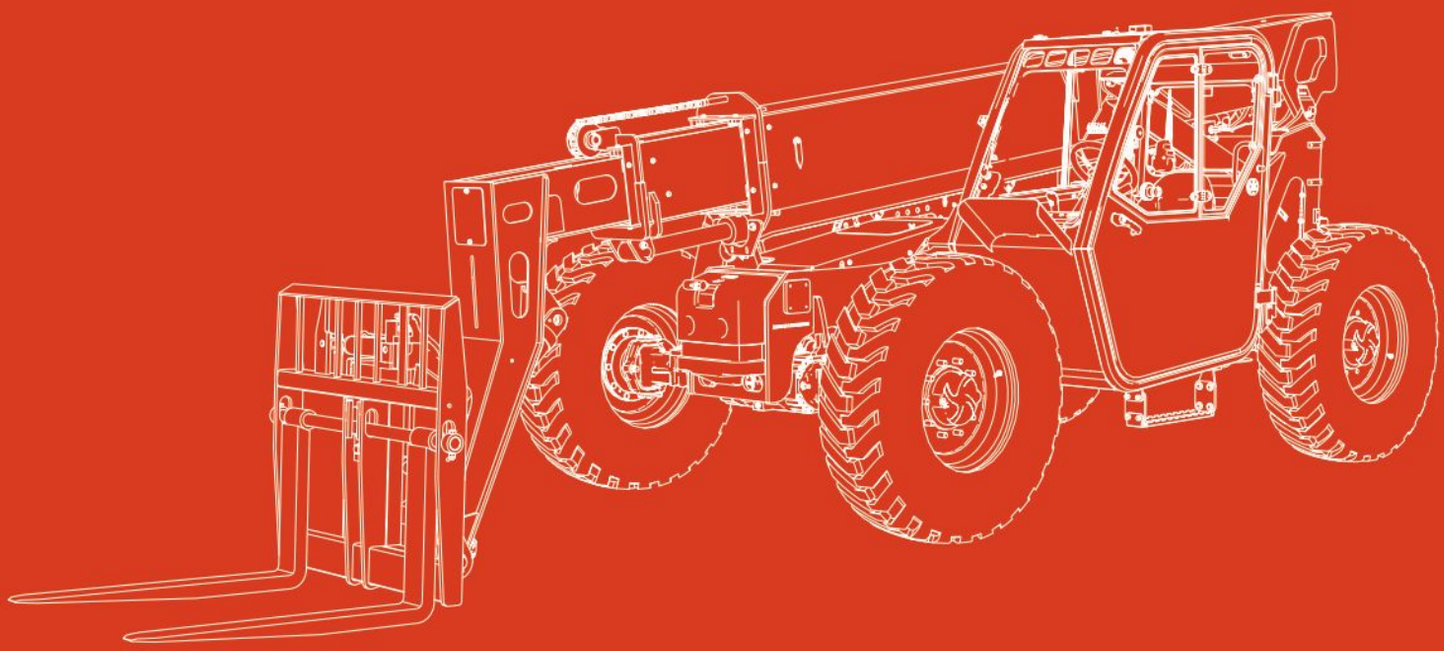
SKYJACK

SERVICE MANUAL

SJ643 TH, SJ843 TH

TELEHANDLERS



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ANSI

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 Telehandler Definition

A material handler designed primarily as a fork truck with a pivoting teloscopic boom which enables it to pick up and place loads at distances as well as various lift heights.

1.1-2 Purpose of Equipment

The SKYJACK telehandlers are designed to lift, handle and transport agricultural or industrial products by means of specific attachments.

1.1-3 Use of Equipment

The telehandler is a highly maneuverable, mobile work station. Lifting, handling and driving must be on a flat, level, compacted surface. It can be driven over uneven terrain only when boom is fully lowered.

1.1-4 Manual

Operating Manual: The operating manual is considered a fundamental part of the telehandler. 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 telehandler at all times.

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

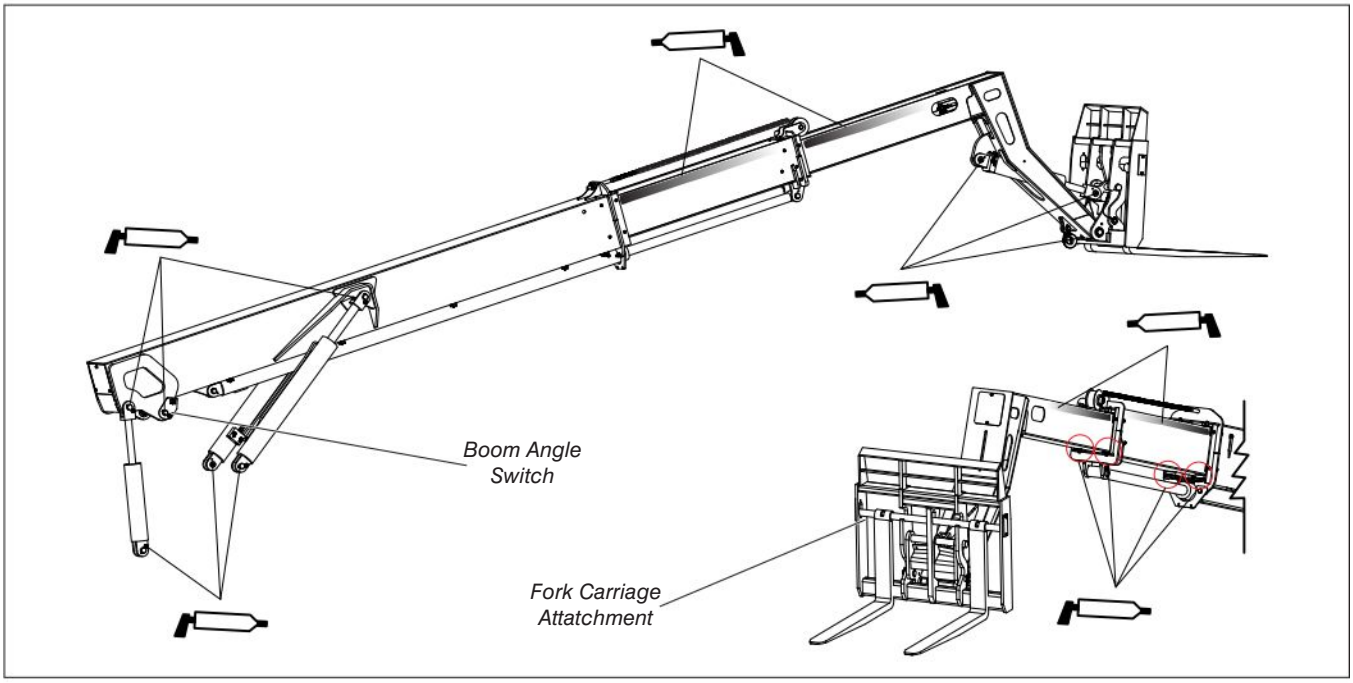
All information in this manual should be read and understood before any attempt is made to service the machine. The updated copy of the manuals are found on the company's website: www.skyjack.com.

