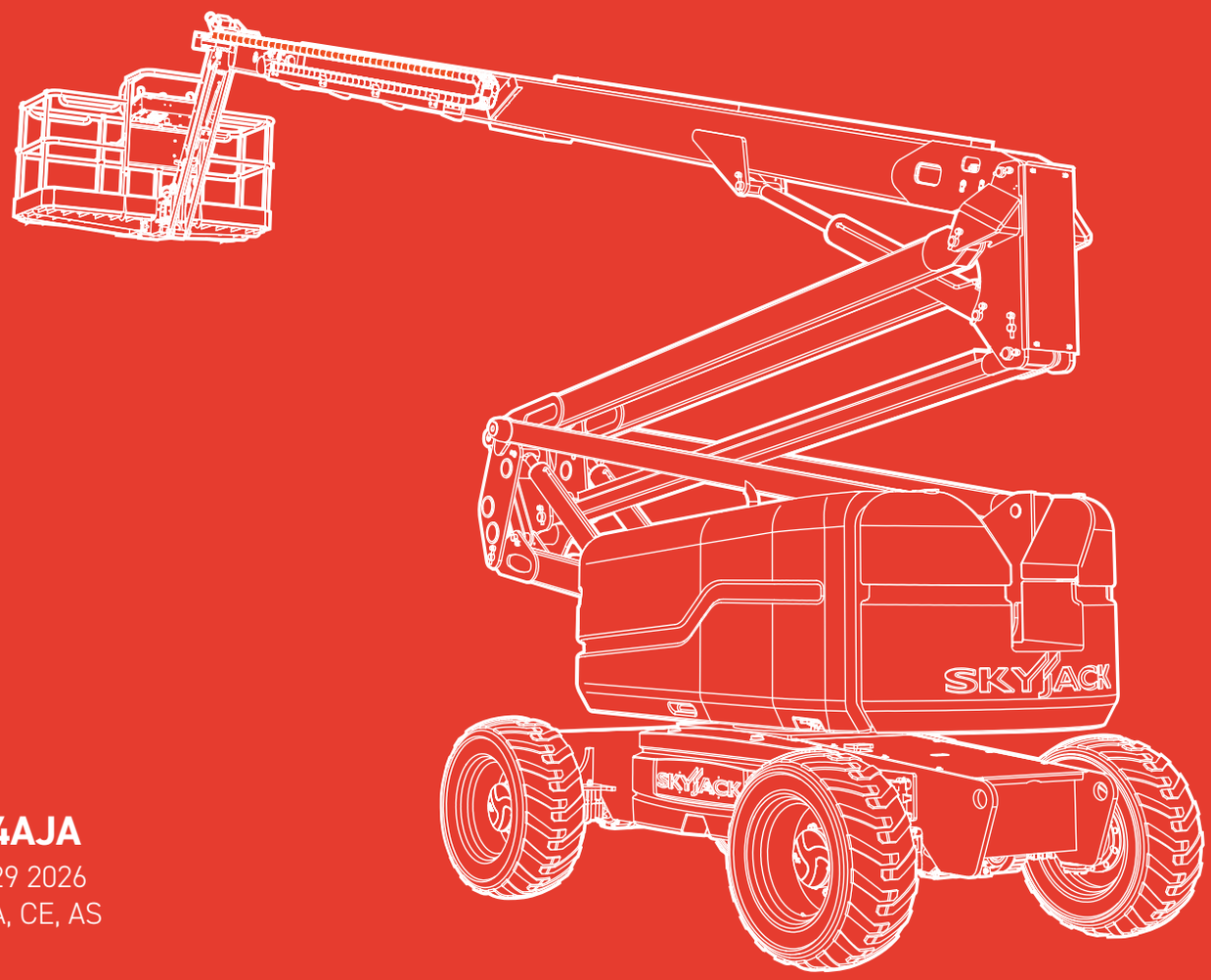
SKYJACK

SERVICE MANUAL

SJ85 AJ

ARTICULATING BOOM



229044AJA
January 29 2026
ANSI/CSA, CE, AS

This manual is for MEWPs with serial numbers:

SJ85 AJ: A303 000 001 - A303 999 999

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

The original instructions are in English.

THIS SAFETY ALERT SYMBOL MEANS ATTENTION!



BECOME ALERT! YOUR SAFETY IS INVOLVED.

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

IMPORTANT

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

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Notes

Section 1 – Maintenance

1.1 Read and Heed

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

1.1-1 Mobile Elevating Work Platform (MEWP) definition

A MEWP is a mobile machine intended for moving persons, tools, and material to working positions. It consists of a work platform with controls, an extending structure, and a chassis.

1.1-2 Purpose of equipment

The Skyjack Articulating Boom Series MEWPs are designed to move personnel, tools, and materials to working positions.

1.1-3 Use of equipment

The MEWP is a highly maneuverable, mobile work station. Only elevate the platform, or drive while elevated on a firm, level surface.

1.1-4 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. Your local Skyjack dealer will replace or repair any defective part, with no charge for parts or labour. In addition, all products have a 5-year structural warranty. Contact the Skyjack service department for warranty statement extensions or exclusions.

1.1-5 Ownership of MEWP

Notify Skyjack of MEWP ownership. If you sell or transfer the ownership of a MEWP, promptly notify Skyjack of the new owner's contact information.

Skyjack needs this information to inform the owner of any updates or additional activities that are necessary to keep the machine in proper working condition.

1.1-6 Optional equipment

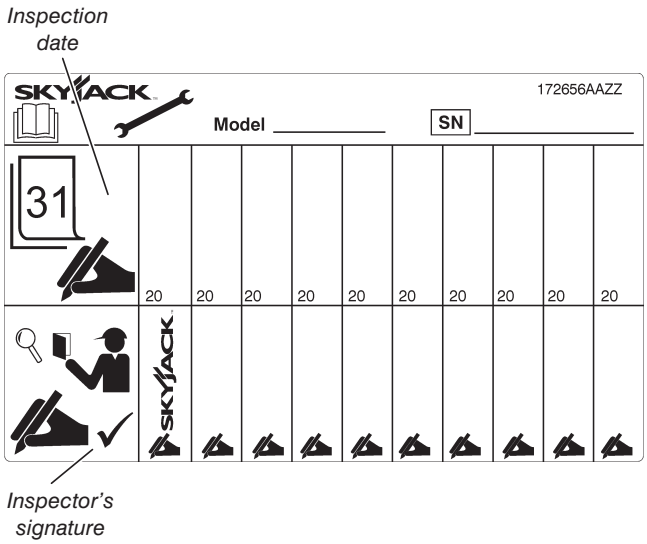
This MEWP accepts a variety of optional equipment. Refer to the operation manual for a list of the optional accessories. Operating instructions for these options are in the operation manual.

For components or systems that are not standard, speak to the Skyjack service department. Give the model and serial number for each applicable MEWP.

1.2 General information

1.2-1 Owner's annual inspection record

The owner is responsible for the maintenance inspections and repairs. Keep a record of the annual inspection on the label on the control side cowling.



1.2-2 Replacement parts

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

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

⚠ WARNING

A unit that is damaged or not operating correctly must be immediately tagged and removed from service until repairs are completed.

1.2-3 Maintenance and service safety tips

1. Maintenance and repair should only be done by personnel who are trained and qualified to service this MEWP.
2. Do the maintenance and service procedures in a well-lit and well-ventilated area.
3. Anyone operating or servicing this MEWP must read and fully understand all operating instructions and safety hazards in both this manual and the operation manual.
4. Make sure all tools, supports, and lifting equipment are of the correct rated load and in good working condition.
5. Keep the work area clean and free of debris to avoid component contamination.
6. Make sure personnel are not below unsupported components or systems that are at risk of movement during maintenance.
7. All service personnel must be familiar with the employer and governmental regulations for servicing this type of equipment.
8. Keep sparks and flames away from flammable or combustible materials.
9. Correctly dispose of waste material such as lubricants, rags, and old parts in accordance with national, state/provincial/territorial, and local regulations.
10. Before you do any repair work, disconnect the main power connectors.

1.2-4 Hydraulic system & component maintenance and repair

⚠ WARNING

The fluid which escapes from a high-pressure hydraulic leak can damage your eyes, penetrate your skin, and cause serious injury. Wear the correct personal protective equipment at all times.

1. The hydraulic circuits include relief valves which limit pressure to safe operation values. They help to prevent the failure of hydraulic or structural components.
2. Make sure the hydraulic oil is completely clean. Even small amounts of dirt or unwanted materials in the system can damage components and cause unsatisfactory operation of the hydraulic system.
3. Drain and flush the entire system and replace the filter cartridges if you have any reason to believe there is contamination of the hydraulic system, or hydraulic system failure.
4. When you drain the hydraulic system, check the magnets in the hydraulic tank for metal particles. Metal particles can indicate imminent component failure. If metal particles are present, flush the entire system and change the hydraulic oil.
5. All containers and funnels used in handling the hydraulic oil must be completely clean. Use a funnel when necessary and fill the reservoir only through the filter opening. Do not use a cloth to strain the oil, as lint could get into the system.
6. When you remove a hydraulic component, cap and tag all of the hydraulic lines involved. Plug the ports of the removed components.
7. Disassemble hydraulic components in clean surroundings. Carefully identify the parts to make sure you reassemble them correctly. Clean all metal parts in a clean mineral oil solvent. Be sure to clean all internal passages fully. After the parts are dry, lay them on a clean, lint-free surface for inspection.
8. Replace all O-rings and seals when you overhaul a component. Lubricate all parts with clean hydraulic oil before you reassemble them. Use a small amount of petroleum jelly to hold O-rings in place during assembly.
9. Be sure to replace lost hydraulic oil after you install the repaired component. Bleed air from the system when required.
10. Keep all hydraulic connections tight. A loose connection in a pressure line allows the oil to leak or draw air into the system. Air in the system can damage components and cause noisy or erratic system operation.
11. Preventive maintenance is the easiest and least expensive type of maintenance.

1.2-5 Hydraulic oil maintenance

Draw samples of hydraulic oil from the reservior annually and test them.

- Take these samples when the oil is warmed through normal operation of the system.
- Have the sample analyzed by a qualified lubrication specialist to determine if it is suitable for continued use.

Oil change intervals depend on the care used to keep the oil clean, and the operating conditions.

- Oil must be changed more often when there is dirt or moisture contamination.
- Under normal use and operating conditions, you should change the hydraulic oil every two years.

1.2-6 Hydraulic maintenance tips

1. Change the filters annually. Dirty, dusty, and high-moisture environments can cause the hydraulic system to be contaminated more quickly. You may need to change the filters more often.
2. Keep a sufficient quantity of clean hydraulic oil of the correct type and viscosity in the hydraulic tank.
3. Keep all hydraulic 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.

1.2-8 Multi-conduction control cable repair

If damage occurs to the outer casing of a multi-conductor control cable, you may use heat shrink tubing to case and protect the control cable casing.

Before you install the heat shrink, make sure there is no damage to the individual wires contained in the control cable, or to their insulation.

The heat shrink tubing selected and used should seal the electrical circuit from water intrusion, be suitable for the machine operating temperature range, and be suitably flexible to allow the required bending radius of the cable in its application.

1.3 Scheduled maintenance and inspections

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 the service and maintenance of this MEWP.

1.3-2 Maintenance and inspections

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

⚠ WARNING

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

NOTE

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

- Unless otherwise specified, do each maintenance procedure with the MEWP in the following configuration:
  - Park the MEWP on a flat and level surface
  - Disconnect the batteries by disconnecting the main power connectors.
- Repair damaged or malfunctioning components before operating the MEWP.
- Keep records of all inspections.

1.3-3 Schedule and instructions

The actual operating environment of the MEWP may affect the maintenance schedule.

The inspection points covered in the *1.3-5 Pre-Delivery/Maintenance Inspection Checklist* indicate the areas of the MEWP to be maintained or inspected, and at what intervals the maintenance and inspections are to be done.

Inspection schedule frequency:

PDI/Frequent/ Periodic	**B**	Do a PDI before each delivery, or a Frequent Inspection every 200 days or 200 hours.
Annual	**C**	Do a Scheduled Maintenance Inspection every year.
Additional	*****	Do this 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 done.
- Place a check mark in the appropriate box after each inspection procedure is done.
- Use the maintenance and inspection checklist and the step-by-step procedures in *1.3-6 Inspection points*.
- If an inspection receives a fail, tag and remove the MEWP from service.
- If a MEWP component has been repaired, do an inspection again before you remove the tag. Place a check mark in the Pass column.

Legend

Pass	**P**
Not applicable	**N/A**

1.3-4 Repairs

When repairs are made to a MEWP, the service technician must complete the full pre-operation inspection and function tests before putting the MEWP into service.

IMPORTANT

Never use a malfunctioning MEWP. If malfunctions are discovered, tag the MEWP and remove it from service.

1.3-5 Pre-Delivery/Maintenance Inspection Checklist

SKYJACK™

Frequent/Periodic/Annual PDI Checklist

Engine-Powered, Hybrid, and Electric Booms

Serial Number: Starting with serial number A/B/D 000 000 000 and above

Model:

Hourmeter Reading:

Product Owner:

Product User/Inspector:

Date/Time:

Inspection Type (choose one): ☐ Pre-delivery ☐ Frequent ☐ Periodic ☐ Annual

Use this table for pre-delivery inspections (PDI) before each rental, lease or sale and as an instruction for all frequent inspections and annual inspections. Refer to the operation and service manuals for inspection instructions (for example, visual inspection and function tests, torque specs, engine oil, chain inspection intervals, and more).

Inspection Type Schedule	
PDI/Frequent/Periodic	B
Annual	B+C

B - Do the pre-delivery inspection before the machine is sent out or during the frequent inspections at 200 days or 200 hour intervals. For more instructions, refer to the operation and service manuals.
C - Do the scheduled maintenance Inspections each year. For more instructions, refer to the operation and service manuals.

P - Pass
N/A - Not Applicable

Put a check mark on the "Pass" column as you meet the requirements of the inspection of each item. Add a comment if the item does not pass inspection.

Items for Inspection		P	N/A
Service Bulletins. Make sure there are no open service bulletins.	B		
Annual Inspection. Make sure you complete it within 13 months.	B		
Labels. In place, correctly attached and you can read them.	B		
Limit Switches. Correctly installed and no obstructions or damage.	B		
ENGINE/HYDRAULIC/BATTERY/ELECTRICAL COMPARTMENTS			
Main Power Disconnect Switch. Cables and switch tight and in working order.	B		
Battery Trays. Trays and covers are latched tightly and no missing components.	B		
Batteries. No damage, tight connections, and sufficient fluid levels where necessary. Clean terminals and cable ends.	B		
Battery Charger. Correctly attached and no damage.	B		
Base Control Console. Operate the switches and make sure they all operate correctly. No damage or missing components.	B		
Emergency Power Unit. Tight fittings and hoses and no damage or leaks. Tight wire connections, no missing components.	B		
Manifolds. Tight fittings and hoses and no damage or leaks. Tight wire connections, no missing components and correctly working valves.	B		
Hydraulic Tank. Filler cap closed tightly and no damage or leaks.	B		
Hydraulic Return Filter. Correctly attached and no damage, missing components or leaks.	B		
Hydraulic Return Filter. Do a check of the filter. Replace the filter if necessary.	C		
High-Pressure Filter. Correctly attached and no damage, missing components or leaks.	B		
High-Pressure Filter. Do a check of the filter. Replace the filter if necessary.	C		
Charge Filter. Correctly attached and no damage, missing components or leaks.	B		
Charge Filter. Do a check of the filter. Replace the filter if necessary.	C		
Hydraulic or Electric Pump and Motor. Tight fittings and hoses and no damage or leaks. Tight wire connections and fasteners.	B		
Hydraulic Oil. Level between min. and max. marks.	B		
Turret Transportation Lock. Unlocked and no damage or missing components.	B		
Turret Rotation Motor/Gear. Tight fittings, hoses and bolts. No damage, missing components or leaks. Make sure the gears are lubricated.	B		
Turret Rotation Motor/Gear. Lubricate the gears.	C		
Fuel Tank and Lines. Filler cap, tank, fittings and hoses are closed tightly and no damage or leaks.	B		
Engine and Components. Do a check of the engine and components for any loose, missing, damaged, or failed items. Do a check of the oil and coolant levels. Make sure you do not exceed the recommended oil and coolant change intervals.	B		
Air Filter. Do a check of the filter. Replace the air filter if necessary.	C		
Fuel Filter. Do a check of the filter. Replace the fuel filter if necessary.	C		
Radiator. Do a check of the coolant condition and replace if necessary.	C		
BASE			
Base Weldment. No cracks or deformation.	B		
Base Electrical Panel. Correctly attached and no damage. Tight wire connections and fasteners.	B		

Items for Inspection		P	N/A
Oscillating Cylinders. Correctly attached and no missing components. Tight fittings and hoses and no leaks.	B		
Oscillating Cylinders. Do a check of the mounting bolts torque seal.	C		
Axles. Correctly attached and no missing components. Tight fittings and hoses and no leaks. Make sure the axles and drive shaft are lubricated.	B		
Axles. Do a check of the brakes. Lubricate the axles and drive shaft.	C		
Electric Drive Motor. Correctly attached and no damage. Tight wire connections and fasteners.	B		
Steer Assembly. Correctly attached and no missing components. Tight fittings and hoses. No leaks, damage or wear.	B		
Torque Hubs. Correctly attached and no damage or missing components. Tight fittings, hoses and bolts. No leaks.	B		
Wheel Motors. Correctly attached. No damage or missing components.	B		
Wheel/Tire Assembly. Do a check of all tires for damage, wear and correctly aligned.	B		
Wheel/Tire Assembly. Wheel nuts are installed and are tight.	B		
BOOM			
Rotary Actuator(s). No damage or missing components. Tight fittings, hoses and bolts and no leaks.	B		
Jib. No damage or missing components. Tight hoses and bolts and no leaks.	B		
Boom. No damage or missing components. No deformation or cracks in welds. Tight fittings, hoses, bolts, and pins. No leaks.	B		
Cable Track. No damage or missing components.	B		
Wear Pads. No damage, wear or missing components. Fasteners tight.	B		
Riser. No damage or missing components. No deformation or cracks in welds. Tight fittings, hoses, bolts, and pins. No leaks.	B		
Cylinders. No damage or missing components. Tight fittings and hoses and no leaks. Pins and bushing are tight and correctly installed.	B		
Control Cables and Hoses. No damage or missing components. No leaks.	B		
Wire Ropes. No damage or missing components. Tight jam nuts. No spring gaps. Do not exceed the inspection interval.	B		
PLATFORM			
Raillings and Gate. Correctly attached and no damage or missing components.	B		
Platform Floor. Correctly attached and no damage or missing components.	B		
Footswitch. Correctly attached. Operates correctly with no modifications.	B		
Fall-Protection Anchorage. Anchorages are correctly attached and no damage.	B		
AC Power Socket. No obstructions, dirt, or damage.	B		
Platform Control Console. Operate the switches and make sure they all operate correctly. No damage or missing components.	B		
Manual Storage Box. Manuals and documents are in storage box, in good condition, and you can read them.	B		
OPTIONAL EQUIPMENT			
Special Options and Approved Attachments. Correctly attached and no damage or missing components.	B		
FUNCTION TESTS			
Function Tests. Refer to the operating manual for your serial number for information on how to do these tests.	B		PASS / FAIL
Drive Speed Tests. Refer to the service manual for your serial number for information on how to do these tests.	C		PASS / FAIL

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Comments:

The undersigned has made sure that all areas in the list have received an inspection.
The undersigned has told the machine owner of all inconsistencies in the inspection and corrected them before machine operation.

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

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

1.3-6 Inspection points

Refer to *1.3 Scheduled maintenance and inspections* for more information and the inspection schedule.

⚠ 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.

Legend


Visual inspection


Action required


Filters


Fluids


Grease

B C *Inspection frequency*


Procedure available in Section 5


Return to the PDI form

Use the *1.3-5 Pre-Delivery/Maintenance Inspection Checklist* and do the inspections that follow:

Labels



- Refer to the operation manual. Make sure all labels are present and in the correct location, in good condition, and are legible. Ⓑ

Electrical components



- Do a check of all electrical components and harnesses for chafed, corroded, loose, or damaged wires and connectors. Make sure the connections are tight.
- Make sure all switches and buttons rotate or move to all positions, are in good condition, and return to the neutral position. Make sure the switches haven't been tampered with or disabled.
- Make sure the limit switches do not have broken or missing actuator arms. Ⓑ
  Refer to *5.6 Limit Switches*.

Fluids and Filters



- Make sure all fittings and hoses are correctly tightened.
- Make sure the hydraulic tank cap, fuel tank cap, and radiator cap are tightly closed.
- Make sure the air, hydraulic oil, fuel, and engine oil filter housings are tight.
- If the filters have service indicators on them, replace the filter element if indicated.
- Look for hydraulic oil, engine oil, fuel, and coolant leaks.
- Do a check of the fuel, engine oil, coolant, and hydraulic oil levels. Add more fluid if necessary. Refer to *2.11 Specifications and Features - Engines & Fluids*.

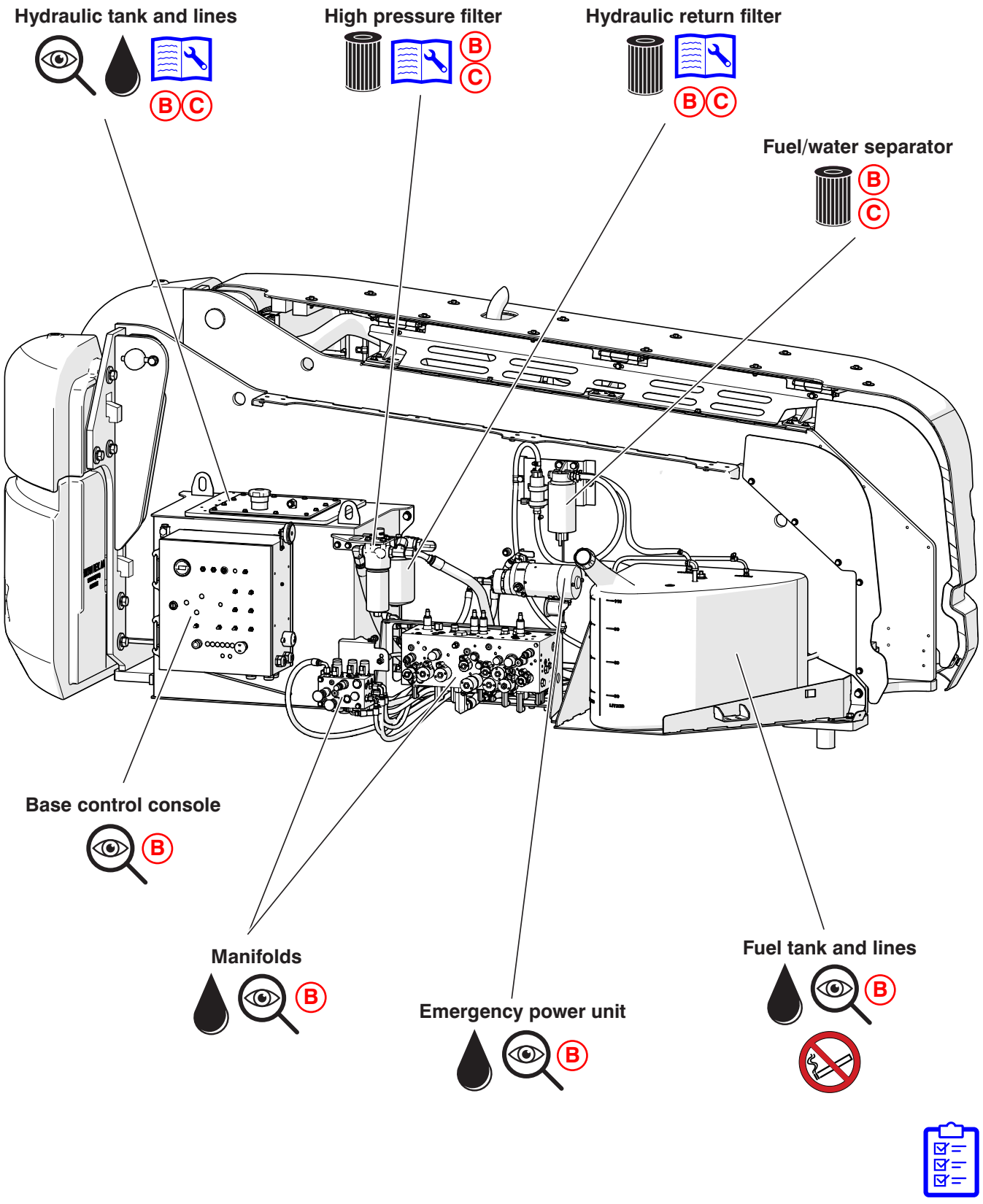
All components

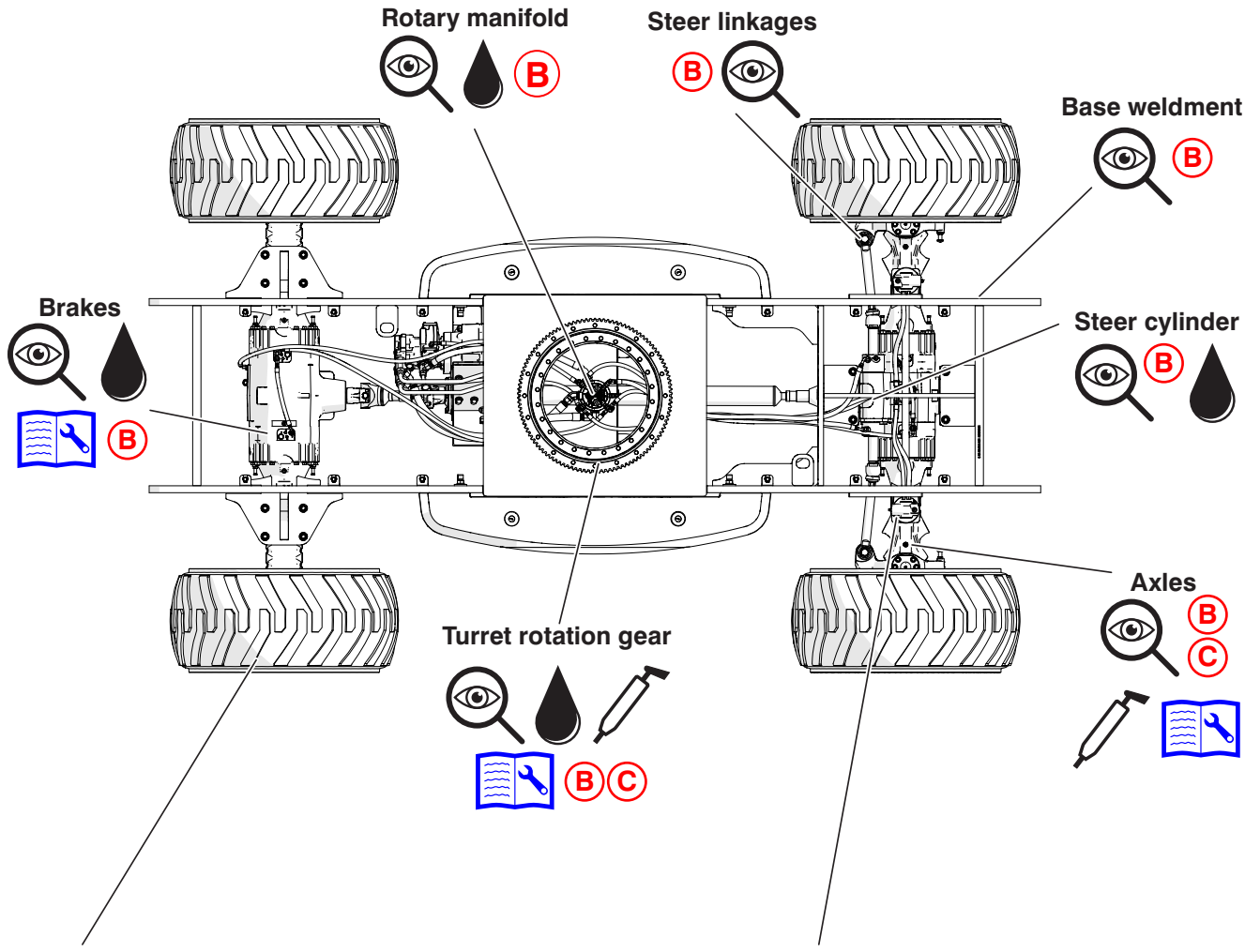


- Make sure there are no loose or missing parts.



- Make sure there is no visible damage, including cracks or deformities in welded parts.
- Make sure all hardware is present and the fasteners are tight.
- Make sure all pins are present and the fasteners are tight.
- Additional inspection items are listed on the following pages.


Hydraulic tank and lines
B C
High pressure filter
B C
Hydraulic return filter
B C
Fuel/water separator
B C
Base control console
B
Manifolds
B
Emergency power unit
B
Fuel tank and lines
B



Wheels/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 that the torque seal is not cracked or missing.
- Make sure the wheels are correctly aligned vertically and horizontally.

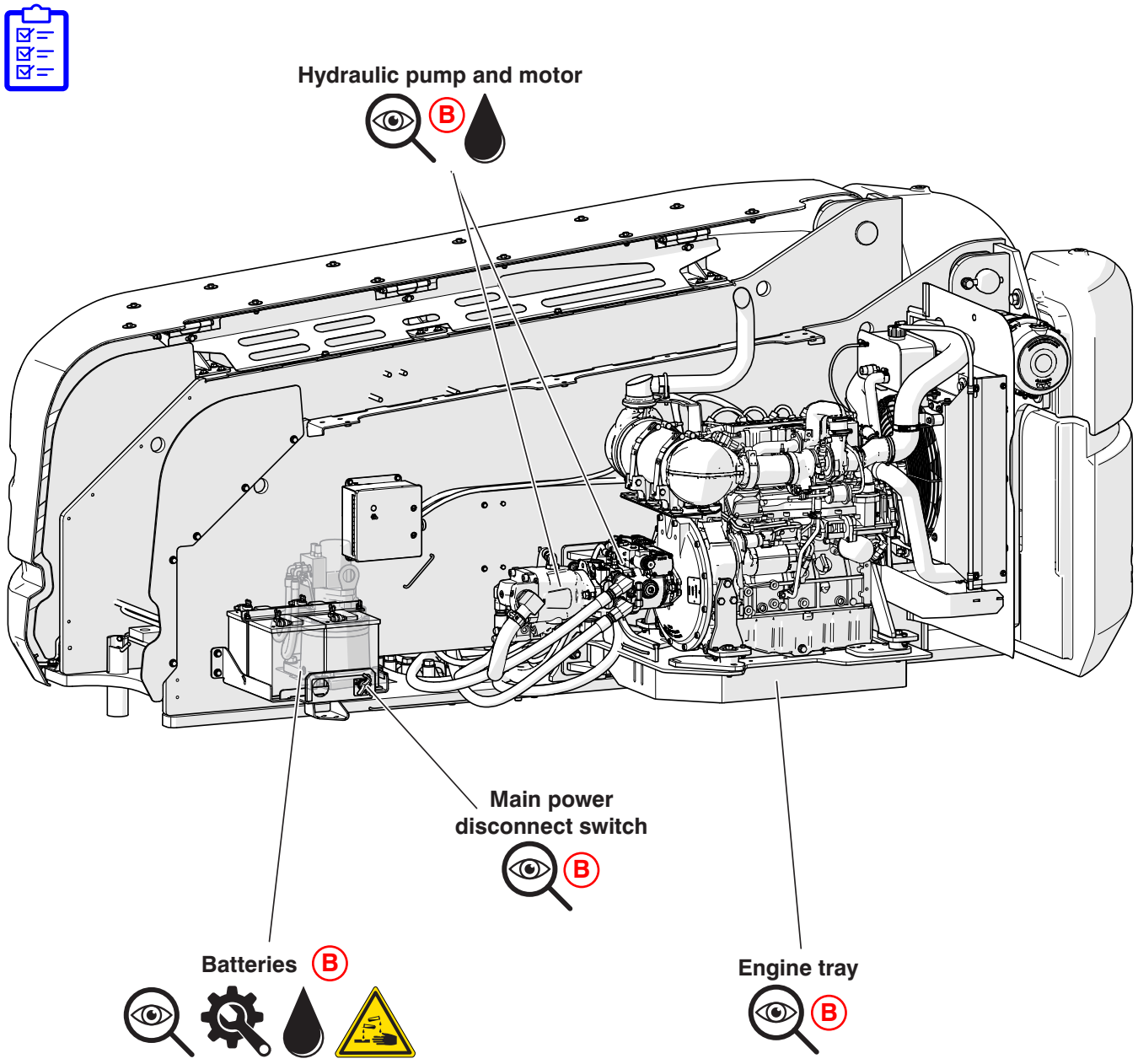
Oscillating Cylinders

B C

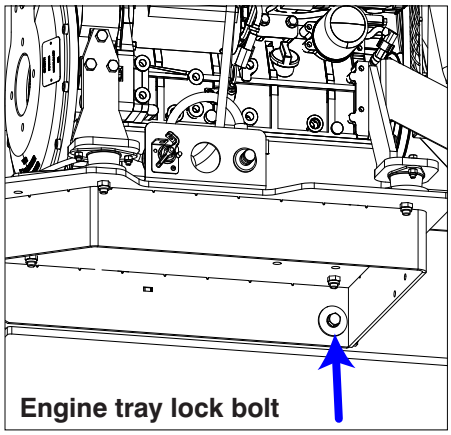
- Do a check of the heads of the oscillating cylinder mounting bolts to make sure the torque seal is visible and undamaged. If the torque seal is damaged or is missing, remove and replace the affected bolts.

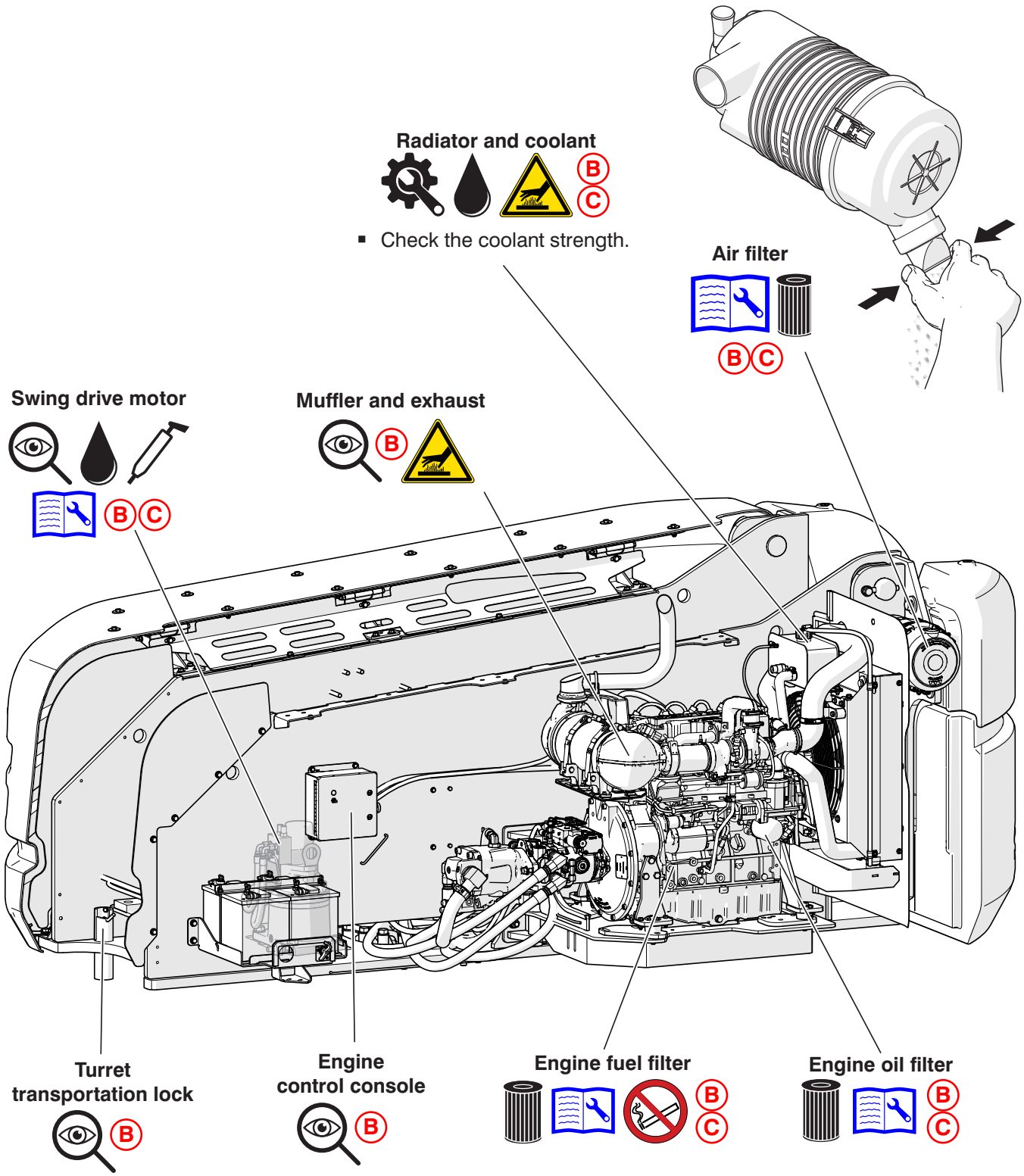
⚠ WARNING

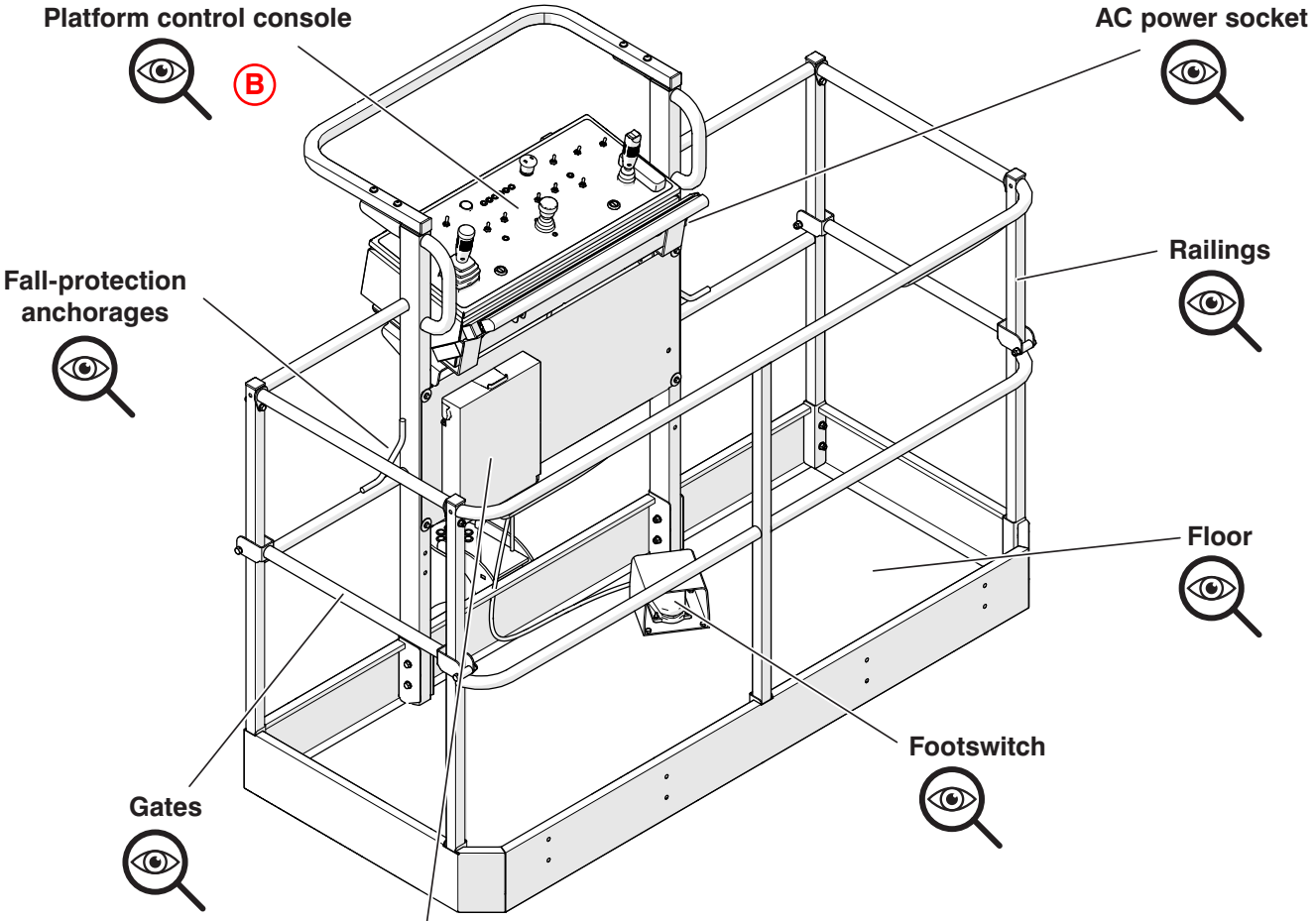
Do not use tires other than those that Skyjack specifies for this MEWP. Do not mix different sizes or types of tires, or use tires that are not in good condition. Only replace the tires with the same types that are approved by Skyjack. The use of other tires can make the MEWP less stable. If you do not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



1. Do an inspection of the battery case for damage.
2. Clean the battery terminals and cable ends thoroughly with a terminal cleaning tool or wire brush.
3. Make sure all the battery connections are tight.
4. 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.



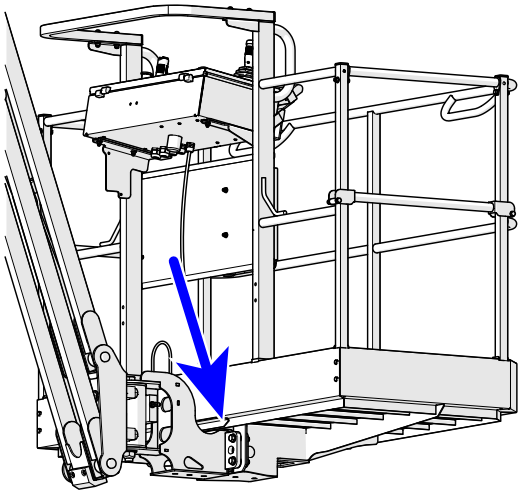

Radiator and coolant
B
C
Check the coolant strength.
Air filter
B C
Swing drive motor
B C
Muffler and exhaust
B
Turret transportation lock
B
Engine control console
B
Engine fuel filter
B
C
Engine oil filter
B
C



- Make sure the gates or drop bars operate correctly.

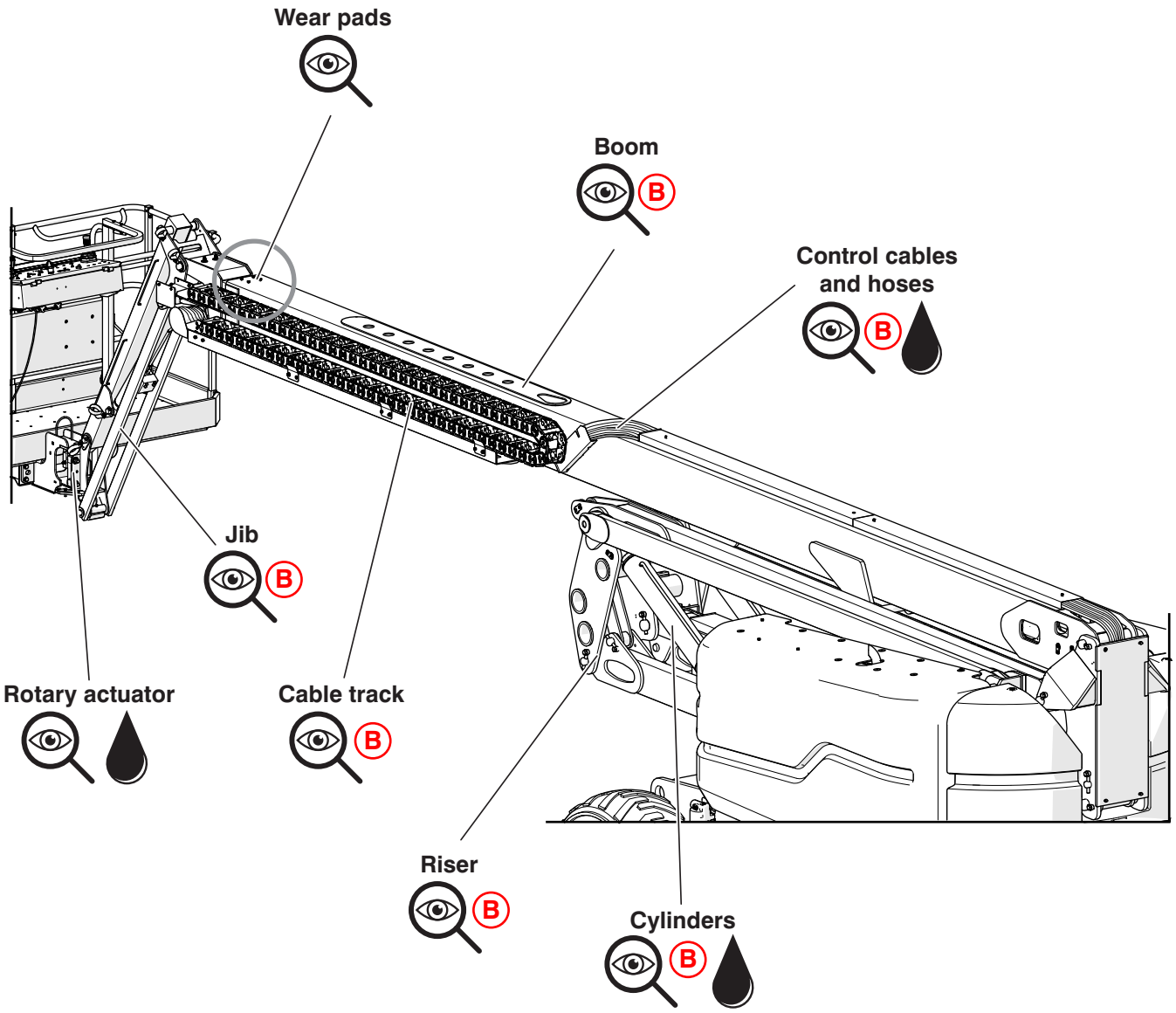
Load Cell B

- Make sure there is no debris lodged between the platform and the boom adaptor.

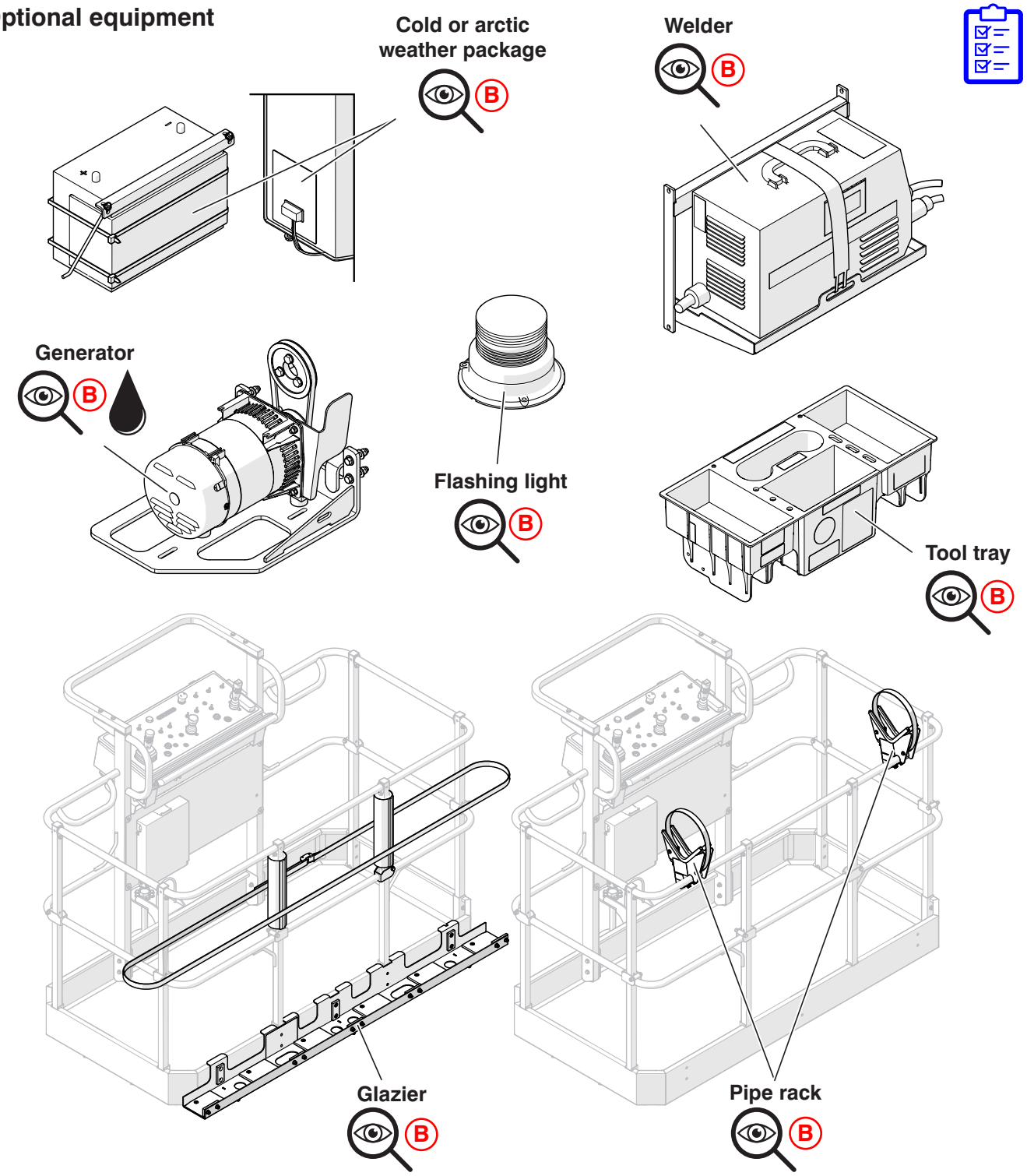


Manual storage box B

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


Wear pads
Boom
B
Control cables
and hoses
B
Jib
B
Rotary actuator
Cable track
B
Riser
B
Cylinders
B

Optional equipment



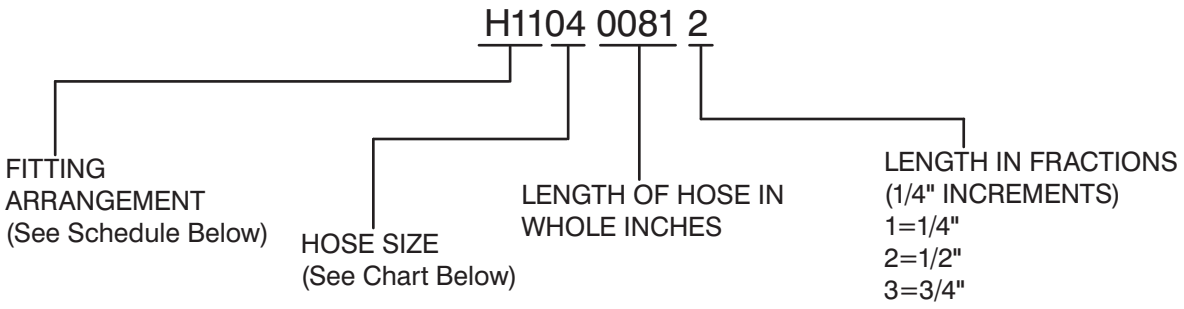
1.3-7 Function tests

Do the function tests after you complete the inspections.

Refer to the *"Inspections before operation"* section of the operation manual for detailed instructions on how to do the function tests.

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 Torque Specifications for Fasteners (Metric)

When specific torque values are not provided within this manual for a task, use the torque values given in the table below.

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

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

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Table 2.3 Torque Specifications for Fasteners (US)

When specific torque values are not provided within this manual for a task, use the torque values given in the table below.

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

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

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

Table 2.4 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 2.5 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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Table 2.6 Axle Maintenance Intervals

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

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

Gear Oil	Gear Box	Central Housing	Hubs (each)
Maximum Oil Capacities	2.4 L (2.5 qt)	7 L (7.3 qt) front 14.5 L (15 qt) rear	2 L (2.1 qt) front 2.1 L (2.2 qt) rear

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

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Table 2.7 MEWP Torque Specifications

Location	Description	Torque (ft-lb)	Torque (Nm)
Base			
Front Axle Mount (Trunnion)	BOLT, Hex head (3/4"-10 x 5", Grade 8)	210	285
Rear Axle Mount (U-Bolt)	NUT, Torque lock (3/4"-10, Grade C)	210	285
Axle Lock Cylinder Mount	BOLT, Hex head (1/2"-13 x 1.75", Grade 9)	111	150
Axle Drive Motor Mount	BOLT, Hex head (M14 x 2 x 35mm, Grade 10.9)	150	203
Wheel Nut	NUT, Wheel	247-302	335-410
Rotation Gear	BOLT, Hex head (3/4"-10 x 5", Grade 8)	280	380
Turret			
Rotation Gear	BOLT, Hex head (3/4"-10 x 4", Grade 8)	280	380
Swing Drive Motor	BOLT, Hex head (3/4"-10 x 2", Grade 8)	280	380
Diesel Fuel Tank Mount	BOLT, Hex head, patch (3/8”-16 x 3/4” G5)*	25	34
Engine			
Engine Mount	BOLT, Hex head (1/2"-13 x 3.25", Grade 5)	62	84
Coupling Assembly - Deutz/ Kubota	BOLT, Socket head (M10)	40	55
Coupling Assembly - Perkins	BOLT, Socket head (M10-1.5 x 20)	18	24
	BOLT, Hex head (3/8"-16 x 1")	40	55
Cylinders			
Jib	ROD NUT	312-382	423-518
Slave	PISTON	596-728	808-987
Extension	PISTON	440-538	597-729
Master	PISTON	802-818	1087-1109
Lift	PISTON	1058-1293	1434-1753
Riser	PISTON	810-990	1098-1342
Platform			
Rotary Actuator Mount	BOLT, Hex head, patch (3/8"-16 x 7/8", Grade 8)*	35	48
	BOLT, Hex head (1"-8 x 10.5", Grade 8)	480	569
Rotary Manifold	BOLT, Hex head (1/2"-13 x 2", Grade 8)	80	108
Load Cell Mounting	BOLT, Hex head patch (M16 x 1.5 x 4.5", Grade 8.8)*	130	177
	BOLT, Hex head (1/2"-13 x 2.5", Grade 8)	80	108

**Loctite 243 on standard bolts may be used in place of patch bolts.* *1711AD*

Table 2.8 Specifications & Features - Dimensional Data

		SJ85 AJ	
Height and Reach Data	Working Height - maximum	27.66 m	91' 9"
	Platform Height - maximum	25.83 m	84' 9"
	Horizontal Reach - maximum	17.22 m	56' 3"
	Horizontal Reach - at maximum height	7.62 m	25'
	Horizontal Reach - at flyboom retracted	10.52 m	34' 6"
	Tailswing	0.86 m	2' 10"
	Up and Over Clearance - at platform	9.55 m	31' 4"
	Up and Over Clearance - at main boom	10.24 m	33' 7"
Platform Data	Platform Size	0.91 x 2.44 m	36" x 96"
		0.91 x 1.83 m	36" x 72"
	Platform Rotation	168°	168°
	Platform Rotation Radius	1.62 m	64"
	Platform Height - stowed	0.28 m	11"
	Overall Railing Height	1.35 m	53"
	Platform Railing Height	1.12 m	44"
Dimensional Data	Height - stowed min.	2.67 m	8' 9"
	Stowed length @ min. height	11.63 m	38' 2"
	Stowed length - min.	10.03 m	32' 11"
	Width	2.49 m	8' 2"
	Wheelbase	2.84 m	9' 4"
	Ground Clearance (Chassis)	0.41 m	16"
	Ground Clearance (Front Axle)	0.33 m	13"
	Axle Oscillation	0.06 m°	2-1/2"
	Turning Radius - Inside	3.05 m	10'
	Turning Radius - Outside	6.22 m	20' 5"
	Turret Rotation	360°	360°
Jib Data	Jib Length	1.68 m	5' 6"
	Jib Range of Motion - vertical	2.97 m	9' 9"
	Jib Range of Motion - down	60°	60°
	Jib Range of Motion - up	65°	65°

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Table 2.9 Specifications and Features - Performance & Speeds

		SJ85 AJ	
Performance and Speeds	Gradeability - maximum	42%	42%
	Drive Speed - stowed / low torque	4.83 km/h	3.0 mph
	Drive Speed - stowed / high torque	1.93 km/h	1.2 mph
	Drive Speed - elevated / low torque	0.80 km/h	0.5 mph
	Drive Speed - elevated / low torque	0.80 km/h	0.5 mph
	Turret Rotation Time - stowed	95 - 130 s	95 - 130 s
	Turret Rotation Time - extended	190 - 220 s	190 - 220 s
	Platform Rotation Time	10 - 20 s	10 - 20 s
	Boom Up Time	85 - 95 s	85 - 95 s
	Boom Down Time	85 - 95 s	85 - 95 s
	Boom Extend Time	45 - 55 s	45 - 55 s
	Boom Retract Time	35 - 45 s	35 - 45 s
	Riser Up	25 - 35 s	25 - 35 s
	Riser Down	25 - 35 s	25 - 35 s
	Jib Up Time	20 - 30 s	20 - 30 s
	Jib Down Time	15 - 25 s	15 - 25 s
	Steer Left Time	5 - 8 s	5 - 8 s
	Steer Right Time	5 - 8 s	5 - 8 s
High Capacity Zone	Capacity	340 kg	750 lb
	Maximum # of Persons	3	3
	Wind Rating	12.5 m/s	28 mph
	Manual Force	400 N	90 lbf
Low Capacity Zone	Capacity	227 kg	500 lb
	Maximum # of Persons	2	2
	Wind Rating	12.5 m/s	28 mph
	Manual Force	400 N	90 lbf
Hydraulic Data	System Pressure	224 bar	3250 psi
Electrical Data	System Voltage	12 V DC	12 V DC
	Battery Type	Lead / Acid	Lead / Acid

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Table 2.10 Hydraulic Specifications

Description		US	Metric
Pumps			
Drive Pump	Displacement	2.48 in^3/r 28.7 gal/min @ 2675 rpm	40.6 cm^3/r 108.6 L/min @ 2675 rpm
	Drive Pump Pressure	3000 psi	207 bar
	Charge Pump Displacement	0.84 in^3/r	13.8 cm^3/r
	Charge Pump Pressure	300 - 320 psi	20.68 - 22.41 bar
System Pump	Displacement - Static	3.00 in^3/r 34.74 gal/min @ 2675 rpm	49.2 cm^3/r 131.5 L/min @ 2675 rpm
	System Pump Pressure	3050 psi	210 bar
Filters			
High Pressure Filter	Max. Operating Pressure	4000 psi	276 bar
Hydraulic Return Filter	Max. Operating Pressure	120 psi	8 bar
Motors			
Drive Motor	Displacement - Low	0.90 in^3/r	14.7 cm^3/r
	Displacement - High	2.48 in^3/r	40.6 cm^3/r
Swing Motor	Motor Displacement	6.1 in^3/r	100 cm^3/r
	Maximum Operating Pressure	3000 psi	207 bar
Cylinders			
Extension Cylinder	Bore	3.93 in	10 cm
	Rod Diameter	2.95 in	7.5 cm
	Stroke	255 in	647.7 cm
	Maximum Boom Pressure	3000 psi	207 bar
Lift Cylinder	Bore	5.71 in	14.5 cm
	Rod Diameter	2.95 in	7.5 cm
	Stroke	46.83 in	119 cm
	Maximum Lift Pressure	4000 psi	276 bar
Steering Cylinder	Bore	3.06 in	7.8 cm
	Stroke	4.31 in	11 cm

For other component specifications, refer to the hydraulic schematic. *1281AB*

Table 2.11 Specifications and Features - Engines & Fluids

			SJ85 AJ
Deutz TD2.9L	RPM Settings		900 Low / 1600 / 2600 High
	Horsepower @ 2600 rpm (intermittent)		55.4 kW / 75 hp
	Fuel Type		Diesel
	Fuel Tank Capacity		30 gal
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C)	SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil Option	-20°F to 90°F (-29°C to 32°C)	SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil Option	-40°F to 115°F (-40°C to 45°C)	SAE 0W-40 API CF/CG/CH-6
	Standard & Arctic Coolant	-40°F to 115°F (-40°C to 45°C)	Delo 50/50 Extended Life Coolant
	Coolant Capacity		3.0 gal (11.4 L)
	Lube Oil Sump Capacity		2.64 gal (10.0 L)
Deutz TCD2.2	RPM Settings		1200 Low / 1600 / 2600 High
	Horsepower @ 2600 rpm (intermittent)		55.4 kW / 75 hp
	Fuel Type		Diesel
	Fuel Tank Capacity		30 gal
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C)	SAE 15W-40 API CF/CG/CH-6
	Standard Coolant	-40°F to 115°F (-40°C to 45°C)	Delo 50/50 Extended Life Coolant
	Coolant Capacity		3.0 gal (11.4 L)
	Lube Oil Sump Capacity		2.11 gal (8.0 L)
Deutz D2011	RPM Settings		1600 Low / 2100 / 2675 High
	Horsepower @ 2600 rpm (intermittent)		48 kW / 65 hp
	Fuel Type		Diesel
	Fuel Tank Capacity		30 gal (114 L)
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C)	SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil Option	-20°F to 90°F (-29°C to 32°C)	SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil Option	-40°F to 115°F (-40°C to 45°C)	SAE 0W-40 API CF/CG/CH-6
	Lube Oil Sump Capacity		2.64 gal (10.0 L)

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Table 2.11 Specifications and Features - Engines & Fluids

			SJ85 AJ
Kubota WG3800	RPM Settings		927 Low / 2600 High
	Horsepower @ 2600 rpm (intermittent)		65 kW / 87.2 hp
	Fuel Type		Dual - Gasoline / Propane
	Fuel Tank Capacity		45 gal (170 L)
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C)	SAE 10W-30 API CF/CG/CH-6
	Cold Lube Oil Option	-20°F to 90°F (-29°C to 32°C)	SAE 10W-30 API CF/CG/CH-6
	Arctic Lube Oil Option	-40°F to 115°F (-40°C to 45°C)	SAE 10W-30 API CF/CG/CH-6
	Standard & Arctic Coolant	-40°F to 115°F (-40°C to 45°C)	Recochem 50/50 Premixed Coolant, Catalys Conventional Antifreeze/Coolant 50/50
	Coolant Capacity		3.0 gal (11.4 L)
	Lube Oil Sump Capacity		3.22 gal (12.2 L)
Hydraulic Oil	Oil Cooler	100°F to 115°F (38°C to 45°C)	Oil cooler option recommended
	Standard Oil	-15°F to 100°F (-26°C to 38°C)	Shell Tellus T46, Petro-Canada Hydrex MV46, Petro-Canada ATF D3M, Shell ATF Donax TG
	Arctic Oil	- 40°F to 100°F (-40°C to 38°C)	Esso/Mobil UNIVIS HVI 26, Petro-Canada Hydrex Extreme
	Hydraulic Tank Capacity		45 gal (170 L)
Gear Oil	Standard Gear Oil	-20°F to 115°F (-29°F to 45°F)	LS 80W-90 GL5
	Arctic Gear Oil	-40°F to 115°F (-40°F to 45°F)	Duratran XL Synthetic Oil

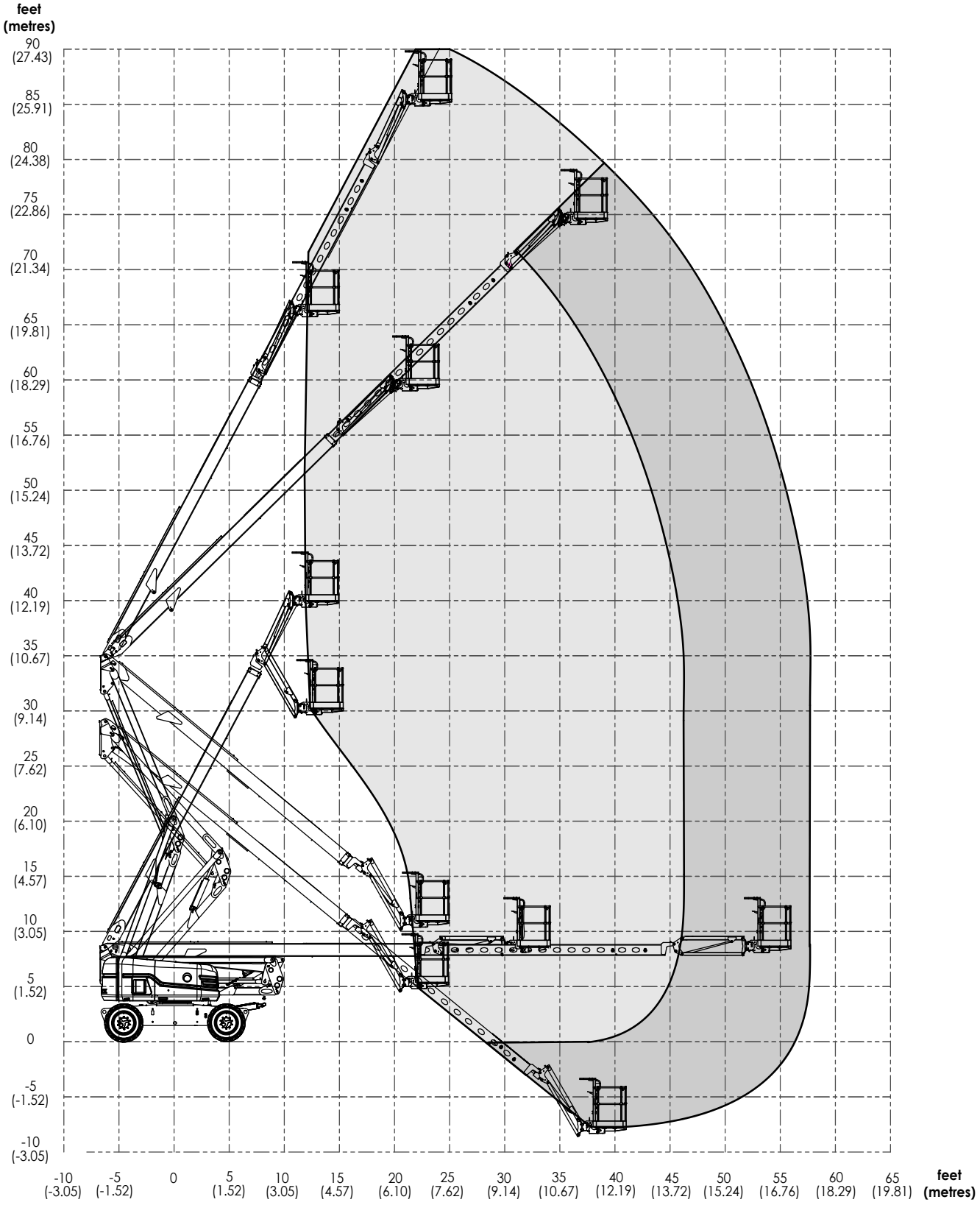
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Table 2.12 Platform Capacities

SJ85 AJ	
Total Capacity (High)	340 kg (750 lb)
	3 Persons
Total Capacity (Low)	227 kg (500 lb)
	2 Persons
Maximum Wind	12.5 m/s
Maximum Side Force	400 N
Tilt Cutout Setting	5 degrees x 5 degrees

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2.13 Reach Diagram



Section 3 – System Component Identification and Schematics

Table 3.1 Electrical Symbol Chart

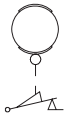
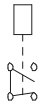
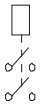
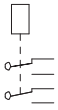
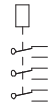
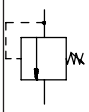
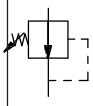
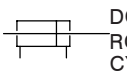
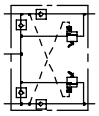
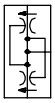
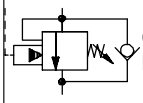
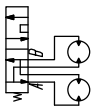
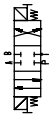
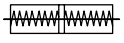
 CIRCUITS CROSSING NO CONNECTION	 HOURMETER	 KEY SWITCH	 LIMIT SWITCH N.O.
 CIRCUITS CONNECTED	 LIGHT	 FOOT SWITCH	 LIMIT SWITCH N.O. HELD CLOSED
 BATTERY	 HYDRAULIC VALVE COIL	 TOGGLE SWITCH	 LIMIT SWITCH N.C.
 GROUND	 PROPORTIONAL HYDRAULIC VALVE COIL	 PUSH BUTTON	 LIMIT SWITCH N.C. HELD OPEN
 FUSE	 ELECTRIC MOTOR	 ROTARY SWITCH	 SILICON CONTROLLED RECTIFIER
 CIRCUIT BREAKER	 HORN	 LIMIT SWITCH	 PROXIMITY SWITCH
 VOLT METER	 EMERGENCY STOP BUTTON	 CAM OPERATED LIMIT SWITCH	 PNP TRANSISTOR
 CAPACITOR	RESISTOR	 TILT SWITCH	 NPN TRANSISTOR
 POTENTIOMETER	 LEVEL SENSOR	 SINGLE POLE SINGLE THROWN RELAY	 PRESSURE/ VACUUM SWITCH
 SINGLE POLE DOUBLE THROW RELAY	 DOUBLE POLE SINGLE THROW RELAY	 DOUBLE POLE DOUBLE THROW RELAY	 TEMPERATURE SWITCH
 TRIPLE POLE DOUBLE THROW RELAY	 DIODE	 RHEOSTAT	

Table 3.2 Hydraulic Symbol Chart

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

3.3 Wire Numbers and Colour Codes

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 Wire Numbers and Color Codes - Additional

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

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

Load Cell Color Code							
Wire No.	**Wire Color**	**Wire No.**	**Wire Color**	**Wire No.**	**Wire Color**	**Wire No.**	**Wire Color**
02	Brown	60	Yellow	161	White	unused	Beige
02	Blue	60	Red	162	Green	unused	Purple
						unused	Black

1790AA

3.5 Hydraulic Parts List

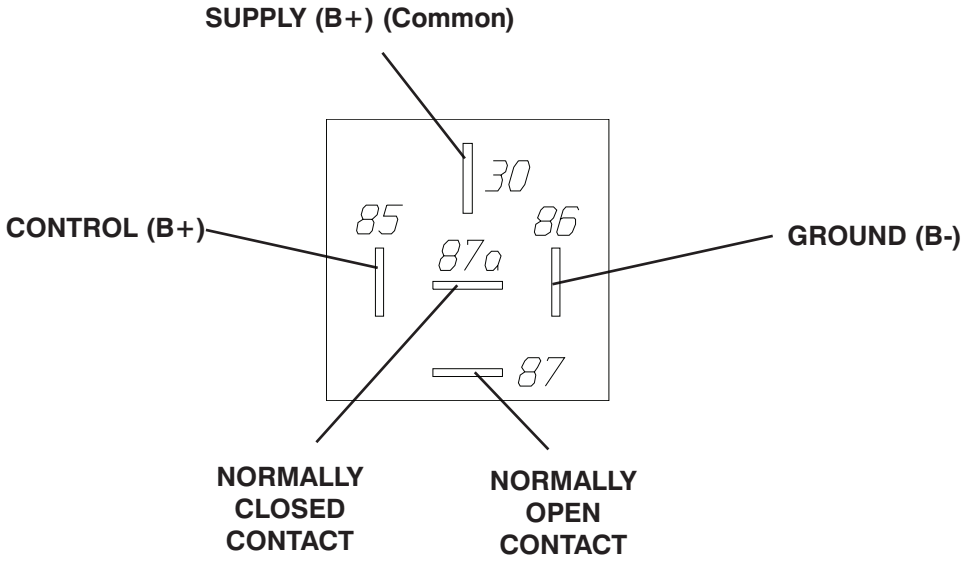
Index No.	Skyjack Part No.	Description
OC1	160800	OIL COOLER
2H-21A	102626	VALVE, Dump
2H-42C	168755	VALVE, Flow enable platform/jib
2H-85	168058	VALVE, Flow enable - 12 kW generator
2H-85	168056	VALVE, Flow enable - 3.5 kW generator
3H-165	159827	VALVE, Diff. lock
3H-26	159827	VALVE, Brake release
3H-45	159827	VALVE, 2-spd
3H-65	159827	VALVE, Axle lock out
4H-13	168758	VALVE, Boom down
4H-14	168758	VALVE, Boom up
4H-15	N/A	VALVE, Drive pump control
4H-16	N/A	VALVE, Drive pump control
4H-30	212555	VALVE, Riser down
4H-31	212555	VALVE, Riser up
4H-34	166041	VALVE, Jib down
4H-35	166041	VALVE, Jib up
4H-36	166041	VALVE, Platform rotate left
4H-37	166041	VALVE, Platform rotate right
4H-38	168758	VALVE, Boom in
4H-39	168756	VALVE, Boom out
4H-40	159803	VALVE, Platform level down
4H-41	159803	VALVE, Platform level up
5H-23A	208875	VALVE, Steer right
5H-24A	208875	VALVE, Steer left
5H-32	159806	VALVE, Rotate left
5H-33	159806	VALVE, Rotate right
C1	255589	CYLINDER, Boom lift
C2	255592	CYLINDER, Boom extend
C3	255590	CYLINDER, Master
C4	255591	CYLINDER, Tilt
C5	255593	CYLINDER, Jib
C6	255646	CYLINDER, Axle lock
C6	212872	CYLINDER, Axle lock
C7	255646	CYLINDER, Axle lock
C7	212872	CYLINDER, Axle lock
C8	170903	CYLINDER, Steer
C9	N/A	CYLINDER, Brake - front
C10	N/A	CYLINDER, Brake - rear
CB1	171421	VALVE, Counterbalance - swing drive
CB2	171421	VALVE, Counterbalance - swing drive
CB3	212623	VALVE, Counterbalance - boom lift
CB4	165486	VALVE, Counterbalance - boom extend
CB5	165486	VALVE, Counterbalance - boom extend
CB6	159841	VALVE, Counterbalance - platform level
CB7	159841	VALVE, Counterbalance - platform level
CB8	216059	VALVE, Counterbalance - jib

Index No.	Skyjack Part No.	Description
CB9	216059	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
CB14	212624	VALVE, Counterbalance - lift cylinder
CB15	212663	VALVE, Counterbalance - riser
CB16	212663	VALVE, Counterbalance - riser
CV1	159842	VALVE, Check - auxiliary pump
CV2	171389	VALVE, Check - main inlet
CV3	199471	VALVE, Check - main LS
CV4	199471	VALVE, Check - main LS
CV5	199471	VALVE, Check - main LS
CV6	199471	VALVE, Check - main LS
CV7	212549	VALVE, Check - jib/platform return
CV8	197770	VALVE, Check - leverl override
CV9	197770	VALVE, Check - level override
CV10	171411	VALVE, Check - steer load sense
CV11	171412	VALVE, Check - swing drive load sense
CV12	171412	VALVE, Check - riser shuttle LS
CV13	171412	VALVE, Check - lift load sense
CV14	171412	VALVE, Check - extend load sense
CV15	171411	VALVE, Check - platform level LS
CV16	159842	VALVE, Check - boom lift suction
CV17	159842	VALVE, Check - riser down suction
CV18	171412	VALVE, Check - platform/jib load sense
CV19	N/A	VALVE, Check - generator 3.5 kW
CV20	159814	VALVE, Check - generator 12 kW manifold LS
CV21	171410	VALVE, Check - generator 12 kW manifold
CV22	N/A	VALVE, Check - generator 12 kW
CV23	159814	VALVE, Check - generator 3.5 kW LS
CV24	159814	VALVE, Check - generator 7.5 kW LS
CV25	171410	VALVE, Check - generator 7.5 kW LS
CV26	171434	VALVE, Check - generator 7.5 kW LS
DSV1	166063	VALVE, Compensator - swing
DSV2	212550	VALVE, Compensator - boom extend
DSV3	212551	VALVE, Compensator - boom lift
DSV4	212550	VALVE, Compensator - riser
EPU	198009	PUMP, Emergency
F1	161932	FILTER, High pressure
F2	161933	FILTER, Return
FR1	166058	VALVE, Flow regulator
M1A	171944	MOTOR, Axle drive - ***Eaton***
M1A	243287	MOTOR, Axle drive - ***Hengli***
M1B	171944	MOTOR, Axle drive - ***Eaton***
M1B	243287	MOTOR, Axle drive - ***Hengli***
M2	170930	MOTOR, Swing drive
M3	171419	MOTOR, Generator 3.5 kW

Index No.	Skyjack Part No.	Description
M4	171438	MOTOR, Generator 12 kW
MB1	198103	MANIFOLD, Main
MB2	198368	MANIFOLD, Brake
MB3	198369	MANIFOLD, Jib
MB5	168618	MANIFOLD, Generator - 3.5 kW
MB6	171437	MANIFOLD, Generator - 12 kW
OR1	212559	ORIFICE, Main manifold (0.090")
OR2	199475	ORIFICE, Main manifold (0.055")
OR3	171416	ORIFICE, Main manifold (0.020")
OR4	171416	ORIFICE, Main manifold (0.020")
OR5	171416	ORIFICE, Main manifold (0.020")
OR6	171416	ORIFICE, Main manifold (0.020")
OR9	171420	ORIFICE, Bleed off (0.073")
P1A	154119	PUMP, Charge
OR10	171450	VALVE, Flow regulator
OR11	171450	VALVE, Flow regulator
OR12	171450	VALVE, Flow regulator
P1A	169006	PUMP, Hydrostatic - ***Eaton***
P1A	246233	PUMP, Hydrostatic - ***Hengli***
P2	165101	PUMP, System
PR1	211704	VALVE, Pressure reducing - 400 psi
PR2	212548	VALVE, Pressure reducing - 80 psi
QD1	122420	FITTING, Quick disconnect
RA1	144710	ACTUATPR, Platform with jib
RA2	167073	ACTUATOR, Swing
RV1	188759	VALVE, Relief - main manifold
RV2	238568	VALVE, Relief - swing drive
RV3	238576	VALVE, Relief - platform level
RV4	238576	VALVE, Relief - Riser
RV5	216236	VALVE, Relief - Boom lift
RV6	212556	VALVE, Relief - Boom extend
RV7	N/A	VALVE, Relief - Charge
RV8	N/A	VALVE, Relief - EPU
SV1	141414	VALVE, Shuttle - brake manifold
SV2	166054	VALVE, Shuttle - brake manifold
SV3	166054	VALVE, Shuttle - riser
SV4	141414	VALVE, Shuttle - boom lift
SV5	N/A	VALVE, Shuttle - swing drive brake
V1	113752	VALVE, Brake release override
V2	223204	VALVE, Pilot operated
V3	159831	VALVE, Brake hand pump
V4	212553	VALVE, Pilot operated
V5	230202	VALVE, Pilot operated
V6	212552	VALVE, Pilot operated
V8	166053	VALVE, Loop flush

3.6 Electrical Parts List

Relay diagram



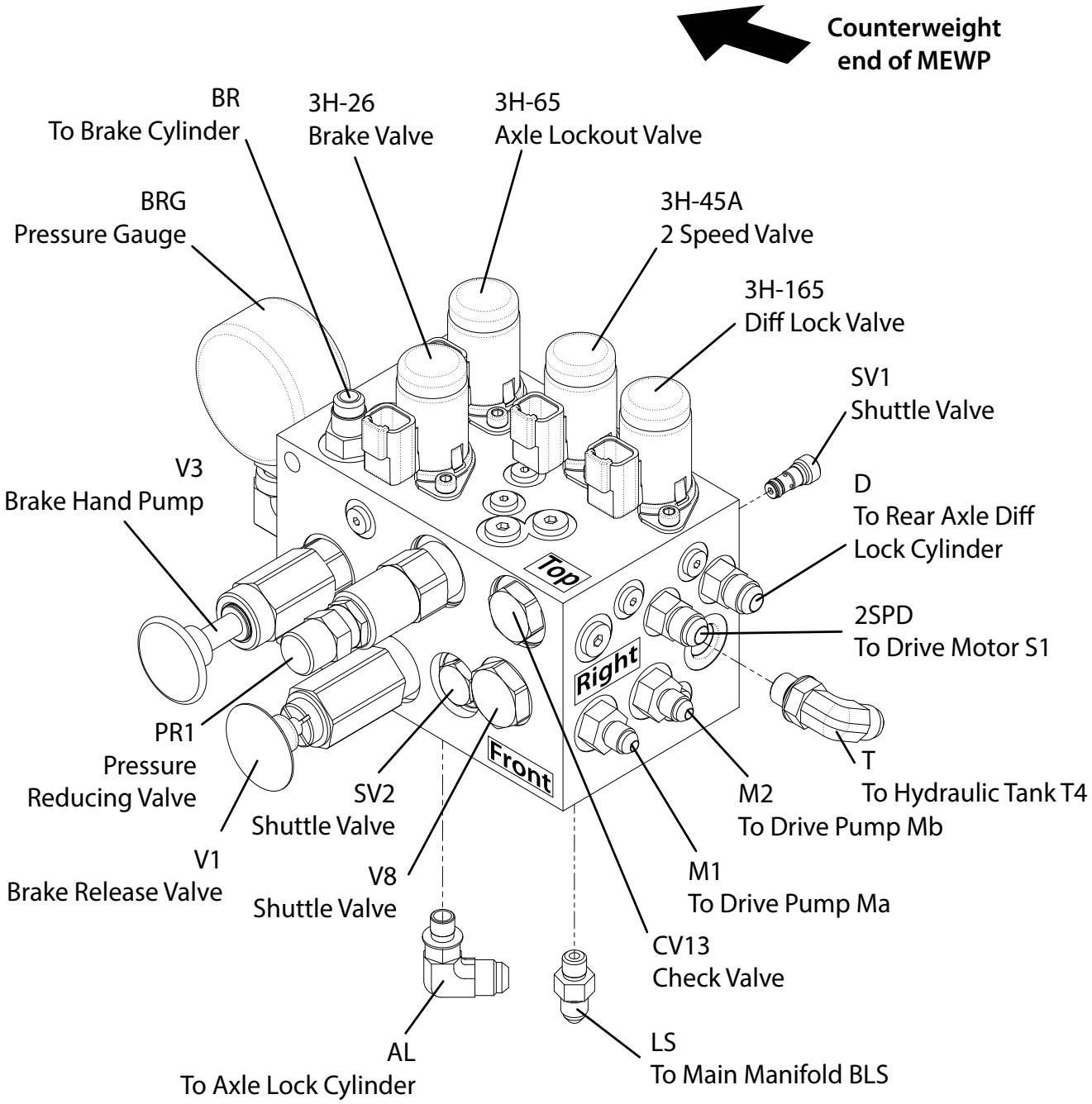
Index No.	Skyjack Part No.	Description
01ACR	127131	RELAY
01ACR1	127131	RELAY
09CR	127131	RELAY
13ACR	127131	RELAY
21CR	127131	RELAY
27CR	127131	RELAY (platform controls)
36ACR	127131	RELAY
45CR1	127131	RELAY
49CR	127131	RELAY
59CR	127131	RELAY
60CR	127131	RELAY
77CR	127131	RELAY
82CR	127131	RELAY (platform controls)
86CR	127131	RELAY, Oil cooler
108CR	127131	RELAY, Emergency pump
120CR	127131	RELAY
123ACR	127131	RELAY
123ACR1	127131	RELAY
123CR	127131	RELAY
162ACR1	127131	RELAY (platform controls)
162ACR2	127131	RELAY
403ACR	127131	RELAY, Positive air shut-off option

Index No.	Skyjack Part No.	Description
2H-21A	159821	COIL, Dump
2H-36A	159821	COIL, Flow enable platform/jib
2H-85	168057	COIL, Flow enable - generator
3H-165	159827	COIL, Diff. lock
3H-26	159827	COIL, Brake release
3H-45	159827	COIL, 2-spd
3H-65	159827	COIL, Axle lock out
4H-13	212554	COIL, Boom down
4H-14	212554	COIL, Boom up
4H-15	N/A	COIL, Drive pump control
4H-16	N/A	COIL, Drive pump control
4H-30	212554	COIL, Riser down
4H-31	212554	COIL, Riser up
4H-34	208881	COIL, Jib down
4H-35	208881	COIL, Jib up
4H-36	208881	COIL, Platform rotate left
4H-37	208881	COIL, Platform rotate right
4H-38	212554	COIL, Boom in
4H-39	212554	COIL, Boom out
4H-40	159821	COIL, Platform level down
4H-41	159821	COIL, Platform level up
5H-23A	208881	COIL, Steer right
5H-24A	208881	COIL, Steer left
5H-32	212554	COIL, Rotate left
5H-33	212554	COIL, Rotate right
A1	138225	CONTROLLER, Boom/turret
A2	148707	CONTROLLER, Riser
A3	138224	CONTROLLER, Drive/steer
AT1	149426	TRANSDUCER, Angle (tilt switch)
BP1	103057	ALARM, Tilt
BP2	103056	BEEPER, All motion alarm
BP3	144387	BEEPER, Overload alarm
BP4	166110	ALARM/FLASHER - SGE
BP5	131938	ALARM, Overload
CB1	117325	BREAKER, Circuit - 15 amp
CB2	117325	BREAKER, Circuit - 15 amp
CB3	117326	BREAKER, Circuit - 20 amp
CB4	117326	BREAKER, Circuit - 20 amp
CB5	117326	BREAKER, Circuit - 15 amp (generator)
CB40	171899	BREAKER, Circuit - 20 amp (positive air shut-off option)
H1	146652	HORN
LB1	171888	LIGHT, Work
LB2	171888	LIGHT, Work
LB2	144078	LIGHT, Flashing
LS1	199546	SWITCH, Limit - direction sensing
LS2	207059	SWITCH, Limit - boom down
LS3	198390	SWITCH, Limit - fly in

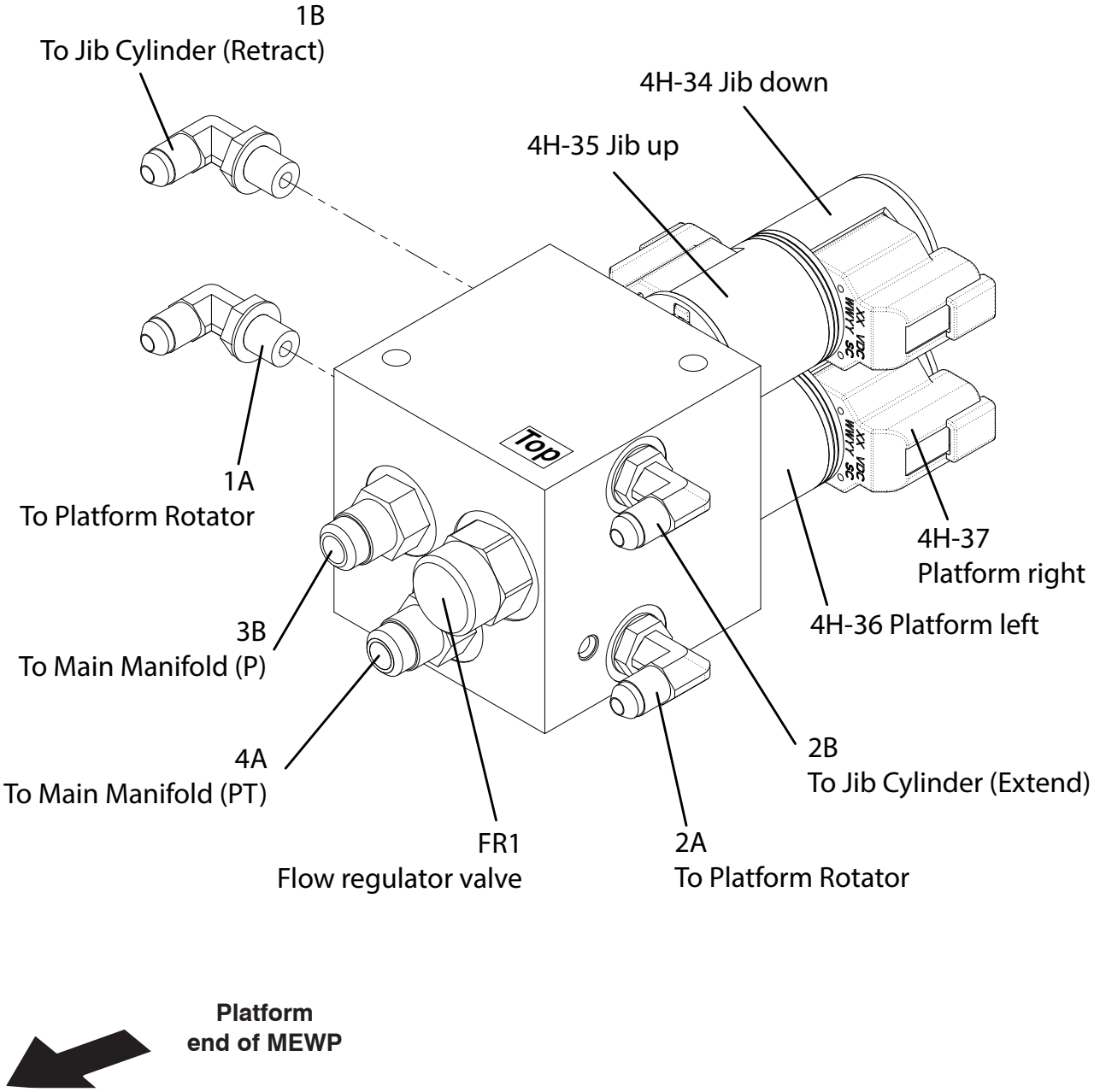
Index No.	Skyjack Part No.	Description
LS4	198391	SWITCH, Limit - dual load zone
LS5	198390	SWITCH, Limit - dual load zone
LS6	207017	SWITCH, Limit - riser down
LS7	207059	SWITCH, Limit
OCM	208873	MODULE, SCM
PL3	133133	LIGHT, Pilot - MIL
PL4	133133	LIGHT, Pilot - low fuel
PL5	164832	LIGHT, Pilot - Oil pressure
PL6	164831	LIGHT, Pilot - Preheat
PL7	164832	LIGHT, Pilot - Coolant temperature
PL8	133133	LIGHT, Pilot - WIF
PL9	171501	LIGHT, Pilot - low capacity
PL10	171501	LIGHT, Pilot - high capacity
PL11	171502	LIGHT, Pilot - load zone border
PL12	171502	LIGHT, Pilot - low capacity
PL13	171501	LIGHT, Pilot - high capacity
PL14	171501	LIGHT, Pilot - load zone border
PL15	138229	LIGHT, Panel
PL16	171502	LIGHT, Pilot - diff lock
PL17	164832	LIGHT, Pilot - Overload
PL40	164832	LIGHT, Pilot - positive air shut-off option
R1	144523	RESISTOR, 7 ohm 25 W
R2	110999	RESISTOR, 5 ohm 25 W
R3	110999	RESISTOR, 3 ohm 25 W
R3	163021	RESISTOR, 120 ohm 1/2 W - ***Deutz TD2.9L serial number A303 000 957 and above***
R4	139088	RESISTOR, 6 ohm 25 W
R4	164855	RESISTOR, 1.0 K ohm 1/2 W - ***Deutz TD2.9L serial number A303 000 957 and above***
R5	171987	RESISTOR, 1 ohm 1/4 W
R5	164856	RESISTOR, 3.3 K ohm 1/2 W - ***Deutz TD2.9L serial number A303 000 957 and above***
R6	164857	RESISTOR, 3.9 K ohm 1/2 W - ***Deutz TD2.9L serial number A303 000 957 and above***
S1	119725	SWITCH, Battery disconnect
S2	164949	SWITCH, Key - ***ANSI/CSA & AS***
S2	165828	SWITCH, Key - ***CE***
S3	144652	SWITCH, Emergency stop
S4	144647	SWITCH, Emergency stop
S5	138278	SWITCH, Toggle - ignition/e-pump switch
S6	144016	SWITCH, Toggle - e-pump
S9	124446	SWITCH, Toggle - Ignition
S10	115747	SWITCH, Toggle - throttle
S11	700187	SWITCH, Footswitch
S12	138278	SWITCH, Toggle - boom lift
S13	102853	SWITCH, Toggle - Tturret rorate
S14	102853	SWITCH, Toggle - Telescope
S15	102853	SWITCH, Toggle - platform levelling
S16	102853	SWITCH, Toggle - platform rotate
S17	102853	SWITCH, Toggle - jib up/down
S18	102853	SWITCH, Toggle - Telescope extend/retract

Index No.	Skyjack Part No.	Description
S19	102853	SWITCH, Toggle - Platform levelling
S20	102853	SWITCH, Toggle - platform rotate
S21	102853	SWITCH, Toggle - Jib up/down
S22	115747	SWITCH, Toggle - generator
S23	144648	SWITCH, Horn
S25	138278	SWITCH, Toggle - riser
S26	102853	SWITCH, Toggle - fuel select
S28	115747	SWITCH, Toggle - Diff lock
S40	115574	SWITCH, Toggle - positive air shut-off
S48	115574	SWITCH, Toggle - drive torque
TT1	195940	Hourmeter - ***ANSI/CSA & AS***
TT1	170787	Hourmeter - ***CE***

