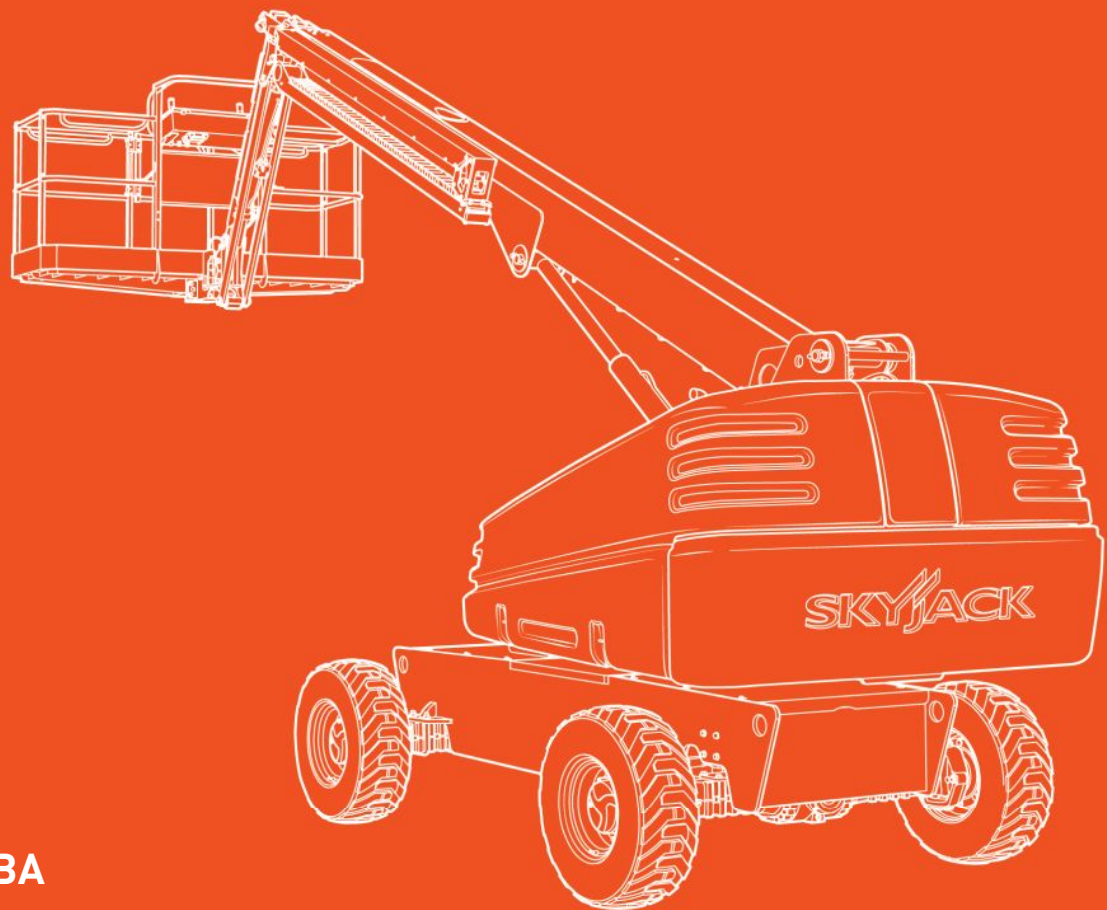




SERVICE MANUAL

SJ40 T+, SJ45 T+

TELESCOPIC BOOMS



229038ABA

August 2020

ANSI/CSA, CE, AS

This manual is based on serial numbers:

SJ40 T+: A400 000 001 - A400 999 999

SJ45 T+: A400 000 001 - A400 999 999

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

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.

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

1.1-2 Purpose of Equipment

The Skyjack Telescopic Boom 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 Skyjackdealer 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 and 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](#) is to be used for recording the date of the inspection, the 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 tires 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 proper rated load and in good working order before any service work begins. Work area should be kept clean and free of debris to avoid contaminating components while servicing.

Ensure personnel are clear from under unsupported components/systems that are at risk of movement during maintenance.

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 connectors.

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 procedures in Section 5 that outline 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 the 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 disconnecting the main power connectors.
- Repair any damaged or malfunction components before operating the MEWP.
- Keep records on all inspections.

1.3-3 Maintenance Instructions

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















Issue or Symptom		
PDI/Frequent	B	Perform PDI prior to each delivery, or Frequent Inspection every 200 days or 200 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 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

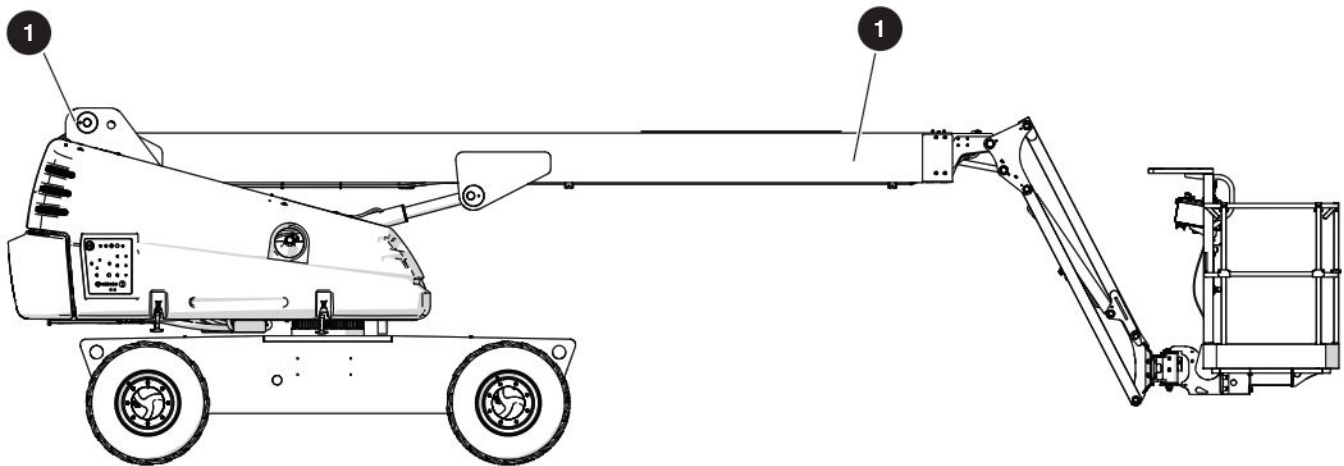
 Model _____ SN _____											
 Inspection Date											
 Inspector Signature											
	20	20	20	20	20	20	20	20	20	20	20

⚠ WARNING

Do not use the MEWP if there is no inspection recorded in the last 13 months. If you do not obey, there is a risk of death or serious injury.

IMPORTANT

The Owner's annual inspection record is located on the scissor assembly. It must be filled out after an annual inspection has been completed. Do not use the MEWP if an inspection has not been recorded in the last 13 months.



1.6 Scheduled Maintenance Inspections

Do an inspection of the MEWP in this sequence.

⚠ WARNING

Do not operate a MEWP until all malfunctions have been corrected. If you do not obey, there is a risk of death or serious injury.

⚠ WARNING

Turn the main power disconnect switch to the off position before you do the visual and daily maintenance inspections. If you do not obey, there is a risk of death or serious injury.

1.6-1 Electrical

Do a check on these areas for chafed, corroded, and loose wires:

- Boom to platform cable harness
- Engine compartment electrical panel
- Engine wiring harness
- Rotary manifold wiring

1.6-2 Hydraulic

Do a check on these areas and make sure there are no signs of leakage:

- Hydraulic tank filter, fittings, hoses, emergency-power unit, turret and base surface
- Engine compartment fittings, hoses, primary pump, filter, turret and base surface
- All hydraulic cylinders
- All hydraulic manifolds
- The ground area below the MEWP.

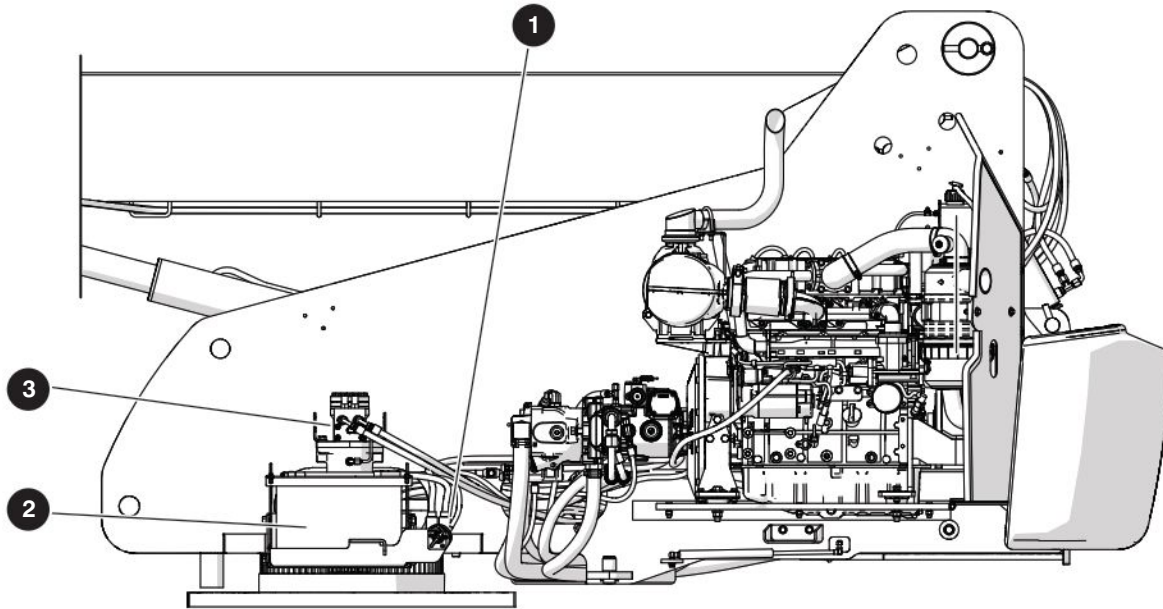
1.6-3 Labels (B)

Refer to the labels section in the Operating Manual. Make sure all the labels are in the correct location, are in good condition, and you can read them.

1.6-4 Limit switches (B)

Do an inspection of all limit switches **1** located inside the turret and on the boom. Inspect for the following:

- Broken or missing actuator arms
- Missing fasteners
- Loose wiring.



1.6-5 Engine compartment

Do the inspection that follows:

Make sure all compartment latches are latched tightly and in good condition.

- 1 **Main power disconnect switch (B)**
 - Turn the **main power disconnect** switch to the off position.
 - Make sure the switch rotates and stays in the on and off position.
 - Make sure the cables are not loose.

- 2 **Battery (B)**

⚠ WARNING

Explosion hazard. Keep flames and sparks away. Do not smoke near the batteries. If you do not obey, there is a risk of death or serious injury.

⚠ WARNING

Corrosion hazard. Do not touch battery acid. Wear the correct PPE. If the battery acid touches you, immediately flush the area with cold water and get medical aid.

B - Frequent Inspection

1. Do an inspection of the battery case for damage.
 - Clean the battery terminals and cable ends thoroughly with a terminal cleaning tool or wire brush.
2. Make sure all the battery connections are tight.
3. If applicable, check the battery fluid level.
 - If the plates do not have a minimum 13 mm (1/2 inch) of solution above them, add distilled or demineralized water.
 - Replace the battery if it is damaged or cannot hold a lasting charge.

⚠ WARNING

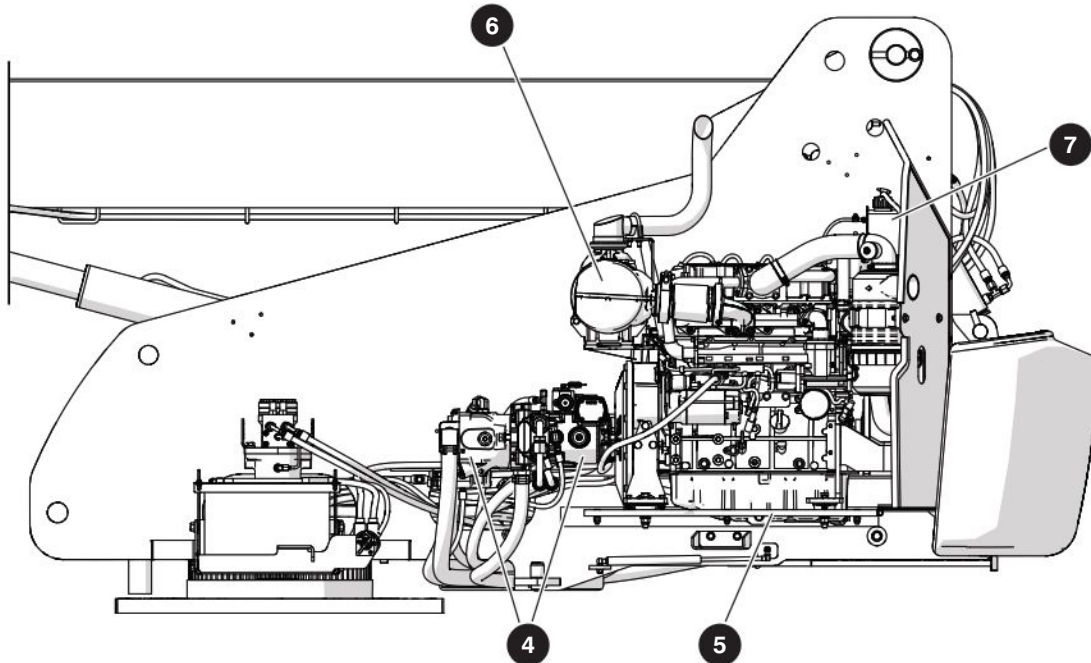
Only use original or manufacturer-approved parts and components for the MEWP. If you do not obey, there is a risk of death, serious injury, or machine damage.

- 3 **Swing drive motor (B,C)**

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Make sure all bolts are correctly tightened.
- Make sure all fittings and hoses are correctly tightened and there are no hydraulic leaks.

C - Annual Inspection

- For the brake/motor oil replacement procedure, refer to [5.4-3 Check the Swing Drive Oil](#).



4 Hydraulic pump and motor (B)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Make sure all bolts are correctly tightened.
- Make sure all fittings and hoses are correctly tightened and there are no hydraulic leaks.

Engine and Components

5 Engine pivot tray (B)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Make sure that the engine is correctly attached to the pivot tray.
- Make sure the tray-securing bolt is in place.

6 Muffler and exhaust (B)

- Make sure that the muffler and exhaust systems are correctly attached with no visible damage.

Engine fuel leaks (B,C)

- Make sure that there no fuel leaks at the engine.
- Make sure there is no visible damage.

⚠ WARNING

Explosion or fire hazard. Do not smoke near the fuel system. If you do not obey, there is a risk of death or serious injury.

Engine fuel filter (B,C)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.

C - Annual Inspection

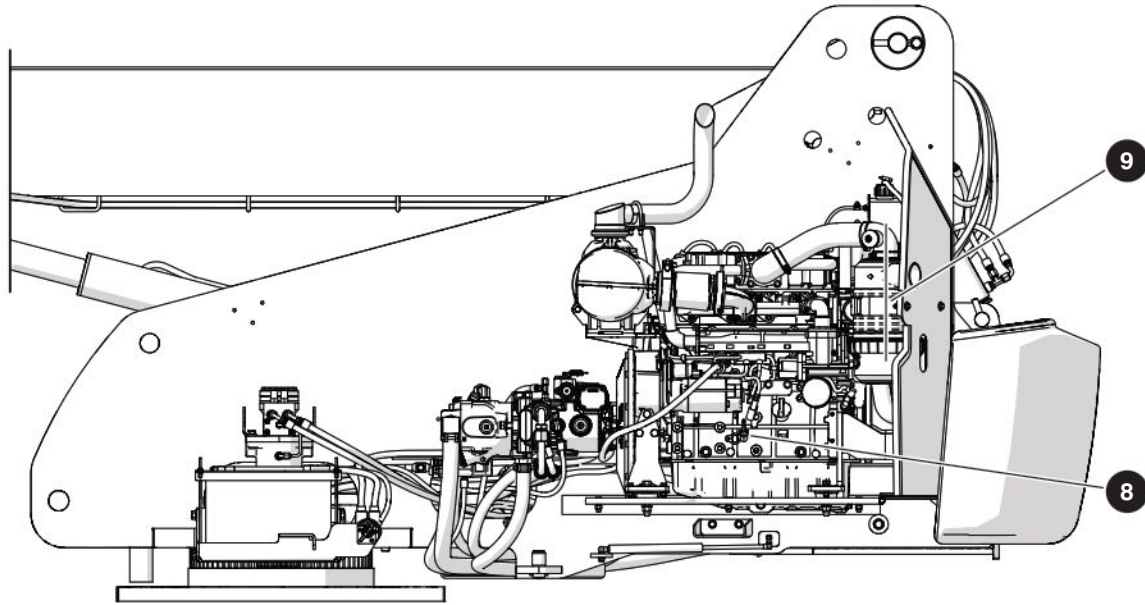
- For the engine fuel filter replacement procedure, refer to the engine manual.

7 Radiator (B, C)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Make sure that the radiator is correctly attached to the engine tray.
- Check the coolant level and add more if necessary.

C - Annual Inspection

- Check the coolant strength. For recommended coolant change intervals, refer to the engine manual.



8 Engine oil level (B)

⚠ WARNING

Burn hazard. Do not touch hot engine components without the correct PPE. Let the engine cool before you do an inspection or servicing. If you do not obey, there is a risk of death or serious injury.

- Use the dipstick to check the oil level.
- The oil level must be between the marks L (low) and H (high). Add oil if it is necessary. Refer to [2.14 Engine Specifications](#).

B - Frequent Inspection

- For the recommended oil change interval and procedure, refer to the engine manual.

9 Air filter (B,C)

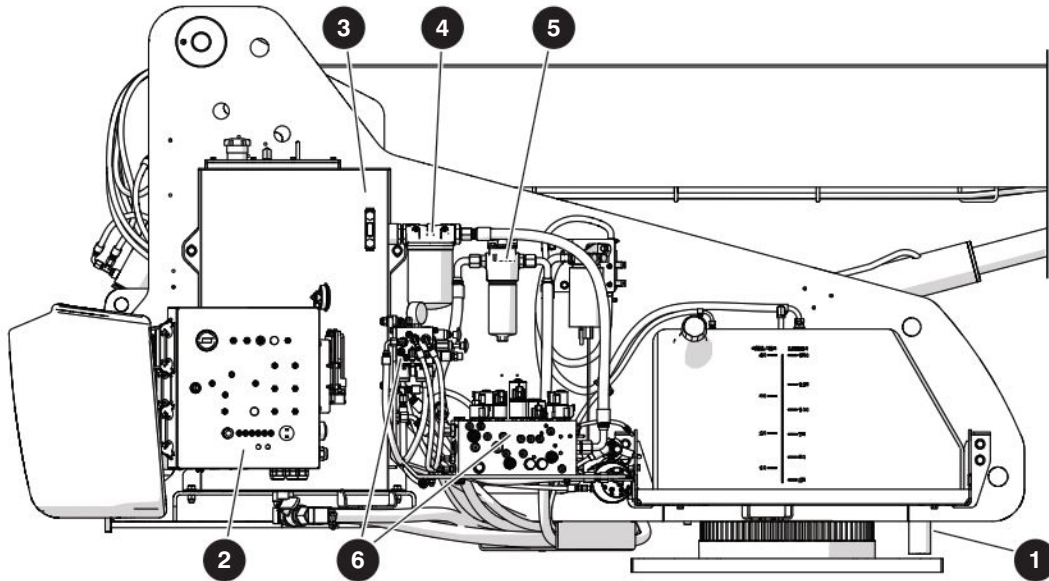
- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Squeeze the lips of the vacuator valve to remove the dirt and dust.
- Do an inspection of the service indicator on the air cleaner. Replace the filter element if necessary.

B - Frequent Inspection

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

C - Annual Inspection

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



1.6-6 Control Compartment

Do the inspection that follows:

Make sure all compartment latches are latched tightly and in good condition.

1 Turret transportation lock (B)

- Make sure the turret transportation lock is unlocked.
- Make sure there are no loose or missing parts.
- Make sure there is no visible damage

2 Base Control Console (B)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage, and all the switches are in their off/neutral positions.

3 Hydraulic Tank (B)

- Make sure the hydraulic filler cap closes tightly.
- Make sure there is no visible damage or hydraulic leaks.

Hydraulic Oil (B, C)

- Make sure the boom is in the stowed position.
- Do a check on the **gauge** on the side of the hydraulic oil tank. The hydraulic oil level must be at or a small distance above the top mark of the gauge. Add oil if it is necessary. Refer to [2.11 Hydraulic & Gear Oils](#).

C - Annual Inspection

- For the hydraulic oil replacement procedure, refer to [5.7-1 Hydraulic Oil Replacement](#).

4 Hydraulic Return Filter (B,C)

- Make sure the filter element is attached and tight.
- Make sure there is no visible damage or hydraulic leaks.

C - Annual Inspection

- For the hydraulic tank filter replacement procedure, refer to [5.7-2 Hydraulic Filter Replacement](#).

5 High-pressure filter (B,C)

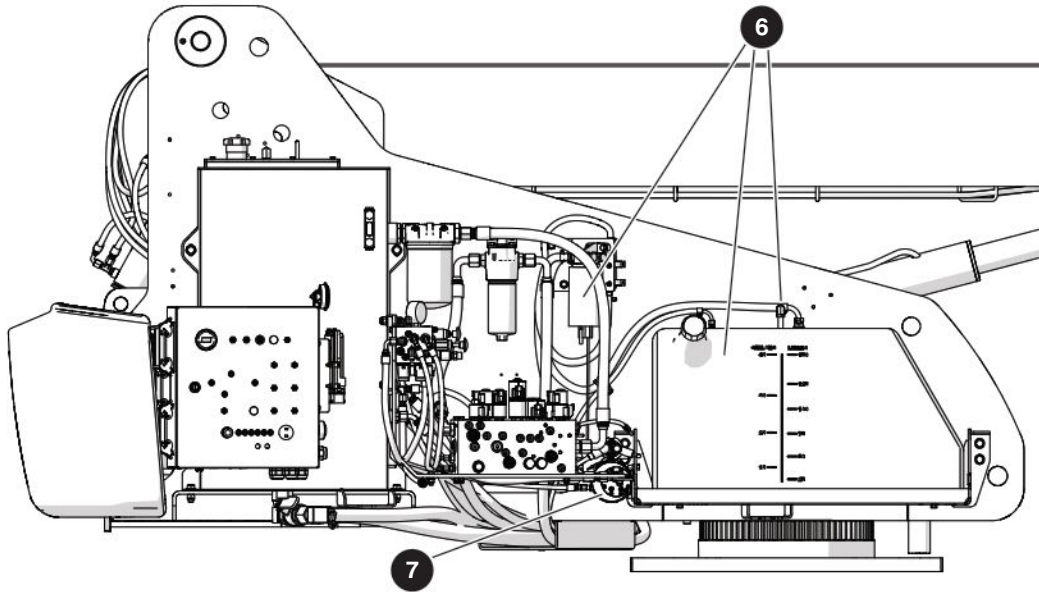
- Make sure the housing is attached and tight.
- Make sure there is no visible damage or hydraulic leaks.

C - Annual Inspection

For the filter element replacement procedure, refer to [5.4-1 Check and Replace the High Pressure Filter](#).

6 Manifolds (B)

- Make sure all fittings and hoses are correctly tightened.
- Make sure there is no indication of hydraulic leakage.
- Make sure there are no loose wires or missing fasteners.



7 Emergency Power Unit (B)

- Make sure there are no loose or missing parts.
- Make sure there are no loose wires or missing fasteners.
- Make sure there is no visible damage.
- Make sure all the fittings and hoses are correctly tightened and there are no hydraulic leaks.

8 Fuel Tank and Lines (B)

IMPORTANT

Before you use the MEWP, make sure there is sufficient fuel for the estimated task.

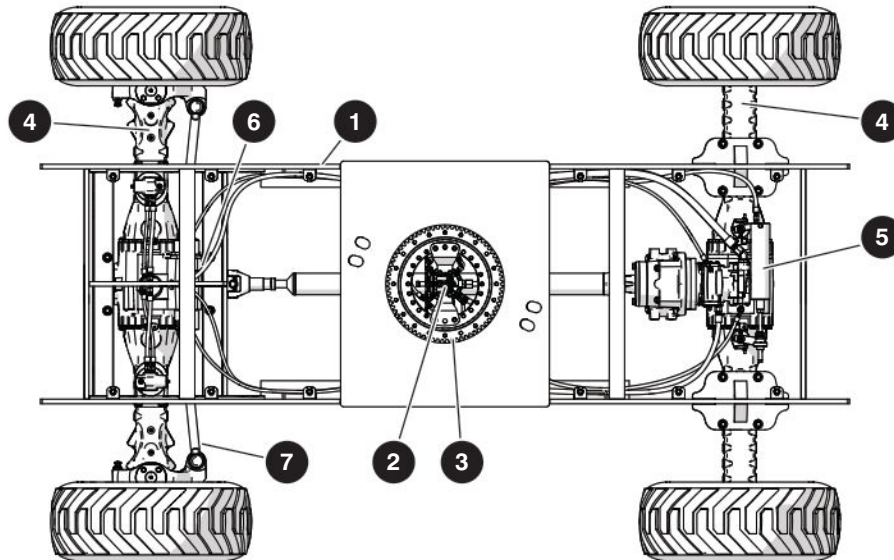
⚠ DANGER

Explosion or fire hazard. Do not smoke near the fuel system. If you do not obey, there is a risk of death or serious injury.

- Make sure that the fuel filler cap closes tightly.
- Make sure there is no visible damage to the tank, gauge, hoses, or fittings.
- Make sure there is no indication of fuel leakage from the tank, gauge, hoses, fittings, pump, and filter.

⚠ WARNING

Environmental hazard. Immediately remove gasoline, diesel fuel, engine oil, and hydraulic fluid spills and leaks with rags. Discard these rags in accordance with national, state/provincial/territorial, and local regulations. Spilled fluids can damage the environment. When spilled fluids go into the water (for example, a sewage system, streams, rivers, or other surface water), they can kill aquatic life.



1.6-7 Base

1 Base weldment (B)

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

3 Rotary manifold (B)

- Make sure all hoses are correctly tightened and there is no sign of hydraulic leakage.

3 Turret rotation gear (B,C)

- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.

C - Annual Inspection

- For the lube procedure, refer to [5.10-1 Grease the Turret Ring Gear](#).

4 Axles (B,C)

- Make sure the front and rear axles are correctly attached.
- Make sure there are no loose or missing parts.
- Make sure all the fittings and hose connections are tight.
- Make sure there is no sign of hydraulic leakage.

C - Annual Inspection

- Check the brakes annually. Refer to the procedure [5.9-11 Brake Inspection](#).

5 Brake Cylinder (B)

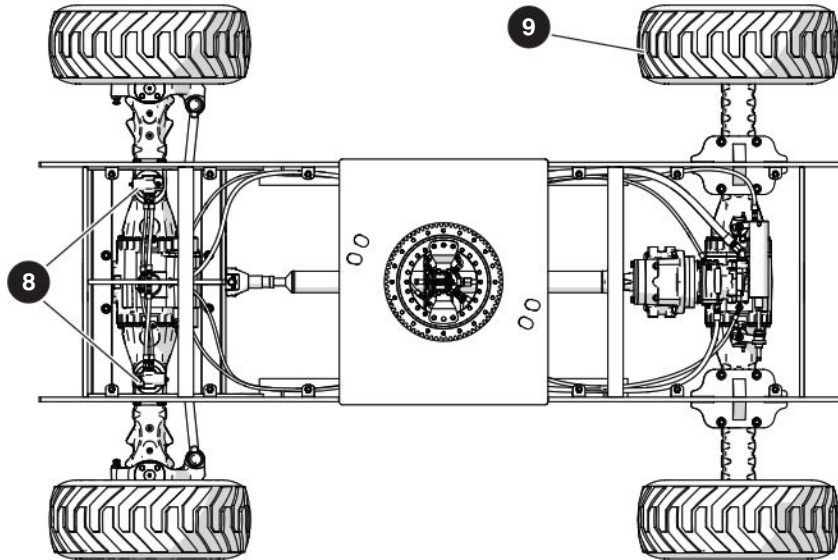
- Make sure there are no loose or missing parts.
- Make sure all the fittings and hoses are correctly tightened and there are no hydraulic leaks.

6 Steer cylinder (B)

- Make sure there are no loose or missing parts.
- Make sure all the fittings and hoses are correctly tightened and there are no hydraulic leaks.

7 Steer linkage (B)

- Make sure there are no loose or missing parts.
- Make sure the tie rod end studs are locked and there is no visible damage.



8 Oscillating cylinders (B,C)

- Make sure the oscillating cylinders are correctly attached, and there are no visible spaces.
- Make sure there are no loose or missing parts.
- Make sure all the fittings and hose connections are tight.
- Make sure there is no sign of hydraulic leakage.
- Do a check of the heads of the oscillating cylinder mounting bolts to make sure the torque seal is visible and undamaged. If the torque seal is 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 the elevated travel position or at the elevated travel speed. Refer to [2.19 Axle Oscillation Diagrams](#).

9 Wheel/tires (B,C)

- Do a check on all tire treads and sidewalls for cuts, cracks, holes, and unusual wear.
- Do a check on each wheel for damage, and cracked welds.
- Do a check on each lug nut for the correct torque to make sure they are not loose.
- Make sure the wheels are correctly aligned vertically and horizontally.
- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.

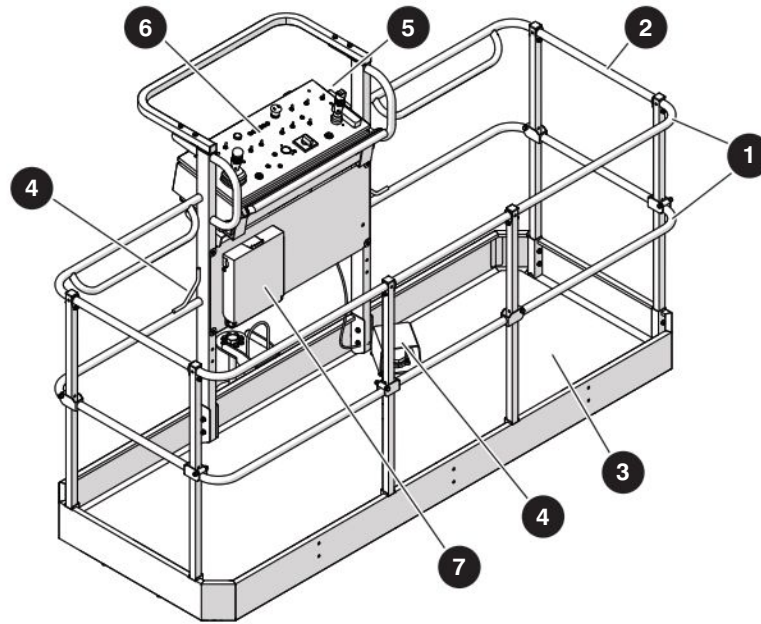
B - Frequent Inspection

- For proper torque information, refer to [2.8 Tire Specifications](#)

WARNING

Do not use tires other than the tires that Skyjack specifies for this MEWP. Do not mix different types of tires or use tires that are not in good condition. Only replace the tires with the same types that are approved by Skyjack. The use of other tires can make the MEWP less stable. If you do not obey, there is a risk of death or serious injury.

Refer to [2.8 Tire Specifications](#).



1.6-8 Platform

1 2 Railings and gates

- Make sure there are no loose or missing parts, and there is no visible damage.
- Make sure the fasteners are correctly installed.
- Make sure the platform railings 1 are in the correct position.
- Make sure the gates or drop bars 2 are in good condition and operate correctly.

3 MEWP floor

- Make sure the MEWP floor is solid and there is no visible damage.

4 Footswitch

- Make sure the footswitch is in good working order and has not been tampered with, disabled or blocked.

5 Fall-protection anchorages

- Make sure that the fall-protection anchorages are correctly installed.
- Make sure there is no visible damage.

6 AC power socket

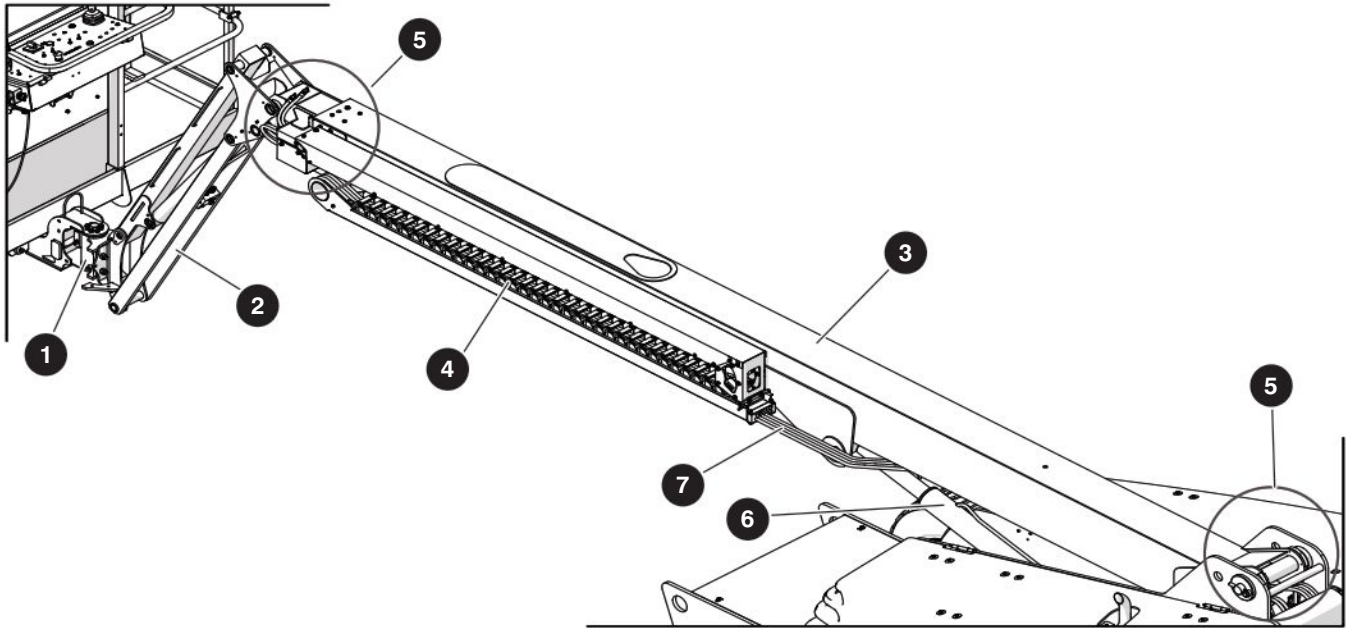
- Make sure that the socket is free of dirt or blockages.

7 Platform control console (B)

- Make sure all switches and controllers are in the neutral position.
- Make sure there are no loose or missing parts, and there is no visible damage.

8 Manual storage box (B)

- Make sure that the operation manual and other important documents are in the manual storage box.
- Make sure that the documents are in good condition, and you can read them.
- Always put the manuals and other documents back in the storage box after use.



1.6-9 Boom Assembly (B)

1 Rotary actuator

- There are no loose or missing parts, and there is no visible damage.
- All fasteners are correctly tightened.
- All hoses are correctly tightened and there is no sign of hydraulic leakage.

2 Jib (if equipped) (B)

- There are no loose or missing parts, and there is no visible damage.
- All fasteners are correctly tightened.
- All hoses are correctly tightened and there is no sign of hydraulic leakage.

3 Boom (B)

- There are no loose or missing parts, and there is no visible damage.
- All fasteners are correctly tightened.
- All hoses are correctly tightened and there is no sign of hydraulic leakage.
- Make sure there are no visible cracks in welds or structure and there are no signs of deformation.

4 Cable Track (B)

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

5 Wear Pads (B)

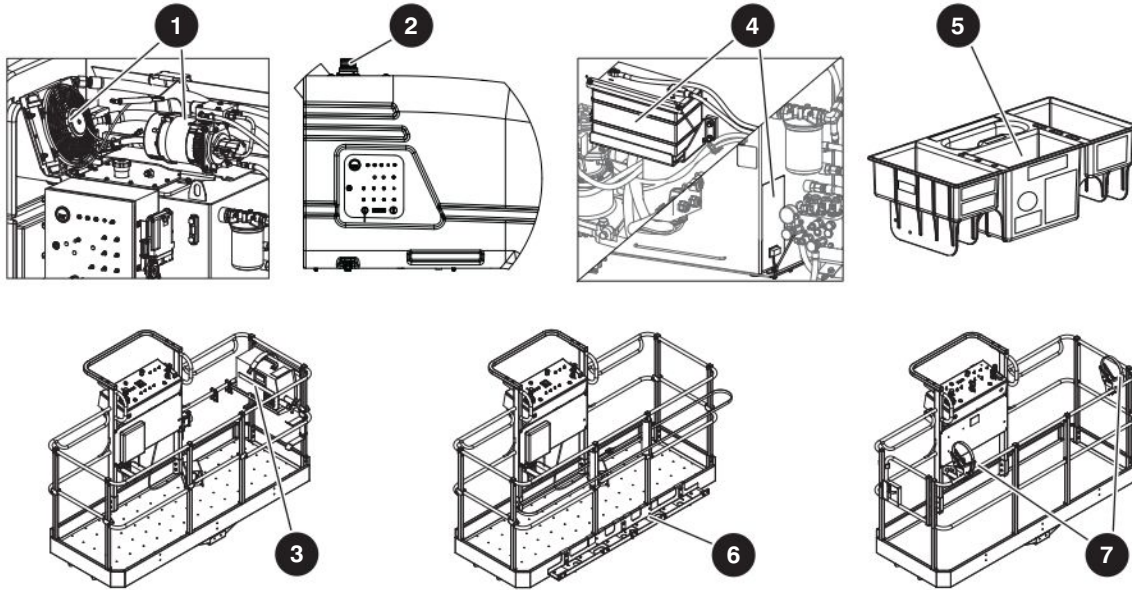
- All fasteners are correctly tightened.
- There are no loose or missing parts, and there is no visible damage to the wear pads.

6 Cylinders (B)

- Make sure the cylinders are correctly installed.
- Make sure there is no indication of leaks or damage.
- Make sure all pins and bushings are secure and properly tightened.

7 Control Cables and Hoses (B)

- There are no loose or missing parts, and there is no visible damage.
- All hoses are correctly tightened and there is no sign of hydraulic leakage.



1.6-10 Optional equipment (B)

Do the inspection that follows, and make sure:

1 Generator

- There are no loose or missing parts, and there is no visible damage.
- All hoses are correctly tightened and there is no sign of hydraulic leakage.

2 Flashing amber light

- The lamp is correctly attached, and there is no visible damage.

3 Welder

- The welder and the welder tray are correctly attached.
- There are no loose or missing parts, and there is no visible damage.
- There are no loose wires or missing fasteners.

4 Cold or arctic weather package

- The heater plugs are correctly attached with no visible damage.
- There is no sign of engine oil leakage.

5 Tool tray

- The tray is correctly attached with lock-pins, and there is no visible damage.

6 Glazier

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

7 Pipe rack

- There are no loose or missing parts, and there is no 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 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 the MEWP 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 into service.
- Prior to performing function tests, be sure to read and understand the “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 will be detailed instructions for which tests to perform, as well as how to properly and successfully perform them.

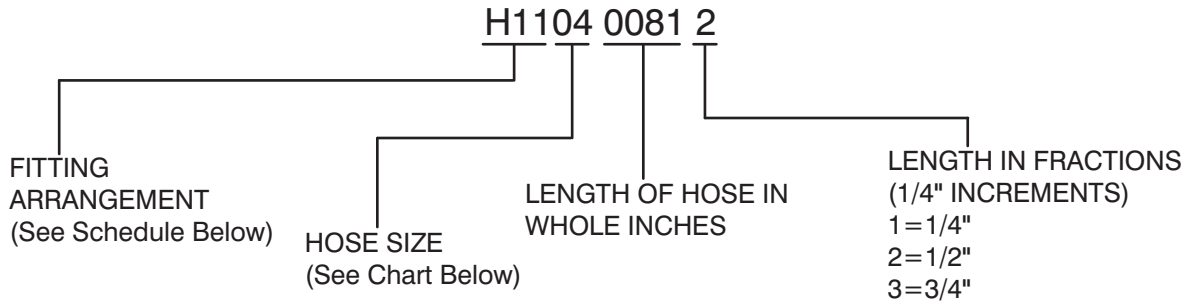


NOTE

The all-function motion alarm should sound while operating any boom and 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 (5/8"-11 x 4.5", Grade 8)	170	230
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 (5/8"-11 x 4.5", Grade 8)	170	230
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	350	475
Master			
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 Mounting (CE)	BOLT, Hex head patch (ZP, M16 x 1.5 x 4.5", Grade 8.8)	130	177
	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

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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	

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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	SAE2		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	SAE2		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, or uncured Loctite.

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Table 2.5 Torque Specifications for Fasteners (Metric)

Size	Torque Type	SAE2		SAE 5		SAE 8	
		Dry	Lubed	Dry	Lubed	Dry	Lubed
M5 x 0.80	(in-lb)	(54)	(41)	(78)	(59)	(12)	(9)
	Nm	6.1	4.6	8.8	6.7	1.4	1.0
M6 x 1.00	(in-lb)	(92)	(69)	(133)	(99)	(13)	(10)
	Nm	10.4	7.8	15	11.2	1.5	1.1
M7 x 1.00	(in-lb)	(156)	(116)	(222)	(167)	(23)	(17)
	Nm	17.6	13.1	25.1	18.9	2.6	1.9
M8 x 1.25	(in-lb)	(225)	(169)	(333)	(242)	(25)	(19)
	Nm	25.4	19.1	37.6	27.3	2.8	2.1
M10 x 1.50	ft-lb	37	28	53	40	(41)	(31)
	Nm	50	38	72	54	4.6	3.5
M12 x 1.75	ft-lb	65	49	93	69	(43)	(32)
	Nm	88	66	126	94	4.9	3.6
M14 x 2.00	ft-lb	104	78	148	111	(60)	(45)
	Nm	141	106	201	150	6.8	5.1
M16 x 2.00	ft-lb	161	121	230	172	(68)	(51)
	Nm	218	164	312	233	7.7	5.8
M18 x 2.50	ft-lb	222	167	318	238	12	9
	Nm	301	226	431	323	16	12
M20 x 2.50	ft-lb	314	235	449	337	14	10
	Nm	426	319	609	457	19	14
M22 x 2.50	ft-lb	428	321	613	460	25	18
	Nm	580	435	831	624	34	24
M24 x 3.00	ft-lb	543	407	776	582	25	20
	Nm	736	552	1052	789	34	27
M27 x 3.00	ft-lb	796	597	1139	854	45	35
	Nm	1079	809	1544	1158	61	47
M30 x 3.50	ft-lb	1079	809	1543	1158	50	35
	Nm	1463	1097	2092	1570	68	47
M33 x 3.50	ft-lb	1468	1101	2101	1576	70	55
	Nm	1990	1493	2849	2137	95	75
M36 x 4.00	ft-lb	1886	1415	2699	2024	80	60
	Nm	2557	1918	3659	2744	108	81

NOTE: Lubed includes lubricants such as lubrizing, oil, grease, or uncured Loctite.

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Table 2.6 Torque Specifications for Hydraulic Couplings & Hoses

Hydraulic Coupling Torque Chart 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 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 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

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Table 2.7 Axles Maintenance Intervals

Operation	Component	Frequency	Lubricants
Check Levels	Differential	monthly	SAE 80W-90 API GL-5
	Planetary reduction	every 200 hours	
	Gear box	monthly	
Oil Change	Differential	every 800 hours *	SAE 80W-90 API GL-5
	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	

Torque Wrench Settings (Nm)			
Size of Screw	8G/8.8	10K/10.9	12K/12.9
M4	2.9	4.1	-
M6	10	14	-
M8	25	35	-
M12	49	69	-
M10 X 1.25	-	73	-
M12	86	120	-
M14	135	190	-
M14 X 1.5	-	-	250
M16	210	295	-
A18	325	-	-

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

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NOTE

1 Nm = 0.7376 ft-lb

Table 2.8 Tire Specifications

	Foam Tires		Solid Tires	
Tire Size				
Wheel Assembly Weight				
Tire Ply Rating				
Wheel Nuts Torque				

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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	Weight		Total Aerial Platform Load					
			Wheel		LCP		OFL	
	kg	lb	kg	lb	kPa	psi	kPa	psf
SJ40 T+ ANSI	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
SJ45 T+ ANSI	7170	15,780	4082	9,000	1163	169	9.9	207
SJ45 T+ CE	7170	15,780	4082	9,000	1163	169	9.9	207
SJ45 T+ AS	7170	15,780	4082	9,000	1163	169	9.9	207

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- 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.
- OFL – Overall Floor Load – 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.

