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SERVICE MANUAL

SJ46 AJ+, SJ46 AJ, SJ51 AJ

ARTICULATING BOOMS



229042ABA

August 2020
ANSI/CSA, CE, AS

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This manual is for MEWPs with serial numbers:

SJ46 AJ+: A301 000 001 - A301 999 999

SJ46 AJ: B301 000 001 - B301 999 999

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THIS SAFETY ALERT SYMBOL MEANS ATTENTION!



BECOME ALERT! YOUR SAFETY IS INVOLVED.

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

 DANGER

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

 WARNING

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

 CAUTION

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

IMPORTANT

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

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Section 1 – Scheduled Maintenance

1.1 Read and Heed

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

1.1-1 MEWP and Mobile Elevating Work Platform Definition

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

1.1-2 Purpose of Equipment

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

1.1-3 Use of Equipment

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

1.1-4 Manual

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

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

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

1.1-5 Service Policy and Warranty

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

1.1-6 Operator Safety Reminders, Warnings and Precautions

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

1.2 Maintenance and Service

1.2-1 Maintenance and Inspection Schedule

The actual operating environment of the work platform governs the use of the maintenance schedule. The inspection points covered in [Table 1.2. Maintenance and Inspection Checklist](#), indicates the areas of the MEWP to be maintained or inspected and at what intervals the maintenance and inspections are to be performed.

1.2-2 Owner's Annual Inspection Record

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

1.2-3 Replacement Parts

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

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

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

WARNING

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

1.2-4 Maintenance and Service Safety Tips

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

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

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

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

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

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

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

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

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

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

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

1.2-5 Hydraulic System & Component Maintenance and Repair

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

WARNING

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

1. Any structure has limits of strength and durability. To prevent failure of structural parts of hydraulic components, relief valves which limit pressure to safe operating values are included in the hydraulic circuits.
2. Tolerance of working parts in the hydraulic system is very close. Even small amounts of dirt or foreign materials in the system can cause wear or damage to components, as well as general faulty operation of the hydraulic system. Every precaution must be taken to assure absolute cleanliness of the hydraulic oil.
3. Whenever there is a hydraulic system failure which gives reason to believe that there are metal particles or foreign materials in the system, drain and flush the entire system and replace the filter cartridges. A complete change of oil must be performed under these circumstances.
4. Whenever the hydraulic system is drained, check the magnets in the hydraulic reservoir for metal particles. If metal particles are present, flush the entire system and add a new change of oil. The presence of metal particles also may indicate the possibility of imminent component failure. A very small amount of fine particles is normal.
5. All containers and funnels used in handling hydraulic oil must be absolutely clean. Use a funnel when necessary for filling the hydraulic oil reservoir, and fill the reservoir only through the filter opening. The use of cloth to strain the oil should be avoided to prevent lint from getting into the system.
6. When removing any hydraulic component, be sure to cap and tag all hydraulic lines involved. Also, plug the ports of the removed components.

7. All hydraulic components must be disassembled in spotlessly clean surroundings. During disassembly, pay particular attention to the identification of parts to assure proper reassembly. Clean all metal parts in a clean mineral oil solvent. Be sure to thoroughly clean all internal passages. After the parts have been dried thoroughly, lay them on a clean, lint-free surface for inspection.
8. Replace all O-rings and seals when overhauling any component. Lubricate all parts with clean hydraulic oil before reassembly. Use small amounts of petroleum jelly to hold O-rings in place during assembly.
9. Be sure to replace any lost hydraulic oil when completing the installation of the repaired component, and bleed any air from the system when required.
10. All hydraulic connections must be kept tight. A loose connection in a pressure line will permit the oil to leak out or air to be drawn into the system. Air in the system can cause damage to the components and noisy or erratic system operation.

1.2-6 Hydraulic Maintenance Hints

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

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

1.2-7 Railing Maintenance and Repair

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

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

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

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

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

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

1.3 Scheduled Maintenance

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

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

1.3-1 Service Bulletins

Before performing any scheduled maintenance inspection procedure, refer to service bulletins found in our web site: www.skyjackinc.com for updates related to service and maintenance of this MEWP.

1.3-2 Maintenance and Inspection

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

WARNING

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

NOTE

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

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

1.3-3 Maintenance Instructions
















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

Issue or Symptom		
PDI/Frequent	B	Perform PDI prior to each delivery, or Frequent Inspection every 200 days or 200 hours.
Annual	B + C	Perform Scheduled Maintenance Inspections every year.
Additional	*	Perform at time sensitive maintenance intervals.

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

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

Table 1.4 Owner's Annual Inspection Record

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

⚠ WARNING

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

IMPORTANT

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

To order go to Discount-Equipment.com

1.5 Pre-Delivery/Maintenance Inspection Checklist



Frequent/Periodic/Annual/PDI Checklist Articulating Booms and Telescopic Booms

Serial Number: Starting with serial number A000 000 000 or B000 000 000 and above

Product Owner: _____

Model: _____

Product User: _____

Hourmeter Reading: _____

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.

P - Pass
N/A - Not Applicable

C - Do the scheduled maintenance inspections each year. For more instructions, refer to the service manual.

Put a check mark in the "Pass" column as you meet the requirements of the inspection for 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 COMPARTMENT		
Main Power Disconnect Switch. Cables and switch tight and in working order.	B	
Battery. No damage, tight connections and sufficient fluid levels. Clean terminals and cable ends.	B	
Swing Drive. Tight fittings, hoses and bolts. No damage, missing components or leaks.	B	
Hydraulic Pump and Motor. Tight fittings, hoses and bolts. No damage, missing components 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	
CONTROL COMPARTMENT		
Turret Transportation Lock. Unlocked and no damage or missing components.	B	
Base Control Console. Operate the switches and make sure they all operate correctly. No damage or missing components.	B	
Hydraulic Tank. Filler cap closed tightly and no damage or leaks.	B	
Hydraulic Oil. Level between min. and max. marks.	B	
Hydraulic Oil. Do a check and replace oil and filters if necessary.	C	
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	
Manifolds. Tight fittings and hoses and no damage or leaks. Tight wire connections, no missing components and correctly working valves.	B	
High-pressure Filter. Do a check of the filter. Replace the filter if necessary.		
Emergency Power Unit. Tight fittings and hoses. No leaks. Tight wire connections and no damage or missing components.	B	
Fuel Tank and Lines. Filler cap, tank, fittings and hoses are closed tightly and no damage or leaks.	B	
BASE		
Base Weldment. No deformation or cracks.	B	
Rotary Manifold. Tight fittings and hoses, and no leaks.	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	

Items for Inspection	P	N/A
Axles. Correctly attached and no missing components. Tight fittings and hoses and no leaks.	B	
Axles. Do a check of the brakes.	C	
Oscillating Cylinders. Correctly attached and no missing components. Tight fittings and hoses and no leaks.	B	
Oscillating Cylinders. Correctly attached and no missing components. Tight fittings and hoses and no leaks. Do a check of the mounting bolts torque seal.	C	
Steer Cylinder. Correctly attached and no missing components. Tight fittings and hoses and no leaks.	B	
Steer Linkage. No damage/wear or missing components.	B	
Wheel/Tire Assembly. Do a check of all tires for damage, wear and correctly aligned.	B	
Wheel/Tire Assembly. No loose bolts. Wheel nuts torqued as recommended.	C	
PLATFORM		
Railings and Gates. 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 the storage the box, in good condition, and you can read them.	B	
BOOM		
Rotary Actuator. 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	
OPTIONAL EQUIPMENT		
Special Options and Approved Attachments. Correctly attached and no damage or missing components.	B	
Function Tests. Refer to the operating manual for your serial number for information on how to run these tests.		
		PASS
		FAIL

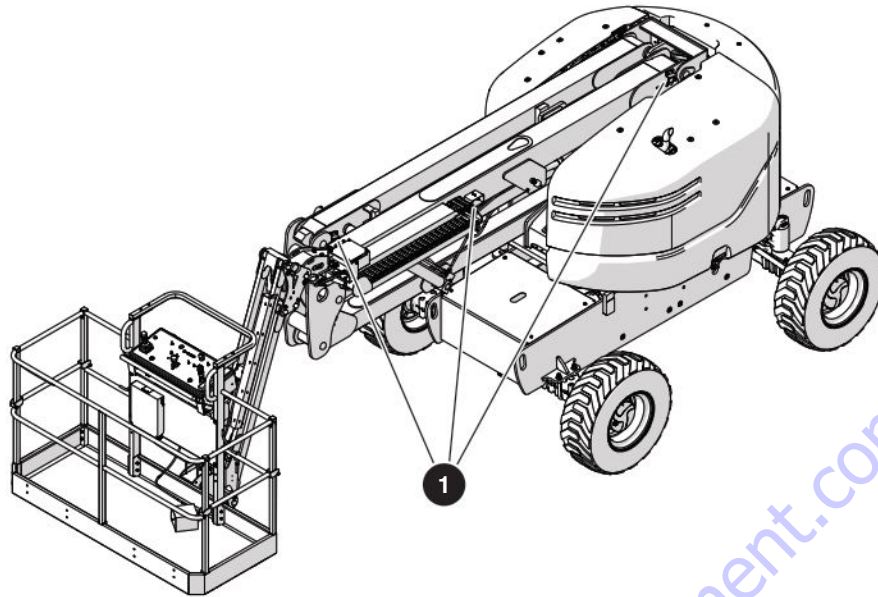
199342AA

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



1.6 Scheduled Maintenance Inspections

Do an inspection of the MEWP in this sequence.

⚠ WARNING

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

⚠ WARNING

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

1.6-1 Electrical

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

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

1.6-2 Hydraulic

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

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

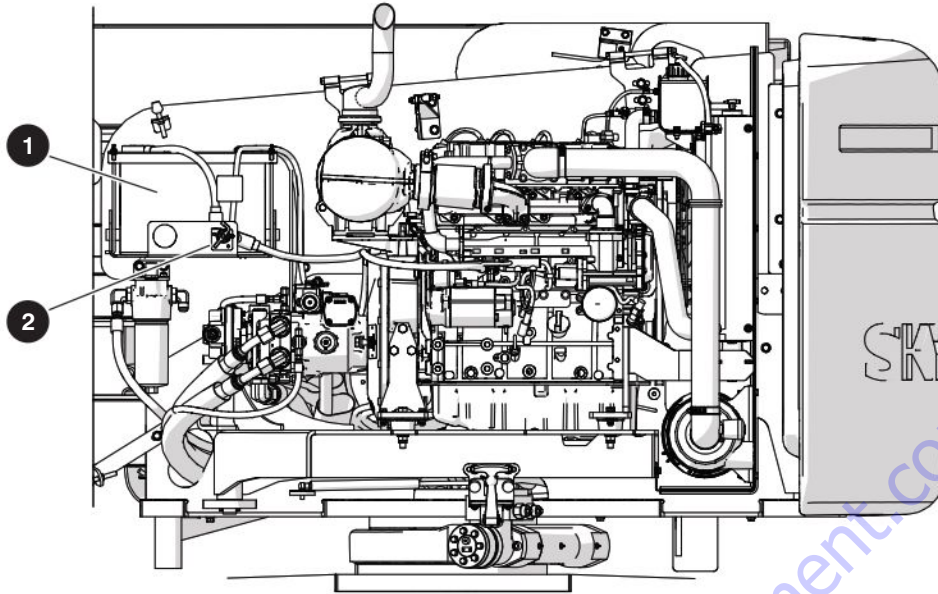
1.6-3 Labels (B)

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

1.6-4 Limit switches (B)

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

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



1.6-5 Engine Compartment

Do the inspection that follows:

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

1 Main power disconnect switch (B)

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

2 Battery (B)

B - Frequent Inspection

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

WARNING

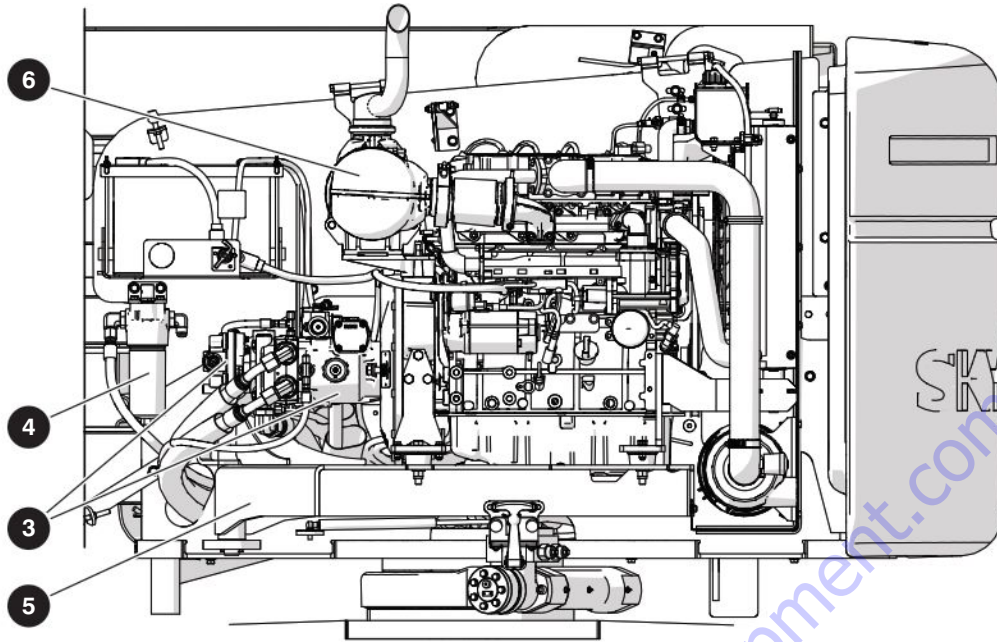
Explosion hazard. Keep flames and sparks away. Do not smoke near the batteries. If you do not obey, there is a risk of death or serious injury.

WARNING

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

WARNING

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



3 Hydraulic pump and motor (B)

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

4 High-pressure filter (B,C)

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

C - Annual Inspection

- For the filter element replacement procedure, refer to 5.5-1 Check and Replace the High Pressure Filter.

Engine and Components

5 Engine pivot tray (B)

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

6 Muffler and exhaust (B)

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

Engine fuel leaks (B,C)

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

⚠ WARNING

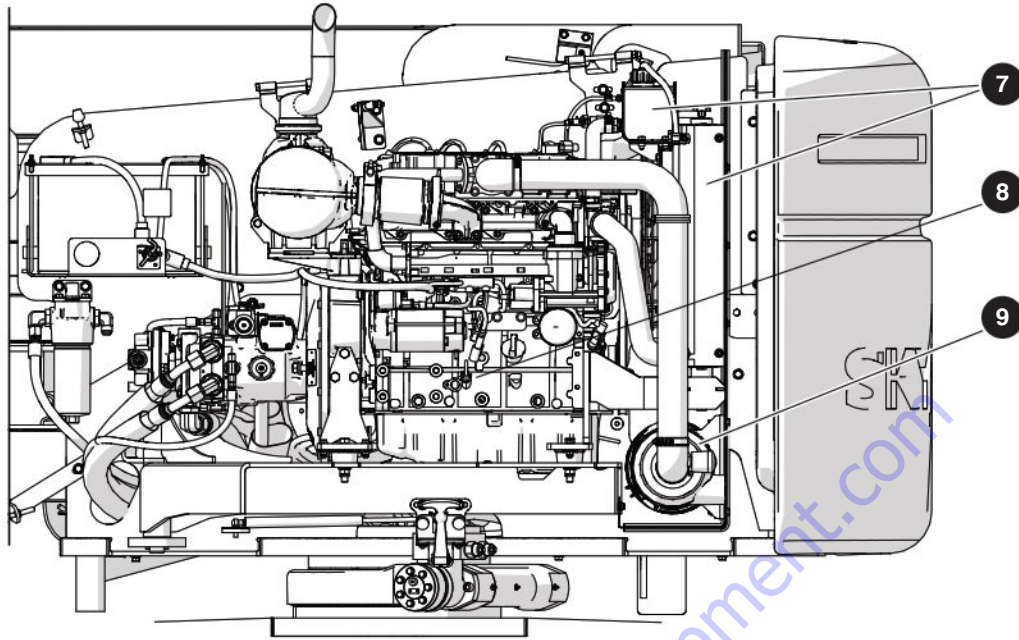
Explosion or fire hazard. Do not smoke near the fuel system. If you do not obey, there is a risk of death or serious injury.

Engine fuel filter (B,C)

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

C - Annual Inspection

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



7 Radiator (B, C)

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

C - Annual Inspection

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

8 Engine oil level (B)

⚠ WARNING

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

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

B - Frequent Inspection

- For recommended oil change intervals, refer to the engine manual.

9 Air filter (B,C)

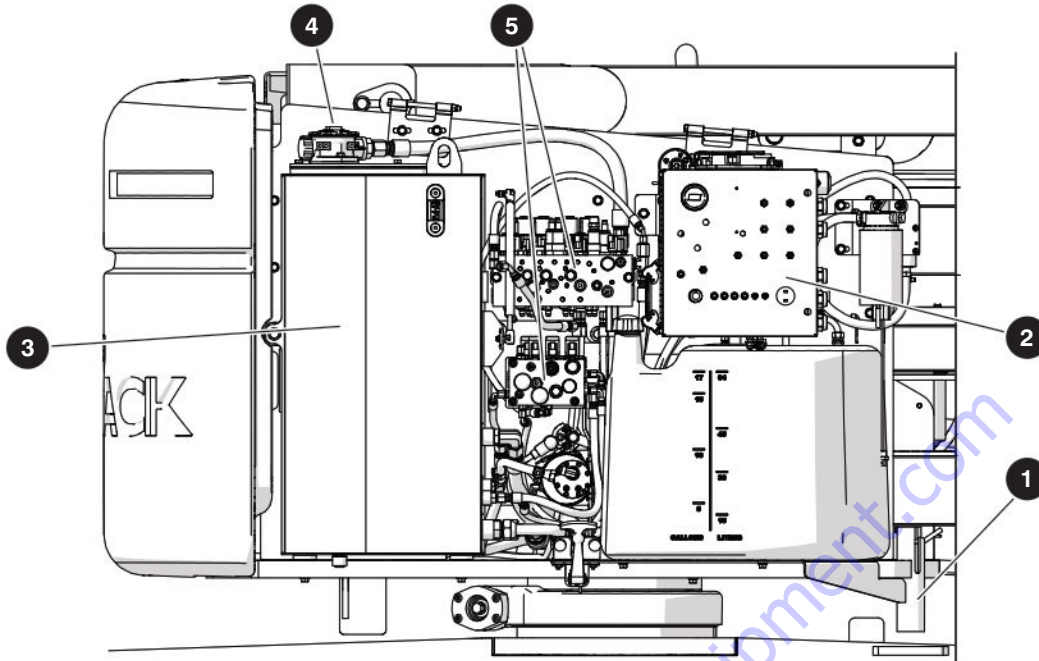
- Make sure there are no loose or missing parts.
- Make sure there is no visible damage.
- Squeeze the lips of the vacuator valve to remove the dirt and dust.
- Do an inspection of the service indicator on the air cleaner. Replace the filter element if necessary.

B - Frequent Inspection

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

C - Annual Inspection

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



1.6-6 Control Compartment

Do the inspection that follows:

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

1 Turret transportation lock (B)

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

2 Base Control Console (B)

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

3 Hydraulic Tank (B)

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

Hydraulic Oil (B, C)

- Make sure the boom is in the stowed position.
- Do a check on the **gauge** on the side of the hydraulic oil tank. The hydraulic oil level must be at or a small distance above the top mark of the gauge. Add oil if it is necessary. Refer to [2.12 Hydraulic & Gear Oils](#).

C - Annual Inspection

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

4 Hydraulic Return Filter (B,C)

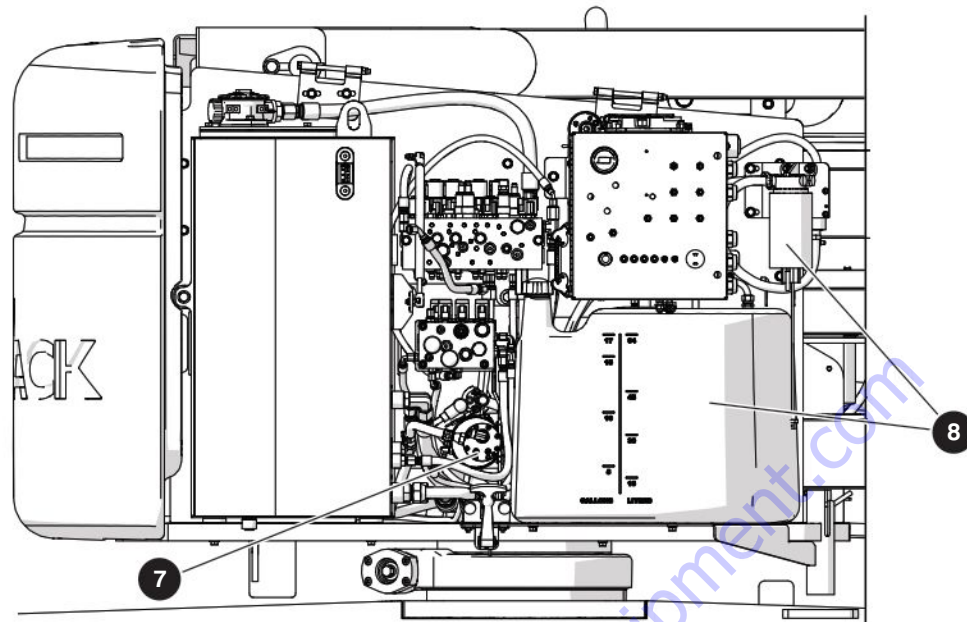
- Make sure the filter element is attached and tight.
- Make sure there is no visible damage or hydraulic leaks.

C - Annual Inspection

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

5 Manifolds (B)

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



7 Emergency Power Unit (B)

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

8 Fuel Tank and Lines (B)

IMPORTANT

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

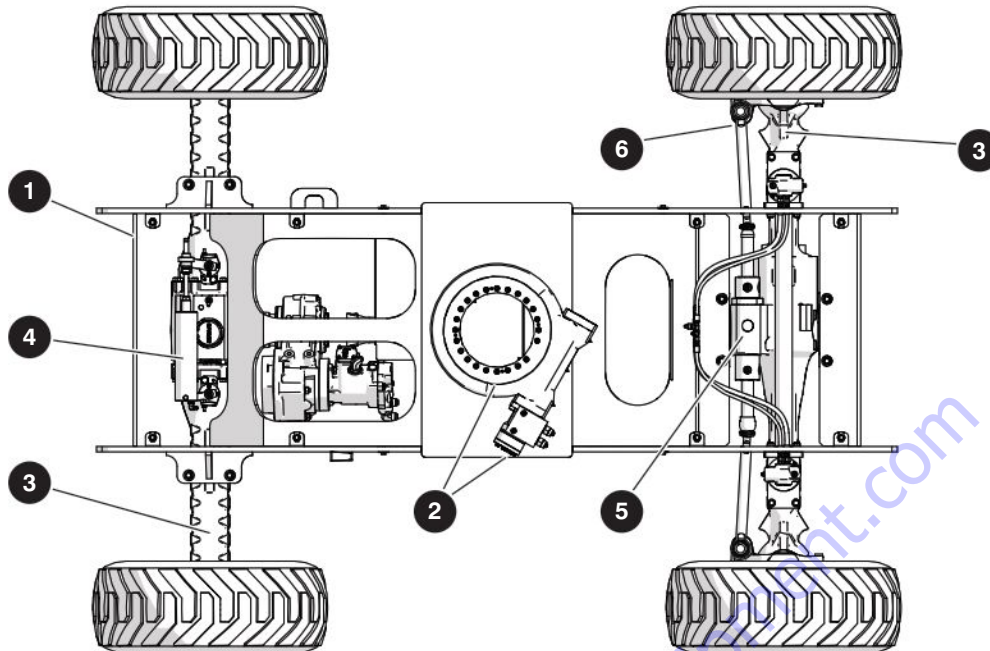
DANGER

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

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

WARNING

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



1.6-7 Base

1 Base weldment (B)

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

2 Turret rotation motor and gear (B,C)

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

C - Annual Inspection

- For the lube procedure, refer

3 Axles (B,C)

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

C - Annual Inspection

- Check the brakes annually. Refer to the procedure [5.10-11 Brake Inspection](#).

4 Brake Cylinder (B)

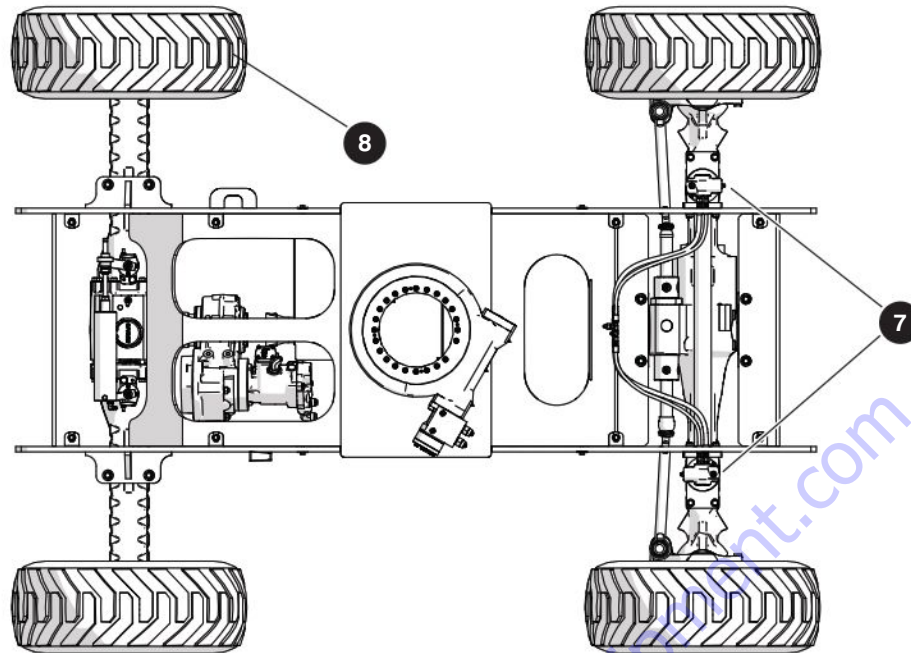
- Make sure there are no loose or missing parts.
- Make sure all the fittings and hoses are correctly tightened and there are no hydraulic leaks.

5 Steer cylinder (B)

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

6 Steer linkage (B)

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



7 Oscillating cylinders (B,C)

- Make sure the oscillating cylinders are correctly attached, and there are no visible spaces.
- Make sure there are no loose or missing parts.
- Make sure all the fittings and hose connections are tight.
- Make sure there is no sign of hydraulic leakage.
- Do a check of the heads of the oscillating cylinder mounting bolts to make sure the torque seal is visible and undamaged. If the torque seal is damaged or is missing, remove and replace the affected bolts. Refer to [5.10-6 Oscillating Cylinder Bolt Replacement](#).



NOTE

The oscillating axle is locked when the MEWP is in the elevated travel position or at the elevated travel speed. Refer to [2.18 Axle Oscillation Diagram](#).

8 Wheel/tires (B,C)

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

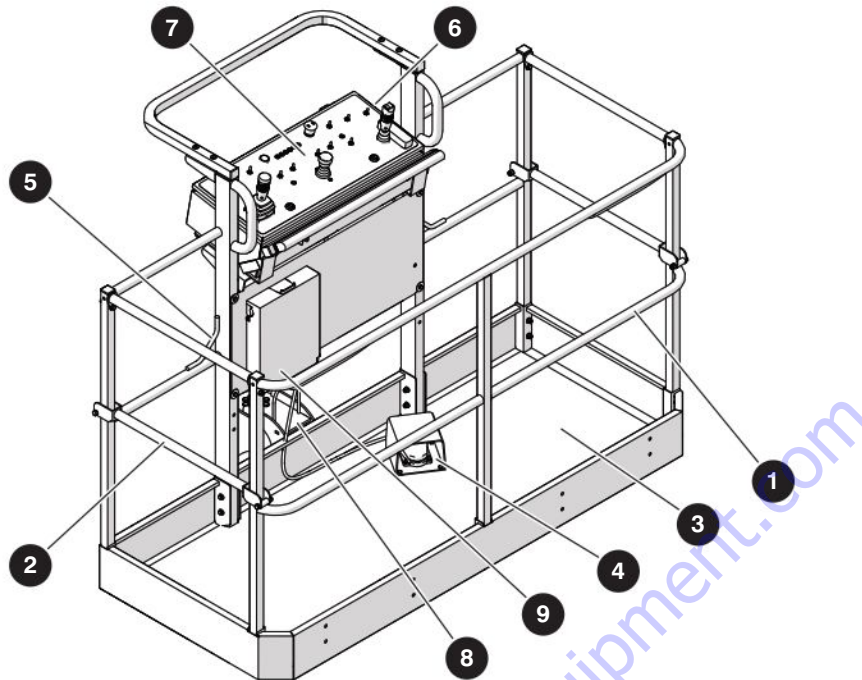
B - Frequent Inspection

- For proper torque information, refer to [2.5 MEWP Torque Specifications](#).

WARNING

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

Refer to [2.9 Tire Specifications](#).



1.6-8 Platform

1 2 Railings and gates

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

3 MEWP floor

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

4 Footswitch

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

5 Fall-protection anchorages

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

6 AC power socket

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

7 Platform control console (B)

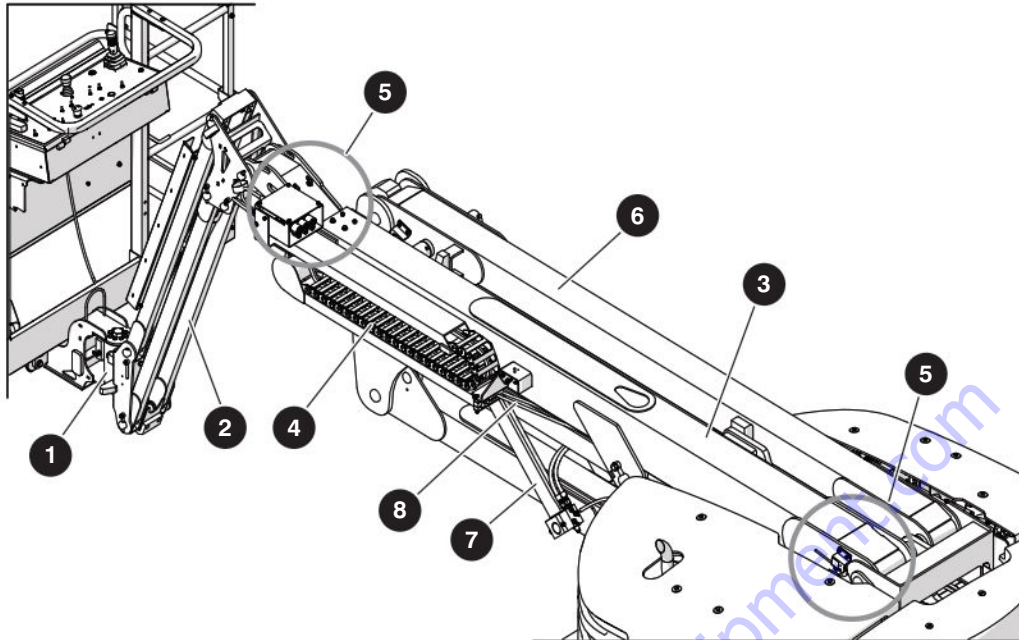
- Make sure all switches and controllers are in the neutral position.
- Make sure there are no loose or missing parts, and there is no visible damage.

8 Manual storage box (B)

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

9 Load Cell - CE & AS (B)

- Make sure there are no loose or missing parts, and there is no visible damage.
- Make sure the fasteners are correctly installed.
- Make sure the cables are in good condition.
- Make sure the cable connections are tight.
- Make sure there is no debris lodged between the platform and the boom adaptor.



1.6-9 Boom Assembly

1 Rotary actuator

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

2 Jib (B)

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

3 Boom (B)

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

4 Cable Track (B)

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

5 Wear Pads (B)

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

6 Riser (B)

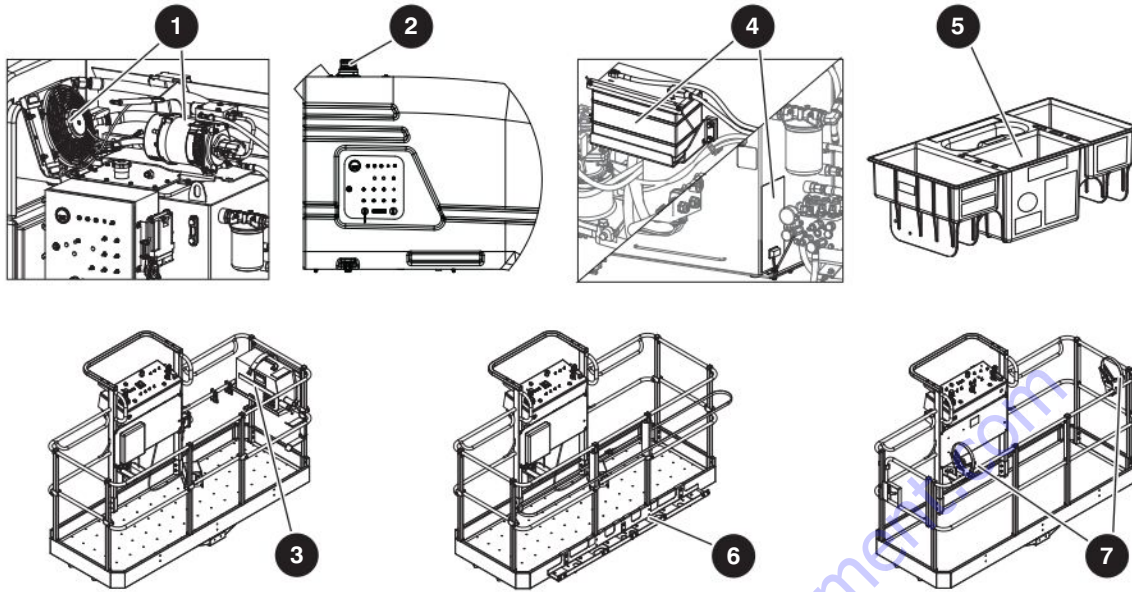
- There are no loose or missing parts.
- There is no visible damage.
- All fasteners and pins are correctly tightened.
- There are no visible cracks in welds or structure and there are no signs of deformation.

7 Cylinders (B)

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

8 Control Cables and Hoses (B)

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



1.6-10 Optional equipment (B)

Do the inspection that follows, and make sure:

1 Generator

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

2 Flashing amber light

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

3 Welder

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

4 Cold or arctic weather package

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

5 Tool tray

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

6 Glazier

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

7 Pipe rack

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

1.7 Function Tests

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

IMPORTANT

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

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



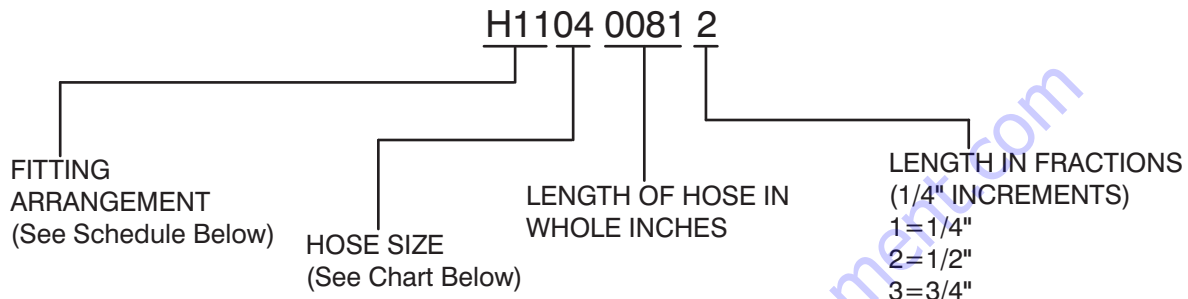
NOTE

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

To order go to Discount-Equipment.com

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 (US Imperial)

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, or uncured Loctite.

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Table 2.3 Torque Specifications for Fasteners (Metric)

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

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

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Table 2.4 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 MEWP Torque Specifications

Location	Description	Torque (ft-lb)	Torque (Nm)
Base			
Trunnion Mount	BOLT, Hex head (3/4"-10 x 5", Grade 8)	210	285
Rear Axle Mount	NUT, Torque lock (3/4"-10, Grade C)	210	285
Axle Lock	BOLT, Hex head (1/2"-13 x 2.25", Grade 8)	80	108
Swing Drive Motor	SCREW, Socket head cap (3/4"-10 x 2.25")	280	380
Rotation Gear	BOLT, Hex head (5/8"-11 x 4.5", Grade 8)	170	230
Hydraulic Drive Motor	BOLT, Hex head (M14 x 2 x 30mm, ZP, Grade 8.8)	80	108
Wheel Nut	NUT, Wheel	247-302	335-410
Turret			
Rotation Gear	BOLT, Hex head (5/8"-11 x 2.75", Grade 8)	170	230
Engine			
Deutz Engine Mount	BOLT, Hex head (1/2"-13 x 3.75", Grade 5)	55	75
Coupling Assembly (Deutz)	BOLT (M10)	40	55
	COUPLING CLAMP BOLT	45	61
GM Engine Mount	NUT, Hex head (1/2"-13, Grade 5)	50	68
Drive Pump	BOLT, Hex head (1/2"-13 x 1.5", Grade 5)	55	75
System Pump	BOLT, Socket (3/8"-16 x 1, Grade 5)	23	31
Cylinders			
Lift	ROD NUT	425	576
	GLAND	400	542
Extension	ROD NUT (SJ46A / SJ51AJ)	300	407
	ROD NUT (SJ46AJ)	150	203
Master	GLAND	450-500	610-678
	ROD NUT	350	475
Slave	GLAND & ROD NUT	350	475
Axle Lock	GLAND	350	475
	BOLT, Hex head (1/2"-13 x 2.25", Grade 8)	80	108
Jib	BOLT, Hex head (0.312-18 x 2.75", Grade 5 \ ZP)	15	20
Riser	ROD NUT & GLAND	350	475
Platform			
Rotary Mount	BOLT, Hex head, patch (3/8"-16 x 7/8", Grade 8 \ ZP)	35	48
	BOLT, Hex head (1"-8 x 10.5", zinc, Grade 8)	480	569
Rotary Actuator	BOLT, Hex head (3/4"-10 x 3", Grade 8)	210	285
Load Cell Mounting (CE)	BOLT, Hex head patch (M16 x 1.5 x 4.5, Grade 8.8 \ ZP)	130	177
	BOLT, Hex head (1/2"-13 x 2.5", Grade 8)	80	108

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Table 2.6 Axle Torque Specifications

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

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Note: 1 Nm = 0.7376 ft-lb

Screw-locking, Sealing and Lubricating Materials

Loctite 242

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

Loctite 270

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

Table 2.7 Axle Maintenance Intervals

Operation	Component	Frequency	Lubricants
Check Levels	Differential	monthly	SAE 80W-90 API GL-5
	Planetary reduction	every 200 hours	
	Gear box	monthly	
Oil Change	Differential	every 800 hours *	SAE 80W-90 API GL-5
	Planetary reduction	every 1000 hours *	
	Self-locking differential gear	every 700 hours * &	
	Gear box	once at 50 hours after every 1000 hours	
Tighten	Gear box screws/bolts	every 200 hours	N/A
	Wheel Nuts	every 200 hours	

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

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

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

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NOTE

1 Nm = 0.7376 ft-lb

Table 2.8 Maximum Platform Capacity

	SJ46 AJ+ ANSI/CSA		SJ46 AJ & SJ51 AJ CE & AS
	without attachment	with attachment	
Total Capacity*	300 kg (660 lb)	272 kg (600 lb)	227 kg (500 lb)
	2 Persons	1 Person	2 Persons
Maximum Wind	12.5 m/s (28 mph)	12.5 m/s (28 mph)	12.5 m/s (28 mph)
Maximum Side Force	400N (90 lb)	200 N (45 lb)	400N (90 lb)

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⚠ WARNING*** DRIVING ON A SLOPE**

- When driving on a slope greater than 30%, the platform capacity is limited to 136 kg (300 lb).
- The platform must be between the non-steer wheels and must be on the downside of the hill.
- When the slope increases to above 45%, the forward drive is disabled but reverse drive remains active.

Table 2.9 Tire Specifications

Model	Type	Brand	Size	Ply Rating
SJ46 AJ+ ANSI	Solid	Trelleborg Brawler HPS	31x10-20	N/A
	Solid non-marking			
SJ46 AJ CE & AS	Foam	Carlisle TR-501	12x16.5	10
	Foam non-marking	OTR	315/55D20	12

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⚠ WARNING

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

⚠ IMPORTANT

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

Table 2.10 Floor Loading Pressure

Model	Gross MEWP Weight		Total MEWP Load					
			Wheel		LCP		OUP	
	kg	lb	kg	lb	kPa	psi	kPa	psf
SJ46 AJ+ ANSI	6000	13,200	3000	6,600	1090	158	10	209
SJ46 AJ CE & AS	7180	15,830	3527	7,775	827	120	10.9	227
SJ51 AJ CE & AS	7543	16,630	3842	8,470	917	133	11.4	239

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

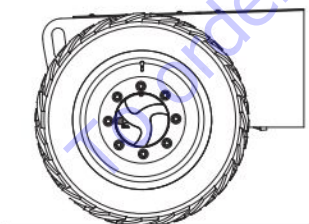
NOTE:

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

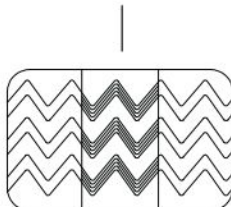
Locally Concentrated Pressure (LCP)

Foot Print Area identified by test

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



Foot Print Area



Overall Floor Load (OFL)

Base Area = Length x Width

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

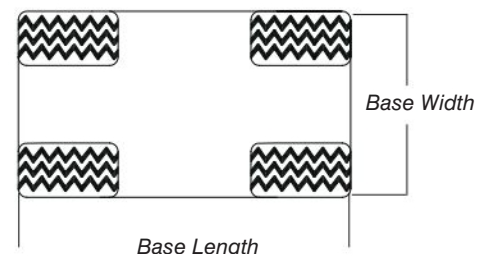
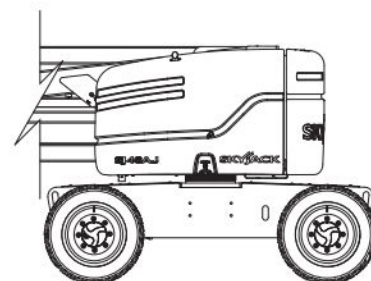


Table 2.11 Hydraulic Specifications

Description		Metric	US
Pumps			
Drive Pump	Displacement - 2000 rpm	46 CC	2.8 CIR 24.3 gpm @ 2000 rpm
	Drive Pump Pressure	345 bar	5000 psi
	Charge Pump Displacement	13.9 CC	0.85 CIR
	Charge Pump Pressure	22 bar	313 psi
System Pump	Displacement - Static	11 CC	0.67 CIR / 5.8 gpm @ 2000 rpm
	System Pump Pressure	207 bar	3000 psi
Filters			
Charge Pump Filter	Max. Operating Pressure	9 μ m/35	50 psi
High Pressure Filter	Max. Operating Pressure	10 μ m/25	87 psi
Return Filter	Max. Operating Pressure	10 μ m/40	22 psi
Motors			
Drive Motor	Displacement - Low	21 CC	1.55 CIR
	Displacement - High	38 CC	2.32 CIR
Swing Motor	Motor Displacement	65.56 CC	4 CIR
	Maximum Swing Pressure	121 bar	1750 psi
Cylinders			
Extension Cylinder	Bore	5.1 cm	2 in.
	Rod Diameter	3.2 cm	1.25 in.
	Stroke	1.7 m	67 in.
	Maximum Boom Pressure	207 bar	3000 psi
Main Lift Cylinder	Bore	10.2 cm	4 in.
	Rod Diameter	4.5 cm	1.75 in.
	Stroke	64.6 cm	25.44 in.
	Maximum Lift Pressure	207 bar	3000 psi
Riser Cylinder	Bore	6.4 cm	2.5 in.
	Rod Diameter	4.5 cm	1.75 in.
	Stroke	92 cm	36.21 in.
	Maximum Lift Pressure	207 bar	3000 psi
	Maximum Lower Pressure	190 bar	2750 psi
Steering Cylinder	Maximum Steering Pressure	207 bar	3000 psi

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Table 2.12 Hydraulic & Gear Oils

Description	Temperature Range	SJ46 AJ+ ANSI/CSA	SJ46 AJ & SJ51 AJ CE & AS
Hydraulic Oil Cooler Option	38°C to 45°C (100°F to 115°F)	Oil cooler option recommended	
Standard Hydraulic Oil	-26°C to 38°C (-15°F to 100°F)	Petro-Canada ATF D3M	Shell Tellus T46, Petro-Canada Hydrex MV46
Arctic Hydraulic Oil	-40°C to 38°C (-40°F to 100°F)	Esso/Mobil UNIVIS HVI 26, Petro-Canada Hydrex Extreme	Esso/Mobil UNIVIS HVI 26, Petro-Canada Hydrex Extreme
Biodegradable Hydraulic Oil	-29°C to 32°C (-20°F to 90°F)	Shell Naturelle HF-E 46	
Hydraulic Tank Capacity		170 L (45 gal)	170 L
Standard Gear Oil	-29°C to 45°C (-20°F to 115°F)	SAE 80W-90 API GL5	
Arctic Gear Oil	-40°C to 45°C (-40°F to 115°F)	Duratran XL Synthetic Oil	
Gear Oil Capacity		38 L (10 gal)	38 L

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Table 2.13 Specifications & Features - Dimensions & Speeds

	SJ46 AJ+ ANSI/CSA		SJ46 AJ CE & AS	SJ51 AJ CE & AS
Height & Reach				
Working Height	15.93 m	52' 3-1/4"	16.10 m	17.55 m
Platform Elevated Height	14.10 m	46' 3-1/4"	14.10 m	15.55 m
Drive Height	Driveable at all heights			
Horizontal Reach - Maximum	7.54 m	24' 8-3/4"	7.54 m	9.03 m
Horizontal Reach at Max Height	2.47 m	8' 1"	2.47 m	2.86 m
Tailswing	0	0	0	0
Up and Over Clearance - Platform	7.53 m	24' 8-3/4"	7.53 m	7.53 m
Up and Over Clearance - Main Boom	7.45 m	24' 5-1/4"	7.45 m	7.45 m
Platform				
Platform Size	0.76 x 1.52 m 0.76 x 1.83 m	30" x 60" 30" x 72"	0.76 m x 1.52 m 0.76 m x 1.83 m	0.76 m x 1.52 m 0.76 m x 1.83 m
Platform Rotation	178°	178°	178°	178°
Platform Height - Stowed	0.28 m	11"	0.25 m	0.25 m
Platform Height - Overall	1.35 m	53"	1.33 m	1.33 m
Railing Height - Platform	1.11 m	44"	1.10 m	1.10 m
Dimensional Data				
Height - Stowed	2.06 m	6' 9"	2.06 m	2.06 m
Length - Stowed	6.35 m	20' 10"	6.35 m	7.10 m
Width	2.29 m	7' 6"	2.29 m	2.29 m
Wheelbase	2.03 m	6' 8"	2.03 m	2.03 m
Ground Clearance - Chassis	0.39 m	15-1/4"	0.39 m	0.39 m
Ground Clearance - Axle	0.33 m (front)	13" (front)	0.27 m (rear)	0.27 m (rear)
Axle Oscillation	3.25°	3.25°	3.25°	3.25°
Turning Radius - Inside	1.50 m	4' 11-1/4"	1.50 m	1.50 m
Turning Radius - Outside	4.34 m	14' 3"	4.34 m	4.34 m
Turret Rotation	360°	360°	360°	360°
Lift Capacity				
Max Lift Capacity without attachment	300 kg	660 lb	227 kg	227 kg
Max Persons without Attachment	2	2	2	2
Max Lift Capacity with attachment	272 kg	600 lb	227 kg	227 kg
Max Persons with Attachment	1	1	2	2
Jib				
Jib Length - Stowed	1.42 m	55-3/4"	1.42 m	1.42 m

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Table 2.13 Specifications & Features - Dimensions & Speeds

	SJ46AJ ANSI/CSA		SJ46AJ CE & AS	SJ51AJ CE & AS
Performance & Speeds				
Gradeability - Maximum	45%		45%	45%
Drive Speed - Stowed/Low Torque	7.7 km/h	4.8 mph	7.7 km/h (Deutz D2011)	7.7 km/h (Deutz D2011)
			4.0 km/h (Deutz D2.2)	4.0 km/h (Deutz D2.2)
Drive Speed - Stowed/High Torque	2.9 km/h	1.8 mph	2.9 km/h (Deutz D2011)	2.9 km/h (Deutz D2011)
			1.3 km/h (Deutz D2.2)	1.3 km/h (Deutz D2.2)
Drive Speed - Elevated	0.8 km/h	0.5 mph	0.8 km/h	0.8 km/h
Turret Rotation	70-90 seconds		90-110 seconds	90-110 seconds
Platform Rotation	5-9 seconds		15-25 seconds	15-25 seconds
Boom Up	29-32 seconds		26-32 seconds (CE) 23-29 seconds (AS)	26-32 seconds (CE) 23-29 seconds (AS)
Boom Down	27-30 seconds		26-32 seconds (CE) 23-29 seconds (AS)	26-32 seconds (CE) 23-29 seconds (AS)
Boom Extend	10-16 seconds		8-14 seconds	12-18 seconds
Boom Retract	25-30 seconds		16-21 seconds	23-29 seconds
Riser Up	24-30 seconds		23-29 seconds	23-29 seconds
Riser Down	30-35 seconds		28-34 seconds	28-34 seconds
Jib Up	18-24 seconds		34-44 seconds	34-44 seconds
Jib Down	10-16 seconds		18-28 seconds	18-28 seconds
Weight				
Weight with Foam Tires - No Options	6 500 kg	14,330 lb	6 500 kg (CE) 6 400 kg (AS)	7 300 kg
Electrical				
System Voltage	12 volt DC		12 volt DC	12 volt DC
Battery Type	Lead / Acid		Lead / Acid	Lead / Acid

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Table 2.14 Engine Specifications

		SJ46 AJ+, SJ46 AJ & SJ51 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	47 gal (170.3 L)
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C) SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil Option	-20°F to 90°F (-29°C to 32°C) SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil Option	-40°F to 115°F (-40°C to 45°C) SAE 0W-40 API CF/CG/CH-6
	Standard & Arctic Coolant	-40°F to 115°F (-40°C to 45°C) Delo 50/50 Extended Life Coolant
	Coolant Capacity	3.0 gal (11.4 L)
	Lube Oil Sump Capacity	2.64 gal (10.0 L)
Deutz D2.2	RPM Settings	1200 Low / 1600 / 2300 High
	Horsepower @ 2300 rpm (intermittent)	18.4.4 kW / 25 hp
	Fuel Type	Diesel
	Fuel Tank Capacity	47 gal (170.3 L)
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C) SAE 15W-40 API CF/CG/CH-6
	Standard Coolant	-40°F to 115°F (-40°C to 45°C) Delo 50/50 Extended Life Coolant
	Coolant Capacity	2.75 gal (10.4 L)
	Lube Oil Sump Capacity	2.11 gal (8.0 L)
Deutz D2011	RPM Settings	1600 Low / 2100 / 2675 High
	Horsepower @ 2600 rpm (intermittent)	48 kW / 65 hp
	Fuel Type	Diesel
	Fuel Tank Capacity	47 gal (170.3 L)
	Standard Oil Factory Fill	0°F to 115°F (-18°C to 45°C) SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil Option	-20°F to 90°F (-29°C to 32°C) SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil Option	-40°F to 115°F (-40°C to 45°C) SAE 0W-40 API CF/CG/CH-6
	Lube Oil Sump Capacity	2.64 gal (10.0 L)
Kubota WG2503	RPM Settings	927 Low / 1700 / 2675 High
	Gross Intermittent HP	45.5 kW / 61 Hp
	Fuel Type	Gasoline/Propane
	Fuel Tank Capacity	45 gal (170.3 L)
	Standard Lube Oil	-40°F to 115°F (-40°C to 45°C) SAE 5W-30 API CF/CG/CH-6
	Standard Coolant	-20°F to 115°F (-29°C to 45°C) Recochem 50/50 Extended Life Coolant
	Arctic Coolant	-40°F to 115°F (-40°C to 45°C) Recochem 60/40 Extended Life Coolant
	Coolant Capacity	3.17 gal (12 L)
	Lube Oil Sump Capacity	2.5 gal (9 L)

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Table 2.15 Reach & Dimension Diagrams - SJ46 AJ+ ANSI/CSA

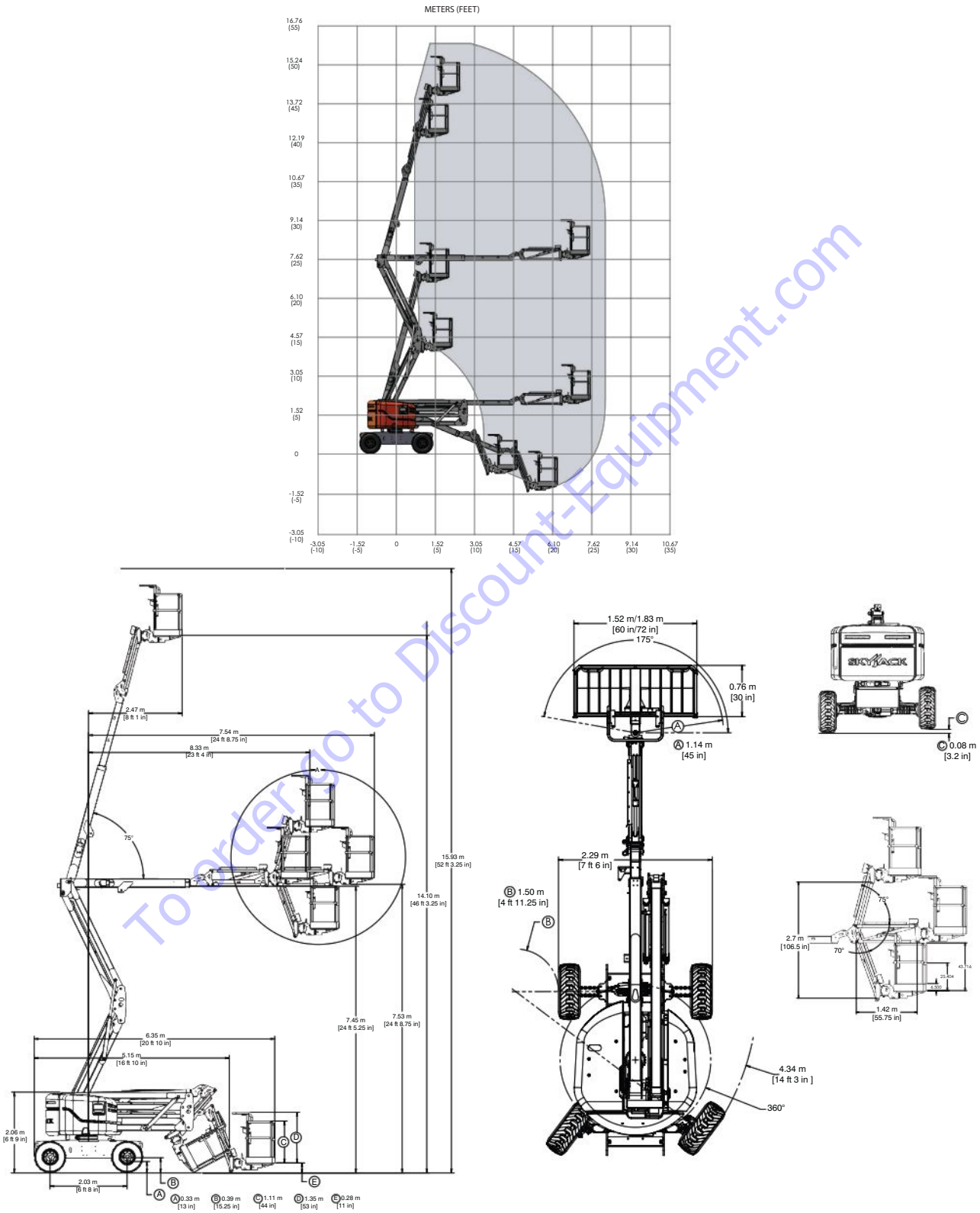


Diagram 2.16 Reach & Dimension Diagrams - SJ46 AJ CE & AS

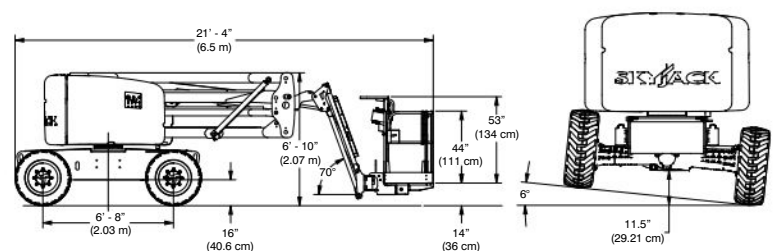
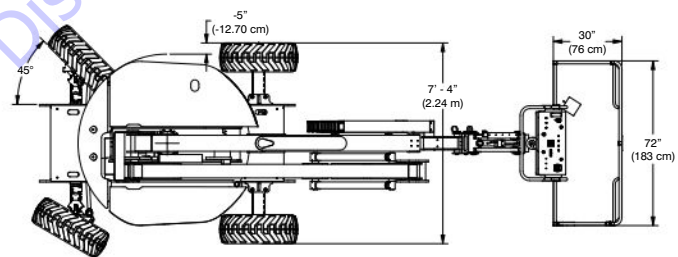
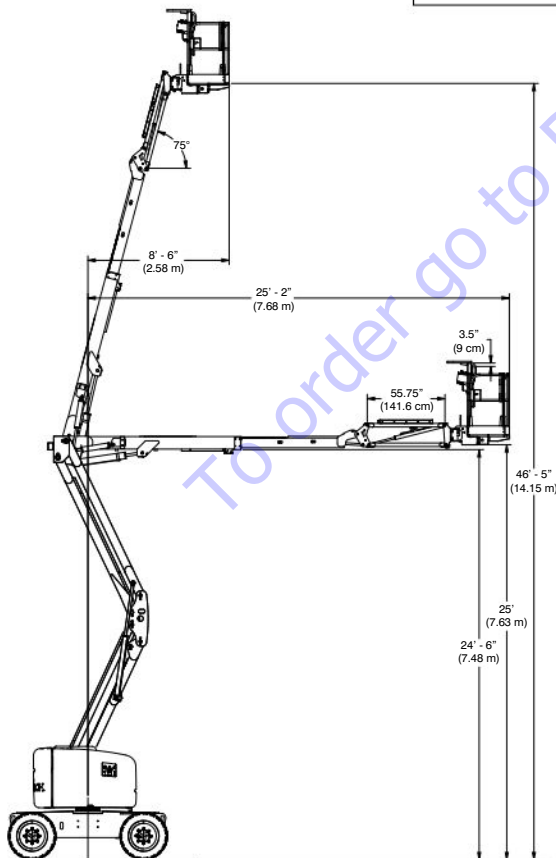
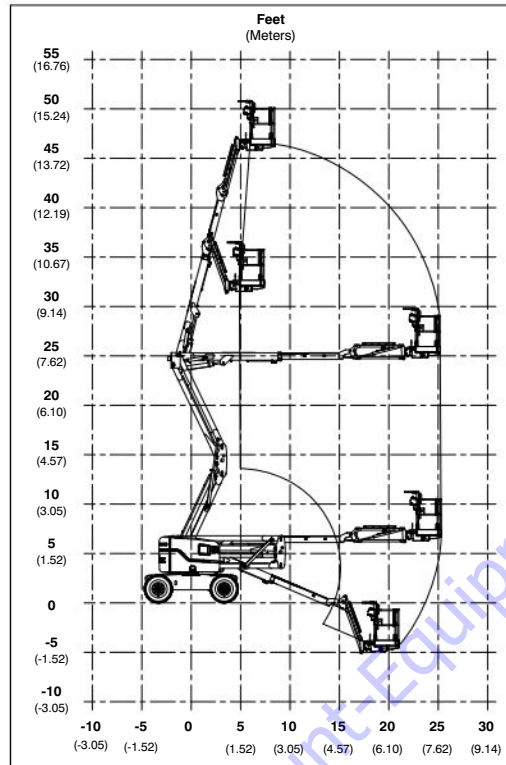


Diagram 2.17 Reach & Dimension Diagrams - SJ51 AJ CE & AS

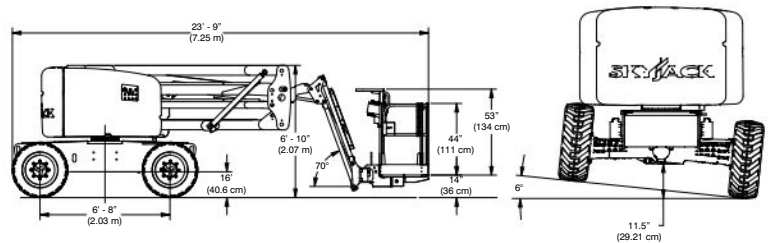
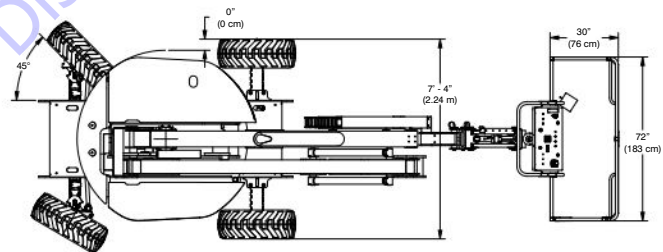
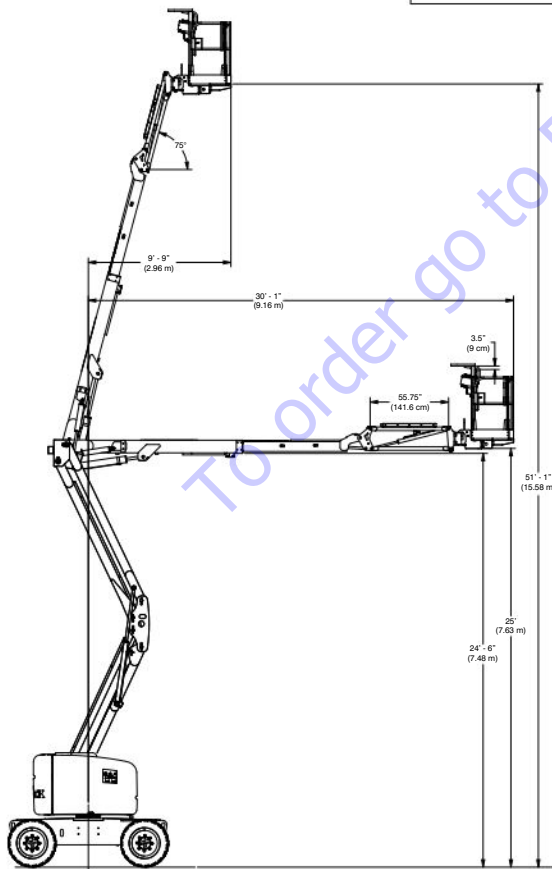
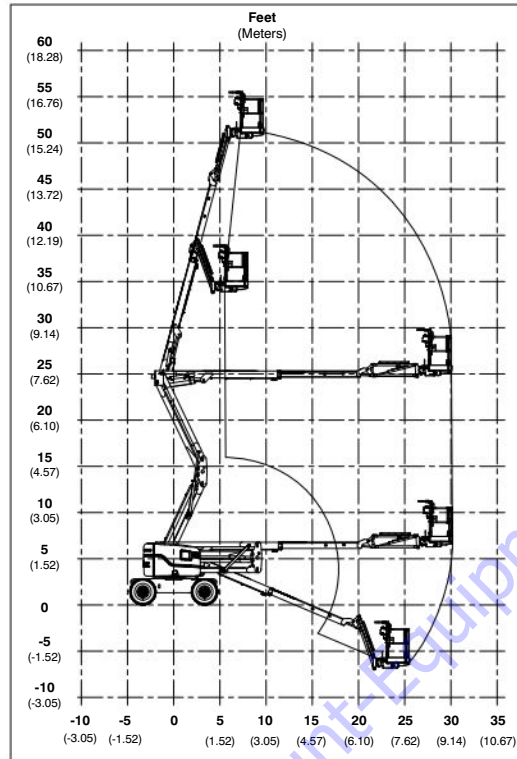
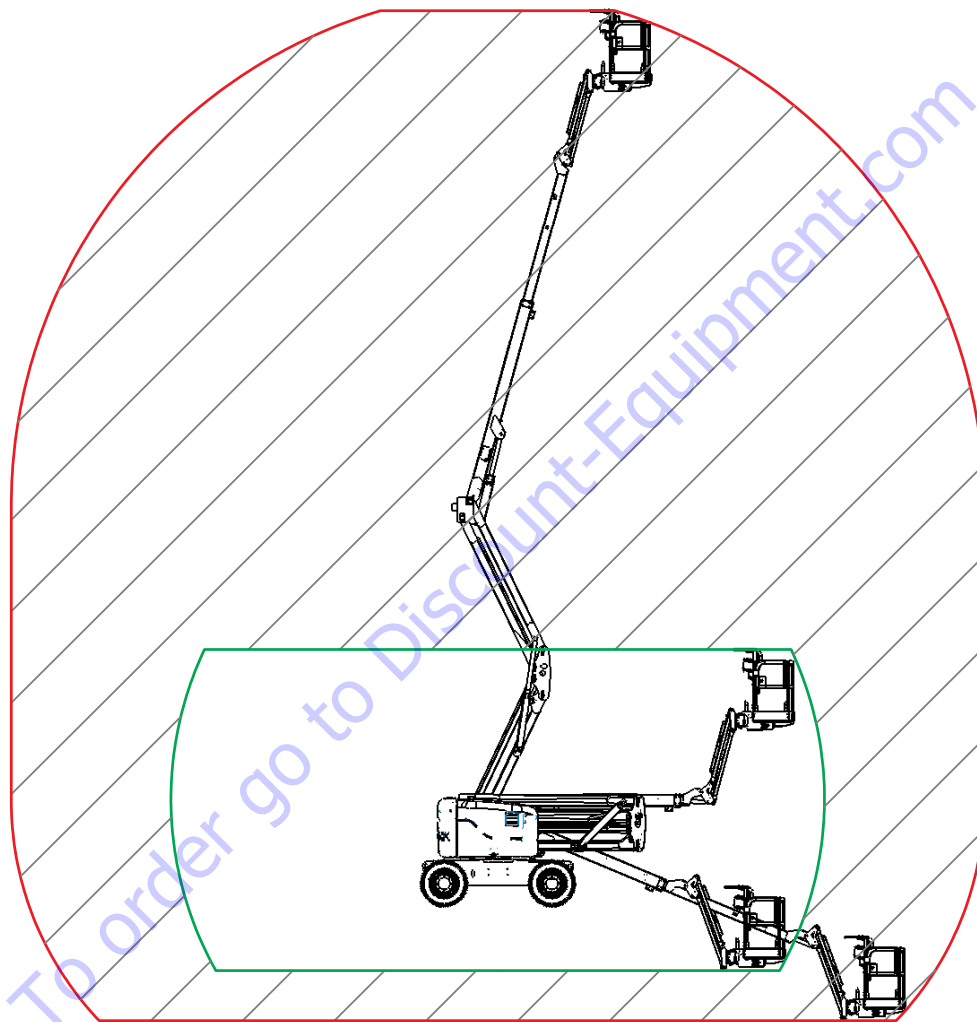


Table 2.18 Axle Oscillation Diagram

WARNING

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



Axle oscillation free (travel mode) - drive speed 7.7 km/h (4.8 mph) max.



Axle oscillation locked (work mode) - drive speed 0.8 km/h (0.5 mph) max.

