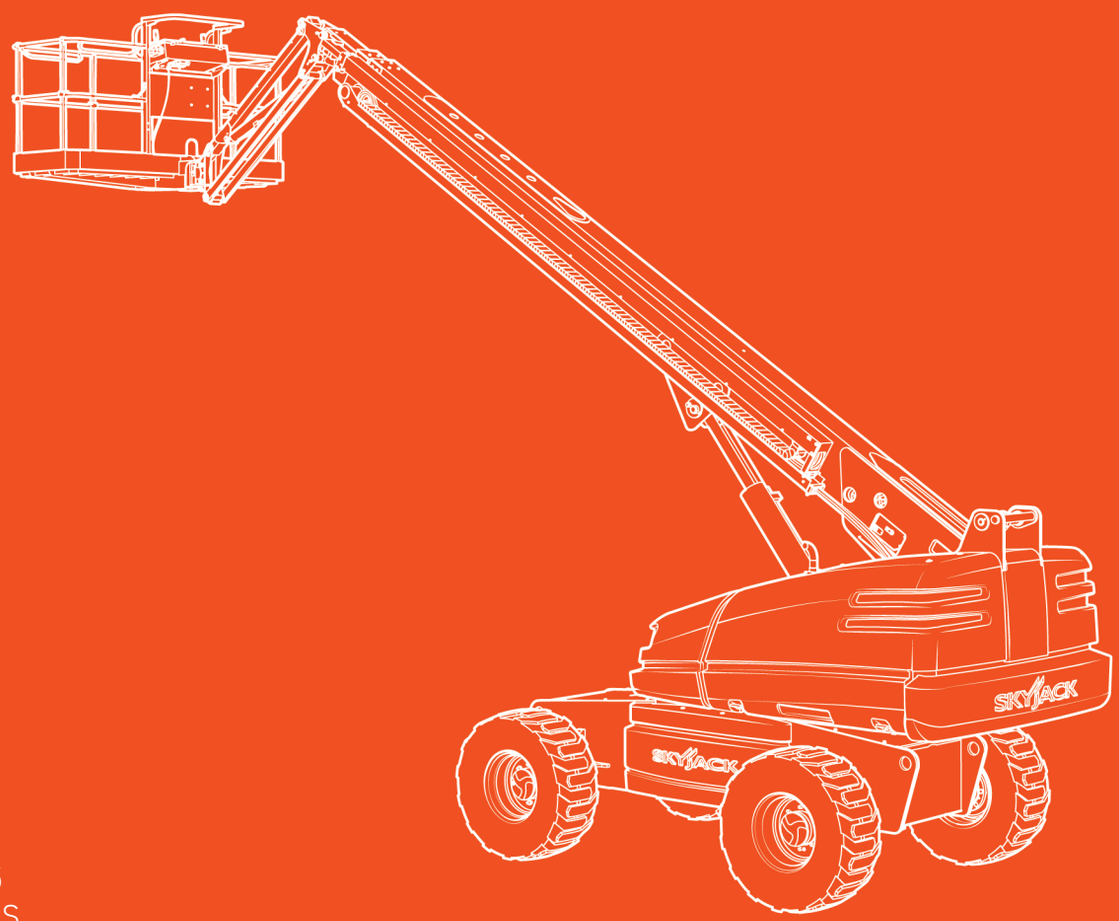
SKYJACK

# SERVICE MANUAL

## SJ61T, SJ66T

TELESCOPIC BOOMS




**207564AM**
September 2025
ANSI/CSA, CE, AS

**This manual is for MEWPs with serial numbers:**

**SJ61T & SJ66T:** 97 001 833 to 97 099 999

**Please refer to the website (www.skyjack.com) for contact information, other serial numbers, the most recent technical manuals, animations, and USB software.**

The original instructions are in English.

**THIS SAFETY ALERT SYMBOL MEANS ATTENTION!**



# BECOME ALERT! YOUR SAFETY IS INVOLVED.

The Safety Alert Symbol identifies important safety messages on MEWPs, safety signs in manuals or elsewhere. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

## ⚠ DANGER

**DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

## ⚠ WARNING

**WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

## ⚠ CAUTION

**CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.**

## IMPORTANT

**IMPORTANT indicates a procedure essential for safe operation and which, if not followed, may result in a malfunction or damage to the MEWP.**

# Notes

# Table of Contents


**Section 1 – Scheduled Maintenance . . . . . 13**

**1.1 Read and Heed . . . . . 13**

*1.1-1 Mobile Elevating Work Platform (MEWP) Definition . . . . . 13*

*1.1-2 Purpose of Equipment . . . . . 13*

*1.1-3 Use of Equipment . . . . . 13*

*1.1-4 Manual . . . . . 13*

*1.1-5 Service Policy and Warranty . . . . . 13*

*1.1-6 Operator Safety Reminders, Warnings and Precautions . . . . . 13*

**1.2 Maintenance and Service . . . . . 14**

*1.2-1 Maintenance Inspection Schedule . . . . . 14*

*1.2-2 Owner's Annual Inspection Record . . . . . 14*

*1.2-3 Replacement Parts . . . . . 14*

*1.2-4 Maintenance and Service Safety Tips . . . . . 14*

*1.2-5 Hydraulic System & Component Maintenance and Repair . . . . . 15*

*1.2-6 Hydraulic Maintenance Hints . . . . . 15*

*1.2-7 Railing Maintenance and Repair . . . . . 16*

**1.3 Scheduled Maintenance . . . . . 17**

*1.3-1 Service Bulletins . . . . . 17*

*1.3-2 Maintenance and Inspection . . . . . 17*

*1.3-3 Maintenance Instructions . . . . . 17*

**1.4 Owner's Annual Inspection Record . . . . . 18**

**1.5 Pre-Delivery/Maintenance Inspection Checklist . . . . . 19**

**1.6 Scheduled Maintenance Inspections . . . . . 20**

*1.6-1 Electrical . . . . . 20*

*1.6-2 Hydraulic . . . . . 20*

*1.6-3 Manuals & Required Documents* **(B) . . . . . 20**

*1.6-4 Labels* **(B) . . . . . 20**

*1.6-5 Limit Switches (B) . . . . . 21*

*1.6-6 Engine Compartment . . . . . 21*

*1.6-7 Control Compartment . . . . . 24*

*1.6-8 Base . . . . . 26*

*1.6-9 Platform Assembly . . . . . 28*

*1.6-10 Boom Assembly . . . . . 29*

*1.6-11 Optional Equipment/Attachments . . . . . 31*

**1.7 Function Tests . . . . . 32**

**Section 2 – Maintenance Tables and Diagrams . . . . . 33**

**2.1 Standard Hose Numbering System . . . . . 33**

2.2 MEWP Torque Specifications . . . . . 35
2.3 Axle Torque Specifications . . . . . 36
2.4 Torque Specifications for Fasteners (US) . . . . . 37
2.5 Torque Specifications for Fasteners (Metric) . . . . . 38
2.6 Torque Specifications for Hydraulic Couplings & Hoses . . . . . 39
2.7 Axle Maintenance Intervals . . . . . 40
2.8 Tire Specifications . . . . . 41
2.9 Floor Loading Pressure . . . . . 42
2.10 Hydraulic Specifications & Gear Oil . . . . . 43
2.11 Specifications and Features - Dimensional Data . . . . . 44
2.12 Specifications and Features - Performance & Speeds . . . . . 45
2.13 Engine Specifications . . . . . 46
2.14 Dimension and Reach Diagram - SJ61T . . . . . 48
2.15 Dimension and Reach Diagram - SJ66T . . . . . 49
2.16 Axle Oscillation Diagrams . . . . . 50

Section 3 – System Component Identification and Schematics . . . . . 51
3.1 Electrical Symbol Chart . . . . . 52
3.2 Hydraulic Symbol Chart . . . . . 53
3.3 Wire Number and Color Code . . . . . 54
3.4 Wire Numbers and Color Codes - Additional . . . . . 55
3.5 Hydraulic Parts List . . . . . 56
3.6 Electrical Parts List . . . . . 59
3.7 Rotary Manifold Port Identification . . . . . 63
3.8 Brake Manifold Port Identification . . . . . 64
3.9 System and Drive Pumps and Port Identifications . . . . . 65
3.10 System Pump and Port Identifications . . . . . 66
3.11 Drive Pump and Port Identifications . . . . . 67
3.12 Drive Motors and Port Identifications . . . . . 68
3.13 Platform Rotate Valve and Port Identification - SJ61T . . . . . 69
3.14 Jib & Platform Rotate Valve and Port Identification - SJ66T . . . . . 70
3.15 Main Manifold Port Identification . . . . . 71
3.16 Main Manifold Electrical Component Identification . . . . . 72
3.17 Main Manifold Hydraulic Component Identification . . . . . 73
3.18 Generator Control Valves and Port Indentifcations . . . . . 74
3.19 Main Harness Wiring Diagram . . . . . 75
3.20 ECU Engine Wiring Diagram - Deutz . . . . . 76
3.21 Glow Plug and EGR Harnesses - Deutz . . . . . 77
3.22 Engine Interface Harness - Deutz TD2.9L . . . . . 78
3.23 Harnesses . . . . . 79
3.24 Platform Control Cables . . . . . 80
3.25 Limit Switch Connections . . . . . 81
3.26 Load Sensing Cable Connection - CE . . . . . 82

3.27 Generator and Oil Cooler Harness Connections. . . . . 83
3.28 Generator Wire Kit Connections. . . . . 84
3.29 Generator Connection - 12 kW . . . . . 85
3.30 SGE Schematic . . . . . 86
3.31 SGE Platform Control Box Wiring. . . . . 87
3.32 Differential Lock Harness . . . . . 88
3.33 Hydraulic Schematic - serial number 97 002 687 and above . . . . . 89
3.34 Hydraulic Schematic - serial number 97 002 686 and below . . . . . 90
3.35 Platform Controls Wiring - SJ61T ANSI/CSA - Deutz & Perkins . . . . . 91
3.36 Platform Controls Wiring - SJ61T ANSI/CSA - Kubota . . . . . 92
3.37 Platform Controls Wiring - SJ66T ANSI/CSA - Deutz & Perkins . . . . . 93
3.38 Platform Controls Wiring - SJ66T ANSI/CSA - Kubota . . . . . 94
3.39 Platform Controls Wiring - SJ66T CE - Deutz TCD2.2. . . . . 95
3.40 Platform Controls Wiring - SJ66T CE - Deutz TD2.9L & D2011. . . . . 96
3.41 Platform Controls Wiring - SJ66T AS - Deutz . . . . . 97
3.42 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L - S/N 97 003 631 & above. . . . . 98
3.43 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L - S/N 97 003 630 & below. . . . . 99
3.44 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 631 & above . . . . . 100
3.45 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 630 & below . . . . . 101
3.46 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011 - S/N 97 003 631 & above . . . . . 102
3.47 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011 - S/N 97 003 630 & below . . . . . 103
3.48 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011with Positive Air Shut-Off Option - S/N 97 003 631 & above . . . . . 104
3.49 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 630 & below . . . . . 105
3.50 Base Controls Wiring - SJ61T ANSI/CSA - Perkins - S/N 97 003 631 & above. . . . . 106
3.51 Base Controls Wiring - SJ61T ANSI/CSA - Perkins - S/N 97 003 630 & below. . . . . 107
3.52 Base Controls Wiring - SJ61T ANSI/CSA - Kubota - S/N 97 003 631 & above . . . . . 108
3.53 Base Controls Wiring - SJ61T ANSI/CSA - Kubota - S/N 97 003 630 & below . . . . . 109
3.54 Base Controls Wiring - SJ66T ANSI/CSA - Deutz TD2.9L - S/N 97 003 631 & above. . . . . 110
3.55 Base Controls Wiring - SJ66T ANSI/CSA - Deutz TD2.9L - S/N 97 003 630 & below. . . . . 111
3.56 Base Controls Wiring - SJ66T ANSI/CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 631 & above . . . . . 112
3.57 Base Controls Wiring - SJ66T ANSI/CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 630 & below . . . . . 113
3.58 Base Controls Wiring - SJ66T ANSI/CSA - Deutz D2011 - S/N 97 003 631 & above . . . . . 114
3.59 Base Controls Wiring - SJ66T ANSI/CSA - Deutz D2011 - S/N 97 003 630 & below . . . . . 115
3.60 Base Controls Wiring - SJ66T ANSI/CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 631 & above . . . . . 116
3.61 Base Controls Wiring - SJ66T ANSI/CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 630 & below . . . . . 117
3.62 Base Controls Wiring - SJ66T ANSI/CSA - Perkins 2.2TA - S/N 97 003 631 & above . . . . . 118

3.63 Base Controls Wiring - SJ66T ANSI/CSA - Perkins 2.2TA - S/N 97 003 630 & below . . . . . 119
3.64 Base Controls Wiring - SJ66T ANSI/CSA - Kubota - S/N 97 003 631 & above . . . . . 120
3.65 Base Controls Wiring - SJ66T ANSI/CSA - Kubota - S/N 97 003 630 & below . . . . . 121
3.66 Base Controls Wiring - SJ66T CE - Deutz TCD2.2. . . . . 122
3.67 Base Controls Wiring - SJ66T CE Deutz - TD2.9L . . . . . 123
3.68 Base Controls Wiring - SJ66T CE - Deutz D2011 - S/N 97 003 631 & above . . . . . 124
3.69 Base Controls Wiring - SJ66T CE - Deutz D2011 - S/N 97 003 630 & below . . . . . 125
3.70 Base Controls Wiring - SJ66T AS - Deutz D2011 - S/N 97 003 631 & above . . . . . 126
3.71 Base Controls Wiring - SJ66T AS - Deutz D2011 - S/N 97 003 630 & below . . . . . 127
3.72 Electrical Schematic - ANSI/CSA - Deutz TD2.9L - S/N 97 003 631 and above . . . . . 128
3.73 Electrical Schematic - ANSI/CSA - Deutz TD2.9L (S/N 97003799 and below) . . . . . 129
3.74 Electrical Schematic - ANSI/CSA - Deutz TD2.9L (S/N 97003800 and above) . . . . . 130
3.75 Electrical Schematic - ANSI/CSA - Deutz D2011 - S/N 97 003 631 and above . . . . . 131
3.76 Electrical Schematic - ANSI/CSA - Deutz D2011 (S/N 97003799 and below) . . . . . 132
3.77 Electrical Schematic - ANSI/CSA - Deutz D2011 (S/N 97003800 and above) . . . . . 133
3.78 Electrical Schematic - ANSI/CSA - Perkins 2.2TA (S/N 97003799 and below) . . . . . 134
3.79 Electrical Schematic - ANSI/CSA - Perkins 2.2TA (S/N 97003800 and above) . . . . . 135
3.80 Electrical Schematic - ANSI/CSA - Kubota - S/N 97 003 631 & above . . . . . 136
3.81 Electrical Schematic - ANSI/CSA - Kubota (S/N 97003799 and below) . . . . . 137
3.82 Electrical Schematic - ANSI/CSA - Kubota (S/N 97003800 and above) . . . . . 138
3.83 Electrical Schematic - CE - Deutz TCD2.2 . . . . . 139
3.84 Electrical Schematic - CE - Deutz TD2.9L (S/N 97003799 and below) . . . . . 140
3.85 Electrical Schematic - CE - Deutz TD2.9L (S/N 97003800 and above) . . . . . 141
3.86 Electrical Schematic - CE - Deutz D2011 (S/N 97003799 and below) . . . . . 142
3.87 Electrical Schematic - CE - Deutz D2011 (S/N 97003800 and above) . . . . . 143
3.88 Electrical Schematic - AS - Deutz D2011 (S/N 97003799 and below) . . . . . 144
3.89 Electrical Schematic - AS - Deutz D2011 (S/N 97003800 and above) . . . . . 145
3.90 Interface & Engine Electrical Schematic - Deutz TCD2.2 . . . . . 146
3.91 Engine OEM Harness Schematic - Deutz TCD2.2 . . . . . 147
3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L . . . . . 148
3.93 Engine Interface Harness Schematic - Perkins . . . . . 149
3.94 Engine OEM Harness Schematic - Perkins . . . . . 150
3.95 Engine Component Harness Schematic - Perkins. . . . . 151
3.96 Interface & Engine Electrical Schematic - Kubota. . . . . 152

**Section 4 – Troubleshooting Information . . . . . 153**

4.1 Introduction . . . . . 153
4.2 Electrical System . . . . . 154
*4.2-1 All Controls Inoperative . . . . . 154*
*4.2-2 No Power . . . . . 155*
*4.2-3 Engine Will Not Crank . . . . . 156*
*4.2-4 Engine Cranks but Will Not Start . . . . . 160*
*4.2-5 Glow Plug Circuit Inoperative - Deutz D2011 diesel engine . . . . . 163*

*4.2-6 All Base Control Console Inoperative . . . 164*
*4.2-7 No Movement from Base Control Console . . . 165*
*4.2-8 All Controls Inoperative From Platform Control Console . . . 172*
*4.2-9 Throttle Inoperative, Mid and High - Deutz D2.9L . . . 180*
*4.2-10 Mid Throttle Inoperative . . . 181*
*4.2-11 High Throttle Inoperative . . . 182*
**4.2-12 Brake will not Release . . . 183**
**4.2-13 Differential Lock will not Engage . . . 184**
**4.2-14 No Drive and Steer . . . 185**
*4.2-15 No High Speed Drive . . . 187*
*4.2-16 No Elevated Drive . . . 188*
*4.2-17 Direction Sensing Inoperative . . . 189*
*4.2-18 Steer Direction Sensing Inoperative . . . 189*
**4.3 Hydraulic System . . . 190**
*4.3-1 All Controls Inoperative . . . 190*
*4.3-2 All Boom Functions Inoperative . . . 190*
*4.3-3 No Main Boom Up . . . 190*
*4.3-4 No Main Boom Down . . . 191*
*4.3-5 No Turret Rotate . . . 191*
*4.3-6 No Boom Extend . . . 192*
*4.3-7 No Boom Retract . . . 193*
*4.3-8 No Jib Up . . . 193*
*4.3-9 No Jib Down . . . 194*
*4.3-10 No Platform Rotation . . . 194*
*4.3-11 Platform will not Level . . . 195*
*4.3-12 Brake will not Release . . . 196*
*4.3-13 Brake will not Engage . . . 196*
*4.3-14 No Drive . . . 196*
*4.3-15 Differential Lock will not Engage . . . 197*
*4.3-16 No High Speed Drive . . . 197*
*4.3-17 No Steer . . . 197*
*4.3-18 Axle Will Not Oscillate . . . 198*
*4.3-19 Axle Will Not Lock . . . 198*
**4.4 Load Sensing System - CE . . . 199**
*4.4-1 Green Power LED is not Flashing . . . 199*
*4.4-2 Load Cell red Alarm LED is ON (with platform empty) . . . 199*
*4.4-3 Red Error LED is ON . . . 199*
*4.4-4 Load Cell red Alarm LED is OFF (with platform overloaded) . . . 199*
*4.4-5 Platform Indicator Light does not turn ON . . . 199*
*4.4-6 Audible Alarm does not turn ON . . . 200*
*4.4-7 Boom and Drive Functions are Enabled (with boom extended) . . . 200*

**Section 5 – Procedures . . . . . 201**

**5.1 General . . . . . 201**

*5.1-1 Safety and Workmanship . . . . . 201*

**5.2 Platform . . . . . 202**

*5.2-1 Human Machine Interface (HMI) . . . . . 202*

*5.2-2 User Interface Keys . . . . . 202*

*5.2-3 SCM Character Functions Charts . . . . . 203*

*5.2-4 SCM Operating Values Chart . . . . . 204*

*5.2-5 How to Select Functionality . . . . . 205*

*5.2-6 How to View OCM Operation . . . . . 206*

*5.2-7 How to Unlock and Modify OCM Settings . . . . . 207*

*5.2-8 OCM Pin Voltage Reference . . . . . 208*

*5.2-9 Fly Boom Switch Voltage References . . . . . 211*

*5.2-10 Platform Controller Voltage References . . . . . 212*

**5.3 Boom . . . . . 213**

*5.3-1 Rotary Actuator Bolt Torque Procedure . . . . . 213*

*5.3-2 Cable Carrier Repair . . . . . 213*

*5.3-3 Check Wear Pads . . . . . 214*

*5.3-4 Shim Wear Pads . . . . . 215*

*5.3-5 Boom Section Wear Pad Replacement . . . . . 216*

*5.3-6 Platform and Jib Boom Removal . . . . . 217*

*5.3-7 Platform Removal (no Jib Boom) . . . . . 219*

*5.3-8 Operating Machine Functions from the Base Controls . . . . . 221*

*5.3-9 Fly Boom Section Removal . . . . . 222*

*5.3-10 Mid Boom Section Removal . . . . . 223*

*5.3-11 Mid Boom Section Installation . . . . . 225*

*5.3-12 Fly Boom Section Installation . . . . . 226*

*5.3-13 Platform and Jib Boom Installation . . . . . 226*

*5.3-14 Platform Installation (no Jib Boom) . . . . . 227*

*5.3-15 Platform Control Console Connection . . . . . 228*

*5.3-16 Inspection and Replacement of Extension Cylinder and Boom Cables . . . . . 228*

*5.3-17 Extension Cylinder and Cable Assembly Removal . . . . . 229*

*5.3-18 Extension Cylinder and Cable Assembly Installation . . . . . 232*

*5.3-19 Proper Wire Rope Tension . . . . . 235*

*5.3-20 Wire Rope Inspection . . . . . 236*

*5.3-21 Limit Switch Locations . . . . . 237*

**5.4 Turret . . . . . 238**

*5.4-1 Check and Replace the High Pressure Filter . . . . . 238*

*5.4-2 Adjust the Turret Rotation Gear Backlash . . . . . 238*

*5.4-3 Check the Swing Drive Oil . . . . . 239*

*5.4-4 Change the Swing Drive Oil . . . . . 239*

*5.4-5 Battery Replacement . . . . . 240*

5.4-6 Turret Rotation Gear Bolt Torque Sequence . . . 240
5.4-7 Electronic Tilt Switch Setup Procedure. . . . 241
5.4-8 Check the Rotation Bearing for Axial Wear . . . 243
**5.5 Deutz Diesel Engines . . . 244**
5.5-1 Replace the Engine Oil and Filter . . . 244
5.5-2 Replace the Fuel Filter . . . 245
5.5-3 Replace the Air Filter. . . . 245
5.5-4 Check the Engine Belt . . . 245
5.5-5 Check the Oil Cooler (Deutz D2011 only) . . . 245
5.5-6 Retrieve Engine Fault Codes - Deutz TD2.9L . . . 246
5.5-7 Deutz TD2.9L Fault Codes . . . 247
5.5-8 Deutz TCD2.2 Diagnoses and Error Codes . . . 267
**5.6 Kubota WG2503 Dual Fuel Engine . . . 278**
5.6-1 Engine Parameter Display (KAntrak 1700) . . . 278
5.6-2 Diagnostic Trouble Codes . . . 279
5.6-3 Diagnostic Trouble Codes . . . 280
5.6-4 Diagnostic Trouble Codes . . . 281
5.6-5 Diagnostic Trouble Codes . . . 282
5.6-6 Diagnostic Trouble Codes . . . 283
5.6-7 ECU Pin Reference Chart - Kubota WG2503 . . . 284
5.6-8 Fuse Box - Kubota WG2503 . . . 285
5.6-9 MAP Sensor - Kubota WG2503. . . . 286
5.6-10 IAT Sensor - Kubota WG2503 . . . 286
5.6-11 ECT - Kubota WG2503 . . . 287
5.6-12 TPS & Engine Speed - Kubota WG2503 . . . 287
5.6-13 Fuel Temperature Sensor - Kubota WG2503. . . . 288
5.6-14 Oil Pressure Sensor - Kubota WG2503. . . . 288
**5.7 Hydraulic Tank . . . 289**
5.7-1 Hydraulic Oil Replacement . . . 289
5.7-2 Hydraulic Filter Replacement . . . 289
**5.8 Manifold and Hydraulic Pumps. . . . 290**
5.8-1 Hydraulic Brake Pressure Adjustment . . . 290
5.8-2 Hydraulic Standby Pressure Adjustment. . . . 291
5.8-3 Hydraulic High Pressure Adjustment . . . 292
5.8-4 Hydraulic System Relief Valve Adjustment . . . 293
5.8-5 Turret Rotate Relief Valve Adjustment . . . 294
5.8-6 Platform Level Relief Valve Adjustment. . . . 294
5.8-7 Fly Boom Relief Valve Adjustment. . . . 295
5.8-8 Test Charge Pump Pressure on Drive Pump. . . . 295
5.8-9 Test Forward Drive Pressure on Drive Pump . . . 296
5.8-10 Test Reverse Drive Pressure on Drive Pump . . . 296
**5.9 Axles. . . . 297**
5.9-1 Change the Oil in the Axles . . . 297

*5.9-2 Check the Oil Level in the Torque Hubs . . . . . 297*
*5.9-3 Change the Oil in the Torque Hubs . . . . . 297*
*5.9-4 Check the Oil Level in the Axle Gearbox . . . . . 298*
*5.9-5 Change the Oil in the Axle Gearbox . . . . . 298*
*5.9-6 Oscillating Cylinder Bolt Replacement . . . . . 299*
*5.9-7 Oscillating Cylinder Replacement . . . . . 299*
*5.9-8 Bleed the Oscillating Axle Cylinders . . . . . 301*
*5.9-9 Test the Oscillating Axle Cylinders . . . . . 301*
*5.9-10 Pin Brake Adjustments . . . . . 302*
*5.9-11 Brake Inspection . . . . . 303*
**5.10 Grease Points . . . . . 304**
*5.10-1 Grease the Turret Ring Gear . . . . . 304*
*5.10-2 Grease the Turret Swing Drive . . . . . 304*
*5.10-3 Grease the Axles . . . . . 305*
*5.10-4 Grease the Drive Shaft . . . . . 305*
**5.11 Options . . . . . 306**
*5.11-1 Load Sensing System - CE . . . . . 306*
*5.11-2 Verify Proper Operation of the Load Sensing System . . . . . 307*
*5.11-3 Calibration of the Load Sensing System (with the “Teach In” Handset) . . . . . 308*
*5.11-4 Generator Troubleshooting . . . . . 309*
*5.11-5 Generator Frequency/Voltage Check & Adjustment . . . . . 310*

# Section 1 – Scheduled Maintenance

## 1.1 Read and Heed

Skyjack is continuously improving and expanding product features on its equipment, therefore, specifications and dimensions are subject to change without notice.

### 1.1-1 Mobile Elevating Work Platform (MEWP) Definition

A MEWP is a mobile device that has a positionable platform supported from ground level by a structure.

### 1.1-2 Purpose of Equipment

The Skyjack Telescopic Series MEWPs are designed to transport and raise personnel, tools and materials to overhead work areas.

### 1.1-3 Use of Equipment

The MEWP is a highly maneuverable, mobile work station. Work platform elevation and elevated driving must only be done on a firm, level surface.

### 1.1-4 Manual

**Operating Manual:** The operating manual is considered a fundamental part of the MEWP. It is a very important way to communicate necessary safety information to users and operators. A complete and legible copy of this manual must be kept in the provided weather-resistant storage compartment on the MEWP at all times.

**Service & Maintenance:** The purpose of this is to provide the customer with the servicing and maintenance procedures essential for the promotion of proper machine operation for its intended purpose.

All information in this manual should be read and understood before any attempt is made to service the machine. The updated copy of the manuals are found on the company's website: www.skyjack.com.

### 1.1-5 Service Policy and Warranty

Skyjack warrants each new product to be free of defective parts and workmanship for the first 2 years or 3000 hours, whichever occurs first. Any defective part will be replaced or repaired by your local Skyjack dealer at no charge for parts or labor. In addition, all products have a 5 year structural warranty. Contact the Skyjack Service Department for warranty statement extensions or exclusions.

### 1.1-6 Operator Safety Reminders, Warnings and Precautions

Operator safety is Skyjack's priority. The operator should comply with all applicable safety-related reminders, warnings and precautions found in the Operating Manual. They should be read and understood completely before operating the MEWP.

# 1.2 Maintenance and Service

## 1.2-1 Maintenance Inspection Schedule

The actual operating environment of the work platform governs the use of the maintenance schedule. The inspection points covered in 1.5 Pre-Delivery/ Maintenance Inspection Checklist, indicates the areas of the MEWP to be maintained or inspected and at what intervals the maintenance and inspections are to be performed.

## 1.2-2 Owner's Annual Inspection Record

It is the responsibility of the owner to arrange quarterly and annual inspections of the MEWP. 1.4 Owner's Annual Inspection Record. Owner's Annual Inspection Record is to be used for recording the date of the inspection, owner's name, and the person responsible for the inspection of the work platform.

## 1.2-3 Replacement Parts

Use only original replacement parts. Parts such as batteries, wheels, railings, etc. with weight and dimensions different from original parts will affect stability of the MEWP and must not be used without manufacturer's consent.

All replacement tires must be of the same size and load rating as originally supplied tires; to maintain safety and stability of MEWP.

Consult Skyjack's Service Department for optional tire specifications and installation.

**⚠ WARNING**

**Any unit that is damaged or not operating properly must be immediately tagged and removed from service until proper repairs are completed.**

## 1.2-4 Maintenance and Service Safety Tips

Maintenance and repair should only be performed by personnel who are trained and qualified to service this MEWP.

All maintenance and service procedures should be performed in a well lighted and well ventilated area.

Anyone operating or servicing this MEWP must read and completely understand all operating instructions and safety hazards in this manual and operating manual.

All tools, supports and lifting equipment to be used must be of a proper rated load and in good working order before any service work begins. The work area should be kept clean and free of debris to avoid contaminating components while servicing.

Keep personnel clear of components, systems or unsupported loads that may move unexpectedly during maintenance procedures.

All service personnel must be familiar with employer and governmental regulations that apply to servicing this type of equipment.

Keep sparks and flames away from all flammable or combustible materials.

Properly dispose of all waste material such as lubricants, rags, and old parts according to the relative law provisions obtaining in the country.

Before attempting any repair work, disconnect the main power conenctors.

Preventive maintenance is the easiest and least expensive type of maintenance.

## 1.2-5 Hydraulic System & Component Maintenance and Repair

The following points should be kept in mind when working on the hydraulic system or any component:

**⚠ WARNING**

**Escaping fluid from a hydraulic pressure leak can damage your eyes, penetrate the skin and cause serious injury. Use proper personal protection at all times.**

1. Any structure has limits of strength and durability. To prevent failure of structural parts of hydraulic components, relief valves which limit pressure to safe operating values are included in the hydraulic circuits.
2. Tolerance of working parts in the hydraulic system is very close. Even small amounts of dirt or foreign materials in the system can cause wear or damage to components, as well as general faulty operation of the hydraulic system. Every precaution must be taken to assure absolute cleanliness of the hydraulic oil.
3. Whenever there is a hydraulic system failure which gives reason to believe that there are metal particles or foreign materials in the system, drain and flush the entire system and replace the filter cartridges. A complete change of oil must be performed under these circumstances.
4. Whenever the hydraulic system is drained, check the magnets in the hydraulic reservoir for metal particles. If metal particles are present, flush the entire system and add a new change of oil. The presence of metal particles also may indicate the possibility of imminent component failure. A very small amount of fine particles is normal.
5. All containers and funnels used in handling hydraulic oil must be absolutely clean. Use a funnel when necessary for filling the hydraulic oil reservoir, and fill the reservoir only through the filter opening. The use of cloth to strain the oil should be avoided to prevent lint from getting into the system.
6. When removing any hydraulic component, be sure to cap and tag all hydraulic lines involved. Also, plug the ports of the removed components.
7. All hydraulic components must be disassembled in spotlessly clean surroundings. During disassembly, pay particular attention to the identification of parts to assure proper reassembly. Clean all metal parts in a clean mineral oil solvent. Be sure to thoroughly clean all internal passages. After the parts have been dried thoroughly, lay them on a clean, lint-free surface for inspection.
8. Replace all O-rings and seals when overhauling any component. Lubricate all parts with clean hydraulic oil before reassembly. Use small amounts of petroleum jelly to hold O-rings in place during assembly.
9. Be sure to replace any lost hydraulic oil when completing the installation of the repaired component, and bleed any air from the system when required.
10. All hydraulic connections must be kept tight. A loose connection in a pressure line will permit the oil to leak out or air to be drawn into the system. Air in the system can cause damage to the components and noisy or erratic system operation.

## 1.2-6 Hydraulic Maintenance Hints

Three simple maintenance procedures have the greatest effect on the hydraulic system performance, efficiency and life. Yet, the very simplicity of them may be the reason they are so often overlooked. They are simply these:

1. Change filters annually. The filters will need to be changed more often depending on the operating conditions. Dirty, dusty, high moisture environments may cause the hydraulic system to be contaminated more quickly.
2. Maintain a sufficient quantity of clean hydraulic oil of the proper type and viscosity in the hydraulic reservoir.
3. Keep all connections tight.

## 1.2-7 Railing Maintenance and Repair

Skyjack MEWPs have been designed to ensure compliance with the relevant design standards applicable for that particular unit at the time of manufacture. As such, any repairs made to the guardrail or basket structure need to ensure this compliance is not compromised and must return the structure to its original condition.

Any damage must be repaired by returning the railing assembly to its undamaged state. Damage includes, but is not limited to, the items listed below:

- bent/deformed guardrail sections
- cracks or broken welds in railing sections
- damaged pin connections
- missing pins or broken pin lanyards
- missing railing hardware
- loose or missing parts
- additional holes in guardrail sections other than those approved by Skyjack

Additionally, the guardrails must be properly positioned and secured, and the entry gate must be in good working order.

The strength of the guardrail system, and therefore its ability to provide fall protection for platform occupants, depends upon the design being secure and undamaged.

Skyjack railings are designed for modular replacement, and Skyjack recommends replacement of any damaged railing section. Skyjack-approved replacement parts will meet this requirement.

# 1.3 Scheduled Maintenance

This section contains the maintenance and inspection schedule that is to be performed.

References are made to the procedures in Section 5 which contain detailed step-by-step instructions for checks and replacements.

## 1.3-1 Service Bulletins

Before performing any scheduled maintenance inspection procedure, refer to the service bulletins found on our website www.skyjack.com for updates related to service and maintenance of this MEWP.

## 1.3-2 Maintenance and Inspection

Death or injury can result if the MEWP is not kept in good working order. Inspection and maintenance should be performed by competent personnel who are trained and qualified on maintenance of this MEWP.

**⚠ WARNING**

**Failure to perform each procedure as presented and scheduled may cause death, serious injury or substantial damage.**

**NOTE**

*Preventive maintenance is the easiest and least expensive type of maintenance.*

- Unless otherwise specified, perform each maintenance procedure with the MEWP in the following configuration:
  - MEWP parked on a flat and level surface
  - Disconnect the batteries by turning the main power disconnect switch to the off position ◯ .
- Repair any damaged or malfunction components before operating the MEWP.
- Keep records of all inspections.

## 1.3-3 Maintenance Instructions

This manual consists of four schedules to be done for maintainance on a MEWP. Inspection schedule frequency is shown below:

| **Issue or Symptom** | | |
|---|---|---|
| PDI/Frequent | **B** | Perform PDI prior to each delivery, or Frequent Inspection every 3 months or 150 hours. |
| Annual | **B + C** | Perform Scheduled Maintenance Inspections every year. |
| Additional | ***** | Perform at time sensitive maintenance intervals. |

- Make copies of the maintenance and inspection checklist to be used for each inspection.
- Check the schedule on the checklist for the type of inspection to be performed.
- Place a check in the appropriate box after each inspection procedure is completed.
- Use the maintenance and inspection checklist and step-by-step procedures in Section 1 – Scheduled Maintenance to perform these inspections.
- If any inspection receives a fail, tag and remove the MEWP from service.
- If any MEWP component(s) has been repaired, an inspection must be performed again before removing the tag. Place a check in the repair column.

| **Legend** | |
|---|---|
| Pass | **P** |
| Fail | **F** |
| Repaired | **R** |
| Not applicable | **N/A** |

# **Table** 1.4 Owner's Annual Inspection Record

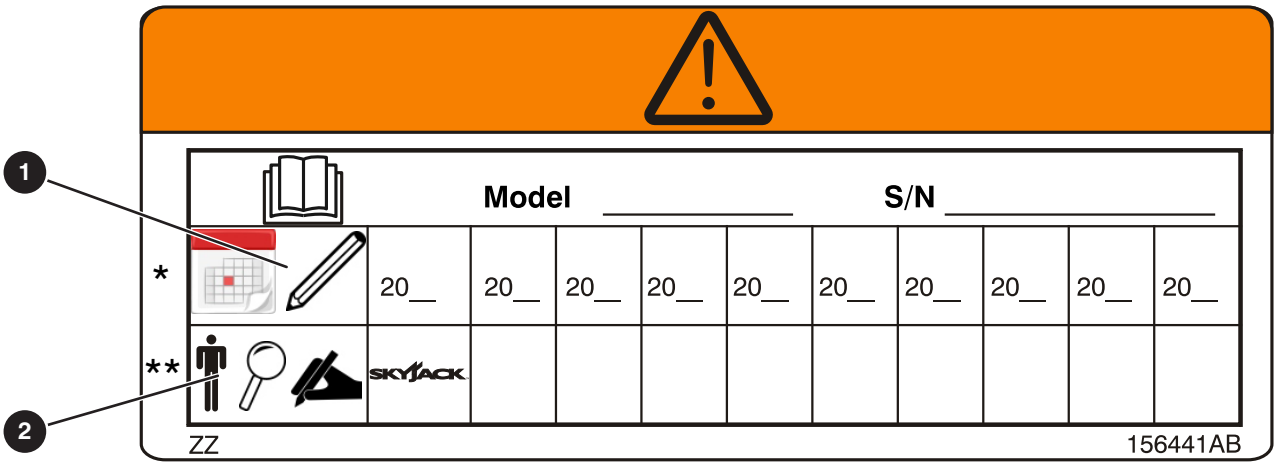



***Figure 01*** *This decal is located on the control compartment cowling. It must be completed after an annual inspection has been completed. Do not use the MEWP if an inspection has not been recorded in the last 13 months.*

| Description | Label Pictorial | Description | Label Pictorial |
|---|---|---|---|
| 1 **Inspection Date** | | 2 **Inspector Signature** | |

# 1.5 Pre-Delivery/Maintenance Inspection Checklist

## Pre-Delivery/Maintenance Inspection Checklist

**Articulating Booms & Telescopic Booms**

Serial Number: _____ Product Owner: _____

Model: _____

Hourmeter Reading: _____ Product User: _____

Date/Time: _____

**Use this form for Pre-Delivery Inspections (PDI) prior to each rental, lease or sale, or as a guide for all Frequent Inspections and Annual Inspections. Refer to the applicable Operating and Service Manuals for inspection details (eg. Visual Inspection and Function Tests, Torque Specs., Engine Oil, Chain Inspection Intervals, etc.).**

| Inspection Type Schedule | |
|---|---|
| ❑ PDI | B |
| ❑ Frequent | B |
| ❑ Annual | B + C |
| ❑ Additional | * |

**B** - Perform PDI prior to each delivery or Frequent Inspections every 3 months or 150 hrs. For further details refer to Service & Operating Manuals.

**C** - Perform Scheduled Maintenance Inspections every year. For further details refer to Service & Operating Manuals.

***** - Perform time sensitive maintenance intervals. Refer to the Service Manual.

**P** - Pass
**F** - Fail
**R** - Repaired
**N/A** - Not Applicable

Check the appropriate box as each item is inspected. If an item is found to be not acceptable, please describe the issue in the comments box provided.

| Items for Inspection | | P | F | R | N/A |
|---|---|---|---|---|---|
| Refer to skyjack.com for the latest service bulletins. | B, C | | | | |
| Ensure Annual Inspection has been completed within the last 13 months. | B | | | | |
| **Manuals & Required Documents**. In storage box, in good condition & legible. | B | | | | |
| **Labels**. In place, secure & legible. | B | | | | |
| **Limit Switches**. Secured & no obstructions or damage. | B | | | | |
| **Main Power Disconnect Switch**. Cables secure & in working order. | B | | | | |
| **Battery**. No damage, tight connections, adequate fluid levels. Clean terminals and cable ends. | B | | | | |
| **Swing Drive Motor**. Tight fittings, hoses & bolts. No damage, missing parts or leaks. | B, C | | | | |
| **Turret Rotation Gear**. No damage or missing parts. | B, C | | | | |
| **Rotary Manifold**. Tight fittings & hoses, & no leaks. | B | | | | |
| **High Pressure Filter**. Secure & no damage or leaks. | B, C | | | | |
| **Hydraulic Pumps**. Tight fittings, hoses & bolts. No damage, missing parts or leaks. | B | | | | |
| **Muffler and Exhaust**. Secure & no damage. | B | | | | |
| **Engine Pivot Tray**. Secure & no damage or missing parts. | B | | | | |
| **Engine Oil**. Level in the "safe" zone. Ensure oil change interval has not been exceeded. | B | | | | |
| **Engine Air Filter**. No damage or missing parts. | B, C | | | | |
| **Engine Fuel Leaks**. No damage or leaks from tank, shutoff valve & hoses and fittings. | B, C | | | | |
| **Engine Fuel Filter**. No damage, missing parts or leaks. | B, C | | | | |
| **Base Control Console**. Switches in neutral position & no damage or missing parts. | B | | | | |
| **Hydraulic Tank**. Filler cap secure & no damage or leaks. | B | | | | |
| **Hydraulic Oil**. Level between min. & max. marks. | *, B | | | | |
| **Hydraulic Filter**. Secure & no damage, missing parts or leaks. | B, C | | | | |
| **Brake & Main Manifolds**. Tight fittings and hoses & no leaks. Tight wire connections. | B, C | | | | |
| **Emergency Power Unit**. Tight fittings and hoses & no leaks. Tight wire connections & no damage or missing parts. | B | | | | |
| **Fuel Tank**. Filler cap is secure & no damage or leaks. | B, C | | | | |

| Items for Inspection | | P | F | R | N/A |
|---|---|---|---|---|---|
| **Fuel Tank Leaks**. Tight fittings and hoses & no damage or leaks. | B | | | | |
| **Base Weldment**. No cracks or deformation. | B | | | | |
| **Turret Transportation Lock**. Unlocked & no damage or missing parts. | B | | | | |
| **Drive Axle**. Secure & no missing parts. Tight fittings and hoses & no leaks. | B, C | | | | |
| **Oscillating Cylinder Assembly**. Secure & no missing parts. Tight fittings and hoses & no leaks. | B, C | | | | |
| **Steer Cylinder Assembly**. Secure & no missing parts. Tight fittings and hoses & no leaks. | B | | | | |
| **Pins & Bushings**. No damage/wear, or loose or missing parts. | B | | | | |
| **Steer Linkage**. No damage/wear or missing parts. | B | | | | |
| **Wheel/Tire Assembly**. Check all tires for damage, wear & proper alignment. Lug nuts torqued as recommended. | B, C | | | | |
| **Platform Assembly**. No damage or missing parts. | B | | | | |
| **Raillings and Gate**. Secure & no damage or missing | B | | | | |
| **Lanyard Attachment Anchorage.** Attachment rings secure & no damage. | B | | | | |
| **Platform Control Console**. Switches in neutral position & secure. No damage or missing parts. | B | | | | |
| **Rotary Actuator**. No damage or missing parts. Tight fittings, hoses and bolts & no leaks. | B | | | | |
| **Jib**. No damage or missing parts. Tight hoses and bolts & no leaks. | B | | | | |
| **Boom**. No damage or missing parts. No deformation or cracks in welds. Tight hoses and bolts & no leaks. | B | | | | |
| **Control Cables and Hoses**. No damage, missing parts, or leaks. | B | | | | |
| **Wire Ropes.** No spring gaps. Ensure inspection interval has not been exceeded. | *, B | | | | |
| **Riser**. Secure & no damage/deformation or missing parts. | B | | | | |
| **Cylinders**. Secure & no damage or leaks. | B | | | | |
| **Wear Pads**. No damage or missing parts. Bolts tightened. | B | | | | |
| **Cable Carrier**. No damage or missing parts. | B | | | | |
| **Special Options and Approved Attachments.** Secure & no damage or missing parts. | | | | | |
| **Function Tests** (Refer to your corresponding serial number's Operating Manual for information on running these tests.) | | ❑ PASS ❑ FAIL | | | |

Comments: _____

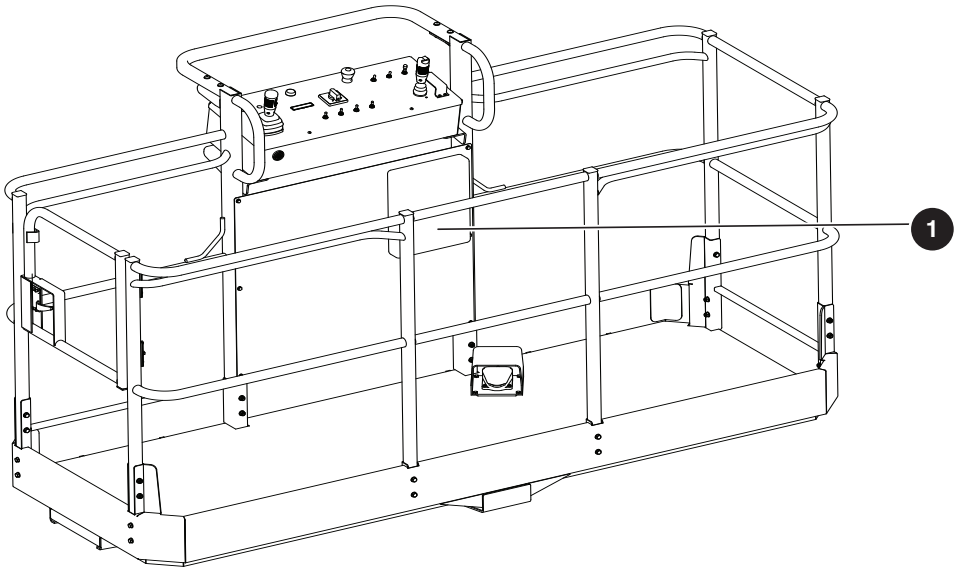
**The undersigned confirms that all areas listed have been inspected, and any and all discrepancies have been brought to the attention of the owner. Furthermore, the undersigned confirms that all discrepancies have been corrected prior to using this machine.**

Owner: _____ / _____ / _____
Print Name Signature Date (DD/MM/YY)

User: _____ / _____ / _____
Print Name Signature Date (DD/MM/YY)

Note: Visit www.skyjack.com for a printable copy of this form.

167834AB




# 1.6 Scheduled Maintenance Inspections

Begin the scheduled maintenance inspections by checking each item in sequence for the conditions listed in this section

**⚠ WARNING**

**To avoid injury, do not operate a MEWP until all malfunctions have been corrected.**

**⚠ WARNING**

**To avoid possible injury, ensure the MEWP power is off during visual and daily maintenance inspections.**

## 1.6-1 Electrical

Maintaining electrical components is essential to the good performance and service life of the MEWP.

Perform a visual inspection around the following areas:

- boom to platform cable harness
- engine compartment electrical panel
- engine wiring harness
- rotary manifold wiring

## 1.6-2 Hydraulic

Maintaining hydraulic components is essential to the good performance and service life of the MEWP.

Perform a visual inspection around the following areas:

- hydraulic tank filter, fittings, hoses, emergency power unit and turret/base surface
- engine compartment fittings, hoses, main pump, filter and turret/base surface
- all hydraulic cylinders
- all hydraulic manifolds
- the underside of the turret
- the underside of the base
- ground area under the MEWP

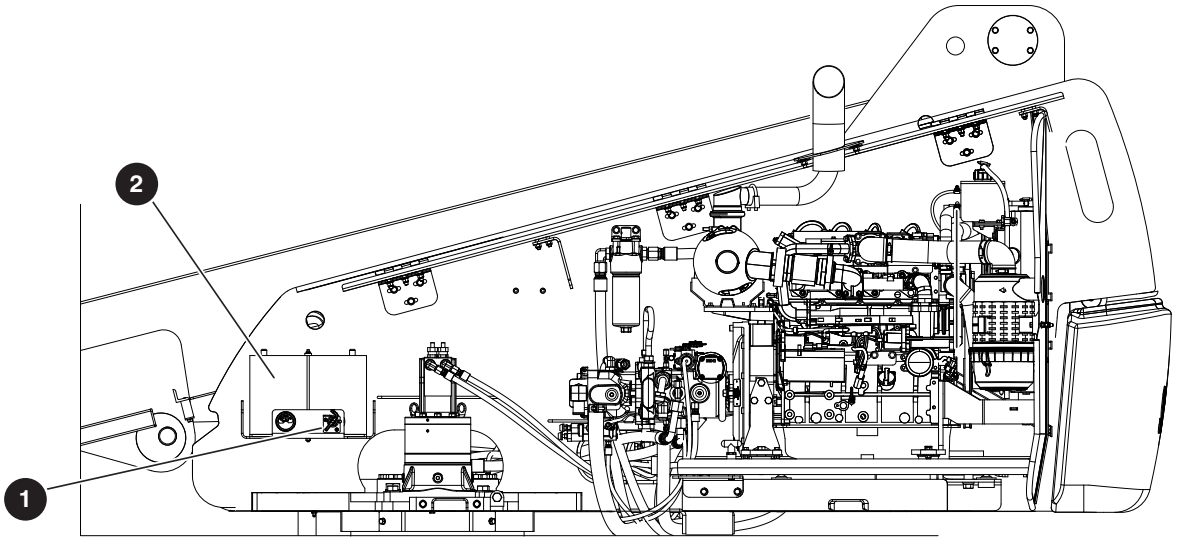
## 1.6-3 Manuals & Required Documents (B)

Ensure a copy of the operating manual and other important documents are enclosed in the manual storage box.

- Check to be sure manual storage box ❶ is present and in good condition.
- Ensure manuals are legible and in good condition.
- Always return manuals to the manual storage box after use.

## 1.6-4 Labels (B)

Refer to the labels section in the Operating Manual and ensure that all labels are in place and are legible.




## 1.6-5 Limit Switches (B)

Detecting limit switch malfunction is essential to the safe MEWP operation. Ensure limit switches are properly secured, there are no signs of visible damage, and movement is not obstructed.

Visually inspect all limit switches located inside the turret and under the cable track. Inspect for the following:

- broken or missing actuator arm
- missing fasteners
- loose wiring

## 1.6-6 Engine Compartment

Ensure all compartment latches are secure and in proper working order.

**1 Main Power Disconnect Switch (B)**

- Turn the main power disconnect switch to the off ◯ position.
- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all cables are secure and the switch is in proper working condition.

**2 Battery (B)**

- Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions.

**⚠ WARNING**

**Explosion hazard. Keep flames and sparks away. Do not smoke near batteries.**

**⚠ WARNING**

**Battery acid is extremely corrosive. Wear proper eye and facial protection as well as appropriate protective clothing. If contact occurs, immediately flush with cold water and seek medical attention.**

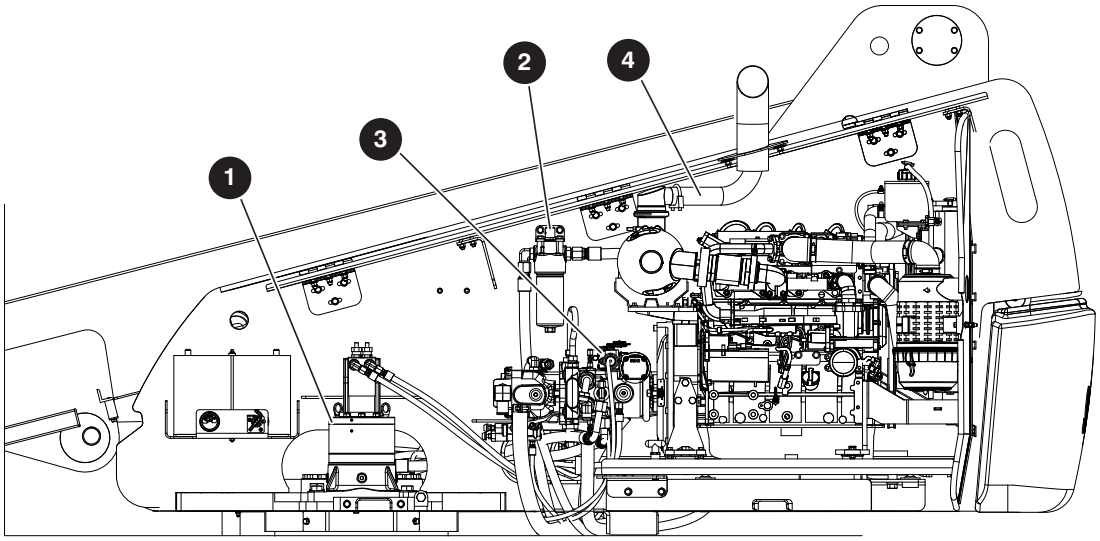
1. Check the battery case for damage.
2. **B - Frequent Inspection**
   - Clean battery terminals and cable ends thoroughly with a terminal cleaning tool or wire brush.
3. Ensure all battery connections are tight.
4. If applicable, check the battery fluid level.

**B - Frequent Inspection**

- If plates are not covered by at least 13 mm (1/2") of solution, add distilled or demineralized water.

**B - Frequent Inspection**

- Replace the battery if it is damaged or incapable of holding a lasting charge.




## ⚠ WARNING

**Use original or manufacturer-approved parts and components for the MEWP.**

### 1 Swing Drive Motor (B,C)

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts are properly tightened.
- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

**C - Annual Inspection**

- For brake/motor oil replacement procedure, refer to 5.4-3 Check the Swing Drive Oil.

### Turret Rotation Gear (B,C)

- Ensure there are no loose or missing parts and there is no visible damage.

**C - Annual Inspection**

- For lube procedure, refer to 5.10 Grease Points.

### 2 High Pressure Filter (B,C)

- Ensure the housing is secure and shows no visible damage or leakage.

**C - Annual Inspection**

- For filter element replacement procedure, refer to 5.4-1 Check and Replace the High Pressure Filter.

### 3 Hydraulic Pumps (B)

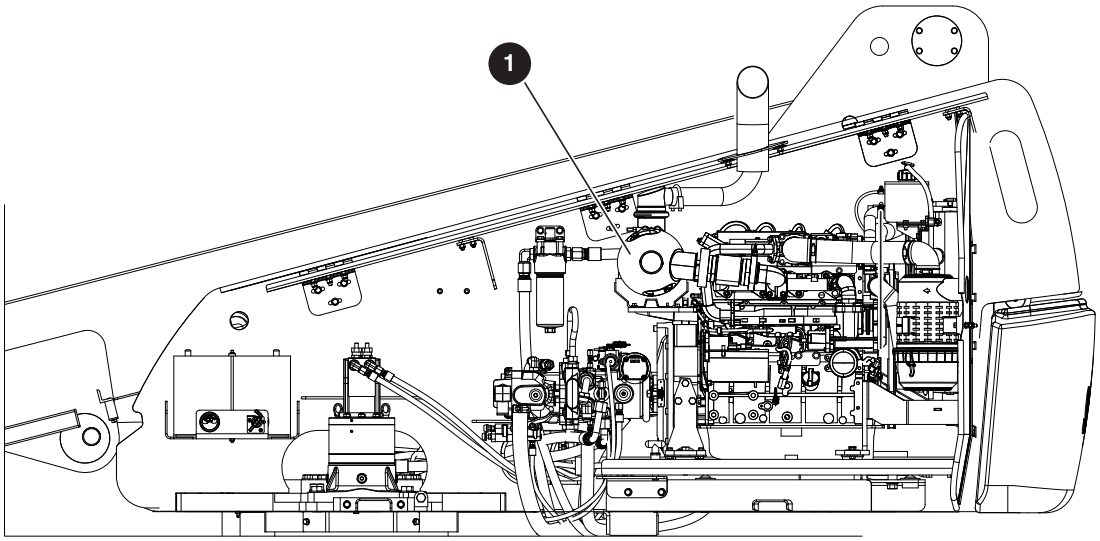
- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts are properly tightened.
- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

### 4 Muffler and Exhaust (B)

- Ensure muffler and exhaust system are properly secured, with no evidence of damage.

### Engine Pivot Tray (B)

- Ensure there are no loose or missing parts and no visible damage to the engine pivot tray. Ensure that each tray-securing bolt is in place.




**Engine Oil Level (B)**

- Maintaining the engine components is essential to good performance and service life of the MEWP.

**⚠ WARNING**

**Beware of hot engine components.**

**Check oil level on dipstick**

- Oil level should be in the “safe” zone. Add oil as needed. Refer to 2.13 Engine Specifications.

**B - Frequent Inspection**

- For recommended oil change, refer to engine manual

**1 Engine Air Filter (B,C)**

- Ensure there are no loose or missing parts and there is no visible damage.

**B - Frequent Inspection**

- For engine air filter maintenance procedure, refer to engine manual.

**C - Annual Inspection**

- For engine air filter replacement procedure, refer to engine manual.

**Engine Fuel Leaks (B,C)**

- Ensure that there no fuel leaks at engine.

**⚠ WARNING**

**Engine fuels are combustible. Inspect the MEWP in an open, well-ventilated area away from heaters, sparks and flames. Always have an tapproved fire extinguisher within easy reach.**

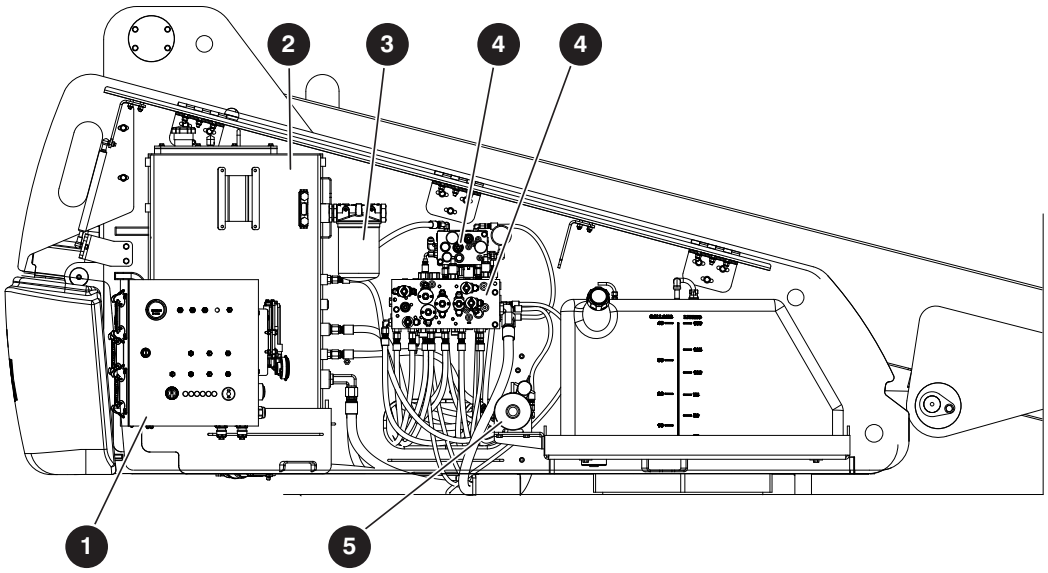
- Ensure shutoff valve, hoses and fittings show no visible damage and no evidence of fuel leakage.

**Engine Fuel Filter (B,C)**

- Ensure there are no loose or missing parts and there is no visible damage.

**C - Annual Inspection**

- For engine fuel filter replacement procedure, refer to engine manual.




## 1.6-7 Control Compartment

- Ensure all compartment latches are secure and in proper working order.

**1 Base Control Console (B)**

- Ensure all switches are returned to their neutral positions.
- Ensure there are no loose or missing parts and there is no visible damage.

**2 Hydraulic Tank (B)**

- Ensure hydraulic filler cap is secure.
- Ensure tank shows no visible damage and no evidence of hydraulic leakage.

**Hydraulic Oil (*,B)**

- Be sure that the boom is in the stowed position, and then visually inspect the sight gauge located on the side of the hydraulic oil tank.
- The hydraulic oil level should be between the minimum and maximum marks on the sight glass. Add oil as needed. Refer to 2.10 Hydraulic Specifications & Gear Oil.

*** - Bi-Annual Inspection**

- For hydraulic oil replacement procedure, refer to 5.7-1 Hydraulic Oil Replacement.

**3 Hydraulic Return Filter (B,C)**

- Ensure filter element is secure.
- Ensure there are no signs of leakage or visible damage.

**C - Annual Inspection**

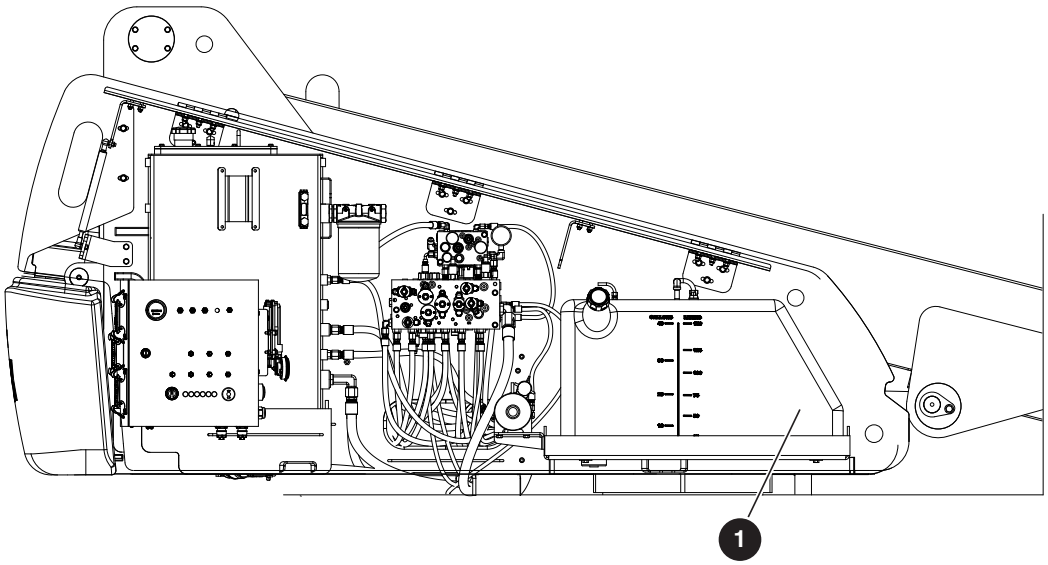
- For hydraulic tank filter replacement procedure, refer to 5.7-2 Hydraulic Filter Replacement.

**4 Brake and Main Manifolds (B,C)**

- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.
- Ensure there are no loose wire connections or missing fasteners.

**5 Emergency Power Unit (B)**

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure there are no loose wire connections or missing fasteners.
- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.




**1 Fuel Tank (B,C)**

## IMPORTANT

**Before using your MEWP ensure there is enough fuel for the expected use.**

- Ensure the fuel filler cap is secure.
- Ensure the tank shows no visible damage and no evidence of fuel leakage.

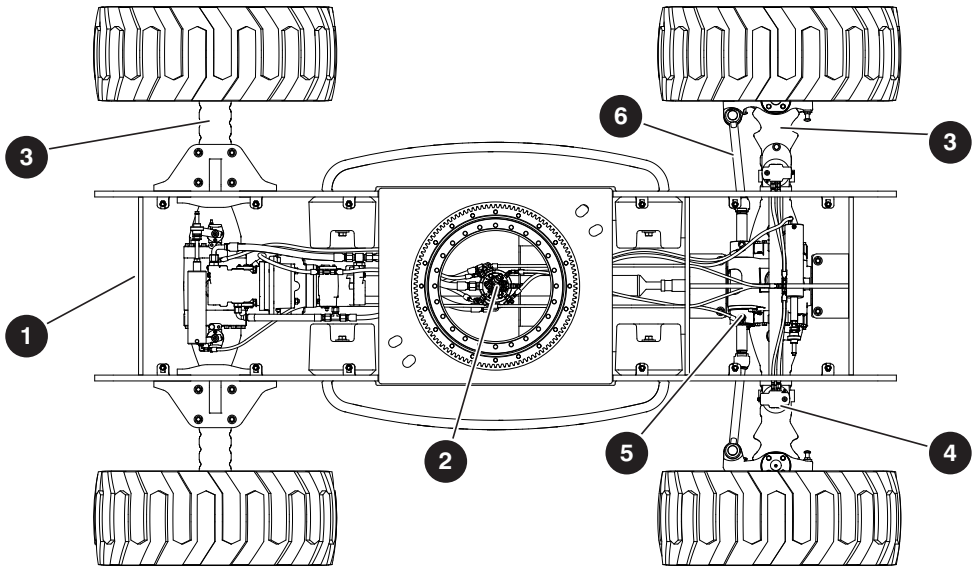
**Fuel Tank Leaks (B)**

- Ensure there no fuel leaks at the tank.

## ⚠ WARNING

**Engine fuels are combustible. Inspect the MEWP in an open, well-ventilated area away from heaters, sparks and flames. Always have an approved fire extinguisher within easy reach.**

- Ensure the fuel tank, shutoff valve, hoses and fittings show no visible damage and no evidence of fuel leakage.




## 1.6-8 Base

**1 Base Weldment (B)**

- Ensure there are no visible cracks in welds or structure and there are no signs of deformation.

**2 Rotary Manifold (B)**

- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

**Turret Transportation Lock (B)**

- Ensure the turret transportation lock is unlocked, there are no loose or missing parts and there is no visible damage.

**3 Axles (B,C)**

- Ensure the axles are properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.
- Check the brakes annually. Refer to procedure 5.9-11 Brake Inspection.

**4 Oscillating Axle Cylinder (B,C)**

- Ensure the oscillating cylinder assembly is properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.
- Visually inspect the heads of the oscillating cylinder mounting bolts to ensure the torque seal is visible and undamaged. If the torque seal has been damaged or is missing, remove and replace the affected bolts. Refer to 5.9-6 Oscillating Cylinder Bolt Replacement.

**NOTE**

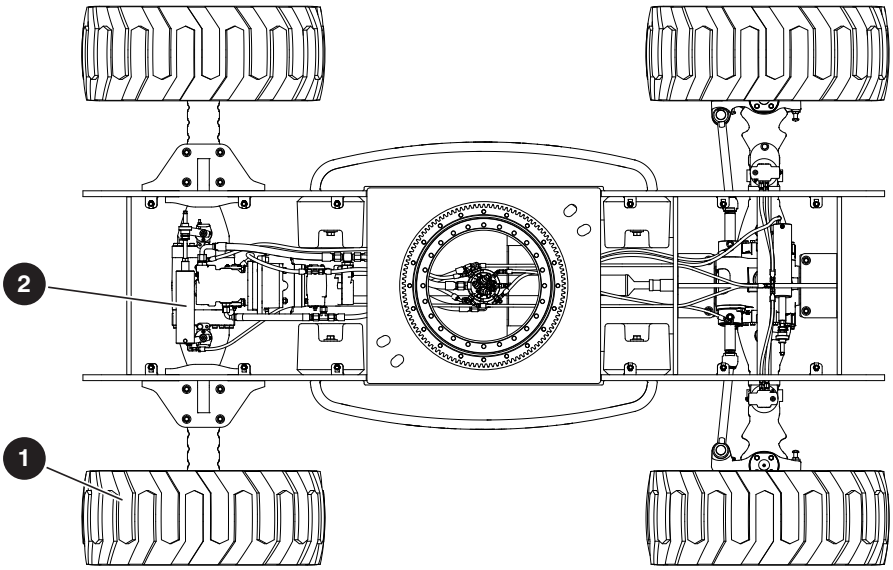
*The oscillating axle is locked when the MEWP is in work mode. Refer to Diagram 2.16 Axle Oscillation Diagrams.*

**5 Steer Cylinder Assembly (B)**

- Ensure the steer cylinder assembly is properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

**6 Steer Linkage (B)**

- Ensure there are no loose or missing parts, tie rod end studs are locked and there is no visible damage.




**1 Wheel/Tire Assembly (B,C)**

- The MEWP is either equipped with air tires or foam-filled tires. Tire and/or wheel failure could result in a MEWP tip over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

**⚠ WARNING**

**An over-inflated tire can explode and may cause death or serious injury.**

- Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.
- Check each wheel for damage and cracked welds.
- Check each lug nut for proper torque to ensure none are loose.

**B - Frequent Inspection**

- For proper torque information, refer to 2.2 MEWP Torque Specifications.

To maximize stability, it is essential to maintain proper pressure in all air-filled tires.

- Check each tire with an air pressure gauge and add air as needed.

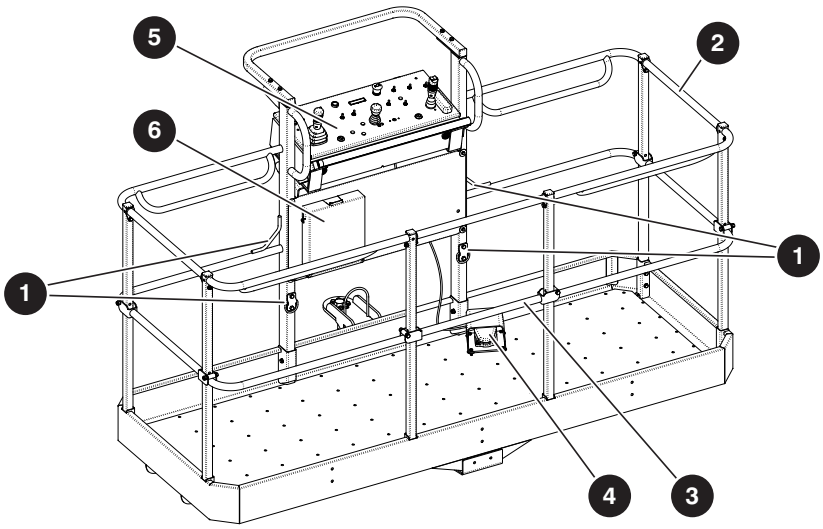
**⚠ WARNING**

**Do not use tires other than those specified for this machine. Do not mix different types of tires. Tires other than those specified can adversely affect stability. Failure to operate with matched, approved tires in good condition can result in death or serious injury. Replace tires with the exact, Skyjack-approved types only.**

Refer to 2.8 Tire Specifications.

**2 Brake Cylinder (B)**

- Ensure there are no loose or missing parts.
- Ensure that all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.




## 1.6-9 Platform Assembly

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all fasteners are securely in place.
- Ensure fall protection anchorage(s) ❶ are secure and there is no visible damage.
- Ensure all railings ❷ are properly positioned and secured.
- Ensure gates/drop bars ❸ are in good working order.
- Ensure the footswitch ❹ is in good working order and has not been modified, disabled or blocked.

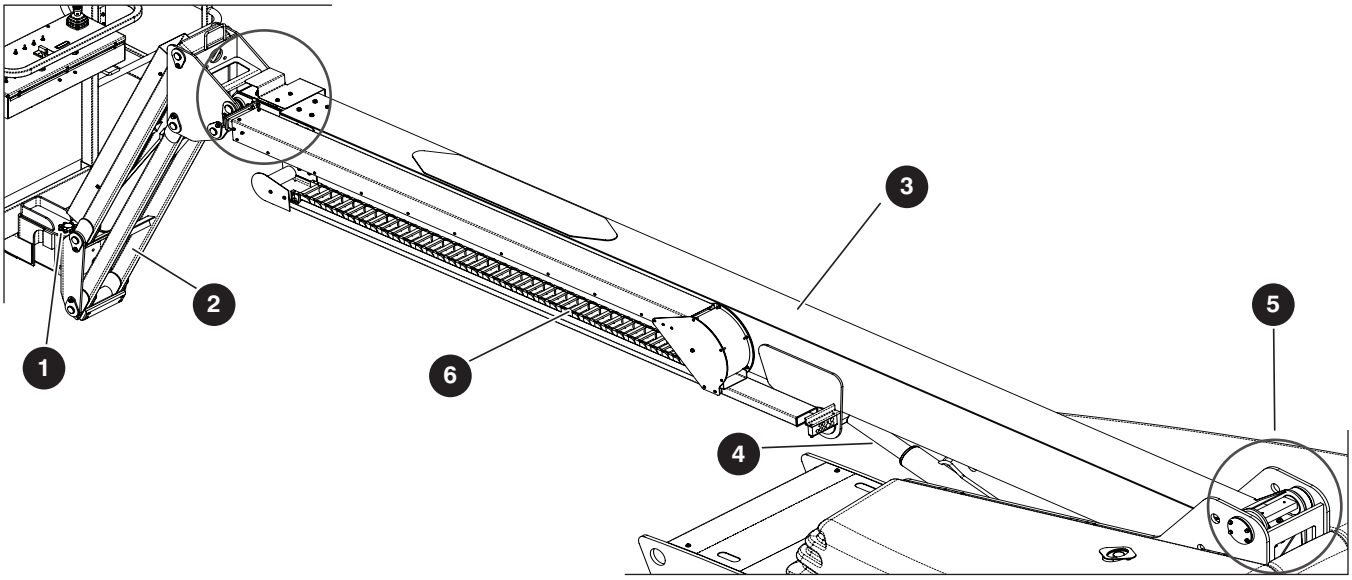
**❺ Platform Control Console (B)**

- Ensure all switches/controllers are returned to neutral.
- Ensure there are no loose or missing parts and there is no visible damage.

**❻ Manuals (B)**

- Ensure a copy of the operating manual and other important documents are enclosed in the manual storage box.

1. Check to be sure manual storage box is present and in good condition.
2. Ensure the manuals are legible and in good condition.
3. Always return manuals to the manual storage box after use.




## 1.6-10 Boom Assembly

**1 Rotatory Actuator (B)**

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

**2 Jib (If Equipped) (B)**

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

**3 Boom (B)**

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure there are no visible cracks in welds or structure and there are no signs of deformation.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

**4 Cylinders (B)**

- Ensure all cylinders are properly secured and there are no loose or missing parts and there is no evidence of damage.
- Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.
- Ensure all pins and bushings are secured and properly tightened

**5 Wear Pads (B)**

- Ensure all bolts are tight, there is no visible damage to the wear pads, and no parts are missing.

**6 Cable Track (B)**

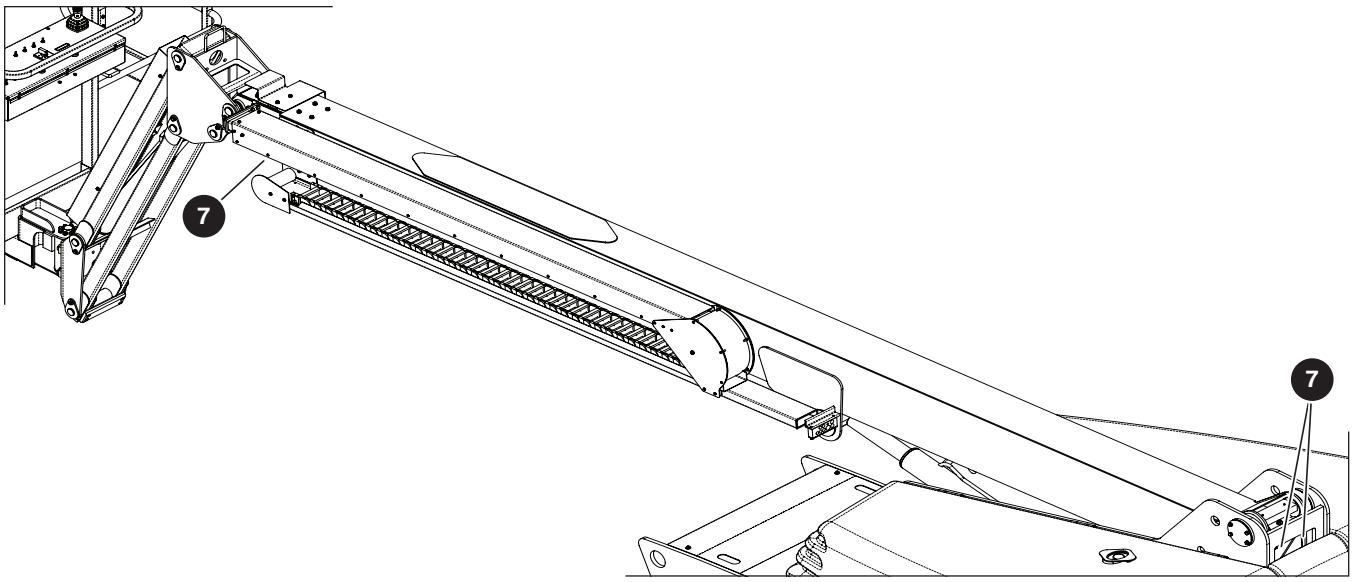
- Ensure there are no loose or missing parts and there is no visible damage.

**Control Cables and Hoses (*,B)**

- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

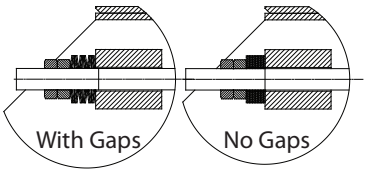
**Cable Carrier (B)**

- Ensure there are no loose or missing parts and there is no visible damage.



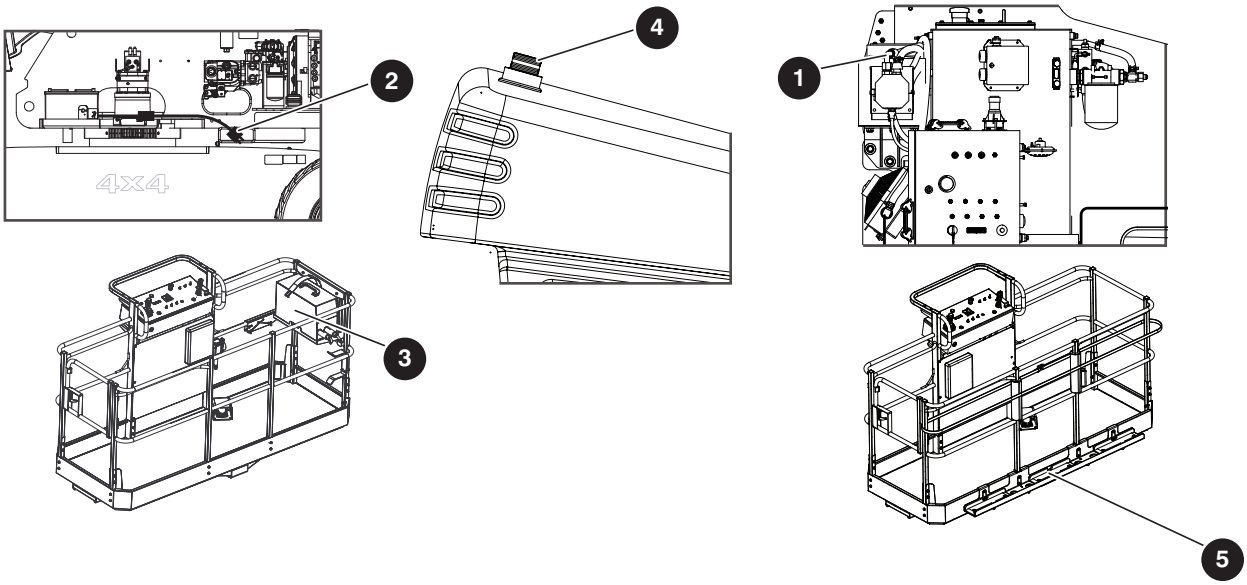

### 7 Wire Ropes (*, B)

- Ensure there are no loose or missing parts with no signs of visible damage.
- Ensure that nuts are not loose and are locked together.
- Ensure that there are no gaps between the springs. For cable tension repair, refer to 5.3-19 Proper Wire Rope Tension.




***Cable Disc Springs***

- Ensure the wire rope inspection interval has not been exceeded. Refer to 5.3-20 Wire Rope Inspection.




## 1.6-11 Optional Equipment/Attachments

**1 Hydraulic Generator (B)**

- Ensure there are no loose or missing parts and no signs of visible damage.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

**2 Battery Warmer/Hydraulic Oil Heater (B)**

- Ensure the battery warmer/hydraulic oil heater cord is properly secured with no signs of visible damage or hydraulic leakage.

**Arctic Weather Package (B)**

- Ensure the battery/hydraulic oil/engine oil heater plug is properly secured with no signs of visible damage or hydraulic leakage.

**3 Welder (B)**

- Ensure the welder and welder tray are properly secured.
- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure there are no loose wires or missing fasteners.

**4 Flashing Amber Light (B)**

- Ensure the lamp is properly secured with no signs of visible damage.

**5 Glazier Tray (B)**

- Ensure the tray, strap, foam supports and cover bumpers are properly secured with no signs of visible damage.

## 1.7 Function Tests

Function tests are designed to discover any malfunctions before a MEWP is put into service. The operator must understand and follow the step-by-step instructions to test all MEWP functions.

**IMPORTANT**

Never use a malfunctioning MEWP. If malfunctions are discovered, the MEWP must be tagged and placed out of service. Repairs to MEWPs may only be made by a qualified service technician.

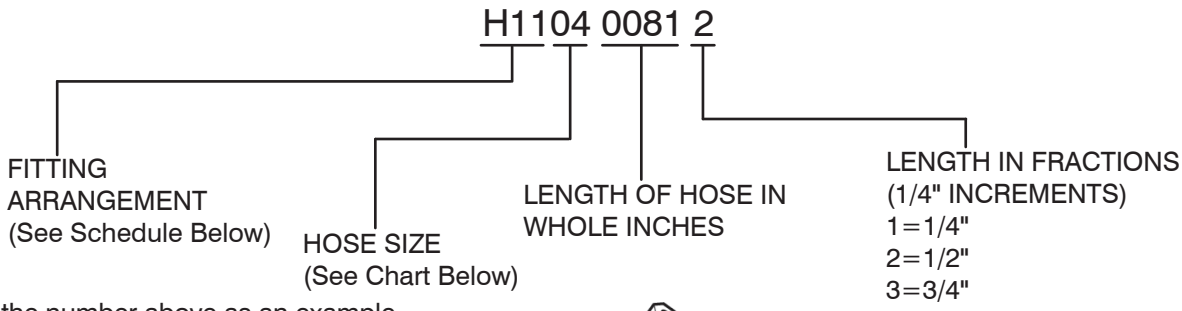
- After repairs are completed, the operator must perform a pre-operation inspection and a series of function tests again before putting the MEWP back into service.
- Prior to performing function tests, be sure to read and understand the “Start Operation” section of the operating manual.
- For function tests that are to be performed, please refer to the operating manual that corresponds to the correct serial number. Found there are detailed instructions for which tests to perform, as well as how to properly and successfully perform them.

**NOTE**

*The all-function motion alarm should sound while operating any boom or drive function.*

# Section 2 – Maintenance Tables and Diagrams

## Table 2.1 Standard Hose Numbering System




Using the number above as an example, H1104 0081 2, this hose requires a 37° JIC female swivel fitting on one end, and a medium length 90° JIC female swivel fitting for the other end. The hose must meet or exceed the S.A.E. 100R13 hose specification, and be a total of 81-1/2" long.

**NOTE**

*Hose ends and hose must be from same manufacturer per S.A.E. J1273 Nov. '91, Sections 3.10 and 4.2. Hose ends and hose must be of the same size i.e. #4 size fittings must be used with #4 size hose.*

| Hose Size Chart | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size | 03 | 04 | 06 | 08 | 10 | 12 | 16 | 20 | 24 | 32 | 40 | 48 | 56 | 64 |
| ID | 3/16" | 1/4" | 3/8" | 1/2" | 5/8" | 3/4" | 1" | 1-1/4" | 1-1/2" | 2" | 2-1/2" | 3" | 3-1/2" | 4" |

| Fitting Arrangement Schedule | | | |
|---|---|---|---|
| **Hose Prefix** | **Hose End Fitting** | **Hose End Fitting** | **S.A.E. Hose Specification** |
| H01 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H02 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R13 |
| H03 | FEMALE, 37° JIC, SWIVEL | 45°, FEMALE, 37° JIC, SWIVEL | 100R17 |
| H04 | FEMALE, 37° JIC, SWIVEL | 45°, FEMALE, 37° JIC, SWIVEL | 100R13 |
| H05 | FEMALE, 37° JIC, SWIVEL | LONG 90°, FEMALE, 37° JIC, SWIVEL | 100R17 |
| H06 | FEMALE, 37° JIC, SWIVEL | SHORT 90°, FEMALE, 37° JIC, SWIVEL | 100R17 |
| H07 | LONG 90°, FEMALE, 37° JIC, SWIVEL | LONG 90°, FEMALE, 37° JIC, SWIVEL | 100R17 |
| H08 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R4 |
| H09 | FEMALE, 37° JIC, SWIVEL | 45°, FEMALE, 37° JIC, SWIVEL | 100R4 |
| H10 | FEMALE, 37° JIC, SWIVEL | MALE PIPE THREAD FITTING | 100R17 |
| H11 | FEMALE, 37° JIC, SWIVEL | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | 100R13 |
| H12 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | SHORT 90°, FEMALE, 37° JIC, SWIVEL | 100R17 |
| H13 | FEMALE, 37° JIC, SWIVEL | REUSABLE MALE PIPE THREAD FITTING | 300 PSI |
| H14 | REUSABLE MALE PIPE THREAD FITTING | NO FITTING | 300 PSI |

| Hose Prefix | Hose End Fitting | Hose End Fitting | S.A.E. Hose Specification |
|---|---|---|---|
| H15 | REUSABLE FEMALE, 37° JIC, SWIVEL | REUSABLE FEMALE, 37° JIC, SWIVEL | 300 PSI |
| H16 | NO FITTING | NO FITTING | 100R4 |
| H17 | NO FITTING | NO FITTING | 300 PSI |
| H18 | REUSABLE, FEMALE, 37° JIC, SWIVEL | NO FITTING | 300 PSI |
| H19 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R13 |
| H20 | FEMALE, SHORT 37° JIC, SWIVEL | SHORT 90°, FEMALE, 37° JIC, SWIVEL | 100R4 |
| H21 | FEMALE, SHORT 37° JIC, SWIVEL | SHORT 90°, FEMALE, 37° JIC, SWIVEL | 100R2AT |
| H22 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R2AT |
| H23 | FEMALE, LONG 37° JIC, SWIVEL | LONG 90°, FEMALE, 37° JIC, SWIVEL | 100R2AT |
| H24 | FEMALE, SHORT 37° JIC, SWIVEL | SHORT 90°, FEMALE, 37° JIC, SWIVEL | 100R13 |
| H25 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R4 |
| H30 | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H31 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H32 | SHORT 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H33 | MEDIUM 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H34 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H35 | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H36 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H37 | SHORT 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R4 |
| H38 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R4 |
| H39 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R4 |
| H40 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H43 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H51 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H52 | SHORT 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H53 | MEDIUM 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H54 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H55 | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H56 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H57 | SHORT 45°, FEMALE, SAE ORFS, SWIVEL | FEMALE, SAE ORFS, SWIVEL | 100R13 |
| H58 | FEMALE, SAE ORFS, SWIVEL | FEMALE, SAE ORFS, SWIVEL | 100R13 |
| H59 | MEDIUM 90°, FEMALE, SAE ORFS, SWIVEL | FEMALE, SAE ORFS, SWIVEL | 100R13 |
| H60 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R17 |
| H61 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H62 | SHORT 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H63 | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H64 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R16 |
| H65 | MEDIUM 67°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R12 |
| H66 | FEMALE, 37° JIC, SWIVEL | NO FITTING | 100R4 |
| H67 | FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R19 |
| H68 | SHORT 45°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R19 |
| H69 | MEDIUM 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R19 |
| H70 | LONG 90°, FEMALE, 37° JIC, SWIVEL | FEMALE, 37° JIC, SWIVEL | 100R19 |
| H71 | LONG 90°, FEMALE, SAE ORFS, SWIVEL | FEMALE, SAE ORFS, SWIVEL | 100R15 |

# **Table** 2.2 MEWP Torque Specifications

| Location | Description | Torque (ft-lb) | Torque (Nm) |
|---|---|---|---|
| **Base** | | | |
| Trunnion Mount | BOLT, Hex head (3.4"-10 x 4.5", Grade 8) | 210 | 285 |
| Rear Axle Mount | BOLT, Hex head (M20 x 2.5 120mm, Grade 10.9) | 210 | 285 |
| Oscillating Axle Mount | BOLT, Hex head (M20 x 2.5 120mm, Grade 10.9) | 280 | 380 |
| Lockout Cylinder Pin | BOLT, Hex head (3/8"-16 x 1", Grade 5) | 23 | 31 |
| Swing Drive Motor | BOLT, Hex head (3/4"-10 x 2", Grade 8) | 280 | 380 |
| Rotation Gear | BOLT, Hex head (3/4"-10 x 5", Grade 8) | 280 | 380 |
| Hydraulic Drive Motor | BOLT, Hex head (M14 x 2 x 30mm, ZP, Grade 8.8) | 80 | 108 |
| Wheel Nut | NUT, Wheel | 247-302 | 335-410 |
| **Turret** | | | |
| Rotation Gear | BOLT, Hex head (3/4"-10 x 5", Grade 8) | 280 | 380 |
| Diesel Fuel Tank Mount | BOLT, Hex head, patch (3/8”-16 x 3/4” G5) | 25 | 34 |
| **Engine** | | | |
| Deutz Engine Mount | BOLT, Hex head (1/2"-13 x 3.75", Grade 5) | 55 | 75 |
| Deutz Coupling | BOLT (M10) | 29-33 | 39-45 |
| Muffler | NUT | 40 | 55 |
| GM Engine Mount | NUT, Hex head (1/2"-13, Grade 5) | 50 | 68 |
| **Cylinders** | | | |
| Lift | ROD NUT | 425 | 576 |
| Extension | ROD NUT | 300 | 407 |
| Master | ROD NUT | 350 | 475 |
| Slave | | | |
| Jib | | | |
| Axle Lockout | | | |
| Lift Cylinder Bracket | BOLT, Hex head (3/4"-10 x 2.5", Grade 5) | 210 | 285 |
| | BOLT, Hex head (3/4"-10 x 2.5", Grade 8) | 200 | 271 |
| Master Cylinder Pin | SCREW, Socket head cap (1/2"-13 x 1", nylon, patch, zinc) | 80 | 108 |
| **Platform** | | | |
| Rotary Mount | BOLT, Hex head patch (3/8"-16 x 7/8", zinc, Grade 8)* | 35 | 48 |
| | BOLT, Hex head (1"-8 x 10.5", zinc, Grade 8) | 480 | 569 |
| Rotary Manifold | BOLT, Hex head (1/2"-13 x 2", Grade 8) | 80 | 108 |
| Rotary Actuator | BOLT, Hex head (3/4"-10 x 3", Grade 8) | 210 | 285 |
| Load Cell | BOLT, Hex head patch (ZP, M16 x 1.5 x 4.5", Grade 8.8)* | 130 | 176 |
| | BOLT, Hex head (1/2"-13 x 2.25", Grade 8) | 80 | 108 |
| **Special Options** | | | |
| Generator Support | BOLT, Hex head (1/2"-13 x 2", Grade 8) | 55 | 75 |
| Oil Cooler Support | BOLT, Hex head (1/2"-13 x 2", Grade 8) | 55 | 75 |

**Loctite 243 on standard bolts may be used in place of patch bolts.* *1372AE*

# **Table** 2.3 Axle Torque Specifications

| Size of Bolt | | Type of Bolt | | | | | |
|---|---|---|---|---|---|---|---|
| | | 8.8 | | 10.9 | | 12.9 | |
| | | Normali Loctite 242 (Nm) | Loctite 270 (Nm) | Normali Loctite 242 (Nm) | Loctite 270 (Nm) | Normali Loctite 242 (Nm) | Loctite 270 (Nm) |
| Coarse Pitch | M6 x 1 | 9.5-10.5 | 10.5-11.5 | 14.3-15.7 | 15.2-16.8 | 16.2-17.8 | 18.1-20.0 |
| | M8 x 1.25 | 23.8-26.2 | 25.6-28.4 | 34.2-37.8 | 36.7-40.5 | 39.0-43.0 | 43.7-48.3 |
| | M10 x 1.5 | 48-53 | 52-58 | 68-75 | 73-81 | 80-88 | 88-97 |
| | M12 x 1.75 | 82-91 | 90-100 | 116-128 | 126-139 | 139-153 | 152-168 |
| | M14 x 2 | 129-143 | 143-158 | 182-202 | 200-221 | 221-244 | 238-263 |
| | M16 x 2 | 200-221 | 219-242 | 283-312 | 309-341 | 337-373 | 371-410 |
| | M18 x 2.5 | 276-305 | 299-331 | 390-431 | 428-473 | 466-515 | 509-562 |
| | M20 x 2.5 | 390-431 | 428-473 | 553-611 | 603-667 | 660-730 | 722-798 |
| | M22 x 2.5 | 523-578 | 575-635 | 746-824 | 817-903 | 893-987 | 974-1076 |
| | M24 x 3 | 675-746 | 732-809 | 950-1050 | 1040-1150 | 1140-1260 | 1240-1370 |
| | M27 x 3 | 998-1103 | 1088-1202 | 1411-1559 | 1539-1701 | 1710-1890 | 1838-2032 |
| | M30 x 3.5 | 1378-1523 | 1473-1628 | 1914-2115 | 2085-2305 | 2280-2520 | 2494-2757 |
| Fine Pitch | M8 x 1 | 25.7-28.3 | 27.5-30.5 | 36.2-39.8 | 40.0-44.0 | 42.8-47.2 | 47.5-52.5 |
| | M10 x 1.25 | 49.4-54.6 | 55.2-61.0 | 71.5-78.5 | 78.0-86.0 | 86.0-94.0 | 93.0-103.0 |
| | M12 x 1.25 | 90-100 | 98-109 | 128-142 | 139-154 | 152-168 | 166-184 |
| | M12 x 1.5 | 86-95 | 94-104 | 120-132 | 133-147 | 143-158 | 159-175 |
| | M14 x 1.5 | 143-158 | 157-173 | 200-222 | 219-242 | 238-263 | 261-289 |
| | M16 x 1.5 | 214-236 | 233-257 | 302-334 | 333-368 | 361-399 | 394-436 |
| | M18 x 1.5 | 312-345 | 342-378 | 442-489 | 485-536 | 527-583 | 580-641 |
| | M20 x 1.5 | 437-483 | 475-525 | 613-677 | 674-745 | 736-814 | 808-893 |
| | M22 x 1.5 | 581-642 | 637-704 | 822-908 | 903-998 | 998-1103 | 1078-1191 |
| | M24 x 2 | 741-819 | 808-893 | 1045-1155 | 1140-1260 | 1235-1365 | 1363-1507 |
| | M27 x 2 | 1083-1197 | 1178-1302 | 1520-1680 | 1672-1848 | 1834-2027 | 2000-2210 |
| | M30 x 2 | 1511-1670 | 1648-1822 | 2138-2363 | 2332-2577 | 2565-2835 | 2788-3082 |

*1373AA*

Note: **1 Nm = 0.7376 ft-lb**

Screw-locking, Sealing and Lubricating Materials

**Loctite 242**

- Anaerobic product apt to prevent the loosening of screws, nuts and plugs. Used for medium-strength locking. Before using it, completely remove any lubricant by using the specific activator.

**Loctite 270**

- Anaerobic product apt to prevent the loosening of screws, nuts and plugs. Used for medium-strength locking. Before using it, completely remove any lubricant by using the specific activator. To remove parts, it may be necessary to heat them at 80˚C approx.

# **Table** 2.4 Torque Specifications for Fasteners (US)

| Size | Torque Type | SAE 2 | | SAE 5 | | SAE 8 | |
|---|---|---|---|---|---|---|---|
| | | Dry | Lubed | Dry | Lubed | Dry | Lubed |
| 4-40 | (in-lb) | (5) | (4) | (8) | (6) | (12) | (9) |
| | Nm | 0.6 | 0.5 | 0.9 | 0.7 | 1.4 | 1.0 |
| 4-48 | (in-lb) | (6) | (5) | (9) | (7) | (13) | (10) |
| | Nm | 0.7 | 0.6 | 1.0 | 0.8 | 1.5 | 1.1 |
| 6-32 | (in-lb) | (10) | (8) | (16) | (12) | (23) | (17) |
| | Nm | 1.1 | 0.9 | 1.8 | 1.4 | 2.6 | 1.9 |
| 6-40 | (in-lb) | (12) | (9) | (18) | (13) | (25) | (19) |
| | Nm | 1.4 | 1.0 | 2.0 | 1.5 | 2.8 | 2.1 |
| 8-32 | (in-lb) | (19) | (14) | (30) | (22) | (41) | (31) |
| | Nm | 2.1 | 1.6 | 3.4 | 2.5 | 4.6 | 3.5 |
| 8-36 | (in-lb) | (20) | (15) | (31) | (23) | (43) | (32) |
| | Nm | 2.3 | 1.7 | 3.5 | 2.6 | 4.9 | 3.6 |
| 10-24 | (in-lb) | (27) | (21) | (43) | (32) | (60) | (45) |
| | Nm | 3.1 | 2.4 | 4.9 | 3.6 | 6.8 | 5.1 |
| 10-32 | (in-lb) | (31) | (23) | (49) | (36) | (68) | (51) |
| | Nm | 3.5 | 2.6 | 5.5 | 4.1 | 7.7 | 5.8 |
| 1/4-20 | (in-lb) ft-lb | (66) | (50) | 8 | (75) | 12 | 9 |
| | Nm | 7.5 | 5.6 | 11 | 8.5 | 16 | 12 |
| 1/4-28 | (in-lb) ft-lb | (76) | (56) | 10 | (86) | 14 | 10 |
| | Nm | 8.6 | 6.3 | 14 | 9.7 | 19 | 14 |
| 5/16-18 | ft-lb | 11 | 8 | 17 | 13 | 25 | 18 |
| | Nm | 15 | 11 | 23 | 18 | 34 | 24 |
| 5/16-24 | ft-lb | 12 | 9 | 19 | 14 | 25 | 20 |
| | Nm | 16 | 12 | 26 | 19 | 34 | 27 |
| 3/8-16 | ft-lb | 20 | 15 | 30 | 23 | 45 | 35 |
| | Nm | 27 | 20 | 41 | 31 | 61 | 47 |
| 3/8-24 | ft-lb | 23 | 17 | 35 | 25 | 50 | 35 |
| | Nm | 31 | 23 | 47 | 34 | 68 | 47 |
| 7/16-14 | ft-lb | 32 | 24 | 50 | 35 | 70 | 55 |
| | Nm | 43 | 33 | 68 | 47 | 95 | 75 |
| 7/16-20 | ft-lb | 36 | 27 | 55 | 40 | 80 | 60 |
| | Nm | 49 | 37 | 75 | 54 | 108 | 81 |
| 1/2-13 | ft-lb | 50 | 35 | 75 | 55 | 110 | 80 |
| | Nm | 68 | 47 | 102 | 75 | 149 | 108 |
| 1/2-20 | ft-lb | 55 | 40 | 90 | 65 | 120 | 90 |
| | Nm | 75 | 54 | 122 | 88 | 163 | 122 |

| Size | Torque Type | SAE 2 | | SAE 5 | | SAE 8 | |
|---|---|---|---|---|---|---|---|
| | | Dry | Lubed | Dry | Lubed | Dry | Lubed |
| 9/16-12 | ft-lb | 70 | 55 | 110 | 80 | 150 | 110 |
| | Nm | 95 | 75 | 149 | 108 | 203 | 149 |
| 9/16-18 | ft-lb | 80 | 60 | 120 | 90 | 170 | 130 |
| | Nm | 108 | 81 | 163 | 122 | 230 | 176 |
| 5/8-11 | ft-lb | 100 | 75 | 150 | 110 | 220 | 170 |
| | Nm | 136 | 102 | 203 | 149 | 298 | 230 |
| 5/8-18 | ft-lb | 110 | 85 | 180 | 130 | 240 | 180 |
| | Nm | 149 | 115 | 244 | 176 | 325 | 244 |
| 3/4-10 | ft-lb | 175 | 130 | 260 | 200 | 380 | 280 |
| | Nm | 237 | 176 | 353 | 271 | 515 | 380 |
| 3/4-16 | ft-lb | 200 | 150 | 300 | 220 | 420 | 320 |
| | Nm | 271 | 203 | 407 | 298 | 569 | 434 |
| 7/8-9 | ft-lb | 170 | 125 | 430 | 320 | 600 | 460 |
| | Nm | 230 | 169 | 583 | 434 | 813 | 624 |
| 7/8-14 | ft-lb | 180 | 140 | 470 | 360 | 660 | 500 |
| | Nm | 244 | 190 | 637 | 488 | 895 | 678 |
| 1-8 | ft-lb | 250 | 190 | 640 | 480 | 900 | 680 |
| | Nm | 339 | 258 | 868 | 651 | 1220 | 922 |
| 1-12 | ft-lb | 270 | 210 | 710 | 530 | 1000 | 740 |
| | Nm | 366 | 285 | 963 | 719 | 1356 | 1003 |
| 1-14 | ft-lb | 280 | 210 | 730 | 540 | 1020 | 760 |
| | Nm | 380 | 285 | 990 | 732 | 1383 | 1030 |
| 1 1/8-7 | ft-lb | 350 | 270 | 800 | 600 | 1280 | 960 |
| | Nm | 475 | 366 | 1085 | 813 | 1735 | 1302 |
| 1 1/8-12 | ft-lb | 400 | 300 | 880 | 660 | 1440 | 1080 |
| | Nm | 542 | 407 | 1193 | 895 | 1952 | 1464 |
| 1 1/4-7 | ft-lb | 500 | 380 | 1120 | 840 | 1820 | 1360 |
| | Nm | 678 | 515 | 1519 | 1139 | 2468 | 1844 |
| 1 1/4-12 | ft-lb | 550 | 420 | 1240 | 920 | 2000 | 1500 |
| | Nm | 746 | 569 | 1681 | 1247 | 2712 | 2034 |
| 1 3/8-6 | ft-lb | 670 | 490 | 1460 | 1100 | 2380 | 1780 |
| | Nm | 908 | 664 | 1979 | 1491 | 3227 | 2413 |
| 1 3/8-12 | ft-lb | 750 | 560 | 1680 | 1260 | 2720 | 2040 |
| | Nm | 1017 | 759 | 2278 | 1708 | 3688 | 2766 |
| 1 1/2-6 | ft-lb | 870 | 650 | 1940 | 1460 | 3160 | 2360 |
| | Nm | 1180 | 881 | 2630 | 1979 | 4284 | 3200 |
| 1 1/2-12 | ft-lb | 980 | 730 | 2200 | 1640 | 3560 | 2660 |
| | Nm | 1329 | 990 | 2983 | 2224 | 4827 | 3606 |

**NOTE:** *Lubed includes lubricants such as lubrizing, oil, grease, and some uncured thread lockers. Refer to the specific thread locker manufacturer's instructions for specific torque adjustments.* *1374AB*

# **Table** 2.5 Torque Specifications for Fasteners (Metric)

| Size | Torque Type | 8.8 | | 10.9 | |
|---|---|---|---|---|---|
| | | Dry | Lubed | Dry | Lubed |
| M5 x 0.80 | (in-lb) | (54) | (41) | (78) | (59) |
| | Nm | 6.1 | 4.6 | 8.8 | 6.7 |
| M6 x 1.00 | (in-lb) | (92) | (69) | (133) | (99) |
| | Nm | 10.4 | 7.8 | 15 | 11.2 |
| M7 x 1.00 | (in-lb) | (156) | (116) | (222) | (167) |
| | Nm | 17.6 | 13.1 | 25.1 | 18.9 |
| M8 x 1.25 | (in-lb) | (225) | (169) | (333) | (242) |
| | Nm | 25.4 | 19.1 | 37.6 | 27.3 |
| M10 x 1.50 | ft-lb | 37 | 28 | 53 | 40 |
| | Nm | 50 | 38 | 72 | 54 |
| M12 x 1.75 | ft-lb | 65 | 49 | 93 | 69 |
| | Nm | 88 | 66 | 126 | 94 |
| M14 x 2.00 | ft-lb | 104 | 78 | 148 | 111 |
| | Nm | 141 | 106 | 201 | 150 |
| M16 x 2.00 | ft-lb | 161 | 121 | 230 | 172 |
| | Nm | 218 | 164 | 312 | 233 |
| M18 x 2.50 | ft-lb | 222 | 167 | 318 | 238 |
| | Nm | 301 | 226 | 431 | 323 |
| M20 x 2.50 | ft-lb | 314 | 235 | 449 | 337 |
| | Nm | 426 | 319 | 609 | 457 |
| M22 x 2.50 | ft-lb | 428 | 321 | 613 | 460 |
| | Nm | 580 | 435 | 831 | 624 |
| M24 x 3.00 | ft-lb | 543 | 407 | 776 | 582 |
| | Nm | 736 | 552 | 1052 | 789 |
| M27 x 3.00 | ft-lb | 796 | 597 | 1139 | 854 |
| | Nm | 1079 | 809 | 1544 | 1158 |
| M30 x 3.50 | ft-lb | 1079 | 809 | 1543 | 1158 |
| | Nm | 1463 | 1097 | 2092 | 1570 |
| M33 x 3.50 | ft-lb | 1468 | 1101 | 2101 | 1576 |
| | Nm | 1990 | 1493 | 2849 | 2137 |
| M36 x 4.00 | ft-lb | 1886 | 1415 | 2699 | 2024 |
| | Nm | 2557 | 1918 | 3659 | 2744 |

**NOTE:** *Lubed includes lubricants such as lubrizing, oil, grease, and some uncured thread lockers. Refer to the specific thread locker manufacturer's instructions for specific torque adjustments.*

*1375AC*

# **Table** 2.6 Torque Specifications for Hydraulic Couplings & Hoses

| Hydraulic Coupling Torque Chart<br>O-Ring Port Connectors | | | | |
|---|---|---|---|---|
| SAE Size | Steel Ports | | Non-ferrous Ports | |
| | ft-lb | Nm | ft-lb | Nm |
| 4 | 14-16 | 20-22 | 9-10 | 12-13 |
| 6 | 24-26 | 33-35 | 15-16 | 20-21 |
| 8 | 50-60 | 68-78 | 30-36 | 41-47 |
| 10 | 72-80 | 98-110 | 43-48 | 60-66 |
| 12 | 125-135 | 170-183 | 75-81 | 102-110 |
| 16 | 200-220 | 270-300 | 120-132 | 162-180 |
| 20 | 210-280 | 285-380 | 126-168 | 171-228 |
| 24 | 270-360 | 370-490 | 162-216 | 222-294 |
| 32 | - | - | - | - |

| Hose End Torque Chart<br>for JIC | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size | | Steel | | | | Brass | | | |
| Dash | Frac. | ft-lb | | Nm | | ft-lb | | Nm | |
| | | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| -4 | 1/4" | 10 | 11 | 13 | 15 | 5 | 6 | 6.75 | 9 |
| -6 | 3/8" | 17 | 19 | 23 | 26 | 12 | 15 | 17 | 20 |
| -8 | 1/2" | 34 | 38 | 47 | 52 | 20 | 24 | 27.66 | 33 |
| -10 | 5/8" | 50 | 56 | 69 | 76 | 34 | 40 | 46.33 | 55 |
| -12 | 3/4" | 70 | 78 | 96 | 106 | 53 | 60 | 72.33 | 82 |
| -16 | 1" | 94 | 104 | 127 | 141 | 74 | 82 | 100.5 | 111 |
| -20 | 1 1/4" | 124 | 138 | 169 | 188 | 75 | 83 | 101.5 | 113 |
| -24 | 1 1/2 | 156 | 173 | 212 | 235 | 79 | 87 | 107 | 118 |
| -32 | 2" | 219 | 243 | 296 | 329 | 158 | 175 | 214 | 237 |

| Hose End Torque Chart<br>for Flat-Face O-Ring Seal (Steel) | | | | | |
|---|---|---|---|---|---|
| Size | | Torque Specification | | | |
| Dash | Frac. | ft-lb | | Nm | |
| | | Min. | Max. | Min. | Max. |
| -4 | 1/4" | 10 | 12 | 14 | 16 |
| -6 | 3/8" | 18 | 20 | 24 | 27 |
| -8 | 1/2" | 32 | 40 | 43 | 54 |
| -10 | 5/8" | 46 | 56 | 60 | 75 |
| -12 | 3/4" | 65 | 80 | 90 | 110 |
| -14 | 1" | 65 | 80 | 90 | 110 |
| -16 | 1 1/4" | 92 | 105 | 125 | 240 |
| -20 | 1 1/2 | 125 | 140 | 170 | 190 |
| -24 | 2" | 150 | 180 | 200 | 245 |

*1276AA*

# **Table** 2.7 Axle Maintenance Intervals

| Operation | Component | Frequency | Lubricants |
|---|---|---|---|
| **Check Levels** | Differential | monthly | SAE 80W-90 LS API GL-5, or with LS additive for the differential. Additive is not required for planetaries or gear boxes. |
| | Planetary reduction | every 200 hours | |
| | Gear box | monthly | |
| **Oil Change** | Differential | every 800 hours * | SAE 80W-90 LS API GL-5, or with LS additive for the differential. Additive is not required for planetaries or gear boxes. |
| | Planetary reduction | every 1000 hours * | |
| | Self-locking differential gear | every 700 hours * & | |
| | Gear box | once at 50 hours after every 1000 hours | |
| **Tighten** | Gear box screws/bolts | every 200 hours | N/A |
| | Wheel Nuts | every 200 hours | |

| Operation | Member | Conditions | Frequency | Lubricants |
|---|---|---|---|---|
| **Grease** | Articulations | Normal work | monthly | MOLIKOTE |
| | | Awkward work | weekly | |

| Gear Oil | Gear Box | Central Housing | Hubs (each) |
|---|---|---|---|
| **Maximum Oil Capacities** | 2.8 L (2.9 qt) | 7.4 L (7.8 qt) front<br>7.5 L (7.9 qt) rear | 0.8 L (0.8 qt) |

***Initially after 100 working hours***
***&** when it starts sounding noisy*

*2238AB-1*

# **Table** 2.8 Tire Specifications

| | Air Tires | | Foam Tires | |
|---|---|---|---|---|
| **Tire Size** | 15" x 19.5” | 38.1 cm x 49.5 cm | 15” x 19.5” | 38.1 cm x 49.5 cm |
| **Pressure** | 95 psi | 655 kPA | Foam Filled | Foam Filled |
| **Tire Ply Rating** | 16 | 16 | 16 | 16 |
| **Wheel Nuts Torque** | 290 ft-lb | 393.2 Nm | 290 ft-lb | 393.2 Nm |

*1377AA*

## ⚠ WARNING

**Do not use tires other than those specified for this machine. Do not mix different types of tires. Tires other than those specified can adversely affect stability. Failure to operate with matched, approved tires in good condition can result in death or serious injury. Replace tires with the exact, Skyjack-approved types only.**

## ⚠ IMPORTANT

**For proper function of each axle differential, all four wheels must have same tire size installed at all times. Failure to comply with this requirement will reduce the life of the differentials and reduce overall mobility of the MEWP.**

# **Table** 2.9 Floor Loading Pressure

| Model | | | Total Aerial Platform Load | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Wheel | | LCP | | OUP | |
| | lb | kg | lb | kg | psi | kPa | psf | kPa |
| SJ61T ANSI | 24,300 | 11 022 | 12,690 | 5756 | 138 | 951 | 266 | 13 |
| SJ66T ANSI | 27,500 | 12 473 | 14,573 | 6610 | 145 | 1,001 | 304 | 14 |
| SJ66T CE | 29,403 | 13 337 | 14,580 | 6613 | 171 | 1,178 | 325 | 16 |
| SJ66T AS | 28,903 | 13 110 | 14,573 | 6610 | 171 | 1,178 | 325 | 16 |

*1378AA*

- Gross MEWP Weight = Weight + platform capacity
- LCP – Locally Concentrated Pressure – is a measure of how hard the MEWP tire tread presses on the area in direct contact with the floor. The floor covering (tile, carpet, etc.) must be able to withstand more than the indicated values above.
- OUP – Overall Uniform Pressure – is a measure of the average load the MEWP imparts on the whole surface projected directly underneath it. The structure of the operating surface (beams, etc.) must be able to withstand more than the indicated values above.
- The welder option will add approximately 350 lb (158.8 kg) to total MEWP weight and 175 lb (79.4 kg) to max. wheel load.

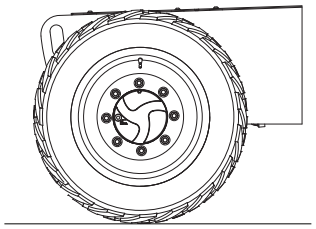
NOTE:

The LCP or OUP that an individual surface can withstand varies from structure to structure and is generally determined by the engineer or architect for that particular structure.