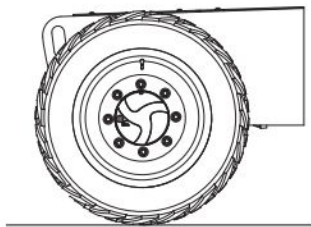
NOTE:

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

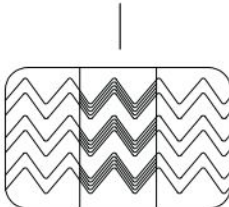
Locally Concentrated Pressure (LCP)

Foot Print Area identified by test

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



Foot Print Area



Overall Floor Load (OFL)

Base Area = Length x Width

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

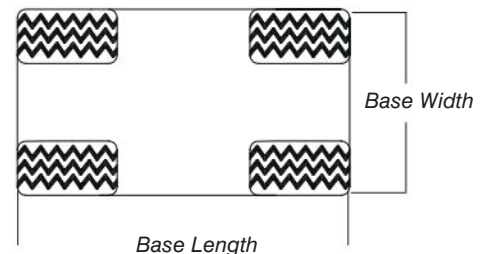
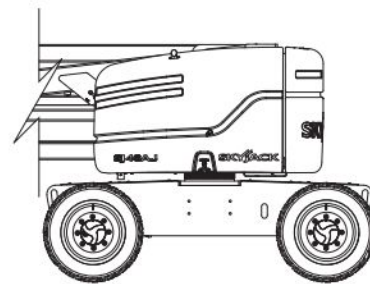


Table 2.10 Hydraulic Specifications

Description		Metric	US
Pumps			
Drive Pump	Displacement - 2600 rpm	46 CC	2.8 CIR 30 gpm @2600 rpm
	Drive Pump Pressure	345 bar	5000 psi
	Charge Pump Displacement	13.9 CC	0.85 CIR
	Charge Pump Pressure	22 bar	313 psi
System Pump	Displacement - Static	30 CC	1.83 CIR / 20.6 gpm @ 2600 rpm
	System Pump Pressure	150 bar	2175 psi
Filters			
Charge Pump Filter	Max. Operating Pressure	9 μ m/35	50 psi
High Pressure Filter	Max. Operating Pressure	10 μ m/25	87 psi
Return Filter	Max. Operating Pressure	10 μ m/60	25 psi
Motors			
Drive Motor	Displacement - Low	25 CC	1.55 CIR / 15.2 gpm @ 2600 rpm
	Displacement - High	38 CC	2.32 CIR / 22.8 gpm @ 2600 rpm
Swing Motor	Motor Displacement	65.56 CC	4 CIR / 39.4 gpm @ 2600 rpm
	Maximum Swing Pressure	96 bar	1400 psi
Cylinders			
Extension Cylinder	Bore	6.4 cm	2-1/2 in
	Rod Diameter	4.1 cm	1-5/8 in
	Stroke	445 cm	175 in
	Max. Operating Pressure	210 bar	3050 psi
Lift Cylinder	Bore	10.2 cm	4 in
	Rod Diameter	7.6 cm	3 in
	Stroke	152 cm	60 in
	Max. Operating Pressure	210 bar	3050 psi
Steering Cylinder	Differential Area	7.8 cm	3-5/64 in
	Stroke	10.9 cm	4-5/16 in
	Maximum Steering Pressure	145 bar	2103 psi

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

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Table 2.11 Hydraulic & Gear Oils

Description	Temperature Range	ANSI/CSA, CE & AS
Hydraulic Oil Cooler Option	38°C to 45°C (100°F to 115°F)	Oil cooler option recommended
Standard Hydraulic Oil	-26°C to 38°C (-15°F to 100°F)	Petro-Canada ATF D3M
Arctic Hydraulic Oil	-40°C to 38°C (-40°F to 100°F)	Esso/Mobil UNIVIS HVI 26, Petro-Canada Hydrex Extreme
Biodegradable Hydraulic Oil	-29°C to 32°C (-20°F to 90°F)	Shell Naturelle HF-E 46
Hydraulic Tank Capacity		170 L (45 gal)
Standard Gear Oil	-29°C to 45°C (-20°F to 115°F)	SAE 80W-90 API GL5
Arctic Gear Oil	-40°C to 45°C (-40°F to 115°F)	Duratran XL Synthetic Oil
Gear Oil Capacity		38 L (10 gal)

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Table 2.12 Specifications and Features - Dimensional Data

	SJ40T ANSI/CSA		SJ45T ANSI/CSA		SJ45T CE	SJ45T AS
Height & Reach						
Working Height	14.19 m	46' 6-1/2"	15.58 m	51' 1-1/2"	15.58 m	15.58 m
Platform Elevated Height	12.36 m	40' 6-1/2"	13.75 m	45' 1-1/2"	13.75 m	13.75 m
Horizontal Reach - Maximum	10.34 m	33' 11"	12.10 m	39' 8-1/4"	12.10 m	12.10 m
Horizontal Reach at Max Height	2.69 m	8' 9-3/4"	3.61 m	11' 10-1/4"	3.61 m	3.61 m
Horizontal Reach - Boom Retracted	5.93 m	19' 5-1/4"	7.68 m	25' 2-1/2"	7.68 m	7.68 m
Tailswing	3' 8"	1.12 m	1.12 m	3' 8"	1.12 m	1.12 m
Platform						
Platform Size	0.91 x 1.83 m 0.91 x 2.44 m	36 x 72" 36 x 96"	0.91 x 1.83 m 0.91 x 2.44 m	36 x 72" 36 x 96"	0.91 x 2.44 m 0.91 x 1.83 m	0.91 x 2.44 m 0.91 x 1.83 m
Platform Rotation	173°	173°	173°	173°	173°	173°
Platform Height - Stowed	0.37 m	10-3/4"	0.27 m	10-3/4"	0.27 m	0.27 m
Platform Height - Overall	1.35 m	53"	1.35 m	53"	1.35 m	1.35 m
Railing Height - Platform	1.09 m	43"	1.11 m	43"	1.11 m	1.11 m
Dimensional Data						
Height - Stowed	2.40 m	7' 10-1/2"	2.40 m	7' 10-1/2"	2.40 m	2.40 m
Length - Stowed	7.73 m	25' 4-1/4"	8.83 m	28' 11-1/2"	8.83 m	8.83 m
Width - Outside of Wheels	2.29 m	7' 6"	2.29 m	7' 6"	2.29 m	2.29 m
Wheelbase	2.44 m	8'	2.44 m	8'	2.44 m	2.44 m
Ground Clearance - Chassis	0.35 m	13-3/4"	0.35 m	13-3/4"	0.35 m	0.35 m
Ground Clearance - Rear Axle	0.27 m	10-3/4"	0.27 m	10-3/4"	0.27 m	0.27 m
Axle Oscillation	0.13 m	5-1/4"	0.13 m	5-1/4"	0.13 m	0.13 m
Turning Radius - Inside	2.24 m	7' 6"	2.24 m	7' 6"	2.24 m	2.24 m
Turning Radius - Outside	5.18 m	17'	5.18 m	17'	5.18 m	5.18 m
Turret Rotation	360°	360°	360°	360°	360°	360°
Lift Capacity						
Maximum lift - without attachment	340/454 kg	750/1000 lb	340/454 kg	660/1000 lb	272/454 kg	300/454 kg
Maximum number of persons	2/3	2/3	2/3	2/3	2/3	2/3
Maximum lift - with attachment	318/454 kg	700/1000 lb	270/454 kg	600/1000 lb	249/454 kg	272/454 kg
Maximum number of persons	1	1	1	1	1	1
Jib						
Jib Length	N/A	N/A	1.60 m	5' 3"	1.60 m	1.60 m
Jib Range of Motion - Vertical	N/A	N/A	2.82 m	9' 3"	2.82 m	2.82 m
Jib Range of Motion - Up	N/A	N/A	63°	63°	63°	63°
Jib Range of Motion - Down	N/A	N/A	61°	61°	61°	61°
Weight						
Weight - Foam Tires, No Options	6410 kg	14,130 lb	7170 kg	15,780 lb	7170 kg	7170 kg

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Table 2.13 Specifications and Features - Performance and Speeds

	SJ40 T+ ANSI/CSA		SJ45 T+ ANSI/CSA		SJ45 T+ CE	SJ45 T+ AS
Performance & Speeds						
Gradeability - Maximum	50%		50%		50%	50%
Drive Speed - Stowed/Low Torque	7.2 km/h	4.5 mph	7.2 km/h	4.5 mph	7.2 km/h (Deutz D2011) 4.0 km/h (Deutz D2.2)	7.2 km/h
Drive Speed - Stowed/High Torque	2.2 km/h	1.4 mph	2.2 km/h	1.4 mph	2.2 km/h (Deutz D2011) 1.7 km/h (Deutz D2.2)	2.2 km/h
Drive Speed - Elevated	0.58 km/h	0.36 mph	0.8 km/h	0.5 mph	0.8 km/h	0.8 km/h
Turret Rotation	90-110 seconds		90-110 seconds		115-125 seconds	90-110 seconds
Platform Rotation	5-9 seconds		5-9 seconds		5-9 seconds	5-9 seconds
Boom Up	43-46 seconds		43-46 seconds		43-46 seconds	43-46 seconds
Boom Down	45-48 seconds		45-48 seconds		45-48 seconds	45-48 seconds
Boom Extend	30-40 seconds		30-40 seconds		30-40 seconds	30-40 seconds
Boom Retract	30-40 seconds		30-40 seconds		30-40 seconds	30-40 seconds
Jib Up	N/A		18-28 seconds		18-28 seconds	18-28 seconds
Jib Down	N/A		10-16 seconds		10-16 seconds	10-16 seconds
Steer Left	5-9 seconds		5-9 seconds		5-9 seconds	5-9 seconds
Steer Right	5-9 seconds		5-9 seconds		5-9 seconds	5-9 seconds
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

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Table 2.14 Engine Specifications

		SJ40 T+ & SJ45 T+
Deutz D2.9L	RPM Settings	900 Low / 1700 / 2600 High
	Horsepower @ 2000 rpm (intermittent)	29.8 kW / 40 Hp
	Fuel Type	Diesel
	Fuel Tank Capacity	45 gal (170.3 L)
	Standard Lube Oil	0°F to 115°F (-18°C to -45°C) SAE 15W-40 API CF/CG/CH-4
	Cold Lube Oil	-20°F to 90°F (-29°C to -32°C) SAE 0W-30 API CF/CG/CH-4
	Arctic Lube Oil	-40°F to 115°F (-40°C to -45°C) SAE 0W-40 API CF/CG/CH-4
	Lube Oil Sump Capacity	2.38 gal (9 L)
	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)
Deutz D2.2	RPM Settings	1200 Low / 1600 / 2300 High
	Horsepower @ 2300 rpm (intermittent)	18.4 kW / 25 Hp
	Fuel Type	Diesel
	Fuel Tank Capacity	45 gal (170.3 L)
	Standard Lube Oil	0°F to 115°F (-18°C to 45°C) SAE 15W-40 API CF/CG/CH-4
	Standard Coolant	-40°F to 115°F (-40°C to 45°C) Delo 50/50 Extended Life Coolant
	Coolant Capacity	2.75 gal (10.4 L)
	Lube Oil Sump Capacity	2.11 gal (8.0 L)
Deutz D2011	RPM Settings	1600 Low / 2100 / 2675 High
	Gross Intermittent HP	36 kW / 48 Hp
	Horsepower @ 2600 rpm (intermittent)	34 kW / 45 Hp
	Fuel Type	Diesel
	Fuel Tank Capacity	45 gal (170.3 L)
	Standard Lube Oil	0°F to 115°F (-18°C to 45°C) SAE 15W-40 API CF/CG/CH-4
	Cold Lube Oil	-20°F to 90°F (-29°C to 32°C) SAE 0W-30 API CF/CG/CH-4
	Arctic Lube Oil	-40°F to 115°F (-40°C to 45°C) SAE 0W-40 API CF/CG/CH-4
	Lube Oil Sump Capacity	1.45 gal (5.5 L)
Kubota WG2503	RPM Settings	927 Low / 1700 / 2675 High
	Gross Intermittent HP	45.5 kW / 61 Hp
	Fuel Type	Gasoline / Propane
	Fuel Tank Capacity	45 gal (170.3 L)
	Standard Lube Oil	-40°F to 115°F (-40°C to 45°C) SAE 5W-30 API SL
	Lube Oil Capacity	2.5 gal (9 L)
	Standard & Arctic Coolant	-20°F to 115°F (-29°C to 45°C) Recochem 50/50 Extended Life Coolant
	Coolant Capacity	3.17 gal (12 L)

2032AA

Table 2.15 Reach Diagram - SJ40 T+

Meters (feet)

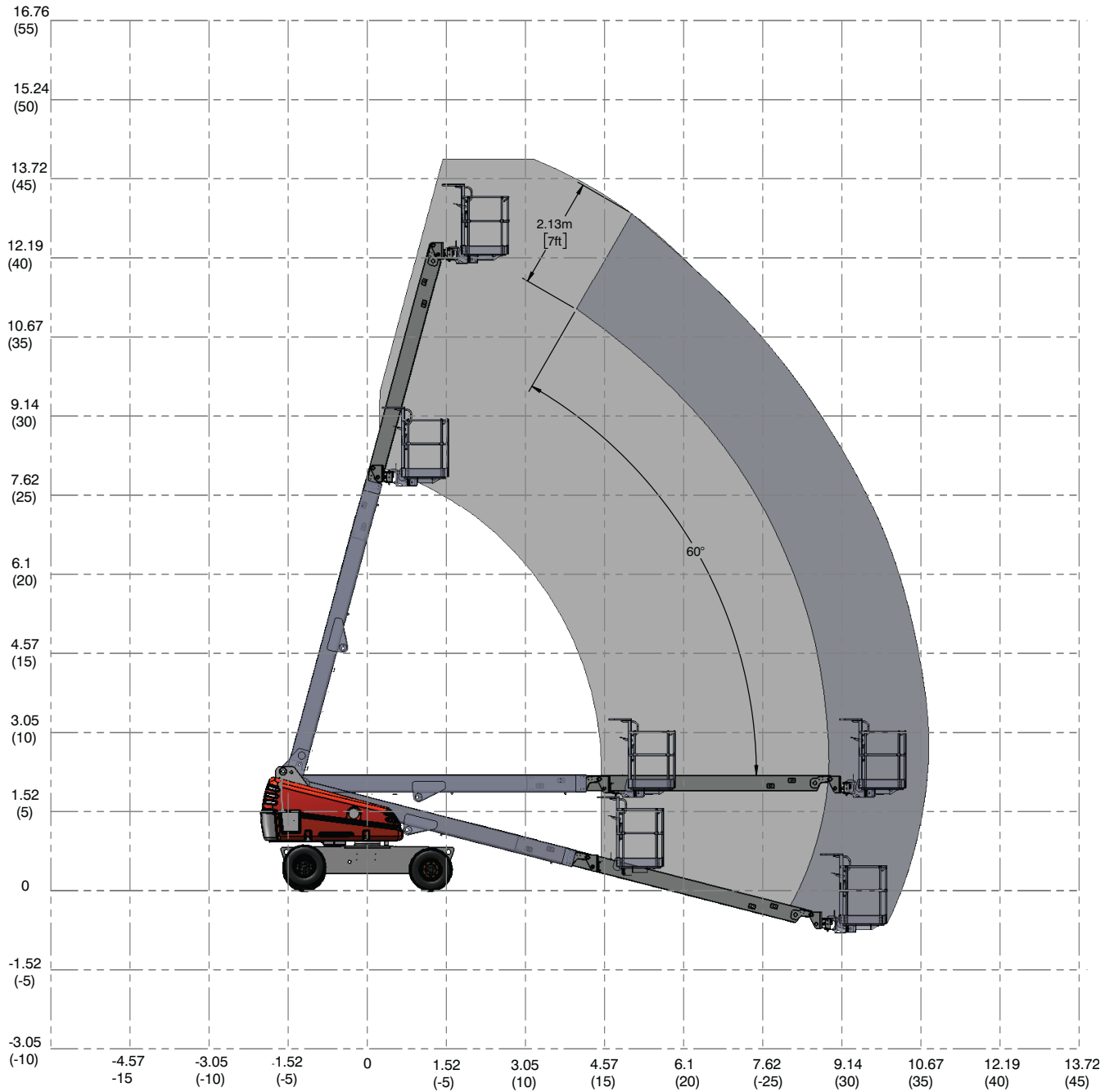


Table 2.16 Dimensions - SJ40 T+

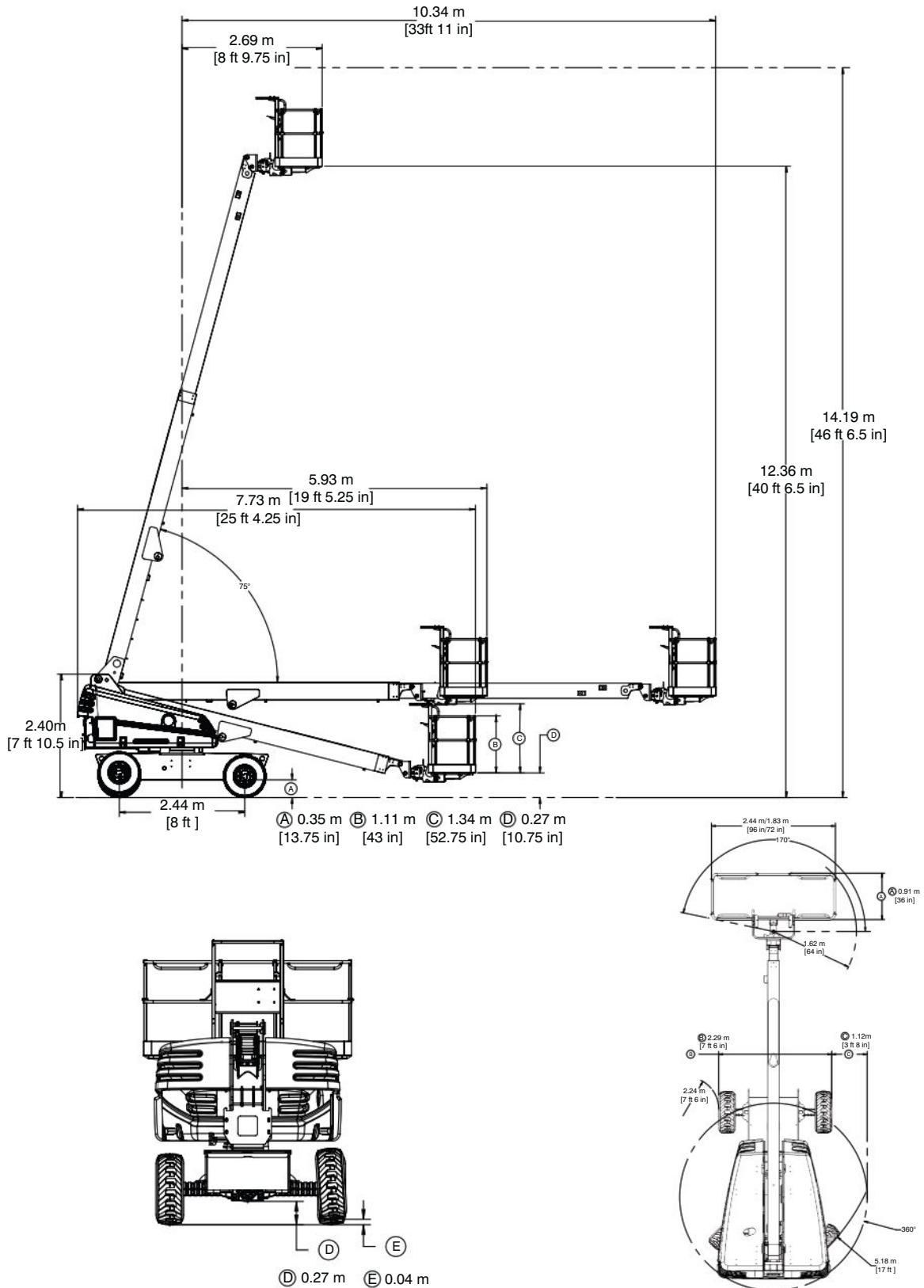


Table 2.17 Reach Diagram - SJ45 T+

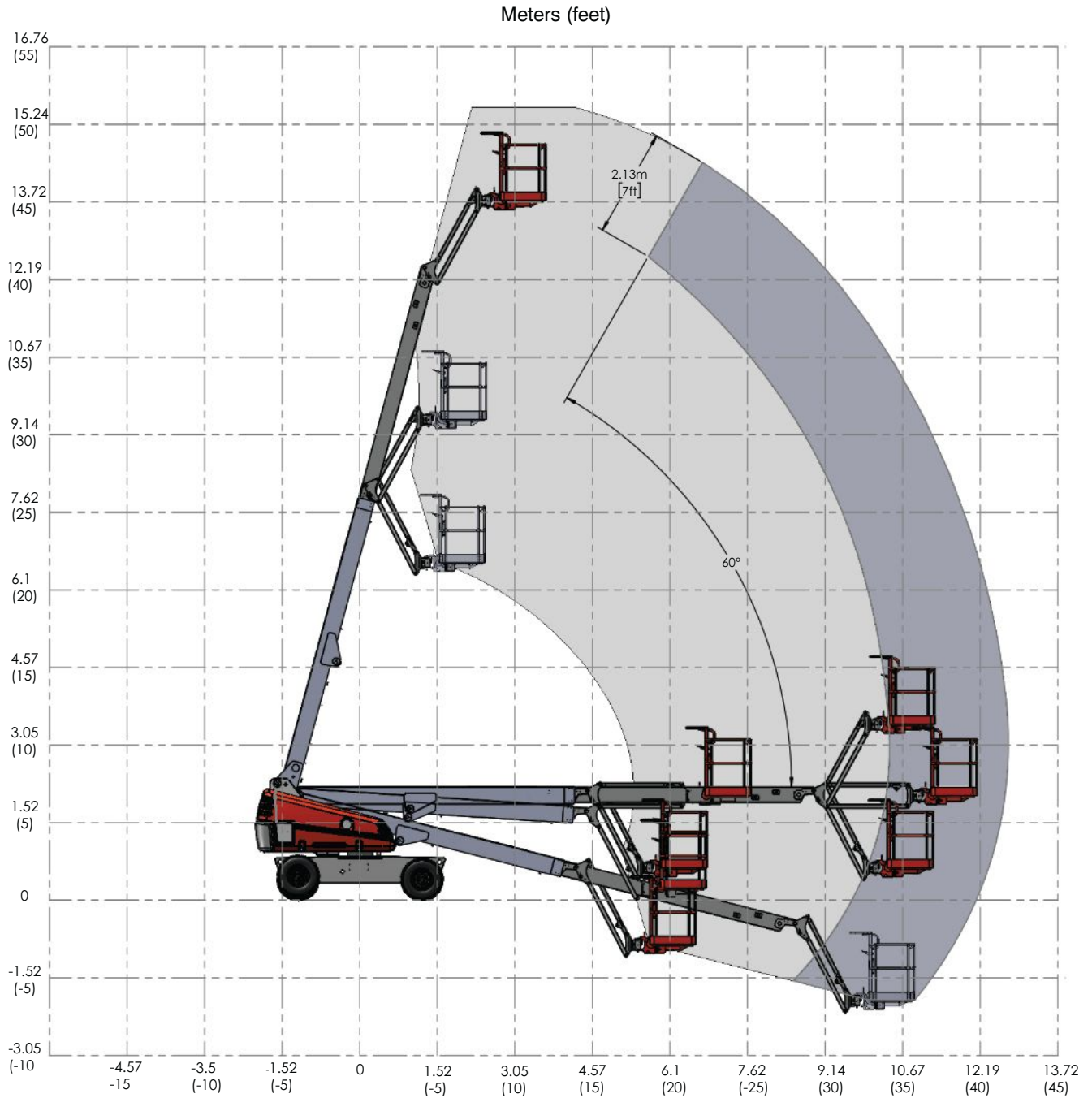


Table 2.18 Dimensions - SJ45 T+

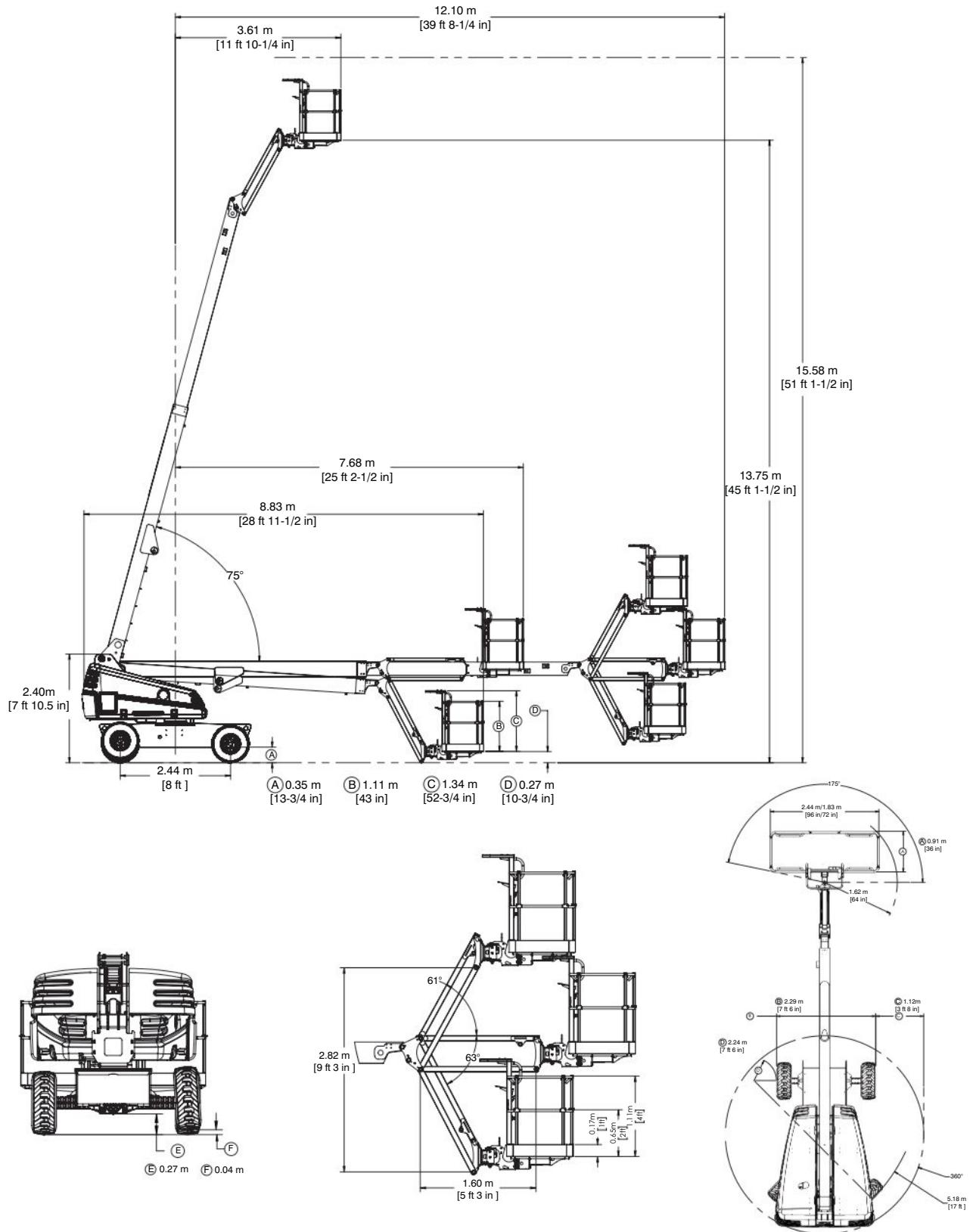
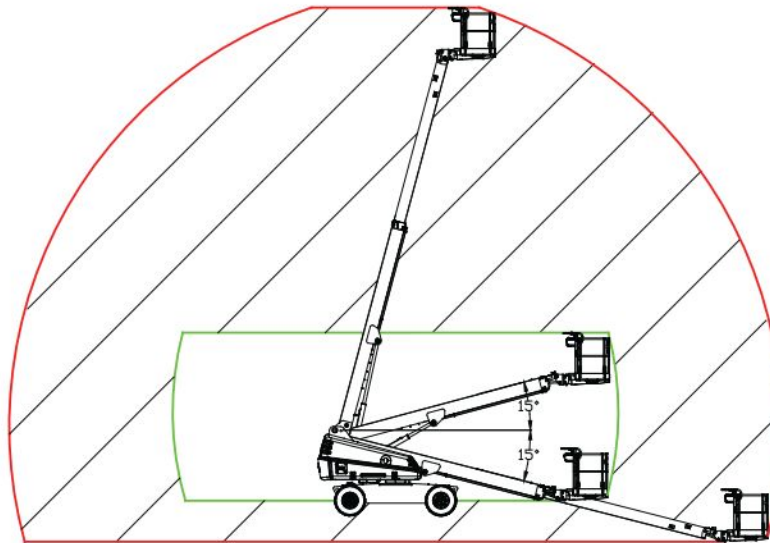




Table 2.19 Axle Oscillation Diagrams

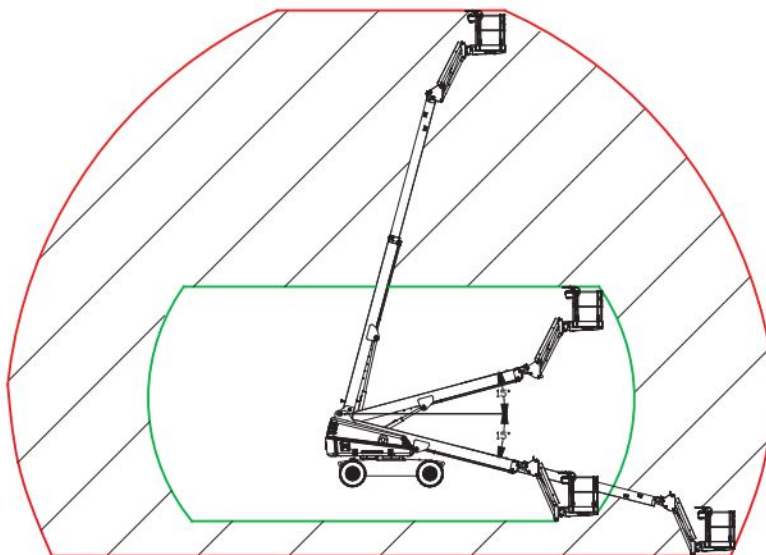
WARNING



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 - SJ40 T+



-  Axle oscillation free (travel mode) - drive speed 4.5 mph max.
-  Axle oscillation locked (work mode) - drive speed 0.5 mph max.

Axle Oscillation - SJ45 T+

Section 3 – System Component Identification and Schematics

Table 3.1 Electrical Symbol Chart























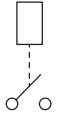


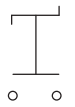
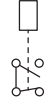



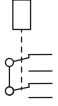



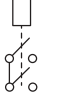


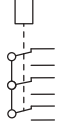



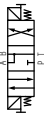



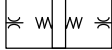


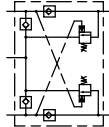







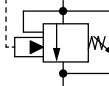






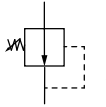



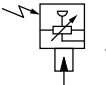

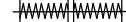






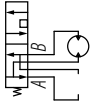

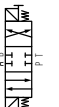
 CIRCUITS CROSSING NO CONNECTION	 HOURMETER	 KEY SWITCH	 LIMIT SWITCH
 CIRCUITS CONNECTED	 LIGHT	 FOOT SWITCH	 CAM OPERATED LIMIT SWITCH
 BATTERY	 HYDRAULIC VALVE COIL	 TOGGLE SWITCH	 LIMIT SWITCH N.O.
 GROUND	 PROPORTIONAL HYDRAULIC VALVE COIL	 ANGLE TRANSDUCER & TILT SWITCH	 LIMIT SWITCH N.O. HELD CLOSED
 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

This table is to be used as a wire number/color reference for all electrical drawings and schematics. All wire numbers will retain their original color coding, for example if wire 7 is red, wire 7A, 7B, and 7C will also be red.

3.4 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, 3.5 kW Generator)
2H-85	168058	VALVE, Control (Flow Enable, 7.5 kW & 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	218258	CYLINDER (Boom Lift)
C2	216838	CYLINDER (Boom Extend)
C3	231520	CYLINDER (Master)
C4	216832	CYLINDER (Slave)
C5	160091	CYLINDER (Jib)
C6	212871	CYLINDER (Axle Lock)
C7	212871	CYLINDER (Axle Lock)
C8	141046	CYLINDER (Steer)
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	141453	VALVE, Counterbalance (Fly Boom)
CB5	141453	VALVE, Counterbalance (Fly Boom)
CB6	166772	VALVE, Counterbalance (Platform Level)
CB7	166772	VALVE, Counterbalance (Platform Level)

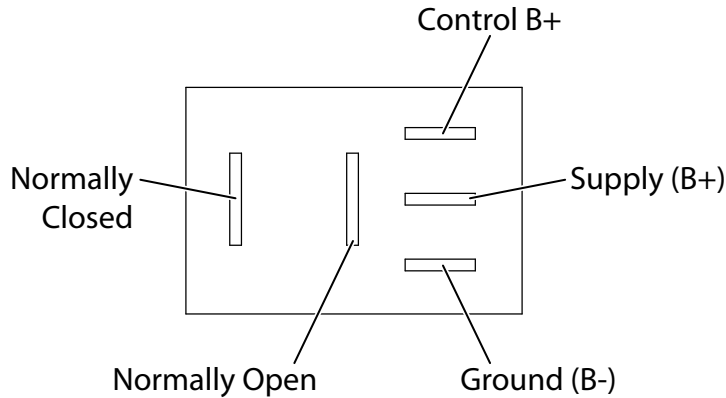
3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Description
CB8	149488	VALVE, Counterbalance (Jib)
CB9	149488	VALVE, Counterbalance (Jib)
CB10	141399	VALVE, Counterbalance (Platform Rotate)
CB11	141399	VALVE, Counterbalance (Platform Rotate)
CB12	212872	VALVE, Counterbalance (Axle Lock)
CB13	212872	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)
CV19	159814	VALVE, Check (7.5 kW generator manifold LS)
CV20	171410	VALVE, Check (7.5 kW generator manifold)
CV21	159814	VALVE, Check (platform level)
CV22	159814	VALVE, Check (platform level)
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, 3.5 kW)
M4	N/A	MOTOR (Generator, 12 kW)
M5	N/A	MOTOR (Generator, 7.5 kW)
MB1	211620	MANIFOLD (Main)
MB2	168642	MANIFOLD (Brake)
MB3	231501	MANIFOLD (Jib)
MB4	231502	MANIFOLD (No Jib)
MB5	168158	MANIFOLD (Pressure Reducing)

3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Description
MB6	168400	MANIFOLD (Generator 3.5 kW)
MB7	168401	MANIFOLD (Generator 12 kW)
MB8	171437	MANIFOLD (Generator 7.5 kW)
MB9	210105	MANIFOLD (dual relief valve)
OC1	160800	COOLER, Oil
OR1	166077	ORIFICE, 0.078" (Main Manifold)
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 (3.5 kW Generator)
OR8	194493	VALVE, Needle (Load Circuit)
OR9	171150	VALVE, Flow regulator (FR)
P1	169006	PUMP (Hydrostatic) - Deutz D2.9L, Deutz D2011, Kubota
P1	228718	PUMP (Hydrostatic) - Deutz D2.2
P1A	169006	PUMP (Charge) - Deutz D2.9L, Deutz D2011, Kubota
P1A	228718	PUMP (Charge) - Deutz D2.2
P2	163595	PUMP (System)
PR1	168754	VALVE, Pressure reducing
QD1	122420	QUICK DISCONNECT
RA1	218126	ACTUATOR, Rotary - platform
RA2	167209	ACTUATOR, Rotary - swing
RV1	166042	VALVE, Relief - main manifold
RV2	166049	VALVE, Relief - swing
RV3	166047	VALVE, Relief - platform level
RV4	166048	VALVE, Relief - boom extend
RV6	N/A	VALVE, Relief - drive
RV7	N/A	VALVE, Relief - drive
RV8	N/A	VALVE, Relief - charge
RV9	N/A	VALVE, Relief - EPU
RV10	166047	VALVE, Relief - platform level
RV11	166047	VALVE, Relief - platform level
SV1	141414	VALVE, Shuttle (Main Manifold)
SV2	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)

3.5 Electrical Component Parts List



Index No.	Skyjack Part No.	Description
00ACR	931298	RELAY, Micro 12 V DC, 30 amp
01ACR	931298	RELAY, Micro 12 V DC, 30 amp
04ACR	931298	RELAY, Micro 12 V DC, 30 amp
49CR	931298	RELAY, Micro 12 V DC, 30 amp
57DCR	931298	RELAY, Micro 12 V DC, 30 amp
403ACR	931298	RELAY, Micro 12 V DC, 30 amp (Positive air shut-off option)
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) (SJ45 T+)
4H-35	143970	COIL, 12 Volt (Jib up valve) (SJ45 T+)
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)

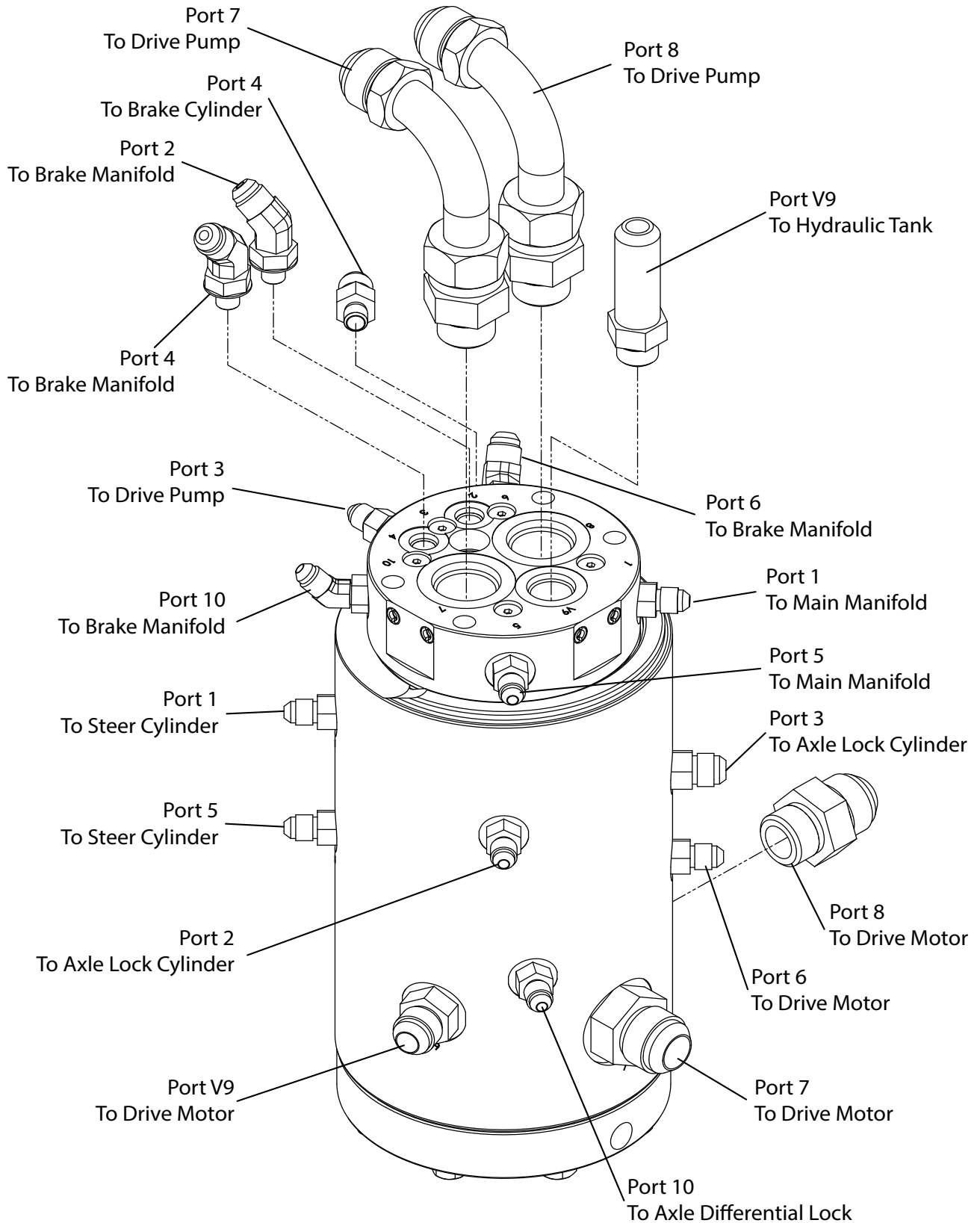
3.5 Electrical Component Parts List

Index No.	Skyjack Part No.	Description
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	117325	CIRCUIT BREAKER (15 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)
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 and Kubota)
	139088	RESISTOR, 6 ohm 25 W (Deutz D2.9L)
R2	144714	RESISTOR, 12 ohm 25 W (SJ40 T+)
	144714	RESISTOR, 15 ohm 25 W (SJ45 T+)
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 and Kubota)
	151643	RESISTOR, 250 ohm 1 W (Deutz D2.9L)

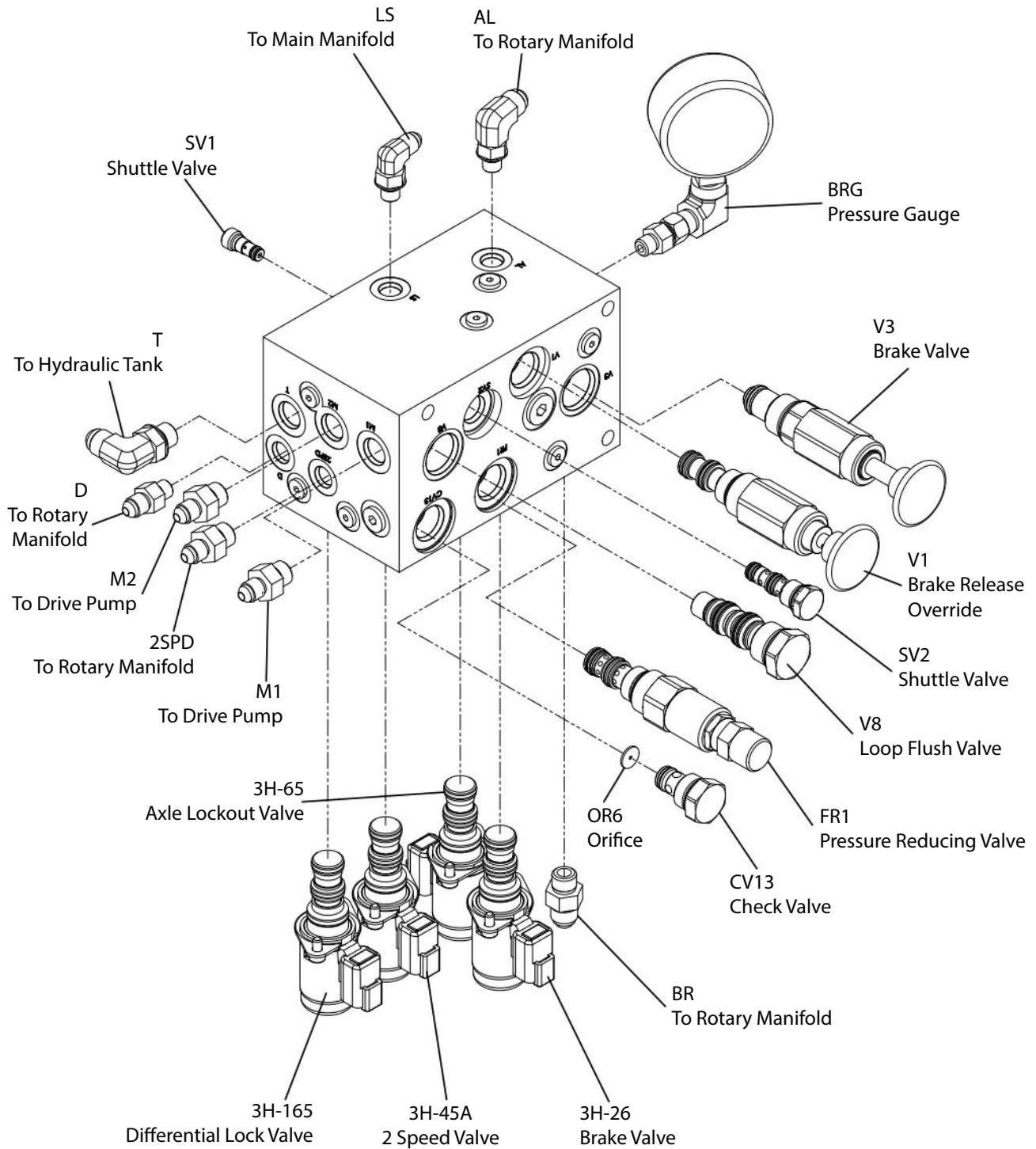
3.5 Electrical Component Parts List

Index No.	Skyjack Part No.	Description
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) (SJ45 T+)
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)
S21	102853	SWITCH, Jib up/down toggle (Platform control console) (SJ45 T+)
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) (Kubota engine)
S48	115574	SWITCH, Drive torque toggle (Platform control console)
SMB1-105	218381	MODULE, Master
SMB1-106	218382	MODULE, Slave
TS1	166163	SWITCH, Tilt (5°/ 5°)
TT1	103336	HOUR METER
X22	138576	PORT, Diagnose (Deutz engine)
X23	138574	CONNECTOR, Engine (Deutz engine)