Section 3 – System Component Identification and Schematics

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Table 3.1 Electrical Symbol Chart







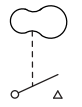















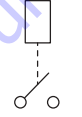


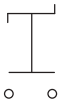
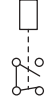



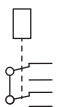



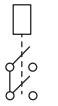


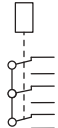










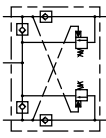



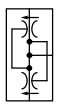



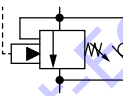






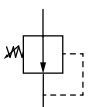





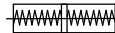






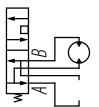

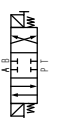
 CIRCUITS CROSSING NO CONNECTION	 HOURMETER	 KEY SWITCH	 LIMIT SWITCH
 CIRCUITS CONNECTED	 LIGHT	 FOOT SWITCH	 CAM OPERATED LIMIT SWITCH
 BATTERY	 HYDRAULIC VALVE COIL	 TOGGLE SWITCH	 LIMIT SWITCH N.O.
 GROUND	 PROPORTIONAL HYDRAULIC VALVE COIL	 ANGLE TRANSDUCER & TILT SWITCH	 LIMIT SWITCH N.O HELD CLOSED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

Table 3.2 Hydraulic Symbol Chart

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

3.3 Wire Number and Color Code

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

3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Description
2H-21A	166039	VALVE (Dump)
2H-42	231438	VALVE, Proportional
3H-21	195036	VALVE, Control (Load Circuit)
3H-26	159827	VALVE, Control (Brake Release)
3H-38	166037	VALVE, Control (Boom Retract)
3H-39	166037	VALVE, Control (Boom Extend)
3H-45A	159827	VALVE, Control (2 Speed Motor)
3H-65	159827	VALVE, Control (Axle Lockout)
3H-85	168448	VALVE, Generator Bypass (3.5kW Generator)
3H-85-1	N/A	VALVE, Generator (12kW Generator Option)
3H-85-2	N/A	VALVE, Generator (12kW Generator Option)
3H-165	159827	VALVE, Control (Differential Lock)
4H-13	166041	VALVE, Control (Main Boom Lift Down)
4H-14	166041	VALVE, Control (Main Boom Lift Up)
4H-15	N/A	VALVE, Control (Drive Pump Control)
4H-16	N/A	VALVE, Control (Drive Pump Control)
4H-23A	158186	VALVE, Control (Steering Left)
4H-24A	158186	VALVE, Control (Steering Right)
4H-30	166041	VALVE, Control (Riser Down)
4H-31	166041	VALVE, Control (Riser Up)
4H-32	166041	VALVE, Control (Turret Rotate Left)
4H-33	166041	VALVE, Control (Turret Rotate Right)
4H-34	166036	VALVE, Control (Jib Down)
4H-35	166036	VALVE, Control (Jib Up)
4H-36	166036	VALVE, Control (Platform Rotate Left)
4H-37	166036	VALVE, Control (Platform Rotate Right)
4H-40	166036	VALVE, Control (Platform Level Down)
4H-41	166036	VALVE, Control (Platform Level Up)
C1	218750	CYLINDER (Jib)
C2	148712	CYLINDER (Fly Boom) (46AJ)
C3	148711	CYLINDER (Main Boom Lift)
C4	148715	CYLINDER (Platform Level, Master)
C5	148716	CYLINDER (Platform Level, Slave)
C6	148710	CYLINDER (Riser Lift)
C7	148710	CYLINDER (Riser Lift)
C8	N/A	CYLINDER (Steer)
C9	212871	RAM (Axle Lockout)
C10	212871	RAM (Axle Lockout)
C11	148713	CYLINDER (Fly Boom) (51AJ)
C12	N/A	CYLINDER (Brake)
C13	N/A	CYLINDER (Differential Lock)
CB1	212872	VALVE, Counterbalance (Axle Lockout)
CB2	212872	VALVE, Counterbalance (Axle Lockout)
CB3	220533	VALVE, Counterbalance (Swing Drive)
CB4	220533	VALVE, Counterbalance (Swing Drive)

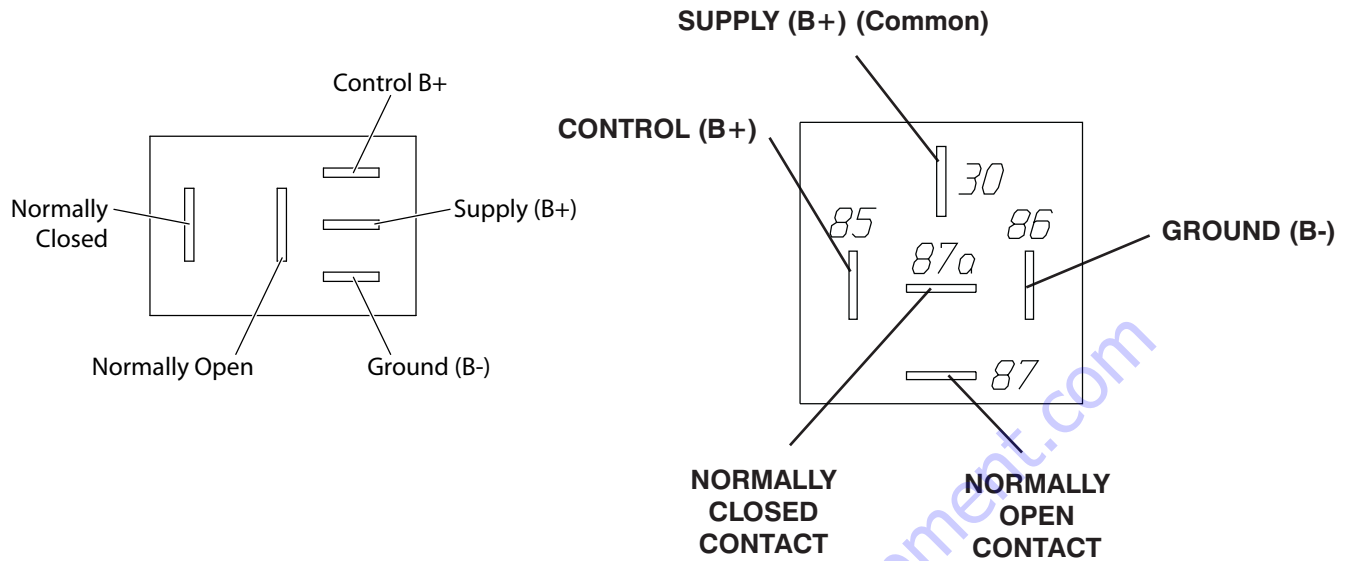
3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Description
CB5	149488	VALVE, Counterbalance (Riser Down)
CB6	149488	VALVE, Counterbalance (Riser Down)
CB7	149228	VALVE, Counterbalance (Platform Level, Slave)
CB8	149228	VALVE, Counterbalance (Platform Level, Slave)
CB9	152326	VALVE, Counterbalance (Boom Lift)
CB10	149228	VALVE, Counterbalance (Fly Boom Extend)
CB11	141453	VALVE, Counterbalance (Fly Boom Retract)
CB12	149372	VALVE, Counterbalance (Jib)
CB13	149372	VALVE, Counterbalance (Jib)
CB14	141399	VALVE, Counterbalance (Rotary Actuator)
CB15	141399	VALVE, Counterbalance (Rotary Actuator)
CP1	231437	PLUG, Cavity
CV1	N/A	VALVE, Check (EPU)
CV2	171413	VALVE, Check (Brake Manifold)
CV3	166064	VALVE, Check (Main Control)
CV4	159817	VALVE, Check (Double, Piloted, Platform Level)
CV5	163183	VALVE, Check (Riser)
CV6	163182	VALVE, Check (Riser)
CV7	166067	VALVE, Check (LS)
CV8	166067	VALVE, Check (LS)
CV9	166067	VALVE, Check (LS)
CV10	166067	VALVE, Check (LS)
CV11	166067	VALVE, Check (LS)
CV12	166067	VALVE, Check (LS)
CV13	N/A	VALVE, Check (Generator 3.5kW)
CV14	N/A	VALVE, Check (Generator 12kW)
CV15	N/A	VALVE, Check (Generator 12kW)
CV16	168243	VALVE, Check (2 SPD)
DSV1	166059	VALVE, System Load Sense (Differential Sensing Valves)
DSV2	166062	VALVE, Differential Sensing (Boom Rotate)
DSV3	166063	VALVE, Differential Sensing (Riser)
DSV4	166063	VALVE, Differential Sensing (Main Lift)
DSV5	166062	VALVE, Differential Sensing (Jib/Platform Rotate)
EPU	160923	PUMP, Emergency Power Unit
F1	161932	FILTER, High Pressure
F2	161934	FILTER, Return
M1	161964	MOTOR, Drive
M2	N/A	MOTOR, Swing
M3	N/A	MOTOR, Generator - 3.5kW Generator Option
M4	N/A	MOTOR, Generator - 12kW Generator Option
MB1	162495	MANIFOLD, Main
MB2	168642	MANIFOLD, Brake
MB3	231501	MANIFOLD, Jib
MB4	169526	MANIFOLD, Generator 12 kW
MB5	169390	MANIFOLD, Generator 3.5 kW
MB7	208620	MANIFOLD, Load Circuit

3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Description
OC1	160800	COOLER, Oil (Oil Cooler Option)
OR1	167353	ORIFICE, Main Control (Platform Rotate)
OR2	167352	ORIFICE, Main Control (Jib)
OR3	166056	ORIFICE, Main Control (Boom Extend)
OR4	166057	ORIFICE, Main Control (Platform Level)
OR5	171420	ORIFICE, Brake Manifold (Loop Flush)
OR6	163710	ORIFICE, Riser Down (0.067")
OR7	195033	VALVE, Needle (Load Circuit)
P1/P1A	170599	PUMP, Drive - Deutz D2.9L, Deutz D2011, Kubota, GM
P1/P1A	228717	PUMP, Drive - Deutz D2.2
P2	161963	PUMP, System
P3	162330	PUMP, System - with 12 kW Generator
PFC1	166055	CONTROL, Priority Flow (Steer)
PFC2	169407	CONTROL, Priority Flow (Generator 3.5kW)
PFC3	N/A	CONTROL, Priority Flow (Generator 12kW)
PR1	168754	VALVE, Pressure Reducing
QD1	122420	DISCONNECT, Quick
RV1	N/A	VALVE, Relief (Drive Pump)
RV2	N/A	VALVE, Relief (Drive Pump)
RV3	N/A	VALVE, Relief (Charge Pump)
RV5	N/A	VALVE, Relief (EPU)
RV6	166043	VALVE, Relief (Main Control)
RV7	168975	VALVE, Relief (Boom Rotate)
RV8	166044	VALVE, Relief (Riser Down)
RV9	159809	VALVE, Relief (Platform Level)
RV10	195600	VALVE, Relief (3.5 kW Generator Option)
RV11	209466	VALVE, Relief (12 kW Generator Option)
RV12	195596	VALVE, Relief (3.5 kW Generator Option)
RV13	195035	VALVE, Relief (Load Circuit)
RV15	209468	VALVE, Relief (Load Circuit)
RV16	209466	VALVE, Relief (12 kW Generator Option)
SV1	141414	SHUTTLE VALVE, Brake Manifold (LS)
SV2	166054	SHUTTLE VALVE, Brake Manifold (M1 / M2)
SV3	N/A	SHUTTLE VALVE, Swing Drive
SV4	166054	SHUTTLE VALVE, Main Manifold (Swing)
SV5	166054	SHUTTLE VALVE, Main Manifold (Riser)
SV6	166054	SHUTTLE VALVE, Main Manifold (Boom Lift)
SV7	166054	SHUTTLE VALVE, Main Manifold (Platform Level)
SV8	166054	SHUTTLE VALVE, Main Manifold (Platform Level)
V1	141436	VALVE, Control (Brake Release Override)
V2	166053	VALVE, Control (Loop Flush)
V3	159831	HAND PUMP (Brake Release)
V4	N/A	VALVE, Control (Bypass Towing)

3.5 Electrical Parts List



Index No.	Skyjack Part No.	Description
01ACR	931298	RELAY, Micro 12 V DC, 30 amp (Base control console) (ANSI)
01ACR	127131	RELAY, 12 Volt 40 Amp (Base control console - E-pump) (CE & AS)
04ACR	931298	RELAY, Micro 12 V DC, 30 amp (Base control console)
07CR	127131	RELAY, 12 Volt 40 Amp (Base control console - E-pump/Enable)
08CR	127131	RELAY, 12 Volt 40 Amp (Platform control console - Footswitch/Starter interlock)
09CR	127131	RELAY, 12 Volt 40 Amp (Engine power on)
21CR	127131	RELAY, 12 Volt 40 Amp (Base control console - Dump valve)
27CR	127131	RELAY, 12 Volt 40 Amp (Platform control console - Tilt alarm)
45CR1	127131	RELAY, 12 Volt 40 Amp (Base control console - 2-SPD motor)
45CR2	127131	RELAY, 12 Volt 40 Amp (Base control console - 2-SPD motor controller)
49CR	931298	RELAY, Micro 12 V DC, 30 amp (Base control console) (ANSI)
49CR	127131	RELAY, 12 Volt 40 Amp (Base control console - Horn) (CE & AS)
57ACR	127131	RELAY, 12 Volt 40 Amp (Base control console - Engine Start)
57DCR	931298	RELAY, Micro 12 V DC, 30 amp (Base control console)
59CR	127131	RELAY, 12 Volt 40 Amp (Base control console - Overload sensor) (CE & AS)
60CR	127131	RELAY, 12 Volt 40 Amp (Base control console - System power)
78CR	127131	RELAY, 12 Volt 40 Amp (Base control console - High idle)
79CR	127131	RELAY, 12 Volt 40 Amp (Base control console - Low idle)
82CR	127131	RELAY, 12 Volt 40 Amp (Platform control console - Load sensing alarm)
165CR	127131	RELAY, 12 Volt 40 Amp (Platform control console - Differential lock)
403ACR	931298	RELAY, Micro 12 V DC, 30 amp (Base control console - Positive air shut-off option) (ANSI)
2H-21A	159819	COIL, 12 Volt (Dump valve)
2H-34A	159821	COIL, 12 Volt (Jib enable valve)
2H-36A	159821	COIL, 12 Volt (Platform rotate enable valve)
3H-26	159827	COIL, 12 Volt (Brake valve)
3H-45	159827	COIL, 12 Volt (Motor 2-speed valve)
3H-65	159827	COIL, 12 Volt (Axle lock valve)
3H-165	159827	COIL, 12 Volt (Differential lock valve)

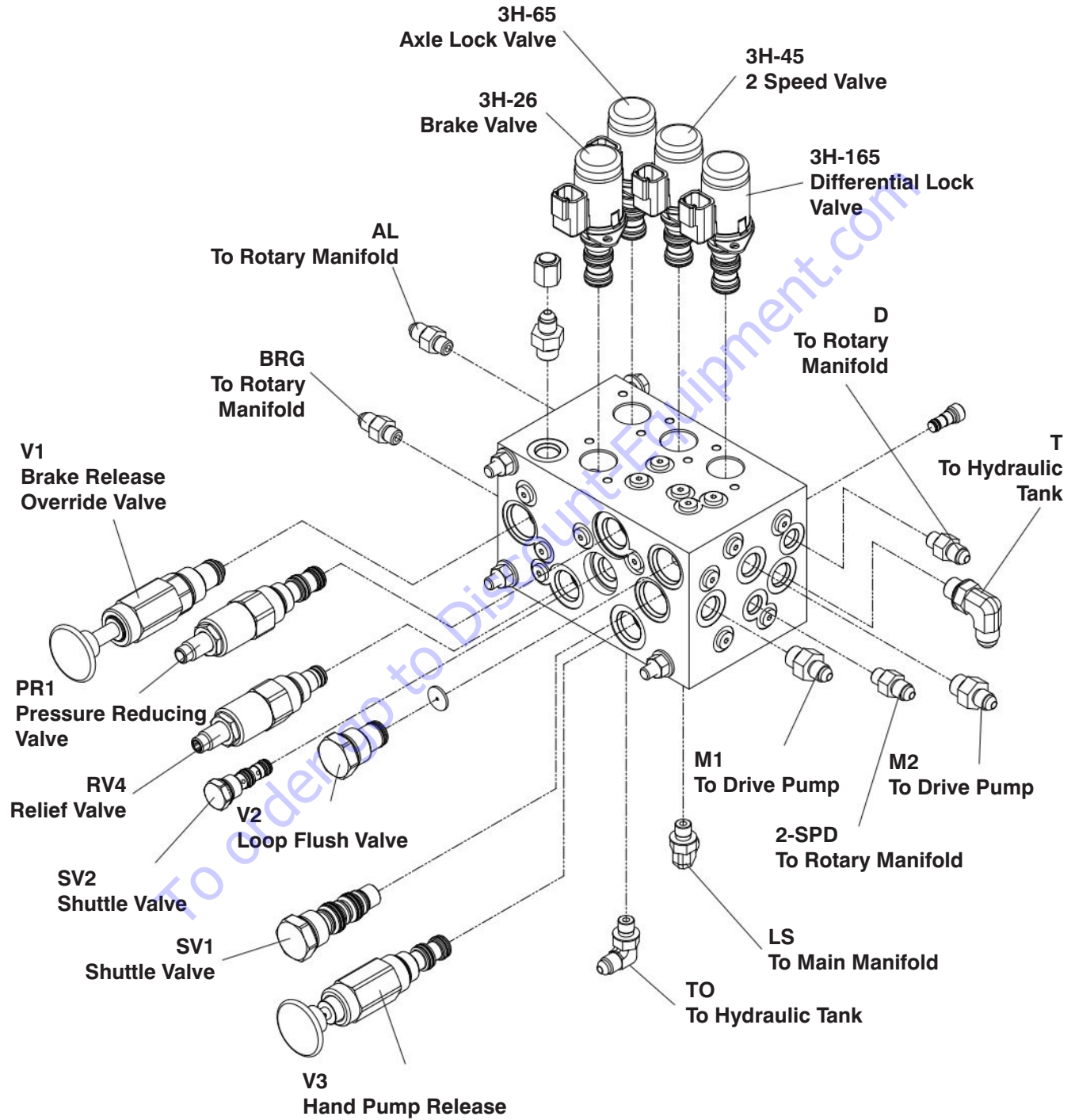
3.5 Electrical Parts List

Index No.	Skyjack Part No.	Description
4H-13	159819	COIL, 12 Volt (Boom down valve)
4H-14	159819	COIL, 12 Volt (Boom up valve)
4H-23A	159819	COIL, 12 Volt (Right steer valve)
4H-24A	159819	COIL, 12 Volt (Left steer valve)
4H-30	159819	COIL, 12 Volt (Riser down valve)
4H-31	159819	COIL, 12 Volt (Riser up valve)
4H-32	159819	COIL, 12 Volt (Left turret rotate valve)
4H-33	159819	COIL, 12 Volt (Right turret rotate valve)
4H-34	159821	COIL, 12 Volt (Jib down valve)
4H-35	159821	COIL, 12 Volt (Jib up valve)
4H-36	159821	COIL, 12 Volt (Platform left rotate valve)
4H-37	159821	COIL, 12 Volt (Platform right rotate valve)
4H-38	159821	COIL, 12 Volt (Boom retract valve)
4H-39	159821	COIL, 12 Volt (Boom extend valve)
4H-40	159821	COIL, 12 Volt (Platform level down valve)
4H-41	159821	COIL, 12 Volt (Platform level up valve)
A1	138224	JOYSTICK (Fly boom/Turret)
A2	138225	JOYSTICK (Drive/Steer)
A3	148707	JOYSTICK (Riser boom)
AT1	149426	ANGLE TRANSDUCER
B1	144676	BATTERY, 12V (Wet)
BP1	103057	BEEPER, 4-28 VDC Slow pulsing (Platform control console)
BP2	103056	BEEPER, 7.5-16 VDC (Base control console) (ANSI/CSA & AS)
BP3	144387	ALARM, Overload (CE & AS)
CB1	117325	CIRCUIT BREAKER (15 Amp)
CB2	117325	CIRCUIT BREAKER (15 Amp)
CB3	117325	CIRCUIT BREAKER (15 Amp)
CB4	117326	CIRCUIT BREAKER (20 Amp)
CB6	117326	CIRCUIT BREAKER (20 Amp)
CI	152323	INDICATOR, Charge
DXX	102921	DIODE
FU1	138848	FUSE, 50 Amp
FS1	138230	SWITCH, Low fuel
H1	146652	HORN, 12 Volt
LS1	122007	SWITCH, Limit (Direction sensing)
LS2	111356	SWITCH, Limit (Riser down)
LS3	161582	SWITCH, Limit (Boom down)
LS4	160018	SWITCH, Limit (Fly in)
M1	706921	PUMP, Emergency
PL1	148971	LIGHT, Pilot (Engine fault)
PL2	148972	LIGHT, Pilot (Glow plug)
PL3	147229	LED BLOCK, Red (12 volts) (Base control console)
PL4	147229	LED BLOCK, Red (12 volts) (Platform control console)
PL5	138229	MODULE, Upper indicating
PL6	148971	LIGHT, Pilot (Platform control console)

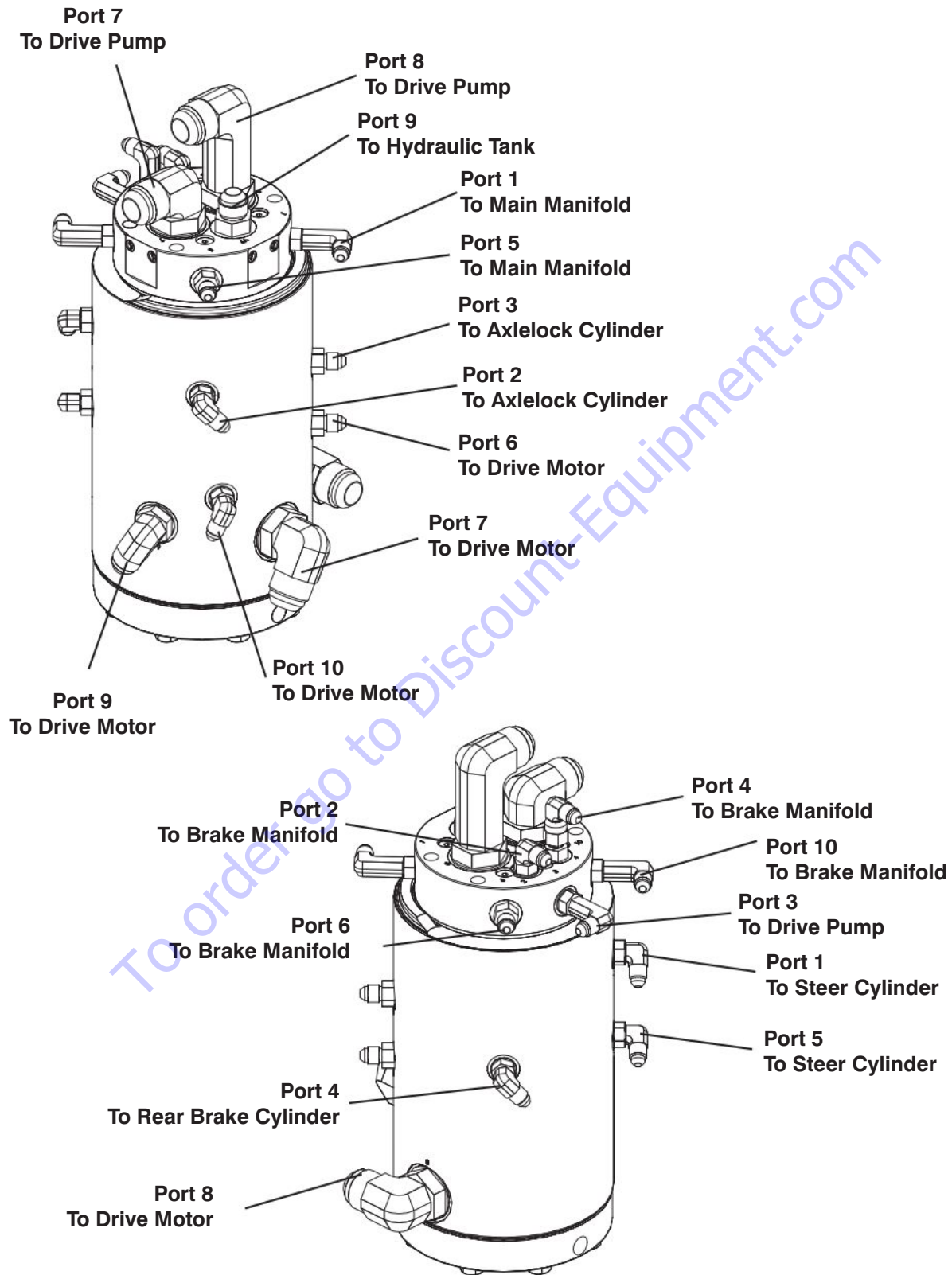
3.5 Electrical Parts List

Index No.	Skyjack Part No.	Description
QD1	122420	QUICK DISCONNECT (CE & AS)
R1	110999	RESISTOR, 5 ohm 25 W
R2	151643	RESISTOR, 250 ohm 1 W
R3	163021	RESISTOR, 120 ohm 1/2 W
R4	164859	RESISTOR, 2.2k ohm 1/2 W
R5	143952	RESISTOR, 51 ohm 2 W (Deutz D2011 and Kubota)
	164858	RESISTOR, 2.1k ohm 1/2 W (Deutz D2.9L)
R6	164857	RESISTOR, 3.9k ohm 1/2 W
R7	144492	RESISTOR, 680 ohm 1 W (Deutz D2.9L)
	151643	RESISTOR, 250 ohm 1 W (Deutz D2011 and Kubota)
S1	119725	SWITCH, Main power disconnect
S2	138277	KEYSWITCH, Base/Off/Platform (Base control) (ANSI/CSA, AS Deutz D2011)
	164949	KEYSWITCH, Base/Off/Platform (Base control) (ANSI/CSA Deutz D2.9L)
	144366	KEYSWITCH, Base/Off/Platform (Base control) (CE)
S3	147053	N.C. CONTACT, Emergency stop (Base control console)
S4	147053	N.C. CONTACT, Emergency stop (Platform control console)
S5	138278	SWITCH, Ignition/emergency pump toggle (Base control console)
S6	138278	SWITCH, Ignition/emergency toggle (Platform control console)
S8	102853	SWITCH, Diagnose toggle (Base control console) (Deutz engine)
S9	124446	SWITCH, Ignition (Platform control console)
S10	115574	SWITCH, Throttle toggle (Platform control console)
S11	138721	ASSEMBLY, Footswitch
S12	138278	SWITCH, Boom up/down toggle (Base control console)
S13	102853	SWITCH, Turret rotate toggle (Base control console)
S14	102853	SWITCH, Telescope in/out toggle (Base control console)
S15	102853	SWITCH, Platform leveling toggle (Base control console)
S16	102853	SWITCH, Platform rotate toggle (Base control console)
S17	102853	SWITCH, Jib up/down toggle (Base control console)
S18	138278	SWITCH, Telescope in/out toggle (Platform control console)
S19	138278	SWITCH, Platform leveling toggle (Platform control console) (ANSI/CSA)
S20	138278	SWITCH, Platform rotate toggle (Platform control console)
S21	138278	SWITCH, Jib up/down toggle (Platform control console)
S23	147054	N.O. CONTACT, Horn (Platform control console)
S25	138278	SWITCH, Riser boom up/down toggle (Base control console)
S26	115574	SWITCH, Fuel select (Platform control console) (GM engine)
S28	148998	SWITCH, Differential (Platform control console)
S48	115747	SWITCH, Drive torque toggle (Platform control console)
SMB1-105	218381	MODULE, Master
SMB1-106	218382	MODULE, Slavew
TT1	103336	HOUR METER
X22	138576	PORT, Diagnose (Deutz engine)
X23	138574	CONNECTOR, Engine (Deutz engine)

