



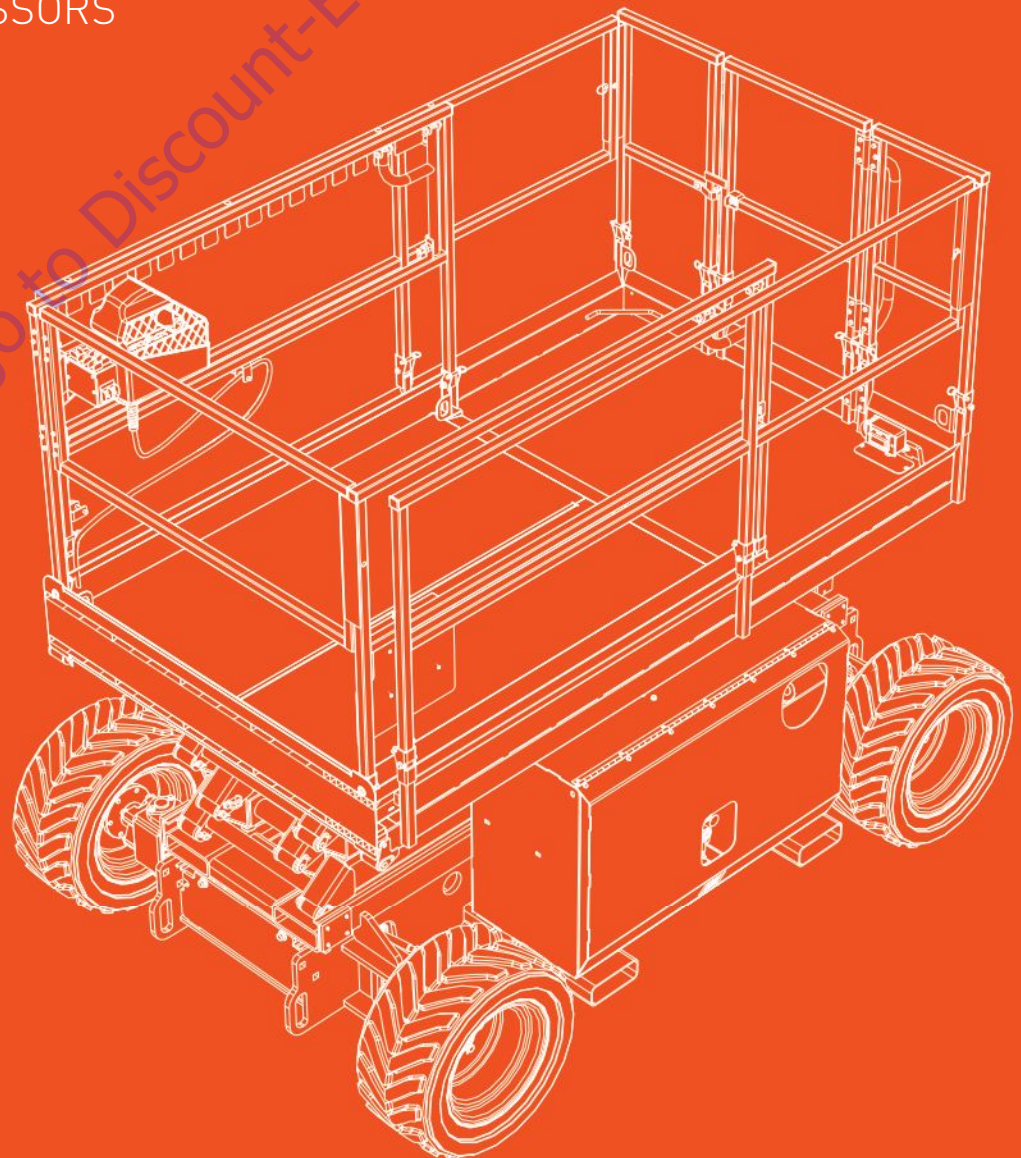
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SKYJACK

SERVICE MANUAL

SJ6826RT, SJ6832RT

ROUGH TERRAIN SCISSORS



213560AA

November 2019

ANSI/CSA, CE, AS, KC

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This manual is for MEWPs with serial numbers:

SJ6826 RT & SJ6832 RT: A200 000 001– A200 999 999

Please refer to the website (www.skyjack.com)
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Original instructions in English.

THIS SAFETY ALERT SYMBOL MEANS ATTENTION!



BECOME ALERT! YOUR SAFETY IS INVOLVED.

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

IMPORTANT

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

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Section 1 – Scheduled Maintenance

1.1 Read and heed

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

1.1-1 Mobile Elevating Work Platform (MEWP) definition

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

1.1-2 Purpose of equipment

The Skyjack Vertical Mast lifts are designed to move personnel, tools, and materials to working positions.

1.1-3 Use of equipment

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

1.1-4 Service policy and warranty

Skyjack warrants each new product to be free of defective parts and workmanship for the first 2 years or 3000 hours, whichever occurs first. 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.

1.1-5 Ownership of MEWP

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

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

1.1-6 Optional equipment

This MEWP is designed to accept a variety of optional accessories. Refer to *operation manual* for a list of the optional accessories. Operating instructions for these options are located in Operation manual.

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

1.2 Maintenance and Inspection Schedule

The actual operating environment of the work platform governs the use of the maintenance schedule. The inspection points covered in *1.4 Frequent/Periodic/Annual/Pre-Delivery 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.

1.2-1 Owner's Annual Inspection Record

It is the responsibility of the owner to arrange quarterly and annual inspections of the MEWP. (*1.3 Owner's Annual Inspection Record*). Owner's Annual Inspection Record is to be used for recording the date of the inspection, owner's name, and the person responsible for the inspection of the work platform.

1.2-2 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.

1.2-3 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.

1.2-4 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.

1.2-5 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.

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1.2-6 About this Section

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.

Service Bulletins

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

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.

Maintenance Instructions

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

Task Frequency












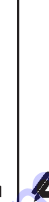



PDI/Frequent	B	Perform PDI prior to each delivery, or Frequent Inspection every 200 days or 200 hours.
Annual	C	Perform Scheduled Maintenance Inspections every year.
Additional	*	Perform at time sensitive maintenance intervals

- 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 the item meets the inspection requirements.
- Use the maintenance and inspection checklist and step-by-step procedures in [Section 1](#) to perform these inspections.
- If any inspection receives a fail, write the issue in the comments section. 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.

Legend

Pass	P
Not applicable	N/A

Table 1.3 Owner's Annual Inspection Record

 Model _____ SN _____											
 31 											
 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.

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1.4 Frequent/Periodic/Annual/Pre-Delivery Inspection Checklist



Frequent/Periodic/Annual/PDI Checklist Vertical Mast, Electric Scissor & Rough Terrain

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

Product Owner: _____

Model: _____

Product User: _____

Date/Time: _____

Hourmeter Reading: _____

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 operation and service manuals.

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

Items for Inspection	P	N/A
Service Bulletins. Make sure there are no open service bulletins.	B	
Annual Inspection. Make sure you complete it within 13 months.	B	
Labels. In place, correctly attached & you can read them.	B	
Limit Switches. Correctly installed & no obstructions or damage.	B	
BASE/ENGINE		
Engine and Components. Do a check on engine and components for any loose, missing, damaged, or failed items. Make sure you do not exceed the recommended fluid, oil and coolant change intervals.	B	
Engine and Components. Replace the engine oil and filter.	C	
Engine Intake Air Filter. No damage or missing component. Remove dirt & dust.	B	
Engine Intake Air Filter. Replace the air filter if necessary.	C	
Engine Oil. Oil level between "L" and "H". Make sure you do not exceed the oil change interval.	B	
Radiator. Correctly attached & no damage or missing components. Do a check of coolant level.	B	
Radiator. Do a check of coolant level & condition & replace if necessary.	C	
Fuel Tank & Lines. Filler cap, tank, fittings and hoses are tightly closed & no damage or leaks.	B	
Propane Tank & Lines. Straps are correctly installed to brackets & couplers are tight. Make sure there are no damage or leaks.	B	
Outriggers. No damage or missing components.	B	
Pothole Protection. Both sides have no obstructions, dirt or damage.	B	
Battery/Hydraulic Tray. Trays are latched tightly & no missing components.	B	
Batteries. No damage, tight connections & sufficient fluid levels. Clean terminals and cable ends.	B	
Battery Charger. Correctly attached & no damage.	B	
Steer Assembly. Correctly attached & no damage leaks or missing components.	B	
Wheel/Tire Assembly. Do a check of all tires for damage, wear & correctly aligned.	B	
Wheel/Tire Assembly. Wheel nuts torqued as recommended.	C	
Axles. Correctly attached & no missing components. Tight fittings and hoses & no leaks.	B	
Axles. Do a check and replace oil if necessary.	C	
Hydraulic Tank, Pump, Motor & Lines. Filler cap, hoses, and other hydraulic components are closed tightly & no damage or leaks.	B	
Hydraulic Oil. Level at, or slightly above top mark.	B	
Hydraulic Oil. Do a check and replace oil and filters if necessary.	C	
Electrical Components. Do a check on all electrical components such as the motor controller if necessary. Correctly attached & no damage. Tight wire connections and fasteners.	B	

