

SECTION 6 - JLG CONTROL SYSTEM

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
BOOM ANGLE SENSOR - OUT OF RANGE HIGH	2344	The UGM detects that Boom Angle Sensor #1 or Boom Angle Sensor #2 signal voltage > 4.5V.	The UGM shall assume the Boom is Above Elevation; The UGM shall report a faulted boom angle of 90 degrees	Power Cycled	X	X
BOOM ANGLE SENSOR - OUT OF RANGE LOW	2345	The UGM detects that Boom Angle Sensor #1 or Boom Angle Sensor #2 signal voltage < 0.5V.	The UGM shall assume the Boom is Above Elevation; The UGM shall report a faulted boom angle of 90 degrees	Power Cycled	X	X
BOOM ANGLE SENSOR – NOT RESPONDING	2346	The UGM detects the following conditions: The UGM detects < 1 deg change of Boom Angle Main Lift Up or Main Lift Down output value ≥ Creep output value Main Lift Up or Main Lift Down has been active longer than 5seconds.	The UGM shall assume the Boom is Above Elevation; The UGM shall report a faulted boom angle of 90 degrees	Power Cycled	X	X
FUNCTION PROBLEM - JIB LIFT UP PERMANENTLY SELECTED	2370	Machine is in Ground Mode; MACHINE SETUP > JIB = YES; The Jib Lift Up switch input = High at Startup	The UGM shall prohibit Jib Lift Up and Down	The Jib Lift Up switch input = Low; Jib Lift Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - JIB LIFT DOWN PERMANENTLY SELECTED	2371	Machine is in Ground Mode; MACHINE SETUP > JIB = YES; The Jib Lift Down switch input = High at Startup	The UGM shall prohibit Jib Lift Up and Down	The Jib Lift Down switch input = Low; Jib Lift Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - SWING LEFT PERMANENTLY SELECTED	2372	Machine is in Ground Mode; The Swing Left switch input = High at Startup	The UGM shall prohibit Swing Left and Right	The Swing Left switch input = Low; Swing Left and Right permitted after controls are initialized	X	X
FUNCTION PROBLEM - SWING RIGHT PERMANENTLY SELECTED	2373	Machine is in Ground Mode; The Swing Right switch input = High at Startup	The UGM shall prohibit Swing Left and Right	The Swing Left switch input = Low; Swing Left and Right permitted after controls are initialized	X	X
BOOM ANGLE SENSOR DIS-AGREEMENT	2396	The UGM detects that Boom Angle Sensor #1 and Boom Angle Sensor #2 readings disagree ≥ 2.5 deg for longer than 5seconds; Do not report if DTC 2343 is active	The UGM shall assume the Boom is Above Elevation and will report a faulted boom angle of 90 degrees	Power Cycled	X	X
FUNCTION PROBLEM – TOWER LIFT UP PERMANENTLY SELECTED	23105	Machine is in Ground Mode; The Tower Lift Up switch input = High at Startup	The UGM shall prohibit Tower Lift Up and Down	The Tower Lift Up switch input = Low; Tower Lift Up and Down permitted after controls are initialized		X
FUNCTION PROBLEM – TOWER LIFT DOWN PERMANENTLY SELECTED	23106	Machine is in Ground Mode; The Tower Lift Down switch input = High at Startup	The UGM shall prohibit Tower Lift Up and Down	The Tower Lift Down switch input = Low; Tower Lift Up and Down permitted after controls are initialized		X
FUNCTION PROBLEM - LIFT UP PERMANENTLY SELECTED	23107	Machine is in Ground Mode; The Lift Up switch input = High at Startup	The UGM shall prohibit Lift Up and Down	The Lift Up switch input = Low; Lift Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - LIFT DOWN PERMANENTLY SELECTED	23108	Machine is in Ground Mode; The Lift Down switch input = High at Startup	The UGM shall prohibit Lift Up and Down	The Lift Down switch input = Low; Lift Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - TELESCOPE IN PERMANENTLY SELECTED	23109	Machine is in Ground Mode; The Telescope In switch input = High at Startup	The UGM shall prohibit Telescope In and Out	The Telescope In switch input = Low; Telescope In and Out permitted after controls are initialized	X	X

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FUNCTION PROBLEM - TELESCOPE OUT PERMANENTLY SELECTED	23110	Machine is in Ground Mode; The Telescope Out switch input = High at Startup	The UGM shall prohibit Telescope In and Out	The Telescope Out switch input = Low; Telescope In and Out permitted after controls are initialized	X	X
FUNCTION PROBLEM - PLATFORM LEVEL UP PERMANENTLY SELECTED	23111	Machine is in Ground Mode; The Platform Level Up switch input = High at Startup	The UGM shall prohibit Platform Level Up and Down	The Platform Level Up switch input = Low; Platform Level Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - PLATFORM LEVEL DOWN PERMANENTLY SELECTED	23112	Machine is in Ground Mode; The Platform Level Down switch input = High at Startup	The UGM shall prohibit Platform Level Up and Down	The Platform Level Down switch input = Low; Platform Level Up and Down permitted after controls are initialized	X	X
FUNCTION PROBLEM - PLATFORM ROTATE LEFT PERMANENTLY SELECTED	23113	Machine is in Ground Mode; The Platform Rotate Left switch input = High at Startup	The UGM shall prohibit Platform Rotate Left and Right	The Platform Rotate Left switch input = Low; Platform Rotate Left and Right permitted after controls are initialized	X	X
FUNCTION PROBLEM - PLATFORM ROTATE RIGHT PERMANENTLY SELECTED	23114	Machine is in Ground Mode; The Platform Rotate Right switch input = High at Startup	The UGM shall prohibit Platform Rotate Left and Right	The Platform Rotate Right switch input = Low; Platform Rotate Left and Right permitted after controls are initialized	X	X
TELESCOPE RETRACT SWITCHES - DISAGREEMENT	23154	The UGM detects the following conditions: Telescope Retracted Switch #1 and Telescope Retracted Switch #2 readings disagree for longer than 5 seconds; Telescope In or Telescope Out output value \geq Creep output value	The UGM shall assume the Boom is Not Retracted	Power Cycled	X	
SWING SWITCHES - DISAGREEMENT	23155	The UGM detects the following conditions: Swing Switch #1 and Swing Switch #2 readings disagree for longer than 5 seconds; Swing Left or Swing Right value \geq Creep output value	The UGM shall assume the Boom is Swung	Power Cycled		X
FUNCTION PROBLEM - MSSO PERMANENTLY SELECTED	23163	The MSSO switch input = Low at Startup	No response required for this DTC	Power Cycled	X	X
BOOM ANGLE SENSOR - SINGLE POINT CALIBRATION PERFORMED	23170	Single point Boom Angle calibration is successfully completed	No response required for this DTC	Fault shall be retentive through Power Cycled; Can be reset if CALIBRATIONS > BOOM ANGLE is successfully completed	X	X
CAPACITY LENGTH SWITCHES - DISAGREEMENT	23173	Dual Capacity is configured; The UGM detects the following conditions: Capacity Length Switch #1 and Capacity Length Switch #2 readings disagree for longer than 5 seconds; Telescope In or Telescope Out output value \geq Creep output value	The UGM shall assume Dual Capacity = 600#	Power Cycled	X	

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AMBIENTTEMPERATURE SENSOR – OUT OF RANGE LOW	241	MACHINE SETUP > TEMP CUTOUT = YES; Ambient Temperature sensor reading ≤ -50C	The UGM shall set Low Temperature Cutout state = Faulty If the Machine is in Platform Mode and if the Boom is Above Elevation; The UGM shall suspend motion; The UGM shall limit the machine to Creep speed after controls initialized If the Machine is in Platform Mode and if the Boom is not Above Elevation; The UGM shall limit Swing, Tower Lift (340AJ, 450AJ), Tele, Lift, Platform Rotate, Platform Level, and Jib Lift (if MACHINE SETUP > JIB = YES) to Creep speed If the Machine is in Ground Mode; No response required for this DTC	Ambient Temperature sensor reading > -50C; Full Speed permitted after controls are initialized	X	X

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AMBIENT TEMPERATURE SENSOR – OUT OF RANGE HIGH	242	MACHINE SETUP > TEMP CUTOUT = YES; Ambient Temperature sensor reading $\geq 85C$	The UGM shall set Low Temperature Cutout state = Faulty If the Machine is in Platform Mode and if the Boom is Above Elevation; The UGM shall suspend motion; The UGM shall limit the machine to Creep speed after controls initialized If the Machine is in Platform Mode and if the Boom is not Above Elevation; The UGM shall limit Swing, Tower Lift (340AJ, 450AJ), Tele, Lift, Platform Rotate, Platform Level, and Jib Lift (if MACHINE SETUP > JIB = YES) to Creep speed If the Machine is in Ground Mode; No response required for this DTC	Ambient Temperature sensor reading < 85C; Full Speed permitted after controls are initialized	X	X
MODEL CHANGED – HYDRAULICS SUSPENDED – CYCLE EMS	259	The MACHINE SETUP > MODEL NUMBER is changed using the analyzer	Disable all machine and engine functions (i.e., command engine shutdown and do not permit start)	Power Cycled	X	X
GENERATOR MOTION CUTOUT ACTIVE	2513	MACHINE SETUP > GEN SET = BELT DRIVE; MACHINE SETUP > GEN SET CUTOUT = MOTION CUTOUT; The platform Generator Switch is engaged Footswitch State = Depressed The machine is in Platform mode	The UGM shall not Enable the Machine	Not all of the trigger conditions are met	X	X
BOOM PREVENTED – DRIVE SELECTED	2514	MACHINE SETUP > FUNCTION CUTOUT = BOOM CUTOUT; Drive or Steer is already engaged; The boom is Above Elevation The operator is attempting to activate one of the boom functions DTC 2514 supercedes DTC 2518 if drive/steer and boom functions are both active when machine transitions from Below Elevation to Above Elevation.	The UGM shall prohibit all boom functions	Not all of the trigger conditions are met	X	X

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DRIVE PREVENTED – ABOVE ELEVATION	2516	MACHINE SETUP > FUNCTION CUTOUT = DRIVE CUTOUT The boom is Above Elevation The operator is attempting to activate Drive or Steer	The UGM shall prohibit Drive and Steer	Not all of the trigger conditions are met	X	X
DRIVE PREVENTED – TILTED & ABOVE ELEVATION	2517	MACHINE SETUP > FUNCTION CUTOUT = DRIVE CUT E&T The boom is Above Elevation The chassis is considered Tilted The operator is attempting to activate Drive or Steer	The UGM shall prohibit Drive and Steer	Not all of the trigger conditions are met	X	X
DRIVE PREVENTED – BOOM SELECTED	2518	MACHINE SETUP > FUNCTION CUTOUT = BOOM CUT-OUT The boom is Above Elevation Any boom function is already active The operator attempts to activate Drive or Steer	The UGM shall prohibit Drive and Steer	Not all of the trigger conditions are met	X	X
DRIVE & BOOM PREVENTED - SOFT TOUCH ACTIVE	2549	MACHINE SETUP > SOFT TOUCH = YES; Machine is in Platform Mode; Soft Touch State = Enabled	Response detailed in Soft Touch section	Not all of the trigger conditions are met	X	X
SKYGUARD SWITCH – DIS-AGREEMENT	2563	MACHINE SETUP > SKYGUARD = YES; Machine is in Platform Mode; [(SkyGuard input #1 Platform Module J7-18) ≠ (Sky-Guard input #2 Platform Module J1-23)] > 160ms	Response detailed in Sky-Guard section	[(SkyGuard inputs (Platform Module J7-18 = High) and (Platform Module J1-23 = High)); and (Footswitch State = Not Depressed)]	X	X
TEMPERATURE CUTOUT ACTIVE – AMBIENT TEMPERATURE TOO LOW	2568	Low Temperature Cutout = Active	If the Boom is Above Elevation; The UGM shall suspend motion; The UGM shall limit the machine to Creep speed after controls initialized If the Machine is in Platform Mode and if the Boom is not Above Elevation; The UGM shall limit Swing, Tower Lift (340AJ, 450AJ), Tele, Lift, Platform Rotate, Platform Level, and Jib Lift (if MACHINE SETUP > JIB = YES) to Creep speed	Low Temperature Cutout = Inactive; Full Speed permitted after controls are initialized	X	X
PLATFORM LEVEL PREVENTED – ABOVE ELEVATION	2576	Platform Level Override Cutout = Enabled; The Platform Level Up or Down switch input = High; Footswitch is active	The UGM shall suspend Platform Level Up and Down commands; The UGM shall prohibit Platform Level Up and Down	Controls initialized	X	X
RUNNING AT CREEP - PLATFORM LEVELED UNDER	2587	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.				

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BRAKE – SHORT TO BATTERY	331	The UGM detects a short to battery at this output	The UGM shall prohibit Drive and Brake outputs.	Power Cycled	X	X
BRAKE – OPEN CIRCUIT	332	The UGM detects an open circuit at this output	No response required for this DTC	Power Cycled	X	X
LIFT UP VALVE – OPEN CIRCUIT	334	The UGM detects an open circuit at this output	The UGM shall suspend Lift Up and Down command and revert to Open Loop Current control for Lift; The UGM shall limit Lift Up and Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Lift Up and Down permitted after controls are initialized	X	X
LIFT DOWN VALVE – OPEN CIRCUIT	336	The UGM detects an open circuit at this output	The UGM shall suspend Lift Up and Down command and revert to Open Loop Current control for Lift; The UGM shall prohibit Lift Up; The UGM shall limit Lift Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Lift Up and Lift Down permitted after controls are initialized	X	X
GROUND ALARM – SHORT TO BATTERY	3311	The UGM detects a short to battery at this output	No response required for this DTC	Power Cycled	X	X
MAIN DUMP VALVE – SHORT TO GROUND	3358	The UGM detects a short to ground at this output	The UGM shall prohibit Main Dump	Power Cycled	X	X
MAIN DUMP VALVE – OPEN CIRCUIT	3359	The UGM detects an open circuit at this output	The UGM shall suspend Swing (340AJ, 400S, 450AJ), Tower Lift Up (340AJ, 450AJ), Lift Up, Telescope (400S, 450AJ, 18RS, 24RS), Jib Lift (400S, 450AJ); Platform Rotate (400S, 450AJ) and Platform Level (400S, 450AJ); The UGM shall limit Tower Lift Up (340AJ, 450AJ), Telescope (400S, 450AJ, 18RS, 24RS), Lift Up, Platform Rotate (400S, 450AJ), Platform Level (400S, 450AJ), and Jib Lift (400S, 450AJ) to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Swing (340AJ, 400S, 450AJ), Tower Lift Up (340AJ, 450AJ), Lift Up, Telescope (400S, 450AJ, 18RS, 24RS) Jib Lift (400S, 450AJ), Platform Rotate (400S, 450AJ) and Platform Level (400S, 450AJ) permitted after controls are initialized	X	X

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MAIN DUMP VALVE – SHORT TO BATTERY	3360	The UGM detects a short to battery at this output	The UGM shall prohibit Main Dump, Steer (400S, 450AJ), Swing (340AJ, 400S, 450AJ), Tower Lift Up (340AJ, 450AJ), Lift Up, Telescope (400S, 450AJ, 18RS, 24RS), Jib Lift (400S, 450AJ), Platform Level (400S, 450AJ) and Platform Rotate (400S, 450AJ)	Power Cycled	X	X
BRAKE – SHORT TO GROUND	3361	The UGM detects a short to ground at this output	Disable UGM Drive/Steer and Brake outputs	Power Cycled	X	X
START SOLENOID – SHORT TO GROUND	3362	UGM detects a short to ground at this output	Engine Start attempt shall not be permitted.	Power Cycled	X	X
START SOLENOID – OPEN CIRCUIT	3363	UGM detects an open circuit at this output; if MACHINE SETUP > ENGINE = DUAL FUEL ECU, only evaluate until first Start is attempted for each power cycle due to possibility of ECU opening ground solenoid return path to disable Start and causing erroneous diagnostics.	No response required for this DTC	Power Cycled	X	X
START SOLENOID – SHORT TO BATTERY	3364	UGM detects a short to battery at this output	Disable UGM Engine Start by deenergizing Fuel Actuator (Kubota) or sending Engine Shutdown command (CAN-based ECUs)	Power Cycled	X	X
STEER DUMP VALVE – SHORT TO GROUND	3365	The UGM detects a short to ground at this output	The UGM shall prohibit Steer Dump	Power Cycled		
TWO SPEED VALVE - SHORT TO GROUND	3368	The UGM detects a short to ground at this output	Disable UGM 2 Speed output. If in Max Speed drive mode, switch to Max Torque; disable Max Speed drive mode	Power Cycled	X	X
TWO SPEED VALVE - OPEN CIRCUIT	3369	The UGM detects an open circuit at this output	If in Max Speed drive mode, switch to Max Torque; disable Max Speed drive mode	Power Cycled	X	X
TWO SPEED VALVE - SHORT TO BATTERY	3370	The UGM detects a short to battery at this output	If in Max Speed drive mode, switch to Max Torque; disable Max Speed drive mode. Ramp and limit drive speed to Creep value for associated drive mode: The UGM shall disable Drive when the Boom is Above Elevation.	Power Cycled	X	X

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GEN SET/WELDER – SHORT TO GROUND	3373	MACHINE SETUP > GEN SET = BELT DRIVE and the UGM detects a short to ground at this output	Disable UGM Generator output. Do not Enable generator functionality or set Engine to Generator RPM.	Power Cycled	X	X
GEN SET/WELDER – OPEN CIRCUIT	3374	MACHINE SETUP > GEN SET = BELT DRIVE and the UGM detect an open circuit at this output	No response required for this DTC	Power Cycled	X	X
GEN SET/WELDER – SHORT TO BATTERY	3375	MACHINE SETUP > GEN SET = BELT DRIVE and the UGM detects a short to battery at this output	Disable UGM Generator output, but UGM shall consider Generator always excited (enabled) and restrict engine to Generator RPM. If MACHINE SETUP > GEN-SET CUTOUT = MOTION CUTOUT, disregard cutout and permit motion.	Power Cycled	X	X
HEAD TAIL LIGHT – SHORT TO GROUND	3376	MACHINE SETUP > H & T LIGHTS = YES and the UGM detects a short to ground at this output	Disable UGM H&T Light relay output	Power Cycled	X	X
HEAD TAIL LIGHT – OPEN CIRCUIT	3377	MACHINE SETUP > H & T LIGHTS = YES and the UGM detects an open circuit at this output	No response required for this DTC	Power Cycled	X	X
HEAD TAIL LIGHT – SHORT TO BATTERY	3378	MACHINE SETUP > H & T LIGHTS = YES and the UGM detects a short to battery at this output	Disable UGM H&T Light relay output	Power Cycled	X	X
PLATFORM LEVEL UP VALVE – SHORT TO GROUND	3382	The UGM detects a short to ground at this output	The UGM shall prohibit Platform Level Up; (340AJ, 400S, 450AJ) The UGM shall limit Platform Level Down to Creep speed	Power Cycled	X	X
PLATFORM LEVEL UP VALVE – OPEN CIRCUIT	3383	The UGM detects an open circuit at this output	The UGM shall suspend Platform Level Up and Down; (340AJ, 400S, 450AJ) The UGM shall limit Platform Level Up and Down to Creep speed after controls initialized; (18RS, 24RS) Platform Level Up and Down permitted after controls are initialized	The UGM no longer detects open circuit; (340AJ, 400S, 450AJ) Full speed Platform Level Up and Down permitted after controls are initialized	X	X
PLATFORM LEVEL UP VALVE – SHORT TO BATTERY	3384	The UGM detects a short to battery at this output	The UGM shall prohibit Platform Level Up, Level Down, and Flow Control	Power Cycled	X	X
PLATFORM LEVEL DOWN VALVE – SHORT TO GROUND	3388	The UGM detects a short to ground at this output	The UGM shall prohibit Platform Level Up and Down	Power Cycled	X	X

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PLATFORM LEVEL DOWN VALVE – OPEN CIRCUIT	3389	The UGM detects an open circuit at this output	The UGM shall suspend Platform Level Up and Down; The UGM shall prohibit Platform Level Up; (340AJ, 400S, 450AJ) The UGM shall limit Platform Level Down to Creep speed after controls initialized; (18RS, 24RS) Platform Level Down permitted after controls are initialized	The UGM no longer detects open circuit; (340AJ, 400S, 450AJ) Full speed Platform Level Up and Platform Level Down permitted after controls are initialized	X	X
PLATFORM LEVEL DOWN VALVE – SHORT TO BATTERY	3390	The UGM detects a short to battery at this output	The UGM shall prohibit Platform Level Up, Level Down, and Flow Control	Power Cycled	X	X
PLATFORM ROTATE LEFT VALVE – SHORT TO GROUND	3394	The UGM detects a short to ground at this output	The UGM shall prohibit Platform Rotate Left and Right	Power Cycled	X	
PLATFORM ROTATE LEFT VALVE – OPEN CIRCUIT	3395	The UGM detects an open circuit at this output	The UGM shall suspend Platform Rotate Left and Right; (340AJ, 400S, 450AJ) The UGM shall limit Platform Rotate Left and Right to Creep speed after controls initialized; (18RS, 24RS) Platform Rotate Left and Right permitted after controls are initialized	The UGM no longer detects open circuit; (340AJ, 400S, 450AJ) Full speed Platform Rotate Left and Right permitted after controls are initialized	X	
PLATFORM ROTATE LEFT VALVE – SHORT TO BATTERY	3396	The UGM detects a short to battery at this output	The UGM shall prohibit Platform Rotate Left, Right and Flow Control Valve outputs	Power Cycled	X	
PLATFORM ROTATE RIGHT VALVE – SHORT TO GROUND	3397	The UGM detects a short to ground at this output	The UGM shall prohibit Platform Rotate Left and Right	Power Cycled	X	

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PLATFORM ROTATE RIGHT VALVE – OPEN CIRCUIT	3398	The UGM detects an open circuit at this output	The UGM shall suspend Platform Rotate Left and Right; (340AJ, 400S, 450AJ) The UGM shall limit Platform Rotate Left and Right to Creep speed after controls initialized; (18RS, 24RS) Platform Rotate Left and Right permitted after controls are initialized	The UGM no longer detects open circuit; (340AJ, 400S, 450AJ) Full speed Platform Rotate Left and Right permitted after controls are initialized	X	
PLATFORM ROTATE RIGHT VALVE – SHORT TO BATTERY	3399	The UGM detects a short to battery at this output	The UGM shall prohibit Platform Rotate Left, Right and Flow Control Valve outputs	Power Cycled	X	
JIB LIFT UP VALVE - SHORT TO GROUND	33100	MACHINE SETUP > JIB = YES; The UGM detects a short to ground at this output	The UGM shall prohibit Jib Lift Up; The UGM shall limit Jib Lift Down to Creep speed	Power Cycled	X	
JIB LIFT UP VALVE - OPEN CIRCUIT	33101	MACHINE SETUP > JIB = YES; The UGM detects an open circuit at this output	The UGM shall suspend Jib Lift Up and Down; The UGM shall limit Jib Lift Up and Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Jib Lift Up and Down permitted after controls are initialized	X	
JIB LIFT UP VALVE - SHORT TO BATTERY	33102	MACHINE SETUP > JIB = YES; The UGM detects a short to battery at this output	The UGM shall prohibit Jib Lift Up, Down and Flow Control	Power Cycled	X	
JIB LIFT DOWN VALVE - SHORT TO GROUND	33103	MACHINE SETUP > JIB = YES; The UGM detects a short to ground at this output	The UGM shall prohibit Jib Lift Up and Down	Power Cycled	X	
JIB LIFT DOWN VALVE - OPEN CIRCUIT	33104	MACHINE SETUP > JIB = YES; The UGM detects an open circuit at this output	The UGM shall suspend Jib Lift Up and Down; The UGM shall prohibit Jib Lift Up; The UGM shall limit Jib Lift Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Jib Lift Up permitted after controls are initialized Full speed Jib Lift Down permitted after controls are initialized	X	
JIB LIFT DOWN VALVE - SHORT TO BATTERY	33105	MACHINE SETUP > JIB = YES; The UGM detects a short to battery at this output	The UGM shall prohibit Jib Lift Up, Down and Flow Control	Power Cycled	X	
TOWER LIFT UP VALVE – SHORT TO GROUND	33106	The UGM detects a short to ground at this output	The UGM shall prohibit Tower Lift Up; The UGM shall limit Tower Lift Down Creep speed	Power Cycled		X

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TOWERLIFT UP VALVE – OPEN CIRCUIT	33107	The UGM detects an open circuit at this output	The UGM shall suspend Tower Lift Up and Down command and revert to Open Loop Current control for Tower Lift; The UGM shall limit Tower Lift Up and Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Tower Lift Up and Down permitted after controls are initialized		X
TOWERLIFT DOWN VALVE – SHORT TO GROUND	33109	The UGM detects a short to ground at this output	The UGM shall prohibit Tower Lift Up and Down	Power Cycled		X
TOWERLIFT DOWN VALVE – OPEN CIRCUIT	33110	The UGM detects an open circuit at this output	The UGM shall suspend Tower Lift Up and Down command and revert to Open Loop Current control for Tower Lift; The UGM shall prohibit Tower Lift Up; The UGM shall limit Tower Lift Down to Creep speed after controls initialized	The UGM no longer detects open circuit; Tower Lift Up permitted after controls are initialized; Full speed Tower Lift Down permitted after controls are initialized		X
SWING RIGHT VALVE – SHORT TO GROUND	33118	The UGM detects a short to ground at this output	The UGM shall prohibit Swing Left and Right	Power Cycled	X	X
SWING RIGHT VALVE – OPEN CIRCUIT	33119	The UGM detects an open circuit at this output	The UGM shall suspend Swing Left and Right command and revert to Open Loop Current control for Swing; The UGM shall limit Swing Left and Right to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Swing Left and Right permitted after controls are initialized	X	X
TELESCOPE IN VALVE – SHORT TO BATTERY	33120	The UGM detects a short to battery at this output	The UGM shall prohibit Telescope In, Out and Flow Control	Power Cycled	X	X
SWING LEFT VALVE – SHORT TO GROUND	33122	The UGM detects a short to ground at this output	The UGM shall prohibit Swing Left and Right	Power Cycled	X	X
TELESCOPE OUT VALVE – SHORT TO BATTERY	33123	The UGM detects a short to battery at this output	The UGM shall prohibit Telescope In, Out and Flow Control	Power Cycled	X	X
LIFT VALVES – SHORT TO BATTERY	33182	The UGM detects a short to battery at either the Lift Up or Lift Down valve	The UGM shall prohibit Lift Up and Down; The UGM shall open the Lift Current Feedback low side FET	Power Cycled	X	X

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TELESCOPE OUT VALVE – OPEN CIRCUIT	33186	The UGM detects an open circuit at this output	(340AJ, 400S, 450AJ) The UGM shall suspend Telescope In and Out (18RS, 24RS) The UGM shall suspend Telescope In and Out command and revert to Open Loop Current control for Telescope The UGM shall limit Telescope In and Out to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Telescope In and Out permitted after controls are initialized	X	X
TELESCOPE OUT VALVE – SHORT TO GROUND	33188	The UGM detects a short to ground at this output	The UGM shall prohibit Telescope Out; Tele In speed limited to Creep	Power Cycled	X	X
TELESCOPE IN VALVE – OPEN CIRCUIT	33189	The UGM detects an open circuit at this output	(340AJ, 400S, 450AJ) The UGM shall suspend Telescope In and Out (18RS, 24RS) The UGM shall suspend Telescope In and Out command and revert to Open Loop Current control for Telescope The UGM shall prohibit Telescope Out; The UGM shall limit Telescope In to Creep speed after controls initialized	The UGM no longer detects open circuit; Telescope Out permitted after controls are initialized; Full speed Telescope In permitted after controls are initialized	X	X
TELESCOPE IN VALVE – SHORT TO GROUND	33190	The UGM detects a short to ground at this output	The UGM shall prohibit Telescope In and Out	Power Cycled	X	X
APU PUMP RELAY - OPEN CIRCUIT	33276	The UGM detects an open circuit at this output	No response required for this DTC	Power Cycled	X	X
APU PUMP RELAY - SHORT TO BATTERY	33277	The UGM detects a short to battery at this output	Disable UGM APU Pump relay output	Power Cycled	X	X
APU PUMP RELAY - SHORT TO GROUND	33278	The UGM detects a short to ground at this output	Disable UGM APU Pump relay output	Power Cycled	X	X
GLOW PLUG – OPEN CIRCUIT	33279	MACHINE SETUP > ENGINE ≠ DUAL FUEL ECM MACHINE SETUP > ENGINE ≠ DEUTZ EMR4 MACHINE SETUP > GLOW PLUG ≠ NO The UGM detects an open circuit at this output	No response required for this DTC	Power Cycled	X	X
GLOW PLUG – SHORT TO BATTERY	33280	MACHINE SETUP > ENGINE ≠ DUAL FUEL ECM MACHINE SETUP > ENGINE ≠ DEUTZ EMR4 MACHINE SETUP > GLOW PLUG ≠ NO The UGM detects a short to battery at this output	Disable UGM Glow Plug relay output	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
GLOW PLUG – SHORT TO GROUND	33281	MACHINE SETUP > ENGINE ≠ DUAL FUEL ECM MACHINE SETUP > ENGINE ≠ DEUTZ EMR4 MACHINE SETUP > GLOW PLUG ≠ NO The UGM detects a short to ground at this output	Disable UGM Glow Plug relay output	Power Cycled	X	X
LIFT – CURRENT FEEDBACK READING TOO LOW	33287	The Engine State = ENGINE RUNNING; The UGM commanded current > 250mA; The difference between the commanded current and the measured feedback current > [the larger of (125mA) or (15% of the commanded function Max)] for longer than 1 second	The UGM shall suspend Lift Up and Down command and revert to Open Loop Current control for Lift; The UGM shall limit Lift Up and Down to Creep speed after controls initialized	Power Cycled	X	X
SWING LEFT VALVE – OPEN CIRCUIT	33295	The UGM detects an open circuit at this output	The UGM shall suspend Swing Left and Right command and revert to Open Loop Current control for Swing; The UGM shall limit Swing Left and Right to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Swing Left and Right permitted after controls are initialized	X	X
FLOW CONTROL VALVE – OPEN CIRCUIT	33314	The UGM detects an open circuit at this output	The UGM shall suspend Flow Control and revert to Open Current loop control for Flow Control; The UGM shall limit Telescope, Jib Lift Up, Jib Lift Down (400S, 450AJ), Platform Rotate and Platform Level to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Telescope, Jib Lift Up, Jib Lift Down (400S, 450AJ), Platform Rotate and Platform Level permitted after controls are initialized	X	X
FLOW CONTROL VALVE – SHORT TO BATTERY	33315	The UGM detects a short to battery at this output	The UGM shall prohibit Flow Control, Telescope, Jib Lift Up (permitted if operating in Auxiliary Power/Emergency Descent mode), Jib Lift Down (permitted if operating in Auxiliary Power/Emergency Descent mode) (400S, 450AJ), Platform Rotate and Platform Level	Power Cycled	X	X
FLOW CONTROL VALVE – SHORT TO GROUND	33316	The UGM detects a short to ground at this output	The UGM shall prohibit Flow Control, Telescope, Jib Lift Up, Jib Lift Down (400S, 450AJ), Platform Rotate and Platform Level	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
DRIVE FORWARD VALVE – OPEN CIRCUIT	33317	The UGM detects an open circuit at this output	The UGM shall suspend Drive Forward and Reverse command and revert to Open Current loop control for Drive; The UGM shall limit Drive Forward and Reverse to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Drive Forward and Reverse permitted after controls are initialized	X	X
DRIVE VALVES – SHORT TO BATTERY	33318	The UGM detects a short to battery at either the Drive Forward or Drive Reverse valve.	The UGM shall prohibit Drive Forward and Reverse; The UGM shall open the Drive Current Feedback low side FET	Power Cycled	X	X
DRIVE FORWARD VALVE – SHORT TO GROUND	33319	The UGM detects a short to ground at this output	The UGM shall prohibit Drive Forward and Reverse	Power Cycled	X	X
DRIVE REVERSE VALVE – OPEN CIRCUIT	33320	The UGM detects an open circuit at this output	The UGM shall suspend Drive Forward and Reverse command and revert to Open Current loop control for Drive; The UGM shall limit Drive Forward and Reverse to Creep speed after controls initialized	The UGM no longer detects open circuit; Full speed Drive Forward and Reverse permitted after controls are initialized	X	X
DRIVE REVERSE VALVE – SHORT TO GROUND	33322	The UGM detects a short to ground at this output	The UGM shall prohibit Drive Forward and Reverse	Power Cycled	X	X
DRIVE – CURRENT FEEDBACK READING TOO LOW	33331	The Engine State = ENGINE RUNNING; The UGM commanded current > 250mA; The difference between the commanded current and the measured feedback current > [the larger of (125mA) or (15% of the commanded function Max)] for longer than 1 second	The UGM shall suspend Drive Forward and Reverse command and revert to Open Current loop control for Drive; The UGM shall limit Drive Forward and Reverse to Creep speed after controls initialized	Power Cycled	X	X
LIFT UP VALVE – SHORT TO GROUND	33406	The UGM detects a short to ground at this output	The UGM shall prohibit Lift Up; The UGM shall limit Lift Down Creep speed	Power Cycled	X	X
LIFT DOWN VALVE – SHORT TO GROUND	33407	The UGM detects a short to ground at this output	The UGM shall prohibit Lift Up and Down	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
DRIVE – LOSS OF CURRENT FEEDBACK	33410	Measured feedback current < 225mA while PWM output > 40% for a period of 100ms.	The UGM shall suspend Drive Forward and Reverse command and revert to Open Current loop control for Drive; The UGM shall limit Drive Forward and Reverse to Creep speed after controls initialized	Power Cycled	X	X
SWING VALVES – SHORT TO BATTERY	33412	The UGM detects a short to battery at either the Swing Right or Swing Left valve	The UGM shall prohibit Swing Left and Right; The UGM shall open the Swing Current Feedback low side FET	Power Cycled	X	X
TOWER LIFT – CURRENT FEEDBACK READING TOO LOW	33413	The Engine State = ENGINE RUNNING; The UGM commanded current > 250mA; The difference between the commanded current and the measured feedback current > [the larger of (125mA) or (15% of the commanded function Max)] for longer than 1 second	The UGM shall suspend Tower Lift Up and Down command and revert to Open Loop Current control for Tower Lift; The UGM shall limit Tower Lift Up and Down to Creep speed after controls initialized	Power Cycled		X
SWING – CURRENT FEEDBACK READING TOO LOW	33414	The Engine State = ENGINE RUNNING; The UGM commanded current > 250mA; The difference between the commanded current and the measured feedback current > [the larger of (125mA) or (15% of the commanded function Max)] for longer than 1 second	The UGM shall suspend Swing Left and Right command and revert to Open Loop Current control for Swing; The UGM shall limit Swing Left and Right to Creep speed after controls initialized	Power Cycled	X	X
FLOW CONTROL VALVE – CURRENT FEEDBACK READING TOO LOW	33415	The Engine State = ENGINE RUNNING; The UGM commanded current > 250mA; The difference between the commanded current and the measured feedback current > [the larger of (125mA) or (15% of the commanded function Max)] for longer than 1 second	The UGM shall suspend Flow Control and revert to Open Current loop control for Flow Control; The UGM shall limit Telescope, Jib Lift Up; Jib Lift Down (400S, 450AJ), Platform Rotate and Platform Level to Creep speed after controls initialized	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
TOWERLIFT – CURRENT FEEDBACK READING LOST	33416	Measured feedback current < 225mA while PWM output > 40% for a period of 100ms.	The UGM shall suspend Tower Lift Up and Down command and revert to Open Loop Current control for Tower Lift; The UGM shall limit Tower Lift Up and Down to Creep speed after controls initialized	Power Cycled		X
LIFT – CURRENT FEEDBACK READING LOST	33417	Measured feedback current < 225mA while PWM output > 40% for a period of 100ms.	The UGM shall suspend Lift Up and Down command and revert to Open Loop Current control for Lift; The UGM shall limit Lift Up and Down to Creep speed after controls initialized	Power Cycled	X	X
SWING – CURRENT FEEDBACK READING LOST	33418	Measured feedback current < 225mA while PWM output > 40% for a period of 100ms.	The UGM shall suspend Swing Left and Right command and revert to Open Loop Current control for Swing; The UGM shall limit Swing Left and Right to Creep speed after controls initialized	Power Cycled	X	X
FLOW CONTROL VALVE – CURRENT FEEDBACK READING LOST	33419	Measured feedback current < 225mA while PWM output > 40% for a period of 100ms.	The UGM shall suspend Flow Control and revert to Open Current loop control for Flow Control; The UGM shall limit Telescope In and Out, Jib Lift Up and Down (400S, 450AJ), Platform Rotate Right and Left and Platform Level Up and Down to Creep speed after controls initialized	Power Cycled	X	X
TOWERLIFT VALVES – SHORT TO BATTERY	33425	The UGM detects a short to battery at either the Tower Lift Up or Tower Lift Down valve.	The UGM shall prohibit Tower Lift Up and Down; The UGM shall open the Tower Lift Current Feedback low side FET	Power Cycled		X
AUXILIARY LIFT DOWN VALVE - SHORT TO GROUND	33537	The UGM detects a short to ground at this output	The UGM shall prohibit Aux Lift Down	Power Cycled	X	X
AUXILIARY LIFT DOWN VALVE - OPEN CIRCUIT	33538	The UGM detects an open circuit at this output	The UGM shall suspend Aux Lift Down; Aux Lift Down permitted after controls are initialized	The UGM no longer detects open circuit	X	X

SECTION 6 - JLG CONTROL SYSTEM

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
AUXILIARY LIFT DOWN VALVE - SHORT TO BATTERY	33539	The UGM detects a short to battery at this output	The UGM shall prohibit Aux Lift Down; The UGM shall open the Auxiliary low side FET	Power Cycled	X	
AUXILIARY TOWER LIFT DOWN VALVE - SHORT TO GROUND	33540	The UGM detects a short to ground at this output	The UGM shall prohibit Aux Tower Lift Down	Power Cycled		X
AUXILIARY TOWER LIFT DOWN VALVE - OPEN CIRCUIT	33541	The UGM detects an open circuit at this output	The UGM shall suspend Aux Tower Lift Down; Aux Tower Lift Down permitted after controls are initialized	The UGM no longer detects open circuit		X
OSCILLATING AXLE #1 VALVE - SHORT TO GROUND	33543	The UGM detects a short to ground at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X
OSCILLATING AXLE #1 VALVE - OPEN CIRCUIT	33544	The UGM detects an open circuit at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X
OSCILLATING AXLE #1 VALVE - SHORT TO BATTERY	33545	The UGM detects a short to battery at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X
OSCILLATING AXLE #2 VALVE - SHORT TO GROUND	33546	The UGM detects a short to ground at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X
OSCILLATING AXLE #2 VALVE - OPEN CIRCUIT	33547	The UGM detects an open circuit at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X
OSCILLATING AXLE #2 VALVE - SHORT TO BATTERY	33548	The UGM detects a short to battery at this output	UGM shall disable Oscillating Axle #1 valve and Oscillating Axle #2 valve outputs; The UGM shall Lock the Oscillating Axle	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
AUXILIARY VALVES - SHORT TO BATTERY	33567	The UGM detects a short to battery at either the Aux Lift Down or Aux Tower Lift Down valve	The UGM shall prohibit Aux Lift Down and Aux Tower Lift Down; The UGM shall open the Auxiliary low side FET	Power Cycled		X
AUXILIARY - CURRENT FEEDBACK READING LOST	33568	Measured feedback current < 225mA while output is active for a period of 100ms.	The UGM shall suspend Aux Lift Down and Aux Tower Down (450AJ); Aux Lift Down and Aux Tower Down (450AJ) permitted after controls are initialized	Power Cycled	X	X
ECM PULL DOWN RESISTOR - OPEN CIRCUIT	33575	MACHINE SETUP > ENGINE = DEUTZ EMR4; Pull down resistor not detected	The UGM shall send the Engine Shutdown command	Power Cycled	X	X
PLATFORM ROTATE LEFT VALVE - OPEN CIRCUIT	349	The PM detects an open circuit at this output and reports it to the UGM	The UGM shall suspend commands to PM for Platform Rotate Right and Left; The UGM shall limit Platform Rotate Right and Left to Creep speed after controls are initialized	The PM no longer detects open circuit; Full speed Platform Rotate Right and Left permitted after controls are initialized		X
PLATFORM ROTATE LEFT VALVE - SHORT TO BATTERY	3410	The PM detects a short to battery at this output and reports it to the UGM	The UGM shall disable commands to PM for Platform Rotate Right and Left; The UGM shall prohibit Flow Control	Power Cycled		X
PLATFORM ROTATE LEFT VALVE - SHORT TO GROUND	3411	The PM detects a short to ground at this output and reports it to the UGM	The UGM shall disable commands to PM for Platform Rotate Right and Left	Power Cycled		X
PLATFORM ROTATE RIGHT VALVE - OPEN CIRCUIT	3412	The PM detects an open circuit at this output and reports it to the UGM	The UGM shall suspend commands to PM for Platform Rotate Right and Left; The UGM shall limit Platform Rotate Right and Left to Creep speed after controls are initialized	The PM no longer detects open circuit; Full speed Platform Rotate Right and Left permitted after controls are initialized		X
PLATFORM ROTATE RIGHT VALVE - SHORT TO BATTERY	3413	The PM detects a short to battery at this output and reports it to the UGM	The UGM shall disable commands to PM for Platform Rotate Right and Left; The UGM shall prohibit Flow Control	Power Cycled		X
PLATFORM ROTATE RIGHT VALVE - SHORT TO GROUND	3414	The PM detects a short to ground at this output and reports it to the UGM	The UGM shall disable commands to PM for Platform Rotate Right and Left	Power Cycled		X

SECTION 6 - JLG CONTROL SYSTEM

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
JIB LIFT UP VALVE – OPEN CIRCUIT	3415	MACHINE SETUP > JIB = YES The PM detects an open circuit at this output and reports it to the UGM	The UGM shall suspend commands to PM for Jib Lift Up and Down; The UGM shall limit Jib Lift Up and Down to Creep speed	The PM no longer detects open circuit; Full speed Jib Lift Up and Down permitted after controls are initialized		X
JIB LIFT UP VALVE – SHORT TO BATTERY	3416	MACHINE SETUP > JIB = YES The PM detects a short to battery at this output and reports it to the UGM	The UGM shall disable commands to PM for Jib Lift Up and Down; The UGM shall prohibit Flow Control	Power Cycled		X
JIB LIFT UP VALVE – SHORT TO GROUND	3417	MACHINE SETUP > JIB = YES The PM detects a short to ground at this output and reports it to the UGM	The UGM shall disable commands to PM for Jib Lift Up; The UGM limits Jib Lift Down to Creep speed	Power Cycled		X
JIB LIFT DOWN VALVE – OPEN CIRCUIT	3418	MACHINE SETUP > JIB = YES The PM detects an open circuit at this output and reports it to the UGM	The UGM shall suspend commands to PM for Jib Lift Up and Down; The UGM shall prohibit Jib Lift Up; The UGM shall limit Jib Lift Down to Creep speed	The PM no longer detects open circuit; Jib Lift Up permitted after controls are initialized Full speed Jib Lift Down permitted after controls are initialized		X
JIB LIFT DOWN VALVE – SHORT TO BATTERY	3419	MACHINE SETUP > JIB = YES The PM detects a short to battery at this output and reports it to the UGM	The UGM shall disable commands to PM for Jib Lift Up and Down; (450AJ) The UGM shall prohibit Flow Control	Power Cycled		X
JIB LIFT DOWN VALVE – SHORT TO GROUND	3420	MACHINE SETUP > JIB = YES The PM detects a short to ground at this output and reports it to the UGM; detection occurs for PWM output approximately $\leq 15\%$ or for STG condition.	The UGM shall disable commands to PM for Jib Lift Up and Down	Power Cycled		X
FUEL SENSOR - SHORT TO BATTERY OR OPEN CIRCUIT	431	UGM fuel sensor analog input J2-25 detects a voltage higher than 2.50 volts (A/D > 512)	Energize fuel sensor per System Indicators	Power Cycled	X	
FUEL SENSOR - SHORT TO GROUND	432	UGM fuel sensor analog input J2-25 detects a voltage less than or equal to 0.3 volts (A/D < 61)	Energize fuel sensor per System Indicators	Power Cycled	X	
ENGINE TROUBLE CODE	437	An engine with a CAN engine controller is configured in MACHINE SETUP The engine controller reports a J1939 fault	Report and log in Help If [(MACHINE SETUP > DEUTZEMR2) or (MACHINE SETUP > DEUTZEMR4) and SPN:FMI = 535:7], prohibit engine cranking	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
HIGH ENGINE TEMP	438	An engine with a CAN engine controller is <u>not</u> configured in MACHINE SETUP: The Engine State = ENGINE RUNNING > 10 seconds The coolant temperature is greater than or equal to the configured engines max allowed temperature. The maximum allowed temperature > 110°C. An engine with a CAN engine controller is configured in MACHINE SETUP: ECM transmits a J1939 DM1 message for an engine coolant high temperature critical fault (SPN:FMI 110:0) on CAN2 or uses the J1939 Transport Protocol every one second to send this information if multiple engine faults exist.	MACHINE SETUP > ENGINE SHUTDOWN = ENABLED then shutdown the engine Activate High Engine Temperature indicator J4-28	Power Cycled	X	X
NO ALTERNATOR OUTPUT	4310	The Engine State = ENGINE RUNNING > 10 seconds and UGM system voltage < 11.5 volts for 10 seconds	Activate the No Charge indicator J4-26 per System Indicators	UGM system voltage > 11.7 volts	X	X
LOW OIL PRESSURE	4311	An engine with a CAN engine controller is <u>not</u> configured in MACHINE SETUP The Engine State = ENGINE RUNNING > 10 seconds The engine oil pressure is LOW (debounce 3s). An engine with a CAN engine controller is configured in MACHINE SETUP ECM transmits a J1939 DM1 message for an engine oil low pressure critical fault (SPN:FMI 100:1) on CAN2 or uses the J1939 Transport Protocol every one second to send this information if multiple engine faults exist.	MACHINE SETUP > ENGINE SHUTDOWN = ENABLED then shutdown the engine Activate the Low Oil Pressure indicator J4-29	Power Cycled	X	X
ENGINE COOLANT – LOW LEVEL	4334	MACHINE SETUP > ENGINE = DEUTZ EMR4; ECM transmits a J1939 DM1 message for an engine coolant low level fault (SPN:FMI 111:1) on CAN2 or uses the J1939 Transport Protocol every one second to send this information if multiple engine faults exist.	MACHINE SETUP > ENGINE SHUTDOWN = ENABLED then shutdown the engine; Activate High Engine Temperature indicator J4-28	Power Cycled	X	X
WATER IN FUEL	4375	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.		

SECTION 6 - JLG CONTROL SYSTEM

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
FUNCTIONS PREVENTED - ENGINE OIL WARM UP ACTIVE	4376	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 or 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.				
BATTERY VOLTAGE TOO LOW – SYSTEM SHUTDOWN	441	The UGM detects that its supply voltage is less than 9 volts Engine State ≠ ENGINE CRANKING Auxiliary Power/Emergency Descent Mode is not active	Disable all UGM valve outputs except those used during APU/Emergency Descent [Tower Lift Down, Lift Down, Swing (400S, 450AJ, 24RS), Jib Lift Up/Down (MACHINE SETUP > JIB = YES)]. If MACHINE SETUP > H&T LIGHTS = YES or > ENGINE ≠ DUAL FUEL ECM turn off lights	Voltage is greater than 9.25 volts	X	X
BATTERY VOLTAGE TOO HIGH – SYSTEM SHUTDOWN	442	The UGM detects that its supply voltage > 16.0 volts	Disable all UGM and Platform outputs until voltage < 15.75 volts and do not permit Machine Enable	Power Cycled	X	X
LSS BATTERY VOLTAGE TOO HIGH	443	MACHINE SETUP > LOAD SYSTEM ≠ NO The UGM detects that the LSS reports supply voltage > 16.0V	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.	X	X
LSS BATTERY VOLTAGE TOO LOW	444	MACHINE SETUP > LOAD SYSTEM ≠ NO The UGM detects that the LSS reports supply voltage < 9.0V	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.	X	X
BATTERY VOLTAGE LOW	445	The UGM detects that its supply voltage < 11 volts for 5 seconds. Engine State ≠ ENGINE CRANKING Auxiliary Power/Emergency Descent Mode is not active Glow Plugs are not energized	No response required for this DTC	Voltage is greater than 11.25 volts	X	X
LSS BATTERY VOLTAGE - INITIALIZATION ERROR	4479	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.			