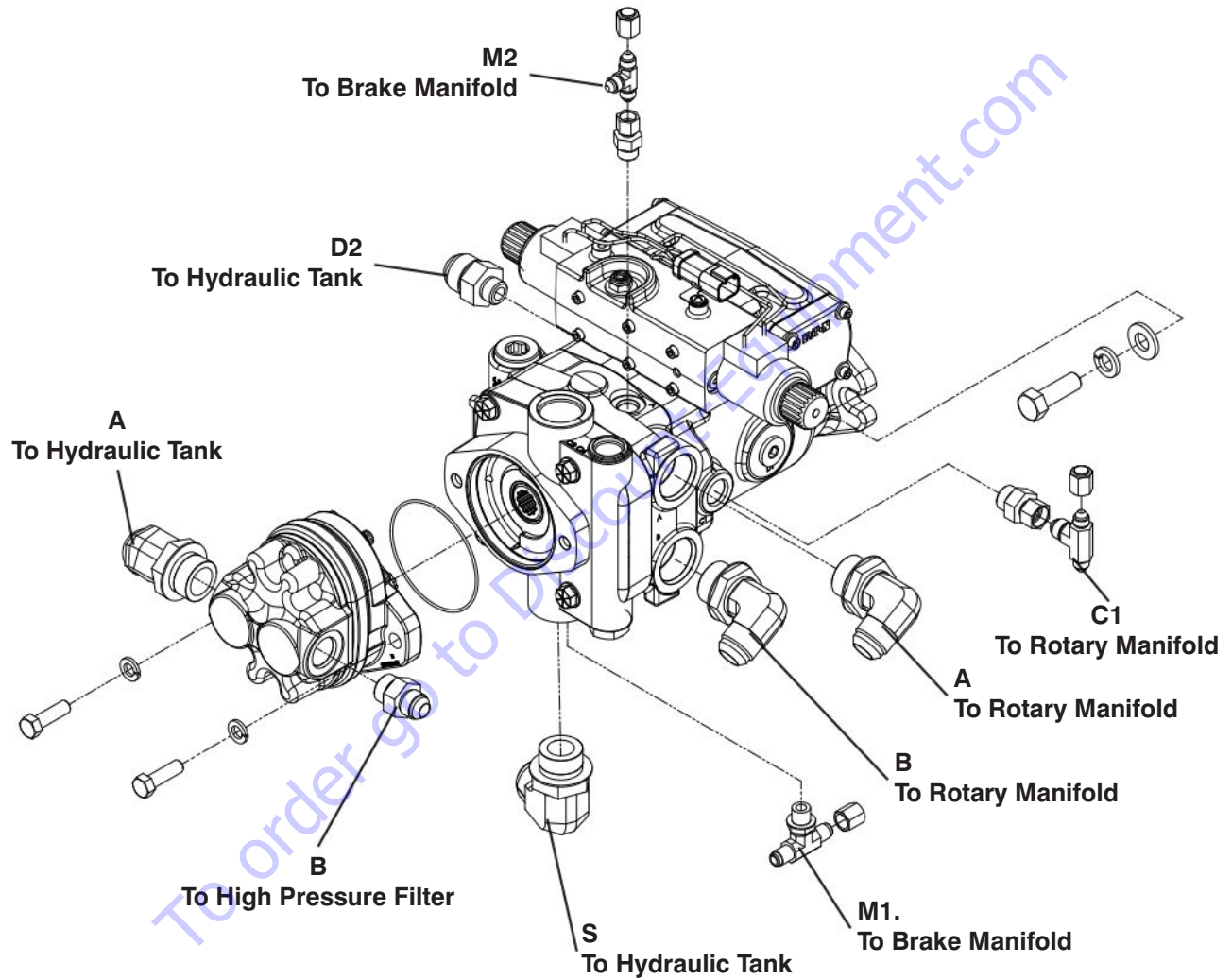
3.6 Brake Manifold Components and Ports



3.7 Rotary Manifold Ports

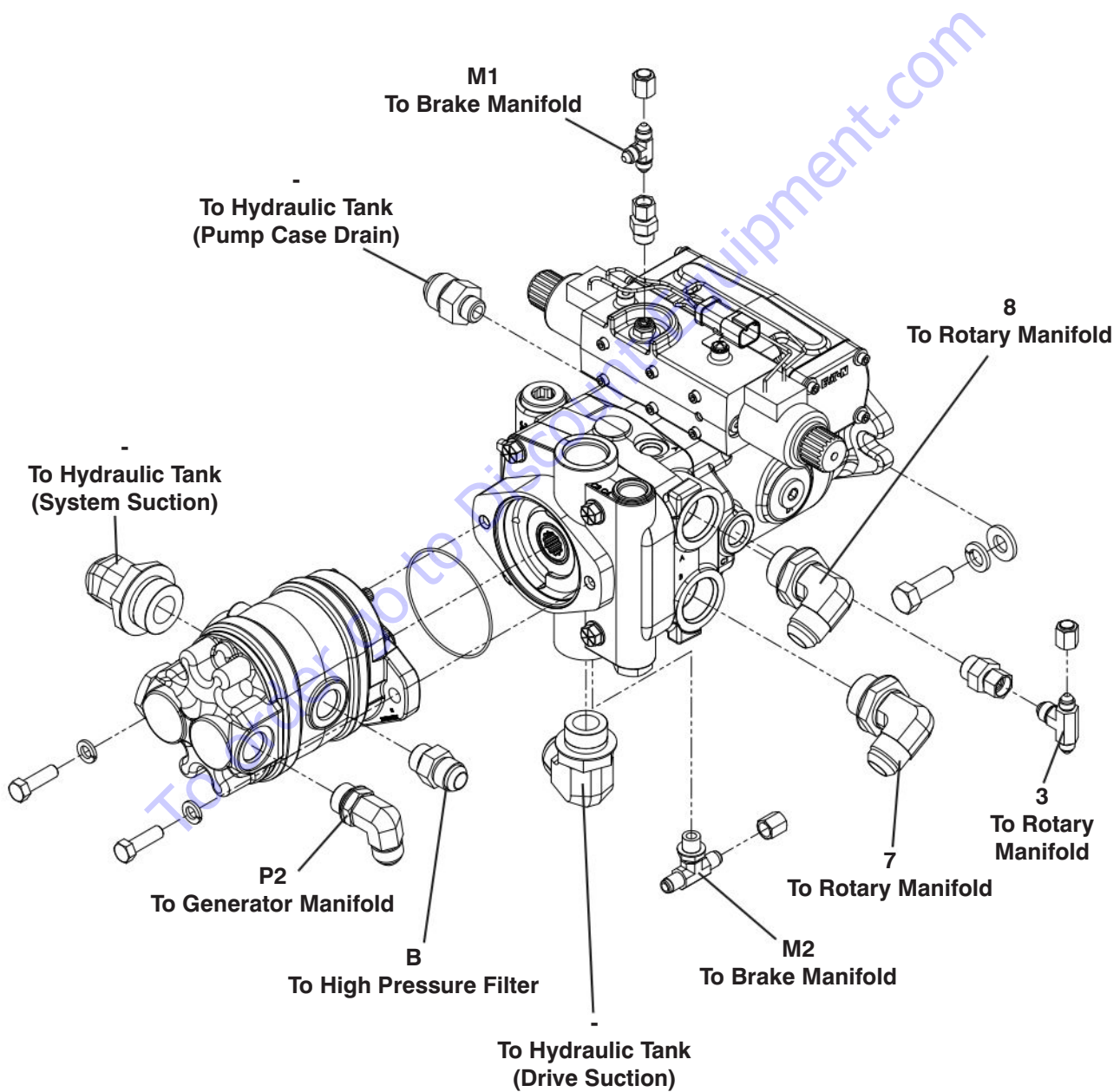


3.8 Drive and System Pump Ports

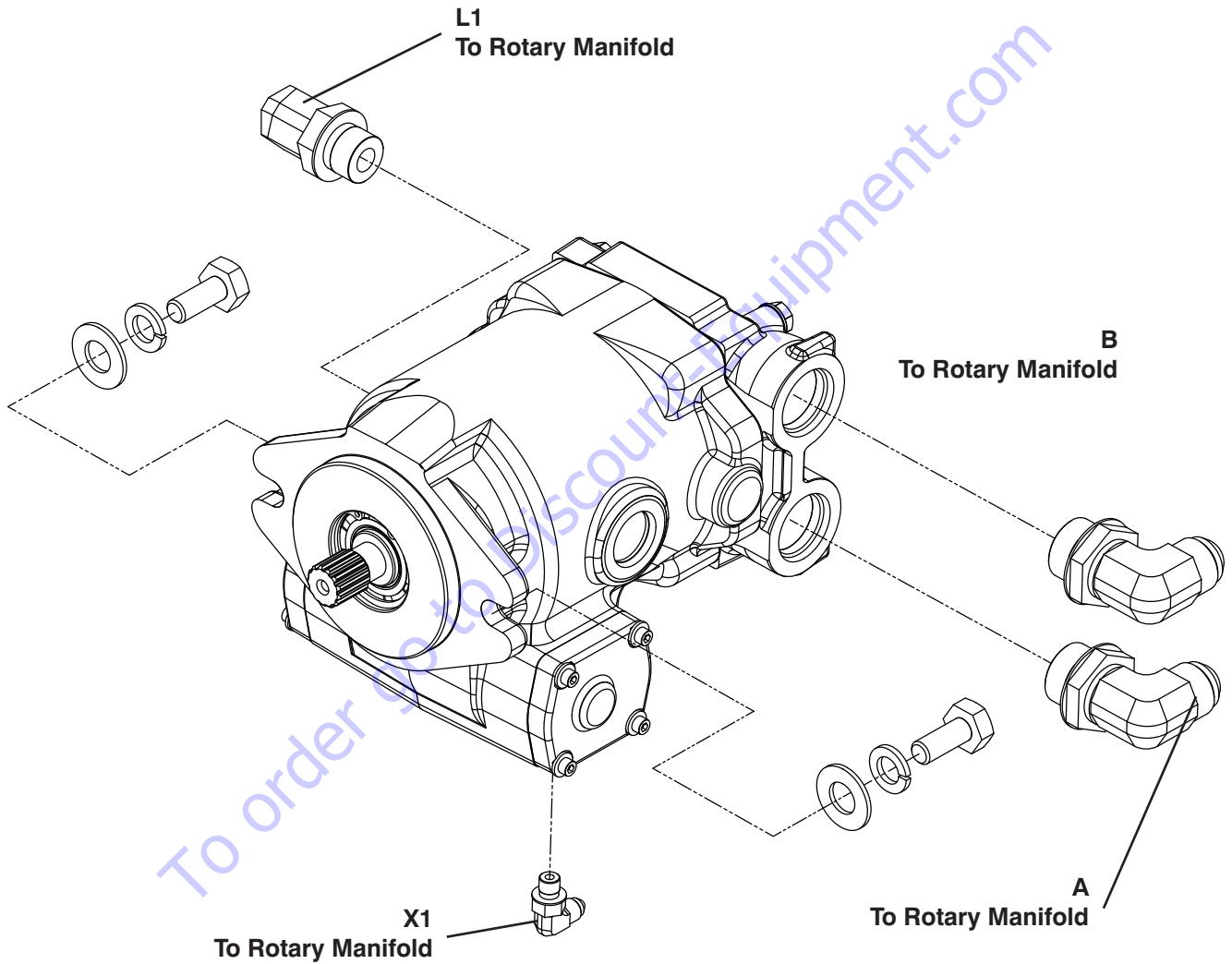


3.9 Drive and System Pump Ports

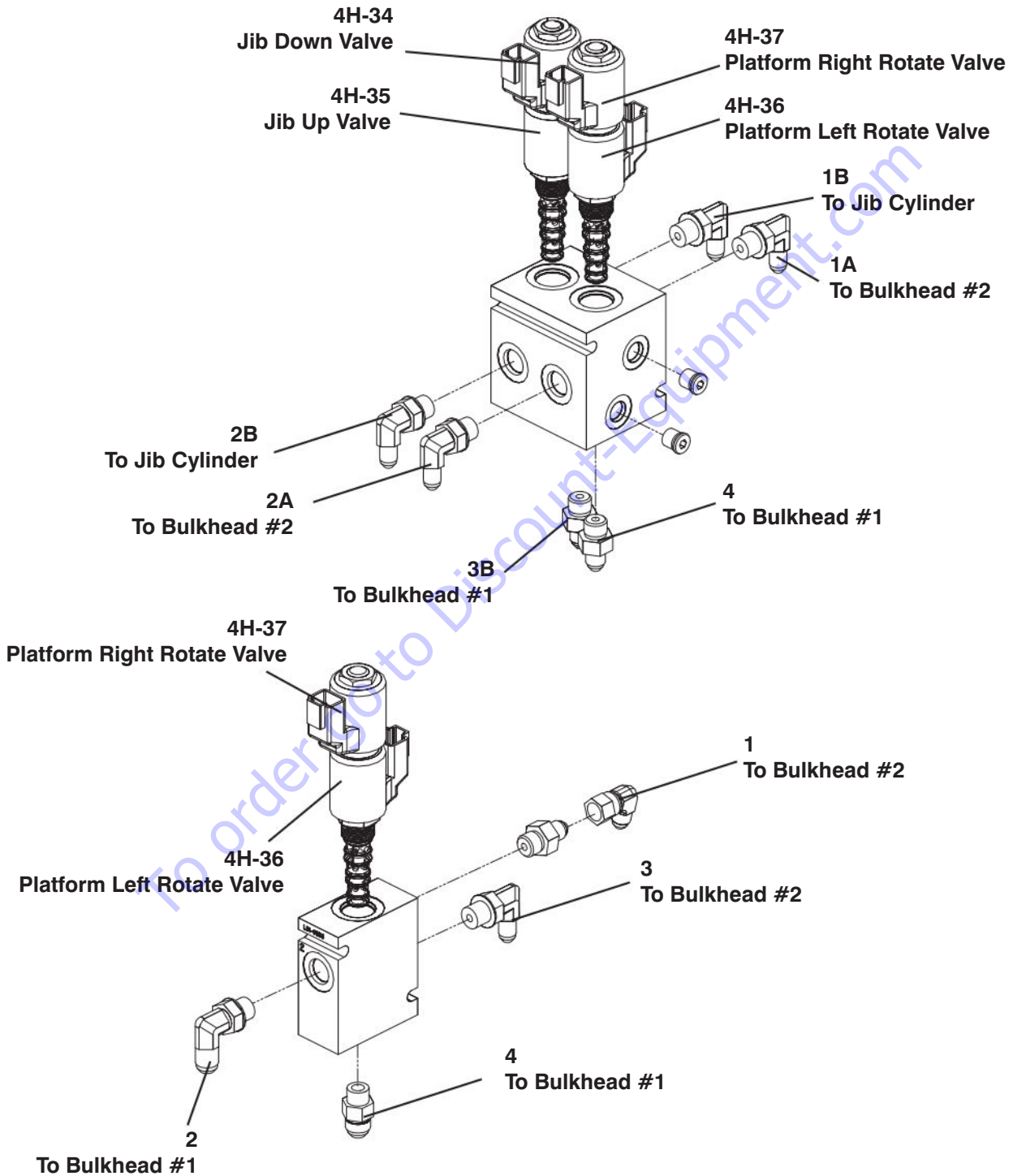
For machines with the Welder Option



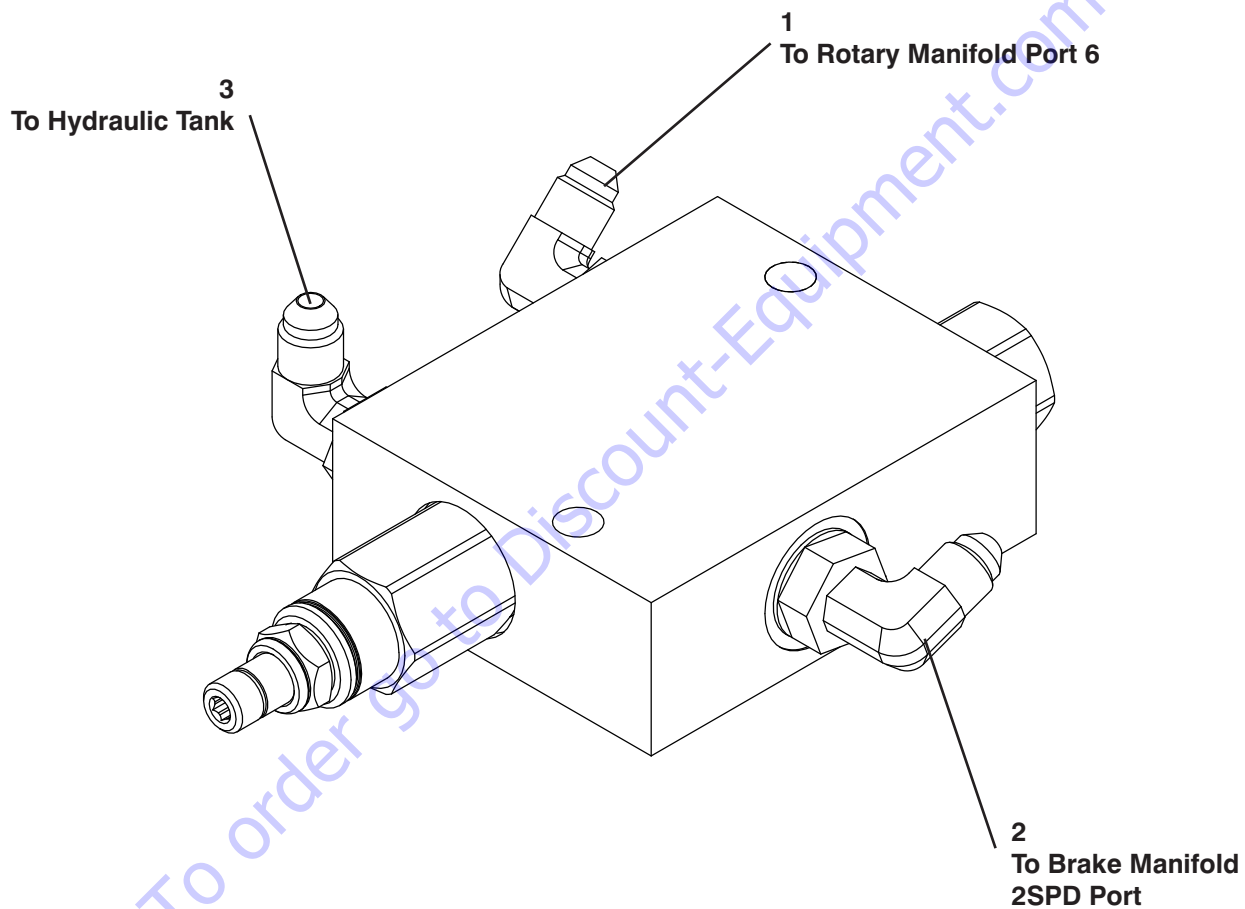
3.10 Drive Motor Ports



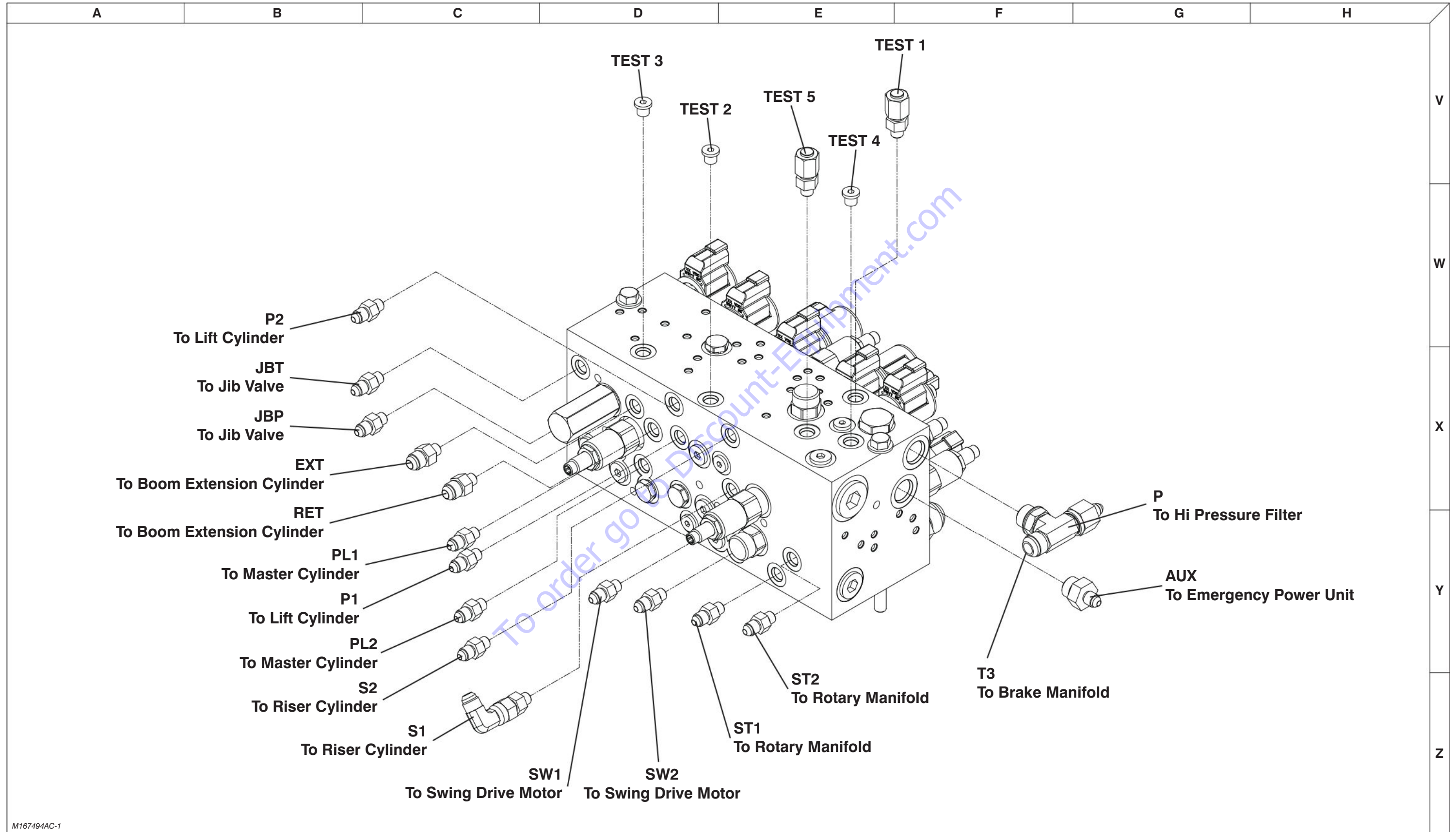
3.11 Jib Valve Ports



3.12 Pressure Reducing Valve Ports

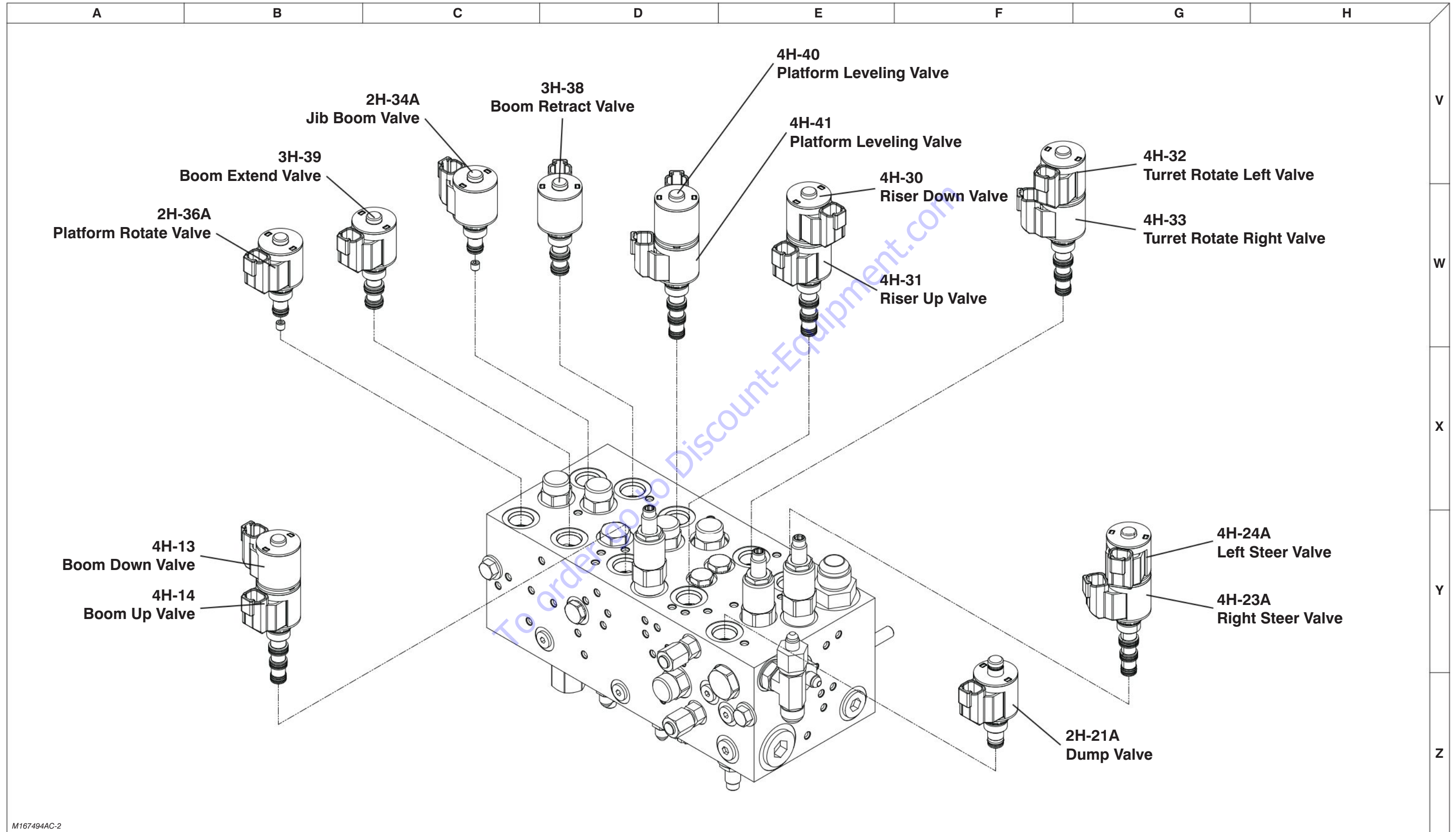


3.13 Main Manifold Ports



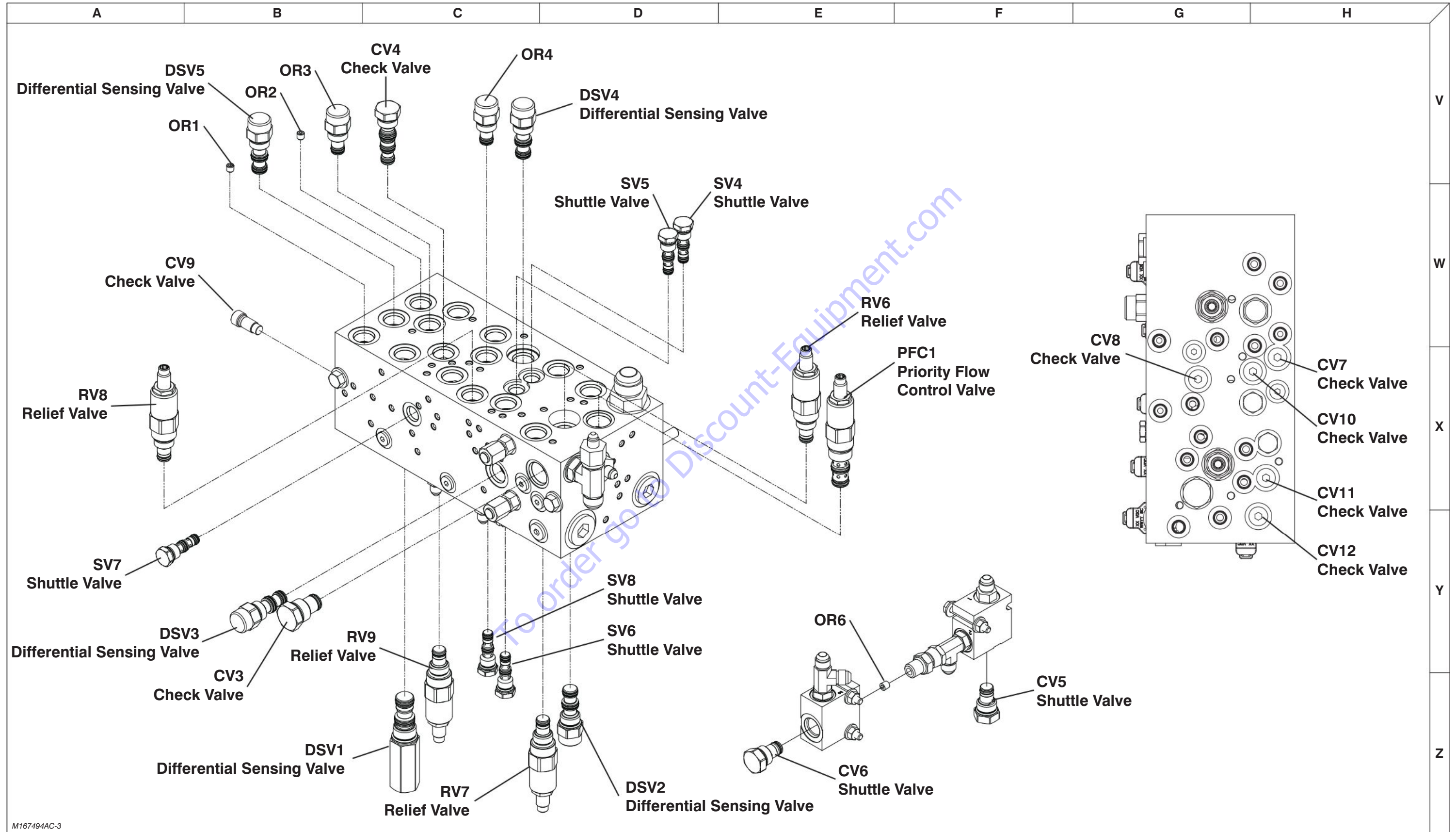
M167494AC-1

3.13 Main Manifold Electrical Components



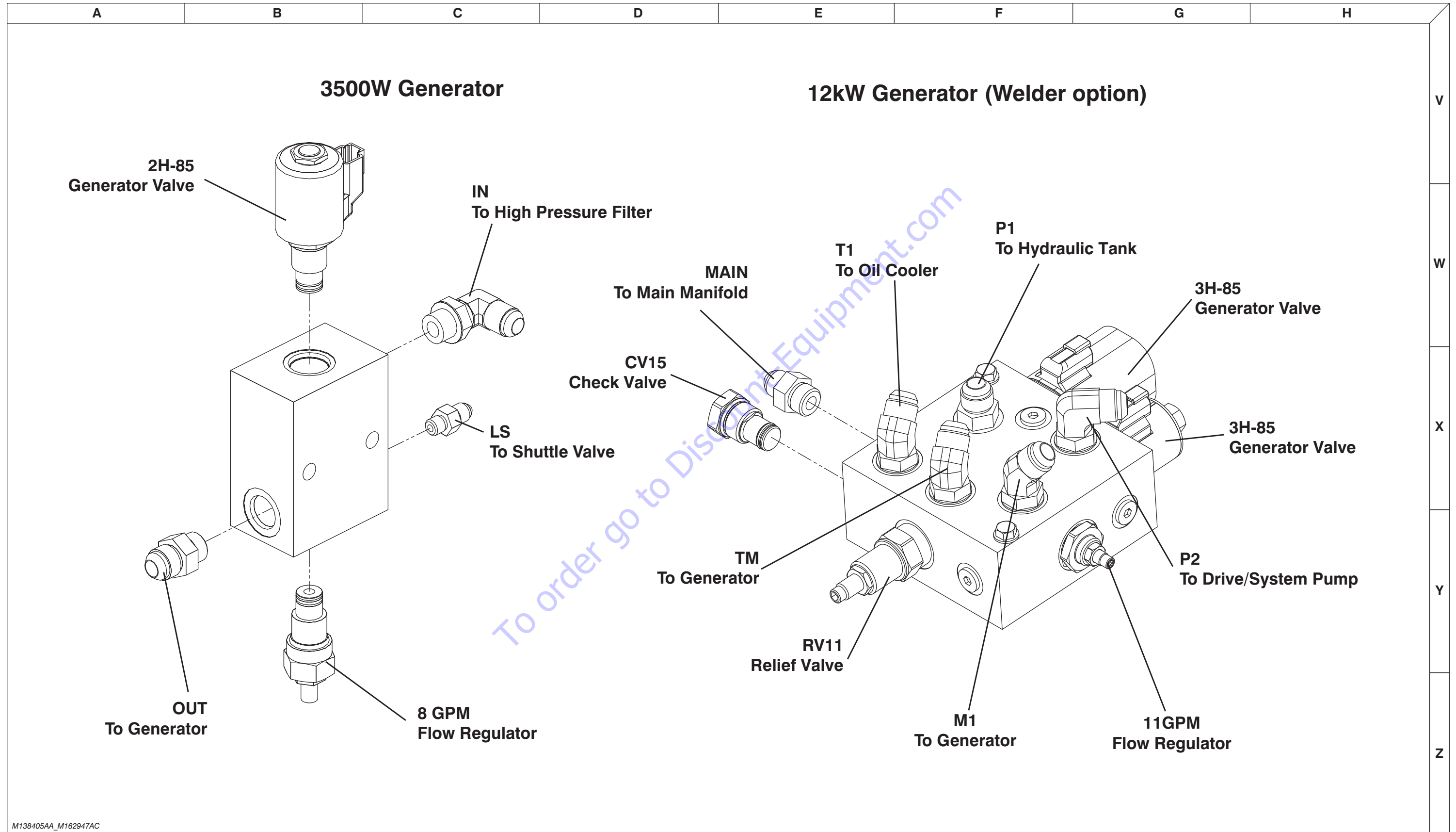
M167494AC-2

3.13 Main Manifold Hydraulic Components



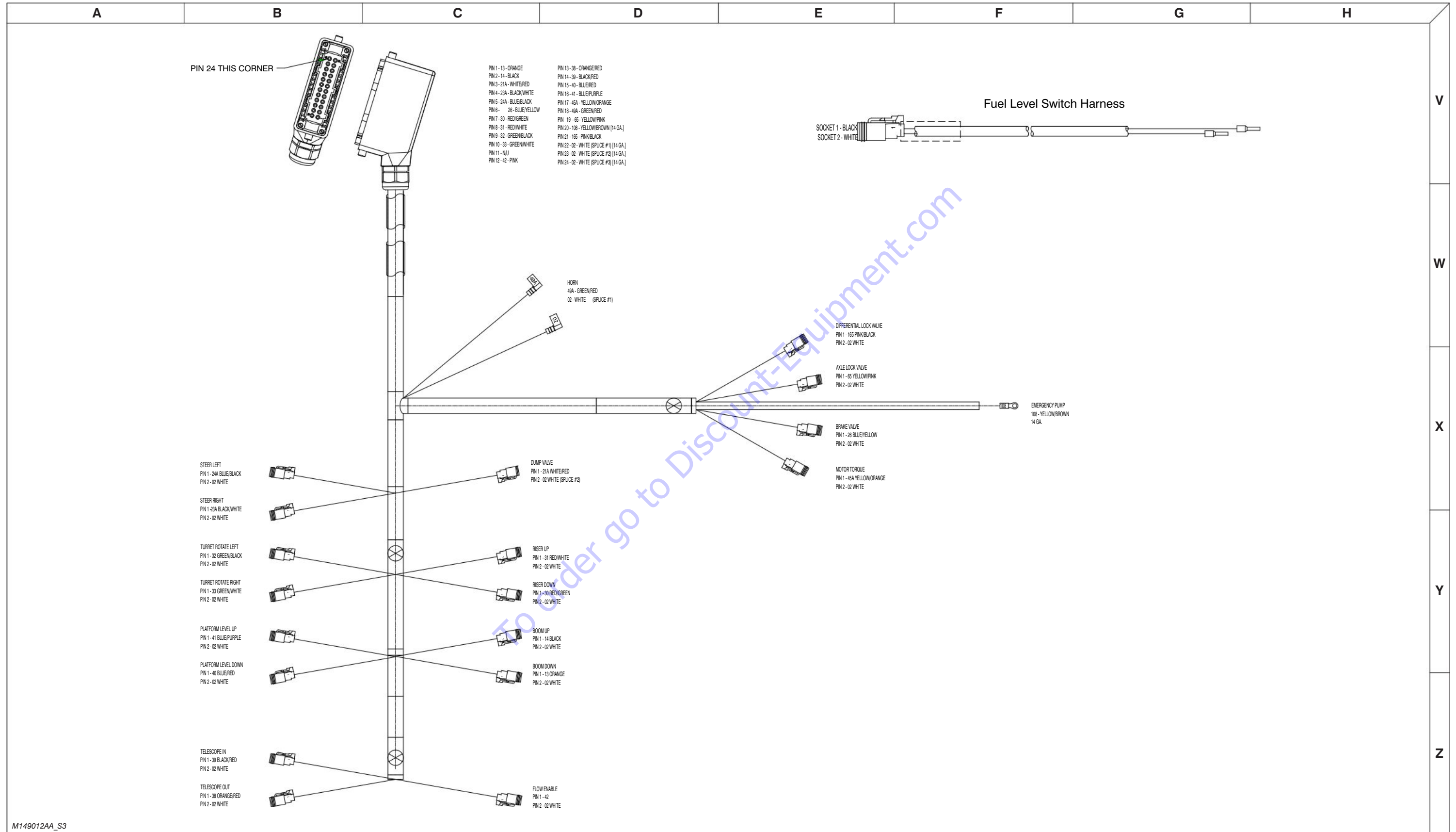
M167494AC-3

3.14 Generator Control Valve and Manifold



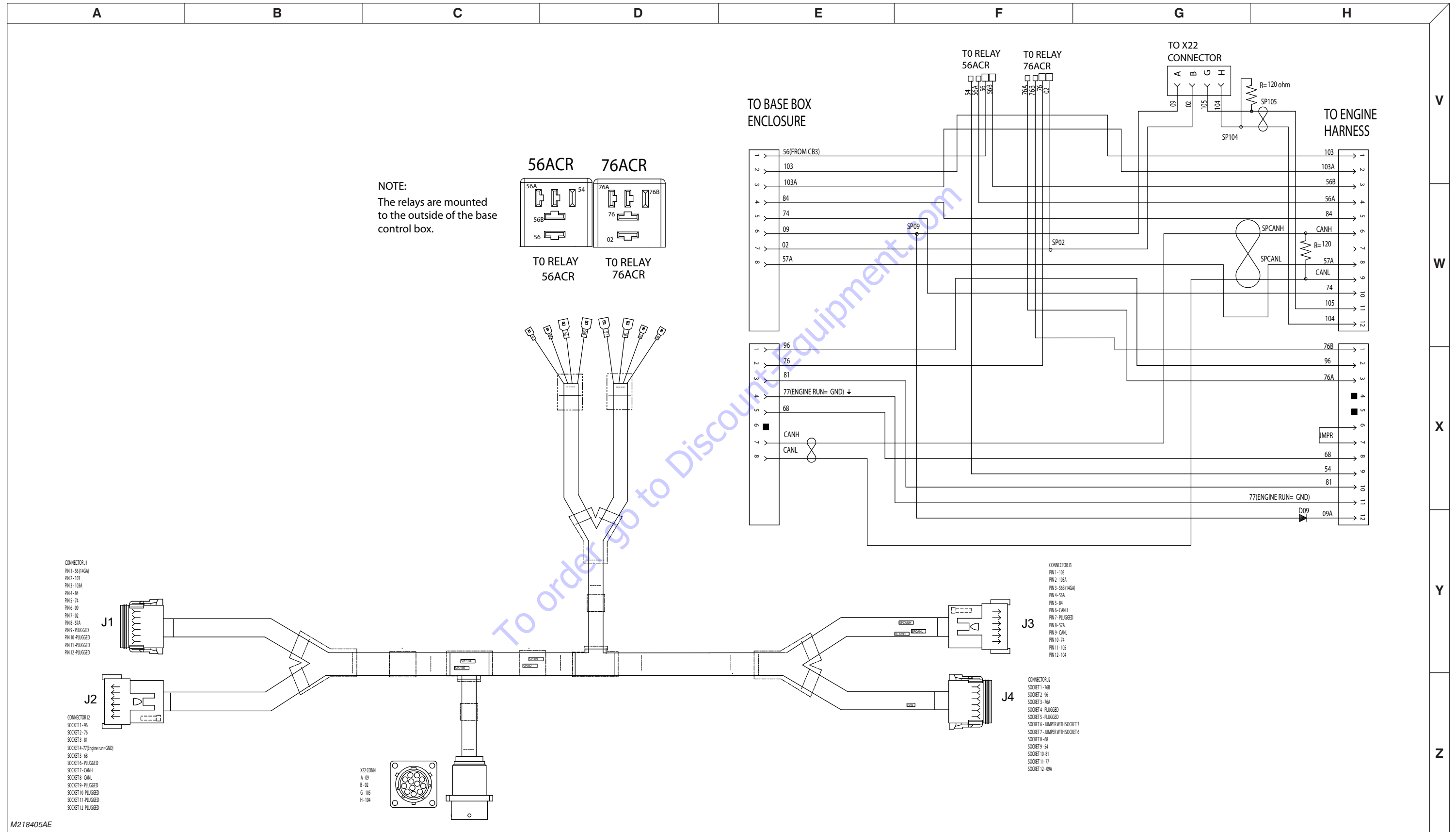
M138405AA_M162947AC

3.15 Main Harness and Fuel Level Switch Harness



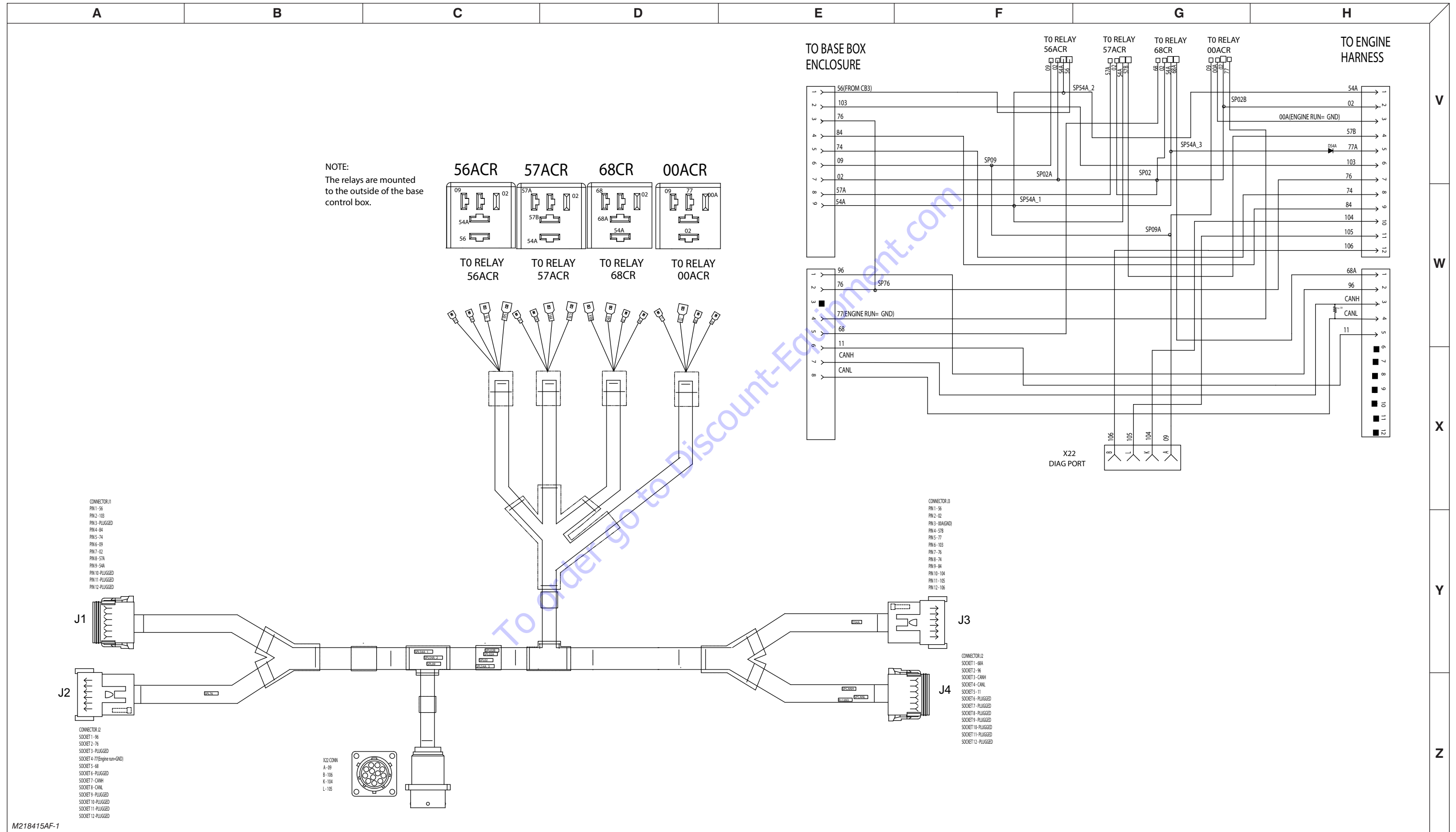
M149012AA_S3

3.16 Interface Harness - Deutz D2.9L



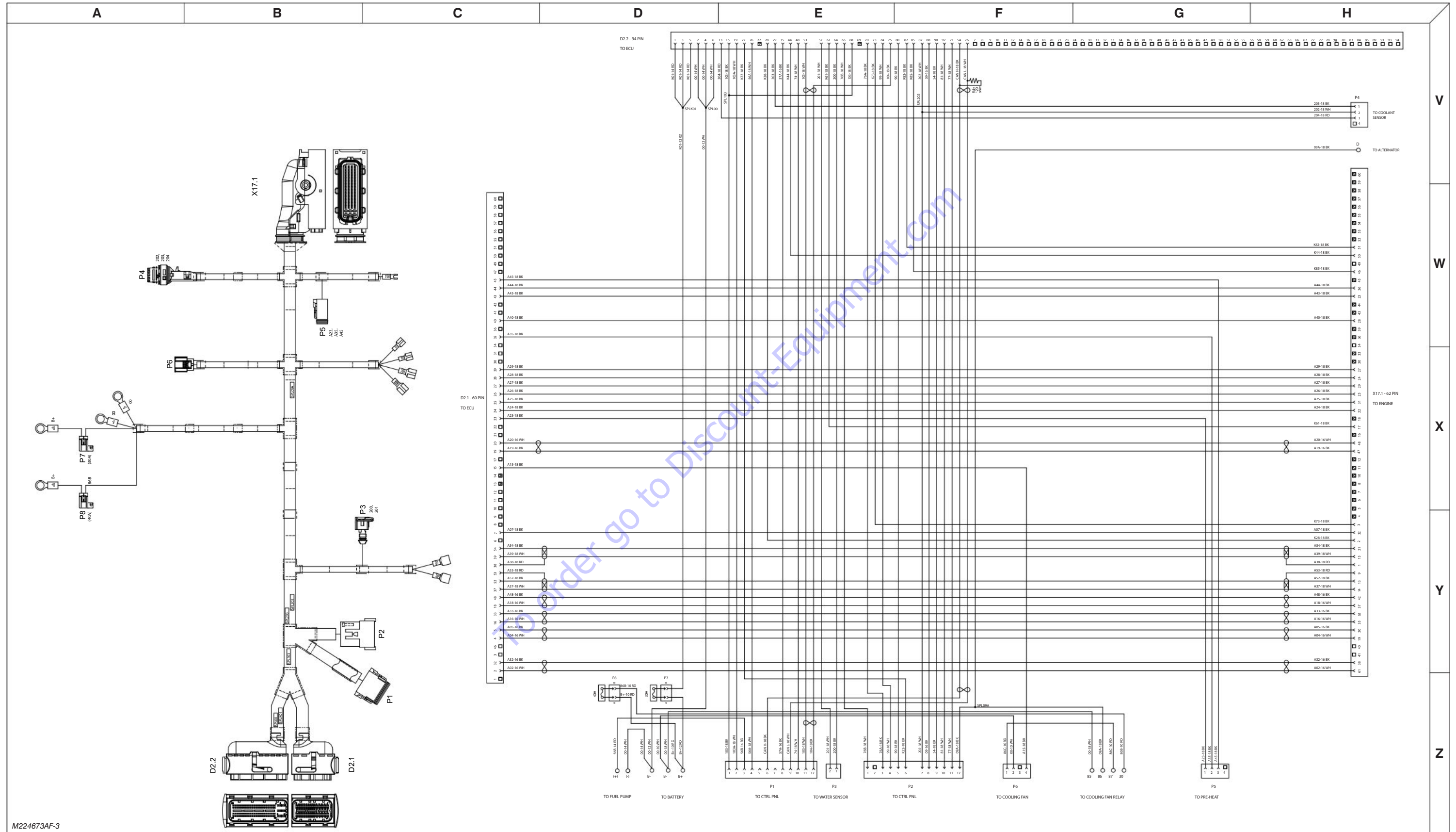
M218405AE

3.17 Interface Harness - Deutz D2011



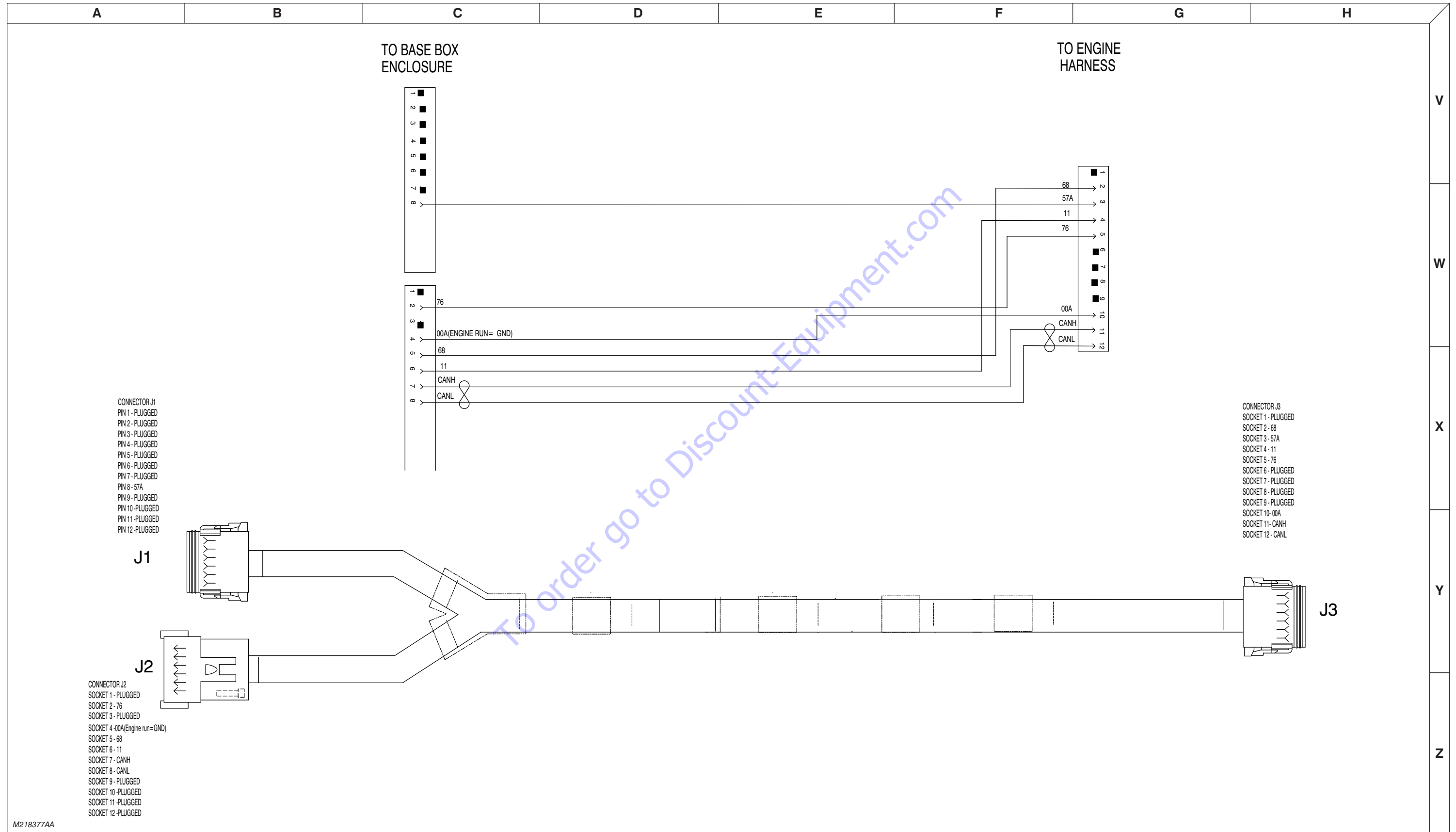
M218415AF-1

3.18 Engine Interface Harness - Deutz D2.2



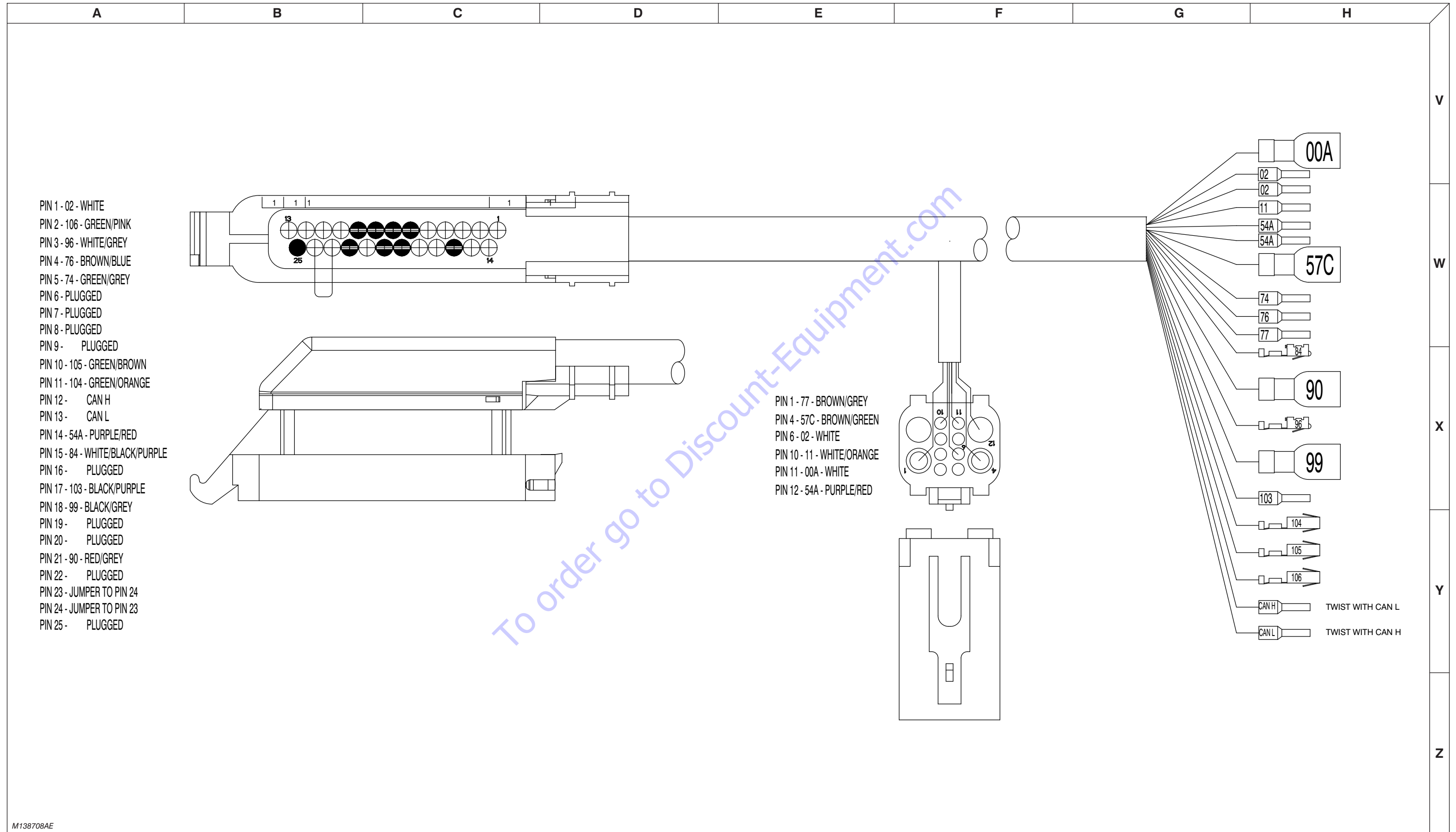
M224673AF-3

3.19 Interface Harness - Kubota



M218377AA

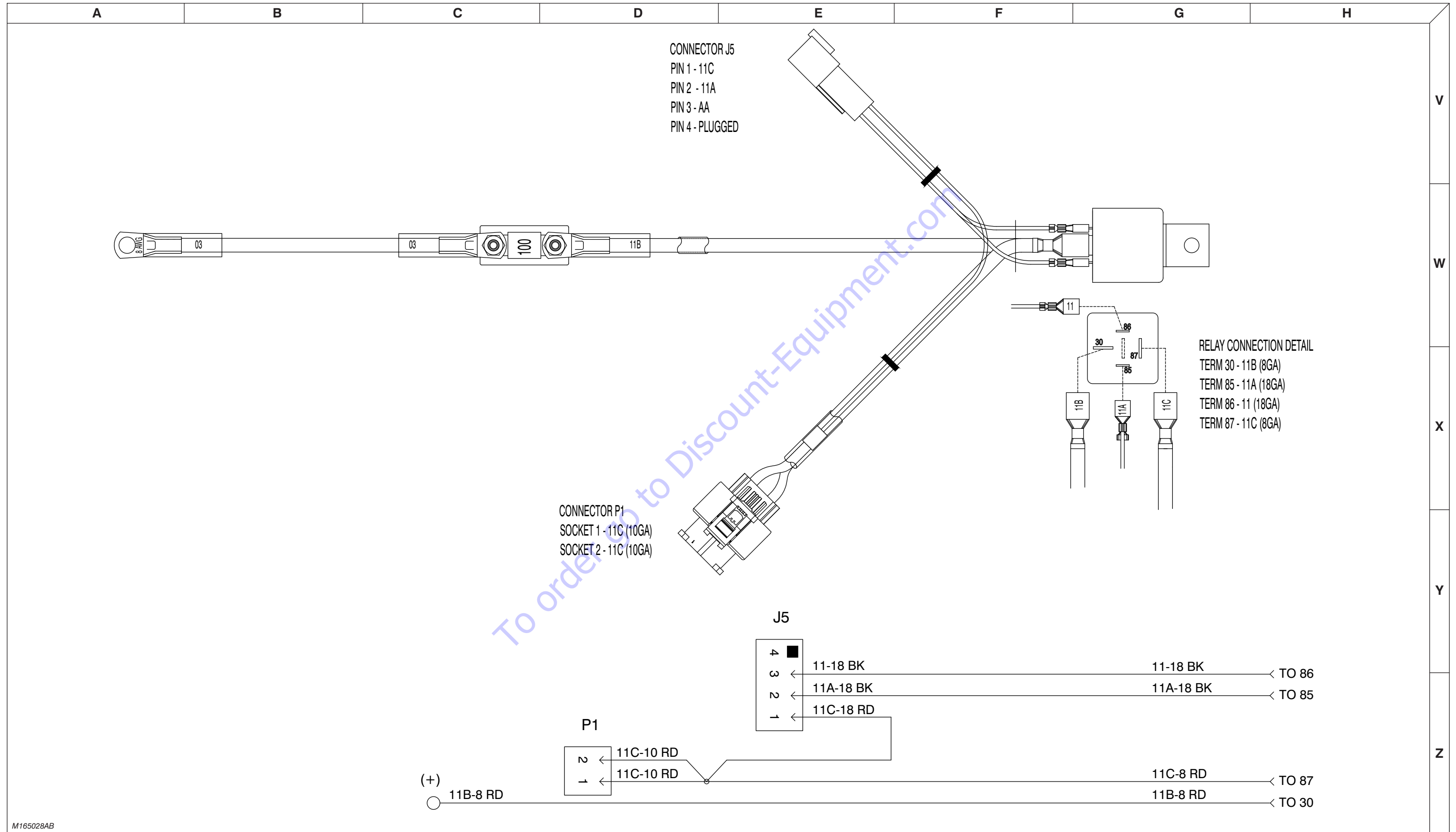
3.20 ECU Engine Wiring Diagram - Deutz D2011



To order go to Discount-Equipment.com

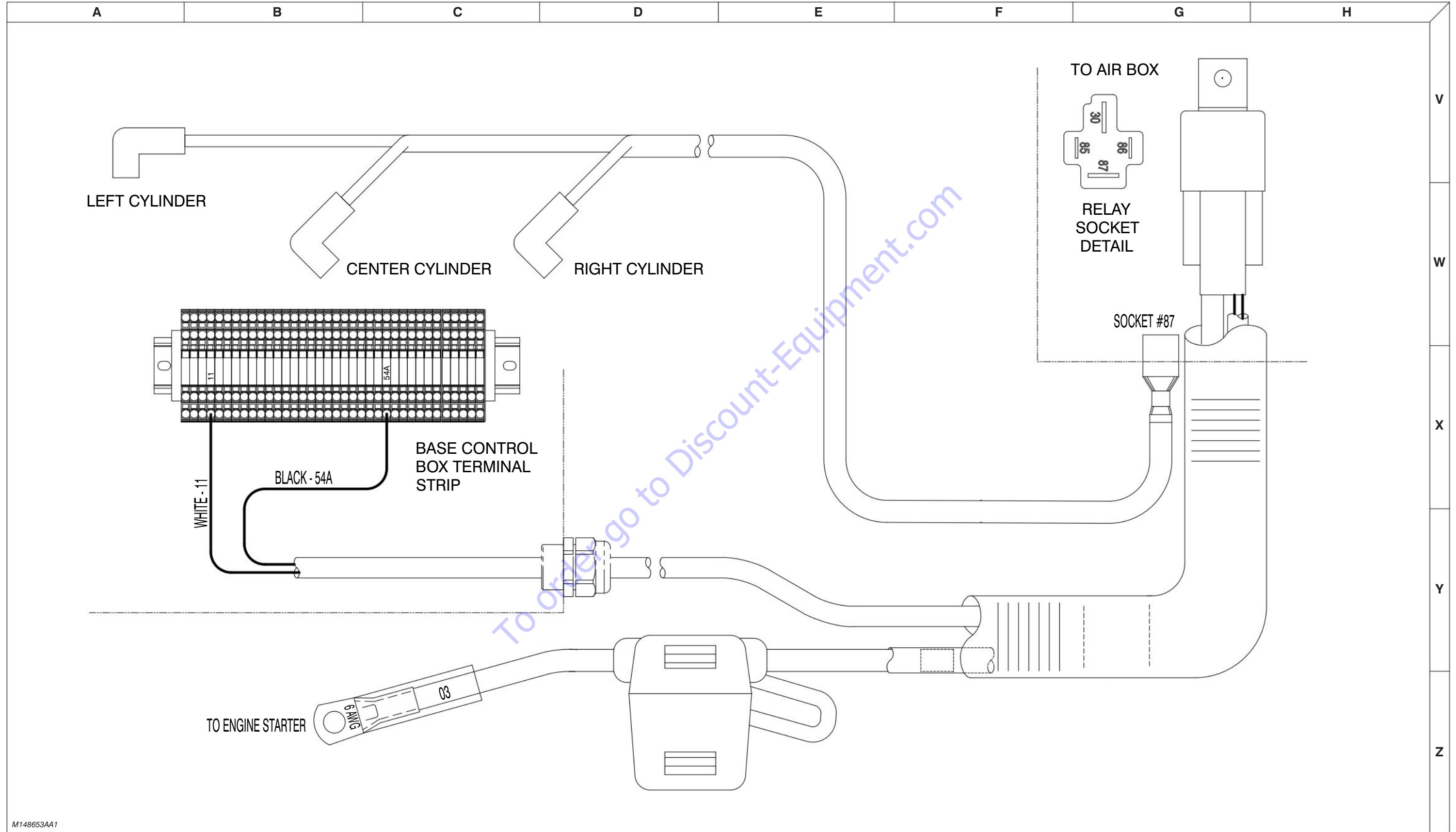
M138708AE

3.21 Glow Plug Harnesses - Deutz D2.9L



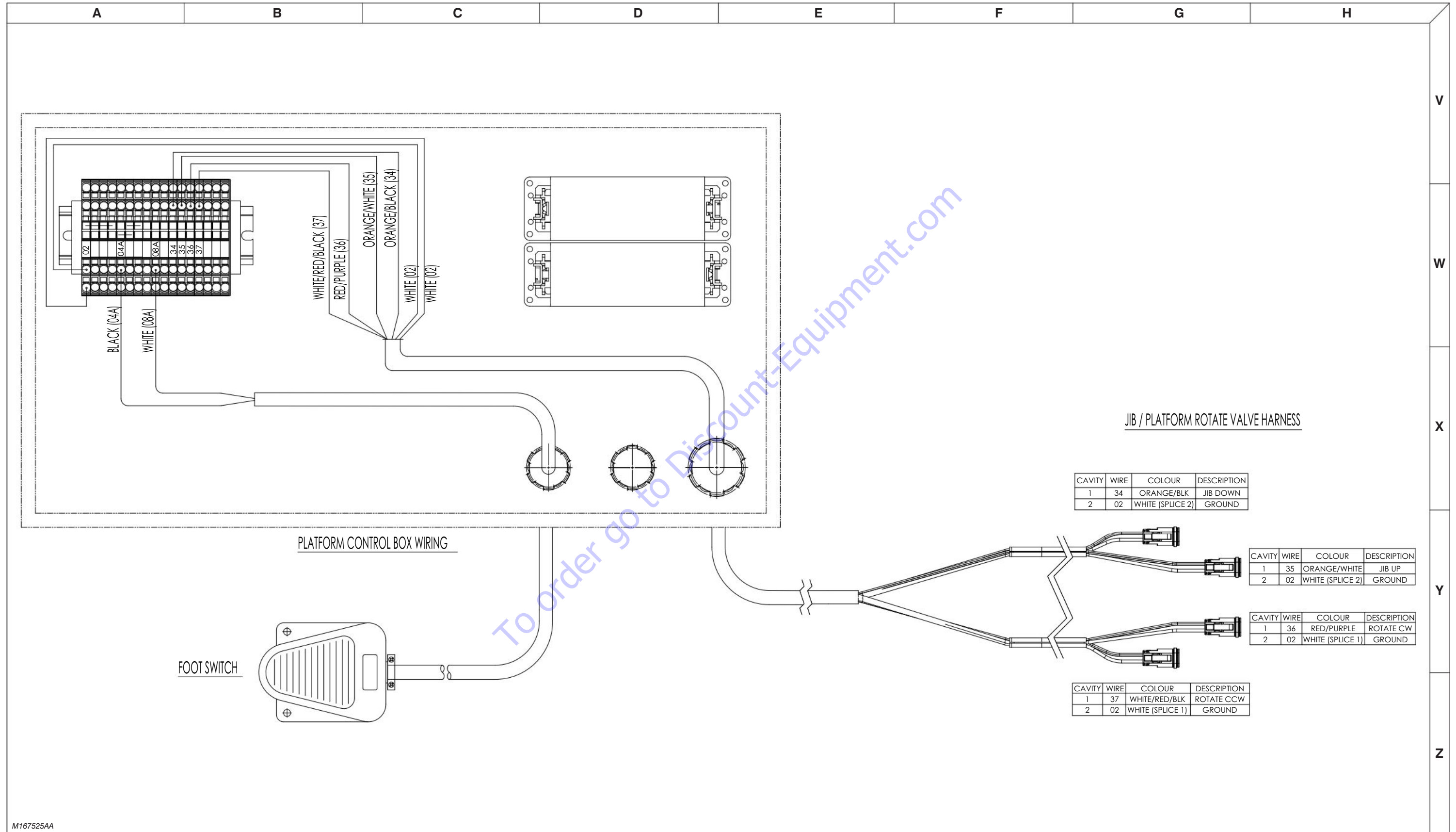
M165028AB

3.22 Glow Plug Harnesses - Deutz D2011



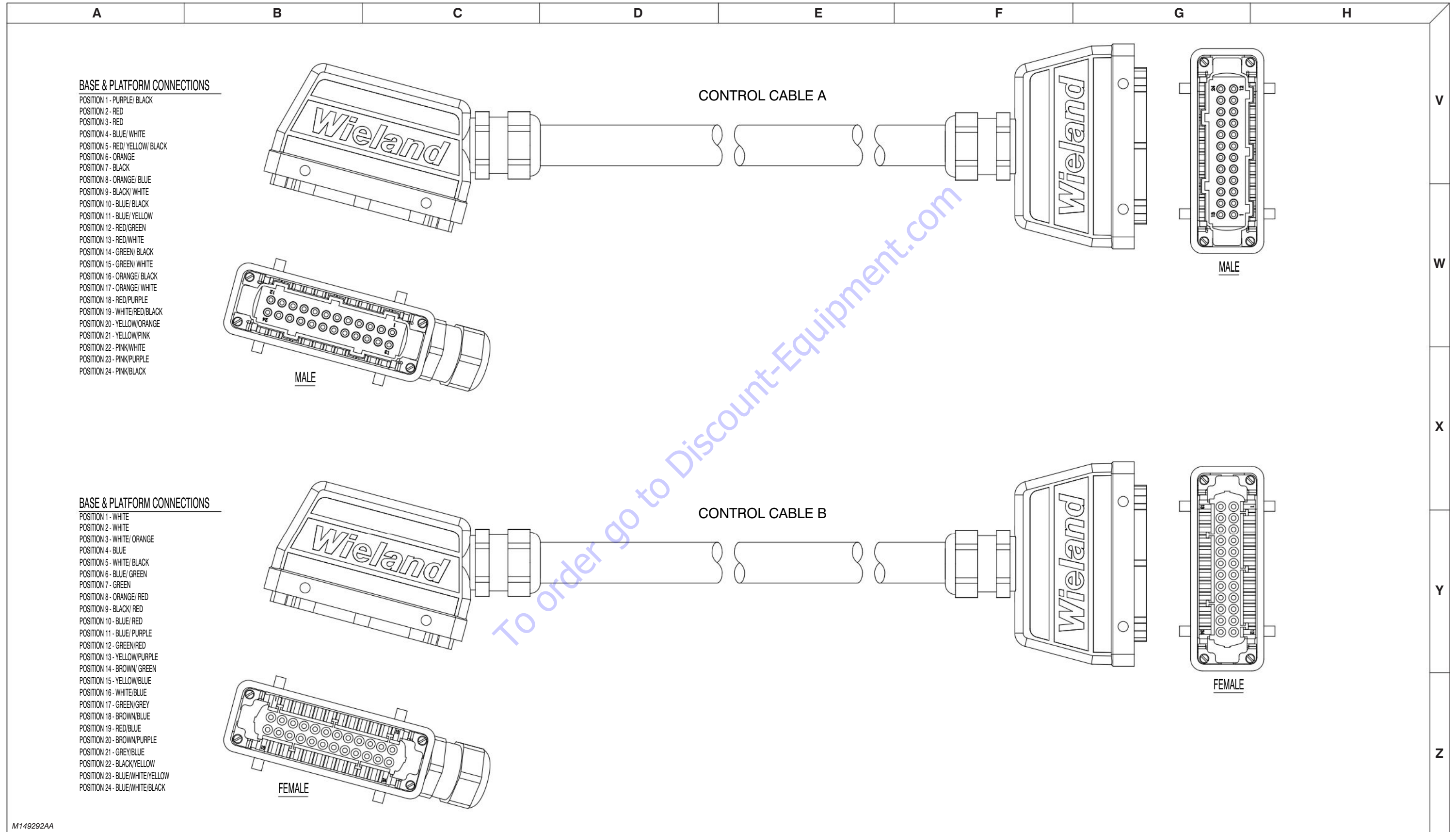
M148653AA1

3.23 Platform Harnesses



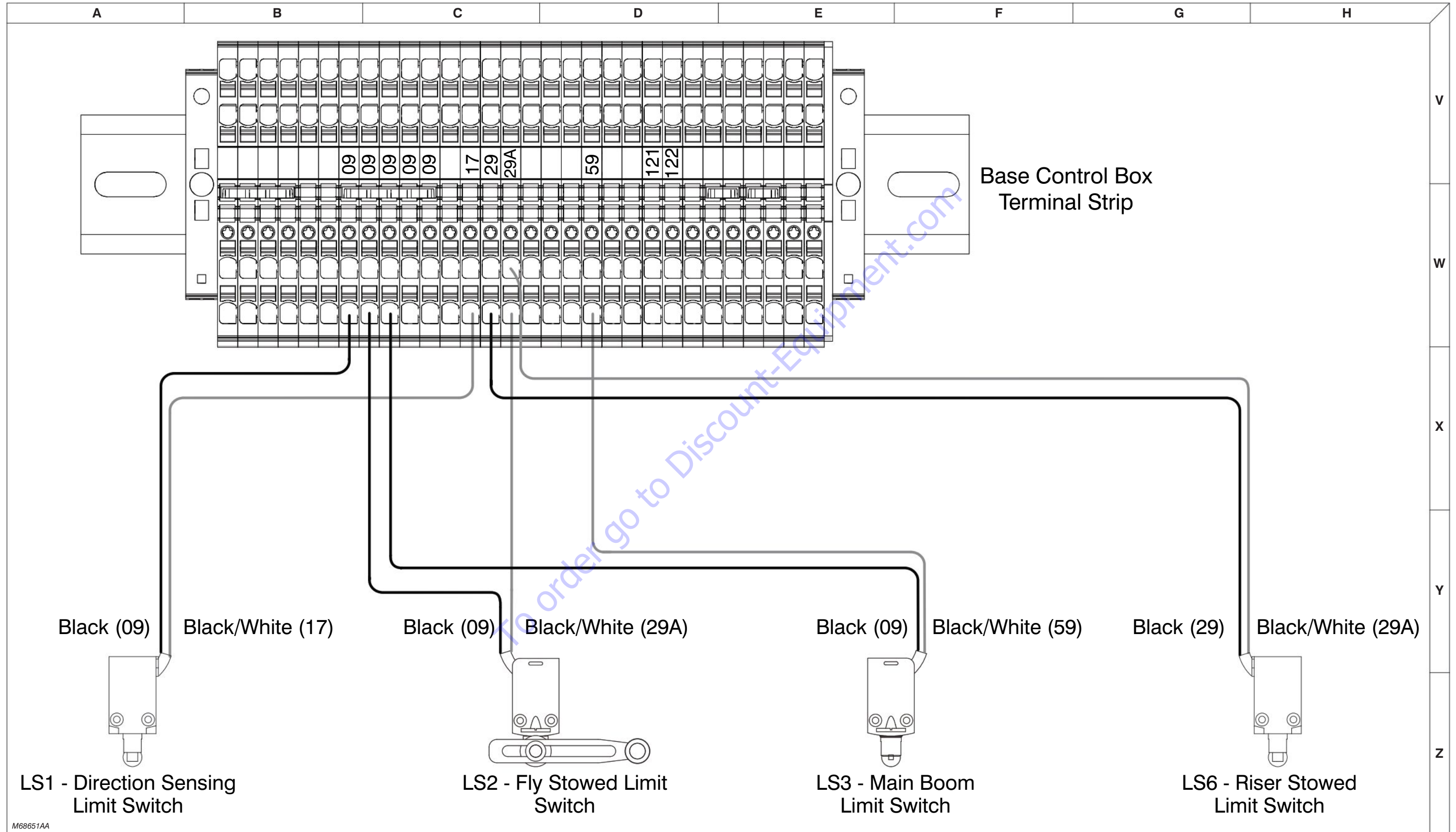
M167525AA

3.24 Platform Control Cables



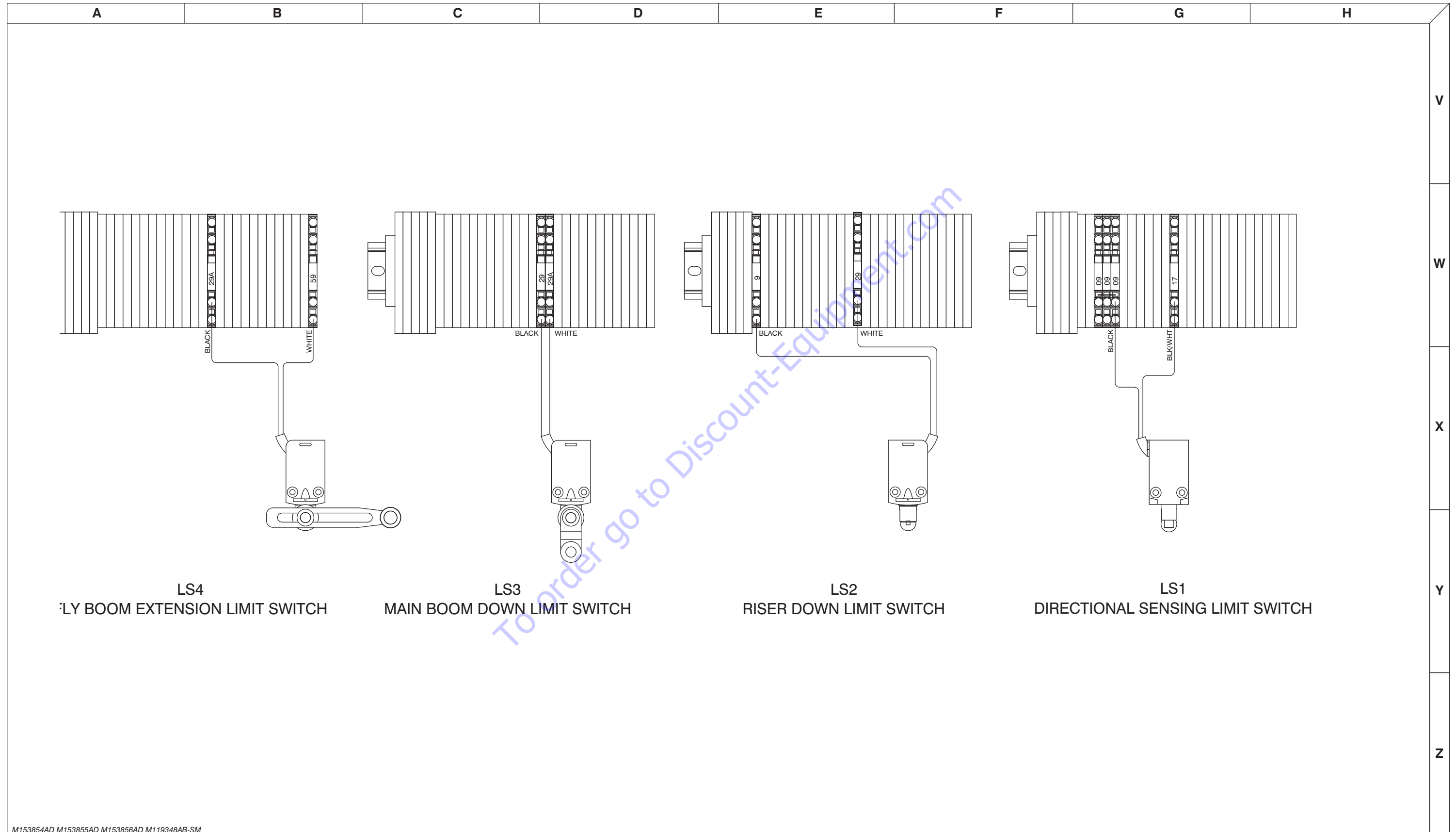
M149292AA

3.25 Limit Switch Connections - ANSI/CSA



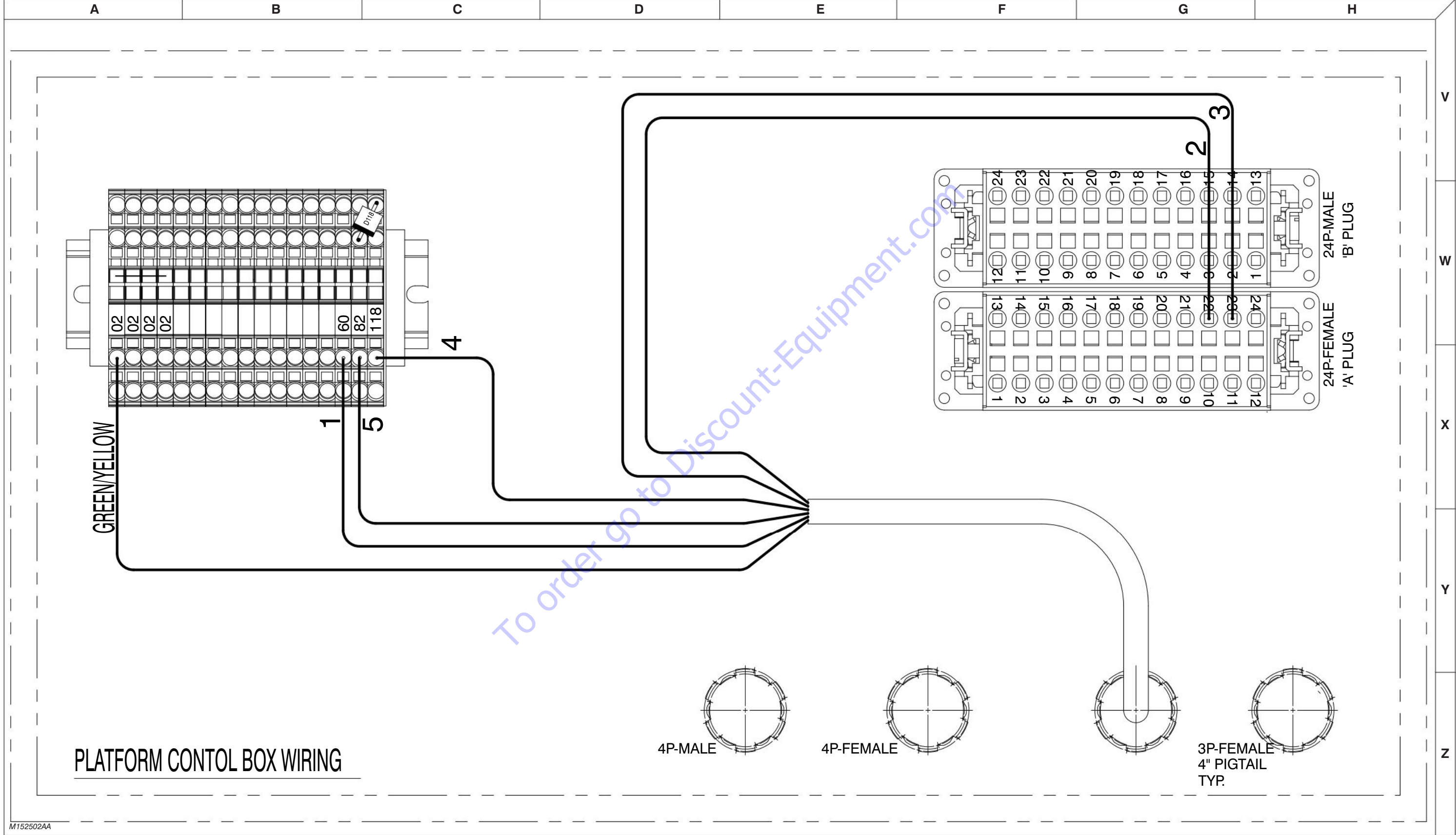
M68651AA

3.26 Limit Switch Connections - CE & AS



M153854AD M153855AD M153856AD M119348AB-SM

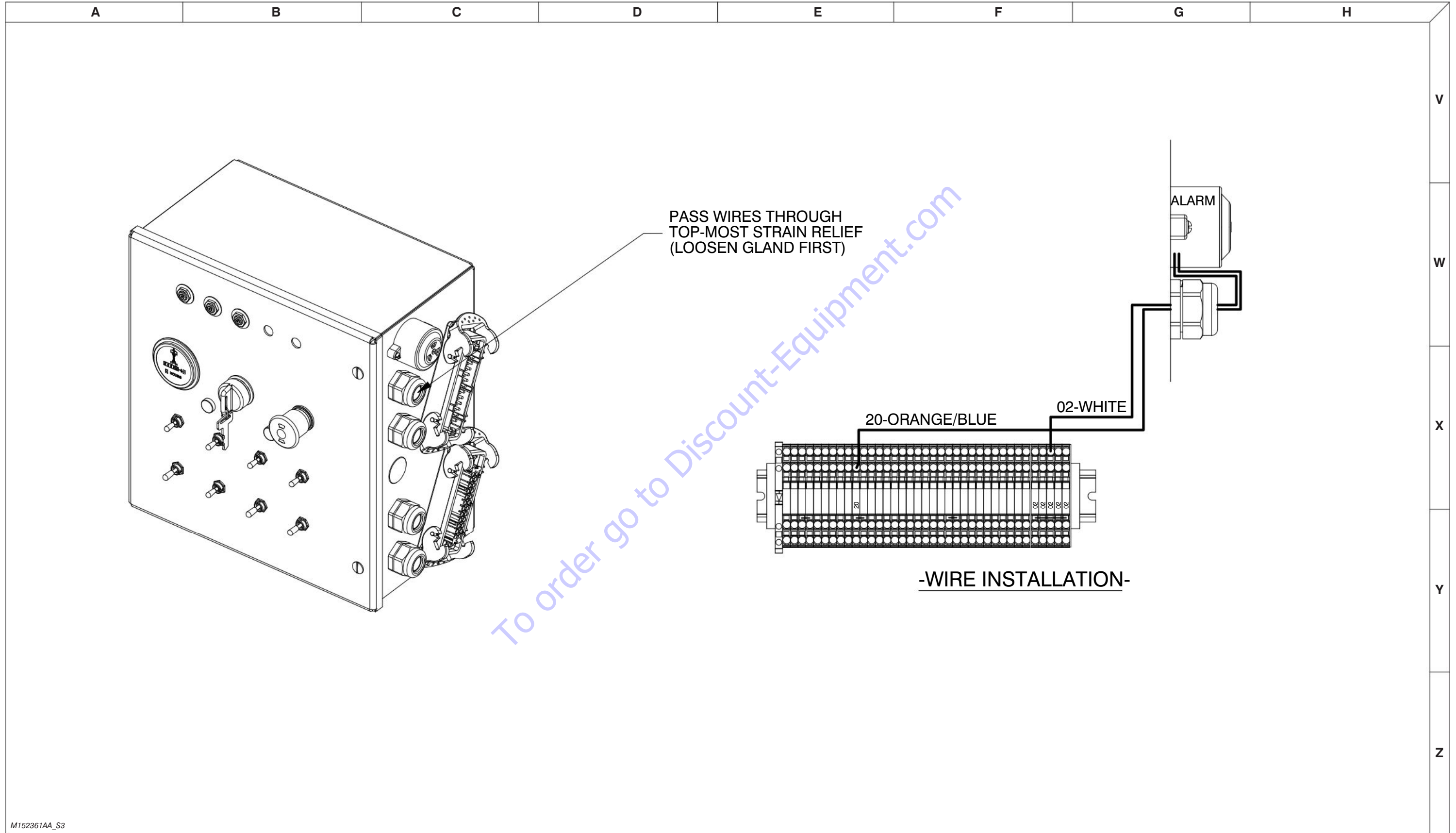
3.27 Load Sensing Cable Connections - CE & AS