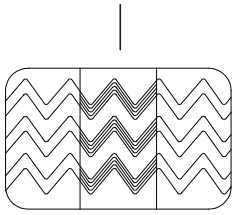
**Locally Concentrated Pressure (LCP)**

Foot Print Area identified by test

$$LCP = \frac{\text{Wheel Load}}{\text{Foot Print Area}}$$



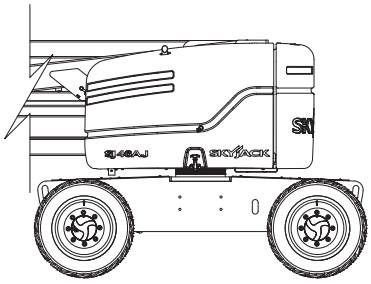
*Foot Print Area*

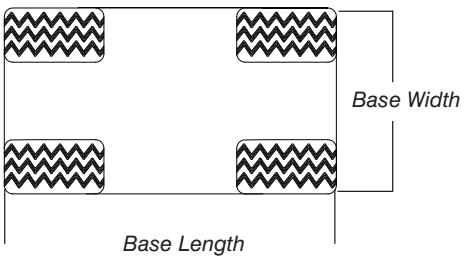


**Overall Uniform Pressure (OUP)**

Base Area = Length x Width

$$OUP = \frac{\text{Weight of MEWP + Capacity}}{\text{Base Area}}$$





# **Table** 2.10 Hydraulic Specifications & Gear Oil

| Description | | US | Metric |
|---|---|---|---|
| **Pumps** | | | |
| Drive Pump | Displacement - 2600 rpm | 2.8 CIR 30gpm @2600 rpm | 46 CC |
| | Drive Pump Pressure | 4350 psi | 300 bar |
| | Charge Pump Displacement | 0.85 CIR | 13.9 CC |
| | Charge Pump Pressure | 313 psi | 22 bar |
| System Pump | Displacement - Static | 1.83 CIR / 20.6 gpm @ 2600 rpm | 30 CC |
| | System Pump Pressure | 3000 psi | 207 bar |
| **Filters** | | | |
| Charge Pump Filter | Max. Operating Pressure | 25 psi | 9 µm/35 |
| High Pressure Filter | Max. Operating Pressure | 87 psi | 10 µm/25 |
| Return Filter | Max. Operating Pressure | 25 psi | 10 µm/60 |
| **Motors** | | | |
| Drive Motor | Displacement - Low | 0.88 CIR / 15.2 gpm @ 2600 rpm | 14.4 CC |
| | Displacement - High | 2.32 CIR / 22.8 gpm @ 2600 rpm | 38 CC |
| Swing Motor | Motor Displacement | 4 CIR / 39.4 gpm @ 2600 rpm | 65.56 CC |
| | Maximum Swing Pressure | 1400 psi | 96 bar |
| **Cylinders** | | | |
| Extension Cylinder | Bore | 2.5 in | 6.9 cm |
| | Rod Diameter | 2.5 in | 6.3 cm |
| | Stroke | 167 in | 4.45 m |
| | Maximum Boom Pressure | 3000 psi | 207 bar |
| Lift Cylinder | Bore | 6 in. | 15.24 cm |
| | Rod Diameter | 3 in. | 7.6 cm |
| | Stroke | 48.28 in | 1.12 m |
| | Maximum Lift Pressure | 3000 psi | 207 bar |
| Steering Cylinder | Differential Area | 3.07 in | 7.8 cm |
| | Steering Cylinder Stroke | 4.32 in | 10.9 cm |
| | Maximum Steering Pressure | 2175 psi | 150 bar |
| **Hydraulic & Gear Oils** | | | |
| Hydraulic Oil Cooler Option | 100°F to 115°F (38°C to 45°C) | Oil cooler option recommended | |
| Standard Hydraulic Oil | -15°F to 100°F (-26°C to 38°C) | Shell Tellus T46, Petro-Canada Hydrex MV46 | |
| Arctic Hydraulic Oil | -40°F to 100°F (-40°C to 38°C) | Esso/Mobil UNIVIS HVI 26, Petro-Canada Hydrex Extreme | |
| Biodegradable Hydraulic Oil | -20°F to 90°F (-29°C to 32°C) | Shell Naturelle HF-E 46 | |
| Hydraulic Tank Capacity | | 61 gal (223.3 L) | |
| Standard Gear Oil | -20°F to 115°F (-29°C to 45°C) | SAE 80W-90 API GL-5 | |
| Arctic Gear Oil | -40°F to 115°F (-40°C to 45°C) | Duratran XL Synthetic Oil | |
| Gear Oil Capacity | | 10 gal (38 L) | |

**For other component specifications, refer to the hydraulic schematic.* *1379AB*

# **Table** 2.11 Specifications and Features - Dimensional Data

| | SJ61T ANSI/CSA | | SJ66T ANSI/CSA | | SJ66T CE | SJ66T AS |
|---|---|---|---|---|---|---|
| **Height & Reach** | | | | | | |
| Working Height | 67' 8" | 20.62 m | 72' 3" | 22.02 m | 22.19 m | 22.19 m |
| Platform Elevated Height | 61' 8" | 18.80 m | 66' 3" | 20.19 m | 20.19 m | 20.19 m |
| Horizontal Reach - Maximum | 51' 3" | 15.62 m | 57' 1-1/4" | 17.38 m | 17.38 m | 17.38 m |
| Horizontal Reach at Max Height | 13' 1/4" | 3.97 m | 16' 1 in | 4.90 m | 4.90 m | 4.90 m |
| Tailswing | 52-1/2" | 1.33 m | 52-1/2" | 1.33 m | 1.33 m | 1.33 m |
| **Platform** | | | | | | |
| Platform Size | 36" x 72"<br>36" x 96" | 0.91 x 1.83 m<br>0.91 x 2.44 m | 36 x 72"<br>36 x 96" | 0.91 x 1.83 m<br>0.91 x 2.44 m | 0.91 x 1.83 m<br>0.91 x 2.44 m | 0.91 x 1.83 m<br>0.91 x 2.44 m |
| Platform Rotation | 170° | 170° | 175° | 175° | 175° | 175° |
| Platform Height - Stowed | 18-3/4" | 0.57 m | 10-3/4" | 0.27 m | 0.27 m | 0.27 m |
| Platform Height - Overall | 52-3/4" | 1.34 m | 52-3/4" | 1.34 m | 1.34 m | 1.34 m |
| Railing Height - Platform | 43-1/2" | 1.09 m | 43-1/2" | 1.10 m | 1.11 m | 1.11 m |
| **Dimensional Data** | | | | | | |
| Height - Stowed | 8' 6" | 2.59 m | 8' 6" | 2.59 m | 2.59 m | 2.59 m |
| Length - Stowed | 30' 3-3/4" | 9.24 m | 34' 1-1/2" | 10.40 m | 10.40 m | 10.40 m |
| Width - Outside of Wheels | 8' | 2.44 m | 8' | 2.44 m | 2.44 m | 2.44 m |
| Wheelbase | 8' | 2.44 m | 8' | 2.44 m | 2.44 m | 2.44 m |
| Ground Clearance - Chassis | 17" | 0.43 m | 17" | 0.43 m | 0.43 m | 0.43 m |
| Ground Clearance - Rear Axle | 14-1/4" | 0.36 m | 14-1/4" | 0.36 m | 0.36 m | 0.36 m |
| Axle Oscillation | 1.7° | 1.7° | 1.7° | 3.7° | 1.7° | 1.7° |
| Turning Radius - Inside | 6' 4" | 1.93 m | 6' 4" | 1.93 m | 1.93 m | 1.93 m |
| Turning Radius - Outside | 16' 7" | 5.0 m | 16' 7" | 5.05 m | 5.05 m | 5.05 m |
| Turning Angle | 45° | 45° | 45° | 45° | 45° | 45° |
| Turret Rotation | 360° | 360° | 360° | 360° | 360° | 360° |
| **Lift Capacity** | | | | | | |
| Lift Capacity - to Max Gradeability | 500 lb | 227 kg | 500 lb | 227 kg | 227 kg | 227 kg |
| **Jib** | | | | | | |
| Jib Length | N/A | N/A | 63" | 1.60 m | 1.60 m | 1.60 m |
| Travel - Down | N/A | N/A | 63° | 63° | 63° | 63° |
| Travel - Up | N/A | N/A | 61° | 61° | 61° | 61° |
| **Weight** | | | | | | |
| Weight with Air Tires - No Options | 23,500 lb | 10 650 kg | 26,700 lb | 12 100 kg | N/A | N/A |
| Weight with Foam Tires - No Options | 25,000 lbs | 11 340 kg | 28,200 lb | 12 790 kg | 12 800 kg | 12 800 kg |
| **Electrical** | | | | | | |
| System Voltage | 12 volt DC | | 12 volt DC | | 12 volt DC | 12 volt DC |
| Battery Type | Lead / Acid | | Lead / Acid | | Lead / Acid | Lead / Acid |

*1380AA*

# **Table** 2.12 Specifications and Features - Performance & Speeds

| | SJ61T ANSI/CSA | | SJ66T ANSI/CSA | | SJ66T CE | SJ66T AS |
|---|---|---|---|---|---|---|
| Gradeability - Maximum | 50% | | 50% | | 50% | 50% |
| Drive Speed - Stowed/Low Torque | 4.5 mph | 7.2 km/h | 4.5 mph | 7.2 km/h | 7.2 km/h | 7.2 km/h |
| Drive Speed - Stowed/High Torque | 1.5 mph | 2.4 km/h | 1.5 mph | 2.4 km/h | 2.4 km/h | 2.4 km/h |
| Drive Speed - Elevated | 0.5 mph | 0.8 km/h | 0.5 mph | 0.8 km/h | 0.8 km/h | 0.8 km/h |
| Turret Rotation | 90-110 seconds | | 90-110 seconds | | 160 - 180 seconds | 160 - 180 seconds |
| Platform Rotation | 5-9 seconds | | 5-9 seconds | | 7 - 15 seconds | 7 - 15 seconds |
| Main Boom Elevation - Up | 50-56 seconds | | 50-56 seconds | | 76 - 84 seconds | 76 - 84 seconds |
| Main Boom Elevation - Down | 20-56 seconds | | 50-56 seconds | | 76 - 84 seconds | 76 - 84 seconds |
| Fly Boom Extend | 62-68 seconds | | 62-68 seconds | | 50 - 70 seconds | 50 - 70 seconds |
| Fly Boom Retract | 37-43 seconds | | 37-43 seconds | | 40 - 50 seconds | 40 - 50 seconds |
| Jib Elevation - Up | N/A | | 18-28 seconds | | 25 - 45 seconds | 25 - 45 seconds |
| Jib Elevation - Down | N/A | | 10-16 seconds | | 16 - 20 seconds | 16 - 20 seconds |

*1381AB*

# **Table** 2.13 Engine Specifications

| | | | SJ61T & SJ66T |
|---|---|---|---|
| **Deutz TD2.9L** | RPM Settings | | 900 Low / 1600 / 2600 High |
| | Horsepower @ 2600 rpm (intermittent) | | 55.4 kW / 75 hp |
| | Fuel Type | | Diesel |
| | Fuel Tank Capacity | | 47 gal (170.3 L) |
| | Standard Oil Factory Fill | 0°F to 115°F (-18°C to 45°C) | SAE 15W-40 API CF/CG/CH-6 |
| | Cold Lube Oil Option | -20°F to 90°F (-29°C to 32°C) | SAE 0W-30 API CF/CG/CH-6 |
| | Arctic Lube Oil Option | -40°F to 115°F (-40°C to 45°C) | SAE 0W-40 API CF/CG/CH-6 |
| | Standard & Arctic Coolant | -40°F to 115°F (-40°C to 45°C) | Delo 50/50 Extended Life Coolant |
| | Coolant Capacity | | 3.0 gal (11.4 L) |
| | Lube Oil Sump Capacity | | 2.64 gal (10.0 L) |
| **Deutz TCD2.2** | RPM Settings | | 1200 Low / 1600 / 2600 High |
| | Horsepower @ 2600 rpm (intermittent) | | 55.4 kW / 75 hp |
| | Fuel Type | | Diesel |
| | Fuel Tank Capacity | | 47 gal (170.3 L) |
| | Standard Oil Factory Fill | 0°F to 115°F (-18°C to 45°C) | SAE 15W-40 API CF/CG/CH-6 |
| | Standard Coolant | -40°F to 115°F (-40°C to 45°C) | Delo 50/50 Extended Life Coolant |
| | Coolant Capacity | | 3.0 gal (11.4 L) |
| | Lube Oil Sump Capacity | | 2.11 gal (8.0 L) |
| **Deutz D2011** | RPM Settings | | 1600 Low / 2100 / 2675 High |
| | Horsepower @ 2600 rpm (intermittent) | | 48 kW / 65 hp |
| | Fuel Type | | Diesel |
| | Fuel Tank Capacity | | 47 gal (170.3 L) |
| | Standard Oil Factory Fill | 0°F to 115°F (-18°C to 45°C) | SAE 15W-40 API CF/CG/CH-6 |
| | Cold Lube Oil Option | -20°F to 90°F (-29°C to 32°C) | SAE 0W-30 API CF/CG/CH-6 |
| | Arctic Lube Oil Option | -40°F to 115°F (-40°C to 45°C) | SAE 0W-40 API CF/CG/CH-6 |
| | Lube Oil Sump Capacity | | 2.64 gal (10.0 L) |
| **Perkins 2.2TA** | RPM Settings | | 1700 / 2675 High |
| | Horsepower @ 6800 rpm (intermittent) | | 50 kW / 67 hp |
| | Fuel Type | | Diesel |
| | Fuel Tank Capacity | | 30 gal (114 L) |
| | Standard Oil Factory Fill | 0°F to 115°F (- 18°C to 45°C) | SAE 15W-40 API CF/CG/CH-6 |
| | Cold Lube Oil Option | -20°F to 90°F (- 29°C to 32°C) | SAE 10W-30 API CF/CG/CH-6 |
| | Arctic Lube Oil Option | -40°F to 115°F (-40°C to 45°C) | SAE 0W-40 API CF/CG/CH-6 |
| | Standard & Arctic Coolant | -40°F to 115°F (-40°C to 45°C) | Delo 50/50 Extended Life Coolant |
| | Coolant Capacity | | 1.0 gal (4.2 L) |
| | Lube Oil Sump Capacity | | 2.8 gal (10.6 L) |

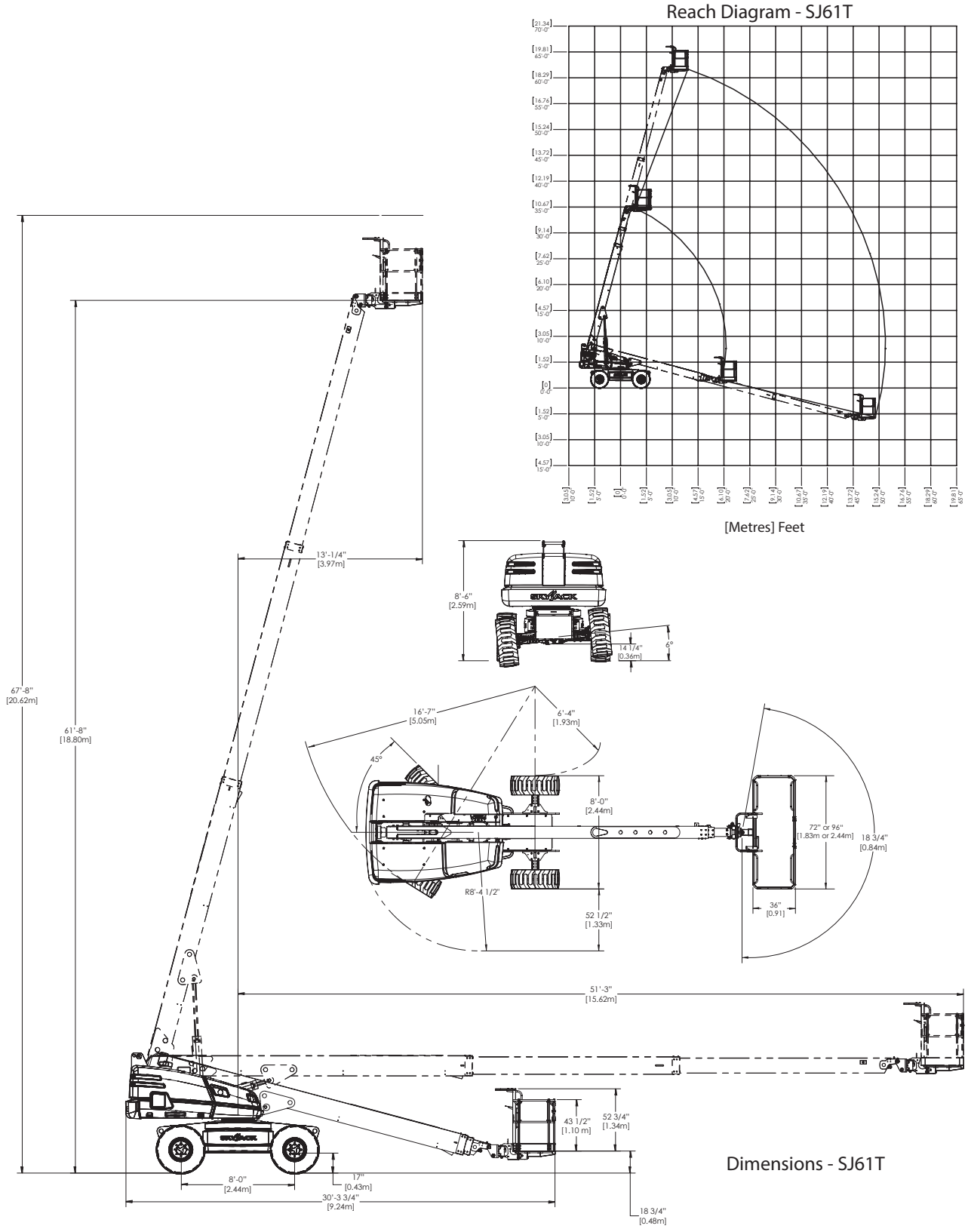
*1382AB-1*

# **Table** 2.13 Engine Specifications

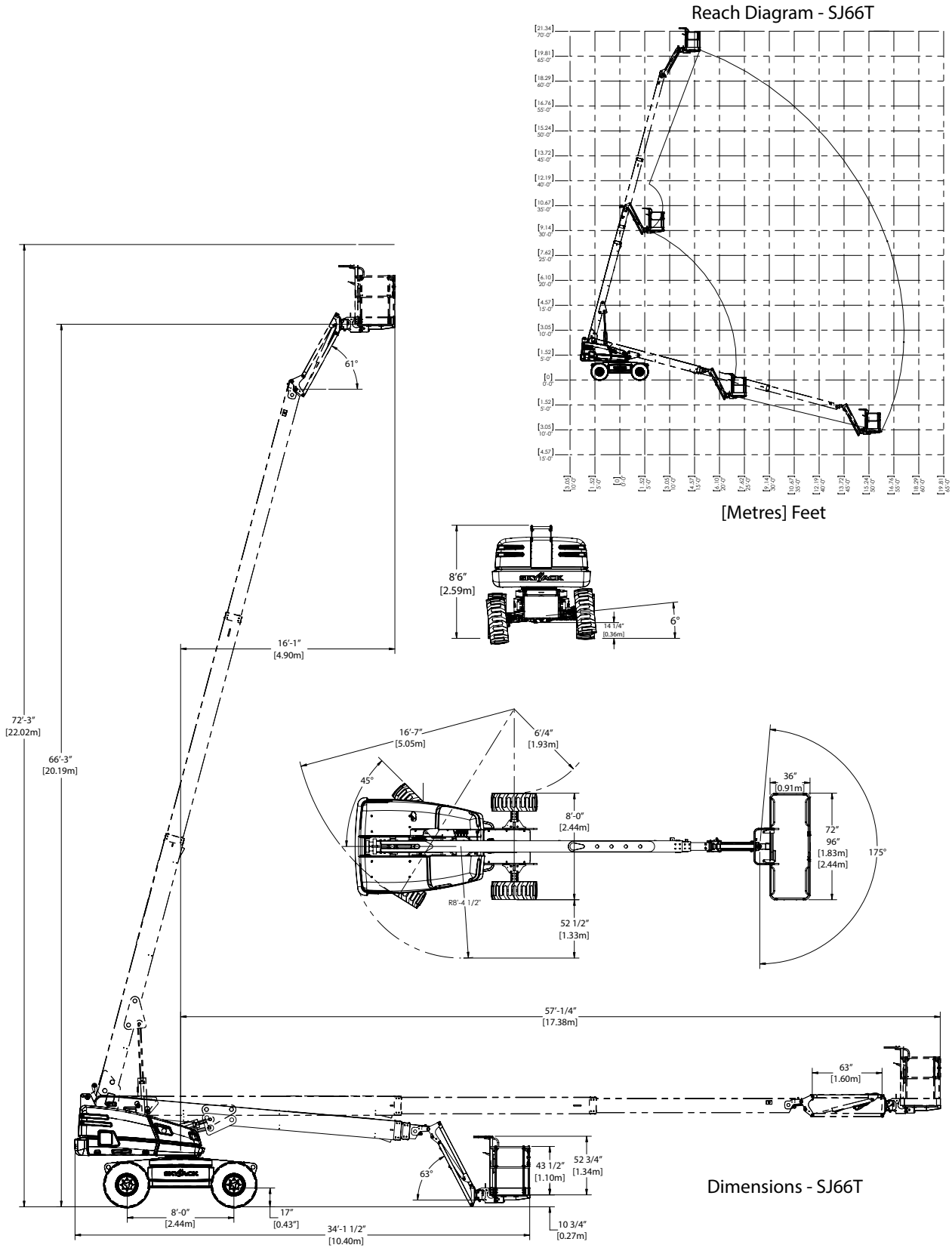
| | | | SJ61T & SJ66T |
|---|---|---|---|
| Kubota WG3800 | RPM Settings | | 927 Low / 1700 / 2600 High |
| | Horsepower @ 2600 rpm (intermittent) | | 45.5 kW kW / 61 hp |
| | Fuel Type | | Gasoline / Propane |
| | Fuel Tank Capacity | | 45 gal (170 L) |
| | Standard Oil Factory Fill | 0°F to 115°F (-18°C to 45°C) | SAE 10W-30 API CF/CG/CH-6 |
| | Cold Lube Oil Option | -20°F to 90°F (-29°C to 32°C) | SAE 10W-30 API CF/CG/CH-6 |
| | Arctic Lube Oil Option | -40°F to 115°F (-40°C to 45°C) | SAE 10W-30 API CF/CG/CH-6 |
| | Standard & Arctic Coolant | -40°F to 115°F (-40°C to 45°C) | Recochem 50/50 Premixed Coolant |
| | Coolant Capacity | | 3.17 gal (12 L) |
| | Lube Oil Sump Capacity | | 2.5 gal (9 L) |

*1382AB-2*

# **Diagram** 2.14 Dimension and Reach Diagram - SJ61T



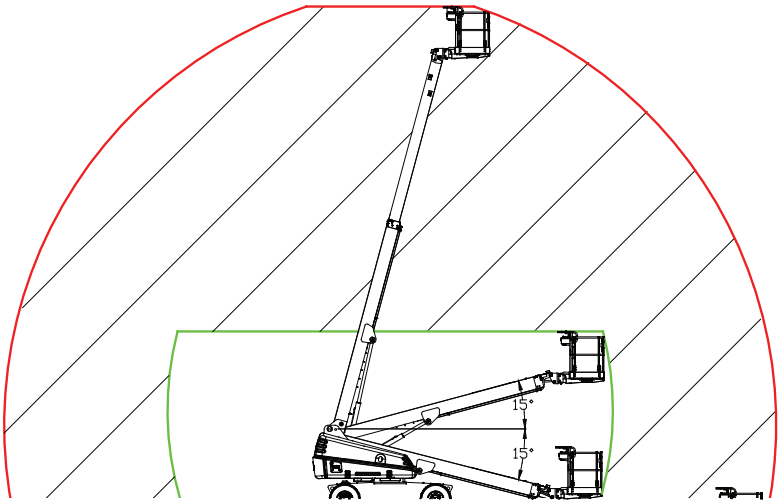
# **Diagram** 2.15 Dimension and Reach Diagram - SJ66T



# **Table** 2.16 Axle Oscillation Diagrams

**⚠ WARNING**

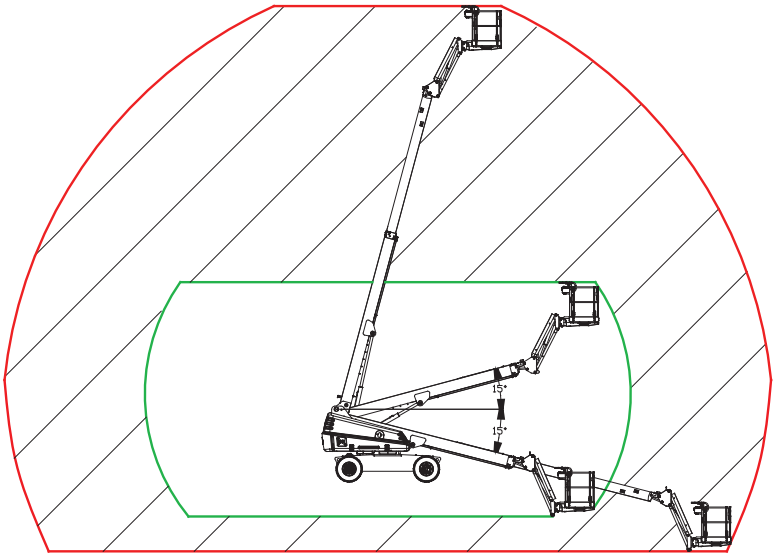
**Do not raise the platform in work mode if it is not on a firm level surface.**




Axle oscillation free (travel mode) - drive speed 4.5 mph max.

Axle oscillation locked (work mode) - drive speed 0.5 mph max.

***Axle Oscillation - No Jib Boom***



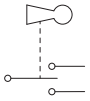
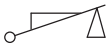
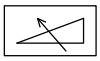
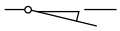
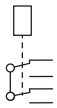
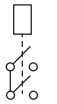
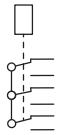

Axle oscillation free (travel mode) - drive speed 4.5 mph max.

Axle oscillation locked (work mode) - drive speed 0.5 mph max.

***Axle Oscillation - Jib Boom***

# Section 3 – System Component Identification and Schematics

# **Table** 3.1 Electrical Symbol Chart

| | | | |
|---|---|---|---|
|  CIRCUITS CROSSING NO CONNECTION |  HOURMETER |  KEY SWITCH |  LIMIT SWITCH |
|  CIRCUITS CONNECTED |  LIGHT |  FOOT SWITCH |  CAM OPERATED LIMIT SWITCH |
|  BATTERY |  HYDRAULIC VALVE COIL |  TOGGLE SWITCH |  LIMIT SWITCH N.O |
|  GROUND |  PROPORTIONAL HYDRAULIC VALVE COIL |  ANGLE TRANSDUCER & TILT SWITCH |  LIMIT SWITCH N.O HELD CLOSED |
|  FUSE |  ELECTRIC MOTOR |  TEMPERATURE SWITCH |  LIMIT SWITCH N.C. |
|  CIRCUIT BREAKER |  HORN |  SINGLE POLE SINGLE THROW RELAY |  LIMIT SWITCH N.C HELD OPEN |
|  VOLT METER |  PUSH BUTTON |  SINGLE POLE DOUBLE THROW RELAY |  BEEPER |
|  CAPACITOR |  ROTARY SWITCH |  DOUBLE POLE DOUBLE THROW RELAY |  DIODE |
|  POTENTIOMETER |  EMERGENCY STOP BUTTON |  DOUBLE POLE SINGLE THROW RELAY | |
|  RESISTOR |  RHEOSTAT |  TRIPLE POLE DOUBLE THROW RELAY | |
| | | | |

# **Table** 3.2 Hydraulic Symbol Chart

| | | | |
|---|---|---|---|
| LINE CROSSING | FIXED DISPLACEMENT PUMP | SHUTTLE VALVE | THREE POSITION FOUR WAY CLOSED CENTER OPEN PORT |
| LINE JOINED | VARIABLE DISPLACEMENT PUMP | PRESSURE SWITCH | CUSHION CYLINDER |
| MAIN LINES Solid | HAND PUMP | MOTION CONTROL VALVE | DOUBLE ACTING CYLINDER |
| PILOT LINES Dashed | OIL COOLER | FLOW DIVIDER COMBINER | DOUBLE ACTING DOUBLE RODDED CYLINDER |
| HYDRAULIC TANK | VELOCITY FUSE | COUNTER BALANCE VALVE | BRAKE CYLINDER |
| HYDRAULIC FILTER WITH BYPASS | RELIEF VALVE | VALVE COIL | SPRING APPLIED HYDRAULIC RELEASED BRAKE |
| ELECTRIC MOTOR | PRESSURE REDUCING VALVE | TWO POSITION TWO WAY NORMALLY OPEN VALVE | ROTARY ACTUATOR |
| ENGINE | PRESSURE TRANSDUCER | TWO POSITION TWO WAY NORMALLY CLOSED VALVE | SERVO |
| BI DIRECTIONAL HYDRAULIC MOTOR | FIXED ORIFICE | TWO POSITION THREE WAY VALVE | |
| VARIABLE DISPLACEMENT HYDRAULIC MOTOR | ADJUSTABLE FLOW CONTROL | TWO POSITION THREE WAY VALVE | |
| SERIES PARALLEL HYDRAULIC MOTOR | CHECK VALVE | THREE POSITION FOUR WAY CLOSED CENTER CLOSED PORT | |

# 3.3 Wire Number and Color Code

| WIRE NO. | **WIRE COLOR** | **WIRE NO.** | **WIRE COLOR** | **WIRE NO.** | **WIRE COLOR** | **WIRE NO.** | **WIRE COLOR** | **WIRE NO.** | **WIRE COLOR** |
|---|---|---|---|---|---|---|---|---|---|
| 00 | WHT | 20 | ORG/BLU | 44 | YEL/WHT | 67 | ORG/BRN | 92 | GRN SHLD |
| 000 | WHT | 21 | WHT/RED | 45 | YEL/ORG | 68 | GREY | 93 | BLK SHLD |
| B1 | BLU/PINK | 23 | BLK/WHT | 46 | RED/BLK | 69 | WHT/GRN | 95 | YEL/GREY |
| 01 | PUR/BLK | 24 | BLU/BLK | 47 | PUR/ORG | 70 | ORG/PINK | 96 | WHT/GREY |
| 02 | WHT | 25 | BRN/BLK | 48 | YEL/GREY | 71 | RED/ORG | 97 | ORG/GREY |
| 03 | GRN/PUR | 26 | BLU/YEL | 49 | GRN/RED | 72 | RED/BRN | 98 | RED SHLD |
| 04 | RED/YEL | 27 | RED/BLK/WHT | 50 | BRN | 73 | RED/PINK | 98A | BLK SHLD |
| 05 | PUR | 28 | GRN | 51 | BLK/GRN | 74 | GRN/ GREY | 99 | BLK/GREY |
| 06 | | 29 | GREY/ORG | 52 | GRN/BLU | 75 | GREY/PUR | 103 | BLK/PUR |
| 07 | RED | 30 | RED/GRN | 53 | BRN/RED | 76 | BRN/BLU | 104 | GRN/ORG |
| 08 | PUR/WHT | 31 | RED/WHT | 54 | PUR/RED | 77 | BRN/GREY | 105 | GRN/BRN |
| 09 | YEL | 32 | GRN/BLK | 55 | YEL/PUR | 78 | RED/BLU | 106 | GRN/PINK |
| 10 | BLU/WHT | 33 | GRN/WHT | 56 | YEL/BLK | 79 | BRN/PUR | 107 | BLK/BLU |
| 11 | WHT/ORG | 34 | ORG/BLK | 57 | BRN/GRN | 80 | GREY/ WHT | 108 | YEL/BRN |
| 12 | RED/YEL/ BLK | 35 | ORG/WHT | 58 | WHT/PUR | 81 | GREY/BLK | 109 | GRN/YEL |
| 13 | ORG | 36 | RED/PUR | 59 | YEL/BLU | 82 | BRN/WHT | 110A | BLU |
| 14 | BLK | 37 | WHT/RED/ BLK | 60 | WHT/BLU | 83 | BLU/GREY | 110B | BRN |
| 15 | BLU | 38 | ORG/RED | 61 | GREY/BRN | 84 | WHT/BLK/ PUR | 111 | GREY/GRN |
| 16 | WHT/BLK | 39 | BLK/RED | 62 | GREY/RED | 85 | GREY/BLU | 112 | BLU/ORG |
| 17 | BLU/GRN | 40 | BLU/RED | 63 | GREY/YEL | 86/87 | PUR/BLU | 113 | BLU/BRN |
| 18 | GRN/BLU | 41 | BLU/PUR | 64 | WHT/BRN | 88 | BLK/ORG | 114 | YEL/RED |
| 19 | ORG/GRN | 42 | PINK | 65 | YEL/PINK | 90 | RED/GREY | 115 | WHT/PUR |
| 22 | PUR/GRN | 43 | WHT/YEL | 66 | ORG/YEL | 91 | RED SHLD | 118 | PUR/PINK |

# 3.4 Wire Numbers and Color Codes - Additional

| AC Cord Color Code (Battery Charger & Platform Power Outlet) | | |
|---|---|---|
| **Standard Definition** | **NEC Colors** | **IEC Colors** |
| Protective Ground/Protective Earth | Green | Green/Yellow |
| Neutral | White | Blue |
| Line, Single Phase | Black | Black or Brown or Grey |

*Note: Standard colors referenced from IEC 60445:2010, Annex A: Table 1.* *1789AA*

# 3.5 Hydraulic Parts List

| Index No. | Skyjack Part No. | Description |
|---|---|---|
| 2H-21A | 103656 | VALVE, Control (Pressure Dump) |
| 2H-21B | 194492 | VALVE, Control (Load Circuit) |
| 2H-42 | 166050 | VALVE, Control (Flow Enable) |
| 2H-85 | 168056 | VALVE, Control (Flow Enable, 3.5kW Generator) |
| 2H-85 | 168058 | VALVE, Control (Flow Enable, 12kW Generator) |
| 3H-26 | 159827 | VALVE, Control (Brake Release) |
| 3H-38 | 166040 | VALVE, Control (Boom Retract) |
| 3H-39 | 166040 | VALVE, Control (Boom Extend) |
| 3H-45 | 159827 | VALVE, Control (2-Speed) |
| 3H-65 | 159827 | VALVE, Control (Axle Lock Out) |
| 3H-165 | 159827 | VALVE, Control (Diff. Lock) |
| 3H-V1 | N/A | VALVE, Control (Pressure Compensator) |
| 3H-V2 | N/A | VALVE, Control (Load Sense Compensator) |
| 4H-13 | 166052 | VALVE, Control (Boom Down) |
| 4H-14 | 166052 | VALVE, Control (Boom Up) |
| 4H-15 | N/A | VALVE, Control (Drive Pump Reverse) |
| 4H-16 | N/A | VALVE, Control (Drive Pump Forward) |
| 4H-23A | 166036 | VALVE, Control (Steer Right) |
| 4H-24A | 166036 | VALVE, Control (Steer Left) |
| 4H-32 | 166041 | VALVE, Control (Swing Left) |
| 4H-33 | 166041 | VALVE, Control (Swing Right) |
| 4H-34 | 166036 | VALVE, Control (Jib Down) |
| 4H-35 | 166036 | VALVE, Control (Jib Up) |
| 4H-36 | 166036 | VALVE, Control (Platform Rotate Left) |
| 4H-37 | 166036 | VALVE, Control (Platform Rotate Right) |
| 4H-40 | 166036 | VALVE, Control (Platform Level Down) |
| 4H-41 | 166036 | VALVE, Control (Platform Level Up) |
| C1 | 166123 | CYLINDER (Boom Lift) |
| C2 | 163480 | CYLINDER (Boom Extend) |
| C3 | 161311 | CYLINDER (Master) |
| C4 | 166947 | CYLINDER (Slave) |
| C5 | 160037 | CYLINDER (Jib) |
| C6 | 161095 | CYLINDER (Axle Lock) |
| C7 | 161095 | CYLINDER (Axle Lock) |
| C8 | 141046 | CYLINDER (Steer, 4WD) |
| C9 | N/A | CYLINDER (Brake) |
| C10 | N/A | CYLINDER (Differential Lock) |
| CB1 | 144570 | VALVE, Counterbalance (Swing Drive) |
| CB2 | 144570 | VALVE, Counterbalance (Swing Drive) |
| CB3 | 149372 | VALVE, Counterbalance (Boom Lift) |
| CB4 | 701827 | VALVE, Counterbalance (Fly Boom) |
| CB5 | 701827 | VALVE, Counterbalance (Fly Boom) |
| CB6 | 166772 | VALVE, Counterbalance (Platform Level) |
| CB7 | 166772 | VALVE, Counterbalance (Platform Level) |
| CB8 | 149488 | VALVE, Counterbalance (Jib) |

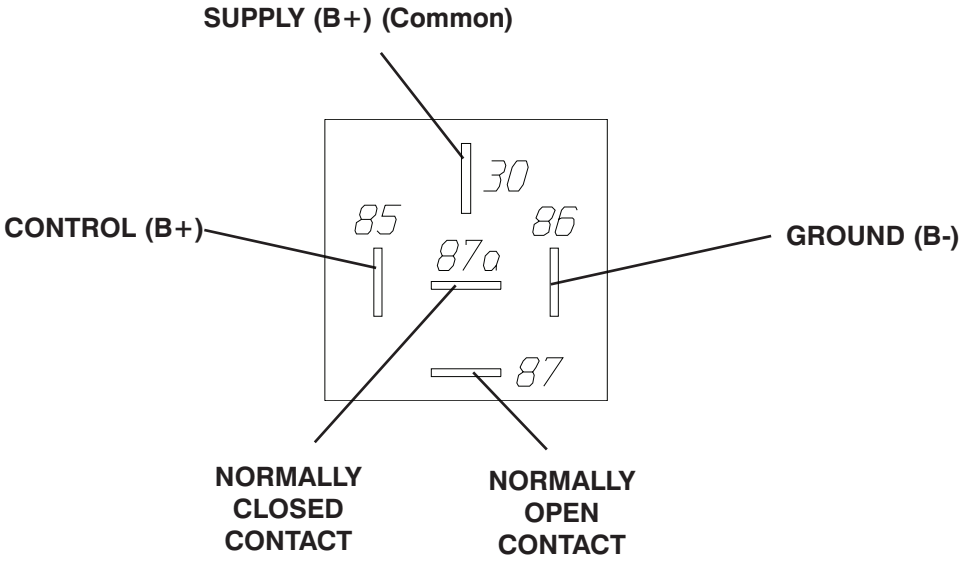
# 3.5 Hydraulic Parts List

| Index No. | Skyjack Part No. | Description |
|---|---|---|
| CB9 | 149488 | VALVE, Counterbalance (Jib) |
| CB10 | 141399 | VALVE, Counterbalance (Platform Rotate) |
| CB11 | 141399 | VALVE, Counterbalance (Platform Rotate) |
| CB12 | 160028 | VALVE, Counterbalance (Axle Lock) |
| CB13 | 160028 | VALVE, Counterbalance (Axle Lock) |
| CV1 | 166066 | VALVE, Check (Auxiliary Pump) |
| CV2 | 159814 | VALVE, Check (Main LS) |
| CV3 | 159814 | VALVE, Check (Main LS) |
| CV4 | 159814 | VALVE, Check (Main LS) |
| CV5 | 159814 | VALVE, Check (Main LS) |
| CV6 | 159814 | VALVE, Check (Main LS) |
| CV7 | 159814 | VALVE, Check (Main LS) |
| CV8 | 159814 | VALVE, Check (Main LS) |
| CV9 | 159814 | VALVE, Check (Main LS) |
| CV10 | 159814 | VALVE, Check (Main LS) |
| CV11 | 159814 | VALVE, Check (Main LS) |
| CV12 | 159813 | VALVE, Check (System Pump) |
| CV13 | 166065 | VALVE, Check (Brake Manifold) |
| CV14 | N/A | VALVE, Check (EPU) |
| CV15 | 159814 | VALVE, Check (Generator LS) |
| CV16 | 159814 | VALVE, Check (Generator LS) |
| CV17 | 168059 | VALVE, Check (Generator) |
| CV18 | 168243 | VALVE, Check (2 SPD) |
| DCV1 | 159817 | VALVE, Double Check (Steering) |
| DCV2 | 159817 | VALVE, Double Check (Platform Level) |
| DSV1 | 166062 | COMPENSATOR (Swing) |
| DSV2 | 166061 | COMPENSATOR (Boom Lift) |
| DSV3 | 166061 | COMPENSATOR (Boom Extend) |
| EPU | 160923 | PUMP (Emergency) |
| F1 | 161932 | FILTER (High Pressure) |
| F2 | 161933 | FILTER (Return) |
| M1 | 161964 | MOTOR (Axle Drive) |
| M2 | N/A | MOTOR (Swing) |
| M3 | N/A | MOTOR (Generator, 3.5kW) |
| M4 | N/A | MOTOR (Generator, 12kW) |
| MB1 | 162843 | MANIFOLD (Main) |
| MB2 | 162844 | MANIFOLD (Brake) |
| MB3 | 162497 | MANIFOLD (Jib) |
| MB4 | 163541 | MANIFOLD (No Jib) |
| MB5 | 166092 | MANIFOLD (Jib Cylinder) |
| MB6 | 168158 | MANIFOLD (Pressure Reducing) |
| MB7 | 168400 | MANIFOLD (Generator 3.5kW) |
| MB8 | 168401 | MANIFOLD (Generator 12kW) |
| OC1 | 160800 | COOLER, Oil |
| OR1 | 166077 | ORIFICE, 0.078” (Main Manifold) |

# 3.5 Hydraulic Parts List

| Index No. | Skyjack Part No. | Description |
|---|---|---|
| OR2 | 166079 | ORIFICE, 0.043” (Main Manifold) |
| OR3 | 166081 | ORIFICE, 0.018” (Main Manifold) |
| OR4 | 166081 | ORIFICE, 0.018” (Main Manifold) |
| OR5 | 166058 | ORIFICE (Main Manifold) |
| OR6 | 171420 | ORIFICE, 0.073” (Bleed Off) |
| OR7 | 168061 | VALVE, Needle (3.5kW Generator) |
| OR8 | 194493 | VALVE, Needle (Load Circuit) |
| P1 | 169006 | PUMP, Drive |
| P1A | 169006 | PUMP, Charge |
| P2 | 163595 | PUMP, System |
| PR1 | 168754 | VALVE, Control (Pressure Reducing) |
| QD1 | 122420 | QUICK DISCONNECT |
| RA1 | 144710 | ACTUATOR (Platform) |
| RA2 | 167209 | ACTUATOR (Swing) |
| RV1 | 166042 | RELIEF (Main Manifold) |
| RV2 | 166049 | RELIEF (Swing) |
| RV3 | 166047 | RELIEF (Platform Level) |
| RV4 | 166048 | RELIEF (Boom Extend) |
| RV6 | N/A | RELIEF (Drive) |
| RV7 | N/A | RELIEF (Drive) |
| RV8 | N/A | RELIEF (Charge) |
| RV9 | N/A | RELIEF (EPU) |
| SV1 | 141414 | VALVE, Shuttle (Main Manifold) |
| SV2 | 141414 | VALVE, Shuttle (Main Manifold) |
| SV3 | 141414 | VALVE, Shuttle (Main Manifold) |
| SV4 | N/A | VALVE, Shuttle (Swing Drive Brake) |
| SV5 | 166054 | VALVE, Shuttle (Brake Manifold) |
| SV6 | 141414 | VALVE, Shuttle (Brake Manifold) |
| SV7 | 138394 | VALVE, Shuttle (Load Circuit) |
| V1 | 141436 | VALVE, Control (Brake Release Override) |
| V2 | 166053 | VALVE, Control (Loop Flush) |
| V3 | 159831 | VALVE, Control (Brake Hand Pump) |
| V4 | 166060 | VALVE, Control (Pilot Operated) |
| V5 | 166060 | VALVE, Control (Pilot Operated) |
| V6 | N/A | VALVE, Control (Bypass, Towing) |

# 3.6 Electrical Parts List




| Index No. | Skyjack Part No. | Description |
|---|---|---|
| 01CR | 127131 | RELAY, 12 Volt 40 Amp (E-pump) |
| 08BCR | 127131 | RELAY, 12 Volt 40 Amp (Enable) |
| 08CR | 127131 | RELAY, 12 Volt 40 Amp (Engine start interlock) |
| 08CR1 | 127131 | RELAY, 12 Volt 40 Amp (Dump valve enable) |
| 08FCR | 127131 | RELAY, 12 Volt 40 Amp (SCM reset) |
| 09CR | 127131 | RELAY, 12 Volt 40 Amp (Engine power on) |
| 17ACR1 | 127131 | RELAY, 12 Volt 40 Amp (Steering reversal) |
| 17ACR2 | 127131 | RELAY, 12 Volt 40 Amp (Steering reversal) |
| 21CR | 127131 | RELAY, 12 Volt 40 Amp (Dump valve) |
| 27CR | 127131 | RELAY, 12 Volt 40 Amp (Tilt alarm) |
| 45CR1 | 127131 | RELAY, 12 Volt 40 Amp (Drive speed) |
| 45CR2 | 127131 | RELAY, 12 Volt 40 Amp (Drive speed) |
| 49CR | 127131 | RELAY, 12 Volt 40 Amp (Horn) |
| 51CR | 127131 | RELAY, 12 Volt 40 Amp (Drive enable) |
| 51CR1 | 127131 | RELAY, 12 Volt 40 Amp (Tilt alarm) |
| 54ACR | 138844 | RELAY, 12 Volt 80 Amp (Cold starter) |
| 56ACR | 127131 | RELAY, 12 Volt 40 Amp (Fuel pump) |
| 57ACR | 127131 | RELAY, 12 Volt 40 Amp (Anti restart) |
| 57BCR | 127131 | RELAY, 12 Volt 40 Amp (Anti restart) |
| 57BCR1 | 127131 | RELAY, 12 Volt 40 Amp (Engine start) |
| 59CR | 127131 | RELAY, 12 Volt 40 Amp (Optional axle lock) |
| 60CR | 127131 | RELAY, 12 Volt 40 Amp (System power) |
| 78CR | 127131 | RELAY, 12 Volt 40 Amp (High idle) |
| 79CR | 127131 | RELAY, 12 Volt 40 Amp (Low idle) |
| 81CR | 127131 | RELAY, 12 Volt 40 Amp (Optional light) |
| 82CR | 127131 | RELAY, 12 Volt 40 Amp (Overload alarm) **(CE & AS)** |
| 86CR | 127131 | RELAY, 12 Volt 40 Amp (Optional oil cooler) |
| 107CR | 127131 | RELAY, 12 Volt 40 Amp (Platform level interlock) |
| 108CR | 127131 | RELAY, 12 Volt 40 Amp (Emergency Pump) |

# 3.6 Electrical Parts List

| Index No. | Skyjack Part No. | Description |
|---|---|---|
| 162ACR | 127131 | RELAY, 12 Volt 40 Amp (Power enable) |
| 165CR | 127131 | RELAY, 12 Volt 40 Amp (Differential Lock) |
| 2H-21A | 143970 | COIL, 12 Volt (Dump valve) |
| 2H-42 | 143966 | COIL, 12 Volt (Proportional flow enable) |
| 2H-85 | 143967 | COIL, 12 Volt (Optional generator valve) |
| 3H-45 | 143970 | COIL, 12 Volt (Motor 2-speed valve) |
| 3H-26 | 143970 | COIL, 12 Volt (Brake valve) |
| 3H-65 | 143970 | COIL, 12 Volt (Optional axle lock valve) |
| 4H-13 | 143964 | COIL, 12 Volt (Boom down valve) |
| 4H-14 | 143964 | COIL, 12 Volt (Boom up valve) |
| 3H-15 | 143965 | COIL, 12 Volt (Reverse drive valve) |
| 3H-16 | 143965 | COIL, 12 Volt (Forward drive valve) |
| 4H-23A | 143968 | COIL, 12 Volt (Right steer valve) |
| 4H-24A | 143968 | COIL, 12 Volt (Left steer valve) |
| 4H-32 | 143964 | COIL, 12 Volt (Left turret rotate valve) |
| 4H-33 | 143964 | COIL, 12 Volt (Right turret rotate valve) |
| 4H-34 | 143970 | COIL, 12 Volt (Jib down valve) **(SJ66T)** |
| 4H-35 | 143970 | COIL, 12 Volt (Jib up valve) **(SJ66T)** |
| 4H-36 | 143970 | COIL, 12 Volt (Platform right rotate valve) |
| 4H-37 | 143970 | COIL, 12 Volt (Platform left rotate valve) |
| 4H-38 | 143964 | COIL, 12 Volt (Telescope in valve) |
| 4H-39 | 143964 | COIL, 12 Volt (Telescope out valve) |
| 4H-40 | 143969 | COIL, 12 Volt (Platform level down valve) |
| 4H-41 | 143969 | COIL, 12 Volt (Platform level up valve) |
| A1 | 138225 | JOYSTICK (Boom/turret) |
| A2 | 138224 | JOYSTICK (Drive/steer) |
| A3 | 138226 | CONTROLLER, Speed control selector |
| AT1 | 166163 | TRANSDUCER, Angle |
| B1 | 144676 | BATTERY, 12V (Wet) |
| BP1 | 103057 | BEEPER, 4-28 VDC Slow pulsing (Platform control console) |
| BP2 | 103056 | BEEPER, 7.5-16 VDC (Base control console) **(ANSI/CSA & AS)** |
| BP3 | 144387 | ALARM, Overload **(CE & AS)** |
| CB1 | 117325 | CIRCUIT BREAKER (15 Amp) |
| CB2 | 117325 | CIRCUIT BREAKER (15 Amp) |
| CB3 | 117326 | CIRCUIT BREAKER (20 Amp) |
| CB4 | 117326 | CIRCUIT BREAKER (20 Amp) |
| CB5 | 141631 | CIRCUIT BREAKER (50 Amp) **(ANSI/CSA & CE)** |
| CB6 | 141630 | CIRCUIT BREAKER (15 Amp) |
| DXX | 102921 | DIODE |
| FU1 | 138848 | FUSE, 50 Amp |
| FS1 | 138230 | SWITCH, Low fuel |
| H1 | 146652 | HORN, 12 Volt |
| LB2 | 143971 | LIGHT, Optional strobe |
| LS1 | 133075 | LIMIT SWITCH, Direction sensing, N.O. held closed |
| | 119348 | LIMIT SWITCH, Direction sensing, N.O. held closed (if equipped) |

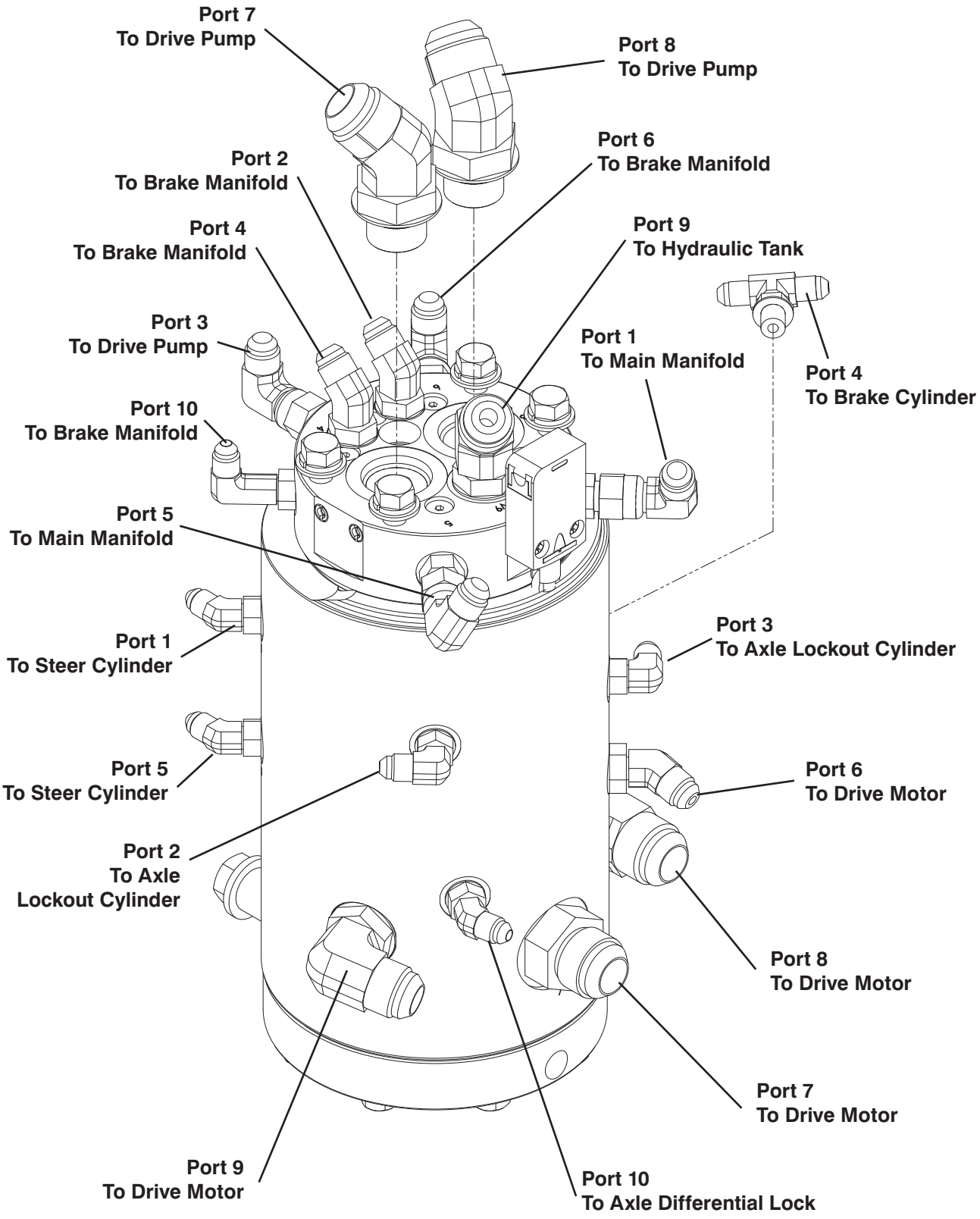
# 3.6 Electrical Component Parts List

| Index No. | Skyjack Part No. | Description |
|---|---|---|
| LS2 | 144576 | LIMIT SWITCH, High drive |
| | 138719 | LIMIT SWITCH, High drive (if equipped) |
| LS3 | 144576 | LIMIT SWITCH, High drive |
| | 138719 | LIMIT SWITCH, High drive (if equipped) |
| M1 | 706921 | PUMP, Emergency |
| PL1 | 138228 | MODULE, Lower indicating |
| PL2 | 138229 | MODULE, Upper indicating |
| PL3 | 147229 | LED BLOCK, Red (12 volts) (Base control console) |
| PL4 | 147229 | LED BLOCK, Red (12 volts) (Platform control console) |
| R1 | 144523 | RESISTOR, 7 ohm 25 W **(Deutz D2011, GM and Kubota)** |
| | 139088 | RESISTOR, 6 ohm 25 W **(Deutz D2.9L)** |
| R2 | 144714 | RESISTOR, 12 ohm 25 W **(SJ61T)** |
| | 144714 | RESISTOR, 15 ohm 25 W **(SJ66T)** |
| R3 | 163021 | RESISTOR, 120 ohm 1/2 W |
| R4 | 164855 | RESISTOR, 1.0k ohm 1/2 W |
| R5 | 164856 | RESISTOR, 3.3k ohm 1/2 W |
| R6 | 164857 | RESISTOR, 3.9k ohm 1/2 W **(ANSI/CSA)** |
| | 144492 | RESISTOR, 380 ohm 1 W **(CE & AS)** |
| R7 | 143952 | RESISTOR, 51 ohm 2 W **(Deutz D2011, GM and Kubota)** |
| | 151643 | RESISTOR, 250 ohm 1 W **(Deutz D2.9L)** |
| R8 | 151643 | RESISTOR, 250 ohm 1 W |
| R9 | 151643 | RESISTOR, 250 ohm 1 W |
| R10 | 151643 | RESISTOR, 250 ohm 1 W |
| R11 | 151643 | RESISTOR, 250 ohm 1 W |
| S1 | 119725 | SWITCH, Main power disconnect |
| S2 | 138277 | KEYSWITCH, Base/Off/Platform (Base control) **(ANSI/CSA, AS Deutz D2011)** |
| | 164833 | KEYSWITCH, Base/Off/Platform (Base control) **(ANSI/CSA Deutz D2.9L)** |
| | 144366 | KEYSWITCH, Base/Off/Platform (Base control) **(CE)** |
| S3 | 147053 | N.C. CONTACT, Emergency stop (Base control console) |
| S4 | 147053 | N.C. CONTACT, Emergency stop (Platform control console) |
| S5 | 138278 | SWITCH, Ignition/emergency pump toggle (Base control console) |
| S6 | 138278 | SWITCH, Ignition/emergency toggle (Platform control console) |
| S7 | 102853 | SWITCH, Function enable toggle (Base control console) |
| S8 | 102853 | SWITCH, Diagnose toggle (Base control console) **(Deutz engine)** |
| S10 | 115747 | SWITCH, Throttle toggle (Platform control console) |
| S11 | 154127 | ASSEMBLY, Footswitch |
| S12 | 138278 | SWITCH, Boom up/down toggle (Base control console) |
| S13 | 102853 | SWITCH, Turret rotate toggle (Base control console) |
| S14 | 102853 | SWITCH, Telescope in/out toggle (Base control console) |
| S15 | 102853 | SWITCH, Platform leveling toggle (Base control console) |
| S16 | 102853 | SWITCH, Platform rotate toggle (Base control console) |
| S17 | 102853 | SWITCH, Jib up/down toggle (Base control console) **(SJ66T)** |
| S18 | 102853 | SWITCH, Telescope in/out toggle (Platform control console) |
| S19 | 102853 | SWITCH, Platform leveling toggle (Platform control console) **(ANSI/CSA)** |
| S20 | 102853 | SWITCH, Platform rotate toggle (Platform control console) |

# 3.6 Electrical Component Parts List

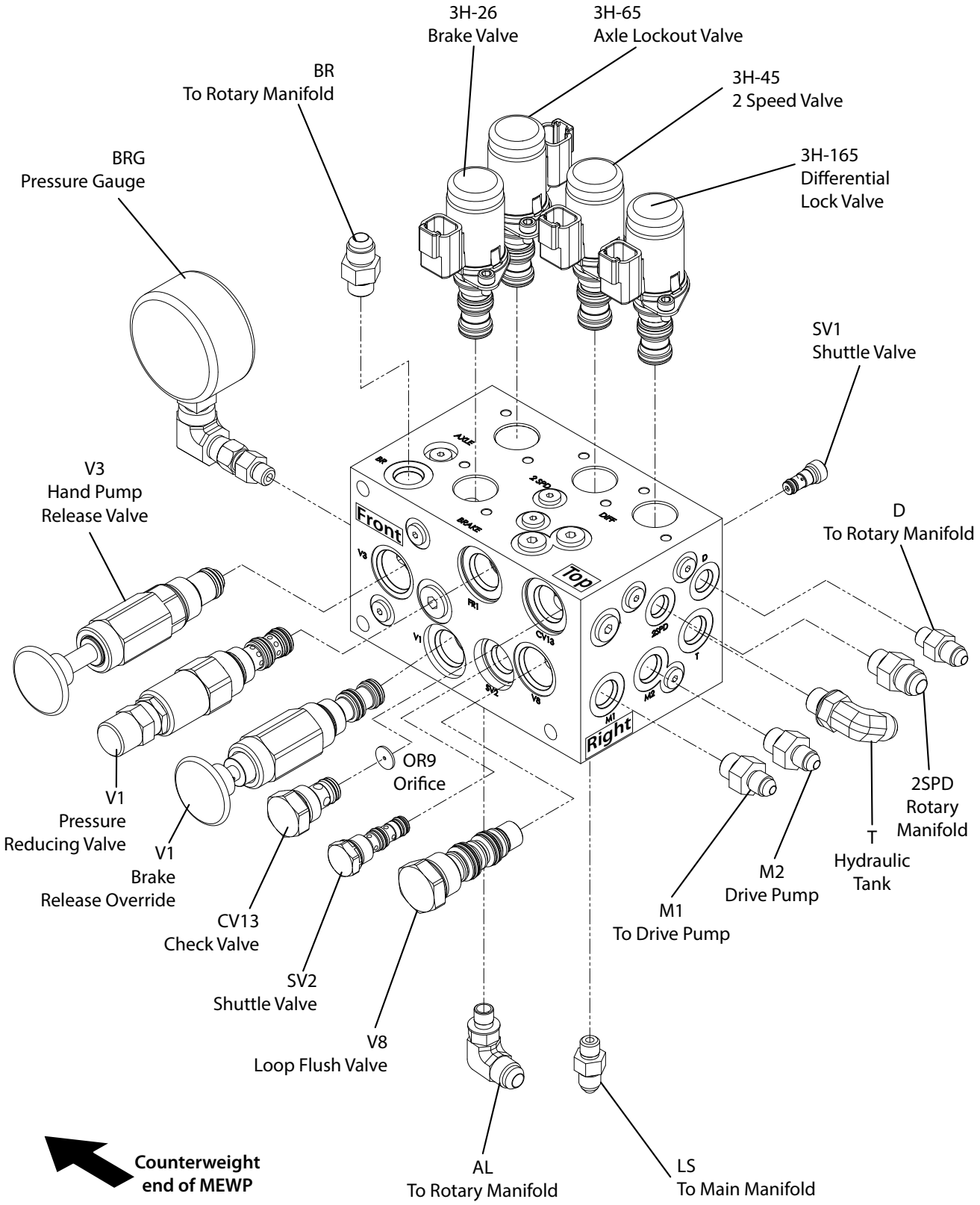
| Index No. | Skyjack Part No. | Description |
|---|---|---|
| S21 | 102853 | SWITCH, Jib up/down toggle (Platform control console) **(SJ66T)** |
| S22 | 144266 | SWITCH, Electrical generator (Platform control console) |
| S23 | 147054 | N.O. CONTACT, Horn (Platform control console) **(ANSI/CSA)** |
| | 102853 | SWITCH, Horn (Platform control console) **(CE)** |
| S24 | 115574 | SWITCH, Optional lights (Platform control console) |
| S25 | 137782 | N.O. CONTACT, Engine enable (**CE** - platform control console) |
| S26 | 102853 | SWITCH, Fuel select (Platform control console) (**GM engine**) |
| S48 | 115574 | SWITCH, Drive torque toggle (Platform control console) |
| TS1 | 166163 | SWITCH, Tilt (5°/ 5°) |
| TT1 | 103336 | HOUR METER |
| X22 | 138576 | PORT, Diagnose **(Deutz engine)** |
| X23 | 138574 | CONNECTOR, Engine **(Deutz engine)** |

# 3.7 Rotary Manifold Port Identification



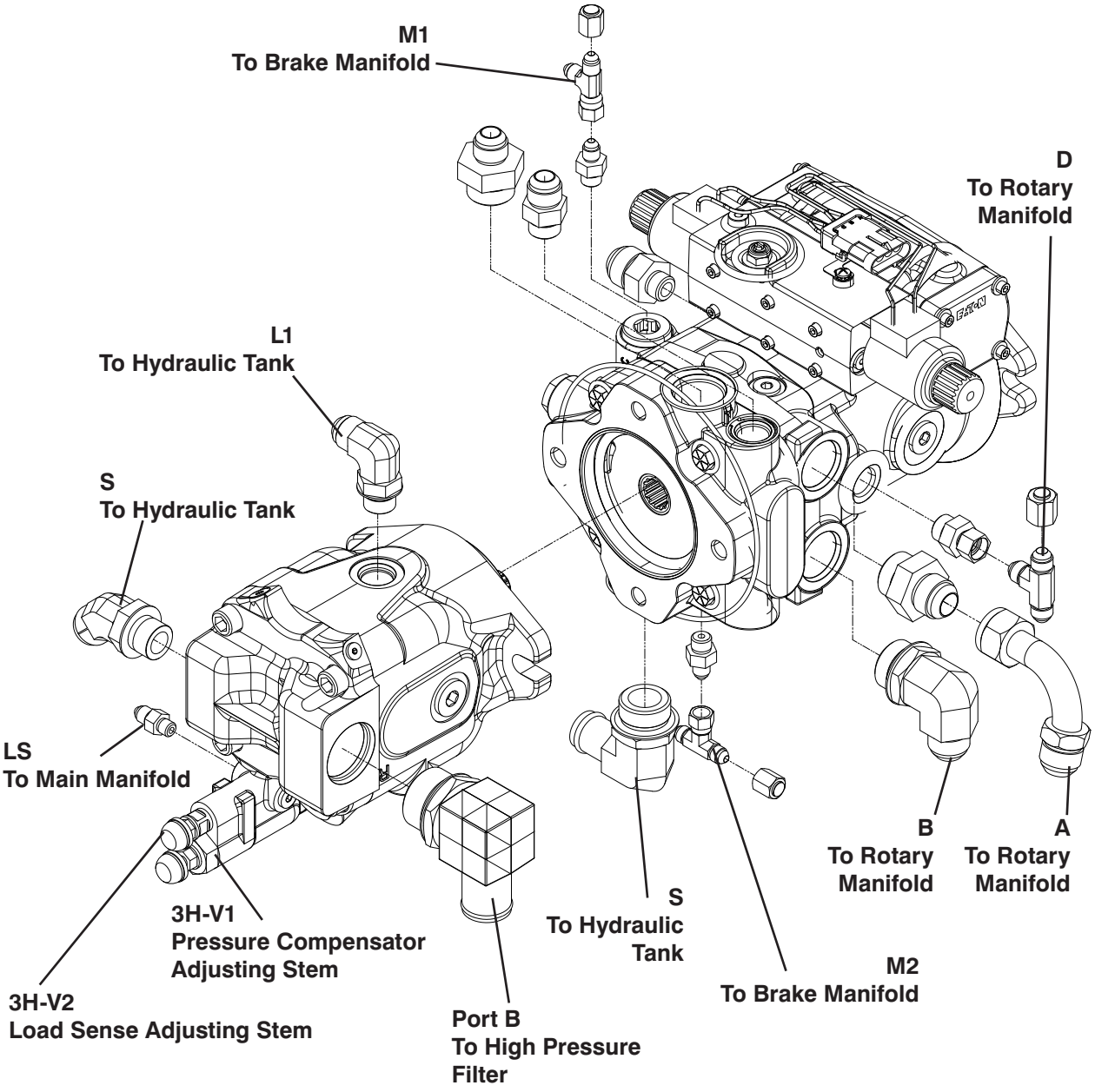

M167237AD

# 3.8 Brake Manifold Port Identification



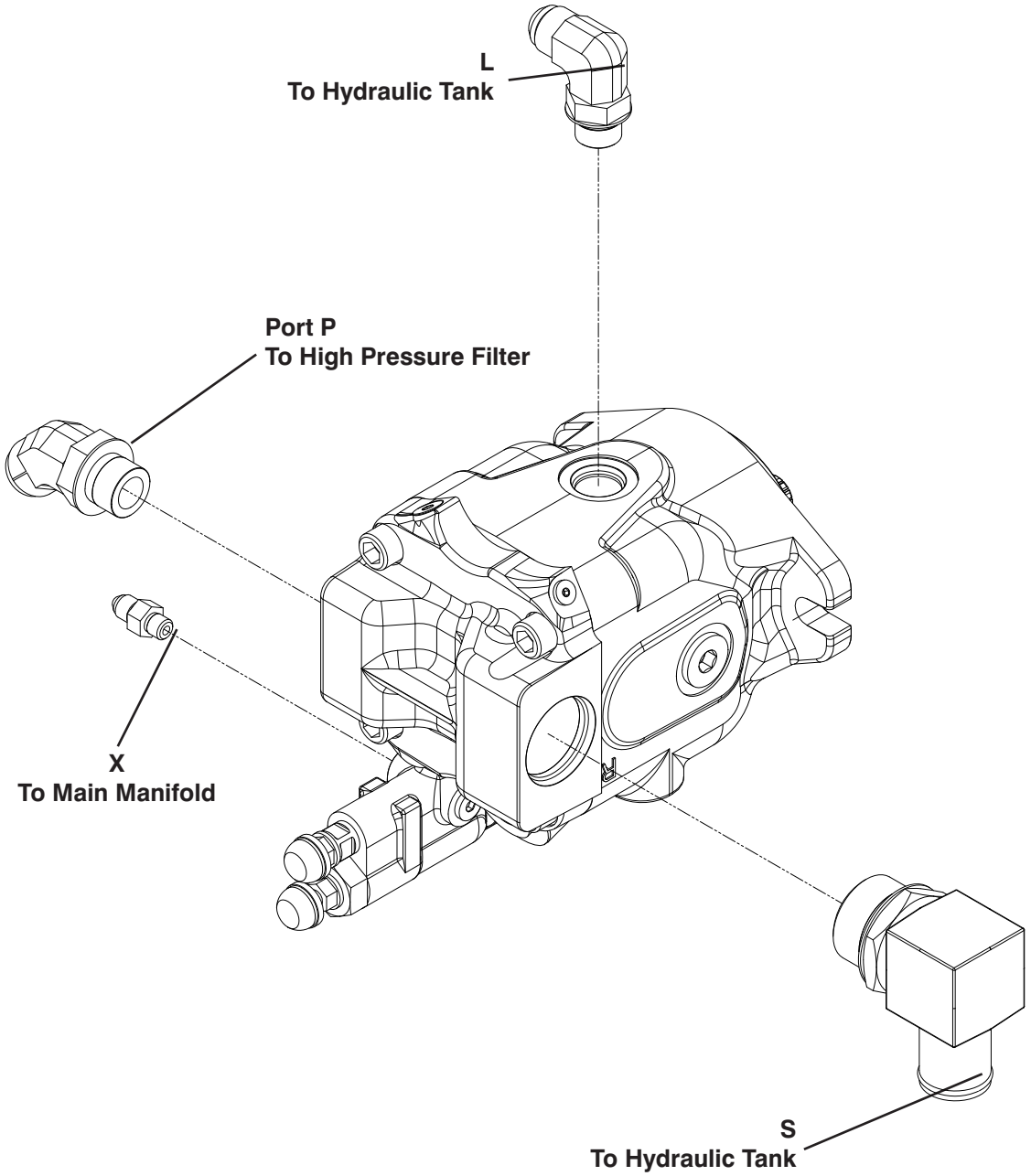

M195057AA_SM

# 3.9 System and Drive Pumps and Port Identifications



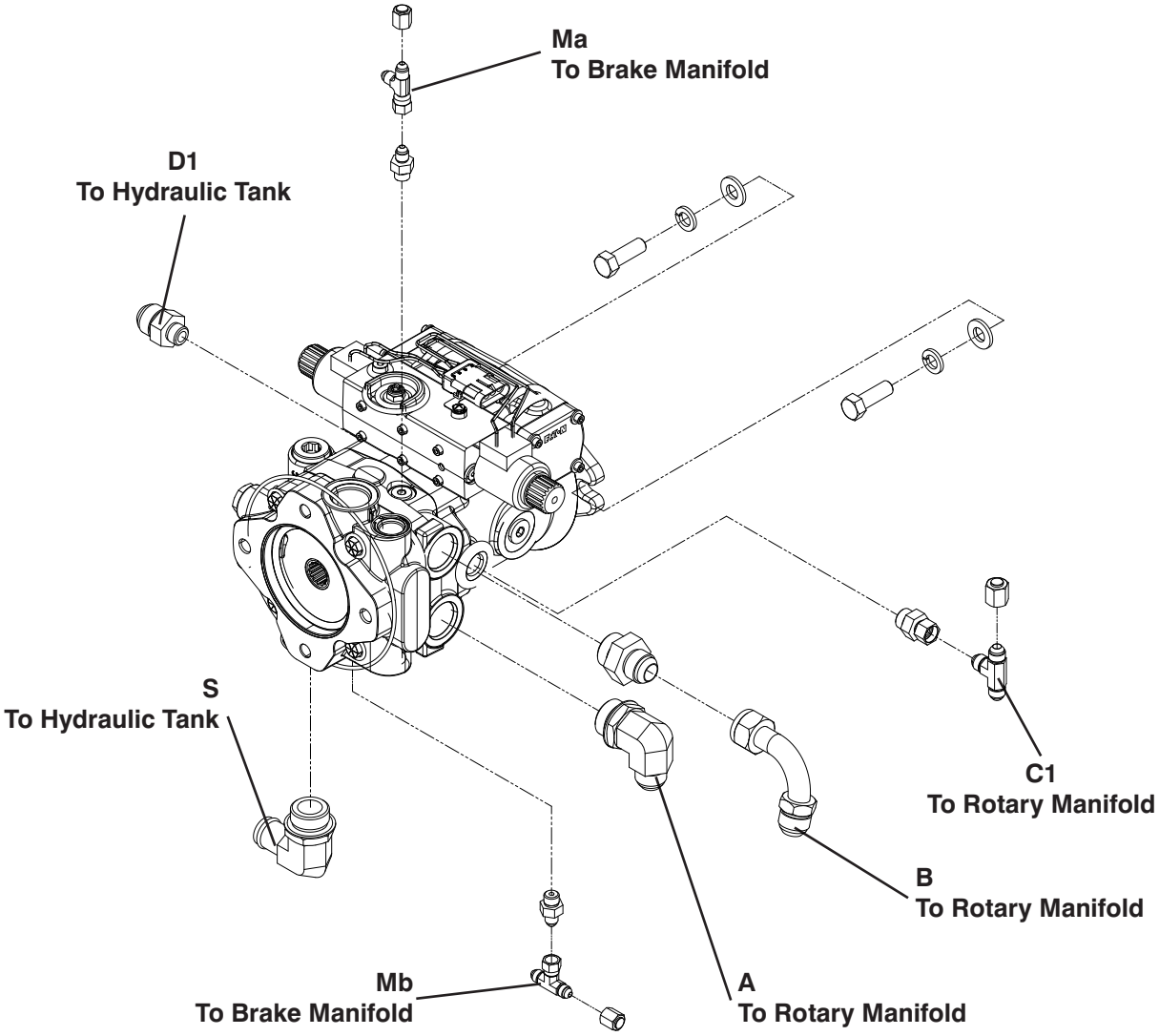

*M162661AA_SM*

# 3.10 System Pump and Port Identifications



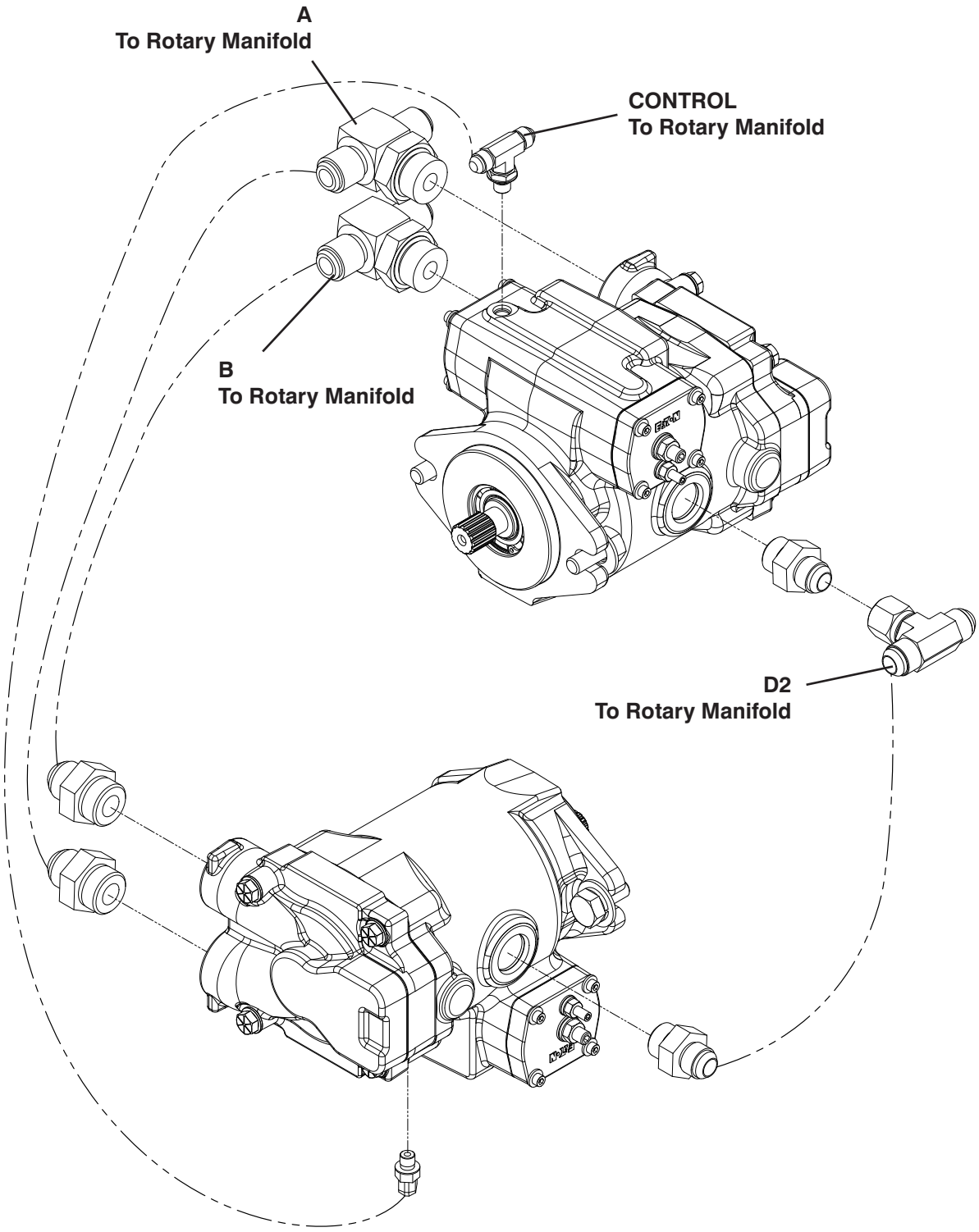

*M163595AA*

# 3.11 Drive Pump and Port Identifications



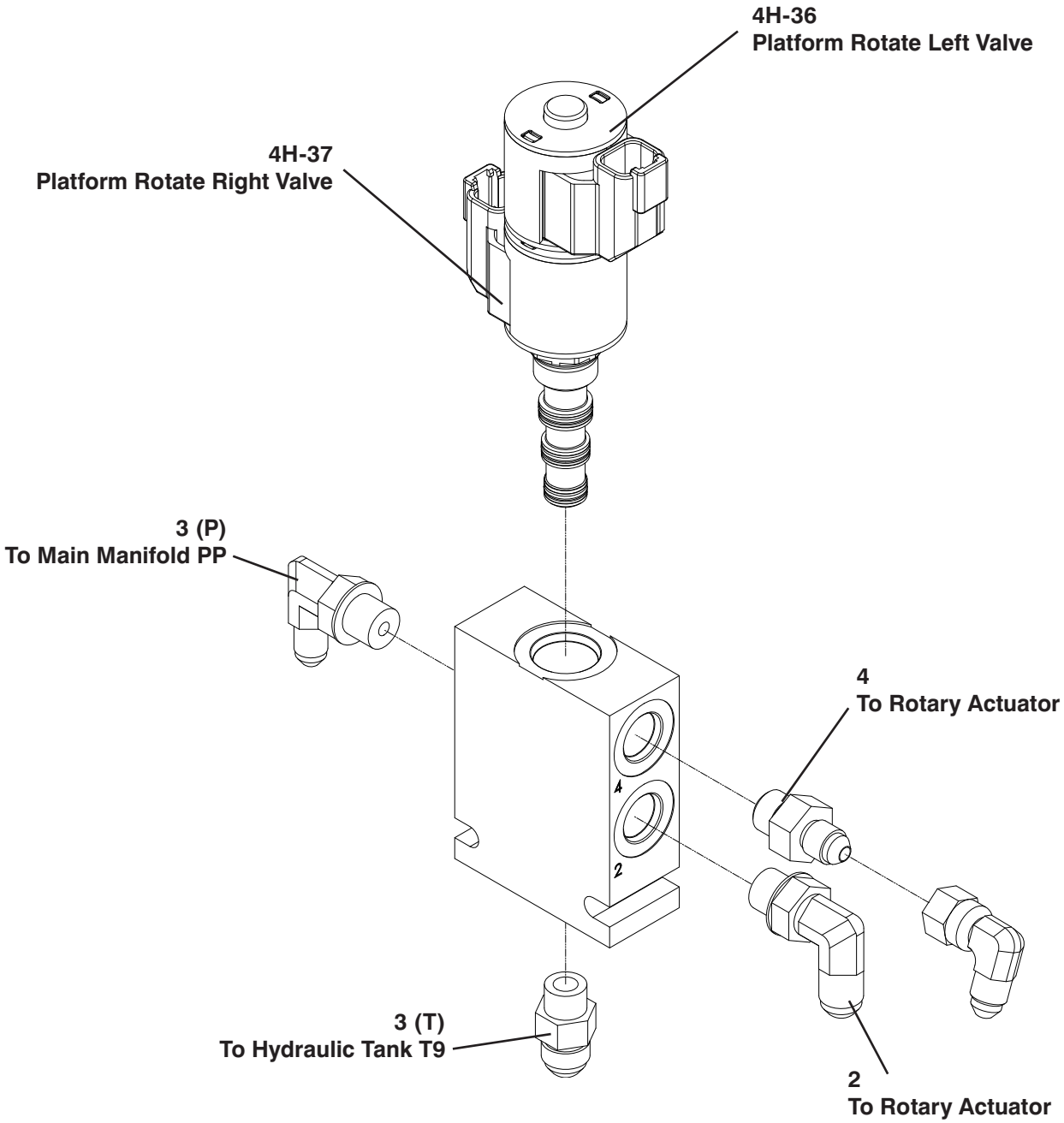

*M162661AB_SM*

# 3.12 Drive Motors and Port Identifications



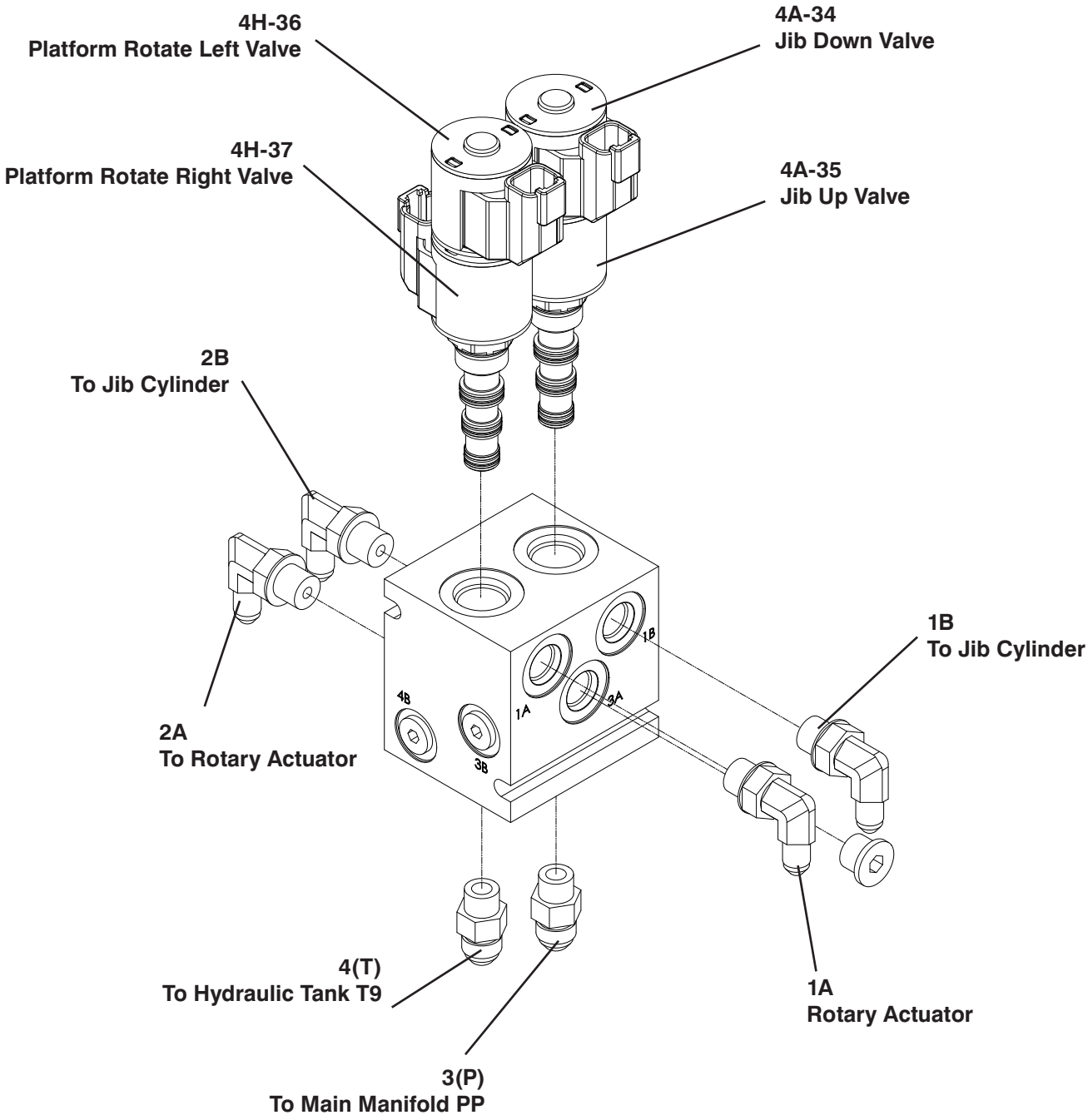

*M163596AA_SM*

# 3.13 Platform Rotate Valve and Port Identification - SJ61T

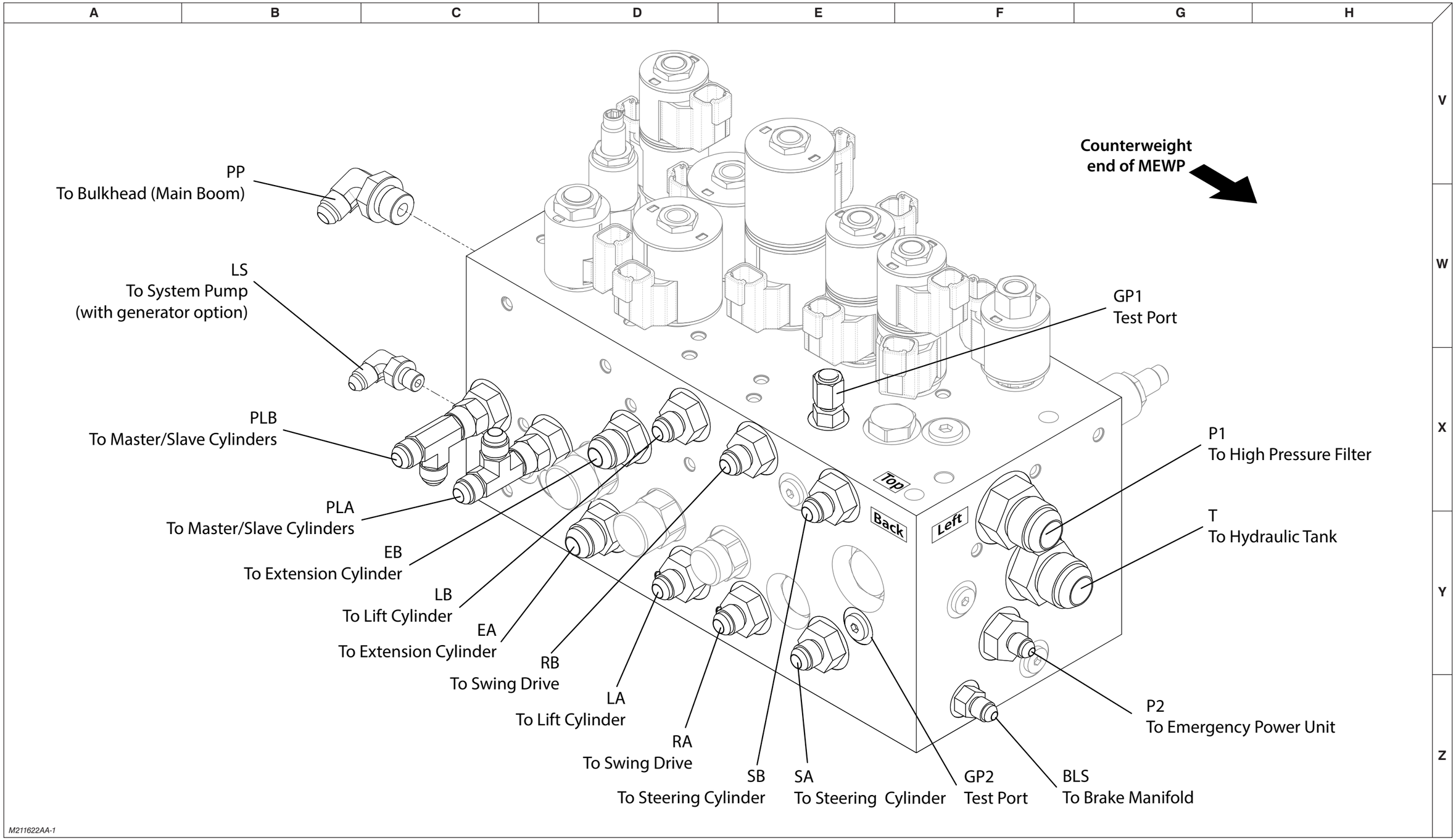



*165009AA_Valve_Explode*

# 3.14 Jib & Platform Rotate Valve and Port Identification - SJ66T




*M165018AB_Valve_Explode*


A
B
C
D
E
F
G
H
V
W
X
Y
Z
PP
To Bulkhead (Main Boom)
LS
To System Pump
(with generator option)
PLB
To Master/Slave Cylinders
PLA
To Master/Slave Cylinders
EB
To Extension Cylinder
LB
To Lift Cylinder
EA
To Extension Cylinder
RB
To Swing Drive
LA
To Lift Cylinder
RA
To Swing Drive
SB
To Steering Cylinder
SA
To Steering Cylinder
GP2
Test Port
BLS
To Brake Manifold
P2
To Emergency Power Unit
T
To Hydraulic Tank
P1
To High Pressure Filter
GP1
Test Port
Counterweight
end of MEWP
Top
Back
Left
M211622AA-1

AD

A B C D E F G H

V W X Y Z

4H-41
Platform Level Up

4H-40
Platform Level Down

4H-38
Boom Retract

2H-42
Flow Enable

4H-39
Boom Extend

4H-14
Boom Up

4H-13
Boom Down

4H-33
Turret Rotate Right

4H-32
Turret Rotate Left

2H-21A
Dump

4H-24A
Left Steer

4H-23A
Right Steer

Front

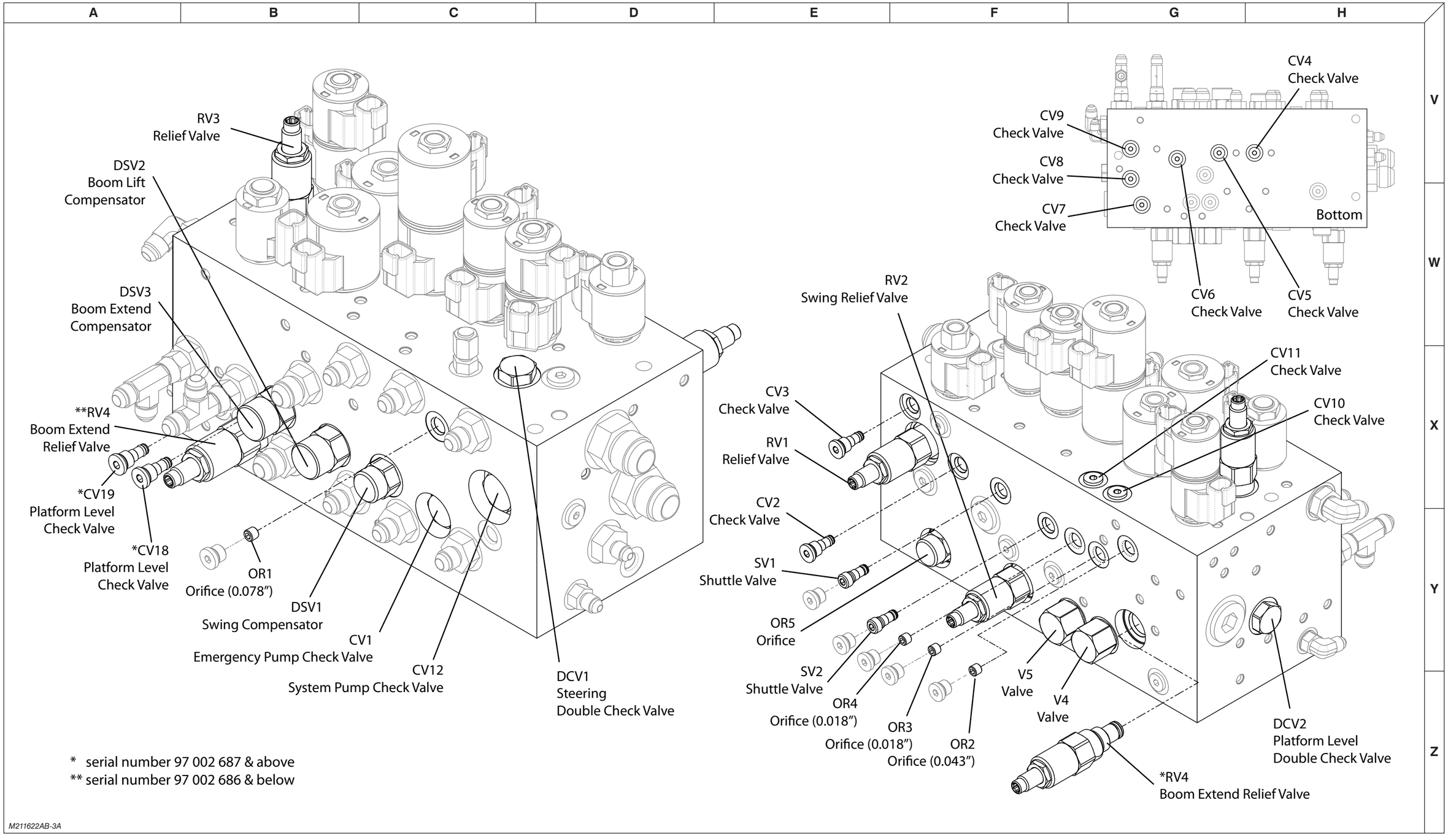
Top

Left

**Counterweight end of MEWP**

M211622AB-2

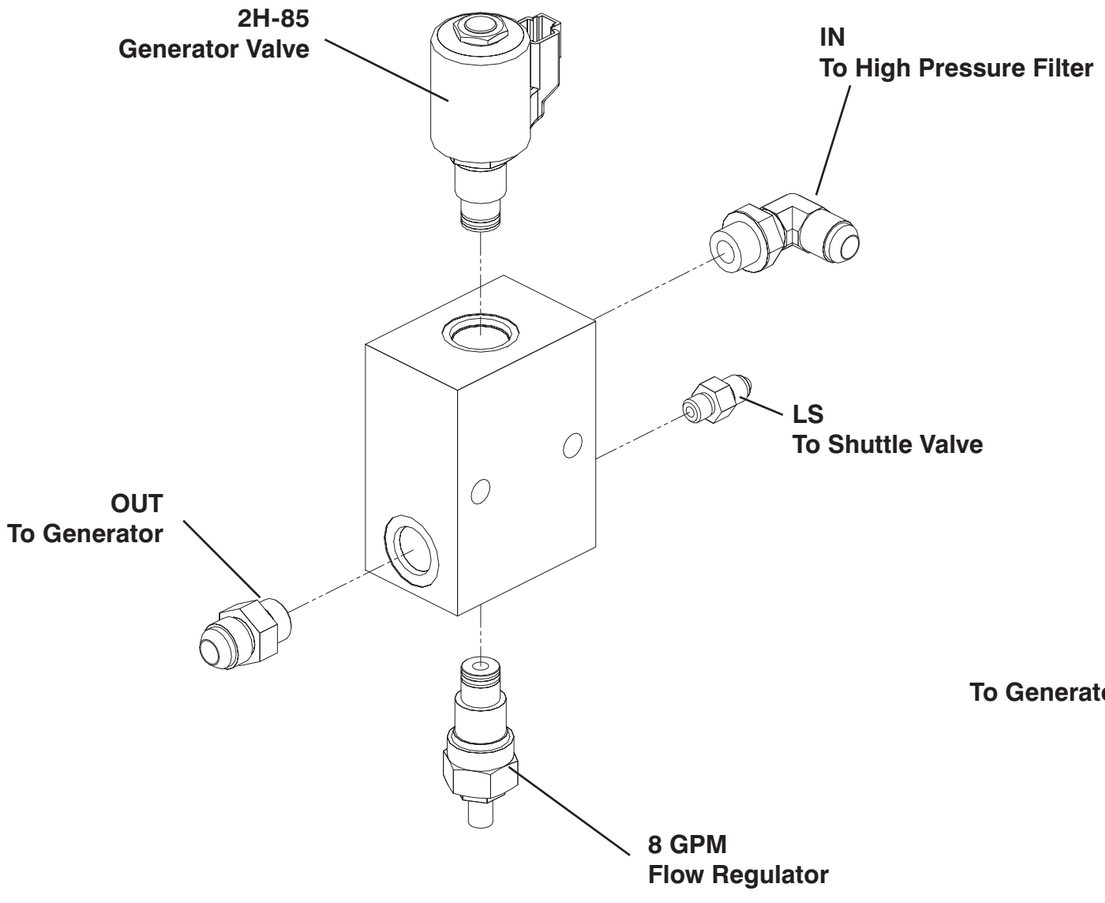
# 3.17 Main Manifold Hydraulic Component Identification



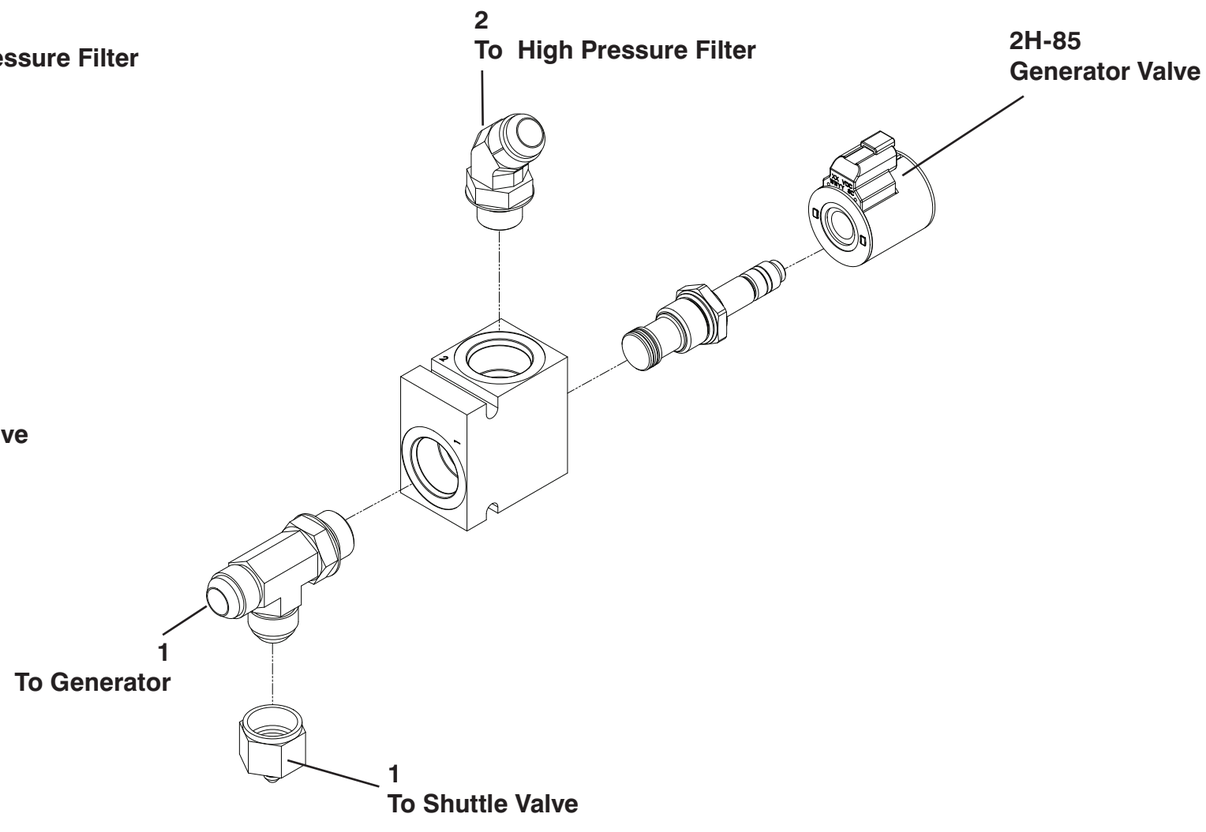

* serial number 97 002 687 & above
** serial number 97 002 686 & below

M211622AB-3A

## 3500W Generator

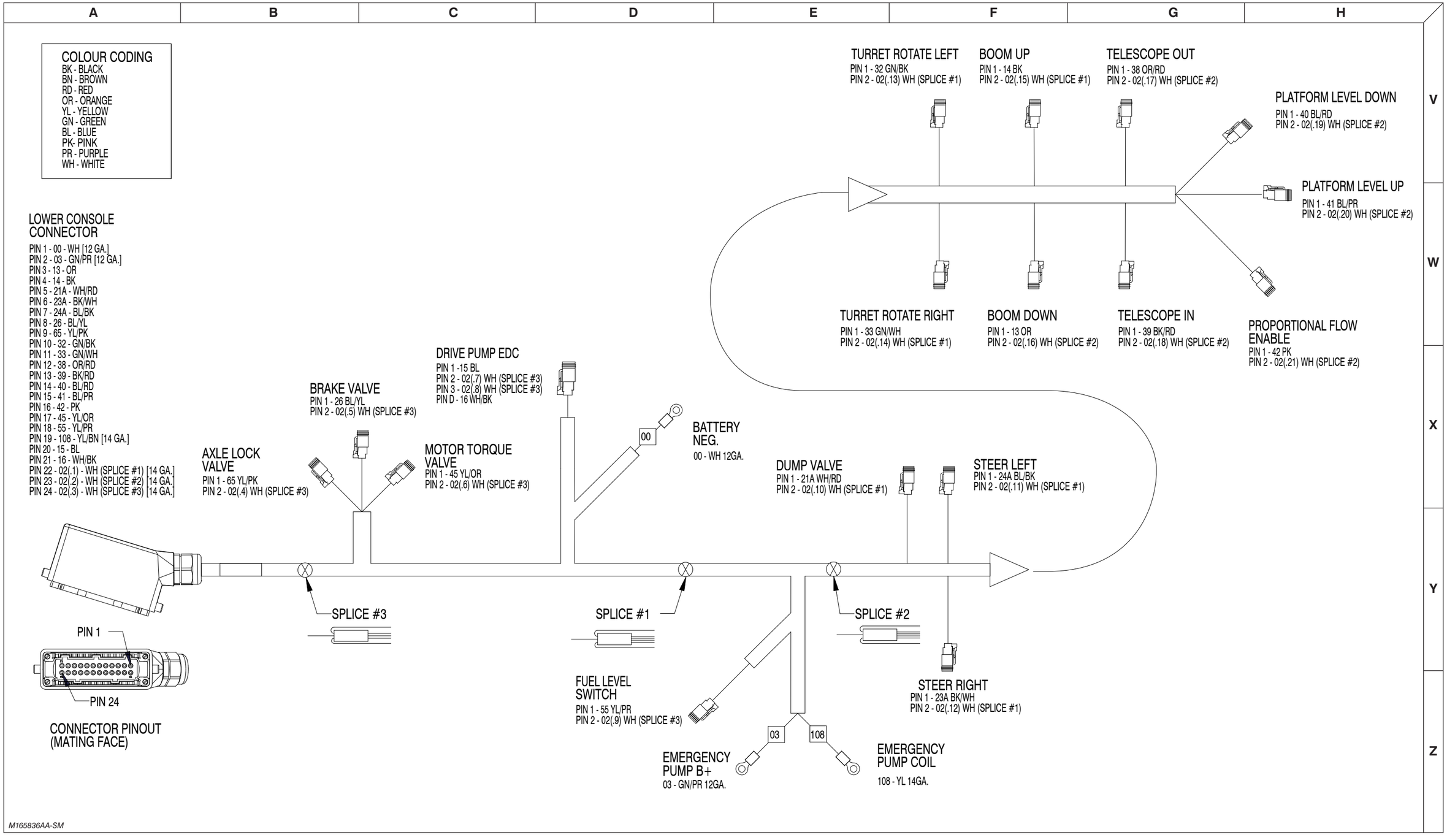



## 12kW Generator (Welder option)

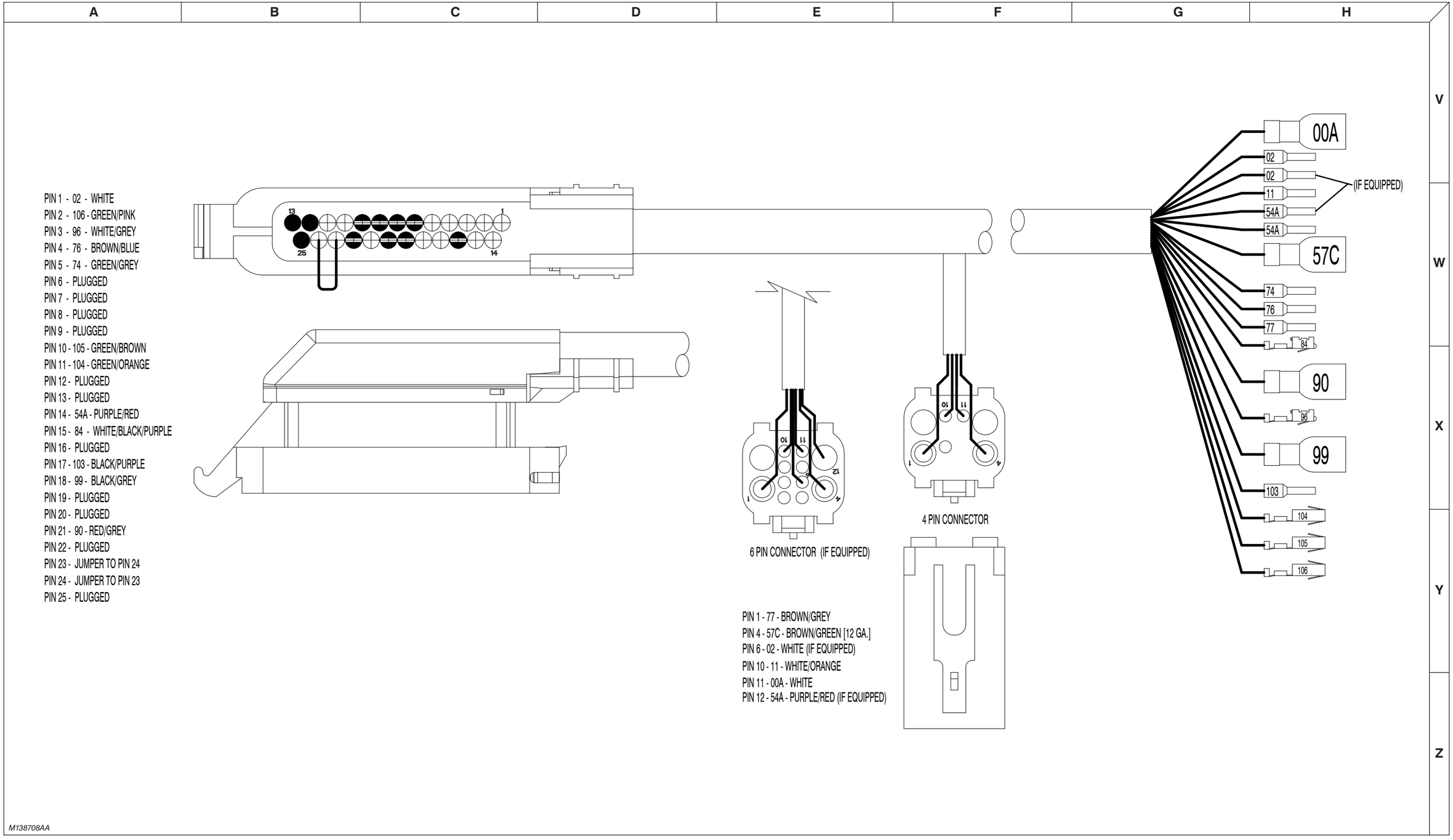



M138405AB_M163543AB

# 3.19 Main Harness Wiring Diagram



# 3.20 ECU Engine Wiring Diagram - Deutz



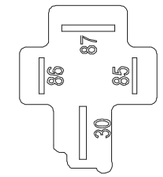
# 3.21 Glow Plug and EGR Harnesses - Deutz

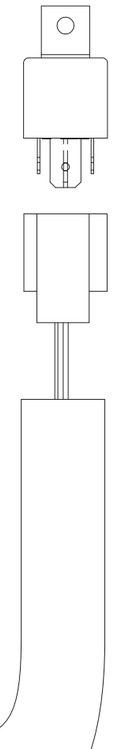



EGR CONNECTOR PIN OUT
CAVITY 1 = 07 WHITE
CAVITY 2 = 02 BLACK

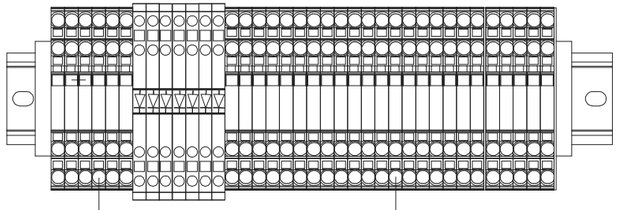
TO AIR BOX

RELAY CONNECTOR PIN-OUT
30 - 11A RED
85 - 54A BLK
86 - 11 WHT
87 - 11B RED



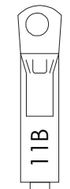
BASE CONTROL BOX TERMINAL STRIP WIRING:



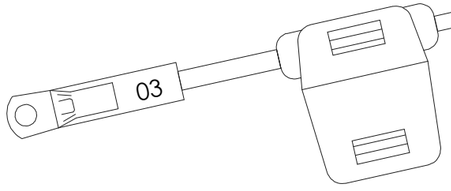
11 WHT

54A BLK

TO ENGINE GLOW PLUG
POWER FEED STUD

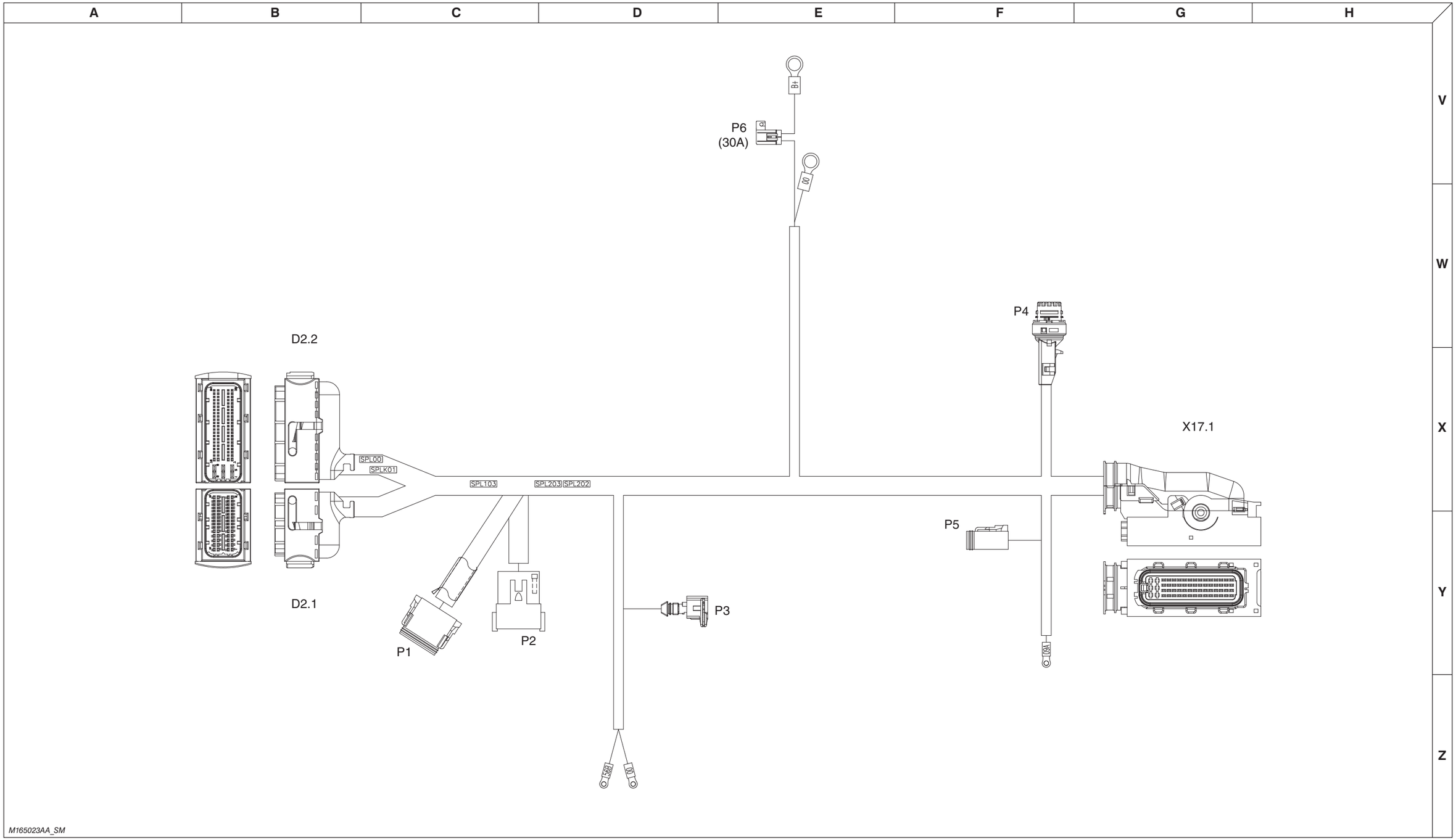



TO ENGINE STARTER



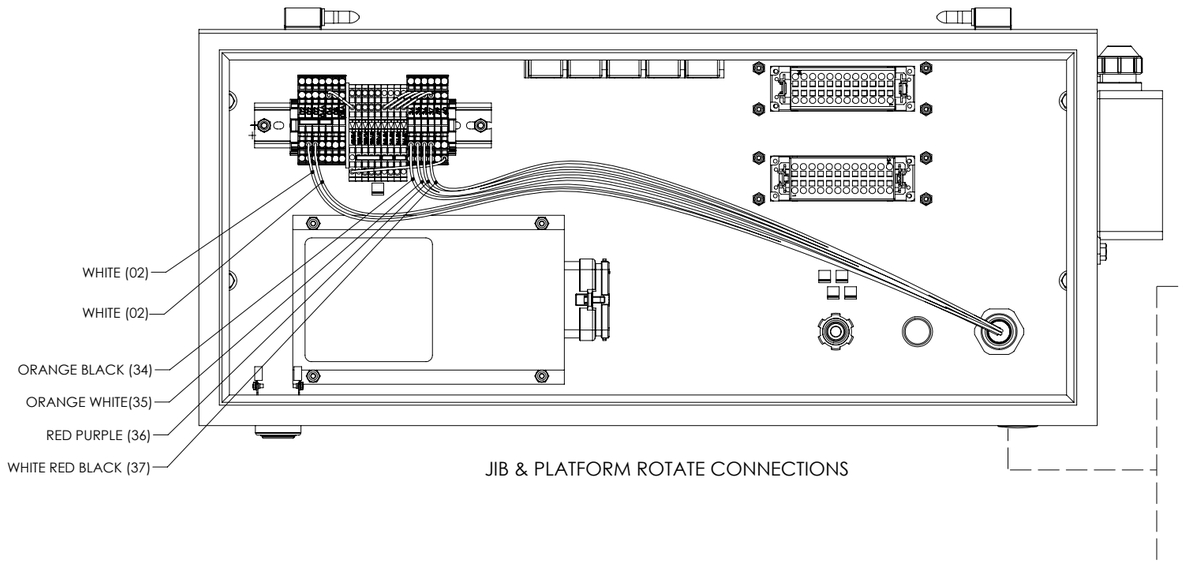

M138849AB

# 3.22 Engine Interface Harness - Deutz TD2.9L

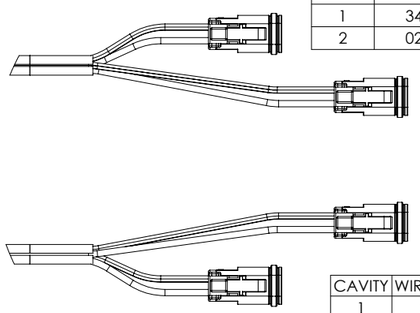



M165023AA_SM

# 3.23 Harnesses




JIB & PLATFORM ROTATE CONNECTIONS



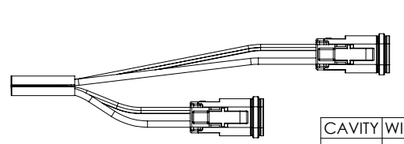
| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 34 | ORANGE/BLK | JIB DOWN |
| 2 | 02 | WHITE (SPLICE 2) | GROUND |

| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 35 | ORANGE/WHITE | JIB UP |
| 2 | 02 | WHITE (SPLICE 2) | GROUND |

| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 36 | RED/PURPLE | ROTATE CW |
| 2 | 02 | WHITE (SPLICE 1) | GROUND |

| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 37 | WHITE/RED/BLK | ROTATE CCW |
| 2 | 02 | WHITE (SPLICE 1) | GROUND |

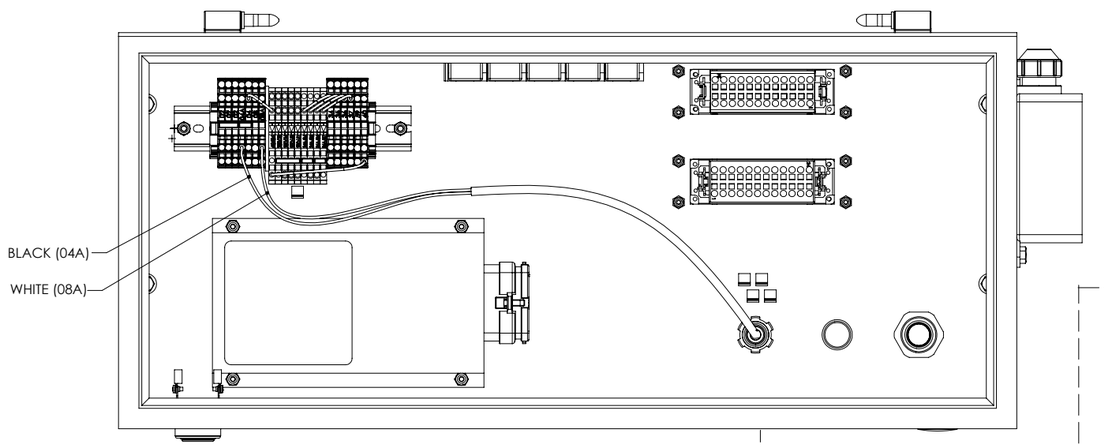
JIB & PLATFORM ROTATE HARNESS (45T/66T)

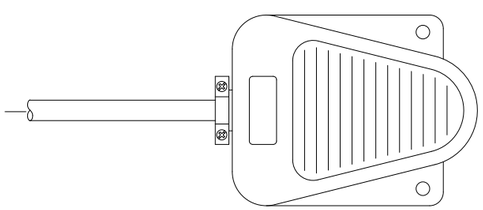


| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 36 | RED/PURPLE | ROTATE CW |
| 2 | 02 | WHITE (SPLICE) | GROUND |

| CAVITY | WIRE NO. | COLOUR | DESCRIPTION |
|---|---|---|---|
| 1 | 37 | WHITE/RED/BLK | ROTATE CCW |
| 2 | 02 | WHITE (SPLICE) | GROUND |

PLATFORM ROTATE HARNESS (40T/61T)

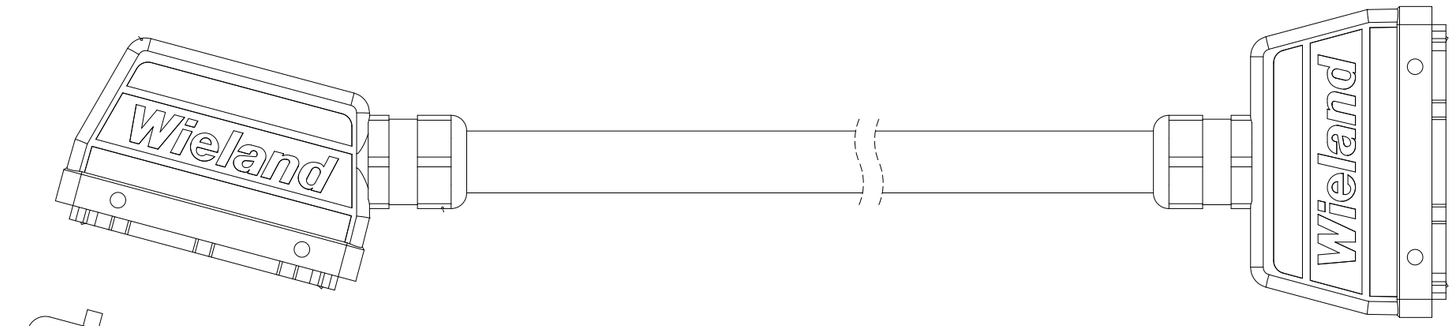


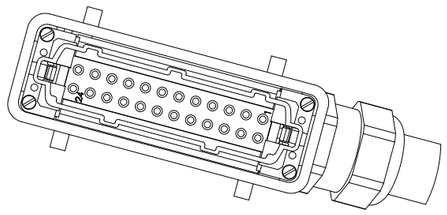



FOOT PEDAL CONNECTIONS

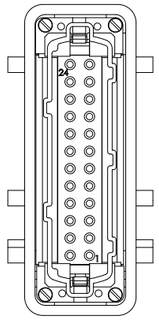
*M167760AA_M167698AB_M167740AB*

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|



Male

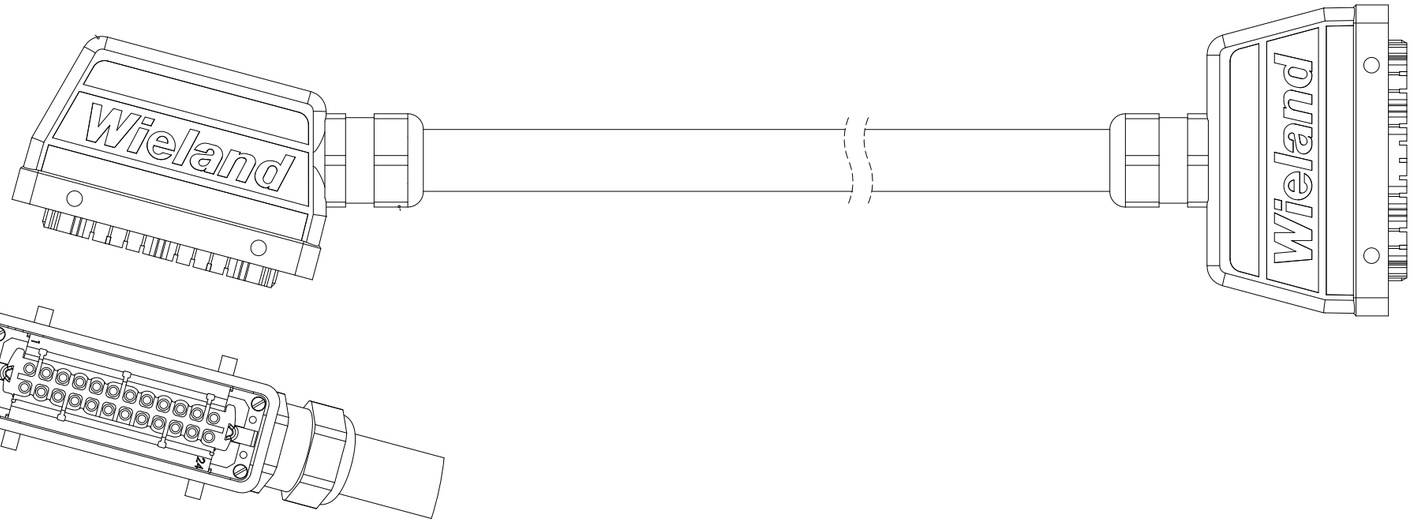


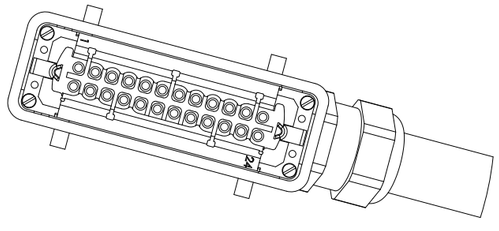
Male

## Control Cable “C”

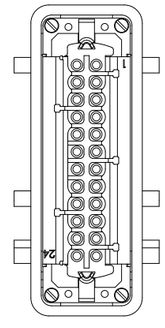
BASE & PLATFORM CONNECTIONS

POSITION 1 - PURPLE/BLACK
POSITION 2 - RED
POSITION 3 - RED
POSITION 4 - BLUE/WHITE
POSITION 5 - RED/YELLOW/BLACK
POSITION 6 - ORANGE
POSITION 7 - BLACK
POSITION 8 - ORANGE/BLUE
POSITION 9 - BLACK/WHITE
POSITION 10 - BLUE/BLACK
POSITION 11 - BLUE/YELLOW
POSITION 12 - RED/GREEN
POSITION 13 - RED/WHITE
POSITION 14 - GREEN/BLACK
POSITION 15 - GREEN/WHITE
POSITION 16 - ORANGE/BLACK
POSITION 17 - ORANGE/WHITE
POSITION 18 - RED/PURPLE
POSITION 19 - WHITE/RED/BLACK
POSITION 20 - YELLOW/ORANGE
POSITION 21 - YELLOW/PINK
POSITION 22 - PINK/WHITE
POSITION 23 - PINK/PURPLE
POSITION 24 - PINK/BLACK



Female



Female

## Control Cable “D”

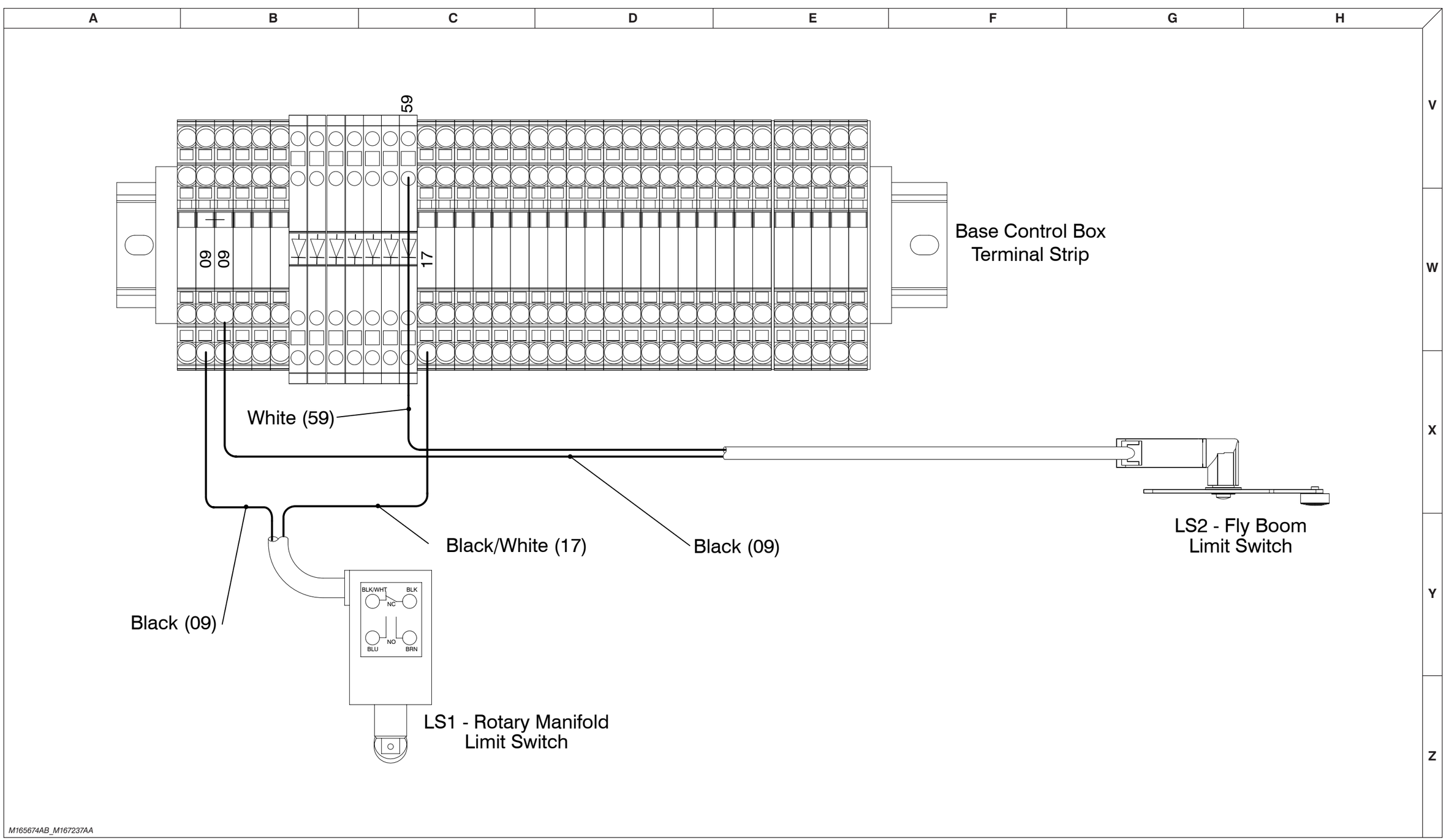
BASE & PLATFORM CONNECTIONS

POSITION 1 - WHITE
POSITION 2 - WHITE
POSITION 3 - WHITE/ORANGE
POSITION 4 - BLUE
POSITION 5 - WHITE/BLACK
POSITION 6 - BLUE/GREEN
POSITION 7 - GREEN
POSITION 8 - ORANGE/RED
POSITION 9 - BLACK/RED
POSITION 10 - BLUE/RED
POSITION 11 - BLUE/PURPLE
POSITION 12 - GREEN/RED
POSITION 13 - YELLOW/PURPLE
POSITION 14 - BROWN/GREEN
POSITION 15 - YELLOW/BLUE
POSITION 16 - WHITE/BLUE
POSITION 17 - GREEN/GREY
POSITION 18 - BROWN/BLUE
POSITION 19 - RED/BLUE
POSITION 20 - BROWN/PURPLE
POSITION 21 - GREY/BLUE
POSITION 22 - BLACK/YELLOW
POSITION 23 - BLUE/WHITE/YELLOW
POSITION 24 - BLUE/WHITE/BLACK