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 telehandler.



- Drain water by opening water drain plug at bottom of filter. Close tightly after inspection.

Refer to section 5.4-5 for fuel/water separator replacement procedure

1.5-8 Transmission

Ensure transmission shifter is working properly and there is no evidence of damage.

- **Check oil level on dipstick “ ” - D**
  - With park brake engaged and transmission shifter in “N” Nuetral position, start engine.
  - Oil level should be in the ‘safe’ zone. Add oil as needed. Refer to section 5.5-6 for transmission oil change procedure.

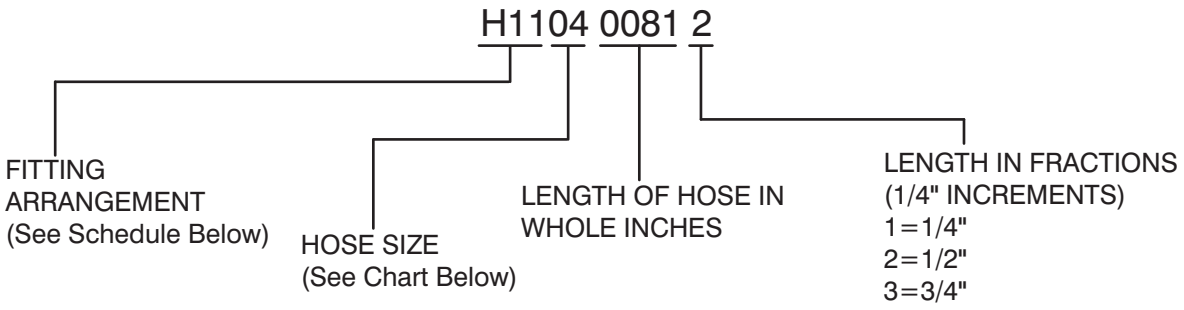
1.5-9 Boom - A

- 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.
- **Boom Angle Switches - A**
  - Ensure boom angle switches are properly secured with no signs of visible damage.
- **Slide Pads - B, C, D**
  - Ensure all bolts are tight, there is no visible damage to the slide pads and that no parts are missing.
- **Chain - A, C**
  - Ensure there are no loose or missing parts and there is no visible damage
- **Boom Angle Indicator - A**
  - Ensure all bolts are tight, and there is no visible damage and indicator swings freely.

1.5-10 Lifting Attachment - A

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure attachment is properly positioned and secured. (refer to Section 2.13 for attachments installation and operation).

Table 2.6 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

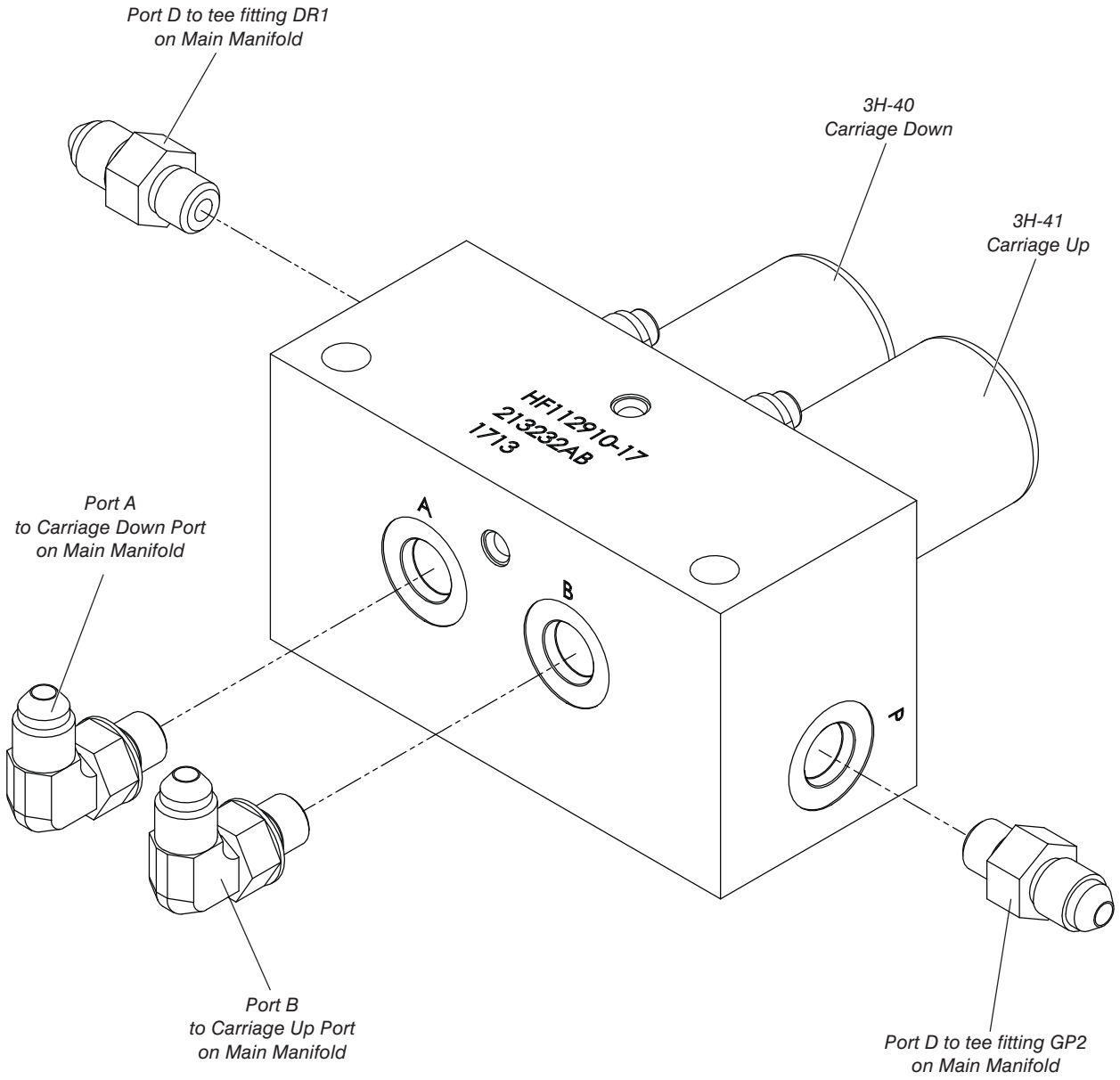
Hose ends and hose must be from same manufacturer per S.A.E. J1273 Nov. '91, Sections 3.10 and 4.2. Hose ends and hose must be of the same size i.e. #4 size fittings must be used with #4 size hose.