Items for Inspection	P	N/A
Manifolds. Tight fittings and hoses & no damage or leaks. Tight wire connections, no missing components & correctly working valves.	B	
Main Power Disconnect Switch. Cables tight & in working order.	B	
Base Controls. Operate switches and make sure they all operate correctly. No damage or missing components.	B	
Brakes. Correctly attached & no damage or leaks.	B	
Brakes. Do a check on disc wear and replace if necessary.	C	
Base Weldment. No deformation or cracks.	B	
Grease Points. No obstructions, dirt, or damage. Add grease if necessary.	B	
Ladder. Correctly attached & no damage.	B	
LIFTING MECHANISM - SCISSORS		
Maintenance Support(s). Correctly attached & no damage.	B	
Scissor Assembly & Bumpers. Correctly attached, no deformation/damage. Cables & wires installed with no damage.	B	
Sliders & Rollers. Correctly attached & no obstructions, dirt, or damage/wear.	B	
Lift Cylinder(s). No damage or missing components. Tight fittings and hoses & no leaks. Correctly installed.	B	
Angle Transducer. Correctly attached & no damage.	B	
Scissor Pins. Correctly attached & no damage.	B	
LIFTING MECHANISM - MAST		
Mast Assembly. No damage, cracks or deformation.	B	
Mast Assembly. Lubricate the mast as recommended.	C	
Chains, Rollers & Control Cables. No damage or missing components.	B	
Wear Pads. No damage/wear or missing components. Fasteners tight.	B	
Tilt Sensor. Correctly attached & no damage.	B	
PLATFORM		
Railings and Gate. Correctly attached & no damage or missing components.	B	
Fall-Protection Anchorage. Attachment rings correctly attached & 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. In storage box, in good condition and you can read them.	B	
Powered Extension Control Console. Operate switches and make sure they all operate correctly. No damage or missing components.	B	
Extension Platform. Correctly attached & no damage or missing components.	B	
Function Tests. Refer to the operation manual for your serial number for information on how to run these tests.		PASS
		FAIL

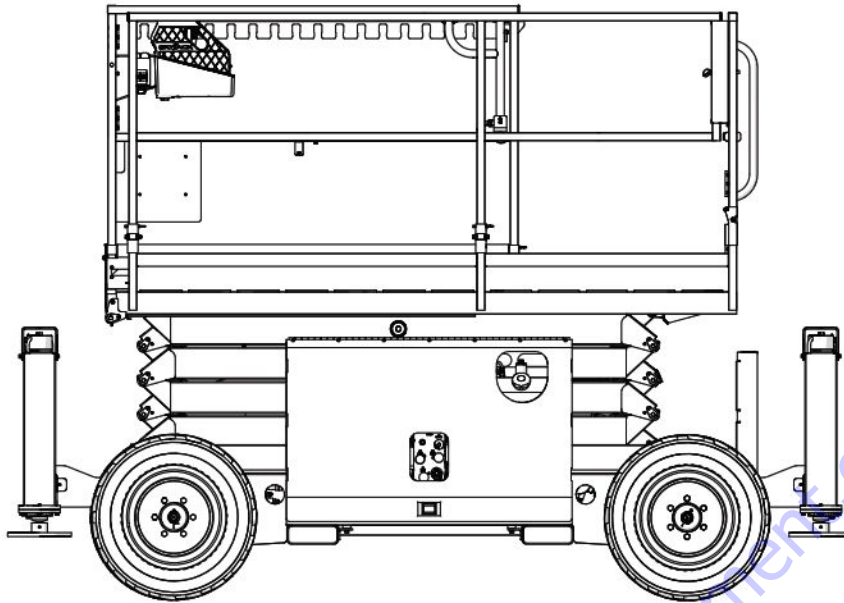
Comments: _____

199341AA

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) _____



1.5 General inspections

Do an inspection of the MEWP in this sequence.

⚠ WARNING

Do not operate a MEWP that does not function correctly. Lock and tag the MEWP, and remove it for servicing. Only a qualified service technician must repair the MEWP. 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.

⚠ CAUTION

Make sure that the MEWP is on a firm, level surface before you do the visual and daily maintenance inspections. If you do not obey, there is a risk of machine damage.

1.5-1 Service Bulletins

(B)

Go to www.skyjack.com and use your machine's serial number to find related open service bulletins.

1.5-2 Annual Inspection

(B)

Do a check on the machine's service record to find information about previous service performed.

1.5-3 Labels

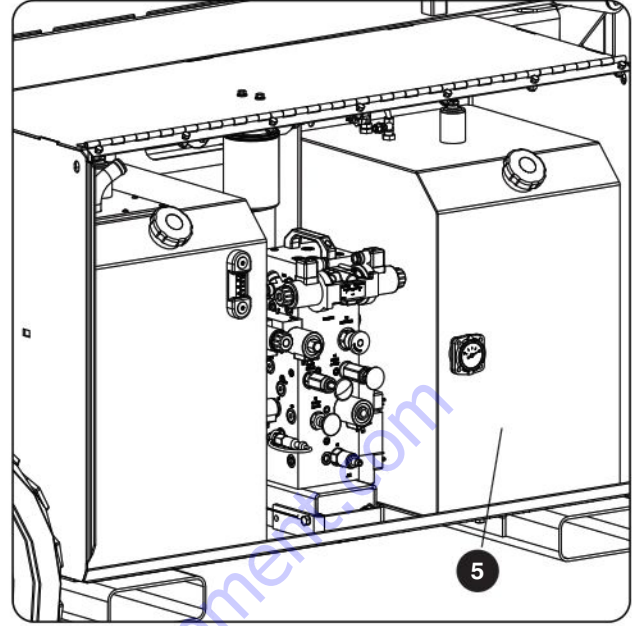
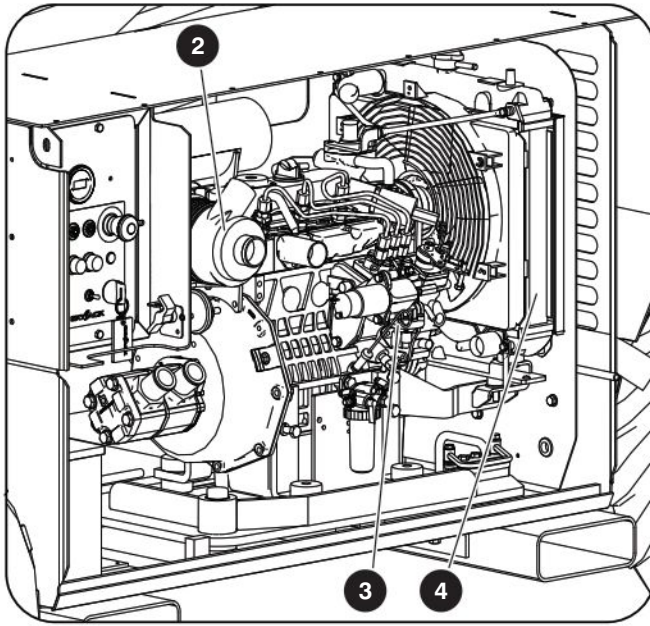
(B)

Refer to the operation manual for the labels. Make sure all the labels are in the correct location, are in good condition, and you can read them.

1.5-4 Limit switches

(B)

Make sure the limit switches are correctly attached, there is no visible damage, and the movement is not obstructed.



1.6 Base/Engine

⚠ 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.

1 Engine & Components (B, C)

- **B - Frequent/periodic/pre-delivery Inspection**
 - Make sure there are no loose or missing parts.
 - Make sure there is no visible damage.
- **C - Annual Inspection**
 - Make sure to replace the engine oil and filter in the recommended intervals.

2 Engine Intake Air Filter (B, C)

- **B - Frequent/periodic/pre-delivery Inspection**
 - 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.
- **C - Annual Inspection**
 - Do an inspection of the service indicator on the air cleaner. Replace the filter element if necessary.

3 Engine Oil (B)

- 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.