PLATFORM CONTROL BOX WIRING

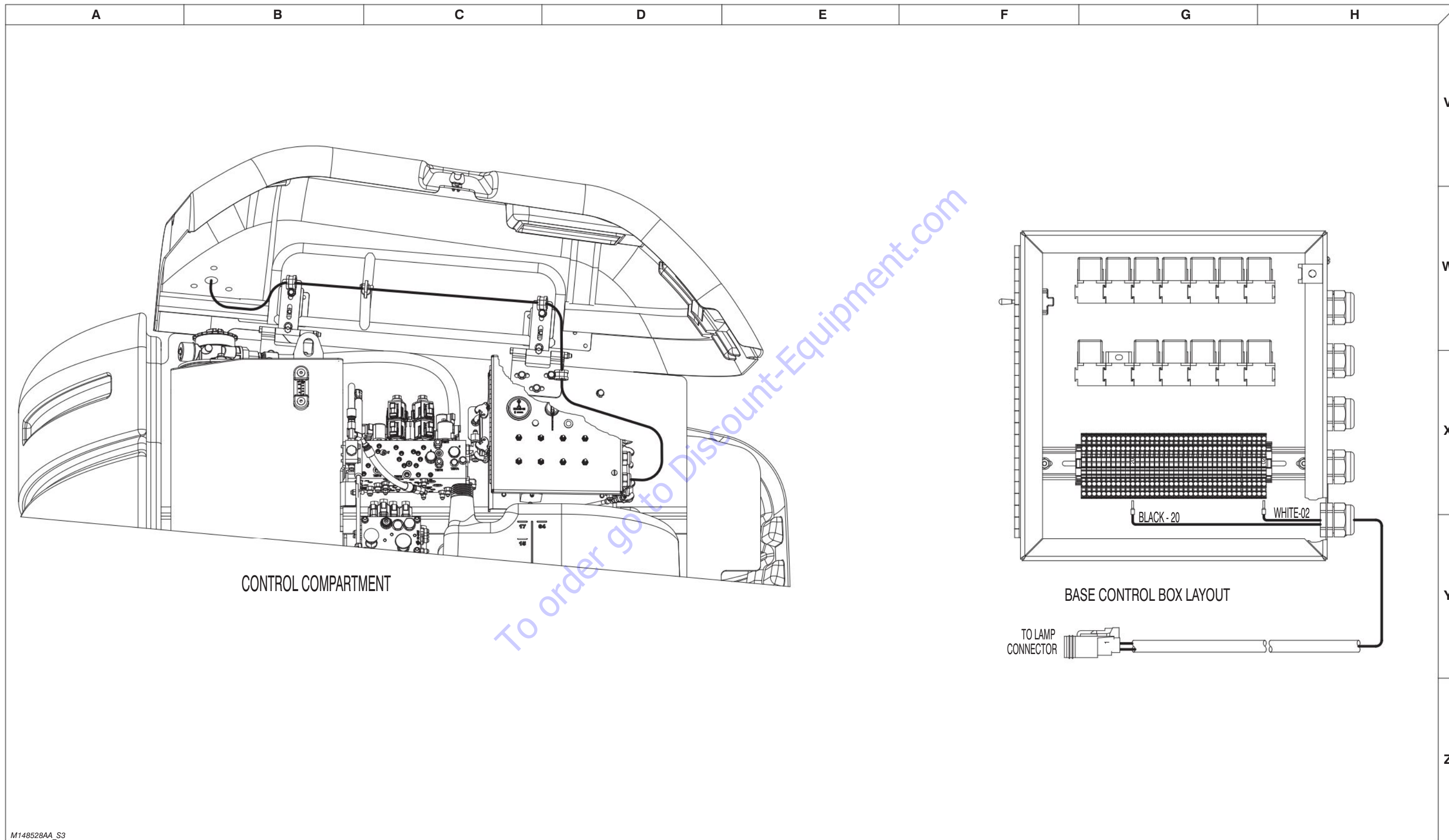
M152502AA

3.28 All Motion Alarm Connections - CE & AS



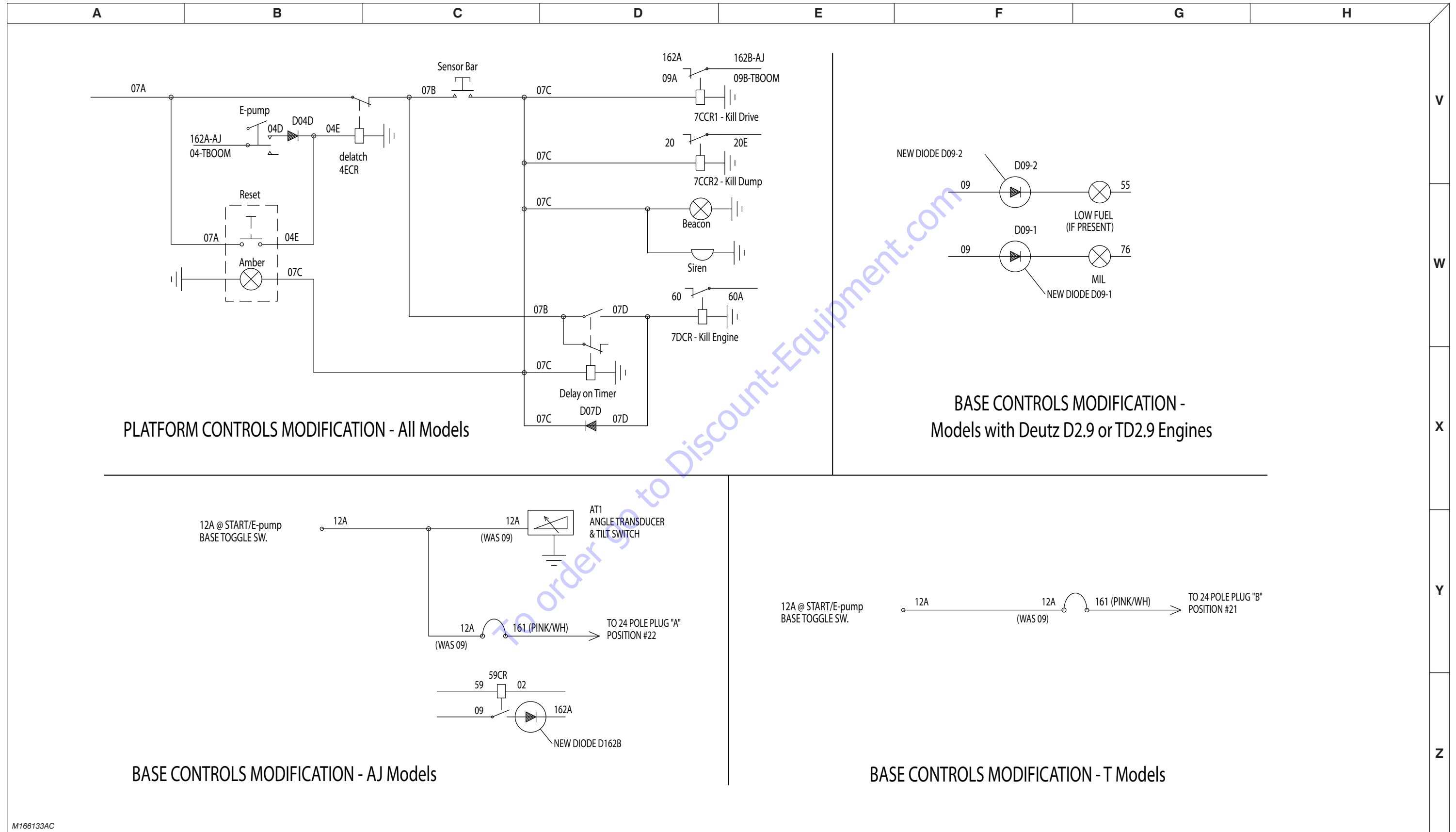
M152361AA_S3

3.29 Flashing Amber Light Connections



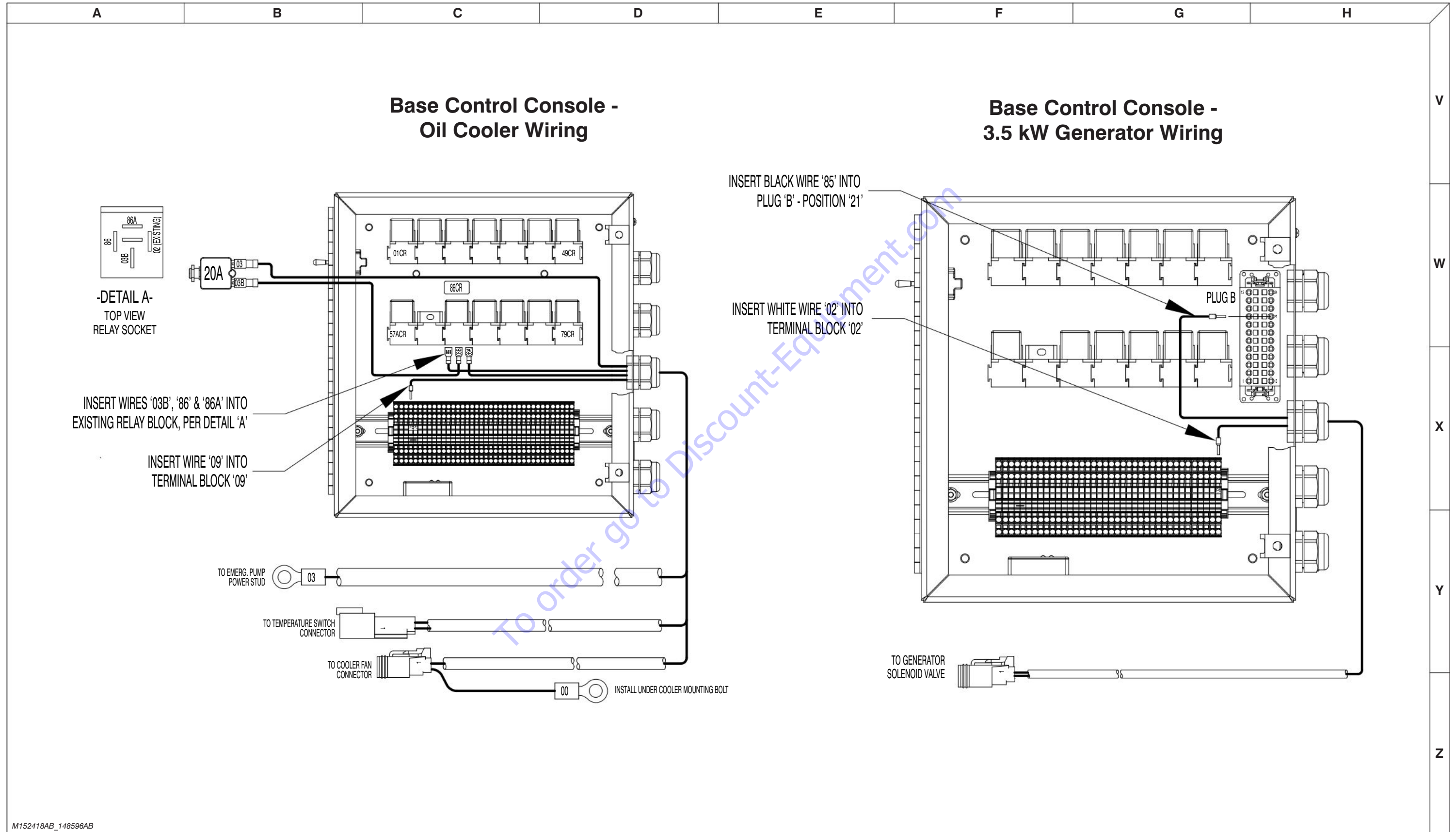
M148528AA_S3

3.30 SGE Wiring Diagram



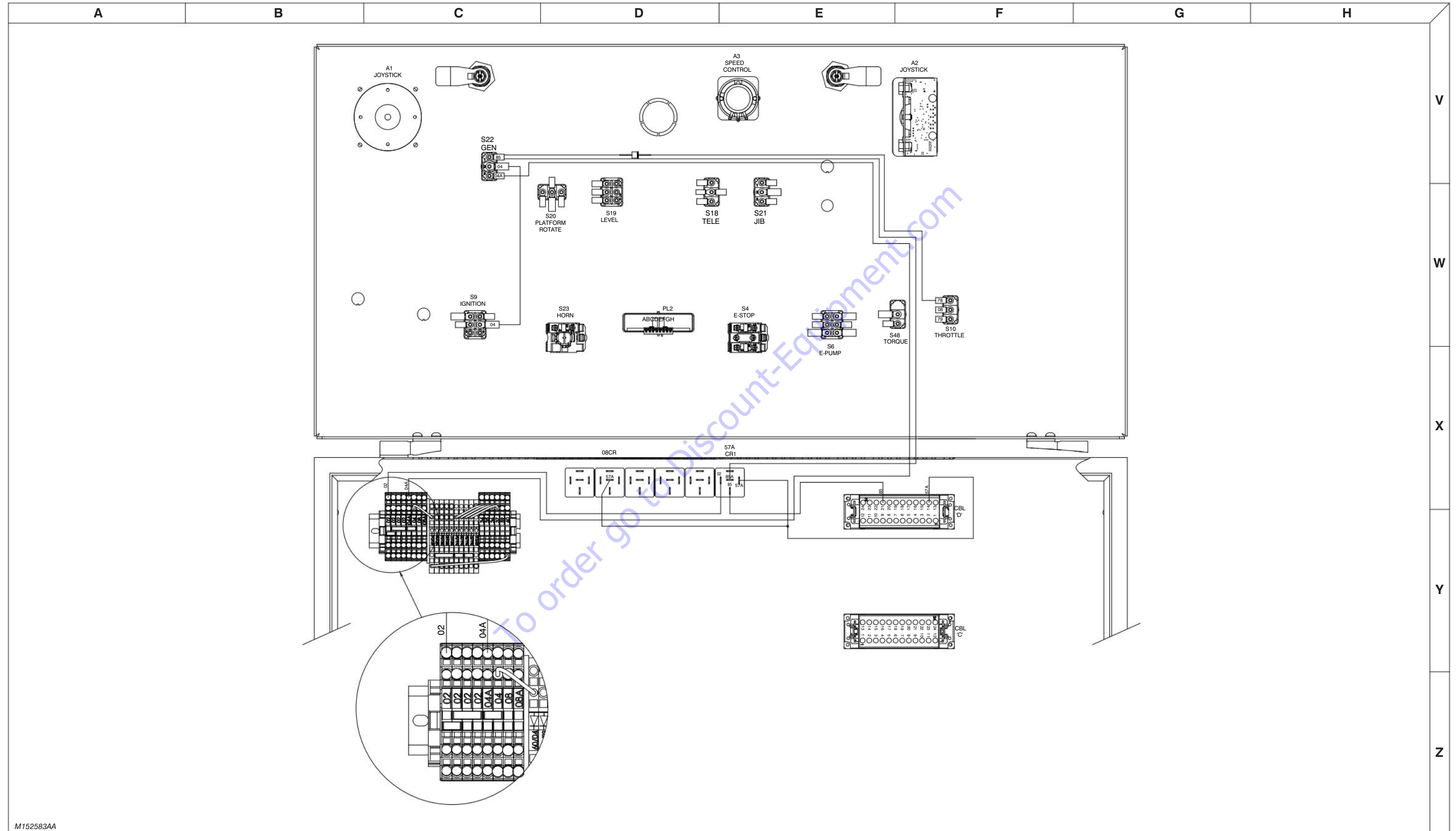
M166133AC

3.31 Oil Cooler and 3.5 kW Generator Base Control Box Wiring



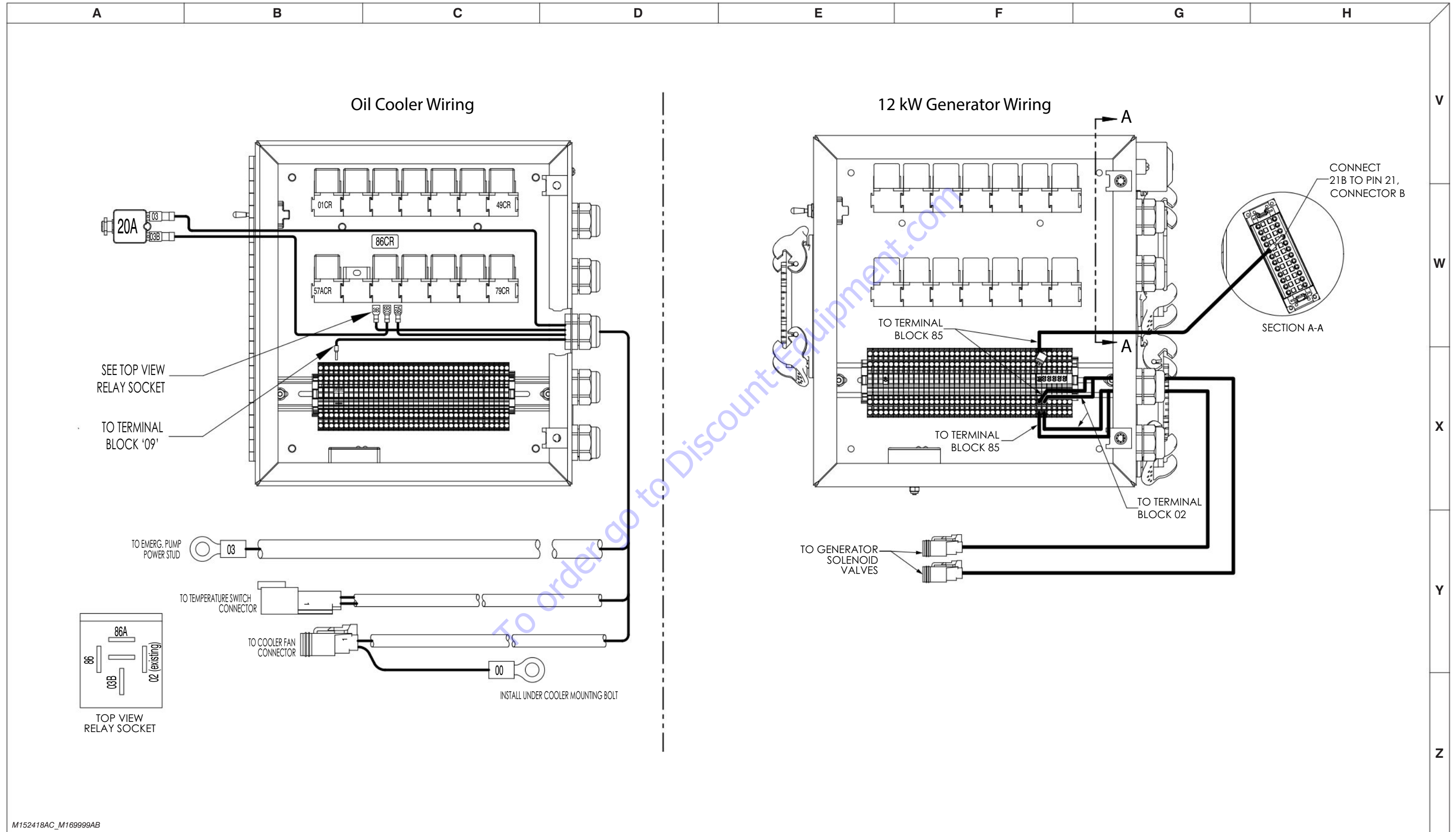
M152418AB_148596AB

3.32 Generator (3.5 kW) Platform Control Box Wiring



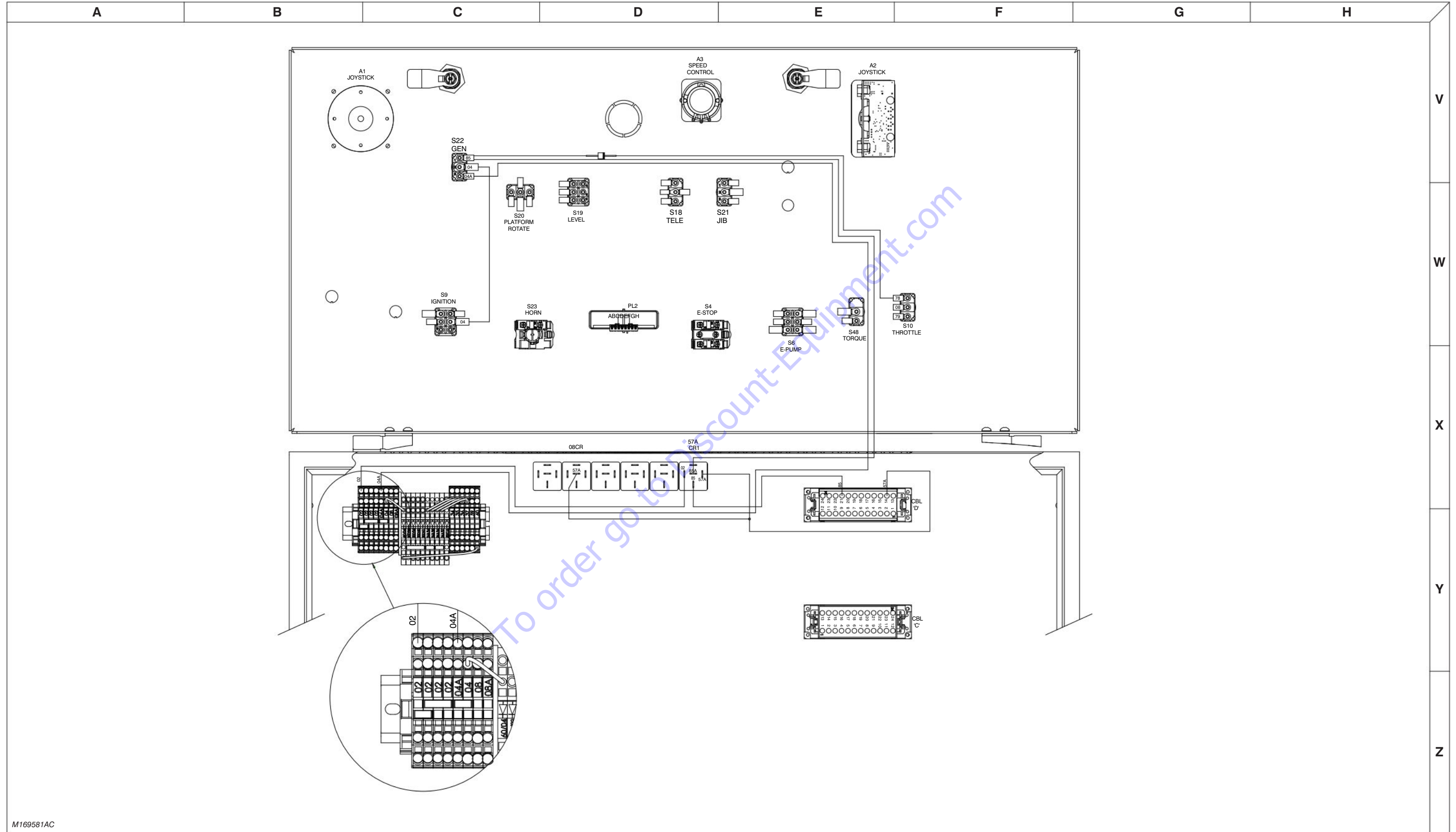
M152583AA

3.33 Oil Cooler and 12 kW Generator Base Control Box Wiring



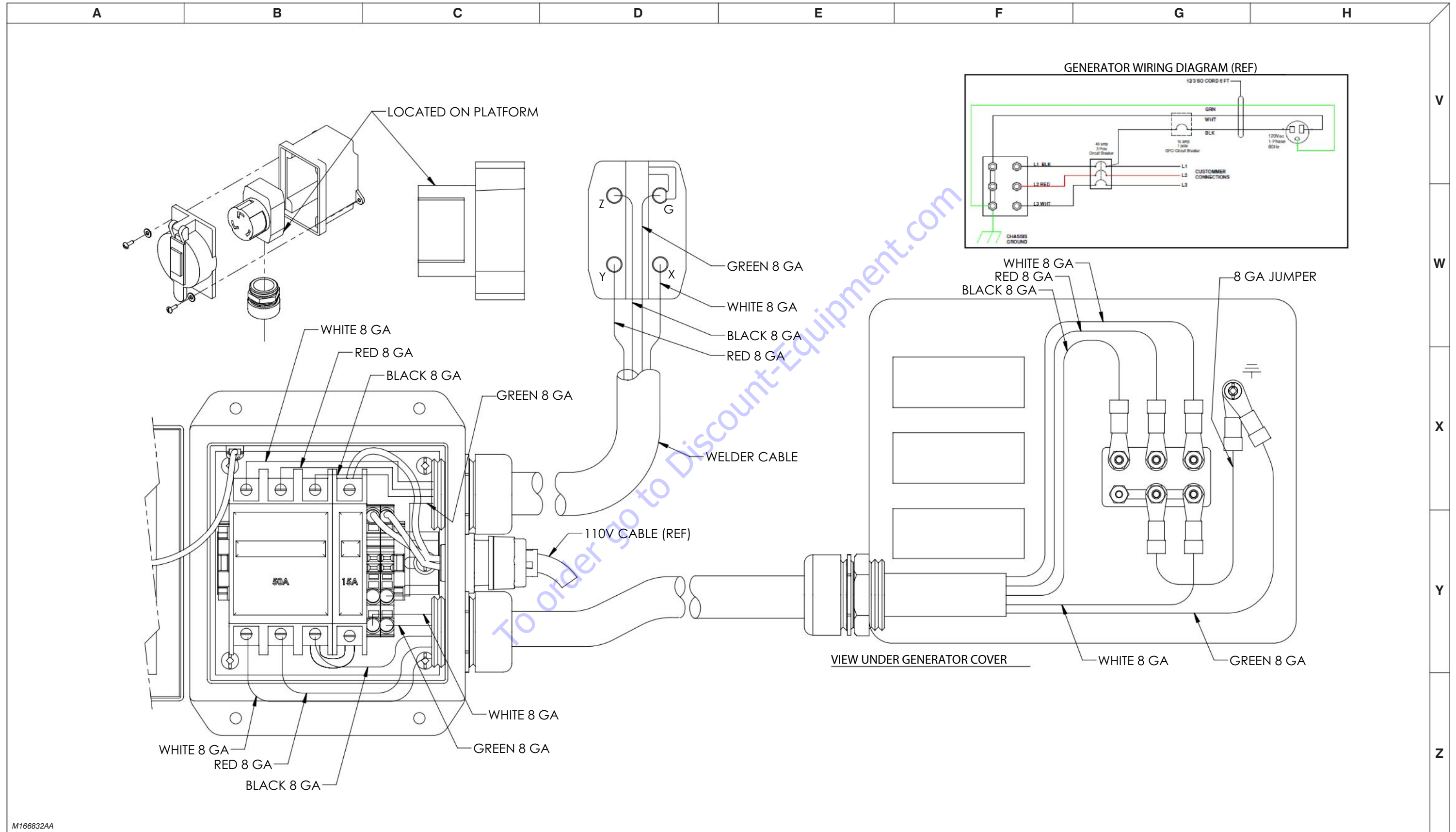
M152418AC_M169999AB

3.34 Generator (12 kW) Platform Control Box Wiring



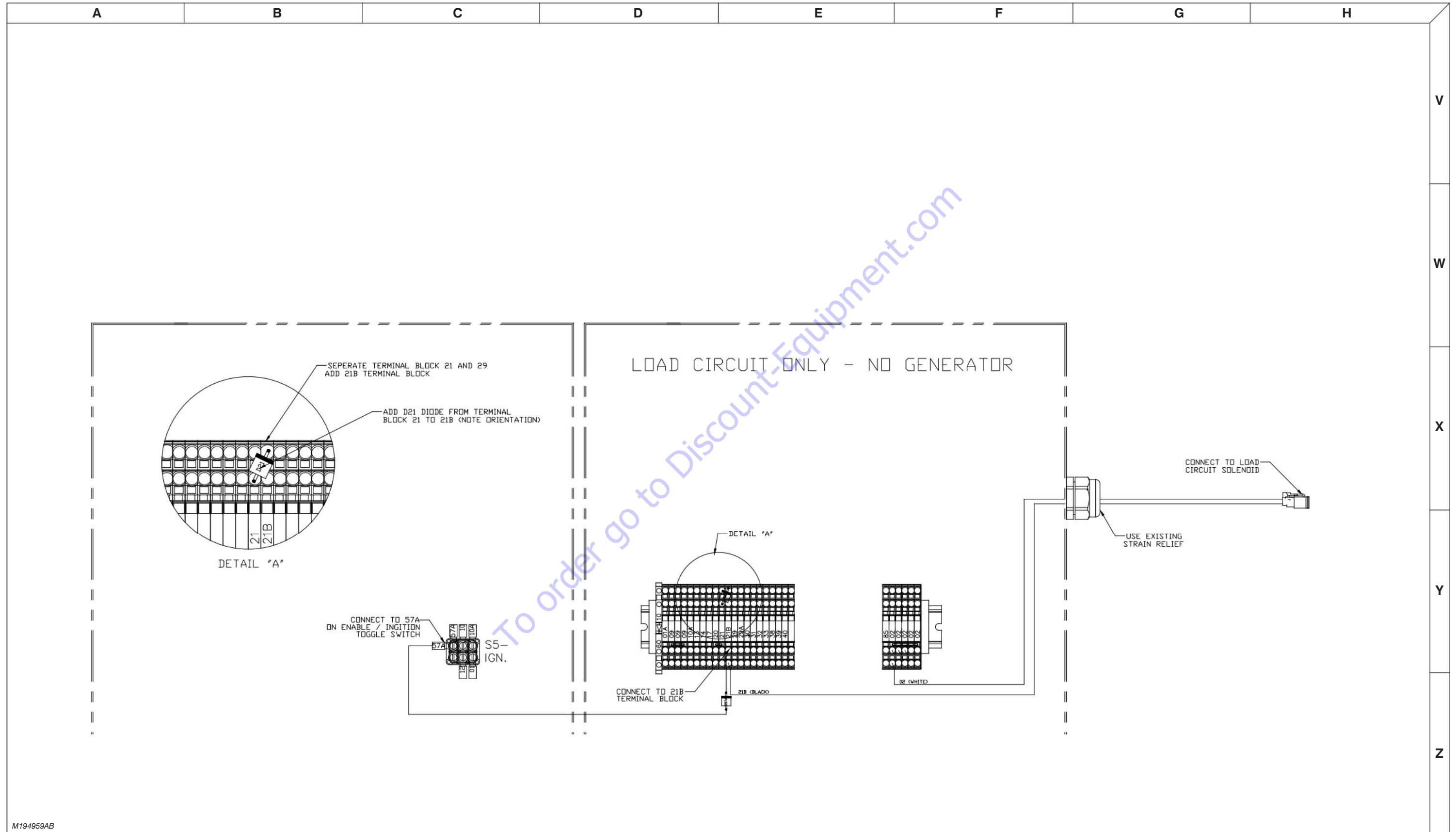
M169581AC

3.35 12kW Generator Electrical Connections



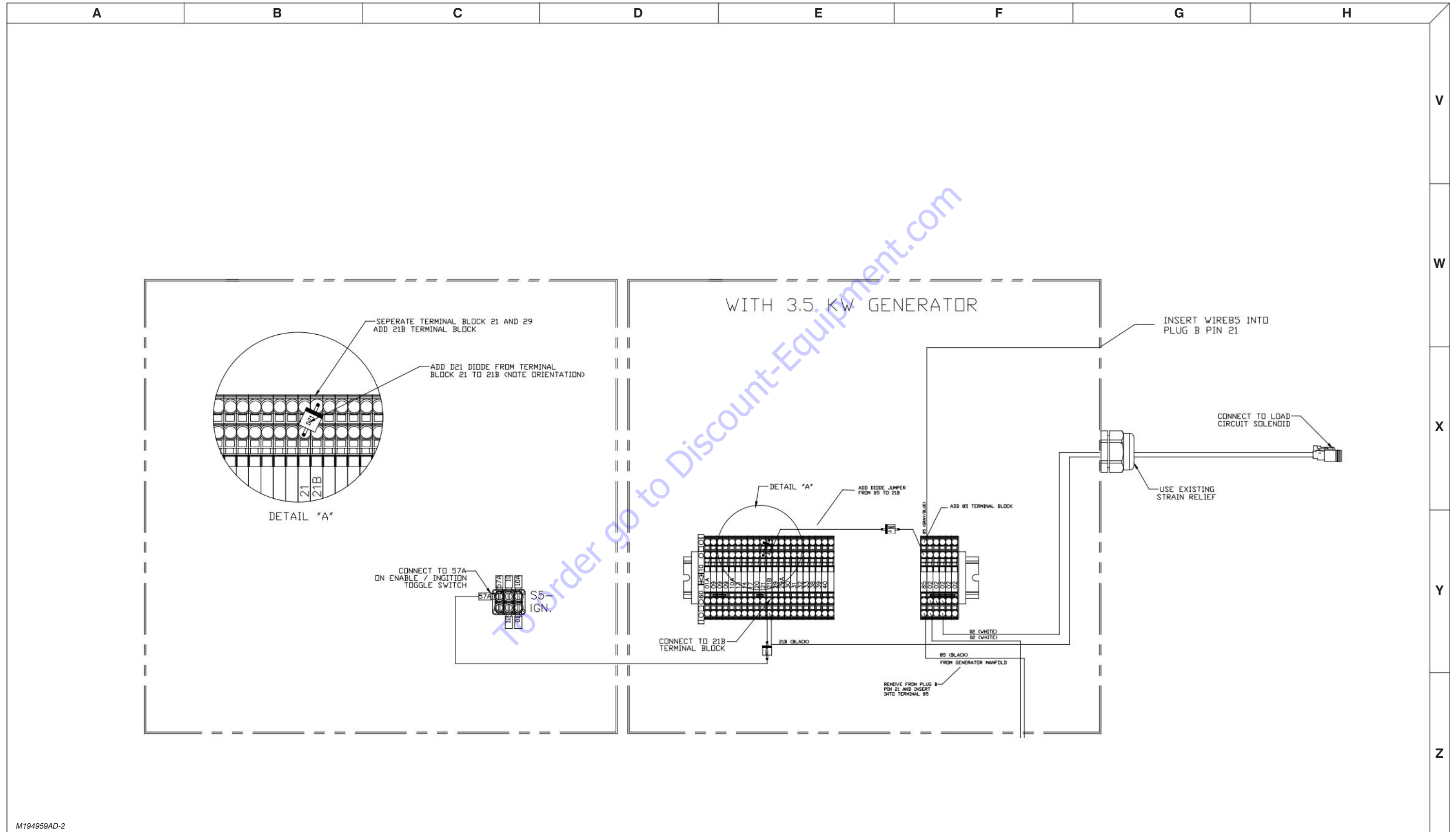
M166832AA

3.36 Load Circuit Wiring - No Generator



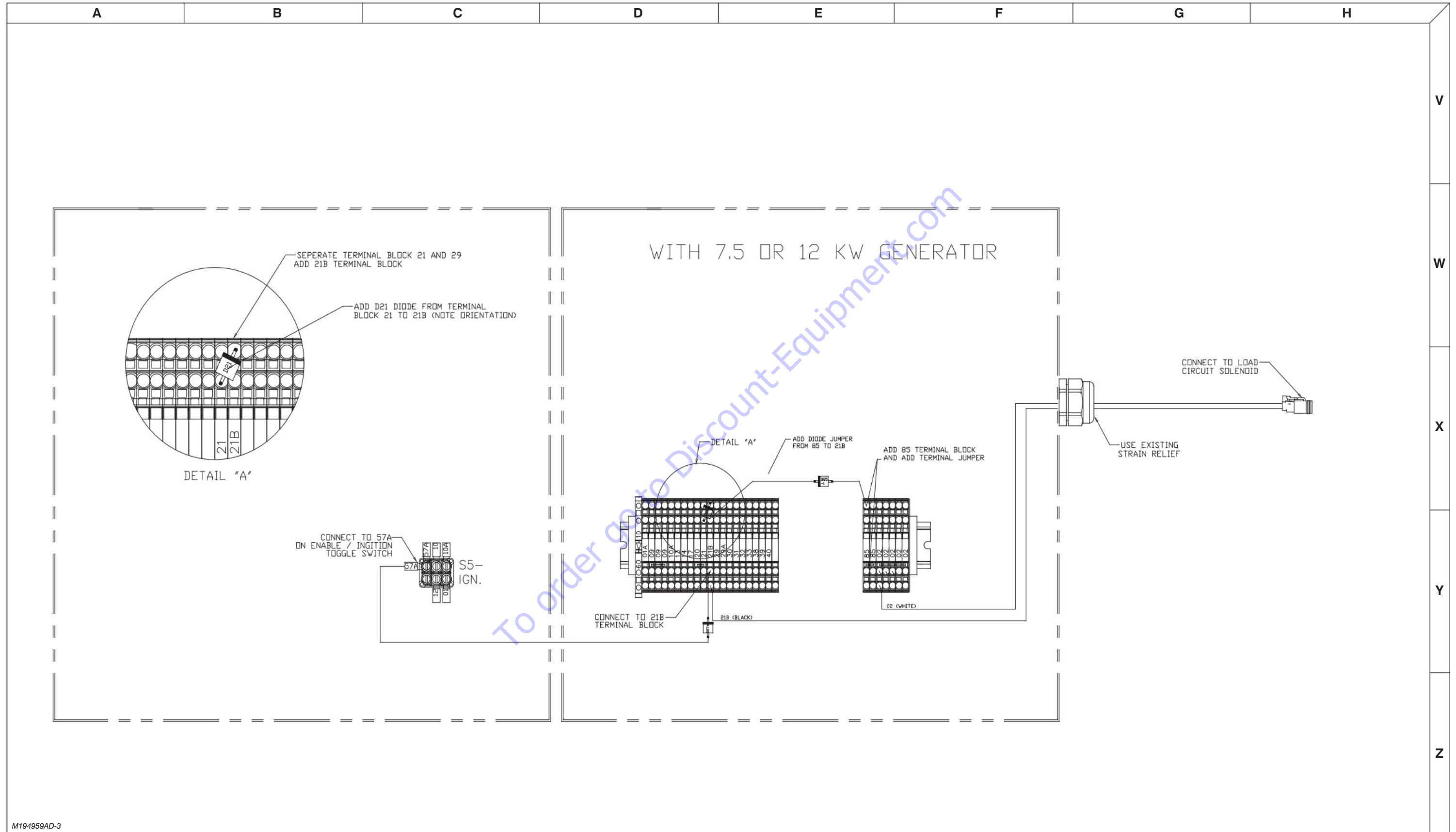
M194959AB

3.37 Load Circuit Wiring - 3.5 kW Generator

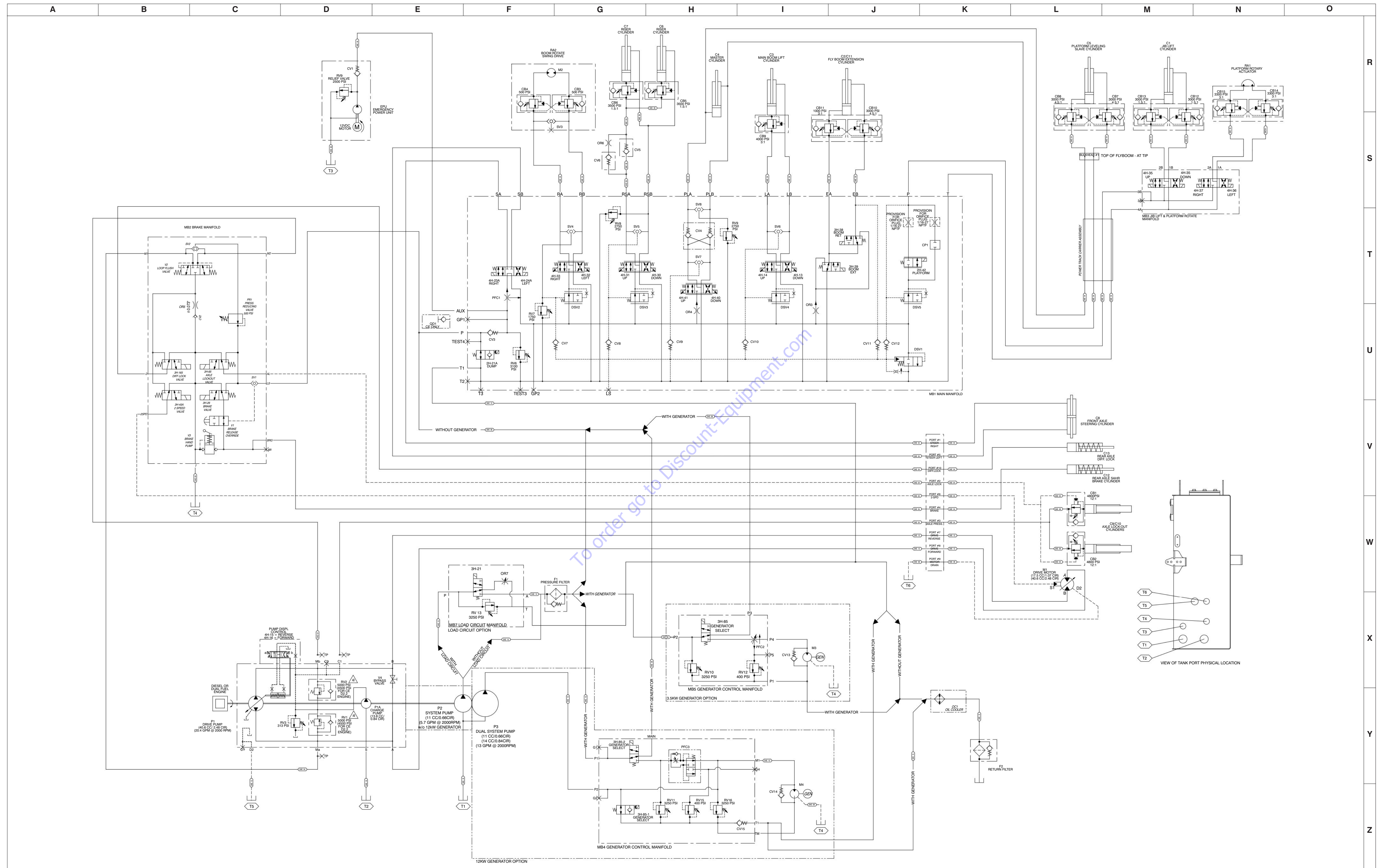


M194959AD-2

3.38 Load Circuit Wiring - 7.5 or 12.5 kW Generator

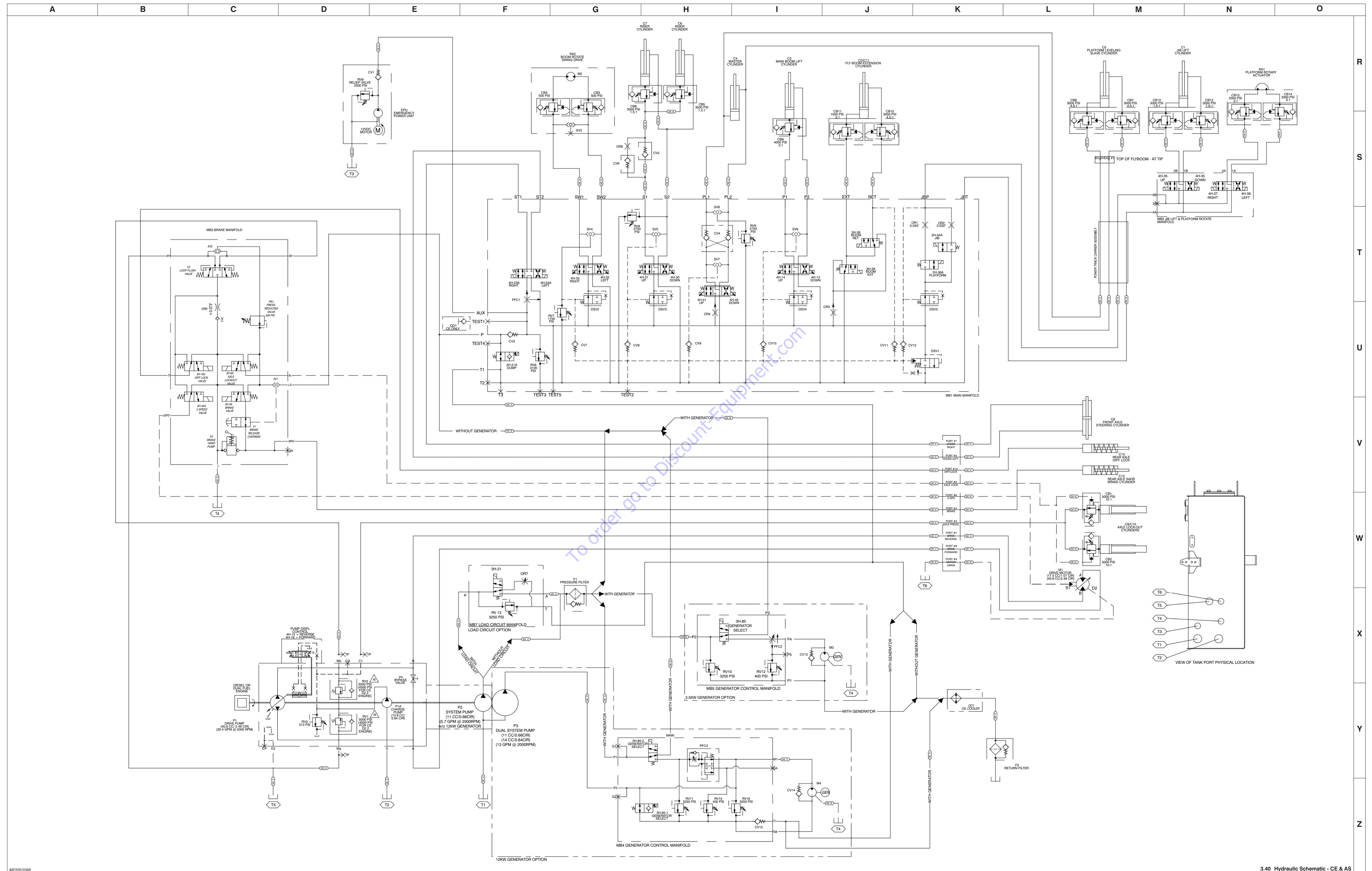


M194959AD-3



M218470AA

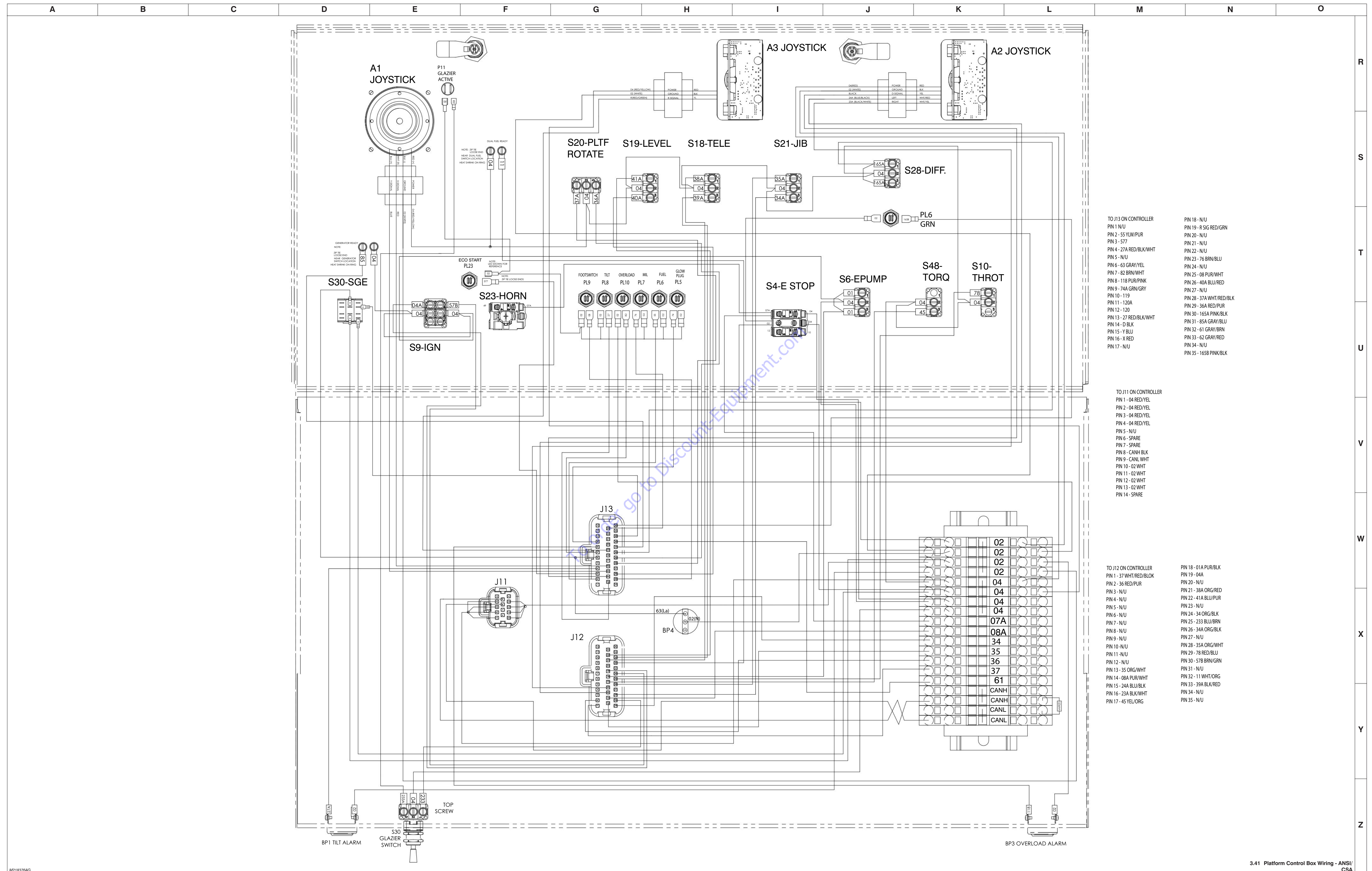
3.40 Hydraulic Schematic - CE & AS



M220532AB

3.40 Hydraulic Schematic - CE & AS

3.41 Platform Control Box Wiring - ANSI/CSA

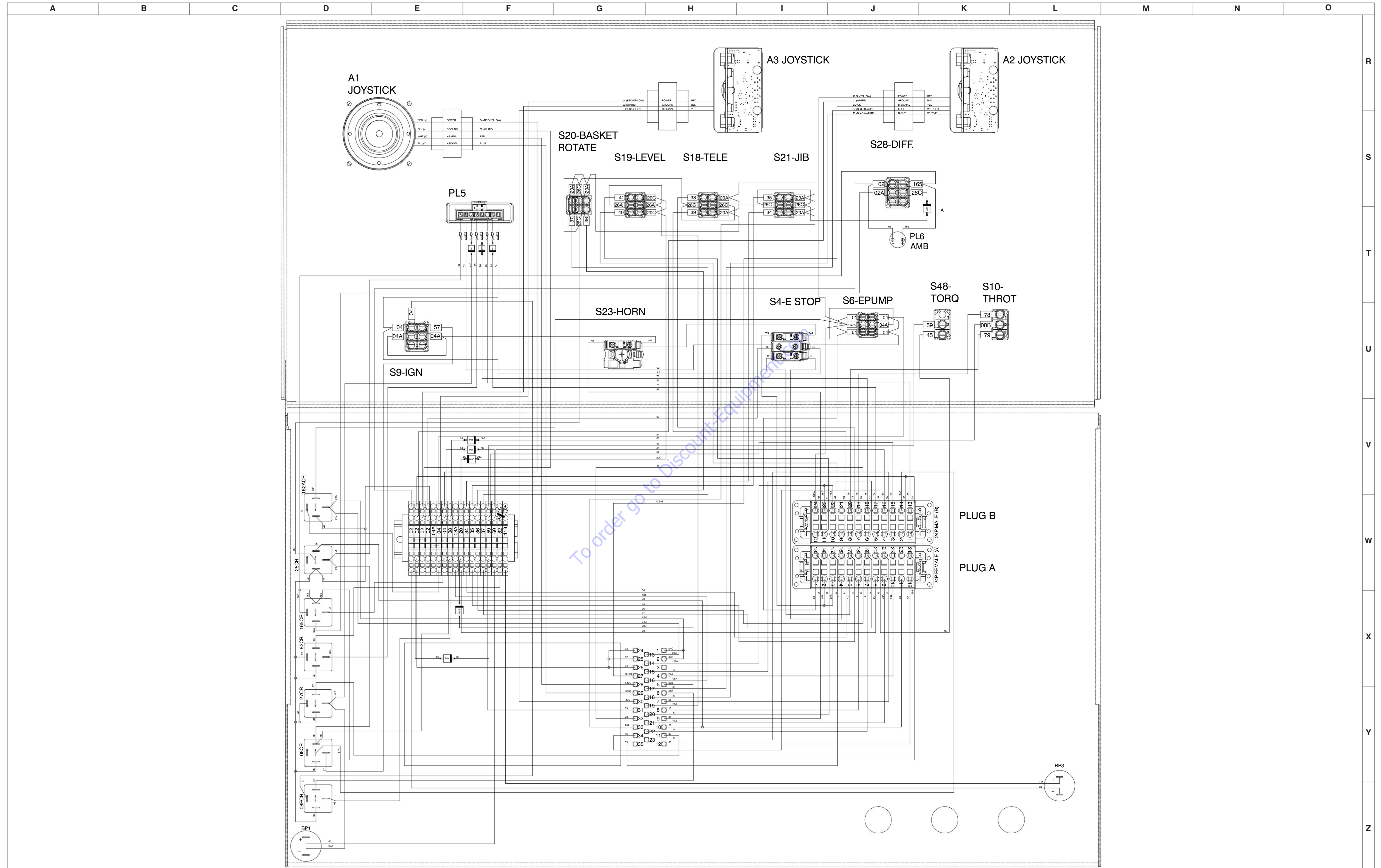


- TO J13 ON CONTROLLER
- PIN 1 - N/U
 - PIN 2 - 55 YLW/PUR
 - PIN 3 - 577
 - PIN 4 - 27A RED/BLK/WHT
 - PIN 5 - N/U
 - PIN 6 - 63 GRAY/YEL
 - PIN 7 - 82 BRN/WHT
 - PIN 8 - 118 PUR/PINK
 - PIN 9 - 76A GRN/GRY
 - PIN 10 - 119
 - PIN 11 - 120A
 - PIN 12 - 120
 - PIN 13 - 27 RED/BLK/WHT
 - PIN 14 - D BLK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

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

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

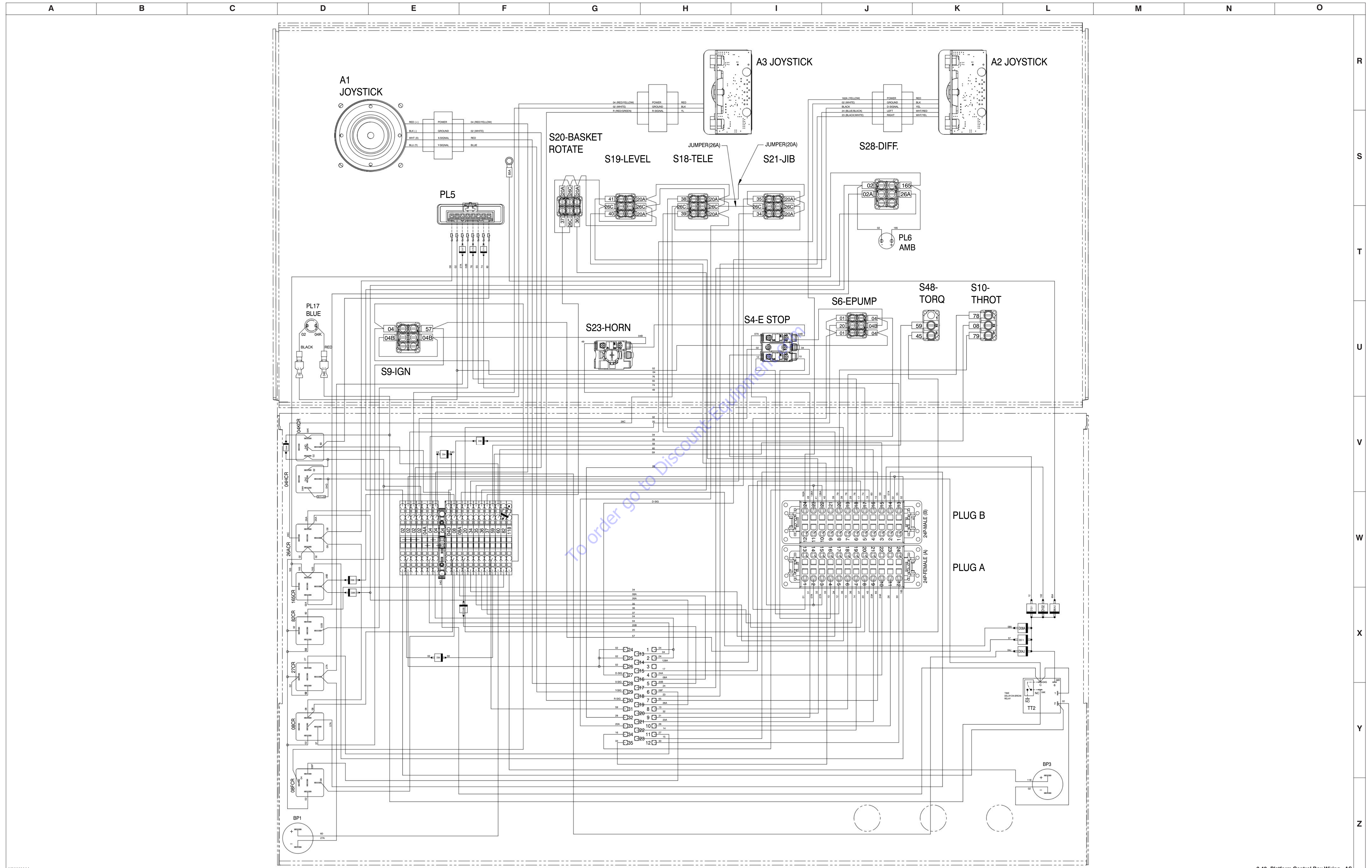
3.42 Platform Control Box Wiring - CE



M170490AB

3.42 Platform Control Box Wiring - CE

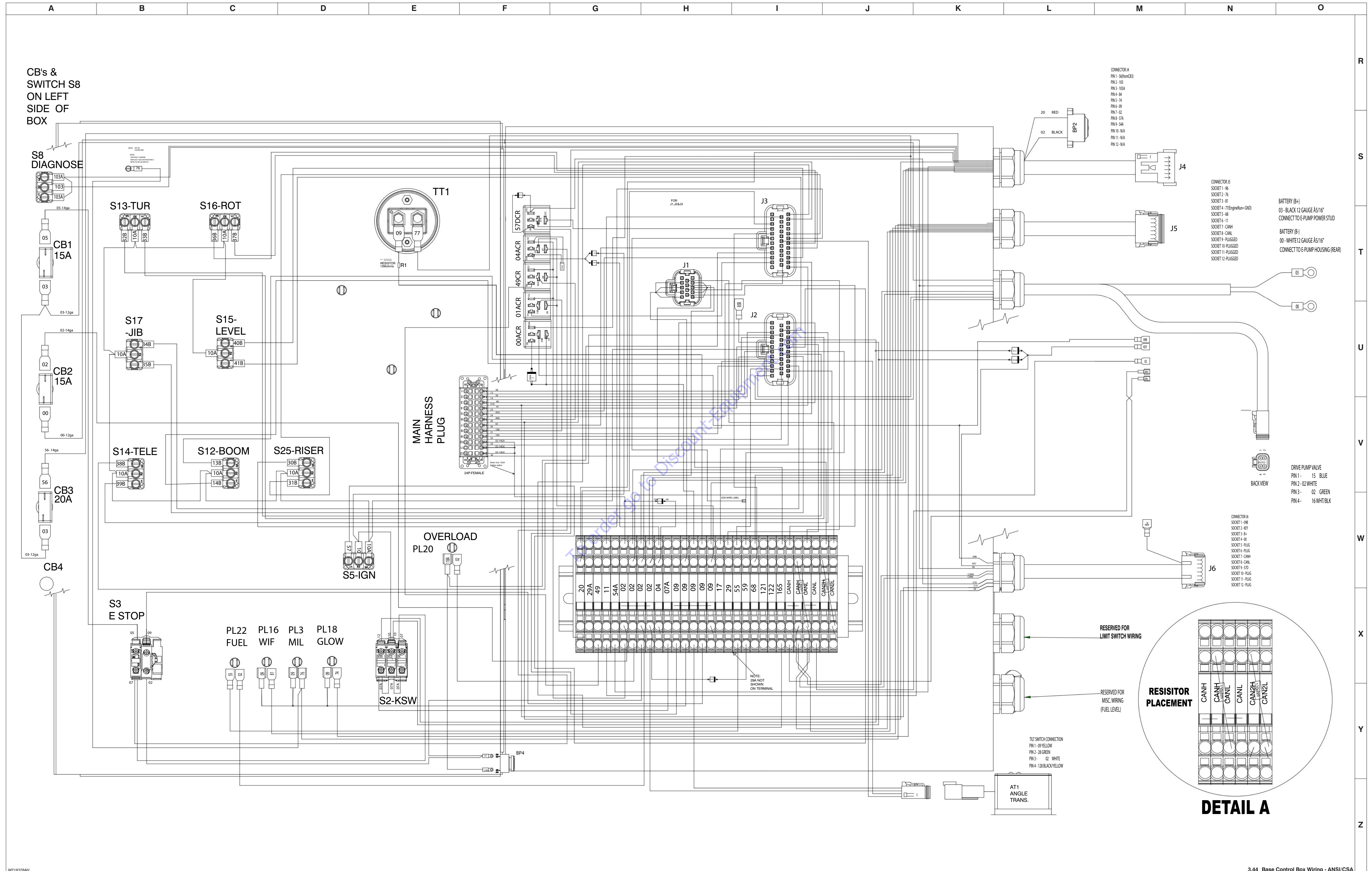
3.43 Platform Control Box Wiring - AS



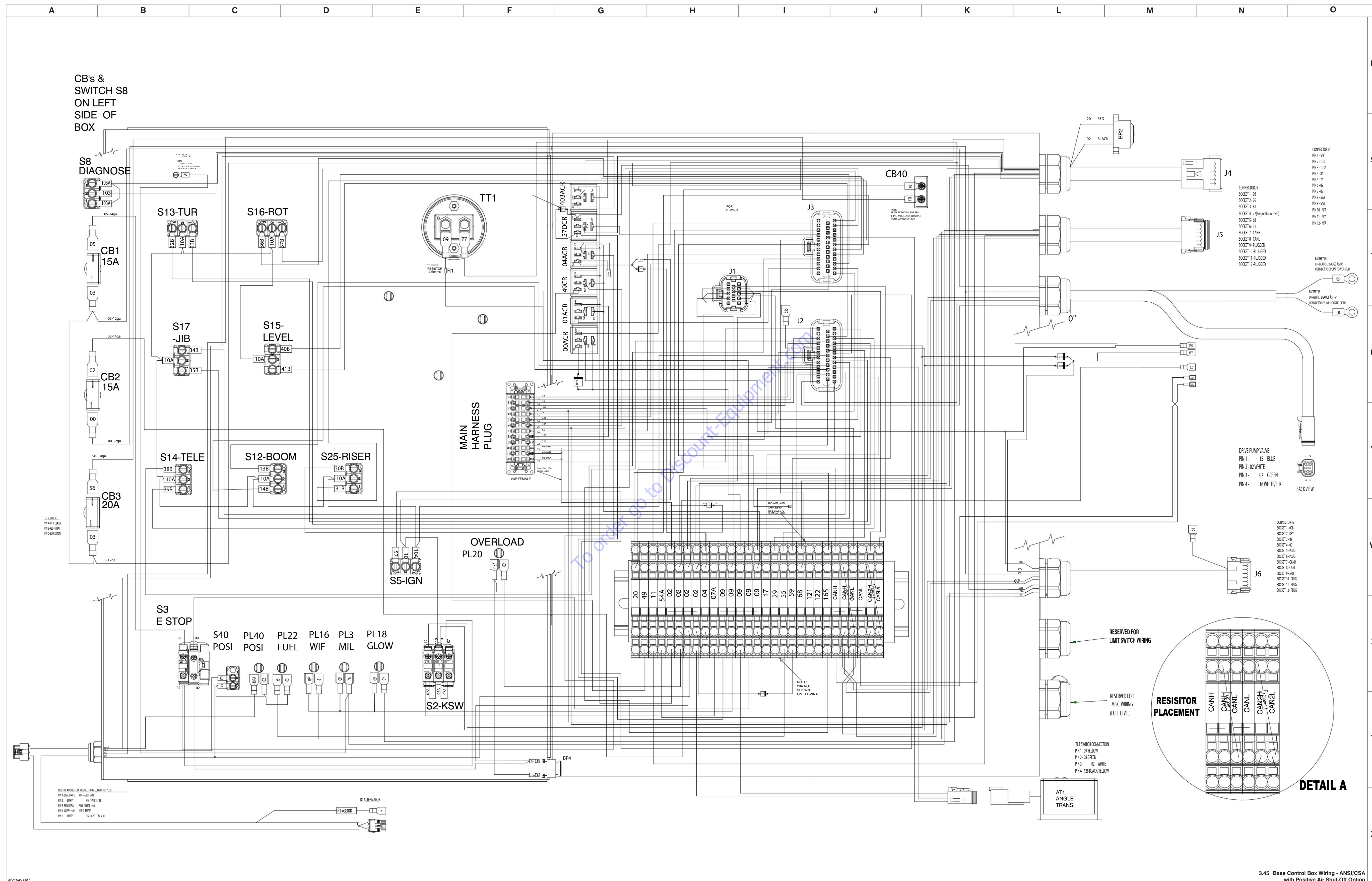
M232992AA

3.43 Platform Control Box Wiring - AS

3.44 Base Control Box Wiring - ANSI/CSA

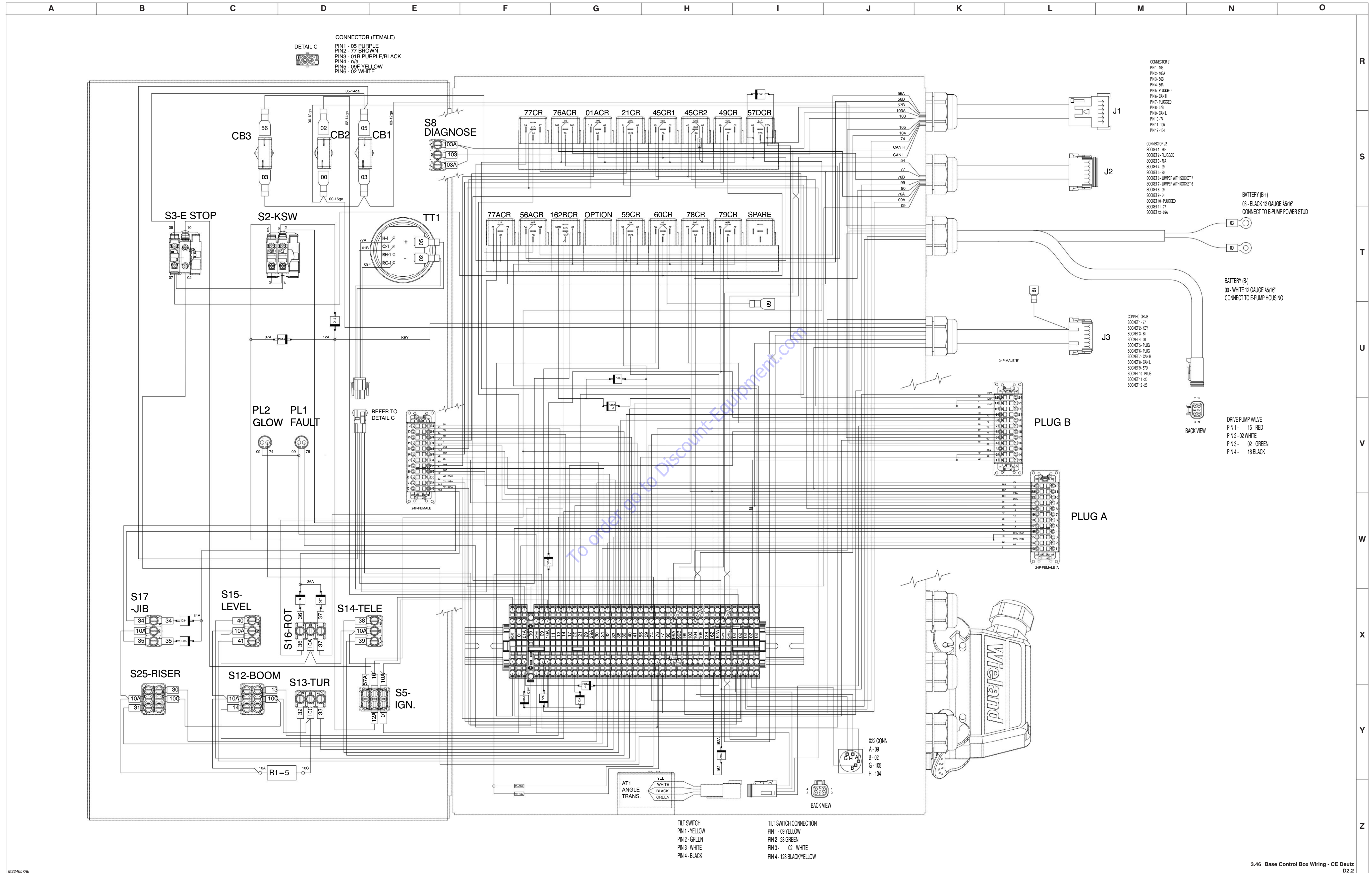


3.45 Base Control Box Wiring - ANSI/CSA with Positive Air Shut-Off Option

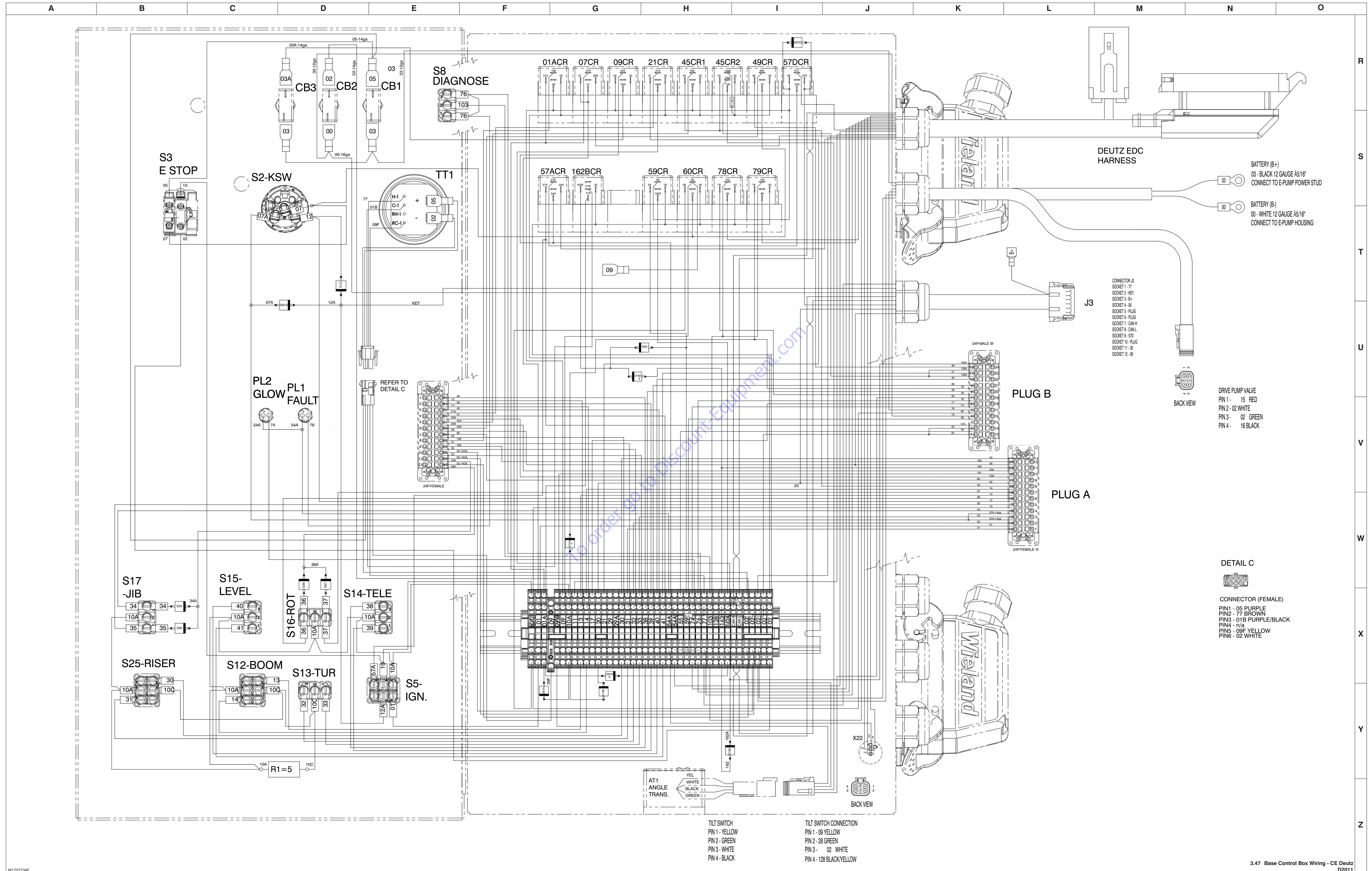


M218491AH

3.46 Base Control Box Wiring - CE Deutz D2.2

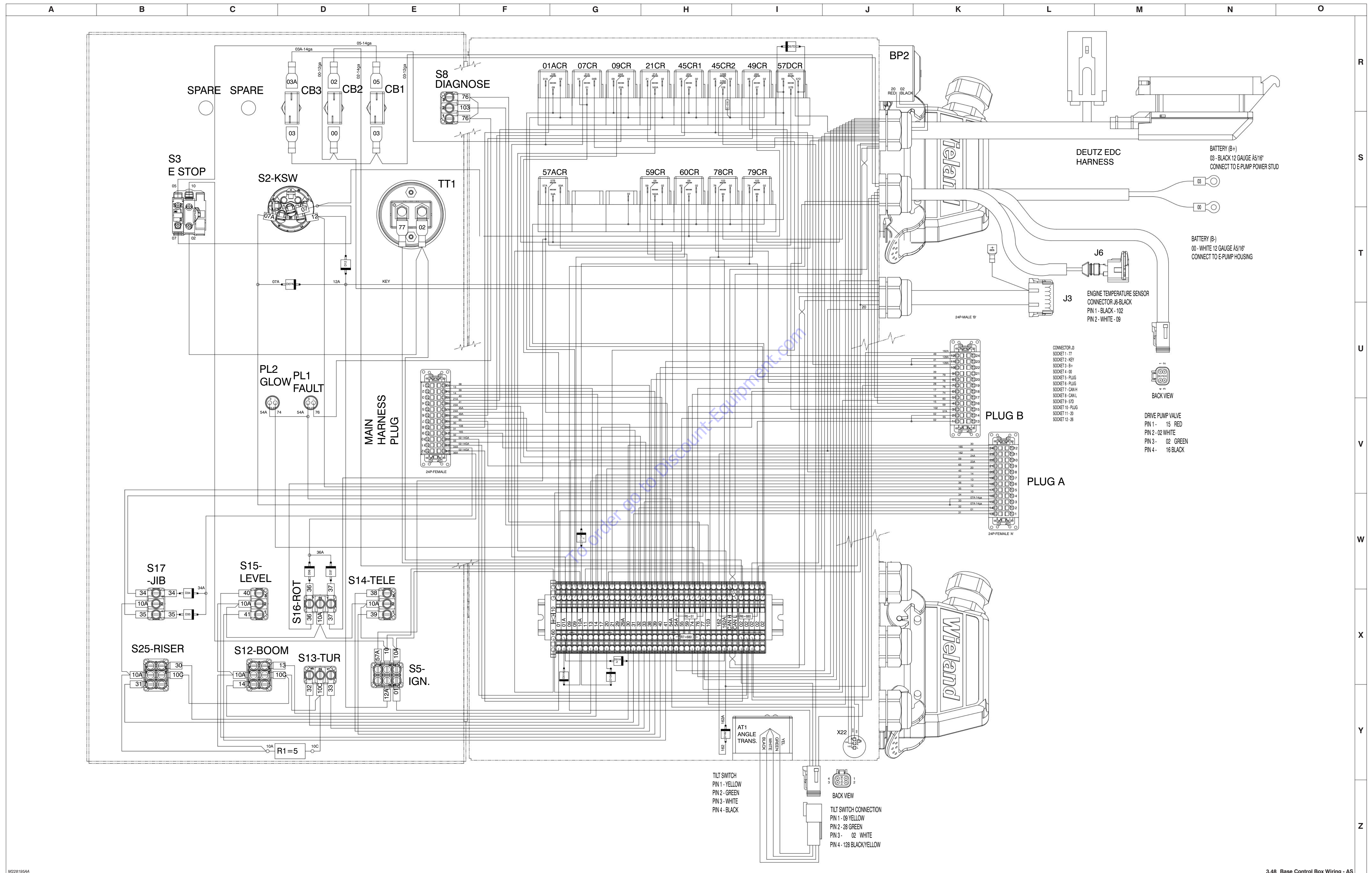


3.47 Base Control Box Wiring - CE Deutz D2011



M17073AF

3.48 Base Control Box Wiring - AS

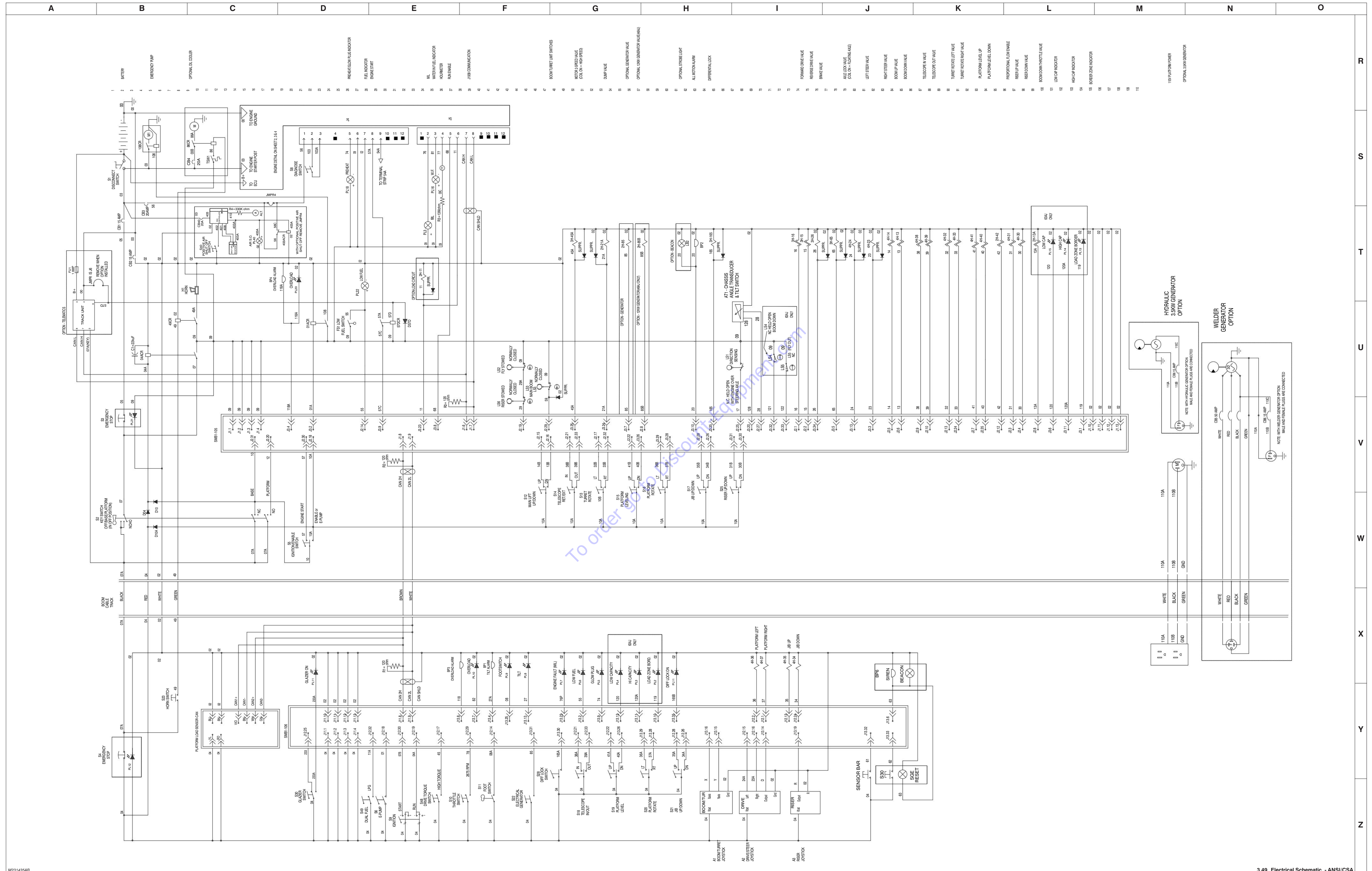


CONNECTOR J3
 SOCKET 1-77
 SOCKET 2-KEY
 SOCKET 3-B+
 SOCKET 4-30
 SOCKET 5-PLUG
 SOCKET 6-PLUG
 SOCKET 7-CAN/L
 SOCKET 8-CAN/L
 SOCKET 9-37D
 SOCKET 10-PLUG
 SOCKET 11-20
 SOCKET 12-26

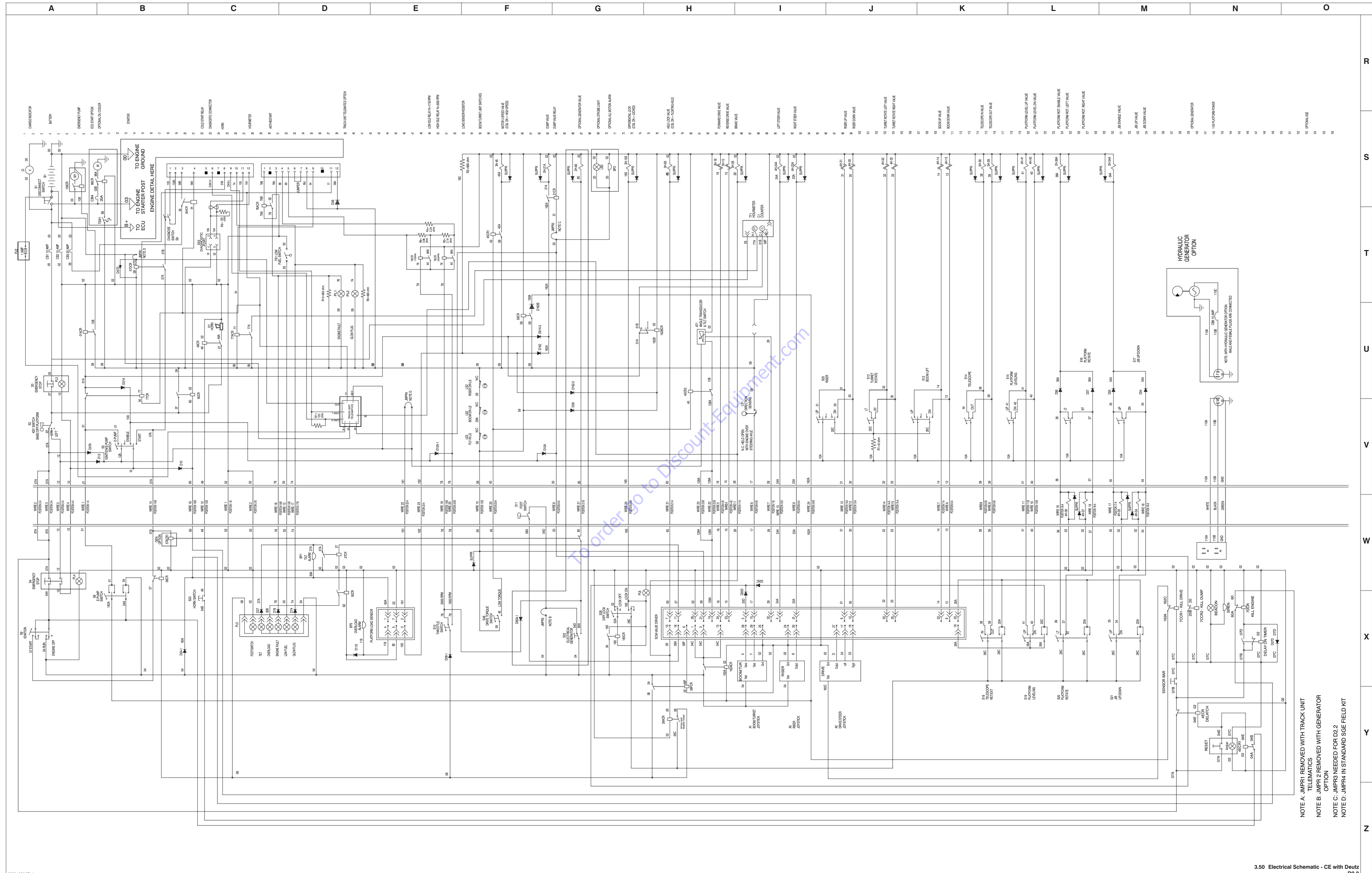
DRIVE PUMP VALVE
 PIN 1 - 15 RED
 PIN 2 - 02 WHITE
 PIN 3 - 02 GREEN
 PIN 4 - 16 BLACK

TILT SWITCH
 PIN 1 - YELLOW
 PIN 2 - GREEN
 PIN 3 - WHITE
 PIN 4 - BLACK

BACK VIEW
 TILT SWITCH CONNECTION
 PIN 1 - 09 YELLOW
 PIN 2 - 28 GREEN
 PIN 3 - 02 WHITE
 PIN 4 - 128 BLACK/YELLOW



3.50 Electrical Schematic - CE with Deutz D2.2

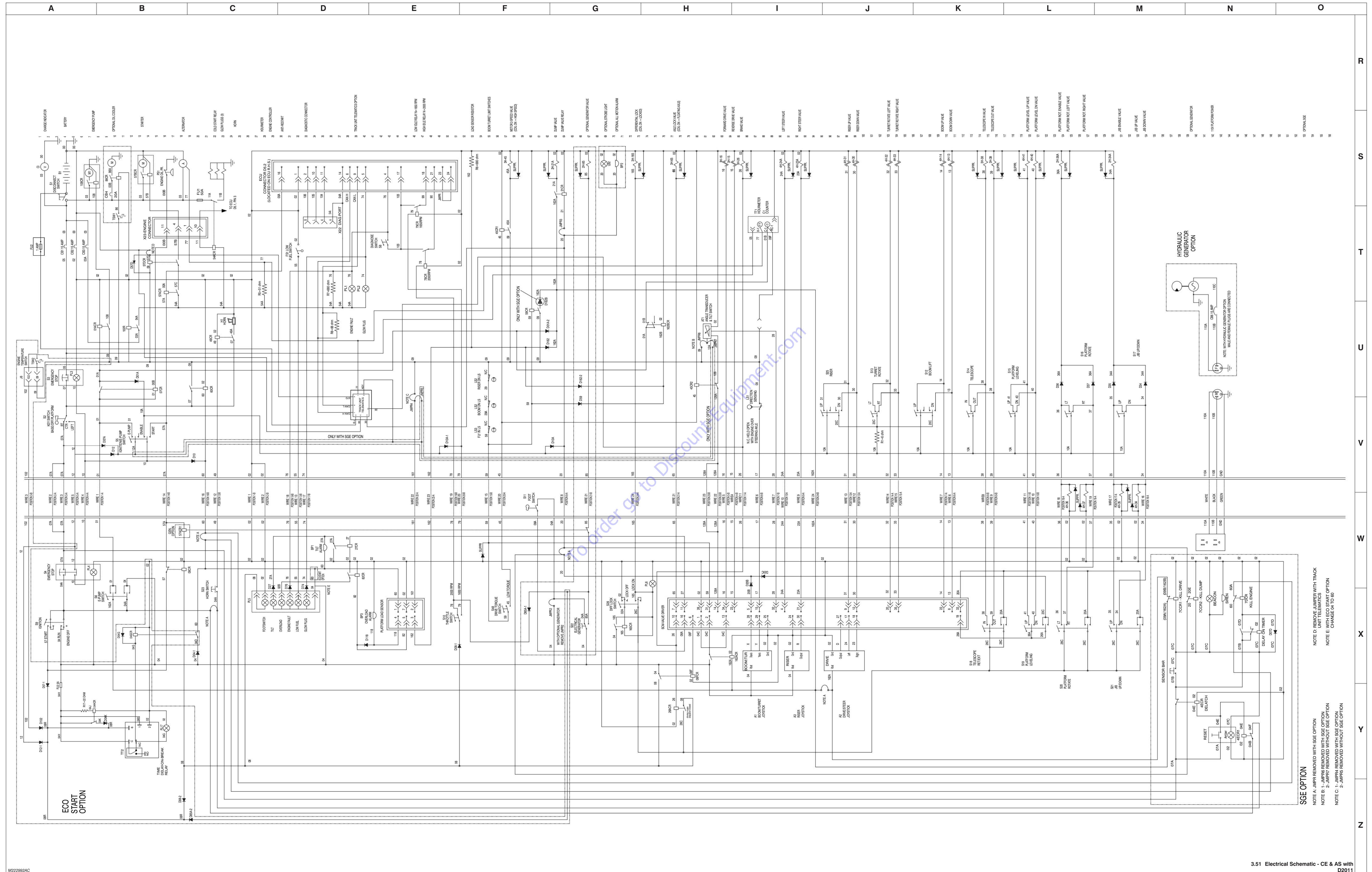


NOTE A: JMPR1 REMOVED WITH TRACK UNIT
TELEMATICS
NOTE B: JMPR2 REMOVED WITH GENERATOR
OPTION
NOTE C: JMPR3 NEEDED FOR D2.2
NOTE D: JMPR4 IN STANDARD SGE FIELD KIT

M224639AD-1

3.50 Electrical Schematic - CE with Deutz D2.2

3.51 Electrical Schematic - CE & AS with D2011



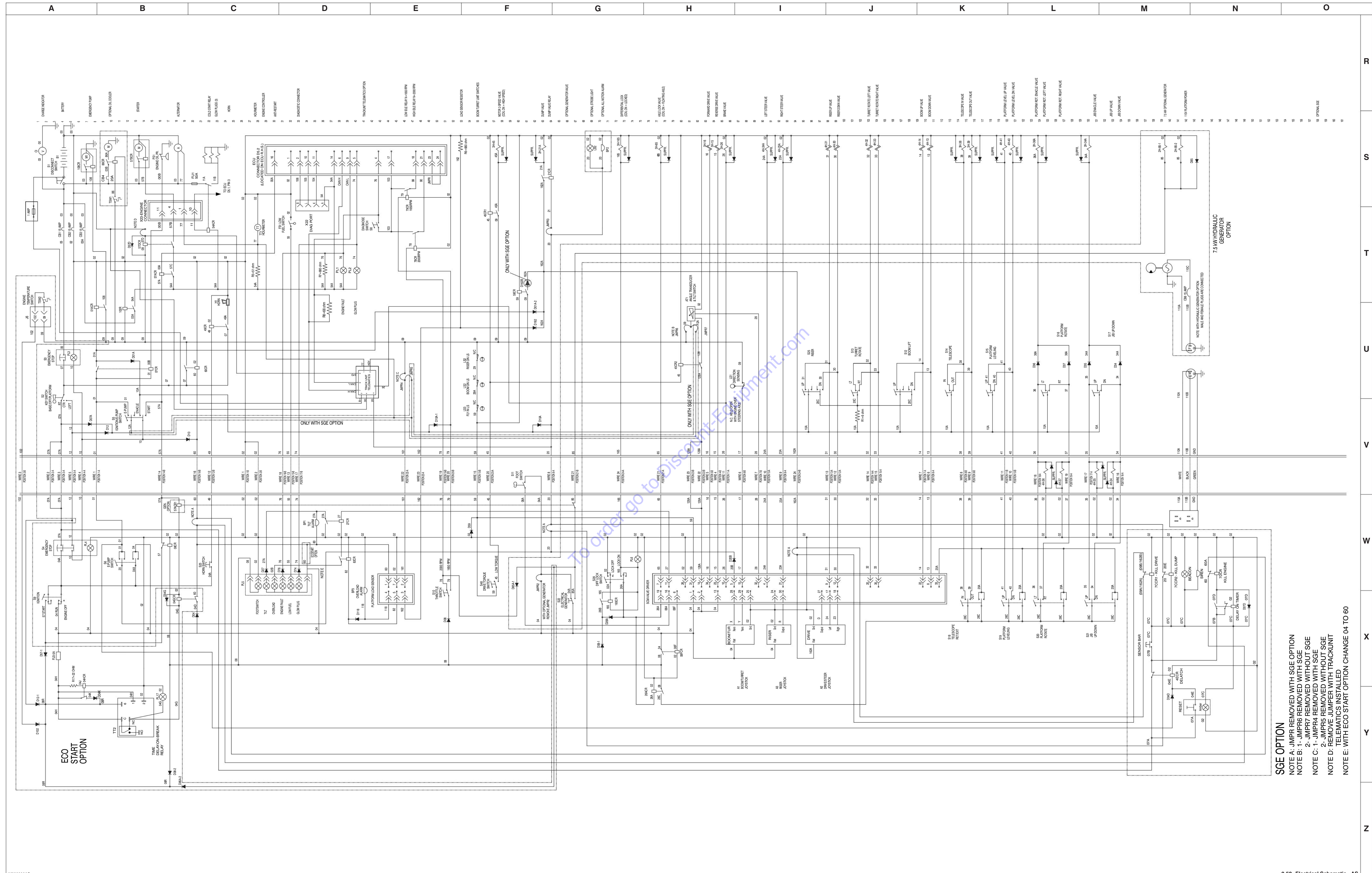
M22299AC

3.51 Electrical Schematic - CE & AS with D2011

SGE OPTION
 NOTE A: JIMPR REMOVED WITH SGE OPTION
 NOTE B: 1- JIMPR8 REMOVED WITH SGE OPTION
 2- JIMPR7 REMOVED WITHOUT SGE OPTION
 NOTE C: 1- JIMPR8 REMOVED WITH SGE OPTION
 2- JIMPR7 REMOVED WITHOUT SGE OPTION

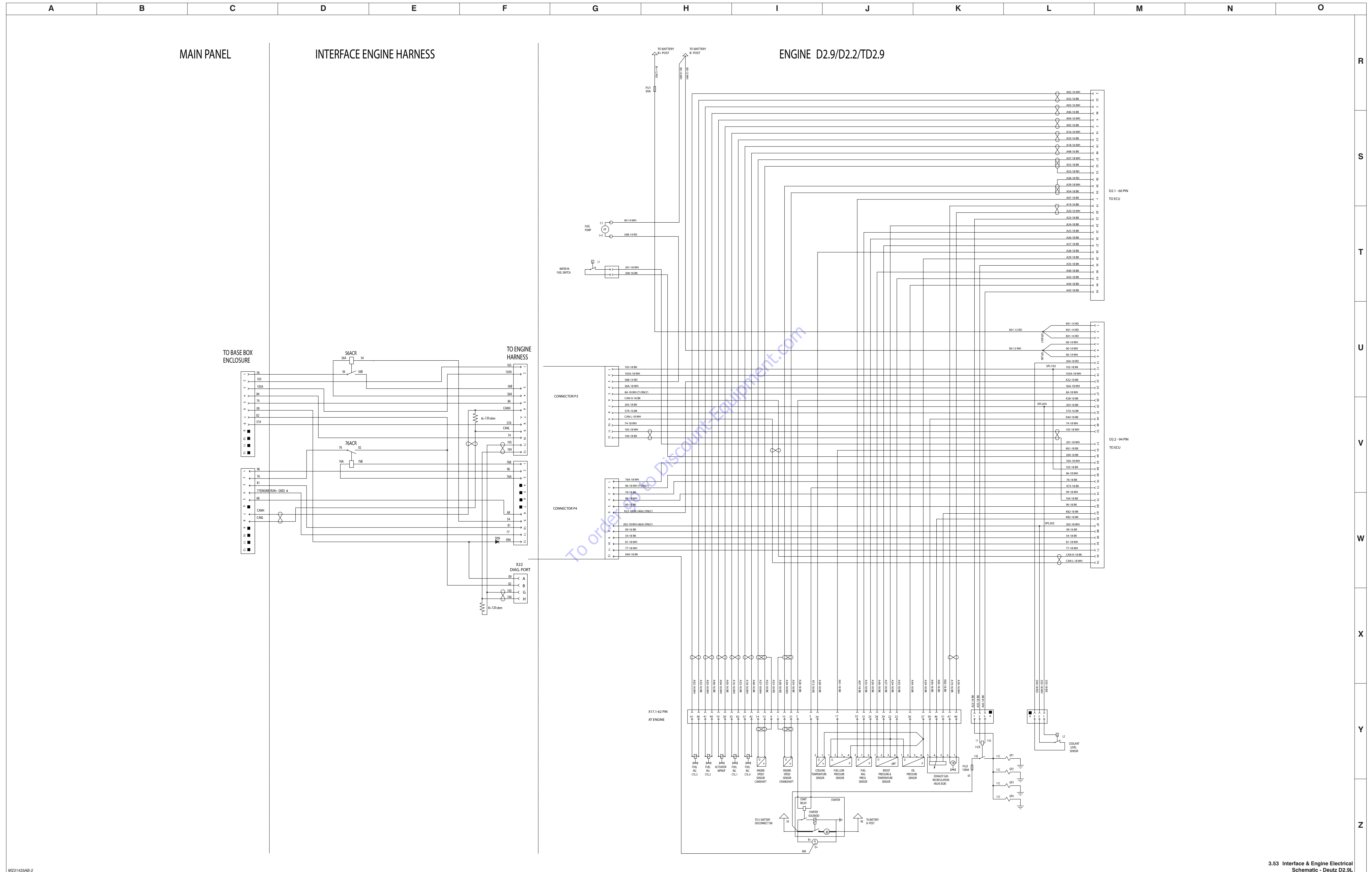
NOTE D: REMOVE JUMPER WITH TRACK UNIT TELEGRAPHS
 NOTE E: CHANGE A1 TO B1

3.52 Electrical Schematic - AS



SGE OPTION
 NOTE A: -JMPP6 REMOVED WITH SGE OPTION
 NOTE B: 1- JMPP6 REMOVED WITH SGE
 2- JMPP7 REMOVED WITHOUT SGE
 NOTE C: 1- JMPP4 REMOVED WITH SGE
 2- JMPP5 REMOVED WITHOUT SGE
 NOTE D: REMOVE JUMPER WITH TRACKUNIT
 TELEMATICS INSTALLED
 NOTE E: WITH ECO START OPTION CHANGE 04 TO 60

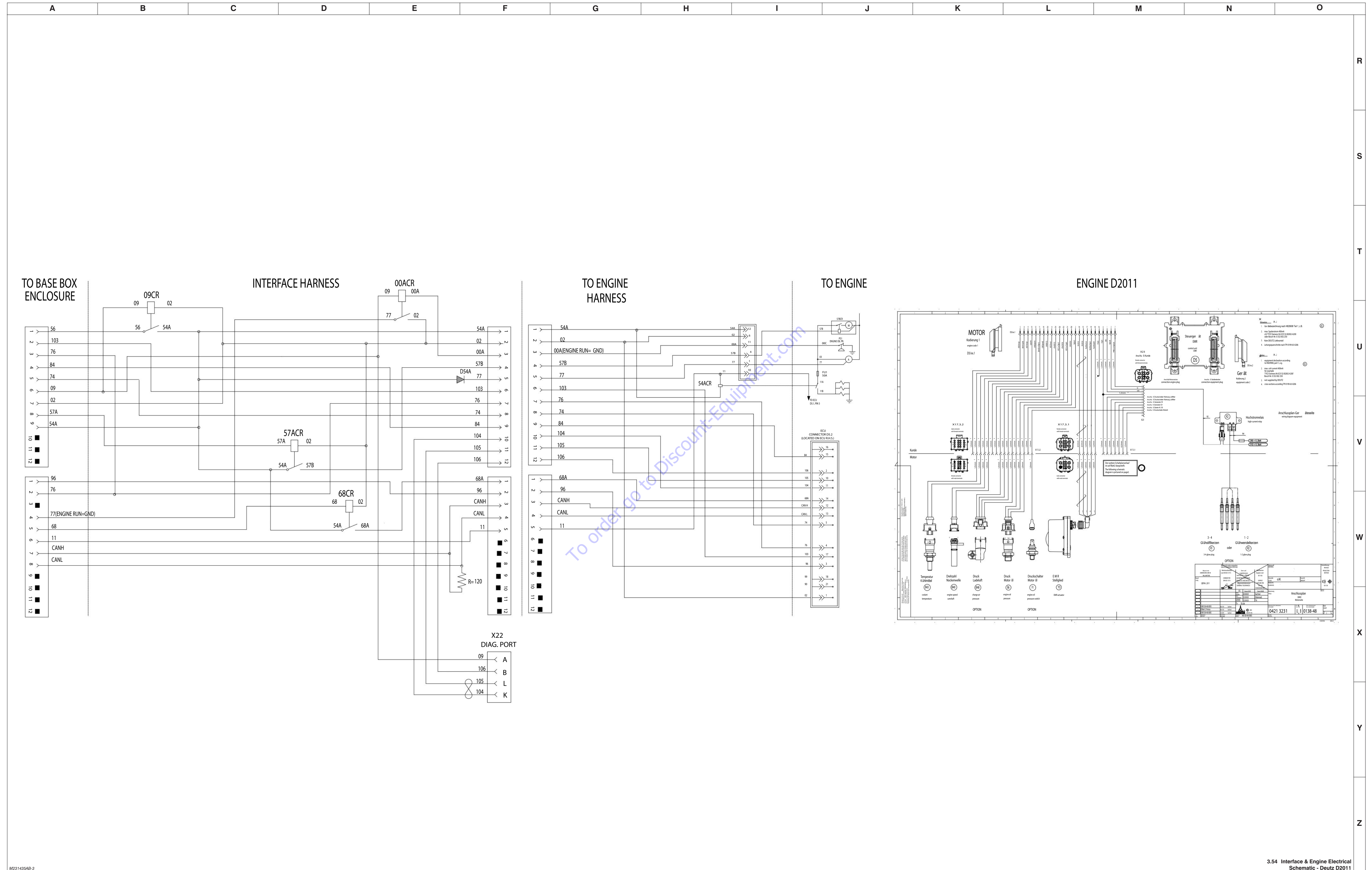
3.53 Interface & Engine Electrical Schematic - Deutz D2.9L



M231435AB-2

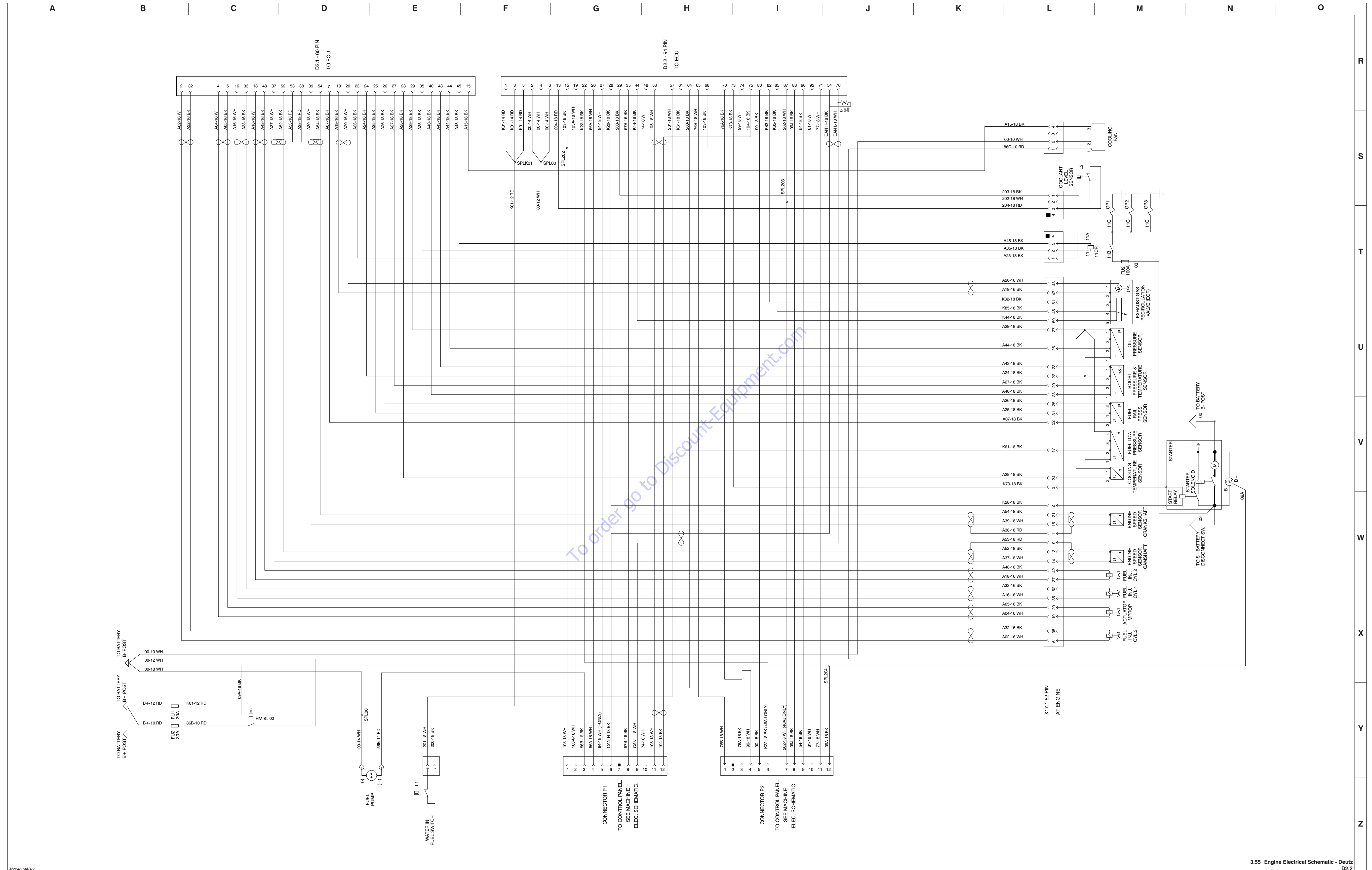
3.53 Interface & Engine Electrical Schematic - Deutz D2.9L

3.54 Interface & Engine Electrical Schematic - Deutz D2011



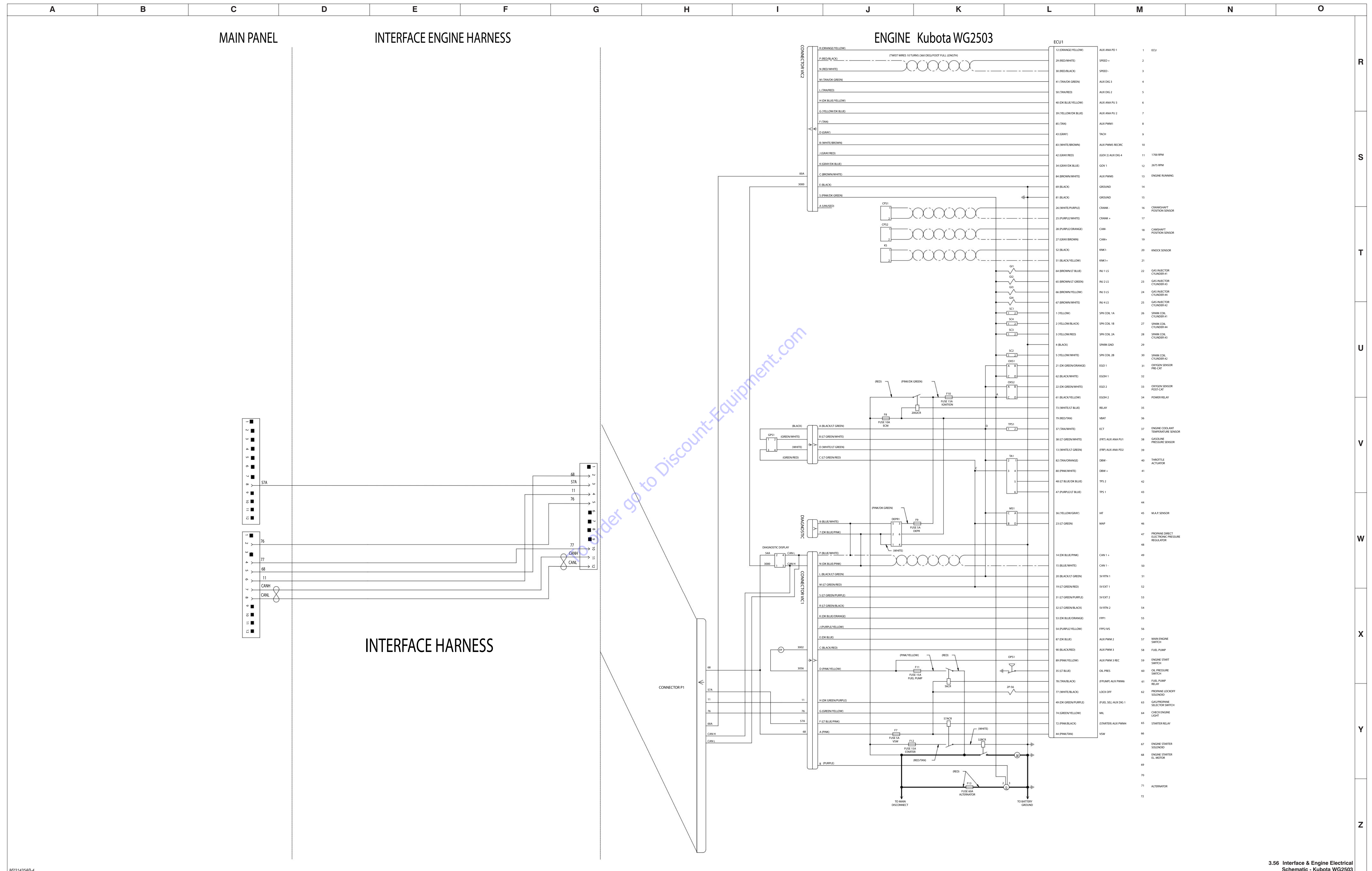
M231435AB-3

3.55 Engine Electrical Schematic - Deutz D2.2



M224639AD-2

3.55 Engine Electrical Schematic - Deutz D2.2



M231435AB-4

Section 4 – Troubleshooting Information

4.1 Introduction

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

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

1. Probable cause

Remedy

4.2 Electrical System - ANSI/CSA

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



NOTE

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

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

17. Loose or broken wire #09 from base terminal block to base control module connector J1 pins 1, 2, 3, and/or 4.	Check continuity. Replace if defective.
18. Loose or broken wire #02 from base control module connector J1 pins 10, 11, 12, and/or 13 to base terminal block.	Check continuity. Replace if defective.
19. Loose or broken wire #02 from base terminal block to circuit breaker CB2.	Check continuity. Replace if defective.
20. Circuit breaker CB2 tripped or defective.	Reset breaker, check for defective wiring. Replace if defective.
21. Loose or broken wire #00 from circuit breaker CB2 to battery negative.	Check continuity. Replace if defective.
22. Loose or broken wire #07A from base key switch S2 to base terminal block.	Check continuity. Replace if defective.
23. Loose or broken wire #07A from base terminal block to platform terminal block.	Check continuity. Replace if defective.
24. Loose or broken wire #07A from platform terminal block to platform emergency stop switch S4.	Check continuity. Replace if defective.
25. Open or defective platform emergency stop switch S4.	Close switch. Replace if defective.
26. Loose or broken wire #04 from platform emergency stop switch S4 to platform terminal block.	Check continuity. Replace if defective.
27. Loose or broken wire #04 from platform terminal block platform control module connector J11 pins 1, 2, 3, and/or 4.	Check continuity. Replace if defective.
28. Loose or broken CAN H wire from platform control module connector J11 pin 8 to platform terminal block	Check continuity. Replace if defective.
29. Loose or broken CAN H wire from platform terminal block to base terminal block.	Check continuity. Replace if defective.
30. Loose or broken CAN H wire from base terminal block to base control module connector J1 pin 8.	Check continuity. Replace if defective.
31. Loose or broken CAN L wire from platform control module connector J11 pin 9 to platform terminal block	Check continuity. Replace if defective.
32. Loose or broken CAN L wire from platform terminal block to base terminal block.	Check continuity. Replace if defective.
33. Loose or broken CAN L wire from base terminal block to base control module connector J1 pin 9.	Check continuity. Replace if defective.