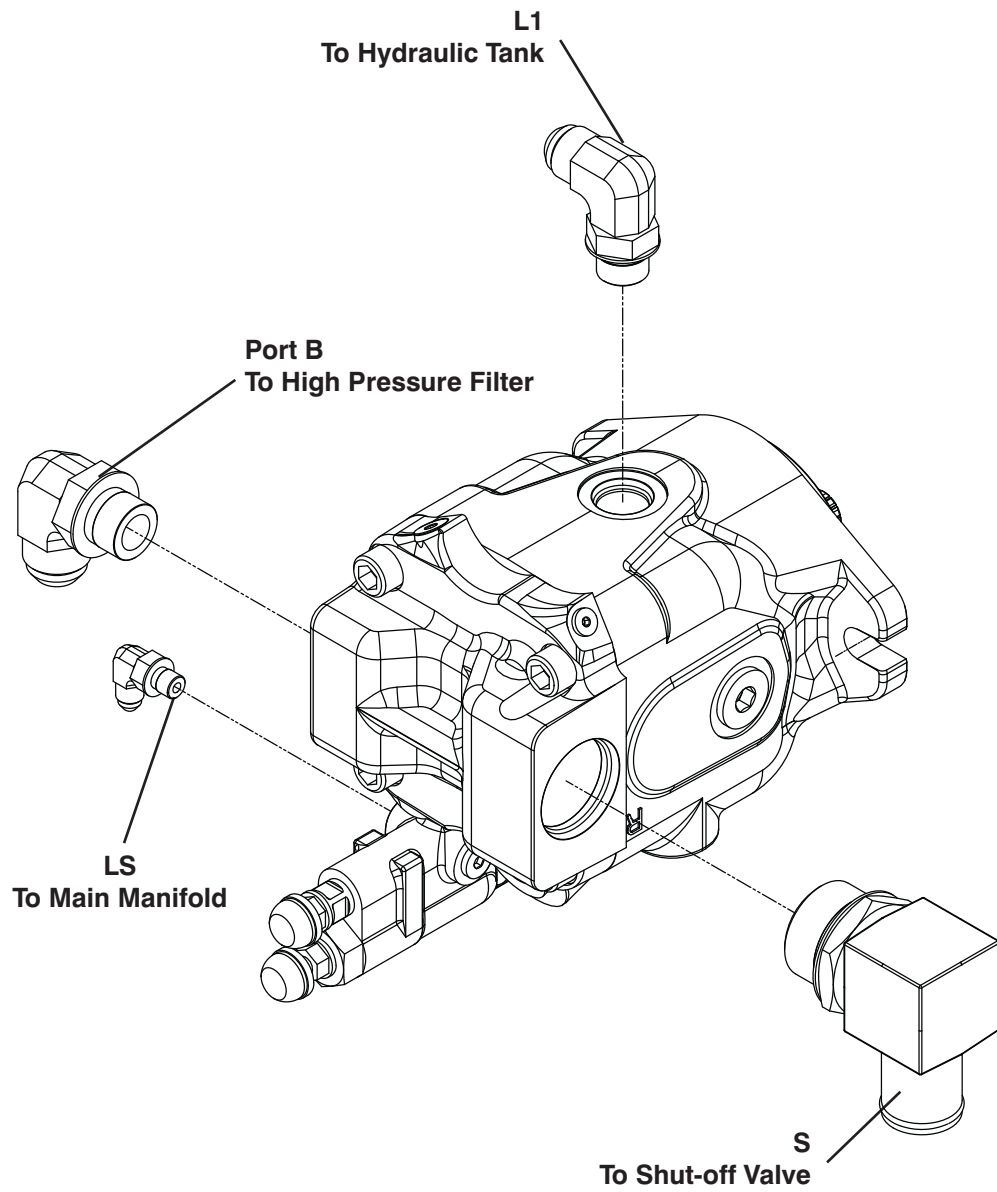
3.6 Rotary Manifold Port Identification



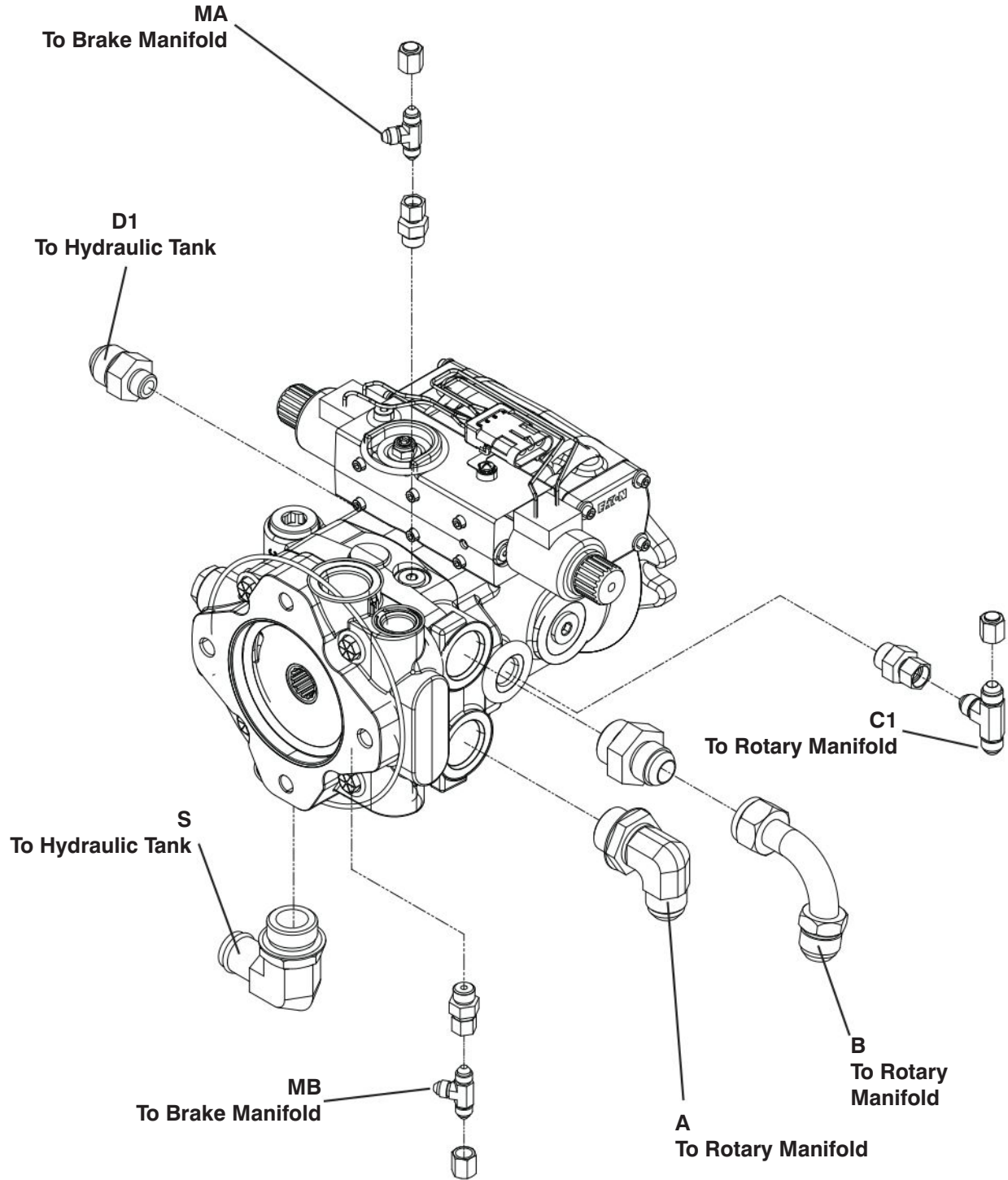
3.7 Brake Manifold Port Identification



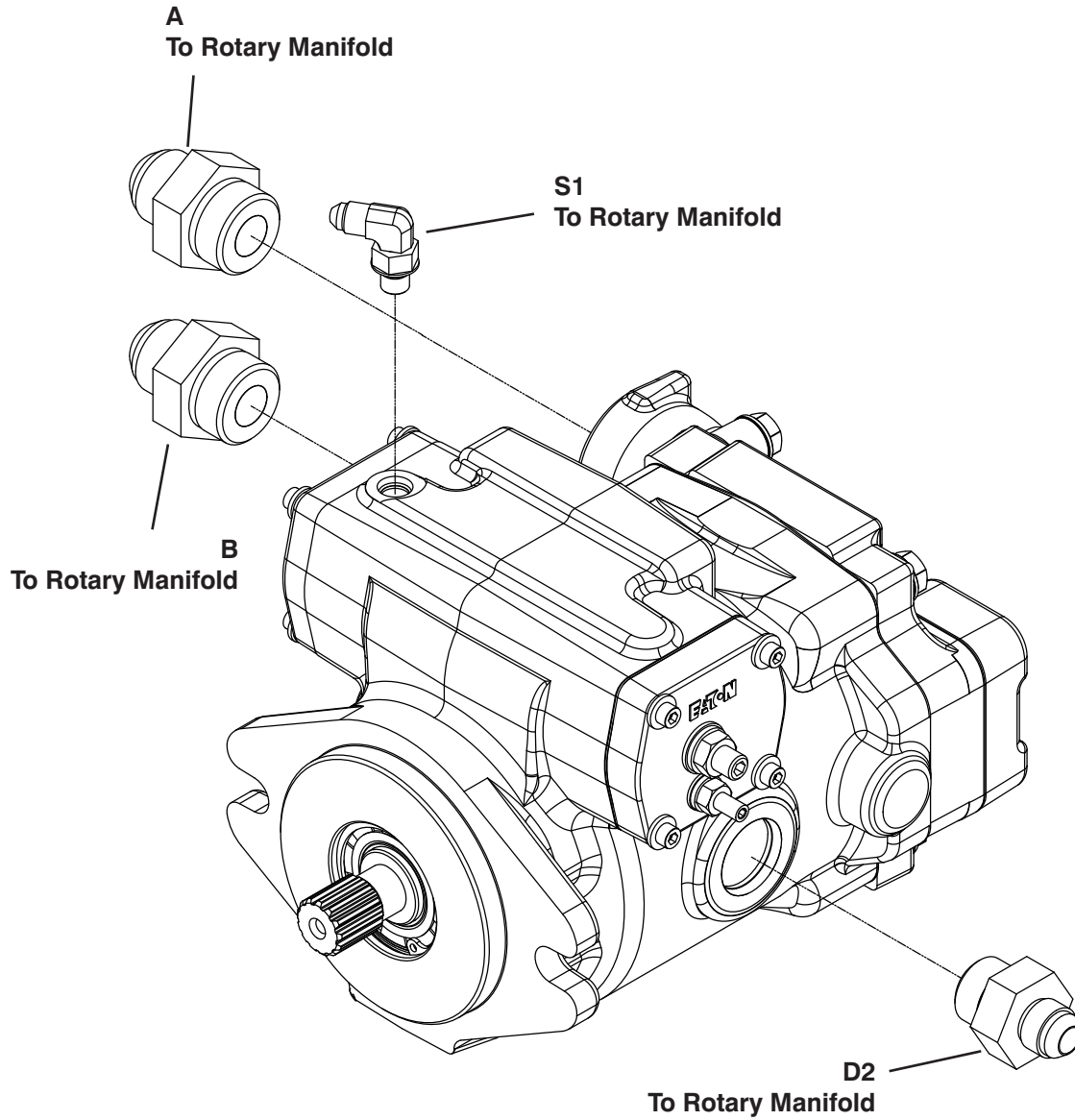
3.8 System Pump Port Identification



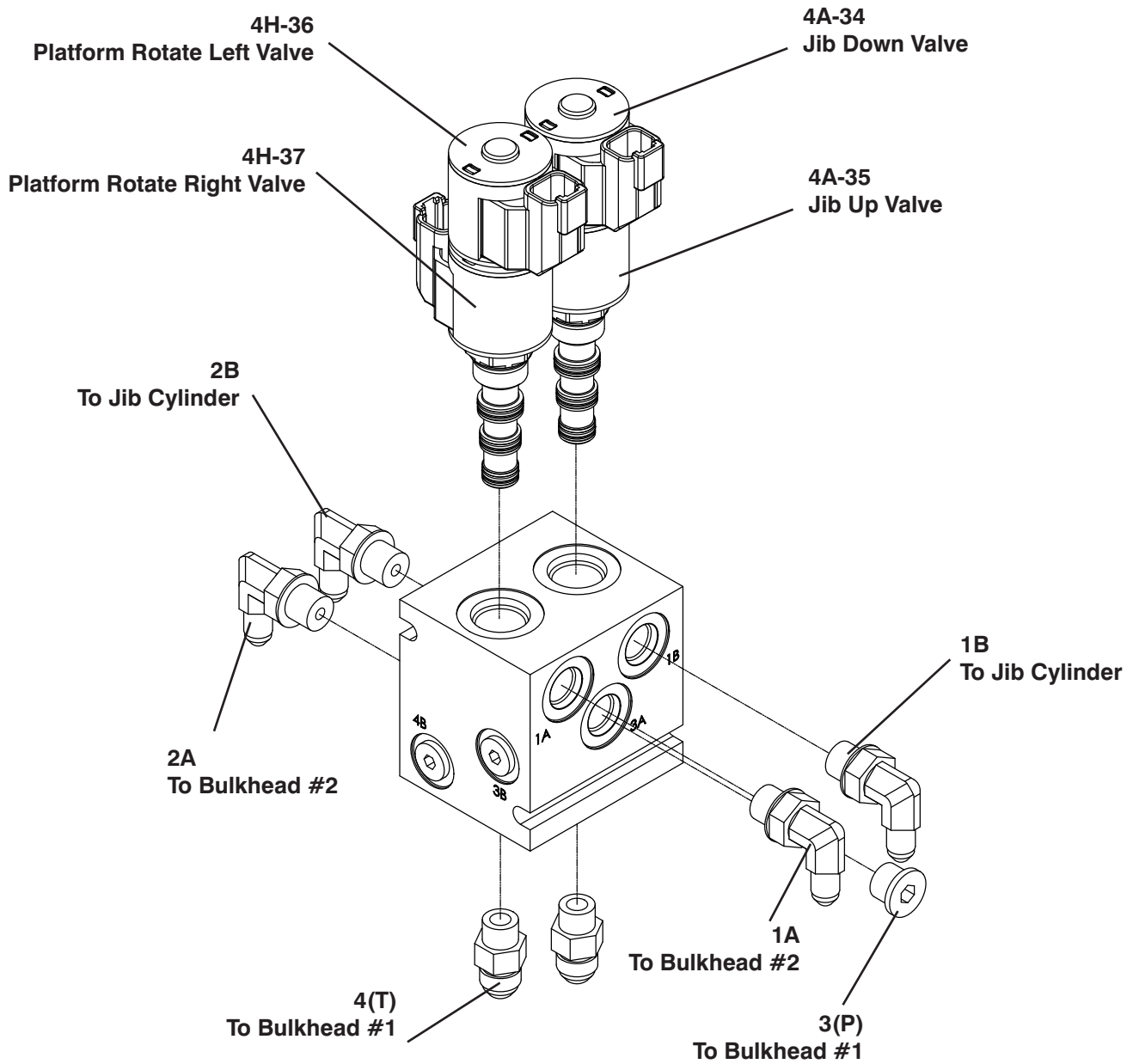
3.9 Drive Pump Port Identification



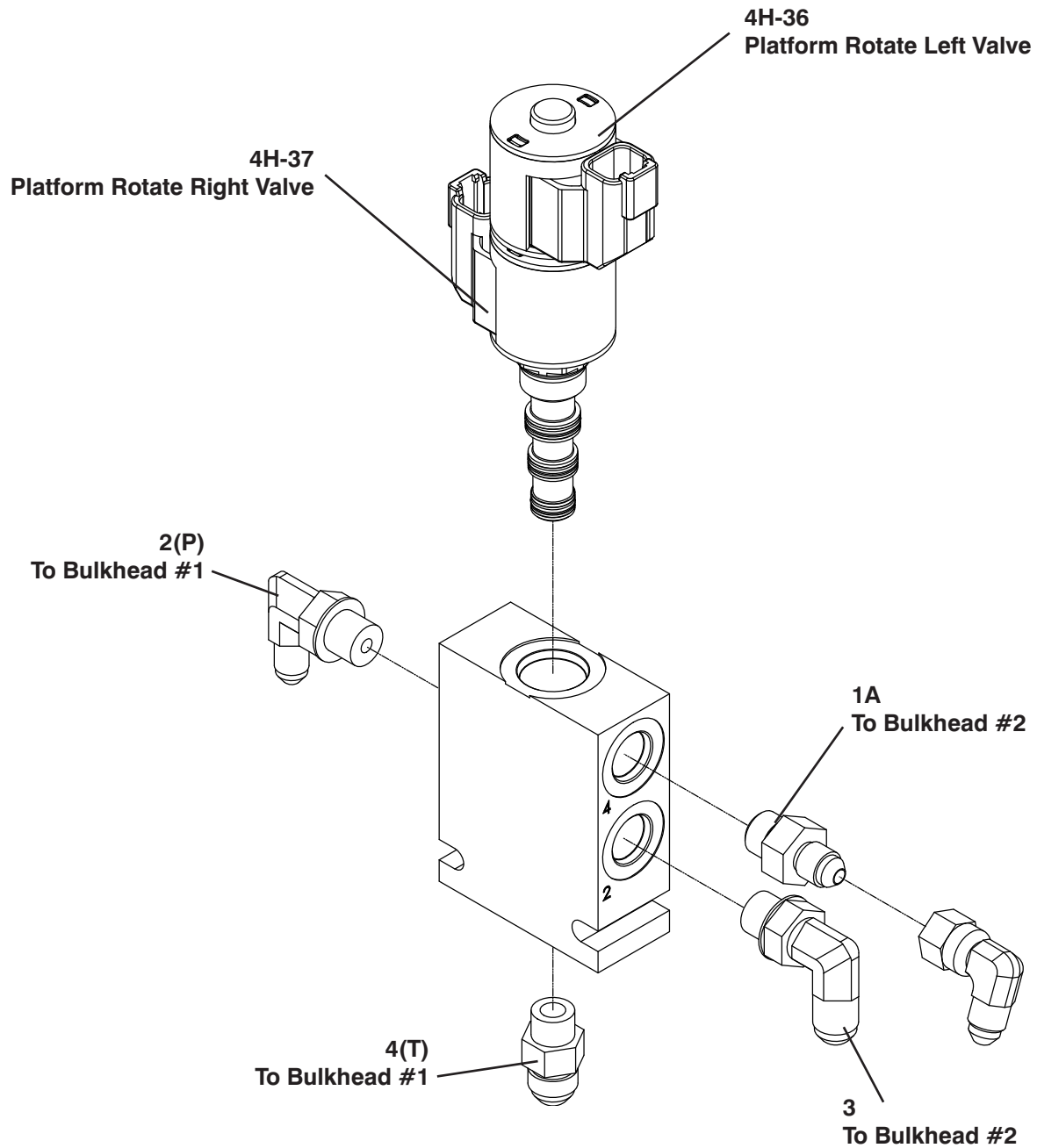
3.10 Drive Motor Port Identification



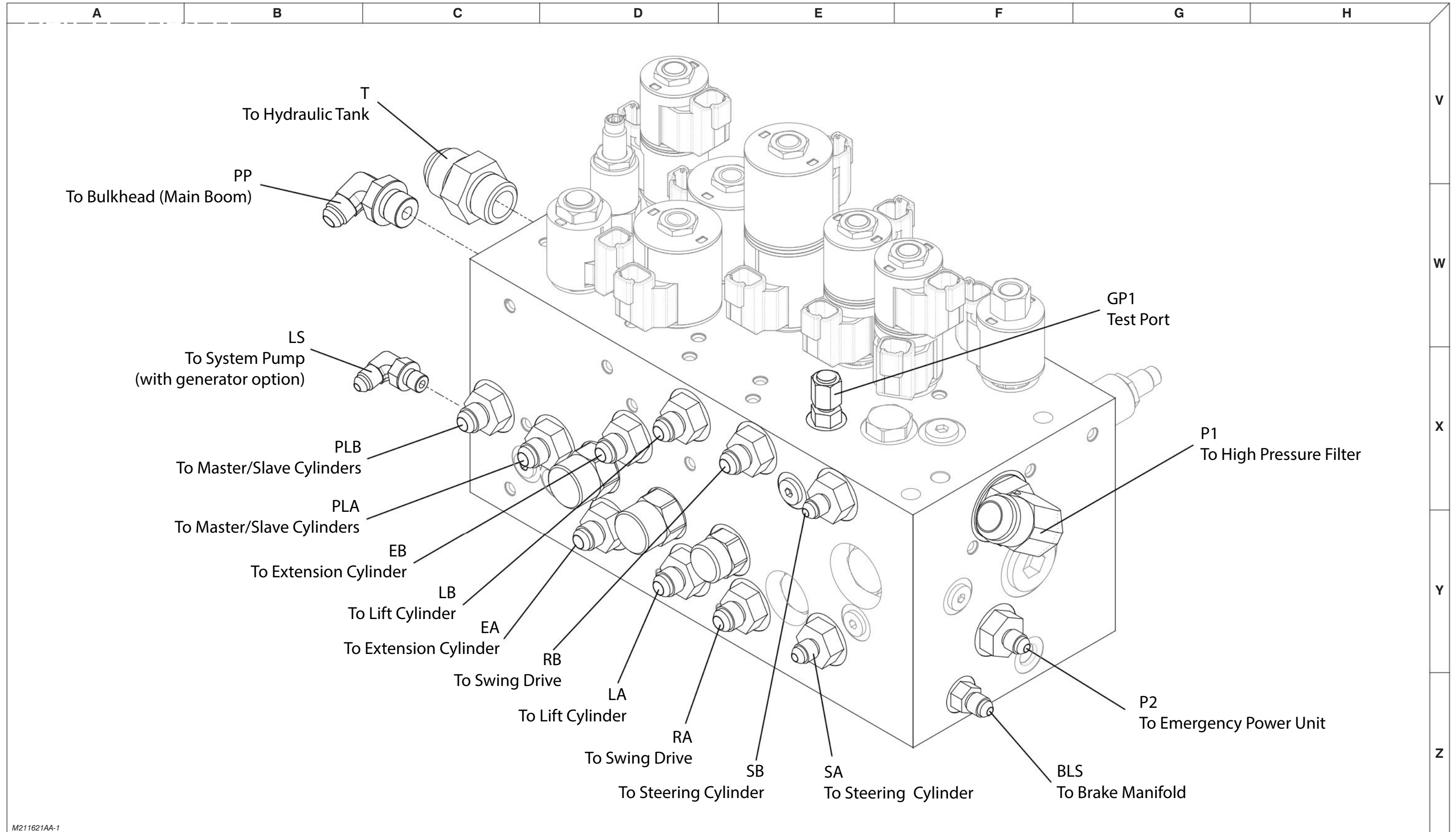
3.11 Jib Valve Port Identification - SJ45 T+



