12
29-1	BRN	18	SW68	3	C001-J1	3
30-1	BRN	18	SW68	1	C001-J1	4
39-1	WHT/YEL	18	GD47-J3	2	C001-J2	14
43-1	YEL/WHT	18	SW66	3	C001-J1	23
44-1	YEL/WHT	18	SW66	1	C001-J1	24
47-1	BRN/WHT	18	GD47-J1	1	C001-J2	22

47-10	BRN/WHT	18	GD47-J4	1	C001-J2	20
47-12	BRN/WHT	18	GD47-J3	6	C001-J2	8
47-13	BRN/WHT	18	GD47-J2	3	C001-J2	21
47-2	BRN/WHT	18	GD47-J1	2	C001-J2	24
47-3	BRN/WHT	18	GD47-J1	3	C001-J2	23
47-4	BRN/WHT	18	GD47-J1	6	C001-J2	35
48-1	WHT/YEL	18	SW72	3	C001-J1	14
48-5	WHT/YEL	18	SW63	1	C001-J1	28
48-6	WHT/YEL	18	GD47-J4	6	C001-J2	17

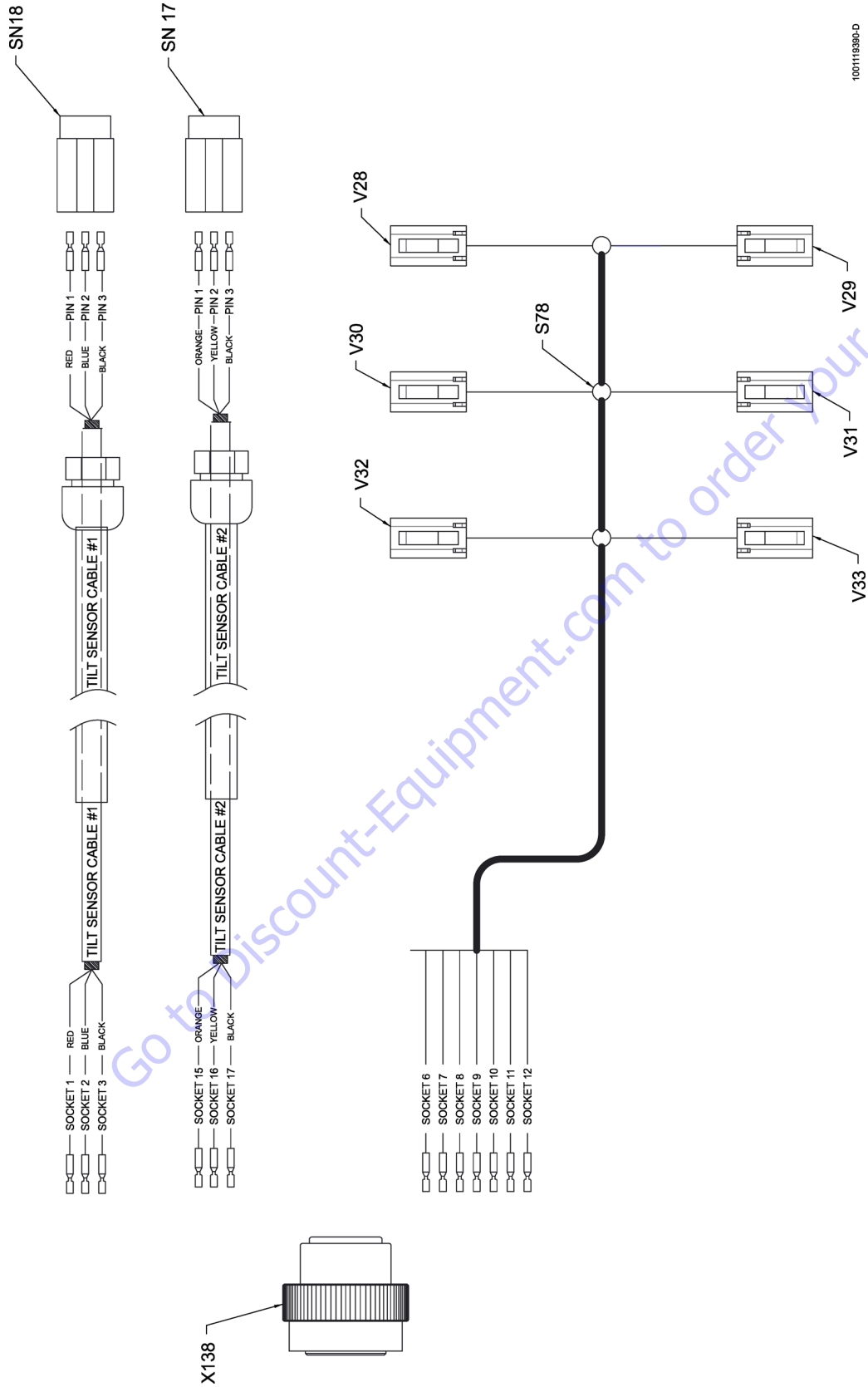
WIRENO	COLOR	WIRE GAUGE	FROM		TO	
			REFERENCE	PIN	REFER-ENCE	PIN
49-100	ORN/RED	18	GD47-J4	3	C001-J2	11
49-1000	ORN/RED	18	GD47-J3	1	C001-J2	19
49-101	ORN/RED	18	GD47-J3	5	C001-J2	10
49-11	ORN/RED	18	SW118	2	C001-J1	32
49-12-1	ORN/RED	18	X51	13	C001-J1	33
49-120	ORN/RED	18	SW135	3	C001-J1	22
49-13-1	ORN/RED	18	X51	15	C001-J1	1
49-15	ORN/RED	18	GD47-J2	1	C001-J2	9
49-3	ORN/RED	18	GD47-J4	5	C001-J2	6
49-4	ORN/RED	18	C001-J7	19	AH142+	1
49-40	ORN/RED	18	SW129-2	1	C001-J1	29
49-42	ORN/RED	18	LB128+	1	C001-J2	16
49-63	ORN/RED	18	X141	2	C001-J1	25
49-67	ORN/RED	18	X155	4	X155	5
49-68	ORN/RED	18	X141	3	C001-J7	21
49-69	ORN/RED	18	C001-J7	18	X5A	4
49-70	ORN/RED	18	C001-J7	8	X155	7
49-80	ORN/RED	18	X141	16	C001-J1	26
49-81	ORN/RED	18	X141	17	C001-J7	33
49-89	ORN/RED	18	X54	4	C001-J2	27
49-90	ORN/RED	18	C001-J2	29	X54	3
49-91	ORN/RED	18	X54	2	C001-J2	28
49-92	ORN/RED	18	X54	1	C001-J2	26
52-1	BLU/ORN	18	SW76-2	1	C001-J1	31
52-12	BLU/ORN	18	SW125-2	1	C001-J1	30
52-3	BLU/ORN	18	C001-J2	33	X155	2
52-4-1	BLU/ORN	18	GD47-J4	2	C001-J2	15
52-4-2	BLU/ORN	18	C001-J7	9	X155	1
53-1	BRN/ORN	18	SW72	1	C001-J1	15
54-1	RED/YEL	18	SW73	3	C001-J1	21
54-2	RED/YEL	18	GD47-J4	4	C001-J2	12
54-3	RED/YEL	18	GD47-J3	4	C001-J2	13
55-1	WHT	18	X141	10	C001-J7	25
55-16	YEL	18	SW64	3	C001-J1	16
55-17	YEL	18	SW64	1	C001-J1	17
55-2	WHT	18	X141	11	C001-J7	26
55-30	RED / WHT	18	SW118	4	C001-J1	34
55-31	RED / WHT	18	SW118	6	C001-J1	35
55-46	ORN	18	SW63	3	C001-J1	27
55-50	ORN	18	SW74	1	C001-J2	4
55-51	ORN	18	GD47-J3	3	C001-J2	30
59-1	WHT	18	SW69	3	C001-J2	2
59-60	WHT	18	LB132+	1	C001-J2	31
60-4	WHT	18	SW69	1	C001-J2	1
CANH	YEL	18	X51	3	X1002	A
CANH	YEL	18	MS156	1	C001-J7	31
CANL	GRN	18	X51	2	X1002	B

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

CANL	GRN	18	MS156	3	CO01-J7	30
CANS	BLK	18	MS156	5	CO01-J7	32
CANS	BLK	18	X51	1	X1002	C
CANH	YEL	18	X1001	A	MS156	2
CANL	GRN	18	X1001	B	MS156	4
CANS	BLK	18	X1001	C	MS156	6
X04-CANH	BLUE	N/A	X04	3	MS156	12
X04-CANL	BLACK	N/A	X04	4	MS156	10
X04-CANS	GRAY	N/A	X04	5	MS156	8
X04-GND	WHITE	N/A	X04	2	CO01-J7	14
X04-PWR	BROWN	N/A	X04	1	CO01-J7	4
X05-CANH	BLUE	N/A	MS509	11	X05	3
X05-CANL	BLACK	N/A	MS509	9	X05	4
X05-CANS	GRAY	N/A	MS509	7	X05	5
X05-GND	WHITE	N/A	S368	2	X05	2
X05-PWR	BROWN	N/A	S367	2	X05	1
P3	YEL/RED	18	X5A	5	CO01-J1	2
P6	BLACK	18	X5A	2	AH142-	1
X1005-PWR	WHITE	N/A	X1005	2	S367	2
X1005-GND	BLUE	N/A	X1005	3	S368	2
X1005-CANH	BLACK	N/A	X1005	4	MS509	2
X1005-CANL	GRAY	N/A	X1005	5	MS509	4
80-2	BLACK	18	MS509	8	MS156	7
80-3	YELLOW	18	MS509	12	MS156	11
80-4	GREEN	18	MS509	10	MS156	9
PWR-J7	BROWN	18	CO01-J7	7	S367	1
GND-J7	WHT	18	CO01-J7	34	S368	1
2-16	YEL/RED	18	CO01-J2	3	X155	8
2-16-1	YEL/RED	18	X155	3	S370	1
FUSELEAD	BLK	18	X5A	1	S370	2
2-16-1	ORN/RED	18	X154	3	X154	6

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SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



100118360-D

WIRE NO	COLOR	WIRE GAUGE	LENGTH (in)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
000-46-2	BLACK	18	44	X138	12	S78	1
000-46-3	BLACK	18	7	V28	2	S78	1
000-46-4	BLACK	18	7	V29	2	S78	1
000-46-5	BLACK	18	4	V30	2	S78	1
000-46-6	BLACK	18	4	V31	2	S78	2
000-46-7	BLACK	18	7	V32	2	S78	2
000-46-8	BLACK	18	7	V33	2	S78	2
23-3	GRAY	18	48	X138	8	V30	1
24-3	GRAY	18	48	X138	9	V31	1
25-3-5	PINK	18	51	X138	7	V28	1
26-3-5	PINK	18	51	X138	6	V29	1
55-5	WHITE	18	45	X138	10	V32	1
55-6	WHITE	18	45	X138	11	V33	1
SNCBL-1	BLACK	18	61.5	X138	3	SN18	3
SNCBL-1	BLUE	18	61.5	X138	2	SN18	2
SNCBL-1	RED	18	61.5	X138	1	SN18	1
SNCBL-2	ORANGE	18	61.5	SN17	1	X138	15
SNCBL-2	BLACK	18	61.5	SN17	3	X138	17
SNCBL-2	YELLOW	18	61.5	X138	16	SN17	2

Figure 7-33. Platform Valve Harness - Sheet 2 of 2

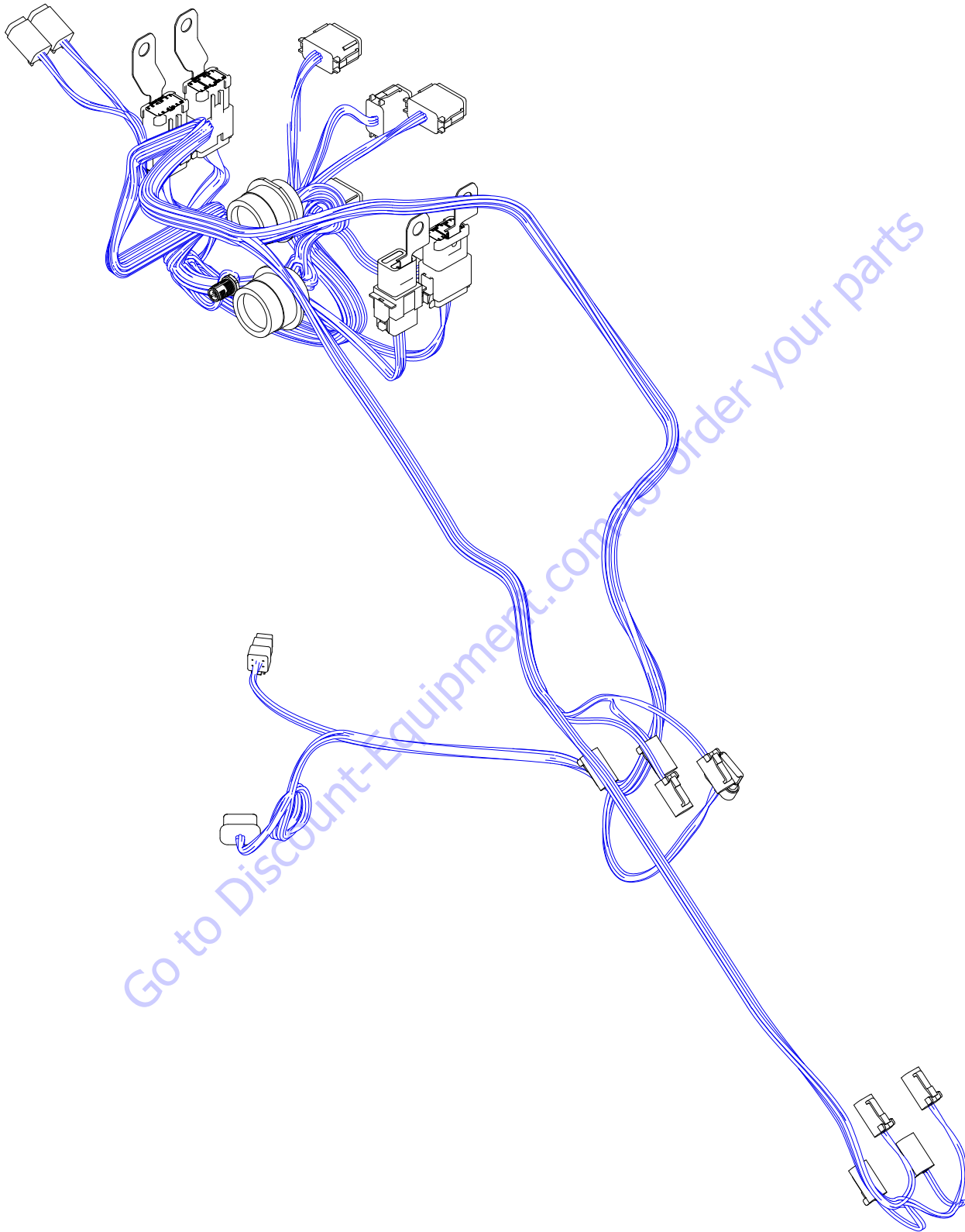


Figure 7-34. Jib Valve Harness - Sheet 1 of 3

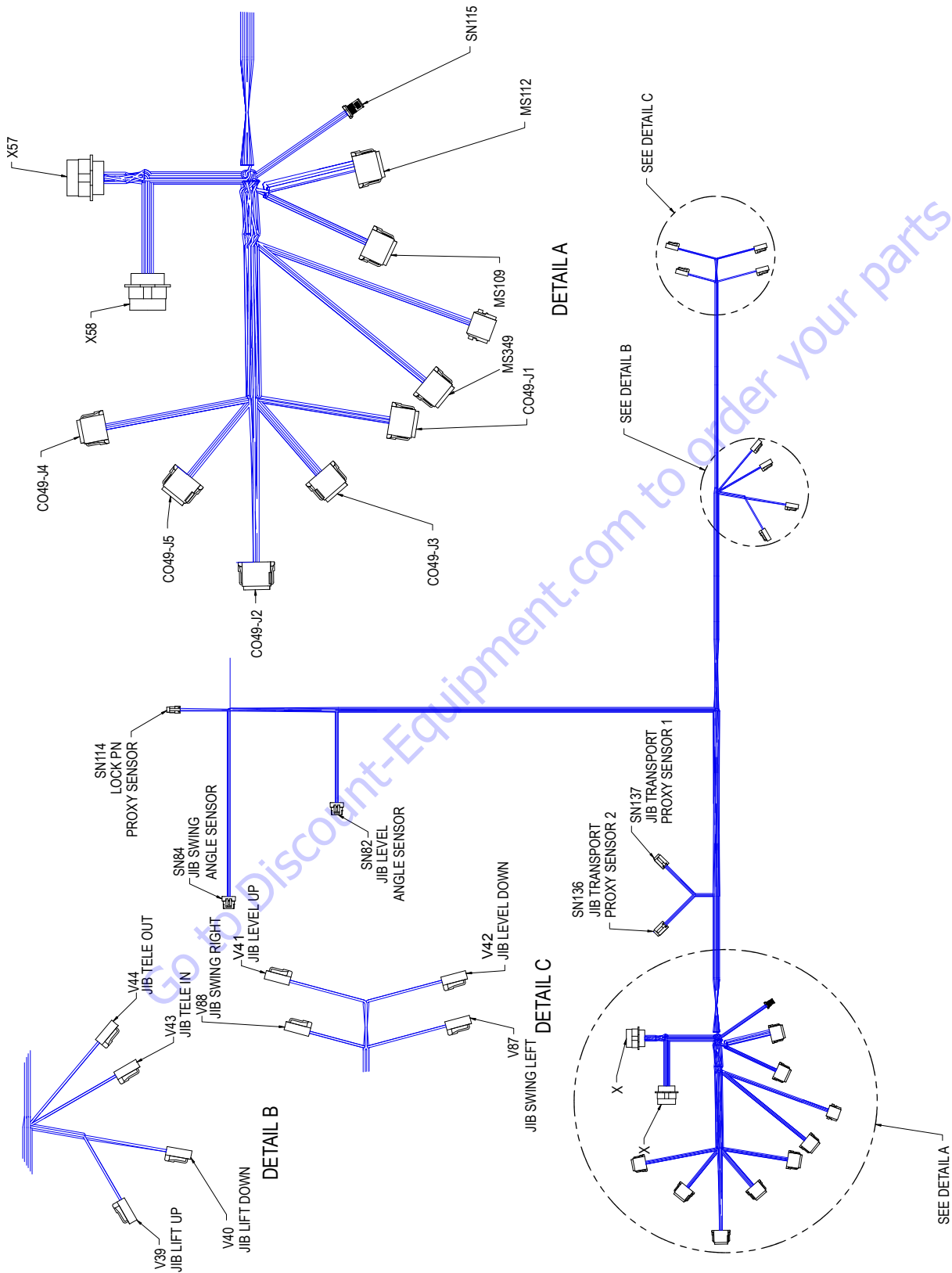
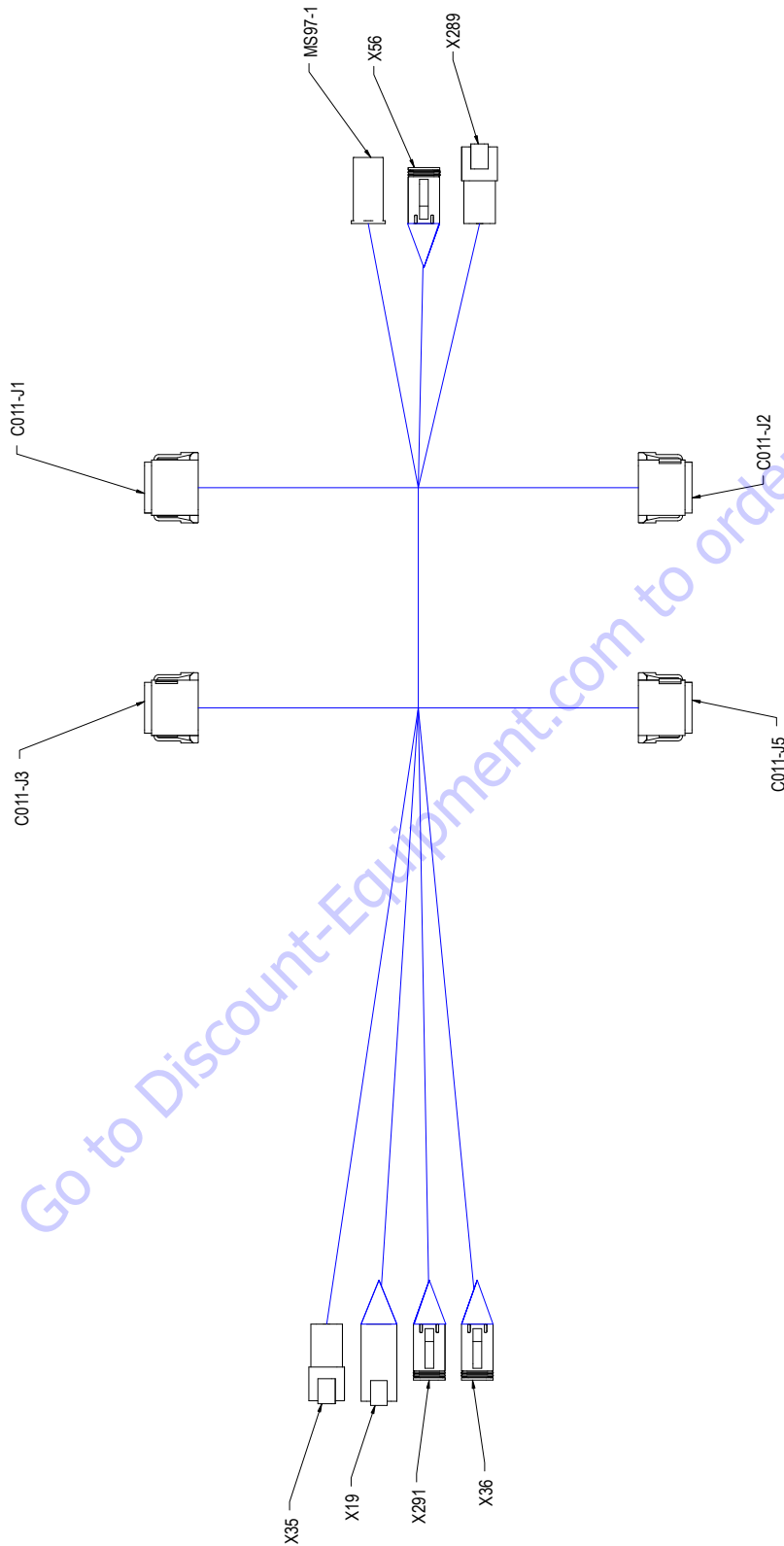