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS BATTERY VOLTAGE - NOT CALIBRATED	4480	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.			
CANBUS FAILURE – PLATFORM MODULE	662	UGM does not receive any CAN messages from the PM in 250ms	The UGM shall suspend motion; If MACHINE SETUP > GENERATOR, the UGM shall disable to turn off generator relay output and assume generator off state. If MACHINE SETUP > ENGINE = DUAL FUEL and > H & T LIGHTS = YES, state of switch prior to loss of CAN Bus 1 shall be retained until CAN Bus 1 is restored or power cycled. Reactivation of Footswitch is required after CAN Bus 1 is restored to obtain Machine Enable. (340AJ, 450AJ) If the Machine is in Ground Mode, the UGM shall disable commands to PM for Jib Lift Up and Down, Platform Rotate Right and Left;	CAN messages are received from the PM	X	X
CANBUS FAILURE – LOAD SENSING SYSTEM MODULE	663	MACHINE SETUP > LOAD SYSTEM ≠ NO UGM does not receive any CAN messages from the LSS module in 1000ms	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.	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
CANBUS FAILURE – ENGINE CONTROLLER	666	An engine with a CAN engine controller is configured in MACHINE SETUP No CAN messages are received from the engine controller for more than 250ms	UGM shall set Target engine RPM = Mid-Engine if Engine State ≠ ENGINE STOPPED, and assume Engine Controller reporting mid-Engine; otherwise, Engine State = ENGINE STOPPED. If engine state = ENGINE STOPPED at time of CAN loss, UGM shall permit one start attempt. If engine state ≠ ENGINE STOPPED at time of CAN loss, UGM shall decel all functions. If MACHINE SETUP > GENERATOR ≠ NO, Generator Relay output to be turned off until re-enabled by operator after CAN is re-established.	CAN messages are received from the engine controller; UGM shall require re-activation of Footswitch (Platform Mode) or Ground Enable (Ground Mode) to enable functions and resume operation.	X	X
CANBUS FAILURE – EXCESSIVE CANBUS ERRORS	6613	More than 22 error frames per second for 4 seconds or more than 500 Buss Off conditions since last power cycle.	No response required for this DTC	Power Cycled	X	X
CANBUS FAILURE – TCU MODULE	6622	MACHINE SETUP > CLEARSKY = YES No CAN2 messages are received from the TCU module for more than 30 seconds	No response required for this DTC	Not all of the trigger conditions are met	X	X
CANBUS FAILURE – CHASSIS TILT SENSOR	6635	UGM does not receive any CAN messages from the Chassis Tilt Sensor in 250ms	The UGM shall consider the machine Tilted; UGM reports a combined chassis tilt angle of 90 degrees; UGM shall report individual axis readings as??	CAN messages are received from the Chassis tilt Sensor and controls are initialized	X	X
CANBUS FAILURE - GROUND DISPLAY	6651	UGM does not receive any CAN messages from the Ground Display in 250ms	No response required for this DTC	CAN messages are received from the Ground Display	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
CANBUS FAILURE – TEMPERATURE SENSOR	6657	MACHINE SETUP > TEMP CUTOUT = YES; UGM does not receive any CAN messages from the Ambient Temperature sensor in 250ms	The UGM shall set Low Temperature Cutout state = Faulty If the Machine is in Platform Mode and if the Boom is Above Elevation; The UGM shall suspend motion; The UGM shall limit the machine to Creep speed after controls initialized If the Machine is in Platform Mode and if the Boom is not Above Elevation; The UGM shall limit Swing, Tower Lift (340AJ, 450AJ), Tele, Lift, Platform Rotate, Platform Level, and Jib Lift (if MACHINE SETUP > JIB = YES) to Creep speed If the Machine is in Ground Mode; No response required for this DTC	CAN messages are received from the Ambient Temperature sensor	X	X
REMOTE CONTRACT MANAGEMENT OVERRIDE – ALL FUNCTIONS IN CREEP	681	MACHINE SETUP > CLEARSKY = YES Value set by ClearSky TCU	Response detailed in Remote Contract Management section.	Cleared by ClearSky TCU	X	X
CHASSIS TILT SENSOR NOT CALIBRATED	813	The UGM detects one of the follow conditions: The tilt sensor has not been calibrated; For 400S, 450AJ, the Tilt Sensor source Address is 0xC0; For 400S, 450AJ, the Tilt Sensor Serial number does not match	The UGM shall consider the machine Tilted UGM reports a combined chassis tilt angle of 90 degrees; UGM shall report individual axis readings	Tilt sensor calibrated	X	X
CHASSIS TILT SENSOR OUT OF RANGE	814	Fault CHASSIS TILT SENSOR NOT CALIBRATED (813) is not present and Tilt sensor measurement > 19° for 4 seconds. Not to be reported during Tilt Sensor calibration.	No additional action required beyond Tilted requirements specified elsewhere; UGM reports a combined chassis tilt angle of 90 degrees; UGM shall report individual axis readings	Not all of the trigger conditions are met.	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
TILT SENSOR STAGNANT	818	The UGM detects the following conditions: The X axis or Y axis filtered readings change by $< \pm 0.1^\circ$ in 5 second; Drive Forward or Drive Reverse output value is \geq Creep output value; Do not report if DTC 823 is active	The UGM shall consider the machine Tilted; UGM reports a combined chassis tilt angle of 90 degrees; The UGM reports individual axis readings	Power Cycled	X	X
LSS CELL #1 ERROR	821	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 4-Cell LSS; The UGM detects that LSS is reporting error with Cell #1	UGM to set Platform Load State = Overloaded	Not all of the trigger conditions are met	X	X
LSS CELL #2 ERROR	822	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 4-Cell LSS; The UGM detects that LSS is reporting error with Cell #2	UGM to set Platform Load State = Overloaded	Not all of the trigger conditions are met	X	X
LSS CELL #3 ERROR	823	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 4-Cell LSS; The UGM detects that LSS is reporting error with Cell #3	UGM to set Platform Load State = Overloaded	Not all of the trigger conditions are met	X	X
LSS CELL #4 ERROR	824	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 4-Cell LSS; The UGM detects that LSS is reporting error with Cell #4.	UGM to set Platform Load State = Overloaded	Not all of the trigger conditions are met	X	X
LSS HAS NOT BEEN CALIBRATED	825	The load sensing system is configured but has not been calibrated. The machine will assume the platform is overloaded.	UGM to set Platform Load State = Overloaded	Calibrate the load sensing system.	X	X
RUNNING AT CREEP – PLATFORM OVERLOADED	826	Machine Setup > LOAD SYSTEM = WARN ONLY The platform is Overloaded Ground mode is active with Auxiliary Power/Emergency Descent mode not active or Platform mode is active	Refer to Table 7-1 for machine response.	Not all of the trigger conditions are met	X	X
DRIVE & BOOM PREVENTED – PLATFORM OVERLOADED	827	The Platform is Overloaded and Machine Setup > LOAD SYSTEM = CUTOFF PLATFORM, Platform Mode is active, and conditions of Table 7-1 apply. -or- The Platform is Overloaded and Machine Setup > LOAD SYSTEM = CUTOFF ALL and conditions of Table 7-1 apply.	Refer to Table 7-1 for machine response.	Not all of the trigger conditions are met	X	X
LIFT UP & TELE OUT PREVENTED – PLATFORM OVERLOADED	828	MACHINE SETUP > LOAD SYSTEM = SPECIAL 1 Platform Mode is active The platform is Overloaded	Refer to Table 7-1 for machine response.	Not all of the trigger conditions are met	X	X
LSS READING UNDER WEIGHT	8211	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.	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS SENSOR DISAGREEMENT	8218	The control system has determined that the difference between the calculated load for sensor 1 and sensor 2 differ by more than 50 lb 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 200 lb. 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.	X	X
LSS SENSOR - OUT OF RANGE HIGH	8219	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 1-Cell LSS; Strain Gauge 1 or 2 reports Out of Range High error	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS SENSOR - OUT OF RANGE LOW	8220	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 1-Cell LSS; Strain Gauge 1 or 2 reports Out of Range Low error	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS SENSOR - OUT OF CALIBRATION	8221	MACHINE SETUP > LOAD SYSTEM \neq NO; Load System is the 1-Cell LSS; Strain Gauge 1 or 2 reports Not Calibrated error	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS STRAIN GAUGE 1 - STAGNANT	8222	The control system has determined that the strain gauge 1 reading in the load sensor is stagnant (not changing). If the platform is not considered to be overloaded boom functions will be restricted to creep. If DTC 8223 is active in combination with DTC 8222 the machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.		Possible sensor hardware issue.		
LSS STRAIN GAUGE 2 - STAGNANT	8223	The control system has determined that the strain gauge 2 reading in the load sensor is stagnant (not changing). If the platform is not considered to be overloaded boom functions will be restricted to creep. If DTC 8222 is active in combination with DTC 8223 the machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.		Possible sensor hardware issue.		

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS STRAIN GAUGE 1 - OUT OF RANGE LOW	8224	<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.		
LSS STRAIN GAUGE 2 - OUT OF RANGE LOW	8225	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		
LSS STRAIN GAUGE 1 - OUT OF RANGE HIGH	8226	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		
LSS STRAIN GAUGE 2 - OUT OF RANGE HIGH	8227	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS STRAIN GAUGE 1 - INITIALIZATION ERROR	8228	<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.		
LSS STRAIN GAUGE 2 - INITIALIZATION ERROR	8229	<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.		
LSS STRAIN GAUGE 1 - NOT CALIBRATED	8230	<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.		
LSS STRAIN GAUGE 2 - NOT CALIBRATED	8231	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS STRAIN GAUGE 1 - SENSOR DEFECT	8232	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		
LSS STRAIN GAUGE 2 - SENSOR DEFECT	8233	<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 annunciated is latched within a given key cycle.</p>		Possible sensor hardware issue.		
LSS STRAIN GAUGE 1 - NOT INSTALLED	8234	<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.		
LSS STRAIN GAUGE 2 - NOT INSTALLED	8235	<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.		

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
LSS NOT DETECTING CHANGE	8236	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. This fault, once annunciated is latched within a given key cycle.		Possible sensor hardware issue.		
LSS STRAIN GAUGE 1 - A/D DEFECT	8237	The shear beam is reporting an internal issue with the strain gauge 1 sensor. If the platform is not overloaded the machine will be placed in to creep. If DTC 8238 is also active the machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.		Possible sensor hardware issue.		
LSS STRAIN GAUGE 2 - A/D DEFECT	8238	The shear beam is reporting an internal issue with the strain gauge 2 sensor. If the platform is not overloaded the machine will be placed in to creep. If DTC 8237 is also active the machine will assume the platform is overloaded. This fault, once annunciated is latched within a given key cycle.		Possible sensor hardware issue.		
FRONT LEFT STEER VALVE – OPEN CIRCUIT	8639	The UGM detects an open circuit at this output	Steer Left and Right speed limited to Creep (340AJ, 400S, 450AJ); No response required for this DTC (18RS, 24RS)	Power Cycled	X	X
FRONT LEFT STEER VALVE – SHORT TO BATTERY	8640	The UGM detects a short to battery at this output	Disable UGM Drive Forward/Reverse and Steer Left/Right outputs	Power Cycled	X	X
FRONT LEFT STEER VALVE – SHORT TO GROUND	8641	The UGM detects a short to ground at this output	Disable UGM Steer Left and Right outputs	Power Cycled	X	X
FRONT RIGHT STEER VALVE – OPEN CIRCUIT	8642	The UGM detects an open circuit at this output	Steer Left and Right speed limited to Creep (340AJ, 400S, 450AJ); No response required for this DTC (18RS, 24RS)	Power Cycled	X	X
FRONT RIGHT STEER VALVE – SHORT TO BATTERY	8643	The UGM detects a short to battery at this output	Disable UGM Drive Forward/Reverse and Steer Left/Right outputs	Power Cycled	X	X
FRONT RIGHT STEER VALVE – SHORT TO GROUND	8644	The UGM detects a short to ground at this output	Disable UGM Steer Left and Right outputs	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
MACHINE SAFETY SYSTEM OVERRIDE OCCURRED	873	MSSO = Active	Response described in MSSO Influence on Machine Operation section	Fault shall be retentive through Power Cycled; Can be reset only with an Analyzer via the CALIBRATIONS > MSSO > MSSO RESET menu	X	X
LSS WATCHDOG RESET	991	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; UGM detects LSS report of an anomaly exists that has caused a WatchDog Timer reset.	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS EEPROM ERROR	992	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; UGM detects LSS report of an anomaly that exists in the LSS EEPROM	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS INTERNAL ERROR – PIN EXCITATION	993	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; UGM detects LSS report of improper excitation voltage	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS INTERNAL ERROR – DRDY MISSING FROM A/D	994	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; UGM detects LSS report of an anomaly that exists in the LSS A/D converter operations.	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
EEPROM FAILURE - CHECK ALL SETTINGS	998	The UGM has detected an anomaly in EEPROM	Disable all machine and engine functions (i.e., command engine shut-down and do not permit start); reset the section of EEPROM where the failure occurred to defaults.	Power Cycled	X	X
FUNCTIONS LOCKED OUT - PLATFORM MODULE SOFTWARE VERSION IMPROPER	9910	The UGM software version type is 'P' or 'B' The UGM has received valid version information from the PM The PM software version type is 'P' or 'B' The UGM software major version number does not match the major version number of the platform software	Activate the platform alarm continuously Creep mode is active If Platform Mode is active, disable all Drive, Steer, and Boom functions and do not permit Machine Enable	Not all of the trigger conditions are met	X	X
FUNCTION LOCKED OUT - LSS MODULE SOFTWARE VERSION IMPROPER	9911	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; The UGM determines that the LSS software version is not compatible with existing code.	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
CHASSIS TILT SENSOR NOT GAIN CALIBRATED	9915	The tilt sensor gain calibration values recorded to flash memory during Phoenix International's manufacturing test are not present	The UGM reports a faulted chassis tilt angle of 90 degrees	Valid values are present	X	X
PLATFORM SENSOR REF VOLTAGE OUT OF RANGE	9920	The PM detects that its reference voltage is out of range and reports the fault to the UGM	If in Platform mode, Lift/Swing and Drive shall be place in Creep. All other functions shall operate normally.	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
GROUND MODULE FAILURE: HIGH SIDE DRIVER CUTOUT FAULTY	9921	The engine is not running The engine is not cranking The UGM footswitch input J7-15 is LOW The machine is in Platform Mode The Main Dump output J2-13 is detected as HIGH via the analog feedback 300ms after it is attempted to be activated during the one time startup test of the UGM hardware shutoff circuitry	Disable all Drive/Steer and Boom functions except Tower Lift Down (340AJ, 450AJ), Lift Down, and Jib Lift Down (340AJ).	Power Cycled	X	X
PLATFORM MODULE FAILURE: HWFS CODE 1	9922	The PM detects that its V(low) FET has failed and reports this fault to the UGM	No response required for this DTC	Power Cycled	X	X
FUNCTIONS LOCKED OUT - MACHINE NOT CONFIGURED	9924	The machine is powered up and no model has been selected yet in the MACHINE SETUP menu	Display ??? or NO MODEL at Analyzer MACHINE SETUP menu MACHINE SETUP->MODEL NUMBER Do not report any other faults Disable all machine and engine functions (i.e., command engine shutdown and do not permit start)	Power Cycled	X	X
GROUND MODULE CONSTANT DATA UPDATE REQUIRED	9927	The UGM detects one of the following conditions when software type is 'P' or 'B': The Version Verification Word #1 or the Version Verification Word #2 values located in the constant data sector of flash memory (found on constant data spreadsheet tab pstConstantDataVersion) do not match the values located in the code area of flash memory The Version Major value located in the constant data sector of flash memory (found on constant data spreadsheet tab pstConstantDataVersion) does not match the value located in the code area of flash memory	Disable all machine and engine functions (i.e., command engine shutdown and do not permit start)	A different application code or constant data version is programmed so that the values match Power Cycled	X	X
CURRENT FEEDBACK GAINS OUT OF RANGE	9944	One or more of the current feedback gains that are calculated and written to flash memory during the PIC manufacturing test process are detected as being out of range	A gain of 1 is used for the factory gain(s) that was out of range; all functions shall be placed in Creep mode.	Power Cycled	X	X
CURRENT FEEDBACK CALIBRATION CHECKSUM INCORRECT	9945	The current feedback gains checksum that is calculated and written to flash memory during the PIC manufacturing test process is detected as being incorrect	Disable all machine and engine functions (i.e., command engine shutdown and do not permit start).	Power Cycled	X	X

Table 6-11. Diagnostic Trouble Code Chart

Help Message	DTC	Fault Condition/Trigger (For configurable items, fault applies only if configured. All listed conditions to be met unless stated otherwise)	Required Control Response or State Assignment	Conditions Required for Movement and/or to Clear Fault	400S	450AJ
MACHINE CONFIGURATION OUT OF RANGE – CHECK ALL SETTINGS	9949	UGM has detected an anomaly in EEPROM with regard to the Machine Setup configuration.	UGM to prompt operator to correct issue via Analyzer and disable all machine and engine functions (i.e., command engine shutdown and do not permit start).until EEPROM data in corrupted area is changed.	Power Cycled and EEPROM data in associated area is changed	X	X
LSS CORRUPT EEPROM	9977	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 4-Cell LSS; and one of the following conditions: UGM determines LSS-stored values for Unloaded weight in Indirect 0x100≠ 0x108 or UGM determines LSS-stored values for Accessory weight in Indirect 0x102≠ 0x10A UGM determines LSS-stored checksum1 (0x10F) ≠ checksum 2 (0x107)	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
FUNCTIONS LOCKED OUT - GROUND MODULE SOFTWARE VERSION IMPROPER	9979	Ground software has been installed on a UGM with a ST10F274 processor (Hardware Rev < 6), which does not have guaranteed flash storage in the sector where Constant Data is written.	Disable all machine and engine functions (i.e., command engine shutdown and do not permit start)	Power Cycled	X	X
GROUND MODULE LOW FET FAILURE	9986	VLow FET determined to be failed because all Digital Inputs are high; UGM unable to read high-sensing inputs.	Disable all machine and engine functions (i.e., command engine shutdown and do not permit start).	Power Cycled	X	X
LSS INTERNAL ERROR	99171	MACHINE SETUP > LOAD SYSTEM ≠ NO; Load System is the 1-Cell LSS; Strain Gauge 1 or 2 reports Initialization, Defect or Not Installed error	UGM to set Platform Load State = Overloaded	Power Cycled	X	X
LSS - FACTORY CALIBRATION ERROR	99285	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.		

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SECTION 7. BASIC ELECTRICAL INFORMATION & 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

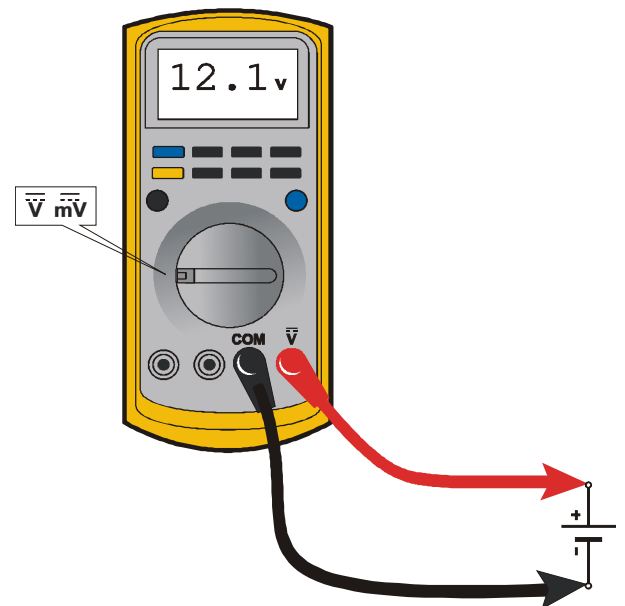


Figure 7-1. Voltage Measurement (DC)

- 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

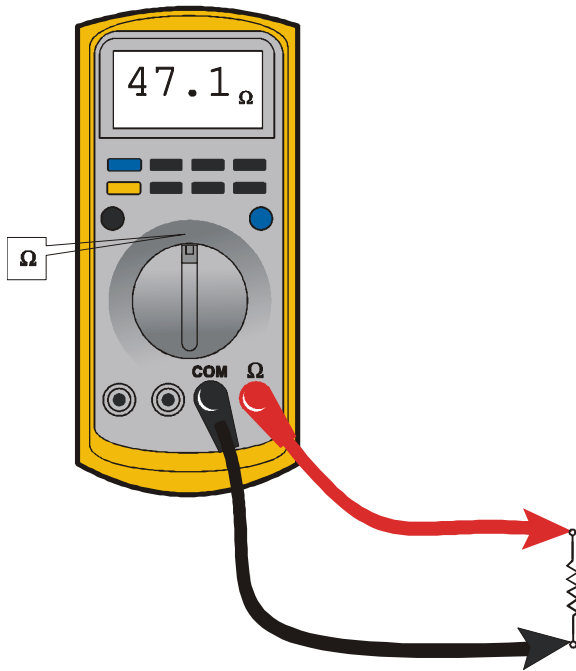


Figure 7-2. Resistance Measurement

- 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

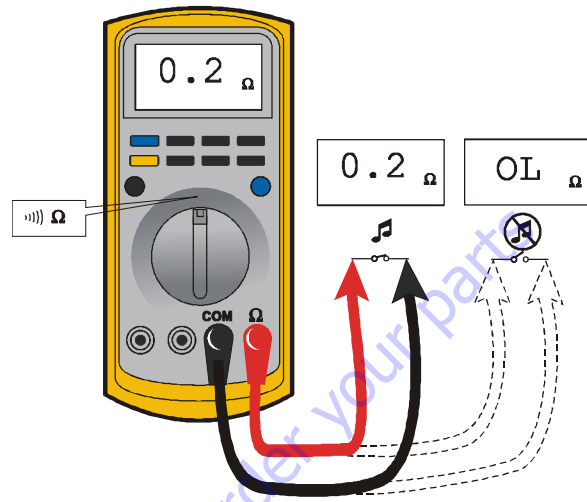


Figure 7-3. Continuity Measurement

- 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

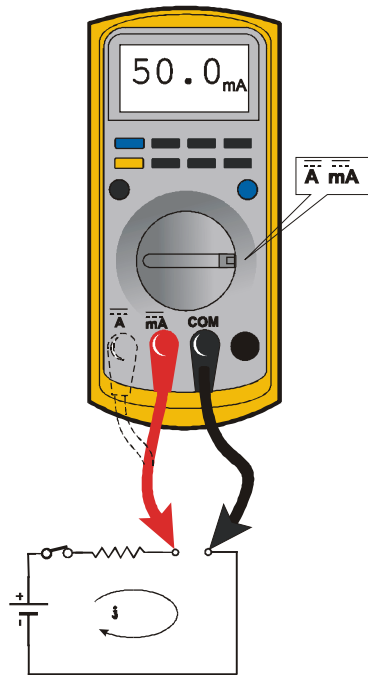


Figure 7-4. Current Measurement (DC)

- 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 P/N 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).

7.4 DIELECTRIC GREASE APPLICATION

Dielectric grease helps to prevent corrosion of electrical contacts and improper conductivity between contacts from moisture intrusion. Non-waterproof connectors benefit from the application of dielectric grease.

Installation

The following is general guidance for the installation of dielectric grease in a connector system.

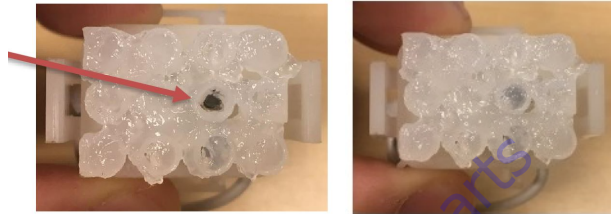
- Use dielectric grease in a tube for larger connection points or apply with a syringe for small connectors.
- Apply dielectric grease to plug/male connector housing which typically contains sockets contact/female terminals.
- Leave a layer of dielectric grease on the mating face of the connector, completely covering each connector terminal hole. Refer the pictures shown below.

Assemble the connector system immediately to prevent moisture ingress or dust contamination.

The following connector systems are specifically addressed because of their widespread use at JLG. However, this guidance may be applied to similar devices.

AMP Mate-N-Lok

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



Improper

Proper

AMP Faston

This connector system is typically used on operator switches at JLG. Follow the general guidance for installation.

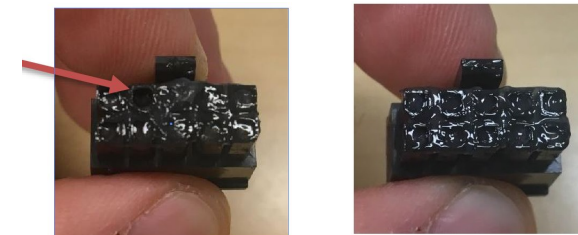


Improper

Proper

AMP Micro-Fit

This connector system is typically used on control modules at JLG. Follow the general guidance for installation.

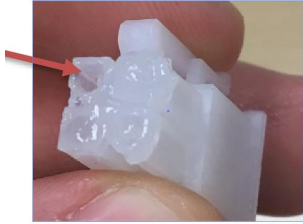


Improper

Proper

AMP Mini Fit Jr

This connector system is typically used on control modules at JLG. Follow the general guidance for installation.



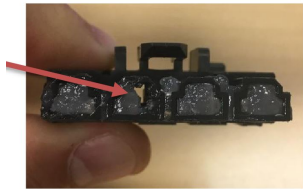
Improper



Proper

Mini Fit Sr

This connector system is typically used on control modules at JLG. Follow the general guidance for installation.



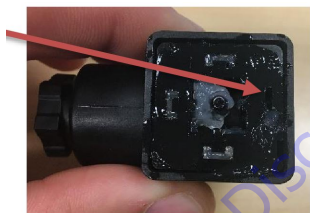
Improper



Proper

DIN Connectors

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



Improper



Proper

Exceptions

Some waterproof connector applications do benefit from dielectric grease, and some non waterproof connectors do not benefit from dielectric grease.

In the exceptions below, we have found dielectric grease is not needed for some applications, and in some cases can interfere with the intended connection. Dielectric grease shall be used as an exception in other applications.

ENCLOSURES

Application of dielectric grease is not required in properly sealed enclosures. To meet criteria, the enclosure must be rated to at least IP56 (dust protected; protected from powerful jets of water).

CARLING SWITCH CONNECTORS

Carling switches may experience high impedance, or discontinuity, due to silicone dielectric grease ingress when switching inductive loads. Therefore, dielectric grease shall not be applied to Carling switch mating connectors unless specified in the AMP Connector.

7.5 AMP CONNECTOR

Applying Silicone Dielectric Compound to AMP Connectors

Silicone Dielectric Compound must be used on the AMP connections 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.

1. To prevent oxidation and low level conductivity, silicone dielectric grease must be packed completely around male and female pins on the inside of the connector after the mating of the housing to the header. This is easily achieved by using a syringe to fill the header with silicone dielectric compound, to a point just above the top of the male pins inside the header. When assembling the housing to the header, it is possible that the housing will become air locked, thus preventing the housing latch from engaging.
2. Pierce one of the unused wire seals to allow the trapped air inside the housing to escape.
3. Install a hole plug into this and/or any unused wire seal that has silicone dielectric compound escaping from it.

Assembly

Check to be sure the wedge lock is in the open, or as-shipped, position (See Figure 7-5.). Proceed as follows:

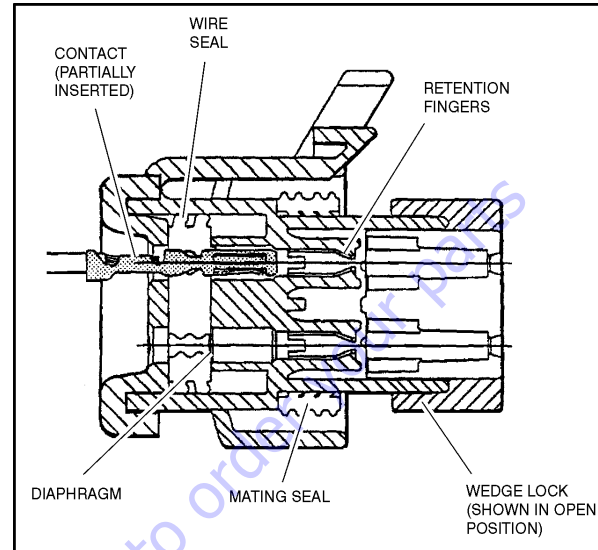


Figure 7-5. Connector Assembly Figure 1

1. To insert a contact, push it straight into the appropriate circuit cavity as far as it will go (See Figure 7-7.).
2. Pull back on the contact wire with a force of 1 or 2 lb to be sure the retention fingers are holding the contact (See Figure 7-7.).

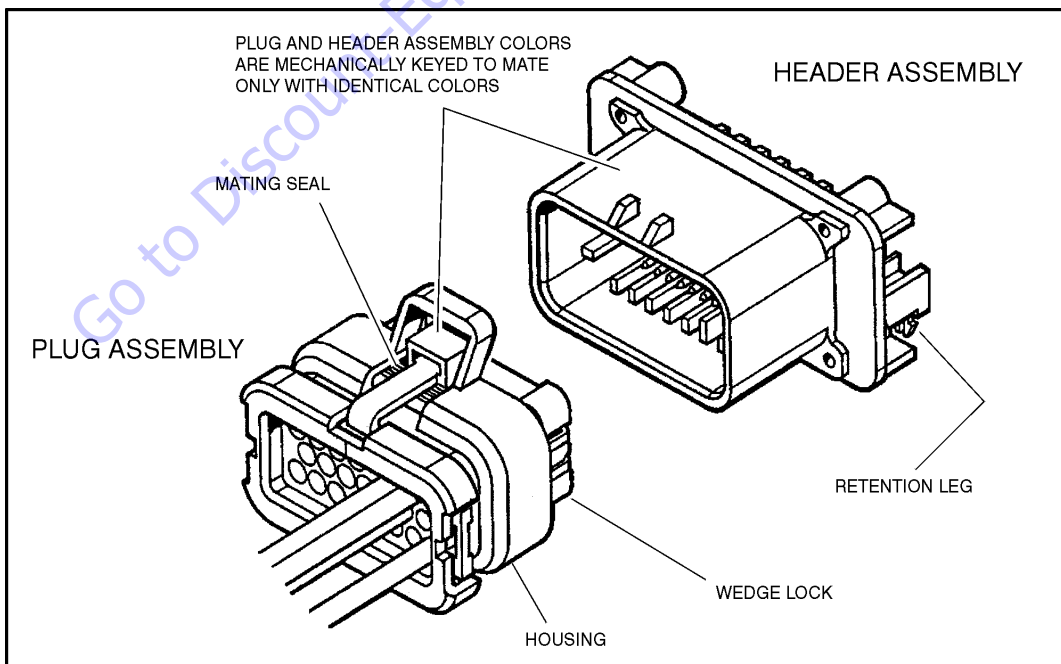


Figure 7-6. AMP Connector

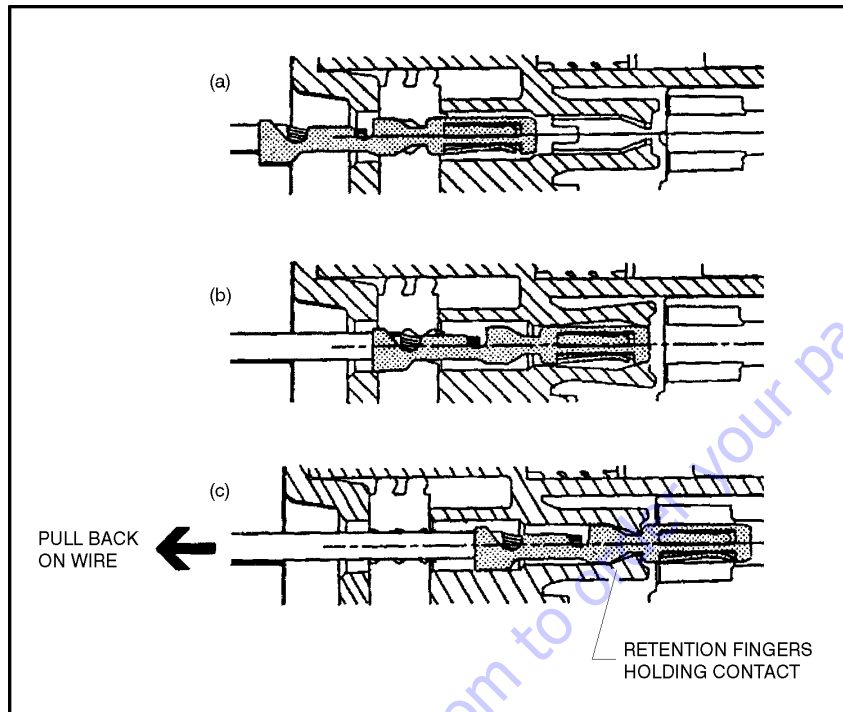


Figure 7-7. Connector Assembly Figure 2

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 7-8).

4. Slide the wedge lock into the housing until it is flush with the housing (See Figure 7-9).

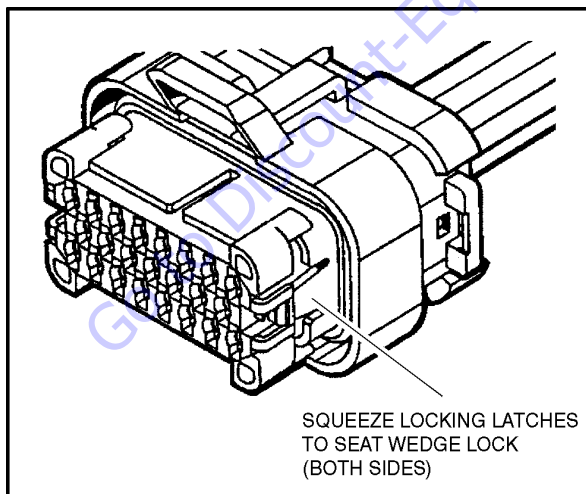


Figure 7-8. Connector Assembly Figure 3

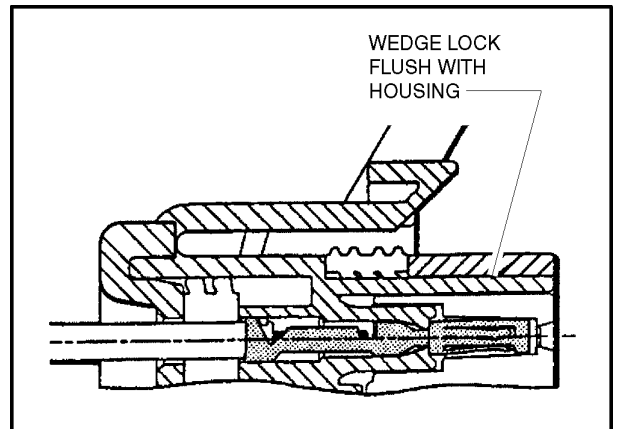


Figure 7-9. Connector Assembly Figure 4

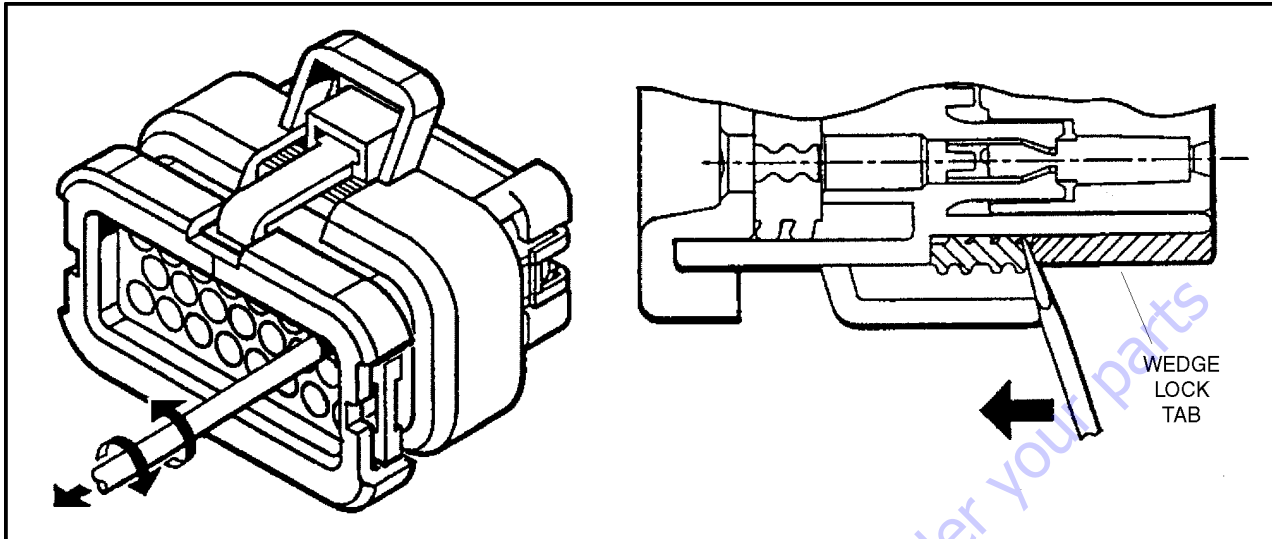


Figure 7-10. Connector Disassembly

Disassembly

1. Insert a 4.8 mm (3/16") wide screwdriver blade between the mating seal and one of the red wedge lock tabs.
2. Pry open the wedge lock to the open position.
3. 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.

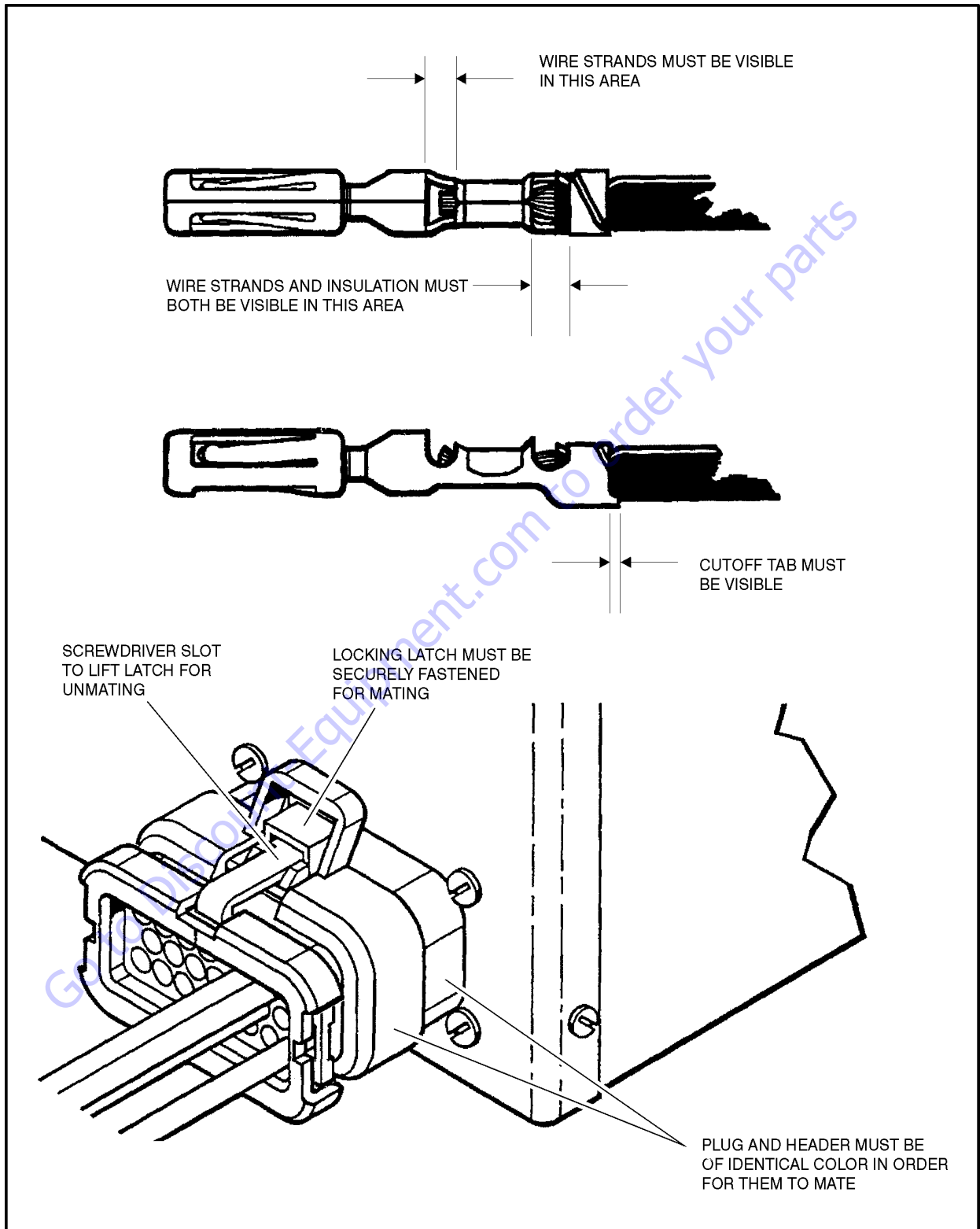


Figure 7-11. Connector Installation

7.6 DEUTSCH CONNECTORS

DT/DTP Series Assembly

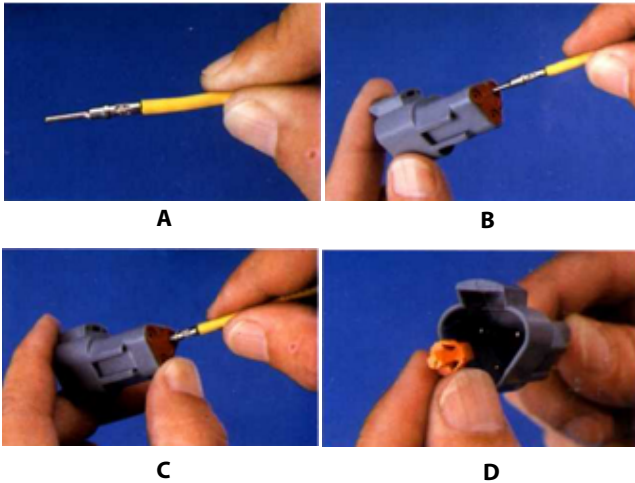


Figure 7-12. DT/DTP Contact Installation

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

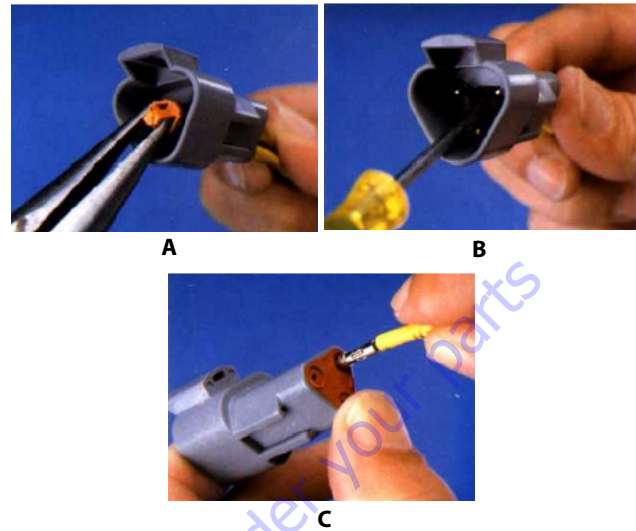


Figure 7-13. DT/DTP Contact Removal

5. Remove wedgelock using needle nose 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

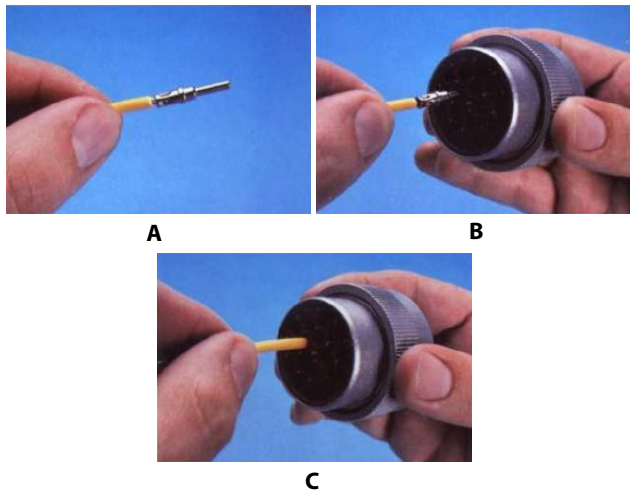


Figure 7-14. HD/HDP Contact Installation

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

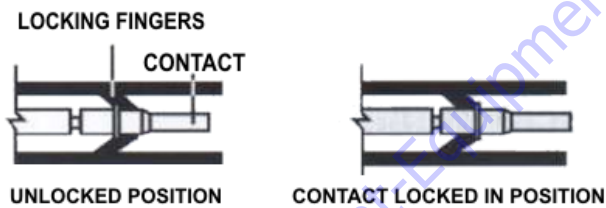


Figure 7-15. HD/HDP Locking Contacts Into Position

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

HD30/HDP20 Series Disassembly

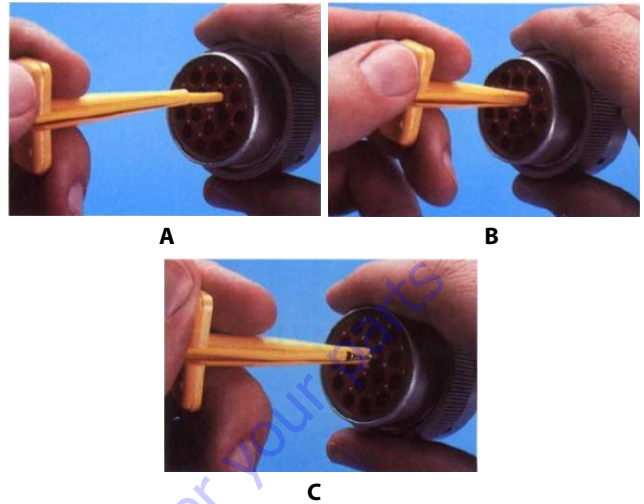


Figure 7-16. HD/HDP Contact Removal

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

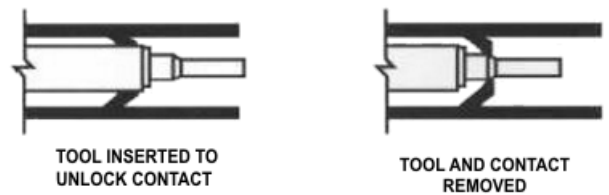


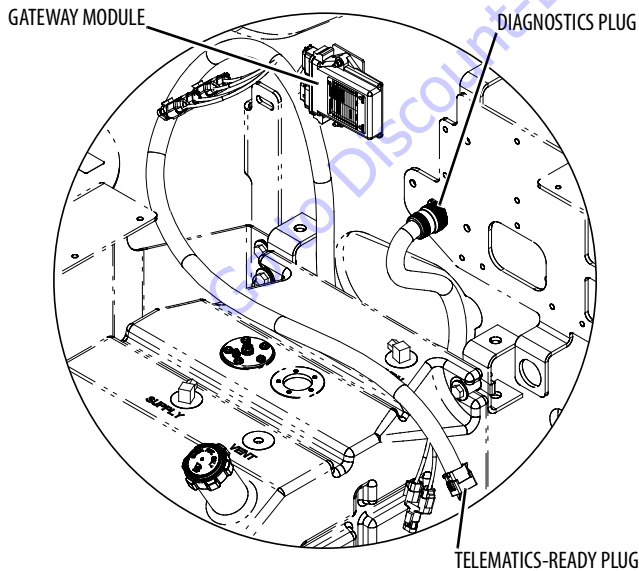
Figure 7-17. HD/HDP Unlocking Contacts

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

7.7 TELEMATICS GATEWAY

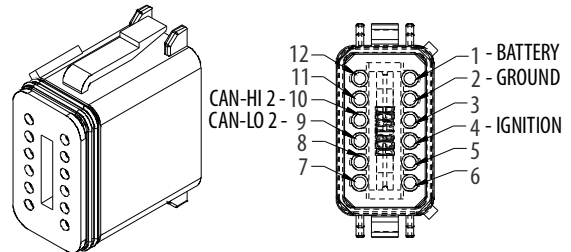
Personnel using machines equipped with an optional telematics gateway will be able to view the following data through their telematics device:

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:



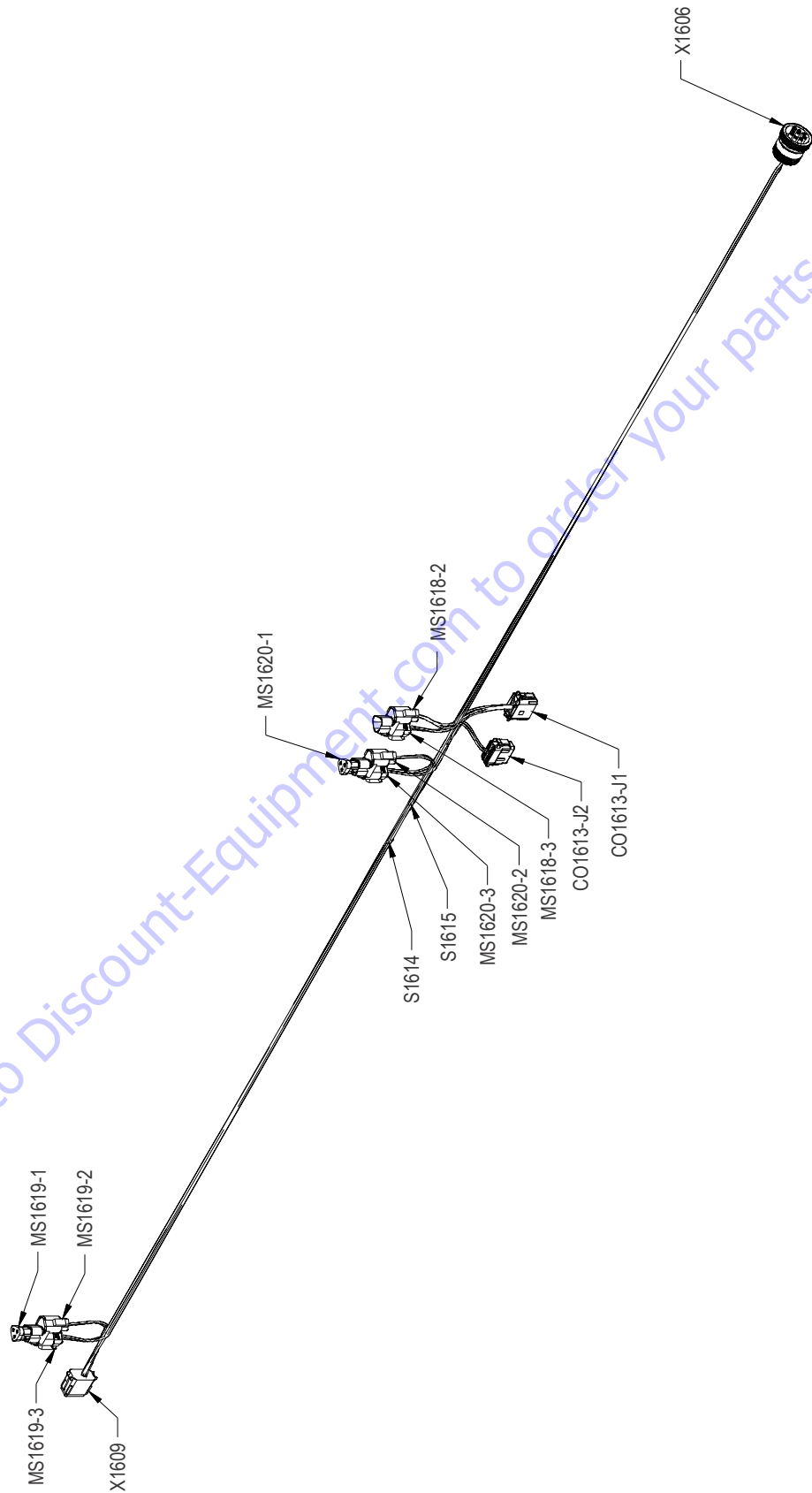


Figure 7-18. Telematics Gateway Harness - Sheet 1 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & 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)