3.12 No Jib Valve Port Identifications - SJ40 T+

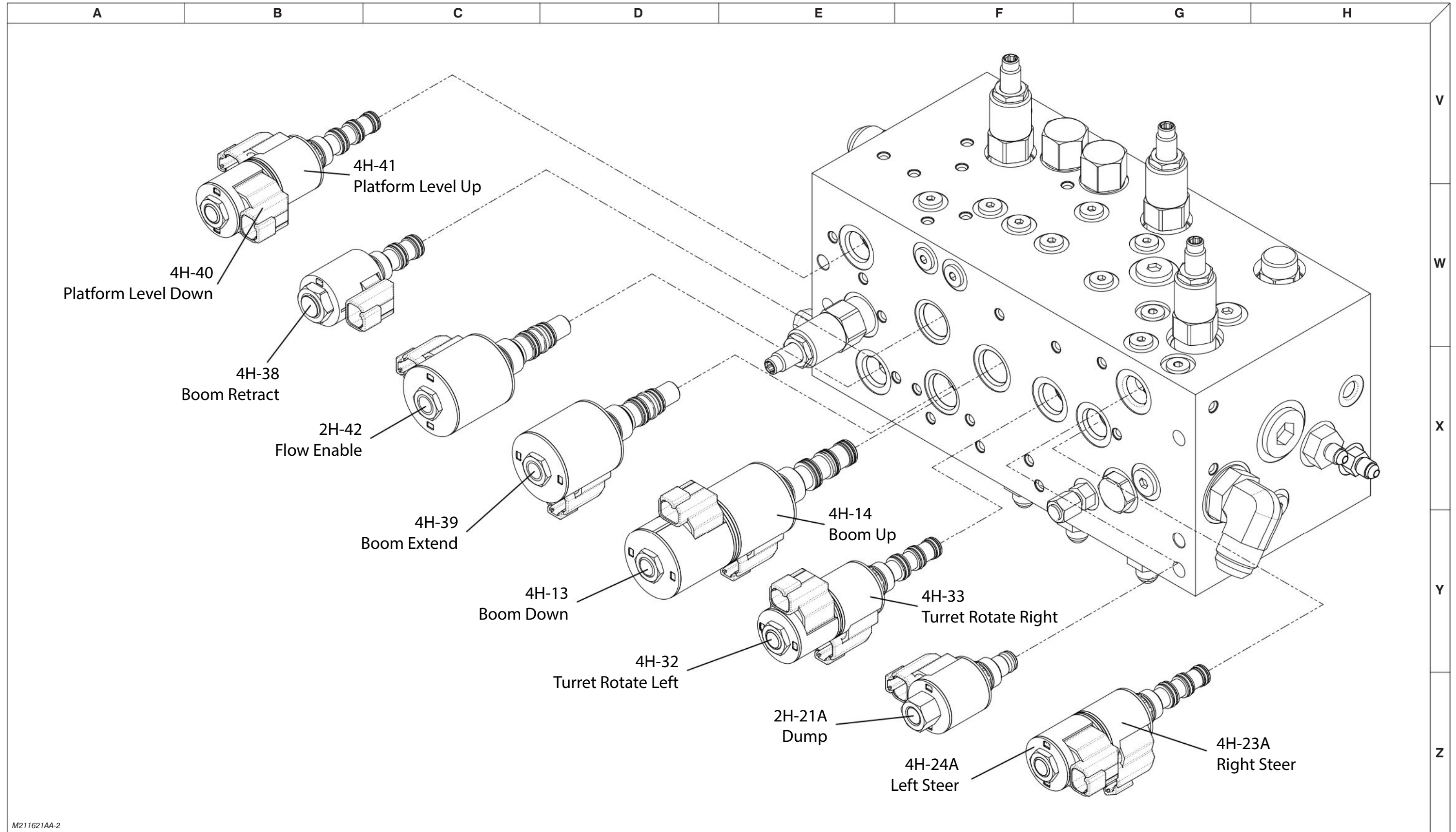


3.13 Main Manifold Port Identification



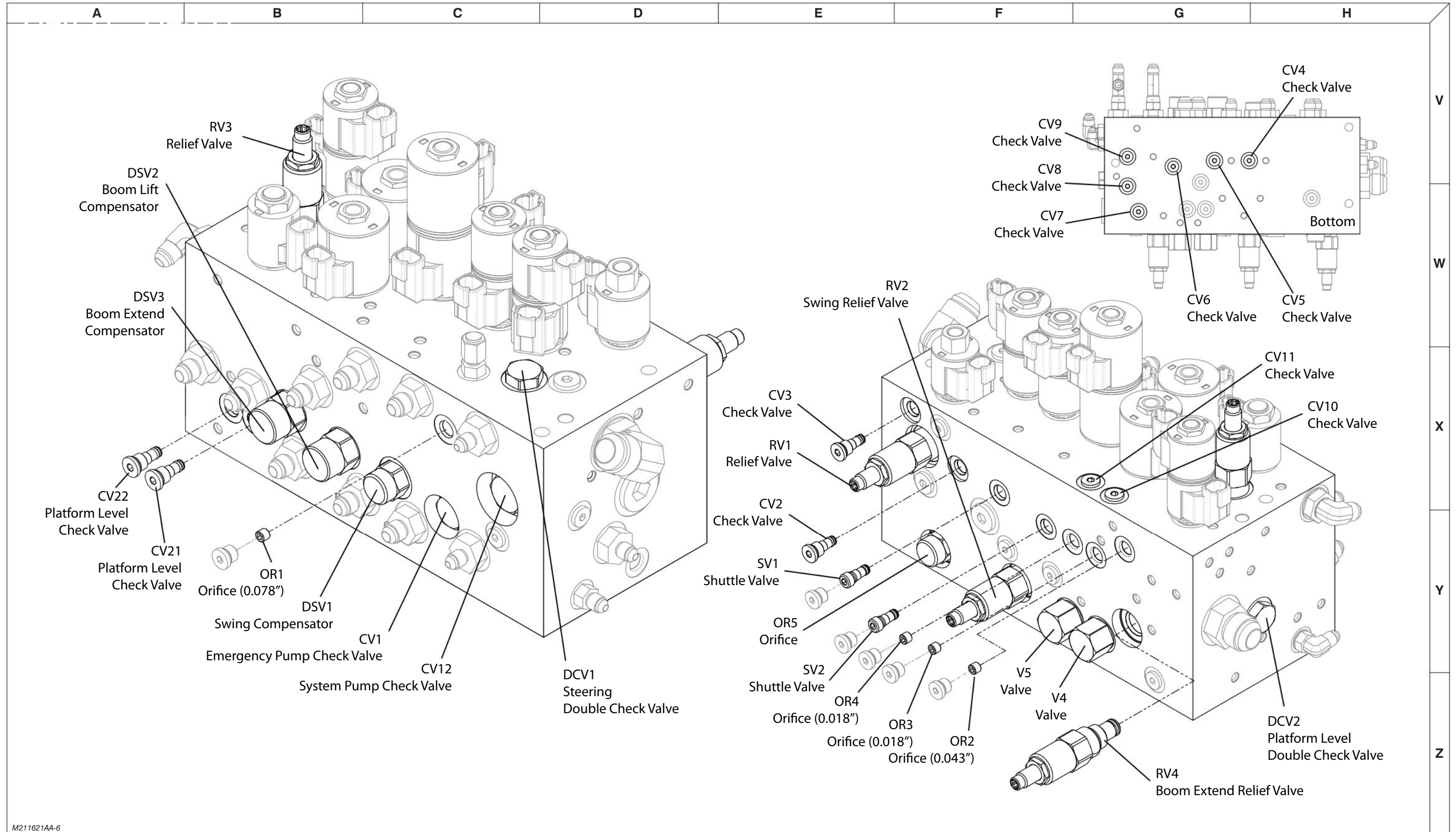
M211621AA-1

3.14 Main Manifold Electrical Component Identification



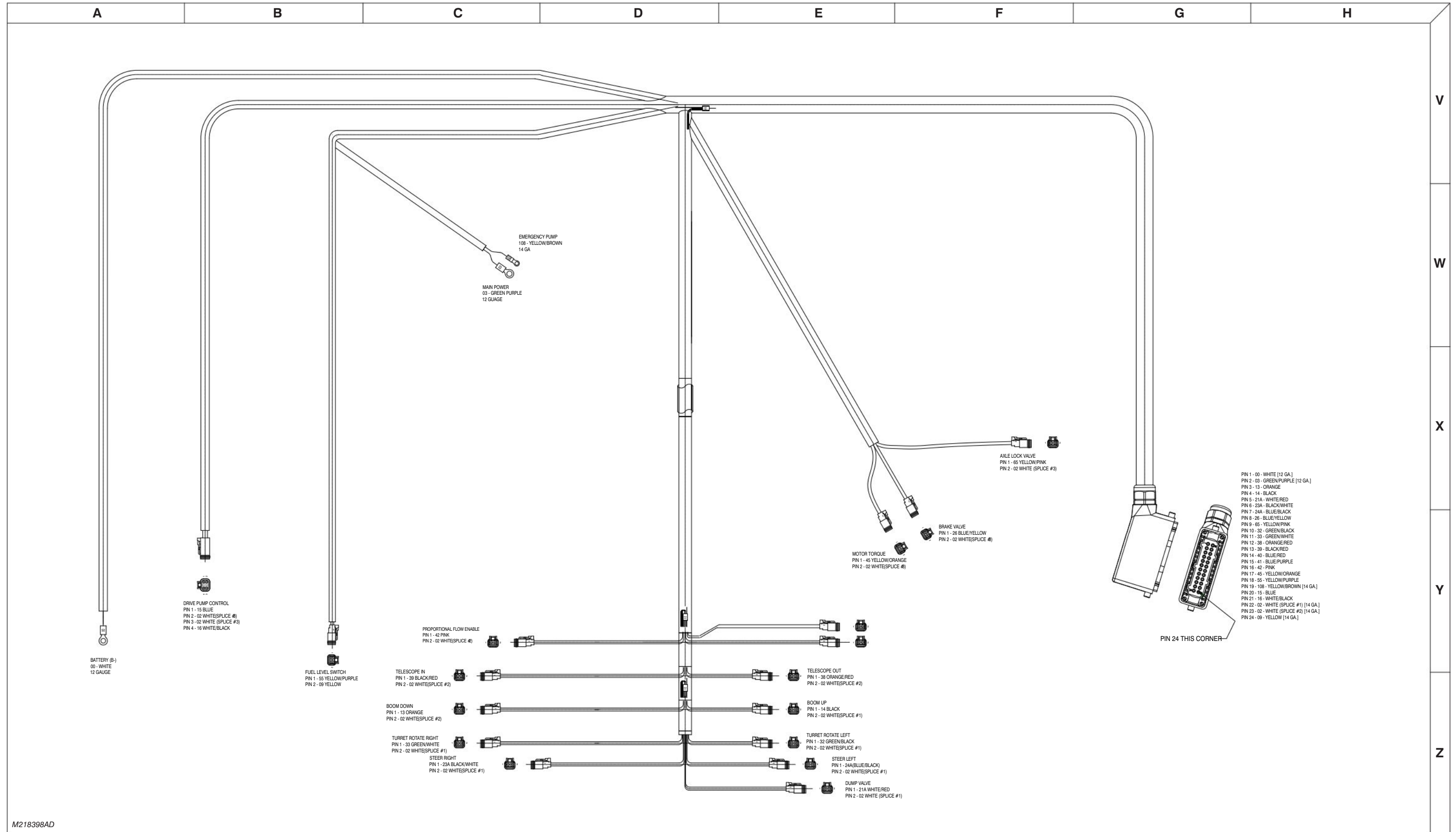
M211621AA-2

3.15 Main Manifold Hydraulic Component Identification



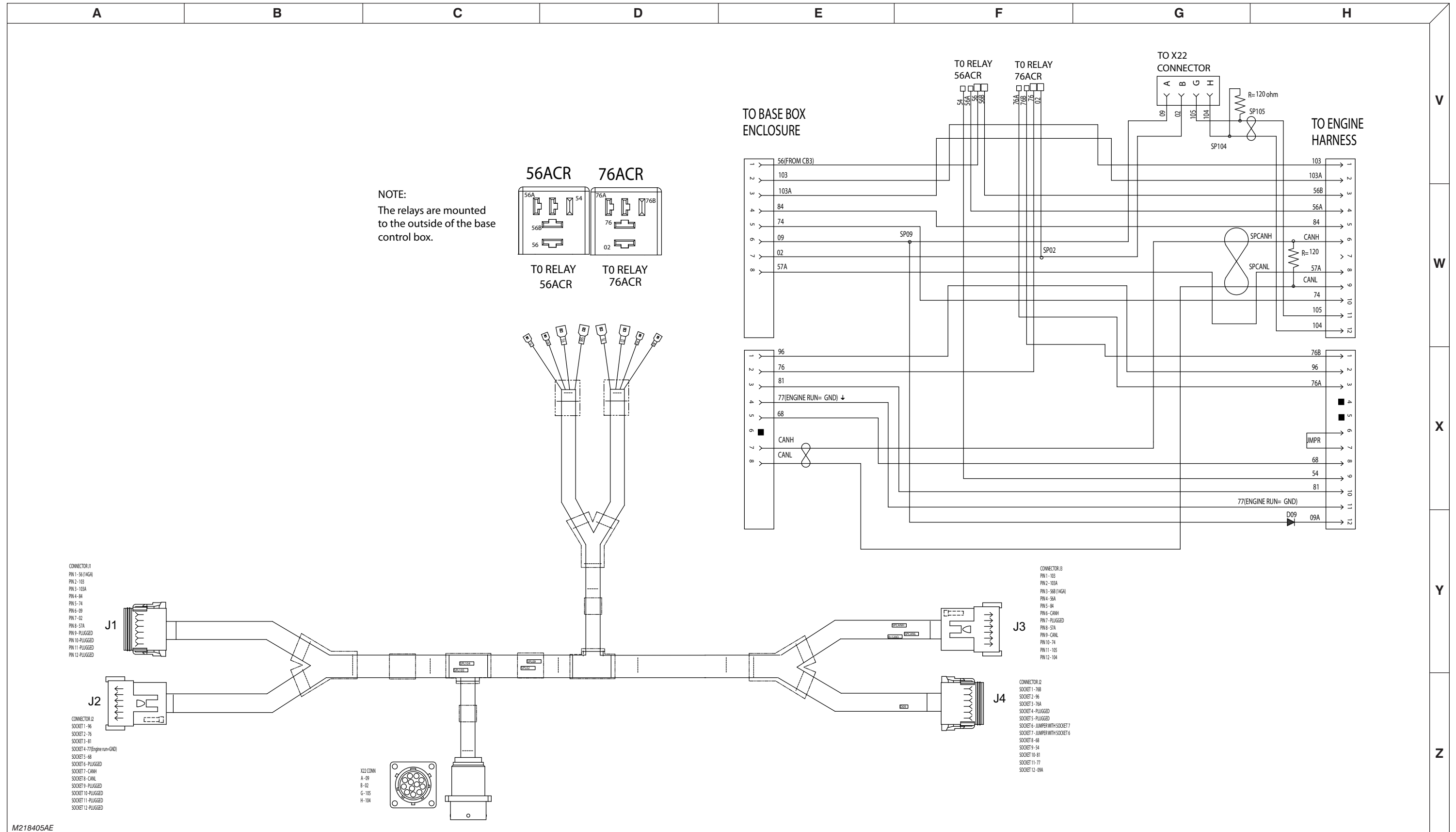
M211621AA-6

3.16 Main Harness Wiring Diagram



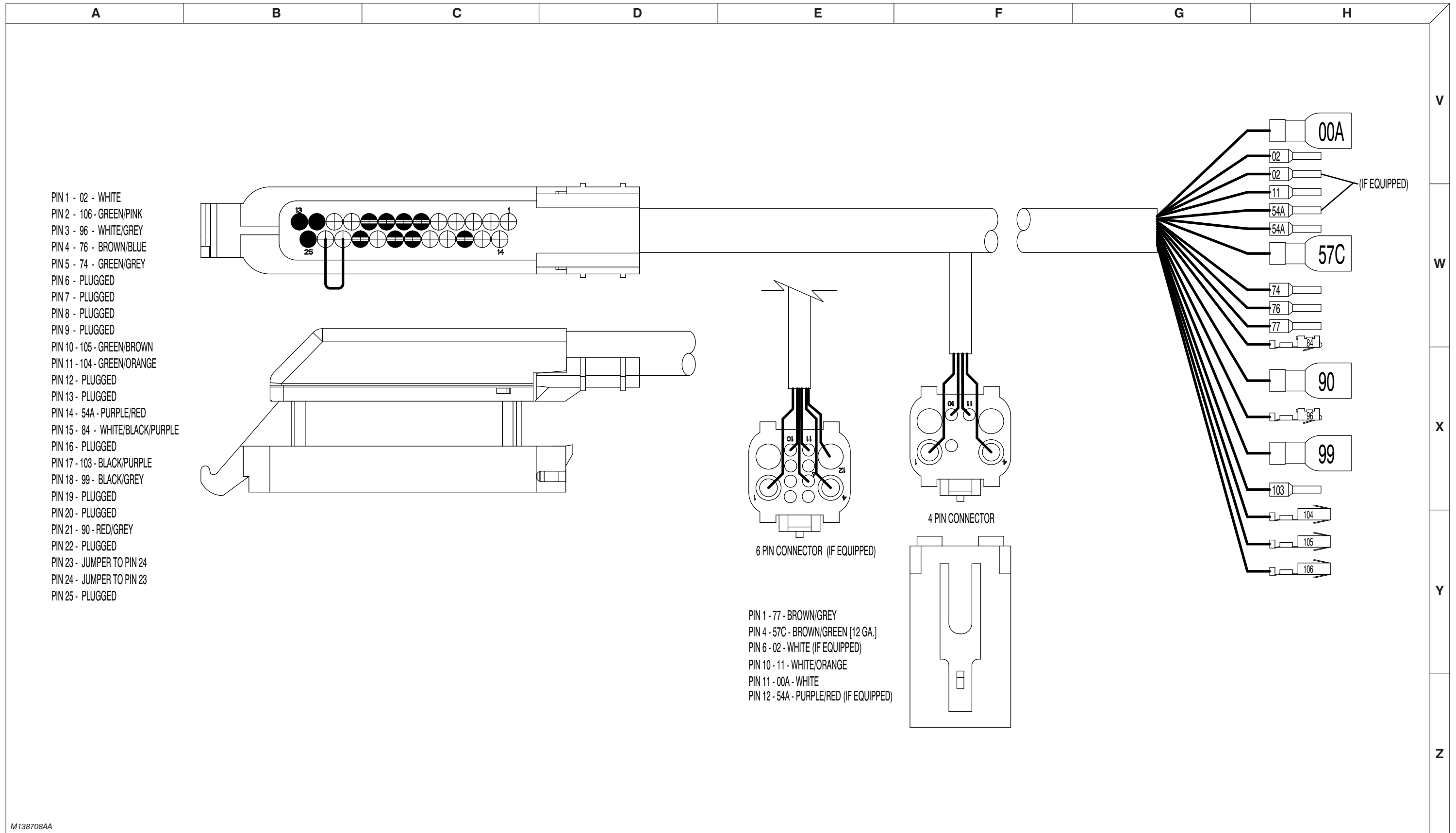
M218398AD

3.17 Interface Harness - Deutz D2.9L & D2.2



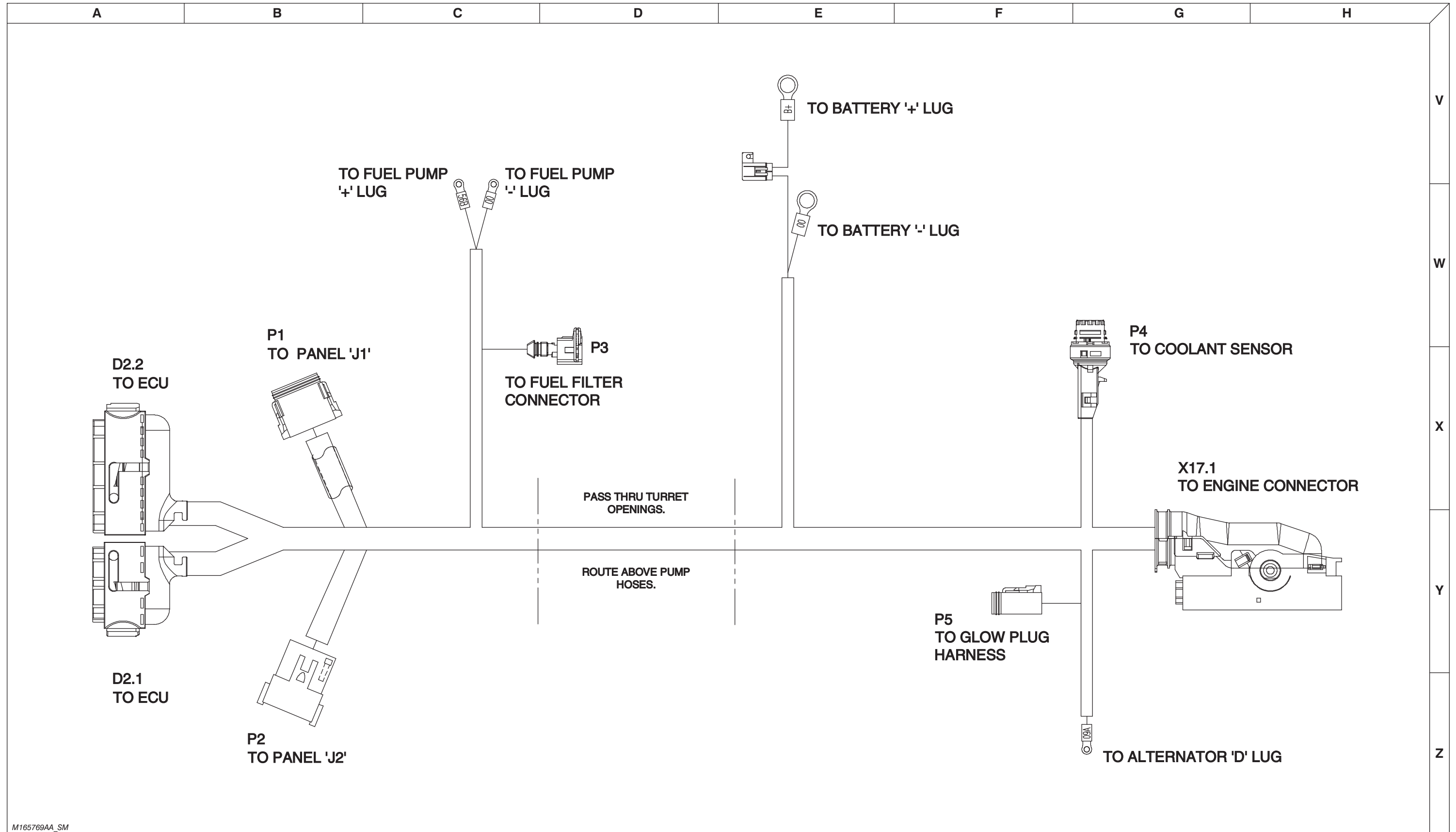
M218405AE

3.18 ECU Engine Wiring Diagram - Deutz D2011



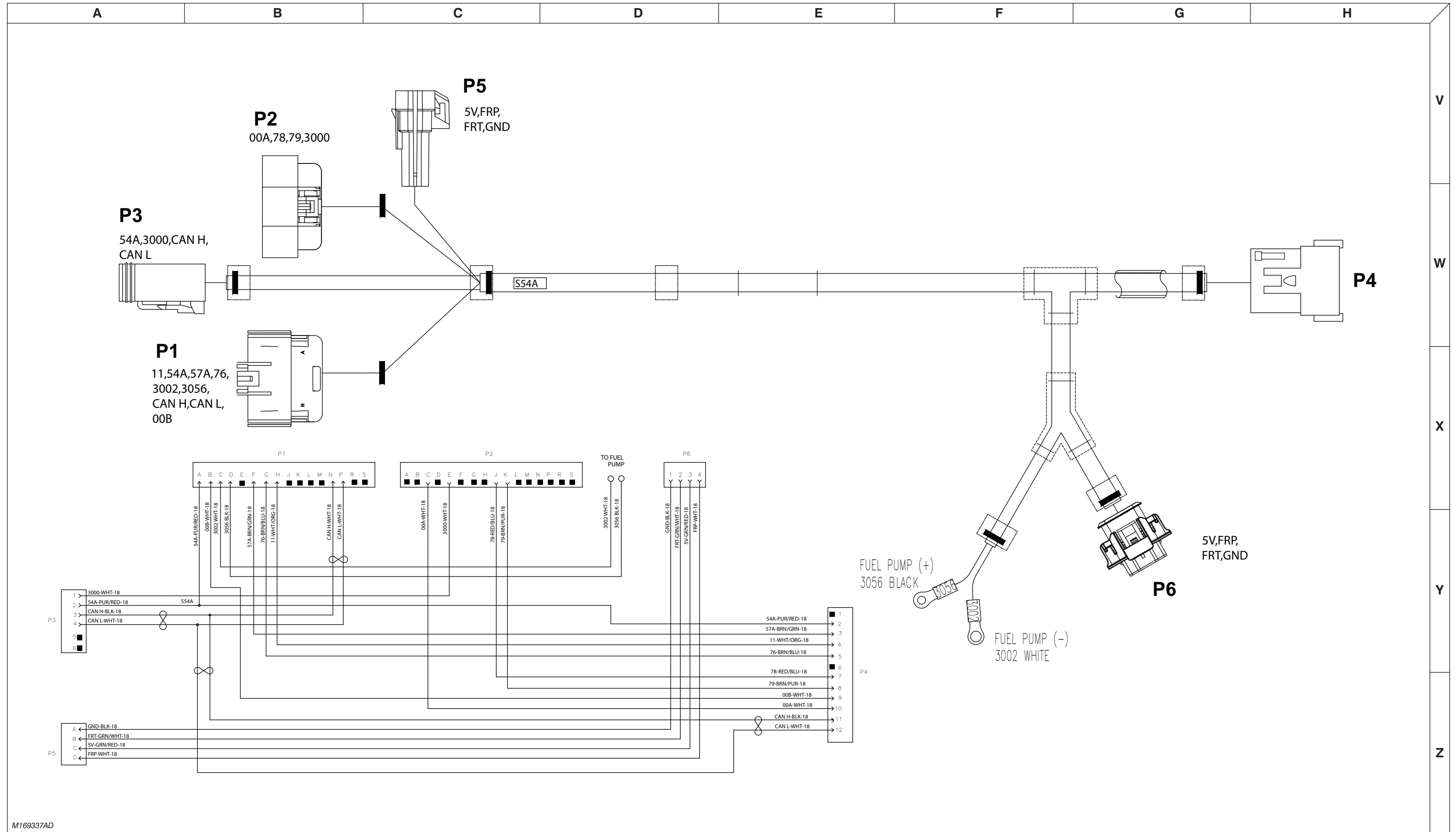
M138708AA

3.19 Engine Interface Harness - Deutz D2.9L



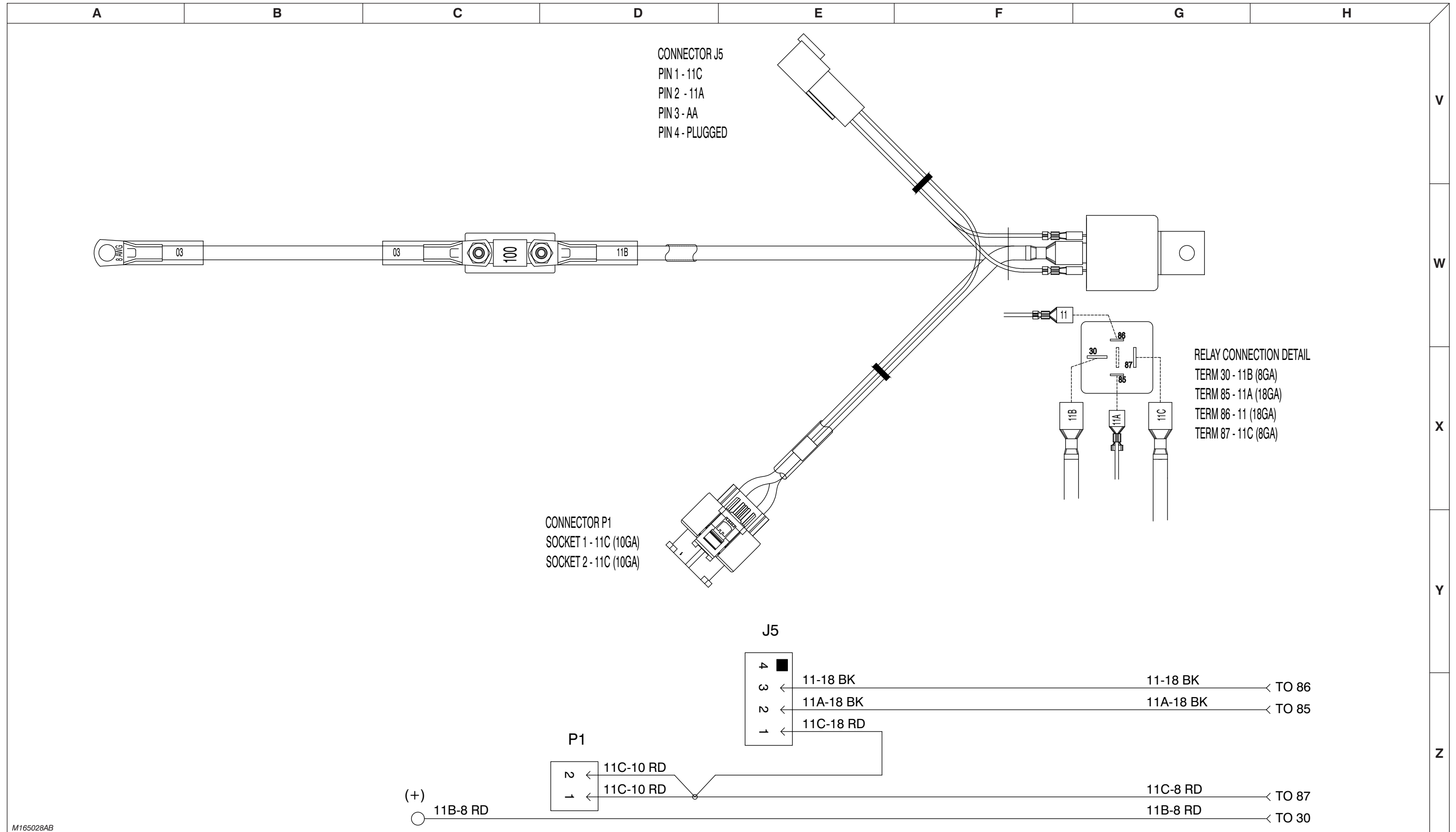
M165769AA_SM

3.20 Engine Interface Harness - Kubota WG2503



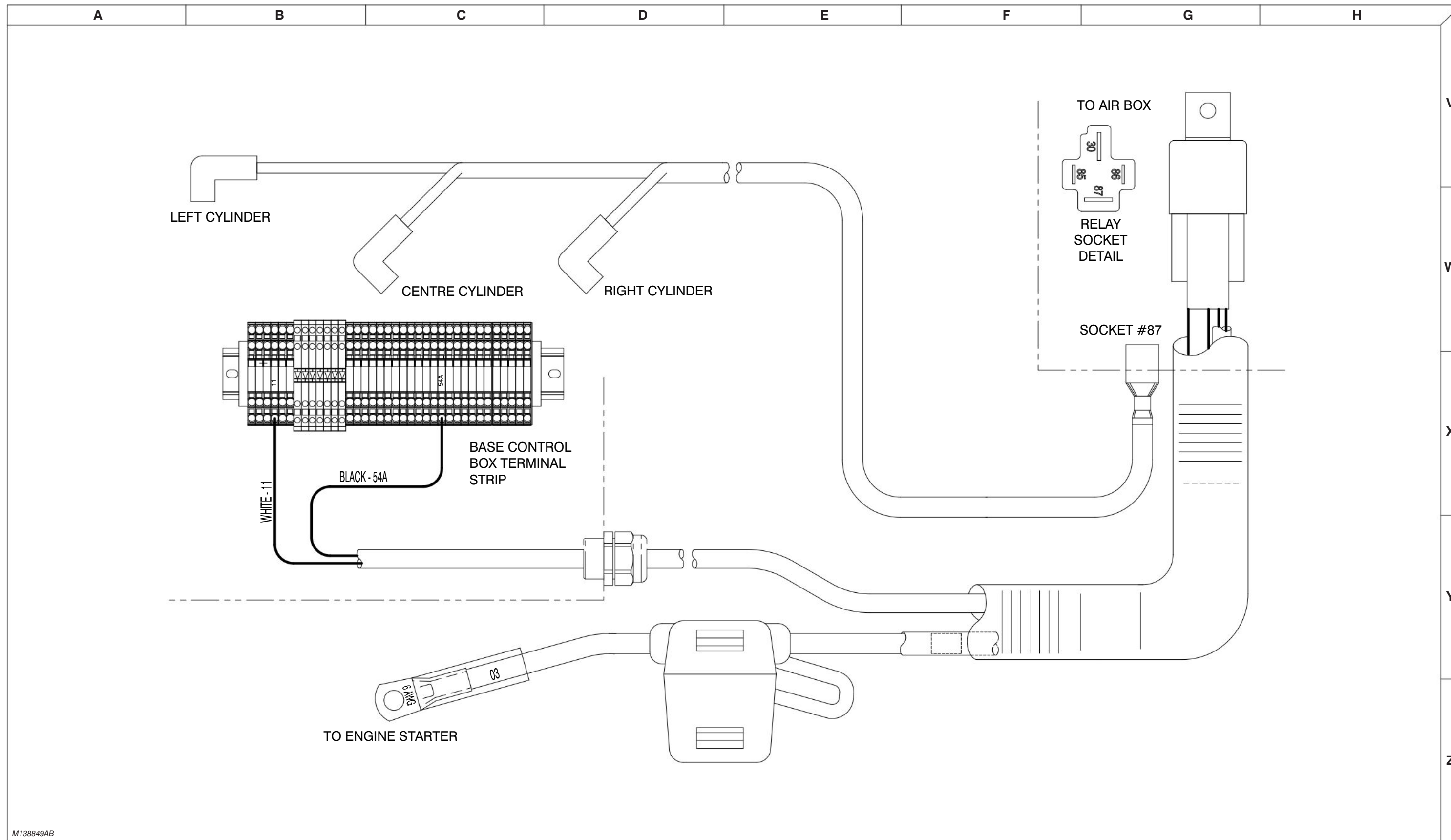
M169337AD

3.21 Glow Plug Harness - Deutz D2.9L



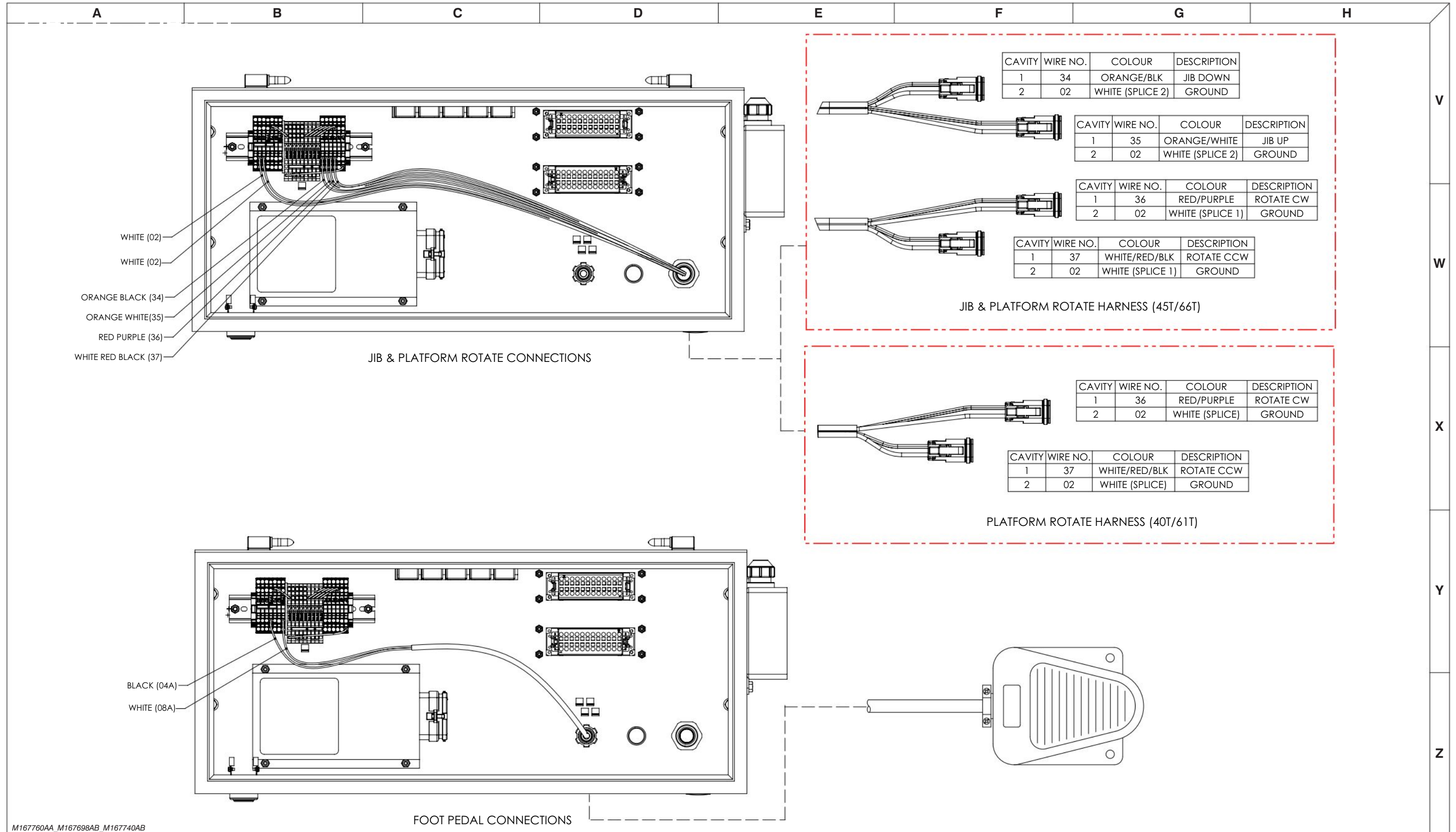
M165028AB

3.22 Glow Plug Harness - Deutz D2011



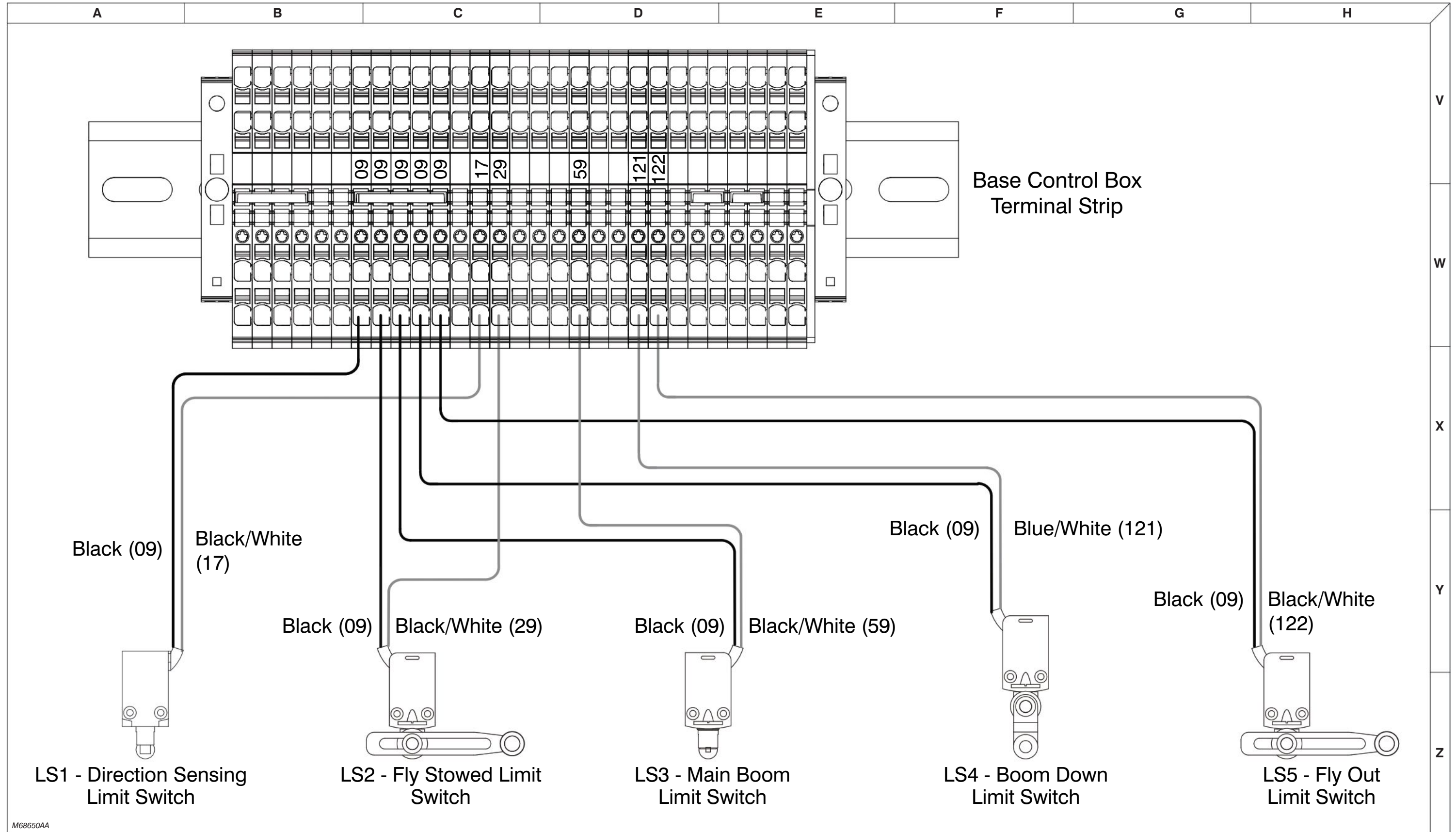
M138849AB

3.23 Platform Harnesses



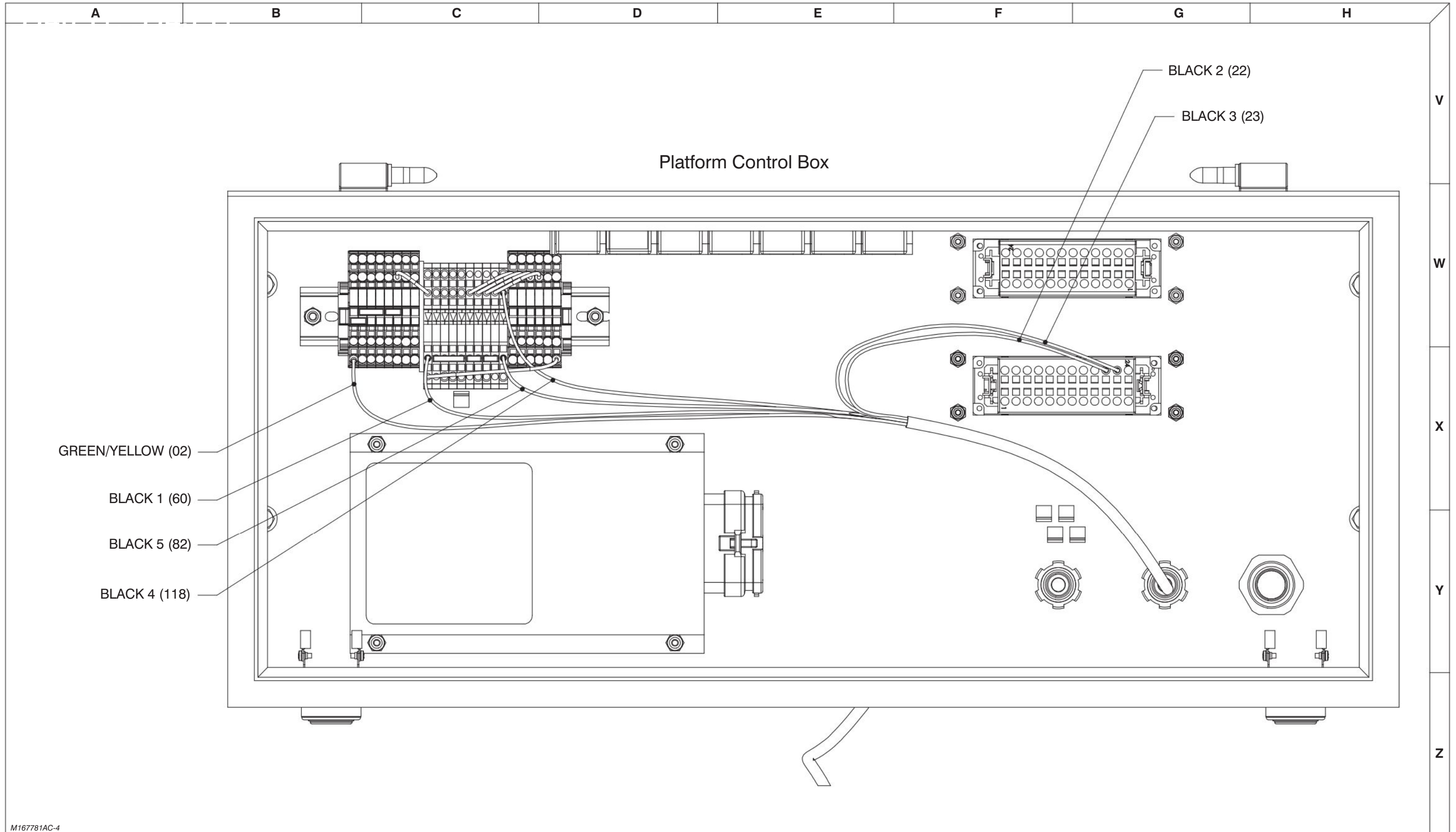
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3.24 Limit Switch Connections



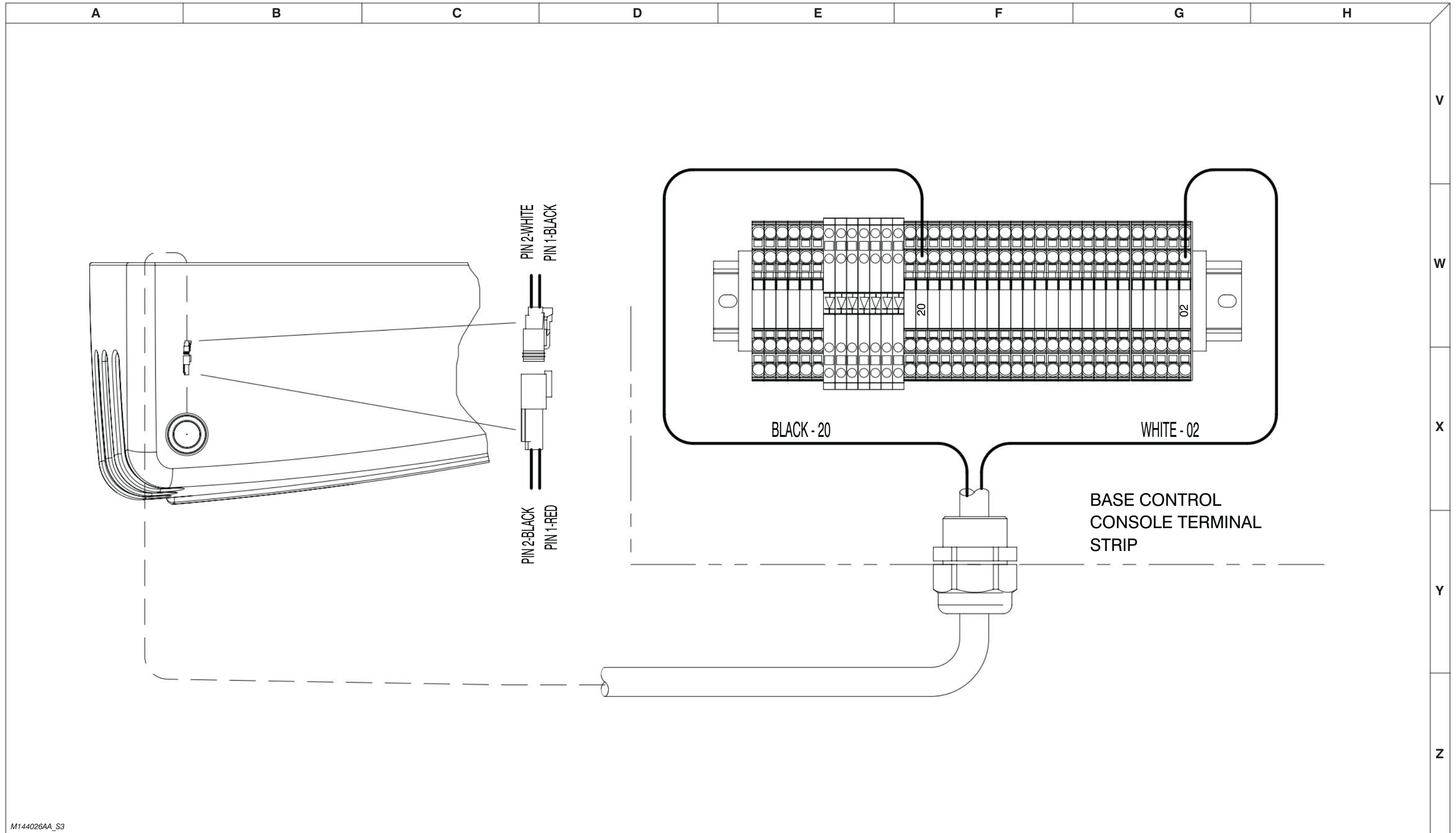
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3.25 Load Sensing Cable Connection



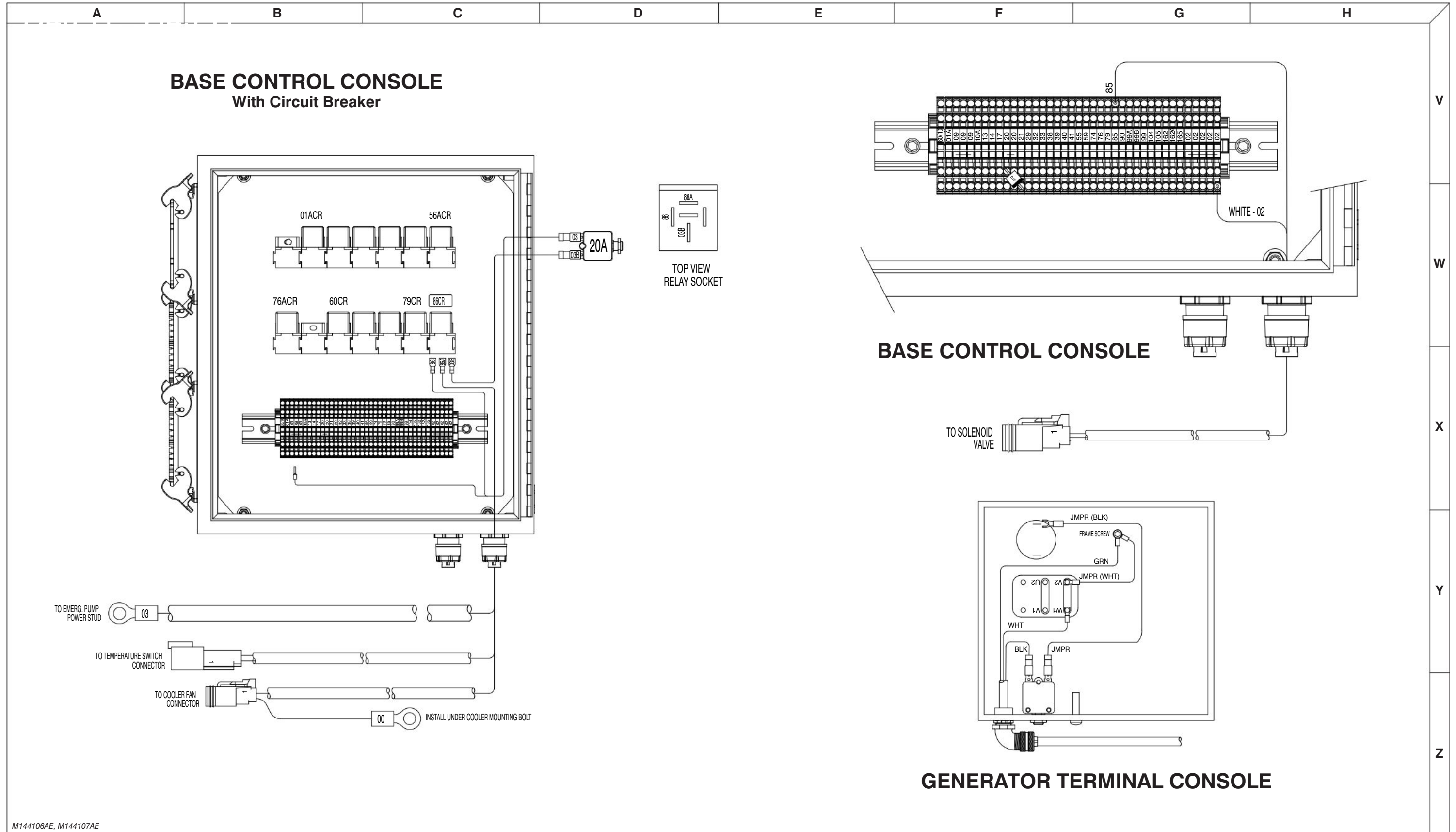
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3.26 Flashing Light Connection



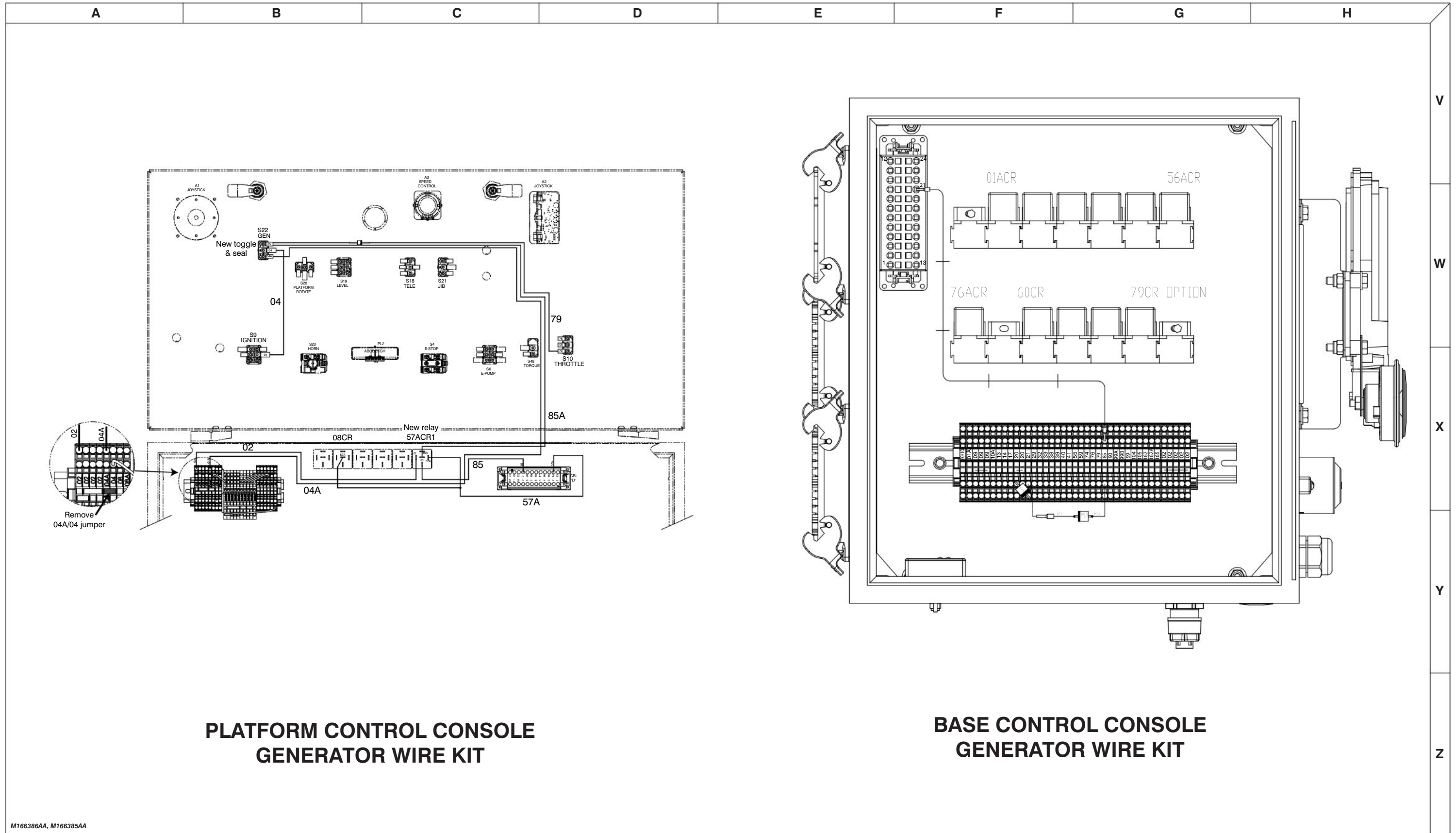
M144026AA_S3

3.27 Oil Cooler Harness Connections



M144106AE, M144107AE

3.28 Generator Wire Kit Connections

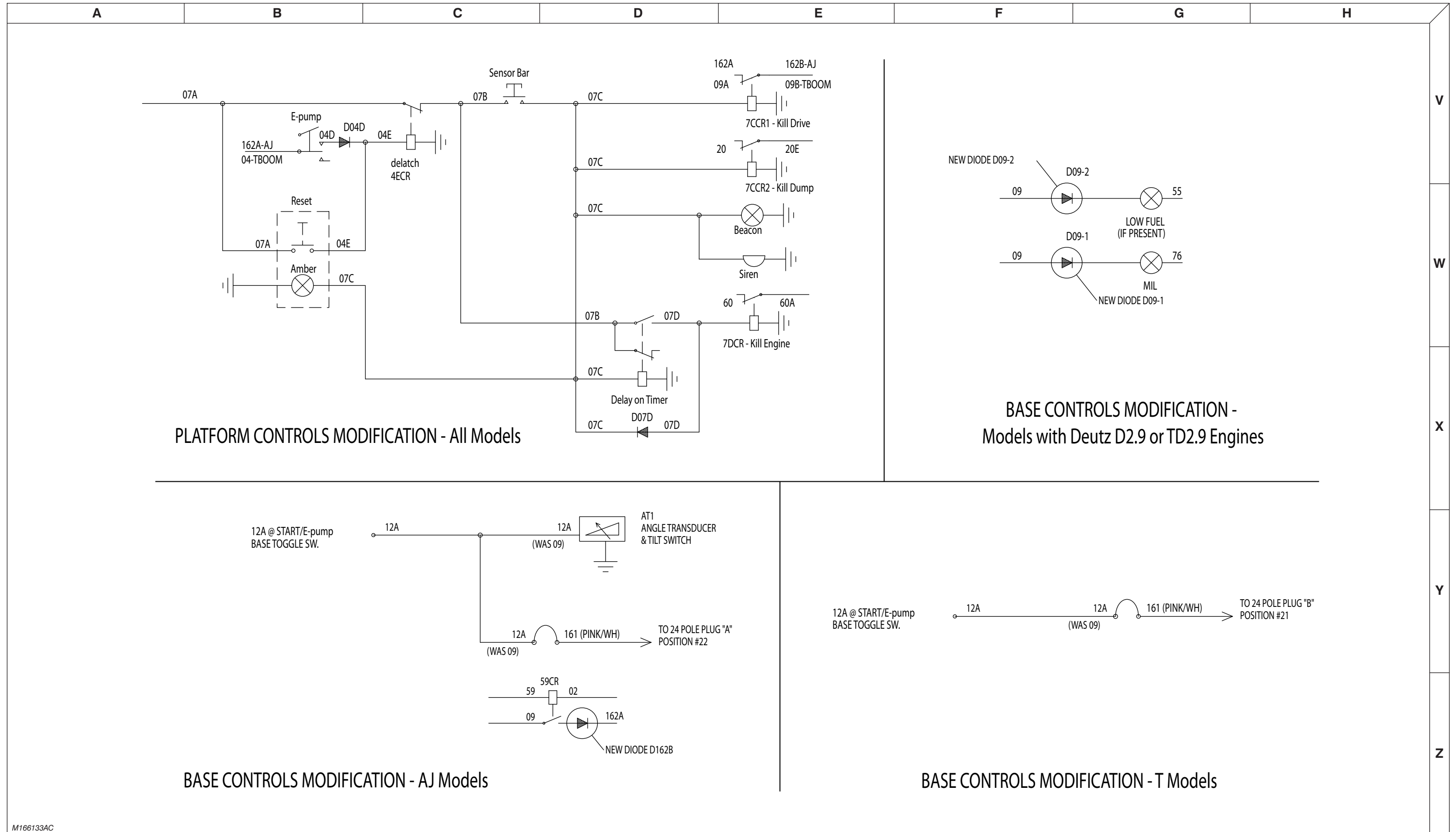


**PLATFORM CONTROL CONSOLE
GENERATOR WIRE KIT**

**BASE CONTROL CONSOLE
GENERATOR WIRE KIT**

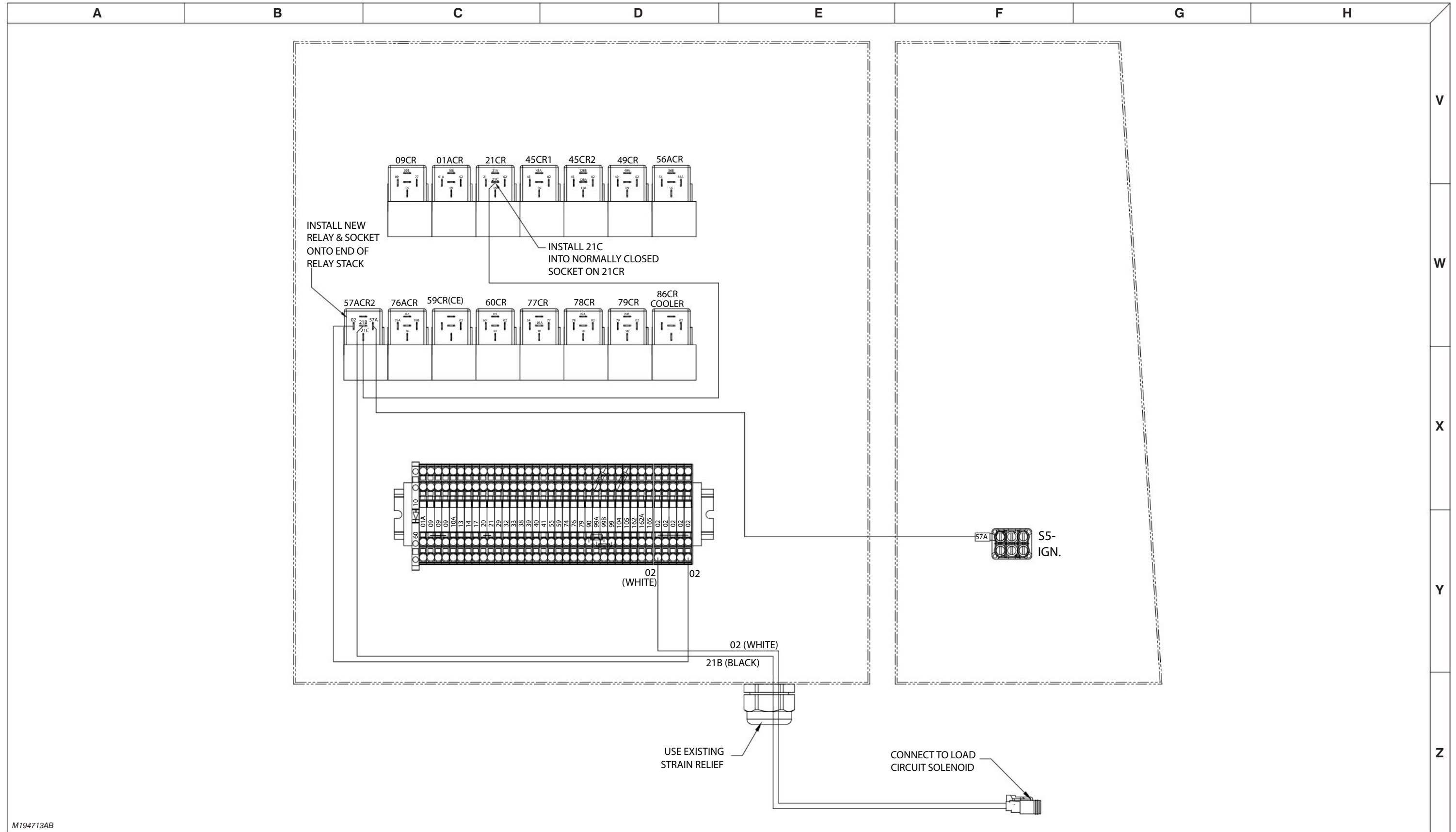
M166386AA, M166385AA

3.29 SGE Wiring Diagram



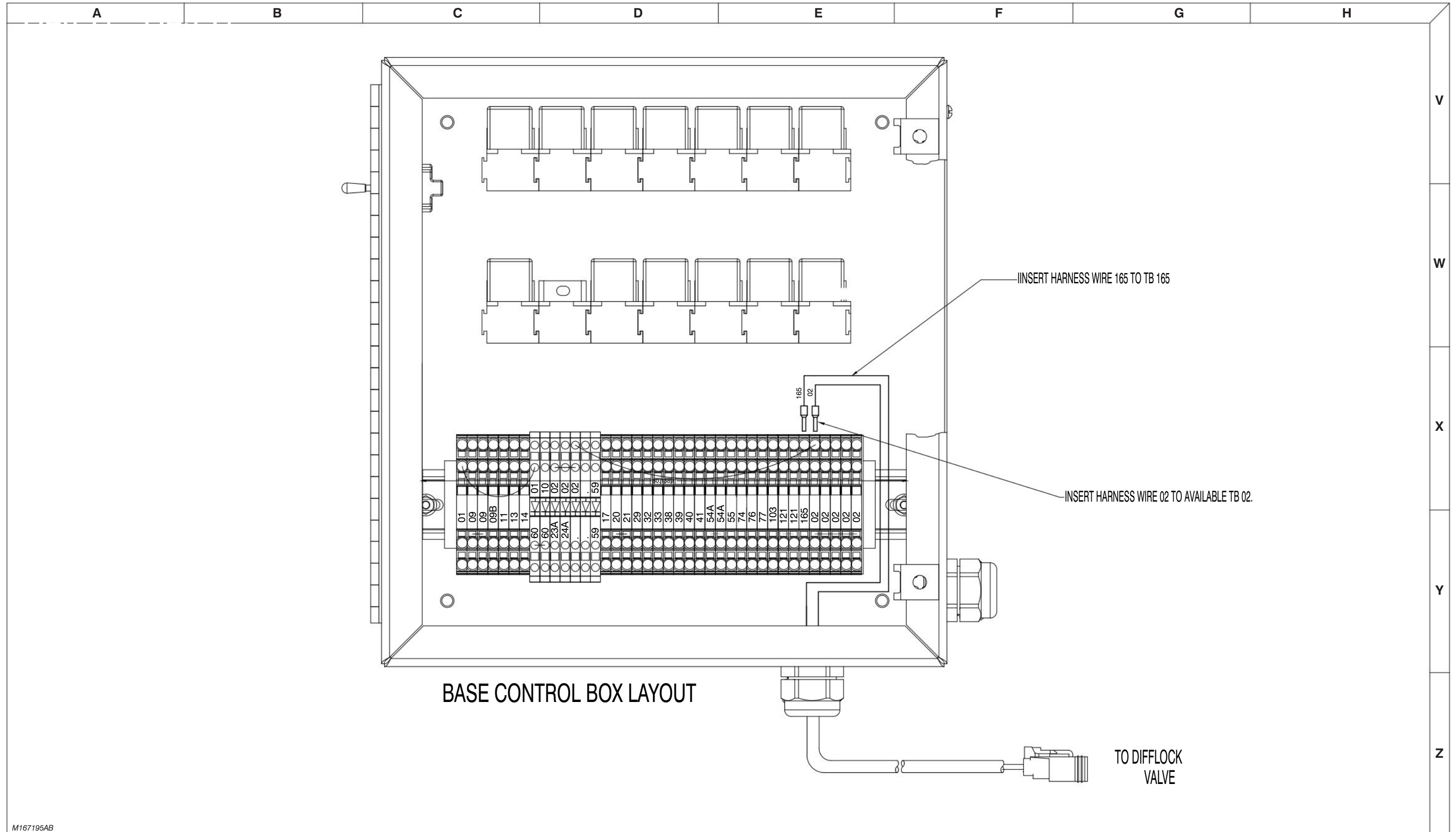
M166133AC

3.30 Load Circuit Wiring



M194713AB

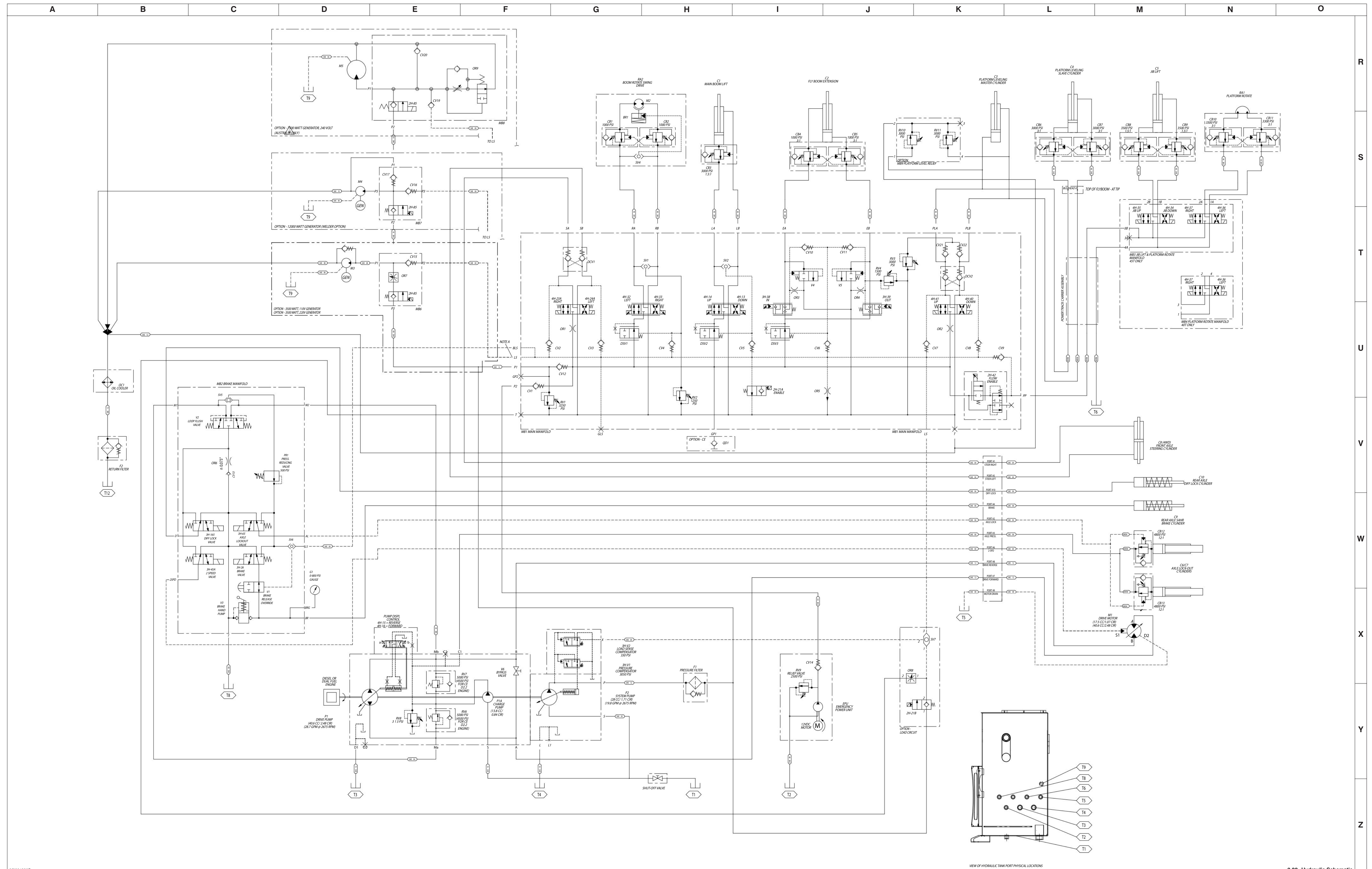
3.31 Differential Lock Harness



M167195AB

A	B	C	D	E	F	G	H	
								V
								W
								X
								Y
								Z

3.32 Hydraulic Schematic

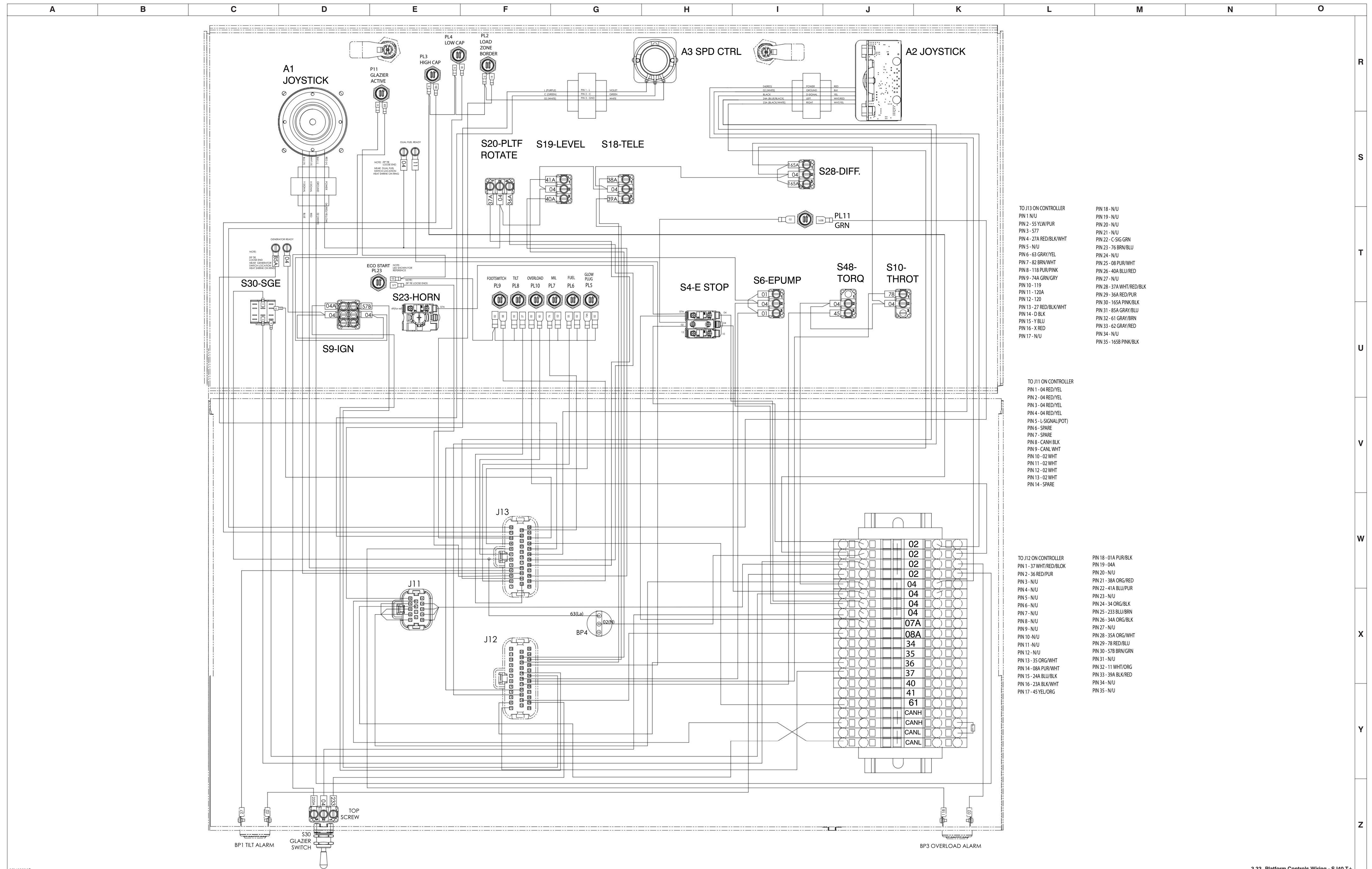


M230135AB

VIEW OF HYDRAULIC TANK PORT PHYSICAL LOCATIONS

3.32 Hydraulic Schematic

3.33 Platform Controls Wiring - SJ40 T+



TO J13 ON CONTROLLER

PIN 1 - N/U	PIN 18 - N/U
PIN 2 - 55 YLW/PUR	PIN 19 - N/U
PIN 3 - 577	PIN 20 - N/U
PIN 4 - 27A RED/BLK/WHT	PIN 21 - N/U
PIN 5 - N/U	PIN 22 - C-SIG GRN
PIN 6 - 63 GRAY/YEL	PIN 23 - 76 BRN/BLU
PIN 7 - 82 BRN/WHT	PIN 24 - N/U
PIN 8 - 118 PUR/PINK	PIN 25 - 08 PUR/WHT
PIN 9 - 74A GRN/GRY	PIN 26 - 40A BLU/RED
PIN 10 - 119	PIN 27 - N/U
PIN 11 - 120A	PIN 28 - 37A WHT/RED/BLK
PIN 12 - 120	PIN 29 - 36A RED/PUR
PIN 13 - 27 RED/BLK/WHT	PIN 30 - 165A PINK/BLK
PIN 14 - D BLK	PIN 31 - 85A GRAY/BLU
PIN 15 - Y BLU	PIN 32 - 61 GRAY/BRN
PIN 16 - X RED	PIN 33 - 62 GRAY/RED
PIN 17 - N/U	PIN 34 - N/U
	PIN 35 - 165B PINK/BLK

TO J11 ON CONTROLLER

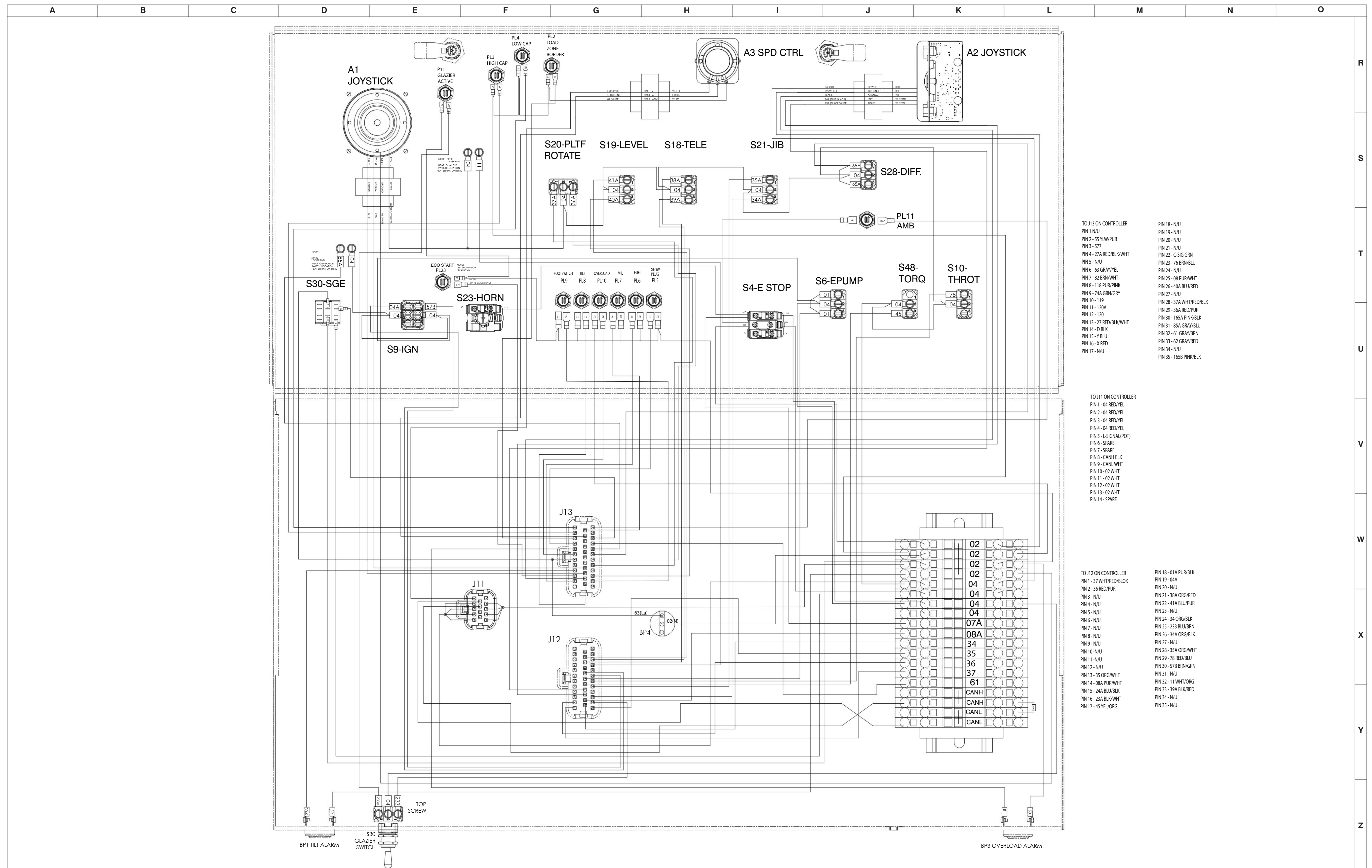
PIN 1 - 04 RED/YEL	
PIN 2 - 04 RED/YEL	
PIN 3 - 04 RED/YEL	
PIN 4 - 04 RED/YEL	
PIN 5 - L-SIGNAL(POT)	
PIN 6 - SPARE	
PIN 7 - SPARE	
PIN 8 - CANH BLK	
PIN 9 - CANL WHT	
PIN 10 - 02 WHT	
PIN 11 - 02 WHT	
PIN 12 - 02 WHT	
PIN 13 - 02 WHT	
PIN 14 - SPARE	

TO J12 ON CONTROLLER

PIN 1 - 37 WHT/RED/BLK	PIN 18 - 01A PUR/BLK
PIN 2 - 36 RED/PUR	PIN 19 - 04A
PIN 3 - N/U	PIN 20 - N/U
PIN 4 - N/U	PIN 21 - 38A ORG/RED
PIN 5 - N/U	PIN 22 - 41A BLU/PUR
PIN 6 - N/U	PIN 23 - N/U
PIN 7 - N/U	PIN 24 - 34 ORG/BLK
PIN 8 - N/U	PIN 25 - 233 BLU/BRN
PIN 9 - N/U	PIN 26 - 34A ORG/BLK
PIN 10 - N/U	PIN 27 - N/U
PIN 11 - N/U	PIN 28 - 35A ORG/WHT
PIN 12 - N/U	PIN 29 - 78 RED/BLU
PIN 13 - 35 ORG/WHT	PIN 30 - 57B BRN/GRN
PIN 14 - 08A PUR/WHT	PIN 31 - N/U
PIN 15 - 24A BLU/BLK	PIN 32 - 11 WHT/ORG
PIN 16 - 23A BLK/WHT	PIN 33 - 39A BLK/RED
PIN 17 - 45 YEL/ORG	PIN 34 - N/U
	PIN 35 - N/U

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3.34 Platform Controls Wiring - SJ45 T+



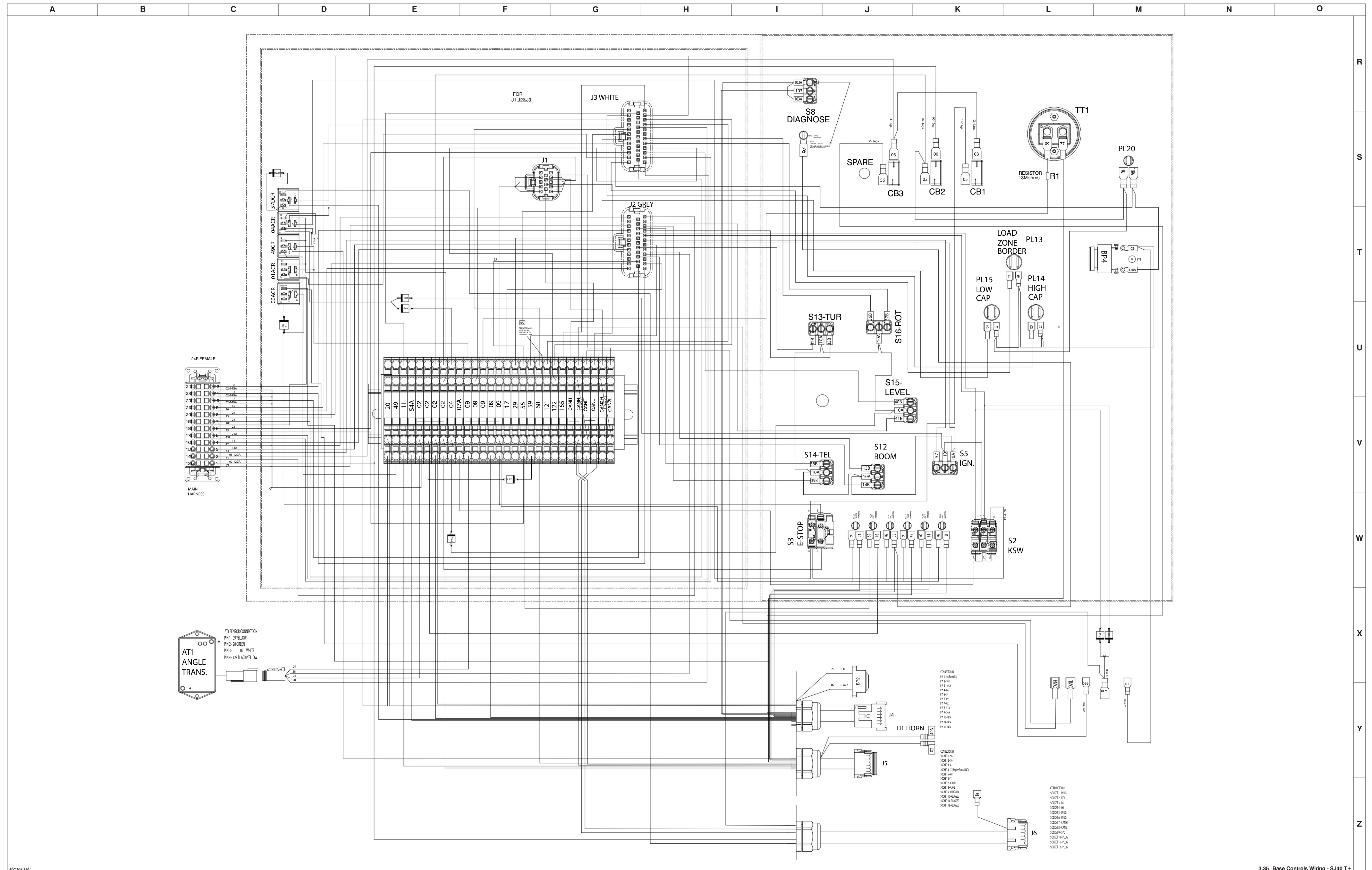
- TO J13 ON CONTROLLER
- PIN 1 - N/U
 - PIN 2 - 55 YLW/PUR
 - PIN 3 - 577
 - PIN 4 - 27A RED/BLK/WHT
 - PIN 5 - N/U
 - PIN 6 - 63 GRAY/YEL
 - PIN 7 - 82 BRN/WHT
 - PIN 8 - 118 PUR/PNK
 - PIN 9 - 74A GRN/GRY
 - PIN 10 - 119
 - PIN 11 - 120A
 - PIN 12 - 120
 - PIN 13 - 27 RED/BLK/WHT
 - PIN 14 - D BLK
 - PIN 15 - Y-BLU
 - PIN 16 - X-RED
 - PIN 17 - N/U
 - PIN 18 - N/U
 - PIN 19 - N/U
 - PIN 20 - N/U
 - PIN 21 - N/U
 - PIN 22 - C-SIG GRN
 - PIN 23 - 76 BRN/BLU
 - PIN 24 - N/U
 - PIN 25 - 08 PUR/WHT
 - PIN 26 - 40A BLU/RED
 - PIN 27 - N/U
 - PIN 28 - 37A WHT/RED/BLK
 - PIN 29 - 36A RED/PUR
 - PIN 30 - 165A PINK/BLK
 - PIN 31 - 85A GRAY/BLU
 - PIN 32 - 61 GRAY/BRN
 - PIN 33 - 62 GRAY/RED
 - PIN 34 - N/U
 - PIN 35 - 165B PINK/BLK