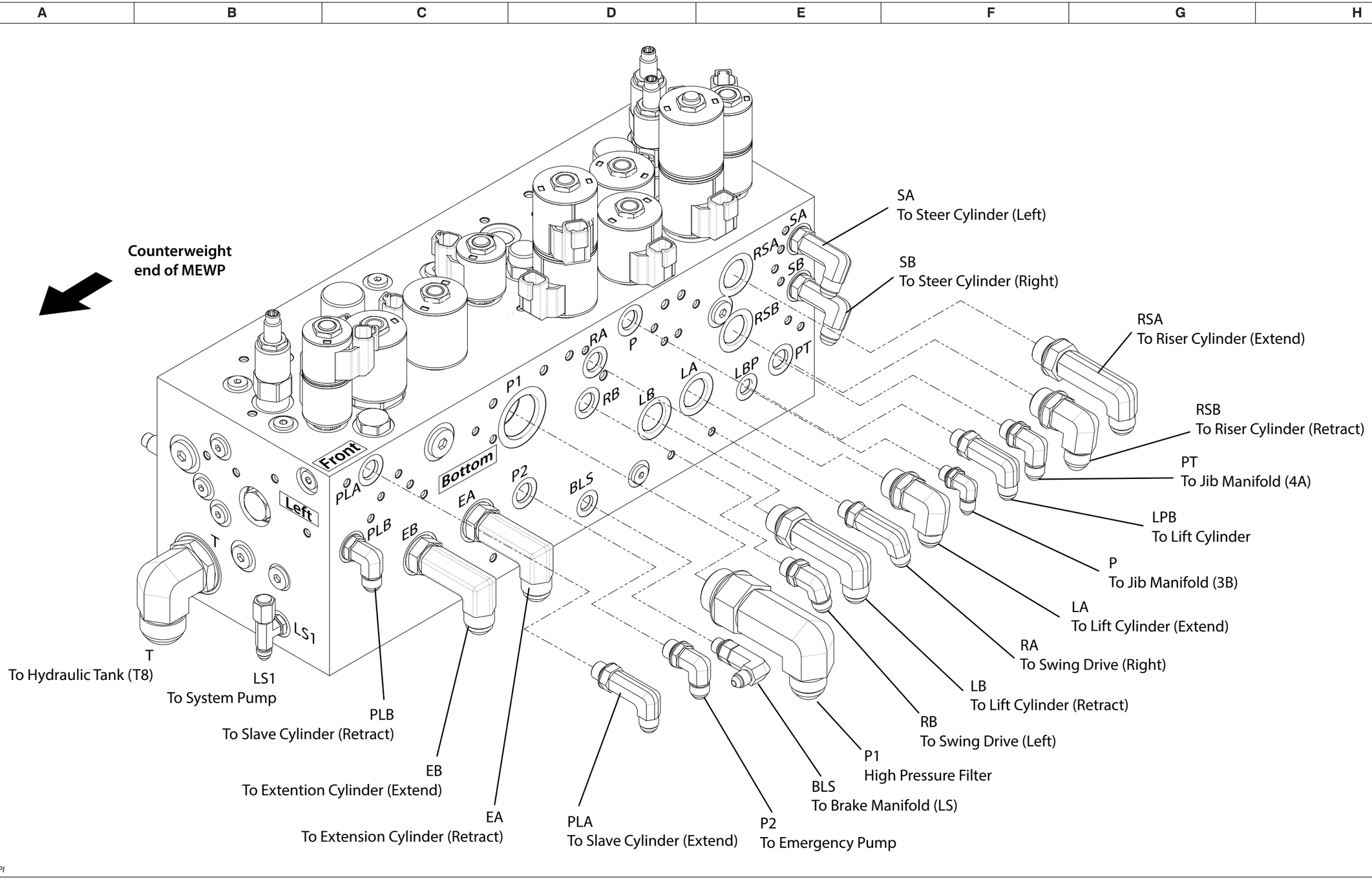
3.7 Brake Manifold Port Identification



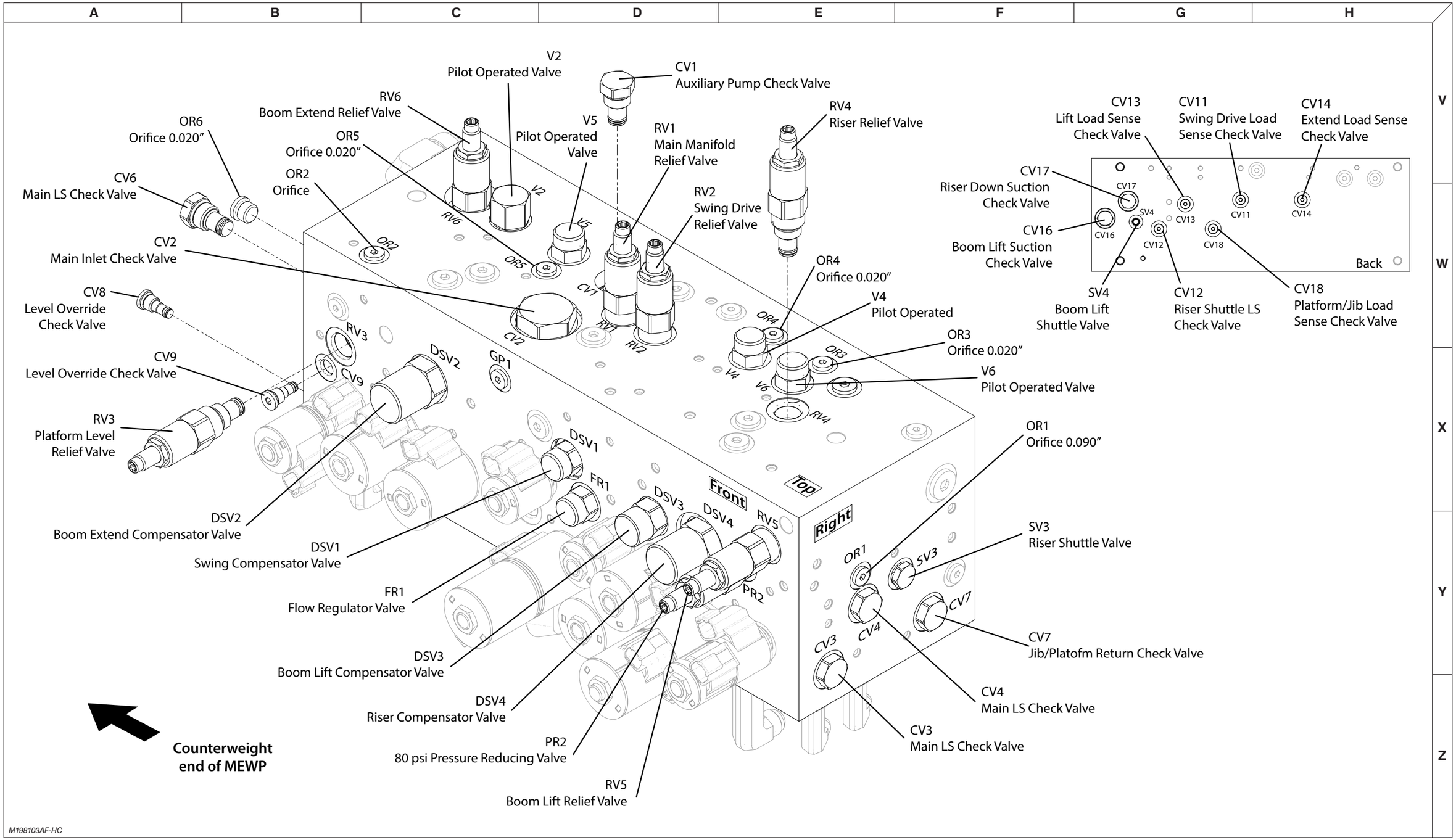
3.8 Jib Manifold Port Identification



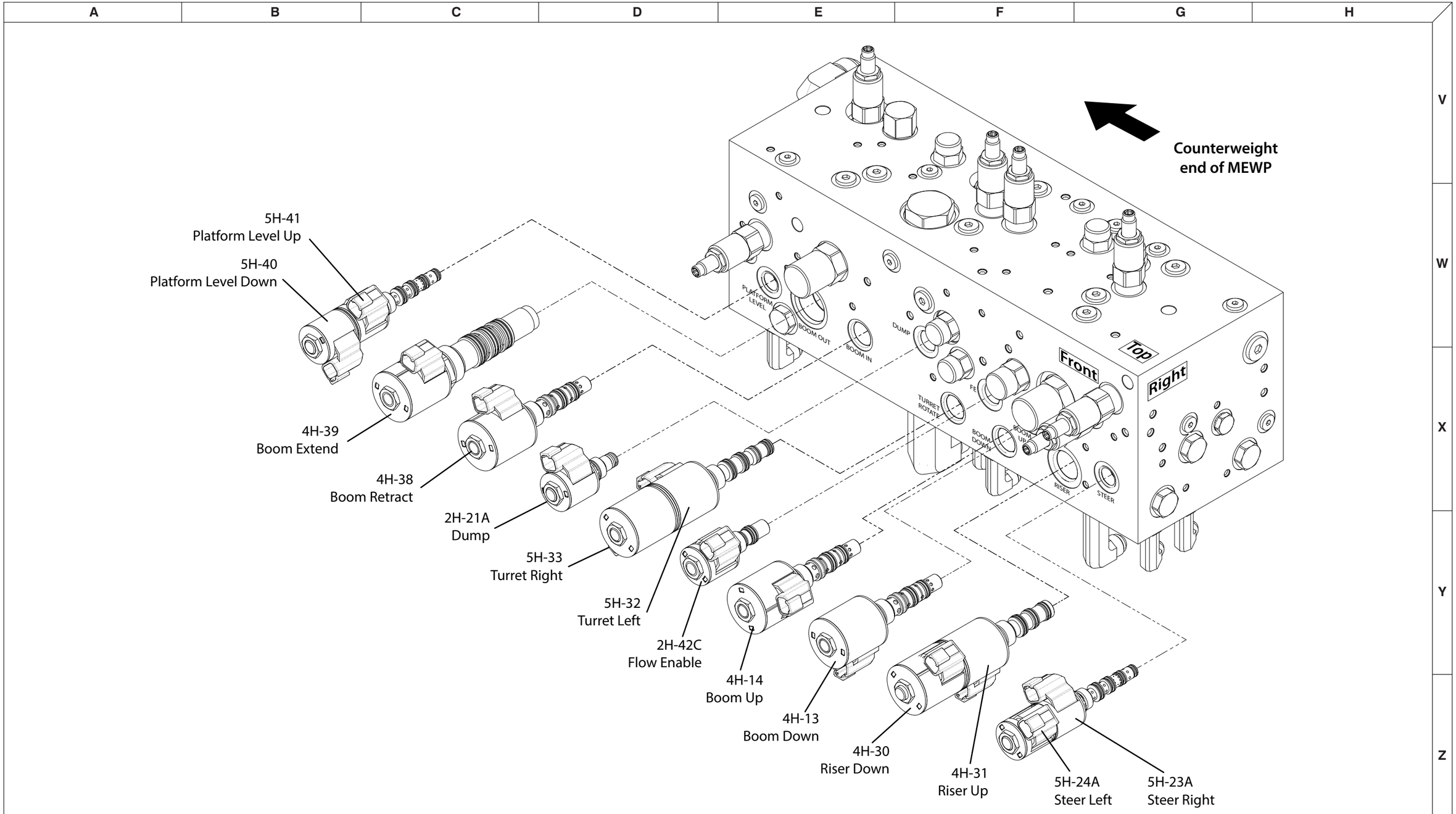
3.9 Main Manifold - Hose Port Identification



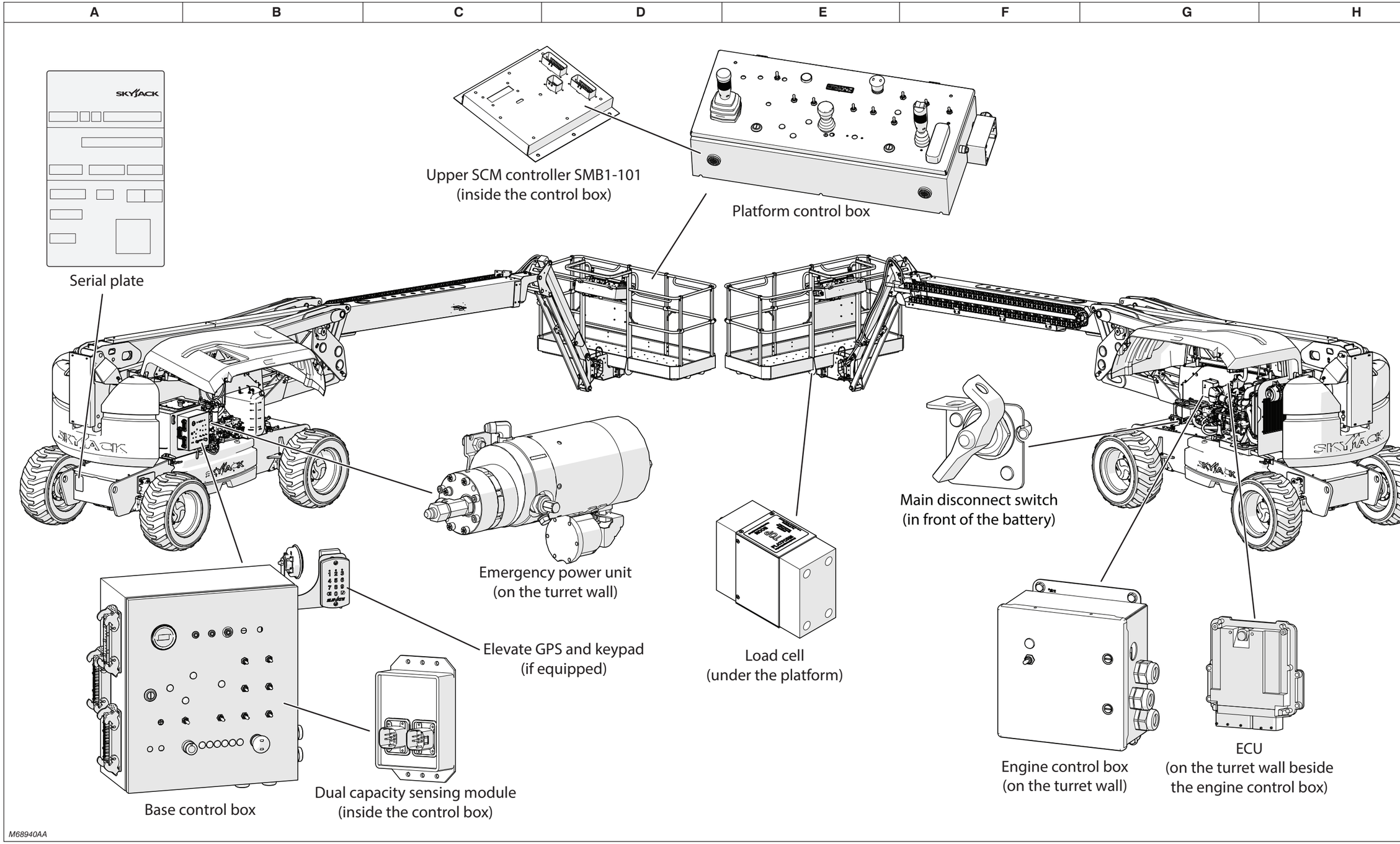
3.10 Main Manifold - Hydraulic Components



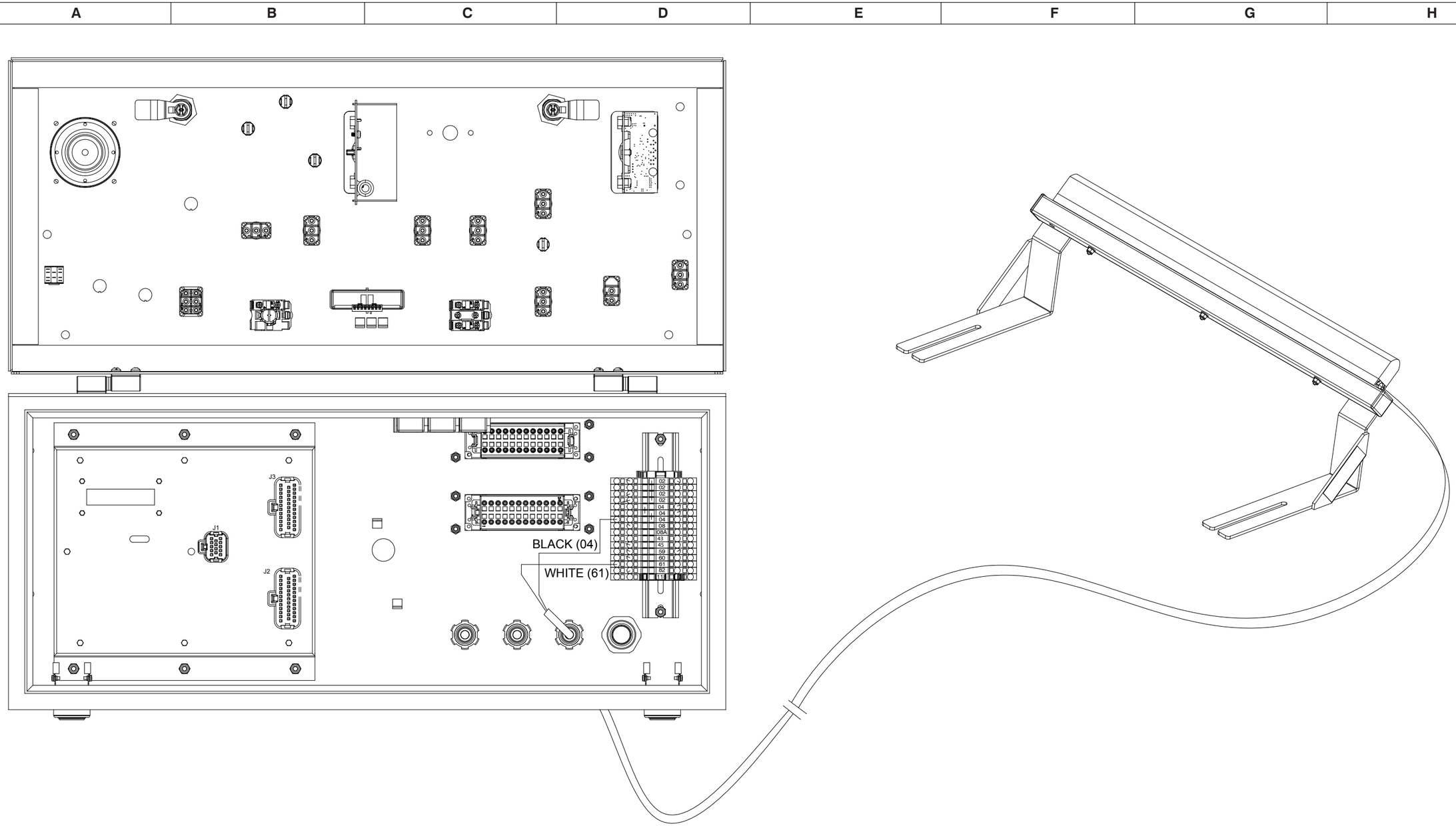
3.11 Main Manifold - Electrical Components



3.12 Major Components



3.13 SGE Harness Connection - 2-wire version



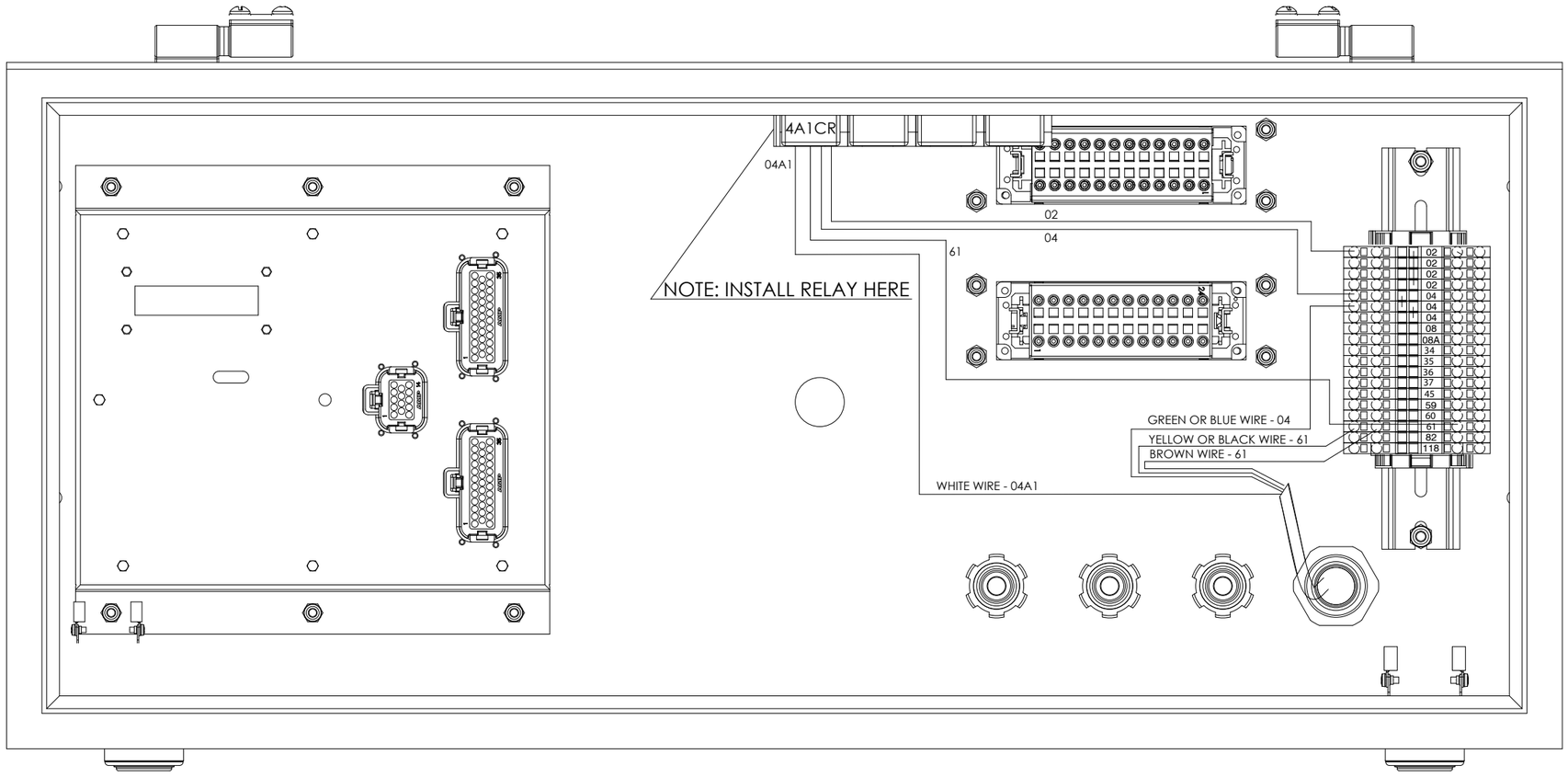
3.14 SGE Harness Connection - 4-wire version

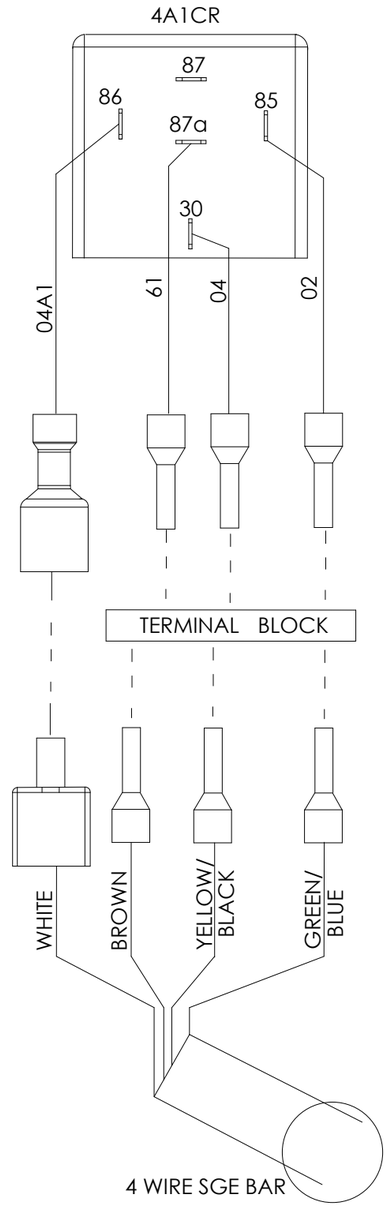
NOTE: NEW SENSING BAR HAS TWO SETS OF COLOR SCHEMES.

SET 1: BN, YL, WH, GN

OR

SET 2: BN, BK, WH, BL





M250145AA

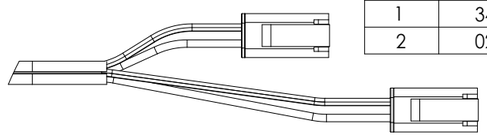
3.15 Jib and Platform Rotate Harness Connections

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

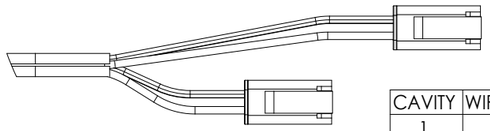
CAVITY	WIRE NO.	COLOUR	DESCRIPTION
1	35	ORANGE/WHITE	JIB UP
2	02	WHITE (SPLICE 2)	GROUND

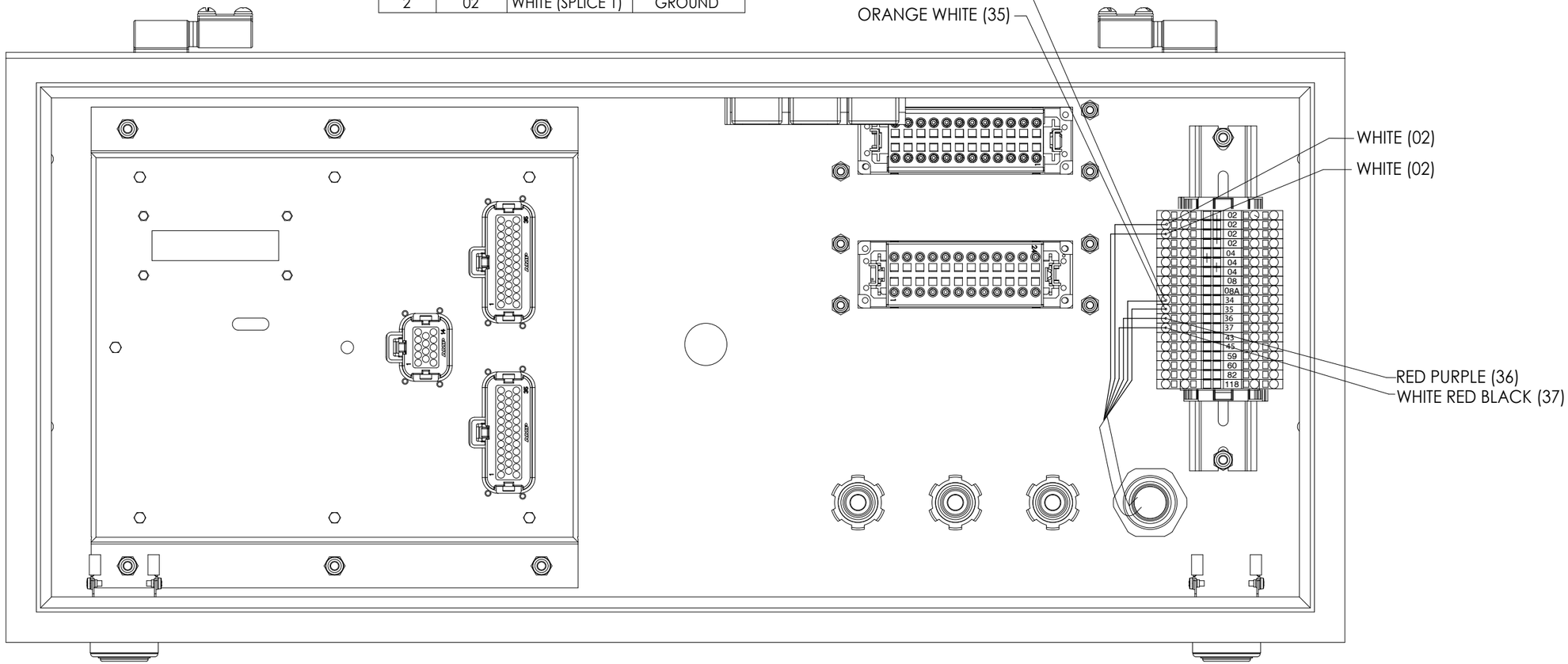
CAVITY	WIRE NO.	COLOUR	DESCRIPTION
1	36	RED/PURPLE	ROTATE CW
2	02	WHITE (SPLICE 1)	GROUND

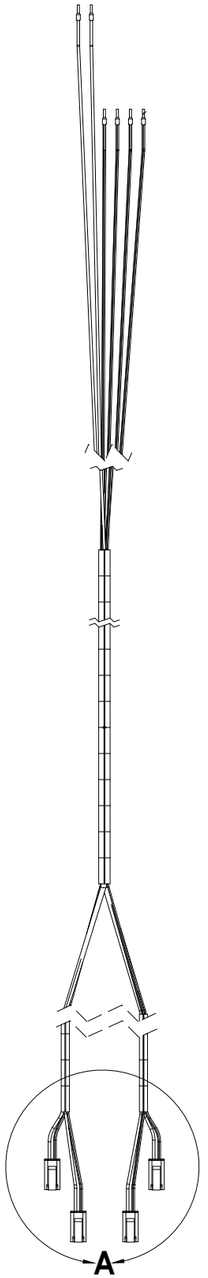
CAVITY	WIRE NO.	COLOUR	DESCRIPTION
1	37	WHITE/RED/BLK	ROTATE CCW
2	02	WHITE (SPLICE 1)	GROUND



DETAIL A
SCALE 1 : 2

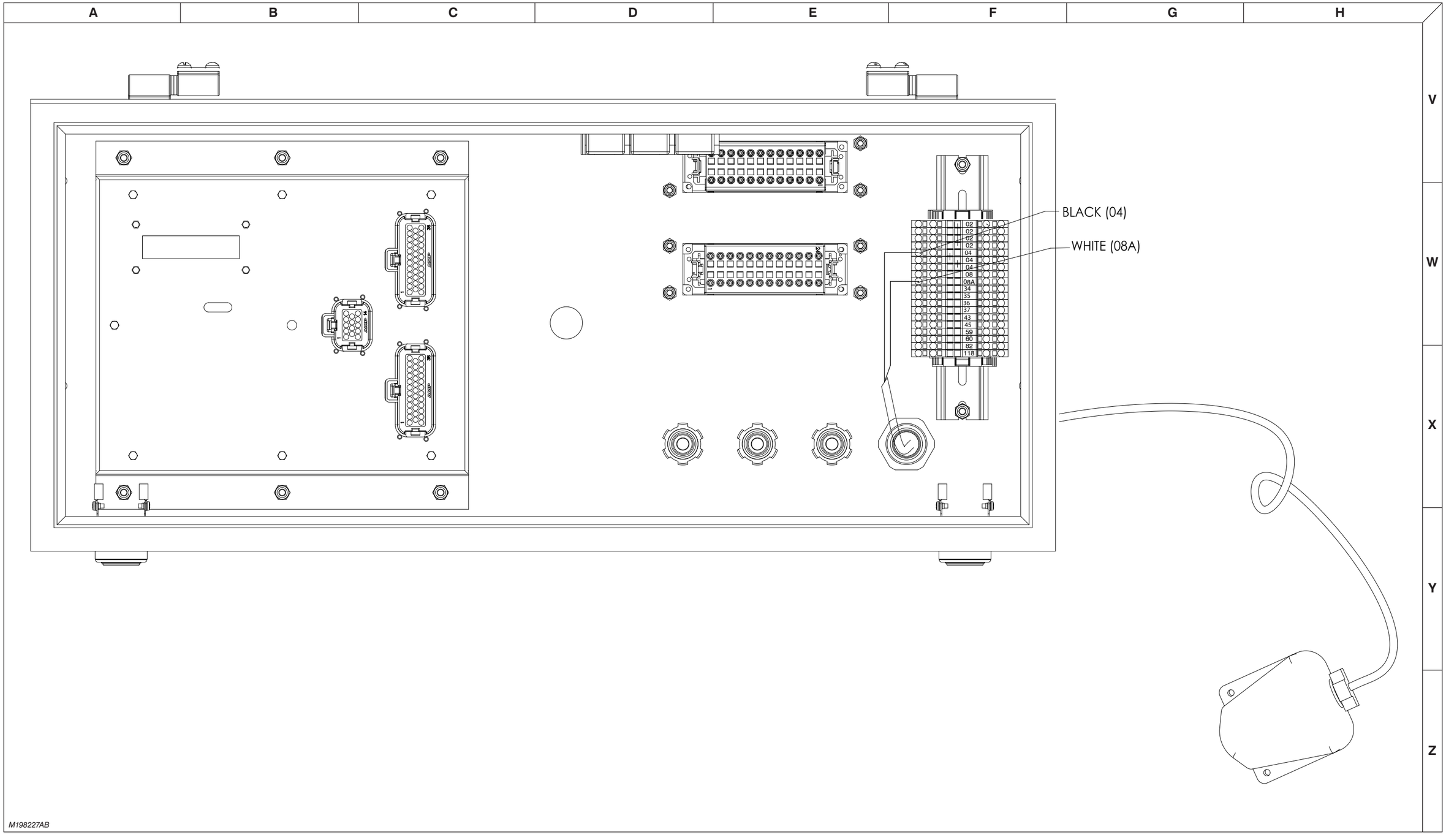




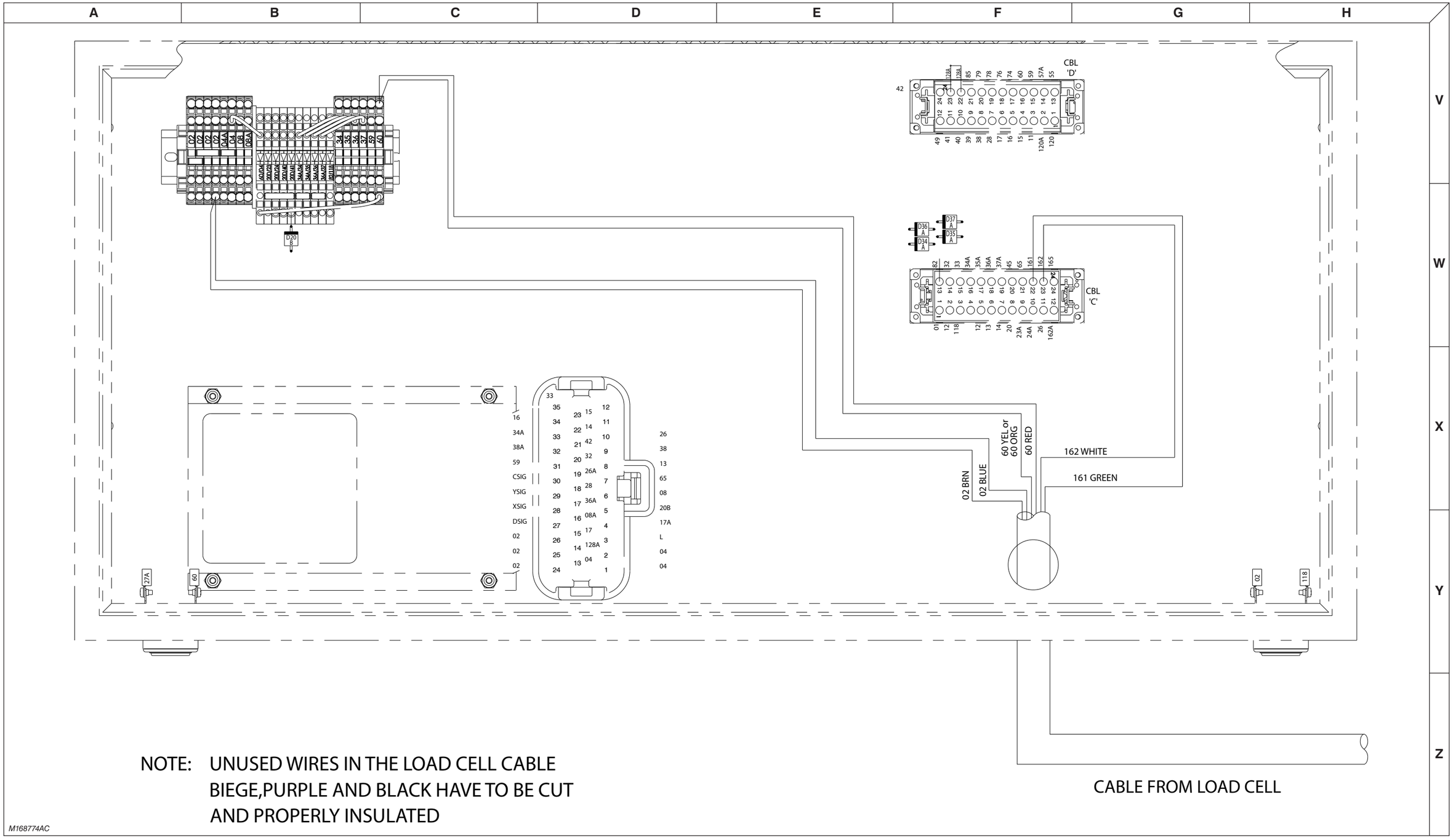


M198228AB_M168650AB

3.16 Footswitch Harness Connection



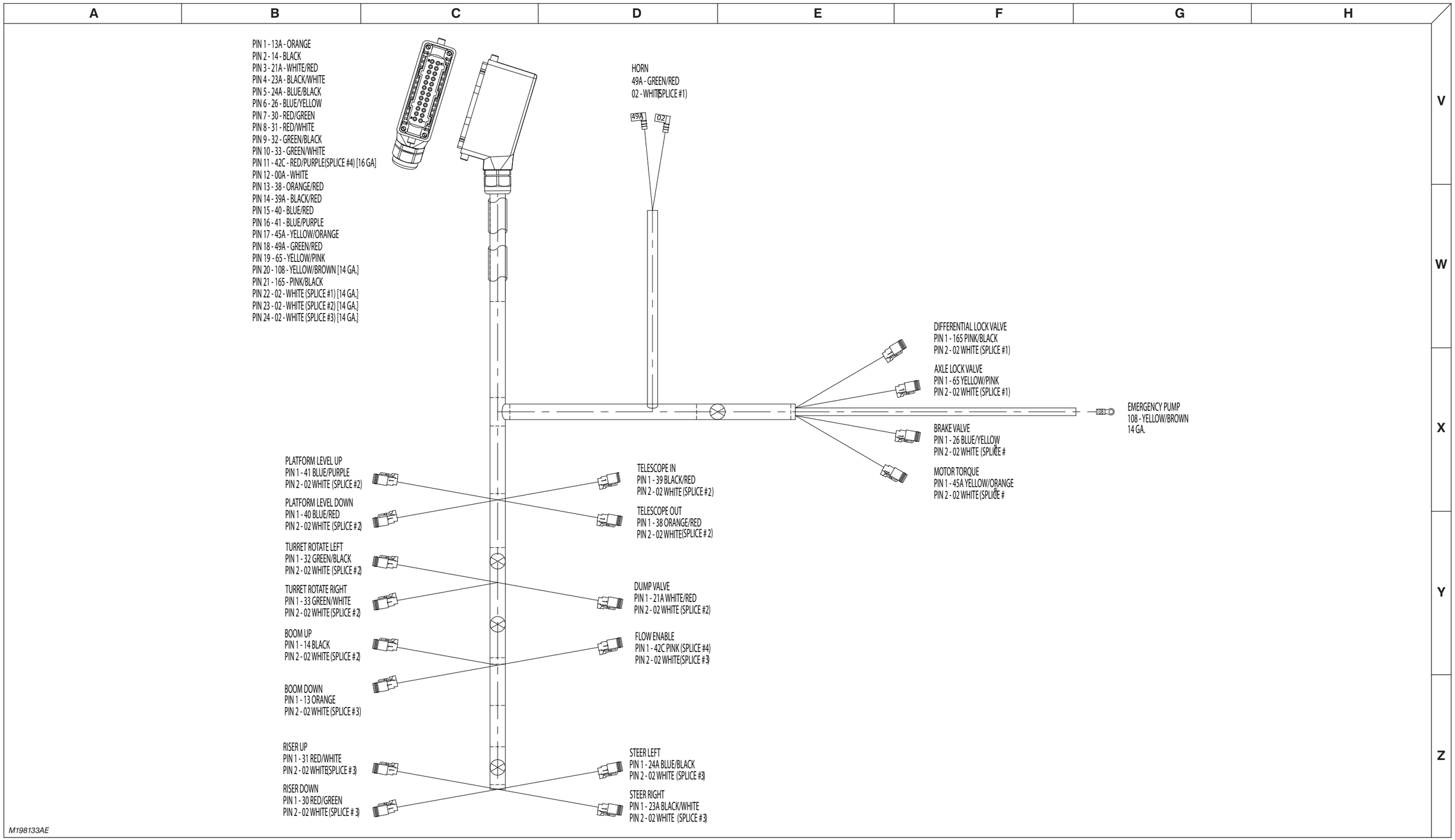
3.17 Load Cell Wiring



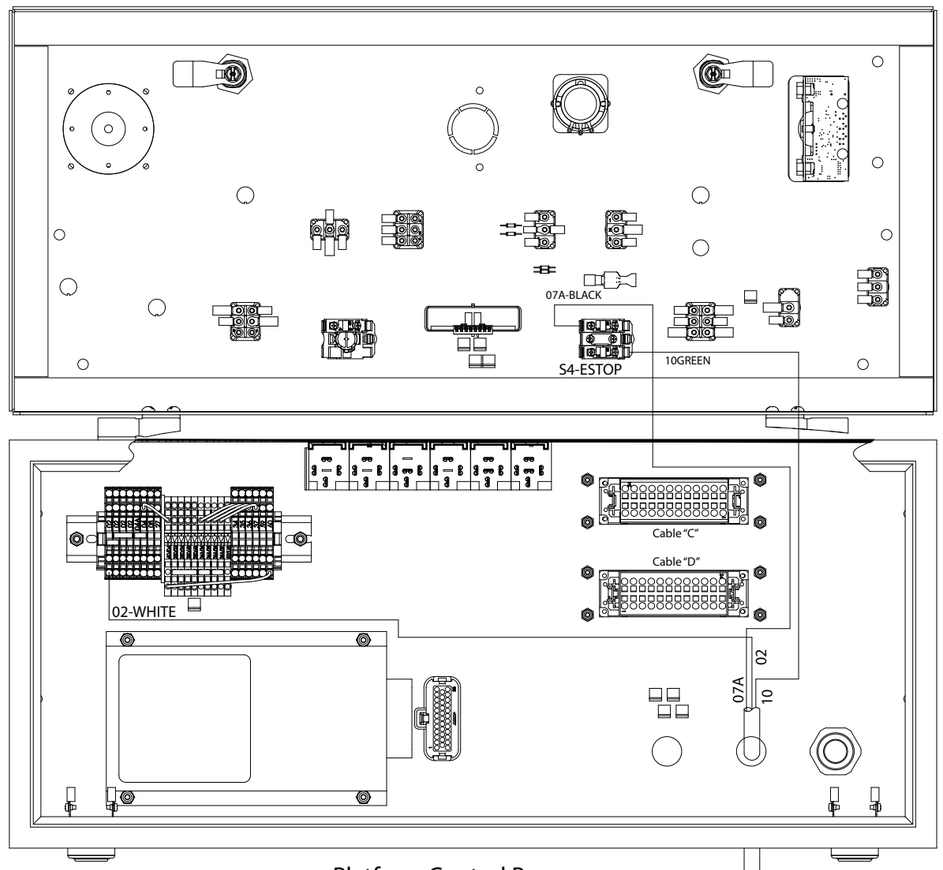
NOTE: UNUSED WIRES IN THE LOAD CELL CABLE BIEGE,PURPLE AND BLACK HAVE TO BE CUT AND PROPERLY INSULATED

M168774AC

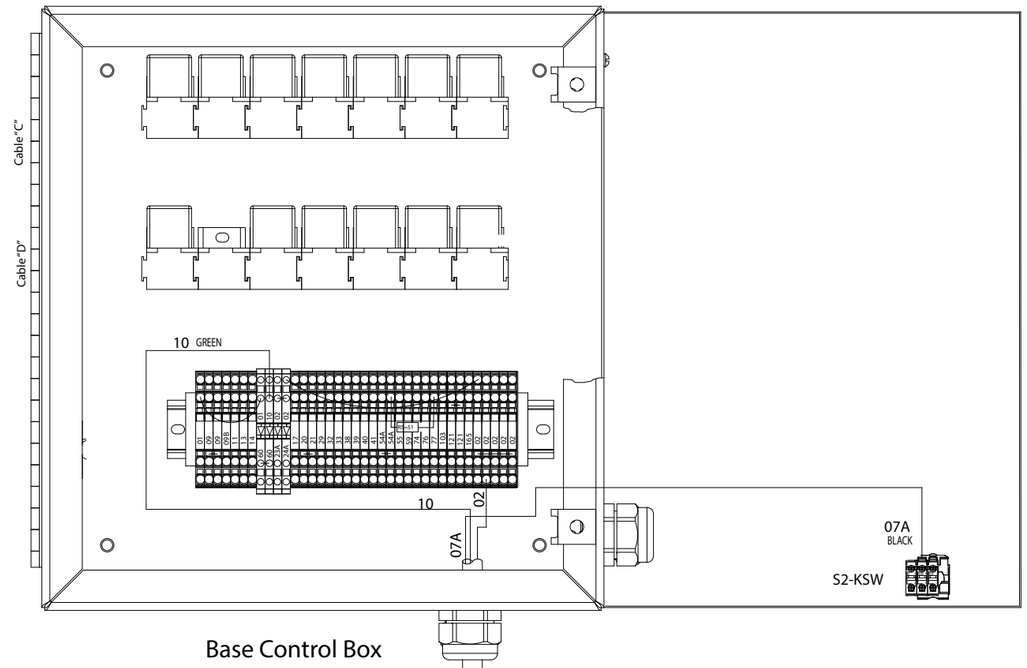
3.18 Main Manifold Harness



3.19 Platform to Base Control Cables



Platform Control Box

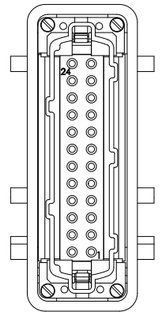


Base Control Box

Cable through E-Chain

02 - WHITE
07A - BLACK
10 - GREEN

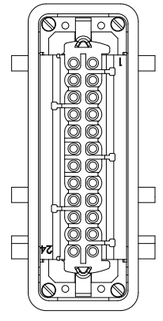
Control Cable "A"



MALE

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

Control Cable "B"

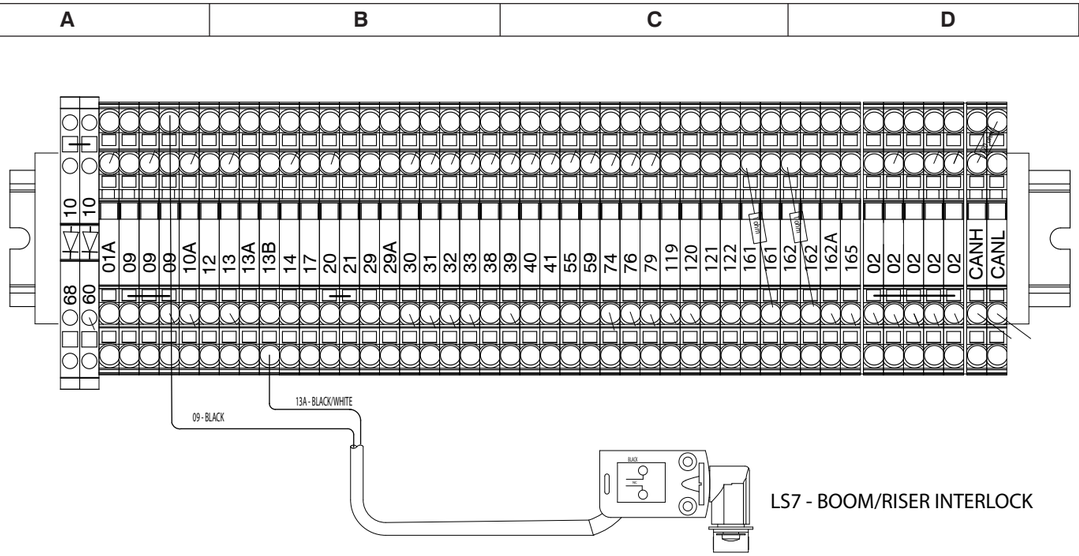


FEMALE

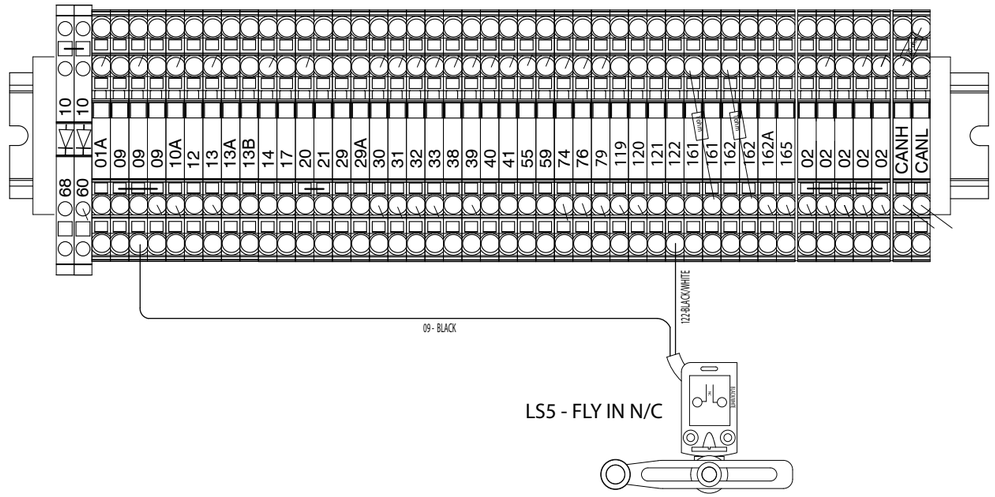
POSITION 1 - WHITE
POSITION 2 - WHITE
POSITION 3 - WHITE/ORANGE
POSITION 4 - BLUE
POSITION 5 - WHITE/BLACK
POSITION 6 - BLUE/GREEN
POSITION 7 - GREEN
POSITION 8 - ORANGE/RED
POSITION 9 - BLACK/RED
POSITION 10 - BLUE/RED
POSITION 11 - BLUE/PURPLE
POSITION 12 - GREEN/RED
POSITION 13 - YELLOW/PURPLE
POSITION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

M168784AA_M165096AC_M165098AC

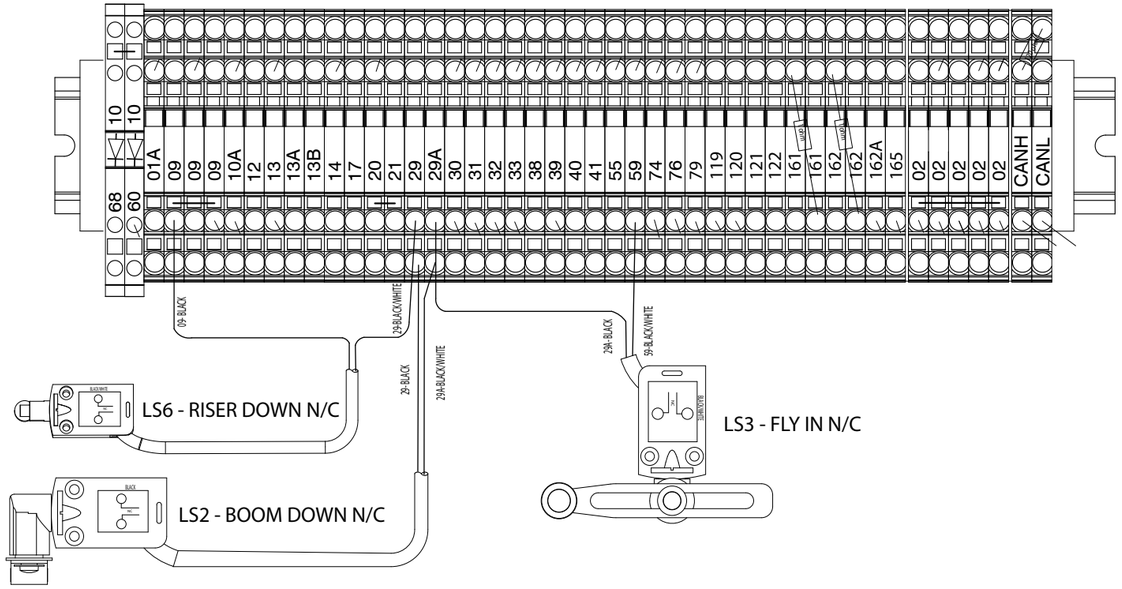
3.20 Limit Switch Connections - Base Control Box



LS7 - BOOM/RISER INTERLOCK



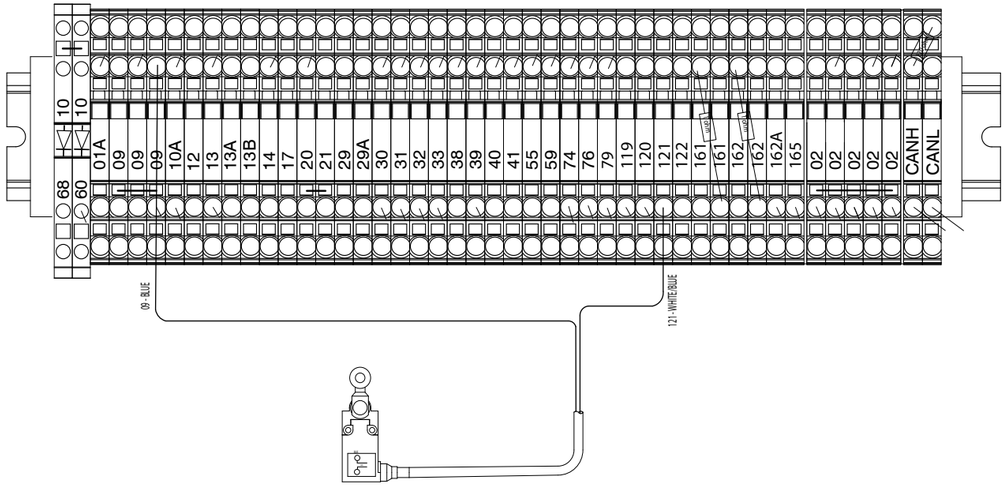
LS5 - FLY IN N/C



LS6 - RISER DOWN N/C

LS2 - BOOM DOWN N/C

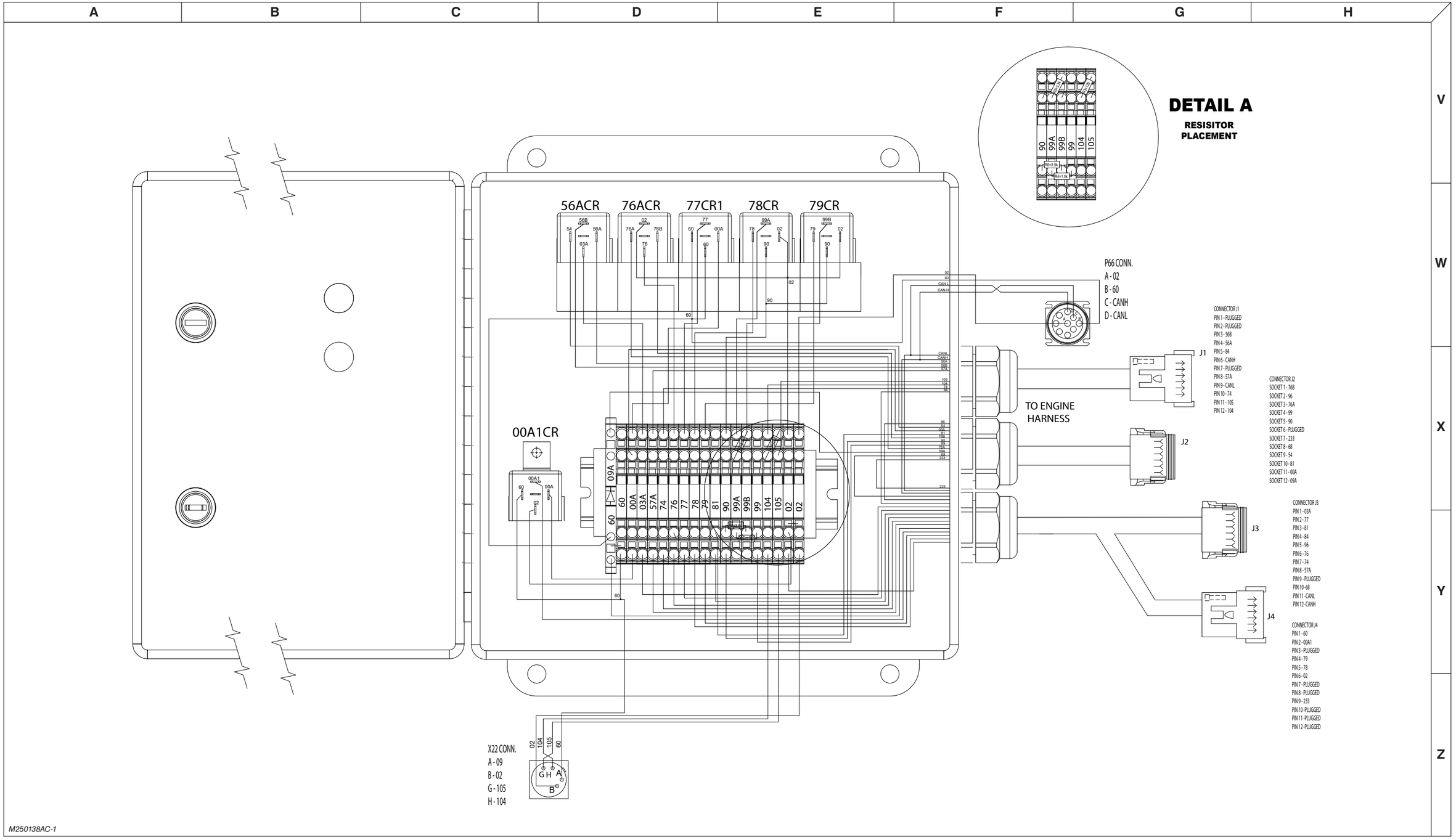
LS3 - FLY IN N/C



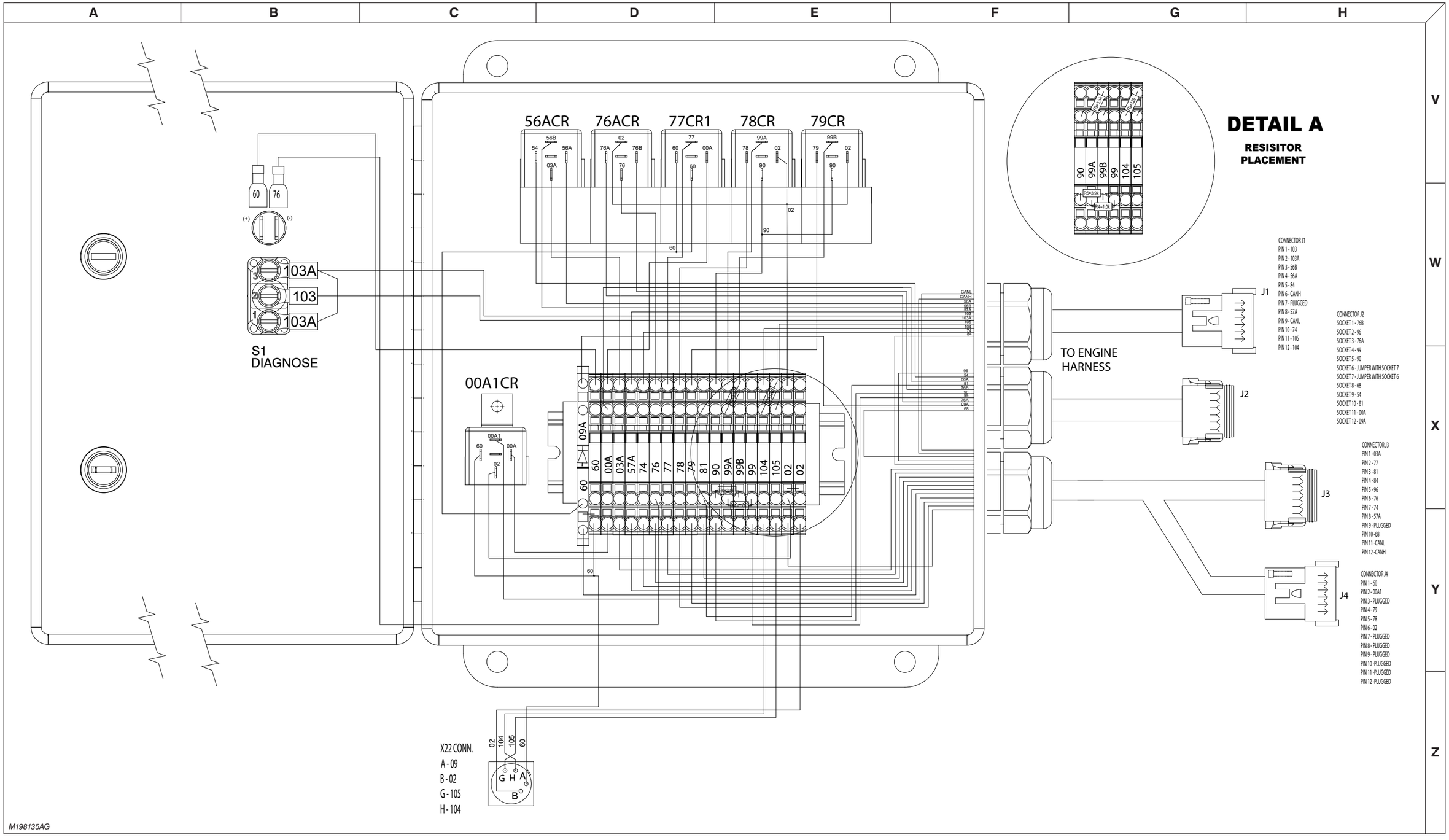
LS4 - BOOM DOWN N/C HELD OPEN

M241799AA

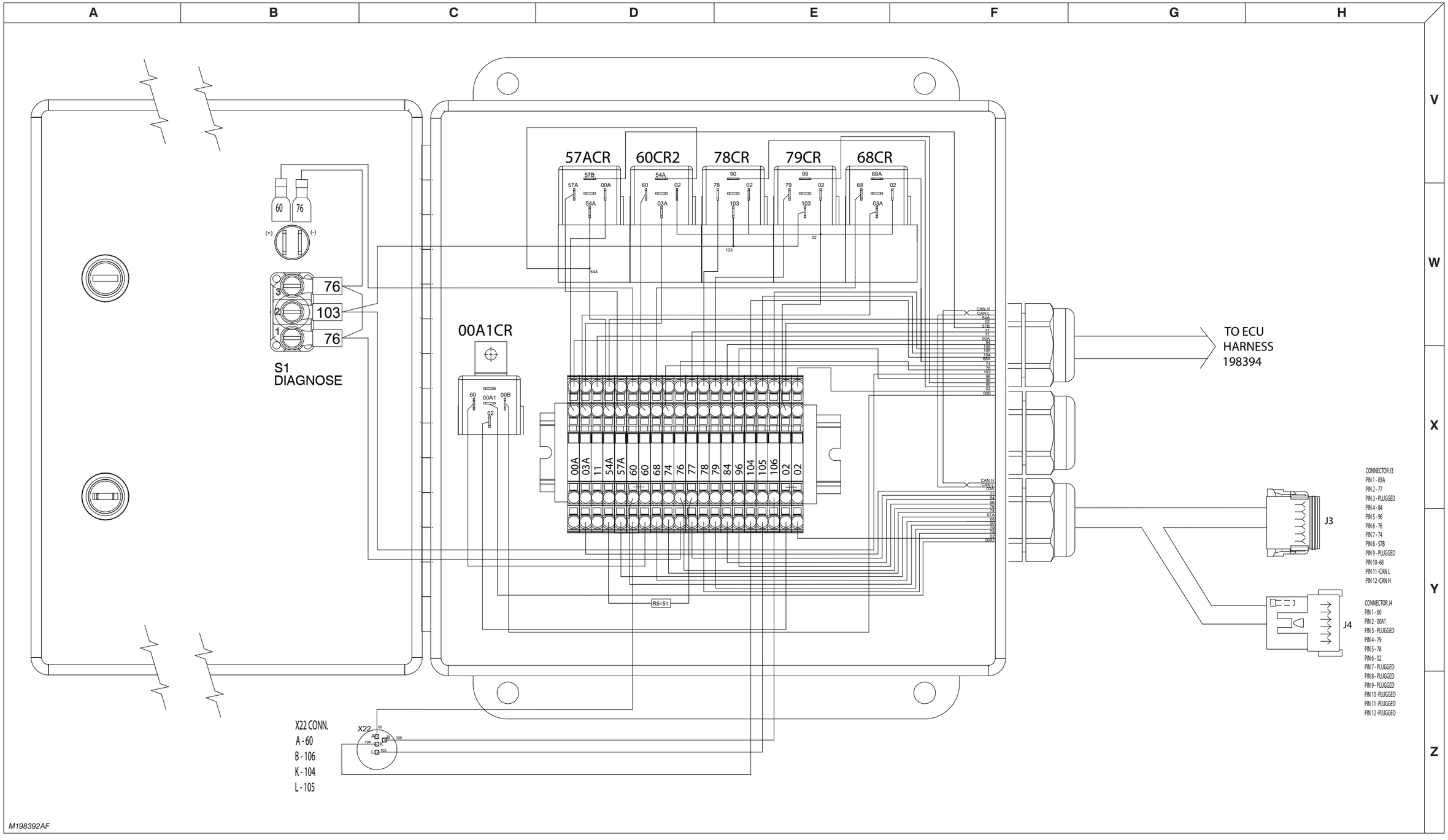
3.21 Engine Control Wiring - Deutz TD2.9L serial number A303 000 957 and above



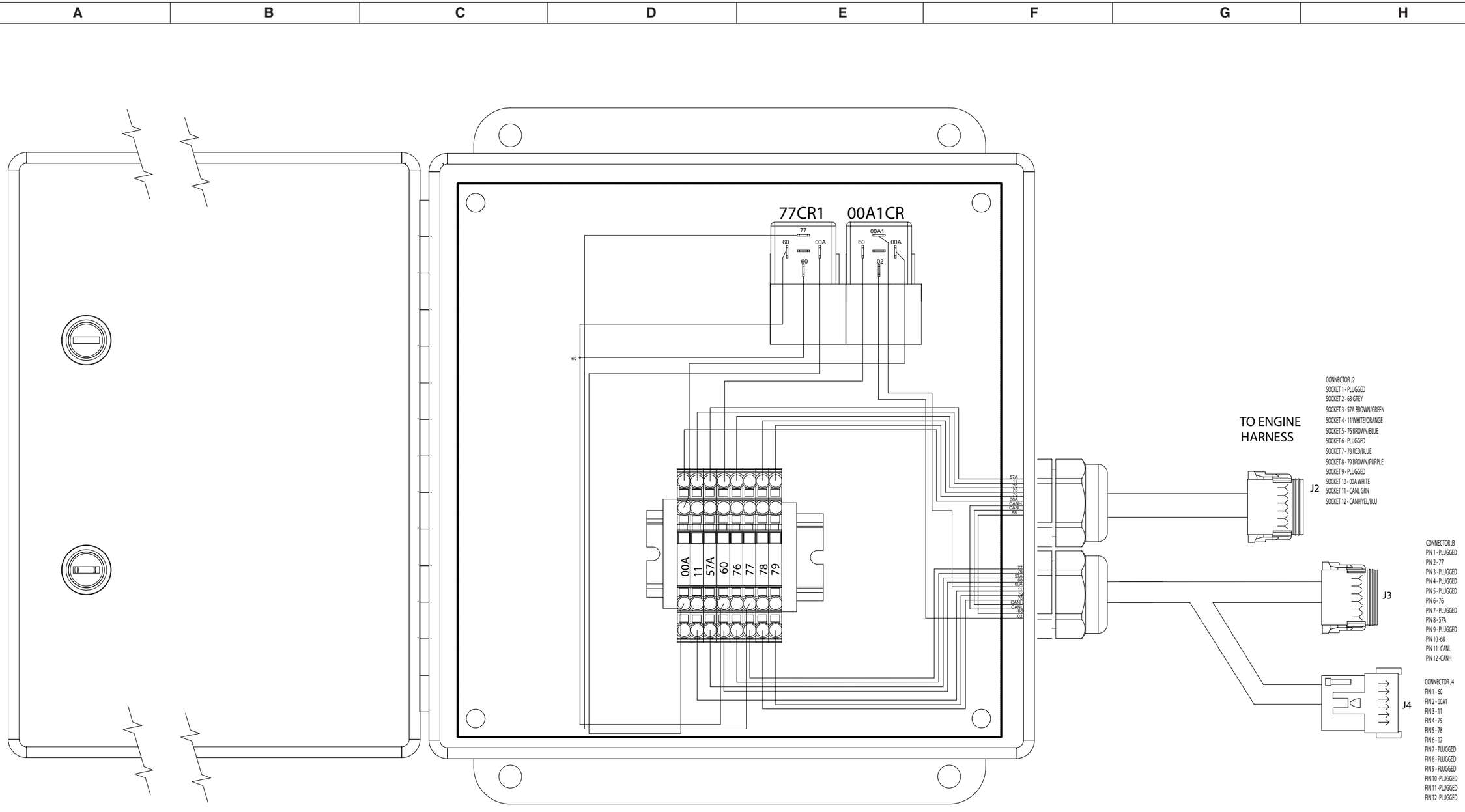
3.22 Engine Control Wiring - Deutz TD2.9L serial number A303 000 956 and below



3.23 Engine Control Wiring - Deutz D2011

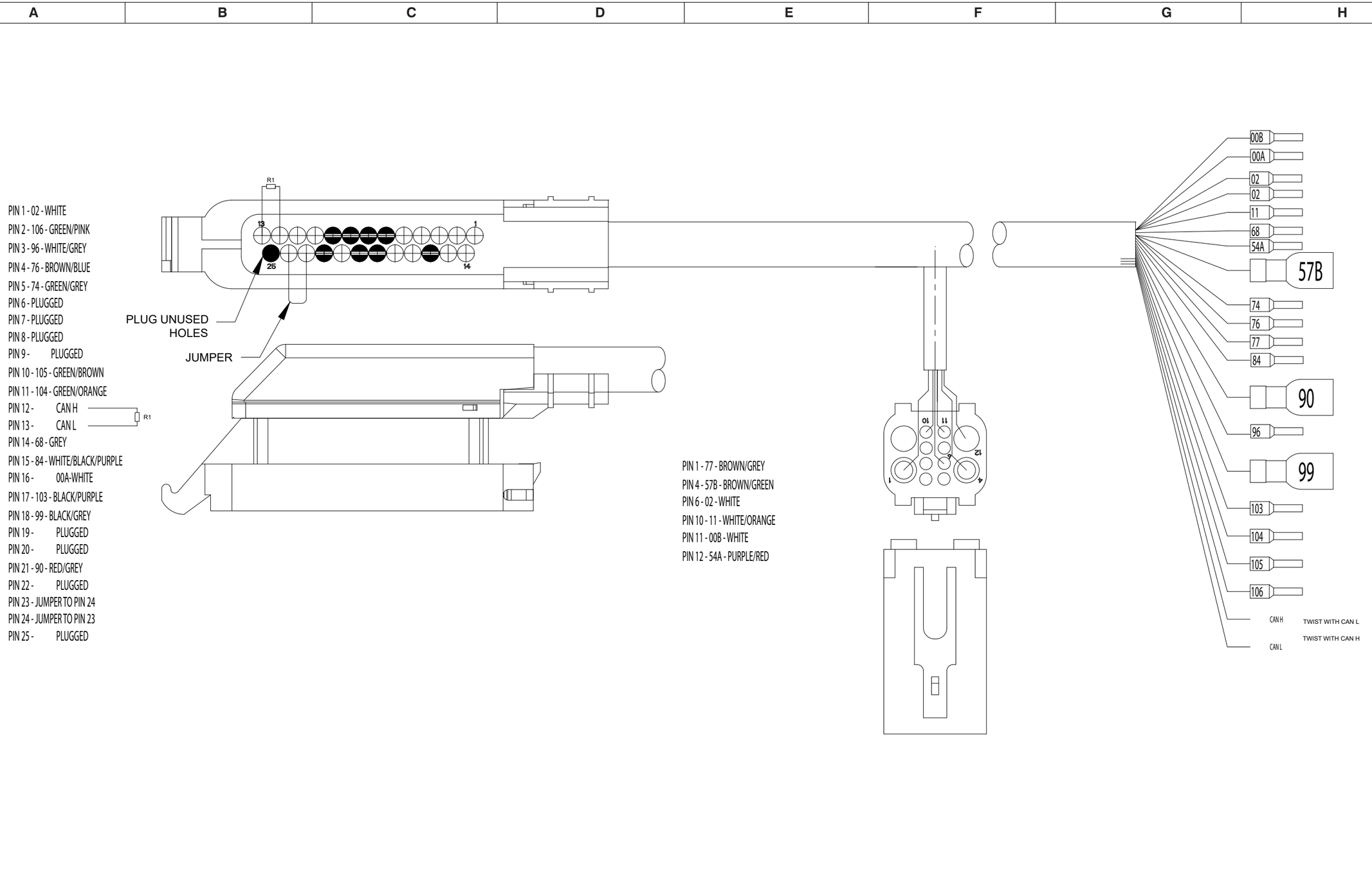


3.24 Engine Control Wiring - Kubota WG3800



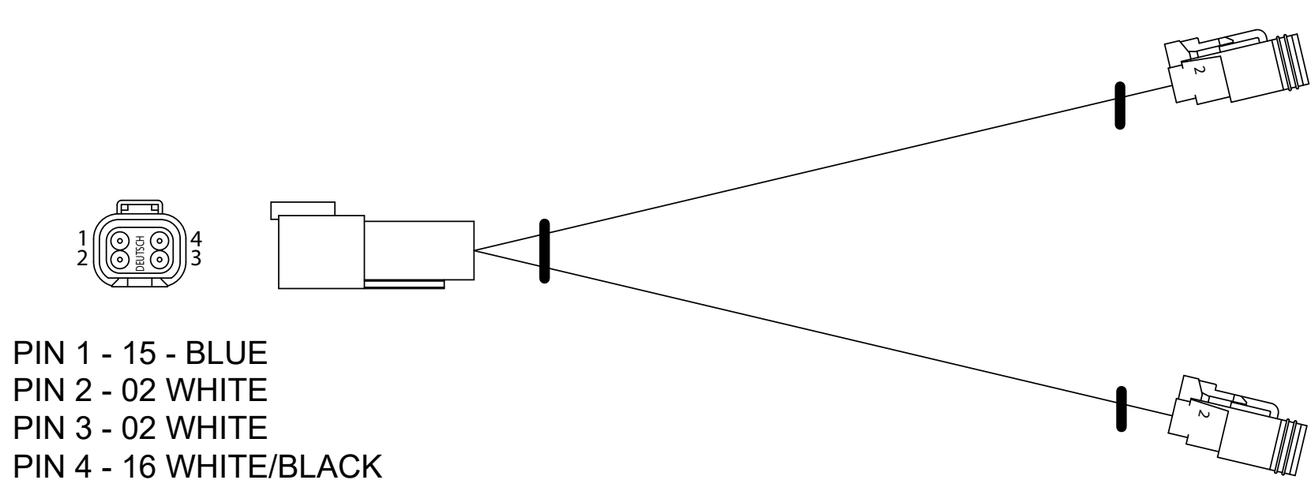
M198212AE

3.25 Deutz EDC-F Harness



M198394AE

3.26 Drive Pump Harness - Hengli

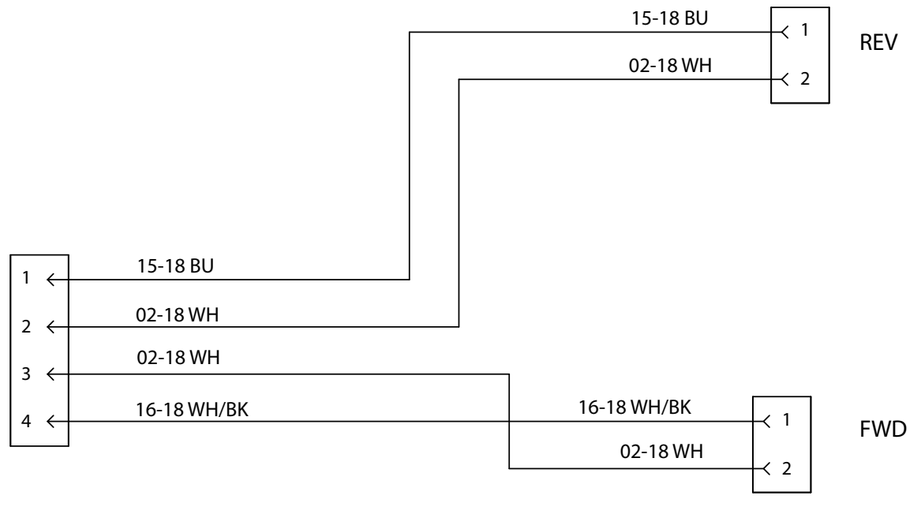




REV
PIN 1 - 15 - BLUE
PIN 2 - 02 WHITE

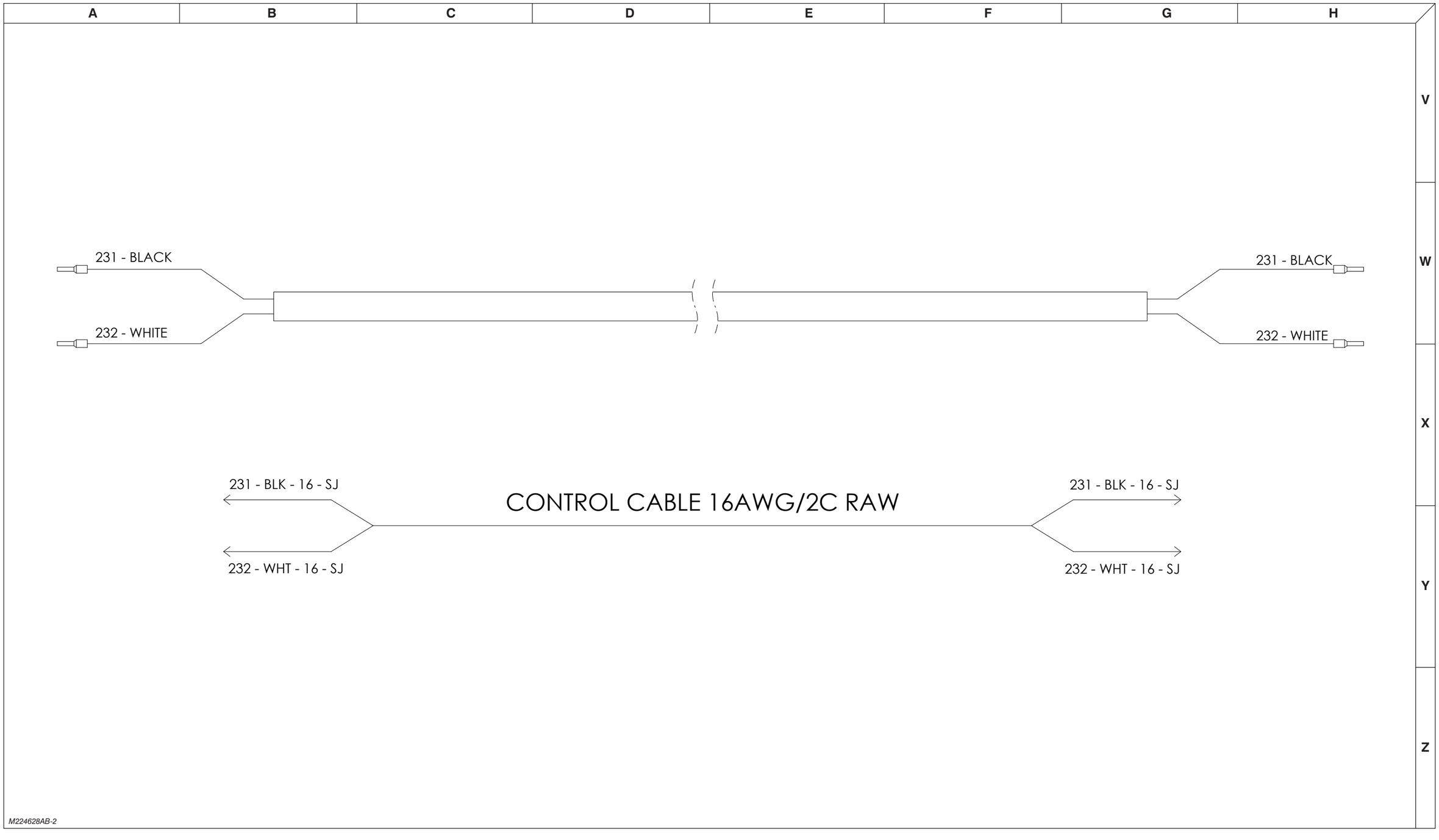


FWD
PIN 1 - 16 - WHITE/BLACK
PIN 2 - 02 - WHITE



M167195AB

3.27 Regeneration Control Cable - Deutz TD2.9 L

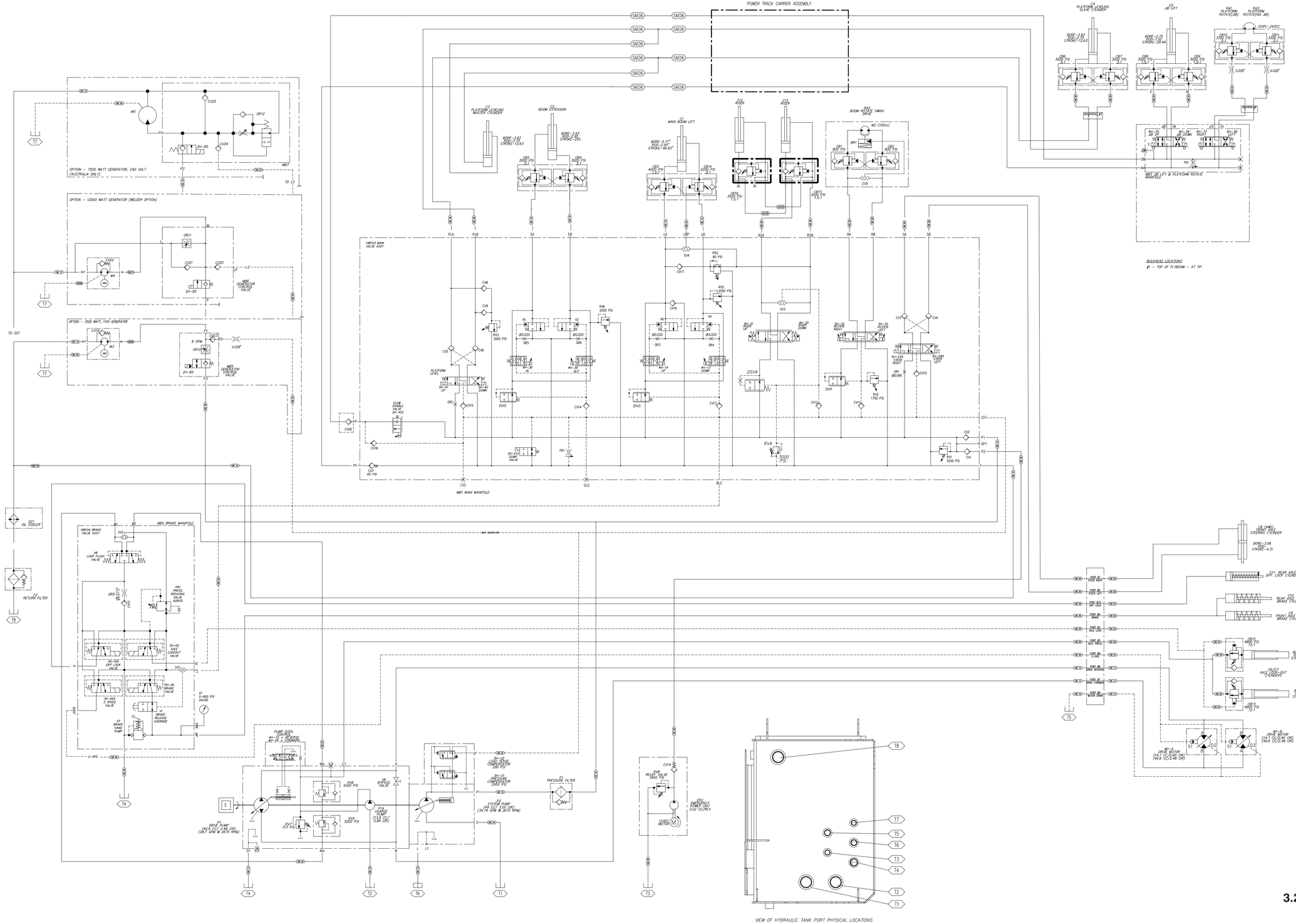


A | B | C | D | E | F | G | H

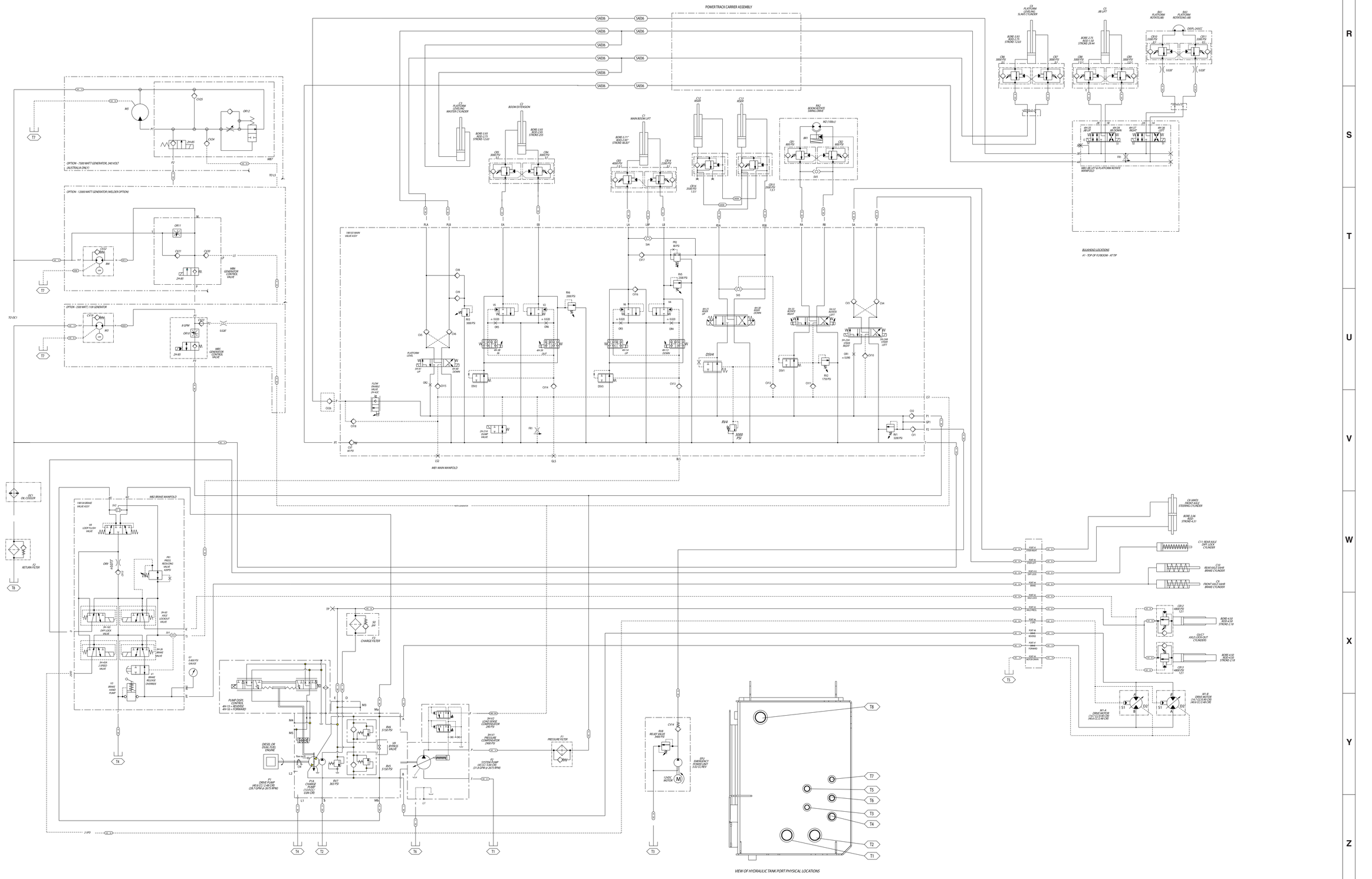
V | W | X | Y | Z

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3.28 Hydraulic Schematic for MEWPs with Eaton drive pump and motors

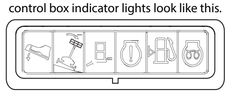


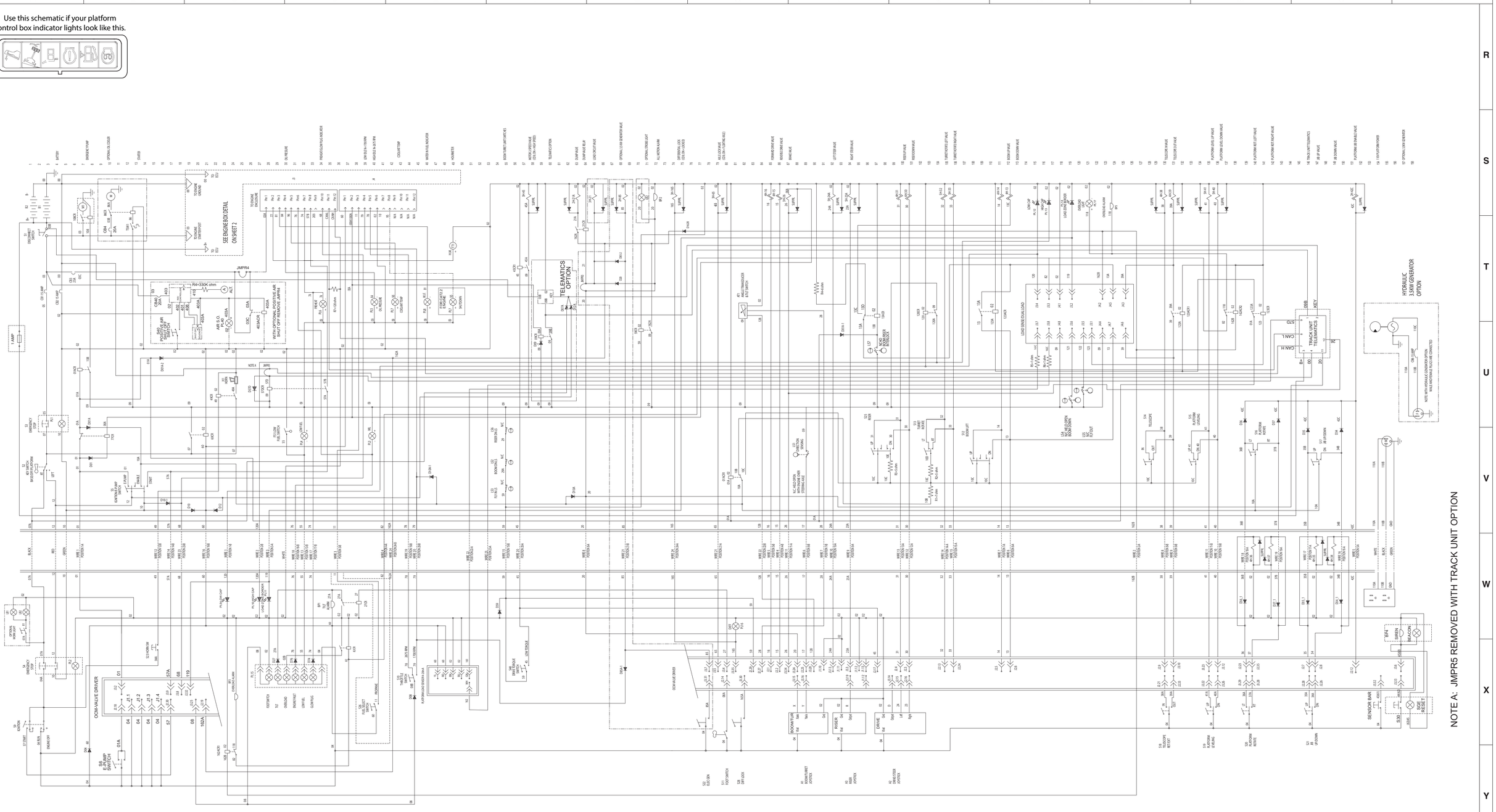
3.30 Hydraulic Schematic for MEWPs with Hengli drive pump and motors



3.31 Electrical Schematic - ANSI/CSA with a platform upper indicator lights module

Use this schematic if your platform control box indicator lights look like this.