34. Loose, broken, or defective 120 ohm CAN termination resistor(s) between CAN H and CAN L terminals in platform and/or base terminal block(s).	Check that resistance between CAN H and CAN L is approximately 60 ohms (2 x 120 ohm in parallel). Check connections. Repair connections or replace if defective.
35. Loose or broken wire #02 from platform control module connector J11 pins 10, 11, 12, and/or 13 to platform terminal block.	Check continuity. Replace if defective.
36. Loose or broken wire #02 from platform terminal block to base terminal block.	Check continuity. Replace if defective.
37. Defective base (master) control module SMB1-105	Replace if Defective
38. Defective platform (slave) control module SMB1-106	Replace if Defective

4.2-2 All Controls are Inoperative from the Base Console

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

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

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

- | | |
|---|--|
| 7. Defective relay 57DCR. | Check relay. Replace if defective. |
| 8. Loose or broken 57A wire from connector P4 pin 8 to start input on ECU or 57ACR relay if equipped. | Check schematic applicable to the engine equipped on the machine to determine ECU pin # or relay if equipped. |

**NOTE**

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

4.2-4 The Engine will not Crank from the Base

- | | |
|---|--|
| 1. Loose or broken wire #10 from base keyswitch S2 to base start switch S5 | Check continuity. Replace if defective |
| 2. Loose or broken wire #57 from base start switch S5 to base control module connector J2 pin 30. | Check continuity. Replace if defective |
| 3. Defective start/enable switch S5 | Check continuity through switch. Replace if defective |

4.2-5 The Engine will not Crank from the Platform

**NOTE**

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

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

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

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

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

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

4.2-8 No Boom Up from the Base Console

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

4.2-9 No Boom Up from the Platform Console

1. Loose or broken wire #04 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
2. Loose or broken wire #02 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
3. No output on y-axis of joystick controller A1	Refer to joystick test procedure in section 5
4. Loose or broken wire "Y" from joystick controller to J13 pin #16 of platform control module	Check continuity. Replace if defective

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

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

4.2-11 No Boom Down from the Base Console

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

4.2-12 No Boom Down from the Platform Console

- | | |
|--|---|
| 1. Loose or broken wire #04 from platform terminal block to joystick controller A1 | Check continuity. Replace if defective |
| 2. Loose or broken wire #02 from platform terminal block to joystick controller A1 | Check continuity. Replace if defective |
| 3. No output on y-axis of joystick controller A1 | Refer to joystick test procedure in section 5 |
| 4. Loose or broken wire “Y” from joystick controller to J13 pin #15 of platform control module | Check continuity. Replace if defective |

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

- | | |
|---|--|
| 1. Loose or broken wire #33 from base control module connector J2 pin 24 base terminal block to turret harness plug pin #10 | Check continuity. Replace if defective |
| 2. Loose or broken wire #33 from turret harness plug pin #10 to boom up valve 4H-33 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to boom up valve 4H-33 | Check continuity. Replace if defective |
| 4. Defective boom up coil 4H-33 | Check continuity and resistance through coil. Replace if defective |

4.2-14 No Turret Rotate Right from the Base Console

- | | |
|--|--|
| 1. Loose or broken wire #10A from IGN switch S5 to turret rotate switch S13 | Check continuity. Replace if defective |
| 2. Defective turret rotate switch S13 | Check continuity through switch while activating turret rotate right function between wires #10A and #33B. Replace switch if no continuity |
| 3. Loose or broken wire #33B from boom switch S12 to base control module connector J2 pin 32 | Check continuity. Replace if defective |

4.2-15 No Turret Rotate Right from the Platform Console

1. Loose or broken wire #04 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
2. Loose or broken wire #02 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
3. No output on X-axis of joystick controller A1	Refer to joystick test procedure in section 5
4. Loose or broken wire “x” from joystick controller to J13 pin #16 of platform control module	Check continuity. Replace if defective

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

1. Loose or broken wire #32 from base control module connector J2 pin 13 to turret harness plug pin #9	Check continuity. Replace if defective
2. Loose or broken wire #32 from turret harness plug pin #9 to turret rotate left valve 4H-32	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32	Check continuity. Replace if defective
4. Defective turret rotate left coil 4H-32	Check continuity and resistance through coil. Replace if defective

4.2-17 No Turret Rotate Left from the Base Console

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

4.2-18 No Turret Rotate Left from the Platform Console

1. Loose or broken wire #04 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
2. Loose or broken wire #02 from platform terminal block to joystick controller A1	Check continuity. Replace if defective
3. No output on y-axis of joystick controller A1	Refer to joystick test procedure in section 5
4. Loose or broken wire “Y” from joystick controller to J13 pin #16 of platform control module	Check continuity. Replace if defective

4.2-19 No Riser Up from the Base or Platform Consoles

1. Loose or broken wire #31 from base control module connector J2 pin 3 to turret harness plug pin #8	Check continuity. Replace if defective
2. Loose or broken wire #31 from turret harness plug pin #8 to riser up valve 4H-31	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to riser up valve 4H-31	Check continuity. Replace if defective
4. Defective rise up coil 4H-31	Check continuity and resistance through coil. Replace if defective

4.2-20 No Riser Up from the Base Console

1. Loose or broken wire #10A from IGN switch S5 to boom switch S25	Check continuity. Replace if defective
2. Defective riser switch S25	Check continuity through switch while activating riser up function between wires #10A and #31B. Replace switch if no continuity
3. Loose or broken wire #31B from riser switch S25 to base control module connector J3 pin 31	Check continuity. Replace if defective

4.2-21 No Riser Up from the 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" of joystick controller A3	Refer to joystick test procedure in section 5
4. Loose or broken wire "R" from joystick controller to J13 pin #19 of platform control module	Check continuity. Replace if defective

4.2-22 No Riser Down from the Base or Platform Consoles

1. Loose or broken wire #30 from base control module connector J2 pin 4 to turret harness plug pin #7	Check continuity. Replace if defective
2. Loose or broken wire #30 from turret harness plug pin #7 to riser down valve 4H-30	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to riser down valve 4H-30	Check continuity. Replace if defective
4. Defective rise down coil 4H-30	Check continuity and resistance through coil. Replace if defective

4.2-23 No Riser Down from the Base Console

- | | |
|---|--|
| 1. Loose or broken wire #10A from IGN switch S5 to boom switch S25 | Check continuity. Replace if defective |
| 2. Defective riser switch S25 | Check continuity through switch while activating riser down function between wires #10A and #30B. Replace switch if no continuity |
| 3. Loose or broken wire #30B from riser switch S25 to base control module connector J3 pin 30 | Check continuity. Replace if defective |

4.2-24 No Riser Down from the 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" of joystick controller A3 | Refer to joystick test procedure in section 5 |
| 4. Loose or broken wire "R" from joystick controller to J13 pin #19 of platform control module | Check continuity. Replace if defective |

4.2-25 No Telescope Out from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #39 from base control module connector J2 pin 10 to turret harness plug pin #14 | Check continuity. Replace if defective |
| 2. Loose or broken wire #39 from turret harness plug pin #14 to telescope out valve 4H-39 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to boom up valve 4H-39 | Check continuity. Replace if defective |
| 4. Defective telescope out coil 4H-39 | Check continuity and resistance through coil. Replace if defective |

4.2-26 No Telescope Out from the Base Console

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

4.2-27 No Telescope Out from the Platform Console

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

4.2-28 No Telescope In from the Base or Platform Consoles

- | | |
|--|--|
| 1. Loose or broken wire #38 from base control module connector J2 pin 9 to turret harness plug pin #13 | Check continuity. Replace if defective |
| 2. Loose or broken wire #38 from turret harness plug pin #13 to telescope in valve 4H-38 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to telescope in valve 4H-38 | Check continuity. Replace if defective |
| 4. Defective telescope in coil 4H-38 | Check continuity and resistance through coil. Replace if defective |

4.2-29 No Telescope In from the Base Console

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

4.2-30 No Telescope In from the Platform Console

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

4.2-31 No Platform Level Up from the Base or Platform Consoles

1. Loose or broken wire #41 from base control module connector J2 pin #7 to turret harness plug pin #16	Check continuity. Replace if defective
2. Loose or broken wire #41 from turret harness plug pin #16 to platform level up valve 4H-41	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to platform level up valve 4H-41	Check continuity. Replace if defective
4. Defective platform level up coil 4H-41	Check continuity and resistance through coil. Replace if defective

4.2-32 No Platform Level Up from the Base Console

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

4.2-33 No Platform Level Up from the Platform Console

1. Loose or broken wire #04 from platform terminal block to platform level switch S19	Check continuity. Replace if defective
2. Defective platform level switch S19	Check continuity through switch while activating platform level up function between wires #04 and #41A. Replace switch if no continuity
3. Loose or broken wire #41A from platform level switch S19 to platform control module connector J12 pin 22	Check continuity. Replace if defective

4.2-34 No Platform Level Down from the Base or Platform Consoles

1. Loose or broken wire #40 from base control module connector J2 pin 35 to turret harness plug pin #15	Check continuity. Replace if defective
2. Loose or broken wire #40 from turret harness plug pin #15 to platform level down valve 4H-40	Check continuity. Replace if defective
3. Loose or broken wire #02 from turret harness plug to platform level down valve 4H-40	Check continuity. Replace if defective
4. Defective platform level down coil 4H-40	Check continuity and resistance through coil. Replace if defective

4.2-35 No Platform Level Down from the Base Console

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

4.2-36 No Platform Level Down from the Platform Console

- | | |
|---|--|
| 1. Loose or broken wire #04 from platform terminal block to platform level switch S19 | Check continuity. Replace if defective |
| 2. Defective platform level switch S19 | Check continuity through switch while activating platform level down function between wires #04 and #40A. Replace switch if no continuity |
| 3. Loose or broken wire #40A from platform level switch S19 to platform control module connector J13 pin 26 | Check continuity. Replace if defective |

4.2-37 No Platform Rotate or Jib Functions from the Base or Platform Consoles

- | | |
|---|---|
| 1. Loose or broken wire #42 from base control module connector J2 pin 12 to turret harness plug pin #20 | Check continuity. Replace if defective |
| 2. Loose or broken wire #42 from turret harness plug pin #20 to platform flow enable valve 2H-42 | Check continuity. Replace if defective |
| 3. Loose or broken wire #02 from turret harness plug to platform flow enable valve 2H-42 | Check continuity. Replace if defective |
| 4. Defective platform flow enable coil 2H-42 | Check continuity and resistance through coil. Replace if defective |

4.2-38 No Platform Rotate Right from the Base or Platform Consoles

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

4.2-39 No Platform Rotate Right from the Base Console

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

4.2-40 No Platform Rotate Right from the Platform Console

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

4.2-41 No Platform Rotate Left from the Base or Platform Consoles

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

4.2-42 No Platform Rotate Left from the Base Console

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

4.2-43 No Platform Rotate Left from the Platform Console

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

4.2-44 No Jib Up from the Base or Platform Consoles

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

4.2-45 No Jib Up from the Base Console

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

4.2-46 No Jib Up from the Platform Console

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

4.2-47 No Jib Down from the Base or Platform Consoles

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

4.2-48 No Jib Down from the Base Console

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

4.2-49 No Jib Down from the Platform Console

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

4.2-50 No Drive or Steer Functions

- | | |
|---|---|
| 1. Loose or broken wire #04 from platform terminal block to drive joystick A2 | Check continuity. Replace if defective |
| 2. Loose or broken wire #02 from platform terminal block to drive joystick A2 | Check continuity. Replace if defective |
| 3. Defective drive joystick A2 | See drive joystick test procedure in section 5 |

4.2-51 No Forward or Reverse Drive

- | | |
|--|---|
| 1. No output on "D" when forward is selected on drive joystick A2 | See drive joystick test procedure in section 5 |
| 2. Loose or broken wire "D-signal" from drive joystick A2 to platform control module connector J13 pin #14 | Check continuity. Replace if defective |

4.2-52 No Forward Drive

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

4.2-53 No Reverse Drive

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

4.2-54 The Brake will not Release

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

4.2-55 No Left Steer

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

- | | |
|--|---|
| 5. Loose or broken wire #02 from turret harness plug to left steer valve 4H-24 | Check continuity. Replace if defective |
| 6. Defective left steer valve coil 4H-24 | Check continuity and resistance through coil. Replace if defective |

4.2-56 No Right Steer

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

4.2-57 The Directon Sensing is Inoperative

- | | |
|--|---|
| 1. Loose or broken wire #09 from base terminal block to limit switch LS1 | Check continuity. Replace if defective |
| 2. Open or defective limit switch LS1 | Adjust limit switch if required. Check continuity through switch. Replace if defective |
| 3. Loose or broken wire #17 from limit switch LS1 to base terminal block | Check continuity. Replace if defective |
| 4. Loose or broken wire #17 from base terminal block to base control module connector J2 pin #25 | Check continuity. Replace if defective |
| 5. Defective base control module channel input for direction sense enable | Replace if Defective |

4.2-58 The Load Sense Indicates Overload or Overload Warning with the Platform Empty or Below Weight

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

4.2-59 The Overload Indicator Light does not Turn On when the Platform is Overloaded

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

4.2-60 The Audible Alarm does not Turn On with the Platform Overloaded

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

4.3 Electrical System - CE & AS

4.3-1 All Controls are Inoperative

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

4.3-2 No Power

To Platform

1. Open or defective key select switch S2.	Close switch. Replace if defective.
2. Loose or broken wire #07A from key select switch S2 to plug A pins # 2 & 3 in base control console.	Check continuity. Replace if defective.
3. Loose or broken wire #07A from plug A pins # 2 & 3 in platform control console to platform emergency stop switch S4.	Check continuity. Replace if defective.
4. Open or defective platform emergency stop switch S4.	Check switch. Replace if defective.
5. Loose or broken wire #04 from platform emergency stop switch S4 to Ignition/E-pump switch S6	Check continuity. Replace if defective.

To Base

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

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

4.3-3 Engine Will Not Crank

From Base

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

From Platform



NOTE

Engine will not crank from platform with footswitch depressed.

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

From Platform or Base

With the following conditions:

- Deutz Diesel D2.9L

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

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

**NOTE**

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

With the following conditions:

- Deutz Diesel D2011

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

13. Loose or broken wire #54A from base terminal block to relay 57BCR1.	Check continuity. Replace if defective.
14. Defective contacts in relay 57BCR1.	Check continuity between wires #54A and #57C when cranking. If no continuity, replace relay.
15. Loose or broken wire #57C from relay 57BCR1 to X23 engine connector pin #4.	Check continuity. Replace if defective.
16. Loose or broken wire #57C from X23 engine plug to start solenoid 57CCR.	Check continuity. Replace if defective.
17. Loose or broken starter cable #03 from disconnect switch S1 to start solenoid 57CCR.	Check continuity. Replace if defective.
18. Defective start solenoid 57CCR.	Check solenoid. Replace if defective.
19. Defective starter motor.	Check starter motor. Replace if defective.
With the following conditions:	
▪ Kubota Dual Fuel	
1. Loose or broken wire #54A from base terminal block TB1 to engine harness plug.	Check continuity. Replace if defective.
2. Loose or broken wire #54A from engine harness plug to GM engine connector 1.	Check continuity. Replace if defective.
3. Loose or broken pink wire from GM engine connector 1 to fuse F7.	Check continuity. Replace if defective.
4. Defective fuse F7.	Check fuse. Replace if defective.
5. Loose or broken pink/tan wire from fuse F7 to ECU connector pin #45.	Check continuity. Replace if defective.
6. Loose or broken red wire from battery positive to ECU fuse F8.	Check continuity. Replace if defective.
7. Defective fuse F8.	Check fuse. Replace if defective.
8. Loose or broken red/tan wire from fuse F8 to ECU connector pin #60 and pin #79.	Check continuity. Replace if defective.
9. Loose or broken black wire from engine ground to ECU connector pin #69 and #81.	Check continuity. Replace if defective.
10. Loose or broken light blue/pink wire from GM engine connector 1 to relay 57ACR.	Check continuity. Replace if defective.
11. Loose or broken pink/black wire from ECU connector pin #89 to relay 57ACR.	Check continuity. Replace if defective.
12. Defective relay 57ACR.	Check relay. Replace if defective.
13. Loose or broken red wire from battery positive to starter fuse F12.	Check continuity. Replace if defective.
14. Defective fuse F12.	Check fuse. Replace if defective.

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

With the following conditions:

- If equipped with Elevate/Trackunit Telematics Ready

**NOTE**

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

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

4.3-4 Engine Cranks but Will Not Start

Deutz Diesel D2.9L

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



NOTE

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

Deutz Diesel D2011

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

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

**NOTE**

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

Kubota Dual Fuel**NOTE**

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

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

16. Loose or broken tan/orange wire from ECU connector pin #83 to throttle actuator RA1.	Check continuity. Replace if defective.
17. Loose or broken light green/red wire from ECU connector pin #19 to throttle actuator RA1.	Check continuity. Replace if defective.
18. Loose or broken black/light green wire from ECU connector pin #20 to throttle actuator RA1.	Check continuity. Replace if defective.
19. Loose or broken light blue/dark blue wire from ECU connector pin #6 to throttle actuator RA1.	Check continuity. Replace if defective.
20. Loose or broken purple/light blue wire from ECU connector pin #5 to throttle actuator RA1.	Check continuity. Replace if defective.

Fuel Related Problems

With the following conditions:

- Gasoline Only

21. Loose or broken pink/tan wire from fuse F7 to fuel pump relay 56CR.	Check continuity. Replace if defective.
22. Loose or broken red wire from battery positive to fuel pump relay 56CR.	Check continuity. Replace if defective.
23. Loose or broken tan/black wire from ECU connector pin #84 to fuel pump relay 56CR.	Check continuity. Replace if defective.
24. Defective fuel pump relay 56CR.	Check relay. Replace if defective.
25. Loose or broken pink/yellow wire from fuel pump relay 56CR to fuse F11.	Check continuity. Replace if defective.
26. Defective fuse F11.	Check fuse. Replace if defective.
27. Loose or broken pink/yellow wire from fuse F11 to fuel pump FP.	Check continuity. Replace if defective.
28. Defective fuel pump FP.	Check fuel pump by putting 12 volts and a ground to it. Replace if defective.
29. Loose or broken wire #3002 from fuel pump FP to GM engine connector 1.	Check continuity. Replace if defective.
30. Loose or broken black/red wire from GM engine connector to ECU connector pin #86.	Check continuity. Replace if defective.

With the following conditions:

- Propane Only



NOTE

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

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

4.3-5 Glow Plug Circuit Inoperative - Deutz D2011 diesel engine

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

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

**NOTE**

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

4.3-6 All Base Control Console Inoperative

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

**NOTE**

Jumper is removed if equipped with generator option.

8. Loose or broken wire #21 from base terminal block to relay 21CR.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from base terminal block to relay 21CR.	Check continuity. Replace if defective.
10. Loose or broken wire #09 from base terminal block to relay 21CR. (ANSI/CSA)	Check continuity. Replace if defective.
11. Loose or broken wire #09 from base terminal block to relay 59CR. (CE)	Check continuity. Replace if defective.
12. Loose or broken wire #162A from relay 59CR to base terminal block. (CE)	Check continuity. Replace if defective.
13. Loose or broken wire #162A from base terminal block to relay 21CR. (CE)	Check continuity. Replace if defective.

**NOTE**

For further CE troubleshooting refer to Load Sensing System.

14. Defective relay 21CR.	Check relay. Replace if defective.
15. Loose or broken wire #21A from relay 21CR to main harness plug pin #3.	Check continuity. Replace if defective.
16. Loose or broken wire #21A from main harness plug pin #3 to dump valve 2H-21A.	Check continuity. Replace if defective.
17. Loose or broken wire #02 from dump valve 2H-21A to main harness plug.	Check continuity. Replace if defective.
18. Defective dump valve coil 2H-21A.	Check continuity and resistance through coil. Replace if defective.

4.3-7 No Movement from Base Control Console

No Main Boom Down, Riser Down or Turret Rotate

1. Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1.	Check continuity. Replace if defective.
2. Open resistor R1.	Check resistor for 6 ohms. If no resistance found, replace resistor.
3. Loose or broken wire #10B from resistor R1 to turret rotate switch S13 and boom down switch S12.	Check continuity. Replace if defective.

No Boom Up

1. Loose or broken wire #10A from ignition/ pump switch S5 to boom switch S12.	Check continuity. Replace if defective.
2. Defective boom switch S12.	Check continuity through switch while activating up function between wires #10A and #14. Replace switch if no continuity.
3. Loose or broken wire #14 from boom switch S12 to base terminal block.	Check continuity. Replace if defective.
4. Loose or broken wire #14 from base terminal block to turret harness plug pin #4.	Check continuity. Replace if defective.
5. Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to boom up valve 4H-14.	Check continuity. Replace if defective.
7. Defective boom up coil 4H-14.	Check continuity and resistance through coil. Replace if defective.

No Boom Down

1. Loose or broken wire #10B from resistor R1 to boom down switch S12.	Check continuity. Replace if defective.
2. Defective boom switch S12.	Check continuity through switch while activating down function between wires #10B and #13. If no continuity found, replace switch.
3. Loose or broken wire #13 from boom down switch S12 to base terminal block.	Check continuity. Replace if defective.
4. Loose or broken wire #13 from base terminal block to turret harness plug pin #3.	Check continuity. Replace if defective.
5. Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13.	Check continuity. Replace if defective.
7. Defective boom down coil 4H-13.	Check continuity and resistance through coil. Replace if defective.

No Riser Up from Base Control Console

1. Loose or broken wire #10A from ignition/pump switch S5 to riser switch S25.	Check continuity. Replace if defective.
2. Defective riser switch S25.	Check continuity through switch while activating up function between wires #10A 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 main harness plug pin #8.	Check continuity. Replace if defective.
5. Loose or broken wire #31 from main harness plug pin #8 to riser up valve 4H-31.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from main harness plug to riser up valve 4H-31.	Check continuity. Replace if defective.
7. Defective boom up coil 4H-31.	Check continuity and resistance through coil. Replace if defective.

No Riser Down from Base Control Console

1. Loose or broken wire #10B from ignition/pump switch S5 to riser switch S25.	Check continuity. Replace if defective.
2. Defective riser switch S25.	Check continuity through switch while activating up function between wires #10B and #30. Replace switch if no continuity.
3. Loose or broken wire #30 from riser switch S25 to base terminal block.	Check continuity. Replace if defective.

4. Loose or broken wire #30 from base terminal block to main harness plug pin #7.	Check continuity. Replace if defective.
5. Loose or broken wire #30 from main harness plug pin #87 to riser up valve 4H-30.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from main harness plug to riser up valve 4H-30.	Check continuity. Replace if defective.
7. Defective boom down coil 4H-30.	Check continuity and resistance through coil. Replace if defective.

No Turret Rotate Left

1. Loose or broken wire #10B from resistor R1 to turret rotate switch S13.	Check continuity. Replace if defective.
2. Defective turret rotate switch S13.	Check continuity through switch while activating rotate left function between wires #10B and #32. If no continuity found, replace switch.
3. Loose or broken wire #32 from turret rotate switch S13 to base terminal block.	Check continuity. Replace if defective.
4. Loose or broken wire #32 from base terminal block to turret harness plug pin #9.	Check continuity. Replace if defective.
5. Loose or broken wire #32 from turret harness plug pin #9 to turret rotate left valve 4H-32.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32.	Check continuity. Replace if defective.
7. Defective turret rotate left valve coil 4H-32.	Check continuity and resistance through coil. Replace if defective.

No Turret Rotate Right

1. Loose or broken wire #10B from resistor R1 to turret rotate switch S13.	Check continuity. Replace if defective.
2. Defective turret rotate switch S13.	Check continuity through switch while activating rotate left function between wires #10B and #33. If no continuity found, replace switch.
3. Loose or broken wire #33 from turret rotate switch S13 to base terminal block.	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 left valve 4H-33.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-33.	Check continuity. Replace if defective.
7. Defective turret rotate right valve coil 4H-33.	Check continuity and resistance through coil. Replace if defective.

No Telescope Retract From Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to telescope switch S14.	Check continuity. Replace if defective.
2. Defective telescope switch S14.	Check continuity through switch while activating retract function between wires #10A and #38. If no continuity found, replace switch.
3. Loose or broken wire #38 from telescope switch S14 to base terminal block.	Check continuity. Replace if defective.
4. Loose or broken wire #38 from base terminal block to turret harness plug pin #12.	Check continuity. Replace if defective.
5. Loose or broken wire #38 from turret harness plug pin #12 to telescope retract valve 3H-38.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to telescope retract valve 3H-38.	Check continuity. Replace if defective.
7. Defective telescope retract valve coil 3H-38.	Check continuity and resistance through coil. Replace if defective.

No Telescope Extend

1. Loose or broken wire #10A from ignition/ pump switch S5 to telescope switch S14.	Check continuity. Replace if defective.
2. Defective telescope switch S14.	Check continuity through switch while activating extend function between wires #10A and #39. If no continuity found, replace switch.
3. Loose or broken wire #39 from telescope switch S14 to base terminal block.	Check continuity. Replace if defective.
4. Loose or broken wire #39 from base terminal block to turret harness plug pin #13.	Check continuity. Replace if defective.
5. Loose or broken wire #39 from turret harness plug pin #13 to telescope extend valve 3H-39.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to telescope extend valve 3H-39.	Check continuity. Replace if defective.
7. Defective telescope extend valve coil 3H-39.	Check continuity and resistance through coil. Replace if defective.

No Platform Rotate Left

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16.	Check continuity. Replace if defective.
2. Defective platform rotate switch S16.	Check continuity through switch while activating rotate left function between wires #10A and #36. If no continuity found, replace switch.
3. Open or defective diode D36.	Check diode. Replace if defective.

4. Loose or broken wire #36A from diode D36 to main harness plug pin #12.	Check continuity. Replace if defective.
5. Loose or broken wire #36A from main harness plug pin #12 to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from main harness plug to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
7. Defective platform rotate enable valve 2H-36A.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #36 from platform rotate switch S16 to base connector plug A pin #18.	Check continuity. Replace if defective.
9. Loose or broken wire #36 in boom cable A or its connectors.	Check for continuity between pins #18 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #36 plug A pin #18 to platform terminal block.	Check continuity. Replace if defective.
11. Loose or broken wire #36 from platform terminal block to platform rotate left valve 4H-36.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from platform terminal block to platform rotate left valve 4H-36.	Check continuity. Replace if defective.
13. Defective platform rotate left valve coil 4H-36.	Check continuity and resistance through coil. Replace if defective.
No Platform Rotate Right	
1. Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16.	Check continuity. Replace if defective.
2. Defective platform rotate switch S16.	Check continuity through switch while activating rotate right function between wires #10A and #37. If no continuity found, replace switch.
3. Open or defective diode D37.	Check diode. Replace if defective.
4. Loose or broken wire #36A from diode D37 to main harness plug pin #12.	Check continuity. Replace if defective.
5. Loose or broken wire #36A from main harness plug pin #12 to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from main harness plug to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
7. Defective platform rotate enable valve 2H-36A.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #37 from platform rotate switch S16 to base connector plug A pin #19.	Check continuity. Replace if defective.

9. Loose or broken wire #37 in boom cable A or its connectors.	Check for continuity between pins #19 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #37 plug A pin #19 to platform terminal block.	Check continuity and resistance through coil. Replace if defective.
11. Loose or broken wire #37 from platform terminal block to platform rotate right valve 4H-37.	Check continuity. Replace if defective
12. Loose or broken wire #02 from platform terminal block to platform rotate right valve 4H-37.	Check continuity. Replace if defective
13. Defective platform rotate right valve coil 4H-37.	Check continuity and resistance through coil. Replace if defective.
No Jib Up	
1. Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17.	Check continuity. Replace if defective
2. Defective jib up switch S17.	Check continuity through switch while activating jib up function between wires #10A and #35. If no continuity found, replace switch.
3. Open or defective diode D35.	Check diode. Replace if defective.
4. Loose or broken wire #34A from diode D35 to main harness plug pin #11.	Check continuity. Replace if defective.
5. Loose or broken wire #34A from main harness plug pin #11 to jib enable valve 2H-34A.	Check continuity. Replace if defective
6. Loose or broken wire #02 from main harness plug to jib enable valve 2H-34A.	Check continuity. Replace if defective
7. Defective jib enable valve 2H-34A.	Check continuity. Replace if defective
8. Loose or broken wire #35 from jib up switch S17 to base connector plug A pin #17.	Check continuity. Replace if defective
9. Loose or broken wire #35 in boom cable A or its connectors.	Check for continuity between pins #17 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #35 from plug A pin #17 to platform terminal block.	Check continuity. Replace if defective
11. Loose or broken wire #35 from platform terminal block to jib up valve 4H-35.	Check continuity. Replace if defective
12. Loose or broken wire #02 from platform terminal block to jib up valve 4H-35.	Check continuity. Replace if defective
13. Defective jib up valve coil 4H-35.	Check continuity and resistance through coil. Replace if defective.

No Jib Down

1. Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17.	Check continuity. Replace if defective
2. Defective jib down switch S17.	Check continuity through switch while activating jib down function between wires #10A and #34. If no continuity found, replace switch.
3. Open or defective diode D34.	Check diode. Replace if defective.
4. Loose or broken wire #34A from diode D34 to main harness plug pin #11.	Check continuity. Replace if defective
5. Loose or broken wire #34A from main harness plug pin #11 to jib enable valve 2H-34A.	Check continuity. Replace if defective
6. Loose or broken wire #02 from main harness plug to jib enable valve 2H-34A.	Check continuity. Replace if defective
7. Defective jib enable valve 2H-34A.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #34 from jib down switch S17 to base connector plug A pin #16.	Check continuity. Replace if defective
9. Loose or broken wire #34 in boom cable A or its connectors.	Check for continuity between pins #16 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #34 from plug A pin #16 to platform terminal block.	Check continuity. Replace if defective
11. Loose or broken wire #34 from platform terminal block to jib down valve 4H-34.	Check continuity. Replace if defective
12. Loose or broken wire #02 from platform terminal block to jib down valve 4H-34.	Check continuity. Replace if defective
13. Defective jib down valve coil 4H-34.	Check continuity and resistance through coil. Replace if defective.

No Manual Platform Level Up

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15.	Check continuity. Replace if defective
2. Defective platform level switch S15.	Check continuity through switch while activating level up function between wires #10A and #41. If no continuity found replace switch.
3. Loose or broken wire #41 from platform level switch S15 to base terminal block.	Check continuity. Replace if defective
4. Loose or broken wire #41 from base terminal block to main harness pin plug #16.	Check continuity. Replace if defective
5. Loose or broken wire #41 from main harness pin plug #16 platform level up valve 4H-41.	Check continuity. Replace if defective

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| 6. Loose or broken wire #02 from turret harness pin plug platform level up valve 4H-41. | Check continuity. Replace if defective |
| 7. Defective platform level up valve coil 4H-41. | Check continuity and resistance through coil. Replace if defective. |

No Manual Platform Level Down

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| 1. Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15. | Check continuity. Replace if defective |
| 2. Defective platform level switch S15. | Check continuity through switch while activating level down function between wires #10A and #40. If no continuity found replace switch. |
| 3. Loose or broken wire #40 from platform level switch S15 to base terminal block. | Check continuity. Replace if defective |
| 4. Loose or broken wire #40 from base terminal block to main harness pin plug pin#15. | Check continuity. Replace if defective |
| 5. Loose or broken wire #40 from main harness pin plug pin#16 platform level down valve 4H-40. | Check continuity. Replace if defective |
| 6. Loose or broken wire #02 from turret harness pin plug platform level down valve 4H-40. | Check continuity. Replace if defective |
| 7. Defective platform level down valve coil 4H-40. | Check continuity and resistance through coil. Replace if defective. |

4.3-8 All Controls Inoperative From Platform Control Console

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| 1. Open or defective emergency stop switch S4. | Pull emergency switch out. Check continuity through switch. Replace if defective. |
| 2. Loose or broken wire #4A from emergency stop switch S4 to platform start switch S9. | Check continuity. Replace if defective. |
| 3. Loose or broken wire #4 platform start switch S9 to platform terminal block. | Check continuity. Replace if defective. |
| 4. Loose or broken pin jumper between #04 and #04A on platform terminal block (without generator option only). | Check continuity. Replace if defective. |
| 5. Loose or broken wire #04 from platform terminal block to generator switch S22 (generator option only). | Check continuity. Replace if defective. |
| 6. Generator switch S22 in generator mode or is open or defective (generator option only). | Select OFF mode on generator switch. Check continuity through switch from #04 to #04A. Replace if defective |
| 7. Loose or broken wire #04A from generator switch S22 to platform terminal block (generator option only). | Check continuity. Replace if defective. |

8. Loose or broken wire #04A from platform terminal block to footswitch S11.	Check continuity. Replace if defective.
9. Open or defective footswitch S11.	Check continuity through switch while activating footswitch function between wires #04A and #08A. If no continuity found replace switch.
10. Loose or broken wire #08A from footswitch S11 to valve driver pin #16.	Check continuity. Replace if defective.
11. Loose or broken wire #04 from platform terminal block to valve driver pin #1, 2 & 13.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from platform terminal block to valve driver pin #24, 25 & 26.	Check continuity. Replace if defective.
13. No output on pin #6 of the valve driver to wire #08.	Check pin #6 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
14. Loose or broken wire #04 from platform terminal block to diode D04.	Check continuity. Replace if defective.
15. Open or defective diode D04.	Check diode. Replace if defective.
16. Loose or broken wire #60 from diode D04 to platform terminal block.	Check continuity. Replace if defective.
17. Loose or broken wire #60 from platform terminal block to plug B pin #16 in platform control console.	Check continuity. Replace if defective.
18. 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.
19. Loose or broken wire #60 from plug B pin #16 to base terminal block.	Check continuity. Replace if defective.

No Boom Up From Platform Control Console

1. Loose or broken wire #04 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
3. No output on y-axis of joystick controller A1.	Refer to joystick test procedure in section 5.
4. Loose or broken wire "Y" from joystick controller A1 to valve driver pin #29.	Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20B.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #22 of the valve driver to wire #14.	Check pin #22 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.

7. Loose or broken wire #14 from valve driver pin #22 to plug A pin #7 in platform control console.	Check continuity. Replace if defective.
8. Loose or broken wire #14 in boom cable A or its connectors.	Check for continuity between pins #7 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #14 from base connector plug A pin #7 to base terminal block.	Check continuity. Replace if defective.
10. Loose or broken wire #14 from base terminal block to turret harness plug pin #4.	Check continuity. Replace if defective.
11. Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from turret harness plug to boom up valve 4H-14.	Check continuity. Replace if defective.
13. Defective boom up valve coil 4H-14.	Check continuity and resistance through coil. Replace if defective.

No Boom Down

1. Loose or broken wire #04 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
3. No output on y-axis of joystick controller A1.	Refer to joystick test procedure in section 5.
4. Loose or broken wire "Y" from joystick controller A1 to valve driver pin #29.	Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20B.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #8 of the valve driver to wire #13.	Check pin #8 for minimum 1.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
7. Loose or broken wire #13 from valve driver pin #8 to plug A pin #6 in platform control console.	Check continuity. Replace if defective.
8. Loose or broken wire #13 in boom cable A or its connectors.	Check for continuity between pins #6 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #13 from base connector plug A pin #6 to base terminal block.	Check continuity. Replace if defective.
10. Loose or broken wire #13 from base terminal block to main harness plug pin #1.	Check continuity. Replace if defective.
11. Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13.	Check continuity. Replace if defective.

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| 12. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13. | Check continuity. Replace if defective. |
| 13. Defective boom down valve coil 4H-13. | Check continuity and resistance through coil. Replace if defective. |

No Riser Up from Platform Control Console

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| 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 from joystick controller A3. | Refer to joystick test procedure in section 5. |
| 4. Loose or broken wire "R" from joystick controller A3 to valve driver pin #30. | Check continuity. Replace if defective. |
| 5. No output on pin #5 of the valve driver to wire #20. | Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference. |
| 6. No output on pin #9 of the valve driver to wire #31. | Check pin #9 for minimum 3 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 pin #9 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. |
| 10. Loose or broken wire #31 from base terminal block to main harness plug pin #8. | Check continuity. Replace if defective. |
| 11. Loose or broken wire #31 from main harness plug pin #8 to riser up valve 4H-31. | Check continuity. Replace if defective. |
| 12. Loose or broken wire #02 from main harness plug to riser up valve 4H-31. | Check continuity. Replace if defective. |
| 13. Defective riser up valve coil 4H-31. | Check continuity and resistance through coil. Replace if defective. |

No Riser Down from Platform Control Console

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| 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 from joystick controller A3. | Refer to joystick test procedure in section 5. |

4. Loose or broken wire "R" from joystick controller A3 to valve driver pin #30.	Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #12 of the valve driver to wire #30.	Check pin #12 for minimum 3 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 pin #12 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.
10. Loose or broken wire #30 from base terminal block to main harness plug pin #7.	Check continuity. Replace if defective.
11. Loose or broken wire #30 from main harness plug pin #7 to riser down valve 4H-30.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from main harness plug to riser down valve 4H-30.	Check continuity. Replace if defective.
13. Defective riser down valve coil 4H-30.	Check continuity and resistance through coil. Replace if defective.

No Turret Left

1. Loose or broken wire #04 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
3. No output on x-axis of joystick controller A1.	Refer to joystick test procedure in section 5.
4. Loose or broken wire "X" from joystick controller A1 to valve driver pin #28.	Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #20 of the valve driver to wire #32.	Check pin #20 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
7. Loose or broken wire #32 from valve driver pin #20 to plug A pin #14 in platform control console.	Check continuity. Replace if defective.

8. Loose or broken wire #32 in boom cable A or its connectors.	Check for continuity between pins #14 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #32 from base connector plug A pin #14 to base terminal block.	Check continuity. Replace if defective.
10. Loose or broken wire #32 from base terminal block to turret harness plug pin #10.	Check continuity. Replace if defective.
11. Loose or broken wire #32 from turret harness plug pin #10 to turret left valve 4H-32.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from turret harness plug to turret left valve 4H-32.	Check continuity. Replace if defective.
13. Defective turret left valve coil 4H-32.	Check continuity and resistance through coil. Replace if defective.
No Turret Right	
1. Loose or broken wire #04 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to joystick controller A1.	Check continuity. Replace if defective.
3. No output on x-axis of joystick controller A1.	Refer to joystick test procedure in section 5.
4. Loose or broken wire "X" from joystick controller A1 to valve driver pin #28.	Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #35 of the valve driver to wire #33.	Check pin #10 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
7. Loose or broken wire #33 from valve driver pin #35 to plug A pin #15 in platform control console.	Check continuity. Replace if defective.
8. Loose or broken wire #33 in boom cable A or its connectors.	Check for continuity between pins #15 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #33 from base connector plug A pin #15 to base terminal block.	Check continuity. Replace if defective.
10. Loose or broken wire #33 from base terminal block to turret harness plug pin #11.	Check continuity. Replace if defective.
11. Loose or broken wire #33 from turret harness plug pin #11 to turret right valve 4H-33.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from turret harness plug to turret right valve 4H-33.	Check continuity. Replace if defective.

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| 13. Defective turret right valve coil 4H-33. | Check continuity and resistance through coil.
Replace if defective. |
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No Toggle Switch Functions from Platform Control Console

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| 1. Loose or broken wire #8 from platform terminal block to toggle switches. | Check continuity. Replace if defective. |
| 2. Loose or broken wire #20A from toggle switches to valve driver pin #33. | Check continuity. Replace if defective. |
| 3. No output on pin #5 of the valve driver to wire #20. | Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference. |

No Telescope In

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|---|--|
| 1. Loose or broken wire #08 from platform terminal block to telescope switch S18. | Check continuity. Replace if defective. |
| 2. Defective telescope switch S18. | Check continuity through switch while activating in function between wires #08 and #38. |
| 3. Loose or broken wire #20A from telescope switch S18 to valve driver pin #33. | Check continuity. Replace if defective. |
| 4. No output on pin #5 of the valve driver to wire #20. | Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference. |
| 5. Loose or broken wire #38 from telescope switch S18 to plug B pin #8 in platform control console. | Check continuity. Replace if defective. |
| 6. 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. |
| 7. Loose or broken wire #38 from base connector plug B pin #8 to base terminal block. | Check continuity. Replace if defective. |
| 8. Loose or broken wire #38 from base terminal block to main harness plug pin #13. | Check continuity. Replace if defective. |
| 9. Loose or broken wire #38 from main harness plug pin #13 to telescope in valve 4H-38. | Check continuity. Replace if defective. |
| 10. Loose or broken wire #02 from main harness plug to telescope in valve 4H-38. | Check continuity. Replace if defective. |
| 11. Defective telescope in valve coil 4H-38. | Check continuity and resistance through coil.
Replace if defective. |

No Telescope Out

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|---|---|
| 1. Loose or broken wire #08 from platform terminal block to telescope switch S18. | Check continuity. Replace if defective. |
| 2. Defective telescope switch S18. | Check continuity through switch while activating out function between wires #08 and #39. |

3. Loose or broken wire #20A from telescope switch S18 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #39 from telescope switch S18 to plug B pin #9 in platform control console.	Check continuity. Replace if defective.
6. 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.
7. Loose or broken wire #39 from base connector plug B pin #9 to base terminal block.	Check continuity. Replace if defective.
8. Loose or broken wire #39 from base terminal block to main harness plug pin #14.	Check continuity. Replace if defective.
9. Loose or broken wire #39 from main harness plug pin #14 to telescope out valve 4H-39.	Check continuity. Replace if defective.
10. Loose or broken wire #02 from main harness plug to telescope out valve 4H-39.	Check continuity. Replace if defective.
11. Defective telescope out valve coil 4H-39.	Check continuity and resistance through coil. Replace if defective.

No Platform Rotate Left

1. Loose or broken wire #08 from platform terminal block to platform rotate switch S20.	Check continuity. Replace if defective.
2. Defective platform rotate switch S20.	Check continuity through switch while activating rotate left function between wires #08 and #36.
3. Loose or broken wire #20A from platform rotate switch S20 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #36 from platform rotate switch S20 to platform terminal block.	Check continuity. Replace if defective.
6. Loose or broken wire #36 or #02 from platform terminal block to rotate left valve 4H-36.	Check continuity. Replace if defective.
7. Defective rotate left valve coil 4H-36.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #36 from platform terminal block to plug A pin#18 in platform control console.	Check continuity. Replace if defective.

9. Loose or broken wire #36 in boom cable A or its connectors.	Check for continuity between pins #18 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #36 from base connector plug A pin #18 to base platform rotate switch S16.	Check continuity. Replace if defective.
11. Defective base platform rotate switch S16.	Check continuity through switch while activating rotate left function between wires #10A and #36. If no continuity found, replace switch.
12. Open or defective diode D36.	Check diode. Replace if defective.
13. Loose or broken wire #36A from diode D36 to main harness plug pin #12.	Check continuity. Replace if defective.
14. Loose or broken wire #36A from main harness plug pin #12 to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from main harness plug to platform rotate enable valve 2H-36A.	Check continuity. Replace if defective.
16. Defective platform rotate enable valve 2H-36A.	Check continuity and resistance through coil. Replace if defective.
No Platform Rotate Right	
1. Loose or broken wire #08 from platform terminal block to platform rotate switch S20.	Check continuity. Replace if defective.
2. Defective platform rotate switch S20.	Check continuity through switch while activating rotate right function between wires #08 and #37.
3. Loose or broken wire #20A from platform rotate switch S20 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #37 from platform rotate switch S20 to platform terminal block.	Check continuity. Replace if defective.
6. Loose or broken wire #37 or #02 from platform terminal block to rotate right valve 4H-37.	Check continuity. Replace if defective.
7. Defective rotate right valve coil 4H-37.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #37 from platform terminal block to plug A pin#19 in platform control console.	Check continuity. Replace if defective.
9. Loose or broken wire #37 in boom cable A or its connectors.	Check for continuity between pins #19 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.

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

11. Defective base jib up switch S17.	Check continuity through switch while activating jib up function between wires #10A and #35. If no continuity found, replace switch.
12. Open or defective diode D35.	Check continuity. Replace if defective.
13. Loose or broken wire #34A from diode D35 to main harness plug pin #11.	Check continuity. Replace if defective.
14. Loose or broken wire #34A from main harness plug pin #11 to jib enable valve 2H-34A.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from main harness plug to jib enable valve 2H-34A.	Check continuity. Replace if defective.
16. Defective jib enable valve 2H-34A.	Check continuity and resistance through coil. Replace if defective.
No Jib Down	
1. Loose or broken wire #08 from platform terminal block to jib switch S21.	Check continuity. Replace if defective.
2. Defective jib down switch S21.	Check continuity through switch while activating jib down function between wires #08 and #34.
3. Loose or broken wire #20A from jib switch S21 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #34 from jib switch S20 to platform terminal block.	Check continuity. Replace if defective.
6. Loose or broken wire #34 or #02 from platform terminal block to jib down valve 4H-34.	Check continuity. Replace if defective.
7. Defective jib up valve coil 4H-34.	Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #34 from platform terminal block to plug A pin#16 in platform control console.	Check continuity. Replace if defective.
9. Loose or broken wire #34 in boom cable A or its connectors.	Check for continuity between pins #16 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #34 from base connector plug A pin #16 to base jib down switch S17.	Check continuity. Replace if defective.
11. Defective base jib down switch S17.	Check continuity through switch while activating jib down function between wires #10A and #34. If no continuity found, replace switch.
12. Open or defective diode D34.	Check continuity. Replace if defective.

13. Loose or broken wire #34A from diode D34 to main harness plug pin #11.	Check continuity. Replace if defective.
14. Loose or broken wire #34A from main harness plug pin #11 to jib enable valve 2H-34A.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from main harness plug to jib enable valve 2H-34A.	Check continuity. Replace if defective.
16. Defective jib enable valve 2H-34A.	Check continuity and resistance through coil. Replace if defective.

No Manual Platform Level Up from Platform Control Console

1. Loose or broken wire #08 from platform terminal block to platform leveling switch S19.	Check continuity. Replace if defective.
2. Defective platform leveling switch S19.	Check continuity through switch while activating level up function between wires #08 and #41.
3. Loose or broken wire #20A from platform leveling switch S19 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #41 from platform leveling switch S19 to plug B pin #11 in platform control console.	Check continuity. Replace if defective.
6. 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.
7. Loose or broken wire #41 from base connector plug B pin #11 to base terminal block.	Check continuity. Replace if defective.
8. Loose or broken wire #41 from base terminal block to main harness plug pin #16.	Check continuity. Replace if defective.
9. Loose or broken wire #41 from main harness plug pin #16 to level up valve 4H-41.	Check continuity. Replace if defective.
10. Loose or broken wire #02 from main harness plug to level up valve 4H-41.	Check continuity. Replace if defective.
11. Defective level up valve coil 4H-41.	Check continuity and resistance through coil. Replace if defective.

No Manual Platform Level Down from Platform Control Console

1. Loose or broken wire #08 from platform terminal block to platform leveling switch S19.	Check continuity. Replace if defective.
2. Defective platform leveling switch S19.	Check continuity through switch while activating level down function between wires #08 and #40.

3. Loose or broken wire #20A from platform leveling switch S19 to valve driver pin #33.	Check continuity. Replace if defective.
4. No output on pin #5 of the valve driver to wire #20.	Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
5. Loose or broken wire #40 from platform leveling switch S19 to plug B pin #10 in platform control console.	Check continuity. Replace if defective.
6. 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.
7. Loose or broken wire #40 from base connector plug B pin #10 to base terminal block.	Check continuity. Replace if defective.
8. Loose or broken wire #40 from base terminal block to main harness plug pin #15.	Check continuity. Replace if defective.
9. Loose or broken wire #40 from main harness plug pin #15 to level down valve 4H-40.	Check continuity. Replace if defective.
10. Loose or broken wire #02 from main harness plug to level down valve 4H-40.	Check continuity. Replace if defective.
11. Defective level down valve coil 4H-40.	Check continuity and resistance through coil. Replace if defective.

4.3-9 Throttle Inoperative, Mid and High - Deutz D2.9L

1. Loose or broken wire #90 from base terminal block to connector J2 pin #5.	Check continuity. Replace if defective.
2. Loose or broken wire #90 from connector P2 pin #5 94 pin ECU connector pin 80.	Check continuity. Replace if defective.
3. Loose or broken wire #99 from base terminal block to connector J2 pin 4	Check continuity. Replace if defective.
4. Loose or broken wire #99 from connector P2 pin 4 to 94 pin ECU connector pin 74	Check continuity. Replace if defective.
5. Resistor R4 open or poor connection at base terminal block.	Measure resistance (1KΩ) between 99 and 99A. Check connections. Replace if defective.
6. Resistor R5 open or poor connection at base terminal block.	Measure resistance (3.3KΩ) between 99A and 99B. Check connections. Replace if defective.
7. Resistor R6 open or poor connection at base terminal block.	Measure resistance (3.9KΩ) between 99B and 90. Check connections. Replace if defective.

4.3-10 Mid Throttle Inoperative

1. Loose or broken wire #08 from platform terminal block to throttle switch S10.	Check continuity. Replace if defective.
2. Defective throttle switch S10.	Check continuity through switch while activating mid throttle function between wires #08 and #79. If no continuity found replace switch.
3. Loose or broken wire #79 from throttle switch S10 to plug B pin #20 in platform control console.	Check continuity. Replace if defective.
4. Loose or broken wire #79 in Cable B or its connectors.	Check for continuity between pins #20 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
With the following conditions:	
<ul style="list-style-type: none"> ▪ Deutz D2.9L Diesel 	
5. Loose or broken wire #79 from base plug B pin #20 to relay 79CR.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from base terminal block to relay 79CR.	Check continuity. Replace if defective.
7. Loose or broken wire #90 from relay 79CR to base terminal block.	Check continuity. Replace if defective.
8. Loose or broken wire #99B from relay 79CR to base terminal block.	Check continuity. Replace if defective.
9. Defective relay 79CR.	Check relay. Replace if defective.
With the following conditions:	
<ul style="list-style-type: none"> ▪ Deutz D2011 Diesel 	
10. Loose or broken wire #79 from base plug B pin #20 to relay 79CR.	Check continuity. Replace if defective.
11. Loose or broken wire #02 from base terminal block to relay 79CR.	Check continuity. Replace if defective.
12. Loose or broken wire #99 from relay 79CR to ECU connector pin #18.	Check continuity. Replace if defective.
13. Loose or broken wire #103 from relay 79CR to base terminal block.	Check continuity. Replace if defective.
14. Loose or broken wire #103 from base terminal block to ECU connector pin #17.	Check continuity. Replace if defective.
15. Defective relay 79CR.	Check relay. Replace if defective.

With the following conditions:

- Kubota Dual Fuel

16. Loose or broken wire #79 from base plug B pin #20 to engine harness plug.	Check continuity. Replace if defective.
17. Loose or broken wire #79 from engine harness plug to GM engine connector 2.	Check continuity. Replace if defective.
18. Loose or broken gray/dark blue wire from Kubota Dual Fuel engine connector to ECU connector pin #51.	Check continuity. Replace if defective.
19. Loose or broken purple/light blue wire from ECU connector pin #5 to throttle actuator RA1.	Check continuity. Replace if defective.
20. Defective throttle actuator RA1.	Check actuator. Replace if defective.

4.3-11 High Throttle Inoperative

1. Loose or broken wire #08 from platform terminal block to throttle switch S10.	Check continuity. Replace if defective.
2. Defective throttle switch S10.	Check continuity through switch while activating high throttle function between wires #08 and #78. If no continuity found replace switch.
3. Loose or broken wire #78 from throttle switch S10 to plug B pin #19 in platform control console.	Check continuity. Replace if defective.
4. Loose or broken wire #78 in Cable B or its connectors.	Check for continuity between pins #19 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.

With the following conditions:

- Deutz D2.9L Diesel

5. Loose or broken wire #78 from base plug B pin #19 to relay 78CR.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from base terminal block to relay 78CR.	Check continuity. Replace if defective.
7. Loose or broken wire #90 from relay 78CR to base terminal block.	Check continuity. Replace if defective.
8. Loose or broken wire #99A from relay 78CR to base terminal block.	Check continuity. Replace if defective.
9. Defective relay 78CR.	Check relay. Replace if defective.

With the following conditions:

- Deutz D2011 Diesel

10. Loose or broken wire #78 from base plug B pin #17 to relay 78CR.	Check continuity. Replace if defective.
11. Loose or broken wire #02 from base terminal block to relay 78CR.	Check continuity. Replace if defective.
12. Loose or broken wire #90 from relay 78CR to ECU connector pin #21.	Check continuity. Replace if defective.
13. Loose or broken wire #103 from relay 78CR to base terminal block.	Check continuity. Replace if defective.
14. Loose or broken wire #103 from base terminal block to ECU connector pin #17.	Check continuity. Replace if defective.
15. Defective relay 78CR.	Check relay. Replace if defective.

4.3-12 Brake will not Release

1. No output on pin #10 from valve driver to wire #26 when operating a drive function.	Check pin #10 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
2. Loose or broken wire #26 from valve drive pin #10 to plug A pin #11 in platform control console.	Check continuity. Replace if defective.
3. Loose or broken wire #26 in Cable A or its connectors.	Check for continuity between pins #11 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
4. Loose or broken wire #26 from base plug A pin #11 to turret harness plug pin #8.	Check continuity. Replace if defective.
5. Loose or broken wire #26 or #02 from turret harness plug to brake valve 3H-26.	Check continuity. Replace if defective.
6. Defective brake valve coil 3H-26.	Check continuity and resistance through coil. Replace if defective.

4.3-13 Differential Lock will not Engage



NOTE

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

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

4.3-14 Differential Lock Engages Momentarily but will not stay Engaged



NOTE

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

1. Loose or broken wire #26A at diode D26A.	Check continuity. Replace if defective.
2. Open or defective diode D26A.	Check diode. Replace if defective.
3. Loose or broken wire #26B from diode D26A to relay 165CR.	Check continuity. Replace if defective.
4. Loose or broken wire #165 from differential lock switch S28 to relay 165CR. (2 places)	Check for 12 volts on wire #165 (2 places) while activating differential lock at relay 165CR. Check continuity. Replace if defective.
5. Defective relay 165CR.	Check relay. Replace if defective.
6. Loose or broken wire #02 from platform terminal block to differential lock switch S28.	Check continuity. Replace if defective.
7. Loose or broken wire #02A from differential lock switch S28 to relay 165CR.	Check continuity. Replace if defective.

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| 8. Loose or broken wire #08 from platform terminal block to diode D08-1. | Check continuity. Replace if defective. |
| 9. Open or defective diode D08-1. | Check diode. Replace if defective. |
| 10. Loose or broken wire #26B from diode D08-1 to relay 165CR. | Check continuity. Replace if defective. |

4.3-15 No Drive and Steer



NOTE

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

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|---|---|
| 1. Loose or broken wire #162A from base terminal block to base plug B pin #24. (CE only) | Check continuity. Replace if defective. |
| 2. Loose or broken wire #162A in Cable B or its connectors. (CE only) | Check for continuity between pins #24 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective. |
| 3. Loose or broken wire #162A from plug B pin #24 in platform control console to drive joystick A2. (CE only) | Check continuity. Replace if defective. |



NOTE

For further CE troubleshooting refer to Load Sensing System.

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| 4. Loose or broken wire #04 from platform terminal block to drive joystick A2. | Check continuity. Replace if defective. |
| 5. Loose or broken wire #02 from platform terminal block to drive joystick A2. | Check continuity. Replace if defective. |

No Forward Drive

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|---|--|
| 1. No output on "D" when forward is selected on drive joystick A2. | See drive joystick test procedure in section 5. |
| 2. Loose or broken wire "D-signal" from drive joystick A2 to valve driver pin #27. | Check continuity. Replace if defective. |
| 3. No output from valve driver pin #34 to wire #16. | Check pin #34 for minimum 2 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference. |
| 4. Loose or broken wire #16 from valve driver pin #34 to plug B pin #5 in platform control console. | Check continuity. Replace if defective. |
| 5. Loose or broken wire #5 in cable B or its connectors. | Check for continuity between pins #5 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective. |

6. Loose or broken wire #16 from base plug B pin #5 to turret harness plug pin #21.	Check continuity. Replace if defective.
7. Loose or broken wire #16 or #02 from turret harness plug to forward drive valve 3H-16.	Check continuity. Replace if defective.
8. Defective forward drive valve coil 3H-16.	Check continuity and resistance through coil. Replace if defective.

No Reverse Drive

1. No output on “D” when forward is selected on drive joystick A2.	See drive joystick test procedure in section 5.
2. Loose or broken wire “D-signal” from drive joystick A2 to valve driver pin #27.	Check continuity. Replace if defective.
3. No output from valve driver pin #23 to wire #15.	Check pin #23 for minimum 2 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
4. Loose or broken wire #15 from valve driver pin #23 to plug B pin #4 in platform control console.	Check continuity. Replace if defective.
5. Loose or broken wire #15 in cable B or its connectors.	Check for continuity between pins #4 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
6. Loose or broken wire #15 from base plug B pin #4 to turret harness plug pin #20.	Check continuity. Replace if defective.
7. Loose or broken wire #15 or #02 from turret harness plug to reverse drive valve 3H-15.	Check continuity. Replace if defective.
8. Defective reverse drive valve coil 3H-15.	Check continuity and resistance through coil. Replace if defective.

No Left Steer**NOTE**

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

1. Loose or broken wire #24 from drive joystick A2 to valve driver pin #17.	Check continuity. Replace if defective.
2. No output from valve driver pin #4 to wire #24A.	Check pin #4 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
3. Loose or broken wire #24A from valve driver pin #4 to plug A pin #10 in platform control console.	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.

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| 5. Loose or broken wire #24A from base plug A pin #10 to main harness plug pin #5. | Check continuity. Replace if defective. |
| 6. Loose or broken wire #24A or #02 from main harness plug to left steer valve 4H-24A. | Check continuity. Replace if defective. |
| 7. Defective left steer valve coil 4H-24A. | Check continuity and resistance through coil. Replace if defective. |

No Right Steer**NOTE**

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

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|--|--|
| 1. Loose or broken wire #23 from drive joystick A2 to valve driver pin #18. | Check continuity. Replace if defective. |
| 2. No output from valve driver pin #21 to wire #23A. | Check pin #21 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference. |
| 3. Loose or broken wire #23A from valve driver pin #21 to plug A pin #9 in platform control console. | Check continuity. Replace if defective. |
| 4. Loose or broken wire #23A in boom cable A or its connectors. | Check for continuity between pins #9 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective. |
| 5. Loose or broken wire #23A from base plug A pin #9 to main harness plug pin #4. | Check continuity. Replace if defective. |
| 6. Loose or broken wire #23A or #02 from main harness plug to right steer valve 4H-23A. | Check continuity. Replace if defective. |
| 7. Defective right steer valve coil 4H-23A. | Check continuity and resistance through coil. Replace if defective. |

4.3-16 No High Speed Drive**NOTE**

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

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|---|---|
| 1. Loose or broken wire #09 from base terminal block to limit switch LS2. | Check continuity. Replace if defective. |
| 2. Open or defective limit switch LS2. | Ensure boom is horizontal or below and fully retracted. Adjust switch if required. Check continuity through switch. Replace if required. |
| 3. Loose or broken wire #29 from limit switch LS2 to base terminal block. | Check continuity. Replace if defective. |

4. Loose or broken wire #29 from base terminal block to limit switch LS3.	Check continuity. Replace if defective.
5. Open or defective limit switch LS3.	Ensure boom is fully retracted and horizontal or below. Adjust switch if required. Check continuity through switch. Replace if defective.
6. Loose or broken wire #29A from limit switch LS3 to base terminal block.	Check continuity. Replace if defective.
7. Loose or broken wire #29A from base terminal block to limit switch LS4.	Check continuity. Replace if defective.
8. Open or defective limit switch LS4.	Ensure boom is fully retracted and horizontal or below. Adjust switch if required. Check continuity through switch. Replace if defective.
9. Loose or broken wire #59 from limit switch LS4 to base terminal block.	Check continuity. Replace if defective.
10. Loose or broken wire #59 from base terminal block to plug B pin #15.	Check continuity. Replace if defective.
11. Loose or broken wire #59 in boom cable B or its connectors.	Check for continuity between pins #15 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
12. Loose or broken wire #59 from plug B pin #15 to platform terminal block.	Check continuity. Replace if defective.
13. Loose or broken wire #59 from platform terminal block to valve driver pin #31.	Check continuity. Replace if defective.
14. Defective valve driver channel input for high drive enable.	See section 5 for OCM pin voltage reference.
15. Loose or broken wire #59 from platform terminal block to torque switch S48.	Check continuity. Replace if defective.
16. Open or defective torque switch S48.	Check continuity through switch while activating low torque function between wires #59 and #45. If no continuity found replace switch.
17. Loose or broken wire #45 from torque switch S48 to plug A pin #20 in platform control console.	Check continuity. Replace if defective.
18. Loose or broken wire #45 in cable A or its connectors.	Check for continuity between pins #20 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
19. Loose or broken wire #45 from plug A pin #20 to relay 45CR1.	Check continuity. Replace if defective.
20. Loose or broken wire #09 from base terminal block to relay 45CR1.	Check continuity. Replace if defective.
21. Loose or broken wire #02 from relay 45CR1 to base terminal block.	Check continuity. Replace if defective.

22. Defective relay 45CR1.	Check relay. Replace if defective.
23. Loose or broken wire #45A from relay 45CR1 to main harness plug pin #17.	Check continuity. Replace if defective.
24. Loose or broken wire #45A or #02 from main harness plug to 2 speed valve 3H-45A.	Check continuity. Replace if defective.
25. Defective 2 speed valve 3H-45A.	Check continuity and resistance through coil. Replace if defective.

4.3-17 No Elevated Drive



NOTE

MEWP must be level to drive elevated.

1. Loose or broken wire #09 or #02 from base terminal block to level sensor TS1.	Check continuity. Replace if defective.
2. Misadjusted, no output or defective level sensor TS1.	Adjust level sensor if required. Check for 12 volts on wire #28. If no voltage present with level sensor adjusted or if defective, replace level sensor.
3. Loose or broken wire #28 from level sensor TS1 to plug B pin #7.	Check continuity. Replace if defective.
4. Loose or broken wire #28 in cable B or its connectors.	Check for continuity between pins #7 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
5. Loose or broken wire #28 from plug B pin #7 to platform terminal block.	Check continuity. Replace if defective.
6. Loose or broken wire #28 from platform terminal block to valve driver pin #32.	Check continuity. Replace if defective.

4.3-18 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.

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| 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. |
| <hr/> | |
| 6. Loose or broken wire #17 from base plug B pin #6 to valve driver pin #15 in platform control console. | Check continuity. Replace if defective. |
| <hr/> | |
| 7. Defective valve driver channel input for direction sense enable. | See section 5 for OCM pin voltage reference. |
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4.4 Load Sensing System - CE & AS

4.4-1 Green Power LED is not Flashing

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

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

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

4.4-3 Red Error LED is ON

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

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

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

4.4-5 Platform Indicator Light does not turn ON

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

4.4-6 Audible Alarm does not turn ON

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

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

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

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4.5 Hydraulic System

4.5-1 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. |

4.5-2 All Boom Functions Inoperative

- | | |
|---|--|
| 1. Open or defective dump valve 2H-21A. | Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required. |
| 2. Stuck or defective relief valve RV6. | Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required. |
| 3. Stuck or defective Inlet Compensator/ differential sensing valve DSV1. | Check O-rings and clean valve. Check operation of valve. Repair or replace valve as required. |
| 4. System pump P2 defective. | Test pump with flow meter. Replace if defective. |
| 5. Plugged or defective high pressure filter F1. | Check filter. Replace if plugged or defective. |

4.5-3 No Main Boom Up

- | | |
|--|--|
| 1. Stuck or defective lift up valve 4H-14. | Clean valve. Check operation of valve. Repair or replace valve as required. |
| 2. Stuck or defective shuttle valve SV6. | Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required. |
| 3. Stuck or defective check valve CV10. | Clean valve. Check operation of valve. Repair or replace valve as required. |
| 4. Stuck or defective differential sensing valve DSV4. | Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required. |
| 5. Stuck or defective counterbalance valve CB9. | Clean valve. Check O-rings on valve. Repair or replace valve as required. |
| 6. Defective lift cylinder C3. | Check seals on cylinder. Replace as necessary. Replace cylinder if defective. |

4.5-4 No Main Boom Down

1. Stuck or defective lift down valve 4H-13.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective shuttle valve SV6.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV10.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective differential sensing valve DSV4.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB9.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective lift cylinder C3.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-5 No Riser Boom Up

1. Stuck or defective riser up valve 4H-31.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective shuttle valve SV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV8.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective differential pressure sensing valve DSV3.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB5 or CB6.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Defective riser cylinder C6 or C7.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-6 No Riser Boom Down

1. Stuck or defective riser down valve 4H-30.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective shuttle valve SV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Plugged or defective orifice OR6.	Check orifice. Replace if plugged or defective.
4. Stuck or defective check valve CV6.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV8.	Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective check valve CV8.	Clean valve. Check operation of valve. Repair or replace valve as required.
7. Stuck or defective differential pressure sensing valve DSV3.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
8. Stuck or defective counterbalance valve CB5 or CB6.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
9. Defective riser cylinder C6 or C7.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-7 Riser Boom Down Jerky

1. Stuck open or defective check valve CV5.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or incorrectly set counterbalance valve CB5 or CB6.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.