- TO J11 ON CONTROLLER
- PIN 1 - 04 RED/YEL
 - PIN 2 - 04 RED/YEL
 - PIN 3 - 04 RED/YEL
 - PIN 4 - 04 RED/YEL
 - PIN 5 - L-SIGNAL(POT)
 - PIN 6 - SPARE
 - PIN 7 - SPARE
 - PIN 8 - CANH BLK
 - PIN 9 - CANL WHT
 - PIN 10 - 02 WHT
 - PIN 11 - 02 WHT
 - PIN 12 - 02 WHT
 - PIN 13 - 02 WHT
 - PIN 14 - SPARE

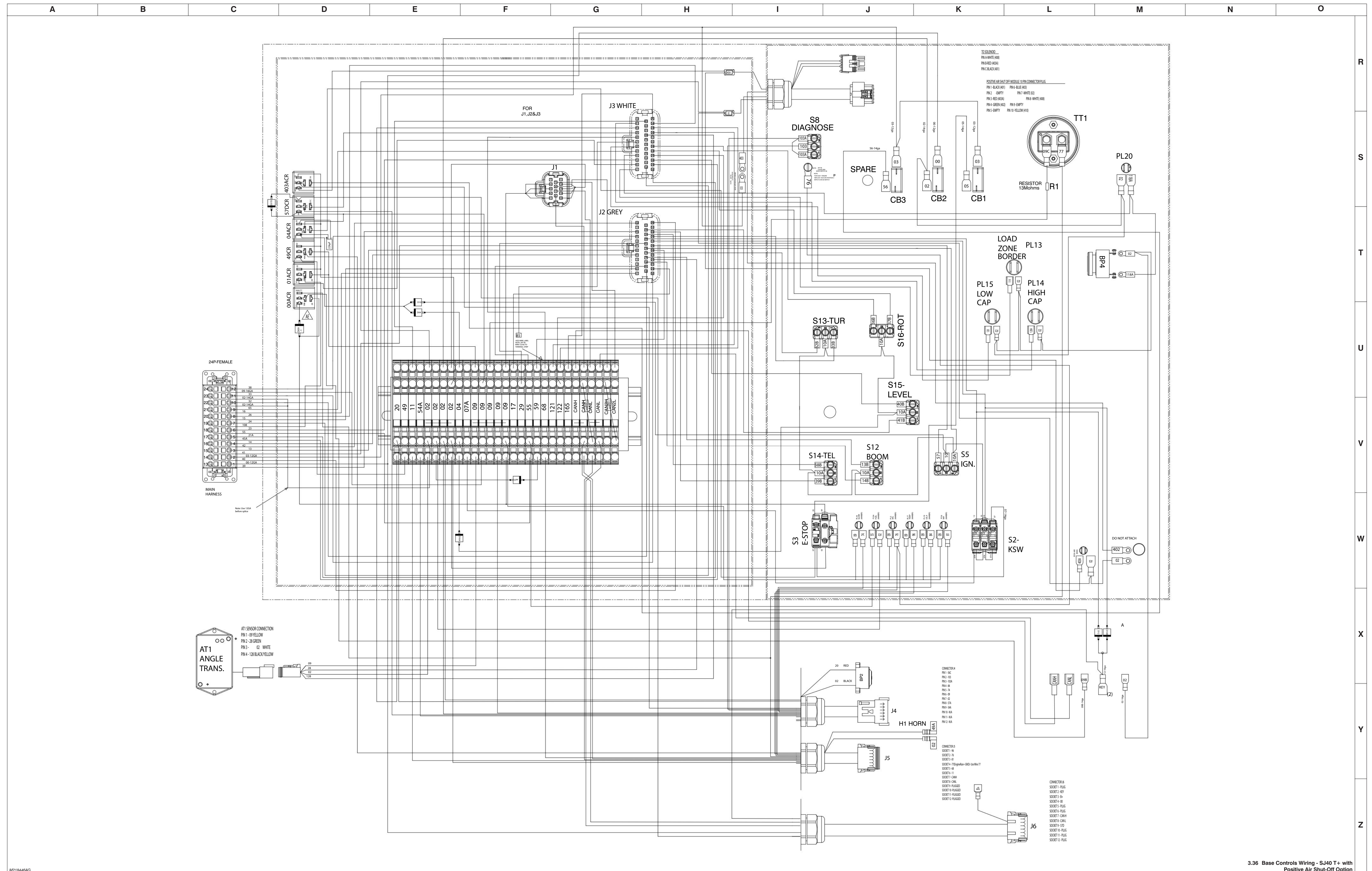
- TO J12 ON CONTROLLER
- PIN 1 - 37 WHT/RED/BLOK
 - PIN 2 - 36 RED/PUR
 - PIN 3 - N/U
 - PIN 4 - N/U
 - PIN 5 - N/U
 - PIN 6 - N/U
 - PIN 7 - N/U
 - PIN 8 - N/U
 - PIN 9 - N/U
 - PIN 10 - N/U
 - PIN 11 - N/U
 - PIN 12 - N/U
 - PIN 13 - 35 ORG/WHT
 - PIN 14 - 08A PUR/WHT
 - PIN 15 - 24A BLU/BLK
 - PIN 16 - 23A BLK/WHT
 - PIN 17 - 45 YEL/ORG
 - PIN 18 - 01A PUR/BLK
 - PIN 19 - 04A
 - PIN 20 - N/U
 - PIN 21 - 38A ORG/RED
 - PIN 22 - 41A BLU/PUR
 - PIN 23 - N/U
 - PIN 24 - 34 ORG/BLK
 - PIN 25 - 233 BLU/BRN
 - PIN 26 - 34A ORG/BLK
 - PIN 27 - N/U
 - PIN 28 - 35A ORG/WHT
 - PIN 29 - 78 RED/BLU
 - PIN 30 - 57B BRN/GRN
 - PIN 31 - N/U
 - PIN 32 - 11 WHT/ORG
 - PIN 33 - 39A BLK/RED
 - PIN 34 - N/U
 - PIN 35 - N/U

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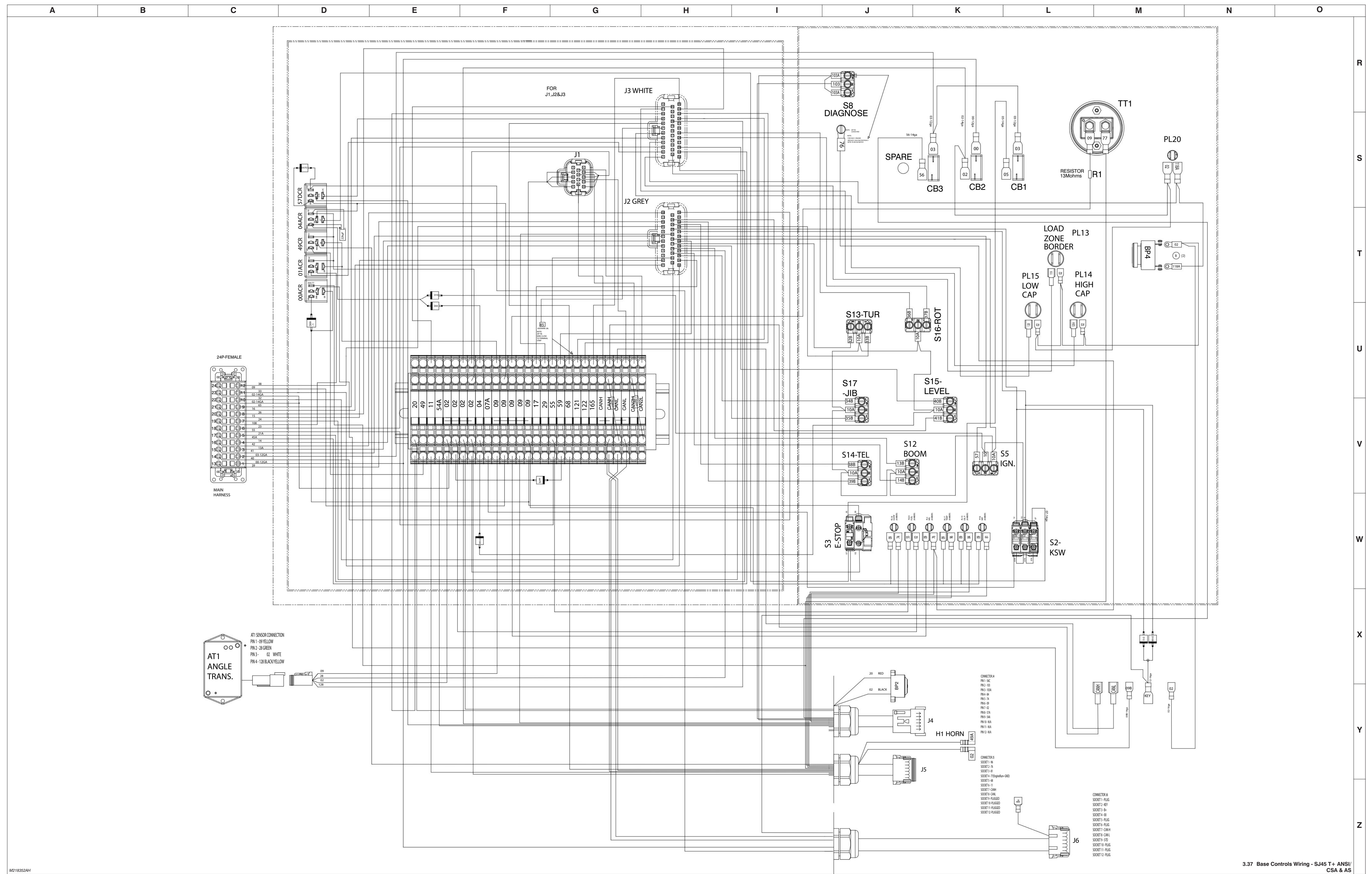
3.35 Base Controls Wiring - SJ40 T+



3.36 Base Controls Wiring - SJ40 T+ with Positive Air Shut-Off Option



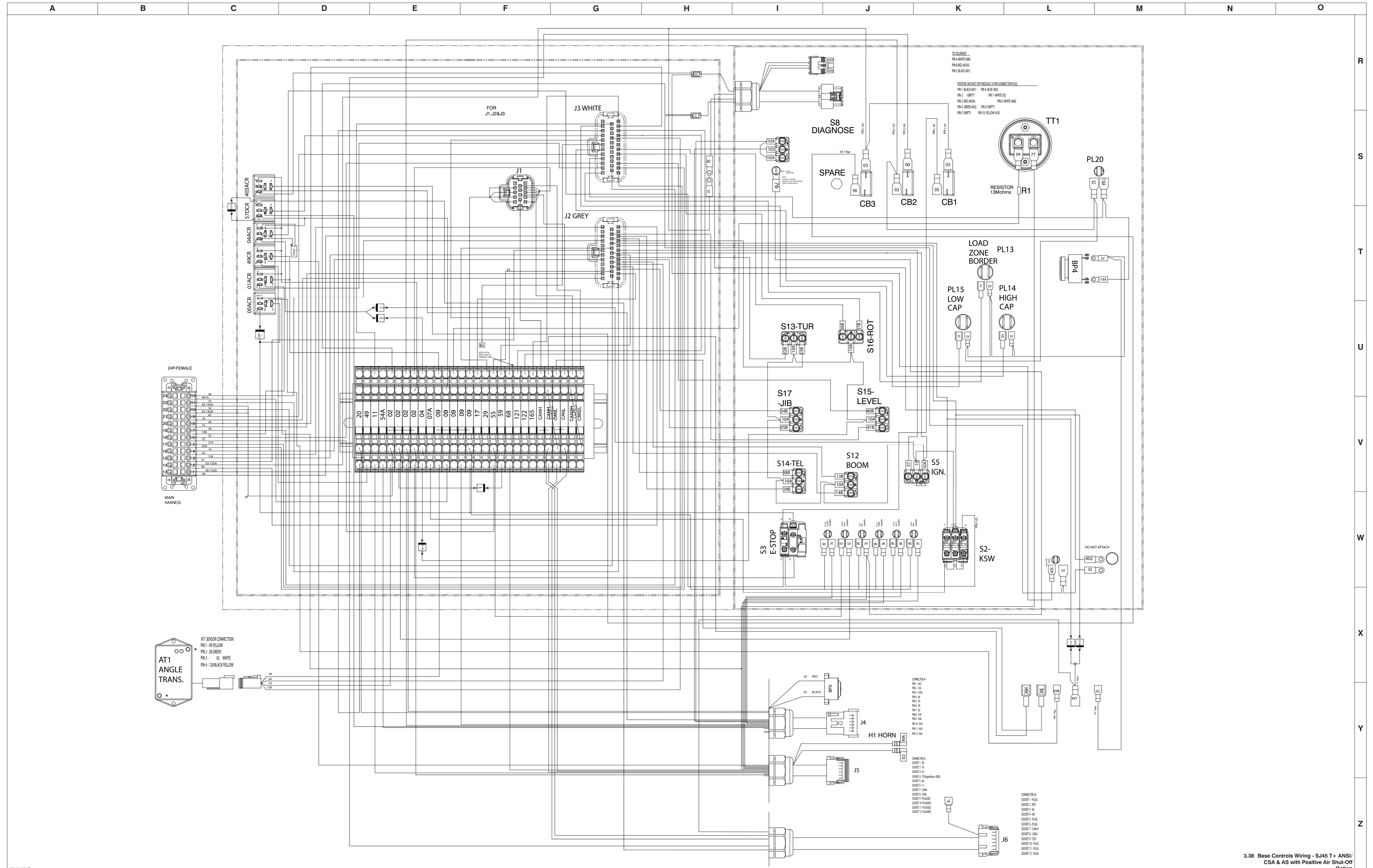
3.37 Base Controls Wiring - SJ45 T+ ANSI/CSA & AS



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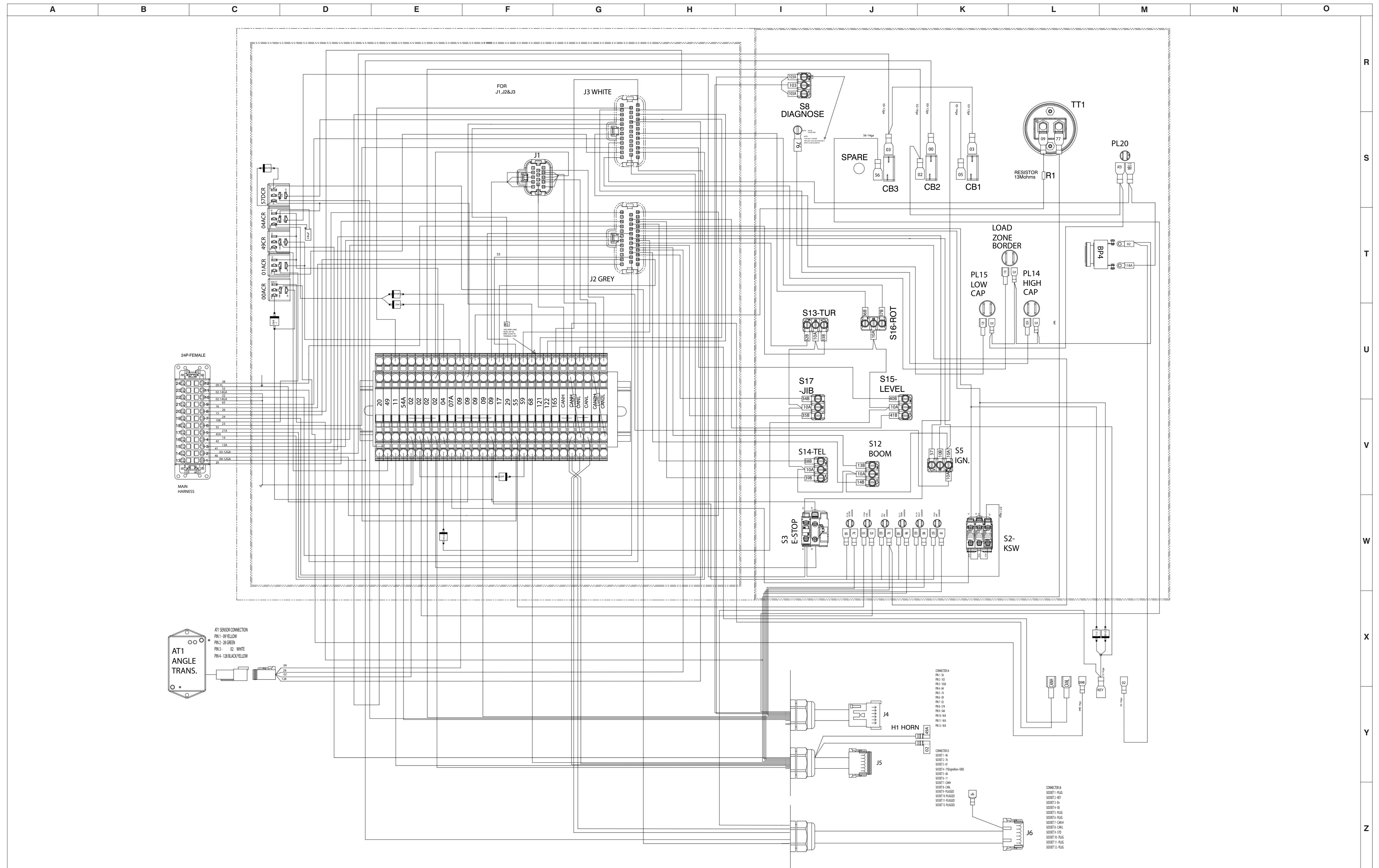
3.37 Base Controls Wiring - SJ45 T+ ANSI/CSA & AS

3.38 Base Controls Wiring - SJ45 T+ ANSI/CSA & AS with Positive Air Shut-Off Option



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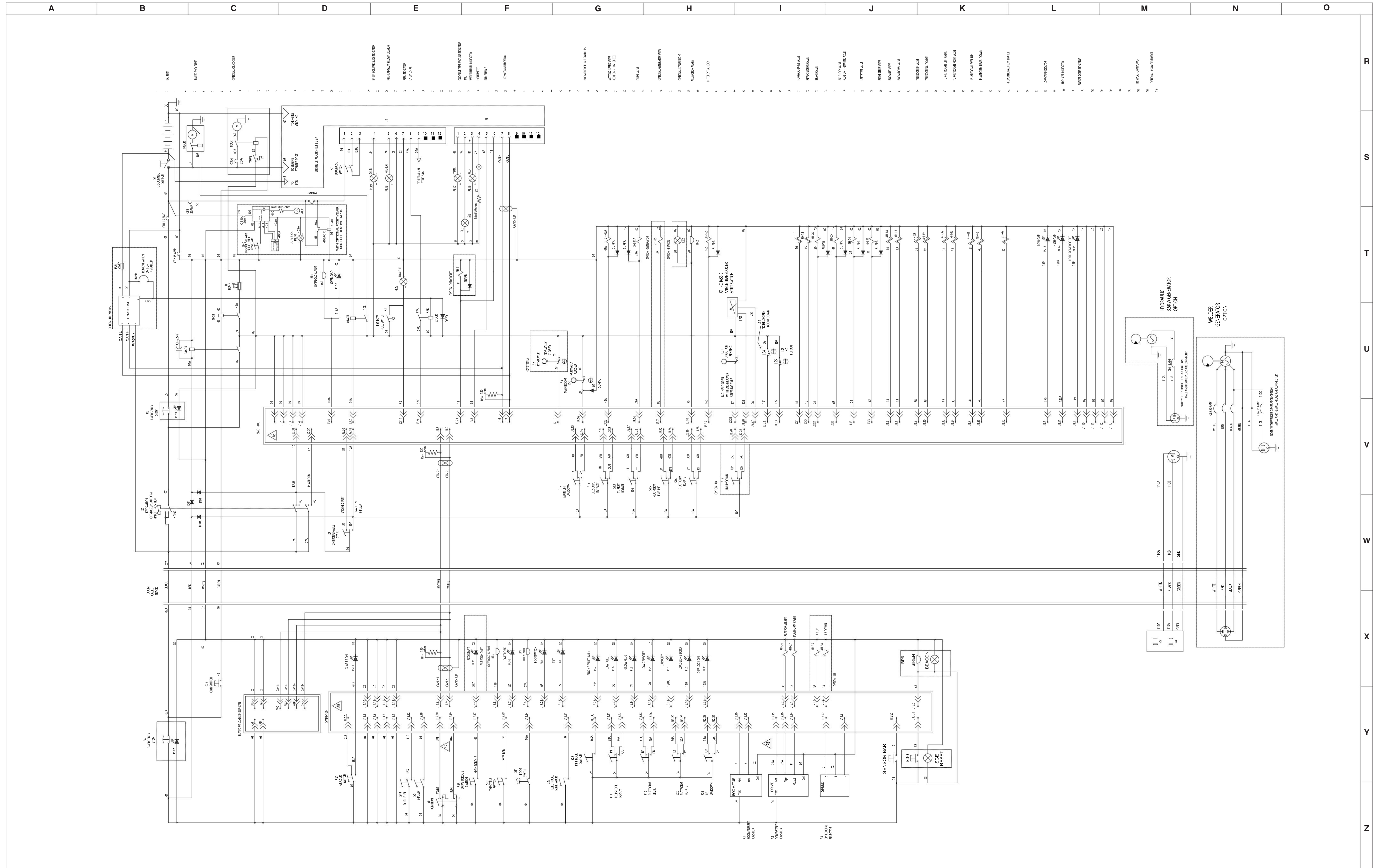
3.39 Base Controls Wiring - SJ45 T+ CE



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3.39 Base Controls Wiring - SJ45 T+ CE

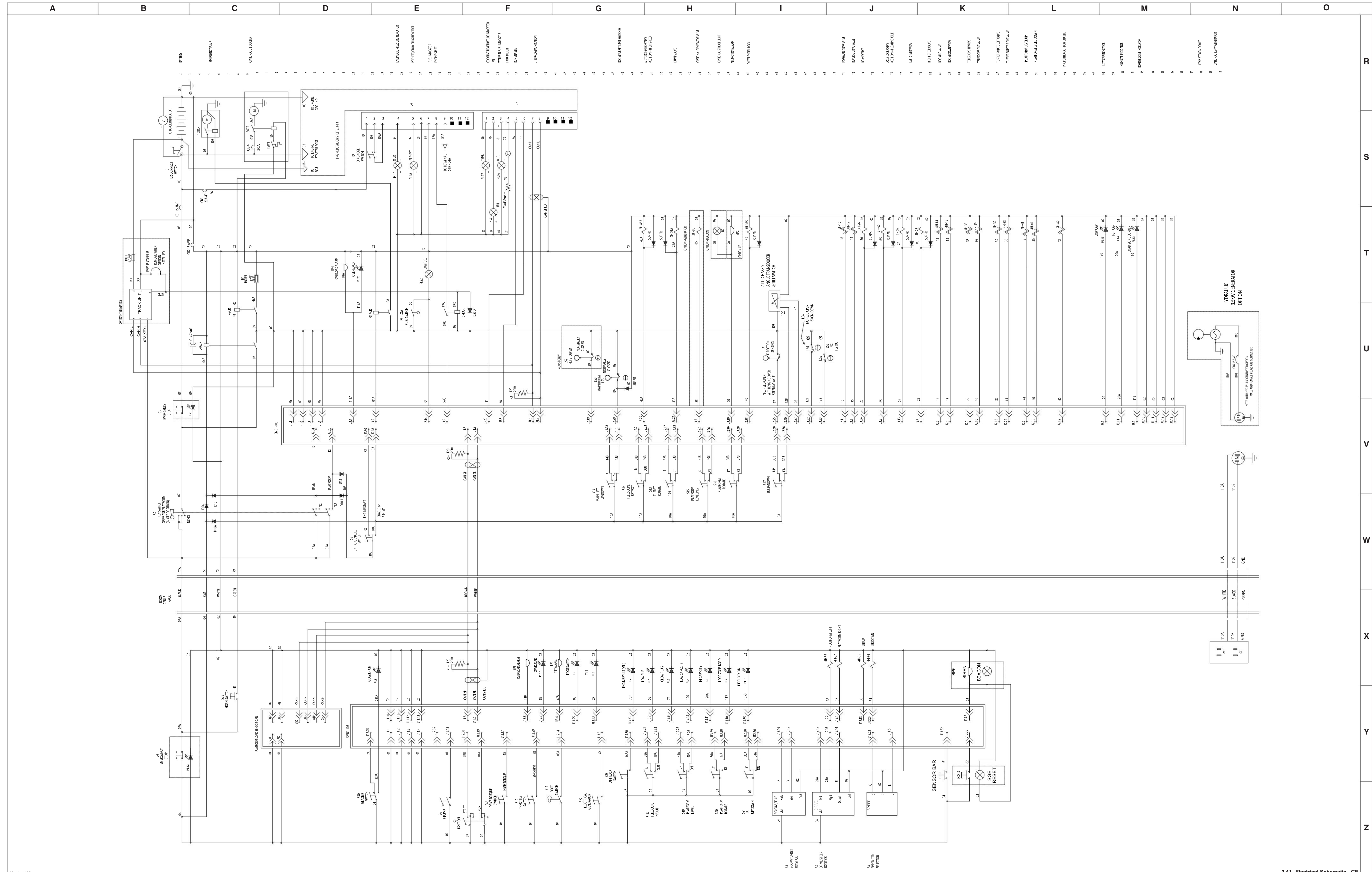
3.40 Electrical Schematic - ANSI/CSA & AS



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3.40 Electrical Schematic - ANSI/CSA & AS

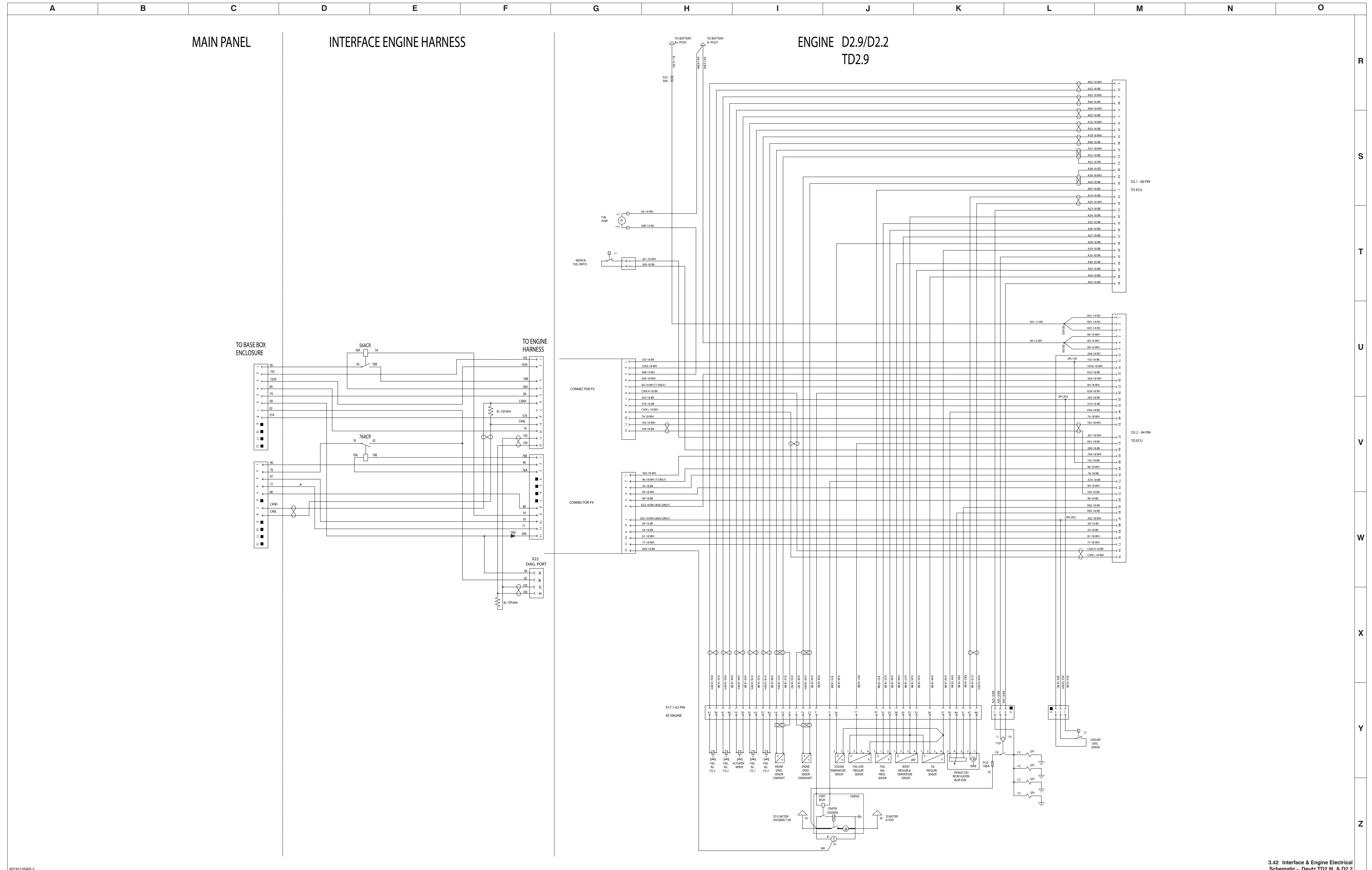
3.41 Electrical Schematic - CE



M23611AB

3.41 Electrical Schematic - CE

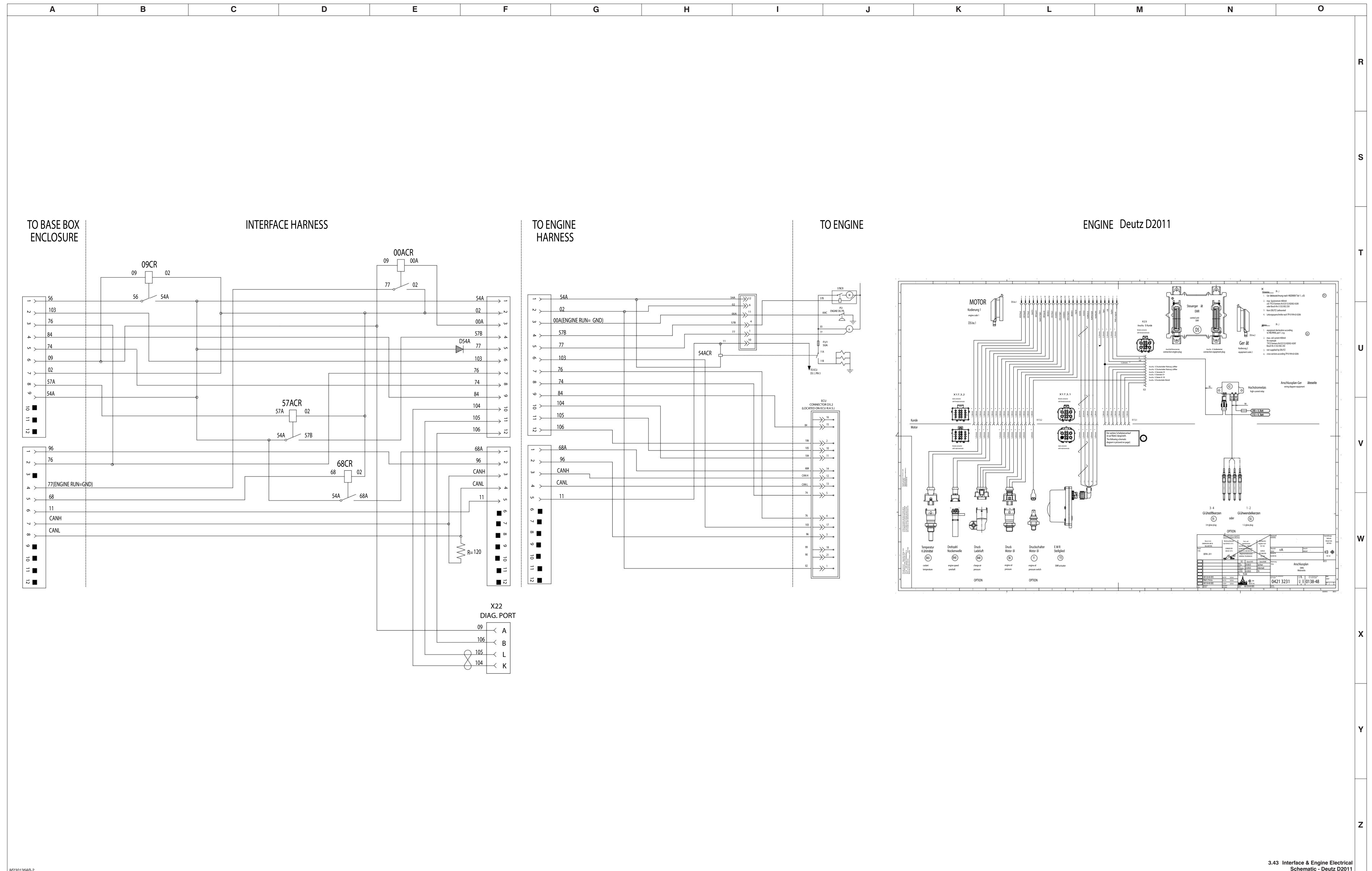
3.42 Interface & Engine Electrical Schematic - Deutz TD2.9L & D2.2



M230136AB-3

3.42 Interface & Engine Electrical Schematic - Deutz TD2.9L & D2.2

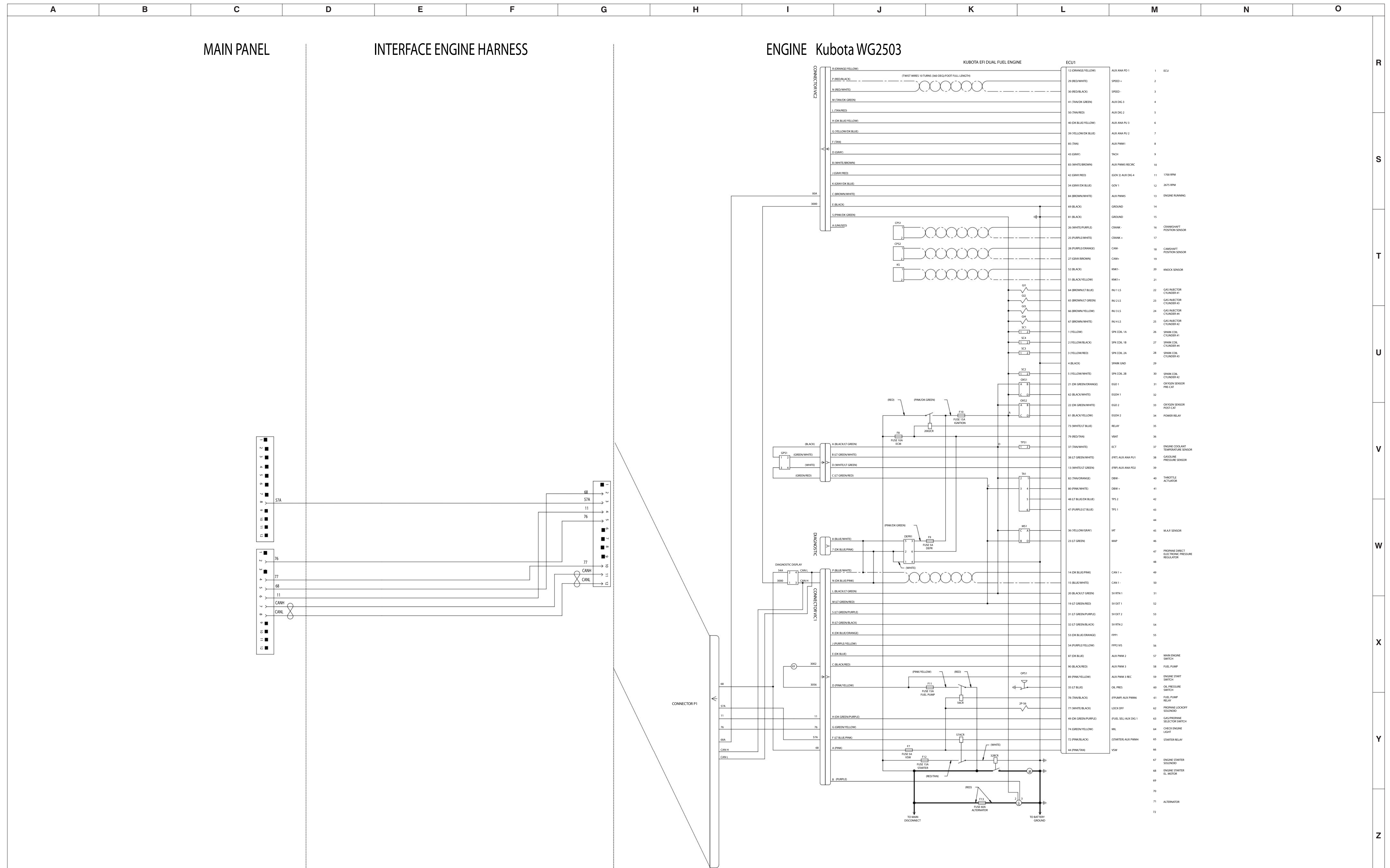
3.43 Interface & Engine Electrical Schematic - Deutz D2011



M230136AB-2

3.43 Interface & Engine Electrical Schematic - Deutz D2011

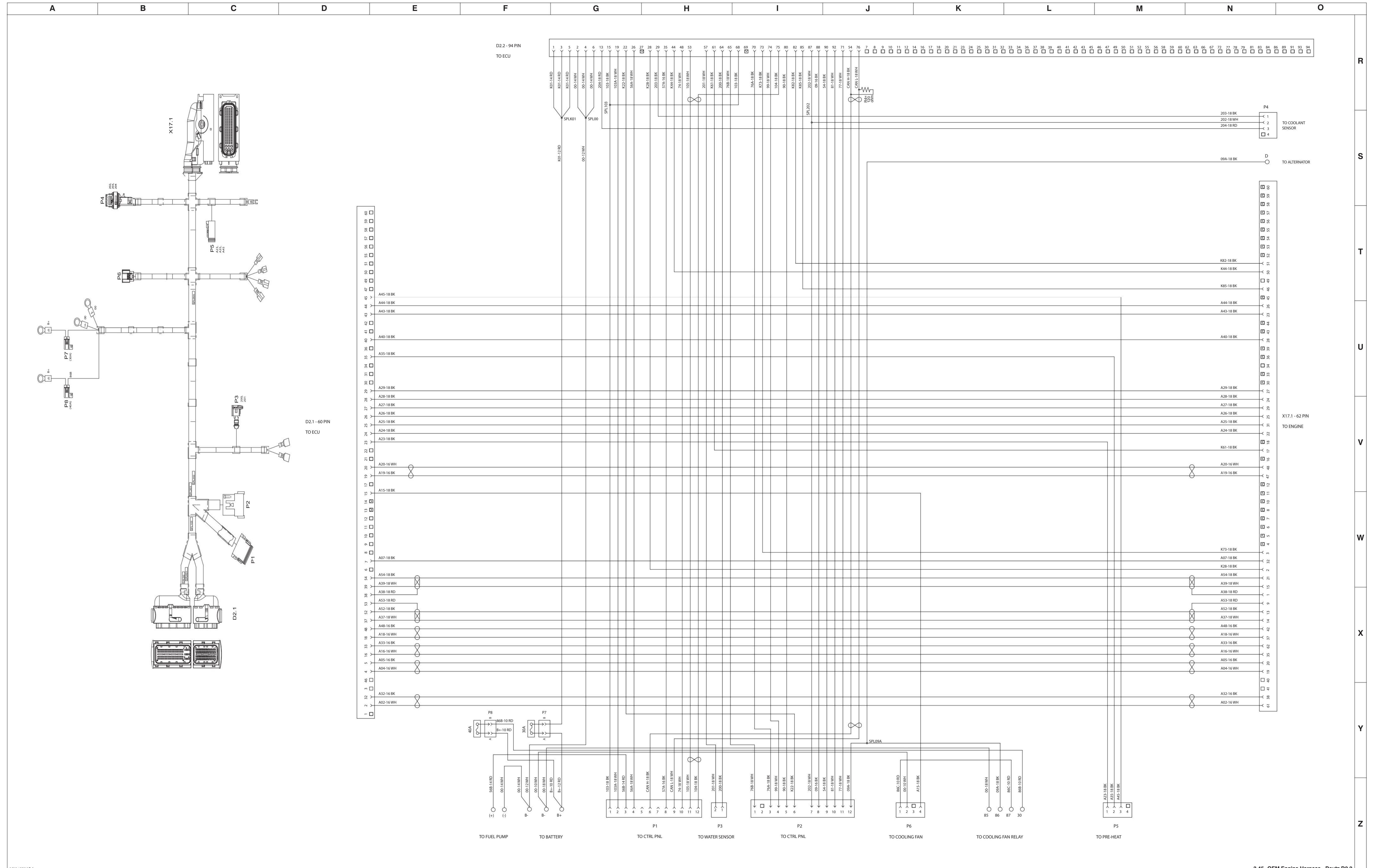
3.44 Interface & Engine Electrical Schematic - Kubota WG2503



M230136AB-4

3.44 Interface & Engine Electrical Schematic - Kubota WG2503

3.45 OEM Engine Harness - Deutz D2.2



M224673AF-2

3.45 OEM Engine Harness - Deutz D2.2

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”. See the example below for clarification.

1. Probable cause.

Remedy.

4.2 Electrical System

4.2-1 All Controls are Inoperative from the Base or Platform Console



NOTE

Functions may be disabled by the dual load zone system or the overload system. Please first make sure the boom is at or below level and fully retracted, the platform is level and free of added weight, and there are no faults in the dual load or overload systems.

1. Battery cables loose/disconnected	Tighten or connect battery cables
2. Battery Discharged or Defective	Charge battery or replace if defective
3. Loose or broken B+ cable from batteries to battery disconnect switch S1	Check continuity. Replace if defective.
4. Open or defective battery disconnect switch S1	Close switch. Replace if defective
5. Loose or broken wire #03 from battery disconnect switch S1 to circuit breaker CB1	Check continuity. Replace if defective
6. Circuit breaker CB1 tripped or defective.	Reset breaker, check for defective wiring. Replace if defective.
7. Loose or broken wire #05 from circuit breaker CB1 to base emergency stop switch S3.	Check continuity. Replace if defective.
8. Open or defective base emergency stop switch S3.	Close switch. Replace if defective.
9. Loose or broken wire #07 from base emergency stop switch S3 to base key switch S2.	Check continuity. Replace if defective.
10. Loose or broken #07A wires between base key switch S2 terminals	Check continuity. Replace if defective.
11. Open or defective key select switch S2	Close switch. Replace if defective
12. Loose or broken wire #04A from base terminal block to relay 04ACR.	Check continuity. Replace if defective.
13. Loose or broken wire #07 from base emergency stop switch S3 to relay 04ACR.	Check continuity. Replace if defective.
14. Loose or broken wire #02 from relay 04ACR to base terminal block.	Check continuity. Replace if defective.
15. Defective relay 04ACR.	Check relay. Replace if defective.
16. Loose or broken wire #09 from relay 04ACR to base terminal block.	Check continuity. Replace if defective.
17. Loose or broken wire #09 from base terminal block to base control module connector J1 pins 1, 2, 3, and/or 4.	Check continuity. Replace if defective.

18. Loose or broken wire #02 from base control module connector J1 pins 10, 11, 12, and/or 13 to base terminal block.	Check continuity. Replace if defective.
19. Loose or broken wire #02 from base terminal block to circuit breaker CB2.	Check continuity. Replace if defective.
20. Circuit breaker CB2 tripped or defective.	Reset breaker, check for defective wiring. Replace if defective.
21. Loose or broken wire #00 from circuit breaker CB2 to battery negative.	Check continuity. Replace if defective.
22. Loose or broken wire #07A from base key switch S2 to base terminal block.	Check continuity. Replace if defective.
23. Loose or broken wire #07A from base terminal block to platform terminal block.	Check continuity. Replace if defective.
24. Loose or broken wire #07A from platform terminal block to platform emergency stop switch S4.	Check continuity. Replace if defective.
25. Open or defective platform emergency stop switch S4.	Close switch. Replace if defective.
26. Loose or broken wire #04 from platform emergency stop switch S4 to platform terminal block.	Check continuity. Replace if defective.
27. Loose or broken wire #04 from platform terminal block platform control module connector J11 pins 1, 2, 3, and/or 4.	Check continuity. Replace if defective.
28. Loose or broken CAN H wire from platform control module connector J11 pin 8 to platform terminal block	Check continuity. Replace if defective.
29. Loose or broken CAN H wire from platform terminal block to base terminal block.	Check continuity. Replace if defective.
30. Loose or broken CAN H wire from base terminal block to base control module connector J1 pin 8.	Check continuity. Replace if defective.
31. Loose or broken CAN L wire from platform control module connector J11 pin 9 to platform terminal block	Check continuity. Replace if defective.
32. Loose or broken CAN L wire from platform terminal block to base terminal block.	Check continuity. Replace if defective.
33. Loose or broken CAN L wire from base terminal block to base control module connector J1 pin 9.	Check continuity. Replace if defective.
34. Loose, broken, or defective 120 ohm CAN termination resistor(s) between CAN H and CAN L terminals in platform and/or base terminal block(s).	Check that resistance between CAN H and CAN L is approximately 60 ohms (2 x 120 ohm in parallel). Check connections. Repair connections or replace if defective.

35. Loose or broken wire #02 from platform control module connector J11 pins 10, 11, 12, and/or 13 to platform terminal block.	Check continuity. Replace if defective.
36. Loose or broken wire #02 from platform terminal block to base terminal block.	Check continuity. Replace if defective.
37. Defective base (master) control module SMB1-105	Replace if Defective
38. Defective platform (slave) control module SMB1-106	Replace if Defective

4.2-2 All Controls are Inoperative from the Base Console

1. loose or defective wire #10 from keyswitch S2 to ignition/enable switch S5	Check continuity. Replace if defective
2. Defective ignition/enable switch S5	Check continuity through switch when activated. Replace if defective
3. Loose or broken wire #10A from ignition/enable switch S5 to base control module connector J2 pin 18.	Check continuity. Replace if defective
4. Loose or broken wire #10A from ignition/enable switch S5 to base boom control toggle switches.	Check continuity. Replace if defective

4.2-3 The Engine will not Crank from the Base or Platform

1. Loose or broken wire #57C from base control module connector J3 pin 9 to 57DCR relay pin 30.	Check continuity. Replace if defective
2. Loose or broken wire #09 from base terminal block to 57DCR relay pin 85	Check continuity. Replace if defective
3. Loose or broken wire #57D from 57DCR relay pin 86 to telematics connector J6 pin 9	Check continuity. Replace if defective
4. Loose or broken jumper wire from J6 pin 9 to J6 pin 4, or if equipped with telematics then either start interlock is engaged or telematics are inoperative	Check continuity of jumper. Check telematics if equipped. Repair or replace as required.
5. Loose or broken wire #00 from J6 pin 4 to ground.	Check continuity. Replace if defective
6. Loose or broken wire #57A from relay 57DCR pin 87 to connector J4 pin 8.	Check continuity. Replace if defective
7. Defective relay 57DCR.	Check relay. Replace if defective.

8. Loose or broken 57A wire from connector P4 pin 8 to start input on ECU or 57ACR relay if equipped.

Check schematic applicable to the engine equipped on the machine to determine ECU pin # or relay if equipped.



NOTE

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

4.2-4 The Engine will not Crank from the 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. |
| 3. Defective base start switch S5. | Check start switch. Replace if defective. |

4.2-5 The Engine will not Crank from the Platform



NOTE

The engine will not crank from the platform with the footswitch pressed.