Figure 7-35. Jib Valve Harness - Sheet 2 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	COLOR	WIRE GAUGE	LENGTH (in)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
000-39-2_1	BLACK	18	24.2	SN136	3	MS112	12
000-39-3_1	BLACK	12	15.6	X57	16	MS112	10
000-39-4_1	BLACK	12	12.5	MS112	1	X58	16
000-39-5_1	BLACK	14	21.8	MS112	11	CO49-J1	4
000-40_1	BLACK	18	36.8	SN137	3	CO49-J4	8
000-41_1	BLACK	18	96.2	SN114	3	CO49-J4	2
000-43-1_1	BLACK	18	25.6	CO49-J2	3	MS349	1
000-43-2_1	BLACK	18	86.6	V41	2	MS349	11
000-43-3_1	BLACK	18	86.9	V42	2	MS349	2
000-44-1_1	BLACK	18	22.7	CO49-J5	12	MS350	1
000-44-2_1	BLACK	18	69.2	V39	2	MS350	1
000-44-3_1	BLACK	18	69.3	V40	2	MS350	1
000-44-4_1	BLACK	18	67.8	V43	2	MS350	1
000-44-5_1	BLACK	18	68.3	V44	2	MS350	1
000-44-6_1	BLACK	18	84.9	V88	2	MS350	1
000-44-7_1	BLACK	18	85.4	V87	2	MS350	1
000-45-2_1	BLACK	12	16.0	X57	18	MS112	3
000-45-3_1	BLACK	12	12.7	MS112	2	X58	18
2-15-1_1	YELLOW/RED	14	21.6	MS112	8	CO49-J1	5
2-15-2_1	YELLOW/RED	12	12.6	MS112	4	X58	12
2-16-2_1	YELLOW/RED	18	24.4	SN136	1	MS112	9
2-16-3_1	YELLOW/RED	18	36.6	SN137	1	CO49-J4	7
2-16_1	YELLOW/RED	18	96.8	SN114	1	CO49-J4	1
2-2-2_1	YELLOW/RED	18	7.7	X57	5	X58	5
2-21-1_1	YELLOW/RED	18	6.8	X58	6	X57	6
2-3-1_1	YELLOW/RED	18	6.1	X58	4	X57	4
2-30-1_1	YELLOW/RED	18	7.7	X58	11	X57	11
2-8-10_2	YELLOW/RED	12	16.1	X57	10	MS112	6
2-8-11_2	YELLOW/RED	12	15.8	X57	12	MS112	7
2-8-12_1	YELLOW/RED	12	12.6	MS112	5	X58	10
25-3-4_1	PINK	18	7.2	X58	7	X57	7
26-3-4_1	PINK	18	6.3	X58	9	X57	9
27-3-1_1	BLUE	18	22.8	MS349	4	CO49-J5	1
27-3-2_1	BLUE	18	25.1	CO49-J2	2	MS349	3
27-3-3_1	BLUE	18	68.5	V39	1	MS349	9
27-3-4_1	BLUE	18	28.5	X57	13	CO49-J1	2
28-3-1_1	BLUE	18	21.5	MS349	6	CO49-J5	2
28-3-2_1	BLUE	18	25.1	CO49-J2	1	MS349	5
28-3-3_1	BLUE	18	69.5	V40	1	MS349	7
28-3-4_1	BLUE	18	28.1	X57	15	CO49-J1	1
29-3_1	BROWN	18	69.2	CO49-J5	5	V43	1
30-3_1	BROWN	18	71.5	CO49-J5	6	V44	1
49-12-2_1	ORANGE/RED	18	26.4	X58	13	SN136	4
49-13-2_1	ORANGE/RED	18	26.0	X58	15	SN136	2
49-14_1	ORANGE/RED	18	37.2	CO49-J2	7	SN137	2
49-1_1	ORANGE/RED	18	97.3	SN114	2	CO49-J2	5
49-21_1	ORANGE/RED	18	38.0	CO49-J2	6	SN137	4
49-2_1	ORANGE/RED	18	97.0	CO49-J2	4	SN114	4
55-3_2	BLUE	18	92.8	CO49-J2	11	V41	1
55-4_1	BLUE	18	91.7	CO49-J2	12	V42	1
59-3_1	WHITE	18	87.9	CO49-J5	4	V87	1
60-3_1	WHITE	18	87.1	CO49-J5	3	V88	1
CAN1-HIGH_4	YELLOW	18	23.3	CO49-J4	3	MS109	12
CAN1-HIGH_5	YELLOW	18	13.3	MS109	1	X58	3
CAN1-HIGH_6	YELLOW	18	28.1	X57	3	CO49-J1	6
CAN1-LOW_4	GREEN	18	23.6	CO49-J4	4	MS109	10
CAN1-LOW_5	GREEN	18	14.3	MS109	3	X58	2
CAN1-LOW_6	GREEN	18	29.6	X57	2	CO49-J1	7
CAN1-SHIELD_3	BLACK	18	14.2	MS109	5	X58	1
CAN1-SHIELD_4	BLACK	18	22.9	CO49-J4	5	MS109	8
CAN1-SHIELD_5	BLACK	18	30.4	X57	1	CO49-J1	8
CBL-10_1	RED	18	88.0	CO49-J3	4	SN82	B
CBL-10_2	WHITE	18	89.2	CO49-J3	5	SN82	D
CBL-10_3	BLACK	18	87.9	CO49-J3	6	SN82	A
CBL-10_4	ORANGE	18	87.6	CO49-J3	1	SN82	F
CBL-10_5	BLUE	18	90.2	CO49-J3	2	SN82	C
CBL-10_6	GREEN	18	89.5	CO49-J3	3	SN82	E
CBL-11_1	RED	18	105.8	CO49-J3	10	SN84	B
CBL-11_2	WHITE	18	107.8	CO49-J3	11	SN84	D
CBL-11_3	BLACK	18	107.0	CO49-J3	12	SN84	A
CBL-11_4	ORANGE	18	105.9	CO49-J3	7	SN84	F
CBL-11_5	BLUE	18	107.8	CO49-J3	8	SN84	C
CBL-11_6	GREEN	18	107.6	CO49-J3	9	SN84	E
SN115-CANH_1	BLUE	20	11.7	MS109	2	SN115	3
SN115-CANL_1	BLACK	20	11.1	MS109	4	SN115	4
SN115-CANS_1	GRAY	20	10.7	MS109	6	SN115	5
SN115-GND_1	WHITE	20	24.9	CO49-J1	12	SN115	2
SN115-PWR_1	BROWN	20	21.9	CO49-J1	11	SN115	1

Figure 7-36. Jib Valve Harness - Sheet 3 of 3



100119284.B

Figure 7-37. Boom Length and Angle Harness - Sheet 1 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	COLOR	WIRE GAUGE	LENGTH (in)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
000-05-2	BLK	14	11	X289	2	CO11-J1	4
000-10	BLK	18	16	CO11-J5	12	X56	6
000-27-1	BLK	18	9.5	CO11-J3	9	S94	2
000-27-2	BLK	18	9.5	X19	2	S94	1
000-27-3	BLK	18	9.5	S94	1	X19	4
000-28	BLK	18	5	CO11-J1	12	CO11-J1	2
000-29	BLK	18	19	CO11-J3	6	X291	3
000-30	BLK	18	19	CO11-J3	12	X291	6
000-55-1	BLK	18	12	CO11-J2	3	S83	1
000-55-2	BLK	18	12	X35	3	S83	2
000-55-3	BLK	18	12	X35	4	S83	2
000-56-1	BLK	18	12	CO11-J2	2	S85	1
000-56-2	BLK	18	12	X36	3	S85	2
000-56-3	BLK	18	12	X36	4	S85	2
2-1-4	YEL/RED	14	11	X289	1	CO11-J1	5
2-80	YEL/RED	18	19	CO11-J3	7	X19	1
2-81	YEL/RED	18	19	X35	1	CO11-J5	9
2-82	YEL/RED	18	24	X36	1	CO11-J2	1
2-9	YEL/RED	18	5	CO11-J1	11	CO11-J1	1
49-110	ORN/RED	18	19	CO11-J3	8	X19	3
49-111	ORN/RED	18	24	X35	2	CO11-J2	8
49-112	ORN/RED	18	24	X36	2	CO11-J2	9
49-18	ORN/RED	18	5	CO11-J3	1	CO11-J3	2
49-19	ORN/RED	18	19	CO11-J3	11	X291	2
49-9	ORN/RED	18	19	CO11-J3	5	X291	5
50-6	RED/WHT	18	19	CO11-J3	4	X291	1
50-7	RED/WHT	18	19	CO11-J3	10	X291	4
60-1-1	ORN	18	16	X289	4	CO11-J5	3
7-2-1	ORN	18	11	CO11-J2	12	X56	3
7-3-1	ORN	18	11	CO11-J2	11	X56	4
8-2-1	ORN	18	11	CO11-J5	2	X56	1
8-3-1	ORN	18	11	CO11-J5	1	X56	2
TP CBL-15	SHIELD	18	11	CO11-J1	8	MS97-1	C
TP CBL-15	BLK	18	11	CO11-J1	7	MS97-1	B
TP CBL-15	RED	18	11	CO11-J1	6	MS97-1	A

Figure 7-38. Boom Length and Angle Harness - Sheet 2 of 2

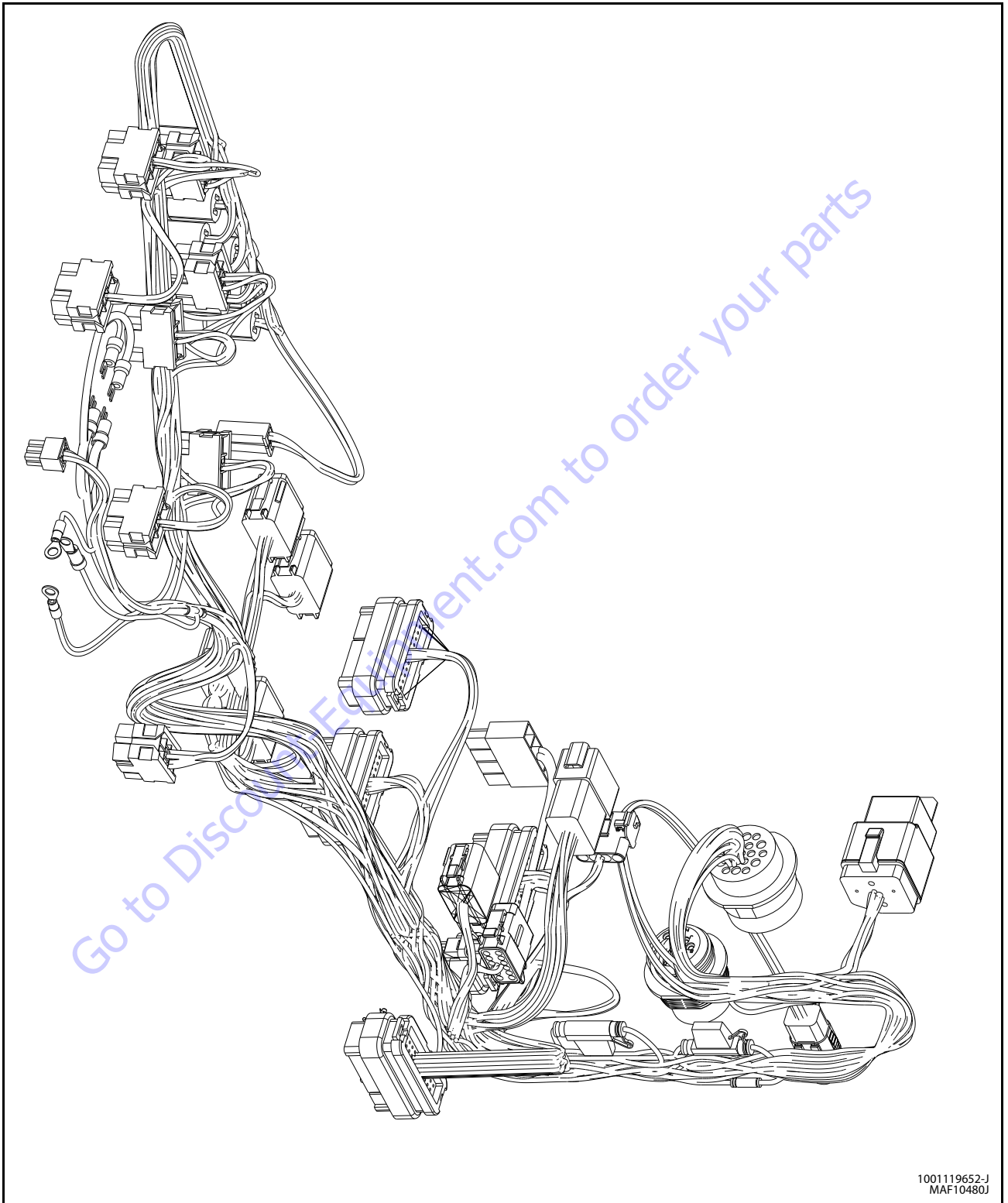


Figure 7-39. Main Terminal Box Harness - Sheet 1 of 4

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

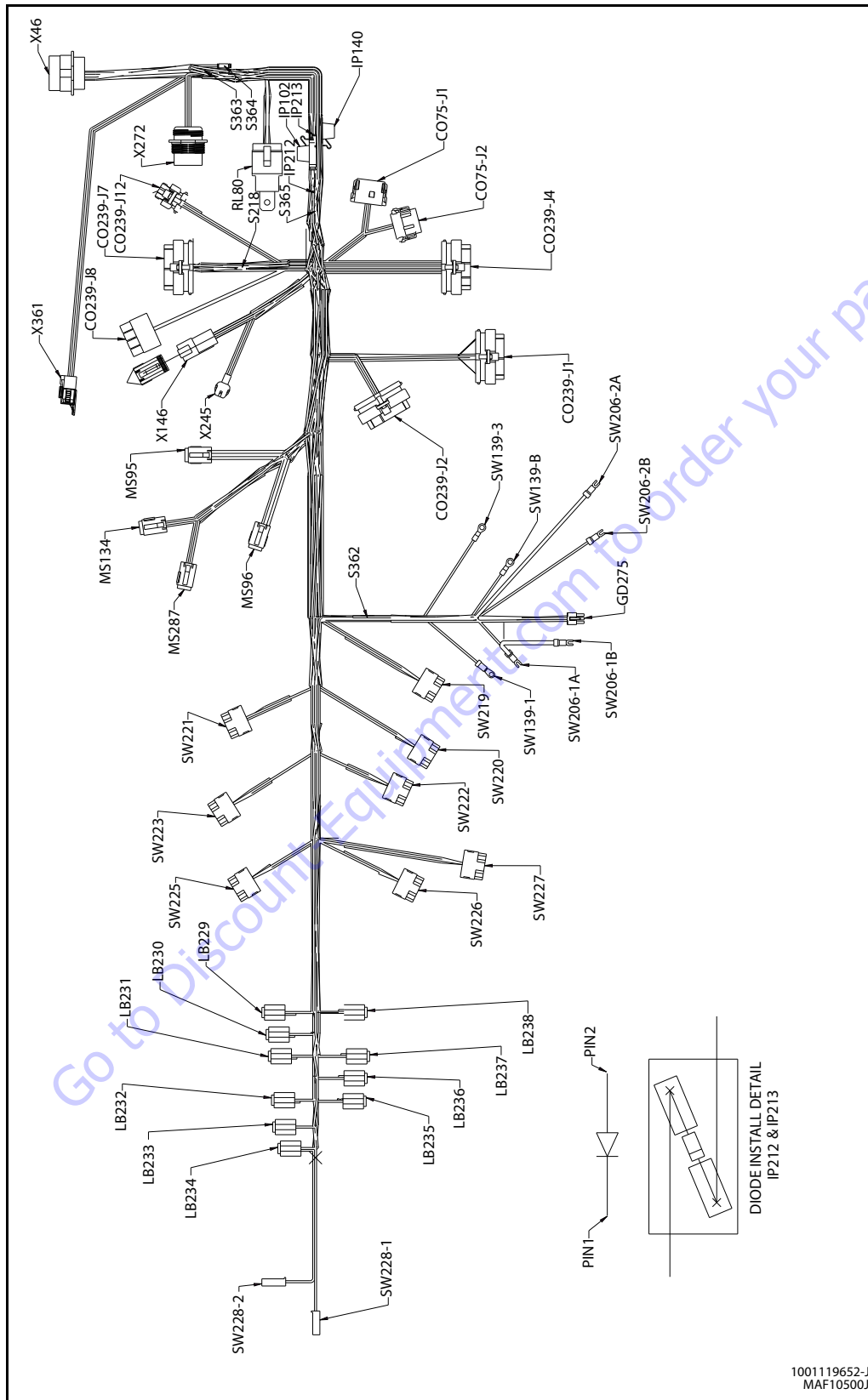


Figure 7-40. Main Terminal Box Harness - Sheet 2 of 4

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
000-03A	BLK	14	363 (1)	361 (2)
000-03B	BLK	18	MS96 (11)	363 (1)
000-03	BLK	18	RL80 (2)	363 (2)
000-08	BLK	18	MS96 (6)	C075- J1 (11)
000-24-1	BLK	16	C0239- J2 (29)	146 (10)
000-25	BLK	16	C0239- J2 (18)	146 (8)
000-26	BLK	18	C0239- J2 (19)	146 (3)
000-2	BLK	12	MS96 (1)	C0239- J8 (1)
000-31-01	BLK	18	C0239- J4 (31)	LB238 (2)
000-31-02	BLK	18	LB237 (2)	LB238 (2)
000-31-03	BLK	18	LB236 (2)	LB237 (2)
000-31-04	BLK	18	LB235 (2)	LB236 (2)
000-31-05	BLK	18	LB234 (2)	LB235 (2)
000-31-06	BLK	18	LB233 (2)	LB234 (2)
000-31-07	BLK	18	LB233 (2)	LB232 (2)
000-31-08	BLK	18	LB231 (2)	LB232 (2)
000-31-09	BLK	18	LB230 (2)	LB231 (1)
000-31-10	BLK	18	LB229 (2)	LB230 (2)
000-31-11	BLK	18	GD275 (2)	LB229 (2)
000-37	BLK	18	C0239- J1 (31)	245 (4)
000-39-1	BLK	12	MS96 (2)	46 (16)
000-45-1	BLK	12	MS96 (3)	46 (18)
000-9	BLK	18	272 (A)	MS96 (12)
1-1-2	RED	10	SW206- 1B (1B)	SW206-1A (1A)
1-3A	RED	18	365 (1)	361 (1)
1-3B	RED	18	272 (B)	365 (1)
1-3	RED	18	SW206- 1A (1A)	IP140 (2)
2-1-1	YEL/ RED	12	SW206- 2A (2A)	RL80 (1)
2-1-2	YEL/ RED	18	SW206- 2B (2B)	SW139- B (1)
2-2-1	YEL/ RED	18	C0239- J7 (2)	S218 (1)
2-20	YEL/ RED	18	46 (6)	C0239- J7 (15)
2-2A	YEL/ RED	18	362 (1)	361 (4)
2-2B	YEL/ RED	18	362 (1)	46 (5)
2-2	YEL/ RED	18	362 (2)	SW139- 1 (1)
2-3-2	YEL/ RED	18	C0239- J7 (1)	S218 (1)
2-3-4	YEL/ RED	18	46 (4)	S218 (2)
2-30-1	YEL/ RED	18	SW139-3 (1)	C0239- J7 (3)
2-30	YEL/ RED	18	46 (11)	C0239- J7 (14)

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
2-31	YEL/ RED	18	C0239- J7 (30)	C0239- J7 (23)
2-3	YEL/ RED	18	S218 (2)	IP212 (2)
2-40-01	YEL/ RED	18	C0239- J4 (25)	SW219 (2)
2-40-02	YEL/ RED	18	SW219 (2)	SW220 (2)
2-40-03	YEL/ RED	18	SW220 (2)	SW221 (2)
2-40-04	YEL/ RED	18	SW223 (2)	SW222 (2)
2-40-05	YEL/ RED	18	SW228-1 (1)	SW223 (2)
2-40-06	YEL/ RED	18	SW225 (2)	SW222 (2)
2-40-07	YEL/ RED	18	GD275 (1)	SW227 (2)
2-40-08	YEL/ RED	18	SW225 (2)	SW226 (2)
2-40-09	YEL/ RED	18	SW226 (2)	SW227 (2)
2-40-10	YEL/ RED	18	SW221 (2)	SW228-1 (1)
2-5	YEL/ RED	18	C0239- J1 (28)	245 (1)
2-60	YEL/ RED	18	C0239- J7 (29)	146 (1)
2-61	YEL/ RED	18	C0239- J7 (32)	146 (5)
2-6	YEL/ RED	18	C0239- J7 (34)	IP102 (2)
2-8-10	YEL/ RED	12	MS95 (2)	46 (10)
2-8-11	YEL/ RED	12	MS95 (3)	46 (12)
2-8-1A	YEL/ RED	18	364 (1)	361 (3)
2-8-1B	YEL/ RED	12	364 (1)	MS95 (12)
2-8-1	YEL/ RED	12	RL80 (4)	364 (2)
2-8-2	YEL/ RED	12	C0239- J8 (2)	MS95 (1)
2-8-5	YEL/ RED	18	MS95 (9)	C0239- J4 (24)
2-8-7	YEL/ RED	18	MS95 (10)	C075- J1 (12)
2-8	YEL/ RED	18	SW139-3 (1)	IP213 (2)
3-2	TAN	18	SW220 (1)	C0239- J4 (23)
3-3	TAN	18	SW220 (3)	C0239- J4 (33)
13-2	BRN	18	SW221 (1)	C0239- J4 (7)
14-2	BRN	18	SW221 (1)	C0239- J4 (30)
21-2	WHT	18	SW219 (1)	C0239- J4 (34)
22-2	WHT	18	SW219 (3)	C0239- J4 (35)
23-2	GRY	18	SW225 (1)	C0239- J4 (18)
24-2	GRY	18	SW225 (3)	C0239- J4 (6)
25-2	PNK	18	SW226 (1)	C0239- J4 (17)
25-3	PNK	18	C0239- J2 (5)	46 (9)
26-2	PNK	18	SW226 (3)	C0239- J4 (5)
26-3	PNK	18	C0239- J2 (7)	46 (7)
27-2	BLU	18	SW222 (3)	C0239- J4 (19)
27-3-4	PNK	18	C0239- J1 (3)	46 (13)
28-2	PNK	18	SW222 (1)	C0239- J4 (8)
28-3-4	PNK	18	C0239- J2 (31)	46 (15)
29-2	BRN	18	SW223 (1)	C0239- J4 (11)
30-2	BRN	18	SW223 (3)	C0239- J4 (22)
39-1	WHT/ YEL	18	LB230 (1)	C0239- J4 (1)
47-5	BRN/ WHT	18	LB233 (1)	C0239- J4 (29)
47-6	BRN/ WHT	18	LB232 (1)	C0239- J4 (28)
47-8	BRN/ WHT	18	LB234 (1)	C0239- J4 (26)
48-1	WHT/ YEL	18	LB227 (1)	C0239- J4 (4)
48-6	WHT/ YEL	18	LB231 (1)	C0239- J4 (15)
49-100	ORN/ RED	18	LB237 (1)	C0239- J4 (14)
49-101	ORN/ RED	18	LB236 (1)	C0239- J4 (3)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
49-102	ORN/ RED	18	SW228-2 (1)	C0239- J7 (21)
49-103	ORN/ RED	18	LB235 (1)	C0239- J4 (13)
49-16	ORN/ RED	18	C0239- J12 (6)	C0239- J12 (7)
49-17	ORN/ RED	18	C0239- J7 (6)	C0239- J7 (17)
49-5	ORN/ RED	18	C0239- J1 (29)	245 (2)
49-64	ORN/ RED	18	C0239- J7 (11)	146 (2)
49-65	ORN/ RED	18	C0239- J7 (35)	146 (6)
49-6	ORN/ RED	18	C0239- J1 (30)	245 (3)
49-88	ORN/ RED	18	C0239- J7 (12)	146 (4)
50-2-1	RED/ WHT	18	C0239- J2 (3)	146 (9)
50-3	RED/ WHT	16	C0239- J2 (1)	146 (7)
53-2	BRN/ ORN	18	SW227 (3)	C0239- J4 (16)
54-4	RED/ YEL	18	LB229 (1)	C0239- J4 (2)
54-5	RED/ YEL	18	LBS238 (1)	C0239- J4 (27)
CANI- H_GTWY	YEL	18	C075- J1 (10)	MS287 (12)
CANI- H_MDI	YEL	18	MS287 (1)	GD275 (4)
CANI- HIGH	YEL	18	MS287 (2)	C0239- J7 (13)
CANI- L_GTWY	GRN	18	C075- J1 (9)	MS287 (3)
CANI- L_MDI	GRN	18	MS287 (4)	GD275 (3)
CANI- LOW	GRN	18	MS287 (10)	C0239- J7 (24)
CANI- SHIELD	BLK	18	MS287 (5)	C0239- J7 (18)
CANI (A)- HIGH	YEL	18	46 (3)	C075- J2 (10)
CANI (A)- LOW	GRN	18	46 (2)	C075- J2 (9)
CAN2-HIGH	YEL	18	C0239- J12 (3)	MS134 (12)
CAN2-HIGH	YEL	18	MS134 (1)	272 (C)
CAN2-LOW	GRN	18	MS134 (3)	272 (D)
CAN2-LOW	GRN	18	C0239- J12 (4)	MS134 (10)
CAN2- SHIELD	BLK	18	C075- J2 (3)	46 (1)
CAN2- SHIELD	BLK	18	MS134 (5)	272 (E)
CAN2- SHIELD	BLK	18	C0239- J12 (5)	MS134 (8)
SEE DETAIL	-		IP213 (1)	RL80 (5)
SEE DETAIL	-		IP212 (1)	RL80 (5)
SEE NOTE	NA		365 (2)	IP140 (1)
SEE NOTE	NA		272 (H)	IP102 (1)