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
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

Index No.	Skyjack Part No.	Qty.	Description
F26	9-121504	1	FUSE, Fuel Pump (20A)
F27	9-165031	1	FUSE, Glow Plug (100A)
-	9-163021	2	RESISTOR, 120 Ohm 1/2 watt axial lead
-	9-164855	1	RESISTOR, 1000 Ohm 1/2 watt axial lead
SW1	9-926721	1	SWITCH, Ignition
SW2	9-191454	1	SWITCH, Park brake
SW3	-	-	Not used.
SW4	9-191457	1	SWITCH, Steer mode
SW5	9-196995	1	SWITCH, Frame level (Joystick)
SW6	9-405339	1	SWITCH, Horn switch (Button)
SW7	9-196995	1	SWITCH, Carriage Tilt (Joystick)
SW8	9-191680	1	SWITCH, Fan
SW9	9-191455	1	SWITCH, positive shutoff
SW10	9-191455	1	SWITCH, boom lights
SW11	9-191457	1	SWITCH, work lights
SW12	9-191457	1	SWITCH, turn signal
SW13	9-191658	1	SWITCH, Interior light
SW14	9-191459	1	SWITCH, rear washer/wiper
SW15	9-197031	1	SWITCH, Auxiliary Extend
SW16	9-197031	1	SWITCH, Auxiliary Retract
SW17	-	1	SWITCH,Blower
SW18	9-191491	1	SWITCH, A/C
SW19	9-191457	1	SWITCH, Road lights
SW20	-	-	Not used.
SW21	N/A	1	SWITCH, LH outrigger
SW22	N/A	1	SWITCH, RH Outrigger
SW23	9-191455	1	SWITCH, Hazard lights
SW24	9-191459	1	SWITCH, Washer/wiper front/top
D05J	9-102921	1	DIODE, Console harness
D26B	9-102921	1	DIODE, Console harness
D60	9-102921	1	DIODE, Console harness
D60-1	9-102921	1	DIODE, Consolo Harness
D252	9-102921	1	DIODE, Console harness
D252-1	9-102921	1	DIODE, Console harness
D252A-1	9-102921	1	DIODE, Console harness
D252A-2	9-102921	1	DIODE, Console harness
D221	9-102921	1	DIODE, Chassis Harness
D15	9-102921	1	DIODE, Engine Harness
D15A	9-102921	1	DIODE, Console harness
D16	9-102921	1	DIODE, Console harness
D250	9-102921	1	DIODE, Road light Harness
D251	9-102921	1	DIODE, Road light Harness
-	9-190547	2	SENSOR, Inductive proxi 15 mm
-	9-166700	2	SENSOR, Pressure
2H-19A	9-159821	1	COIL, #8
2H-57	-	1	COIL, #8
2H-221	-	1	COIL, #8