- | | |
|---|--|
| 1. Loose or broken wire #04 from platform terminal block to start switch S9. | Check continuity. Replace if defective |
| 2. Loose or broken wire #57B from start switch S9 to platform control module connector J12 pin 30 | Check continuity. Replace if defective |
| 3. Defective start switch S9 | Check continuity through switch. Replace if defective |

4.2-6 The Boom Controls are Inoperative (Drive Operates)

- | | |
|---|---|
| 1. Loose or broken wire #21 from base control module connector J3 pin 24 to main harness 24 pin connector pin 5 | Check continuity. Replace if defective |
| 2. Loose or broken wire #21A from main harness plug pin #5 to dump valve 2H-21A | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from dump valve 2H-21A to main harness plug | Check continuity. Replace if defective |
| 4. Defective dump valve coil 2H-21A | Check continuity and resistance through coil. Replace if defective |

4.2-7 No Boom Up from the Base or Platform Controls

1. Loose or broken wire #14 from base control module connector J2 pin 5 base terminal block to turret harness plug pin #4	Check continuity. Replace if defective
2. Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to boom up valve 4H-14	Check continuity. Replace if defective
4. Defective boom up coil 4H-14	Check continuity and resistance through coil. Replace if defective

4.2-8 No Boom Up from the Base Console

1. Loose or broken wire #10A from IGN switch S5 to boom switch S12	Check continuity. Replace if defective
2. Defective boom switch S12	Check continuity through switch while activating boom up function between wires #10A and #14B. Replace switch if no continuity
3. Loose or broken wire #14B from boom switch S12 to base control module connector J2 pin 15	Check continuity. Replace if defective

4.2-9 No Boom Up from the Platform 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 to J13 pin #16 of platform control module	Check continuity. Replace if defective

4.2-10 No Boom Down from the Base or Platform Consoles

1. Loose or broken wire #13 from base control module connector J2 pin 6 base terminal block to turret harness plug pin #3	Check continuity. Replace if defective
2. Loose or broken wire #14 from turret harness plug pin #4 to boom down valve 4H-13	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13	Check continuity. Replace if defective
4. Defective boom down coil 4H-13	Check continuity and resistance through coil. Replace if defective

4.2-11 No Boom Down from the Base Console

- | | |
|--|---|
| 1. Loose or broken wire #10A from IGN switch S5 to boom switch S12 | Check continuity. Replace if defective |
| 2. Defective boom switch S12 | Check continuity through switch while activating boom down function between wires #10A and #13B. Replace switch if no continuity |
| 3. Loose or broken wire #13B from boom switch S12 to base control module connector J2 pin 16 | Check continuity. Replace if defective |

4.2-12 No Boom Down from the Platform 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 to J13 pin #15 of platform control module | Check continuity. Replace if defective |

4.2-13 No Turret Rotate Right from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #33 from base control module connector J2 pin 24 base terminal block to turret harness plug pin #11 | Check continuity. Replace if defective |
| 2. Loose or broken wire #33 from turret harness plug pin #11 to boom up valve 4H-33 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to boom up valve 4H-33 | Check continuity. Replace if defective |
| 4. Defective boom up coil 4H-33 | Check continuity and resistance through coil. Replace if defective |

4.2-14 No Turret Rotate Right from the Platform Console

- | | |
|---|---|
| 1. Loose or broken wire #32 from base control module connector J2 pin 13 to turret harness plug pin #10 | Check continuity. Replace if defective |
| 2. Loose or broken wire #32 from turret harness plug pin #10 to turret rotate left valve 4H-32 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32 | Check continuity. Replace if defective |
| 4. Defective turret rotate left coil 4H-32 | Check continuity and resistance through coil. Replace if defective |

4.2-15 No Turret Rotate Right from the Platform Console

- | | |
|--|---|
| 1. Missing output from telematics pin 9. | Check for ground on pin 9. If no ground, contact the machine owner. |
| 2. Defective relay 57DCR. | Check relay. Replace if defective. |
| 3. Defective telematics module. | Check telematics assembly; repair or replace as required. |

4.2-16 No Turret Rotate Left from the Base or Platform Consoles

- | | |
|---|--|
| 1. Loose or broken wire #32 from base control module connector J2 pin 13 to turret harness plug pin #10 | Check continuity. Replace if defective |
| 1. Loose or broken wire #32 from turret harness plug pin #10 to turret rotate left valve 4H-32 | Check continuity. Replace if defective |
| 2. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32 | Check continuity. Replace if defective |
| 3. Defective turret rotate left coil 4H-32 | Check continuity and resistance through coil. Replace if defective |

4.2-17 No Turret Rotate Left from the Base Console

- | | |
|---|---|
| 1. Loose or broken wire #10A from IGN switch S5 to turret rotate switch S13 | Check continuity. Replace if defective |
| 2. Defective turret rotate switch S13 | Check continuity through switch while activating down function between wires #10A and #32B. Replace switch if no continuity |
| 3. Loose or broken wire #32B from turret rotate switch S13 to base control module connector J2 pin 17 | Check continuity. Replace if defective |

4.2-18 No Turret Rotate Left from the Platform 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 to J13 pin #16 of platform control module | Check continuity. Replace if defective |

4.2-19 No Telescope Out from the Base or Platform Consoles

1. Loose or broken wire #39 from base control module connector J2 pin 5 base terminal block to turret harness plug pin #13	Check continuity. Replace if defective
2. Loose or broken wire #39 from turret harness plug pin #13 to telescope out valve 4H-39	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to boom up valve 4H-39	Check continuity. Replace if defective
4. Defective telescope out coil 4H-39	Check continuity and resistance through coil. Replace if defective

4.2-20 No Telescope Out from the Base Console

1. Loose or broken wire #10A from IGN switch S5 to telescope switch S13	Check continuity. Replace if defective
2. Defective boom switch S13	Check continuity through switch while activating telescope out function between wires #10A and #39B. Replace switch if no continuity
3. Loose or broken wire #39B from telescope switch S13 to base control module connector J2 pin 33	Check continuity. Replace if defective

4.2-21 No Telescope Out from the Platform Console

1. Loose or broken wire #04 from platform terminal block to telescope switch S18	Check continuity. Replace if defective
2. Defective boom switch S18	Check continuity through switch while activating telescope out function between wires #04 and #39A. Replace switch if no continuity
3. Loose or broken wire #39A from telescope switch S18 to platform control module connector J12 pin 33	Check continuity. Replace if defective

4.2-22 No Telescope In from the Base or Platform Consoles

1. Loose or broken wire #38 from base control module connector J2 pin 9 to turret harness plug pin #12	Check continuity. Replace if defective
2. Loose or broken wire #38 from turret harness plug pin #12 to telescope in valve 4H-38	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to telescope in valve 4H-38	Check continuity. Replace if defective
4. Defective telescope in coil 4H-38	Check continuity and resistance through coil. Replace if defective

4.2-23 No Telescope In from the Base Console

1. Loose or broken wire #10A from IGN switch S5 to telescope switch S14	Check continuity. Replace if defective
2. Defective telescope switch S14	Check continuity through switch while activating telescope in function between wires #10A and #38B. Replace switch if no continuity
3. Loose or broken wire #38B from boom switch S14 to base control module connector J2 pin 21	Check continuity. Replace if defective

4.2-24 No Telescope In from the Platform Console

1. Loose or broken wire #04 from platform terminal block to telescope switch S18	Check continuity. Replace if defective
2. Defective telescope switch S18	Check continuity through switch while activating down function between wires #04 and #38A. Replace switch if no continuity
3. Loose or broken wire #38A from boom switch S18 to platform control module connector J12 pin 21	Check continuity. Replace if defective

4.2-25 No Platform Level Up from the Base or Platform Consoles

1. Loose or broken wire #41 from base control module connector J2 pin #7 to turret harness plug pin #15	Check continuity. Replace if defective
2. Loose or broken wire #41 from turret harness plug pin #15 to platform level up valve 4H-41	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to platform level up valve 4H-41	Check continuity. Replace if defective
4. Defective platform level up coil 4H-41	Check continuity and resistance through coil. Replace if defective

4.2-26 No Platform Level Up from the Base Console

- | | |
|--|--|
| 1. Loose or broken wire #10A from IGN switch S5 to platform level switch S15 | Check continuity. Replace if defective |
| 2. Defective platform level switch S15 | Check continuity through switch while activating up function between wires #10A and #41B. Replace switch if no continuity |
| 3. Loose or broken wire #41B from platform level switch S15 to base control module connector J2 pin 22 | Check continuity. Replace if defective |

4.2-27 No Platform Level Up from the Platform Console

- | | |
|---|--|
| 1. Loose or broken wire #04 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 platform level up function between wires #04 and #41A. Replace switch if no continuity |
| 3. Loose or broken wire #41A from platform level switch S19 to platform control module connector J12 pin 22 | Check continuity. Replace if defective |

4.2-28 No Platform Level Down from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #40 from base control module connector J2 pin 35 to turret harness plug pin #14 | Check continuity. Replace if defective |
| 2. Loose or broken wire #40 from turret harness plug pin #14 to platform level down valve 4H-40 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to platform level down valve 4H-40 | Check continuity. Replace if defective |
| 4. Defective platform level down coil 4H-40 | Check continuity and resistance through coil. Replace if defective |

4.2-29 No Platform Level Down from the Base Console

- | | |
|--|---|
| 1. Loose or broken wire #10A from IGN switch S5 to platform level switch S16 | Check continuity. Replace if defective |
| 2. Defective platform level switch S16 | Check continuity through switch while activating platform level down function between wires #10A and #40B. Replace switch if no continuity |
| 3. Loose or broken wire #40B from platform level switch S16 to base control module connector J3 pin 26 | Check continuity. Replace if defective |

4.2-30 No Platform Level Down from the Platform Console

- | | |
|---|--|
| 1. Loose or broken wire #04 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 platform level down function between wires #04 and #40A. Replace switch if no continuity |
| 3. Loose or broken wire #40A from platform level switch S19 to platform control module connector J13 pin 26 | Check continuity. Replace if defective |

4.2-31 No Platform Rotate or Jib Functions from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #42 from base control module connector J2 pin 12 to turret harness plug pin #16 | Check continuity. Replace if defective |
| 2. Loose or broken wire #42 from turret harness plug pin #16 to platform flow enable valve 2H-42 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to platform flow enable valve 2H-42 | Check continuity. Replace if defective |
| 4. Defective platform flow enable coil 2H-42 | Check continuity and resistance through coil. Replace if defective |

4.2-32 No Platform Rotate Right from the Base or Platform Consoles

- | | |
|--|---|
| 1. Loose or broken wire #37 from platform control module connector J12 pin #1 to platform terminal strip | Check continuity. Replace if defective |
| 2. Loose or broken wire #37 from platform terminal strip to platform platform rotate right valve 4H-37 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from platform terminal strip to platform rotate right valve 4H-37 | Check continuity. Replace if defective |
| 4. Defective platform rotate right coil 4H-37 | Check continuity and resistance through coil. Replace if defective |

4.2-33 No Platform Rotate Right from the Base Console

- | | |
|---|---|
| 1. Loose or broken wire #10A from IGN switch S5 to platform rotate switch S16 | Check continuity. Replace if defective |
| 2. Defective platform rotate switch S16 | Check continuity through switch while activating platform rotate right function between wires #10A and #37B. Replace switch if no continuity |
| 3. Loose or broken wire #37B from platform rotate switch S16 to base control module connector J2 pin 28 | Check continuity. Replace if defective |

4.2-34 No Platform Rotate Right from the Platform Console

- | | |
|--|--|
| 1. Loose or broken wire #04 from platform terminal block to platform rotate switch S20 | Check continuity. Replace if defective |
| 2. Defective platform level switch S20 | Check continuity through switch while activating platform rotate right function between wires #04 and #37A. Replace switch if no continuity |
| 3. Loose or broken wire #37A from platform rotate switch S20 to platform control module connector J13 pin 28 | Check continuity. Replace if defective |

4.2-35 No Platform Rotate Left from the Base or Platform Consoles

- | | |
|--|---|
| 1. Loose or broken wire #36 from platform control module connector J12 pin #2 to platform terminal strip | Check continuity. Replace if defective |
| 2. Loose or broken wire #36 from platform terminal strip to platform platform rotate left valve 4H-36 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from platform terminal strip to platform rotate left valve 4H-36 | Check continuity. Replace if defective |
| 4. Defective platform rotate left coil 4H-36 | Check continuity and resistance through coil. Replace if defective |

4.2-36 No Platform Rotate Left from the Base Console

- | | |
|--|---|
| 1. Loose or broken wire #10A from IGN switch S5 to platform level switch S16 | Check continuity. Replace if defective |
| 2. Defective platform level switch S16 | Check continuity through switch while activating platform level down function between wires #10A and #36B. Replace switch if no continuity |
| 3. Loose or broken wire #36B from platform level switch S16 to base control module connector J3 pin 29 | Check continuity. Replace if defective |

4.2-37 No Platform Rotate Left from the Platform Console

- | | |
|--|---|
| 1. Loose or broken wire #04 from platform terminal block to platform rotate switch S20 | Check continuity. Replace if defective |
| 2. Defective platform level switch S20 | Check continuity through switch while activating platform rotate left function between wires #04 and #36A. Replace switch if no continuity |
| 3. Loose or broken wire #37A from platform rotate switch S20 to platform control module connector J13 pin 28 | Check continuity. Replace if defective |

4.2-38 No Jib Up from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #35 from platform control module connector J12 pin #13 to platform terminal strip | Check continuity. Replace if defective |
| 2. Loose or broken wire #35 from platform terminal strip to jib up valve 4H-35 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from platform terminal strip to jib up valve 4H-35 | Check continuity. Replace if defective |
| 4. Defective jib up coil 4H-35 | Check continuity and resistance through coil. Replace if defective |

4.2-39 No Jib Up from the Base Console

- | | |
|---|--|
| 1. Loose or broken wire #10A from IGN switch S5 to jib switch S17 | Check continuity. Replace if defective |
| 2. Defective jib switch S17 | Check continuity through switch while activating jib up function between wires #10A and #35B. Replace switch if no continuity |
| 3. Loose or broken wire #35B from jib switch S17 to base control module connector J2 pin 28 | Check continuity. Replace if defective |

4.2-40 No Jib Up from the Platform Console

- | | |
|--|---|
| 1. Loose or broken wire #04 from platform terminal block to jib switch S21 | Check continuity. Replace if defective |
| 2. Defective jib switch S21 | Check continuity through switch while activating jib up function between wires #04 and #35A. Replace switch if no continuity |
| 3. Loose or broken wire #35A from jib switch S21 to platform control module connector J12 pin 28 | Check continuity. Replace if defective |

4.2-41 No Jib Down from the Base or Platform Consoles

1. Loose or broken wire #34 from platform control module connector J12 pin #24 to platform terminal strip	Check continuity. Replace if defective
2. Loose or broken wire #34 from platform terminal strip to jib down valve 4H-34	Check continuity. Replace if defective
3. Loose or broken wire #02 from platform terminal strip to jib down valve 4H-34	Check continuity. Replace if defective
4. Defective jib down coil 4H-34	Check continuity and resistance through coil. Replace if defective

4.2-42 No Jib Down from the Base Console

1. Loose or broken wire #10A from IGN switch S5 to jib switch S17	Check continuity. Replace if defective
2. Defective jib switch S17	Check continuity through switch while activating jib down function between wires #10A and #34B. Replace switch if no continuity
3. Loose or broken wire #34B from jib switch S17 to base control module connector J2 pin 26	Check continuity. Replace if defective

4.2-43 No Jib Down from the Platform Console

1. Loose or broken wire #04 from platform terminal block to jib switch S21	Check continuity. Replace if defective
2. Defective jib switch S21	Check continuity through switch while activating jib down function between wires #04 and #34A. Replace switch if no continuity
3. Loose or broken wire #34A from jib switch S21 to platform control module connector J12 pin 26	Check continuity. Replace if defective

4.2-44 No Drive or Steer Functions

1. Loose or broken wire #04 from platform terminal block to drive joystick A2	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 joystick A2	See drive joystick test procedure in section 5

4.2-45 No Forward or 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 platform control module connector J13 pin #14 | Check continuity. Replace if defective |

4.2-46 No Forward Drive

- | | |
|--|--|
| 1. No output from base control module at connector J2 pin #1 to wire #16 | Check for correct output voltage. |
| 2. Loose or broken wire 16 from base control module connector J2 pin #1 to turret connector pin 21 | Check continuity. Replace if defective |
| 3. Loose or broken wire #16 from turret plug pin 21 to drive pump valve connector pin #4 | Check continuity. Replace if defective |
| 4. Loose or broken wire #16 from drive pump valve connector pin #4 to 3H-16 Forward coil | Check continuity. Replace if defective |
| 5. Loose or broken wire #02 wire from 3H-16 Forward coil to ground | Check continuity. Replace if defective |
| 6. Defective forward coil 3H-16 | Check continuity and resistance through coil. Replace if defective |

4.2-47 No Reverse Drive

- | | |
|--|--|
| 1. No output from base control module at connector J2 pin #2 to wire #15 | Check for correct output voltage. |
| 2. Loose or broken wire 15 from base control module connector J2 pin #2 to turret connector pin 20 | Check continuity. Replace if defective |
| 3. Loose or broken wire #15 from turret plug pin 20 to drive pump valve connector pin #1 | Check continuity. Replace if defective |
| 4. Loose or broken wire #15 from drive pump valve connector pin #1 to 3H-15 Forward coil | Check continuity. Replace if defective |
| 5. Loose or broken wire #02 wire from 3H-15 Reverse coil to ground | Check continuity. Replace if defective |
| 6. Defective reverse coil 3H-15 | Check continuity and resistance through coil. Replace if defective |

4.2-48 The Brake will not Release

1. No output from base control module connector J3 pin #24 to wire #26	Check for correct output voltage
2. Loose or broken wire 26 from base control module connector J3 pin #24 to turret harness connector pin #8	Check continuity. Replace if defective
3. Loose or broken wire #26 from turret harness connector pin #8 to 3H-26 Brake coil	Check continuity. Replace if defective
4. Loose or broken wire #02 wire from 3H-26 Brake coil to ground	Check continuity. Replace if defective
5. Defective brake coil 3H-26	Check continuity and resistance through coil. Replace if defective

4.2-49 No Left Steer

1. Loose or broken wire #24P from drive joystick A2 to platform control module connector J12 pin #15	Check continuity. Replace if defective
2. No output from base control module on connector J3 pin #13	Check pin #13 for 12 volts. If no voltage present with foot on footswitch and activating steer function check section 5 for OCM pin voltage reference
3. Loose or broken wire #24 from base control module connector J3 pin #13 to turret harness connector pin #7	Check continuity. Replace if defective
4. Loose or broken wire #24 from turret harness plug pin #7 to left steer valve 4H-24	Check continuity. Replace if defective
5. Loose or broken wire #02 from turret harness plug to left steer valve 4H-24	Check continuity. Replace if defective
6. Defective left steer valve coil 4H-24	Check continuity and resistance through coil. Replace if defective

4.2-50 No Right Steer

1. Loose or broken wire #23P from drive joystick A2 to platform control module connector J12 pin #16	Check continuity. Replace if defective
2. No output from base control module on connector J3 pin #3	Check pin #13 for 12 volts. If no voltage present with foot on footswitch and activating steer function check section 5 for OCM pin voltage reference
3. Loose or broken wire #23 from base control module connector J3 pin 13 to turret harness connector pin #6	Check continuity. Replace if defective
4. Loose or broken wire #23 from turret harness plug pin #6 to right steer valve 4H-23	Check continuity. Replace if defective
5. Loose or broken wire #02 from turret harness plug to right steer valve 4H-23	Check continuity. Replace if defective
6. Defective right steer valve coil 4H-23	Check continuity and resistance through coil. Replace if defective

4.2-51 The Direction Sensing is 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 control module connector J2 pin #25	Check continuity. Replace if defective
5. Defective base control module channel input for direction sense enable	Replace if defective

4.2-52 The Load Sense Indicates Overload or Overload Warning with the Platform Empty or Below Weight

1. Load sense mis-calibration	Refer to calibration procedure for recalibration of load cell
2. Load cell circuit not operating	Check wiring from load cell to platform control module. Check CAN termination resistors. Check load cell. Repair or replace as required

4.2-53 The Overload Indicator Light does not Turn On when the Platform is Overloaded

1. Defective lamp	Check lamp. Replace if defective
2. Load cell circuit not operating	Check wiring from load cell to platform control module. Check CAN termination resistors. Check load cell. Repair or replace as required
3. Load sense out of calibration	Refer to calibration procedure for recalibration of load cell
4. No output control module	Check Voltage at platform control module connectpr J3 pin #7 for 12V when platform is loaded with 110% of rated capacity. (Boom fully retracted and 12" (30cm) off the ground.)
5. Loose or broken wire #82 from the platform control module connector J13 pin 7 to overload lamp PL10.	Check continuity. Replace if defective
6. Loose or broken wire #02 from overload lamp to platform terminal strip	Check continuity. Replace if defective

4.2-54 The Audible Alarm does not Turn On with the Platform Overloaded

1. Defective alarm BP3	Check alarm. Replace if defective
2. Loose or broken wire #118 from platform control module connector J13 pin 8 to alarm BP3	Check continuity. Replace if defective
3. Loose or broken wire #02 from alarm BP3 to platform terminal block	Check continuity. Replace if defective

4.3 Hydraulic System

4.3-1 All Controls are 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 are 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.
9. Defective brake cylinder C9.	Check cylinder. Repair or replace as necessary.

4.3-13 Brake will not Engage

1. Brake out of adjustment or defective cylinder.	Check brake adjustment, cylinder. Adjust, 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-23(A). | 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-24(A).	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.	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.

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.

Before performing routine maintenance underneath the boom, support it using a suitably rated lifting device (refer to Figure 01), or a cylinder chock on the lift cylinder. Contact Skyjack Parts to order chocks.

WARNING

Remove all material and personnel from the platform while using the maintenance support(s).

1. Park the MEWP on a firm, level surface.
2. Retract and lower the boom 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

Make sure you maintain three points of contact when mounting and dismounting the platform.

WARNING

Do not operate any platform controls without the proper fall protection secured to the designated location in the platform. Failure to do so could result in death or serious injury!

WARNING

Make sure 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.

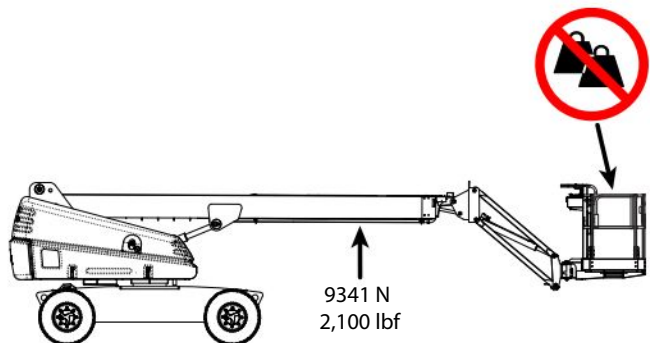


Figure 01 Support location

5.2 Platform

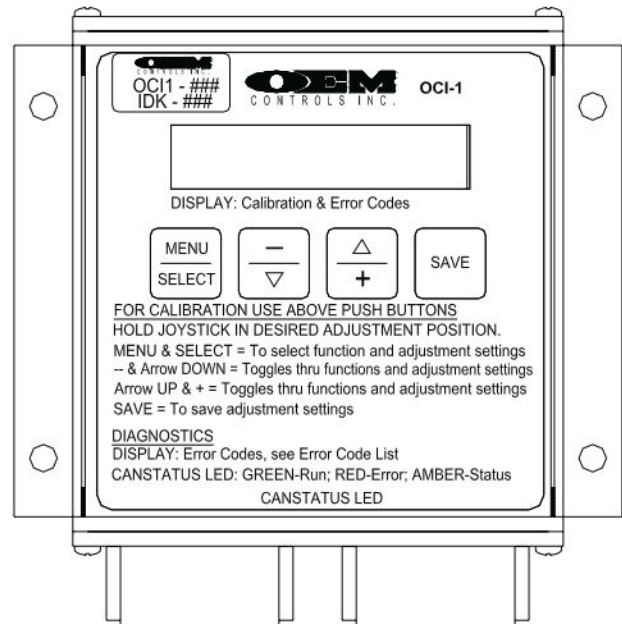
5.2-1 Human Machine Interface (HMI)

Maintaining proper calibration is essential for good performance of the aerial platform.

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 1.0-2 <SELECT> select the flashing item.
1.1		1.1-1 <MINUS> decreases an adjustable parameter such as ramp time. 1.1-2 <DOWN> selects the previous item in the current menu's list.
1.2		1.2-1 <PLUS> increases an adjustable parameter. 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.

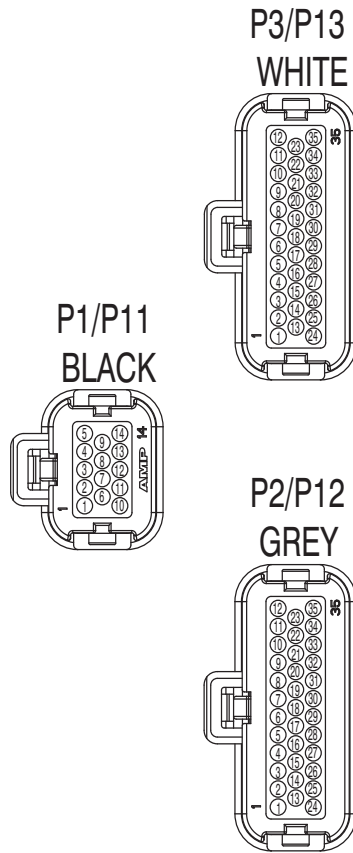
5.2-3 OCM Character Functions Charts

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

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5.2-4 OCM Pin Reference



P1 (Black) Master Controller: SMB1-105					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	09		Power		VS1
2	09		Power		VS2
3	09		Power		VS3
4	09		Power		VS4
5		Not used			Vreg 5v
6	CAN H	CANH to Engine ECU & Telematics	J1939 CAN		
7	CAN L	CANL to Engine ECU & Telematics	J1939 CAN		
8	CAN 2H	CANH to PLTF SMB1-106	CANopen		
9	CAN 2L	CANL to PLTF SMB1-106	CANopen		
10	02		Ground		GND1
11	02		Ground		GND2
12	02		Ground		GND3
13	02		Ground		GND4
14		Not used			--

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P2 (Grey) Master Controller: SMB1-105					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	16	Drive Forward	Analog Output	PWM01	PWM02
2	15	Drive Reverse	Analog Output	PWM00	PWM01
3	31	Riser Up	Analog Output	PWM07	PWM08
4	30	Riser Down	Analog Output	PWM06	PWM07
5	14	Boom Up	Analog Output	PWM05	PWM06
6	13	Boom Down	Analog Output	PWM04	PWM05
7	41	Platform Level Up	Analog Output	PWM11	PWM12
8		63AJ Boom Down Throttle	Analog Output	PWM10	PWM11
9	38	Fly Boom In	Analog Output	PWM09	PWM10
10	39	Fly Boom Out	Analog Output	PWM08	PWM09
11		Not Used		--	--
12	42	Proportional Flow	Analog Output	PWM14	PWM15
13	32	Turret Rotate Left	Analog Output	PWM02	PWM03
14	55	Fuel level float sw	Digital Input	P4B	DIN02
15	14B	Main Boom Up	Digital Input	P72	DIN04
16	13B	Main Boom Dn	Digital Input	P77	DIN06
17	32B	Turret Rotate L	Digital Input	P7C	DIN08
18	10A	Emergency Pump / Enable	Digital Input	PF0	DIN10
19	29	Fly Boom In LS (Hi Speed Drive)	Digital Input	P25	DIN12
20	12	Platform key position	Digital Input	P82	DIN14
21	38B	Telescope Retract	Digital Input	P92	DIN16
22	41B	Platform Level Up	Digital Input	PC0	DIN18
23		Not Used		PWM13	PWM14
24	33	Turret Rotate Right	Analog Output	PWM03	PWM04
25	17	Direction Sensing	Digital Input	P49	DIN01
26	34B	Jib Down	Digital Input	P4D	DIN03
27	28	Tilt Switch Active	Digital Input	P74	DIN05
28	35B	Jib Up	Digital Input	P7A	DIN07
29	59	Main Boom Cradled LS (Hi Speed Drive)	Digital Input	P7E	DIN09
30	57	Engine Start Request	Digital Input	PF2	DIN11
31	10	Base key position	Digital Input	P20	DIN13
32	33B	Turret Rotate R	Digital Input	P90	DIN15
33	39B	Telescope Extend	Digital Input	P94	DIN17
34		Not Used		--	--
35	40	Platform Level Down	Analog Output	PWM12	PWM13

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P3 (White) Master Controller: SMB1-105					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	119	Load Zone Border Lamp	Digital Output	P30	DOUT1
2	01A	Emergency Pump Relay	Digital Output	P37	DOUT8
3	23	Steer Right	Digital Output	P36	DOUT7
4	118A	Overload Alarm/lamp	Digital Output	P35	DOUT6
5	65	Axle Lock	Digital Output	P34	DOUT5
6	120	Low capacity zone lamp	Digital Output	P3B	DOUT12
7	85	Generator Solenoid	Digital Output	P3A	DOUT11
8	68	Engine Run Enable	Digital Output	P39	DOUT10
9	57A	Engine Start	Digital Output	P38	DOUT9
10	20	All-Motion Alarm	Digital Output	P3F	DOUT16
11	120A	High capacity zone lamp	Digital Output	P3E	DOUT15
12		Not Used	Digital Output	P5C	DOUT14
13	24	Steer Left	Digital Output	P31	DOUT2
14		Not Used	Analog Input	AN16	AIN01
15		Not Used	Analog Input	AN17	AIN02
16		Not Used	Analog Input	AN18	AIN03
17		Not Used	Analog Input	AN19	AIN04
18		Not Used	Analog Input	AN20	AIN05
19		Not Used	Analog Input	AN21	AIN06
20	128	Angle Sensor - Chassis	Analog Input	AN22	AIN07
21		Not Used	Analog Input	AN23	AIN08
22		Not Used	Analog Input	AN25	AIN09
23	11	Propane Run	Digital Output	P3C	DOUT13
24	21A	Dump Valve	Digital Output	P32	DOUT3
25	45A	Motor 2 Speed	Digital Output	P33	DOUT4
26	40B	Platform Level Down	Digital Input	PC2	DIN19
27		Main Boom Creep (used on 86)	Digital Input	PC5	DIN20
28	37B	Platform Rotate Right	Digital Input	PC8	DIN21
29	36B	Platform Rotate Left	Digital Input	PCA	DIN22
30		Riser Down	Digital Input	PCC	DIN23
31		Riser Up	Digital Input	PCE	DIN24
32	121	load zone safety limit (Main)	Digital Input	PD0	DIN25
33	122	load zone safety limit (Fly)	Digital Output	PF4	DIN26
34	26	Holding Brake Off	Digital Output	P06	DOUT17
35	165	Diff Lock	Digital Output	P07	DOUT18

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P11 (Black) Slave Controller: SMB1-106					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	04		Power		VS1
2	04		Power		VS2
3	04		Power		VS3
4	04		Power		VS4
5	L	Speed control supply (T Booms)			Vreg 5v
6		Not Used	J1939 CAN		
7		Not Used	J1939 CAN		
8	CAN 2H	CANH To PLTF SMB1-106	CANopen		
9	CAN 2L	CANL To PLTF SMB1-106	CANopen		
10	02		Ground		GND1
11	02		Ground		GND2
12	02		Ground		GND3
13	02		Ground		GND4
14		Not used			--

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P12 (Grey) Slave Controller: SMB1-106					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	37	Platform Rotation Right		PWM01	PWM17
2	36	Platform Rotation Left		PWM00	PWM16
3		Not Used		PWM07	PWM23
4		Not Used		PWM06	PWM22
5		Not Used		PWM05	PWM21
6		Not Used		PWM04	PWM20
7		Not Used		PWM11	DEPOP
8		Not Used		PWM10	DEPOP
9		Not Used		PWM09	DEPOP
10		Not Used		PWM08	DEPOP
11		Not Used		--	--
12		Not Used		PWM14	DEPOP
13	35	Jib Up		PWM02	PWM18
14	08A	Footswitch Actuated	Y	P4B	DIN28
15	24P	Steer Left	Y	P72	DIN30
16	23P	Steer Right	Y	P77	DIN32
17	45	High Torque Drive Mode Selected	Y	P7C	DIN34
18	01	Emergency Pump Request	Y	PF0	DIN36
19	04A	Engine Run/Enable		P25	DIN38
20		MPS2 = KC O/H (Korea)	Y	P82	DIN40
21	38A	Fly Boom In	Y	P92	DIN42
22	41A	Platform Level Up	Y	PC0	DIN44
23		Not Used		PWM13	DEPOP
24	34	Jib Down		PWM03	PWM19
25	233	Glazier Load Restrict		P49	DIN27
26	34A	Jib Down	Y	P4D	DIN29
27		Not Used	Y	P74	DIN31
28	35A	Jib Up	Y	P7A	DIN33
29	78	High Throttle Selected	Y	P7E	DIN35
30	57B	Engine Start Request	Y	PF2	DIN37
31		MPS1 = KC O/H (Korea)	Y	P20	DIN39
32	11A	Propane Fuel Select		P90	DIN41
33	39A	Fly Boom Out	Y	P94	DIN43
34		Not Used		--	--
35		Not Used		PWM12	DEPOP

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P13 (White) Slave Controller: SMB1-106					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1		Not Used	Y	P30	DOUT19
2	55	Low Fuel Indicator Lamp	Y	P37	DOUT26
3	577	EcoStart Indicator Light		P36	DOUT25
4	27A	Tilt Audible Indicator	Y	P35	DOUT24
5	231	Regen Lamp (EU Stage 5 engine)		P34	DOUT23
6	63	SGE Alarm		P3B	DOUT30
7	82	O/L Lamp		P3A	DOUT29
8	118	O/L Alarm		P39	DOUT28
9	74	Glow Plug Indicator Lamp	Y	P38	DOUT27
10	119	Load Zone Border Lamp		P3F	DOUT34
11	120A	High capacity zone lamp		P3E	DOUT33
12	120	Low capacity zone lamp		P5C	DOUT32
13	27	5 Degree Tilt LED Indicator		P31	DOUT20
14	D	Drive Controller	Y	AN16	AIN10
15	Y	Main Boom Elevation Controller	Y	AN17	AIN11
16	X	Turret controller	Y	AN18	AIN12
17		Not Used	Y	AN19	AIN13
18		Not Used	Y	AN20	AIN14
19	R	Riser Controller (AJ Booms)		AN21	AIN15
20		Not Used	Y	AN22	AIN16
21		Not Used	Y	AN23	AIN17
22	C	Speed control knob (T booms)	Y	AN25	AIN18
23	76P	MIL		P3C	DOUT31
24		Not Used		P32	DOUT21
25	08	Footswitch Indicator	Y	P33	DOUT22
26	40A	Platform Level Down	Y	PC2	DIN45
27	232	Regen Temp. Override (EU Stage 5 engine)		PC5	DIN46
28	35A	Platform Rotate Right	Y	PC8	DIN47
29	36A	Platform Rotate Left	Y	PCA	DIN48
30	165A	Diff Lock	Y	PCC	DIN49
31	85	Generator On/Off	Y	PCE	DIN50
32	61	SGE - Bar In	Y	PD0	DIN51
33	62	Reset SGE	Y	PF4	DIN52
34		Not Used		P06	DOUT35
35	165B	Diff Lock Indicator		P07	DOUT36

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5.2-5 SCM Calibration

Tare weight calibration sets the unladen weight of the platform. It is the weight of an empty platform that the SCM subtracts from the gross weight reading of the load cell, giving a new zero (net) weight to start from when measuring the contents of the platform.

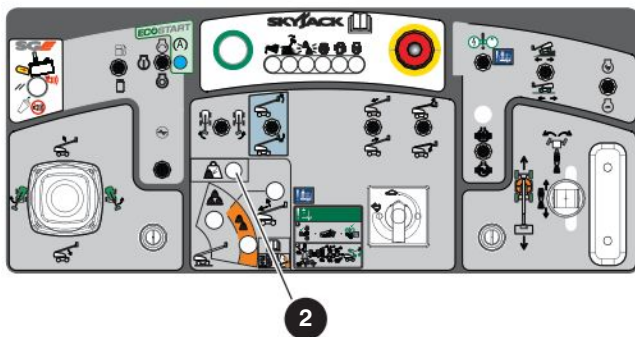
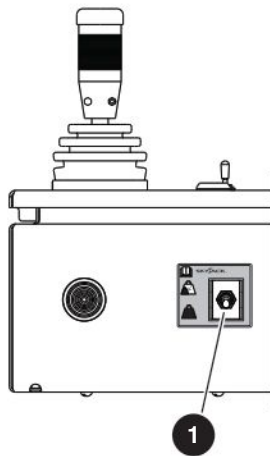
Net weight = Gross weight - Tare weight

Net weight: the weight of the platform.

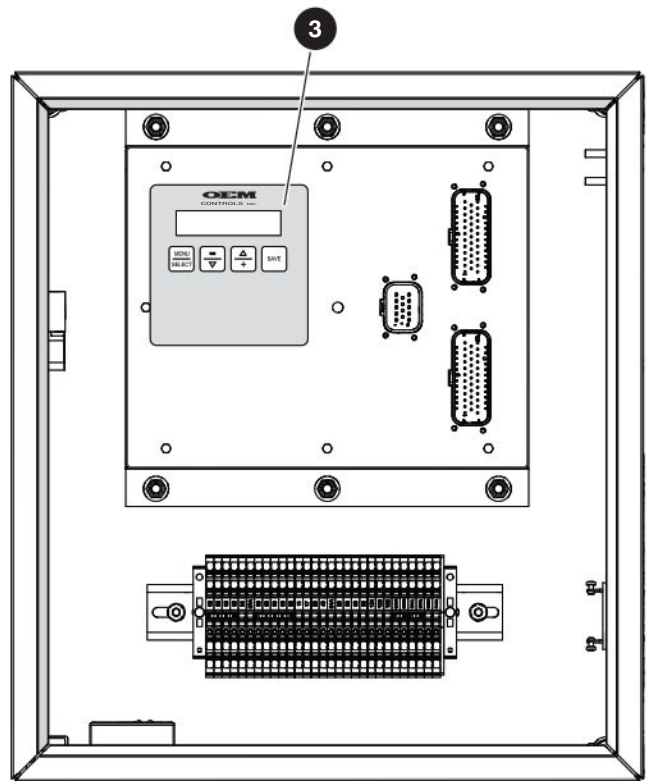
Gross weight: the total weight as measured by the load cell.

Tare weight: the weight of the empty platform as set by the tare weight calibration.

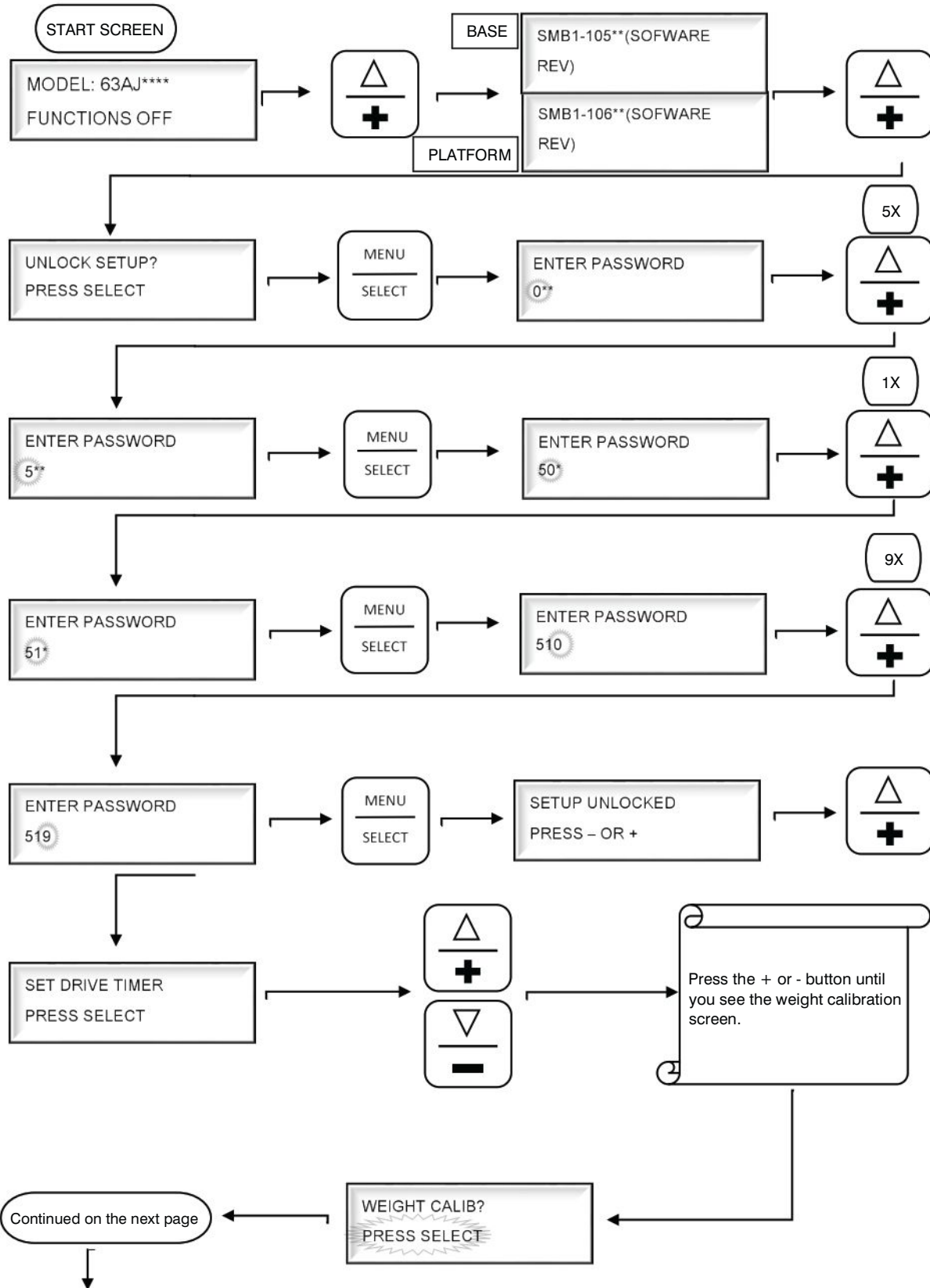
1. Make sure the platform is level.
2. Remove all items from the platform, including optional attachments.
3. Make sure the **capacity derate switch 1** is in the full capacity position, and the **capacity derate light 2** is not on.



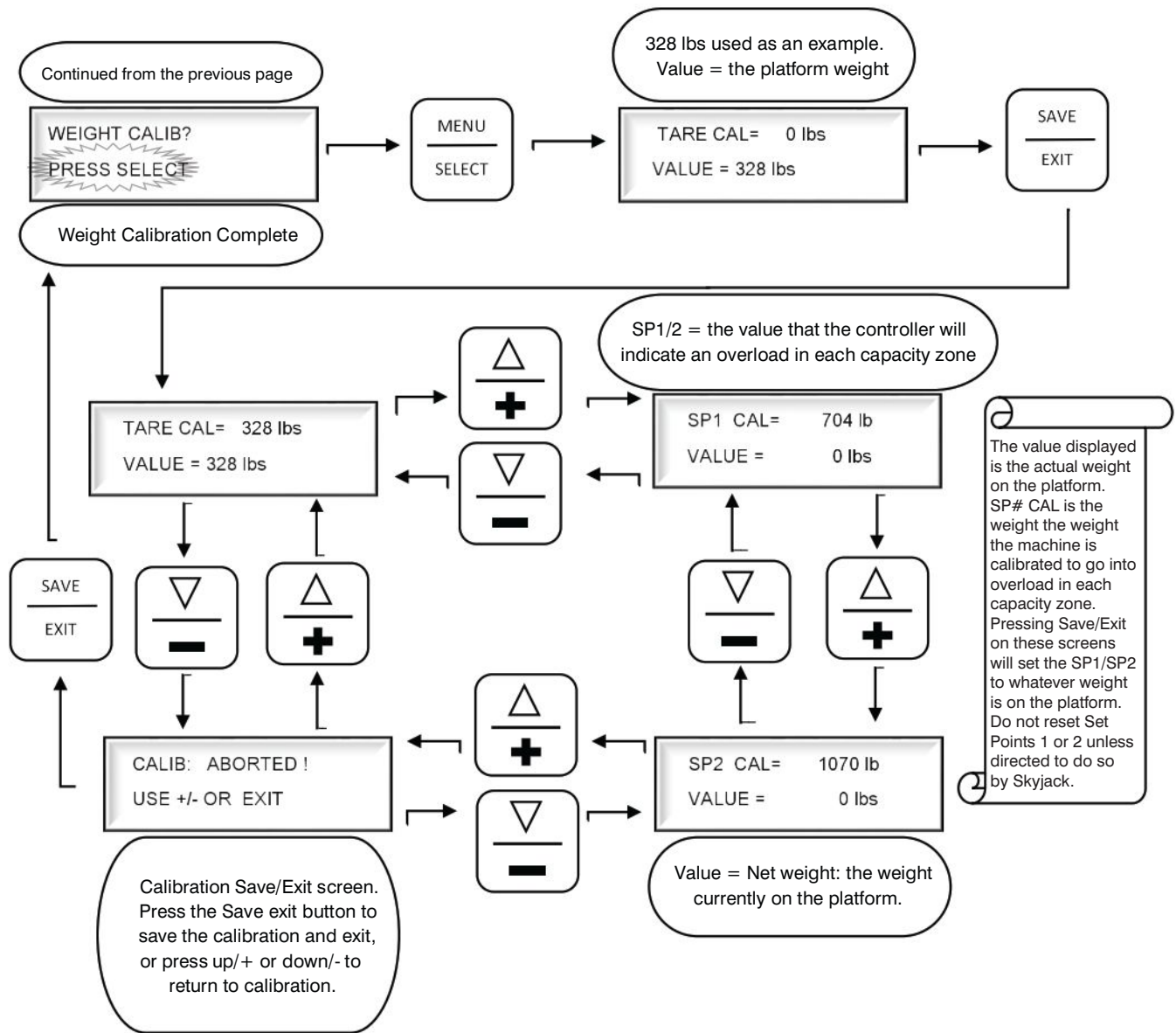
4. Do the calibration procedure from the **SCM 3** in the base control box. Follow the flowchart on the next two pages.



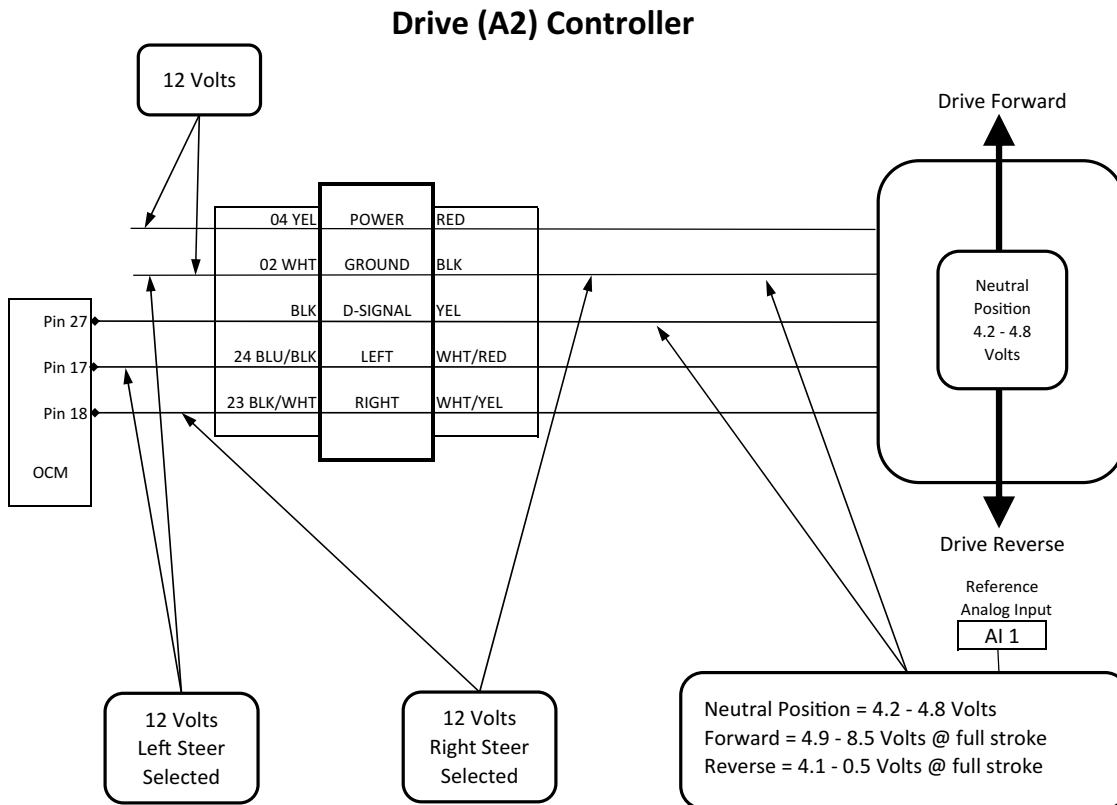
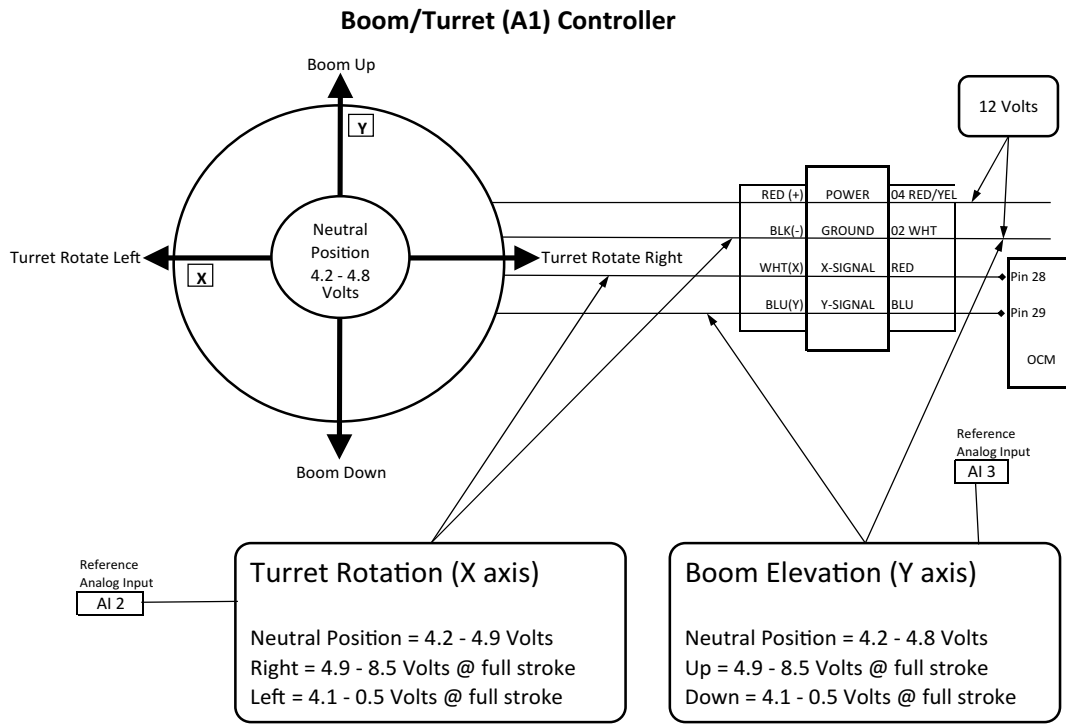
5.2-6 SCM Calibration Flowchart



SCM Calibration Flowchart (continued)



5.2-7 Platform Controller Voltage References



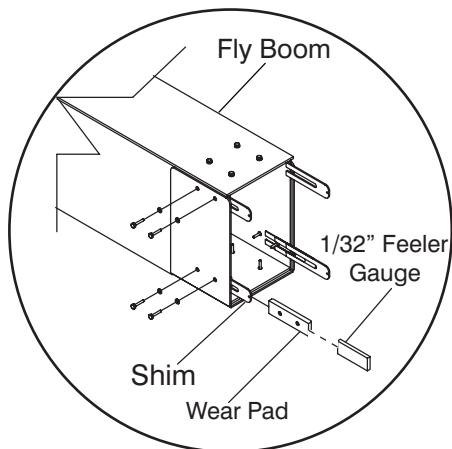
5.3 Boom

5.3-1 Check Wear Pads

1. Ensure the MEWP is on a firm level surface and is in the stowed position.
2. Start the engine from the base control console.
3. Raise the main boom to a comfortable working height (chest high), and then extend fly boom approximately 1 ft (30 cm).
4. Measure the thickness of each wear pad, and replace wear pad if it is less than 7/16 inches (11 mm)
5. If the wear pad is within the specified thickness, shim it as necessary.