Go to Discount-Equipment.com to order your parts

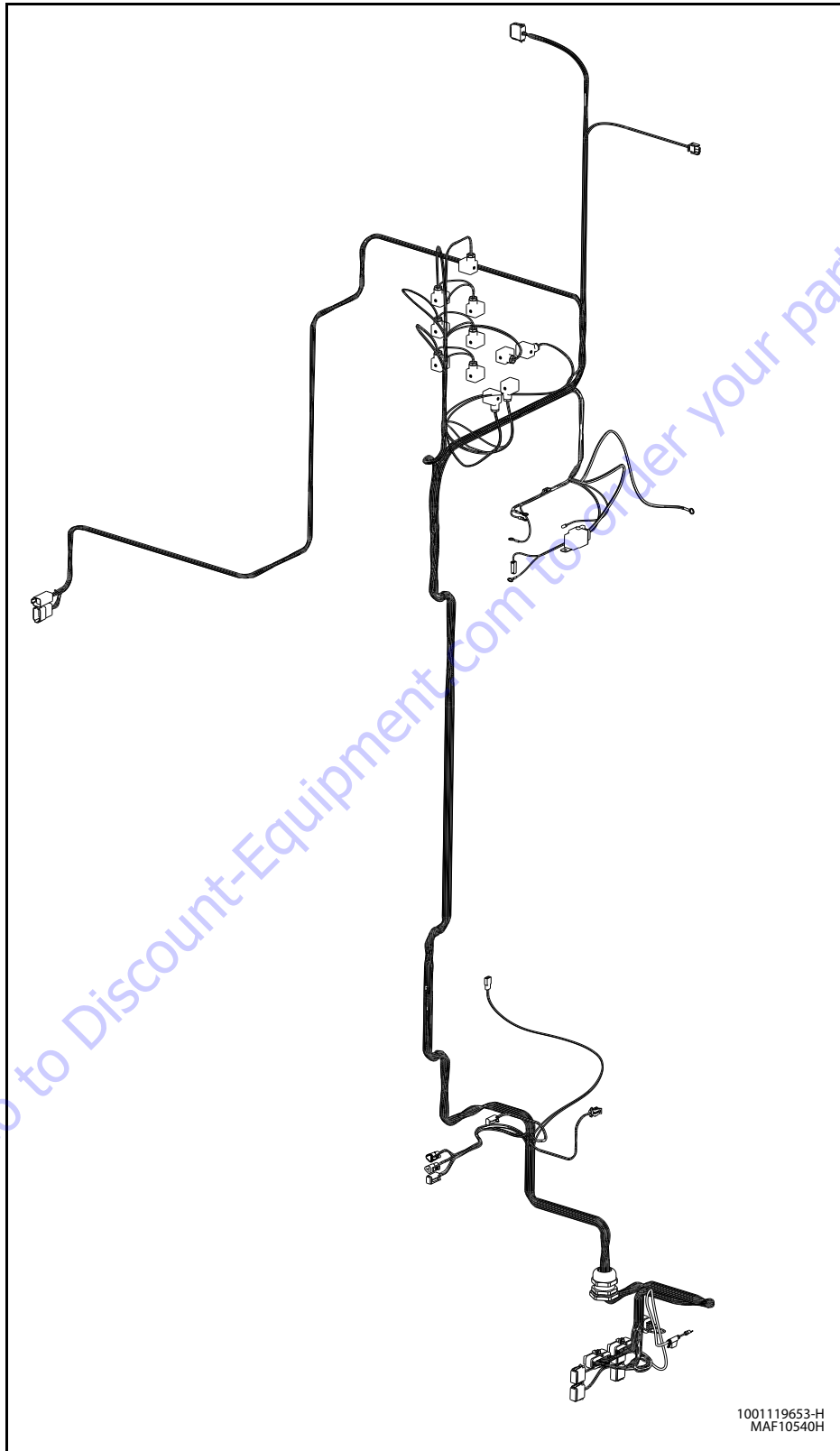


Figure 7-41. Turntable Harness - Sheet 1 of 3

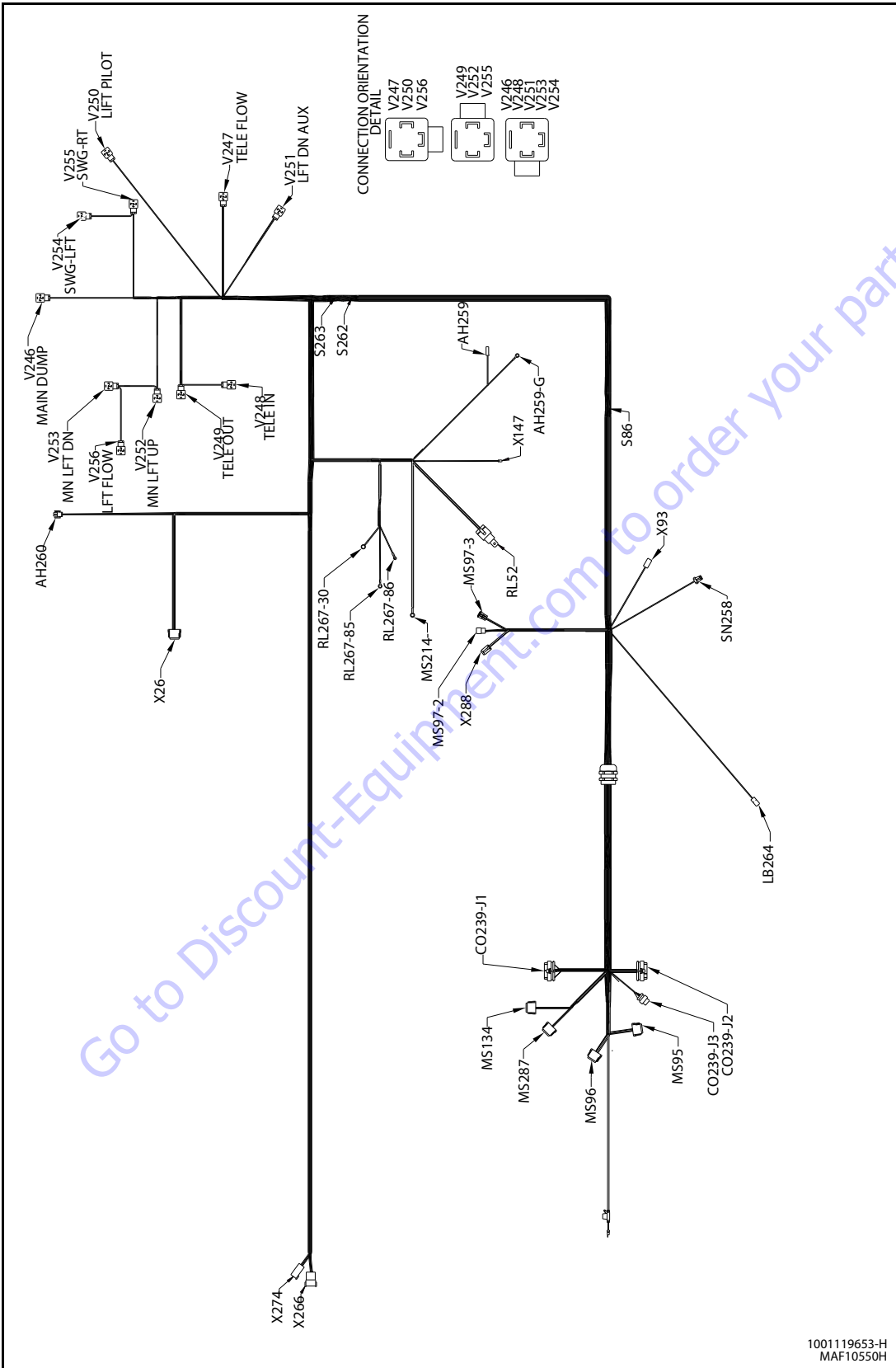


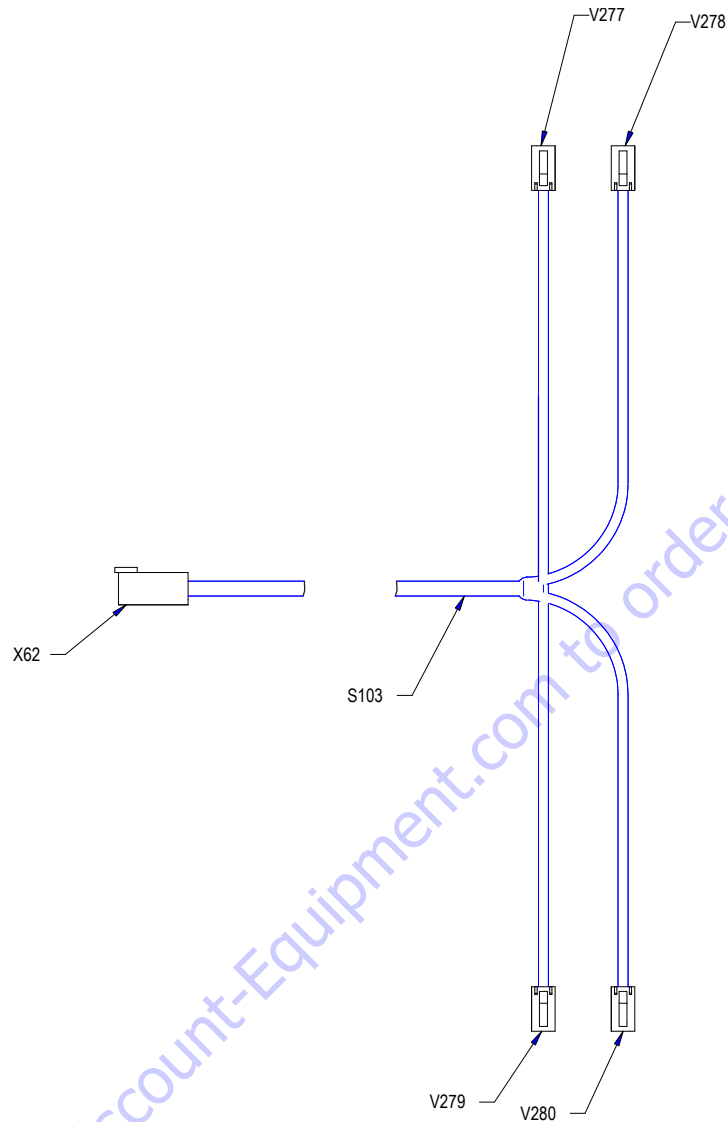
Figure 7-42. Turntable Harness - Sheet 2 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
000-01	BLACK	12	MS96 (1)	MS214- (1)
000-04	BLACK	12	MS96 (1)	X26 (5)
000-05-1	BLACK	12	MS96 (1)	X288 (2)
000-06	BLACK	18	MS96 (1)	LB264 (2)
000-07	BLACK	18	RL267- 85 (1)	MS214- (1)
000-22	BLACK	18	CO239- J1 (9)	X266 (6)
000-3	BLACK	18	MS214- (1)	RL52 (2)
000-33	BLACK	18	SN258 (2)	CO239- J2 (6)
000-34	BLACK	18	AH259- G (1)	CO239- J2 (17)
000-35-1	BLACK	18	CO239- J2 (30)	S263 (2)
000-35-2	BLACK	16	AH260 (2)	S263 (1)
000-35-3	BLACK	18	V246 (2)	S263 (1)
000-35-4	BLACK	18	V255 (2)	S263 (1)
000-35-5	BLACK	18	V255 (2)	V254 (2)
000-35-6	BLACK	18	V252 (2)	S263 (1)
000-35-7	BLACK	18	V252 (2)	V253 (2)
000-35-8	BLACK	18	V253 (2)	V256 (2)
000-36-1	BLACK	18	CO239- J2 (14)	S262 (2)
000-36-2	BLACK	18	V249 (2)	S262 (1)
000-36-3	BLACK	18	V248 (2)	V249 (2)
000-36-4	BLACK	18	V247 (2)	S262 (1)
000-36-5	BLACK	18	V251 (2)	V247 (2)
000-36-6	BLACK	18	V250 (2)	V251 (2)
000-38	BLACK	16	MS96 (1)	X93 (2)
000-42	BLACK	16	CO239- J1 (8)	X266 (2)
1-1	RED	10	S240 (2)	IP284 (1)
1- FSLINK	-	14	S240 (1)	RL267- 30 (1)
2-1-88	YEL/ RED	16	CO239- J1 (10)	X266 (1)
2-12	YEL/ RED	12	RL52 (1)	S301 (1)
2-13	YEL/ RED	14	RL52 (4)	X26 (4)
2-8-3	YEL/ RED	12	MS95 (1)	X288 (1)
2-8-4	YEL/ RED	18	RL52 (5)	MS95 (1)
2-8-6	YEL/ RED	16	MS95 (1)	X274 (1)
2-8-8	YEL/ RED	16	MS95 (1)	X266 (5)
2-8-9	YEL/ RED	18	MS95 (1)	LB264 (1)
2- FSLINK	-	14	RL267- 30 (1)	S301 (2)
3-3	TAN	18	V252 (1)	CO239- J2 (11)
4-3	TAN	18	V253 (1)	CO239- J2 (22)
13-3	BROWN	18	V248 (1)	CO239- J2 (4)

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
14-3	BROWN	18	V249 (1)	CO239- J2 (16)
21-3	WHITE	18	V254 (1)	CO239- J2 (34)
22-3	WHITE	18	V255 (1)	CO239- J2 (35)
47-12	BROWN/ WHITE	18	SN258 (1)	CO239- J2 (25)
47-8-1	BROWN/ WHITE	18	SN86 (1)	CO239- J1 (32)
47-8-2	BROWN/ WHITE	18	X274 (5)	S86 (2)
47-9	BROWN/ WHITE	18	CO239- J3 (9)	S86 (1)
48-3	WHITE/ YELLOW	18	CO239- J1 (11)	X274 (2)
48-7	WHITE/ YELLOW	16	X266 (8)	X93 (1)
48-8	WHITE/ YELLOW	18	CO239- J1 (7)	X266 (7)
48-9	WHITE/ YELLOW	18	CO239- J1 (12)	X266 (4)
50-1	RED/ WHITE	18	V246 (1)	CO239- J2 (13)
52-10	BLUE/ ORANGE	18	AH260 (1)	CO239- J2 (27)
52-12	BLUE/ ORANGE	18	CO239- J2 (26)	X147 (1)
52-2	BLUE/ ORANGE	18	AH259 (1)	CO239- J2 (2)
52-5	BLUE/ ORANGE	18	CO239- J1 (22)	X266 (3)
52-3	BROWN/ ORANGE	18	RL267- 86 (1)	CO239- J1 (13)
55-10	BROWN	18	V247 (1)	CO239- J2 (9)
55-20	TAN	18	V256 (1)	CO239- J2 (19)
55-21	TAN	18	V250 (1)	CO239- J2 (10)
55-22	TAN	18	V251 (1)	CO239- J2 (12)
55-45	ORANGE	18	CO239- J1 (23)	X26 (7)
55-47	ORANGE	18	CO239- J1 (20)	X26 (6)
60-1-2	ORANGE	18	X288 (4)	X26 (8)
SEE NOTE 1-1			SW206- 1B (1B)	IP284 (2)
TP CBL- 13	RED	18	MS97- 2 (A)	MS287 (11)
TP CBL- 13	BLACK	18	MS97- 2 (C)	MS287 (7)
TP CBL- 13	RED	18	MS97- 2 (B)	MS287 (9)
TP CBL- 14	BLACK	18	X26 (3)	MS97- 3 (C)
TP CBL- 14	BLACK	18	MS97- 3 (A)	X26 (1)
TP CBL- 14	YEL/ RED	18	MS97- 3 (B)	X26 (2)
TP CBL 12	YEL/ RED	18	MS134 (2)	X274 (3)
TP CBL 12	YEL/ RED	18	MS134 (6)	X274 (6)
TP CBL 12	YEL/ RED	18	MS134 (4)	X274 (4)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



WIRE NO	COLOR	WIRE GAUGE	LENGTH (IN.)	FROM		TO	
				REFERENCE	PIN	REFERENCE	PIN
000-22-1	BLACK	18	190	X62	6	S103	1
000-22-2	BLACK	18	20	V279	2	S103	2
000-22-3	BLACK	18	20	V280	2	S103	2
000-22-4	BLACK	18	20	V278	2	S103	2
000-22-5	BLACK	18	20	V277	2	S103	2
7-2-2	ORANGE	18	210	V278	1	X62	3
7-3-2	ORANGE	18	210	V277	1	X62	4
8-2-2	ORANGE	18	210	V280	1	X62	1
8-3-2	ORANGE	18	210	V279	1	X62	2