3.11 Premium Joystick Manifold Port Identifications



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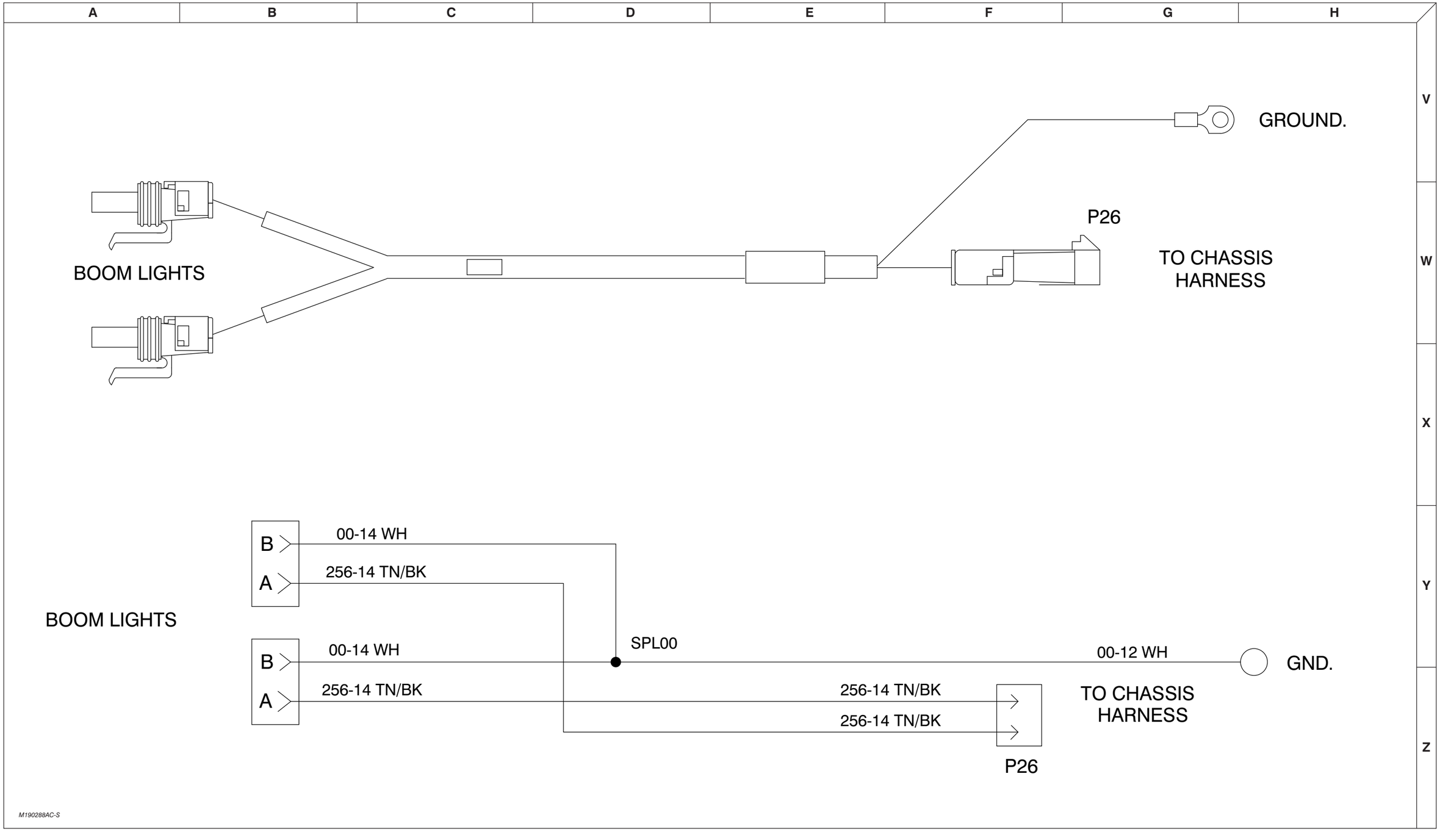
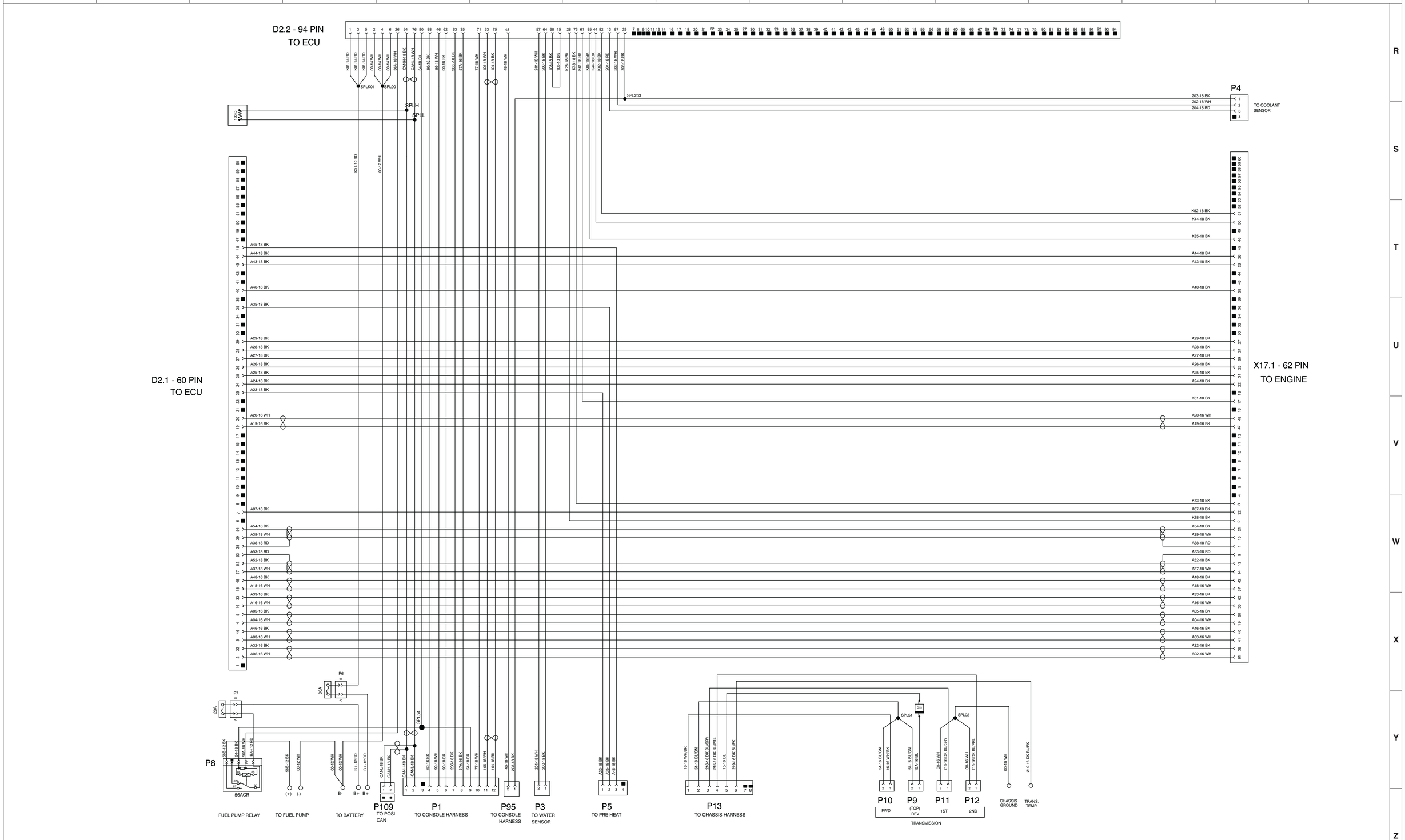
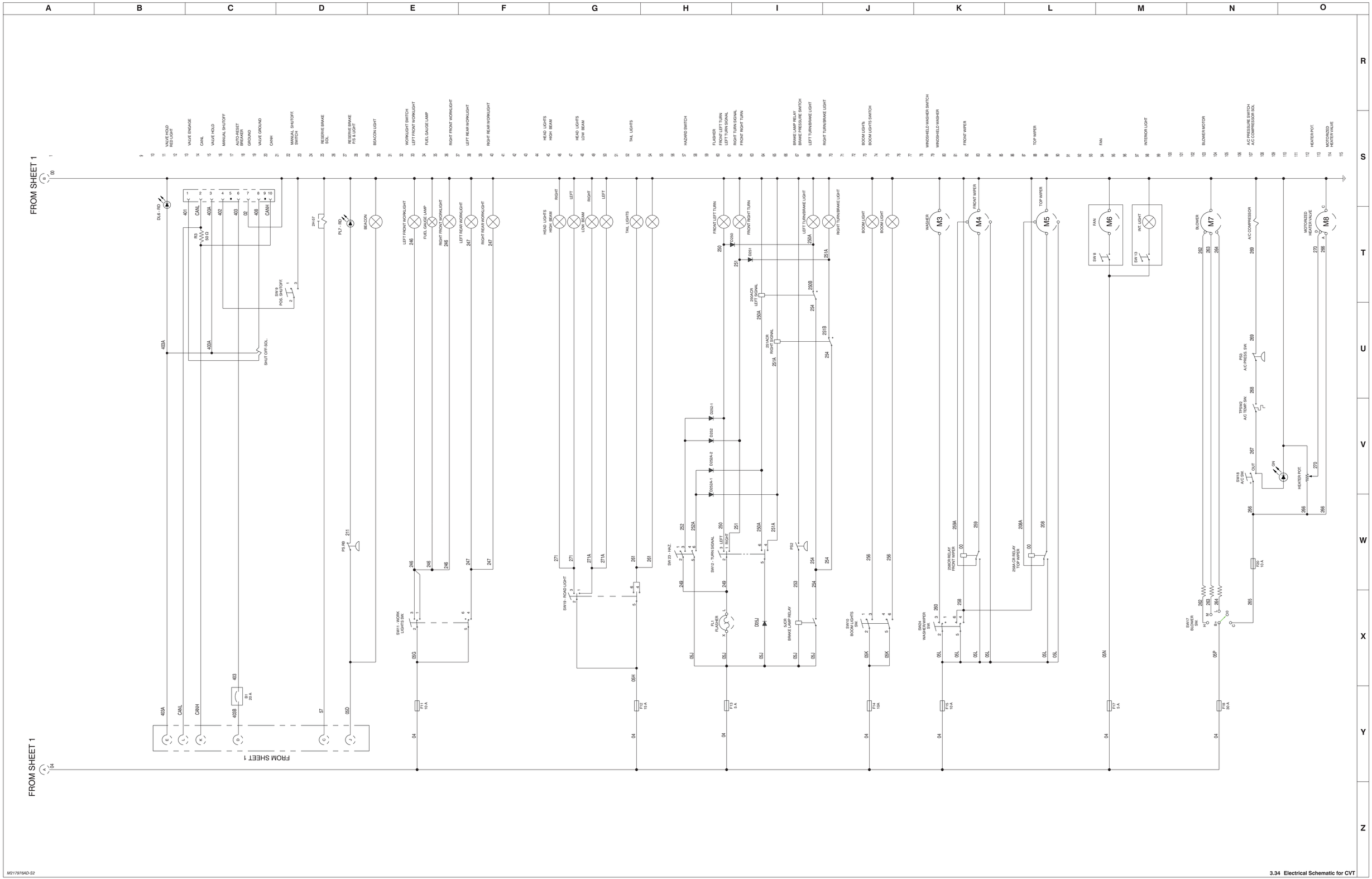
3.19 Boom Lights Harness & Wiring Diagram