4.5-8 No Turret Rotate Left

1. Stuck or defective rotate left valve 4H-32.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective shuttle valve SV4.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective relief valve RV7.	Set valve to specifications. Check o-rings and clean valve. Repair or replace valve as required.

4. Stuck or defective differential pressure sensing valve DSV2.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective shuttle valve SV3.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB4.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Stuck or defective check valve CV7.	Clean valve. Check operation of valve. Repair or replace valve as required.
8. Turret rotate brake BR2 not releasing.	Inspect brake for worn seals or broken components. Repair and replace as necessary.
9. Worn or defective swing drive motor RA2.	Check motor. Repair or replace if defective.

4.5-9 No Turret Rotate Right

1. Stuck or defective rotate right valve 4H-33.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective shuttle valve SV4.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective relief valve RV7.	Set valve to specifications. Check o-rings and clean valve. Repair or replace valve as required.
4. Stuck or defective differential pressure sensing valve DSV2.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective shuttle valve SV3.	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. Stuck or defective check valve CV7.	Clean valve. Check operation of valve. Repair or replace valve as required.
8. Turret rotate brake BR2 not releasing.	Inspect brake for worn seals or broken components. Repair and replace as necessary.
9. Worn or defective swing drive motor RA2.	Check motor. Repair or replace if defective.

4.5-10 No Boom Extend

1. Stuck or defective boom extend valve 3H-39.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Plugged, incorrectly adjusted or defective orifice OR3.	Check orifice. Replace if plugged or defective.
3. Stuck in the shifted position or defective boom retract valve 3H-38.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV11.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB10.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective extension cylinder C2.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-11 No Boom Retract

1. Stuck or defective boom retract valve 3H-38.	Clean valve. Check operation of valve. Repair or replace valve as required.
2. Plugged, incorrectly adjusted or defective orifice OR3.	Check orifice. Replace if plugged or defective.
3. Stuck or defective check valve CV11.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective counterbalance valve CB11.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
5. Defective extension cylinder C2.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective

4.5-12 No Jib Up - ANSI/CSA

1. Stuck or defective jib 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 differential pressure sensing valve DSV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV12.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective jib up valve 4H-35.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB12.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective jib cylinder C1.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-13 No Jib Up - CE & AS

1. Stuck or defective jib enable valve 2H-34A.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Plugged or defective orifice OR2.	Check orifice. Replace if plugged or defective.
3. Stuck or defective differential pressure sensing valve DSV5.	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 operation of valve. Repair or replace valve as required.
5. Stuck or defective jib up valve 4H-35.	Clean valve. Check operation of valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB12.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Defective jib cylinder C1.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-14 No Jib Down - ANSI/CSA

1. Stuck or defective jib 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 differential pressure sensing valve DSV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV12.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective jib down valve 4H-34.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB13.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective jib cylinder C1.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-15 No Jib Down - CE & AS

1. Stuck or defective jib enable valve 2H-34A.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Plugged or defective orifice OR2.	Check orifice. Replace if plugged or defective.
3. Stuck or defective differential pressure sensing valve DSV5.	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 operation of valve. Repair or replace valve as required.
5. Stuck or defective jib down valve 4H-34.	Clean valve. Check operation of valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB13.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Defective jib cylinder C1.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.5-16 No Platform Rotation Right - ANSI/CSA

1. Stuck or defective platform rotate 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 differential pressure sensing valve DSV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV12.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective platform rotate right valve 4H-37.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB14.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective rotary actuator RA1.	Check actuator. Repair or replace as necessary.

4.5-17 No Platform Rotation Right - CE & AS

1. Stuck or defective platform rotate enable valve 2H-36A.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Plugged or defective orifice OR1.	Check orifice. Replace if plugged or defective.
3. Stuck or defective differential pressure sensing valve DSV5.	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 operation of valve. Repair or replace valve as required.
5. Stuck or defective platform rotate right valve 4H-37.	Clean 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. Defective rotary actuator RA1.	Check actuator. Repair or replace as necessary.

4.5-18 No Platform Rotation Left - ANSI/CSA

1. Stuck or defective platform rotate 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 differential pressure sensing valve DSV5.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV12.	Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective platform rotate right valve 4H-36.	Clean valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB15.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective rotary actuator RA1.	Check actuator. Repair or replace as necessary.

4.5-19 No Platform Rotation Left - CE & AS

1. Stuck or defective platform rotate enable valve 2H-36A.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Plugged or defective orifice OR1.	Check orifice. Replace if plugged or defective.
3. Stuck or defective differential pressure sensing valve DSV5.	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 operation of valve. Repair or replace valve as required.
5. Stuck or defective platform rotate right valve 4H-36.	Clean valve. Check operation of valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB15.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Defective rotary actuator RA1.	Check actuator. Repair or replace as necessary.

4.5-20 Platform will not Level Down Manually

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

4.5-21 Platform will not Level Up Manually

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

4.5-22 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 SV1.	Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Defective or misadjusted relief valve RV4.	Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective brake release override valve V1.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Bypassing or defective brake hand pump V3.	Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Bypassing or defective brake cylinder C12.	Check seals on cylinder. Replace as necessary. Replace cylinder if defective

4.5-23 Brake will not Engage

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

4.5-24 Differential Lock will not Engage

- | | |
|---|---|
| 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 differential lock valve 3H-165. | Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required. |
| 4. Bypassing or defective differential lock cylinder C13. | Check seals on cylinder. Replace as necessary. Replace cylinder if defective |

4.5-25 No Drive Forward or Reverse

- | | |
|---|--|
| 1. Brake not releasing. | See “brake will not release” in this section. |
| 2. Defective or misadjusted charge pump relief valve RV3. | Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required. |
| 3. Plugged or defective charge pump filter F1. | Check filter. Replace if plugged or defective. |
| 4. Worn charge pump P1A. | Check pump. Replace if defective. |
| 5. Defective pump displacement control 4H-15 and 4H-16. | Check control. Replace if defective. |
| 6. Open bypass valve V4. | Close bypass valve. |
| 7. Worn drive pump P1. | Check pump. Replace if defective. |
| 8. Worn or defective drive motor M1. | Check motor. Replace if defective. |

4.5-26 No Forward Drive

- | | |
|---|---|
| 1. Defective pump displacement control 4H-16. | Check control. Replace if defective. |
| 2. Defective or misadjusted drive relief valve RV1. | See section 5 for drive pump set up procedures. |
| 3. Drive pump servo stuck or not shifting. | Check pump. Replace if defective. |

4.5-27 No Reverse Drive

- | | |
|---|---|
| 1. Defective pump displacement control 4H-15. | Check control. Replace if defective. |
| 2. Defective or misadjusted drive relief valve RV2. | See section 5 for drive pump set up procedures. |
| 3. Drive pump servo stuck or not shifting. | Check pump. Replace if defective. |

4.5-28 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. |

4.5-29 No Right Steer

- | | |
|---|---|
| 1. Plugged, incorrectly adjusted or defective priority flow control PFC1. | Check operation. Set flow rate to 1.25 GPM @ 2000 psi. Replace if plugged or defective. |
| 2. Stuck or defective right steer valve 4H-23A. | Clean valve. Check operation of valve. Repair or replace valve as required. |
| 3. Defective steer cylinder C8. | Check seals on cylinder. Replace as necessary. Replace cylinder if defective. |

4.5-30 No Left Steer

- | | |
|---|---|
| 1. Plugged, incorrectly adjusted or defective priority flow control PFC1. | Check operation. Set flow rate to 1.25 GPM @ 2000 psi. Replace if plugged or defective. |
| 2. Stuck or defective left steer valve 4H-24A. | Clean valve. Check operation of valve. Repair or replace valve as required. |
| 3. Defective steer cylinder C8. | Check seals on cylinder. Replace as necessary. Replace cylinder if defective. |

4.5-31 Axle Will Not Oscillate



NOTE

Axle will only oscillate when boom is fully retracted and is horizontal or below.

- | | |
|--|---|
| 1. Stuck or defective axle lockout valve 3H-65. | Clean valve. Check O-rings on valve. Repair or replace valve as required. |
| 2. One or more counterbalance valves (CB1 or CB2) failed to shift or is defective. | Clean valve. Check O-rings on valve. Repair or replace valve as required. |

4.5-32 Axle Will Not Lock



NOTE

Axle is in constant float if boom is fully retracted and is horizontal or below.

- | | |
|---|--|
| 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 lock cylinders C9 and C10. | Check seals on cylinder. Replace as necessary. Replace cylinder if defective. |
| 3. Counterbalance valves (CB1 or CB2) out of adjustment or are defective. | Clean valve. Check O-rings on valve. Repair or replace valve as required. |

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Section 5 – Procedures

5.1 General

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

NOTE

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



5.1-1 Safety and Workmanship

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

Before performing routine maintenance underneath the 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).

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. Pull out the emergency stop buttons  on the base controls and on the platform controls.
5. Turn the battery disconnect switch to the off position .

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

WARNING

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

WARNING

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

WARNING

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

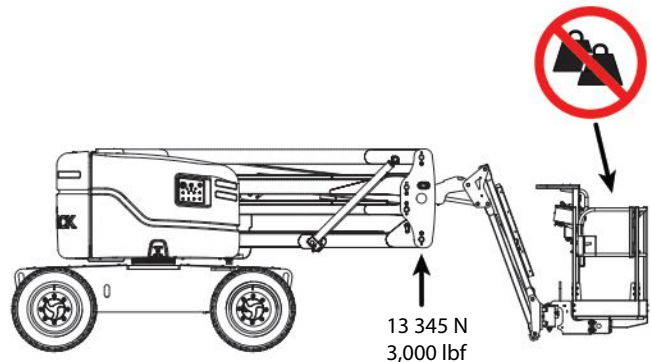


Figure 01 Support location

5.2 Platform

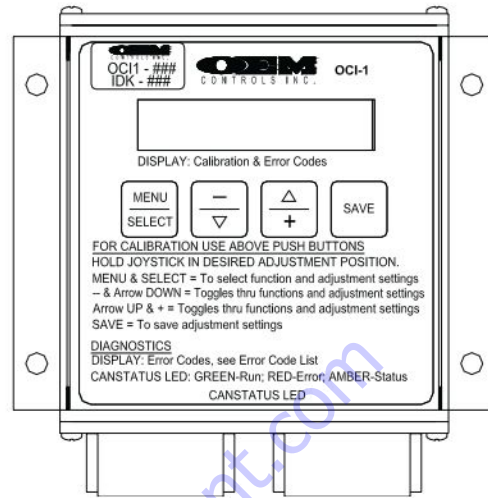
5.2-1 Human Machine Interface (HMI) - CE & AS

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

To access the OC1-1 console, open the platform control cover.

The OCI-1 has an integrated multi segment, two line display with membrane keys that allow it to be used as the main interface to system controls and adjustments. The Human Machine Interface (referred to as the HMI) will serve as your window into the application software to allow the operator to monitor/adjust the following information:

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



5.2-2 User Interface Keys

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

5.2-3 OCM Character Functions Charts

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

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

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5.2-4 OCM Function Channel Names

SCM Function (Channel) Names	
DRIVE REV Fn01A	Drive Reverse
DRIVE FWD Fn01B	Drive Forward
CHAN 2A Fn02A	Brakes
CHAN 2B Fn02B	Differential Lock Enable
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
RISER UP Fn06A	Virtual channel
RISER UP Fn06B	Virtual channel

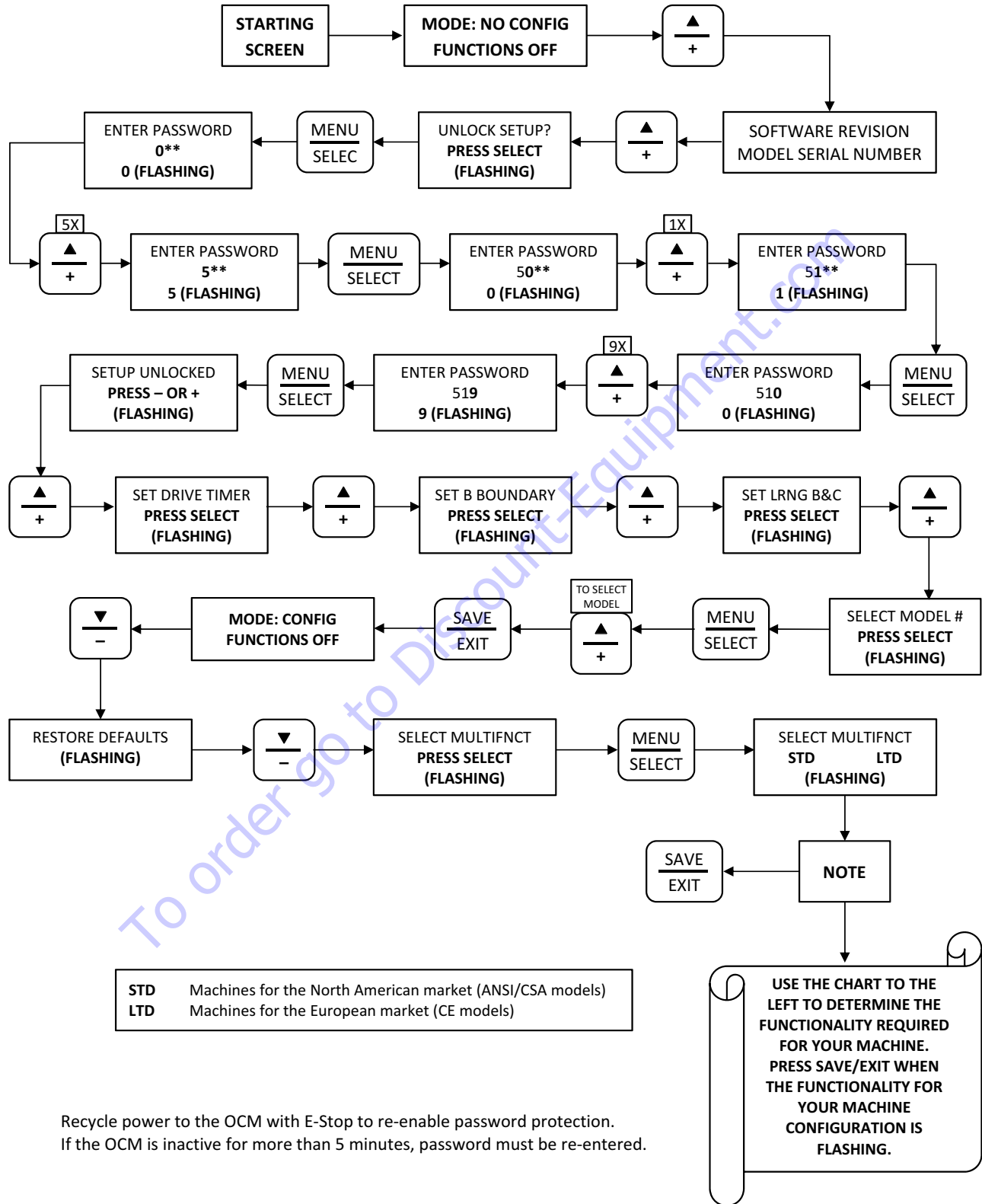
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5.2-5 OCM Operating Values Chart - CE & AS

Input	Expected Value	Description
AI 1	0.5V to 8.5V	Drive Joystick
AI 2	0.5V to 8.5V	Turret Rotation Joystick
AI 3	0.5V to 8.5V	Boom Elevation Joystick
AI 4	0.5V to 7.5V	Flow Enable Rotary Potentiometer
DI 1	0 or 1	Direction Reverse Limit Switch
DI 2	0 or 1	Footswitch Actuated
DI 3	0 or 1	Telescope Out Toggle Switch
DI 4	0 or 1	Telescope In Toggle Switch
DI 5	0 or 1	Jib Toggle Enabled
DI 6	0 or 1	Platform Rotation Toggle Enabled
DI 11	0 or 1	High Speed Drive Enable Limit Switch
Output	Adjustable Parameter	Description
PWM 1	25 to 75%	Drive Reverse
PWM 2	25 to 75%	Drive Forward
PWM 3	21 to 35%	Turret Rotate Left
PWM 4	21 to 35%	Turret Rotate Right
PWM 5	21 to 35%	Main Boom Down
PWM 6	38 to 47%	Main Boom Up
PWM 7	0 to 100%	Jib and Platform Rotate
PWM 11	40 to 48%	Boom Telescope Retract
PWM 12	45 to 70%	Boom Telescope Extend
Output	Expected Value	Description
DOUT 1	0 or 1	Steering Reverse Relay
DOUT 2	0 or 1	Load Sense Valve Enable
DOUT 3	0 or 1	Footswitch Actuated Indicator
DOUT 4	0 or 1	Holding Brake OFF (energize to release)
DOUT 5	0 or 1	Manual Platform Level Enable

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5.2-6 How to Select OCM Functionality - CE & AS

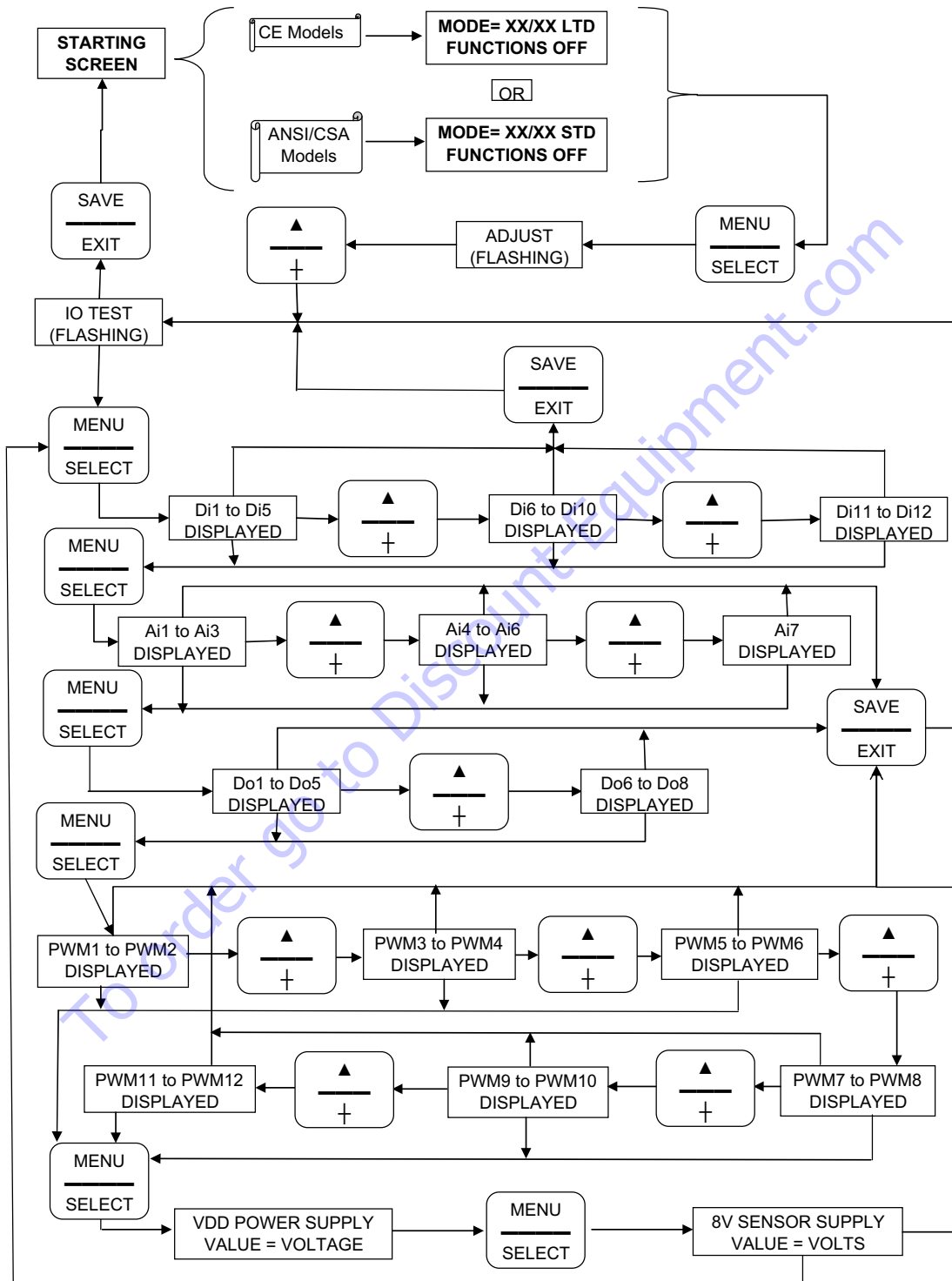


Recycle power to the OCM with E-Stop to re-enable password protection.
 If the OCM is inactive for more than 5 minutes, password must be re-entered.

5.2-7 How to View OCM Operation - CE & AS

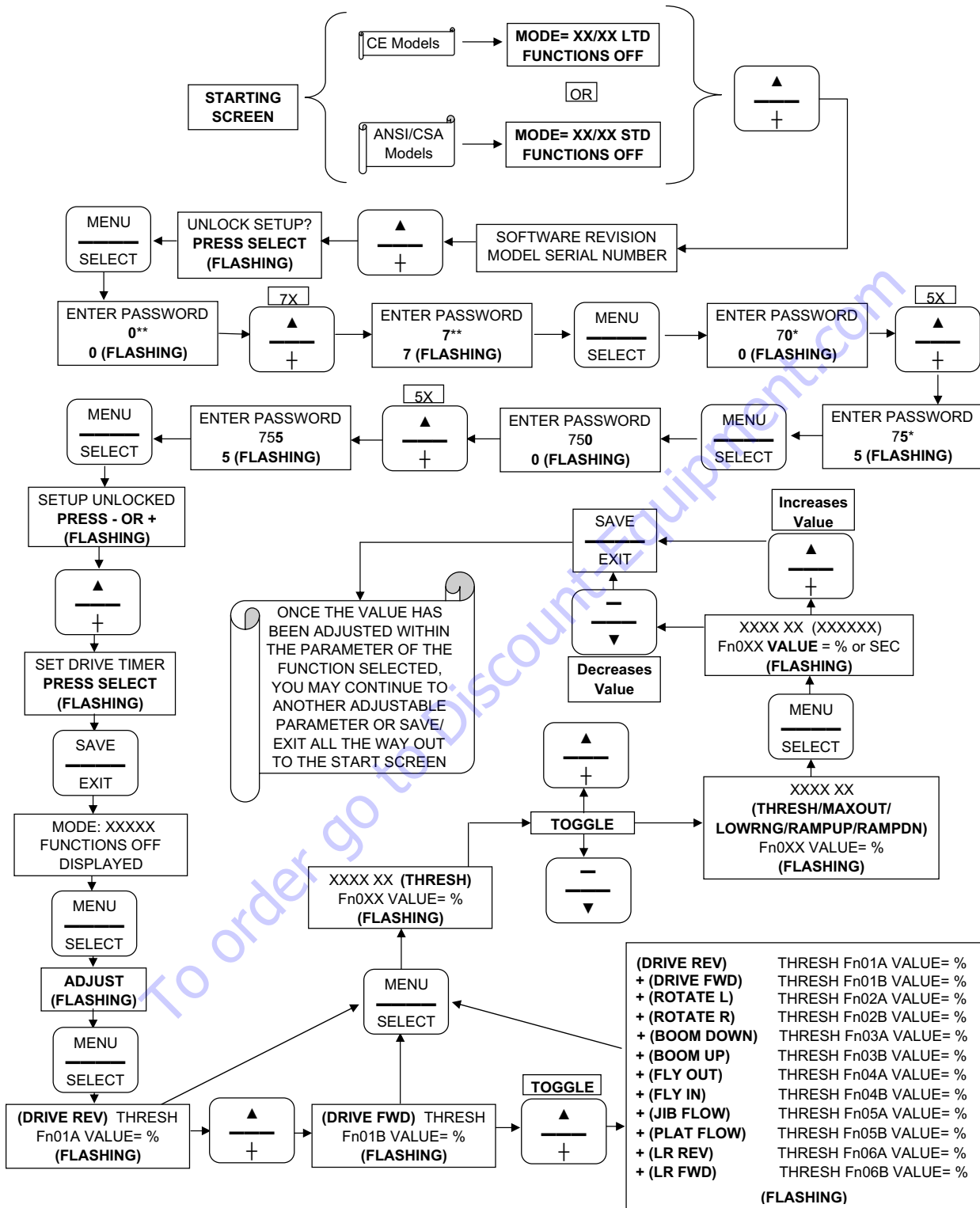
As a joystick or toggle switch is being activated, the OCM screen will display the active function and % output.

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



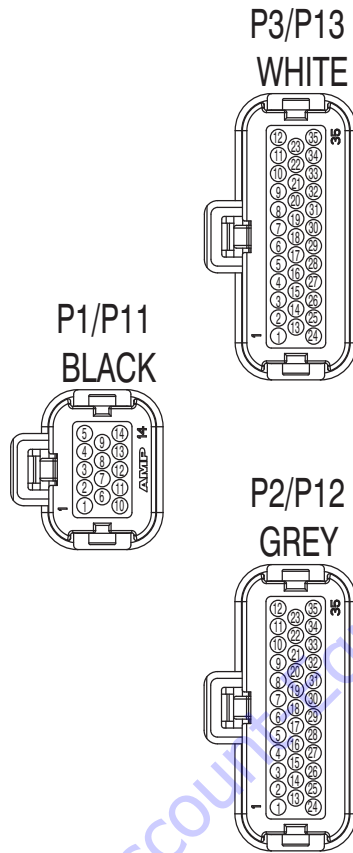
See 5.2-5 OCM Operating Values Chart - CE & AS for operating values for the previous observations.

5.2-8 How to Unlock and Modify OCM Settings - CE & AS



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

5.2-9 OCM Pin Reference



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

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

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

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

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To order go to Discount-Equipment.com

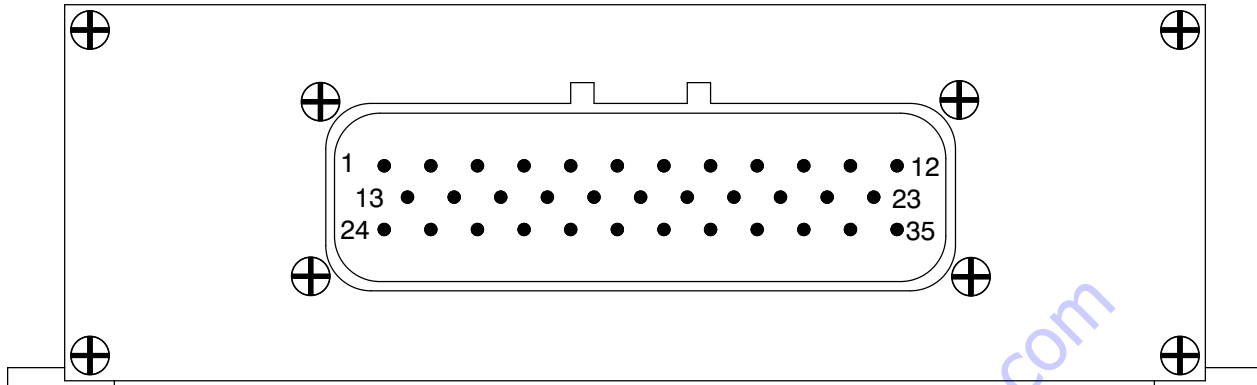
P12 (Grey) Slave Controller: SMB1-106					
Pin	Wire	Function	Input/Output Type	I/O Name	Label
1	37	Platform Rotation Right		PWM01	PWM17
2	36	Platform Rotation Left		PWM00	PWM16
3		Not Used		PWM07	PWM23
4		Not Used		PWM06	PWM22
5		Not Used		PWM05	PWM21
6		Not Used		PWM04	PWM20
7		Not Used		PWM11	DEPOP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

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

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5.2-10 OCM Pin Voltage Reference - CE & AS



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

- Pin 1 - 12 volt input from wire 4.
 Test between pin 1 and 02 wire.
- Pin 2 - 12 volt input from wire 4.
 Test between pin 2 and 02 wire.
- Pin 3 - Not used.
- Pin 4 - 12 Volt output on wire 24A to left steer valve 5H-24A
 Test between pin 4 and 02 wire.
- Pin 5 - 12 volt output on wire 20B to dump valve relay 21CR.
 Test between pin 5 and 02 wire while selecting a function.
- Pin 6 - 12 volt output on wire 08 to toggle switch boom functions. (Foot switch activated)
 Test between pin 6 and 02 wire.
- Pin 7 - 12 volt output on wire 65 to axle lock valve 3H-65.
 Test between pin 7 and 02 wire.
- Pin 8 - Boom down selected. Proportional output on wire 13 to boom down valve 5H-13.
 0 volts to 5.5 volts depending on position of joystick. Threshold= 1.0 volt.
 Test between pin 8 and 02 wire while operating boom down.
- Pin 9 - Riser up selected. Proportional output on wire 31 to riser up valve 5H-31.
 0 volts to 7.5 volts depending on position of joystick. Threshold= 2.8 volts.
 Test between pin 9 and 02 wire while operating boom down.

- Pin 10 - 12 volt output on wire 26 brake valve 3H-26. 12V=Drive selected
Test between pin 10 and 02 wire.
- Pin 11- 12 volt output on wire 27 to tilt alarm relay 27CR.
Test between pin 11 and 02 wire
- Pin 12 - Riser down selected. Proportional output on wire 30 to riser down valve 5H-30.
0 volts to 4.3 volts depending on position of joystick. Threshold= 2.8 volts.
Test between pin 12 and 02 wire.
- Pin 13 - 12 volt input from wire 4.
Test between pin 13 and 02 wire.
- Pin 14 - Variable input from wire 128A.
1 Volt to 5 volts depending on angle of machine
1 volt = Level
Test between pin 14 and 02 wire
- Pin 15 - Turret position. 12 volt input from limit switch LS1 on wire 17.
0 volts= Platform over drive axle.
12 volts= Platform over steer axle.
Test between 15 and 02 wire.
- Pin 16 - Foot switch activated. 12 volt input from wire 08A.
Test between pin 16 and 02 wire.
- Pin 17 - Left steer selected. 12 volt input from wire 24.
Test between pin 17 and 02 wire.
- Pin 18 - Right steer selected. 12 volt input from wire 23.
Test between pin 18 and 02 wire.
- Pin 19 - 12 Volt output on wire 26A to differential lock switch. 12V= Footswitch activated.
Test between pin 19 and 02 wire.
- Pin 20 - Turret rotate left selected. Proportional output on wire 32 to turret rotate left valve 5H-32.
0 volts to 6.0 volts depending on position of joystick. Threshold= 3.5 volts.
Test between pin 20 and 02 wire while operating turret rotate left.
- Pin 21 - 12 Volt output on wire 23A to right steer valve 5H-23A
Test between pin 21 and 02 wire.
- Pin 22 - Boom up selected. Proportional output on wire 14 to boom up valve 5H-14.
0 volts to 6.5 volts depending on joystick position. Threshold= 3.2 volts.
Test between pin 22 and 02 wire while operating boom up.
- Pin 23 - Reverse drive selected. Proportional output on wire 15 to reverse drive valve 4H-15.
0 volts to 5.5 volts depending on joystick position. Threshold= 1.1 volts.
Test between pin 23 and 02 wire while operating reverse drive.

Pin 24 - Battery negative. Wire 02.

Pin 25 - Battery negative. Wire 02.

Pin 26 - Battery negative. Wire 02.

Pin 27 - Accelerator input. Wire D from drive joystick controller.

Neutral position= 4.2 volts to 4.8 volts.

Forward function= 4.9 volts to 8.5 volts.

Reverse function= 4.1 volts to .5 volts.

Test between pin 27 and 02 wire.

Pin 28 - Turret rotate input. Wire X from boom joystick controller.

Neutral position= 4.2 volts to 4.8 volts.

Rotate right function= 4.9 volts to 8.5 volts.

Rotate left function= 4.1 volts to .5 volts.

Test between pin 28 and 02 wire.

Pin 29 - Boom elevation input. Wire Y from boom joystick controller.

Neutral position= 4.2 volts to 4.8 volts.

Boom up function= 4.9 volts to 8.5 volts.

Boom down function= 4.1 volts to .5 volts.

Test between pin 29 and 02 wire.

Pin 30 - Riser input. Wire R from riser joystick controller.

Neutral position= 4.2 volts to 4.8 volts.

Boom up function= 4.9 volts to 8.5 volts.

Boom down function= 4.1 volts to .5 volts.

Test between pin 30 and 02 wire.

Pin 31 - 12 volt input from LS2, LS3 and LS4 limit switches on wire 59.

12 volts= full speed. 0 volts= creep speed (one or more limit switches open).

Test between pin 31 and 02 wire.

Pin 32 - 12 volt input from angle sensor on wire 28. 12V= <5%

Test between pin 32 and 02 wire.

Pin 33 - Toggle switch boom function enable. 12 volt input from wire 20A.

Test between pin 33 and 02 wire.

Pin 34 - Forward drive selected. Proportional output on wire 16 to forward drive valve 4H-16.

0 volts to 5.7 volts depending on joystick position. Threshold= 1.2 volts.

Test between pin 34 and 02 wire while operating forward drive.

Pin 35 - Turret rotate right selected. Proportional output on wire 33 to turret rotate right valve 5H-33.

0 volts to 6.0 volts depending on position of joystick. Threshold= 3.5 volts.

Test between pin 10 and 02 wire while operating turret rotate right.

5.2-11 SCM Calibration - ANSI/CSA

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

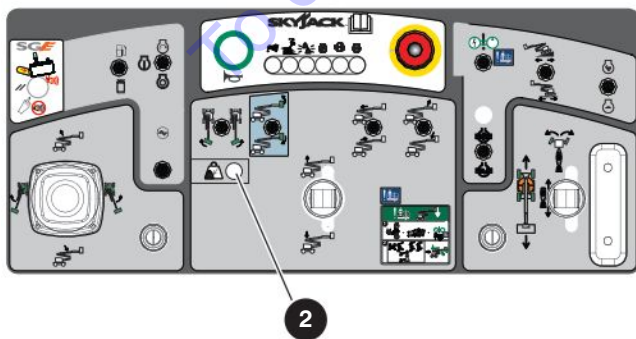
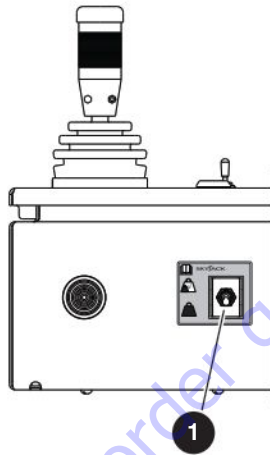
Net weight = Gross weight - Tare weight

Net weight: the weight of the platform.

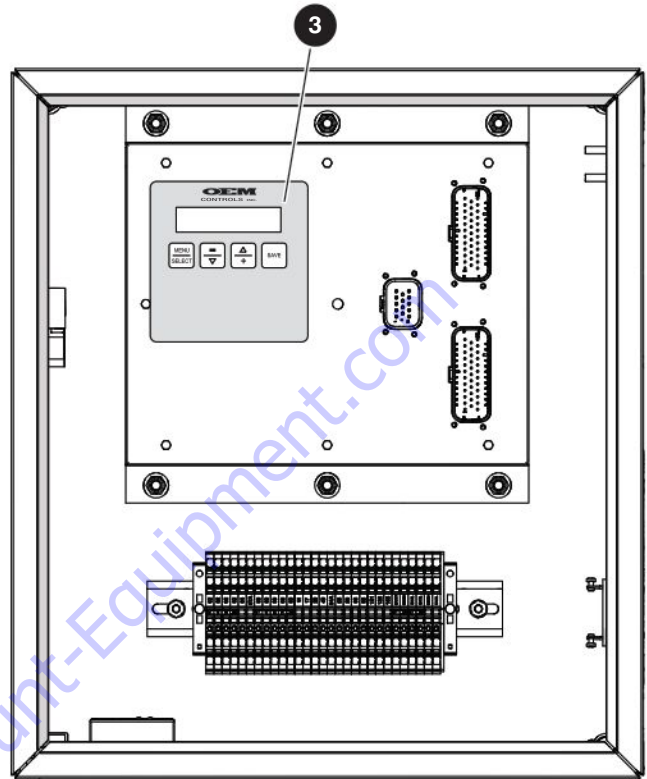
Gross weight: the total weight as measured by the load cell.

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

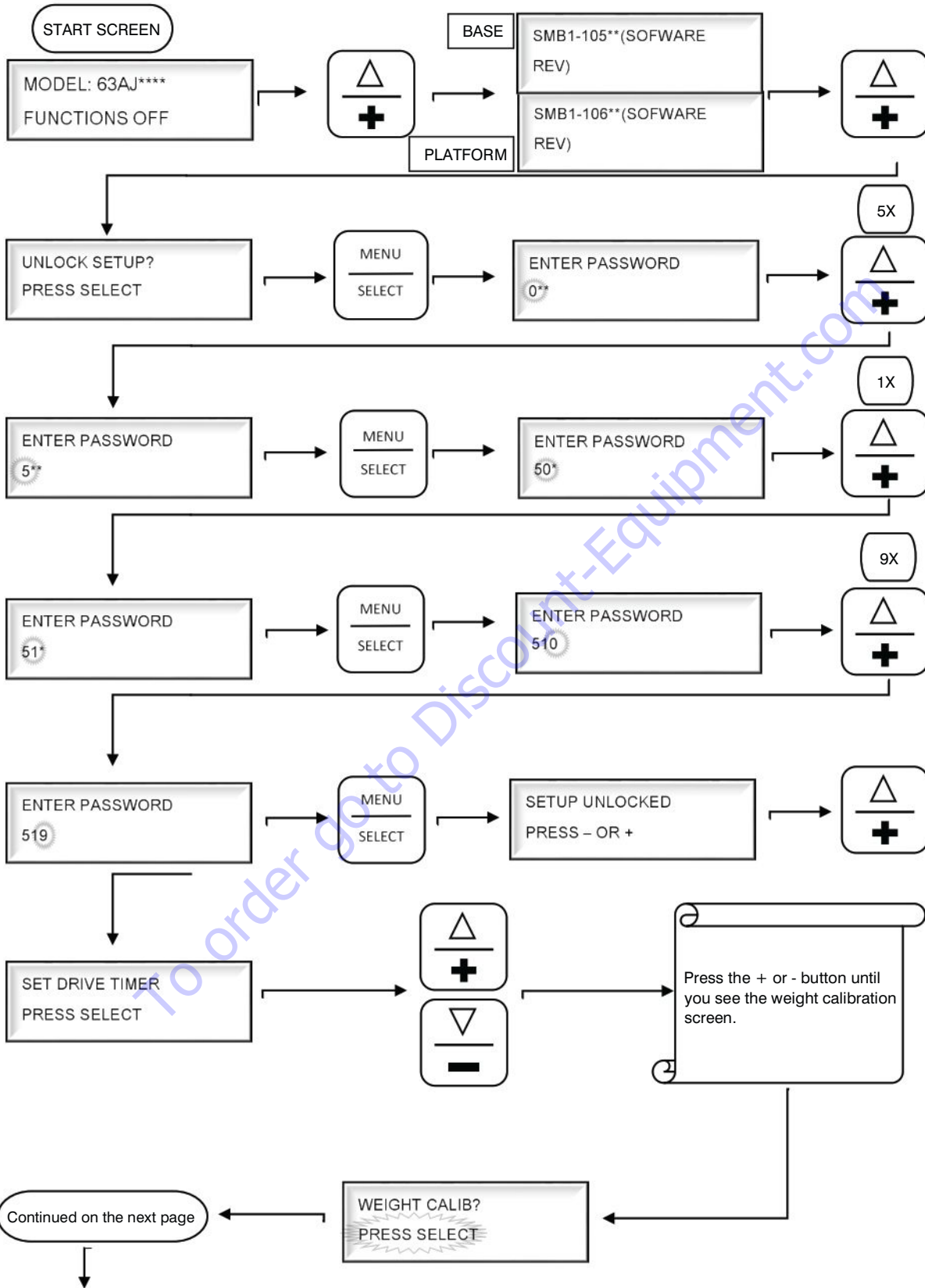
1. Make sure the platform is level.
2. Remove all items from the platform, including optional attachments.
3. Make sure the **capacity derate switch** ❶ is in the full capacity position, and the **capacity derate light** ❷ is not on.



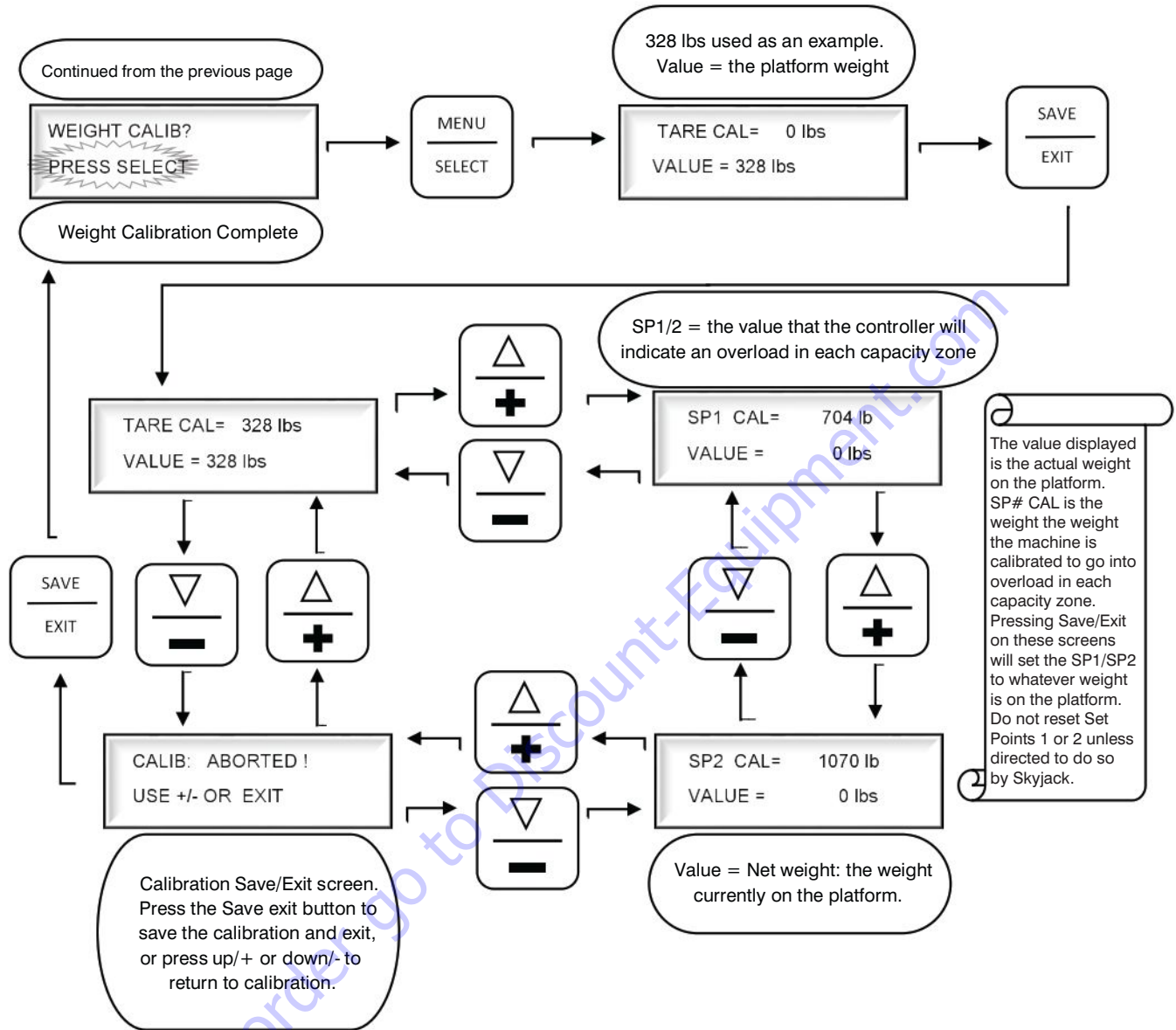
4. Do the calibration procedure from the **SCM** ❸ in the base control box. Follow the flowchart on the next two pages.



5.2-12 SCM Calibration Flowchart - ANSI/CSA

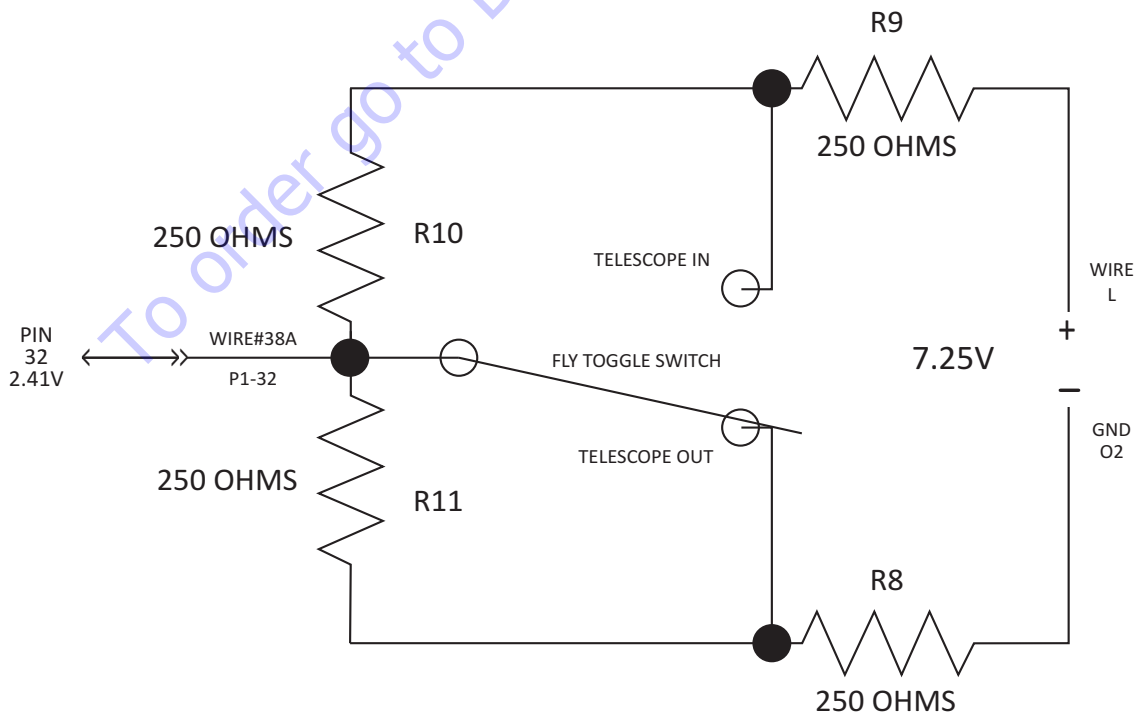
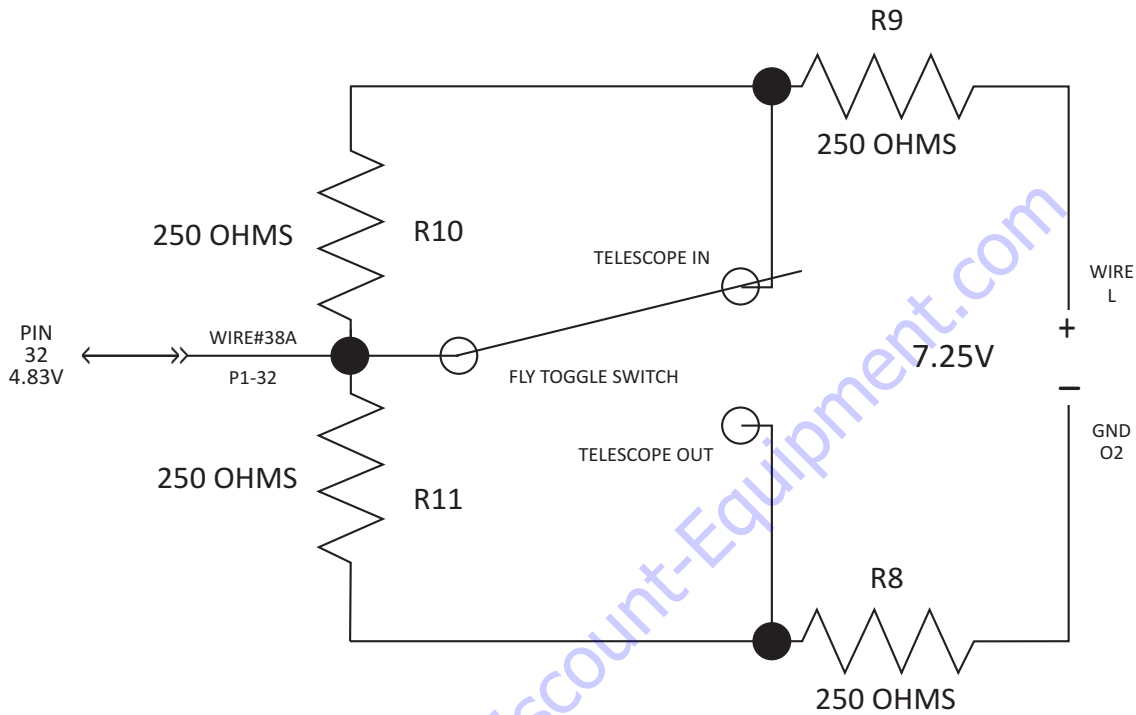


SCM Calibration Flowchart (continued)

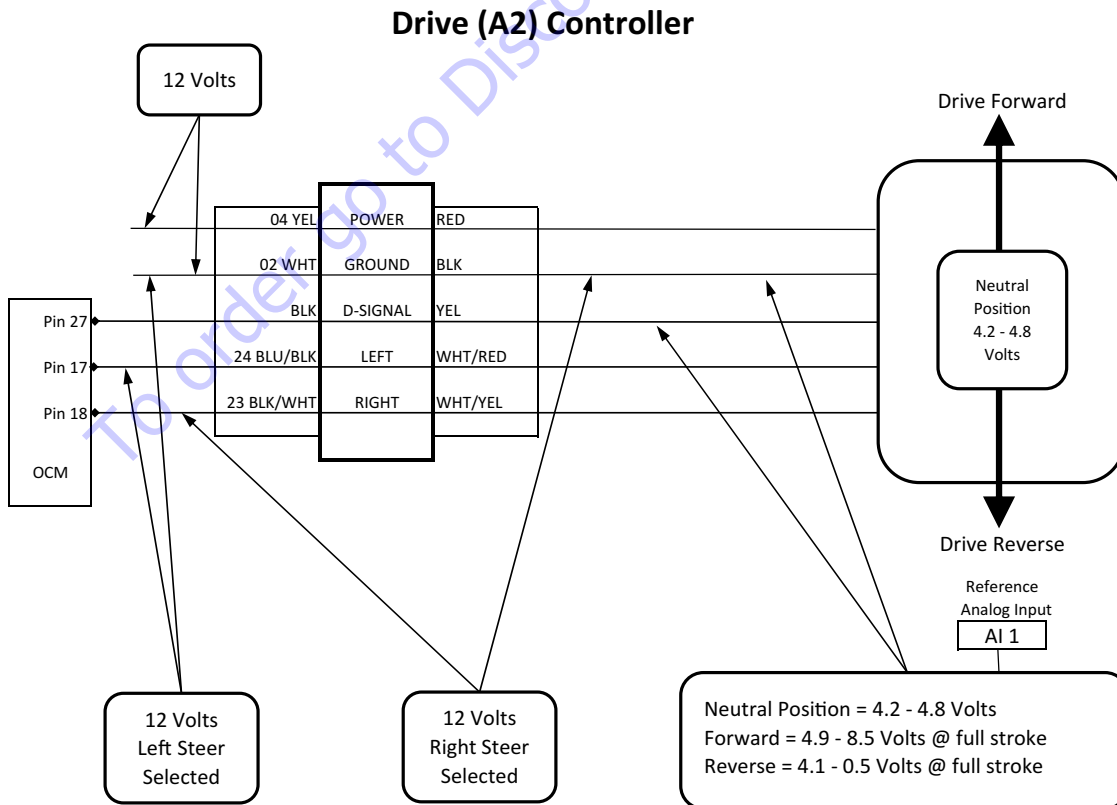
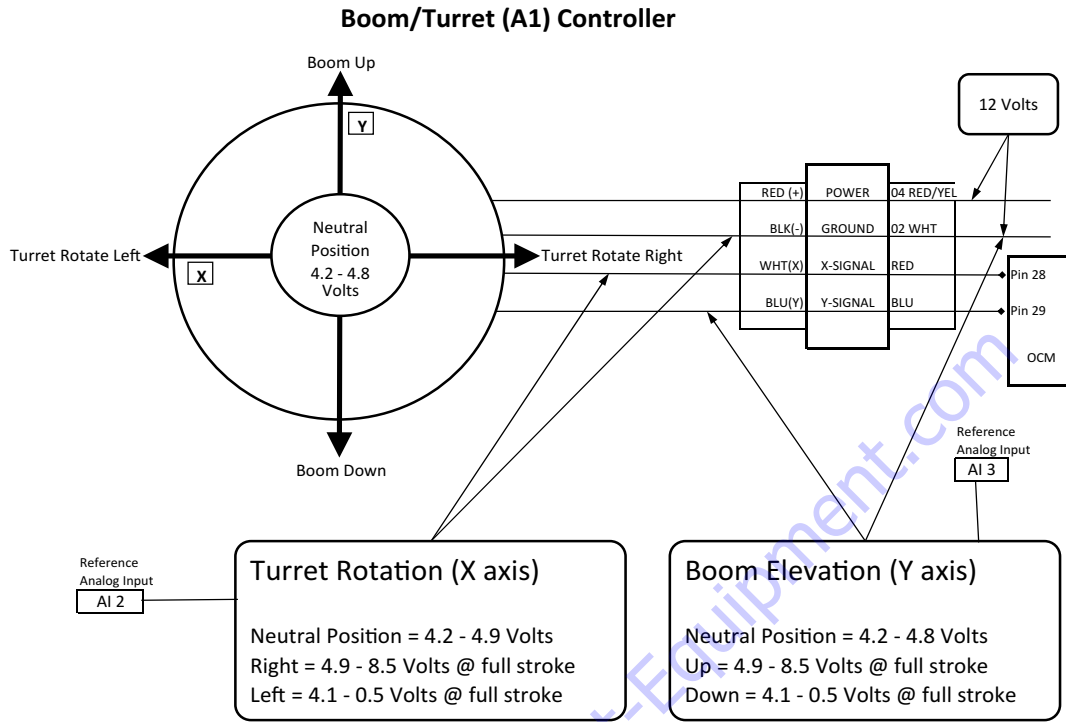


5.2-13 Fly Boom Switch Voltage References

TELESCOPE SWITCH WORKSHEET VOLTAGE DIVIDER CIRCUIT



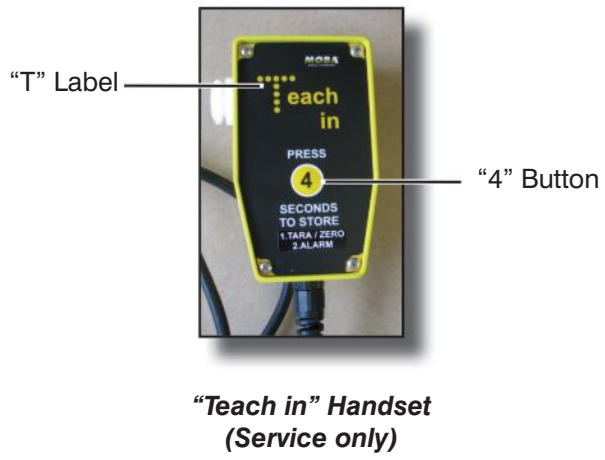
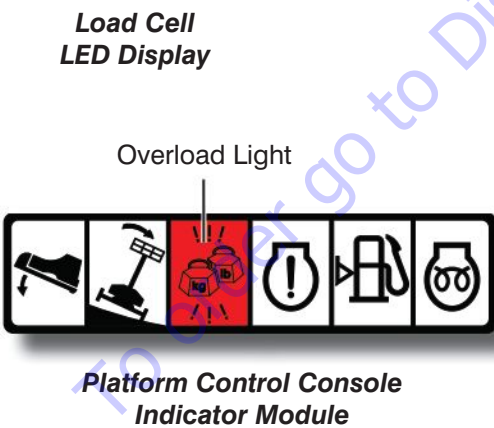
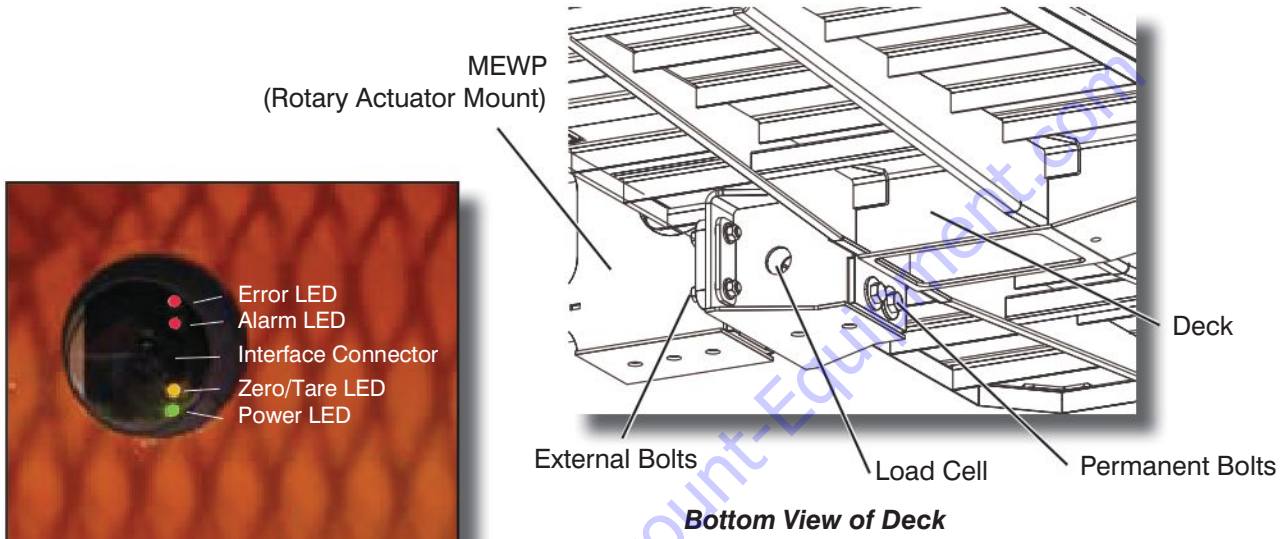
5.2-14 Platform Controller Voltage References



5.3 Load Sensing System - CE & AS

5.3-1 Load Sensing System

The Skyjack boom platform overload sensing system is based on load cell or electronic scale technology. The deck steel structure is isolated from the MEWP. The load cell is permanently bolted between the deck and the rotary actuator mount. The load cell will only respond to the vertical component of the load in the platform. There are four external bolted connections that serve as a redundant back up system for the load cell connection. The system is first calibrated with an empty platform to set the tare weight to zero. The following steps of the process set the overload limit as regulated by applicable safety standards for Mobile Elevated Work Platforms.















- Error LED** - Continuously on when system error
- Alarm LED** - Continuously on when platform is overload or has base contact
- Interface Connector** - Storage of limit valve ("Teach in" handset connects here)
- Orange LED** - Continuously on when tare value is zero ± 15 kg
- Green LED** - Flashes slowly on when system powered and calibrated


NOTE

When power is turned on and after a four second time period elapses, the overload light and audible alarm will pulse two times. This indicates the system is active and there are no faults.

5.3-2 Verify Proper Operation of the Load Sensing System

Overload Status Chart

Weight	Indicator Light	Load Cell LED Display	Audible Alarm	MEWP Functions
 (Zero)	 OFF	<ul style="list-style-type: none"> ● Error - OFF ● Alarm - OFF ● Zero/Tare - ON (orange) ● Power - FLASHING (green) 	 OFF	 ENABLED
 (Work Mode @ 244+)	 FLASHING	<ul style="list-style-type: none"> ● Error - OFF ● Alarm - FLASHING (red) ● Zero/Tare - OFF ● Power - FLASHING (green) 	 PULSING	 DISABLED
 (Travel Mode @ 244+)	 FLASHING	<ul style="list-style-type: none"> ● Error - OFF ● Alarm - FLASHING (red) ● Zero/Tare - OFF ● Power - FLASHING (green) 	 PULSING	 ENABLED

1. Ensure MEWP is on firm level ground.
2. Fully “

NOTE






Refer to Section 4 for load sensing system troubleshooting.

5.3-3 Calibration of Load Sensing System (with “Teach In” Handset)

WARNING

Do not interrupt system power during this procedure.

Do not rest your hand or foot on the platform during this procedure.

1. Ensure MEWP is on firm level ground.
2. Fully  retract and  lower boom.
3. Turn engine  off.
4. Ensure both  emergency stops are pulled out and platform engine enable switch is in  on position.
Result: Overload indicator light and audible alarm pulse two times.
5. Ensure platform is unloaded and is free from any surface contact.
6. Remove cap from load cell interface connector.
7. Connect “Teach in” handset to interface connector.
Result: The “T” label on handset will flash at a high frequency of 5Hz. If not, recheck that power is on and handset is properly connected.

WARNING

Do not disconnect the handset at any point during the following steps until instructed.

8. On “Teach in” handset, depress “4” button for four seconds.
Result: The “T” label on handset will light on constantly and then flash at a lower frequency of 1.25 Hz.
9. Add a test load of 244 kg onto the center of platform.
10. Depress “4” button for four seconds.
Result: The “T” label on handset will go from flashing to constantly on.
11. Disconnect “Teach in” handset from interface connector.
12. Wait for four seconds and then add a test load exceeding 244 kg to test load sensing system.
Result: On platform control console, the overload light will flash and an audible alarm will pulse.
13. Remove test load from platform.
Result: Green power LED is flashing, orange LED is ON, red alarm LED is OFF, audible alarm is OFF and red error LED is OFF.
14. Re-cap interface connector and place provided “calibrated” label over interface connector.

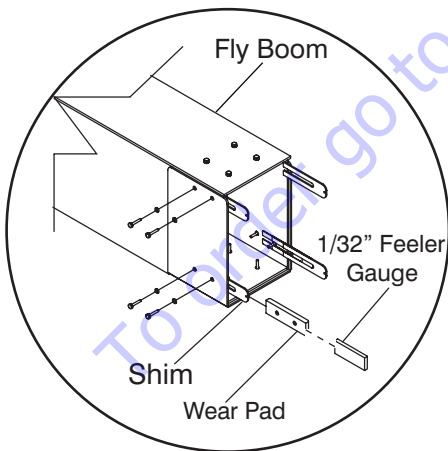
5.4 Boom

5.4-1 Check Wear Pads

1. Ensure the MEWP is on a firm level surface and is in the stowed position.
2. Start the engine from the base control console.
3. Raise the main boom to a comfortable working height (chest high), and then extend fly boom approximately 30 cm (1 ft).
4. Measure the thickness of each wear pad, and replace 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.

5.4-2 Shim Wear Pads

1. Ensure the MEWP is on a firm level surface and is in the stowed position.
2. Raise the main boom to a comfortable working height (chest high) and extend the fly boom until the wear pads are accessible.
3. Loosen the wear pad fasteners.
4. Shim the wear pads as necessary to obtain zero to 1/32" (0.8 mm) clearance and zero drag.



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

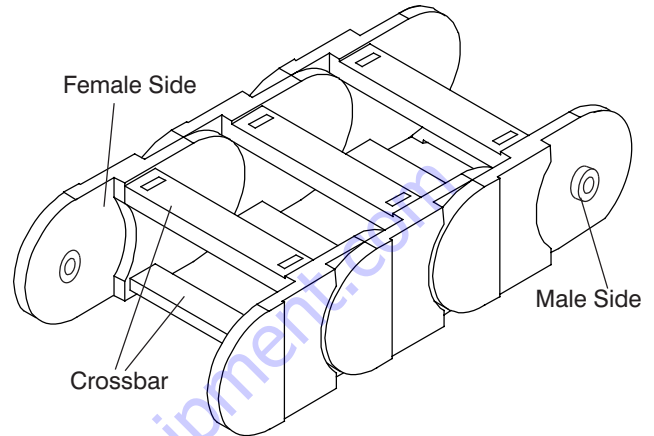


NOTE

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

5.4-3 Cable Carrier Repair

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

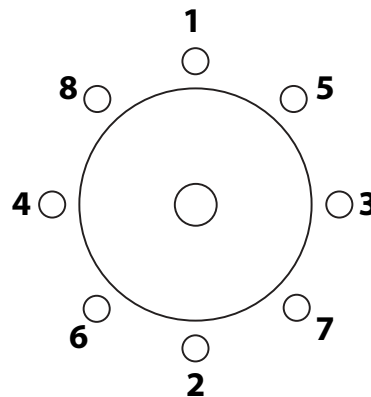


5.4-4 Rotary Actuator Bolt Torque Procedure

WARNING

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

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



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

5.4-5 Master Cylinder Replacement

1. Ensure the MEWP is parked on a firm and level surface.

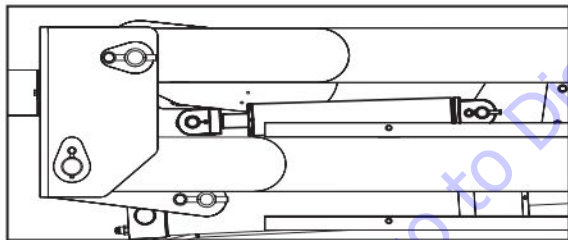
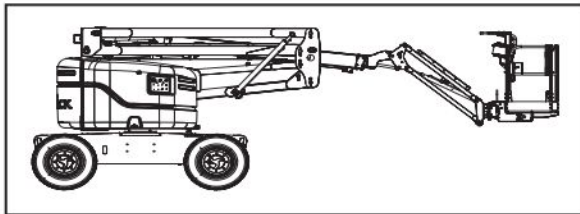
WARNING


Ensure that there is sufficient room for boom to swing and elevate.

WARNING

Be aware of overhead obstructions or other possible hazards around the machine when lifting.

2. By using the base controls, position the machine as below to allow for easy work access to the basket/jib boom and the master cylinder.



3. Turn the main disconnect switch to the off position . Lock the switch to prevent unauthorized use during this procedure.

NOTE

Ensure all components are secured before lifting or removing them.

4. Using straps, secure the main boom on suitable lifting equipment such as a crane.

5. Secure the master cylinder with straps. See below for an example.



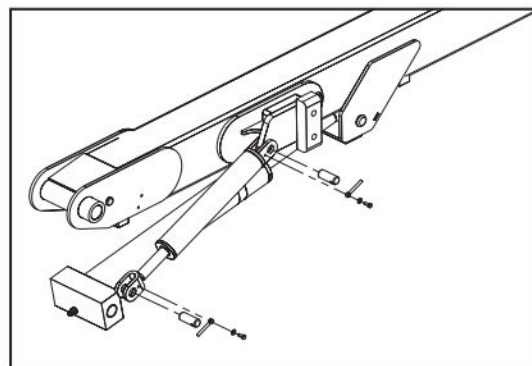
CAUTION

Label all electrical cables and hydraulic hoses before removal

CAUTION

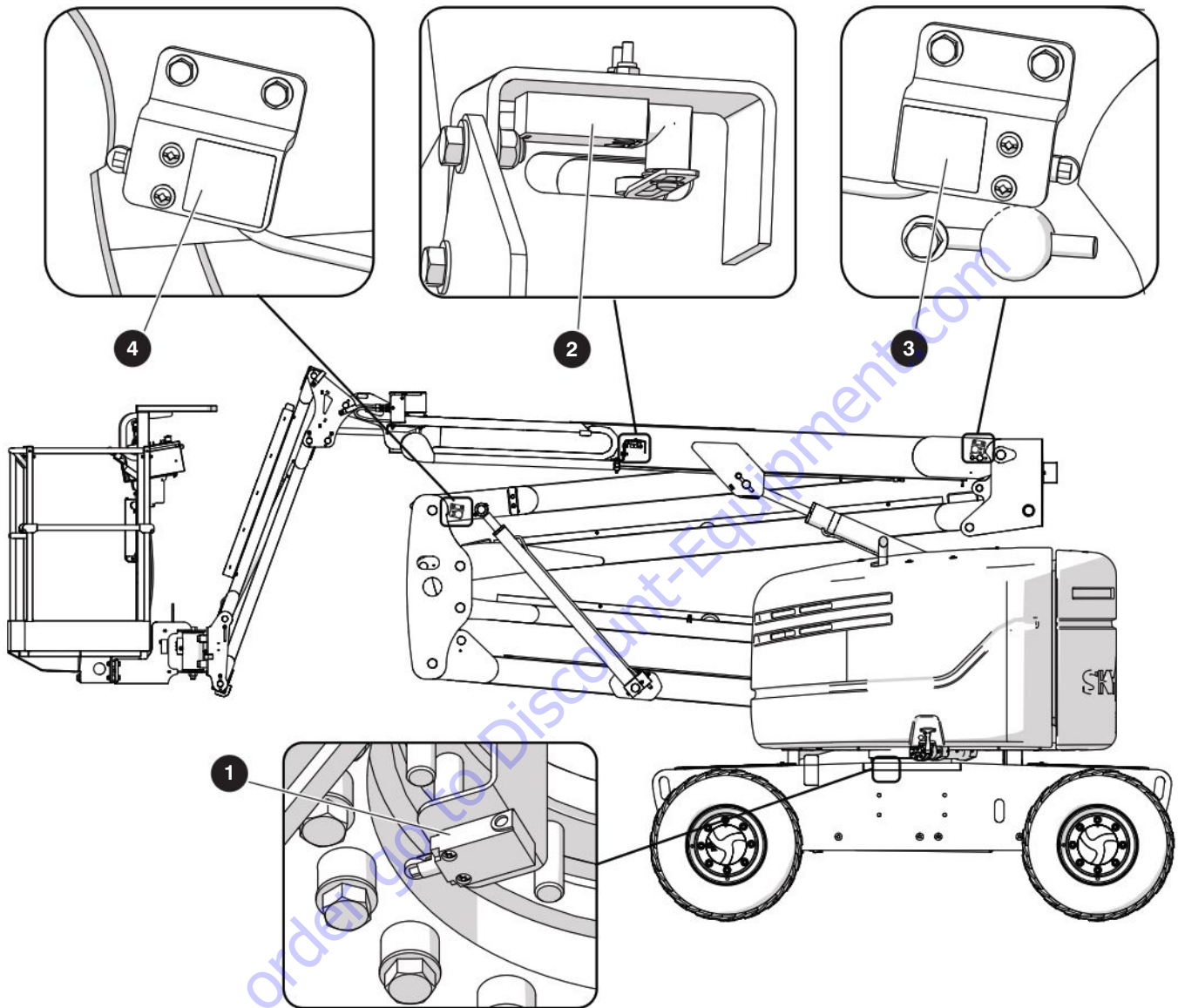
To prevent hydraulic system contaminations, cap all hydraulic hoses and fittings after removal.

6. Remove the hydraulic hoses and fittings on the master cylinder. Replace any worn or damaged components.
7. Disconnect the master cylinder from the main boom by removing the connecting pin, see below. Set all parts aside for reuse.