1001120276 A

Figure 7-43. Pump Harness

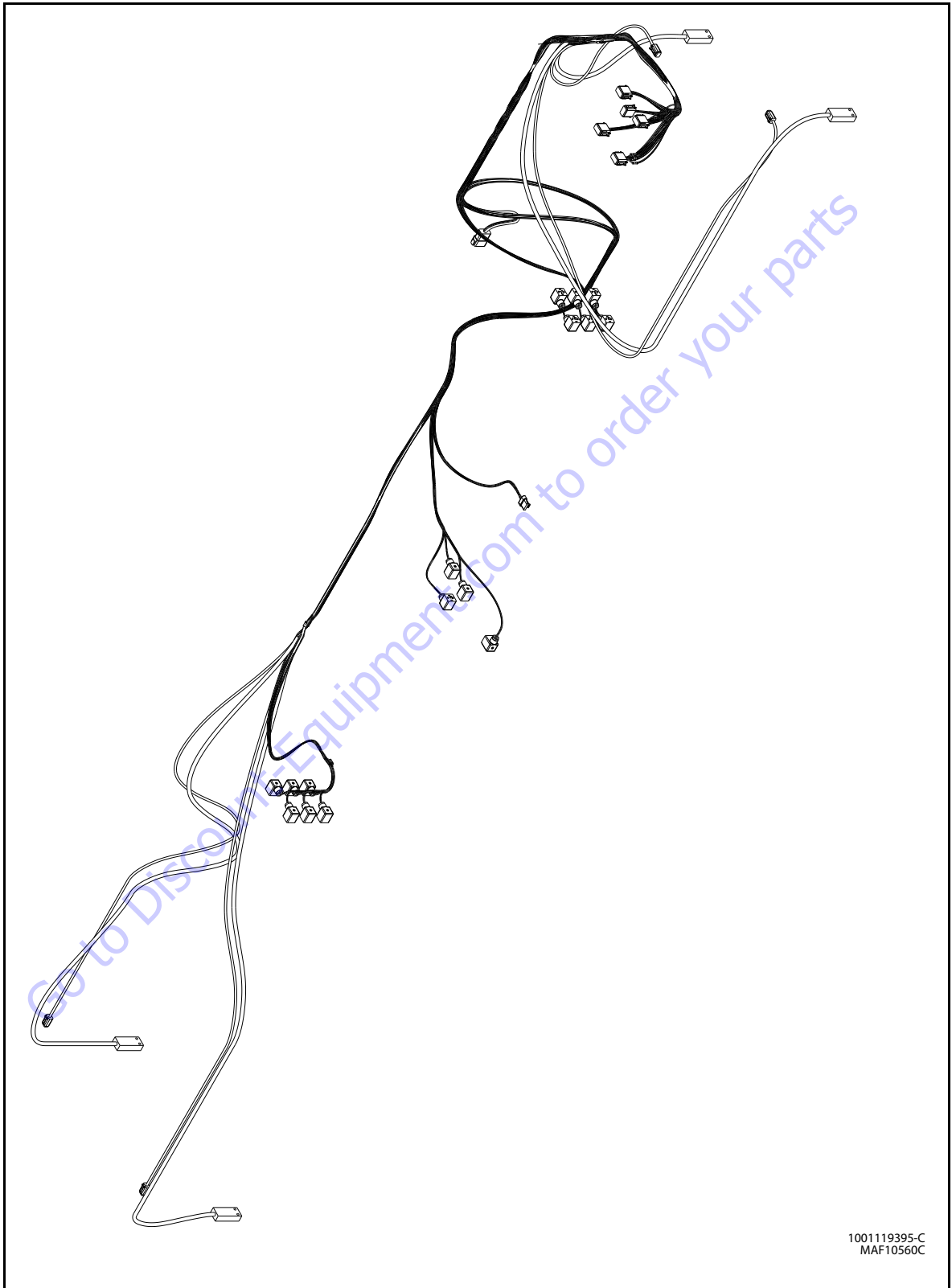


Figure 7-44. Chassis Harness - Sheet 1 of 2

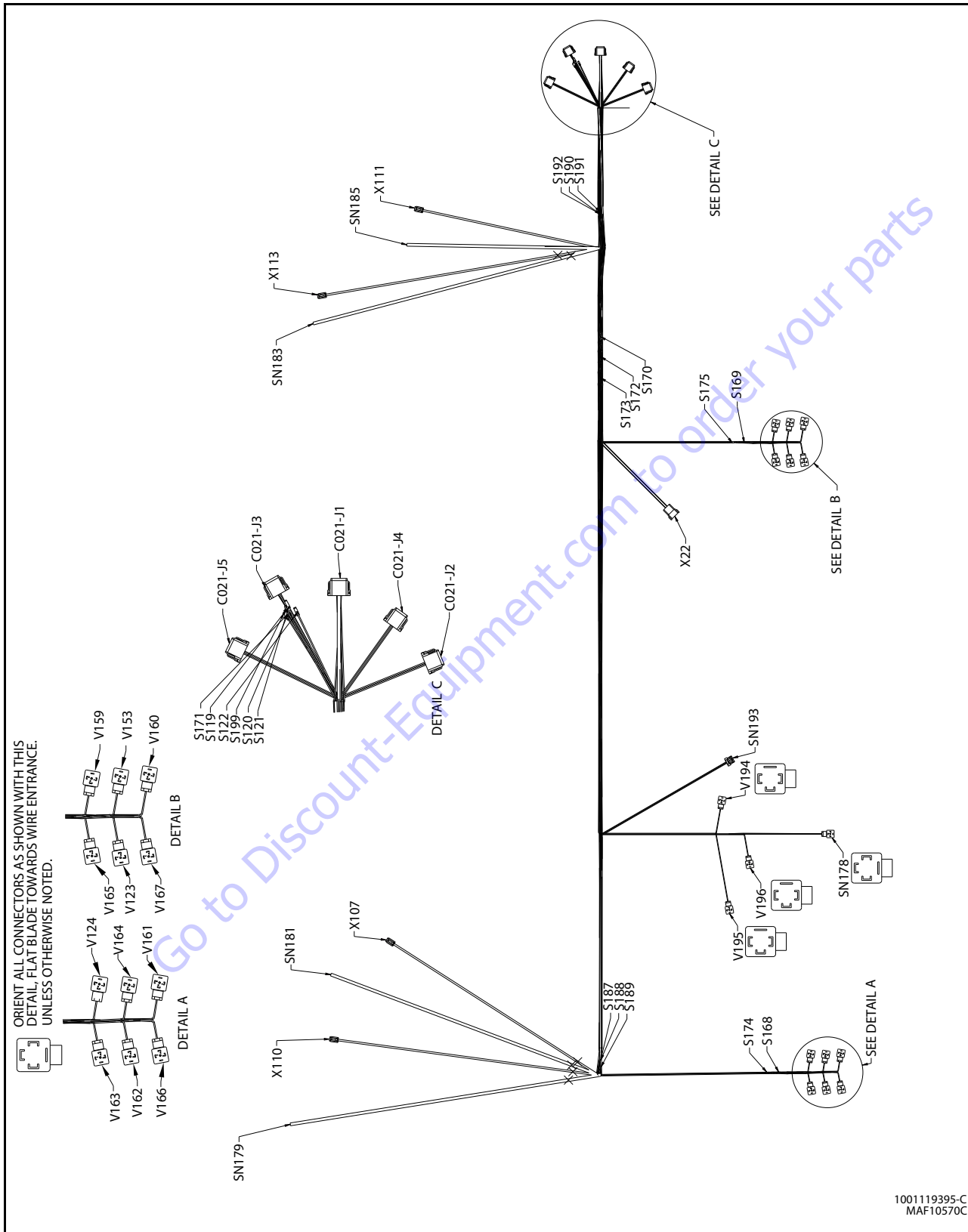


Figure 7-45. Chassis Harness - Sheet 2 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRE NO	WIRE COLOR	WIRE GAUGE	FROM	TO
000-14	BLACK	18	V194 (2)	C021-J4 (2)
000-15	BLACK	14	X22 (5)	C021-J1 (4)
000-16	BLACK	18	V196 (2)	C021-J1 (12)
000-17	BLACK	18	V195 (2)	C021-J4 (8)
000-19	BLACK	18	S121 (1)	C021-J3 (9)
000-20	BLACK	18	S120 (1)	C021-J3 (6)
000-12-01	BLACK	18	S170 (2)	C021-J5 (12)
000-12-02	BLACK	18	S168 (2)	S170 (1)
000-12-03	BLACK	18	V164 (2)	S168 (1)
000-12-04	BLACK	18	S170 (1)	S169 (2)
000-12-05	BLACK	18	V165 (2)	S168 (1)
000-12-06	BLACK	18	V163 (2)	S168 (1)
000-12-07	BLACK	18	V162 (2)	S168 (1)
000-12-08	BLACK	18	V153 (2)	S169 (1)
000-12-09	BLACK	18	V159 (2)	S169 (1)
000-12-10	BLACK	18	V123 (2)	S169 (1)
000-12-11	BLACK	18	V124 (2)	S169 (1)
000-13-01	BLACK	18	C021-J2 (3)	S175 (2)
000-13-02	BLACK	18	S175 (1)	V160 (2)
000-13-03	BLACK	18	S175 (2)	S174 (2)
000-13-04	BLACK	18	V166 (2)	S174 (1)
000-13-05	BLACK	18	V167 (2)	S174 (1)
000-13-06	BLACK	18	S175 (1)	V161 (2)
000-17-01	BLACK	18	S119 (1)	C021-J3 (3)
000-17-02	BLACK	18	S119 (2)	SN193 (8)
000-18-01	BLACK	18	S122 (1)	C021-J3 (12)
000-18-02	BLACK	18	SN193 (1)	S122 (2)
CABLE-01_BLACK	BLACK		X22 (2)	C021-J1 (7)
CABLE-02_BLACK	BLACK		SN179 (22)	S188 (1)
CABLE-04_BLACK	BLACK		SN181 (22)	S189 (1)
CABLE-05_BLACK	BLACK		SN183 (22)	S191 (1)
CABLE-06_BLACK	BLACK		SN185 (22)	S192 (1)
CABLE-07_BLACK	BLK		X107 (3)	S119 (2)
CABLE-08_BLACK	BLK		X110 (3)	S120 (2)
CABLE-09_BLACK	BLK		X111 (3)	S121 (2)
CABLE-10_BLACK	BLK		X113 (3)	S122 (2)
55-45	ORANGE	18	X22 (7)	V195 (1)
55-47	ORANGE	18	X22 (6)	V194 (1)
60-2	ORANGE	18	X22 (8)	V196 (1)
49-7	ORN/ RED	18	SN193 (C)	C021-J2 (8)
49-8	ORN/ RED	18	C021-J2 (9)	SN193 (D)
49-10	ORN/ RED	18	C021-J1 (9)	C021-J1 (10)
49-104	ORN/ RED	18	C021-J2 (4)	S189 (2)
49-105	ORN/ RED	18	C021-J2 (5)	S192 (2)
49-106	ORN/ RED	18	X22 (12)	C021-J2 (6)
49-107	ORN/ RED	18	SN178 (3)	C021-J2 (7)
CABLE-01_RED	RED		X22 (1)	C021-J1 (6)
CABLE-07_RED	RED		X107 (1)	S171 (2)
CABLE-08_RED	RED		X110 (1)	C021-J3 (4)
CABLE-09_RED	RED		X111 (1)	C021-J3 (7)
CABLE-10_RED	RED		X113 (1)	S199 (2)
50-4-1	RED/ WHT	18	S171 (1)	C021-J3 (1)
50-4-2	RED/ WHT	18	SN193 (A)	S171 (2)
50-5-1	RED/ WHT	18	S199 (1)	C021-J3 (10)
50-5-2	RED/ WHT	18	S199 (2)	SN193 (F)
CABLE-01_SHIELD	SHIELD		X22 (3)	C021-J1 (8)
CABLE-07_SHIELD	SHIELD		X107 (4)	S119 (2)
CABLE-08_SHIELD	SHIELD		X110 (4)	S120 (2)
CABLE-09_SHIELD	SHIELD		X111 (4)	S121 (2)
CABLE-10_SHIELD	SHIELD		X113 (4)	S122 (2)
CABLE-02_WHITE	WHITE		SN179 (21)	S187 (1)
CABLE-03_WHITE	WHITE		SN181 (21)	S188 (1)
CABLE-05_WHITE	WHITE		SN183 (21)	S190 (1)
CABLE-06_WHITE	WHITE		SN185 (21)	S191 (1)
CABLE-07_WHITE	WHITE		X107 (2)	C021-J3 (2)
CABLE-08_WHITE	WHITE		X110 (2)	C021-J3 (5)
CABLE-09_WHITE	WHITE		X111 (2)	C021-J3 (8)
CABLE-10_WHITE	WHITE		X113 (2)	C021-J3 (11)
2-4	YEL/ RED	18	C021-J1 (11)	X22 (11)
2-1-1	YEL/ RED	18	X22 (4)	C021-J1 (5)
2-1-2	YEL/ RED	18	C021-J4 (1)	S190 (2)
2-1-3	YEL/ RED	18	C021-J4 (7)	S187 (2)
2-1-4	YEL/ RED	18	SN178 (1)	C021-J5 (9)
39-2	YEL/ WHT		V167 (1)	S172 (2)

39-2-43-1	YEL/ WHT		S172 (1) (4)	C021-J2 (11)
40-2	YEL/ WHT		V166 (1)	S173 (2)
40-2-44-1	YEL/ WHT		S173 (1)	C021-J2 (12)
43-1	YEL/ WHT		V160 (1)	S172 (2)
44-1	YEL/ WHT		V161 (1)	S173 (2)
10-1	YELLOW		V162 (1)	C021-J5 (2)
10-2	YELLOW		V163 (1)	C021-J5 (2)
11-1	YELLOW		V153 (1)	C021-J5 (2)
11-2	YELLOW		V159 (1)	C021-J5 (2)
12-1	YELLOW		V123 (1)	C021-J5 (2)
12-2	YELLOW		V124 (1)	C021-J5 (2)
9-1	YELLOW		V164 (1)	C021-J5 (2)
9-2	YELLOW		V165 (1)	C021-J5 (2)

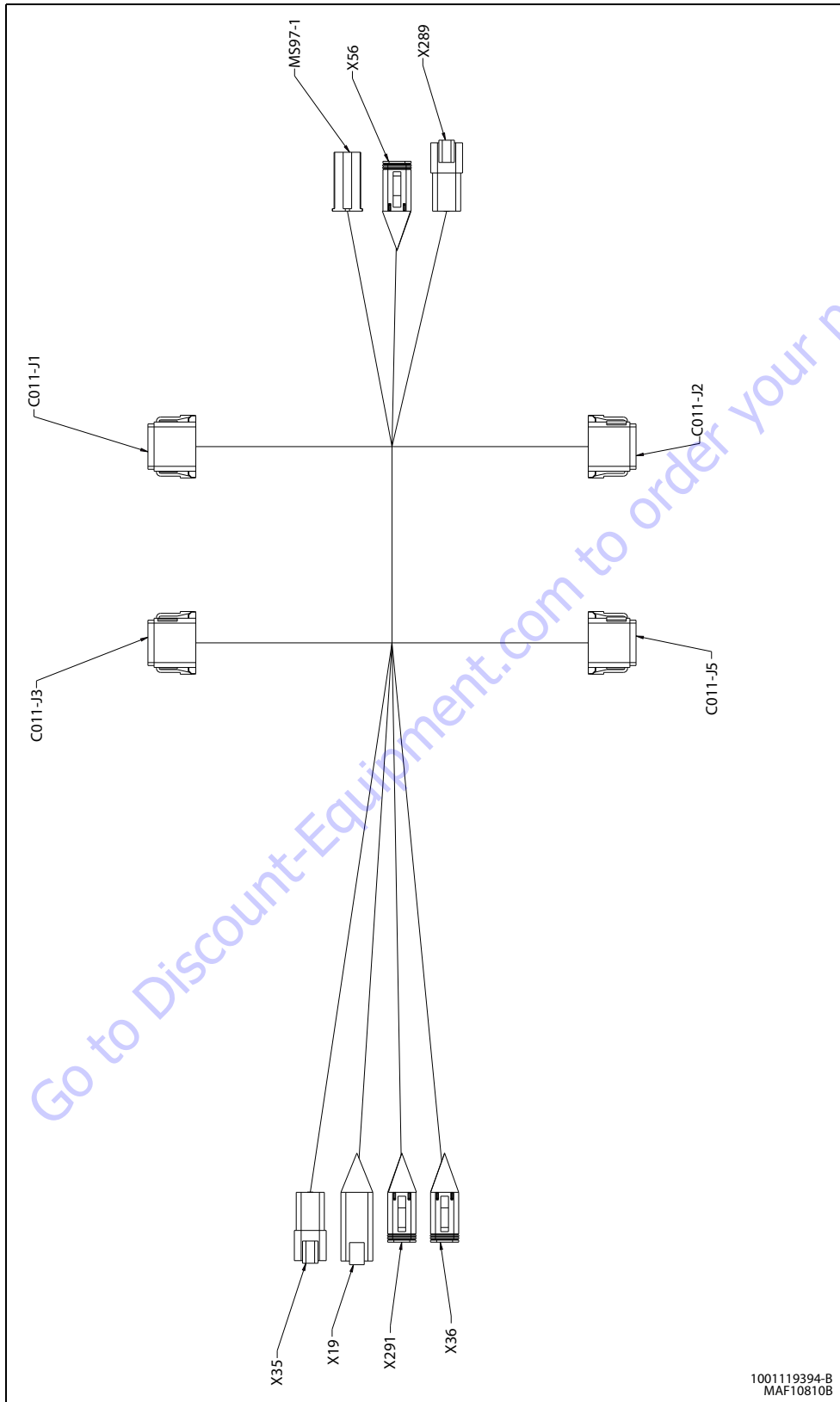


Figure 7-46. BLAM Harness

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRENO	COLOR	WIREGAUGE	FROM		TO	
			REFERENCE	PIN	REFERENCE	PIN
000-05-2	BLK	14	X289	2	C011-J1	4
000-10	BLK	18	C011-J5	12	X56	6
000-27-1	BLK	18	C011-J3	9	S94	2
000-27-2	BLK	18	X19	2	S94	1
000-27-3	BLK	18	S94	1	X19	4
000-28	BLK	18	C011-J1	12	C011-J1	2
000-29	BLK	18	C011-J3	6	X291	3
000-30	BLK	18	C011-J3	12	X291	6
000-55-1	BLK	18	C011-J2	3	S83	1
000-55-2	BLK	18	X35	3	S83	2
000-55-3	BLK	18	X35	4	S83	2
000-56-1	BLK	18	C011-J2	2	S85	1
000-56-2	BLK	18	X36	3	S85	2
000-56-3	BLK	18	X36	4	S85	2
2-1-4	YEL/RED	14	X289	1	C011-J1	5
2-80	YEL/RED	18	C011-J3	7	X19	1
2-81	YEL/RED	18	X35	1	C011-J5	9
2-82	YEL/RED	18	X36	1	C011-J2	1
2-9	YEL/RED	18	C011-J1	11	C011-J1	1
49-110	ORN/RED	18	C011-J3	8	X19	3
49-111	ORN/RED	18	X35	2	C011-J2	8
49-112	ORN/RED	18	X36	2	C011-J2	9
49-18	ORN/RED	18	C011-J3	1	C011-J3	2
49-19	ORN/RED	18	C011-J3	11	X291	2
49-9	ORN/RED	18	C011-J3	5	X291	5
50-6	RED/WHT	18	C011-J3	4	X291	1
50-7	RED/WHT	18	C011-J3	10	X291	4
60-1-1	ORN	18	X289	4	C011-J5	3
7-2-1	ORN	18	C011-J2	12	X56	3
7-3-1	ORN	18	C011-J2	11	X56	4
8-2-1	ORN	18	C011-J5	2	X56	1
8-3-1	ORN	18	C011-J5	1	X56	2
TPCBL-15	SHIELD	18	C011-J1	8	MS97-1	C
TPCBL-15	BLK	18	C011-J1	7	MS97-1	B
TPCBL-15	RED	18	C011-J1	6	MS97-1	A

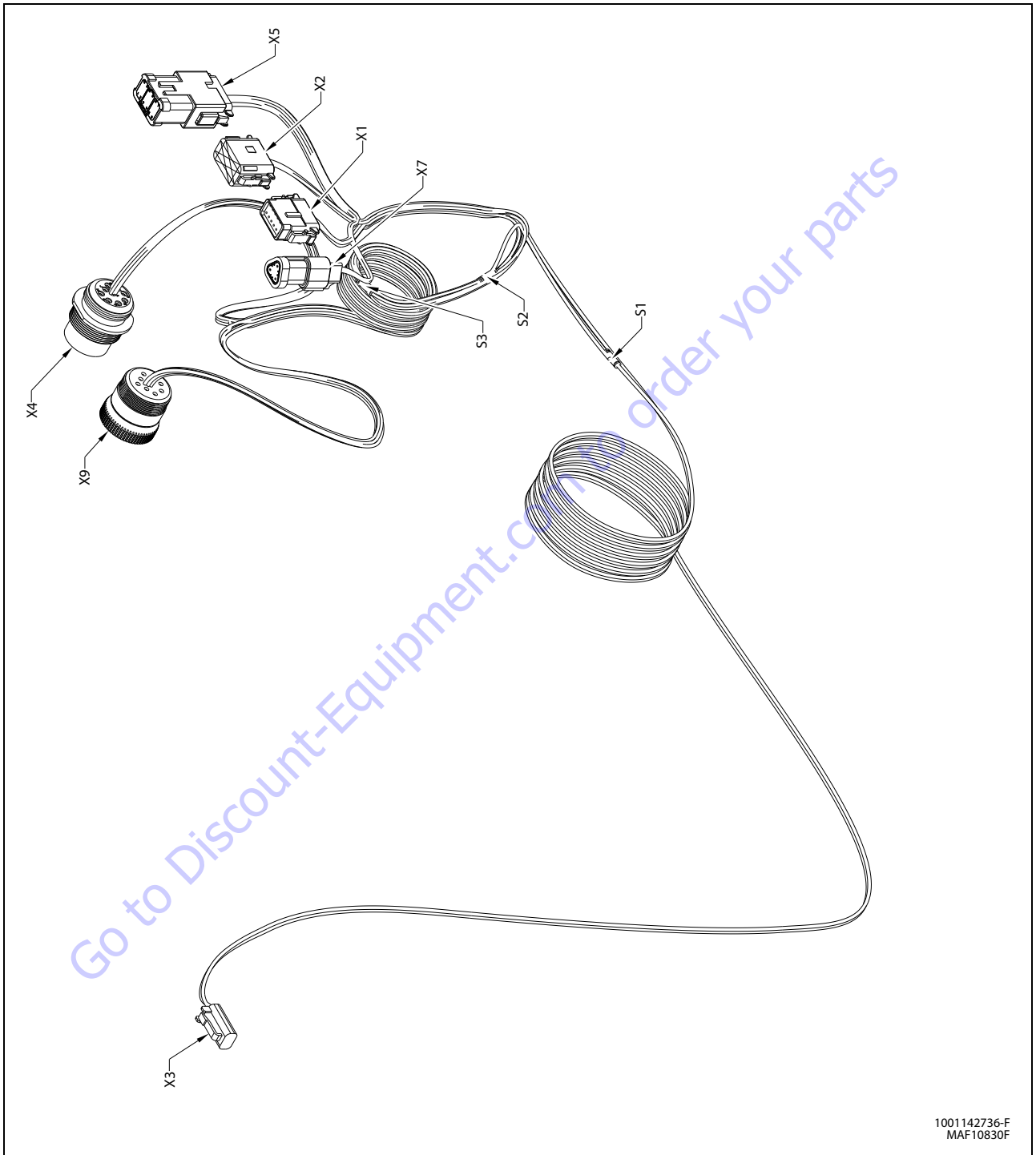


Figure 7-47. Beacon Light Harness- Sheet 1 of 2

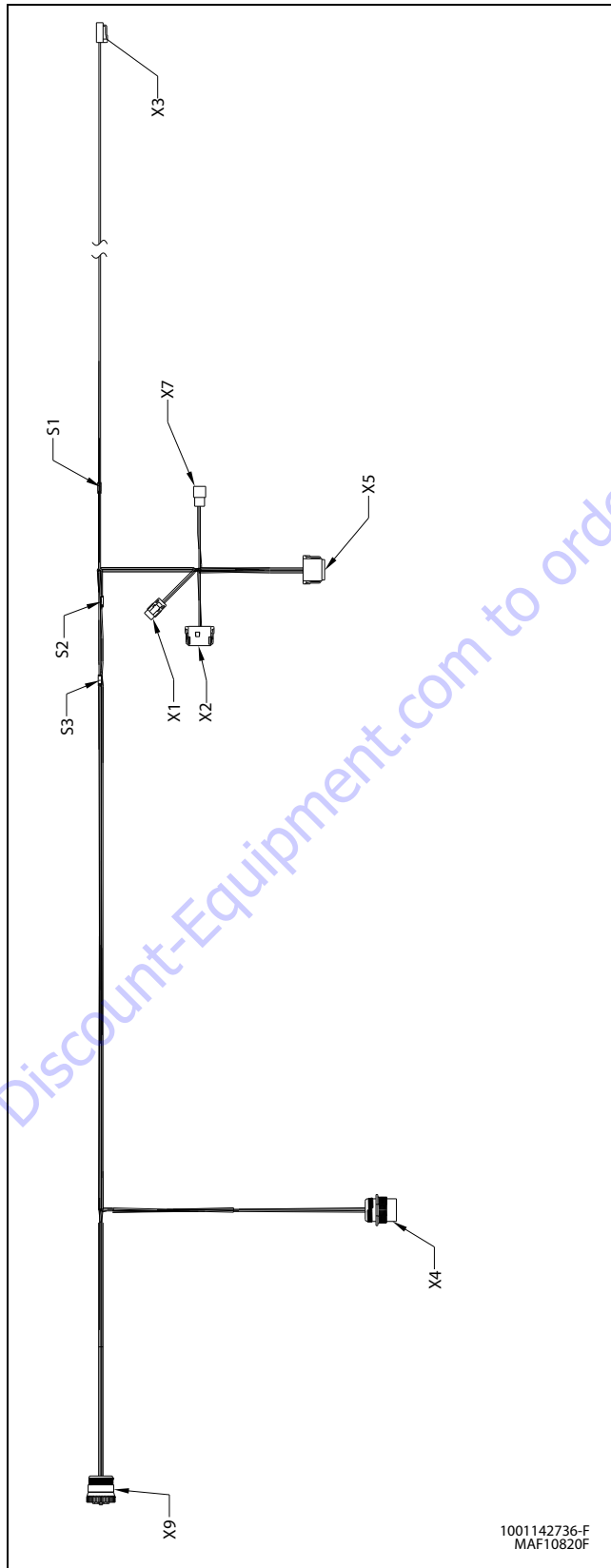


Figure 7-48. Beacon Harness- Sheet 2 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	IGNITION	18AWG	GXL	S3(1)
2	BLK	GROUND	18AWG	GXL	S1(2)
3					
4					
5					
6					
7	RED	BEACONPWR	18AWG	GXL	X3(1)
8					
9					
10					
11					
12					

X2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2					
3					
4					
5					
6					
7					
8					
9	YEL	CANHIGH	18AWG	J1939CA BLE	X5(1)
10	GRN	CANLOW	18AWG	J1939CA BLE	X5(3)
11	SHLD	CANSHIELD	18AWG	J1939CA BLE	X5(5)
12					

X7					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CANHIGH	18AWG	J1939CA BLE	X5(11)
B	GRN	CANLOW	18AWG	J1939CA BLE	X5(9)
C	SHLD	CANSHIELD	18AWG	J1939CA BLE	X5(7)

X5					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CANHIGH	18AWG	J1939CA BLE	X2(9)
2	YEL	CANHIGH	18AWG	J1939CA BLE	X4(C)
3	GRN	CANLOW	18AWG	J1939CA BLE	X2(10)
4	GRN	CANLOW	18AWG	J1939CA BLE	X4(D)
5	SHLD	CANSHIELD	18AWG	J1939CA BLE	X2(11)
6	SHLD	CANSHIELD	18AWG	J1939CA BLE	X4(E)
7	SHLD	CANSHIELD	18AWG	J1939CA BLE	X7(C)
8	SHLD	CANSHIELD	18AWG	J1939CA BLE	X9(E)
9	GRN	CANLOW	18AWG	J1939CA BLE	X7(B)
10	GRN	CANLOW	18AWG	J1939CA BLE	X9(D)
11	YEL	CANHIGH	18AWG	J1939CA BLE	X7(A)
12	YEL	CANHIGH	18AWG	J1939CA BLE	X9(C)

X3					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	BEACONPWR	18AWG	GXL	X1(7)
2	BLK	GROUND	18AWG	GXL	S1(1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

S3					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	IGNITION	18AWG	GXL	X1(1)
2	WHT	IGNITION	18AWG	GXL	X9(H)
2	WHT	IGNITION	18AWG	GXL	X4(H)

S2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	GROUND	18AWG	GXL	S1(2)
2	BLK	GROUND	18AWG	GXL	X9(A)
2	BLK	GROUND	18AWG	GXL	X4(A)

S1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	GROUND	18AWG	GXL	X3(2)
2	BLK	GROUND	18AWG	GXL	X1(2)
2	BLK	GROUND	18AWG	GXL	S2(1)

X9					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	GROUND	18AWG	GXL	S2(2)
B	RED	BATTERY	18AWG	GXL	X4(B)
C	YEL	CANHIGH	18AWG	J1939CABLE	X5(12)
D	GRN	CANLOW	18AWG	J1939CABLE	X5(10)
E	SHLD	CANSHIELD	18AWG	J1939CABLE	X5(8)
F					
G					
H	WHT	IGNITION	18AWG	GXL	S3(2)
J					

X4					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	GROUND	18AWG	GXL	S2(2)
B	RED	BATTERY	18AWG	GXL	X9(B)
C	YEL	CANHIGH	18AWG	J1939CABLE	X5(2)
D	GRN	CANLOW	18AWG	J1939CABLE	X5(4)
E	SHLD	CANSHIELD	18AWG	J1939CABLE	X5(6)
F					
G					
H	WHT	IGNITION	18AWG	GXL	S3(2)
J					