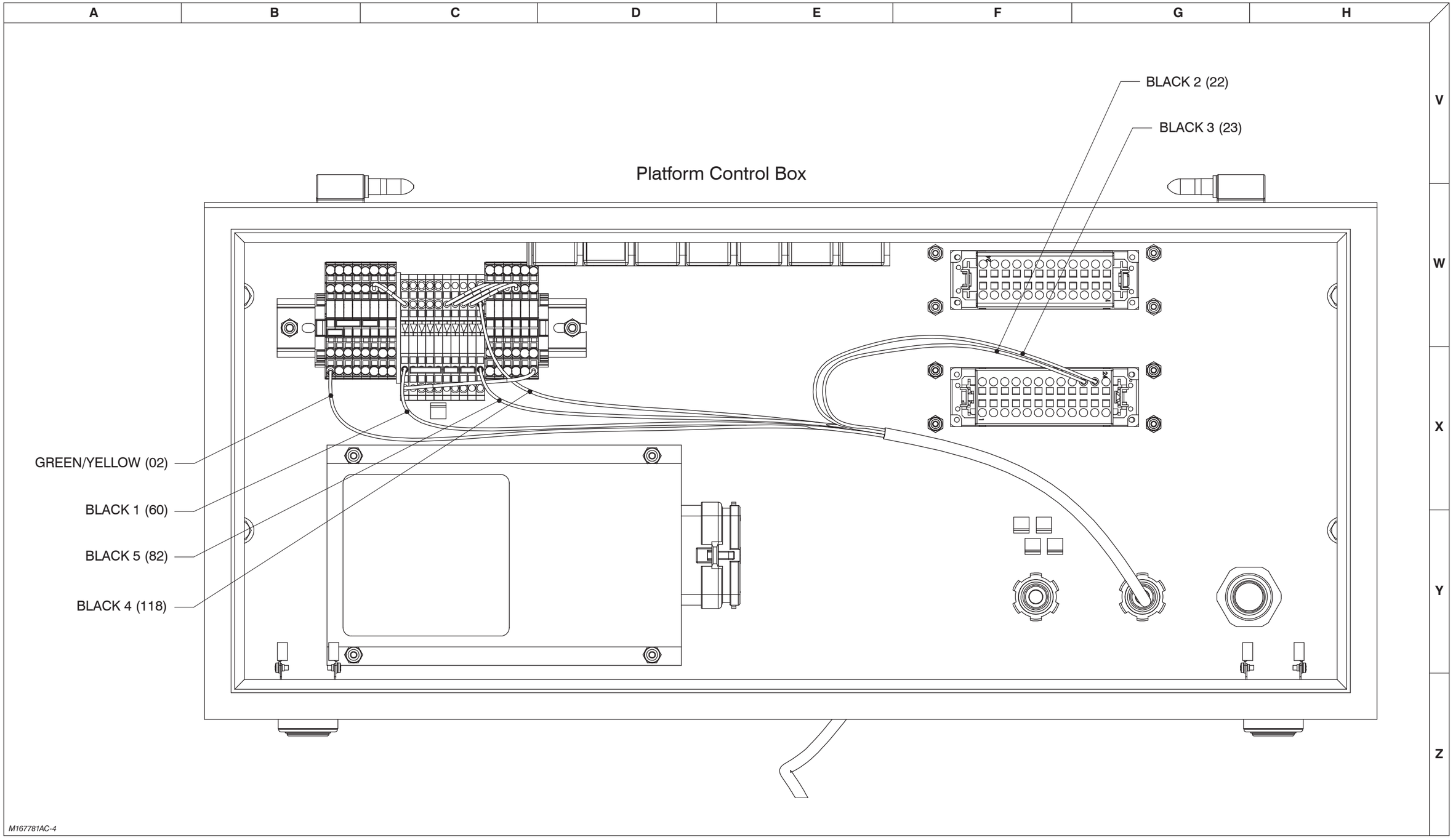
| V | W | X | Y | Z |
|---|---|---|---|---|

*M165528AA_M165525AA*

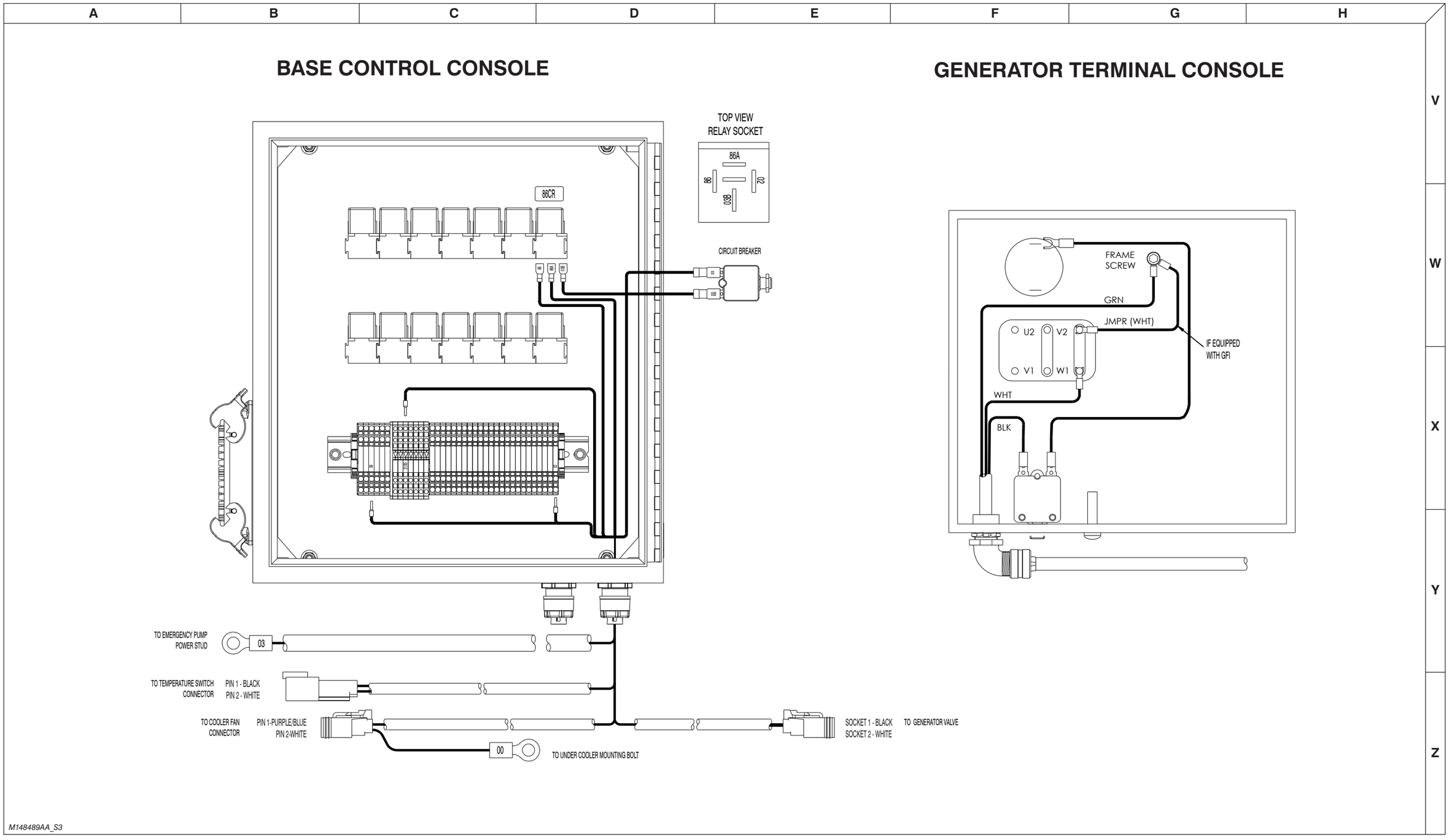
## 3.25 Limit Switch Connections



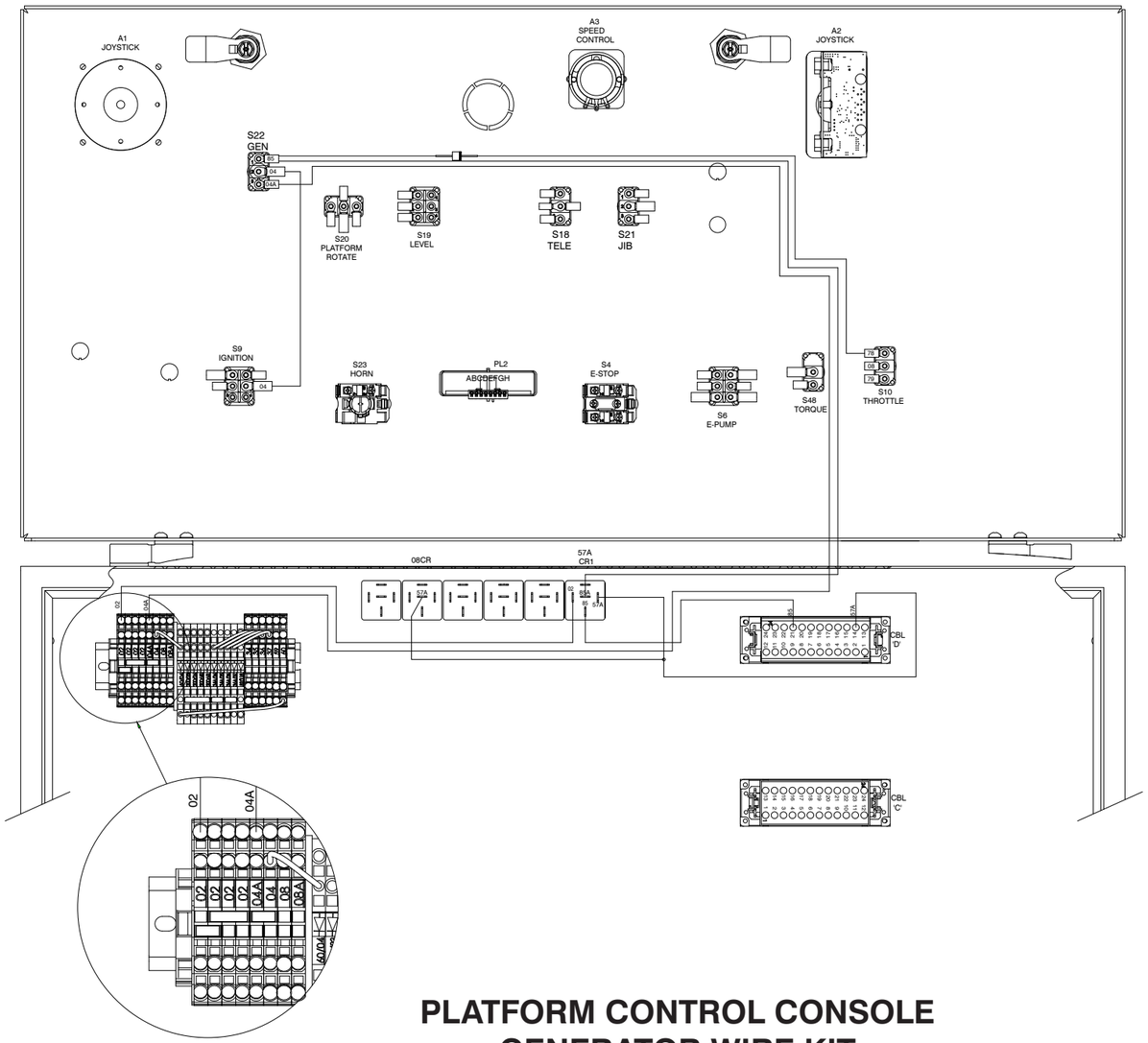
# 3.26 Load Sensing Cable Connection - CE



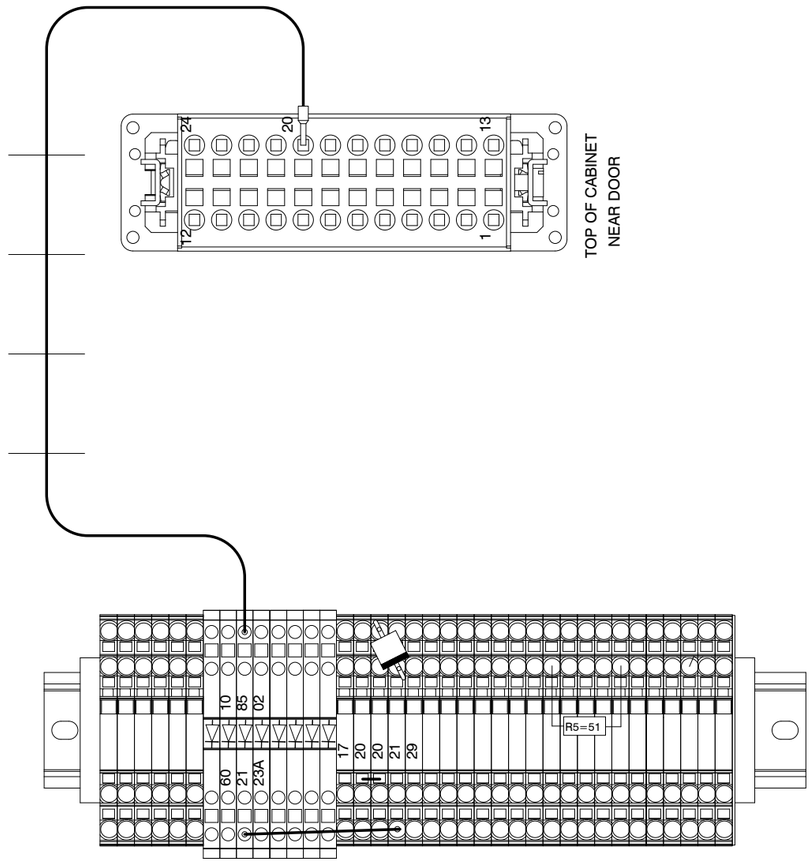
# 3.27 Generator and Oil Cooler Harness Connections



# 3.28 Generator Wire Kit Connections



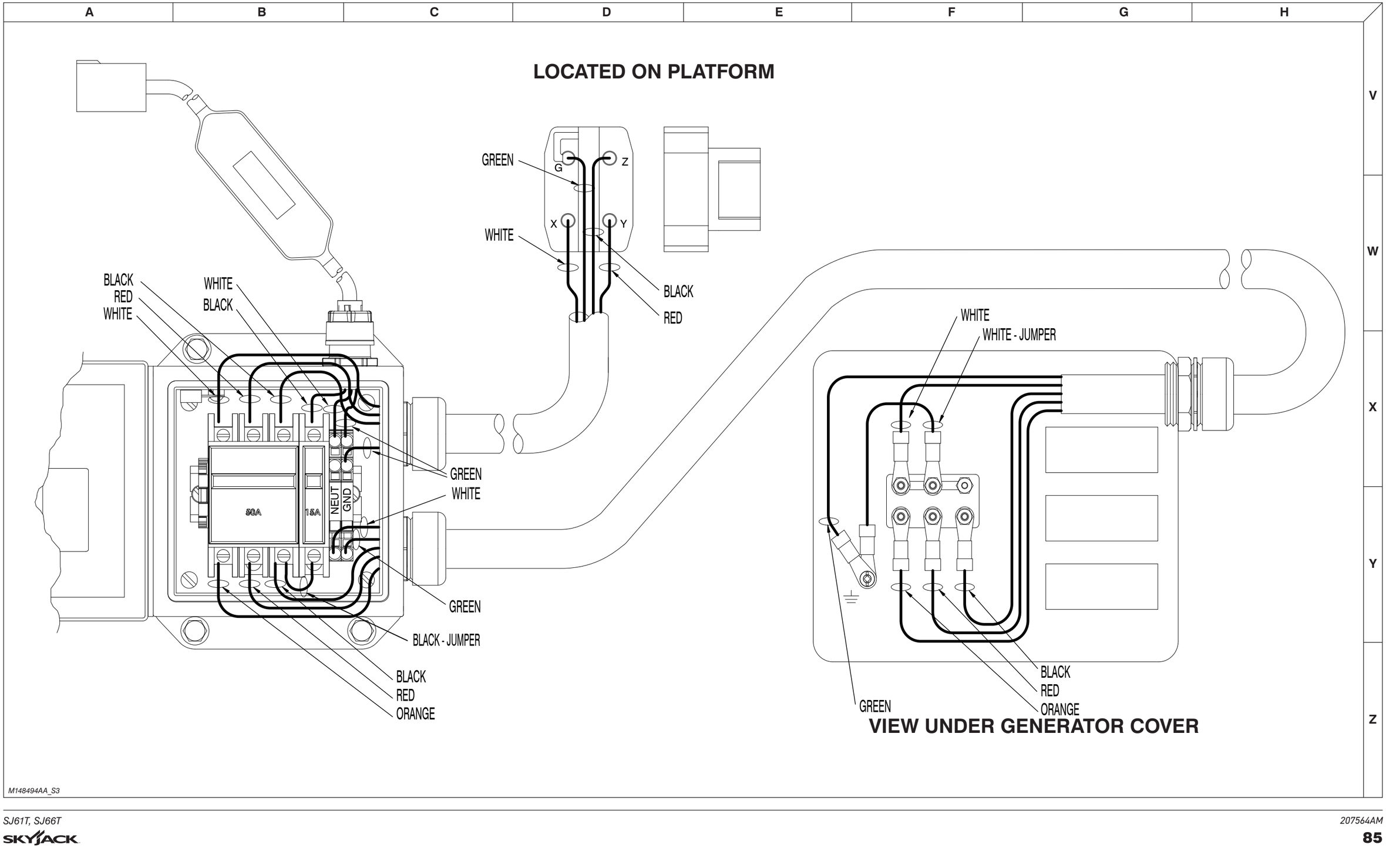

**PLATFORM CONTROL CONSOLE**
**GENERATOR WIRE KIT**

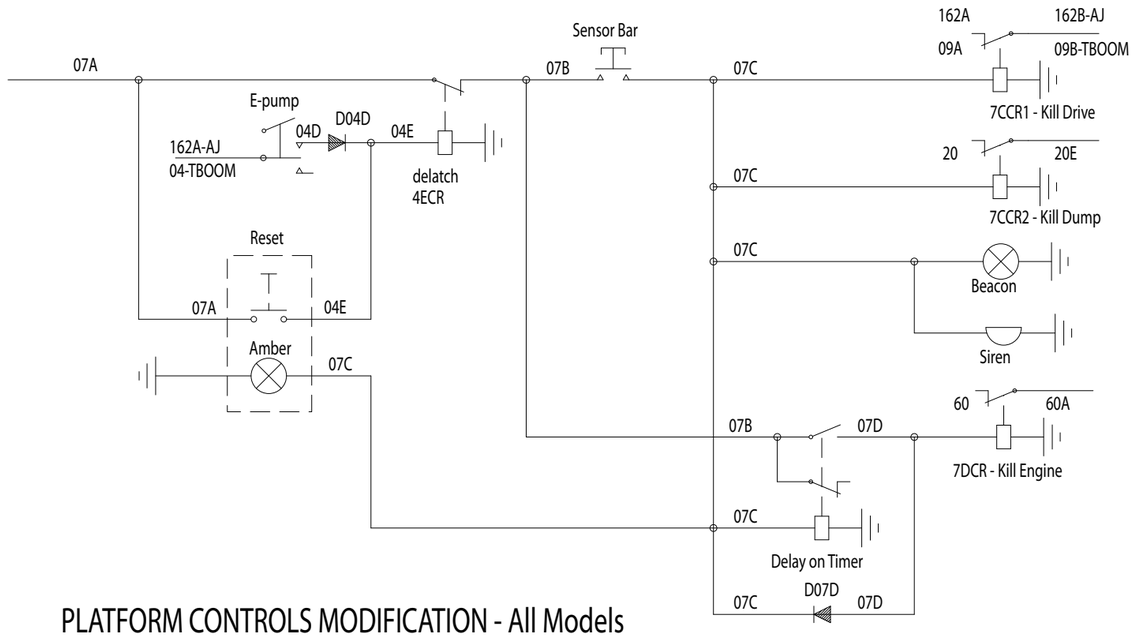



**BASE CONTROL CONSOLE**
**GENERATOR WIRE KIT**

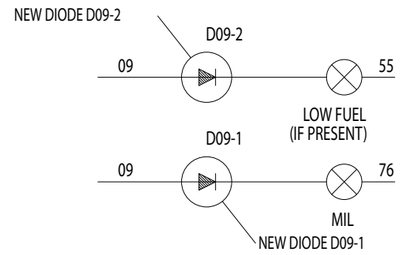
*M169581AC_M144108AB*

## 3.29 Generator Connection - 12 kW

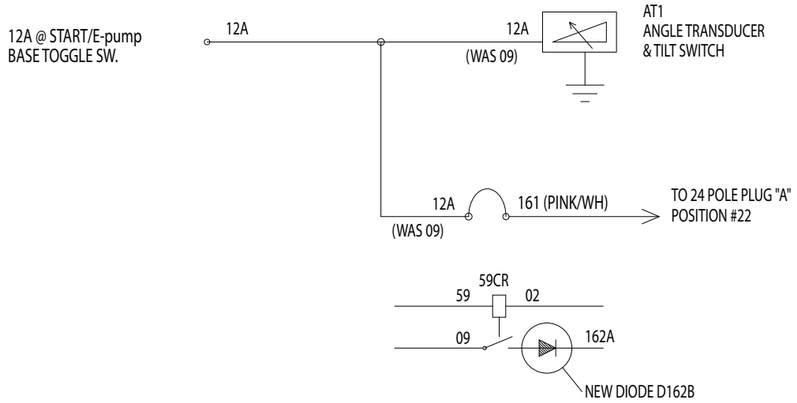





PLATFORM CONTROLS MODIFICATION - All Models




BASE CONTROLS MODIFICATION -
Models with Deutz D2.9 or TD2.9 Engines



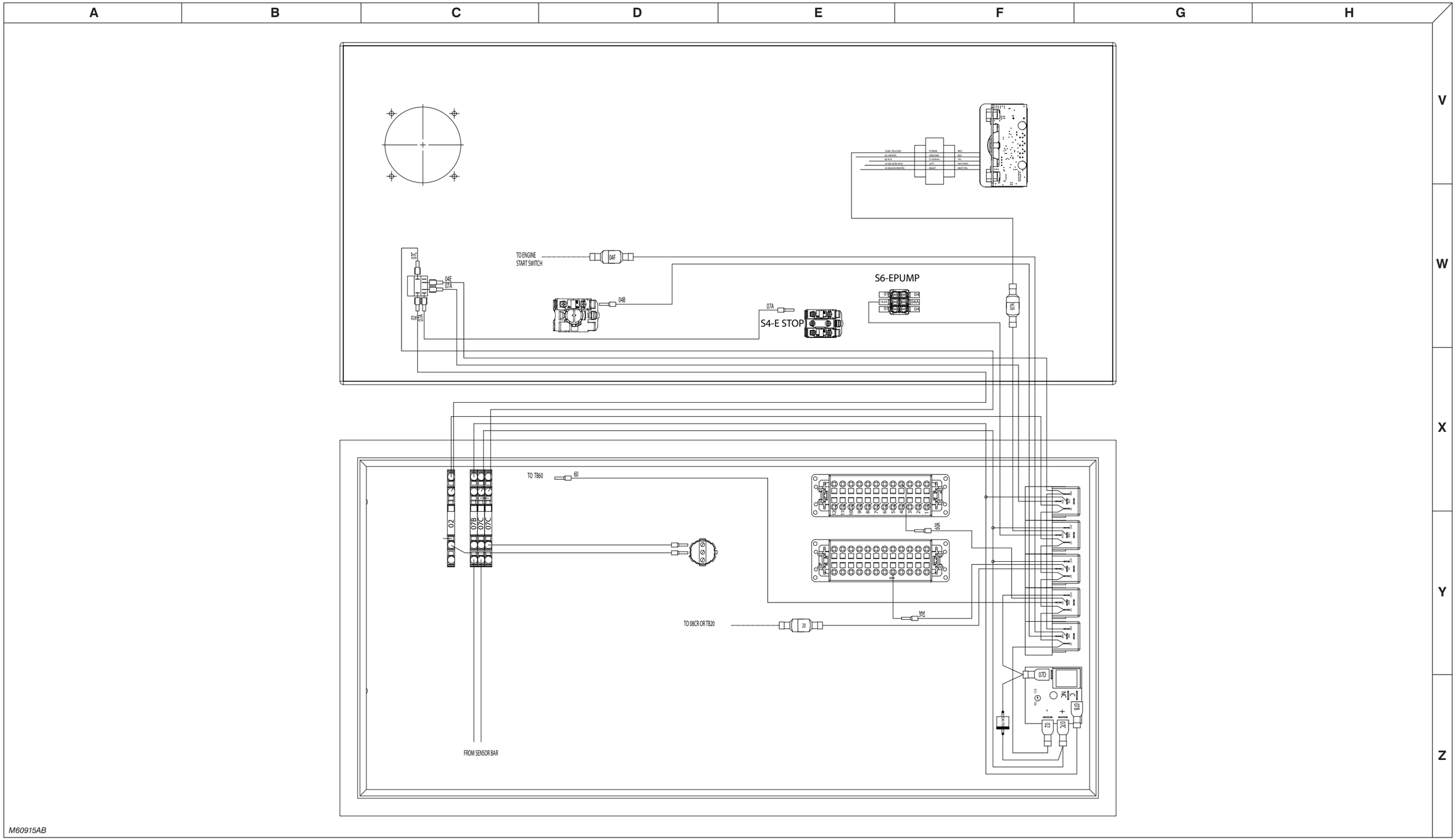

BASE CONTROLS MODIFICATION - AJ Models



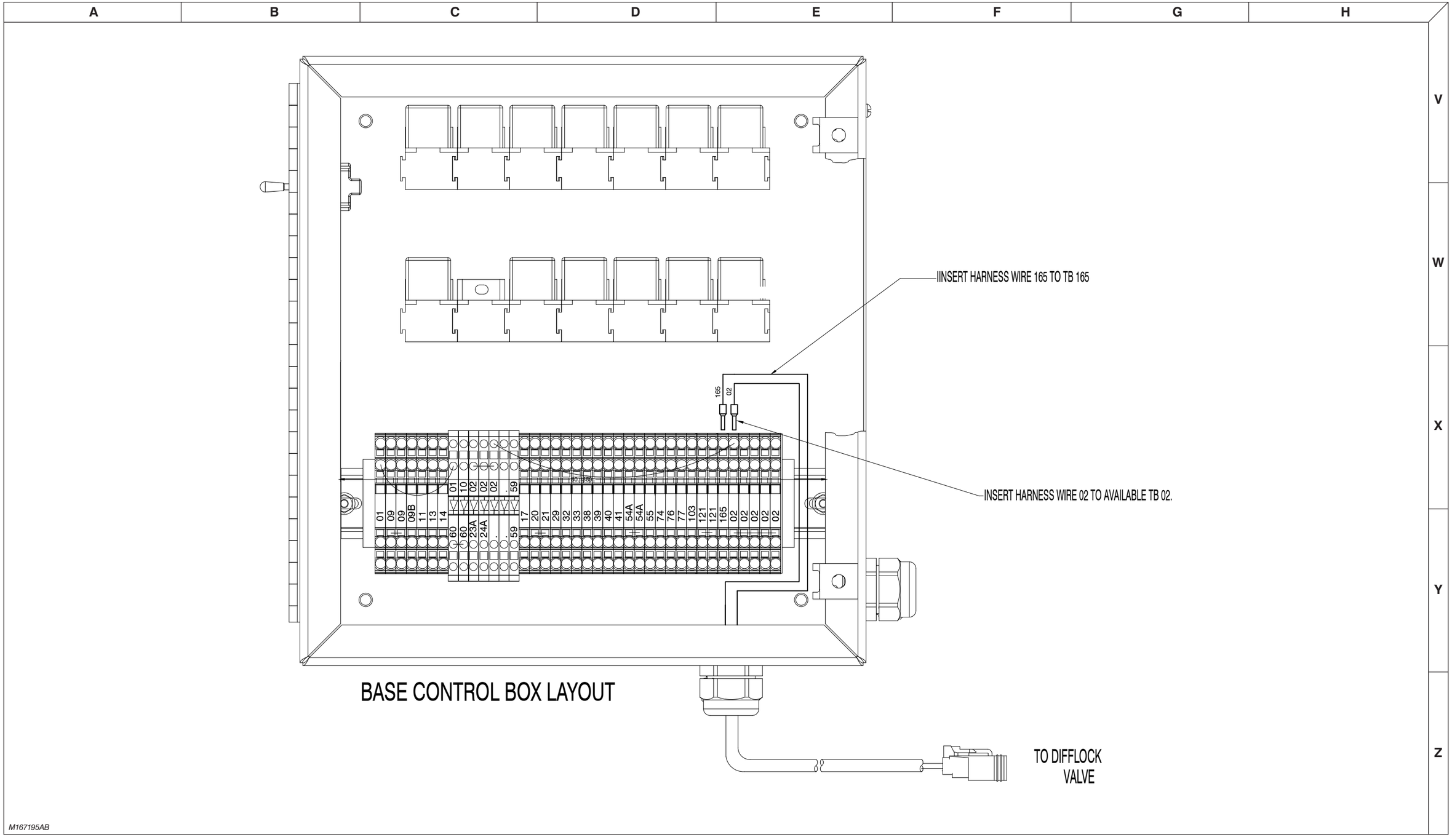

BASE CONTROLS MODIFICATION - T Models

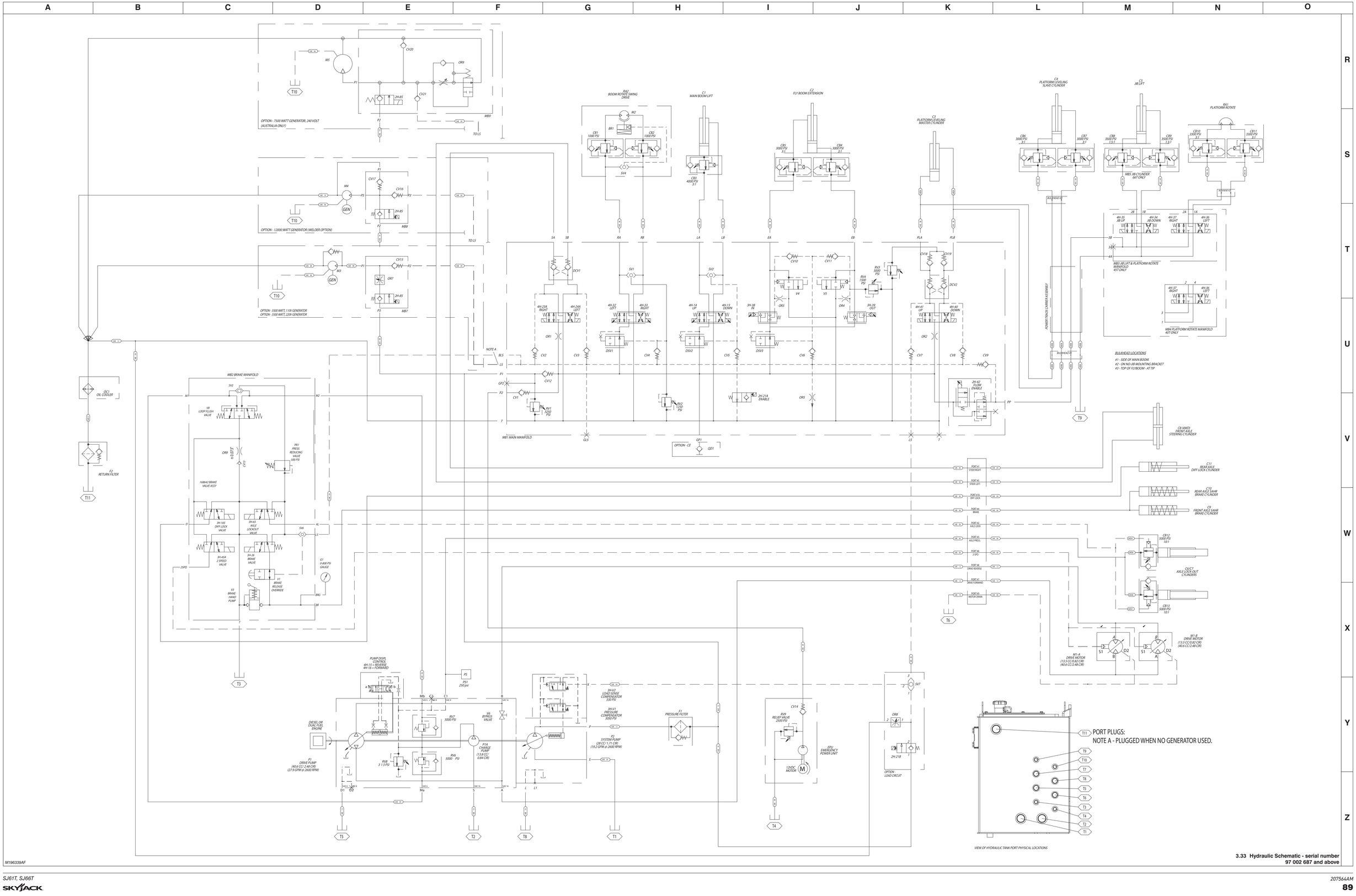
M166133AC

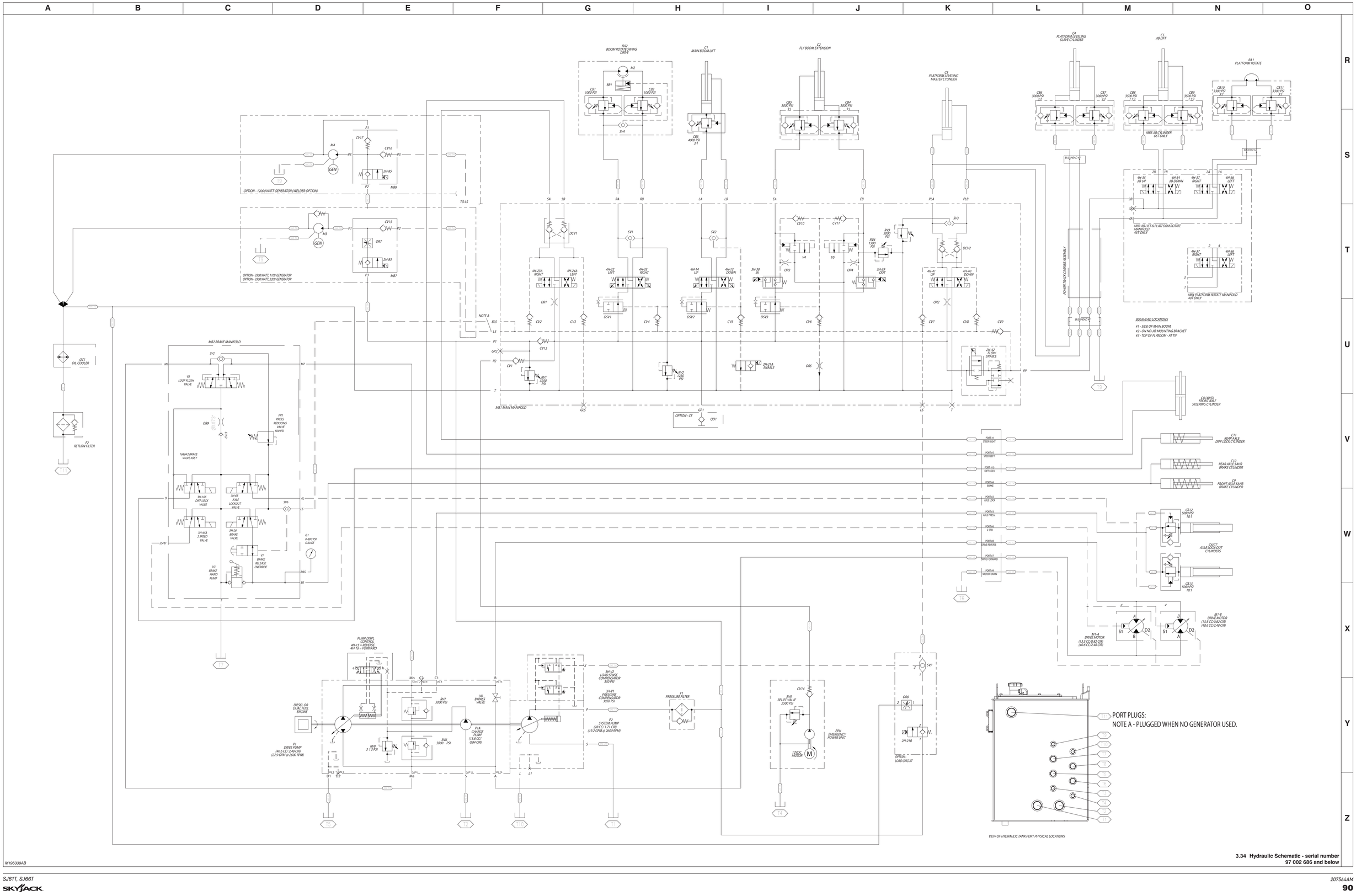
# 3.31 SGE Platform Control Box Wiring



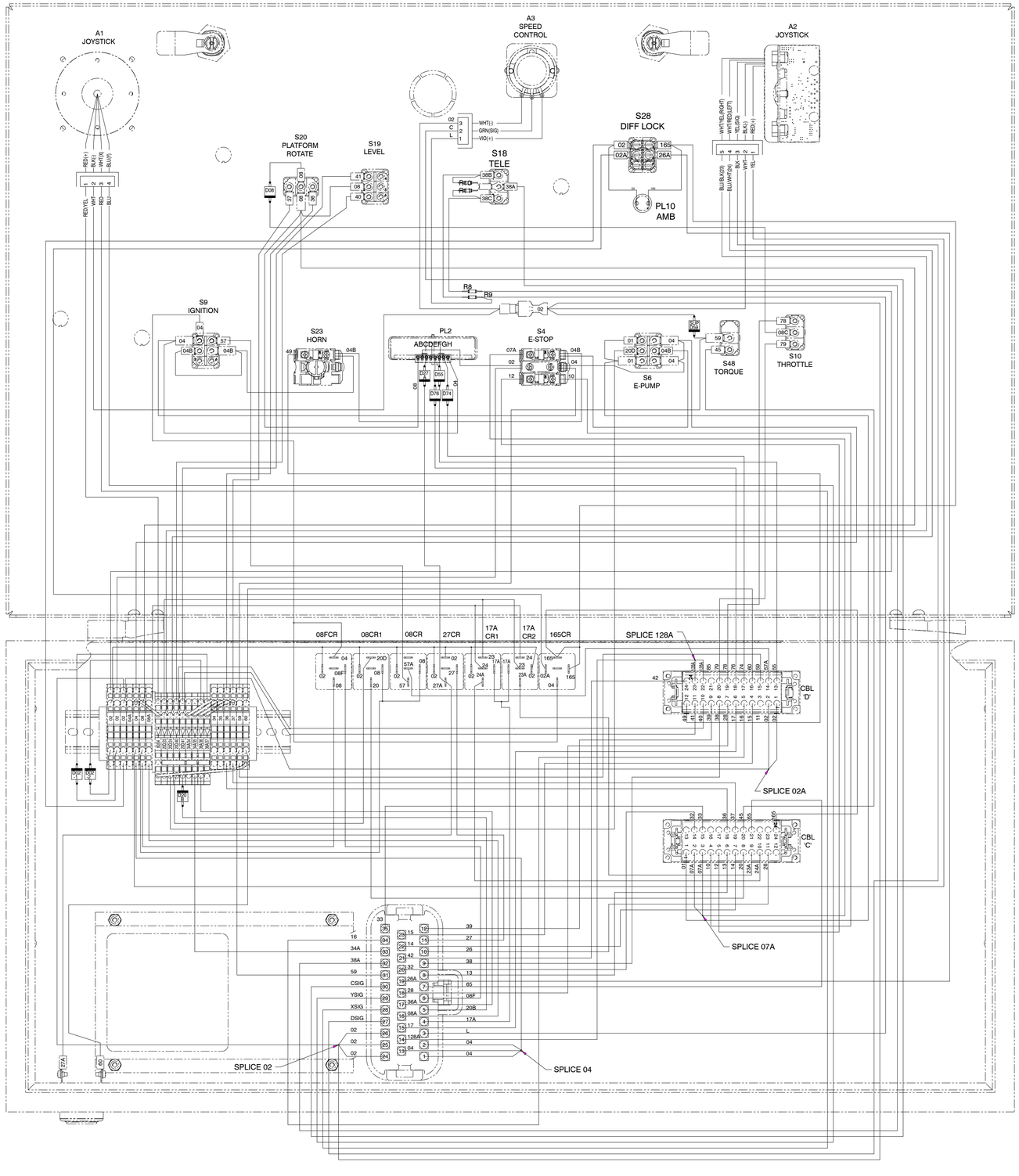
# 3.32 Differential Lock Harness

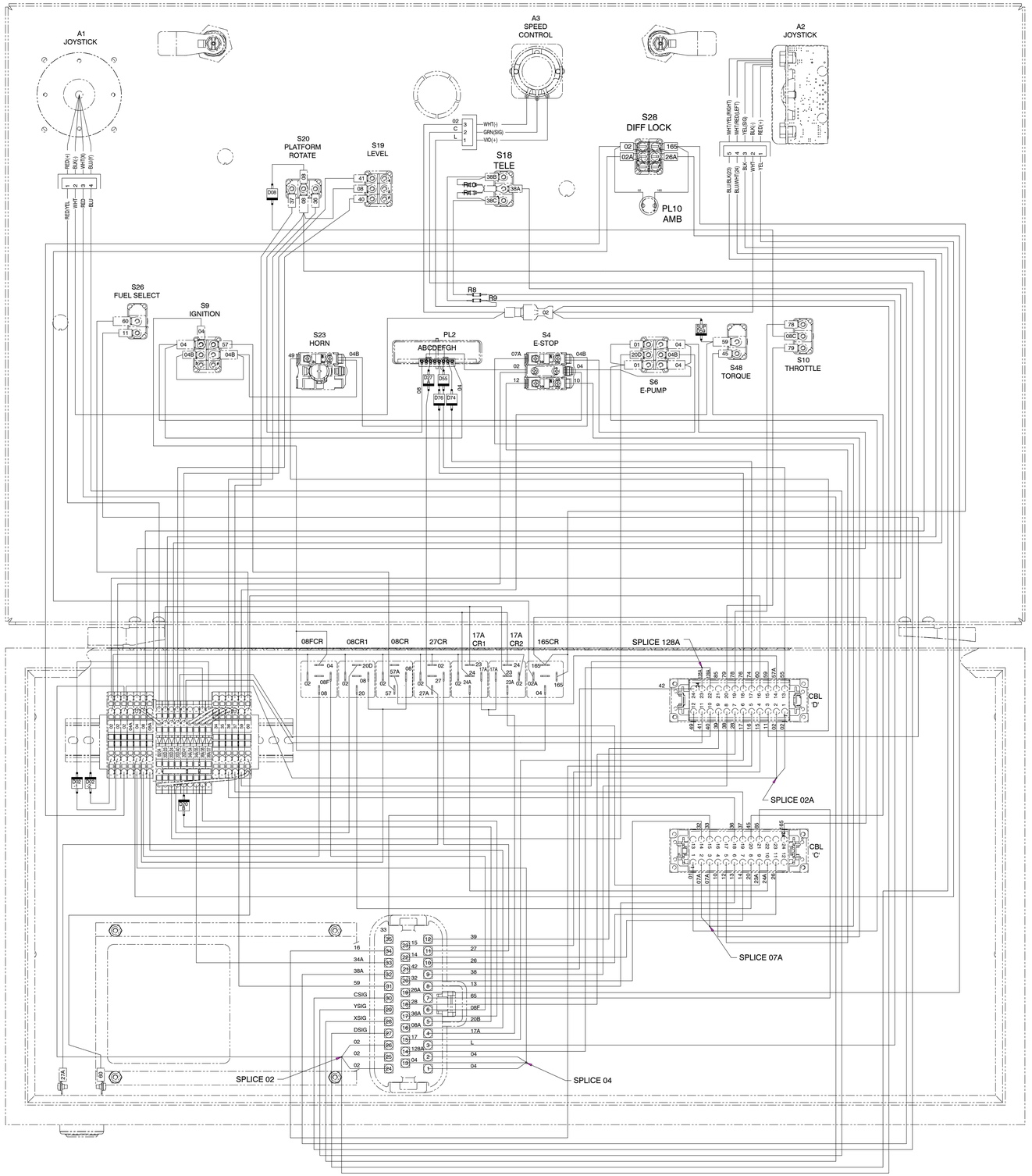


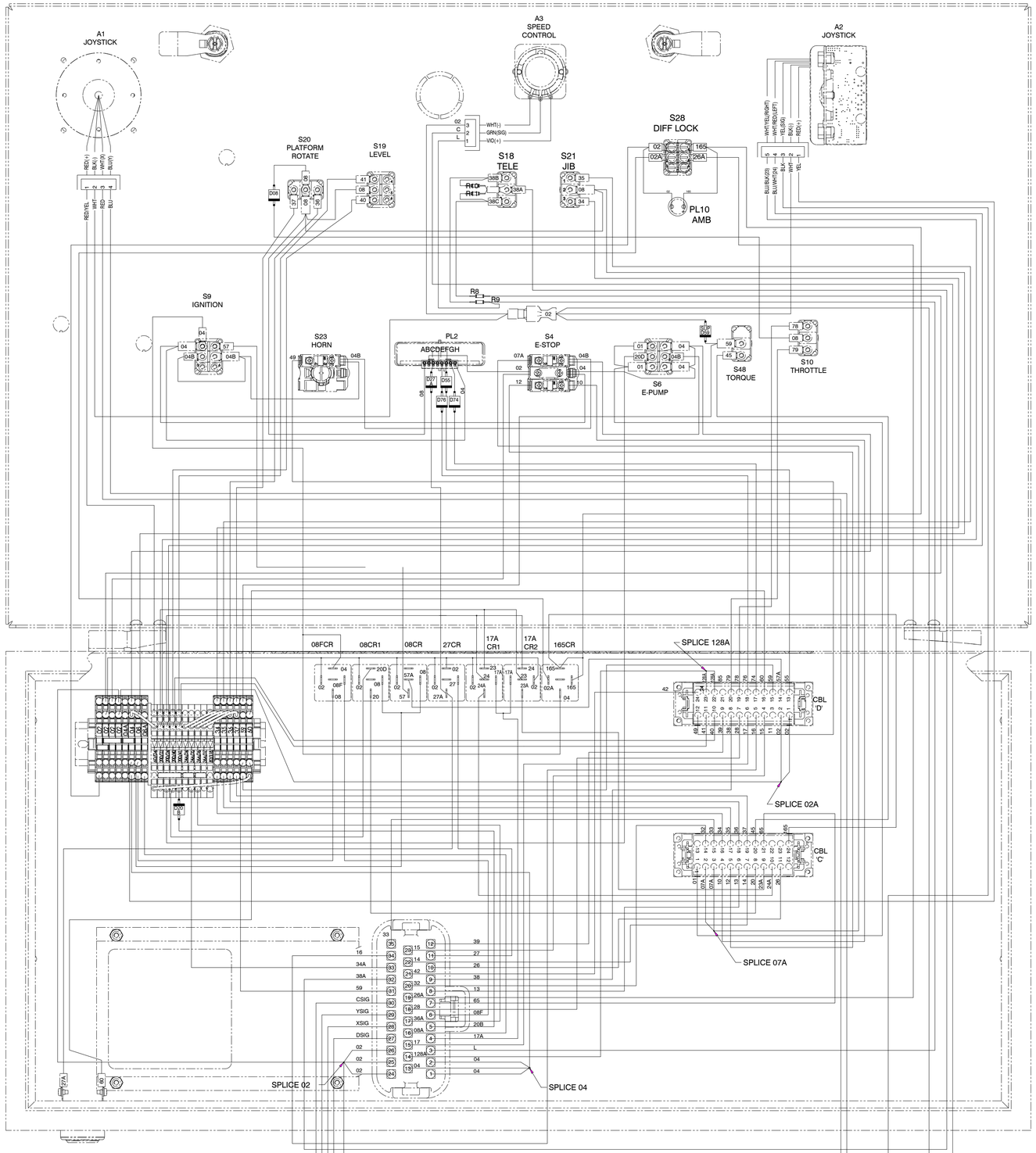

OPTION - 7500 WATT GENERATOR, 240 VOLT (AUSTRALIA ONLY)
OPTION - 12000 WATT GENERATOR (WELDER OPTION)
OPTION - 3500 WATT, 110V GENERATOR
OPTION - 3500 WATT, 220V GENERATOR
MB2 BRAKE MANIFOLD
MB7 MAIN MANIFOLD
MB8 JIB CYLINDER 66T ONLY
MB3 JIB LIFT & PLATFORM ROTATE MANIFOLD 45T ONLY
MB4 PLATFORM ROTATE MANIFOLD 40T ONLY
POWER TRACK CABLE ASSEMBLY
BULKHEAD LOCATIONS
#1 - SIDE OF MAIN BOOM
#2 - ON NO-JIB MOUNTING BRACKET
#3 - TOP OF FLYBOOM - AT TIP
PORT PLUGS:
NOTE A - PLUGGED WHEN NO GENERATOR USED.
VIEW OF HYDRAULIC TANK PORT PHYSICAL LOCATIONS
M196339AF

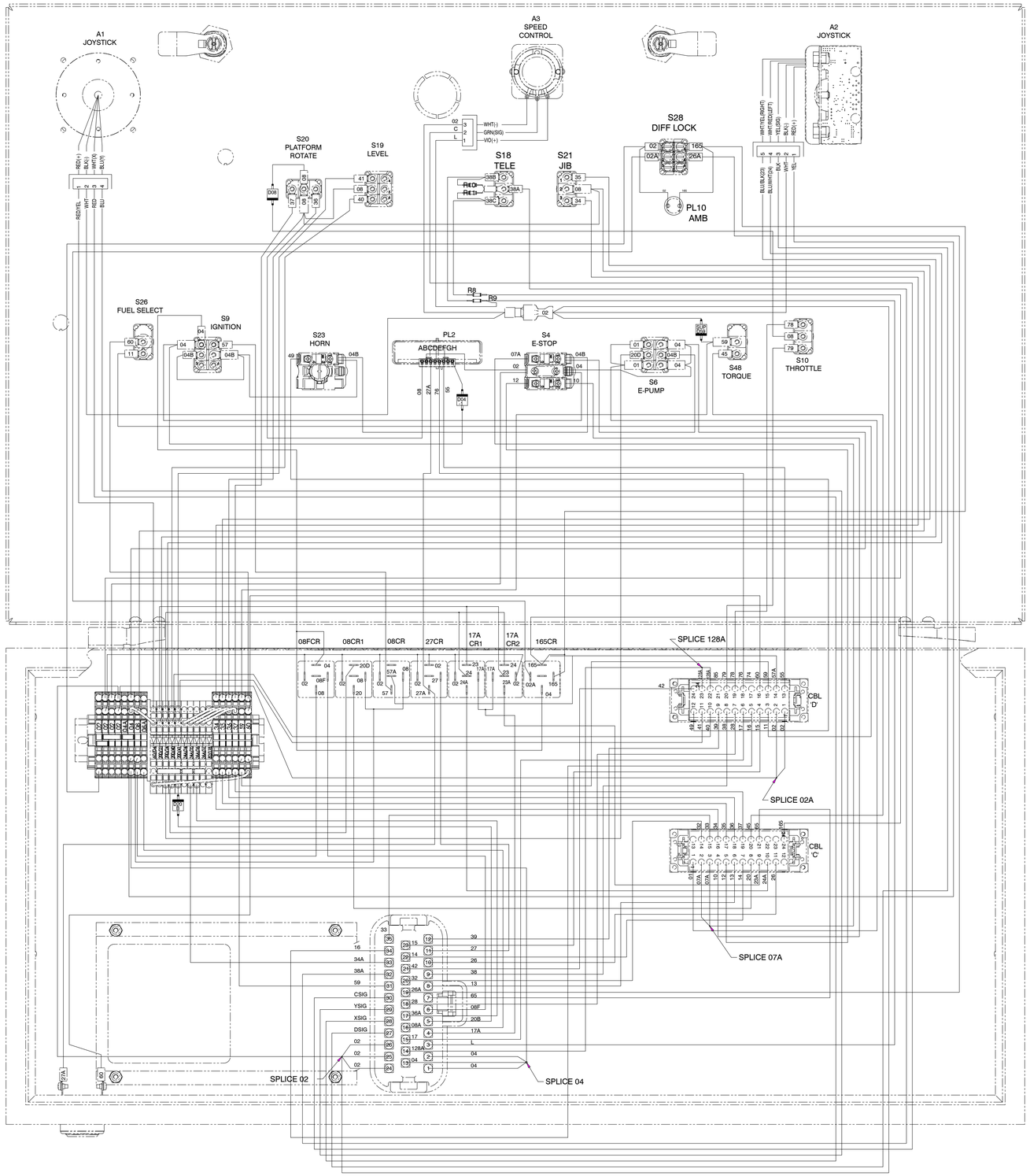



3.34 Hydraulic Schematic - serial number 97 002 686 and below

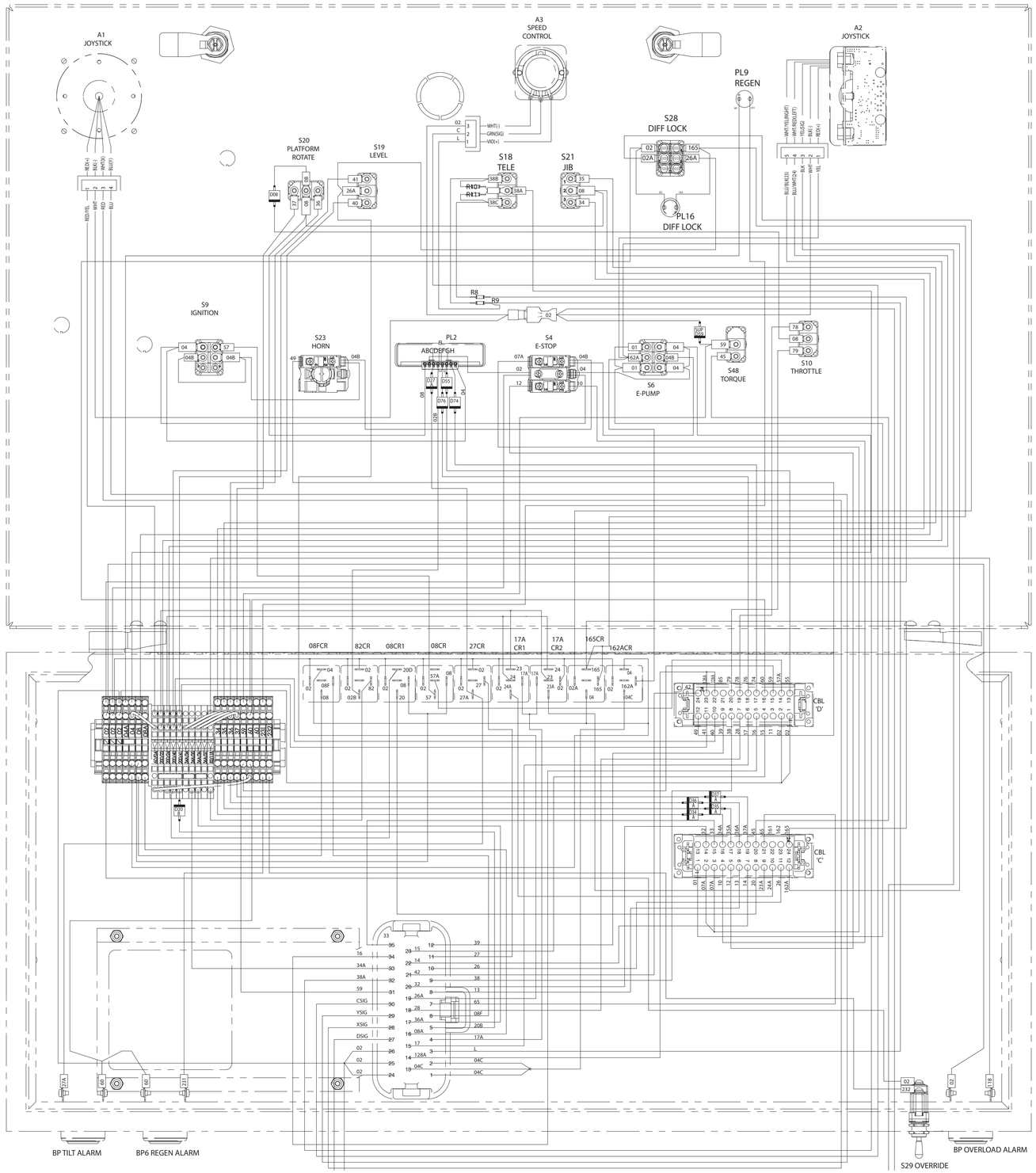

A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S28
DIFF LOCK
PL10
AMB
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
08FCR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
SPLICE 128A
CBL
'D'
SPLICE 02A
CBL
'C'
SPLICE 07A
SPLICE 02
SPLICE 04


A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S28
DIFF LOCK
PL10
AMB
S18
TELE
S19
LEVEL
S20
PLATFORM
ROTATE
S26
FUEL SELECT
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
R8
R9
08FCR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
SPLICE 128A
CBL
'D'
SPLICE 02A
CBL
'C'
SPLICE 07A
SPLICE 02
SPLICE 04

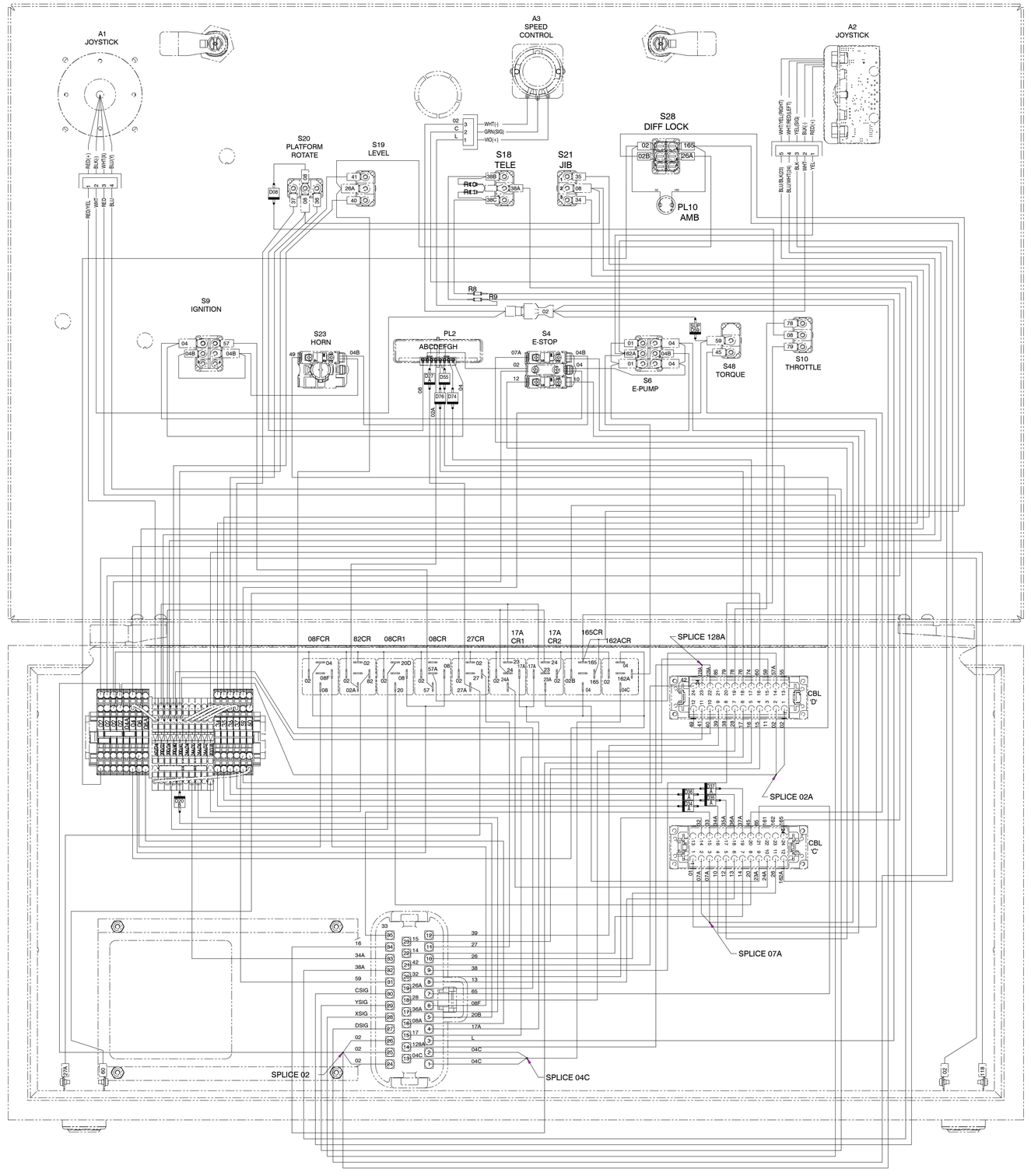

A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S21
JIB
S28
DIFF LOCK
PL10
AMB
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
08FCR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL 'D'
CBL 'C'

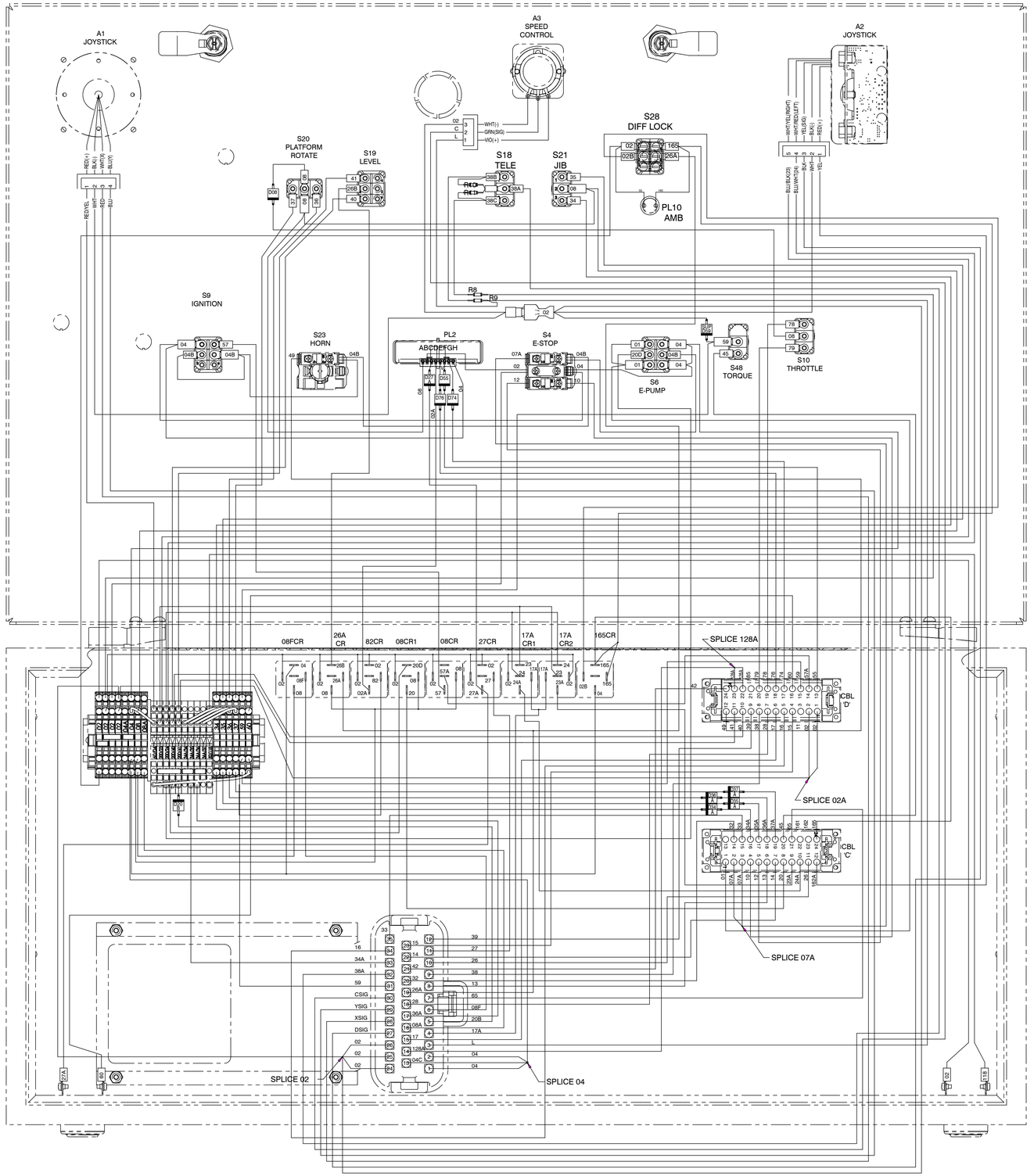

A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S28
DIFF LOCK
PL10
AMB
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S21
JIB
S26
FUEL SELECT
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
R8
R9
08FCR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL
'D'
CBL
'C'

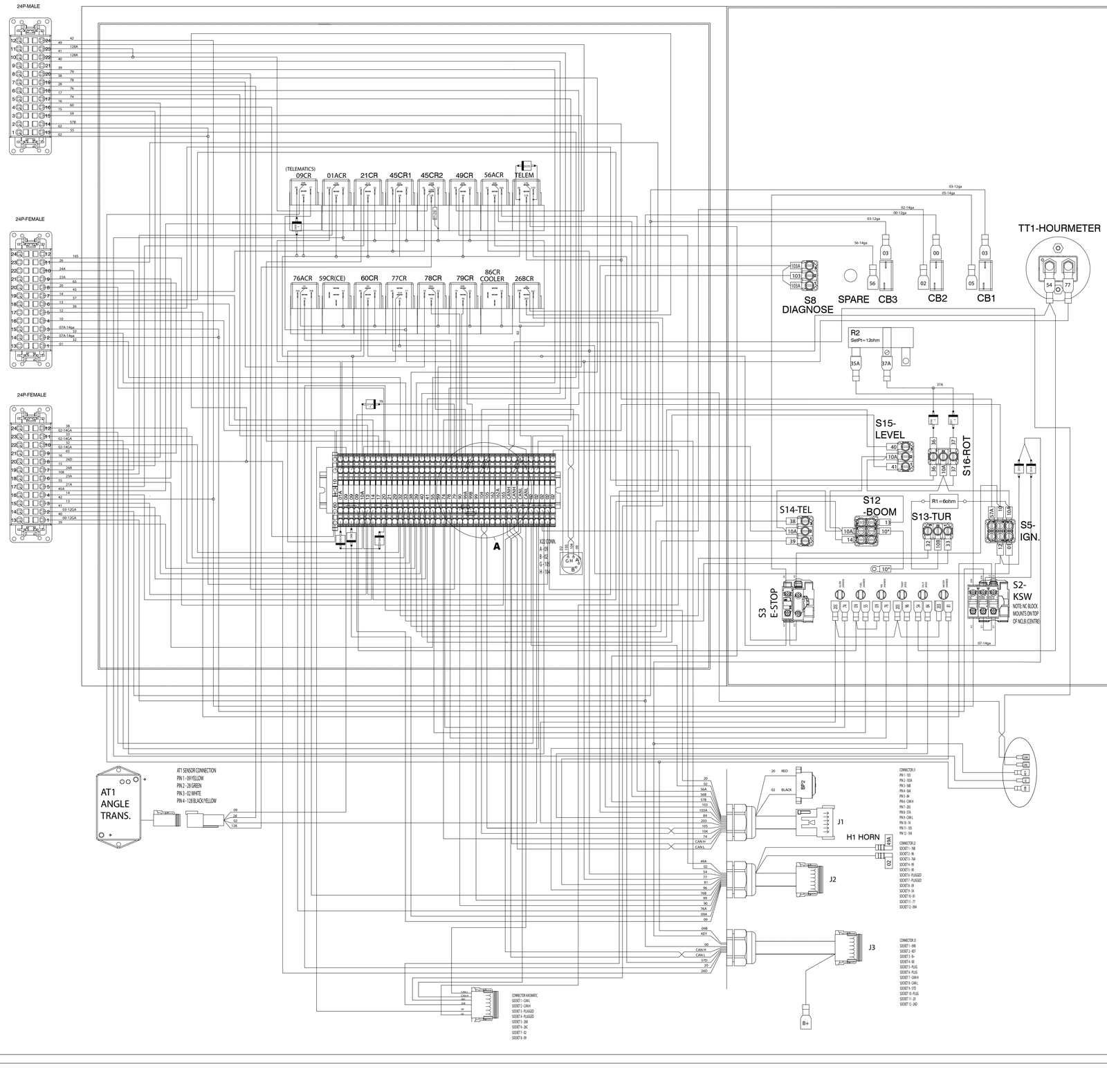
M195134AB

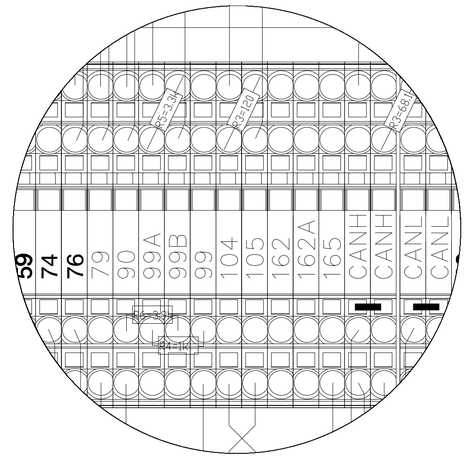

A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
PL9
REGEN
S28
DIFF LOCK
PL16
DIFF LOCK
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S21
JIB
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
08FCR
82CR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
162ACR
CBL
'D'
CBL
'C'
BP TILT ALARM
BP6 REGEN ALARM
S29 OVERRIDE
BP OVERLOAD ALARM

M224671AB


A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S28
DIFF LOCK
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S21
JIB
PL10
AMB
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
08FCR
82CR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
162ACR
SPLICE 128A
CBL
'D'
SPLICE 02A
CBL
'C'
SPLICE 07A
SPLICE 02
SPLICE 04C


A1
JOYSTICK
A3
SPEED
CONTROL
A2
JOYSTICK
S20
PLATFORM
ROTATE
S19
LEVEL
S18
TELE
S21
JIB
S28
DIFF LOCK
PL10
AMB
S9
IGNITION
S23
HORN
PL2
ABCDEFGH
S4
E-STOP
S6
E-PUMP
S48
TORQUE
S10
THROTTLE
08FCR
26A
CR
82CR
08CR1
08CR
27CR
17A
CR1
17A
CR2
165CR
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
ICBL
'D'
ICBL
'C'



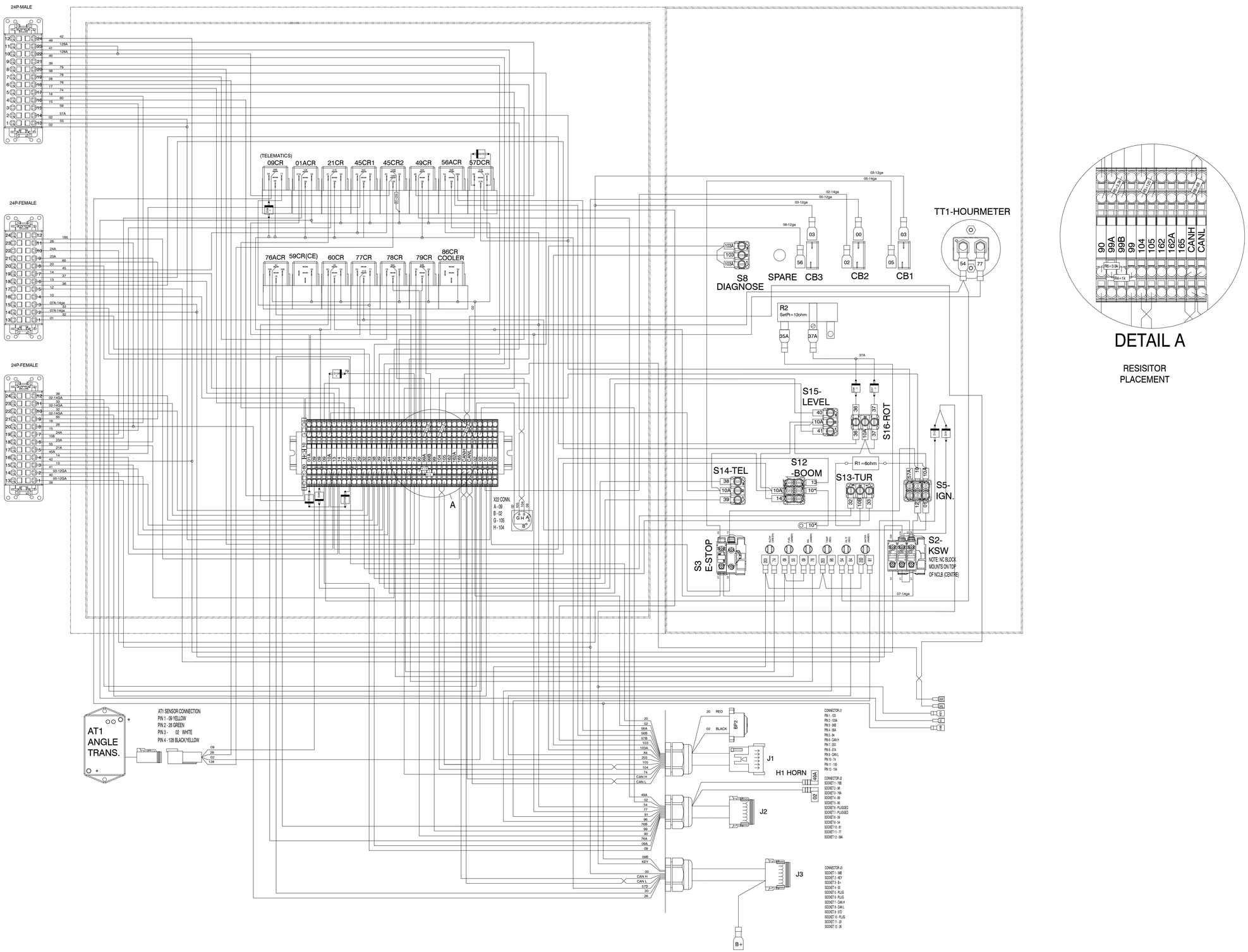




## DETAIL A

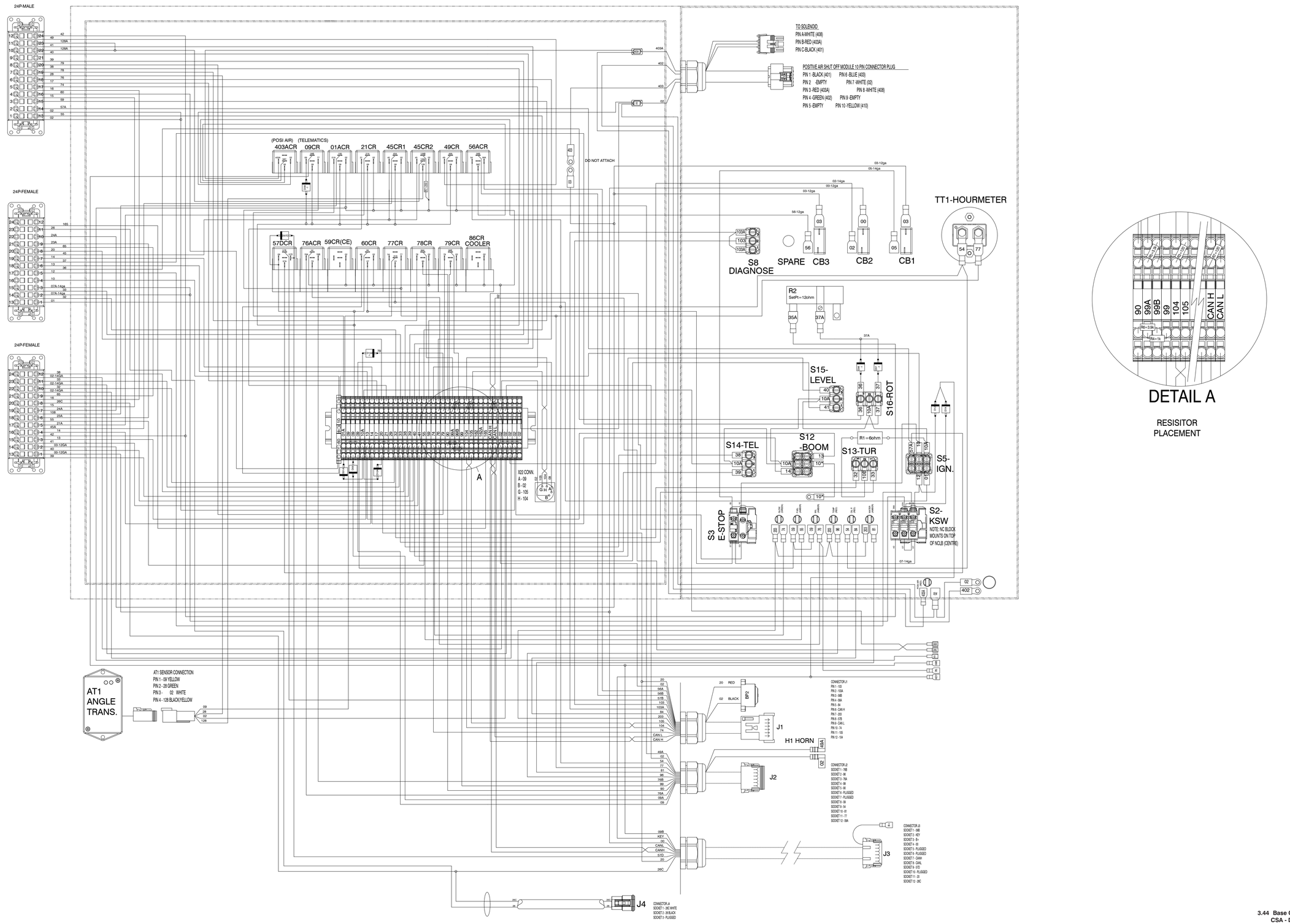
**RESISITOR PLACEMENT**

M228335AC

3.42 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L - S/N 97 003 631 & above

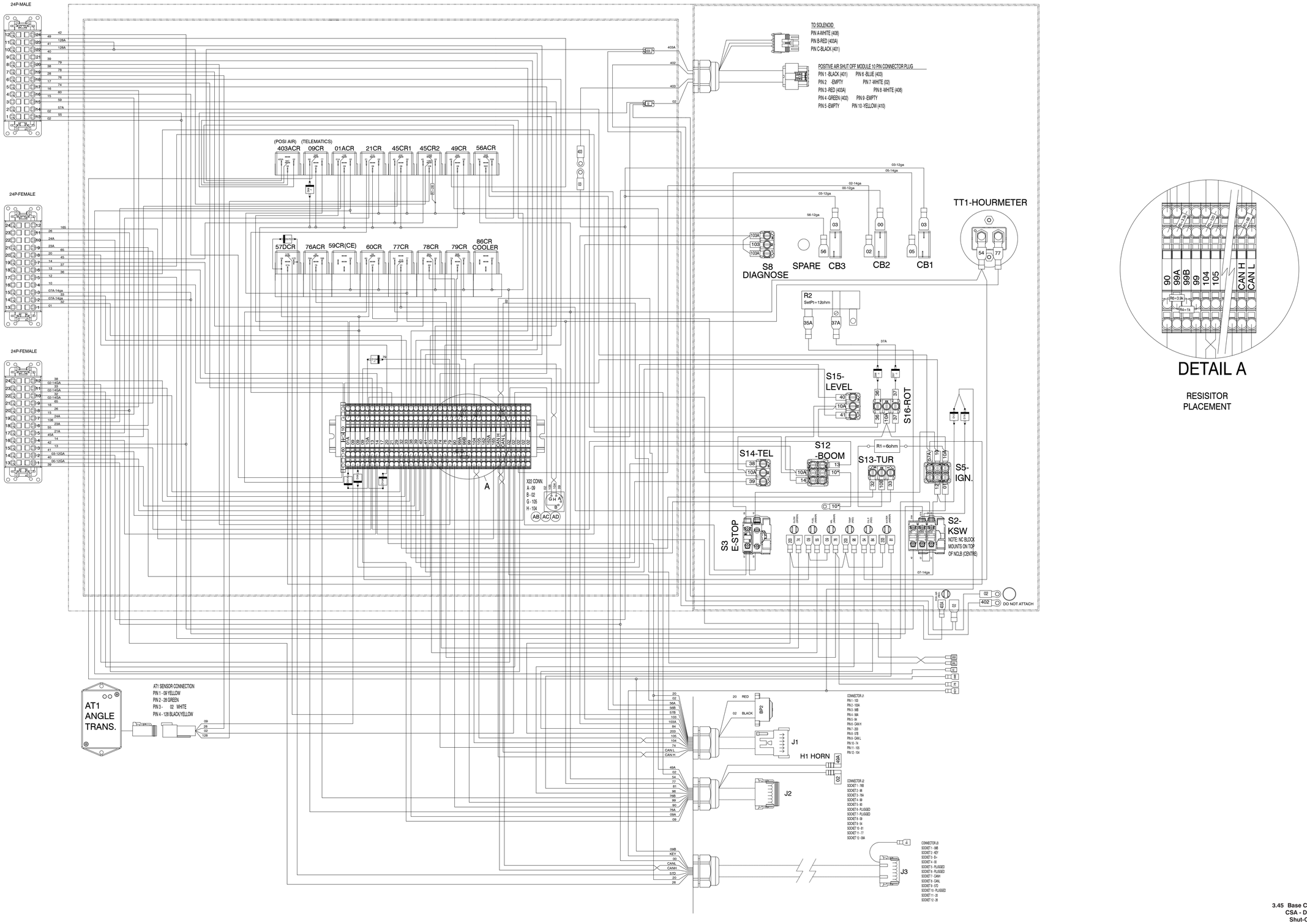

24P-MALE
24P-FEMALE
24P-FEMALE
(TELEMATICS)
09CR
01ACR
21CR
45CR1
45CR2
49CR
56ACR
57DCR
76ACR
59CR(CE)
60CR
77CR
78CR
79CR
86CR COOLER
TT1-HOURMETER
S8 DIAGNOSE
SPARE
CB3
CB2
CB1
R2 SetPt=12ohm
S15-LEVEL
S16-ROT
S14-TEL
S12 -BOOM
S13-TUR
S5-IGN.
S3 E-STOP
S2-KSW
NOTE: NC BLOCK MOUNTS ON TOP OF NCLB (CENTRE)
A
X22 CONN.
A - 09
B - 02
G - 105
H - 104
AT1 ANGLE TRANS.
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
J1
J2
J3
BP2
H1 HORN
B+
CONNECTOR J1
CONNECTOR J2
CONNECTOR J3
DETAIL A
RESISITOR PLACEMENT

M1657634I



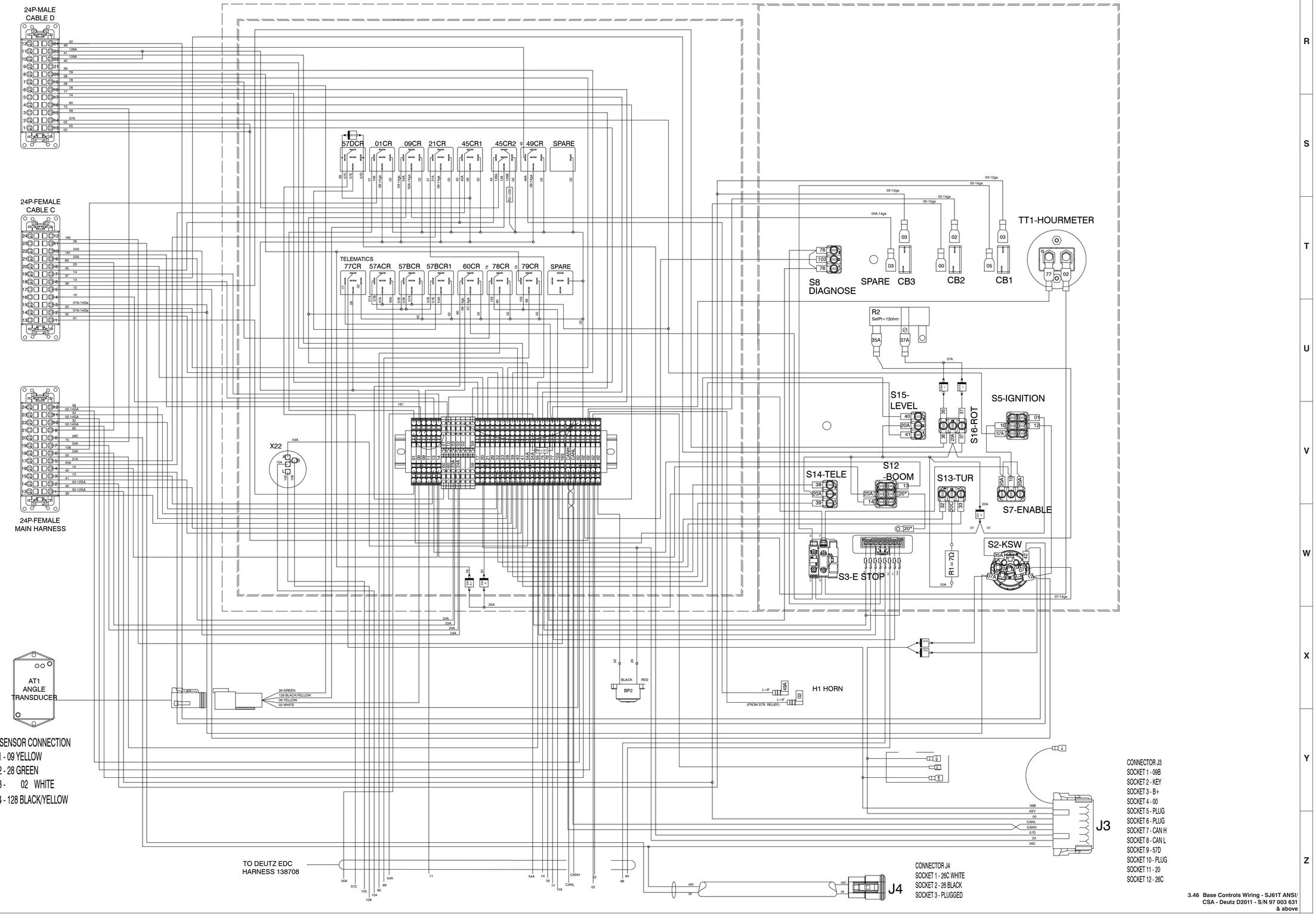

M228339AC

**3.44 Base Controls Wiring - SJ61T ANSI/CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 631 & above**



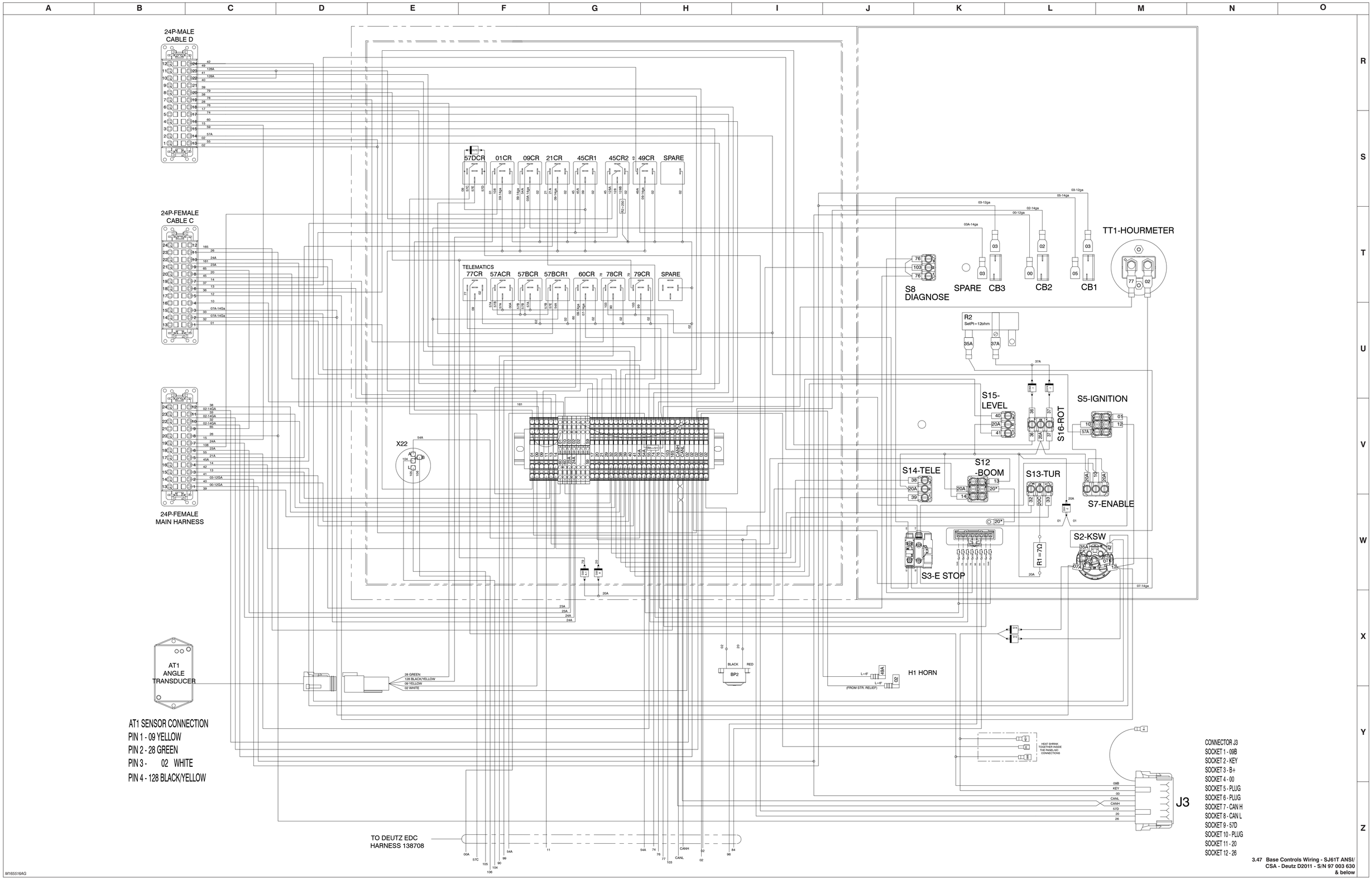

3.45 Base Controls Wiring - SJ61T ANSI/ CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 630 & below

M194223AE



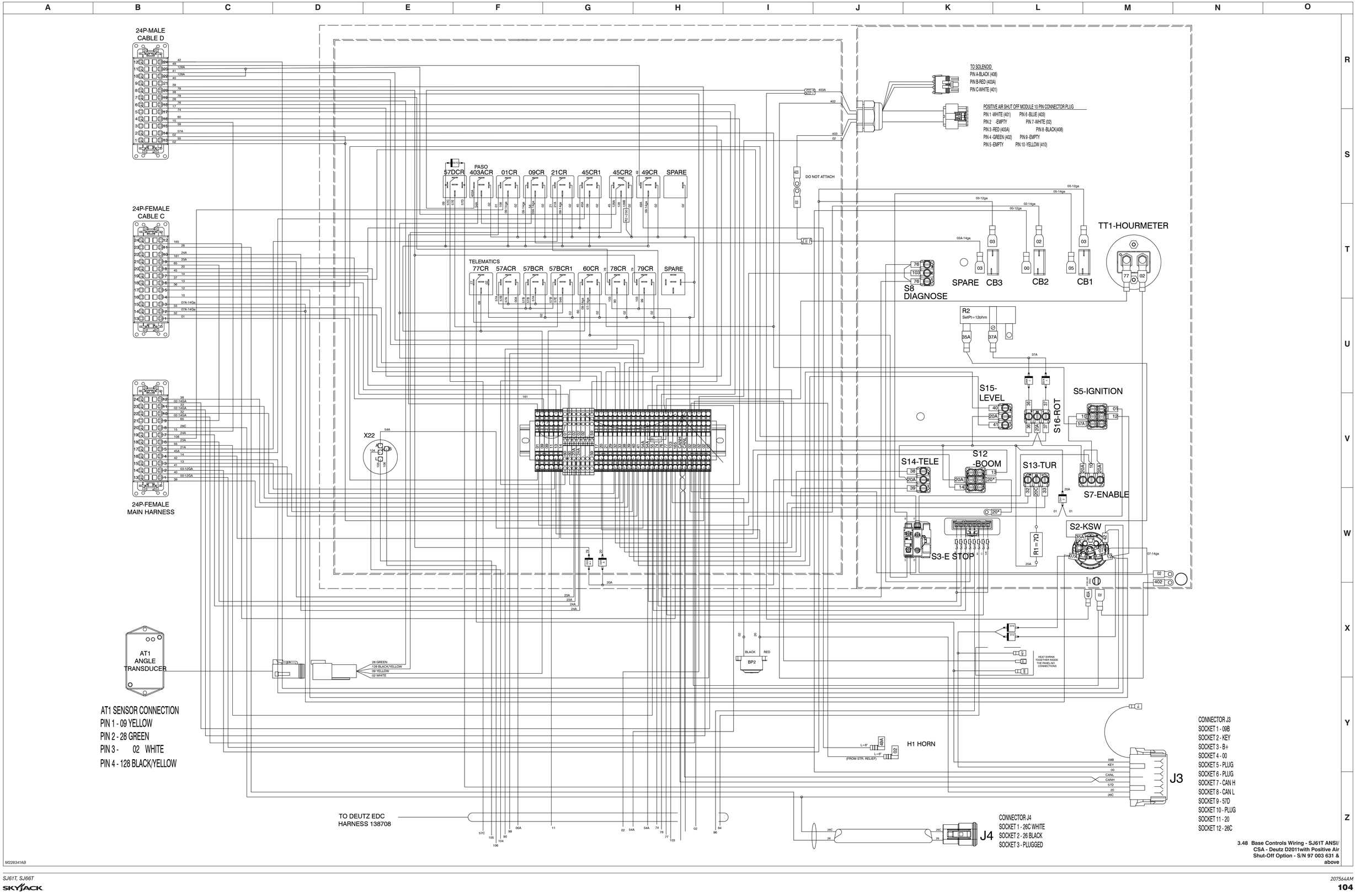

M228333AC

3.46 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011 - S/N 97 003 631 & above



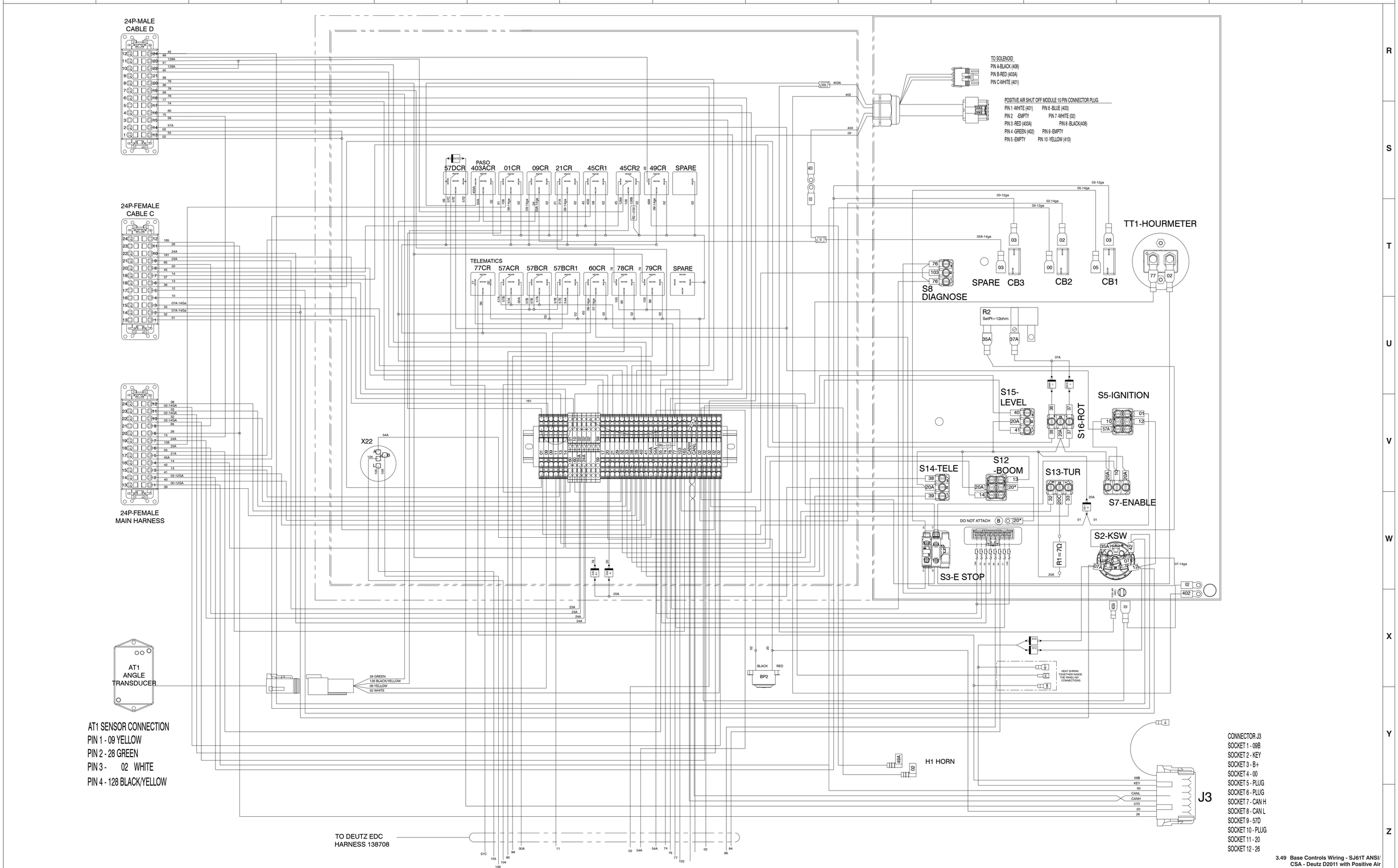

3.47 Base Controls Wiring - SJ61T ANSI/CSA - Deutz D2011 - S/N 97 003 630 & below

M1655164G



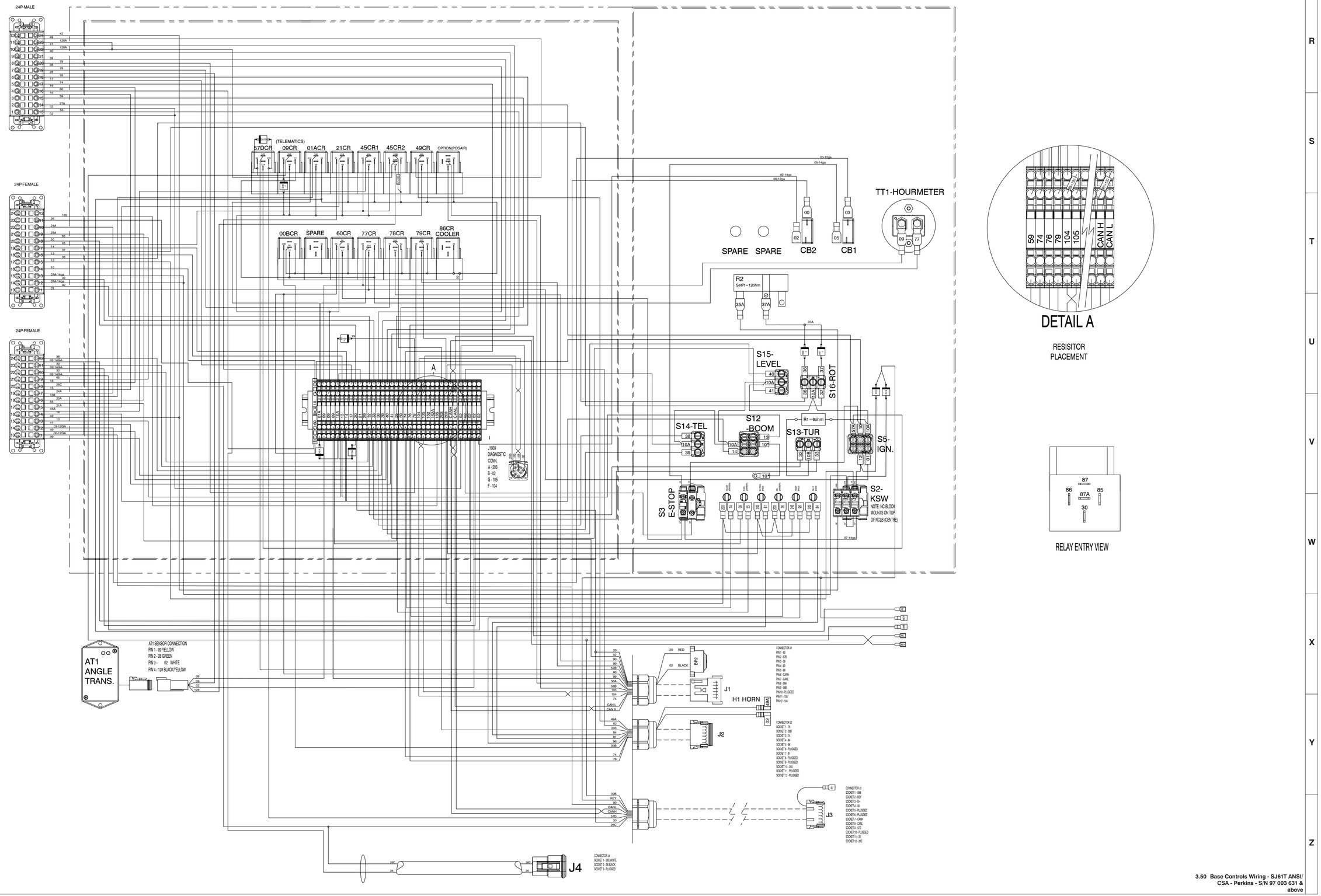

**3.48 Base Controls Wiring - SJ61T ANSI/ CSA - Deutz D2011with Positive Air Shut-Off Option - S/N 97 003 631 & above**

M228341AB

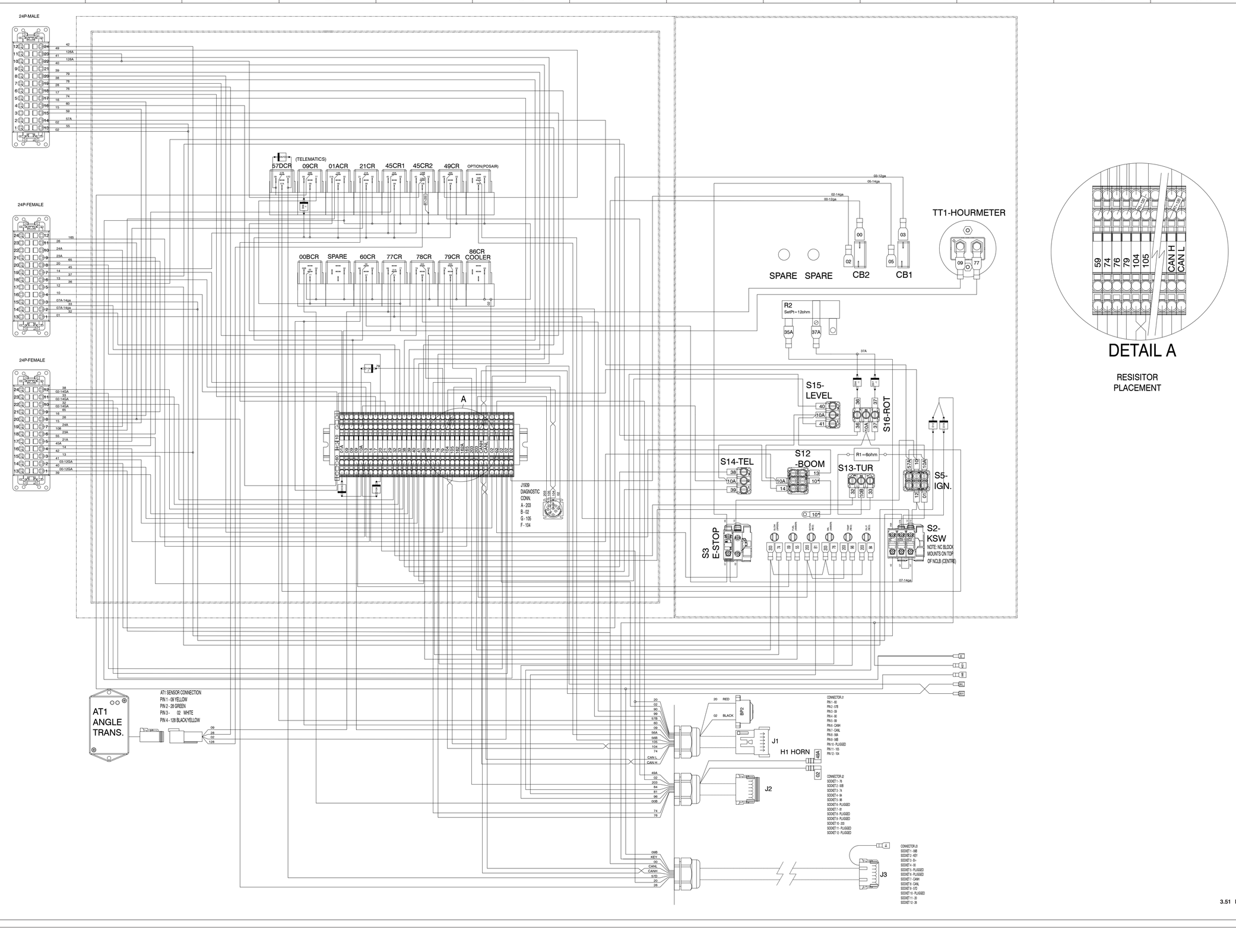



M195339AE

3.49 **Base Controls Wiring - SJ61T ANSI/ CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 630 & below**

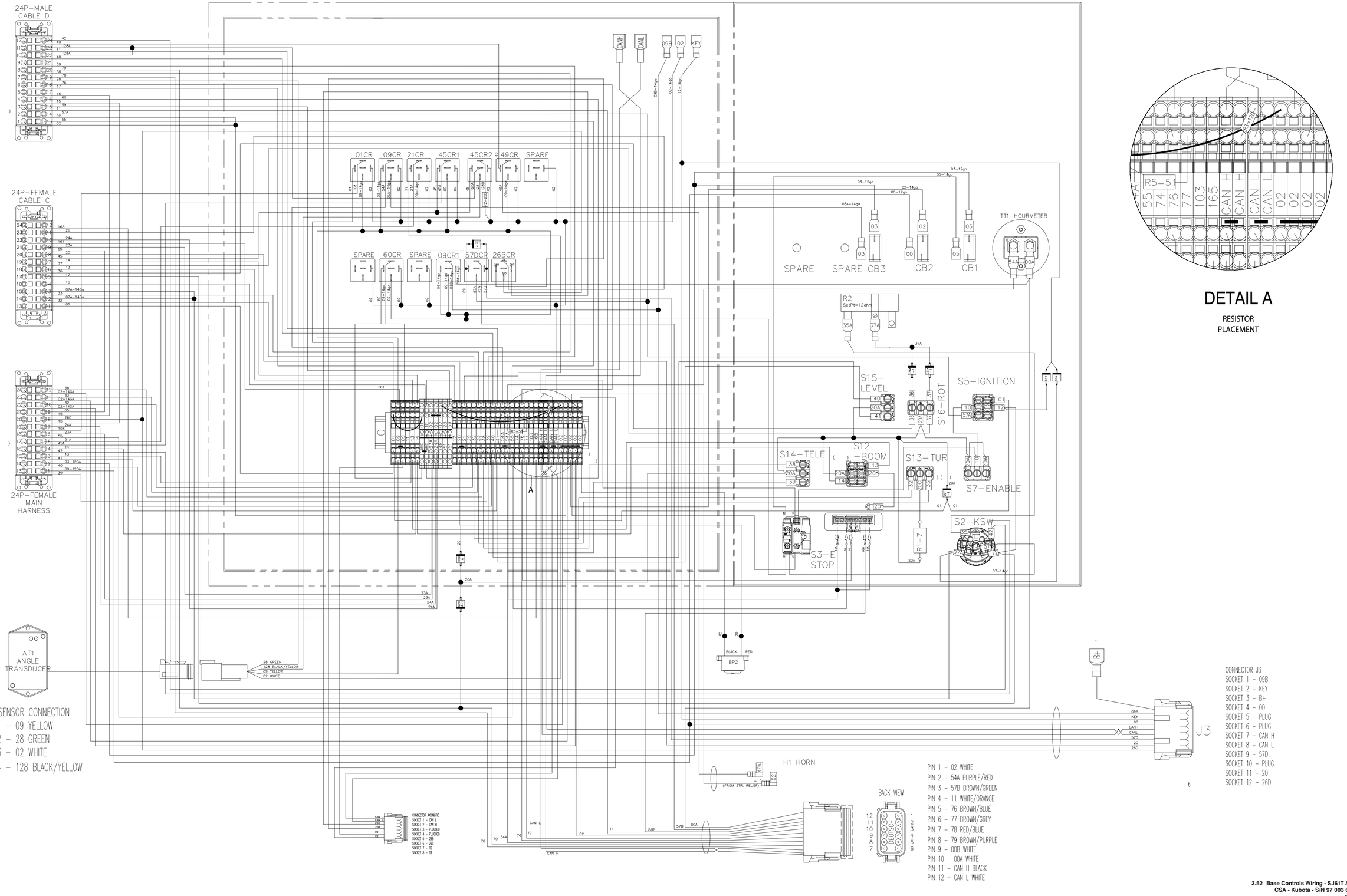

24P-MALE
24P-FEMALE
24P-FEMALE
(TELEMATICS)
57DCR
09CR
01ACR
21CR
45CR1
45CR2
49CR
OPTION(POSAIR)
00BCR
SPARE
60CR
77CR
78CR
79CR
86CR COOLER
SPARE
SPARE
CB2
CB1
TT1-HOURMETER
R2
SetPt=12ohm
S15-LEVEL
S16-ROT
S14-TEL
S12 -BOOM
S13-TUR
R1=6ohm
S5-IGN.
S3 E-STOP
S2-KSW
NOTE: NC BLOCK MOUNTS ON TOP OF NO/LB (CENTRE)
J1009 DIAGNOSTIC CONN.
A - 203
B - 02
G - 105
F - 104
AT1 ANGLE TRANS.
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
H1 HORN
BP2
J1
J2
J3
J4
CONNECTOR J1
PIN 1 - 60
PIN 2 - 57B
PIN 3 - 09
PIN 4 - 02
PIN 5 - 99
PIN 6 - CANH
PIN 7 - CANL
PIN 8 - 56A
PIN 9 - 56B
PIN 10 - PLUGGED
PIN 11 - 105
PIN 12 - 104
CONNECTOR J2
SOCKET 1 - 76
SOCKET 2 - 00B
SOCKET 3 - 74
SOCKET 4 - 84
SOCKET 5 - 95
SOCKET 6 - PLUGGED
SOCKET 7 - 81
SOCKET 8 - PLUGGED
SOCKET 9 - PLUGGED
SOCKET 10 - 203
SOCKET 11 - PLUGGED
SOCKET 12 - PLUGGED
CONNECTOR J3
SOCKET 1 - 00B
SOCKET 2 - KEY
SOCKET 3 - B-
SOCKET 4 - 00
SOCKET 5 - PLUGGED
SOCKET 6 - PLUGGED
SOCKET 7 - CANH
SOCKET 8 - CANL
SOCKET 9 - 57D
SOCKET 10 - PLUGGED
SOCKET 11 - 20
SOCKET 12 - 26C
CONNECTOR J4
SOCKET 1 - 26C WHITE
SOCKET 2 - 00 BLACK
SOCKET 3 - PLUGGED
DETAIL A
RESISITOR PLACEMENT
RELAY ENTRY VIEW

M228343AB




M216383AD

3.51 Base Controls Wiring - SJ61T ANSI/ CSA - Perkins - S/N 97 003 630 & below

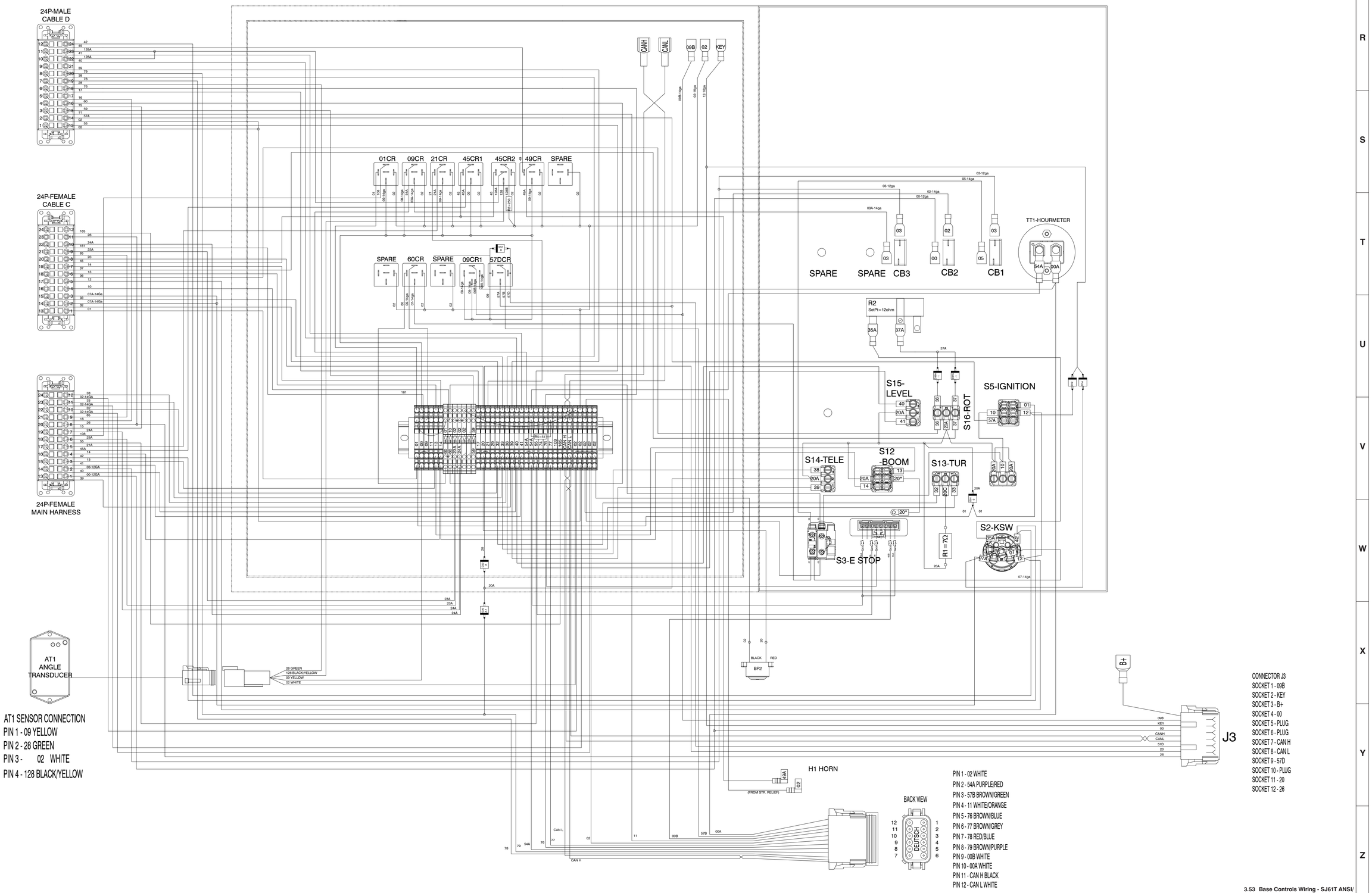






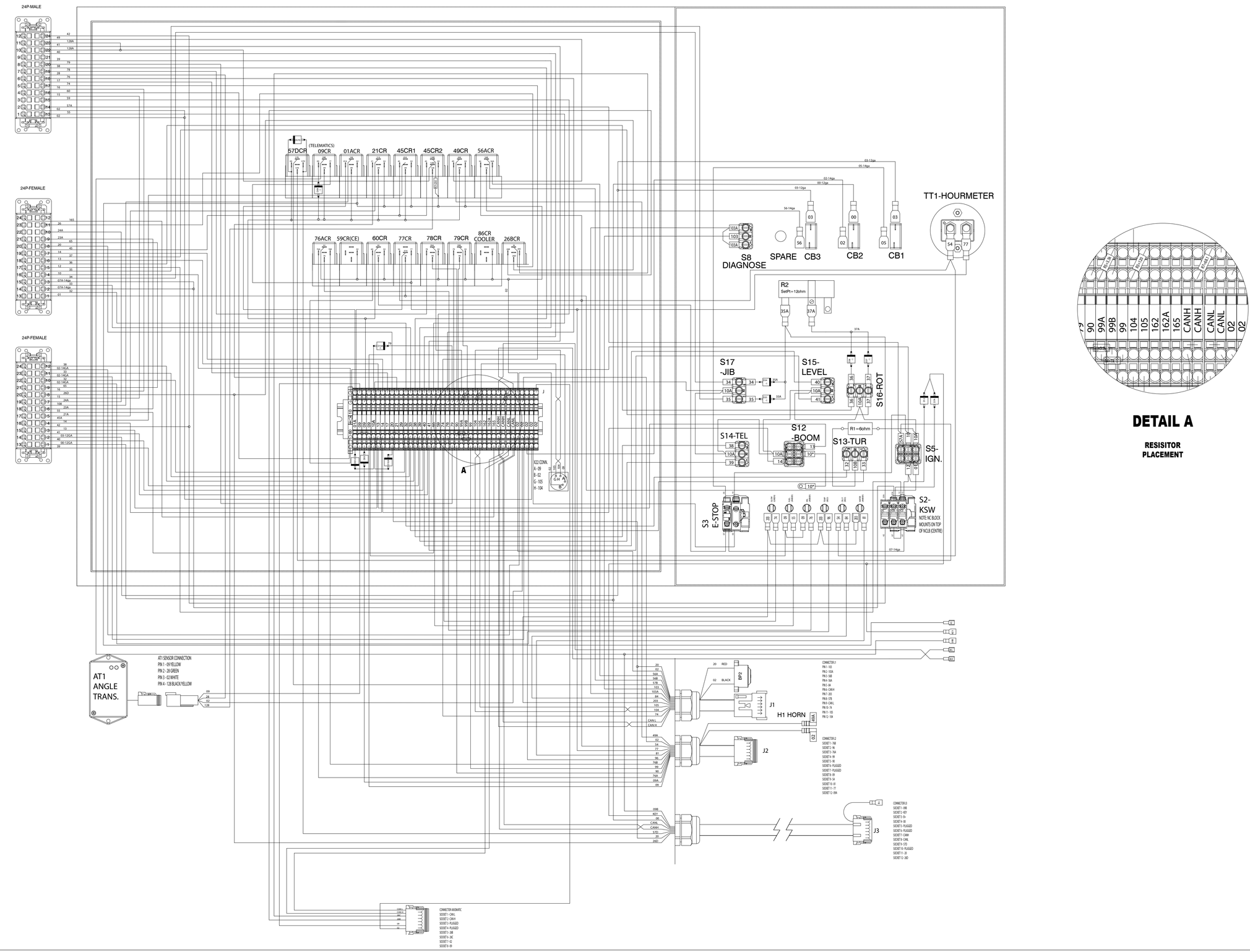
M228337AC

**3.52 Base Controls Wiring - SJ61T ANSI/CSA - Kubota - S/N 97 003 631 & above**



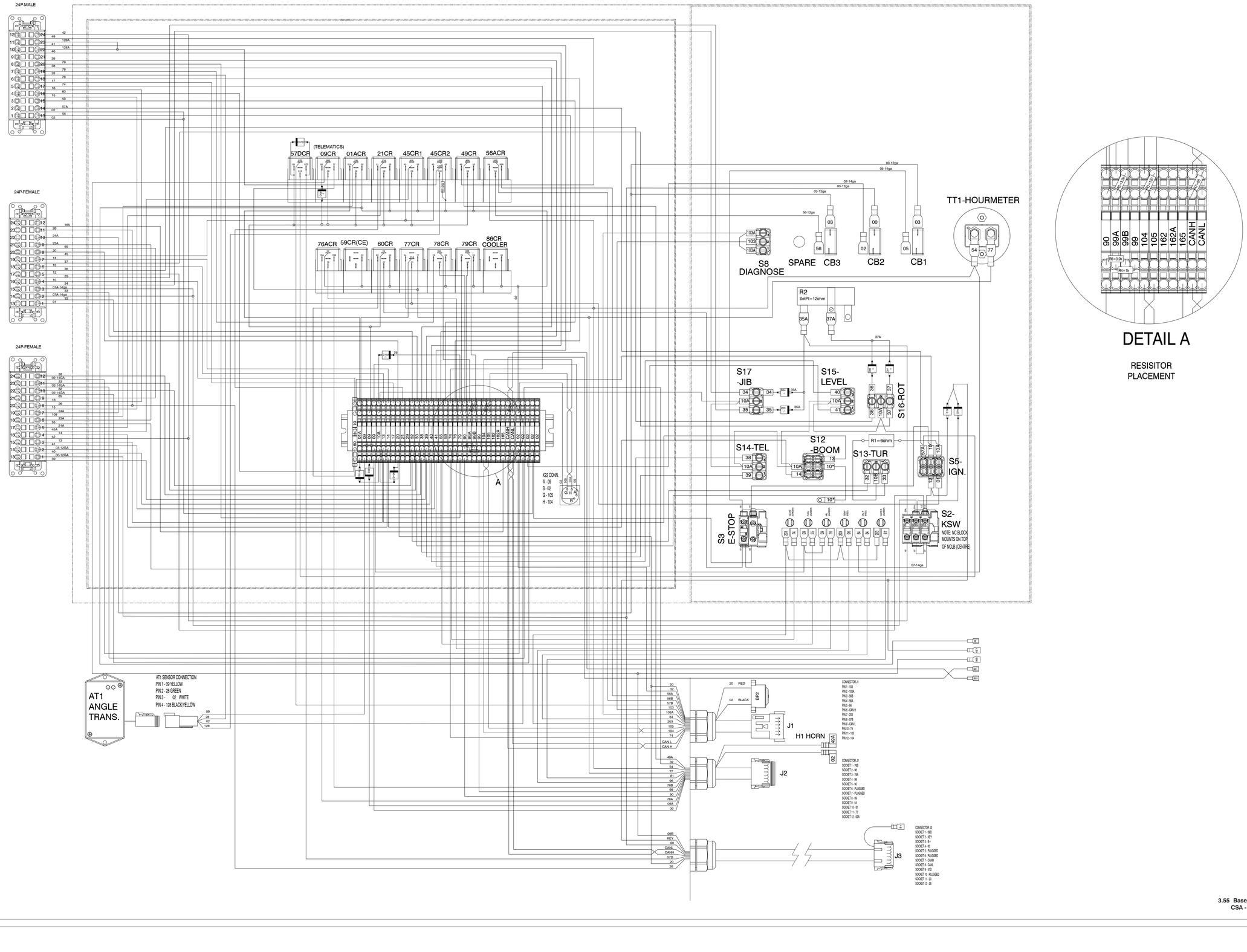

M16551BAG

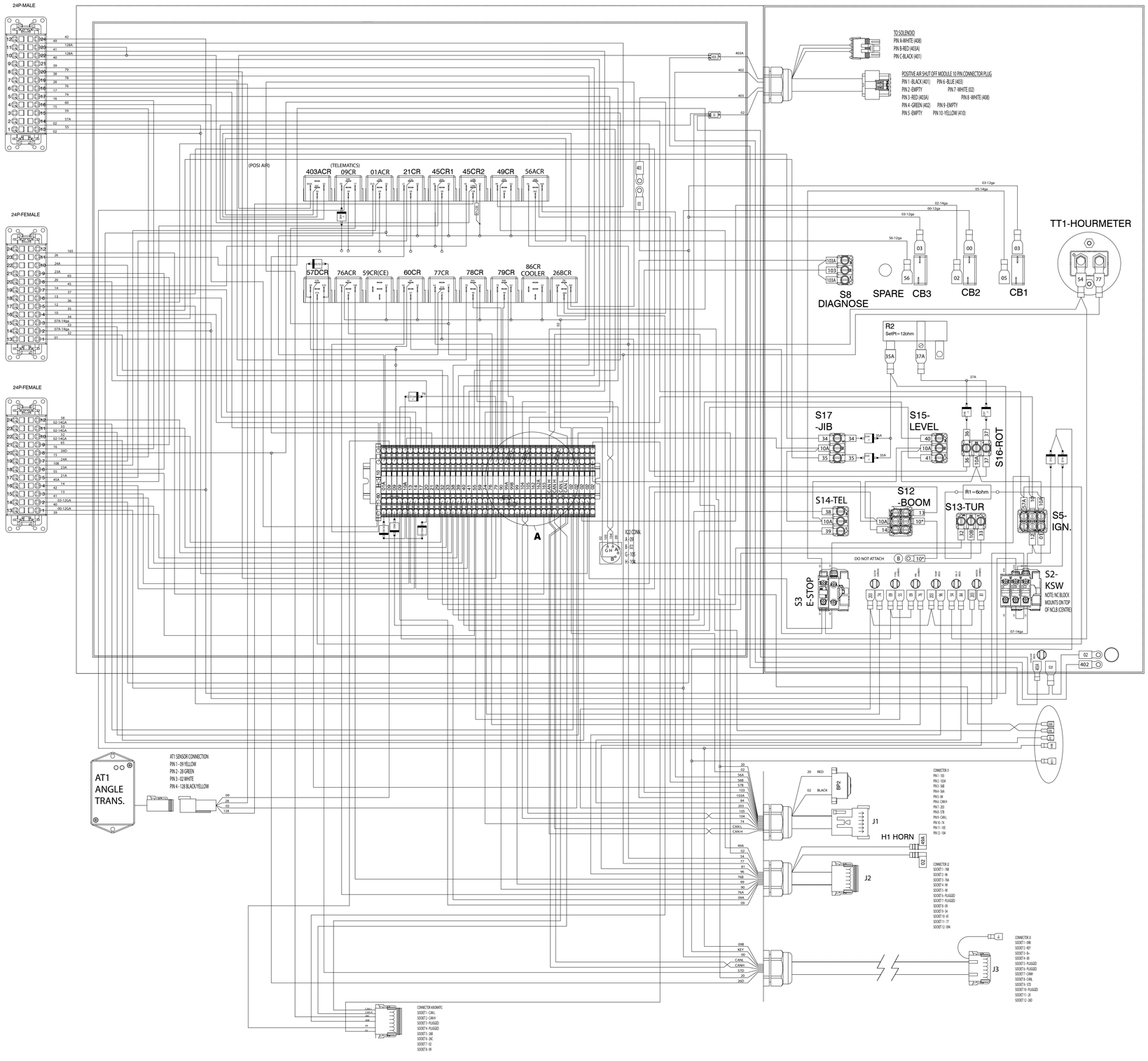
**3.53 Base Controls Wiring - SJ61T ANSI/ CSA - Kubota - S/N 97 003 630 & below**