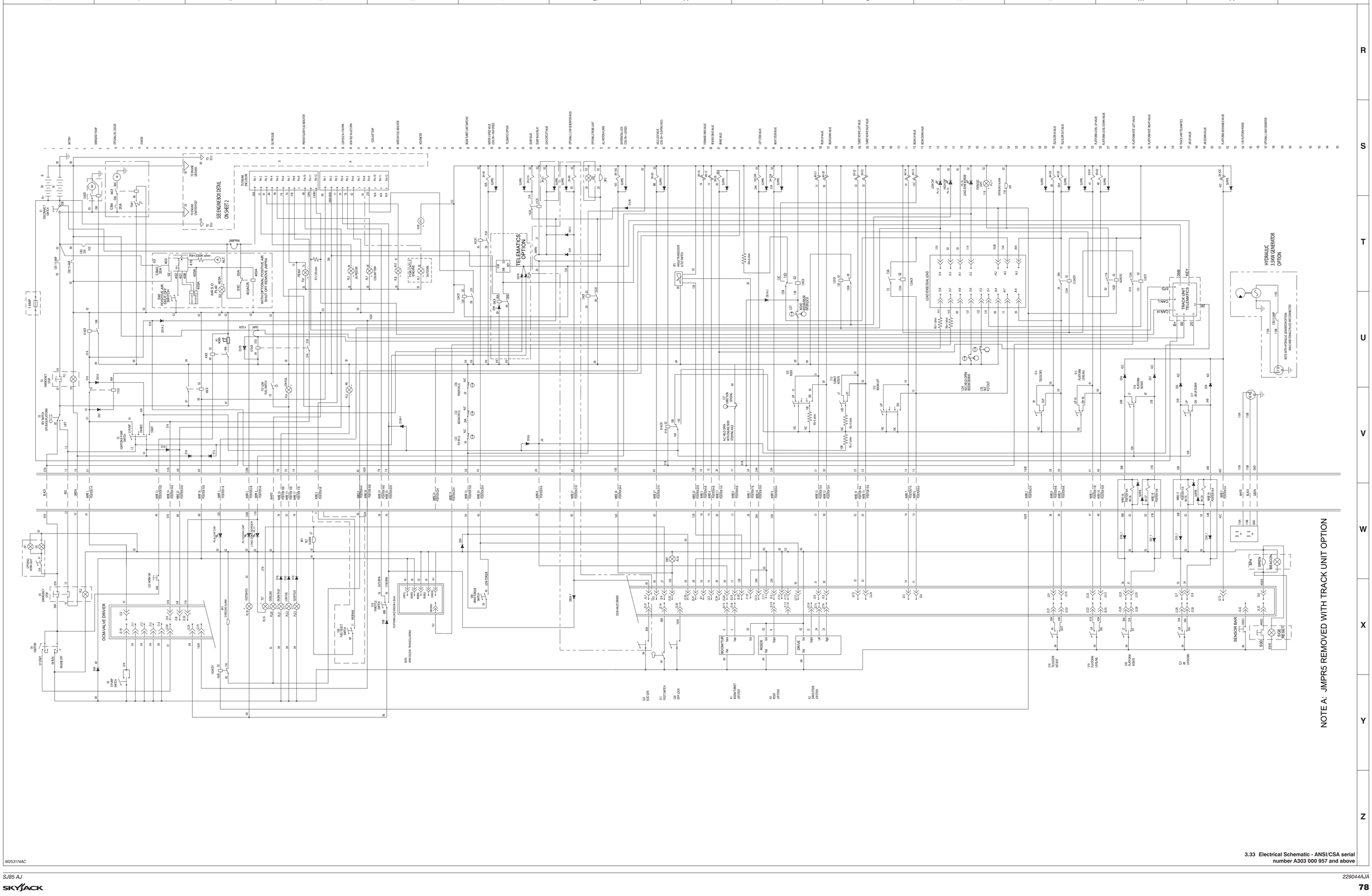




3.32 Electrical Schematic - ANSI/CSA with a platform upper indicator lights module

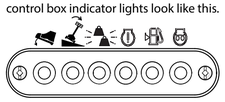
M218403AG

3.33 Electrical Schematic - ANSI/CSA serial number A303 000 957 and above



3.34 Electrical Schematic - ANSI/CSA with individual platform upper indicator LEDs, serial number A303 000 956 and below

Use this schematic if your platform control box indicator lights look like this.

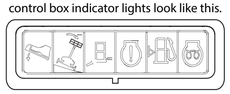


NOTE A: JMPR5 REMOVED WITH TRACK UNIT OPTION

M244354AA

3.35 Electrical Schematic - CE with Deutz TCD2.2 Engine with a platform upper indicator lights module

Use this schematic if your platform control box indicator lights look like this.



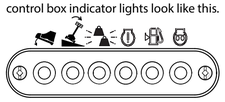
NOTE A: JMPR4 REMOVED WITH TRACK UNIT OPTION
NOTE B: S31A IS NO, S31B IS NB CONTACTS
NOTE C: STATIONARY MODE CAN ONLY BE ACCESSED IN BASE MODE

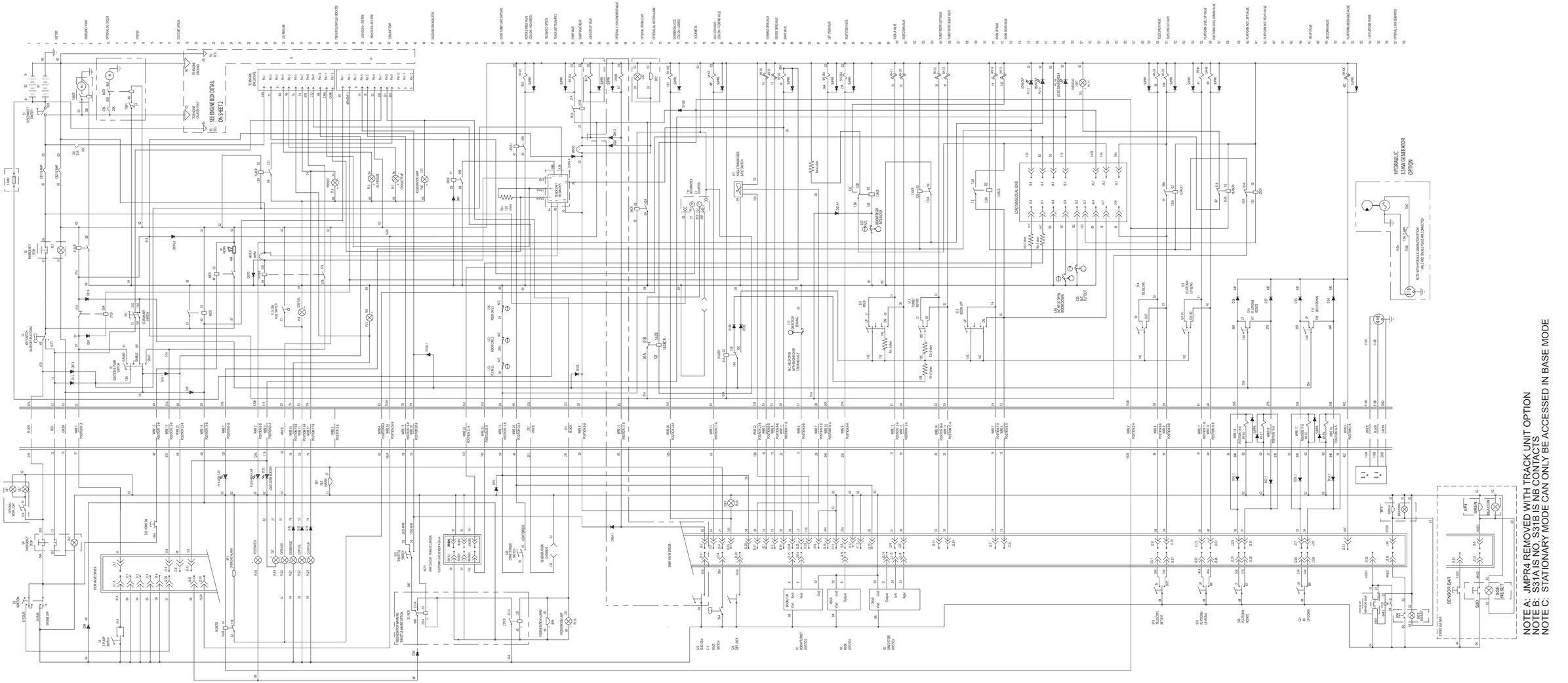
3.36 Electrical Schematic - CE with Deutz TCD2.2 Engine with a platform upper indicator lights module

M224590I

3.37 Electrical Schematic - CE with Deutz TCD2.2 Engine with individual platform upper indicator LEDs

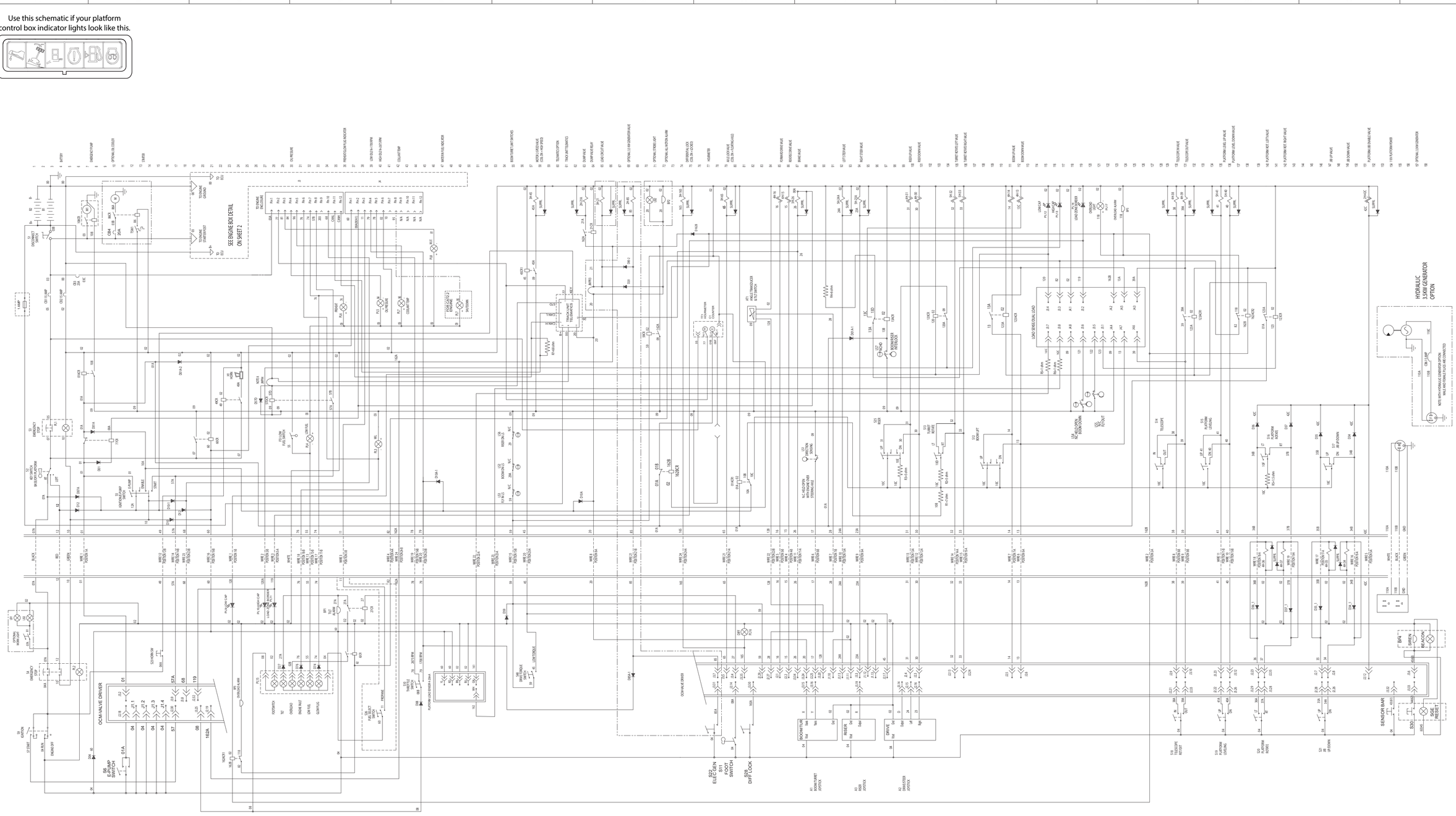
Use this schematic if your platform control box indicator lights look like this.





3.38 Electrical Schematic - CE with Deutz TD2.9L, Deutz D2011 or Kubota Engines with a single platform upper indicator light module

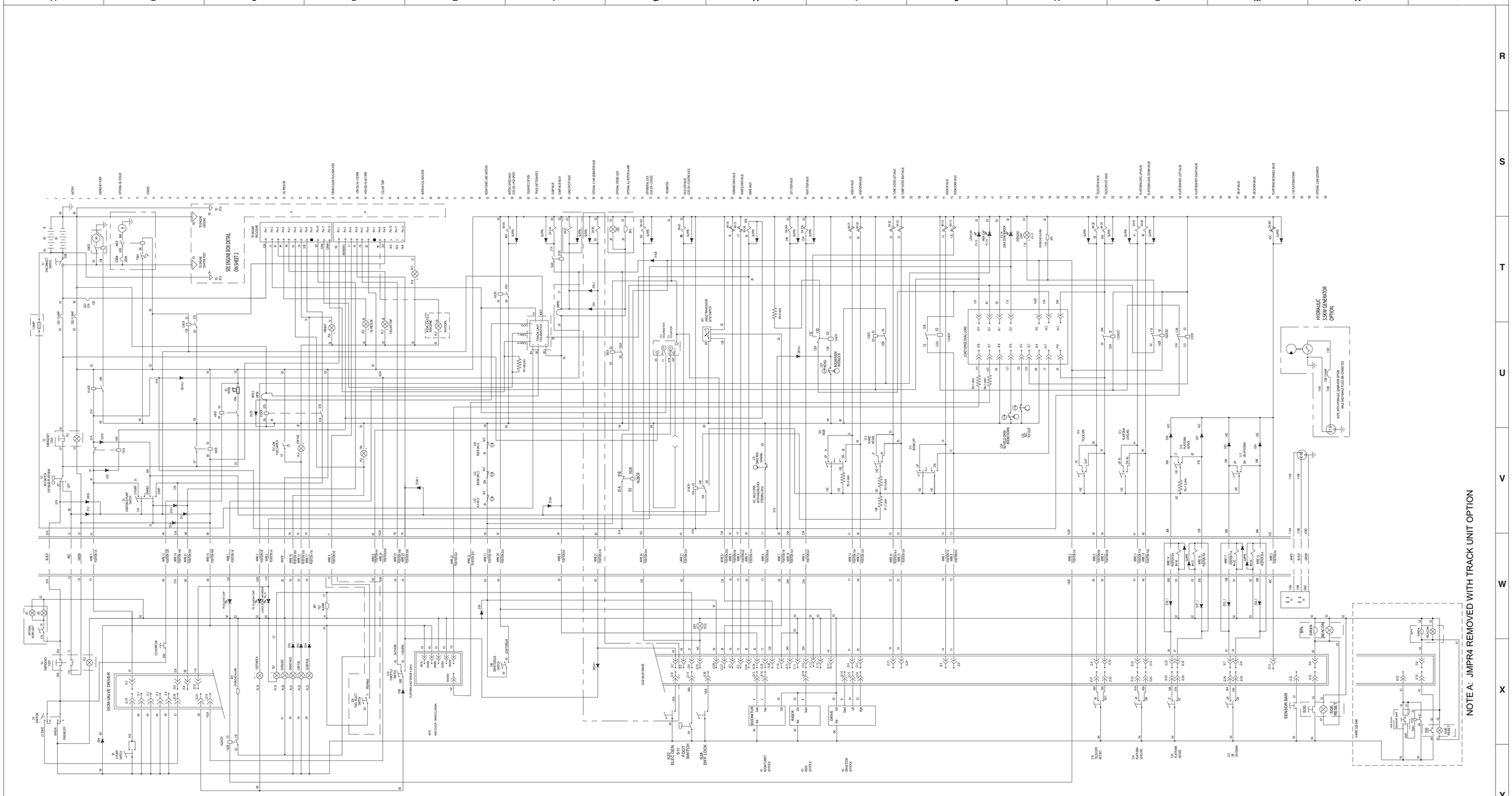
Use this schematic if your platform control box indicator lights look like this.



M223006AH

3.38 Electrical Schematic - CE with Deutz TD2.9L, Deutz D2011 or Kubota Engines with a single platform upper indicator light module

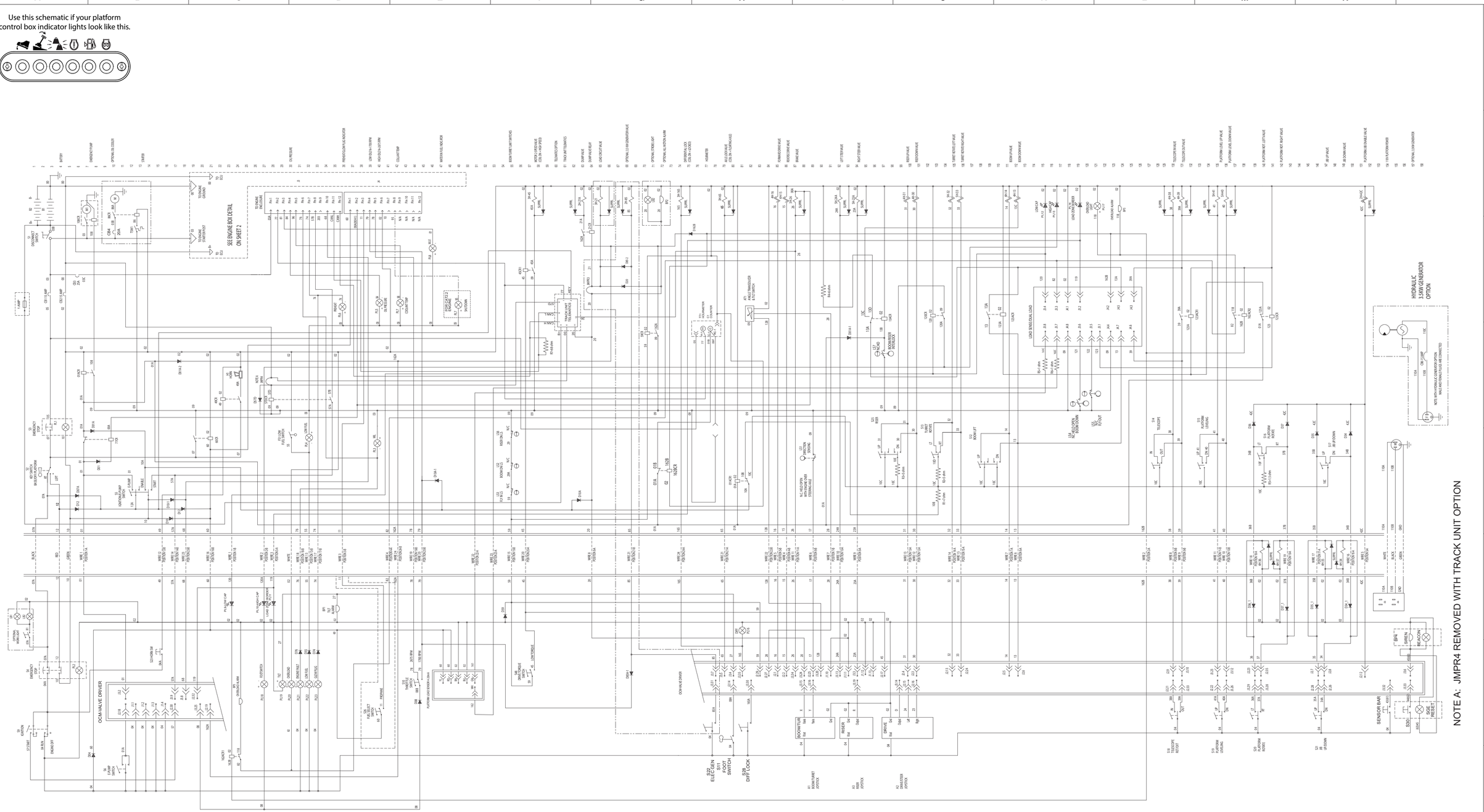
3.39 Electrical Schematic - CE with Deutz TD2.9L, Deutz D2011 or Kubota Engines, serial number A303 000 957 and above



M253175AA

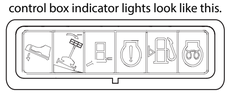
3.40 Electrical Schematic - CE with Deutz TD2.9L, Deutz D2011 or Kubota Engines with individual platform upper indicator LEDs, serial number A303 000 956 and below

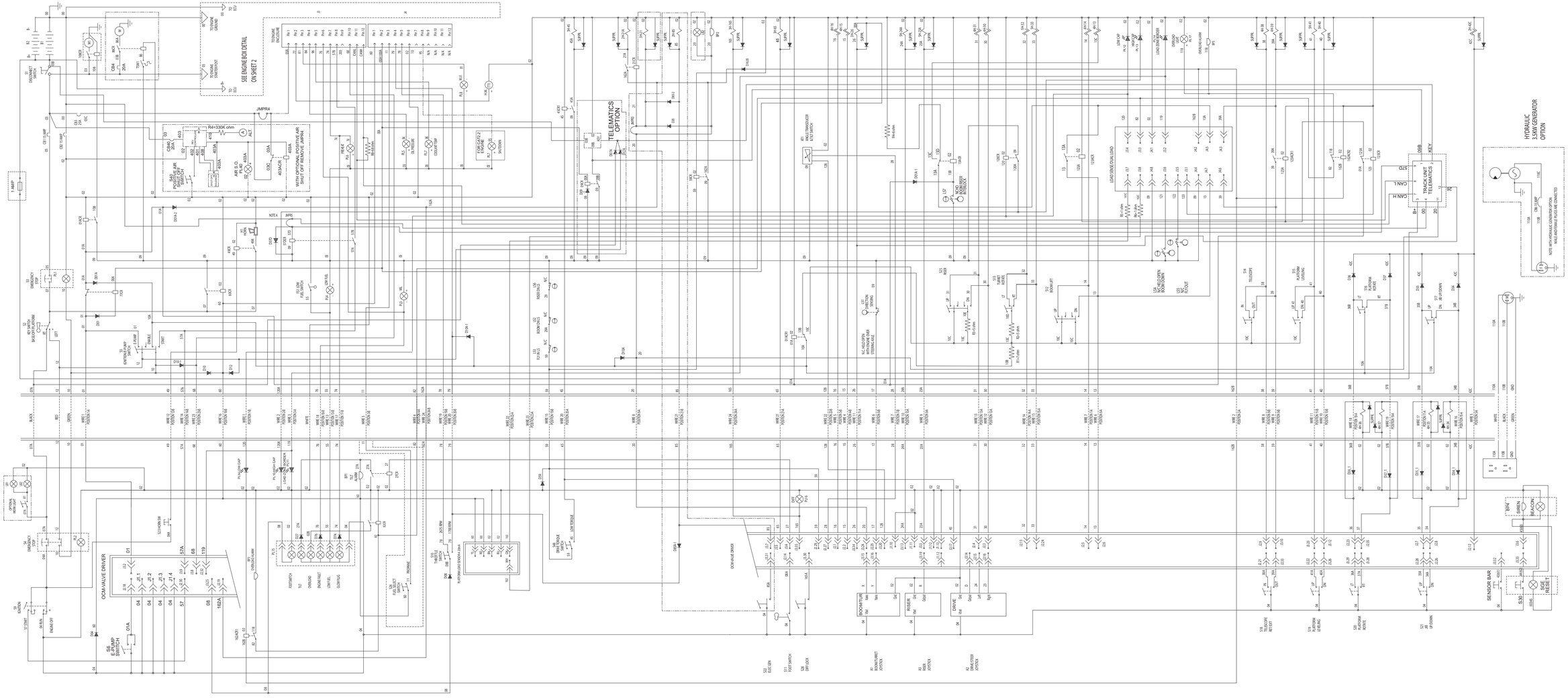
Use this schematic if your platform control box indicator lights look like this.


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R
S
T
U
V
W
X
Y
Z
SEE ENGINE BOX DETAIL ON SHEET 2
HYDRAULIC 3.5KW GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION, ALTERNATOR IS NOT INSTALLED
NOTE A: JMPR4 REMOVED WITH TRACK UNIT OPTION
OCM-VALVE DRIVER
S22 ELEC GEN
S11 FOOT SWITCH
S23 DRIVE LOCK
A1 ROOM/TURRET JOYSTICK
A3 RISER JOYSTICK
A2 DRIVE/STEER JOYSTICK
LOAD SENSE/DUAL LOAD
SENSOR BAR
ESD
RESET
SIREN
BEACON
S1 EMERGENCY STOP
S2 KEY SWITCH
S3 EMERGENCY STOP
S4 HORN
S5 GENERATOR SWITCH
S6 ENGINE START
S7 ENGINE IDLE
S8 FUNCTION ENABLE
S9 HORN
S10 ROTATE SWITCH
S12 PLATFORM LEVEL
S13 PLATFORM LEVEL
S14 TELESCOPE
S15 PLATFORM ROTATE
S16 TELESCOPE
S17 TURRET ROTATE
S18 STEER/DRIVE RETEST
S19 RAISE/LOWER LOW/JIB
S20 EXTEND/RETRACT BOOM
S21 JIB UP/DOWN
S22 BOOM LIFT
S23 TURRET ROTATE
S24 TURRET ROTATE
S25 TELESCOPE
S26 TELESCOPE
S27 PLATFORM LEVEL
S28 PLATFORM LEVEL
S29 PLATFORM ROTATE
S30 PLATFORM ROTATE
S31 JIB UP/DOWN
S32 JIB UP/DOWN
S33 PLATFORM OVERLOAD
S34 PLATFORM OVERLOAD
S35 PLATFORM OVERLOAD
S36 TILT PLATFORM OVER
S37 OPTIONAL LOAD ENGAGED
K1 HORN
K2 HORN
K3 ENGINE START
K4 ENGINE IDLE
K5 FUNCTION ENABLE
K6 ALARM
K7 ENGINE START
K8 ENGINE IDLE
K9 ENGINE START
K10 ENGINE IDLE
K11 ENGINE START
K12 ENGINE IDLE
K13 ENGINE START
K14 ENGINE IDLE
K15 ENGINE START
K16 ENGINE IDLE
K17 ENGINE START
K18 ENGINE IDLE

3.41 Electrical Schematic - AS with a platform upper indicator lights module

Use this schematic if your platform control box indicator lights look like this.

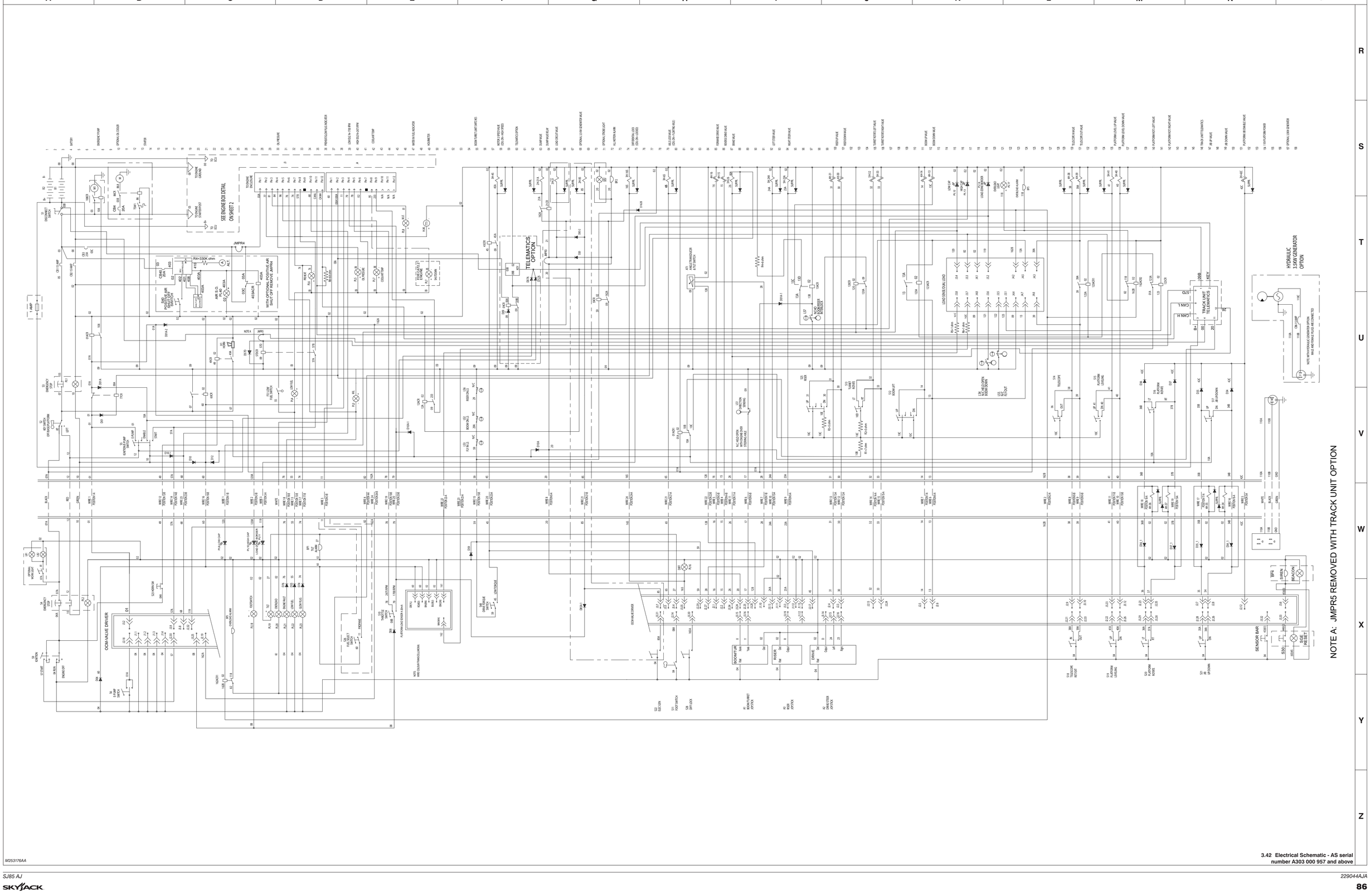




M223005AF

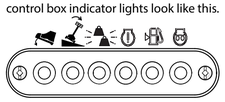
3.41 Electrical Schematic - AS with a platform upper indicator lights module

3.42 Electrical Schematic - AS serial number A303 000 957 and above


NOTE A: JMPR5 REMOVED WITH TRACK UNIT OPTION
TELEMATICS OPTION
HYDRAULIC 33KW GENERATOR OPTION
OCM-VALVE DRIVER
SEE ENGINEROOM DETAIL ON SHEET 2
TRACK UNIT TELEMATICS
SENSOR BAR
S30
HORN
BEACON
S.SIREN
RESET
ROCKOVER
RAISER
DRIVE
BATTERY
ENGINE/PUMP
OPTIONAL COOLER
STARTER
PRESSURE SWITCH
OIL PRESSURE
ENGINE/PUMP SPEED
CONTROL PUMP TEMP
COOLANT TEMP
WATER IN FUEL INDICATOR
TACHOMETER
ROOM THERMOSTAT/CHECK
ECM / ENGINE
TELEMATICSOPTION
CHARGE RELAY
LOAD RECEPTACLE
OPTIONAL 110W GENERATOR MOUNT
OPTIONAL STROBE LIGHT
ALARM/HORN
DEFORMATION LOCK CONTROL/SENSOR
HOLD DOWN CYL (SOLON +SHOP NEED)
BOOM EXTEND MOUNT
BOOM RETRACT MOUNT
BRAKE MOUNT
LIFT CYLINDER MOUNT
HOIST CYLINDER MOUNT
RIDE MOUNT
RIDE DOWN MOUNT
SLIDE OUT MOUNT
SLIDE IN MOUNT
PLATFORM LEVEL UP MOUNT
PLATFORM LEVEL DOWN MOUNT
PLATFORM ROTATE LEFT MOUNT
PLATFORM ROTATE RIGHT MOUNT
JIB UP MOUNT
JIB DOWN MOUNT
PLATFORM ENABLE MOUNT
TILT UP/DOWN POWER
OPTIONAL 33KW GENERATOR
1 AMP
CB1 15 AMP
CB2 15 AMP
CB3 10A
CB4 20A
CB5 30A
CB6 20A
CB7 40A
CB8 40A
CB9 40A
CB10 40A
CB11 40A
CB12 40A
CB13 40A
CB14 40A
CB15 40A
CB16 40A
CB17 40A
CB18 40A
CB19 40A
CB20 40A
CB21 40A
CB22 40A
CB23 40A
CB24 40A
CB25 40A
CB26 40A

3.43 Electrical Schematic - AS with individual platform upper indicator LEDs, serial number A303 000 956 and below

Use this schematic if your platform control box indicator lights look like this.

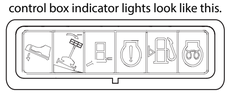


NOTE A: JMPR5 REMOVED WITH TRACK UNIT OPTION

3.43 Electrical Schematic - AS with individual platform upper indicator LEDs, serial number A303 000 956 and below

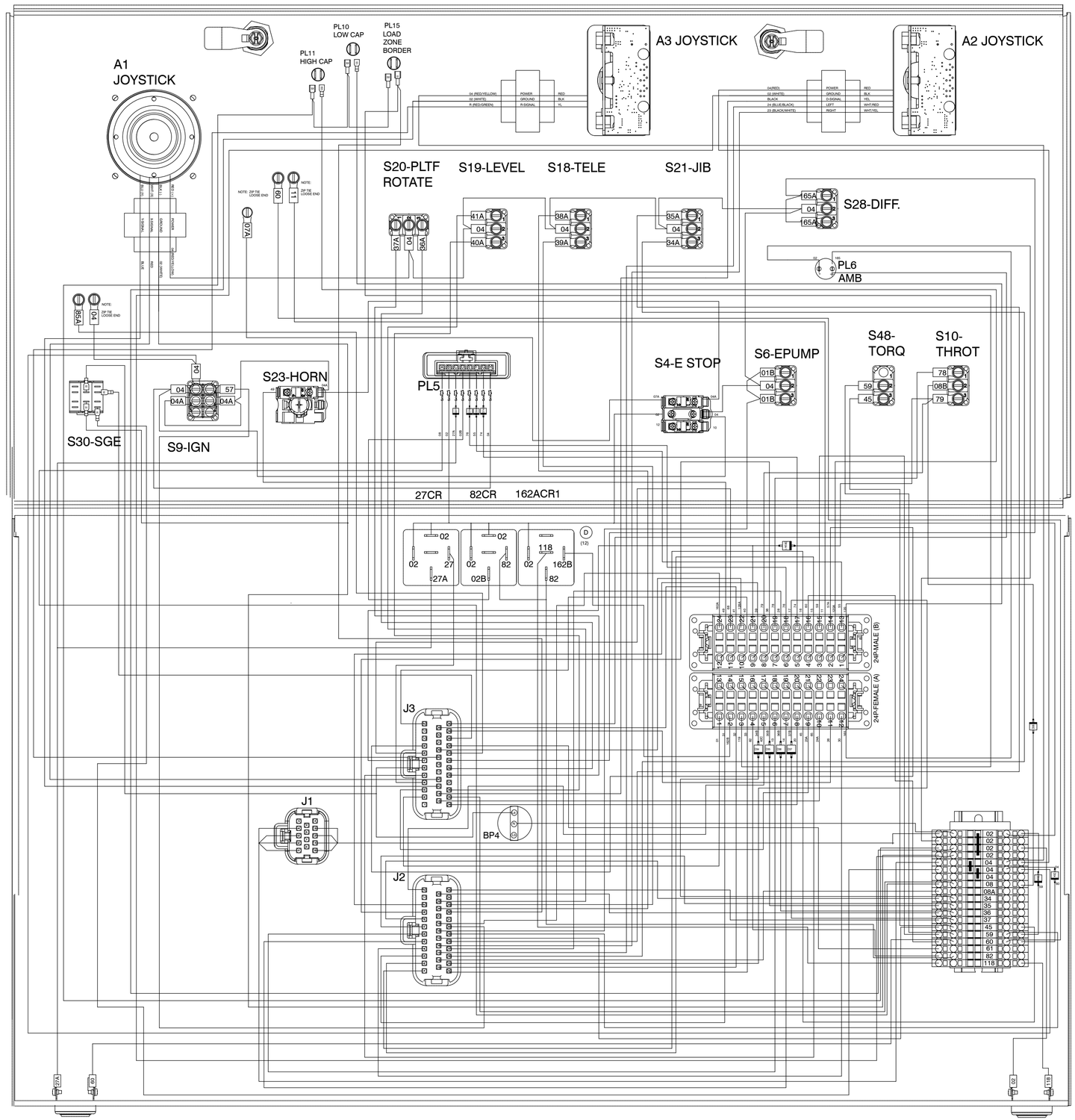
M244356AA

Use this schematic if your platform control box indicator lights look like this.



Wire Numbers and Colour Codes

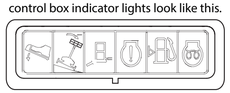
Relay diagram



M198203AG-3

3.44 Platform Controls Wiring - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with a single indicator light module

Use this schematic if your platform control box indicator lights look like this.



TO PL11 HIGH CAP
TO PL10 LOW CAP
TO PL15 BORDER ZONE

TO A3 RISER JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - R SIGNAL RED/GRN
PIN 4 - N/U

TO A1 JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - D BLK
PIN 4 - 24 BLU/BLK
PIN 5 - 23 BLK/WHT

TO S20 PLATFORM ROTATE
POS. 1 - 37B WHT/RED/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 36B RED/PUR

TO S19 LEVEL
POS. 1 - 41A BLU/PUR
POS. 2 - 04 RED/YEL
POS. 3 - 40A BLU/RED

TO S18 TELE
POS. 1 - 38A ORG/RED
POS. 2 - 04 RED/YEL
POS. 3 - 39A BLK/RED

TO S21 JIB
POS. 1 - 35B ORG/WHT
POS. 2 - 04 RED/YEL
POS. 3 - 34B ORG/BLK

TO S29 DIFF LOCK
POS. 1 - 165A PINK/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 165A PINK/BLK

NOTE: LOOSE WIRES TO BE SCRWED INTO BEEPER TERMINALS

TO PL6 DIFFLOCK LIGHT
(+) - 165 PINK/BLK
(-) - 02 WHT

TO A2 JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - X RED
PIN 4 - Y BLU

TO S22 ELEC. GEN.
POS. 1 - 85A GRAY/BLU
POS. 2 - 04 RED/YEL

TO S31 WORK LIGHTS
POS. 2 - 07A RED/YEL

TO S9 IGNITION
POS. 1 - 04 RED/YEL
POS. 2 - 04A RED/YEL
POS. 4 - 57 BRN/GRN
POS. 5 - 04A RED/YEL

TO S23 HORN
POS. 4 - 49 GRN/RED
POS. 3 - 04A RED/YEL
POS. 3 - 04A RED/YEL

TO PL2
A - 08 PUR/WHT
B - 02 WHITE
C - D27A
D - 02A WHITE
E - D76
F - D55
G - D74
H - 04 RED/YEL

TO S4 E-STOP
02 - WHITE
04A - RED/YEL
04 - RED/YEL

TO S6 E-PUMP
POS. 1 - 01B PUR/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 01B PUR/BLK

TO S48 TORQUE
POS. 2 - 59 YEL/BLU
POS. 3 - 45 YEL/ORG

TO S10 THROTTLE
POS. 1 - 78 RED/BLU
POS. 2 - 06B PUR/WHT
POS. 3 - 79 BRN/PUR

DETAIL A
SCALE 2:1

DETAIL C

TO S30 RESET BUTTON
63 - GRAY/YEL
02 - WHT
62 - GRAY/RED
04 - RED/YEL

TO S26 FUEL SELECT
POS. 2 - 60 WHT/BLU
POS. 3 - 11 WHT/ORG

DETAIL C
SCALE 2:1

DETAIL B

TO P3 ON CONTROLLER
PIN 1 - N/U
PIN 2 - 01 PUR/BLK
PIN 3 - 23A BLK/WHT
PIN 4 - 27 RED/BLK/WHT
PIN 5 - 65 YEL/PINK
PIN 6 - 63 GRAY/YEL
PIN 7 - 85 GRAY/BLU
PIN 8 - 68 GRAY
PIN 9 - 57A BRN/GRN
PIN 10 - N/U
PIN 11 - N/U
PIN 12 - 40 BLU/RED
PIN 13 - 24A BLU/BLK
PIN 14 - D BLK
PIN 15 - Y BLU
PIN 16 - X RED
PIN 17 - N/U
PIN 18 - N/U
PIN 19 -R SIG RED/GRN
PIN 20 - 12B BLK/YEL
PIN 21 - N/U
PIN 22 - N/U
PIN 23 - 41 BLU/PUR
PIN 24 - 20 ORG/BLUE
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 - 26 BLU/YEL
PIN 35 - 165 PINK/BLK

TO P1 ON CONTROLLER
PIN 1 - 04 RED/YEL
PIN 2 - 04 RED/YEL
PIN 3 - 04 RED/YEL
PIN 4 - 04 RED/YEL
PIN 5 - SPARE
PIN 6 - TXCAN0 (FUTURE)
PIN 7 - RXCAN0 (FUTURE)
PIN 8 - TXCAN1 (FUTURE)
PIN 9 - RXCAN1 (FUTURE)
PIN 10 - 02 WHT
PIN 11 - 02 WHT
PIN 12 - 02 WHT
PIN 13 - 02 WHT
PIN 14 - SPARE

TO BP1 TILT ALARM
(-) - 27A RED/BLK/WHT
(+) - 60 WHT/BLU

TO P2 ON CONTROLLER
PIN 1 - 16 WHT/BLK
PIN 2 - 15 BLU
PIN 3 - 31 RED/WHT
PIN 4 - 30 RED/GRN
PIN 5 - 14 BLK
PIN 6 - 13 ORG
PIN 7 - 35 ORG/WHT
PIN 8 - 34 ORG/BLK
PIN 9 - 38 ORG/RED
PIN 10 -39 BLK/RED
PIN 11 - N/U
PIN 12 - 42C PINK
PIN 13 - 32 GRN/BLK
PIN 14 - 08A PUR/WHT
PIN 15 - 24 BLU/BLK
PIN 16 - 23 BLK/WHT
PIN 17 - 45 YEL/ORG
PIN 18 - 01B PUR/BLK
PIN 19 - 162A PINK/PURPLE
PIN 20 - N/U
PIN 21 - 38A ORG/RED
PIN 22 - 41A BLU/PUR
PIN 23 - 36 RED/PUR
PIN 24 - 33 GRN/WHT
PIN 25 - 17 BLU/GRN
PIN 26 - 34A ORG/BLK
PIN 27 - 28 GRN
PIN 28 - 35A ORG/WHT
PIN 29 - 59 YEL/BLU
PIN 30 - 57 BRN/GRN
PIN 31 - N/U
PIN 32 - 119-PUR/YEL
PIN 33 - 39A BLK/RED
PIN 34 - N/U
PIN 35 - 37 WHT/RED/BLK

TO 'CABLE C'
01 PUR/BLK — PIN 1
162B PINK/PUR — PIN 2
119-PUR/YEL — PIN 3
82-BRN/WHT — PIN 4
36A-RED/PUR-18 — PIN 5
13 ORG — PIN 6
14 BLK — PIN 7
20 ORG/BLU — PIN 8
23A BLK/WHT — PIN 9
24A BLU/BLK — PIN 10
28 BLU/YEL — PIN 11
30 RED/GRN — PIN 12
31 RED/WHT — PIN 13
32 GRN/BLK — PIN 14
33 GRN/WHT — PIN 15
34 ORG/BLK — PIN 16
35 ORG/WHT — PIN 17
36 RED/PUR — PIN 18
37 WHT/RED/BLK — PIN 19
45 YEL/ORG — PIN 20
65 YEL/PINK — PIN 21
PIN 22
PIN 23
165 PINK/BLK — PIN 24

TO 'CABLE D'
120 GRY/BRN — PIN 1
120A GRY/BRN — PIN 2
11 WHT/ORG — PIN 3
15 BLU — PIN 4
16 WHT/BLK — PIN 5
17 BLU/GRN — PIN 6
28 GRN — PIN 7
38 ORG/RED — PIN 8
39 BLK/RED — PIN 9
40 BLU/RED — PIN 10
41 BLU/PUR — PIN 11
49 GRN/RED — PIN 12
55 YEL/PUR — PIN 13
57A BRN/GRN — PIN 14
59 YEL/BLU — PIN 15
60 WHT/BLU — PIN 16
74 GRN/GREY — PIN 17
76 BRN/BLU — PIN 18
78 RED/BLU — PIN 19
79 BRN/PUR — PIN 20
85 GRAY/BLU — PIN 21
128 BLK/YEL — PIN 22
68 GRAY — PIN 23
162A PINK/PUR — PIN 24

TO BP4
POS. LA - 63 GRAY/YEL
POS. N - 02 WHT
POS. LB - N/U

TO BP3 OVERLOAD ALARM
(-) - 02 WHT
(+) - 118 PUR/PINK

TO TERMINAL BLOCK	QTY
45 YEL/ORG	x2
08 PUR/WHT	x3
04 RED/YEL	x4 (VARYING GAUGES)
34 ORG/BLK	x1
35 ORG/WHT	x1
36 RED/PUR	x1
37 WHT/RED/BLK	x1
34 ORG/BLK	x2
35 ORG/WHT	x2
36 RED/PUR	x2
37 WHT/RED/BLK	x2
02 WHT	x14 (VARYING GAUGES)
60 WHT/BLU	x3
59 YEL/BLU	x3
118 PUR/PINK	x2
82 BRN/WHT	x3
61 GRAY/BRN	x1
08A PUR/WHT	x1

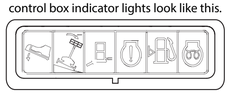
DETAIL B
SCALE 2:1

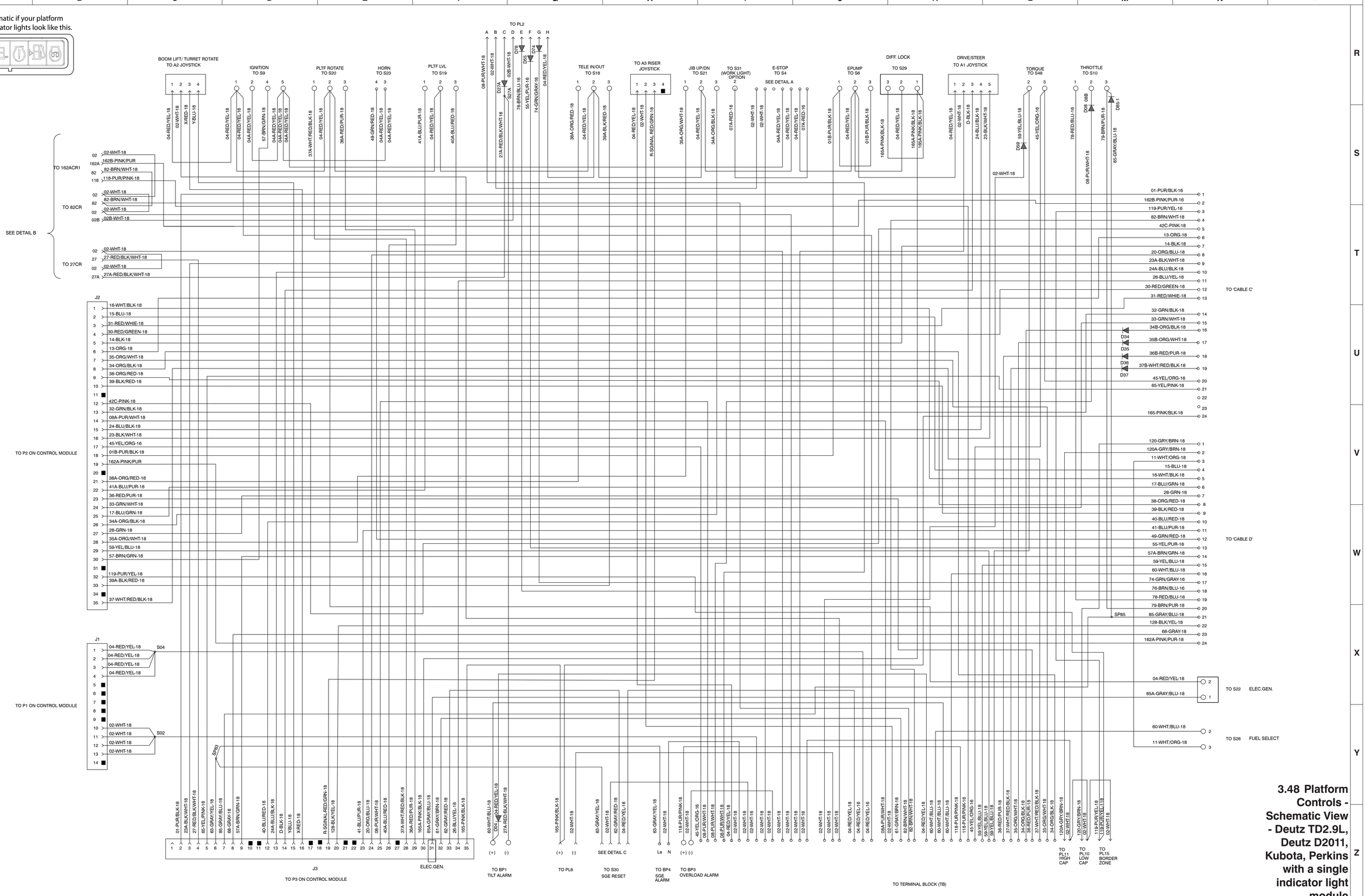
M198203AG-1

3.46 Platform Controls - Harness View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with a single indicator light module

3.47 Platform Controls - Schematic View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with a single indicator light module

Use this schematic if your platform control box indicator lights look like this.

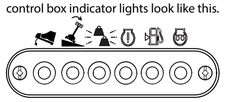




3.48 Platform Controls - Schematic View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with a single indicator light module

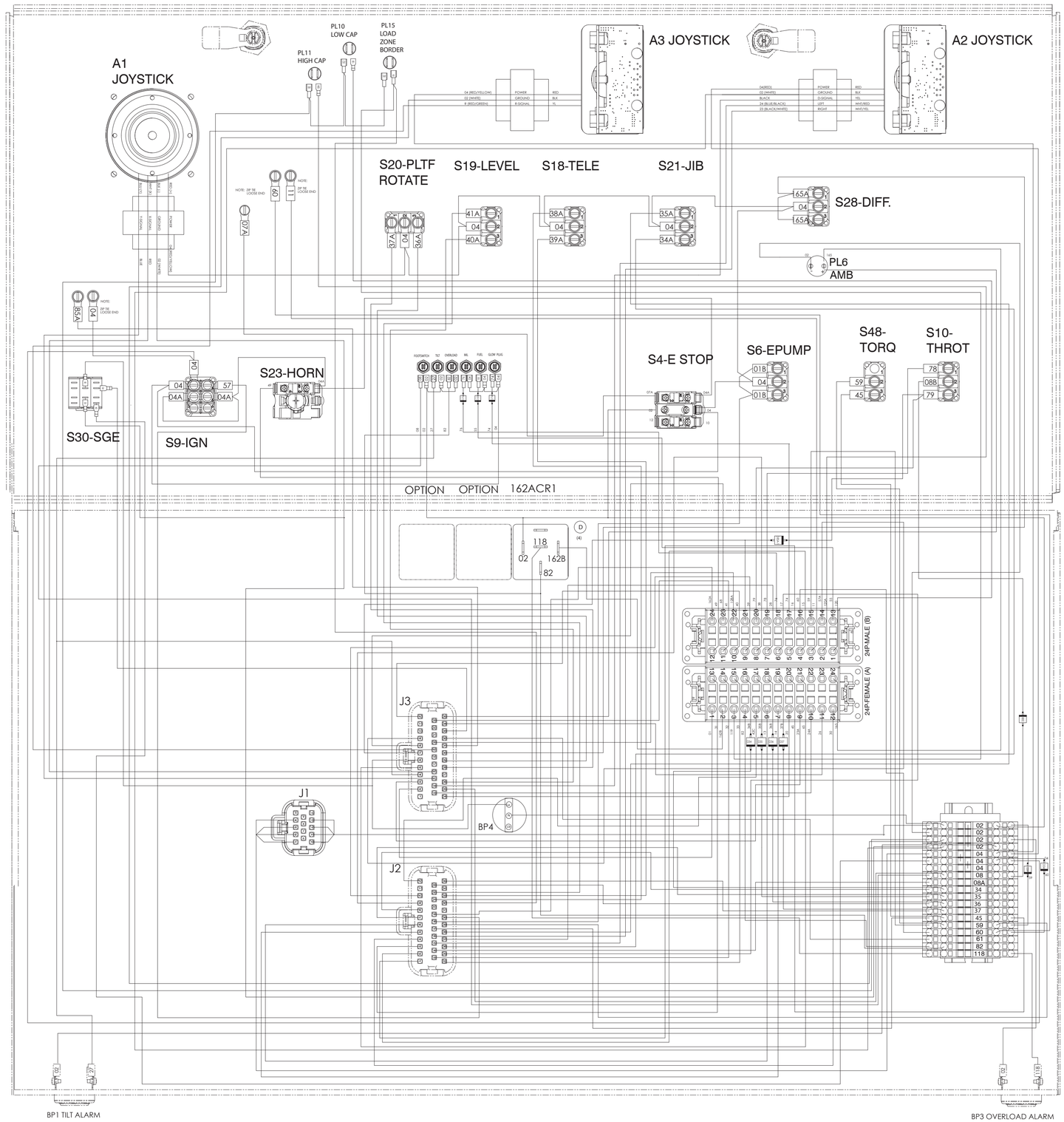
M198203AG-2

Use this schematic if your platform control box indicator lights look like this.



Wire Numbers and Colour Codes

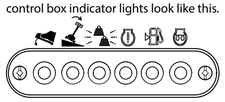
Relay diagram

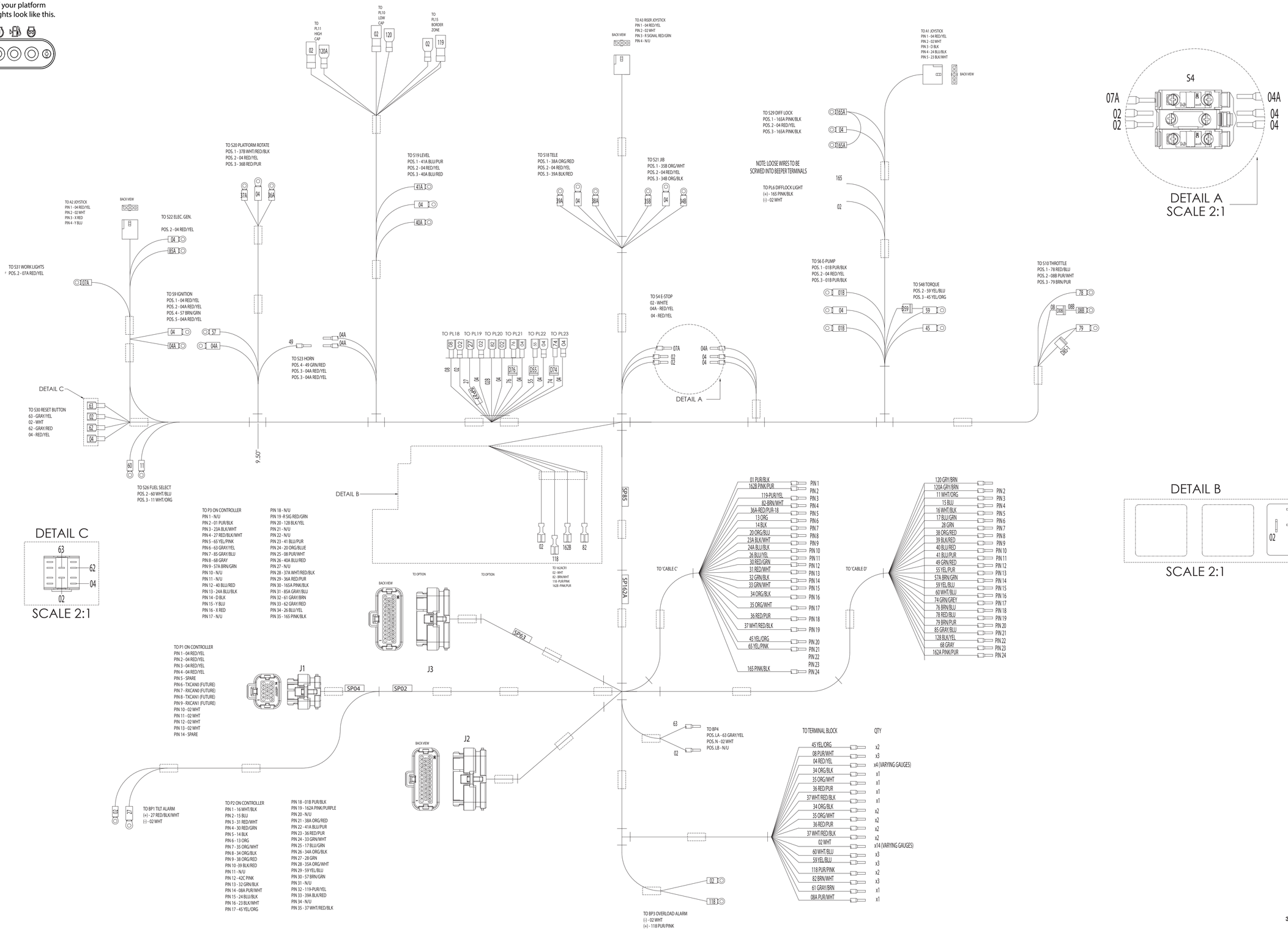


M244351AA:1

3.50 Platform Controls - Harness View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with individual indicator LEDs

Use this schematic if your platform control box indicator lights look like this.

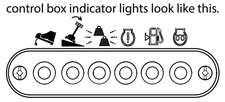


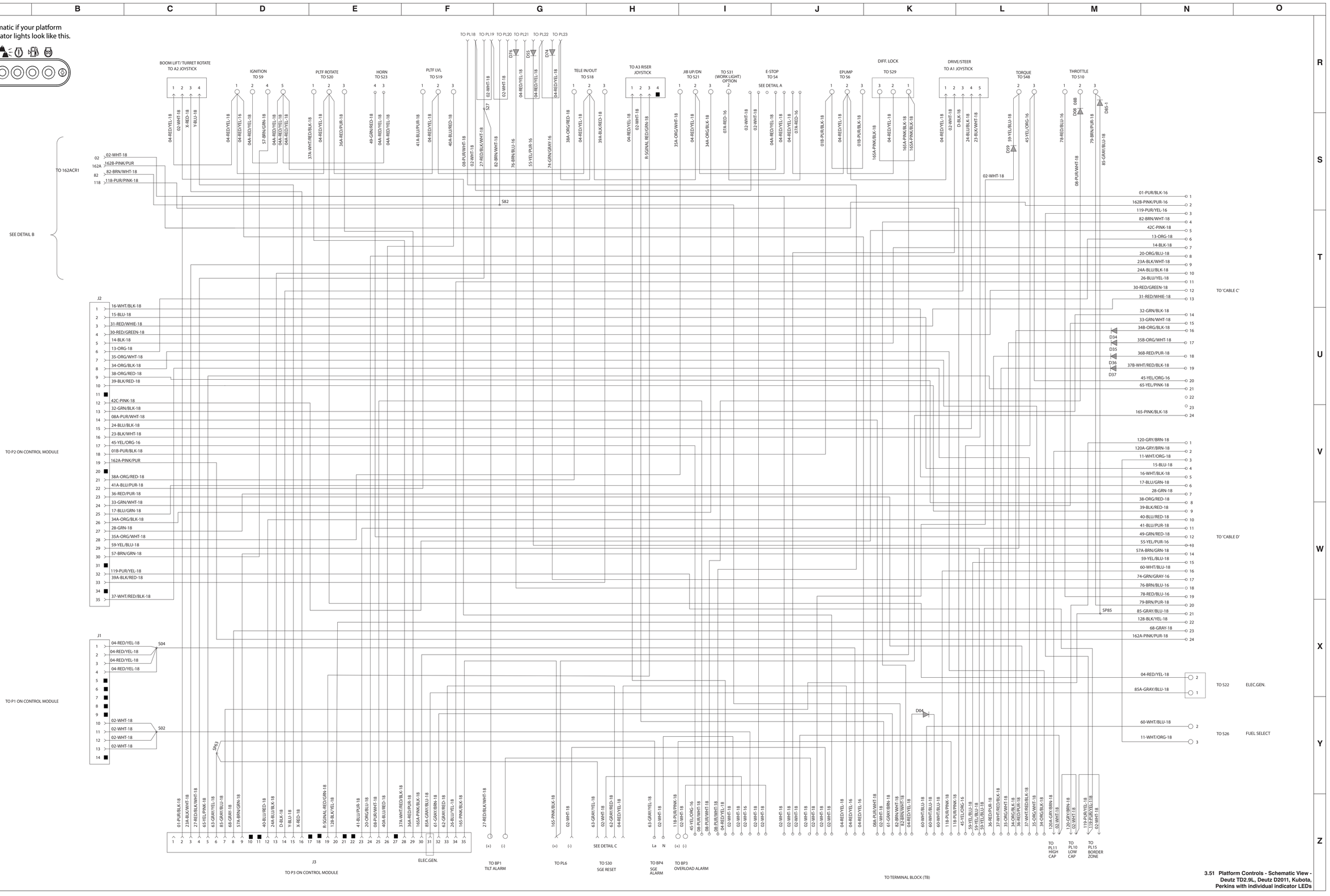


M244351AA:2

3.50 Platform Controls - Harness View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with individual indicator LEDs

3.51 Platform Controls - Schematic View - Deutz TD2.9L, Deutz D2011, Kubota, Perkins with individual indicator LEDs

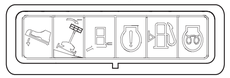




3.52 Platform Controls Wiring - Deutz TCD2.2 with a single indicator light module

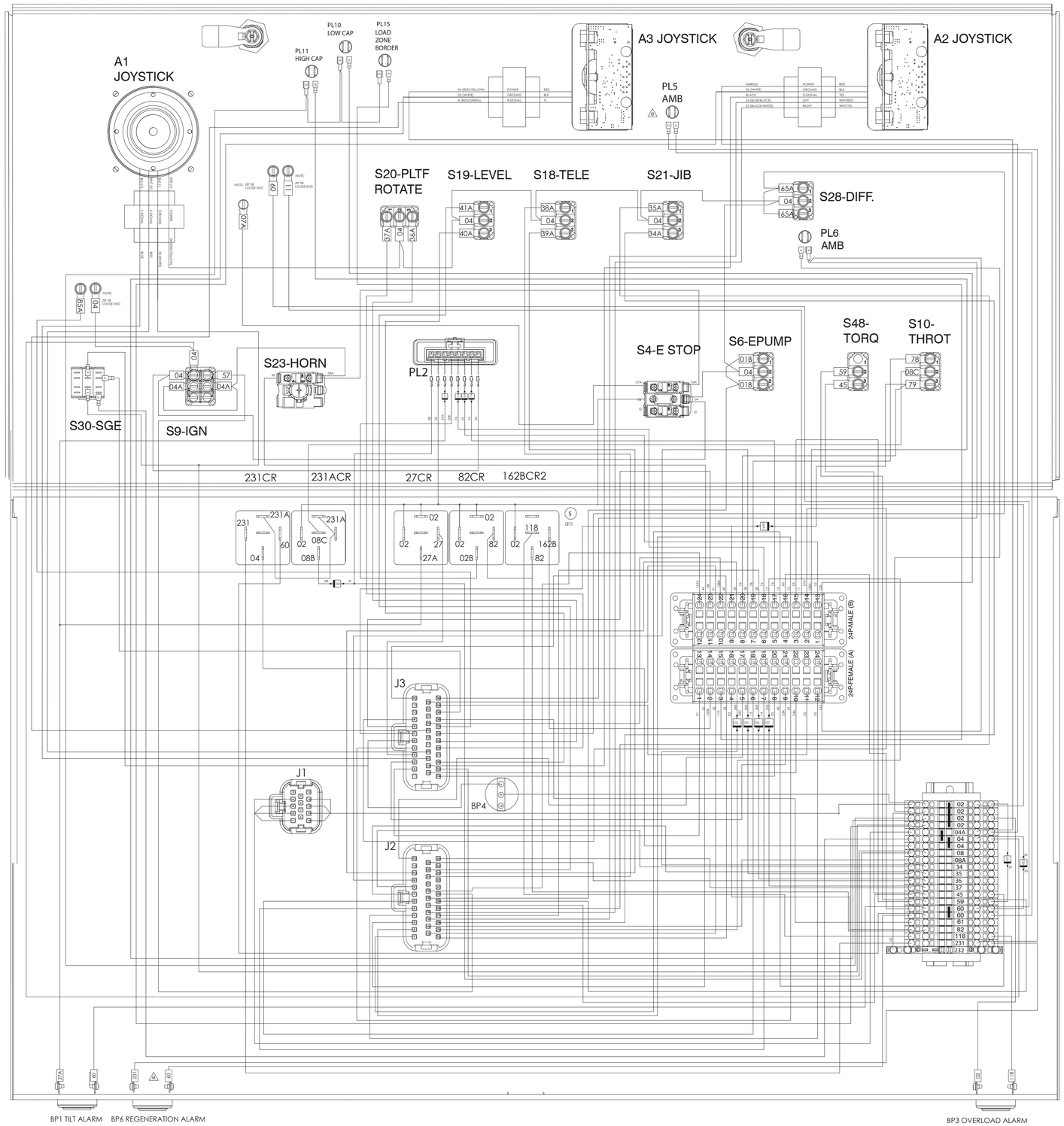
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

Use this schematic if your platform control box indicator lights look like this.



Wire Numbers and Colour Codes

Relay diagram

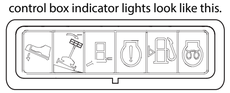


3.52 Platform Controls Wiring - Deutz TCD2.2 with a single indicator light module

M224601AE

3.53 Platform Controls - Harness View - Deutz TCD2.2 with a single indicator light module

Use this schematic if your platform control box indicator lights look like this.



TO PL11 HIGH CAP — 02 — 20A
TO PL10 LOW CAP — 02 — 120
TO PL15 BORDER ZONE — 02 — 119

TO S20 PLATFORM ROTATE
POS. 1 - 37B WHT/RED/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 36B RED/PUR

TO S19 LEVEL
POS. 1 - 41A BLU/PUR
POS. 2 - 04 RED/YEL
POS. 3 - 40A BLU/RED

TO A3 RIGEB JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - F SIGNAL RED/GRN
PIN 4 - N/U

TO PLS REGEN. LAMP
POS. 1 - 231 PNK/RED
POS. 2 - 60 WHT/BLU

TO S18 TELE
POS. 1 - 38A ORG/RED
POS. 2 - 04 RED/YEL
POS. 3 - 39A BLK/RED

TO S21 JIB
POS. 1 - 35B ORG/WHT
POS. 2 - 04 RED/YEL
POS. 3 - 34B ORG/BLK

TO A1 JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - D BLK
PIN 4 - 24 BLU/BLK
PIN 5 - 23 BLK/WHT

TO S29 DIFF LOCK
POS. 1 - 165A PINK/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 165A PINK/BLK

NOTE: LOOSE WIRES TO BE SCRWED INTO BEEPER TERMINALS

TO PL6 DIFFLOCK LIGHT
(+) - 165 PINK/BLK
(-) - 02 WHT

S4
07A — 02 — 02
04A — 04 — 04
DETAIL A
SCALE 2:1

TO A2 JOYSTICK
PIN 1 - 04 RED/YEL
PIN 2 - 02 WHT
PIN 3 - X RED
PIN 4 - Y BLU

TO S22 ELEC. GEN.
POS. 1 - 85A GRAY/BLU
POS. 2 - 04 RED/YEL

TO S31 WORK LIGHTS
POS. 2 - 07A RED/YEL

TO S59 IGNITION
POS. 1 - 04 RED/YEL
POS. 2 - 04A RED/YEL
POS. 4 - 57 BRN/GRN
POS. 5 - 04A RED/YEL

TO S23 HORN
POS. 4 - 49 GRN/RED
POS. 3 - 04A RED/YEL
POS. 3 - 04A RED/YEL

TO PL2
A - 08 PUR/WHT
B - 02 WHITE
C - D27A
D - 02A WHITE
E - D76
F - D55
G - D74
H - 04 RED/YEL

TO S4 E-STOP
02 - WHITE
04A - RED/YEL
04 - RED/YEL

DETAIL A

TO S6 E-PUMP
POS. 1 - 01B PUR/BLK
POS. 2 - 04 RED/YEL
POS. 3 - 01B PUR/BLK

TO S48 TORQUE
POS. 2 - 59 YEL/BLU
POS. 3 - 45 YEL/ORG

TO S10 THROTTLE
POS. 1 - 78 RED/BLU
POS. 2 - 08C PUR/WHT
POS. 3 - 79 BRN/PUR

TO S30 RESET BUTTON
63 - GRAY/YEL
02 - WHT
62 - GRAY/RED
04 - RED/YEL

TO S26 FUEL SELECT
POS. 2 - 60 WHT/BLU
POS. 3 - 11 WHT/ORG

DETAIL B

DETAIL C
63 — 62 — 04 — 02
SCALE 2:1

TO P3 ON CONTROLLER
PIN 1 - N/U
PIN 2 - 01 PUR/BLK
PIN 3 - 23A BLK/WHT
PIN 4 - 27 RED/BLK/WHT
PIN 5 - 65 YEL/PINK
PIN 6 - 63 GRAY/YEL
PIN 7 - 85 GRAY/BLU
PIN 8 - 68 GRAY
PIN 9 - 57A BRN/GRN
PIN 10 - N/U
PIN 11 - N/U
PIN 12 - 40 BLU/RED
PIN 13 - 24A BLU/BLK
PIN 14 - D BLK
PIN 15 - Y BLU
PIN 16 - X RED
PIN 17 - N/U
PIN 18 - N/U
PIN 19 - F SIG RED/GRN
PIN 20 - 128 BLK/YEL
PIN 21 - N/U
PIN 22 - N/U
PIN 23 - 41 BLU/PUR
PIN 24 - 20 ORG/BLUE
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 - 26 BLU/YEL
PIN 35 - 165 PINK/BLK

TO P1 ON CONTROLLER
PIN 1 - 04 RED/YEL
PIN 2 - 04 RED/YEL
PIN 3 - 04 RED/YEL
PIN 4 - 04 RED/YEL
PIN 5 - SPARE
PIN 6 - TXCAN0 (FUTURE)
PIN 7 - RXCAN0 (FUTURE)
PIN 8 - TXCAN1 (FUTURE)
PIN 9 - RXCAN1 (FUTURE)
PIN 10 - 02 WHT
PIN 11 - 02 WHT
PIN 12 - 02 WHT
PIN 13 - 02 WHT
PIN 14 - SPARE

TO BP6 REGENERATION ALARM
(-) - 231 PNK/RED
(+) - 60 WHT/BLU

TO BP1 TILT ALARM
(-) - 27A RED/BLK/WHT
(+) - 60 WHT/BLU

TO P2 ON CONTROLLER
PIN 1 - 16 WHT/BLK
PIN 2 - 15 BLU
PIN 3 - 31 RED/WHT
PIN 4 - 30 RED/GRN
PIN 5 - 14 BLK
PIN 6 - 13 ORG
PIN 7 - 35 ORG/WHT
PIN 8 - 34 ORG/BLK
PIN 9 - 38 ORG/RED
PIN 10 - 39 BLK/RED
PIN 11 - N/U
PIN 12 - 42C PINK
PIN 13 - 32 GRN/BLK
PIN 14 - 08A PUR/WHT
PIN 15 - 24 BLU/BLK
PIN 16 - 23 BLK/WHT
PIN 17 - 45 YEL/ORG
PIN 18 - 01B PUR/BLK
PIN 19 - 162A PINK/PURPLE
PIN 20 - N/U
PIN 21 - 38A ORG/RED
PIN 22 - 41A BLU/PUR
PIN 23 - 36 RED/PUR
PIN 24 - 33 GRN/WHT
PIN 25 - 17 BLU/GRN
PIN 26 - 34A ORG/BLK
PIN 27 - 28 GRN
PIN 28 - 35A ORG/WHT
PIN 29 - 59 YEL/BLU
PIN 30 - 57 BRN/GRN
PIN 31 - N/U
PIN 32 - 119-PUR/YEL
PIN 33 - 39A BLK/RED
PIN 34 - N/U
PIN 35 - 37 WHT/RED/BLK

J1 — SP04 — SP02 — SP03 — J3 — J2

TO 'CABLE C' — AS REQUIRED
01 PUR/BLK — PIN 1
162B-PINK/PUR — PIN 2
119-PUR/YEL — PIN 3
82-BRN/WHT — PIN 4
36A-RED/PUR-18 — PIN 5
13 ORG — PIN 6
14 BLK — PIN 7
20 ORG/BLU — PIN 8
23A BLK/WHT — PIN 9
24A BLU/BLK — PIN 10
26 BLU/YEL — PIN 11
30 RED/GRN — PIN 12
31 RED/WHT — PIN 13
32 GRN/BLK — PIN 14
33 GRN/WHT — PIN 15
34 ORG/BLK — PIN 16
35 ORG/WHT — PIN 17
36 RED/PUR — PIN 18
37 WHT/RED/BLK — PIN 19
45 YEL/ORG — PIN 20
65 YEL/PINK — PIN 21
PIN 22
PIN 23
165 PINK/BLK — PIN 24

TO 'CABLE D' — AS REQUIRED
120 GRY/BRN — PIN 1
120A GRY/BRN — PIN 2
11 WHT/ORG — PIN 3
15 BLU — PIN 4
16 WHT/BLK — PIN 5
17 BLU/GRN — PIN 6
28 GRN — PIN 7
38 ORG/RED — PIN 8
39 BLK/RED — PIN 9
40 BLU/RED — PIN 10
41 BLU/PUR — PIN 11
49 GRN/RED — PIN 12
55 YEL/PUR — PIN 13
57A BRN/GRN — PIN 14
59 YEL/BLU — PIN 15
60 WHT/BLU — PIN 16
74 GRN/GREY — PIN 17
76 BRN/BLU — PIN 18
78 RED/BLU — PIN 19
79 BRN/PUR — PIN 20
85 GRAY/BLU — PIN 21
128 BLK/YEL — PIN 22
68 GRAY — PIN 23
162A PINK/PUR — PIN 24

TO BP4
POS. LA - 63 GRAY/YEL
POS. N - 02 WHT
POS. LB - N/U

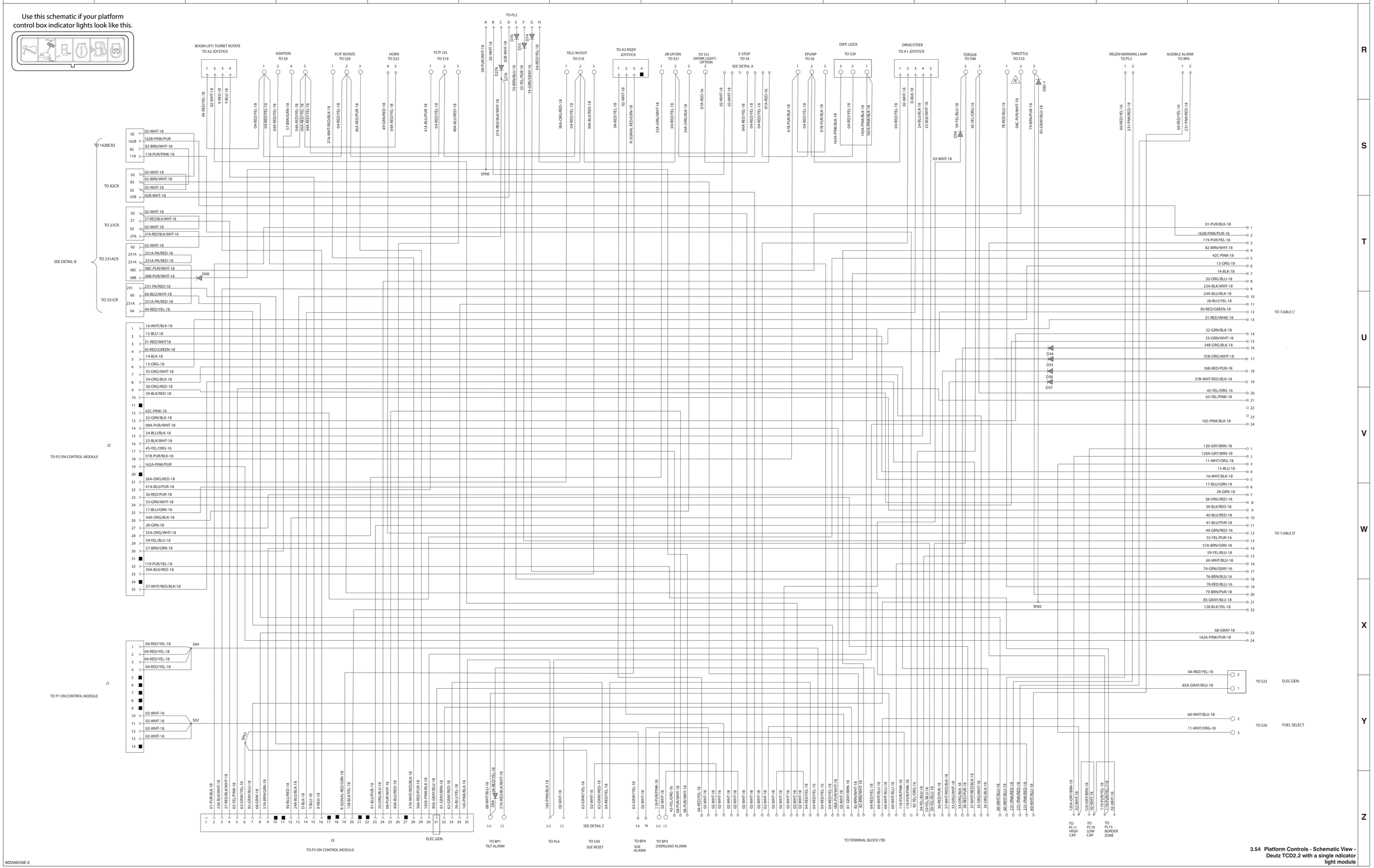
TO BP3 OVERLOAD ALARM
(-) - 02 WHT
(+) - 118 PUR/PINK

TO TERMINAL BLOCK — QTY
45 YEL/ORG — x2
08 PUR/WHT — x2
04 RED/YEL — x4 (VARYING GAUGES)
34 ORG/BLK — x1
35 ORG/WHT — x1
36 RED/PUR — x1
37 WHT/RED/BLK — x1
34 ORG/BLK — x2
35 ORG/WHT — x2
36 RED/PUR — x2
37 WHT/RED/BLK — x2
02 WHT — x12 (VARYING GAUGES)
60 WHT/BLU — x7
59 YEL/BLU — x3
118 PUR/PINK — x2
82 BRN/WHT — x3
61 GRAY/BRN — x1
08A PUR/WHT — x1
231 PNK/RED — x3

DETAIL B
231A — 231 — 60 — 04
231A — 08C — 02 — 231A — 08B
02 — 02 — 27 — 27A
02 — 02 — 82 — 02B
118 — 02 — 162B — 82
SCALE 2:1

M224601AE-2

3.54 Platform Controls - Schematic View - Deutz TCD2.2 with a single ndicator light module

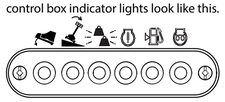


3.54 Platform Controls - Schematic View - Deutz TCD2.2 with a single ndicator light module

M224601AE-3

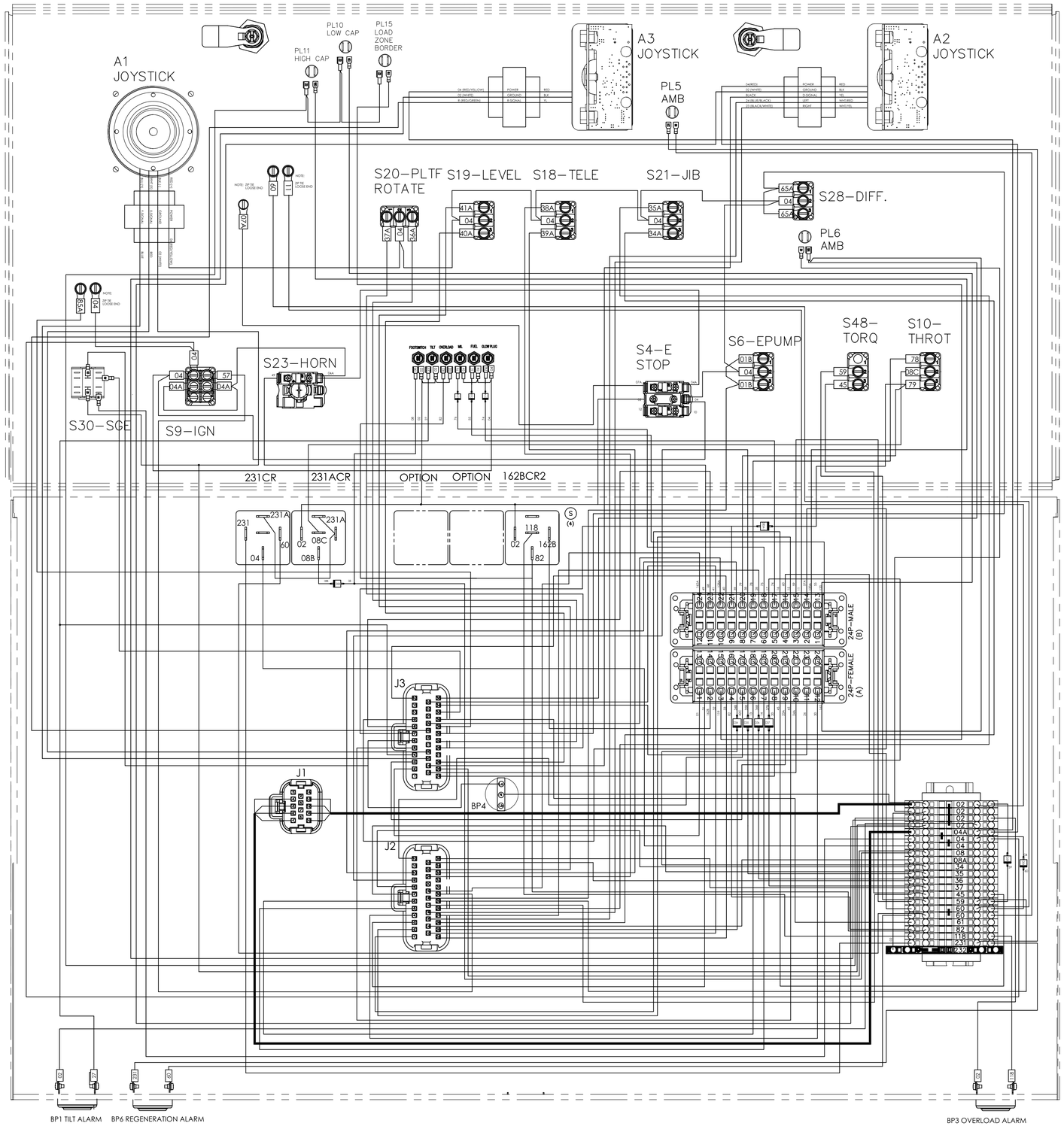
3.55 Platform Controls Wiring - Deutz TCD2.2 with individual indicator LEDs

Use this schematic if your platform control box indicator lights look like this.



Wire Numbers and Colour Codes

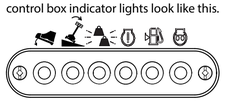
Relay diagram

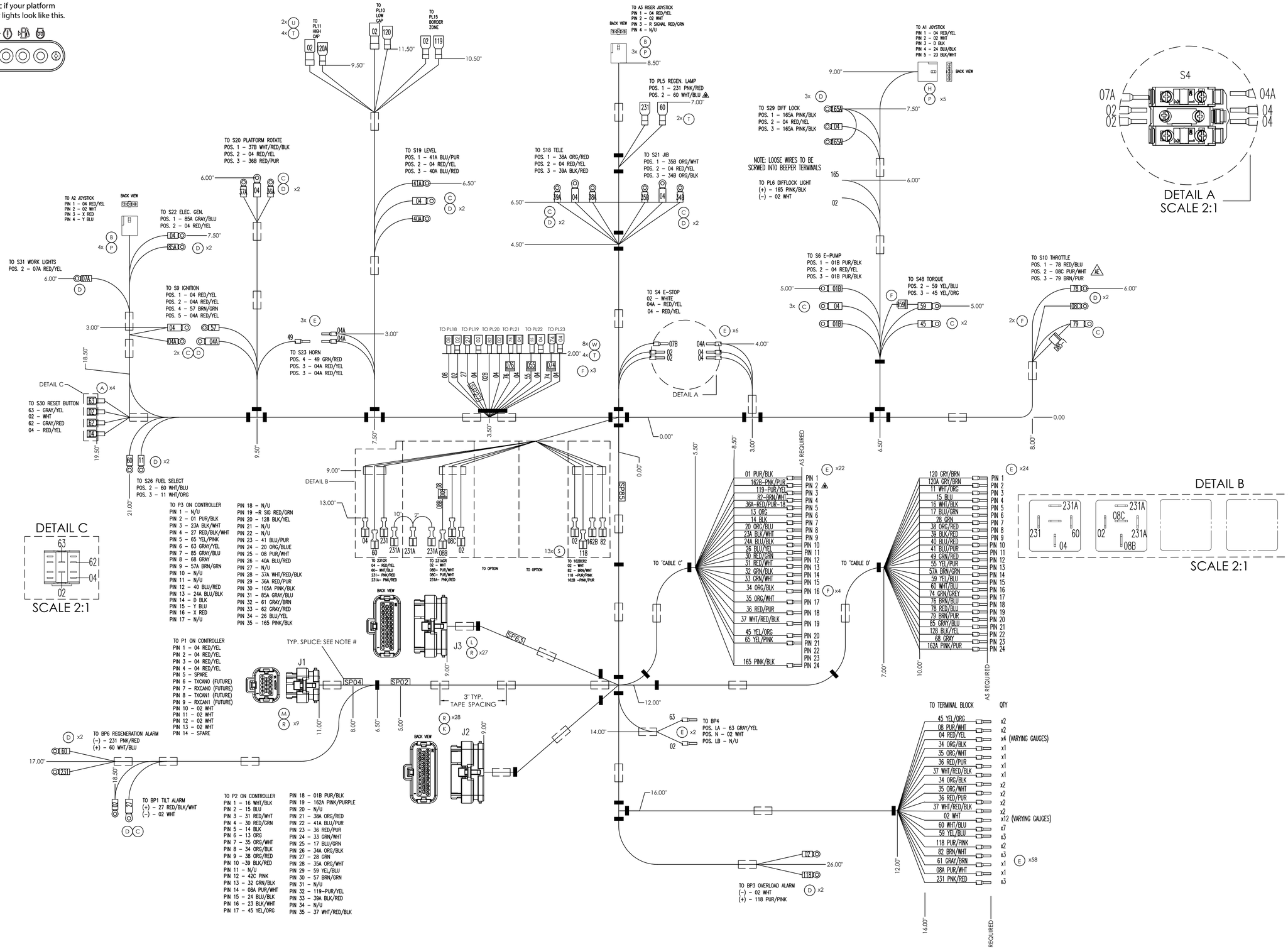


M224601AE

3.56 Platform Controls - Harness View - Deutz TCD2.2 with individual indicator LEDs

Use this schematic if your platform control box indicator lights look like this.



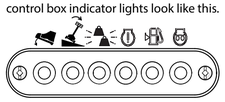


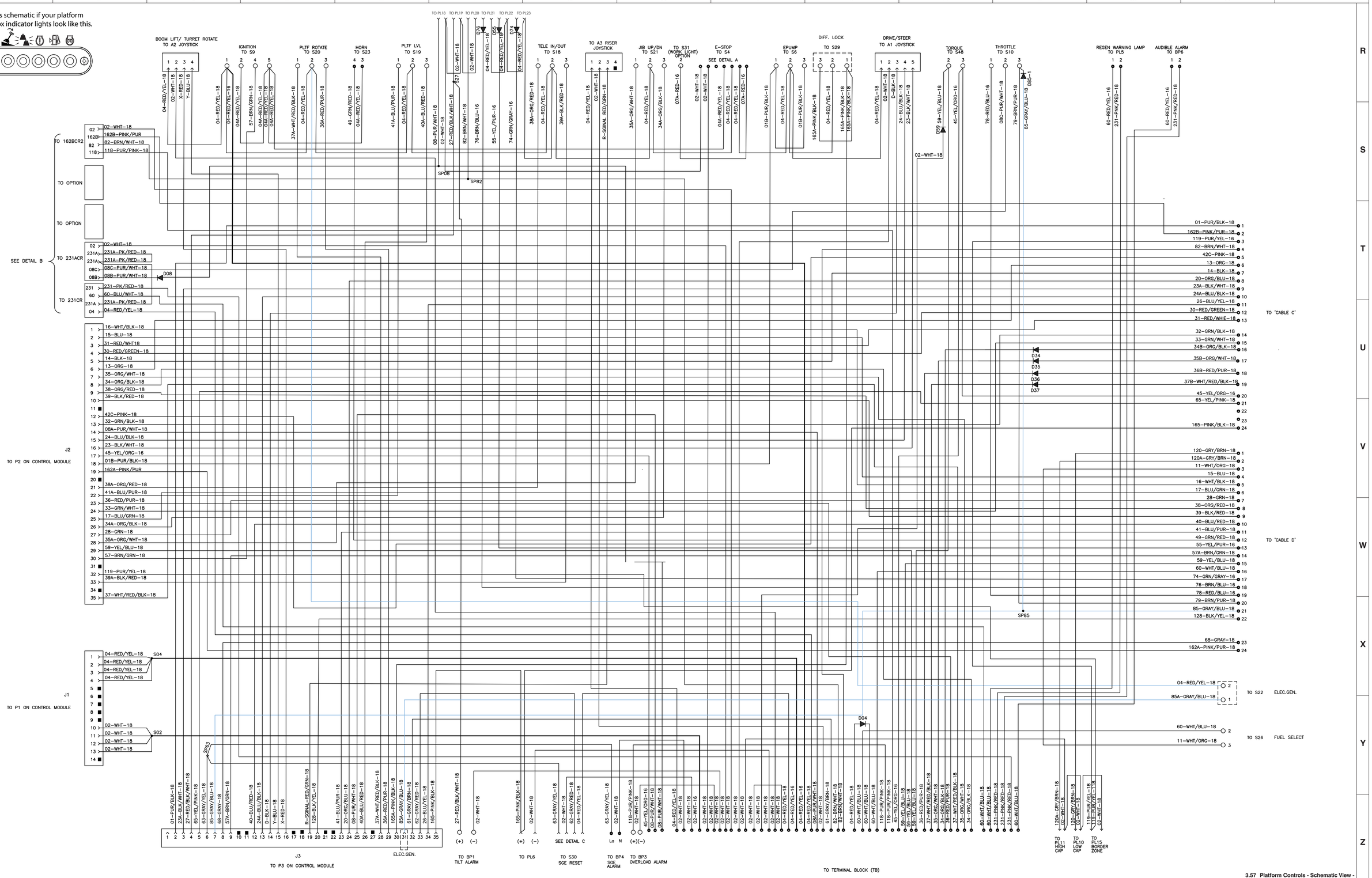
M224601AE-2

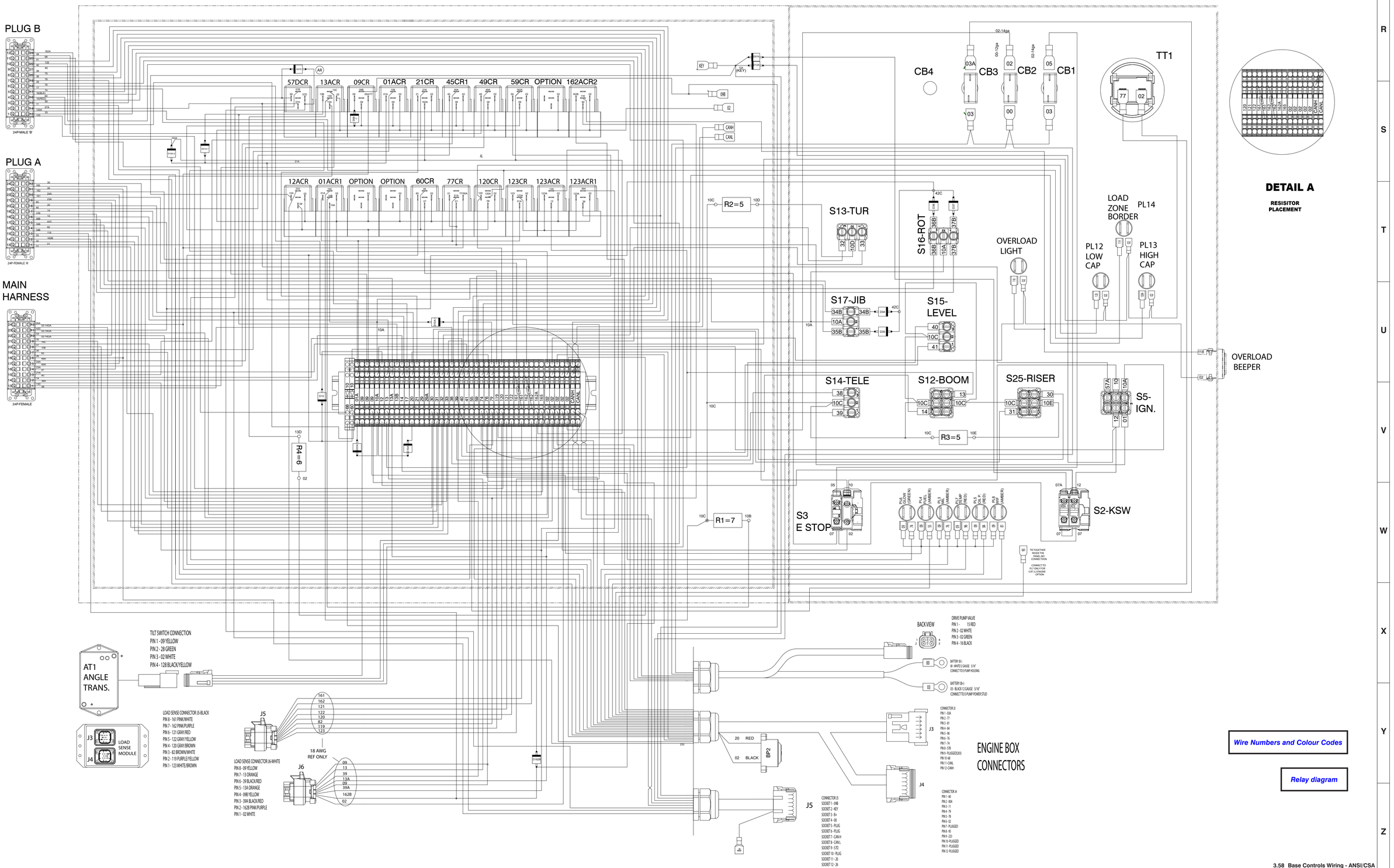
3.56 Platform Controls - Harness View - Deutz TCD2.2 with individual indicator LEDs

3.57 Platform Controls - Schematic View - Deutz TCD2.2 with individual indicator LEDs

Use this schematic if your platform control box indicator lights look like this.