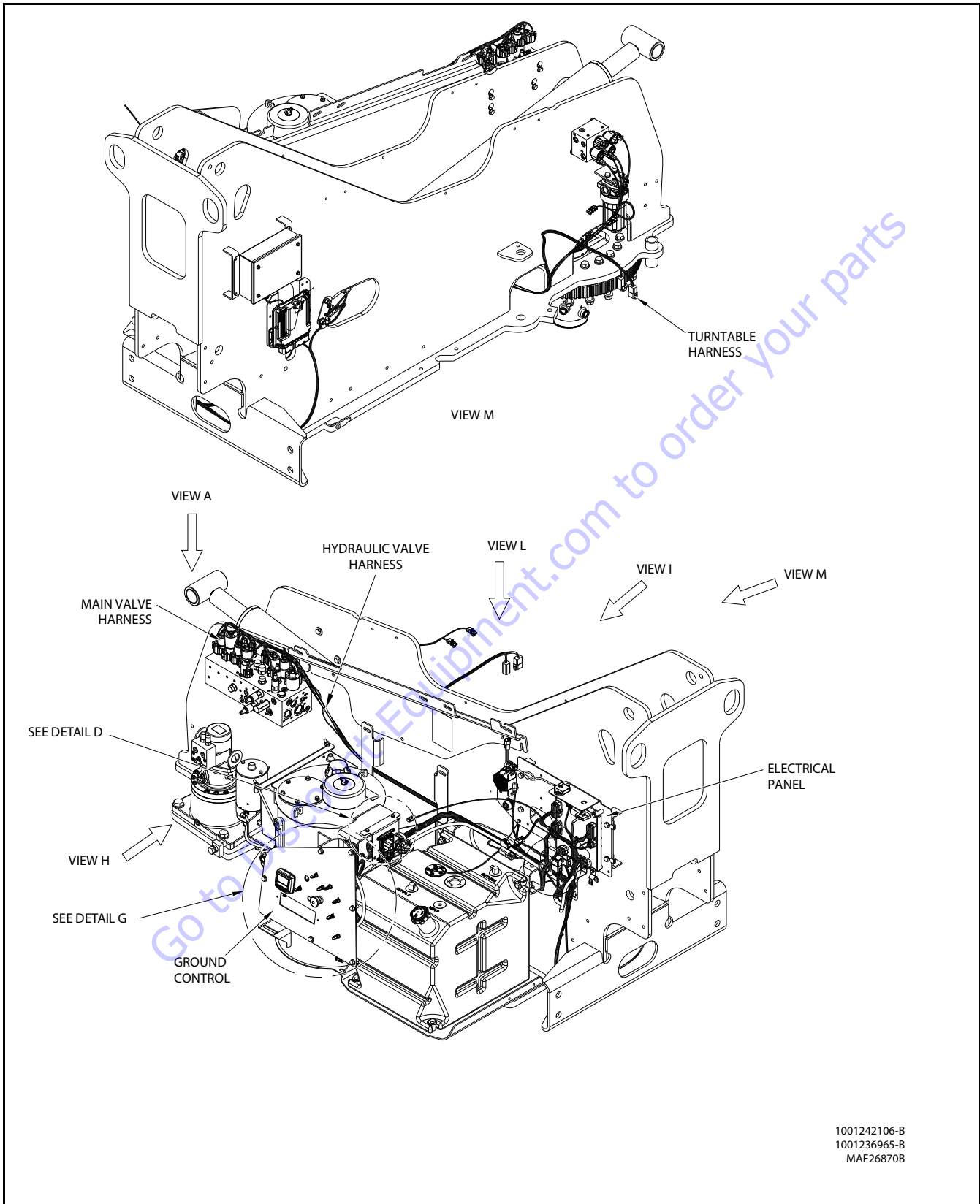
X1606 (DIAG)					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	0-1 GND	16 AWG	GXL	S1615 (2)
B	RED	1-0 BAT	16 AWG	GXL	X1609 (1)
C	YEL	CANH1	18 AWG	GXL	MS1618-3 (A)
D	GRN	CANL1	18 AWG	GXL	MS1618-3 (B)
H	ORN	2-1 IGN	16 AWG	GXL	S1614 (2)

Figure 7-19. Telematics Gateway Harness - Sheet 2 of 3

					FROM		TO	
WIRE NO.	COLOR	WIRE GAUGE	LENGTH (mm)	JACKET	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 7-20. Telematics Gateway Harness - Sheet 3 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



1001242106-B
1001236965-B
MAF26870B

Figure 7-21. Electrical Installation - Sheet 1 of 5

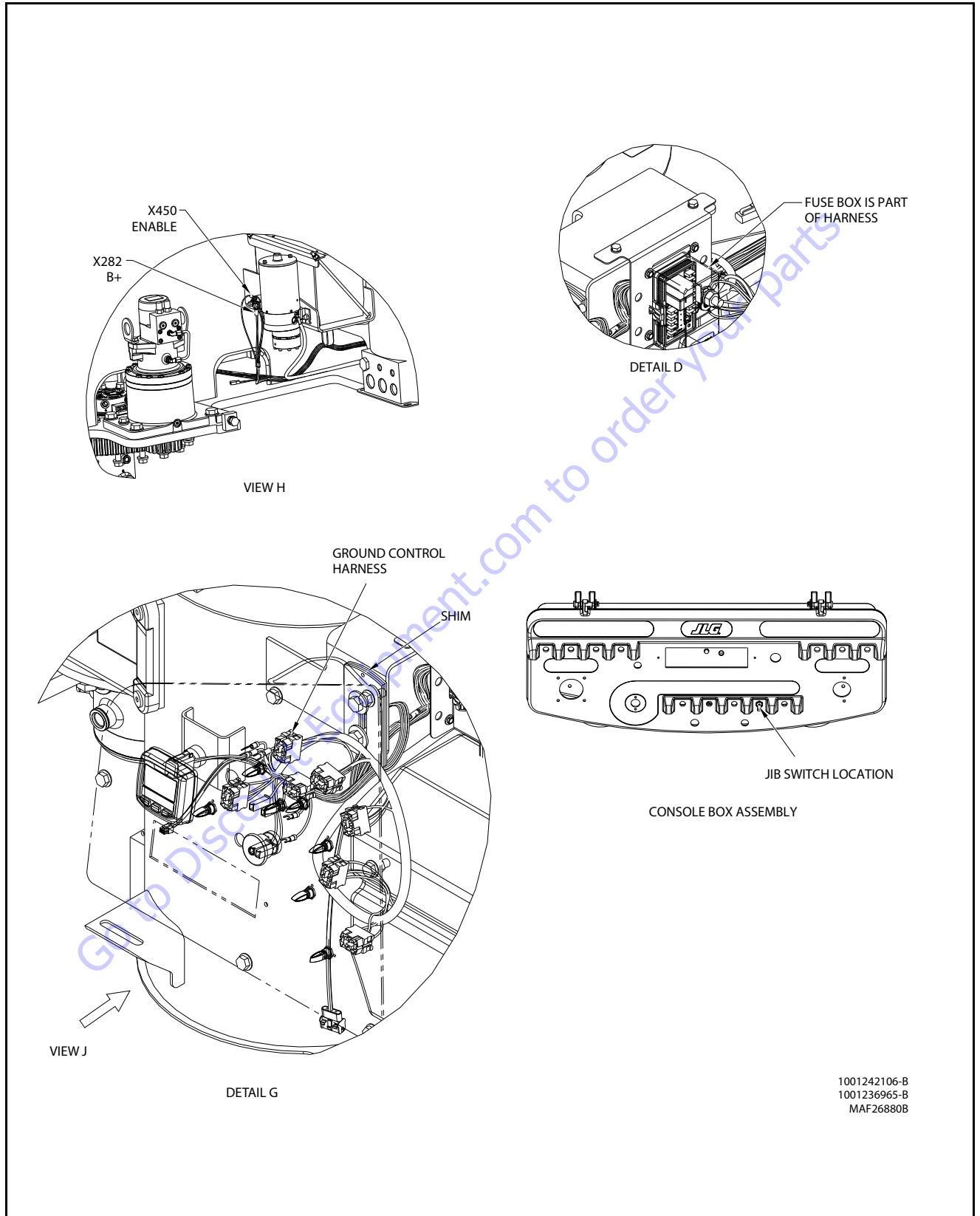
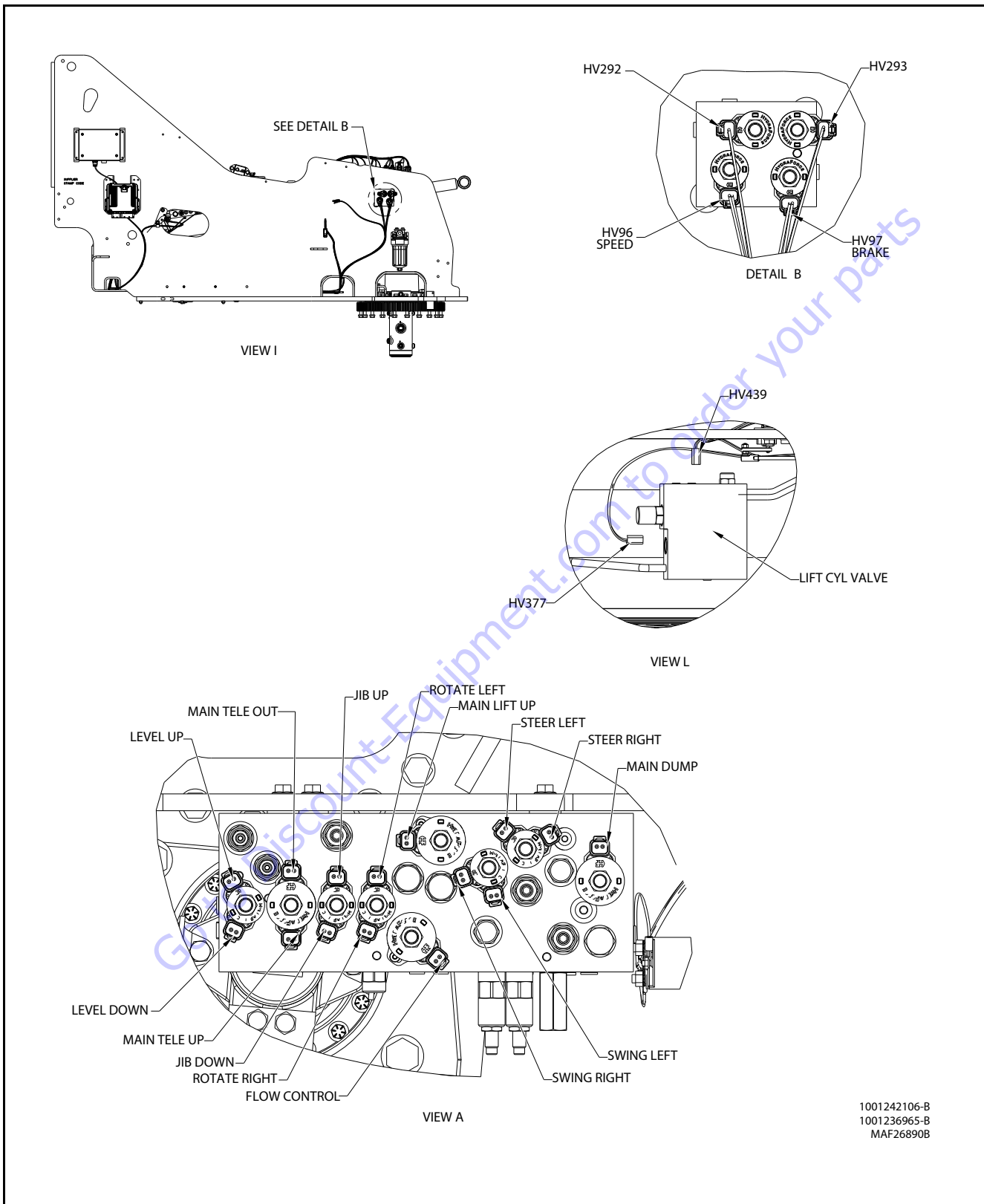


Figure 7-22. Electrical Installation - Sheet 2 of 5

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



1001242106-B
1001236965-B
MAF26890B

Figure 7-23. Electrical Installation - Sheet 3 of 5

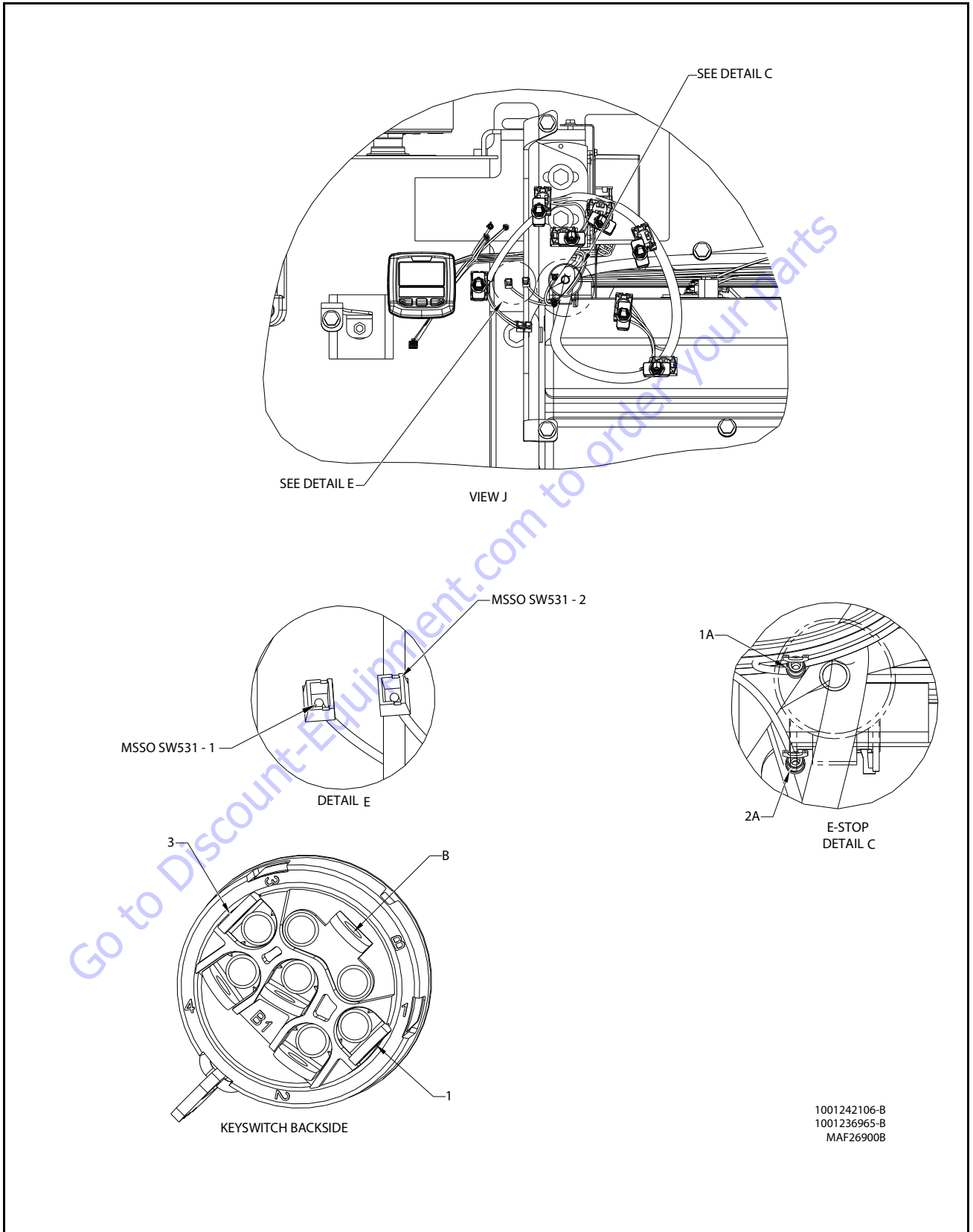


Figure 7-24. Electrical Installation - Sheet 4 of 5

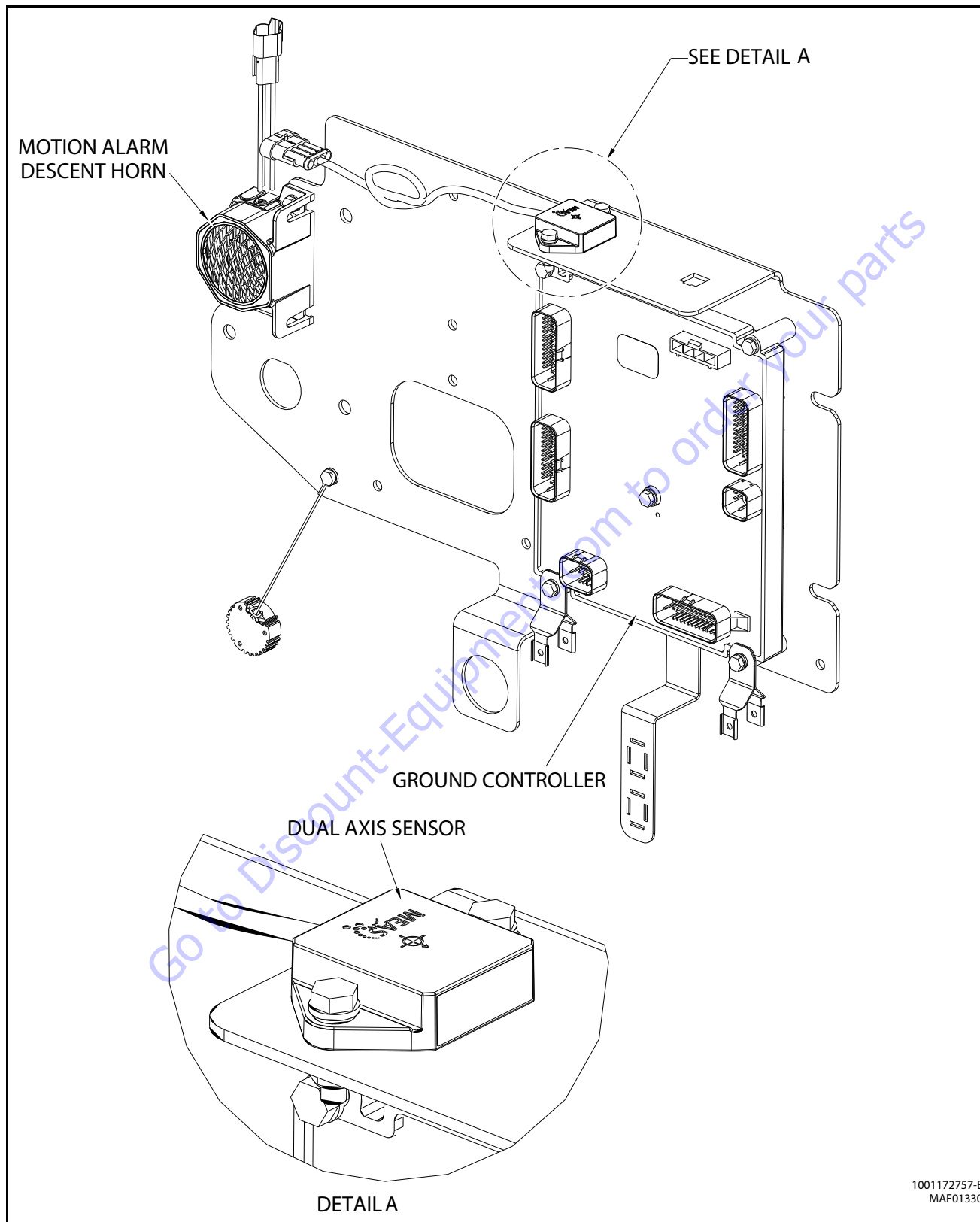


Figure 7-25. Electrical Installation - Sheet 5 of 5

7.8 WIRING HARNESS CONNECTOR LABELS AND WIRING HARNESSES

Connector Labels

Connectors between harnesses are identified by the prefix "X" and a sequentially assigned number. An optional suffix (letters & numbers) may be added when multiple terminations occur at one device or when there are optional connections.

Examples:

X25 connects to X25 in another harness.

X65A, X65B connect to different portions of one device

X163 connects to X163A in ANSI and X163B in CE machines

Component Labels

Every component on the vehicle has a unique identification. A standard prefix letter is assigned according to the table below, followed by a unique sequential number. An optional suffix (letters & numbers) may be added when multiple terminations occur at one device.

Terminals that are not loaded into connectors are considered independent components and labeled in the same fashion.

Table 7-1. Wiring Harness Connector Labels

Component	Category	Label
Audible	Alarms	AH
	Horns	
Battery	Batteries	BT
	Battery Terminals	
Control Module	Ground	CO
	LSS	
	Platform	
Engine	Alternator	EC
	Cold Start	
	Controller	
	Coolant Temp	
	Fuel Pump	
	Fuel Solenoid	
	Glow Plugs	
	Oil Pressure	
Fuse & CB Fuse FC	Fuse	FC
	Fusible Link	FC
	Circuit Breaker	CB
Gauge & Display	Board	GD
	Cluster	
	Hour meter	
	LMI	
Inline	Resistor	R
	Diode	D
Joystick & Steering	Electronic	JS
	Hydraulic	
Lights	Dome	LB
	Headlights	
	Simple	
	Taillights	
Membrane Panel		MP
Miscellaneous	Radio	MS
	Speakers	
	Splice Blocks	
	T-Connectors	

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

Table 7-1. Wiring Harness Connector Labels

Component	Category	Label	
Other Switches	Disconnect	SW	
	EMS		
	Foot		
		HVAC	WH
		Key	SW
		Park brake	
		Pump pot	
		Push	
		Shifter	
		Turn signal	
Relay	5 Pin	RL	
	4 Pin		
	Contactors		
	Power module		
Rocker Switch		SW	
Sensor	Angle	SN	
	Fuel		
	Length		
	Limit		
	Load		
	Pressure		
	Proximity		
	Speed		
	Temperature		
Terminals	Pins	T	
	Sockets		
	Male Blades		
	Female Blades		
	Rings		
	Forks		
Toggle Switch	DPDT	SW	
	DPST		
	SPDT		
	SPST		
	Special		
Valves	Simple	HV	
	Suppression		
<p>Examples: <i>T67 is a ring terminal connected during installation.</i> <i>C01-J3 is the J3 connector for a UGM control module.</i> <i>EC9 is a glow plug supplied with the engine</i></p>			

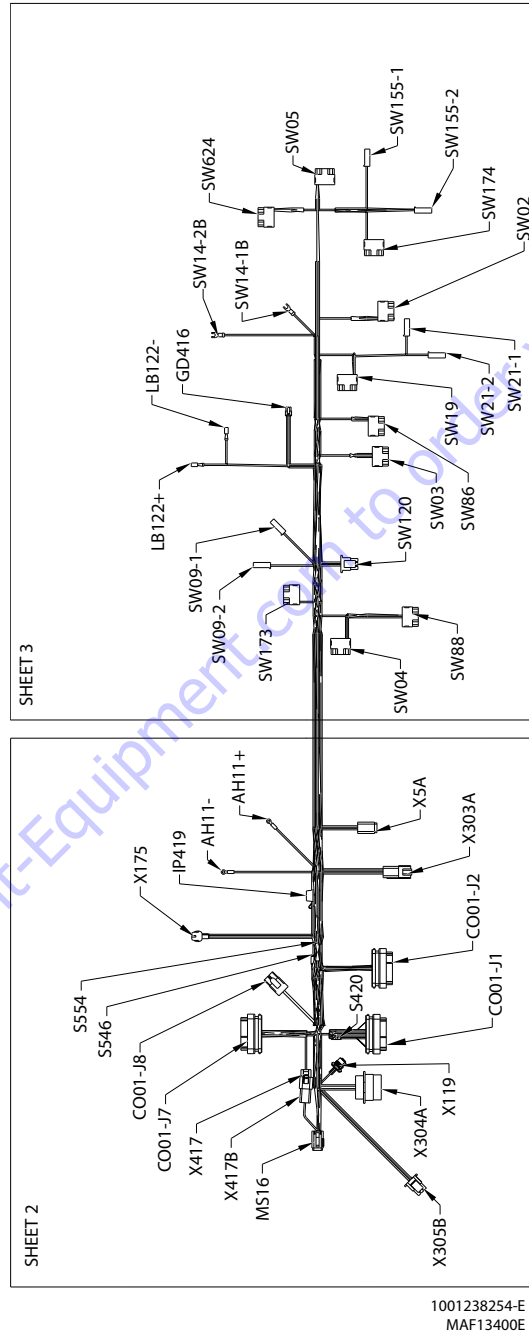
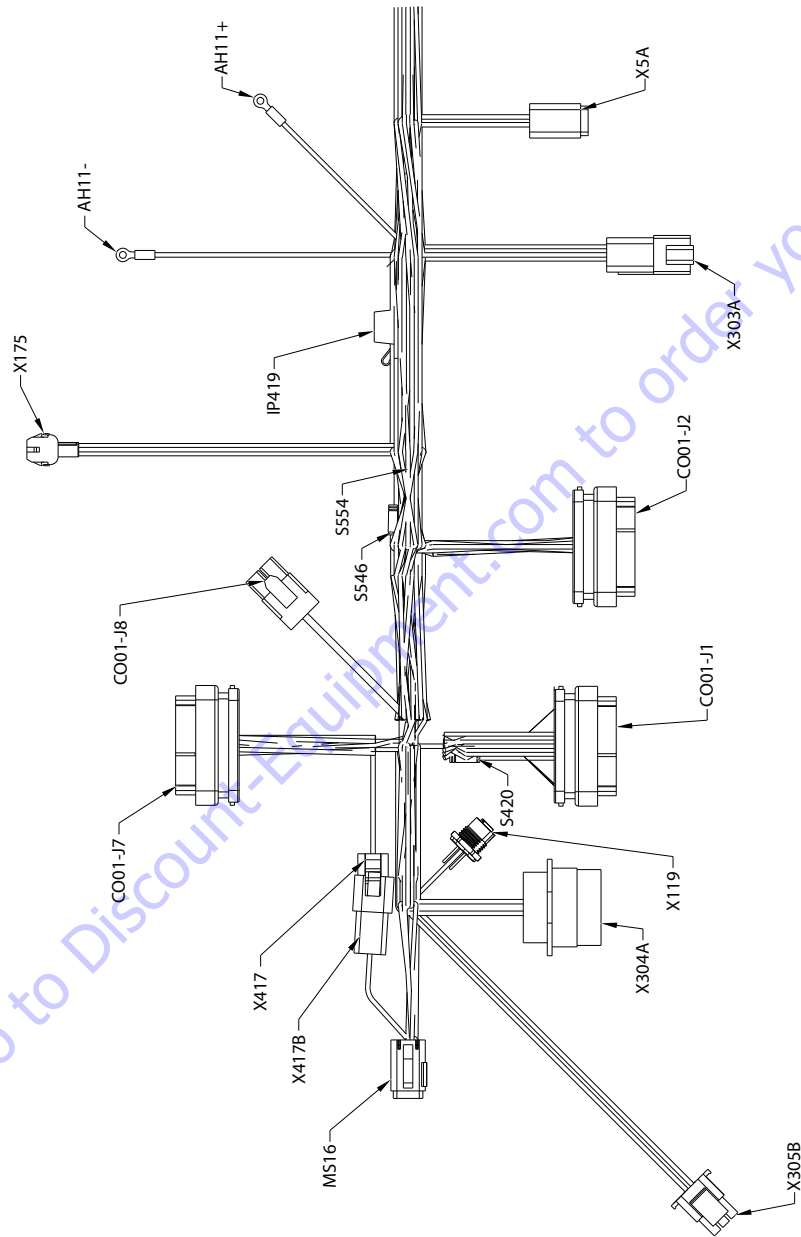


Figure 7-26. Platform Control Box Harness - Sheet 1 of 4



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Figure 7-27. Platform Control Box Harness - Sheet 2 of 4

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X304A					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	GRN	CAN-ONE LOW	18 AWG	GXL	X417 (B)
3	YEL	CAN-ONE HIGH	18 AWG	GXL	X417 (A)
4	WHT	9-0 PLAT MODE/GND ENABLE	18 AWG	GXL	C001-J7 (3)
5					
6					
7					
8					
9	YEL	4-0	18 AWG	GXL	SW14-1B (1B)
10					
11	WHT	1-37 GND MODE/PLAT ENABLE	18 AWG	GXL	C001-J7 (1)
12	YEL	2-7	12 AWG	GXL	C001-J8 (2)
13					
14					
15					
16	BLK	0-7	12 AWG	GXL	C001-J8 (1)
17					
18					
19					

X305B					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	508-1 GENERATOR SW INPUT	18 AWG	GXL	C001-J7 (9)
2	YEL	10-4 GENERATOR SW+	18 AWG	GXL	C001-J7 (5)
3					
4	WHT	7-2 FOOT SW N.C.	18 AWG	GXL	C001-J7 (8)
5	YEL	10-3 FOOT SW+	18 AWG	GXL	C001-J7 (4)
6					
7					
8					
9	YEL	10-8 SOFT TOUCH+	18 AWG	GXL	C001-J2 (31)
10					
11					
12	WHT	504-1-2 SOFT TOUCH	18 AWG	GXL	S420(2)
13					
14	WHT	1-551	18 AWG	GXL	X305B (15)
15	WHT	1-551	18 AWG	GXL	X305B (14)

MS16 CANBUSS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN-ONE HIGH	18 AWG	GXL	X417B (A)
2	BLK	CAN-ONE HIGH	20 AWG	CABLE	X119 (4)
3	YEL	CAN-ONE HIGH	18 AWG	GXL	X303A (8)
4	GRN	CAN-ONE LOW	18 AWG	GXL	X417B (B)
5	GRY	CAN-ONE LOW	20 AWG	CABLE	X119 (5)
6	GRN	CAN-ONE LOW	18 AWG	GXL	X303A (9)
7	GRN	CAN-ONE LOW	18 AWG	GXL	C001-J7 (30)
8	GRN	CAN-ONE LOW	20 AWG	TXL	GD416 (4)
9					
10	YEL	CAN-ONE HIGH	18 AWG	GXL	C001-J7 (31)
11	YEL	CAN-ONE HIGH	20 AWG	TXL	GD416 (1)
12					

X417B CANTAP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN-ONE HIGH	18 AWG	GXL	MS16 (1)
B	GRN	CAN-ONE LOW	18 AWG	GXL	MS16 (4)
C					

X417 CANTAP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN-ONE HIGH	18 AWG	GXL	X304A (3)
B	GRN	CAN-ONE LOW	18 AWG	GXL	X304A (2)
C					

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

C001-J7					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	1-37 GND MODE/PLAT ENABLE	18 AWG	GXL	X304A (11)
2	YEL	5-0	18 AWG	GXL	SW14-2B (2B)
3	WHT	9-0 PLAT MODE/GND ENABLE	18 AWG	GXL	X304A (4)
4	YEL	10-3 FOOT SW+	18 AWG	GXL	X305B (5)
5	YEL	10-4 GENERATOR SW+	18 AWG	GXL	X305B (2)
6					
7	YEL	10-10 SKYG/STCH+	18 AWG	GXL	IP419 (1)
8	WHT	7-2 FOOT SW N.C.	18 AWG	GXL	X305B (4)
9	WHT	508-1 GENERATOR SW INPUT	18 AWG	GXL	X305B (1)
10					
11					
12					
13					
14					
15					
16	BLU	12-4-2L SS-	20 AWG	CABLE	X119 (3)
17					
18	WHT	503-1 SKYG INPUT 1	18 AWG	GXL	X5A (4)
19	WHT	94-2 PLAT ALARM	18 AWG	GXL	AH11+ (1)
20	WHT	12-1 PLAT ALARM-	18 AWG	GXL	AH11- (1)
21					
22					
23	BLK	12-3P LAT VLV-	18 AWG	GXL	X303A (5)
24	BLK	12-10 SKY GUARD-	18 AWG	GXL	X5A (2)
25	WHT	82-3 JIB UP	18 AWG	GXL	X303A (3)
26	WHT	83-3 JIB DOWN	18 AWG	GXL	X303A (4)
27					
28					
29	BLK	12-2 OPTION-	18 AWG	GXL	S554 (1)
30	GRN	CAN-ONE LOW	18 AWG	GXL	MS16 (7)
31	YEL	CAN-ONE HIGH	18 AWG	GXL	MS16 (10)
32					
33	WHT	86-3 ROTATE LEFT	18 AWG	GXL	X303A (1)
34	WHT	87-3 ROTATE RIGHT	18 AWG	GXL	X303A (2)
35					

C001-J8					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-7	12 AWG	GXL	X304A (16)
2	YEL	2-7	12 AWG	GXL	X304A (12)

X175 ANALYZER					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-7 ANALYZER+	18 AWG	GXL	C001-J2 (26)
2	WHT	13-3 RECEIVE	18 AWG	GXL	C001-J2 (28)
3	WHT	13-4 TRANSMIT	18 AWG	GXL	C001-J2 (29)
4	BLK	12-6 ANALYZER-	18 AWG	GXL	C001-J2 (27)

IP 4193A					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-10 SKYG/STCH+	18 AWG	GXL	C001-J7 (7)
2	YEL	10-10-1 SKYGUARD+	18 AWG	GXL	X5A (1)
2	YEL	10-10-2 SOFT TOUCH+	18 AWG	GXL	X5A (3)

AH11-ALARM					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	12-1 PLAT ALARM-	18 AWG	GXL	C001-J7 (20)

AH11+ALARM					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	94-2 PLAT ALARM	18 AWG	GXL	C001-J7 (19)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X5A SKYGUARD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-10-1 SKY GUARD+	18 AWG	GXL	IP419 (2)
2	BLK	12-10 SKY GUARD-	18 AWG	GXL	C001-J7 (24)
3	YEL	10-10-2 SOFT TOUCH+	18 AWG	GXL	IP419 (2)
4	WHT	503-1 SKYG INPUT1	18 AWG	GXL	C001-J7 (18)
5	WHT	503-2S KYG INPUT2	18 AWG	GXL	C001-J1 (23)
6	WHT	504-1-1 SOFT TOUCH	18 AWG	GXL	S420 (2)

X303A					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	86-3 ROTATE LEFT	18 AWG	GXL	C001-J7 (33)
2	WHT	87-3 ROTATE RIGHT	18 AWG	GXL	C001-J7 (34)
3	WHT	82-3 JIB UP	18 AWG	GXL	C001-J7 (25)
4	WHT	83-3 JIB DOWN	18 AWG	GXL	C001-J7 (26)
5	BLK	12-3 PLAT VLV-	18 AWG	GXL	C001-J7 (23)
6	BLK	12-2-1 OPTION-	18 AWG	GXL	S554 (2)
7	YEL	10-6-1 OPTION+	18 AWG	GXL	S546 (2)
8	YEL	CAN-ONE HIGH	18 AWG	GXL	MS16 (3)
9	GRN	CAN-ONE LOW	18 AWG	GXL	MS16 (6)
10					
11	YEL	10-6-2 OPTION+	18 AWG	GXL	S546 (2)
12	BLK	12-2-2 OPTION-	18 AWG	GXL	S554 (2)

C 001-J2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2					
3					
4	WHT	51-2 DRV ORENTION SW	18 AWG	GXL	SW174 (1)
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16	WHT	504-2 SOFT TCH/SKYG LT	18 AWG	GXL	LB122+ (1)
17					
18	BLK	12-8 DISPLAY-	20 AWG	TXL	GD416 (6)
19					
20					
21					
22					
23					
24					
25	BLK	12-7 SKYG LT-	18 AWG	GXL	LB122- (1)
26	YEL	10-7 ANALYZER+	18 AWG	GXL	X175 (1)
27	BLK	12-6 ANALYZER-	18 AWG	GXL	X175 (4)
28	WHT	13-3 RECEIVE	18 AWG	GXL	X175 (2)
29	WHT	13-4 TRANSMIT	18 AWG	GXL	X175 (3)
30					
31	YEL	10-8 SOFT TOUCH+	18 AWG	GXL	X305B (9)
32	WHT	10-2-2 LSS+	20 AWG	CABLE	X119 (2)
33	YEL	10-6 OPTION+	18 AWG	GXL	S546 (1)
34	YEL	10-9 DISPLAY+	20 AWG	TXL	GD416 (3)
35					

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

C001-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	72-2 TOWER UP	18 AWG	GXL	SW86 (3)
2	WHT	73-2 TOWER DOWN	18 AWG	GXL	SW86 (1)
3					
4					
5	WHT	78-2 TELE IN	18 AWG	GXL	SW02 (3)
6	WHT	79-2 TELE OUT	18 AWG	GXL	SW02 (1)
7	WHT	87-2 ROTATE RIGHT	18 AWG	GXL	SW03 (3)
8	WHT	86-2 ROTATE LEFT	18 AWG	GXL	SW03 (1)
9	WHT	88-2 LEVEL UP	18 AWG	GXL	SW04 (3)
10	WHT	89-2 LEVEL DOWN	18 AWG	GXL	SW04 (1)
11	WHT	82-2 JIB UP	18 AWG	GXL	SW19 (3)
12	WHT	83-2 JIB DOWN	18 AWG	GXL	SW19 (1)
13	WHT	12-0 FUNCTION SPD-	18 AWG	GXL	SW120 (5)
14	WHT	100-2 START SWITCH	18 AWG	GXL	SW05 (3)
15	WHT	93-2 AUX POWER	18 AWG	GXL	SW05 (1)
16					
17					
18	YEL	10-0 PLAT CNTRL+	18 AWG	GXL	SW88 (2)
19	WHT	54-5 ZONE 3	18 AWG	GXL	SW624 (1)
20	WHT	504-1 SOFT TOUCH	18 AWG	GXL	S420 (1)
21	WHT	54-2 ZONE 1	18 AWG	GXL	SW624 (3)
22					
23	WHT	503-2 SKYG INPUT 2	18 AWG	GXL	X5A (5)
24					
25					
26					
27	WHT	24-2 TWO SPEED	18 AWG	GXL	SW88(3)
28	WHT	25-1 MAX TORQUE	18 AWG	GXL	SW88 (1)
29	WHT	504-0SOFT/SKYG OVERRIDE	18 AWG	GXL	SW21-1 (1)
30	WHT	500-3 HEAD LIGHTS	18 AWG	GXL	SW155-1 (1)
31	WHT	30-0 HORN	18 AWG	GXL	SW09-1 (1)
32	WHT	29-0 CREEP SW	18 AWG	GXL	SW120 (2)
33	WHT	107-0 FUEL SELECT	18 AWG	GXL	SW173 (3)
34	WHT	11-0 FUNCTION SPD 7V+	18 AWG	GXL	SW120 (4)
35	WHT	69-0 FUNCTION SPD INPUT	18 AWG	GXL	SW120 (6)

S420					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	504-1 SOFT TOUCH	18 AWG	GXL	C001-J1 (20)
2	WHT	504-1-1 SOFT TOUCH	18 AWG	GXL	X5A (6)
2	WHT	504-1-2 SOFT TOUCH	18 AWG	GXL	X305B (12)

X119 SINGLE CELL LSS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BRN	---	20 AWG	CABLE	CAP - NOT USED
2	WHT	10-2-2 LSS+	20 AWG	CABLE	C001-J2 (32)
3	BLU	12-4-2 LSS-	20 AWG	CABLE	C001-J7 (16)
4	BLK	CAN-ONE HIGH	20 AWG	CABLE	MS16 (2)
5	GRY	CAN-ONE LOW	20 AWG	CABLE	MS16 (5)

S554					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	12-2 OPTION-	18 AWG	GXL	C001-J7 (29)
2	BLK	12-2-1 OPTION-	18 AWG	GXL	X303A (6)
2	BLK	12-2-2 OPTION-	18 AWG	GXL	X303A (12)

S546					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-6 OPTION+	18 AWG	GXL	C001-J2 (33)
2	YEL	10-6-1 OPTION+	18 AWG	GXL	X303A (7)
2	YEL	10-6-2 OPTION+	18 AWG	GXL	X303A (11)

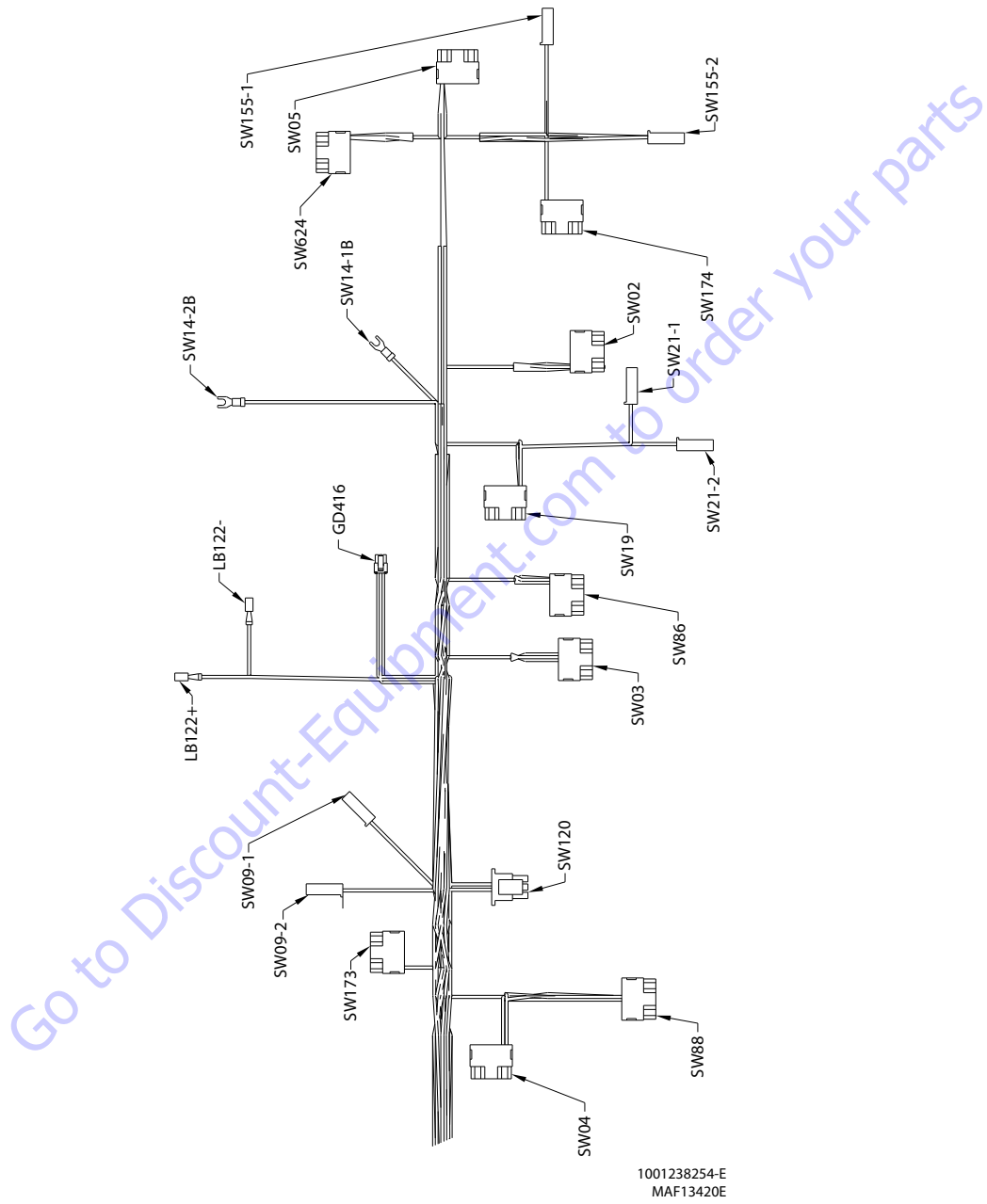


Figure 7-28. Platform Control Box Harness - Sheet 3 of 4

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SW 173 FUEL SELECT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	YEL	10-0-2 PLAT CNTRL+	18 AWG	GXL	SW04 (2)
2	YEL	10-0-3 PLAT CNTRL+	18 AWG	GXL	SW03 (2)
3	WHT	107-0 FUEL SELECT	18 AWG	GXL	C001-J1 (33)
4					
5					
6					

SW 09-2 HORN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-0-12 PLAT CNTRL+	18 AWG	GXL	SW120 (3)
1	YEL	10-0-13 PLAT CNTRL+	18 AWG	GXL	SW21-2 (1)

SW 09-1 HORN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	30-0 HORN	18 AWG	GXL	C001-J1 (31)

LB 122+ SKYGUARD WARNING					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	504-2 SOFT TCH/SKYG LT	18 AWG	GXL	C001 J2 (16)

LB 122- SKYGUARD WARNING					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	12-7 SKYG LT-	18 AWG	GXL	C001-J2 (25)

GD 416 LED DISPLAY					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN-ONE HIGH	20 AWG	TXL	MS16 (11)
2					
3	YEL	10-9 DISPLAY+	20 AWG	TXL	C001-J2 (34)
4	GRN	CAN-ONE LOW	20 AWG	TXL	MS16 (8)
5					
6	BLK	12-8 DISPLAY-	20 AWG	TXL	C001-J2 (18)

SW 14-2B E STOP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
2B	YEL	5-0	18 AWG	GXL	C001-J7 (2)

SW14-1B E STOP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1B	YEL	4-0	18 AWG	GXL	X304A (9)

SW 624 PLATFORM CAPACITY					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	54-5 ZONE 3	18 AWG	GXL	C001-J1 (19)
2	YEL	10-0-9 PLAT CNTRL+	18 AWG	GXL	SW05 (2)
2	YEL	10-0-10 PLAT CNTRL+	18 AWG	GXL	SW174 (2)
3	WHT	54-2 ZONE 1	18 AWG	GXL	C001-J1 (21)
4					
5					
6					

SW05 START/AUX					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	93-2 AUX POWER	18 AWG	GXL	C001-J1 (15)
2	YEL	10-0-8 PLAT CNTRL+	18 AWG	GXL	SW155-2 (1)
2	YEL	10-0-9 PLAT CNTRL+	18 AWG	GXL	SW624 (2)
3	WHT	100-2 START SWITCH	18 AWG	GXL	C001-J1 (14)
4					
5					
6					

SW155-1 HEAD AND TAIL LIGHTS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	500-3 HEAD LIGHTS	18 AWG	GXL	C001-J1 (30)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SW155-2 HEAD AND TAIL LIGHTS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-0-7 PLAT CNTRL+	18 AWG	GXL	SW02 (2)
1	YEL	10-0-8 PLAT CNTRL+	18 AWG	GXL	SW05 (2)

SW21-1 SOFT TCH/SKYGUARD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	504-0 SOFT/SKYG OVRIDE	18 AWG	GXL	C001-J1 (29)

SW174 DRIVE ORIENTATION OVERRIDE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	51-2 DRV ORENTION SW	18 AWG	GXL	C001-J2 (4)
2	YEL	10-0-10 PLAT CNTRL+	18 AWG	GXL	SW624 (2)
2	YEL	10-0-11 PLAT CNTRL+	18 AWG	GXL	SW120 (3)
3					
4					
5					
6					

SW21-2 SOFT TCH/SKYGUARD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	10-0-13 PLAT CNTRL+	18 AWG	GXL	SW09-2 (1)

SW19 JIB LIFT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	83-2 JIB DOWN	18 AWG	GXL	C001-J1 (12)
2	YEL	10-0-5 PLAT CNTRL+	18 AWG	GXL	SW86 (2)
2	YEL	10-0-6 PLAT CNTRL+	18 AWG	GXL	SW02 (2)
3	WHT	82-2 JIB UP	18 AWG	GXL	C001-J1 (11)
4					
5					
6					

SW02 MAIN TELE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	79-2 TELE OUT	18 AWG	GXL	C001-J1 (6)
2	YEL	10-0-6 PLAT CNTRL+	18 AWG	GXL	SW19 (2)
2	YEL	10-0-7 PLAT CNTRL+	18 AWG	GXL	SW155-2 (1)
3	WHT	78-2 TELE IN	18 AWG	GXL	C001-J1 (5)
4					
5					
6					

SW86 TOWER LIFT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	73-2 TOWER DOWN	18 AWG	GXL	C001-J1 (2)
2	YEL	10-0-4 PLAT CNTRL+	18 AWG	GXL	SW03 (2)
2	YEL	10-0-5 PLAT CNTRL+	18 AWG	GXL	SW19 (2)
3	WHT	72-2 TOWER UP	18 AWG	GXL	C001-J1 (1)
4					
5					
6					