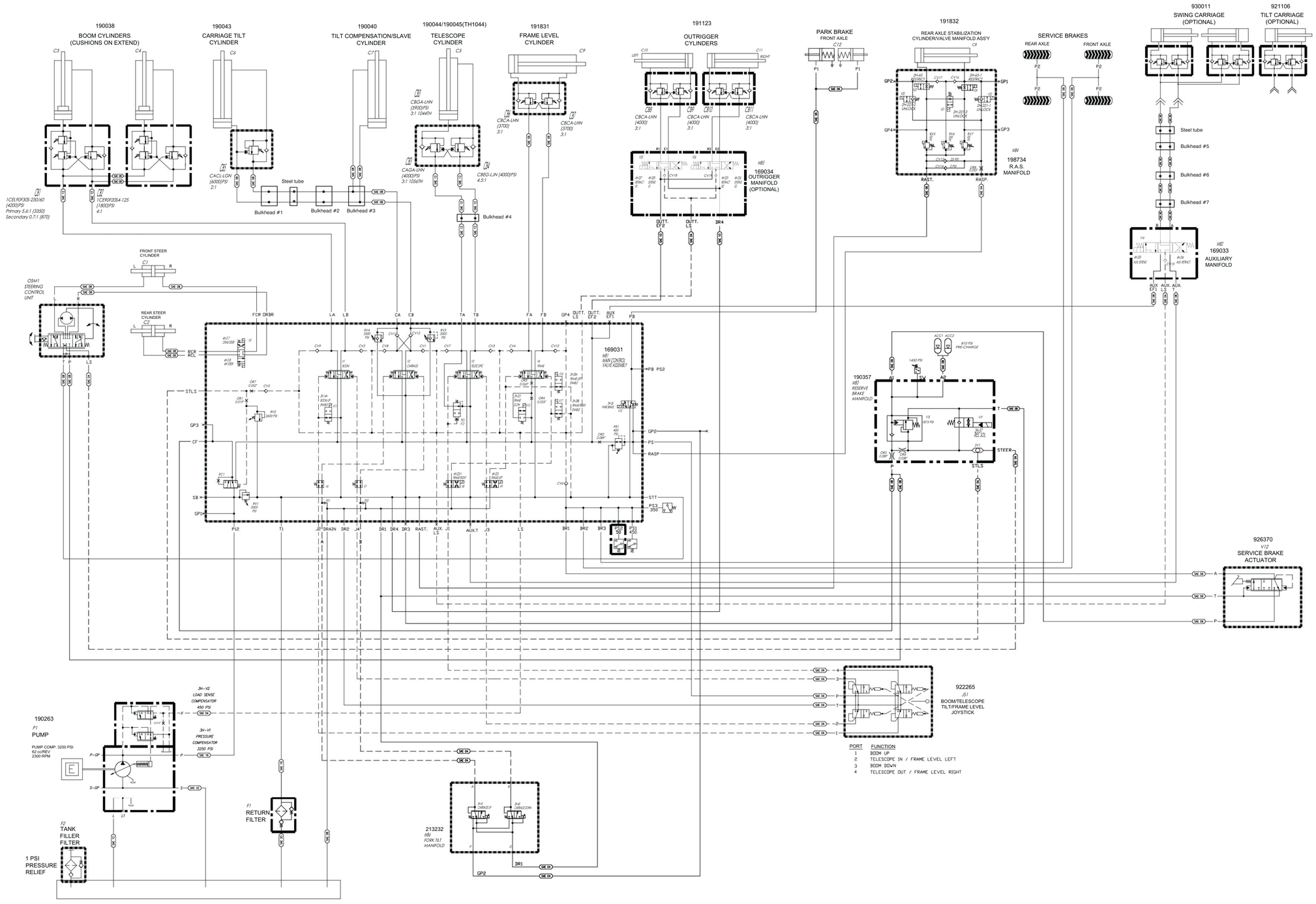
3.29 Engine Harness Wiring Diagram



3.34 Electrical Schematic for CVT



3.39 Hydraulic Schematic (Reserve Brake) - Premium Joystick



12. Loose or broken wire 28 from frame angle sensor pin 5 to 4 pin connector P113 pin 2.	**Check continuity. Replace if defective**
13. Loose or broken wire 28 from 4 pin connector J113 pin 2 to boom up enable relay 28CR pin 86	**Check continuity. Replace if defective**
14. Loose or broken wire 00 from boom up enable relay 28CR pin 85 to ground	**Check continuity. Replace if defective**
15. Defective relay 28CR.	**Check continuity through contacts of relay (pin 30 to 87 with coil energized). Replace if defective.**
16. Loose or broken wire 14A from 28CR relay to 31 pin chassis harness connector J31 pin 3	**Check continuity. Replace if defective**
17. Loose or broken wire 14A from connector P31 pin 3 to boom up enable solenoid 2H-14A connector J25 pin 1.	**Check continuity. Replace if defective**
18. Loose or broken 00 wire from boom up enable solenoid 2H-14A connector J25 pin 2 to ground	**Check continuity. Replace if defective**
19. Defective boom up enable solenoid 2H-14A	**Replace if defective.**

With following conditions:

- No Frame Level

1. Fuse F5 open	**Check for defective wiring. Replace fuse**
2. Loose or broken 05R wire from fuse F5 to 31 pin Chassis harness connector J31 pin 24	**Check continuity. Replace if defective.**
3. Loose or broken 05R wire from connector P31 pin 24 to frame angle sensor connector J105 pin 2	**Check continuity. Replace if defective.**
4. Loose or broken 00 wire from frame angle sensor connector J105 pin 3 to ground.	**Check continuity. Replace if defective.**
5. Frame angle sensor defective.	**With boom below 40° and frame level check for voltage on wires 28 (pin 5), 28R (pin 7), and 28L (pin 6). Replace if defective.**