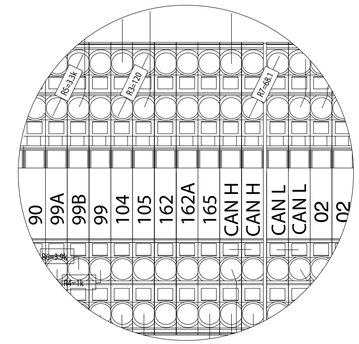



M228284AD

3.54 Base Controls Wiring - SJ66T ANSI/ CSA - Deutz TD2.9L - S/N 97 003 631 & above


24P-MALE
24P-FEMALE
24P-FEMALE
57DCR
(TELEMATICS)
09CR
01ACR
21CR
45CR1
45CR2
49CR
56ACR
76ACR
59CR(CE)
60CR
77CR
78CR
79CR
86CR COOLER
TT1-HOURMETER
S8 DIAGNOSE
SPARE
CB3
CB2
CB1
R2 SetPt=12ohm
S17 -JIB
S15- LEVEL
S16-ROT
S14-TEL
S12 -BOOM
S13-TUR
S5- IGN.
S3 E-STOP
S2- KSW
NOTE: NC BLOCK MOUNTS ON TOP OF NCLB (CENTRE)
A
X22 CONN.
A - 09
B - 02
G - 105
H - 104
AT1 ANGLE TRANS.
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
J1
H1 HORN
J2
J3
CONNECTOR J1
CONNECTOR J2
CONNECTOR J3
DETAIL A
RESISITOR PLACEMENT



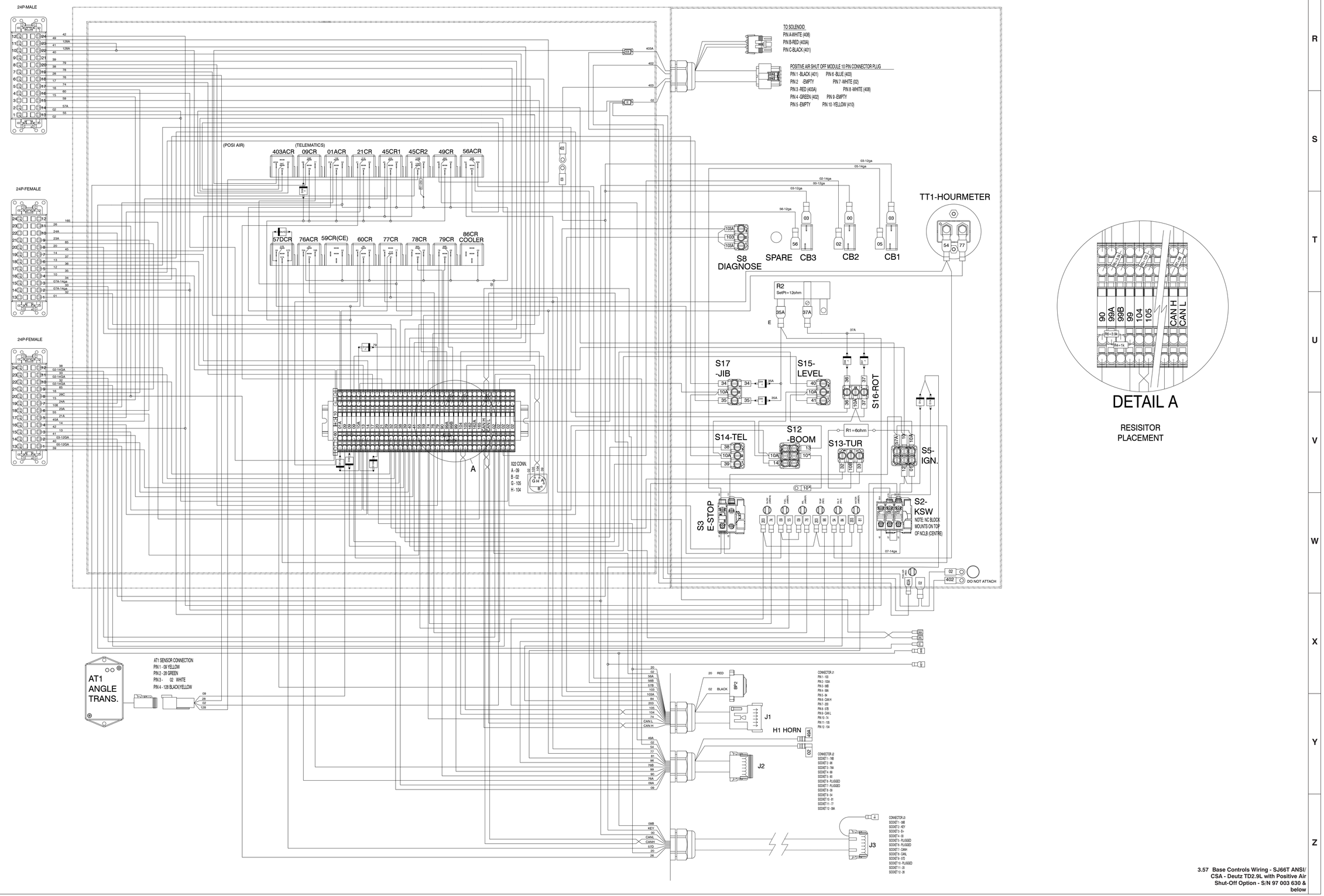




**DETAIL A**

**RESISITOR PLACEMENT**

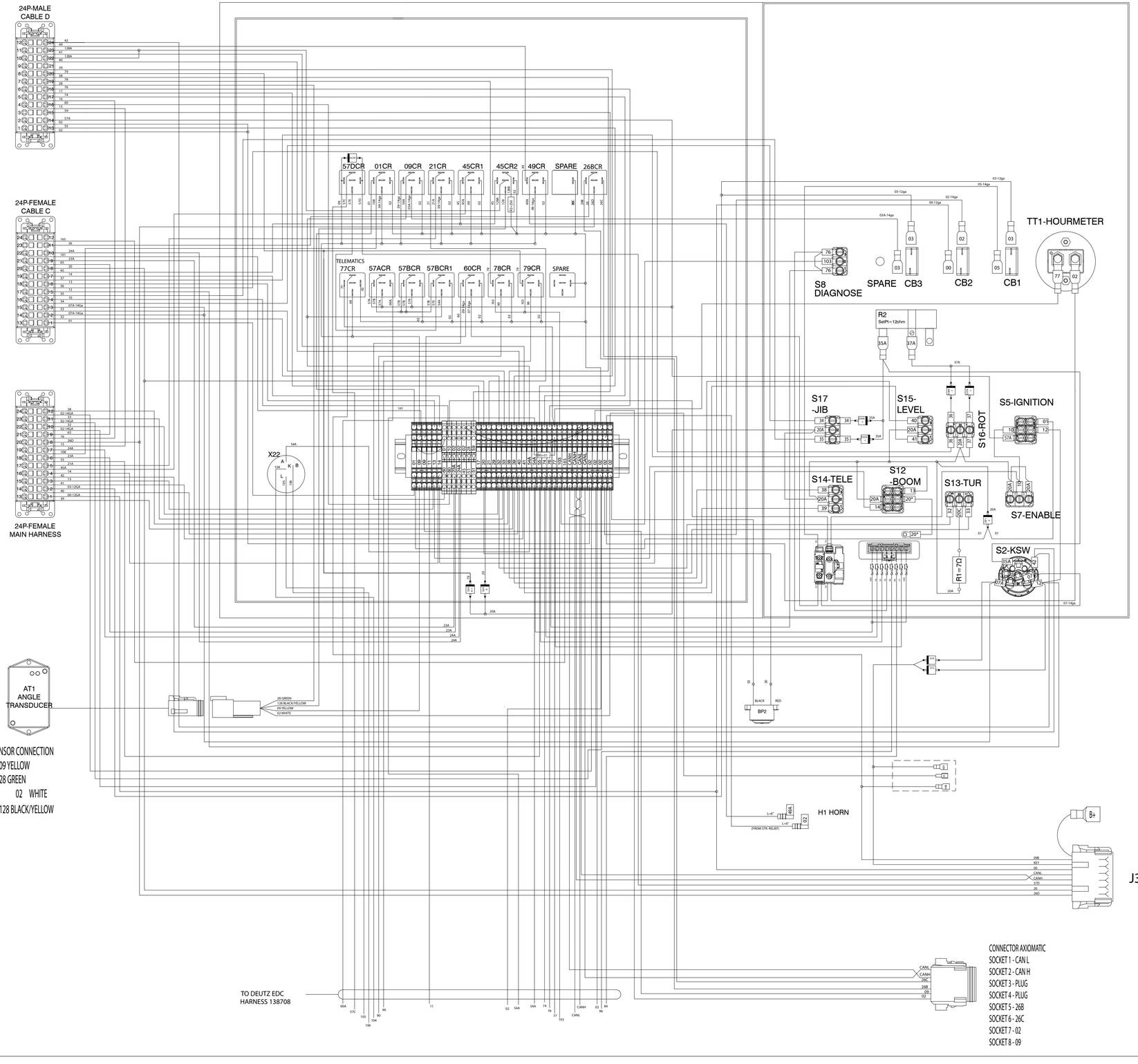
**3.56 Base Controls Wiring - SJ66T ANSI/ CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 631 & above**

M228288AE




3.57 Base Controls Wiring - SJ66T ANSI/ CSA - Deutz TD2.9L with Positive Air Shut-Off Option - S/N 97 003 630 & below

M171648AH

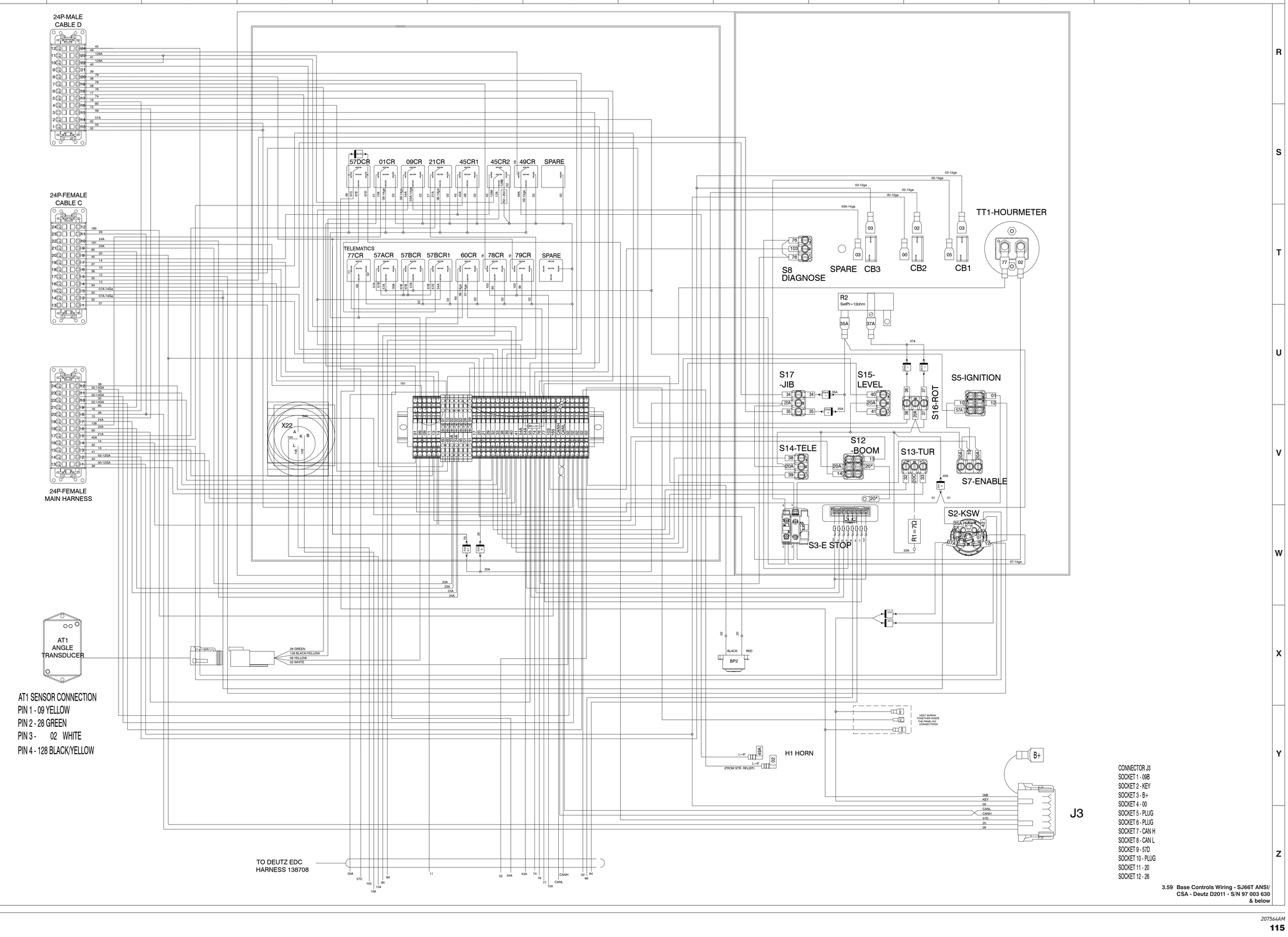



AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

CONNECTOR J3
SOCKET 1 - 09B
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26D

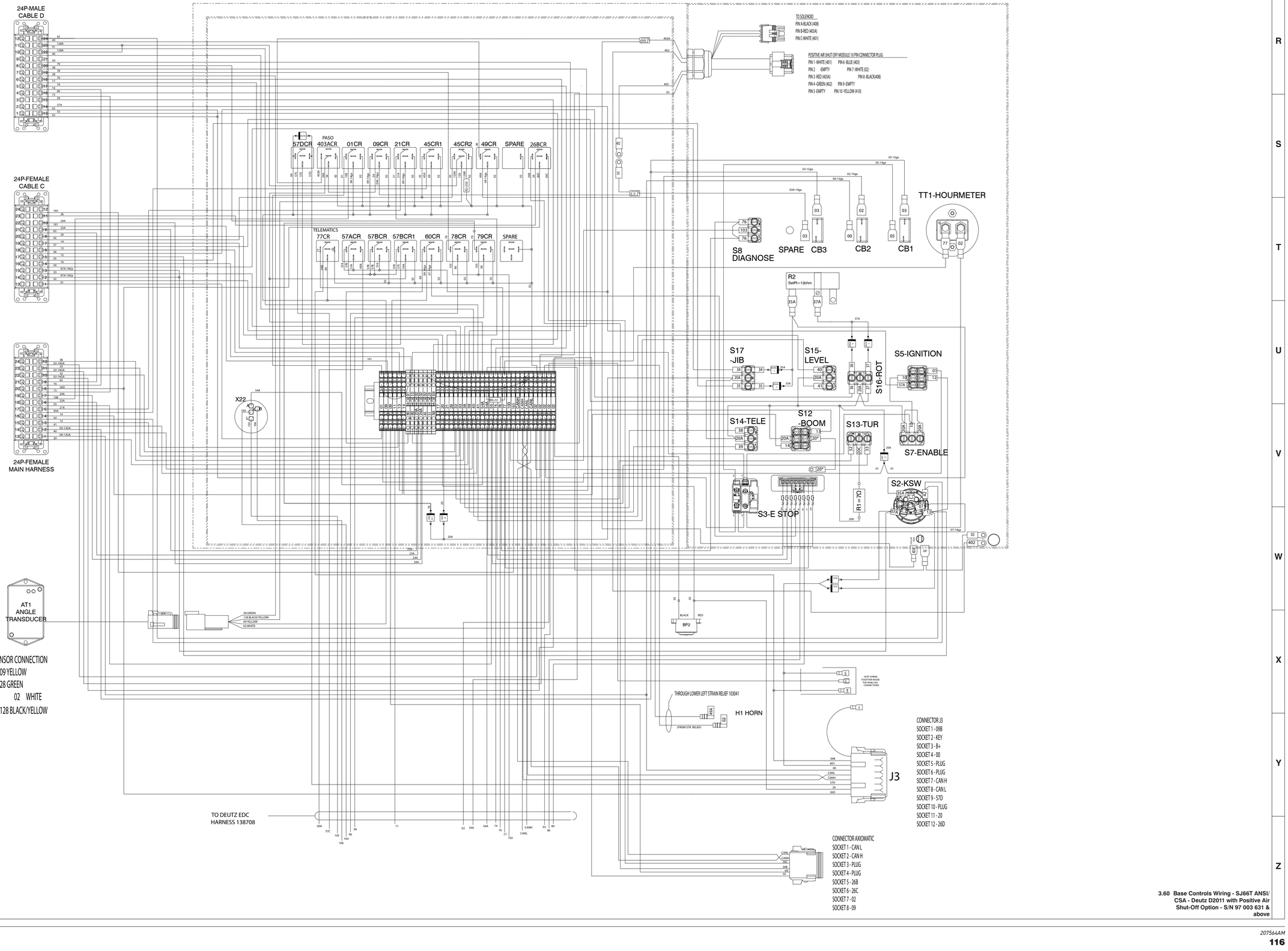
CONNECTOR AXIOMATIC
SOCKET 1 - CAN L
SOCKET 2 - CAN H
SOCKET 3 - PLUG
SOCKET 4 - PLUG
SOCKET 5 - 26B
SOCKET 6 - 26C
SOCKET 7 - 02
SOCKET 8 - 09

M228282AC



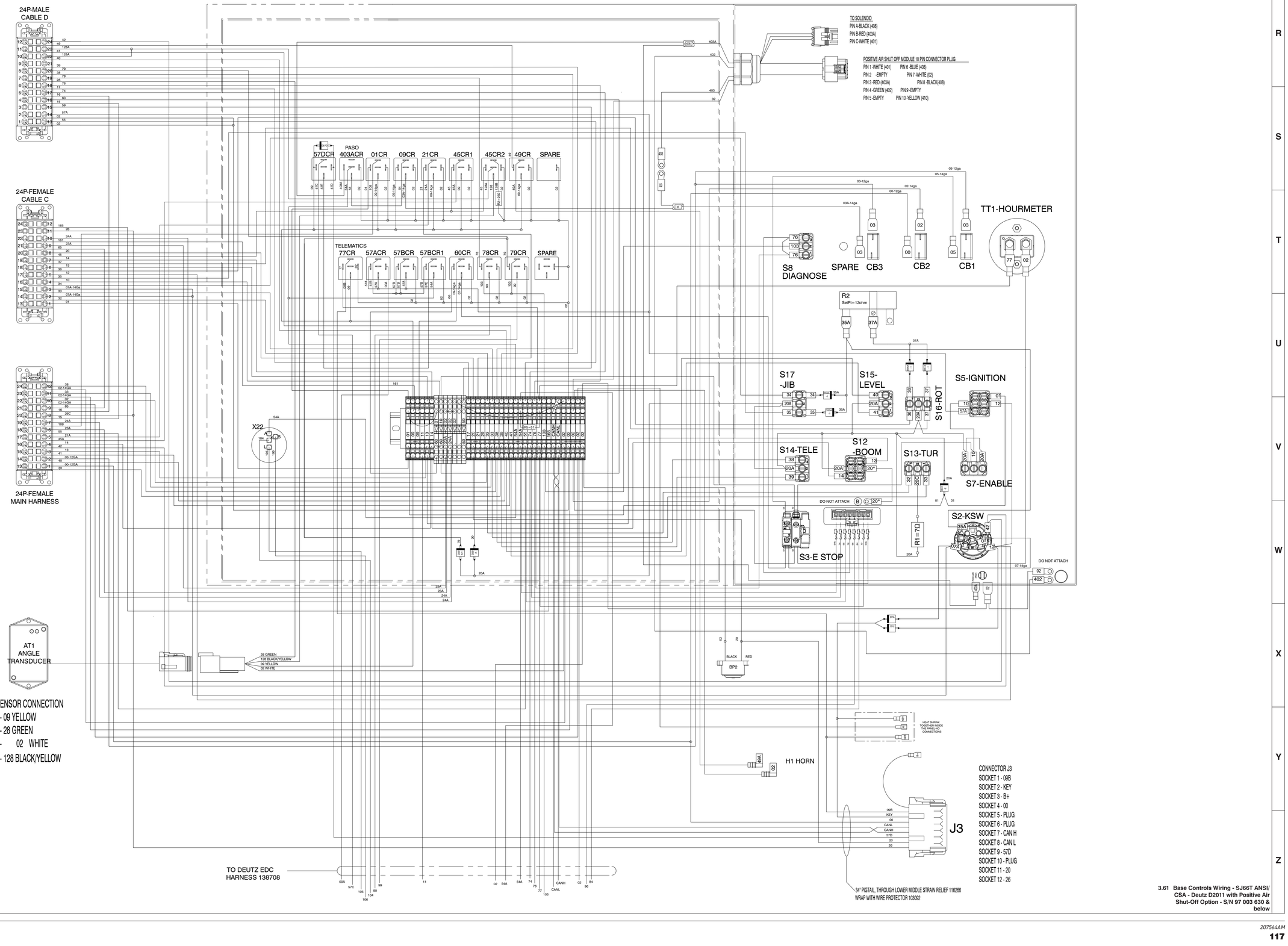

M165517AG

3.59 **Base Controls Wiring - SJ66T ANSI/ CSA - Deutz D2011 - S/N 97 003 630 & below**



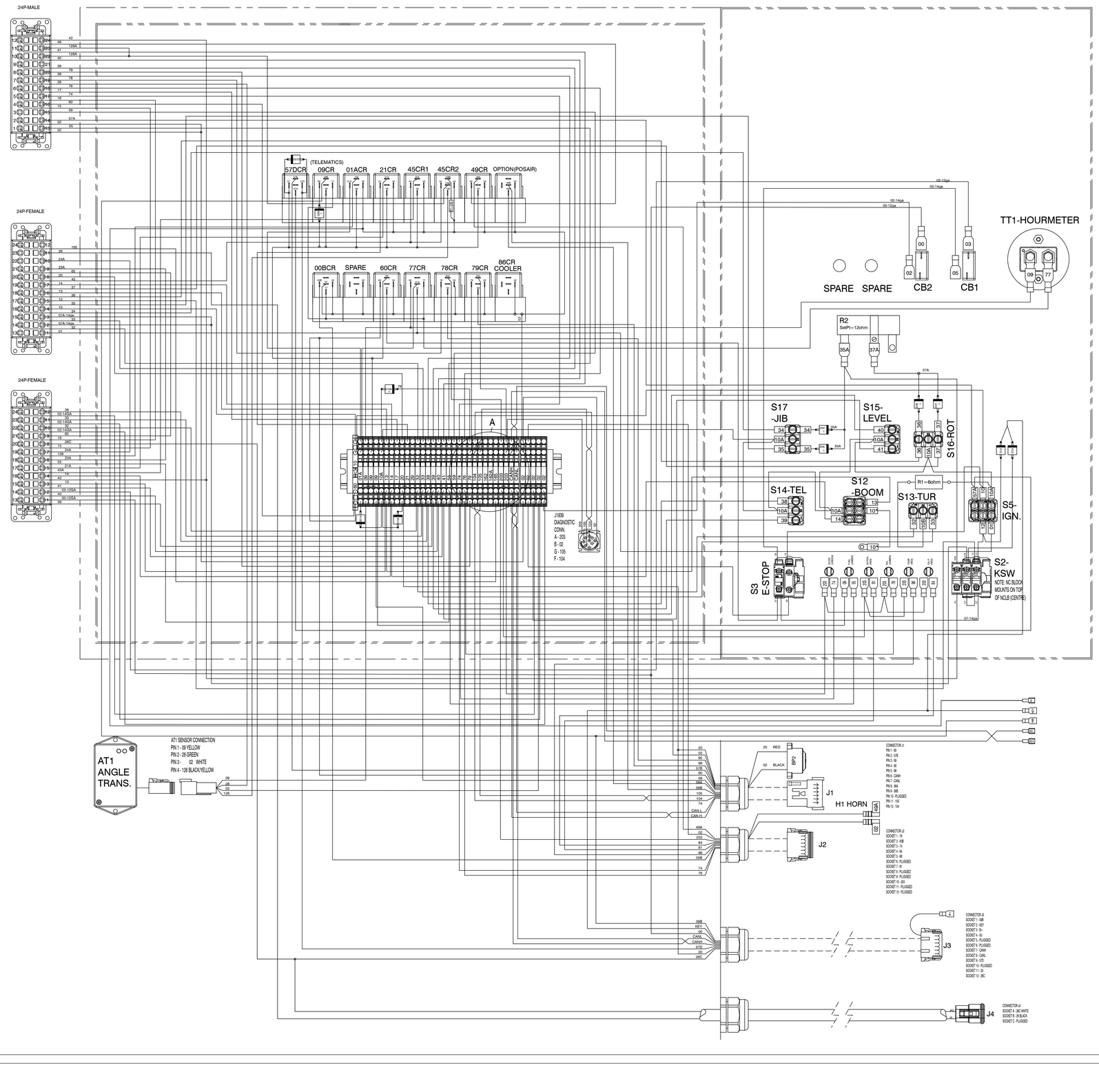

M22829GAC

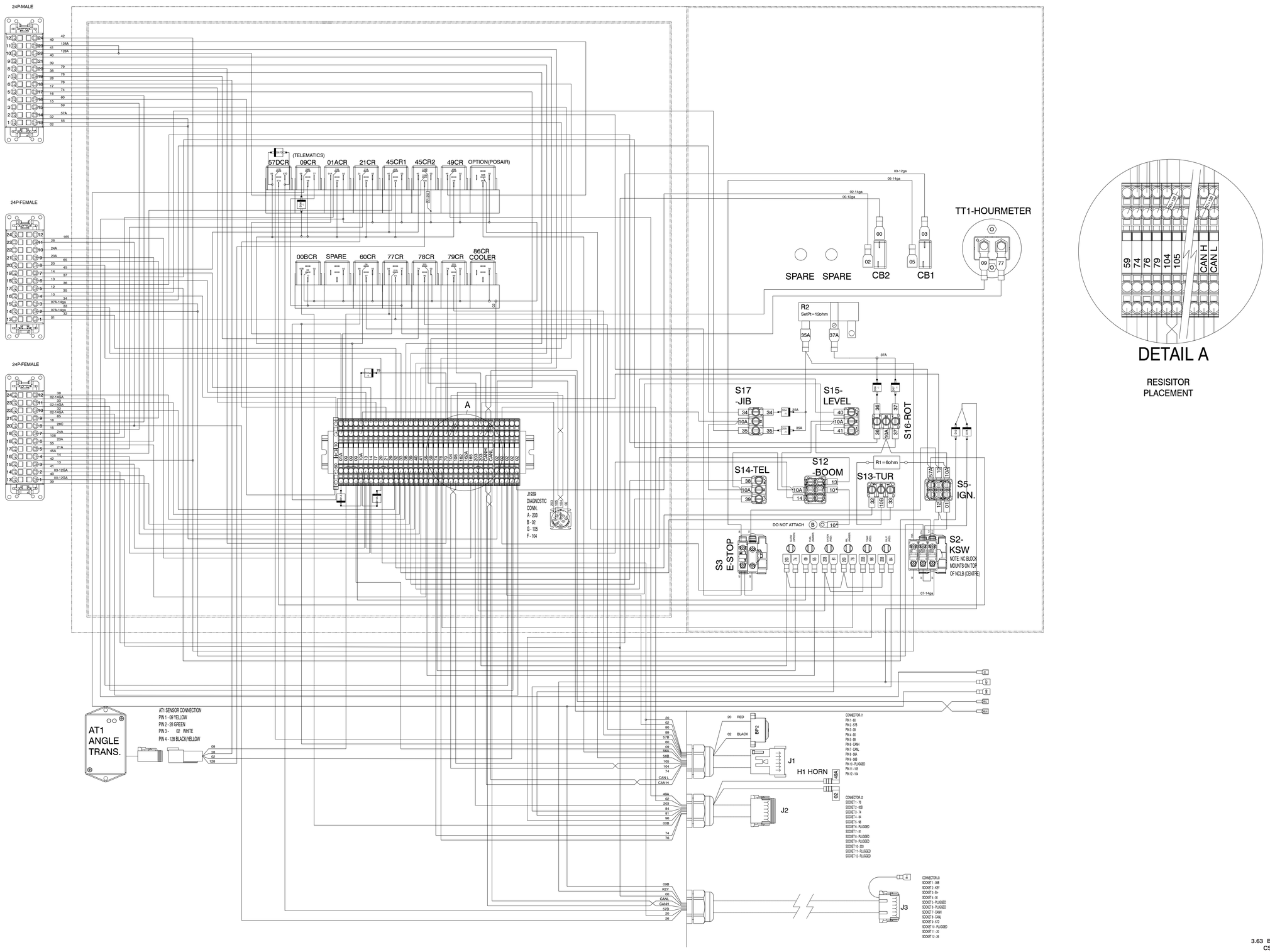
**3.60 Base Controls Wiring - SJ66T ANSI/CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 631 & above**




M195145AF

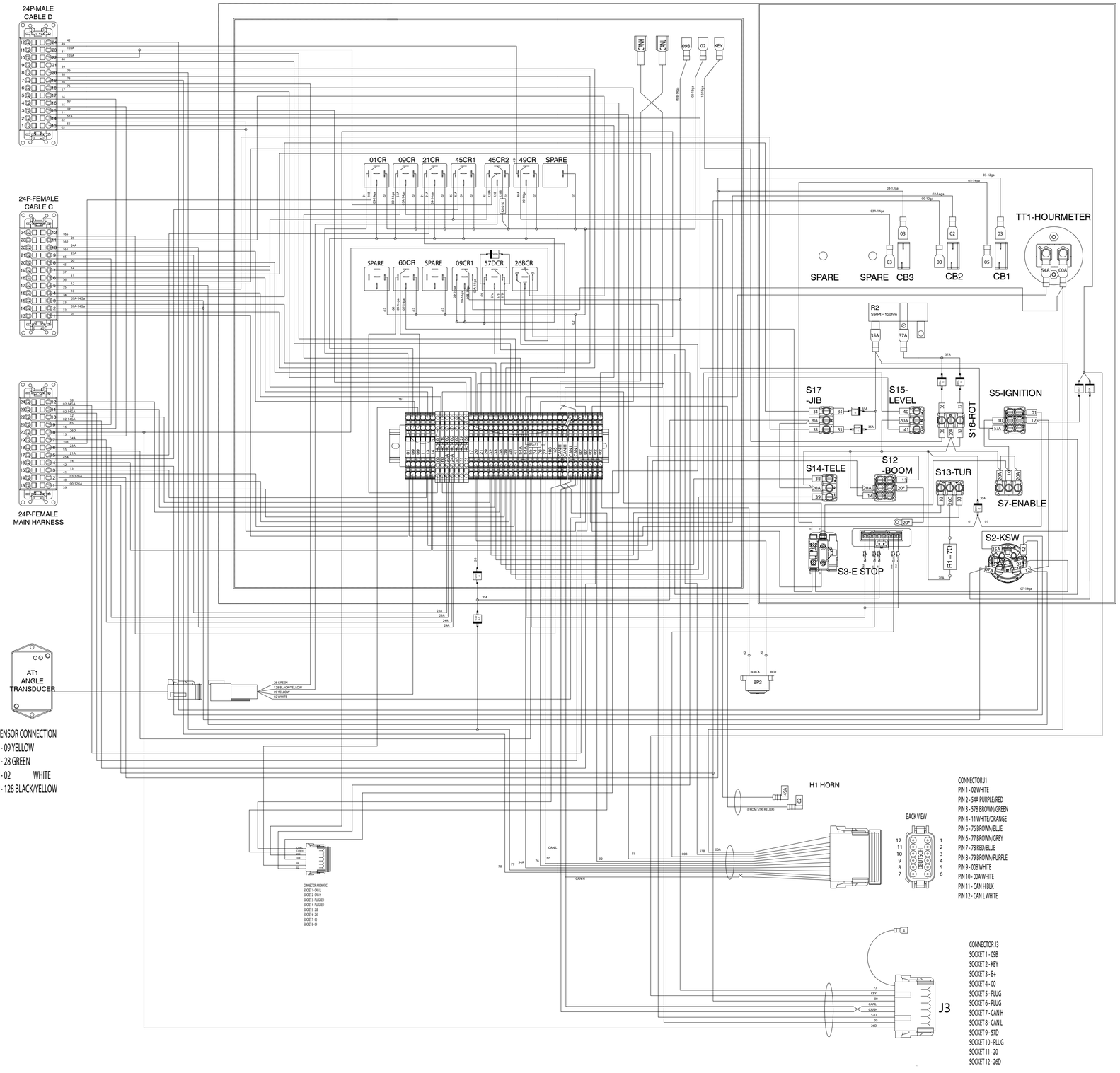
3.61 **Base Controls Wiring - SJ66T ANSI/ CSA - Deutz D2011 with Positive Air Shut-Off Option - S/N 97 003 630 & below**


24P-MALE
24P-FEMALE
24P-FEMALE
57DCR
09CR
01ACR
21CR
45CR1
45CR2
49CR
OPTION(POSAIR)
(TELEMATICS)
00BCR
SPARE
60CR
77CR
78CR
79CR
86CR COOLER
SPARE
SPARE
CB2
CB1
TT1-HOURMETER
R2
SetPt=12ohm
S17 -JIB
S15- LEVEL
S16-ROT
S14-TEL
S12 -BOOM
S13-TUR
R1=6ohm
S5- IGN.
S3 E-STOP
S2- KSW
NOTE: NC BLOCK MOUNTS ON TOP OF NCLB (CENTRE)
J1939 DIAGNOSTIC CONN.
A - 203
B - 02
G - 105
F - 104
AT1 ANGLE TRANS.
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
H1 HORN
J1
J2
J3
J4
BP2
20 RED
02 BLACK
CONNECTOR J1
CONNECTOR J2
CONNECTOR J3
CONNECTOR J4
DETAIL A
RESISITOR PLACEMENT
RELAY ENTRY VIEW
87
86
85
87A
30




3.63 Base Controls Wiring - SJ66T ANSI/ CSA - Perkins 2.2TA - S/N 97 003 630 & below

M212125AE

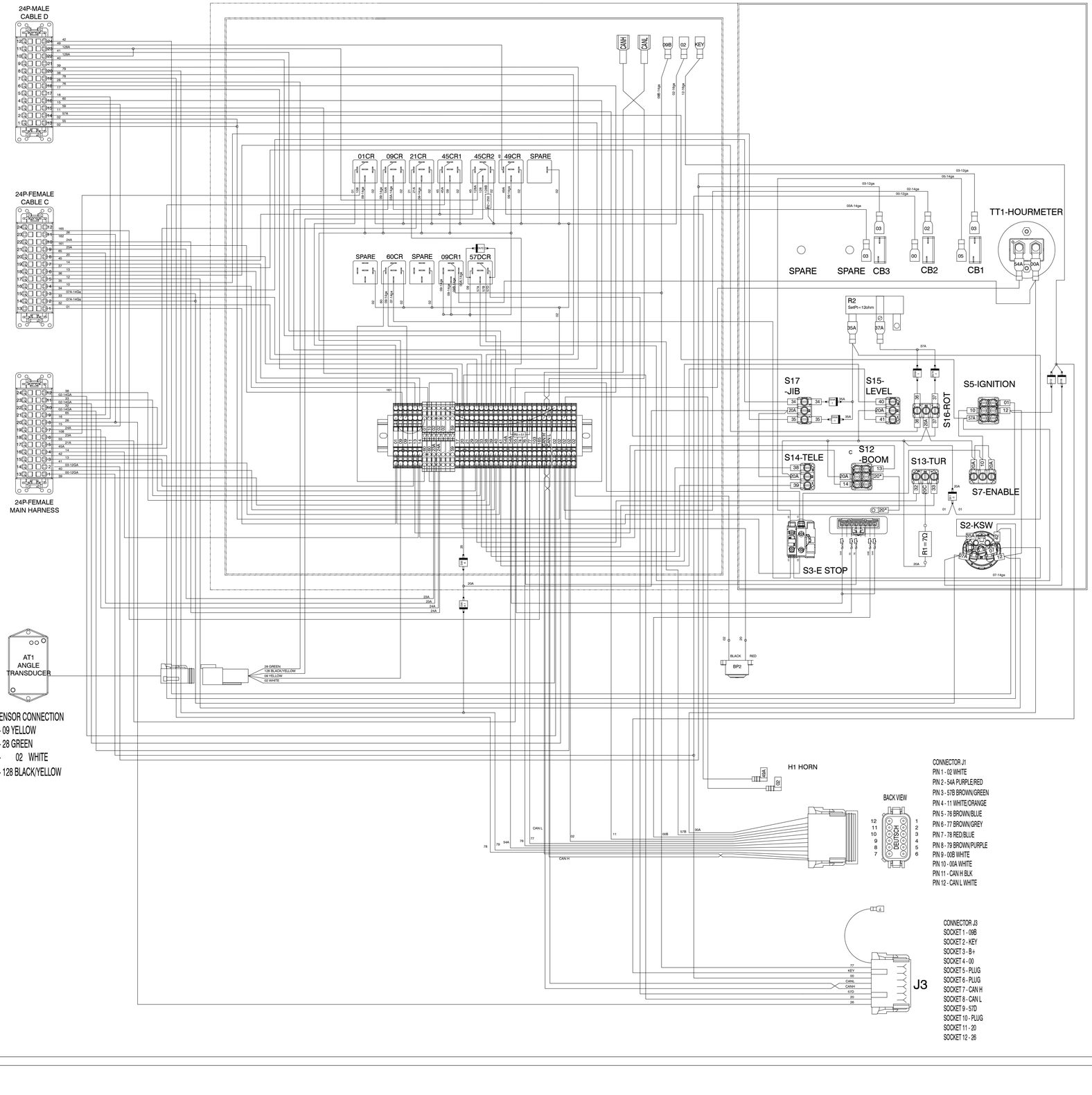



## DETAIL A

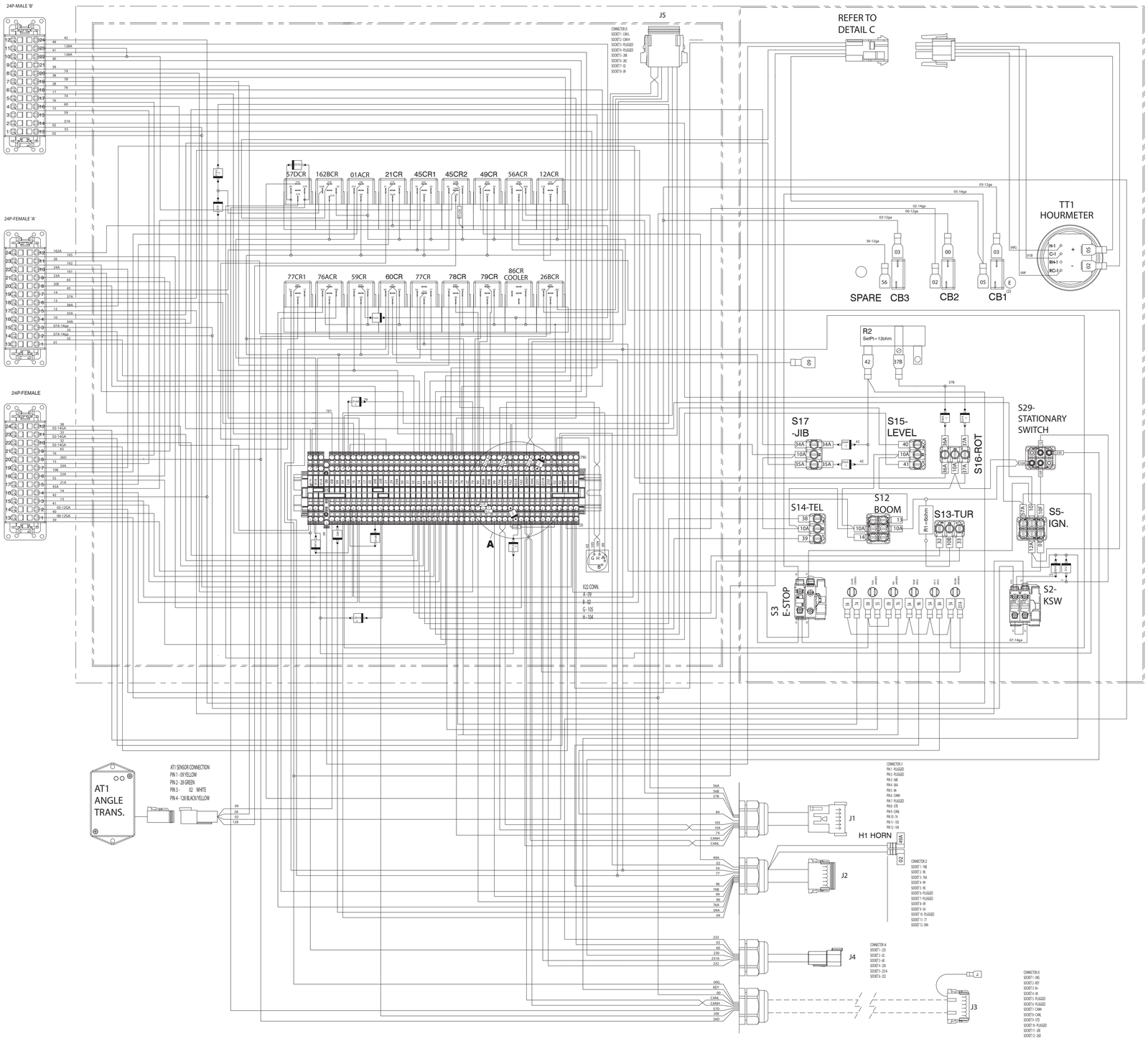
**RESISITOR PLACEMENT**

**3.64 Base Controls Wiring - SJ66T ANSI/ CSA - Kubota - S/N 97 003 631 & above**

M228286AC


24P-MALE
CABLE D
24P-FEMALE
CABLE C
24P-FEMALE
MAIN HARNESS
01CR
09CR
21CR
45CR1
45CR2
49CR
SPARE
SPARE
60CR
SPARE
09CR1
57DCR
CANH
CANL
09B
02
KEY
TT1-HOURMETER
SPARE
SPARE
CB3
CB2
CB1
R2
SetPt = 12ohm
S17
-JIB
S15-
LEVEL
S5-IGNITION
S16-ROT
S14-TELE
S12
-BOOM
S13-TUR
S7-ENABLE
S2-KSW
S3-E STOP
R1 = 7Ω
BP2
BLACK
RED
AT1
ANGLE
TRANSDUCER
28 GREEN
128 BLACK/YELLOW
09 YELLOW
02 WHITE
H1 HORN
BACK VIEW
J3
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
CONNECTOR J1
PIN 1 - 02 WHITE
PIN 2 - 54A PURPLE/RED
PIN 3 - 57B BROWN/GREEN
PIN 4 - 11 WHITE/ORANGE
PIN 5 - 76 BROWN/BLUE
PIN 6 - 77 BROWN/GREY
PIN 7 - 78 RED/BLUE
PIN 8 - 79 BROWN/PURPLE
PIN 9 - 00B WHITE
PIN 10 - 00A WHITE
PIN 11 - CAN H BLK
PIN 12 - CAN L WHITE
CONNECTOR J3
SOCKET 1 - 09B
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26

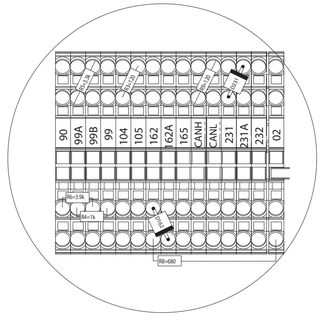
M165519AG




DETAIL C

CONNECTOR(FEMALE)

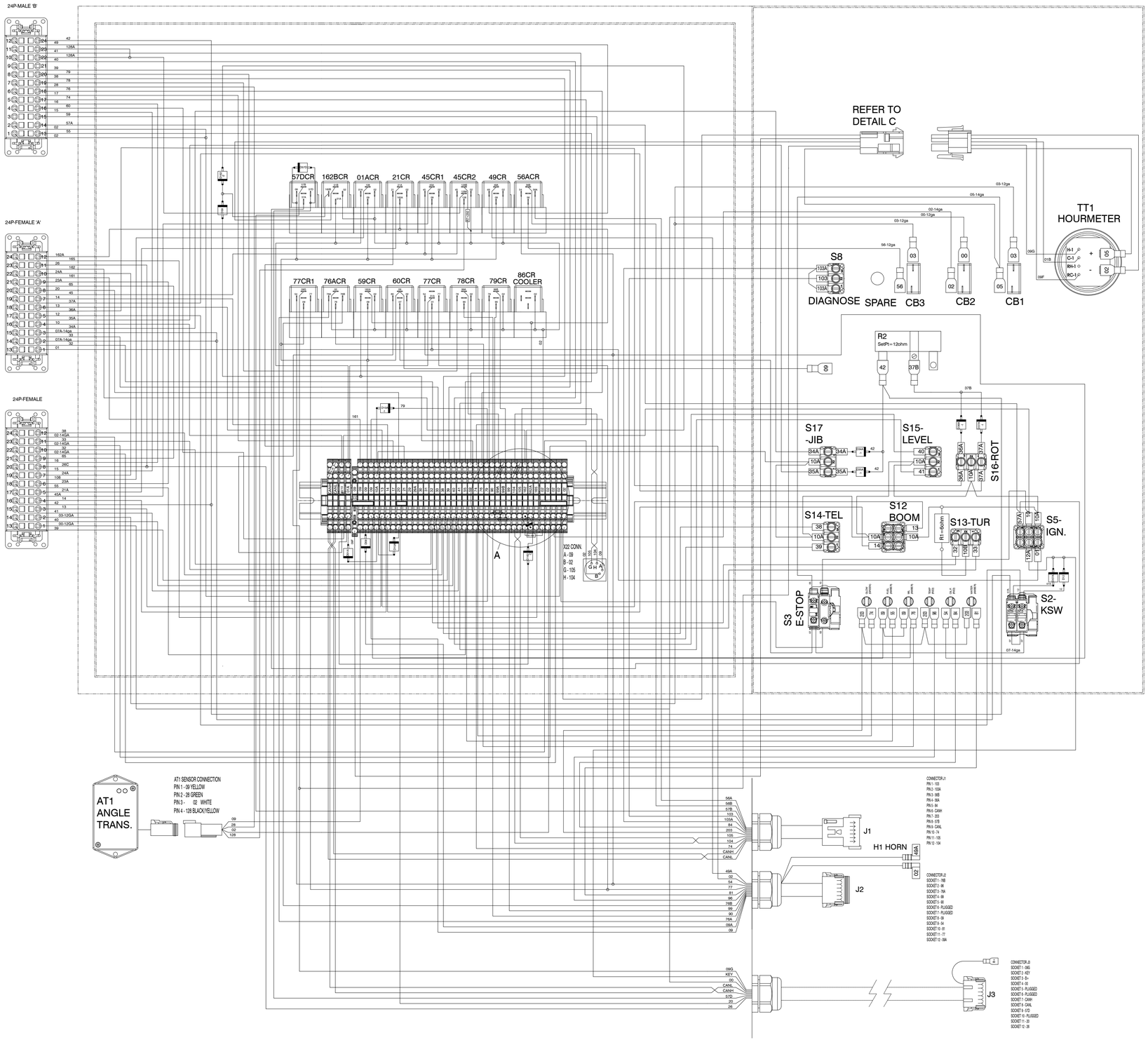
PIN1 - 05 PURPLE
PIN2 - 77 BROWN
PIN3 - 01B PURPLE/BLACK
PIN4 - n/a
PIN5 - 09F YELLOW
PIN6 - 02 WHITE




## DETAIL A

RESISTOR & DIODE PLACEMENT

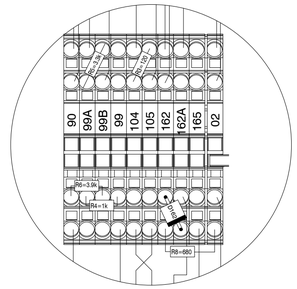
M224670AD




DETAIL C

CONNECTOR(FEMALE)

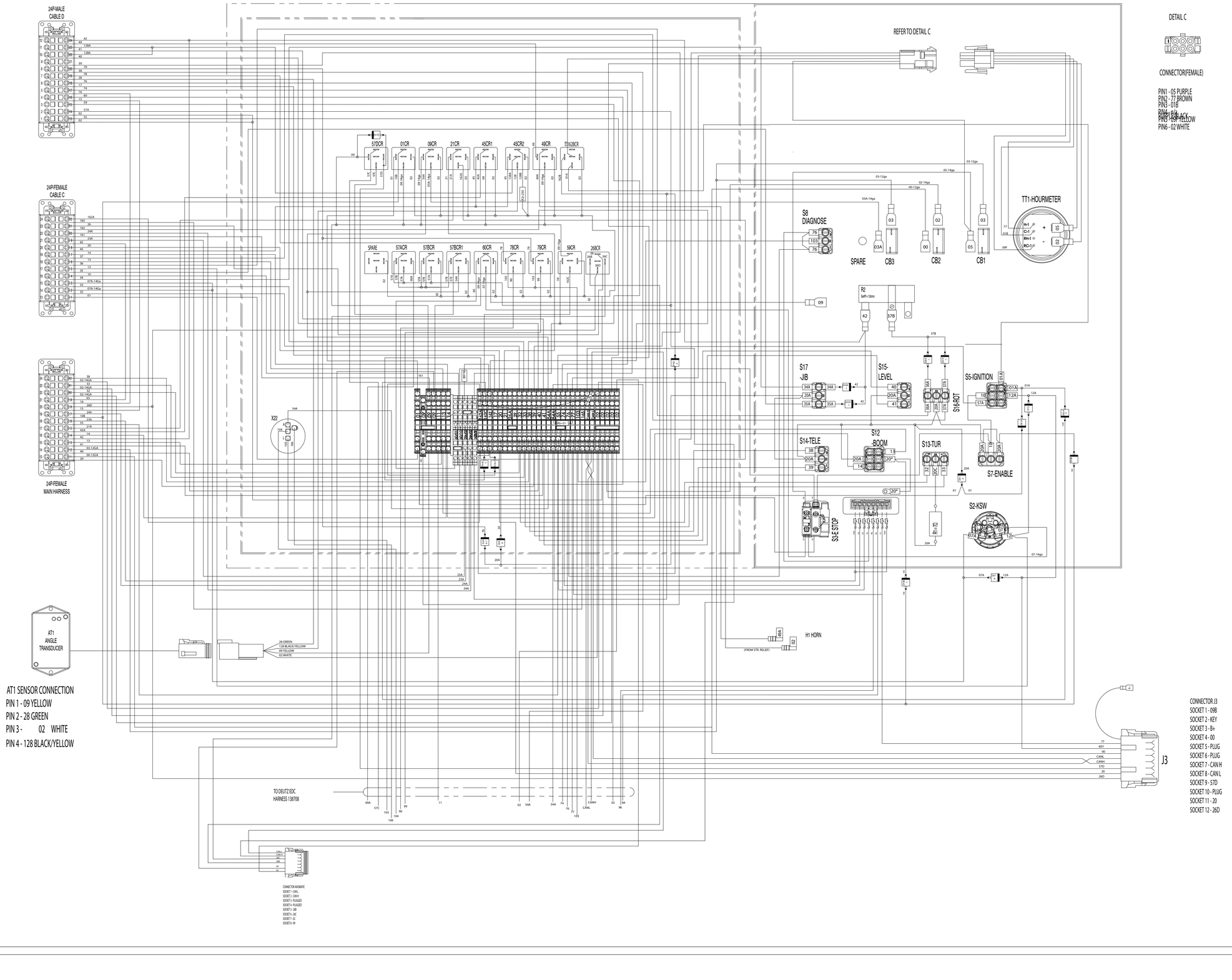
PIN1 - 05 PURPLE
PIN2 - 77 BROWN
PIN3 - 01B PURPLE/BLACK
PIN4 - n/a
PIN5 - 09F YELLOW
PIN6 - 02 WHITE




# DETAIL A

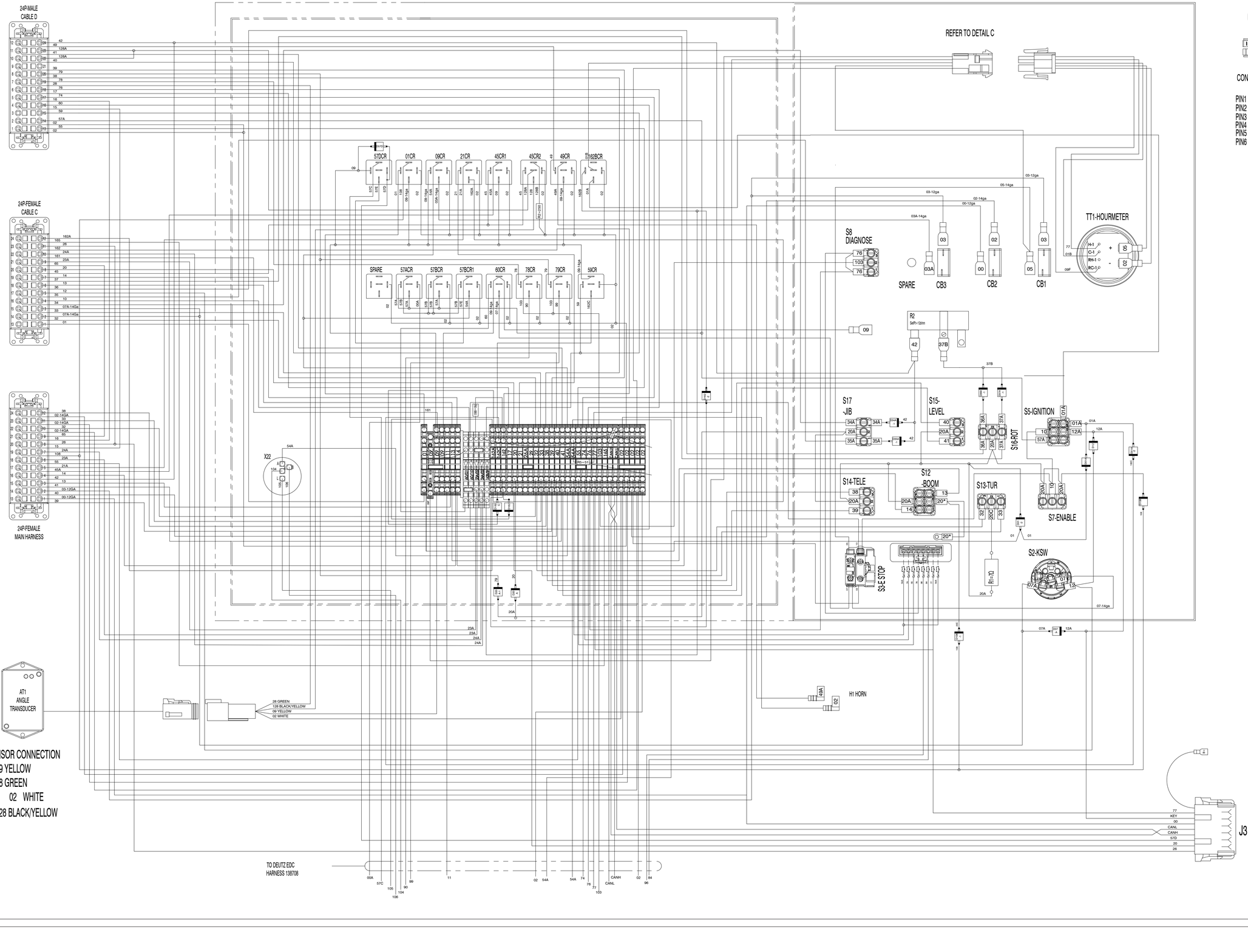
RESISITOR & DIODE PLACEMENT

M170739AF




M233239AA

3.68 Base Controls Wiring - SJ66T CE - Deutz D2011 - S/N 97 003 631 & above




DETAIL C

CONNECTOR (FEMALE)

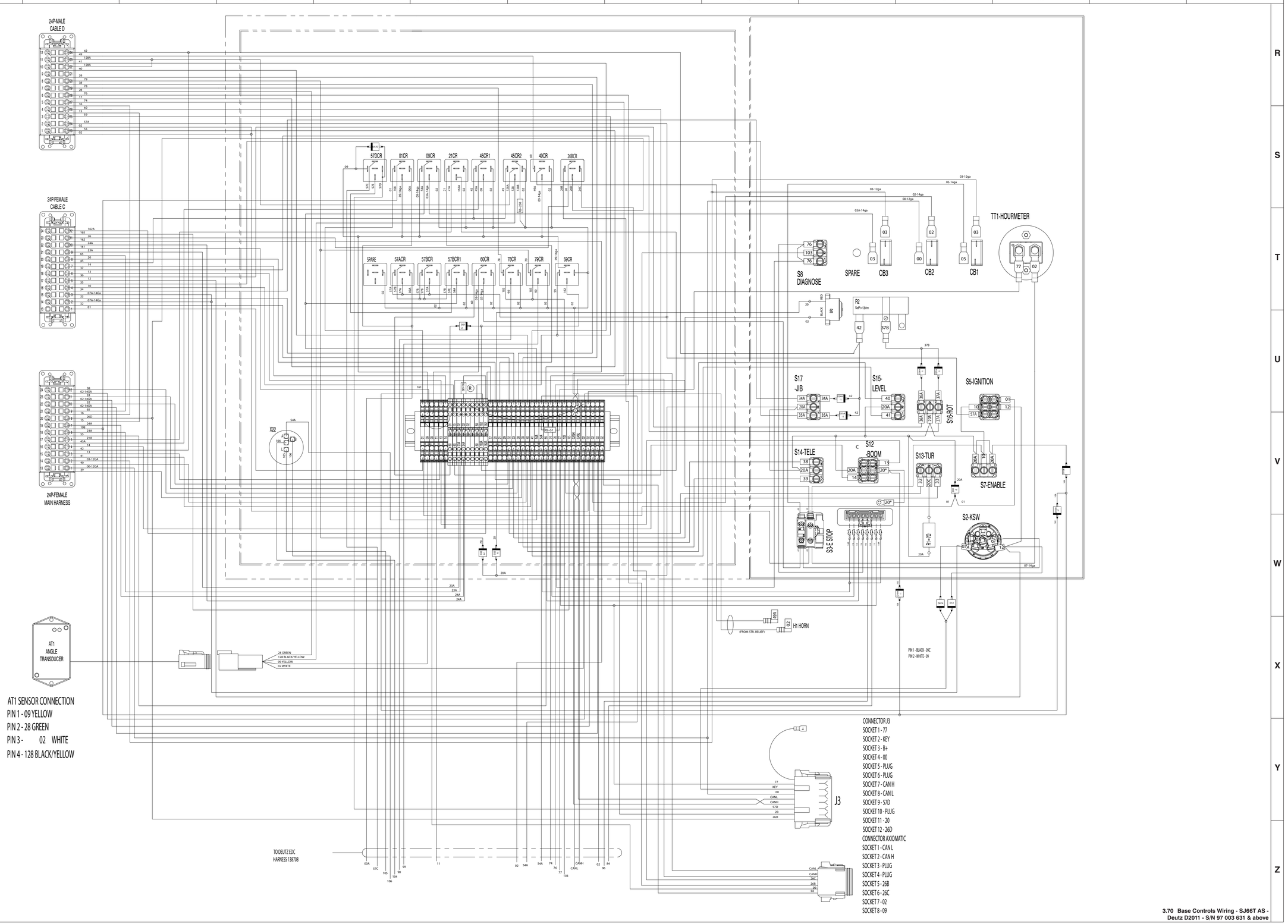
PIN1 - 05 PURPLE
PIN2 - 77 BROWN
PIN3 - 01B PURPLE/BLACK
PIN4 - n/a
PIN5 - 09F YELLOW
PIN6 - 02 WHITE

AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

CONNECTOR J3
SOCKET 1 - 09B
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26

M170734AG

3.69 Base Controls Wiring - SJ66T CE - Deutz D2011 - S/N 97 003 630 & below

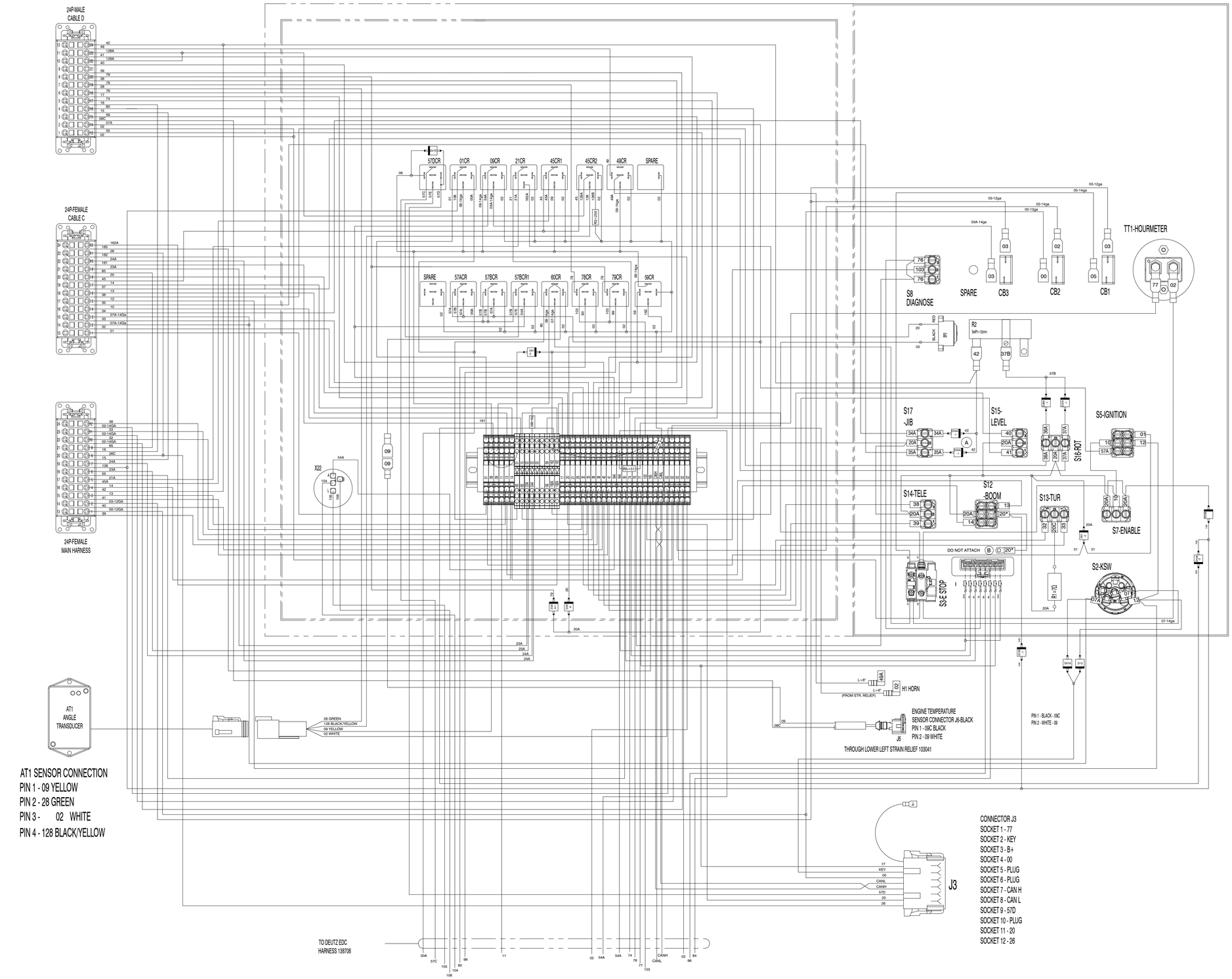



AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

CONNECTOR J3
SOCKET 1 - 77
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26D
CONNECTOR AXIOMATIC
SOCKET 1 - CAN L
SOCKET 2 - CAN H
SOCKET 3 - PLUG
SOCKET 4 - PLUG
SOCKET 5 - 26B
SOCKET 6 - 26C
SOCKET 7 - 02
SOCKET 8 - 09

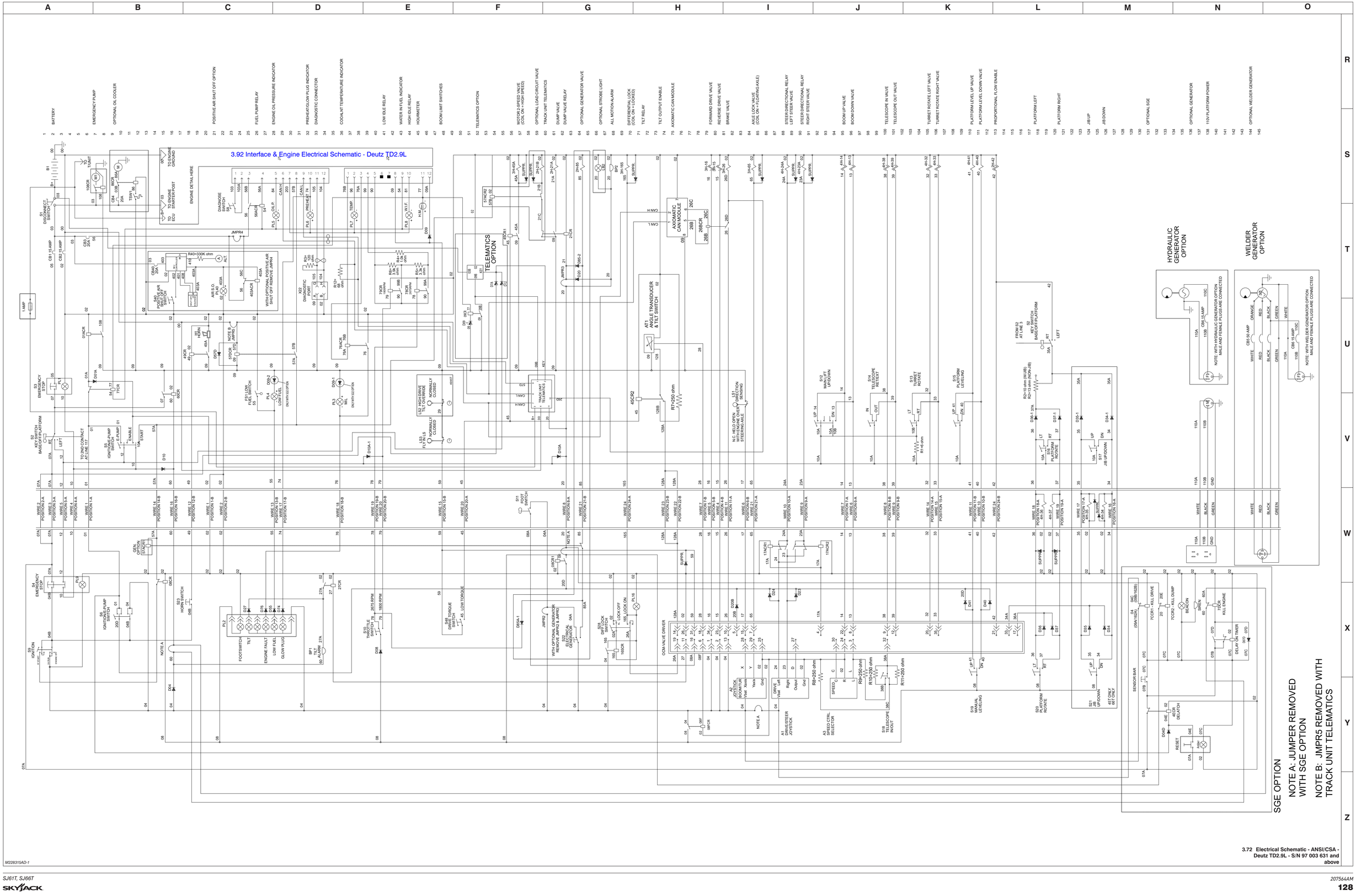
M233248AA

3.70 Base Controls Wiring - SJ66T AS - Deutz D2011 - S/N 97 003 631 & above


24P-MALE CABLE D
24P-FEMALE CABLE C
24P-FEMALE MAIN HARNESS
57DCR
01CR
09CR
21CR
45CR1
45CR2
49CR
SPARE
57ACR
57BCR
57BCR1
60CR
78CR
79CR
59CR
X22
TT1-HOURMETER
S8 DIAGNOSE
SPARE
CB3
CB2
CB1
R2
S17 -JIB
S15- LEVEL
S16-ROT
S5-IGNITION
S14-TELE
S12 BOOM
S13-TUR
S7-ENABLE
S3-E STOP
S2-KSW
R1=7Ω
H1 HORN
DO NOT ATTACH
AT1 ANGLE TRANSDUCER
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
28 GREEN
128 BLACK/YELLOW
09 YELLOW
02 WHITE
ENGINE TEMPERATURE SENSOR CONNECTOR J6-BLACK
PIN 1 - 09C BLACK
PIN 2 - 09 WHITE
J6
THROUGH LOWER LEFT STRAIN RELIEF 103041
PIN 1 - BLACK - 09C
PIN 2 - WHITE - 09
J3
CONNECTOR J3
SOCKET 1 - 77
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26
TO DEUTZ EDC HARNESS 138708

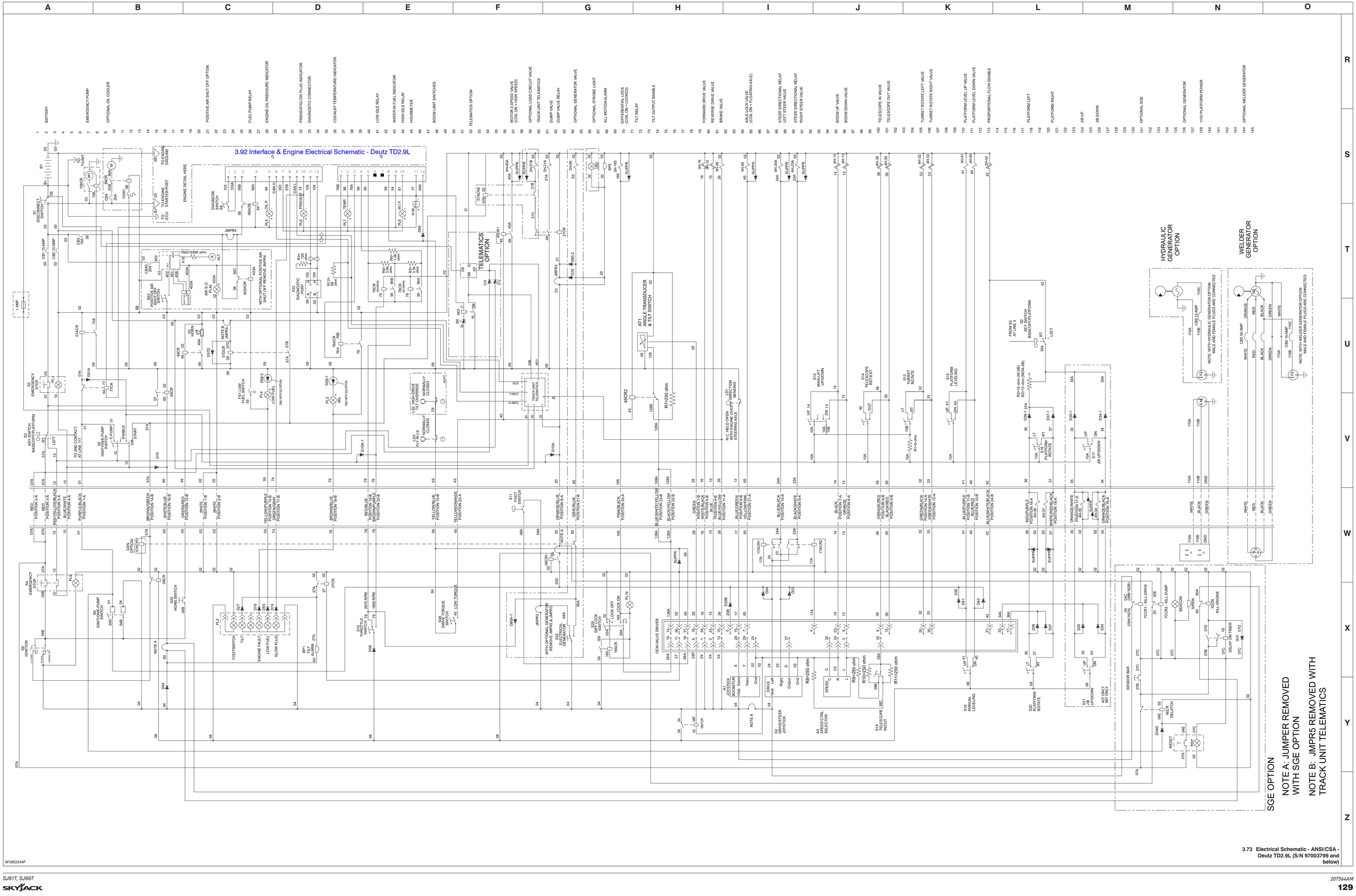
M165653AG

3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L




M228315AD-1

3.72 Electrical Schematic - ANSI/CSA - Deutz TD2.9L - S/N 97 003 631 and above


3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L
TELEMATICS OPTION
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR5 REMOVED WITH TRACK UNIT TELEMATICS

3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L

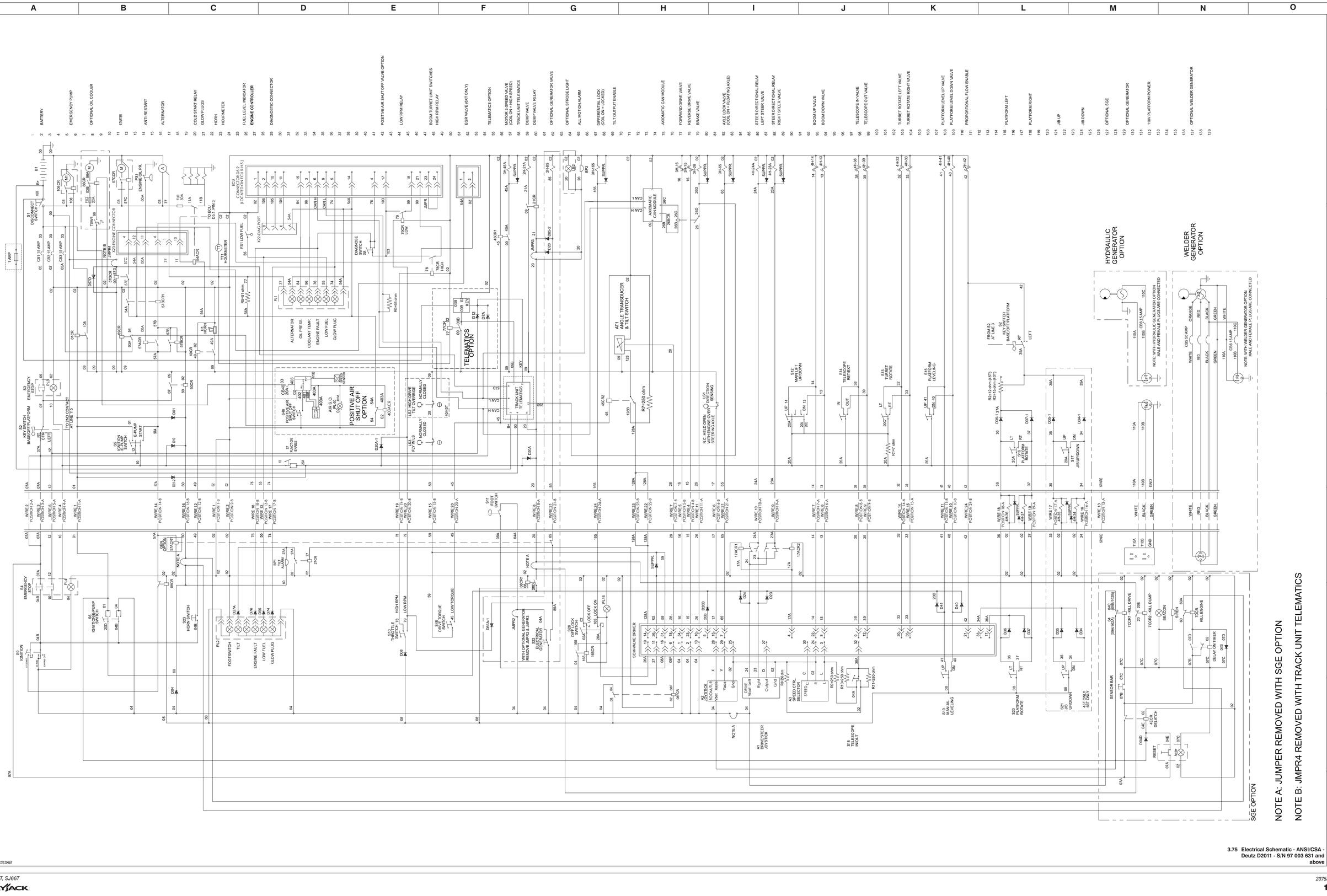
SGE OPTION

NOTE A: JUMPER REMOVED WITH SGE OPTION

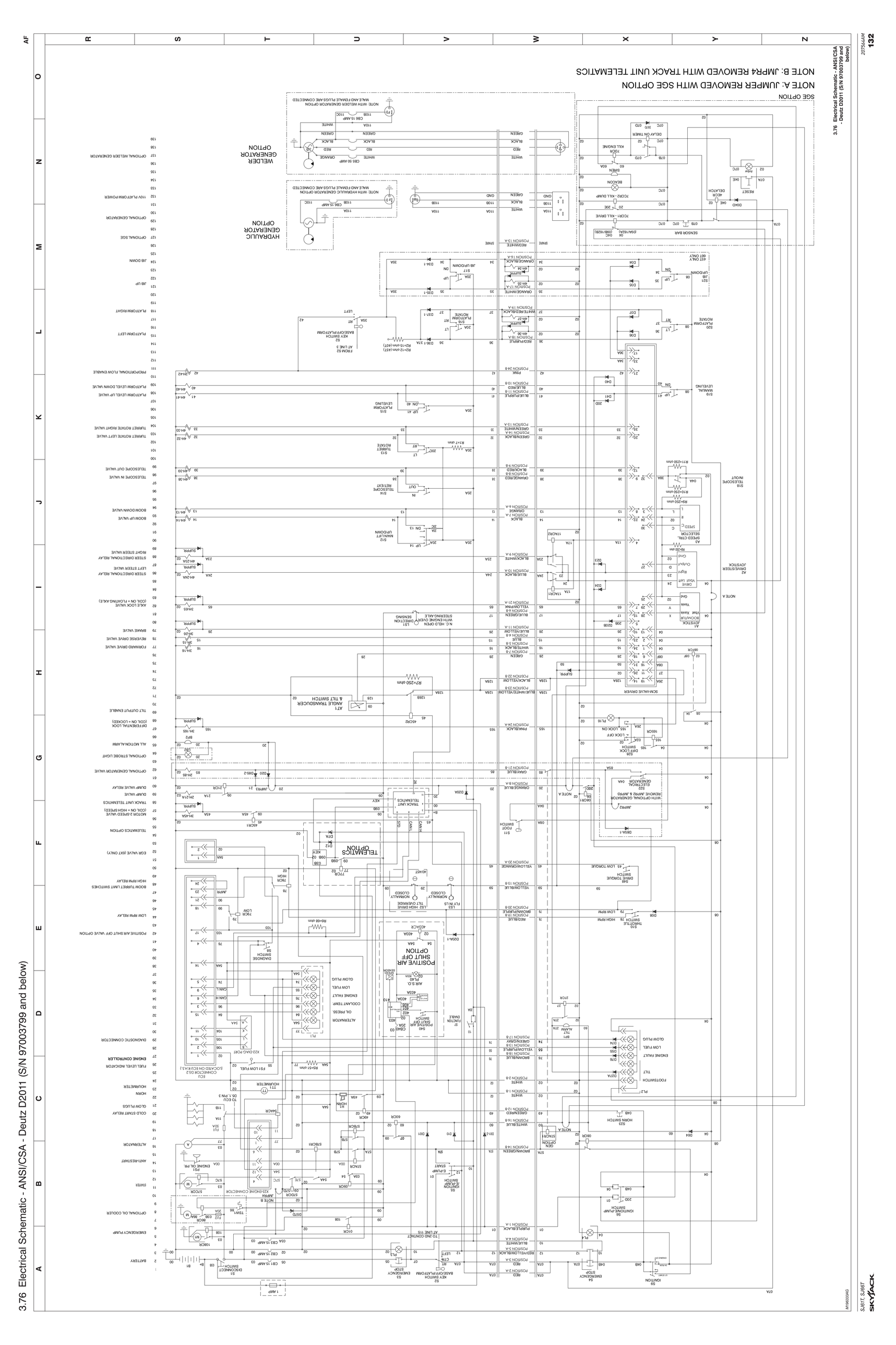
NOTE B: JMPR5 REMOVED WITH TRACK UNIT TELEMATICS

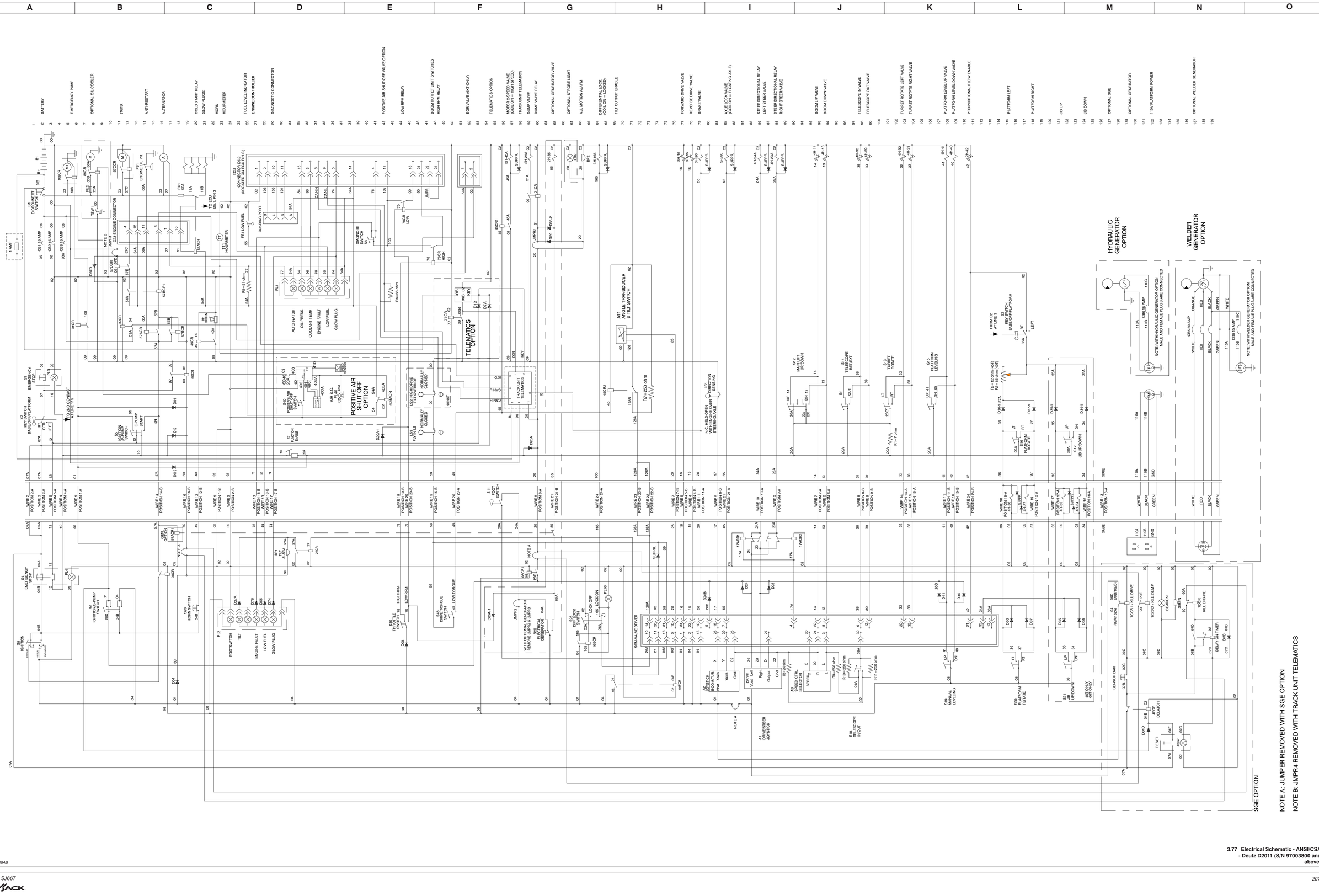
3.74 Electrical Schematic - ANSI/CSA - Deutz TD2.9L (S/N 97003800 and above)

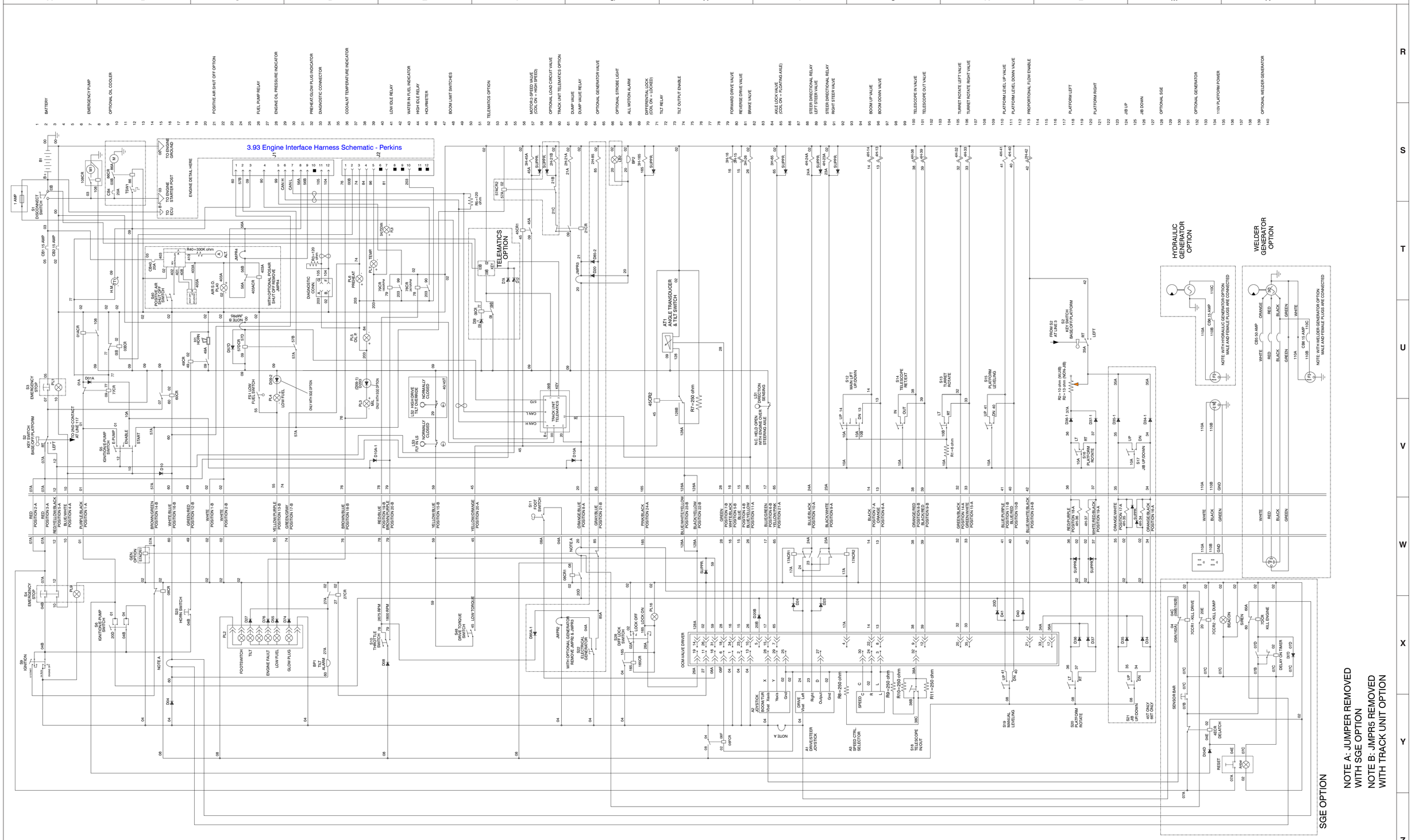
M223012AC-1


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R
S
T
U
V
W
X
Y
Z
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
STARTER
ANTI-RESTART
ALTERNATOR
COLD START RELAY
GLOW PLUGS
HORN
HOURMETER
FUEL LEVEL INDICATOR
ENGINE CONTROLLER
DIAGNOSTIC CONNECTOR
POSITIVE AIR SHUT OFF VALVE OPTION
LOW RPM RELAY
BOOM TURRET LIMIT SWITCHES
HIGH RPM RELAY
EGR VALVE (4XT ONLY)
TELEMATICS OPTION
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
TRACK UNIT TELEMATICS
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
DIFFERENTIAL LOCK (COIL ON = LOCKED)
TILT OUTPUT ENABLE
AXIOMATIC CAN MODULE
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
STEER DIRECTIONAL RELAY LEFT STEER VALVE
STEER DIRECTIONAL RELAY RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL SGE
OPTIONAL GENERATOR
110V PLATFORM POWER
OPTIONAL WELDER GENERATOR
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
NOTE: WITH WELDER GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
TELEMATICS OPTION
POSITIVE AIR SHUT OFF OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR4 REMOVED WITH TRACK UNIT TELEMATICS

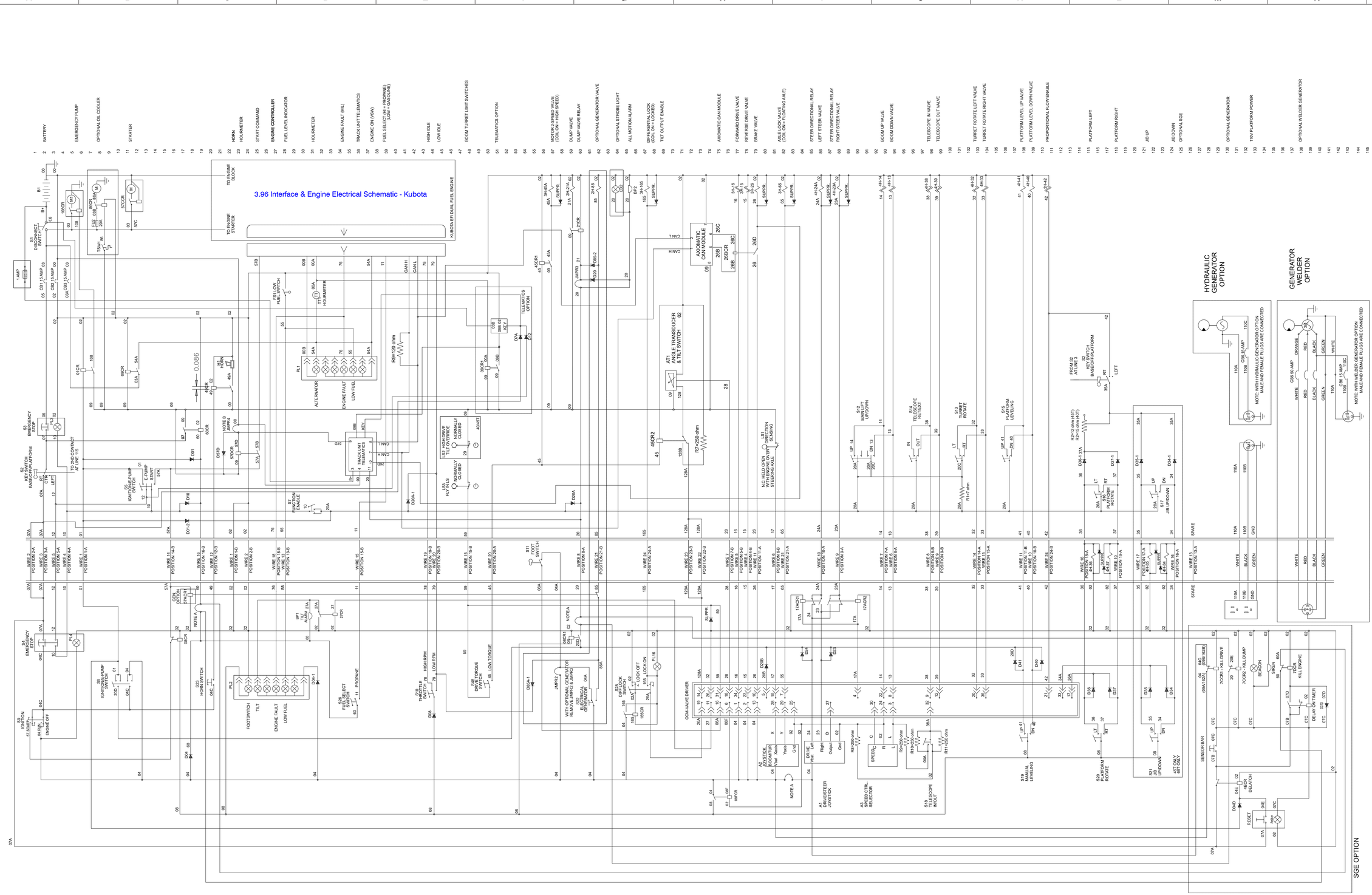
M228313AB


SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JUMPR4 REMOVED WITH TRACK UNIT TELEMATICS
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
TELEMATICS OPTION
POSITIVE AIR SHUT OFF OPTION
WITH OPTIONAL GENERATOR REMOVE JUMP2 & JUMP3
ENGINE CONTROLLER
ENGINE FAULT
LOW FUEL
GLOW PLUG
TILT
FOOTSWITCH
HORN SWITCH
IGNITION SWITCH
EMERGENCY STOP
KEY SWITCH
BATTERY
ALTERNATOR
STARTER
ANTI-RESTART
GLOW PLUGS
COLD START RELAY
HOURMETER
HORN
DIAGNOSTIC CONNECTOR
FUEL LEVEL INDICATOR
LOW RPM RELAY
POSITIVE AIR SHUT OFF VALVE OPTION
BOOM TUNNEL LIMIT SWITCHES
HIGH RPM RELAY
TELEMATICS OPTION
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
TRACK UNIT TELEMATICS (COIL ON = TRACK UNIT TELEMATICS)
DUMP VALVE
DUMP VALVE RELAY
EGR VALVE (IGT ONLY)
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
DIFFERENTIAL LOCK (COIL ON = LOCKED)
TILT CUTOUT ENABLE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
BRAKE VALVE
REVERSE DRIVE VALVE
FORWARD DRIVE VALVE
LEFT STEER VALVE
STEER DIRECTIONAL RELAY
RIGHT STEER VALVE
BOOM DOWN VALVE
BOOM UP VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE RIGHT VALVE
TURRET ROTATE LEFT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL SGE
OPTIONAL GENERATOR
110V PLATFORM POWER
OPTIONAL WELDER GENERATOR
3.76 Electrical Schematic - ANSI/CSA - Deutz D2011 (S/N 97003799 and below)


TELEMATICS OPTION
POSITIVE AIR SHUTOFF OPTION
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR4 REMOVED WITH TRACK UNIT TELEMATICS


3.93 Engine Interface Harness Schematic - Perkins
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR5 REMOVED WITH TRACK UNIT OPTION

3.93 Engine Interface Harness Schematic - Perkins 2.2TA


3.96 Interface & Engine Electrical Schematic - Kubota
KUBOTA EFI DUAL FUEL ENGINE
HYDRAULIC GENERATOR OPTION
GENERATOR WELDER OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR4 REMOVED WITH TRACK UNIT OPTION

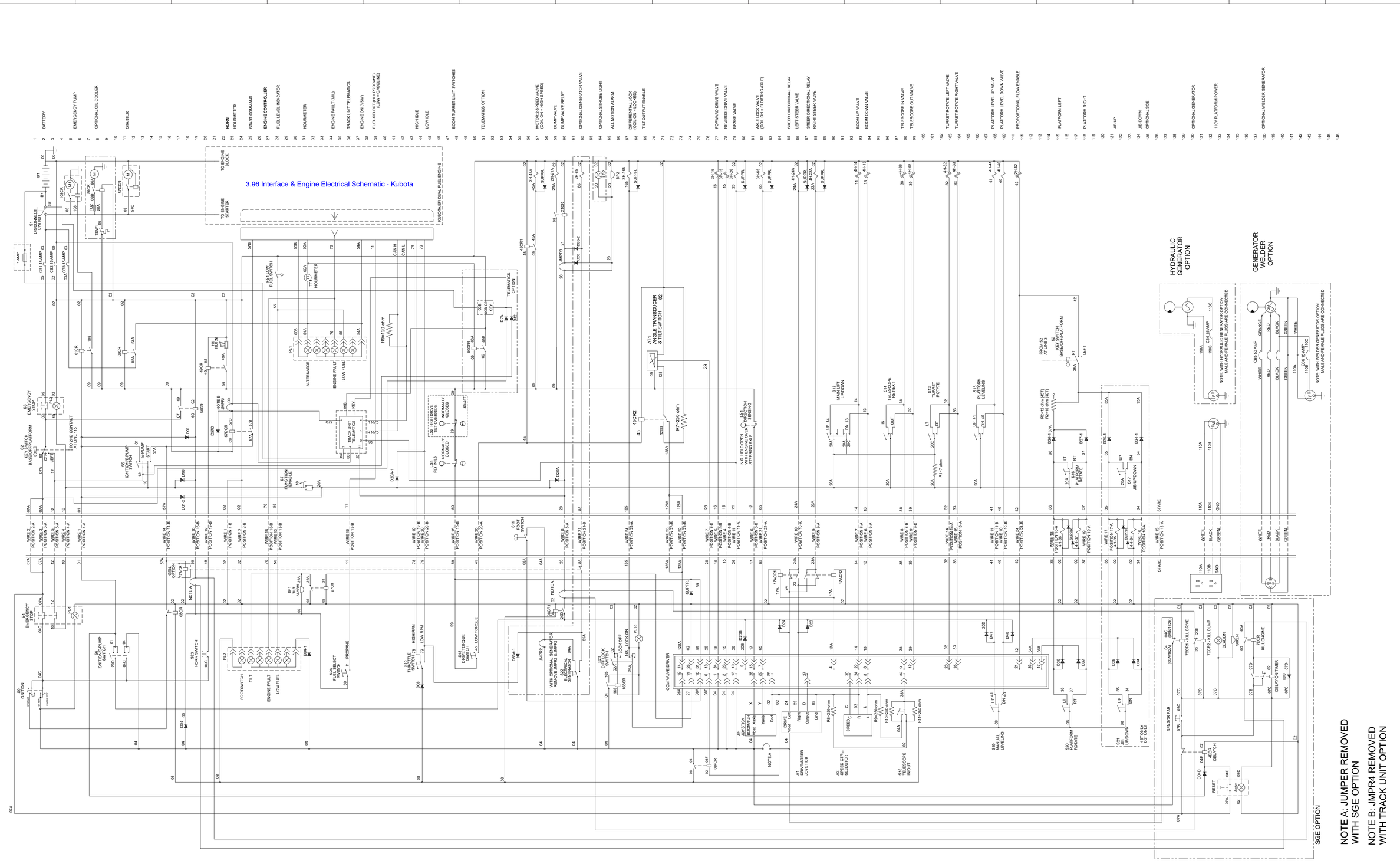
3.96 Interface & Engine Electrical Schematic - Kubota

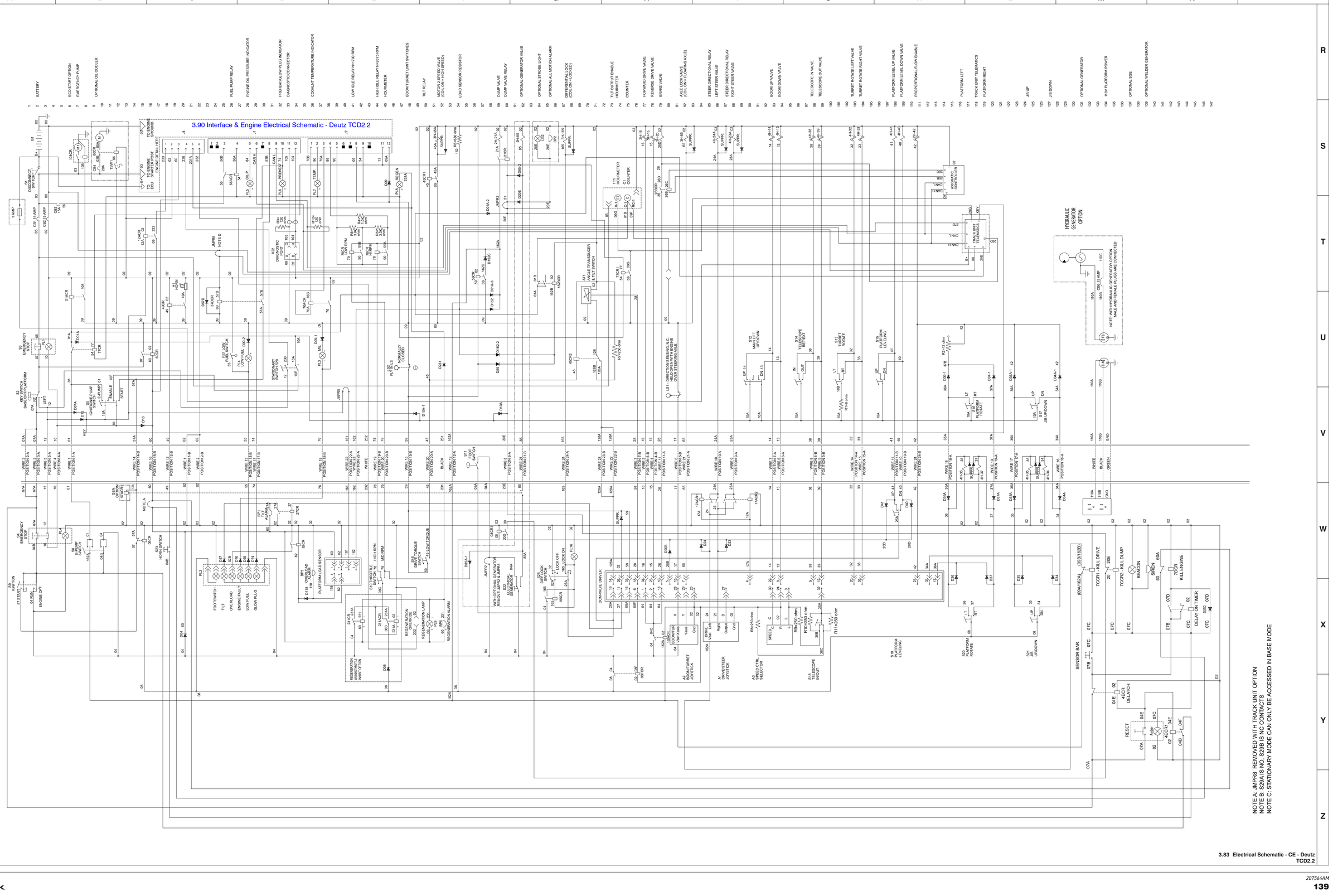
SGE OPTION

NOTE A: JUMPER REMOVED WITH SGE OPTION

NOTE B: JMPR4 REMOVED WITH TRACK UNIT OPTION

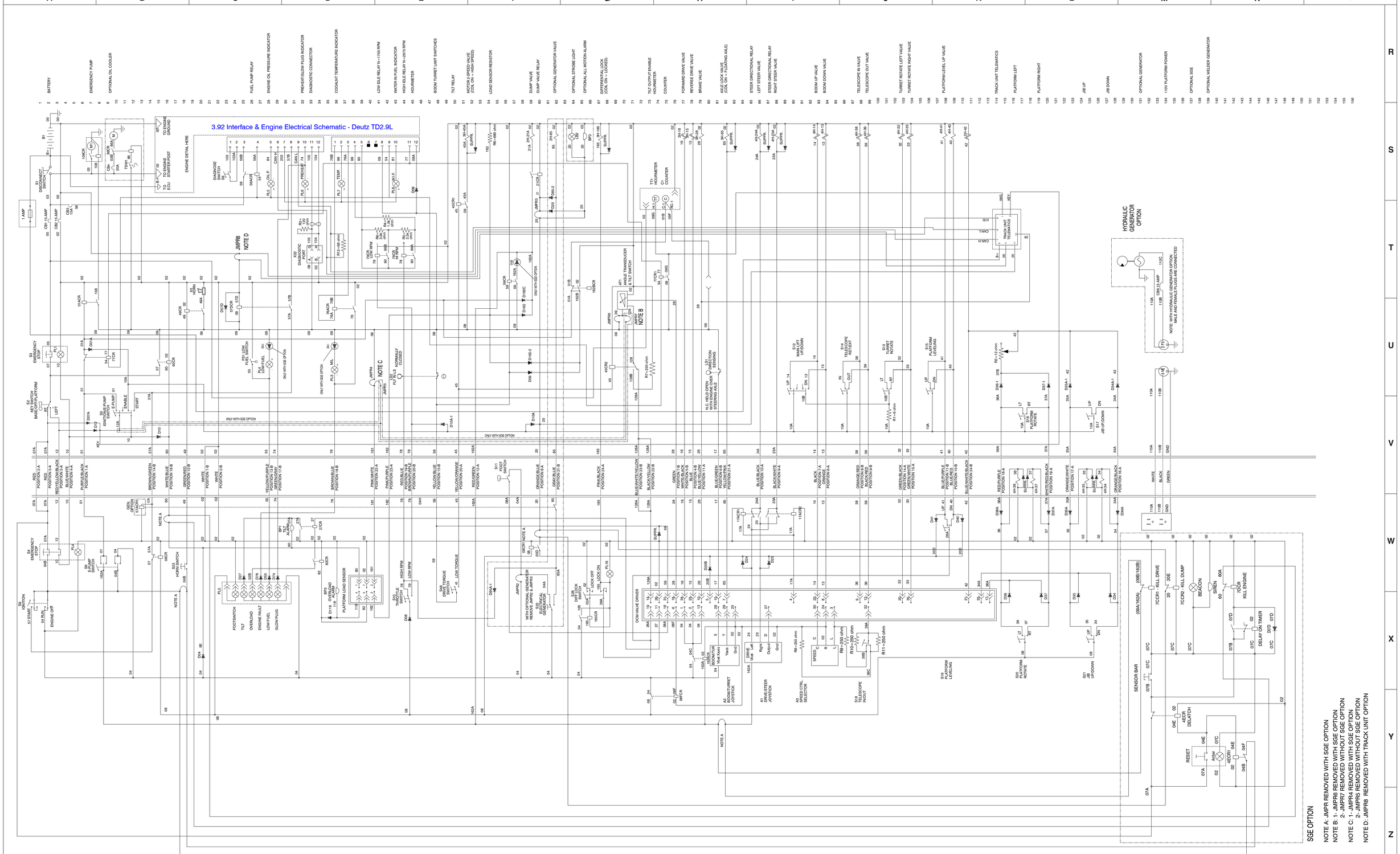
M196335AG


3.96 Interface & Engine Electrical Schematic - Kubota
HYDRAULIC GENERATOR OPTION
GENERATOR WELDER OPTION
SGE OPTION
NOTE A: JUMPER REMOVED WITH SGE OPTION
NOTE B: JMPR4 REMOVED WITH TRACK UNIT OPTION



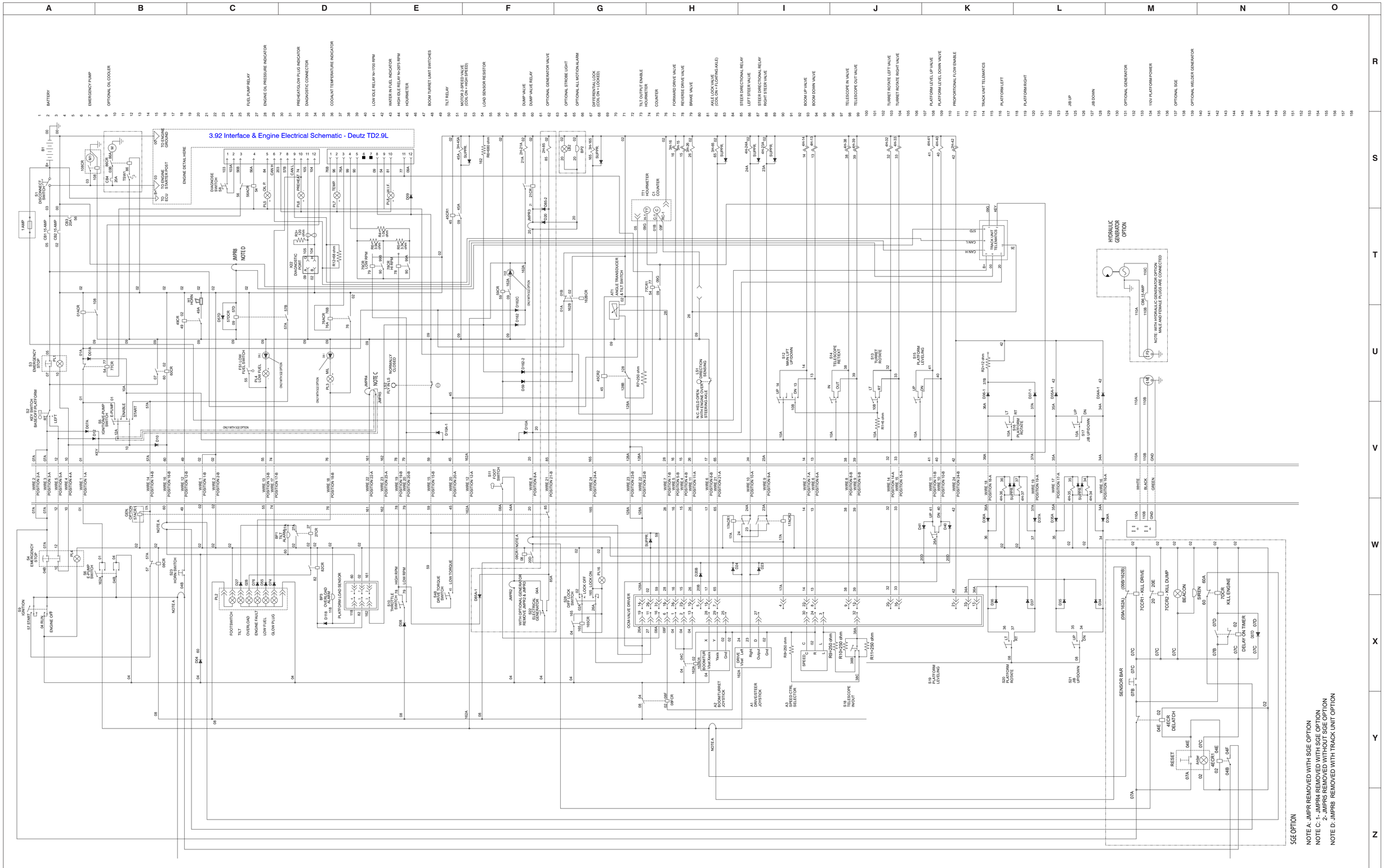

3.83 Electrical Schematic - CE - Deutz TCD2.2

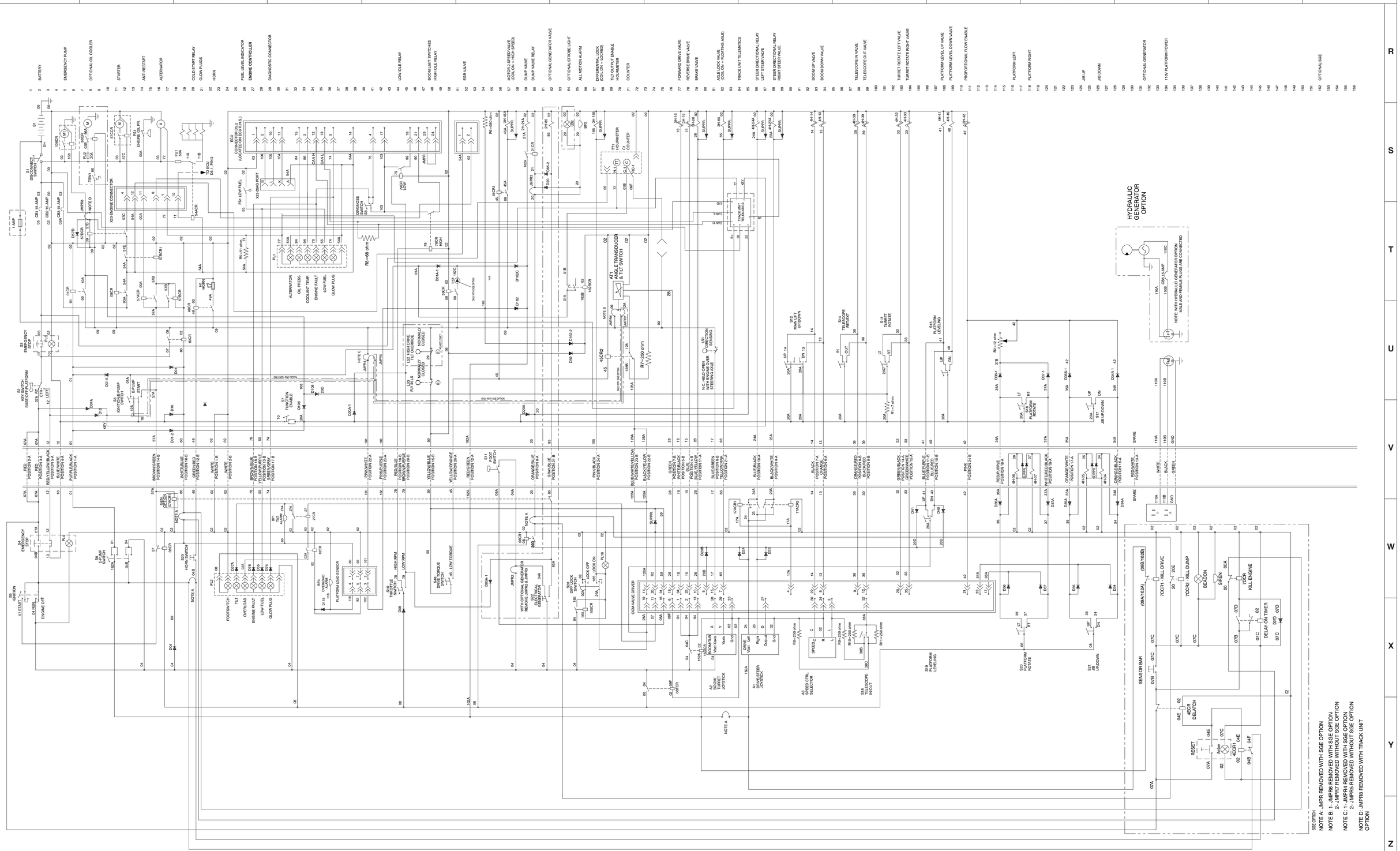
M224669AF



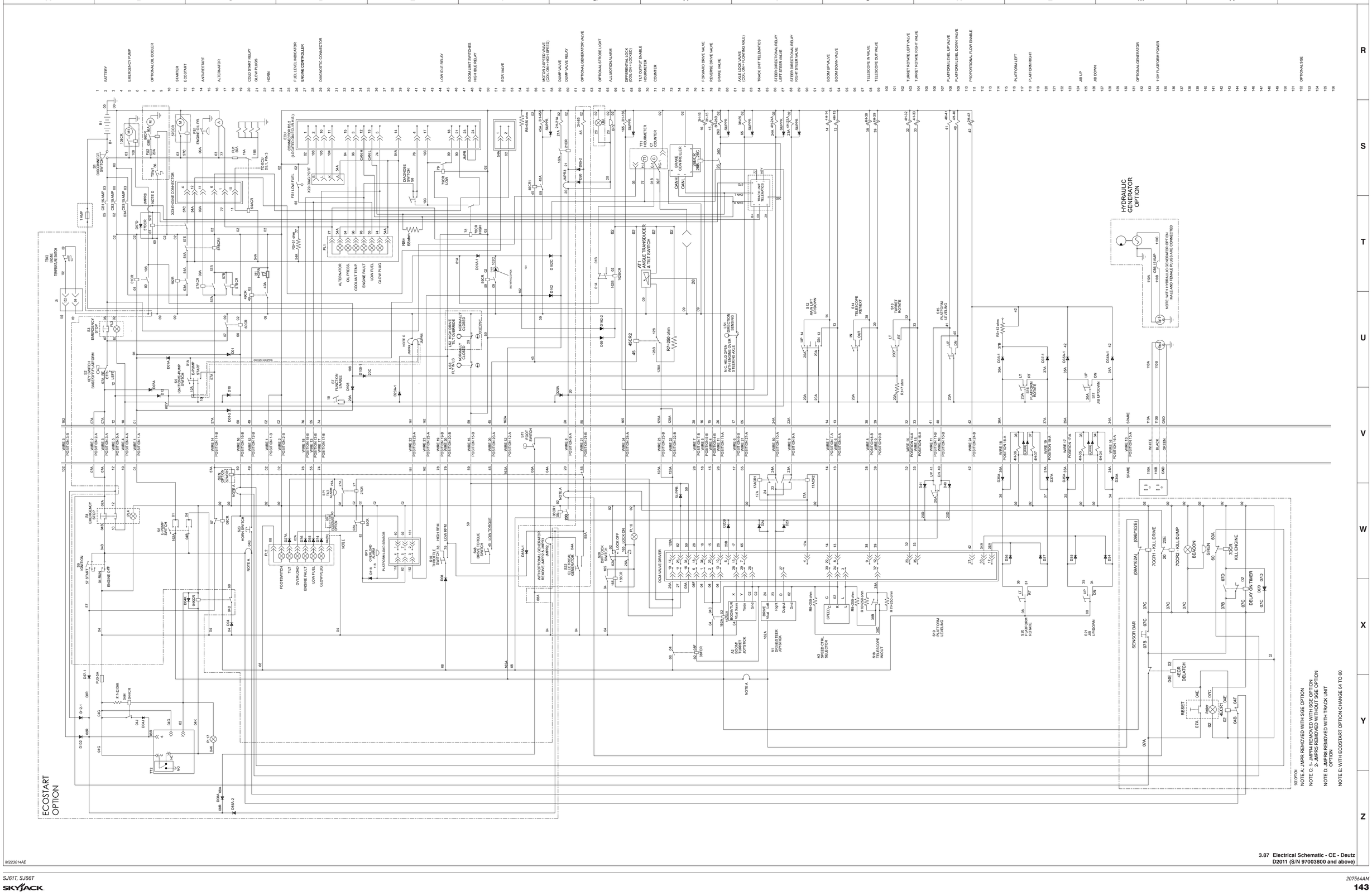

M196337AF-1

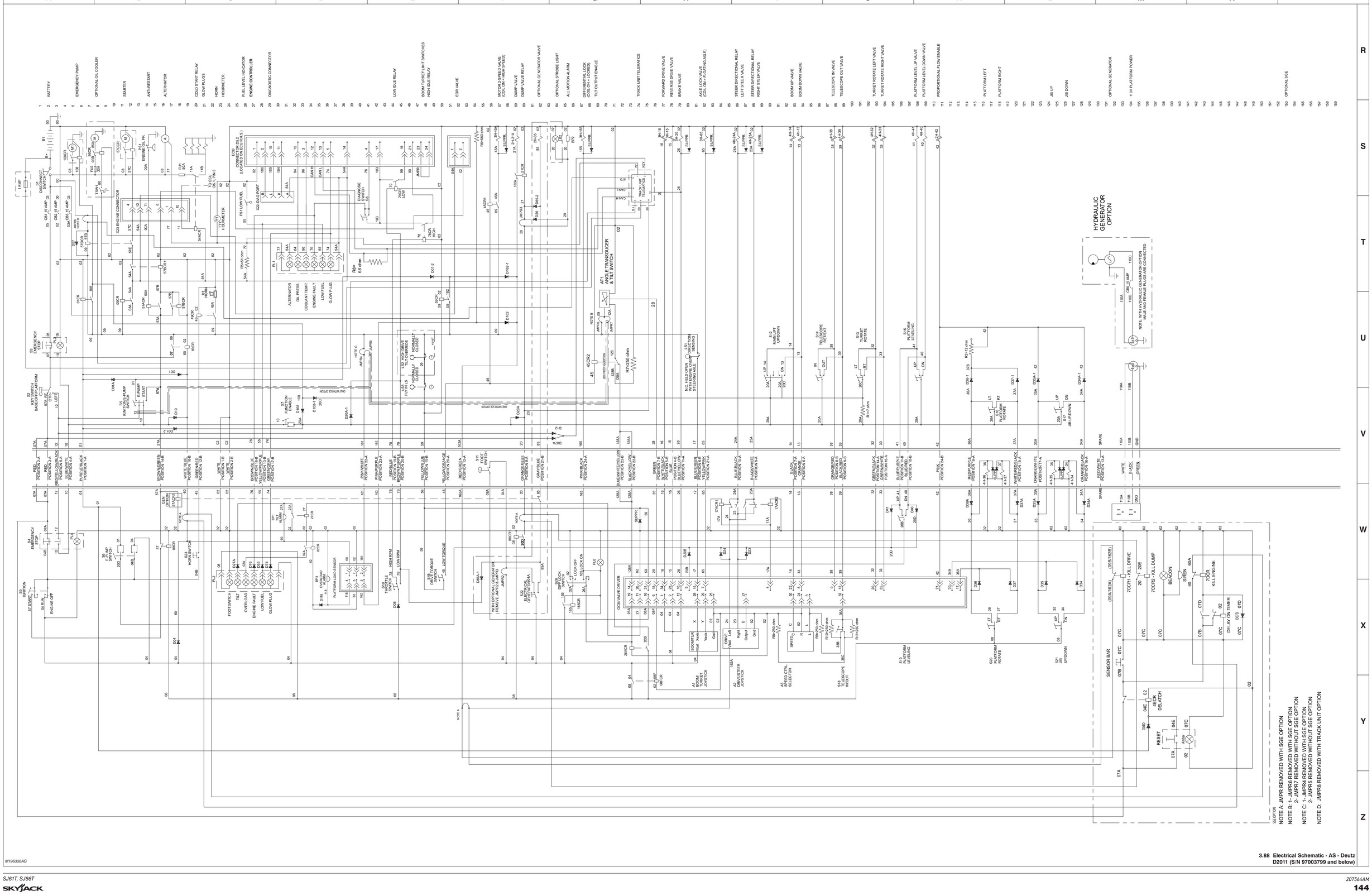
3.84 Electrical Schematic - CE - Deutz TD2.9L (S/N 97003799 and below)

