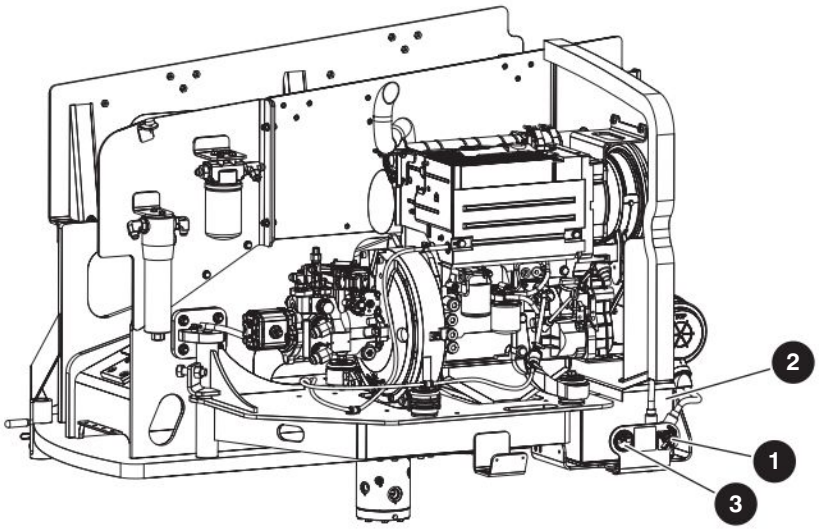
SKYJACK

SERVICE MANUAL

SJ46AJ, SJ51AJ

ARTICULATING BOOMS

194313AI
April 2019
ANSI/CSA, CE, AS



1.6-5 Limit Switches (B)

Detecting limit switch malfunction is essential to 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 power 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 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.

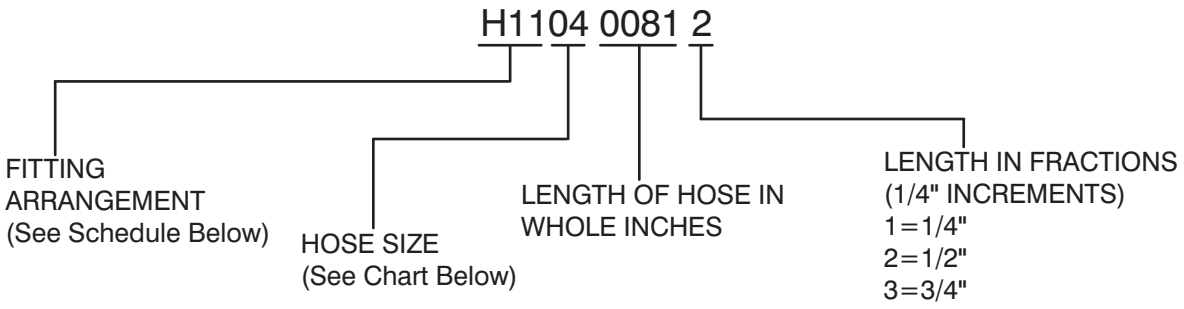
   B - Frequent Inspection
   - Replace the battery if it is damaged or incapable of holding a lasting charge.

3 Charge Indicator - CE **(B)**

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

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

Table 2.11 Hydraulic Specifications & Gear Oil

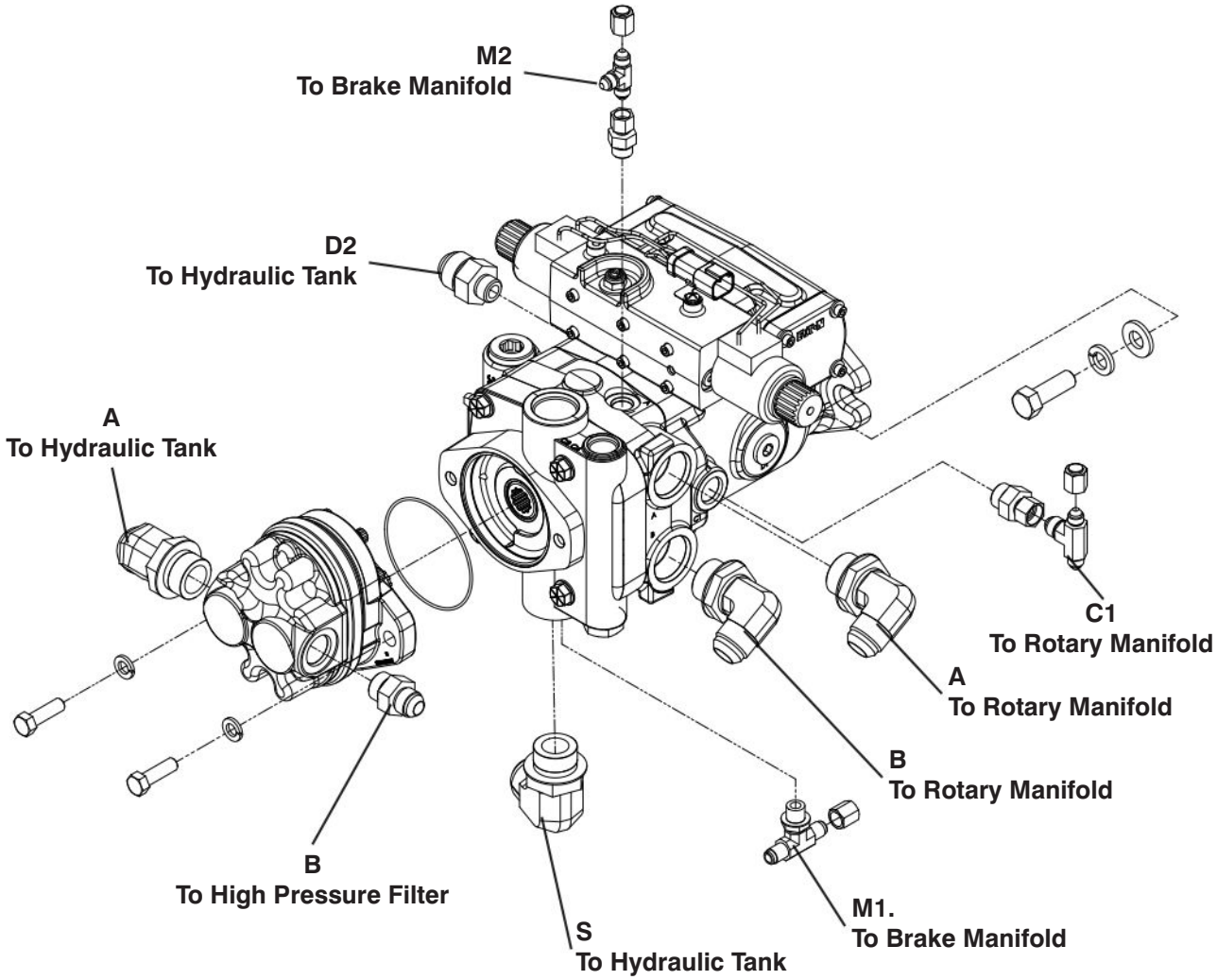
Description		US	Metric
Pumps			
Drive Pump	Displacement - 2000 rpm	2.8 CIR 24.3 gpm @ 2000 rpm	46 CC
	Drive Pump Pressure	5000 psi	345 bar
	Charge Pump Displacement	0.85 CIR	13.9 CC
	Charge Pump Pressure	313 psi	22 bar
System Pump	Displacement - Static	0.67 CIR / 5.8 gpm @ 2000 rpm	11 CC
	System Pump Pressure	3000 psi	207 bar