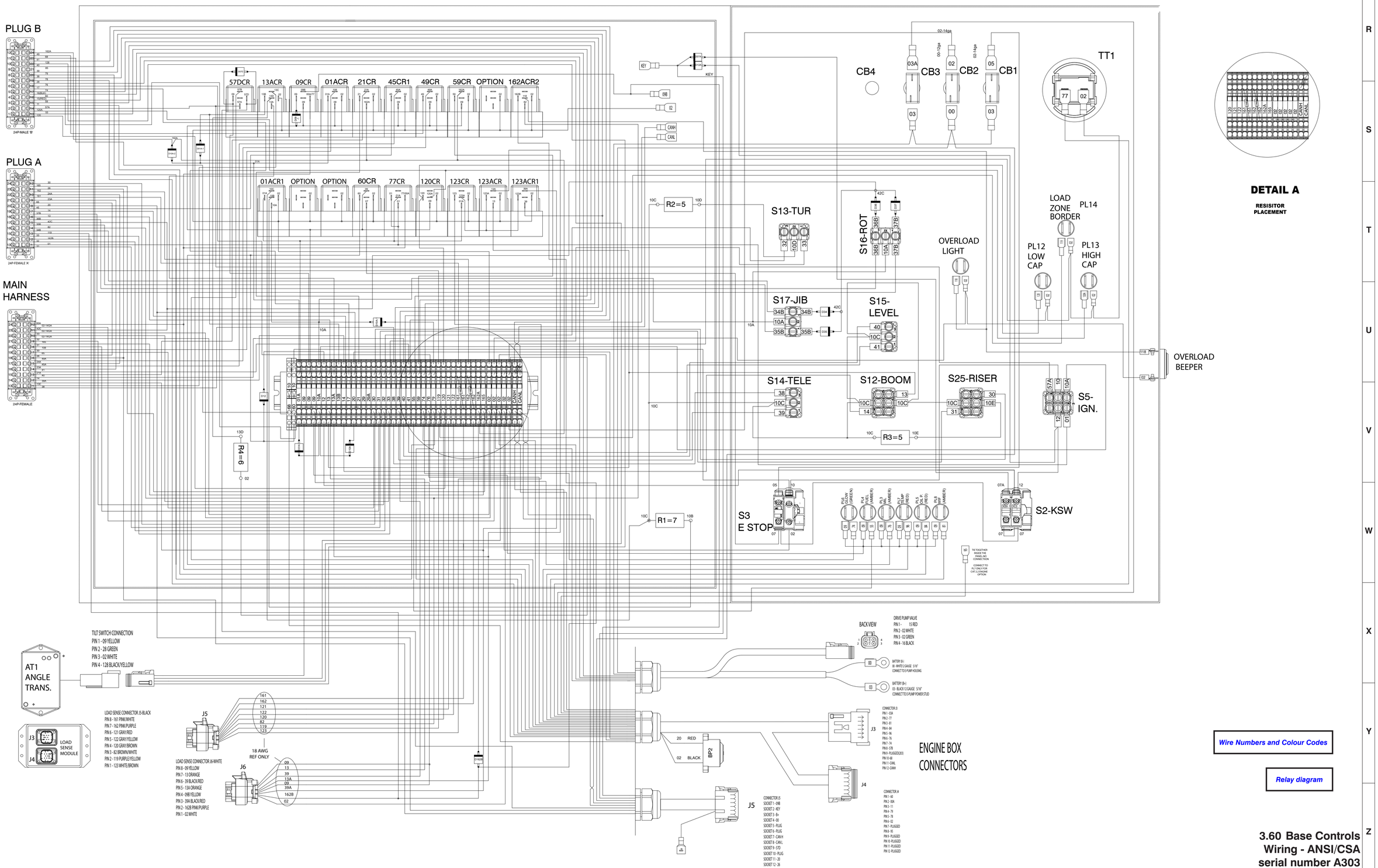




M250077AA

3.58 Base Controls Wiring - ANSI/CSA serial number A303 000 957 and above

3.59 Base Controls Wiring - ANSI/CSA serial number A303 000 956 and below

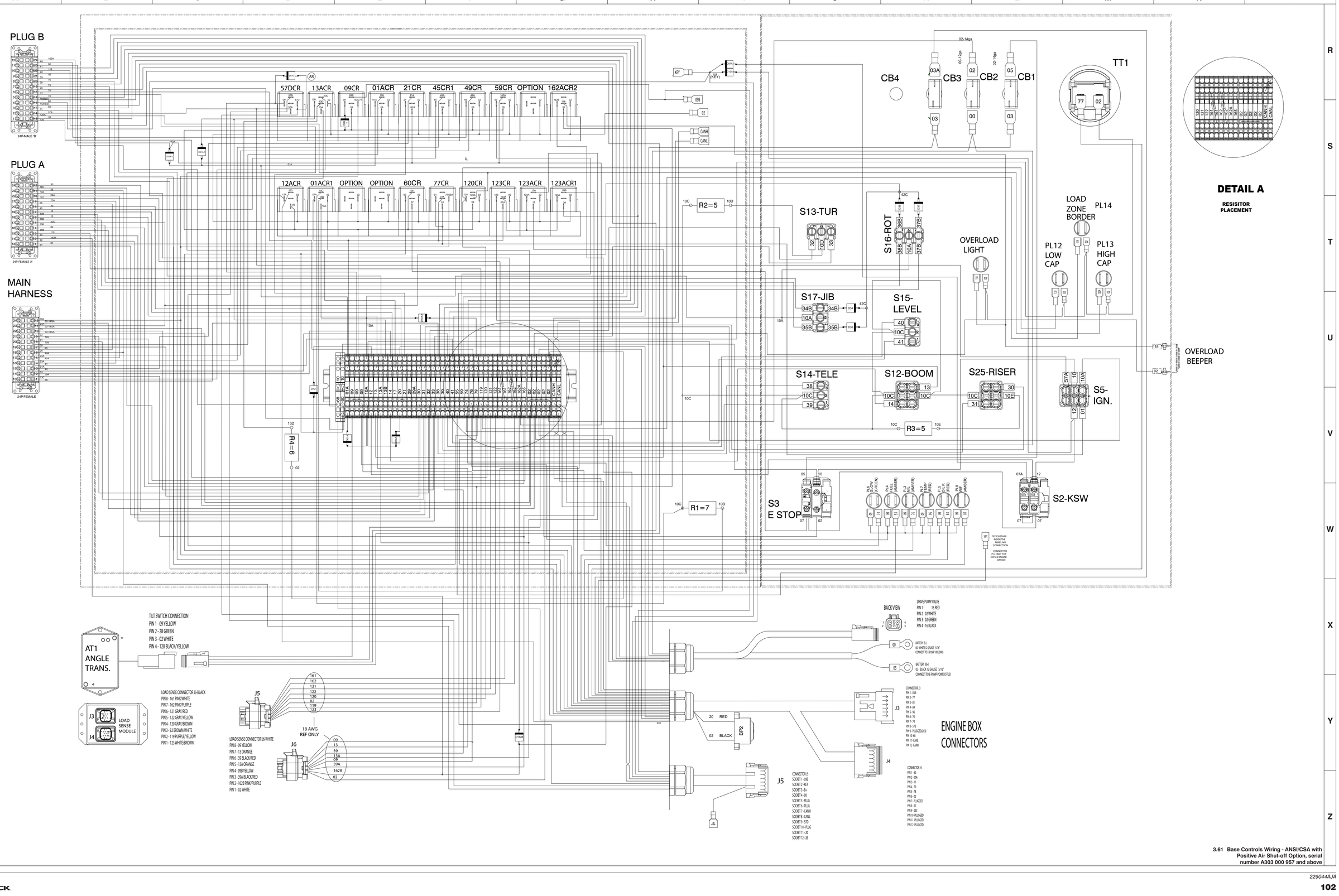


Wire Numbers and Colour Codes

Relay diagram

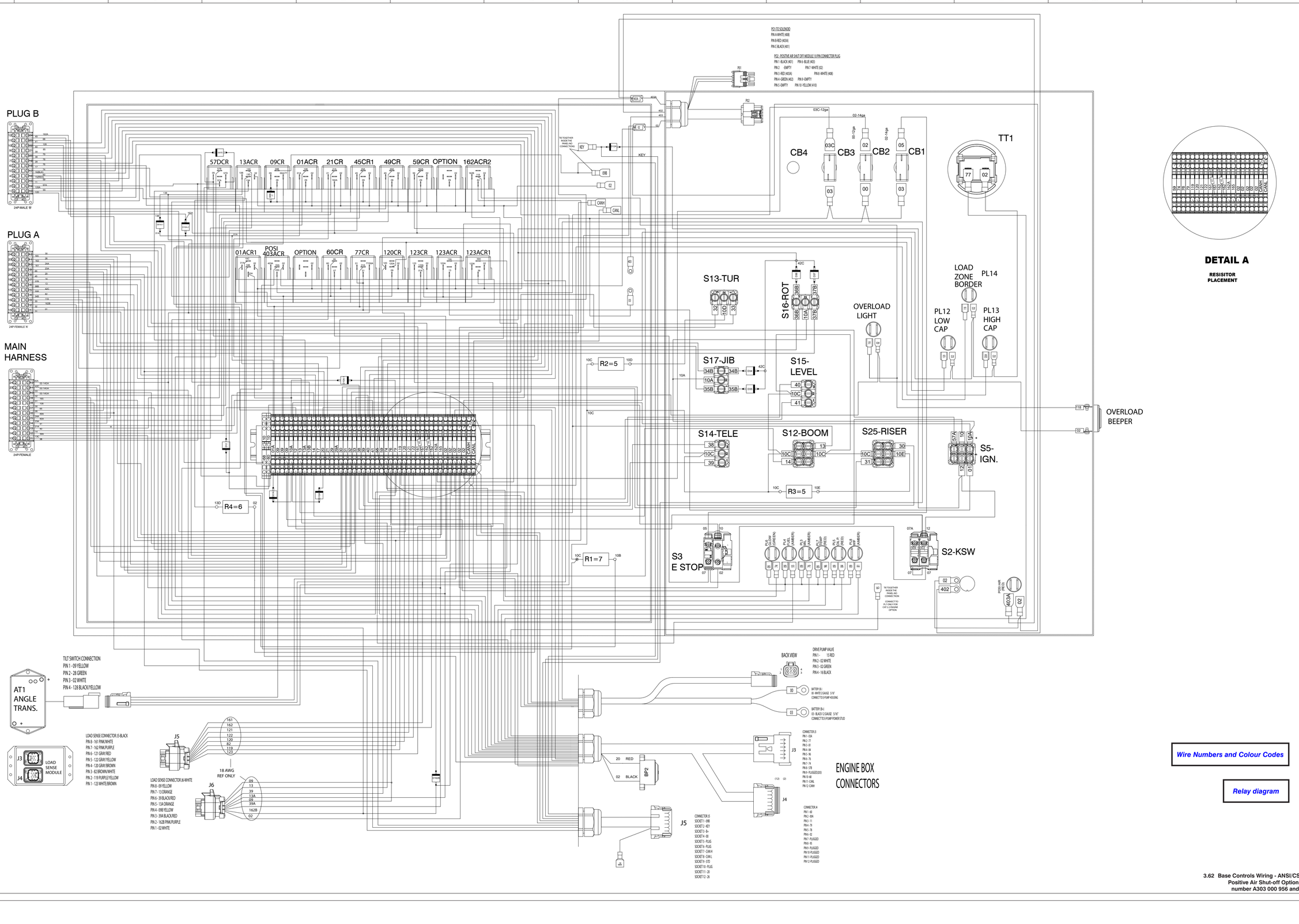
3.60 Base Controls Wiring - ANSI/CSA serial number A303 000 956 and below

M218340AE


PLUG B
24P-MALE 'B'
PLUG A
24P-FEMALE 'A'
MAIN HARNESS
24P-FEMALE
57DCR
13ACR
09CR
01ACR
21CR
45CR1
49CR
59CR
OPTION
162ACR2
12ACR
01ACR1
OPTION
OPTION
60CR
77CR
120CR
123CR
123ACR
123ACR1
R2=5
R3=5
R4=6
R1=7
S13-TUR
S16-ROT
S17-JIB
S15-LEVEL
S14-TELE
S12-BOOM
S25-RISER
S5-IGN.
S3 E STOP
S2-KSW
CB4
CB3
CB2
CB1
TT1
OVERLOAD LIGHT
LOAD ZONE BORDER
PL14
PL12 LOW CAP
PL13 HIGH CAP
OVERLOAD BEEPER
DETAIL A
RESISITOR PLACEMENT
AT1 ANGLE TRANS.
TILT SWITCH CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
LOAD SENSE MODULE
LOAD SENSE CONNECTOR J5-BLACK
PIN 8 - 161 PINK/WHITE
PIN 7 - 162 PINK/PURPLE
PIN 6 - 121 GRAY/RED
PIN 5 - 122 GRAY/YELLOW
PIN 4 - 120 GRAY/BROWN
PIN 3 - 82 BROWN/WHITE
PIN 2 - 119 PURPLE/YELLOW
PIN 1 - 123 WHITE/BROWN
LOAD SENSE CONNECTOR J6-WHITE
PIN 8 - 09 YELLOW
PIN 7 - 13 ORANGE
PIN 6 - 39 BLACK/RED
PIN 5 - 13A ORANGE
PIN 4 - 09B YELLOW
PIN 3 - 39A BLACK/RED
PIN 2 - 162B PINK/PURPLE
PIN 1 - 02 WHITE
18 AWG REF ONLY
BACK VIEW
DRIVE PUMP VALVE
PIN 1 - 15 RED
PIN 2 - 02 WHITE
PIN 3 - 03 GREEN
PIN 4 - 16 BLACK
BATTERY (B-)
00 - WHITE/3 GAUGE 5/16"
CONNECT TO E-PUMP HOUSING
BATTERY (B+)
03 - BLACK/ 12 GAUGE 5/16"
CONNECT TO E-PUMP POWER STUD
ENGINE BOX CONNECTORS
CONNECTOR J3
PIN 1 -15A
PIN 2 - 77
PIN 3 - 81
PIN 4 - 84
PIN 5 - 96
PIN 6 - 76
PIN 7 - 74
PIN 8 - 57B
PIN 9 - PLUGGED/33
PIN 10 -68
PIN 11 -CANL
PIN 12 -CANH
CONNECTOR J4
PIN 1 - 60
PIN 2 - 09A
PIN 3 - 11
PIN 4 - 79
PIN 5 - 78
PIN 6 - 62
PIN 7 - PLUGGED
PIN 8 - 95
PIN 9 - 23
PIN 10 -PLUGGED
PIN 11 -PLUGGED
PIN 12 -PLUGGED
CONNECTOR J5
SOCKET 1 - 09B
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - 57D
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26
TIE TOGETHER INSIDE THE PANEL-NO CONNECTION
CONNECT TO PL7 ONLY FOR CAT 2 ENGINE OPTION

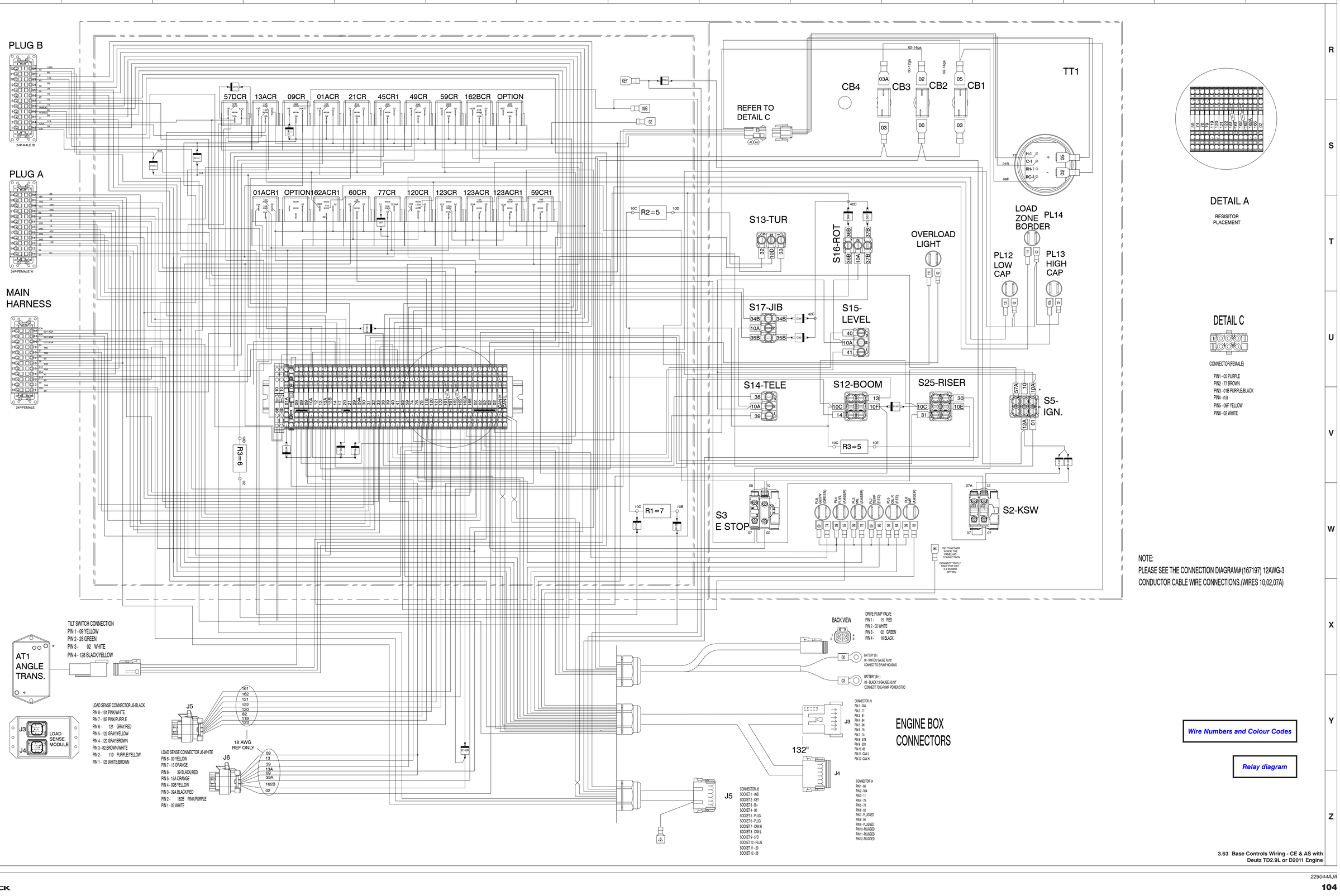
M250074AA

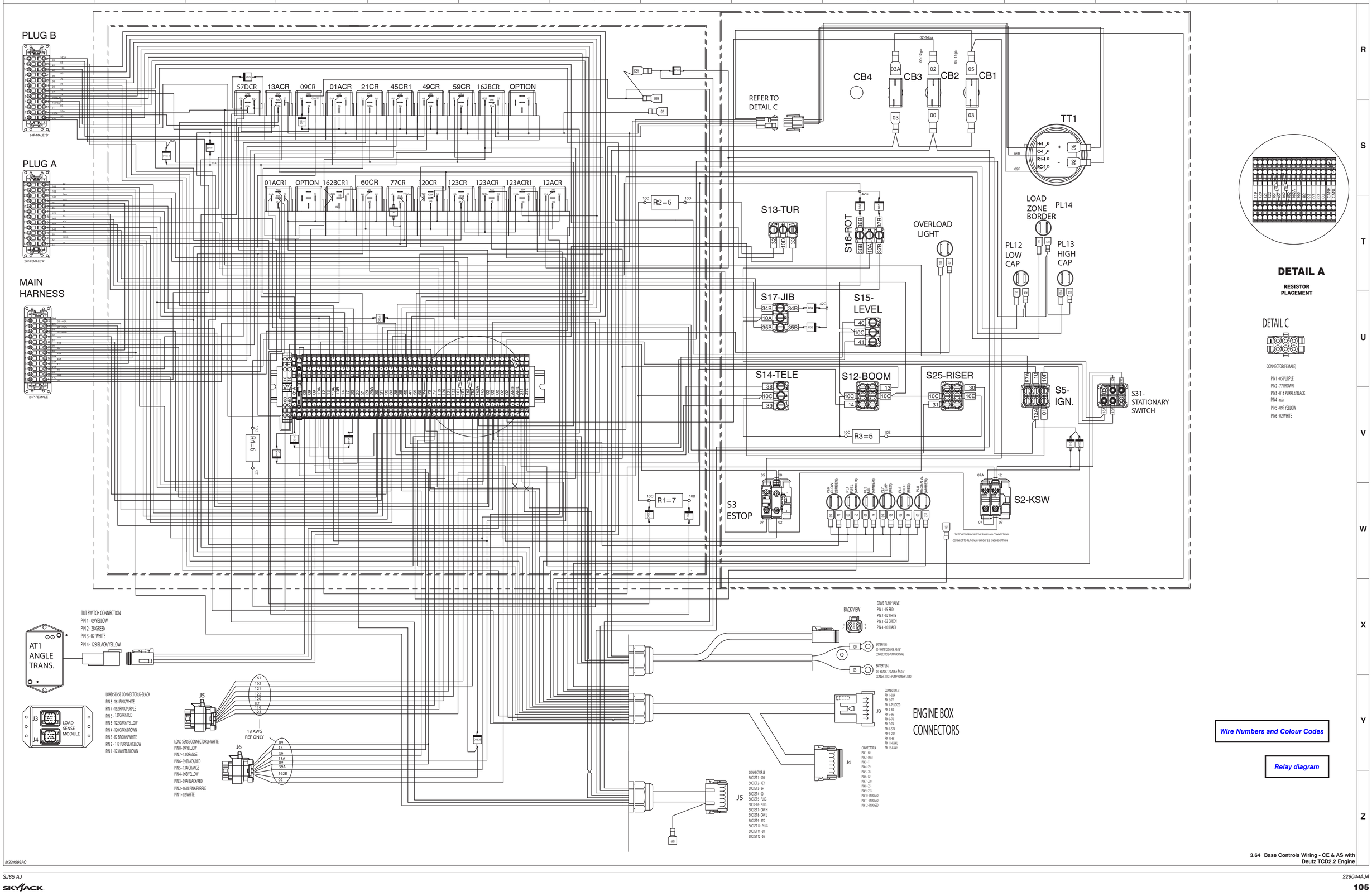
3.62 Base Controls Wiring - ANSI/CSA with Positive Air Shut-off Option, serial number A303 000 956 and below



3.62 Base Controls Wiring - ANSI/CSA with Positive Air Shut-off Option, serial number A303 000 956 and below

M218341AF

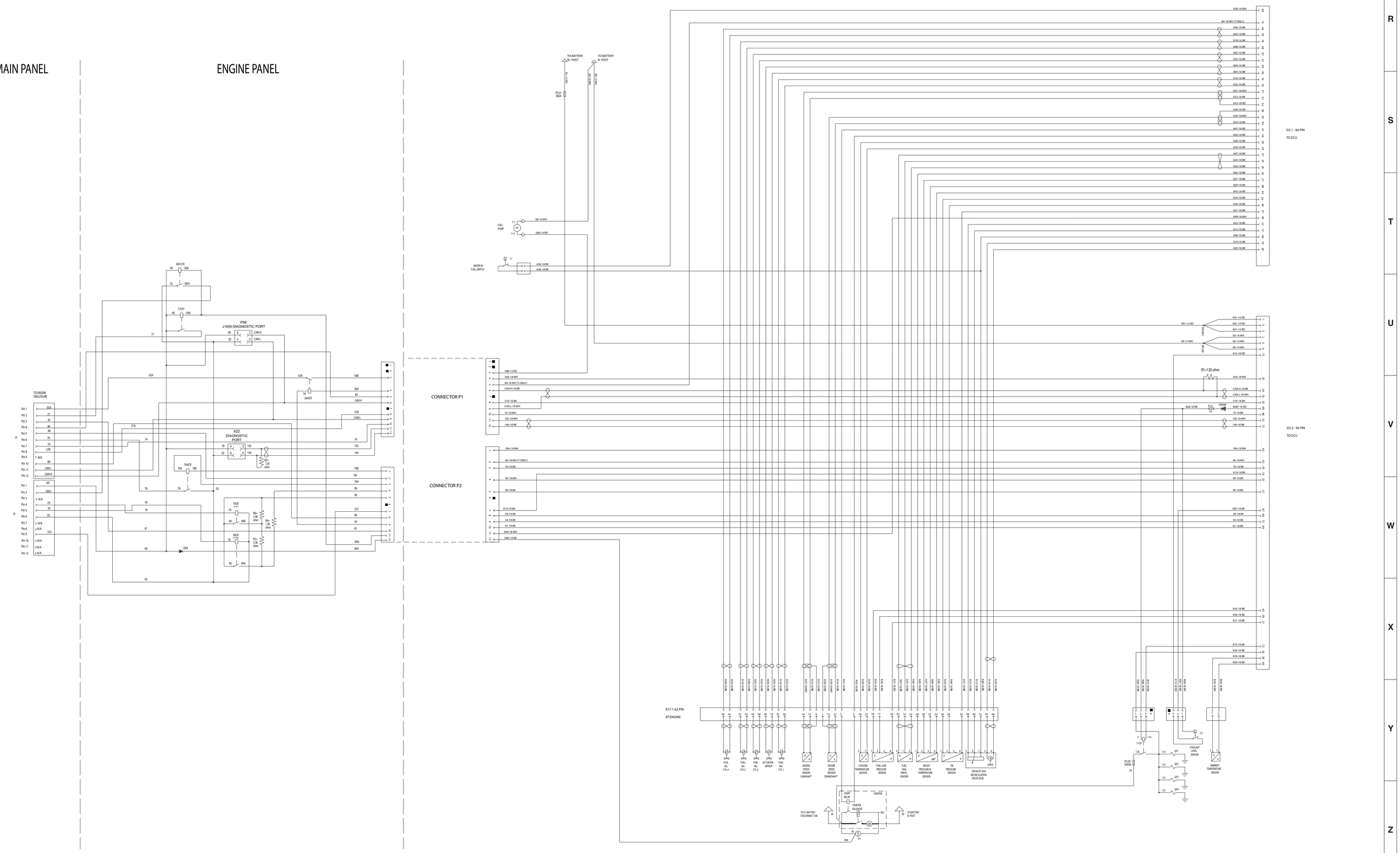

PLUG B
24P-MALE 'B'
PLUG A
24P-FEMALE 'A'
MAIN HARNESS
24P-FEMALE
57DCR
13ACR
09CR
01ACR
21CR
45CR1
49CR
59CR
162BCR
OPTION
01ACR1
OPTION
162ACR1
60CR
77CR
120CR
123CR
123ACR
123ACR1
59CR1
R2=5
R3=6
R1=7
KEY
REFER TO DETAIL C
CB4
CB3
CB2
CB1
TT1
LOAD ZONE BORDER
PL14
PL12 LOW CAP
PL13 HIGH CAP
S13-TUR
S16-ROT
OVERLOAD LIGHT
S17-JIB
S15-LEVEL
S14-TELE
S12-BOOM
S25-RISER
S5-IGN.
S3 E STOP
S2-KSW
PL6 GLOW (GREEN)
PL4 PUMP (AMBER)
PL3 (AMBER)
PL7 TEMP (RED)
PL2 OIL P. (RED)
PL5 (AMBER)
TIE TOGETHER INSIDE THE PANEL/NO CONNECTION
CONNECT TO PL7 ONLY FOR CAT 2,3 ENGINE OPTION
DETAIL A
RESISITOR PLACEMENT
DETAIL C
CONNECTOR(FEMALE)
PIN1 - 05 PURPLE
PIN2 - 77 BROWN
PIN3 - 01B PURPLE/BLACK
PIN4 - n/a
PIN5 - 09F YELLOW
PIN6 - 02 WHITE
NOTE:
PLEASE SEE THE CONNECTION DIAGRAM#(167197) 12AWG-3 CONDUCTOR CABLE WIRE CONNECTIONS.(WIRES 10,02,07A)
TILT SWITCH CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW
AT1 ANGLE TRANS.
LOAD SENSE MODULE
J3
J4
LOAD SENSE CONNECTOR J4-BLACK
PIN 8 - 161 PINK/WHITE
PIN 7 - 162 PINK/PURPLE
PIN 6 - 121 GRAY/RED
PIN 5 - 122 GRAY/YELLOW
PIN 4 - 120 GRAY/BROWN
PIN 3 - 82 BROWN/WHITE
PIN 2 - 119 PURPLE/YELLOW
PIN 1 - 123 WHITE/BROWN
J5
J6
18 AWG REF ONLY
LOAD SENSE CONNECTOR J6-WHITE
PIN 8 - 09 YELLOW
PIN 7 - 13 ORANGE
PIN 6 - 39 BLACK/RED
PIN 5 - 13A ORANGE
PIN 4 - 09B YELLOW
PIN 3 - 39A BLACK/RED
PIN 2 - 162B PINK/PURPLE
PIN 1 - 02 WHITE
BACK VIEW
DRIVE PUMP VALVE
PIN 1 - 15 RED
PIN 2 - 02 WHITE
PIN 3 - 02 GREEN
PIN 4 - 16 BLACK
BATTERY (B-)
00 - WHITE/3 GAUGE AS/16'
CONNECT TO E-PUMP HOUSING
BATTERY (B+)
03 - BLACK 12 GAUGE AS/16'
CONNECT TO E-PUMP POWER-STUD
132"
J3
J4
J5
CONNECTOR J3
PIN 1 - 03A
PIN 2 - 77
PIN 3 - 81
PIN 4 - 84
PIN 5 - 96
PIN 6 - 76
PIN 7 - 74
PIN 8 - 07B
PIN 9 - 22D
PIN 10 - 46
PIN 11 - CAN L
PIN 12 - CAN H
CONNECTOR J4
PIN 1 - 60
PIN 2 - 39A
PIN 3 - 71
PIN 4 - 79
PIN 5 - 78
PIN 6 - 02
PIN 7 - PLUGGED
PIN 8 - 9L
PIN 9 - PLUGGED
PIN 10 - PLUGGED
PIN 11 - PLUGGED
PIN 12 - PLUGGED
CONNECTOR J5
SOCKET 1 - 09B
SOCKET 2 - KEY
SOCKET 3 - B+
SOCKET 4 - 00
SOCKET 5 - PLUG
SOCKET 6 - PLUG
SOCKET 7 - CAN H
SOCKET 8 - CAN L
SOCKET 9 - STD
SOCKET 10 - PLUG
SOCKET 11 - 20
SOCKET 12 - 26
ENGINE BOX CONNECTORS
Wire Numbers and Colour Codes
Relay diagram
M198355AL



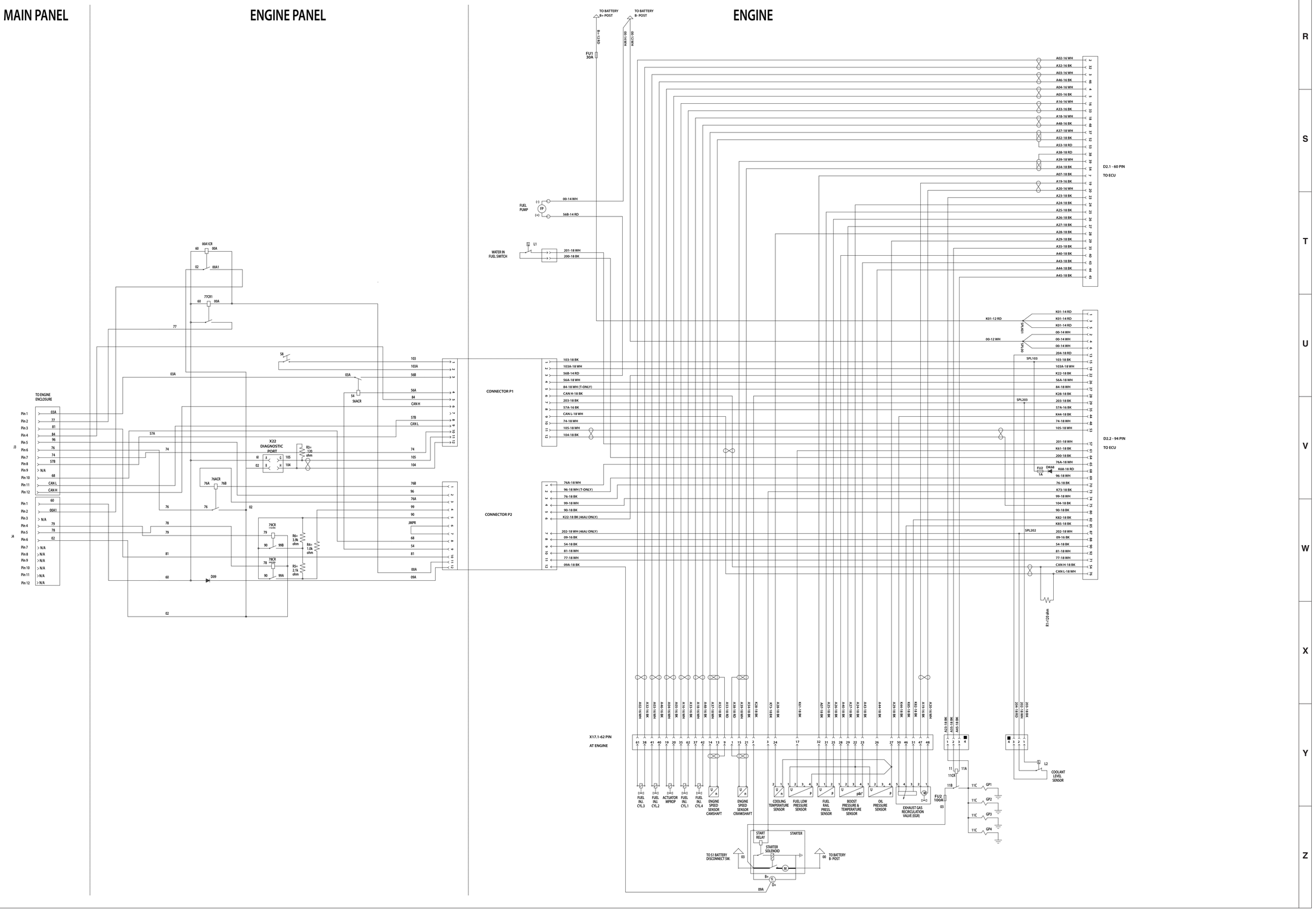
M22459AC

3.64 Base Controls Wiring - CE & AS with Deutz TCD2.2 Engine

3.65 Engine Schematic - Deutz TD2.9L serial number A303 000 957 and above

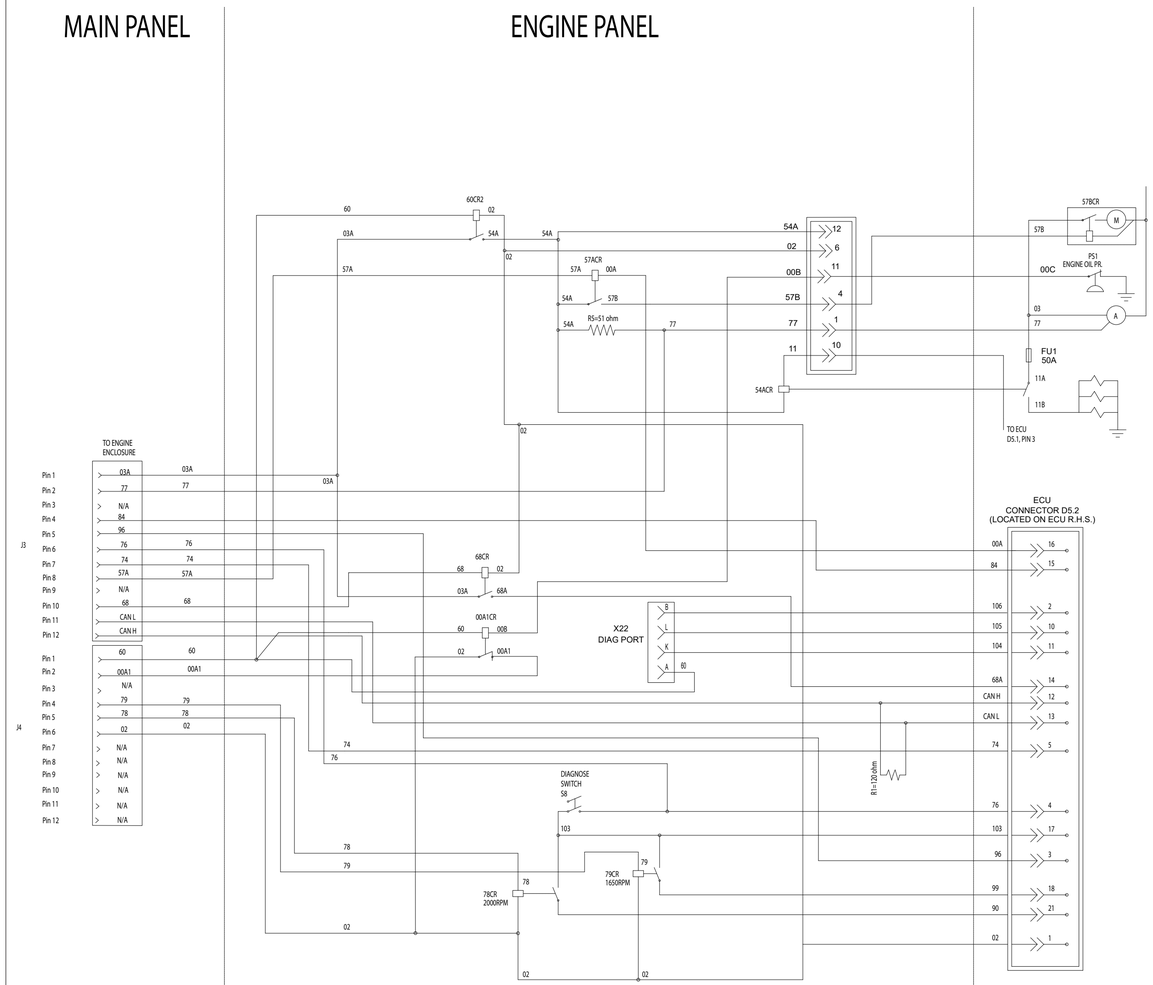


3.66 Engine Schematic - Deutz TD2.9L serial number A303 000 956 and below

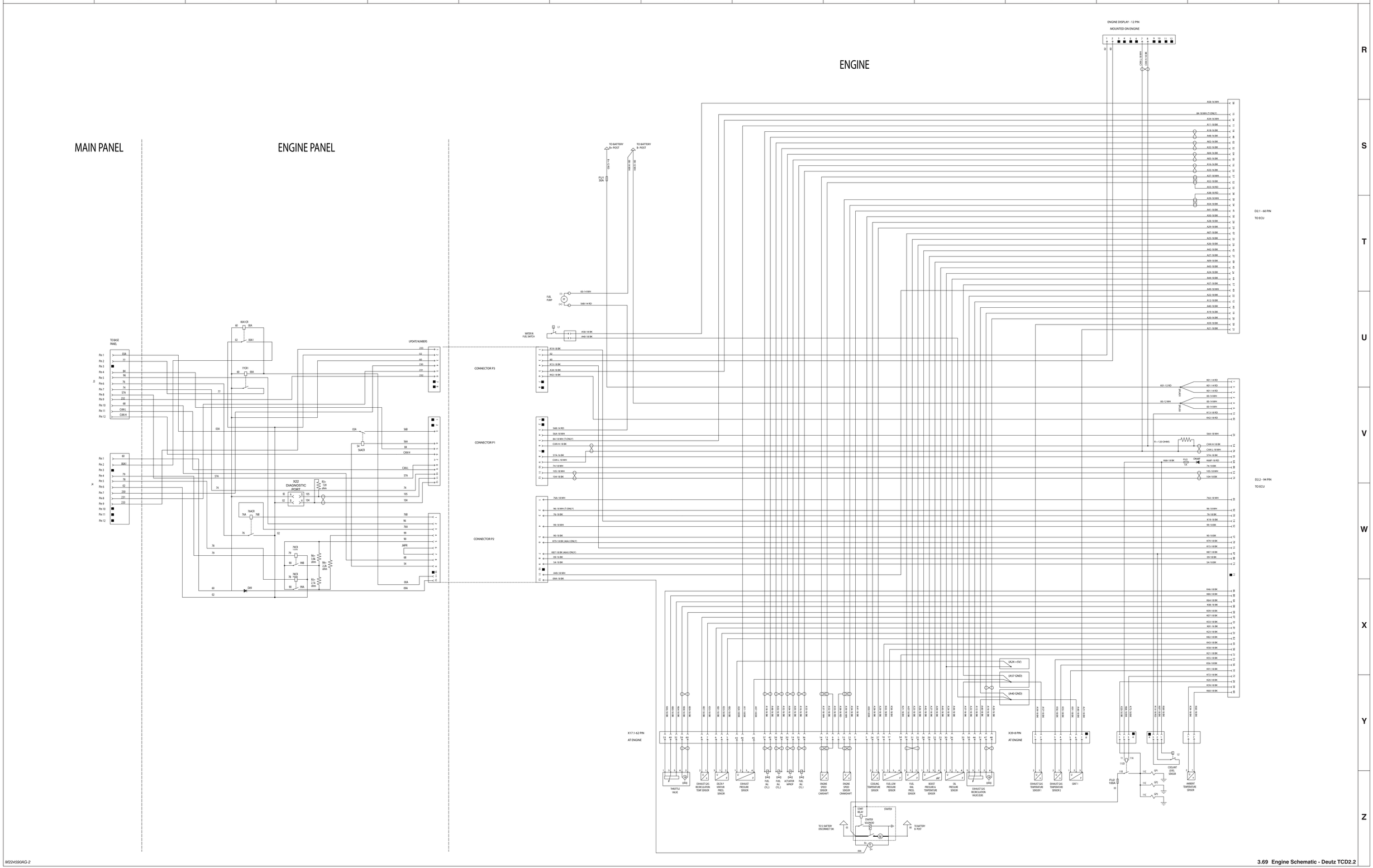


M218403AE-2

3.67 Engine Schematic - Deutz D2011


MAIN PANEL
ENGINE PANEL
TO ENGINE ENCLOSURE
Pin 1 03A
Pin 2 77
Pin 3 N/A
Pin 4 84
Pin 5 96
J3 Pin 6 76
Pin 7 74
Pin 8 57A
Pin 9 N/A
Pin 10 68
Pin 11 CAN L
Pin 12 CAN H
Pin 1 60
Pin 2 00A1
Pin 3 N/A
Pin 4 79
Pin 5 78
J4 Pin 6 02
Pin 7 N/A
Pin 8 N/A
Pin 9 N/A
Pin 10 N/A
Pin 11 N/A
Pin 12 N/A
60CR2
57ACR
RS=51 ohm
68CR
00A1CR
78CR 2000RPM
79CR 1650RPM
DIAGNOSE SWITCH 58
R1=120 ohm
X22 DIAG PORT
57BCR
PS1 ENGINE OIL PR.
FU1 50A
54ACR
TO ECU D5.1, PIN 3
ECU CONNECTOR D5.2 (LOCATED ON ECU R.H.S.)
ENGINE
MOTOR
Kodierung 1
engine code 1
D5/xx.1
X23
Anschlü ß Kunde
female connector with female terminals
Steuerger ät
EMR
control unit EMR
Ger ät
Kodierung 2
equipment code 2
D5/xx.2
Anschlü ß Motorsteckder
connection engine plug
Anschlü ß Geräteseckder
connection equipment plug
Hinweise: (N...)
1. Ger ätebezeichnung nach HB29908 Teil 1, z.B.
2. max. Spulenstrom 400mA ±8, TYCO Siemens Nr.V23132-B2002-A200 oder Bosch Nr. 0 332 002 250
3. Kein DEUTZ Lieferanteil
4. Leitungsquerschnitte nach TPI 0199-63-0206
Notes: (N...)
1. equipment declaration according to HB29908, part 1, e.g.
2. max. coil current 400mA for example TYCO Siemens Nr.V23132-B2002-A200 Bosch Nr. 0 332 002 250
3. not supplied by DEUTZ
4. cross-sections according TPI 0199-63-0206
X17.3.2
X17.3.1
Der weitere Schaltplanverlauf ist auf Blatt2 dargestellt.
The following schematic diagram is pictured on page2.
Hochstromrelais
high-current relay
(30) + U_Batt
(15) + U_Batt
Anschlussplan-Ger äteseite
wiring diagram-equipment
3 - 4 Gl ühstiftkerzen (R1) 3-4 glow plug
oder
1 - 2 Gl ühwendelkerzen (R2) 1-2 glow plug
OPTION
Temperatur Kühlmittel B43 coolant temperature
Drehzahl Nockenwelle B40 engine speed camshaft
Druck Ladeluft B48 charge air pressure
Druck Motor öl B6 engine oil pressure
Druckschalter Motor öl F1 engine oil pressure switch
E.M.R. Stellglied Y3 EMR actuator
OPTION
Anschluss Motor öldruck
Anschluss Druckschalter Wartung Luftfilter
Anschluss B Generator W
Anschluss B Generator D+
Anschluss B Starter Kl. 50
Anschluss B Druckschalter Motorö l
Anschluss B Druckschalter Wartung Luftfilter
Kunde
Motor
Anschluss
Anschluss
Anschluss

3.69 Engine Schematic - Deutz TCD2.2



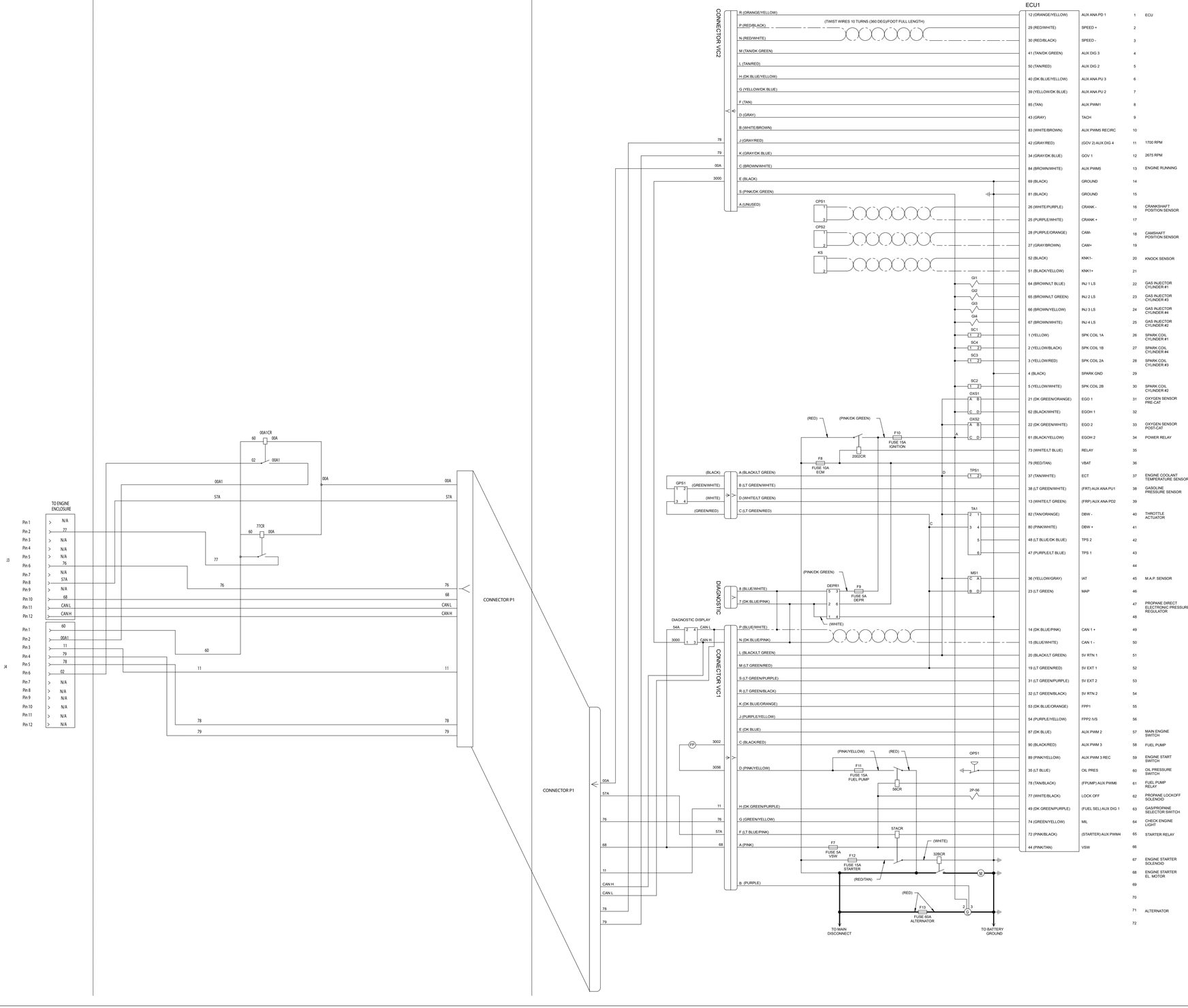
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

MAIN PANEL

ENGINE PANEL

ENGINE

KUBOTA EFI DUAL FUEL ENGINE

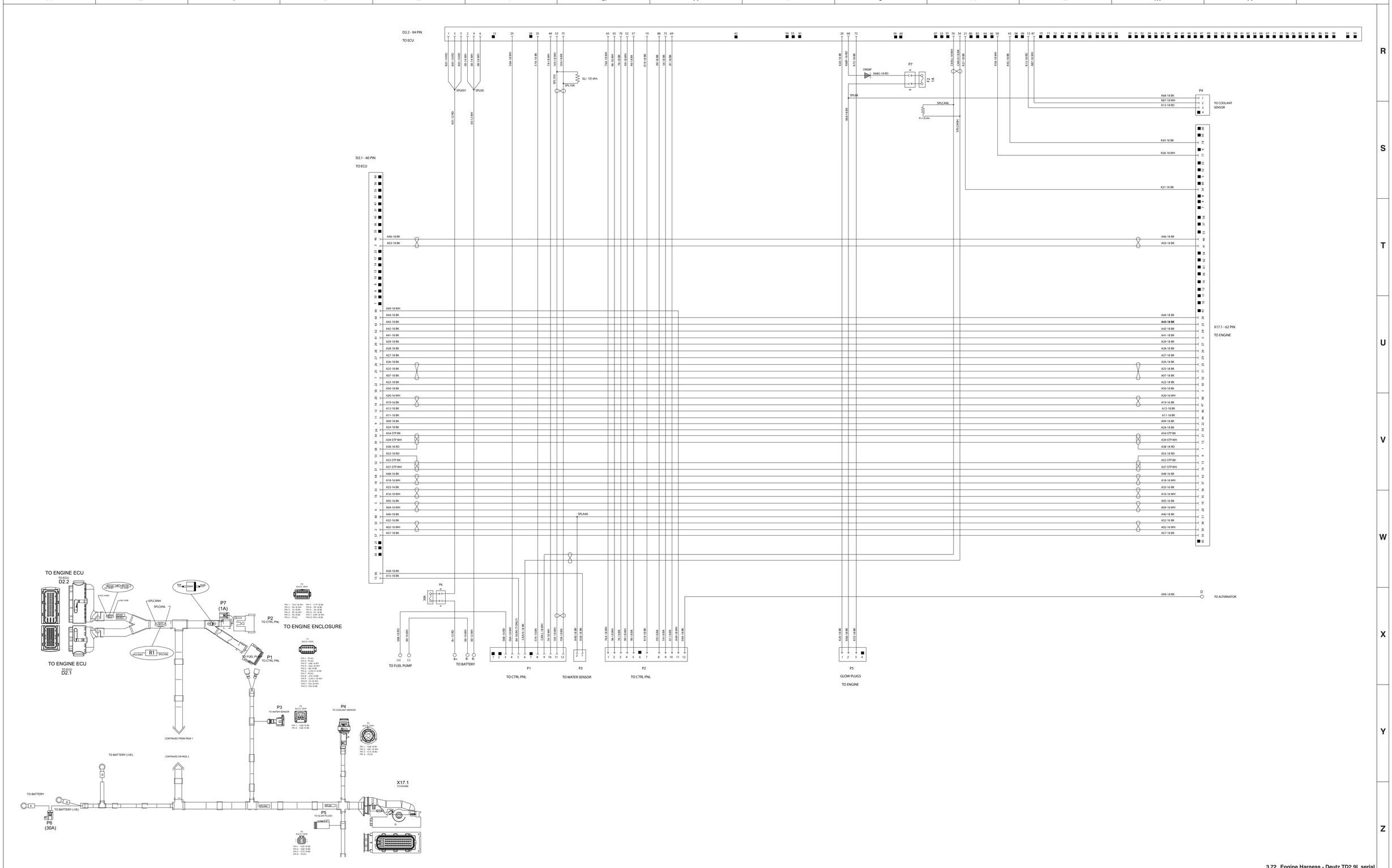


M218403AE-4

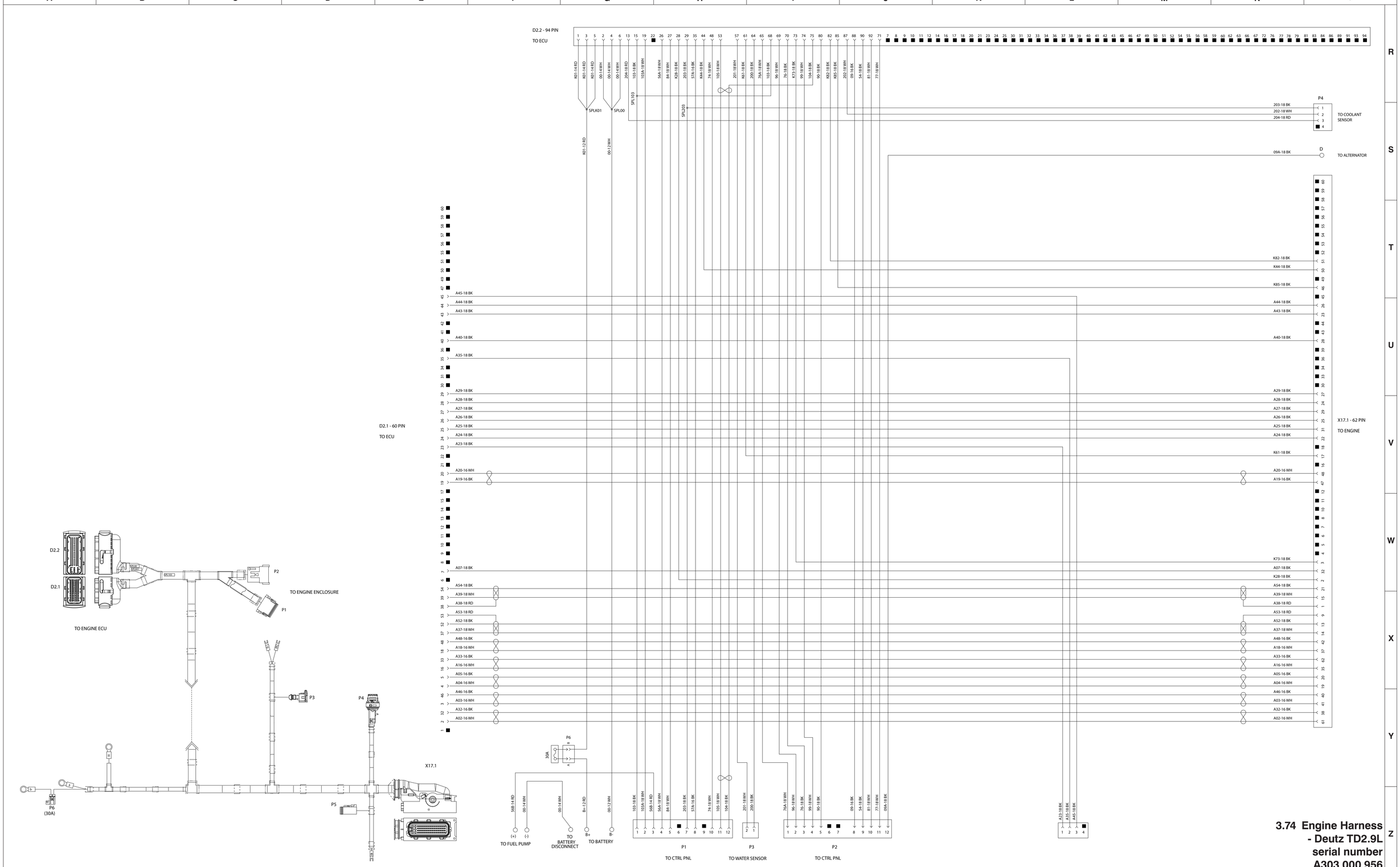
3.71 Engine Schematic - Kubota WG3800

R S T U V W X Y Z

3.72 Engine Harness - Deutz TD2.9L serial number A303 000 957 and above



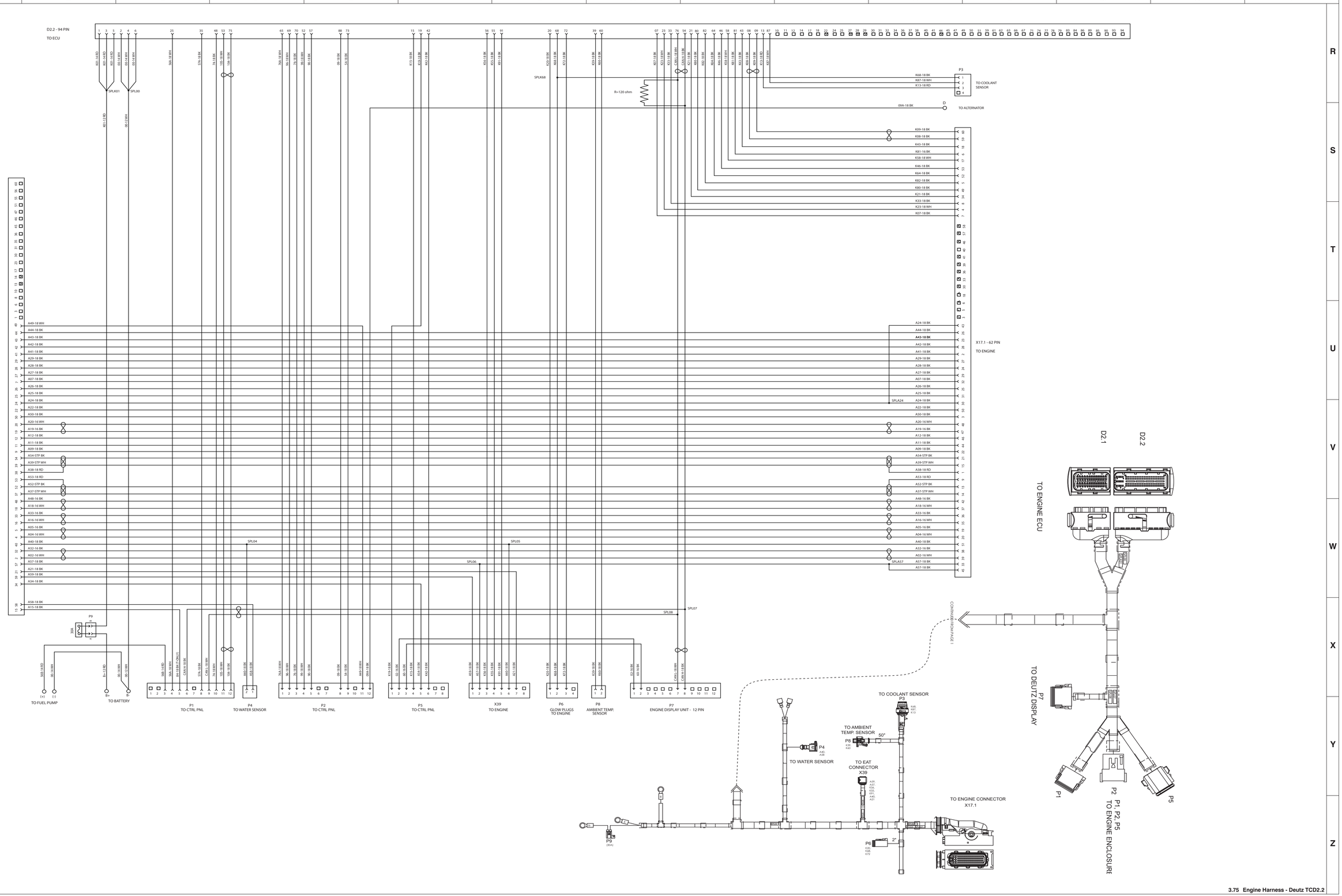
3.73 Engine Harness - Deutz TD2.9L serial number A303 000 956 and below

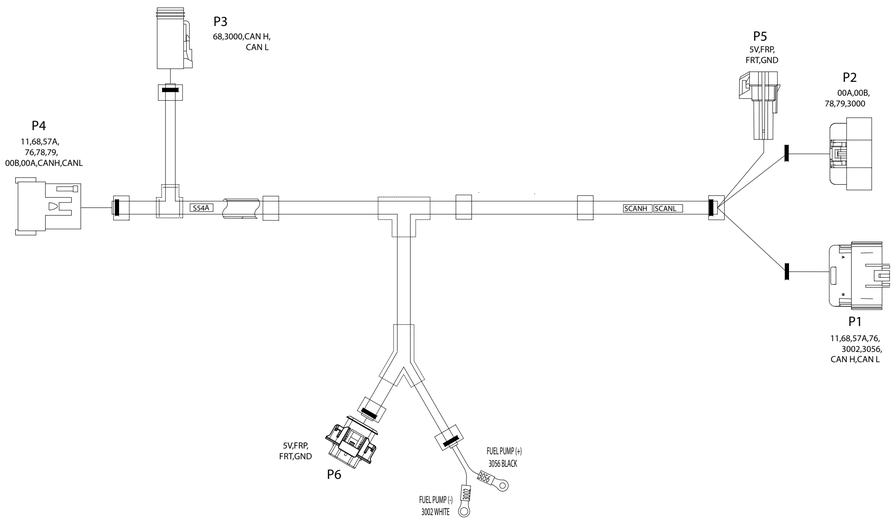


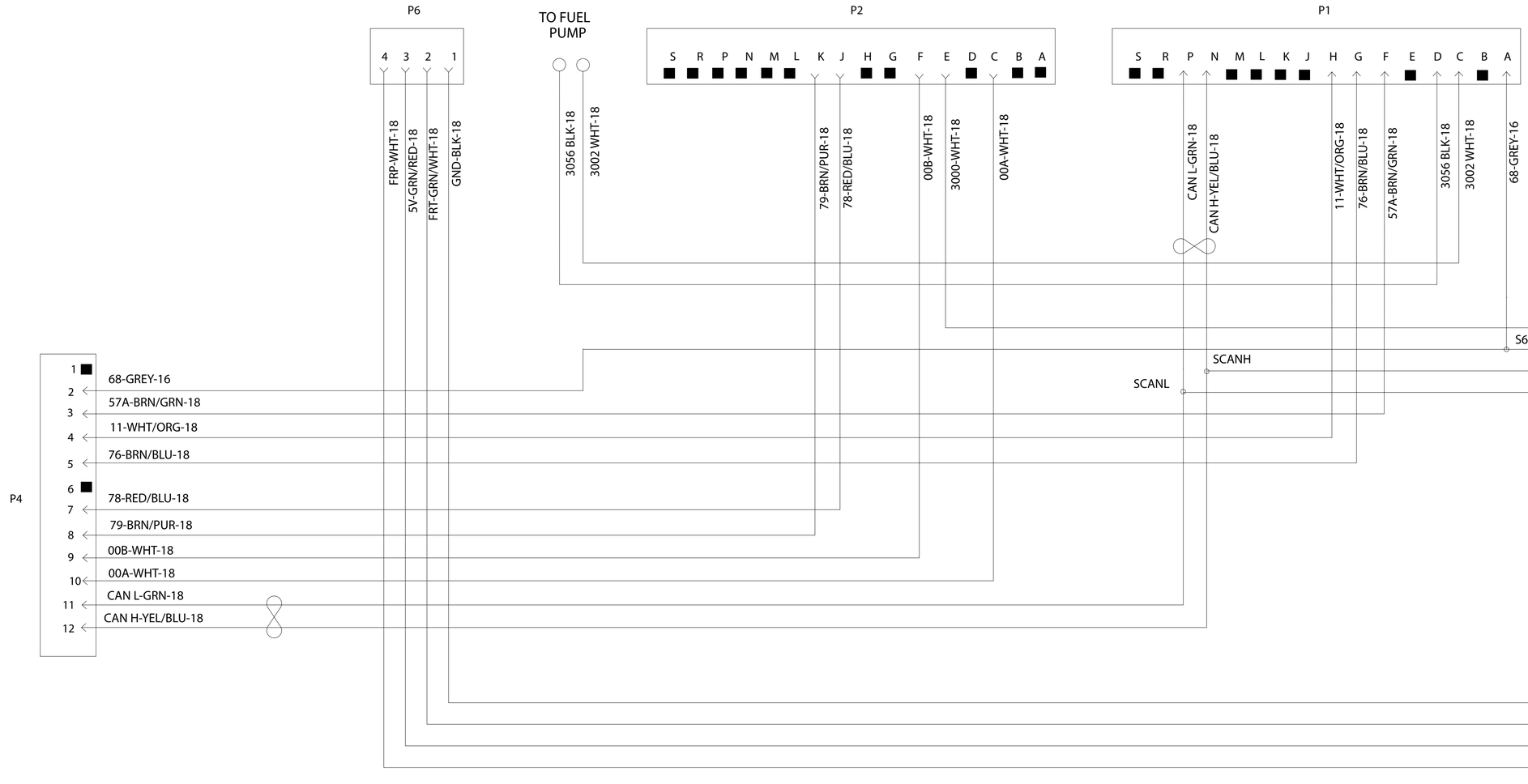
3.74 Engine Harness - Deutz TD2.9L serial number A303 000 956 and below

M198132AD

3.75 Engine Harness - Deutz TCD2.2




P3
68,3000,CAN H,
CAN L
P5
5V,FRP,
FRT,GND
P2
00A,00B,
78,79,3000
P4
11,68,57A,
76,78,79,
00B,00A,CANH,CANL
S54A
SCANH SCANL
P1
11,68,57A,76,
3002,3056,
CAN H,CAN L
5V,FRP,
FRT,GND
P6
FUEL PUMP (+)
3056 BLACK
3056
FUEL PUMP (-)
3002 WHITE
3002


P6
4 3 2 1
FRP-WHT-18
5V-GRN/RED-18
FRT-GRN/WHT-18
GND-BLK-18
TO FUEL PUMP
3056 BLK-18
3002 WHT-18
P2
S R P N M L K J H G F E D C B A
79-BRN/PUR-18
78-RED/BLU-18
00B-WHT-18
3000-WHT-18
00A-WHT-18
P1
S R P N M L K J H G F E D C B A
CAN L-GRN-18
CAN H-YEL/BLU-18
11-WHT/ORG-18
76-BRN/BLU-18
57A-BRN/GRN-18
3056 BLK-18
3002 WHT-18
68-GREY-16
P3
3000-WHT-16
68-GREY-18
CAN H-YEL/BLU-18
CAN L-GRN-18
1
2
3
4
5
6
S68
SCANH
SCANL
P4
1 68-GREY-16
2 57A-BRN/GRN-18
3 11-WHT/ORG-18
4 76-BRN/BLU-18
5
6 78-RED/BLU-18
7 79-BRN/PUR-18
8 00B-WHT-18
9 00A-WHT-18
10 CAN L-GRN-18
11 CAN H-YEL/BLU-18
12
P5
GND-BLK-18
FRT-GRN/WHT-18
5V-GRN/RED-18
FRP-WHT-18
A
B
C
D

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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 Inoperative

All Controls Inoperative from Platform and Base:

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 S2.	**Check continuity. Replace if defective.**
10. Open or defective key select switch S2.	**Close switch. Replace if defective.**
11. Loose or broken wire #60 from base terminal block to relay 60CR.	**Check continuity. Replace if defective.**
12. Loose or broken wire #07 from base emergency stop switch S3 to relay 60CR.	**Check continuity. Replace if defective.**
13. Loose or broken wire #02 from relay 60CR to base terminal block.	**Check continuity. Replace if defective.**
14. Defective relay 60CR.	**Check relay. Replace if defective.**
15. Loose or broken wire #9 from relay 60CR to base terminal block.	**Check continuity. Replace if defective.**
16. Loose or broken wire #02 from base terminal block to circuit breaker CB2.	**Check continuity. Replace if defective.**
17. Circuit breaker CB2 tripped or defective.	**Reset breaker, check for defective wiring. Replace if defective.**
18. Loose or broken wire #00 from circuit breaker CB2 to battery negative.	**Check continuity. Replace if defective.**

All Controls Inoperative from Base Console:

NOTE

Functions may be disabled by the dual load zone system and/or overload system if equipped. Please first ensure the boom is fully retracted and there are no faults in the dual load/overload system.

1. Defective ignition/enable switch S5.	**Check continuity through switch when activated. Replace if defective.**
2. Loose or broken wire #10A from ignition/enable switch S5 to base terminal block.	**Check continuity. Replace if defective.**
3. Open or defective diode D10A.	**Check diode. Replace if defective.**
4. Loose or broken wire #20 from diode D10A to base terminal block.	**Check continuity. Replace if defective.**
5. Missing or broken terminal block jumper between wire #20 and #21.	**Check for jumper. Replace if missing or broken.**

NOTE

The jumper is removed if the MEWP is equipped with a generator option.

6. Loose or broken wire #21 from base terminal block to relay 21CR.	**Check continuity. Replace if defective.**
7. Loose or broken wire #21 from base terminal block to relay 21CR.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 from base terminal block to relay 21CR.	**Check continuity. Replace if defective.**
9. Defective relay 21CR.	**Check relay. Replace if defective.**
10. Loose or broken wire #21A from relay 21CR to main harness plug pin #3.	**Check continuity. Replace if defective.**
11. Loose or broken wire #21A from main harness plug pin #3 to dump valve 2H-21A.	**Check continuity. Replace if defective.**
12. Loose or broken wire #02 from dump valve 2H-21A to main harness plug.	**Check continuity. Replace if defective.**
13. Defective dump valve coil 2H-21A.	**Check continuity and resistance through coil. Replace if defective.**
14. Loose or broken wire #10A from base terminal block to 01ACR1 relay.	**Check continuity. Replace if defective.**
15. Defective relay 01ACR1.	**Check relay. Replace if defective.**
16. Loose or broken wire #10B from 01ACR1 relay to resistor R1.	**Check continuity. Replace if defective.**
17. Defective resistor R1.	**Check resistor, replace if defective.**

All Controls Inoperative from Platform Console:

NOTE

Functions may be disabled by the dual load zone system and/or overload system if equipped. Please first ensure the boom is fully retracted and there are no faults in the dual load/overload system.

1. Open or defective emergency stop switch S4.	**Pull emergency switch out. Check continuity through switch. Replace if defective.**
2. Loose or broken wire #04A from emergency stop switch S4 to platform start switch S9.	**Check continuity. Replace if defective.**
3. Loose or broken wire #04 emergency stop switch S4 to platform terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #04B from platform terminal block to footswitch S11.	**Check continuity. Replace if defective.**
5. Open or defective footswitch S11.	**Check continuity through switch while activating footswitch function between wires #04 and #08A. If no continuity found replace switch.**
6. Loose or broken wire #04 from platform terminal block to valve driver connector J1 pin #1, 2, 3, and 4.	**Check continuity. Replace if defective.**
7. Loose or broken wire #02 from platform terminal block to valve driver connector J1 pin #10, 11, 12, and 13.	**Check continuity. Replace if defective.**
8. Loose or broken wire #04 from platform terminal block to diode D04.	**Check continuity. Replace if defective.**
9. Open or defective diode D04.	**Check diode. Replace if defective.**
10. Loose or broken wire #60 from diode D04 to platform terminal block.	**Check continuity. Replace if defective.**
11. Loose or broken wire #60 from platform terminal block to plug B pin #16 in platform control console.	**Check continuity. Replace if defective.**
12. Loose or broken wire #60 in boom cable B or its connectors.	**Check for continuity between pins #16 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
13. Loose or broken wire #60 from plug B pin #16 to base terminal block.	**Check continuity. Replace if defective.**
14. Loose or broken wire #02 from platform terminal block to base terminal block.	**Check continuity. Replace if defective.**

4.2-2 No Power

No Power to Platform:

1. Open or defective key select switch S2.	**Select platform position on key switch. Check continuity through base key switch. Replace if defective.**
2. Loose or broken wire #07A from key select switch S2 to platform emergency stop switch S4.	**Check continuity. Replace if defective.**
3. Open or defective platform emergency stop switch S4.	**Check switch. Replace if defective.**
4. Loose or broken wire #04A from platform emergency stop switch S4 to Ignition switch S9.	**Check continuity. Replace if defective.**

No Power to Base:

1. Open or defective base key switch S2.	**Select base position on key switch. Check continuity through base key switch. Replace if defective.**
2. Loose or broken wire #12 from base key switch S2 to Ignition/E-pump switch S4.	**Check continuity. Replace if defective.**
3. Open or defective emergency stop switch S4.	**Check switch is in on position. Check continuity through switch. Replace if defective.**
4. Loose or broken wire #10 from emergency stop switch S4 to base ignition switch S5.	**Check continuity. Replace if defective.**
5. Open or defective Ignition/E-pump (enable) switch S5.	**Check switch. Replace if defective.**

4.2-3 Engine will not Crank

Engine will not Crank from Base:

NOTE

The engine will not crank with the footswitch depressed or the platform overloaded.

1. Loose or broken wire from base start switch S5 to 57DCR pin 30.	**Check continuity. Replace if defective.**
2. Loose or broken wire 57B from 57DCR pin 87 to Engine electrical box connector J3 pin 8	**Check continuity. Replace if defective.**
3. Loose or broken wire 09 from base terminal block to 57DCR pin 86	**Check continuity. Replace if defective.**
4. Loose, broken or missing jumper 5 on J5 plug (no telematics only)	**Check continuity. Replace if defective.**

5. Loose or broken wire 57B from Engine electrical box connector J3 pin 8 to X17 engine connector pin 3.	**Check continuity. Replace if defective.**
6. Loose or broken wire 57B from X17 engine connector pin 3 to start solenoid 57BCR.	**Check continuity. Replace if defective.**
7. Loose or broken start cable 03 from disconnect switch S1 to start solenoid 57BCR.	**Check continuity. Replace if defective.**
8. Defective start solenoid 57BCR	**Check continuity. Replace if defective.**
9. Defective starter motor	**Check continuity. Replace if defective.**

Engine will not Crank from Platform:

1. Loose or broken wire 57 from S5 upper ignition switch to pin J2.30 on SCM valve driver.	**Check continuity. Replace if defective.**
2. Loose or broken wire 57A from SCM valve driver pin J3.9 to Relay 57DCR.	**Check relay. Replace if defective.**
3. Loose or broken wire 57B from engine box connector J3 pin 8 to X17 engine connector pin 3.	**Check continuity. Replace if defective.**
4. Loose or broken wire 57B from X17 to start solenoid 57BCR.	**Check continuity. Replace if defective.**
5. Loose or broken starter cable #03 from disconnect switch S1 to start solenoid 57BCR.	**Check continuity. Replace if defective.**
6. Defective start solenoid 57BCR.	**Check solenoid. Replace if defective.**
7. Defective starter motor.	**Check starter motor. Replace if defective.**

Engine Will Not Crank from Platform or Base when equipped with Elevate/Trackunit Telematics Ready:

NOTE

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

1. Loose or broken B+ wire from battery + to telematics pin 3.	**Check continuity. Replace if defective.**
2. Loose or broken B- wire 00 from battery - to telematics pin 4.	**Check continuity. Replace if defective.**
3. Loose or broken wire 09 from base terminal block to 57DCR.	**Check continuity. Replace if defective.**
4. Loose or broken wire 57A from S5 ignition switch to 57DCR pin 30.	**Check continuity. Replace if defective.**
5. If telematics device is not installed: loose, broken or missing Jumper JMPR1 from 57DCR pin 85 to ground 00.	**Check continuity. Replace if defective or missing.**

6. Loose or broken wire 57D from telematics pin 9 to 57DCR pin 85.	**Check continuity. Replace if defective.**
7. Missing output from telematics pin 9.	**Check for ground on pin 9. If no ground, contact the machine owner.**
8. Defective relay 57DCR.	**Check relay. Replace if defective.**
9. Loose or broken wire 57B from 57DCR pin 87 to engine starter contactor coil.	**Check continuity. Replace if defective.**
10. Defective telematics module.	**Check telematics assembly; repair or replace as required.**
11. Loose or broken wire #14 from boom switch S12 to base terminal block.	**Check continuity. Replace if defective.**
12. Loose or broken wire #14 from base terminal block to turret harness plug pin #4.	**Check continuity. Replace if defective.**
13. Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14.	**Check continuity. Replace if defective.**
14. Loose or broken wire #02 from turret harness plug to boom up valve 4H-14.	**Check continuity. Replace if defective.**
15. Defective boom up coil 4H-14.	**Check continuity and resistance through coil. Replace if defective.**

4.2-4 No Boom Up or Down

No Boom Up from 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 the joystick test procedure in section 5.**
4. Loose or broken wire “Y” from joystick controller to J3 pin #16 of valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #5 of the valve driver to wire #14.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #14 from valve driver J2 pin #5 to plug A pin #7 in platform control console.	**Check continuity. Replace if defective.**

8. Loose or broken wire #14 in boom cable A or its connectors.	**Check for continuity between pins #7 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #14 from base connector plug A pin #7 to base terminal block.	**Check continuity. Replace if defective.**

No Boom Down from Base Console:

NOTE

Boom Down may be disabled by the dual load zone system. Please first ensure the boom is fully retracted and there are no faults in the dual load system.

1. Loose or broken wire #10C from resistor R1 to boom switch S12.	**Check continuity. Replace if defective.**
2. Defective boom switch S12.	**Check continuity through switch while activating up function between wires #10A and #13. Replace switch if no continuity.**
3. Loose or broken wire #13 from boom switch S12 to base terminal block.	**Check continuity. Replace if defective.**
	Follow the steps in *No Boom Down from Base or Platform Consoles: on page 123*.

No Boom Down from Platform Console:

NOTE

Functions may be disabled by the dual load zone system and/or overload system if equipped. Please first ensure the boom is fully retracted and there are no faults in the dual load/overload system.

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 J3 pin #16 of valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #6 of the valve driver to wire #14	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #13 from valve driver J2 pin #6 to plug A pin #6 in platform control console.	**Check continuity. Replace if defective.**

8. Loose or broken wire #13 in boom cable A or its connectors.	**Check for continuity between pins #6 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #13 from base connector plug A pin #6 to base terminal block.	**Check continuity. Replace if defective.**
	Follow steps on *No Boom Down from Base or Platform Consoles: on page 123.*
No Boom Down from Base or Platform Consoles:	
1. Loose or broken wire #13 from base terminal block to load sense/dual load zone module white connector J4 pin 7.	**Check continuity. Replace if defective.**
2. No output on load sense/dual load zone module white connector J4 pin 5 to wirer 13A.	**Check pin #5 for 12 volts. If no voltage present when operating down function check section 5 for module information.**
3. Loose or broke wire #13A from load sense/dual load zone module white connector J4 pin 5 to harness plug pin #3.	**Check continuity. Replace if defective.**
4. Loose or broke wire #13A from harness plug pin #3 to boom down valve 4H-13A.	**Check continuity. Replace if defective.**
5. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13A.	**Check continuity. Replace if defective.**
6. Defective boom down coil 4H-13A.	**Check continuity and resistance through coil. Replace if defective.**

4.2-5 No Riser Up or Down

No Riser Up from Base Console:	
1. Loose or broken wire #10C from resistor R1 to riser switch S25.	**Check continuity. Replace if defective.**
2. Defective riser switch S25.	**Check continuity through switch while activating up function between wires #10C and #31. Replace switch if no continuity.**
3. Loose or broken wire #31 from riser switch S25 to base terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #31 from base terminal block to turret harness plug pin #8.	**Check continuity. Replace if defective.**
5. Loose or broken wire #31 from turret harness plug pin #8 to riser up valve 4H-31.	**Check continuity. Replace if defective.**
6. Loose or broken wire #02 from turret harness plug to riser up valve 4H-31.	**Check continuity. Replace if defective.**
7. Defective riser up coil 4H-31.	**Check continuity and resistance through coil. Replace if defective.**
No Riser Up from Platform Console:	
1. Loose or broken wire #04 from platform terminal block to joystick controller A3.	**Check continuity. Replace if defective.**
2. Loose or broken wire #02 from platform terminal block to joystick controller A3.	**Check continuity. Replace if defective.**
3. No output on R-Signal joystick controller A3.	**Refer to joystick test procedure in section 5.**
4. Loose or broken R-signal wire from joystick controller to J3 pin #19 valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #4 of the valve driver to wire #31.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #31 from valve driver J2 pin #4 to plug A pin #13 in platform control console.	**Check continuity. Replace if defective.**
8. Loose or broken wire #31 in boom cable A or its connectors.	**Check for continuity between pins #13 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #31 from base connector plug A pin #13 to base terminal block.	**Check continuity. Replace if defective.**
No Riser Down from Base Console:	

1. Loose or broken wire #10C from resistor R1 to resistor R3.	**Check continuity. Replace if defective.**
2. Defective resistor R3.	**Check resistor, replace if defective.**
3. Loose or broken wire #10E from resistor R3 to riser switch S25.	**Check continuity. Replace if defective.**
4. Defective riser switch S25.	**Check continuity through switch while activating up function between wires #10E and #30. Replace switch if no continuity.**
5. Loose or broken wire #30 from riser switch S25 to base terminal block.	**Check continuity. Replace if defective.**
6. Loose or broken wire #30 from base terminal block to turret harness plug pin #7.	**Check continuity. Replace if defective.**
7. Loose or broken wire #30 from turret harness plug pin #7 to riser down valve 4H-30.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 from turret harness plug to riser down valve 4H-30.	**Check continuity. Replace if defective.**
9. Defective riser down coil 4H-30.	**Check continuity and resistance through coil. Replace if defective.**
No Riser Down from Platform Console:	
1. Loose or broken wire #04 from platform terminal block to joystick controller A3.	**Check continuity. Replace if defective.**
2. Loose or broken wire #02 from platform terminal block to joystick controller A3.	**Check continuity. Replace if defective.**
3. No output on R-Signal joystick controller A3.	**Refer to joystick test procedure in section 5.**
4. Loose or broken R-signal wire from joystick controller to J3 pin #19 valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #3 of the valve driver to wire #30.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #30 from valve driver J2 pin #3 to plug A pin #12 in platform control console.	**Check continuity. Replace if defective.**
8. Loose or broken wire #30 in boom cable A or its connectors.	**Check for continuity between pins #12 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #30 from base connector plug A pin #12 to base terminal block.	**Check continuity. Replace if defective.**

4.2-6 No Turret Rotate

No Turret Rotate Left from Base Console:

1. Loose or broken wire #10C from resistor R1 to resistor R2.	**Check continuity. Replace if defective.**
2. Defective resistor R2.	**Check resistor, replace if defective.**
3. Loose or broken wire #10D from resistor R3 to riser switch S13.	**Check continuity. Replace if defective.**
4. Loose or broken wire #33 from base terminal block to turret harness plug pin #10.	**Check continuity. Replace if defective.**
5. Loose or broken wire #33 from turret harness plug pin #10 to turret rotate right valve 4H-33.	**Check continuity. Replace if defective.**
6. Loose or broken wire #32 from base terminal block to turret harness plug pin #9.	**Check continuity. Replace if defective.**
7. Loose or broken wire #32 from turret harness plug pin #9 to turret rotate left valve 4H-32.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 from turret harness plug to boom up valve 4H-32.	**Check continuity. Replace if defective.**
9. Defective turret rotate left coil 4H-32.	**Check continuity and resistance through coil. Replace if defective.**
No Turret Rotate Left from 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 X-axis of joystick controller A1.	**Refer to joystick test procedure in section 5.**
4. Loose or broken wire “X” from joystick controller to J3 pin #15 of valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #13 of the valve driver to wire #32.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #32 from valve driver J2 pin #13 to plug A pin #14 in platform control console.	**Check continuity. Replace if defective.**
8. Loose or broken wire #32 in boom cable A or its connectors.	**Check for continuity between pins #14 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #32 from base connector plug A pin #14 to base terminal block.	**Check continuity. Replace if defective.**
No Turret Rotate Right from Base Console:	

1. Loose or broken wire #10C from resistor R1 to resistor R2.	**Check continuity. Replace if defective.**
2. Defective resistor R2.	**Check resistor, replace if defective.**
3. Loose or broken wire #10D from resistor R3 to turret rotate right switch S13.	**Check continuity. Replace if defective.**
4. Defective turret rotate right switch S13.	**Check continuity through switch while activating up function between wires #10D and #33. Replace switch if no continuity.**
5. Loose or broken wire #33 from turret rotate right switch S13 to base terminal block.	**Check continuity. Replace if defective.**
6. Loose or broken wire #33 from base terminal block to turret harness plug pin #10.	**Check continuity. Replace if defective.**
7. Loose or broken wire #33 from turret harness plug pin #10 to turret rotate right valve 4H-33.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 from turret harness plug to turret rotate right valve 4H-33.	**Check continuity. Replace if defective.**
9. Defective turret rotate right coil 4H-32.	**Check continuity and resistance through coil. Replace if defective.**
No Turret Rotate Right from 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 X-axis of joystick controller A1.	**Refer to joystick test procedure in section 5.**
4. Loose or broken wire “X” from joystick controller to J3 pin #15 of valve driver.	**Check continuity. Replace if defective.**
5. No output on J3 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. No output on J2 pin #24 of the valve driver to wire #32.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
7. Loose or broken wire #33 from valve driver J2 pin #24 to plug A pin #15 in platform control console.	**Check continuity. Replace if defective.**
8. Loose or broken wire #33 in boom cable A or its connectors.	**Check for continuity between pins #15 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
9. Loose or broken wire #33 from base connector plug A pin #15 to base terminal block.	**Check continuity. Replace if defective.**

4.2-7 No Telescope

No Telescope In from Base Console:	
1. Loose or broken wire #10C from resistor R1 to boom switch S14.	**Check continuity. Replace if defective.**
2. Defective telescope switch S14.	**Check continuity through switch while activating up function between wires #10C and #38. Replace switch if no continuity.**
3. Loose or broken wire #38 from telescope switch S14 to base terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #38 from base terminal block to turret harness plug pin #13.	**Check continuity. Replace if defective.**
5. Loose or broken wire #38 from turret harness plug pin #13 to telescope in valve 4H-38.	**Check continuity. Replace if defective.**
6. Loose or broken wire #02 from turret harness plug to telescope in valve 4H-38.	**Check continuity. Replace if defective.**
7. Defective telescope in coil 4H-38.	**Check continuity and resistance through coil. Replace if defective.**
No Telescope In from 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 function between wires #4 and #38A. Replace switch if no continuity.**
3. Loose or broken wire 38A from S18 to J2 pin #21 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #9 of the valve driver to wire #38.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire #38 from valve driver J2 pin #9 to plug B pin #8 in platform control console.	**Check continuity. Replace if defective.**
7. Loose or broken wire #38 in boom cable B or its connectors.	**Check for continuity between pins #8 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
8. Loose or broken wire #38 from base connector plug B pin #8 to base terminal block.	**Check continuity. Replace if defective.**
No Telescope Out from Base Console:	

NOTE

Telescope Out may be disabled by the dual load zone system. Please first ensure the boom is fully retracted and there are no faults in the dual load system.