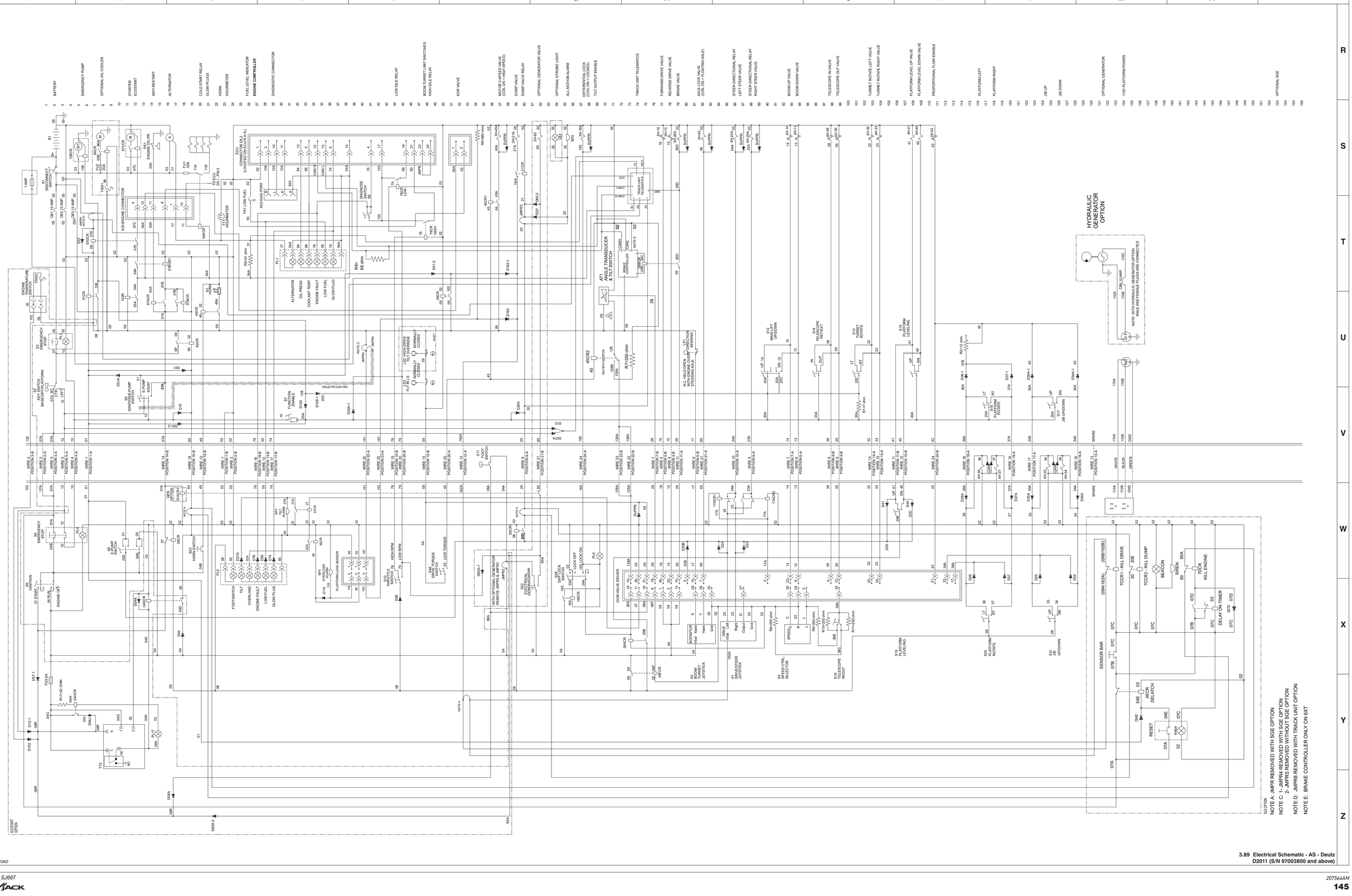

3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L
SGE OPTION
NOTE A: JMPR REMOVED WITH SGE OPTION
NOTE C: 1- JMPR4 REMOVED WITH SGE OPTION
2- JMPR5 REMOVED WITHOUT SGE OPTION
NOTE D: JMPR8 REMOVED WITH TRACK UNIT OPTION


HYDRAULIC GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
SEE OPTION
NOTE A: JMPR6 REMOVED WITH SGE OPTION
NOTE B: 1- JMPR6 REMOVED WITH SGE OPTION
2- JMPR7 REMOVED WITH SGE OPTION
NOTE C: 1- JMPR4 REMOVED WITH SGE OPTION
2- JMPR5 REMOVED WITHOUT SGE OPTION
NOTE D: JMPR8 REMOVED WITH TRACK UNIT OPTION

M196336AE

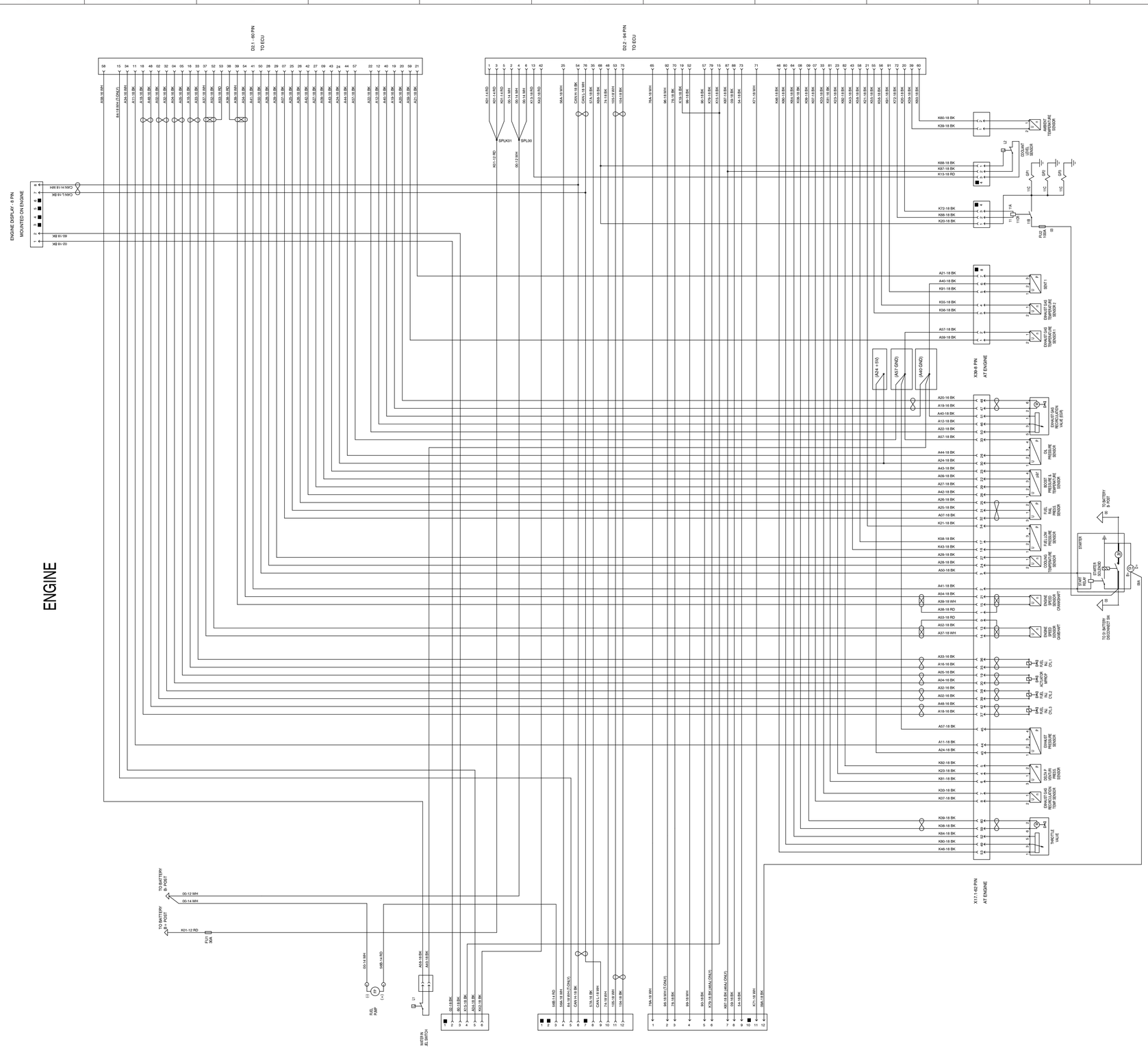

ECOSTART OPTION
HYDRAULIC GENERATOR OPTION
SENSOR BAR
SIREN
BEACON
RESET
DELAY ON TIMER
KILL ENGINE
KILL DRIVE
KILL DUMP
ENGINE OFF
ENGINE START
ALTERNATOR
OIL PRESS.
COOLANT TEMP.
ENGINE FAULT
LOW FUEL
GLOW PLUG
FOOTSWITCH
TILT
OVERLOAD
HORN SWITCH
HIGH RPM
LOW RPM
DRIVE TORQUE
LOW TORQUE
ANGLE TRANSDUCER & TILT SWITCH
DRIVE/STEER JOYSTICK
BOOM TILT/WRIST JOYSTICK
SPEED CTRL SELECTOR
TELESCOPE IN/OUT
PLATFORM ROTATE
PLATFORM LEVELING
JIB UP/DOWN
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
STARTER
ECOSTART
ANTI-RESTART
ALTERNATOR
COLD START RELAY
GLOW PLUGS
HORN
FUEL LEVEL INDICATOR
ENGINE CONTROLLER
DIAGNOSTIC CONNECTOR
EGR VALVE
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
DIFFERENTIAL LOCK (COIL ON = LOCKED)
TILT/OUTRIGGER ENABLE
COUNTER
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
TRACK UNIT TELEMATICS
STEER DIRECTIONAL RELAY LEFT STEER VALVE
STEER DIRECTIONAL RELAY RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
OPTIONAL GENERATOR
110V PLATFORM POWER
JIB UP
JIB DOWN
OPTIONAL SGE
NOTE A. JMPR REMOVED WITH SGE OPTION
NOTE C. 1-. JMPR4 REMOVED WITH SGE OPTION
2-. JMPR5 REMOVED WITHOUT SGE OPTION
NOTE D. JMPR5 REMOVED WITH TRACK UNIT OPTION
NOTE E. WITH ECOSTART OPTION CHANGE 04 TO 60

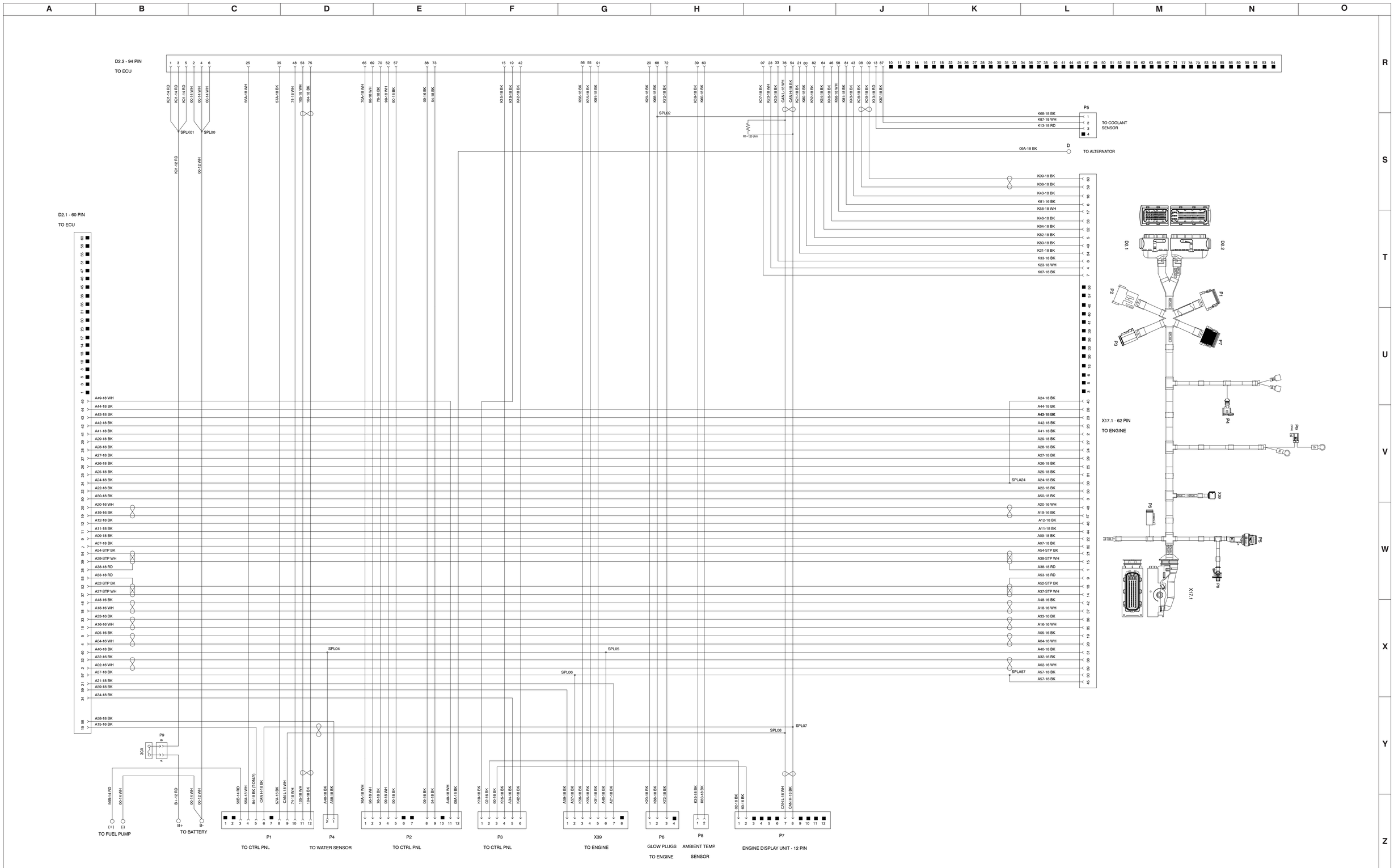

HYDRAULIC GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION MAT AND FRAME PLUGS ARE CONNECTED
SGE OPTION
NOTE A: JMPR REMOVED WITH SGE OPTION
NOTE B: 1- JMPR6 REMOVED WITH SGE OPTION
NOTE C: 1- JMPR4 REMOVED WITH SGE OPTION
2- JMPR1 REMOVED WITHOUT SGE OPTION
NOTE D: JMPR8 REMOVED WITH TRACK UNIT OPTION




M223010AD

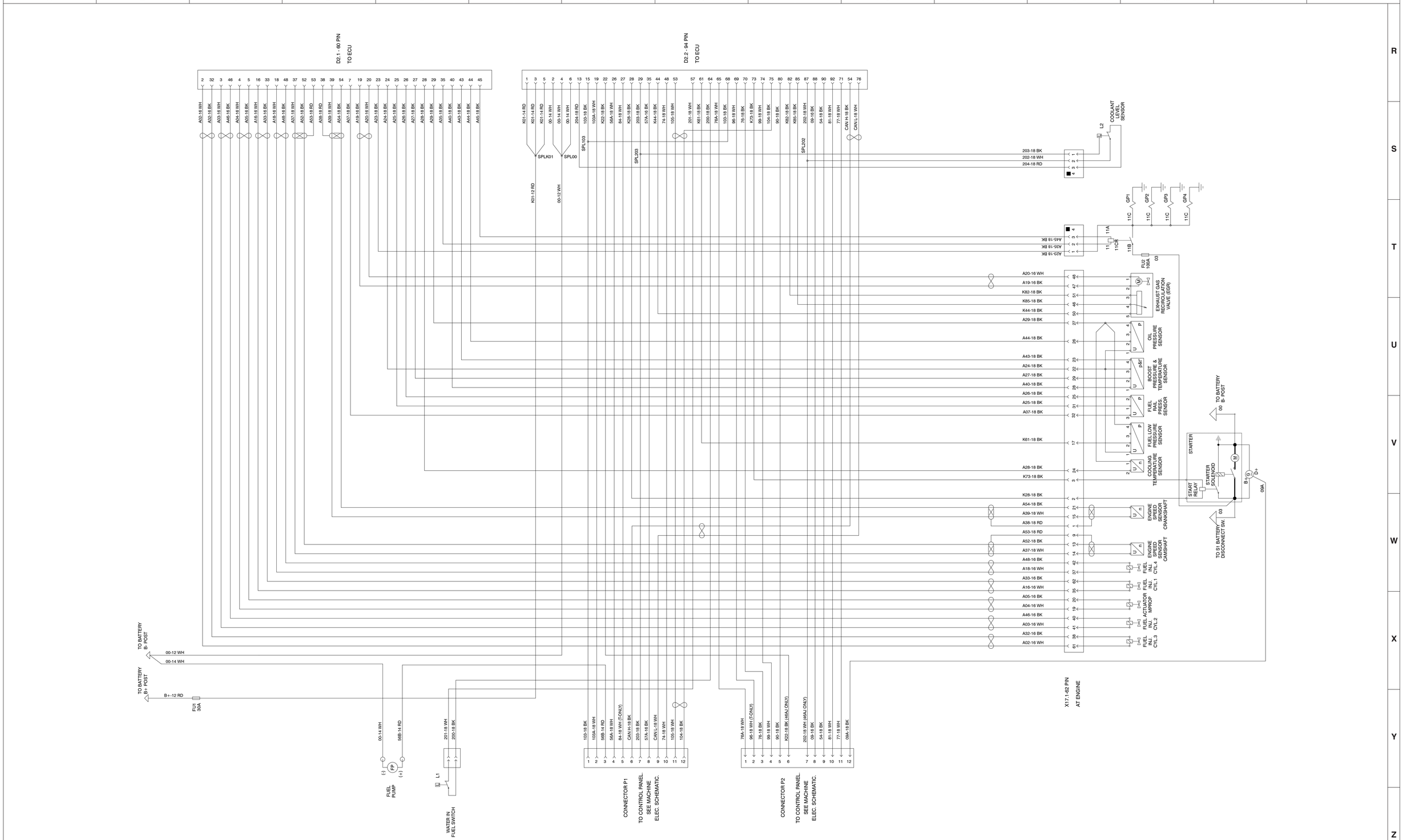
3.89 Electrical Schematic - AS - Deutz D2011 (S/N 97003800 and above)


ENGINE
D2.1 - 60 PIN TO ECU
D2.2 - 94 PIN TO ECU
ENGINE DISPLAY - 8 PIN MOUNTED ON ENGINE
CANH 0.18 WH
CANL 0.18 BK
D2.18 BK
60.18 BK
SPLK01
SPL001
K01-12 RD
00-12 WH
00-14 WH
FUEL PUMP
WATER IN FE SWITCH
TO BATTERY B+ POST
TO BATTERY A1 POST
FUEL PUMP
XD#-8 PN AT ENGINE
(A24) +5V
(A7) GND)
(A40) GND)
X17.1-40 PIN AT ENGINE
AMBIENT TEMPERATURE SENSOR
COOLANT LEVEL SENSOR
FUEL TEMPERATURE SENSOR
ENGINE OIL TEMPERATURE SENSOR
EXHAUST GAS RECIRCULATION VALVE (EGR)
OIL PRESSURE SENSOR
BOOST PRESSURE & TEMPERATURE SENSOR
FUEL RAIL PRESSURE SENSOR
FUEL FILLION PRESSURE SENSOR
COOLANT TEMPERATURE SENSOR
ENGINE SPEED SENSOR CAMSHAFT
ENGINE SPEED SENSOR CAMSHAFT
FUEL INJECTOR CYL 1
FUEL INJECTOR CYL 2
FUEL INJECTOR CYL 3
EXHAUST PRESSURE SENSOR
COOLANT VISCOUS HEATER SENSOR
EXHAUST GAS RECIRCULATION POSITION
THROTTLE VALVE
STARTER
STARTER SOLENOID
RELAY #4 (K4)
TO BATTERY B+ POST
TO BATTERY DISCONNECT SW.



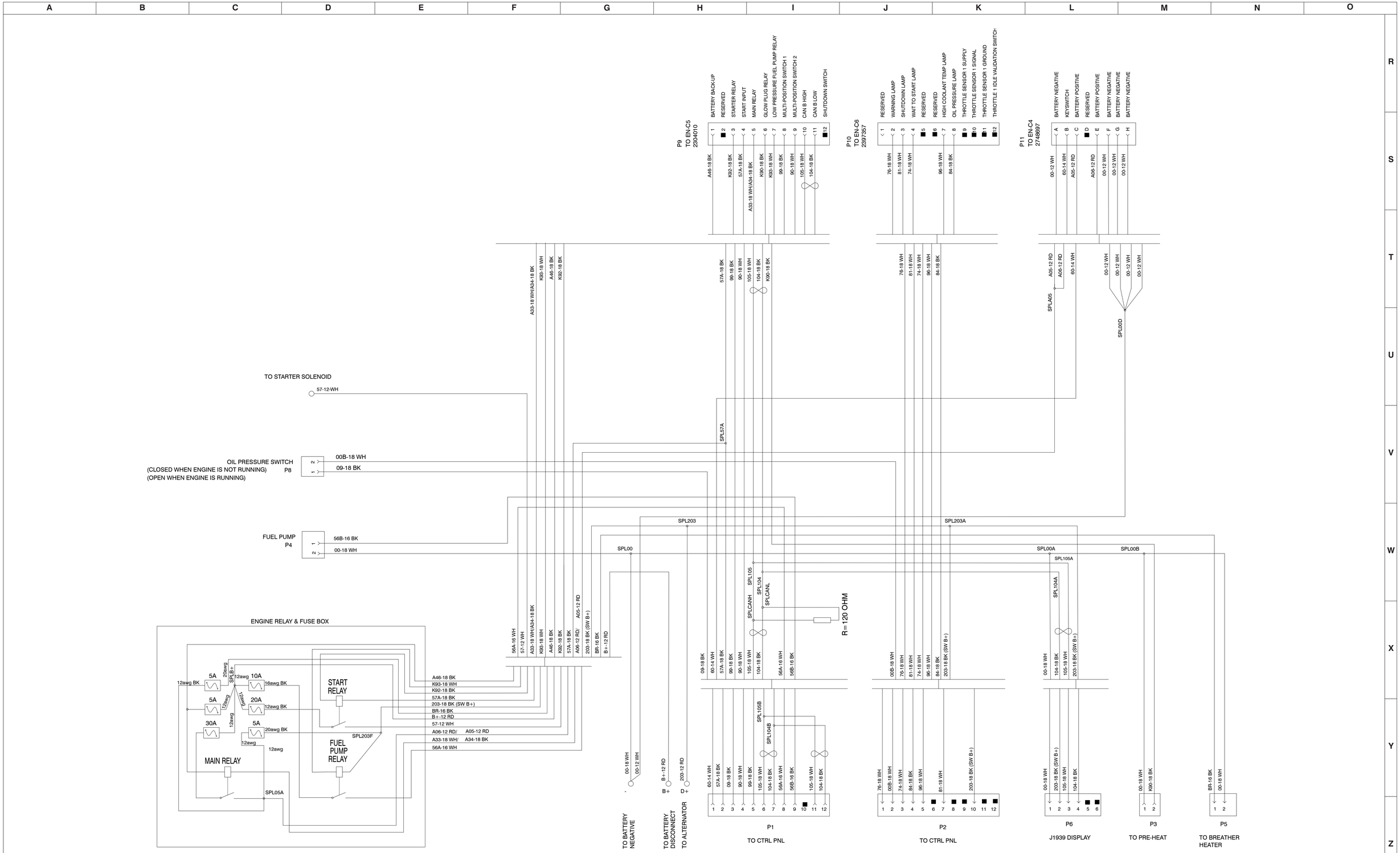

M2246384F

3.91 Engine OEM Harness Schematic - Deutz TCD2.2



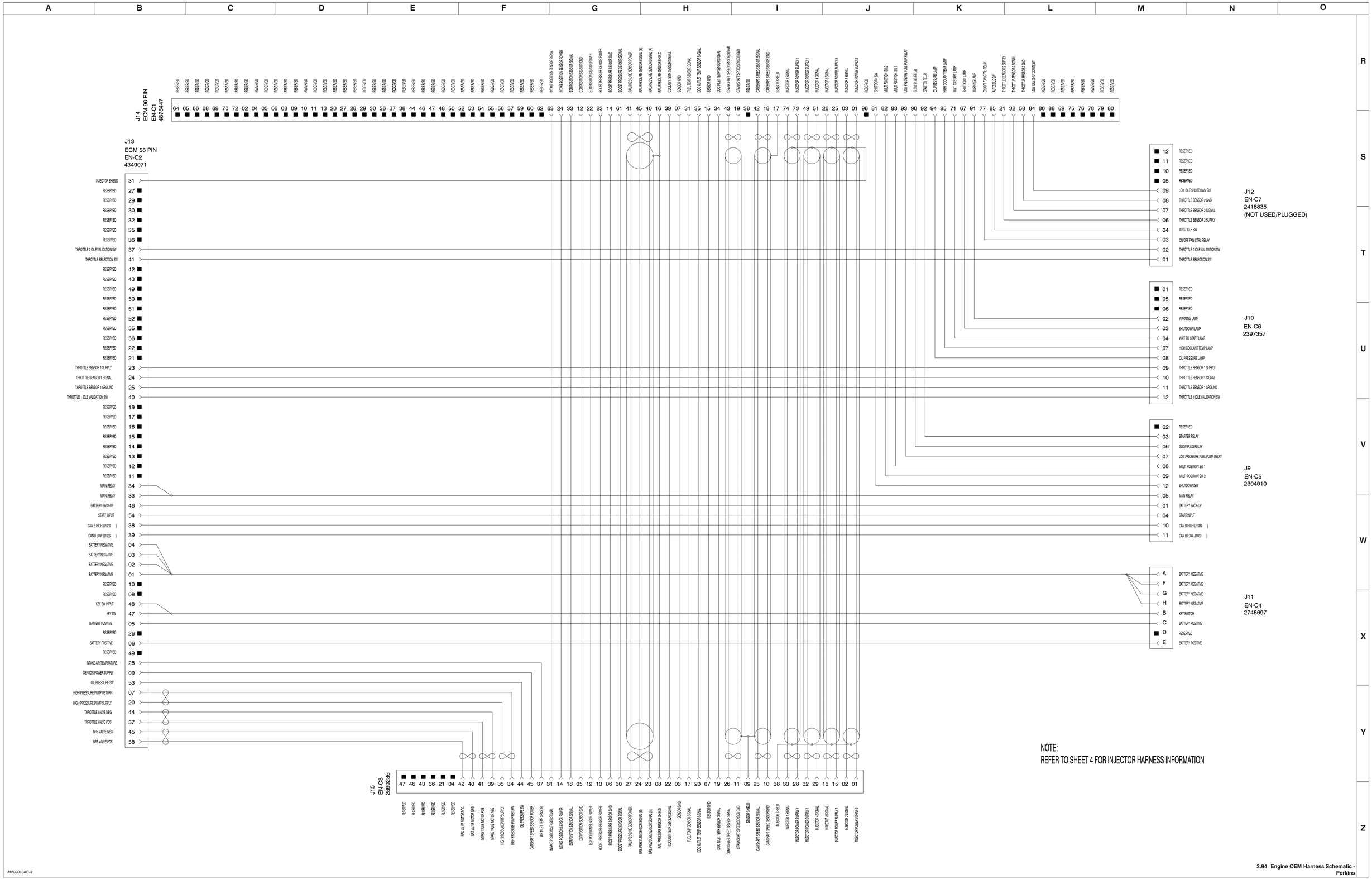

M223012AC-2

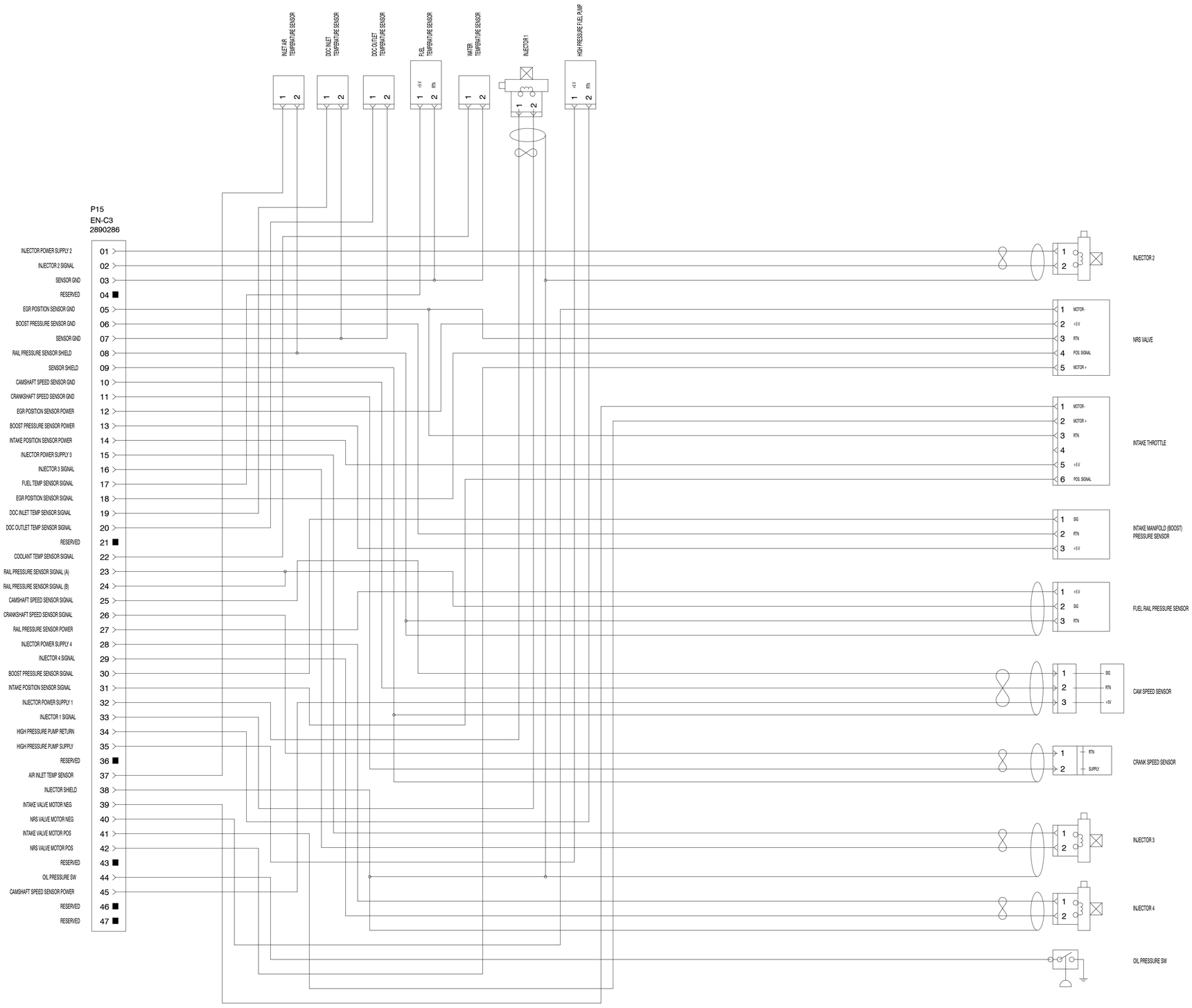
**3.92 Interface & Engine Electrical Schematic - Deutz TD2.9L**




M223013AB-2

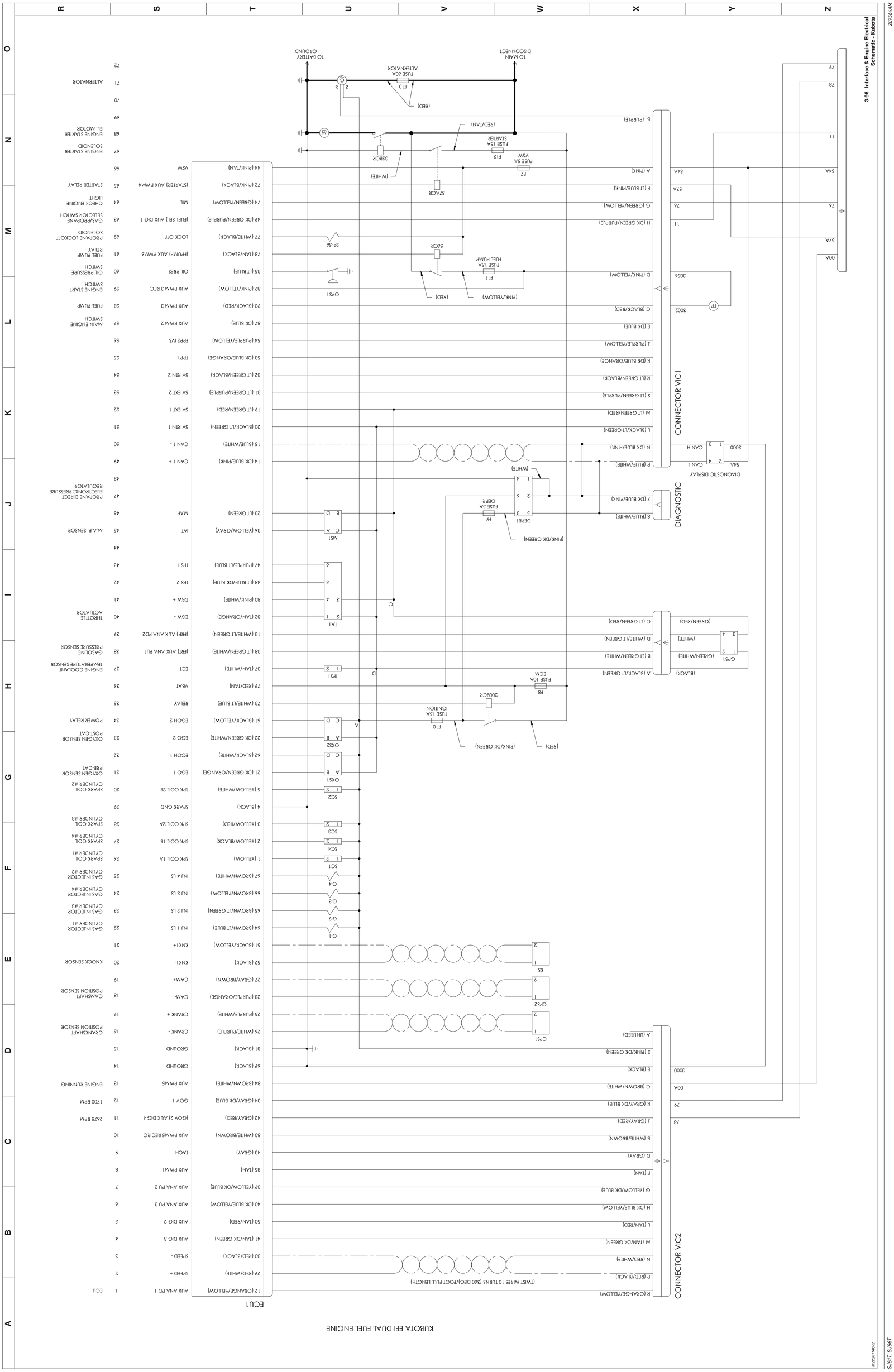
3.93 Engine Interface Harness Schematic - Perkins


J14
ECM 96 PIN
EN-C1
4878447
J13
ECM 58 PIN
EN-C2
4349071
J15
EN-C3
2890286
J12
EN-C7
2418835
(NOT USED/PLUGGED)
J10
EN-C6
2397357
J9
EN-C5
2304010
J11
EN-C4
2748697
NOTE:
REFER TO SHEET 4 FOR INJECTOR HARNESS INFORMATION




M223013AB-4

3.95 Engine Component Harness Schematic - Perkins


KUBOTA EFI DUAL FUEL ENGINE
ECU1
CONNECTOR VIC2
CONNECTOR VIC1
DIAGNOSTIC
DIAGNOSTIC DISPLAY
(TWIST WIRES 10 TURNS (360 DEG)/FOOT FULL LENGTH)
TO MAIN DISCONNECT
TO BATTERY GROUND
FUSE 60A ALTERNATOR
FUSE 5A VSW
FUSE 15A STARTER
FUSE 15A FUEL PUMP
FUSE 5A DEPR
FUSE 10A ECM
FUSE 15A IGNITION
ALTERNATOR
STARTER
FUEL PUMP
ENGINE STARTER SOLENOID
ENGINE STARTER EL. MOTOR
MAIN ENGINE SWITCH
ENGINE START SWITCH
OIL PRESSURE SWITCH
CHECK ENGINE LIGHT
GAS/PROPANE SELECTOR SWITCH
PROPANE LOCKOFF SOLENOID
THROTTLE ACTUATOR
ENGINE COOLANT TEMPERATURE SENSOR
GASOLINE PRESSURE SENSOR
POWER RELAY
OXYGEN SENSOR POST-CAT
OXYGEN SENSOR PRE-CAT
SPARK COIL CYLINDER #2
GAS INJECTOR CYLINDER #1
GAS INJECTOR CYLINDER #2
GAS INJECTOR CYLINDER #3
GAS INJECTOR CYLINDER #4
CAMSHAFT POSITION SENSOR
CRANKSHAFT POSITION SENSOR
KNOCK SENSOR
ENGINE RUNNING
FUEL PUMP RELAY
STARTER RELAY
ALTERNATOR
M.A.P. SENSOR
ELECTRONIC PRESSURE REGULATOR
ECU
SPEED
AUX DIG 2
AUX DIG 3
AUX ANA PU 3
AUX ANA PU 2
AUX PWM1
TACH
AUX PWM5 REGRC
GOV 1
GOV 2) AUX DIG 4
2675 RPM
1700 RPM
GROUND
AUX PWM4
AUX PWM 3 REC
AUX PWM 3
AUX PWM 2
FPP2 IVS
FPP1
5V RTN 2
5V EXT 2
5V EXT 1
5V RTN 1
CAN 1 -
CAN 1 +
MAP
IAT
VBAT
ECT
EGOH 2
EGO 2
EGOH 1
EGO 1
SPARK GND
SPK COIL 2B
SPK COIL 2A
SPK COIL 1B
SPK COIL 1A
INJ 4 LS
INJ 3 LS
INJ 2 LS
INJ 1 LS
KNK1+
KNK1-
CAM+
CAM-
CRANK +
CRANK -
GROUND
LOCK OFF
AUX ANA PU1
AUX ANA PU2
TPS 2
TPS 1
DBW +
DBW -
CAN H
CAN L
OIL PRES
(FUEL SEL) AUX DIG 1
ALL
(STARTER) AUX PWM4
(FPUMP) AUX PWM6
VSW
(GRAY/RED)
(GRAY/DK BLUE)
(BROWN/WHITE)
(BLACK)
(WHITE/BROWN)
(GRAY)
(TAN)
(YELLOW/DK BLUE)
(DK BLUE/YELLOW)
(TAN/RED)
(TAN/DK GREEN)
(RED/WHITE)
(RED/BLACK)
(ORANGE/YELLOW)
(PINK/DK GREEN)
(PINK/YELLOW)
(RED/TAN)
(WHITE)
(PURPLE)
(BLUE/WHITE)
(PINK)
(DK BLUE/PINK)
(LT BLUE/PINK)
(DK GREEN/PURPLE)
(LT GREEN/BLACK)
(DK BLUE/ORANGE)
(PURPLE/YELLOW)
(DK BLUE)
(BLACK/RED)
(PINK/YELLOW)
(BLACK/LT GREEN)
(LT GREEN/RED)
(WHITE/LT GREEN)
(LT GREEN/WHITE)
(GREEN/WHITE)
(GREEN/RED)
(BLACK)
(WHITE)
(BLACK/LT GREEN)
(LT GREEN/PURPLE)
(LT GREEN/RED)
(BLACK/LT GREEN)
(DK BLUE/PINK)
(BLUE/WHITE)
(PINK/DK GREEN)
(BLUE/WHITE)
(PINK)
(DK GREEN/PURPLE)
(DK GREEN/YELLOW)
(GRAY)
(BLACK)
(PURPLE)
(BLACK)
(BROWN/LT BLUE)
(BROWN/LT GREEN)
(BROWN/YELLOW)
(BROWN/WHITE)
(YELLOW)
(YELLOW/BLACK)
(YELLOW/RED)
(BLACK)
(YELLOW/WHITE)
(DK GREEN/ORANGE)
(DK GREEN/WHITE)
(BLACK/YELLOW)
(GRAY/DK BLUE)
(ORANGE/YELLOW)
(RED/BLACK)
(RED)
(TAN)
(GRAY)
(WHITE/BROWN)
(GRAY/RED)
(GRAY/DK BLUE)
(BROWN/WHITE)
(BLACK)
(PINK/DK GREEN)
(UNUSED)
(RED)
(PINK/DK GREEN)
(WHIT

# Section 4 – Troubleshooting Information

## 4.1 Introduction

The following pages contain a table of Troubleshooting for locating and correcting most service trouble which can develop. Careful and accurate analysis of the systems listed in the table of Troubleshooting will localize the trouble more quickly than any other method. This manual cannot cover all possible troubles and deficiencies that may occur. If a specific trouble is not listed, isolate the major component in which the trouble occurs, isolate whether the problem is electrical or hydraulic, and then isolate and correct the specific problem.

The content of this section is separated into “probable cause” and “remedy.” The information in the left-hand column, preceded by a number, represents the “probable cause.” The information in the right-hand column, in bold text, represents the “remedy” to the “probable cause” directly beside it. See the example below for clarification.

| **1.** Probable cause | **Remedy** |
|---|---|

**NOTE**

*All tests should be performed with the boom over the non-steering axle.*

# 4.2 Electrical System

## 4.2-1 All Controls Inoperative

| | |
|---|---|
| **1.** Battery disconnected or discharged. | **Connect battery or recharge.** |
| **2.** Loose or broken B+ cable from battery to battery disconnect switch S1. | **Check continuity. Replace if defective.** |
| **3.** Open or defective battery disconnect switch S1. | **Close switch. Replace if defective.** |
| **4.** Loose or broken wire #03 from battery disconnect switch S1 to circuit breaker CB1. | **Check continuity. Replace if defective.** |
| **5.** Circuit breaker CB1 tripped or defective. | **Reset breaker, check for defective wiring. Replace if defective.** |
| **6.** Loose or broken wire #05 from circuit breaker CB1 to base emergency stop switch S3. | **Check continuity. Replace if defective.** |
| **7.** Open or defective base emergency stop switch S3. | **Close switch. Replace if defective.** |
| **8.** Loose or broken wire #07 from base emergency stop switch S3 to base key S2. | **Check continuity. Replace if defective.** |
| **9.** Open or defective key select switch S2. | **Close switch. Replace if defective.** |
| **10.** Loose or broken wire #60 from base terminal block to relay 60CR. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #07 from base emergency stop switch S3 to relay 60CR. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from relay 60CR to base terminal block. | **Check continuity. Replace if defective.** |
| **13.** Defective relay 60CR. | **Check relay. Replace if defective.** |
| **14.** Loose or broken wire #9 from relay 60CR to base terminal block. | **Check continuity. Replace if defective.** |
| **15.** Loose or broken wire #02 from base terminal block to circuit breaker CB2. | **Check continuity. Replace if defective.** |
| **16.** Circuit breaker CB2 tripped or defective. | **Reset breaker, check for defective wiring. Replace if defective.** |
| **17.** Loose or broken wire #00 from circuit breaker CB2 to battery negative. | **Check continuity. Replace if defective.** |

## 4.2-2 No Power

| | |
|---|---|
| ***To Platform*** | |
| **1.** Open or defective key select switch S2. | **Close switch. Replace if defective.** |
| **2.** Loose or broken wire #07A from key select switch S2 to plug A pins # 2 & 3 in base control console. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #07A from plug A pins # 2 & 3 in platform control console to platform emergency stop switch S4. | **Check continuity. Replace if defective.** |
| **4.** Open or defective platform emergency stop switch S4. | **Check switch. Replace if defective.** |
| **5.** Loose or broken wire #04 from platform emergency stop switch S4 to Ignition/E-pump switch S6 | **Check continuity. Replace if defective.** |
| ***To Base*** | |
| **1.** Open or defective base key switch S2. | **Select base position on key switch. Check continuity through base key switch. Replace if defective.** |
| **2.** Loose or broken wire #12 from base key switch S2 to Ignition/E-pump switch S5. | **Check continuity. Replace if defective** |
| **3.** Loose or broken wire #12 from base key switch S2 to base connector plug A pin #5. | **Check continuity. Replace if defective** |
| **4.** Loose or broken wire #12 in boom cable A or its connectors. | **Check for continuity between pins #5 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **5.** Loose or broken wire #12 from plug A pin #5 to emergency stop switch S4 in platform control console. | **Check continuity. Replace if defective** |
| **6.** Open or defective emergency stop switch S4. | **Check switch is in on position. Check continuity through switch. Replace if defective.** |
| **7.** Loose or broken wire #10 from emergency stop switch S4 to plug A pin #4. | **Check continuity. Replace if defective** |
| **8.** Loose or broken wire #10 in boom cable A or its connectors. | **Check for continuity between pins #4 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **9.** Loose or broken wire #10 from plug A pin #4 to base terminal block. | **Check continuity. Replace if defective** |
| **10.** Open or defective diode D10. | **Check diode. Replace if defective.** |

| | |
|---|---|
| **11.** Loose or broken wire #10 from base terminal block to Ignition/E-pump (enable) switch S5. | **Check continuity. Replace if defective** |
| **12.** Open or defective Ignition/E-pump (enable) switch S5. | **Check switch. Replace if defective** |

## 4.2-3 Engine Will Not Crank

***From Base***

| | |
|---|---|
| **1.** Loose or broken wire #57A from base start switch S5 to relay 57ACR (Deutz D2011 and GM 3.0l engines). | **Check continuity. Replace if defective.** |
| **2.** Defective base start switch S5. | **Check start switch. Replace if defective.** |

***From Platform***

**NOTE**

*The engine will not crank from the platform with the footswitch depressed.*

| | |
|---|---|
| **1.** Loose or broken wire #4 from emergency stop switch S4 to start switch S6. | **Check continuity. Replace if defective.** |
| **2.** Defective start switch S6. | **Check continuity through contacts of relay. Replace if defective.** |
| **3.** Loose or broken wire #57 from start switch S6 to relay 08CR. | **Check continuity. Replace if defective.** |
| **4.** Defective relay 08CR. | **Check continuity through contacts of relay. Replace if defective.** |
| **5.** Loose or broken wire #57A from relay 08CR to plug B pin #14. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #57A in boom cable B or its connectors. | **Check for continuity between pin #14 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #57A from plug B pin #14 to relay 57ACR in base control console (Deutz D2011, GM 3.0L) or to base start switch S5 (Deutz TD2.9L). | **Check continuity. Replace if defective.** |

***From Platform or Base***

***With the following conditions:***

- Deutz Diesel D2.9L

| | |
|---|---|
| **1.** Loose or broken wire #57A from base start switch S5 to 12 pin connector (J1) pin 8. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **2.** Loose or broken wire #57A from 12 pin connector (P1) pin 8 to 94 pin ECU connector, pin 35. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken B+ wire from battery B+ to ECU fuse connector P6 pin A. | **Check continuity. Replace if defective.** |
| **4.** ECU 30A fuse open or defective. | **Check for defective wiring. Replace if defective. Replace fuse.** |
| **5.** Loose or broken wire #K01 from ECU fuse connector P6 pin B to 94 pin ECU connector 3 places pins 1, 3, and 5. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken ground wire #00 from battery B- to 94 pin ECU connector 3 places pins 2, 4, and 6. | **Check continuity. Replace if defective.** |

**NOTE**

*For other engine related problems, consult the engine manufacturer's manual.*

***With the following conditions:***

- Deutz Diesel D2011

| | |
|---|---|
| **1.** Loose or broken wire #57A at relay 57ACR (2 places). | **Check for connections at relay. Check for voltage on relay (2 places).** |
| **2.** Loose or broken wire #57A from relay 57ACR to relay 57BCR. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #00A from X23 engine connector pin #11 to relay 57ACR. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #00A from X23 engine connector pin #11 to engine oil pressure switch. | **Check continuity. Replace if defective.** |
| **5.** Defective relay 57ACR. | **Check relay. Replace if defective.** |
| **6.** Loose or broken wire #09 from base terminal block to relay 09CR. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #03A from circuit breaker CB3 to relay 09CR. | **Check continuity. Replace if defective.** |
| **8.** Tripped or defective circuit breaker CB3. | **Reset circuit breaker. Check continuity through circuit breaker. Replace if defective.** |
| **9.** Loose or broken wire #3 from circuit breaker CB3 to turret harness plug pin #2. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #02 from relay 09CR to base terminal block. | **Check continuity. Replace if defective.** |
| **11.** Defective relay 09CR. | **Check relay. Replace if defective.** |
| **12.** Loose or broken wire #54A from relay 09CR to base terminal block. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **13.** Loose or broken wire #54A from base terminal block to relay 57BCR1. | **Check continuity. Replace if defective.** |
| **14.** Defective contacts in relay 57BCR1. | **Check continuity between wires #54A and #57C when cranking. If no continuity, replace relay.** |
| **15.** Loose or broken wire #57C from relay 57BCR1 to X23 engine connector pin #4. | **Check continuity. Replace if defective.** |
| **16.** Loose or broken wire #57C from X23 engine plug to start solenoid 57CCR. | **Check continuity. Replace if defective.** |
| **17.** Loose or broken starter cable #03 from disconnect switch S1 to start solenoid 57CCR. | **Check continuity. Replace if defective.** |
| **18.** Defective start solenoid 57CCR. | **Check solenoid. Replace if defective.** |
| **19.** Defective starter motor. | **Check starter motor. Replace if defective.** |

***With the following conditions:***

- Kubota Dual Fuel

| | |
|---|---|
| **1.** Loose or broken wire #54A from base terminal block TB1 to engine harness plug. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #54A from engine harness plug to GM engine connector 1. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken pink wire from GM engine connector 1 to fuse F7. | **Check continuity. Replace if defective.** |
| **4.** Defective fuse F7. | **Check fuse. Replace if defective** |
| **5.** Loose or broken pink/tan wire from fuse F7 to ECU connector pin #45. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken red wire from battery positive to ECU fuse F8. | **Check continuity. Replace if defective.** |
| **7.** Defective fuse F8. | **Check fuse. Replace if defective.** |
| **8.** Loose or broken red/tan wire from fuse F8 to ECU connector pin #60 and pin #79. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken black wire from engine ground to ECU connector pin #69 and #81. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken light blue/pink wire from GM engine connector 1 to relay 57ACR. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken pink/black wire from ECU connector pin #89 to relay 57ACR. | **Check continuity. Replace if defective.** |
| **12.** Defective relay 57ACR. | **Check relay. Replace if defective.** |
| **13.** Loose or broken red wire from battery positive to starter fuse F12. | **Check continuity. Replace if defective.** |
| **14.** Defective fuse F12. | **Check fuse. Replace if defective.** |

| | |
|---|---|
| **15.** Loose or broken red/tan wire from fuse F12 to relay 57ACR. | **Check continuity. Replace if defective.** |
| **16.** Loose or broken white wire from relay 57ACR to start solenoid 32BCR. | **Check continuity. Replace if defective.** |
| **17.** Defective starter solenoid 32BCR. | **Check solenoid. Replace if defective.** |
| **18.** Loose or broken battery cable from starter solenoid 32BCR to starter motor. | **Check continuity. Replace if defective.** |
| **19.** Defective starter motor. | **Check motor. Repair or replace if defective.** |

***With the following conditions:***

- Equipped with Elevate/Trackunit Telematics Ready

**NOTE**

*If the unit is equipped with an Access keypad, a passcode is required from the machine owner.*

| | |
|---|---|
| **1.** Loose or broken B+ wire from battery + to telematics pin 3. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken B- wire 00 from battery - to telematics pin 4. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire 07 from S3 base Emergency stop switch to 57DCR pin 86. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire 57A from S5 ignition switch to 57DCR pin 30. | **Check continuity. Replace if defective.** |
| **5.** If telematics device is not installed: loose, broken or missing Jumper JMPR1 from 57DCR pin 85 to ground 00. | **Check continuity. Replace if defective or missing.** |
| **6.** Loose or broken wire 57D from telematics pin 9 to 57DCR pin 85. | **Check continuity. Replace if defective.** |
| **7.** Missing output from telematics pin 9. | **Check for ground on pin 9. If no ground, contact the machine owner.** |
| **8.** Defective relay 57DCR. | **Check relay. Replace if defective.** |
| **9.** Loose or broken wire 57B from 57DCR pin 87 to engine starter contactor coil. | **Check continuity. Replace if defective.** |
| **10.** Defective telematics module. | **Check telematics assembly; repair or replace as required.** |

## 4.2-4 Engine Cranks but Will Not Start

***Deutz Diesel D2.9L***

| | |
|---|---|
| **1.** Loose or broken wire #54 from 94 pin ECU connector, pin90 to 12 pin connector (P2), pin 9. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #54 from 12 pin connector (J2) pin 9 to relay 56ACR. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #03 to circuit breaker CB3. | **Check continuity. Replace if defective.** |
| **4.** Circuit breaker CB3 tripped or defective. | **Reset breaker, check for defective wiring. Replace if defective** |
| **5.** Loose or broken wire #56 from CB3 to relay 56ACR. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #56A from relay 56ACR to 12 pin connector (J1) pin 4. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #56A from 12 pin connector (P1) pin 4 to 94 pin ECU connector, pin 26. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #56B from relay 56ACR to 12 pin connector (J1) pin 3. | **Check continuity. Replace if defective.** |
| **9.** Defective relay 56ACR. | **Check continuity through contacts of relay. Replace if defective.** |
| **10.** Loose or broken wire #56B from 12 pin connector (P1) pin 3 to fuel pump. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken ground wire #00 from fuel pump to battery B-. | **Check continuity. Replace if defective.** |
| **12.** Engine pre-heat circuit inoperative. | **Refer to Engine manufacturer's manual to diagnose.** |

**NOTE**

*For other engine related problems, consult engine manufacturer's manual.*

***Deutz Diesel D2011***

| | |
|---|---|
| **1.** Loose or broken wire #57B from relay 57ACR to relay 57BCR (2 places). | **57BCR maintains power for start circuit before engine starts and after oil pressure switch opens to relay 57BCR1. Check wire #57B for continuity. Replace if defective.** |
| **2.** Loose or broken wire #57A from relay 57ACR to relay 57BCR. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #02 from base terminal block to relay 57BCR. | **Check continuity. Replace if defective.** |

| | | |
|---|---|---|
| **4.** | Defective relay 57BCR. | **Check relay. Replace if defective.** |
| **5.** | Glow plug circuit not operating. | **See "Glow Plug Circuit Inoperative" in this section.** |
| **6.** | No fuel in fuel tank or fuel line obstructions. | **Check fuel level and flow through lines. Fill or repair if necessary.** |

**NOTE**

*For other engine related problems, consult engine manufacturer's manual.*

***Kubota Dual Fuel***

**NOTE**

*For additional engine troubleshooting refer to diagnostic trouble codes for use with the check engine light.*

| | | |
|---|---|---|
| **1.** | Loose or broken red wire from battery positive to relay 2002CR. | **Check continuity. Replace if defective.** |
| **2.** | Loose or broken red/tan wire from ECU fuse F8 to relay 2002CR. | **Check continuity. Replace if defective.** |
| **3.** | Loose or broken white/ light blue wire from ECU connector pin #71 to relay 2002CR. | **Check continuity. Replace if defective.** |
| **4.** | Defective relay 2002CR. | **Check relay. Replace if defective.** |
| **5.** | Loose or broken pink/dark green wire from relay 2002CR to ignition fuse F10. | **Check continuity. Replace if defective.** |
| **6.** | Defective fuse F10. | **Check fuse. Replace if defective.** |
| **7.** | Loose or broken pink/dark green wire from fuse F10 to ignition coil IGC1 pin #A. | **Check continuity. Replace if defective.** |
| **8.** | Loose or broken yellow wire from ignition coil IGC1 pin #B to ignition module IGM1. | **Check continuity. Replace if defective.** |
| **9.** | Defective ignition coil IGC1. | **Check coil for spark. Replace if defective.** |
| **10.** | Loose or broken pink/dark green wire from fuse F10 to ignition module IGM1 pin #A. | **Check continuity. Replace if defective.** |
| **11.** | Loose or broken black wire from ignition module IGM1 pin #C to engine ground. | **Check continuity. Replace if defective.** |
| **12.** | Loose or broken yellow wire from ignition module IGM1 pin #B to ECU connector pin #31. | **Check continuity. Replace if defective.** |
| **13.** | Defective ignition module IGM1. | **Check module for operation. Replace if defective.** |
| **14.** | Loose or broken pink/dark green wire from fuse F10 to gas injectors GI-1, GI-2, GI-3 and GI-4. | **Check continuity. Replace if defective.** |
| **15.** | Loose or broken pink/white wire from ECU connector pin #82 to throttle actuator RA1. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **16.** Loose or broken tan/orange wire from ECU connector pin #83 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **17.** Loose or broken light green/red wire from ECU connector pin #19 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **18.** Loose or broken black/light green wire from ECU connector pin #20 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **19.** Loose or broken light blue/dark blue wire from ECU connector pin #6 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **20.** Loose or broken purple/light blue wire from ECU connector pin #5 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| ***Fuel Related Problems*** | |
| ***With the following conditions:*** ▪ Gasoline Only | |
| **21.** Loose or broken pink/tan wire from fuse F7 to fuel pump relay 56CR. | **Check continuity. Replace if defective.** |
| **22.** Loose or broken red wire from battery positive to fuel pump relay 56CR. | **Check continuity. Replace if defective.** |
| **23.** Loose or broken tan/black wire from ECU connector pin #84 to fuel pump relay 56CR. | **Check continuity. Replace if defective.** |
| **24.** Defective fuel pump relay 56CR. | **Check relay. Replace if defective.** |
| **25.** Loose or broken pink/yellow wire from fuel pump relay 56CR to fuse F11. | **Check continuity. Replace if defective.** |
| **26.** Defective fuse F11. | **Check fuse. Replace if defective.** |
| **27.** Loose or broken pink/yellow wire from fuse F11 to fuel pump FP. | **Check continuity. Replace if defective.** |
| **28.** Defective fuel pump FP. | **Check fuel pump by putting 12 volts and a ground to it. Replace if defective.** |
| **29.** Loose or broken wire #3002 from fuel pump FP to GM engine connector 1. | **Check continuity. Replace if defective.** |
| **30.** Loose or broken black/red wire from GM engine connector to ECU connector pin #86. | **Check continuity. Replace if defective.** |
| ***With the following conditions:*** ▪ Propane Only | |

**NOTE**

*The fuel select switch is defaulted to gasoline. The engine will run on gasoline if propane is selected from the switch and either the switch is bad or a wire is loose or broken from the switch. This is providing there is nothing wrong on the gasoline side of the system. Disconnect fuel pump to test propane side.*

| | | |
|---|---|---|
| **31.** | Loose or broken wire #60 from platform terminal block to fuel select switch S26. | **Check continuity. Replace if defective.** |
| **32.** | Defective fuel select switch S26. | **Check switch. Replace if defective.** |
| **33.** | Loose or broken wire #11 from fuel select switch S26 to plug B pin #15 in platform control console. | **Check continuity. Replace if defective.** |
| **34.** | Loose or broken wire #11 in boom cable B or its connectors. | **Check continuity between pins #15 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **35.** | Loose or broken wire #11 from plug B pin #15 to engine harness plug. | **Check continuity. Replace if defective.** |
| **36.** | Loose or broken wire #11 from engine harness plug to GM engine connector 1. | **Check continuity. Replace if defective.** |
| **37.** | Loose or broken tan/brown wire from GM engine connector 1 to ECU connector pin #42. | **Check continuity. Replace if defective.** |
| **38.** | Loose or broken pink/tan wire from fuse F7 to propane lock off 2P-56. | **Check continuity. Replace if defective.** |
| **39.** | Loose or broken white/black wire from ECU connector pin #75 to propane lock off 2P-56. | **Check continuity. Replace if defective.** |
| **40.** | Defective propane lock off 2P-56. | **Check lock off. Replace if defective.** |
| **41.** | Loose or broken pink/dark green wire from fuse F10 to fuse F9. | **Check continuity. Replace if defective.** |
| **42.** | Defective fuse F9. | **Check fuse. Replace if defective.** |
| **43.** | Loose or broken red/light blue wire from fuse F9 to propane regulator PRV1. | **Check continuity. Replace if defective.** |
| **44.** | Loose or broken black wire from engine ground to propane regulator PRV1. | **Check continuity. Replace if defective.** |

## 4.2-5 Glow Plug Circuit Inoperative - Deutz D2011 diesel engine

| | | |
|---|---|---|
| **1.** | Defective glow plug fuse FU1 50 amp. | **Check fuse. Replace if defective.** |
| **2.** | Loose or broken wire #03 from start solenoid 57CCR to fuse holder FU1. | **Check continuity. Replace if defective.** |
| **3.** | Loose or broken wire #11A from fuse holder FU1 to relay 54ACR. | **Check continuity. Replace if defective.** |
| **4.** | Loose or broken wire #11B from relay 54ACR to glow plugs. | **Check continuity. Replace if defective.** |
| **5.** | Loose or broken wire #54A from base terminal strip to relay 54ACR. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **6.** Loose or broken wire #11 from base terminal block to relay 54ACR. | **Check continuity. Replace if defective.** |
| **7.** Defective relay 54ACR. | **Check relay. Replace if defective.** |
| **8.** Defective glow plugs. | **Check glow plugs. Replace if defective.** |

**NOTE**

*For other glow plug related problems, consult engine manufacturer's manual.*

### 4.2-6 All Base Control Console Inoperative

| | |
|---|---|
| **1.** Loose or broken wire #10 from base emergency stop switch S3 to ignition/ pump switch S5. | **Check continuity. Replace if defective.** |
| **2.** Defective ignition/ pump switch S5. | **Check continuity through switch when activated. Replace if defective.** |
| **3.** Loose or broken wire #10A from ignition/ pump switch S5 to basket rotation switch S16. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #10A from jib switch S17 to base terminal block. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #10A from base terminal block to diode D10A. | **Check continuity. Replace if defective.** |
| **6.** Open or defective diode D10A. | **Check diode. Replace if defective.** |
| **7.** Loose or broken wire #20 from diode D10A to base terminal block. | **Check continuity. Replace if defective.** |
| **8.** Missing or broken jumper JMPR3 on base terminal block between wires #20 and #21. | **Check for jumper. Replace if missing or broken.** |

**NOTE**

*Jumper is removed if equipped with generator option.*

| | |
|---|---|
| **9.** Loose or broken wire #21 from base terminal block to relay 21CR. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #02 from base terminal block to relay 21CR. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #09 from base terminal block to relay 21CR. | **Check continuity. Replace if defective.** |
| **12.** Defective relay 21CR. | **Check relay. Replace if defective.** |
| **13.** Loose or broken wire #21A from relay 21CR to turret harness plug pin #5. | **Check continuity. Replace if defective.** |
| **14.** Loose or broken wire #21A from turret harness plug pin #5 to dump valve 2H-21A. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **15.** Loose or broken wire #02 from dump valve 2H-21A to turret harness plug. | **Check continuity. Replace if defective.** |
| **16.** Defective dump valve coil 2H-21A. | **Check continuity and resistance through coil. Replace if defective.** |

## 4.2-7 No Movement from Base Control Console

| | |
|---|---|
| ***No Main Boom Down or Turret Rotate*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1. | **Check continuity. Replace if defective.** |
| **2.** Open resistor R1. | **Check resistor for 6 ohms. If no resistance found, replace resistor.** |
| **3.** Loose or broken wire #10B from resistor R1 to turret rotate switch S13 and boom down switch S12. | **Check continuity. Replace if defective.** |
| ***No Boom Up*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to boom switch S12. | **Check continuity. Replace if defective.** |
| **2.** Defective boom switch S12. | **Check continuity through switch while activating up function between wires #10A and #14. Replace switch if no continuity.** |
| **3.** Loose or broken wire #14 from boom switch S12 to base terminal block. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #14 from base terminal block to turret harness plug pin #4. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #02 from turret harness plug to boom up valve 4H-14. | **Check continuity. Replace if defective.** |
| **7.** Defective boom up coil 4H-14. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Boom Down*** | |
| **1.** Loose or broken wire #10B from resistor R1 to boom down switch S12. | **Check continuity. Replace if defective.** |
| **2.** Defective boom switch S12. | **Check continuity through switch while activating down function between wires #10B and #13. If no continuity found, replace switch.** |
| **3.** If no continuity found, replace switch. | |
| **4.** Loose or broken wire #13 from boom down switch S12 to base terminal block. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **5.** Loose or broken wire #13 from base terminal block to turret harness plug pin #3. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #02 from turret harness plug to boom down valve 4H-13. | **Check continuity. Replace if defective.** |
| **8.** Defective boom down coil 4H-13. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Turret Rotate Left*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1. | **Check continuity. Replace if defective.** |
| **2.** Open resistor R1. | **Check resistor for 6 ohms. If no resistance found, replace resistor.** |
| **3.** Loose or broken wire #10B from resistor R1 to turret rotate switch S13. | **Check continuity. Replace if defective.** |
| **4.** Defective turret rotate switch S13. | **Check continuity through switch while activating rotate left function between wires #10B and #32. If no continuity found, replace switch.** |
| **5.** Loose or broken wire #32 from turret rotate switch S13 to base terminal block. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #32 from base terminal block to turret harness plug pin #10. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #32 from turret harness plug pin #10 to turret rotate left valve 4H-32. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32. | **Check continuity. Replace if defective.** |
| **9.** Defective turret rotate left valve coil 4H-32. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Turret Rotate Right*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1. | **Check continuity. Replace if defective.** |
| **2.** Open resistor R1. | **Check resistor for 6 ohms. If no resistance found, replace resistor.** |
| **3.** Loose or broken wire #10B from resistor R1 to turret rotate switch S13. | **Check continuity. Replace if defective.** |
| **4.** Defective turret rotate switch S13. | **Check continuity through switch while activating rotate left function between wires #10B and #33. If no continuity found, replace switch.** |
| **5.** Loose or broken wire #33 from turret rotate switch S13 to base terminal block. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **6.** Loose or broken wire #33 from base terminal block to turret harness plug pin #11. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #33 from turret harness plug pin #10 to turret rotate left valve 4H-33. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #02 from turret harness plug to turret rotate right valve 4H-33. | **Check continuity. Replace if defective.** |
| **9.** Defective turret rotate right valve coil 4H-33. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Telescope Retract From Base Control Console*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to telescope switch S14. | **Check continuity. Replace if defective.** |
| **2.** Defective telescope switch S14. | **Check continuity through switch while activating retract function between wires #10A and #38. If no continuity found, replace switch.** |
| **3.** Loose or broken wire #38 from telescope switch S14 to base terminal block. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #38 from base terminal block to turret harness plug pin #12. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #38 from turret harness plug pin #12 to telescope retract valve 3H-38. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #02 from turret harness plug to telescope retract valve 3H-38. | **Check continuity. Replace if defective.** |
| **7.** Defective telescope retract valve coil 3H-38. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Telescope Extend*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to telescope switch S14. | **Check continuity. Replace if defective.** |
| **2.** Defective telescope switch S14. | **Check continuity through switch while activating extend function between wires #10A and #39. If no continuity found, replace switch.** |
| **3.** Loose or broken wire #39 from telescope switch S14 to base terminal block. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #39 from base terminal block to turret harness plug pin #13. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #39 from turret harness plug pin #13 to telescope extend valve 3H-39. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #02 from turret harness plug to telescope extend valve 3H-39. | **Check continuity. Replace if defective.** |
| **7.** Defective telescope extend valve coil 3H-39. | **Check continuity and resistance through coil. Replace if defective.** |

| | |
|---|---|
| ***No Platform Rotate Left*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16. | **Check continuity. Replace if defective.** |
| **2.** Defective platform rotate switch S16. | **Check continuity through switch while activating rotate left function between wires #10A and #36. If no continuity found, replace switch.** |
| **3.** Open or defective diode D36-1. | **Check diode. Replace if defective.** |
| **4.** Loose or broken wire #37A from diode D36-1 to resistor R2. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #36 from platform rotate switch S16 to base connector plug A pin #18. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #36 in boom cable A or its connectors. | **Check for continuity between pins #18 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #36 plug A pin #18 to platform terminal block. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #36 from platform terminal block to platform rotate left valve 4H-36. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken wire #02 from platform terminal block to platform rotate left valve 4H-36. | **Check continuity. Replace if defective.** |
| **10.** Defective platform rotate left valve coil 4H-36. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Platform Rotate Right*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16. | **Check continuity. Replace if defective.** |
| **2.** Defective platform rotate switch S16. | **Check continuity through switch while activating rotate right function between wires #10A and #37. If no continuity found, replace switch.** |
| **3.** Open or defective diode D37-1. | **Check diode. Replace if defective.** |
| **4.** Loose or broken wire #37A from diode D37-1 to resistor R2. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #37 from platform rotate switch S16 to base connector plug A pin #19. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #37 in boom cable A or its connectors. | **Check for continuity between pins #19 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #37 plug A pin #19 to platform terminal block. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #37 from platform terminal block to platform rotate right valve 4H-37. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken wire #02 from platform terminal block to platform rotate right valve 4H-37. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **10.** Defective platform rotate right valve coil 4H-37. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Platform Rotate Left or Right*** | |
| **1.** Open resistor R2. | **Check resistor for 10 ohms (45T) or 13 ohms (40T). If no resistance found, replace resistor.** |
| **2.** Loose or broken wire #35A from resistor R2 to base key switch S2. | **Check continuity. Replace if defective** |
| **3.** Open or defective base key switch S2. | **Select base control on switch. Check continuity through switch. Replace if defective.** |
| **4.** Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16. | **Check continuity. Replace if defective** |
| **5.** Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective** |
| **6.** Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective** |
| **7.** Defective proportional flow enable valve coil 2H-42. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Jib Up*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17. | **Check continuity. Replace if defective** |
| **2.** Defective jib up switch S17. | **Check continuity through switch while activating jib up function between wires #10A and #35.If no continuity found, replace switch.** |
| **3.** Open or defective diode D35-1. | **Check diode. Replace if defective.** |
| **4.** Loose or broken wire #35A from diode D35-1 to resistor R2. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #35 from jib up switch S17 to base connector plug A pin #17. | **Check continuity. Replace if defective** |
| **6.** Loose or broken wire #35 in boom cable A or its connectors. | **Check for continuity between pins #17 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #35 from plug A pin #17 to platform terminal block. | **Check continuity. Replace if defective** |
| **8.** Loose or broken wire #35 from platform terminal block to jib up valve 4H-35. | **Check continuity. Replace if defective** |
| **9.** Loose or broken wire #02 from platform terminal block to jib up valve 4H-35. | **Check continuity. Replace if defective** |
| **10.** Defective jib up valve coil 4H-35. | **Check continuity and resistance through coil. Replace if defective.** |

| | |
|---|---|
| ***No Jib Down*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17. | **Check continuity. Replace if defective** |
| **2.** Defective jib down switch S17. | **Check continuity through switch while activating jib down function between wires #10A and #34. If no continuity found, replace switch.** |
| **3.** Open or defective diode D34-1. | **Check diode. Replace if defective.** |
| **4.** Loose or broken wire #35A from diode D34-1 to resistor R2. | **Check continuity. Replace if defective** |
| **5.** Loose or broken wire #34 from jib down switch S17 to base connector plug A pin #16. | **Check continuity. Replace if defective** |
| **6.** Loose or broken wire #34 in boom cable A or its connectors. | **Check for continuity between pins #16 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #34 from plug A pin #16 to platform terminal block. | **Check continuity. Replace if defective** |
| **8.** Loose or broken wire #34 from platform terminal block to jib down valve 4H-34. | **Check continuity. Replace if defective** |
| **9.** Loose or broken wire #02 from platform terminal block to jib down valve 4H-34. | **Check continuity. Replace if defective** |
| **10.** Defective jib down valve coil 4H-34. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Jib Up Or Down*** | |
| **1.** Loose or broken wire #35A from resistor R2 to base key switch S2. | **Check continuity. Replace if defective** |
| **2.** Open or defective base key switch S2. | **Select base control console on switch. Check continuity through switch. Replace if defective.** |
| **3.** Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16. | **Check continuity. Replace if defective** |
| **4.** Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective** |
| **5.** Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective** |
| **6.** Defective proportional flow enable valve coil 2H-42. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Manual Platform Level Up*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15. | **Check continuity. Replace if defective** |

| | |
|---|---|
| **2.** Defective platform level switch S15. | **Check continuity through switch while activating level up function between wires #10A and #41. If no continuity found replace switch.** |
| **3.** Loose or broken wire #41 from platform level switch S15 to base terminal block. | **Check continuity. Replace if defective** |
| **4.** Loose or broken wire #41 from base terminal block to turret harness pin plug pin#15. | **Check continuity. Replace if defective** |
| **5.** Loose or broken wire #41 from turret harness pin plug pin#15 platform level up valve 4H-41. | **Check continuity. Replace if defective** |
| **6.** Loose or broken wire #02 from turret harness pin plug platform level up valve 4H-41. | **Check continuity. Replace if defective** |
| **7.** Defective platform level up valve coil 4H-41. | **Check continuity and resistance through coil. Replace if defective.** |
| **8.** Loose or broken wire #41 from base terminal block to base connector plug B pin #11. | **Check continuity. Replace if defective** |
| **9.** Loose or broken wire #41 in boom cable B or its connectors. | **Check for continuity between pins #11 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **10.** Loose or broken wire #41 from plug B pin #11 to platform terminal block. | **Check continuity. Replace if defective** |
| **11.** Open diode D41 located in platform terminal block. | **Check diode. Replace if defective.** |
| ***No Manual Platform Level Down*** | |
| **1.** Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15. | **Check continuity. Replace if defective** |
| **2.** Defective platform level switch S15. | **Check continuity through switch while activating level down function between wires #10A and #40. If no continuity found replace switch.** |
| **3.** Loose or broken wire #40 from platform level switch S15 to base terminal block. | **Check continuity. Replace if defective** |
| **4.** Loose or broken wire #40 from base terminal block to turret harness pin plug pin #14. | **Check continuity. Replace if defective** |
| **5.** Loose or broken wire #40 from turret harness pin plug pin #14 platform level down valve 4H-40. | **Check continuity. Replace if defective** |
| **6.** Loose or broken wire #02 from turret harness pin plug platform level down valve 4H-40. | **Check continuity. Replace if defective** |
| **7.** Defective platform level down valve coil 4H-40. | **Check continuity and resistance through coil. Replace if defective.** |
| **8.** Loose or broken wire #40 from base terminal block to base connector plug B pin #10. | **Check continuity. Replace if defective** |

| | |
|---|---|
| **9.** Loose or broken wire #40 in boom cable B or its connectors. | **Check for continuity between pins #10 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **10.** Loose or broken wire #40 from plug B pin #10 to platform terminal block. | **Check continuity. Replace if defective** |
| **11.** Open diode D40 located in platform terminal block. | **Check diode. Replace if defective.** |

## 4.2-8 All Controls Inoperative From Platform Control Console

| | |
|---|---|
| **1.** Open or defective emergency stop switch S4. | **Pull emergency switch out. Check continuity through switch. Replace if defective.** |
| **2.** Loose or broken wire #4 from emergency stop switch S4 to platform terminal block. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken jumper wire #4 on emergency stop switch S4. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken pin jumper between #04 and #04A on platform terminal block (without generator option only). | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #04 from platform terminal block to generator switch S22 (generator option only). | **Check continuity. Replace if defective.** |
| **6.** Generator switch S22 in generator mode or is open or defective (generator option only). | **Select OFF mode on generator switch. Check continuity through switch from #04 to #04A. Replace if defective** |
| **7.** Loose or broken wire #04A from generator switch S22 to platform terminal block (generator option only). | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #04A from platform terminal block to footswitch S11. | **Check continuity. Replace if defective.** |
| **9.** Open or defective footswitch S11. | **Check continuity through switch while activating footswitch function between wires #04A and #08A. If no continuity found replace switch.** |
| **10.** Loose or broken wire #08A from footswitch S11 to valve driver pin #16. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #04 from platform terminal block to valve driver pin #1, 2 & 13. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from platform terminal block to valve driver pin #24, 25 & 26. | **Check continuity. Replace if defective.** |
| **13.** No output on pin #6 of the valve driver to wire #08. | **Check pin #6 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |

| | |
|---|---|
| **14.** Loose or broken wire #08 from valve driver pin #6 to relay 08CR1. | **Check continuity. Replace if defective.** |
| **15.** Loose or broken wire #02 from platform terminal block to relay 08CR1. | **Check continuity. Replace if defective.** |
| **16.** Loose or broken wire #20D from platform terminal block to relay 08CR1. | **Check continuity. Replace if defective.** |
| **17.** Loose or broken wire #20 from 08CR1 relay to plug A pin #8 in platform control console. | **Check continuity. Replace if defective.** |
| **18.** Defective relay 08CR1. | **Check relay. Replace if defective.** |

***No Manual Platform Level Up***

**NOTE**

*This function times out after 15 seconds when operating this function only*

| | |
|---|---|
| **1.** Loose or broken wire #08 from platform terminal block to platform level switch S19. | **Check continuity. Replace if defective.** |
| **2.** Defective platform level switch S19. | **Check continuity through switch while activating level up function between wires #08 and #41. If no continuity found replace switch.** |
| **3.** Loose or broken wire #41 from platform level switch S19 to platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open diode D41 located in platform terminal block. | **Check diode. Replace if defective.** |

***No Manual Platform Level Down***

**NOTE**

*This function times out after 15 seconds when operating this function only*

| | |
|---|---|
| **1.** Loose or broken wire #08 from platform terminal block to platform level switch S19. | **Check continuity. Replace if defective.** |
| **2.** Defective platform level switch S19. | **Check continuity through switch while activating level up function between wires #08 and #40. If no continuity found replace switch.** |
| **3.** Loose or broken wire #40 from platform level switch S19 to platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open diode D40 located in platform terminal block. | **Check diode. Replace if defective.** |

***No Boom Up From Platform Control Console***

| | |
|---|---|
| **1.** Loose or broken wire #04 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #02 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **3.** No output on y-axis of joystick controller A1. | **Refer to joystick test procedure in section 5.** |
| **4.** Loose or broken wire “Y” from joystick controller A1 to valve driver pin #29. | **Check continuity. Replace if defective.** |
| **5.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **6.** No output on pin #22 of the valve driver to wire #14. | **Check pin #22 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **7.** Loose or broken wire #14 from valve driver pin #22 to plug A pin #7 in platform control console. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #14 in boom cable A or its connectors. | **Check for continuity between pins #7 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **9.** Loose or broken wire #14 from base connector plug A pin #7 to base terminal block. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #14 from base terminal block to turret harness plug pin #4. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from turret harness plug to boom up valve 4H-14. | **Check continuity. Replace if defective.** |
| **13.** Defective boom up valve coil 4H-14. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Boom Down*** | |
| **1.** Loose or broken wire #04 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #02 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **3.** No output on y-axis of joystick controller A1. | **Refer to joystick test procedure in section 5.** |
| **4.** Loose or broken wire “Y” from joystick controller A1 to valve driver pin #29. | **Check continuity. Replace if defective.** |
| **5.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **6.** No output on pin #8 of the valve driver to wire #13. | **Check pin #8 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **7.** Loose or broken wire #13 from valve driver pin #8 to plug A pin #6 in platform control console. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **8.** Loose or broken wire #13 in boom cable A or its connectors. | **Check for continuity between pins #6 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **9.** Loose or broken wire #13 from base connector plug A pin #6 to base terminal block. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #13 from base terminal block to turret harness plug pin #3. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from turret harness plug to boom down valve 4H-13. | **Check continuity. Replace if defective.** |
| **13.** Defective boom down valve coil 4H-13. | **Check continuity and resistance through coil. Replace if defective.** |
| No Turret Left | |
| **1.** Loose or broken wire #04 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #02 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **3.** No output on x-axis of joystick controller A1. | **Refer to joystick test procedure in section 5.** |
| **4.** Loose or broken wire “X” from joystick controller A1 to valve driver pin #28. | **Check continuity. Replace if defective.** |
| **5.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **6.** No output on pin #20 of the valve driver to wire #32. | **Check pin #20 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **7.** Loose or broken wire #32 from valve driver pin #20 to plug A pin #14 in platform control console. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #32 in boom cable A or its connectors. | **Check for continuity between pins #14 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **9.** Loose or broken wire #32 from base connector plug A pin #14 to base terminal block. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #32 from base terminal block to turret harness plug pin #10. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #32 from turret harness plug pin #10 to turret left valve 4H-32. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from turret harness plug to turret left valve 4H-32. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **13.** Defective turret left valve coil 4H-32. | **Check continuity and resistance through coil. Replace if defective.** |

***No Turret Right***

| | |
|---|---|
| **1.** Loose or broken wire #04 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #02 from platform terminal block to joystick controller A1. | **Check continuity. Replace if defective.** |
| **3.** No output on x-axis of joystick controller A1. | **Refer to joystick test procedure in section 5.** |
| **4.** Loose or broken wire "X" from joystick controller A1 to valve driver pin #28. | **Check continuity. Replace if defective.** |
| **5.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **6.** No output on pin #35 of the valve driver to wire #33. | **Check pin #10 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **7.** Loose or broken wire #33 from valve driver pin #35 to plug A pin #15 in platform control console. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #33 in boom cable A or its connectors. | **Check for continuity between pins #15 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **9.** Loose or broken wire #33 from base connector plug A pin #15 to base terminal block. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #33 from base terminal block to turret harness plug pin #11. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #33 from turret harness plug pin #11 to turret right valve 4H-33. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from turret harness plug to turret right valve 4H-33. | **Check continuity. Replace if defective.** |
| **13.** Defective turret right valve coil 4H-33. | **Check continuity and resistance through coil. Replace if defective.** |

**NOTE**

*Toggle switch controls are speed controlled through a speed control selector A3.*

***No Telescope In***

| | |
|---|---|
| **1.** Loose or broken purple wire from speed controller to resistor R9 in platform control console. | **Check continuity. Replace if defective.** |
| **2.** Open or defective resistor R9. | **Check resistor. Replace if defective.** |

| | |
|---|---|
| **3.** Loose or broken wire #38B from resistor R9 to telescope switch S18. | **Check continuity. Replace if defective.** |
| **4.** Defective telescope switch S18. | **Check continuity through switch while activating the function between wires #38B and #38A.** |
| **5.** Loose or broken wire #38A from telescope switch S18 to valve driver pin #32. | **Check continuity. Replace if defective.** |
| **6.** Voltage out of range at valve driver pin #32. | **Check voltage while operating telescope in. Voltage should be between 4.75 and 5.25 volts. Refer to telescope voltage reference table in section 5 if out of this range.** |
| **7.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **8.** No output on pin #9 of the valve driver to wire #38. | **Check pin #9 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **9.** Loose or broken wire #38 from valve driver pin #9 to plug B pin #8 in platform control console. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #38 in boom cable B or its connectors. | **Check for continuity between pins #8 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **11.** Loose or broken wire #38 from base connector plug B pin #8 to base terminal block. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #38 from base terminal block to turret harness plug pin #12. | **Check continuity. Replace if defective.** |
| **13.** Loose or broken wire #38 from turret harness plug pin #12 to telescope in valve 3H-38. | **Check continuity. Replace if defective.** |
| **14.** Loose or broken wire #02 from turret harness plug to telescope in valve 3H-38. | **Check continuity. Replace if defective.** |
| **15.** Defective telescope in valve coil 3H-38. | **Check continuity and resistance through coil. Replace if defective.** |

***No Telescope Out***

| | |
|---|---|
| **1.** Loose or broken purple wire from speed controller to resistor R9 in platform control console. | **Check continuity. Replace if defective.** |
| **2.** Open or defective resistor R9. | **Check resistor. Replace if defective.** |
| **3.** Loose or broken wire #38B from resistor R9 to telescope switch S18. | **Check continuity. Replace if defective.** |
| **4.** Open or defective resistor R10. | **Check resistor. Replace if defective.** |
| **5.** Defective telescope switch S18. | **Check continuity through switch while activating the function between wires #38C and #38A.** |

| | |
|---|---|
| **6.** Loose or broken wire #38A from telescope switch S18 to valve driver pin #32. | **Check continuity. Replace if defective.** |
| **7.** Voltage out of range at valve driver pin #32. | **Check voltage while operating telescope out. Voltage should be between 2.25 and 2.75 volts. Refer to telescope voltage reference table in section 5 if out of this range.** |
| **8.** No output on pin #5 of the valve driver to wire #20B. | **Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **9.** No output on pin #12 of the valve driver to wire #39. | **Check pin #12 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **10.** Loose or broken wire #39 from valve driver pin #12 to plug B pin #9 in platform control console. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #39 in boom cable B or its connectors. | **Check for continuity between pins #9 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **12.** Loose or broken wire #39 from base connector plug B pin #9 to base terminal block. | **Check continuity. Replace if defective.** |
| **13.** Loose or broken wire #39 from base terminal block to turret harness plug pin #13. | **Check continuity. Replace if defective.** |
| **14.** Loose or broken wire #39 from turret harness plug pin #13 to telescope out valve 3H-39. | **Check continuity. Replace if defective.** |
| **15.** Loose or broken wire #02 from turret harness plug to telescope out valve 3H-39. | **Check continuity. Replace if defective.** |
| **16.** Defective telescope out valve coil 3H-39. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Platform Rotate or Jib Function*** | |
| **1.** Loose or broken wire #08 from platform terminal block to rotate switch S20 and jib switch S21. | **Check continuity. Replace if defective.** |
| **2.** No output on pin #21 of the valve driver to wire #42. | **Check pin #20 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **3.** Loose or broken wire #42 from valve driver pin #21 to plug B pin #24 in platform control console. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #42 in boom cable B or its connectors. | **Check for continuity between pins #24 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **5.** Loose or broken wire #42 from base connector plug B pin #24 to base key switch S2. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **6.** Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42. | **Check continuity. Replace if defective.** |
| **9.** Defective proportional flow enable valve 2H-42. | |
| ***No Platform Rotate Left*** | |
| **1.** Defective platform rotate switch S20. | **Check continuity through switch while activating rotate left function between wires #08 and #36.** |
| **2.** Loose or broken wire #36 from platform rotate switch S20 to platform terminal block. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken jumper wire #36 on platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open or defective diode D36 in platform terminal block. | **Check diode. Replace if defective.** |
| **5.** Loose or broken wire #36A from platform terminal block to valve driver pin #17. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #36 or #02 from platform terminal block to rotate left valve 4H-36. | **Check continuity. Replace if defective.** |
| **7.** Defective rotate left valve coil 4H-36. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Platform Rotate Right*** | |
| **1.** Defective platform rotate switch S20. | **Check continuity through switch while activating rotate right function between wires #08 and #37.** |
| **2.** Loose or broken wire #37 from platform rotate switch S20 to platform terminal block. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken jumper wire #37 on platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open or defective diode D37 in platform terminal block. | **Check diode. Replace if defective.** |
| **5.** Loose or broken wire #36A from platform terminal block to valve driver pin #17. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #37 or #02 from platform terminal block to rotate right valve 4H-37. | **Check continuity. Replace if defective.** |
| **7.** Defective rotate right Valve coil 4H-37. | **Check continuity and resistance through coil. Replace if defective.** |

| | |
|---|---|
| ***No Jib Up*** | |
| **1.** Defective jib switch S21. | **Check continuity through switch while activating jib up function between wires #08 and #35.** |
| **2.** Loose or broken wire #35 from jib switch S21 to platform terminal block. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken jumper wire #35 on platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open or defective diode D35 in platform terminal block. | **Check diode. Replace if defective.** |
| **5.** Loose or broken wire #34A from platform terminal block to valve driver pin #33. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #35 or #02 from platform terminal block to jib up valve 4H-35. | **Check continuity. Replace if defective.** |
| **7.** Defective jib up valve coil 4H-35. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Jib Down*** | |
| **1.** Defective jib switch S21. | |
| **2.** Loose or broken wire #34 from jib switch S21 to platform terminal block. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken jumper wire #34 on platform terminal block. | **Check continuity. Replace if defective.** |
| **4.** Open or defective diode D34 in platform terminal block. | **Check diode. Replace if defective.** |
| **5.** Loose or broken wire #34A from platform terminal block to valve driver pin #33. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #34 or #02 from platform terminal block to jib down valve 4H-34. | **Check continuity. Replace if defective.** |
| **7.** Defective jib down valve coil 4H-34. | **Check continuity and resistance through coil. Replace if defective.** |

## 4.2-9 Throttle Inoperative, Mid and High - Deutz D2.9L

| | |
|---|---|
| **1.** Loose or broken wire #90 from base terminal block to connector J2 pin #5. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #90 from connector P2 pin #5 94 pin ECU connector pin 80. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #99 from base terminal block to connector J2 pin 4 | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #99 from connector P2 pin 4 to 94 pin ECU connector pin 74 | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **5.** Resistor R4 open or poor connection at base terminal block. | **Measure resistance (1KΩ) between 99 and 99A. Check connections. Replace if defective.** |
| **6.** Resistor R5 open or poor connection at base terminal block. | **Measure resistance (3.3KΩ) between 99A and 99B. Check connections. Replace if defective.** |
| **7.** Resistor R6 open or poor connection at base terminal block. | **Measure resistance (3.9KΩ) between 99B and 90. Check connections. Replace if defective.** |

## 4.2-10 Mid Throttle Inoperative

| | |
|---|---|
| **1.** Loose or broken wire #08 from platform terminal block to throttle switch S10. | **Check continuity. Replace if defective.** |
| **2.** Open or defective diode D08. (Generator option only) | **Check diode. Replace if defective.** |
| **3.** Defective throttle switch S10. | **Check continuity through switch while activating mid throttle function between wires #08 and #79. If no continuity found replace switch.** |
| **4.** Loose or broken wire #79 from throttle switch S10 to plug B pin #20 in platform control console. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #79 in Cable B or its connectors. | **Check for continuity between pins #20 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| ***With the following conditions:*** ▪ Deutz D2.9L Diesel | |
| **6.** Loose or broken wire #79 from base plug B pin #20 to relay 79CR. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #02 from base terminal block to relay 79CR. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #90 from relay 79CR to base terminal block. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken wire #99B from relay 79CR to base terminal block. | **Check continuity. Replace if defective.** |
| **10.** Defective relay 79CR. | **Check relay. Replace if defective.** |
| ***With the following conditions:*** ▪ Deutz D2011 Diesel | |
| **11.** Loose or broken wire #79 from base plug B pin #20 to relay 79CR. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #02 from base terminal block to relay 79CR. | **Check continuity. Replace if defective.** |
| **13.** Loose or broken wire #99 from relay 79CR to ECU connector pin #18. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **14.** Loose or broken wire #103 from relay 79CR to base terminal block. | **Check continuity. Replace if defective.** |
| **15.** Loose or broken wire #103 from base terminal block to ECU connector pin #17. | **Check continuity. Replace if defective.** |
| **16.** Defective relay 79CR. | **Check relay. Replace if defective.** |
| ***With the following conditions:*** ▪ Kubota Dual Fuel | |
| **17.** Loose or broken wire #79 from base plug B pin #20 to engine harness plug. | **Check continuity. Replace if defective.** |
| **18.** Loose or broken wire #79 from engine harness plug to GM engine connector 2. | **Check continuity. Replace if defective.** |
| **19.** Loose or broken gray/dark blue wire from Kubota Dual Fuel engine connector to ECU connector pin #51. | **Check continuity. Replace if defective.** |
| **20.** Loose or broken purple/light blue wire from ECU connector pin #5 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **21.** Defective throttle actuator RA1. | **Check actuator. Replace if defective.** |

## 4.2-11 High Throttle Inoperative

| | |
|---|---|
| **1.** Loose or broken wire #08 from platform terminal block to throttle switch S10. | **Check continuity. Replace if defective.** |
| **2.** Defective throttle switch S10. | **Check continuity through switch while activating high throttle function between wires #08 and #78. If no continuity found replace switch.** |
| **3.** Loose or broken wire #78 from throttle switch S10 to plug B pin #19 in platform control console. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #78 in Cable B or its connectors. | **Check for continuity between pins #19 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| ***With the following conditions:*** ▪ Deutz D2.9L Diesel | |
| **5.** Loose or broken wire #78 from base plug B pin #19 to relay 78CR. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #02 from base terminal block to relay 78CR. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #90 from relay 78CR to base terminal block. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #99A from relay 78CR to base terminal block. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **9.** Defective relay 78CR. | **Check relay. Replace if defective.** |
| ***With the following conditions:*** ▪ Deutz D2011 Diesel | |
| **10.** Loose or broken wire #78 from base plug B pin #17 to relay 78CR. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #02 from base terminal block to relay 78CR. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #90 from relay 78CR to ECU connector pin #21. | **Check continuity. Replace if defective.** |
| **13.** Loose or broken wire #103 from relay 78CR to base terminal block. | **Check continuity. Replace if defective.** |
| **14.** Loose or broken wire #103 from base terminal block to ECU connector pin #17. | **Check continuity. Replace if defective.** |
| **15.** Defective relay 78CR. | **Check relay. Replace if defective.** |
| ***With the following conditions:*** ▪ Kubota Dual Fuel | |
| **16.** Loose or broken wire #78 from base plug B pin #17 to engine harness plug. | **Check continuity. Replace if defective.** |
| **17.** Loose or broken wire #78 from engine harness plug to Kubota Dual Fuel engine connector 2. | **Check continuity. Replace if defective.** |
| **18.** Loose or broken gray/orange wire from GM engine connector 2 to ECU connector pin #52. | **Check continuity. Replace if defective.** |
| **19.** Loose or broken light blue/dark blue wire from ECU connector pin #6 to throttle actuator RA1. | **Check continuity. Replace if defective.** |
| **20.** Defective throttle actuator RA1. | **Check actuator. Replace if defective.** |

## 4.2-12 **Brake will not Release**

| | |
|---|---|
| **1.** No output on pin #10 from valve driver to wire #26 when operating a drive function. | **Check pin #10 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **2.** Loose or broken wire #26 from valve drive pin #10 to plug A pin #11 in platform control console. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #26 in Cable A or its connectors. | **Check for continuity between pins #11 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **4.** Loose or broken wire #26 from base plug A pin #11 to turret harness plug pin #8. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **5.** Loose or broken wire #26 or #02 from turret harness plug to brake valve 3H-26. | **Check continuity. Replace if defective.** |
| **6.** Defective brake valve coil 3H-26. | **Check continuity and resistance through coil. Replace if defective.** |

## 4.2-13 Differential Lock will not Engage

**NOTE**

*Differential Lock cannot be engaged if a drive function has been selected.*

**NOTE**

*Differential Lock will engage without light being illuminated. Check bulb.*

| | |
|---|---|
| **1.** No output on pin #19 from valve driver to wire #26A. | **Check pin #19 for 12 volts when drive in neutral position. If no voltage present make sure drive joystick output "D" is between 4.2 and 4.8 volts.** |
| **2.** Loose or broken wire #26A from valve drive pin #19 to differential lock switch S28. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #165 from differential lock switch S28 to plug A pin #24 in platform control console. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #165 in Cable A or its connectors. | **Check for continuity between pins #24 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **5.** Loose or broken wire #165 from base plug A pin #24 to base terminal block. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #165 or #02 from base terminal block to differential lock valve 3H-165. | **Check continuity. Replace if defective.** |
| **7.** Defective differential lock valve coil 3H-165. | **Check continuity and resistance through coil. Replace if defective.** |
| **8.** Loose or broken wire #165 from differential lock switch S28 to relay 165CR. (2 places) | **Check for 12 volts on wire #165 (2 places) while activating differential lock at relay 165CR. Check continuity. Replace if defective.** |
| **9.** Defective relay 165CR. | **Check relay. Replace if defective.** |
| **10.** Loose or broken wire #02 from platform terminal block to differential lock switch S28. | **Check continuity. Replace if defective.** |
| **11.** Loose or broken wire #02A from differential lock switch S28 to relay 165CR. | **Check continuity. Replace if defective.** |
| **12.** Loose or broken wire #04 from ignition switch S9 to relay 165CR. | **Check continuity. Replace if defective.** |

## 4.2-14 No Drive and Steer

**NOTE**

*MEWP will not drive or steer if it is tilted and off limit switches.*

| | |
|---|---|
| **1.** Loose or broken wire #4 from platform terminal block to drive joystick A2 in platform control console. | **Check continuity. Replace if defective.** |
| **2.** Loose or broken wire #02 from platform terminal block to drive joystick A2. | **Check continuity. Replace if defective.** |
| **3.** Defective drive joystickA2. | **See drive joystick test procedure in section 5.** |
| ***No Forward Drive*** | |
| **1.** No output on “D” when forward is selected on drive joystick A2. | **See drive joystick test procedure in section 5.** |
| **2.** Loose or broken wire ”D-signal” from drive joystick A2 to valve driver pin #27. | **Check continuity. Replace if defective.** |
| **3.** No output from valve driver pin #34 to wire #16. | **Check pin #34 for minimum 2 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **4.** Loose or broken wire #16 from valve driver pin #34 to plug B pin #5 in platform control console. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #5 in cable B or its connectors. | **Check for continuity between pins #5 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **6.** Loose or broken wire #16 from base plug B pin #5 to turret harness plug pin #21. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #16 or #02 from turret harness plug to forward drive valve 3H-16. | **Check continuity. Replace if defective.** |
| **8.** Defective forward drive valve coil 3H-16. | **Check continuity and resistance through coil. Replace if defective.** |
| ***No Reverse Drive*** | |
| **1.** No output on “D” when forward is selected on drive joystick A2. | **See drive joystick test procedure in section 5.** |
| **2.** Loose or broken wire ”D-signal” from drive joystick A2 to valve driver pin #27. | **Check continuity. Replace if defective.** |
| **3.** No output from valve driver pin #23 to wire #15. | **Check pin #23 for minimum 2 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **4.** Loose or broken wire #15 from valve driver pin #23 to plug B pin #4 in platform control console. | **Check continuity. Replace if defective.** |

| | |
|---|---|
| **5.** Loose or broken wire #15 in cable B or its connectors. | **Check for continuity between pins #4 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **6.** Loose or broken wire #15 from base plug B pin #4 to turret harness plug pin #20. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #15 or #02 from turret harness plug to reverse drive valve 3H-15. | **Check continuity. Replace if defective.** |
| **8.** Defective reverse drive valve coil 3H-15. | **Check continuity and resistance through coil. Replace if defective.** |

***No Left Steer***

**NOTE**

*This function times out after 15 seconds when operating this function only.*

| | |
|---|---|
| **1.** Loose or broken wire #24 from drive joystick A2 to platform terminal block. | **Check continuity. Replace if defective.** |
| **2.** Open or defective diode D24 in platform terminal block. | **Check diode. Replace if defective.** |
| **3.** Loose or broken wire #24 from platform terminal block to relay 17ACR1. | **Check continuity. Replace if defective.** |
| **4.** Defective N/C contacts in relay 17ACR1. | **Check relay. Replace if defective.** |
| **5.** Loose or broken wire #24A from relay 17ACR1 to plug A pin #10 in platform control console. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #24A in boom cable A or its connectors. | **Check for continuity between pins #10 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #24A from base plug A pin #10 in base terminal block. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #24A from base terminal block to turret harness plug pin #7. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken wire #24A or #02 from turret harness plug to left steer valve 4H-24A. | **Check continuity. Replace if defective.** |
| **10.** Defective left steer valve coil 4H-24A. | **Check continuity and resistance through coil. Replace if defective.** |

***No Right Steer***

**NOTE**

*This function times out after 15 seconds when operating this function only.*

| | |
|---|---|
| **1.** Loose or broken wire #23 from drive joystick A2 to platform terminal block. | **Check continuity. Replace if defective.** |
| **2.** Open or defective diode D23 in platform terminal block. | **Check diode. Replace if defective.** |

| | |
|---|---|
| **3.** Loose or broken wire #23 from platform terminal block to relay 17ACR2. | **Check continuity. Replace if defective.** |
| **4.** Defective N/C contacts in relay 17ACR2. | **Check relay. Replace if defective.** |
| **5.** Loose or broken wire #23A from relay 17ACR2 to plug A pin #9 in platform control console. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #23A in boom cable A or its connectors. | **Check for continuity between pins #9 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **7.** Loose or broken wire #23A from base plug A pin #9 to base terminal block. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #23A from base terminal block to turret harness plug pin #6. | **Check continuity. Replace if defective.** |
| **9.** Loose or broken wire #23A or #02 from turret harness plug to right steer valve 4H-23A. | **Check continuity. Replace if defective.** |
| **10.** Defective left steer valve coil 4H-23A. | **Check continuity and resistance through coil. Replace if defective.** |

## 4.2-15 No High Speed Drive

**NOTE**

*Aerial platform must be level and boom must be below 15 degrees and fully retracted for high speed drive.*

| | |
|---|---|
| **1.** Loose or broken wire #09 from base terminal block to limit switch LS2. | **Check continuity. Replace if defective.** |
| **2.** Open or defective limit switch LS2. | **Ensure boom is below 15 degrees. Adjust switch if required. Check continuity through switch.Replace if required.** |
| **3.** Loose or broken wire #29 from limit switch LS2 to base terminal block. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #29 from base terminal block to limit switch LS3. | **Check continuity. Replace if defective.** |
| **5.** Open or defective limit switch LS3. | **Ensure boom is fully retracted. Adjust switch if required. Check continuity through switch. Replace if defective.** |
| **6.** Loose or broken wire #59 from limit switch LS3 to base terminal block. | **Check continuity. Replace if defective.** |
| **7.** Loose or broken wire #59 from base terminal block to plug B pin #15. | **Check continuity. Replace if defective.** |
| **8.** Loose or broken wire #59 in boom cable B or its connectors. | **Check for continuity between pins #15 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |

| | |
|---|---|
| **9.** Loose or broken wire #59 from plug B pin #15 in platform control console to platform terminal block. | **Check continuity. Replace if defective.** |
| **10.** Loose or broken wire #59 from platform terminal block to valve driver pin #31. | **Check continuity. Replace if defective.** |
| **11.** Defective valve driver channel input for high drive enable. | **See section 5 for OCM pin voltage reference.** |
| **12.** Loose or broken wire #59 from platform terminal block to torque switch S48. | **Check continuity. Replace if defective.** |
| **13.** Open or defective torque switch S48. | **Check continuity through switch while activating low torque function between wires #59 and #45. If no continuity found replace switch.** |
| **14.** Loose or broken wire #45 from torque switch S48 to plug A pin #20 in platform control console. | **Check continuity. Replace if defective.** |
| **15.** Loose or broken wire #45 in cable A or its connectors. | **Check for continuity between pins #20 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **16.** Loose or broken wire #45 from base plug A pin #20 to relay 45CR1. | **Check continuity. Replace if defective.** |
| **17.** Loose or broken wire #02 from base terminal block to relay 45CR1. | **Check continuity. Replace if defective.** |
| **18.** Loose or broken wire #09 from base terminal block to relay 45CR1. | **Check continuity. Replace if defective.** |
| **19.** Defective relay 45CR1. | **Check relay. Replace if defective.** |
| **20.** Loose or broken wire #45A from base terminal block to turret harness plug pin #17. | **Check continuity. Replace if defective.** |
| **21.** Loose or broken wire #45A or #02 from turret harness plug to 2 speed valve 3H-45A. | **Check continuity. Replace if defective.** |
| **22.** Defective 2 speed valve 3H-45A. | **Check continuity and resistance through coil. Replace if defective.** |

## 4.2-16 No Elevated Drive

**NOTE**

*Aerial platform must be level to drive elevated.*

| | |
|---|---|
| **1.** Loose or broken wire #09 or #02 from base terminal block to angle transducer/ tilt switch AT1. | **Check continuity. Replace if defective.** |
| **2.** Misadjusted, no output or defective angle transducer/ tilt switch AT1. | **Adjust angle transducer/ tilt switch if required. Check for 12 volts on wire #28. If no voltage present with angle transducer/ tilt switch adjusted it is defective, replace angle transducer/ tilt switch.** |

| | |
|---|---|
| **3.** Loose or broken wire #28 from level sensor TS1 to plug B pin #7. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #28 in cable B or its connectors. | **Check for continuity between pins #7 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **5.** Loose or broken wire #28 from plug B pin #7 to platform terminal block. | **Check continuity. Replace if defective.** |
| **6.** Loose or broken wire #28 from platform terminal block to valve driver pin #18. | **Check continuity. Replace if defective.** |

## 4.2-17 Direction Sensing Inoperative

| | |
|---|---|
| **1.** Loose or broken wire #09 from base terminal block to limit switch LS1. | **Check continuity. Replace if defective.** |
| **2.** Open or defective limit switch LS1. | **Adjust limit switch if required. Check continuity through switch. Replace if defective.** |
| **3.** Loose or broken wire #17 from limit switch LS1 to base terminal block. | **Check continuity. Replace if defective.** |
| **4.** Loose or broken wire #17 from base terminal block to base plug B pin #6. | **Check continuity. Replace if defective.** |
| **5.** Loose or broken wire #17 in boom cable B or its connectors. | **Check for continuity between pins #6 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.** |
| **6.** Loose or broken wire #17 from base plug B pin #6 to valve driver pin #15 in platform control console. | **Check continuity. Replace if defective.** |
| **7.** Defective valve driver channel input for direction sense enable. | **See section 5 for OCM pin voltage reference.** |

## 4.2-18 Steer Direction Sensing Inoperative

| | |
|---|---|
| **1.** No output on valve driver pin #4 to wire #17A. | **Check pin #4 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.** |
| **2.** Loose or broken wire #17A from valve driver pin #4 to relays 17ACR1 and 17ACR2. | **Check continuity. Replace if defective.** |
| **3.** Loose or broken wire #02 from platform terminal block to relays 17ACR1 and 17ACR2. | **Check continuity. Replace if defective.** |
| **4.** Defective relays 17ACR1 and 17ACR2. | **Check relay. Replace if defective.** |

**NOTE**

*If only one relay is bad and one is OK, you will have steer in one direction only.*

# 4.3 Hydraulic System

## 4.3-1 All Controls Inoperative

| | |
|---|---|
| **1.** Broken or defective drive pump shaft or coupling. | **Check pump shaft and coupling. Replace if defective.** |
| **2.** Hydraulic oil level low. | **Check oil level. Fill to proper level.** |

## 4.3-2 All Boom Functions Inoperative

| | |
|---|---|
| **1.** Open or defective dump/ enable valve 2H-21A. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective relief valve RV1. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **3.** System pump P2 out of adjustment or is defective. | **Refer to section 5 for pump set up procedure. Replace if defective.** |
| **4.** Defective load sense adjusting valve 3H-V2. | **Check valve. Replace if defective.** |
| **5.** Defective pressure compensator valve 3H-V1. | **Check valve. Replace if defective.** |
| **6.** Plugged or defective high pressure filter F1. | **Check filter. Replace if plugged or defective.** |

## 4.3-3 No Main Boom Up

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective lift up valve 4H-14. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective shuttle valve SV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV5. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective counterbalance valve CB3. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **6.** Defective lift cylinder C1. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-4 No Main Boom Down

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective lift up valve 4H-13. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective shuttle valve SV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV5. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective counterbalance valve CB3. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **6.** Defective lift cylinder C1. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-5 No Turret Rotate

***Left Rotate***

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV1. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective rotate left valve 4H-32. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective shuttle valve SV1. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV4. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV2. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Stuck or defective shuttle valve SV7. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **7.** Stuck or defective counterbalance valve CB2. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **8.** Turret rotate brake BR1 not releasing. | **Inspect brake for worn seals or broken components. Repair and replace as necessary.** |
| **9.** Worn or defective swing drive motor M2. | **Check motor. Repair or replace if defective.** |

***Right Rotate***

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV1. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective rotate left valve 4H-33. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective shuttle valve SV1. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV4. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV2. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Stuck or defective shuttle valve SV7. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **7.** Stuck or defective counterbalance valve CB1. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **8.** Turret rotate brake BR1 not releasing. | **Inspect brake for worn seals or broken components. Repair and replace as necessary.** |
| **9.** Worn or defective swing drive motor M2. | **Check motor. Repair or replace if defective.** |

## 4.3-6 No Boom Extend

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV3. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective boom extend valve 3H-39. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV11. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV6. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV4. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Return valve V5 stuck in the open position. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **7.** Stuck or defective counterbalance valve CB4. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |

| | |
|---|---|
| **8.** Return valve V4 stuck in the closed position or is defective. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **9.** Defective extension cylinder C2. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-7 No Boom Retract

| | |
|---|---|
| **1.** Stuck or defective differential sensing valve DSV3. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective boom extend valve 3H-38. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV10. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective check valve CV6. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV4. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Return valve V4 stuck in the open position. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **7.** Stuck or defective counterbalance valve CB5. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **8.** Return valve V5 stuck in the closed position or is defective. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **9.** Defective extension cylinder C2. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-8 No Jib Up

| | |
|---|---|
| **1.** Stuck or defective proportional flow enable valve 2H-42. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective check valve CV9. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective jib up valve 4H-35. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective counterbalance valve CB9. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **5.** Defective jib cylinder C5. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-9 No Jib Down

| | |
|---|---|
| **1.** Stuck or defective proportional flow enable valve 2H-42. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective check valve CV9. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective jib up valve 4H-34. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective counterbalance valve CB8. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **5.** Defective jib cylinder C5. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-10 No Platform Rotation

***Right Rotation***

| | |
|---|---|
| **1.** Stuck or defective proportional flow enable valve 2H-42. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective check valve CV9. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective jib up valve 4H-37. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective counterbalance valve CB11. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **5.** Defective rotary actuator RA1. | **Check actuator. Repair or replace as necessary.** |

***Left Rotation***

| | |
|---|---|
| **1.** Stuck or defective proportional flow enable valve 2H-42. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective check valve CV9. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective jib up valve 4H-36. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective counterbalance valve CB10. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **5.** Defective rotary actuator RA1. | **Check actuator. Repair or replace as necessary.** |

## 4.3-11 Platform will not Level

| | |
|---|---|
| ***Level Down*** | |
| **1.** Stuck or defective platform level down valve 4H-40. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective dual check valve DCV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV8. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective shuttle valve SV3. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV3. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Stuck or defective counterbalance valve CB6. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **7.** Plugged orifice OR2. | **Check orifice. Clean if plugged or replace if defective.** |
| **8.** Defective leveling cylinder C3 or slave cylinder C4. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |
| ***Level Up*** | |
| **1.** Stuck or defective platform level down valve 4H-41. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective dual check valve DCV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV7. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective shuttle valve SV3. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Stuck or defective relief valve RV3. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Stuck or defective counterbalance valve CB7. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **7.** Plugged orifice OR2. | **Check orifice. Clean if plugged or replace if defective.** |
| **8.** Defective leveling cylinder C3 or slave cylinder C4. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-12 Brake will not Release

| | |
|---|---|
| **1.** Stuck or defective shuttle valve SV5. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Defective or misadjusted pressure reducing valve PR1. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **3.** Stuck or defective brake valve 3H-26. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Stuck or defective shuttle valve SV6. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **5.** Defective or misadjusted relief valve RV5. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **6.** Stuck or defective brake release override valve V1. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **7.** Bypassing or defective brake hand pump V3. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |
| **8.** Bypassing or defective brake cylinder BR1. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-13 Brake will not Engage

| | |
|---|---|
| **1.** Brake return spring or defective cylinder. | **Check cylinder. Repair or replace as necessary.** |
| **2.** Brake valve 3H-26 stuck in shifted position. | **Check valve. Replace if defective.** |
| **3.** Brake in axle out of adjustment. | **See section 5 for brake adjustment procedure.** |

## 4.3-14 No Drive

***Forward or Reverse***

| | |
|---|---|
| **1.** Brake not releasing. | **See “brake will not release” in this section.** |
| **2.** Defective or misadjusted charge pump relief valve RV8. | **Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.** |
| **3.** Worn charge pump P1A. | **Check pump. Replace if defective.** |
| **4.** Defective pump displacement control 4H-15 and 4H-16. | **Check control. Replace if defective.** |
| **5.** Open bypass valve V6. | **Close bypass valve.** |
| **6.** Worn or defective drive pump P1. | **Check pump. Replace if defective.** |
| **7.** Worn or defective drive motor M1. | **Check motor. Replace if defective.** |

***Forward Drive***

| | |
|---|---|
| **1.** Defective pump displacement control 4H-16. | **Check control. Replace if defective.** |
| **2.** Defective or misadjusted drive relief valve RV6. | **See section 5 for drive pump set up procedures.** |

***Reverse Drive***

| | |
|---|---|
| **1.** Defective pump displacement control 4H-15. | **Check control. Replace if defective.** |
| **2.** Defective or misadjusted drive relief valve RV7. | **See section 5 for drive pump set up procedures.** |

## 4.3-15 Differential Lock will not Engage

| | |
|---|---|
| **1.** Stuck or defective differential lock valve 3H-165. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Bypassing or defective differential lock cylinder C10. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective** |

## 4.3-16 No High Speed Drive

| | |
|---|---|
| **1.** Stuck or defective 2 speed valve 3H-45. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Defective shift spool in drive motor M1. | **Check motor. Repair or replace if necessary.** |

## 4.3-17 No Steer

***Steer Right***

| | |
|---|---|
| **1.** Stuck or defective right steer valve 4H-23A. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective dual check valve DCV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Plugged orifice OR1. | **Check orifice. Clean if plugged or replace if defective.** |
| **5.** Defective steer cylinder C8 for 4WD or C9 for 2WD. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

***Steer Left***

| | |
|---|---|
| **1.** Stuck or defective right steer valve 4H-24A. | **Clean valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Stuck or defective dual check valve DCV2. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **3.** Stuck or defective check valve CV3. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **4.** Plugged orifice OR1. | **Check orifice. Clean if plugged or replace if defective.** |
| **5.** Defective steer cylinder C8 for 4WD or C9 for 2WD. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |

## 4.3-18 Axle Will Not Oscillate

**NOTE**

*Axle will only oscillate when boom is fully retracted and is no greater than 15 degrees above horizontal.*

| | |
|---|---|
| **1.** Stuck or defective axle lockout valve 3H-65. | **Clean valve. Replace if defective.** |
| **2.** One or more counterbalance valves (CB12 or CB13) failed to shift or is defective. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |

## 4.3-19 Axle Will Not Lock

**NOTE**

*Axle is in constant float if boom is fully retracted and is below 15 degrees of elevation.*

| | |
|---|---|
| **1.** Axle lockout valve 3H-65 is stuck in shifted position or is defective. | **Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.** |
| **2.** Bypassing or defective axle cylinders C6 and C7. | **Check seals on cylinder. Replace as necessary. Replace cylinder if defective.** |
| **3.** Counterbalance valves (CB12 or CB13) out of adjustment or are defective. | **Clean valve. Check O-rings on valve. Repair or replace valve as required.** |

# 4.4 Load Sensing System - CE

## 4.4-1 Green Power LED is not Flashing

| | |
|---|---|
| **1.** Loose or broken wires #60 and #02 at platform terminal block. | **Check for connections. Check for voltage (12V).** |
| **2.** Load cell has lost its calibration. | **Refer to calibration procedure for recalibration of load cell.** |

## 4.4-2 Load Cell red Alarm LED is ON (with platform empty)

| | |
|---|---|
| **1.** Load cell has lost its calibration. | **Refer to calibration procedure for recalibration of load cell.** |

## 4.4-3 Red Error LED is ON

| | |
|---|---|
| **1.** Open safety contact circuit. | **Check for connections with wires #161 and #162A at platform terminal block and base terminal block. Check resistor R6 for 680 ohms.** |

## 4.4-4 Load Cell red Alarm LED is OFF (with platform overloaded)

| | |
|---|---|
| **1.** Load cell has lost its calibration. | **Refer to calibration procedure for recalibration of load cell.** |

## 4.4-5 Platform Indicator Light does not turn ON

| | |
|---|---|
| **1.** Defective lamp. | **Check relay. Replace if defective.** |
| **2.** Defective relay 82CR. | **Check relay. Replace if defective.** |
| **3.** Load cell circuit not operating. | **Check for connections with wire #02A at pilot light strip and relay 82CR, and wire #82 at platform terminal block and relay 82CR.** |
| **4.** Defective load cell. | **Defective if 0V is measured between wire #82 and #02 from platform terminal block.** |

## 4.4-6 Audible Alarm does not turn ON

| | |
|---|---|
| **1.** Defective alarm BP3. | **Check alarm. Replace if defective.** |
| **2.** Open or defective diode D118. | **Check diode. Replace if defective.** |
| **3.** Load cell circuit not operating. | **Check for connections with wires #02A and #118 at platform terminal block.** |
| **4.** Defective load cell. | **Defective if 0V is measured between wire #118 and #02 from platform terminal block.** |

## 4.4-7 Boom and Drive Functions are Enabled (with boom extended)

| | |
|---|---|
| **1.** “Fly IN” limit switch LS3 is not operating properly. | **Check for voltage (0V) between wires #59 and #02 from platform terminal block. If 12V is measured, check for proper actuation of limit switch. Readjust limit switch if necessary.** |
| **2.** Defective load cell. Safety contact remains closed. | **Check for voltage (0V) between wires #162A and #02 from base terminal block. Defective if 12V is measured.** |

# Section 5 – Procedures

## 5.1 General

The following information is provided to assist you in the use and application of servicing and maintenance procedures contained in this chapter.