Filters			
Charge Pump Filter	Max. Operating Pressure	50 psi	9 µm/35
High Pressure Filter	Max. Operating Pressure	87 psi	10 µm/25
Return Filter	Max. Operating Pressure	22 psi	10 µm/40
Motors			
Drive Motor	Displacement - Low	1.55 CIR	21 CC
	Displacement - High	2.32 CIR	38 CC
Swing Motor	Motor Displacement	4 CIR	65.56 CC
	Maximum Swing Pressure	1750 psi	121 bar
Cylinders			
Extension Cylinder	Bore	2 in.	5.1 cm
	Rod Diameter	1.25 in.	3.2 cm
	Stroke	67 in.	1.7 m
	Maximum Boom Pressure	3000 psi	207 bar
Main Lift Cylinder	Bore	4 in.	10.2 cm
	Rod Diameter	1.75 in.	4.5 cm
	Stroke	25.44 in.	64.6 cm
	Maximum Lift Pressure	3000 psi	207 bar
Riser Cylinder	Bore	2.5 in.	6.4 cm
	Rod Diameter	1.75 in.	4.5 cm
	Stroke	36.21 in.	92 cm
	Maximum Lift Pressure	3000 psi	207 bar
	Maximum Lower Pressure	2750 psi	190 bar
Steering Cylinder	Maximum Steering Pressure	3000 psi	207 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		24 gal (91 L)	
Standard Gear Oil	-20°F to 115°F (-29°C to 45°C)	SAE 80W-90 API GL5	
Arctic Gear Oil	-40°F to 115°F (-40°C to 45°C)	Duratran XL Synthetic Oil	
Gear Oil Capacity		10 gal (38 L)	