5.3-2 Shim Wear Pads

1. Ensure 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 1/32" (0.8 mm) clearance and zero drag.



5. Extend and retract the fly boom through the entire range of motion and observe for loose points.

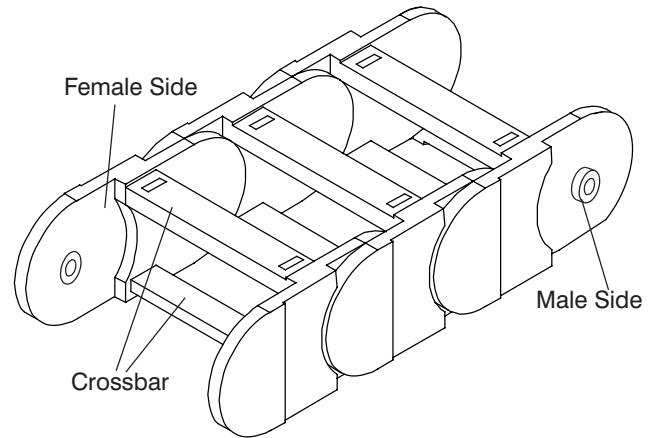


NOTE

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

5.3-3 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.

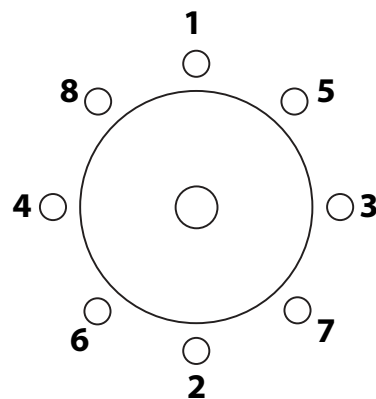


5.3-4 Rotary Actuator Bolt Torque Procedure

WARNING

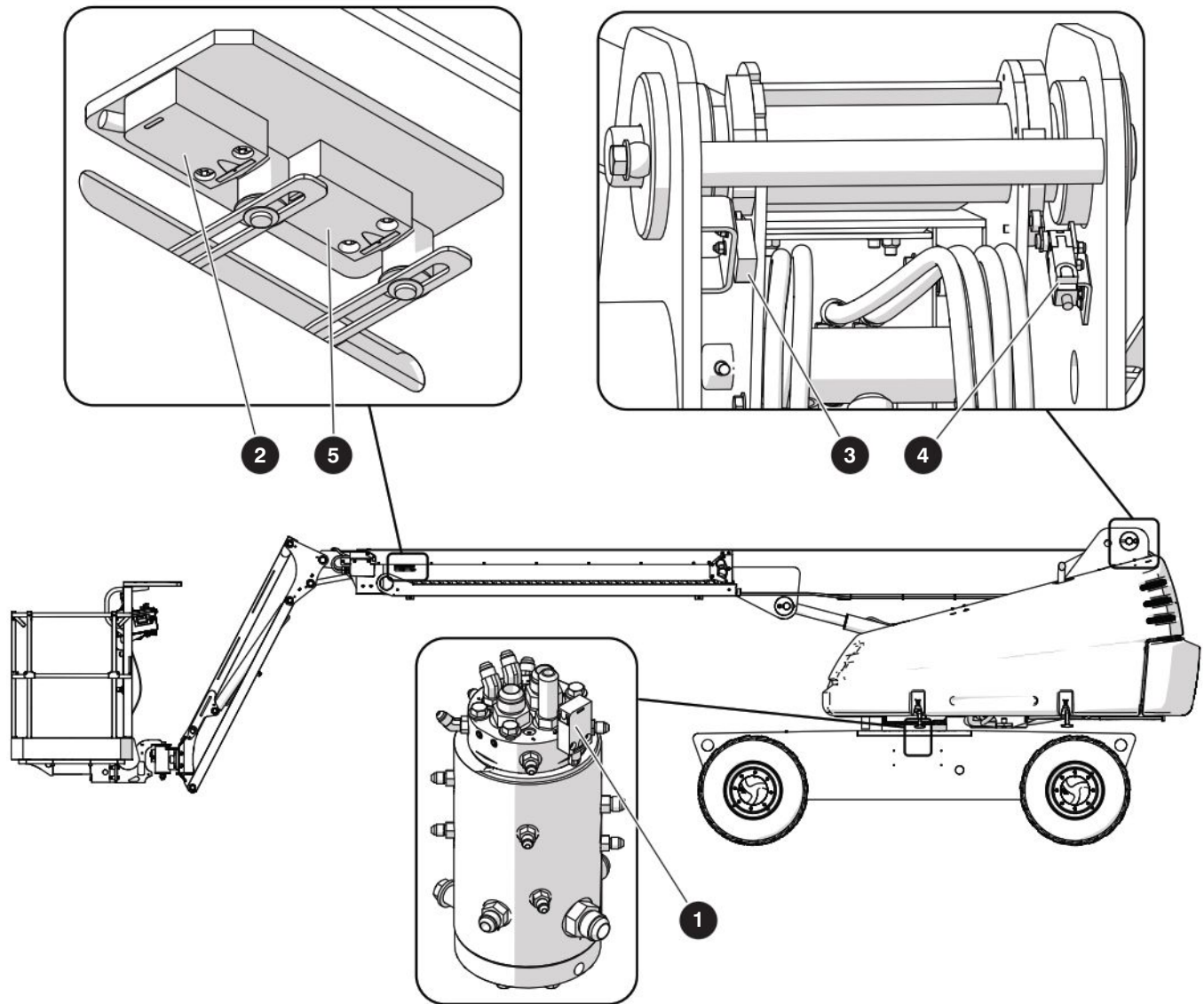
Maintaining proper torque is essential to safe MEWP operation. Improper bolt torque could result in an unsafe operating condition and component damage.

1. Set the torque wrench to 17 ft-lb (25 Nm) and tighten the mounting bolts in a cross pattern sequence.



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

5.3-5 Limit Switch Locations

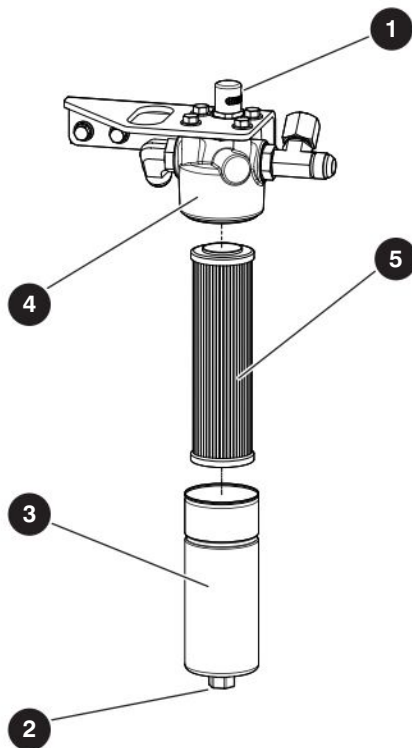


- ❶ Limit Switch LS1 - Direction Sensing
- ❷ Limit Switch LS2 - Fly Stowed (high speed cut-out)
- ❸ Limit Switch LS3 - Main Boom (high speed cut-out)
- ❹ Limit Switch LS4 - Boom Down (dual load zone)
- ❺ Limit Switch LS5 - Fly Out (dual load zone)

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 **1**. 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 **2**, loosen filter housing **3** and remove it from the filter head **4**.
6. Remove the filter element **5** 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

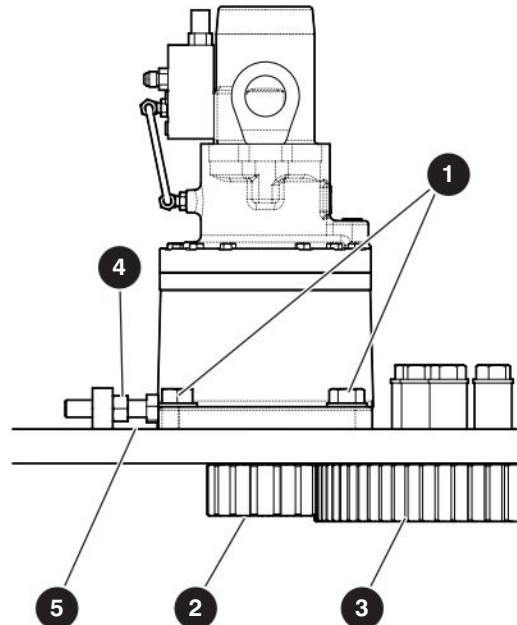
The swing drive is located at the platform end of the turret, behind the battery.



NOTE

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

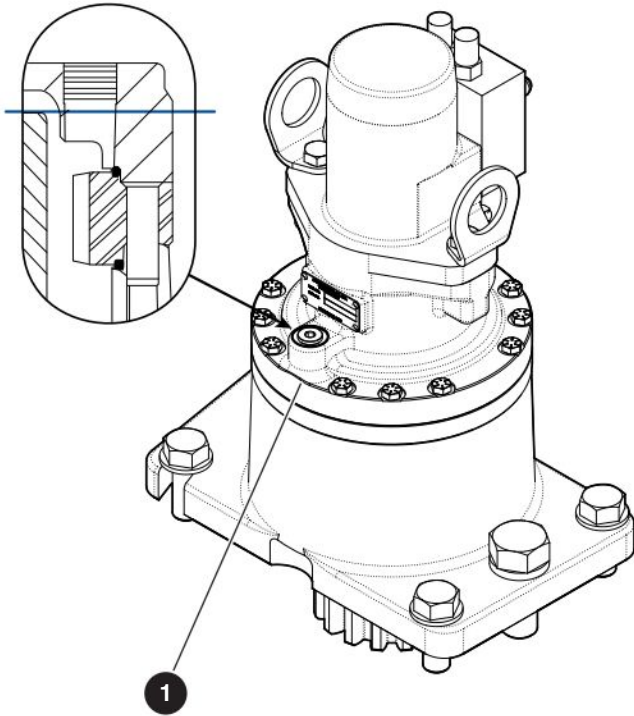
9. Loosen the mounting fasteners **1** on the swing drive.
10. Push the swing drive towards the rotation gear as close as possible (this will push the swing drive gear **2** into the rotation gear **3**).



11. Loosen the lock nut **4** on the adjustment bolt **5**.
12. Tighten the adjustment bolt clockwise until it contacts the plate of the swing drive.
13. Turn the adjustment bolt $\frac{1}{2}$ turn counterclockwise, then tighten the lock nut on the adjustment bolt.
14. Pull the swing drive away from the rotation gear until it contacts the adjustment bolt.
15. Tighten the mounting fasteners on the swing drive.
16. 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 **1** 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 [2.11 Hydraulic & Gear Oils](#) for recommended oil types.



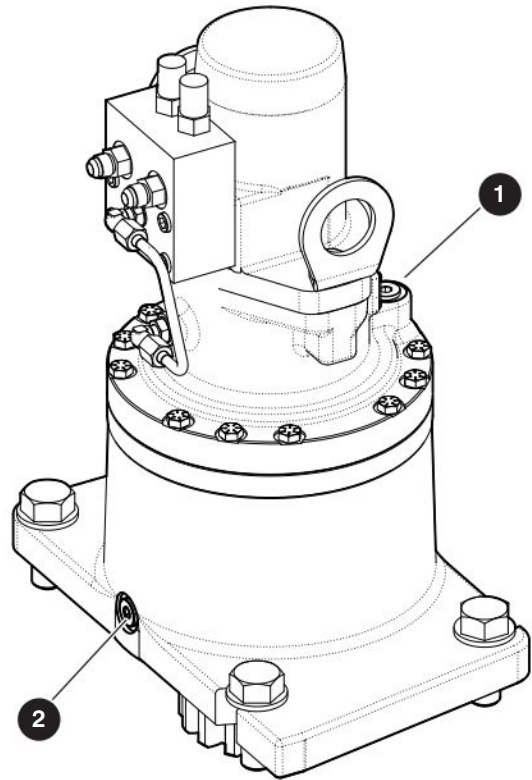
5.4-4 Change the Swing Drive Oil



NOTE

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

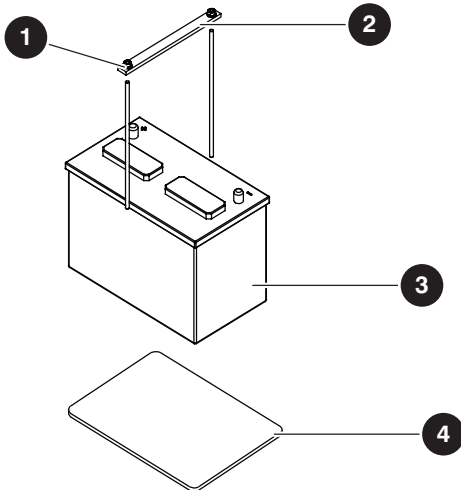
1. Remove the plug at the fill port **1**.
2. Place a suitable container under the drain port **2**.



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 [2.11 Hydraulic & Gear Oils](#) 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.



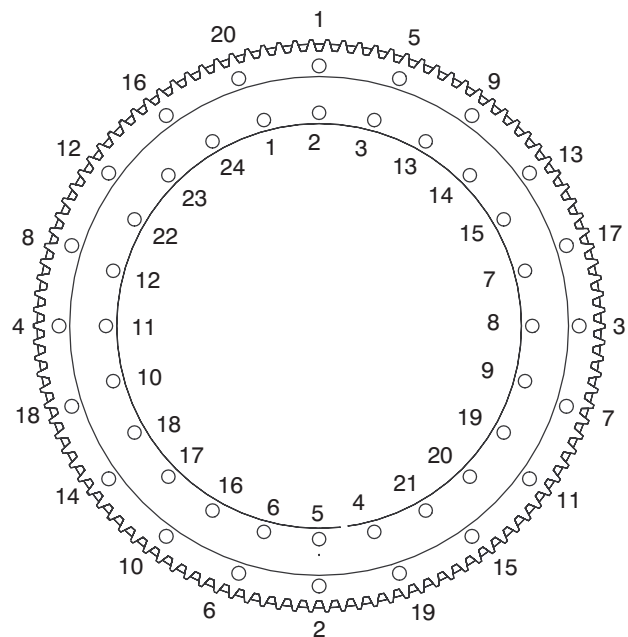
2. Remove the positive and negative connectors from the batteries.
3. Remove the battery retainer bracket nuts and washers ①.
4. Remove the bracket ②.
5. Remove the batteries ③.
6. Replace the battery pad ④ if needed.
7. Replace the batteries and secure them with the bracket, j-hooks, washers and nuts.
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.

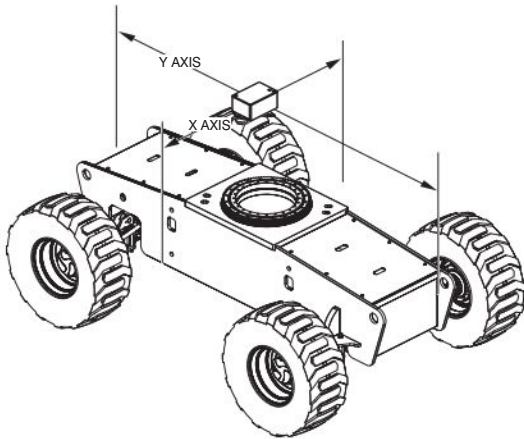
1. Set the torque wrench to 85 ft-lb (115 Nm) and tighten the mounting bolts in a criss-cross pattern sequence.



2. Set the torque wrench to 170 ft-lb (230 Nm) and tighten the mounting bolts with the same sequence.

5.4-7 Electronic Tilt Switch Setup Procedure

Tilt Switch Replacement



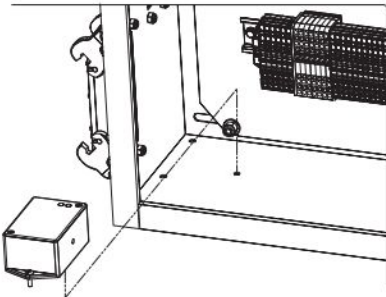
1. Park the MEWP on a firm level surface.
2. Disconnect the tilt switch from the 4 pin connector.



NOTE

Make sure the part number of the old tilt switch and 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 .

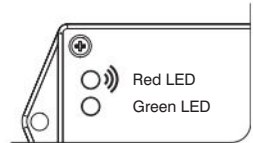
8. Verify the switch is powered (red or green LED will be continually blinking).



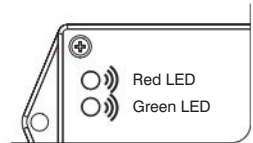
9. Program the tilt switch:

- a. Press and release the set to zero button 3 times. Observe LED flash codes as shown below.

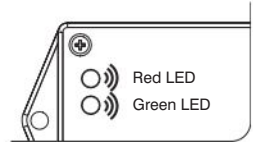
- b. Only the red LED will blink for 4 seconds.



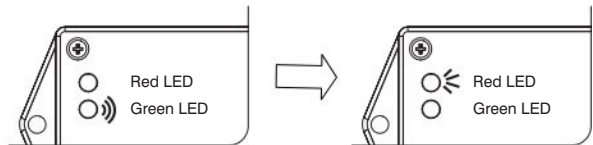
- c. Both LEDs will flash for 1 second.
Results: The switch is learning the new zero position.



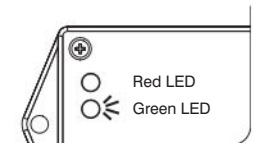
- d. Both LEDs will turn on solid for 1 second.
Results: The new zero position has been learned.




- 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.

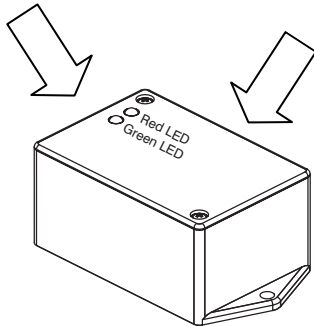


10. Turn the main power disconnect switch to the off position .

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

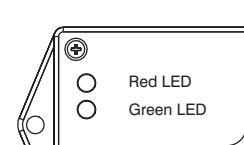
The tilt circuit is only powered when the controls are powered up.

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 switch is powered (red or green LED will be continually blinking).

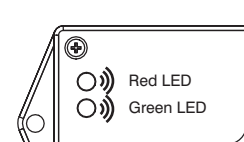


5. Reprogram the Tilt Switch

- a. Press and hold the set to zero button for 5 seconds.
Results: Both LEDs will be OFF.



- b. Both LEDs will flash.

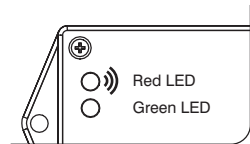


IMPORTANT

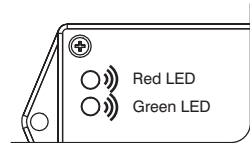
Step “c” must be completed within a 5 second period, or the switch will automatically exit program mode and return to normal operation using the previously stored data.

- 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”.

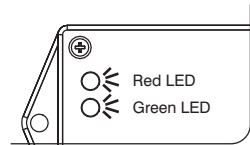
- e. Observe program delay / stabilization time (only the red LED will blink for 4 seconds).



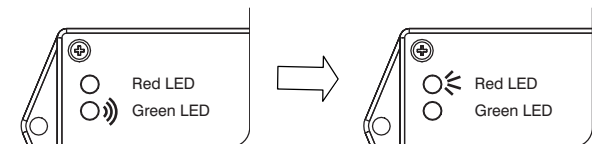
- f. Both LEDs will flash for 1 second.
Results: The switch is learning the new zero position.



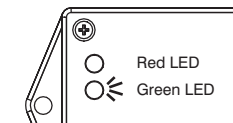
- g. Both LEDs will turn on solid for 1 second.
Results: The new zero position has been learned.





- h. 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.



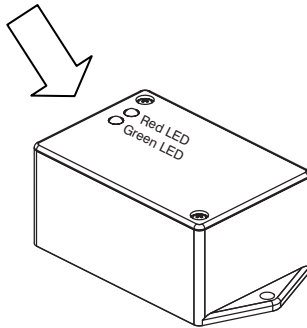
- i. The green LED will turn on solid.
Results: The switch is ready for normal operation.



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

Verify Tilt Circuit

Light Indicators



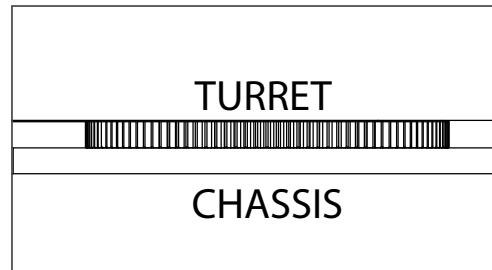
Operations of the Tilt Switch

The following describes the LED's 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 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 that the pointer touches the bottom surface of the turret weldment.



5. Zero the dial indicator.
6. Rotate the turret 180° in the 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 0.100” (2.54 mm) or greater, the rotation bearing should be removed and replaced.

5.5 Deutz Diesel Engines

Maintaining the engine components is essential to 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

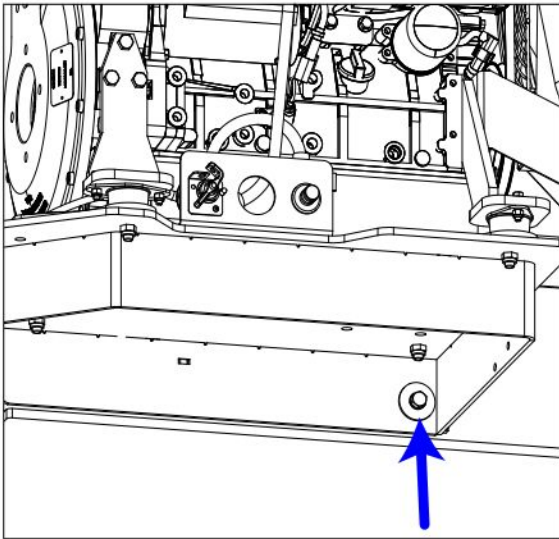
Perform this operation after warming the engine to normal operating temperature.



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 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 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 Deutz D2.9L 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.

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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
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 FIEco.
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.

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5.5-6 Deutz D2.9L 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. 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.

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5.5-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
417	171	3	3-1-2	Sensor error SCR-System environment temperature. DPF-System air inlet temperature, signal range check high.
418	171	4	3-1-2	Sensor error SCR-System environment temperature. 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. 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. 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. 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. No detailed information!
500	523915	0	1-6-5	HCI dosing valve (DV1); overcurrent at the end of the injection phase
501	523915	12	1-6-6	HCI dosing valve (DV1): Powerstage over temperature.
502	523915	3	1-5-9	HCI dosing valve (DV1): Short circuit to battery.
503	523915	3	1-6-4	Short circuit to battery high side, HCI dosing valve (DV1).
504	523915	4	1-5-9	HCI dosing valve (DV1): Short circuit to ground.
505	523915	11	1-6-4	HCI dosing valve (DV1): Short circuit high side powerstage.

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5.5-6 Deutz D2.9L 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!

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5.5-6 Deutz D2.9L 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. 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.

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5.5-6 Deutz D2.9L 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 Pol2 quantity.
635	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol2 shut-off.
636	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol3 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 readiness 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.

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5.5-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
720	98	2	2-1-1	Plausibility Check. 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 clogged.
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	Exhaust gas pressure 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!

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5.5-6 Deutz D2.9L 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. (3x) over the max. has been aborted allowed recovery time. Regeneration after time X is not successful (the error occurs when the regeneration times).
806	524058	2	8-4-4	Particulate filter; regeneration not successful.
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. 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.

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5.5-6 Deutz D2.9L 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) 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).

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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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5.5-6 Deutz D2.9L 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. 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 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). 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

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5.5-6 Deutz D2.9L 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). 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). 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.

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5.5-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1219	524018	14	7-8-6	HMI engine derate service state. DPF wasn't regenerated, power reduction phase 1 (manuell regeneration request).
1220	524022	14	7-8-6	HMI engine derate stop state. 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. Air pressure glow plug flush line; below limit.
1255	524013	7	8-5-7	Burner Control; Flame lost max. Burner operation is interrupted too often.
1257	523915	7	8-5-3	HCl 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.

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5.5-6 Deutz D2.9L 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 plausibility 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.

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5.5-6 Deutz D2.9L 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.

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5.5-6 Deutz D2.9L 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.

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5.5-6 Deutz D2.9L 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.

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5.6 Kubota WG2503 Dual Fuel Engine

Maintaining the engine components is essential to 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

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 on page 177](#)

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 occurrences).

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 on page 177](#) 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.

5.6-2 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 Abnormality (Low Side)
88	94	0	-Fuel Pressure Abnormality (High Side)
91	94	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
92	94	3	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
107	106	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
108	106	16	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
111	105	15	-Intake air temperature abnormality (High Side Stage 1)
112	105	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
113	105	3	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
116	110	15	-Engine Coolant Temperature Abnormality (High Side Stage 1)
117	110	4	-Sensor/Wiring Harness Short To Ground -Sensor Malfunction
118	110	3	-Sensor/Wiring Harness Short To Power -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 -Open heater ground circuit -Open or shorted to ground O2 signal wire -Open sensor ground (5Vrtn1) -Inoperative sensor
154	3227	5	-Open feed circuit to O2 heater -Open heater ground circuit -Open or shorted to ground O2 signal wire -Open sensor ground (5Vrtn1) -Inoperative sensor
171	4237	0	-Exhaust leaks upstream or near the HEGO sensor -reduced fuel supply pressure to the fuel injection system -a inoperative sensor -an injector that is stuck closed or dirty -weak spark or lack of spark to a cylinder -a MAP sensor that indicates pressure that is lower than the true pressure
172	4237	1	-An inoperative O2 sensor -High fuel supply pressure or temperature
182	174	4	-Operating in a frigid atmosphere -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 -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 -Throttle position sensor malfunction
223	3673	3	-Throttle position sensor circuit in the harness short to power -Throttle position sensor malfunction
261	651	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
262	651	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
264	652	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
265	652	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
267	653	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
268	653	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
270	654	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
271	654	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
326	731	2	-Knock signal abnormality (High Side) -Sensor Malfunction
327	731	4	-Sensor/wiring harness open/short to power -Sensor malfunction
336	636	2	-Crank+ or Crank- circuits in wrong connector terminal slot
337	636	4	-Loss of sensor feed -Open sensor ground -Open or shorted to ground signal 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 -Loss of feed voltage to Cam sensor -Loss of sensor feed -Open sensor ground -Open or shorted to ground signal wire -Sensor malfunctioning
342	723	4	-Loss of feed voltage to Cam sensor -Loss of signal or ground circuits -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 -Battery abnormality
563	168	15	-System voltage abnormality (High Side)
601	628	13	-Faulty ECU -ROM Malfunction
604	630	12	- Faulty ECU
606	629	31	-Faulty ECU
627	1348	5	-Open coil in relay -Open in relay driver circuit in engine harness
628	1347	5	-Relay pull in coil shorted internally -Relay driver circuit shorted to ground in wire harness
629	1347	6	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness
642	1079	4	-Wiring harness short to ground -ECM malfunction
643	1079	3	-Wiring harness short to 12.0 V power -ECM malfunction
652	1080	4	-Wiring harness short to ground -ECM malfunction
653	1080	3	-Wiring harness short to 10.0 V power -ECM malfunction
686	1485	4	-Short to ground in relay pull in coil -Short to ground in relay driver circuit in wire harness
687	1485	3	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness -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	<ul style="list-style-type: none"> •exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor

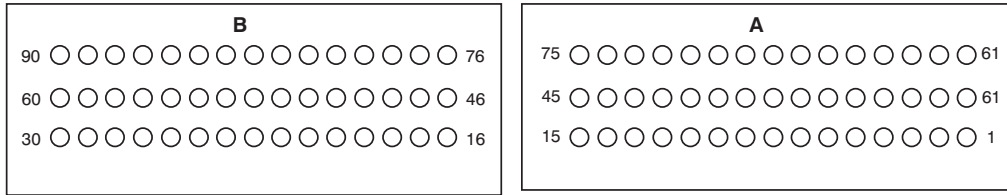
5.6-5 Diagnostic Trouble Codes

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
1152	4236	1	<ul style="list-style-type: none"> • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1153	4236	0	<ul style="list-style-type: none"> • exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1154	4236	1	<ul style="list-style-type: none"> • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1155	4236	0	<ul style="list-style-type: none"> • exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure • an injector that is stuck closed
1156	4236	1	<ul style="list-style-type: none"> • high fuel supply pressure to the fuel injection system • a non-responsive HEGO sensor • an injector that is stuck open
1161	4237	0	<ul style="list-style-type: none"> • exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1162	4237	1	<ul style="list-style-type: none"> • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1163	4237	0	<ul style="list-style-type: none"> • exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1164	4237	1	<ul style="list-style-type: none"> • high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1165	3050	11	n/a
1166	3050	11	n/a
1173	520620	31	n/a
1612	629	31	<ul style="list-style-type: none"> • Faulty ECU
1613	629	31	<ul style="list-style-type: none"> • Faulty ECU
1614	629	31	<ul style="list-style-type: none"> • Faulty ECU
1615	629	31	<ul style="list-style-type: none"> • Faulty ECU
1616	629	31	<ul style="list-style-type: none"> • Faulty ECU
2111	51	7	<ul style="list-style-type: none"> • TPS malfunction
2112	51	7	<ul style="list-style-type: none"> • TPS malfunction
2115	51	0	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction • IVS malfunction

5.6-6 Diagnostic Trouble Codes

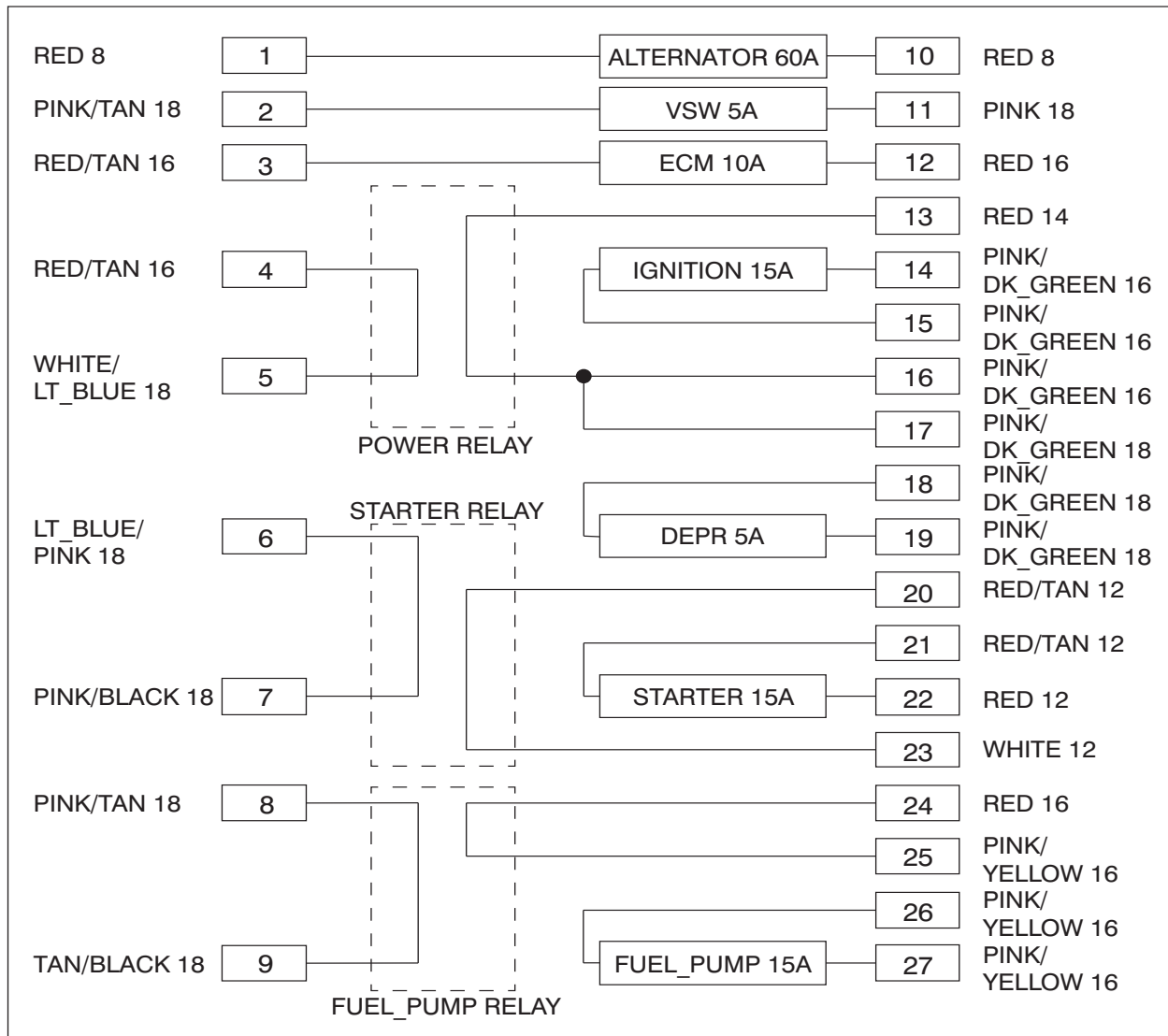
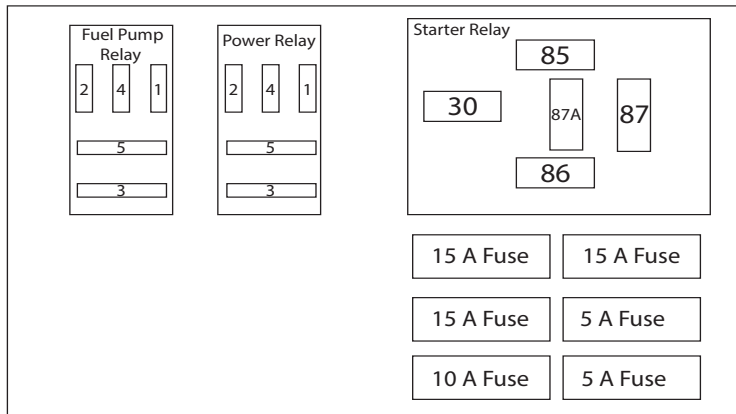
DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
2116	29	0	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2122	91	3	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction
2123	91	3	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction
2127	29	4	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction
2128	29	3	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction
2135	51	31	<ul style="list-style-type: none"> • TPS malfunction
2139	91	1	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2140	29	1	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2300	1268	5	<ul style="list-style-type: none"> • a short to ground or open circuit in the harness • an open internal to the primary coil
2301	1268	6	<ul style="list-style-type: none"> • a short to power in the harness • a short internal to the primary coil
2303	1269	5	<ul style="list-style-type: none"> • a short to ground or open circuit in the harness • an open internal to the primary coil
2304	1269	6	<ul style="list-style-type: none"> • a short to power in the harness • a short internal to the primary coil
2306	1270	5	<ul style="list-style-type: none"> • a short to ground or open circuit in the harness • an open internal to the primary coil
2307	1270	6	<ul style="list-style-type: none"> • a short to power in the harness • a short internal to the primary coil
2309	1271	5	<ul style="list-style-type: none"> • a short to ground or open circuit in the harness • an open internal to the primary coil
2310	1271	6	<ul style="list-style-type: none"> • a short to power in the harness • a short internal to the primary coil

5.6-7 ECU Pin Reference Chart (Kubota WG2503)

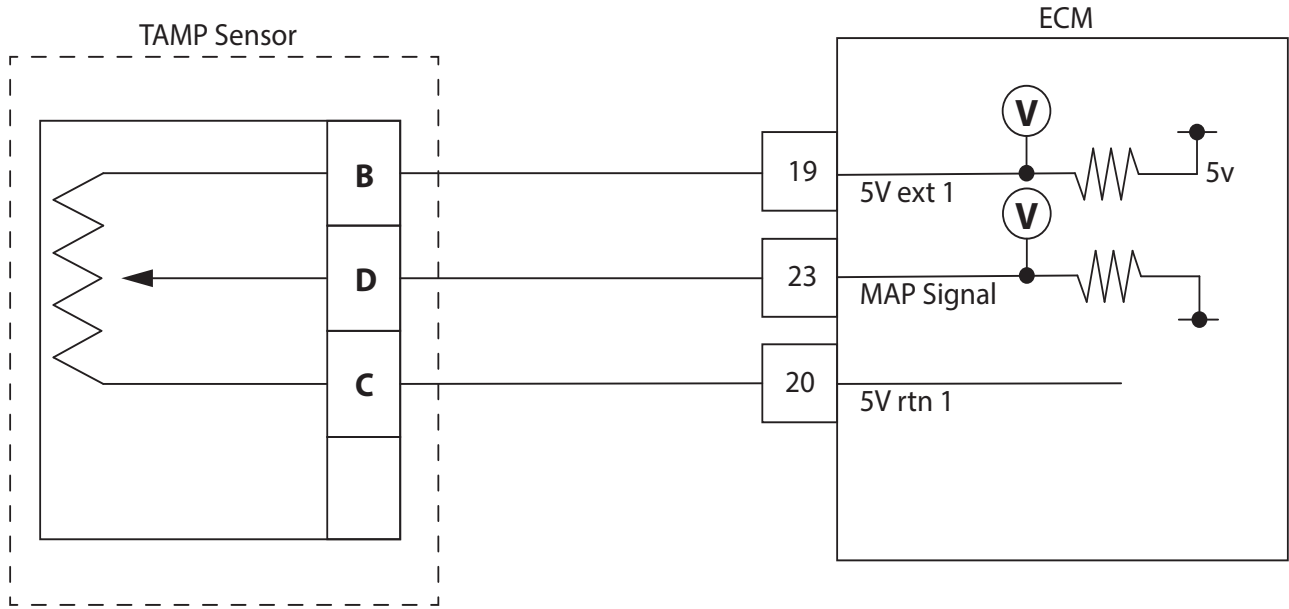


Pin	Wire Colour	Description	Pin	Wire Colour	Description
1	YELLOW 18	SPK_COIL 1A	46	BLANK	AUX ANA PUD 1
2	YELLOW/BLACK 18	SPK_COIL 1B	47	PURPLE/LT_BLUE 18	TPS 1
3	YELLOW/RED 18	SPK_COIL 2A	48	LT_BLUE/DK_BLUE 18	TPS 2
4	BLACK 16	SPK_GRND	49	DK_GREEN/PURPLE 18	AUX DIG 1
5	YELLOW/WHITE 18	SPK_COIL 2B	50	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

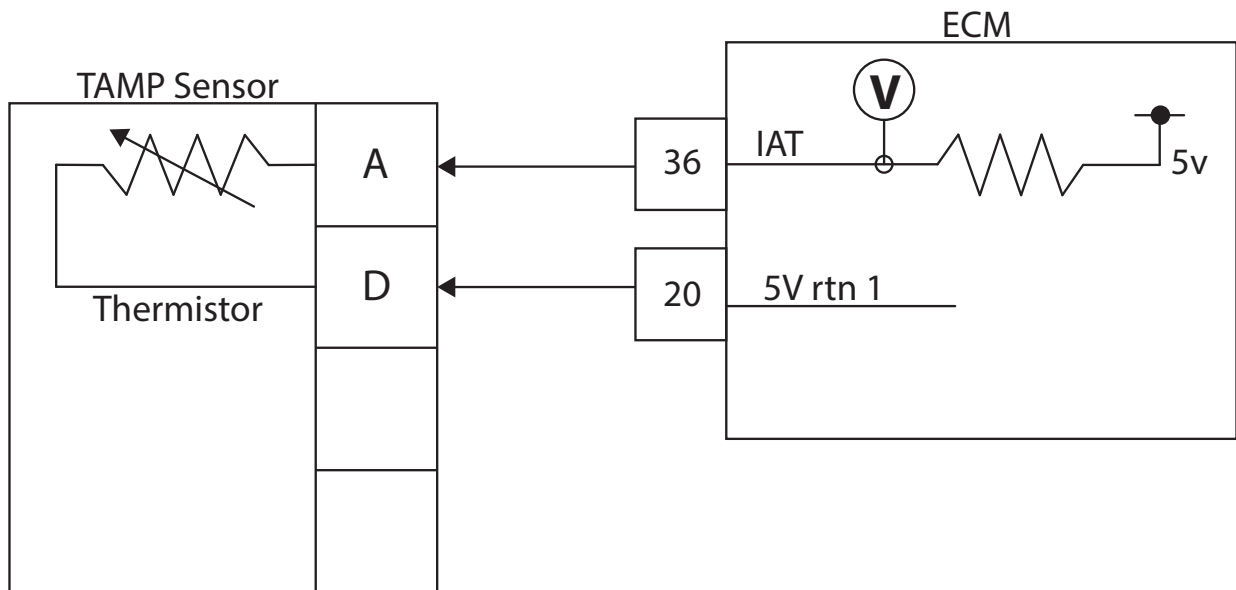
5.6-8 Fuse Box (Kubota WG2503)



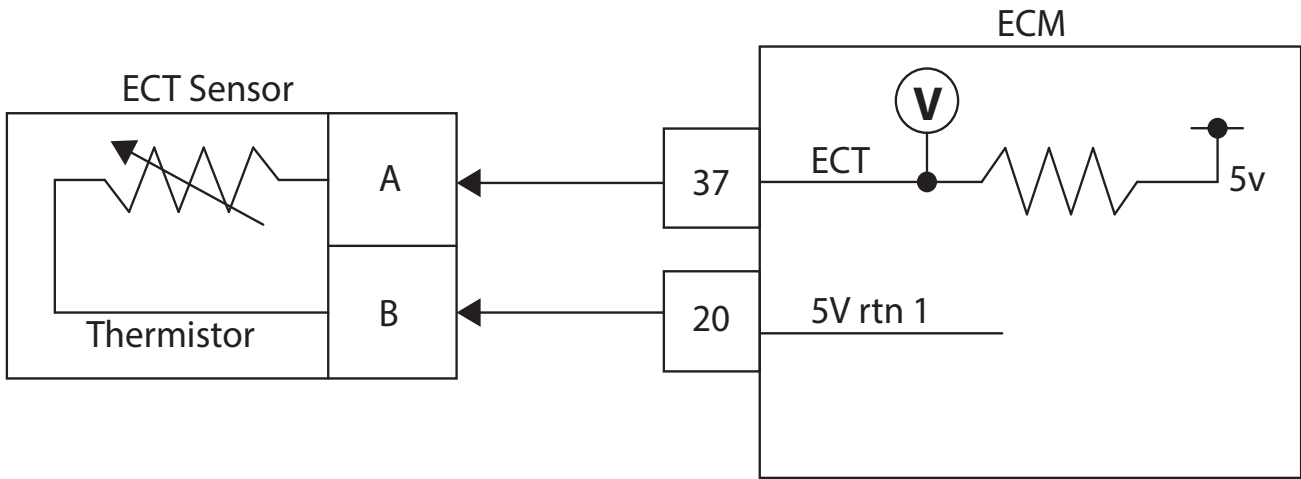
5.6-9 MAP Sensor (Kubota WG2503)



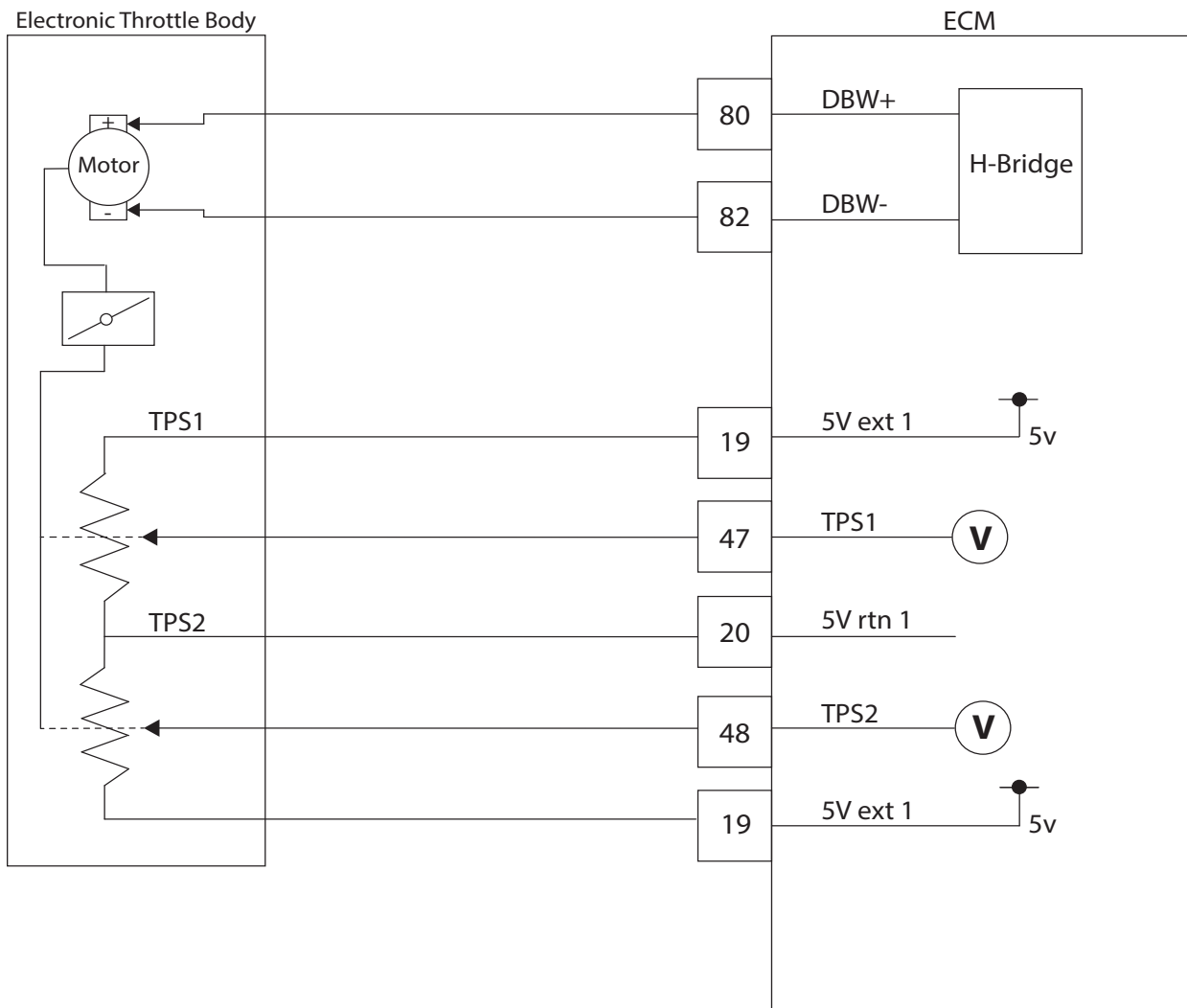
5.6-10 IAT Sensor (Kubota WG2503)



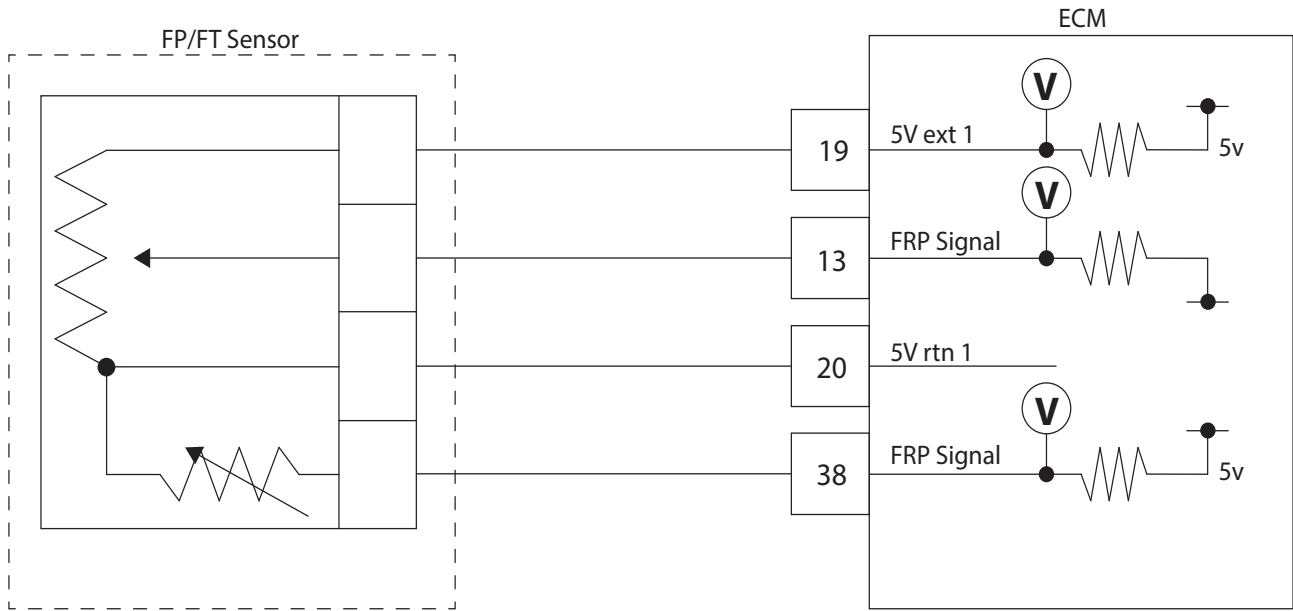
5.6-11 ECT (Kubota WG2503)



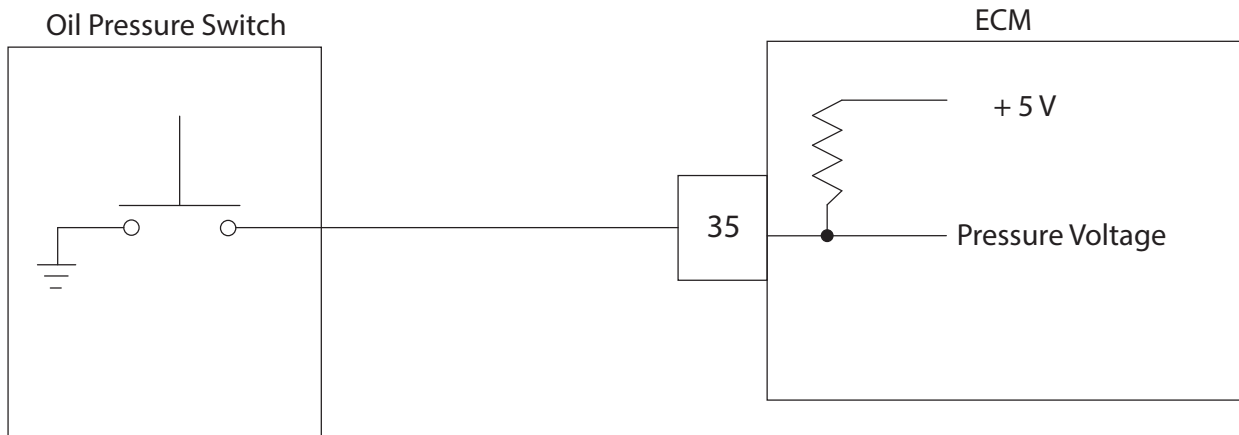
5.6-12 TPS & Engine Speed (Kubota WG2503)



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 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 [2.11 Hydraulic & Gear Oils](#).
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

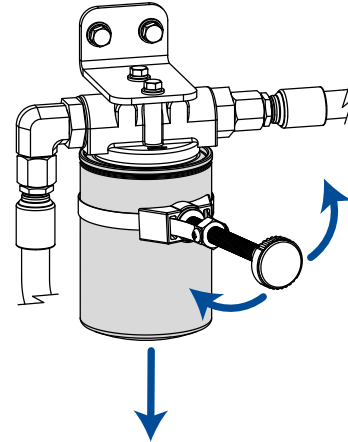
Refer to your national/local regulations on how to dispose of used filter and oil.