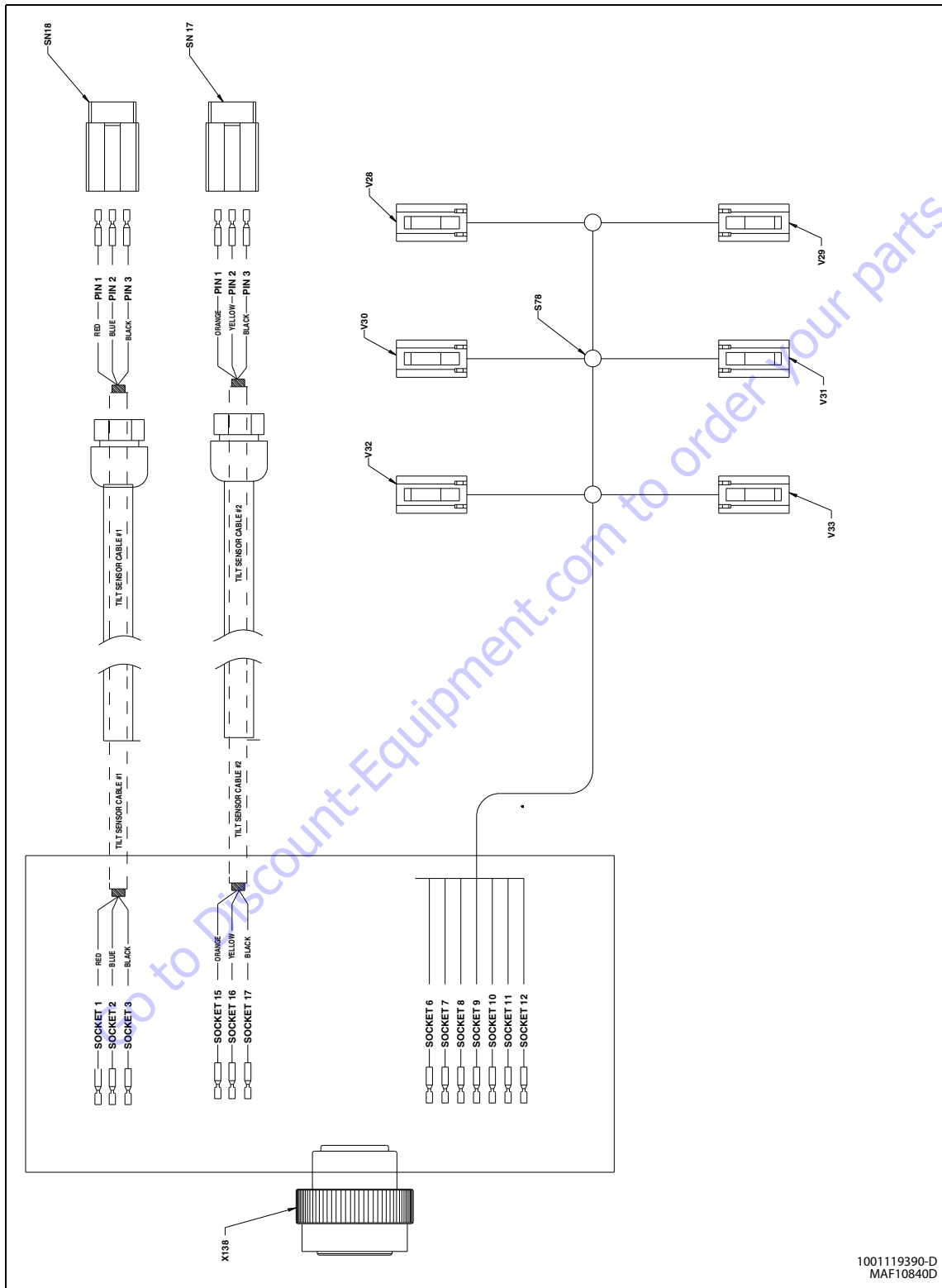


Figure 7-49. Platform Harness

1001119390-D
MAF10840D

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

WIRENO	COLOR	WIREGAUGE	FROM		TO	
			REFERENCE	PIN	REFERENCE	PIN
000-46-2	BLACK	18	X138	12	S78	1
000-46-3	BLACK	18	V28	2	S78	1
000-46-4	BLACK	18	V29	2	S78	1
000-46-5	BLACK	18	V30	2	S78	1
000-46-6	BLACK	18	V31	2	S78	2
000-46-7	BLACK	18	V32	2	S78	2
000-46-8	BLACK	18	V33	2	S78	2
23-3	GRAY	18	X138	8	V30	1
24-3	GRAY	18	X138	9	V31	1
25-3-5	PINK	18	X138	7	V28	1
26-3-5	PINK	18	X138	6	V29	1
55-5	WHITE	18	X138	10	V32	1
55-6	WHITE	18	X138	11	V33	1
SNCBL-1	BLACK	18	X138	3	SN18	3
SNCBL-1	BLUE	18	X138	2	SN18	2
SNCBL-1	RED	18	X138	1	SN18	1
SNCBL-2	ORANGE	18	SN17	1	X138	15
SNCBL-2	BLACK	18	SN17	3	X138	17
SNCBL-2	YELLOW	18	X138	16	SN17	2

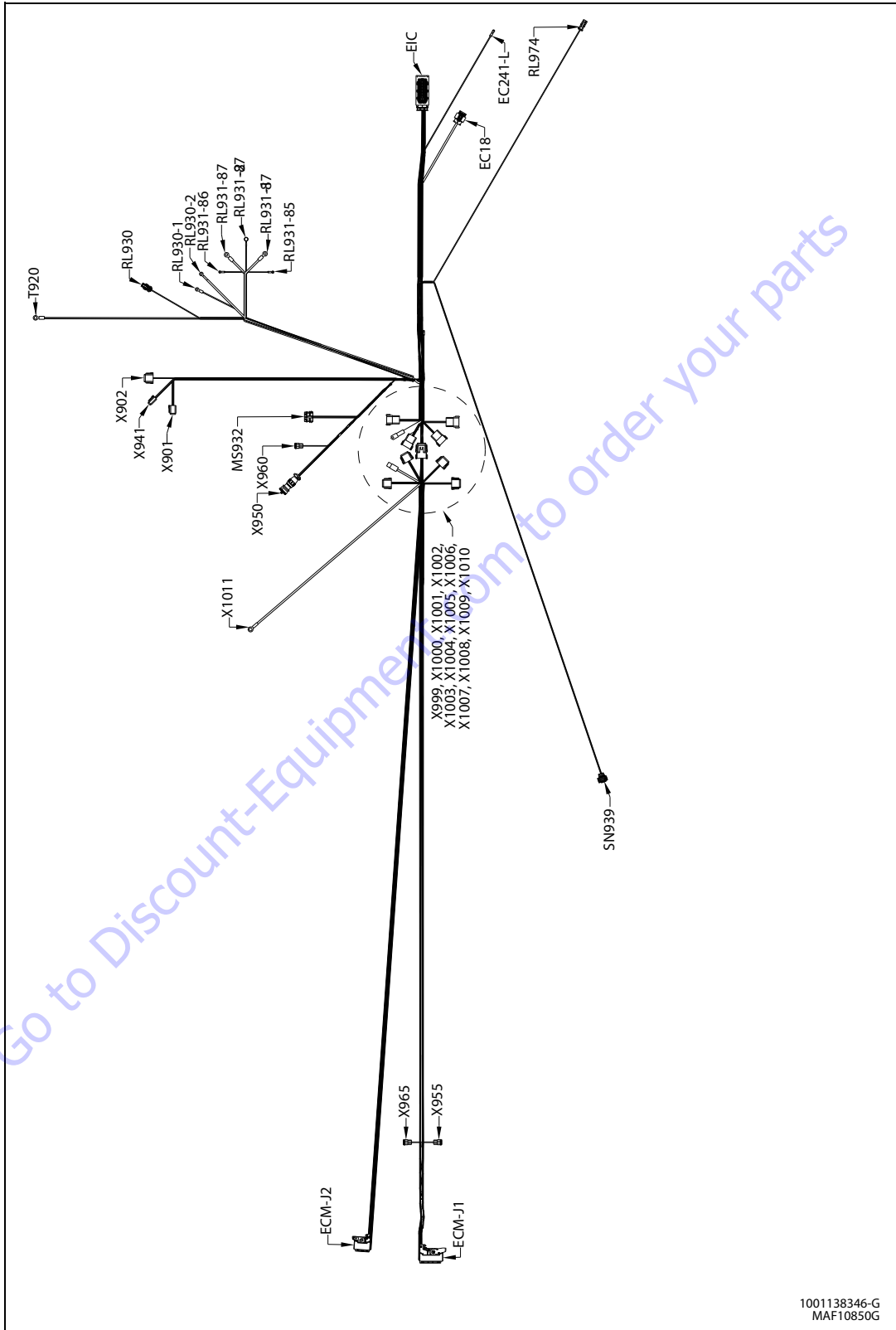


Figure 7-50. Engine Harness - Sheet 1 of 7

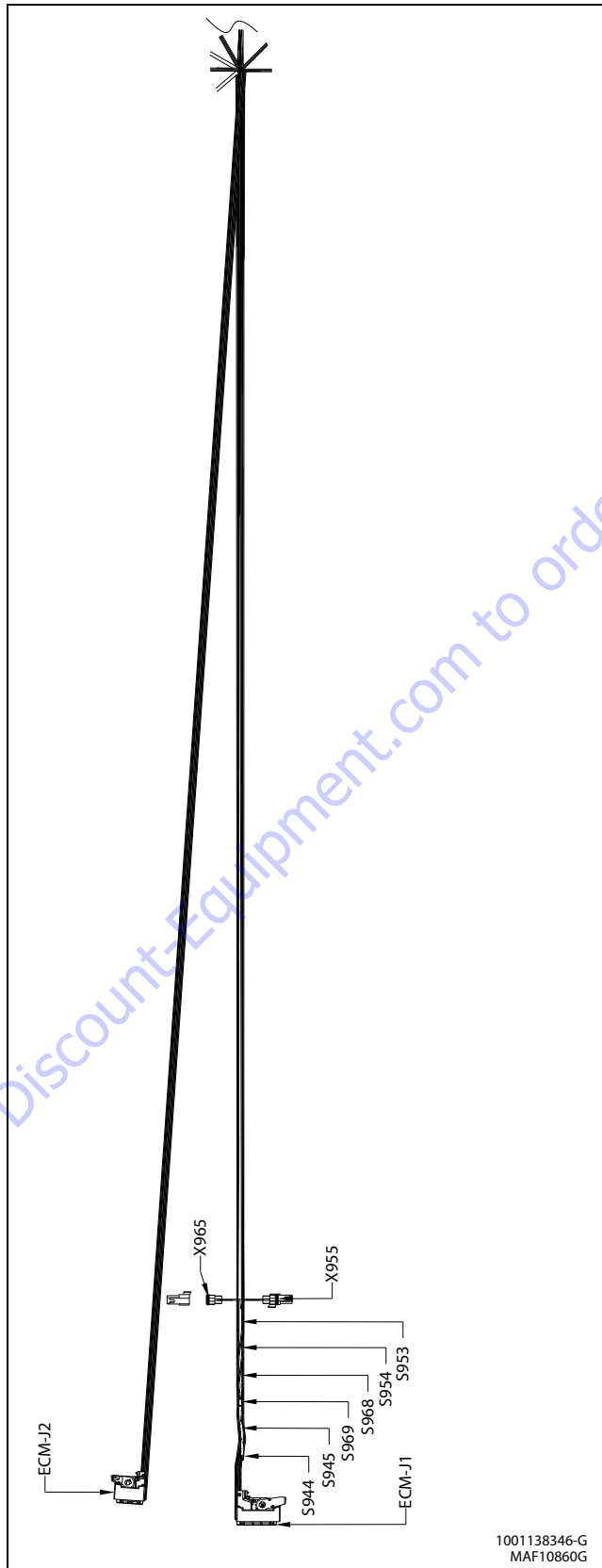


Figure 7-51. Engine Harness - Sheet 2 of 7

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

ECM-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	148-1	2.5mm ²	FLRYW	S944(2)
2	BLK	148-2	2.5mm ²	FLRYW	S945(2)
3	RED	148-3	2.5mm ²	FLRYW	S944(2)
4	BLK	148-4	2.5mm ²	FLRYW	S945(2)
5	RED	148-5	2.5mm ²	FLRYW	S944(2)
6	BLK	148-6	2.5mm ²	FLRYW	S945(2)
7					
8					
9					
10					
11					
12					
13	BLK	148-13	0.75mm ²	FLRYW	X1008(7)
14					
15	BLK	148-15-68	0.75mm ²	FLRYW	ECM-J1(68)
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26	BLK	148-26	0.75mm ²	FLRYW	X1008(8)
27					
28					
29	BLK	148-29	0.75mm ²	FLRYW	X1002(1)
30					
31					
32					
33					
34					
35					
36					
37					
38	BLK	148-38	0.75mm ²	FLRYW	X1002(2)
39					
40					
41					

42					
43					
44	BLK	148-44	0.75mm ²	FLRYW	X1002(3)
45					
46					
47					
48					
49					
50					
51					
52					
53	GRN	CAN2LO	18AWG	J1939CA BLE	S968(1)
54	YEL	CAN1HI	18AWG	J1939CA BLE	S953(1)
55					
56	BLK	148-56	0.75mm ²	FLRYW	X1002(4)
57	BLK	148-57	0.75mm ²	FLRYW	X1002(5)
58					
59					
60					
61	BLK	148-61	0.75mm ²	FLRYW	X1002(6)
62					
63					
64	BLK	148-64	0.75mm ²	FLRYW	X1002(7)
65					
66					
67					
68	BLK	148-15-68	0.75mm ²	FLRYW	ECM-J1(15)
69					
70					
71					
72	BLK	148-72	0.75mm ²	FLRYW	X1002(8)
73					
74					
75	YEL	CAN2HI	18AWG	J1939CA BLE	S969(1)
76	GRN	CAN1LO	18AWG	J1939CA BLE	S954(1)
77					
78					
79					
80					
81					
82	BLK	148-82	0.75mm ²	FLRYW	X1002(9)
83					

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

84					
85	BLK	148-85	0.75mm ²	FLRYW	X1002(10)
86					
87	BLK	148-87	0.75mm ²	FLRYW	X1002(11)
88	BLK	148-88	0.75mm ²	FLRYW	X1002(12)
89					
90					
91					
92					
93					
94					
NC	SHLD	CAN1SHLD	18AWG	J1939CA BLE	X1008(6)

29	BLK	248-29	0.75mm ²	FLRYW	X1001(6)
30					
31					
32	BLK	248-32	1.5mm ²	FLRYW	X999(5)
33	BLK	248-33	1.5mm ²	FLRYW	X999(1)
34					
35	BLK	248-35	0.75mm ²	FLRYW	X1001(7)
36					
37	BLK	248-37	0.75mm ²	FLRYW	X1000(1)
38	SHLD	248-38	0.75mm ²	SHLD	X1000(6)
39	BLK	248-39	0.75mm ²	FLRYW	X1000(4)
40	BLK	248-40	0.75mm ²	FLRYW	X1001(8)
41					
42					
43	BLK	248-43	0.75mm ²	FLRYW	X1001(9)
44	BLK	248-44	0.75mm ²	FLRYW	X1001(10)
45					
46	BLK	248-46	1.5mm ²	FLRYW	X999(7)
47					
48	BLK	248-48	1.5mm ²	FLRYW	X999(3)
49					
50					
51					
52	BLK	248-52	0.75mm ²	FLRYW	X1000(2)
53	SHLD	248-53	0.75mm ²	SHLD	X1000(3)
54	BLK	248-54	0.75mm ²	FLRYW	X1000(5)
55					
56					
57					
58					
59					
60					

ECM-J2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	BLK	248-2	1.5mm ²	FLRYW	X999(6)
3	BLK	248-3	1.5mm ²	FLRYW	X999(8)
4	BLK	248-4	1.5mm ²	FLRYW	X999(10)
5	BLK	248-5	1.5mm ²	FLRYW	X999(9)
6					
7	BLK	148-7	0.75mm ²	FLRYW	X1000(7)
8					
9					
10					
11					
12					
13					
14					
15					
16	BLK	248-16	1.5mm ²	FLRYW	X999(2)
17					
18	BLK	248-18	1.5mm ²	FLRYW	X999(4)
19	BLK	248-19	1.5mm ²	FLRYW	X999(11)
20	BLK	248-20	1.5mm ²	FLRYW	X999(12)
21					
22					
23	BLK	248-23	0.75mm ²	FLRYW	X1000(8)
24	BLK	248-24	0.75mm ²	FLRYW	X1001(1)
25	BLK	248-25	0.75mm ²	FLRYW	X1001(2)
26	BLK	248-26	0.75mm ²	FLRYW	X1001(3)
27	BLK	248-27	0.75mm ²	FLRYW	X1001(4)
28	BLK	248-28	0.75mm ²	FLRYW	X1001(5)

S954					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	GRN	CAN1LO	18AWG	J1939CA BLE	ECM-J1(76)
2	GRN	CAN1LO	18AWG	J1939CA BLE	X1008(5)
2	GRN	CAN1LO	18AWG	J1939CA BLE	X955(B)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X955					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
A	YEL	CAN1HI	18AWG	J1939CA BLE	S953(2)
B	GRN	CAN1LO	18AWG	J1939CA BLE	S954(2)
C					

S969					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	CAN2HI	18AWG	J1939CA BLE	ECM-J1(75)
2	YEL	CAN2HI	18AWG	J1939CA BLE	X1008(1)
2	YEL	CAN2HI	18AWG	J1939CA BLE	X965(A)

X965					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
A	YEL	CAN2HI	18AWG	J1939CA BLE	S969(2)
B	GRN	CAN2LO	18AWG	J1939CA BLE	S968(2)
C					

S945					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	BLK	000-148-246	8AWG	GXL	X1011(1)
2	BLK	148-2	2.5mm ²	FLRYW	ECM-J1(2)
2	BLK	148-4	2.5mm ²	FLRYW	ECM-J1(4)
2	BLK	148-6	2.5mm ²	FLRYW	ECM-J1(6)

S968					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	GRN	CAN2LO	18AWG	J1939CA BLE	ECM-J1(53)
2	GRN	CAN2LO	18AWG	J1939CA BLE	X1008(2)
2	GRN	CAN2LO	18AWG	J1939CA BLE	X965(B)

S953					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	CAN1HI	18AWG	J1939CA BLE	ECM-J1(54)
2	YEL	CAN1HI	18AWG	J1939CA BLE	X1008(4)
2	YEL	CAN1HI	18AWG	J1939CA BLE	X955(A)

S944					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	1-148-135	8AWG	GXL	X1007(1)
2	RED	148-1	2.5mm ²	FLRYW	ECM-J1(1)
2	RED	148-3	2.5mm ²	FLRYW	ECM-J1(3)
2	RED	148-5	2.5mm ²	FLRYW	ECM-J1(5)

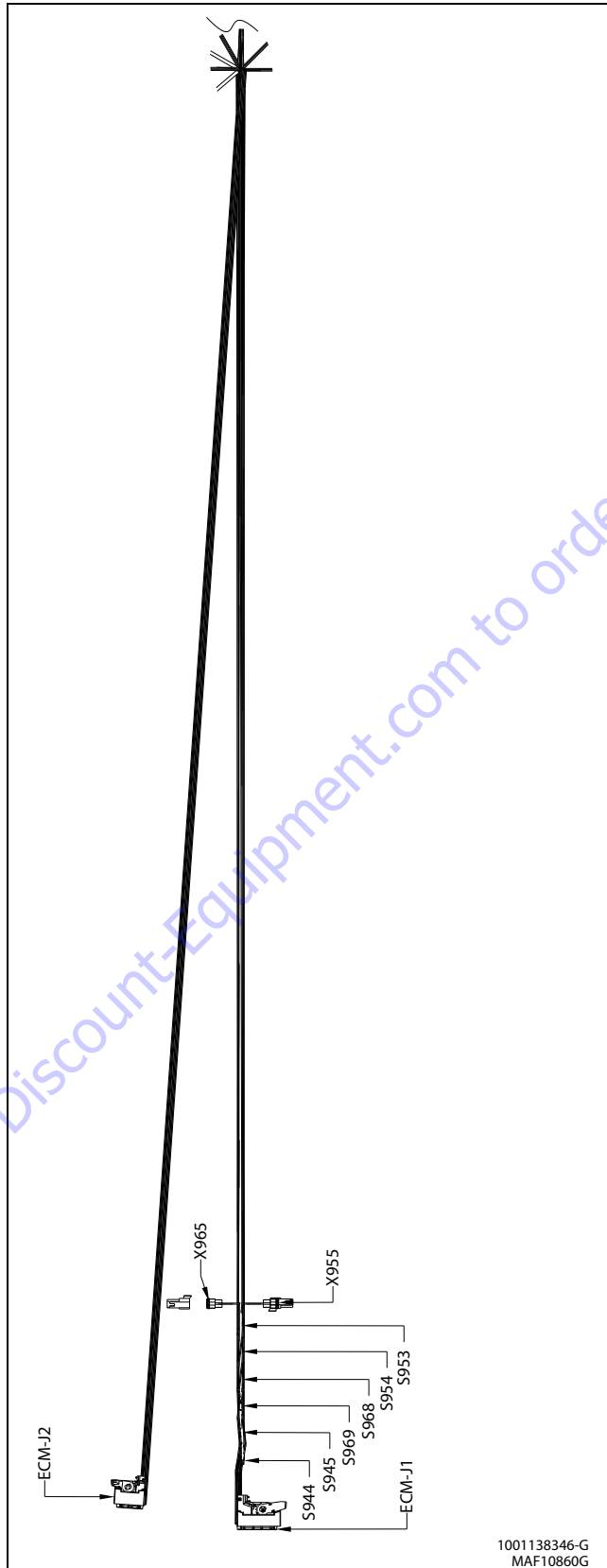


Figure 7-52. Engine Harness - Sheet 3 of 7

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1008					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN2HI	18AWG	J1939CABLE	S969(2)
2	GRN	CAN2LO	18AWG	J1939CABLE	S968(2)
3					
4	YEL	CAN1HI	18AWG	J1939CABLE	S953(2)
5	GRN	CAN1LO	18AWG	J1939CABLE	S954(2)
6	SHLD	CAN1SHLD	18AWG	J1939CABLE	ECM-J1(NC)
7	BLK	148-13	0.75mm ²	FLRYW	ECM-J1(13)
8	BLK	148-26	0.75mm ²	FLRYW	ECM-J1(26)

X1003					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-33	1.5mm ²	FLRYW	EIC(62)
2	BLK	248-16	1.5mm ²	FLRYW	EIC(35)
3	BLK	248-48	1.5mm ²	FLRYW	EIC(42)
4	BLK	248-18	1.5mm ²	FLRYW	EIC(37)
5	BLK	248-32	1.5mm ²	FLRYW	EIC(38)
6	BLK	248-2	1.5mm ²	FLRYW	EIC(61)
7	BLK	248-46	1.5mm ²	FLRYW	EIC(40)
8	BLK	248-3	1.5mm ²	FLRYW	EIC(41)
9	BLK	248-5	1.5mm ²	FLRYW	EIC(20)
10	BLK	248-4	1.5mm ²	FLRYW	EIC(19)
11	BLK	248-19	1.5mm ²	FLRYW	EIC(47)
12	BLK	248-20	1.5mm ²	FLRYW	EIC(48)

X1007					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135	8AWG	GXL	S944(1)

X1001					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-24	0.75mm ²	FLRYW	ECM-J2(24)
2	BLK	248-25	0.75mm ²	FLRYW	ECM-J2(25)
3	BLK	248-26	0.75mm ²	FLRYW	ECM-J2(26)
4	BLK	248-27	0.75mm ²	FLRYW	ECM-J2(27)
5	BLK	248-28	0.75mm ²	FLRYW	ECM-J2(28)
6	BLK	248-29	0.75mm ²	FLRYW	ECM-J2(29)
7	BLK	248-35	0.75mm ²	FLRYW	ECM-J2(35)
8	BLK	248-40	0.75mm ²	FLRYW	ECM-J2(40)
9	BLK	248-43	0.75mm ²	FLRYW	ECM-J2(43)
10	BLK	248-44	0.75mm ²	FLRYW	ECM-J2(44)
11					
12					

X1002					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-29	0.75mm ²	FLRYW	ECM-J1(29)
2	BLK	148-38	0.75mm ²	FLRYW	ECM-J1(38)
3	BLK	148-44	0.75mm ²	FLRYW	ECM-J1(44)
4	BLK	148-56	0.75mm ²	FLRYW	ECM-J1(56)
5	BLK	148-57	0.75mm ²	FLRYW	ECM-J1(57)
6	BLK	148-61	0.75mm ²	FLRYW	ECM-J1(61)
7	BLK	148-64	0.75mm ²	FLRYW	ECM-J1(64)
8	BLK	148-72	0.75mm ²	FLRYW	ECM-J1(72)
9	BLK	148-82	0.75mm ²	FLRYW	ECM-J1(82)
10	BLK	148-85	0.75mm ²	FLRYW	ECM-J1(85)
11	BLK	148-87	0.75mm ²	FLRYW	ECM-J1(87)
12	BLK	148-88	0.75mm ²	FLRYW	ECM-J1(88)

X1009					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135	8AWG	GXL	RL930-2(1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1006					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-29	0.75mm ²	FLRYW	SN939(1)
2	BLK	148-38	0.75mm ²	FLRYW	EIC(52)
3	BLK	148-44	0.75mm ²	FLRYW	EIC(50)
4	BLK	148-56	0.75mm ²	FLRYW	EIC(34)
5	BLK	148-57	0.75mm ²	FLRYW	X941(2)
6	BLK	148-61	0.75mm ²	FLRYW	EIC(17)
7	BLK	148-64	0.75mm ²	FLRYW	X941(1)
8	BLK	148-72	0.75mm ²	FLRYW	EIC(49)
9	BLK	148-82	0.75mm ²	FLRYW	EIC(51)
10	BLK	148-85	0.75mm ²	FLRYW	EIC(46)
11	BLK	148-87	0.75mm ²	FLRYW	SN939(2)
12	BLK	148-88	0.75mm ²	FLRYW	S946(2)