1406AD

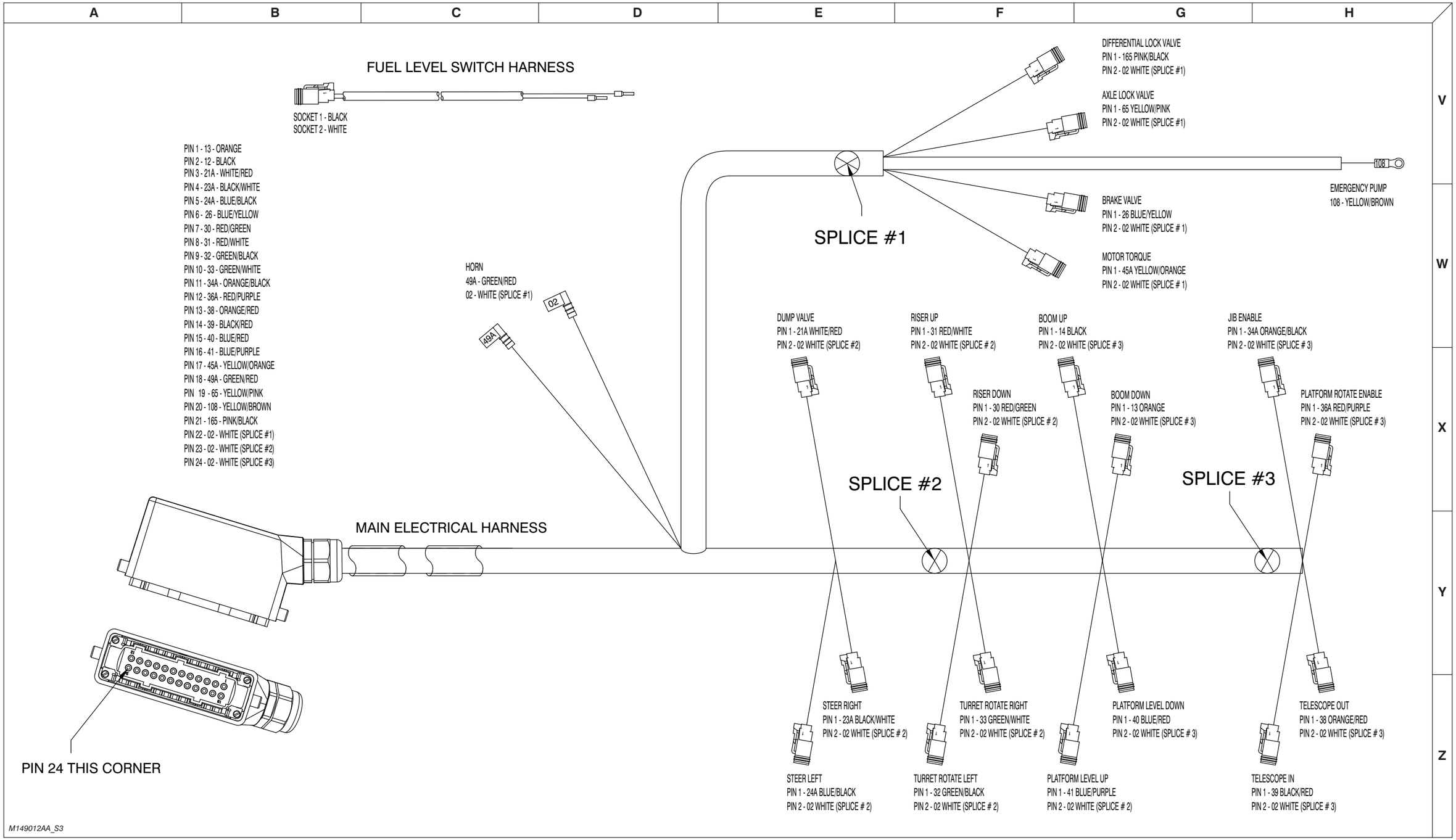
Table 3.2 Hydraulic Symbol Chart

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	

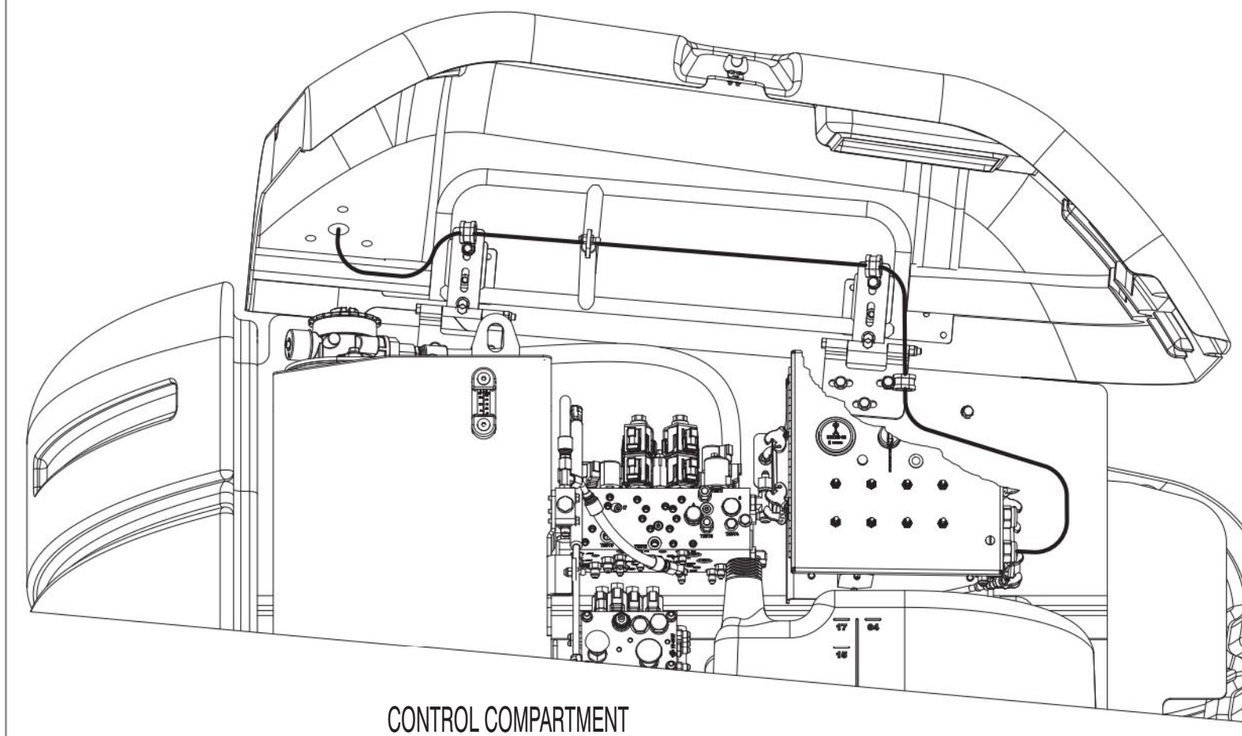
3.8 Drive and System Pump Ports



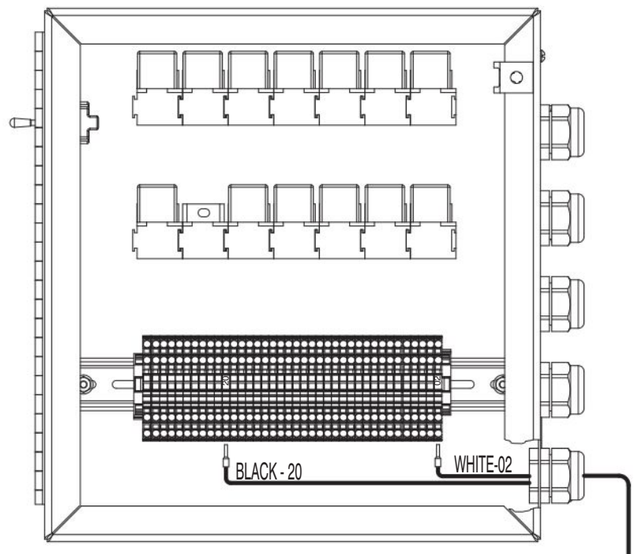
3.15 Main Electrical Harness and Fuel Level Switch Harness