4.2-15 Frame Will Not Tilt Over 40° With Boom Below 40°

1. Loose or broken 05R wire from connector P31 pin 24 to boom 40° angle proximity switch connector J71 pin 1	**Check continuity. Replace if defective**
2. Loose or broken 00 wire from boom 40° angle proximity switch connector J71 pin 3 to ground.	**Check continuity. Replace if defective.**
3. Boom 40° angle proximity switch misadjusted or defective.	**Check adjustment (set to 40°) , replace if defective**

4.3-7 Park Brake will not Release

1. Stuck or defective park brake valve 3H-26	**Clean valve. Check O-rings on valve. Repair or replace valve as required**
2. Bypassing or defective parking brake seals in axle.	**Check seals, replace as necessary. Replace if defective**

4.3-8 Park Brake Will Not Engage

3. Defective park brake C11.	**Repair or replace as necessary.**
4. Park brake valve SV3 stuck in shifted position.	**Check valve. Replace if defective.**

4.3-9 Service Brake Will Not Engage

1. Service brake actuator stuck or defective	**Clean valve. Check operation of valve. Repair or replace valve as required**
2. Load sense check valve CV6 blocked or defective	**Clean valve. Check operation of valve. Repair or replace valve as required**
3. Bypassing or defective brake seals in axle.	**Check seals, replace as necessary. Replace if defective**

5.3-6 Grease Bottom Front & Top Rear Slide Pads

1. Ensure telehandler is parked on a firm level surface.
2. Move transmission lever to neutral and engage park brake.
3. Fully extend the boom to gain access to front bottom slide pads.
4. Shut down the engine and dismount from cab.
5. With boom fully extended, smear grease along the path of front bottom slide pads. See figures below.

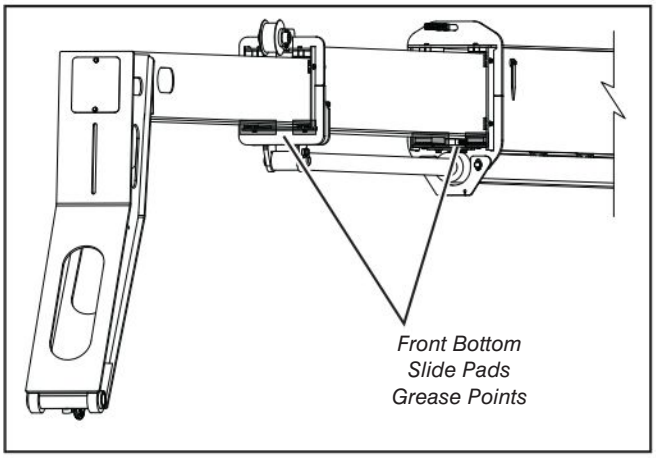


Figure 20 *Front Bottom Slide Pads*

6. Fully retract the boom then fully extend it a few times to ensure the path of slide pads is covered with grease for maximum protection.
7. With boom fully retracted, remove boom rear cover door to gain access to top rear slide pads.
8. Smear grease along the path of rear top slide pads. See figure below.

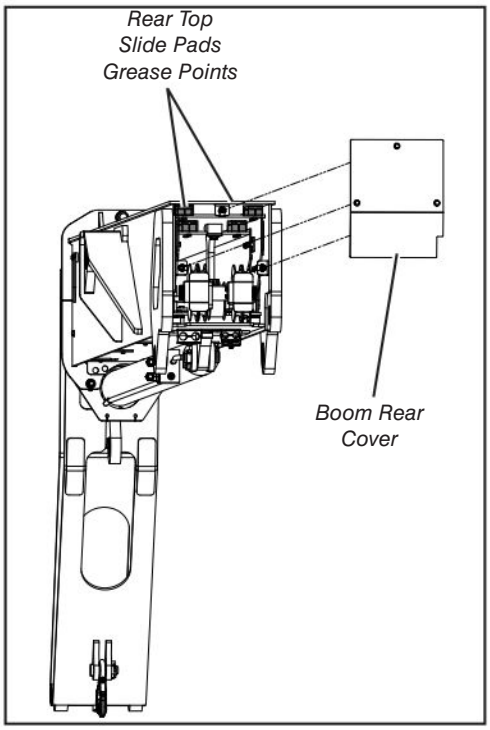


Figure 21 *Front Bottom Slide Pads*

9. Shut down the engine and remove key.

NOTE

Chain slack should not exceed 1 inch. See Figure below.

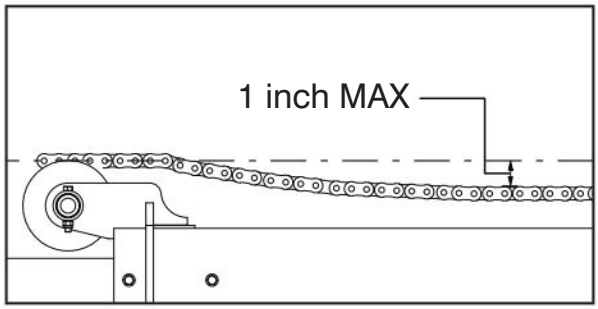


Figure 43 *Chain Maximum Slack*

IMPORTANT

If the slack is more than 1.00 in., an adjustment is required. Refer to 5.4-11 Chain Tension Adjustment for chain tension adjustment procedure.

5.4-11 Chain Tension Adjustment

The boom chains should be adjusted when the following conditions occur:

- Every 250 hours
- When the chains are making noise (i.e. banging on interior boom parts)

WARNING

Before performing chain adjustment, complete the steps outlined in 5.4-10 Check Boom Chains Tension.