X1005					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-24	0.75mm ²	FLRYW	EIC(22)
2	BLK	248-25	0.75mm ²	FLRYW	EIC(31)
3	BLK	248-26	0.75mm ²	FLRYW	EIC(25)
4	BLK	248-27	0.75mm ²	FLRYW	EIC(29)
5	BLK	248-28	0.75mm ²	FLRYW	EIC(24)
6	BLK	248-29	0.75mm ²	FLRYW	EIC(27)
7	BLK	248-35	0.75mm ²	FLRYW	RL931-85(1)
8	BLK	248-40	0.75mm ²	FLRYW	EIC(28)
9	BLK	248-43	0.75mm ²	FLRYW	EIC(23)
10	BLK	248-44	0.75mm ²	FLRYW	EIC(26)
11					
12					

X999					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-33	1.5mm ²	FLRYW	ECM-J2(33)
2	BLK	248-16	1.5mm ²	FLRYW	ECM-J2(16)
3	BLK	248-48	1.5mm ²	FLRYW	ECM-J2(48)
4	BLK	248-18	1.5mm ²	FLRYW	ECM-J2(18)
5	BLK	248-32	1.5mm ²	FLRYW	ECM-J2(32)
6	BLK	248-2	1.5mm ²	FLRYW	ECM-J2(2)
7	BLK	248-46	1.5mm ²	FLRYW	ECM-J2(46)
8	BLK	248-3	1.5mm ²	FLRYW	ECM-J2(3)
9	BLK	248-5	1.5mm ²	FLRYW	ECM-J2(5)
10	BLK	248-4	1.5mm ²	FLRYW	ECM-J2(4)
11	BLK	248-19	1.5mm ²	FLRYW	ECM-J2(19)
12	BLK	248-20	1.5mm ²	FLRYW	ECM-J2(20)

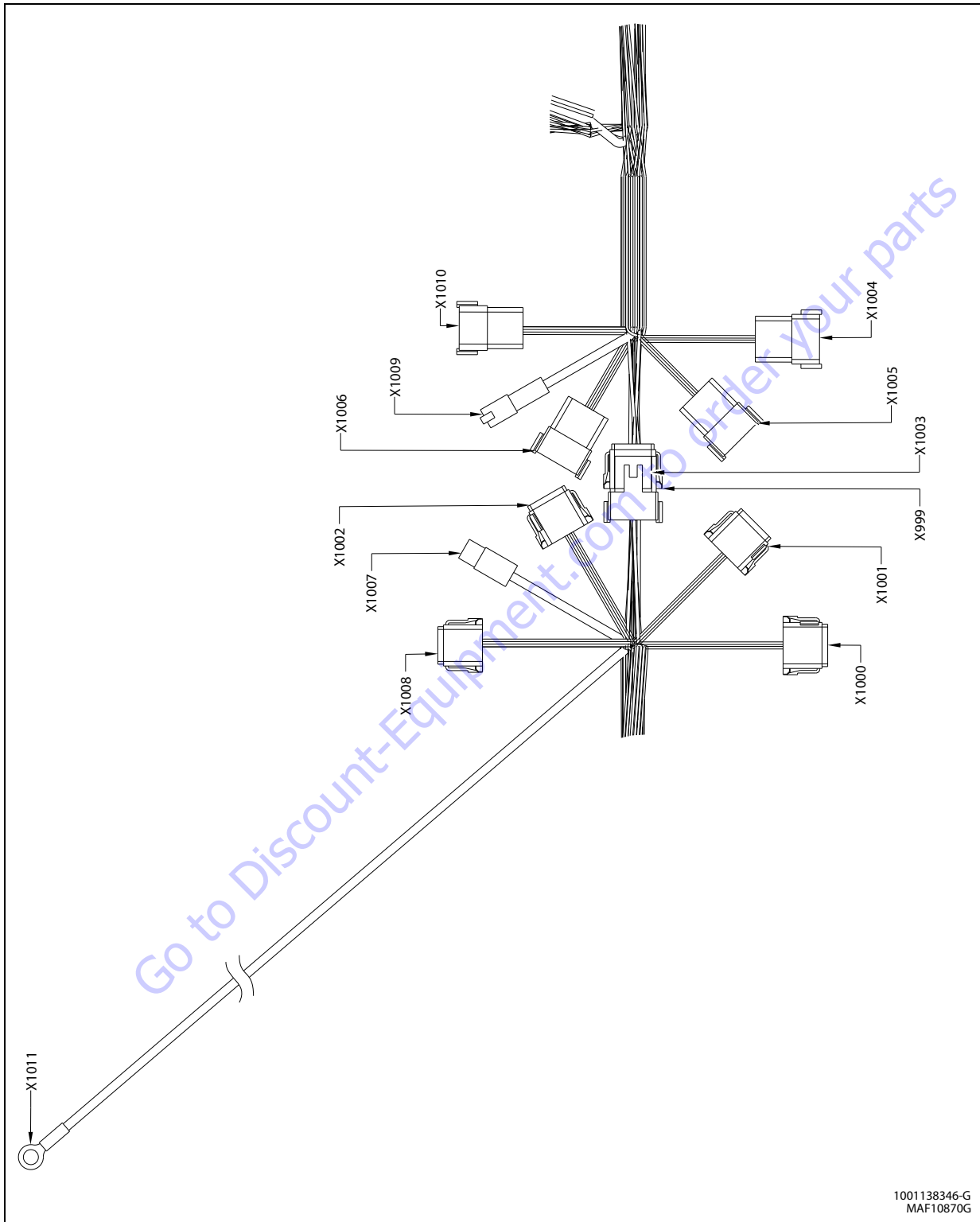


Figure 7-53. Engine Harness - Sheet 4 of 7

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1009					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135	8AWG	GXL	RL930-2(1)

X1006					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-29	0.75mm ²	FLRYW	SN939(1)
2	BLK	148-38	0.75mm ²	FLRYW	EIC(52)
3	BLK	148-44	0.75mm ²	FLRYW	EIC(50)
4	BLK	148-56	0.75mm ²	FLRYW	EIC(34)
5	BLK	148-57	0.75mm ²	FLRYW	X941(2)
6	BLK	148-61	0.75mm ²	FLRYW	EIC(17)
7	BLK	148-64	0.75mm ²	FLRYW	X941(1)
8	BLK	148-72	0.75mm ²	FLRYW	EIC(49)
9	BLK	148-82	0.75mm ²	FLRYW	EIC(51)
10	BLK	148-85	0.75mm ²	FLRYW	EIC(46)
11	BLK	148-87	0.75mm ²	FLRYW	SN939(2)
12	BLK	148-88	0.75mm ²	FLRYW	S946(2)

X1005					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-24	0.75mm ²	FLRYW	EIC(22)
2	BLK	248-25	0.75mm ²	FLRYW	EIC(31)
3	BLK	248-26	0.75mm ²	FLRYW	EIC(25)
4	BLK	248-27	0.75mm ²	FLRYW	EIC(29)
5	BLK	248-28	0.75mm ²	FLRYW	EIC(24)
6	BLK	248-29	0.75mm ²	FLRYW	EIC(27)
7	BLK	248-35	0.75mm ²	FLRYW	RL931-85(1)
8	BLK	248-40	0.75mm ²	FLRYW	EIC(28)
9	BLK	248-43	0.75mm ²	FLRYW	EIC(23)
10	BLK	248-44	0.75mm ²	FLRYW	EIC(26)
11					
12					

X1011					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-148-246	8AWG	GXL	S945(1)

X999					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-33	1.5mm ²	FLRYW	ECM-J2(33)
2	BLK	248-16	1.5mm ²	FLRYW	ECM-J2(16)
3	BLK	248-48	1.5mm ²	FLRYW	ECM-J2(48)
4	BLK	248-18	1.5mm ²	FLRYW	ECM-J2(18)
5	BLK	248-32	1.5mm ²	FLRYW	ECM-J2(32)
6	BLK	248-2	1.5mm ²	FLRYW	ECM-J2(2)
7	BLK	248-46	1.5mm ²	FLRYW	ECM-J2(46)
8	BLK	248-3	1.5mm ²	FLRYW	ECM-J2(3)
9	BLK	248-5	1.5mm ²	FLRYW	ECM-J2(5)
10	BLK	248-4	1.5mm ²	FLRYW	ECM-J2(4)
11	BLK	248-19	1.5mm ²	FLRYW	ECM-J2(19)
12	BLK	248-20	1.5mm ²	FLRYW	ECM-J2(20)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X1000					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-37	0.75mm ²	FLRYW	ECM-J2(37)
2	BLK	248-52	0.75mm ²	FLRYW	ECM-J2(52)
3	SHLD	248-53	0.75mm ²	SHLD	ECM-J2(53)
4	BLK	248-39	0.75mm ²	FLRYW	ECM-J2(39)
5	BLK	248-54	0.75mm ²	FLRYW	ECM-J2(54)
6	SHLD	248-38	0.75mm ²	SHLD	ECM-J2(38)
7	BLK	148-7	0.75mm ²	FLRYW	ECM-J2(7)
8	BLK	248-23	0.75mm ²	FLRYW	ECM-J2(23)
9					
10					
11					
12					

X1004					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-37	0.75mm ²	FLRYW	EIC(14)
2	BLK	248-52	0.75mm ²	FLRYW	EIC(13)
3	SHLD	248-53	0.75mm ²	SHLD	EIC(9)
4	BLK	248-39	0.75mm ²	FLRYW	EIC(15)
5	BLK	248-54	0.75mm ²	FLRYW	EIC(21)
6	SHLD	248-38	0.75mm ²	SHLD	EIC(1)
7	BLK	248-7	0.75mm ²	FLRYW	EIC(32)
8	BLK	248-23	0.75mm ²	FLRYW	MS932(E)
9					
10					
11					
12					

X1010					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN2HI	18AWG	J1939CABLE	S964(1)
2	GRN	CAN2LO	18AWG	J1939CABLE	S963(1)
3					
4	YEL	CAN1HI	18AWG	J1939CABLE	S951(1)
5	GRN	CAN1LO	18AWG	J1939CABLE	S952(1)
6	SHLD	CAN1SHLD	18AWG	J1939CABLE	X901(6)
7	BLK	148-13	0.75mm ²	FLRYW	SN939(3)
8	BLK	148-26	0.75mm ²	FLRYW	RL930(2)

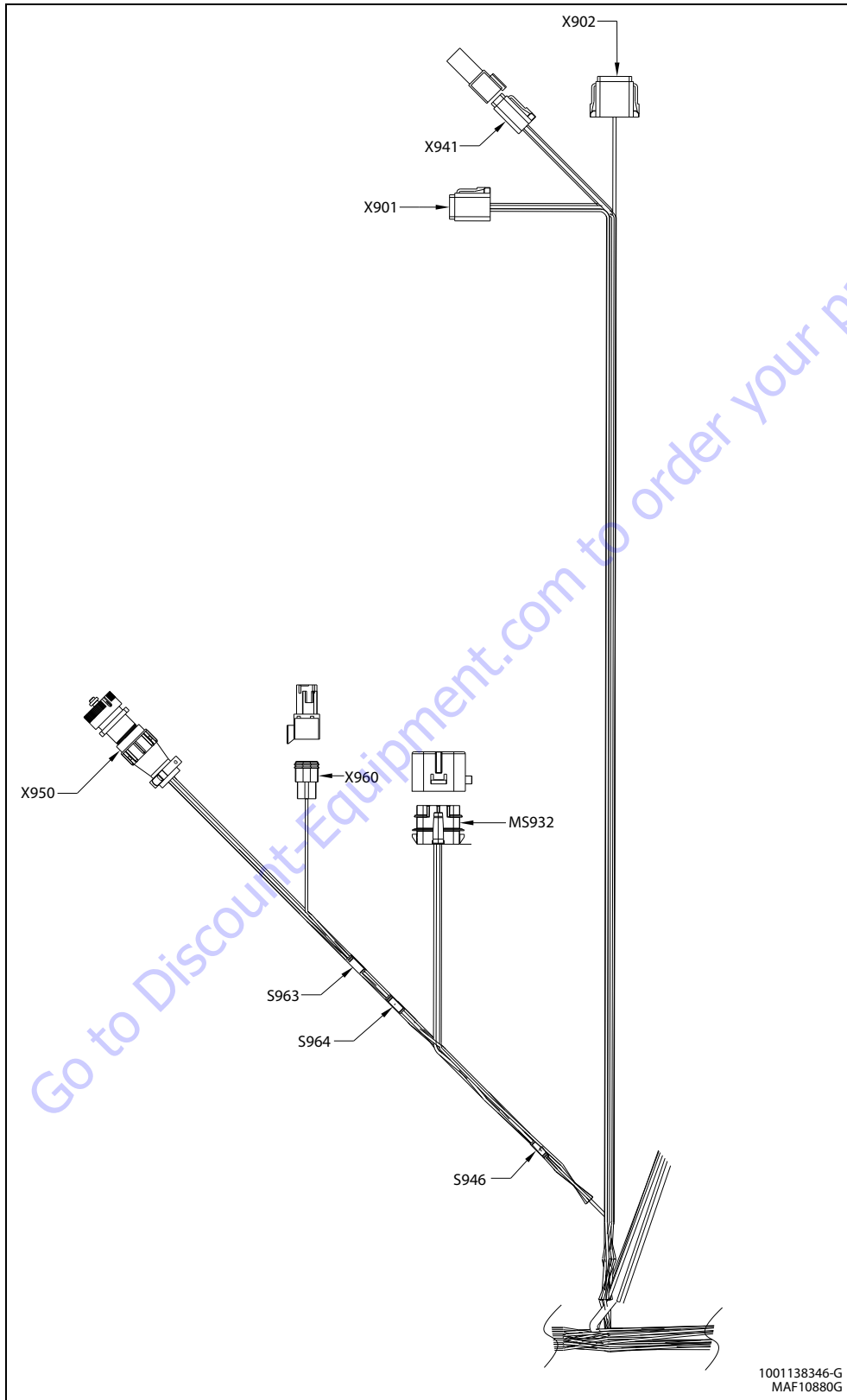


Figure 7-54. Engine Harness - Sheet 5 of 7

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

X901					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	T0
1					
2	WHT	48-3	18AWG	GXL	RL974(1)
3	YEL	CAN1HI	18AWG	J1939CABLE	S951(2)
4	GRN	CAN1LO	18AWG	J1939CABLE	S952(2)
5	RED	47-8	16AWG	GXL	EC241-L(1)
6	SHLD	CAN1SHLD	18AWG	J1939CABLE	X1010(6)

X902					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	T0
1	YEL	2-1-99	18AWG	GXL	MS932(G)
2					
3					
4					
5					
6					
7					
8					

X941					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	T0
1	BLK	148-64	0.75mm ²	FLRYW	X1006(7)
2	BLK	148-57	0.75mm ²	FLRYW	X1006(5)
3	WHT	48-96	14AWG	GXL	RL930-1(1)
4	BLK	000-48-1	14AWG	GXL	T920(1)

X950					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	T0
A	YEL	2-48-2	18AWG	GXL	S946(1)
B	BLK	000-48-2	18AWG	GXL	T920(1)
C					
D					
E					
F	GRN	CAN1LO	18AWG	J1939CABLE	S952(2)
G	GRN	CAN2LO	18AWG	J1939CABLE	S963(2)
H	YEL	CAN2HI	18AWG	J1939CABLE	S964(2)
J					
K					
L					
M	YEL	CAN1HI	18AWG	J1939CABLE	S951(2)

S964					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	T0
1	YEL	CAN2HI	18AWG	J1939CABLE	X1010(1)
2	YEL	CAN2HI	18AWG	J1939CABLE	X950(H)
2	YEL	CAN2HI	18AWG	J1939CABLE	X960(A)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

S946					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	2-48-1	16AWG	GXL	MS932(H)
1	YEL	2-48-2	18AWG	GXL	X950(A)
2	YEL	2-48-3	18AWG	GXL	RL931-86(1)
2	YEL	2-48-4	18AWG	GXL	RL930(1)
2	BLK	148-88	0.75mm ²	FLRYW	X1006(12)

MS932					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
A					
B					
C					
D					
E	BLK	248-23	0.75mm ²	FLRYW	X1004(8)
F	ORG	248-23-1	18AWG	GXL	RL931-87(1)
G	YEL	2-1-99	18AWG	GXL	X902(1)
H	YEL	2-48-1	16AWG	GXL	S946(1)

X960					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
A	YEL	CAN2HI	18AWG	J1939CA BLE	S964(2)
B	GRN	CAN2LO	18AWG	J1939CA BLE	S963(2)
C					

S963					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	GRN	CAN2LO	18AWG	J1939CA BLE	X1010(2)
2	GRN	CAN2LO	18AWG	J1939CA BLE	X950(G)
2	GRN	CAN2LO	18AWG	J1939CA BLE	X960(B)

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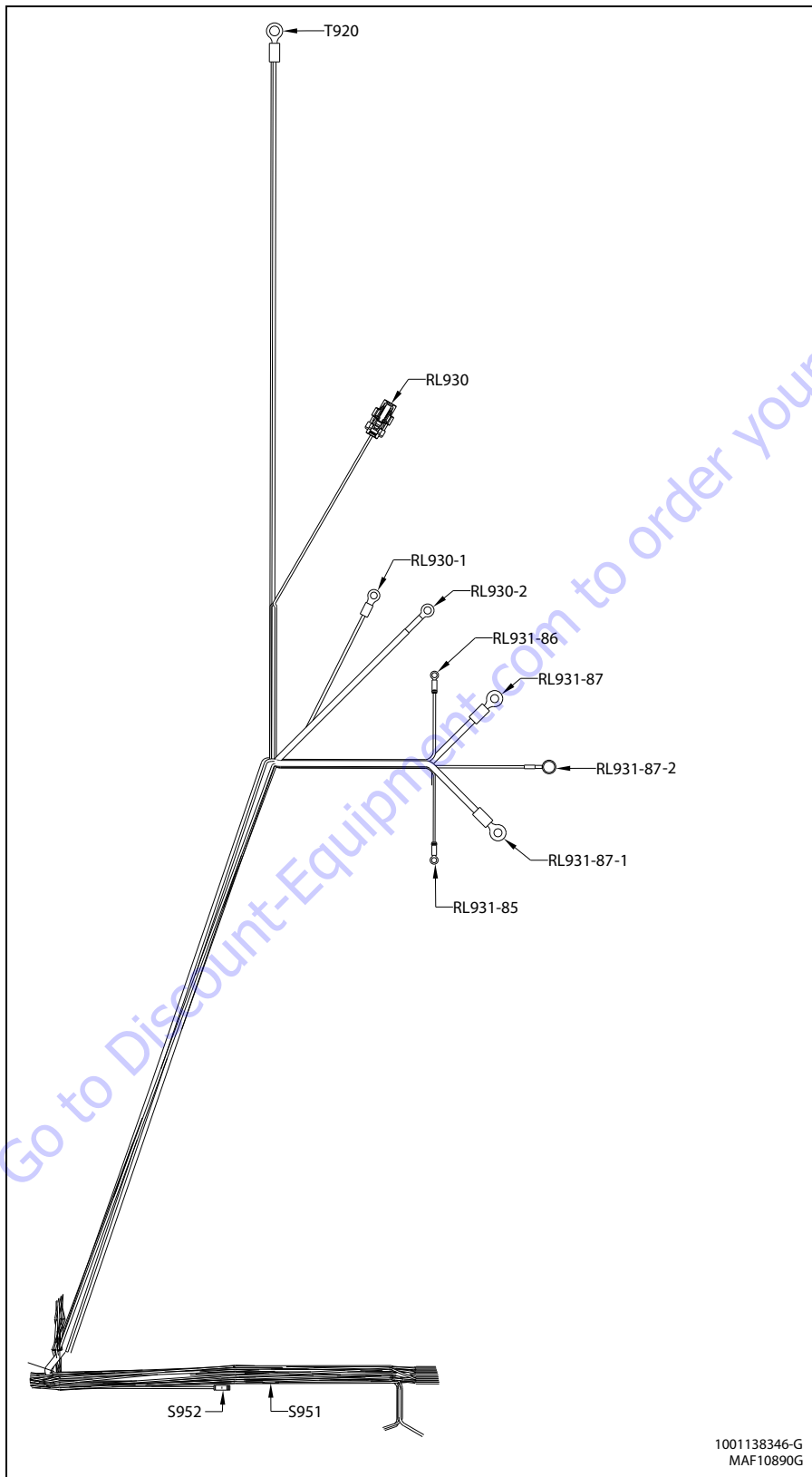


Figure 7-55. Engine Harness - Sheet 6 of 7

1001138346-G
MAF10890G

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

RL931-85					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	BLK	248-35	0.75mm ²	FLRYW	X1005(7)

RL930					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	2-48-4	18AWG	GXL	S946(2)
2	BLK	148-26	0.75mm ²	FLRYW	X1010(8)

RL931-86					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	2-48-3	18AWG	GXL	S946(2)

RL930-1					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	WHT	48-96	14AWG	GXL	X941(3)

RL931-87-1					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	48-14	8AWG	GXL	EC18(2)

RL930-2					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	1-148-135	8AWG	GXL	X1009(1)

RL931-87					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	48-13	8AWG	GXL	EC18(1)

T920					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	BLK	000-48-1	14AWG	GXL	X941(4)
1	BLK	000-48-2	18AWG	GXL	X950(B)
1	BLK	000-48-4	18AWG	GXL	RL974(2)
1					

RL931-87-2					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	ORG	248-23-1	18AWG	GXL	MS932(F)

S951					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	YEL	CAN1HI	18AWG	J1939CA BLE	X1010(4)
2	YEL	CAN1HI	18AWG	J1939CA BLE	X901(3)
2	YEL	CAN1HI	18AWG	J1939CA BLE	X950(M)

S952					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	GRN	CAN1LO	18AWG	J1939CA BLE	X1010(5)
2	GRN	CAN1LO	18AWG	J1939CA BLE	X901(4)
2	GRN	CAN1LO	18AWG	J1939CA BLE	X950(F)