1. Loose or broken wire #10C from resistor R1 to telescope switch S14.	**Check continuity. Replace if defective.**
2. Defective telscope switch S14.	**Check continuity through switch while activating up function between wires #10C and #39. Replace switch if no continuity.**
3. Loose or broken wire #39 from boom switch S14 to base terminal block.	**Check continuity. Replace if defective**
	Follow steps on *No Boom Extend from Base or Platform Consoles: on page 129.*

No Telescope Out from 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 function between wires #4 and #38A. Replace switch if no continuity.**
3. Loose or broken wire 39A from S18 to J2 pin #33 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #10 of the valve driver to wire #39.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire #39 from valve driver J2 pin #10 to plug B pin #9 in platform control console.	**Check continuity. Replace if defective.**
7. Loose or broken wire #39 in boom cable B or its connectors.	**Check for continuity between pins #9 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
8. Loose or broken wire #39 from base connector plug B pin #9 to base terminal block.	**Check continuity. Replace if defective.** **Follow steps on** *No Boom Extend from Base or Platform Consoles: on page 129.*

No Boom Extend from Base or Platform Consoles:

1. Loose or broken wire #39 from base terminal block to load sense/dual load zone module white connector J4 pin 6.	**Check continuity. Replace if defective.**
2. No output on load sense/dual load zone module white connector J4 pin 3 to wirer 39A.	**Check pin #5 for 12 volts. If no voltage present when operating down function check section 5 for module information.**
3. Loose or broke wire #39A from load sense/dual load zone module white connector J4 pin 3 to harness plug pin #13.	**Check continuity. Replace if defective.**
4. Loose or broke wire #39A from harness plug pin #13 to boom extend valve 4H-39A.	**Check continuity. Replace if defective.**
5. Loose or broken wire #02 from turret harness plug to boom extend valve 4H-39A.	**Check continuity. Replace if defective.**
6. Defective boom extend coil 4H-39A.	**Check continuity and resistance through coil. Replace if defective.**

4.2-8 No Platform Level

No Platform Level Up from Base Console:	
1. Loose or broken wire #10C from resistor R1 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 #10C and #41. Replace switch if no continuity.**
3. Loose or broken wire #41 from platform level switch S15 to base terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #41 from base terminal block to turret harness plug pin #16.	**Check continuity. Replace if defective.**
5. Loose or broken wire #38 from turret harness plug pin #16 to platform up valve 4H-41.	**Check continuity. Replace if defective.**
6. Loose or broken wire #02 from turret harness plug to platform up valve 4H-41.	**Check continuity. Replace if defective.**
7. Defective platform up coil 4H-41.	**Check continuity and resistance through coil. Replace if defective.**
No Platform Level Up from 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 function between wires #4 and #41A. Replace switch if no continuity.**
3. Loose or broken wire 41A from S19 to J2 pin #22 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J3 pin #23 of the valve driver to wire #41.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire #41 from valve driver J3 pin #23 to plug B pin #11 in platform control console.	**Check continuity. Replace if defective.**
7. Loose or broken wire #41 in boom cable B or its connectors.	**Check for continuity between pins #11 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
8. Loose or broken wire #41 from base connector plug B pin #11 to base terminal block.	**Check continuity. Replace if defective.**
No Platform Level Down from Base Console:	

1. Loose or broken wire #10C from resistor R1 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 #10C and #40. Replace switch if no continuity.**
3. Loose or broken wire #40 from platform level switch S15 to base terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #40 from base terminal block to turret harness plug pin #15.	**Check continuity. Replace if defective.**
5. Loose or broken wire #38 from turret harness plug pin #16 to platform down valve 4H-40.	**Check continuity. Replace if defective.**
6. Loose or broken wire #02 from turret harness plug to platform down valve 4H-40.	**Check continuity. Replace if defective.**
7. Defective platform down coil 4H-40.	**Check continuity and resistance through coil. Replace if defective.**
No Platform Level Down from 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 function between wires #4 and #40A. Replace switch if no continuity.**
3. Loose or broken wire 40A from S19 to J2 pin #26 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J3 pin #12 of the valve driver to wire #40.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire #40 from valve driver J3 pin #12 to plug B pin #10 in platform control console.	**Check continuity. Replace if defective.**
7. Loose or broken wire #40 in boom cable B or its connectors.	**Check for continuity between pins #10 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
8. Loose or broken wire #40 from base connector plug B pin #10 to base terminal block.	**Check continuity. Replace if defective.**

4.2-9 No Jib Up or Down

No Jib Up from Base:

1. Loose or broken wire #10C from resistor R1 to jib switch S17.	**Check continuity. Replace if defective.**
2. Defective jib switch S17.	**Check continuity through switch while activating up function between wires #10C and #35B. Replace switch if no continuity.**
3. Loose or broken wire #35B from jib switch S17 to plug A pin 17.	**Check continuity. Replace if defective.**
4. Loose or broken wire #35B in boom cable A or its connectors.	**Check continuity. Replace if defective.**
5. Loose or broken wire #35B from plug A pin #17 to platform terminal block.	**Check continuity. Replace if defective.**
6. Loose or broken wire #35B from platform terminal block to jib up valve 4H-35B.	**Check continuity. Replace if defective.**
7. Loose or broken wire #02 from platform terminal block to jib up valve 4H-35B.	**Check continuity. Replace if defective.**
8. Defective jib up valve coil 4H-35B.	**Check continuity and resistance through coil. Replace if defective.**
9. Open or defective diode D35-1.	**Check diode. Replace if defective.**

No Jib Up from Platform Console:

1. Loose or broken wire #04 from platform terminal block to platform level switch S21.	**Check continuity. Replace if defective.**
2. Defective platform level switch S21.	**Check continuity through switch while activating function between wires #4 and #35A. Replace switch if no continuity.**
3. Loose or broken wire 35A from S21 to J2 pin #28 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #7 of the valve driver to wire #35.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire 35 from J2 pin #7 of valve driver to platform terminal strip.	**Check continuity. Replace if defective.**

No Jib Down from Base:

1. Loose or broken wire #10C from resistor R1 to jib switch S17.	**Check continuity. Replace if defective.**
2. Defective jib switch S17.	**Check continuity through switch while activating up function between wires #10C and #34B. Replace switch if no continuity.**
3. Loose or broken wire #34B from jib switch S17 to plug A pin 16.	**Check continuity. Replace if defective.**
4. Loose or broken wire #34B in boom cable A or its connectors.	**Check continuity. Replace if defective.**
5. Loose or broken wire #34B from plug A pin #16 to platform terminal block.	**Check continuity. Replace if defective.**
6. Loose or broken wire #34B from platform terminal block to jib up valve 4H-34B.	**Check continuity. Replace if defective.**
7. Loose or broken wire #02 from platform terminal block to jib up valve 4H-34B.	**Check continuity. Replace if defective.**
8. Defective jib up valve coil 4H-34B.	**Check continuity and resistance through coil. Replace if defective.**
9. Open or defective diode D34-1.	**Check diode. Replace if defective.**
No Jib Down from Platform Console:	
1. Loose or broken wire #04 from platform terminal block to platform level switch S21.	**Check continuity. Replace if defective.**
2. Defective platform level switch S21.	**Check continuity through switch while activating function between wires #4 and #34A. Replace switch if no continuity.**
3. Loose or broken wire 34A from S21 to J2 pin #26 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #8 of the valve driver to wire #34.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire 34 from J2 pin #8 of valve driver to platform terminal strip.	**Check continuity. Replace if defective.**

4.2-10 No Platform Rotate

No Platform Rotate Right from Base:	
1. Loose or broken wire #10C from resistor R1 to R5.	**Check continuity. Replace if defective.**
2. Defective resistor R5.	**Check resistor, replace if defective.**
3. Loose or broken wire #10F from resistor R5 to platform rotate switch S16.	**Check continuity. Replace if defective.**
4. Defective platform rotate switch S16.	**Check continuity through switch while activating up function between wires #10C and #37B. Replace switch if no continuity.**
5. Loose or broken wire #37B from platform rotate switch S16 to plug A pin 19.	**Check continuity. Replace if defective.**
6. Loose or broken wire #37B in boom cable A or its connectors.	**Check continuity. Replace if defective.**
7. Loose or broken wire #37B from plug A pin #19 to platform terminal block.	**Check continuity. Replace if defective.**
8. Loose or broken wire #37B from platform terminal block to platform rotate right valve valve 4H-37B.	**Check continuity. Replace if defective.**
9. Loose or broken wire #02 from platform terminal block to platform rotate right valve 4H-37B.	**Check continuity. Replace if defective.**
10. Defective platform rotate right valve coil 4H-37B.	**Check continuity and resistance through coil. Replace if defective.**
11. Open or defective diode D37-1.	**Check diode. Replace if defective.**
No Platform Rotate Right from Platform Console:	
1. Loose or broken wire #04 from platform terminal block to platform level switch S20.	**Check continuity. Replace if defective.**
2. Defective platform level switch S20.	**Check continuity through switch while activating function between wires #4 and #36A. Replace switch if no continuity.**
3. Loose or broken wire 37A from S21 to J3 pin #28 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #35 of the valve driver to wire #37.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire 37 from J2 pin #35 of valve driver to platform terminal strip.	**Check continuity. Replace if defective.**
No Platform Rotate Left from Base:	

1. Loose or broken wire #10C from resistor R1 to R5.	**Check continuity. Replace if defective.**
2. Defective resistor R5.	**Check resistor, replace if defective.**
3. Loose or broken wire #10F from resistor R5 to platform rotate switch S16.	**Check continuity. Replace if defective.**
4. Defective platform rotate switch S16.	**Check continuity through switch while activating up function between wires #10C and #36B. Replace switch if no continuity.**
5. Loose or broken wire #36B from platform rotate switch S16 to plug A pin 18.	**Check continuity. Replace if defective.**
6. Loose or broken wire #36B in boom cable A or its connectors.	**Check continuity. Replace if defective.**
7. Loose or broken wire #36B from plug A pin #18 to platform terminal block.	**Check continuity. Replace if defective.**
8. Loose or broken wire #36B from platform terminal block to platform rotate left valve valve 4H-36B.	**Check continuity. Replace if defective.**
9. Loose or broken wire #02 from platform terminal block to platform rotate left valve 4H-36B.	**Check continuity. Replace if defective.**
10. Defective platform rotate right valve coil 4H-36B.	**Check continuity and resistance through coil. Replace if defective.**
11. Open or defective diode D36-1.	**Check diode. Replace if defective.**
No Platform Rotate Left from Platform Console:	
1. Loose or broken wire #04 from platform terminal block to platform level switch S20.	**Check continuity. Replace if defective.**
2. Defective platform level switch S20.	**Check continuity through switch while activating function between wires #4 and #36A. Replace switch if no continuity.**
3. Loose or broken wire 36A from S21 to J3 pin #29 of valve driver.	**Check continuity. Replace if defective.**
4. No output on J2 pin #24 of the valve driver to wire #20B.	**Check for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
5. No output on J2 pin #23 of the valve driver to wire #36.	**Check for a minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.**
6. Loose or broken wire 36 from J2 pin #23 of valve driver to platform terminal strip.	**Check continuity. Replace if defective.**

4.2-11 No Platform Rotate or Jib Functions

No Platform Rotate or Jib Funcions from Base:

1. Loose or broken wire 36C from Diodes D34-1, D35-1, D36-1, and D37-1 to relay 36CCR .	**Check continuity. Replace if defective.**
2. Loose or broken wire 9 at relay 36CCR.	**Check continuity. Replace if defective.**
3. Loose or broken wire 02 at relay 36CCR.	**Check continuity. Replace if defective.**
4. Defective relay 36CCR.	**Check relay. Replace if defective.**
5. Loose or broken wire 42 from relay 36CCR to turret harness connector pin 11 .	**Check continuity. Replace if defective.**
6. Loose or broken wire 42 from turret harness connector pin 11 to platform/jib flow enable valve 2H-42.	**Check continuity. Replace if defective.**
7. Loose or broken wire 02 from platform/jib flow enable valve 2H-42 to turret harness connector.	**Check continuity. Replace if defective.**
8. Defective platform/jib flow enable valve coil 2H-42.	**Check continuity and resistance through coil. Replace if defective.**

No Platform Rotate or Jib Funcions from Platform:

1. No output on J3 pin #1 of the valve driver to wire #42.	**Check for 12 volts. If no voltage present with foot on footswitch and function selected check section 5 for OCM pin voltage reference.**
2. Loose or broken wire 42 from J3 pin #1 of valve driver to platform terminal strip.	**Check continuity. Replace if defective.**
3. Loose or broken wire 42 from platform terminal strip to plug A pin #5 in platform control console.	**Check continuity. Replace if defective.**
4. Loose or broken wire #42 in boom cable A or its connectors.	**Check for continuity between pins #5 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
5. Loose or broken wire 42 plug A pin #5 in base control console to 42CR relay pin 85.	**Check continuity. Replace if defective.**
6. Loose or broken wire 02 to 42CR relay pin 86.	**Check for ground at relay pin 86. Check for loose or corroded connection. Replace if wire is defective.**
7. Loose or broken wire 9 to 42CR relay pin 30.	**Check for power at relay pin 30. Check for loose or corroded connection. Replace if wire is defective.**
8. Defective realay 42CR.	**Check operation of relay. Replace if defective.**
9. loose or broken wire 42A from 42CR relay pin 87 to turret harness pin 11.	**Check continuity. Replace if defective.**
10. loose or broken wire 42A from 42CR relay pin 87 to turret harness plug pin 11.	**Check continuity. Replace if defective.**
11. loose or broken wire 42A from turret harness plug pin 11 to 2H-42A flow enable valve.	**Check continuity. Replace if defective.**

12. loose or broken wire 02 from 2H-42A flow enable valve to ground.	**Check continuity. Replace if defective.**

4.2-12 No Drive or Steer

No Drive or Steer Functions:	
1. Loose or broken wire #4 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 joystickA2.	**See drive joystick test procedure in section 5.**
No Forward Drive:	
1. No output on “D” when forward is selected on drive joystick A2.	**See drive joystick test procedure in section 5.**
2. Loose or broken wire ”D-signal” from drive joystick A2 to J3 pin #14 of valve driver .	**Check continuity. Replace if defective.**
3. No output from valve driver J2 pin #1 to wire #16.	**Check continuity. Replace if defective.**
4. Loose or broken wire 16 from valve driver J2 pin #1 to plug B pin #5.	**Check continuity. Replace if defective.**
5. Loose or broken wire #16 in cable B or its connectors.	**Check for continuity between pins #5 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
6. Loose or broken wire #16 from base plug B pin #5 to drive pump valve connector pin #4.	**Check continuity. Replace if defective.**
7. Loose or broken wire #16 from drive pump valve connector pin #4 to 4H-16 Forward coil.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 wire from 4H-16 Forward coil to ground.	**Check continuity. Replace if defective.**
9. Defective forward coil 4H-16.	**Check continuity and resistance through coil. Replace if defective.**
No Reverse Drive:	
1. No output on “D” when forward is selected on drive joystick A2.	**See drive joystick test procedure in section 5.**
2. Loose or broken wire ”D-signal” from drive joystick A2 to J3 pin #14 of valve driver .	**Check continuity. Replace if defective.**
3. No output from valve driver J2 pin #2 to wire #15.	**Check continuity. Replace if defective.**
4. Loose or broken wire 15 from valve driver J2 pin #2 to plug B pin #4.	**Check continuity. Replace if defective.**

5. Loose or broken wire #15 in cable B or its connectors.	**Check for continuity between pins #4 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
6. Loose or broken wire #15 from base plug B pin #5 to drive pump valve connector pin #1.	**Check continuity. Replace if defective.**
7. Loose or broken wire #15 from drive pump valve connector pin #1 to 4H-15 Reverse coil.	**Check continuity. Replace if defective.**
8. Loose or broken wire #02 wire from 4H-15 Reverse coil to ground.	**Check continuity. Replace if defective.**
9. Defective reverse coil 4H-15.	**Check continuity and resistance through coil. Replace if defective.**
No Left Steer:	
1. Loose or broken wire #24 from drive joystick A2 to valve driver connector J2 pin #15.	**Check continuity. Replace if defective.**
2. No output from valve driver 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 #24A from valve driver connector J3 pin #13 to plug A pin #10.	**Check continuity. Replace if defective.**
4. Loose or broken wire #24A in boom cable A or its connectors.	**Check for continuity between pins #10 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
5. Loose or broken wire #24A from base terminal block to turret harness plug pin #7.	**Check continuity. Replace if defective.**
6. Loose or broken wire #24A or #02 from turret harness plug to left steer valve 4H-24A.	**Check continuity. Replace if defective.**
7. Defective left steer valve coil 4H-24A.	**Check continuity and resistance through coil. Replace if defective.**
No Right Steer:	
1. Loose or broken wire #23 from drive joystick A2 to valve driver connector J2 pin #16.	**Check continuity. Replace if defective.**
2. No output from valve driver on connector J3 pin #3.	**Check pin #3 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 #23A from valve driver connector J3 pin #3 to plug A pin #9.	**Check continuity. Replace if defective.**
4. Loose or broken wire #23A in boom cable A or its connectors.	**Check for continuity between pins #9 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
5. Loose or broken wire #23A from base terminal block to turret harness plug pin #6.	**Check continuity. Replace if defective.**

6. Loose or broken wire #24A or #02 from turret harness plug to left steer valve 4H-23A.	**Check continuity. Replace if defective.**
7. Defective left steer valve coil 4H-23A.	**Check continuity and resistance through coil. Replace if defective.**
Brake will not Release:	
1. No output from valve driver J3 pin #24 to wire #26.	**Check continuity. Replace if defective.**
2. Loose or broken wire 26 from valve driver J3 pin #24 to plug B pin #5.	**Check continuity. Replace if defective.**
3. Loose or broken wire #16 in cable A or its connectors.	**Check for continuity between pins #11 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
4. Loose or broken wire #26 from base plug A pin #11 to turret harness connector pin #6.	**Check continuity. Replace if defective.**
5. Loose or broken wire #26 from turret harness connector pin #6 to 3H-26 Brake coil.	**Check continuity. Replace if defective.**
6. Loose or broken wire #02 wire from 3H-26 Brake coil to ground.	**Check continuity. Replace if defective.**
7. Defective forward coil 3H-26.	**Check continuity and resistance through coil. Replace if defective.**

4.2-13 Direction Sensing Inoperative

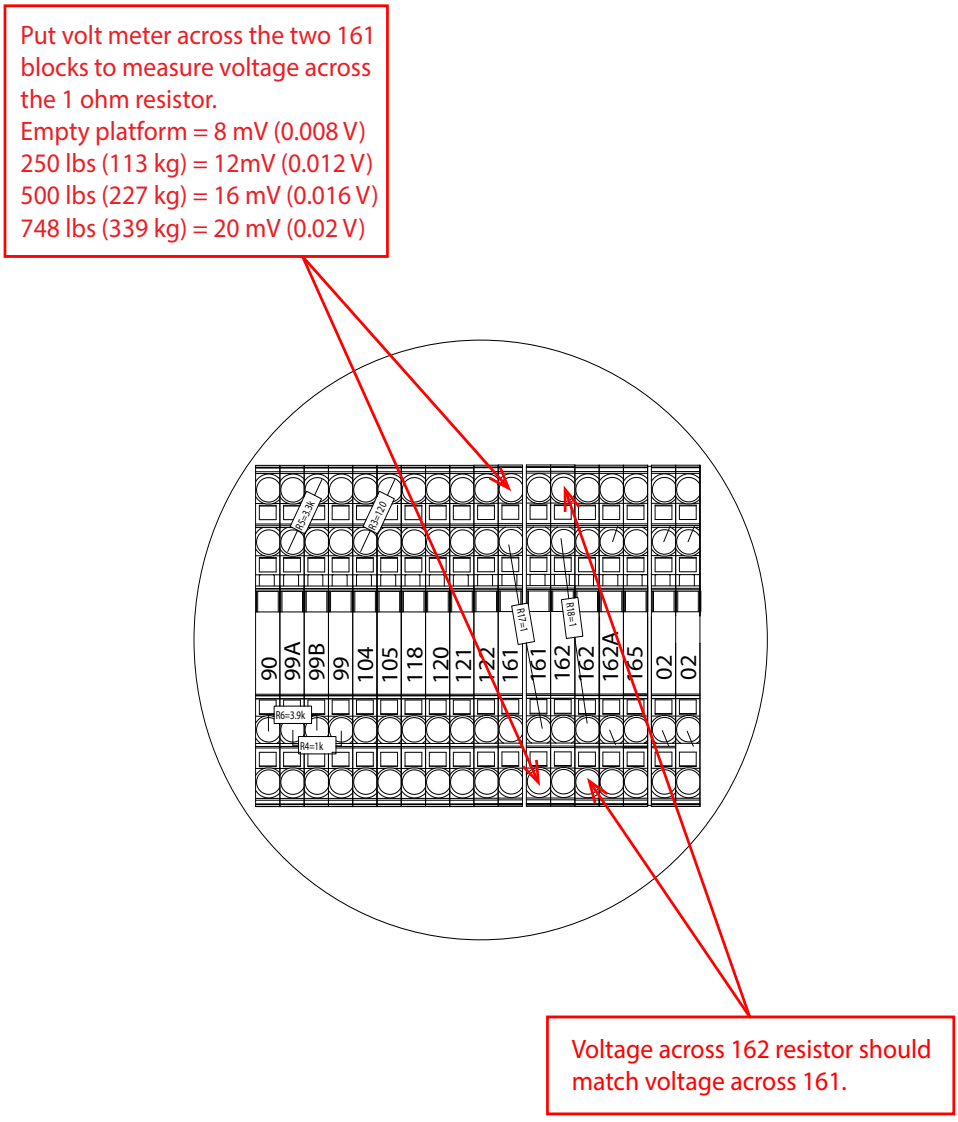
1. Loose or broken wire #09 from base terminal block to limit switch LS1.	**Check continuity. Replace if defective.**
2. Open or defective limit switch LS1.	**Adjust limit switch if required. Check continuity through switch. Replace if defective.**
3. Loose or broken wire #17 from limit switch LS1 to base terminal block.	**Check continuity. Replace if defective.**
4. Loose or broken wire #17 from base terminal block to base plug B pin #6.	**Check continuity. Replace if defective.**
5. Loose or broken wire #17 in boom cable B or its connectors.	**Check for continuity between pins #6 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
6. Loose or broken wire #17 from base plug B pin #6 to valve driver connector J2 pin #25 in platform control console.	**Check continuity. Replace if defective.**
7. Defective valve driver channel input for direction sense enable.	**Replace if Defective.**

4.2-14 Green LED on Load Sense/Dual Load Zone Module is not On

1. Loose or broken wires #9 and #02 at base terminal block to load sense/dual load zone module white connector J4 pins #8 and #1.	**Check for loose or corroded connections. Check for voltage (12V).**

4.2-15 Load Sense Indicates Overload or Overload Warning with Platform Empty or Below Weight

1. Load sense module mis-calibration.	**Refer to calibration procedure for recalibration of load cell.**
2. Load cell circuit not operating.	**Check Voltage across 1Ω (ohm) resistors 161 and 162 in base control console.**



4.2-16 Load Sense/Dual Load Zone Module Error

When a fault is detected, the module outputs will have limited operation depending on the fault type:

For ANY and all faults:

- Load zone border light is turned on
- Low capacity lamp and high capacity lamp will flash alternately
- Overload lamp will flash
- The Red diagnostic LED on The module will be illuminated (no flashing)

If a short circuit is detected on wire 120, 82, or 119:

- The output that is shorted will be disabled (open, high Z to ground)
- 120 shorted: high capacity light on solid, border light on solid, overload light flashes
- 82 shorted: capacity lights flash alternately, border light on solid, overload light off
- 119 shorted: capacity lights flash alternately, border light off, overload light flashes

If a short circuit is detected on any safety contact (wire 162B, 13A, or 39A):

- All safety contacts will be disabled (opened)
- Stowed Position: all functions are available
- Off limits(boom extended and/or boom above 10°): No functions and overload alarm pulses with overload light.

If the measured load falls below the tare (no load/empty platform) calibration point by 2.0mA, for 1.5 seconds:

- 13A is disabled (open) – Down Function is disabled. Will self-clear when the measured load returns to normal.
- Module Amber and Green diagnostic LEDs flash together

If a discrepancy is detected between the load cell analog inputs (delta > 2mA for 2.0 seconds):

- Wire 162B, 13A, and 39A are disabled (opened) - – Stowed Position: all functions are available: lower and retract functions may not be operable. Off limits: (boom extended and/or boom above 10°): No functions and overload alarm pulses with overload light.
- Module Amber and Green diagnostic LEDs on the module flash alternately

To reset the module hold the actuator button down for 5 seconds.

4.2-17 No Light/Alarm when Platform is Overloaded

Overload Indicator Light does not Turn On when Platform is Overloaded:

1. Defective lamp.	**Check lamp. Replace if defective.**
2. Load cell circuit not operating.	**Check Voltage across 1Ω (ohm) resistors 161 and 162 in base control console. See Fig. 1 above.**
3. Load sense/dual load zone module out of calibration.	**Calibrate module. Refer to section 5 of this manual for the procedure.**
4. No output from module.	**Check Voltage at black connector J3 pin #3 for 12V when platform is loaded with 110% of rated capacity (with the boom fully retracted and 12" (30cm) off the ground).**
5. Loose or broken wire #82 from the base terminal strip to connector A pin #13.	**Check continuity. Replace if defective.**
6. Loose or broken wire #82 in boom cable A or its connectors.	**Check for continuity between pins #4 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.**
7. Loose or broken wire #82 plug A pin #4 to 82CR pin 85.	**Check continuity. Replace if defective.**
8. Defective relay 82CR.	**Check relay. Replace if defective.**
9. Load cell circuit not operating.	**Check for connections with wire #02A at pilot light strip and relay 82CR, and wire #82 at platform terminal block and relay 82CR.**

Audible Alarm does not Turn On when Platform is Overloaded:

1. Defective alarm BP3.	**Check alarm. Replace if defective.**
2. Loose or broken wire #82 plug A pin #4 to 162ACR1 pin 30.	**Check continuity. Replace if defective.**
3. Loose or broken wire #118 from relay 162ACR1 to alarm BP3.	**Check continuity. Replace if defective.**
4. Loose or broken wire #2 from alarm BP3 to platform terminal block.	**Check continuity. Replace if defective.**
5. Defective relay 162ACR1.	**Check relay. Replace if defective.**

4.3 Hydraulic System

4.3-1 All Controls Inoperative

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

4.3-2 All Boom Functions Inoperative

1. System pump P2 out of adjustment or is defective.	**Refer to section 5 for pump set up procedure. Adjust 3H-V1 and 3H-V2 to spec. Replace if defective.**
2. Stuck or defective relief valve RV1.	**Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.**
3. 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.**
4. Stuck or defective LS bleed off valve FR1.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**

4.3-3 No Main Boom Up or Down

No Main Boom Up:

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 up valve 4H-14.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective valve V6 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV16 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective check valve CV13.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**

6. Stuck or defective counterbalance valve CB14.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
7. Stuck or defective check valve CV17.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
8. Stuck or defective shuttle valve SV4.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
9. Return valve V4 stuck in the closed position or is defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
10. Defective lift cylinder C1.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
No Main Boom Up:	
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 down valve 4H-13.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective valve V4 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective releif valve RV5 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective check valve CV13.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Stuck or defective counterbalance valve CB3.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
7. Return valve V6 stuck in the closed position or is defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
8. Defective lift cylinder C1.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-4 No Turret Rotate

No Turret Rotate Left:	
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 right valve 5H-32.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV2 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV11.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB1 and/ or CB2.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Shuttle valve SV5 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Defective Swing Drive Brake BR1.	**Check seals and operation. Repair or replacelace as necessary.**
8. Defective Swing Drive Motor M2.	**Check seals and operation. Repair or replace as necessary.**
No Turret Rotate Right:	
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 right valve 5H-33.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV2 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV11.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB1 and/ or CB2.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Shuttle valve SV5 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Defective Swing Drive Brake BR1.	**Check seals and operation. Repair or replacelace as necessary.**
8. Defective Swing Drive Motor M2.	**Check seals and operation. Repair or replace as necessary.**

4.3-5 No Boom Extend or Retract

No Boom Extend:	
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 boom extend valve 4H-39.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective valve V2 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective releif valve RV6 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB5.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Return valve V5 stuck in the closed position or is defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Defective lift cylinder C2.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
No Boom Retract:	
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 boom retract valve 4H-38.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective valve V5 (stuck open, or leak to tank port).	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective counterbalance valve CB4.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
5. Return valve V2 stuck in the closed position or is defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
6. Defective lift cylinder C2.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-6 No Riser Up or Down

No Riser Up:	
1. Stuck or defective differential sensing valve DSV4.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
2. Stuck or defective riser up valve 4H-31.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV4 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV12.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB15 and/or CB16.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Shuttle valve SV3 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Defective riser cylinder(s) C11 and/or C12.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
No Riser Down:	
1. Stuck or defective differential sensing valve DSV4.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
2. Stuck or defective riser down valve 4H-30.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV4 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV12.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB15 and/or CB16.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Shuttle valve SV3 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Defective riser cylinder(s) C11 and/or C12.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-7 No Platform Level

No Platform Level Up:

1. Orifice OR2 plugged.	**Clean or replace orifice as required.**
2. Stuck or defective platform level up valve 5H-41.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV3 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV15.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective pilot check valve CV5 and/or CV6.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Check valve CV9 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Stuck or defective counterbalance valve CB6 and/or CB7.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Defective master cylinder C3.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
9. Defective slave cylinder C4.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

No Platform Level Down:

1. Orifice OR2 plugged.	**Clean or replace orifice as required.**
2. Stuck or defective platform level down valve 5H-40.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective, or misadjusted releif valve RV3 (stuck open, or leak to tank port).	**Adjust valve. Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
4. Stuck or defective check valve CV15.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Stuck or defective pilot check valve CV5 and/or CV6.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Check valve CV8 stuck or defective.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
7. Stuck or defective counterbalance valve CB6 and/or CB7.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Defective master cylinder C3.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
9. Defective slave cylinder C4.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-8 No Jib Up or Down

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 CV18.	**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. Flow Regulator FR2 stuck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Return check valve CV7 suck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Stuck or defective counterbalance valves CB8 and/or CB9.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
7. Defective jib cylinder C5.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
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 CV18.	**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. Flow Regulator FR2 stuck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Return check valve CV7 suck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Stuck or defective counterbalance valves CB8 and/or CB9.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
7. Defective jib cylinder C5.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-9 No Platform Rotate

No Platform Rotate Right:

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 CV18.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective rotate right valve 4H-37.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
4. Flow Regulator FR2 stuck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Return check valve CV7 suck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Orificed fittings at platform rotator plugged.	**Clean or replace orifices as required.**
7. Stuck or defective counterbalance valves CB10 and/or CB11.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Defective platform rotator RA1.	**Check seals on rotator Replace as necessary. Repair or replace rotator if defective.**

No Platform Rotate Left:

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 CV18.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
3. Stuck or defective rotate left valve 4H-36.	**Clean valve. Check operation of valve. Repair or replace valve as required.**
4. Flow Regulator FR2 stuck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
5. Return check valve CV7 suck or defective.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
6. Orificed fittings at platform rotator plugged.	**Clean or replace orifices as required.**
7. Stuck or defective counterbalance valves CB10 and/or CB11.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
8. Defective platform rotator RA1.	**Check seals on rotator Replace as necessary. Repair or replace rotator if defective.**

4.3-10 No Steer

No Steer Right:	
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 steer right valve 5H-23A.	**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 pilot check valve CV3 and/or CV4.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB6 and/or CB7.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Defective steer cylinder C8.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**
No Steer Left:	
1. Orifice OR1 plugged.	**Clean or replace orifice as required.**
2. Stuck or defective steer right valve 5H-24A.	**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 pilot check valve CV3 and/or CV4.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
5. Stuck or defective counterbalance valve CB6 and/or CB7.	**Clean valve. Check O-rings on valve. Repair or replace valve as required.**
6. Defective steer cylinder C8.	**Check seals on cylinder. Replace as necessary. Replace cylinder if defective.**

4.3-11 No Drive

No Drive Forward or Reverse:	
1. Defective or misadjusted charge pump relief valve RV7.	**Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.**
2. Worn charge pump P1A.	**Check pump. Replace if defective.**
3. Defective pump displacement control 4H-15 and 4H-16.	**Check control. Replace if defective.**
4. Open bypass valve V6.	**Close bypass valve.**
5. Worn or defective drive pump P1.	**Check pump. Replace if defective.**
6. Worn or defective drive motorS M1A and/or M1B.	**Check motors. Replace if defective.**
7. Brake not releasing.	**See "brake will not release" in this section.**
No 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.**
No Drive Reverse Drive:	
1. Defective pump displacement control 4H-15.	**Check control. Replace if defective.**
2. Defective or misadjusted drive relief valve RV5.	**See section 5 for drive pump set up procedures.**
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.**

4.3-12 No Brake Function

Brake will not Release:	
1. Stuck or defective shuttle valve SV2.	**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 piston on front or rear axle C9 or C10.	**Check seals on pistons (axle oil level overfull). Replace as necessary.**
Brake will not Engage:	
1. Brake return spring or defective cylinder.	**Check cylinder. Repair or replace as necessary.**
2. Stuck or defective brake valve 3H-26.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
3. Brake in axle out of adjustment.	**See section 5 for brake adjustment procedure.**

4.3-13 No Oscillating Axle Function

Axle will not Oscillate:

NOTE

Axle will only oscillate when boom is fully retracted and is no greater then 10° above horizontal.

1. Stuck or defective axle lockout valve 3H-65.	**Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.**
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.**

Axle will not Lock:

NOTE

Axle is in constant float if boom is fully retracted and is below 10° 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.**

Notes

Section 5 – Procedures

NOTE

The illustrations 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 Safety and Workmanship

Your safety, and that of others, is the first consideration when doing maintenance on 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 you raise a part of the equipment, make sure it has sufficient support.

Before you do routine maintenance underneath the riser, support it using a suitably rated lifting device (refer to Figure 01), or cylinder chocks on both riser cylinders. Contact Skyjack Parts to order chocks.

⚠ WARNING

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

Unless specifically noted otherwise, before beginning any procedure:

1. Park the MEWP on a firm, level surface.
2. Retract and lower the boom, riser, and platform until the MEWP is in the stowed position.
3. Turn the engine off.
4. Push in 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

Fall hazard. Use the three points of contact principle when you use the MEWP to enter or exit the platform. If you do not obey, there is a risk of death or serious injury.

⚠ WARNING

Do not operate the platform controls without the correct fall protection attached 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.

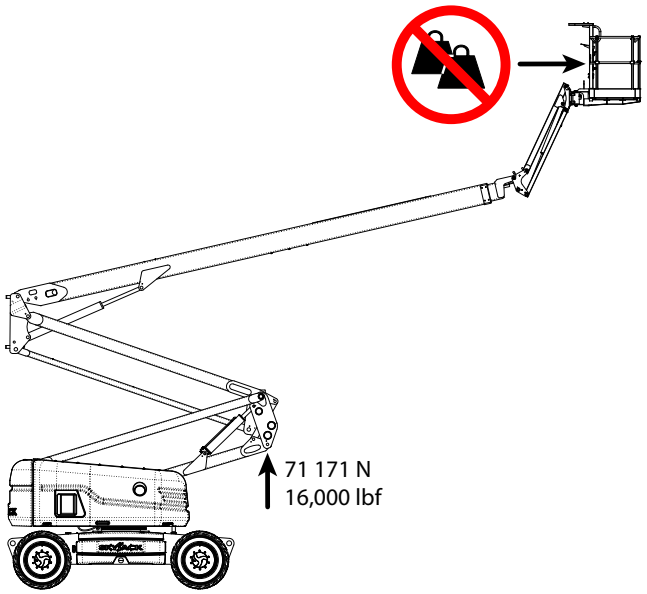


Figure 01 *Support location*

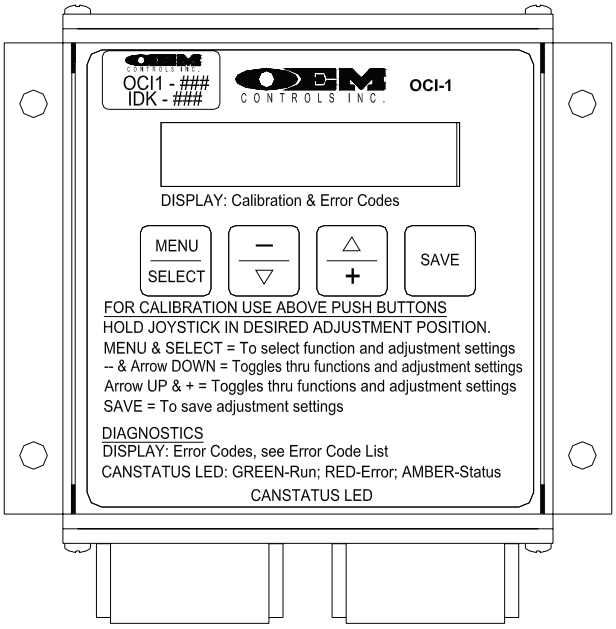
5.2 System Control Module (SCM)

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

Open the base control box to access the lower main controller, or the platform control box to access the upper secondary controller.

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 SCM serves as your window into the application software to allow you to monitor or adjust the following information:

- Active function in use
- Part number and serial number
- Restore the factory default settings
- Output calibrations (Thresh, Max, Ramp.etc)
- I-O status
- CANBus status



5.2-1 User Interface Keys

1.0	MENU / SELECT	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	SAVE	1.3-1 <SAVE> saves the new data to EEPROM (permanent memory storage).
1.4	▲ / + and ---- / ▼	Simultaneously pressing <UP> and <DOWN> resets the HMI to menu screen 0.

5.2-2 SCM Character Functions Charts

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

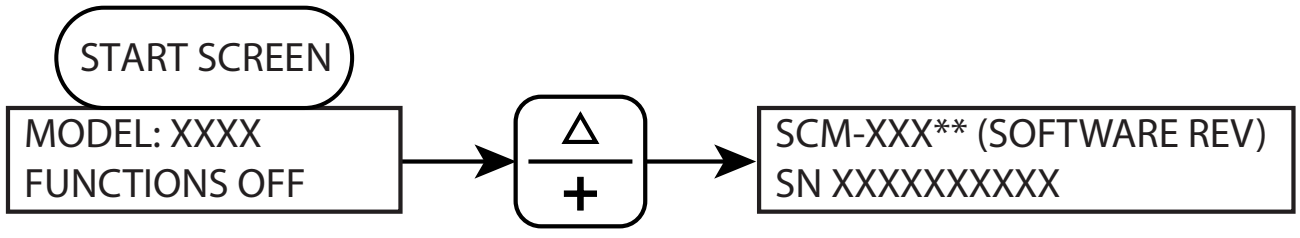
Function Attribute	
THRESH	Threshold
RAMPDN	Ramp Down
RAMPUP	Ramp Up
LOWRNG	Low Range
MAXOUT	Maximum Output

1345AA

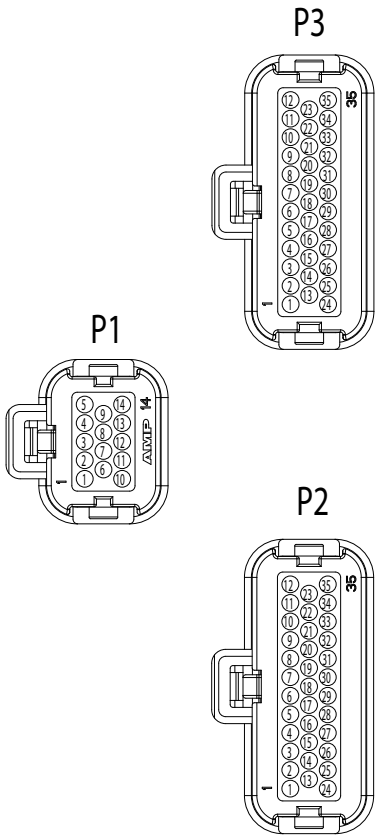
SCM Function (Channel) Names	
DRIVE REV Fn01A	Drive Reverse (Flat)
DRIVE FWD Fn01B	Drive Forward (Flat)
CHAN 2A Fn02A	Drive Off Confirmation
CHAN 2B Fn02B	Drive On Confirmation
BOOM DOWN Fn03A	Main Boom Down
BOOM UP Fn03B	Main Boom Up
ROTATE L Fn04A	Turret Rotate Left
ROTATE R Fn04B	Turret Rotate Right
RISER DN Fn05A	Riser Down
RISER UP Fn05B	Riser Up
LR REV Fn06A	Drive Reverse (Hill)
LR FWD Fn06B	Drive Forward (Hill)

1346AB

5.2-3 SCM Model and Software Check



5.2-4 CM Operating Values Chart



P1 (Black)						
Pin	**Wire**	**Function**	**Input/Output Type**	**I/O Test**	**I/O Error**	**Expected Value**
1	04		POWER		VS1	12V
2	04		POWER		VS2	12V
3	04		POWER		VS3	12V
4	04		POWER		VS4	12V
5		N/U				
6		N/U				
7		N/U				
8		N/U				
9		N/U				
10	02		GROUND		GND1	0V
11	02		GROUND		GND2	0V
12	02		GROUND		GND3	0V
13	02		GROUND		GND4	0V
14		N/U				

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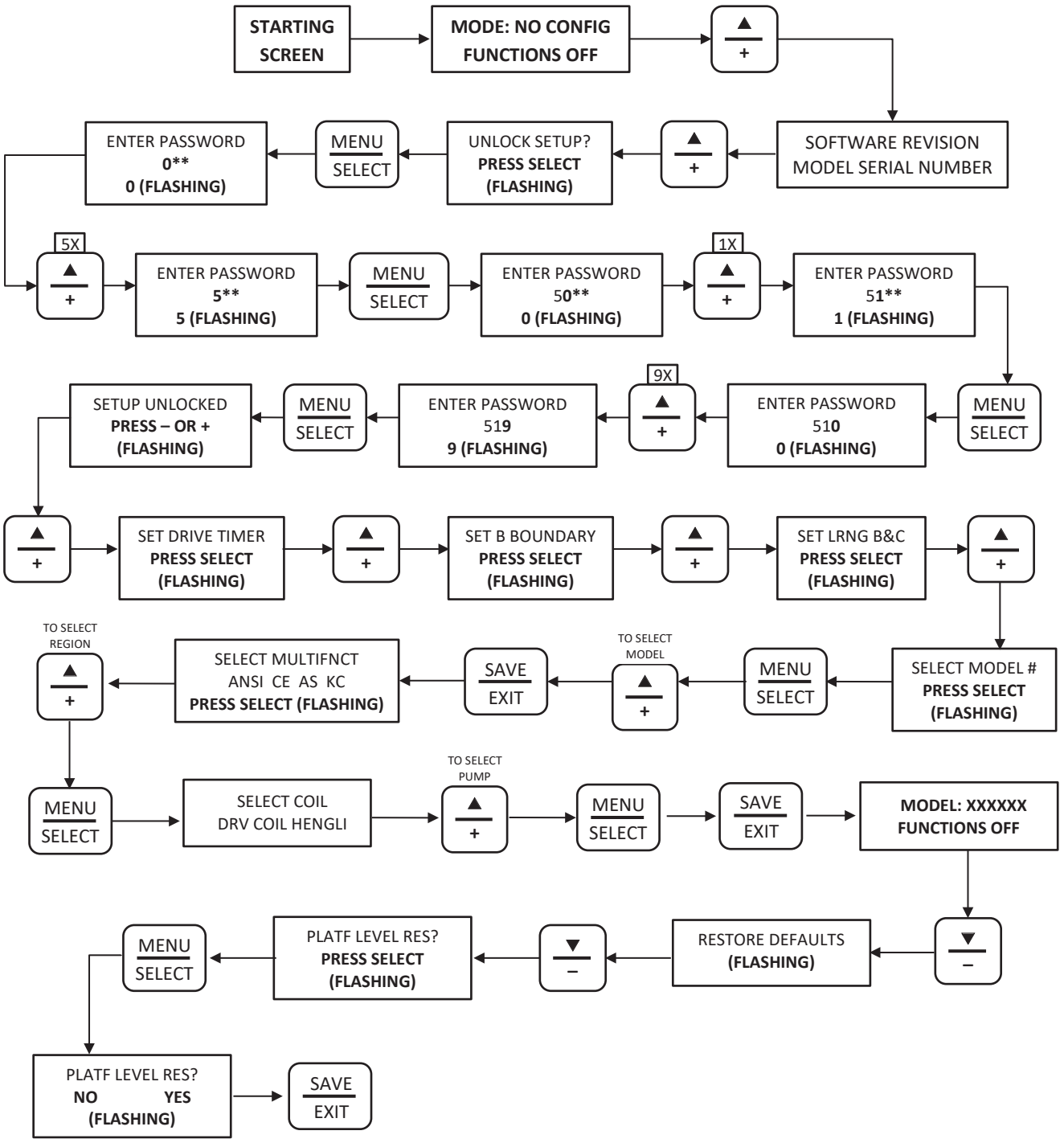
P2 (Grey)						
Pin	**Wire**	**Function**	**Input/Output Type**	**I/O Test**	**I/O Error**	**Expected Value**
1	16	Drive Forward	ANALOG OUTPUT	PWM02	PE02	400 - 1170mA
2	15	Drive Reverse	ANALOG OUTPUT	PWM01	PE01	400 - 1200mA
3	31	Riser Up	ANALOG OUTPUT	PWM08	PE08	470 - 1000mA
4	30	Riser Down	ANALOG OUTPUT	PWM07	PE07	470 - 880mA
5	14	Boom Up	ANALOG OUTPUT	PWM06	PE06	580 - 880mA
6	13	Boom Down	ANALOG OUTPUT	PWM05	PE05	650 - 830mA
7	35	Jib Up	ANALOG OUTPUT	PWM12	PE12	350 - 880mA
8	34	Jib Down	ANALOG OUTPUT	PWM11	PE11	350 - 810mA
9	38	Fly Boom In	ANALOG OUTPUT	PWM10	PE10	470 - 1310mA
10	39	Fly Boom Out	ANALOG OUTPUT	PWM09	PE09	200 - 1080mA
11		N/U		--	--	
12	42C	Jib Flow	ANALOG OUTPUT	PWM15	PE15	
		Platform Flow	ANALOG OUTPUT	PWM16	PE16	
13	32	Rotate Left	ANALOG OUTPUT	PWM03	PE03	400 - 800mA
14	08A	Footswitch Actuated	DIGITAL INPUT	DI2	IE2	0V/12V
15	24	Steer Left	DIGITAL INPUT	DI4	IE4	0V/12V
16	23	Steer Right	DIGITAL INPUT	DI6	IE6	0V/12V
17	45	High Torque Drive Mode Selected	DIGITAL INPUT	DI8	IE8	0V/12V
18	01B	Emergency Pump Request	DIGITAL INPUT	DI10	IE10	0V/12V
19	162A	Platform Not Overloaded	DIGITAL INPUT	DI12	IE12	0V/12V
20		N/U	DIGITAL INPUT	DI14	IE14	0V/12V
21	38A	Fly Boom In	DIGITAL INPUT	DI16	IE16	0V/12V
22	41A	Platform Level Up	DIGITAL INPUT	DI18	IE18	0V/12V
23	36	Platform Rotate Left	ANALOG OUTPUT	PWM14	PE14	400 - 800mA
24	33	Rotate Right	ANALOG OUTPUT	PWM04	PE04	400 - 790mA
25	17	Drive Direction	DIGITAL INPUT	DI1	IE1	0V/12V
26	34A	Jib Down	DIGITAL INPUT	DI3	IE3	0V/12V
27	28	Tilt Switch Active	DIGITAL INPUT	DI5	IE5	0V/12V
28	35A	Jib Up	DIGITAL INPUT	DI7	IE7	0V/12V
29	59	Hi Speed Drive	DIGITAL INPUT	DI9	IE9	0V/12V
30	57	Engine Start Request	DIGITAL INPUT	DI11	IE11	0V/12V
31		N/U	DIGITAL INPUT	DI13	IE13	0V/12V
32		N/U	DIGITAL INPUT	DI15	IE15	0V/12V
33	39A	Fly Boom Out	DIGITAL INPUT	DI17	IE17	0V/12V
34		N/U		--	--	
35	37	Platform Rotate Right	ANALOG OUTPUT	PWM13	PE13	400 - 790mA

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P3 (White)						
Pin	**Wire**	**Function**	**Input/Output Type**	**IO Name**	**Label**	**Expected Value**
1	42	Jib/Platform Flow Enable	DIGITAL OUTPUT	DO1	OE1	0V/12V
2	01	Emergency Pump Relay	DIGITAL OUTPUT	DO8	OE8	0V/12V
3	23A	Steer Right	DIGITAL OUTPUT	DO7	OE7	0V/12V
4	27	Tilt Alarm Indicator	DIGITAL OUTPUT	DO6	OE6	0V/12V
5	65	Axle Lock	DIGITAL OUTPUT	DO5	OE5	0V/12V
6	63	SGE Alarm	DIGITAL OUTPUT	DO12	OE12	0V/12V
7	85	Generator Solenoid	DIGITAL OUTPUT	DO11	OE11	0V/12V
8	68	Engine Run Enable	DIGITAL OUTPUT	DO10	OE10	0V/12V
9	57A	Engine Start Relay	DIGITAL OUTPUT	DO9	OE9	0V/12V
10		N/U	DIGITAL OUTPUT	DO16	OE16	0V/12V
11		N/U	DIGITAL OUTPUT	DO15	OE15	0V/12V
12	40	Platform Level Down	DIGITAL OUTPUT	DO14	OE14	0V/12V
13	24A	Steer Left	DIGITAL OUTPUT	DO2	OE2	0V/12V
14	D	Drive Controller	ANALOG INPUT	AI1	AE1	0.5 - 8.5V
15	Y	Main Boom Elevation Controller	ANALOG INPUT	AI2	AE2	0.5 - 8.5V
16	X	Turret controller	ANALOG INPUT	AI3	AE3	0.5 - 8.5V
17		N/U	ANALOG INPUT	AI4	AE4	
18		N/U	ANALOG INPUT	AI5	AE5	
19	R	Riser Controller	ANALOG INPUT	AI6	AE6	0.5 - 8.5V
20	128	Angle Sensor / Torque Mode	ANALOG INPUT	AI7	AE7	1.0 - 5.0V
21		N/U	ANALOG INPUT	AI8	AE8	
22		N/U	ANALOG INPUT	AI9	AE9	
23	41	Platform Level Up	DIGITAL OUTPUT	DO13	OE13	0V/12V
24	20	Load Sense Valve	DIGITAL OUTPUT	DO3	OE3	0V/12V
25	08	Footswitch Indicator	DIGITAL OUTPUT	DO4	OE4	0V/12V
26	40A	Platform Level Down	DIGITAL INPUT	DI19	IE19	0V/12V
27		N/U	DIGITAL INPUT	DI20	IE20	0V/12V
28	37A	Platform Rotate Right	DIGITAL INPUT	DI21	IE21	0V/12V
29	36A	Platform Rotate Left	DIGITAL INPUT	DI22	IE22	0V/12V
30	165A	Diff Lock	DIGITAL INPUT	DI23	IE23	0V/12V
31	85A	Generator	DIGITAL INPUT	DI24	IE24	0V/12V
32	61	Sensing Bar (SGE)	DIGITAL INPUT	DI25	IE25	0V/12V
33	62	Reset SGE	DIGITAL INPUT	DI26	IE26	0V/12V
34	26	Holding Brake Off	DIGITAL OUTPUT	DO17	OE17	0V/12V
35	165	Diff Lock	DIGITAL OUTPUT	DO18	OE18	0V/12V

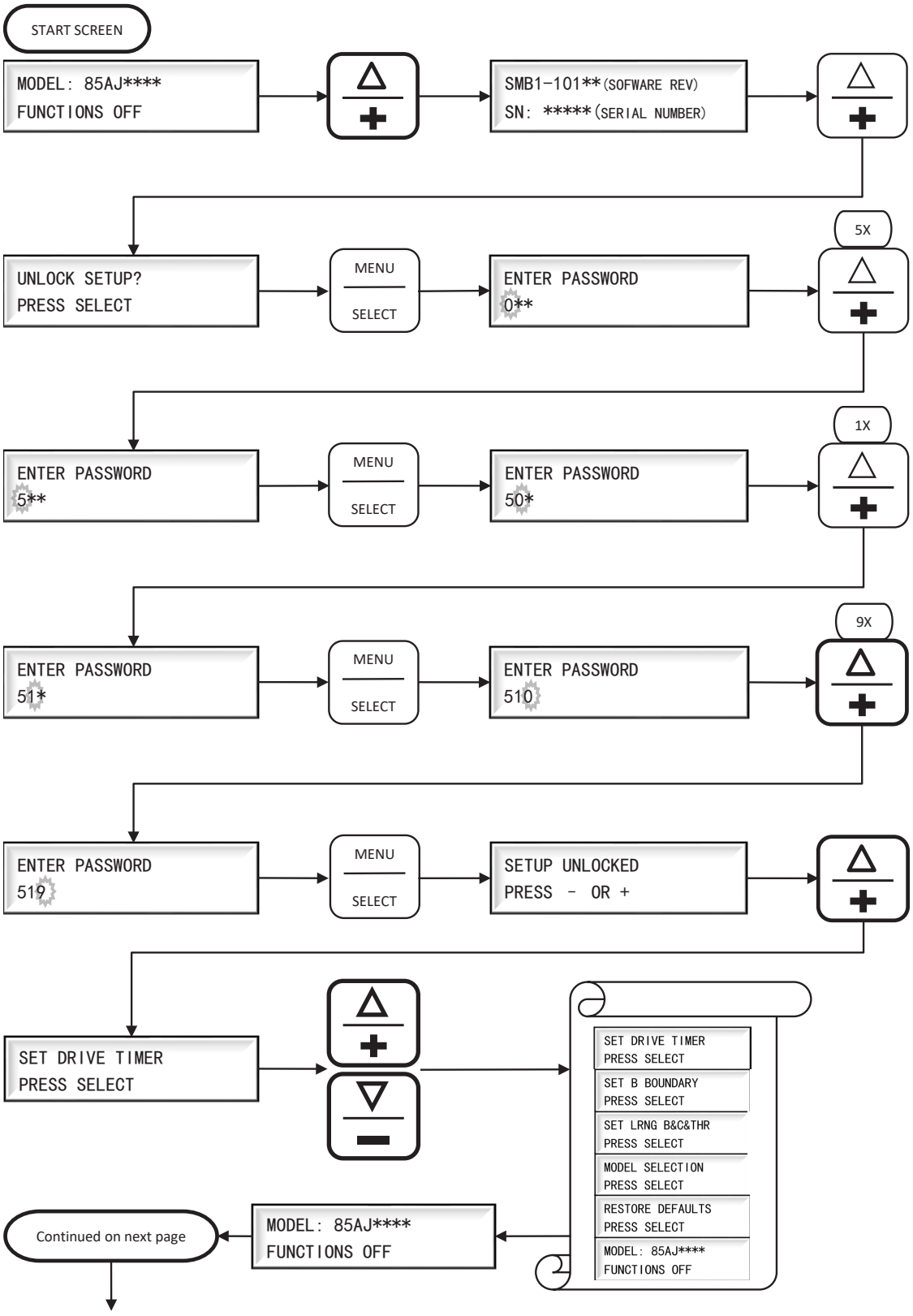
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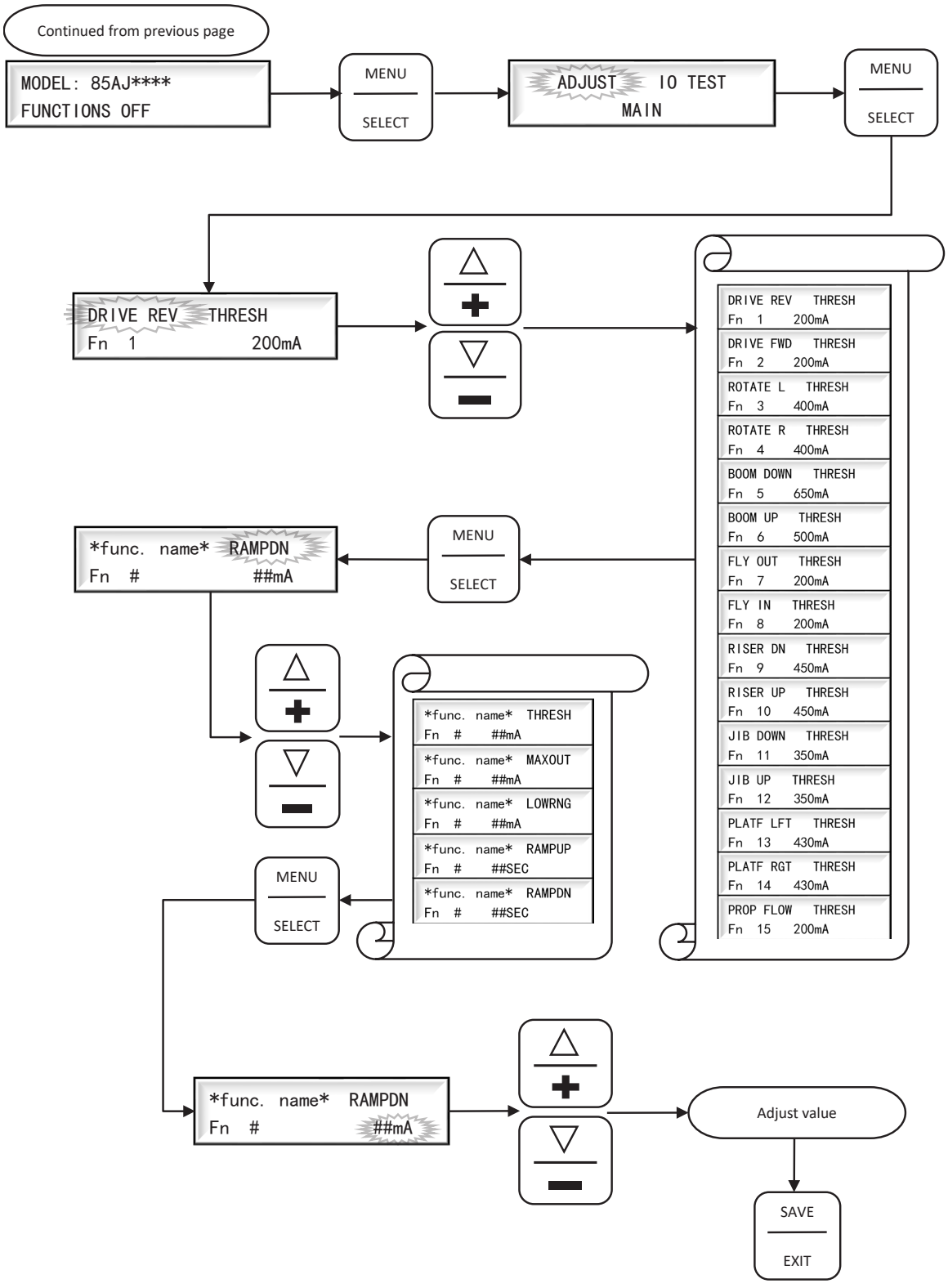
5.2-5 How to select SCM functionality



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

5.2-6 How to Unlock and Modify SCM Settings





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

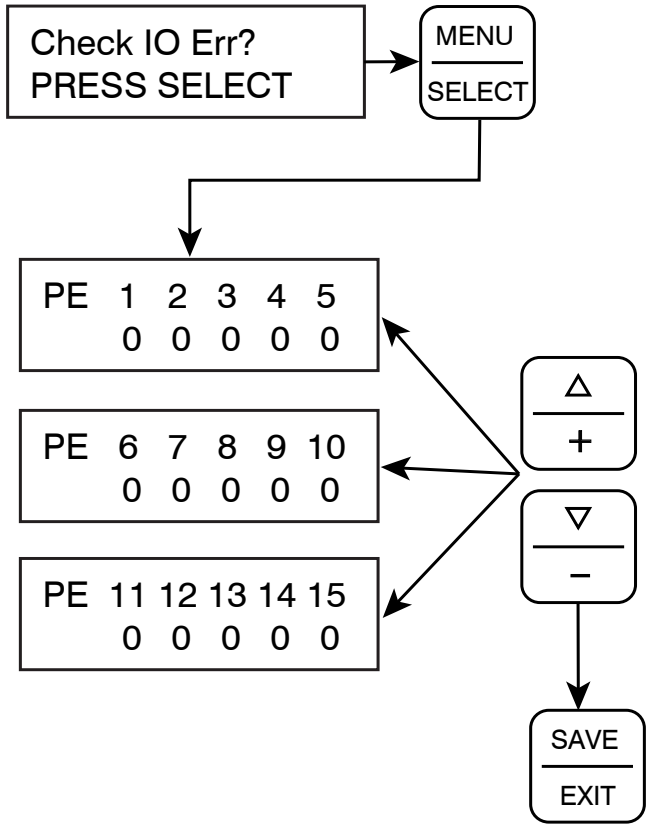
If the SCM is inactive for more than 5 minutes, the password must be re-entered.

5.3-4 Check I/O Error

If a fault is detected, the engine shuts off and the SCM displays “Check I/O Err? Press select”.

This check helps to determine which channel has the fault.

Use the chart below to determine which function each channel is related to. A properly working channel is indicated by a “0”. A fault is indicated by a “1”.



Example:

PE	6	**7**	8	9	10
	0	**1**	0	0	0

This example indicates an error (1) in channel 7, which is the Riser Down function.

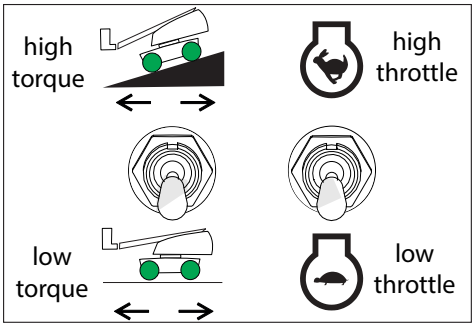
Channel Functions

DRIVE REV	1
DRIVE FWD	2
ROTATE L	3
ROTATE R	4
BOOM DOWN	5
BOOM UP	6
RISER DN	7
RISER UP	8
FLY OUT	9
FLY IN	10
JIB DOWN	11
JIB UP	12
PLATF RGT	13
PLATF LFT	14
PROP FLOW	15

5.3-5 Drive speed tests

Items needed:

- Two people (an “operator” and a “timer”)
- Stopwatch
- Tape measure
- Three pylons or other objects to use as markers on the ground
- Pen and paper



Set up the test area:

1. Locate a firm, level surface outdoors where you can drive the boom in a straight line for 20 m (80 ft).
2. Position the MEWP at the beginning of this driving track.
3. Place a marker on the ground ahead of the platform. This is marker **A**.
4. Place a second marker on the ground 3 m (10 ft) ahead of marker A. This is marker **B**.
5. Place a third marker on the ground 12 m (40 ft) ahead of marker A. This is marker **C**.
6. Make sure the path is clear.
7. *Timer:* Take a stopwatch, pen, and paper, and go into the platform with the operator.



IMPORTANT

When you do the following tests, make sure the MEWP is at full speed before you start timing at the first marker.

Do the high drive speed (low torque) test forward

1. *Operator:* Start the MEWP from the platform controls. Fully retract the boom.
2. *Operator:* Set the platform controls to high throttle, low torque.
3. *Operator:* Drive the MEWP forward at full throttle.
4. *Timer:* Use yourself as the point of reference. As the operator drives, start the stopwatch when you are next to marker **A**.
5. *Timer:* Stop the stopwatch when you are next to marker **C**.
6. *Timer:* Record the time.
7. *Operator:* Stop the MEWP when the timer fully passes marker **C**.
8. *Operator:* Drive back to the beginning of the track.

Do the mid drive speed (high torque) test forward

1. *Operator:* Change the platform controls to high throttle, high torque.
2. *Operator:* Drive the MEWP forward at full throttle.
3. *Timer:* Start the stopwatch when you are next to marker **A**.
4. *Timer:* Stop the stopwatch when you are next to marker **B**.
5. *Timer:* Record the time.
6. *Operator:* Stop the MEWP when the timer fully passes marker **B**.
7. *Operator:* Drive back to the beginning of the track.

Do the elevated drive speed test forward

1. *Operator:* Extend the boom at least 30 cm (12 in).
2. *Operator:* Change the platform controls to high throttle, low torque.
3. *Operator:* Drive the MEWP forward at full throttle.
4. *Timer:* Start the stopwatch when you are next to marker **A**.
5. *Timer:* Stop the stopwatch when you are next to marker **B**.
6. *Timer:* Record the time.
7. *Operator:* Stop the MEWP when the timer fully passes marker **B**.

Normal drive speed test results:

Drive speed	Distance		Time in seconds		
			Minimum	Target	Maximum
High	12 m	40 ft	9	10	11
Mid	3 m	10 ft	6	6.5	7
Elevated	3 m	10 ft	14*	21	23

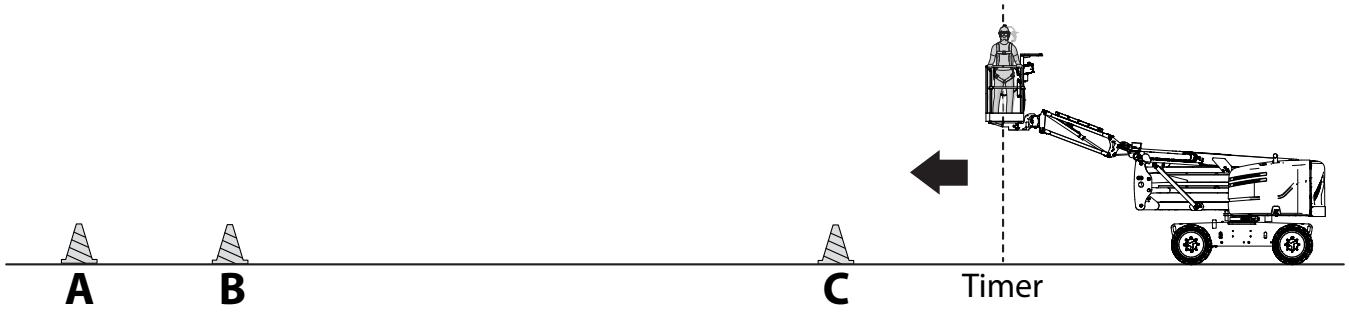
*The time must not be lower than this value.

Adjustments

If any of the drive tests show results outside of the values above, adjust the drive speed settings through the SCM module. Refer to *5.3-6 Adjust the drive speeds.*

Reverse drive speed tests

Once the forward drive speeds have been tested and adjusted (or if no adjustments are needed), follow the next steps to do the drive tests in reverse.



Do the high drive speed (low torque) test in reverse

1. *Operator:* Position the MEWP past marker **C**.
2. *Operator:* Fully retract the boom.
3. *Operator:* Set the platform controls to high throttle, low torque.
4. *Operator:* Drive the MEWP in reverse at full throttle.
5. *Timer:* Start the stopwatch when you are next to marker **C**.
6. *Timer:* Stop the stopwatch when you are next to marker **A**.
7. *Timer:* Record the time.
8. *Operator:* Stop the MEWP when the timer fully passes marker **A**.
9. *Operator:* Drive forward past marker **B**.

Do the mid drive speed (high torque) test in reverse

1. *Operator:* Change the platform controls to high throttle, high torque.
2. *Operator:* Drive the MEWP in reverse at full throttle.
3. *Timer:* Start the stopwatch when you are next to marker **B**.
4. *Timer:* Stop the stopwatch when you are next to marker **A**.
5. *Timer:* Record the time.
6. *Operator:* Stop the MEWP when the timer fully passes marker **A**.
7. *Operator:* Drive forward past marker **B**.

Do the elevated drive speed test in reverse

1. *Operator:* Extend the boom at least 30 cm (12 in).
2. *Operator:* Change the platform controls to high throttle, low torque.
3. *Operator:* Drive the MEWP in reverse at full throttle.
4. *Timer:* Start the stopwatch when you are next to marker **B**.
5. *Timer:* Stop the stopwatch when you are next to marker **A**.
6. *Timer:* Record the time.
7. *Operator:* Stop the MEWP when the timer fully passes marker **A**.

Adjustments

If any of the drive tests show results outside of the values in the table on the previous page, adjust the drive speed settings through the SCM module. Refer to *5.3-6 Adjust the drive speeds.*

5.3-6 Adjust the drive speeds

IMPORTANT

Adjust the drive speeds in this order: high speed, then elevated drive speed, then mid speed, as some models are affected by the sequence in which they are adjusted.

1. Refer to *5.2-6 How to Unlock and Modify SCM Settings* to unlock the SCM and navigate to the ADJUST menu. Once there, press MENU/SELECT.
2. Use the up/down arrows to go to DRIVE FWD or DRIVE REV, as applicable. Press MENU/SELECT.
3. If the high drive speed (low torque) does not need to be adjusted, skip ahead to step 8 to adjust the elevated drive speed.

Adjust the high drive speed (low torque)

4. When THRESH flashes, use the up/down arrows to highlight MAXOUT. Press MENU/SELECT.
5. Increase or decrease the mA value based on the drive test time and the guidelines below.
   - Increase the amperage to increase the drive speed. Decrease the amperage to decrease the drive speed.
   - Less than 1 second: adjust approximately 10 mA to 20 mA
   - 1 to 3 seconds: adjust approximately 50mA
   - More than 5 seconds: adjust approximately 90mA maximum.
6. Press SAVE/EXIT.
7. If the elevated drive speed does not need to be adjusted, skip ahead to step 11 to adjust the mid drive speed.

Adjust the elevated drive speed

8. Use the up/down arrows to highlight LOWRNG. Press MENU/SELECT.
9. Increase or decrease the mA value based on the drive test time and the guidelines in step 5 above.
10. Press SAVE/EXIT.

Adjust the mid drive speed (high torque)

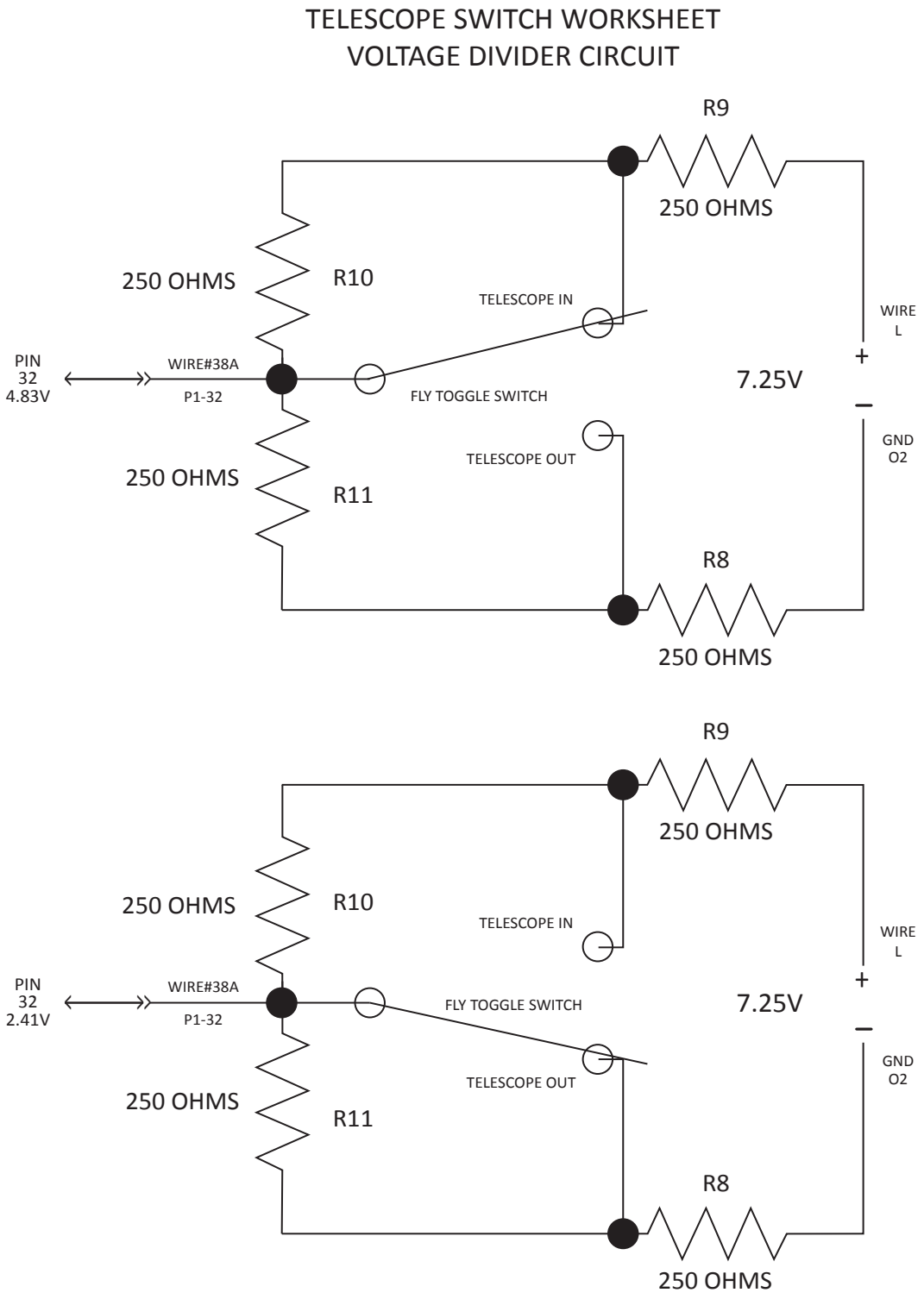
11. Press SAVE/EXIT several times until you get back to the screen with the model display.
12. Press the up/down buttons until SET LRNG B&C&THR is displayed.
13. Press MENU/SELECT.
14. When SET LRNG-B MAX flashes, press MENU/SELECT.
15. When DRIVE FWD or DRIVE REV flashes, press MENU/SELECT.
16. Increase or decrease the mA value based on the drive test time and the guidelines in step 5 above.
17. Press SAVE/EXIT.

Repeat the drive tests

18. Repeat the forward or reverse drive tests and adjustments as needed until the test results fall within the acceptable range.

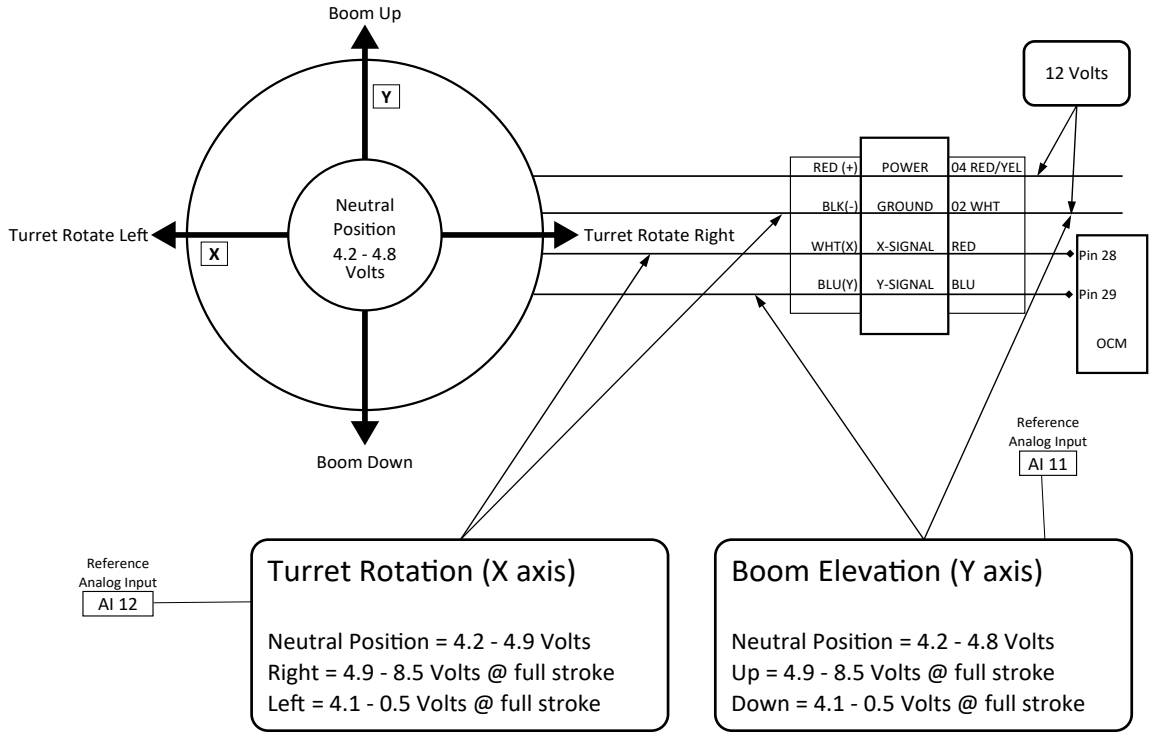
5.3 Platform

5.3-1 Fly Boom Switch Voltage References

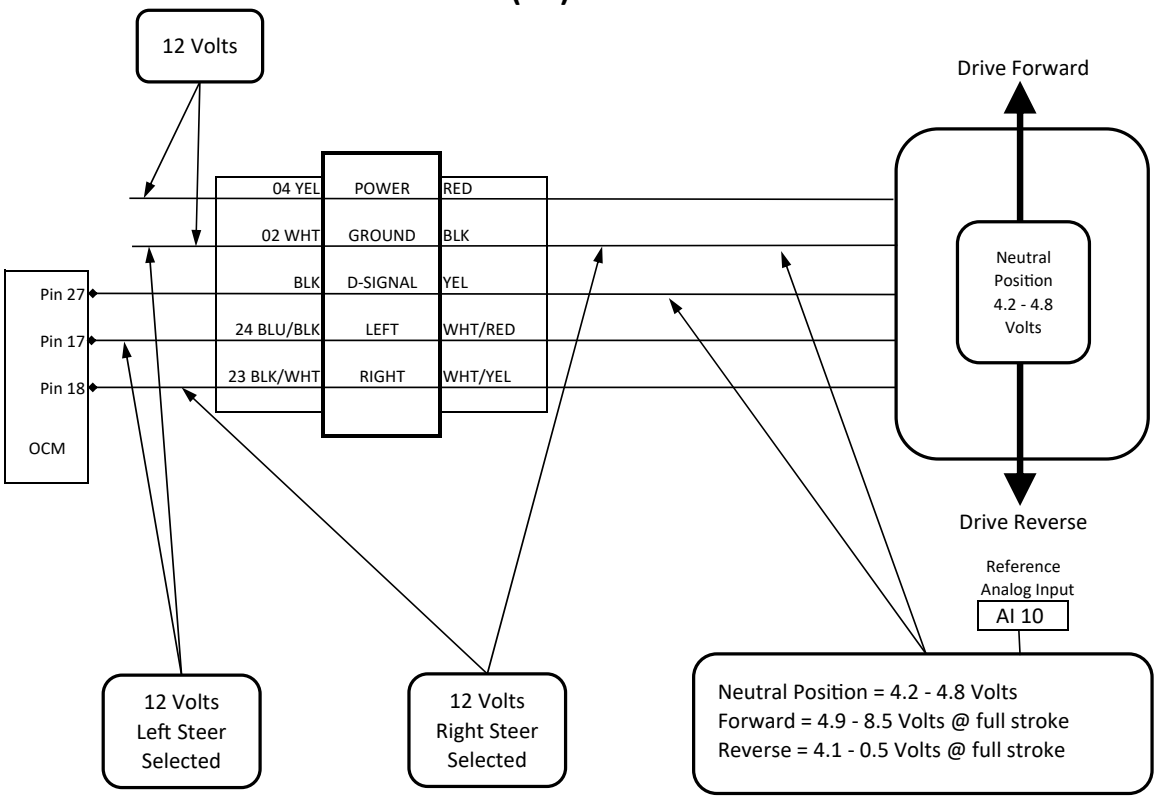


5.3-2 Platform Controller Voltage References

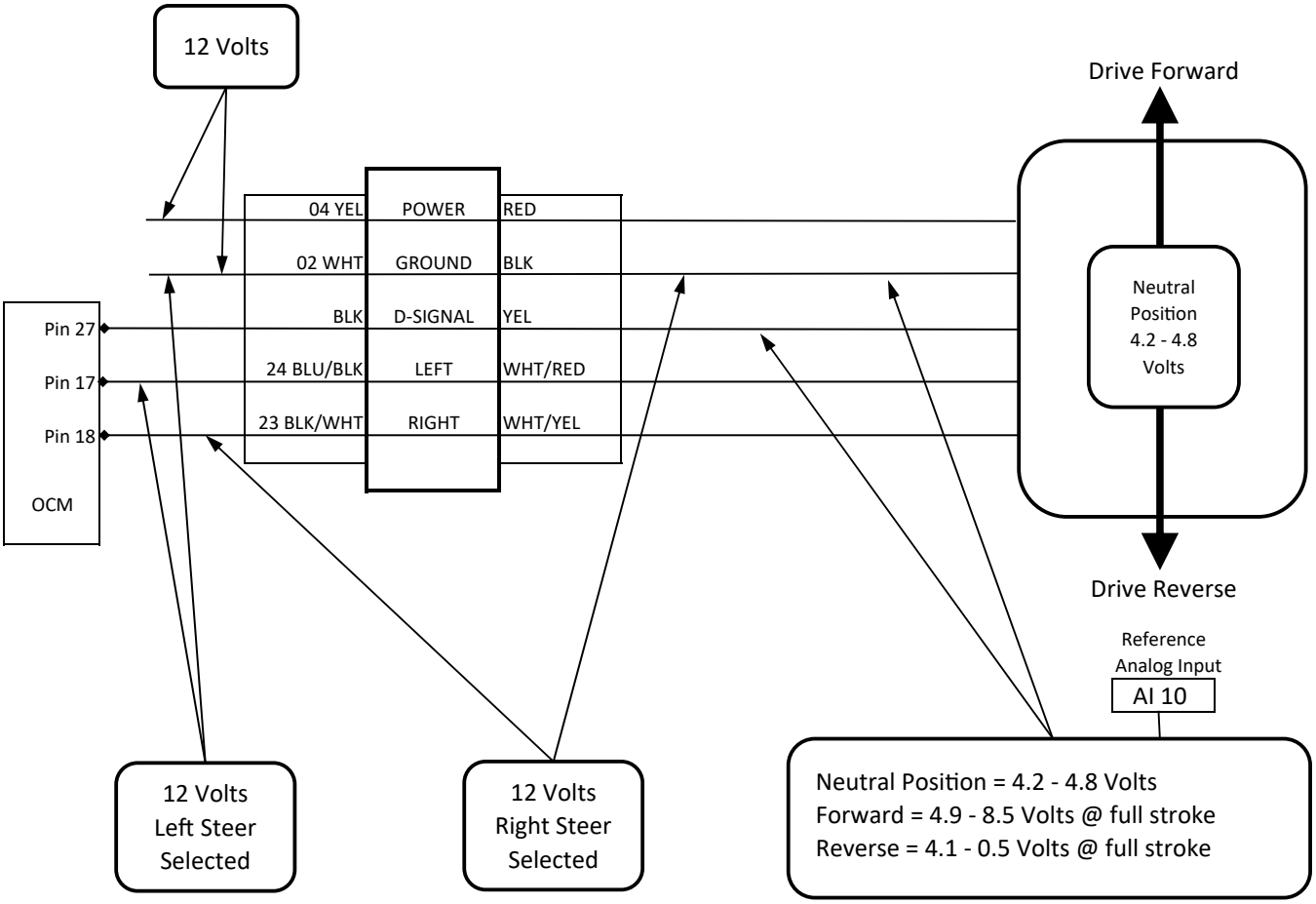
Boom/Turret (A1) Controller



Drive (A2) Controller

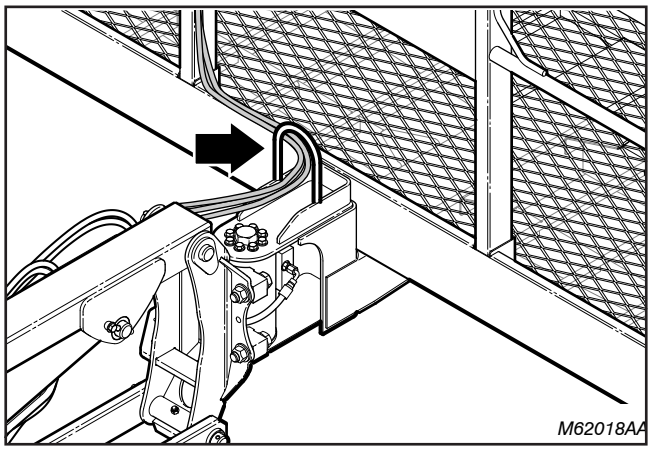


Drive (A2) Controller

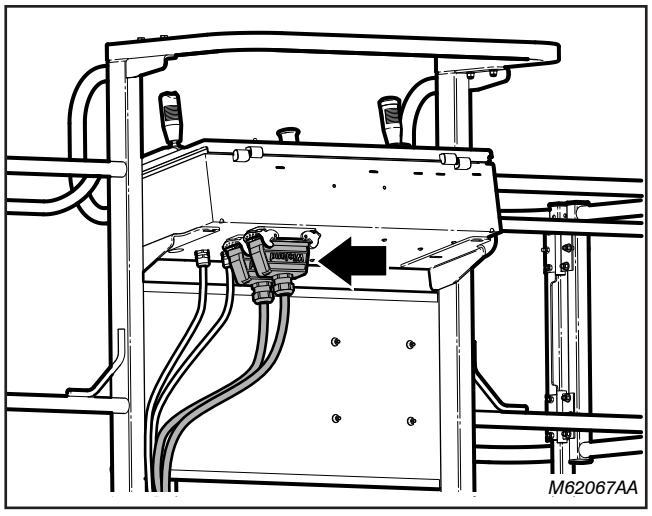


5.3-3 Remove and Replace the Platform

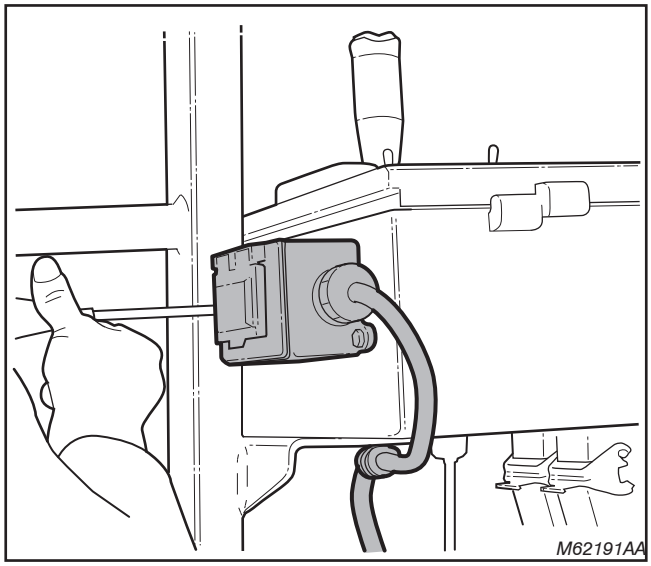
1. Lower the platform until it is resting on the ground.
2. Before removing the platform from the machine, the electrical harnesses routed across the platform swivel joint must be disconnected.


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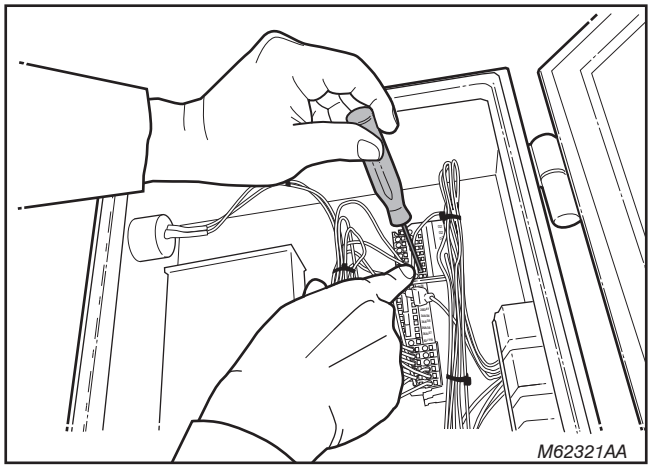
3. Disconnect the two 24-pin control cables from the bottom of the control box.


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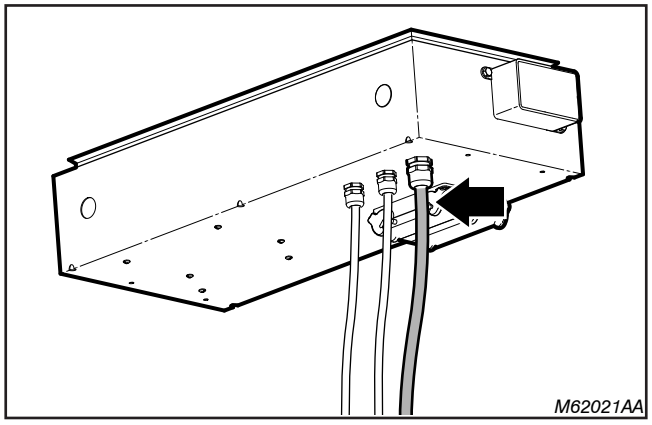
4. Remove the auxiliary AC receptacle box (if equipped). Remove the cable clamps.


M62191AA

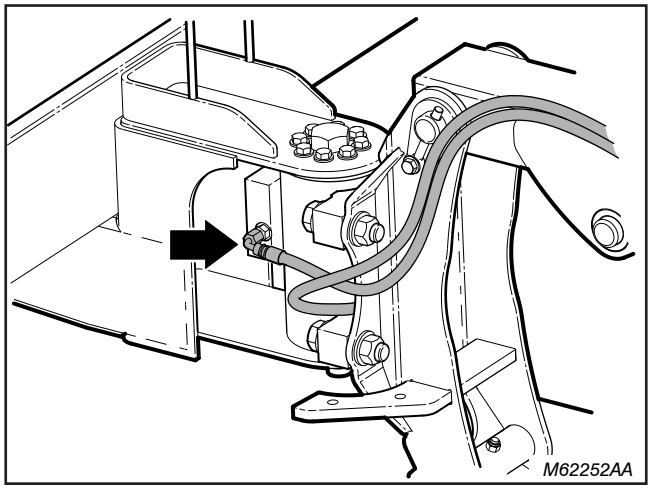
5. Open the control box lid to disconnect the jib and platform rotate harness. Remove the tie wraps and make note of the wire labels and locations for reinstallation.
6. To release each wire, insert a small flat screwdriver into the slot beside it in the terminal strip.


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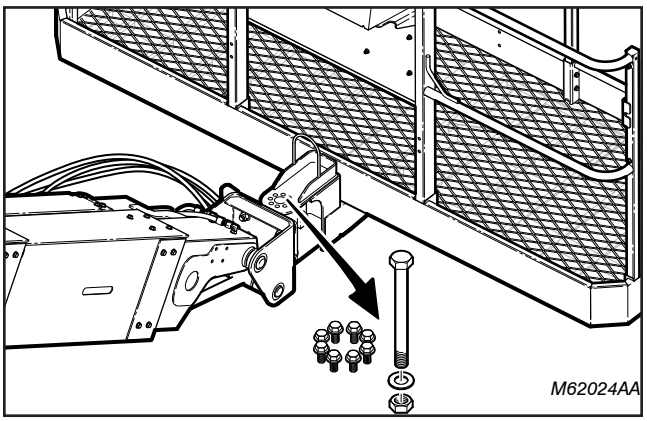
7. Loosen the strain relief connector, and pull the disconnected harness out of the control box.



8. Pull all harnesses through the cable guard on the swivel joint.
9. Mark and disconnect the platform rotary actuator hydraulic hoses. Use a suitable container or rags to catch any oil spillage. Cap hoses and ports to keep them clean.



10. Remove the 8 bolts which secure the rotary actuator to the platform base mount.
11. Remove the main pivot bolt.



12. Carefully move the platform assembly away from the jib. Set it down on suitable blocking nearby.
13. To reinstall the platform, follow the preceeding steps in reverse order.
14. Torque the 8 smaller rotary actuator bolts in a criss-cross pattern to 35 ft-lb (47 Nm). Refer to *5.5-3 Rotary Actuator Bolt Torque Procedure.*
15. Torque the center rotary actuator bolt to 680 ft-lb (922 Nm).

IMPORTANT

w are routed and secured in such a way so as to avoid pinching or chafing as the platform moves.

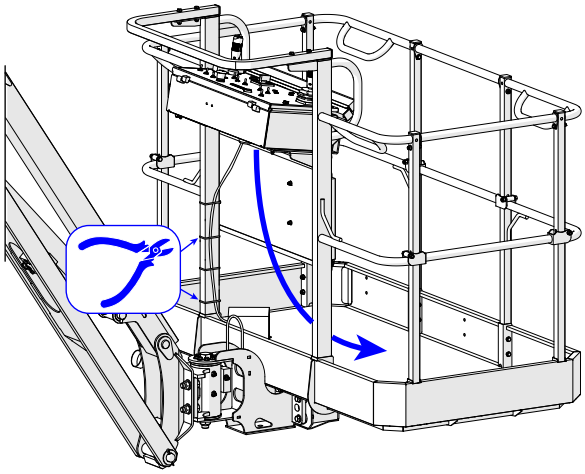
⚠ CAUTION

To avoid personal injury or equipment damage, perform all of the function tests given in your unit's Operating Manual after reconnecting all of the cables.

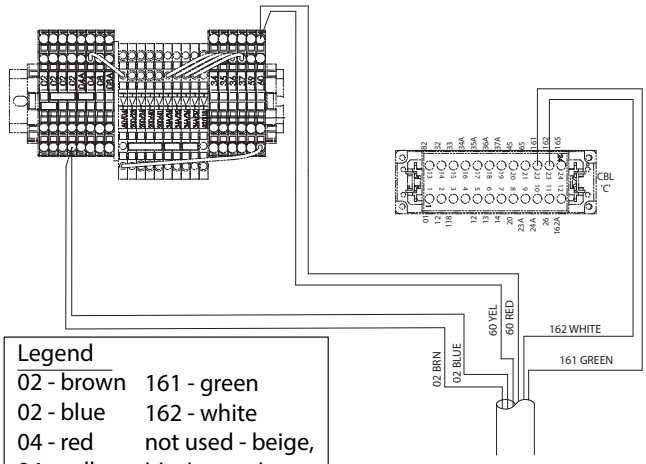
5.3-7 Replace the Load Cell

Disconnect the old load cell

1. Lower the jib and boom until the platform rests in a stable position at a comfortable working height on support stands or a similar device. Make sure you have easy access to the load cell hardware under the platform.
2. Remove the platform control box from its brackets and set it on the floor of the platform.
3. If needed, cut the cable ties which secure the cables to the upright platform railing.