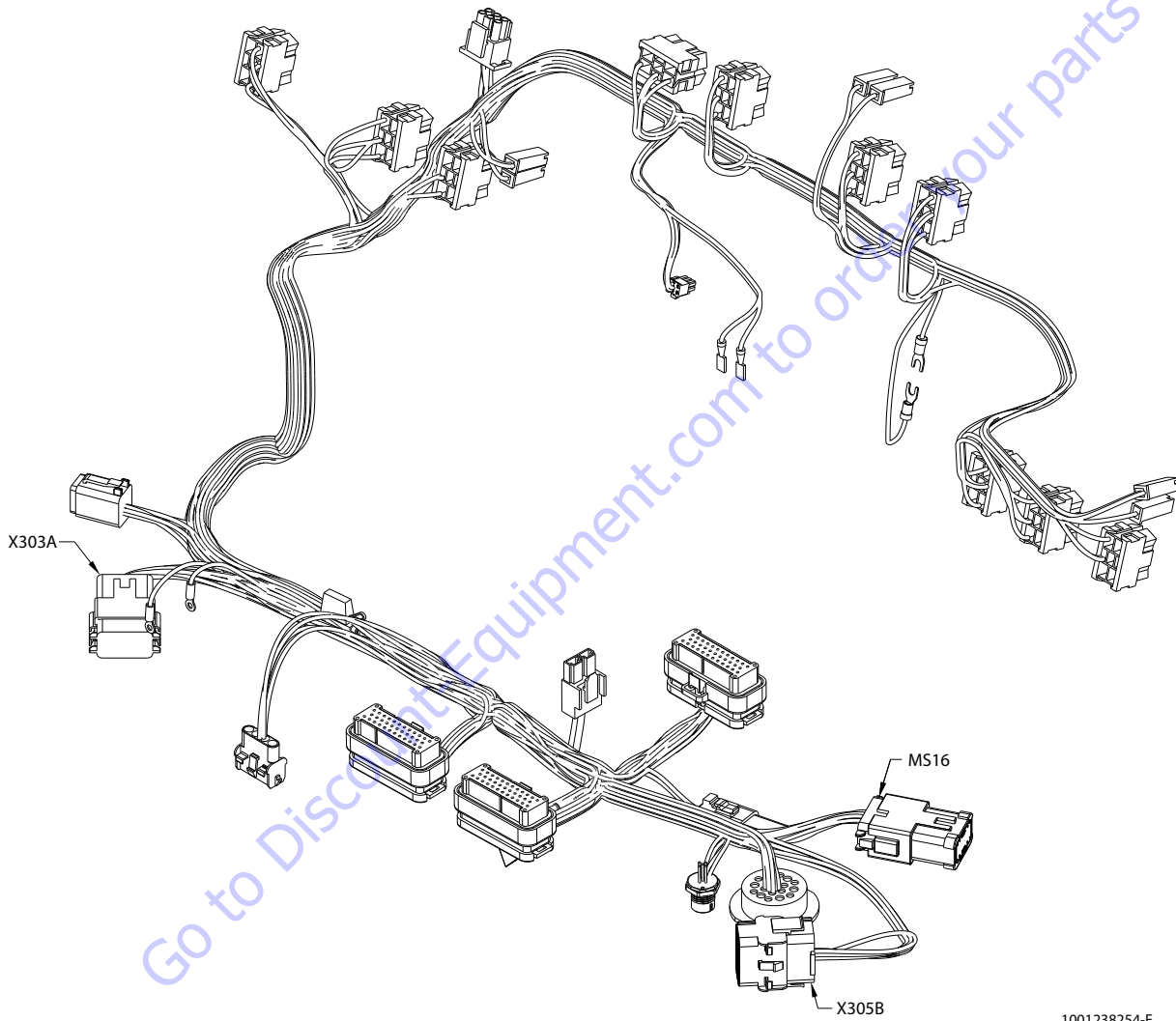
SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SW03 PLATFORM ROTATE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	86-2 ROTATE LEFT	18 AWG	GXL	C001-J1 (8)
2	YEL	10-0-3 PLAT CNTRL+	18 AWG	GXL	SW173 (2)
2	YEL	10-0-4 PLAT CNTRL+	18 AWG	GXL	SW86 (2)
3	WHT	87-2 ROTATE RIGHT	18 AWG	GXL	C001-J1 (7)
4					
5					
6					

SW88 ENGINE SPEED					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	25-1 MAX TORQUE	18 AWG	GXL	C001-J1 (28)
2	YEL	10-0 PLAT CNTRL+	18 AWG	GXL	C001-J1 (18)
2	YEL	10-0-1 PLAT CNTRL+	18 AWG	GXL	SW04 (2)
3	WHT	24-2 TWO SPEED	18 AWG	GXL	C001-J1 (27)
4					
5					
6					

SW120 PUMP POT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	WHT	29-0 CREEP SW	18 AWG	GXL	C001-J1 (32)
3	YEL	10-0-11 PLAT CNTRL+	18 AWG	GXL	SW174 (2)
3	YEL	10-0-12 PLAT CNTRL+	18 AWG	GXL	SW09-2 (1)
4	WHT	11-0 FUNCTION SPD 7V+	18 AWG	GXL	C001-J1 (34)
5	WHT	12-0 FUNCTION SPD-	18 AWG	GXL	C001-J1 (13)
6	WHT	69-0 FUNCTION SPD INPUT	18 AWG	GXL	C001-J1 (35)

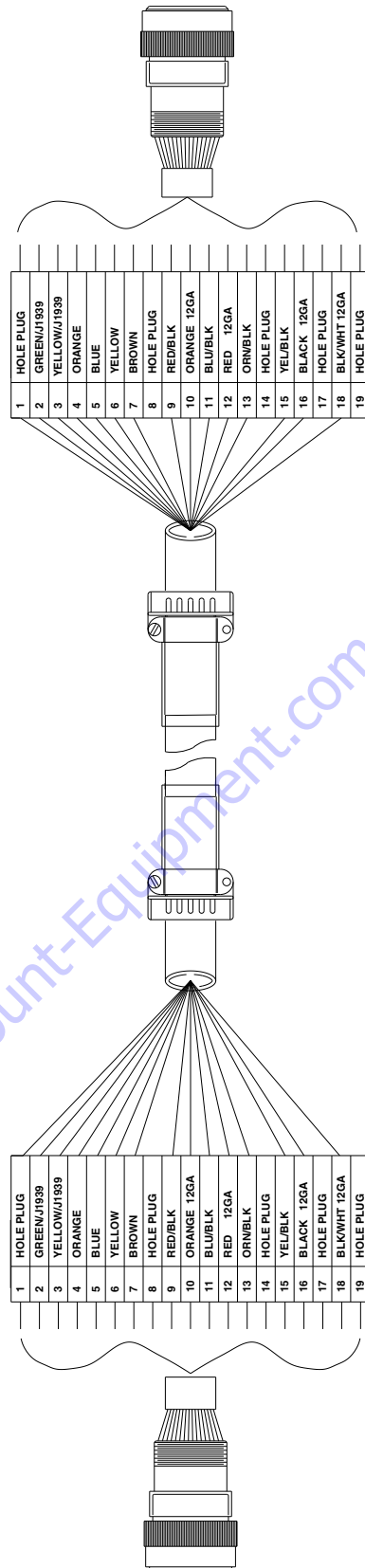
SW04 LEVEL					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	89-2 LEVEL DOWN	18 AWG	GXL	C001-J1 (10)
2	YEL	10-0-1 PLAT CNTRL+	18 AWG	GXL	SW88 (2)
2	YEL	10-0-2 PLAT CNTRL+	18 AWG	GXL	SW173 (2)
3	WHT	88-2 LEVEL UP	18 AWG	GXL	C001-J1 (9)
4					
5					
6					



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1001238254-E
MAF13430E

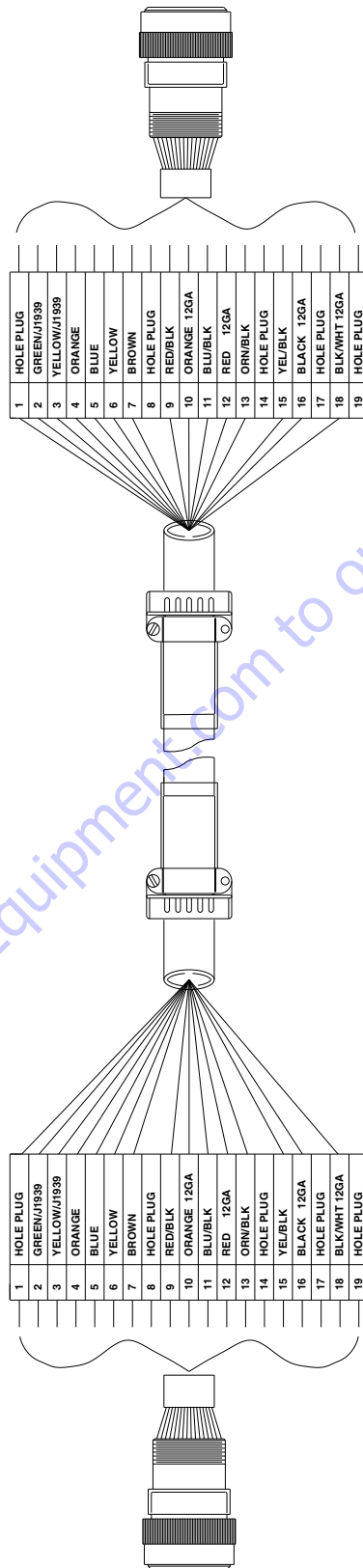
Figure 7-29. Platform Control Box Harness - Sheet 4 of 4



1001176952-C
MAF00960

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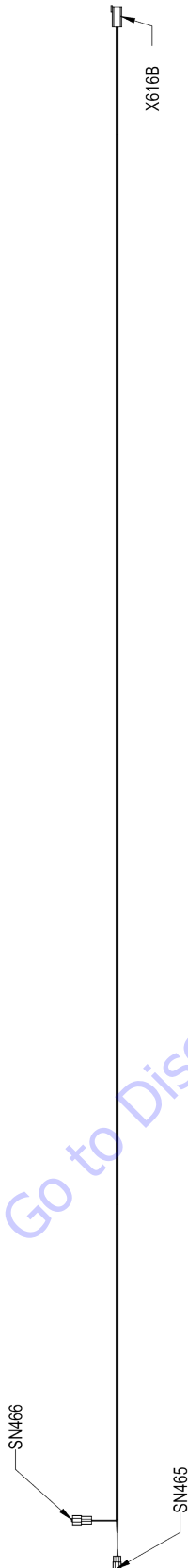
Figure 7-30. Main Boom Harness



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MAF00970

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Figure 7-31. Main Boom with Jib Harness



X616B					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	ORN/BLK	CABLE CABLE	18 AWG	TFFN	SN465 (1)
2	BLK/RED	CABLE CABLE	18 AWG	TFFN	SN465 (3)
3	BLU/RED	CABLE CABLE	18 AWG	TFFN	SN465 (2)
4	YEL/BLK	CABLE CABLE	18 AWG	TFFN	SN466 (1)
5	BRN/BLK	CABLE CABLE	18 AWG	TFFN	SN466 (3)
6	BLU/BLK	CABLE CABLE	18 AWG	TFFN	SN466 (2)

SN466					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL/BLK	CABLE CABLE	18 AWG	TFFN	X616B (4)
2	BLU/BLK	CABLE CABLE	18 AWG	TFFN	X616B (6)
3	BRN/BLK	CABLE CABLE	18 AWG	TFFN	X616B (5)

SN465					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	ORN/BLK	CABLE CABLE	18 AWG	TFFN	X616B (1)
2	BLU/RED	CABLE CABLE	18 AWG	TFFN	X616B (3)
3	BLK/RED	CABLE CABLE	18 AWG	TFFN	X616B (2)

100117808 C

Figure 7-32. Tele In Proximity Switches Harness

X615B						
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO	
1	YEL/BLK	CABLE	18 AWG	TFFN	SN467 (1)	
2	BRN/BLK	CABLE	18 AWG	TFFN	SN467 (3)	
3	BLU/BLK	CABLE	18 AWG	TFFN	SN467 (2)	
4	ORN/BLK	CABLE	18 AWG	TFFN	SN571 (1)	
5	BLK/RED	CABLE	18 AWG	TFFN	SN571 (3)	
6	BLU/RED	CABLE	18 AWG	TFFN	SN571 (2)	

SN571					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL/BLK	CABLE	18 AWG	TFFN	X615B (4)
2	BLU/BLK	CABLE	18 AWG	TFFN	X615B (6)
3	BRN/BLK	CABLE	18 AWG	TFFN	X615B (5)

SN467					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	ORN/BLK	CABLE	18 AWG	TFFN	X615E (1)
2	BLU/RED	CABLE	18 AWG	TFFN	X615E (3)
3	BLK/RED	CABLE	18 AWG	TFFN	X615E (2)

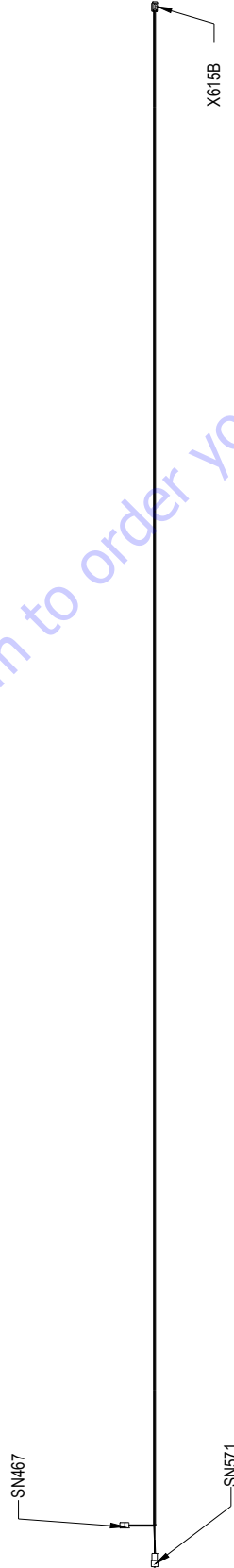


Figure 7-33. Capacity Proximity Switches Harness

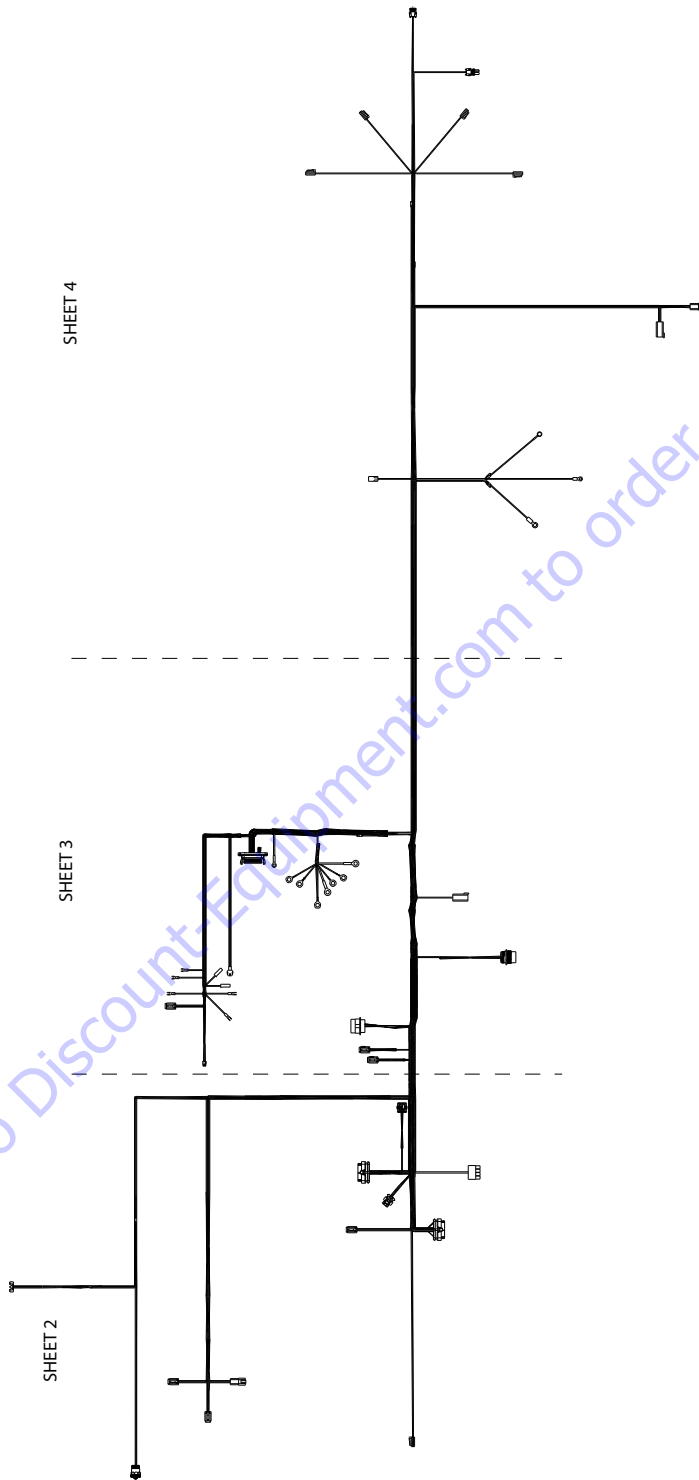


Figure 7-34. Turntable Harness - Sheet 1 of 6

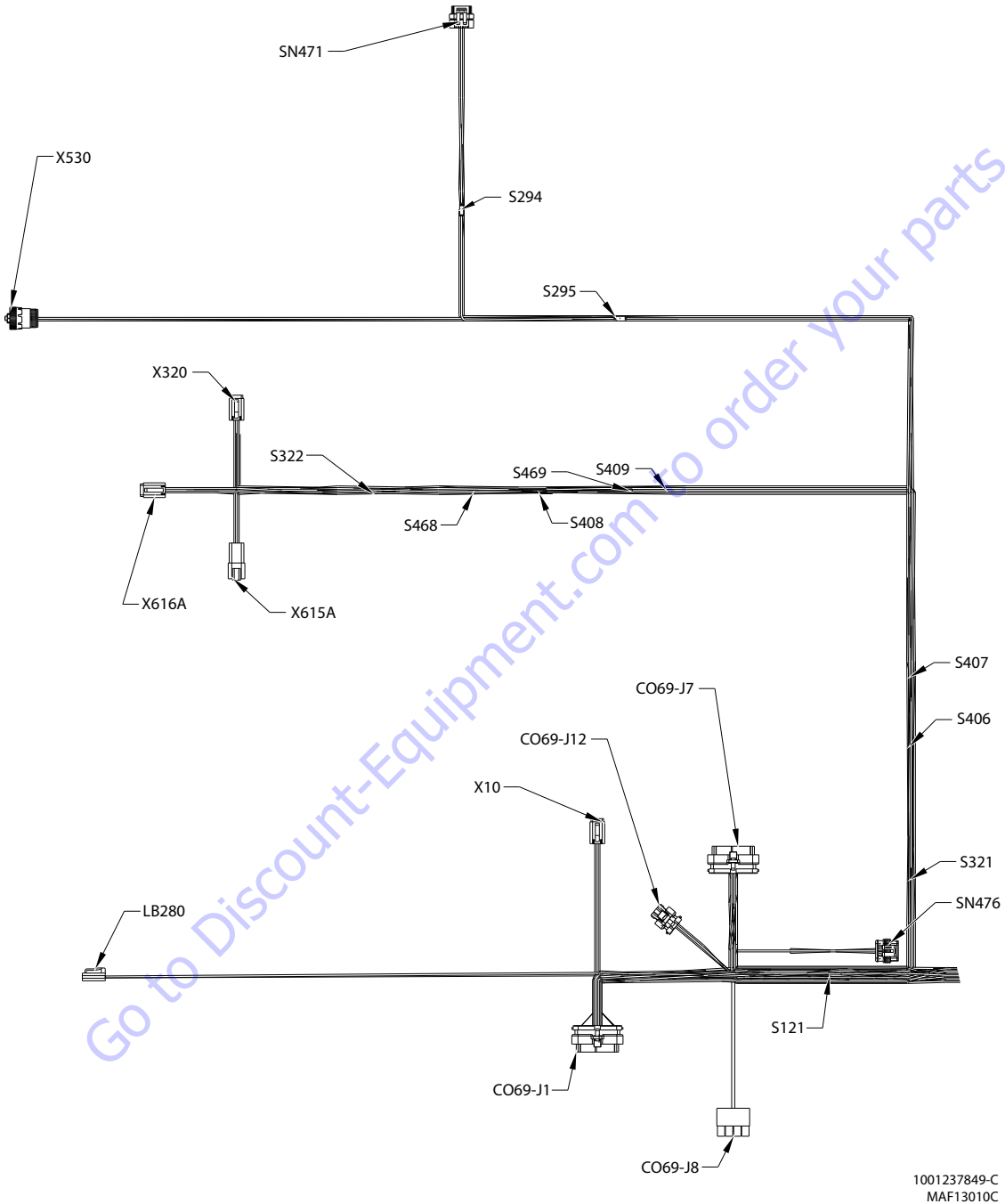


Figure 7-35. Turntable Harness - Sheet 2 of 6

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X530 GENERATOR CONNECTOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-15	18 AWG	GXL	FC334 (A5)
2	WHT	508-0 GEN ENABLE	18 AWG	GXL	C069-J1 (22)
3	BLK	0-15	18 AWG	GXL	X291 (1)

S322					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-15 TELE PROX-	18 AWG	GXL	C069-J1 (8)
2	BLK	16-15-1 TELE PROX-	18 AWG	GXL	X320 (2)
2	BLK	16-15-2 TELE PROX-	18 AWG	GXL	X320 (5)

SN471 MAIN BOOM ANGLE SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	16-0-1 ANG SNSR-	18 AWG	GXL	S295 (2)
B	WHT	15-0-15V REF	18 AWG	GXL	S294 (2)
C	WHT	60-0 ANG SNSR INPUT 1	18 AWG	GXL	C069-J7 (4)
D	WHT	60-1 ANG SNSR INPUT 2	18 AWG	GXL	C069-J7 (7)
E	BLK	16-0-2 ANG SNSR-	18 AWG	GXL	S295 (2)
F	WHT	15-0-25V REF	18 AWG	GXL	S294 (2)

X615A DUAL CAPACITY LENGTH PROXIMITY SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-1-2-1 TELE PROX+	18 AWG	GXL	S409 (2)
2	BLK	16-1-2-1 TELE PROX-	18 AWG	GXL	S408 (2)
3	WHT	54-0 NO CAPACITY LNTH	18 AWG	GXL	C069-J7 (23)
4	YEL	14-1-2-2 TELE PROX+	18 AWG	GXL	S409 (2)
5	BLK	16-1-2-2 TELE PROX-	18 AWG	GXL	S408 (2)
6	WHT	54-1 NC CAPACITY LNTH	18 AWG	GXL	C069-J1 (35)
7					
8					

S294					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	15-05 V REF	18 AWG	GXL	C069-J7 (16)
2	WHT	15-0-15 V REF	18 AWG	GXL	SN471 (B)
2	WHT	15-0-25 V REF	18 AWG	GXL	SN471 (F)

X616A TELESCOPE RETRACTED PROXIMITY SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-1-1-1 TELE PROX+	18 AWG	GXL	S468 (2)
2	BLK	16-1-1-2 TELE PROX-	18 AWG	GXL	S469 (2)
3	WHT	53-1 NO TRANSPORT LNTH	18 AWG	GXL	C069-J7 (21)
4	YEL	14-1-1-2 TELE PROX+	18 AWG	GXL	S468 (2)
5	BLK	16-1-1-1 TELE PROX-	18 AWG	GXL	S469 (2)
6	WHT	53-0 NC TRANSPORT LNTH	18 AWG	GXL	C069-J1 (34)

S295					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-0 ANG SNSR-	18 AWG	GXL	C069-J7 (9)
2	BLK	16-0-1 ANG SNSR-	18 AWG	GXL	SN471 (A)
2	BLK	16-0-2 ANG SNSR-	18 AWG	GXL	SN471 (E)

S409					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-1-2 TELE PROX+	18 AWG	GXL	S406 (1)
2	YEL	14-1-2-1 TELE PROX+	18 AWG	GXL	X615A (1)
2	YEL	14-1-2-2 TELE PROX+	18 AWG	GXL	X615A (4)

X320 TRI-CAP PROX					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-8-1 TELE PROX+	18 AWG	GXL	S321 (2)
2	BLK	16-15-1 TELE PROX-	18 AWG	GXL	S322 (2)
3	WHT	54-7 NO CAPACITY LNTH	18 AWG	GXL	X513B (4)
4	YEL	14-8-2 TELE PROX+	18 AWG	GXL	S321 (2)
5	BLK	16-15-2 TELE PROX-	18 AWG	GXL	S322 (2)
6	WHT	54-6 NC CAPACITY LNTH	18 AWG	GXL	C069-J1 (21)
7					
8					

S469					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-1-1 TELE PROX-	18 AWG	GXL	S407 (1)
2	BLK	16-1-1-1 TELE PROX-	18 AWG	GXL	X616A (5)
2	BLK	16-1-1-2 TELE PROX-	18 AWG	GXL	X616A (2)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

S407					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-1-1 TELE PROX-	18 AWG	GXL	S469 (1)
1	BLK	16-1-2 TELE PROX-	18 AWG	GXL	S408 (1)
2	BLK	16-1 TELE PROX-	18 AWG	GXL	C069-J7 (28)

S406					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-1-1 TELE PROX+	18 AWG	GXL	S468 (1)
1	YEL	14-1-2 TELE PROX+	18 AWG	GXL	S409 (1)
2	YEL	14-1 TELE PROX+	18 AWG	GXL	C069-J7 (33)

S408					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-1-2 TELE PROX-	18 AWG	GXL	S407 (1)
2	BLK	16-1-2-1 TELE PROX-	18 AWG	GXL	X615A (2)
2	BLK	16-1-2-2 TELE PROX-	18 AWG	GXL	X615A (5)

S468					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-1-1 TELE PROX+	18 AWG	GXL	S406 (1)
2	YEL	14-1-1-1 TELE PROX+	18 AWG	GXL	X616A (1)
2	YEL	14-1-1-2 TELE PROX+	18 AWG	GXL	X616A (4)

S121					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	9-0-2 PLAT MODE/GND ENABLE	18 AWG	GXL	C069-J7 (1)
1	WHT	9-0-3 PLAT MODE/GND ENABLE	18 AWG	GXL	C069-J7 (2)
2	WHT	9-0 PLAT MODE/GND ENABLE	18 AWG	GXL	X 102 A (4)
2	WHT	9-0-1 PLAT MODE/GND ENABLE	18 AWG	GXL	FC334 (C10)

S321					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-8 TELE PROX/WIF+	18 AWG	GXL	C069-J7 (30)
1	YEL	14-8-3 WIF+	18 AWG	GXL	X181A (7)
2	YEL	14-8-1 TELE PROX+	18 AWG	GXL	X320 (1)
2	YEL	14-8-2 TELE PROX+	18 AWG	GXL	X320 (4)

C069-J8 UGM J8					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-5	12 AWG	GXL	X296 (1)
2	YEL	2-5	12 AWG	GXL	FC334 (A1)
3					
4					

LB280 STROBE LIGHT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-11	18 AWG	GXL	FC334 (A4)
2	BLK	0-11	18 AWG	GXL	X287 (1)

X10 UNI TELEM					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-7	18 AWG	GXL	S578 (2)
2	BLK	0-2	18 AWG	GXL	X288 (1)
3	YEL	2-14	18 AWG	GXL	FC334 (A7)
4	YEL	4-2 PLAT STAT	18 AWG	GXL	FC334 (C6)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

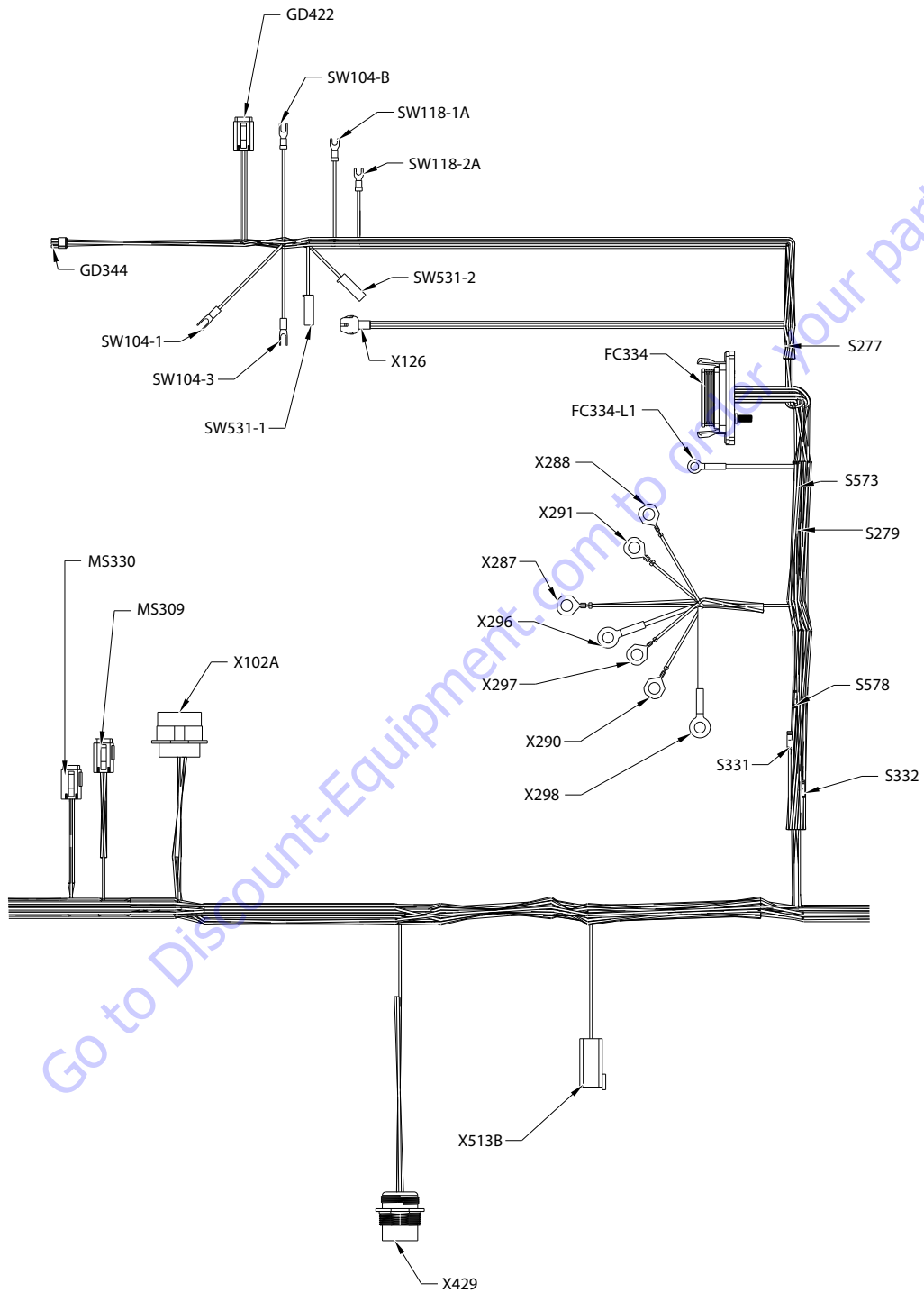
C069-J1 UGM J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	WHT	40-2 OSC AXL VLV 2	18 AWG	GXL	HV 293 (1)
3	WHT	27-1 DRIVE FORWARD	18 AWG	GXL	HV95 (1)
4					
5	BLK	16-2 BRK 2SPD VLV-	18 AWG	GXL	S98 (2)
6	WHT	28-1 DRIVE REVERSE	18 AWG	GXL	HV94 (1)
7	WHT	40-1 OSC AXL/CHASSIS EN	18 AWG	GXL	HV292 (1)
8	BLK	16-15 TELE PROX-	18 AWG	GXL	S322 (1)
9	BLK	16-3 MSSO-	18 AWG	GXL	SW531-2 (1)
10	WHT	103-0 DELAYED ECU PWR	18 AWG	GXL	X181 A (1)
11	WHT	100-1 START	16 AWG	GXL	X183A (2)
12	WHT	102-0 GLOW PLUG	16 AWG	GXL	X181 A (4)
13	WHT	93-1 AUX PUMP	18 AWG	GXL	X450 (1)
14					
15					
16					
17					
18					
19					
20	WHT	24-1 TWO SPD	18 AWG	GXL	HV 96 (1)
21	WHT	54-6 NC CAPACITY LNTH	18 AWG	GXL	X320 (6)
22	WHT	508-0 GEN ENABLE	18 AWG	GXL	X530 (2)
23	WHT	23-1 BRAKE	18 AWG	GXL	HV97 (1)
24					
25					
26					
27					
28	YEL	14-2 ANALYZER+	18 AWG	GXL	X126 (1)
29	WHT	13-1 RECEIVE	18 AWG	GXL	X126 (2)
30	WHT	13-2 TRANSMIT	18 AWG	GXL	X126 (3)
31	BLK	16-4 ANALYZER-	18 AWG	GXL	X126 (4)
32	WHT	101-0 ALT EXCITE	16 AWG	GXL	X183A (5)
33					
34	WHT	53-0 NC TRANSPORT LNTH	18 AWG	GXL	X616A (6)
35	WHT	54-1 NC CAPACITY LNTH	18 AWG	GXL	X615A (6)

C069-J12 UGM-J12					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2					
3	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	MS309 (5)
4	GRN	CAN-TWOWLOW	20 AWG	J1939 CABLE	MS309 (3)
5					
6	WHT	4-96 CAN 2 TERM	18 AWG	GXL	C069-J 12 (7)
7	WHT	4-96 CAN 2 TERM	18 AWG	GXL	C069-J 12 (6)
8	WHT	507-0 MSSO INPUT	18 AWG	GXL	SW531-1 (1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

CO 69-J7 UGM J7					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	WHT	9-0-3 PLAT MODE/GND ENABLE	18 AWG	GXL	S121 (1)
3	YEL	3-1	18 AWG	GXL	SW104-1 (1)
4	WHT	60-0 ANG SNSR INPUT 1	18 AWG	GXL	SN471 (C)
5					
6	WHT	4-133 CAN 1 TERM	18 AWG	GXL	CO69-J7 (17)
7	WHT	60-1 ANG SNSR INPUT 2	18 AWG	GXL	SN471 (D)
8					
9	BLK	16-0 ANG SNSR-	18 AWG	GXL	S295 (1)
10	BLK	0-10 TILT-	18 AWG	GXL	SN476 (2)
11					
12					
13	YEL	CAN-ONE HIGH	18 AWG	J1939 CABLE	MS330 (10)
14	WHT	8-0 GND MODE/PLAT ENABLE	18 AWG	GXL	X102A (11)
15	WHT	7-0 FOOT SW INPUT	18 AWG	GXL	X102A (6)
16	WHT	15-0 5V REF	18 AWG	GXL	S294 (1)
17	WHT	4-133 CAN 1 TERM	18 AWG	GXL	CO69-J7 (6)
18					
19					
20					
21	WHT	53-1 NO TRANSPORT LNTH	18 AWG	GXL	X616 A (3)
22	WHT	108-1 WIF	18 AWG	GXL	X181 A (8)
23	WHT	54-0 NO CAPACITY LNTH	18 AWG	GXL	X615 A (3)
24	GRN	CAN-ONE LOW	18 AWG	J1939 CABLE	MS330 (5)
25	BLK	16-5 DISPLAY-	18 AWG	GXL	S331 (1)
26					
27					
28	BLK	16-1 TELE PROX-	18 AWG	GXL	S407 (2)
29	YEL	14-4 DISPLAY+	18 AWG	GXL	S332 (1)
30	YEL	14-8 TELE PROX/WIF+	18 AWG	GXL	S321 (1)
31					
32	YEL	14-6 DOS+	18 AWG	GXL	X479 (1)
33	YEL	14-1 TELE PROX+	18 AWG	GXL	S406 (2)
34	YEL	14-7 TILT+	18 AWG	GXL	SN476 (1)
35	WHT	51-0 DOS SW	18 AWG	GXL	X479 (2)

SN476 TILT SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-7 TILT+	18 AWG	GXL	CO69-J7 (34)
2	BLK	0-10 TILT-	18 AWG	GXL	CO69-J7 (10)
3	YEL	CAN-ONE HIGH	20 AWG	J1939 CABLE	MS330 (12)
4	GRN	CAN-ONE LOW	20 AWG	J1939 CABLE	MS330 (7)



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Figure 7-36. Turntable Harness - Sheet 3 of 6

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X126 ANALYZER					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-2 ANALYZER+	18 AWG	GXL	C069-J1 (28)
2	WHT	13-1 RECEIVE	18 AWG	GXL	C069-J1 (29)
3	WHT	13-2 TRANSMIT	18 AWG	GXL	C069-J1 (30)
4	BLK	16-4 ANALYZER-	18 AWG	GXL	C069-J1 (31)

GD344 LED DISPLAY					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN-ONE HIGH	20 AWG	TXL	MS330 (2)
2	WHT	98-1 GND LED ID	20 AWG	TXL	S573 (2)
3	YEL	14-4-2 DISPLAY+	20 AWG	TXL	S573 (2)
4	GRN	CAN-ONE LOW	20 AWG	TXL	MS330 (8)
5					
6	BLK	16-5-2 DISPLAY-	20 AWG	TXL	S331 (2)

SW104-1 GROUND MODE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	3-0	18 AWG	GXL	FC334 (C9)
1	YEL	3-1	18 AWG	GXL	C069-J7 (3)

SW118-2A E-STOP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
2A	RED	1-1	18 AWG	GXL	FC334 (D7)

SW 118-1A E-STOP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1A	YEL	2-0	18 AWG	GXL	SW104-B (1)

FC334 FUSE BLOCK					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A1	YEL	2-5	12 AWG	GXL	C069-J8 (2)
A2	YEL	2-7	12 AWG	GXL	X102A (12)
A3	YEL	2-9	18 AWG	GXL	X183A (1)
A4	YEL	2-11	18 AWG	GXL	LB280 (1)
A5	YEL	2-15	18 AWG	GXL	X530 (1)
A6	YEL	2-13	18 AWG	GXL	X429 (H)
A7	YEL	2-14	18 AWG	GXL	X10 (3)
A8					
A9					
A10					
B1	RED	1-2	12 AWG	GXL	S284 (2)
B2	WHT	6-3 IGN PWR ENABLE	18 AWG	GXL	S277 (1)
B3	RED	1-4	12 AWG	GXL	S283 (2)
B4	WHT	6-4 IGN PWR ENABLE	18 AWG	GXL	S277 (1)
B5					
B8					
B10					
C2					
C4					
C5					
C6	YEL	4-2 PLAT STAT	18 AWG	GXL	X10 (4)
C7	RED	1-0	18 AWG	GXL	S302 (2)
C8	RED	1-5	18 AWG	GXL	S301 (2)
C9	YEL	3-0	18 AWG	GXL	SW104-1 (1)
C10	WHT	9-0-1 PLAT MODE/ GND ENABLE	18AWG	GXL	S121 (2)
D1	BLK	0-1-1	18 AWG	GXL	S279 (2)
D2	YEL	2-2	12 AWG	GXL	FC334-L1 (L1)
D3	BLK	0-1-3	18 AWG	GXL	S279 (2)
D4	YEL	2-4	12 AWG	GXL	FC334-L1 (L1)
D5					
D6	YEL	4-1	18 AWG	GXL	SW104-3 (1)
D7	RED	1-1	18 AWG	GXL	SW118-2A (2A)
D8	RED	1-7	18 AWG	GXL	S578 (1)
D9	WHT	6-0 IGN PWR ENABLE	18 AWG	GXL	S277 (2)
D10	WHT	6-1 IGN PWR ENABLE	18 AWG	GXL	S277 (2)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SW104-B KEY SW B+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-0	18 AWG	GXL	SW118-1A (1A)

SW104-3 PLAT MODE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	4-0	18 AWG	GXL	X102A (9)
1	YEL	4-1	18 AWG	GXL	FC334 (D6)

GD422 KONGSBERG DISPLAY					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-5-1 DISPLAY-	18 AWG	GXL	S331(2)
2	YEL	14-4-1 DISPLAY+	18 AWG	GXL	S332 (2)
3	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	MS309 (4)
4	GRN	CAN-TWO LOW	20 AWG	J1939 CABLE	MS309 (2)
5					
6					

SW531-1 MSSO SW					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	507-0 MSSO INPUT	18 AWG	GXL	C069-J12 (8)

SW531-2 MSSO SW					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-3 MSSO-	18 AWG	GXL	C069-J1(9)

S277					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-3 IGN PWR ENABLE	18 AWG	GXL	FC334 (B2)
1	WHT	6-4 IGN PWR ENABLE	18 AWG	GXL	FC334 (B4)
2	WHT	6-0 IGN PWR ENABLE	18 AWG	GXL	FC334 (D9)
2	WHT	6-1 IGN PWR ENABLE	18 AWG	GXL	FC334 (D10)

FC334-L1 FUSE BLK IGN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
L1	YEL	2-2	12 AWG	GXL	FC334 (D2)
L1	YEL	2-4	12 AWG	GXL	FC334 (D4)

S279					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-1	18 AWG	GXL	X290 (1)
2	BLK	0-1-1	18 AWG	GXL	FC334 (D1)
2	BLK	0-1-3	18 AWG	GXL	FC334 (D3)

S332					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-4 DISPLAY+	18 AWG	GXL	C069-J7 (29)
2	YEL	14-4-1 DISPLAY+	18 AWG	GXL	GD422 (2)
2	YEL	14-4-2 DISPLAY+	20 AWG	TXL	S573 (1)

X291 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-9	18 AWG	GXL	X181A (2)
1	BLK	0-15	18 AWG	GXL	X530 (3)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

S573					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-4-2 DISPLAY+	20 AWG	TXL	S332 (2)
2	YEL	14-4-2 DISPLAY+	20 AWG	TXL	GD344 (3)
2	WHT	98-1 GND LED ID	20 AWG	TXL	GD344 (2)

X287 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-11	18 AWG	GXL	LB280 (2)
1	BLK	0-13	18 AWG	GXL	X429 (A)

X296 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-5	12 AWG	GXL	CO69-J8 (1)

X297 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-40	18 AWG	GXL	S405 (2)

X290 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-1	18 AWG	GXL	S279 (1)

X298 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-7	12 AWG	GXL	X102A (16)

X513 B					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-1 DRV RTN	18 AWG	GXL	S404 (2)
2					
3					
4	WHT	54-7 NO CAPCITY LNTH	18 AWG	GXL	X320 (3)
5					
6					

S331					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-5 DISPLAY-	18 AWG	GXL	CO69-J7 (25)
2	BLK	16-5-1 DISPLAY-	18 AWG	GXL	GD422 (1)
2	BLK	16-5-2 DISPLAY-	20 AWG	TXL	GD344 (6)

S578					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-7	18 AWG	GXL	FC334 (D8)
2	RED	1-6	18 AWG	GXL	X429 (B)
2	RED	1-7	18 AWG	GXL	X10 (1)

X288 GROUND STUD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-2	18 AWG	GXL	X10 (2)

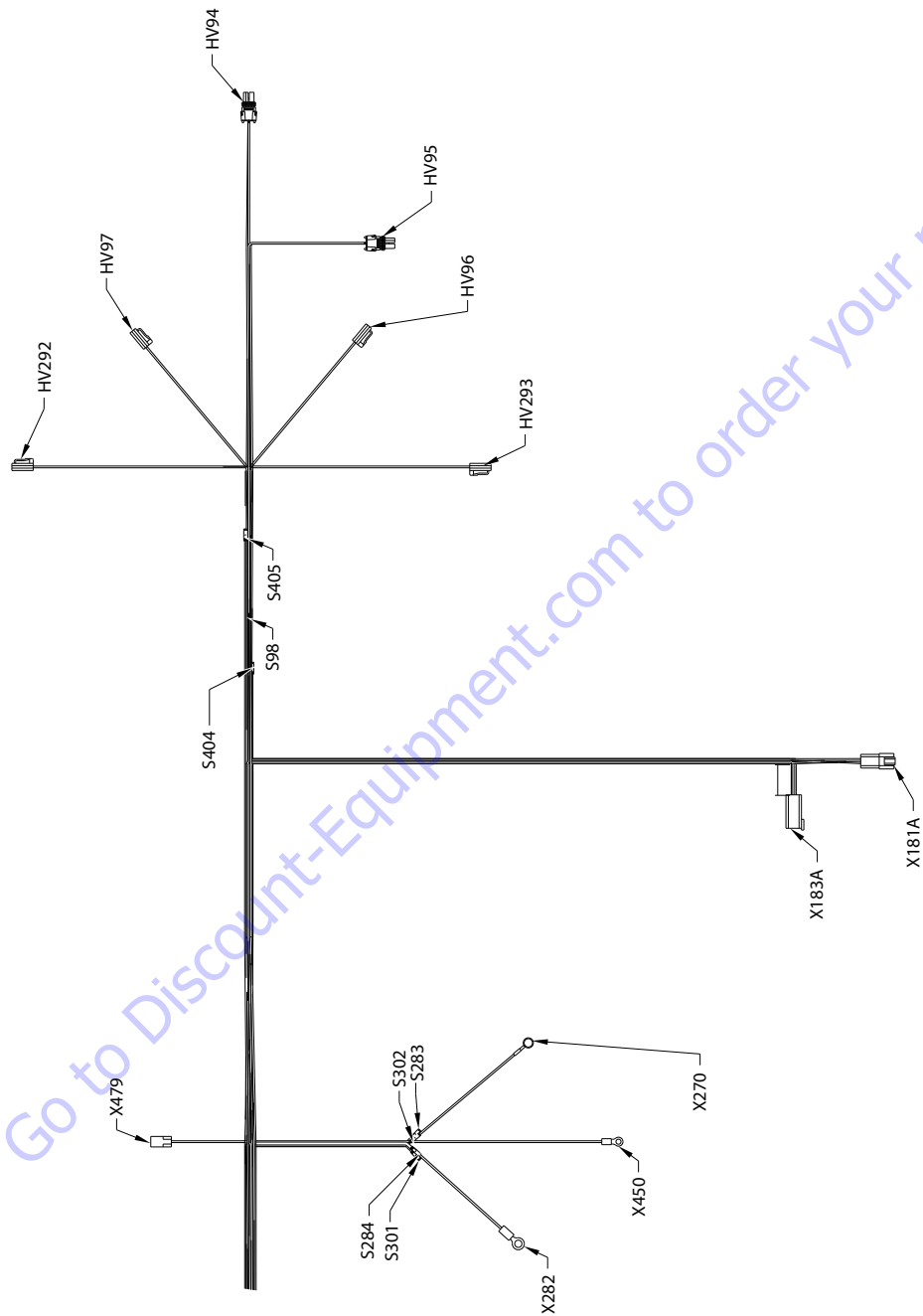
SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X102A BOOM CABLE CONNECTION					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	GRN	CAN-ONE LOW	18 AWG	J1939 CABLE	MS330 (4)
3	YEL	CAN-ONE HIGH	18 AWG	J1939 CABLE	MS330 (3)
4	WHT	9-0 PLAT MODE/GND ENABLE	18 AWG	GXL	S121 (2)
5					
6	WHT	7-0 FOOT SW INPUT	18 AWG	GXL	C069-J7 (15)
7					
8					
9	YEL	4-0	18 AWG	GXL	SW104-3 (1)
10					
11	WHT	8-0 GND MODE/PLAT ENABLE	18 AWG	GXL	C069-J7 (14)
12	YEL	2-7	12 AWG	GXL	FC334 (A2)
13					
14					
15					
16	BLK	0-7	12 AWG	GXL	X298 (1)
17					
18					
19					

X429 JLG DIAGNOSTIC					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	BLK	0-13	18 AWG	GXL	X287 (1)
B	RED	1-6	18 AWG	GXL	S578 (2)
C	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	MS309 (9)
D	GRN	CAN-TWOLOW	20 AWG	J1939 CABLE	MS309 (12)
E					
F					
G					
H	YEL	2-13	18 AWG	GXL	FC334 (A6)
J					

MS330 CAN CHANNEL 1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	YEL	CAN-ONE HIGH	20 AWG	TXL	GD344 (1)
3	YEL	CAN-ONE HIGH	18 AWG	J1939 CABLE	X102A (3)
4	GRN	CAN-ONE LOW	18 AWG	J1939 CABLE	X102A (2)
5	GRN	CAN-ONE LOW	18 AWG	J1939 CABLE	C069-J7 (24)
6					
7	GRN	CAN-ONE LOW	20 AWG	J1939 CABLE	SN476 (4)
8	GRN	CAN-ONE LOW	20 AWG	TXL	GD344 (4)
9					
10	YEL	CAN-ONE HIGH	18 AWG	J1939 CABLE	C069-J7 (13)
11					
12	YEL	CAN-ONE HIGH	20 AWG	J1939 CABLE	SN476 (3)

MS309 CAN CHANNEL 2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	GRN	CAN-TWO LOW	20 AWG	J1939 CABLE	GD422 (4)
3	GRN	CAN-TWO LOW	20 AWG	J1939 CABLE	C069-J12 (4)
4	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	GD422 (3)
5	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	C069-J12 (3)
6					
7	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	X183A (3)
8	YEL	CAN-TWO HIGH	20 AWG	TXL	X429 (C)
9					
10	GRN	CAN-TWO LOW	20 AWG	J1939 CABLE	X183A (4)
11					
12	GRN	CAN-TWO LOW	20 AWG	J1939 CABLE	X429 (D)



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Figure 7-37. Turntable Harness - Sheet 4 of 6

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X479 DRIVE ORNT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-6 DOS+	18 AWG	GXL	C069-J7 (32)
2	WHT	51-0 DOS SW	18 AWG	GXL	C069-J7 (35)

S302					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		03	20 AWG	FUSIBLE LINK	X270 (1)
2	RED	1-0	18 AWG	GXL	FC334 (C7)

S301					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		04	20 AWG	FUSIBLE LINK	X270 (1)
2	RED	1-5	18 AWG	GXL	FC334 (C8)

S283					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		02	16 AWG	FUSIBLE LINK	X282 (1)
2	RED	1-4	12 AWG	GXL	FC334 (B3)

S284					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		01	16 AWG	FUSIBLE LINK	X282 (1)
2	RED	1-2	12 AWG	GXL	FC334 (B1)

X183A ENGINE CONNECTOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-9	18 AWG	GXL	FC334 (A3)
2	WHT	100-1 START	16 AWG	GXL	C069-J1 (11)
3	YEL	CAN-TWO HIGH	20 AWG	J1939 CABLE	MS309 (8)
4	GRN	CAN-TWOWLOW	20 AWG	J1939 CABLE	MS309 (11)
5	WHT	101-0 ALT EXCITE	16 AWG	GXL	C069-J1 (32)
6					

X282 SYSTEM B+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		01	16 AWG	FUSIBLE LINK	S284 (1)
1		02	16 AWG	FUSIBLE LINK	S283 (1)

X450 AUX PUMP COIL					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	93-1 AUX PUMP	18 AWG	GXL	C069-J1 (13)