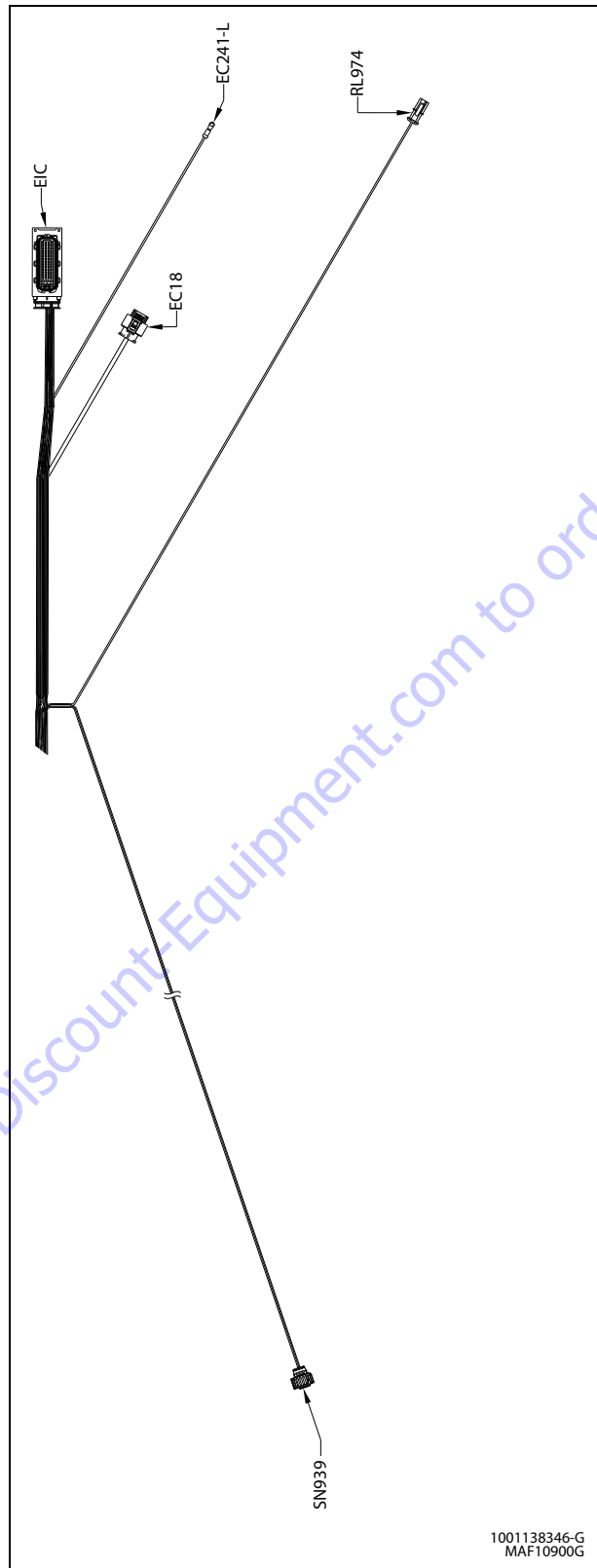


Figure 7-56. Engine Harness - Sheet 7 of 7

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

EIC					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	SHLD	248-38	0.75mm ²	SHLD	X1004(6)
2					
3					
4					
5					
6					
7					
8					
9	SHLD	248-53	0.75mm ²	SHLD	X1004(3)
10					
11					
12					
13	BLK	248-52	0.75mm ²	FLRYW	X1004(2)
14	BLK	248-37	0.75mm ²	FLRYW	X1004(1)
15	BLK	248-39	0.75mm ²	FLRYW	X1004(4)
16					
17	BLK	148-61	0.75mm ²	FLRYW	X1006(6)
18					
19	BLK	248-4	1.5mm ²	FLRYW	X1003(10)
20	BLK	248-5	1.5mm ²	FLRYW	X1003(9)
21	BLK	248-54	0.75mm ²	FLRYW	X1004(5)
22	BLK	248-24	0.75mm ²	FLRYW	X1005(1)
23	BLK	248-43	0.75mm ²	FLRYW	X1005(9)
24	BLK	248-28	0.75mm ²	FLRYW	X1005(5)
25	BLK	248-26	0.75mm ²	FLRYW	X1005(3)
26	BLK	248-44	0.75mm ²	FLRYW	X1005(10)
27	BLK	248-29	0.75mm ²	FLRYW	X1005(6)
28	BLK	248-40	0.75mm ²	FLRYW	X1005(8)
29	BLK	248-27	0.75mm ²	FLRYW	X1005(4)
30					
31	BLK	248-25	0.75mm ²	FLRYW	X1005(2)
32	BLK	248-7	0.75mm ²	FLRYW	X1004(7)
33					
34	BLK	148-56	0.75mm ²	FLRYW	X1006(4)
35	BLK	248-16	1.5mm ²	FLRYW	X1003(2)
36					
37	BLK	248-18	1.5mm ²	FLRYW	X1003(4)
38	BLK	248-32	1.5mm ²	FLRYW	X1003(5)
39					
40	BLK	248-46	1.5mm ²	FLRYW	X1003(7)
41	BLK	248-3	1.5mm ²	FLRYW	X1003(8)

42	BLK	248-48	1.5mm ²	FLRYW	X1003(3)
43					
44					
45					
46	BLK	148-85	0.75mm ²	FLRYW	X1006(10)
47	BLK	248-19	1.5mm ²	FLRYW	X1003(11)
48	BLK	248-20	1.5mm ²	FLRYW	X1003(12)
49	BLK	148-72	0.75mm ²	FLRYW	X1006(8)
50	BLK	148-44	0.75mm ²	FLRYW	X1006(3)
51	BLK	148-82	0.75mm ²	FLRYW	X1006(9)
52	BLK	148-38	0.75mm ²	FLRYW	X1006(2)
53					
54					
55					
56					
57					
58					
59					
60					
61	BLK	248-2	1.5mm ²	FLRYW	X1003(6)
62	BLK	248-33	1.5mm ²	FLRYW	X1003(1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

EC18					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	48-13	8AWG	GXL	RL931-87(1)
2	RED	48-14	8AWG	GXL	RL931-87(1)

SN939					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	BLK	148-29	0.75mm ²	FLRYW	X1006(1)
2	BLK	148-87	0.75mm ²	FLRYW	X1006(11)
3	BLK	148-13	0.75mm ²	FLRYW	X1010(7)
4					

EC241-L					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	RED	47-8	16AWG	GXL	X901(5)

RL974					
CONN POS	WIRE COLOR	WIRELABEL	GAUGE	JACKET	TO
1	WHT	48-3	18AWG	GXL	X901(2)
1					
2	BLK	000-48-4	18AWG	GXL	T920(1)

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SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

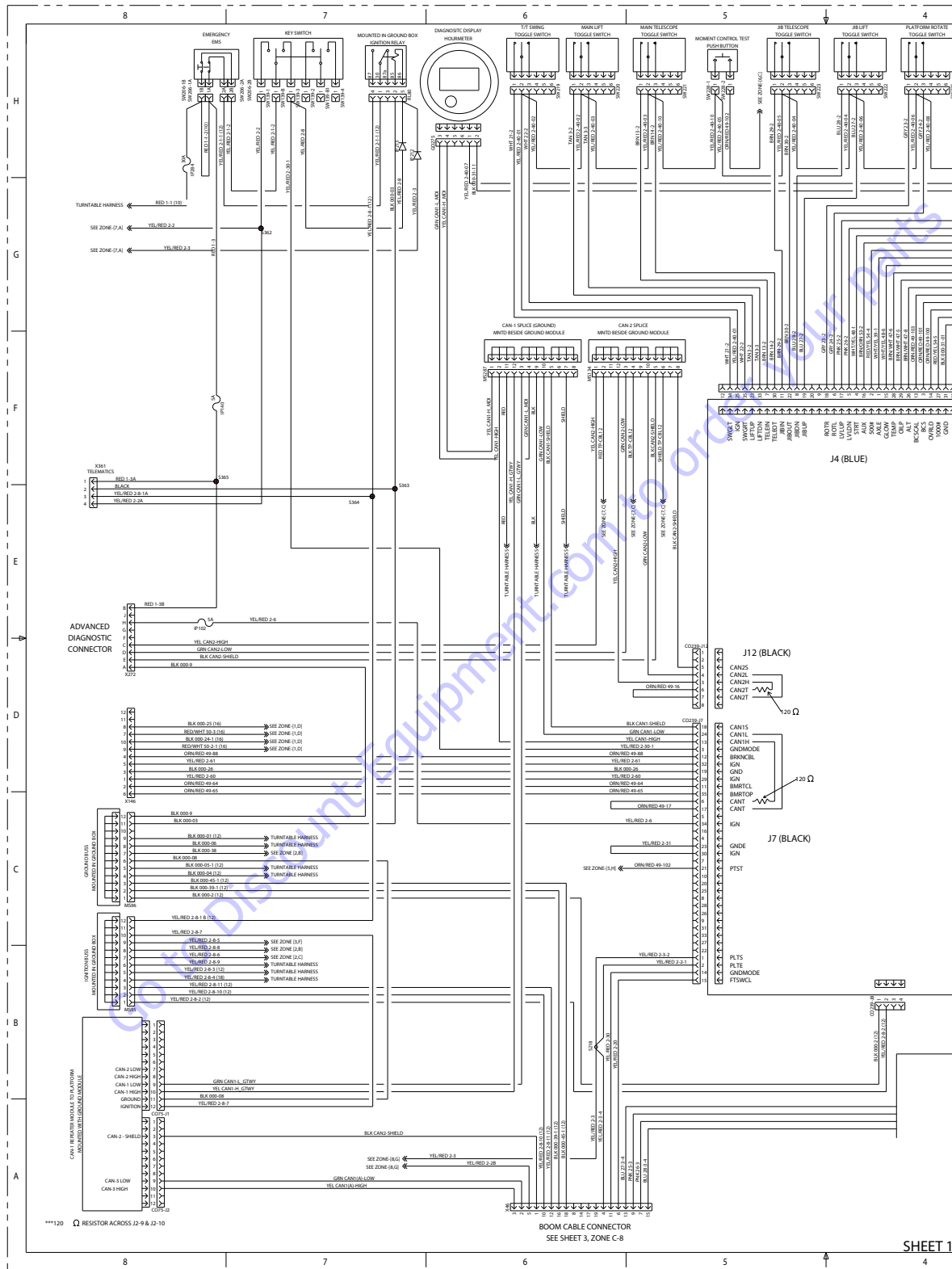


Figure 7-57. Ground Control Box Wiring Diagram - Sheet 1 of 2

1500SJ Electrical Schematic

SHEET 2: PLATFORM BOX

BOX ASSEMBLY
CONSOLE BOX HARNESS

SHEET 3: PLATFORM AND JIB COMPONENTS

WIRE HARNESS INST'L
PLATFORM VALVE HARNESS
JIB VALVE HARNESS
BOOM CABLES
PLATFORM DUMP HARNESS JIB ENABLE HARNESS
BOOM CONTROL CABLE
LIMIT SWITCH HARNESS
10/3 AC CABLE (MAIN BOOM) (DOM)/ (CE) (IF EQUIPPED) (CONNECTORIZED FOR JIB)
GENERATOR POWER CABLE (MAIN BOOM)
JIB CONTROL CABLE
10/3 AC CABLE (JIB) (DOM)/ (CE) (IF EQUIPPED)
GENERATOR POWER CABLE (JIB)

SHEET 4: TURNTABLE & BOOM

WIRE HARNESS INST'L
BLAM HARNESS (SIMILAR TO EXISTING)
MAIN BOOM CYLINDER ANGLE HARNESS

SHEET 5: GROUND CONTROL BOX

MTB (REXROTH) INST'L
MTB (SAUER) INST'L, MTB (TIER 4 FINAL) INST'L
MAIN TERMINAL BOX ASSEMBLY
MTB HARNESS
TURNTABLE HARNESS
PUMP HARNESS

SHEET 6: CHASSIS

WIRE HARNESS INST'L
CHASSIS HARNESS (SIMILAR TO EXISTING)

SHEET 7: ENGINE - DEUTZ EMR2

SHEET 8: ACCESSORIES

SHEET 9: ENGINE - TIER 4 FINAL - DEUTZ EMR4

SHEET 10: CRIBBING HARNESS /ALERT BEACON OPTION GEN 2 PLAT INTERFACE

SHEET 1

1001119266-V

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

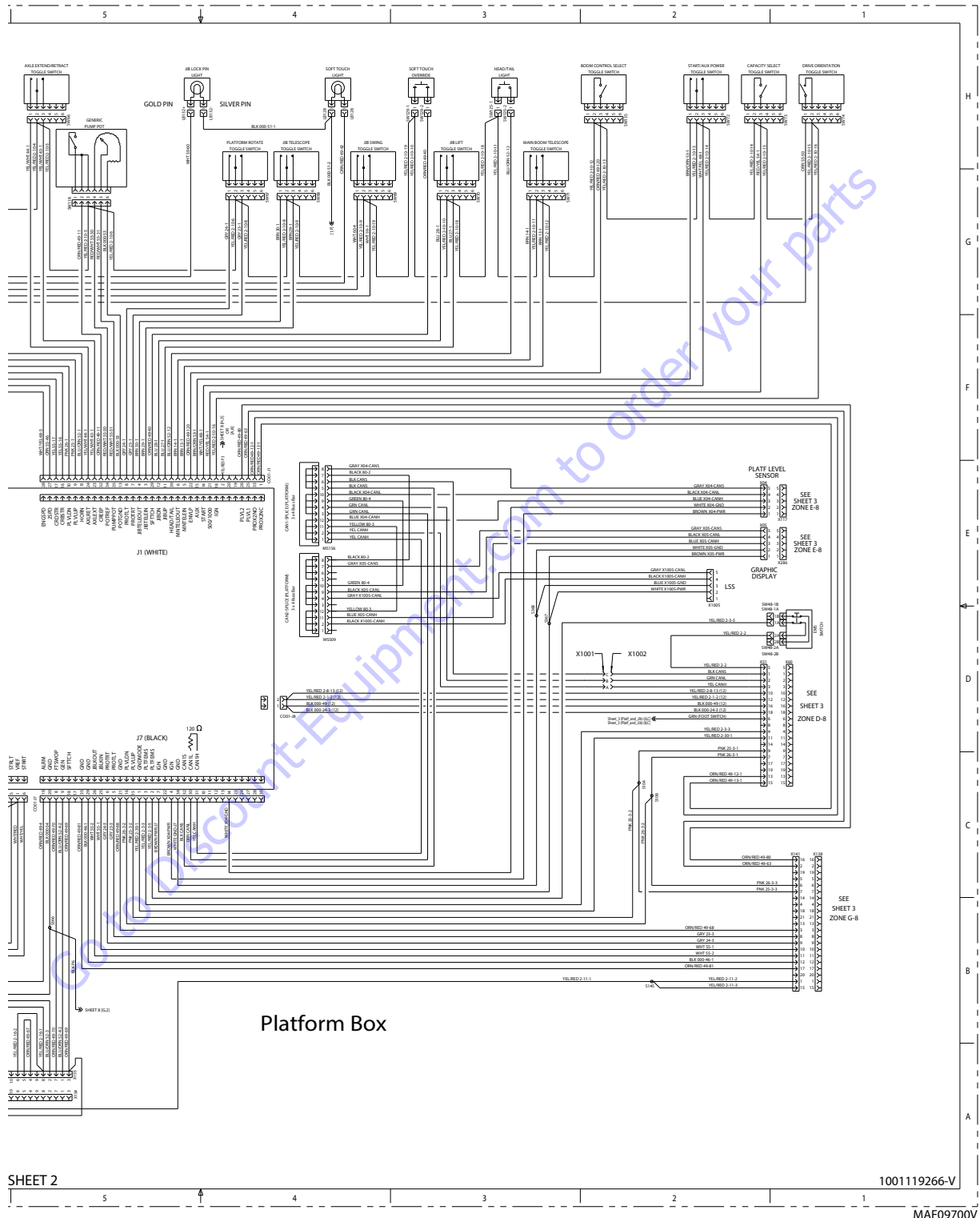


Figure 7-60. Electrical Schematic - Sheet 3 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

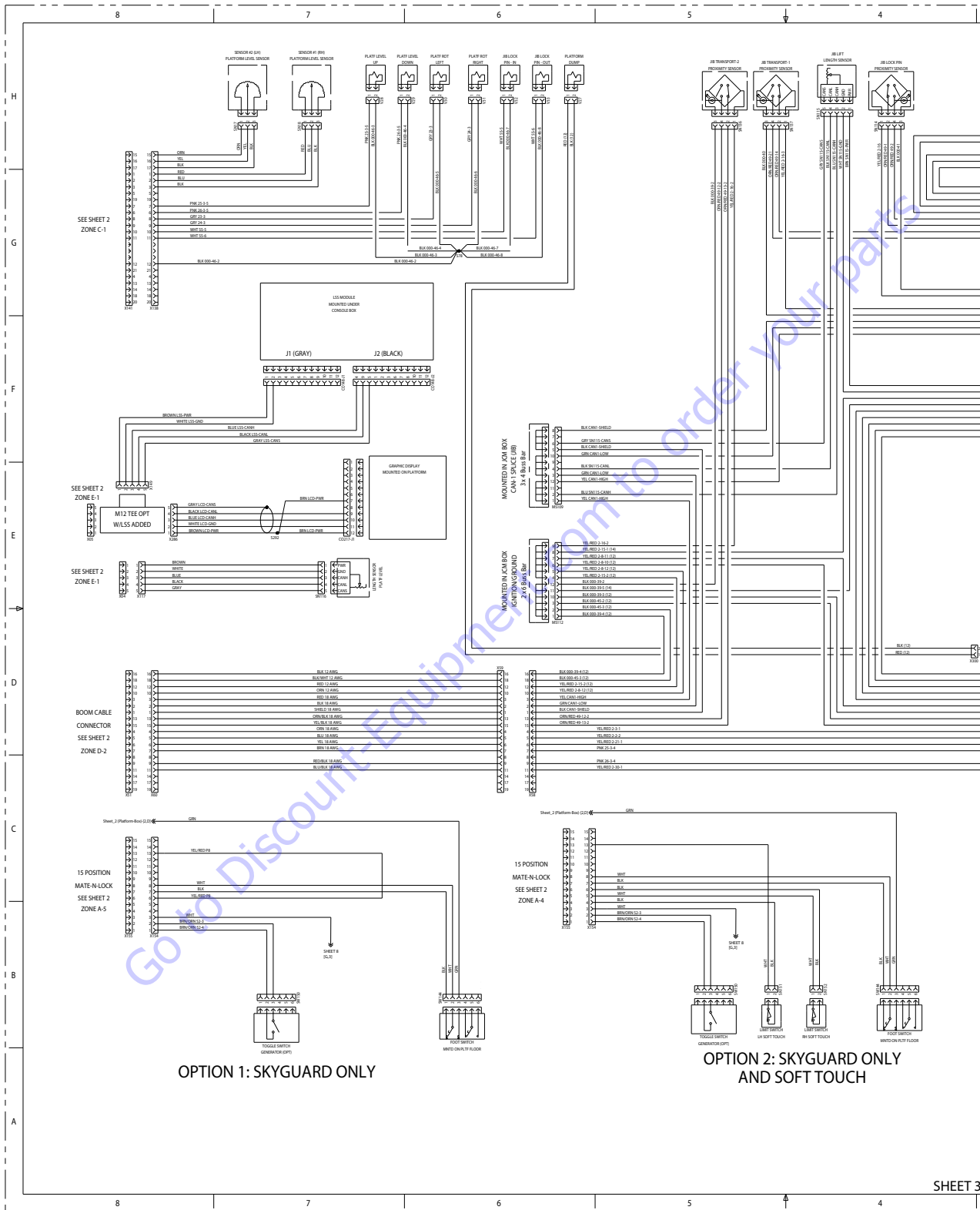
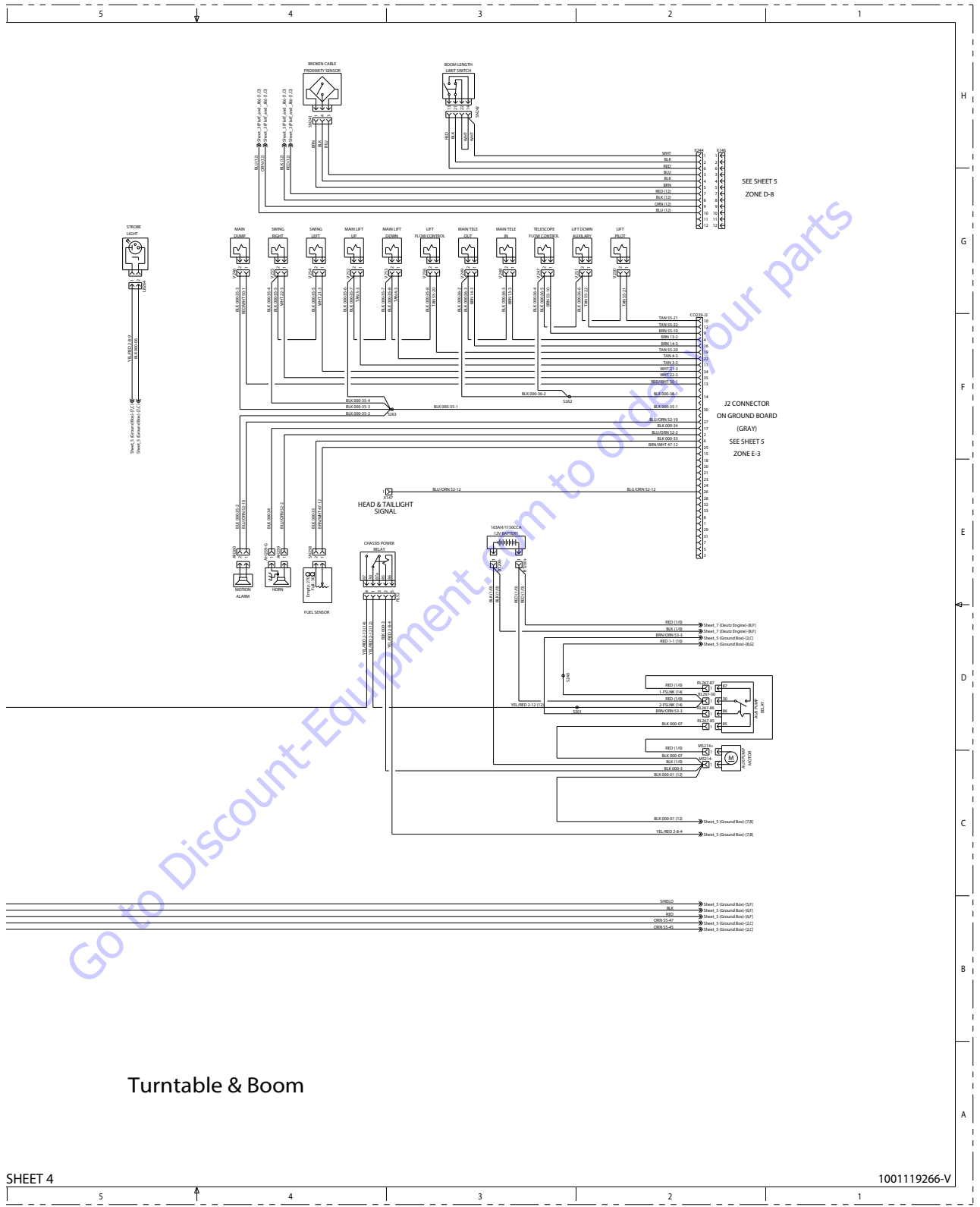


Figure 7-61. Electrical Schematic - Sheet 4 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



Turntable & Boom

SHEET 4

1001119266-V

MAF09720V

Figure 7-64. Electrical Schematic - Sheet 7 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