3.25 Flashing Amber Light Connections

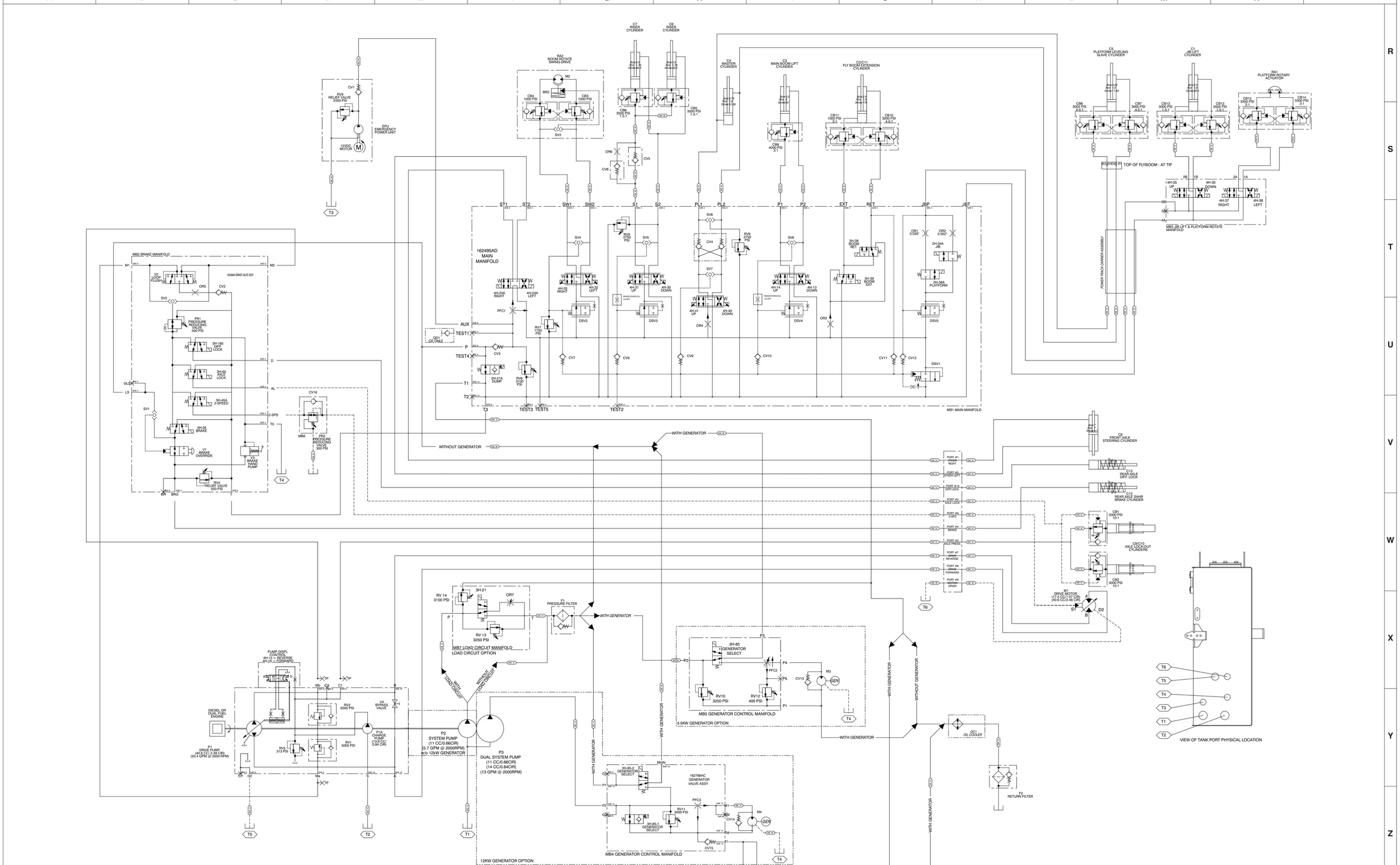


CONTROL COMPARTMENT

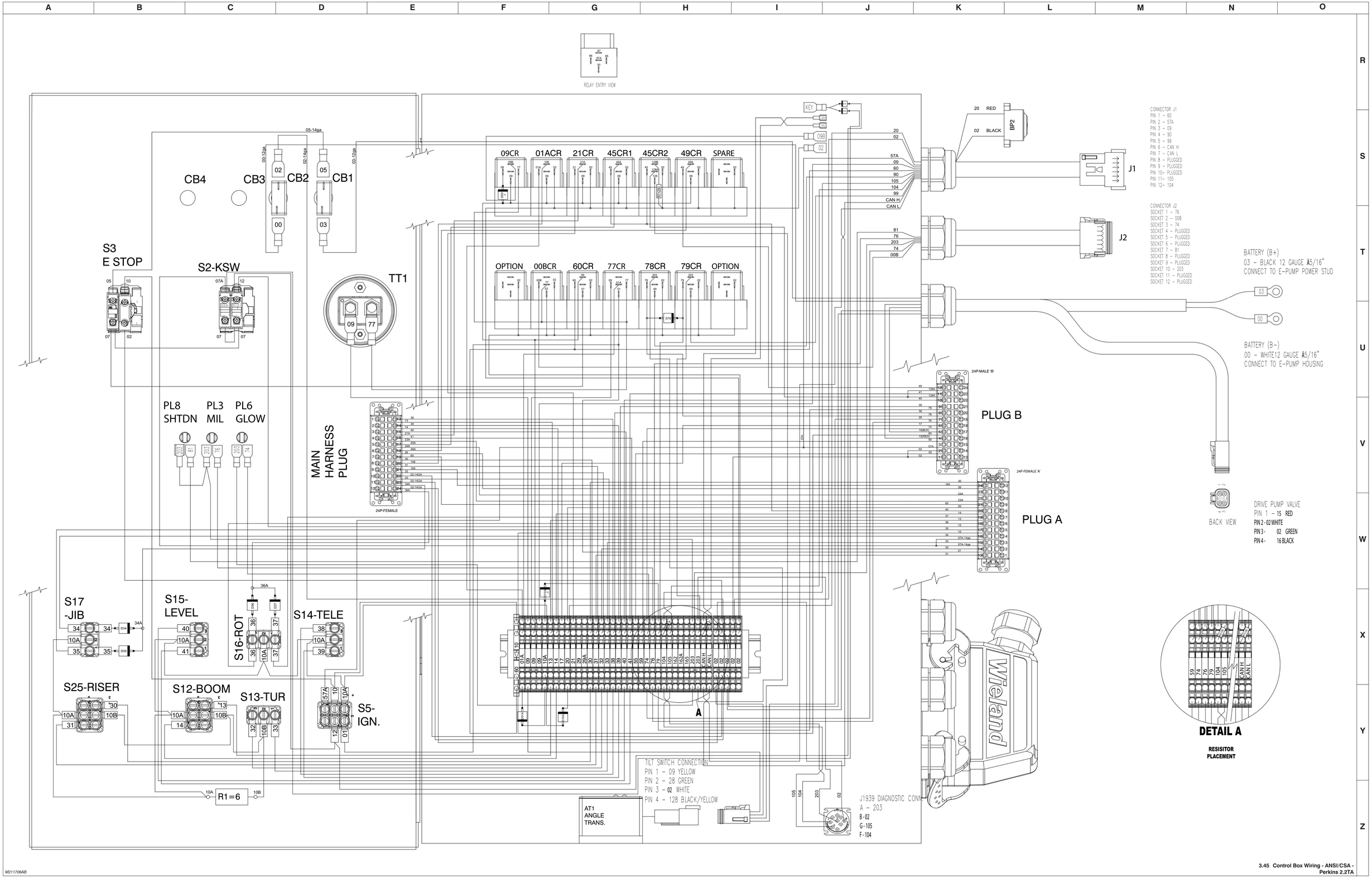


BASE CONTROL BOX LAYOUT