4 Radiator (B,C)

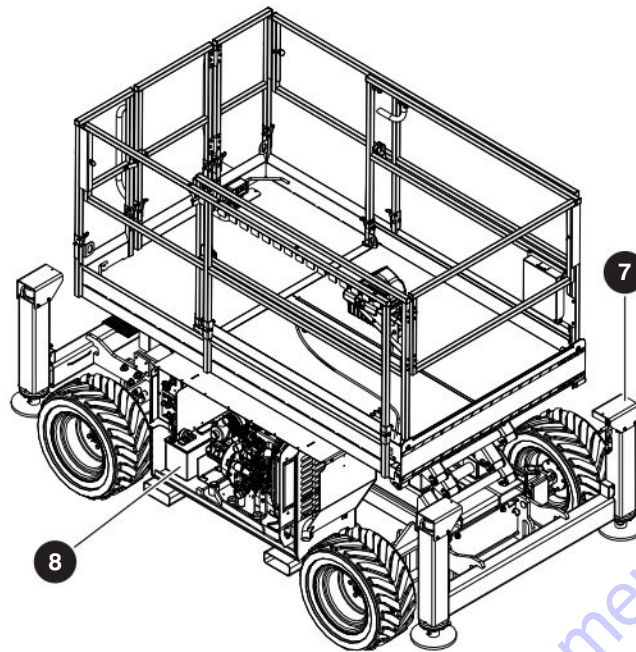
- **B - Frequent/periodic/pre-delivery Inspection**
 - Make sure that the radiator is correctly installed.
 - Make sure there are no loose or missing parts
 - Make sure there is no visible damage.
- **C - Annual Inspection**
 - Do a check of the coolant level and condition. Replace coolant if necessary

5 Fuel Tank & Lines (B)

- 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.

6 Propane Tank & Lines (B)

- Make sure that the propane tank is correctly installed to the mounting tray.
- Make sure there is no visible damage to the propane tank, hoses and fittings.
- Make sure there is no indication of propane leakage.



7 Outriggers (B)

- Make sure outriggers are correctly installed and there are no loose or missing parts.
- Make sure there is no visible damage.

8 Batteries (B)

⚠ WARNING

Explosion hazard. Keep flames and sparks away. Do not smoke near the batteries. Batteries release explosive gas while you charge them. Charge the batteries in a well-ventilated area. If you do not obey, there is a risk of death or serious injury.

⚠ WARNING

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

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

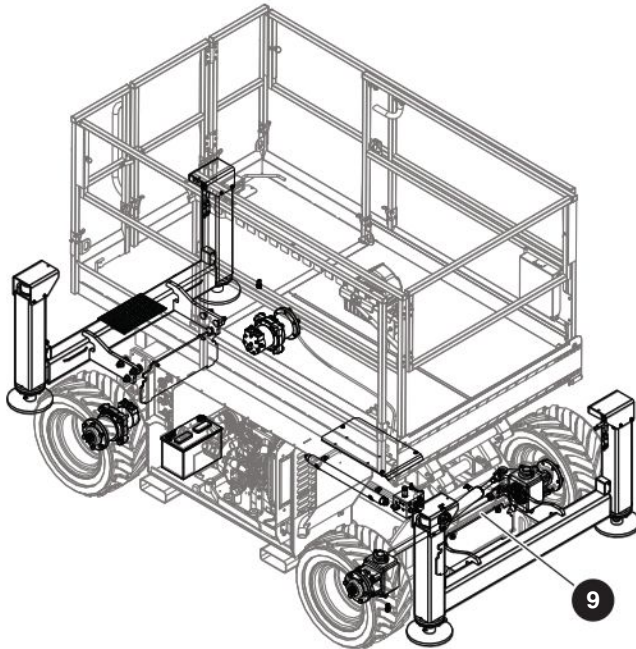
⚠ WARNING

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

⚠ WARNING

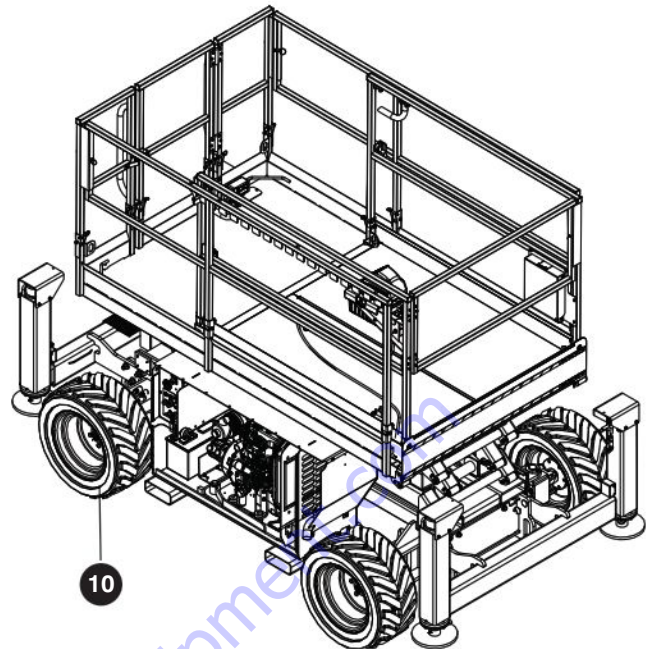
Burn hazard. Do not touch hot engine components without the correct PPE. Let the engine cool before you do an inspection or servicing. If you do not obey, there is a risk of death or serious injury.

- Use the handle on the engine pivot tray to move the engine out of the engine compartment.



9 Steer assembly (B)

- **Steer cylinder assembly (B)**
 - Make sure the steer cylinder assembly is correctly installed.
 - Make sure there are no loose or missing fasteners.
 - Make sure there is no visible damage.
- **Steer linkages (B)**
 - Make sure there are no loose or missing fasteners and lock-pins.
 - Make sure the steer linkages and bushings are correctly attached.
 - Make sure there is no visible damage.
- **Grease points (B)**
 - Make sure there are no loose or missing fasteners and lock-pins.
 - Make sure the steer linkages and bushings are correctly attached.
 - Make sure there is no visible damage.
 - Add grease if necessary.



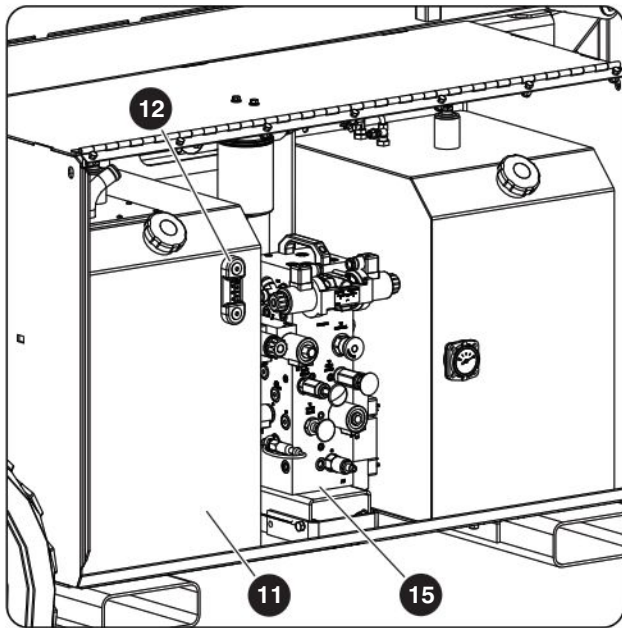
10 Wheel/tire assembly (B,C)

- **B - Frequent/periodic/pre-delivery Inspection**
 - Do a check on all the tire treads and sidewalls for cuts, cracks, and unusual wear.
 - Do a check on each wheel for damage, and cracked welds.
 - Make sure the wheels are correctly aligned vertically and horizontally.
 - Make sure there is no visible damage.
 - Do a check on wheel motor assembly for loose or missing parts and no visible damage.

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.

- **C - Annual Inspection**
 - Make sure the castle nut is in position and is tight.
 - Make sure the cotter pin is correctly installed.
 - If the cotter pin is not installed then refer to [2.4 Torque Specifications for Hydraulic Couplings & Hoses](#) for proper torque information.



11 Hydraulic Tank (B)

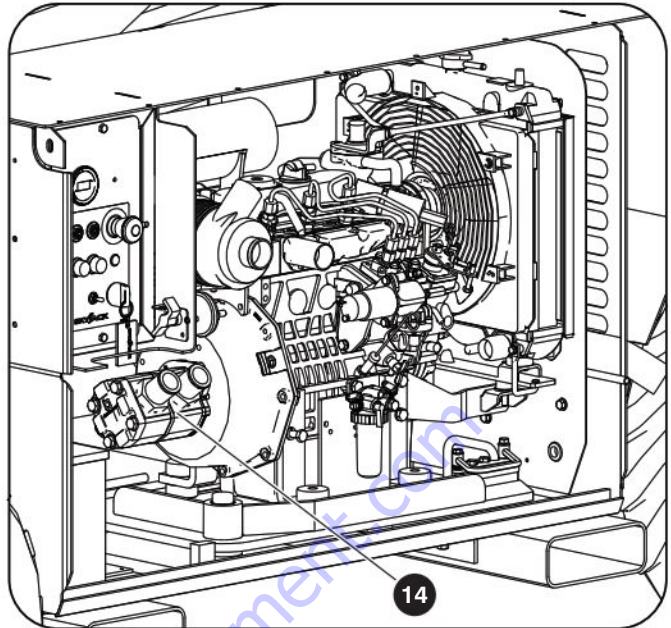
⚠ WARNING

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.