**NOTE**

*The illustrations shown in this manual are for instructional purposes only. The models and components shown may appear somewhat different from those on your actual MEWP.*

### 5.1-1 Safety and Workmanship

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

Unless specifically noted otherwise, before beginning any procedure:

1. Park the mobile elevating work platform (MEWP) on a firm, level surface.
2. Retract and lower the boom, riser, and platform until the MEWP is in the stowed position.
3. Turn the engine off.
4. Pull out the emergency stop buttons on the base controls and on the platform controls.
5. Turn the battery disconnect switch to the off position ◯ .

After completing any procedure which involves modifying, adjusting, or replacing any hydraulic or electrical components, perform all of the function tests given in your unit's Operating Manual.

**⚠ WARNING**

**Ensure you maintain three points of contact when mounting/dismounting the platform.**

**⚠ WARNING**

**DO NOT operate any control on the platform control console without proper fall protection secured to the designated location in the platform. Failure to avoid this hazard could result in death or serious injury!**

**⚠ WARNING**

**Ensure there are no people or obstructions in the test area, and there is sufficient space for the boom and drive functions required for the given procedures.**

# 5.2 Platform

## 5.2-1 Human Machine Interface (HMI)

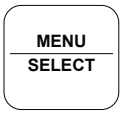
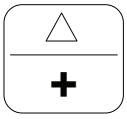
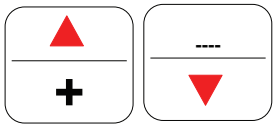
Maintaining proper calibration is essential for the good performance of the MEWP.

To access the SCM console, open the platform control cover.

The SCM has an integrated multi segment, two line display with membrane keys that allow it to be used as the main interface to system controls and adjustments. The Human Machine Interface (referred to as the HMI) will serve as your window into the application software to allow the operator to monitor/adjust the following information:

- Active Function Being Used
- Part Number and Serial Number
- Restore the Factory Default Settings
- Output Calibrations (Tresh, Max, Ramp.etc)
- I-O Status
- CANBus Status

## 5.2-2 User Interface Keys

| | | |
|---|---|---|
| 1.0 |  | 1.0-1 <MENU> Enters a new menu screen and/or<br>1.0-2 <SELECT> select the flashing item. |
| 1.1 |  | 1.1-1 <MINUS> Decreases an adjustable parameter such as ramp time.<br>1.1-2 <DOWN> Selects the previous item in the current menu's list. |
| 1.2 |  | 1.2-1 <PLUS> Increases an adjustable parameter.<br>1.2-2 <UP> selects the next item in the current menu's list. |
| 1.3 |  | 1.3-1 <SAVE> Saves the new data to EEPROM (permanent memory storage). |
| 1.4 |  | Simultaneously pressing <UP> and <DOWN> resets the HMI to menu screen 0. |

## 5.2-3 SCM Character Functions Charts

| SCM Keypad | |
|---|---|
| **Keys** | **Short Form** |
| Menu/Select | (M/S) |
| ▼/- | (-) |
| ▲/+ | (+) |
| Save/Exit | (S/E) |

| Function Attribute | |
|---|---|
| THRESH | Threshold |
| RAMPDN | Ramp Down |
| RAMPUP | Ramp Up |
| LOWRNG | Low Range |
| MAXOUT | Maximum Output |

*1345AA*

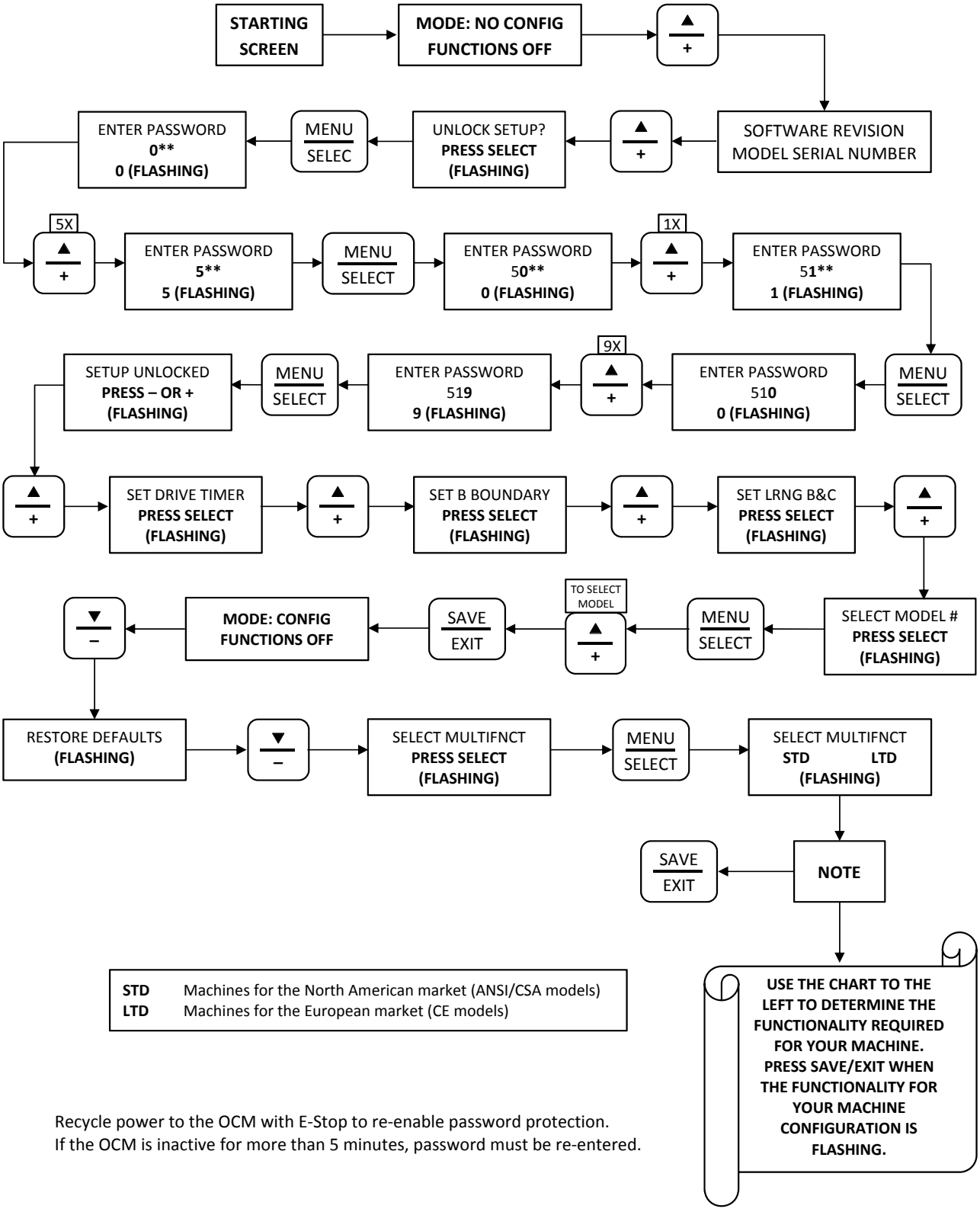
| SCM Function (Channel) Names | |
|---|---|
| DRIVE REV Fn01A | Drive Reverse |
| DRIVE FWD Fn01B | Drive Forward |
| ROTATE L Fn02A | Turret Rotate Left |
| ROTATE R Fn02B | Turret Rotate Right |
| BOOM DOWN Fn03A | Main Boom Down |
| BOOM UP Fn03B | Main Boom Up |
| FLY IN Fn04A | Boom Telescope Retract |
| FLY OUT Fn04B | Boom Telescope Extend |
| PROP FLOW Fn05A | Jib and Platform Rotate |
| PROP FLOW Fn05B | Unused Channel |
| LR REV Fn06A | Virtual Channel |
| LR FWD Fn06B | Virtual Channel |
| TILT INDICATOR Fn06A | Virtual Channel D7 |

## 5.2-4 SCM Operating Values Chart

| Input | Description |
|---|---|
| AI 1 | Drive Controller |
| AI 2 | Turret Rotation Controller |
| AI 3 | Boom Elevation Controller |
| AI 4 | Flow Enable Rotary Potentiometer |
| AI 6 | Fly Control |
| DI 1 | Drive Direction Reverse (Limit Switch) |
| DI 2 | Footswitch Actuated |
| DI 3 | Platform Rotation Enables |
| DI 4 | Tilt Switch Active |
| DI 5 | Jib Elevation |
| DI 11 | High Speed Drive Enable (Limit Switch) |
| **Output** | **Description** |
| PWM 1 | Drive Reverse |
| PWM 2 | Drive Forward |
| PWM 3 | Brakes Applied |
| PWM 4 | Holding Brake Off |
| PWM 5 | Main Boom Down |
| PWM 6 | Main Boom Up |
| PWM 7 | Rotate Left |
| PWM 8 | Rotate Right |
| PWM 9 | Fly Out |
| PWM 10 | Fly In |
| **Output** | **Description** |
| DOUT 1 | Steering Reverse Relay |
| DOUT 2 | Load Sense Valve Enable |
| DOUT 3 | Footswitch Actuated Indicator |
| DOUT 4 | Axle Lock |
| DOUT 7 | Tilt Alarm Indicator |

*1371AD*

## 5.2-5 How to Select Functionality



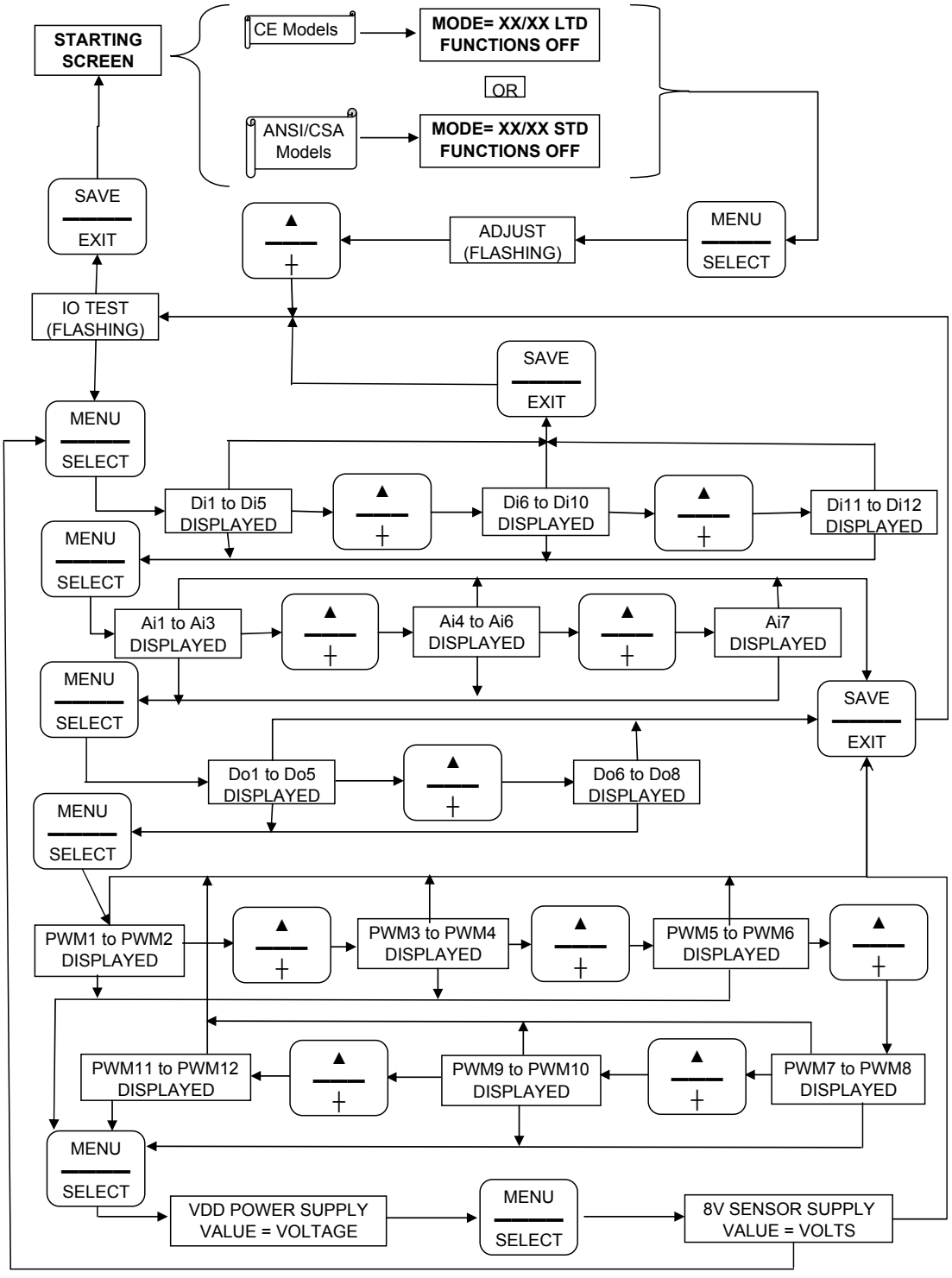

| | |
|---|---|
| **STD** | Machines for the North American market (ANSI/CSA models) |
| **LTD** | Machines for the European market (CE models) |

Recycle power to the OCM with E-Stop to re-enable password protection.
If the OCM is inactive for more than 5 minutes, password must be re-entered.

## 5.2-6 How to View OCM Operation

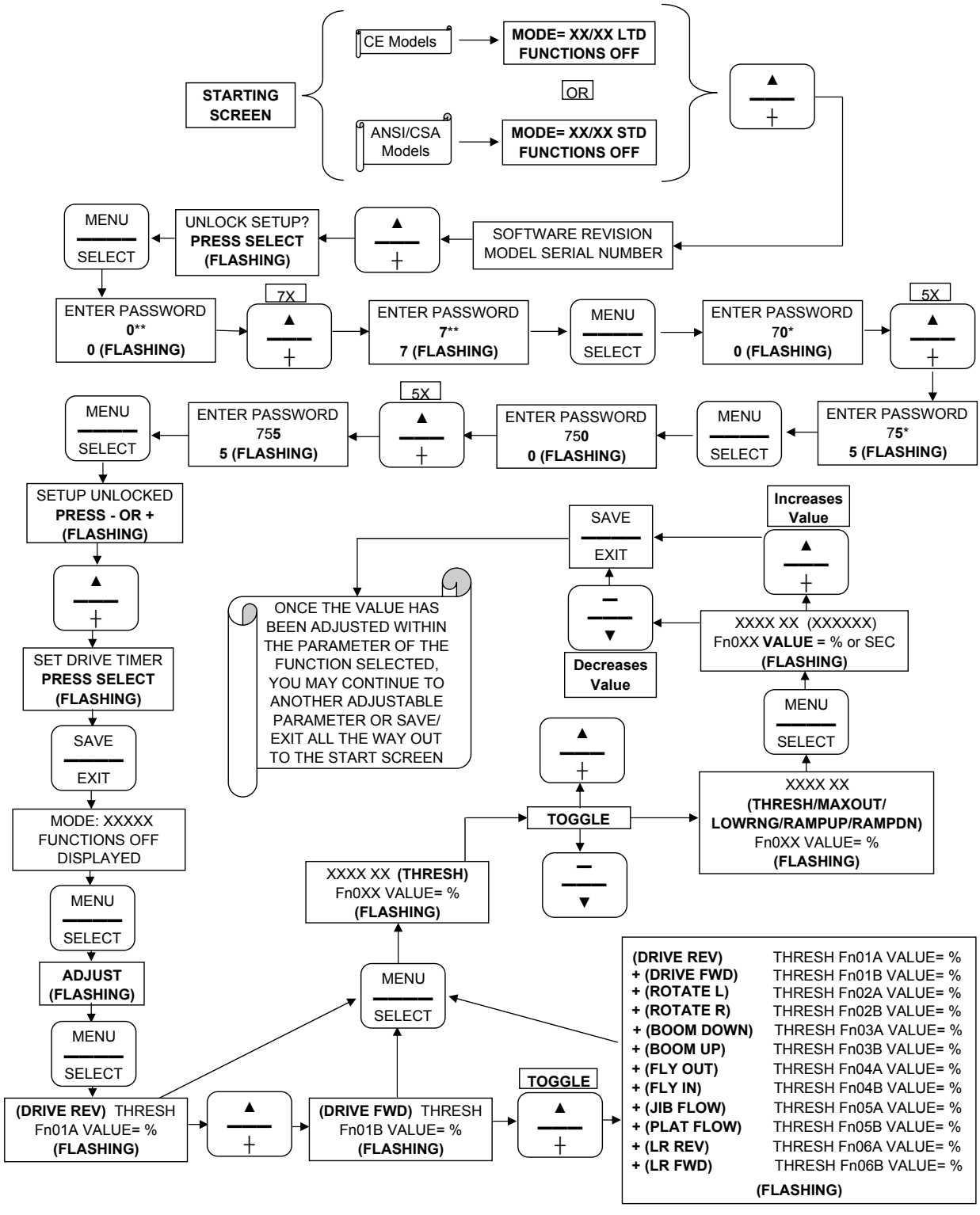
As a joystick or toggle switch is being activated, the OCM screen will display the active function and % output.

Also, the following procedure will allow monitoring of all input and output channels:




See 5.2-4 SCM Operating Values Chart for operating values for the previous observations.

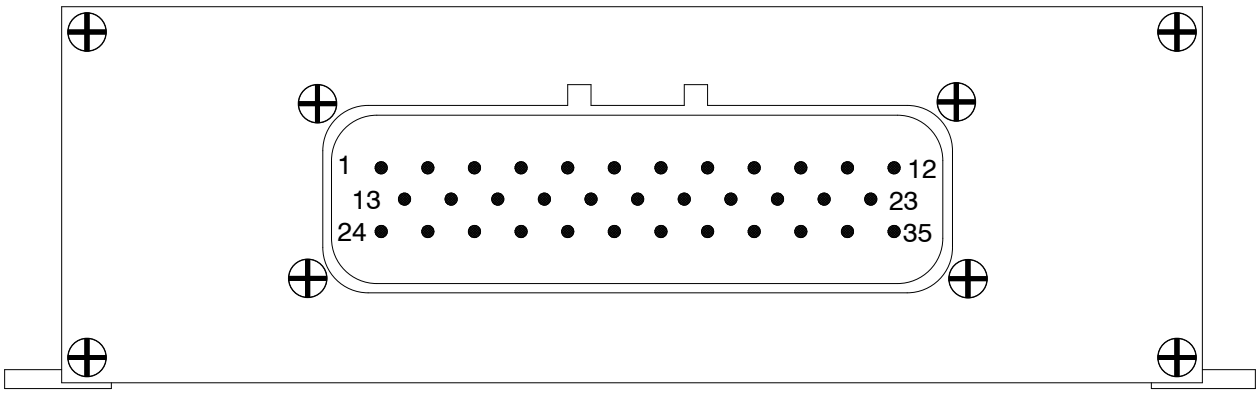
## 5.2-7 How to Unlock and Modify OCM Settings




Recycle power to the OCM with the E-Stop to re-enable password protection.

If the OCM is inactive for more than 5 minutes, password must be re-entered.

## 5.2-8 OCM Pin Voltage Reference




All voltages given are with OCM controller at maximum % adjustable settings.
All voltages should be tested with key on, engine off and foot switch depressed.
All tests should be performed with platform over drive axle, boom fully stowed and on flat level surface.

Pin 1 - 12 volt input from wire 4.
Test between pin 1 and 02 wire.

Pin 2 - 12 volt input from wire 4.
Test between pin 2 and 02 wire.

Pin 3 - 8 volt output (purple wire) to boom speed controller.
7.5 volts= speed control in circuit. Test between pin 3 and 02 wire.

Pin 4 - Turret position. 12 volt output on wire 17A to relays 17ACR1 and 17ACR2 for directional sensing.
0 volts= Platform over drive axle.
12 volts= Platform over steer axle. Test between pin 4 and 02 wire.

Pin 5 - 12 volt output on wire 20B to load sense dump valve when any function selected.
Test between pin 5 and 02 wire while selecting a function.

Pin 6 - 12 volt output on wire 08 to boom control switches.
Test between pin 6 and 02 wire.

Pin 7 - 12 volt output on wire 65 to axle lock valve 3H-65 to float axle. 0 volts when above limit switches.
Test between pin 7 and 02 wire.

Pin 8 - Boom down selected. Proportional output on wire 13 to boom down valve 4H-13.
0 volts to 4.85 volts depending on position of joystick. Threshold= 1.5 volts. Test between pin 8 and 02 wire while operating boom down.

Pin 9 - Telescope in selected. Proportional output on wire 38 to telescope in valve 3H-38.
0 volts to 4.65 volts depending on boom speed control potentiometer.
Threshold= .95 volts.
Test between pin 9 and 02 wire while operating telescope in.

Pin 10 - 12 volt output on wire 26 to brake valve 3H-26 to release brakes.
Test between pin 10 and 02 wire.

Pin 11- 12 volt output on wire 27 to tilt alarm relay 27CR.
Test between pin 11 and 02 wire.

Pin 12 - Telescope out selected. Proportional output on wire 39 to telescope out valve 3H-39.
0 volts to 6.8 volts depending on boom speed control potentiometer position. Threshold= .95 volts.
Test between pin 12 and 02 wire while operating telescope out.

Pin 13 - 12 volt input from wire 4.
Test between pin 13 and 02 wire.

Pin 14 - Variable input from wire 128A.
1 volt to 5 volts depending on angle of machine.
1 volt = Level.
Test between pin 14 and 02 wire.

Pin 15 - Turret position. 12 volt input from wire 17 (limit switch LS1).
0 volts= Platform over drive axle.
12 volts= Platform over steer axle.
Test between 15 and 02 wire.

Pin 16 - Foot switch activated. 12 volt input from wire 08A.
Test between pin 16 and 02 wire.

Pin 17 - Platform rotate selected. 12 volt input from wire 36A.
Test between pin 17 and 02 wire.

Pin 18 - 12 volt input from angle sensor on wire 28. 12V= <5 degrees.
Test between pin 18 and 02 wire.

Pin 19 - Diff. lock enable toggle switch (ANSI/CSA & CE) / Platform level toggle switch (CE only).
Driving = 0 volts
Not driving = 12 to 13.5 volts

Pin 20 - Turret rotate left selected. Proportional output on wire 32 to turret rotate left valve 4H-32.
0 volts to 5 volts depending on position of joystick. Threshold= .5 volts. Test between pin 20 and 02 wire while operating turret rotate left.

Pin 21 - Platform rotate or jib function selected. Proportional output on wire 42 to proportional flow enable valve 2H-42.
0 volts to 3.85 volts while operating platform rotate depending on boom speed control potentiometer position. Threshold= 2.3 volts.
0 volts to 9 volts while operating jib function depending on boom speed control potentiometer position. Threshold= 2.3 volts.
Test between pin 21 and 02 wire.

Pin 22 - Boom up selected. Proportional output on wire 14 to boom up valve 4H-14.
0 volts to 6.3 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 22 and 02 wire while operating boom up.

Pin 23 - Reverse drive selected. Proportional output on wire 15 to reverse drive valve 3H-15.
0 volts to 7.5 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 23 and 02 wire while operating reverse drive.

Pin 24 - Battery negative. Wire 02.

Pin 25 - Battery negative. Wire 02.

Pin 26 - Battery negative. Wire 02.

Pin 27 - Accelerator input. Wire D from drive joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Forward function= 4.9 volts to 8.5 volts. Reverse function= 4.1 volts to .5 volts. Test between pin 27 and 02 wire.

Pin 28 - Turret rotate input. Wire X from boom joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Rotate right function= 4.9 volts to 8.5 volts. Rotate left function= 4.1 volts to .5 volts. Test between pin 28 and 02 wire.

Pin 29 - Boom elevation input. Wire Y from boom joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Boom up function= 4.9 volts to 8.5 volts. Boom down function= 4.1 volts to .5 volts. Test between pin 29 and 02 wire.

Pin 30 - Accelerator input. Signal wire (green wire) from boom speed controller.
Proportional voltage. .5 volts= slow speed up to 7.5 volts= fast speed.
Test between pin 30 and 02 wire while operating telescope in/out, jib up/down or basket rotate.

Pin 31 - 12 volt input from wire 59. From LS2 boom elevation limit switch and LS3 telescope limit switch.
12 volts= full speed. 0 volts= creep speed (one or more limit switches open). Test between pin 31 and 02 wire.

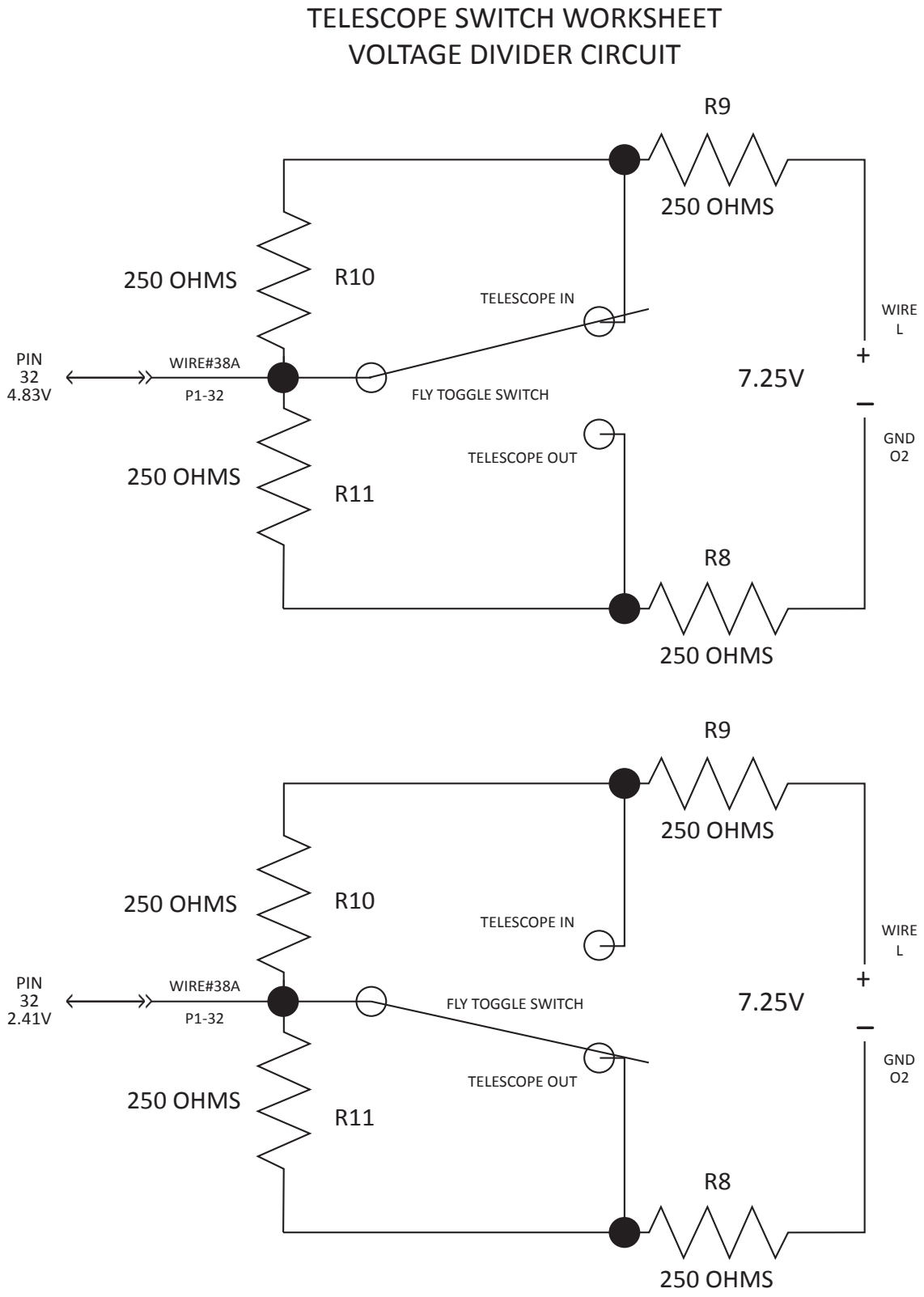
Pin 32 - Telescope selected. Input from wire 38A.
Neutral position= 3.58 volts.
Telescope in function= 4.83 volts.
Telescope out function= 2.41 volts.
Test between pin 32 and 02 wire.

Pin 33 - Jib function enable. 12 volt input from wire 34A.
Test between pin 33 and 02 wire.

Pin 34 - Forward drive selected. Proportional output on wire 16 to forward drive valve 3H-16.
0 volts to 7.5 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 34 and 02 wire while operating forward drive.

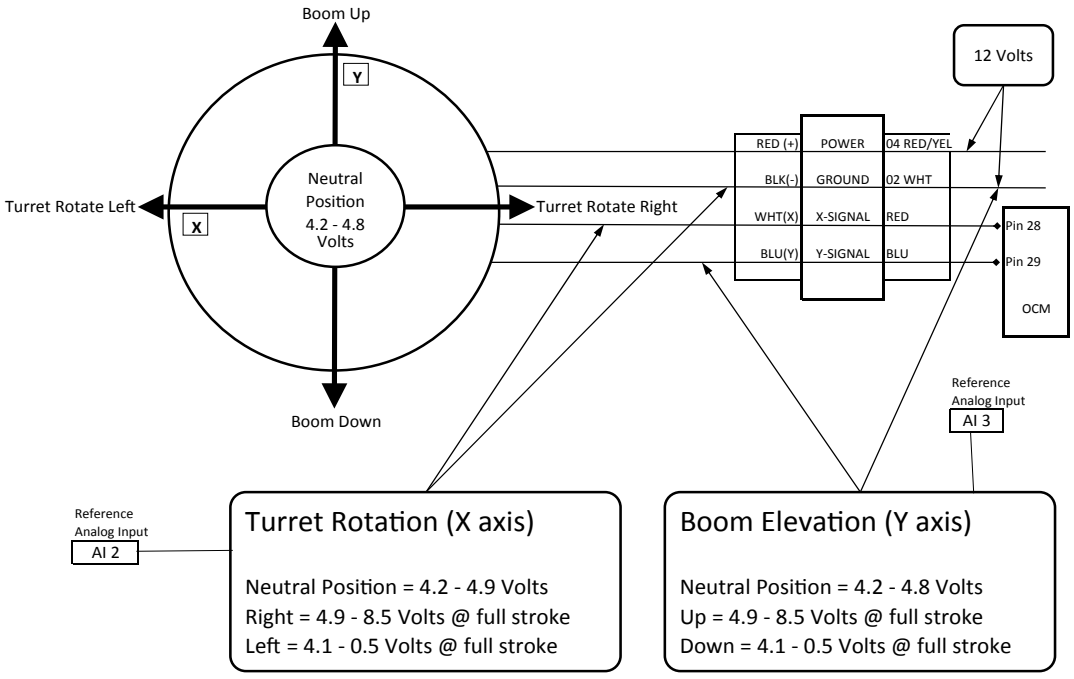
Pin 35 - Turret rotate right selected. Proportional output on wire 33 to turret rotate right valve 4H-33.
0 volts to 5 volts depending on position of joystick. Threshold= .5 volts. Test between pin 10 and 02 wire while operating turret rotate right.

## 5.2-9 Fly Boom Switch Voltage References

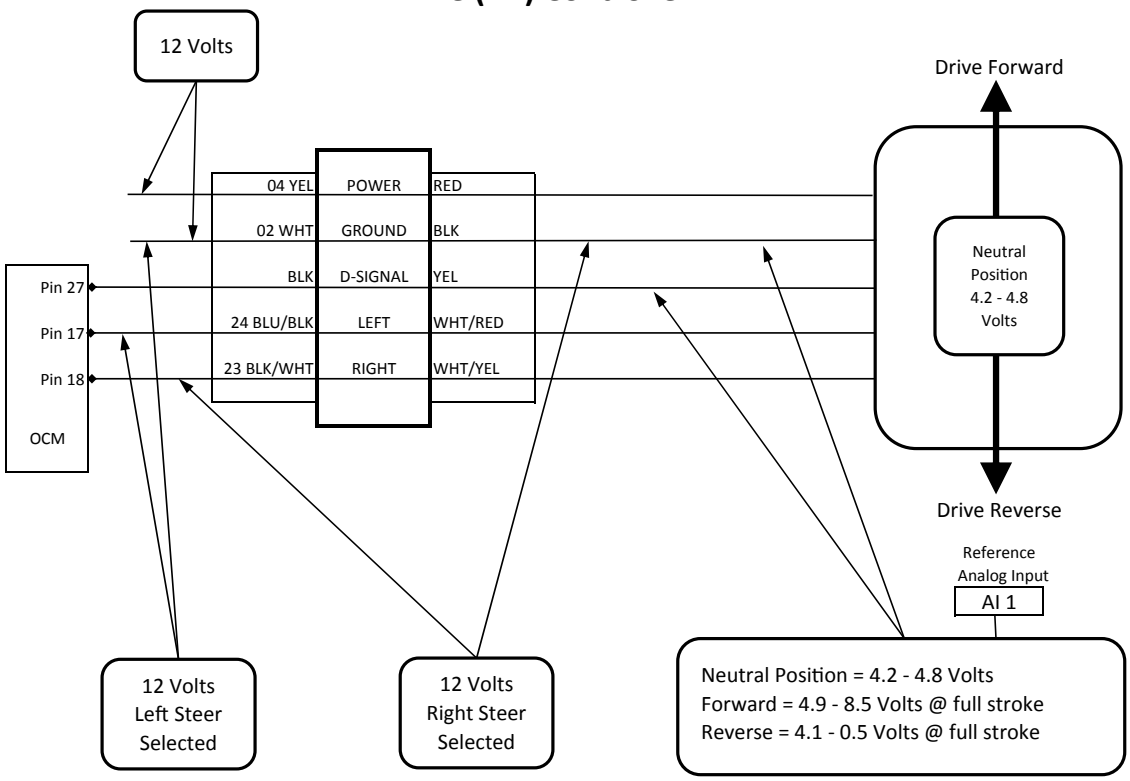


## 5.2-10 Platform Controller Voltage References

### Boom/Turret (A1) Controller




### Drive (A2) Controller



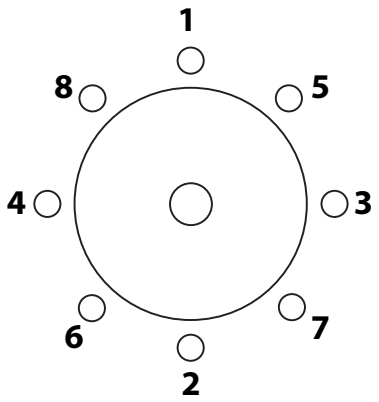
# 5.3 Boom

## 5.3-1 Rotary Actuator Bolt Torque Procedure

**⚠ WARNING**

**Maintaining proper torque is essential to safe MEWP operation. Improper bolt torque could result in an unsafe operating condition and component damage.**

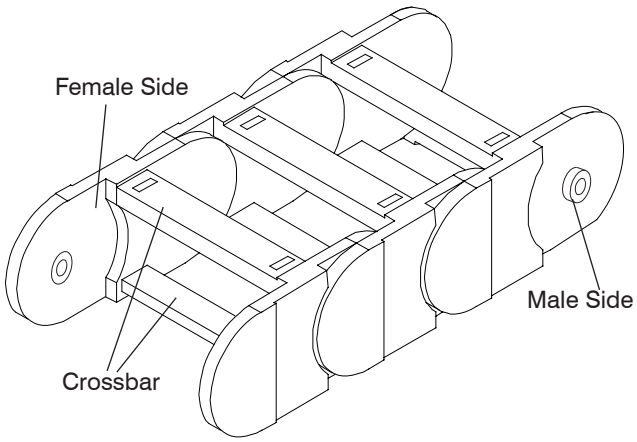
1. Set the torque wrench to 23 Nm (17 ft-lb) and tighten the mounting bolts in a cross pattern sequence.




2. Set the torque wrench to 47 Nm (35 ft-lb) and tighten the mounting bolts with the same sequence.
3. Torque the center bolt to 650 Nm (480 ft-lb).

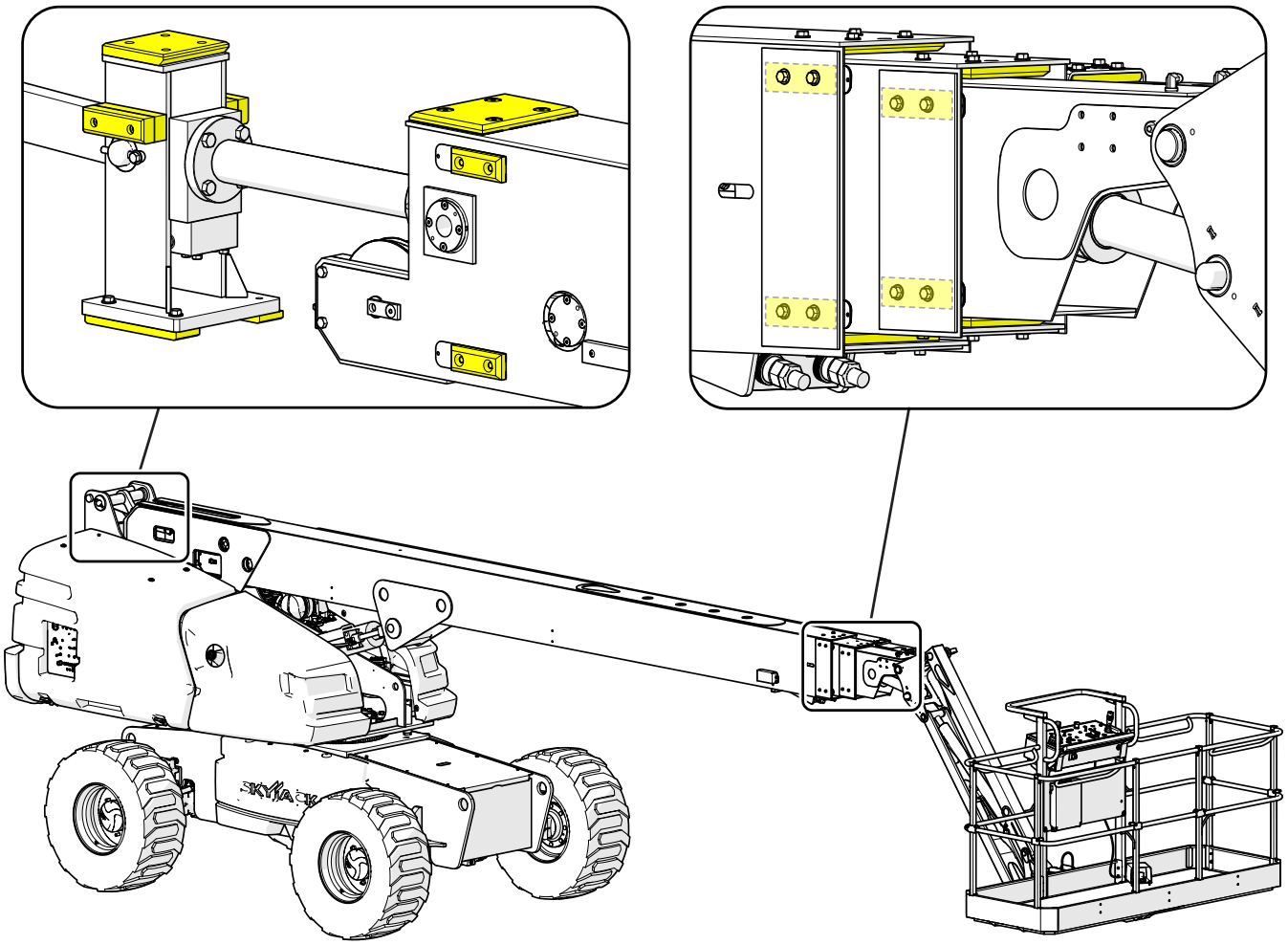
## 5.3-2 Cable Carrier Repair

To repair the cable carrier, simply use a screwdriver. Snap each crossbar off from either side of the chain, either by hand or by using the screwdriver as a lever. Install new crossbars by snapping the links together.



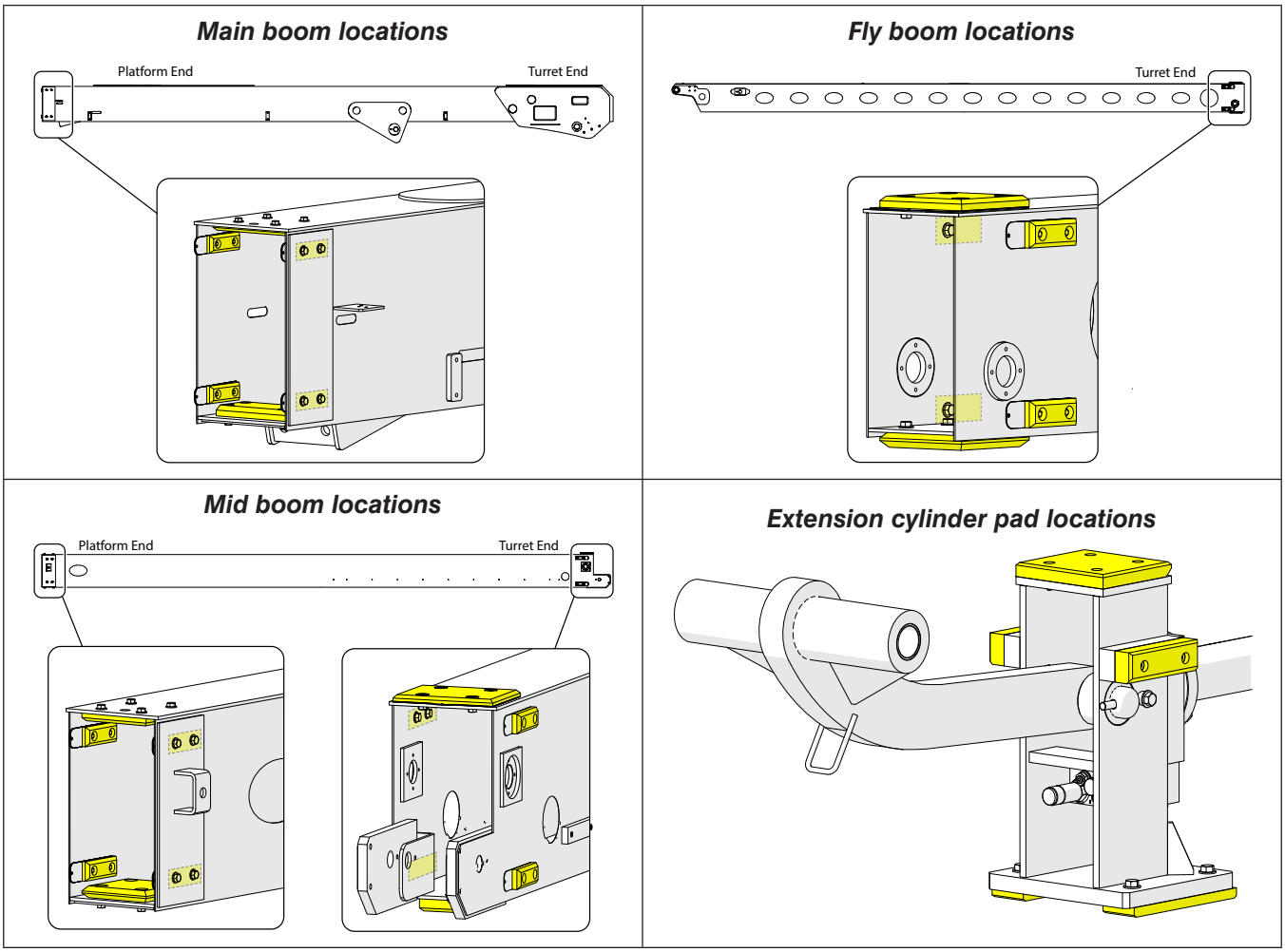
## 5.3-3 Check Wear Pads

1. Park the MEWP on a firm level surface.
2. Adjust the boom height and extension as required to inspect all wear pads. Refer to the wear pad location diagrams on this and the following page.
3. Inspect the wear pads for excessive wear, damage, and loose or missing mounting hardware. Also, check for indications of uneven wear and damage to the wear pads and pad contact surfaces.
4. Replace all wear pads that are damaged or have more than 3mm (0.120”) of wear.
5. If the wear pad is within the specified thickness, shim it as necessary. Use Loctite 242 or 243 whenever a fastener is removed or loosened.
6. If there is damage or uneven wear, check for debris in the boom. Make sure the correct fasteners are installed and torqued to specifications. Also, check that the appropriate number of shims are installed.
7. If there is damage (such as gouging) to the pad mating surfaces or any other part of the boom structure, contact Skyjack service.



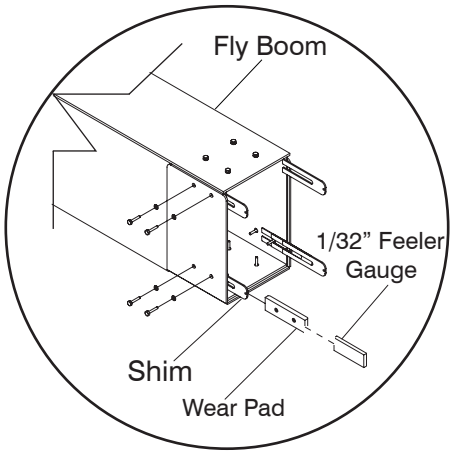
***General locations of the wear pads***

Wear pads are located at the ends of each boom section (main, mid, fly), and at the base of the extension cylinder assembly.




## 5.3-4 Shim Wear Pads

1. Make sure the MEWP is on a firm level surface and is in the stowed position.
2. Raise the main boom to a comfortable working height (chest high) and extend the fly boom until the wear pads are accessible.
3. Loosen the wear pad fasteners.
4. Shim the wear pads as necessary to obtain zero to 0.8 mm (1/32”) clearance and zero drag.
5. Extend and retract the fly boom through the entire range of motion and observe for loose points.




**NOTE**

*Always maintain squareness between the boom’s outer and inner tubes.*

## 5.3-5 Boom Section Wear Pad Replacement

If wear pads inside the boom sections are worn and cannot be shimmed to meet the specification, they must be replaced. Wear pads that are worn past the specification can impair machine operation. For wear pad limit specification, refer 5.3-3 Check Wear Pads.

**⚠ WARNING**

**Use original or manufacturer-approved parts and components for the MEWP.**

The boom sections must be disassembled to replace the wear pads. Typically the bottom platform-end and the top counterweight-end pads on each boom section wear out first. Check which ones need to be replaced before disassembly.

**NOTE**

*To disassemble the boom sections, the extension cylinder and cable assembly inside the boom must be removed first. See* 5.3-17 Extension Cylinder and Cable Assembly Removal.

To disassemble the boom sections, the fly boom and mid boom must be slid fully out of the main boom. Provide enough space at the platform end of the machine at least the length of the boom assembly.

Preparation:

- Remove the jib boom and the platform before disassembly. Removing these components limits twisting when lifting, and provides better control when sliding the boom sections out. See 5.3-6 Platform and Jib Boom Removal. If the machine does not have a jib boom, just the platform is removed.
- Before beginning, place the machine in the proper shut down position, parked on level ground.
- Make sure the e-stops are pushed in and the key is off.
- Turn the main power disconnect switch off. Lock out the switch.

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage if repositioning boom during this procedure. Use the base controls with auxiliary power (engine off) to reposition it safely.**

**⚠ IMPORTANT**

**If boom repositioning is necessary during this procedure, select the emergency power position from the start–function enable–emergency power switch, then activate the desired boom function.**

**To avoid overloading the 12-volt auxiliary pump motor, when operating on auxiliary power, do not operate more than one function at a time.**

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage. Always use suitable lifting equipment and safe rigging practices when performing the following procedures.**

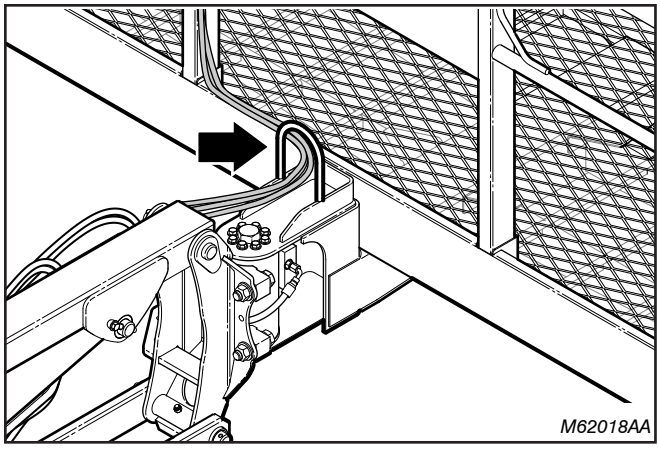
**NOTE**

*If boom repositioning is required with the platform removed and the control cables disconnected, reconnect the two main (24 pin) control cables and the jib and platform rotate harness (if equipped) to the platform control box. See* 5.3-15 Platform Control Console Connection.

*The machine cannot operate with the two platform control harnesses disconnected.*

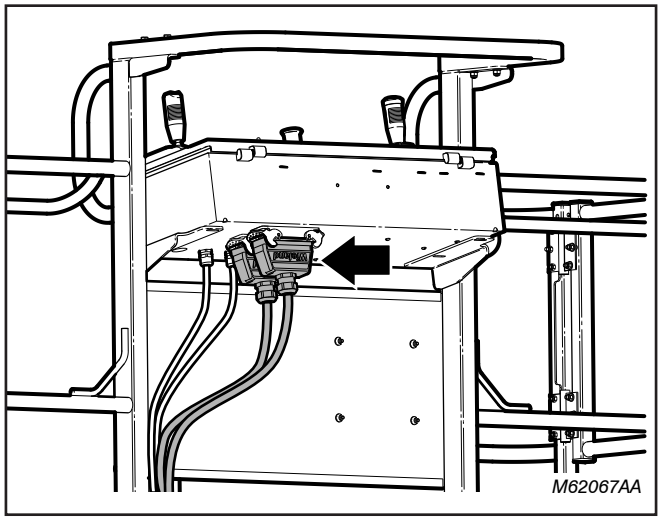
## 5.3-6 Platform and Jib Boom Removal

Before removing the platform and jib boom from the machine, the electrical harnesses routed across the platform swivel joint must be disconnected.

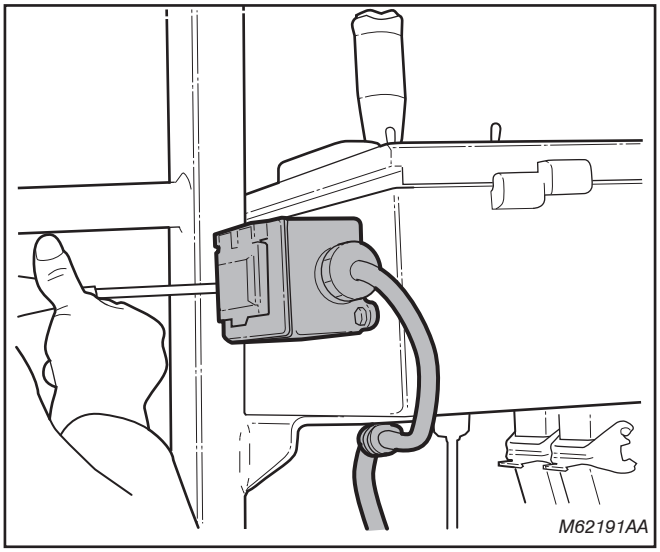

M62018AA

**Procedure :**

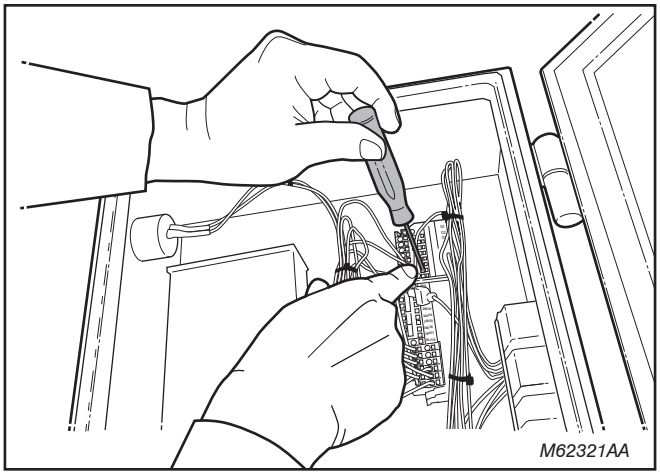
1. Disconnect the two 24-pin control cables from the bottom of the control box.


M62067AA

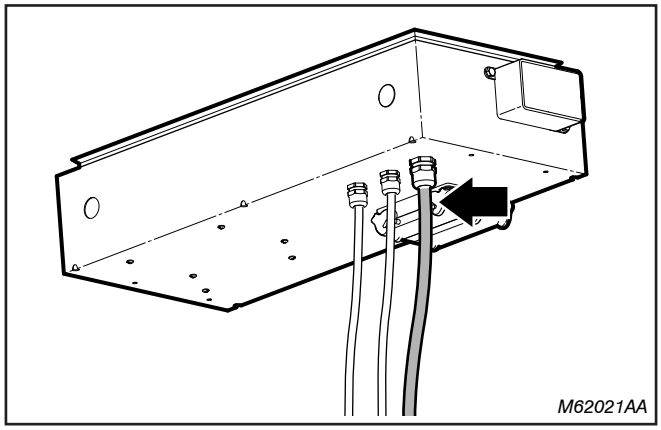
2. Remove the auxiliary AC receptacle box (if equipped) if its harness is bundled with the other harnesses. Remove the harness clamps.


M62191AA

3. Open the control console lid to disconnect the jib and platform rotate harness.
4. Remove tie wraps and make note of the wire labels for reinstallation. To release each wire, insert a small flat screwdriver into the slot beside it in the terminal strip.

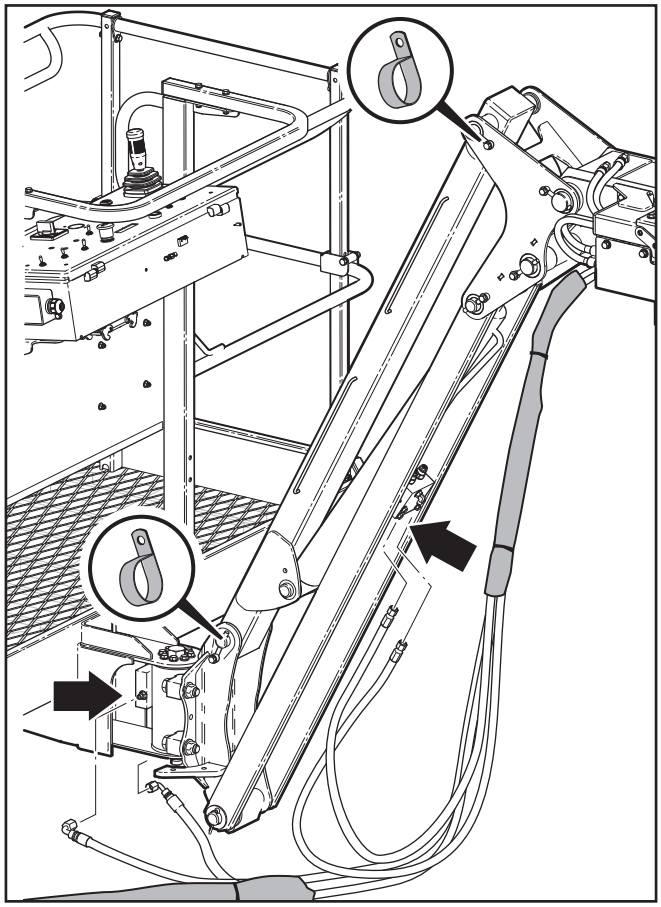

M62321AA

5. Pull the disconnected harness out of the strain relief connector in the box.



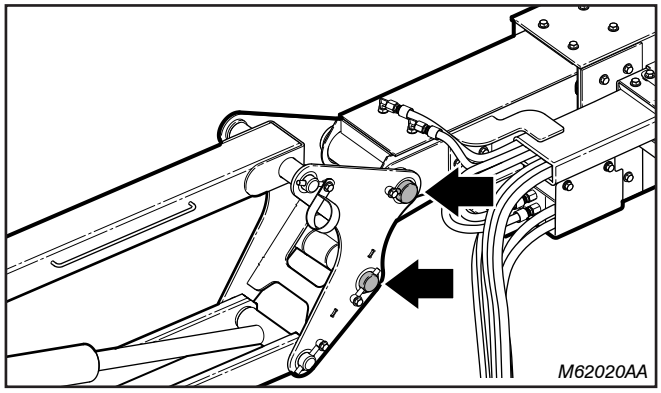

6. Pull all harnesses through the cable guard on the swivel joint.
7. Mark and disconnect the hydraulic hoses for the jib cylinder and the platform rotary actuator. Provide a suitable container or rags to catch any oil spillage. Cap the hoses and ports to keep them clean.

8. Remove the hoses and wire cable bundle from the P-clamps on the side of the jib boom.



9. Using suitable lift equipment and safe rigging practices, connect lifting slings to the jib boom and platform. Tension the slings enough to lightly take the weight off the mounting bracket pins.

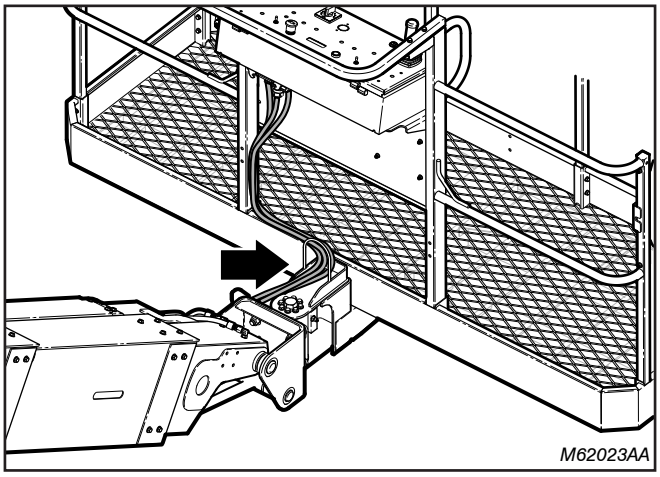
**10.** Remove the pins mounting the jib boom to the fly boom and the slave cylinder.




**11.** Carefully move the jib/platform assembly away from the end of the machine. Set it down on suitable blocking nearby. Place it close enough to the end of the main boom so the control cables can be reconnected if boom repositioning is required.

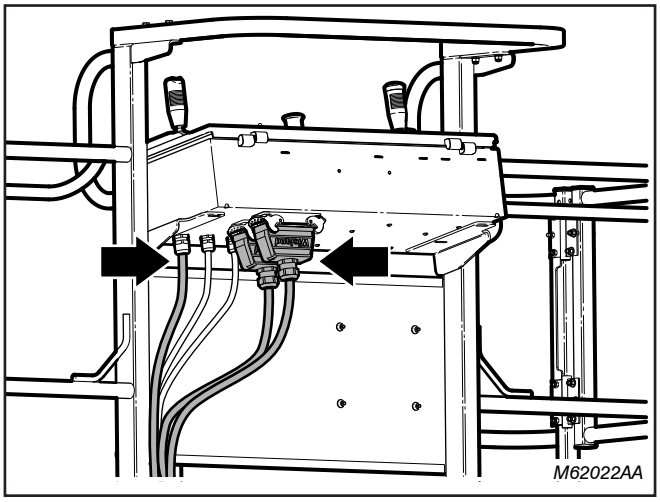
## 5.3-7 Platform Removal (no Jib Boom)

Before removing the platform from the machine, disconnect the electrical harnesses routed across the platform swivel joint.

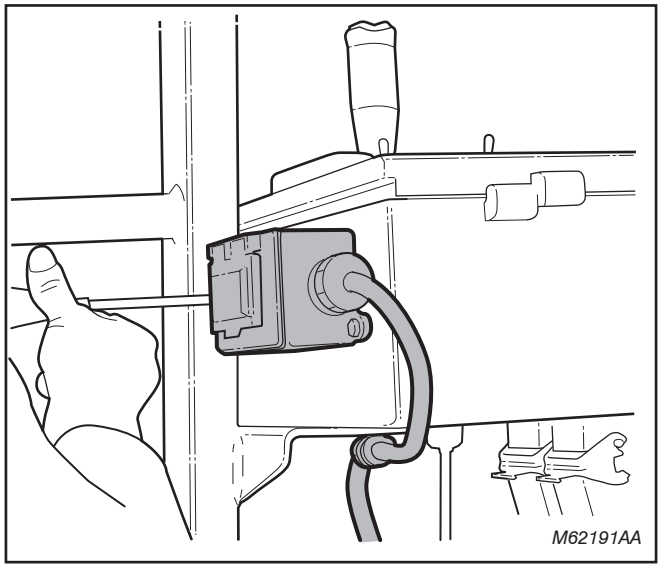



Procedure

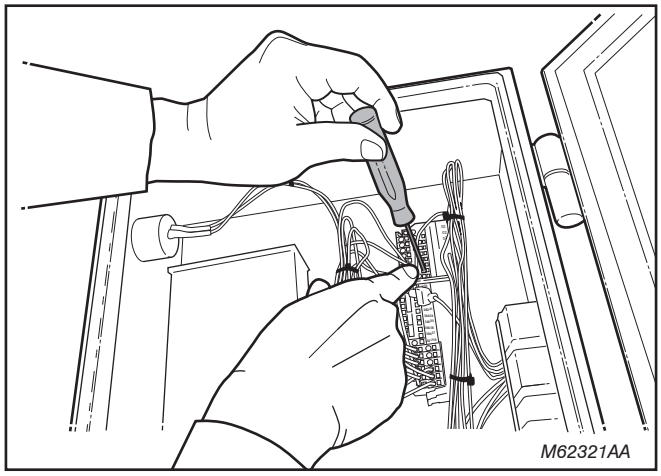
**1.** Disconnect the two 24-pin control cables from the control box.



2. Remove the auxiliary AC receptacle box (if equipped) if its harness is bundled with the other harnesses. Remove the harness clamps.

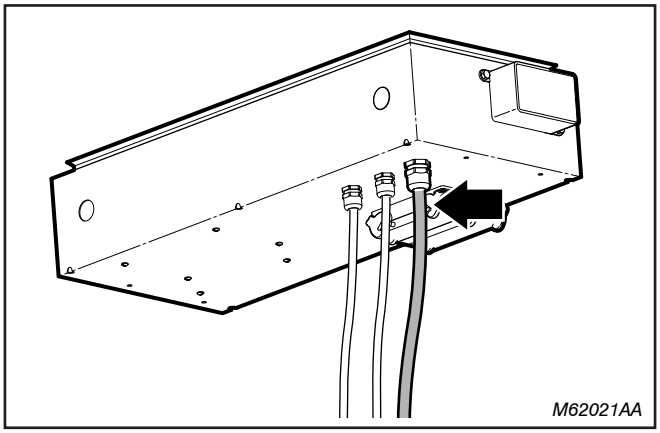



3. Open the control console lid to disconnect the jib and platform rotate harness.
4. Remove tie wraps and make note of wire labels for reinstallation.
5. To release each wire, insert a small flat screwdriver into the slot beside it in the terminal strip.



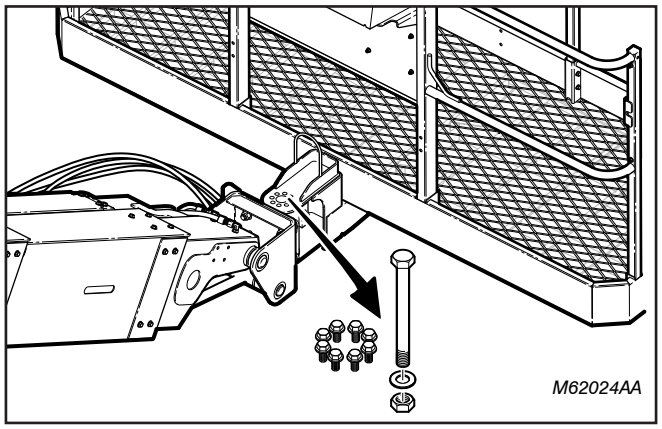

***Control Console***

6. Pull the disconnected harness out of the strain relief connector in the box.




7. Pull all harnesses through the cable guard on the swivel joint.
8. Remove the hoses and wire cables from the P-clamp on the side of the fly boom.

9. Using suitable lift equipment and safe rigging practices, attach slings to the platform assembly. Tension the slings to lightly support the platform.
10. Remove the 8 bolts that secure the rotary actuator to the platform base mount.
11. Remove the main pivot bolt.




12. Carefully move the platform assembly away from the end of the machine. Set it down on suitable blocking nearby. Place it close enough to the end of the main boom so the control cables can be reconnected in the event boom repositioning is required.

## 5.3-8 Operating Machine Functions from the Base Controls

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage if repositioning the boom with the platform removed. Use the base controls with auxiliary power (engine off) to reposition it safely.**

If boom repositioning is necessary with the platform removed, reconnect the two cable harnesses and the jib (if equipped) and platform rotate harness to the platform control box.

**⚠ IMPORTANT**

**If boom repositioning is necessary during this procedure, select emergency power position from the start–function enable–emergency power switch, then activate the desired boom function.**

**When operating on auxiliary power, do not operate more than one function at a time to avoid overloading the 12-volt auxiliary pump motor.**

**⚠ IMPORTANT**

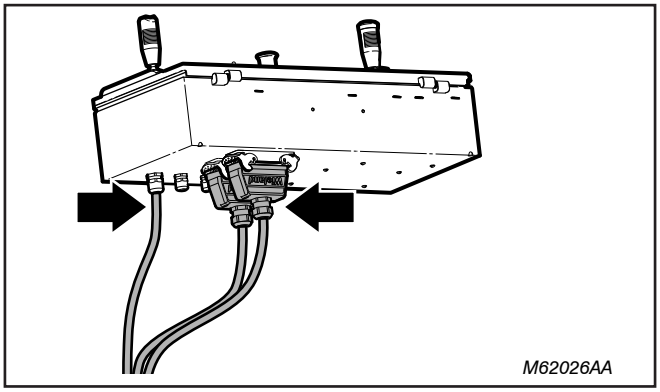
**Be aware that the short length of control cables connected to the platform control box limits boom movement.**

**Procedure :**

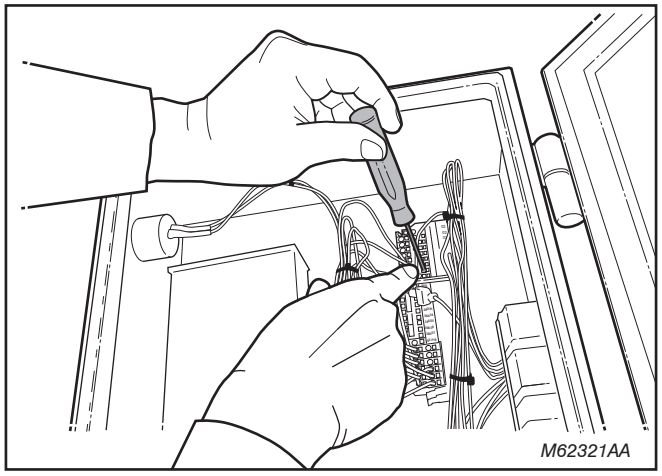
1. Connect the jib and platform rotate harness as shown on the diagram 3.23 Harnesses.

**⚠ WARNING**

**Use original or manufacturer-approved parts and components for the MEWP.**



2. Pull the jib and platform rotate harness through the strain relief connector on the bottom of the box and tighten the connector. Make sure the wires can reach the terminal block on the left-hand side on the box. Note the color and markings for each wire.
3. Insert a small flat screwdriver into the slot beside the wire position in the terminal strip to depress the spring mechanism. Insert the end of the wire, then pull out the screwdriver to secure it.



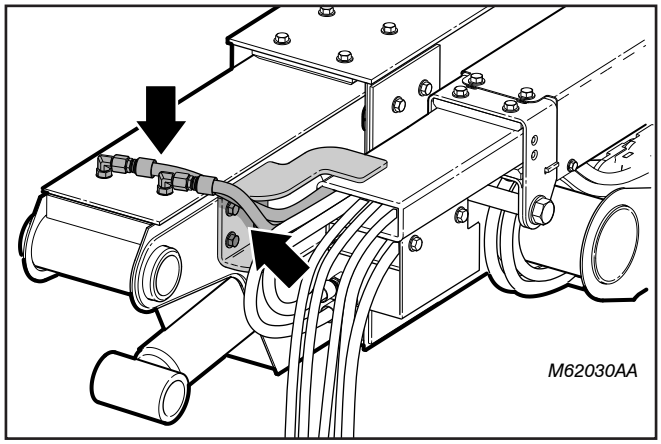

***Control Console***

4. Once the wires are all connected, close the lid and turn the two box latches to fasten it.

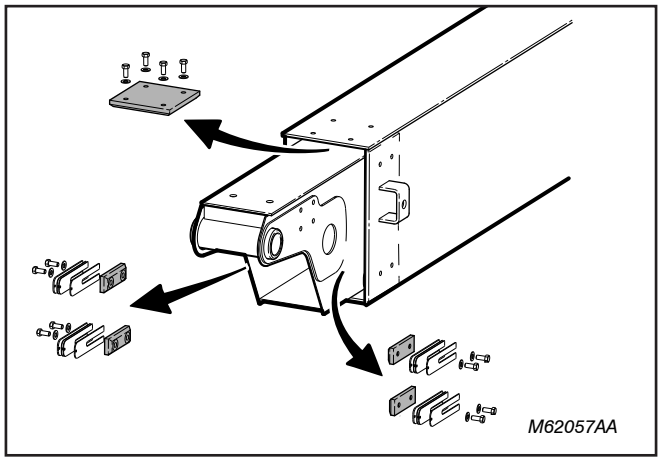
The machine can now be operated for boom repositioning purposes. Refer to the operator's manual for information on using emergency power.

## 5.3-9 Fly Boom Section Removal

1. On the platform end of the boom, mark and remove the slave cylinder hoses on the top side of the fly boom tip. Crack the lines slowly to relieve any residual pressure. Use a suitable container or rags to catch any oil spillage. Cap the hoses and ports to keep them clean.
2. Remove the fasteners for the cable/hose tube support on the side of the fly boom.

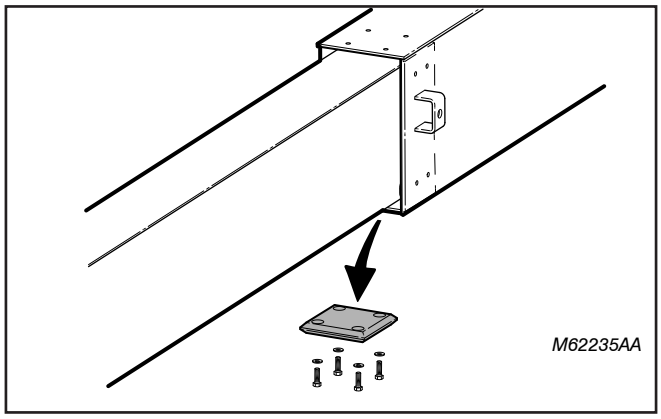



3. Remove the top and side wear pads and shims inside the platform end of the mid boom. Store the shims with the appropriate parts for reassembly.




4. Place a suitable stand that can bear the weight of the fly boom ahead of the machine.

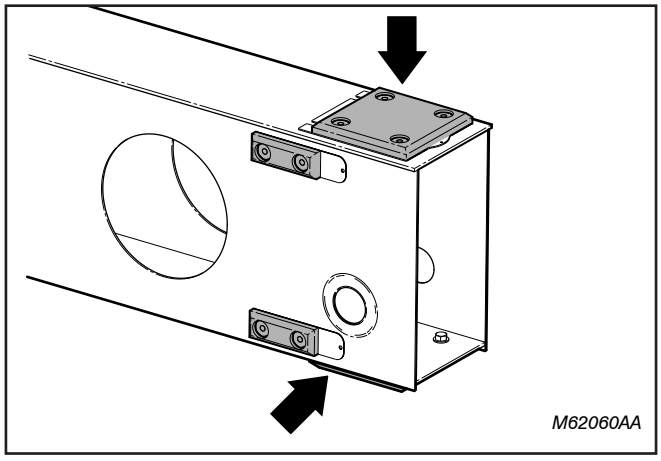
5. Attach a lifting sling to the fly boom tip and using suitable lift equipment, slide it out 2/3 of the way. Pull it out straight to avoid binding.
6. Set it down on the stand and re-sling it to lift from two points.
7. Remove the bottom wear pad from the mid boom.




**NOTE**

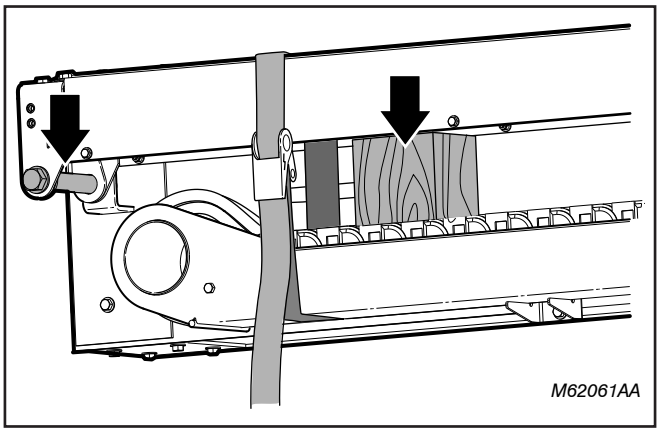
*All of the wear pads must be removed from the platform end of the mid boom so the fly boom section can be pulled all the way out. The wear pads on the counterweight end of the fly boom section would otherwise prevent removal.*

8. Slide the fly boom completely out of the mid boom and set it down on suitable blocking.
9. Replace the wear pads on the counterweight end of the fly boom. Use Loctite 242 or 243 on the wear pad fasteners.

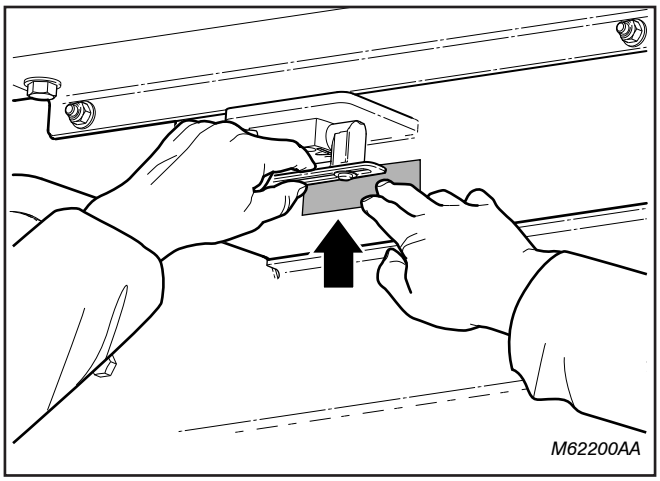



## 5.3-10 Mid Boom Section Removal

1. Place blocking inside the cable/hose tube to support the e-chain track when the main support bolt is removed. Cut the blocks about 12 cm (5") high. Place them about 1.2 m (4 ft) apart.
2. Remove the main power track carrier bolt from the platform end of the mid boom. Allow the cable/hose tube to rest on the blocking. Secure it with a strap.

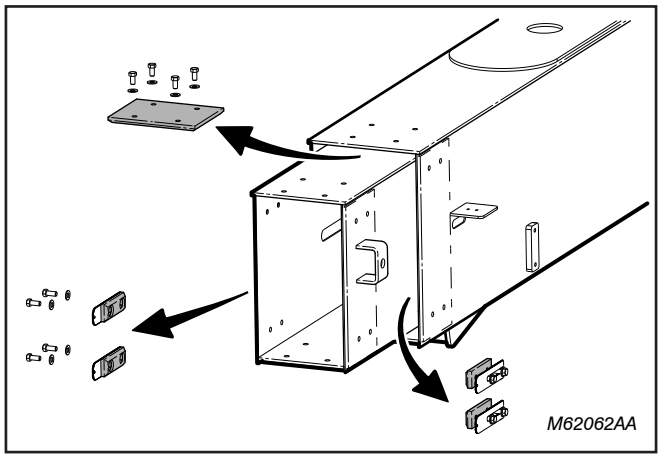



3. Locate the limit switch on the left-hand side of the main boom, at the platform end of the lower e-chain tube. Pull in the limit switch arm and place a piece of tape over the switch hole. The tape prevents the switch from being damaged as the fly boom is removed.

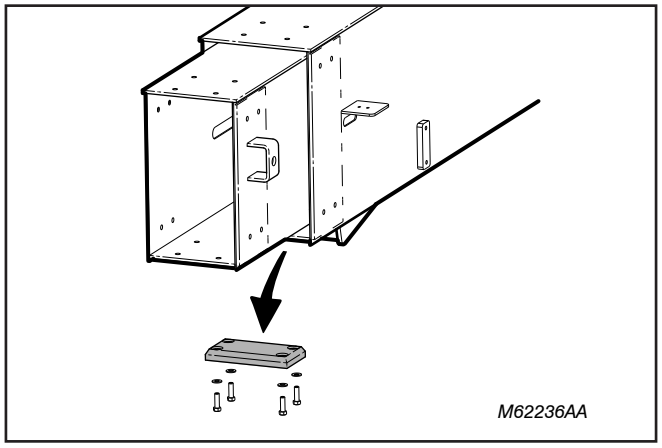



4. Place a suitable stand that can bear the weight of the mid boom about 2/3 the boom length ahead of the machine.

5. Connect lifting slings to the platform end of the mid boom.
6. Remove the top and side wear pads and shims inside the platform end of the main boom. Store the shims with the appropriate parts for reassembly.



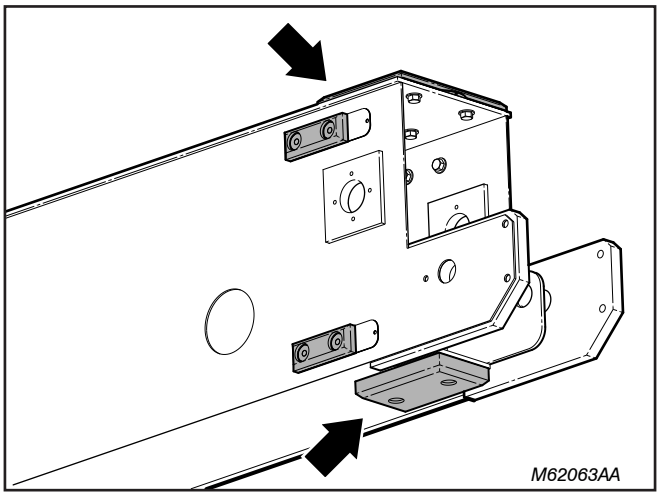

7. Slide the mid boom out 2/3 of the way. Slide it out straight to avoid binding.
8. Set it down on the stand and re-sling to lift it from two points.
9. Remove the bottom wear pad from the main boom.




**NOTE**

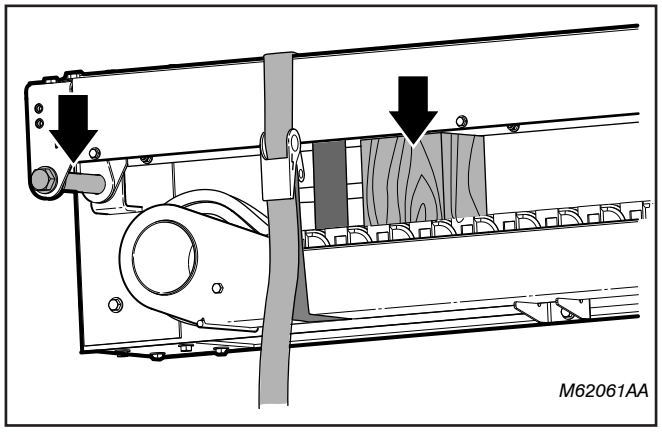
*All of the wear pads must be removed from the platform end of the main boom so the mid boom section can be pulled all the way out. The wear pads on the counterweight end of the mid boom section would otherwise prevent removal.*

10. Slide the mid boom completely out of the main boom and set it down on suitable blocking.
11. Replace the wear pads on the counterweight end of the boom section. Install them with the shims that were removed. Apply Loctite 242 or 243 to the wear pad fasteners.

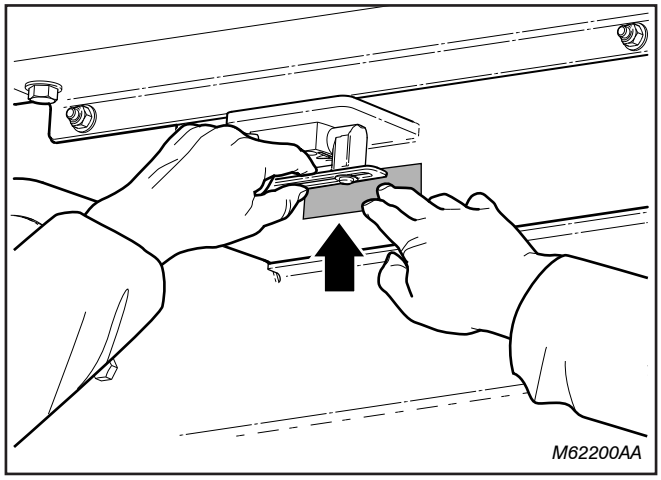


## 5.3-11 Mid Boom Section Installation

1. Attach two lifting slings to the mid boom. Using suitable lifting equipment, slide the mid boom section slowly into the platform end of the main boom. Be careful not to damage the wear pads.
2. When it is about 1/3 of the way in, install the bottom wear pad. Apply Loctite 242 or 243 to the wear pad fasteners.
3. Place a suitable stand under the end of the boom. Lower it onto the stand and remove one lifting sling.
4. Continue sliding the boom all the way in until the holes in the mid boom nose and the cable/hose tube support line up.
5. Install the top and side wear pads and shims in the main boom nose. Apply Loctite 242 or 243 to the fasteners.
6. Install the main power track carrier bolt. Remove the blocking and strap supporting the cable/ hose tube.

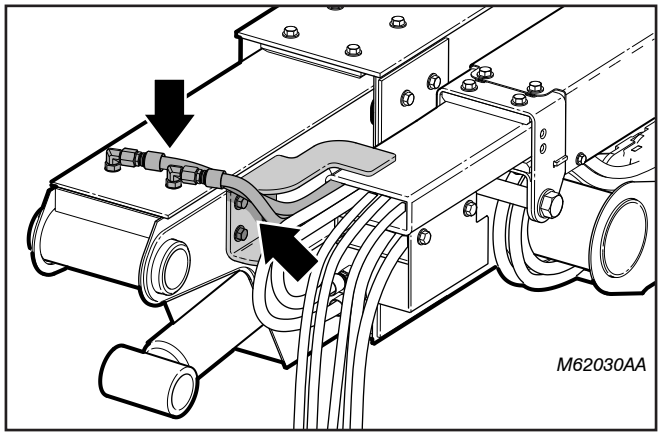

M62061AA

7. Remove the tape from the limit switch hole.


M62200AA

## 5.3-12 Fly Boom Section Installation

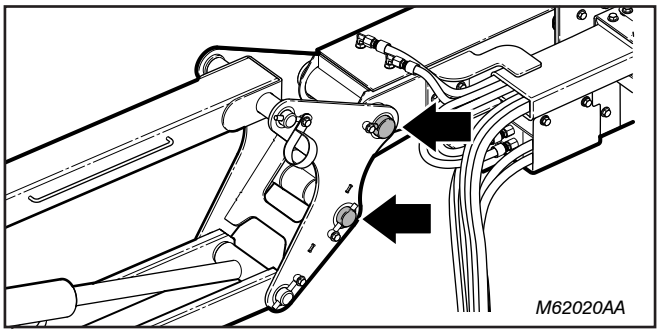
1. Attach two lifting slings to the fly boom. Using suitable lifting equipment, slide it slowly into the nose of the mid boom. Be careful not to damage the wear pads.
2. When it is about 1/3 of the way in, install the bottom wear pad. Apply Loctite 242 or 243 to the wear pad fasteners.
3. Place a suitable stand under the end of the boom. Lower it onto the stand and remove one lifting sling.
4. Continue sliding the boom all the way in until the holes in the boom tip and the e-chain support bracket line up.
5. Install the top and side wear pads and shims in the mid boom nose. Apply Loctite 242 or 243 to the wear pad fasteners.
6. Install the fasteners for the cable/hose tube support in the fly boom. Connect the platform level hydraulic hoses.



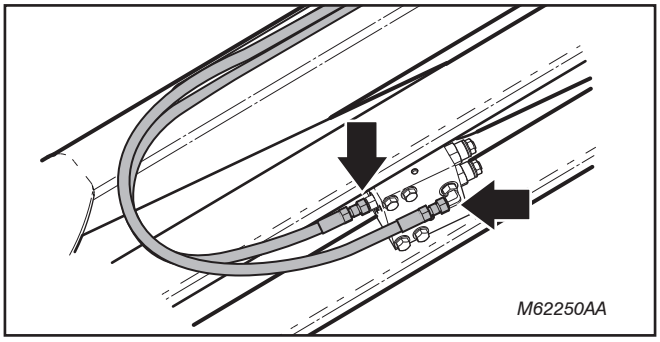

## 5.3-13 Platform and Jib Boom Installation

For torque specifications, refer to 2.2 MEWP Torque Specifications.

1. Connect lifting slings to the jib assembly.
2. Using suitable lift equipment, move it into position and insert the jib pin and slave cylinder pin. Insert the keeper pins.

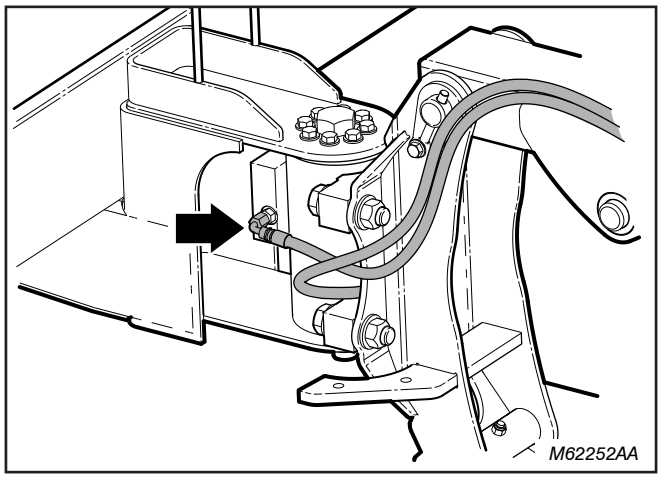



3. Connect the hydraulic hoses for the jib cylinder.




***s***

4. Connect the hoses for the platform rotary actuator.




5. Install the hoses and P-clamps to the side of the jib boom.

**IMPORTANT**

**Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.**

6. Connect the platform control console, see 5.3-15 Platform Control Console Connection.

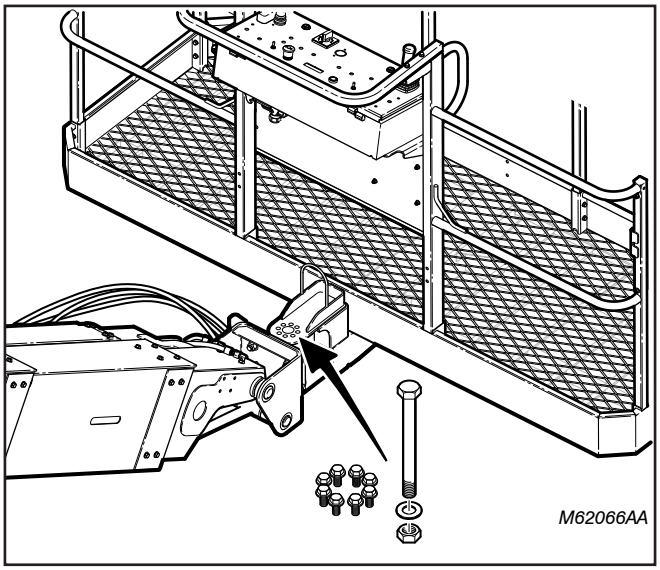
**CAUTION**

**There is a risk of personal injury or equipment damage. Test the equipment operation before putting machine into service. See the Function Tests in the Operating Manual.**

## 5.3-14 Platform Installation (no Jib Boom)

For torque specifications, refer to 2.2 MEWP Torque Specifications.

1. Connect lifting slings to the platform assembly.
2. Using suitable lift equipment, move the platform into place.
3. Install the main pivot bolt pin, flat washer and hex nut. Tighten them to the correct torque.
4. Install the bolts that secure the rotary actuator to the platform base mount. Apply Loctite 242 to the bolt threads. Tighten them to the correct torque.




5. Connect the hydraulic hoses to the platform rotator.
6. Install the P-clamp for the hoses and wire cables to the side of the fly boom nose.

**IMPORTANT**

**Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.**

7. Connect the platform control console, see 5.3-15 Platform Control Console Connection.

**CAUTION**

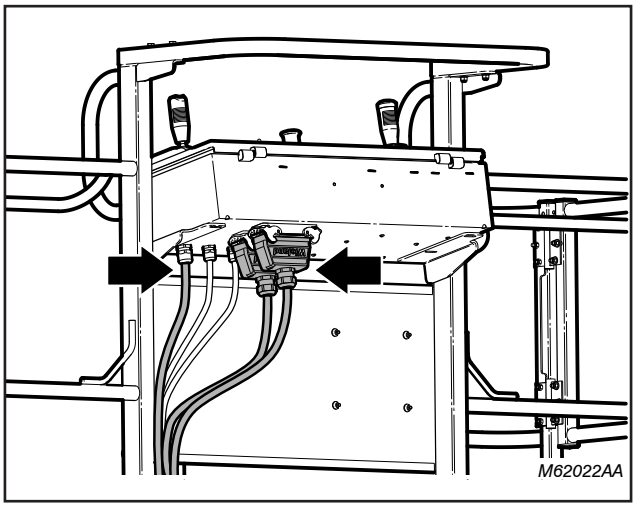
**Test the equipment operation before putting the machine into service. See the Function Tests in the Operating Manual.**

## 5.3-15 Platform Control Console Connection

Refer to the 3.23 Harnesses to properly identify control console wiring connections.

Once the platform is installed, make sure all harnesses to be connected to the platform control box are routed through the guard hoop on the platform base.

1. Connect the two platform control cable harnesses.




2. Pull the jib (if equipped) and platform rotate harness through the strain relief connector in the bottom of the platform control box. Make sure the wires can reach the terminal block on the left-hand side of the box.
3. Tighten the strain relief connector locknut to secure it.
4. Note the color and markings for each wire. Connect the wires as shown on the wiring diagram.
5. Tie-wrap the harnesses inside the control box as before.

**⚠ IMPORTANT**

**Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.**

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage. Perform a function and range-of-controls check before putting the machine into service. See Fthe unction Tests in the Operating Manual.**

## 5.3-16 Inspection and Replacement of Extension Cylinder and Boom Cables

Inspecting the cable assembly and extension cylinder for wear requires completely removing them from inside the boom assembly. Adequate space must be provided to do so. See 5.3-20 Wire Rope Inspection.

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage if repositioning boom during this procedure. Use the base controls with auxiliary power (engine off) to reposition it safely.**

**⚠ CAUTION**

**There is a risk of personal injury or equipment damage. Always use suitable lifting equipment and safe rigging practices when performing the following procedures.**

**⚠ IMPORTANT**

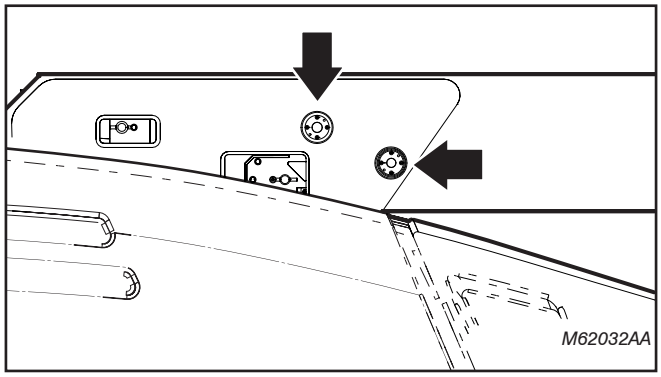
**When operating on auxiliary power, do not operate more than one function at a time to avoid overloading the 12-volt auxiliary pump motor.**

**⚠ IMPORTANT**

**Prevent hydraulic system contamination by capping all hydraulic connections after disconnecting.**

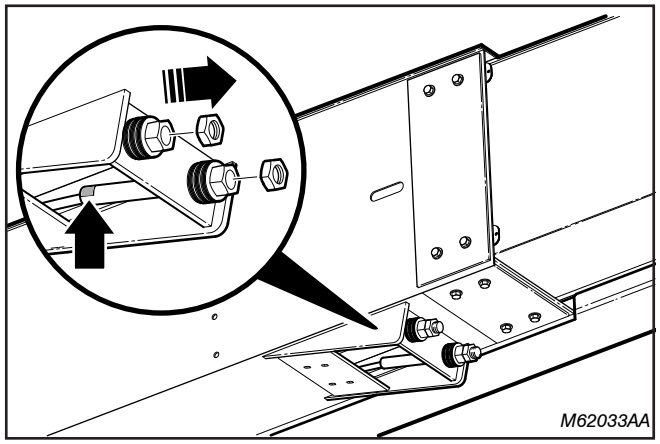
## 5.3-17 Extension Cylinder and Cable Assembly Removal

1. Park the machine on a flat, level surface. Position the boom so it is horizontal.
2. Extend/retract the boom to align the flanges with the holes in the side of the main boom. The lower flanges connect the cable support to the fly boom. The upper flanges connect the cylinder base to the mid boom.

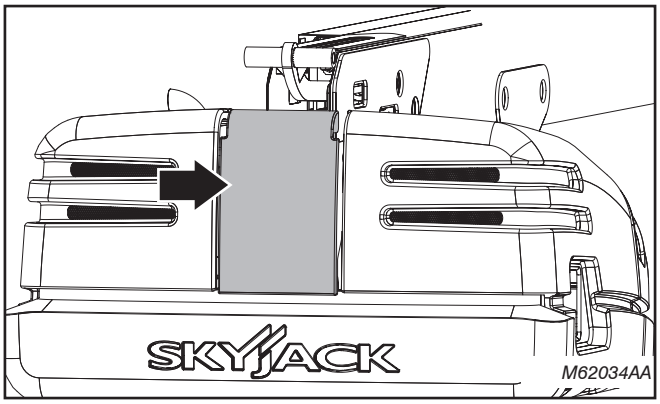



- Make sure the e-stops are pushed in and the key is off.
- Turn the main power disconnect switch off. Lock out the switch.

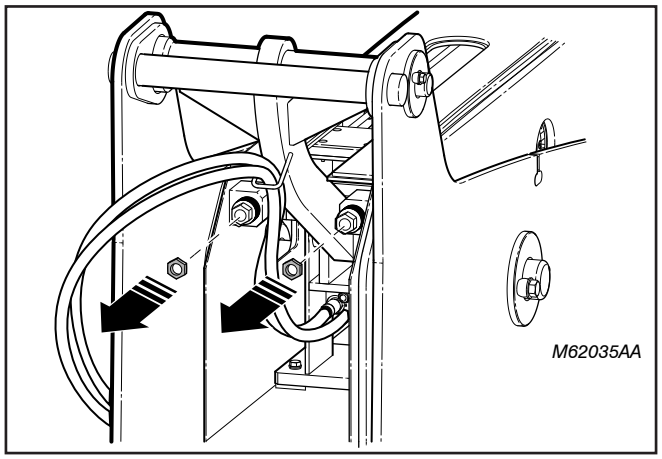
3. The cables (wire ropes) inside of the boom assembly must be loosened. Loosen the cables on the platform end of the machine first. Remove the jam nut, then use the flat on the end of the cable adjuster to hold it while backing off the main nut. Leave the main nut on the cable adjuster about one full nut thread.




4. Remove the center cowling from the turret.



5. Loosen the cables on the counterweight end of the machine. Remove the jam nut, then use the flat on the end of the cable adjuster to hold it while backing off the main nut. Leave the main nut on the cable adjuster about one full nut thread.

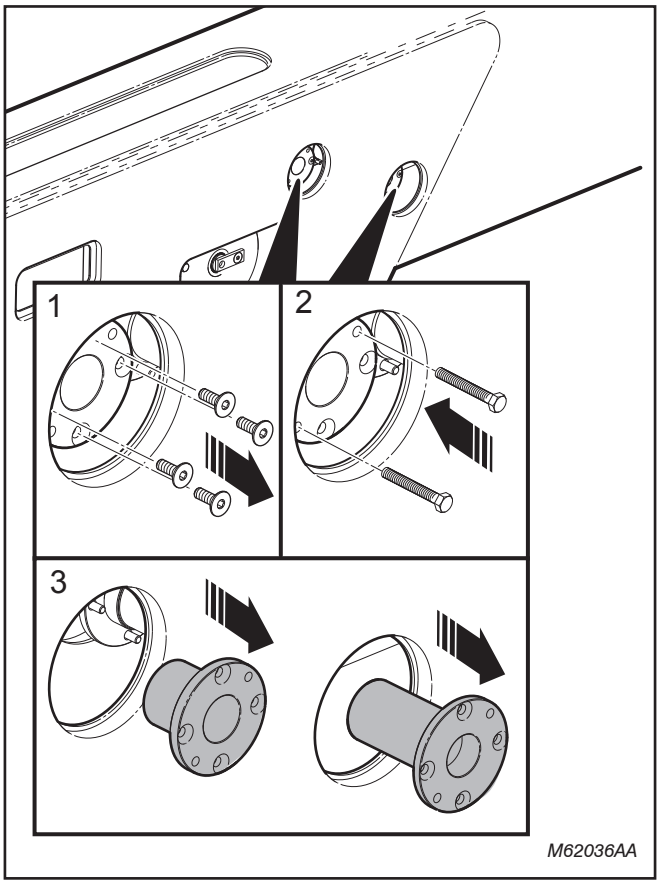



6. Once all cables are slackened, the spring discs (washers) can be removed from the cable adjusters. Remove the washers, then put the hex nut back on one full nut thread to temporarily hold the cable in place.
7. Once the cables are slackened, remove the boom flange pins and fasteners.

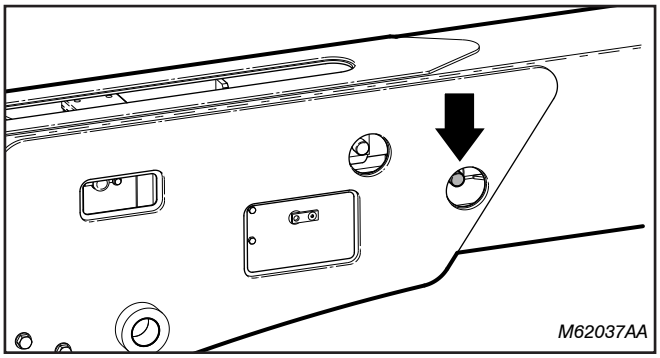
**NOTE**

*The flange pins may not line up in the holes exactly, but can be moved into place using a pry bar once the cables are slackened.*

8. Use two 1/4"-20 UNC bolts to help as a puller when removing the flange pins. Threaded holes are located in the flange pin collar. The bolts should be full thread with no shoulder, and at least 50 mm (2 in) long.

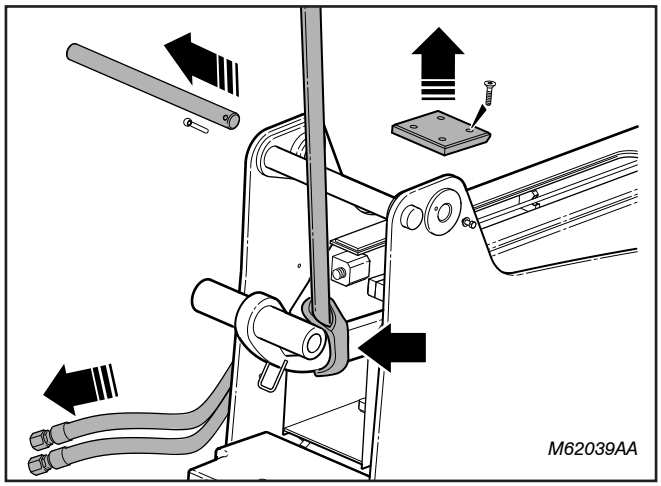



9. Once the flanges are removed, tap out the cable support pin.

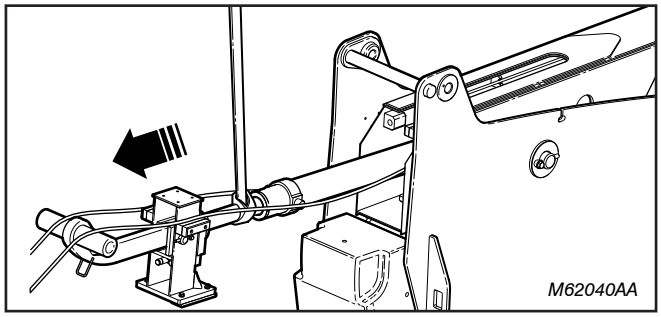



10. Remove the hex nuts from all 4 cable adjusters.

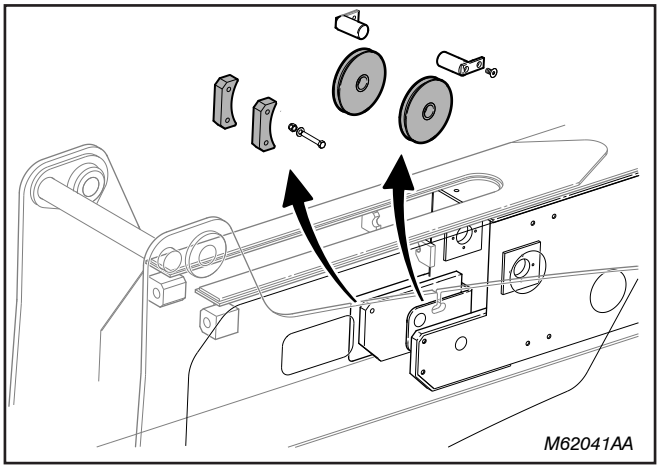
11. Mark and disconnect the hoses from the extension cylinder. Cap the hoses and ports to keep them clean. Take the hoses out of the hanger on the cylinder link.
12. Support the link, then remove the link pin.
13. Remove the top wear pad on the extension cylinder guide.



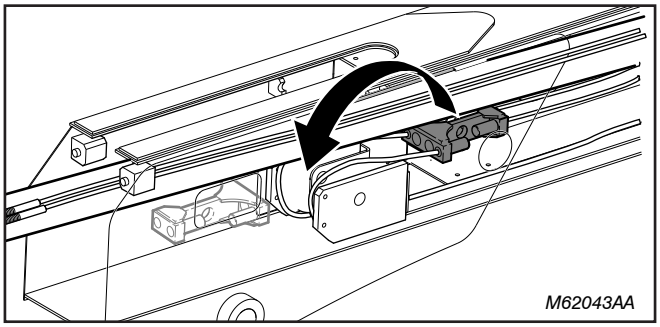

14. Place a lifting strap on the extension cylinder rod. Pull the cylinder out along with the upper cables to about 1/3 of the way. The cable ends can be tie-wrapped to the cylinder to help keep them from getting tangled.



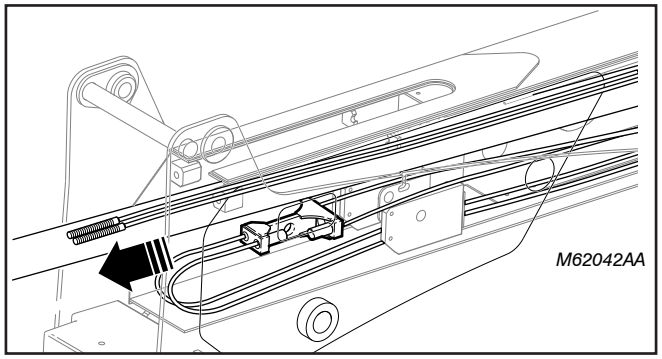

15. Remove the mid boom pulleys and cable stops. Continue to pull the cylinder out.




16. Flip the cable support over so the narrow end faces the counterweight end of the machine. Flipping it over makes it easier to remove it with the cylinder.



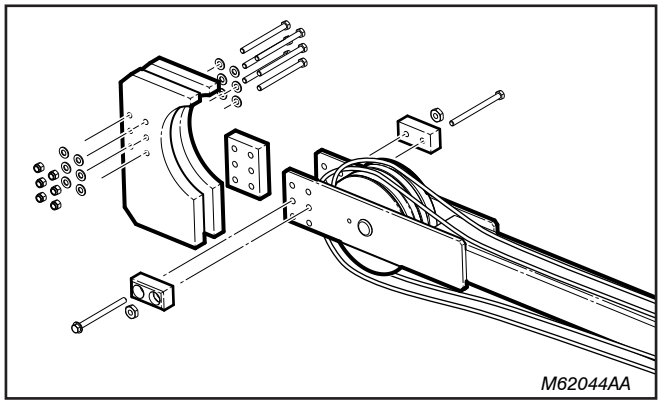
17. Pull the cylinder out 2/3 of the way. Allow the upper cables to come out with the cylinder.




**NOTE**

*Make sure the cables do not get tangled or caught on other components.*

18. Lower the end of cylinder onto a support. Connect lifting straps to both ends of the extension cylinder.
19. Continue to slide the cylinder completely out of the boom. Balance the load as it is being removed.
20. Lower the cylinder onto suitable supports.
21. Remove the cable stop and cables from the extension cylinder pulley.




22. Inspect the extension cylinder wear pads for wear or damage. Replace them if required.
23. Perform a cable inspection at this time. See 5.3-20 Wire Rope Inspection.

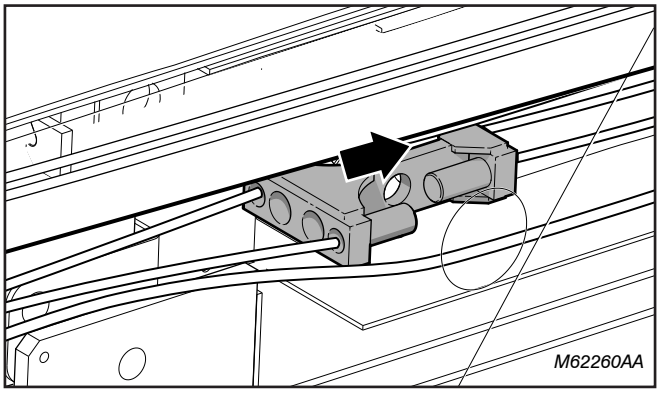
## 5.3-18 Extension Cylinder and Cable Assembly Installation

1. Attach two lifting slings to the extension cylinder. Using suitable lifting equipment, raise and slide the end slowly into the counterweight end of the boom assembly. The upper cables can be tie-wrapped to the cylinder to keep them from getting tangled. Be sure to remove the tie wraps as the cylinder is being installed.

**NOTE**

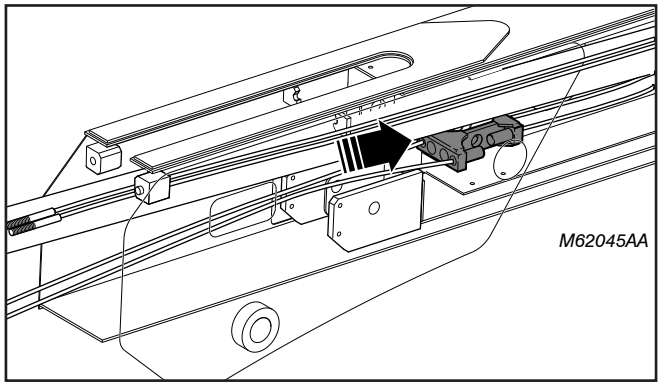
*Make sure the cables do not get tangled or caught on other components.*

2. Orient the cables correctly. Identify which cable ends go to the platform end, and which go to the counterweight end of the machine. The narrow end of the cable support is towards the platform end of the machine when installed. See the diagram below.

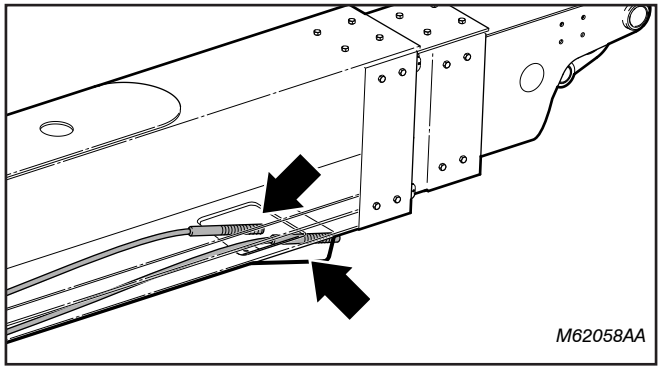



3. Lift and slide the end of the cylinder into the boom, being careful not to tangle the cables.
4. Once the pulley end of the cylinder is into the boom, one lifting sling can be removed. Lower the cylinder onto a suitable stand or support and remove one sling. Connect the lifting sling to the link on the end of the cylinder support.
5. Carefully feed the cables in as the cylinder is being pushed in.

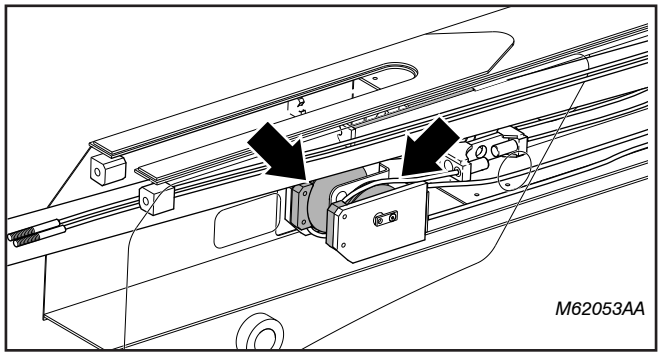
6. Slide the cylinder 2/3 of the way in until the cable support has passed where the mid boom pulleys mount.



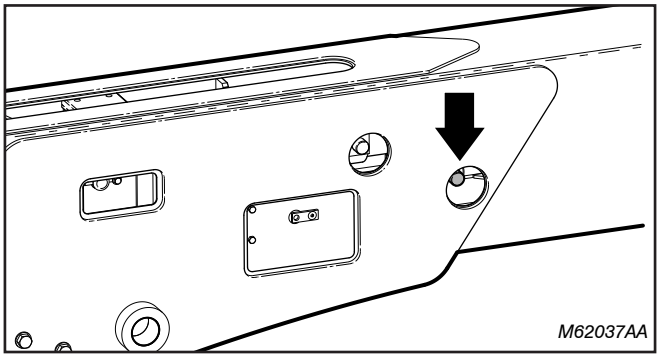

7. Route the platform end cables between the main and mid booms, through to the anchor points at the platform end. Install one hex nut on each cable end.



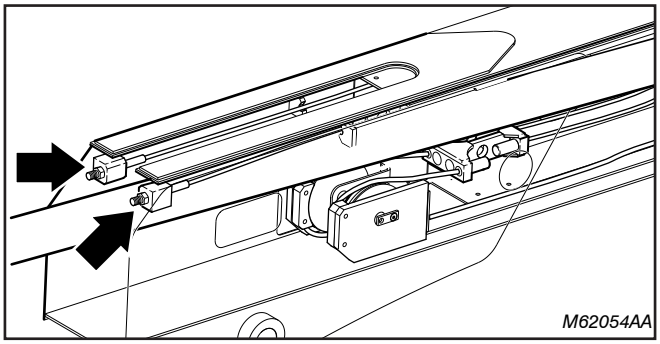

8. Install the mid boom pulleys. Pull the cable slack and fit it onto the pulleys. Install the cable stops.



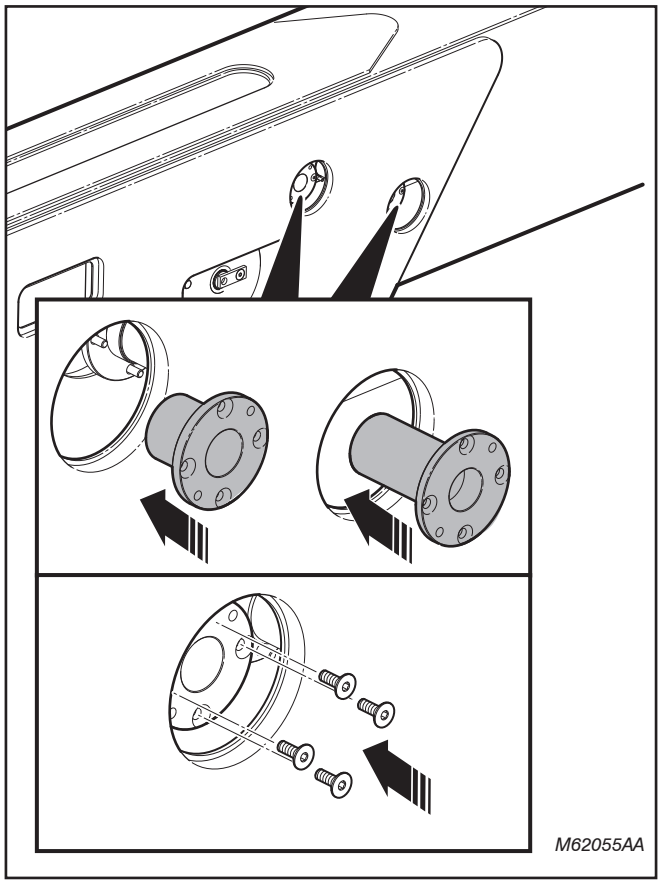

9. Once lined up, install the (lower) cable support pin through the cable support.




10. Continue sliding the cylinder inward, making sure the cables do not get tangled.
11. Install the counterweight end of the cables into the anchor points. Install one hex nut on each cable end.



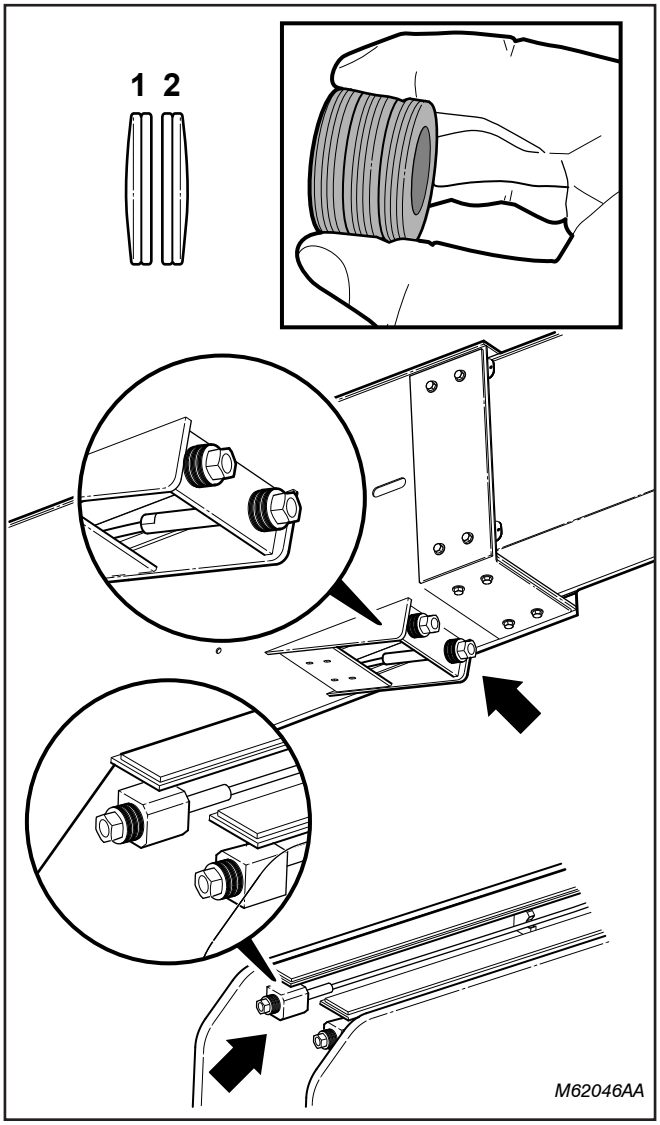
12. Install the (lower) flange pins for the cable support onto the cable support pin and into the side of the boom. If the flanges need to be rotated, thread in two bolts into the puller holes and turn them with a pry bar.
13. Install the (upper) flange pins onto the pin of the cylinder base end.



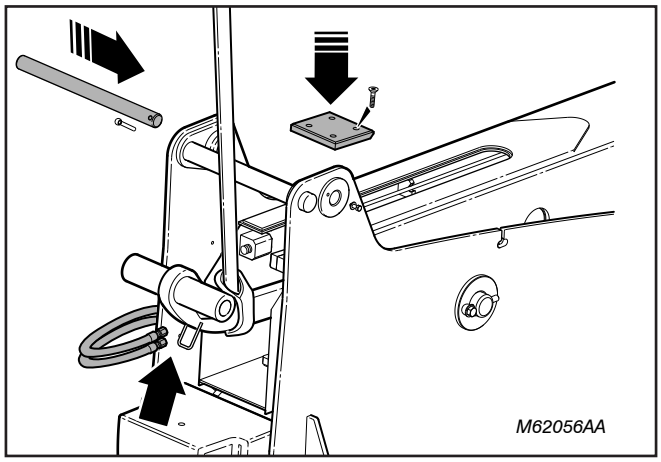

14. Remove the hex nut on each cable end and install the 12 spring discs. The orientation of the spring discs is important. They must be installed by reversing the direction of every second pair. Turn the hex nuts on one thread to secure them.