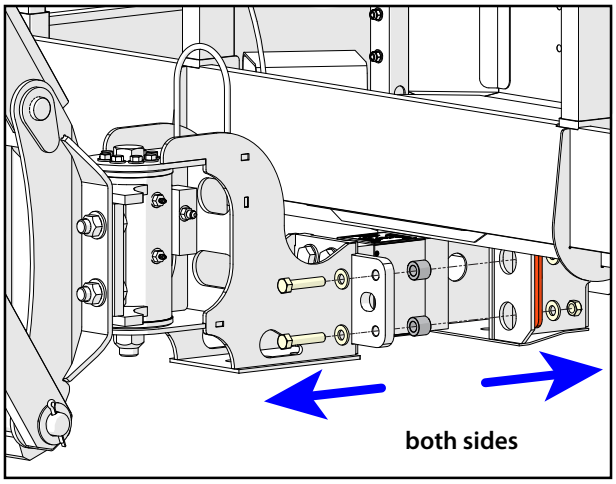
4. Find the load cell cable and follow it into the platform control box. Make note of the wire connections, then disconnect it. Note: wire colours can vary and may not be the same as the legend below.
5. Loosen the strain relief connector and pull the load cell cable out of the platform control box. Cut cable ties as needed to free it.



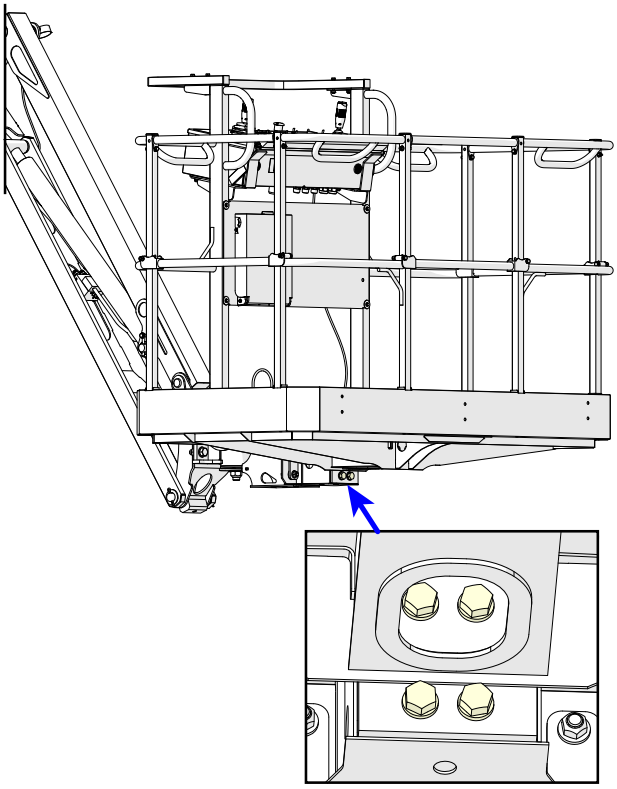
Legend	
02 - brown	161 - green
02 - blue	162 - white
04 - red	not used - beige,
04 - yellow	black, purple

Remove the old load cell

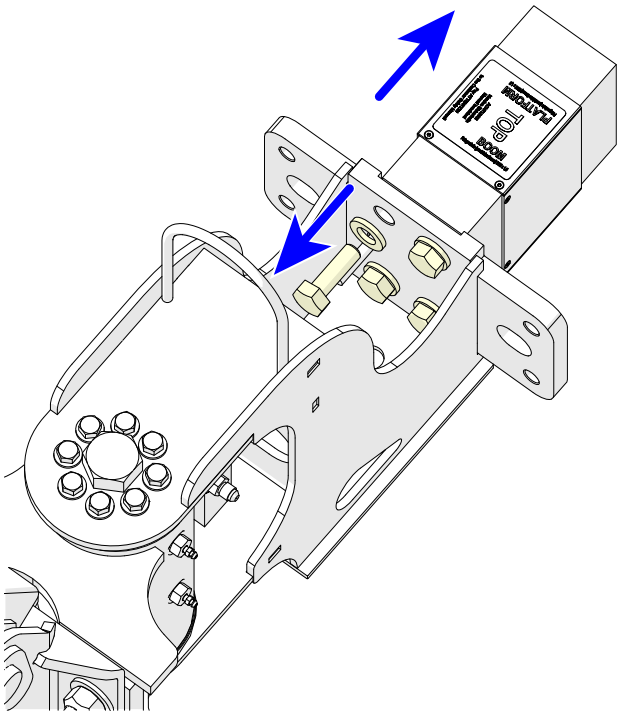
1. Remove the four outer bolts, washers, and spacers that secure the rotary actuator bracket to the platform. Set aside the hardware.



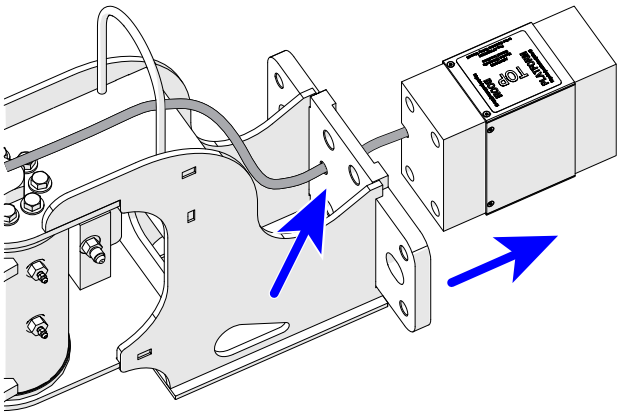
2. Remove the four bolts and washers from the load cell on the underside of the platform.



3. Separate the platform from the jib/boom until the load cell is fully visible.
4. Remove the remaining four sets of hardware from the load cell. Set the hardware aside.

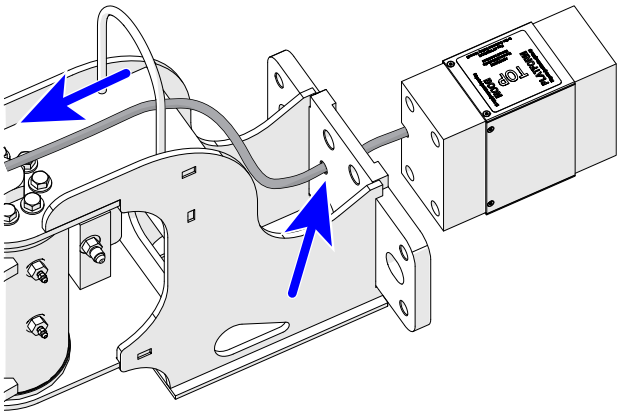


5. Pull the load cell cable out of the rotary actuator bracket.
6. Remove the load cell.

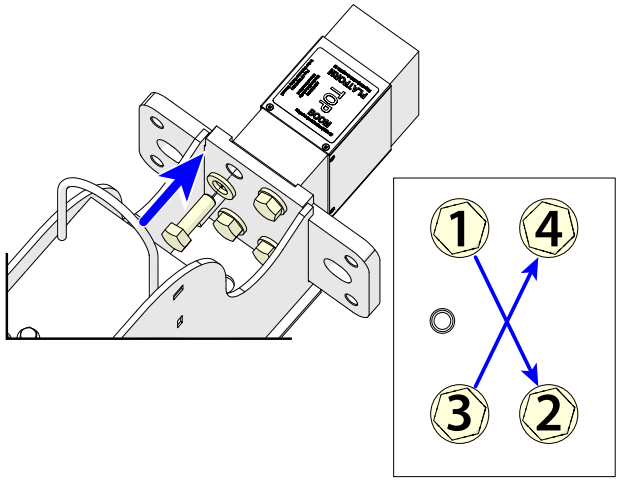


Install the new load cell

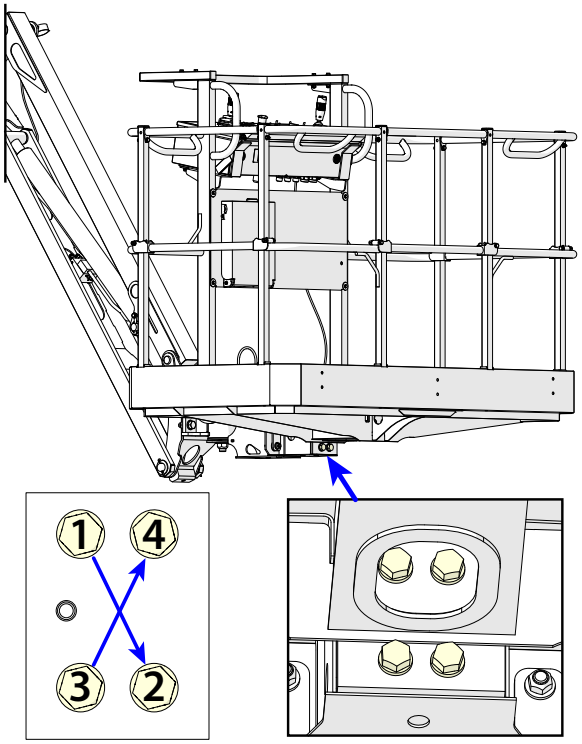
1. Remove any debris from the mating surfaces of the rotary actuator bracket and the platform. Then clean the surfaces.
2. Feed the load cell cable through the hole in the rotary actuator bracket.



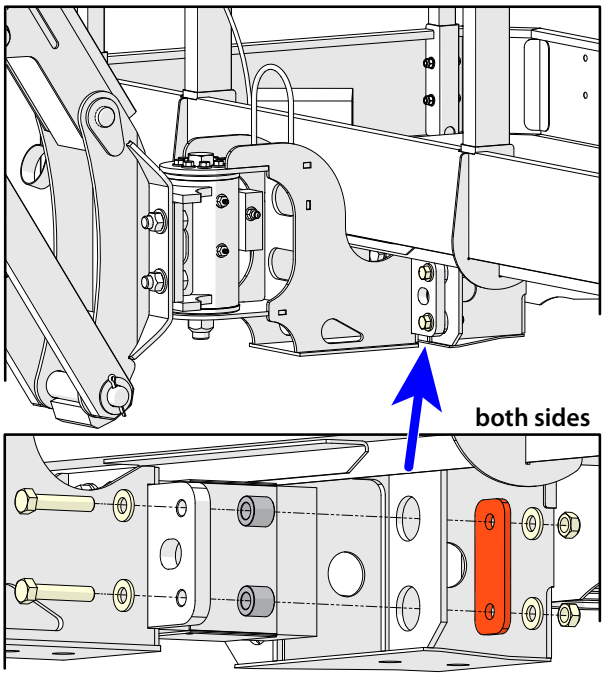
3. With the side marked “TOP” facing up, secure the load cell to the rotary actuator bracket with the hardware removed earlier. Hand-tighten the bolts.
4. Then use the sequence below to torque the bolts to 177 Nm (130 ft-lb).



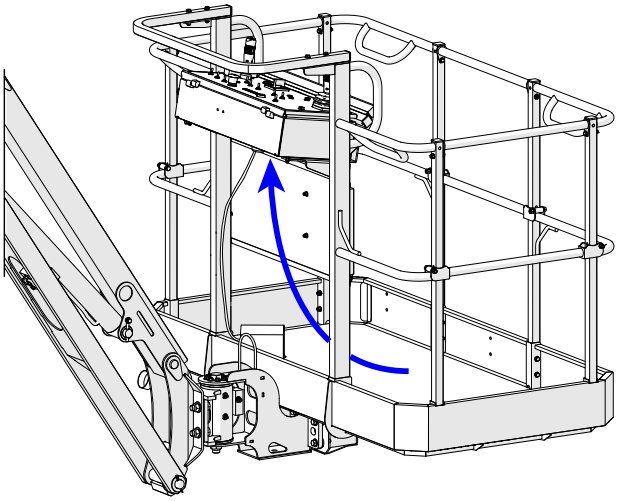
5. Move the platform and the rotary actuator bracket together and line up the holes.
6. Install the four bolts and washers on the load cell, under the platform. Hand-tighten the bolts.
7. Torque the bolts to 177 Nm (130 ft-lb).



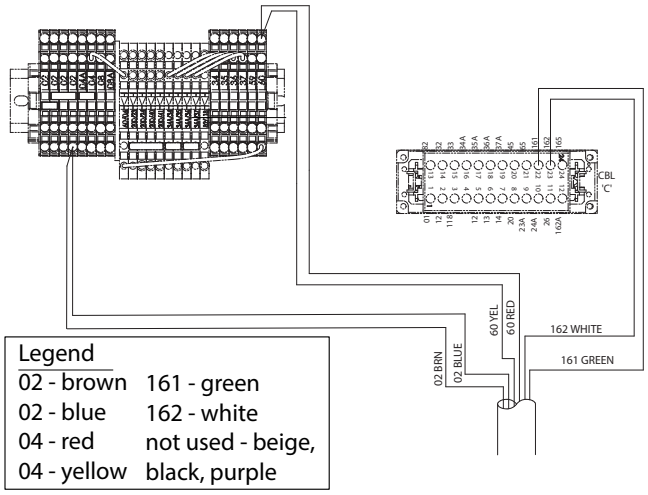
8. Install the four outer bolts, washers, spacers, safety washers, and nuts.
9. Torque the bolts to 108 Nm (80 ft-lb).



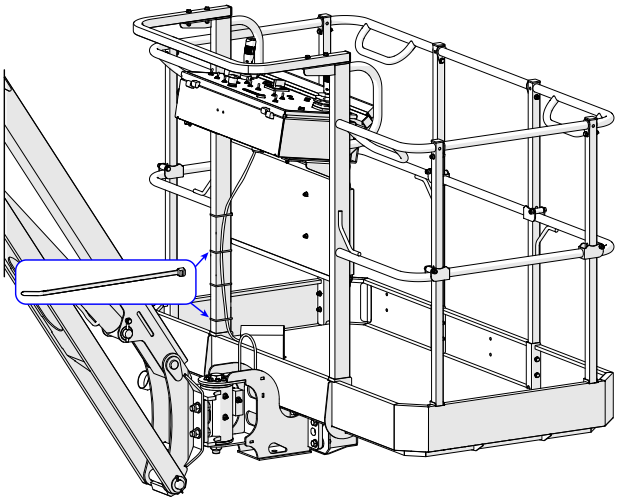
10. Mount the platform control box on its brackets.



11. Feed the load cell cable into the platform control box.
12. Connect the load cell wires to the terminal blocks and control cable C.
13. Cut the unused beige, black, and purple wires. Cover each cut wire end with electrical tape, then tape the three wires together.
14. Tighten the strain relief connector.



15. Replace any cable ties that were cut inside and outside of the control box.



16. Follow *5.4-3 Calibration of Load Sensing System*.

5.4 Load Sensing System

5.4-1 Load Sensing System Overload Status

The platform load sensing system is a device that senses for an overload on the platform before the system disables boom and drive functions. This system is active when the MEWP is powered on.

If the platform is overloaded while in work mode (the boom is raised greater than 15 degrees from horizontal or is extended greater than 6 inches), the load sensing system will disable all normal functions and signal the operator with an indicator light and an audible alarm.

If the platform is overloaded while in travel mode, the load sensing system will signal the operator with an indicator light and an audible alarm, but will not disable any normal functions.

The following table shows the progression of warnings, indicated to the operator, up to the point of overload.

Mode/Condition	Indicator Light	Audible Alarm	Drive Functions	Powered Boom Functions (Platform or Base)	Emergency Power (Platform)	Emergency Power (Base)
93-99% of platform capacity	On	Off	Enabled	Enabled	Enabled	Enabled
Lowered Travel Position, ≥ 100% of platform capacity	Flashing	Pulsing	Enabled	Enabled	Enabled	Enabled
Elevated Travel Position, ≥ 100% of platform capacity	Flashing	Pulsing	Disabled	Disabled	Enabled	Enabled
Elevated Travel Position, ≥ 100% of platform capacity for Low Capacity Zone, Boom extended or lowered to Border between High and Low Capacity Zones	Flashing	Off	Disabled	Boom raise and Boom retract only	Enabled	Enabled

1256AA

⚠ WARNING

Do not operate the emergency power unit if the platform capacity is exceeded. If the platform is overloaded due to contact with an overhead obstruction, do one of the following:

- **Remove the obstruction from the platform, then after a four-second delay normal functions can be resumed.**
- **Use the emergency power unit at the base control console to release the platform from the obstruction.**

⚠ WARNING

If the platform load sensing system is in fault mode (capacity zone lights flash alternately, overload light flashes and capacity zone border light illuminates), do the following:

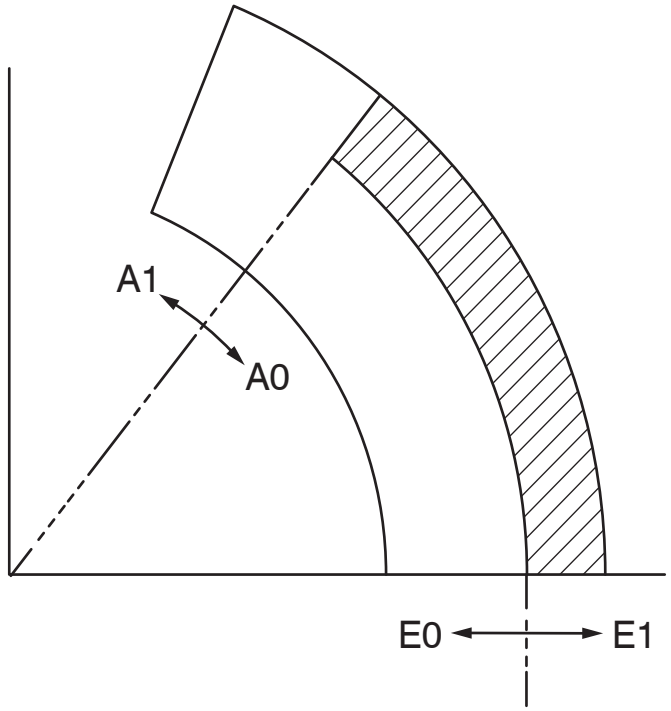
- **Ensure the platform is level and there are no obstructions contacting the platform.**
- **Shut the MEWP off using either the ignition switch or the e-stop. Restart the engine.**

If the platform load sensing system remains in fault mode, the emergency power unit may be used to lower the platform from the base controls. Contact a qualified/competent person for repairs.

5.4-2 Dual Capacity Overload Module Function Table

Position		Load in Platform	Boom Function Availability				Inputs			Outputs					
A	E	Platform Load (lb/kg)	Boom Up	Boom Down	Boom Extend	Boom Retract	Load Cell Voltage measured across resistors 161 & 162 (3) (millivolts)	Boom Angle Wire 121 Limit sw. LS4 (volts)	Boom Extension Wire 122 Limit sw. LS5 (volts)	DOUT1 Low Capacity Wire 120	DOUT2 Overload Indicator Wire 82	DOUT3 Border Lamp Wire 119	SCOUT1 Boom Down Wire 13A	SCOUT2 Boom Extend Wire 39A	SCOUT3 System Enable Wire 162B
@powerup	@powerup	N/A	disable	disable	disable	disable	N/A	any	any	1s pulse	1s pulse	1s pulse	disable	disable	disable
0	0	up to 695/315	allow	allow	allow	allow	up to 18.8	0	12	off	off	off	enable	enable	enable
0	0	695/315 to 748/339	allow	allow	allow	allow	18.9 to 19.9	0	12	off	on	off	enable	enable	enable
0	0	over 748/339	disable	disable	disable	disable	over 20	0	12	0	pulsing 1Hz	off	enable	enable	disable
1	0	up to 695/315	allow	allow	allow	allow	up to 18.8	12	12	off	off	off	enable	enable	enable
1	0	695/315 to 748/339	allow	allow	allow	allow	18.9 to 19.9	12	12	off	on	off	enable	enable	enable
1	0	over 748/339	disable	disable	disable	disable	over 20	12	12	0	pulsing 1Hz	off	enable	enable	disable
1	1	up to 695/315	allow	allow	allow	allow	up to 18.8	12	0	off	off	off	enable	enable	enable
1	1	695/315 to 748/339	allow	allow	allow	allow	18.9 to 19.9	12	0	off	on	off	enable	enable	enable
1	1	over 748/339	disable	disable	disable	disable	over 20	12	0	0	pulsing 1Hz	off	enable	enable	disable
0	1	up to 500/227	allow	allow	allow	allow	9 to 16	0	0	on	off	off	enable	enable	enable
0	1	500/227 to 538/244	allow	allow	allow	allow	16.1 to 17.1	0	0	on	on	off	enable	enable	enable
0	1	over 538/244 (1)	allow	disable	disable	allow	over 17.2 (1)	0	0	off	off	pulsing 2 Hz	disable	disable	enable
0	1	over 538/244 (2)	disable	disable	disable	disable	over 17.2 (2)	0	0	on	pulsing 1Hz	off	enable	enable	disable

(1) Existing load in platform in excess of 538 lb (244 kg) moving into zone A0E1. *1160AE*
(2) Platform load below 538 lb (244 kg) in zone A0E1 then load added so total becomes in excess of 538 lb (244 kg).
(3) Voltage across 161 & 162 resistors is approximate and will vary slightly from machine to machine.

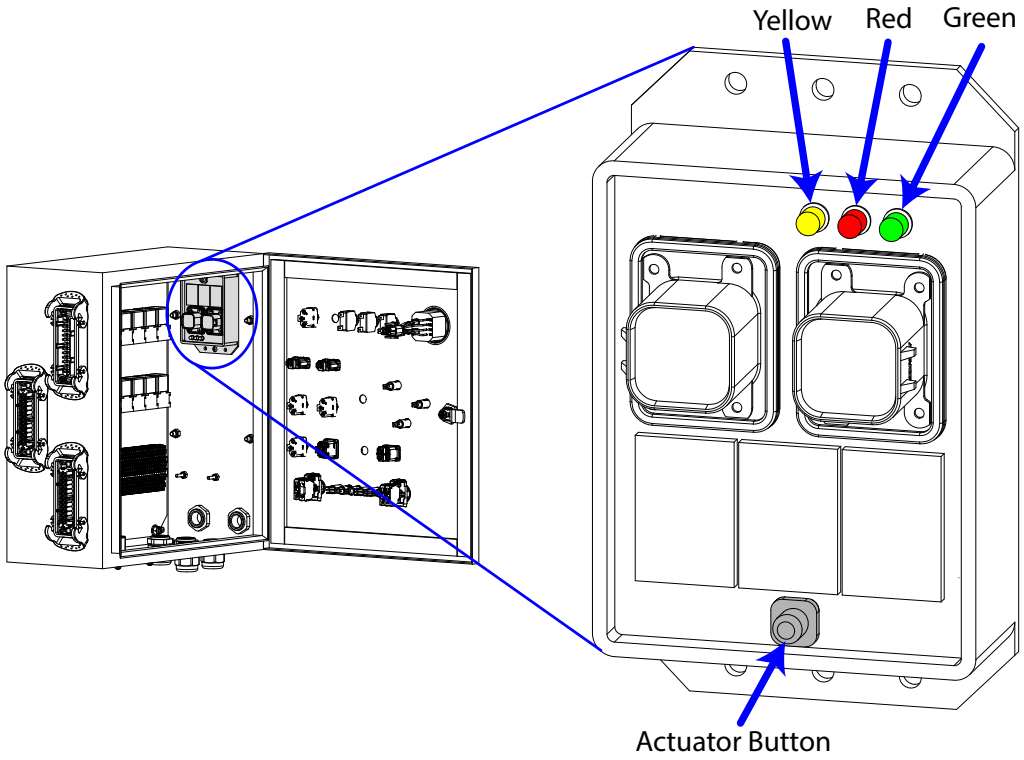


Legend:
"A" is angle of boom
"E" is extension of boom

5.4-3 Calibration of Load Sensing System

NOTE

There is a time-out period of 10 minutes for each step in the calibration process (indicated by a solid green light). Should you exceed 10 minutes, the calibration process must be started over from the beginning.



Preparation

1. Ensure the MEWP is on firm, level ground.
2. Fully retract and lower the boom.
3. Turn the engine off.
4. Pull out both emergency stop buttons and the flip the engine enable switch to the on position.
   Result: The overload indicator light and audible alarm pulse two times.
5. Make sure the platform is unloaded and is free from any surface contact. Remove all options from the platform.
6. Open the base control box door, and locate the dual capacity module on the inside right wall of the control box.

Calibrate the Tare Point (No Load)

7. Press and release the actuation button twice, then press it a third time, this time holding it for about 3 seconds.
   Result: A solid yellow LED light turns on, and the green LED will start to flash.
8. Press the actuation button.
   Result: The green LED will flash quickly indicating the tare weight is being calibrated. Wait for the light to stop flashing.

Calibrate Trip Point 1

9. The yellow LED will remain solid and the red LED will begin flashing.
10. Load the platform to the Trip Point 1 calibration point (see table below). Press the actuation button.
    Result: The red LED will flash quickly indicating that Trip Point 1 is being calibrated. Wait for the red LED to stop flashing - this indicates that the calibration point has been stored.

Calibrate Trip Point 2

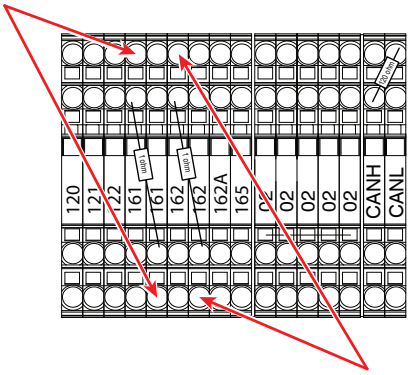
11. The yellow LED will remain solid and the red AND green LEDs will begin flashing.
12. Load the platform to the Trip Point 2 calibration point (see table below). Press the actuation button.
    Result: The red and green LEDs will flash quickly indicating that Trip Point 2 is being calibrated. Wait for the red and green LEDs to stop flashing - this indicates that the calibration point has been stored.
13. The red, green, and yellow LEDs will flash simultaneously for approximately 2 seconds. This indicates that calibration is complete.
14. The green LED will become solid, which is normal operating mode.

Trip Point 1	Trip Point 2
538 lb (244 kg)	538 lb + 210 lb = 748 lb (244 kg + 94 kg = 339 kg)

5.4-4 Dual Capacity Module Wiring

Put a volt meter acoss the two 161 blocks to measure voltage across the 1 ohm resistor.

Empty platform = 8 mV (0.008 V)
113 kg (250 lb) = 12 mV (0.012 V)
227 kg (500 lb) = 16 mV (0.016 V)
339 kg (748 lb) = 20 mV (0.020 V)



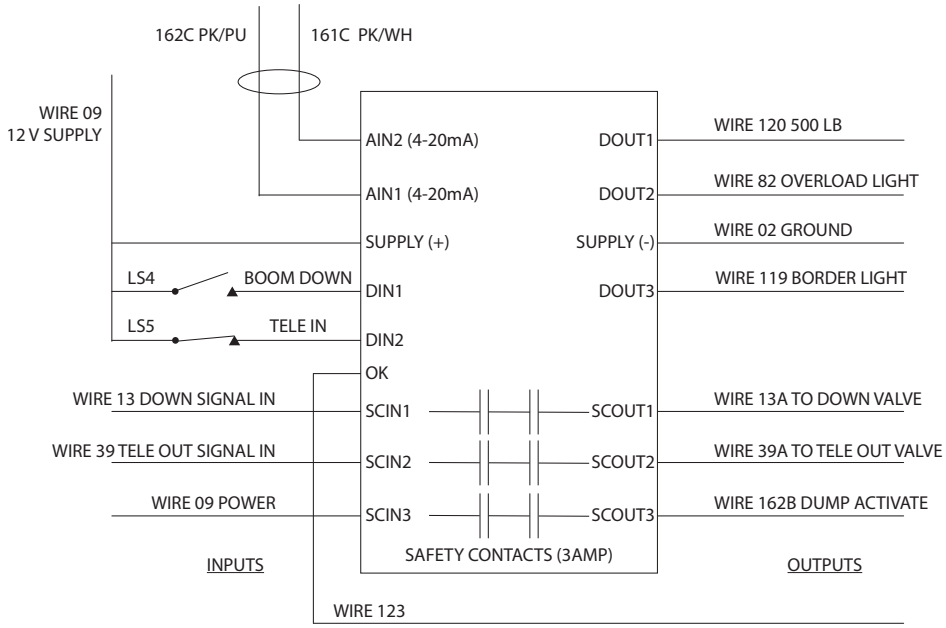
Voltage across the 162 resistor should match the voltage across 161.

Wires 161C and 162C are the load cell inputs.

161C is the primary load cell signal to the module. 162C is the back-up or redundant load cell signal to the module.

The module uses 161C to determine the load on the platform. The module uses 162C as a verification that the 161C signal is correct. Both of these circuits have a 1 ohm resistor at the base terminal strip.

- When the platform is empty, read across either resistor and it should be 0.008 V.
- When there is 750 lb in the platform (overloaded), read across either resistor and it should be 0.019 to 0.020 V.
- The controller goes into error if the signals on 161C and 162C are not equal.



Wire 123 always has 12 V as long as there is no internal fault in the module. If the module faults, the platform can be lowered using the emergency pump.

Control relays 123CR, 123ACR, & 123ACR1 activate to allow telescope in and lowering.

Limit Switches

The controller uses the LS4 and LS5 inputs to determine which zone the platform is in.

LS4 Boom down status. Normally Open when stowed.

LS5 Boom telescope status. Normally Closed when stowed.

For example, in the LOW CAPACITY zone (boom lowered and telescope fully out), the LS4 switch remains open and the LS5 switch opens with boom extension. Both inputs read 0 V.

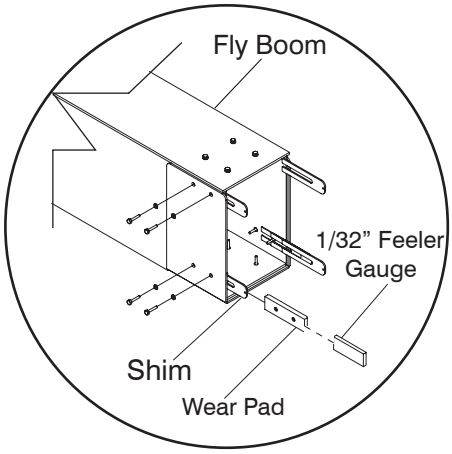
5.5 Boom

5.5-1 Check the 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 30 cm (1').
4. Measure the thickness of each wear pad, and replace the wear pad if it is less than 11 mm (7/16").
5. If the wear pad is within the specified thickness, shim it as necessary.

5.5-2 Shim the 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 0.8 mm (1/32") clearance and zero drag.



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

NOTE

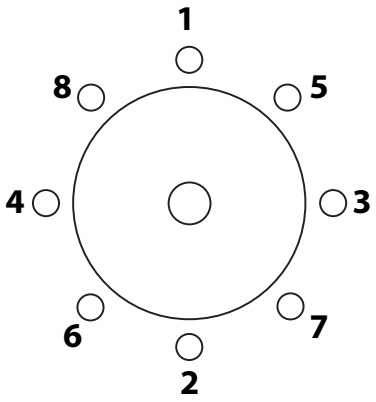
Always maintain squareness between the boom's outer and inner tubes.

5.5-3 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.

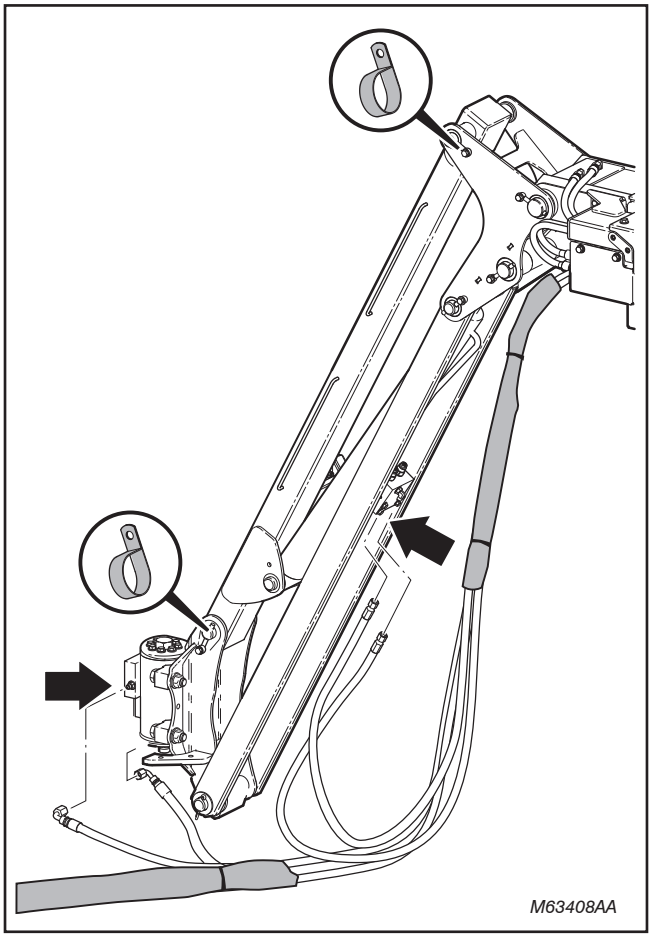
1. Set the torque wrench to 25 Nm (17 ft-lb) and tighten the mounting bolts in a criss-cross pattern sequence.



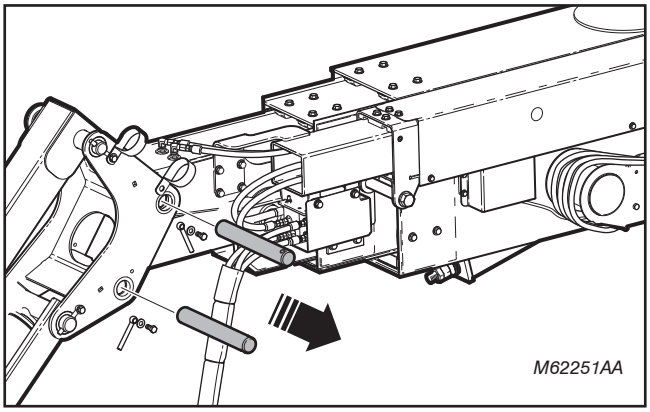
2. Set the torque wrench to 47 Nm (35 ft-lb) and tighten the mounting bolts with the same sequence.
3. Torque the center bolt to 650 Nm (480 ft-lb).

5.5-4 Remove and Replace the Jib

1. Before removing the jib boom from the machine, the platform must be removed first.
   See *5.3-3 Remove and Replace the Platform.*
2. Mark and disconnect the hydraulic hoses for the jib cylinder. Use a suitable container or rags to catch any oil spillage. Cap hoses and ports to keep them clean.
3. Remove the hoses and wire cable bundle from the P-clamps on the side of the jib boom.



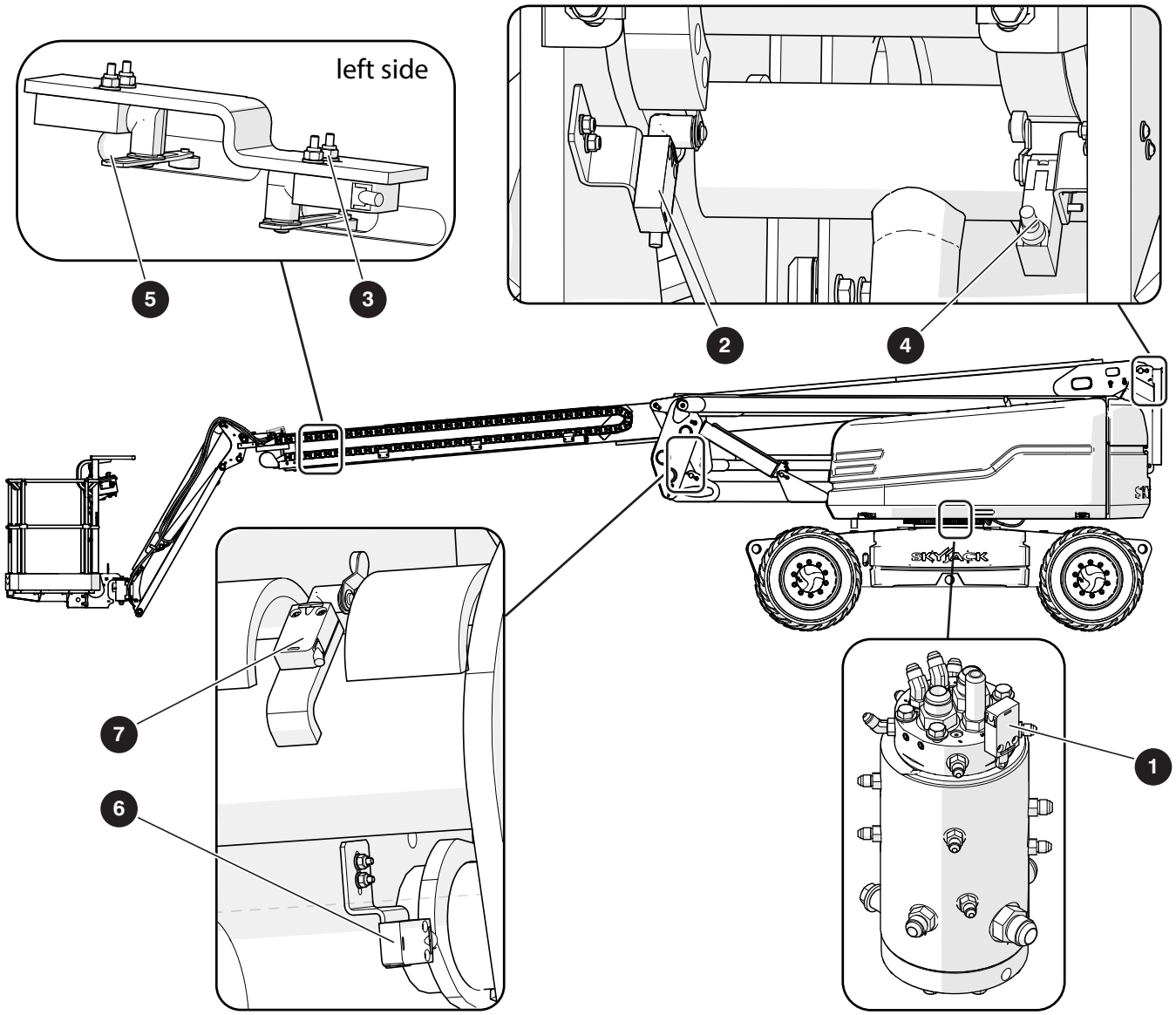
4. Using suitable lift equipment and safe rigging practices, connect lifting slings to the jib boom. Tension the slings enough to lightly take the weight off the mounting bracket pins.
5. Remove the pins mounting the jib boom to the fly boom and the slave cylinder.



6. Carefully move the jib assembly away from the end of the fly boom. Set it down on suitable blocking nearby.
7. To reinstall the jib boom, follow the preceeding steps in reverse order.

5.6 Limit Switches

5.6-1 Limit Switch Locations and Trip Points



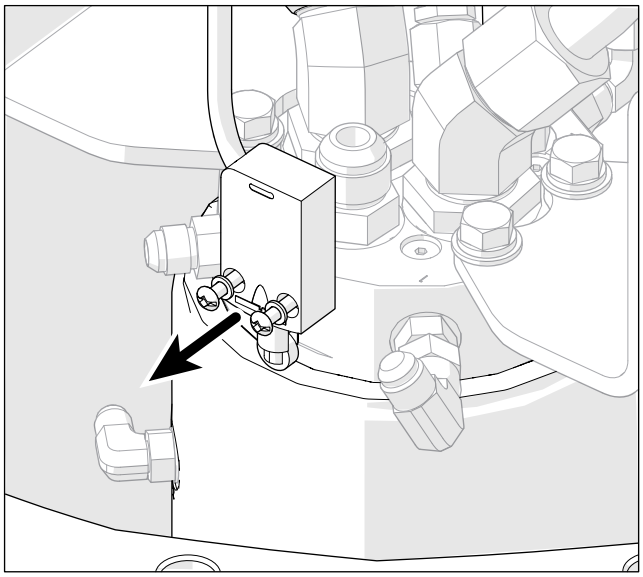
		Identification	Trip Point	Contact Type
1	LS1	Direction sensing	-	NC held open
2	LS2	Main boom stowed (high speed cut-out)	2.6°	NC
3	LS3	Fly boom stowed (high speed cut-out)	50 mm (2")	NC
4	LS4	Boom down (dual load zone)	48°	NC held open
5	LS5	Fly out (dual load zone)	3.66 m (12') from full extension at horizontal	NC
6	LS6	Riser Stowed (high speed cut-out)	3.5°	NC
7	LS7	Boom/riser interlock	-	NC held open

5.6-2 Replace the Direction Sensing Limit Switch LS1

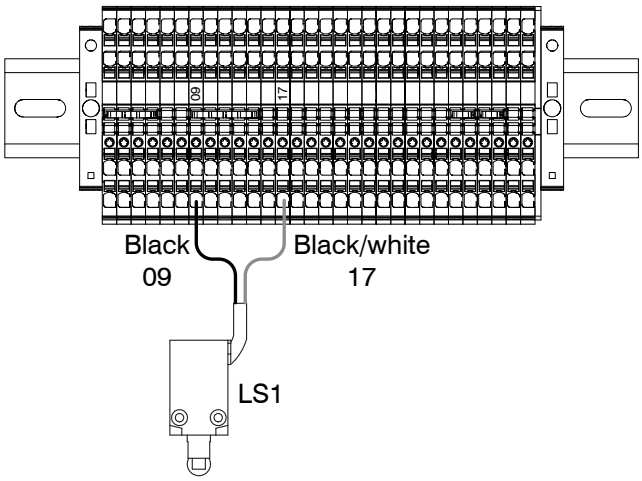
The direction sensing limit switch LS1 is located on the rotary manifold in the center of the chassis ring gear. Refer to *5.6 Limit Switches.*

This limit switch consists of a normally closed contact held open and controls the MEWP drive direction.

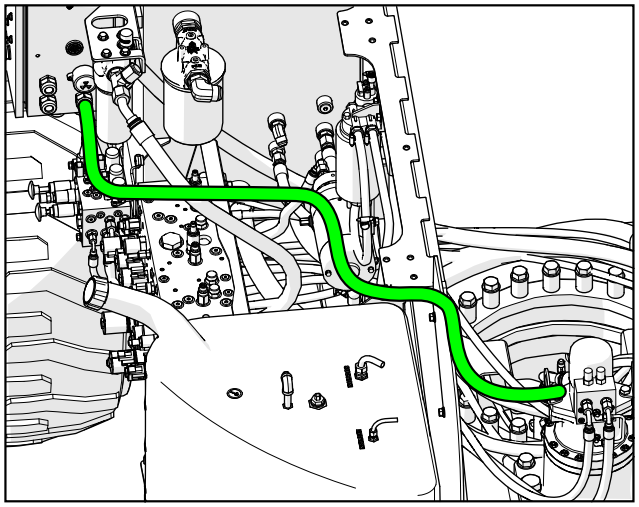
1. Remove the hardware that secures the limit switch to the rotary manifold. Remove the limit switch from the manifold. Keep the hardware for reuse later.



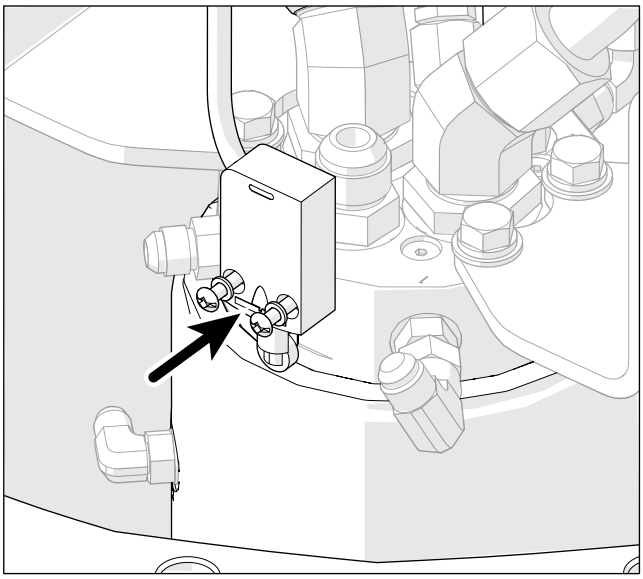
2. In the base control box disconnect the LS1 limit switch cable from terminal blocks 09 and 17.



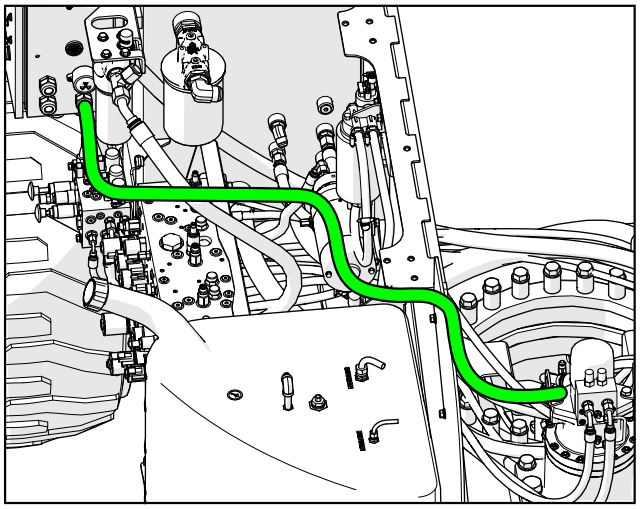
3. Remove the limit switch cable from the base control box, through the cutout in the turret to the rotary manifold, until it is completely free.
4. Throw out the limit switch and cable.



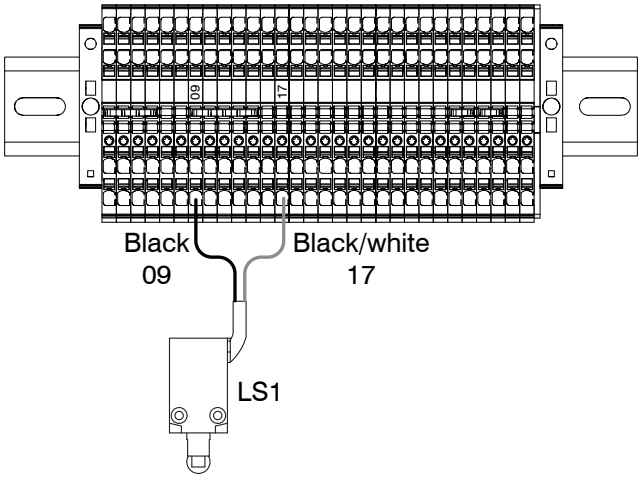
5. Use the hardware removed earlier to secure the new limit switch to the rotary manifold.



6. Route the cable through the cutout in the turret wall to the base control box. . Secure the cable with cable ties as needed.



7. Connect the black limit switch wire to terminal block 09 in the base control box. Connect the black/white wire to terminal block 17.



5.6-3 Test the Direction Sensing Limit Switch LS1

1. Start the engine.
2. With the counterweight over the steer axle, drive the MEWP forward.

   Result: The MEWP drives forward in the direction of the counterweight.
3. Rotate the turret 180° so the counterweight is over the non-steer axle. Reset the footswitch then drive the MEWP forward.

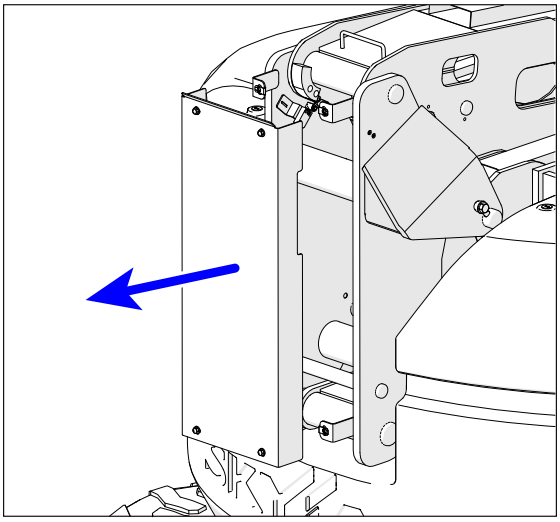
   Result: The MEWP drives forward in the direction of the counterweight.

5.6-4 Replace the Main Boom Limit Switch LS2

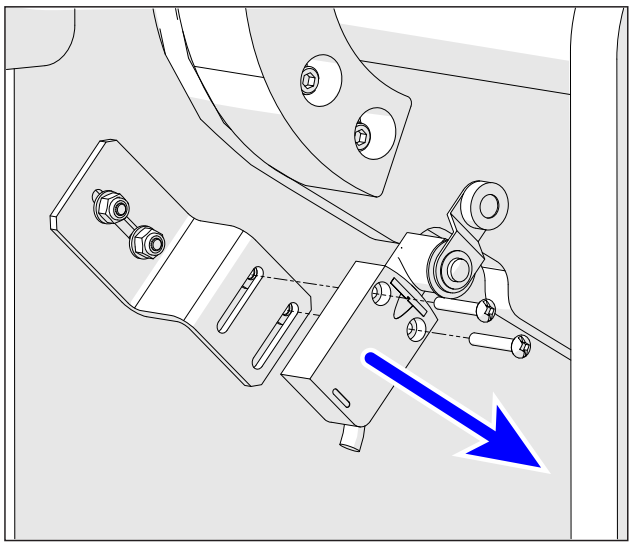
The main boom limit switch LS2 is located at the front end of the boom where it connects to the upper pivot. If you are facing the front end of the boom, it is the limit switch on the left side. Refer to *5.6 Limit Switches.*

This limit switch consists of a normally closed contact and controls the MEWP elevated drive speed.

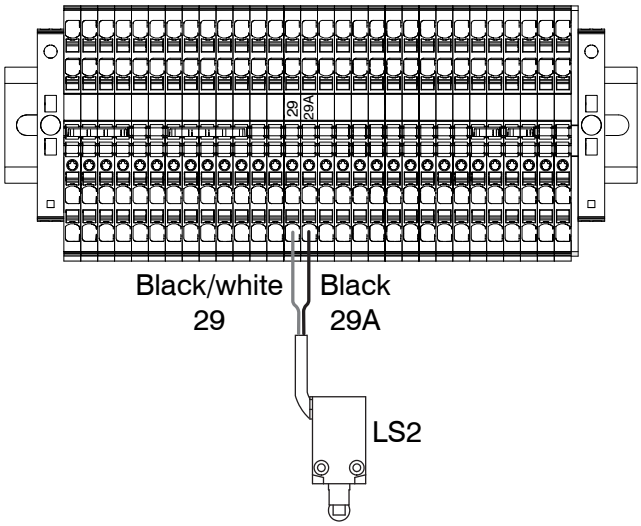
1. Lower the main boom.
2. Remove the upper pivot cover plate.



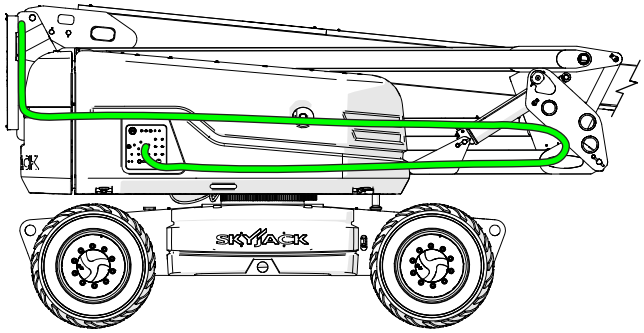
3. Remove the limit switch hardware and set it aside for reuse later.



4. Open the base control console.
5. Find the LS2 connections on the terminal blocks. The black wire is connected to terminal block 29A, and the black/white wire is connected to terminal block 29.
6. Disconnect the two wires.

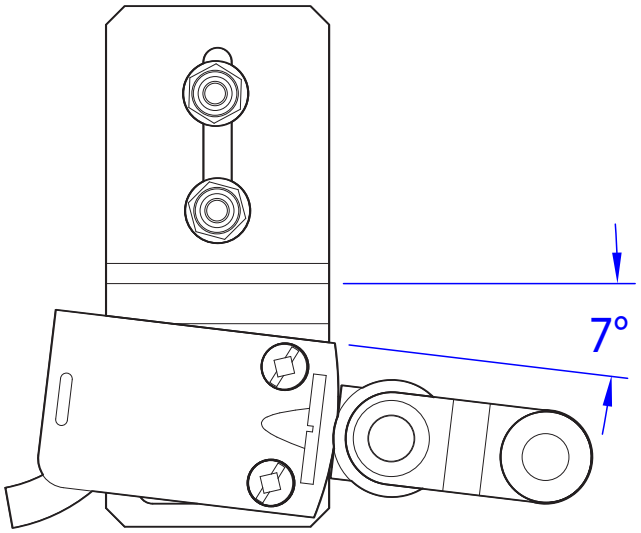


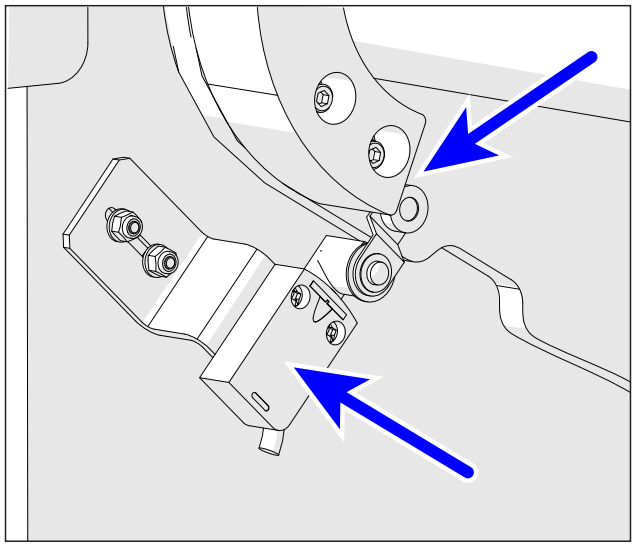
7. Remove the limit switch cable all the way from the base control box along the riser to the end of the boom until it is completely free.
8. Throw out the limit switch and cable.



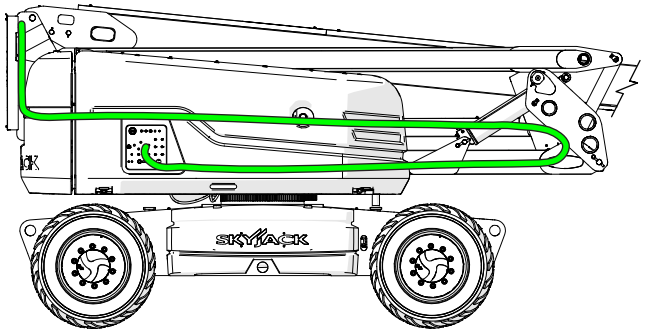
9. Use the original hardware to secure the new limit switch to the turret wall.

- Angle the roller end of the limit switch down about 7˚ on the bracket.
- Make sure the head of the limit switch sits under the short end of the cam, lightly touching it.

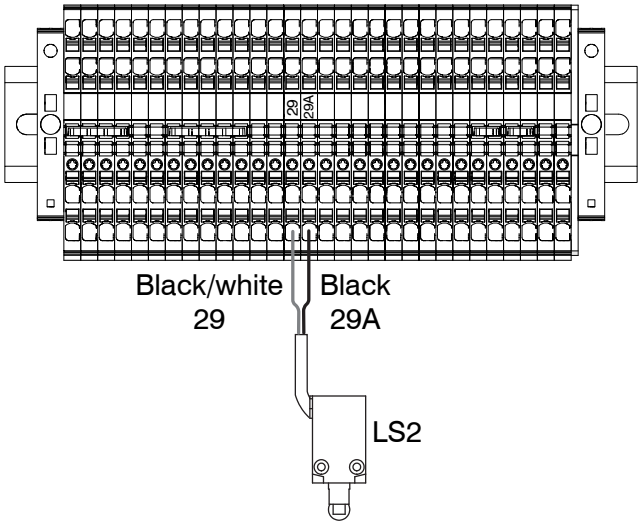




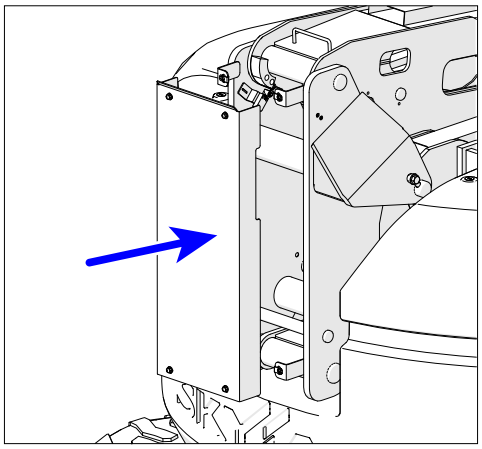
10. Run the limit switch cable along the riser and into the base control box. Secure the cable with cable ties as needed.



11. Connect the black limit switch wire to terminal block 29A in the base control box. Connect the black/white wire to terminal block 29.



12. Install the upper pivot cover plate and retaining hardware.



5.6-5 Test the Main Boom Limit Switch LS2

1. Start the engine.
2. With the riser stowed and the main boom at or below horizontal, drive the MEWP forward at full speed.
3. Stop and then raise the main boom above horizontal. Drive the MEWP forward at full speed.

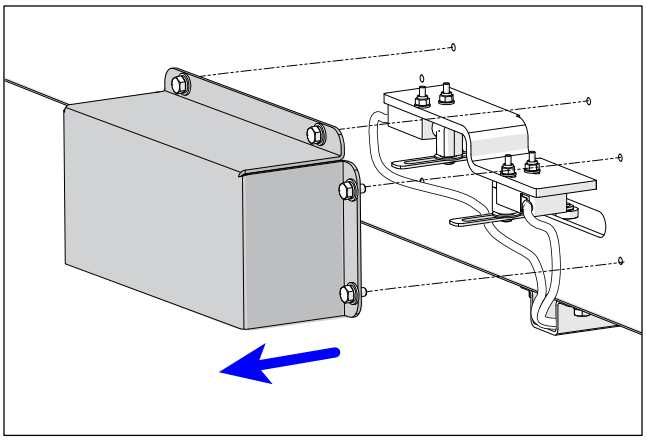
   Result: The MEWP drives much slower than it did when the boom was lowered.

5.6-6 Replace the Fly Boom Limit Switch LS3

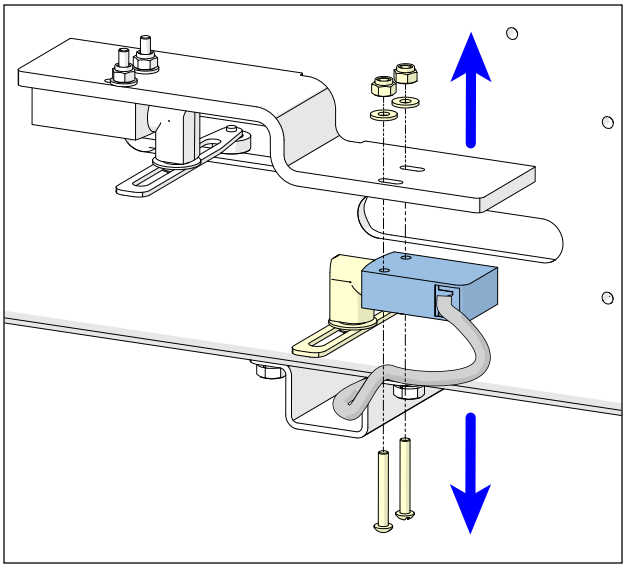
The fly boom limit switch LS3 is located on the outer left side of the main boom under a cover. It is the lower limit switch closer to the platform. Refer to *5.6-1 Limit Switch Locations and Trip Points.*

This limit switch consists of a normally closed contact and controls the MEWP elevated drive speed.

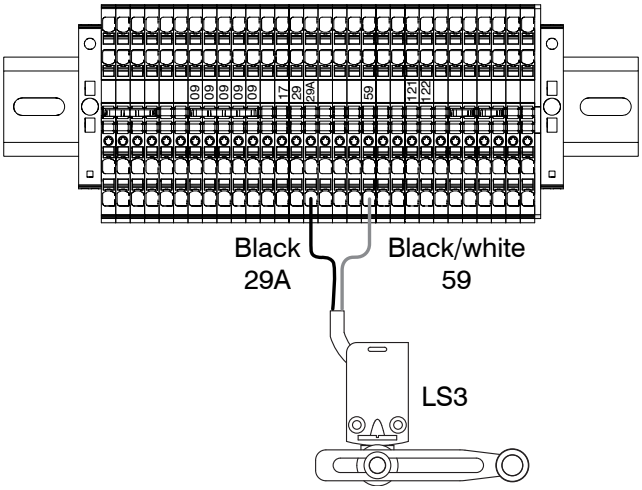
1. Retract the boom.
2. Remove the cover over the limit switches and set it aside.



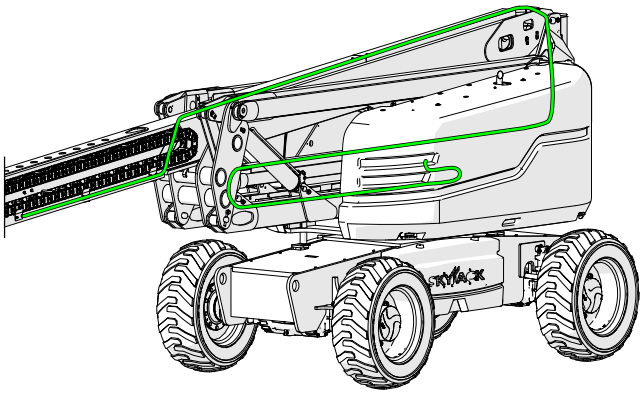
3. Remove the limit switch hardware and set it aside for reuse later.



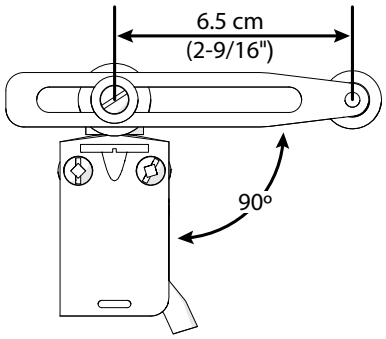
4. In the base control box disconnect the LS3 limit switch cable from terminal blocks 29A and 59.



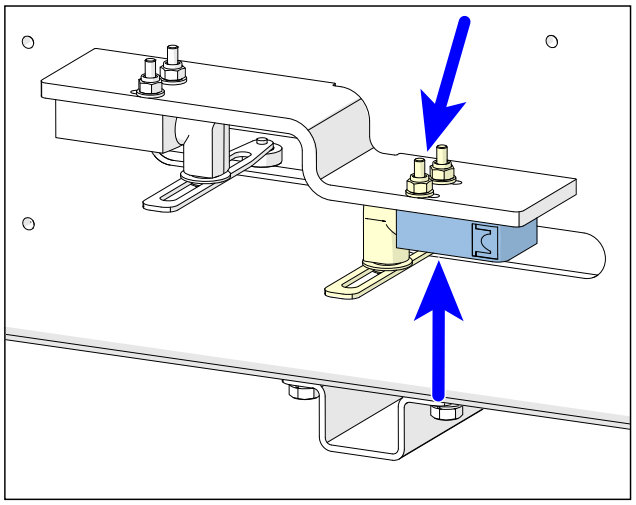
5. Remove the limit switch cable from the base control box, along the lower riser arm, to the knuckle, and down the main boom to the limit switch, until it is completely free.
6. Throw out the limit switch and cable.



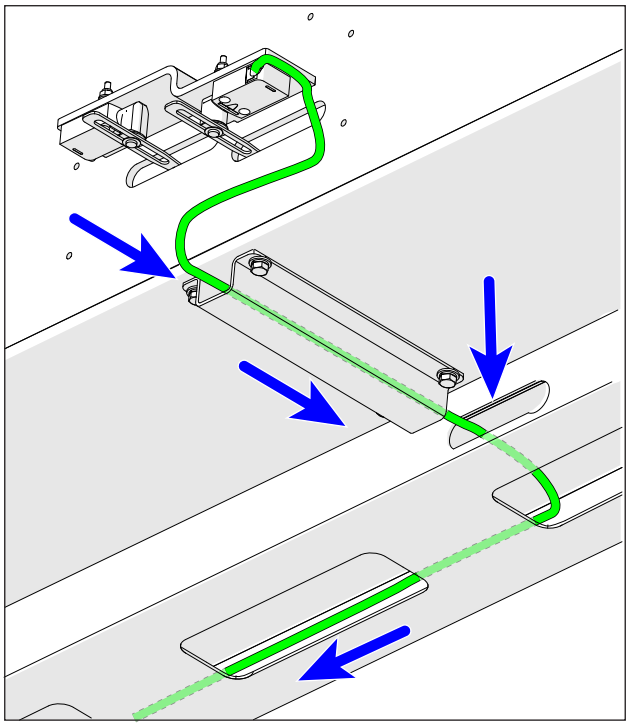
7. Use the dimensions below to set the arm on the new limit switch.



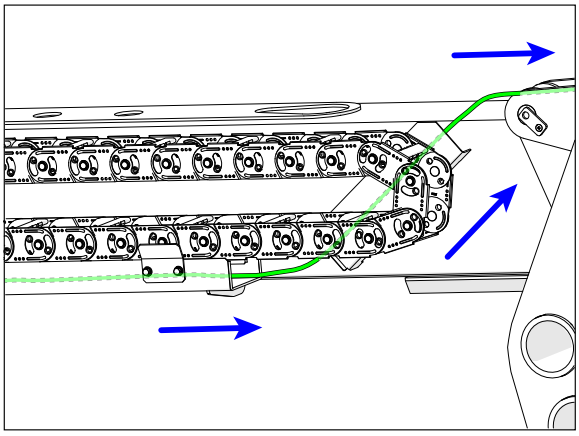
8. Use the hardware removed earlier to secure the new limit switch to the boom.



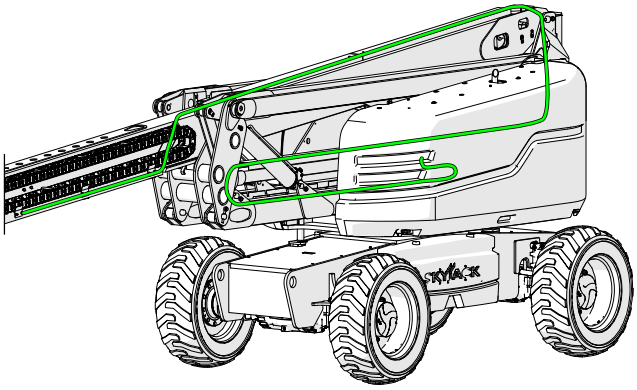
9. Feed the cable through the cable bracket on the underside of the boom, and into the cutout in the side of the lower hose support.



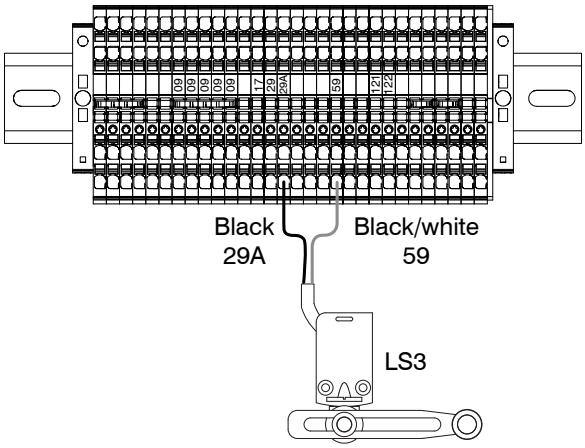
10. Route the cable along the hose support, and through the hose support plate.



11. Continue to route the cable along the top of the boom, down the front knuckle, along the lower riser arm and into the base control box.
12. Secure the cable with cable ties as needed.



13. Connect the black limit switch wire to terminal block 29A in the base control box. Connect the black/white wire to terminal block 59.



5.6-7 Test the Fly Boom Limit Switch LS3

1. Start the engine.
2. With the riser stowed and the main boom at or below horizontal and fully retracted, drive the MEWP at full speed.
3. Stop and then extend the boom approximately 30 cm (12”). Drive the MEWP at full speed.

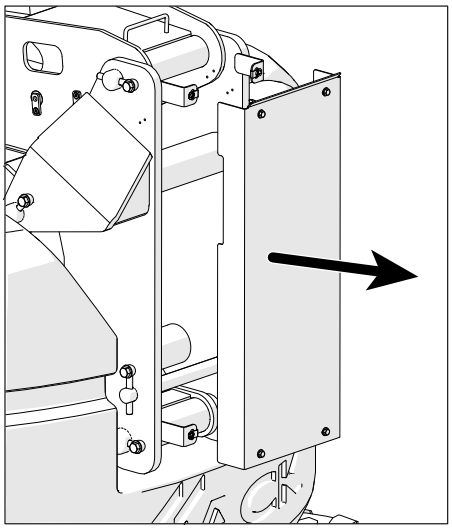
   Result: The drive speed with the boom extended is significantly slower than the retracted drive speed.

5.6-8 Replace the Dual Load Zone Main Boom Limit Switch LS4

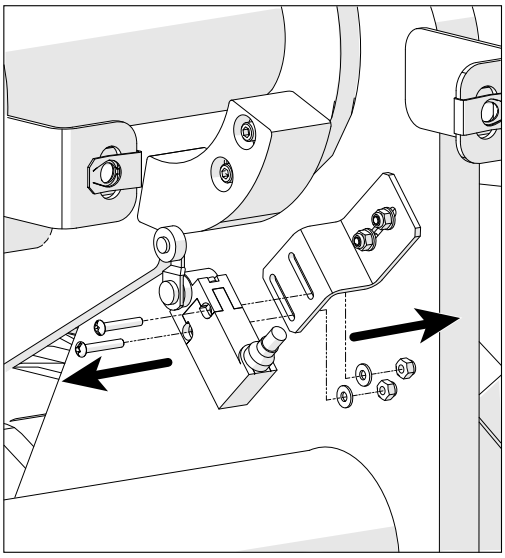
The dual load zone limit switch LS4 is located at the front end of the main boom where it connects to the upper pivot. If you are facing the front end of the boom, it is the limit switch on the right side. Refer to *5.6-1 Limit Switch Locations and Trip Points.*

This limit switch consists of a normally closed contact held open and controls the MEWP dual load zone.

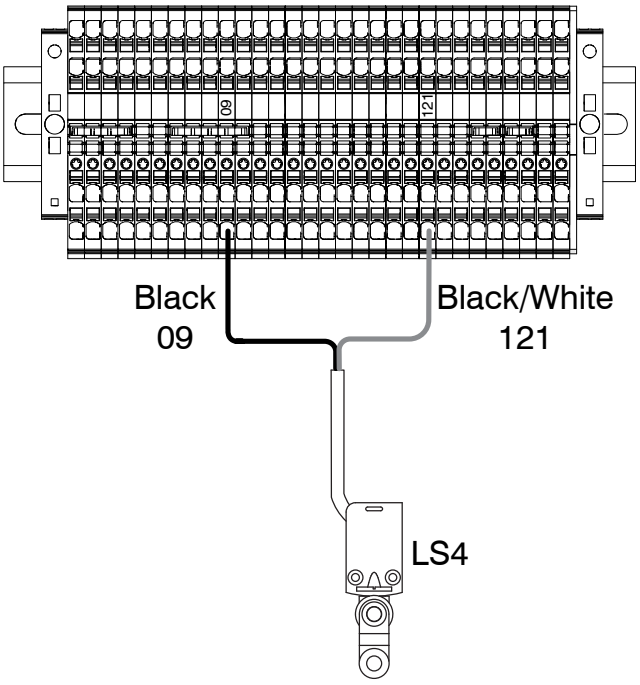
1. Remove the upper pivot cover plate.



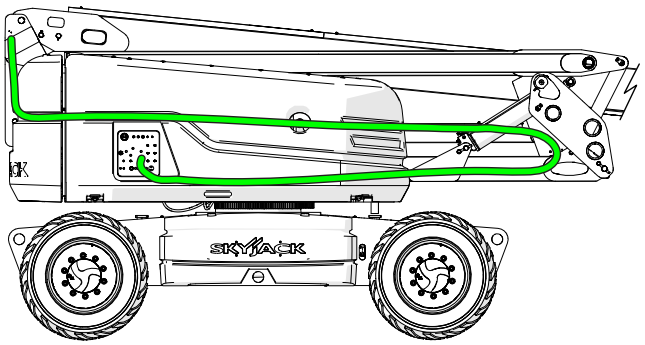
2. Remove the hardware that secures the limit switch to the bracket. Remove the limit switch from the bracket. Keep the hardware for reuse later.



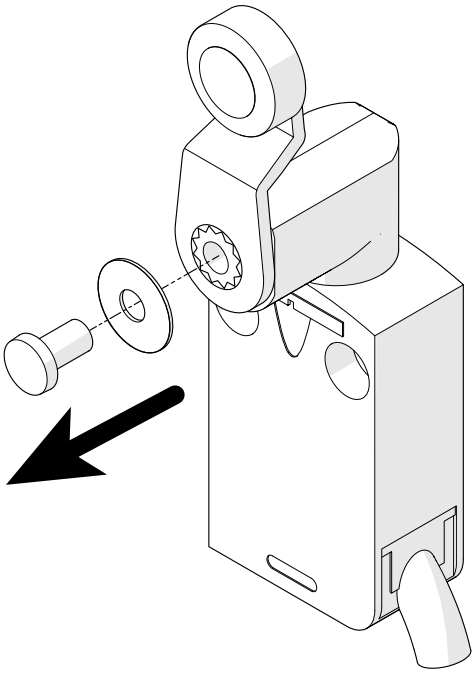
3. Open the control side cowling. Open the base control console door.
4. Find the LS4 connections on the terminal blocks. The black wire is connected to terminal block 09, and the black/white wire is connected to terminal block 121.
5. Disconnect the two wires.



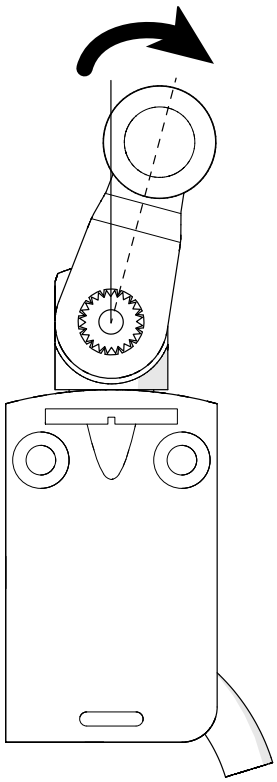
6. Remove the limit switch cable all the way from the base control box along the riser to the end of the boom until it is completely free.
7. Throw out the limit switch and cable.



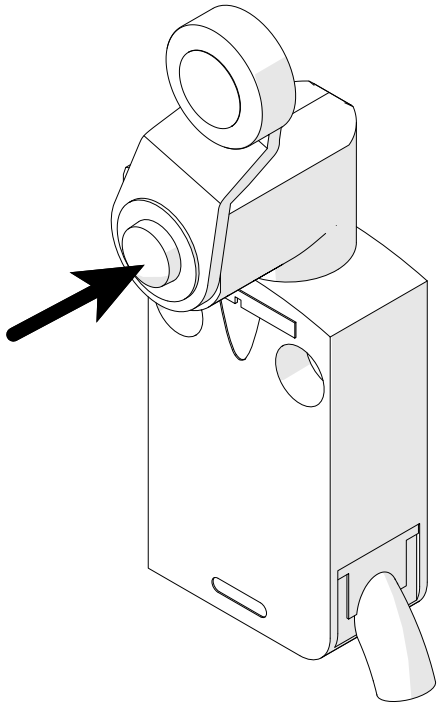
8. Get the new limit switch and remove the screw and washer that holds the actuator arm to the limit switch body.



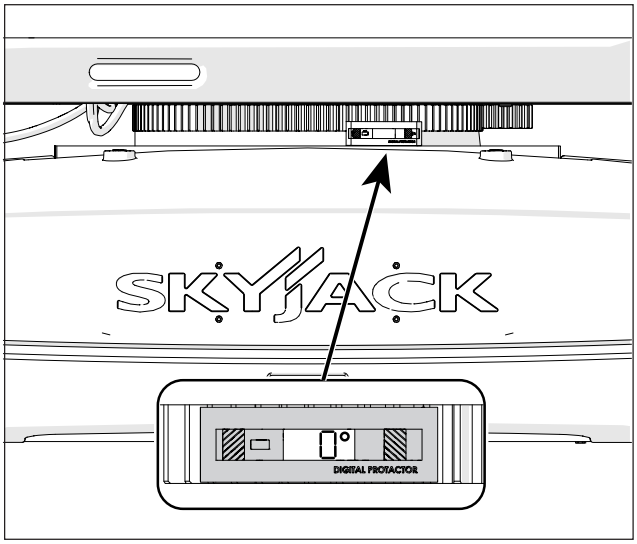
9. Lift the actuator arm and rotate it clockwise one gear tooth.



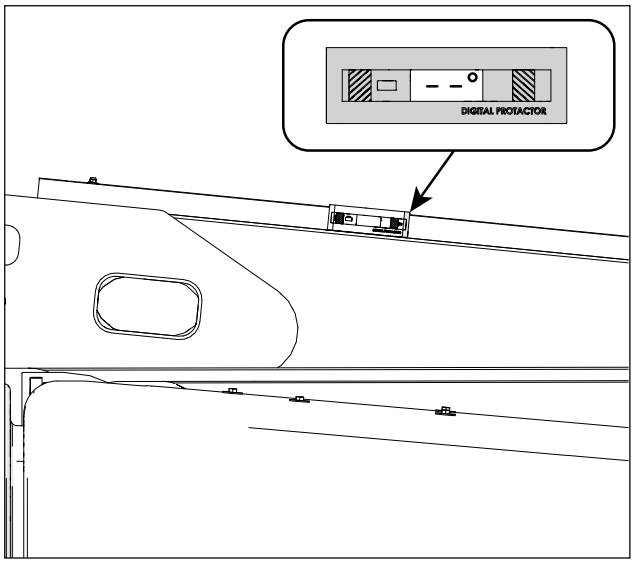
10. Secure the actuator arm with the screw and washer removed earlier.



11. On the controls side of the MEWP place a digital protractor on a flat surface of the chassis near the ring gear. Zero the protractor.

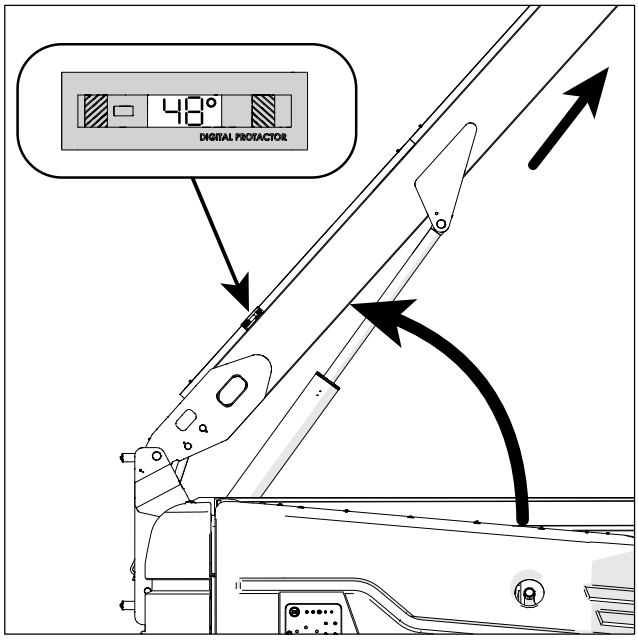


12. Move the protractor to a flat surface on the main boom.



13. Turn on the engine.

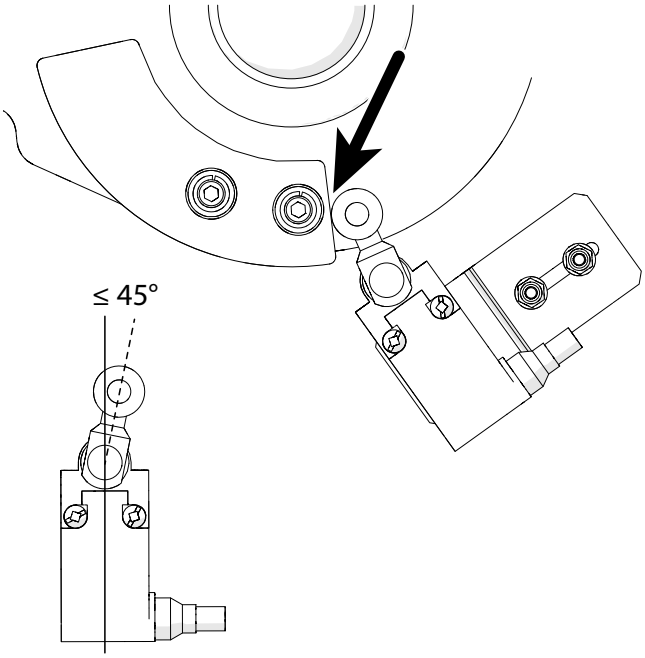
14. Raise the main boom until the angle on the protractor is 48°. Extend the boom fully. Shut off the engine.



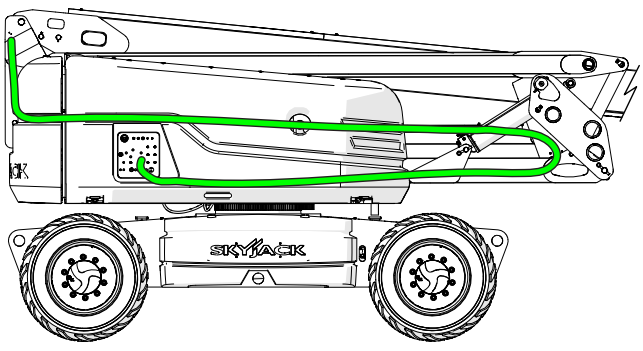
15. Install the new limit switch on the limit switch bracket. Leave the hardware loose.

16. Position the limit switch so the roller pushes against the cam at about a 20° to 30° angle. Make sure the angle of the roller arm is no greater than 45°.

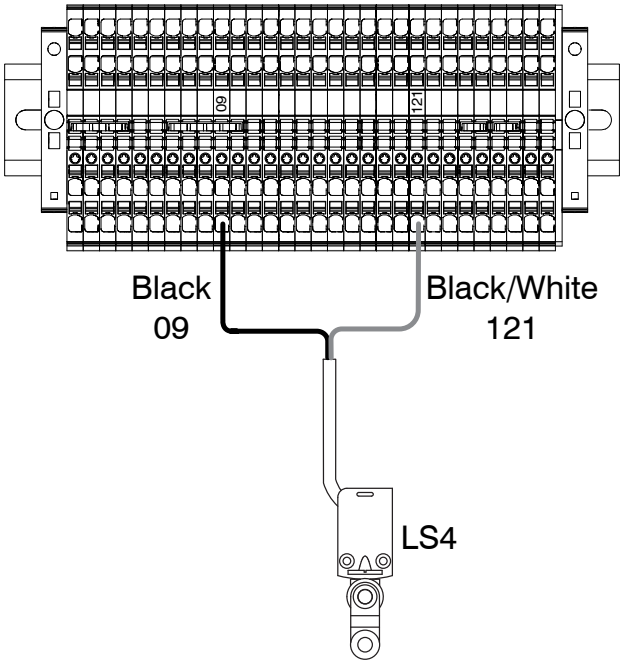
17. Tighten the hardware.



18. Run the limit switch cable along the riser and into the base control box. Secure the cable with cable ties as needed.

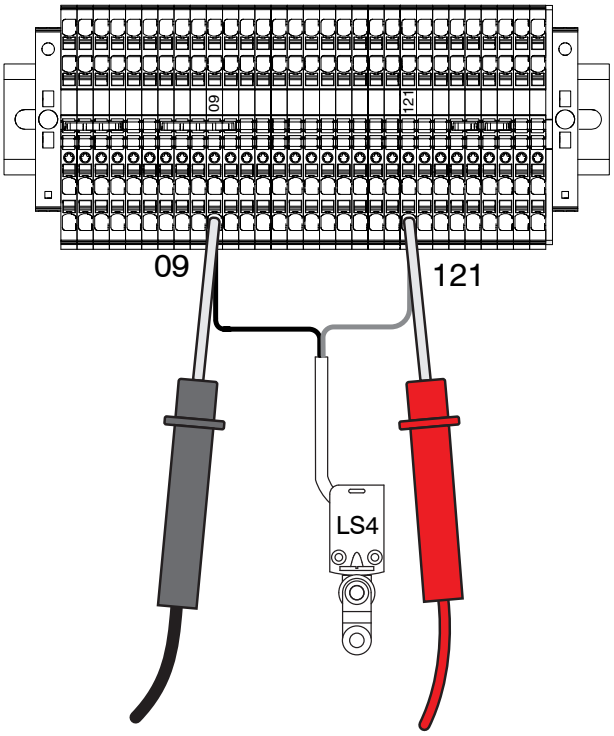


19. Connect the black limit switch wire to terminal block 09 in the base control box. Connect the black/white wire to terminal block 121.



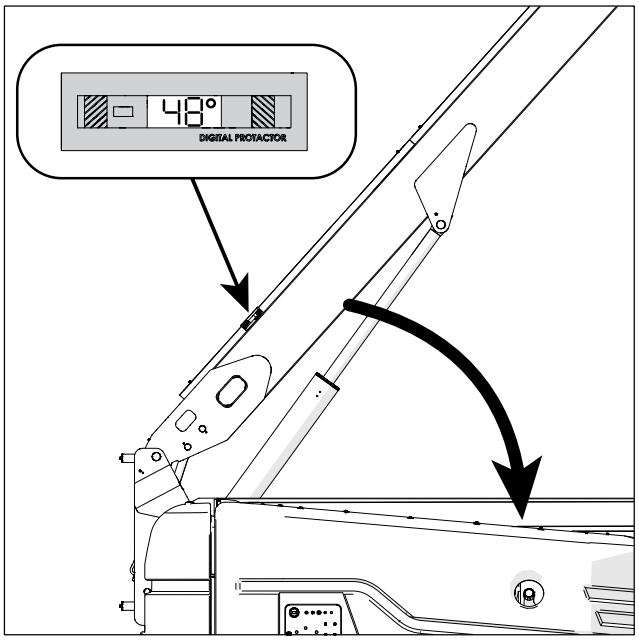
20. Turn on the engine.

21. Use a multimeter to check for continuity between terminal blocks 09 and 121.



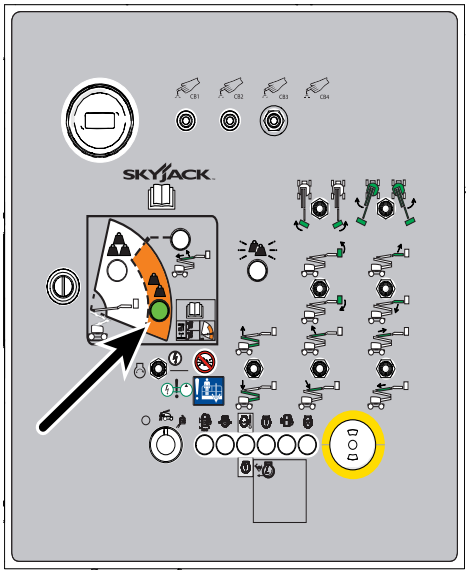
22. While still checking the continuity between the terminal blocks, start to lower the main boom slowly. Immediately stop lowering the boom when you lose continuity between terminal blocks 09 and 121.

23. Check the angle on the protractor. If it is between 47° and 49°, continue with the next step. If it is not, repeat steps 16, 17, 21, and 22 until the angle is between 47° and 49°.

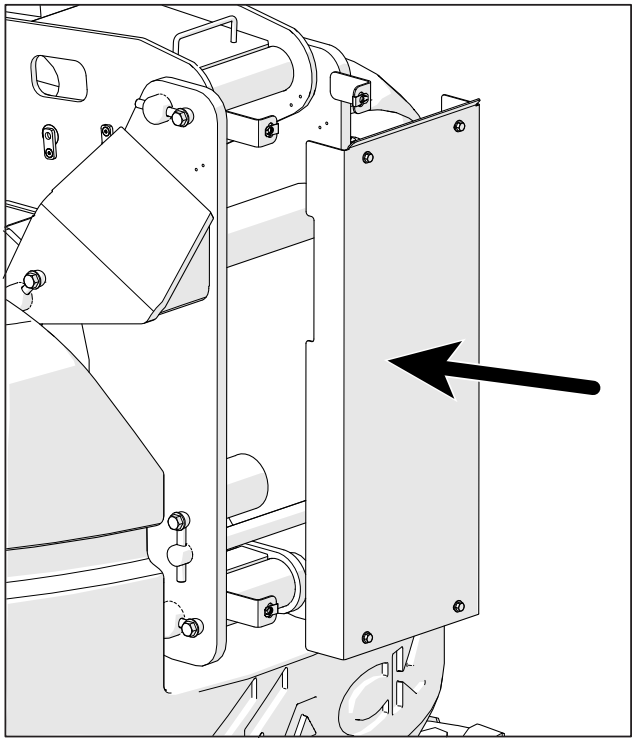


24. Look at the green low capacity light in the dual load zone on the front of the base control box

Result: The low capacity light is on.



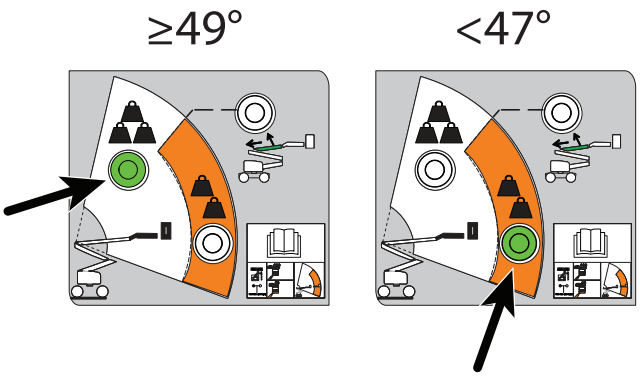
25. Install the upper pivot cover plate and retaining hardware.



5.6-9 Test the Dual Load Zone Main Boom Limit Switch LS4

1. If a digital protractor is not already in place from the previous procedure, place a digital protractor on a flat surface of the chassis. Zero the protractor.
2. Move the protractor to a flat surface on the main boom.
3. Fully raise and extend the main boom.
4. Watch the load zone lights on the base control console while you slowly lower the main boom.

   Result: The high capacity light turns off and the low capacity light turns on when the boom lowers past 47° to 49°.

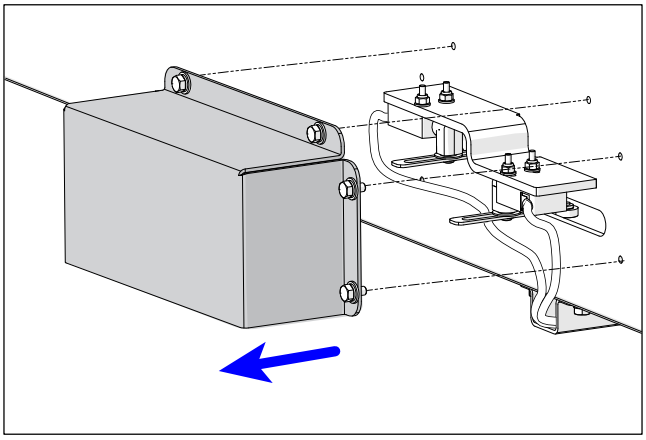


5.6-10 Replace the Dual Load Zone Fly Boom Limit Switch LS5

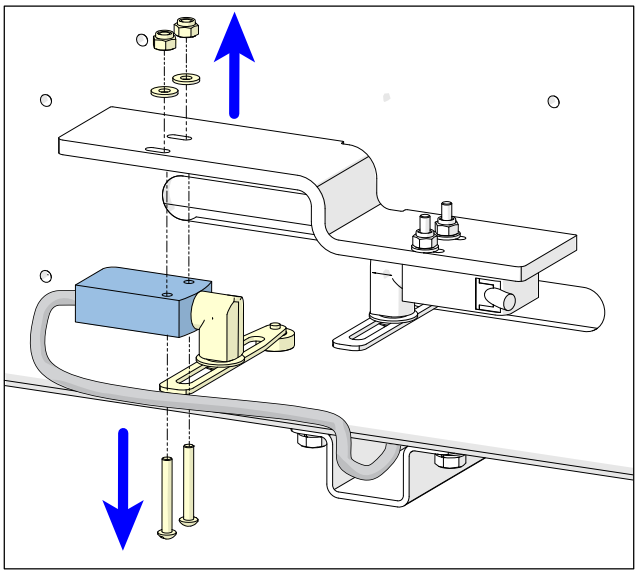
The dual load zone fly boom limit switch LS5 is located on the outer left side of the main boom under a cover. It is the upper limit switch closer to the turret. Refer to *5.6-1 Limit Switch Locations and Trip Points.*

This limit switch consists of a normally closed contact and controls the MEWP dual load zone.