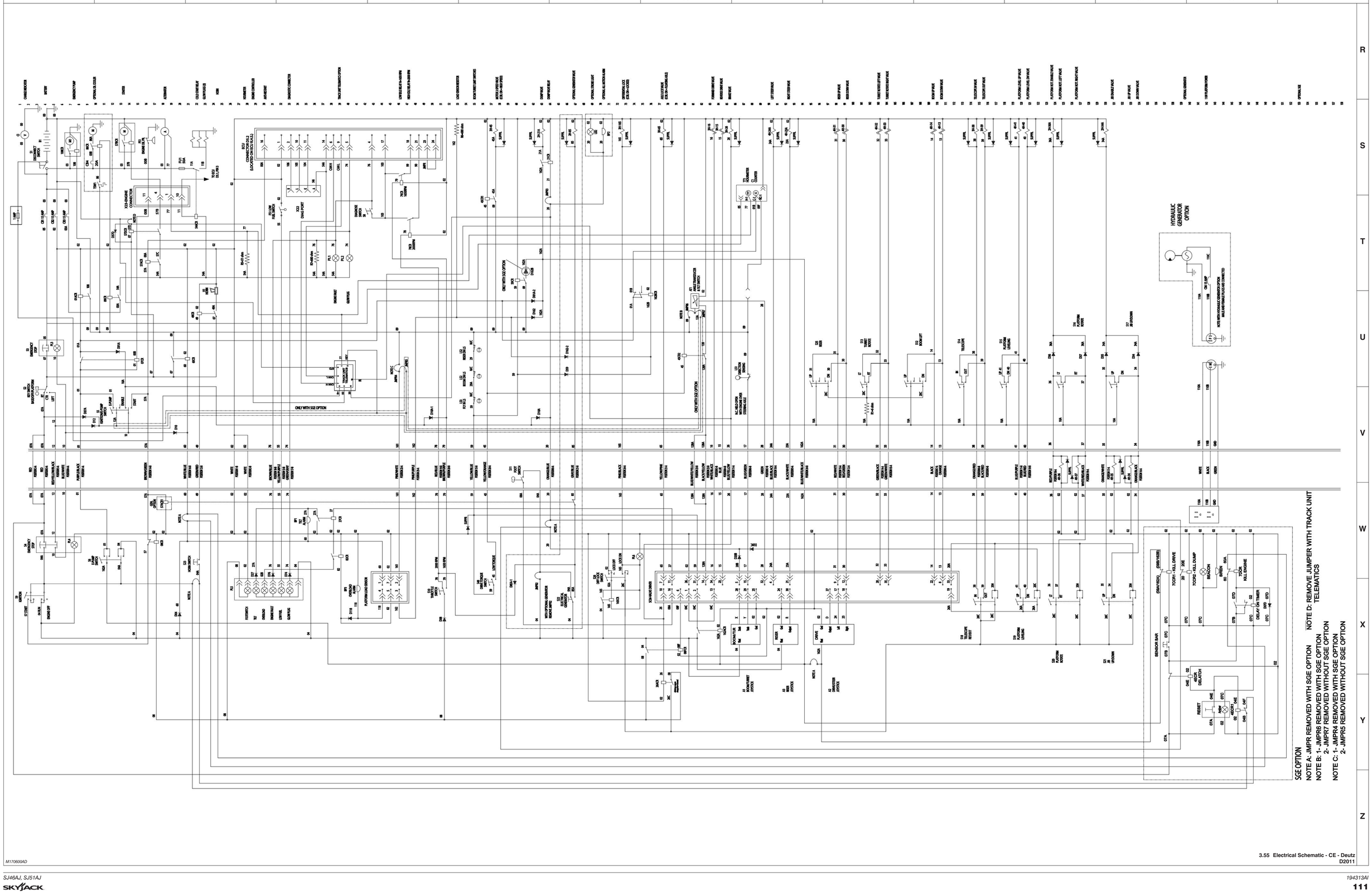
M148528AA_S3



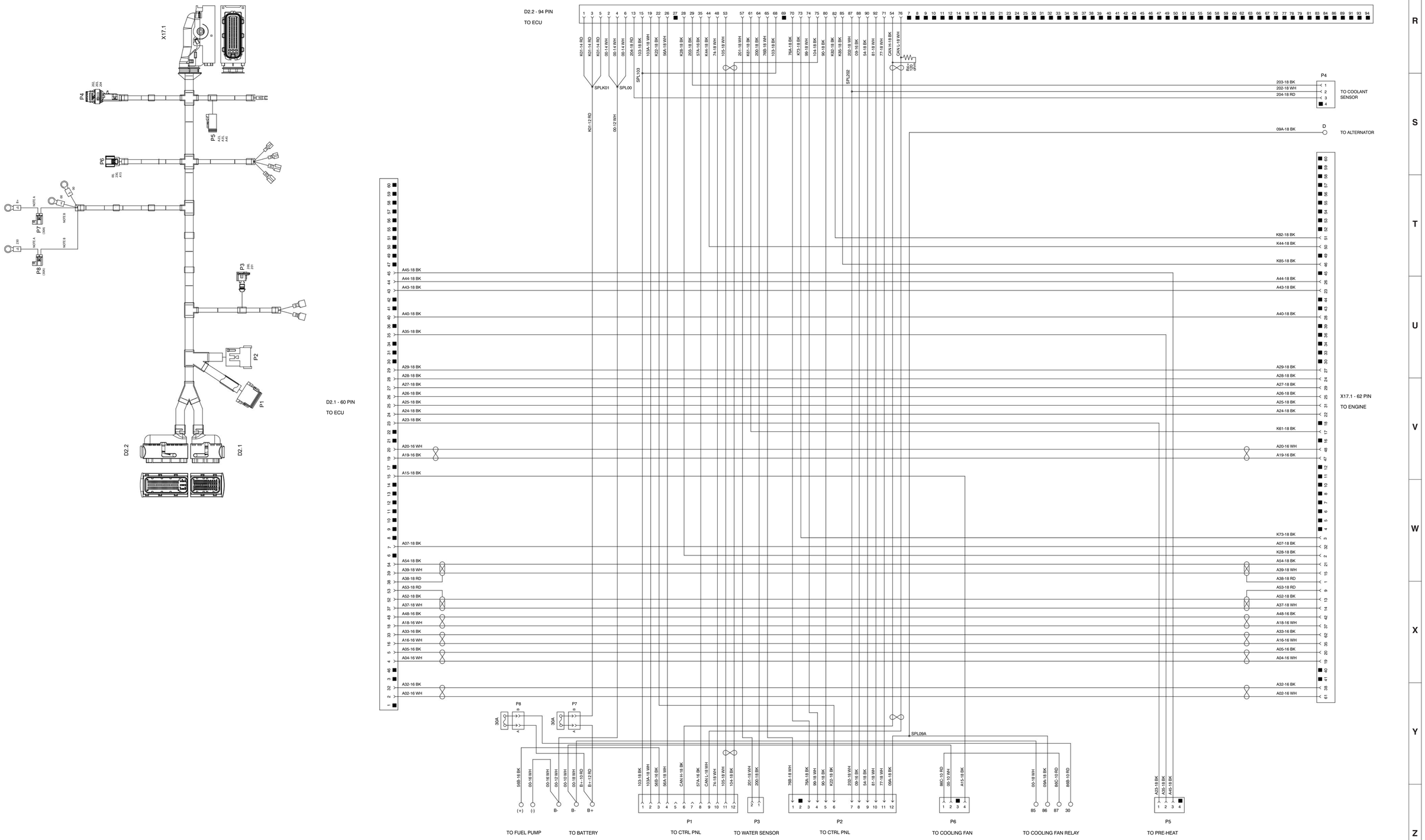
3.35 Hydraulic Schematic (serial number 95 001 716 and below)