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

12 Hydraulic oil level (B,C)

- **B - Frequent/periodic/pre-delivery Inspection**
 - Make sure the platform is fully lowered.
 - 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.
- **C - Annual Inspection**
 - Do a check on the hydraulic oil for contamination.
 - Make sure the oil filter is in good condition.
 - Replace the hydraulic oil and filters if necessary.



13 Electrical components (B)

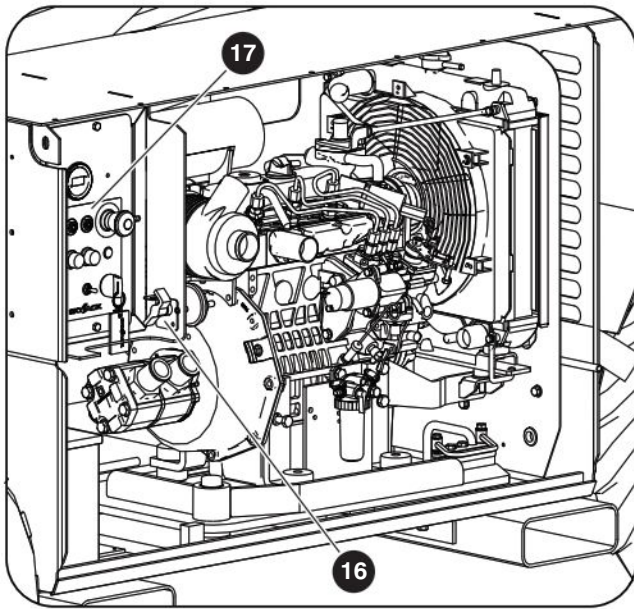
- Do a check on these areas for chafed, corroded, and loose wires:
 - Base to platform cables and wiring harness
 - Hydraulic and electrical wiring harnesses.

14 Hydraulic pump and motor (B)

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

15 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.
- Make sure the manual valves on the manifold move freely and make sure they are put back to their initial positions.

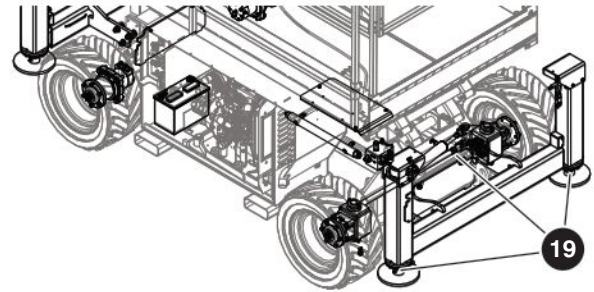


16 Main Power Disconnect Switch (B)

- Turn main power disconnect switch to off position.
- Make sure the cables are secure and correctly installed.

17 Base Controls (B)

- Make sure the base controls are correctly installed.
- Make sure there is no visible damage.
- **AC power socket (B)**
 - Make sure there is no visible damage.



18 Base Weldment (B)

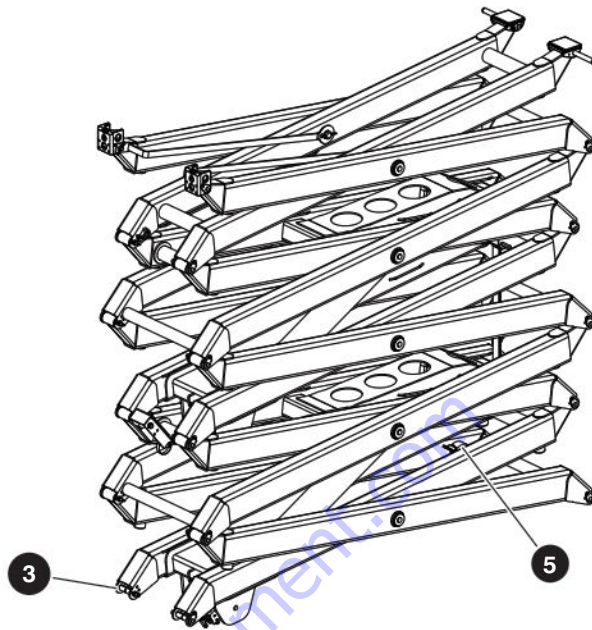
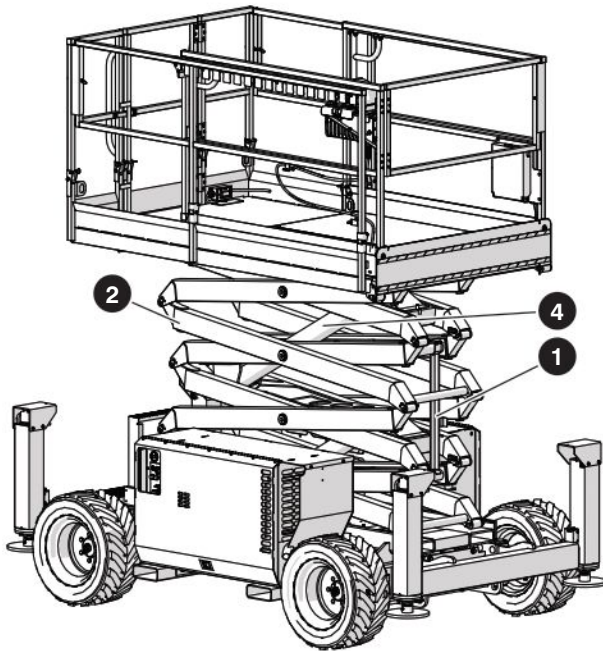
- There are no cracks in the welds or structure.
- There are no signs of deformation.

19 Grease points (B)

- Make sure there is no visible damage.
- Make sure there is no dirt or blockages.
- Add grease if necessary.

20 Ladder (B)

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



1.7 Scissors inspection

1. Raise the platform and deploy the maintenance support.

1 Maintenance Support (B)

- Make sure that the maintenance support is correctly attached and show no visible damage.

2 Scissor Assembly (B)

- Make sure that the scissor assembly shows no signs of visible damage, deformation, or cracks in the weldments.
- Make sure all the pins and fasteners are correctly installed.
- Make sure that the cables and wires have the correct routing, and show no signs of wear and/or physical damage.
- Make sure that the scissor bumpers are correctly attached and have no visible damage.

3 Sliders & Rollers (B)

- Make sure that the sliders and rollers on the left and right side of the MEWP are correctly attached.
- Make sure there is no visible damage.
- Make sure there is no dirt or blockages in the slider or roller paths.

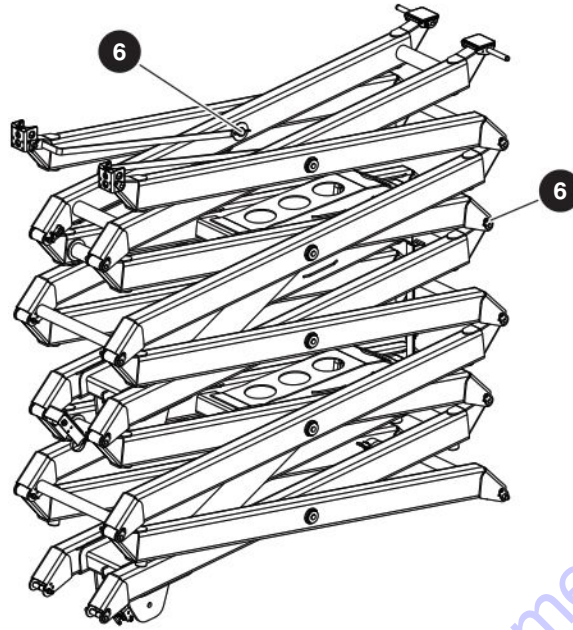
4 Lift Cylinder(s) (B)

- Make sure that the lift cylinders are correctly installed.
- Make sure there are no loose or missing fasteners.
- Make sure there is no indication of leaks or damage.

5 Angle Transducer (B)

- Make sure the angle transducer has no damage and is correctly attached.
- Make sure there is no visible damage.