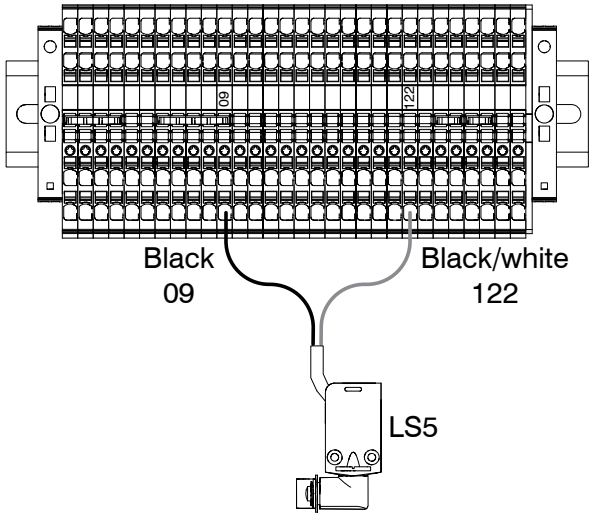
1. Remove the cover over the limit switches and set it aside.



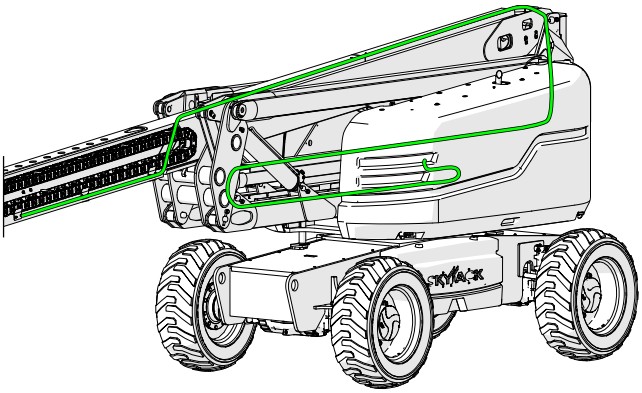
2. Remove the limit switch hardware and set it aside for reuse later.



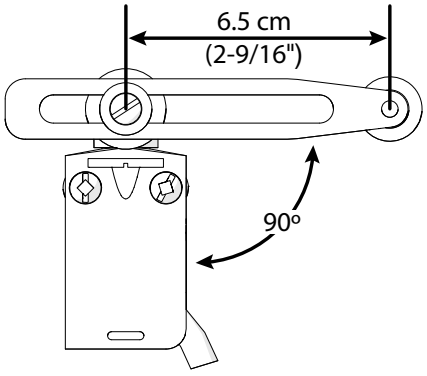
3. In the base control box disconnect the LS5 limit switch cable from terminal blocks 09 and 122.



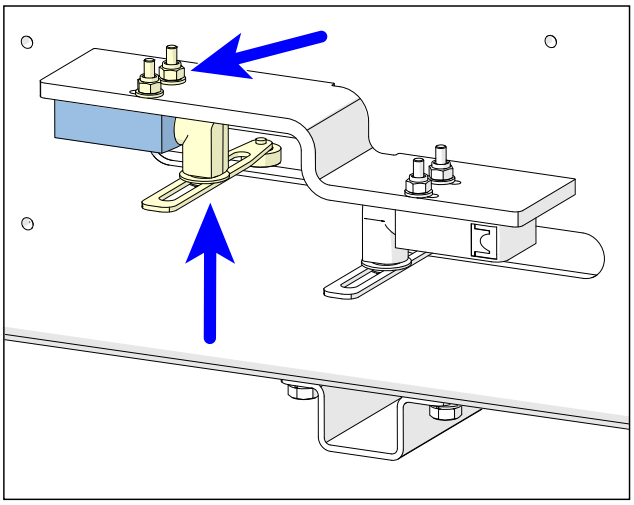
4. Remove the limit switch cable from the base control box, along the lower riser arm, to the knuckle, and down the main boom to the limit switch, until it is completely free.
5. Throw out the limit switch and cable.



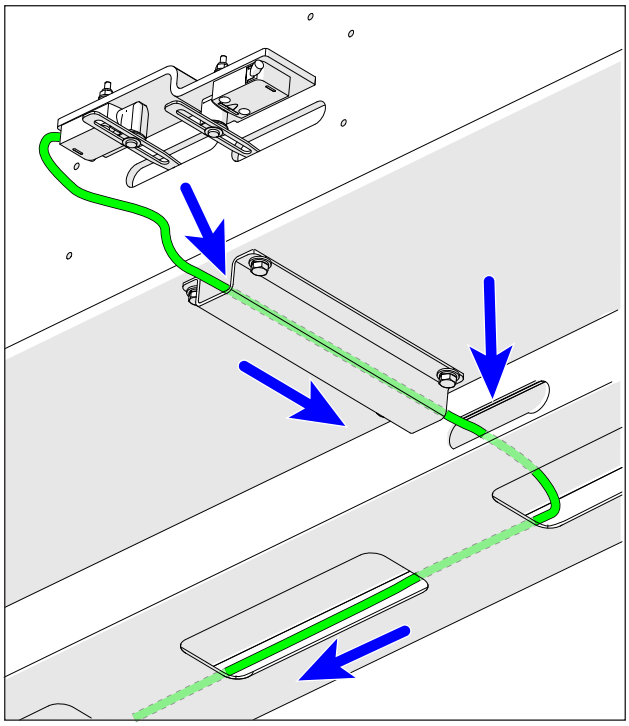
6. Use the dimensions below to set the arm on the new limit switch.



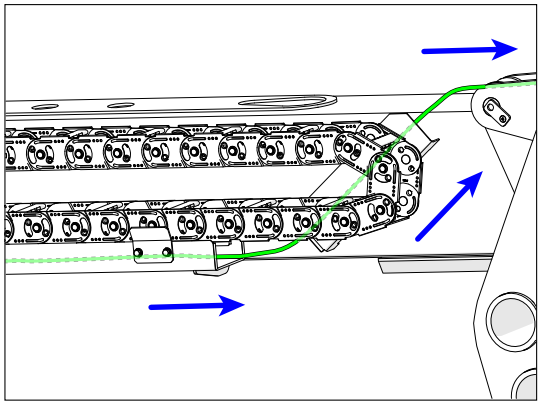
7. Use the hardware removed earlier to secure the new limit switch to the boom.



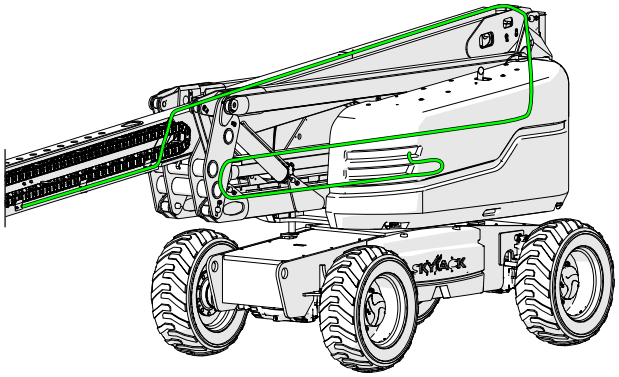
8. Feed the cable through the cable bracket on the underside of the boom, and into the cutout in the side of the lower hose support.



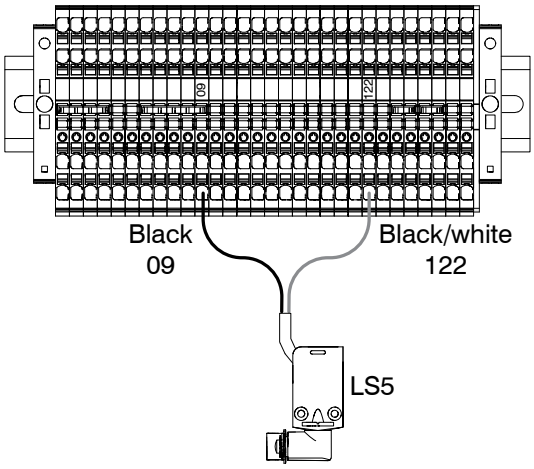
9. Route the cable along the hose support, and through the hose support plate.



10. Continue to route the cable along the top of the boom, down the front knuckle, along the lower riser arm and into the base control box.
11. Secure the cable with cable ties as needed.



12. Connect the black limit switch wire to terminal block 09 in the base control box. Connect the black/white wire to terminal block 122.

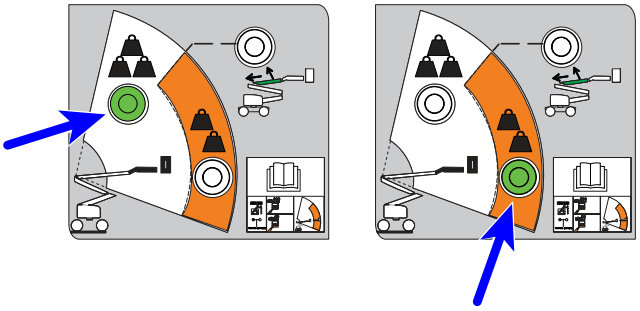


5.6-11 Test the Dual Load Zone Fly Boom Boom Limit Switch LS5

1. Start the engine.
2. Retract the boom all the way. Position it horizontally.
3. Look at the load zone lights on the front of the base control console.

   Result: The green light is on while the boom is fully retracted.
4. Watch the load zone lights on the base control console while you extend the boom about 3.66 m (12 ft).

   Result: The high capacity light turns off and the low capacity light turns on when the boom extends past 3.66 m (12 ft).

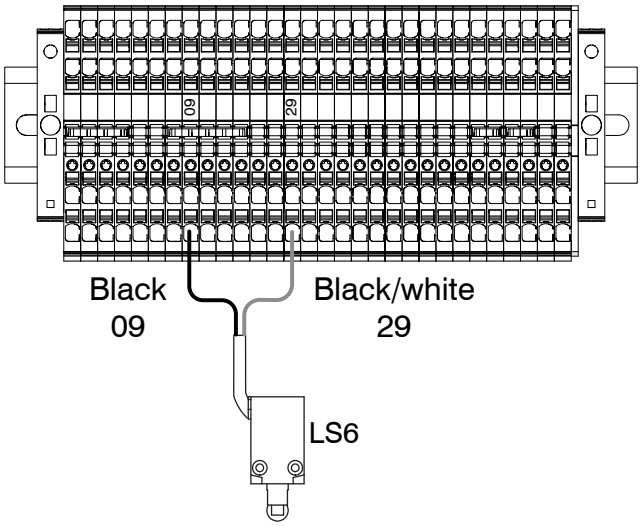


5.6-12 Replace the Riser Limit Switch LS6

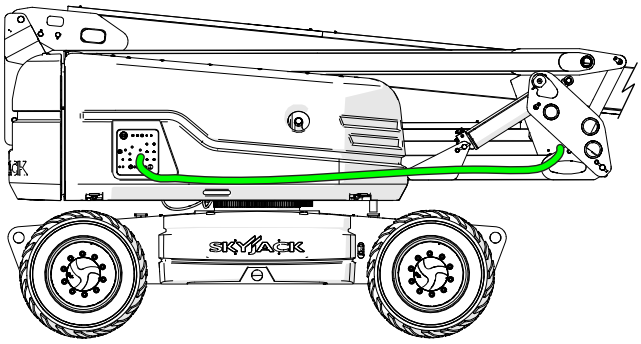
The riser limit switch LS6 is located on the inside face of the lower pivot where the third riser connects to it. Refer to *5.6-1 Limit Switch Locations and Trip Points.*

This limit switch consists of a normally closed contact and controls the MEWP elevated drive speed.

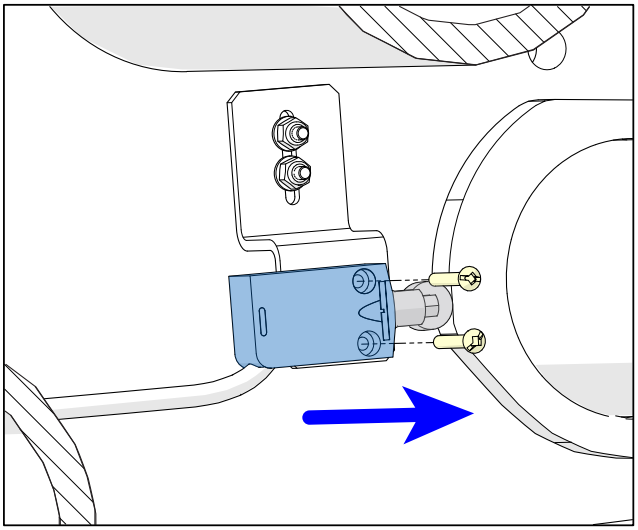
1. Lower the riser all the way.
2. Disconnect the LS6 limit switch cable from terminal blocks 09 and 29 in the base control box.



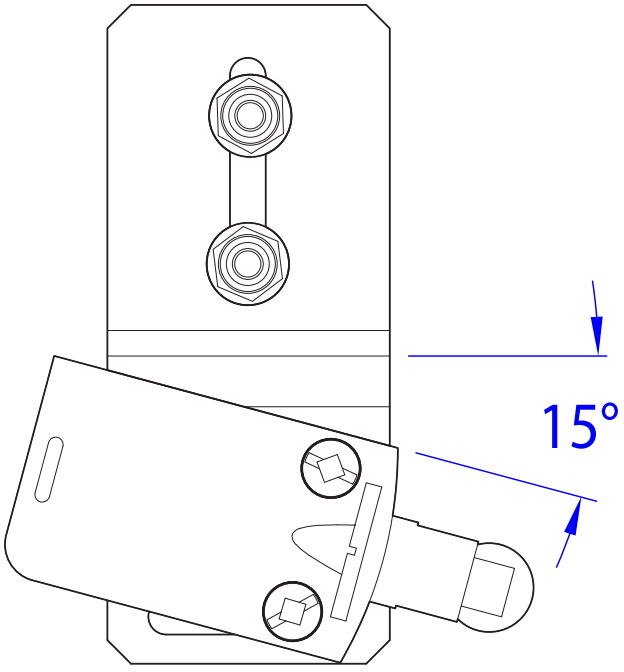
3. Remove the limit switch cable from the base control box, along the lower riser arm, to the limit switch, until it is completely free.

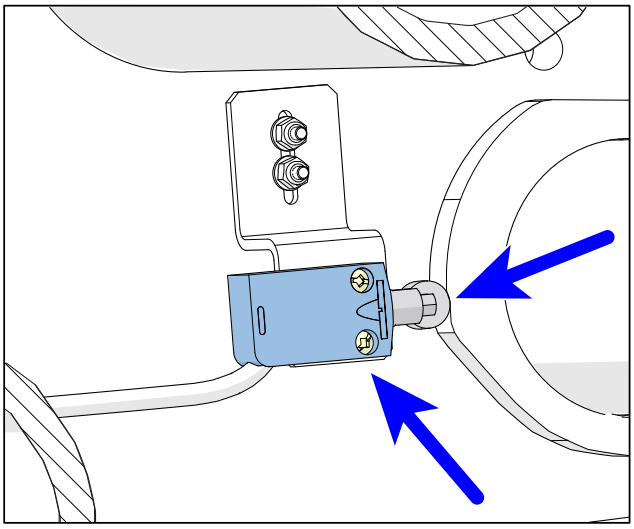


4. Remove the limit switch hardware. Throw out the limit switch and cable, but keep the hardware.

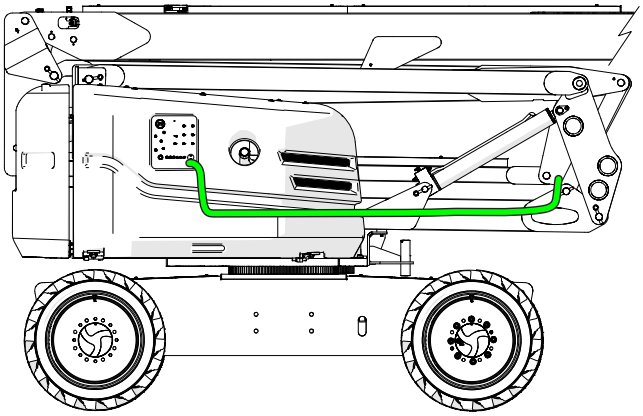


5. Install a new riser boom limit switch in place of the old one. Use the original hardware.
   - Angle the roller end of the limit switch down about 15˚ on the bracket.
   - Make sure there is light contact between the roller plunger and the cam surface.

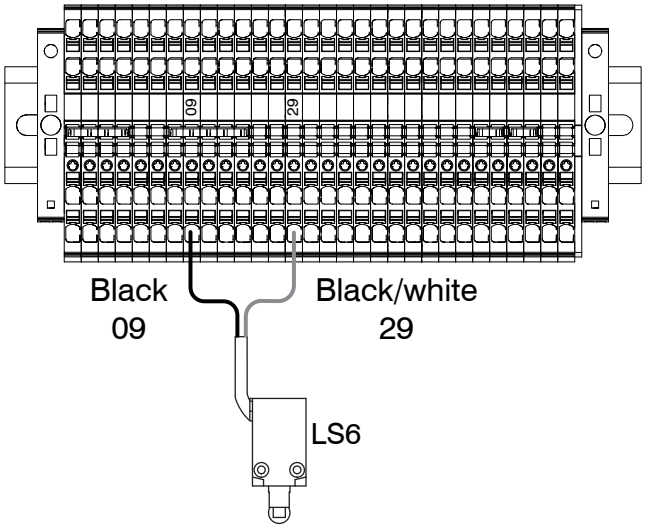




6. Route the limit switch cable along the lower riser arm and into the base control box.
7. Secure the cable with cable ties as needed.



8. Connect the black/white limit switch wire to terminal block 29 in the base control box. Connect the black wire to terminal block 09.



5.6-13 Test the Riser Limit Switch LS6

1. Start the engine.
2. With the boom retracted and at or below horizontal, and the riser fully lowered, drive the MEWP at full speed.
3. Stop and then raise the riser 1.2 m (4 ft). Drive the MEWP at full speed.

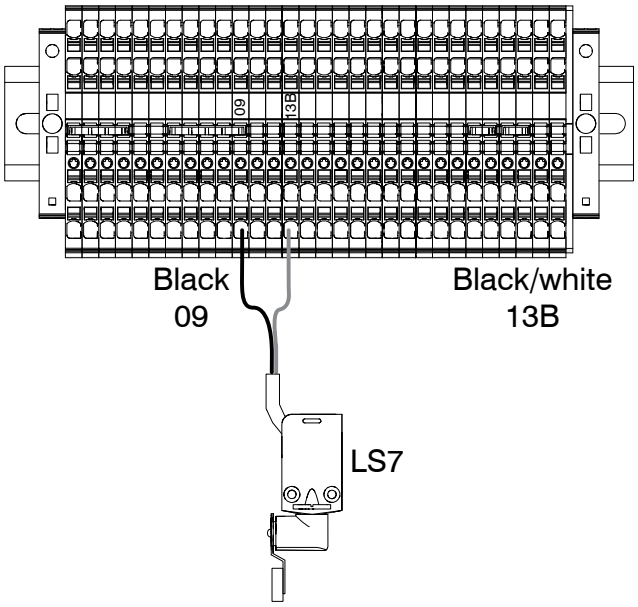
   Result: The drive speed with the riser raised is significantly slower than the stowed drive speed.

5.6-14 Replace the Boom/Riser Interlock Limit Switch LS7

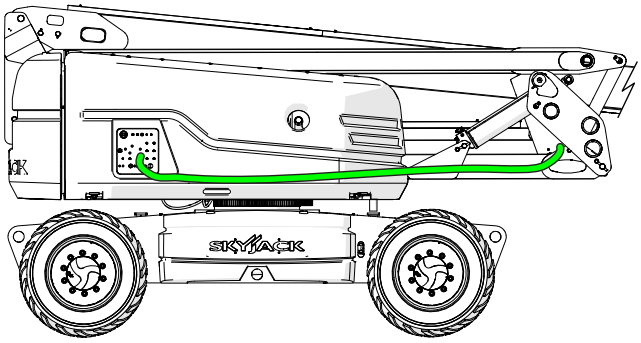
The boom/riser interlock limit switch LS7 is located on the upper cross bar between the lower pivots. Refer to *5.6-1 Limit Switch Locations and Trip Points.*

This limit switch consists of a normally closed contact and stops the boom down function when stowed.

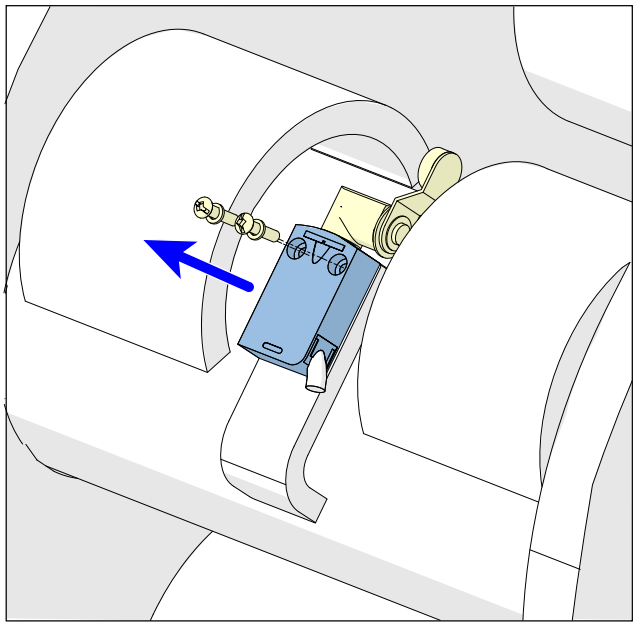
1. Lower the riser all the way.
2. Disconnect the LS7 limit switch cable from terminal blocks 09 and 13B in the base control box.



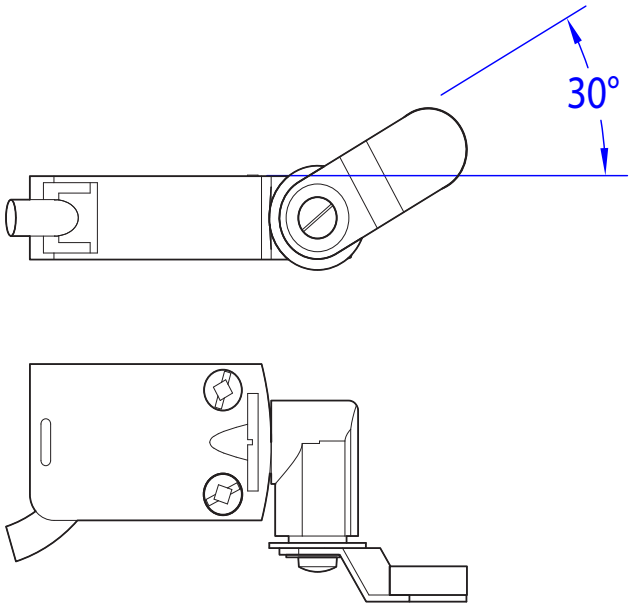
3. Remove the limit switch cable from the base control box, along the lower riser arm, to the limit switch, until it is completely free.



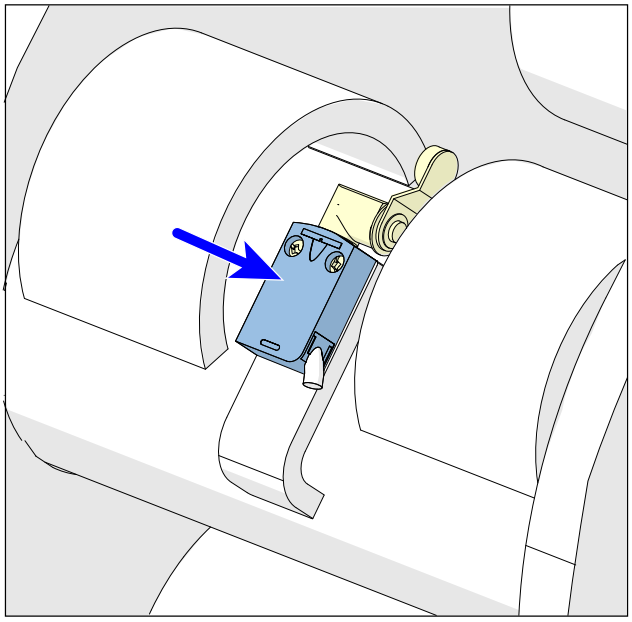
4. Remove the limit switch hardware. Throw out the limit switch and cable, but keep the hardware.



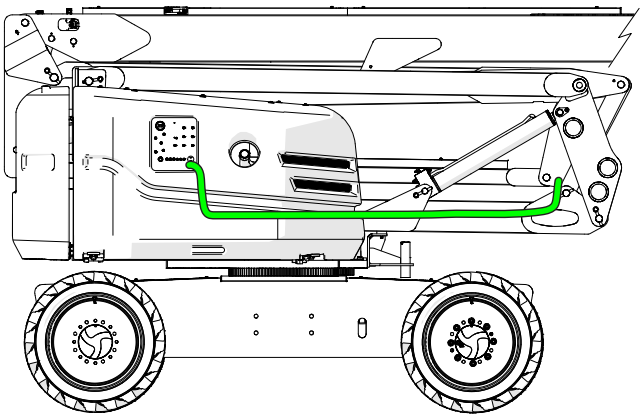
5. Loosen the screw on the new limit switch roller arm. Rotate the arm up about 30˚. Tighten the screw.



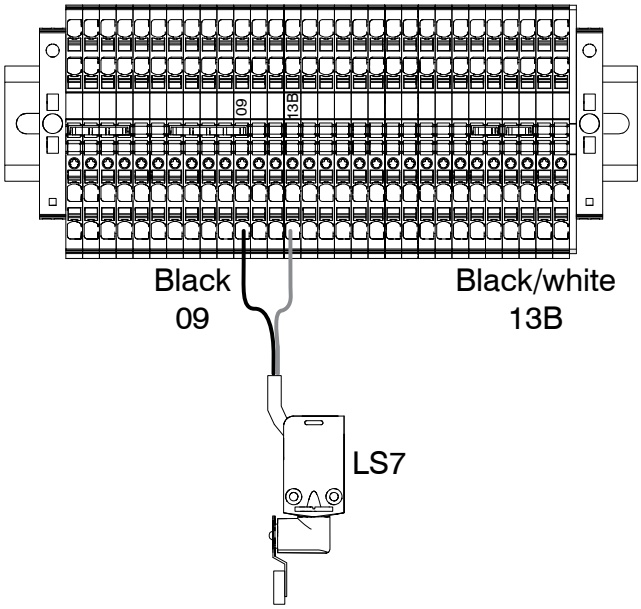
6. Install the new limit switch in place of the old one. Use the original hardware.



7. Route the limit switch cable along the lower riser arm and into the base control box.
8. Secure the cable with cable ties as needed.



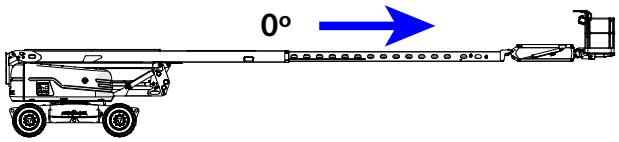
9. Connect the black/white limit switch wire to terminal block 13B in the base control box. Connect the black wire to terminal block 09.



5.6-15 Test the Boom/Riser Interlock Limit Switch LS7

1. Turn on the engine.
2. Raise the main boom above horizontal. Raise the riser all the way up.
3. With no boom or riser functions engaged, use a multimeter to check the voltage between terminal blocks 02 and 13B.

   Result: The voltage reads around 12 to 13 V.



4. With the multimeter still connected, lower the main boom until it touches LS7.

   Result: While the main boom lowers, the multimeter reads around 12 to13 V. When the main boom wear pad touches the limit switch the down function cuts out and the multimeter reads 0 V.

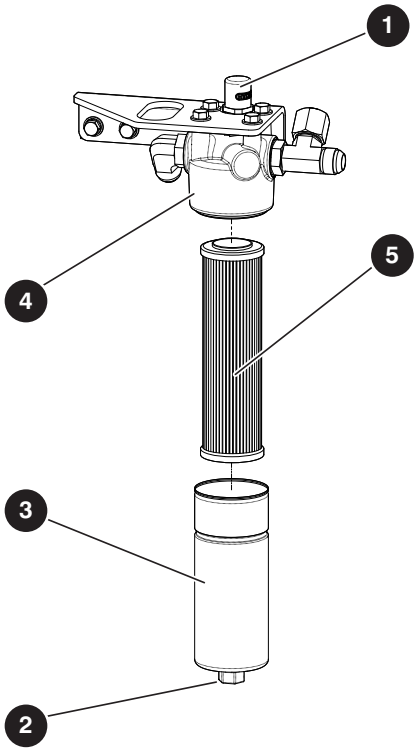
5. Now fully lower the riser while you watch the multimeter.

   Result: The multimeter continues to read 0 V as the riser lowers to the stowed position.

5.7 Turret

5.7-1 Check and Replace the High Pressure Filter

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



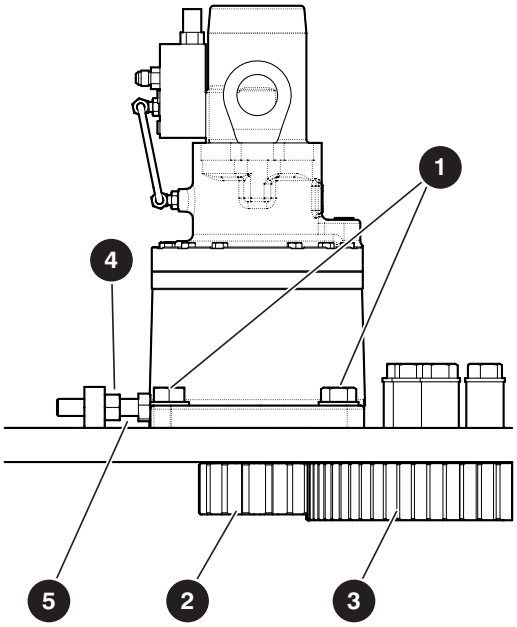
5. Using a 30 mm box wrench on the filter housing nut ❷, loosen the filter housing ❸ and remove it from the filter head ❹.
6. Remove the filter element ❺ from the filter head and install a new high pressure filter element.
7. Apply hydraulic oil to the o-ring on the high pressure filter housing.
8. Reinstall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

5.7-2 Adjust the Turret Ring Gear Backlash

NOTE

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

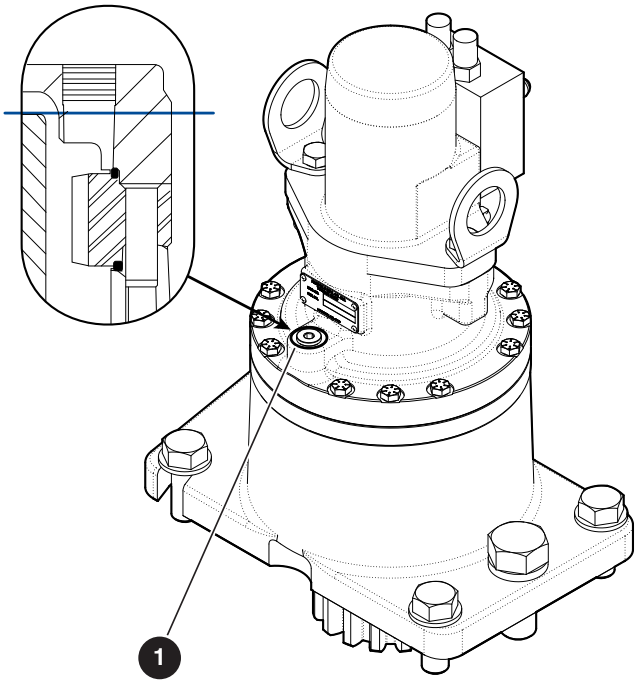
1. Raise the riser and support it with a suitably rated lifting device, or cylinder chocks on both riser cylinder rods.
2. Slowly lower the riser until it is just above the supportive device being used.
3. Loosen the mounting fasteners ❶ on the swing drive.
4. Push the swing drive towards the rotation gear as close as possible (this will push the swing drive gear ❷ into the rotation gear ❸).



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

5.7-3 Check the Swing Drive Oil

1. Raise the riser and support it with a suitably rated lifting device, or cylinder chocks on both riser cylinder rods.
2. Slowly lower the riser until it is just above the supportive device being used.
3. Remove the plug from the fill port ❶ on the back of the swing drive.
4. Check the oil level. The oil level should be slightly below the port threads.
5. Add oil if needed. Refer to *2.11 Specifications and Features - Engines & Fluids for recommended oil types.*

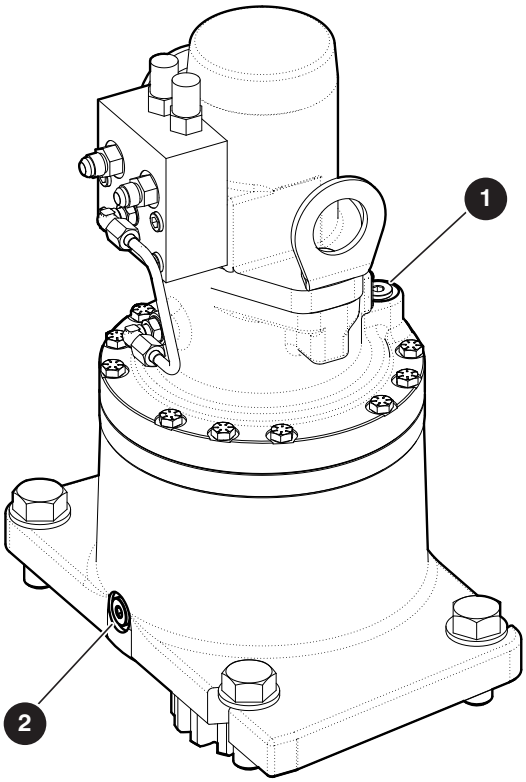


5.7-4 Change the Swing Drive Oil

NOTE

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

1. Raise the riser and support it with a suitably rated lifting device, or cylinder chocks on both riser cylinder rods.
2. Slowly lower the riser until it is just above the supportive device being used.
3. Remove the plug at the fill port ❶.
4. Place a suitable container under the drain port ❷.



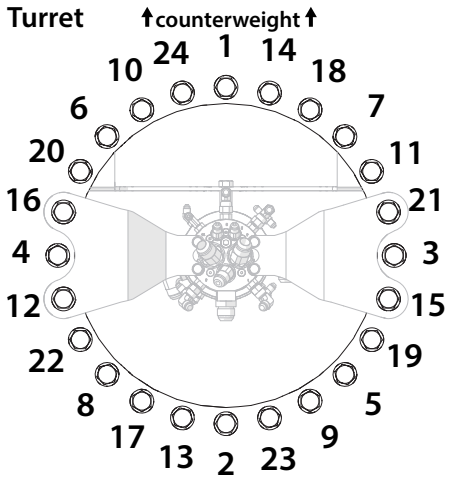
5. Remove the plug at the drain port.
6. Allow the oil to drain.
7. Reinstall the drain plug.
8. Refill the swing drive with approximately 1 L (32 oz) of oil (refer to *2.11 Specifications and Features - Engines & Fluids for recommended oil types).*
9. Reinstall the plug at the fill port.

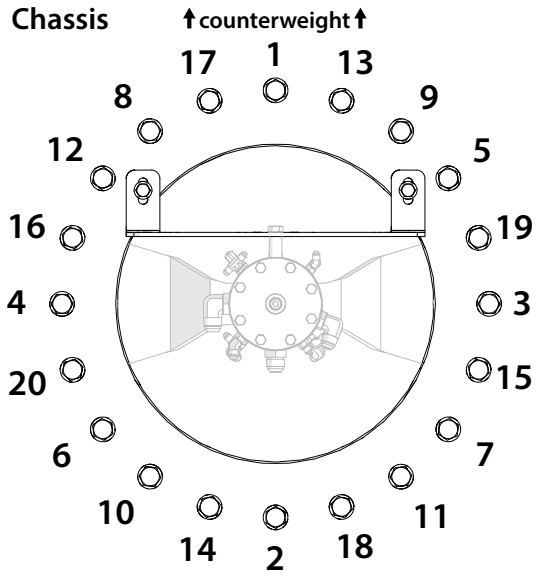
5.7-5 Ring Gear Bolt Torque Sequence

⚠ WARNING

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

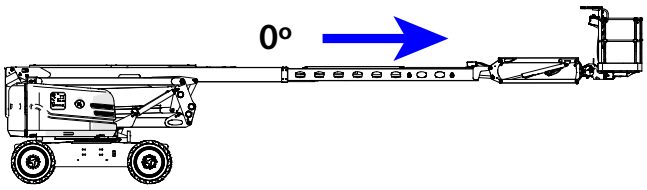
1. Set the torque wrench to 190 Nm (140 ft-lb) and tighten the ring gear bolts in the sequence shown below.
2. Set the torque wrench to 380 Nm (280 ft-lb) and tighten the ring gear bolts with the same sequence.



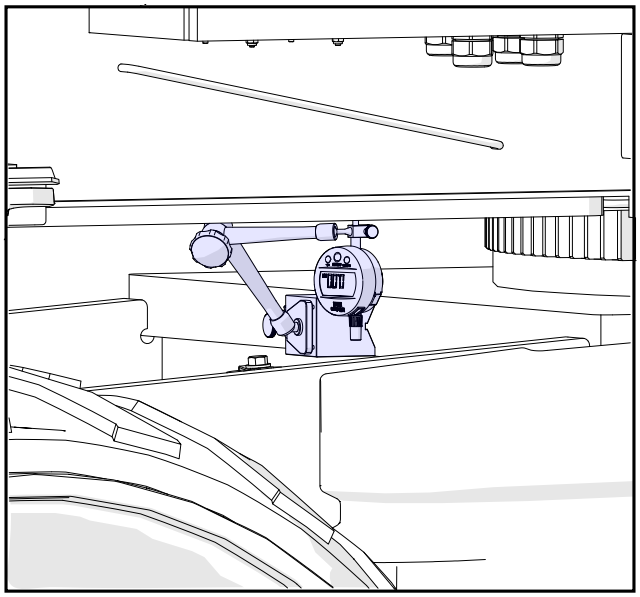


5.7-6 Check the Ring Gear for Axial Wear

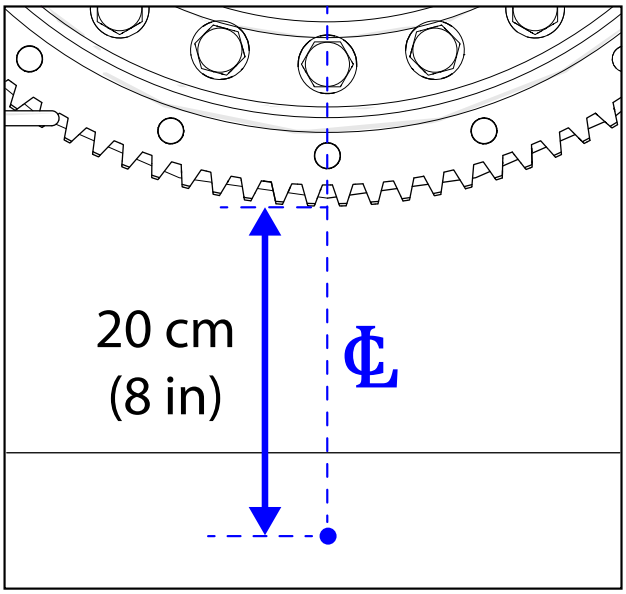
1. Before you start the inspection:
   - Check the bearing bolts' torque and retorque them if needed. Refer to *5.7-5 Ring Gear Bolt Torque Sequence.*
   - Make sure the bearing is greased. Refer to *5.12-1 Grease the Turret Ring Gear*.
2. Make sure you have enough space to extend the boom, riser, and jib fully, both horizontally and vertically.
3. Park the boom on a firm level surface.
4. Position the turret parallel to the base, with the counterweight end over the steer axle.
5. Stow the riser. Position the boom and jib horizontally to the ground.
6. Extend the boom fully.



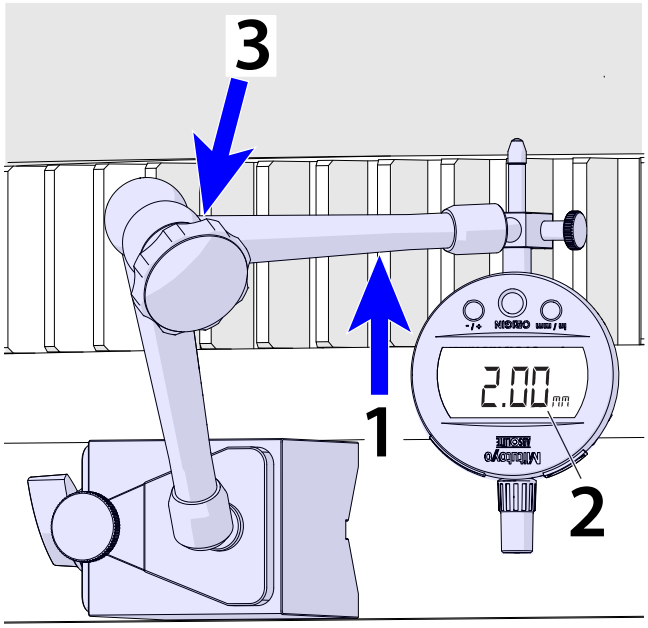
7. Remove the base cover at the counterweight end of the chassis.
8. Set the base of a dial indicator gauge on the chassis frame in the location shown below, near the ring gear on the counterweight end of the chassis.



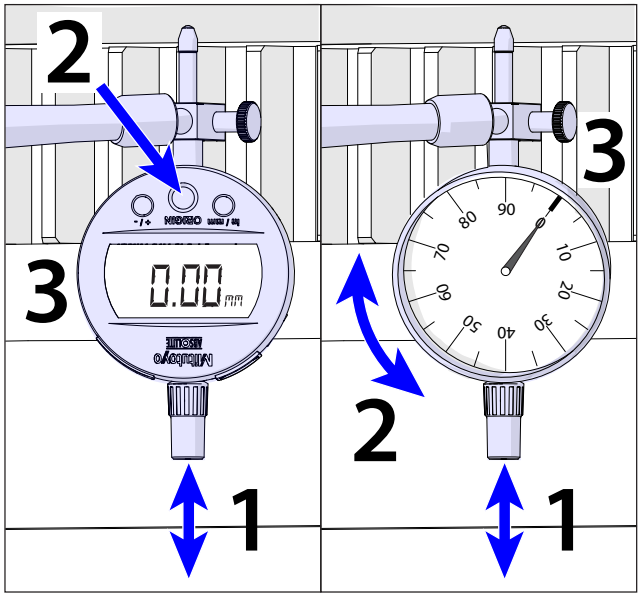
9. Set the dial indicator plunger tip on the underside of the turret, 20 cm (8") from the ring gear as shown below, centred side-to-side.



10. Add 2 mm (0.078”) of pressure to the dial indicator, then tighten the arm.

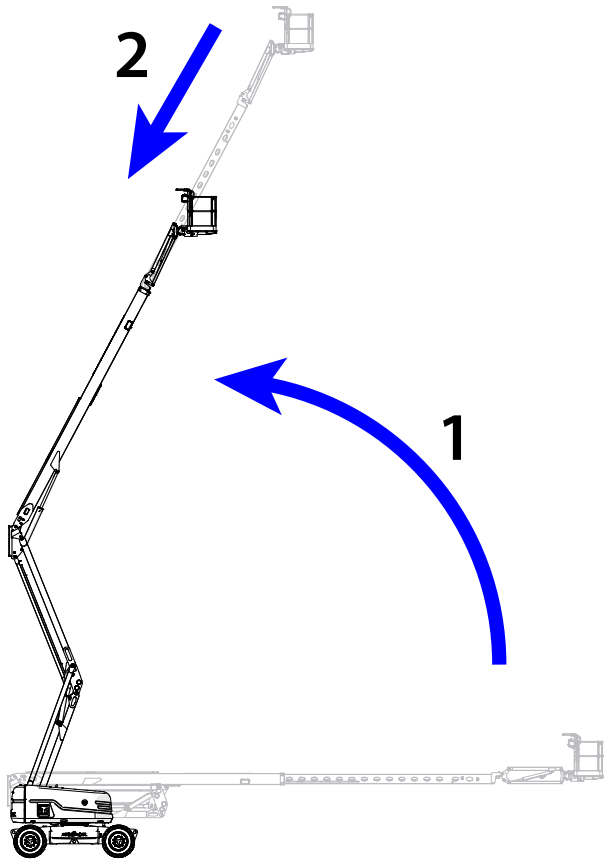


11. Pull and release the plunger to reset it, then zero the dial.



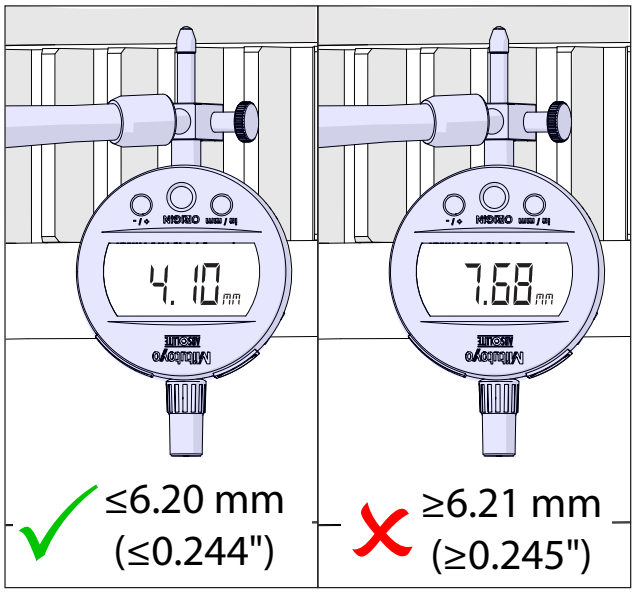
12. Raise the riser fully, then the boom and jib fully.

13. Then, retract the boom fully.



14. Read the number on the dial. This number indicates the axial displacement.
15. The maximum displacement allowed for the bearing is 6.20 mm (0.244").
    a. If the number is **greater** than this it means the bearing is worn and you must replace it.
    b. If the number is **less** than this but the bearing:
        - starts to make noise
        - experiences rough rotation
        - needs more power to rotate or
        - has metal shavings in the grease

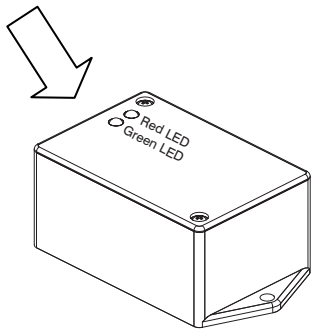
    replace the bearing.



5.7-7 Tilt Switch Operation

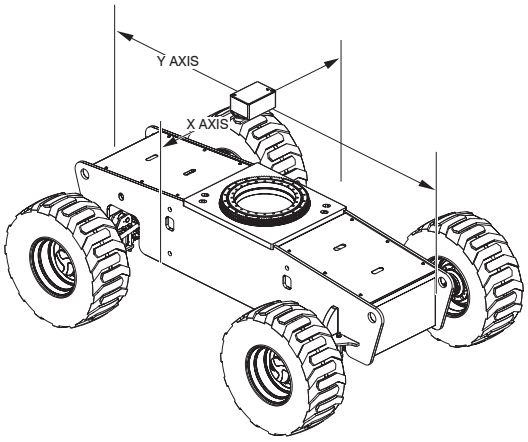
The following describes the LEDs and what they indicate.

Light Indicators



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.**

5.7-8 Set Up a New Tilt Switch



NOTE

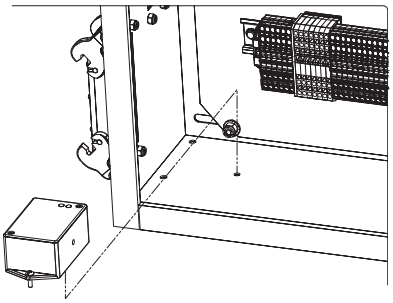
To reprogram an existing tilt switch, go to 5.7-9 Reprogram an Existing Tilt Switch.

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

NOTE

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

3. Remove the old tilt switch from the mount.



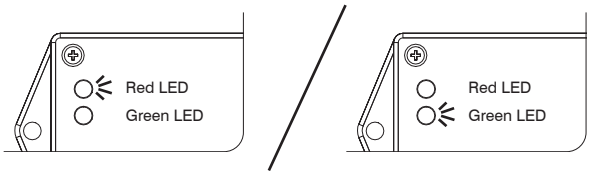
4. Install the new switch on the mount and connect the switch plug to the 4 pin connector.

NOTE

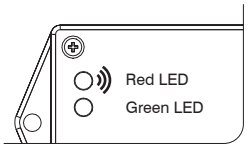
The tilt circuit is only powered when the controls are powered up.

5. Turn the main disconnect switch to the ON position.
6. Turn the base/off/platform key switch to the base position.

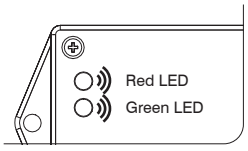
7. Pull out both emergency stop buttons.
8. Verify the switch is powered (the red or green LED will be solid).



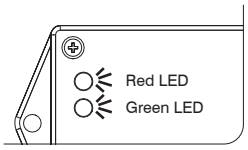
9. Program the tilt switch:
   a. Press and release the set to zero button 3 times. Observe the LED flash codes as shown below.
   b. Only the red LED will blink for 4 seconds.



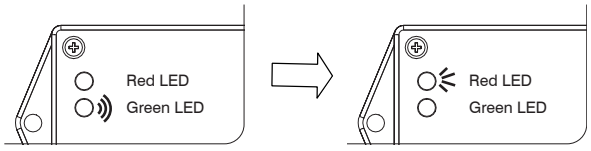
   c. Both LEDs will flash for 1 second.
   Results: The switch is learning the new zero position.



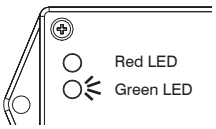
   d. Both LEDs will turn on solid for 1 second.
   Results: The new zero position has been learned.



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

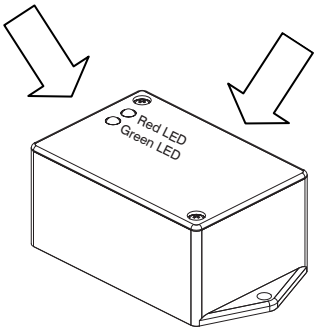


10. Turn the main power disconnect switch to the off position.
11. Push in the emergency stop buttons.

5.7-9 Reprogram an Existing Tilt Switch

Light Indicators

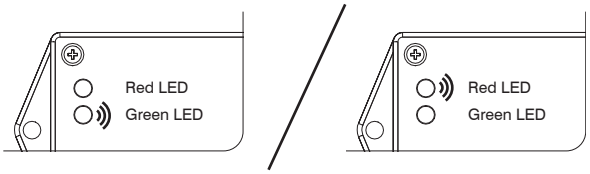
The set to zero button is located on this face next to the harness



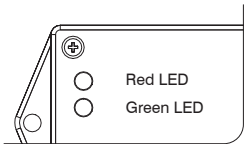
NOTE

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

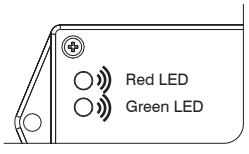
1. Turn the main disconnect switch to the ON position .
2. Turn the base/off/platform key switch to the base position.
3. Pull out both emergency stop buttons.
4. Verify the switch is powered (the red or green LED will be solid).



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



   b. Both LEDs will flash.



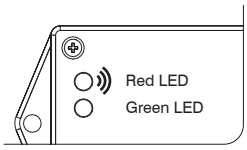
IMPORTANT

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.

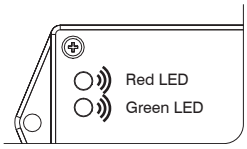
c. Press and release the set to zero button 3 times.

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

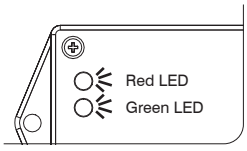
e. Observe the program delay / stabilization time (only the red LED will blink for 4 seconds).



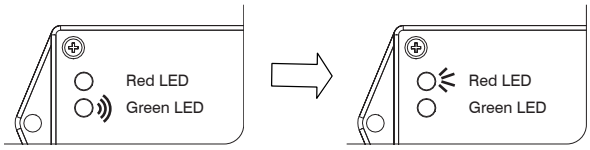
f. Both LEDs will flash for 1 second.
Results: The switch is learning the new zero position.



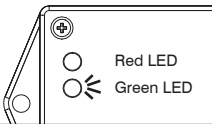
g. Both LEDs will turn on solid for 1 second.
Results: The new zero position has been learned.



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.



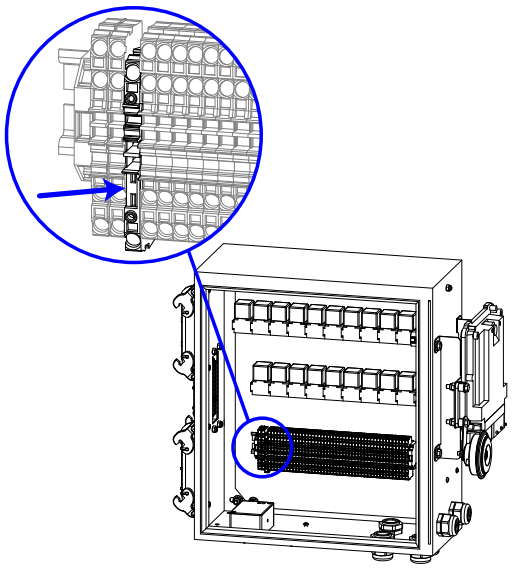
6. Turn the main power disconnect switch to the off position.
7. Push in the emergency stop buttons.
8. Proceed to *5.7-7 Tilt Switch Operation*.

5.7-10 Reset the Emergency Lowering Counter (CE only)

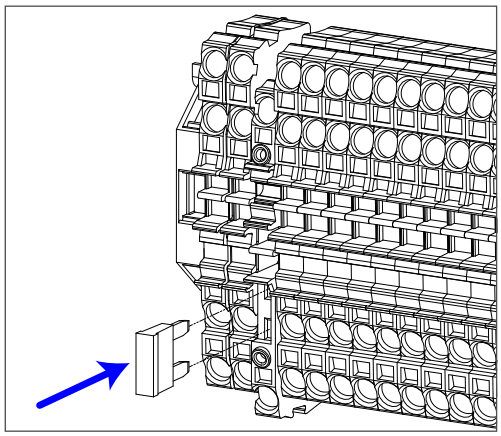
The emergency lowering counter increments each time the emergency power unit is activated while the platform is in work mode and overloaded.

To reset the counter:

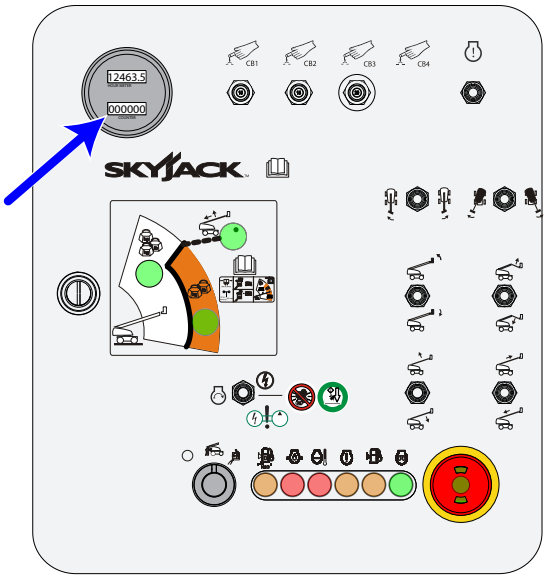
1. Locate the terminal block with the integrated fuse holder inside the base control box.



2. Insert a standard automotive fuse into the fuse slot in the terminal block.

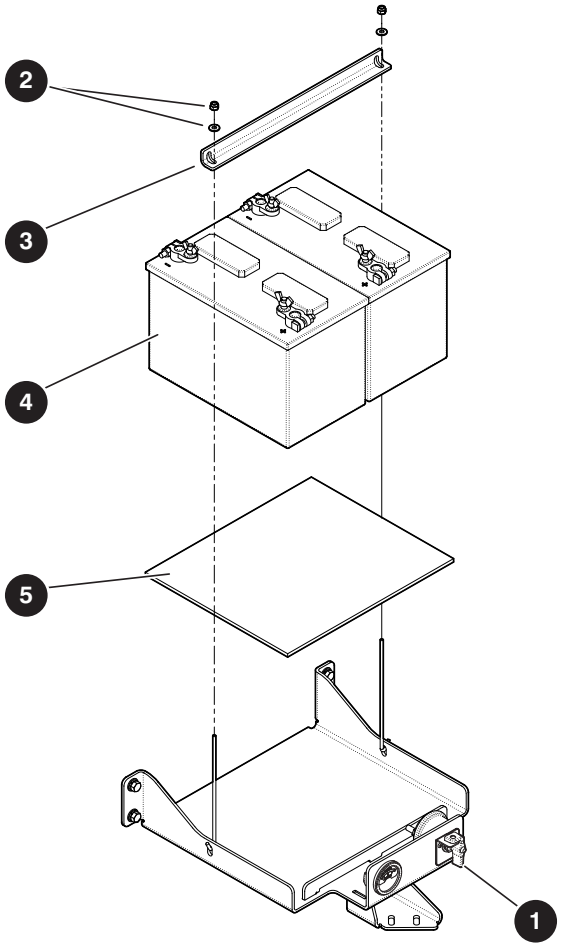


3. Remove the fuse.
4. Check the counter on the base control box door to verify it has been reset to zero.



5.7-11 Battery Replacement

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



2. Remove the positive and negative connectors from the batteries.
3. Remove the battery retainer bracket nuts and washers ❷.
4. Remove the bracket ❸.
5. Remove the batteries ❹.
6. Replace the battery pad ❺ 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).

5.8 Deutz Diesel Engines

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

5.8-1 Replace the Engine Oil and Filter

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

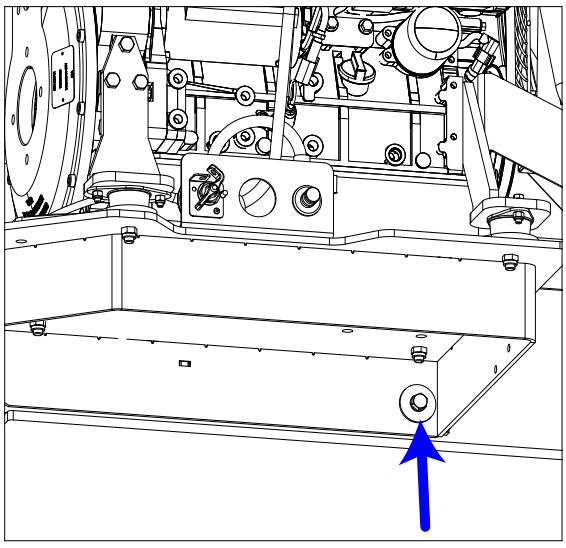
NOTE

Warm the engine to normal operating temperature before starting this procedure.

⚠ CAUTION

Beware of hot engine components and hot oil. Contact with hot 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.

5.8-2 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.

5.8-3 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.

5.8-4 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.

5.8-5 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.

5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

Code	SPN	FMI	Blink Code	Error Identification
8	132	1	2-2-6	The air mass flow AFS_dm is greater than or equal to AFS_PhysRng.Min_C. Physical range check is low for air mass flow sensor.
9	172	2	2-2-6	Air inlet filter temperature, plausibility error.
26	523891	14	2-6-3	When AirHt_ctDefSRCLoOn_mp is lower than AirHt_ctMaxDef_C. DFC to SRC Low error when heater is on.
28	523953	2	7-2-8	Healing takes place if the condition for error detection is not present. Air temperature monitoring plausibility check array.
30	523955	2	7-2-8	Healing takes place if the condition for error detection is not present. Air temperature monitoring plausibility check array.
36	523923	3	7-2-9	
37	523924	3	1-6-7	Short circuit to battery error of actuator relay 2.
38	523925	3	7-3-1	Short circuit to battery of actuator relay 3.
40	523927	3	7-3-3	Short circuit to battery of actuator relay 6.
41	523923	4	7-2-9	Short circuit to ground error. Detailed information not available.
42	523924	4	1-6-7	Short circuit to ground of actuator relay 2.
43	523925	4	7-3-1	Short circuit to ground of actuator relay 3.
44	523926	4	7-3-2	Short circuit to ground of actuator relay 4.
45	168	3	3-1-8	Sensor battery voltage error; signal range check is high.
46	168	4	3-1-8	Sensor battery voltage error; signal range check is low.
47	168	2	3-1-8	High battery voltage; warning threshold is exceeded.
48	168	2	3-1-8	High battery voltage; Shot off threshold exceeded.
55	523910	14	6-9-5	Air pump doesn’t achieve air mass flow setpoint. Burner Control - burner air pump.
56	524013	7	8-5-6	Burner Control. Burner does not start after several trials (burner flame lost detection). Burner flame unintentional deleted.
57	524020	14	8-6-3	Burner Control: Power reduction due to low lambda. Engine power: Not enough oxygen for regeneration.
58	523911	0	7-2-3	Burner dosing valve (DV2); Overcurrent at the end of the injection phase.
59	523911	12	7-2-3	Burner dosing valve (DV2); Powerstage over temperature.
60	523911	3	7-2-3	Burner dosing valve (DV2); Short circuit to battery.
62	523911	4	7-2-3	Burner dosing valve (DV2); Short circuit to ground.
63	523911	11	7-2-3	Burner dosing valve (DV2); Short circuit high side powerstage.
64	523912	2	7-2-2	Burner dosing valve (DV2) downstream pressure sensor; plausibility error.
66	523912	0	7-2-2	Physical range check high for burner dosing valve (DV2) downstream pressure; Shut off regeneration.

1513AA-1

5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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.

1513AA-2

5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

Code	SPN	FMI	Blink Code	Error Identification
122	523698	11	5-9-1	Shut off request from supervisory monitoring function.
124	523969	11	7-7-4	Fault entry for override control mode.
125	523717	12	5-9-5	Timeout error of CAN-transmit-frame AmbCon; Weather environments.
126	523603	9	3-3-8	Timeout Error of CAN-receive-frame AMB; Ambient temperature sensor.
128	3224	9	5-9-7	Timeout error of CAN-receive-frame AT1IG1; NOX sensor upstream.
129	3224	2	5-9-6	DLC error of CAN-receive-frame AT1IG1Vol NOX sensor.
130	3224	9	5-9-7	Timeout error of CAN-receive-frame AT1IG1Vol; NOX sensor.
133	523938	9	7-6-6	Timeout error (BAM to packet) for CAN-receive-frame AT1IGCVol1.
134	523939	9	7-6-6	Broadcast announce message of the calibration message of the upstream catalytic NOx sensor has failed.
135	523940	9	7-6-6	Timeout error (PCK2PCK) for CAN-Receive-Frame AT1IGCVol1.
136	3234	2	1-1-4	DLC error of CAN-Receive-Frame AT1O1.
137	3234	9	1-1-7	Timeout error of CAN-Receive-Frame AT1OG1. NOX sensor (SCR-system downstream cat; DPF-system downstream cat).
138	3234	2	1-1-4	DLC error of CAN-Receive-Frame AT1O1Vol.
139	3234	9	1-1-7	Timeout error of CAN-Receive-Frame AT1OG1Vol.
140	523941	9	7-6-7	Timeout error (BAM to packet) for CAN-Receive-Frame AT1OGCVol2.
141	523942	9	7-6-7	Calibration message 1 of the after catalyst Nox sensor has failed.
142	523943	9	7-6-7	Timeout error (PCK2PCK) for CAN-Receive-Frame AT1OGCVol2.
153	523992	9	7-9-3	Not used.
155	0	0	-	Not used.
164	523211	9	3-3-1	Timeout error of CAN-Receive-Frame EBC1.
167	523704	12	6-1-5	Timeout error of CAN-Transmit-Frame EEC3.
168	523935	12	7-6-3	Timeout error of CAN-Transmit-Frame EEC3VOL1. Engine send messages.
169	523936	12	7-6-4	Timeout error of CAN-Transmit-Frame EEC3VOL2. Engine send messages.
171	523212	9	3-3-3	Timeout error of CAN-Receive-Frame ComEngPrt. Engine Protection.
172	523741	14	6-1-8	Engine shut off request through CAN.
174	523213	12	3-3-4	Timeout error of CAN-Transmit-Frame ERC1.
178	523706	12	6-2-3	Timeout error of CAN-Transmit-Frame FlEco.
179	523240	9	5-2-7	Timeout CAN-message FunModCtl. Function Mode Control.
193	523937	9	7-6-5	Timeout DFC for NOxSensGlbReqTx.
196	3227	2	6-3-8	DFC SAE J1939 error.
198	523216	9	3-3-7	Timeout error of CAN-Receive-Frame PrHtEnCmd. Pre-heat command, engine command.
202	523793	9	6-7-8	Timeout error of CAN-Receive-Frame UAA10. AGS sensor service message.
203	523794	9	6-7-8	Timeout error of CAN-Receive-Frame UAA11. AGS sensor data.
212	523803	9	6-7-8	Timeout error of CAN-Receive-Message RxEngPres. Status Burner Air Pump.

1513AA-3

5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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.

1513AA-4

5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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	HCl dosing valve (DV1); overcurrent at the end of the injection phase
501	523915	12	1-6-6	HCl dosing valve (DV1): Powerstage over temperature.
502	523915	3	1-5-9	HCl dosing valve (DV1): Short circuit to battery.
503	523915	3	1-6-4	Short circuit to battery high side, HCl dosing valve (DV1).
504	523915	4	1-5-9	HCl dosing valve (DV1): Short circuit to ground.
505	523915	11	1-6-4	HCl dosing valve (DV1): Short circuit high side powerstage.

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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

Code	SPN	FMI	Blink Code	Error Identification
624	523612	12	555	ECU reported internal software error.
625	523612	12	555	ECU reported internal software error.
627	523612	12	555	ECU reported internal software error.
628	523612	12	555	ECU reported internal software error.
629	523612	12	555	Diagnostic fault check to report the accelerator pedal position error.
630	523612	12	555	Diagnostic fault check to report the engine speed error.
631	523612	12	555	Error in the plausibility of the injection energizing time.
632	523612	12	555	Error in the plausibility of the start of energising angles.
633	523612	12	555	Diagnostic fault check to report the error due to non plausibility in ZFC.
634	523612	12	555	Diagnosis fault check to report the demand for normal mode due to an error in the PoI2 quantity.
635	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI2 shut-off.
636	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the PoI3 efficiency factor.
637	523612	12	555	Internal ECU monitoring detection reported error.
638	523612	12	555	Monitoring of Fuel Quantity Correction.
639	523612	12	555	Diagnostic fault check to report the plausibility error in rail pressure monitoring.
640	523612	12	555	Diagnostic fault check to report the error due to torque comparison.
641	523612	12	555	Diagnosis of curr path limitation forced by ECU monitoring level 2.
642	523612	12	555	Diagnosis of lead path limitation forced by ECU monitoring level 2.
643	523612	12	5-5-5	Diagnosis of set path limitation forced by ECU monitoring level 2.
644	523612	3	5-5-5	Reported Over Voltage of Supply.
646	523612	4	5-5-5	Reported UnderVoltage of Supply.
648	523008	1	4-2-4	Manipulation control was triggered.
649	523008	2	4-2-4	Timeout error in Manipulation control.
654	2634	12	7-5-7	Early opening defect of main relay No detailed information!
656	2634	12	7-5-7	DFC for stuck main relay error No detailed information!
659	3226	2	8-1-3	Nox feed back fault detection No detailed information!
692	523752	0	7-5-8	Plausibiliti error during Rich to Lean switch over No detail informationen!
693	523752	0	7-5-8	Monitoring of Nox signal readyness No detail informationen!
714	523612	12	5-5-5	Diagnostic fault check to report WDA active due to errors in query-/response communication.
715	523612	12	5-5-5	Diagnostic fault check to report ABE active due to undervoltage detection.
716	523612	12	5-5-5	Diagnostic fault check to report ABE active due to overvoltage detection.
717	523612	12	5-5-5	Diagnostic fault check to report WDA/ABE active due to unknown reason.

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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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 cologged.
753	523919	2	6-9-4	DPF burner air pump pressure sensor, plausibility error.
755	523919	0	6-9-4	DPF burner air pump pressure sensor, pressure above upper shutoff threshold.
758	523919	1	6-9-4	DPF burner air pump pressure sensor, pressure below lower shutoff threshold.
761	523919	3	6-9-4	DPF burner air pump pressure sensor, short circuit to battery or open load.
762	523919	4	6-9-4	DPF burner air pump pressure sensor, short circuit to ground.
763	523920	2	7-1-6	Exhaustgaspressure upstream burner, plausibility error.
765	523920	0	7-1-6	Exhaust gas pressure upstream burner, pressure above upper shutoff threshold.
770	523920	3	7-1-6	Exhaust gas pressure upstream burner, short circuit to battery or open load.
771	523920	4	7-1-6	Exhaust gas pressure upstream burner, short circuit to ground.
772	102	2	2-2-3	Pressure downstream charge air cooler, plausibility error.
774	102	1	2-2-3	Pressure downstream charge air cooler, pressure below lower physical threshold.
776	102	3	2-2-3	Pressure downstream charge air cooler, short circuit to battery or open load.
777	102	4	2-2-3	Pressure downstream charge air cooler, short circuit to ground.
780	523699	3	1-1-3	Boost pressure control; negative governor deviation below limit.
781	523699	4	1-1-3	Learning value too high. No detailed information!
785	523889	3	1-1-3	Over temperature of device driver of pressure control valve. No detailed information!

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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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 succesful.
807	3253	2	6-9-2	Differential pressure DPF, plausibility error.
809	3251	0	6-9-2	Differential pressure DPF maximum value is exceeded.
810	3251	0	6-9-2	Differential pressure sensor across DPF exceeds warning high limit.
812	3251	1	6-9-2	Differential pressure DPF, pressure below lower shutoff threshold.
813	3251	1	6-9-2	Differential pressure DPF, pressure below lower warning threshold.
814	3253	3	6-9-2	Electrical error differential pressure B58 (DPF). (Signal range check high).
815	3253	4	6-9-2	Electrical error differential pressure (DPF). signal range check low.
825	523009	9	2-5-3	The pressure relief valve (PRV) has reached the number of allowed activations.
826	523470	2	1-4-6	Pressure relief valve is forced to open, perform pressure increase.
827	523470	2	1-4-6	Pressure Relief Valve (PRV) forced to open. Performed by pressure increase.
828	523470	12	1-4-6	Pressure Relief Valve (PRV) forced to open. Shutoff conditions.
829	523470	12	1-4-6	Pressure Relief Valve (PRV) forced to open. Warning conditions.
830	523470	14	1-4-6	Open Pressure Relief Valve (PRV).
831	523470	11	1-4-6	Pressure Relief Valve (PRV) error; Rail pressure out of tolerance range.
832	523470	11	1-4-6	Rail pressure out of tolerance range. 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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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	HCI dosing valve (DV1); blocked open.
1258	524016	11	8-5-9	Burner Control; HFM - Electrical Fault HFM sensor; electrical fault.
1259	524016	2	8-5-9	Burner Control; HFM - Plausibilitätsfehler 1 Amount of air is not plausible to pump speed.
1261	523910	6	6-9-5	Burner Control Air Pump; over current Air pump electrically overloaded.
1262	523922	7	8-5-4	Burner Control; Shut-off Valve - Blocked closed Burner Shut Off Valve; blocked closed.
1263	524021	11	8-6-4	Burner Control; Fuel line ShutOff downstream - broken Burner fuel line pipe leak behind Shut Off Valve.

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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

Code	SPN	FMI	Blink Code	Error Identification
1264	523922	7	8-5-5	Burner Shut Off Valve; blocked open.
1285	524038	9	8-2-4	Timeout error of CAN-Receive-Frame ComMS_Sys1TO (error memory Slave); Master-Slave internal CAN message.
1286	524039	9	8-2-5	Timeout error of CAN-Receive-Frame ComMS_Sys2TO (error memory Slave); Master-Slave internal CAN message.
1287	524040	9	8-2-6	Timeout error of CAN-Receive-Frame ComMS_Sys3TO (error memory Slave); Master-Slave internal CAN message.
1288	524041	9	8-2-7	Timeout error of CAN-Receive-Frame ComMS_Sys4TO (error memory Slave); Master-Slave internal CAN message.
1289	524042	9	8-2-8	Timeout error of CAN-Receive-Frame ComMS_Sys5TO (error memory Slave); Master-Slave internal CAN message.
1290	524043	9	8-2-9	Timeout error of CAN-Receive-Frame ComMS_Sys6TO (error memory Slave); Master-Slave internal CAN message.
1291	524045	9	8-3-1	Master Slave, Error of message counter CAN receive message ComMSMoFOvR; ComMSMoFOvR1CNT.
1292	524046	9	8-3-2	Master-Slave CAN; Error Checksum of CAN-Receive Message.
1293	524047	9	8-3-3	Master-Slave CAN; Error of message length of CAN receive message ComMSMoFOvR;_ComMSMoFOvR1DLC.
1294	524048	9	8-3-4	Timeout error CAN message ComMSMoFOvR1TO error memory Slave.
1299	523788	0	6-5-5	Wastegate plauisibility error off CAN transmit message.
1300	523788	0	6-5-5	Timeout Error of CAN-Receive-Frame ComTrbChActr; Wastegate.
1302	524024	11	8-6-6	Deviation of the exhaust gas temperature setpoint to actual value downstream (DOC) too high.
1324	523995	13	7-9-5	Check of missing injector adjustment value programming (IMA) injector 7 (in firing order).
1325	523996	13	7-9-6	check of missing injector adjustment value programming (IMA) injector 8 (in firing order).
1326	523997	4	7-9-7	Injector cylinder bank 1 slave; short circuit.
1327	523998	4	7-9-8	Injector cylinder bank 2 slave; short circuit.
1328	523999	12	7-9-9	Injector powerstage output Slave defect.
1329	524000	5	1-7-7	Injector 7 (in firing order); interruption of electric connection.
1330	524001	5	1-7-8	Injector 8 (in firing order); interruption of electric connection.
1333	524000	3	1-7-7	Injector 7 (in firing order); short circuit.
1334	524001	3	1-7-8	Injector 8 (in firing order); short circuit.
1337	2797	4	5-6-5	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 0;_ IVDiaShCirGndToutBnk_0.
1338	2798	4	5-6-6	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 1;_ IVDiaShCirGndToutBnk_1.
1339	2797	4	5-6-5	Injector diagnostic; Short circuit to ground cylinder bank 0.
1340	2798	4	5-6-6	Injector diagnostic; Short circuit to ground cylinder bank 1.

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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

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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5.8-6 Deutz TD2.9L Fault Codes (EMR4) - serial number A401 000 519 and below

Code	SPN	FMI	Blink Code	Error Identification
1759	2791	4	4-1-5	EGR actuator supply voltage is below minimum threshold.
1760	2791	13	4-1-5	EGR actuator, learning process out of range.
1761	2791	7	4-1-5	EGR actuator, broken spring detected.
1762	2791	16	4-1-5	EGR actuator, temperature high.
1763	2791	0	4-1-5	EGR actuator, temperature critical high.
1788	1188	7	8-1-4	Turbocharger wastegate, mechanical blocking detected.
1789	1188	2	8-1-4	Turbocharger wastegate, CAN Error.
1790	1188	13	8-1-4	Turbocharger wastegate, EOL calibration error.
1791	1188	12	8-1-4	Turbocharger wastegate, internal electrical error.
1792	1188	13	8-1-4	Turbocharger wastegate, learning process aborted.
1793	1188	6	8-1-4	Turbocharger wastegate, current above maximum threshold.
1794	1188	3	8-1-4	Turbocharger wastegate, supply voltage above maximum threshold.
1795	1188	4	8-1-4	Turbocharger wastegate, supply voltage below minimum threshold.
1796	1188	13	8-1-4	Turbocharger wastegate, learning process out of range.
1797	1188	7	8-1-4	Turbocharger wastegate, broken spring detected.
1799	1188	0	8-1-4	Turbocharger wastegate, temperature critical high.
1827	524141	7	1-9-2	DEF dosing valve, dosing valve blocked.
1857	523612	12	5-5-5	Engine starter, plausibility error of starter release condition.
1858	524147	7	9-6-6	SCR-System, reverting valve blocked.

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5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

EMR5 Error Codes				
DTC #	**FTB**	**SPN**	**FMI**	**Fault description**
P000F	F0	5571	15	Fuel pressure relief valve: data is above the normal operational range (least severe level)
P000F	F1	5571	16	Fuel pressure relief valve: data is above the normal operational range (moderately severe level)
P006D	64	1209	2	TC exhaust pressure sensor: data erratic, intermittent or incorrect
P0072	11	171	4	Ambient air temperature sensor: voltage is below the normal range or is shorted to a low source.
P0073	12	171	3	Ambient air temperature sensor: voltage is below the normal range or is shorted to a high source.
P007A	F0,F1	105	0	Charge air temperature sensor: data is above the normal operational range (most severe level)
P0087	21	7103	0	Rail pressure pump: data is below the normal operational range (most severe level)
P0088	22	7103	1	Rail pressure pump: data is above the normal operational range (most severe level)
P008A	F0,F1	94	1	Fuel low pressure sensor: data is below the normal operational range (most severe level)
P008B	22	94	15	Fuel low pressure sensor: data is above the normal operational range (least severe level)
P00C6	92	94	1	Charge air temperature sensor: data is below the normal operational range (most severe level)
P00E8	21	105	0	Fuel low pressure sensor: data is above the normal operational range (least severe level)
P00E8	22	105	0	Fuel low pressure sensor: data is below the normal operational range (most severe level)
P00FA	11	1209	4	TC exhaust pressure sensor: voltage is below the normal range or is shorted to a low source
P00FB	12	1209	3	TC exhaust pressure sensor: voltage is below the normal range or is shorted to a high source
P0106	2A	102	2	Charge air pressure sensor: data erratic, intermittent or incorrect
P0107	11	102	4	Charge air pressure sensor: voltage is below the normal range or is shorted to a low source
P0108	12	102	3	Charge air pressure sensor: voltage is below the normal range or is shorted to a high source
P0111	64	105	2	Charge air temperature sensor: data erratic, intermittent or incorrect
P0112	11	105	4	Charge air temperature sensor: voltage is below the normal range or is shorted to a low source
P0113	12	105	3	Charge air temperature sensor: voltage is below the normal range or is shorted to a high source
P0116	64	110	2	Coolant air temperature sensor: data erratic, intermittent or incorrect
P0117	11	110	4	Coolant air temperature sensor: voltage is below the normal range or is shorted to a low source
P0118	12	110	3	Coolant air temperature sensor: voltage is below the normal range or is shorted to a high source
P012B	21	1209	1	TC exhaust pressure sensor: Data is below the normal operational range (most severe level)

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P012B	22	1209	15	TC exhaust pressure sensor: Data is above the normal operational range (least severe level)
P012B	2A	1209	2	TC exhaust pressure sensor: data erratic, intermittent or incorrect
P018F	F3	5571	16	Fuel pressure relief valve: data is above the normal operational range (most severe level)
P0190	11	157	4	Rail pressure metering unit: voltage is below the normal value or is shorted to a low source.
P0190	12	157	3	Rail pressure metering unit: voltage is above the normal value or is shorted to a high source.
P0201	01,11	5358	6	Fuel injection quantity injector 1: current is above the normal range or grounded circuit.
P0201	13	5358	5	Fuel injection quantity injector 1: current is below the normal range or open circuit.
P0202	01,11	5359	6	Fuel injection quantity injector 2: current is above the normal range or grounded circuit.
P0202	13	5359	5	Fuel injection quantity injector 2: current is below the normal range or open circuit.
P0203	01,11	5360	6	Fuel injection quantity injector 3: current is above the normal range or grounded circuit.
P0203	13	5360	5	Fuel injection quantity injector 3: current is below the normal range or open circuit.
P0204	01,11	5361	6	Fuel injection quantity injector 4: current is above the normal range or grounded circuit.
P0204	13	5361	6	Fuel injection quantity injector 4: current is below the normal range or open circuit.
P0205	01,11	5362	6	Fuel injection quantity injector 5: current is above the normal range or grounded circuit.
P0205	13	5362	5	Fuel injection quantity injector 5: current is below the normal range or open circuit.
P0206	01,11	5363	6	Fuel injection quantity injector 6: current is above the normal range or grounded circuit.
P0206	13	5363	5	Fuel injection quantity injector 6: current is below the normal range or open circuit.
P0207	01,11	5364	6	Fuel injection quantity injector 7: current is above the normal range or grounded circuit.
P0207	13	5364	5	Fuel injection quantity injector 7: current is below the normal range or open circuit.
P0208	01,11	5365	6	Fuel injection quantity injector 8: current is above the normal range or grounded circuit.
P0208	13	5365	5	Fuel injection quantity injector 8: current is below the normal range or open circuit.
P0217	F0,F1	110	0	Coolant temperature sensor: data is above the normal operational range (most severe level)
P0219	F0	190	0	Rotation speed: data is above the normal operational range (most severe level)
P0243	01	1188	12	TC wastegate: bad intelligent device or component
P0243	49	1188	9	TC wastegate: abnormal update rate timeout
P0243	71	1188	7	TC wastegate: mechanical system not responding or out of adjustment
P0251	01	7103	6	Rail pressure pump: current above normal range or grounded circuit
P0251	11	7103	4	Rail pressure pump: voltage below normal range or is shorted to a low source
P0251	12	7103	3	Rail pressure pump: voltage above normal range or is shorted to a low source
P0251	13	7103	5	Rail pressure pump: current below normal range or open circuit
P02E7	00	132	2	EGR differential pressure: data erratic, intermittent or incorrect
P0336	2F	4201	8	Crankshaft rotation speed sensor: abnormal frequency or pulse width or period
P0336	31	4201	14	Crankshaft rotation speed sensor: special instructions
P033F	00	723	13	Camshaft rotation speed sensor: out of calibration
P0341	2F	723	8	Camshaft rotation speed sensor: abnormal frequency or pulse width or period
P0341	31	723	14	Camshaft rotation speed sensor: special instructions
P0405	11	411	4	EGR differential pressure: voltage below the normal range or is shorted to a low source.