X270 SYSTEM B+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		03	20 AWG	FUSIBLE LINK	S302 (1)
1		04	20 AWG	FUSIBLE LINK	S301 (1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X181A ENGINE CONNETOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	103-0 DELAYED ECU PWR	18 AWG	GXL	C069-J1 (10)
2	BLK	0-9	18 AWG	GXL	X291 (1)
3					
4	WHT	102-0 GLOW PLUG	16 AWG	GXL	C069-J1 (12)
5					
6					
7	YEL	14-8-3 WIF+	18 AWG	GXL	S321 (1)
8	WHT	108-1 WIF	18 AWG	GXL	C069-J7 (22)

S404					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-1-1 DRV RTN	18 AWG	GXL	HV94 (2)
1	WHT	50-1-2 DRV RTN	18 AWG	GXL	HV95 (2)
2	WHT	50-1 DRV RTN	18 AWG	GXL	XS13B (1)

S98					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-2-1BRK/2SPD VLV-	18 AWG	GXL	HV97 (2)
1	BLK	16-2-2BRK/2SPD VLV-	18 AWG	GXL	HV96 (2)
2	BLK	16-2 BRK/2SPD VLV-	18 AWG	GXL	C069-J1 (5)

S405					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	0-40-1	18 AWG	GXL	HV293 (2)
1	BLK	0-40-2	18 AWG	GXL	HV292 (2)
2	BLK	0-40	18 AWG	GXL	X297 (1)

HV293 OSC AXLE #2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	40-2 OSC AXL VLV 2	18 AWG	GXL	C069-J1 (2)
2	BLK	0-40-1	18 AWG	GXL	S405 (1)

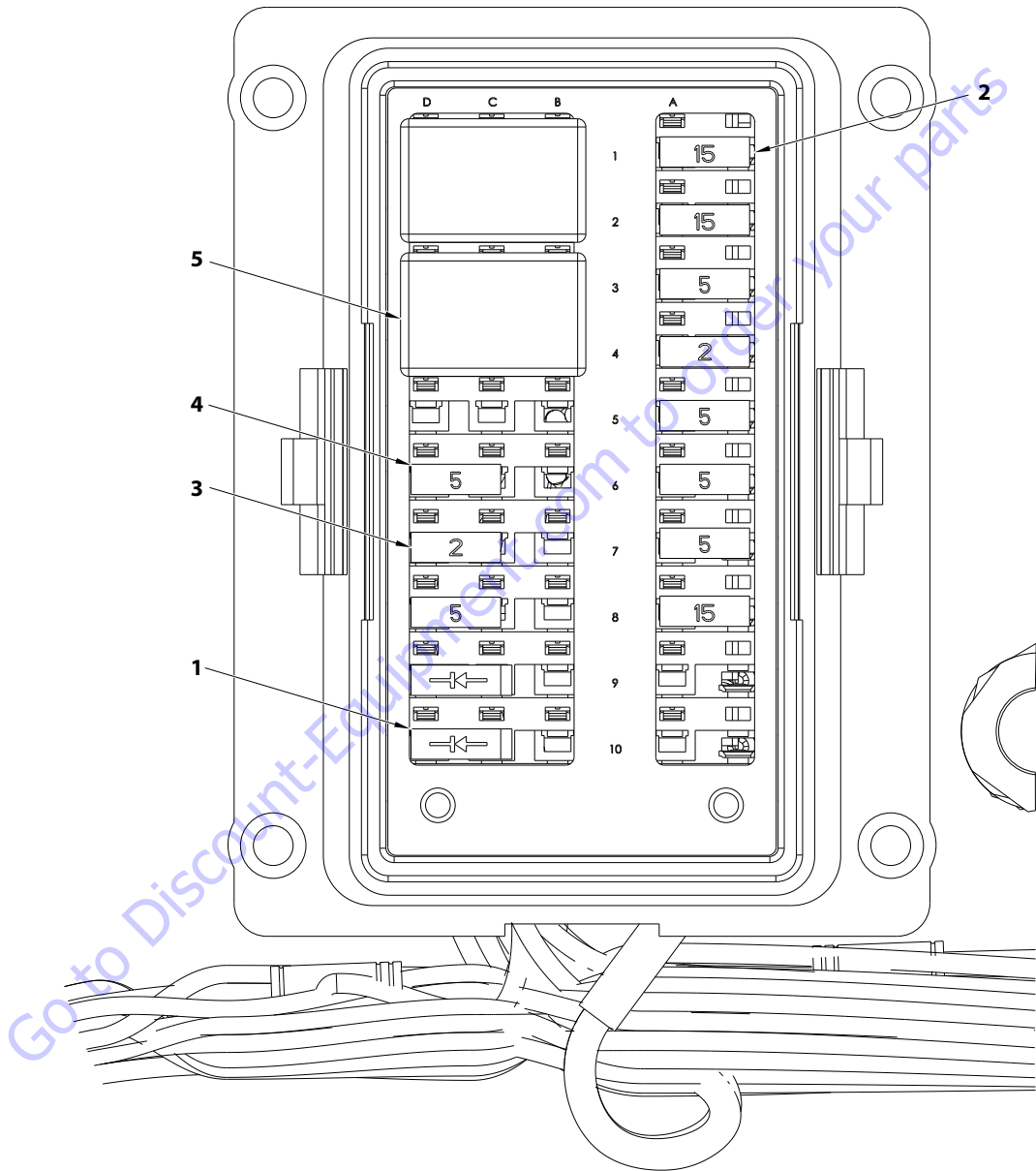
HV96 2 SPEED					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	24-1 TWO SPD	18 AWG	GXL	C069-J1 (20)
2	BLK	16-2-2 BRK/2SPD VLV-	18 AWG	GXL	S98 (1)

HV292 OSC AXL #1/CHASSIS EN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	40-10 SC AXL/CHASSIS EN	18 AWG	GXL	C069-J1 (7)
2	BLK	0-40-2	18 AWG	GXL	S405 (1)

HV97 BRAKE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	23-1 BRAKE	18 AWG	GXL	C069-J1 (23)
2	BLK	16-2-1 BRK/2SPD VLV-	18 AWG	GXL	S98 (1)

HV94 DRIVE REVERSE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	28-1 DRIVE REVERSE	18 AWG	GXL	C069-J1 (6)
2	WHT	50-1-1 DRV RTN	18 AWG	GXL	S404 (1)

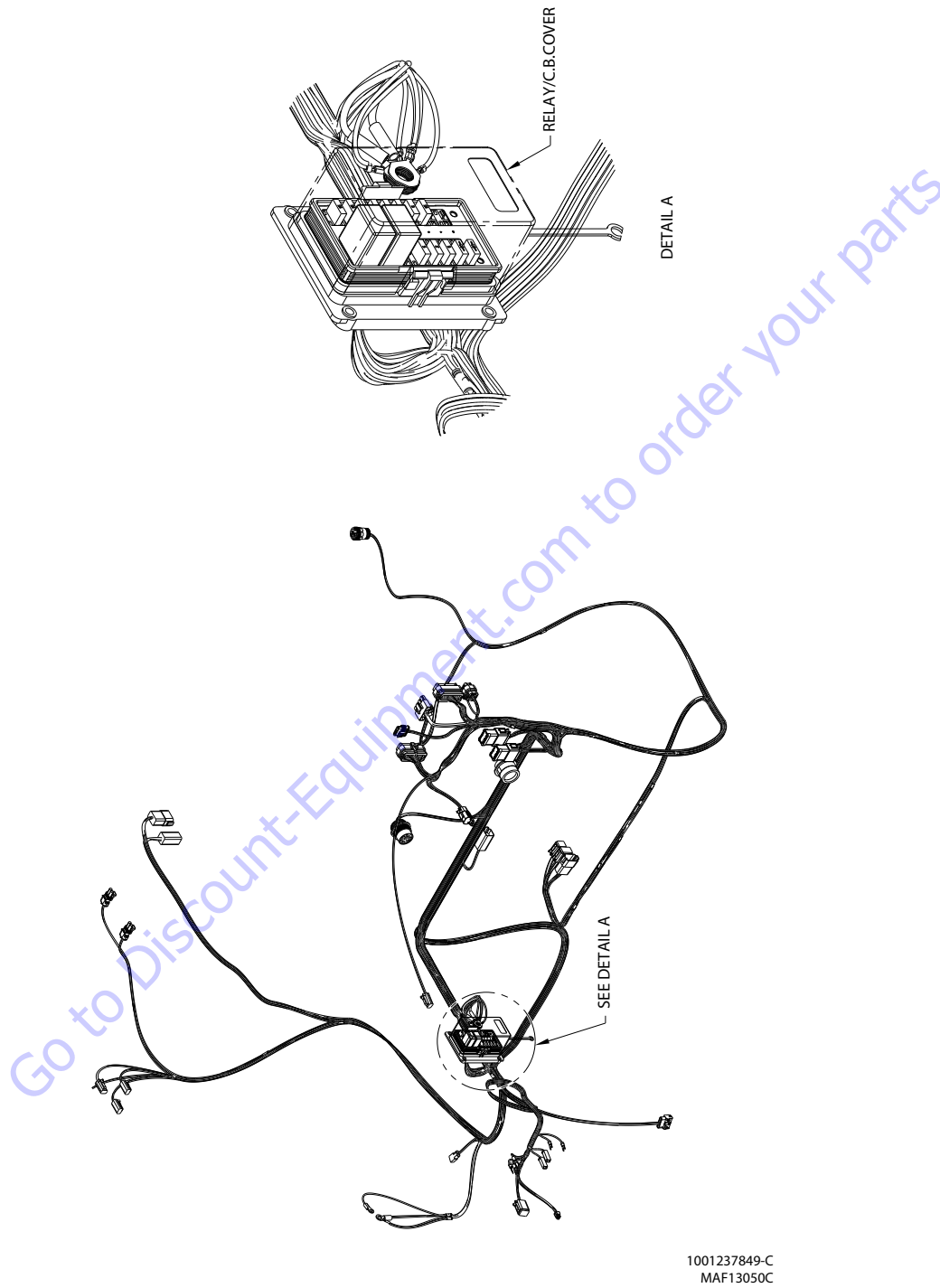
HV95 DRIVE FORWARD					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	27-1 DRIVE FORWARD	18 AWG	GXL	C069-J1 (3)
2	WHT	50-1-2 DRV RTN	18 AWG	GXL	S404 (1)



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- | | |
|----------------------------|-----------------------|
| 1. Connector (1 Amp Diode) | 4. Fuse (5 Amp) |
| 2. Fuse (15 Amp) | 5. Relay (12V 35 Amp) |
| 3. Fuse (2 Amp) | |

Figure 7-38. Turntable Harness - Sheet 5 of 6



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Figure 7-39. Turntable Harness - Sheet 6 of 6

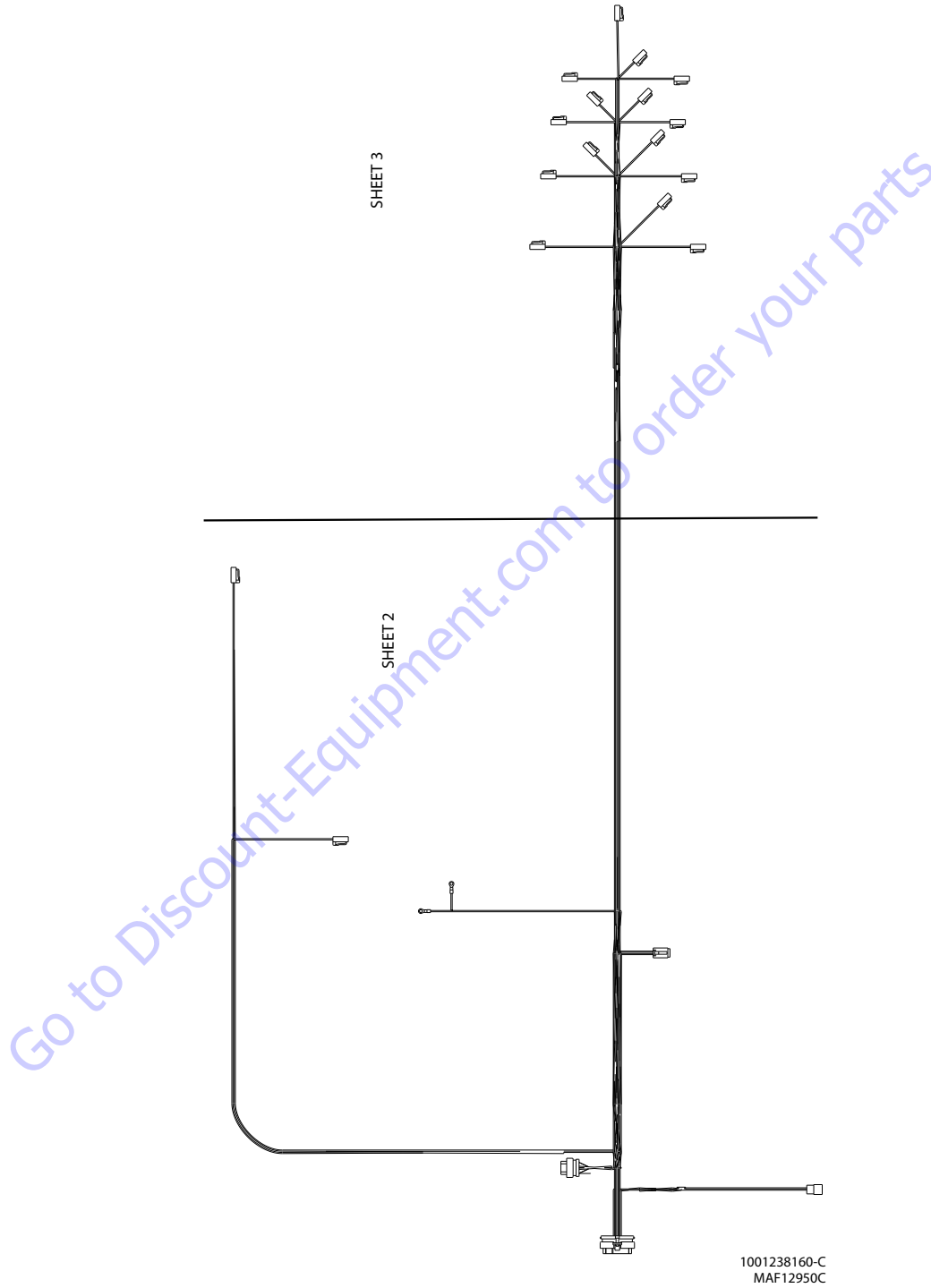


Figure 7-40. Main Valve Harness - Sheet 1 of 3

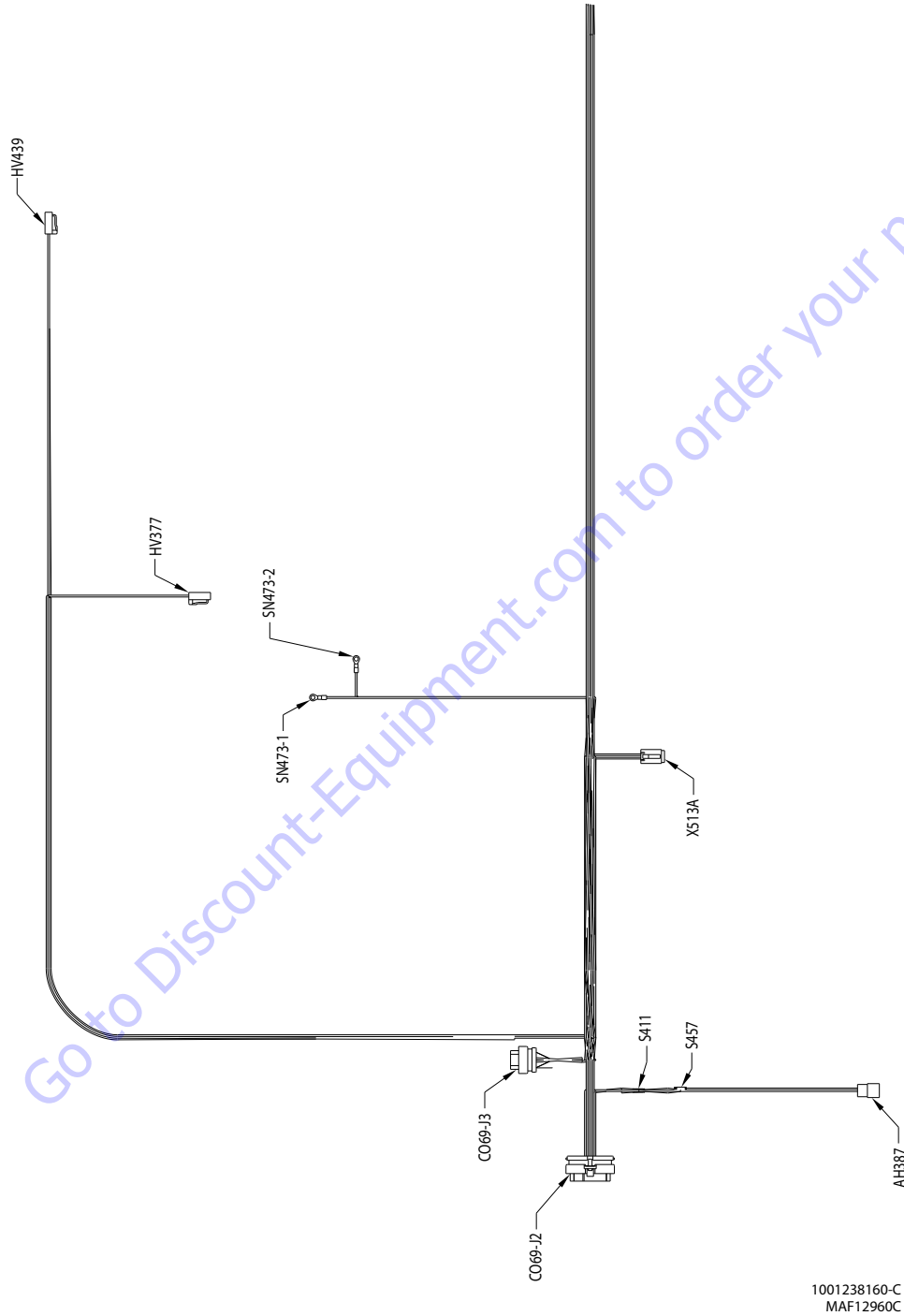


Figure 7-41. Main Valve Harness - Sheet 2 of 3

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SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

C069-J2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2					
3					
4	WHT	78-1 BOOM TELEIN	18 AWG	GXL	HV371 (1)
5	WHT	88-1 LEVEL UP	18 AWG	GXL	HV381 (1)
6	BLK	16-11 FUEL SNSR-	18 AWG	GXL	SN473-2 (1)
7	WHT	89-1 LEVEL DOWN	18 AWG	GXL	HV380 (1)
8	WHT	20-0 STEER RIGHT	18 AWG	GXL	HV373 (1)
9	WHT	77-2 BOOM LIFT DN AUX	18 AWG	GXL	HV439 (1)
10	WHT	86-1 ROTATE LEFT	18 AWG	GXL	HV383 (1)
11	WHT	76-1 BOOM LIFT UP	18 AWG	GXL	HV376 (1)
12	WHT	82-1 JIB UP	18 AWG	GXL	HV364 (1)
13	WHT	90-1 MAIN DUMP	18 AWG	GXL	HV366 (1)
14	BLK	16-7 TELE/LEVEL-	18 AWG	GXL	S386 (2)
15					
16	WHT	79-1 BOOM TELEOUT	18 AWG	GXL	HV372 (1)
17	BLK	16-9 JIB/ROTATE-	18 AWG	GXL	S384 (2)
18					
19	WHT	19-0 STEER LEFT	18 AWG	GXL	HV374 (1)
20					
21	WHT	87-1 ROTATE RIGHT	18 AWG	GXL	HV382 (1)
22	WHT	77-1 BOOM LIFT DN	18 AWG	GXL	HV377 (1)
23	WHT	83-1 JIB DOWN	18 AWG	GXL	HV365 (1)
24	BLK	16-10-2 CONFIG-	18 AWG	GXL	S411 (2)
25	WHT	104-0 FUEL SENSOR	18 AWG	GXL	SN473-1 (1)
26	WHT	5000 HEAD & TAIL LIGHTS	18 AWG	GXL	X513A (2)
27	WHT	94-0 ALARM SIGNAL	18 AWG	GXL	AH387 (B)
28	BLK	16-6 STEER-	18 AWG	GXL	S415 (2)
29	BLK	16-10 ALARM/CONFIG-	18 AWG	GXL	S411 (2)
30	BLK	16-8 MAIN DUMP-	18 AWG	GXL	HV366 (2)
31	WHT	91-1 FLOW CNTRL	18 AWG	GXL	HV375 (1)
32					
33					
34	WHT	70-1 SWING LEFT	18 AWG	GXL	HV379 (1)
35	WHT	71-1 SWING RIGHT	18 AWG	GXL	HV378 (1)

AH387 ALARM					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	14-5-1 ALARM+	18 AWG	GXL	S457 (1)
B	WHT	94-0 ALARM SIGNAL	18 AWG	GXL	C069-J2 (27)
C	BLK	16-10-1 ALARM-	18 AWG	GXL	S411 (1)

C069-J3					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-1 DRV RTN	18 AWG	GXL	X513A (1)
2	WHT	50-5 LIFT DN AUX RTN	18 AWG	GXL	HV439 (2)
3					
4	WHT	50-2 SWING RTN	18 AWG	GXL	S389 (2)
5					
6	WHT	50-3 FLOW CNTRL RTN	18 AWG	GXL	HV375 (2)
7	YEL	14-5 ALARM/CRIBBING+	18 AWG	GXL	S457 (2)
8					
9	WHT	506-0 CRIBBING	18 AWG	GXL	X513A (3)
10	WHT	54-7 NO CAPCITY LNTH	18 AWG	GXL	X513A (4)
11					
12					
13					
14	WHT	50-4 LIFT RTN	18 AWG	GXL	S388 (2)

X513A TO TURNABLE HARN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-1 DRV RTN	18 AWG	GXL	C069-J3 (1)
2	WHT	500-0 HEAD & TAIL LIGHTS	18 AWG	GXL	C069-J2 (26)
3	WHT	506-0 CRIBBING	18 AWG	GXL	C069-J3 (9)
4	WHT	54-7 NO CAPCITY LNTH	18 AWG	GXL	C069-J3 (10)
5	YEL	14-5-2 CRIBBING+	18 AWG	GXL	S457 (2)
6					

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

HV377 BOOM LIFT DOWN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	77-1 BOOM LIFT DN	18 AWG	GXL	C069-J2 (22)
2	WHT	50-4-1 LIFT RTN	18 AWG	GXL	S388 (1)

S457					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-5-1 ALARM+	18 AWG	GXL	AH387 (A)
2	YEL	14-5 ALARM/CRIBBING+	18 AWG	GXL	C069-J3 (7)
2	YEL	14-5-2 CRIBBING+	18 AWG	GXL	X513A (5)

SN473-2 FUEL LEVEL SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-11 FUEL SNSR-	18 AWG	GXL	C069-J2 (6)

S411					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-10-1 ALARM-	18 AWG	GXL	AH387 (C)
2	BLK	16-10 ALARM/CONFIG-	18 AWG	GXL	C069-J2 (29)
2	BLK	16-10-2 CONFIG-	18 AWG	GXL	C069-J2 (24)

SN473-1 FUEL LEVEL SENSOR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	104-0 FUEL SENSOR	18 AWG	GXL	C069-J2 (25)

HV439 BOOM LIFT DOWN AUX					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	77-2 BOOM LIFT DN AUX	18 AWG	GXL	C069-J2 (9)
2	WHT	50-5 LIFT DN AUX RTN	18 AWG	GXL	C069-J3 (2)

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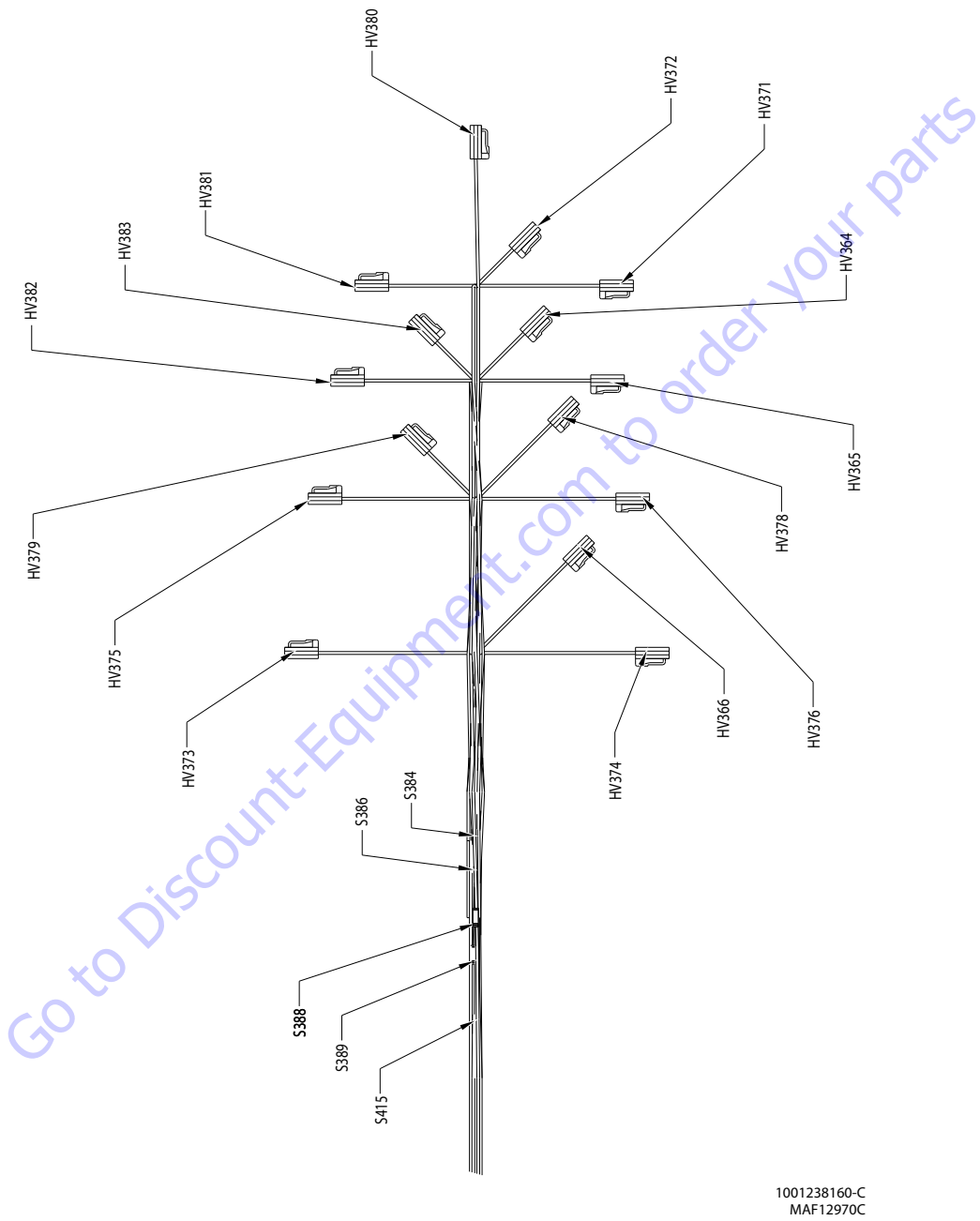


Figure 7-42. Main Valve Harness - Sheet 3 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

S415					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-6-1 STEER-	18 AWG	GXL	HV373 (2)
1	BLK	16-6-2 STEER-	18 AWG	GXL	HV374 (2)
2	BLK	16-6 STEER-	18 AWG	GXL	C069-J2 (28)

HV375 FLOW CONTROL					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	91-1 FLOW CNTRL	18 AWG	GXL	C069-J2 (31)
2	WHT	50-3 FLOW CNTRL RTN	18 AWG	GXL	C069-J3 (6)

S389					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-2-1 SWING RTN	18 AWG	GXL	HV379 (2)
1	WHT	50-2-2 SWING RTN	18 AWG	GXL	HV378 (2)
2	WHT	50-2 SWING RTN	18 AWG	GXL	C069-J3 (4)

HV379 SWING LEFT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	70-1 SWING LEFT	18 AWG	GXL	C069-J2 (34)
2	WHT	50-2-1 SWING RTN	18 AWG	GXL	S389 (1)

S388					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	50-4-1 LEFT RTN	18 AWG	GXL	HV377 (2)
1	WHT	50-4-2 LEFT RTN	18 AWG	GXL	HV376 (2)
2	WHT	50-4 LEFT RTN	18 AWG	GXL	C069-J3 (14)

HV382 ROTATE RIGHT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	87-1 ROTATE RIGHT	18 AWG	GXL	C069-J2 (21)
2	BLK	16-9-2 JIB/ROTATE-	18 AWG	GXL	S384 (1)

S386					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-7-1 TELE/LEVEL-	18 AWG	GXL	HV371 (2)
1	BLK	16-7-2 TELE/LEVEL-	18 AWG	GXL	HV372 (2)
1	BLK	16-7-3 TELE/LEVEL-	18 AWG	GXL	HV381 (2)
2	BLK	16-7 TELE/LEVEL-	18 AWG	GXL	C069-J2 (14)
2	BLK	16-7-4 TELE/LEVEL-	18 AWG	GXL	HV380 (2)

HV383 ROTATE LEFT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	86-1 ROTATE LEFT	18 AWG	GXL	C069-J2 (10)
2	BLK	16-9-1 JIB/ROTATE-	18 AWG	GXL	S384 (1)

S384					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	16-9-1 JIB/ROTATE-	18 AWG	GXL	HV383 (2)
1	BLK	16-9-2 JIB/ROTATE-	18 AWG	GXL	HV382 (2)
1	BLK	16-9-3 JIB/ROTATE-	18 AWG	GXL	HV364 (2)
2	BLK	16-9 JIB/ROTATE-	18 AWG	GXL	C069-J2 (17)
2	BLK	16-9-4 JIB/ROTATE-	18 AWG	GXL	HV365 (2)

HV381 LEVEL UP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	88-1 LEVEL UP	18 AWG	GXL	C069-J2 (5)
2	BLK	16-7-3 TELE/LEVEL-	18 AWG	GXL	S386 (1)

HV373 STEER RIGHT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	20-0 STEER RIGHT	18 AWG	GXL	C069-J2 (8)
2	BLK	16-6-1 STEER-	18 AWG	GXL	S415 (1)

HV380 LEVEL DOWN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	89-1 LEVEL DOWN	18 AWG	GXL	C069-J2 (7)
2	BLK	16-7-4 TELE/LEVEL-	18 AWG	GXL	S386 (2)

HV372 BOOM TELE OUT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	79-1 BOOM TELE OUT	18 AWG	GXL	C069-J2 (7)
2	BLK	16-7-2 TELE/LEVEL-	18 AWG	GXL	S386 (1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

HV371 BOOM TELE IN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	78-1 BOOM TELE IN	18 AWG	GXL	C069-J2 (4)
2	BLK	16-7-1 TELE/LEVEL-	18 AWG	GXL	S386 (1)

HV376 BOOM LIFT UP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	76-1 BOOM LIFT UP	18 AWG	GXL	C069-J2 (11)
2	WHT	50-4-2 LIFT RTN	18 AWG	GXL	S388 (1)

HV364 JIB UP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	82-1 JIB UP	18 AWG	GXL	C069-J2 (12)
2	BLK	16-9-3 JIB/ROTATE-	18 AWG	GXL	S384 (1)

HV366 MAIN DUMP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	90-1 MAIN DUMP	18 AWG	GXL	C069-J2 (13)
2	BLK	16-8 MAIN DUMP-	18 AWG	GXL	C069-J2 (30)

HV365 JIB DOWN					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	83-1 JIB DOWN	18 AWG	GXL	C069-J2 (23)
2	BLK	16-9-4 JIB/ROTATE-	18 AWG	GXL	S384 (2)

HV366 MAIN DUMP					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	19-0 STEER LEFT	18 AWG	GXL	C069-J2 (19)
2	BLK	16-6-2 STEER-	18 AWG	GXL	S415 (1)

HV378 SWING RIGHT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	71-1 SWING RIGHT	18 AWG	GXL	C069-J2 (35)
2	WHT	50-2-2 SWING RTN	18 AWG	GXL	S389 (1)

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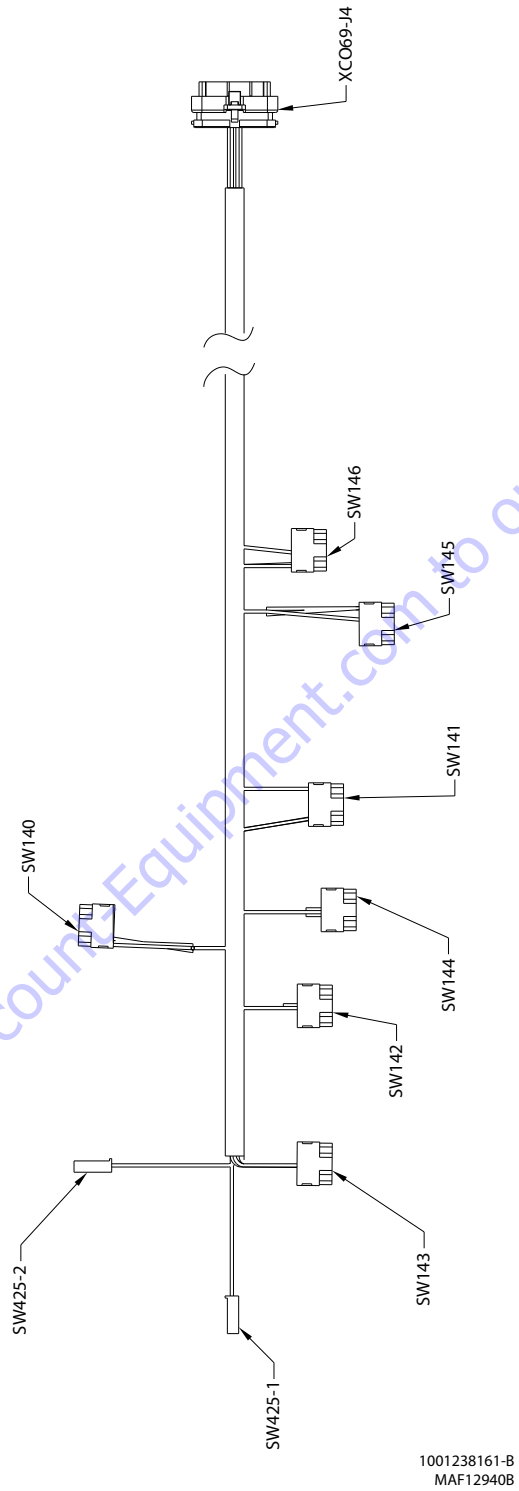


Figure 7-43. Ground Control Panel Harness

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SW140 ROTATE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	87-0 ROTATE RIGHT	18 AWG	GXL	XCO69-J4 (18)
2	YEL	14-0-1 GND CNTRL+	18 AWG	GXL	SW141 (2)
2	YEL	14-0-2 GND CNTRL+	18 AWG	GXL	SW142 (2)
3	WHT	86-0 ROTATE LEFT	18 AWG	GXL	XCO69-J4 (6)
4					
5					
6					

SW143 IGNITION START AUX POWER					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	100-0 START	18 AWG	GXL	XCO69-J4 (4)
2	YEL	14-0-3 GND CNTRL+	18 AWG	GXL	SW142 (2)
2	YEL	14-0-4 GND CNTRL+	18 AWG	GXL	SW144 (2)
3	WHT	93-0 AUX PWR	18 AWG	GXL	XCO69-J4 (16)
4					
5					
6					

SW425-2 ENGINE REGENERATION					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	109-0 ENG REGEN	18 AWG	GXL	XCO69-J4 (9)

SW144 JIB					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	82-0 JIB UP	18 AWG	GXL	XCO69-J4 (19)
2	YEL	14-0-4 GND CNTRL+	18 AWG	GXL	SW143 (2)
2	YEL	14-0-5 GND CNTRL+	18 AWG	GXL	SW145 (2)
3	WHT	83-0 JIB DOWN	18 AWG	GXL	XCO69-J4 (8)
4					
5					
6					

SW425-1GND CNTRL+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	14-0-7 GND CNTRL+	18 AWG	GXL	SW146 (2)

SW142 LEVEL					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	88-0 LEVEL UP	18 AWG	GXL	XCO69-J4 (17)
2	YEL	14-0-2 GND CNTRL+	18 AWG	GXL	SW140 (2)
2	YEL	14-0-3 GND CNTRL+	18 AWG	GXL	SW143 (2)
3	WHT	89-0 LEVEL DOWN	18 AWG	GXL	XCO69-J4 (5)
4					
5					
6					

SW141 MAIN TELE					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	79-0 TELE OUT	18 AWG	GXL	XCO69-J4 (30)
2	YEL	14-0 GND CNTRL+	18 AWG	GXL	XCO69-J4 (25)
2	YEL	14-0-1 GND CNTRL+	18 AWG	GXL	SW140 (2)
3	WHT	78-0 TELE IN	18 AWG	GXL	XCO69-J4 (7)
4					
5					
6					

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

XC069-J4					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2					
3					
4	WHT	100-0 START	18 AWG	GXL	SW143 (1)
5	WHT	89-0 LEVEL DOWN	18 AWG	GXL	SW142 (3)
6	WHT	86-0 ROTATE LEFT	18 AWG	GXL	SW140 (3)
7	WHT	78-0 TELE IN	18 AWG	GXL	SW141 (3)
8	WHT	83-0 JIB DOWN	18 AWG	GXL	SW144 (3)
9	WHT	109-0 ENG REGEN	18 AWG	GXL	SW425-2 (1)
10					
11					
12					
13					
14					
15					
16	WHT	93-0 AUX PWR	18 AWG	GXL	SW143 (3)
17	WHT	88-0 LEVEL UP	18 AWG	GXL	SW142 (1)
18	WHT	87-0 ROTATE RIGHT	18 AWG	GXL	SW140 (1)
19	WHT	82-0 JIB UP	18 AWG	GXL	SW144 (1)
20					
21					
22					
23	WHT	76-0 MAIN LIFTUP	18 AWG	GXL	SW145 (1)
24					
25	YEL	14-0 GND CNTRL+	18 AWG	GXL	SW141(2)
26					
27					
28					
29					
30	WHT	79-0 TELE OUT	18 AWG	GXL	SW141 (1)
31					
32					
33	WHT	77-0 MAIN LIFT DOWN	18 AWG	GXL	SW145 (3)
34	WHT	70-0 SWING LEFT	18 AWG	GXL	SW146 (3)
35	WHT	71-0 SWING RIGHT	18 AWG	GXL	SW146 (1)

SW145 MAIN LIFT					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	76-0 MAIN LIFT UP	18 AWG	GXL	XC069-J4 (23)
2	YEL	14-0-5 GND CNTRL+	18 AWG	GXL	SW144 (2)
2	YEL	14-0-6 GND CNTRL+	18 AWG	GXL	SW146 (2)
3	WHT	77-0 MAIN LIFT DOWN	18 AWG	GXL	XC069-J4 (33)
4					
5					
6					

SW146 SWING					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	71-0 SWING RIGHT	18 AWG	GXL	XC069-J4 (35)
2	YEL	14-0-6 GND CNTRL+	18 AWG	GXL	SW145 (2)
2	YEL	14-0-7 GND CNTRL+	18 AWG	GXL	SW425-1 (1)
3	WHT	70-0 SWING LEFT	18 AWG	GXL	XC069-J4 (34)
4					
5					
6					

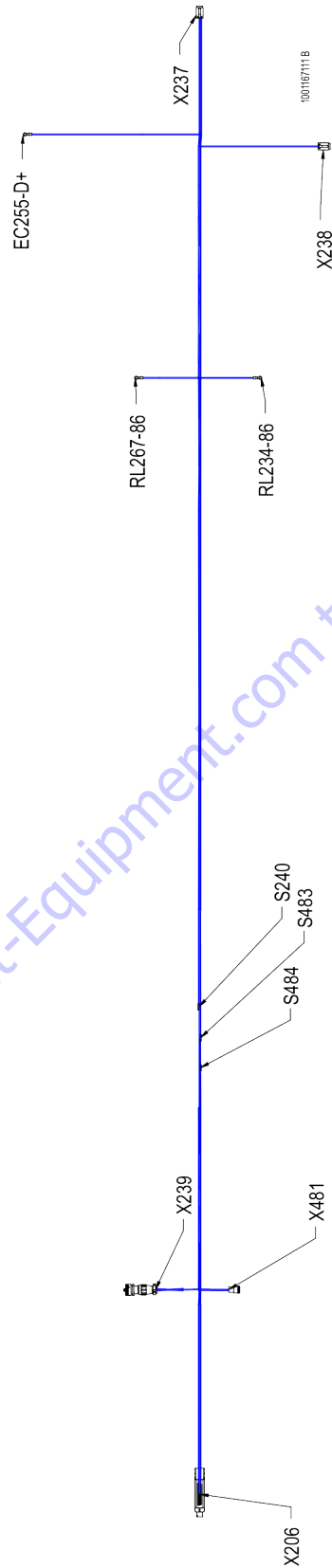


Figure 7-44. Deutz T4j Harness - Sheet 1 of 4

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SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X206					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-6-1 GROUND	16 AWG	TFFN	X238 (2)
2	BLK	000-6-3	18 AWG	GXL	X239 (B)
3					
4					
5					
6					
7					
8					
9					
10	WHT	6-23	18 AWG	GXL	X239 (L)
11	WHT	6-23	18 AWG	GXL	X239 (K)
12	RED	CABLE	18 AWG	CABLE	S484 (2)
13	BLK	CABLE CAN LO	18 AWG	CABLE	S483 (2)
14	WHT	6-15 DIAGNOSTIC	18 AWG	GXL	S240 (2)
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

X238					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	BLK	000-6-1 GROUND	16 AWG	TFFN	X206 (1)
3					
4	WHT	6-18 GLOW	18 AWG	GXL	RL234-86 (1)
5					
6					
7					
8					

X481					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	RED	CABLE	18 AWG	CABLE	S484 (1)
B	BLK	CABLE	18 AWG	CABLE	S483 (2)
C	SHIELD	6-50	18 AWG	SHLD	X237 (6)

S484					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	CABLE CAN HI	18 AWG	CABLE	X237 (3)
1	RED	CABLE	18 AWG	CABLE	X481 (A)
2	RED	CABLE	18 AWG	CABLE	X206 (12)

X239					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	WHT	6-17 DIAGNOSTIC	18 AWG	GXL	S240 (2)
B	BLK	000-6-3	18 AWG	GXL	X206 (2)
K	WHT	6-23	18 AWG	GXL	X206 (11)
L	WHT	6-23	18 AWG	GXL	X206 (10)

S240					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-16	18 AWG	GXL	X237 (1)
2	WHT	6-15 DIAGNOSTIC	18 AWG	GXL	X206 (14)
2	WHT	6-17 DIAGNOSTIC	18 AWG	GXL	X239 (A)

RL267-86					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-25	14 AWG	GXL	X237 (2)

S483					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	CABLE CAN LO	18 AWG	CABLE	X237 (4)
2	BLK	CABLE	18 AWG	CABLE	X481 (B)
2	BLK	CABLE CAN LO	18 AWG	CABLE	X206 (13)

RL234-86					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-18 GLOW	18 AWG	GXL	X238 (4)

X237					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-16	18 AWG	GXL	S240 (1)
2	WHT	6-25	14 AWG	GXL	RL267-86 (1)
3	RED	CABLE CAN HI	18 AWG	CABLE	S484 (1)
4	BLK	CABLE CAN LO	18 AWG	CABLE	S483 (1)
5	RED	6-51 16AWG	16 AWG	GXL	EC255-D+ (1) ***
6	SHIELD	6-50	18 AWG	SHLD	X481 (C)

EC255-D+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	6-51 16AWG	16 AWG	GXL	X237 (5)

Figure 7-45. Deutz T4i Harness - Sheet 2 of 4

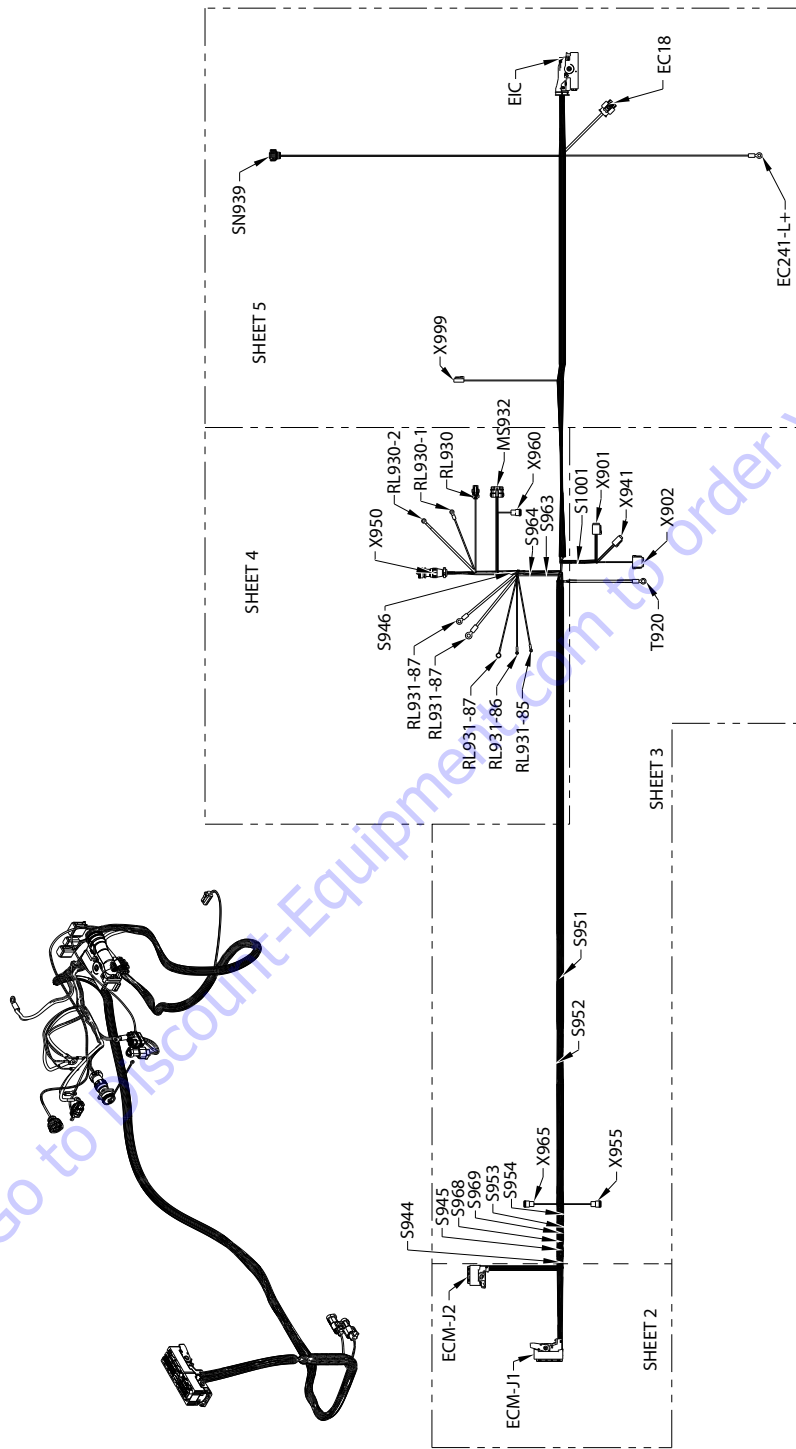
WIRE NO	COLOR	WIRE GAUGE	JACKET	LENGTH (mm)	FROM		TO	
					REFERENCE	PIN	REFERENCE	PIN
000-6-1	BLK	16	TFFN	3809	X238	2	X206	1
000-6-3	BLK	18	GXL	582	X239	B	X206	2
6-15	WHT	18	GXL	1267	X206	14	S240	2
6-16	WHT	18	GXL	2574	S240	1	X237	1
6-17	WHT	18	GXL	846	S240	2	X239	A
6-18	WHT	18	GXL	1054	X238	4	RL234-86	1
6-23	WHT	18	GXL	588	X239	K	X206	11
6-23	WHT	18	GXL	584	X239	L	X206	10
6-25	WHT	14	GXL	1091	X237	2	RL267-86	1
6-50	SHIELD	18	SHLD	3389	X237	6	X481	C
6-51	RED	16	GXL	739	X237	5	EC255-D+	1
CABLE CAN LO	BLK	18	CABLE	2661	X237	4	S483	1
CABLE CAN HI	RED	18	CABLE	2739	X237	3	S484	1
CABLE	RED	18	CABLE	662	S484	1	X481	A
CABLE	BLK	18	CABLE	728	X481	B	S483	2
CABLE	RED	18	CABLE	1110	S484	2	X206	12
CABLE CAN LO	BLK	18	CABLE	1189	X206	13	S483	2