2. Fully lower the platform.



6 Scissor pin inspection (B)

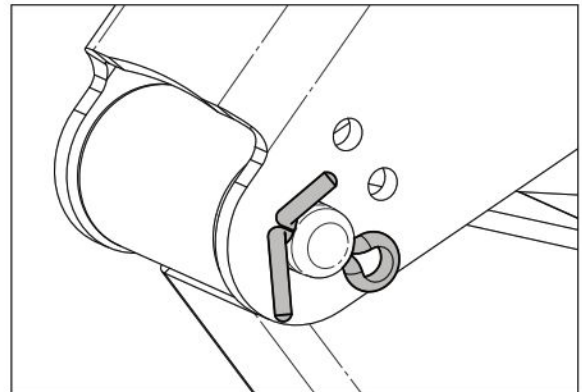
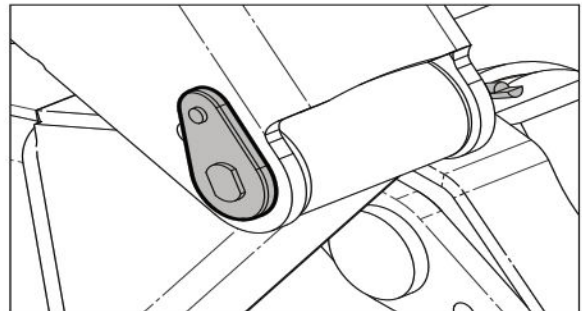
⚠ WARNING

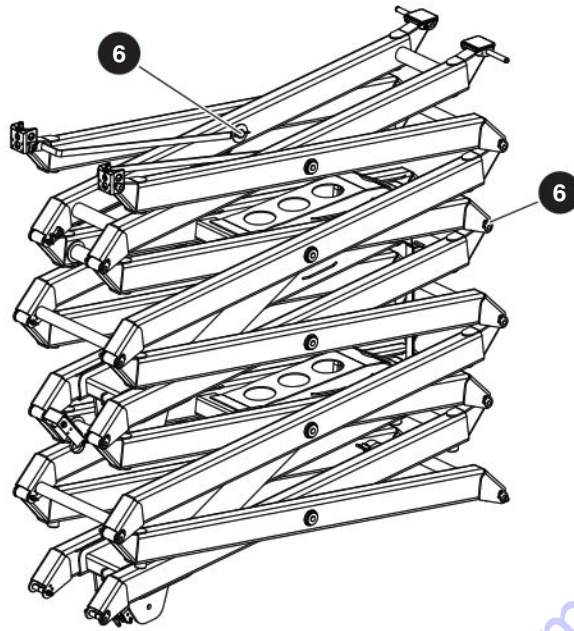
Units that show signs of damage must be immediately removed from service and repaired by a qualified technician. Speak to the Skyjack service department for directions on how to repair the unit.

1. Do an inspection of the scissor pin connections. Look for signs of damage on the pins and scissor arms. These signs can include:
 - Noise can be heard from seized pins.
 - Rust near the pin joint
 - Cracks in welds of adjacent metals
 - Dust or metal shaving from worn components
 - Broken or missing pin retainer bolts
 - Broken or missing pin retainers
 - Rotated pin
 - Elongated or enlarged pin hole
2. Remove damaged pins and bushings. Do an inspection of the scissor bore after removing the applicable pins and bushings. Look for signs of damage, elongation and ovality of the hole.
3. If there is no structural damage to the scissor arms, replace the pins and bushings with new components.

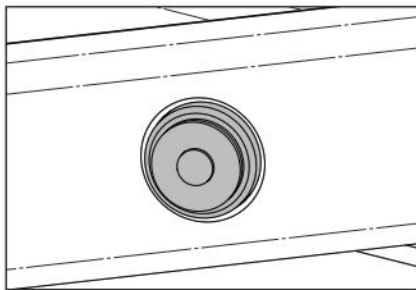
Examples of pivot pin connections with no damage:

- No rust
- Pin has not rotated
- Area is clear of dust or metal shavings
- Pin retainers are installed

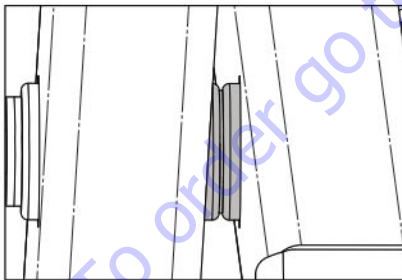




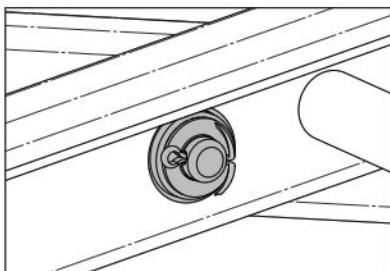
Examples of damaged pin connections:



Center Pin - Outer

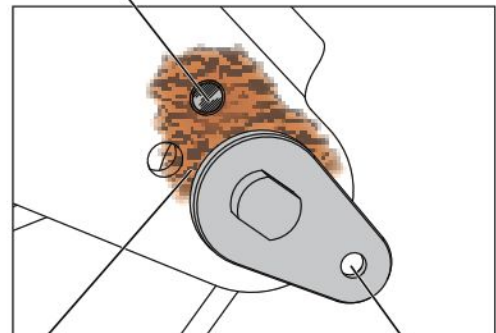


Center Pin - Middle



Center Pin - Inner

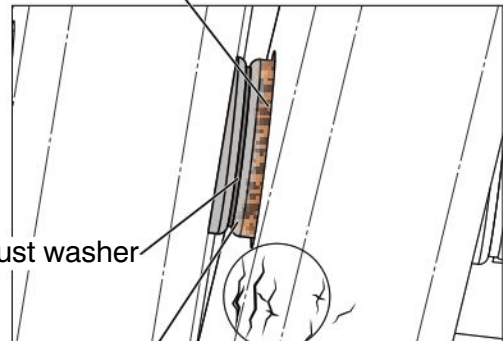
Broken retainer bolt



Rust around the pin

Rotated pin

Rust around pin boss

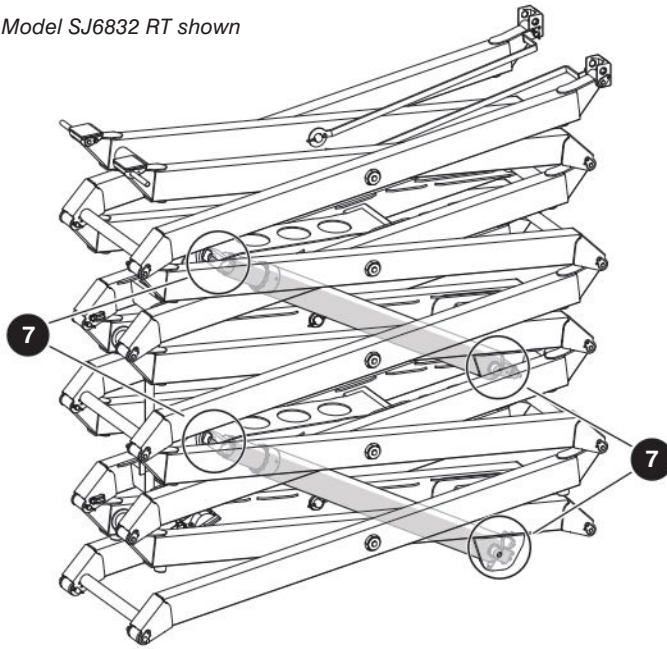


Thrust washer

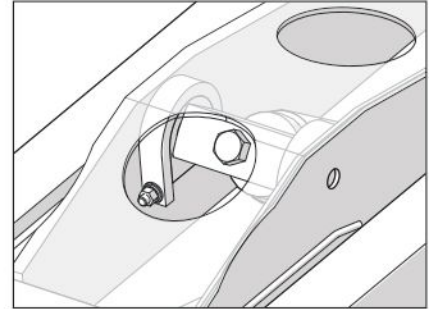
Broken pin boss

Stress cracks

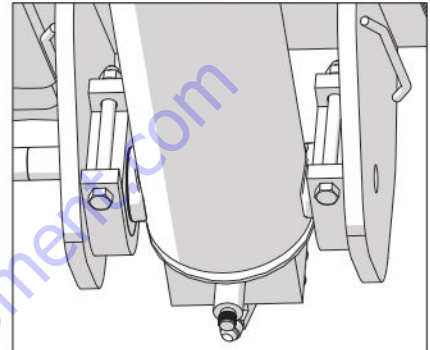
Model SJ6832 RT shown



Upper cylinder mount area



Lower cylinder mount area



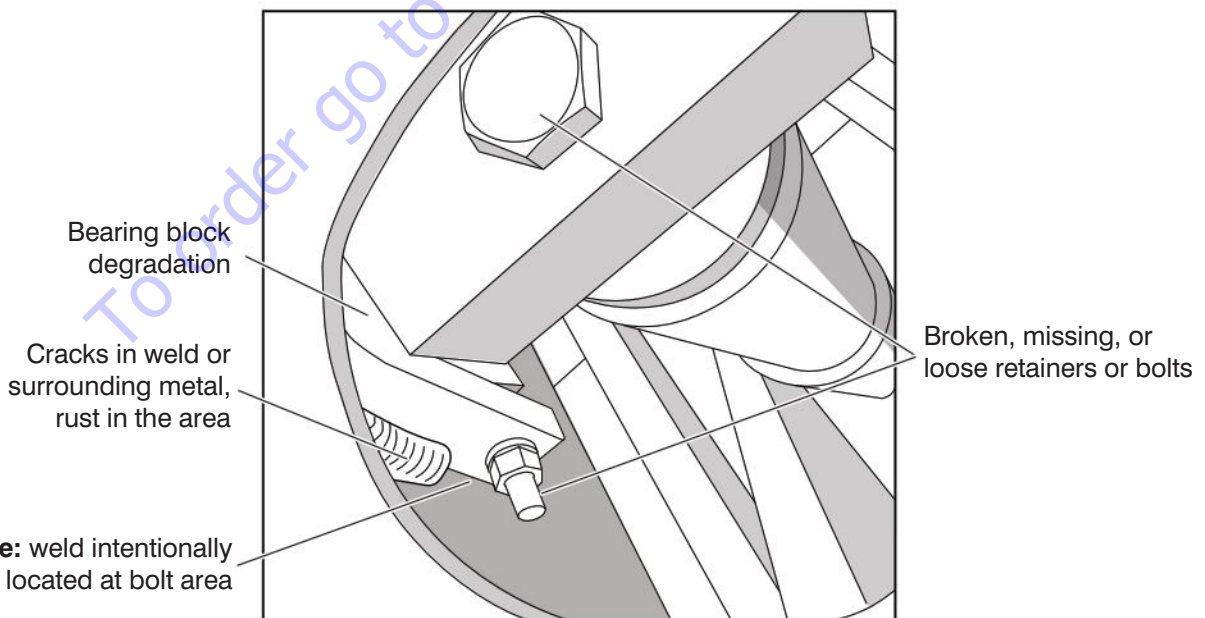
7 Cylinder mount inspection (B)

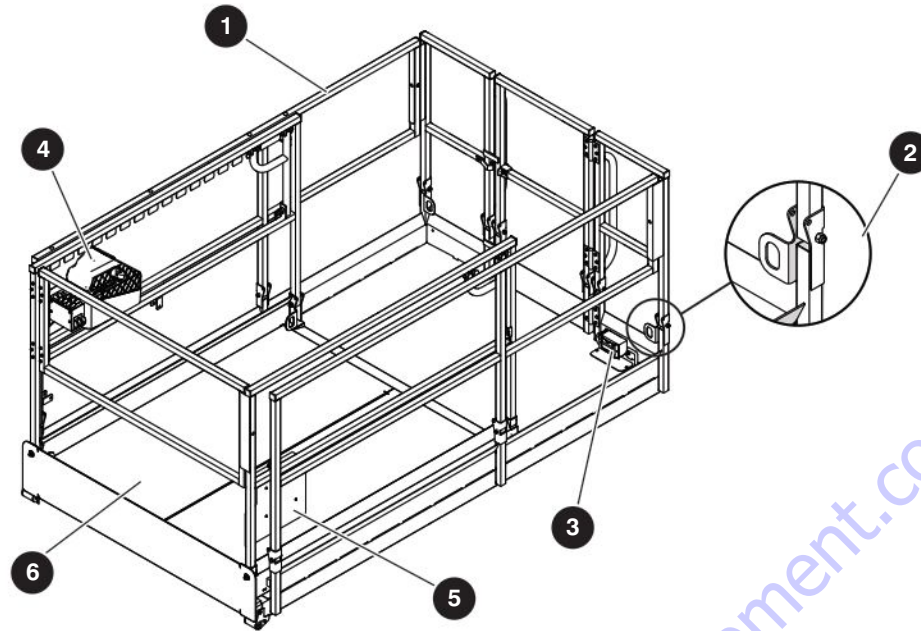
This inspection must be done as part of the scissor assembly inspection.

- 1. Do a structural inspection of the cylinder mount areas. Look for signs of damage to the mounts.

These signs can include:

- Broken, loose or missing retainers or bolts
- Bearing block degradation
- Cracks in welds or the surrounding metal, or rust forming in the area.





1.8 Platform inspections

⚠ WARNING

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

1. Enter the platform and close the gate.

1 Railings and gate (B)

- Make sure there are no loose or missing parts, and there is no visible damage.
- Make sure that the lock-pins and fasteners are correctly locked.
- Make sure that the platform railings are in the correct position and locked with lock-pins.
- Make sure that the gate is in good condition and operates correctly.
- Refer to *5.7-2 Railing Maintenance and Repair* for the railing maintenance information.

2 Fall-protection anchorages (B)

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

3 AC power socket (B)

- Make sure there is no visible damage.

4 Platform control console (B)

- Make sure the control console is locked with lock-pins.
- Make sure the platform control cable is correctly locked, and there is no visible damage.
- Make sure all switches operate correctly.

5 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.

6 Extension platform (B)

- Make sure that the extension deck is correctly installed.
- Make sure there is no visible damage or missing components.
- Make sure that the extension handles, push bars, and extension lock bars are in good working order and that it has no loose or missing parts and there is no visible damage.

2. Use the MEWP ladder to exit the platform.

1.9 Function Tests

Do the function tests to find malfunctions in the MEWP before it is put into service. The operator must understand and follow the step-by-step instructions in the operation manual to do all the MEWP functions.

IMPORTANT

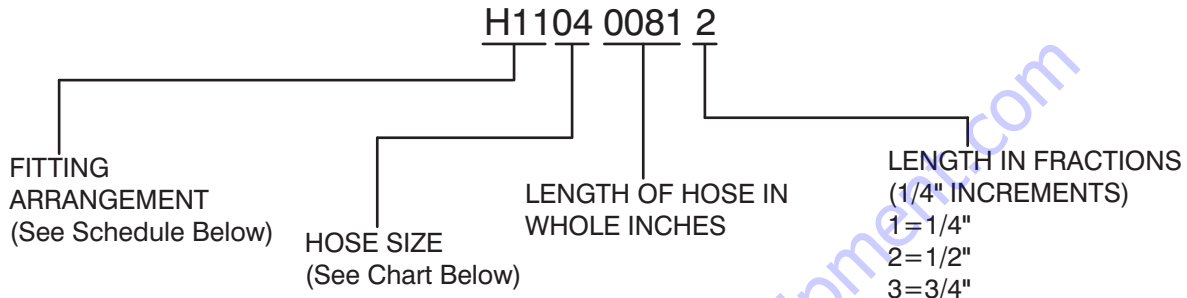
Do not operate a MEWP that does not function correctly. Lock and tag the MEWP, and remove it for servicing. Only a qualified service technician must repair the MEWP. If you do not obey, there is a risk of death or serious injury.

- After repairs are completed, operator must do a pre-operation inspection and a series of function tests again before putting MEWP into service.
- Before you do the function tests, read and understand the “Start Operation” section of the operating manual.
- Before you do the function tests, look for the operation manual with the same serial number as your MEWP. The operation manual has the instructions on which tests to do and how to do them correctly and successfully.

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	SAE2		SAE 5		SAE 8	
		Dry	Lubed	Dry	Lubed	Dry	Lubed
4-40	(in-lb)	(5)	(4)	(8)	(6)	(12)	(9)
	Nm	0.6	0.5	0.9	0.7	1.4	1.0
4-48	(in-lb)	(6)	(5)	(9)	(7)	(13)	(10)
	Nm	0.7	0.6	1.0	0.8	1.5	1.1
6-32	(in-lb)	(10)	(8)	(16)	(12)	(23)	(17)
	Nm	1.1	0.9	1.8	1.4	2.6	1.9
6-40	(in-lb)	(12)	(9)	(18)	(13)	(25)	(19)
	Nm	1.4	1.0	2.0	1.5	2.8	2.1
8-32	(in-lb)	(19)	(14)	(30)	(22)	(41)	(31)
	Nm	2.1	1.6	3.4	2.5	4.6	3.5
8-36	(in-lb)	(20)	(15)	(31)	(23)	(43)	(32)
	Nm	2.3	1.7	3.5	2.6	4.9	3.6
10-24	(in-lb)	(27)	(21)	(43)	(32)	(60)	(45)
	Nm	3.1	2.4	4.9	3.6	6.8	5.1
10-32	(in-lb)	(31)	(23)	(49)	(36)	(68)	(51)
	Nm	3.5	2.6	5.5	4.1	7.7	5.8
1/4-20	(in-lb) ft-lb	(66)	(50)	8	(75)	12	9
	Nm	7.5	5.6	11	8.5	16	12
1/4-28	(in-lb) ft-lb	(76)	(56)	10	(86)	14	10
	Nm	8.6	6.3	14	9.7	19	14
5/16-18	ft-lb	11	8	17	13	25	18
	Nm	15	11	23	18	34	24
5/16-24	ft-lb	12	9	19	14	25	20
	Nm	16	12	26	19	34	27
3/8-16	ft-lb	20	15	30	23	45	35
	Nm	27	20	41	31	61	47
3/8-24	ft-lb	23	17	35	25	50	35
	Nm	31	23	47	34	68	47
7/16-14	ft-lb	32	24	50	35	70	55
	Nm	43	33	68	47	95	75
7/16-20	ft-lb	36	27	55	40	80	60
	Nm	49	37	75	54	108	81
1/2-13	ft-lb	50	35	75	55	110	80
	Nm	68	47	102	75	149	108
1/2-20	ft-lb	55	40	90	65	120	90
	Nm	75	54	122	88	163	122