1. Partially extend the boom.
2. Using a 1-1/4” wrench, loosen jam nut at the chain anchor.

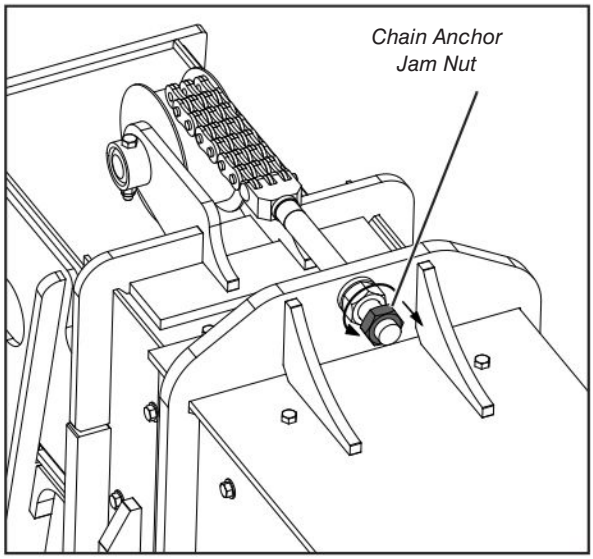


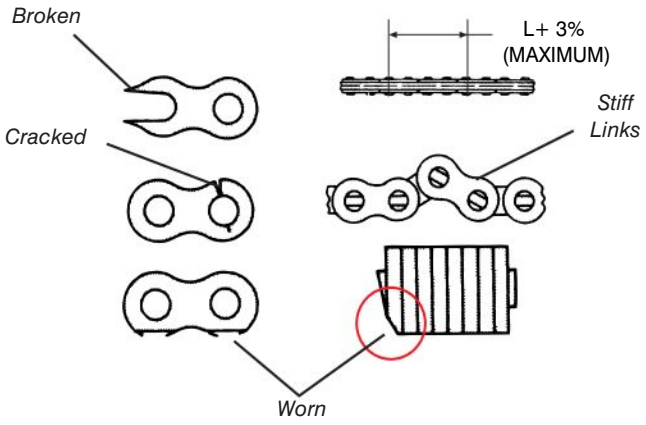
Figure 44 *Extend Chain Jam Nut*

5.5-8 Inspect Boom Chains

NOTE

Refer to 5.6-2 Boom Chains Replacement for chain replacement procedure.

1. Inspect the chains annually for the following items, replace the chains as necessary:
   - worn, cracked or broken plates
   - wear of plate and pin head
   - stiff links or enlarged plate holes
   - worn or rusted connecting pins



Chain Plate Deformations

2. Measure chain elongation. Measurement should be MAXIMUM of new chain length plus 3%.
3. If chain replacement is not necessary; clean the chain in solvent, and dry using low pressure compressed air.
4. Prior to installation, soak the chain in a pan of SAE 40 engine oil or chain and cable lubricant for a MINIMUM of 8 hours to ensure correct lubrication of the pins and links.

5.6 Non-Routine Maintenance

5.6-1 Boom Hoses and Sheaves Replacement

Remove Hose Sheaves

1. Park telehandler on a firm level surface, apply park brake.
2. Fully retract and lower the boom then shutdown engine and remove key from ignition switch.
3. Remove the rear boom cover.

NOTE

Right side sheaves are for Fork Tilt hoses. Left side sheaves are for Auxiliary Functions hoses.

4. Remove the 2 bolts holding each sheave guard bracket to the finger weldment.

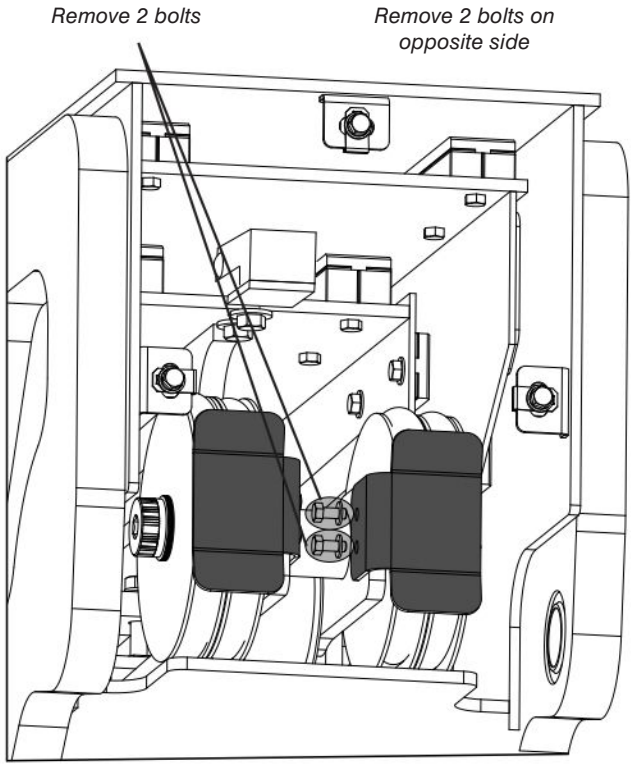


Figure 67 *Sheave Guards Removal.*

5.6-4 Hydraulic Pressure Test Procedure

IMPORTANT

All checks and adjustments are to be made with the engine running at low idle, the transmission shifter in Neutral and the parking brake applied.

⚠ CAUTION

The addition of a hydraulic accumulator on this system causes residual pressure to be present AFTER the engine has been turned OFF. Prior to opening any hydraulic fitting in this system, move the joystick several times in each direction to relieve this residual pressure. Failure to do so may result in personal injury.

System Pressure

- **System Pressure Check:**

1. Release residual pressure by moving the joystick several times in each direction.
2. Install a 5,000 psi gauge at port GP1 of Main Control Valve.

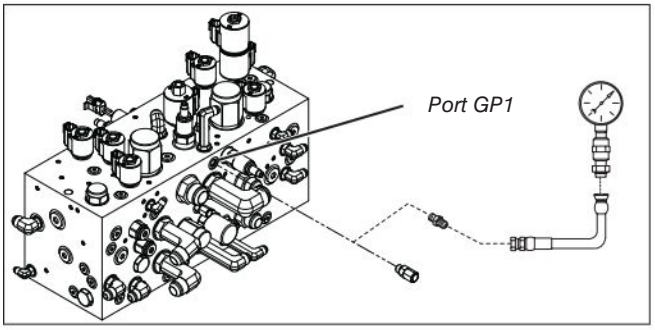


Figure 91 *System Pressure Adjustment*

3. With engine running at low idle, dead-head the boom retract function. Indicated system pressure should be 3000 psi.
4. If reading is different than what is mentioned above, adjustment is required.

System Pressure Adjustment:

1. Loosen the lock nut on the maximum steering pressure reducing valve at port RV1 on the Main Control Valve.

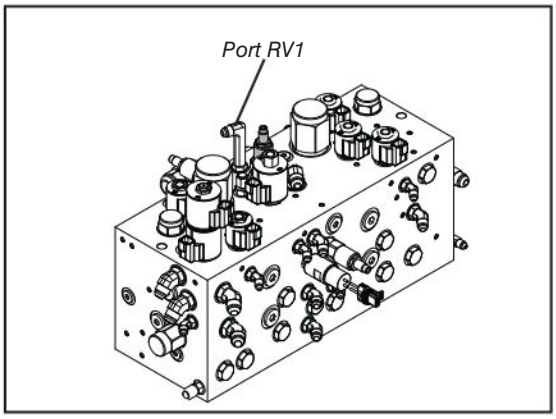


Figure 92 *Maximum Steering Pressure Adjustment*

2. With engine running at low idle, turn the adjustment screw clockwise (CW) to increase the pressure reading and counter-clockwise (CCW) to reduce the pressure reading until desired reading is achieved.
3. Tighten the lock nut on the valve RV1 and re-check the reading to ensure that the correct pressure is maintained.