## ⚠ IMPORTANT

**Reverse the direction of every second pair of spring discs. Orientation of spring discs is critical for proper wire rope tension.**



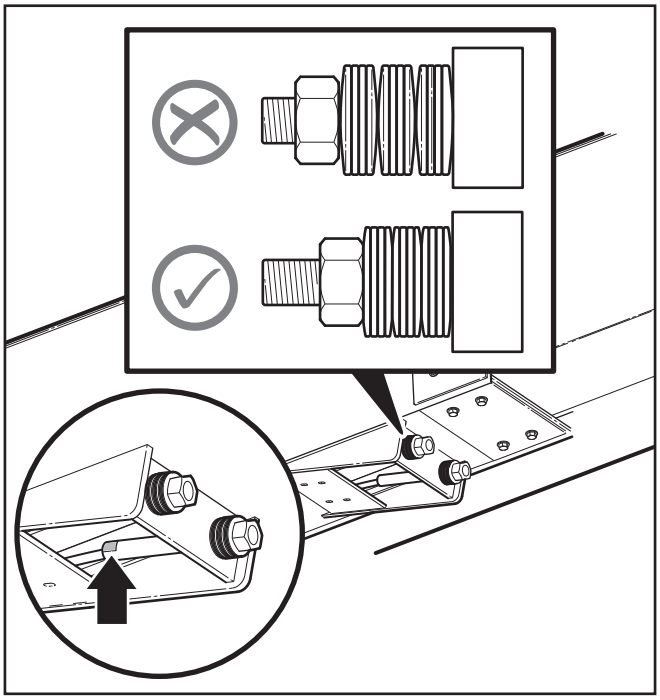
15. Install the link pin.
16. Install the wear pad on the top of the cylinder support. The chamfer faces the platform end of the machine. Apply Loctite® 242 or 243 (removable) to the fasteners.
17. Install the extension cylinder hydraulic hoses. Route the hoses through the hanger on the cylinder link.




18. Tighten all cable ends at the anchors.

## 5.3-19 Proper Wire Rope Tension

1. Tighten each hex nut until all the spring discs are fully compressed, then turn them one additional ½ turn. Note: you will still see small gaps between reversed discs, even when fully compressed.



2. Install the jam nuts on the cable anchors.
3. Install the center cowling on the turret.

**⚠ CAUTION**

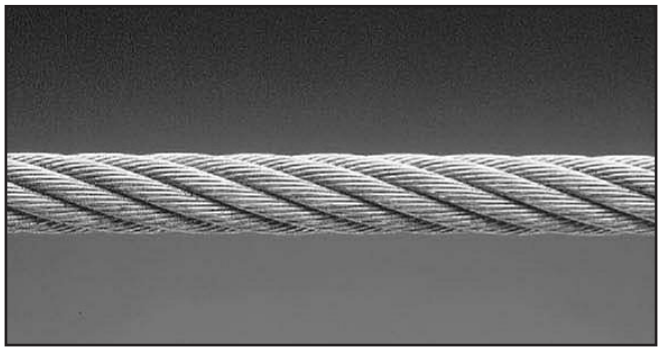
**There is a risk of personal injury or equipment damage. Test the equipment operation before putting the machine into service. See the Function Tests in the Operating Manual.**

## 5.3-20 Wire Rope Inspection

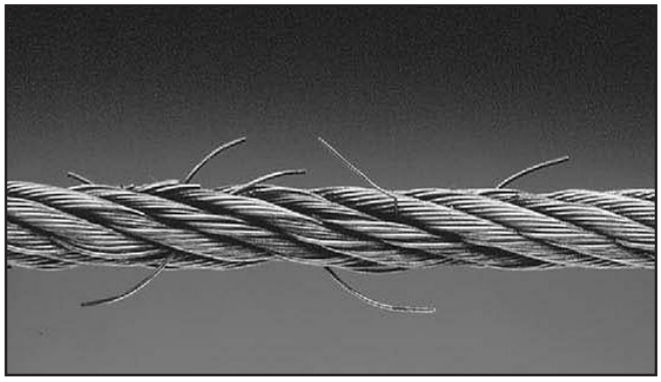
**NOTE**

*This inspection procedure must be done at the start of the first 10th year of boom cable life, or every 2 years if the boom cable is not replaced after the initial inspection.*

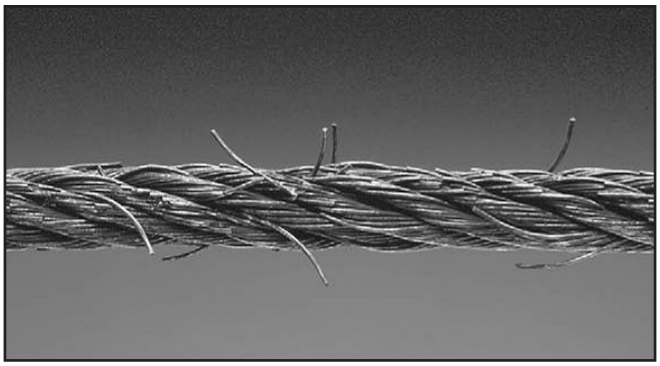
Check the wire rope cables for wear or damage. Any cable with broken wires, severe corrosion, excessive stretch, deformed strands, variations in diameter (necking), or any change from its normal appearance, must be replaced. If any cable is found to be in need of replacement, the entire cable set must be replaced immediately. Refer to the examples below.



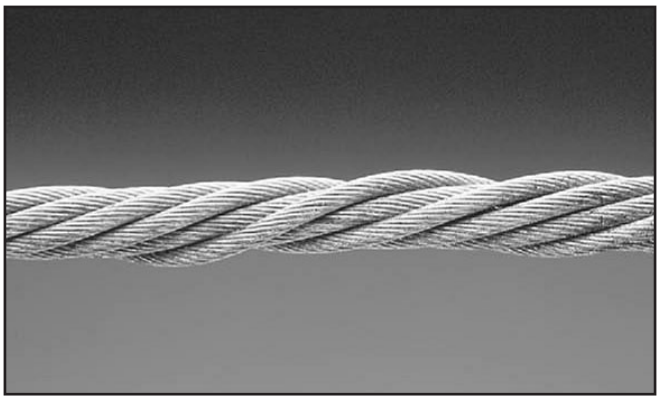
***Cable in Good Condition***



***Cable with Broken Wires***



***Cable with Rust***



***Cable with Necking***

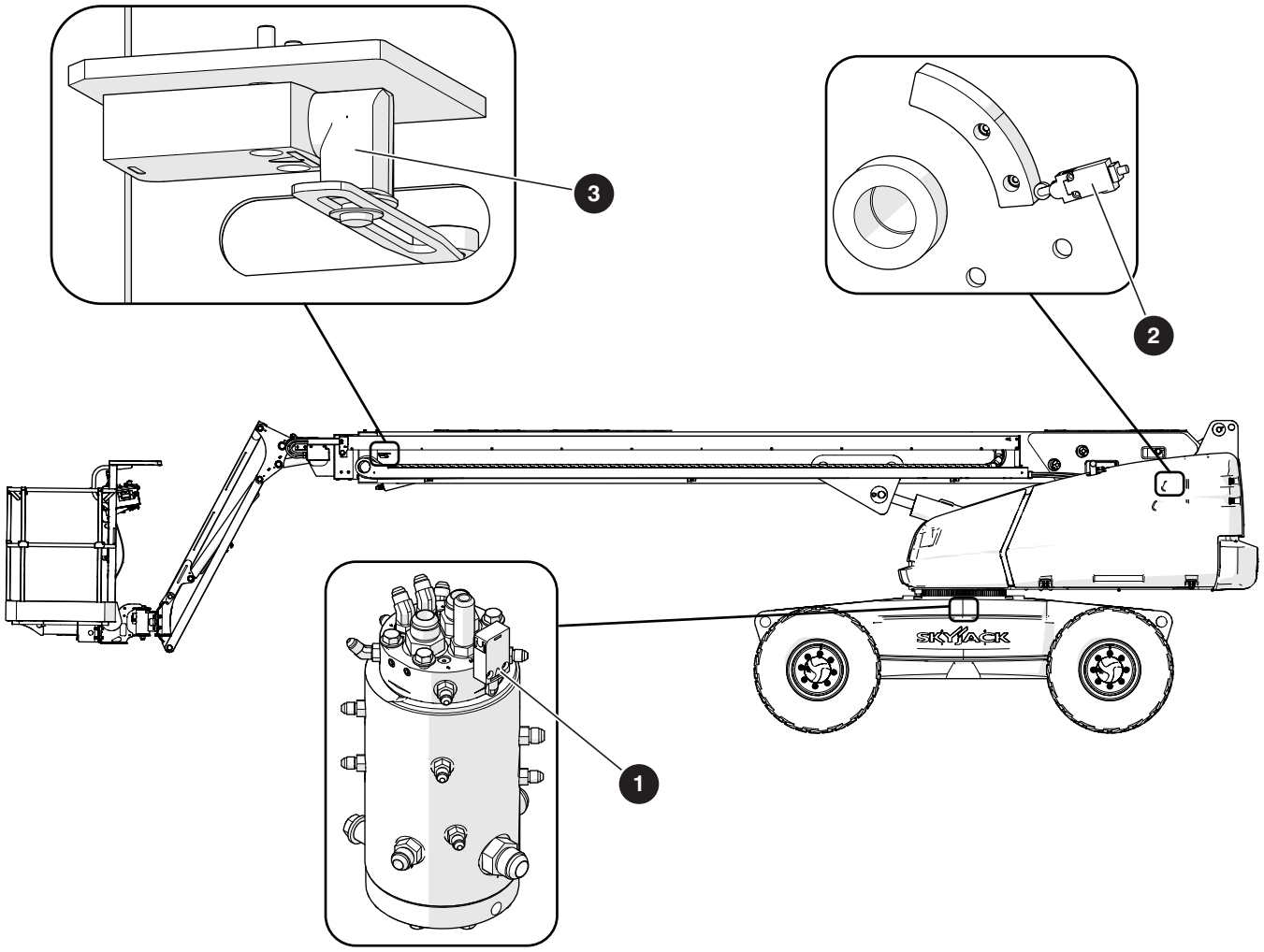
**Sheave Inspection**

Check sheaves (pulleys) for wear or damage, for example, wobble (tilt), cracks, loose on pin, or excessive noise during operation.

**Sheave Pins Inspection**

Check for loose or missing sheave (pulley) pins.

## 5.3-21 Limit Switch Locations

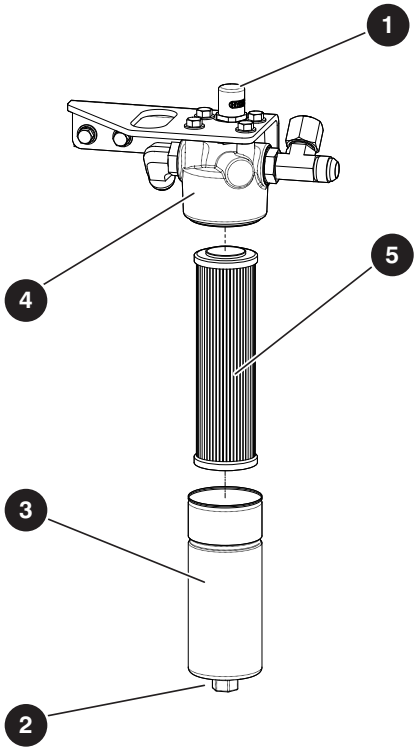



1. Limit Switch LS1 - Direction Sensing
2. Limit Switch LS2 - Boom Lift
3. Limit Switch LS3 - Fly In

# 5.4 Turret

## 5.4-1 Check and Replace the High Pressure Filter

1. Start the engine from the base control console.
2. Inspect the filter restriction indicator gauge ❶. The filter should be operating with the gauge pointing to the green area. If it is in the red area, the filter needs to be replaced.
3. To replace the filter, turn the engine off.
4. Place a suitable container under the filter.




5. Using a 30 mm box wrench on the filter housing nut ❷, loosen the filter housing ❸ and remove it from the filter head ❹.
6. Remove the filter element ❺ from the filter head and install a new high pressure filter element.
7. Apply hydraulic oil to the o-ring on the high pressure filter housing.
8. Reinstall the housing, screwing it in fully, then backing it off by one quarter turn.

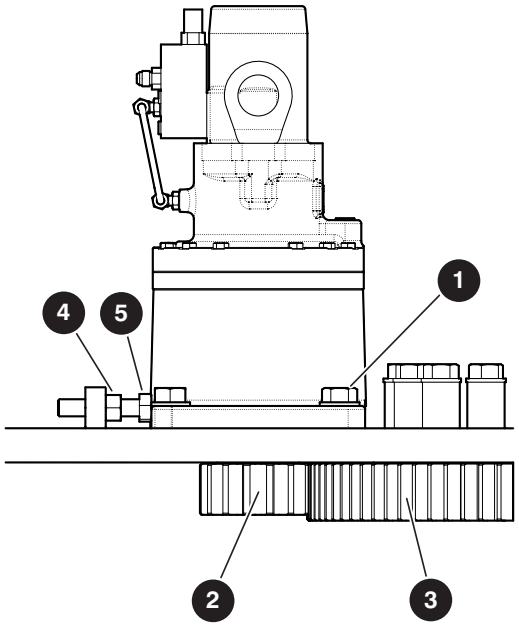
## 5.4-2 Adjust the Turret Rotation Gear Backlash

The swing drive is located at the platform end of the turret, behind the battery.

**NOTE**

*The adjustment of the backlash must be performed on a flat level surface.*

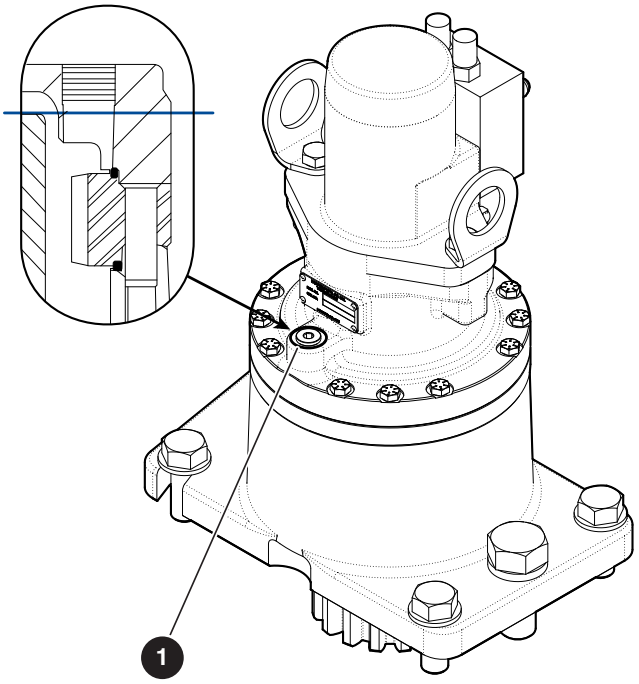
1. Loosen the mounting fasteners ❶ on the swing drive.
2. Push the swing drive towards the rotation gear as close as possible (this will push the swing drive gear ❷ into the rotation gear ❸).




3. Loosen the lock nut ❹ on the adjustment bolt ❺.
4. Tighten the adjustment bolt clockwise until it contacts the plate of the swing drive.
5. Turn the adjustment bolt ½ turn counterclockwise, then tighten the lock nut on the adjustment bolt.
6. Pull the swing drive away from the rotation gear until it contacts the adjustment bolt.
7. Tighten the mounting fasteners on the swing drive.
8. Rotate the turret 360° and check for a smooth rotation of the turret.

## 5.4-3 Check the Swing Drive Oil

1. Remove the plug from the fill port ❶ on the back of the swing drive.
2. Check the oil level. The oil level should be slightly below the port threads.
3. Add oil if needed. Refer to 2.10 Hydraulic Specifications & Gear Oil for recommended oil types.

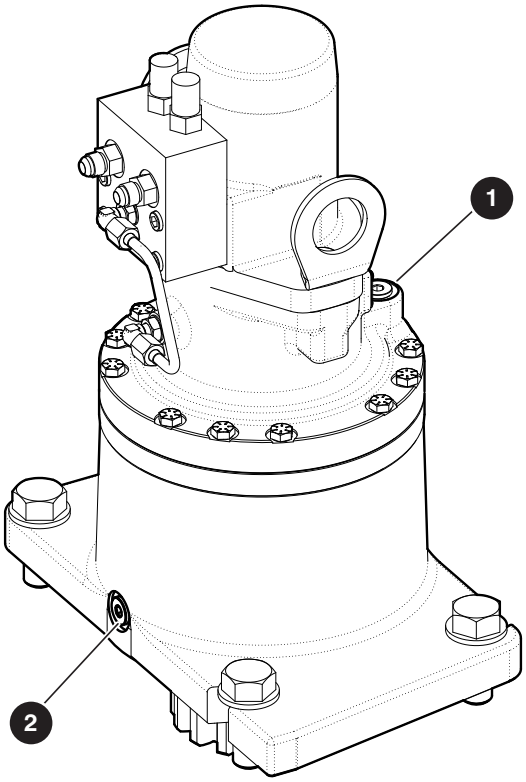



## 5.4-4 Change the Swing Drive Oil

**NOTE**

*The oil change must be performed on a flat, level surface.*

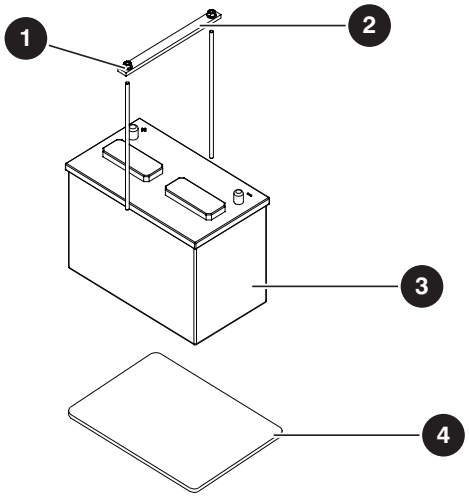
1. Remove the plug at the fill port ❶.
2. Place a suitable container under the drain port ❷.




3. Remove the plug at the drain port.
4. Allow the oil to drain.
5. Reinstall the drain plug.
6. Refill the swing drive with approximately 32 oz (1 L) of oil (refer to 2.10 Hydraulic Specifications & Gear Oil for recommended oil types).
7. Reinstall the plug at the fill port.

## 5.4-5 Battery Replacement

1. Turn the main power disconnect switch to the off position.



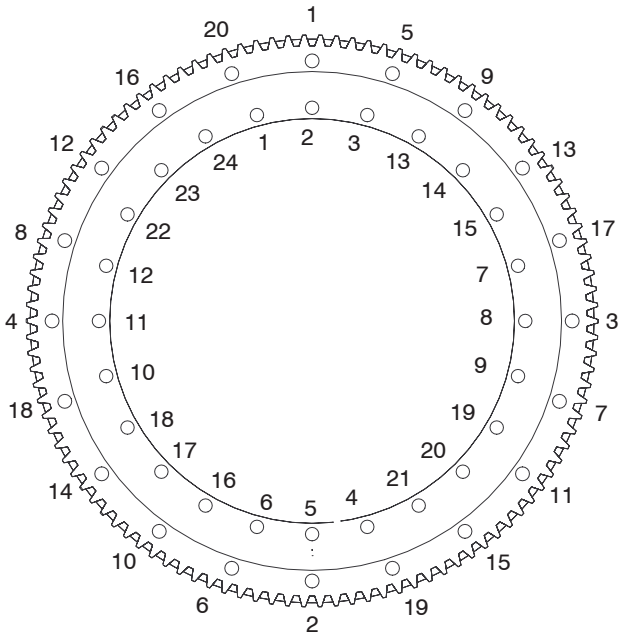

2. Remove the positive and negative connectors from the batteries.
3. Remove the battery retainer bracket nuts and washers 1.
4. Remove the bracket 2 .
5. Remove the batteries 3.
6. Replace the battery pad 4 if needed.
7. Replace the batteries and secure them with the bracket, j-hooks, washers and nuts.
8. Clean the terminal posts and clamps of the batteries, and apply acid-free and acid-resistant grease.
9. Re-connect the batteries with the positive and negative connector cables (ensure the clamps make good contact).

## 5.4-6 Turret Rotation Gear Bolt Torque Sequence

**⚠ WARNING**

**Maintaining proper torque is essential to safe MEWP operation. Improper bolt torque could result in an unsafe operating condition and component damage.**

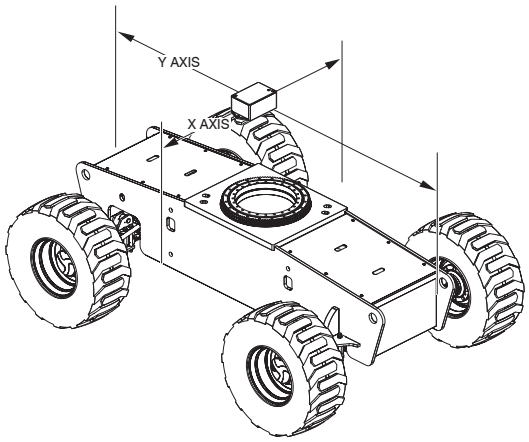
1. Set the torque wrench to 190 Nm (140 ft-lb) and tighten the mounting bolts in a criss-cross pattern sequence.




2. Set the torque wrench to 380 Nm (280 ft-lb) and tighten the mounting bolts with the same sequence.

## 5.4-7 Electronic Tilt Switch Setup Procedure

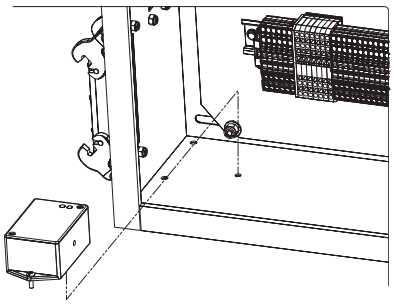
### Tilt Switch Replacement




1. Park the MEWP on a firm level surface.
2. Disconnect the tilt switch from the 4 pin connector.

**NOTE**
*Make sure the part number of the old tilt switch and the new tilt switch are the same.*

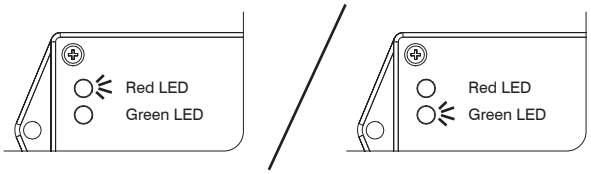
3. Remove the old tilt switch from the mount.



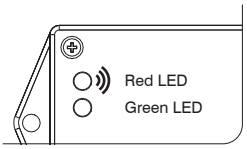
4. Install the new switch on the mount and connect the switch plug to the 4 pin connector.

**NOTE**
*The tilt circuit is only powered when the controls are powered up.*

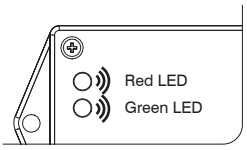
5. Turn the main disconnect switch to the ON position.
6. Turn the base/off/platform key switch to the base position.
7. Pull out both emergency stop buttons.
8. Verify the switch is powered (the red or green LED will be solid).



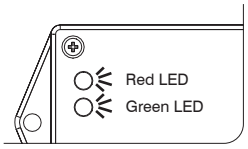

9. Program the tilt switch:
   a. Press and release the set to zero button 3 times. Observe LED flash codes as shown below.
   b. Only the red LED will blink for 4 seconds.



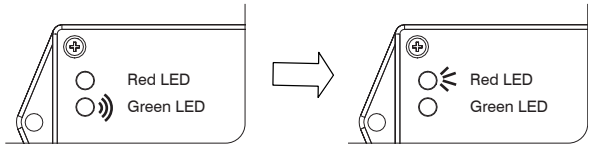

   c. Both LEDs will flash for 1 second.
   Results: The switch is learning the new zero position.



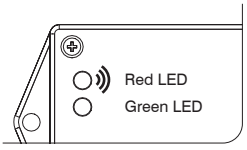

   d. Both LEDs will turn on solid for 1 second.
   Results: The new zero position has been learned.




   e. The green LED will flash and then the red LED will turn on solid for 2 seconds.
   Results: The switch is verifying the new zero position.




   f. Only the red LED will blink for 4 seconds.

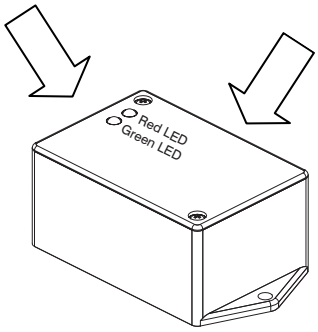



10. Turn the main power disconnect switch to the off position.
11. Push in the emergency stop buttons.

## Reprogramming the Existing Tilt Switch

Light Indicators

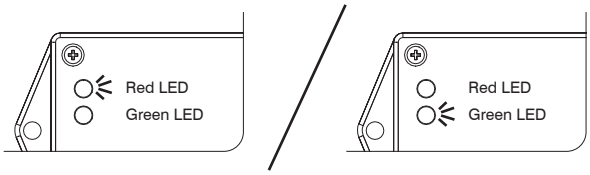
The set to zero button is located on this face next to the harness




### NOTE

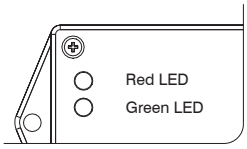
*The tilt circuit is only powered when the controls are powered up.*

1. Turn the main disconnect switch to the ON position.
2. Turn the base/off/platform key switch to the base position.
3. Pull out both emergency stop buttons.
4. Verify the switch is powered (the red or green LED will be solid).

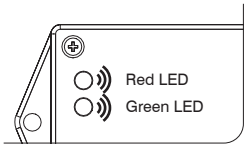



5. Reprogram the tilt switch.

   **a.** Press and hold the set to zero button for 5 seconds.
   **Results:** Both LEDs are OFF.




   **b.** Both LEDs flash.



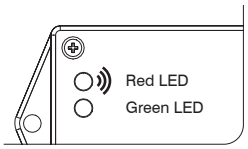

### IMPORTANT

**Step "c" must be completed within a 5 second period, or the switch will automatically exit program mode and return to normal operation using the previously stored data.**

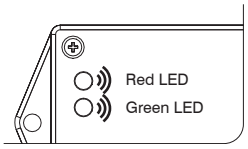
   **c.** Press and release the set to zero button 3 times.

   **d.** If the 5 second period has expired prior to completion, repeat steps "a", "b" and "c".

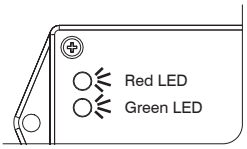
   **e.** Observe the program delay / stabilization time (only the red LED blinks for 4 seconds).



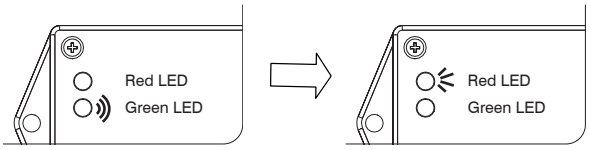

   **f.** Both LEDs flash for 1 second.
   **Results:** The switch is learning the new zero position.



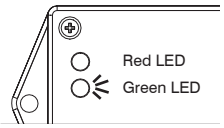

   **g.** Both LEDs turn on solid for 1 second.
   **Results:** The new zero position has been learned.




   **h.** The green LED flashes and then the red LED turns on solid for 2 seconds.
   **Results:** The switch is verifying the new zero position.



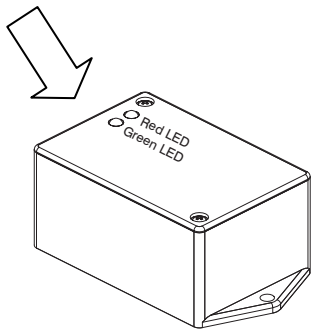

   **i.** The green LED turns on solid.
   **Results:** The switch is ready for normal operation.




6. Turn the main power disconnect switch to the off position.
7. Push in the emergency stop buttons.
8. Proceed to Verify the Tilt Circuit.

### Verify the Tilt Circuit

Indicator Lights



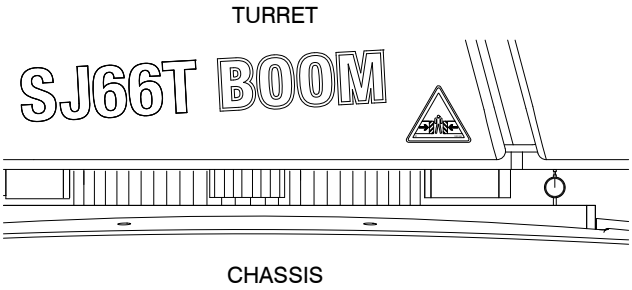

### Operations of the Tilt Switch

The following describes the LEDs and what they indicate.

| | |
|---|---|
| **Green LED** | **Illuminated whenever both tilt axes are within the specified degrees of the zero/ home learned position. Flashes when transitioning in or out of tilt angle limits, but built in time delay has not fully occurred.** |
| **Red LED** | **Illuminated whenever tilt on one or more axes is more than the specified degrees out from the zero/ home position.** |
| **Green & Red LED** | **On together, no blinking when fault detected.** |

## 5.4-8 Check the Rotation Bearing for Axial Wear

1. Position the boom so that it is centered over the front drive and steer axle, and is horizontal with the ground.
2. Extend the boom to its full extension length.
3. Mount a dial indicator on the chassis. Place the dial indicator set directly under the boom, close to the bearing teeth. Make sure to allow clearance as the turret assembly rotates.
4. Position the indicator arm or shaft so the pointer touches the bottom surface of the turret weldment.




5. Zero the dial indicator.
6. Rotate the turret 180° in a clockwise direction until the boom is centered over the rear axle. (Rotating the turret in the counterclockwise direction will cause the rotation gearbox pinion to impact the dial indicator).
7. If, when you are rotating the turret, the boom needs to be retracted or raised to avoid obstacles, be sure to again fully extend and level the boom when it is positioned over the rear axle. Do not be concerned with any dial indicator readings as the turret assembly rotates.
8. With the boom assembly rotation stopped and the boom centered over the rear axle, read the dial indicator and record the reading. This reading is the total amount of axial movement in the bearing assembly. If this reading is 2.54 mm (0.100") or greater, the rotation bearing should be removed and replaced.

# 5.5 Deutz Diesel Engines

Maintaining the engine components is essential to the good performance and service life of the MEWP.

## 5.5-1 Replace the Engine Oil and Filter

Periodic replacement of the engine oil and filter is essential to good engine performance.

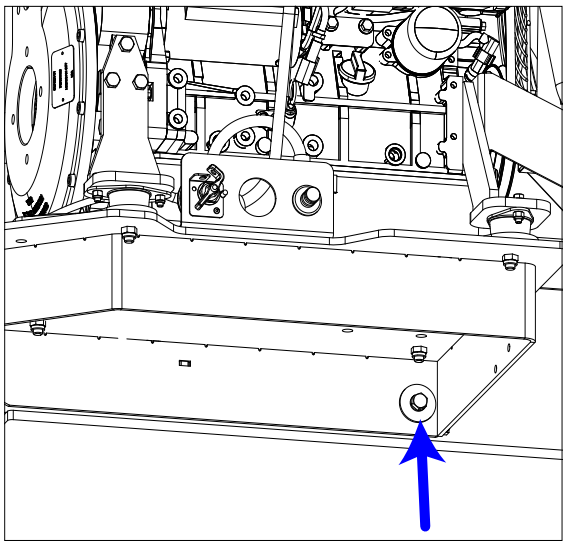
**NOTE**

*Perform this operation after warming the engine to a normal operating temperature.*

**CAUTION**

**Beware of hot engine components. Contact with hot engine components may cause severe burns.**

1. Turn the engine off.
2. Remove the bolt securing the engine tray to the turret.



3. Swing the engine tray away from the turret.
4. Place a suitable container under the engine oil drain.
5. Remove the oil drain plug and allow all engine oil to drain into the container.

**WARNING**

**Dispose of oil in accordance with local and federal regulations.**

6. Install the oil drain plug with a new seal ring and tighten firmly.
7. Remove the oil filter and catch any escaping oil.
8. Clean inside the filter head.
9. Add clean engine oil to the oil filter.
10. Apply a thin layer of engine oil to the new oil filter gasket.
11. Install the filter and tighten it by hand.
12. Clean up any oil that may have spilled during this procedure.
13. Refill the engine with new oil as per the specifications (refer to the engine manual).
14. Swing the engine tray back to its original position.
15. Reinstall the engine tray bolt.
16. Start the engine from the base control console and allow the engine to run for 30 seconds, then stop the engine.
17. Check for oil leakage.
18. Check the engine oil level on the dipstick and add oil if needed.

## 5.5-2 Replace the Fuel Filter

1. Remove the bolt securing the engine tray to the turret.
2. Pull the locking pin down and swing the engine tray away from the turret.
3. Close the fuel shut-off valve.
4. Place a suitable container under the fuel filter.
5. Remove the fuel filter and catch any escaping fuel.

**⚠ WARNING**

**Dispose of fuel in accordance with local and federal regulations.**

6. Clean any dirt from the filter carrier sealing surface.
7. Apply a thin layer of oil or diesel fuel to the rubber gasket of the new fuel filter.
8. Install the fuel filter and tighten it by hand, then tighten the filter cartridge with a final half-turn.
9. Clean up any fuel that may have spilled during this procedure.
10. Open the fuel shut-off valve.
11. Check for fuel leakage.
12. Swing the engine tray back to its original position.
13. Reinstall the engine tray bolt.

## 5.5-3 Replace the Air Filter

Engine specifications require that this procedure be performed more often if dusty conditions exist. Refer to the engine manual.

**⚠ CAUTION**

**Perform this procedure with the engine off.**

1. Remove the mounting fasteners from the air filter canister, and remove the end cap.
2. Remove the filter from inside of the canister.
3. Clean the inside of the canister and gasket with a dry cloth.
4. Insert a new filter into the canister.
5. Reinstall the end cap.

## 5.5-4 Check the Engine Belt

The MEWP will not operate properly with a loose or defective belt. Continuous usage may cause component damage.

**⚠ WARNING**

**Do not inspect the fan belt while the engine is running. Remove the key to prevent accidental operation.**

1. Inspect the engine belt for:
   - cracking
   - glazing
   - separation
   - breaks
2. For correct tension of the engine belt, refer to the engine manual.

## 5.5-5 Check the Oil Cooler (Deutz D2011 only)

1. Remove the cover from the side of the engine.
2. Inspect the oil cooler for leaks and physical damage.
3. Clean the oil cooler of any kind of debris.
4. Reinstall the cover.

## 5.5-6 Retrieve Engine Fault Codes - Deutz TD2.9L

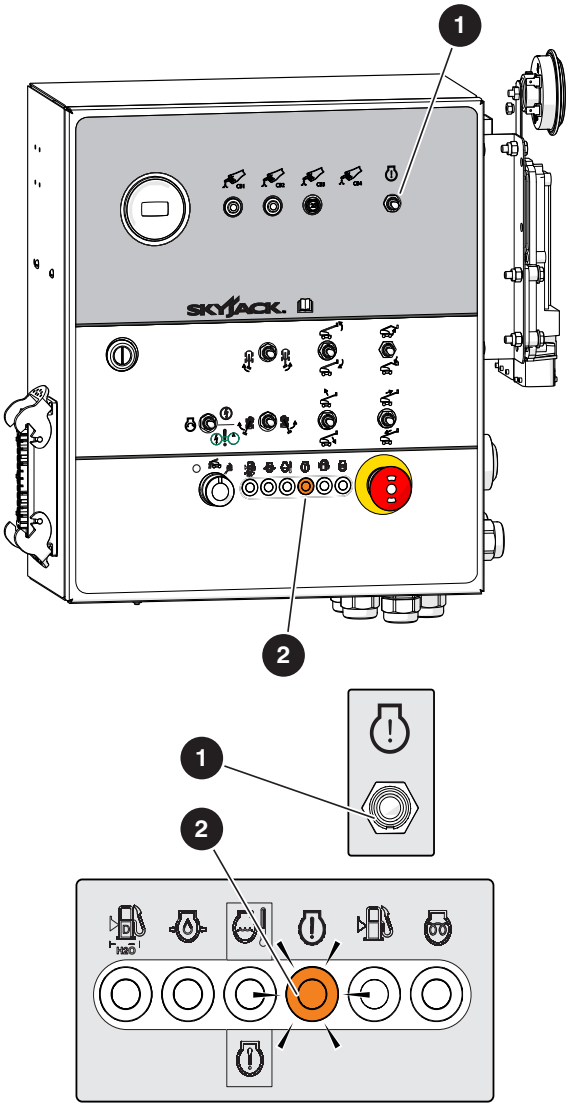
1. Turn the engine on. Keep the e-stop pulled out.
2. Hold the diagnostic switch ❶ down for about 3 seconds, then let it go. The switch is located on the front of the base control box.
3. The diagnostic indicator light ❷ flashes in this sequence:

- fast flash, pause, slow flash, pause, fast flash

4. The flashes represent a 3-digit engine code.

   **Example:** 2 fast flashes, 1 slow flash, 6 fast flashes represents engine code 216.

5. Repeat steps 2 and 3 to read any additional engine codes.



## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 8 | 132 | 1 | 2-2-6 | The air mass flow AFS_dm is greater than or equal to AFS_PhysRng.Min_C. Physical range check is low for air mass flow sensor. |
| 9 | 172 | 2 | 2-2-6 | Air inlet filter temperature, plausibility error. |
| 26 | 523891 | 14 | 2-6-3 | When AirHt_ctDefSRCLoOn_mp is lower than AirHt_ctMaxDef_C. DFC to SRC Low error when heater is on. |
| 28 | 523953 | 2 | 7-2-8 | Healing takes place if the condition for error detection is not present. Air temperature monitoring plausibility check array. |
| 30 | 523955 | 2 | 7-2-8 | Healing takes place if the condition for error detection is not present. Air temperature monitoring plausibility check array. |
| 36 | 523923 | 3 | 7-2-9 | |
| 37 | 523924 | 3 | 1-6-7 | Short circuit to battery error of actuator relay 2. |
| 38 | 523925 | 3 | 7-3-1 | Short circuit to battery of actuator relay 3. |
| 40 | 523927 | 3 | 7-3-3 | Short circuit to battery of actuator relay 6. |
| 41 | 523923 | 4 | 7-2-9 | Short circuit to ground error. Detailed information not available. |
| 42 | 523924 | 4 | 1-6-7 | Short circuit to ground of actuator relay 2. |
| 43 | 523925 | 4 | 7-3-1 | Short circuit to ground of actuator relay 3. |
| 44 | 523926 | 4 | 7-3-2 | Short circuit to ground of actuator relay 4. |
| 45 | 168 | 3 | 3-1-8 | Sensor battery voltage error; signal range check is high. |
| 46 | 168 | 4 | 3-1-8 | Sensor battery voltage error; signal range check is low. |
| 47 | 168 | 2 | 3-1-8 | High battery voltage; warning threshold is exceeded. |
| 48 | 168 | 2 | 3-1-8 | High battery voltage; Shot off threshold exceeded. |
| 55 | 523910 | 14 | 6-9-5 | Air pump doesn’t achieve air mass flow setpoint. Burner Control - burner air pump. |
| 56 | 524013 | 7 | 8-5-6 | Burner Control. Burner does not start after several trials (burner flame lost detection). Burner flame unintentional deleted. |
| 57 | 524020 | 14 | 8-6-3 | Burner Control: Power reduction due to low lambda. Engine power: Not enough oxygen for regeneration. |
| 58 | 523911 | 0 | 7-2-3 | Burner dosing valve (DV2); Overcurrent at the end of the injection phase. |
| 59 | 523911 | 12 | 7-2-3 | Burner dosing valve (DV2); Powerstage over temperature. |
| 60 | 523911 | 3 | 7-2-3 | Burner dosing valve (DV2); Short circuit to battery. |
| 62 | 523911 | 4 | 7-2-3 | Burner dosing valve (DV2); Short circuit to ground. |
| 63 | 523911 | 11 | 7-2-3 | Burner dosing valve (DV2); Short circuit high side powerstage. |
| 64 | 523912 | 2 | 7-2-2 | Burner dosing valve (DV2) downstream pressure sensor; plausibility error. |
| 66 | 523912 | 0 | 7-2-2 | Physical range check high for burner dosing valve (DV2) downstream pressure; Shut off regeneration. |

*1513AA-1*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 69 | 523912 | 1 | 7-2-2 | Physical range check low for burner dosing valve (DV2) downstream pressure; Shut off regeneration.<br>When burner injector is actuated, the measured pressure does not rise above 1250mbar abs (expected: about 2400mbar). |
| 72 | 523912 | 3 | 7-2-2 | Sensor error burner dosing valve (DV2) downstream pressure sensor; Signal range check high. |
| 73 | 523912 | 4 | 7-2-2 | For engines < 4l:<br>Throttle valve error, Open load or short cut to battery, blocked valve or wrong control signal for valve.<br>For engines with Burner T4i:<br>Pressure Sensor error after valve (DV2), lower limit reached. |
| 74 | 523913 | 3 | 7-2-1 | Sensor error glow plug control diagnostic line voltage; Signal range check high. |
| 75 | 523913 | 4 | 7-2-1 | Sensor error glow plug control diagnostic line voltage; Signal range check low. |
| 76 | 523914 | 5 | 7-2-1 | Glow plug control; Open load.<br>Water pump control (PWM) only TTCD 6.1/7.8. |
| 77 | 523914 | 12 | 7-2-1 | Glow plug control; Powerstage over temperature. |
| 78 | 523914 | 3 | 7-2-1 | Glow plug control; Short circuit to battery. Water pump control (PWM). |
| 79 | 523914 | 4 | 7-2-1 | Glow plug control; Short circuit to ground. Water pump control (PWM). |
| 82 | 1235 | 14 | 2-7-1 | CAN-Bus 2 = CAN_C reports Bus-error (for engines <8L and CV52 it is the engine-CAN@250kbaud)<br>CAN Bus error passive; warning CAN C - engine CAN. |
| 83 | 16 | 0 | 2-7-1 | No detail information. |
| 84 | 639 | 14 | 2-7-1 | CAN-Bus 0: "BusOff-Status" |
| 85 | 1231 | 14 | 2-7-1 | CAN-Bus 1: "BusOff-Status" |
| 86 | 1235 | 14 | 2-7-1 | CAN-Bus 2 = engine bus "BusOff-Status" |
| 87 | 16 | 0 | 2-7-1 | BusOff error CAN. |
| 88 | 102 | 2 | 2-2-3 | Charged air pressure above warning threshold. |
| 89 | 102 | 2 | 2-2-3 | Charged air pressure above shut off threshold. |
| 90 | 110 | 2 | 2-2-5 | Defect fault check for absolute plausibility test. |
| 92 | 110 | 0 | 2-2-5 | Physical range check high for coolant temperature. |
| 93 | 110 | 1 | 2-2-5 | Physical range check low for coolant temperature. |
| 96 | 110 | 3 | 2-2-5 | Sensor error coolant temperature; Signal range check high. |
| 97 | 110 | 4 | 2-2-5 | Sensor error coolant temperature; Signal range check low. |
| 98 | 110 | 0 | 2-3-2 | High coolant temperature; Warning threshold exceeded. |
| 99 | 110 | 0 | 2-3-2 | Coolant temperature; System reaction initiated. |
| 101 | 111 | 1 | 2-3-5 | Coolant level too low. |
| 106 | 598 | 2 | 3-2-5 | Plausibility check for clutch. |
| 121 | 1109 | 2 | 3-4-1 | Engine shut off demand ignored. |

*1513AA-2*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 122 | 523698 | 11 | 5-9-1 | Shut off request from supervisory monitoring function. |
| 124 | 523969 | 11 | 7-7-4 | Fault entry for override control mode. |
| 125 | 523717 | 12 | 5-9-5 | Timeout error of CAN-transmit-frame AmbCon; Weather environments. |
| 126 | 523603 | 9 | 3-3-8 | Timeout Error of CAN-receive-frame AMB; Ambient temperature sensor. |
| 128 | 3224 | 9 | 5-9-7 | Timeout error of CAN-receive-frame AT1IG1; NOX sensor upstream. |
| 129 | 3224 | 2 | 5-9-6 | DLC error of CAN-receive-frame AT1IG1Vol NOX sensor. |
| 130 | 3224 | 9 | 5-9-7 | Timeout error of CAN-receive-frame AT1IG1Vol; NOX sensor. |
| 133 | 523938 | 9 | 7-6-6 | Timeout error (BAM to packet) for CAN-receive-frame AT1IGCVol1. |
| 134 | 523939 | 9 | 7-6-6 | Broadcast announce message of the calibration message of the upstream catalytic NOx sensor has failed. |
| 135 | 523940 | 9 | 7-6-6 | Timeout error (PCK2PCK) for CAN-Receive-Frame AT1IGCVol1. |
| 136 | 3234 | 2 | 1-1-4 | DLC error of CAN-Receive-Frame AT1O1. |
| 137 | 3234 | 9 | 1-1-7 | Timeout error of CAN-Receive-Frame AT1OG1. NOX sensor (SCR-system downstream cat; DPF-system downstream cat). |
| 138 | 3234 | 2 | 1-1-4 | DLC error of CAN-Receive-Frame AT1O1Vol. |
| 139 | 3234 | 9 | 1-1-7 | Timeout error of CAN-Receive-Frame AT1OG1Vol. |
| 140 | 523941 | 9 | 7-6-7 | Timeout error (BAM to packet) for CAN-Receive-Frame AT1OGCVol2. |
| 141 | 523942 | 9 | 7-6-7 | Calibration message 1 of the after catalyst Nox sensor has failed. |
| 142 | 523943 | 9 | 7-6-7 | Timeout error (PCK2PCK) for CAN-Receive-Frame AT1OGCVol2. |
| 153 | 523992 | 9 | 7-9-3 | Not used. |
| 155 | 0 | 0 | - | Not used. |
| 164 | 523211 | 9 | 3-3-1 | Timeout error of CAN-Receive-Frame EBC1. |
| 167 | 523704 | 12 | 6-1-5 | Timeout error of CAN-Transmit-Frame EEC3. |
| 168 | 523935 | 12 | 7-6-3 | Timeout error of CAN-Transmit-Frame EEC3VOL1. Engine send messages. |
| 169 | 523936 | 12 | 7-6-4 | Timeout error of CAN-Transmit-Frame EEC3VOL2. Engine send messages. |
| 171 | 523212 | 9 | 3-3-3 | Timeout error of CAN-Receive-Frame ComEngPrt. Engine Protection. |
| 172 | 523741 | 14 | 6-1-8 | Engine shut off request through CAN. |
| 174 | 523213 | 12 | 3-3-4 | Timeout error of CAN-Transmit-Frame ERC1. |
| 178 | 523706 | 12 | 6-2-3 | Timeout error of CAN-Transmit-Frame FlEco. |
| 179 | 523240 | 9 | 5-2-7 | Timeout CAN-message FunModCtl. Function Mode Control. |
| 193 | 523937 | 9 | 7-6-5 | Timeout DFC for NOxSensGlbReqTx. |
| 196 | 3227 | 2 | 6-3-8 | DFC SAE J1939 error. |
| 198 | 523216 | 9 | 3-3-7 | Timeout error of CAN-Receive-Frame PrHtEnCmd. Pre-heat command, engine command. |
| 202 | 523793 | 9 | 6-7-8 | Timeout error of CAN-Receive-Frame UAA10. AGS sensor service message. |
| 203 | 523794 | 9 | 6-7-8 | Timeout error of CAN-Receive-Frame UAA11. AGS sensor data. |
| 212 | 523803 | 9 | 6-7-8 | Timeout error of CAN-Receive-Message RxEngPres. Status Burner Air Pump. |

*1513AA-3*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 273 | 3219 | 2 | 6-4-9 | DFC SAE J1939 error. |
| 281 | 523766 | 9 | 1-1-8 | Timeout error of CAN-Receive-Frame Active TSC1AE. |
| 282 | 523767 | 9 | 1-1-8 | Timeout error of CAN-Receive-Frame Passive TSC1AE. |
| 283 | 523768 | 9 | 1-1-9 | Timeout error of CAN-Receive-Frame Active TSC1AR. |
| 284 | 523769 | 9 | 1-1-9 | Timeout error of CAN-Receive-Frame Passive TSC1AR. |
| 291 | 523776 | 9 | 1-1-9 | Timeout error of CAN-Receive-Frame TSC1TE - active. |
| 292 | 523777 | 9 | 1-1-9 | Passive timeout error of CAN-Receive-Frame TSC1TE. Setpoint. |
| 293 | 523778 | 9 | 1-1-8 | Timeout error of CAN-Receive-Frame TSC1TR. |
| 294 | 523779 | 9 | 1-1-8 | Passive timeout error of CAN-Receive-Frame TSC1TR. |
| 299 | 523788 | 12 | 6-5-5 | Timeout error of CAN-Transmit-Frame TrbCH. Status Wastegate. |
| 300 | 523605 | 9 | 1-1-8 | Timeout error of CAN-Receive-Frame TSC1AE. Traction Control. |
| 301 | 523606 | 9 | 1-1-9 | Timeout error of CAN-Receive-Frame TSC1AR. Retarder. |
| 305 | 898 | 9 | 1-1-8 | Timeout error of CAN-Receive-Frame TSC1TE. Setpoint. |
| 306 | 520 | 9 | 1-1-9 | Timeout Error of CAN-Receive-Frame TSC1TR; control signal |
| 313 | 523858 | 12 | 6-7-9 | Timeout error of CAN-Transmit-Frame UAA11. |
| 322 | 523867 | 12 | 6-7-9 | Timeout error of CAN-Transmit-Frame UAA1 on CAN 2. Control burner air pump. |
| 360 | 523982 | 0 | 7-3-7 | Powerstage diagnosis disabled. High battery voltage. |
| 361 | 523982 | 1 | 7-3-7 | Powerstage diagnosis disabled. Low battery voltage. |
| 362 | 523090 | 2 | 3-2-9 | Engine brake Pre-Selection switch. Plausibility error. |
| 376 | 630 | 12 | 2-8-1 | Access error EEPROM memory (delete). |
| 377 | 630 | 12 | 2-8-1 | Access error EEPROM memory (read). |
| 378 | 630 | 12 | 2-8-1 | Access error EEPROM memory (write). |
| 381 | 411 | 4 | 6-9-3 | Physical range check low for EGR differential pressure. |
| 384 | 2791 | 12 | 4-1-5 | Actuator EGR valve. Powerstage over temperature. |
| 387 | 523612 | 12 | 5-5-5 | Internal software error ECU. Injection cut off. |
| 388 | 190 | 0 | 2-1-4 | Engine speed above warning threshold.<br>Overspeed detection in component engine protection. |
| 389 | 190 | 0 | 2-1-4 | Engine speed above warning threshold (FOC-Level 1). |
| 390 | 190 | 11 | 2-1-4 | Engine speed above warning threshold (FOC-Level 2). |
| 391 | 190 | 14 | 2-1-4 | Engine speed above warning threshold (Overrun Mode). |
| 411 | 108 | 11 | 2-9-2 | Ambient air pressure received from a CAN-bus is reported as defective. |
| 412 | 108 | 3 | 2-9-2 | Sensor error ambient air pressure. Signal range check high. |
| 413 | 108 | 4 | 2-9-2 | Sensor error ambient air pressure. Signal range check low. |
| 415 | 171 | 0 | 3-1-2 | Environment temperature sensor, temperature above upper physical threshold. |
| 416 | 171 | 1 | 3-1-2 | Environment temperature physical range check low. |

*1513AA-4*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 417 | 171 | 3 | 3-1-2 | Sensor error SCR-System environment temperature.<br>DPF-System air inlet temperature, signal range check high. |
| 418 | 171 | 4 | 3-1-2 | Sensor error SCR-System environment temperature.<br>DPF-System air inlet temperature, signal range check low. |
| 419 | 190 | 8 | 2-1-2 | Sensor camshaft speed, disturbed signal. |
| 420 | 190 | 12 | 2-1-2 | Sensor camshaft detection.<br>Out of range, signal disrupted, no signal. |
| 421 | 190 | 2 | 2-1-3 | Offset angle between crank- and camshaft-sensor is too large. |
| 422 | 190 | 8 | 2-1-2 | Sensor crankshaft detection.<br>Out of range, signal disrupted or no signal. |
| 423 | 190 | 12 | 2-1-2 | Speed detection, out of range, signal disrupted or no signal. |
| 455 | 975 | 5 | 2-3-8 | PWM-Signal fan, open load or short-circuit ground. |
| 457 | 975 | 3 | 2-3-8 | PWM-Signal fan, short-circuit to battery. |
| 458 | 975 | 4 | 2-3-8 | PWM-Signal fan, open load or short circuit to ground |
| 459 | 1639 | 12 | 2-3-8 | Fan speed sensor, electrical error, signal disturbed or very low fan speed. |
| 460 | 1639 | 0 | 2-3-8 | Sensor error fan speed.<br>Signal range check high or engine speed resp. Fan speed too big. |
| 461 | 1639 | 1 | 2-3-8 | Sensor error fan speed, signal range check low or fan speed too low. |
| 462 | 523602 | 0 | 2-3-8 | High fan speed, warning threshold exceeded. |
| 463 | 523602 | 0 | 2-3-8 | High fan speed, shut off threshold exceeded. |
| 464 | 97 | 3 | 2-2-8 | Sensor error water in fuel, signal range check high. |
| 465 | 97 | 4 | 2-2-8 | Sensor error water in fuel, signal range check low. |
| 472 | 94 | 3 | 2-1-6 | Sensor error low fuel pressure, signal range check high. |
| 473 | 94 | 4 | 2-1-6 | Sensor error low fuel pressure, signal range check low. |
| 474 | 94 | 1 | 2-1-6 | Low fuel pressure, warning threshold exceeded. |
| 475 | 94 | 1 | 2-1-6 | Low fuel pressure, shut off threshold exceeded. |
| 483 | 174 | 11 | 2-2-7 | Fuel temperature not plausible. |
| 486 | 523618 | 3 | 1-3-3 | Sensor error gearbox oil temperature, signal range check high. |
| 487 | 523618 | 4 | 1-3-3 | Sensor error gearbox oil temperature, signal range check low. |
| 488 | 523619 | 2 | 1-3-3 | Physical range check high for exhaust gas temperature upstream (SCR-CAT). |
| 489 | 523619 | 2 | 1-3-3 | Shutoff condition.<br>No detailed information! |
| 500 | 523915 | 0 | 1-6-5 | HCl dosing valve (DV1); overcurrent at the end of the injection phase |
| 501 | 523915 | 12 | 1-6-6 | HCl dosing valve (DV1): Powerstage over temperature. |
| 502 | 523915 | 3 | 1-5-9 | HCl dosing valve (DV1): Short circuit to battery. |
| 503 | 523915 | 3 | 1-6-4 | Short circuit to battery high side, HCl dosing valve (DV1). |
| 504 | 523915 | 4 | 1-5-9 | HCl dosing valve (DV1): Short circuit to ground. |
| 505 | 523915 | 11 | 1-6-4 | HCl dosing valve (DV1): Short circuit high side powerstage. |

*1513AA-5*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 506 | 523916 | 2 | 7-1-9 | Sensor HCl dosing valve (DV1) downstream pressure: Plausibility error. |
| 508 | 523916 | 0 | 7-1-9 | HCl dosing valve (DV1) downstream pressure: Physical range check high. Shut off regeneration. |
| 511 | 523916 | 1 | 7-1-9 | HCl dosing valve (DV1) downstream pressure: Physical range check low. Shut off regeneration. |
| 514 | 523916 | 3 | 7-1-9 | Sensor error HCl dosing valve (DV1) downstream pressure: Signal range check high. |
| 515 | 523916 | 4 | 7-1-9 | Sensor error HCl dosing valve (DV1) downstream pressure: Signal range check low. |
| 525 | 523917 | 4 | 7-1-8 | Sensor error DV1 & DV2 upstream pressure: Signal range check low. |
| 534 | 523918 | 3 | 7-1-7 | Sensor error DV1 & DV2 upstream temperature: Signal range check high. |
| 535 | 523918 | 4 | 7-1-7 | Sensor error DV1 & DV2 upstream temperature: Signal range check low. |
| 542 | 1638 | 2 | 3-1-4 | Hydraulic oil temperature check for Shut off condition. |
| 543 | 676 | 11 | 263 | Cold start aid relay error. |
| 544 | 676 | 11 | 263 | Cold start aid relay: Open load. |
| 545 | 729 | 5 | 263 | Cold start aid relay open load. |
| 547 | 729 | 12 | 263 | Cold start aid relay: Over temperature error. |
| 549 | 729 | 3 | 263 | Intake Air Heater Device: Short circuit to battery. |
| 551 | 729 | 4 | 263 | |
| 559 | 523895 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 1. |
| 560 | 523896 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 2. |
| 561 | 523897 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 3. |
| 562 | 523898 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 4. |
| 563 | 523899 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 5. |
| 564 | 523900 | 13 | 1-5-8 | Check of missing injector adjustment value programming (IMA) injector 6. |
| 565 | 523350 | 4 | 151 | Injector cylinder-bank 1: Short circuit. |
| 566 | 523352 | 4 | 152 | Injector cylinder-bank 2: Short circuit. |
| 567 | 523354 | 12 | 153 | Injector powerstage output defect. |
| 568 | 651 | 5 | 154 | Injector 1 (in firing order): Interruption of electric connection. |
| 569 | 652 | 5 | 155 | Injector 2 (in firing order): Interruption of electric connection. |
| 570 | 653 | 5 | 156 | Injector 3 (in firing order): Interruption of electric connection. |
| 571 | 654 | 5 | 161 | Injector 4 (in firing order): Interruption of electric connection. |
| 572 | 655 | 5 | 162 | Injector 5 (in firing order): Interruption of electric connection. |
| 573 | 656 | 5 | 163 | Injector 6 (in firing order): Interruption of electric connection. |
| 575 | 523756 | 14 | 1-5-5 | Special pattern for special cases. No detailed information! |
| 576 | 523757 | 14 | 1-5-6 | Special pattern for special cases. No detailed information! |
| 577 | 523758 | 14 | 1-6-1 | Special pattern for special cases. No detailed information! |

*1513AA-6*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 578 | 523759 | 14 | 1-6-2 | Special pattern for special cases No detailed information! |
| 579 | 523760 | 14 | 1-6-3 | Special pattern for special cases No detailed information! |
| 580 | 651 | 3 | 154 | Injector 1 (in firing order): Short circuit. |
| 581 | 652 | 3 | 155 | Injector 2 (in firing order): Short circuit. |
| 582 | 653 | 3 | 156 | Injector 3 (in firing order): Short circuit. |
| 583 | 654 | 3 | 161 | Injector 4 (in firing order): Short circuit. |
| 584 | 655 | 3 | 162 | Injector 5 (in firing order): Short circuit. |
| 585 | 656 | 3 | 163 | Injector 6 (in firing order): Short circuit. |
| 590 | 655 | 4 | 1-6-2 | High side to low side short circuit in the injector 5 (in firing order). |
| 591 | 656 | 4 | 1-6-3 | High side to low side short circuit in the injector 6 (in firing order). |
| 592 | 523615 | 5 | 135 | Metering unit (Fuel-System): Open load. |
| 593 | 523615 | 12 | 135 | Metering unit (Fuel-System): Powerstage over temperature. |
| 594 | 523615 | 3 | 135 | Metering unit (Fuel-System): Short circuit to battery, highside. |
| 595 | 523615 | 4 | 135 | Metering unit (Fuel-System): Short circuit to ground, high side. |
| 596 | 523615 | 3 | 135 | Metering unit (Fuel-System): Short circuit to battery, low side. |
| 597 | 523615 | 4 | 135 | Metering Unit (Fuel-System): Short circuit to ground, low side |
| 598 | 523615 | 3 | 1-3-5 | Metering unit, short circuit to battery. |
| 599 | 523615 | 4 | 1-3-5 | Metering unit, short circuit to ground. |
| 605 | 1323 | 12 | 2-4-1 | Too many recognized misfires in cylinder 2 (in firing order). |
| 607 | 1323 | 12 | 2-4-1 | Too many recognized misfires in cylinder 4 (in firing order). |
| 608 | 1323 | 12 | 2-4-1 | Too many recognized misfires in cylinder 5 (in firing order). |
| 609 | 1323 | 12 | 2-4-1 | Too many recognized misfires in cylinder 6 (in firing order). |
| 610 | 1322 | 12 | 2-4-1 | |
| 611 | 1346 | 0 | 2-4-1 | Misfire detection monitoring No detailed information! |
| 612 | 523612 | 12 | 555 | Internal ECU monitoring detection reported error. |
| 613 | 523612 | 12 | 555 | ECU reported internal software error.<br>Internal ECU monitoring detection reported error. |
| 614 | 523612 | 12 | 555 | ECU reported internal software error. |
| 615 | 523612 | 12 | 555 | ECU reported internal software error. |
| 616 | 523612 | 12 | 555 | ECU reported internal software error. |
| 617 | 523612 | 12 | 555 | ECU reported internal software error. |
| 618 | 523612 | 12 | 555 | ECU reported internal software error. |
| 619 | 523612 | 12 | 555 | Injection system,electrical error injectors. |
| 620 | 523612 | 12 | 555 | ECU reported internal software error. |
| 621 | 523612 | 12 | 555 | ECU reported internal software error. |
| 623 | 523612 | 12 | 555 | ECU reported internal software error. |

*1513AA-7*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 624 | 523612 | 12 | 555 | ECU reported internal software error. |
| 625 | 523612 | 12 | 555 | ECU reported internal software error. |
| 627 | 523612 | 12 | 555 | ECU reported internal software error. |
| 628 | 523612 | 12 | 555 | ECU reported internal software error. |
| 629 | 523612 | 12 | 555 | Diagnostic fault check to report the accelerator pedal position error. |
| 630 | 523612 | 12 | 555 | Diagnostic fault check to report the engine speed error. |
| 631 | 523612 | 12 | 555 | Error in the plausibility of the injection energizing time. |
| 632 | 523612 | 12 | 555 | Error in the plausibility of the start of energising angles. |
| 633 | 523612 | 12 | 555 | Diagnostic fault check to report the error due to non plausibility in ZFC. |
| 634 | 523612 | 12 | 555 | Diagnosis fault check to report the demand for normal mode due to an error in the PoI2 quantity. |
| 635 | 523612 | 12 | 555 | Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI2 shut-off. |
| 636 | 523612 | 12 | 555 | Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI3 efficiency factor. |
| 637 | 523612 | 12 | 555 | Internal ECU monitoring detection reported error. |
| 638 | 523612 | 12 | 555 | Monitoring of Fuel Quantity Correction. |
| 639 | 523612 | 12 | 555 | Diagnostic fault check to report the plausibility error in rail pressure monitoring. |
| 640 | 523612 | 12 | 555 | Diagnostic fault check to report the error due to torque comparison. |
| 641 | 523612 | 12 | 555 | Diagnosis of curr path limitation forced by ECU monitoring level 2. |
| 642 | 523612 | 12 | 555 | Diagnosis of lead path limitation forced by ECU monitoring level 2. |
| 643 | 523612 | 12 | 5-5-5 | Diagnosis of set path limitation forced by ECU monitoring level 2. |
| 644 | 523612 | 3 | 5-5-5 | Reported Over Voltage of Supply. |
| 646 | 523612 | 4 | 5-5-5 | Reported UnderVoltage of Supply. |
| 648 | 523008 | 1 | 4-2-4 | Manipulation control was triggered. |
| 649 | 523008 | 2 | 4-2-4 | Timeout error in Manipulation control. |
| 654 | 2634 | 12 | 7-5-7 | Early opening defect of main relay No detailed information! |
| 656 | 2634 | 12 | 7-5-7 | DFC for stuck main relay error No detailed information! |
| 659 | 3226 | 2 | 8-1-3 | Nox feed back fault detection No detailed information! |
| 692 | 523752 | 0 | 7-5-8 | Plausibiliti error during Rich to Lean switch over No detail informationen! |
| 693 | 523752 | 0 | 7-5-8 | Monitoring of Nox signal readyness No detail informationen! |
| 714 | 523612 | 12 | 5-5-5 | Diagnostic fault check to report WDA active due to errors in query-/response communication. |
| 715 | 523612 | 12 | 5-5-5 | Diagnostic fault check to report ABE active due to undervoltage detection. |
| 716 | 523612 | 12 | 5-5-5 | Diagnostic fault check to report ABE active due to overvoltage detection. |
| 717 | 523612 | 12 | 5-5-5 | Diagnostic fault check to report WDA/ABE active due to unknown reason. |

*1513AA-8*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 720 | 98 | 2 | 2-1-1 | Plausibility Check.<br>No detailed information! |
| 732 | 100 | 3 | 2-2-4 | Sensor error oil pressure; signal range check high. |
| 733 | 100 | 4 | 2-2-4 | Sensor error oil pressure sensor; signal range check low. |
| 734 | 100 | 0 | 2-3-1 | High oil pressure; warning threshold exceeded. |
| 735 | 100 | 0 | 2-3-1 | High oil pressure; shut off threshold exceeded. |
| 736 | 100 | 1 | 2-3-1 | Low oil pressure; warning threshold exceeded. |
| 737 | 100 | 1 | 2-3-1 | Low oil pressure; shut off threshold exceeded. |
| 743 | 175 | 3 | 1-4-4 | Sensor error oil temperature; signal range check high. |
| 744 | 175 | 4 | 1-4-4 | Sensor error oil temperature; signal range check low. |
| 745 | 175 | 0 | 1-4-4 | High oil temperature; warning threshold exceeded. |
| 746 | 175 | 0 | 1-4-4 | High oil temperature; shut off threshold exceeded. |
| 747 | 1237 | 2 | 1-4-5 | Override switch; plausibility error. |
| 750 | 107 | 3 | 1-3-6 | Sensor error airfilter differential pressure; short circuit to battery. |
| 751 | 107 | 0 | 1-3-6 | Sensor error airfilter differential pressure; short circuit to ground. |
| 752 | 107 | 0 | 1-3-6 | Air filter differential pressure; air filter cologged. |
| 753 | 523919 | 2 | 6-9-4 | DPF burner air pump pressure sensor, plausibility error. |
| 755 | 523919 | 0 | 6-9-4 | DPF burner air pump pressure sensor, pressure above upper shutoff threshold. |
| 758 | 523919 | 1 | 6-9-4 | DPF burner air pump pressure sensor, pressure below lower shutoff threshold. |
| 761 | 523919 | 3 | 6-9-4 | DPF burner air pump pressure sensor, short circuit to battery or open load. |
| 762 | 523919 | 4 | 6-9-4 | DPF burner air pump pressure sensor, short circuit to ground. |
| 763 | 523920 | 2 | 7-1-6 | Exhaustgaspressure upstream burner, plausibility error. |
| 765 | 523920 | 0 | 7-1-6 | Exhaust gas pressure upstream burner, pressure above upper shutoff threshold. |
| 770 | 523920 | 3 | 7-1-6 | Exhaust gas pressure upstream burner, short circuit to battery or open load. |
| 771 | 523920 | 4 | 7-1-6 | Exhaust gas pressure upstream burner, short circuit to ground. |
| 772 | 102 | 2 | 2-2-3 | Pressure downstream charge air cooler, plausibility error. |
| 774 | 102 | 1 | 2-2-3 | Pressure downstream charge air cooler, pressure below lower physical threshold. |
| 776 | 102 | 3 | 2-2-3 | Pressure downstream charge air cooler, short circuit to battery or open load. |
| 777 | 102 | 4 | 2-2-3 | Pressure downstream charge air cooler, short circuit to ground. |
| 780 | 523699 | 3 | 1-1-3 | Boost pressure control; negative governor deviation below limit. |
| 781 | 523699 | 4 | 1-1-3 | Learning value too high. No detailed information! |
| 785 | 523889 | 3 | 1-1-3 | Over temperature of device driver of pressure control valve. No detailed information! |

*1513AA-9*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 791 | 411 | 0 | 6-9-3 | Delta pressure across venturi in EGR line above physical high limit. |
| 793 | 411 | 0 | 6-9-3 | Plausibility Check fault for deviation of desired and actual EGR-mass flow, where the latter is calculated out of EGR Delta Pressure Sensor. |
| 795 | 411 | 3 | 6-9-3 | Sensor error differential pressure Venturiunit (EGR), signal range check low. |
| 796 | 411 | 4 | 6-9-3 | Sensor error differential pressure Venturiunit (EGR), signal range check high. |
| 805 | 524025 | 14 | 8-4-5 | Particulate filter regeneration.<br>(3x) over the max. has been aborted allowed recovery time.<br>Regeneration after time X is not successful (the error occurs when the regeneration times). |
| 806 | 524058 | 2 | 8-4-4 | Particulate filter; regeneration not succesful. |
| 807 | 3253 | 2 | 6-9-2 | Differential pressure DPF, plausibility error. |
| 809 | 3251 | 0 | 6-9-2 | Differential pressure DPF maximum value is exceeded. |
| 810 | 3251 | 0 | 6-9-2 | Differential pressure sensor across DPF exceeds warning high limit. |
| 812 | 3251 | 1 | 6-9-2 | Differential pressure DPF, pressure below lower shutoff threshold. |
| 813 | 3251 | 1 | 6-9-2 | Differential pressure DPF, pressure below lower warning threshold. |
| 814 | 3253 | 3 | 6-9-2 | Electrical error differential pressure B58 (DPF). (Signal range check high). |
| 815 | 3253 | 4 | 6-9-2 | Electrical error differential pressure (DPF). signal range check low. |
| 825 | 523009 | 9 | 2-5-3 | The pressure relief valve (PRV) has reached the number of allowed activations. |
| 826 | 523470 | 2 | 1-4-6 | Pressure relief valve is forced to open, perform pressure increase. |
| 827 | 523470 | 2 | 1-4-6 | Pressure Relief Valve (PRV) forced to open. Performed by pressure increase. |
| 828 | 523470 | 12 | 1-4-6 | Pressure Relief Valve (PRV) forced to open. Shutoff conditions. |
| 829 | 523470 | 12 | 1-4-6 | Pressure Relief Valve (PRV) forced to open. Warning conditions. |
| 830 | 523470 | 14 | 1-4-6 | Open Pressure Relief Valve (PRV). |
| 831 | 523470 | 11 | 1-4-6 | Pressure Relief Valve (PRV) error; Rail pressure out of tolerance range. |
| 832 | 523470 | 11 | 1-4-6 | Rail pressure out of tolerance range.<br>The PRV can not be opened at this operating point with a pressure shock. |
| 833 | 523009 | 10 | 2-5-3 | Open time of Pressure Relief Valve (PRV) for wear out monitoring had exceeded. |
| 834 | 523906 | 5 | 7-6-1 | Electrical fuel pre - supply pump; open load. |
| 835 | 523906 | 12 | 7-6-1 | Electrical fuel pre - supply pump. ECU powerstage over temperature. |
| 836 | 523906 | 3 | 7-6-1 | Electrical fuel pre - supply pump; short circuit to battery. |
| 837 | 523906 | 4 | 7-6-1 | Electrical fuel pre - supply pump. Short circuit to ground. |
| 847 | 1176 | 0 | 1-3-9 | Pressure sensor upstream turbine, Physical Range Check high. |
| 848 | 1176 | 1 | 1-3-9 | Pressure sensor upstream turbine, Physical Range Check low. |
| 849 | 1176 | 3 | 1-4-1 | Pressure sensor upstream turbine, signal range check (SRC) high. |
| 850 | 1176 | 4 | 1-4-1 | Pressure sensor upstream turbine, signal range check (SRC) low. |
| 856 | 523613 | 0 | 1-3-4 | Rail pressure metering unit, Positive governor deviation. |

*1513AA-10*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 857 | 523613 | 0 | 1-3-4 | Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure exceeded. |
| 858 | 523613 | 0 | 1-3-4 | Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure in metering unit exceeded (RailMeUn1). |
| 859 | 523613 | 0 | 1-3-4 | Rail pressure metering unit, Rail pressure below the target range. (RailMeUn2)<br>Railsystem leakage detected.(RailMeUn10) |
| 861 | 523613 | 1 | 1-3-4 | Rail pressure metering unit, Minimum rail pressure exceeded (RailMeUn3). Negative deviation of rail pressure second stage (RailMeUn22). |
| 862 | 523613 | 0 | 1-3-4 | Rail pressure metering unit, Maximum rail pressure exceeded. |
| 864 | 523613 | 2 | 1-3-4 | Rail pressure metering unit, Setpoint of metering unit in overrun mode not plausible. |
| 865 | 523613 | 0 | 1-3-4 | Setpoint of metering unit in overrun mode not plausible. |
| 874 | 157 | 0 | 1-4-7 | Rail pressure raw value is intermittent. No detailed information! |
| 875 | 157 | 1 | 1-4-7 | rail pressure raw value is above maximum offset. No detailed information! |
| 876 | 523470 | 7 | 1-4-6 | Maximum rail pressure exceeded (PRV). |
| 877 | 157 | 3 | 1-4-7 | Sensor error rail pressure. Sensor voltage above upper limit. |
| 878 | 157 | 4 | 1-4-7 | Sensor error rail pressure. Sensor voltage below lower limit. |
| 881 | 523633 | 11 | 1-4-9 | Longterm adaption factor below threshold. |
| 882 | 523633 | 11 | 1-4-9 | Nox conversion rate insufficient (SCR-Cat defect, bad DEF quality). |
| 883 | 523633 | 11 | 1-4-9 | Nox conversion rate insufficient (SCR-Cat defect, bad DEF quality); temperature range 1 |
| 887 | 3234 | 11 | 1-8-4 | DFC for plausibility error Min for NOx sensor downstream of SCR Cat. |
| 889 | 3224 | 1 | 1-8-5 | DFC for plausibility error Max for NOx sensor upstream of SCR Cat. |
| 892 | 4345 | 11 | 2-3-6 | Sensor backflow line pressure (SCR); plausibility error. |
| 893 | 4343 | 11 | 8-7-1 | SCR Monitoring; Pressure stabilisation error, general pressure check error (SCR). |
| 894 | 4374 | 13 | 8-7-2 | Pressure stabilisation error dosing valve (SCR). |
| 897 | 523632 | 16 | 8-7-5 | Pump pressure SCR metering unit too high. |
| 898 | 523632 | 18 | 8-7-6 | Pump pressure SCR metering unit too low. |
| 899 | 523632 | 0 | 8-7-7 | Pressure overload of SCR-System. |
| 900 | 523632 | 1 | 8-7-8 | Pressure build-up error SCR-System. |
| 903 | 4365 | 0 | 8-8-1 | DEF tank temperature too high. |
| 905 | 3241 | 0 | 8-8-3 | Sensor SCR catalyst upstream temperature too high; plausibility error. |
| 908 | 3361 | 7 | 8-8-6 | DEF dosing valve blocked (SCR). |
| 914 | 523720 | 2 | 1-4-8 | DEF supply module heater temperature; plausibility error (normal condition). |
| 915 | 523720 | 2 | 1-4-8 | Sensor DEF supply module heater temperature; plausibility error (cold start condition). |

*1513AA-11*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 916 | 523721 | 2 | 6-8-9 | Sensor DEF supply module temperature; plausibility error (normal condition). |
| 917 | 523721 | 2 | 6-8-9 | Sensor DEF supply module temperature; plausibility error (cold start condition). |
| 918 | 523981 | 11 | 2-4-3 | SCR plausibility, OBD and diagnosis; Stuck in range check of DEF tank temperature sensor.<br>DEF-tank without heating function (heating phase). |
| 919 | 523330 | 14 | 1-3-1 | Immobilizer status; fuel blocked. |
| 920 | 523330 | 14 | 1-3-1 | DFC to block the fuel by Sia. No detailed information! |
| 921 | 523330 | 14 | 1-3-1 | DFC to indicate that TEN-code or UC-code received if ECU is learned.<br>No detailed information! |
| 922 | 523330 | 14 | 1-3-1 | DFC to indicate that no code is received via CAN. No detailed information! |
| 923 | 523330 | 14 | 1-3-1 | DFC to indicate that wrong code is received. No detailed information! |
| 925 | 523720 | 8 | 1-4-8 | DEF supply module heater temperature; duty cycle in failure range. |
| 926 | 523720 | 8 | 1-4-8 | DEF supply module heater temperature; duty cycle in invalid range. |
| 927 | 523721 | 11 | 6-8-9 | Urea supply module temperature measurement not available. |
| 928 | 523722 | 8 | 6-9-1 | DEF supply module PWM signal; period outside valid range. |
| 929 | 523722 | 8 | 6-9-1 | Detect faulty PWM signal from Supply Modul. |
| 930 | 523721 | 8 | 6-8-9 | DEF supply module temperature; duty cycle in failure range. |
| 931 | 523721 | 8 | 6-8-9 | Urea supply module temperature; duty cycle in invalid range. |
| 932 | 29 | 3 | 1-2-6 | Handthrottle idle validation switch; short circuit to battery |
| 935 | 91 | 3 | 2-2-6 | Sensor error accelerator pedal. signal range check high. |
| 937 | 29 | 4 | 1-2-6 | Handthrottle; short circuit to ground. |
| 940 | 91 | 4 | 2-2-6 | Sensor error accelerator pedal. Signal is below the range. |
| 942 | 523921 | 3 | 7-1-4 | Sensor error burner temperature; signal range check high. |
| 943 | 3532 | 3 | 1-2-7 | Sensor error DEF tank level; signal range check high. |
| 944 | 523921 | 4 | 7-1-4 | Sensor error burner temperature; signal range check low. |
| 946 | 1079 | 13 | 2-8-2 | Failure of sensor supply voltage 1. |
| 947 | 1080 | 13 | 2-8-2 | Failure of sensor supply voltage 2. |
| 948 | 523601 | 13 | 2-8-2 | Failure of sensor supply voltage 3. |
| 956 | 677 | 3 | 5-1-2 | Starter relay high side. Short circuit to battery. |
| 957 | 677 | 4 | 5-1-2 | Starter relay high side short circuit to ground. |
| 958 | 677 | 5 | 5-1-2 | Starter relay low side no load error. |
| 959 | 677 | 12 | 5-1-2 | Starter relay powerstage over temperature. |
| 960 | 677 | 3 | 5-1-2 | Starter relay low side short circuit to battery. |
| 961 | 677 | 4 | 5-1-2 | Starter relay low side short circuit to ground. |
| 965 | 523922 | 3 | 7-1-5 | Burner shut of valve; short circuit to battery. |
| 969 | 624 | 5 | 5-1-3 | SVS lamp; open load. |

*1513AA-12*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 970 | 624 | 12 | 5-1-3 | SVS lamp: powerstage over temperature |
| 971 | 624 | 3 | 5-1-3 | SVS lamp; short circuit to battery |
| 972 | 624 | 4 | 5-1-3 | SVS lamp; short circuit to ground |
| 973 | 523612 | 14 | 5-5-5 | Softwarereset CPU SWReset_0 |
| 974 | 523612 | 14 | 5-5-5 | Softwarereset CPU SWReset_1 |
| 975 | 523612 | 14 | 5-5-5 | Softwarereset CPU SWReset_2 |
| 976 | 91 | 11 | 2-2-6 | Plausibility error between APP1 and APP2 or APP1 and idle switch. |
| 978 | 29 | 2 | 1-2-6 | Plausibility error between sensor and idle switch, Acceleratio Pedal Detection.<br>In case of Hand Throttle with Low Idle Switch, it is the plausibility check between hand throttle and idle switch. |
| 980 | 523550 | 12 | 5-1-5 | Terminal 50 was operated too long. |
| 981 | 172 | 3 | 2-2-6 | Air flow temperature sensor; short circuit to battery or open load. |
| 982 | 172 | 4 | 2-2-6 | Air flow temperature sensor; short circuit to ground. |
| 986 | 523921 | 0 | 7-1-4 | Burner temperature, temperature above upper shutoff threshold. |
| 989 | 523921 | 1 | 7-1-4 | Burner temperature, temperature below lower shutoff threshold. |
| 992 | 105 | 1 | 1-2-8 | Charged Air cooler down stream temperature. Temperature below lower physical threshold. |
| 994 | 105 | 3 | 1-2-8 | Electrical error charged air temperature. Signal range check high.(SRC) |
| 995 | 105 | 4 | 1-2-8 | Electrical error charged air temperature. Signal range check low. |
| 996 | 105 | 0 | 2-3-3 | Charged air cooler temperature. System reaction initiated. High charged air cooler temperature. Warning threshold exceeded. |
| 997 | 105 | 0 | 2-3-3 | High charged air cooler temperature. Shut off threshold exceeded. |
| 998 | 105 | 11 | 1-2-8 | Diagnostic fault check for charged air cooler downstream temperature sensor<br>No detailed information! |
| 1007 | 412 | 3 | 6-8-2 | Electrical error EGR cooler downstream temperature. Signal range check high. |
| 1008 | 412 | 4 | 6-8-2 | electrical error EGR cooler downstream temperature. Signal range check low. |
| 1011 | 523960 | 0 | 7-7-1 | Physical range check high for EGR cooler downstream temperature. |
| 1012 | 523960 | 1 | 7-7-1 | Physical range check low for EGR cooler downstream temperature. |
| 1014 | 51 | 6 | 5-9-4 | Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8).<br>Signal range check high. |
| 1015 | 520521 | 5 | 5-9-4 | Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check low. |
| 1016 | 51 | 7 | 5-9-4 | Actuator position for EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8) not plausible. |
| 1022 | 51 | 6 | 5-9-4 | Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check high |

*1513AA-13*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1023 | 51 | 5 | 5-9-4 | Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check low. |
| 1024 | 51 | 3 | 5-9-4 | Position sensor error of actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8).<br>Signal range check high. |
| 1025 | 51 | 4 | 5-9-4 | Position sensor error actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8).<br>Signal range check low. |
| 1026 | 4769 | 2 | 6-8-4 | Temperature downstream DOC, plausibility error. |
| 1029 | 4766 | 0 | 6-8-4 | Temperature downstream DOC, temperature above upper shutoff threshold. |
| 1030 | 4766 | 0 | 6-8-4 | Temperature downstream DOC, temperature above upper warning threshold. |
| 1034 | 4769 | 3 | 6-8-4 | Sensor error exhaust gas temperature downstream (DOC); signal range check high. |
| 1035 | 4769 | 4 | 6-8-4 | Sensor error exhaust gas temperature downstream (DOC); signal range check low. |
| 1036 | 4768 | 2 | 6-8-3 | Temperature upstream DOC, plausibility error. |
| 1039 | 4765 | 0 | 6-8-3 | Temperature upstream DOC, temperature above upper shutoff threshold. |
| 1040 | 4765 | 0 | 6-8-3 | Temperature upstream DOC, temperature above upper warning threshold. |
| 1044 | 4768 | 3 | 6-8-3 | Electrical error exhaust gas temperature upstream (DOC); signal range check high. |
| 1045 | 4768 | 4 | 6-8-3 | Electrical error exhaust gas temperature upstream (DOC); signal range check low. |
| 1047 | 3248 | 4 | 6-8-5 | Sensor error particle filter downstream temperature; signal range check low. |
| 1067 | 1180 | 3 | 5-5-6 | Sensor error exhaust gas temperature upstream turbine; signal range check high. |
| 1069 | 4360 | 0 | 6-6-8 | Exhaust temperature upstream SCR-Cat, temperature above upper physical threshold. |
| 1070 | 4360 | 1 | 6-6-8 | Sensed exhaust temperature before SCR-Cat is < physical low limit. |
| 1071 | 4361 | 2 | 6-6-8 | Signal error for CAN message No detail informationen! |
| 1166 | 523948 | 1 | 7-7-2 | Zerofuel calibration injector 3 (in firing order); minimum value exceeded. |
| 1167 | 523949 | 1 | 7-7-2 | Zerofuel calibration injector 4 (in firing order); minimum value exceeded. |
| 1168 | 523950 | 1 | 7-7-2 | Zerofuel calibration injector 5 (in firing order); minimum value exceeded. |
| 1170 | 523612 | 12 | 5-5-5 | Internal software error ECU. |
| 1180 | 168 | 0 | 3-1-8 | Physical range check high for battery voltage. |
| 1181 | 168 | 1 | 3-1-8 | Physical range check low for battery voltage. |
| 1183 | 172 | 1 | 2-2-6 | Air inlet filter sensor out of physical range check. |
| 1187 | 523980 | 14 | 7-8-4 | Bad quality of reduction agent detected. |
| 1193 | 1180 | 0 | 5-5-6 | Physical range check high for exhaust gas temperature upstream turbine. |
| 1194 | 1180 | 1 | 5-5-6 | Physical range check low for exhaust gas temperature upstream turbine. |

*1513AA-14*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1219 | 524018 | 14 | 7-8-6 | HMI engine derate service state.<br>DPF wasn't regenerated, power reduction phase 1 (manuell regeneration request). |
| 1220 | 524022 | 14 | 7-8-6 | HMI engine derate stop state.<br>DPF wasn't regenerated, power reduction phase 2 (manuell regeneration request). |
| 1222 | 190 | 14 | 2-1-2 | Camshaft- and Crankshaft speed sensor signal not available on CAN. |
| 1223 | 51 | 5 | 5-9-4 | Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); open load. |
| 1224 | 51 | 6 | 5-9-4 | Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (6.1,7.8); over current. |
| 1226 | 51 | 3 | 5-9-4 | EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery. |
| 1227 | 51 | 3 | 5-9-4 | EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery. |
| 1228 | 51 | 4 | 5-9-4 | EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground. |
| 1229 | 51 | 4 | 5-9-4 | EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground. |
| 1230 | 51 | 6 | 5-9-4 | Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); Overload by short-circuit. |
| 1231 | 51 | 11 | 5-9-4 | Power stage overtemperature due to high current. |
| 1232 | 51 | 4 | 5-9-4 | actuator AGR valve (2.9;3.6) throttle valve (4.1;6.1;7.8); Voltage below threshold. |
| 1239 | 523984 | 3 | 7-8-8 | UB7; Short circuit to battery error of actuator relay 7. |
| 1241 | 523986 | 4 | 1-7-6 | UB6; Short circuit to ground actuator relais 6. |
| 1242 | 523987 | 4 | 7-9-1 | UB7; Short circuit to ground actuator relay 7. |
| 1247 | 524019 | 11 | 8-6-2 | Burner Control; Air Line - Blocked Air Pump; air lines blocked. |
| 1248 | 523910 | 9 | 6-9-5 | Burner Control; Air Pump - CAN Lost Air Pump; CAN communication lost. |
| 1249 | 523910 | 7 | 6-9-5 | Air pump; CAN communication interrupted no purge function available. |
| 1250 | 523910 | 12 | 6-9-5 | Air Pump; internal error. |
| 1252 | 523910 | 0 | 6-9-5 | Air Pump; operating voltage error. |
| 1254 | 524014 | 1 | 8-5-8 | Air inlet EPV - pressure too low.<br>Air pressure glow plug flush line; below limit. |
| 1255 | 524013 | 7 | 8-5-7 | Burner Control; Flame lost max.<br>Burner operation is interrupted too often. |
| 1257 | 523915 | 7 | 8-5-3 | HCI dosing valve (DV1); blocked open. |
| 1258 | 524016 | 11 | 8-5-9 | Burner Control; HFM - Electrical Fault HFM sensor; electrical fault. |
| 1259 | 524016 | 2 | 8-5-9 | Burner Control; HFM - Plausibilitätsfehler 1 Amount of air is not plausible to pump speed. |
| 1261 | 523910 | 6 | 6-9-5 | Burner Control Air Pump; over current Air pump electrically overloaded. |
| 1262 | 523922 | 7 | 8-5-4 | Burner Control; Shut-off Valve - Blocked closed Burner Shut Off Valve; blocked closed. |
| 1263 | 524021 | 11 | 8-6-4 | Burner Control; Fuel line ShutOff downstream - broken Burner fuel line pipe leak behind Shut Off Valve. |

*1513AA-15*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1264 | 523922 | 7 | 8-5-5 | Burner Shut Off Valve; blocked open. |
| 1285 | 524038 | 9 | 8-2-4 | Timeout error of CAN-Receive-Frame ComMS_Sys1TO (error memory Slave); Master-Slave internal CAN message. |
| 1286 | 524039 | 9 | 8-2-5 | Timeout error of CAN-Receive-Frame ComMS_Sys2TO (error memory Slave); Master-Slave internal CAN message. |
| 1287 | 524040 | 9 | 8-2-6 | Timeout error of CAN-Receive-Frame ComMS_Sys3TO (error memory Slave); Master-Slave internal CAN message. |
| 1288 | 524041 | 9 | 8-2-7 | Timeout error of CAN-Receive-Frame ComMS_Sys4TO (error memory Slave); Master-Slave internal CAN message. |
| 1289 | 524042 | 9 | 8-2-8 | Timeout error of CAN-Receive-Frame ComMS_Sys5TO (error memory Slave); Master-Slave internal CAN message. |
| 1290 | 524043 | 9 | 8-2-9 | Timeout error of CAN-Receive-Frame ComMS_Sys6TO (error memory Slave); Master-Slave internal CAN message. |
| 1291 | 524045 | 9 | 8-3-1 | Master Slave, Error of message counter CAN receive message ComMSMoFOvR; ComMSMoFOvR1CNT. |
| 1292 | 524046 | 9 | 8-3-2 | Master-Slave CAN; Error Checksum of CAN-Receive Message. |
| 1293 | 524047 | 9 | 8-3-3 | Master-Slave CAN; Error of message length of CAN receive message ComMSMoFOvR;_ComMSMoFOvR1DLC. |
| 1294 | 524048 | 9 | 8-3-4 | Timeout error CAN message ComMSMoFOvR1TO error memory Slave. |
| 1299 | 523788 | 0 | 6-5-5 | Wastegate plauisibility error off CAN transmit message. |
| 1300 | 523788 | 0 | 6-5-5 | Timeout Error of CAN-Receive-Frame ComTrbChActr; Wastegate. |
| 1302 | 524024 | 11 | 8-6-6 | Deviation of the exhaust gas temperature setpoint to actual value downstream (DOC) too high. |
| 1324 | 523995 | 13 | 7-9-5 | Check of missing injector adjustment value programming (IMA) injector 7 (in firing order). |
| 1325 | 523996 | 13 | 7-9-6 | check of missing injector adjustment value programming (IMA) injector 8 (in firing order). |
| 1326 | 523997 | 4 | 7-9-7 | Injector cylinder bank 1 slave; short circuit. |
| 1327 | 523998 | 4 | 7-9-8 | Injector cylinder bank 2 slave; short circuit. |
| 1328 | 523999 | 12 | 7-9-9 | Injector powerstage output Slave defect. |
| 1329 | 524000 | 5 | 1-7-7 | Injector 7 (in firing order); interruption of electric connection. |
| 1330 | 524001 | 5 | 1-7-8 | Injector 8 (in firing order); interruption of electric connection. |
| 1333 | 524000 | 3 | 1-7-7 | Injector 7 (in firing order); short circuit. |
| 1334 | 524001 | 3 | 1-7-8 | Injector 8 (in firing order); short circuit. |
| 1337 | 2797 | 4 | 5-6-5 | Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 0;_ IVDiaShCirGndToutBnk_0. |
| 1338 | 2798 | 4 | 5-6-6 | Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 1;_ IVDiaShCirGndToutBnk_1. |
| 1339 | 2797 | 4 | 5-6-5 | Injector diagnostic; Short circuit to ground cylinder bank 0. |
| 1340 | 2798 | 4 | 5-6-6 | Injector diagnostic; Short circuit to ground cylinder bank 1. |

*1513AA-16*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1341 | 524035 | 12 | 5-5-5 | Injector diagnostics; time out error in the SPI communication. |
| 1342 | 524036 | 12 | 5-5-5 | Injector diagnostics Slave; time out error in the SPI communication. |
| 1345 | 524069 | 9 | 8-9-6 | Timeout Error of CAN-Receive-Frame MSMon_FidFCCTO; Master-Slave CAN communication faulty. |
| 1357 | 524052 | 11 | 8-3-6 | Error memory Slave reports FID MSMonFC2 (collective error). |
| 1368 | 524052 | 11 | 8-3-6 | Error memory Slave reports FID MSMonFC3 (collective error). |
| 1378 | 523919 | 2 | 6-9-4 | Sensor air pump airpressure; plausibility error. |
| 1379 | 523920 | 2 | 7-1-6 | Sensor exhaust gas back pressure burner; plausibility error. |
| 1380 | 3253 | 2 | 6-9-2 | Sensor differential pressure (DPF); plausibility error. |
| 1381 | 164 | 2 | 8-3-9 | Rail pressure safety function is not executed correctly (). |
| 1389 | 523922 | 5 | 7-1-5 | Burner Shut Off Valve; open load. |
| 1390 | 523922 | 12 | 7-1-5 | Burner Shut Off Valve; powerstage over temperature. |
| 1392 | 523922 | 4 | 7-1-5 | Burner Shut Off Valve; short circuit to ground. |
| 1395 | 523921 | 2 | 7-1-4 | Burner temperature sensor; Plausibility Check for burner temperature sensor Sensor burner temperature; plausibility error. |
| 1398 | 1136 | 0 | 6-8-1 | Physical range check high for ECU temperature. |
| 1402 | 4769 | 2 | 6-8-4 | Sensor exhaust gas temperature OxiCat downstream (normal operation); plausibility error. |
| 1403 | 4769 | 2 | 6-8-4 | Sensor exhaust gas temperature OxiCat downstream (regeneration); plausibility error. |
| 1411 | 1188 | 11 | 8-1-4 | Wastegate actuator; internal error. |
| 1412 | 1188 | 11 | 8-1-4 | Wastegate actuator; EOL calibration not performed correctly. |
| 1413 | 1188 | 13 | 8-1-4 | Wastegate actuator calibration deviation too large, recalibration required. |
| 1414 | 1188 | 2 | 8-1-4 | Wastegate; status message from ECU missing. |
| 1415 | 1188 | 7 | 8-1-4 | Wastegate actuator; blocked. |
| 1417 | 1188 | 11 | 8-1-4 | Wastegate actuator; over temperature (> 135°C). |
| 1418 | 1188 | 11 | 8-1-4 | Wastegate actuator; operating voltage error. |
| 1423 | 51 | 0 | 5-9-4 | Warning threshold for an internal actuator error exceeded, < 4L EGR. actuator und >4L Air Intake Flap. |
| 1424 | 51 | 1 | 5-9-4 | Shut off threshold for an internal actuator error exceeded, < 4L EGR.actuator und >4L Air Intake Flap. |
| 1425 | 172 | 0 | 2-2-6 | air temperature within air filter box above maximum physical value. |
| 1431 | 524028 | 2 | 8-1-5 | CAN message PROEGRActr; plausibility error. |
| 1432 | 524029 | 2 | 8-1-5 | Timeout Error of CAN-Receive-Frame ComEGRActr - exhaust gas recirculation positioner. |
| 1436 | 524034 | 5 | 8-1-6 | Disc separator; open load. |
| 1437 | 524034 | 12 | 8-1-6 | Disc separator; powerstage over temperature. |
| 1438 | 524034 | 3 | 8-1-6 | Disc separator; short circuit to battery. |

*1513AA-17*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1439 | 524034 | 4 | 8-1-6 | Disc separator; short circuit to ground. |
| 1440 | 524030 | 7 | 8-1-5 | EGR actuator; internal error. |
| 1441 | 524031 | 13 | 8-1-5 | EGR actuator, calibration error. |
| 1442 | 524032 | 2 | 8-1-5 | EGR actuator; status message "EGRCust" is missing. |
| 1443 | 524033 | 7 | 8-1-5 | EGR actuator; due to overload in Save Mode. |
| 1455 | 3711 | 12 | 7-1-1 | Temperature during stand-still main phase too low or too high. |
| 1458 | 523960 | 0 | 7-7-1 | High exhaust gas temperature EGR cooler downstream; warning threshold exceeded. |
| 1464 | 0 | 0 | - | |
| 1466 | 0 | 0 | - | |
| 1467 | 0 | 0 | - | |
| 1469 | 0 | 0 | - | |
| 1470 | 0 | 0 | - | |
| 1471 | 0 | 0 | - | |
| 1472 | 0 | 0 | - | |
| 1481 | 524025 | 5 | 8-4-5 | DPF system; operating voltage error. |
| 1482 | 524044 | 9 | 1-8-8 | CAN message ComMS_Sys7 not received from slave. |
| 1484 | 524068 | 2 | 8-9-5 | Master ECU and Slave ECU have been identified as the same types. |
| 1485 | 524052 | 11 | 8-3-6 | Master ECU and Slave ECU data sets or software are not identical. |
| 1486 | 523718 | 5 | 6-7-6 | SCR mainrelay; open load (only CV56B). |
| 1488 | 523718 | 3 | 6-7-6 | SCR mainrelay; short circuit to battery (only CV56B). |
| 1489 | 523718 | 4 | 6-7-6 | SCR mainrelay; short circuit to ground (only CV56B). |
| 1661 | 524116 | 9 | 1-9-4 | Timeout error of CAN-Transmit-Frame SCR2. |
| 1662 | 524117 | 9 | 9-4-1 | Timeout error of CAN-Transmit-Frame SCR3. |
| 1663 | 524097 | 9 | 9-2-1 | Timeout error of CAN-Transmit-Frame DPFBrnAirPmpCtl. |
| 1664 | 524098 | 9 | 9-2-2 | Timeout error of CAN-Transmit-Frame ComDPFBrnPT. |
| 1665 | 524099 | 9 | 9-2-3 | Timeout error of CAN-Transmit-Frame ComDPFC1. |
| 1666 | 524100 | 9 | 9-2-4 | Timeout error of CAN-Transmit-Frame ComDPFHisDat. |
| 1667 | 524101 | 9 | 9-2-5 | Timeout error of CAN-Transmit-Frame ComDPFTstMon. |
| 1668 | 524105 | 9 | 9-2-9 | Timeout error of CAN-Transmit-Frame ComEGRMsFlw (EGR Steller). |
| 1669 | 524108 | 9 | 9-3-2 | Timeout error of CAN-Transmit-Frame ComEGRTVActr (EGR actuator). |
| 1670 | 524110 | 9 | 9-3-4 | Timeout error of CAN-Transmit-Frame ComETVActrTO. |
| 1671 | 524112 | 9 | 9-3-6 | Timeout ComIntake Throttle Valve Actr. |
| 1672 | 524118 | 9 | 9-4-2 | Timeout error of CAN-Receive-Frame ComRxCM1. |
| 1675 | 524103 | 9 | 9-2-7 | Timeout error of CAN-Receive-Frame ComRxDPFBrnAirPmp. |
| 1676 | 524104 | 9 | 9-2-8 | Timeout error of CAN-Receive-Frame ComRxDPFCtl. |

*1513AA-18*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1677 | 524106 | 9 | 1-9-5 | Timeout error of CAN-Receive-Frame ComRxEGRMsFlw1 (EGR actuator) |
| 1678 | 524107 | 9 | 9-3-1 | Timeout error of CAN-Receive-Frame ComRxEGRMsFlw2 (EGR actuator). |
| 1679 | 524109 | 9 | 9-3-3 | Timeout error of CAN-Receive-Frame ComRxEGRTVActr (EGR actuator). |
| 1680 | 524111 | 9 | 9-3-5 | Timeout error of CAN-Receive-Frame ComRxETVActr. |
| 1681 | 524113 | 9 | 9-3-7 | Timeout error of CAN-Receive-Frame ComRxITVActr. |
| 1682 | 524120 | 9 | 9-4-4 | Timeout error of CAN-Receive-Frame ComRxSCRHtDiag. |
| 1683 | 524121 | 9 | 9-4-5 | Timeout error of CAN-Receive-Frame ComRxTrbChActr (wastegate actuator). |
| 1684 | 524122 | 9 | 9-4-6 | Timeout error of CAN-Receive-Frame ComRxUQSens (Urea quality). |
| 1685 | 524123 | 9 | 9-4-7 | Timeout error of CAN-Receive-Frame ComSCRHtCtl. |
| 1686 | 524124 | 9 | 9-4-8 | Timeout error of CAN-Receive-Frame ComTxAT1IMG. |
| 1687 | 524125 | 9 | 9-4-9 | Timeout error of CAN-Receive-Frame ComTxTrbChActr (Wastegate actuator). |
| 1698 | 524133 | 2 | 9-5-6 | HMI system; set if restore button blocked. |
| 1699 | 524134 | 0 | 9-5-7 | DPF, ash load exceeds the shutoff threshold. |
| 1700 | 524134 | 0 | 9-5-7 | DPF, ash load exceeds the warning threshold. |
| 1701 | 524135 | 0 | 9-5-8 | DPF, soot load exceeds the shutoff threshold. |
| 1702 | 524135 | 14 | 9-5-8 | DPF, soot load exceeds the service request threshold. |
| 1703 | 524135 | 0 | 9-5-8 | DPF, soot load exceeds the warning threshold. |
| 1705 | 524156 | 9 | 9-7-2 | Timeout error of CAN-Receive-Frame ComRxEBC2. |
| 1706 | 524157 | 9 | 9-7-3 | Fan control; time out for fan governing. |
| 1708 | 524159 | 0 | 9-7-5 | Fan; short circuit battery or open load. |
| 1709 | 524159 | 1 | 9-7-5 | Fan; short circuit ground. |
| 1710 | 524160 | 5 | 9-7-6 | Fan; in/outlet valve 1; open load. |
| 1712 | 524160 | 3 | 9-7-6 | Fan; in/outlet valve 1; short circuit battery. |
| 1713 | 524160 | 4 | 9-7-6 | Fan; in/outlet valve 1; open load ground. |
| 1714 | 524161 | 5 | 9-7-7 | Fan; in/outlet valve 2; open load. |
| 1716 | 524161 | 3 | 9-7-7 | Fan; in/outlet valve 2; short circuit battery. |
| 1717 | 524161 | 4 | 9-7-7 | Fan; in/outlet valve 2; open load ground. |
| 1718 | 524162 | 12 | 9-7-8 | Fan; fancontrol; angle sensor defect. |
| 1719 | 524163 | 12 | 9-7-9 | Fan; fancontrol; fan or valve defect. |
| 1752 | 2791 | 7 | 4-1-5 | EGR actuator, actuator blocked. |
| 1753 | 2791 | 2 | 4-1-5 | EGR actuator, CAN error. |
| 1754 | 2791 | 13 | 4-1-5 | EGR actuator, EOL calibration error. |
| 1755 | 2791 | 12 | 4-1-5 | EGR Actuator, internal electrical fault. |
| 1756 | 2791 | 13 | 4-1-5 | EGR actuator, learning process aborted. |
| 1757 | 2791 | 6 | 4-1-5 | EGR actuator current is above maximum threshold. |
| 1758 | 2791 | 3 | 4-1-5 | EGR actuator supply voltage is above the maximum threshold. |

*1513AA-19*

## 5.5-7 Deutz TD2.9L Fault Codes

| Code | SPN | FMI | Blink Code | Error Identification |
|---|---|---|---|---|
| 1759 | 2791 | 4 | 4-1-5 | EGR actuator supply voltage is below minimum threshold. |
| 1760 | 2791 | 13 | 4-1-5 | EGR actuator, learning process out of range. |
| 1761 | 2791 | 7 | 4-1-5 | EGR actuator, broken spring detected. |
| 1762 | 2791 | 16 | 4-1-5 | EGR actuator, temperature high. |
| 1763 | 2791 | 0 | 4-1-5 | EGR actuator, temperature critical high. |
| 1788 | 1188 | 7 | 8-1-4 | Turbocharger wastegate, mechanical blocking detected. |
| 1789 | 1188 | 2 | 8-1-4 | Turbocharger wastegate, CAN Error. |
| 1790 | 1188 | 13 | 8-1-4 | Turbocharger wastegate, EOL calibration error. |
| 1791 | 1188 | 12 | 8-1-4 | Turbocharger wastegate, internal electrical error. |
| 1792 | 1188 | 13 | 8-1-4 | Turbocharger wastegate, learning process aborted. |
| 1793 | 1188 | 6 | 8-1-4 | Turbocharger wastegate, current above maximum threshold. |
| 1794 | 1188 | 3 | 8-1-4 | Turbocharger wastegate, supply voltage above maximum threshold. |
| 1795 | 1188 | 4 | 8-1-4 | Turbocharger wastegate, supply voltage below minimum threshold. |
| 1796 | 1188 | 13 | 8-1-4 | Turbocharger wastegate, learning process out of range. |
| 1797 | 1188 | 7 | 8-1-4 | Turbocharger wastegate, broken spring detected. |
| 1799 | 1188 | 0 | 8-1-4 | Turbocharger wastegate, temperature critical high. |
| 1827 | 524141 | 7 | 1-9-2 | DEF dosing valve, dosing valve blocked. |
| 1857 | 523612 | 12 | 5-5-5 | Engine starter, plausibility error of starter release condition. |
| 1858 | 524147 | 7 | 9-6-6 | SCR-System, reverting valve blocked. |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

*1513AA-20*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 1000 | 0 | 98 | 2 | Oil level sensor internal error. Sensor reports error (open/short (transducer)) |
| 1001 | 0 | 98 | 31 | Oil level out of range.<br>1) Level below measuring range<br>2) Level above measuring range<br>3) Strong signal noise (e.g., oil foaming) |
| 1002 | 0 | 98 | 31 | Oil sensor voltage out of range. Sensor reports voltage out of range (<8,5V ±0,5V; >16,5V ±0,5V). |
| 1003 | 0 | 98 | 2 | Oil sensor invalid sensor status. Sensor status can not be read correctly. |
| 1004 | 0 | 98 | 31 | Oil sensor temperature out of range (-48°C > temp. > 168°C). |
| 1005 | 0 | 98 | 14 | Oil sensor is broken or disconnected. PWM input signal from sensor is not available or not correct. |
| 1021 | 0 | 100 | 3 | Sensor error oil pressure; signal range check high. |
| 1022 | 0 | 100 | 4 | Sensor error oil pressure sensor; signal range check low. |
| 1025 | 0 | 100 | 1 | Low oil pressure; warning threshold exceeded. |
| 1026 | 0 | 100 | 1 | Low oil pressure; shut off threshold exceeded. |
| 1043 | 0 | 107 | 0 | Air filter differential pressure; air filter cologged. |
| 1071 | 0 | 411 | 2 | PEGRdiff_p value stuck check failed. Pressure does not change between engine operating points. |
| 1077 | 0 | 411 | 3 | Signal value above maximum limit. |
| 1078 | 0 | 411 | 4 | Signal value below minimum limit. |
| 1079 | 0 | 108 | 0 | Ambient air pressure sensor range check max-error. |
| 1080 | 0 | 108 | 1 | Ambient air pressure sensor range check min-error |
| 1081 | 0 | 108 | 15 | Fault check max signal range violated for ambient air pressure sensor |
| 1082 | 0 | 108 | 17 | Fault check min signal range violated for ambient air pressure sensor |
| 1083 | 0 | 108 | 2 | Ambient air pressure sensor sensor error by component self diagnosis |
| 1084 | 0 | 3720 | 0 | DPF ash load exceeded shut off level. |
| 1086 | 0 | 3734 | 0 | DPF soot load exceeded remove filter level. |
| 1087 | 0 | 4781 | 14 | DPF soot load exceeded shut off level. |
| 1088 | 0 | 4781 | 0 | DPF soot load exceeded warning level. |
| 1089 | 0 | 4781 | 16 | Too much standstill time in short time interval. |
| 1090 | 0 | 10156 | 0 | The standstill-regeneration mode time exceeds the short-limit. |
| 1091 | 0 | 3735 | 16 | Standstill required and no successful standtill longer than escalation threshold 2. |
| 1092 | 0 | 3735 | 0 | Standstill required and no successful standtill longer than escalation threshold 2. |
| 1093 | 0 | 4766 | 1 | Regeneration temperature in standstill main phase not reached. |
| 1102 | 0 | 171 | 2 | Static plausibility check failed for EnvT_t. Temperature shows a deviation from expected value at cold start conditions. |
| 1113 | 0 | 102 | 0 | SRC high in manifold pressure sensor Bank1. |
| 1114 | 0 | 102 | 1 | SRC low in manifold pressure sensor Bank1. |
| | | | | |

*1461AA-1*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 1115 | 0 | 102 | 3 | DFC for plausibility check for maximum threshold of the pressure sensor of the intake manifold - Bank 1. |
| 1116 | 0 | 102 | 4 | DFC for plausibility check for minimum threshold of the pressure sensor of the intake manifold - Bank 2. |
| 1118 | 0 | 102 | 1 | DFC for physical range check for minimum threshold of the pressure sensor of the intake manifold - Bank 2 |
| 1121 | 0 | 102 | 2 | DFC for signal variation check for pressure sensor of the intake manifold - Bank 2. |
| 1122 | 0 | 102 | 0 | Intake air pressure valve sensor, warning condition exceeded. |
| 1123 | 0 | 102 | 1 | Intake air pressure valve sensor, shutoff condition exceeded. |
| 1124 | 0 | 1209 | 2 | Pressure turbine upstream differs from ambient pressure while engine not running. |
| 1125 | 0 | 1209 | 15 | Pressure turbine upstream above upper limit. |
| 1126 | 0 | 1176 | 1 | Pressure turbine upstream below lower limit. |
| 1127 | 0 | 1209 | 2 | Pressure turbine upstream stuck check failed. Pressure does not change between engine operating points. |
| 1130 | 0 | 1209 | 3 | Diagnostic fault check for SRC high for outlet-valve downstream pressure. |
| 1131 | 0 | 1209 | 4 | Diagnostic fault check for SRC low for outlet-valve downstream pressure. |
| 1134 | 0 | 3251 | 3 | DFC to report an error in case of signal line Short circuitrd to battery. |
| 1135 | 0 | 3251 | 4 | DFC to report an error in case of signal line Short circuitrd to ground. |
| 1136 | 0 | 3251 | 14 | DFC for reporting communication error. |
| 1137 | 0 | 3251 | 14 | DFC for reporting data error. |
| 1138 | 0 | 3251 | 14 | DFC for reporting fast channel1 error. |
| 1139 | 0 | 3251 | 14 | DFC for reporting fast channel 2 signal range error. |
| 1149 | 0 | 3251 | 2 | Particle filter difference pressure value not plausible. |
| 1150 | 0 | 3251 | 0 | Particle filter difference pressure above shut off threshold. |
| 1151 | 0 | 3251 | 16 | Particle filter difference pressure above warning threshold. |
| 1152 | 0 | 3251 | 1 | Particle filter difference pressure below shut off threshold. |
| 1153 | 0 | 3251 | 18 | Particle filter difference pressure below warning threshold. |
| 1161 | 0 | 5571 | 16 | The pressure relief valve (PRV) has reached the number of allowed activations. |
| 1162 | 0 | 5571 | 2 | Pressure relief valve is forced to open, perform pressure increase. |
| 1163 | 0 | 5571 | 2 | Pressure Relief Valve (PRV) forced to open. Performed by pressure increase. |
| 1164 | 0 | 5571 | 16 | Pressure Relief Valve (PRV) forced to open. Shutoff conditions. |
| 1165 | 0 | 5571 | 15 | Pressure Relief Valve (PRV) forced to open. Warning conditions. |
| 1166 | 0 | 5571 | 0 | Open Pressure Relief Valve (PRV) was detected. |
| 1167 | 0 | 5571 | 2 | Unexpected opening of the pressure relief valve. |
| 1168 | 0 | 5571 | 2 | Successful PRV opening cannot be ensured. |
| 1169 | 0 | 5571 | 13 | Averaged rail pressure after PRV opening is outside the expected tolerance range. |
| 1170 | 0 | 5571 | 16 | Open time of Pressure Relief Valve (PRV) for wear out monitoring had exceeded. |
| 1171 | 0 | 94 | 1 | Fuel pressure build up during engine start not successful. |

*1461AA-2*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 1172 | 0 | 1347 | 5 | Electrical fuel pre - supply pump; open load. |
| 1174 | 0 | 1347 | 3 | Electrical fuel pre - supply pump; short circuit to battery. |
| 1175 | 0 | 1347 | 4 | Electrical fuel pre - supply pump. Short circuit to ground. |
| 119 | 0 | 1231 | 14 | Errror generated from DemEvent ComCILBusOffNode_APPL_CAN: CAN Busoff Error for Application CAN. |
| 1190 | 0 | 7103 | 13 | Rail pressure below setpoint, speed-dependent threshold exceeded. |
| 1191 | 0 | 7103 | 13 | Railpressure metering unit: Fuel quantity balance is disrupted. |
| 1194 | 0 | 7103 | 13 | Negative rail pressure governor deviation at zero delivery by metering unit. |
| 1195 | 0 | 7103 | 1 | Rail pressure value is below minimum rail pressure threshold. |
| 1197 | 0 | 7103 | 0 | Maximum rail pressure exceeded. |
| 1198 | 0 | 7103 | 2 | Setpoint of metering unit in overrun mode not plausible. |
| 120 | 0 | 639 | 14 | Error generated from DemEvent ComCILBusOffNode_PT_CAN: CAN Busoff Error for Powertrain CAN. |
| 1200 | 0 | 5357 | 14 | Shut-off due to undershoot of minimum rail pressure. |
| 1202 | 0 | 157 | 0 | Maximum rail pressure exceeded in limp home mode. |
| 1208 | 0 | 157 | 3 | Sensor error rail pressure. Sensor voltage above upper limit. |
| 1209 | 0 | 157 | 4 | Sensor error rail pressure. Sensor voltage below lower limit. |
| 121 | 0 | 520252 | 2 | Wrong checksum in the CAN message EAT Control. |
| 1212 | 0 | 629 | 12 | Error generated from DemEvent RBA_IOEXTLIB_KEEPALIVE_DRV: KeepAlive error during runtime at an external device. |
| 1213 | 0 | 629 | 12 | Error generated from DemEvent RBA_IOEXTLIB_KEEPALIVE_INI: KeepAlive error during initialisation phase at an external device. |
| 1215 | 0 | 629 | 12 | DFC generated from DemEvent rba_MemDiag_MemReadErr: Read diagnosis error for non volatile memory. |
| 1216 | 0 | 629 | 12 | DFC generated from DemEvent rba_MemDiag_MemWrErr: Write diagnosis error for non volatile memory. |
| 1218 | 0 | 629 | 12 | DFC generated from DemEvent rba_MultiStackTrace_Threshold: Stack memory threshold overrun. |
| 1219 | 0 | 629 | 12 | DFC generated from DemEvent rba_SyC_IrrSwOffTrigEngRun_Event: Observation Counter Irregular Switch Off Counter Triggered by Engine Running. |
| 122 | 0 | 4207 | 2 | Checksum fault. |
| 123 | 0 | 4207 | 2 | Checksum fault. |
| 1233 | 0 | 5826 | 15 | NCD Inducement level 1 for EU. |
| 1235 | 0 | 5826 | 0 | NCD Inducement level 2 for EU. |
| 1236 | 0 | 5826 | 14 | NCD Pretrigger for inducement level 2. |
| 124 | 0 | 4207 | 2 | Checksum fault. |
| 125 | 0 | 4207 | 2 | Checksum fault. |
| 1274 | 0 | 91 | 3 | Sensor error accelerator pedal (channel 1), short circuit to battery. |
| 1275 | 0 | 2623 | 3 | Sensor error accelerator pedal (channel 2), short circuit to battery. |

*1461AA-3*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 1276 | 0 | 29 | 3 | Signal Range Check High for remote APP signal 1. |
| 1277 | 0 | 2625 | 3 | Short circuit to battery of remote accelerator pedal signal 2. |
| 1280 | 0 | 91 | 4 | Sensor error accelerator pedal (channel 1), short circuit to ground. |
| 1281 | 0 | 2623 | 4 | Sensor error accelerator pedal (channel 2), short circuit to ground. |
| 1282 | 0 | 29 | 4 | Signal Range Check Low for remote APP signal 1. |
| 1283 | 0 | 2625 | 4 | Short circuit to ground of remote accelerator pedal signal 2. |
| 1289 | 0 | 3509 | 14 | Failure of sensor supply voltage 1. |
| 1290 | 0 | 3509 | 0 | DFC generated from DemEvent SSpMon1OV: Overvoltage error at sensor supply 1 . |
| 1291 | 0 | 3509 | 6 | DFC generated from DemEvent SSpMon1SCG: Short circuit to ground error at sensor supply 1. |
| 1292 | 0 | 3509 | 1 | DFC generated from DemEvent SSpMon1UV: Undervoltage error at sensor supply 1 . |
| 1293 | 0 | 3510 | 14 | Failure of sensor supply voltage 2. |
| 1294 | 0 | 3510 | 0 | DFC generated from DemEvent SSpMon2OV: Overvoltage error at sensor supply 2. |
| 1295 | 0 | 3510 | 6 | DFC generated from DemEvent SSpMon2SCG: Short circuit to ground error at sensor supply 2. |
| 1296 | 0 | 3510 | 1 | DFC generated from DemEvent SSpMon2UV: Undervoltage error at sensor supply 2. |
| 1306 | 0 | 677 | 3 | Starter relay high side. Short circuit to battery. |
| 1307 | 0 | 677 | 4 | Starter relay high side. Short circuit to ground. |
| 1308 | 0 | 677 | 5 | Starter relay low side no load error. |
| 1310 | 0 | 677 | 3 | Starter relay low side short circuit to battery. |
| 1311 | 0 | 677 | 4 | Starter relay low side short circuit to ground. |
| 1323 | 0 | 91 | 11 | Plausibility error between APP1 and APP2 or APP1 and idle switch. |
| 1326 | 0 | 29 | 11 | In case of dual analog accelerator pedal, it is the plausibility check between RmtAPP1 and RmtAPP2 and in case of potentiometer switch accelerator pedal, it is the plausibility check between APP1 and idle switch. |
| 1346 | 0 | 1041 | 14 | Terminal 50 was operated too long. |
| 1354 | 0 | 105 | 0 | High charged air cooler temperature. Warning threshold exceeded. |
| 1355 | 0 | 105 | 0 | High charged air cooler temperature. Shut off threshold exceeded. |
| 1357 | 0 | 1136 | 0 | Physical range check high for ECU temperature. |
| 1358 | 0 | 1136 | 1 | Physikal range check low for ECU temperature. |
| 1359 | 0 | 1136 | 15 | Signal Range Check Maximum for ECU temperature sensor. |
| 1360 | 0 | 1136 | 17 | Signal Range Check Minimum for ECU temperature sensor. |
| 1361 | 0 | 1136 | 2 | Diagnostic Fault Check for TECU sensor plausibility. |
| 1362 | 0 | 412 | 15 | Physical Range Check high for EGR cooler downstream temperature. |
| 1363 | 0 | 412 | 17 | Physical Range Check low for EGR cooler downstream temperature. |
| 1364 | 0 | 412 | 3 | Electrical error EGR cooler downstream temperature. Signal range check high. |
| 1365 | 0 | 412 | 4 | Electrical error EGR cooler downstream temperature. Signal range check low. |
| 1372 | 0 | 51 | 5 | Throtte valve, open load. |

*1461AA-4*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 1375 | 0 | 51 | 3 | Throtte valve, short circuit to battery1. |
| 1376 | 0 | 51 | 3 | Throtte valve, short circuit to battery2. |
| 1377 | 0 | 51 | 4 | Throtte valve, short circuit to ground1. |
| 1378 | 0 | 51 | 4 | Throtte valve, short circuit to ground2. |
| 1379 | 0 | 51 | 6 | Throttle valve, over load. |
| 1382 | 0 | 51 | 7 | Status of diagnostic fault check valve jammed closed. |
| 1383 | 0 | 51 | 7 | Status of diagnostic fault check valve jammed opened. |
| 1391 | 0 | 51 | 3 | Throtte valve, short circuit to battery. |
| 1392 | 0 | 51 | 4 | Throtte valve, short circuit to ground. |
| 1397 | 0 | 105 | 0 | TIntkVUs_t above upper limit. |
| 1398 | 0 | 105 | 1 | TIntkVUs_t below lower limit. |
| 1399 | 0 | 4766 | 2 | Dynamic plausibility check for TOxiCatDs_t failed. Temperature difference between ToxiCatUs_t and ToxiCatDs_t too high. |
| 1400 | 0 | 4766 | 2 | Plausibility check for TOxiCatDs_t failed. Temperature is too low. |
| 1401 | 0 | 4766 | 15 | Temperature downstream DOC, temperature above upper warning threshold. |
| 1402 | 0 | 4766 | 3 | Sensor error exhaust gas temperature downstream (DOC); signal range check high. |
| 1403 | 0 | 4766 | 4 | Sensor error exhaust gas temperature downstream (DOC); signal range check low. |
| 1404 | 0 | 4765 | 2 | Temperature upstream DOC, plausibility error. |
| 1405 | 0 | 4765 | 15 | Temperature upstream DOC, temperature above upper warning threshold . |
| 1406 | 0 | 4765 | 3 | Sensor error exhaust gas temperature upstream (DOC); signal range check high. |
| 1407 | 0 | 4765 | 4 | Sensor error exhaust gas temperature upstream (DOC); signal range check low. |
| 1408 | 0 | 4765 | 2 | Stuck check for TOxiCatUs_t failed. Temperature does not change anymore. |
| 142 | 0 | 520256 | 9 | Timeout of EAT Control Receive Message. The message is not received. |
| 144 | 0 | 523211 | 9 | Timeout error of CAN-Receive-Frame EBC1. |
| 154 | 0 | 523212 | 9 | Timeout error of CAN-Receive-Frame ComEngPrt. Engine Protection. |
| 1540 | 0 | 520254 | 8 | The standstill-regeneration mode time exceeds the long limit threshold. |
| 1541 | 0 | 520255 | 2 | Hoses connected to the dp DPF SENT sensor inverted. Swap the hoses. |
| 155 | 0 | 523741 | 14 | Engine shut off request through CAN. |
| 1587 | 0 | 97 | 0 | Water in fuel level prefilter; maximum value exceeded. |
| 188 | 0 | 523240 | 9 | Timeout CAN-message FunModCtl. Function Mode Control. |
| 219 | 0 | 520253 | 2 | Rolling counter fault CAN message EAT Control. |
| 220 | 0 | 4206 | 2 | Fault check for Rolling Counter of TSC1AE |
| 221 | 0 | 4206 | 2 | Fault check for Rolling Counter of TSC1AR |
| 222 | 0 | 4206 | 2 | Fault check for Rolling Counter of TSC1TE |
| 223 | 0 | 4206 | 2 | Fault check for Rolling Counter of TSC1TR |
| 349 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame Active TSC1AE. |
| 350 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame Passive TSC1AE. |

*1461AA-5*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 351 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame Active TSC1AR. |
| 352 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame Passive TSC1AR. |
| 353 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame TSC1TE - active. |
| 354 | 0 | 3349 | 0 | Short circuit to ground error. |
| 355 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame TSC1TR. |
| 356 | 0 | 3349 | 0 | Passive timeout error of CAN-Receive-Frame TSC1TR. |
| 361 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame TSC1AE. Traction Control. |
| 363 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame TSC1AR. Retarder. |
| 365 | 0 | 3349 | 0 | Timeout error of CAN-Receive-Frame TSC1TE. Setpoint. |
| 367 | 0 | 3349 | 0 | Timeout Error of CAN-Receive-Frame TSC1TR; control signal. |
| 38 | 0 | 1485 | 3 | Short circuit to battery error. |
| 39 | 0 | 1485 | 3 | Short circuit to battery error of actuator relay 2. |
| 40 | 0 | 1485 | 3 | Short circuit to battery of actuator relay 3. |
| 41 | 0 | 1485 | 4 | Short circuit to ground error. |
| 42 | 0 | 1485 | 4 | Short circuit to ground of actuator relay 2. |
| 43 | 0 | 1485 | 4 | Short circuit to ground of actuator relay 3. |
| 48 | 0 | 168 | 0 | Physical range check high for battery voltage. |
| 49 | 0 | 168 | 1 | Physical range check low for battery voltage. |
| 50 | 0 | 168 | 3 | Sensor battery voltage error; signal range check is high. |
| 51 | 0 | 168 | 4 | Sensor battery voltage error; signal range check is low. |
| 516 | 0 | 523982 | 0 | Powerstage diagnosis disabled. High battery voltage. |
| 517 | 0 | 523982 | 1 | Powerstage diagnosis disabled. Low battery voltage. |
| 52 | 0 | 168 | 0 | High battery voltage; warning threshold is exceeded. |
| 567 | 0 | 27 | 5 | EGR valve, open load. |
| 570 | 0 | 27 | 3 | EGR valve, short circuit to battery1. |
| 571 | 0 | 27 | 3 | EGR valve, short circuit to battery2. |
| 572 | 0 | 27 | 4 | EGR valve, short circuit to ground1. |
| 573 | 0 | 27 | 4 | EGR valve, short circuit to ground2. |
| 574 | 0 | 27 | 6 | EGR valve, over load. |
| 577 | 0 | 27 | 7 | Status of diagnostic fault check valve jammed closed. |
| 578 | 0 | 27 | 7 | Status of diagnostic fault check valve jammed opened. |
| 582 | 0 | 5763 | 3 | EGR valve, short circuit to battery. |
| 583 | 0 | 5763 | 4 | EGR valve, short circuit to ground. |
| 586 | 0 | 3055 | 14 | Internal software error ECU. Injection cut off. |
| 587 | 0 | 190 | 0 | Engine speed above warning threshold.<br>Overspeed detection in component engine protection. |
| 588 | 0 | 190 | 0 | Engine speed above warning threshold (FOC-Level 1). |

*1461AA-6*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 589 | 0 | 190 | 0 | Engine speed above warning threshold (FOC-Level 2). |
| 590 | 0 | 190 | 0 | Engine speed above warning threshold (Overrun Mode). |
| 610 | 0 | 171 | 15 | Environment temperature sensor, temperature above upper physical threshold. |
| 613 | 0 | 171 | 3 | Sensor error SCR-System environment temperature.<br>DPF-System air inlet temperature, signal range check high. |
| 614 | 0 | 171 | 4 | Sensor error SCR-System environment temperature.<br>DPF-System air inlet temperature, signal range check low. |
| 615 | 0 | 723 | 8 | Sensor camshaft speed, disturbed signal. |
| 616 | 0 | 723 | 14 | Sensor camshaft detection.<br>Out of range, signal disrupted, no signal. |
| 617 | 0 | 723 | 13 | Offset angle between crank- and camshaft-sensor is too large. |
| 618 | 0 | 4201 | 8 | Sensor crankshaft detection.<br>Out of range, signal disrupted or no signal. |
| 619 | 0 | 4201 | 14 | Speed detection, out of range, signal disrupted or no signal. |
| 68 | 0 | 1669 | 14 | Error generated from DemEvent CAN_E_TIMEOUT: CAN Hardware registers are not updated within the expected time. |
| 70 | 0 | 110 | 2 | Defect fault check for dynamic plausibility test. |
| 709 | 0 | 97 | 3 | DFC SAE J1939 error. |
| 710 | 0 | 97 | 4 | Sensor error water in fuel, signal range check low. |
| 721 | 0 | 94 | 15 | Low fuel pressure system, max. physical range exceeded. |
| 723 | 0 | 94 | 3 | Sensor error low fuel pressure, signal range check high. |
| 724 | 0 | 94 | 4 | Sensor error low fuel pressure, signal range check low. |
| 725 | 0 | 94 | 1 | Low fuel pressure system, warning threshold exceeded. |
| 726 | 0 | 94 | 1 | Low fuel pressure, shut off threshold exceeded. |
| 75 | 0 | 110 | 3 | Sensor error coolant temperature; Signal range check high. |
| 76 | 0 | 110 | 4 | Sensor error coolant temperature; Signal range check low. |
| 77 | 0 | 110 | 0 | High coolant temperature; Warning threshold exceeded. |
| 78 | 0 | 110 | 0 | Coolant temperature; System reaction initiated. |
| 797 | 0 | 676 | 12 | Cold start aid relay error. |
| 798 | 0 | 676 | 5 | Cold start aid relay: Open load. |
| 799 | 0 | 676 | 5 | Cold start aid relay: Open load. |
| 80 | 0 | 411 | 2 | Intake air massflow not in expected range. |
| 803 | 0 | 676 | 3 | Intake Air Heater Device: Short circuit to battery. |
| 805 | 0 | 676 | 4 | Powerstage on CJ945, short circuit to ground. |
| 807 | 0 | 2797 | 14 | Number of possible injections limited by the injection valve. |
| 815 | 0 | 2797 | 4 | Booster voltage too low. |
| 816 | 0 | 5358 | 5 | Open load on the  power stage of injection valve 0. |
| 817 | 0 | 5359 | 5 | Open load on the  power stage of injection valve 1. |

*1461AA-7*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 818 | 0 | 5360 | 5 | Open load on the power stage of injection valve 2. |
| 819 | 0 | 5361 | 5 | Open load on the power stage of injection valve 3. |
| 820 | 0 | 5362 | 5 | Open load on the power stage of injection valve 4. |
| 821 | 0 | 5363 | 5 | Open load on the power stage of injection valve 5. |
| 822 | 0 | 2797 | 6 | Short circuit of the HDEV power stage high-side (bank0 error). |
| 823 | 0 | 2798 | 6 | Short circuit of the HDEV power stage high-side (bank1 error). |
| 824 | 0 | 5358 | 6 | Short circuit of the power stage low-side (cylinder error 0). |
| 825 | 0 | 5359 | 6 | Short circuit of the power stage low-side (cylinder error 1). |
| 826 | 0 | 5360 | 6 | Short circuit of the power stage low-side (cylinder error 2). |
| 827 | 0 | 5361 | 6 | Short circuit of the power stage low-side (cylinder error 3). |
| 828 | 0 | 5362 | 6 | Short circuit of the power stage low-side (cylinder error 4). |
| 829 | 0 | 5363 | 6 | Short circuit of the power stage low-side (cylinder error 5). |
| 83 | 0 | 111 | 1 | Coolant level too low. |
| 830 | 0 | 5358 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 831 | 0 | 5359 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 832 | 0 | 5360 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 833 | 0 | 5361 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 834 | 0 | 5362 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 835 | 0 | 5363 | 6 | Short circuit between high-side and low-side of the power stage (high-side non plausible error). |
| 836 | 0 | 105 | 3 | Signal Range Check high for intake valve upstream temperature. |
| 837 | 0 | 105 | 4 | Signal Range Check Low for intake valve upstream temperature. |
| 838 | 0 | 2797 | 14 | Check of missing injector adjustment value programming (IMA) injector 1. |
| 839 | 0 | 2798 | 14 | Check of missing injector adjustment value programming (IMA) injector 2. |
| 840 | 0 | 4257 | 14 | Check of missing injector adjustment value programming (IMA) injector 3. |
| 841 | 0 | 4258 | 14 | Check of missing injector adjustment value programming (IMA) injector 4. |
| 853 | 0 | 0 | 0 | |
| 854 | 0 | 7103 | 5 | Open load diagnosis of MeUn power stage. |
| 855 | 0 | 7103 | 3 | Short circuit to battery on the high side power stage of MeUn. |
| 856 | 0 | 7103 | 3 | Short circuit to battery on the low side power stage of MeUn. |
| 857 | 0 | 7103 | 4 | Short circuit to ground on the high side power stage of MeUn. |
| 858 | 0 | 7103 | 4 | Short circuit to ground on the low side power stage of MeUn. |
| 859 | 0 | 7103 | 6 | Short circuit between high side and low side power stage of MeUn. |
| 868 | 0 | 629 | 12 | Function monitoring: fault of ECU ADC - Null Load Test Pulse. |

*1461AA-8*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 869 | 0 | 629 | 12 | Function monitoring: fault of ECU ADC - test voltage. |
| 870 | 0 | 629 | 12 | DFC to indicate ICO request from MoCSOP module. |
| 871 | 0 | 91 | 14 | Function monitoring: Monitoring of accelerator pedal position. |
| 875 | 0 | 190 | 2 | Function monitoring: fault of engine speed check. |
| 876 | 0 | 5357 | 2 | Diagnostic fault check to report the plausibility error between level 1 energizing time and level 2 information. |
| 877 | 0 | 5441 | 2 | Diagnostic fault check to report the error due to plausibility between the injection begin v/s injection type. |
| 878 | 0 | 5357 | 2 | Diagnostic fault check to report the error due to non plausibility in ZFC |
| 879 | 0 | 523612 | 12 | Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI2 shut-off. |
| 88 | 0 | 598 | 10 | No clutch edge within calibrated time. |
| 880 | 0 | 523612 | 12 | Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI3 efficiency factor. |
| 881 | 0 | 523612 | 12 | Diagnosis fault check to report the error to demand for an ICO due to an error in change of EOM. |
| 882 | 0 | 5357 | 2 | Diagnosis fault check to report the error to demand for an ICO due to an error in total toruque relevant quantity. |
| 883 | 0 | 5357 | 2 | Diagnostic fault check to report the error due to injection quantity correction. |
| 884 | 0 | 5442 | 2 | Diagnostic fault check to report the plausibility error in rail pressure monitoring. |
| 885 | 0 | 29 | 2 | DFC to report the fault in Remote APP plausibility check. |
| 886 | 0 | 677 | 2 | Function monitoring: fault of ECU powertrain active. |
| 887 | 0 | 513 | 2 | DFC to report the fault in energizing time comparison. |
| 888 | 0 | 513 | 2 | DFC to report fault in torque comparison error. |
| 889 | 0 | 520250 | 2 | Function monitoring: error in the post-build selectable monitoring. |
| 890 | 0 | 629 | 12 | Status of the EMM alarm FCCU0 which is read out of the FCCU hardware module. |
| 891 | 0 | 629 | 12 | Internal ECU error. |
| 893 | 0 | 629 | 12 | Internal ECU error. |
| 894 | 0 | 629 | 12 | Internal ECU error. |
| 895 | 0 | 629 | 12 | Internal ECU error. |
| 896 | 0 | 629 | 12 | Internal ECU error. |
| 897 | 0 | 629 | 12 | Internal ECU error. |
| 898 | 0 | 629 | 12 | Internal ECU error. |
| 899 | 0 | 629 | 12 | Internal ECU error. |
| 900 | 0 | 629 | 12 | Internal ECU error. |
| 901 | 0 | 629 | 12 | Internal ECU error. |
| 902 | 0 | 629 | 12 | Internal ECU error. |
| 903 | 0 | 629 | 12 | Internal ECU error. |
| 904 | 0 | 629 | 12 | Internal ECU error. |

*1461AA-9*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 905 | 0 | 629 | 12 | Internal ECU error. |
| 906 | 0 | 629 | 12 | Internal ECU error. |
| 907 | 0 | 629 | 12 | Internal ECU error. |
| 908 | 0 | 629 | 12 | Internal ECU error. |
| 909 | 0 | 629 | 12 | Internal ECU error. |
| 91 | 0 | 1109 | 2 | Engine shut off demand ignored. |
| 910 | 0 | 629 | 12 | Internal ECU error. |
| 911 | 0 | 629 | 12 | Internal ECU error. |
| 912 | 0 | 629 | 12 | Internal ECU error. |
| 913 | 0 | 629 | 12 | Internal ECU error. |
| 914 | 0 | 629 | 12 | Internal ECU error. |
| 915 | 0 | 629 | 12 | Internal ECU error. |
| 916 | 0 | 629 | 12 | Internal ECU error. |
| 917 | 0 | 629 | 12 | Internal ECU error. |
| 918 | 0 | 629 | 12 | Internal ECU error. |
| 919 | 0 | 629 | 12 | Internal ECU error. |
| 92 | 0 | 1109 | 14 | Shut off request from supervisory monitoring function. |
| 920 | 0 | 629 | 12 | Internal ECU error. |
| 921 | 0 | 629 | 12 | Internal ECU error. |
| 922 | 0 | 629 | 12 | Internal ECU error. |
| 923 | 0 | 629 | 12 | Internal ECU error. |
| 924 | 0 | 629 | 12 | Internal ECU error. |
| 925 | 0 | 629 | 12 | Internal ECU error. |
| 926 | 0 | 629 | 12 | Internal ECU error. |
| 927 | 0 | 629 | 12 | Internal ECU error. |
| 928 | 0 | 629 | 12 | Internal ECU error. |
| 929 | 0 | 629 | 12 | Internal ECU error. |
| 930 | 0 | 629 | 12 | Internal ECU error. |
| 931 | 0 | 629 | 12 | Internal ECU error. |
| 932 | 0 | 629 | 12 | Internal ECU error. |
| 933 | 0 | 629 | 12 | Internal ECU error. |
| 935 | 0 | 629 | 12 | Internal ECU error. |
| 936 | 0 | 629 | 12 | Internal ECU error. |
| 937 | 0 | 629 | 12 | Internal ECU error. |
| 938 | 0 | 629 | 12 | Internal ECU error. |
| 939 | 0 | 629 | 12 | Internal ECU error. |
| 940 | 0 | 629 | 12 | Internal ECU error. |

*1461AA-10*

## 5.5-8 Deutz TCD2.2 Diagnoses and Error Codes

| Code | FTB | SPN | FMI | Error Identification |
|---|---|---|---|---|
| 941 | 0 | 629 | 12 | Internal ECU error. |
| 942 | 0 | 629 | 12 | Internal ECU error. |
| 943 | 0 | 629 | 12 | Internal ECU error. |
| 944 | 0 | 629 | 12 | Internal ECU error. |
| 945 | 0 | 629 | 12 | Internal ECU error. |
| 996 | 0 | 629 | 12 | Diagnostic fault check to report ABE active state. |
| 997 | 0 | 629 | 12 | Function monitoring: fault of ECU, WDA active by inquiry/response communication. |
| 998 | 0 | 629 | 12 | Function monitoring: fault of ECU, Error Pin active suspision of HW fault. |
| 999 | 0 | 629 | 12 | Function monitoring: fault of ECU, WDA active by overvoltage detection. |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

*1461AA-11*

# 5.6 Kubota WG2503 Dual Fuel Engine

Maintaining the engine components is essential to the good performance and service life of the MEWP.