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P0406	12	411	3	EGR differential pressure: voltage above the normal range or is shorted to a high source.
P040A	11	412	4	EGR temperature pressure: voltage below the normal range or is shorted to a low source.
P040A	12	412	3	EGR temperature pressure: voltage above the normal range or is shorted to a high source.
P040A	21	412	17	EGR temperature pressure: Data below normal operational range (least severe level)
P040A	22	412	15	EGR temperature pressure: Data above normal operational range (least severe level)
P040A	64	412	2	EGR temperature pressure: data erratic, intermittent or incorrect
P0425	11	4765	4	Exhaust aftertreatment: Temperature before DOC - voltage below the normal range or short to a low source
P0425	12	4765	3	Exhaust aftertreatment: Temperature before DOC - voltage above the normal range or is shorted to a high source.
P0425	2A,64	4765	2	Exhaust aftertreatment: Temperature before DOC - data erratic, intermittent or incorrect
P0425	F0	4765	15	Exhaust aftertreatment: Temperature before DOC - Data above the normal operational range (least severe level)
P042A	11	4766	4	Exhaust aftertreatment: Temperature after DOC - voltage below the normal range or short to a low source
P042A	12	4766	3	Exhaust aftertreatment: Temperature after DOC - voltage above the normal range or is shorted to a high source.
P042A	F0	4766	15	Exhaust aftertreatment: Temperature after DOC - Data above the normal operational range (least severe level)
P042E P042F	72	27	7	Position EGR valve: Mechanical system not responding or is not adjusted
P046C	2A,64	411	2	EGR differential pressure: data erratic, intermittent or incorrect
P046D	00	411	2	EGR differential pressure: data erratic, intermittent or incorrect
P0480	13	1071	5	Fan drive output: current below the normal range or open circuit
P0489	11	27	4	EGR temperature sensor: data is below the operational range (least severe level)
P0490	12	27	3	Position EGR valve: voltage above the normal range or is shorted to a high source
P0522	11	100	4	Oil pressure sensor: voltage is below the normal range or is shorted to a low source
P0523	12	100	3	Oil pressure sensor: voltage is above the normal range or is shorted to a high source
P0524	F4	100	18	Oil pressure sensor: data is below the normal operational range (moderately severe level)
P0524	F5	100	1	Oil pressure sensor: data is below the normal operational range (most severe level)
P0541	11	729	4	Preheating relay: voltage is below the normal range or is shorted to a low source
P0542	12	729	3	Preheating relay: voltage is above the normal range or is shorted to a high source
P0543	13	729	5	Preheating relay: current is below the normal range or open circuit
P0616	11	677	4	Starter relay: voltage is below the normal range or is shorted to a low source
P0617	12	677	3	Starter relay: voltage is above the normal range or is shorted to a high source
P0627	11	1347	4	Fuel supply pump: voltage is below the normal range or is shorted to a low source
P0627	12	1347	3	Fuel supply pump: voltage is above the normal range or is shorted to a high source
P0627	13	1347	5	Fuel supply pump: current is below the normal range or open circuit

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P102C	00	677	3	Starter relay: voltage is above the normal range or is shorted to a high source
P102D	00	677	4	Starter relay: voltage is below the normal range or is shorted to a low source
P102E	00	91	11	Position accelerator pedal: root cause not known
P102F	00	29	11	Position accelerator pedal 2: root cause not known
P1030	00	1041	14	Starter signal KL. 50: special instructions
P1031	00	3510	3	ECU sensor supply voltage 2: voltage is above the normal range or is shorted to a high source
P1032	00	3510	4	ECU sensor supply voltage 2: voltage is below the normal range or is shorted to a low source
P1035	00	0	0	
P1036	00	520417	31	Dummy element: condition exists
P103D	00	520424	31	Controller access failed: condition exists
P103E	00	5099	11	Oil pressure lamp: root cause not known
P103F	00	5099	3	Oil pressure lamp: voltage is above the normal range or is shorted to a high source
P1040	00	5099	4	Oil pressure lamp: voltage is below the normal range or is shorted to a low source
P1041	00	3697	11	Particle filter lamp: root cause not known
P1042	00	624	11	Amber warning lamp: root cause not known
P1043	00	624	3	Amber warning lamp: voltage is above the normal range or is shorted to a high source
P1044	00	624	4	Amber warning lamp: voltage is below the normal range or is shorted to a low source
P1045	00	520458	11	Engine running lamp: root cause not known
P1046	00	520458	3	Engine running lamp: voltage is above the normal range or is shorted to a high source
P1047	00	520458	4	Engine running lamp: voltage is below the normal range or is shorted to a low source
P1048	00	520459	11	Multi purpose lamp: root cause not known
P1049	00	520459	4	Multi purpose lamp: voltage is below the normal range or is shorted to low source
P104F	00	51	4	Throttle valve position: voltage is below the normal range or is shorted to a low source
P1050, P1052, P1058	00	27	3	Position EGR valve: voltage is above the normal range or is shorted to a high source
P1051, P1053, P1059	00	27	4	Position EGR valve: voltage is below the normal range or is shorted to a low source
P1054	00	27	6	Position EGR valve: current is above the normal range or grounded circuit
P1055, P1056	00	27	5	Position EGR valve: current is below the normal range or open circuit
P1057, P105A	00	27	11	Position EGR valve: root cause not known
P105B, P105C	00	27	2	Position EGR valve: data erratic, intermittent or incorrect
P105D P105F	00	51	6	Throttle valve position: current above the normal range or grounded circuit
P105E	00	51	11	Throttle valve position: root cause is not known

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1060, P1061, P1062	00	190	0	Rotation speed: data is above the normal operational range (most severe level)
P1063	00	520435	11	Output torque: root cause not known
P1064	64	1237	2	Shutdown override switch: data erratic, intermittent or incorrect
P1067	00	520491	2	Exhaust aftertreatment: too many engine starts in a short amount of time - data erratic, intermittent or incorrect
P1068	00	520433	5	Resv lamp: current is below the normal range or open circuit
P1069	00	520433	11	Resv lamp: root cause is not known
P106A	00	520433	3	Resv lamp: voltage is above the normal range is shorted to a high source
P106B	00	520433	4	Resv lamp: voltage is below the normal range is shorted to a low source
P106C	00	5100	11	Coolant temperature lamp: the root cause is not known
P106D	00	5100	3	Coolant temperature lamp: voltage is above the normal range or is shorted to a high source
P106E	00	5100	4	Coolant temperature lamp: voltage is below the normal range or is shorted to a low source
P1070	00	598	10	Signal on D2.2 94 pin ECU connector, pin 19: abnormal rate of change.
P1071	00	1109	2	Protection system requested shutdown: data erratic, intermittent or incorrect
P1072	00	1109	14	Protection system requested shutdown: special instructions
P1075	00	171	2	Ambient air temperature sensor: data erratic, intermittent or incorrect
P1076	00	110	2	Coolant temperature sensor: data erratic, intermittent or incorrect
P1077	00	4766	2	Exhaust aftertreatment: temperature after DOC - data erratic, intermittent or incorrect
P1078, P1079	00	4765	2	Exhaust aftertreatment: temperature before DOC - data erratic, intermittent or incorrect
P107A	00	1081	11	Cold start lamp: Root cause is not known
P107B	00	1081	3	Cold start lamp: voltage is above the normal range or is shorted to a high source
P107C	00	1081	4	Cold start lamp: voltage is below the normal range is shorted to a low source
P107D	00	520444	11	Vehicle speed control lamp: the root cause is not known
P107E	00	520416	5	Disc separator: the current is below the normal range or open circuit
P107F	00	520416	11	Disc separator: root cause is not known
P1080	00	520416	3	Disc separator: voltage is above the normal range or is shorted to a high source
P1081	00	520416	4	Disc separator: voltage is below the normal range or is shorted to a low source
P1082	00	520429	2	Main and secondary ECU identification: data erratic, intermittent or incorrect
P1083	00	520430	11	Exhaust flap failure: the root cause is not known
P1085	00	677	11	Starter relay: root cause is not known
P1086	00	6655	11	ECU power off lamp: root cause is not known
P1087	00	6655	3	ECU power off lamp: voltage is above the normal range or is shorted to a high source
P1088	00	6655	4	ECU power off lamp: voltage is below the normal range or is shorted to a low source
P1089	00	520259	15	Temperature before engine inlet valve: data is above the normal operational range (least severe level)
P108A	00	520259	16	Temperature before engine inlet valve: data is above the normal operational range (moderately severe level)

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P108B	00	520259	1	Temperature before engine inlet valve: data is below the normal operational range (most severe level)
P108C	00	107	0	Air filter differential pressure sensor: data is above the normal operational range (most severe level)
P108F, P1090	00	102	0	Change air pressure sensor: data erratic, intermittent or incorrect
P1091	00	102	1	Change is pressure sensor: data is below the normal operational range (most severe level)
P1092	00	51	3	Throttle valve position: voltage is above the normal range or is shorted to a high source.
P1093	00	51	4	Throttle valve position: voltage is below the normal range or is shorted to a low source.
P1094	00	51	11	Throttle valve position: root cause is not known
P1095	00	520304	2	Status throttle valve: data erratic, intermittent or incorrect
P1906	00	520305	2	Signal error throttle valve: data erratic, intermittent or incorrect
P1907	00	520296	31	Torque reduction TC protection active: condition exists
P1099	00	171	16	Ambient air temperature sensor: data is above the normal operational range (moderately severe level)
P109A	00	171	18	Ambient air temperature sensor: data is below the operational range (moderately severe level)
P109B	00	520442	31	Intake air temperature sensor: condition exists
P109C	00	520443	31	intake air temperature sensor not available: condition exists
P10E0	54	657	13	Injector 7: out of calibration
P10E1	54	658	13	Injector 8: out of calibration
P1100, P1101, P1104	12	1485	3	ECU main relay: voltage is above the normal range or is shorted to a high source
P1102, P1103, P1105	12	1485	4	ECU main relay: voltage is below the normal range or is shorted to a low source
P1106, P1107, P1108, P1109, P110A, P110B, P110C, P110D, P110E, P110F, P1110, P1111, P1112, P1113	49	629	12	ECU: bad intelligent device or component

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1114, P1115, P1116, P1117, P1118, P1119, P111A, P111B, P111C, P111D, P111E, P111F, P1120, P1121, P1122, P1123, P1124, P1125, P1126, P1127, P1128, P1129, P112A, P112B, P112C, P112D, P112E, P112F, P1130, P1131, P1132, P1133, P1134, P1135, P1136, P1137, P1138, P1139, P113A, P113B, P113C, P113D,	49	629	12	ECU: bad intelligent device or component
P113E	00	520370	2	Not waiting for ECU after run: data erratic, intermittent, or incorrect
P113F	00	520371	2	Not waiting for ECU after run (often): data erratic, intermittent, or incorrect
P1140	00	520372	2	Not waiting for ECU after run (often): data erratic, intermittent, or incorrect
P1141, P1143, P1145, P1147, P1149, P114B, P114D	12	1485	3	ECU main relay: voltage is above the normal range or is shorted to a high source

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1142, P1144, P1146, P1148, P114A, P114C, P114E	11	1485	4	ECU main relay: voltage is below the normal range or is shorted to a low source
P115A	01	3513	14	ECU sensor supply voltage 5: special instructions
P115A	4B	3513	11	ECU sensor supply voltage 5: the root cause is not known
P115B	17	3513	0	ECU sensor supply voltage 5: data is above the normal operational range (most severe level)
P115C	11	3513	6	ECU sensor supply voltage 5: current is above the normal range or grounded circuit
P115C	16	3513	1	ECU sensor supply voltage 5: data is below the normal operational range (most severe level)
P115D	01	3514	14	ECU sensor supply voltage 6: special instructions
P115D	4B	3514	11	ECU sensor supply voltage 6: the root cause is not known
P115E	17	3514	0	ECU sensor supply voltage 6: data is above the normal operational range (most severe level)
P115F	11	3514	6	ECU sensor supply voltage 6: current is above the normal range or grounded circuit
P115F	16	3514	1	ECU sensor supply voltage 6: data is below the normal operational range (most severe level)
P1168	00	520378	11	MCAN not enough memory: the root cause is not known
P1169	00	520379	11	MCANR not enough memory: the root cause is not known
P116A	11	520425	4	Powerstage on CJ945: voltage is below the normal range or is shorted to a low source
P116A	12	520425	3	Powerstage on CJ945: voltage is above the normal range or is shorted to a high source
P116A	13	520425	5	Powerstage on CJ945: current is below the normal range or open circuit
P116A	4B	520425	12	Powerstage on CJ945: bad intelligent device or component
P1173	00	520437	31	Replacement fault code triggered by FID UVMDSM04/V-engine: main secondary ECU swapped - condition exists
P1174	00	520438	31	Replacement fault code triggered by FID UVMDSM04 - condition exists
P1175	00	520439	31	Replacement fault code triggered by FID UVMDSM10 - condition exists
P1176	00	520439	31	Replacement fault code triggered by FID UVMDSM12 - condition exists
P1177	00	520441	31	Replacement fault code triggered by FID UVMDSM13 - condition exists
P119A, P119B, P119C,	00	629	12	ECU: bad intelligent device or component
P119D	00	91	14	Position accelerator pedal: special instructions
P119E	00	190	2	Rotation speed: data erratic, intermittent or incorrect
P119F, P11A2	00	5357	2	Fuel injection quantity multiple cylinders: data erratic, intermittent or incorrect
P11A0	00	5441	2	Fuel injection timing error multiple cylinders: data erratic, intermittent or incorrect
P11A1	00	520281	2	Injection temperature compensation: data erratic, intermittent or incorrect

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P11A3, P11A4, P11A5	00	523612	12	ECU: bad intelligent device or component
P1186, P11A7	00	5357	2	Fuel injection quantity multiple cylinders: data erratic, intermittent or incorrect
P11A8	00	5442	2	Fuel injection pressure error multiple cylinders: data erratic, intermittent or incorrect
P11A9	00	29	2	Position accelerator pedal 2: data erratic, intermittent or incorrect
P11AA	00	677	2	Starter relay: data erratic, intermittent or incorrect
P11AB, P11AC	00	513	2	Actual percent torque: data erratic, intermittent or incorrect
P11AD	00	520250	2	Function monitoring: data erratic, intermittent or incorrect
P11AE, P11AF, P11B0, P11B1, P11B2, P11B3, P11B4, P11B5, P11B6, P11B7, P11B8, P11B9, P11BA, P11BB, P11BC, P11BD, P11BE, P11BF, P11C0, P11C1, P11C2, P11C3, P11C4, P11C5, P11C6, P11C7, P11C8, P11C9, P11CA, P11CB, P11CC, P11CD, P11CE, P11CF, P11D0, P11D1, P11D2, P11D3, P11D4, P11D5	00	629	12	ECU: bad intelligent device or component

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P11D6, P11D7, P11D8, P11D9, P11DA, P11DB, P11DC, P11DD, P11DE, P11DF, P11E0, P11E1, P11E2, P11E3, P11E4, P11E5, P11E6, P11E7, P11E8, P11E9, P11EB, P11EC, P11ED, P11EE, P11ED, P11F0, P11F1, P11F2, P11F3, P11F4, P11F5, P11F6, P11F7,	00	629	12	ECU: bad intelligent device or component
P11F8	00	520473	31	Wrong engine ECU - condition exists
P1251	00	520282	7	Lines DPF sensor inverted - mechanical system not responding or out of adjustment
P1252	00	520283	14	Oil change request: special instructions
P1253	00	520300	2	Pressure after DPF: data erratic, intermittent or incorrect
P1254	00	4781	14	DEF soot load: special instructions
P1255	00	10156	0	DPF regeneration time: data is above the normal operational range (most severe level)
P1256	00	3735	16	Time stand still: data is above the normal operational range (moderately severe level)
P1257	00	3735	0	Time stand still: data is above the normal operational range (most severe level)
P1258	00	4766	1	Temperature after DOC: data erratic, intermittent or incorrect
P1259, P125A, P125B, P125C	00	3251	14	DPF differential pressure: special instructions
P125F, P1260	00	4766	2	Temperature after DOC: data erratic, intermittent or incorrect

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1261	00	3734	0	Time stand still: data above the normal operational range (most severe level)
P1262	00	520254	8	Time stand still: abnormal frequency or pulse width or period
P1263	00	520255	2	Lines DPF sensor wrong connection: data erratic, intermittent or incorrect
P1264	00	520434	14	Condition stand still: special instructions
P1265	00	520472	11	ETV actuator light error: the root cause is not known
P1351	00	3226	0	NOx sensor after SCR cat: data is above the normal operational range (most severe level)
P1352	00	3226	2	NOx sensor after SCR cat: data erratic, intermittent or incorrect
P1353	00	3216	2	NOx sensor: data erratic, intermittent or incorrect
P1354	00	520286	2	Calculated lambda value: data erratic, intermittent or incorrect
P1355	00	7351	0	NOx emissions after SCR Cat: data is above the normal operational range (most severe level)
P1356	00	520287	2	NOx conversion SCR cat: data erratic, intermittent or incorrect
P1358	00	520289	14	Emptying DEF supply system: special instructions
P1359	00	6875	31	DEF metering pressure: data is above the normal operational range (most severe level)
P135A	00	520290	14	DEF pressure: special instructions
P135B	00	6875	0	DEF metering pressure: data is above the normal operational range (most severe level)
P135C	00	520291	11	DEF warm up: the root cause is not known
P135D	00	520292	1	DEF metering valve blocked: the root cause is not known
P135E	00	3226	0	NOx sensor after SCR cat: data is above the normal operational range (most severe level)
P135F	00	3226	9	NOx sensor after SCR cat: abnormal update rate timeout
P1360	00	3226	13	NOx sensor after SCR cat: out of calibration
P1361	00	3226	31	NOx sensor after SCR cat: condition exists
P1362	00	3216	0	NOx sensor: data is above the normal operational range (most severe level)
P1363	00	3216	9	NOx sensor: abnormal update rate timeout
P1364	00	3216	13	NOx sensor: out of calibration
P1365	00	3216	31	NOx sensor: condition exists
P1366	00	4360	2	Temperature before SCR cat: data erratic, intermittent or incorrect
P1367	00	4360	3	Temperature before SCR cat: voltage is above the normal range or is shorted to a high source
P1368	00	4360	4	Temperature before SCR cat: voltage is below the normal range or is shorted to a low source
P136A	00	3516	1	DEF concentration: Data is below the normal operational range (most severe level)
P136B	00	524087	11	DEF error lamp: the root cause is not known
P136C	00	524087	3	DEF error lamp: voltage above the normal range or is shorted to a high source
P136D	00	524087	4	DEF error lamp: voltage is below the normal range or is shorted to a low source
P1372	00	5746	5	DEF metering unit heater relay: current is below the normal range or open circuit
P1373	00	5746	3	DEF metering unit heater relay: voltage is above the normal range or is shorted to a high source

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1374	00	5746	4	DEF metering unit heater relay: voltage is below the normal range or is shorted to a low source
P1375	00	4334	2	DEF pump pressure: data erratic, intermittent or incorrect
P1376	00	520311	11	DEF supply module heater over temperature: the root cause is not known
P1378	00	4376	5	DEF reverse valve: current is below the normal range or open circuit
P1379	00	4376	3	DEF reverse valve: voltage is above the normal range or is shorted to a high source
P137A	00	4376	4	DEF reverse valve: voltage is below the normal range or is shorted to a low source
P137E	00	520284	15	Power reduction step 1 active: data is above the normal operational range (least severe level)
P1380	00	5826	14	Power reduction: special instructions
P1381	00	520285	0	Power reduction step 2 active: data is above the normal operational range (most severe level)
P1383	00	520293	15	Particle diagnostic power reduction step 1 active: data is above the normal operational range (least severe level)
P1384	00	520294	14	Particle diagnostic pretrigger reduction step 2 active: special instructions
P1385	00	520295	0	Particle diagnostic power reduction step21 active: data is above the normal operational range (most severe level)
P1386	00	520301	2	NOx conversion efficiency: data erratic, intermittent or incorrect
P1387	00	520302	2	Voltage for power supply DEF heater: data erratic, intermittent or incorrect
P1388	00	520303	11	Relay DEF heater: the root cause is not known
P1389	0	3226	12	NOx sensor after SCR cat: bad intelligent device or component
P138A	00	3226	31	NOx sensor after SCR cat: condition exists
P138B	00	3216	12	NOx sensor: bad intelligent device or component
P138C	00	3216	31	NOx sensor: condition exists
P138D	00	4360	11	Temperature before SCR cat: the root cause is not known
P138F	F0	520375	15	DEF concentration: data is above the normal operational range (least severe level)
P138F	F1	520375	0	SCR crystallization monitoring: data is above the normal operational range (most severe level)
P1390	00	520373	9	CAN DEF quality sensor: abnormal update rate timeout
P1391	00	520374	9	CAN DEF tank temperature/level sensor: abnormal update rate timeout
P1392	00	3532	3	DEF tank level sensor: voltage is above the normal range or is shorted to a high source
P1393	00	3532	4	DEF tank level sensor: voltage is below the normal range or is shorted to a low source
P1394	00	3031	3	DEF tank temperature: voltage is above the normal range or is shorted to a high source
P1395	00	3031	4	DEF tank temperature: voltage is below the normal range or is shorted to a low source
P1396	00	7540	11	DEF backflow line heater relay: the root cause is not known
P1397	00	5746	11	DEF metering unit heater relay: the root cause is not known
P1398	00	7069	11	DEF pressure line heater relay: the root cause is not known
P1399	00	5491	11	DEF heater relay cable: the root cause is not known
P139A	00	5746	8	Def metering unit heater relay: abnormal frequency or pulse width or period

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P139B	00	520317	8	DEF supply module over temperature: abnormal frequency or pulse width or period
P139C	00	520445	2	DEF pump motor communication: data erratic, intermittent or incorrect
P139D	00	520307	11	DEF heater relay over temperature: the root cause is not known
P139E, P139F, P13A0, P13A1, P13A3	00	3520	2	DEF quality sensor: data erratic, intermittent or incorrect
P13A2	00	3520	13	DEF quality sensor: Out of calibration
P13A4	00	520436	11	DEF quality sensor: the root cause is not known
P13A5	00	520436	3	DEF quality sensor: the voltage is above the normal range or is shorted to a high source
P13A6	00	520436	4	DEF quality sensor: the voltage is below the normal range is shorted to a low source
P13A7, P13A8, P13A9, P13AA	00	3532	2	DEF tank level sensor: data erratic, intermittent or incorrect
P13AB, P13AC, P13AD	00	3031	2	DEF tank temperature: data erratic, intermittent or incorrect
P13AE	00	4360	2	Temperature before SCR cat: data erratic, intermittent or incorrect
P13AF	00	520489	2	DEF pump temperature: data erratic, intermittent or incorrect
P13B0	00	5707	2	DEF pump heater temperature: data erratic, intermittent or incorrect
P13B1	00	520490	2	DEF pump pressure: data erratic, intermittent or incorrect
P1452	00	520321	12	CAN main secondary no communication - bad intelligent device or component
P1453	00	520322	9	Collective fault on the main ECU, triggered bby the fault couple coordinator secondary - abnormal update rate timeout
P1454	00	520323	11	SCR diagnostic disabled on main ECU triggered by fault on secondary - the root cause is not known
P1455	00	520324	11	DEF tank temperature diagnostic disabled on the main ECU triggered by fault on the secondary ECU - the root cause is not known
P1456	00	520325	11	DEF tank level diagnostic disabled on the main ECU triggered by fault on the secondary ECU - the root cause is not known
P1457	00	520326	11	SCR system turned off on the main ECU triggered by fault on the secondary ECU - the root cause is not known
P1458	00	520327	11	SCR system turned off/system on hold on the main ECU triggered by fault on the secondary ECU -the root cause is not known
P1459	00	520328	11	SCR system turned off/system on hold on the main ECU triggered by fault on the secondary ECU - the root cause is not known
P145A	00	520329	11	Standstill forbidden on the main ECU - the root cause is not known
P145B	00	520330	11	Power reduction request by 25% on the main ECU triggered by failure on the secondary ECU - the root cause is not known
P145C	00	520331	11	Power reduction request by 50% on the main ECU triggered by failure on the secondary ECU - the root cause is not known

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P145D	00	520332	11	Collective fault on the main ECU triggered by software-reset failure - the root cause is not known
P145E	00	520333	11	Collective fault on the main ECU triggered by no engine speed signal - the root cause is not known
P145F	00	520334	11	Collective fault on the main ECU triggered by light failure of the ETV - the root cause is not known
P1460	00	520335	11	Collective fault on the main ECU triggered by severe failure of the ETV - the root cause is not known
P1461	00	520336	11	Collective fault on the main ECU triggered by DEF CAN sensor failure - the root cause is not known
P1462	00	520337	11	Collective fault on the main ECU triggered by NOx sensor downstream failure - the root cause is not known
P1463	00	520338	11	ETV safe position: the root cause is not known
P1464	00	520339	11	Collective fault on the main ECU triggered by dosing valve failure - the root cause is not known
P1465	00	520340	11	Collective fault on the main ECU triggered by stand still temperature not being reached - the root cause is not known
P1466	00	520341	11	Collective fault on the main ECU triggered by DEF pressure problems - the root cause is not known
P1467	00	520342	11	Collective fault on the main ECU triggered by reverting valve failure - the root cause is not known
P1468	00	520343	11	Collective fault on the main ECU triggered by DEF backflow line heater - the root cause is not known
P1469	00	520344	11	Collective fault on the main ECU triggered by the NOx-tailpipe emissions being too high - the root cause is not known
P146A	00	520345	11	Collective fault on the main ECU triggered by DEF suction line heater failure - the root cause is not known
P146B	00	520346	11	Collective fault on the main ECU triggered by supply module heater lines failure - the root cause is not known
P146C	00	520347	11	Collective fault on the main ECU triggered by exhaust pressure upstream SCR failure - the root cause is not known
P146D	00	520348	11	Collective fault on the main ECU triggered by exhaust pressure upstream SCR failure - the root cause is not known
P146E	00	520349	11	NCD timer activated on the main ECU triggered by fault on the secondary - the root cause is not known
P146F	00	520350	11	Collective fault on the main ECU triggered by DEF pressure line failure - the root cause is not known
P1470	00	520351	11	Collective fault on the main ECU triggered by DEF pump temperature failure - the root cause is not known
P1471	00	520352	11	Collective fault on the main ECU triggered by DEF heater failure - the root cause is not known
P1472	00	520353	11	PCD timer activated on the main ECU triggered by fault on the secondary - the root cause is not known
P1473	00	520354	11	Collective fault on the main ECU triggered by microcontroller failure- the root cause is not known

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P1474	00	520355	11	Collective fault on the main ECU triggered by sensor supply voltage failure- the root cause is not known
P1475	00	520356	11	Collective fault on the main ECU triggered by data set ID failure- the root cause is not known
P1476	00	520357	11	Power reduction request by 25% on the main ECU triggered by failure on the secondary - the root cause is not known
P1477	00	520358	11	Power reduction request by 50% on the main ECU triggered by failure on the secondary - the root cause is not known
P1478	00	520359	11	Standstill forbidden on the main ECU - the root cause is not known
P1479	00	520360	11	NCD reduction fail timer activated on the main ECU triggered by the fault on the secondary - the root cause is not known
P147A	00	520361	11	Standstill change main to after run phase - the root cause is not known
P147B	00	520362	11	Collective fault on the main ECU triggered by temperature upstream of DOC failure- the root cause is not known
P147C	00	520363	11	Power reduction, stand still inhibited, ETV turned off on the main ECU triggered by fault on the secondary - the root cause is not known
P147D	00	520364	11	Collective fault on the main ECU triggered by KeepAlive error at an external device- the root cause is not known
P147E	00	520365	11	Collective fault on the main ECU triggered by battery voltage failure- the root cause is not known
P147F	00	520366	11	Collective fault on the main ECU triggered by CAN failure- the root cause is not known
P1480	00	520367	11	Collective fault on the main ECU triggered by function monitoring failure- the root cause is not known
P1481	00	520368	11	Collective fault on the main ECU triggered by microcontroller hardware failure- the root cause is not known
P1482	00	520369	11	Collective fault on the main ECU triggered by ECU temperature failure- the root cause is not known
P1483	00	520320	13	Main and secondary ECU software version mismatch - out of calibration
P1484	00	520460	11	Collective fault on the main ECU triggered by differential pressure sensor failure- the root cause is not known
P1485	00	520461	11	Collective fault on the main ECU triggered by environment pressure sensor failure- the root cause is not known
P1486	00	520462	11	Collective fault on the main ECU triggered by DEF supply system failure- the root cause is not known
P1487	00	520463	11	Collective fault on the main ECU triggered by NH3 sensor failure- the root cause is not known
P1488	00	520464	11	Collective fault on the main ECU triggered by camshaft speed signal failure- the root cause is not known
P1489	00	520465	11	Standstill inhibited on the main ECU triggered by failure - the root cause is not known
P148A	00	520466	11	Power reduction request by 50% on the main ECU triggered by failure on the secondary - the root cause is not known
P148B	00	520467	11	Power reduction request by 25% on the main ECU triggered by failure on the secondary - the root cause is not known

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P148C	00	520468	11	Power reduction request by 50% on the main ECU triggered by failure on the secondary ECU - the root cause is not known
P148D	00	520469	11	Collective fault on the main ECU triggered by SCR crystallization failure- the root cause is not known
P148E	00	520470	11	Standstill request from the secondary ECU to the main ECU - the root cause is not known
P148F	00	520475	11	Power reduction request by 25% on the main ECU triggered by failure on the secondary ECU - the root cause is not known
P1490	00	520476	11	Deactivation NOx monitoring - the root cause is not known
P1491	00	520477	11	Activation of the replacement value for ETV - the root cause is not known
P1492	00	520478	11	Deactivation NOx plausibility check secondary - the root cause is not known
P1493	00	520479	11	Standstill forbidden on the main ECU - the root cause is not known
P1494	00	520480	11	Standstill forbidden on the main ECU, execution only possible with service tool - the root cause is not known
P1495	00	520481	11	Set “FID” on the main ECU - the root cause is not known
P1496	00	520482	11	Activation of “performance intervention” on the main ECU - the root cause is not known
P1497	00	520483	11	Forces SCR supply system on the main ECU in status “hold” - the root cause is not known
P1498	00	520484	11	Collective fault on the main ECU triggered by electrical supply module failure- the root cause is not known
P1499	00	520485	11	Deactivation DEF dosing adaption on the main ECU - the root cause is not known
P149A	00	520486	11	Deactivation NOx downstream monitoring on the main ECU - the root cause is not known
P149B	00	520487	13	Inconsistent dataset on the main and secondary ECU - out of calibration
P149C	00	520488	0	SCR crystallization: data is above the normal operational range (most severe level)
P202A	13	4366	5	DEF tank heating valve: the current is below the normal range or open circuit
P202B	11	4366	4	DEF tank heating valve: the voltage is below the normal range or is shorted to a low source
P202C	12	4366	3	DEF tank heating valve: the voltage is above the normal range or is shorted to a high source
P203B	22	1761	0	DEF tank level sensor: data is above the normal operational range (most severe level)
P203B	64	1761	2	DEF tank level sensor: data erratic, intermittent or incorrect
P203C	11	3532	4	DEF tank level sensor: the voltage is below the normal range or is shorted to a low source
P203D	12	3532	3	DEF tank level sensor: the voltage is above the the normal range or is shorted to a high source
P203F	21	3532	1	DEF tank level sensor: data is below the normal operational range (most severe level)
P2047	01	3361	6	DEF metering unit: the current is above the normal range or grounded circuit
P2047	13	3361	5	DEF metering unit: the current is below the normal range or open circuit
P2048	11	3361	4	DEF metering unit: voltage is below the normal range or is shorted to a low source
P2049	12	3361	3	DEF metering unit: the voltage is above the normal range or is shorted to a high source

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P204C	11	4334	4	DEF pump pressure: voltage is below the normal range or is shorted to a low source
P204D	12	4334	3	DEF pump pressure: voltage is above the normal range or is shorted to a high source
P205B	21	3031	1	DEF tank temperature: data below the normal operational range (most severe level)
P205B	22	3031	0	DEF tank temperature: data is above the normal operational range (most severe level)
P205B	4B	520319	11	DEF tank temperature the root cause not known
P205B	64	3031	2	DEF tank temperature: data erratic, intermittent or incorrect
P205C	11	3031	4	DEF tank temperature: voltage is below the normal range or is shorted to a low source
P205D	12	3031	3	DEF tank temperature: voltage is above the normal range or is shorted to a high source
P206A	01	3520	2	DEF quality sensor: data erratic, intermittent or incorrect
P207F	21	3520	1	DEF quality sensor: data below the normal operational range (most severe level)
P208A	13	7107	5	DEF pump: current is below the normal range or open circuit
P208B	4B	520306	11	DEF pump motor over temperature - the root cause is not known
P208C	11	7107	4	DEF pump: voltage is below the normal range or is shorted to a low source
P208D	12	7107	3	DEF pump: voltage is above the normal range or is shorted to a high source
P209F	4B	520312	11	DEF tank heater over temperature: the root cause is not known
P20B9	13	4341	5	Heater DEF supply line: the current is below the normal range or open circuit
P20BA	4B	520310	11	DEF suction line heater over temperature - the root cause is not known
P20BB	11	4341	4	Heater DEF supply line: voltage is below the normal range or shorted to a low source
P20BC	12	4341	3	Heater DEF supply line: voltage is above the normal range or is shorted to a high source
P20BD	13	4343	5	Heater DEF pressure line: current is below the normal range or open circuit
P20BE	4B	520309	11	DEF pressure line heater over temperature - the root cause is not known
P20BF	11	4343	4	Heater DEF pressure line: voltage is below the normal range or is shorted to a low source
P20C0	12	4343	3	Heater DEF pressure line: voltage is above the normal range or is shorted to a high source
P20C1	13	4345	5	Heater DEF return line: current is below the normal range or open circuit
P20C2	4B	420308	11	DEF backflow line heater over temperature - the root cause is not known
P20C3	11	4345	4	Heater DEF return line: voltage is below the normal range or is shorted to a low source
P20C4	12	4345	3	Heater DEF return line: voltage is above the normal range or is shorted to a high source
P20C5	13	520471	5	DEF downstream line heater: the current is below the normal range or open circuit
P20C6	4B	520471	11	DEF downstream line heater: the root cause is not known
P2027	11	520471	4	DEF downstream line: voltage is below the normal range or is shorted to a low source
P2028	12	520471	3	DEF downstream line: voltage is above the normal range or is shorted to a high source

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P20E8	21	4334	1	DEF pump pressure: data is below the normal operational range (most severe level)
P20E9	22	4334	0	DEF pump pressure: data is above the normal operational range (most severe level)
P20EE	00	5304	2	NOx cat efficiency: data erratic, intermittent or incorrect
P2100	13	51	5	Throttle valve position: current is below the normal range or open circuit
P2101	4B	51	11	Throttle valve position: the root cause is not known
P2102	00,11	51	4	Throttle valve position: the voltage is below the normal range or shorted to a low source
P2103	00,12	51	3	Throttle valve position: the voltage is above the normal range or shorted to a high source
P2111	72	51	7	Throttle valve position: the mechanical system is not responding or out of adjustment
P2112	73	51	7	Throttle valve position: the mechanical system is not responding or out of adjustment
P214A	22	4360	0	Temperature before SCR cat - data is above the normal operational range (most severe range)
P21C2	13	5491	5	DEF heater relay cable: current is below the normal range or open circuit
P21C3	11	5491	3	DEF heater relay cable: the voltage is below the normal range or shorted to a low source
P21C4	12	5491	3	DEF heater relay cable: the voltage is above the normal range or is shorted to a high source
P2227	21	108	1	Ambient pressure sensor: data is below the normal operational range (most severe level)
P2227	22	108	0	Ambient pressure sensor: data is above the normal operational range (most severe level)
P2227	64	108	2	Ambient pressure sensor: data erratic, intermittent or incorrect
P2228	11	108	4	Ambient pressure sensor: the voltage is below the normal range or shorted to a low source
P2229	12	108	3	Ambient pressure sensor: the voltage is above the normal range or shorted to a high source
P2264	22	97	0	Water in fuel sensor: data is above the normal operational range (most severe level)
P2266	11	97	4	Water in fuel sensor: voltage is below the normal range or shorted to a low source
P2267	12	97	3	Water in fuel sensor: voltage is above the normal range or shorted to a high source
P226B	F0	102	16	Charge air pressure sensor: data is above the normal operational range (moderately severe level)
P226B	F1	102	0	Charge air pressure sensor: data is above the normal operational range (most severe level)
P229F	64	3226	2	NOx sensor after SCR cat: data erratic, intermittent or incorrect
P22FF	21	4360	1	Temperature before SCR cat: data is below the normal operational range (most severe level)
P242F	F0	3720	16	DPF ash load: data is above the normal operational range (moderately severe level)
P244A	F4	3251	18	DPF differential pressure: data is below the normal operational range (moderately severe level)
P244A	F5	3251	1	DPF differential pressure: data is below the normal operational range (most severe level)
P244B	F0	3251	16	DPF differential pressure: data is above the normal operational range (moderately severe level)

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
P244B	F1	3521	0	DPF differential pressure: data is above the normal operational range (most severe level)
P2454	11	3251	4	DPF differential pressure: voltage is below the normal range or is shorted to a low source
P2455	12	3251	3	DPF differential pressure: voltage is above the normal range or is shorted to a high source
P2456	64	3251	2	DPF differential pressure: data erratic, intermittent or incorrect
P245F	21	520300	18	Pressure after DPF - data is below the normal operational range (moderately severe level)
P245F	22	520300	16	Pressure after DPF - data is above the normal operational range (moderately severe level)
P2463	F0	4781	16	DEF soot load: data is above the normal operational range (moderately severe level)
P2463	F1	4781	0	DEF soot load: data is above the normal operational range (most severe level)
P24E1	01	4377	2	NH3 sensor: data erratic, intermittent or incorrect
P24E9	01	4382	2	NH3 sensor heater: data erratic, intermittent or incorrect
P250A	00,2F	98	2	Oil level: data erratic, intermittent or incorrect
P250A, P250B	1C	98	31	Oil level: condition exists
P250E	13	98	14	Oil level: special instructions
P2541	11	94	4	Fuel low pressure sensor: voltage is below the normal range or is shorted to a low source
P2542	12	94	3	Fuel low pressure sensor: voltage is above the normal range or is shorted to a high source
P2560	7B	111	1	Coolant level sensor: data is below the normal operational range (most severe level)
P2604	02	729	12	Preheating relay: bad intelligent device or component
P2604	13	729	5	Preheating relay: current is below the normal range or open circuit
P2604	4B	729	12	Preheating relay: bad intelligent device or component
P260E	11	3697	4	Particle filler lamp: voltage is below the normal or shorted to a low source
P260E	12	3697	3	Particle filler lamp: voltage is above the normal or shorted to a high source
P268A	54	651	13	Injector 1: out of calibration
P26DF	01	3512	14	ECU sensor supply voltage 4: special instructions
P26DF	4B	3512	11	ECU sensor supply voltage 4: the root cause is not known
P26E0	11	3512	6	ECU sensor supply voltage 4: current is above the normal range or grounded circuit
P26E0	16	3512	1	ECU sensor supply voltage 4: data is below the normal operational range (most severe level)
P26E1	17	3512	0	ECU sensor supply voltage 4: data is above the normal operational range (most severe level)
P2ABD	F0	1188	11	TC wastegate: the root cause is not known
P2D87	4B	1071	11	Fan drive output: the root cause is not known
U0010	88	1231	14	CAN: special instructions
U0028	88	639	14	CAN: special instructions

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
U1700	00	520261	9	CAN communication to NOx sensor before Cat - abnormal update rate timeout
U1704	00	520265	9	CAN communication to NOx sensor before Cat - abnormal update rate timeout
U170C	87	1669	14	CAN: special instructions
U170D	00	520252	2	CAN control message: data erratic, intermittent or incorrect
U170E	00	520269	2	CAN engine start (GeraBox) checksum - data erratic, intermittent or incorrect
U170F	00	520270	2	CAN engine start (Vehicle controller) checksum - data erratic, intermittent or incorrect
U1710, U1711, U1712, U1713,	00	4207	2	CAN torque rotation speed control: data erratic, intermittent or incorrect
U1714	00	523211	9	CAN engine brake: abnormal update rate timeout
U1715	00	523212	9	CAN engine protection: abnormal update rate timeout
U1716	00	523741	14	CAN shut down request from engine - special instructions
U1717	00	523240	9	CAN functional mode control: abnormal update rate timeout
U1718	00	520253	2	CAN control message: data erratic, intermittent or incorrect
U1719	00	520271	2	CAN engine start (GeraBox) rolling counter - data erratic, intermittent or incorrect
U171A	00	520272	2	CAN engine start (Vehicle controller) rolling counter - data erratic, intermittent or incorrect
U171B, U171C, U171D, U171E	00	4206	2	Can torque rotation speed control - data erratic, intermittent or incorrect
U1720	00	520273	2	CAN engine start (GeraBox)- c
U1721	00	520274	9	CAN engine start (GeraBox) - abnormal update rate timeout
U1722	00	520275	2	CAN engine start (Vehicle controller) - data erratic, intermittent or incorrect
U1723	00	520276	9	CAN engine start (Vehicle controller) - abnormal update rate timeout
U1725	00	520278	9	CAN ETV actuator - abnormal update rate timeout
U1726, U1727, U1728, U1729, U172A, U172B, U172C, U172D, U172E, U172F, U1730, U1731	00	3349	0	CAN torque rotation speed control - data above the normal operational range (most severe level)
U1732	00	523982	0	Power stage diagnostic - data is above the normal operational range (most severe level)
U1733	00	523982	1	Power stage diagnostic - data is below the normal operational range (most severe level)

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

DTC #	FTB	SPN	FMI	Fault description
U1734	00	520356	9	CAN control message: abnormal update rate timeout
U1737	00	520380	14	Exhaust aftertreatment CAN shortcut - special instructions
U1738	00	520381	14	Main and secondary CAN shortcut - special instructions
U1739	00	520382	14	Engine CAN shortcut - special instructions
U173A	00	520383	9	CAN main secondary - abnormal update rate timeout
U173B	00	520384	9	CAN main secondary - abnormal update rate timeout
U173C	00	520385	9	CAN main secondary - abnormal update rate timeout
U173D	00	520386	9	CAN main secondary - abnormal update rate timeout
U173E	00	520387	9	CAN main secondary - abnormal update rate timeout
U173F	00	520388	9	CAN main secondary - abnormal update rate timeout
U1740	00	520389	9	CAN main secondary - abnormal update rate timeout
U1741	00	520390	9	CAN main secondary - abnormal update rate timeout
U1742	00	520391	9	CAN main secondary - abnormal update rate timeout
U1743	00	520392	9	CAN main secondary - abnormal update rate timeout
U1744	00	520393	9	CAN main secondary - abnormal update rate timeout
U1745	00	520394	9	CAN main secondary - abnormal update rate timeout
U1746	00	520395	9	CAN main secondary - abnormal update rate timeout
U1747	00	520396	9	CAN main secondary - abnormal update rate timeout
U1748	00	520397	9	CAN main secondary - abnormal update rate timeout
U1749	00	520398	9	CAN main secondary - abnormal update rate timeout
U174A	00	520399	9	CAN main secondary - abnormal update rate timeout
U174B	00	520400	9	CAN main secondary - abnormal update rate timeout
U174C	00	520401	9	CAN main secondary - abnormal update rate timeout
U174D	00	520402	9	CAN main secondary - abnormal update rate timeout
U174E	00	520403	9	CAN main secondary - abnormal update rate timeout
U174F	00	520404	9	CAN main secondary - abnormal update rate timeout
U1750	00	520405	9	CAN main secondary - abnormal update rate timeout
U1751	00	520406	9	CAN main secondary - abnormal update rate timeout
U1752	00	520407	9	CAN main secondary - abnormal update rate timeout
U1753	00	520408	9	CAN main secondary - abnormal update rate timeout
U1754	00	520409	9	CAN main secondary - abnormal update rate timeout
U1755	00	520410	9	CAN main secondary - abnormal update rate timeout
U1756	00	520411	9	CAN main secondary - abnormal update rate timeout
U1757	00	520412	9	CAN main secondary - abnormal update rate timeout
U1758	00	520413	2	CAN main secondary, ECU checksum - data erratic, intermittent or incorrect
U1759	00	520414	2	CAN main secondary, time synchronously private CAN - data erratic, intermittent or incorrect
U175A	00	520415	2	CAN main secondary, ECU rolling counter - data erratic, intermittent or incorrect
U175C	00	520431	9	CAN main secondary - abnormal update rate timeout

5.8-7 Deutz TD2.9L Fault Codes (EMR5) - serial number A401 000 520 and above

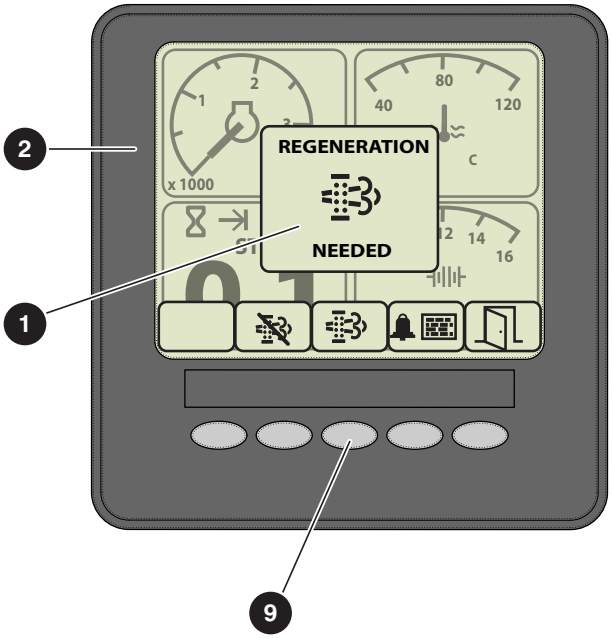
DTC #	FTB	SPN	FMI	Fault description
U175D	00	520432	9	CAN main secondary - abnormal update rate timeout
U175E, U175F, U1760, U1761	00	3349	2	CAN torque rotation speed control: data erratic, intermittent or incorrect
U1762	00	520446	9	CAN-Receive-Frame ComMS_SWS10_MRcv - abnormal update rate timeout
U1763	00	520447	9	CAN-Receive-Frame ComMS_SWS13_SRcv - abnormal update rate timeout
U1764	00	520448	9	CAN-Receive-Frame ComMS_SWS14_SRcv - abnormal update rate timeout
U1765	00	520449	9	CAN-Receive-Frame ComMS_SWS15_SRcv - abnormal update rate timeout
U1766	00	520450	9	CAN-Receive-Frame ComMS_SWS16_SRcv - abnormal update rate timeout
U1767	00	520451	9	CAN-Receive-Frame ComMS_SWS17_SRcv - abnormal update rate timeout
U1768	00	520452	9	CAN-Receive-Frame ComMS_SWS18_SRcv - abnormal update rate timeout
U1769	00	520453	9	CAN-Receive-Frame ComMS_SWS19_SRcv - abnormal update rate timeout
U176A	00	520454	9	CAN-Receive-Frame ComMS_SWS20_SRcv - abnormal update rate timeout
U176B	00	520455	9	CAN-Receive-Frame ComMS_SWS7_MRcv - abnormal update rate timeout
U176C	00	520456	9	CAN-Receive-Frame ComMS_SWS8_MRcv - abnormal update rate timeout
U176D	00	520457	9	CAN-Receive-Frame ComMS_SWS9_MRcv - abnormal update rate timeout
U1770	00	520314	9	CAN ETC actuator secondary - abnormal update rate timeout
U1771	00	1638	2	Hydraulic oil temperature: data erratic, intermittent or incorrect
U1772	00	1638	9	Hydraulic oil temperature: abnormal update rate timeout
U1773	00	520313	9	CAN ETV actuator: abnormal update rate timeout
U3003	11	168	4	Battery voltage: voltage is below the normal range or shorted to a low source
U3003	12	168	3	Battery voltage: voltage is above the normal range or shorted to a high source
U3003	A2,F4	168	1	Battery voltage: data is below the normal operational range (most severe level)
U3003	A3,F0	168	0	Battery voltage: data is above the normal operational range (most severe level)

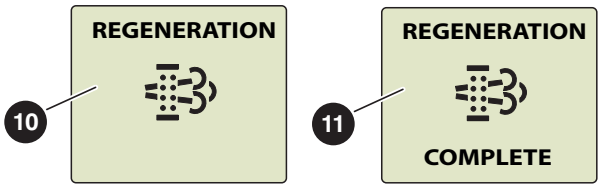
5.8-8 Diesel Particulate Filter (DPF) and Standstill Regeneration - Deutz TCD2.2 Engine

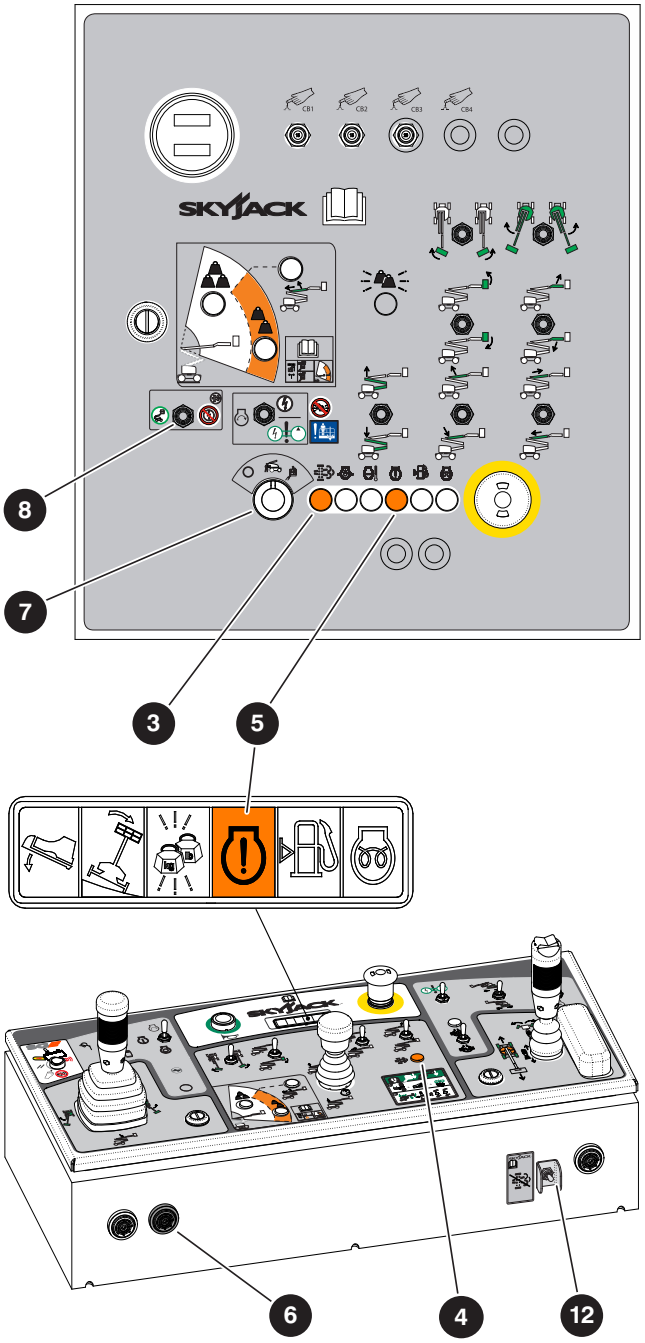
About the DPF and Standstill Regeneration

The DPF system is a closed diesel particulate filter system that accumulates the soot during the operation of the engine to reduce diesel particulate emissions.

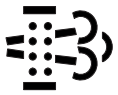
As soon as the soot load reaches 100%, the system triggers a standstill regeneration request. The request is issued and displayed ❶ on the screen of the Deutz engine display module ❷ (located below the engine control console) and indicated by the flashing standstill lamps on the base ❸ and platform ❹ controls.







Standstill Regeneration Stages

Standstill Lamps ❸ ❹ 	Engine Lamp ❺ 	Audible Alarm ❻	Engine Torque	Action Required
Flashes slowly	Off	Pulsates slowly	100%	Perform the standstill operation at the next available opportunity, within 3 to 4 hours.
Flashes slowly	On	Pulsates slowly	75%	The standstill operation must be performed immediately.
Flashes quickly	Flashes	Pulsates quickly	40%	a. The standstill operation is no longer possible with on-machine controls. Contact an authorized repair facility.
				b. Failure to perform the standstill has resulted in the diesel particulate filter failure, and regeneration is no longer possible. Contact an authorized repair facility to replace the filter.

Do the Standstill Regeneration

1. Move the MEWP to an open, well-ventilated area, away from any flammable material. Park it on a firm level surface, and fully stow the MEWP.
2. With the engine running, turn the off/base/platform switch ❼ on the base controls to the base position.
3. Activate the standstill regeneration by moving the standstill switch ❽ on the base controls to the right. Base functions become inoperative when the standstill switch is turned on.
4. On the engine display module ❷ press and hold the middle button ❾ (below the regeneration symbol) for 7 seconds.

⚠ WARNING

Do not touch hot engine components. Touching hot surfaces may cause serious injury.

5. The engine display module changes to the Regeneration Ongoing symbol ❿, the standstill lamps turn solid, and the engine speed may change.
6. Standstill regeneration takes approximately 45 minutes. During this time, the MEWP must not be used.

IMPORTANT

The standstill regeneration must be completed fully. If the process is interrupted, the standstill request continues.

7. When the standstill regeneration is complete, the Regeneration Ongoing symbol changes to Regeneration Complete ⓫, the standstill lamps ❸ ❹ turn off, and the engine speed returns to normal.
8. Move the standstill switch to the left. The MEWP may now be used normally.

IMPORTANT

The derate override switch ⓬ on the front of the platform control box should only be used when absolutely necessary to move the MEWP to park it in a safe location when the derated engine torque/rpm prevents adequate torque to drive the MEWP.

It will temporarily (for approximately 30 minutes) restore full engine power and speed.

Be aware that use of the derate override switch may result in diesel particulate filter failure.

5.9 Hydraulic Tank

Maintaining the hydraulic components and hydraulic oil at the proper level are essential to the good performance and service life of the MEWP.

5.9-1 Change the Hydraulic Tank Filter

1. Place a suitable container under the hydraulic tank filter.
2. Remove the oil filter and catch any escaping oil.

⚠ WARNING

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

3. Clean inside the filter head.
4. Apply a thin layer of clean hydraulic oil to the new oil filter gasket.
5. Install the filter and tighten it firmly.
6. Clean up any oil that may have spilled during this procedure.
7. Start the engine from the base control console.
8. Check for leakage.

5.9-2 Change the Hydraulic Oil

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 drain port.
4. Remove the oil drain plug and allow all of the hydraulic oil to drain into the container.

⚠ WARNING

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

5. Install the oil drain plug with a new seal ring and tighten it firmly.
6. Refill the hydraulic tank with new oil as per the specifications (refer to *2.11 Specifications and Features - Engines & Fluids*).
7. Check for leakage.
8. Clean up any oil that may have spilled during this procedure.
9. Check the hydraulic oil level on the sight gauge. The oil level should be at or slightly above the top mark on the sight gauge.

NOTE

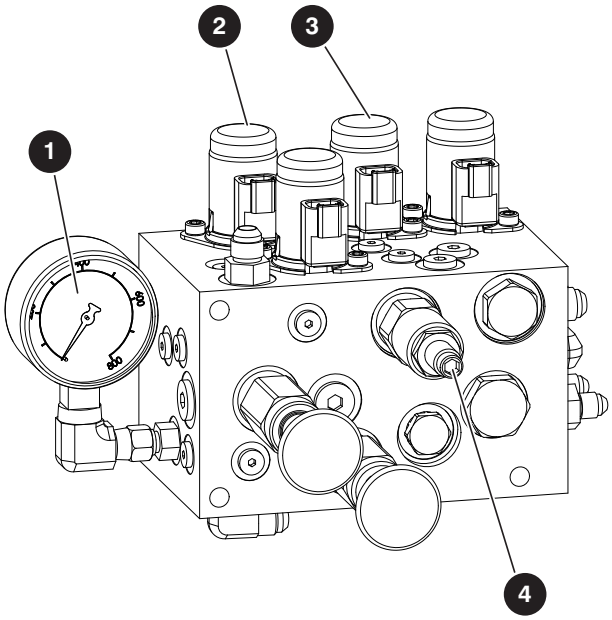
Samples of hydraulic oil should be drawn from the reservoir and tested annually. These samples should be taken when the oil is warmed through normal operation of the system. The sample should be analyzed by a qualified lubrication specialist to determine if it is suitable for continued use. Oil change 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.

5.10 Manifolds and Hydraulic Pumps

5.10-1 Hydraulic Brake Pressure Adjustment

Maintaining accurate hydraulic brake pressure is important when it comes to safe MEWP operation.

1. Locate the pressure gauge ❶ on the brake valve assembly.



IMPORTANT

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

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

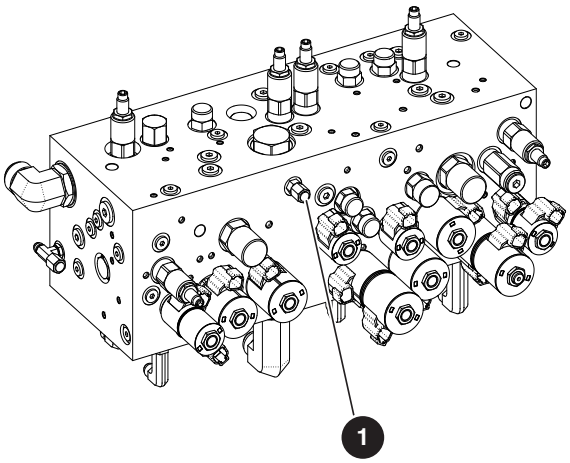
IMPORTANT

Valve damage will occur if it is tightened too much.

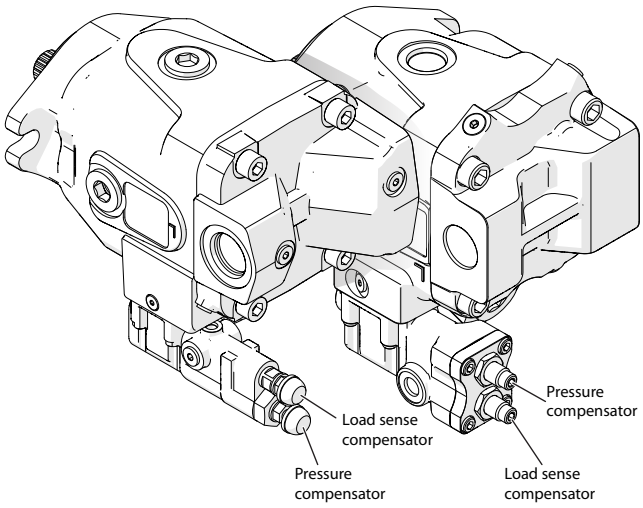
3. Locate the brake system pressure reducing valve PR1 ❹. Loosen the lock nut and turn the adjustment stem gently clockwise 2 full turns.
4. Start the engine from the platform control console and extend the boom slightly (approximately 30 cm (12")) to achieve low speed drive.
5. Drive the MEWP forward or reverse. The pressure gauge reading should be 28 bar (400 psi). Stop the MEWP. Follow the next steps for adjusting the relief valve pressure if needed. If no adjustment is required, skip ahead to step 10.
6. Locate the brake system pressure reducing valve PR1 and turn the valve gently counterclockwise to the initial position.
7. Drive the MEWP forward or reverse. The pressure gauge reading should be 28 bar (400 psi).
8. Stop the MEWP and adjust the pressure reducing valve PR1 1/4 turn at a time by turning it either clockwise to increase the pressure, or counterclockwise to decrease the pressure.
9. Repeat steps 7 and 8 until the brake pressure is achieved (28 bar / 400 psi) then tighten the lock nut on the brake system pressure reducing valve PR1.
10. Reinstall the wiring in the same positions it was removed from in step 3.
11. Test the brake and two speed functions.

5.10-2 Hydraulic Standby Pressure Adjustment

1. Locate the GP1 port ❶ on the front of the main manifold and remove the cap.



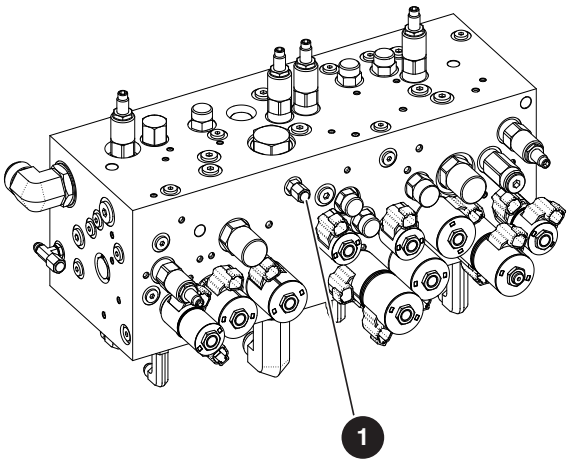
2. Connect a pressure gauge (41 bar / 600 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Check the reading on the gauge (standard pressure should be 23 bar / 330 psi) and follow the next steps for adjusting the pressure, if needed.
5. Locate the load sense compensator on the system pump.



6. Loosen the lock nut.
7. Adjust the load sensing pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after the pressure is set to 23 bar (330 psi).
9. Turn the engine off.
10. Remove the pressure gauge from the GP1 port and cap the port.

5.10-3 Hydraulic High Pressure Adjustment

1. Locate the GP1 port ❶ on the main manifold and remove the cap.

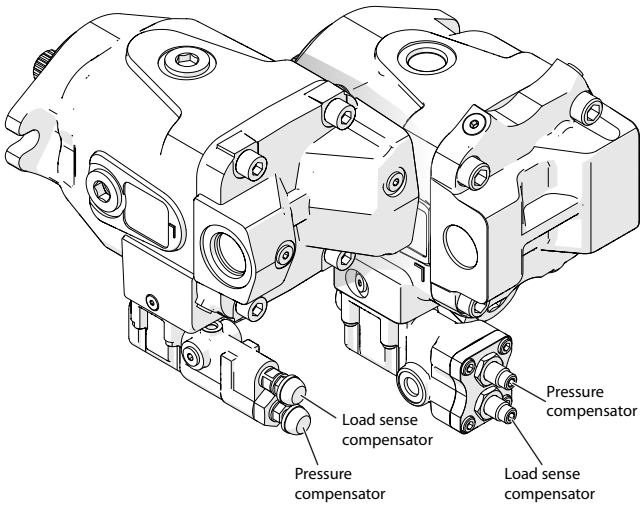


2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.

⚠ WARNING

To protect the gauge, do not activate any controls during this procedure.

3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Without driving, steer fully to one direction and then check the reading on the gauge. Standard pressure should be 210 bar (3050 psi). Follow the next steps for adjusting the pressure, if needed.
5. Locate the pressure compensator on the system pump.

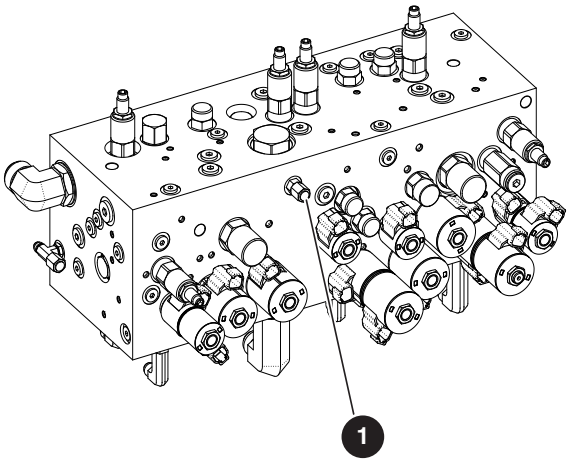


6. Loosen the lock nut.
7. Adjust the system pump pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after pressure is set to 210 bar (3050 psi).
9. Turn the engine off.
10. Remove the pressure gauge from the GP1port and cap the port.

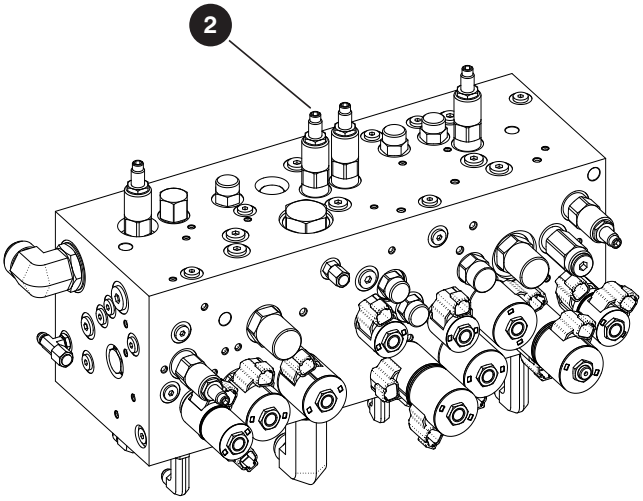
5.10-4 Hydraulic System Relief Valve Adjustment (RV1)

To adjust the system relief valve (RV1), you are required to temporarily adjust the high pressure setting on the system pump to 228 bar (3300 psi). Refer to *5.10-3 Hydraulic High Pressure Adjustment*.

1. Locate the GP1 port ❶ on the main manifold and remove the cap.



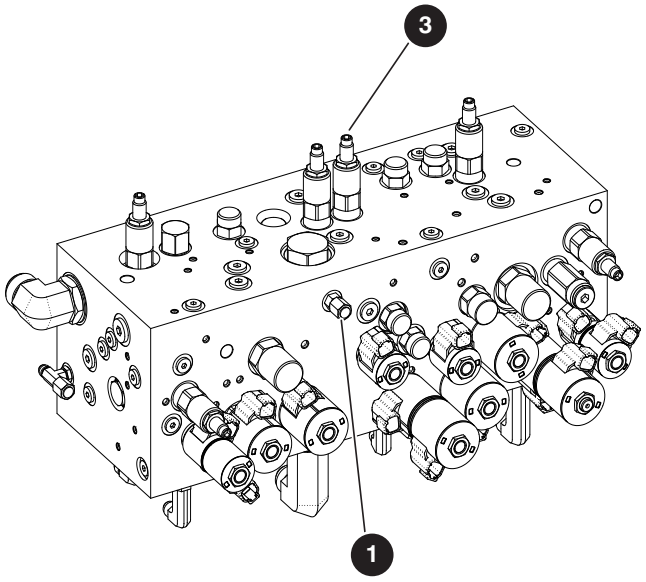
2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Steer fully to one direction and then check the reading on the gauge. Standard pressure should be 220 bar (3200 psi). Follow the next steps for adjusting pressure if needed.
5. Locate the system relief valve (RV1) ❷.



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 210 bar (3050 psi) is observed on the gauge. You must steer fully in one direction to activate the pressure reading on the gauge.
8. Reset the system pump to 210 bar (3050 psi). Refer to *5.10-3 Hydraulic High Pressure Adjustment*.

5.10-5 Turret Rotate Relief Valve Adjustment (RV2)

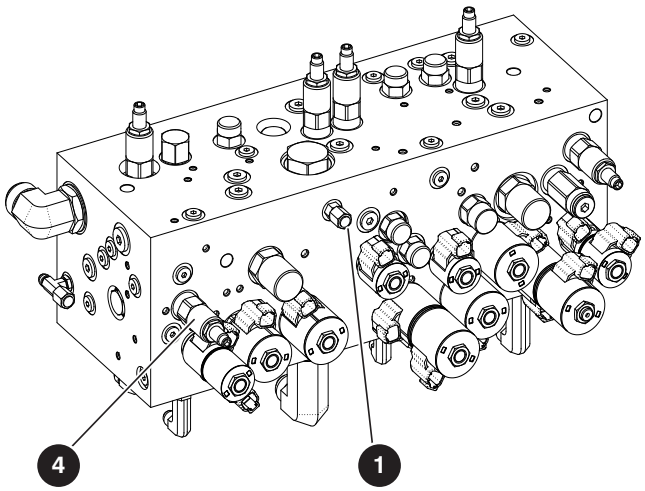
1. Locate the GP1 port ❶ on the main manifold.
2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.



3. Start the engine from the base control console and let it run for 2-5 minutes.
4. 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 120 bar (1750 psi). Follow the next steps for adjusting the pressure, if needed.
7. Locate the turret rotate relief valve RV2 ❸.
8. Loosen the lock nut on the turret rotate relief valve RV2. Turn the adjusting stem clockwise to increase the pressure and counterclockwise to decrease the pressure.
9. Tighten the lock nut on the turret rotate relief valve RV2 once 120 bar (1750 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.

5.10-6 Platform Level Relief Valve Adjustment (RV3)

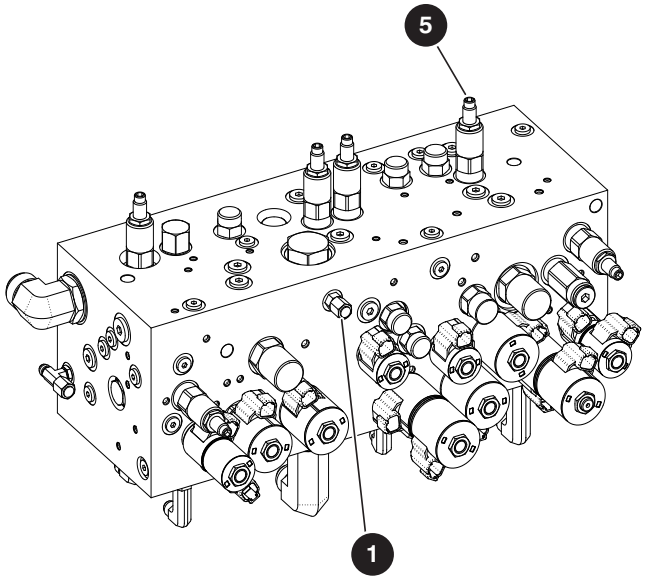
1. Locate the GP1 port ❶ on the main manifold.
2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.



3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the main boom to ensure the platform will not contact the ground.
5. Fully raise or lower the platform level and check the reading on the gauge. The pressure should be 206 bar (3000 psi). Follow the next steps for adjusting the pressure, if needed.
6. Locate the platform leveling relief valve RV3 ❹ .
7. Loosen the lock nut on the platform level relief valve RV3. Turn the adjusting stem clockwise to increase the pressure and counterclockwise to decrease the pressure.
8. Tighten the lock nut on the platform level relief valve RV3 once 206 bar (3000 psi) is observed on the gauge. You must fully raise or lower the platform level to activate a pressure reading on the gauge.

5.10-7 Riser Relief Valve Adjustment (RV4)

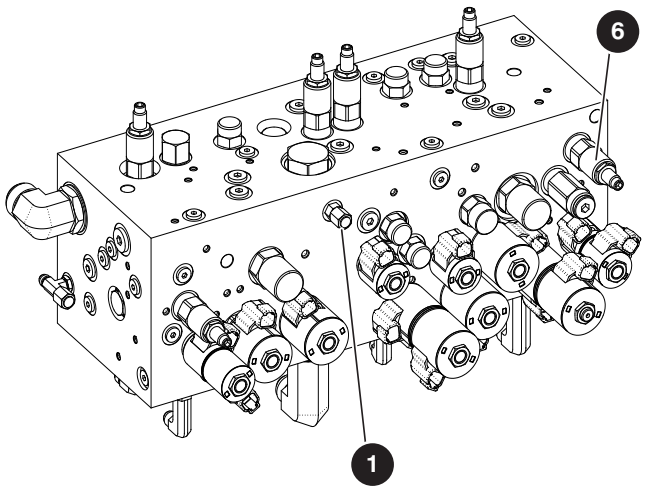
1. Locate the GP1 port ❶ on the main manifold and remove the cap.



2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the jib boom so the platform will not touch the ground.
5. Fully lower the riser and check the reading on the gauge. The pressure should be 206 bar (3000 psi). Follow the next steps for adjusting the pressure, if needed.
6. Locate the riser relief valve RV4 ❺.
7. Loosen the lock nut on the riser boom relief valve RV4. Turn the adjusting stem clockwise to increase the pressure, and counterclockwise to decrease the pressure.
8. Tighten the lock nut on the riser boom relief valve RV4 once 206 bar (3000 psi) is observed on the gauge. You must fully lower the riser to activate a pressure reading on the gauge.

5.10-8 Main Boom Relief Valve Adjustment (RV5)

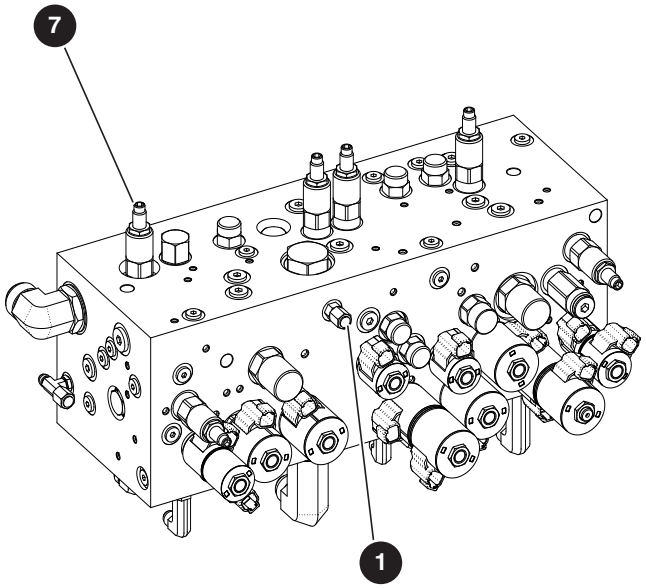
1. Locate the GP1 port ❶ on the main manifold and remove the cap.



2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the jib boom so the platform will not touch the ground.
5. Fully raise the riser.
6. Lower the main boom fully and check the reading on the gauge. The pressure should be 172 bar (2500 psi). Follow the next steps for adjusting the pressure, if needed.
7. Locate the main boom relief valve RV5 ❻.
8. Loosen the lock nut on the main boom relief valve RV5. Turn the adjusting stem clockwise to increase the pressure, and counterclockwise to decrease the pressure.
9. Tighten the lock nut on the main boom relief valve RV5 once 172 bar (2500 psi) is observed on the gauge. You must fully lower the main boom to activate a pressure reading on the gauge.

5.10-9 Fly Boom Relief Valve Adjustment (RV6)

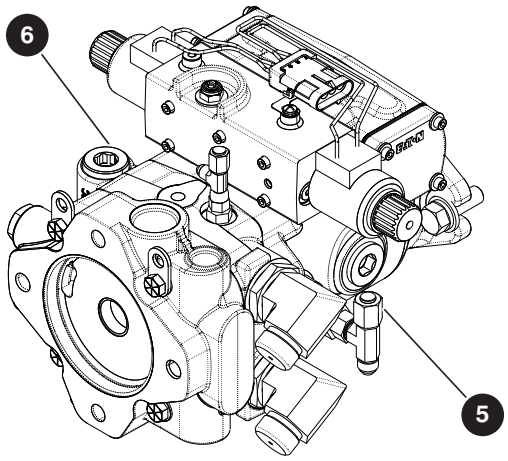
1. Locate the GP1 port ❶ on the main manifold and remove the cap.



2. Connect a pressure gauge (345 bar / 5000 psi) to the GP1 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Fully extend the boom and check the reading on the gauge. The pressure should be 138 bar (2000 psi). Follow the next steps for adjusting the pressure, if needed.
5. Locate the fly boom relief valve RV6 ❼.
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 138 bar (2000 psi) is observed on the gauge. You must fully extend the boom to activate a pressure reading on the gauge.

5.10-10 Test Charge Pump Pressure on Drive Pump (RV7)

1. Locate test port TP3 ❺ on the drive pump.
2. Connect a pressure gauge (41 bar / 600 psi) to the test port.



3. Start the engine from the base control console.

⚠ WARNING

To protect the gauge, do not activate any controls during this procedure.

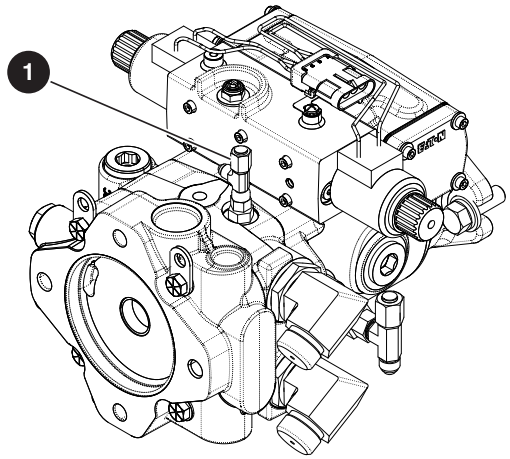
4. Check the reading on the gauge. The standard pressure should be 22 ±2 bar (313 ±31 psi).
5. Replace the charge pump relief valve RV7 ❻ if the standard pressure is not achieved.
6. Repeat steps 2, 3, and 4 after the charge pump relief valve is replaced.
7. If the pressure is still not in range, repair or replace the pump as necessary.

5.10-11 Test Forward Drive Pressure on Drive Pump

NOTE

Make sure the charge pump pressure test is completed first.

1. Locate test port TP1 ❶ on the drive pump.
2. Connect a pressure gauge (700 bar / 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.

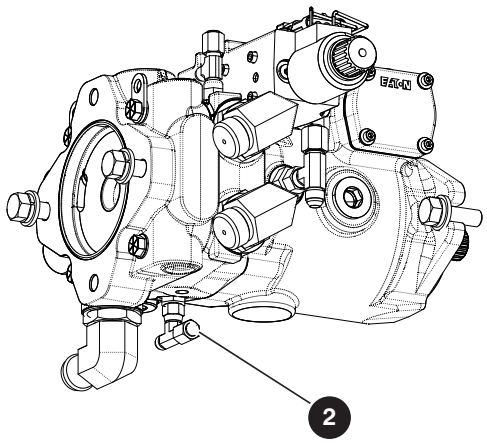
6. Check the reading on the gauge. The standard pressure should be 345 bar (5000 psi).
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.
9. Remove the pressure gauge from the port, cap the port, and re-plug the brake solenoid power cable.

5.10-12 Test Reverse Drive Pressure on Drive Pump

NOTE

Make sure the charge pump pressure test is completed first.

1. Locate test port TP2 ❷ on the drive pump.



2. Connect a pressure gauge (700 bar / 10000 psi) to test port TP2.

⚠ WARNING

To protect the gauge, do not activate any controls during this procedure.

3. Start the engine from the platform control console.
4. Unplug the brake solenoid power cable (26) on the brake valve.
5. Activate the drive function slowly in reverse with the engine at high speed. The wheels should not turn.

NOTE

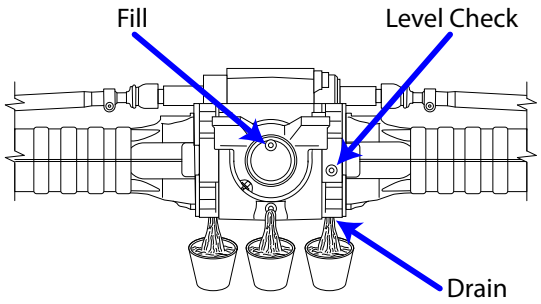
Activating the drive function too quickly will stall the engine.

6. Check the reading on the gauge. The standard pressure should be 345 bar (5000 psi).
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.

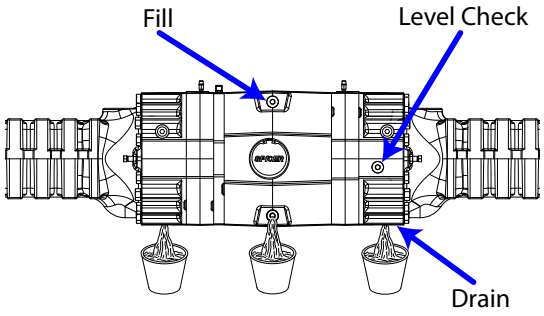
5.11 Axles

5.11-1 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.

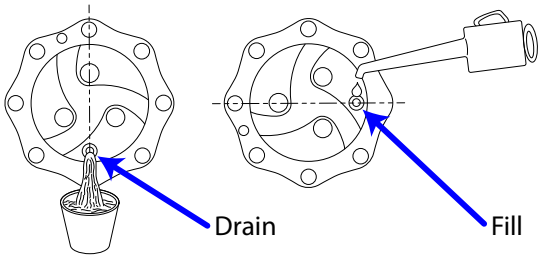
NOTE

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 Specifications and Features - Engines & Fluids*.
7. Reinstall both of the fill and check plugs.

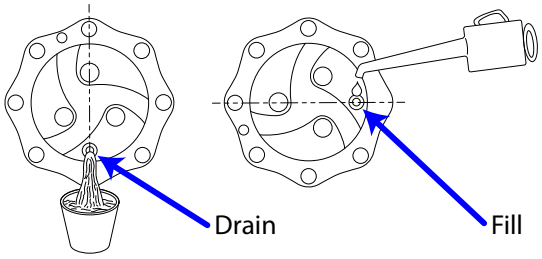
5.11-2 Check the Oil Level in the Torque Hubs

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 Specifications and Features - Engines & Fluids*. for oil specifications.



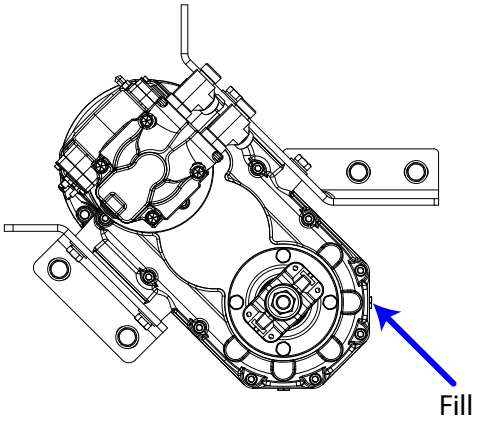
5.11-3 Change the Oil in the Torque Hubs

1. Start the engine and drive the MEWP 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 MEWP 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 Specifications and Features - Engines & Fluids.*
5. Repeat the above steps with the other three wheel hubs.



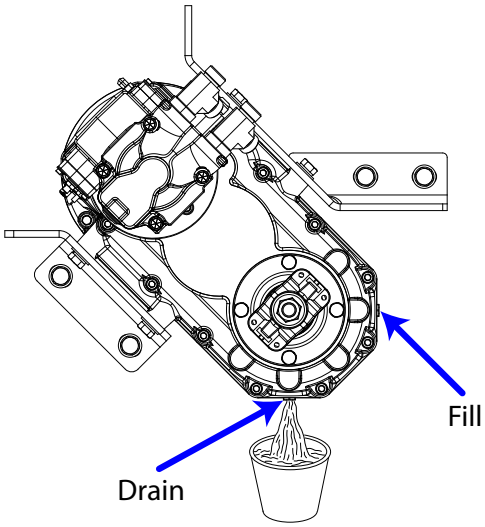
5.11-4 Check the Oil Level in the Axle Gearbox

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 Specifications and Features - Engines & Fluids*. for oil specifications.



5.11-5 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.



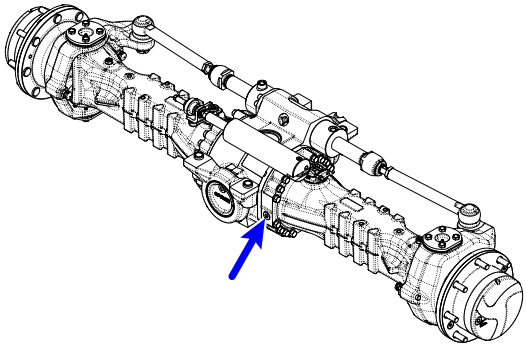
4. Reinstall the drain plug.

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

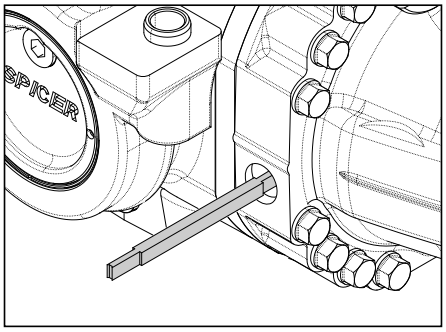
5. Refill the gearbox with new oil as per specifications. Refer to *2.11 Specifications and Features - Engines & Fluids.*
6. Reinstall the fill plug.

5.11-6 Brake Inspection

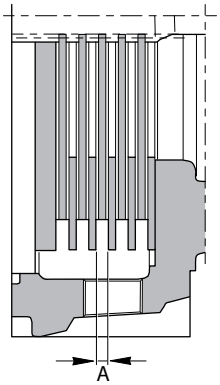
1. Remove the oil level plug from one of the braking axle arms, as shown below.



2. Insert a 4.5 mm (front steer axle) or 5.2 mm (rear rigid axle) 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 (front) or 5.2 (rear). Reinstall the oil level plug.

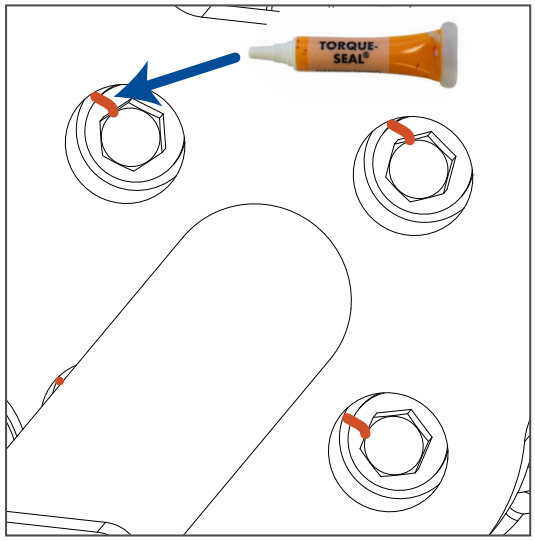


4. Repeat the inspection on the other axle arm. If the gap is smaller than 4.5 mm (front) or 5.2 mm (rear) between the disks of either arm (i.e. the gauge doesn't fit), the brake disks must be replaced on both arms.
5. Repeat the procedure on the opposite axle.

5.11-7 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 either a new 1/2"-13 x 1-3/4" grade 8 bolt with liquid blue Loctite 242 or 243 applied to the bottom half of the bolt, or a new 1/2"-13 x 1-3/4" grade 8 Nylok patch bolt.
4. Hand tighten the bolt.
5. Torque the new bolt to 108 Nm (80 ft-lb) for a standard bolt with blue Loctite applied, or to 129 Nm (95 ft-lb) for a Nylok patch bolt.
6. Apply a line of torque seal to each new bolt extending from the bolt head over the washer and to the chassis wall.

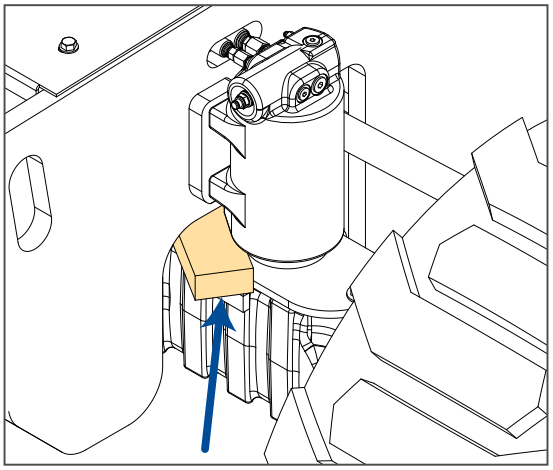


5.11-8 Oscillating Cylinder Replacement

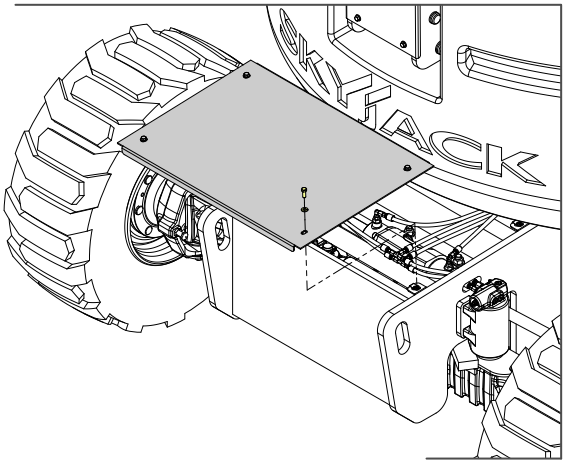
⚠ CAUTION

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

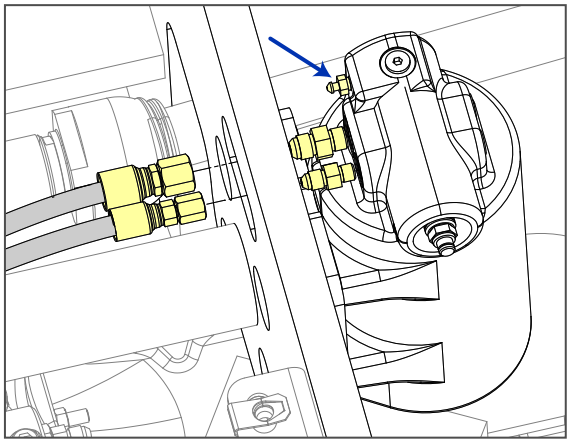
1. Wedge a block of wood between the front axle and the chassis, to prevent the axle from oscillating during the procedure.



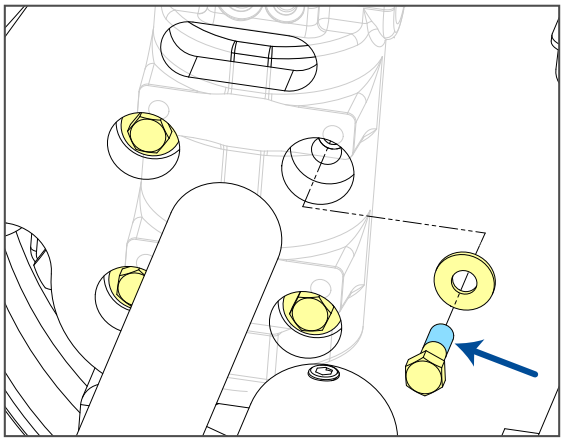
2. Remove and set aside the base cover from the oscillating axle end of the chassis.



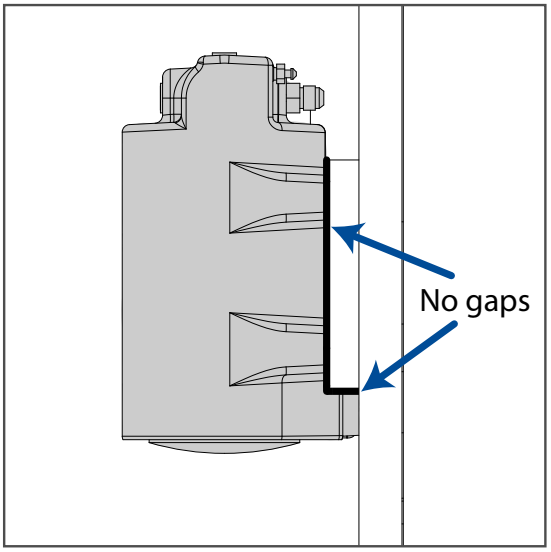
3. With a rag in hand to catch any leaking oil, slowly loosen the bleeder screw to release any trapped air within the cylinder, then tighten it again. Slowly loosen the oscillating axle cylinder hoses to release the pressure, then disconnect them fully, being sure to plug the hose ends.
4. Remove and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



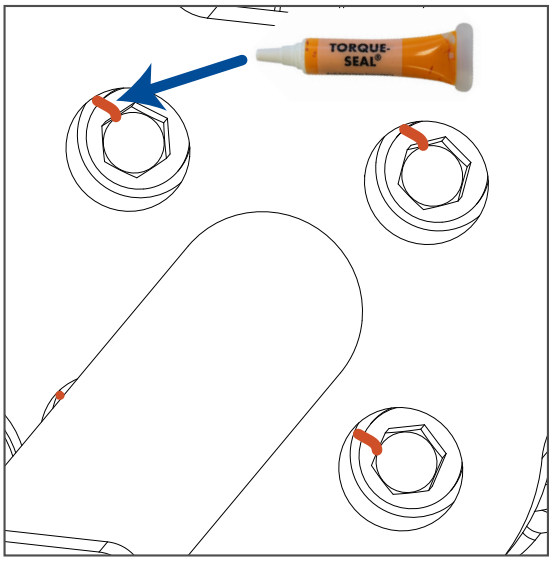
5. Remove and throw away the bolts and washers securing the cylinder to the chassis. Lift the cylinder away.
6. Lift a new cylinder into place and install new bolts (1/2"-13 x 1-3/4" grade 8) and 1/2" hardened washers. If you use standard bolts, apply liquid blue Loctite 242 or 243 to the lower half of the bolts before you install them. If you use Nylok patch bolts, Loctite is not required.Hand tighten the bolts.



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



8. Apply a line of torque seal to each bolt extending from the bolt head over the washer and to the chassis wall.



9. Reinstall the cylinder fittings, torquing the larger one to 33 Nm (24 ft-lb) and the smaller one to 20 Nm (15 ft-lb).
10. Remove the plugs and reconnect the hoses to the cylinder fittings, torquing the larger hose end to 28 Nm (21 ft-lb) and the smaller hose end to 16 Nm (12 ft-lb).
11. Reinstall the base cover and remove the block of wood.
12. Turn the engine on and let it run for a few minutes to pressurize the cylinder, then turn it off again.
13. Check the oil level using the hydraulic tank sight gauge. Add more hydraulic oil if needed.
14. Bleed the cylinder (refer to the next procedure).

5.11-9 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.

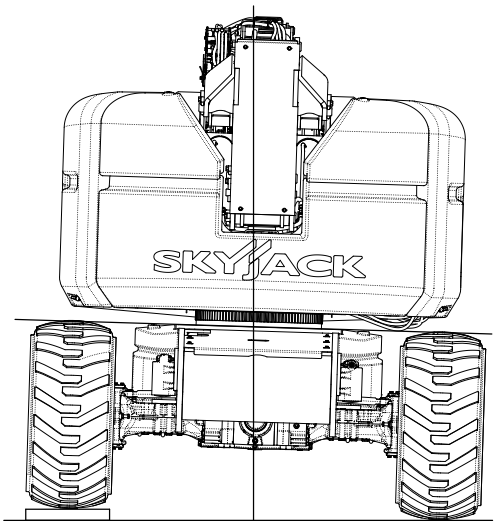
Items you will need before starting:

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

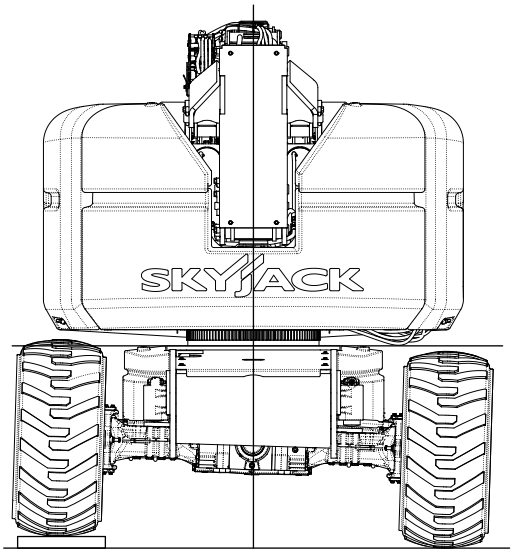
1. Locate a bleeder on either side of the oscillating axle cylinder.
2. Connect a hose to the bleeder nipple.
3. Start the engine and slowly open the bleeder to allow the oil to flow in a continuous stream.
4. Close the bleeder.
5. Repeat the procedure with the other oscillating axle cylinder.

5.11-10 Test the Oscillating Axle Cylinders

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



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

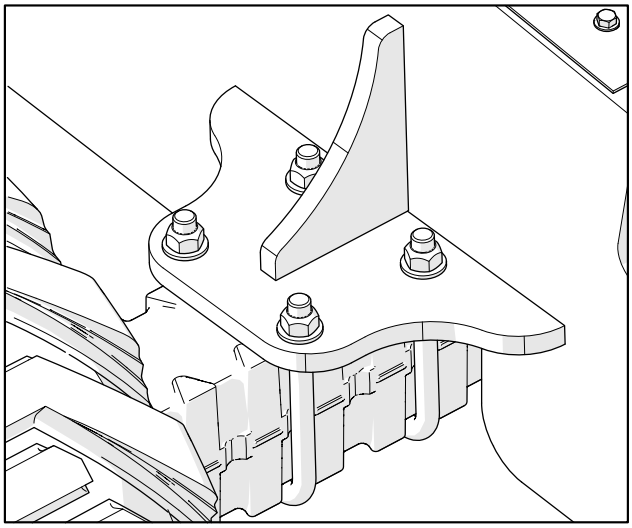


5.11-11 Axle U-Bolt Torque

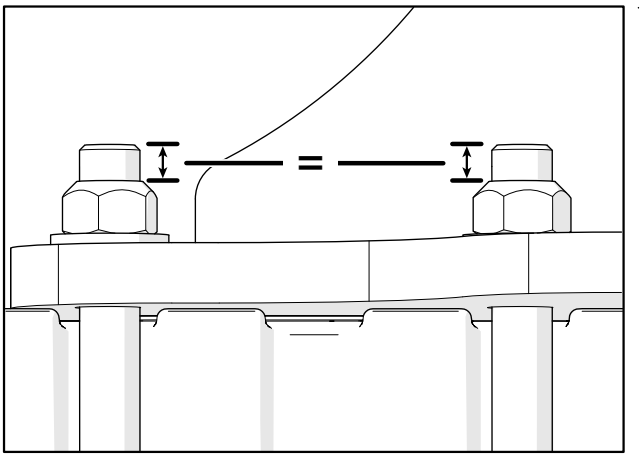
Replace the u-bolts and nuts every time you replace or remove an axle, or when a u-bolt has been loosened for any reason.

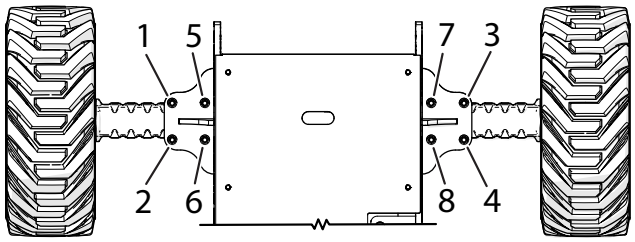
Refer to the parts manual for the u-bolt, flat washer, and nut part numbers.

1. If applicable, set the axle in place under the chassis.
2. Put a new u-bolt through the holes in the mounting bracket. Place flat washers over the bolts. Install two new nuts on the ends of the bolt. Finger-tighten the nuts.
3. Repeat with the other three u-bolts and nuts.



4. Gradually tighten the nuts evenly so the same amount of bolt thread shows above all 4 nuts. Use the sequence shown below.
5. Use the same sequence to torque the nuts to 290 Nm (214 ft-lb).





5.12 Grease Points

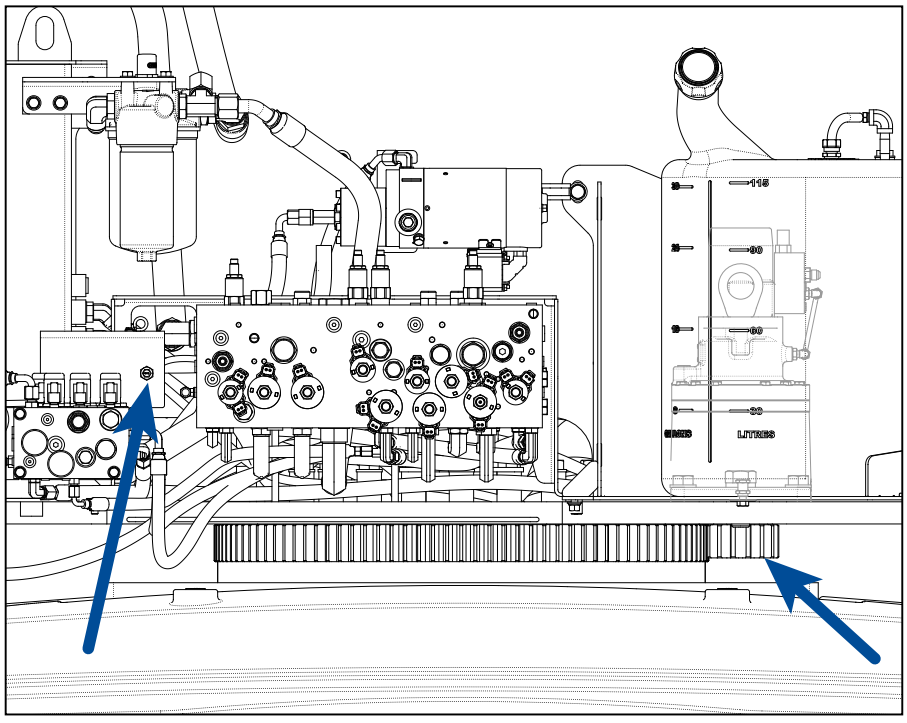
Maintaining proper lubrication is essential for the good performance and service life of the MEWP. If the bearing and gear of the MEWP are improperly greased, it could result in component damage.

5.12-1 Grease the Turret Ring Gear

1. Open the control side cowling, and locate the turret ring gear grease fitting beside the hydraulic tank.
2. Pump grease into the fitting, and continue pumping until new lube appears continuously around the grease seal lip of the ring gear.
3. Rotate the turret in increments of 10 to 13 cm (4 to 5 inches) at a time, and repeat step 2 until the entire bearing has been greased.

5.12-2 Grease the Turret Swing Drive

1. Apply open gear lube to each tooth of the swing drive gear, located under the turret.

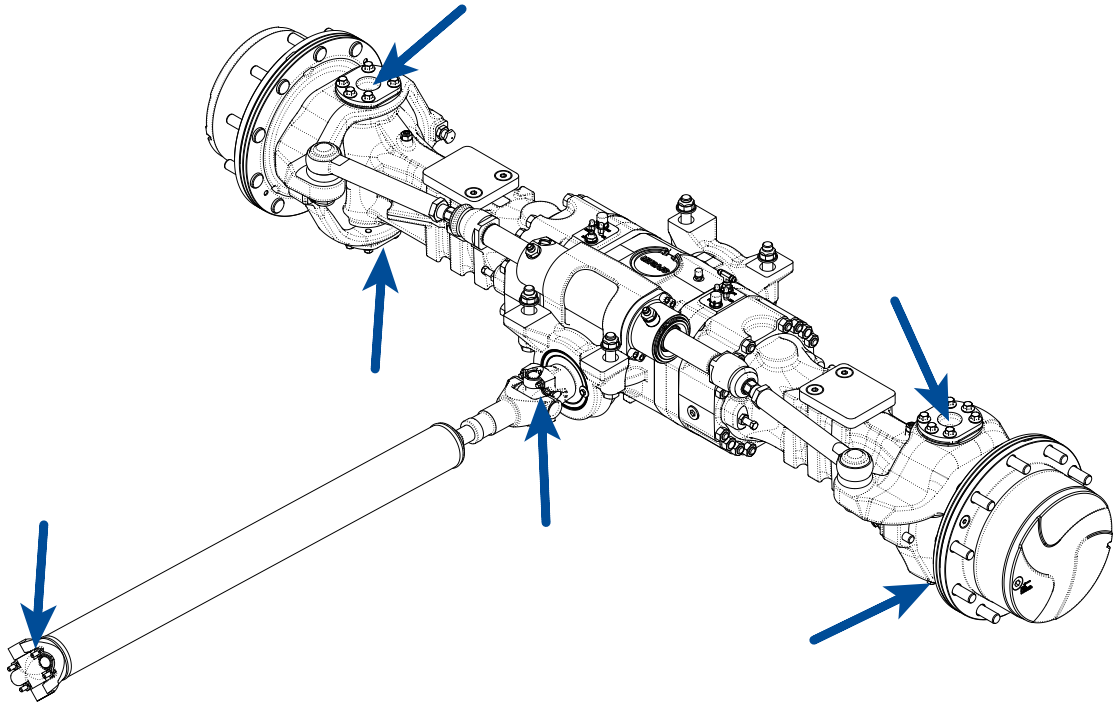


5.12-3 Grease the Axles

1. Open the axle cover plates and locate the grease fittings.
2. Pump grease into the grease fittings.

5.12-4 Grease the Drive Shaft

1. Locate the grease fittings on the drive shaft u-joints, and pump grease into the fittings.



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