NOTE

Samples of 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 contamination 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 [2.11 Hydraulic & Gear Oils](#).

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

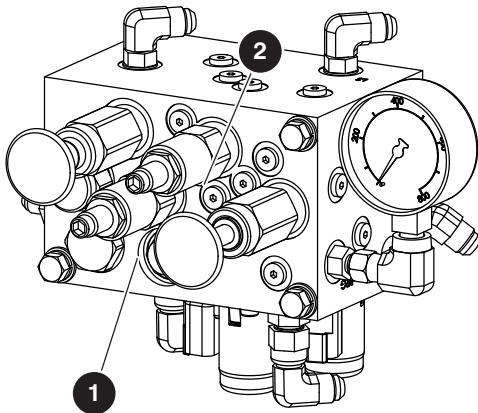
Refer to your national/local regulations on how to dispose of used filters and oil.

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. Ensure the MEWP is on a firm level surface and is in stowed position.
2. Locate the pressure gauge on the brake valve assembly.



3. Remove the wiring from two valves: axle lockout valve wires 65 and 02, and two speed valve wires 45A and 02. Mark the valves to ensure you put the wiring back in the correct positions later.

CAUTION

Failure to remove the wiring may cause damage to components downstream.

4. Locate brake system pressure reducing valve PR1 **1**. Loosen the lock nut and turn the adjustment stem gently clockwise 2 full turns.

WARNING

Valve damage will occur if tightened too much.

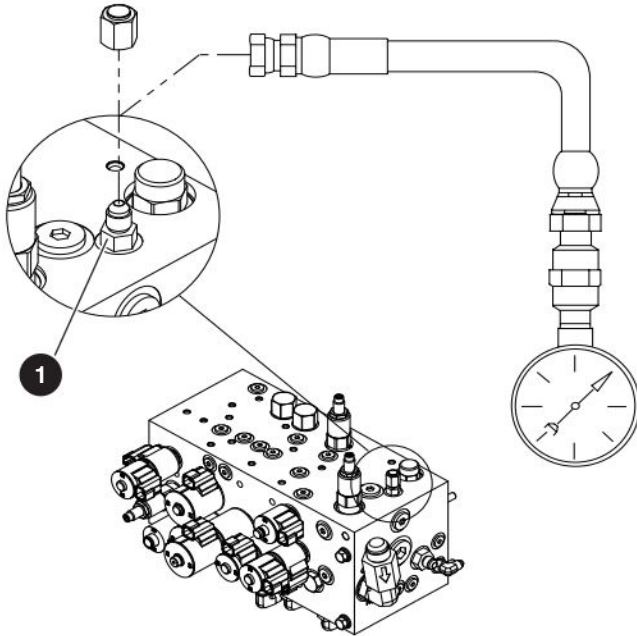
WARNING

Ensure that there are no personnel or obstructions in test area and there is sufficient room for forward or reverse travel.

5. Start the engine from the platform control console and extend the boom slightly to achieve low speed drive.
6. Drive the MEWP forward or reverse. The pressure gauge reading should be 550 psi. Stop the MEWP. Follow the next steps for adjusting the relief valve pressure if needed. If no adjustment is required continue to step 10.
7. Locate brake pressure relief valve RV5 **2** and loosen the lock nut.
8. Turn the adjusting stem on the pressure relief valve RV5 $\frac{1}{4}$ **2** of a revolution at a time clockwise to increase pressure or counterclockwise to decrease pressure. Drive the MEWP forward or reverse, note pressure and stop the MEWP.
9. Repeat step 8 until brake pressure is achieved (550 psi) then tighten lock nut on brake system pressure relief valve RV5 **2**.
10. Locate brake system pressure reducing valve PR1 and turn the valve gently counterclockwise to the initial position.
11. Drive the MEWP forward or reverse. Pressure gauge reading should be 500 psi.
12. Stop the MEWP and adjust pressure reducing valve PR1 $\frac{1}{4}$ **1** turn at a time by turning either clockwise to increase pressure or counterclockwise to decrease pressure.
13. Repeat step 11 and 12 until brake pressure is achieved (500 psi) then tighten lock nut on brake system pressure reducing valve PR1 **1**.
14. Reinstall the wiring in the same positions it was removed from in step 4.
15. Test the brake and two speed functions.

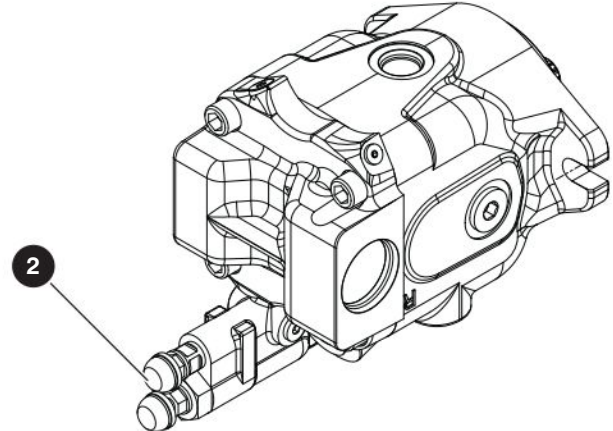
5.8-2 Hydraulic Standby Pressure Adjustment

1. Locate the GP2 port ❶ on either the top or bottom of the main manifold and remove the cap.



2. Connect a pressure gauge (600 psi) to the GP2 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Check the reading on the gauge (standard pressure should be 330 psi) and follow the next steps for adjusting pressure if needed.

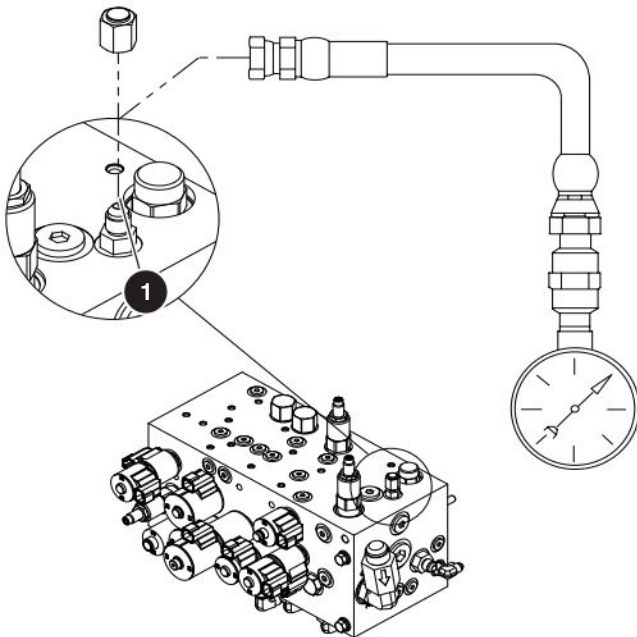
5. Locate the load sense compensator ❷ on the system pump.



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 pressure is set to 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 GP2 port ① on the main manifold and remove the cap.



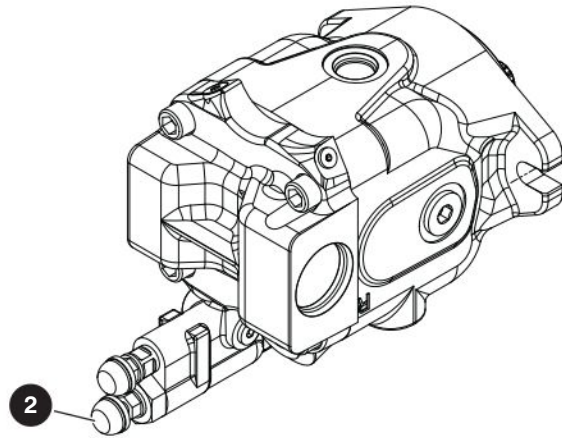
2. Connect a pressure gauge (5000 psi) to the GP2 port.

⚠ 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 3050 psi. Follow the next steps for adjusting the pressure, if needed.

5. Locate the pressure compensator ② on the system pump.

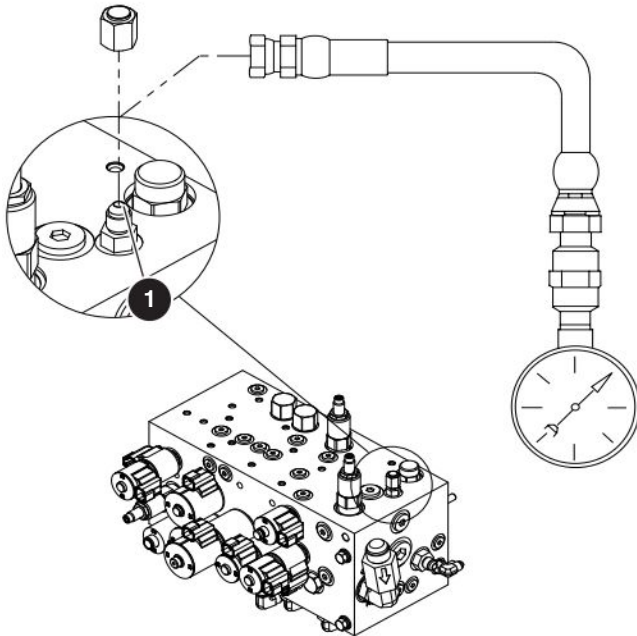


6. Loosen the lock nut.
7. Adjust the system pump pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after pressure is set to 3050 psi.
9. Turn the engine off.
10. Remove the pressure gauge from the GP2 port and cap the port.

5.8-4 Hydraulic System Relief Valve Adjustment

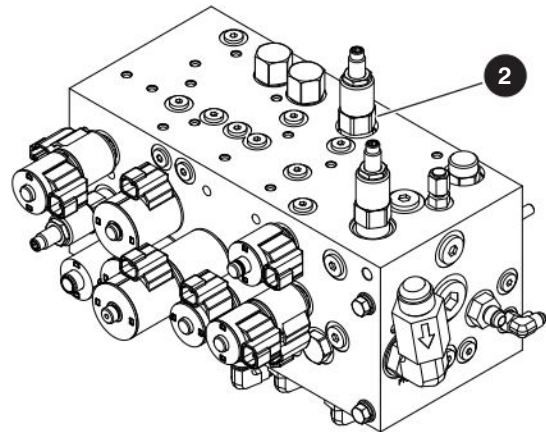
To adjust the system relief valve (RV1), you are required to temporarily adjust the high pressure setting on the system pump to 3300 psi. Refer to [5.8-3 Hydraulic High Pressure Adjustment](#).

1. Locate the GP2 port **1** on the main manifold and remove the cap.



2. Connect a pressure gauge (5000 psi) to the GP2 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 3250 psi. Follow the next steps for adjusting pressure if needed.

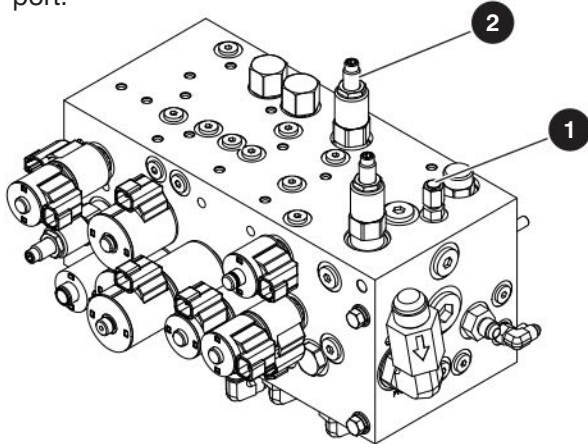
5. Locate the system relief valve (RV1) **2**.



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 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 3050 psi. Refer to [5.8-3 Hydraulic High Pressure Adjustment](#).

5.8-5 Turret Rotate Relief Valve Adjustment

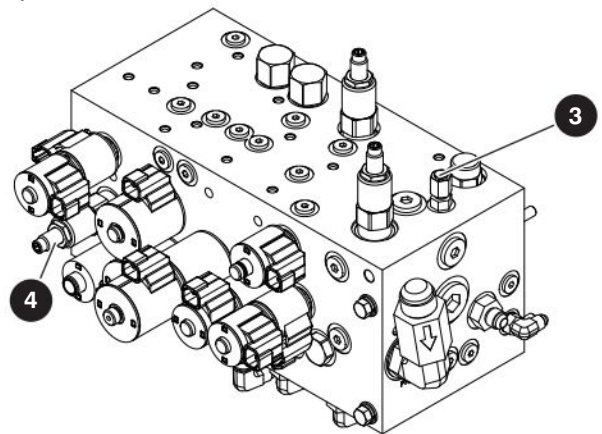
1. Locate the GP2 port **1** on the main manifold.
2. Connect a pressure gauge (5000 psi) to the GP2 port.



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 basket will not contact the ground.
5. Engage the turret transport lock.
6. Attempt to rotate the turret. The pressure should be 1250 psi. Follow the next steps for adjusting the pressure, if needed.
7. Locate the turret rotate relief valve RV2 **2**.
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 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

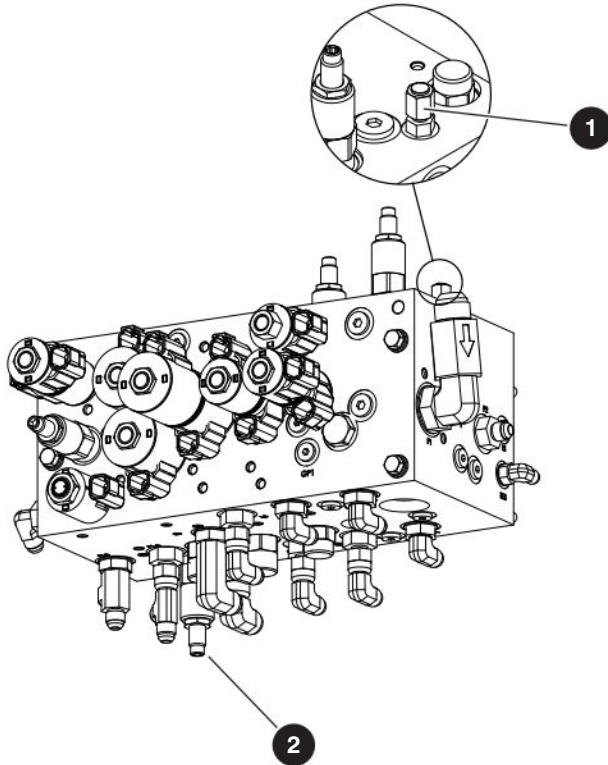
1. Locate the GP2 port **3** on the main manifold.
2. Connect a pressure gauge (5000 psi) to the GP2 port.



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 basket will not contact the ground.
5. Fully raise or lower the platform level and check the reading on the gauge. The pressure should be 3000 psi. Follow the next steps for adjusting the pressure, if needed.
6. Locate the platform leveling relief valve RV3 **4**.
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 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

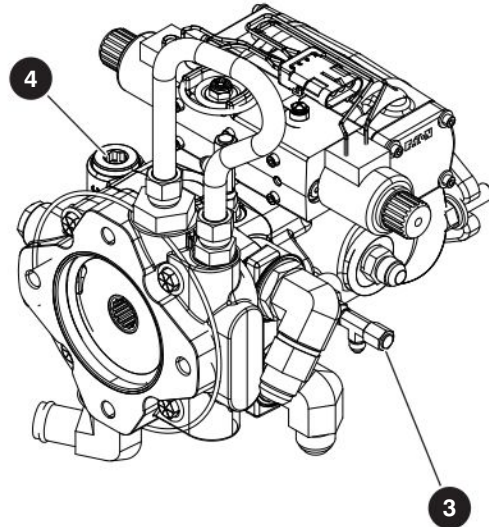
1. Locate the GP2 port ❶ on the main manifold and remove the cap.



2. Connect a pressure gauge (5000 psi) to the GP2 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 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 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 ❸ on the drive pump.
2. Connect a pressure gauge (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.

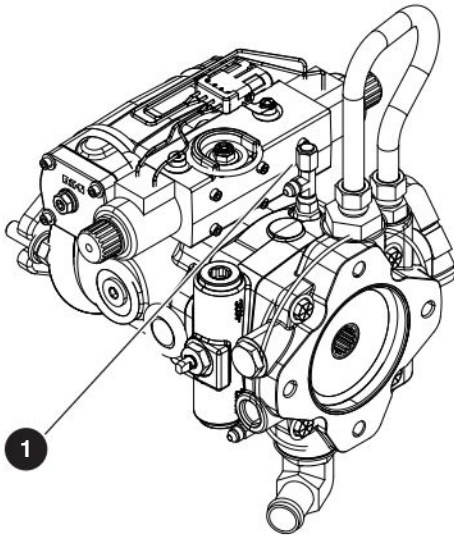
4. Check the reading on the gauge. Standard pressure should be 313 ± 31 psi.
5. Replace the charge pump relief valve RV10 ❹ if the standard pressure is not achieved.
6. Repeat steps 2, 3, and 4 after the charge pump relief valve is replaced.
7. If the pressure is still not in range, repair or replace 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  on the drive pump.
2. Connect a pressure gauge (10000 psi) to test port 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.

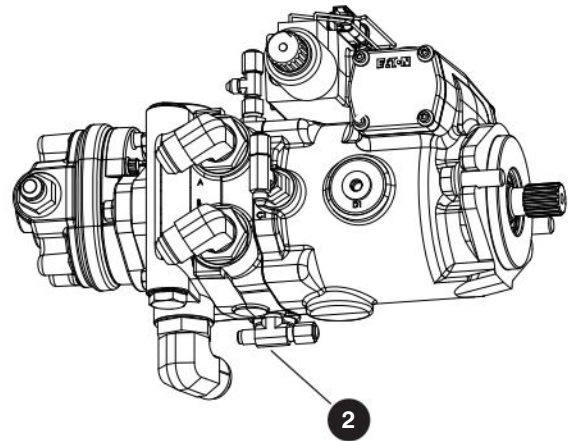
6. Check the reading on the gauge. The standard pressure should be 5000 psi.
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.
9. Remove the pressure gauge from the port, cap the port, and re-plug the brake solenoid power cable.

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  on the drive pump.



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

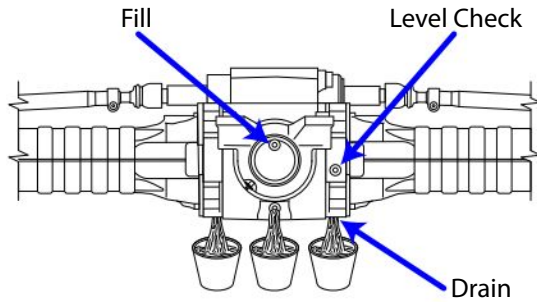
Activating the drive function too quickly will stall the engine.

6. Check the reading on the gauge. The standard pressure should be 5000 psi.
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.

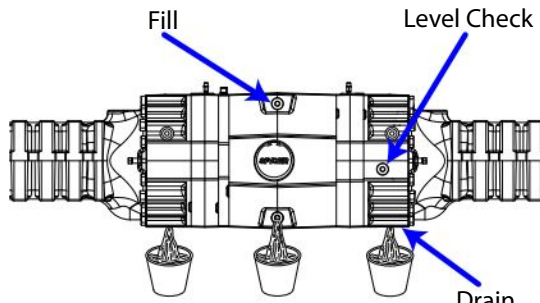
5.9 Axles

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.



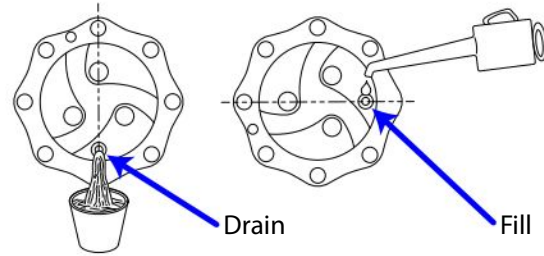
NOTE

The axle is full when oil is leaking from the check port.

6. Refill the axle with new oil as per specifications Refer to [2.11 Hydraulic & Gear Oils](#).
7. Reinstall both of the fill and check plugs.

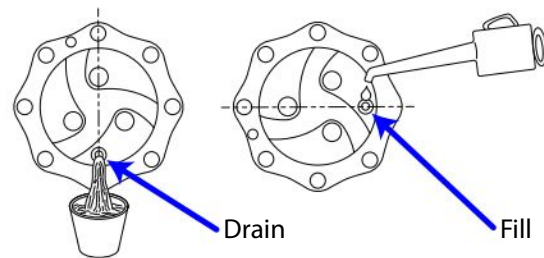
5.9-2 Check the Oil Level in the Torque Hubs

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 [2.11 Hydraulic & Gear Oils](#) for oil specifications.



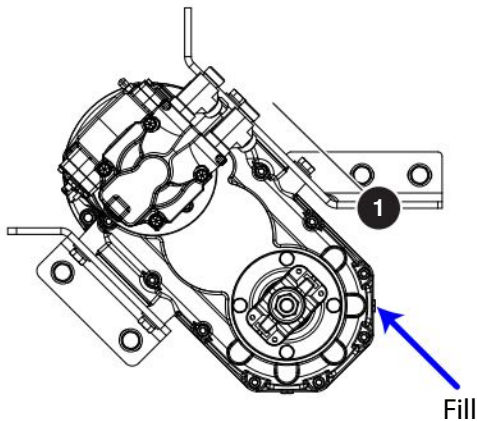
5.9-3 Change the Oil in the Torque Hubs

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 [2.11 Hydraulic & Gear Oils](#).
5. Repeat the above steps with the other three wheel hubs.



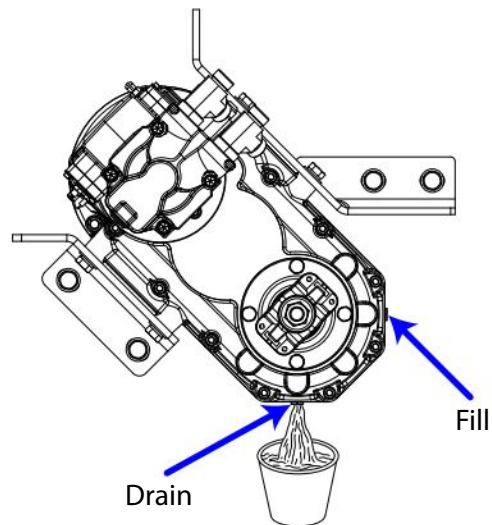
5.9-4 Check the Oil Level in the Axle Gearbox

1. Remove the fill plug 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 [2.11 Hydraulic & Gear Oils](#) 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.



4. Reinstall the drain plug.



NOTE

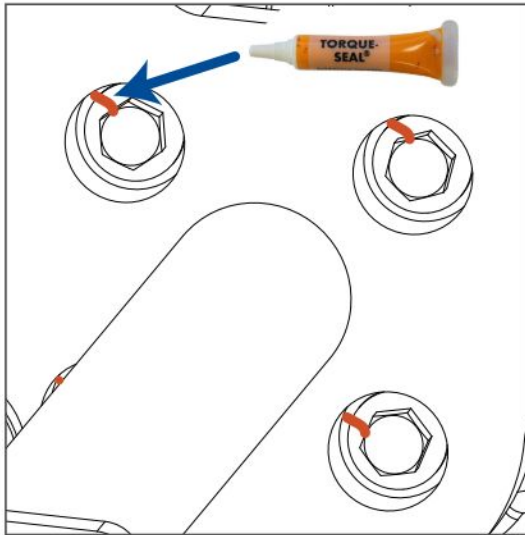
The gearbox is full when oil is leaking from the check port.

5. Refill the gearbox with new oil as per specifications. Refer to [2.11 Hydraulic & Gear Oils](#).
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 0.5"-13 x 1.75" 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 80 ft-lbs.
6. Apply a line of torque seal to each new bolt extending from the bolt head over the washer and to the chassis wall.

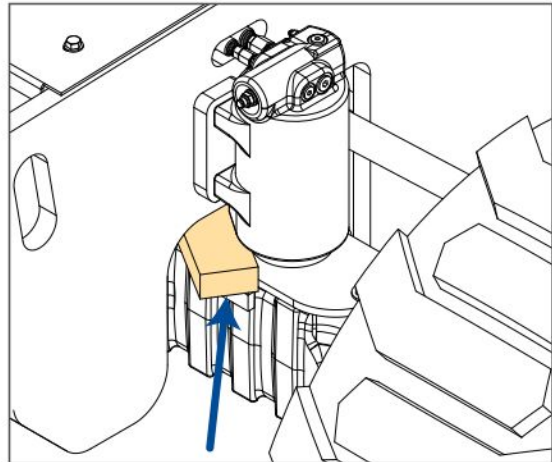


5.9-7 Oscillating Cylinder Replacement

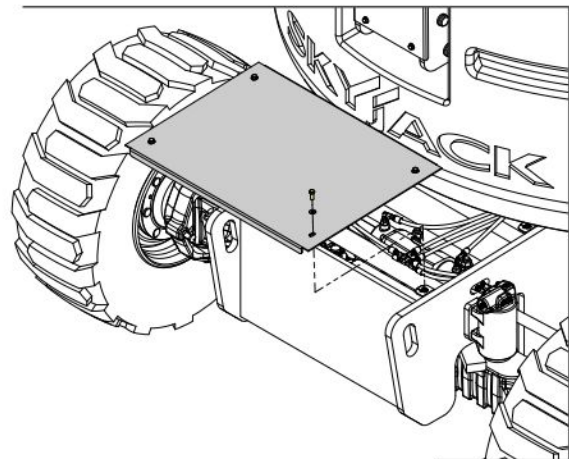
CAUTION

The oscillating axle cylinder weighs approximately 43 lbs (19.5 kg), so a second person to assist with the removal and replacement would be helpful.

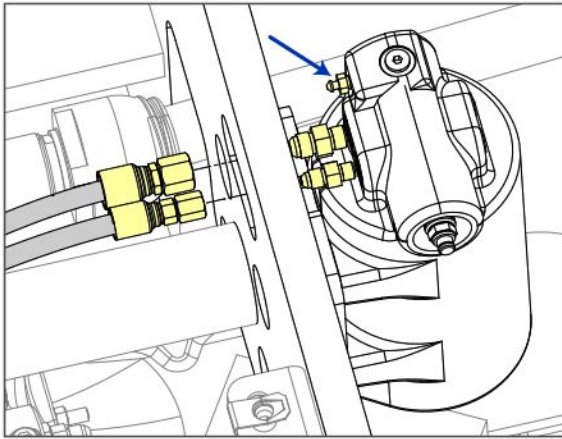
1. Wedge a block of wood between the front axle and the chassis, to prevent the axle from oscillating during the procedure.



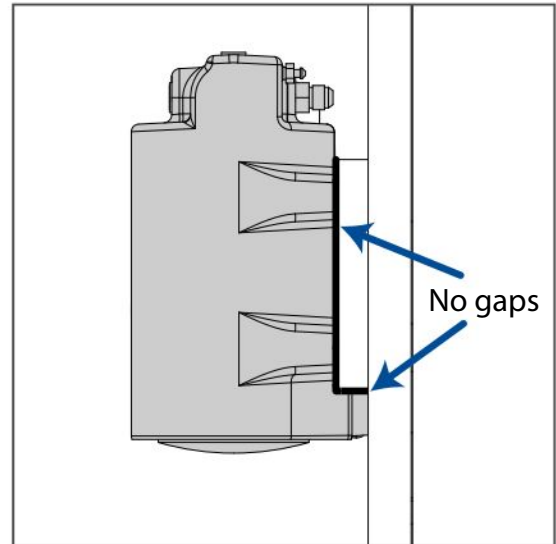
2. Remove and set aside the base cover from the oscillating axle end of the chassis.



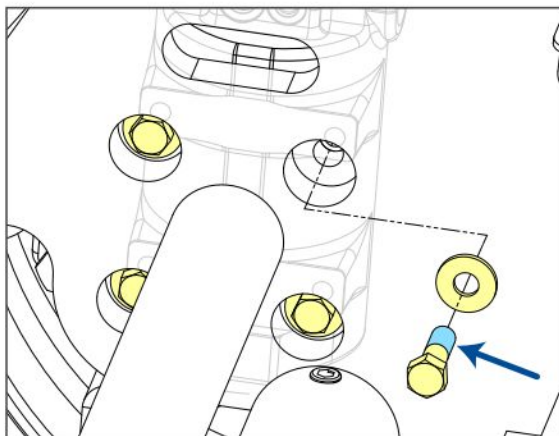
3. With a rag in hand to catch any leaking oil, slowly loosen the bleeder screw to release any trapped air within the cylinder, then tighten it again. Slowly loosen the oscillating axle cylinder hoses to release the pressure, then disconnect them fully, being sure to plug the hose ends.
4. Remove and set aside the cylinder fittings, ensuring they stay clean.



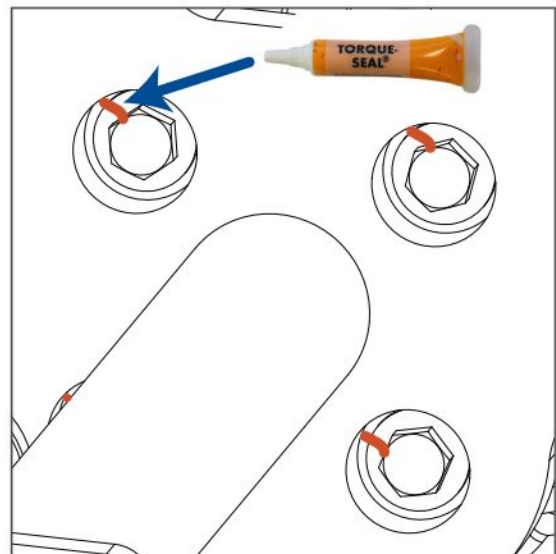
7. Adjust the oscillating cylinder position until there is continuous contact between the cylinder mounting surface and the mounting plate, and between the mounting plate and the cylinder shoulder, with no gaps. Torque the bolts to 80 ft-lbs [108 Nm].



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 (0.5"-13 x 1.75" grade 8) and 0.50" hardened washers, applying liquid blue Loctite 242 or 243 to the lower half of the bolts before installing them. Hand tighten the bolts.



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 24 ft-lbs [33 Nm] and the smaller one to 15 ft-lbs [20 Nm].

10. Remove the plugs and reconnect the hoses to the cylinder fittings, torquing the larger hose end to 21 ft-lbs [28 Nm] and the smaller hose end to 12 ft-lbs [16 Nm].
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.

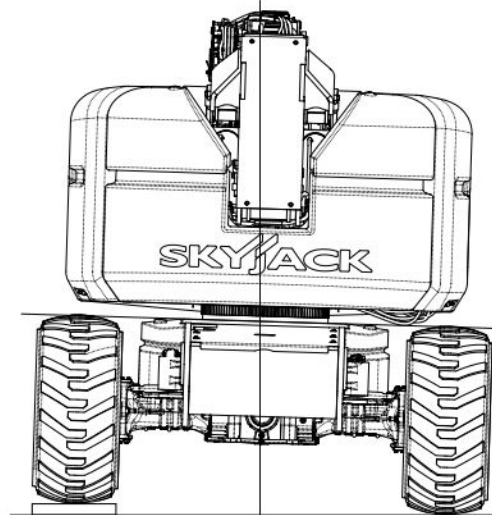
Items you will need before starting:


- oil container
- hose (to reach from bleeders to bucket)

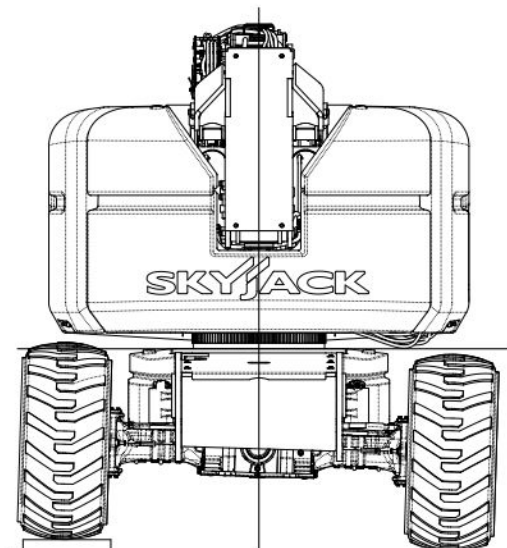
1. Locate a bleeder on either side of the oscillating axle cylinder.
2. Connect a hose to the bleeder nipple.
3. Start the engine and slowly open the bleeder to allow the oil to flow in a continuous stream.
4. Close the bleeder.
5. Repeat the procedure with the other oscillating axle cylinder.

5.9-9 Test the Oscillating Axle Cylinders

1. Extend  the fly boom 1 ft (30) cm while on a firm, level surface.
 - **Result:** The steer axle should be locked.
2. Drive one of the steer tires up onto a 6" (15 cm) block or curb.
 - **Result:** An appropriate tilt of the MEWP chassis should occur.

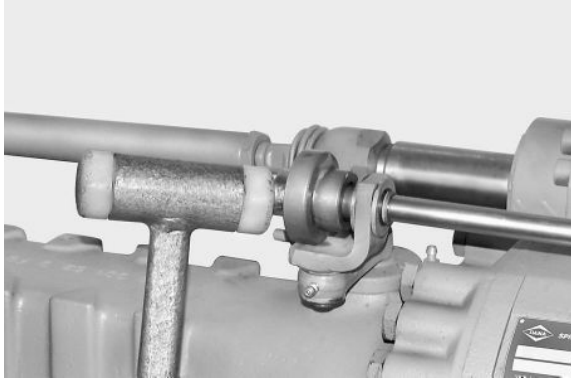


3. Retract  the fly boom while in tilt position.
 - **Result:** The steer axles should unlock and the MEWP chassis should level itself to the ground.



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.



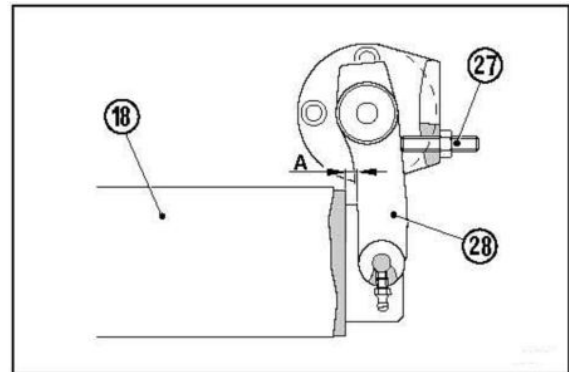
3. Apply a 2lb force (1 kg) in the direction of brake application and turn the adjusting stem so that it touches the stop.



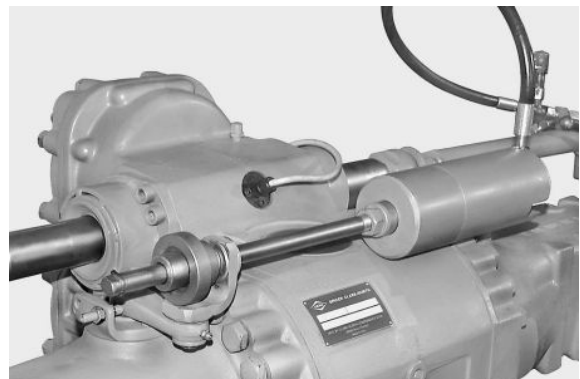
4. Tighten the jam nut. Repeat this procedure for the other side.



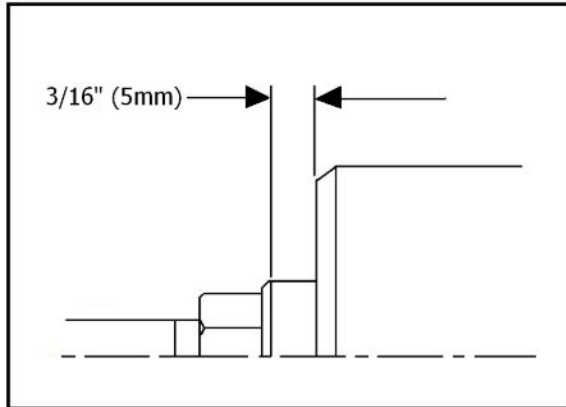
5. On the cylinder side ensure there is some clearance between the cylinder and lever "A", with the lever against the stop.



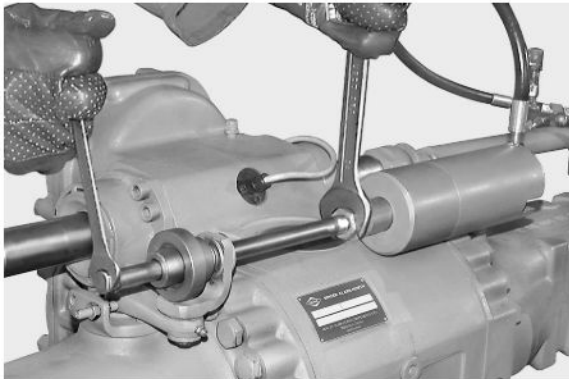
6. Introduce pressure into the cylinder and ensure the check unit engages.



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 a minimum of 3/16" (5 mm).

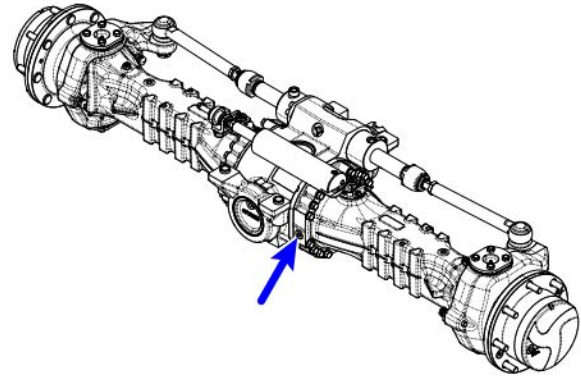


8. If adjustment is needed loosen the jam nut, pressurize the cylinder and turn the adjustment stem. Repeat step 7 and tighten the jam nut when the correct adjustment is obtained.

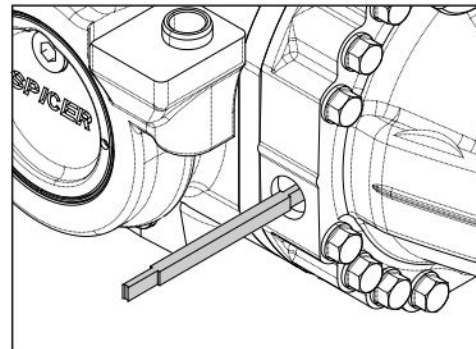


5.9-11 Brake Inspection

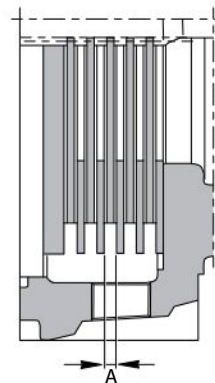
1. Remove the oil level plug from one of the braking axle arms, as shown below.



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.

5.10 Grease Points

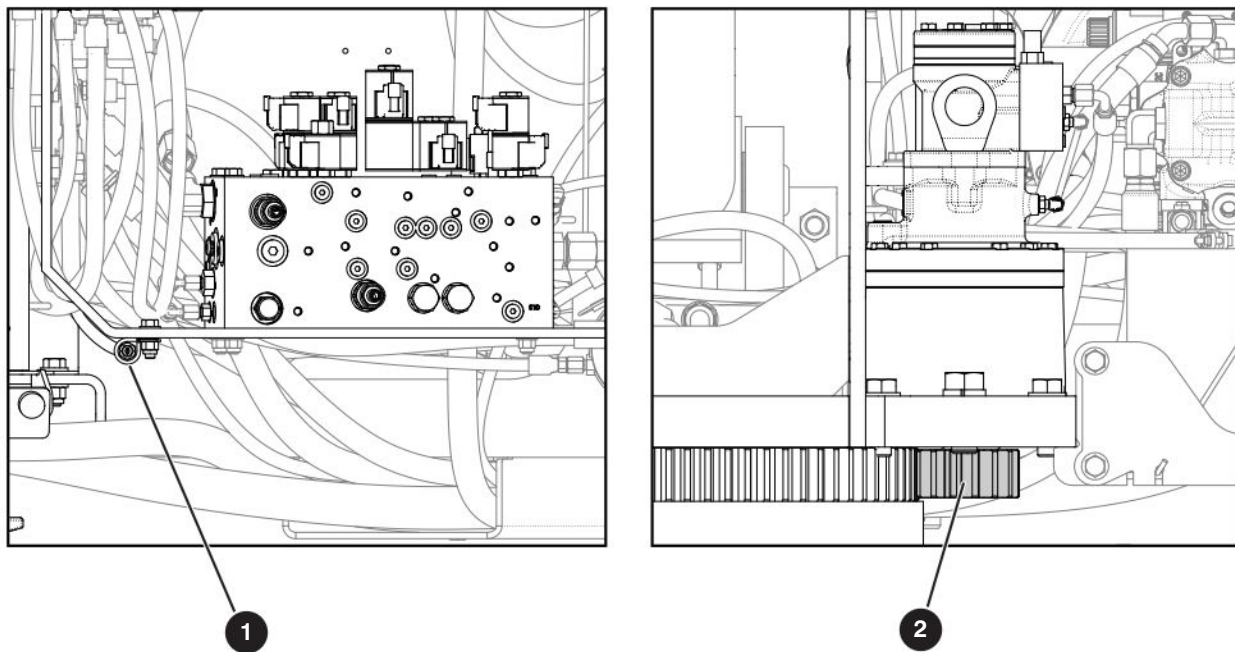
Maintaining proper lubrication is essential for good performance and service life of the MEWP. If the bearing and gear of the MEWP are improperly greased, it could result in component damage.

5.10-1 Grease the Turret Ring Gear

1. Open the control side cowling, and locate the turret ring gear grease fitting **1** between the hydraulic tank and the main manifold.
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 4 to 5 inches (10 to 13 cm) 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 **2**, located under the turret on the engine side.

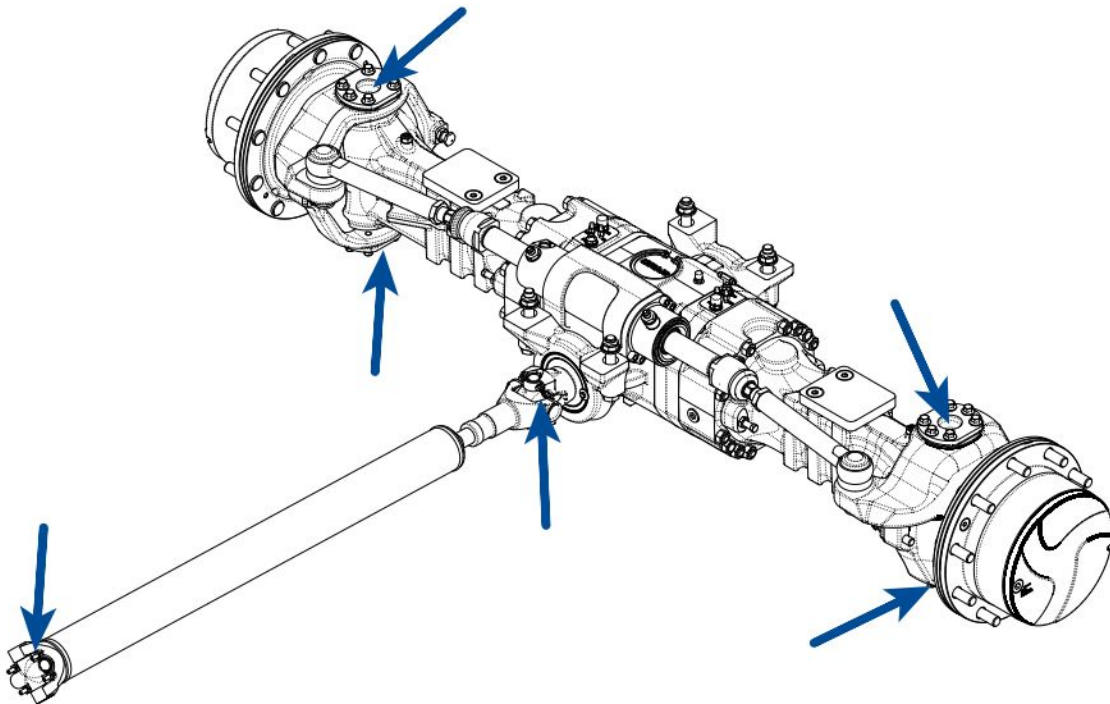


5.10-3 Grease the Axles

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 Generator Troubleshooting

Problem	Cause	Remedy
Generator not rotating	<ul style="list-style-type: none"> - Motor not turning - Directional valve not working - Broken drive key 	<ul style="list-style-type: none"> - Check for proper hydraulic flow - Check voltage to coil - Bad coil or valve - Check and replace
Frequency falls under load	<ul style="list-style-type: none"> - Hydraulic flow to motor falling - Bad motor 	<ul style="list-style-type: none"> - Check flow to motor is constant - Replace motor
Generator does not excite	<ul style="list-style-type: none"> - Low speed - Faulty capacitor - Breakdown in windings 	<ul style="list-style-type: none"> - Check and adjust speed - Check and replace - Check winding resistance
High no-load voltage	<ul style="list-style-type: none"> - Excessive speed - High capacity of capacitor 	<ul style="list-style-type: none"> - Check and adjust speed - Check and replace
Low no-load voltage	<ul style="list-style-type: none"> - Low speed - Faulty rotary diodes - Worn windings - Low capacity of capacitor 	<ul style="list-style-type: none"> - Check and adjust RPM - Check and replace - Check winding resistance - Check and replace
Proper no-load but low loaded voltage	<ul style="list-style-type: none"> - Low speed when loaded - Excessive load - Short-circuited diodes 	<ul style="list-style-type: none"> - Check and adjust RPM - Check and repair - Check and replace
Proper voltage in no-load conditions but high voltage at load	<ul style="list-style-type: none"> - High speed in loaded condition 	<ul style="list-style-type: none"> - Check and adjust speed
Unstable voltage	<ul style="list-style-type: none"> - Poor contacts - Uneven rotation 	<ul style="list-style-type: none"> - Check connections - Check for uniform rotation speed
Noisy generator	<ul style="list-style-type: none"> - Broken bearings - Poor coupling 	<ul style="list-style-type: none"> - Replace bearings - Check and repair

1177AA

5.11-2 Generator Frequency/Voltage Check & Adjustment

Check the Frequency and Voltage

1. On 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

1. Loosen the generator control valve jam nut.
2. 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.
3. Output must be:

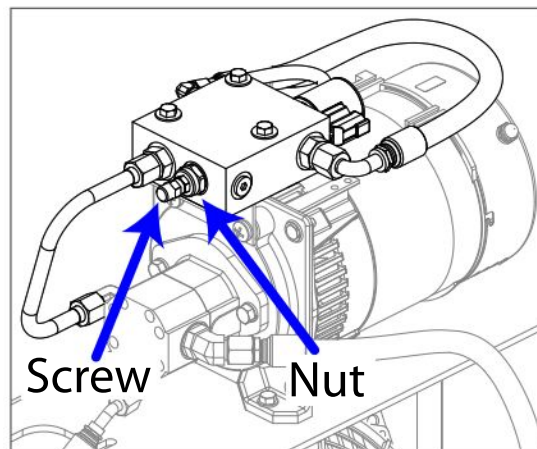
ANSI/CSA

- 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

4. Tighten the jam nut when the correct output is achieved.



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