RELAY ENTRY VIEW
CB4
CB3
CB2
CB1
05-14ga
00-12ga
02-14ga
03-12ga
09CR
01ACR
21CR
45CR1
45CR2
49CR
SPARE
OPTION
00BCR
60CR
77CR
78CR
79CR
OPTION
S3
E STOP
S2-KSW
TT1
PL8
SHTDN
PL3
MIL
PL6
GLOW
MAIN
HARNESS
PLUG
24P-FEMALE
S17
-JIB
S15-
LEVEL
S16-ROT
S14-TELE
S25-RISER
S12-BOOM
S13-TUR
S5-
IGN.
R1=6
A
AT1
ANGLE
TRANS.
TILT SWITCH CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
J1939 DIAGNOSTIC CONN
A - 203
B - 02
G - 105
F - 104
20 RED
02 BLACK
BP2
J1
J2
CONNECTOR J1
PIN 1 - 60
PIN 2 - 57A
PIN 3 - 09
PIN 4 - 90
PIN 5 - 99
PIN 6 - CAN H
PIN 7 - CAN L
PIN 8 - PLUGGED
PIN 9 - PLUGGED
PIN 10- PLUGGED
PIN 11- 105
PIN 12- 104
CONNECTOR J2
SOCKET 1 - 76
SOCKET 2 - 00B
SOCKET 3 - 74
SOCKET 4 - PLUGGED
SOCKET 5 - PLUGGED
SOCKET 6 - PLUGGED
SOCKET 7 - 81
SOCKET 8 - PLUGGED
SOCKET 9 - PLUGGED
SOCKET 10 - 203
SOCKET 11 - PLUGGED
SOCKET 12 - PLUGGED
BATTERY (B+)
03 - BLACK 12 GAUGE Ã5/16"
CONNECT TO E-PUMP POWER STUD
BATTERY (B-)
00 - WHITE12 GAUGE Ã5/16"
CONNECT TO E-PUMP HOUSING
24P-MALE 'B'
PLUG B
24P-FEMALE 'A'
PLUG A
BACK VIEW
DRIVE PUMP VALVE
PIN 1 - 15 RED
PIN 2 - 02 WHITE
PIN 3 - 02 GREEN
PIN 4 - 16 BLACK
DETAIL A
RESISITOR
PLACEMENT
Weland

M211706AB


HYDRAULIC GENERATOR OPTION
ONLY WITH SGE OPTION
SGE OPTION
NOTE A: JMPR REMOVED WITH SGE OPTION
NOTE B: 1- JMPR9 REMOVED WITH SGE OPTION
2- JMPR7 REMOVED WITHOUT SGE OPTION
NOTE C: 1- JMPR4 REMOVED WITH SGE OPTION
2- JMPR5 REMOVED WITHOUT SGE OPTION
NOTE D: REMOVE JUMPER WITH TRACK UNIT TELEMATICS

3.65 Engine Interface Harness - Deutz D2.2



M224673AD-2

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.**

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.	**Check diode. Replace if defective.**
4. Loose or broken wire #34A from diode D34 to main harness plug pin #11.	**Check continuity. Replace if defective**
5. Loose or broken wire #34A from main harness plug pin #11 to jib enable valve 2H-34A.	**Check continuity. Replace if defective**
6. Loose or broken wire #02 from main harness plug to jib enable valve 2H-34A.	**Check continuity. Replace if defective**
7. Defective jib enable valve 2H-34A.	**Check continuity and resistance through coil. Replace if defective.**
8. Loose or broken wire #34 from jib down switch S17 to base connector plug A pin #16.	**Check continuity. Replace if defective**
9. 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.**
10. Loose or broken wire #34 from plug A pin #16 to platform terminal block.	**Check continuity. Replace if defective**
11. Loose or broken wire #34 from platform terminal block to jib down valve 4H-34.	**Check continuity. Replace if defective**
12. Loose or broken wire #02 from platform terminal block to jib down valve 4H-34.	**Check continuity. Replace if defective**
13. Defective jib down valve coil 4H-34.	**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 main harness pin plug pin#16.	**Check continuity. Replace if defective**
5. Loose or broken wire #41 from main harness pin plug pin#16 platform level up valve 4H-41.	**Check continuity. Replace if defective**

10. Loose or broken wire #37 from base connector plug A pin #19 to base platform rotate switch S16.	**Check continuity. Replace if defective.**
11. Defective base platform rotate switch S16.	**Check continuity through switch while activating rotate left function between wires #10A and #36. If no continuity found, replace switch.**
12. Open or defective diode D37.	**Check diode. Replace if defective.**
13. Loose or broken wire #36A from diode D37 to main harness plug pin #12.	**Check continuity. Replace if defective.**
14. Loose or broken wire #36A from main harness plug pin #12 to platform rotate enable valve 2H-36A.	**Check continuity. Replace if defective.**
15. Loose or broken wire #02 from main harness plug to platform rotate enable valve 2H-36A.	**Check continuity. Replace if defective.**
16. Defective platform rotate enable valve 2H-36A.	**Check continuity and resistance through coil. Replace if defective.**
No Jib Up	
1. Loose or broken wire #08 from platform terminal block to jib switch S21.	**Check continuity. Replace if defective.**
2. Defective jib up switch S21.	**Check continuity through switch while activating jib up function between wires #08 and #35.**
3. Loose or broken wire #20A from jib switch S21 to valve driver pin #33.	**Check continuity. Replace if defective.**
4. No output on pin #5 of the valve driver to wire #20.	**Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. Loose or broken wire #35 from jib switch S20 to platform terminal block.	**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.**
8. Loose or broken wire #35 from platform terminal block to plug A pin#17 in platform control console.	**Check continuity. Replace if defective.**
9. 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.**
10. Loose or broken wire #35 from base connector plug A pin #17 to base jib up switch S17.	**Check continuity. Replace if defective.**

5. Loose or broken wire #24A from base plug A pin #10 to main harness plug pin #5.	**Check continuity. Replace if defective.**
6. Loose or broken wire #24A or #02 from main harness plug to left steer valve 4H-24A.	**Check continuity. Replace if defective.**
7. 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 valve driver pin #18.	**Check continuity. Replace if defective.**
2. No output from valve driver pin #21 to wire #23A.	**Check pin #21 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
3. Loose or broken wire #23A from valve driver pin #21 to plug A pin #9 in platform control console.	**Check continuity. Replace if defective.**
4. 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.**
5. Loose or broken wire #23A from base plug A pin #9 to main harness plug pin #4.	**Check continuity. Replace if defective.**
6. Loose or broken wire #23A or #02 from main harness plug to right steer valve 4H-23A.	**Check continuity. Replace if defective.**
7. Defective right steer valve coil 4H-23A.	**Check continuity and resistance through coil. Replace if defective.**

4.2-16 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 horizontal or below and fully retracted. 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.**