Figure 7-46. Deutz T4i Harness - Sheet 3 of 4



1001167111 B

Figure 7-47. Deutz T4i Harness - Sheet 4 of 4



1001167108-J
MAF13260J

Figure 7-48. Deutz T4F Harness - Sheet 1 of 6

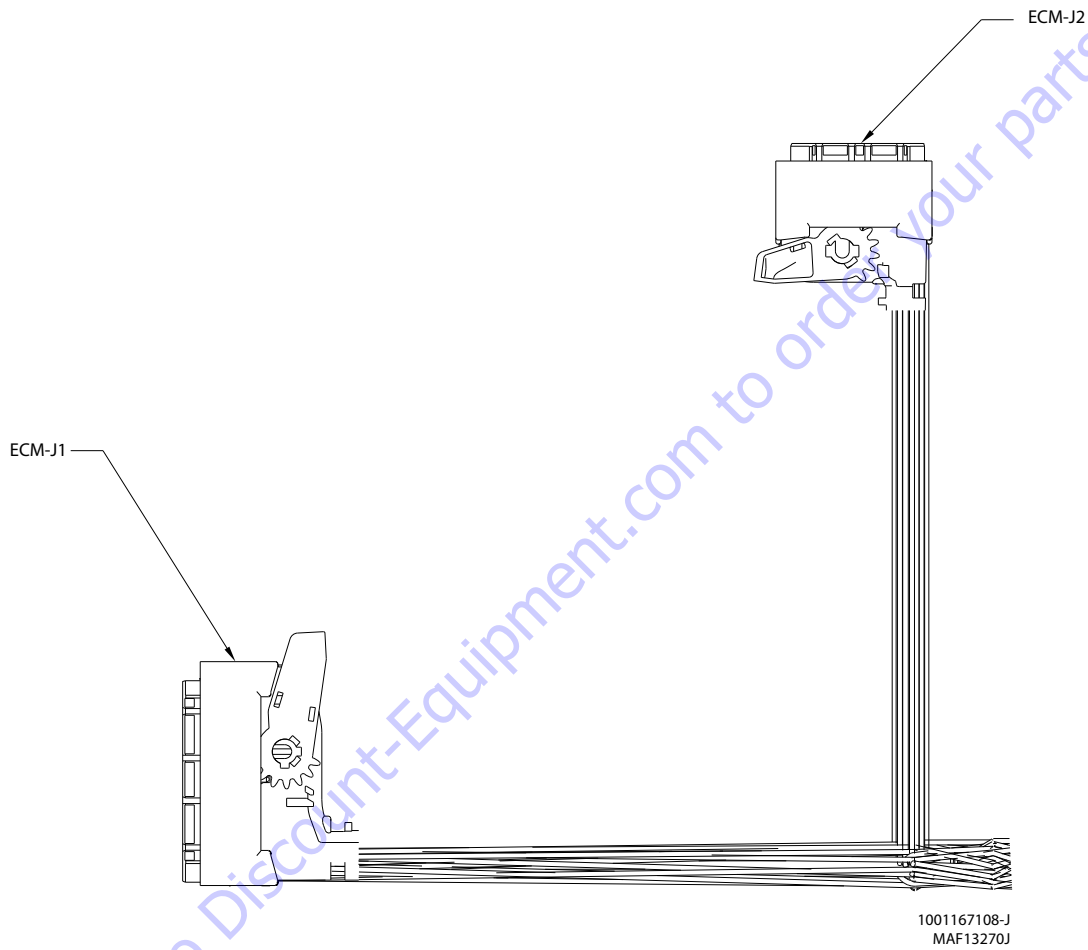


Figure 7-49. Deutz T4F Harness - Sheet 2 of 6

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

ECM-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	148-1 ECM PWR	2.5 mm ²	FLRYW	S944 (2)
2	BLK	148-2 ECM GND	2.5 mm ²	FLRYW	S945 (2)
3	RED	148-3 ECM PWR	2.5 mm ²	FLRYW	S944 (2)
4	BLK	148-4 ECM GND	2.5 mm ²	FLRYW	S945 (2)
5	RED	148-5 ECM PWR	2.5 mm ²	FLRYW	S944 (2)
6	BLK	148-6 ECM GND	2.5 mm ²	FLRYW	S945 (2)
7					
8					
9					
10					
11					
12					
13	BLK	148-13 COOLANT LEVEL SIG	0.75 mm ²	FLRYW	SN939 (3)
14					
15	BLK	148-15-68 CLUTCH SWITCH	0.75 mm ²	FLRYW	ECM-J1 (68)
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26	BLK	148-28 FUEL PUMP RELAY CONTROL GND	0.75 mm ²	FLRYW	RL930 (2)
27					
28	BLK	148-28 START RTN	0.75 mm ²	FLRYW	EIC (2)
29	BLK	148-29 COOLANT LEVEL PWR	0.75 mm ²	FLRYW	SN939 (1)
30					
31					
32					
33					
34					
35	BLK	148-35-2 START	0.75 mm ²	FLRYW	S1001 (1)
36					
37					

ECM-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
38	BLK	148-38 THROTTLE FLAP 4	0.75 mm ²	FLRYW	EIC (52)
39					
40					
41					
42					
43					
44	BLK	148-44 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	EIC (50)
45					
46					
47					
48					
49					
50					
51					
52					
53	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S968 (1)
54	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S953 (1)
55					
56	BLK	148-56 AIR INLET TEMP	0.75 mm ²	FLRYW	EIC (34)
57	BLK	148-57 WATER IN FUEL SW RTN	0.75 mm ²	FLRYW	X941 (2)
58					
59					
60					
61	BLK	148-61 FUEL LOW PRESSURE	0.75 mm ²	FLRYW	EIC (17)
62					
63					
64	BLK	148-64 WATER IN FUEL SW	0.75 mm ²	FLRYW	X941 (1)
65					
66					
67					
68	BLK	148-15-68 CLUTCH SWITCH	0.75 mm ²	FLRYW	ECM-J1 (15)
69					
70					
71					
72	BLK	148-72 THROTTLE FLAP 3	0.75 mm ²	FLRYW	EIC (49)
73	BLK	148-73 START SIG	0.75 mm ²	FLRYW	EIC (3)
74					

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

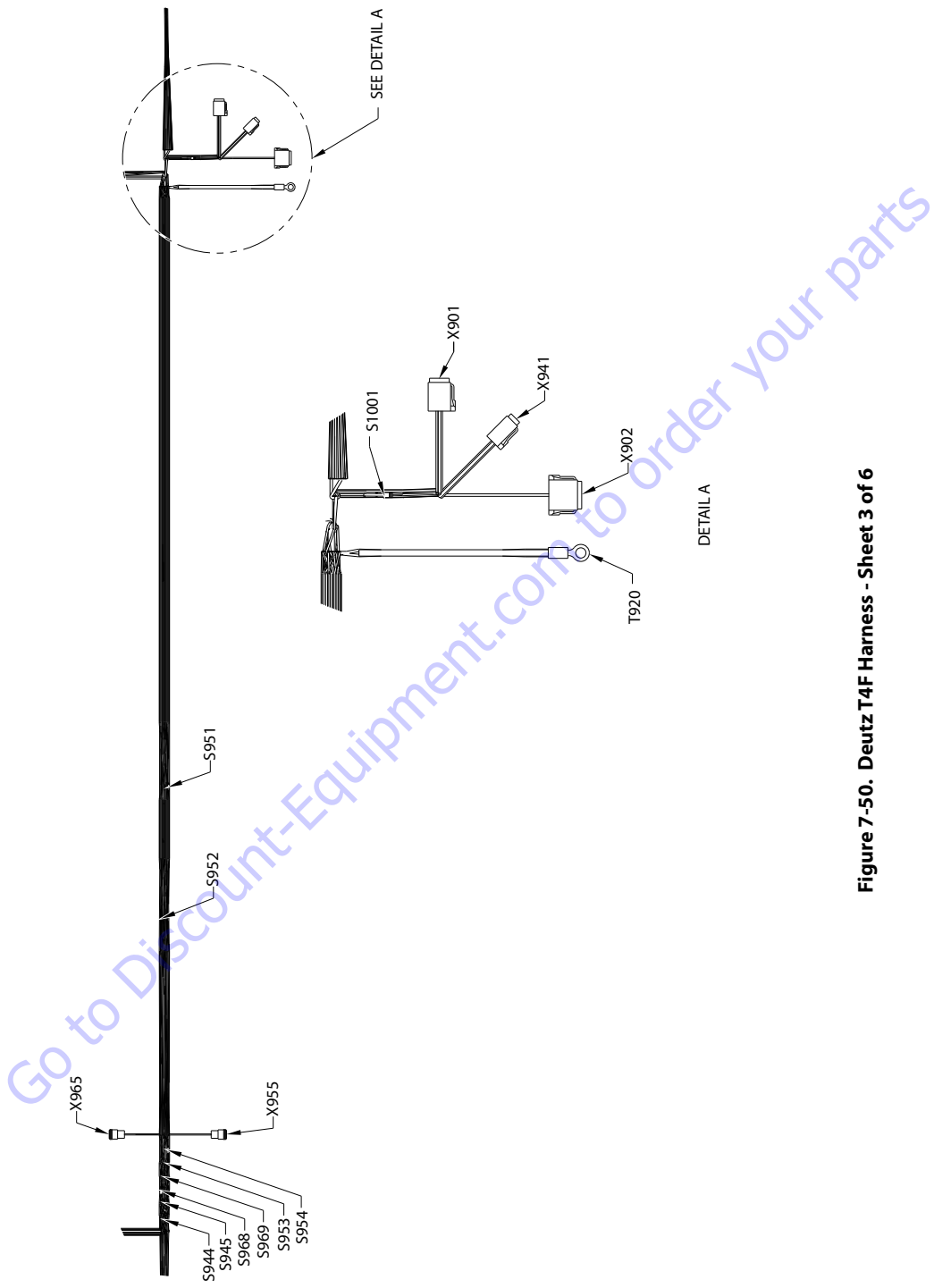
ECM-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
75	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S969 (1)
76	GRN	CAN1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	S954 (1)
77					
78					
79					
80					
81					
82	BLK	148-82 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	EIC (51)
83					
84					
85	BLK	148-85 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	EIC (46)
86					
87	BLK	148-87 COOLANT LEVEL GND	0.75 mm ²	FLRYW	SN939 (2)
88	BLK	148-88 IGNITION	0.75 mm ²	FLRYW	S946 (2)
89					
90					
91					
92					
93					
94					
76	GRN	CAN1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	S954 (1)
77					
78					
79					
80					
81					
82	BLK	148-82 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	EIC (51)
83					
84					
85	BLK	148-85 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	EIC (46)
86					
87	BLK	148-87 COOLANT LEVEL GND	0.75 mm ²	FLRYW	SN939 (2)
88	BLK	148-88 IGNITION	0.75 mm ²	FLRYW	S946 (2)
89					
90					

ECM-J1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
91					
92					
93					
94					
NC	SHLD	CAN 1 SHLD CUSTOMER CAN SHIELD	18 AWG	J1939 CABLE	X901 (6)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

ECM-J2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	BLK	248-2 INJECTOR 3	1.5 mm ²	FLRYW	EIC (61)
3	BLK	248-3 INJECTOR 2	1.5 mm ²	FLRYW	EIC (41)
4	BLK	248-4 MPROP ACTUATOR	1.5 mm ²	FLRYW	EIC (19)
5	BLK	248-5 MPROP ACTUATOR	1.5 mm ²	FLRYW	EIC (20)
6					
7	BLK	248-7 RAIL PRESSURE FUEL	0.75 mm ²	FLRYW	EIC (32)
8					
9					
10					
11					
12					
13					
14					
15					
16	BLK	248-16 INJECTOR 1	1.5 mm ²	FLRYW	EIC (35)
17					
18	BLK	248-18 INJECTOR 4	1.5 mm ²	FLRYW	EIC (37)
19	BLK	248-19 EXHAUST GAS RECIRCULATION	1.5 mm ²	FLRYW	EIC (47)
20	BLK	248-20 EXHAUST GAS RECIRCULATION	1.5 mm ²	FLRYW	EIC (48)
21					
22					
23	BLK	248-23 GLOW SENSE	0.75 mm ²	FLRYW	MS932 (E)
24	BLK	248-24 BOOST PRESSURE/TEMP	0.75 mm ²	FLRYW	EIC (22)
25	BLK	248-25 RAIL PRESSURE FUEL	0.75 mm ²	FLRYW	EIC (31)
26	BLK	248-26 RAIL PRESSURE FUEL	0.75 mm ²	FLRYW	EIC (25)
27	BLK	248-27 BOOST PRESSURE/TEMP	0.75 mm ²	FLRYW	EIC (29)
28	BLK	248-28 COOLING TEMPERATURE	0.75 mm ²	FLRYW	EIC (24)
29	BLK	248-29 OIL PRESSURE	0.75 mm ²	FLRYW	EIC (27)
30					
31					
32	BLK	248-32 INJECTOR 3	1.5 mm ²	FLRYW	EIC (38)

ECM-J2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
33	BLK	248-33 INJECTOR 1	1.5 mm ²	FLRYW	EIC (62)
34					
35	BLK	248-35 GLOW RELAY CONTROL GND	0.75 mm ²	FLRYW	RL931-85 (1)
36					
37	BLK	248-37 ENGINE SPEED CAM SHAFT	18 AWG	CABLE	EIC (14)
38	SHLD	248-38 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	EIC (1)
39	BLK	248-39 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	EIC (15)
40	BLK	248-40 AIR INLET TEMP	0.75 mm ²	FLRYW	EIC (28)
41					
42					
43	BLK	248-43 OIL PRESSURE	0.75 mm ²	FLRYW	EIC (23)
44	BLK	248-44 OIL PRESSURE	0.75 mm ²	FLRYW	EIC (26)
45					
46	BLK	248-46 INJECTOR 2	1.5 mm ²	FLRYW	EIC (40)
47					
48	BLK	248-48 INJECTOR 4	1.5 mm ²	FLRYW	EIC (42)
49					
50					
51					
52	WHT	248-52 ENGINE SPEED CAMSHAFT	18 AWG	CABLE	EIC (13)
53	SHLD	248-53 ENGINE SPEED CAMSHAFT	18 AWG	CABLE	EIC (9)
54	WHT	248-54 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	EIC (21)
55					
56					
57					
58					
59					
60					



DETAIL A

Figure 7-50. Deutz T4F Harness - Sheet 3 of 6

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MAF13280J

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

T920					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-148-246 ECM GND	8 AWG	GXL	S945 (1)
1	BLK	000-48-1 ENG GND	14 AWG	GXL	X941 (4)
1	BLK	000-48-2 ENG GND	18 AWG	GXL	X950 (B)
1	BLK	000-48-3 GND	18 AWG	GXL	X999 (2)

S944					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135 ECM PWR	8 AWG	GXL	RL930-2 (1)
2	RED	148-1 ECM PWR	2.5 mm ²	FLRYW	ECM-J1 (1)
2	RED	148-3 ECM PWR	2.5 mm ²	FLRYW	ECM-J1 (3)
2	RED	148-5 ECM PWR	2.5 mm ²	FLRYW	ECM-J1 (5)

S945					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-148-246 ECM GND	8 AWG	GXL	T920 (1)
2	BLK	148-2 ECM GND	2.5 mm ²	FLRYW	ECM-J1 (2)
2	BLK	148-4 ECM GND	2.5 mm ²	FLRYW	ECM-J1 (4)
2	BLK	148-6 ECM GND	2.5 mm ²	FLRYW	ECM-J1 (6)

S1001					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-35-2 START	0.75 mm ²	FLRYW	ECM-J1 (35)
1	BLK	148-35-3-	18 AWG	GXL	X999 (1)
2	BLK	148-35-1 START	18 AWG	GXL	X901 (2)

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

X941					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-64 WATER IN FUEL SW	0.75 mm ²	FLRYW	ECM-J1 (64)
2	BLK	148-57 WATER IN FUEL SW RTN	0.75 mm ²	FLRYW	ECM-J1 (57)
3	WHT	48-96 FUEL PUMP	14 AWG	GXL	RL930-1 (1)
4	BLK	000-48-1 ENG GND	14 AWG	GXL	T920 (1)

X901					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	BLK	148-35-1 START	18 AWG	GXL	S1001 (2)
3	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S951 (2)
4	GRN	CAN 1 LO CUSTOMER CAN LO	18 AWG	J1939 CABLE	S952 (2)
5	RED	47-8 ALT EXCITE	16 AWG	GXL	EC241-L+ (1)
6	SHLD	CAN 1 SHLD CUSTOMER CAN SHIELD	18 AWG	J1939 CABLE	ECM-J1 (NC)

S951					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S953 (2)
2	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	X901 (3)
2	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	X950 (M)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

S952					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	GRN	CAN 1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	S954 (2)
2	GRN	CAN 1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	X901 (4)
2	GRN	CAN 1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	X950 (F)

S954					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	GRN	CAN 1 LOCUSTOMER CAN LOW	18 AWG	J1939 CABLE	ECMJ1 (76)
2	GRN	CAN 1 LOCUSTOMER CAN LOW	18 AWG	J1939 CABLE	S952 (1)
2	GRN	CAN 1 LOCUSTOMER CAN LOW	18 AWG	J1939 CABLE	X955 (B)

S968					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	ECMJ1(53)
2	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S963 (1)
2	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	X965 (B)

X955					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S953 (2)
B	GRN	CAN 1 LOCUSTOMER CAN LOW	18 AWG	J1939 CABLE	S954 (2)
C					

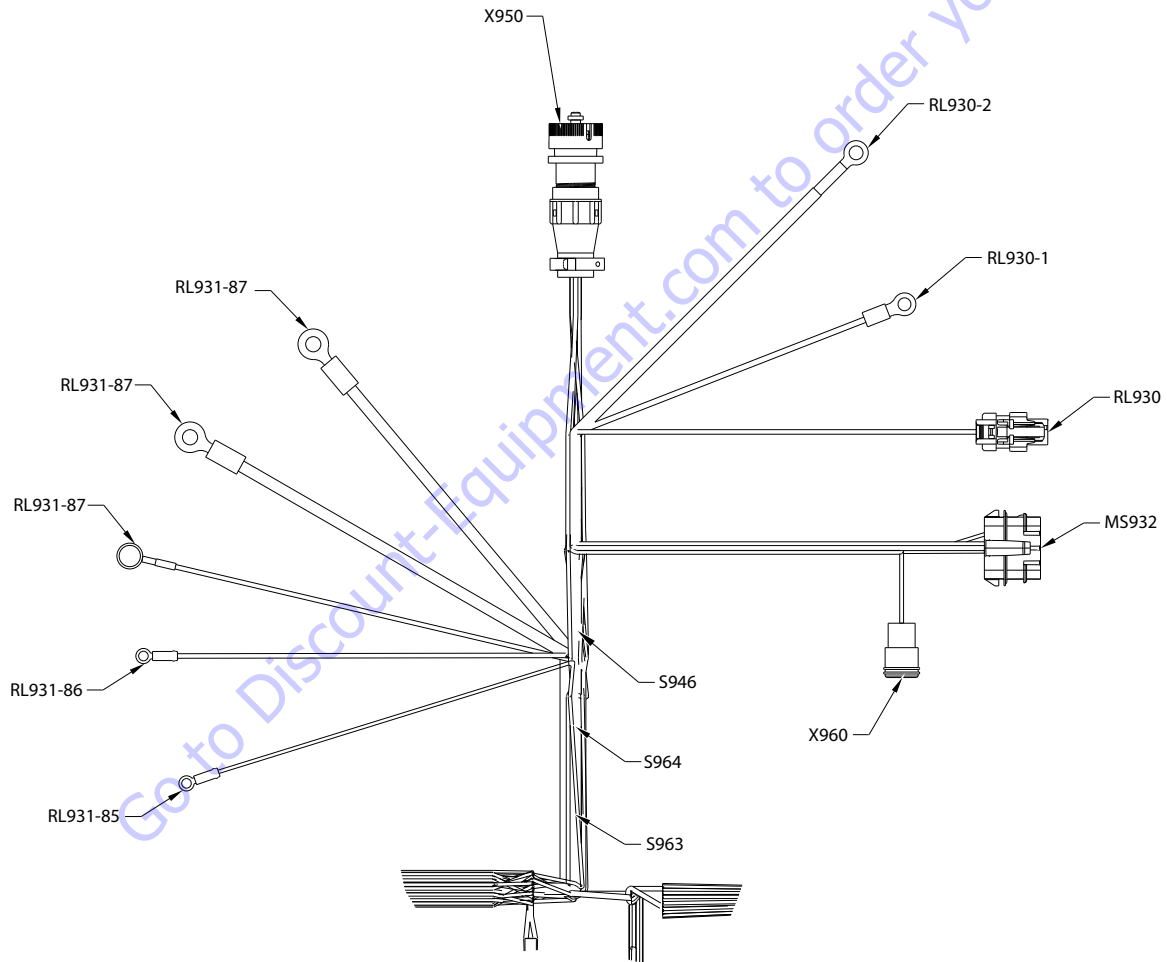
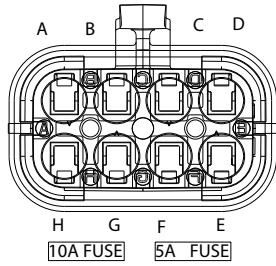
S969					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	ECMJ1(75)
2	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S964 (1)
2	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	X965 (A)

X965					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S969 (2)
B	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S968 (2)
C					

S953					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	ECMJ1 (54)
2	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S951 (1)
2	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	X955 (A)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

MS932 DETAIL WITH CAP REMOVED
(TOP VIEW)



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Figure 7-51. Deutz T4F Harness - Sheet 4 of 6

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

RL930					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-48-4	18 AWG	GXL	S946 (2)
2	BLK	148-26	0.75 mm ²	FLRYW	ECM-J1 (26)

RL930-2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-148-135 ECM PWR	8 AWG	GXL	S944 (1)

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

RL931-85					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	248-35 GLOW RELAY CONTROL GND	0.75 mm ²	FLRYW	ECM2 (35)

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

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

RL931-87					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	48-14 GLOW	8 AWG	GXL	EC1 (2)

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

X960					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S964 (2)
B	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S963 (2)
C					

X950					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	YEL	2-48-2 IGNITION	18 AWG	GXL	S946 (1)
B	BLK	000-48-2 ENG GND	18 AWG	GXL	T920 (1)
C					
D					
E					
F	GRN	CAN 1 LO CUSTOMER CAN LOW	18 AWG	J1939 CABLE	S952 (2)
G	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S963 (2)
H	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S964 (2)
J					
K					
L					
M	YEL	CAN 1 HI CUSTOMER CAN HIGH	18 AWG	J1939 CABLE	S951 (2)

S946					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	2-48-1 IGNITION	16 AWG	GXL	MS932 (H)
1	YEL	2-48-2 IGNITION	18 AWG	GXL	X950 (A)
2	BLK	148-88 IGNITION	0.75 mm ²	FLRYW	ECM-J1 (88)
2	YEL	2-48-3 IGNITION	18 AWG	GXL	RL931-86 (1)
2	YEL	2-48-4 IGNITION	18 AWG	GXL	RL930 (1)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

MS932					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A					
B					
C					
D					
E	BLK	248-23 GLOW SENSE	0.75 mm ²	FLRYW	ECM-J2 (23)
F	ORG	248-23-1 GLOW SENSE	18 AWG	GXL	RL931-87 (1)
G	YEL	2-1-99 IGNITION	18 AWG	GXL	X902 (1)
H	YEL	2-48-1 IGNITION	16 AWG	GXL	S946 (1)

S964					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	S969 (2)
2	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	X950 (H)
2	YEL	CAN 2 HI DIAG CAN HIGH	18 AWG	J1939 CABLE	X960 (A)

S963					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	S968 (2)
2	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	X950 (G)
2	GRN	CAN 2 LO DIAG CAN LOW	18 AWG	J1939 CABLE	X960 (B)

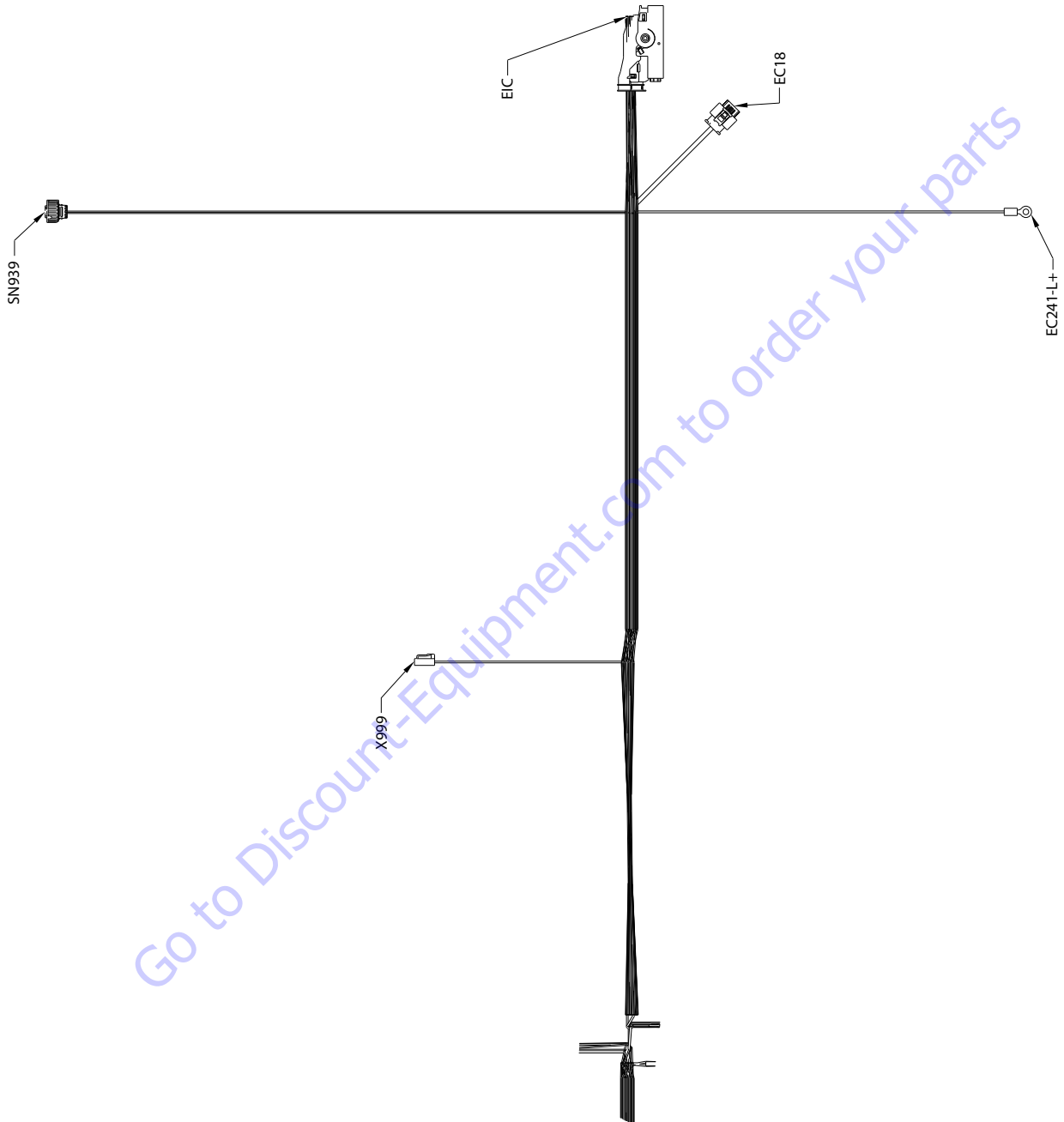


Figure 7-52. Deutz T4F Harness - Sheet 5 of 6

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SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

SN939					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-29 COOLANT LEVEL PWR	0.75 mm ²	FLRYW	ECM-J1 (29)
2	BLK	148-87 COOLANT LEVEL GND	0.75 mm ²	FLRYW	ECM-J1 (87)
3	BLK	148-13 COOLANT LEVEL SIG	0.75 mm ²	FLRYW	ECM-J1 (13)
4					

X999					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	148-35-3-	18 AWG	GXL	S1001 (1)
2	BLK	000-48-3 GND	18 AWG	GXL	T920 (1)

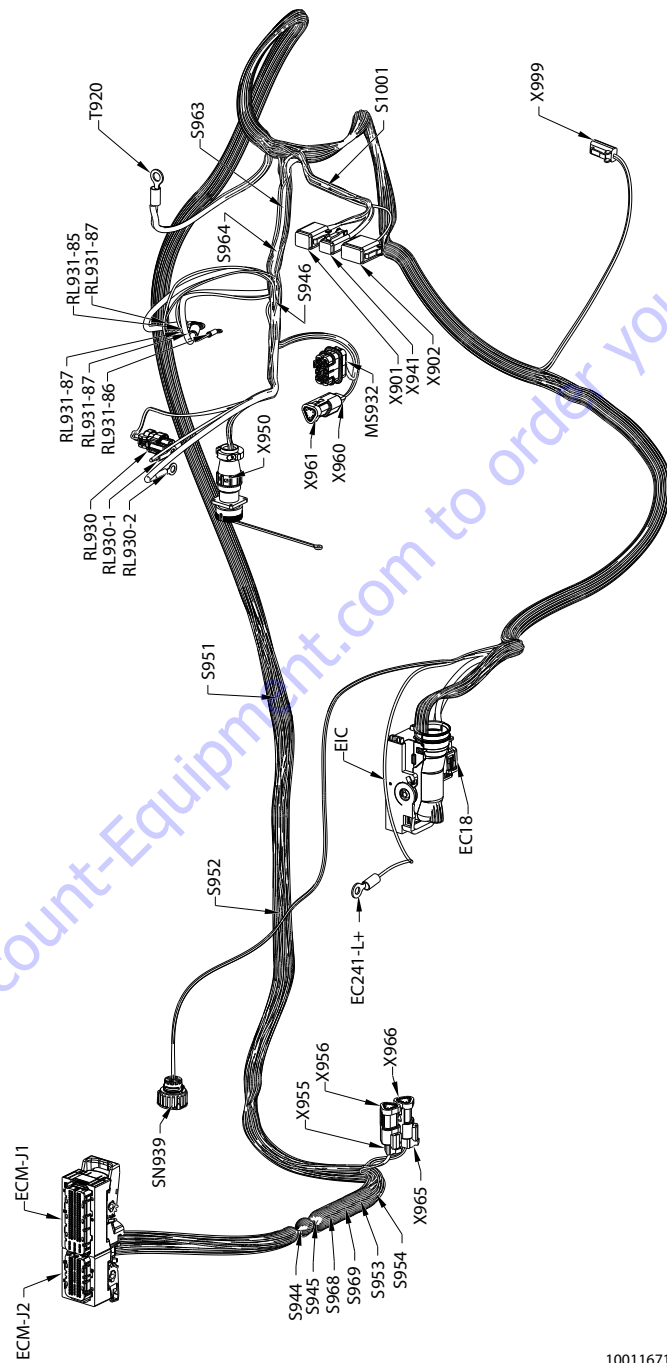
EC241-L+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	47-8 ALT EXCITE	16 AWG	GXL	X901 (5)

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

EIC					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	SHLD	248-38 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	ECM-J2 (38)
2	BLK	148-28 START RTN	0.75 mm ²	FLRYW	ECM-J1 (28)
3	BLK	148-73 START SIG	0.75 mm ²	FLRYW	ECM-J1 (73)
4					
5					
6					
7					
8					
9	SHLD	248-53 ENGINE SPEED CAM SHAFT	18 AWG	CABLE	ECM-J2 (53)
10					
11					
12					
13	WHT	248-52 ENGINE SPEED CAM SHAFT	18 AWG	CABLE	ECM-J2 (52)
14	BLK	248-37 ENGINE SPEED CAM SHAFT	18 AWG	CABLE	ECM-J2 (37)
15	BLK	248-39 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	ECM-J2 (39)
16					
17	BLK	148-61 FUEL LOW PRESSURE	0.75 mm ²	FLRYW	ECM-J1 (61)
18					
19	BLK	248-4 MPROP ACTUATOR	1.5 mm ²	FLRYW	ECM-J2 (4)
20	BLK	248-5 MPROP ACTUATOR	1.5 mm ²	FLRYW	ECM-J2 (5)
21	WHT	248-54 ENGINE SPEED CRANK SHAFT	18 AWG	CABLE	ECM-J2 (54)
22	BLK	248-24 BOOST PRESSURE/TEMP	0.75 mm ²	FLRYW	ECM-J2 (24)
23	BLK	248-43 OIL PRESSURE	0.75 mm ²	FLRYW	ECM-J2 (43)
24	BLK	248-28 COOLING TEMPERATURE	0.75 mm ²	FLRYW	ECM-J2 (28)
25	BLK	248-26 RAIL PRESSURE FUEL	0.75 mm ²	FLRYW	ECM-J2 (26)
26	BLK	248-44 OIL PRESSURE	0.75 mm ²	FLRYW	ECM-J2 (44)
27	BLK	248-29 OIL PRESSURE	0.75 mm ²	FLRYW	ECM-J2 (29)
28	BLK	248-40 AIR INLET TEMP	0.75mm ²	FLRYW	ECM-J2 (40)
29	BLK	248-27 BOOST PRESSURE/TEMP	0.75mm ²	FLRYW	ECM-J2 (27)
30					
31	BLK	248-25 RAIL PRESSURE FUEL	0.75mm ²	FLRYW	ECM-J2 (25)

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

EIC					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
32	BLK	248-7 RAIL PRESSURE FUEL	0.75 mm ²	FLRYW	ECM-J2 (7)
33					
34	BLK	148-56 AIR INLET TEMP	0.75 mm ²	FLRYW	ECM-J1 (56)
35	BLK	248-16 INJECTOR 1	1.5 mm ²	FLRYW	ECM-J2 (16)
36					
37	BLK	248-18 INJECTOR 4	1.5 mm ²	FLRYW	ECM-J2 (18)
38	BLK	248-32 INJECTOR 3	1.5 mm ²	FLRYW	ECM-J2 (32)
39					
40	BLK	248-46 INJECTOR 2	1.5 mm ²	FLRYW	ECM-J2 (46)
41	BLK	248-3 INJECTOR 2	1.5 mm ²	FLRYW	ECM-J2 (3)
42	BLK	248-48 INJECTOR 4	1.5 mm ²	FLRYW	ECM-J2 (48)
43					
44					
45					
46	BLK	148-85 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	ECM-J1 (85)
47	BLK	248-19 EXHAUST GAS RECIRCULATION	1.5 mm ²	FLRYW	ECM-J2 (19)
48	BLK	248-20 EXHAUST GAS RECIRCULATION	1.5 mm ²	FLRYW	ECM-J2 (20)
49	BLK	148-72 THROTTLE FLAP 3	0.75 mm ²	FLRYW	ECM-J1 (72)
50	BLK	148-44 EXHAUST GAS RECIRCULATION	0.75mm ²	FLRYW	ECM-J1(44)
51	BLK	148-82 EXHAUST GAS RECIRCULATION	0.75 mm ²	FLRYW	ECM-J1 (82)
52	BLK	148-38 THROTTLE FLAP 4	0.75 mm ²	FLRYW	ECM-J1 (38)
53					
54					
55					
56					
57					
58					
59					
60					
61	BLK	248-2 INJECTOR 3	1.5 mm ²	FLRYW	ECM-J2 (2)
62	BLK	248-33 INJECTOR 1	1.5 mm ²	FLRYW	ECM-J2 (33)



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Figure 7-53. Deutz T4F Harness - Sheet 6 of 6

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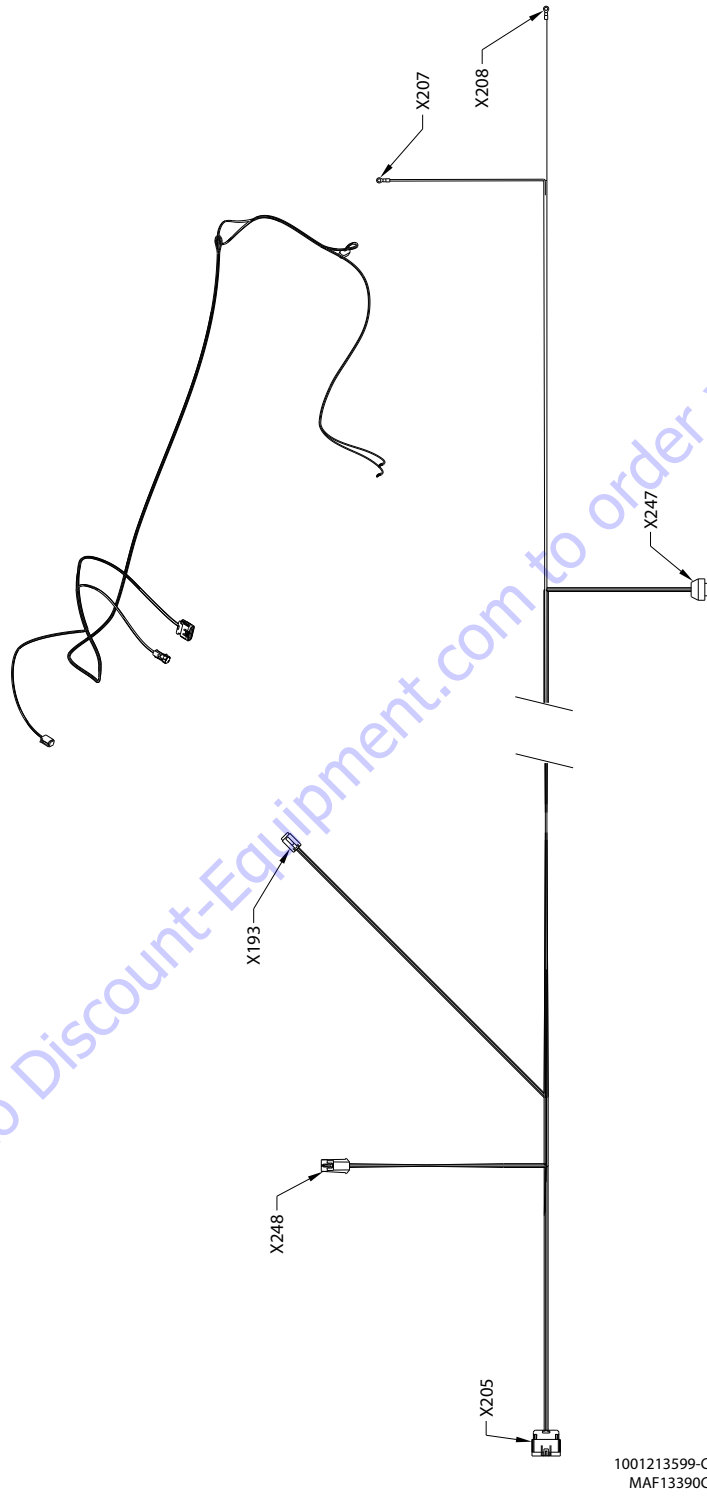


Figure 7-54. Kubota Engine Harness

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

X205 KUBOTA ENGINE HARNESS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
A	WHT	6-1 4 IGNITION	18 AWG	TXL	X193 (1)
B					
C	BLK	000-60-11 FUEL PUMP NEGATIVE	16 AWG	TXL	X208 (1)
D	WHT	6-54 FUEL PUMP POSITIVE	16 AWG	TXL	X207 (1)
E					
F	WHT	6-12 ENGINE START	18 AWG	TXL	X193 (2)
G					
H					
J					
K					
L					
M					
N	RED	CAN HI	18 AWG	CABLE	X193 (3)
P	BLK	CAN LO	18 AWG	CABLE	X193 (4)
R					
S					

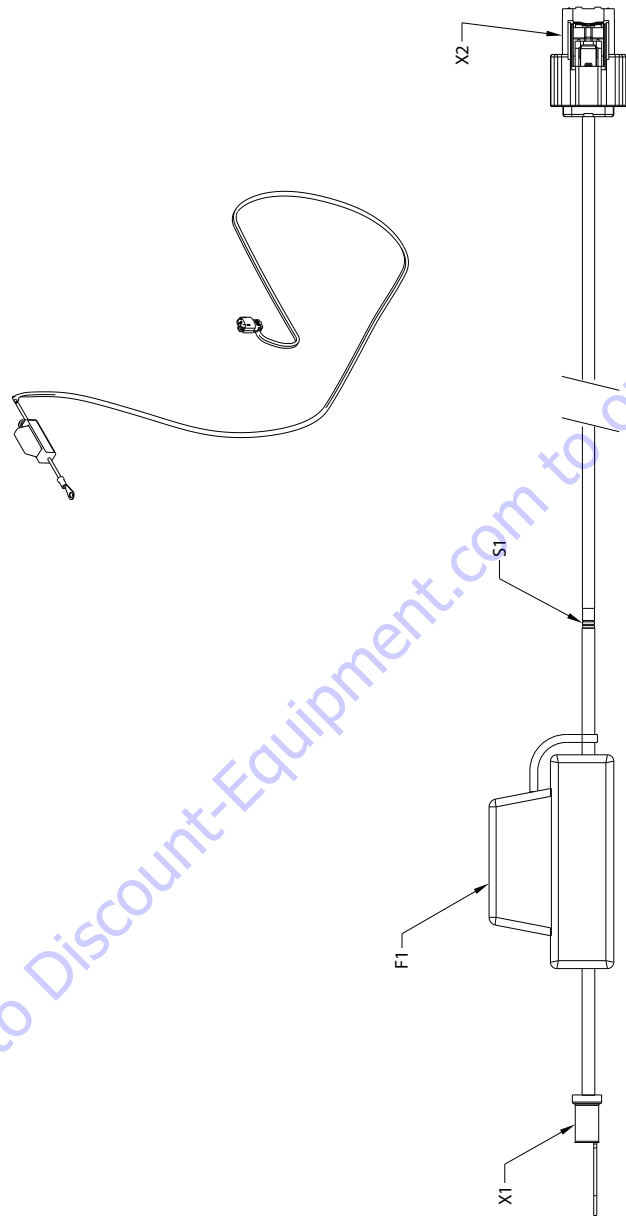
X193 TO TURNTABLE HARNESS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-14 IGNITION	18 AWG	TXL	X205 (A)
2	WHT	6-12 ENGINE START	18 AWG	TXL	X205 (F)
3	RED	CAN HI	18 AWG	CABLE	X205 (N)
4	BLK	CAN LO	18 AWG	CABLE	X205 (P)
5					
6					

X247 FUEL PRESS REG					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	6-19	18 AWG	TXL	X248 (1)
2	WHT	6-20	18 AWG	TXL	X248 (2)
3	RED	6-21	18 AWG	TXL	X248 (3)
4	GRN	6-22	18 AWG	TXL	X248 (4)

X207 FUEL PUMP+					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-54 FUEL PUMP POSITIVE	16 AWG	TXL	X205 (D)

X208 FUEL PUMP-					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK0	00-60-11 FUEL PUMP NEGATIVE	E16AWG	TXL	X205 (C)

X248 KUBOTA ENGINE HARNESS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	6-19	18 AWG	TXL	X247 (1)
2	WHT	6-20	18 AWG	TXL	X247 (2)
3	RED	6-21	18 AWG	TXL	X247 (3)
4	GRN	6-22	18 AWG	TXL	X247 (4)



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Figure 7-55. Kubota D/F PWR Harness

F1 40A					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-1	6 AWG	GXL	X1 (1)
2	RED	1-1	6 AWG	GXL	S1 (1)

S1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-1	6 AWG	GXL	F1 (1)
2	RED	1-2	10 AWG	GXL	X2 (1)
2	RED	1-3	10 AWG	GXL	X2 (2)

X1 BATT POS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-1	6 AWG	GXL	F1 (1)

X2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	RED	1-2	10 AWG	GXL	S1 (2)
2	RED	1-3	10 AWG	GXL	S1 (2)

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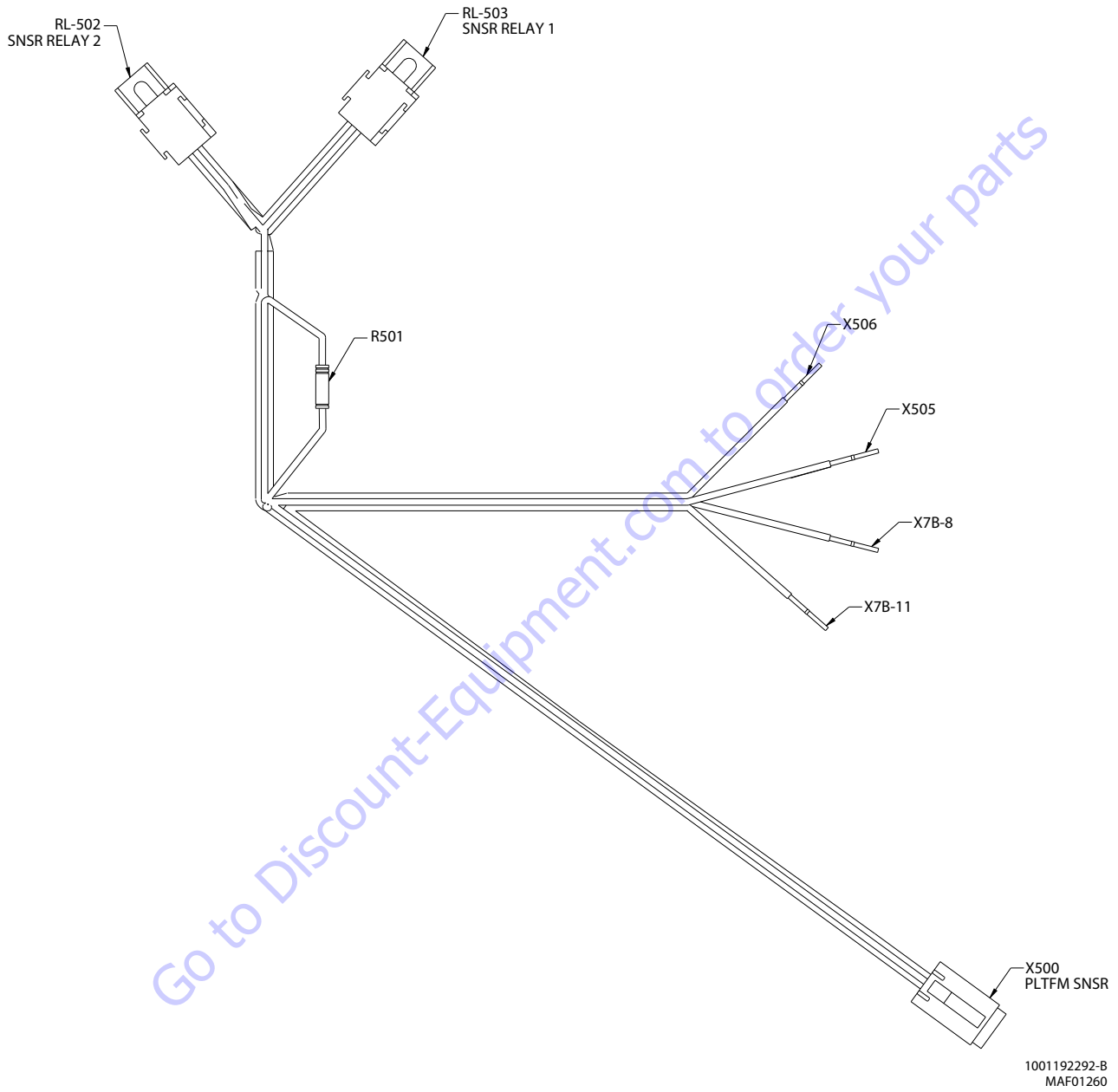


Figure 7-56. Skyguard Harness - Sheet 1 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

RL-503 - SNSR RELAY 1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
30	WHT	P9	18 AWG	GXL	X505 (1)
30	WHT	P9-1	18 AWG	GXL	RL-502 (30)
85	WHT	P5-1	18 AWG	GXL	RL-502 (85)
86	WHT	P4-1	18 AWG	GXL	RL-502 (86)
87	WHT	P1	18 AWG	GXL	X506 (1)
87a					

X505					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P2	18 AWG	GXL	R501 (1)
1	WHT	P9	18 AWG	GXL	RL-503 (30)

R501					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P2	18 AWG	GXL	X505 (1)
2	WHT	P10	18 AWG	GXL	X500 (1)

X7B-8					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P6	18 AWG	GXL	X500 (2)

RL-502 - SNSR RELAY 2					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
30	WHT	P9-1	18 AWG	GXL	RL-503 (30)
85	WHT	P5	18 AWG	GXL	X500 (4)
85	WHT	P5-1	18 AWG	GXL	RL-503 (85)
86	WHT	P4	18 AWG	GXL	X500 (3)
86	WHT	P4-1	18 AWG	GXL	RL-503 (86)
87	WHT	P3	18 AWG	GXL	X7B-11 (1)
87a					

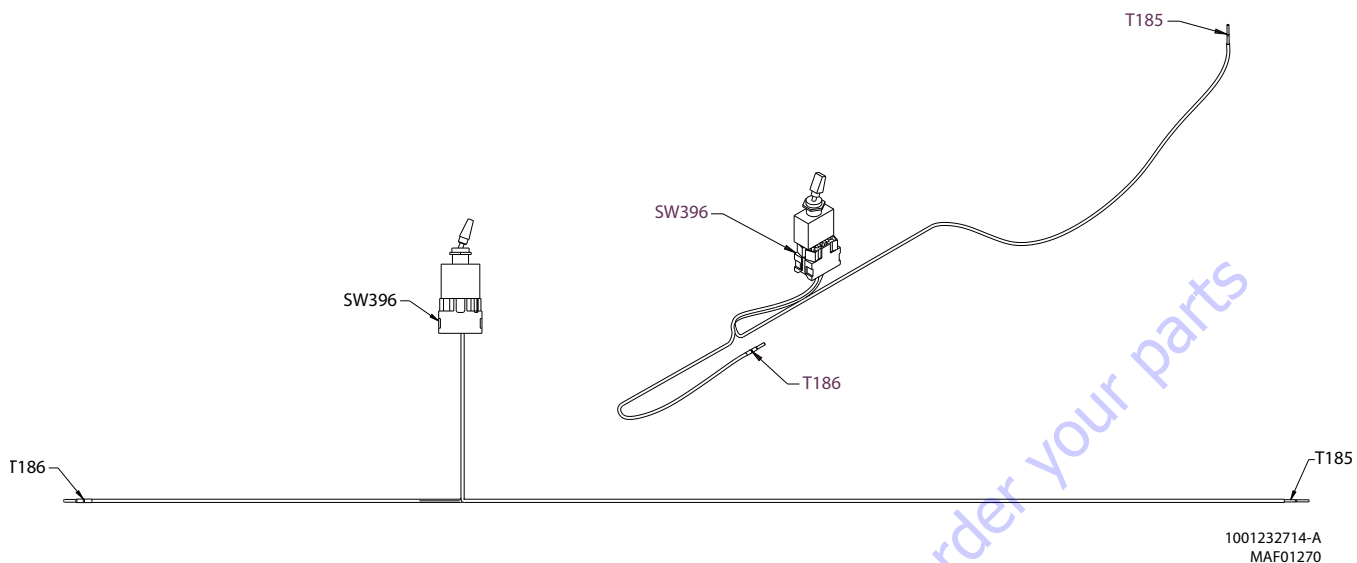
X7B-11					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P3	18 AWG	GXL	RL-502 (87)