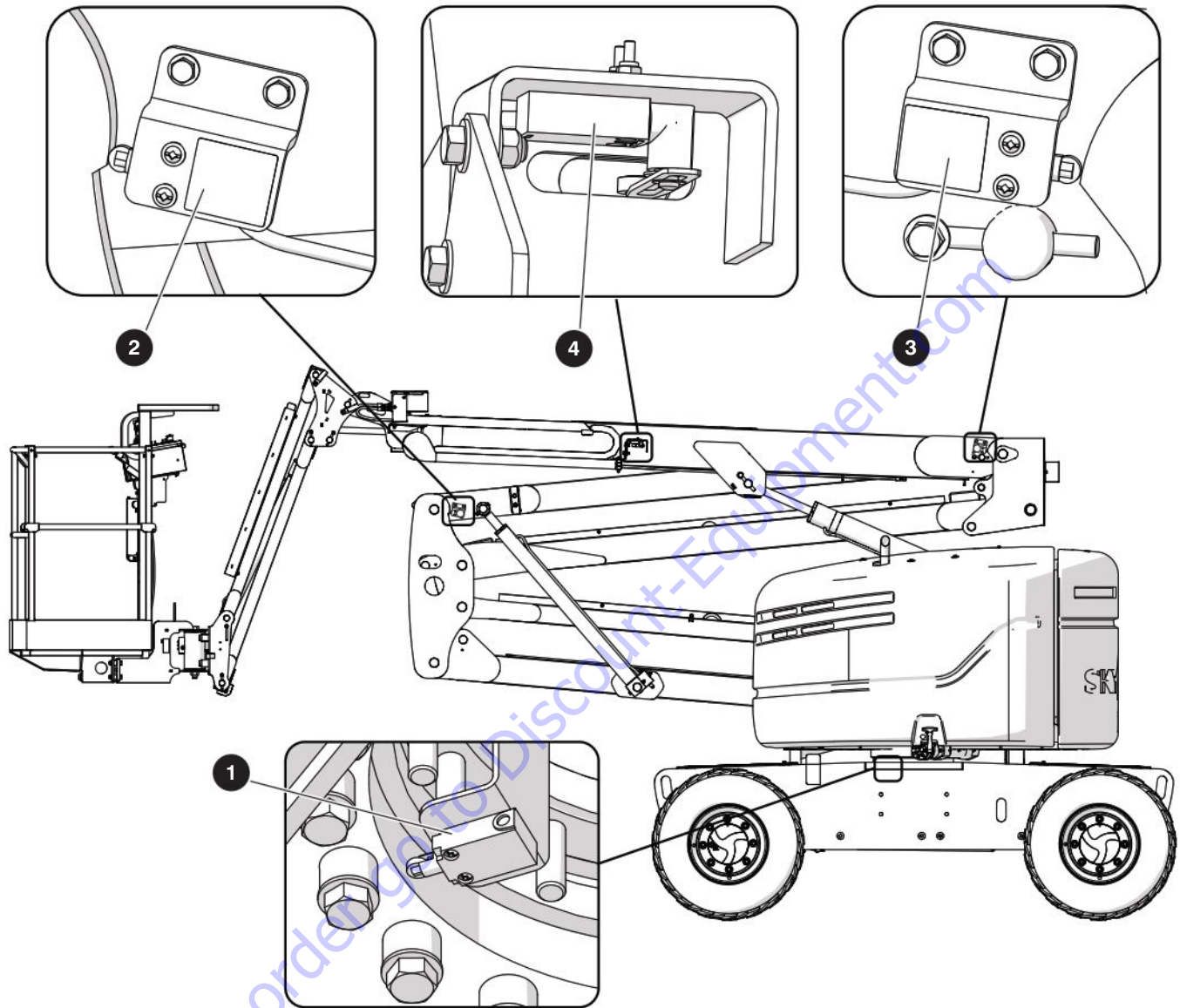
8. Install the new master by installing the cylinder pins as shown above. Secure the keeper pin and the bolt with Loctite 242 (Blue) or equivalent.
9. Install the hydraulic hoses and fittings on the master cylinder.

5.4-6 Limit Switch Locations - SJ46 AJ+ ANSI/CSA



- ❶ Limit Switch LS1 - Direction Sensing
- ❷ Limit Switch LS2 - Fly Stowed (high speed cut-out)
- ❸ Limit Switch LS3 - Main Boom (high speed cut-out)
- ❹ Limit Switch LS6 - Riser Stowed

5.4-7 Limit Switch Locations - SJ46 AJ & SJ51 AJ CE & AS

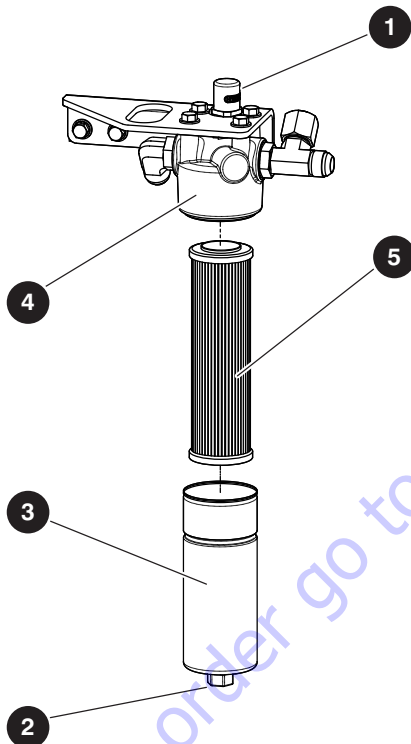


- ❶ Limit Switch LS1 - Direction Sensing
- ❷ Limit Switch LS2 - Riser Down
- ❸ Limit Switch LS3 - Boom Down (high speed cut-out)
- ❹ Limit Switch LS4 - Fly In (high speed cut-out)

5.5 Turret

5.5-1 Check and Replace the High Pressure Filter

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



5. Using a 30 mm box wrench on the filter housing nut ②, loosen the filter housing ③ and remove it from the filter head ④.
6. Remove the filter element ⑤ from the filter head and install a new high pressure filter element.
7. Apply hydraulic oil to the o-ring on the high pressure filter housing.
8. Reinstall the housing, screwing it in fully, then backing it off by one quarter turn.

5.5-2 Adjust the Turret Rotation Gear Backlash

The swing drive is located near the center of the turret, underneath the riser/main boom.



NOTE

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



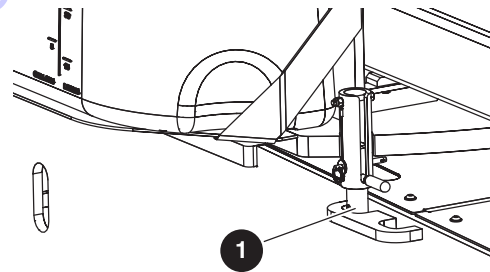
WARNING

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



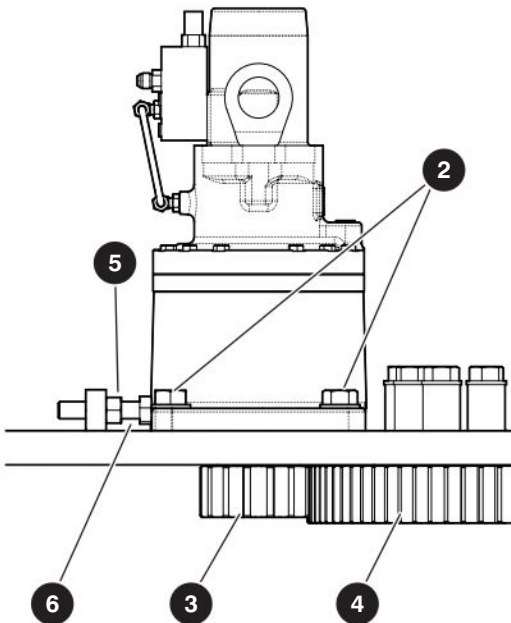
WARNING

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



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

5. Loosen the mounting fasteners ② on the swing drive.
6. Push the swing drive towards the rotation gear as close as possible (this will push the swing drive gear ③ into the rotation gear ④).



7. Loosen the lock nut ⑤ on the adjustment bolt ⑥.
8. Tighten the adjustment bolt clockwise until it contacts the plate of the swing drive.
9. Turn the adjustment bolt 1/2 turn counterclockwise, then tighten the lock nut on the adjustment bolt.
10. Pull the swing drive away from the rotation gear until it contacts the adjustment bolt.
11. Tighten the mounting fasteners on the swing drive.
12. Rotate the turret 360° and check for smooth rotation of the turret.

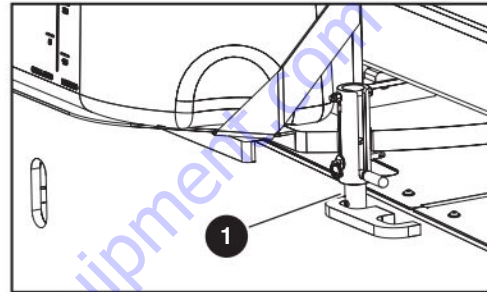
5.5-3 Swing Drive Removal

The swing drive is located near the center of the turret, underneath the riser/main boom.

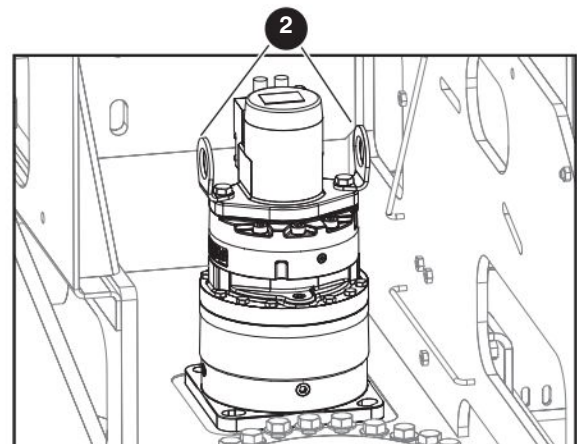
⚠ WARNING

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

1. Lock the turret to the base with the turret locking pin ①.



2. Raise the riser boom to access the swing drive motor.
3. Support the boom with an overhead crane. Do not lift the boom.
4. Turn the main disconnect switch to the off position ○.
5. Remove the mid-turret cover.
6. Label the hydraulic hoses connected to the swing drive, then disconnect the hoses from the motor. Plug or cap the hoses and fittings to prevent hydraulic contamination.
7. Loosen the adjustment bolt and remove the mounting fasteners from the swing drive motor.
8. Use a lifting device attached to the swing drive lifting lugs ② to lift the swing drive motor out away from the turret. Set the swing drive aside.

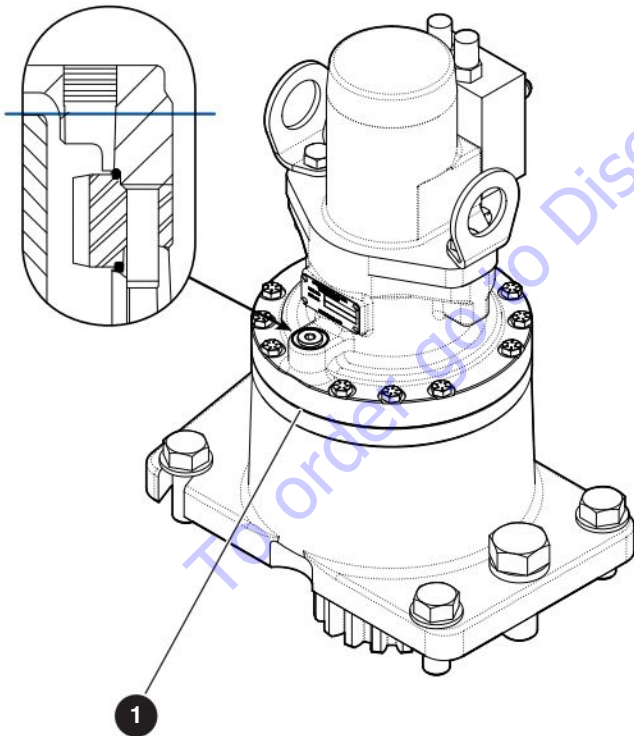


5.5-4 Swing Drive Replacement

1. Refer to procedure .
2. Use a lifting device to position the new swing drive onto the turret and loosely bolt the swing drive to the turret.
3. Refer to steps 6 to 12 of procedure [5.5-2 Adjust the Turret Rotation Gear Backlash](#) to complete this procedure.

5.5-5 Check the Swing Drive Oil

1. Remove the plug from the fill port **1** on the back of the swing drive.
2. Check the oil level. The oil level should be slightly below the port threads.
3. Add oil if needed. Refer to [2.12 Hydraulic & Gear Oils](#) for recommended oil types.



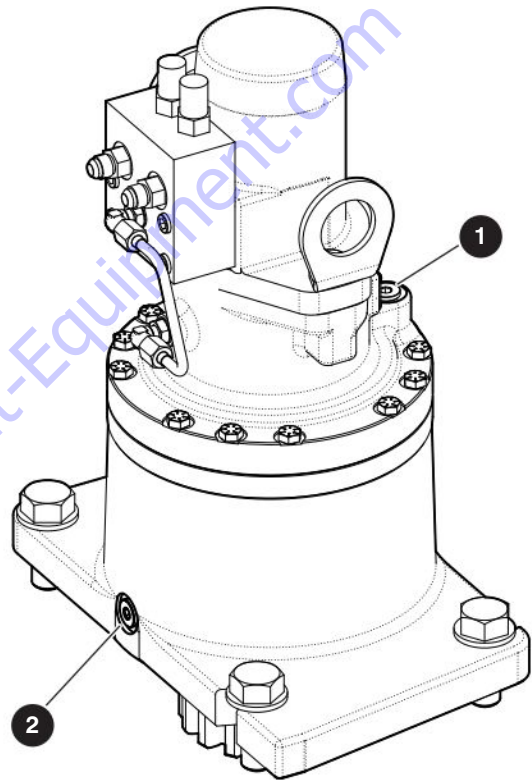
5.5-6 Change the Swing Drive Oil



NOTE

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

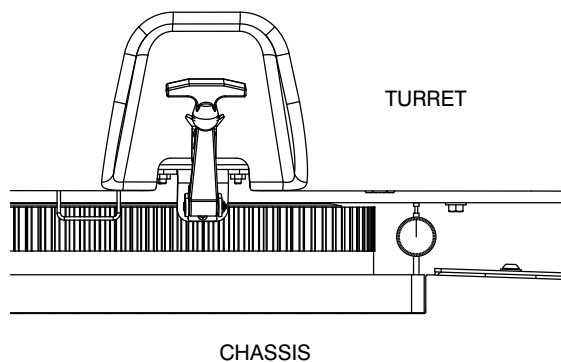
1. Remove the plug at the fill port **1**.
2. Place a suitable container under the drain port **2**.



3. Remove the plug at the drain port.
4. Allow the oil to drain.
5. Reinstall the drain plug.
6. Refill the swing drive with approximately 1L (32 oz) of oil. Refer to [2.12 Hydraulic & Gear Oils](#) for recommended oil types.
7. Reinstall the plug at the fill port.

5.5-7 Check Rotation Bearing for Axial Wear

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



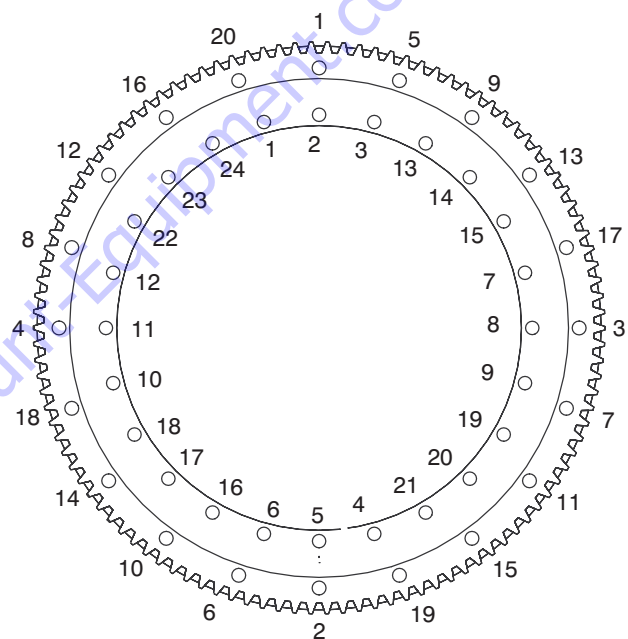
5. Zero the dial indicator.
6. Rotate the turret 180° in the clockwise direction until the boom is centered over the rear axle.
Note: Rotating the turret in the counterclockwise direction will cause the rotation gearbox pinion to impact the dial indicator.
7. If, when you are rotating the turret, the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

5.5-8 Turret Rotation Gear Bolt Torque Sequence

WARNING

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

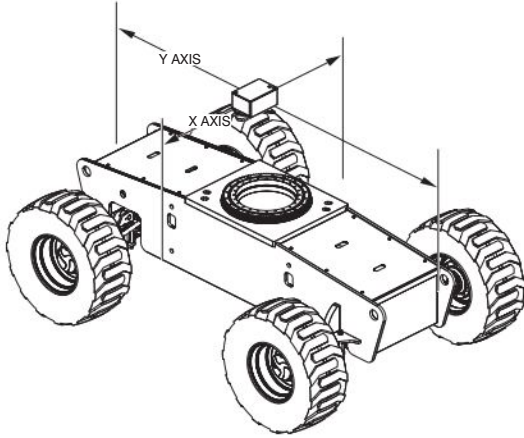
1. Set the torque wrench to 115 Nm (85 ft-lb) and tighten the mounting bolts in a criss-cross pattern sequence.



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

5.5-9 Electronic Tilt Switch Setup Procedure

Tilt Switch Replacement



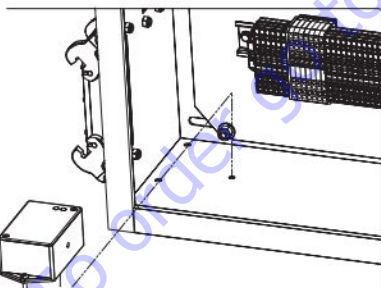
1. Park the MEWP on a firm level surface.
2. Disconnect the tilt switch from the 4 pin connector.



NOTE

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

3. Remove the old tilt switch from the mount.






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

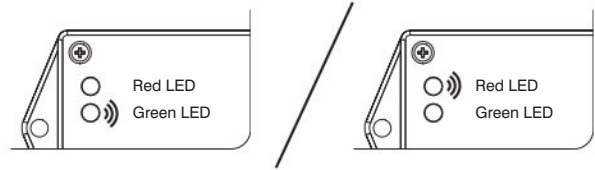


NOTE

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

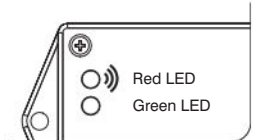
5. Turn the main disconnect switch to the ON position .
6. Turn the base/off/platform key switch to the base position .

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

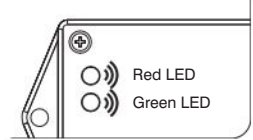


9. Program the tilt switch:
 - a. Press and release the set to zero button 3 times. Observe LED flash codes as shown below.

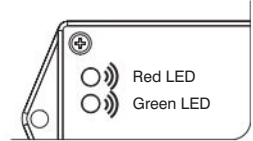
- b. Only the red LED will blink for 4 seconds.



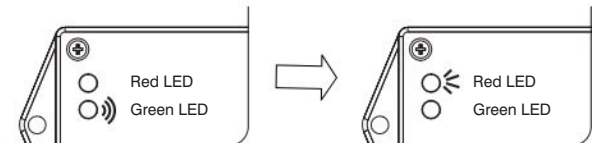
- c. Both LEDs will flash for 1 second. Results: The switch is learning the new zero position.



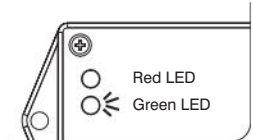
- d. Both LEDs will turn on solid for 1 second. Results: The new zero position has been learned.





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



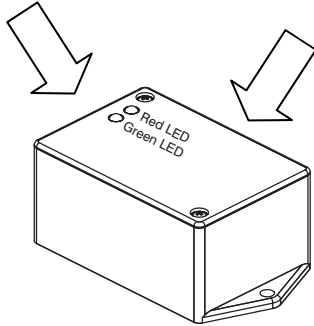
- f. Only the red LED will blink for 4 seconds.



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




Reprogramming the Existing Tilt Switch

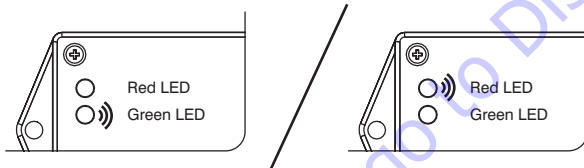
Light Indicators The set to zero button is located on this face next to the harness



NOTE

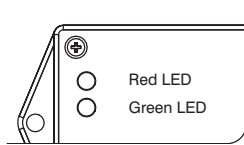
The tilt circuit is only powered when the controls are powered up.

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

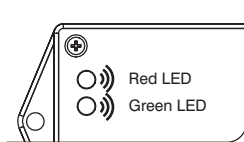


5. Reprogram the Tilt Switch

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



- b. Both LEDs will flash.

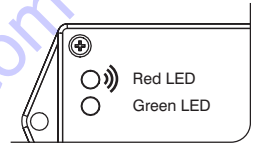


IMPORTANT

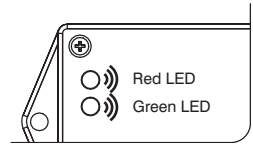
Step “c” must be completed within a 5 second period, or the switch will automatically exit program mode and return to normal operation using the previously stored data.

- c. Press and release the set to zero button 3 times.
- d. If the 5 second period has expired prior to completion, repeat steps “a”, “b” and “c”.

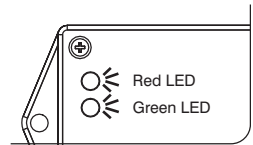
- e. Observe program delay / stabilization time (only the red LED will blink for 4 seconds).



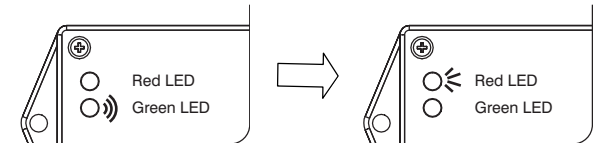
- f. Both LEDs will flash for 1 second.
Results: The switch is learning the new zero position.



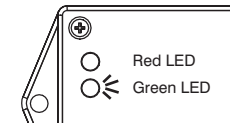
- g. Both LEDs will turn on solid for 1 second.
Results: The new zero position has been learned.





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



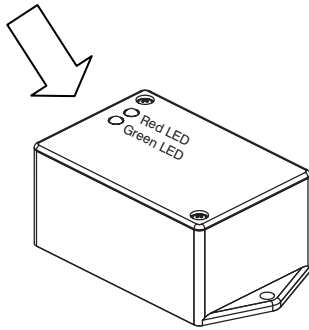
- i. The green LED will turn on solid.
Results: The switch is ready for normal operation.



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

Verify Tilt Circuit

Light Indicators



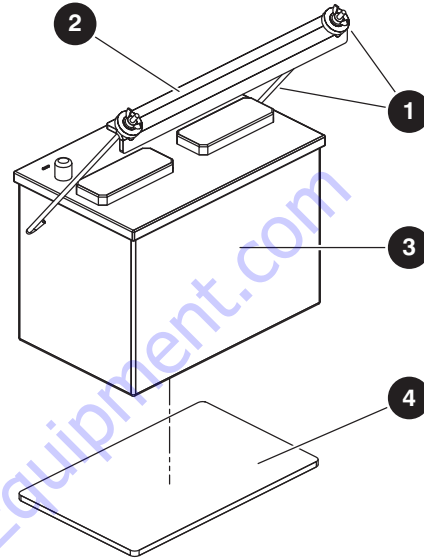
Operations of the Tilt Switch

The following describes the LED's and what they indicate.

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

5.5-10 Battery Replacement

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



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

5.6 Deutz Diesel Engines

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

5.6-1 Replace Engine Oil and Filter

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



NOTE

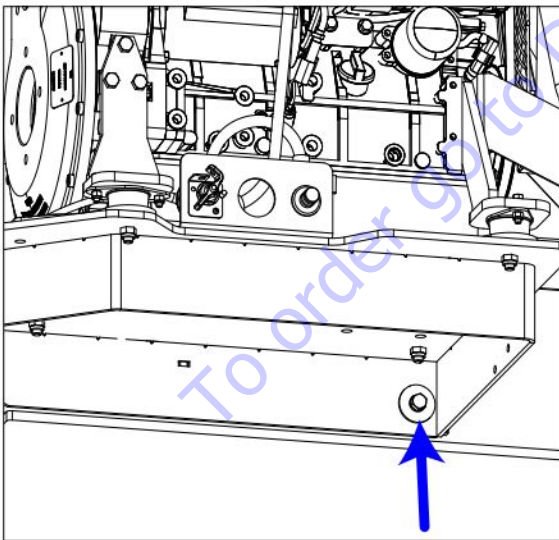
Warm the engine to normal operating temperature before starting this procedure.



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 it 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. Refer to [2.14 Engine Specifications](#).
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 shut off the engine.
17. Check for oil leakage.
18. Check the engine oil level on the dipstick and add oil if needed.

5.6-2 Replace the Fuel Filter

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

WARNING

Dispose of fuel in accordance with local and federal regulations.

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

5.6-3 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.

5.6-4 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.

5.6-5 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.

5.6-6 Deutz D2.9L Fault Codes

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

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
69	523912	1	7-2-2	Physical range check low for burner dosing valve (DV2) downstream pressure; Shut off regeneration. When burner injector is actuated, the measured pressure does not rise above 1250mbar abs (expected: about 2400mbar).
72	523912	3	7-2-2	Sensor error burner dosing valve (DV2) downstream pressure sensor; Signal range check high.
73	523912	4	7-2-2	For engines < 4l: Throttle valve error, Open load or short cut to battery, blocked valve or wrong control signal for valve. For engines with Burner T4i: Pressure Sensor error after valve (DV2), lower limit reached.
74	523913	3	7-2-1	Sensor error glow plug control diagnostic line voltage; Signal range check high.
75	523913	4	7-2-1	Sensor error glow plug control diagnostic line voltage; Signal range check low.
76	523914	5	7-2-1	Glow plug control; Open load. Water pump control (PWM) only TTCD 6.1/7.8.
77	523914	12	7-2-1	Glow plug control; Powerstage over temperature.
78	523914	3	7-2-1	Glow plug control; Short circuit to battery. Water pump control (PWM).
79	523914	4	7-2-1	Glow plug control; Short circuit to ground. Water pump control (PWM).
82	1235	14	2-7-1	CAN-Bus 2 = CAN_C reports Bus-error (for engines <8L and CV52 it is the engine-CAN@250kbaud) CAN Bus error passive; warning CAN C - engine CAN.
83	16	0	2-7-1	No detail information.
84	639	14	2-7-1	CAN-Bus 0: "BusOff-Status"
85	1231	14	2-7-1	CAN-Bus 1: "BusOff-Status"
86	1235	14	2-7-1	CAN-Bus 2 = engine bus "BusOff-Status"
87	16	0	2-7-1	BusOff error CAN.
88	102	2	2-2-3	Charged air pressure above warning threshold.
89	102	2	2-2-3	Charged air pressure above shut off threshold.
90	110	2	2-2-5	Defect fault check for absolute plausibility test.
92	110	0	2-2-5	Physical range check high for coolant temperature.
93	110	1	2-2-5	Physical range check low for coolant temperature.
96	110	3	2-2-5	Sensor error coolant temperature; Signal range check high.
97	110	4	2-2-5	Sensor error coolant temperature; Signal range check low.
98	110	0	2-3-2	High coolant temperature; Warning threshold exceeded.
99	110	0	2-3-2	Coolant temperature; System reaction initiated.
101	111	1	2-3-5	Coolant level too low.
106	598	2	3-2-5	Plausibility check for clutch.
121	1109	2	3-4-1	Engine shut off demand ignored.

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5.6-6 Deutz D2.9L Fault Codes

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

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
273	3219	2	6-4-9	DFC SAE J1939 error.
281	523766	9	1-1-8	Timeout error of CAN-Receive-Frame Active TSC1AE.
282	523767	9	1-1-8	Timeout error of CAN-Receive-Frame Passive TSC1AE.
283	523768	9	1-1-9	Timeout error of CAN-Receive-Frame Active TSC1AR.
284	523769	9	1-1-9	Timeout error of CAN-Receive-Frame Passive TSC1AR.
291	523776	9	1-1-9	Timeout error of CAN-Receive-Frame TSC1TE - active.
292	523777	9	1-1-9	Passive timeout error of CAN-Receive-Frame TSC1TE. Setpoint.
293	523778	9	1-1-8	Timeout error of CAN-Receive-Frame TSC1TR.
294	523779	9	1-1-8	Passive timeout error of CAN-Receive-Frame TSC1TR.
299	523788	12	6-5-5	Timeout error of CAN-Transmit-Frame TrbCH. Status Wastegate.
300	523605	9	1-1-8	Timeout error of CAN-Receive-Frame TSC1AE. Traction Control.
301	523606	9	1-1-9	Timeout error of CAN-Receive-Frame TSC1AR. Retarder.
305	898	9	1-1-8	Timeout error of CAN-Receive-Frame TSC1TE. Setpoint.
306	520	9	1-1-9	Timeout Error of CAN-Receive-Frame TSC1TR; control signal
313	523858	12	6-7-9	Timeout error of CAN-Transmit-Frame UAA11.
322	523867	12	6-7-9	Timeout error of CAN-Transmit-Frame UAA1 on CAN 2. Control burner air pump.
360	523982	0	7-3-7	Powerstage diagnosis disabled. High battery voltage.
361	523982	1	7-3-7	Powerstage diagnosis disabled. Low battery voltage.
362	523090	2	3-2-9	Engine brake Pre-Selection switch. Plausibility error.
376	630	12	2-8-1	Access error EEPROM memory (delete).
377	630	12	2-8-1	Access error EEPROM memory (read).
378	630	12	2-8-1	Access error EEPROM memory (write).
381	411	4	6-9-3	Physical range check low for EGR differential pressure.
384	2791	12	4-1-5	Actuator EGR valve. Powerstage over temperature.
387	523612	12	5-5-5	Internal software error ECU. Injection cut off.
388	190	0	2-1-4	Engine speed above warning threshold. Overspeed detection in component engine protection.
389	190	0	2-1-4	Engine speed above warning threshold (FOC-Level 1).
390	190	11	2-1-4	Engine speed above warning threshold (FOC-Level 2).
391	190	14	2-1-4	Engine speed above warning threshold (Overrun Mode).
411	108	11	2-9-2	Ambient air pressure received from a CAN-bus is reported as defective.
412	108	3	2-9-2	Sensor error ambient air pressure. Signal range check high.
413	108	4	2-9-2	Sensor error ambient air pressure. Signal range check low.
415	171	0	3-1-2	Environment temperature sensor, temperature above upper physical threshold.
416	171	1	3-1-2	Environment temperature physical range check low.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
417	171	3	3-1-2	Sensor error SCR-System environment temperature. DPF-System air inlet temperature, signal range check high.
418	171	4	3-1-2	Sensor error SCR-System environment temperature. DPF-System air inlet temperature, signal range check low.
419	190	8	2-1-2	Sensor camshaft speed, disturbed signal.
420	190	12	2-1-2	Sensor camshaft detection. Out of range, signal disrupted, no signal.
421	190	2	2-1-3	Offset angle between crank- and camshaft-sensor is too large.
422	190	8	2-1-2	Sensor crankshaft detection. Out of range, signal disrupted or no signal.
423	190	12	2-1-2	Speed detection, out of range, signal disrupted or no signal.
455	975	5	2-3-8	PWM-Signal fan, open load or short-circuit ground.
457	975	3	2-3-8	PWM-Signal fan, short-circuit to battery.
458	975	4	2-3-8	PWM-Signal fan, open load or short circuit to ground
459	1639	12	2-3-8	Fan speed sensor, electrical error, signal disturbed or very low fan speed.
460	1639	0	2-3-8	Sensor error fan speed. Signal range check high or engine speed resp. Fan speed too big.
461	1639	1	2-3-8	Sensor error fan speed, signal range check low or fan speed too low.
462	523602	0	2-3-8	High fan speed, warning threshold exceeded.
463	523602	0	2-3-8	High fan speed, shut off threshold exceeded.
464	97	3	2-2-8	Sensor error water in fuel, signal range check high.
465	97	4	2-2-8	Sensor error water in fuel, signal range check low.
472	94	3	2-1-6	Sensor error low fuel pressure, signal range check high.
473	94	4	2-1-6	Sensor error low fuel pressure, signal range check low.
474	94	1	2-1-6	Low fuel pressure, warning threshold exceeded.
475	94	1	2-1-6	Low fuel pressure, shut off threshold exceeded.
483	174	11	2-2-7	Fuel temperature not plausible.
486	523618	3	1-3-3	Sensor error gearbox oil temperature, signal range check high.
487	523618	4	1-3-3	Sensor error gearbox oil temperature, signal range check low.
488	523619	2	1-3-3	Physical range check high for exhaust gas temperature upstream (SCR-CAT).
489	523619	2	1-3-3	Shutoff condition. No detailed information!
500	523915	0	1-6-5	HCI dosing valve (DV1); overcurrent at the end of the injection phase
501	523915	12	1-6-6	HCI dosing valve (DV1): Powerstage over temperature.
502	523915	3	1-5-9	HCI dosing valve (DV1): Short circuit to battery.
503	523915	3	1-6-4	Short circuit to battery high side, HCI dosing valve (DV1).
504	523915	4	1-5-9	HCI dosing valve (DV1): Short circuit to ground.
505	523915	11	1-6-4	HCI dosing valve (DV1): Short circuit high side powerstage.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
506	523916	2	7-1-9	Sensor HCl dosing valve (DV1) downstream pressure: Plausibility error.
508	523916	0	7-1-9	HCl dosing valve (DV1) downstream pressure: Physical range check high. Shut off regeneration.
511	523916	1	7-1-9	HCl dosing valve (DV1) downstream pressure: Physical range check low. Shut off regeneration.
514	523916	3	7-1-9	Sensor error HCl dosing valve (DV1) downstream pressure: Signal range check high.
515	523916	4	7-1-9	Sensor error HCl dosing valve (DV1) downstream pressure: Signal range check low.
525	523917	4	7-1-8	Sensor error DV1 & DV2 upstream pressure: Signal range check low.
534	523918	3	7-1-7	Sensor error DV1 & DV2 upstream temperature: Signal range check high.
535	523918	4	7-1-7	Sensor error DV1 & DV2 upstream temperature: Signal range check low.
542	1638	2	3-1-4	Hydraulic oil temperature check for Shut off condition.
543	676	11	263	Cold start aid relay error.
544	676	11	263	Cold start aid relay: Open load.
545	729	5	263	Cold start aid relay open load.
547	729	12	263	Cold start aid relay: Over temperature error.
549	729	3	263	Intake Air Heater Device: Short circuit to battery.
551	729	4	263	
559	523895	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 1.
560	523896	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 2.
561	523897	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 3.
562	523898	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 4.
563	523899	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 5.
564	523900	13	1-5-8	Check of missing injector adjustment value programming (IMA) injector 6.
565	523350	4	151	Injector cylinder-bank 1: Short circuit.
566	523352	4	152	Injector cylinder-bank 2: Short circuit.
567	523354	12	153	Injector powerstage output defect.
568	651	5	154	Injector 1 (in firing order): Interruption of electric connection.
569	652	5	155	Injector 2 (in firing order): Interruption of electric connection.
570	653	5	156	Injector 3 (in firing order): Interruption of electric connection.
571	654	5	161	Injector 4 (in firing order): Interruption of electric connection.
572	655	5	162	Injector 5 (in firing order): Interruption of electric connection.
573	656	5	163	Injector 6 (in firing order): Interruption of electric connection.
575	523756	14	1-5-5	Special pattern for special cases. No detailed information!
576	523757	14	1-5-6	Special pattern for special cases. No detailed information!
577	523758	14	1-6-1	Special pattern for special cases. No detailed information!

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
578	523759	14	1-6-2	Special pattern for special cases No detailed information!
579	523760	14	1-6-3	Special pattern for special cases No detailed information!
580	651	3	154	Injector 1 (in firing order): Short circuit.
581	652	3	155	Injector 2 (in firing order): Short circuit.
582	653	3	156	Injector 3 (in firing order): Short circuit.
583	654	3	161	Injector 4 (in firing order): Short circuit.
584	655	3	162	Injector 5 (in firing order): Short circuit.
585	656	3	163	Injector 6 (in firing order): Short circuit.
590	655	4	1-6-2	High side to low side short circuit in the injector 5 (in firing order).
591	656	4	1-6-3	High side to low side short circuit in the injector 6 (in firing order).
592	523615	5	135	Metering unit (Fuel-System): Open load.
593	523615	12	135	Metering unit (Fuel-System): Powerstage over temperature.
594	523615	3	135	Metering unit (Fuel-System): Short circuit to battery, highside.
595	523615	4	135	Metering unit (Fuel-System): Short circuit to ground, high side.
596	523615	3	135	Metering unit (Fuel-System): Short circuit to battery, low side.
597	523615	4	135	Metering Unit (Fuel-System): Short circuit to ground, low side
598	523615	3	1-3-5	Metering unit, short circuit to battery.
599	523615	4	1-3-5	Metering unit, short circuit to ground.
605	1323	12	2-4-1	Too many recognized misfires in cylinder 2 (in firing order).
607	1323	12	2-4-1	Too many recognized misfires in cylinder 4 (in firing order).
608	1323	12	2-4-1	Too many recognized misfires in cylinder 5 (in firing order).
609	1323	12	2-4-1	Too many recognized misfires in cylinder 6 (in firing order).
610	1322	12	2-4-1	
611	1346	0	2-4-1	Misfire detection monitoring No detailed information!
612	523612	12	555	Internal ECU monitoring detection reported error.
613	523612	12	555	ECU reported internal software error. Internal ECU monitoring detection reported error.
614	523612	12	555	ECU reported internal software error.
615	523612	12	555	ECU reported internal software error.
616	523612	12	555	ECU reported internal software error.
617	523612	12	555	ECU reported internal software error.
618	523612	12	555	ECU reported internal software error.
619	523612	12	555	Injection system,electrical error injectors.
620	523612	12	555	ECU reported internal software error.
621	523612	12	555	ECU reported internal software error.
623	523612	12	555	ECU reported internal software error.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
624	523612	12	555	ECU reported internal software error.
625	523612	12	555	ECU reported internal software error.
627	523612	12	555	ECU reported internal software error.
628	523612	12	555	ECU reported internal software error.
629	523612	12	555	Diagnostic fault check to report the accelerator pedal position error.
630	523612	12	555	Diagnostic fault check to report the engine speed error.
631	523612	12	555	Error in the plausibility of the injection energizing time.
632	523612	12	555	Error in the plausibility of the start of energising angles.
633	523612	12	555	Diagnostic fault check to report the error due to non plausibility in ZFC.
634	523612	12	555	Diagnosis fault check to report the demand for normal mode due to an error in the Pol2 quantity.
635	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol2 shut-off.
636	523612	12	555	Diagnosis fault check to report the error to demand for an ICO due to an error in the Pol3 efficiency factor.
637	523612	12	555	Internal ECU monitoring detection reported error.
638	523612	12	555	Monitoring of Fuel Quantity Correction.
639	523612	12	555	Diagnostic fault check to report the plausibility error in rail pressure monitoring.
640	523612	12	555	Diagnostic fault check to report the error due to torque comparison.
641	523612	12	555	Diagnosis of curr path limitation forced by ECU monitoring level 2.
642	523612	12	555	Diagnosis of lead path limitation forced by ECU monitoring level 2.
643	523612	12	5-5-5	Diagnosis of set path limitation forced by ECU monitoring level 2.
644	523612	3	5-5-5	Reported Over Voltage of Supply.
646	523612	4	5-5-5	Reported UnderVoltage of Supply.
648	523008	1	4-2-4	Manipulation control was triggered.
649	523008	2	4-2-4	Timeout error in Manipulation control.
654	2634	12	7-5-7	Early opening defect of main relay No detailed information!
656	2634	12	7-5-7	DFC for stuck main relay error No detailed information!
659	3226	2	8-1-3	Nox feed back fault detection No detailed information!
692	523752	0	7-5-8	Plausibiliti error during Rich to Lean switch over No detail informationen!
693	523752	0	7-5-8	Monitoring of Nox signal readiness No detail informationen!
714	523612	12	5-5-5	Diagnostic fault check to report WDA active due to errors in query-/response communication.
715	523612	12	5-5-5	Diagnostic fault check to report ABE active due to undervoltage detection.
716	523612	12	5-5-5	Diagnostic fault check to report ABE active due to overvoltage detection.
717	523612	12	5-5-5	Diagnostic fault check to report WDA/ABE active due to unknown reason.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
720	98	2	2-1-1	Plausibility Check. No detailed information!
732	100	3	2-2-4	Sensor error oil pressure; signal range check high.
733	100	4	2-2-4	Sensor error oil pressure sensor; signal range check low.
734	100	0	2-3-1	High oil pressure; warning threshold exceeded.
735	100	0	2-3-1	High oil pressure; shut off threshold exceeded.
736	100	1	2-3-1	Low oil pressure; warning threshold exceeded.
737	100	1	2-3-1	Low oil pressure; shut off threshold exceeded.
743	175	3	1-4-4	Sensor error oil temperature; signal range check high.
744	175	4	1-4-4	Sensor error oil temperature; signal range check low.
745	175	0	1-4-4	High oil temperature; warning threshold exceeded.
746	175	0	1-4-4	High oil temperature; shut off threshold exceeded.
747	1237	2	1-4-5	Override switch; plausibility error.
750	107	3	1-3-6	Sensor error airfilter differential pressure; short circuit to battery.
751	107	0	1-3-6	Sensor error airfilter differential pressure; short circuit to ground.
752	107	0	1-3-6	Air filter differential pressure; air filter clogged.
753	523919	2	6-9-4	DPF burner air pump pressure sensor, plausibility error.
755	523919	0	6-9-4	DPF burner air pump pressure sensor, pressure above upper shutoff threshold.
758	523919	1	6-9-4	DPF burner air pump pressure sensor, pressure below lower shutoff threshold.
761	523919	3	6-9-4	DPF burner air pump pressure sensor, short circuit to battery or open load.
762	523919	4	6-9-4	DPF burner air pump pressure sensor, short circuit to ground.
763	523920	2	7-1-6	Exhaust gas pressure upstream burner, plausibility error.
765	523920	0	7-1-6	Exhaust gas pressure upstream burner, pressure above upper shutoff threshold.
770	523920	3	7-1-6	Exhaust gas pressure upstream burner, short circuit to battery or open load.
771	523920	4	7-1-6	Exhaust gas pressure upstream burner, short circuit to ground.
772	102	2	2-2-3	Pressure downstream charge air cooler, plausibility error.
774	102	1	2-2-3	Pressure downstream charge air cooler, pressure below lower physical threshold.
776	102	3	2-2-3	Pressure downstream charge air cooler, short circuit to battery or open load.
777	102	4	2-2-3	Pressure downstream charge air cooler, short circuit to ground.
780	523699	3	1-1-3	Boost pressure control; negative governor deviation below limit.
781	523699	4	1-1-3	Learning value too high. No detailed information!
785	523889	3	1-1-3	Over temperature of device driver of pressure control valve. No detailed information!

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
791	411	0	6-9-3	Delta pressure across venturi in EGR line above physical high limit.
793	411	0	6-9-3	Plausibility Check fault for deviation of desired and actual EGR-mass flow, where the latter is calculated out of EGR Delta Pressure Sensor.
795	411	3	6-9-3	Sensor error differential pressure Venturiunit (EGR), signal range check low.
796	411	4	6-9-3	Sensor error differential pressure Venturiunit (EGR), signal range check high.
805	524025	14	8-4-5	Particulate filter regeneration. (3x) over the max. has been aborted allowed recovery time. Regeneration after time X is not successful (the error occurs when the regeneration times).
806	524058	2	8-4-4	Particulate filter; regeneration not successful.
807	3253	2	6-9-2	Differential pressure DPF, plausibility error.
809	3251	0	6-9-2	Differential pressure DPF maximum value is exceeded.
810	3251	0	6-9-2	Differential pressure sensor across DPF exceeds warning high limit.
812	3251	1	6-9-2	Differential pressure DPF, pressure below lower shutoff threshold.
813	3251	1	6-9-2	Differential pressure DPF, pressure below lower warning threshold.
814	3253	3	6-9-2	Electrical error differential pressure B58 (DPF). (Signal range check high).
815	3253	4	6-9-2	Electrical error differential pressure (DPF). signal range check low.
825	523009	9	2-5-3	The pressure relief valve (PRV) has reached the number of allowed activations.
826	523470	2	1-4-6	Pressure relief valve is forced to open, perform pressure increase.
827	523470	2	1-4-6	Pressure Relief Valve (PRV) forced to open. Performed by pressure increase.
828	523470	12	1-4-6	Pressure Relief Valve (PRV) forced to open. Shutoff conditions.
829	523470	12	1-4-6	Pressure Relief Valve (PRV) forced to open. Warning conditions.
830	523470	14	1-4-6	Open Pressure Relief Valve (PRV).
831	523470	11	1-4-6	Pressure Relief Valve (PRV) error; Rail pressure out of tolerance range.
832	523470	11	1-4-6	Rail pressure out of tolerance range. The PRV can not be opened at this operating point with a pressure shock.
833	523009	10	2-5-3	Open time of Pressure Relief Valve (PRV) for wear out monitoring had exceeded.
834	523906	5	7-6-1	Electrical fuel pre - supply pump; open load.
835	523906	12	7-6-1	Electrical fuel pre - supply pump. ECU powerstage over temperature.
836	523906	3	7-6-1	Electrical fuel pre - supply pump; short circuit to battery.
837	523906	4	7-6-1	Electrical fuel pre - supply pump. Short circuit to ground.
847	1176	0	1-3-9	Pressure sensor upstream turbine, Physical Range Check high.
848	1176	1	1-3-9	Pressure sensor upstream turbine, Physical Range Check low.
849	1176	3	1-4-1	Pressure sensor upstream turbine, signal range check (SRC) high.
850	1176	4	1-4-1	Pressure sensor upstream turbine, signal range check (SRC) low.
856	523613	0	1-3-4	Rail pressure metering unit, Positive governor deviation.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
857	523613	0	1-3-4	Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure exceeded.
858	523613	0	1-3-4	Rail pressure metering unit, Rail pressure disrupted. Maximum positive deviation of rail pressure in metering unit exceeded (RailMeUn1).
859	523613	0	1-3-4	Rail pressure metering unit, Rail pressure below the target range. (RailMeUn2) Railsystem leakage detected.(RailMeUn10)
861	523613	1	1-3-4	Rail pressure metering unit, Minimum rail pressure exceeded (RailMeUn3). Negative deviation of rail pressure second stage (RailMeUn22).
862	523613	0	1-3-4	Rail pressure metering unit, Maximum rail pressure exceeded.
864	523613	2	1-3-4	Rail pressure metering unit, Setpoint of metering unit in overrun mode not plausible.
865	523613	0	1-3-4	Setpoint of metering unit in overrun mode not plausible.
874	157	0	1-4-7	Rail pressure raw value is intermittent. No detailed information!
875	157	1	1-4-7	rail pressure raw value is above maximum offset. No detailed information!
876	523470	7	1-4-6	Maximum rail pressure exceeded (PRV).
877	157	3	1-4-7	Sensor error rail pressure. Sensor voltage above upper limit.
878	157	4	1-4-7	Sensor error rail pressure. Sensor voltage below lower limit.
881	523633	11	1-4-9	Longterm adaption factor below threshold.
882	523633	11	1-4-9	Nox conversion rate insufficient (SCR-Cat defect, bad DEF quality).
883	523633	11	1-4-9	Nox conversion rate insufficient (SCR-Cat defect, bad DEF quality); temperature range 1
887	3234	11	1-8-4	DFC for plausibility error Min for NOx sensor downstream of SCR Cat.
889	3224	1	1-8-5	DFC for plausibility error Max for NOx sensor upstream of SCR Cat.
892	4345	11	2-3-6	Sensor backflow line pressure (SCR); plausibility error.
893	4343	11	8-7-1	SCR Monitoring; Pressure stabilisation error, general pressure check error (SCR).
894	4374	13	8-7-2	Pressure stabilisation error dosing valve (SCR).
897	523632	16	8-7-5	Pump pressure SCR metering unit too high.
898	523632	18	8-7-6	Pump pressure SCR metering unit too low.
899	523632	0	8-7-7	Pressure overload of SCR-System.
900	523632	1	8-7-8	Pressure build-up error SCR-System.
903	4365	0	8-8-1	DEF tank temperature too high.
905	3241	0	8-8-3	Sensor SCR catalyst upstream temperature too high; plausibility error.
908	3361	7	8-8-6	DEF dosing valve blocked (SCR).
914	523720	2	1-4-8	DEF supply module heater temperature; plausibility error (normal condition).
915	523720	2	1-4-8	Sensor DEF supply module heater temperature; plausibility error (cold start condition).

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
916	523721	2	6-8-9	Sensor DEF supply module temperature; plausibility error (normal condition).
917	523721	2	6-8-9	Sensor DEF supply module temperature; plausibility error (cold start condition).
918	523981	11	2-4-3	SCR plausibility, OBD and diagnosis; Stuck in range check of DEF tank temperature sensor. DEF-tank without heating function (heating phase).
919	523330	14	1-3-1	Immobilizer status; fuel blocked.
920	523330	14	1-3-1	DFC to block the fuel by Sia. No detailed information!
921	523330	14	1-3-1	DFC to indicate that TEN-code or UC-code received if ECU is learned. No detailed information!
922	523330	14	1-3-1	DFC to indicate that no code is received via CAN. No detailed information!
923	523330	14	1-3-1	DFC to indicate that wrong code is received. No detailed information!
925	523720	8	1-4-8	DEF supply module heater temperature; duty cycle in failure range.
926	523720	8	1-4-8	DEF supply module heater temperature; duty cycle in invalid range.
927	523721	11	6-8-9	Urea supply module temperature measurement not available.
928	523722	8	6-9-1	DEF supply module PWM signal; period outside valid range.
929	523722	8	6-9-1	Detect faulty PWM signal from Supply Modul.
930	523721	8	6-8-9	DEF supply module temperature; duty cycle in failure range.
931	523721	8	6-8-9	Urea supply module temperature; duty cycle in invalid range.
932	29	3	1-2-6	Handthrottle idle validation switch; short circuit to battery
935	91	3	2-2-6	Sensor error accelerator pedal. signal range check high.
937	29	4	1-2-6	Handthrottle; short circuit to ground.
940	91	4	2-2-6	Sensor error accelerator pedal. Signal is below the range.
942	523921	3	7-1-4	Sensor error burner temperature; signal range check high.
943	3532	3	1-2-7	Sensor error DEF tank level; signal range check high.
944	523921	4	7-1-4	Sensor error burner temperature; signal range check low.
946	1079	13	2-8-2	Failure of sensor supply voltage 1.
947	1080	13	2-8-2	Failure of sensor supply voltage 2.
948	523601	13	2-8-2	Failure of sensor supply voltage 3.
956	677	3	5-1-2	Starter relay high side. Short circuit to battery.
957	677	4	5-1-2	Starter relay high side short circuit to ground.
958	677	5	5-1-2	Starter relay low side no load error.
959	677	12	5-1-2	Starter relay powerstage over temperature.
960	677	3	5-1-2	Starter relay low side short circuit to battery.
961	677	4	5-1-2	Starter relay low side short circuit to ground.
965	523922	3	7-1-5	Burner shut of valve; short circuit to battery.
969	624	5	5-1-3	SVS lamp; open load.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
970	624	12	5-1-3	SVS lamp: powerstage over temperature
971	624	3	5-1-3	SVS lamp; short circuit to battery
972	624	4	5-1-3	SVS lamp; short circuit to ground
973	523612	14	5-5-5	Softwarereset CPU SWReset_0
974	523612	14	5-5-5	Softwarereset CPU SWReset_1
975	523612	14	5-5-5	Softwarereset CPU SWReset_2
976	91	11	2-2-6	Plausibility error between APP1 and APP2 or APP1 and idle switch.
978	29	2	1-2-6	Plausibility error between sensor and idle switch, Acceleratio Pedal Detection. In case of Hand Throttle with Low Idle Switch, it is the plausibility check between hand throttle and idle switch.
980	523550	12	5-1-5	Terminal 50 was operated too long.
981	172	3	2-2-6	Air flow temperature sensor; short circuit to battery or open load.
982	172	4	2-2-6	Air flow temperature sensor; short circuit to ground.
986	523921	0	7-1-4	Burner temperature, temperature above upper shutoff threshold.
989	523921	1	7-1-4	Burner temperature, temperature below lower shutoff threshold.
992	105	1	1-2-8	Charged Air cooler down stream temperature. Temperature below lower physical threshold.
994	105	3	1-2-8	Electrical error charged air temperature. Signal range check high.(SRC)
995	105	4	1-2-8	Electrical error charged air temperature. Signal range check low.
996	105	0	2-3-3	Charged air cooler temperature. System reaction initiated. High charged air cooler temperature. Warning threshold exceeded.
997	105	0	2-3-3	High charged air cooler temperature. Shut off threshold exceeded.
998	105	11	1-2-8	Diagnostic fault check for charged air cooler downstream temperature sensor No detailed information!
1007	412	3	6-8-2	Electrical error EGR cooler downstream temperature. Signal range check high.
1008	412	4	6-8-2	electrical error EGR cooler downstream temperature. Signal range check low.
1011	523960	0	7-7-1	Physical range check high for EGR cooler downstream temperature.
1012	523960	1	7-7-1	Physical range check low for EGR cooler downstream temperature.
1014	51	6	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check high.
1015	520521	5	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check low.
1016	51	7	5-9-4	Actuator position for EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8) not plausible.
1022	51	6	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check high

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1023	51	5	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); signal range check low.
1024	51	3	5-9-4	Position sensor error of actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check high.
1025	51	4	5-9-4	Position sensor error actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8). Signal range check low.
1026	4769	2	6-8-4	Temperature downstream DOC, plausibility error.
1029	4766	0	6-8-4	Temperature downstream DOC, temperature above upper shutoff threshold.
1030	4766	0	6-8-4	Temperature downstream DOC, temperature above upper warning threshold.
1034	4769	3	6-8-4	Sensor error exhaust gas temperature downstream (DOC); signal range check high.
1035	4769	4	6-8-4	Sensor error exhaust gas temperature downstream (DOC); signal range check low.
1036	4768	2	6-8-3	Temperature upstream DOC, plausibility error.
1039	4765	0	6-8-3	Temperature upstream DOC, temperature above upper shutoff threshold.
1040	4765	0	6-8-3	Temperature upstream DOC, temperature above upper warning threshold.
1044	4768	3	6-8-3	Electrical error exhaust gas temperature upstream (DOC); signal range check high.
1045	4768	4	6-8-3	Electrical error exhaust gas temperature upstream (DOC); signal range check low.
1047	3248	4	6-8-5	Sensor error particle filter downstream temperature; signal range check low.
1067	1180	3	5-5-6	Sensor error exhaust gas temperature upstream turbine; signal range check high.
1069	4360	0	6-6-8	Exhaust temperature upstream SCR-Cat, temperature above upper physical threshold.
1070	4360	1	6-6-8	Sensed exhaust temperature before SCR-Cat is < physical low limit.
1071	4361	2	6-6-8	Signal error for CAN message No detail informationen!
1166	523948	1	7-7-2	Zerofuel calibration injector 3 (in firing order); minimum value exceeded.
1167	523949	1	7-7-2	Zerofuel calibration injector 4 (in firing order); minimum value exceeded.
1168	523950	1	7-7-2	Zerofuel calibration injector 5 (in firing order); minimum value exceeded.
1170	523612	12	5-5-5	Internal software error ECU.
1180	168	0	3-1-8	Physical range check high for battery voltage.
1181	168	1	3-1-8	Physical range check low for battery voltage.
1183	172	1	2-2-6	Air inlet filter sensor out of physical range check.
1187	523980	14	7-8-4	Bad quality of reduction agent detected.
1193	1180	0	5-5-6	Physical range check high for exhaust gas temperature upstream turbine.
1194	1180	1	5-5-6	Physical range check low for exhaust gas temperature upstream turbine.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1219	524018	14	7-8-6	HMI engine derate service state. DPF wasn't regenerated, power reduction phase 1 (manuell regeneration request).
1220	524022	14	7-8-6	HMI engine derate stop state. DPF wasn't regenerated, power reduction phase 2 (manuell regeneration request).
1222	190	14	2-1-2	Camshaft- and Crankshaft speed sensor signal not available on CAN.
1223	51	5	5-9-4	Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); open load.
1224	51	6	5-9-4	Actuator EGR-Valve (2.9;3.6) or Throttle-Valve (6.1;7.8); over current.
1226	51	3	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery.
1227	51	3	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to battery.
1228	51	4	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground.
1229	51	4	5-9-4	EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); short circuit to ground.
1230	51	6	5-9-4	Actuator error EGR-Valve (2.9;3.6) or Throttle-Valve (4.1;6.1;7.8); Overload by short-circuit.
1231	51	11	5-9-4	Power stage overtemperature due to high current.
1232	51	4	5-9-4	actuator AGR valve (2.9;3.6) throttle valve (4.1;6.1;7.8); Voltage below threshold.
1239	523984	3	7-8-8	UB7; Short circuit to battery error of actuator relay 7.
1241	523986	4	1-7-6	UB6; Short circuit to ground actuator relais 6.
1242	523987	4	7-9-1	UB7; Short circuit to ground actuator relay 7.
1247	524019	11	8-6-2	Burner Control; Air Line - Blocked Air Pump; air lines blocked.
1248	523910	9	6-9-5	Burner Control; Air Pump - CAN Lost Air Pump; CAN communication lost.
1249	523910	7	6-9-5	Air pump; CAN communication interrupted no purge function available.
1250	523910	12	6-9-5	Air Pump; internal error.
1252	523910	0	6-9-5	Air Pump; operating voltage error.
1254	524014	1	8-5-8	Air inlet EPV - pressure too low. Air pressure glow plug flush line; below limit.
1255	524013	7	8-5-7	Burner Control; Flame lost max. Burner operation is interrupted too often.
1257	523915	7	8-5-3	HCl dosing valve (DV1); blocked open.
1258	524016	11	8-5-9	Burner Control; HFM - Electrical Fault HFM sensor; electrical fault.
1259	524016	2	8-5-9	Burner Control; HFM - Plausibilitätsfehler 1 Amount of air is not plausible to pump speed.
1261	523910	6	6-9-5	Burner Control Air Pump; over current Air pump electrically overloaded.
1262	523922	7	8-5-4	Burner Control; Shut-off Valve - Blocked closed Burner Shut Off Valve; blocked closed.
1263	524021	11	8-6-4	Burner Control; Fuel line ShutOff downstream - broken Burner fuel line pipe leak behind Shut Off Valve.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1264	523922	7	8-5-5	Burner Shut Off Valve; blocked open.
1285	524038	9	8-2-4	Timeout error of CAN-Receive-Frame ComMS_Sys1TO (error memory Slave); Master-Slave internal CAN message.
1286	524039	9	8-2-5	Timeout error of CAN-Receive-Frame ComMS_Sys2TO (error memory Slave); Master-Slave internal CAN message.
1287	524040	9	8-2-6	Timeout error of CAN-Receive-Frame ComMS_Sys3TO (error memory Slave); Master-Slave internal CAN message.
1288	524041	9	8-2-7	Timeout error of CAN-Receive-Frame ComMS_Sys4TO (error memory Slave); Master-Slave internal CAN message.
1289	524042	9	8-2-8	Timeout error of CAN-Receive-Frame ComMS_Sys5TO (error memory Slave); Master-Slave internal CAN message.
1290	524043	9	8-2-9	Timeout error of CAN-Receive-Frame ComMS_Sys6TO (error memory Slave); Master-Slave internal CAN message.
1291	524045	9	8-3-1	Master Slave, Error of message counter CAN receive message ComMSMoFOvR; ComMSMoFOvR1CNT.
1292	524046	9	8-3-2	Master-Slave CAN; Error Checksum of CAN-Receive Message.
1293	524047	9	8-3-3	Master-Slave CAN; Error of message length of CAN receive message ComMSMoFOvR; _ComMSMoFOvR1DLC.
1294	524048	9	8-3-4	Timeout error CAN message ComMSMoFOvR1TO error memory Slave.
1299	523788	0	6-5-5	Wastegate plausibility error off CAN transmit message.
1300	523788	0	6-5-5	Timeout Error of CAN-Receive-Frame ComTrbChActr; Wastegate.
1302	524024	11	8-6-6	Deviation of the exhaust gas temperature setpoint to actual value downstream (DOC) too high.
1324	523995	13	7-9-5	Check of missing injector adjustment value programming (IMA) injector 7 (in firing order).
1325	523996	13	7-9-6	check of missing injector adjustment value programming (IMA) injector 8 (in firing order).
1326	523997	4	7-9-7	Injector cylinder bank 1 slave; short circuit.
1327	523998	4	7-9-8	Injector cylinder bank 2 slave; short circuit.
1328	523999	12	7-9-9	Injector powerstage output Slave defect.
1329	524000	5	1-7-7	Injector 7 (in firing order); interruption of electric connection.
1330	524001	5	1-7-8	Injector 8 (in firing order); interruption of electric connection.
1333	524000	3	1-7-7	Injector 7 (in firing order); short circuit.
1334	524001	3	1-7-8	Injector 8 (in firing order); short circuit.
1337	2797	4	5-6-5	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 0; _IVDiaShCirGndToutBnk_0.
1338	2798	4	5-6-6	Timeout of Short-Circuit Ground Diagnosis Cyl. Bank 1; _IVDiaShCirGndToutBnk_1.
1339	2797	4	5-6-5	Injector diagnostic; Short circuit to ground cylinder bank 0.
1340	2798	4	5-6-6	Injector diagnostic; Short circuit to ground cylinder bank 1.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1341	524035	12	5-5-5	Injector diagnostics; time out error in the SPI communication.
1342	524036	12	5-5-5	Injector diagnostics Slave; time out error in the SPI communication.
1345	524069	9	8-9-6	Timeout Error of CAN-Receive-Frame MSMon_FidFCCTO; Master-Slave CAN communication faulty.
1357	524052	11	8-3-6	Error memory Slave reports FID MSMonFC2 (collective error).
1368	524052	11	8-3-6	Error memory Slave reports FID MSMonFC3 (collective error).
1378	523919	2	6-9-4	Sensor air pump airpressure; plausibility error.
1379	523920	2	7-1-6	Sensor exhaust gas back pressure burner; plausibility error.
1380	3253	2	6-9-2	Sensor differential pressure (DPF); plausibility error.
1381	164	2	8-3-9	Rail pressure safety function is not executed correctly ().
1389	523922	5	7-1-5	Burner Shut Off Valve; open load.
1390	523922	12	7-1-5	Burner Shut Off Valve; powerstage over temperature.
1392	523922	4	7-1-5	Burner Shut Off Valve; short circuit to ground.
1395	523921	2	7-1-4	Burner temperature sensor; Plausibility Check for burner temperature sensor Sensor burner temperature; plausibility error.
1398	1136	0	6-8-1	Physical range check high for ECU temperature.
1402	4769	2	6-8-4	Sensor exhaust gas temperature OxiCat downstream (normal operation); plausibility error.
1403	4769	2	6-8-4	Sensor exhaust gas temperature OxiCat downstream (regeneration); plausibility error.
1411	1188	11	8-1-4	Wastegate actuator; internal error.
1412	1188	11	8-1-4	Wastegate actuator; EOL calibration not performed correctly.
1413	1188	13	8-1-4	Wastegate actuator calibration deviation too large, recalibration required.
1414	1188	2	8-1-4	Wastegate; status message from ECU missing.
1415	1188	7	8-1-4	Wastegate actuator; blocked.
1417	1188	11	8-1-4	Wastegate actuator; over temperature (> 135°C).
1418	1188	11	8-1-4	Wastegate actuator; operating voltage error.
1423	51	0	5-9-4	Warning threshold for an internal actuator error exceeded, < 4L EGR. actuator und >4L Air Intake Flap.
1424	51	1	5-9-4	Shut off threshold for an internal actuator error exceeded, < 4L EGR.actuator und >4L Air Intake Flap.
1425	172	0	2-2-6	air temperature within air filter box above maximum physical value.
1431	524028	2	8-1-5	CAN message PROEGRActr; plausibility error.
1432	524029	2	8-1-5	Timeout Error of CAN-Receive-Frame ComEGRActr - exhaust gas recirculation positioner.
1436	524034	5	8-1-6	Disc separator; open load.
1437	524034	12	8-1-6	Disc separator; powerstage over temperature.
1438	524034	3	8-1-6	Disc separator; short circuit to battery.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1439	524034	4	8-1-6	Disc separator; short circuit to ground.
1440	524030	7	8-1-5	EGR actuator; internal error.
1441	524031	13	8-1-5	EGR actuator, calibration error.
1442	524032	2	8-1-5	EGR actuator; status message "EGRCust" is missing.
1443	524033	7	8-1-5	EGR actuator; due to overload in Save Mode.
1455	3711	12	7-1-1	Temperature during stand-still main phase too low or too high.
1458	523960	0	7-7-1	High exhaust gas temperature EGR cooler downstream; warning threshold exceeded.
1464	0	0	-	
1466	0	0	-	
1467	0	0	-	
1469	0	0	-	
1470	0	0	-	
1471	0	0	-	
1472	0	0	-	
1481	524025	5	8-4-5	DPF system; operating voltage error.
1482	524044	9	1-8-8	CAN message ComMS_Sys7 not received from slave.
1484	524068	2	8-9-5	Master ECU and Slave ECU have been identified as the same types.
1485	524052	11	8-3-6	Master ECU and Slave ECU data sets or software are not identical.
1486	523718	5	6-7-6	SCR mainrelay; open load (only CV56B).
1488	523718	3	6-7-6	SCR mainrelay; short circuit to battery (only CV56B).
1489	523718	4	6-7-6	SCR mainrelay; short circuit to ground (only CV56B).
1661	524116	9	1-9-4	Timeout error of CAN-Transmit-Frame SCR2.
1662	524117	9	9-4-1	Timeout error of CAN-Transmit-Frame SCR3.
1663	524097	9	9-2-1	Timeout error of CAN-Transmit-Frame DPFBrnAirPmpCtl.
1664	524098	9	9-2-2	Timeout error of CAN-Transmit-Frame ComDPFBrnPT.
1665	524099	9	9-2-3	Timeout error of CAN-Transmit-Frame ComDPFC1.
1666	524100	9	9-2-4	Timeout error of CAN-Transmit-Frame ComDPFHisDat.
1667	524101	9	9-2-5	Timeout error of CAN-Transmit-Frame ComDPFTstMon.
1668	524105	9	9-2-9	Timeout error of CAN-Transmit-Frame ComEGRMsFlw (EGR Steller).
1669	524108	9	9-3-2	Timeout error of CAN-Transmit-Frame ComEGRTVActr (EGR actuator).
1670	524110	9	9-3-4	Timeout error of CAN-Transmit-Frame ComETVActrTO.
1671	524112	9	9-3-6	Timeout ComIntake Throttle Valve Actr.
1672	524118	9	9-4-2	Timeout error of CAN-Receive-Frame ComRxCM1.
1675	524103	9	9-2-7	Timeout error of CAN-Receive-Frame ComRxDPFBrnAirPmp.
1676	524104	9	9-2-8	Timeout error of CAN-Receive-Frame ComRxDPFCtl.

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5.6-6 Deutz D2.9L Fault Codes

Code	SPN	FMI	Blink Code	Error Identification
1677	524106	9	1-9-5	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw1 (EGR actuator)
1678	524107	9	9-3-1	Timeout error of CAN-Receive-Frame ComRxEGRMsFlw2 (EGR actuator).
1679	524109	9	9-3-3	Timeout error of CAN-Receive-Frame ComRxEGRTVActr (EGR actuator).
1680	524111	9	9-3-5	Timeout error of CAN-Receive-Frame ComRxETVActr.
1681	524113	9	9-3-7	Timeout error of CAN-Receive-Frame ComRxITVActr.
1682	524120	9	9-4-4	Timeout error of CAN-Receive-Frame ComRxSCRHtDiag.
1683	524121	9	9-4-5	Timeout error of CAN-Receive-Frame ComRxTrbChActr (wastegate actuator).
1684	524122	9	9-4-6	Timeout error of CAN-Receive-Frame ComRxUQSens (Urea quality).
1685	524123	9	9-4-7	Timeout error of CAN-Receive-Frame ComSCRHtCtl.
1686	524124	9	9-4-8	Timeout error of CAN-Receive-Frame ComTxAT1IMG.
1687	524125	9	9-4-9	Timeout error of CAN-Receive-Frame ComTxTrbChActr (Wastegate actuator).
1698	524133	2	9-5-6	HMI system; set if restore button blocked.
1699	524134	0	9-5-7	DPF, ash load exceeds the shutoff threshold.
1700	524134	0	9-5-7	DPF, ash load exceeds the warning threshold.
1701	524135	0	9-5-8	DPF, soot load exceeds the shutoff threshold.
1702	524135	14	9-5-8	DPF, soot load exceeds the service request threshold.
1703	524135	0	9-5-8	DPF, soot load exceeds the warning threshold.
1705	524156	9	9-7-2	Timeout error of CAN-Receive-Frame ComRxEBC2.
1706	524157	9	9-7-3	Fan control; time out for fan governing.
1708	524159	0	9-7-5	Fan; short circuit battery or open load.
1709	524159	1	9-7-5	Fan; short circuit ground.
1710	524160	5	9-7-6	Fan; in/outlet valve 1; open load.
1712	524160	3	9-7-6	Fan; in/outlet valve 1; short circuit battery.
1713	524160	4	9-7-6	Fan; in/outlet valve 1; open load ground.
1714	524161	5	9-7-7	Fan; in/outlet valve 2; open load.
1716	524161	3	9-7-7	Fan; in/outlet valve 2; short circuit battery.
1717	524161	4	9-7-7	Fan; in/outlet valve 2; open load ground.
1718	524162	12	9-7-8	Fan; fancontrol; angle sensor defect.
1719	524163	12	9-7-9	Fan; fancontrol; fan or valve defect.
1752	2791	7	4-1-5	EGR actuator, actuator blocked.
1753	2791	2	4-1-5	EGR actuator, CAN error.
1754	2791	13	4-1-5	EGR actuator, EOL calibration error.
1755	2791	12	4-1-5	EGR Actuator, internal electrical fault.
1756	2791	13	4-1-5	EGR actuator, learning process aborted.
1757	2791	6	4-1-5	EGR actuator current is above maximum threshold.
1758	2791	3	4-1-5	EGR actuator supply voltage is above the maximum threshold.

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5.7 Hydraulic Tank

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

5.7-1 Hydraulic Oil Replacement

1. Turn the engine on and allow the hydraulic oil to warm up.
2. Shut the engine off.
3. Place a suitable container under the hydraulic tank.
4. Remove the oil drain plug and allow all of the hydraulic oil to drain into the container.
5. Reinstall the drain plug with a new seal ring and tighten the plug firmly.
6. Refill the hydraulic tank with new oil. Refer to [2.12 Hydraulic & Gear Oils](#).
7. Check for leakage.
8. Clean up any oil that may have spilled during this procedure.
9. Check the hydraulic oil level. The hydraulic oil level should be at or slightly above the fill line on the tank.

NOTE

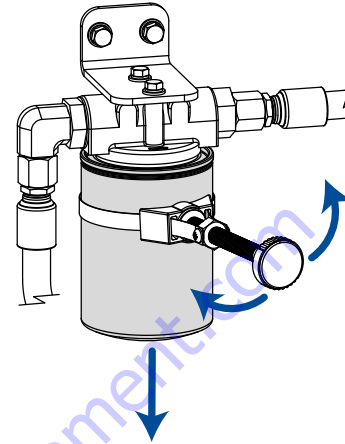
Refer to your national/local regulations on how to dispose of the used filter and oil.

NOTE

Samples of hydraulic oil should be drawn from the reservoir and tested annually. These samples should be taken when the oil is warmed through normal operation of the system. The sample should be analyzed by a qualified lubrication specialist to determine if it is suitable for continued use. Oil change intervals will depend on the care used in keeping the oil clean, and the operating conditions. Dirt and/or moisture contamination dictate that the oil should be changed more often. Under normal use and operating conditions, the hydraulic oil should be changed every two years. For oil specifications, refer to [2.12 Hydraulic & Gear Oils](#).

5.7-2 Hydraulic Filter Replacement

1. Turn the MEWP off.
2. Place a suitable container under the filter.



3. Use a filter wrench to remove the filter from the head. Throw out the filter.
4. Apply hydraulic oil to the o-ring on the new filter, and screw the filter into place.
5. Tighten the filter with the filter wrench.

NOTE

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

5.8 Kubota WG2503 Dual Fuel Engine

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

5.8-1 Engine Parameter Display (KANtrak 1700)

KANtrak 1700 display allows users to easily monitor diagnostic trouble codes or critical engine faults such as oil pressure and water temperature as well as providing an alarm system to alert the user when the ECU (Engine Control Unit) detects an engine fault.