## 5.6-1 Engine Parameter Display (KAntrak 1700)

KAntrak 1700 display allows users to easily monitor diagnostic trouble codes or critical engine faults such as oil pressure and water temperature as well as providing an alarm system to alert the user when the ECU (Engine Control Unit) detects an engine fault.




### Menu Browsing

The KAntrak 1700 unit has only three (3) buttons for different features selection on its dynamic style menu system. These buttons, located at the bottom of the unit, are used to navigate on the menu.

During normal operation, the buttons have no specific functions. When pressing any button once, a dynamic pop-up menu appears which contains some function icons aligned above the associated buttons. The user selects the required function from the displayed menu. When a fault occurs, the amber light on top of the KAntrak unit and the Check Engine Indicator Light on the Engine Control Console illuminate and will stay on until the fault is corrected.

### Display Modes

The KAntrak 1700 unit has four display modes and can be accessed through the Setting Menu by selecting the tool.

1. Single Screen. This mode is used to monitor one parameter at a time. The screen also displays the associated parameter icon, the description, the units and a bar graph.
2. Dual Screen. This mode is used to monitor two parameters at a time. The screen also displays the associated parameter icon and units.
3. Multi Screen. This mode is used to monitor a list of four (4) parameters selected by the user. Every item is listed with its associated icon and units.
4. DTC Screen. This mode is used to display Data Trouble Codes

### Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Codes (DTCs) are manufacturer's codes to indicate specific engine malfunction. These codes will appear on the KAntrak screen whenever an engine malfunction occurs. For DTCs, see 5.6-2 Diagnostic Trouble Codes.

**Selecting DTC Screen**

The DTC Screen mode is used to display Data Trouble Codes. The header contains the total active/inactive faults, the associated SPN (Suspect Parameter Number) and FMI (Failure Mode Identifier), as well as the OCC (number of occurences).

1. To access the DTC Screen, select the tool to access the Settings Menu.
2. On the Display Mode option, select Dtc.
3. To display the DTC detailed info, select the "?" function. A detailed screen of the selected DTC including the SPN description (Header), the FMI Description (Header), the fault status (Status), the SPN Number (SPN), the FMI Number (FMI), the total number of occurrences (OCC) and the related node source address (SRC) will then appear.
4. Note the SPN Number on the display and check it against the list found in 5.6-2 Diagnostic Trouble Codes Look for the Detected Item/ Hardware information and correct the error. Once the fault is fixed, the amber lights on KAntrak unit and on Engine Control Console will turn off.
5. To exit from the DTC Screen, select tool to continue browsing for other parameters. The menu will be hidden after a few seconds.

## 5.6-2 Diagnostic Trouble Codes

| DTC | (J1939) SPN | (J1939) FMI | Detected Item/Hardware |
|---|---|---|---|
| 16 | 636 | 8 | -Mechanical Misalignment between cam and crank |
| 87 | 94 | 1 | -Fuel Pressure Abormality (Low Side) |
| 88 | 94 | 0 | -Fuel Pressure Abormality (High Side) |
| 91 | 94 | 4 | -Sensor/Wiring Harness Open/Short To Ground<br>-Sensor Malfunction |
| 92 | 94 | 3 | -Sensor/Wiring Harness Short To Power<br>-Sensor Malfunction |
| 107 | 106 | 4 | -Sensor/Wiring Harness Open/Short To Ground<br>-Sensor Malfunction |
| 108 | 106 | 16 | -Sensor/Wiring Harness Short To Power<br>-Sensor Malfunction |
| 111 | 105 | 15 | -Intake air temperature abnormality (High Side Stage 1) |
| 112 | 105 | 4 | -Sensor/Wiring Harness Open/Short To Ground<br>-Sensor Malfunction |
| 113 | 105 | 3 | -Sensor/Wiring Harness Short To Power<br>-Sensor Malfunction |
| 116 | 110 | 15 | -Engine Coolant Temperature Abnormality (High Side Stage 1) |
| 117 | 110 | 4 | -Sensor/Wiring Harness Short To Ground<br>-Sensor Malfunction |
| 118 | 110 | 3 | -Sensor/Wiring Harness Short To Power<br>-Sensor Malfunction |
| 121 | 51 | 1 | -Throttle Position Sensor Malfunction |
| 122 | 51 | 4 | -Throttle Position Sensor 1 Signal Voltage Low |
| 123 | 51 | 3 | -Throttle Position Sensor 1 Signal Voltage High |
| 127 | 105 | 0 | -Intake Air Temperature Higher Than Expected Stage 2 |
| 134 | 3217 | 5 | -Open feed circuit to O2 heater<br>-Open heater ground circuit<br>-Open or shorted to ground O2 signal wire<br>-Open sensor ground (5Vrtn1)<br>-Inoperative sensor |
| 154 | 3227 | 5 | -Open feed circuit to O2 heater<br>-Open heater ground circuit<br>-Open or shorted to ground O2 signal wire<br>-Open sensor ground (5Vrtn1)<br>-Inoperative sensor |
| 171 | 4237 | 0 | -Exhaust leaks upstream or near the HEGO sensor<br>-reduced fuel supply pressure to the fuel injection system<br>-a inoperative sensor<br>-an injector that is stuck closed or dirty<br>-weak spark or lack of spark to a cylinder<br>-a MAP sensor that indicates pressure tjat is lower that the true pressure |
| 172 | 4237 | 1 | -An inoperative O2 sensor<br>-High fuel supply pressure or temperature |
| 182 | 174 | 4 | -Operating in a frigid atmosphere<br>-Sensor out of calibration |

## 5.6-3 Diagnostic Trouble Codes

| DTC | (J1939) SPN | (J1939) FMI | Detected Item/Hardware |
|---|---|---|---|
| 183 | 174 | 3 | -Operating in a hot environment<br>-Sensor out of calibration |
| 217 | 110 | 0 | -Engine Coolant Temperature Exceeds Stage 2 |
| 219 | 515 | 15 | -Engine over speed condition, stuck throttle, large vacuum leak into intake manifold after throttle blade |
| 221 | 51 | 51 | -Throttle Position Sensor Malfunction |
| 222 | 3673 | 4 | -Throttle position sensor circuit in the harness short to ground<br>-Throttle position sensor malfunction |
| 223 | 3673 | 3 | -Throttle position sensor circuit in the harness short to power<br>-Throttle position sensor malfunction |
| 261 | 651 | 5 | -Loss of 12.0 V feed to injector<br>-Open injector coil<br>-Open or shorted to ground injector driver circuit in engine harness |
| 262 | 651 | 6 | -Injector coil shorted internally<br>-Injector driver circuit shorted to voltage between injector and ECM |
| 264 | 652 | 5 | -Loss of 12.0 V feed to injector<br>-Open injector coil<br>-Open or shorted to ground injector driver circuit in engine harness |
| 265 | 652 | 6 | -Injector coil shorted internally<br>-Injector driver circuit shorted to voltage between injector and ECM |
| 267 | 653 | 5 | -Loss of 12.0 V feed to injector<br>-Open injector coil<br>-Open or shorted to ground injector driver circuit in engine harness |
| 268 | 653 | 6 | -Injector coil shorted internally<br>-Injector driver circuit shorted to voltage between injector and ECM |
| 270 | 654 | 5 | -Loss of 12.0 V feed to injector<br>-Open injector coil<br>-Open or shorted to ground injector driver circuit in engine harness |
| 271 | 654 | 6 | -Injector coil shorted internally<br>-Injector driver circuit shorted to voltage between injector and ECM |
| 326 | 731 | 2 | -Knock signal abnormality (High Side)<br>-Sensor Malfunction |
| 327 | 731 | 4 | -Sensor/wiring harness open/short to power<br>-Sensor malfunction |
| 336 | 636 | 2 | -Crank+ or Crank- circuits in wrong connector terminal slot |
| 337 | 636 | 4 | -Loss of sensor feed<br>-Open sensor ground<br>-Open or shorted to ground sinal wire |

## 5.6-4 Diagnostic Trouble Codes

| DTC | (J1939) SPN | (J1939) FMI | Detected Item/Hardware |
|---|---|---|---|
| 341 | 723 | 2 | -Cam+ or Cam- circuits in wrong connector terminal slot<br>-Loss of feed voltage to Cam sensor<br>-Loss of sensor feed<br>-Open sensor ground<br>-Open or shorted to ground signal wire<br>-Sensor malfunctioning |
| 342 | 723 | 4 | -Loss of feed voltage to Cam sensor<br>-Loss of signal or ground circuits<br>-Faulty sensor |
| 359 | n/a | n/a | n/a |
| 420 | 3050 | n/a | n/a |
| 524 | 100 | 1 | -Low Oil Pressure |
| 562 | 168 | 17 | -Wiring harness open/short/damage<br>-Battery abnormality |
| 563 | 168 | 15 | -System voltage abnormality (High Side) |
| 601 | 628 | 13 | -Faulty ECU<br>-ROM Malfunction |
| 604 | 630 | 12 | - Faulty ECU |
| 606 | 629 | 31 | -Faulty ECU |
| 627 | 1348 | 5 | -Open coil in relay<br>-Open in relay driver circuit in engine harness |
| 628 | 1347 | 5 | -Relay pull in coil shorted internally<br>-Relay driver circuit shorted to ground in wire harness |
| 629 | 1347 | 6 | -Shorted relay pull in coil<br>-Relay driver circuit shorted to voltage in wire harness |
| 642 | 1079 | 4 | -Wiring harness short to ground<br>-ECM malfunction |
| 643 | 1079 | 3 | -Wiring harness short to 12.0 V power<br>-ECM malfunction |
| 652 | 1080 | 4 | -Wiring harness short to ground<br>-ECM malfunction |
| 653 | 1080 | 3 | -Wiring harness short to 10.0 V power<br>-ECM malfunction |
| 686 | 1485 | 4 | -Short to ground in relay pull in coil<br>-Short to ground in relay driver circuit in wire harness |
| 687 | 1485 | 3 | -Shorted relay pull in coil<br>-Relay driver circuit shorted to voltage in wire harness<br>-Power Relay Error |
| 1111 | 515 | 16 | -Engine overspeed condition, faulty Crank sensor or input |
| 1112 | 515 | 0 | -Engine overspeed condition, faulty Crank sensor or input |
| 1151 | 4236 | 0 | •exhaust leaks upstream or near the HEGO sensor<br>• reduced fuel supply pressure to the gaseous fuel control system<br>• a fuel supply or manifold leak<br>• a non-responsive HEGO sensor |

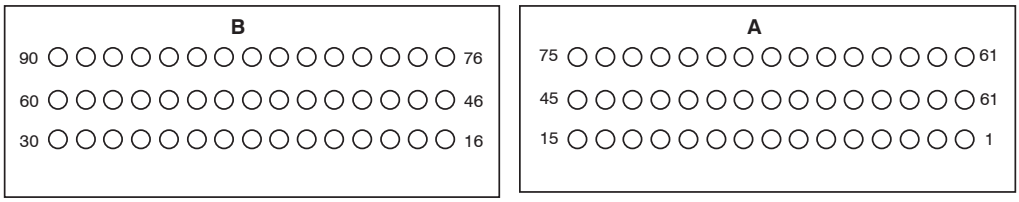
## 5.6-5 Diagnostic Trouble Codes

| DTC | (J1939) SPN | (J1939) FMI | Detected Item/Hardware |
|---|---|---|---|
| 1152 | 4236 | 1 | • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator<br>• a non-responsive HEGO sensor |
| 1153 | 4236 | 0 | • exhaust leaks upstream or near the HEGO sensor<br>• reduced fuel supply pressure to the gaseous fuel control system<br>• a fuel supply or manifold leak<br>• a non-responsive HEGO sensor |
| 1154 | 4236 | 1 | • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator<br>• a non-responsive HEGO sensor |
| 1155 | 4236 | 0 | • exhaust leaks upstream or near the HEGO sensor<br>• reduced fuel supply pressure<br>• an injector that is stuck closed |
| 1156 | 4236 | 1 | • high fuel supply pressure to the fuel injection system<br>• a non-responsive HEGO sensor<br>• an injector that is stuck open |
| 1161 | 4237 | 0 | • exhaust leaks upstream or near the HEGO sensor<br>• reduced fuel supply pressure to the gaseous fuel control system<br>• a fuel supply or manifold leak<br>• a non-responsive HEGO sensor |
| 1162 | 4237 | 1 | • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator<br>• a non-responsive HEGO sensor |
| 1163 | 4237 | 0 | • exhaust leaks upstream or near the HEGO sensor<br>• reduced fuel supply pressure to the gaseous fuel control system<br>• a fuel supply or manifold leak<br>• a non-responsive HEGO sensor |
| 1164 | 4237 | 1 | • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator<br>• a non-responsive HEGO sensor |
| 1165 | 3050 | 11 | n/a |
| 1166 | 3050 | 11 | n/a |
| 1173 | 520620 | 31 | n/a |
| 1612 | 629 | 31 | • Faulty ECU |
| 1613 | 629 | 31 | • Faulty ECU |
| 1614 | 629 | 31 | • Faulty ECU |
| 1615 | 629 | 31 | • Faulty ECU |
| 1616 | 629 | 31 | • Faulty ECU |
| 2111 | 51 | 7 | • TPS malfunction |
| 2112 | 51 | 7 | • TPS malfunction |
| 2115 | 51 | 0 | • Wiring harness open/short/damage<br>• FPP malfunction<br>• IVS malfunction |

## 5.6-6 Diagnostic Trouble Codes

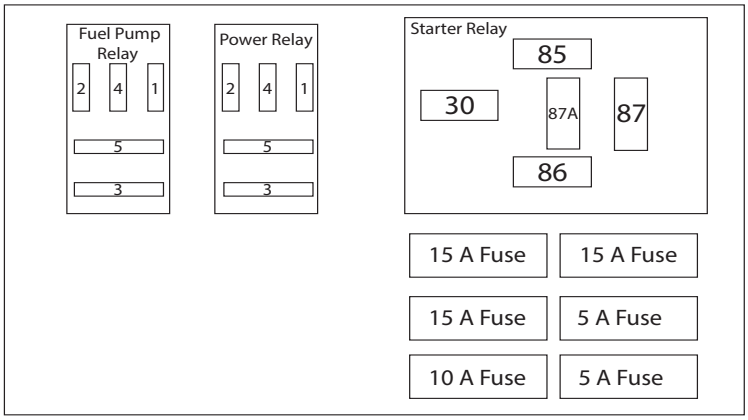
| DTC | (J1939) SPN | (J1939) FMI | Detected Item/Hardware |
|---|---|---|---|
| 2116 | 29 | 0 | • Wiring harness open/short/damage<br>• FPP malfunction<br>• IVS malfunction |
| 2122 | 91 | 3 | • Wiring harness open/short/damage<br>• FPP malfunction |
| 2123 | 91 | 3 | • Wiring harness open/short/damage<br>• FPP malfunction |
| 2127 | 29 | 4 | • Wiring harness open/short/damage<br>• FPP malfunction |
| 2128 | 29 | 3 | • Wiring harness open/short/damage<br>• FPP malfunction |
| 2135 | 51 | 31 | • TPS malfunction |
| 2139 | 91 | 1 | • Wiring harness open/short/damage<br>• FPP malfunction<br>• IVS malfunction |
| 2140 | 29 | 1 | • Wiring harness open/short/damage<br>• FPP malfunction<br>• IVS malfunction |
| 2300 | 1268 | 5 | • a short to ground or open circuit in the harness<br>• an open internal to the primary coil |
| 2301 | 1268 | 6 | • a short to power in the harness<br>• a short internal to the primary coil |
| 2303 | 1269 | 5 | • a short to ground or open circuit in the harness<br>• an open internal to the primary coil |
| 2304 | 1269 | 6 | • a short to power in the harness<br>• a short internal to the primary coil |
| 2306 | 1270 | 5 | • a short to ground or open circuit in the harness<br>• an open internal to the primary coil |
| 2307 | 1270 | 6 | • a short to power in the harness<br>• a short internal to the primary coil |
| 2309 | 1271 | 5 | • a short to ground or open circuit in the harness<br>• an open internal to the primary coil |
| 2310 | 1271 | 6 | • a short to power in the harness<br>• a short internal to the primary coil |

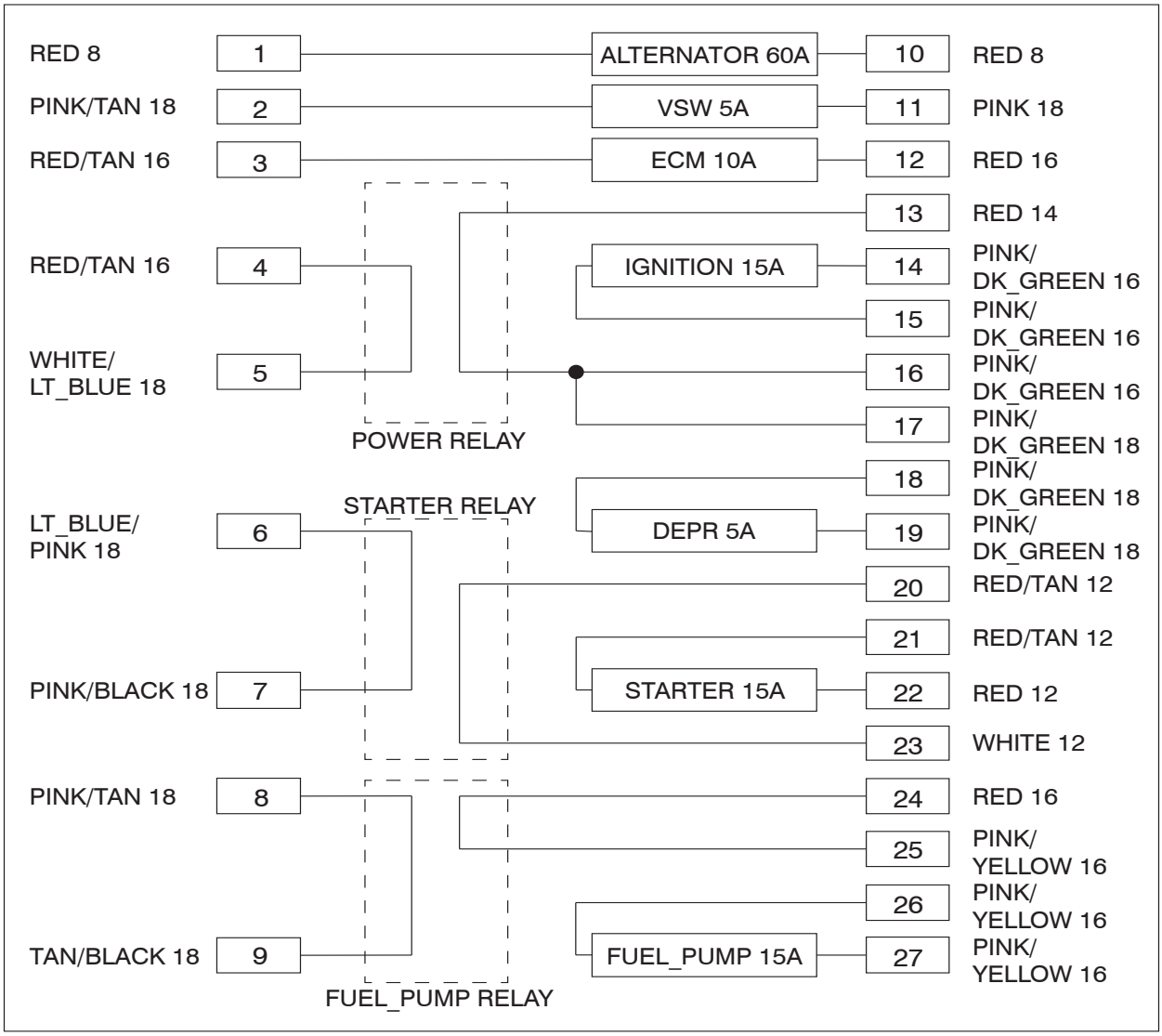
## 5.6-7 ECU Pin Reference Chart - Kubota WG2503



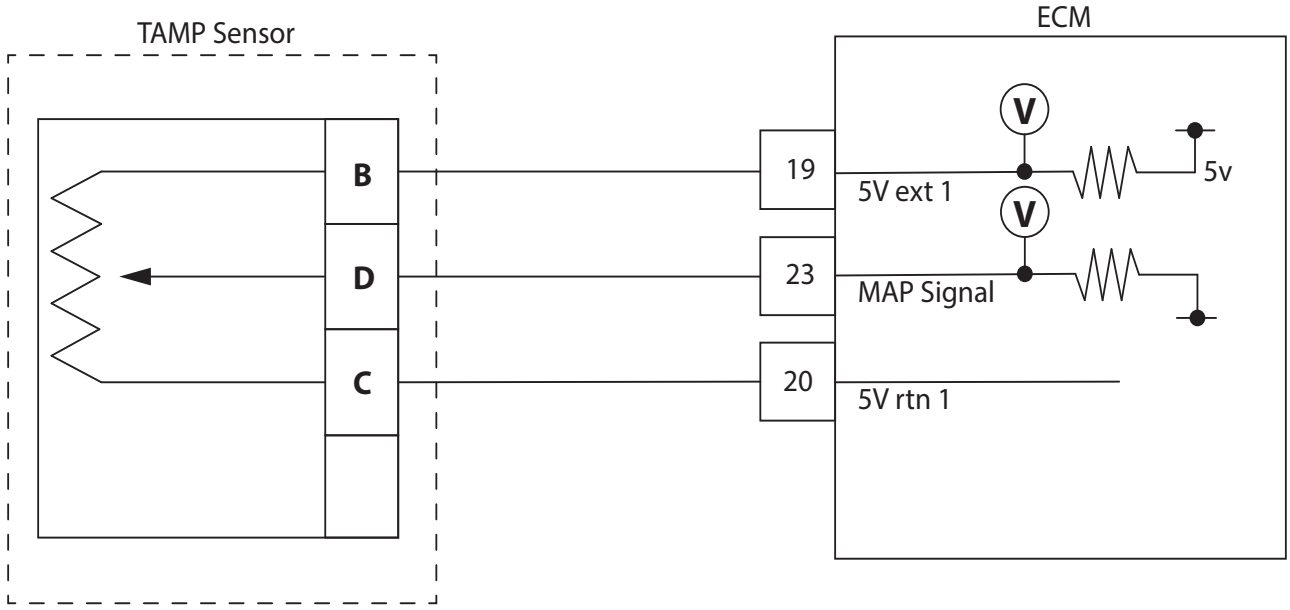

| Pin | Wire Colour | Description | Pin | Wire Colour | Description |
|---|---|---|---|---|---|
| 1 | YELLOW 18 | SPK_COIL 1A | 46 | BLANK | AUX ANA PUD 1 |
| 2 | YELLOW/BLACK 18 | SPK_COIL 1B | 47 | PURPLE/LT_BLUE 18 | TPS 1 |
| 3 | YELLOW/RED 18 | SPK_COIL 2A | 48 | LT_BLUE/DK_BLUE 18 | TPS 2 |
| 4 | BLACK 16 | SPK_GRND | 49 | DK_GREEN/PURPLE 18 | AUX DIG 1 |
| 5 | YELLOW/WHITE 18 | SPK_COIL 2B | 50 | TAN/RED 18 | AUX DIG 2 |
| 6 | BLANK | SPK_COIL 3A | 51 | BLACK/YELLOW 18 | KNK1 + |
| 7 | BLANK | SPK_COIL 3B | 52 | BLACK 18 | KNK1 - |
| 8 | BLANK | EGO_3 | 53 | DK_BLUE/ORANGE 18 | FPP1 |
| 9 | - | - | 54 | PURPLE/YELLOW 18 | FPP2 IVS |
| 10 | - | - | 55 | BLANK | VRELAY |
| 11 | - | - | 56 | - | - |
| 12 | ORANGE/YELLOW 18 | AUX ANA PD1 | 57 | BLANK | KNK2 + |
| 13 | WHITE/LT_GREEN 18 | AUX ANA PD2 | 58 | BLANK | KNK2 - |
| 14 | DK BLUE-PINK 18 | CAN 1 + | 59 | BLANK | VBAT PROT |
| 15 | BLUE/WHITE 18 | CAN 1 - | 60 | RED/TAN 16 | VBAT |
| 16 | - | - | 61 | BLACK/YELLOW 18 | EGOH 2 |
| 17 | - | - | 62 | BLACK/WHITE 18 | EGOH 1 |
| 18 | BLANK | AUX ANA PUD3 | 63 | BLANK | UEGOC |
| 19 | LT_GREEN/RED 18 | 5 V EXT 1 | 64 | BROWN/LT_BLUE 18 | INJ1 LS |
| 20 | BLACK/LT_GREEN 18 | 5 V RTN 1 | 65 | BROWN/LT_GREEN 18 | INJ2 LS |
| 21 | DK_GREEN/ORANGE 18 | EGO 1 | 66 | BROWN/YELLOW 18 | INJ3 LS |
| 22 | DK_GREEN/WHITE 18 | EGO 2 | 67 | BROWN/WHITE 18 | INJ4 LS |
| 23 | LT_GREEN 18 | MAP | 68 | BLANK | INJ5 LS |
| 24 | BLANK | AUX ANA PUD3 | 69 | BLACK 16 | GROUND |
| 25 | PURPLE/WHITE 18 | CRANK + | 70 | BLANK | INJ6 LS |
| 26 | WHITE/PURPLE 18 | CRANK - | 71 | BLANK | AUX PWM8 |
| 27 | GRAY/BROWN 18 | CAM + | 72 | PINK/BLACK 18 | STARTER |
| 28 | PURPLE/ORANGE 18 | CAM - | 73 | WHITE/LT_BLUE 18 | RELAY |
| 29 | RED/WHITE 18 | SPEED + | 74 | GREEN/YELLOW 18 | MIL |
| 30 | RED/BLACK 18 | SPEED - | 75 | BLANK | EGOH_3 |
| 31 | LT_GREEN/PURPLE 18 | 5 V EXT 2 | 76 | BLANK | AUX PWM7 |
| 32 | LT_GREEN/B;ACK 18 | 5 V RTN 2 | 77 | WHITE/BLACK 18 | LOCK OFF |
| 33 | BLANK | PULSE_IN | 78 | TAN/BLACK 18 | AUX PWM6 |
| 34 | GRAY/DK_BLUE 18 | GOV 1 | 79 | RED/TAN 16 | VBAT |
| 35 | LT_BLUE 18 | OIL PRESSURE | 80 | PINK/WHITE 18 | DBW + |
| 36 | YELLOW/GRAY 18 | IAT | 81 | BLACK 16 | GROUND |
| 37 | TAN/WHITE 18 | ECT | 82 | TAN/ORANGE 18 | DBW - |
| 38 | LT_GREEN/WHITE 18 | AUX ANA PU1 | 83 | WHITE/BROWN 16 | AUX OWM5 REC |
| 39 | YELLOW/DK_BLUE 18 | AUX ANA PU2 | 84 | BROWN/WHITE 16 | AUX PWM5 |
| 40 | DK_BLUE/YELLOW 18 | AUX ANA PU3 | 85 | TAN 16 | AUX PWM1 |
| 41 | TAN/DK_GREEN 18 | AUX DIG 3 | 86 | BLANK | AUX PWM4 |
| 42 | GRAY/RED 18 | AUX DIG 4 | 87 | DK_BLUE 18 | AUX PWM2 |
| 43 | GRAY 18 | TACH | 88 | BLANK | AUX PWM4 REC |
| 44 | PINK/TAN 18 | VSW | 89 | PINK/YELLOW 16 | AUX PWM3 REC |
| 45 | BLANK | AUX ANA PUD 2 | 90 | BLACK/RED 16 | AUX PWM3 REC |

## 5.6-8 Fuse Box - Kubota WG2503

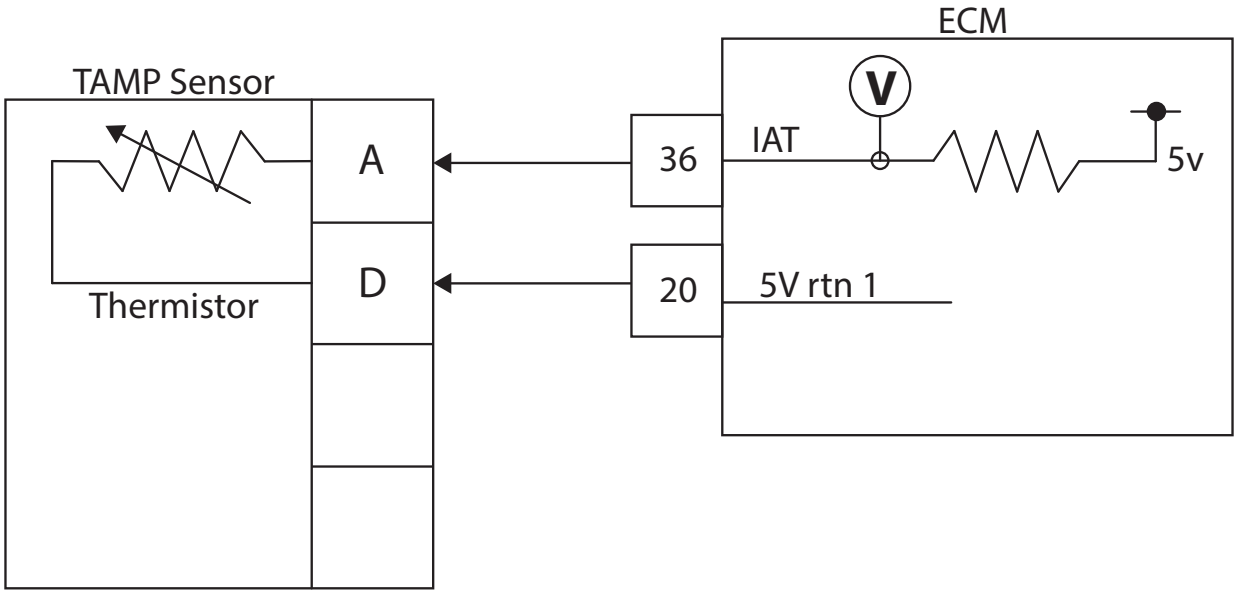


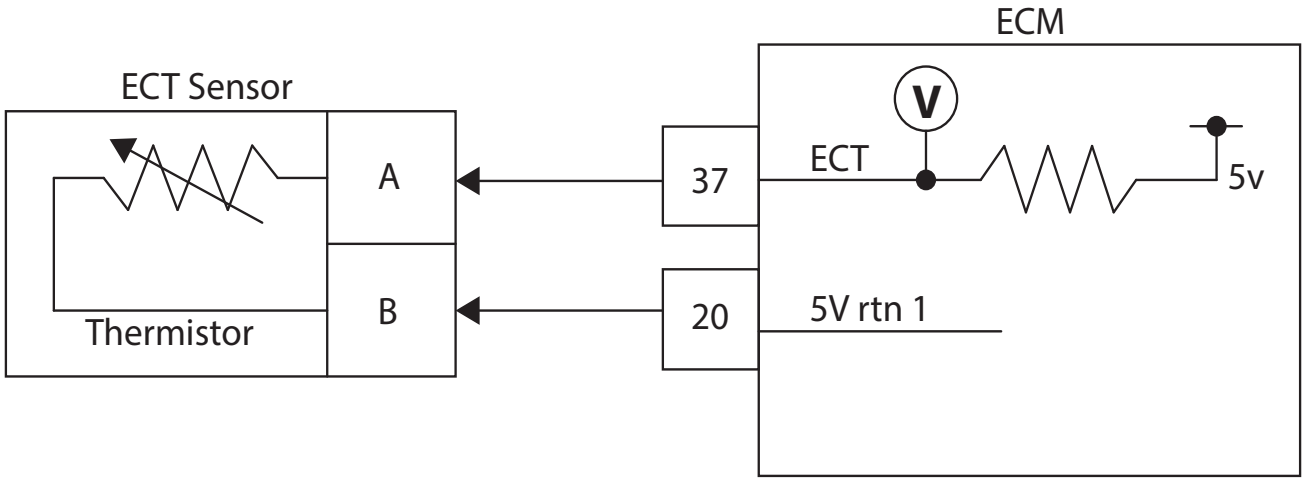
## 5.6-9 MAP Sensor - Kubota WG2503



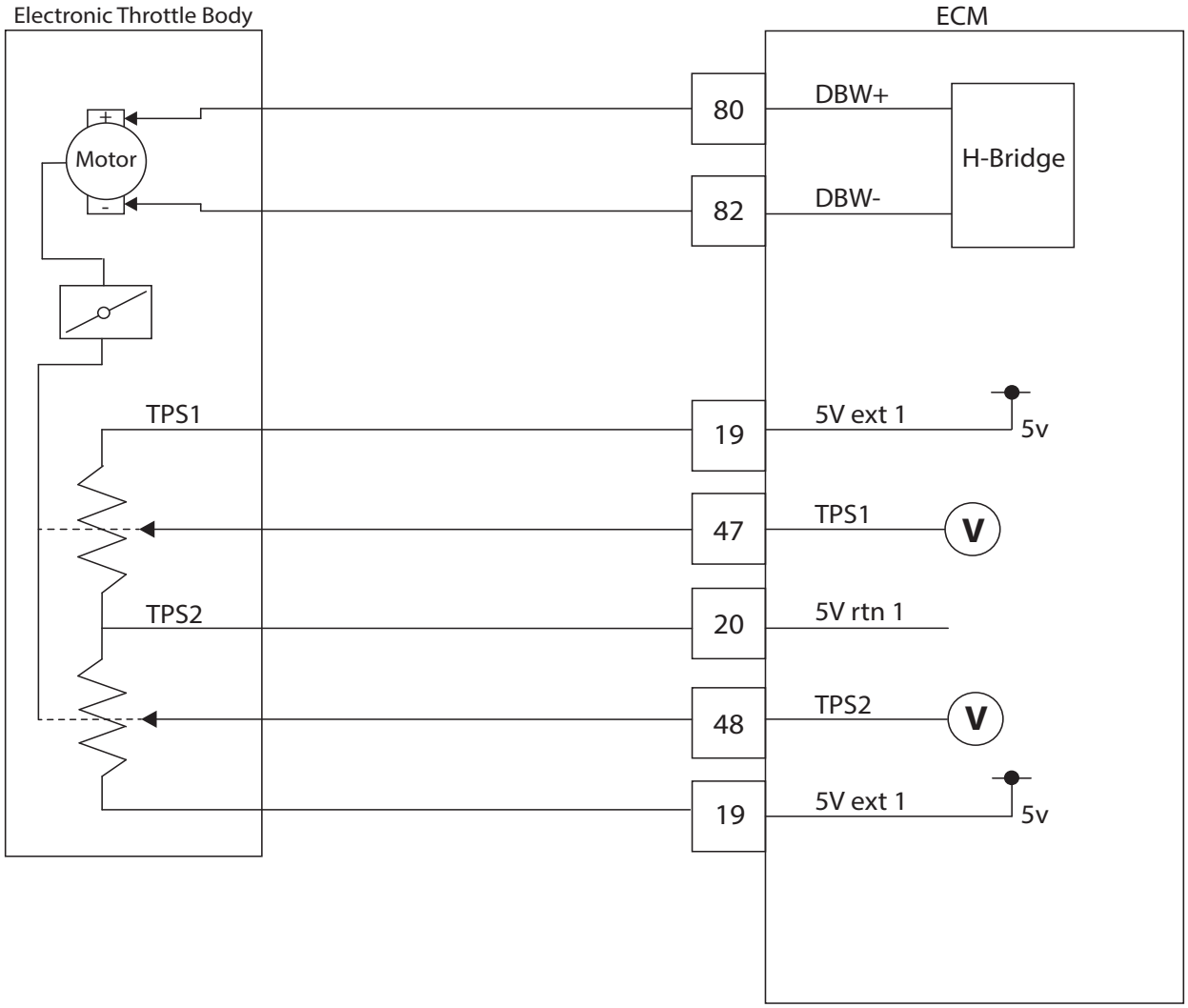

## 5.6-10 IAT Sensor - Kubota WG2503



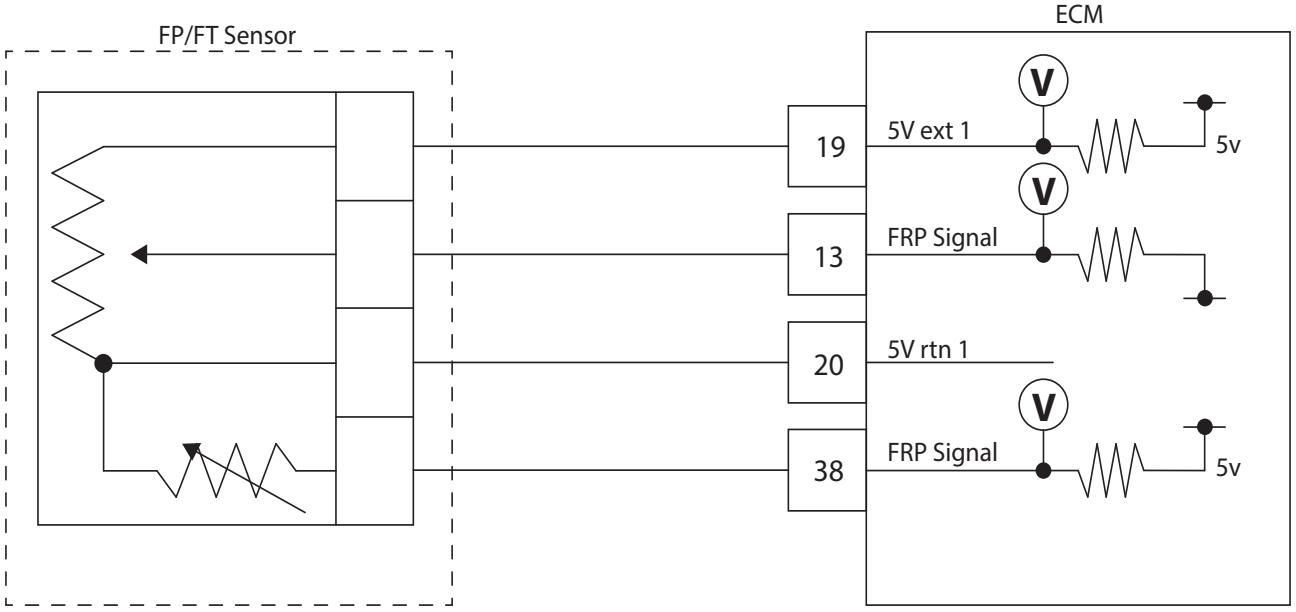
## 5.6-11 ECT - Kubota WG2503



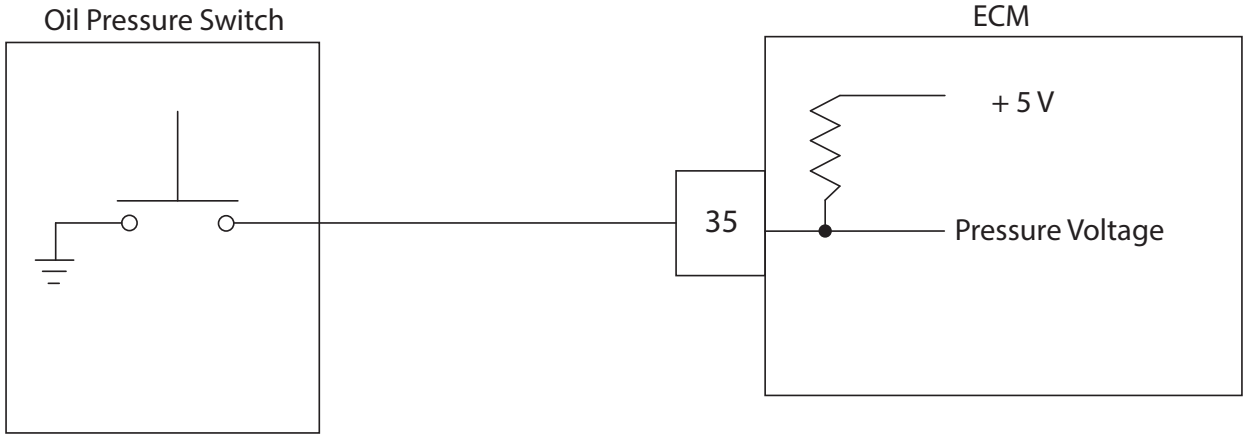

## 5.6-12 TPS & Engine Speed - Kubota WG2503



## 5.6-13 Fuel Temperature Sensor - Kubota WG2503




## 5.6-14 Oil Pressure Sensor - Kubota WG2503



# 5.7 Hydraulic Tank

Maintaining the hydraulic components and hydraulic oil at the proper level are essential to the good performance and service life of the MEWP.

## 5.7-1 Hydraulic Oil Replacement

1. Turn the engine on and allow the hydraulic oil to warm up.
2. Shut the engine off.
3. Place a suitable container under the hydraulic tank.
4. Remove the oil drain plug and allow all of the hydraulic oil to drain into the container.
5. Reinstall the drain plug with a new seal ring and tighten the plug firmly.
6. Refill the hydraulic tank with new oil. Refer to 2.10 Hydraulic Specifications & Gear Oil.
7. Check for leakage.
8. Clean up any oil that may have spilled during this procedure.
9. Check the hydraulic oil level. The hydraulic oil level should be at or slightly above the fill line on the tank.

**NOTE**

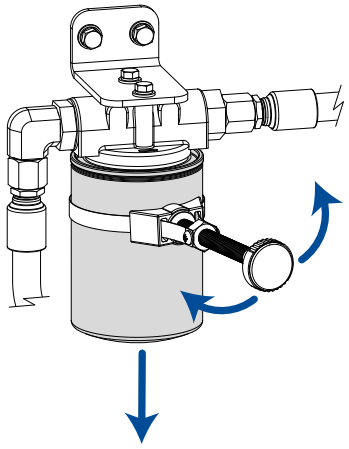
Refer to your national/local regulations on how to dispose of used filter and oil.

**NOTE**

Samples of the hydraulic oil should be drawn from the reservoir and tested annually. These samples should be taken when the oil is warmed through normal operation of the system. The sample should be analyzed by a qualified lubrication specialist to determine if it is suitable for continued use. Oil change intervals will depend on the care used in keeping the oil clean, and the operating conditions. Dirt and/or moisture cotamination will dictate that the oil should be changed more often. Under normal use and operating conditions, the hydraulic oil should be changed every two years. For oil specifications, refer to 2.10 Hydraulic Specifications & Gear Oil.

## 5.7-2 Hydraulic Filter Replacement

1. Turn the MEWP off.
2. Place a suitable container under the filter.



3. Use a filter wrench to remove the filter from the head. Throw out the filter.
4. Apply hydraulic oil to the o-ring on the new filter, and screw the filter into place.
5. Tighten the filter with the filter wrench.

**NOTE**

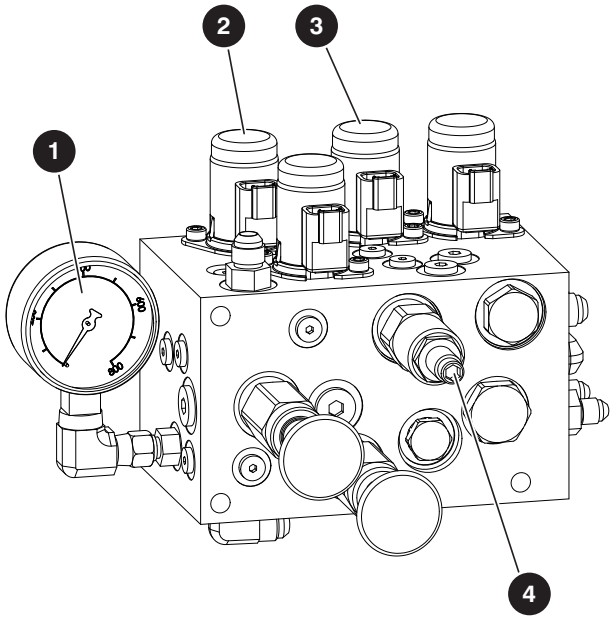
Refer to your national/local regulations on how to dispose of used filters and oil.

# 5.8 Manifold and Hydraulic Pumps

## 5.8-1 Hydraulic Brake Pressure Adjustment

Maintaining accurate hydraulic brake pressure is important when it comes to safe MEWP operation.

1. Locate the pressure gauge ❶ on the brake valve assembly.




**IMPORTANT**

**Failure to remove the wiring may cause damage to components downstream.**

2. Remove the wiring from two valves: the axle lockout valve ❷ wires 65 and 02, and the two speed valve ❸ wires 45 and 02. Mark the valves to ensure you put the wiring back in the correct positions later.

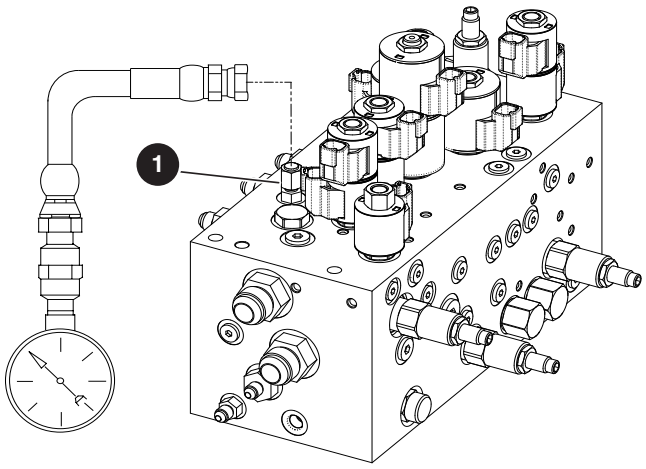
**IMPORTANT**

**Valve damage will occur if it is tightened too much.**

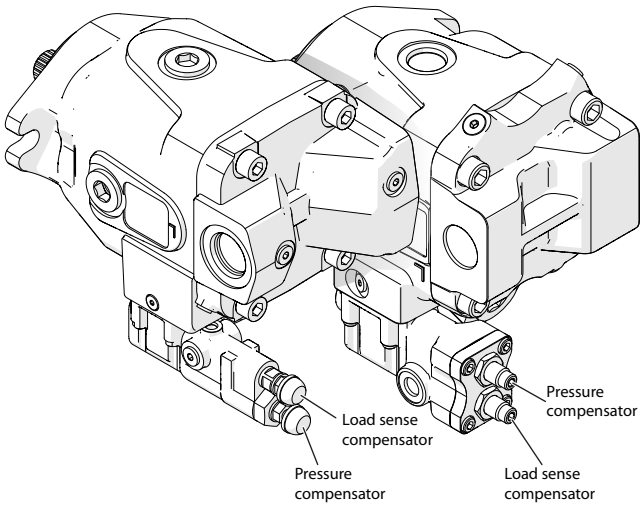
3. Locate the brake system pressure reducing valve PR1 ❹. Loosen the lock nut and turn the adjustment stem gently clockwise 2 full turns.
4. Start the engine from the platform control console and extend the boom slightly (approximately 30 cm (12") to achieve low speed drive.
5. Drive the MEWP forward or reverse. The pressure gauge reading should be 28 bar (400 psi). Stop the MEWP. Follow the next steps for adjusting the relief valve pressure if needed. If no adjustment is required, skip ahead to step 10.
6. Locate the brake system pressure reducing valve PR1 and turn the valve gently counterclockwise to the initial position.
7. Drive the MEWP forward or reverse. The pressure gauge reading should be 28 bar (400 psi).
8. Stop the MEWP and adjust the pressure reducing valve PR1 1/4 turn at a time by turning it either clockwise to increase the pressure, or counterclockwise to decrease the pressure.
9. Repeat steps 7 and 8 until the brake pressure is achieved (28 bar/400 psi) then tighten the lock nut on the brake system pressure reducing valve PR1.
10. Reinstall the wiring in the same positions it was removed from in step 2.
11. Test the brake and two speed functions.

## 5.8-2 Hydraulic Standby Pressure Adjustment

1. Locate the GP1 port ❶ on either the top or bottom of the main manifold and remove the cap.



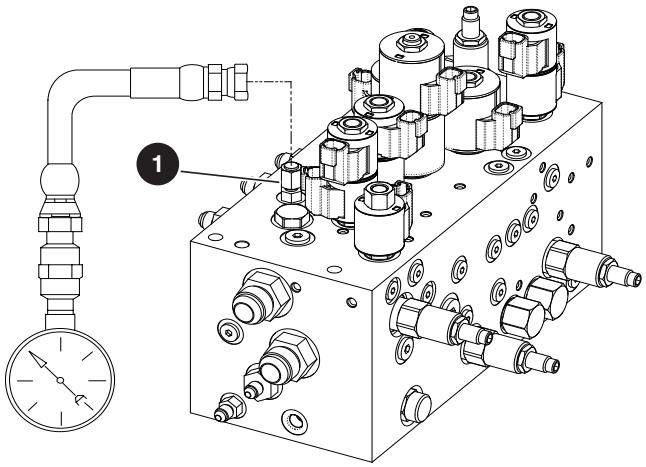

2. Connect a pressure gauge (41 bar/600 psi) to the GP1 port.
3. Start the ngine from the base control console and let it run for 2-5 minutes.
4. Check the reading on the gauge (the standard pressure should be 23 bar/330 psi) and follow the next steps for adjusting the pressure if needed.
5. Locate the load sense compensator on the system pump.




6. Loosen the lock nut.
7. Adjust the load sensing pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after the pressure is set to 23 bar (330 psi).
9. Turn the engine off.
10. Remove the pressure gauge from the GP2 port and cap the port.

## 5.8-3 Hydraulic High Pressure Adjustment

1. Locate GP1 port ❶ on the main manifold and remove the cap.

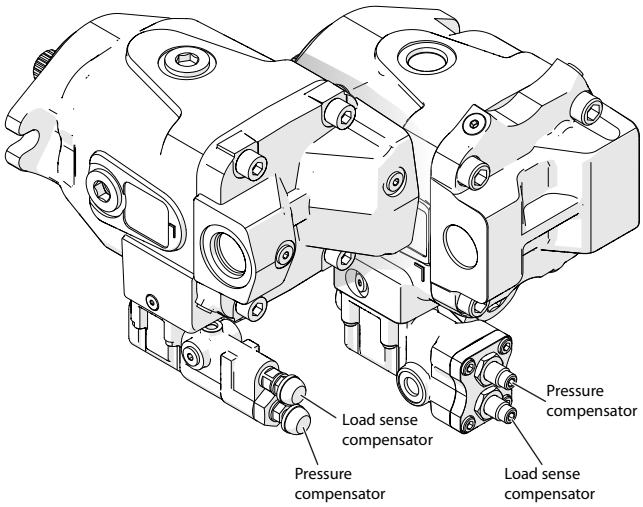



2. Connect a pressure gauge (350 bar/5000 psi) to the GP1 port.

**⚠ WARNING**

**To protect the gauge, do not activate any controls during this procedure.**

3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Without driving, steer fully to one direction and then check the reading on the gauge. Standard pressure should be 210 bar (3050 psi). Follow the next steps for adjusting the pressure, if needed.
5. Locate the pressure compensator on the system pump.

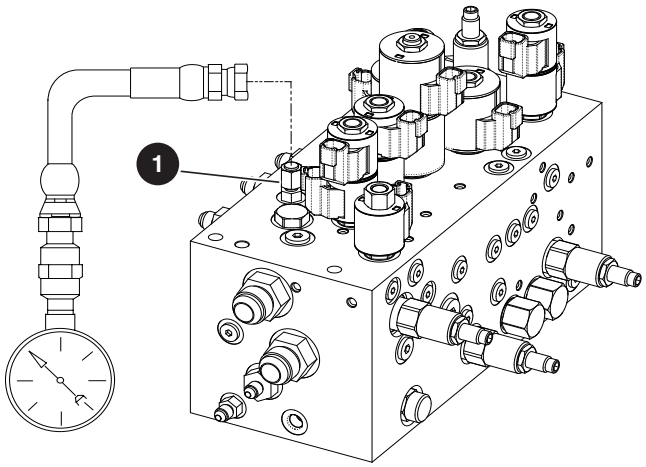



6. Loosen the lock nut.
7. Adjust the system pump pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after pressure is set to 210 bar (3050 psi).
9. Turn the engine off.
10. Remove the pressure gauge from the GP2 port and cap the port.

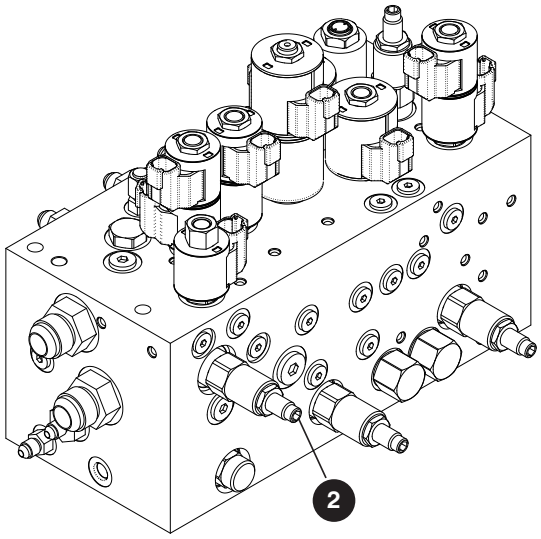
## 5.8-4 Hydraulic System Relief Valve Adjustment

To adjust the system relief valve (RV1), you are required to temporarily adjust the high pressure setting on the system pump to 228 bar (3300 psi). Refer to 5.8-3 Hydraulic High Pressure Adjustment.

1. Locate the GP1 port ❶ on the main manifold and remove the cap.




2. Connect a pressure gauge (350 bar/5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Steer fully to one direction and then check the reading on the gauge. Standard pressure should be 224 bar (3250 psi). Follow the next steps for adjusting pressure if needed.
5. Locate the system relief valve (RV1) ❷.

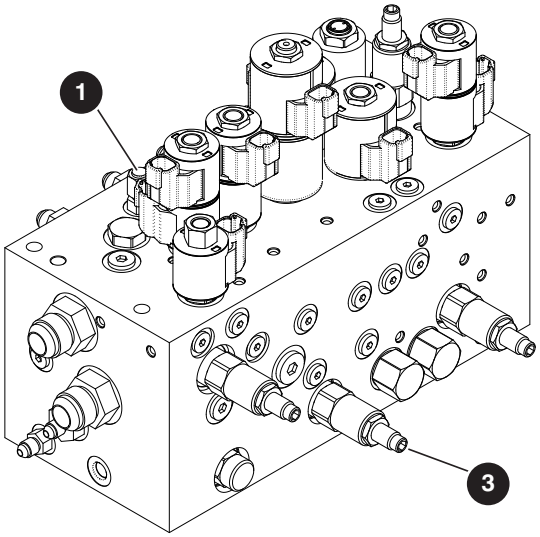



***Main Manifold***

6. Loosen the lock nut on the system relief valve. Turn the adjusting stem clockwise to increase pressure and counterclockwise to decrease pressure.
7. Tighten the lock nut on the system relief valve once 224 bar (3250 psi) is observed on the gauge. You must steer fully in one direction to activate pressure reading on gauge.
8. Reset the system pump to 211 bar (3050 psi). Refer to 5.8-3 Hydraulic High Pressure Adjustment.

## 5.8-5 Turret Rotate Relief Valve Adjustment

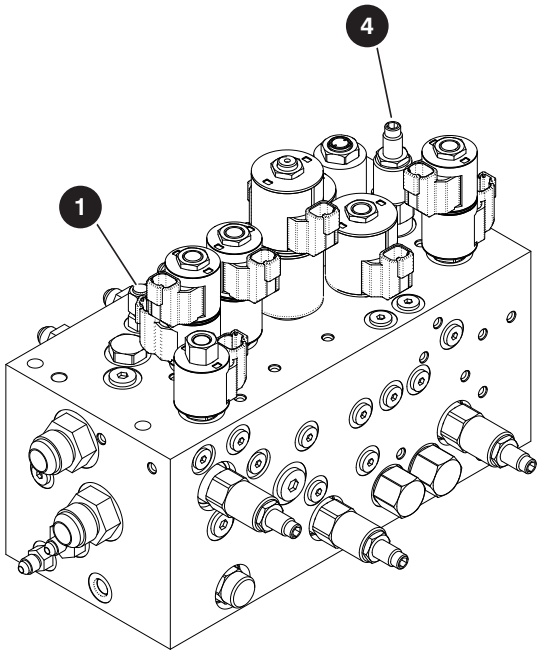
1. Locate the GP1 port ❶ on the main manifold.
2. Connect a pressure gauge (350 bar/5000 psi) to the GP1 port.




3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the main boom to ensure the platform will not contact the ground.
5. Engage the turret transport lock.
6. Attempt to rotate the turret. The pressure should be 86 bar (1250 psi). Follow the next steps for adjusting the pressure, if needed.
7. Locate the turret rotate relief valve RV2 ❸.
8. Loosen the lock nut on the turret rotate relief valve RV2. Turn the adjusting stem clockwise to increase the pressure and counterclockwise to decrease the pressure.
9. Tighten the lock nut on the turret rotate relief valve RV2 once 86 bar (1250 psi) is observed on the gauge. You must activate the turret rotate to obtain a pressure reading on the gauge.
10. Disengage the turret transport lock.

## 5.8-6 Platform Level Relief Valve Adjustment

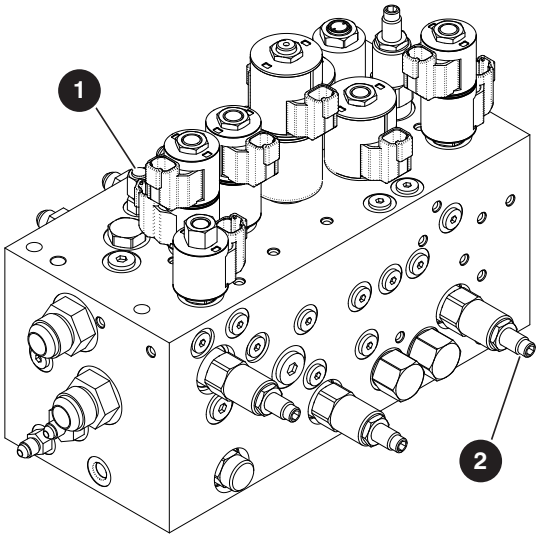
1. Locate the GP1 port ❶ on the main manifold.
2. Connect a pressure gauge (350 bar/5000 psi) to the GP1 port.




3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the main boom to ensure the platform will not contact the ground.
5. Fully raise or lower the platform level and check the reading on the gauge. The pressure should be 207 bar (3000 psi). Follow the next steps for adjusting the pressure, if needed.
6. Locate the platform leveling relief valve RV3 ❹ .
7. Loosen the lock nut on the platform level relief valve RV3. Turn the adjusting stem clockwise to increase the pressure and counterclockwise to decrease the pressure.
8. Tighten the lock nut on the platform level relief valve RV3 once 207 bar (3000 psi) is observed on the gauge. You must fully raise or lower the platform level to activate a pressure reading on the gauge.

## 5.8-7 Fly Boom Relief Valve Adjustment

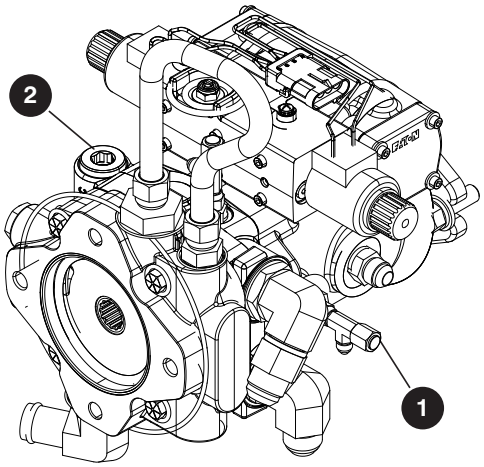
1. Locate the GP1 port ❶ on the main manifold and remove the cap.




2. Connect a pressure gauge (345 bar/5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Fully extend the boom and check the reading on the gauge. The pressure should be 103 bar (1500 psi). Follow the next steps for adjusting the pressure, if needed.
5. Locate the fly boom relief valve RV4 ❷.
6. Loosen the lock nut on the fly boom relief valve RV4. Turn the adjusting stem clockwise to increase the pressure and counterclockwise to decrease the pressure.
7. Tighten the lock nut on the fly boom relief valve RV4 once 103 bar (1500 psi) is observed on the gauge. You must fully extend the boom to activate a pressure reading on the gauge.

## 5.8-8 Test Charge Pump Pressure on Drive Pump

1. Locate test port TP3 ❶ on the drive pump.
2. Connect a pressure gauge (41 bar/600 psi) to the test port.




3. Start the engine from the base control console.

**⚠ WARNING**

**To protect the gauge, do not activate any controls during this procedure.**

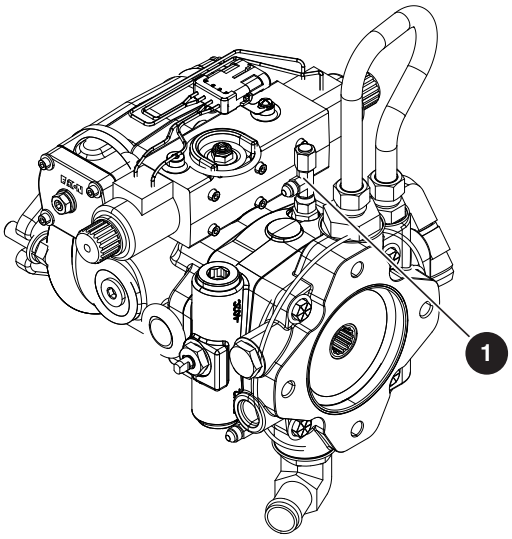
4. Check the reading on the gauge. Standard pressure should be 21 bar ±2 (313 ±31 psi).
5. Replace the charge pump relief valve RV10 ❷ if the standard pressure is not achieved.
6. Repeat steps 2, 3, and 4 after the charge pump relief valve is replaced.
7. If the pressure is still not in range, repair or replace the pump as necessary.

## 5.8-9 Test Forward Drive Pressure on Drive Pump

**NOTE**

*Make sure the charge pump pressure test is completed first.*

1. Locate test port TP1 ❶ on the drive pump.
2. Connect a pressure gauge (690 bar /10,000 psi) to test port TP1.




***Drive Pump - TP1***

3. Start the engine from the platform control console.
4. Unplug the brake solenoid power cable (26) on the brake valve.
5. Activate the drive function slowly forward with the engine at high speed. The wheels should not turn.

**NOTE**

*Activating the drive function too quickly will stall the engine.*

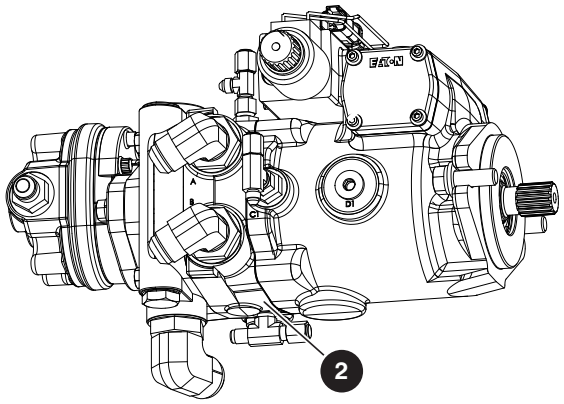
6. Check the reading on the gauge. The standard pressure should be 345 bar (5000 psi).
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.
9. Remove the pressure gauge from the port, cap the port, and re-plug the brake solenoid power cable.

## 5.8-10 Test Reverse Drive Pressure on Drive Pump

**NOTE**

*Make sure the charge pump pressure test is completed first.*

1. Locate test port TP2 ❷ on the drive pump.




***Drive Pump - TP2***

2. Connect a pressure gauge (10000 psi) to test port TP2.

**⚠ WARNING**

**To protect the gauge, do not activate any controls during this procedure.**

3. Start the engine from the platform control console.
4. Unplug the brake solenoid power cable (26) on the brake valve.
5. Activate the drive function slowly in reverse with the engine at high speed. The wheels should not turn.

**NOTE**

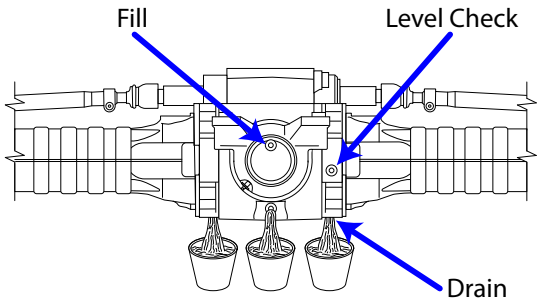
*Activating the drive function too quickly will stall the engine.*

6. Check the reading on the gauge. The standard pressure should be 345 bar (5000 psi).
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.

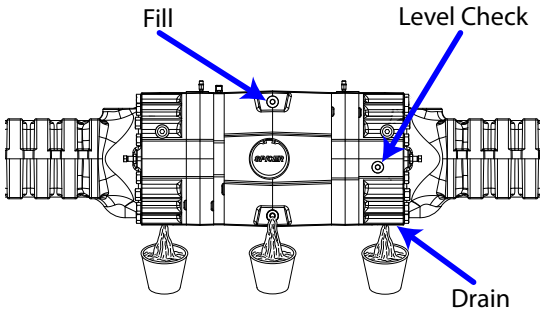
# 5.9 Axles

## 5.9-1 Change the Oil in the Axles

1. Place a suitable container under the axle.
2. Remove the fill plug.
3. Remove all three drain plugs to allow the oil to drain into the container.




***Front Axle***




***Rear Axle***

4. Reinstall all of the drain plugs.
5. Remove the check plug.

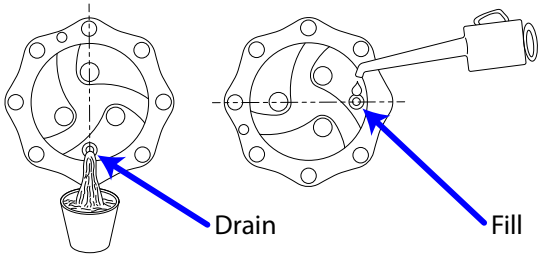
**NOTE**

*The axle is full when oil is leaking from the check port.*

6. Refill the axle with new oil as per specifications Refer to 2.10 Hydraulic Specifications & Gear Oil.
7. Reinstall both of the fill and check plugs.

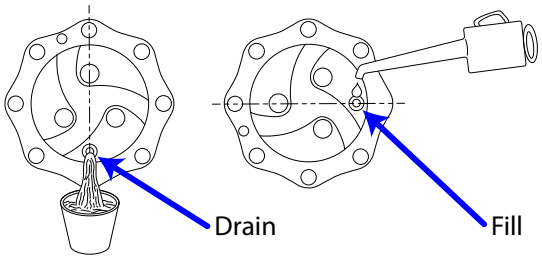
## 5.9-2 Check the Oil Level in the Torque Hubs

1. Drive the MEWP to rotate the hub until the plug is in the 3 or 9 o'clock position. Shut off the engine.
2. Remove the plug and check the oil level. The oil level should be even with the bottom of the plug hole. Add oil if needed. Refer to 2.10 Hydraulic Specifications & Gear Oil. for oil specifications.



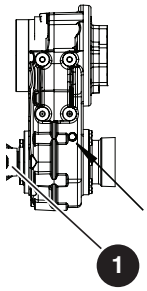

## 5.9-3 Change the Oil in the Torque Hubs

1. Start the engine and drive the boom until the fill/drain port of one of the hubs is in the 6 o'clock position. Shut off the engine. Place a container under the fill/drain port.
2. Remove the plug and allow all of the oil to drain, watching carefully to avoid spills.
3. Restart the engine and drive the boom until the drain plug is in the 3 or 9 o'clock position. Shut off the engine.
4. Refill the hub with new oil as per specifications. Refer to 2.10 Hydraulic Specifications & Gear Oil.
5. Repeat the above steps with the other three wheel hubs.



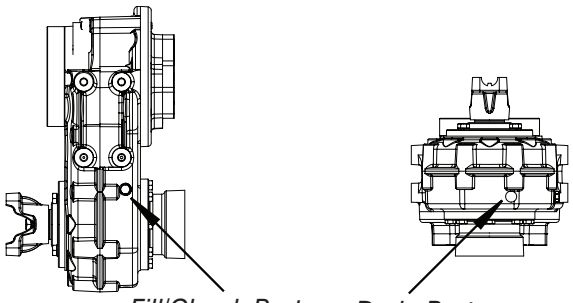
## 5.9-4 Check the Oil Level in the Axle Gearbox

1. Remove the fill plug ❶ from the gear box.
2. Check the oil level. It should be even with the bottom of the fill plug hole. Add oil if needed. Refer to 2.10 Hydraulic Specifications & Gear Oil. for oil specifications.




## 5.9-5 Change the Oil in the Axle Gearbox

1. Place a suitable container under the gearbox.
2. Remove the fill plug.
3. Remove the drain plug to allow oil to drain into the container.




***Gearbox***

4. Reinstall the drain plug.

**NOTE**

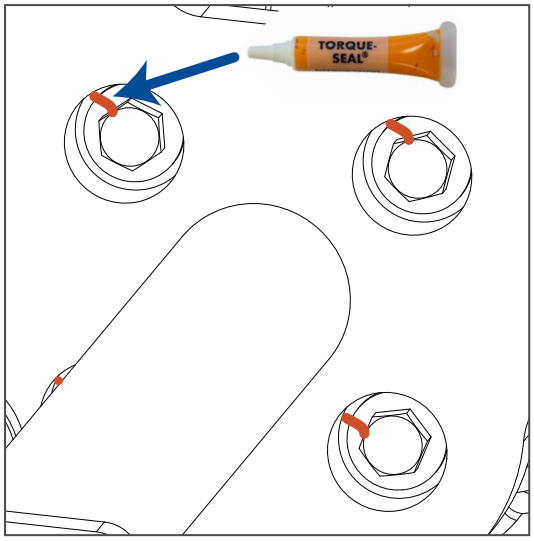
*The gearbox is full when oil is leaking from the check port.*

5. Refill the gearbox with new oil as per specifications. Refer to 2.10 Hydraulic Specifications & Gear Oil.
6. Reinstall the fill plug.

## 5.9-6 Oscillating Cylinder Bolt Replacement

If upon inspection it is determined that the oscillating cylinder bolts have missing or damaged torque seal, the affected bolts must be replaced. If replacing more than one bolt, do so one at a time to prevent the cylinder from shifting.

1. Remove the affected bolt.
2. Clean the cylinder's corresponding internal threaded hole thoroughly.
3. Replace the removed bolt with a new 1/2"-13 x 1-3/4" grade 8 bolt, applying liquid blue Loctite 242 or 243 to the bottom half of the bolts.
4. Hand tighten the bolt.
5. Torque the new bolt to 108 Nm (80 ft-lb).
6. Apply a line of torque seal to each new bolt extending from the bolt head over the washer and to the chassis wall.

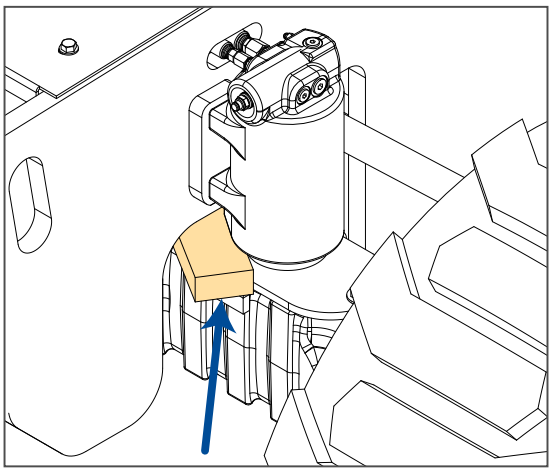



## 5.9-7 Oscillating Cylinder Replacement

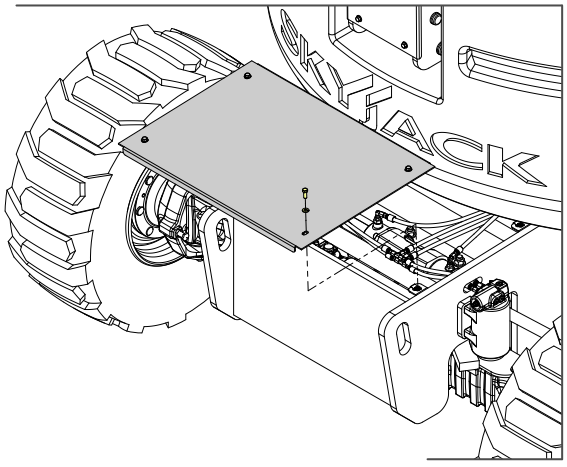
**⚠ CAUTION**

**The oscillating axle cylinder weighs approximately 19.5 kg (43 lbs), so a second person to assist with the removal and replacement would be helpful.**

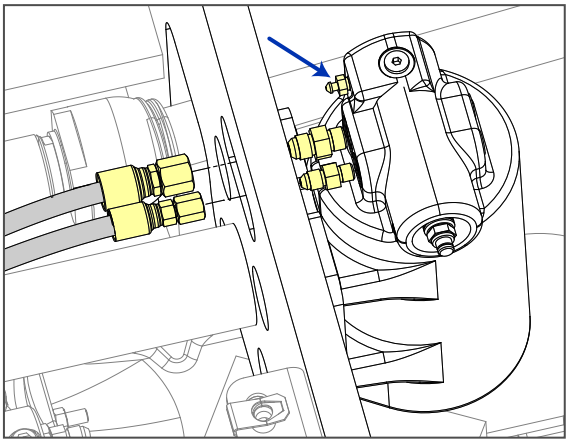
1. Wedge a block of wood between the front axle and the chassis, to prevent the axle from oscillating during the procedure.



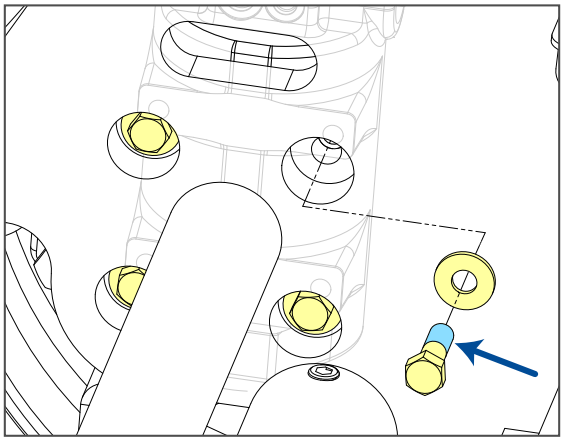
2. Remove and set aside the base cover from the oscillating axle end of the chassis.



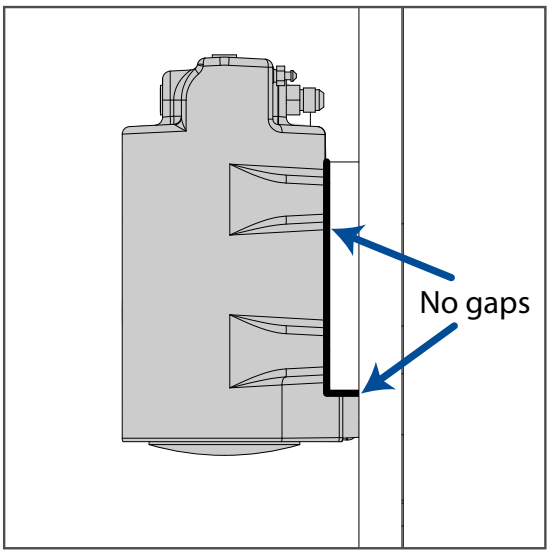
3. With a rag in hand to catch any leaking oil, slowly loosen the bleeder screw to release any trapped air within the cylinder, then tighten it again. Slowly loosen the oscillating axle cylinder hoses to release the pressure, then disconnect them fully, being sure to plug the hose ends.
4. Remove and set aside the cylinder fittings, ensuring they stay clean.



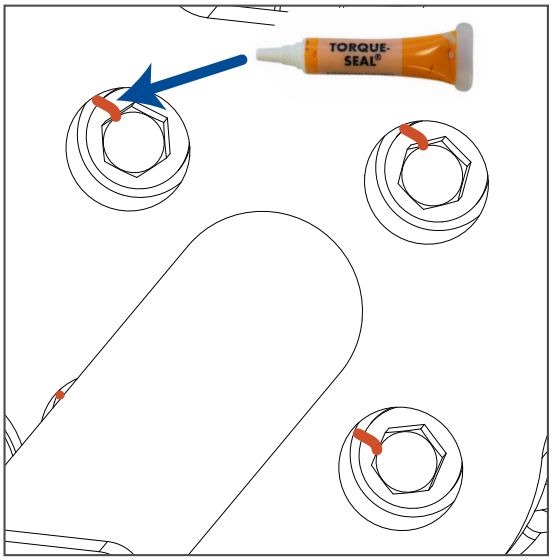
5. Remove and throw away the bolts and washers securing the cylinder to the chassis. Lift the cylinder away.
6. Lift a new cylinder into place and install new bolts (1/2"-13 x 1-3/4" grade 8) and 1/2" hardened washers, applying liquid blue Loctite 242 or 243 to the lower half of the bolts before installing them. Hand tighten the bolts.



7. Adjust the oscillating cylinder position until there is continuous contact between the cylinder mounting surface and the mounting plate, and between the mounting plate and the cylinder shoulder, with no gaps. Torque the bolts to 108 Nm (80 ft-lb).




8. Apply a line of torque seal to each bolt extending from the bolt head over the washer and to the chassis wall.




9. Reinstall the cylinder fittings, torquing the larger one to 33 Nm (24 ft-lb) and the smaller one to 20 Nm (15 ft-lb).

10. Remove the plugs and reconnect the hoses to the cylinder fittings, torquing the larger hose end to 28 Nm (21 ft-lb) and the smaller hose end to 16 Nm (12 ft-lb).
11. Reinstall the base cover and remove the block of wood.
12. Turn the engine on and let it run for a few minutes to pressurize the cylinder, then turn it off again.
13. Check the oil level using the hydraulic tank sight gauge. Add more hydraulic oil if needed.
14. Bleed the cylinder (refer to the next procedure).

## 5.9-8 Bleed the Oscillating Axle Cylinders

If the axle oscillation system is not operating properly, the stability of the MEWP is compromised and it may tip over.

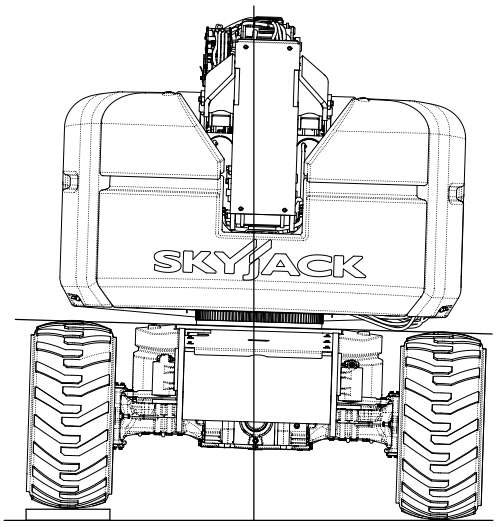
Items you will need before starting:

- oil container
- hose (to reach from bleeders to bucket)

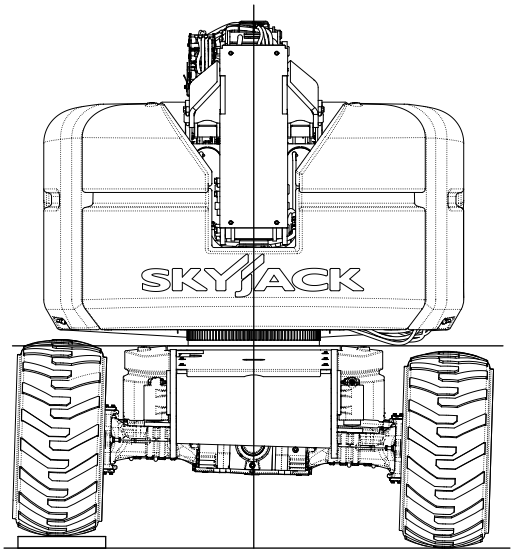
1. Locate a bleeder on either side of the oscillating axle cylinder.
2. Connect a hose to the bleeder nipple.
3. Start the engine and slowly open the bleeder to allow the oil to flow in a continuous stream.
4. Close the bleeder.
5. Repeat the procedure with the other oscillating axle cylinder.

## 5.9-9 Test the Oscillating Axle Cylinders

1. Extend the fly boom 30 cm (1 ft) cm while on a firm, level surface.
   - **Result:** The steer axle should be locked.
2. Drive one of the steer tires up onto a 15 cm (6 in) block or curb.
   - **Result:** An appropriate tilt of the MEWP chassis should occur.

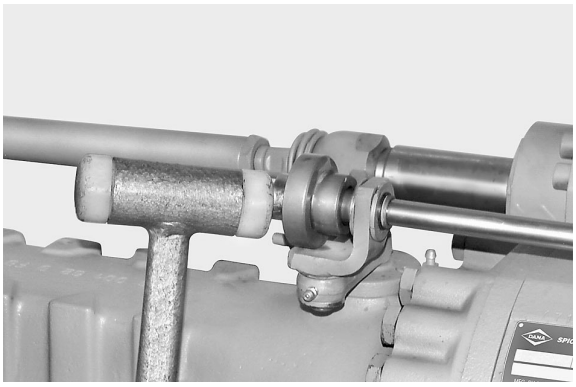



3. Retract the fly boom while in tilt position.
   - **Result:** The steer axles should unlock and the MEWP chassis should level itself to the ground.

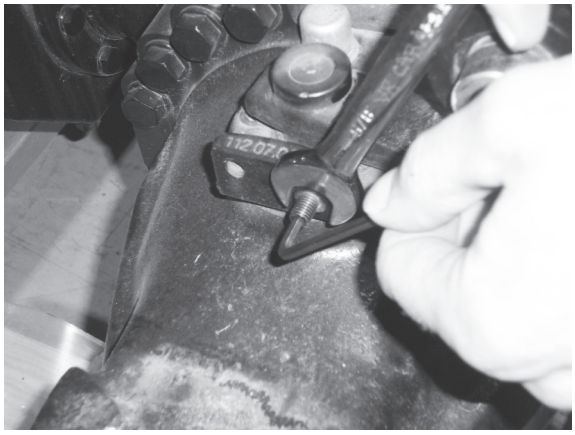


## 5.9-10 Pin Brake Adjustments

1. To manually release the brake give a light blow to the external ring of the check unit.



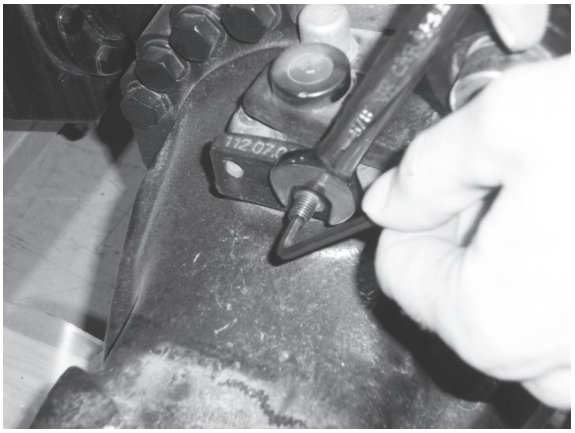
2. To adjust the idle elimination loosen the jam nut and back out the adjustment stem a few turns.



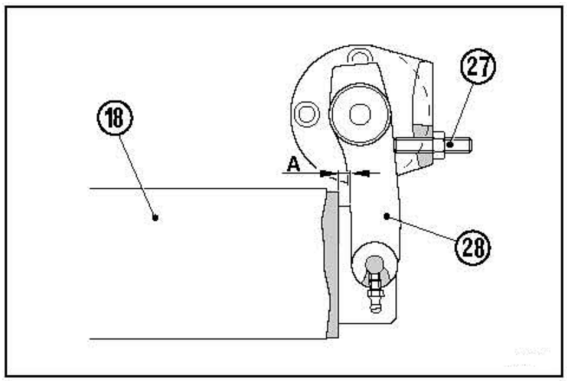
3. Apply a 1 kg (2 lb force) in the direction of the brake application, and turn the adjusting stem so that it touches the stop.



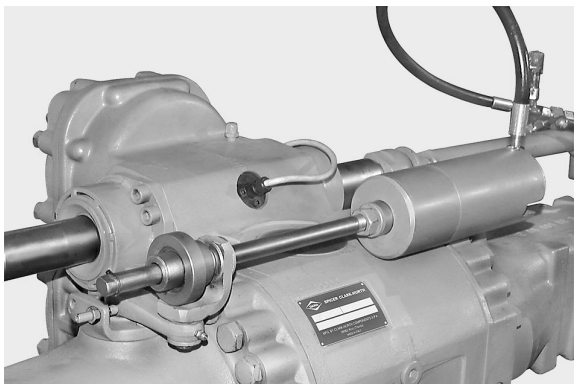
4. Tighten the jam nut. Repeat this procedure for the other side.



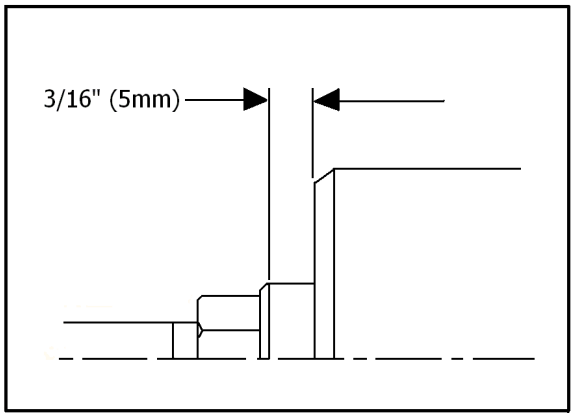
5. On the cylinder side ensure that there is some clearance between the cylinder and lever “A” with the lever against the stop.



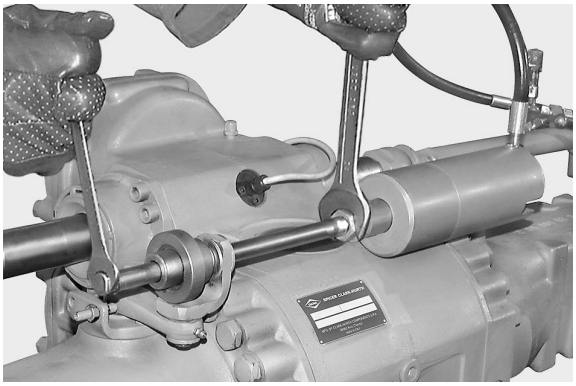

6. Introduce pressure into the cylinder and ensure that the check unit engages.



7. Release the pressure from the cylinder and check that the rod returns and stops in a position where it projects out from the cylinder head by 5 mm (3/16").

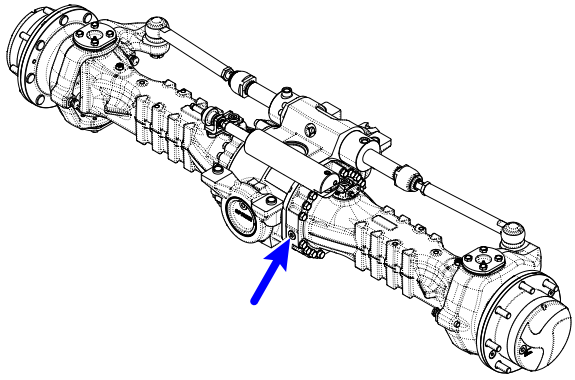



8. If adjustment is needed loosen the jam nut, pressurize the cylinder and turn the adjustment stem. Repeat step 7 and tighten the jam nut when correct adjustment is obtained.

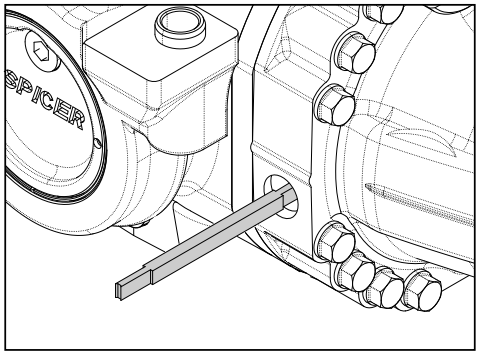


## 5.9-11 Brake Inspection

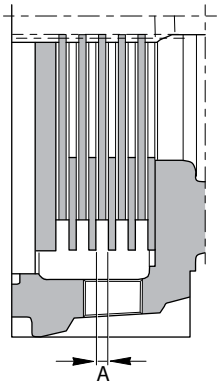
1. Remove the oil level plug from one of the braking axle arms, as shown below.



2. Insert a 4.5 mm feeler gauge into the drain port.




3. Use the gauge to check the gap between the disks (A). The minimum distance allowed is 4.5 mm. Reinstall the oil level plug.




4. Repeat the inspection on the other axle arm. If the gap is smaller than 4.5 mm between the disks of either arm (i.e. the gauge doesn't fit), the brake disks must be replaced on both arms.
5. Repeat the procedure on the opposite axle.

# 5.10 Grease Points

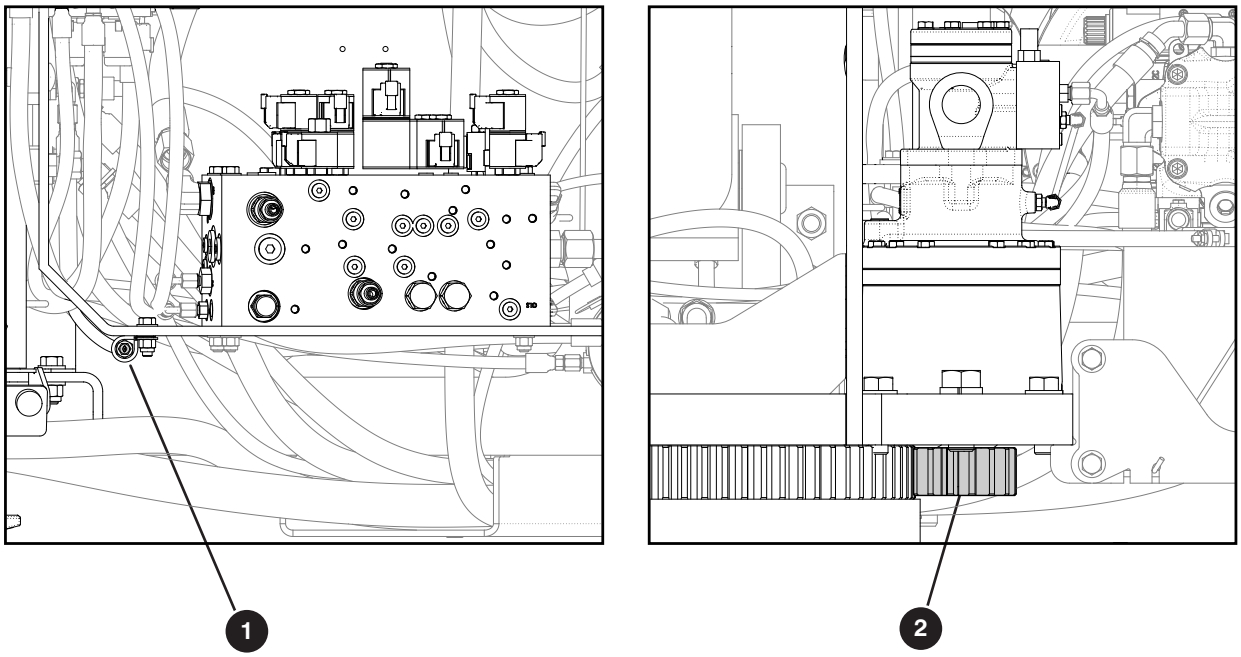
Maintaining proper lubrication is essential for the good performance and service life of the MEWP. If the bearing and gear of the MEWP are improperly greased, it could result in component damage.

## 5.10-1 Grease the Turret Ring Gear

1. Open the control side cowling, and locate the turret ring gear grease fitting beside the hydraulic tank.
2. Pump grease into the fitting, and continue pumping until new lube appears continuously around the grease seal lip of the ring gear.
3. Rotate the turret in increments of 10 to 13 cm (4 to 5 inches) at a time, and repeat step 2 until the entire bearing has been greased.

## 5.10-2 Grease the Turret Swing Drive

1. Apply open gear lube to each tooth of the swing drive gear, located under the turret.

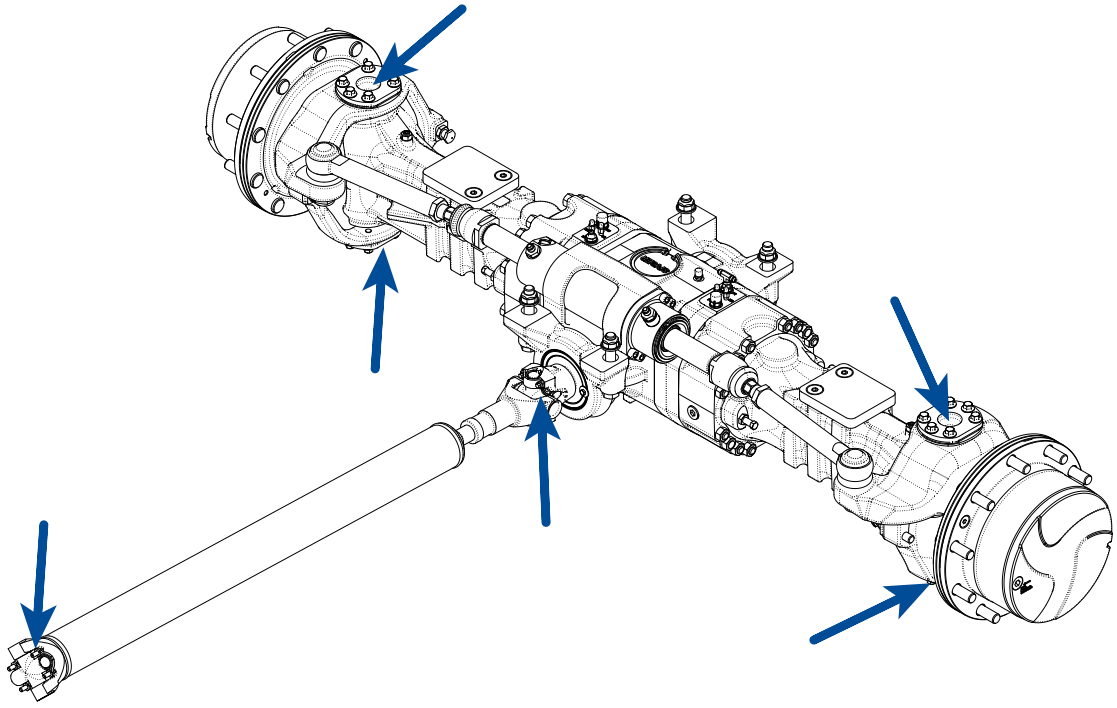


## 5.10-3 Grease the Axles

1. Open the axle cover plates and locate the grease fittings.
2. Pump grease into the grease fittings.

## 5.10-4 Grease the Drive Shaft

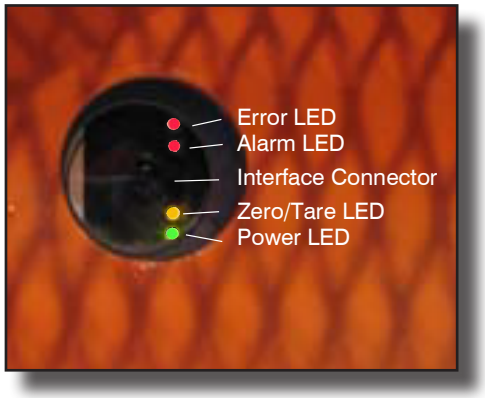
1. Locate the grease fittings on the drive shaft u-joints, and pump grease into the fittings.



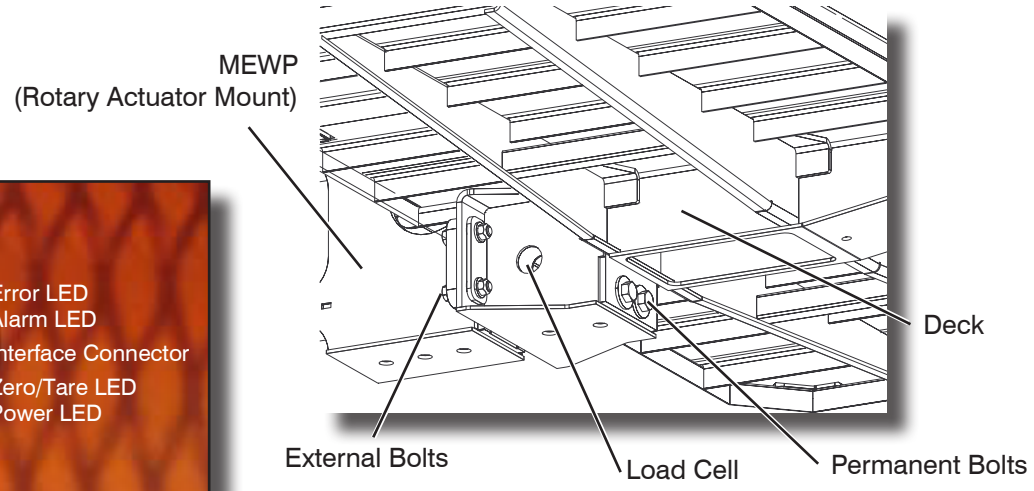
# 5.11 Options

## 5.11-1 Load Sensing System - CE

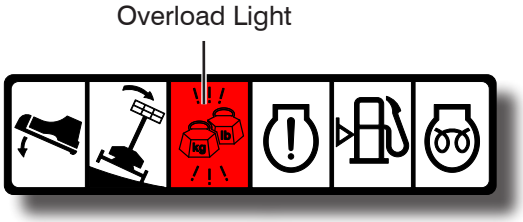
The Skyjack boom platform overload sensing system is based on load cell or electronic scale technology. The deck steel structure is isolated from the MEWP. The load cell is permanently bolted between the deck and the rotary actuator mount. The load cell will only respond to the vertical component of the load in the platform. There are four external bolted connections that serve as a redundant back up system for the load cell connection. The system is first calibrated with an empty platform to set the tare weight to zero. The following steps of the process set the overload limit as regulated by applicable safety standards for Mobile Elevated Work Platforms.



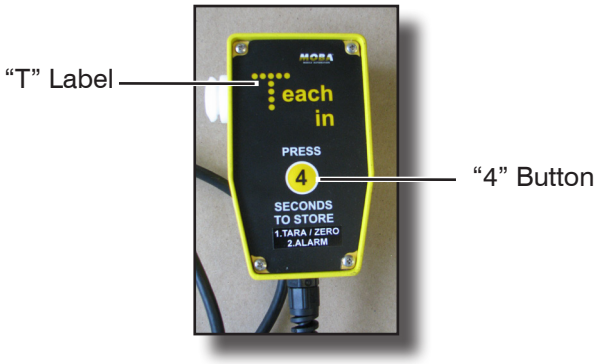

***Load Cell LED Display***




***Bottom View of Deck***




***Platform Control Console Indicator Module***




***"Teach in" Handset (Service only)***

**Error LED** - Continously on when system error
**Alarm LED** - Continously on when platform is overload or has base contact
**Interface Connector** - Storage of limit valve ("Teach in" handset connects here)
**Orange LED** - Continously on when tare value is zero ± 15 kg (33 lb)
**Green LED** - Flashes slowly on when system powered and calibrated

**NOTE**

*When power is turned on and after a four second time period elapses, the overload light and audible alarm will pulse two times. This indicates the system is active and there are no faults.*

## 5.11-2 Verify Proper Operation of the Load Sensing System

***Overload Status Chart***

| Weight | Indicator Light | Load Cell LED Display | Audible Alarm | MEWP Functions |
|---|---|---|---|---|
| (Zero) | OFF | Error - OFF<br>Alarm - OFF<br>Zero/Tare - ON (orange)<br>Power - FLASHING (green) | OFF | ENABLED |
| (Work Mode @ 244+) | FLASHING | Error - OFF<br>Alarm - FLASHING (red)<br>Zero/Tare - OFF<br>Power - FLASHING (green) | PULSING | DISABLED |
| (Travel Mode @ 244+) | FLASHING | Error - OFF<br>Alarm - FLASHING (red)<br>Zero/Tare - OFF<br>Power - FLASHING (green) | PULSING | ENABLED |

1. Park the MEWP on firm level ground.
2. Fully retract and lower the boom.
3. Turn the engine off ◯ .
4. Ensure both emergency stops are pulled out and platform engine enable switch is in the on | position.
   **Result:** The overload indicator light and audible alarm pulse two times.
5. Ensure the platform is unloaded and is free from any surface contact.
   **Result:** The green power LED flashes, the orange LED is ON, the red alarm LED is OFF, and the red error LED is OFF.
6. Place a 244 kg (538 lb) load on the platform.
   **Result:** The platform indicator light flashes, the load cell red alarm LED is ON, and the audible alarm is pulsing.
7. On base control console, start the engine and extend the boom by more than 30 cm (1 ft).
   **Result:** All drive and boom function are disabled.
8. Remove the load from the platform.
   **Result:** All drive and boom function are enabled and all warning indicators are OFF.

**NOTE**

*Refer to Section 4 for the load sensing system troubleshooting.*

## 5.11-3 Calibration of the Load Sensing System (with the “Teach In” Handset)

### ⚠ WARNING

**Do not interrupt the system power during this procedure.**

**Do not rest your hand or foot on the platform during this procedure.**

1. Park the MEWP on firm level ground.
2. Fully retract and lower the boom.
3. Turn the engine off ◯ .
4. Ensure both emergency stops are pulled out and the platform engine enable switch is in the on | position.

   **Result:** The overload indicator light and audible alarm pulse two times.
5. Ensure the platform is unloaded and is free from any surface contact.
6. Remove the cap from the load cell interface connector.
7. Connect the “Teach in” handset to the interface connector.

   **Result:** The “T” label on the handset will flash at a high frequency of 5Hz. If not, recheck that power is on and the handset is properly connected.

### ⚠ WARNING

**Do not disconnect the handset at any point during the following steps until instructed.**

8. On the “Teach in” handset, depress the “4” button for four seconds.

   **Result:** The “T” label on the handset will light on constantly.
9. Add a test load of 244 kg (538 lb) onto the center of platform.
10. Depress the “4” button for four seconds.

    **Result:** The “T” label on the handset will go from flashing to constantly on.
11. Disconnect the “Teach in” handset from the interface connector.
12. Wait for four seconds and then add a test load exceeding 244 kg (538 lb) to test the load sensing system.

    **Result:** On the platform control console, the overload light will flash and an audible alarm will pulse.
13. Remove the test load from the platform.

    **Result:** The green power LED flashes, the orange LED is ON, the red alarm LED is OFF, the audible alarm is OFF, and the red error LED is OFF.
14. Re-cap the interface connector and place the provided “calibrated” label over the interface connector.

## 5.11-4 Generator Troubleshooting

| Problem | Cause | Remedy |
|---|---|---|
| Generator not rotating | - Motor not turning<br>- Directional valve not working<br>- Broken drive key | - Check for proper hydraulic flow<br>- Check voltage to coil<br>- Bad coil or valve<br>- Check and replace |
| Frequency falls under load | - Hydraulic flow to motor falling<br>- Bad motor | - Check flow to motor is constant<br>- Replace motor |
| Generator does not excite | - Low speed<br>- Faulty capacitor<br>- Breakdown in windings | - Check and adjust speed<br>- Check and replace<br>- Check winding resistance |
| High no-load voltage | - Excessive speed<br>- High capacity of capacitor | - Check and adjust speed<br>- Check and replace |
| Low no-load voltage | - Low speed<br>- Faulty rotary diodes<br>- Worn windings<br>- Low capacity of capacitor | - Check and adjust RPM<br>- Check and replace<br>- Check winding resistance<br>- Check and replace |
| Proper no-load but low loaded voltage | - Low speed when loaded<br>- Excessive load<br>- Short-circuited diodes | - Check and adjust RPM<br>- Check and repair<br>- Check and replace |
| Proper voltage in no-load conditions but high voltage at load | - High speed in loaded condition | - Check and adjust speed |
| Unstable voltage | - Poor contacts<br>- Uneven rotation | - Check connections<br>- Check for uniform rotation speed |
| Noisy generator | - Broken bearings<br>- Poor coupling | - Replace bearings<br>- Check and repair |

1177AA

## 5.11-5 Generator Frequency/Voltage Check & Adjustment

### Check the Frequency and Voltage

1. On the base control box, turn the base/off/platform key switch to the platform position .
2. On the platform control box, ensure the generator switch is in the off position .
3. Select the start position on the start/emergency power switch until the engine starts .
4. Turn the generator on/off switch to the on position .
5. Connect a multimeter to the platform power outlet.
6. Note the voltage and frequency.

### Adjust the Frequency and Voltage

7. Loosen the generator control valve jam nut.
8. Turn the control valve screw with an allen head wrench. Turning it counterclockwise (out) increases voltage and frequency, turning it clockwise (in) decreases voltage and frequency.
9. The output must be:

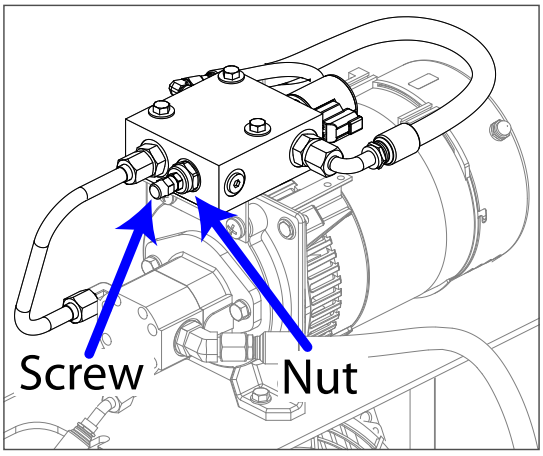
ANSI/CSA

- Voltage: 104.4 VAC to 127.2 VAC
- Frequency: 57 Hz to 63 Hz

CE & AS

- Voltage: 207.0 VAC to 243.8 VAC
- Frequency: 47.5 Hz to 52.5 Hz

10. Tighten the jam nut when the correct output is achieved.



SKYJACK™

www.skyjack.com