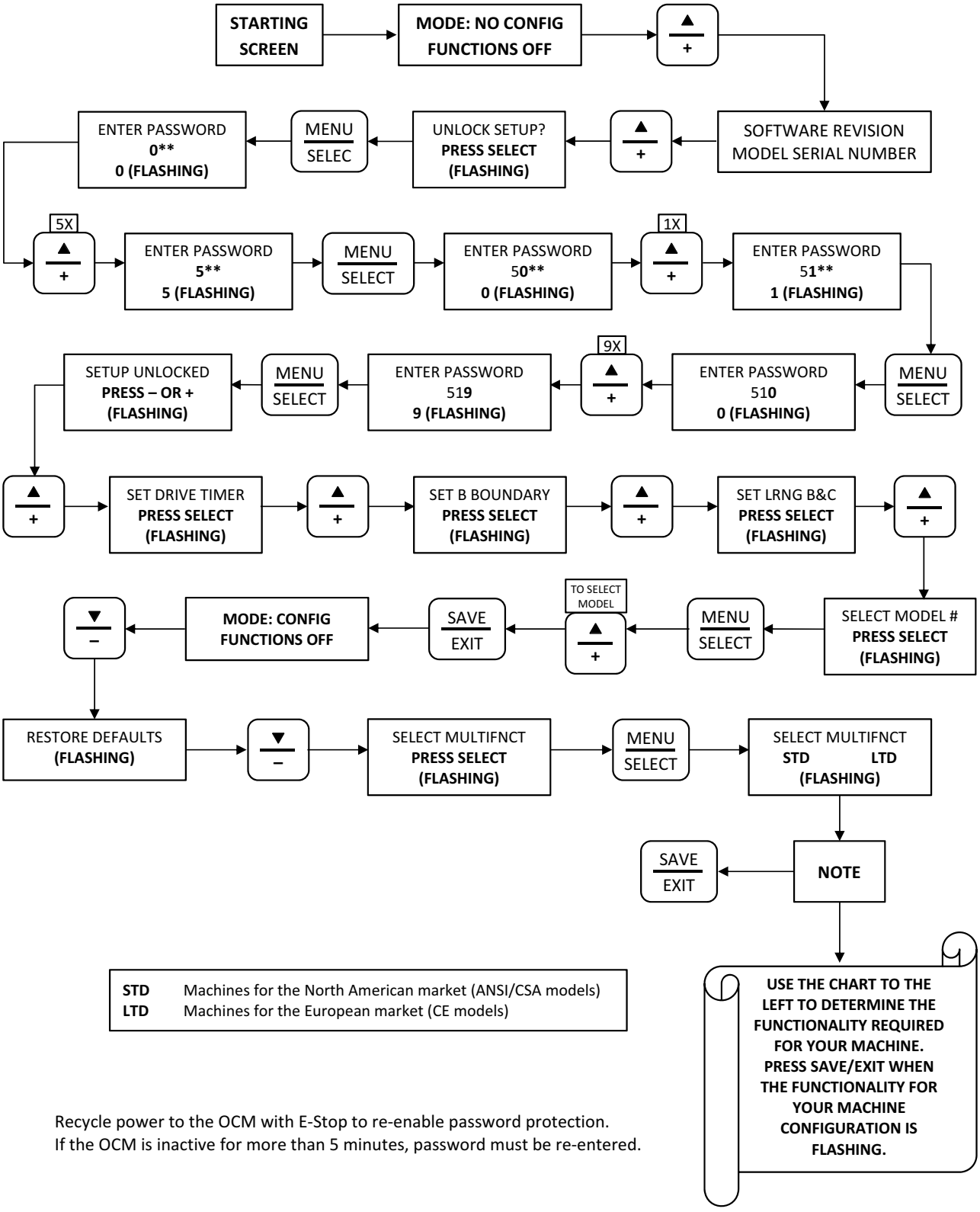
4.3-16 Platform will not Level Down Manually

1. Plugged, incorrectly adjusted or defective orifice OR4.	**Check orifice. Replace if plugged or defective.**
2. Stuck or defective platform level down valve 4H-40.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective shuttle valve SV7.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective shuttle valve SV8.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective check valve CV4.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Stuck or defective relief valve RV9.	**Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.**
7. Stuck or defective counterbalance valve CB8.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Stuck or defective check valve CV9.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
9. Defective leveling cylinder C4 or slave cylinder C5.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-17 Platform will not Level Up Manually

1. Plugged, incorrectly adjusted or defective orifice OR4.	**Check orifice. Replace if plugged or defective.**
2. Stuck or defective platform level down valve 4H-41.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective shuttle valve SV7.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective shuttle valve SV8.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective check valve CV4.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Stuck or defective relief valve RV9.	**Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.**
7. Stuck or defective counterbalance valve CB7.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Stuck or defective check valve CV9.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
9. Defective leveling cylinder C4 or slave cylinder C5.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

5.2-5 How to Select Functionality



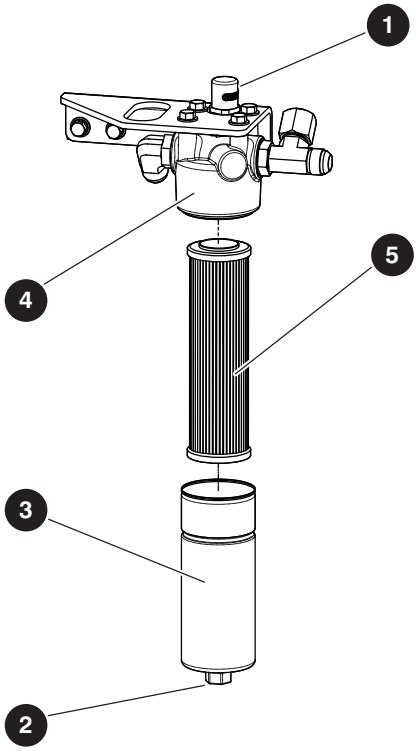
STD	Machines for the North American market (ANSI/CSA models)
LTD	Machines for the European market (CE models)

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.

5.4 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 operate 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 near the center of the turret, underneath the riser/main boom.

NOTE

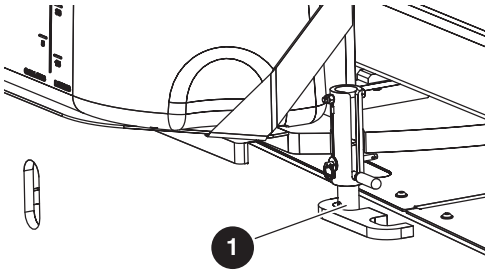
The adjustment of the backlash must be performed on a flat level surface.

⚠ WARNING

Make sure there are no personnel or obstructions in the test area and there is sufficient room for the boom to lift.

⚠ WARNING

The operator must lock the turret to the base to prevent the turret from turning spontaneously.