X506					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P1	18 AWG	GXL	RL-503 (87)

X500 - PLTFM SNSR					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	P10	18 AWG	GXL	R501 (2)
2	WHT	P6	18 AWG	GXL	X7B-8 (1)
3	WHT	P4	18 AWG	GXL	RL-502 (86)
4	WHT	P5	18 AWG	GXL	RL-502 (85)

Figure 7-57. Skyguard Harness - Sheet 2 of 2

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



T186					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-105 CRIBBING	18 AWG	TFFN	SW396 (3)

T185					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	YEL	4-85 IGN	18 AWG	TFFN	SW396 (2)

SW396					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	YEL	4-85 IGN	18 AWG	TFFN	T185 (1)
3	WHT	4-105 CRIBBING	18 AWG	TFFN	T186 (1)
4					
5					
6					

Figure 7-58. Cribbing Enable Harness

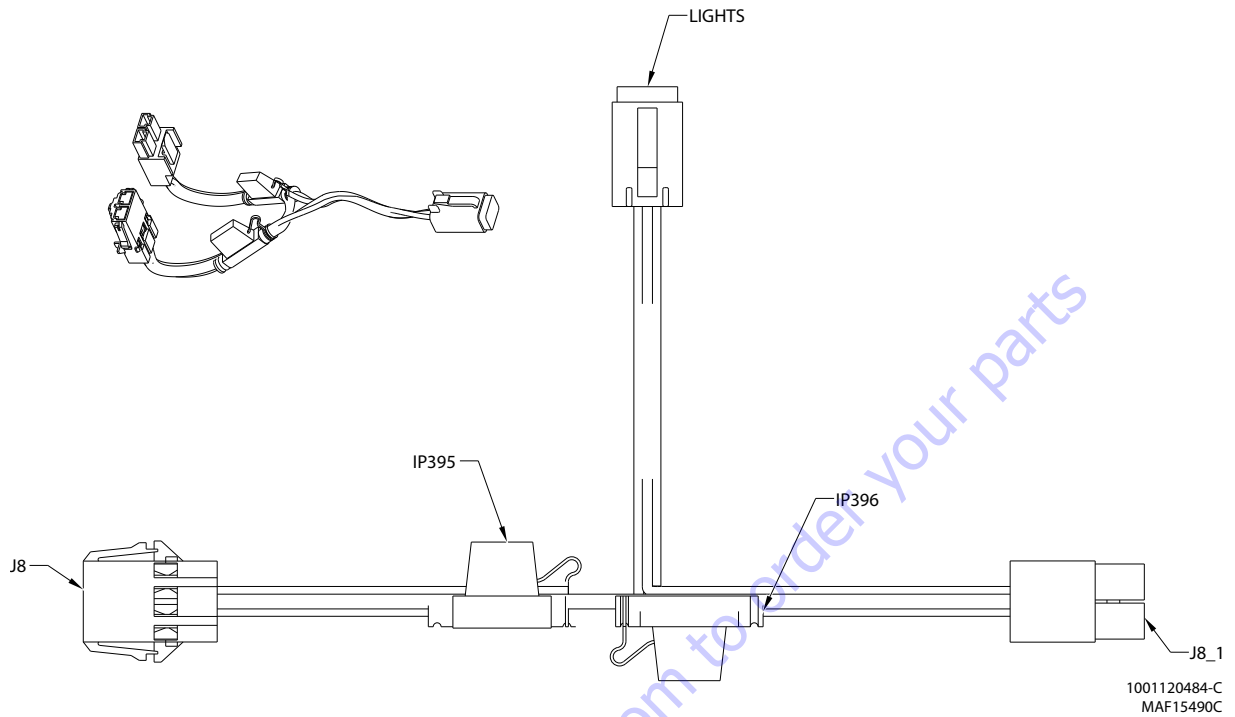


Figure 7-59. Platform Work Lights Harness

J8_1					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK		12 AWG	GXL	J8 (1)
1	BLK		16 AWG	GXL	LIGHTS (1)
3	YEL/RED		12 AWG	GXL	J8 (2)
4		SEE NOTE			IP396 (2)

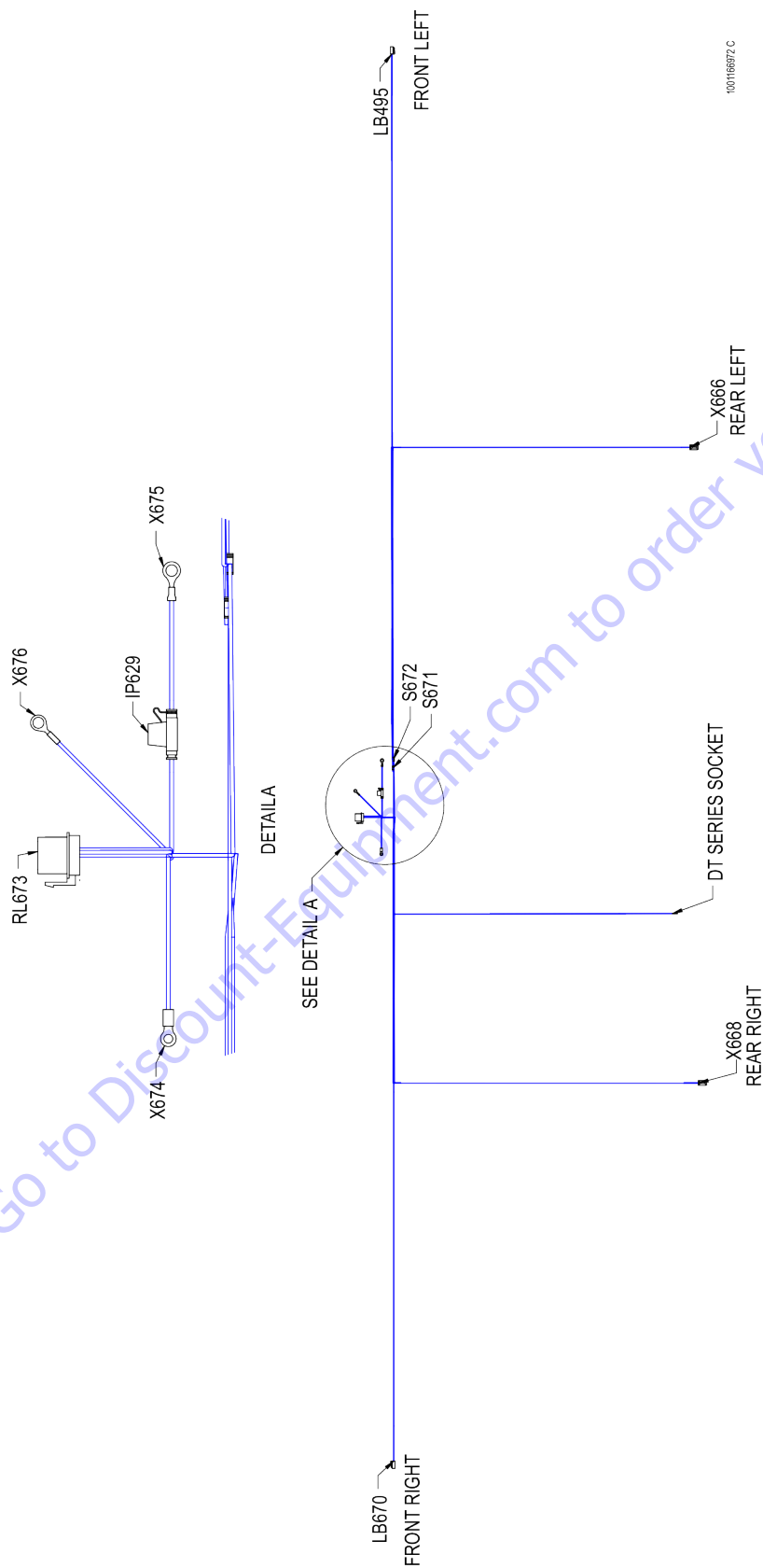
IP395					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		SEE NOTE			LIGHTS (2)
2		SEE NOTE			J8 (2)

IP396					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1		SEE NOTE			LIGHTS (4)
2		SEE NOTE			J8_1 (2)

J8					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK		12 AWG	GXL	J8_1 (1)
1	BLK		16 AWG	GXL	LIGHTS (1)
3	YEL/RED		12 AWG	GXL	J8_1 (2)
4		SEE NOTE			IP395 (2)

LIGHTS					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK		16 AWG	GXL	J8 (1)
2		SEE NOTE			IP395 (1)
3	BLK		16 AWG	GXL	J8_1 (1)
4		SEE NOTE			IP396 (1)

NOTE: The wire reference is part of fuse holder.



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Figure 7-60. Chassis Head and Tail Lights Harness - Sheet 1 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

LB495					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-11	16 AWG	GXL	S671 (1)
2	BLK	000-60-11	16 AWG	GXL	S672 (1)

X668					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	WHT	6-30	16 AWG	GXL	S671 (2)
3	BLK	000-60-30	16 AWG	GXL	S672 (2)
4					

LB495					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-11	16 AWG	GXL	S671 (1)
2	BLK	000-60-11	16 AWG	GXL	S672 (1)

RL673					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-146	14 AWG	GXL	IP629 (2)
2	BLK	000-40-109	16 AWG	GXL	X676 (1)
3					
4	WHT	6-8	14 AWG	GXL	S671 (2)
5	WHT	4-145	18 AWG	GXL	X505 (1)

X674					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	4-122	14 AWG	GXL	S672 (2)

IP629					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-146	14 AWG	GXL	X675 (1)
2	WHT	4-146	14 AWG	GXL	RL673 (1)

X675					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-146	14 AWG	GXL	IP629 (1)

X676					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-40-109	16 AWG	GXL	RL673 (2)

S671					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-11	16 AWG	GXL	LB495 (1)
1	WHT	6-29	16 AWG	GXL	LB670 (1)
2	WHT	6-13	16 AWG	GXL	X666 (2)
2	WHT	6-30	16 AWG	GXL	X668 (2)
2	WHT	6-8	14 AWG	GXL	RL673 (4)

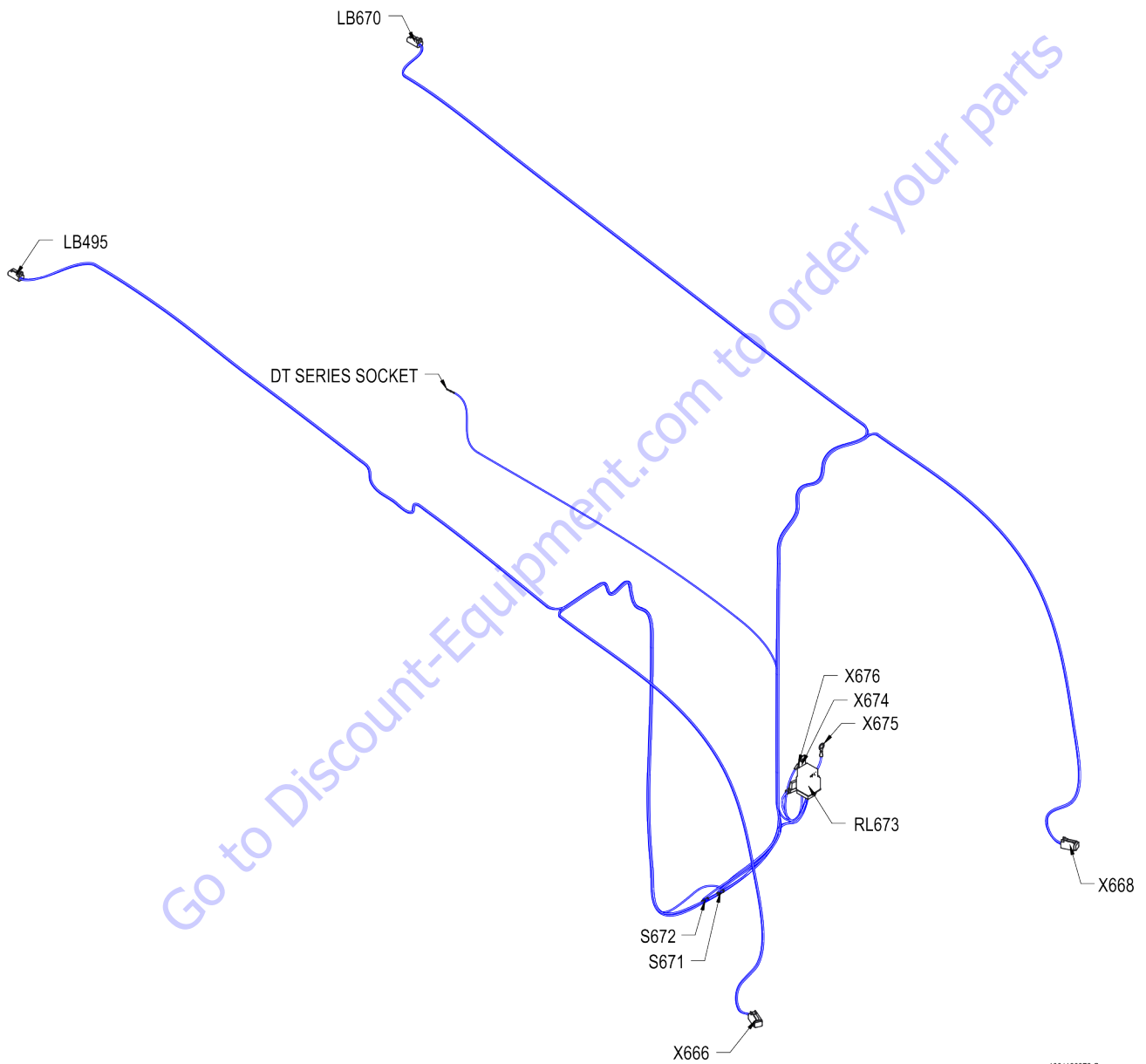
X505					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-145	18 AWG	GXL	RL673 (5)

X666					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1					
2	WHT	6-13	16 AWG	GXL	S671 (2)
3	BLK	000-60-12	16 AWG	GXL	S672 (2)
4					

S672					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-60-11	16 AWG	GXL	LB495 (2)
1	BLK	000-60-29	16 AWG	GXL	LB670 (2)
2	BLK	000-60-12	16 AWG	GXL	X666 (3)
2	BLK	000-60-30	16 AWG	GXL	X668 (3)
2	BLK	4-122	14 AWG	GXL	X674 (1)

WIRE NO	COLOR	WIRE GAUGE	JACKET	LENGTH (mm)	FROM		TO	
					REFERENCE	PIN	REFERENCE	PIN
000-40-109	BLK	16	GXL	196	RL673	2	X676	1
000-60-11	BLK	16	GXL	2680	LB495	2	S672	1
000-60-12	BLK	16	GXL	2327	S672	2	X666	3
000-60-29	BLK	16	GXL	2689	S672	1	LB670	2
000-60-30	BLK	16	GXL	2399	S672	2	X668	3
4-122	BLK	14	GXL	388	S672	2	X674	1
4-145	WHT	18	GXL	1516	X505	1	RL673	5
4-146	WHT	14	GXL	140	IP629	2	RL673	1
4-146	WHT	14	GXL	83	IP629	1	X675	1
6-11	WHT	16	GXL	2723	S671	1	LB495	1
6-13	WHT	16	GXL	2372	S671	2	X666	2
6-29	WHT	16	GXL	2651	S671	1	LB670	1
6-30	WHT	16	GXL	2358	S671	2	X668	2
6-8	WHT	14	GXL	308	S671	2	RL673	4

Figure 7-61. Chassis Head and Tail Lights Harness - Sheet 2 of 3



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Figure 7-62. Chassis Head and Tail Lights Harness - Sheet 3 of 3

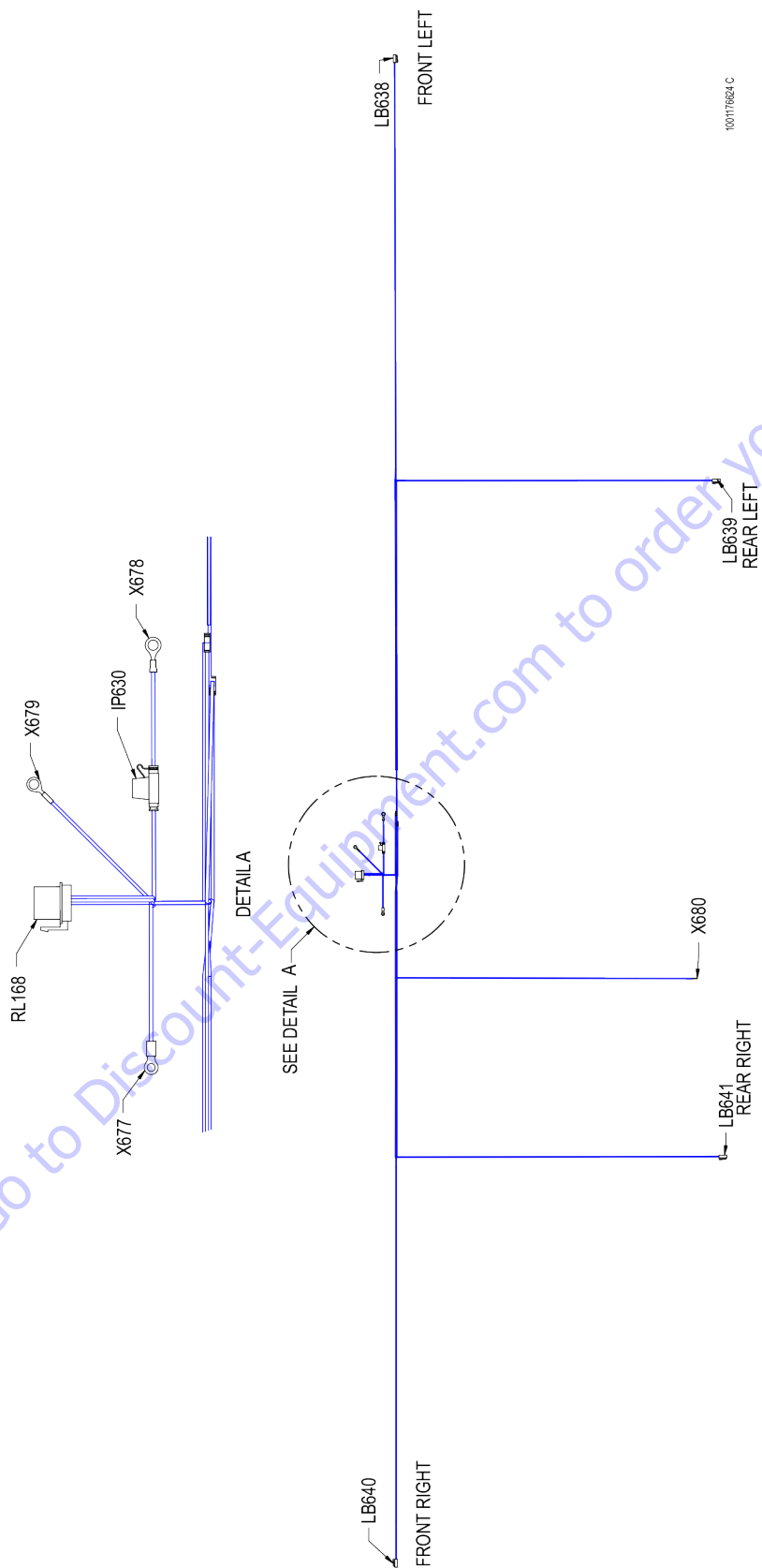


Figure 7-63. Chassis Work Lights Harness- Sheet 1 of 3

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

LB638					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-4	16 AWG	GXL	S642 (1)
2	BLK	000-60-3	16 AWG	GXL	S643 (1)

LB639					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-5	16 AWG	GXL	S642 (2)
2	BLK	000-60-4	16 AWG	GXL	S643 (2)

LB640					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-6	16 AWG	GXL	S642 (1)
2	BLK	000-60-5	16 AWG	GXL	S643 (1)

LB641					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-7	16 AWG	GXL	S642 (2)
2	BLK	000-60-6	16 AWG	GXL	S643 (2)

X680					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	4-28	16 AWG	GXL	RL168 (5)

X677					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-40-17	14 AWG	GXL	S643 (2)

X679					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-40-9	16 AWG	GXL	RL168 (2)

X678					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	4-70	14 AWG	GXL	IP630 (1)

IP630					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	4-70	14 AWG	GXL	X678 (1)
2	BLK	4-70	14 AWG	GXL	RL168 (1)

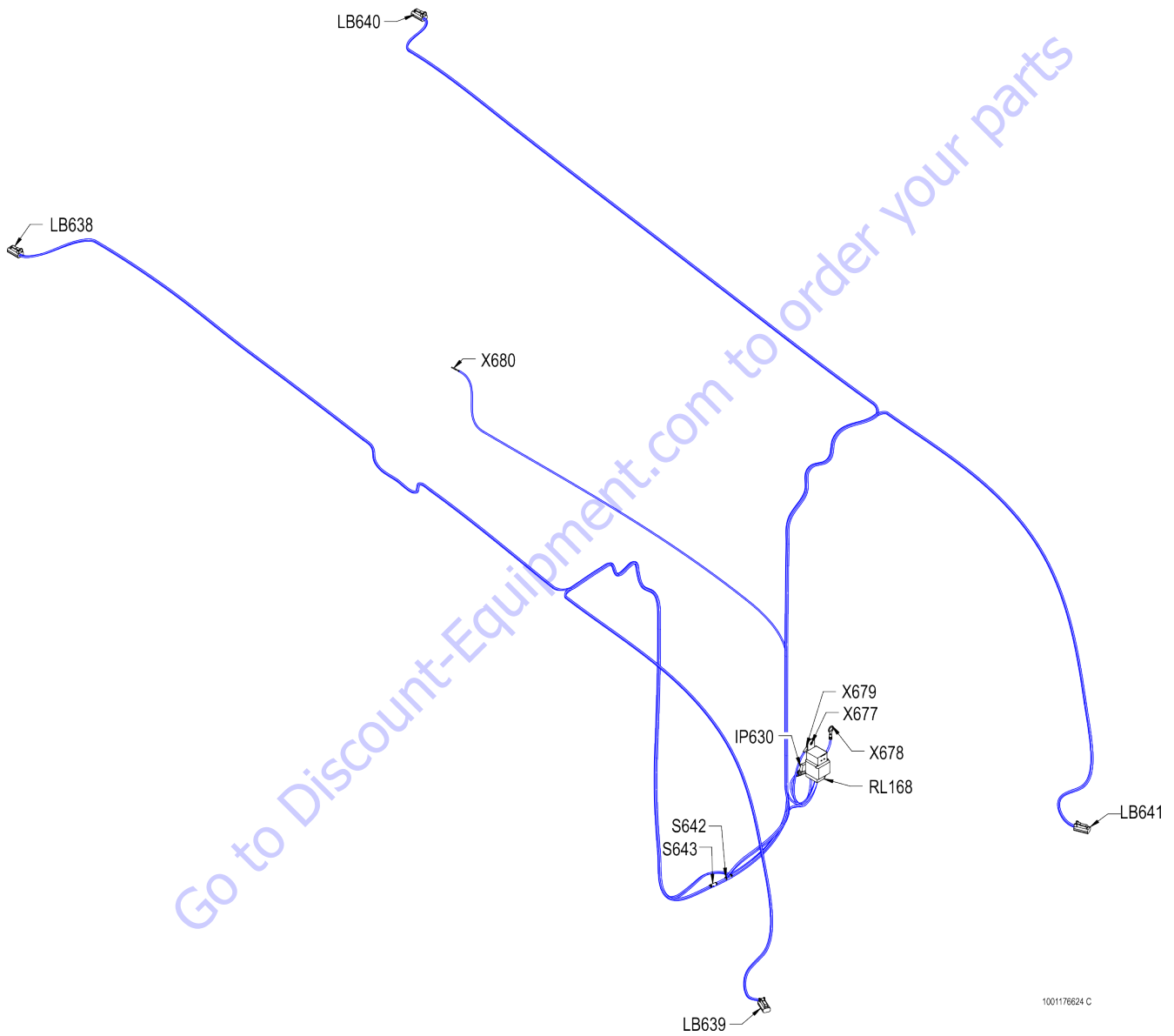
RL168					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	4-70	14 AWG	GXL	IP630 (2)
2	BLK	000-40-9	16 AWG	GXL	X679 (1)
3					
4	WHT	6-8	14 AWG	GXL	S642 (2)
5	WHT	4-28	16 AWG	GXL	X680 (1)

S642					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	WHT	6-4	16 AWG	GXL	LB638 (1)
1	WHT	6-6	16 AWG	GXL	LB640 (1)
2	WHT	6-5	16 AWG	GXL	LB639 (1)
2	WHT	6-7	16 AWG	GXL	LB641 (1)
2	WHT	6-8	14 AWG	GXL	RL168 (4)

S643					
CONN POS	WIRE COLOR	WIRE LABEL	GAUGE	JACKET	TO
1	BLK	000-60-3	16 AWG	GXL	LB638 (2)
1	BLK	000-60-5	16 AWG	GXL	LB640 (2)
2	BLK	000-40-17	14 AWG	GXL	X677 (1)
2	BLK	000-60-4	16 AWG	GXL	LB639 (2)
2	BLK	000-60-6	16 AWG	GXL	LB641 (2)

WIRE NO	COLOR	WIRE GAUGE	JACKET	LENGTH (mm)	FROM		TO	
					REFERENCE	PIN	REFERENCE	PIN
000-40-17	BLK	14	GXL	386	S643	2	X677	1
000-40-9	BLK	16	GXL	196	RL168	2	X679	1
000-60-3	BLK	16	GXL	2680	LB638	2	S643	1
000-60-4	BLK	16	GXL	2316	S643	2	LB639	2
000-60-5	BLK	16	GXL	2682	S643	1	LB640	2
000-60-6	BLK	16	GXL	2396	S643	2	LB641	2
4-28	WHT	16	GXL	1516	RL168	5	X680	1
4-70	BLK	14	GXL	149	IP630	2	RL168	1
4-70	BLK	14	GXL	79	X678	1	IP630	1
6-4	WHT	16	GXL	2739	S642	1	LB638	1
6-5	WHT	16	GXL	2375	S642	2	LB639	1
6-6	WHT	16	GXL	2643	S642	1	LB640	1
6-7	WHT	16	GXL	2368	S642	2	LB641	1
6-8	WHT	14	GXL	302	RL168	4	S642	2

Figure 7-64. Chassis Work Lights Harness - Sheet 2 of 3



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Figure 7-65. Chassis Work Lights Harness - Sheet 3 of 3

7.9 ELECTRICAL SCHEMATICS

SHEET 2: PLATFORM

Platform Control Box Harness

SHEET 3: PLATFORM AND BOOM COMPONENTS

Boom Control Cable
No Jib
460SJ HC3 W/Jib
Tele in Prox Switches

SHEET 4: CHASSIS, TURNTABLE

Turntable Harness

SHEET 5: MAIN VALVE/GROUND CONTROLS

Main Valve Harness
Ground Control Panel Harness

SHEET 6: ENGINE SCHEMATIC DEUTZ - T4I

Deutz T4i Engine Harness
Battery Cable Kit - T4i

SHEET 7: ENGINE SCHEMATIC DEUTZ - T4F

Deutz T4F Engine Harness
Battery Cable Kit - T4F

SHEET 8: NOT APPLICABLE

SHEET 9: KUBOTA ENGINE

Engine Harness
Alternator Cable
Battery Cable Kit
Kubota D/F PWR

SHEET 10: OPTIONS

Skyguard
Cribbing Option Harness

SHEET 11: OPTIONS

Platform Work Lights
Chassis Head and Tail Lights
Chassis Work Lights

SHEET 12: GENERATOR HARNESS

2500W, 4000W, 7500W

SHEET 13: NOT APPLICABLE

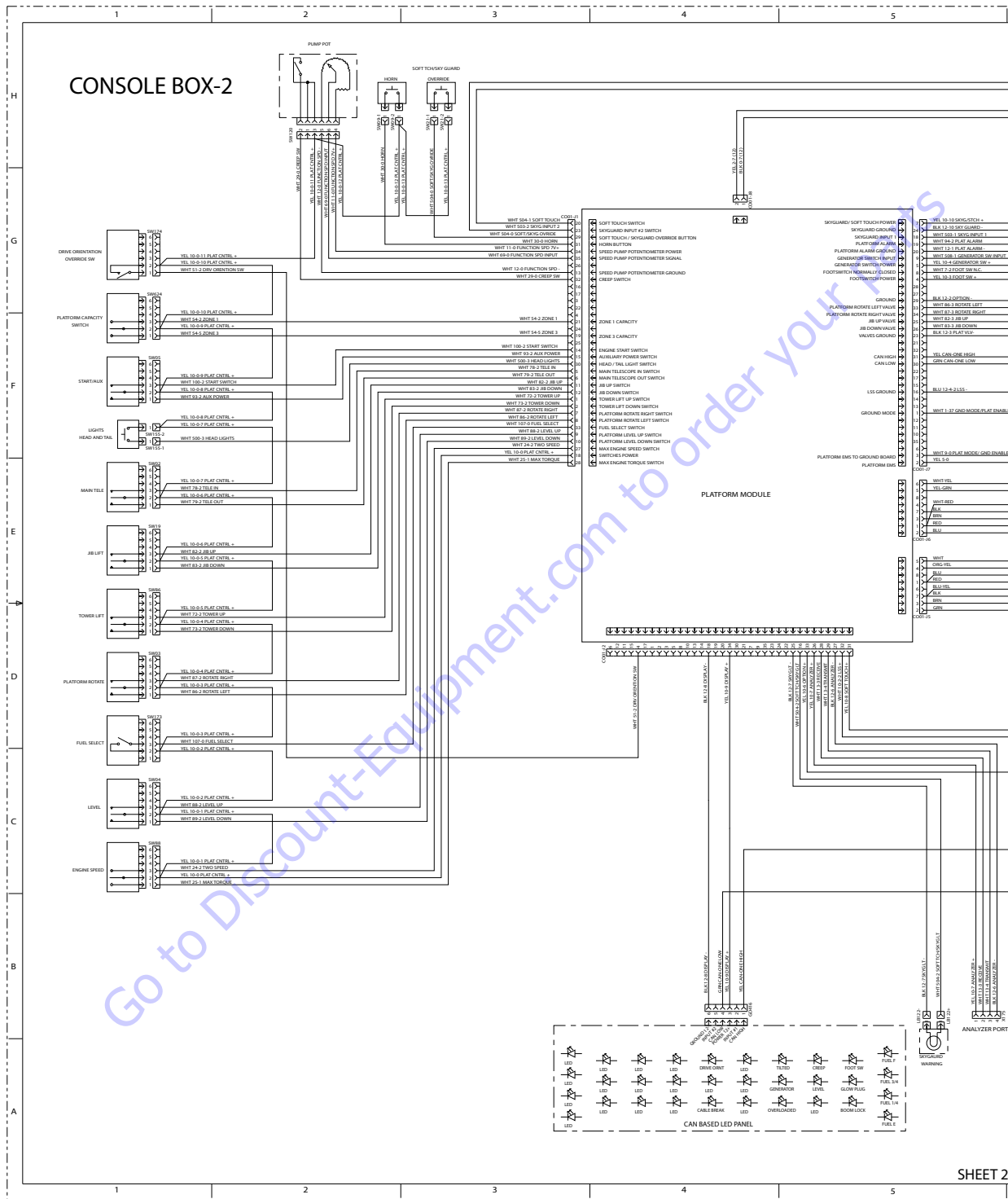
SHEET 14: NOT APPLICABLE

SHEET 15: NOT APPLICABLE

SHEET 1

1001235859-B

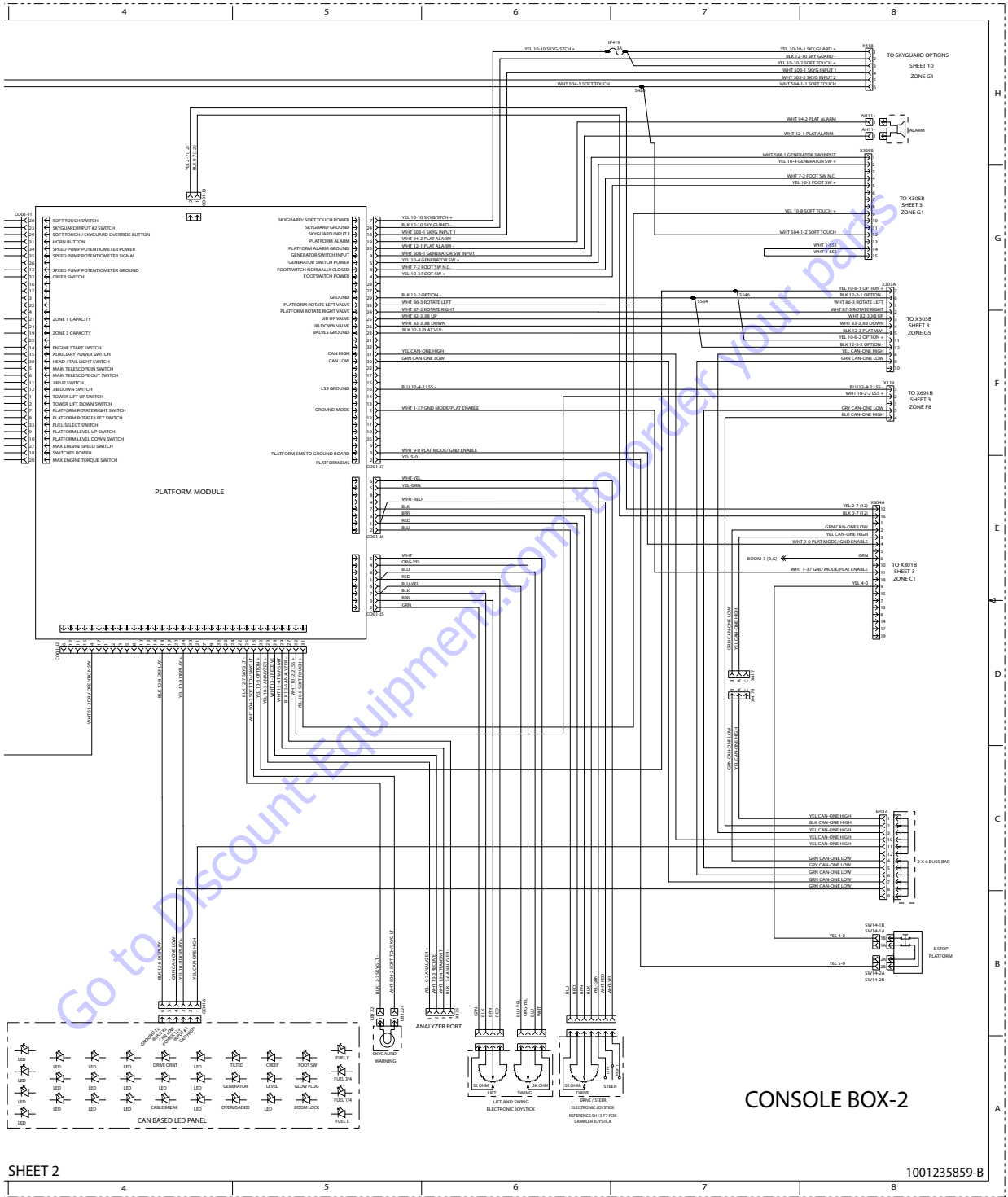
SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



SHEET 2

Figure 7-66. Electrical Schematic - Sheet 1 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



SHEET 2

1001235859-B

MAF13460B

Figure 7-67. Electrical Schematic - Sheet 2 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

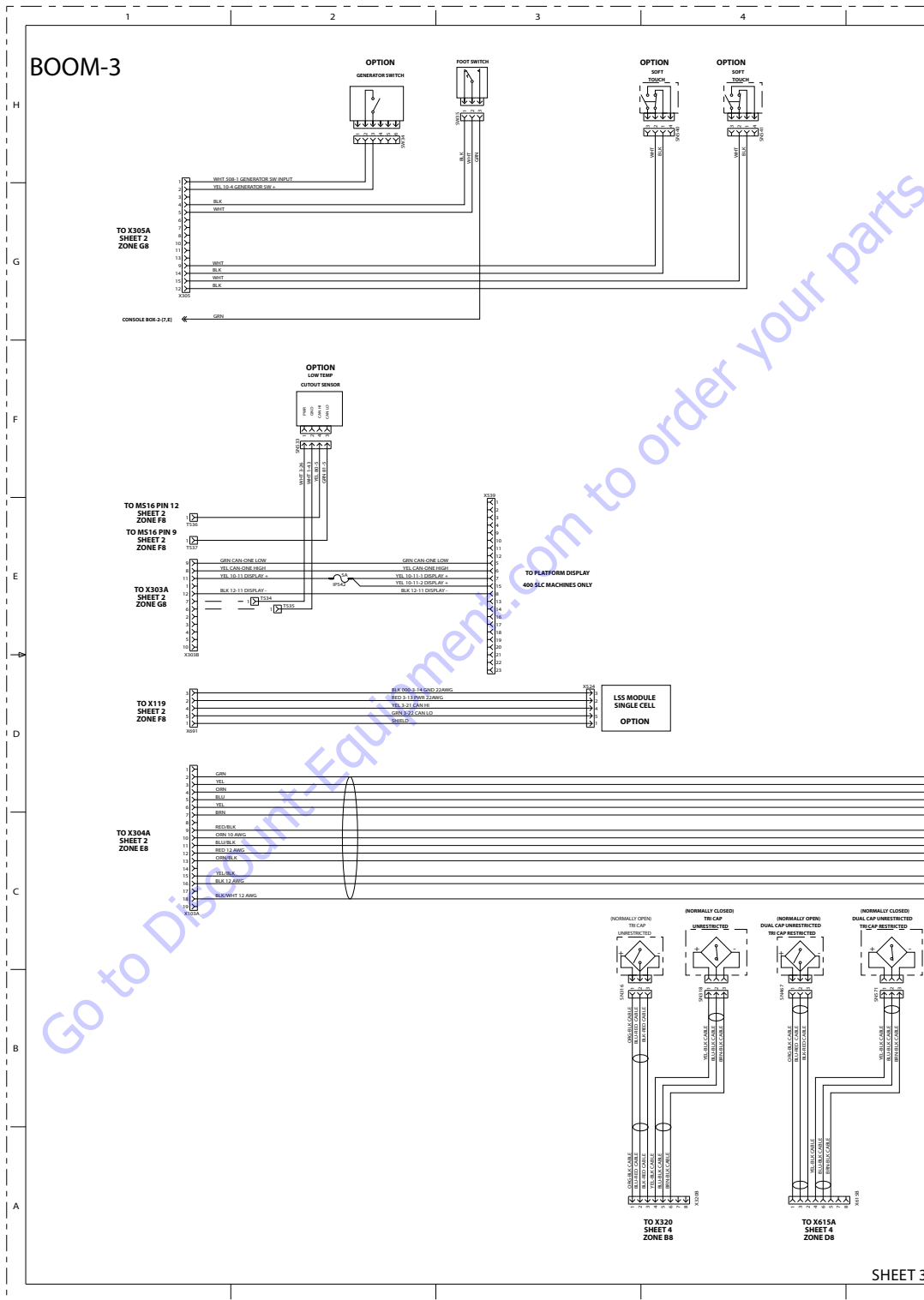


Figure 7-68. Electrical Schematic - Sheet 3 of 19

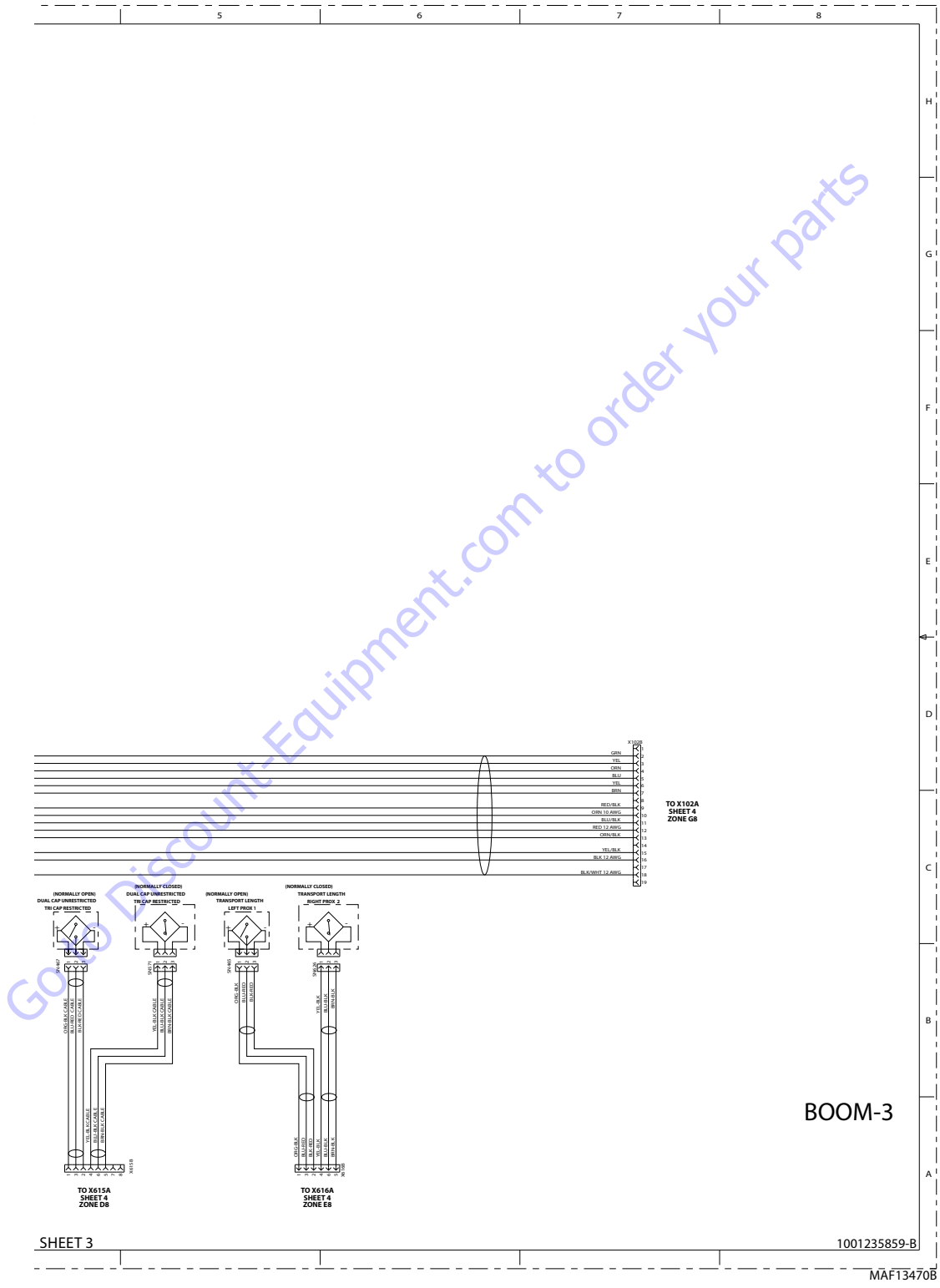


Figure 7-69. Electrical Schematic - Sheet 4 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

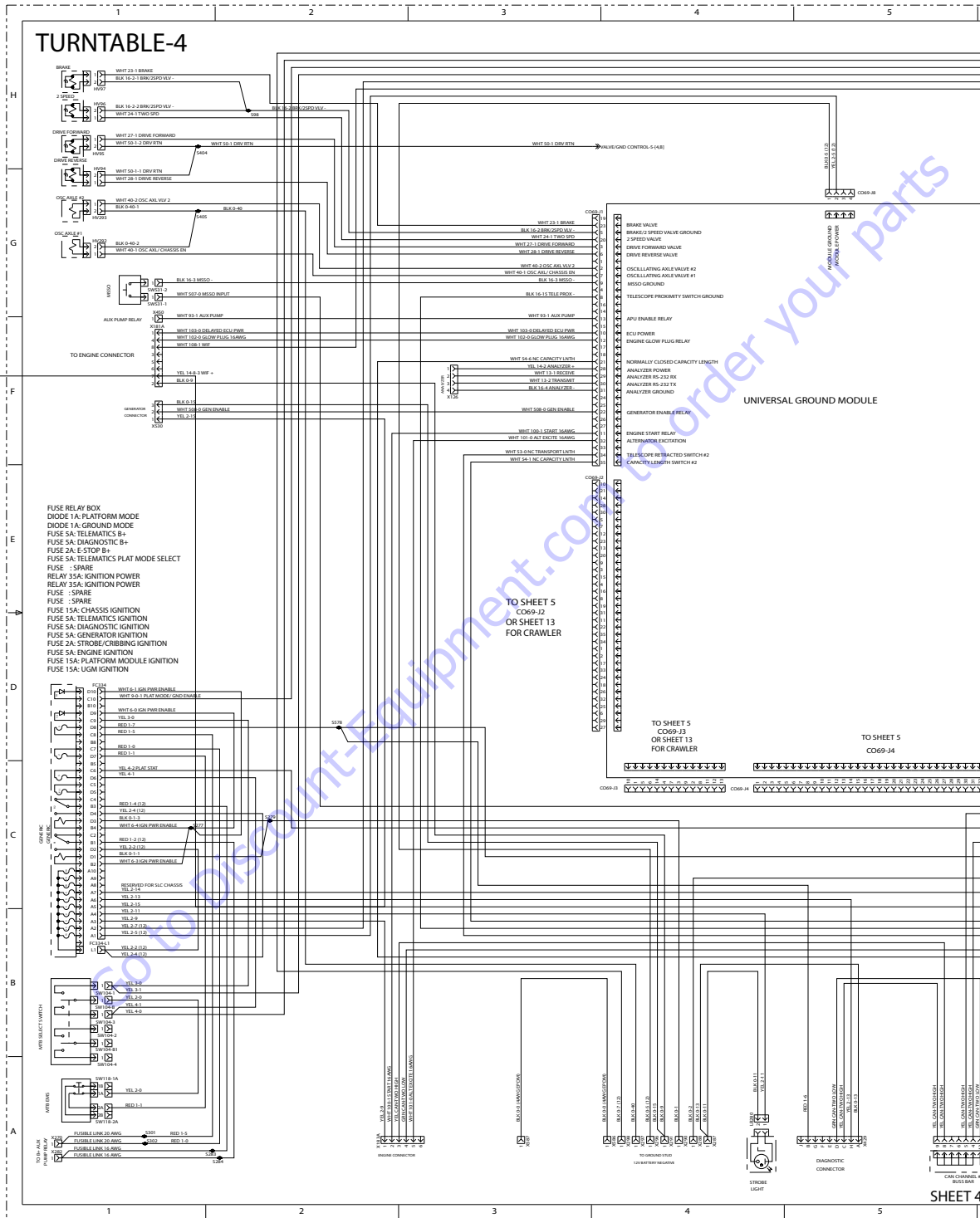


Figure 7-70. Electrical Schematic - Sheet 5 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

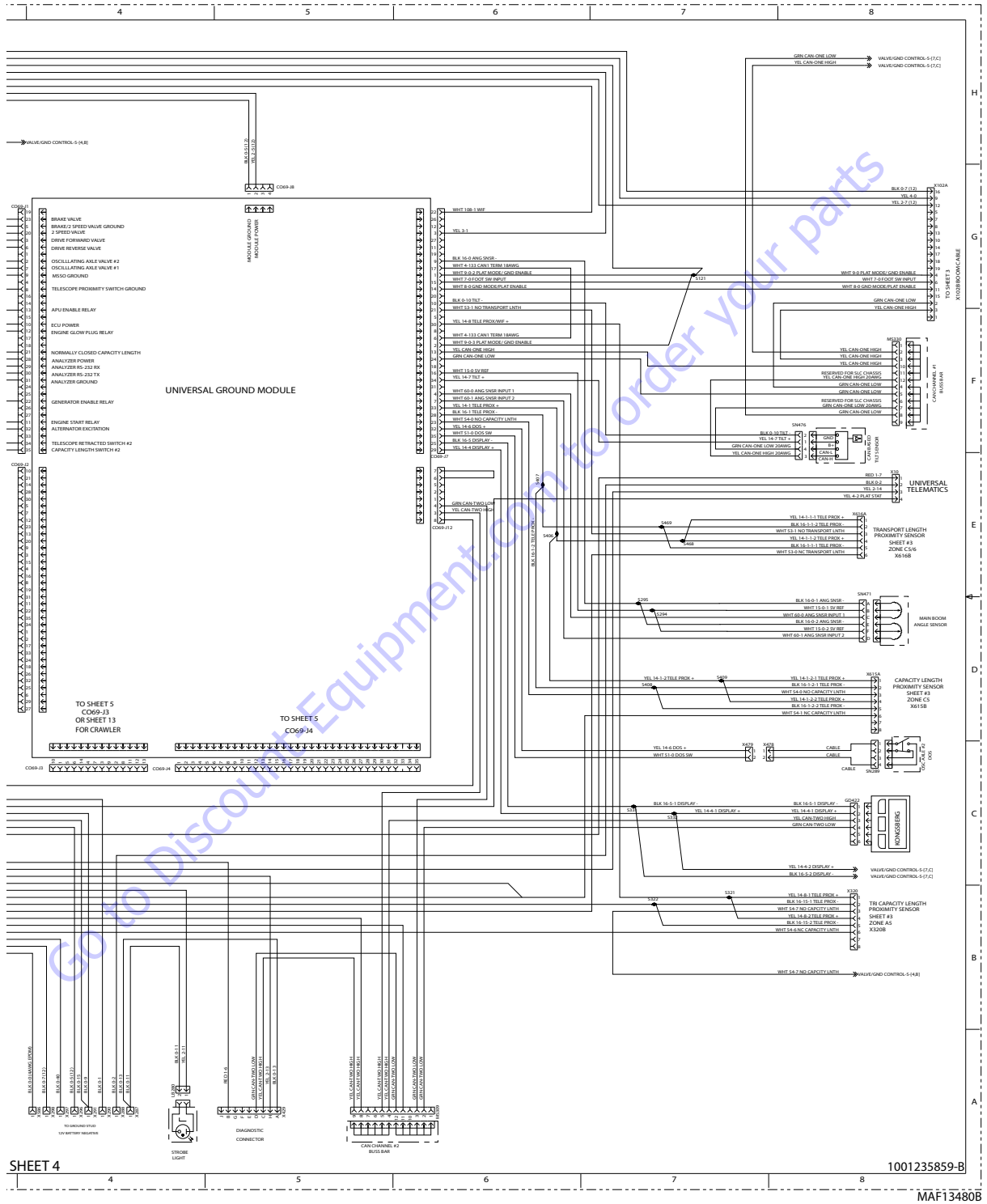


Figure 7-71. Electrical Schematic - Sheet 6 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