Menu Browsing

The KANtrak 1700 unit has only three (3) buttons for different features selection on its dynamic style menu system. These buttons, located at the bottom of the unit, are used to navigate on the menu.

During normal operation, the buttons have no specific functions. When pressing any button once, a dynamic pop-up menu appears which contains some function icons aligned above the associated buttons. The user selects the required function from the displayed menu. When a fault occurs, the amber light on top of the KANtrak unit and the Check Engine Indicator Light on the Engine Control Console illuminate and will stay on until the fault is corrected.

Display Modes

KANtrak 1700 unit has four display modes and can be accessed through the Setting Menu by selecting the  tool.

1. Single Screen. This mode is used to monitor one parameter at a time. The screen also displays the associated parameter icon, the description,

the units and a bar graph.



2. Dual Screen. This mode is used to monitor two parameters at a time. The screen also displays the associated parameter icon and units.
3. Multi Screen. This mode is used to monitor a list of four(4) parameters selected by the user. Every item is listed with its associated icon and units.
4. DTC Screen. This mode is used to display Data Trouble Codes

Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Codes (DTCs) are manufacturer's codes to indicate specific engine malfunction. These codes will appear on the KANtrak screen whenever an engine malfunction occurs. For DTCs, see [5.8-2 Kubota WG2503 Diagnostic Trouble Codes](#).

Selecting DTC Screen

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

1. To access the DTC Screen, select the  tool to access the Settings Menu.
2. On the Display Mode option, select Dtc.
3. To display the DTC detailed info, select the "?" function. A detailed screen of the selected DTC including the SPN description (Header), the FMI Description (Header), the fault status (Status), the SPN Number (SPN), the FMI Number (FMI), the total number of occurrences (OCC) and the related node source address (SRC) will then appear.
4. Note the SPN Number on the display and check it against the list found in [5.8-2 Kubota WG2503 Diagnostic Trouble Codes](#). Look for the Detected Item/Hardware information and correct the error. Once the fault is fixed, the amber lights on KANtrak unit and on Engine Control Console will turn off.
5. To exit from DTC Screen, select  tool to continue browsing for other parameters. The menu will be hidden after a few seconds.

5.8-2 Kubota WG2503 Diagnostic Trouble Codes

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
16	636	8	-Mechanical Misalignment between cam and crank
87	94	1	-Fuel Pressure Abnormality (Low Side)
88	94	0	-Fuel Pressure Abnormality (High Side)
91	94	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
92	94	3	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
107	106	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
108	106	16	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
111	105	15	-Intake air temperature abnormality (High Side Stage 1)
112	105	4	-Sensor/Wiring Harness Open/Short To Ground -Sensor Malfunction
113	105	3	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
116	110	15	-Engine Coolant Temperature Abnormality (High Side Stage 1)
117	110	4	-Sensor/Wiring Harness Short To Ground -Sensor Malfunction
118	110	3	-Sensor/Wiring Harness Short To Power -Sensor Malfunction
121	51	1	-Throttle Position Sensor Malfunction
122	51	4	-Throttle Position Sensor 1 Signal Voltage Low
123	51	3	-Throttle Position Sensor 1 Signal Voltage High
127	105	0	-Intake Air Temperature Higher Than Expected Stage 2
134	3217	5	-Open feed circuit to O2 heater -Open heater ground circuit -Open or shorted to ground O2 signal wire -Open sensor ground (5Vrtn1) -Inoperative sensor
154	3227	5	-Open feed circuit to O2 heater -Open heater ground circuit -Open or shorted to ground O2 signal wire -Open sensor ground (5Vrtn1) -Inoperative sensor
171	4237	0	-Exhaust leaks upstream or near the HEGO sensor -reduced fuel supply pressure to the fuel injection system -a inoperative sensor -an injector that is stuck closed or dirty -weak spark or lack of spark to a cylinder -a MAP sensor that indicates pressure that is lower than the true pressure
172	4237	1	-An inoperative O2 sensor -High fuel supply pressure or temperature
182	174	4	-Operating in a frigid atmosphere -Sensor out of calibration

Kubota WG2503 Diagnostic Trouble Codes

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
183	174	3	-Operating in a hot environment -Sensor out of calibration
217	110	0	-Engine Coolant Temperature Exceeds Stage 2
219	515	15	-Engine over speed condition, stuck throttle, large vacuum leak into intake manifold after throttle blade
221	51	51	-Throttle Position Sensor Malfunction
222	3673	4	-Throttle position sensor circuit in the harness short to ground -Throttle position sensor malfunction
223	3673	3	-Throttle position sensor circuit in the harness short to power -Throttle position sensor malfunction
261	651	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
262	651	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
264	652	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
265	652	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
267	653	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
268	653	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
270	654	5	-Loss of 12.0 V feed to injector -Open injector coil -Open or shorted to ground injector driver circuit in engine harness
271	654	6	-Injector coil shorted internally -Injector driver circuit shorted to voltage between injector and ECM
326	731	2	-Knock signal abnormality (High Side) -Sensor Malfunction
327	731	4	-Sensor/wiring harness open/short to power -Sensor malfunction
336	636	2	-Crank+ or Crank- circuits in wrong connector terminal slot
337	636	4	-Loss of sensor feed -Open sensor ground -Open or shorted to ground signal wire

Kubota WG2503 Diagnostic Trouble Codes

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
341	723	2	-Cam+ or Cam- circuits in wrong connector terminal slot -Loss of feed voltage to Cam sensor -Loss of sensor feed -Open sensor ground -Open or shorted to ground signal wire -Sensor malfunctioning
342	723	4	-Loss of feed voltage to Cam sensor -Loss of signal or ground circuits -Faulty sensor
359	n/a	n/a	n/a
420	3050	n/a	n/a
524	100	1	-Low Oil Pressure
562	168	17	-Wiring harness open/short/damage -Battery abnormality
563	168	15	-System voltage abnormality (High Side)
601	628	13	-Faulty ECU -ROM Malfunction
604	630	12	- Faulty ECU
606	629	31	-Faulty ECU
627	1348	5	-Open coil in relay -Open in relay driver circuit in engine harness
628	1347	5	-Relay pull in coil shorted internally -Relay driver circuit shorted to ground in wire harness
629	1347	6	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness
642	1079	4	-Wiring harness short to ground -ECM malfunction
643	1079	3	-Wiring harness short to 12.0 V power -ECM malfunction
652	1080	4	-Wiring harness short to ground -ECM malfunction
653	1080	3	-Wiring harness short to 10.0 V power -ECM malfunction
686	1485	4	-Short to ground in relay pull in coil -Short to ground in relay driver circuit in wire harness
687	1485	3	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness -Power Relay Error
1111	515	16	-Engine overspeed condition, faulty Crank sensor or input
1112	515	0	-Engine overspeed condition, faulty Crank sensor or input
1151	4236	0	<ul style="list-style-type: none"> • exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor

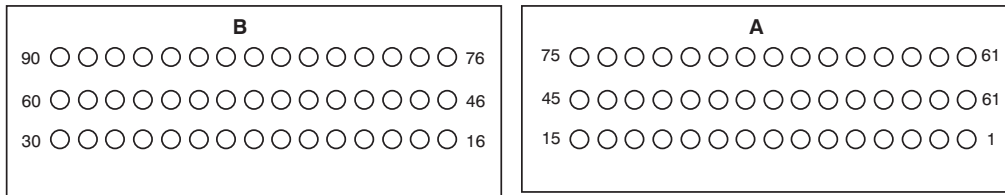
Kubota WG2503 Diagnostic Trouble Codes

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

Kubota WG2503 Diagnostic Trouble Codes

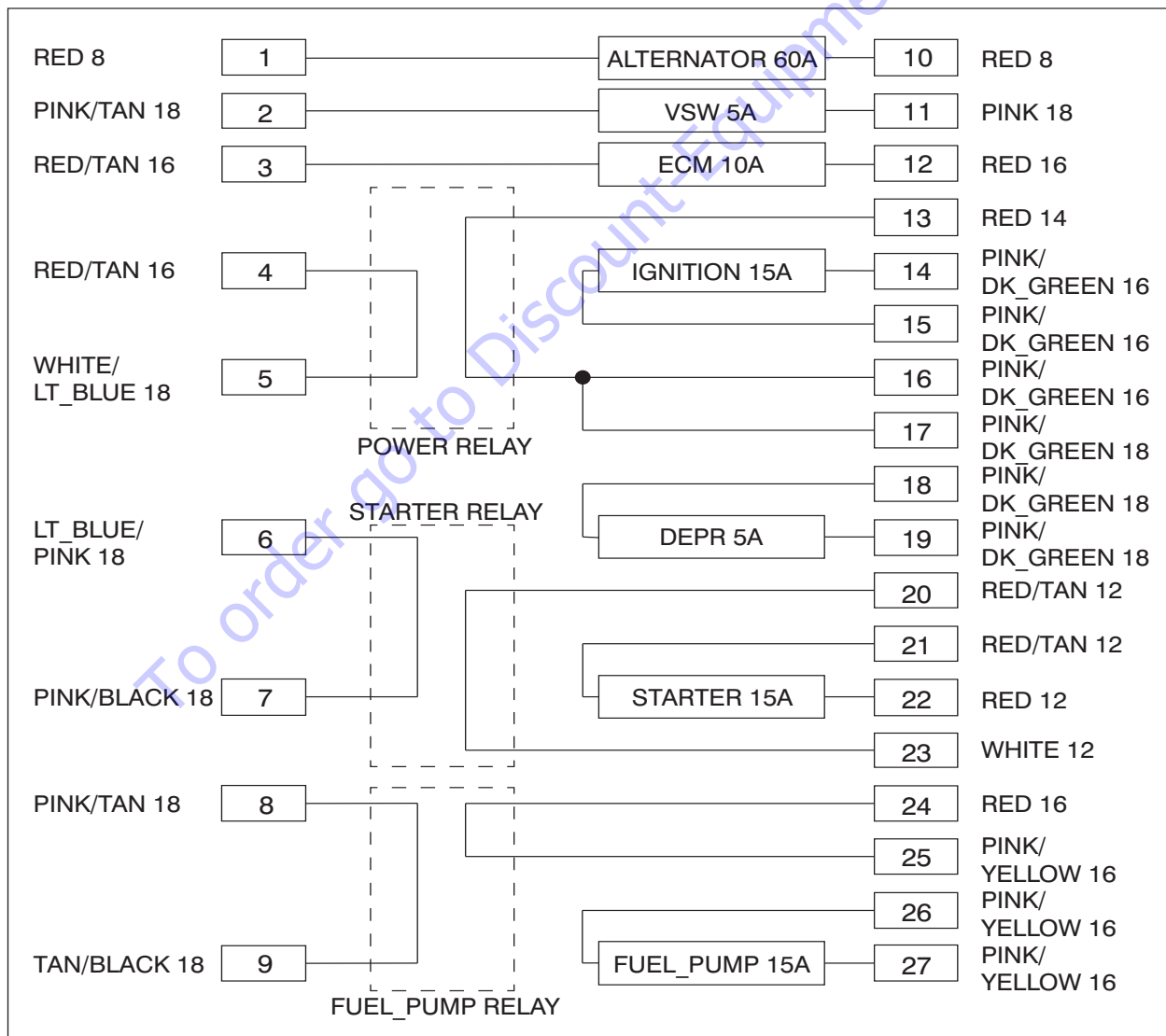
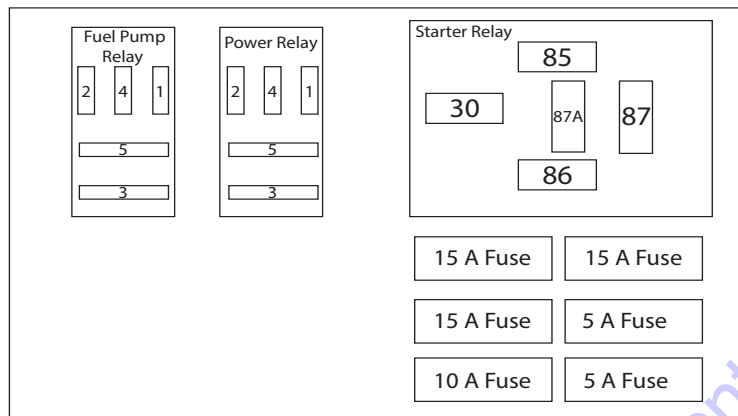
DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
2116	29	0	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2122	91	3	<ul style="list-style-type: none"> • Wiring harness open/short/damage • FPP malfunction
2123	91	3	<ul style="list-style-type: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

5.8-3 ECU Pin Reference Chart (Kubota WG2503)

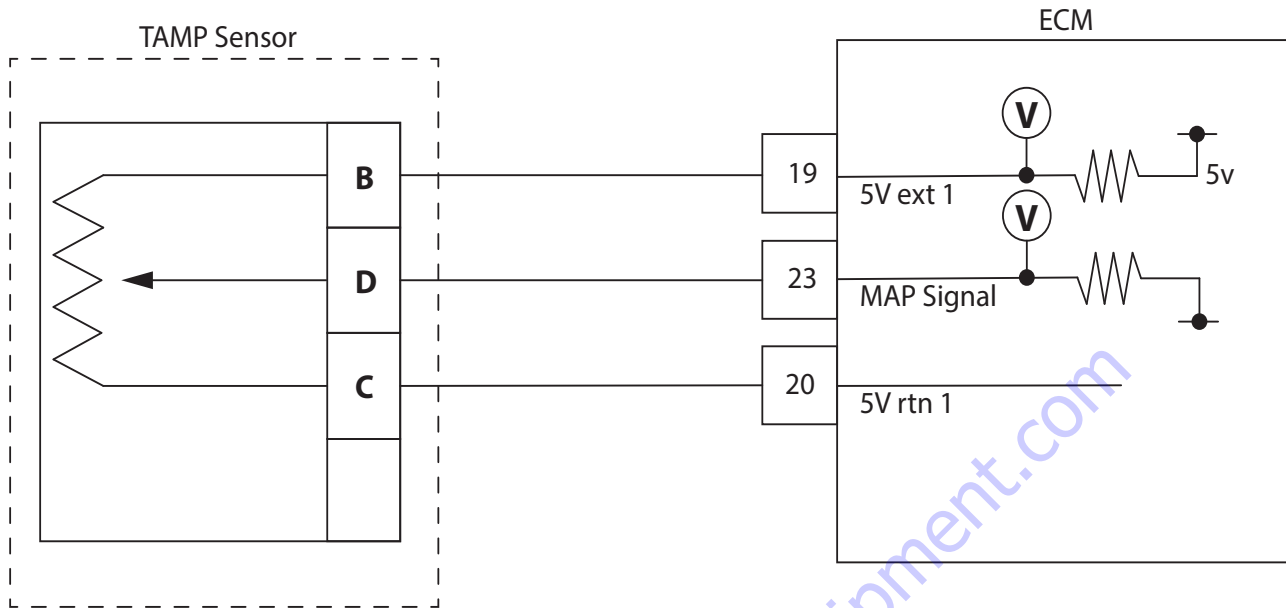


Pin	Wire Colour	Description	Pin	Wire Colour	Description
1	YELLOW 18	SPK_COIL 1A	46	BLANK	AUX ANA PUD 1
2	YELLOW/BLACK 18	SPK_COIL 1B	47	PURPLE/LT_BLUE 18	TPS 1
3	YELLOW/RED 18	SPK_COIL 2A	48	LT_BLUE/DK_BLUE 18	TPS 2
4	BLACK 16	SPK_GRND	49	DK_GREEN/PURPLE 18	AUX DIG 1
5	YELLOW/WHITE 18	SPK_COIL 2B	50	TAN/RED 18	AUX DIG 2
6	BLANK	SPK_COIL 3A	51	BLACK/YELLOW 18	KNK1 +
7	BLANK	SPK_COIL 3B	52	BLACK 18	KNK1 -
8	BLANK	EGO_3	53	DK_BLUE/ORANGE 18	FPP1
9	-	-	54	PURPLE/YELLOW 18	FPP2 IVS
10	-	-	55	BLANK	VRELAY
11	-	-	56	-	-
12	ORANGE/YELLOW 18	AUX ANA PD1	57	BLANK	KNK2 +
13	WHITE/LT_GREEN 18	AUX ANA PD2	58	BLANK	KNK2 -
14	DK BLUE-PINK 18	CAN 1 +	59	BLANK	VBAT PROT
15	BLUE/WHITE 18	CAN 1 -	60	RED/TAN 16	VBAT
16	-	-	61	BLACK/YELLOW 18	EGOH 2
17	-	-	62	BLACK/WHITE 18	EGOH 1
18	BLANK	AUX ANA PUD3	63	BLANK	UEGOC
19	LT_GREEN/RED 18	5 V EXT 1	64	BROWN/LT_BLUE 18	INJ1 LS
20	BLACK/LT_GREEN 18	5 V RTN 1	65	BROWN/LT_GREEN 18	INJ2 LS
21	DK_GREEN/ORANGE 18	EGO 1	66	BROWN/YELLOW 18	INJ3 LS
22	DK_GREEN/WHITE 18	EGO 2	67	BROWN/WHITE 18	INJ4 LS
23	LT_GREEN 18	MAP	68	BLANK	INJ5 LS
24	BLANK	AUX ANA PUD3	69	BLACK 16	GROUND
25	PURPLE/WHITE 18	CRANK +	70	BLANK	INJ6 LS
26	WHITE/PURPLE 18	CRANK -	71	BLANK	AUX PWM8
27	GRAY/BROWN 18	CAM +	72	PINK/BLACK 18	STARTER
28	PURPLE/ORANGE 18	CAM -	73	WHITE/LT_BLUE 18	RELAY
29	RED/WHITE 18	SPEED +	74	GREEN/YELLOW 18	MIL
30	RED/BLACK 18	SPEED -	75	BLANK	EGOH_3
31	LT_GREEN/PURPLE 18	5 V EXT 2	76	BLANK	AUX PWM7
32	LT_GREEN/BLACK 18	5 V RTN 2	77	WHITE/BLACK 18	LOCK OFF
33	BLANK	PULSE_IN	78	TAN/BLACK 18	AUX PWM6
34	GRAY/DK_BLUE 18	GOV 1	79	RED/TAN 16	VBAT
35	LT_BLUE 18	OIL PRESSURE	80	PINK/WHITE 18	DBW +
36	YELLOW/GRAY 18	IAT	81	BLACK 16	GROUND
37	TAN/WHITE 18	ECT	82	TAN/ORANGE 18	DBW -
38	LT_GREEN/WHITE 18	AUX ANA PU1	83	WHITE/BROWN 16	AUX OWM5 REC
39	YELLOW/DK_BLUE 18	AUX ANA PU2	84	BROWN/WHITE 16	AUX PWM5
40	DK_BLUE/YELLOW 18	AUX ANA PU3	85	TAN 16	AUX PWM1
41	TAN/DK_GREEN 18	AUX DIG 3	86	BLANK	AUX PWM4
42	GRAY/RED 18	AUX DIG 4	87	DK_BLUE 18	AUX PWM2
43	GRAY 18	TACH	88	BLANK	AUX PWM4 REC
44	PINK/TAN 18	VSW	89	PINK/YELLOW 16	AUX PWM3 REC
45	BLANK	AUX ANA PUD 2	90	BLACK/RED 16	AUX PWM3 REC

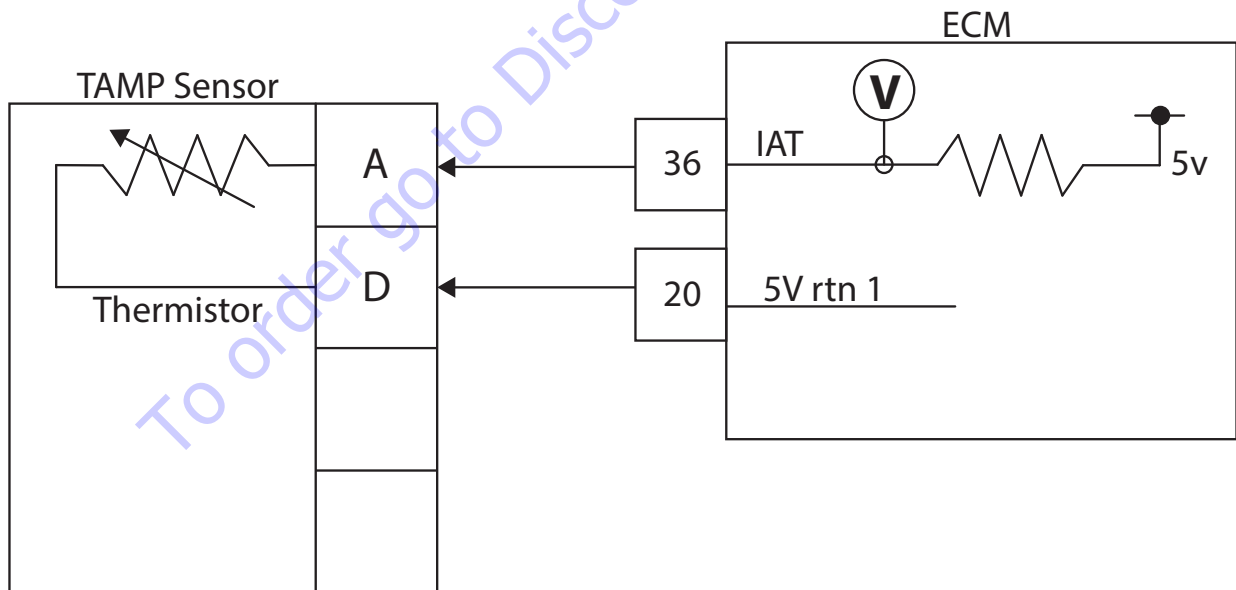
5.8-4 Fuse Box (Kubota WG2503)



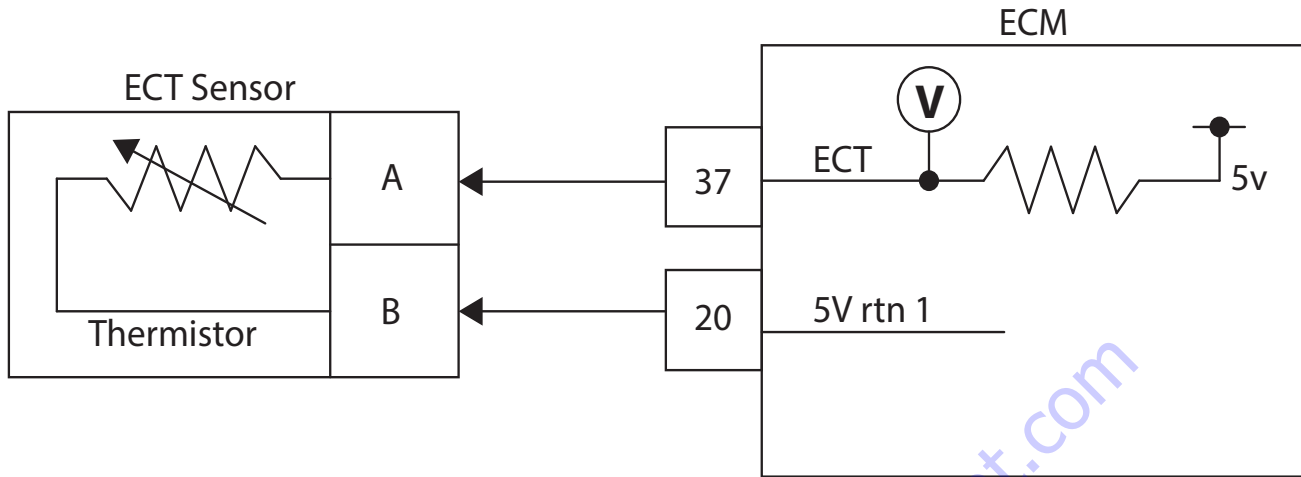
5.8-5 MAP Sensor (Kubota WG2503)



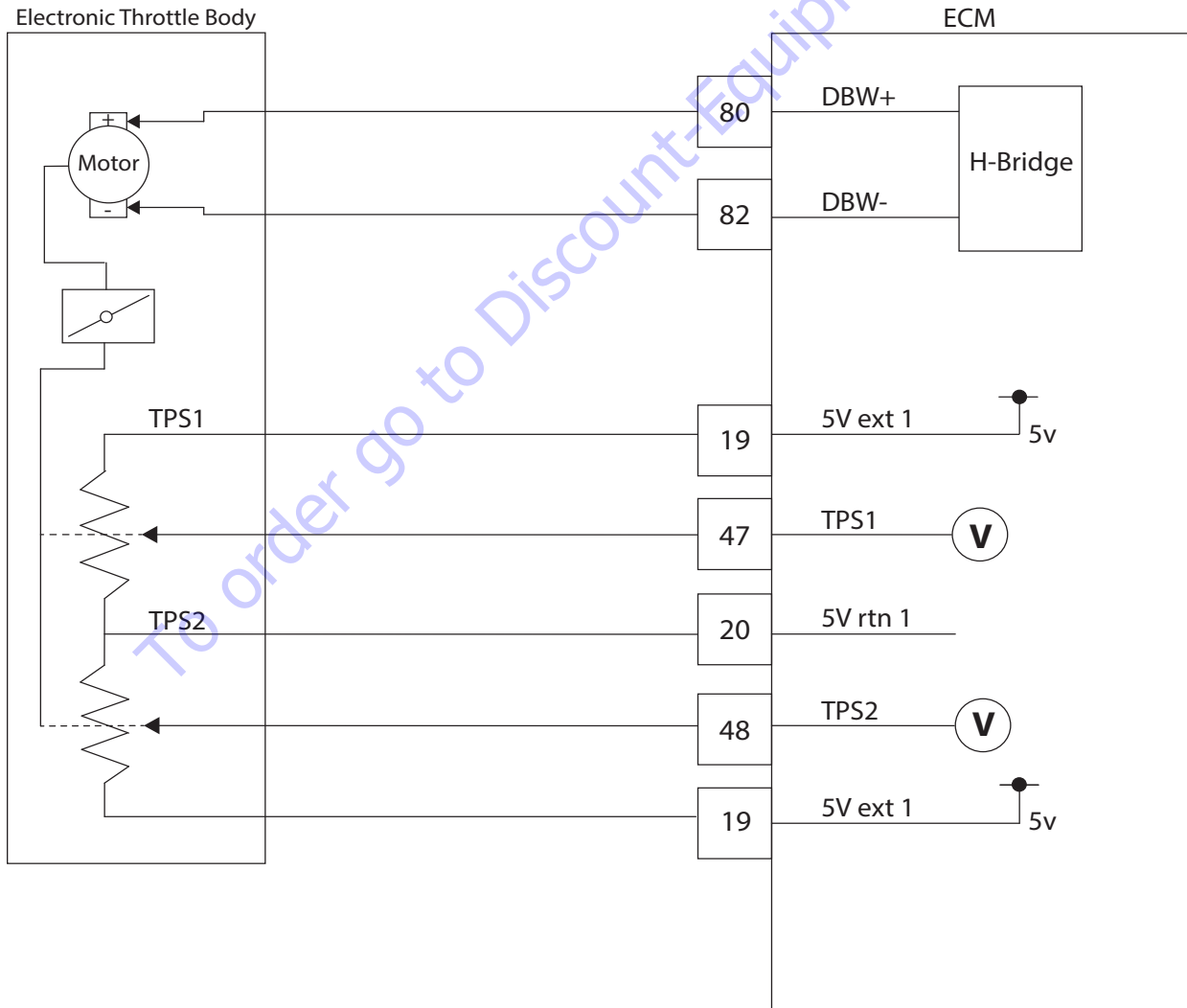
5.8-6 IAT Sensor (Kubota WG2503)



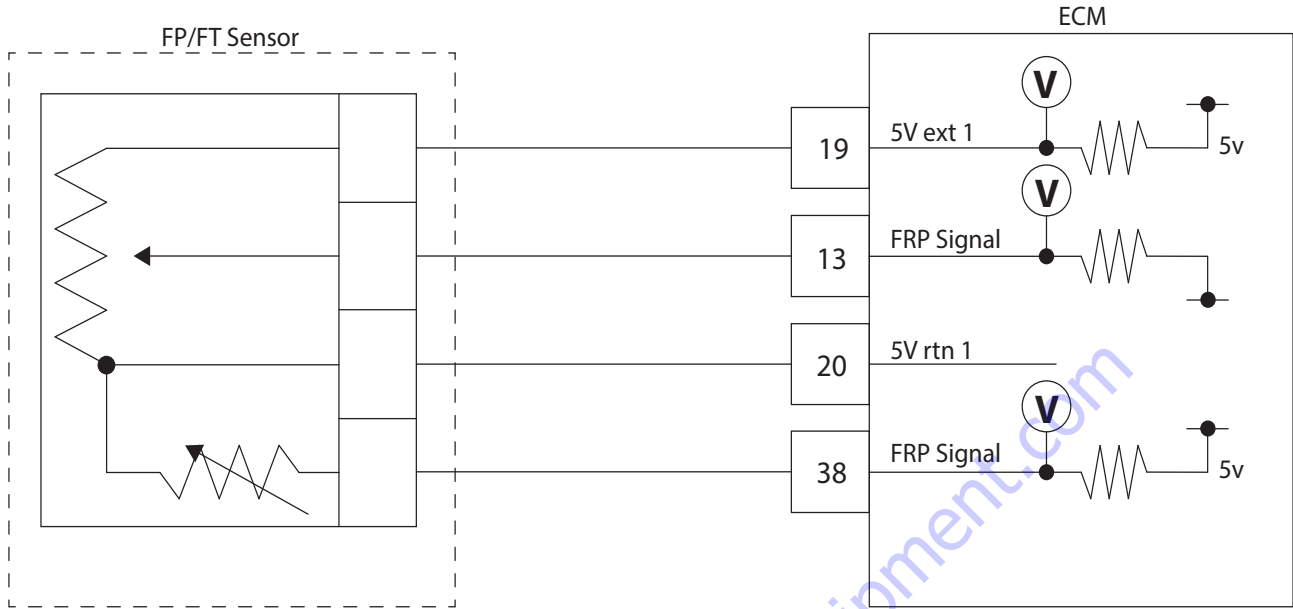
5.8-7 ECT (Kubota WG2503)



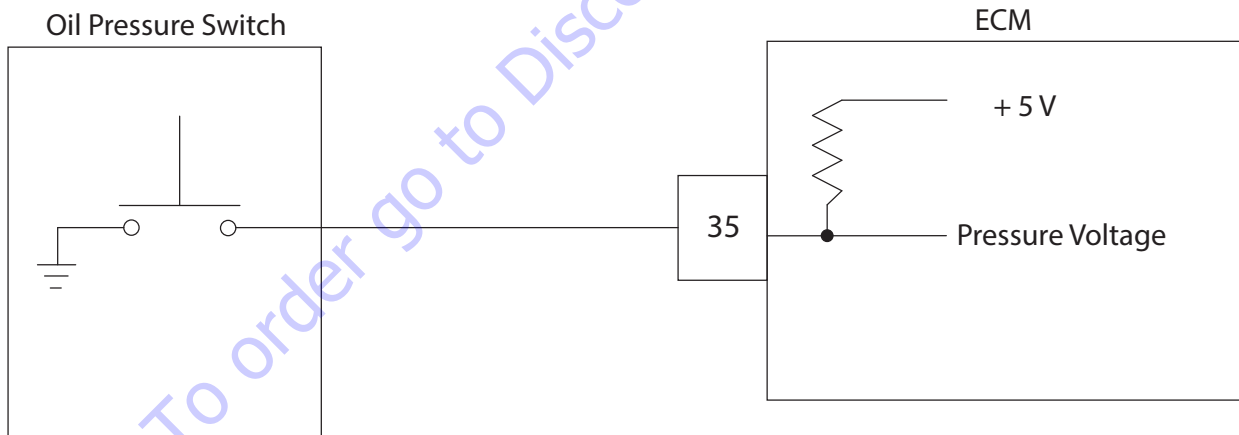
5.8-8 TPS & Engine Speed (Kubota WG2503)



5.8-9 Fuel Temperature Sensor (Kubota WG2503)



5.8-10 Oil Pressure Sensor (Kubota WG2503)

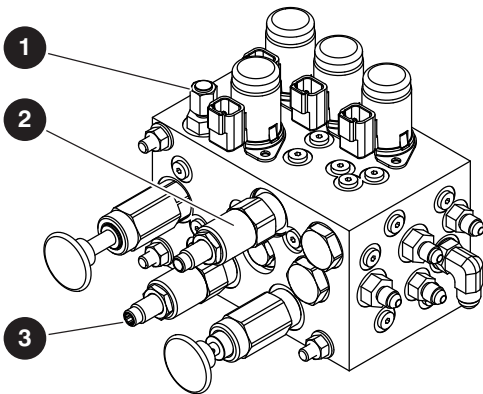


5.9 Manifold and Hydraulic Pumps

5.9-1 Hydraulic Brake Pressure Adjustment

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

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



3. Connect a pressure gauge (69 bar / 1000 psi) to port BR ①.
4. Remove the wiring from three valves: differential lock valve wire numbers 165 and 02, axle lockout valve wires 65 and 02, as well as two speed valve wires 45A and 02. Mark the valves to ensure you put the wiring back in the correct positions later.

CAUTION

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

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

WARNING

Valve damage will occur if tightened too much.

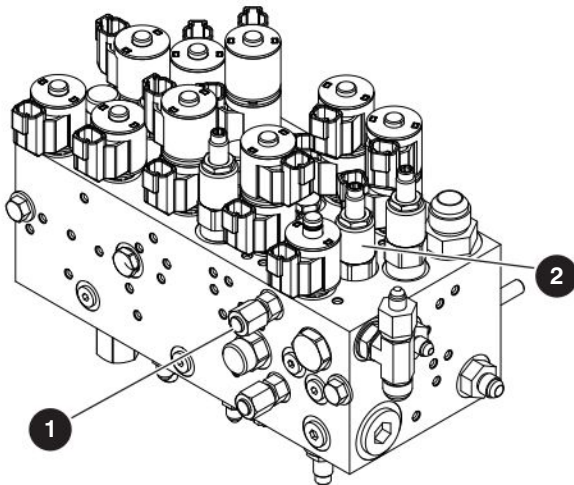
WARNING

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

6. Start the engine from the platform control console and extend the boom slightly to achieve low speed drive.
7. Drive the MEWP forward or reverse. The pressure gauge reading should be 38 bar (550 psi). Stop the MEWP. Follow the next steps for adjusting the relief valve pressure, if needed. If no adjustment is required continue to step 10.
8. Locate brake pressure relief valve RV4 ③ and loosen the lock nut.
9. Turn the adjusting stem on the pressure relief valve RV4 one-quarter of a revolution at a time clockwise to increase pressure, or counterclockwise to decrease pressure. Drive the MEWP forward or reverse, note the pressure, and stop the MEWP.
10. Repeat step 9 until brake pressure is achieved (38 bar / 550 psi) then tighten the lock nut on brake system pressure relief valve RV4 ③.
11. Locate brake system pressure reducing valve PR1 ② and turn the valve gently counterclockwise to the initial position.
12. Drive the MEWP forward or reverse. The pressure gauge reading should be 34.5 bar (500 psi).
13. Stop the MEWP and adjust pressure reducing valve PR1 ② one-quarter of a turn at a time by turning either clockwise to increase the pressure, or counterclockwise to decrease the pressure.
14. Repeat step 11 and 12 until the brake pressure is achieved 34.5 bar (500 psi), then tighten the lock nut on brake system pressure reducing valve PR1 ②.
15. Reinstall the wiring in the same position it was removed from in step 4.
16. Test the brake and two-speed functions.

5.9-2 Hydraulic System Relief Valve Adjustment

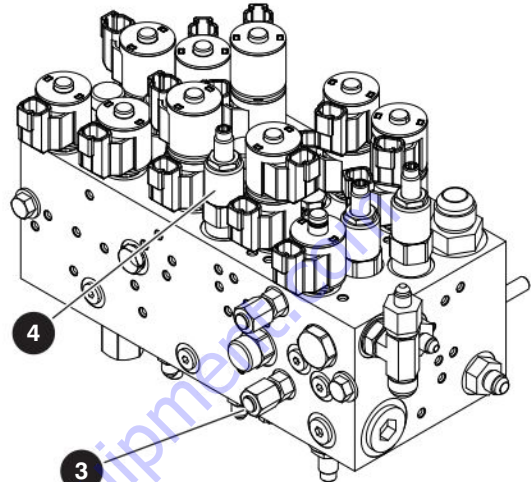
1. Locate Test Port 1 **1** on the main manifold. Remove the cap.
2. Connect a pressure gauge (345 bar / 5000 psi) to Test Port 1 **1**.



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. The pressure should be 214 bar (3100 psi). Follow the next steps for adjusting the pressure, if needed.
5. Locate system relief valve RV6 **2**.
6. Loosen the lock nut on system relief valve RV6 **2**. Turn the adjusting stem clockwise to increase the pressure, and counterclockwise to decrease the pressure.
7. Tighten the lock nut on system relief valve RV6 **2** once 214 bar (3100 psi) is observed on the gauge. Note: You must steer fully in one direction to activate the pressure reading on the gauge.

5.9-3 Riser Down Relief Valve Adjustment

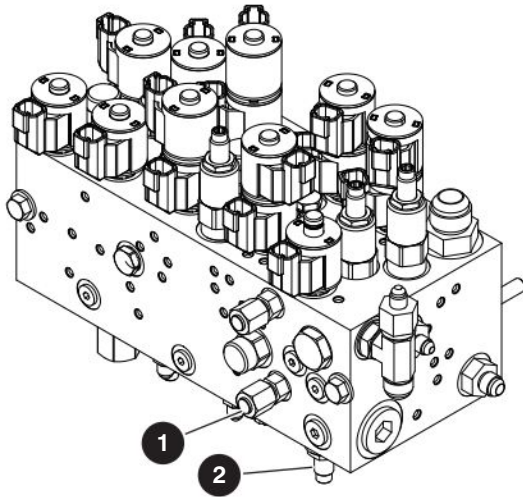
1. Locate Test Port 5 **3** on the main manifold.
2. Connect a pressure gauge (345 bar 5000 psi) to Test Port 5 **3**.



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 lower the riser and check the reading on the gauge. The pressure should be 189.5 bar (2750 psi). Follow the next steps for adjusting the pressure, if needed.
6. Locate riser down relief valve RV8 **4**.
7. Loosen the lock nut on system relief valve RV8 **4**. Turn the adjusting stem clockwise to increase the pressure, and counterclockwise to decrease the pressure.
8. Tighten the lock nut on system relief valve RV8 **4** once 189.5 bar (2750 psi) is observed on the gauge. Note: You must fully lower the riser to activate the pressure reading on the gauge.

5.9-4 Turret Rotate Relief Valve Adjustment

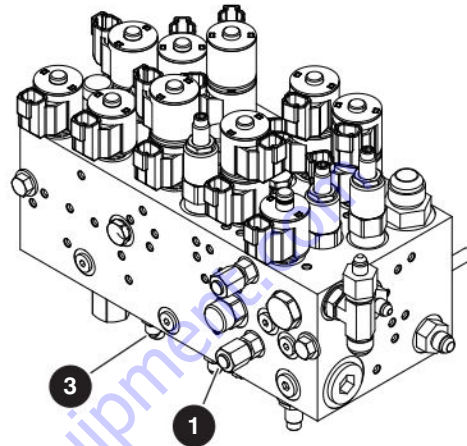
1. Locate Test Port 5 **1** on the main manifold.
2. Connect a pressure gauge (345 bar / 5000 psi) to Test Port 5 **1**.



3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the main boom to ensure the platform will not contact the ground.
5. Engage the turret transport lock.
6. Attempt to rotate the turret. The pressure should be 124-131 bar (1800-1900 psi). Follow the next steps for adjusting the pressure, if needed.
7. Locate the turret rotate relief valve RV7 **2**.
8. Loosen the lock nut on the turret rotate relief valve RV7 **2**. 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 RV7 **2** once 86 bar 124-131 bar (1800-1900 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.

5.9-5 Platform Level Relief Valve Adjustment

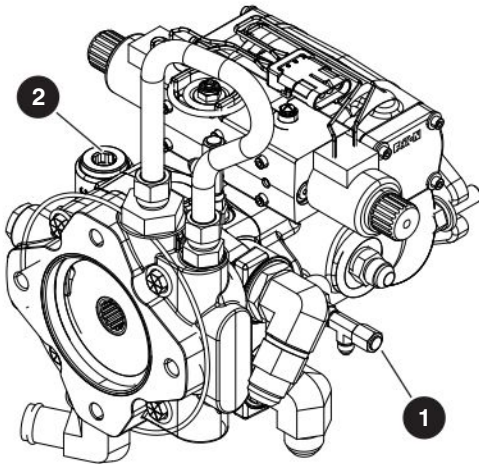
1. Locate the Test 5 Port **1** on the main manifold.
2. Connect a pressure gauge (345 bar / 5000 psi) to Test Port 5 **1**.



3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise the main boom to ensure the platform will not contact the ground.
5. Fully raise or lower the platform level and check the reading on the gauge. The pressure should be 207 bar (3000 psi). Follow the next steps for adjusting the pressure, if needed.
6. Locate the platform leveling relief valve RV9 **3**.
7. Loosen the lock nut on the platform level relief valve RV9 **3**. 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 RV9 **3** once 207 bar (3000 psi) is observed on the gauge. You must fully raise or lower the platform level to activate a pressure reading on the gauge.

5.9-6 Test Charge Pump Pressure on Drive Pump

1. Locate test port TP3 **1** on the drive pump.
2. Connect a pressure gauge 41.5 bar (600 psi) to the test port.



3. Start the engine from the base control console.

WARNING

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

4. Check the reading on the gauge. Standard pressure should be 21.5 ± 2 bar (313 ± 31 psi).
5. Replace the charge pump relief valve RV3 **2** 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.

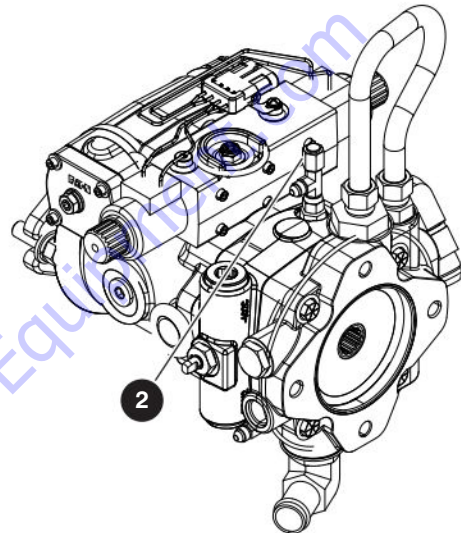
5.9-7 Test Forward Drive Pressure on Drive Pump



NOTE

Make sure the charge pump pressure test is completed first.

1. Locate test port TP1 **2** on the drive pump.
2. Connect a pressure gauge (690 bar / 10 000 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.

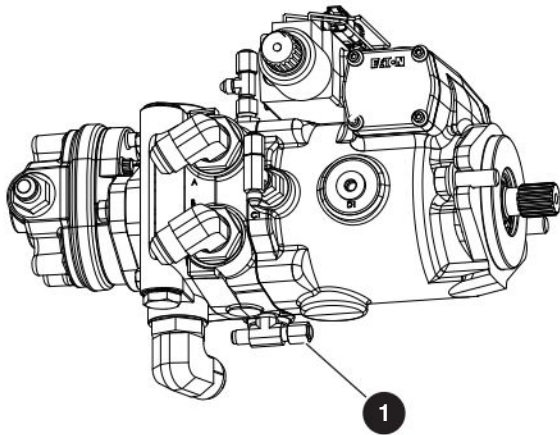
6. Check the reading on the gauge. The standard pressure should be 345 bar (5000 psi).
7. Replace the pump if the pressure is not achieved.
8. Turn the engine off.
9. Remove the pressure gauge from the port, cap the port, and re-plug the brake solenoid power cable.

5.9-8 Test Reverse Drive Pressure on Drive Pump

NOTE

Make sure the charge pump pressure test is completed first.

1. Locate test port TP2  on the drive pump.



2. Connect a pressure gauge (690 bar / 10 000 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

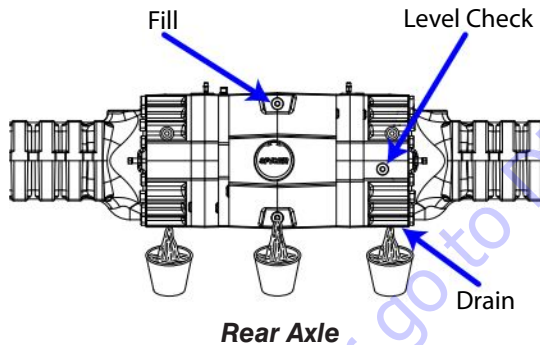
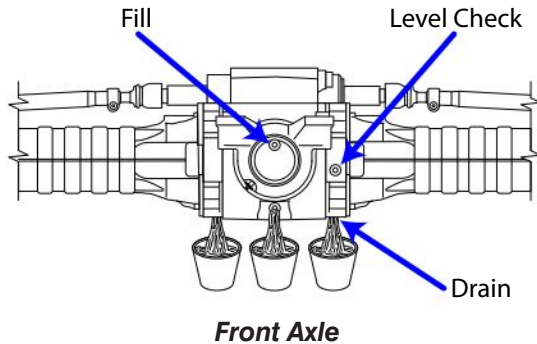
Activating the drive function too quickly will stall the engine.

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.

5.10 Axles

5.10-1 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.



4. Reinstall all of the drain plugs.
5. Remove the check plug.



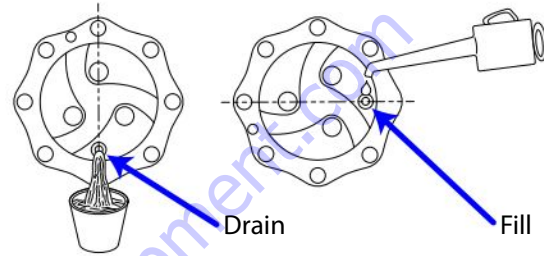
NOTE

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

6. Refill the axle with new oil as per specifications. Refer to [2.12 Hydraulic & Gear Oils](#).
7. Reinstall both of the fill and check plugs.

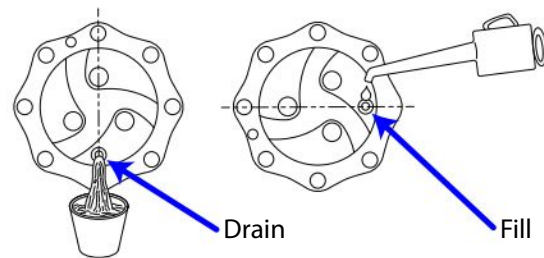
5.10-2 Check the Oil Level in the Torque Hubs

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



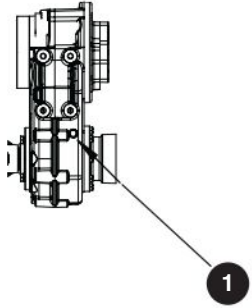
5.10-3 Change the Oil in the Torque Hubs

1. Start the engine and drive the boom until the fill/drain port of one of the hubs is in the 6 o'clock position. Shut off the engine. Place a container under the fill/drain port.
2. Remove the plug and allow all of the oil to drain, watching carefully to avoid spills.
3. Restart the engine and drive the boom until the drain plug is in the 3 or 9 o'clock position. Shut off the engine.
4. Refill the hub with new oil as per specifications. Refer to [2.12 Hydraulic & Gear Oils](#).
5. Repeat the above steps with the other three wheel hubs.



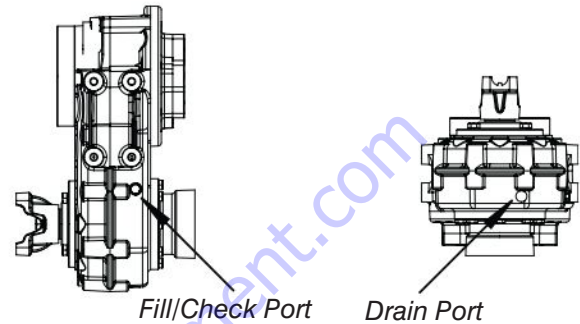
5.10-4 Check the Oil Level in the Axle Gearbox

1. Remove the fill plug ❶ from the gear box.
2. Check the oil level. It should be even with the bottom of the fill plug hole. Add oil if needed. Refer to [2.12 Hydraulic & Gear Oils](#) for oil specifications.



5.10-5 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

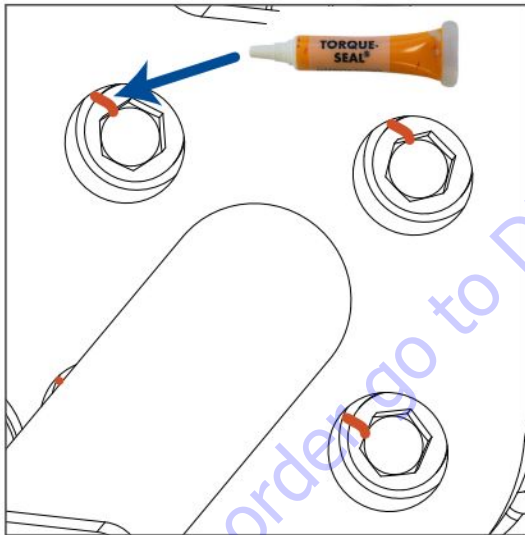
The gearbox is full when oil is leaking from the check port.

5. Refill the gearbox with new oil as per specifications. Refer to [2.12 Hydraulic & Gear Oils](#).
6. Reinstall the fill plug.

5.10-6 Oscillating Cylinder Bolt Replacement

If upon inspection it is determined that the oscillating cylinder bolts have missing or damaged torque seal, the affected bolts must be replaced. If replacing more than one bolt, do so one at a time to prevent the cylinder from shifting.

1. Remove the affected bolt.
2. Clean the cylinder's corresponding internal threaded hole thoroughly.
3. Replace the removed bolt with a new 01/2"-13 x 1-3/4" grade 8 bolt, applying liquid blue Loctite 242 or 243 to the bottom half of the bolts.
4. Hand tighten the bolt.
5. Torque the new bolt to 108 Nm (80 ft-lbs).
6. Apply a line of torque seal to each new bolt extending from the bolt head over the washer and to the chassis wall.

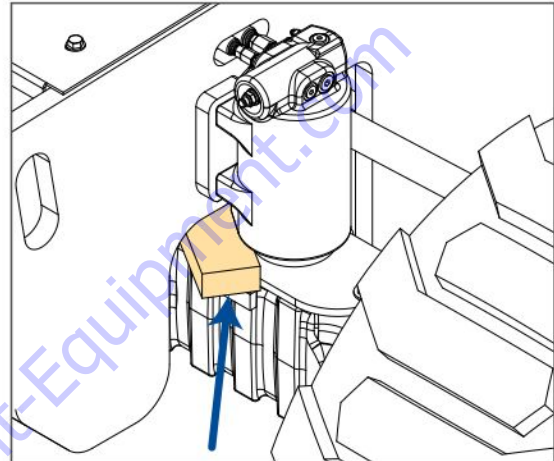


5.10-7 Oscillating Cylinder Replacement

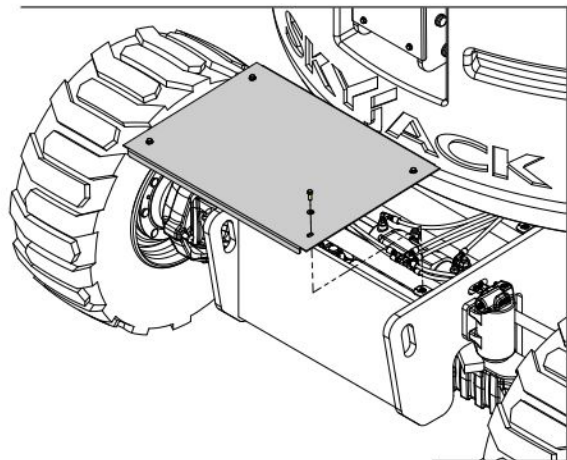
CAUTION

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.

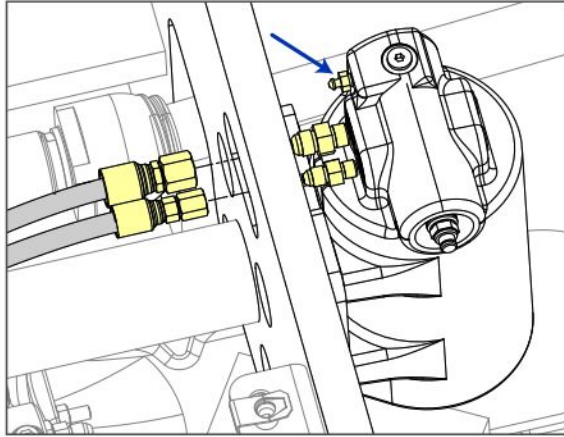


2. Remove and set aside the base cover from the oscillating axle end of the chassis.

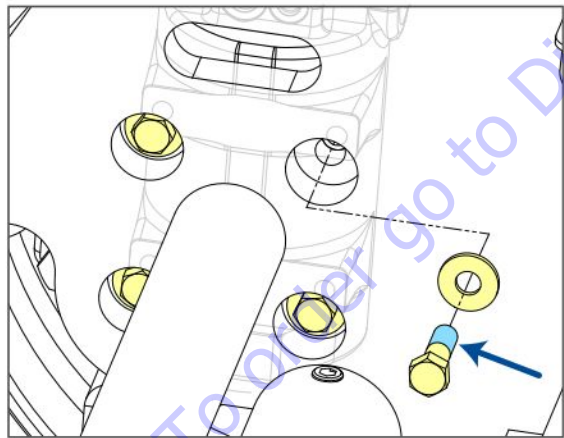


3. With a rag in hand to catch any leaking oil, slowly loosen the bleeder screw to release any trapped air within the cylinder, then tighten it again. Slowly loosen the oscillating axle cylinder hoses to release the pressure, then disconnect them fully, being sure to plug the hose ends.

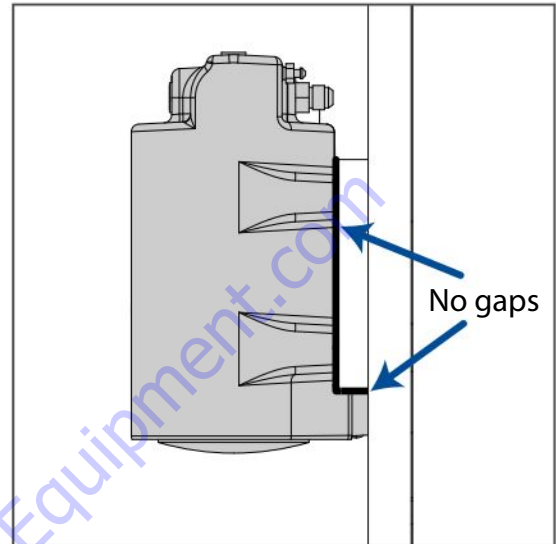
4. Remove and set aside the cylinder fittings, ensuring they stay clean.



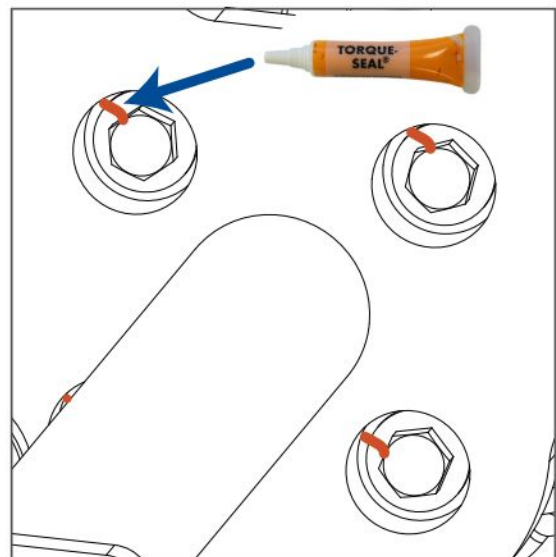
5. Remove and throw away the bolts and washers securing the cylinder to the chassis. Lift the cylinder away.
6. Lift a new cylinder into place and install new bolts (1/2"-13 x 1-3/4" grade 8) and 1/2" hardened washers, applying liquid blue Loctite 242 or 243 to the lower half of the bolts before installing them. Hand tighten the bolts.



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



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).

5.10-8 Bleed the Oscillating Axle Cylinders


If the axle oscillation system is not operating properly, the stability of the MEWP is compromised and it may tip over.

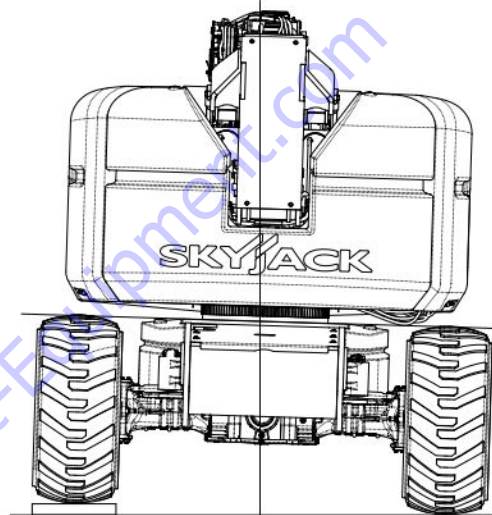
Items you will need before starting:


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

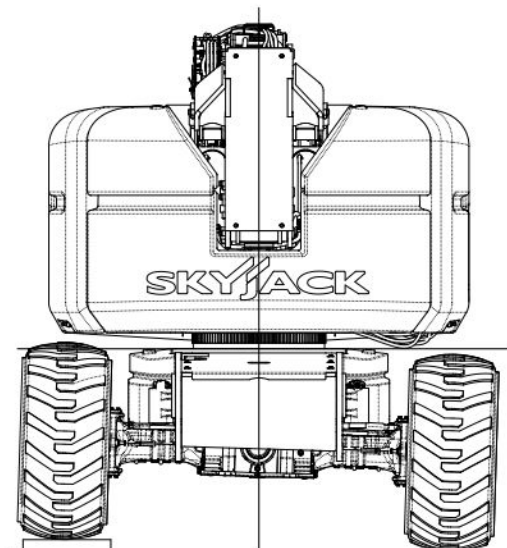
1. Locate a bleeder on either side of the oscillating axle cylinder.
2. Connect a hose to the bleeder nipple.
3. Start the engine and slowly open the bleeder to allow the oil to flow in a continuous stream.
4. Close the bleeder.
5. Repeat the procedure with the other oscillating axle cylinder.

5.10-9 Test the Oscillating Axle Cylinders

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

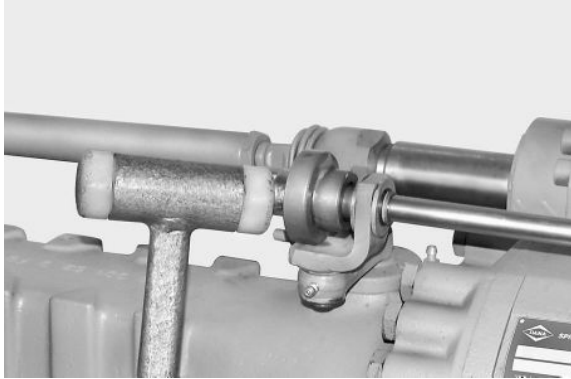


3. Retract  the fly boom while in tilt position.
 - **Result:** The steer axles should unlock and the MEWP chassis should level itself to the ground.



5.10-10Pin Brake Adjustments

1. To manually release the brake give a light blow to the external ring of the check unit.



2. To adjust the idle elimination loosen jam nut and back out adjustment stem a few turns.



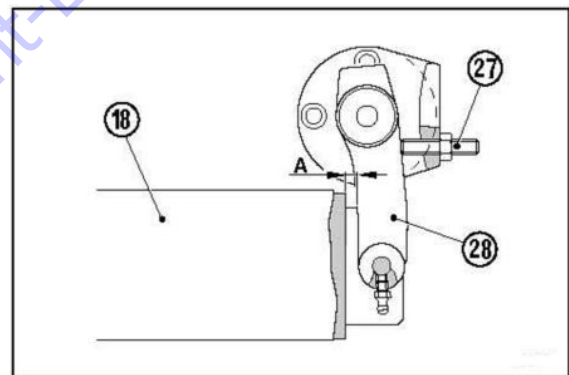
3. Apply a 2lb. force (1Kg) in the direction of brake application and turn adjusting stem so that it touches the stop.



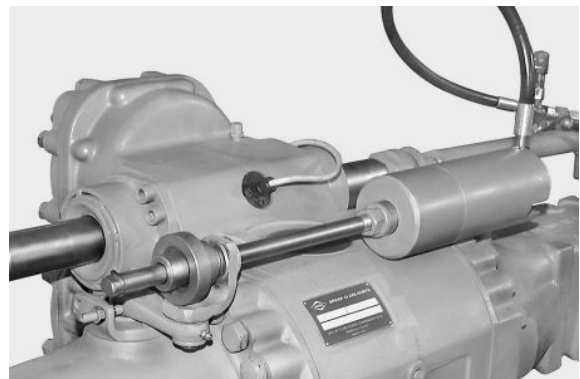
4. Tighten the Jam nut. Repeat this procedure for the other side.



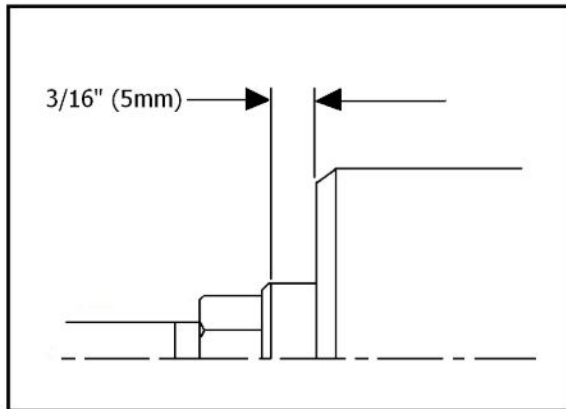
5. On the Cylinder side ensure that there is some clearance between the cylinder and the lever "A" with the lever against the stop.



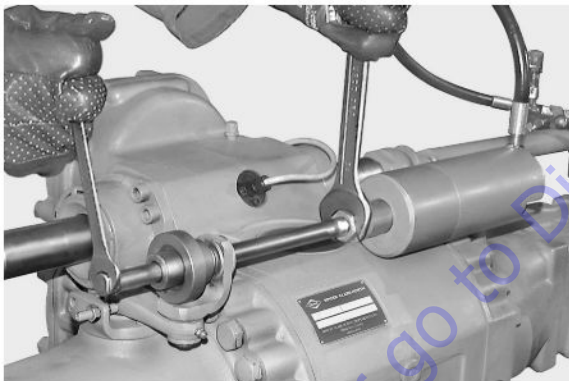
6. Introduce pressure into the cylinder and ensure that the check unit engages.



7. Release the pressure from the cylinder and check that the rod returns and stops in a position where it projects out from the cylinder head by 5 mm (3/16").



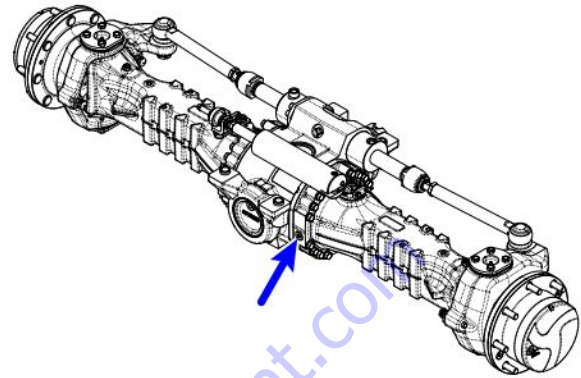
8. If adjustment is needed loosen the jam nut, pressurize the cylinder and turn the adjustment stem. Repeat step 7 and tighten jam nut when correct adjustment is obtained.



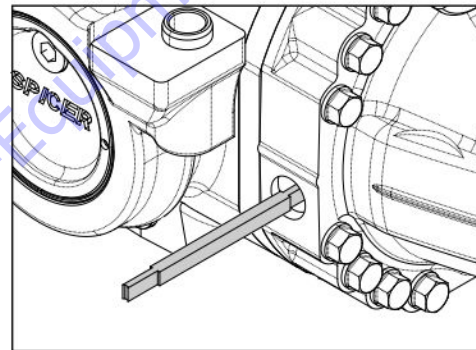
9.

5.10-11 Brake Inspection

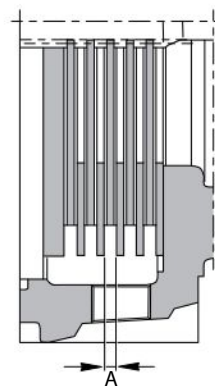
1. Remove the oil level plug from one of the braking axle arms, as shown below.



2. Insert a 4.5 mm feeler gauge into the drain port.



3. Use the gauge to check the gap between the disks (A). The minimum distance allowed is 4.5 mm. Reinstall the oil level plug.



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

5.11 Grease Points

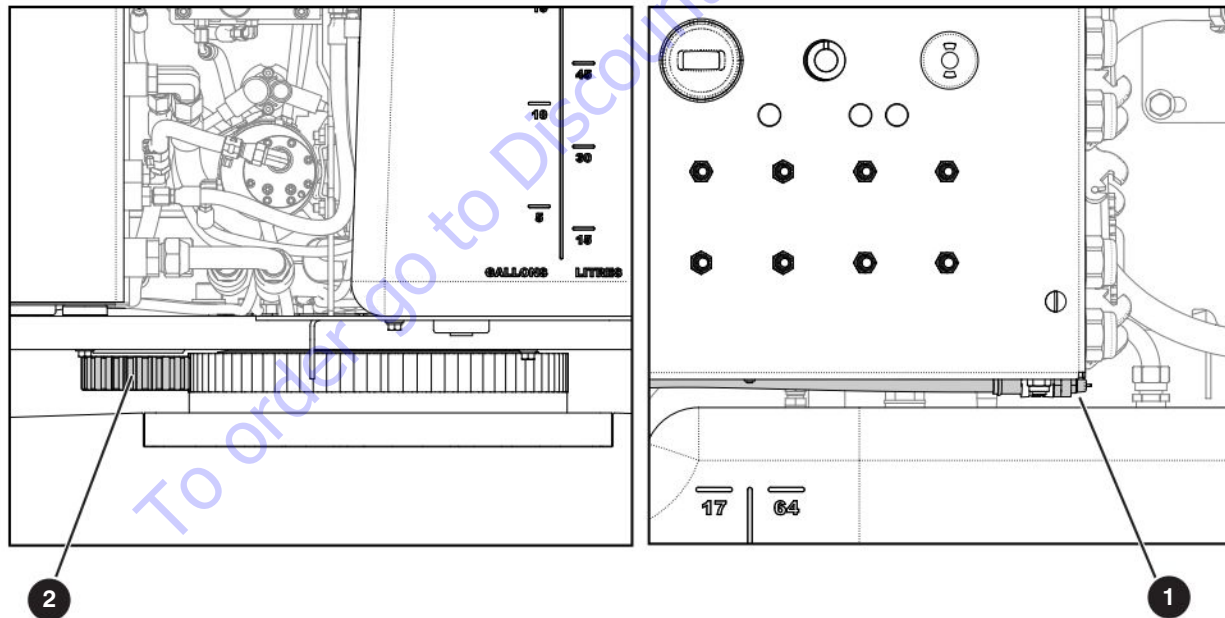
Maintaining proper lubrication is essential for good performance and service life of the MEWP. If the bearing and gear of the MEWP are improperly greased, it could result in component damage.

5.11-1 Grease the Turret Ring Gear

1. Open the control side cowling, and locate the turret ring gear grease fitting **1** under the bottom right corner of the base control box.
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.

5.11-2 Grease the Turret Swing Drive

1. Apply open gear lube to each tooth of the swing drive gear **2**, located under the turret.

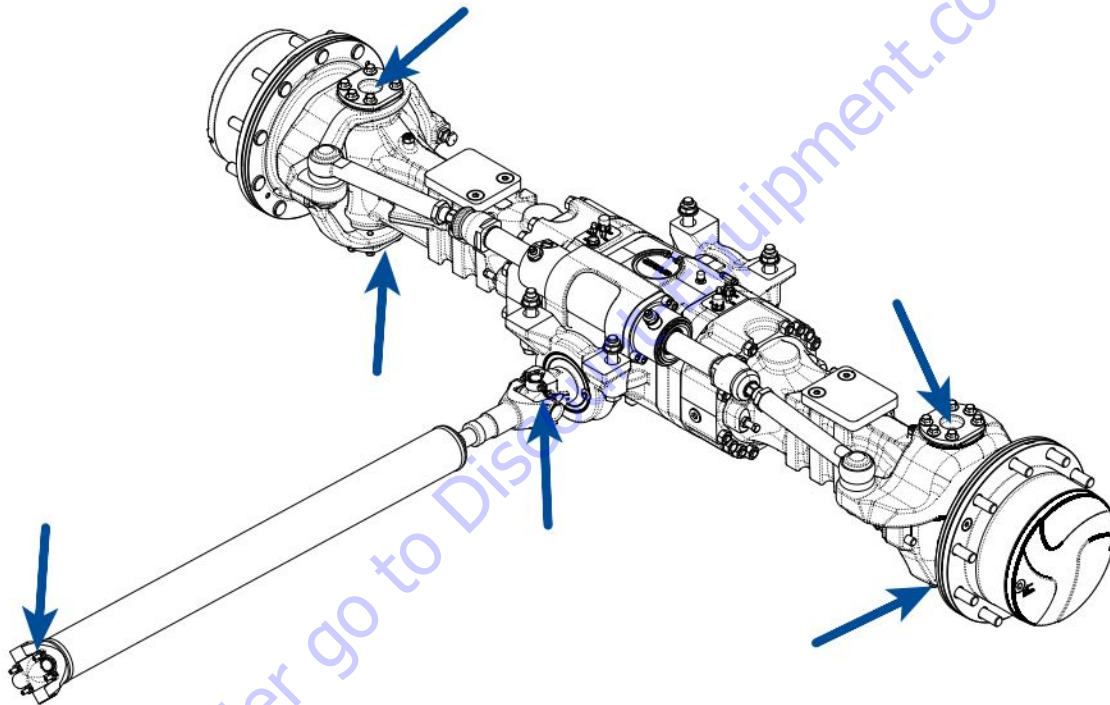


5.11-3 Grease the Axles

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

5.11-4 Grease the Drive Shaft

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



5.12 Options





5.12-1 Generator Troubleshooting

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

1177AA

5.12-2 Generator Frequency/Voltage Check & Adjustment

Check the Frequency and Voltage

1. On the base control box, turn the base/off/platform key switch to the  platform position.
2. On the platform control box, ensure the generator switch is in the off position .
3. Select the start position on the start/emergency power switch until the engine starts .
4. Turn the generator on/off switch to the on position .
5. Connect a multimeter to the platform power outlet.
6. Note the voltage and frequency.

Adjust the Frequency and Voltage

1. Loosen the generator control valve jam nut.
2. Turn the control valve screw with an allen head wrench. Turning it counterclockwise (out) increases voltage and frequency, turning it clockwise (in) decreases voltage and frequency.
3. The output must be:

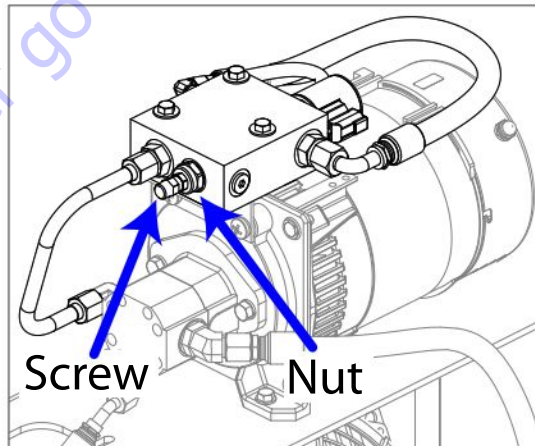
ANSI/CSA

- Voltage: 104.4 VAC to 127.2 VAC
- Frequency: 57 Hz to 63 Hz

CE & AS

- Voltage: 207.0 VAC to 243.8 VAC
- Frequency: 47.5 Hz to 52.5 Hz

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



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