1. Lock the turret to the base with the turret lock pin ❶.
2. Raise the riser boom to access the swing drive motor.
3. Support the boom with an overhead crane.
4. Turn the main disconnect switch to the off position ◯.

5.5-6 Deutz D2.9L 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. 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: Throttle valve error, Open load or short cut to battery, blocked valve or wrong control signal for valve. For engines with Burner T4i: 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. 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) 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.

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5.5-6 Deutz D2.9L 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. 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. 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.

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5.7 Kubota WG2503 Dual Fuel Engine

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

5.7-1 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

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)

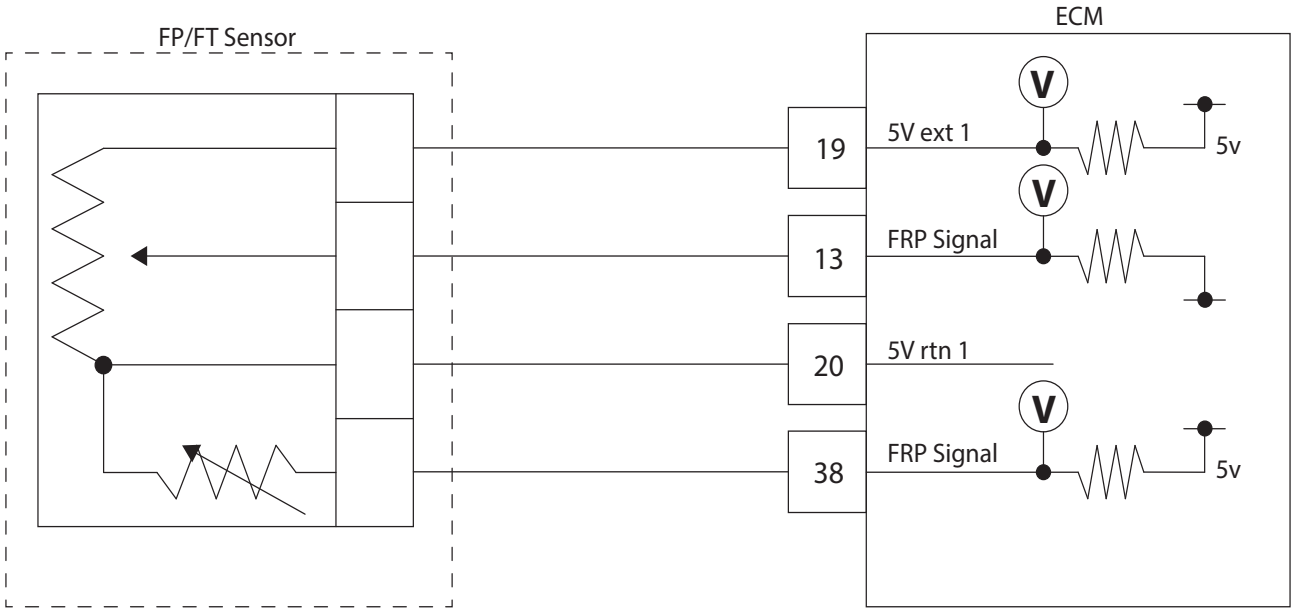
Diagnostic Trouble Codes (DTCs) are manufacturer's codes to indicate specific engine malfunction. These codes will appear on the KAntrak screen whenever an engine malfunction occurs. For DTCs, see 5.7-2 Kubota WG2503 Diagnostic Trouble Codes.

Selecting DTC Screen

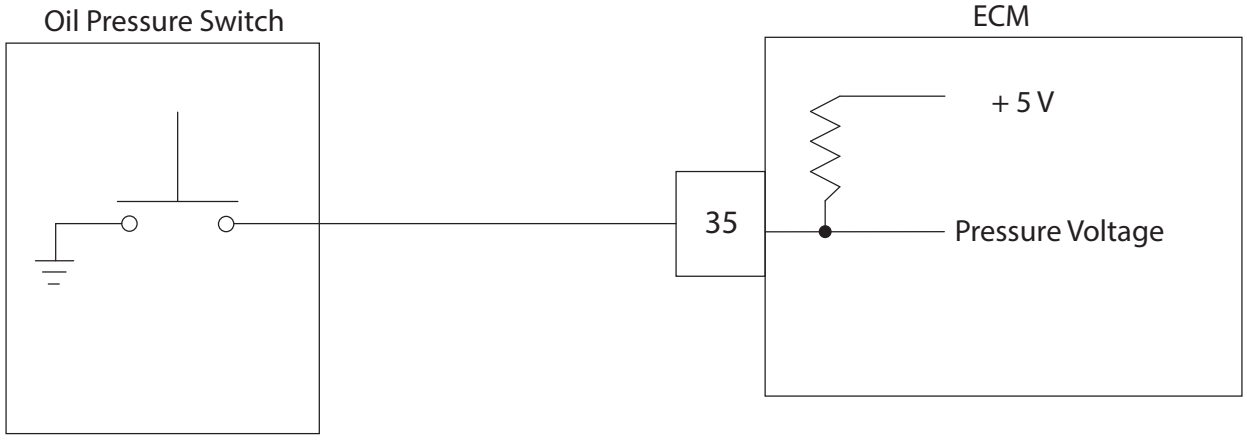
The DTC Screen mode is used to display Data Trouble Codes. The header contains the total active/inactive faults, the associated SPN (Suspect Parameter Number) and FMI (Failure Mode Identifier), as well as the OCC (number of occurences).

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 5.7-2 Kubota WG2503 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 DTC Screen, select tool to continue browsing for other parameters. The menu will be hidden after a few seconds.

5.7-9 Fuel Temperature Sensor (Kubota WG2503)



5.7-10 Oil Pressure Sensor (Kubota WG2503)



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.

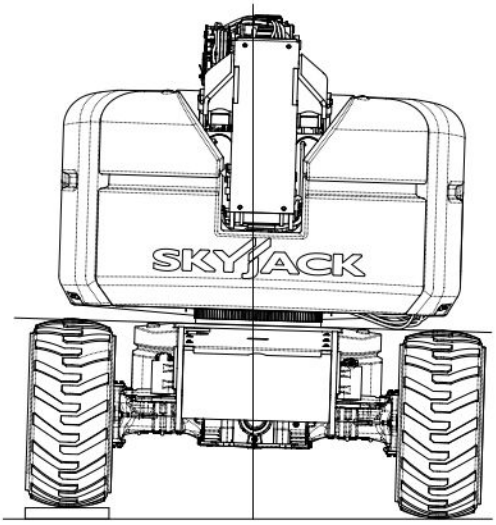
Items you will need before starting:

- 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) 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") 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.