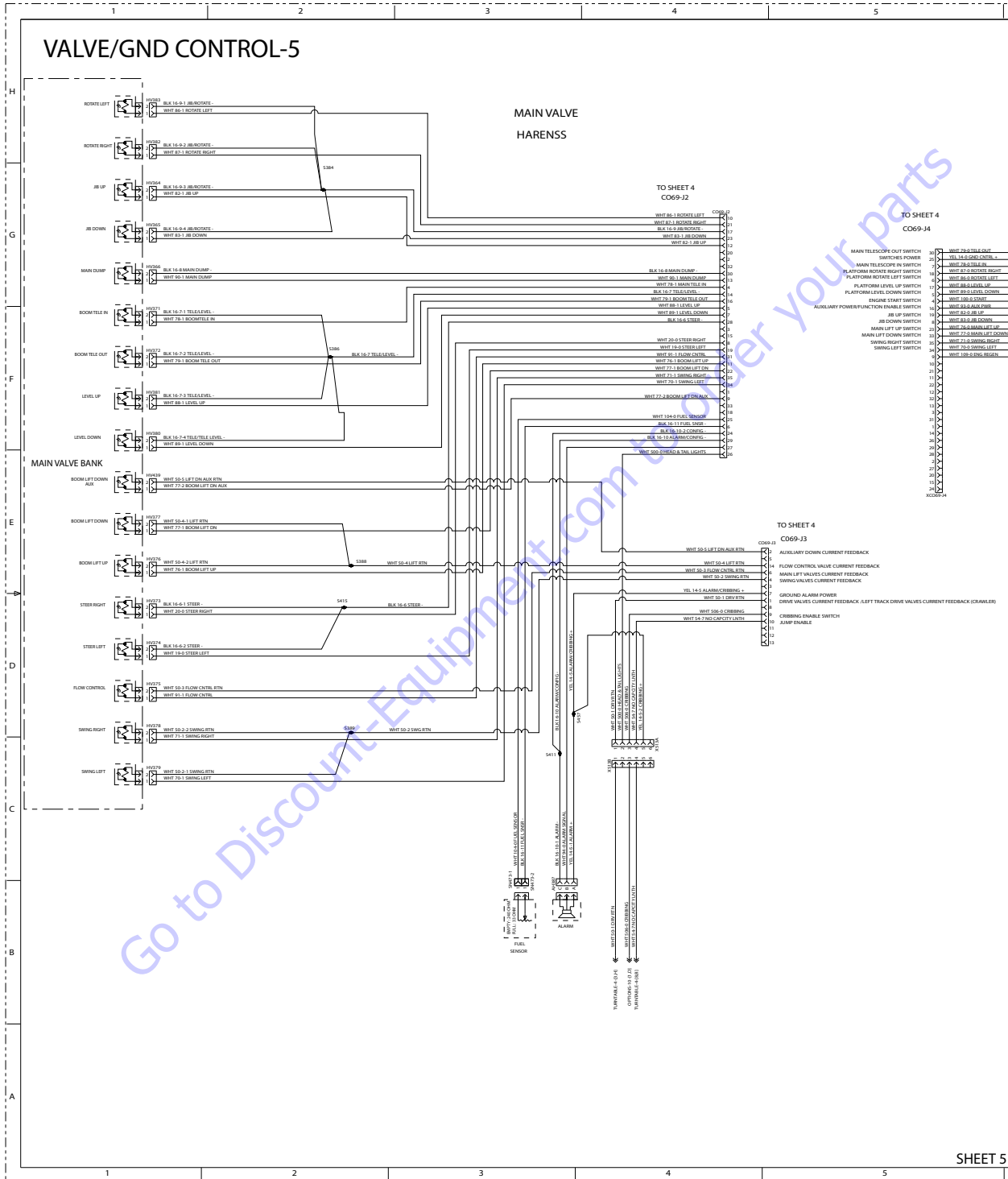


Figure 7-72. Electrical Schematic - Sheet 7 of 19

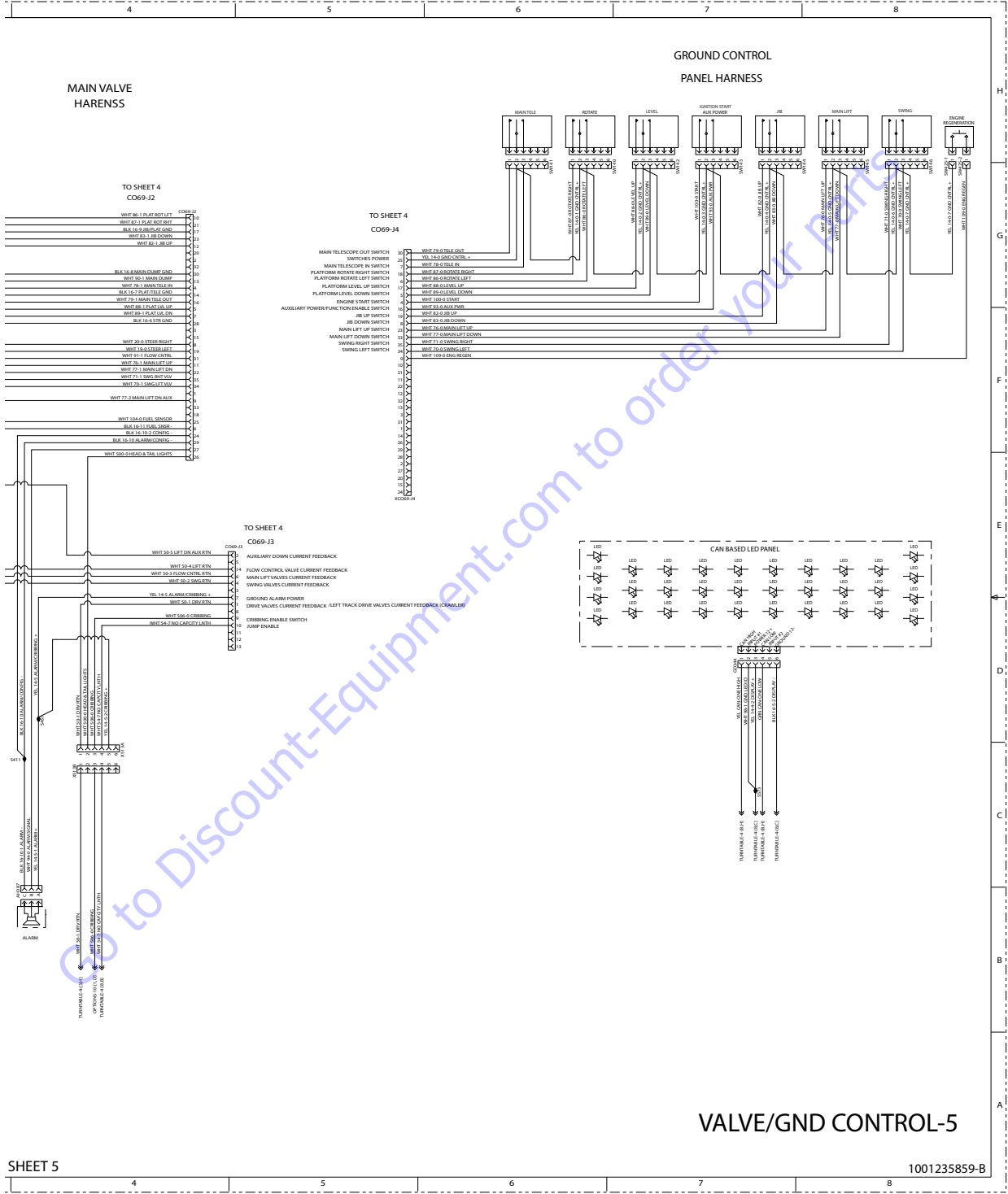


Figure 7-73. Electrical Schematic - Sheet 8 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

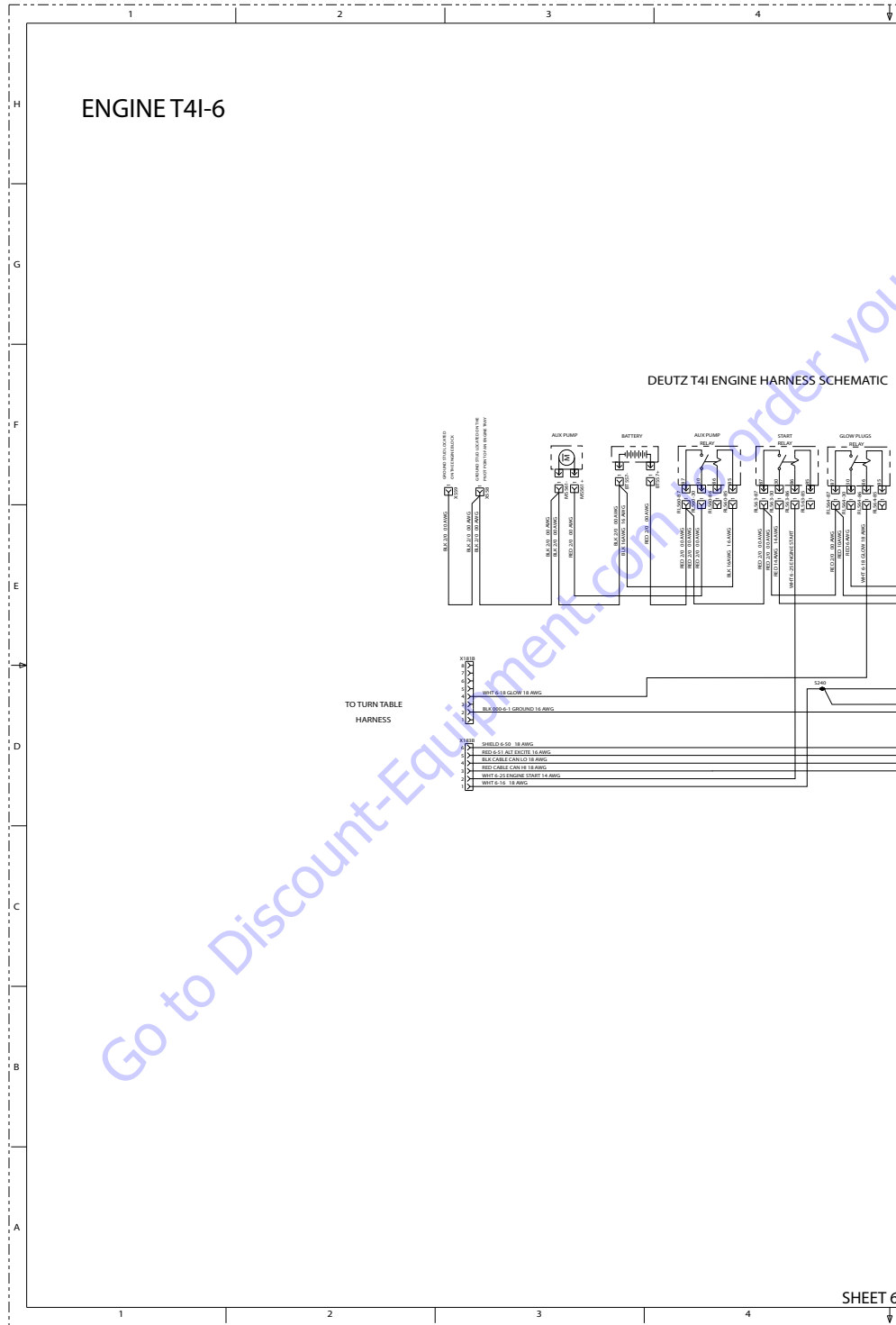


Figure 7-74. Electrical Schematic - Sheet 9 of 19

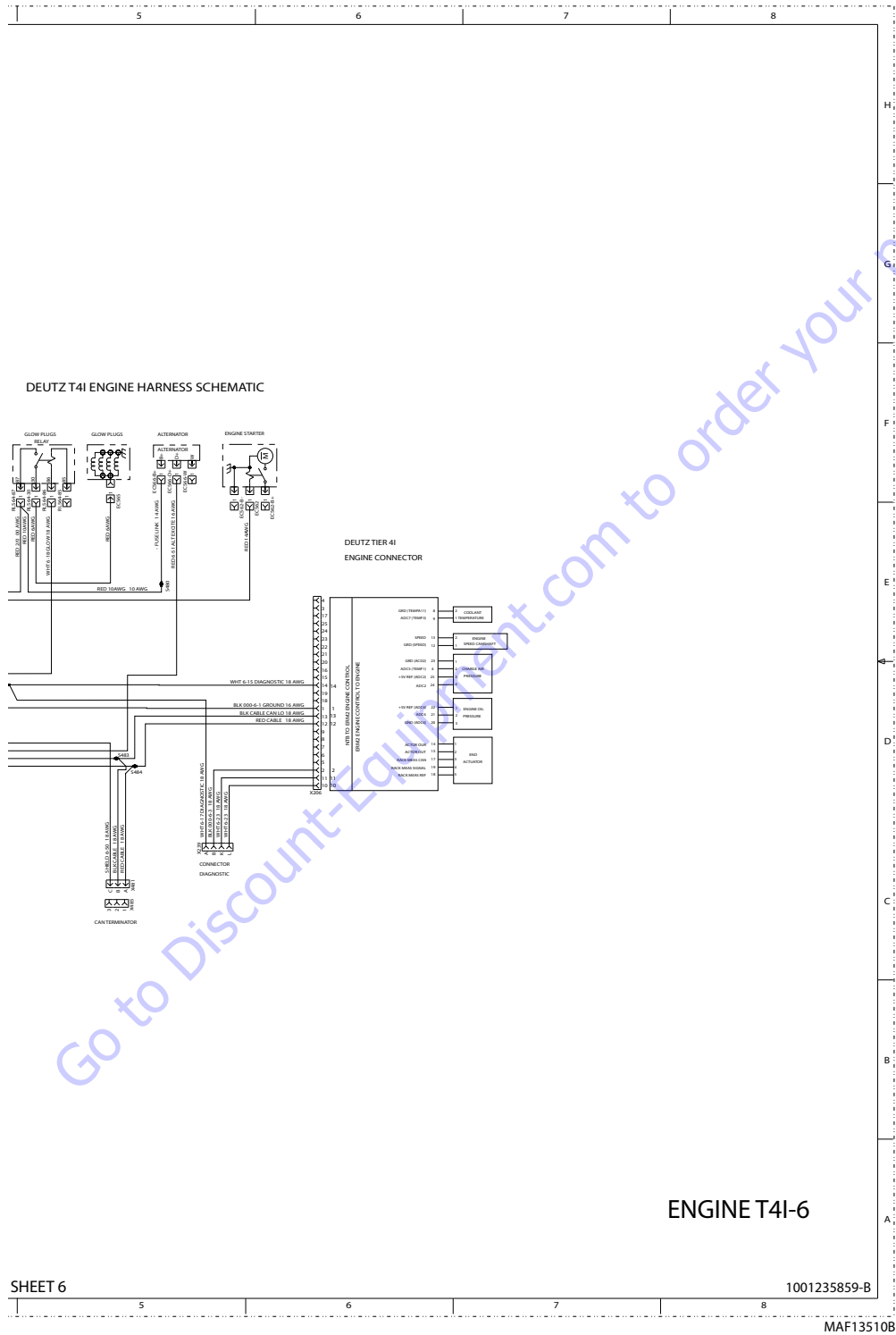
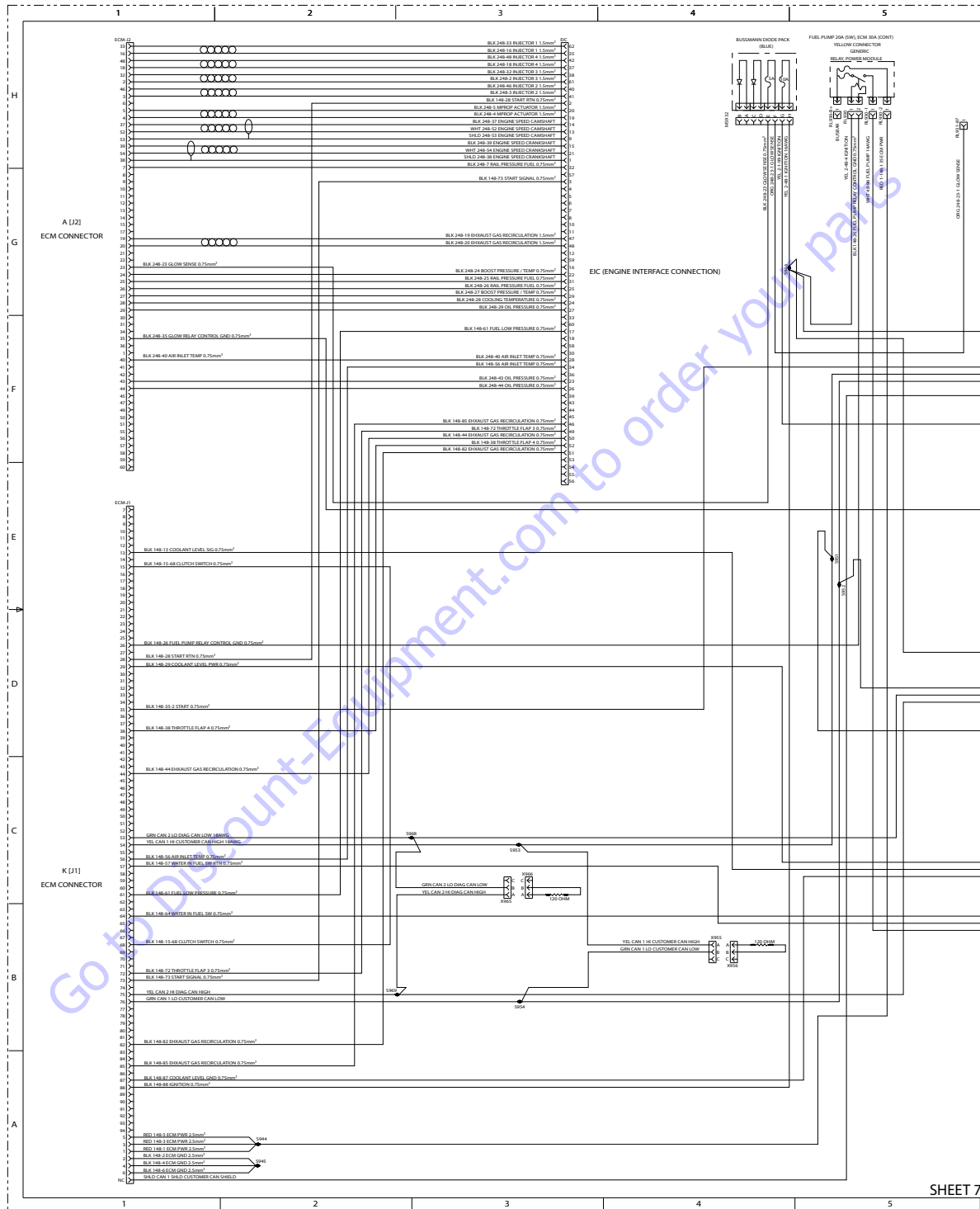


Figure 7-75. Electrical Schematic - Sheet 10 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



SHEET 7

Figure 7-76. Electrical Schematic - Sheet 11 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

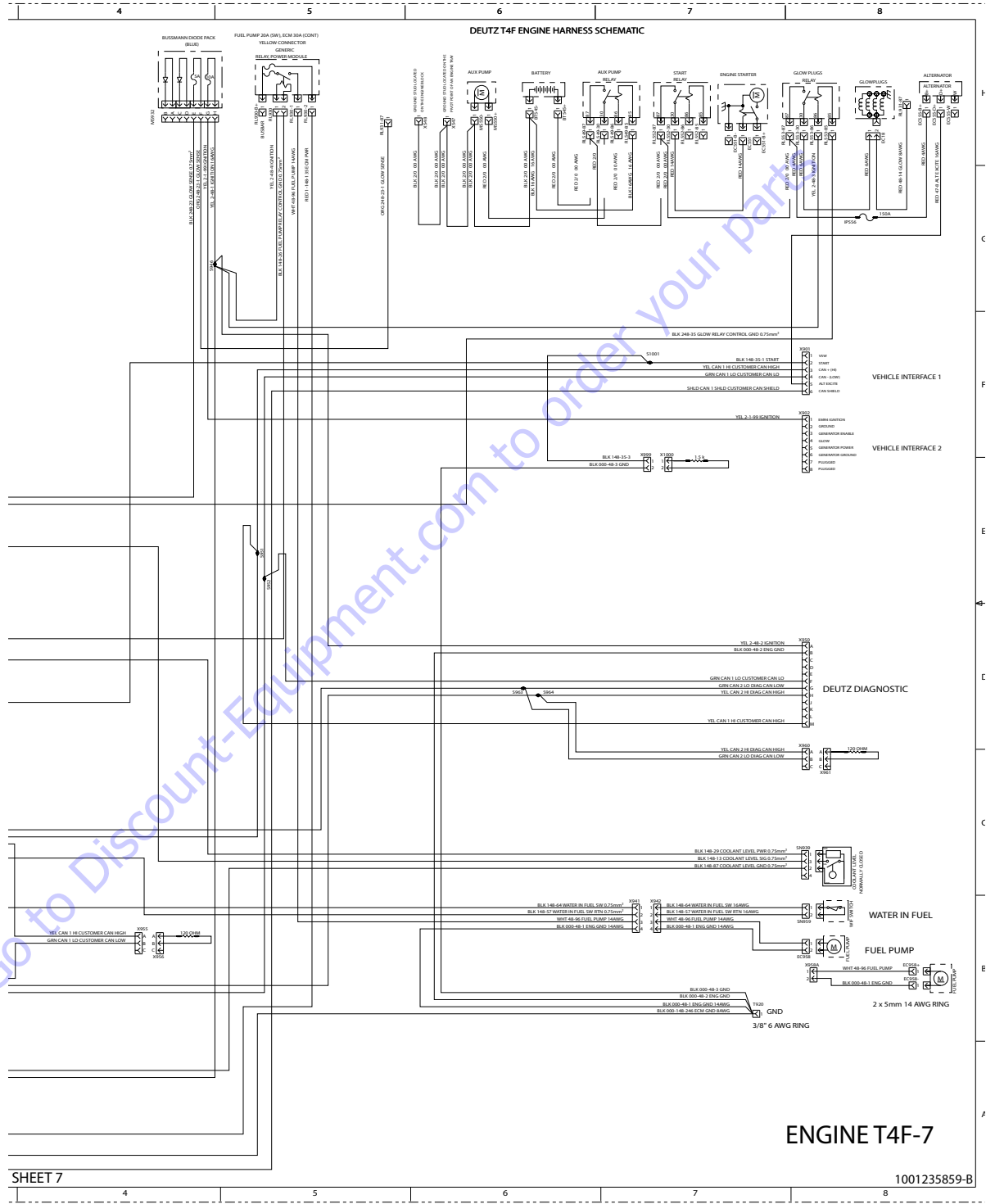


Figure 7-77. Electrical Schematic - Sheet 12 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

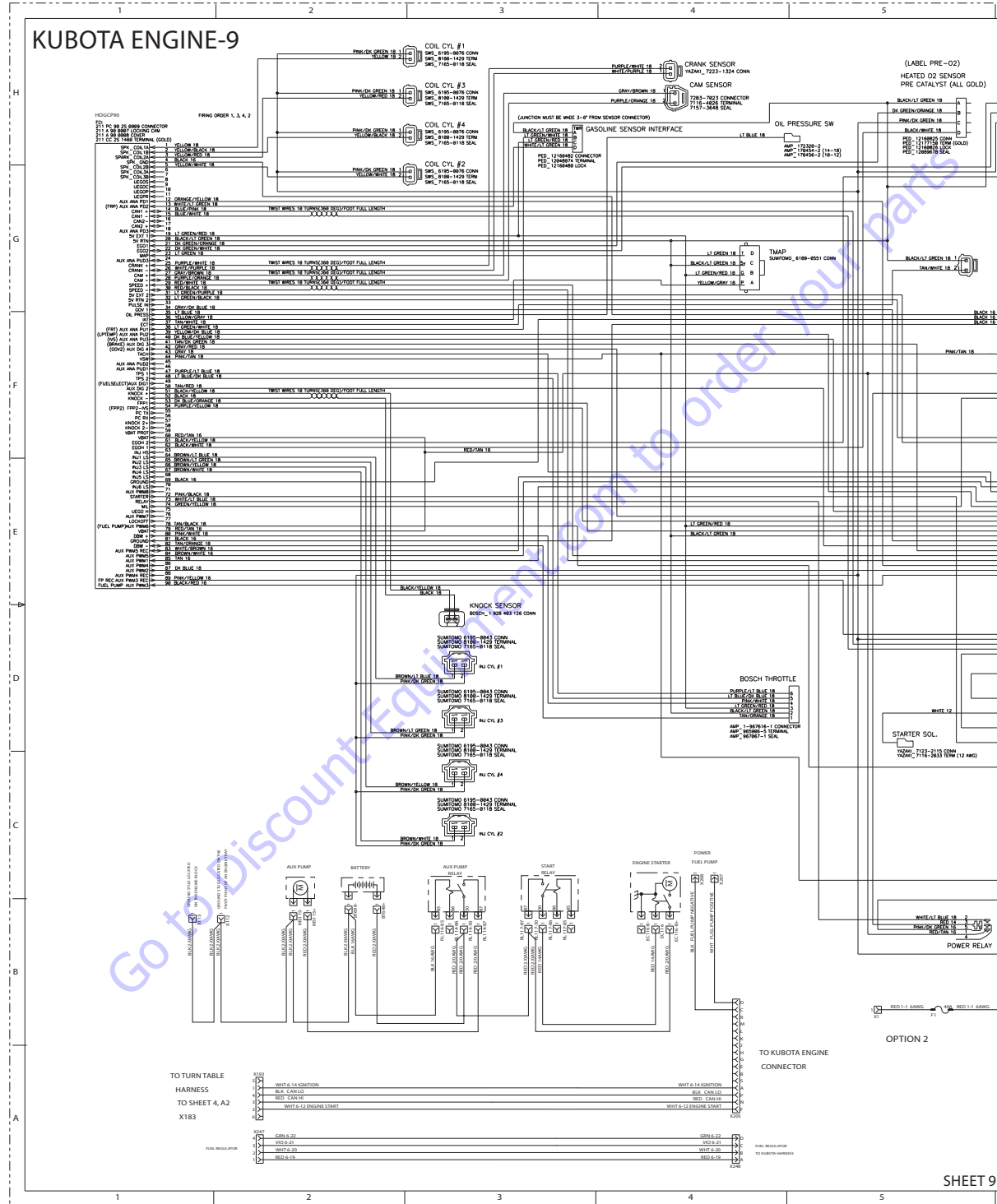


Figure 7-78. Electrical Schematic - Sheet 13 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

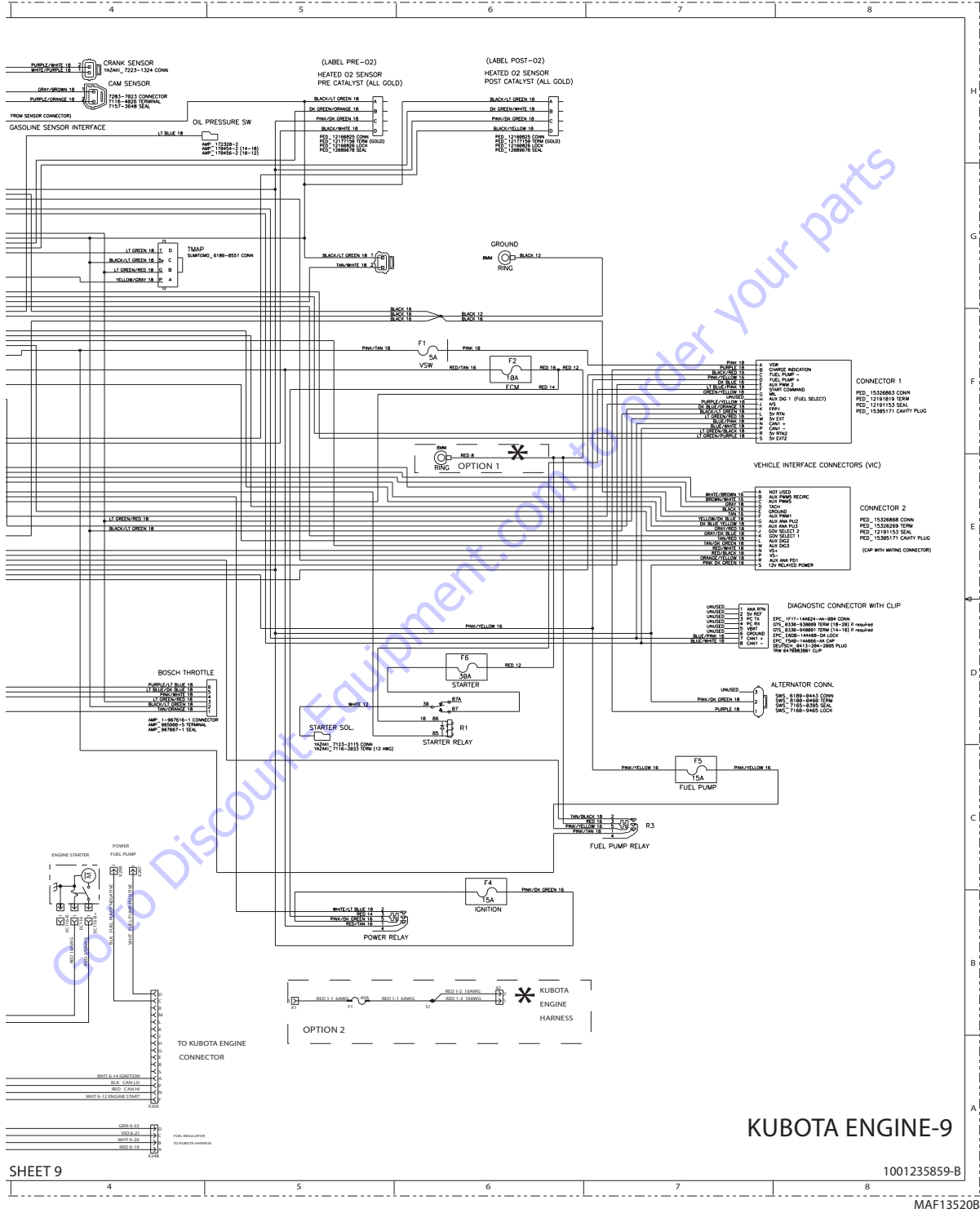


Figure 7-79. Electrical Schematic - Sheet 14 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS

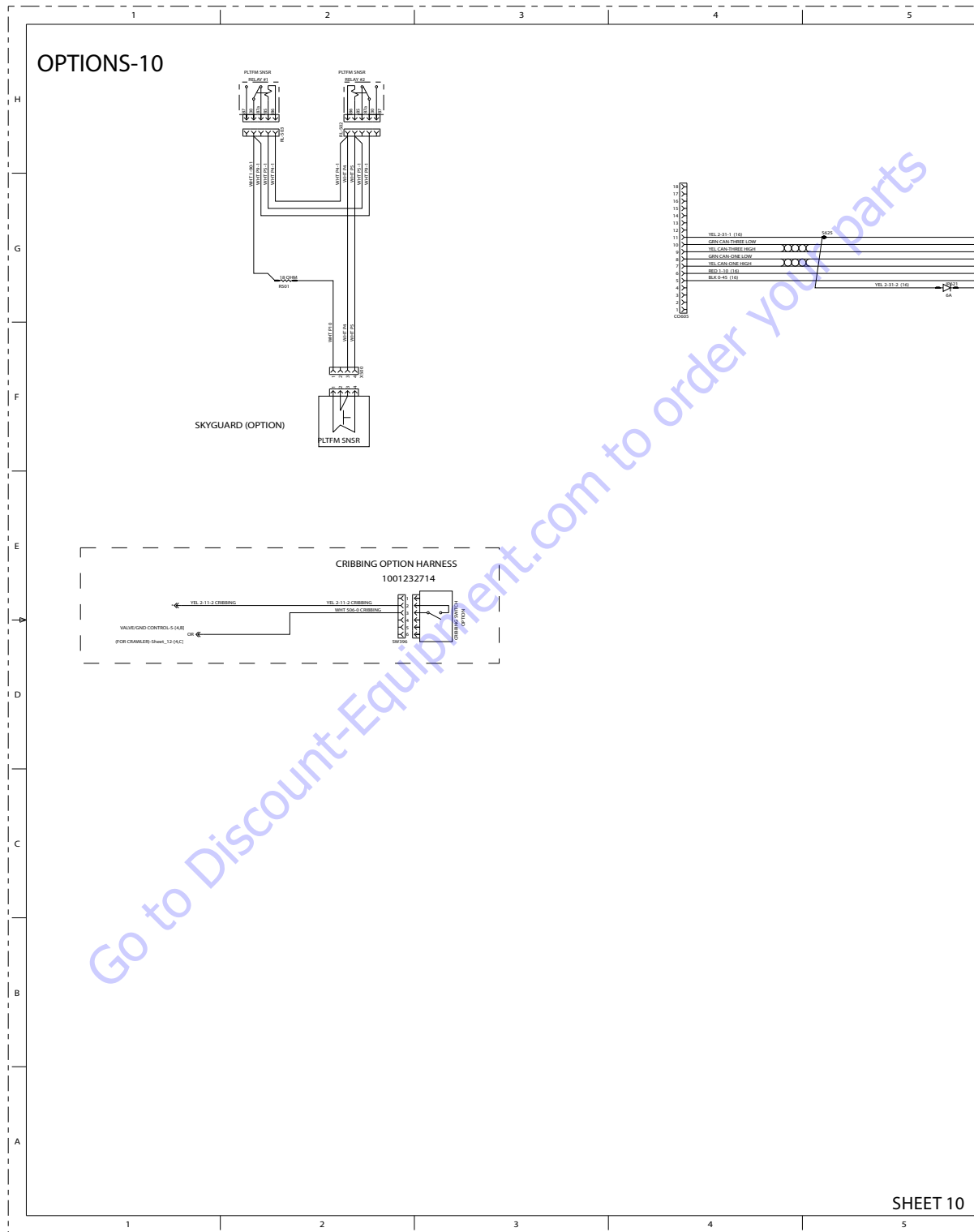


Figure 7-80. Electrical Schematic - Sheet 15 of 19

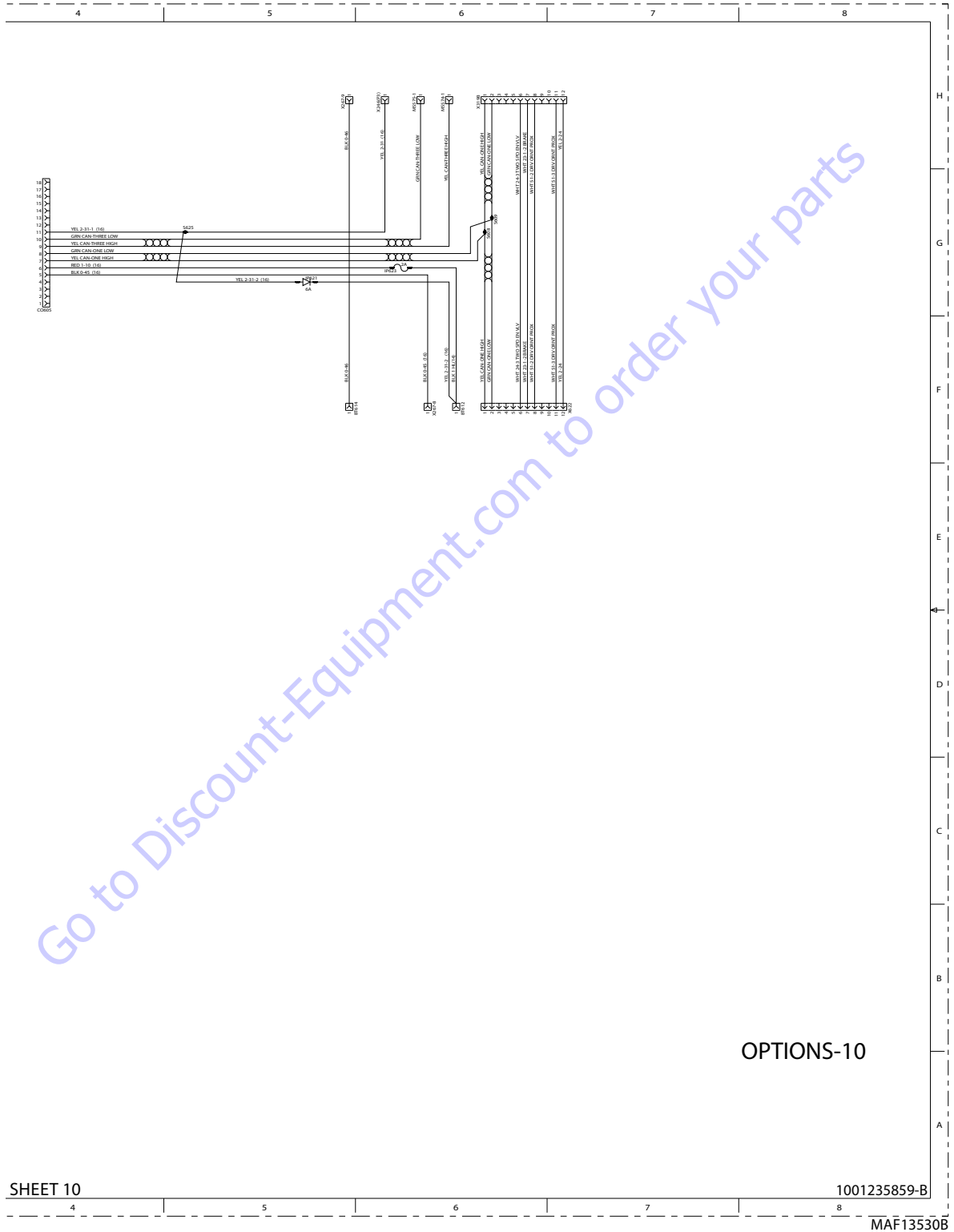


Figure 7-81. Electrical Schematic - Sheet 15 of 19

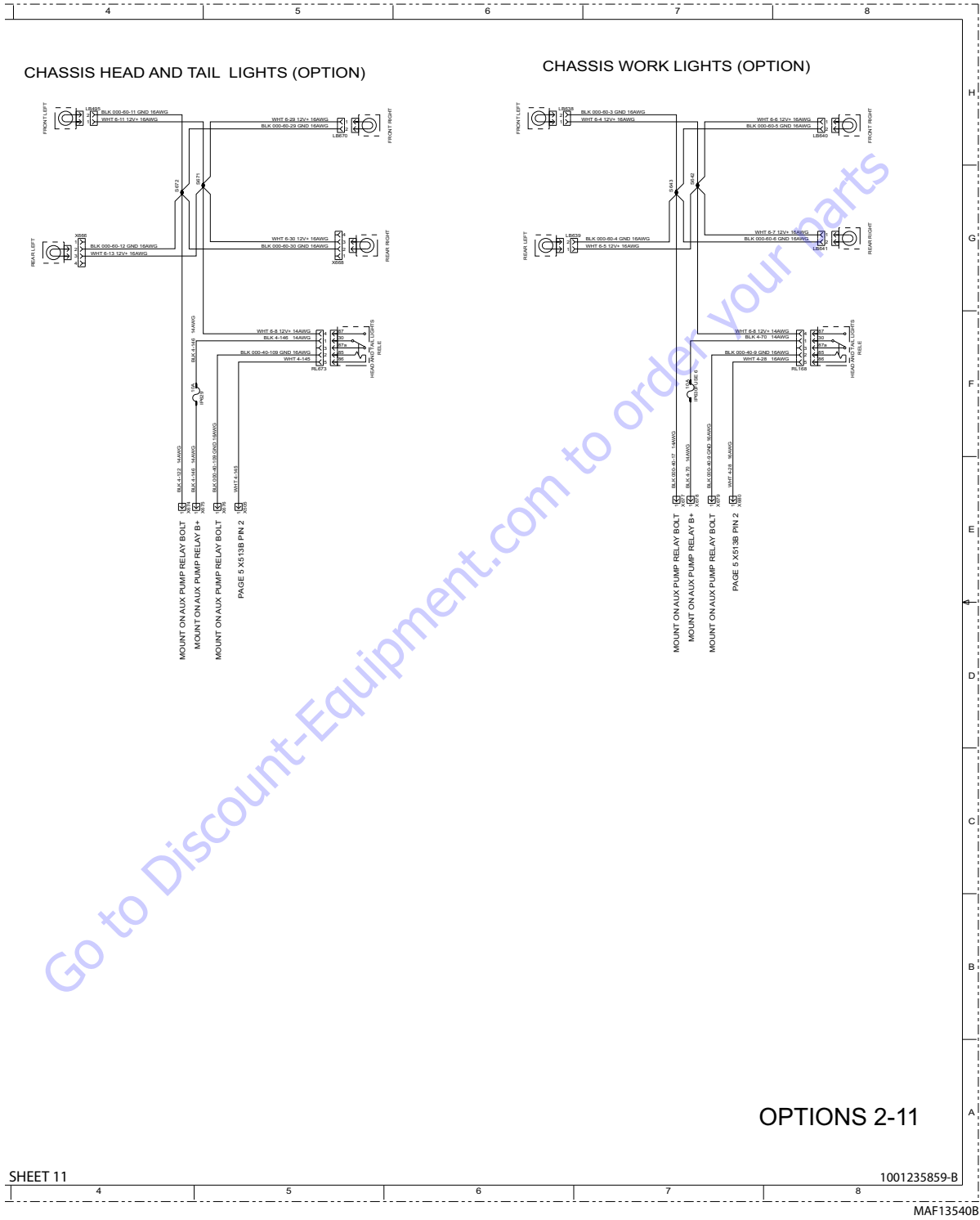
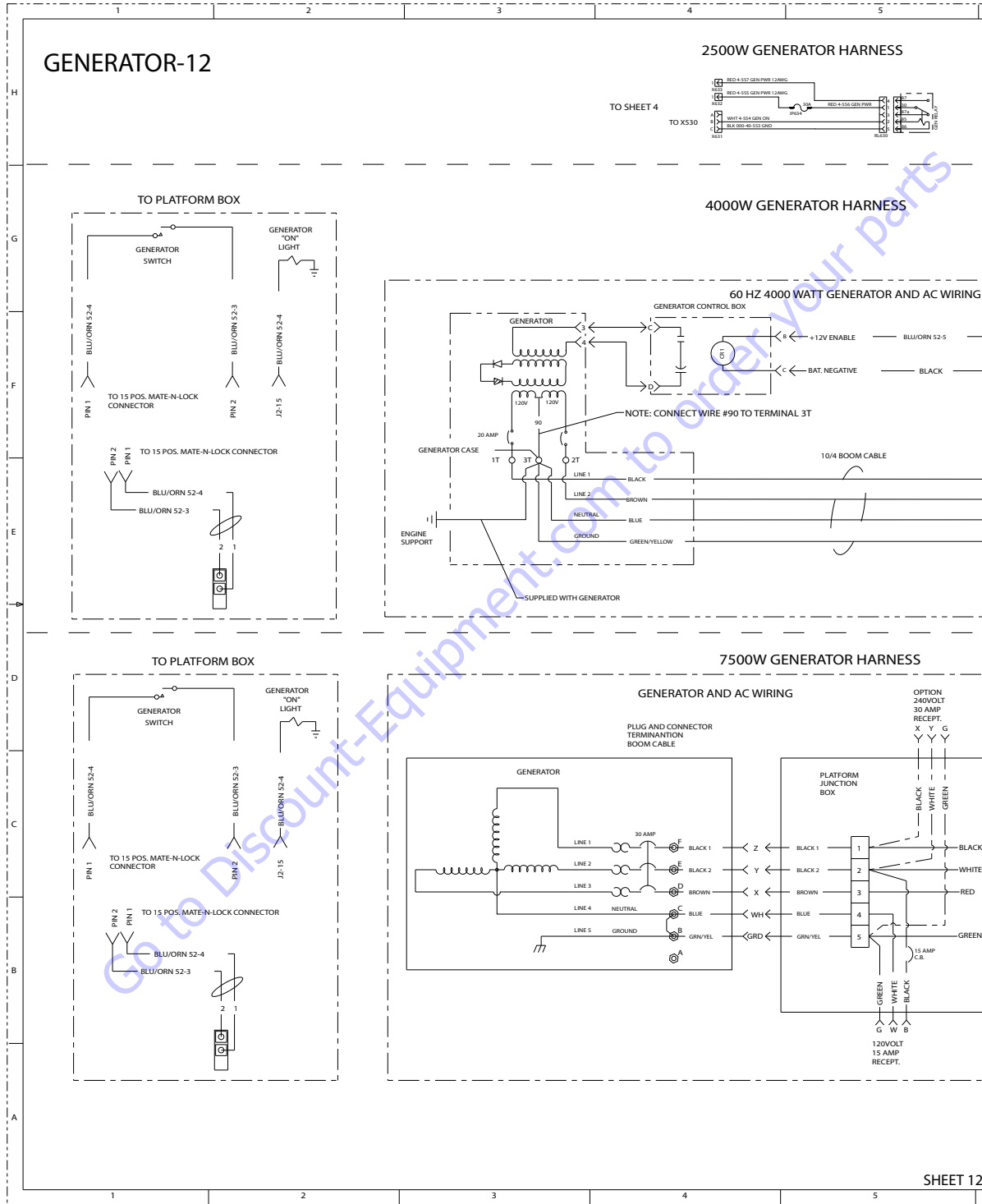


Figure 7-83. Electrical Schematic - Sheet 17 of 19

SECTION 7 - BASIC ELECTRICAL INFORMATION & SCHEMATICS



SHEET 12

Figure 7-84. Electrical Schematic - Sheet 18 of 19

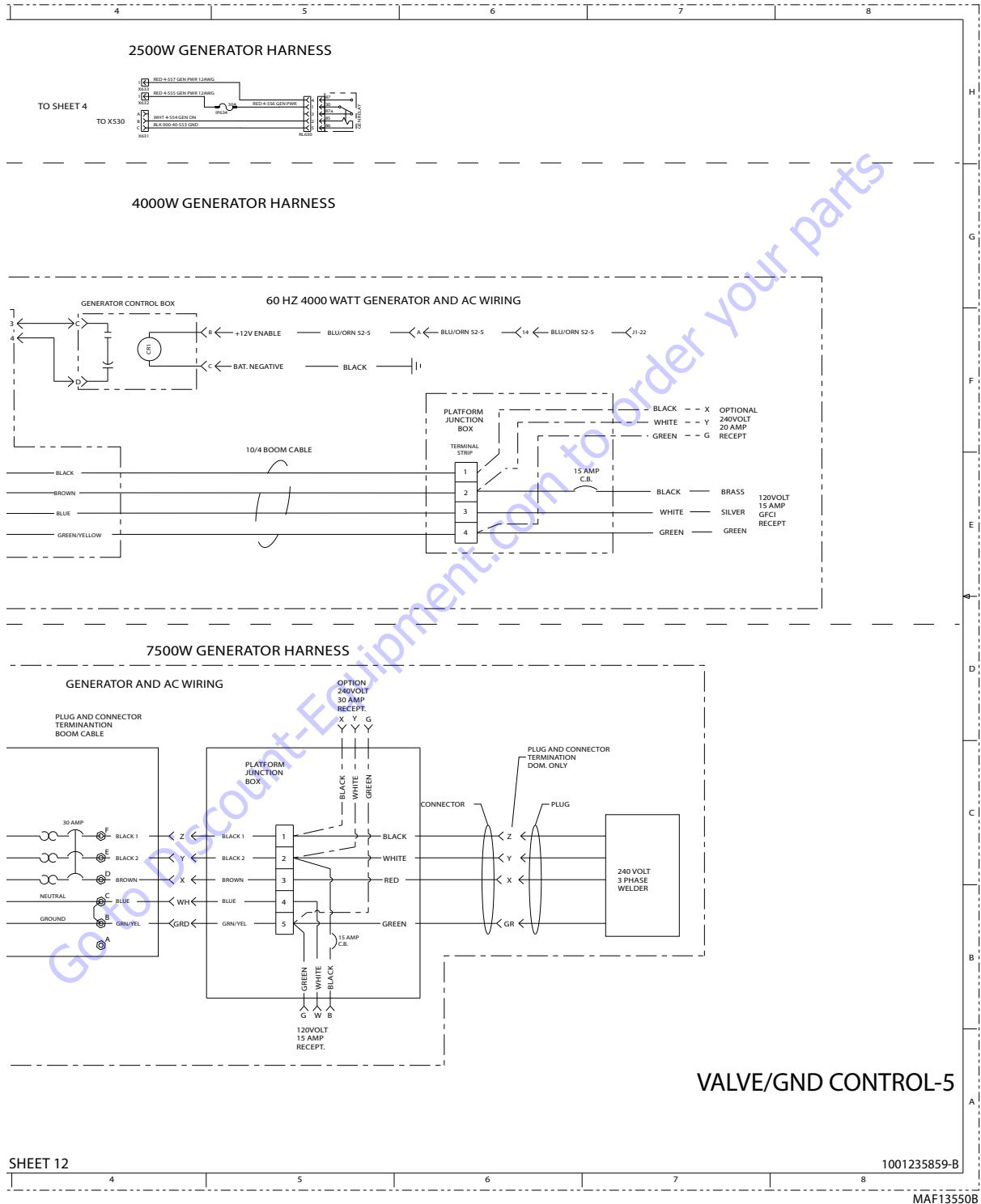


Figure 7-85. Electrical Schematic - Sheet 19 of 19

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Part Number:	<input type="text"/>
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