Steering Pressure

- **Steering Pressure Check:**

1. Release residual pressure by moving the joystick several times in each direction
2. Install a 5,000 psi gauge into port GP3 at the front of the main control valve as shown in figure below.

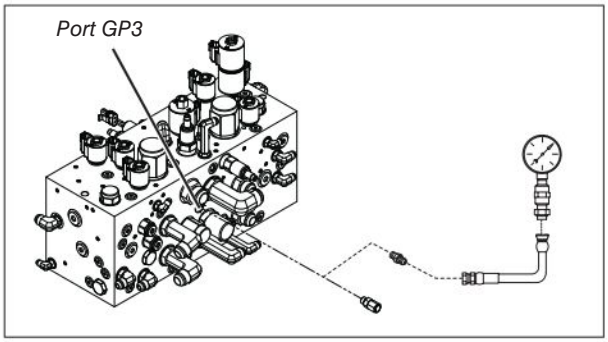


Figure 93 *Maximum Steering Pressure*

5.6-8 Starter Replacement Procedure

1. Turn main power disconnect to the "○" off position (of equipped) then disconnect battery terminals negative, then positive.
2. Locate starter at the left side of the engine between the engine and the frame.

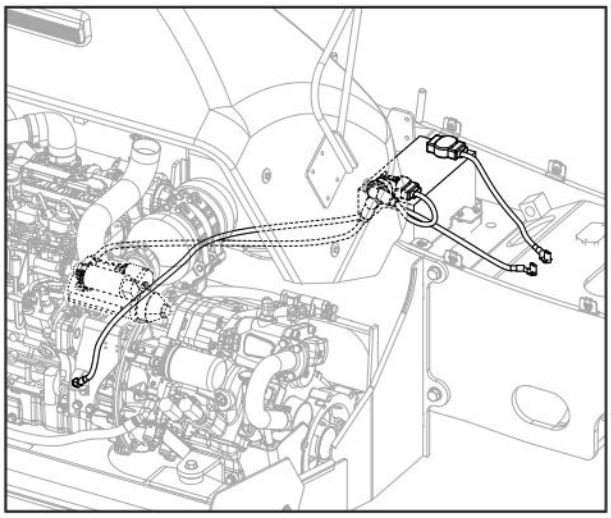


Figure 120

⚠ WARNING

A second person to assist will be required to complete this procedure.

3. Locate the upper and lower bolts securing the starter motor unit. Using a 13 mm socket remove upper bolt then remove the lower bolt.

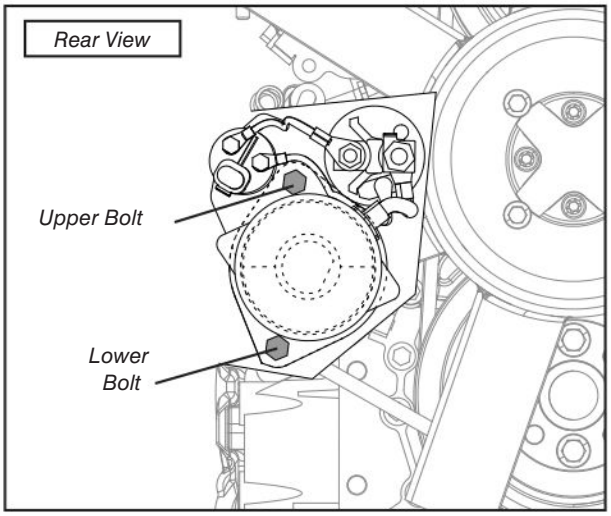


Figure 121 *Bolts Location.*

4. Remove the existing starter from the side of the engine.

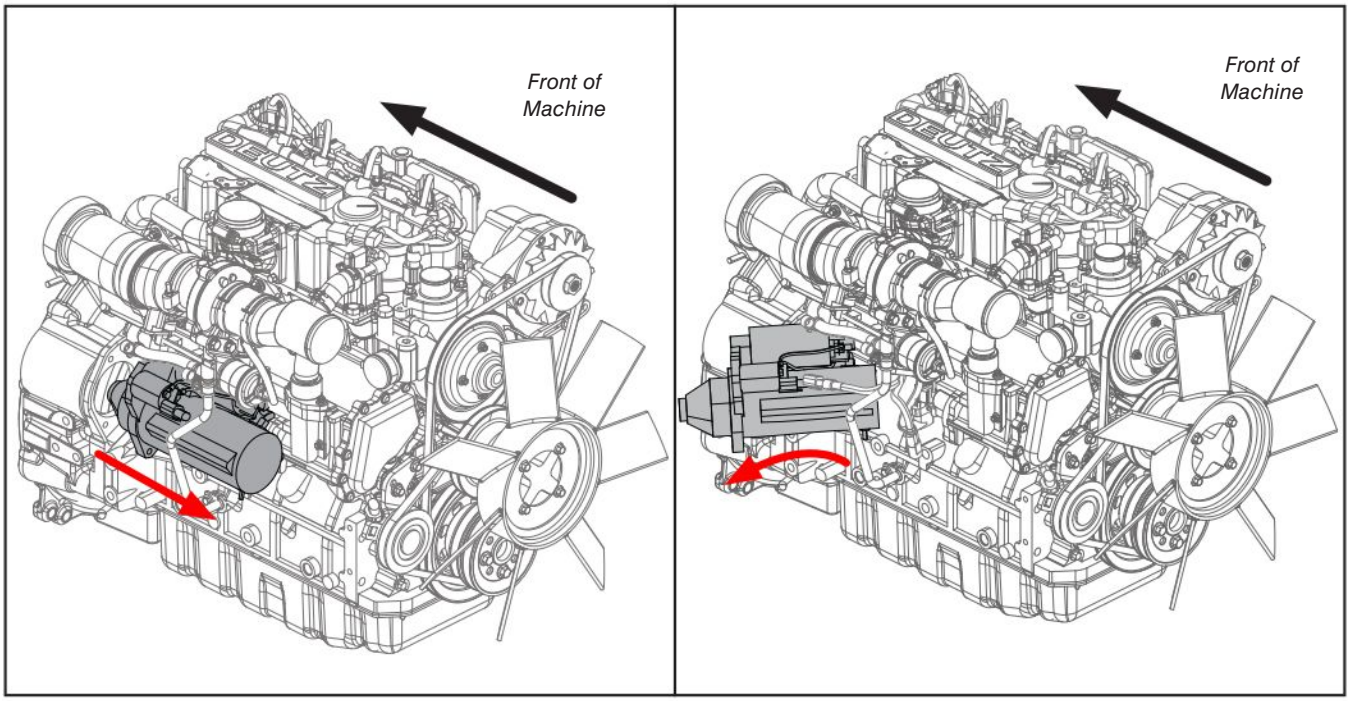


Figure 122 *Starter Removal.*