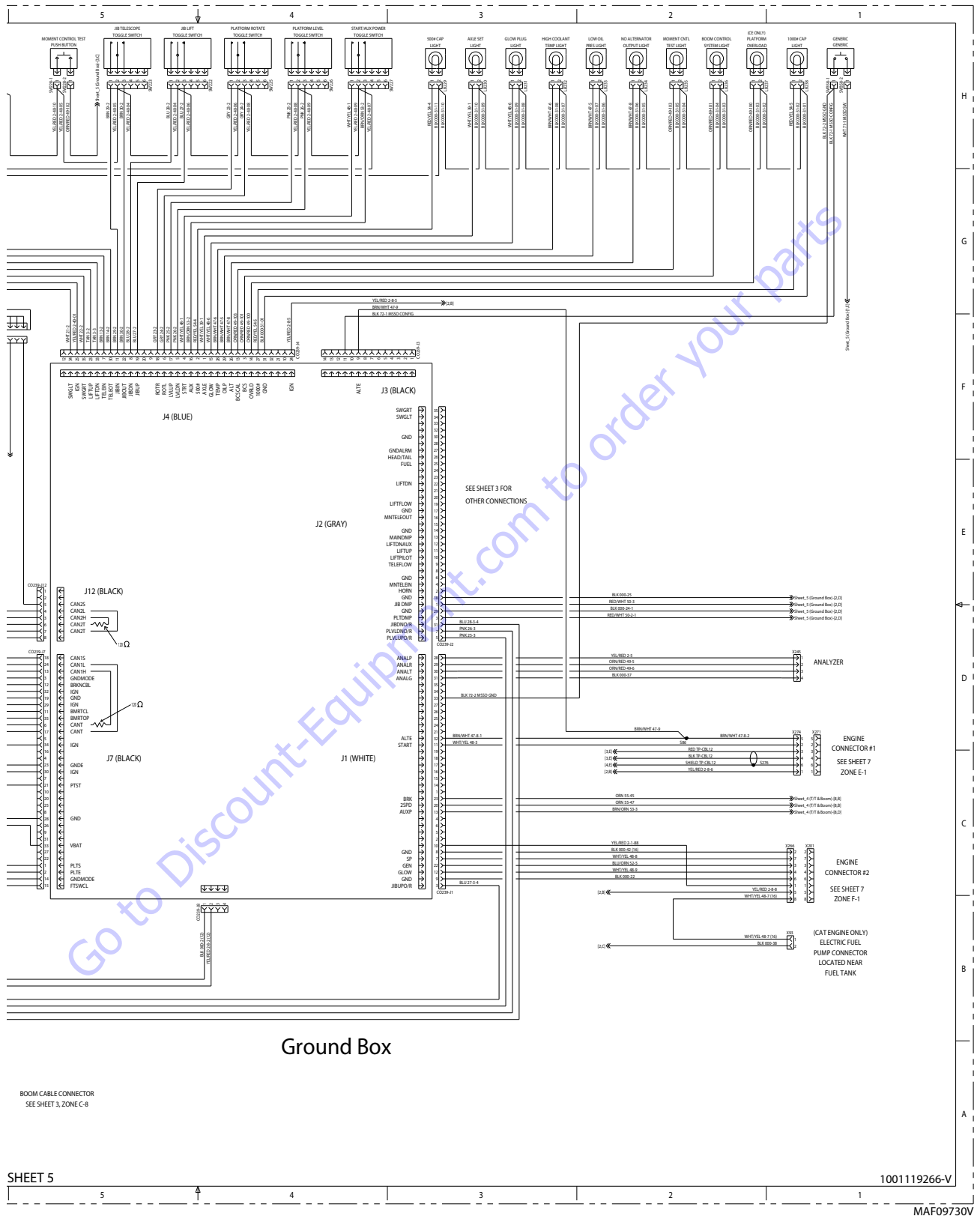
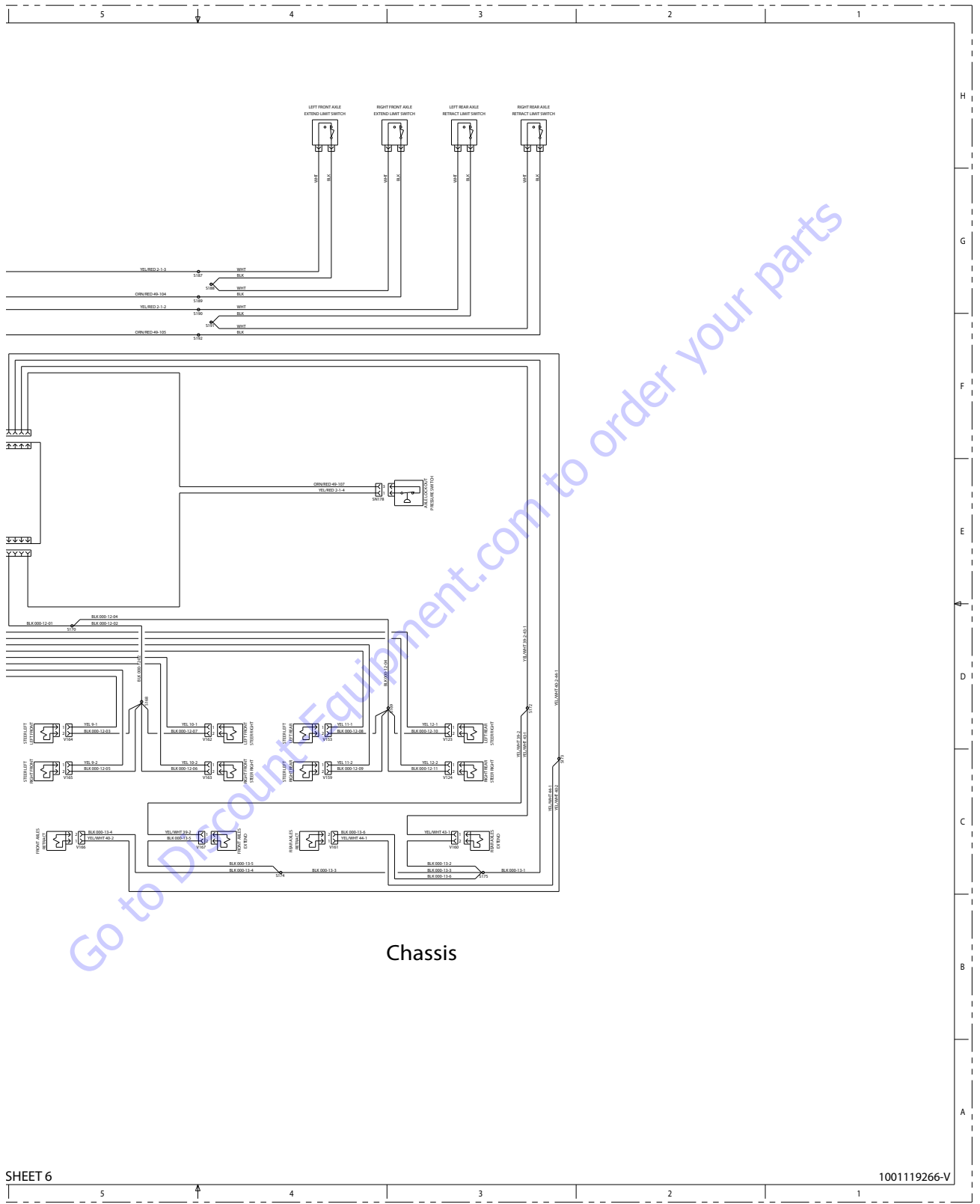


Figure 7-66. Electrical Schematic - Sheet 9 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



Chassis

SHEET 6

1001119266-V

Figure 7-68. Electrical Schematic - Sheet 11 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

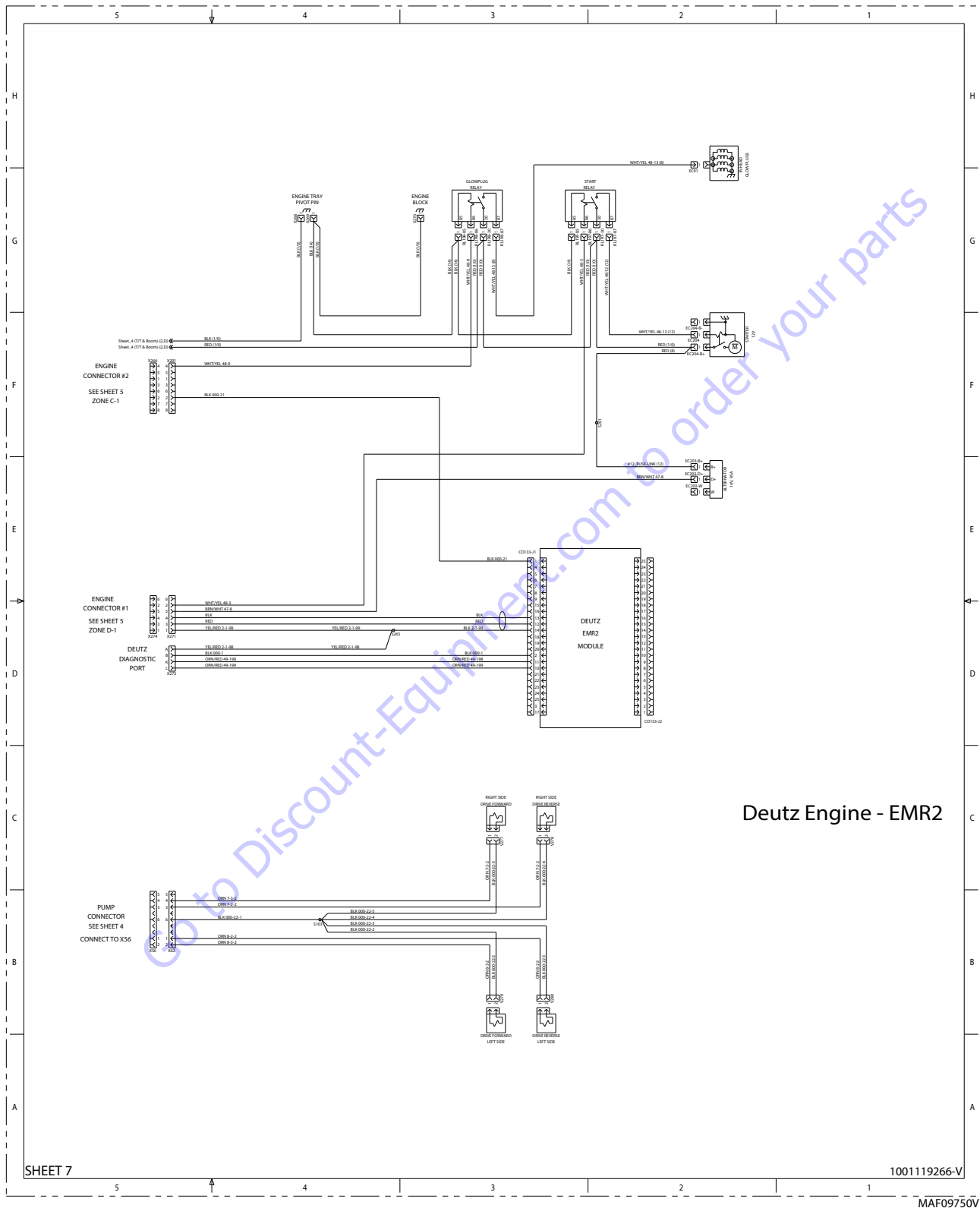


Figure 7-69. Electrical Schematic - Sheet 12 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

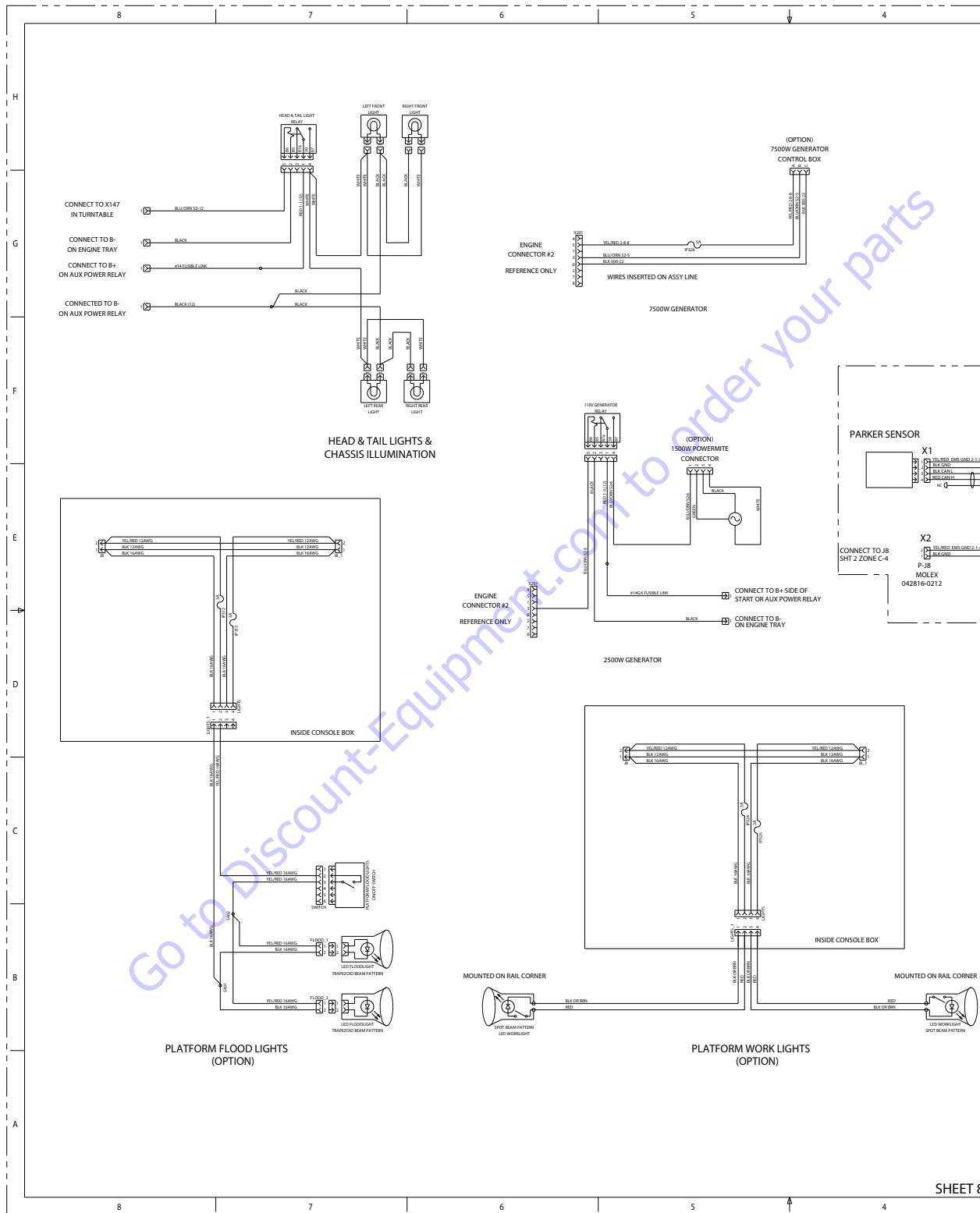


Figure 7-70. Electrical Schematic - Sheet 13 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

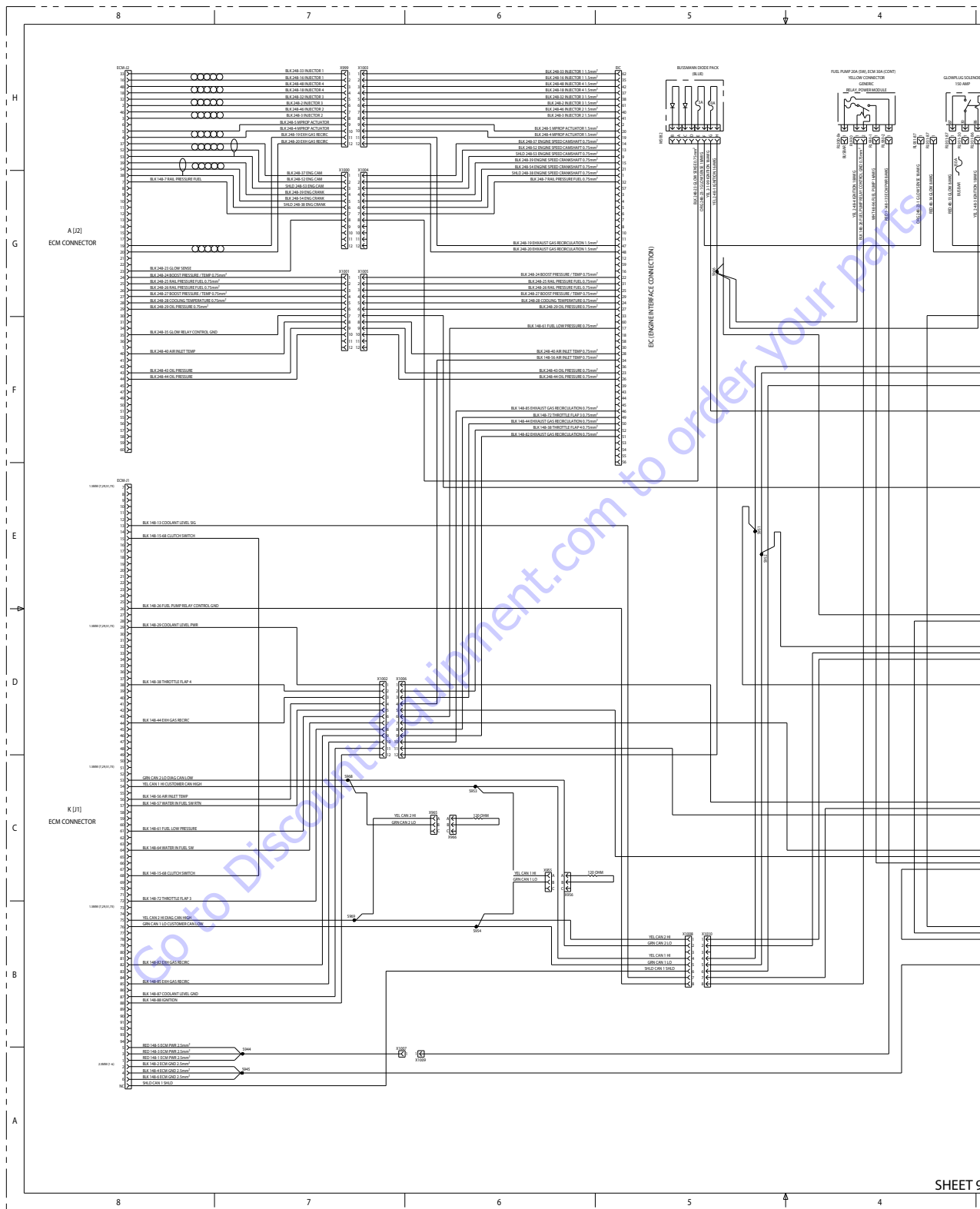


Figure 7-72. Electrical Schematic - Sheet 15 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS

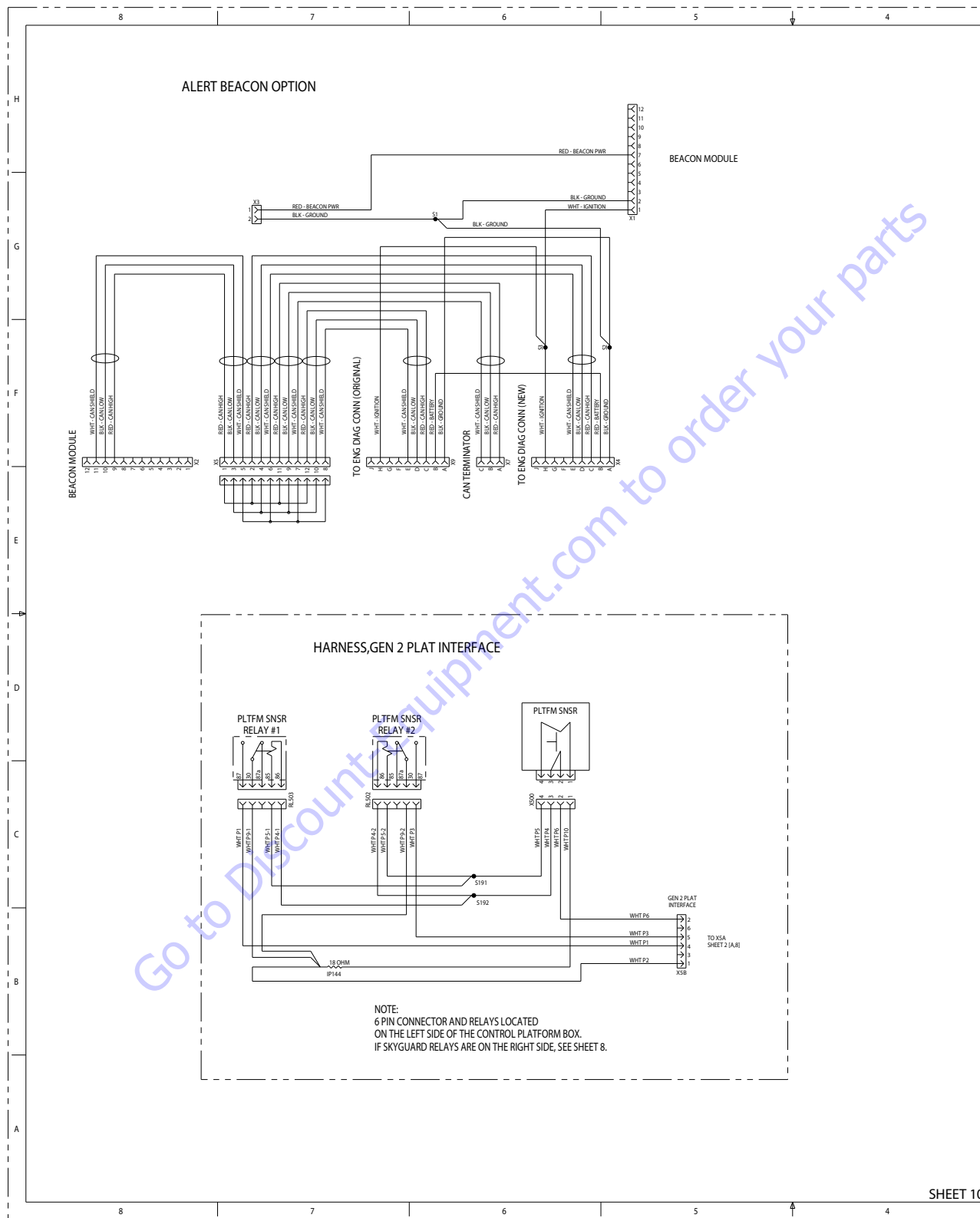
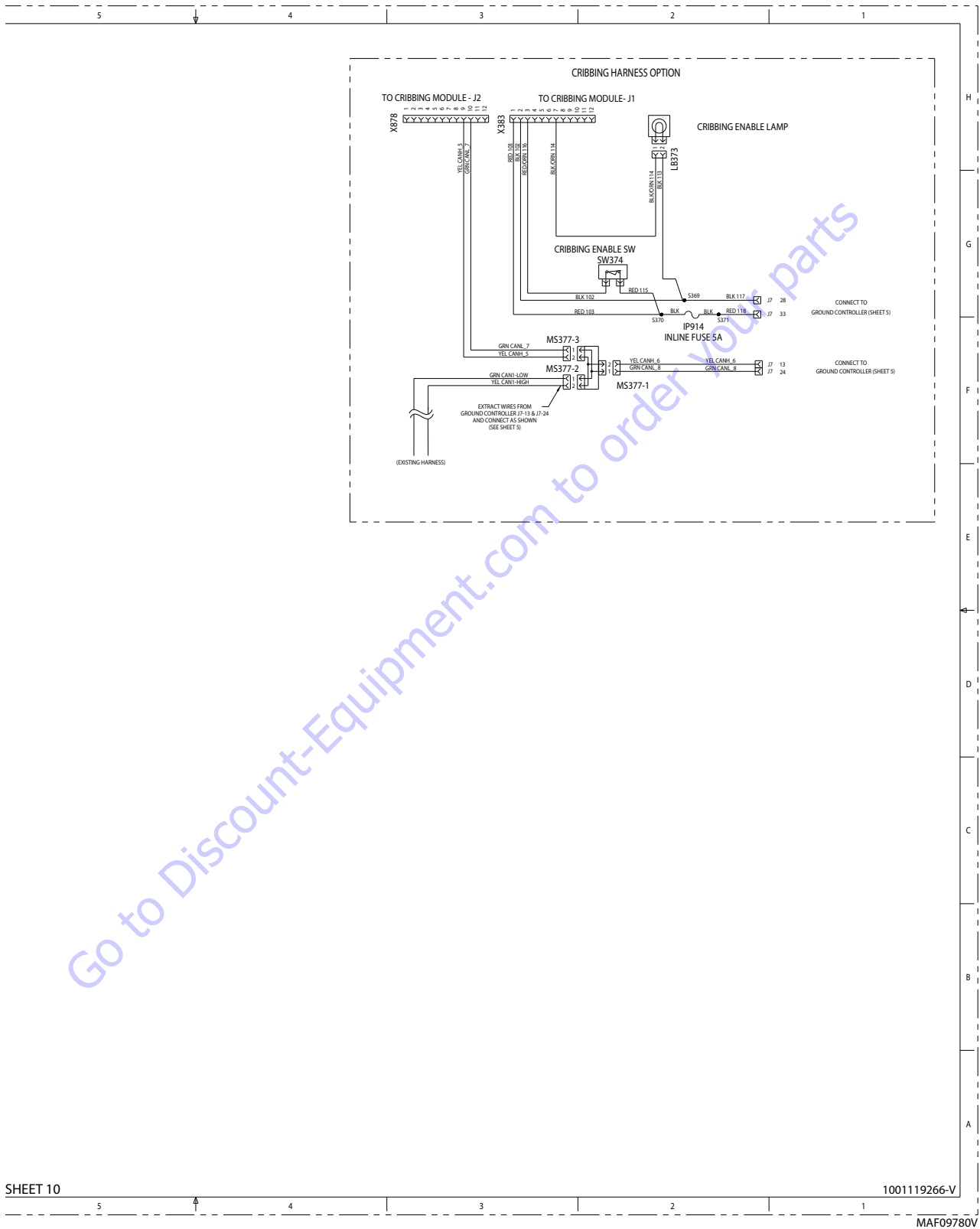


Figure 7-74. Electrical Schematic - Sheet 17 of 18

SECTION 7 - BASIC ELECTRICAL INFORMATION & ELECTRICAL SCHEMATICS



SHEET 10

1001119266-V

MAF09780V

Figure 7-75. Electrical Schematic - Sheet 18 of 18



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