Size	Torque Type	SAE2		SAE 5		SAE 8	
		Dry	Lubed	Dry	Lubed	Dry	Lubed
9/16-12	ft-lb	70	55	110	80	150	110
	Nm	95	75	149	108	203	149
9/16-18	ft-lb	80	60	120	90	170	130
	Nm	108	81	163	122	230	176
5/8-11	ft-lb	100	75	150	110	220	170
	Nm	136	102	203	149	298	230
5/8-18	ft-lb	110	85	180	130	240	180
	Nm	149	115	244	176	325	244
3/4-10	ft-lb	175	130	260	200	380	280
	Nm	237	176	353	271	515	380
3/4-16	ft-lb	200	150	300	220	420	320
	Nm	271	203	407	298	569	434
7/8-9	ft-lb	170	125	430	320	600	460
	Nm	230	169	583	434	813	624
7/8-14	ft-lb	180	140	470	360	660	500
	Nm	244	190	637	488	895	678
1-8	ft-lb	250	190	640	480	900	680
	Nm	339	258	868	651	1220	922
1-12	ft-lb	270	210	710	530	1000	740
	Nm	366	285	963	719	1356	1003
1-14	ft-lb	280	210	730	540	1020	760
	Nm	380	285	990	732	1383	1030
1 1/8-7	ft-lb	350	270	800	600	1280	960
	Nm	475	366	1085	813	1735	1302
1 1/8-12	ft-lb	400	300	880	660	1440	1080
	Nm	542	407	1193	895	1952	1464
1 1/4-7	ft-lb	500	380	1120	840	1820	1360
	Nm	678	515	1519	1139	2468	1844
1 1/4-12	ft-lb	550	420	1240	920	2000	1500
	Nm	746	569	1681	1247	2712	2034
1 3/8-6	ft-lb	670	490	1460	1100	2380	1780
	Nm	908	664	1979	1491	3227	2413
1 3/8-12	ft-lb	750	560	1680	1260	2720	2040
	Nm	1017	759	2278	1708	3688	2766
1 1/2-6	ft-lb	870	650	1940	1460	3160	2360
	Nm	1180	881	2630	1979	4284	3200
1 1/2-12	ft-lb	980	730	2200	1640	3560	2660
	Nm	1329	990	2983	2224	4827	3606

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

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Table 2.3 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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2.5 Torque Specifications

Cartridge								
Torque	Size							
	8	38	58	10	12	16		
Lb-ft (max)	20			25	35	50		
Lb-in (max)	240			300	420	600		
Nm (max)	27.12			33.9	47.46	67.8		
Coils								
Torque	Size							
	All Coils							
Lb-ft (max)	4 to 5							
Lb-in (max)	48 to 60							
Nm (max)	5.42 to 6.78							
SAE Plugs								
Torque	Size							
	2	4	5	6	8	10	12	16
Lb-ft (max)	3	10	15		25		30	35
Lb-in (max)	36	120	180		300		360	420
Nm (max)	4.07	13.56	20.34		33.9		40.68	47.46
Bolts								
Type of Bolt	Torque (ft-lb)				Torque (Nm)			
Directional valve mounting bolts	2.33 (28-32 in-lb)				3.16 - 3.61			
Wheel mounting bolts	90				122			
Wheel motor castle nut (front)	350				474.54			
Wheel motor castle nut (back)	350				474.54			
Center drive sprocket mounting bolts	110 - 115 (242 Loctite)				149 - 156			
Hydraulic drive motor mounting bolts	120 (242 Loctite)				162			
Positive battery post cable/fuse nut	7.5 (90 in-lb)				10.2			
Newton-meter = Nm	Foot-Pound Force = ft-lb				Inch-Pound Force = in-lb			

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2.6 Specifications and Features

Models	SJ6826 RT	SJ6832 RT
Weight (Without Outriggers)*	2930 kg (6460 lb)	3443 kg (7590 lb)
Weight (With Outriggers)*	3440 kg (7570 lb)	3641 kg (8030 lb)
Overall Width	1765 mm (69.5 in)	
Overall Length (Platform Retracted)	2720 mm (107 in)	
Overall Length (Platform Extended)	4110 mm (162 in)	
Platform Length, Inside (Platform Retracted)	2440 mm (96 in)	
Platform Length, Inside (Platform Extended)	3900 mm (153 in)	
Height		
Working Height	9.7 m (31.7 ft)	11.5 m (37.6 ft)
Platform Elevated Height	7.8 m (25.7 ft)	9.6 m (31.6 ft)
Stowed Height (Railings Up)	2370 mm (93.5 in)	2510 mm (99 in)
Stowed Height (Railings Down)	1620 mm (63.5 in)	1750 mm (69 in)
Drive Height (Maximum)	7.8 m (25.7 ft)	9.6 m (31.6 ft)
Standard Operating Times		
Lift Time (No Load)	32 - 36 sec	
Lower Time (No Load)	46 - 50 sec	44 - 48 sec
Lift Time (Rated Load)	34 - 38 sec	37 - 41 sec
Lower Time (Rated Load)	34 - 38 sec	
Chassis		
Drive Speed (Stowed)	5.78 - 6.10 km/h (3.59 - 3.79 mph)	
Drive Speed (Elevated)	0.52 - 0.61 km/h (0.32 - 0.38 mph)	
Gradeability (Torque Equivalent To)	50 %	40 %
Tires (Foam Filled)	30.5 cm (12 in) x 66 cm (26 in)	
Engine (RPM)		
Kubota Diesel/Dual Fuel	3500 (High Throttle)/2050 (Low Throttle)	
Fuel Tank Capacity	80 L (21 gal)	
Hydraulic Oil		
Type	ATF	
Tank Capacity	86.88 L (22.95 gal)	

* Weights are approximate; refer to serial nameplate for specific weight.

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2.7 Floor loading pressure

Models		Total MEWP Weight		Total MEWP Load					
				Wheel/Outrigger Pad***		LCP**		OUP**	
		kg	lb	kg	lb	kPa	psi	kg/m ²	psf
SJ6826 RT on tires (foam-filled only)	min*	2930	6460	1400	3090	1130	163	620	125
	max*	3440	7570	1630	3600	1310	190	730	150
SJ6826 RT on outrigger pads	min*	3436	7573	1400	3090	280	40	590	119
	max*	4003	8823	1630	3600	320	46	680	138
SJ6832 RT on tires (foam-filled only)	min*	3443	7589	1675	3693	1350	195	720	146
	max*	3897	8589	1860	4100	1500	216	920	166
SJ6832 RT on outrigger pads	min*	3641	8027	1675	3693	330	47	620	126
	max*	4095	9027	1860	4100	370	52	700	142

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* min: MEWP weight, LCP, and OUP with no options.

* max: MEWP weight, LCP, and OUP with options and full capacity on platform.

** LCP: Locally Concentrated Pressure is a measure of how hard the MEWP presses on the areas in direct contact with the floor. The floor covering (tile, carpet, for example) must be able to withstand more than the indicated values above.

** OUP: Overall Uniform Pressure is a measure of the average load the MEWP imparts on the whole surface directly underneath it. The structure of the operating surface (beams, for example) must be able to withstand more than the indicated values above.

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

***Min wheel load is taken as 25% of the total weight of the model with no load on the platform. Max wheel load is defined by measurement—the platform was fully elevated with the rated load located above one rear wheel.

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.

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.

2.8 Maximum platform capacities (evenly distributed)

Models	Wind Rating	Total Platform Capacity		Extension Platform Capacity		Manual Side Force	Tilt Cutout Setting
SJ6826 RT	12.5 m/s (28 mph)	567 kg (1250 lb)	4 Persons	136 kg (300 lb)	1 Person	400 N (90 lbf)	2.5° x 4.5°
SJ6832 RT		454 kg (1000 lb)	4 Persons				

NOTE

Occupants and materials are not to exceed the rated load. Refer to the capacity label at the sides of the platform for additional information and models equipped with options.

2.9 Environment

Model	SJ6826 RT	SJ6832 RT
Electromagnetic Compatibility (EMC)	Meets requirements of ISO 13766-1:2018 and CAN/CSA CISPR 12-10	
Hazardous Location Rating	MEWP not rated for hazardous locations with potentially flammable gases, explosive gases or particles	
Sound Pressure Level (ISO 3744)	72 dB	
Guaranteed Maximum Sound Power Level (ISO 4871)	100 dB	
Whole-body Vibration on Platform	0.3995 m/s ²	
Operating Temperatures		
Standard	-20°C (-4°F) to +40°C (+104°F)	
Cold Weather Package	Below -10°C (+14°F)	
Arctic Weather Package	Below -18°C (0°F)	

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2.10 Fluids

Hydraulic Oil				
Model	Capacity (Liters)	Capacity (US Gallons)	Oil Type	
SJ68XXRT	86.88	22.95	ATF Dexron III	
			Shell Naturelle HF-E 32 (biodegradable)	
Engine Oil				
Engine Type	Capacity (Liters)	Capacity (US Gallons)	Engine Oil Type	Recommended Equivalent Oil
Kubota D902	3.9	1.03	SAE 10W-30	10W30 - API Service Designation CG-4, CF-4, CD, SH
Kubota D972	3.4	0.9		
Kubota WG752				
Engine Coolant				
Engine Type	Capacity (Liters)	Capacity (US Gallons)	Coolant Type	
Kubota	3.1	0.82	Anti-freeze 50/50 Premix	
Engine Fuel				
Engine Type	Capacity (Liters)	Capacity (US Gallons)	Fuel Type	
Kubota D902	86.88	22.95	Diesel	
Kubota D972				
Kubota WG752			Unleaded Gasoline	

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Section 3 – System Component Identification and Schematics

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Table 3.1 Electrical Symbol Chart



















































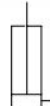

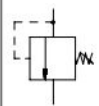








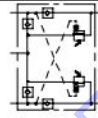







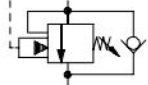





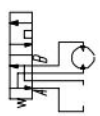


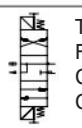


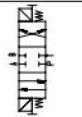
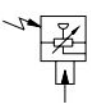


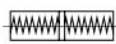
 CIRCUITS CROSSING NO CONNECTION	 HOURMETER	 KEY SWITCH	 LIMIT SWITCH N.O.
 CIRCUITS CONNECTED	 LIGHT	 FOOT SWITCH	 LIMIT SWITCH N.O. HELD CLOSED
 BATTERY	 HYDRAULIC VALVE COIL	 TOGGLE SWITCH	 LIMIT SWITCH N.C.
 GROUND	 PROPORTIONAL HYDRAULIC VALVE COIL	 PUSH BUTTON	 LIMIT SWITCH N.C. HELD OPEN
 FUSE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

Table 3.2 Hydraulic Symbol Chart

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

3.3 Wire 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	21	GRN/BLK	42	PNK/BLU	84	YEL/BRN	1002	RED/BLK
000	WHT	21	WHT/RED	43	PNK/RED	85	ORG/BLK/WHT	1003	ORG
B1	BLU/PINK	22	ORG/BLU	44	PNK/ORG	87	BRN/ORG	1006	BLU
01	PUR/BLK	23	BLK/WHT/RED	49	GRN	88	BRN/PNK	1008	GRY
02	WHT	23	BLK/WHT	50	BRN/WHT	89	BRN/GRN	1100	BLK
03	GRN/PUR	24	BLU/BLK	55	GRY/RED	99	PUR/RED	1103	ORG
04	RED/YEL	25	ORG/GRN	56	WHT/ORG	100	RED	2001	BRN
05	PUR/BLACK	26	GRN	57	BLK/WHT	101		2002	RED
06		27	BLK	59	ORG/BLK	102	PNK	2005	GRN/WHT
07	RED	28	GRN/RED	60	BLK/RED/GRN	103	RED	3008	GRY
08	PUR/WHT	29	BLU/YEL	71	BLU/RED	103B	BLK	4002	RED
09	ORG/RED	30	BRN	72	WHT/BLK/RED	103C	WHT	7002	RED
10	BLU/WHT	31	RED/WHT	73	WHT/RED/GRN	104	RED		
11	YEL/BLK	32	GRN/BLK	74	BLK/RED/GRN	105	GRN		
12	BRN/RED	33		75	WHT/RED/GRN	106	BLU		
13	ORG	34	GRN/WHITE	76	RED/GRN	200	BLK/WHT		
14	BLK	35	RED/BRN	77	GRN/BLK/WHT	203	ORG/BLK		
15	BLU	36	YEL	78	RED/BLK/WHT	205	GRN		
16	WHT/BLK	37	GRN/WHT	79	YEL/PNK	209	WHT/BLK		
17	BLU/RED	38		80	YEL/PUR	900	WHT		
18	RED/BLK	39	GRN/WHT	81	YEL/RED	902	WHT		
19	ORG/BLK	40	PNK/YEL	82	YEL/BLU	910	BLK		
20	BLK/WHT/RED	41	PNK	83	YEL/ORG	1001	BRN/WHT		

This table is to be used as a wire number/color reference for electrical drawings and schematics.

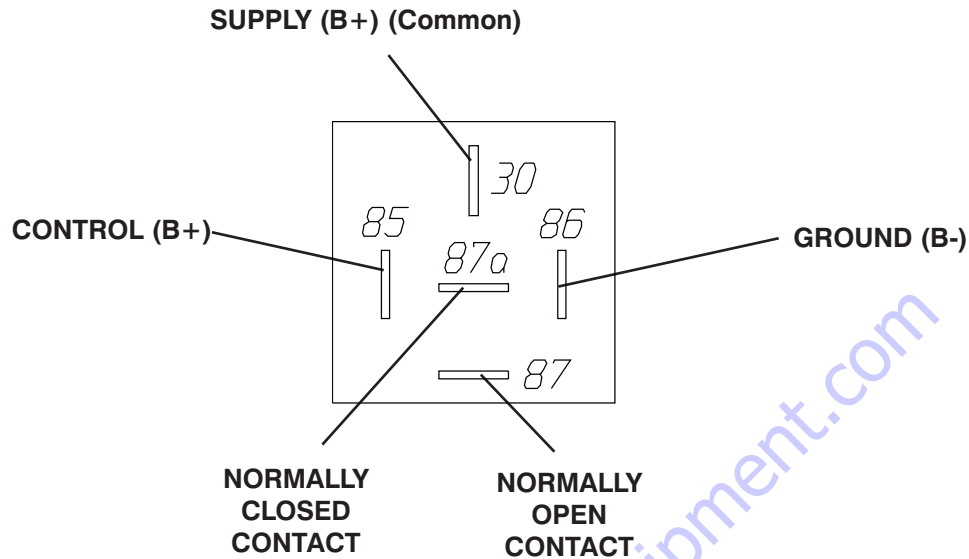
All wire numbers will retain their original color coding, for example if wire 7 is red, wire 7A, 7B, and 7C will also be red.

3.4 Hydraulic Parts List

Index No.	Skyjack Part No.	Qty.	Description
C1	220455	1	CYLINDER, Lift (Lower)
C2	220455	1	CYLINDER, Lift (Upper)
C7	135896	1	CYLINDER, Steer
C8	107752	1	CYLINDER, Cushion
C9	132694	1	CYLINDER, Outrigger (Front left)
C10	132694	1	CYLINDER, Outrigger (Front right)
C11	132694	1	CYLINDER, Outrigger (Rear right)
C12	132694	1	CYLINDER, Outrigger (Rear left)
CB1	137181	1	VALVE, Counterbalance (Main)
CB2	137181	1	VALVE, Counterbalance (Parallel)
CV1	104624	1	VALVE, Check
CV2	104624	1	VALVE, Check
CV3	104624	1	VALVE, Pilot check
CV4	104624	1	VALVE, Pilot check
CV5	104624	1	VALVE, Pilot check
CV6	104624	1	VALVE, Pilot check
CV7	104115	1	VALVE, Pilot check
CV8	104115	1	VALVE, Pilot check
CV9	104115	1	VALVE, Pilot check
CV10	104115	1	VALVE, Pilot check
F1	136408	1	FILTER ASSEMBLY
FD1	169282	1	VALVE, Flow divider
HP2	110652	1	PUMP, Brake hand
2H-13	107271	1	VALVE, Control (Lowering)
2H-13-1	210298	1	VALVE, Holding (Lower cylinder)
2H-13-2	125915	1	VALVE, Holding (Upper cylinder)
2H-17A	114365	1	VALVE, Control (Large pump dump)
2H-17C	103655	1	VALVE, Holding (Outrigger)
2H-18B	103656	1	VALVE, Control (Small pump dump)
2H-20B	106272	1	VALVE, Control (High speed)
2H-86D	103655	1	VALVE, Control (Hydraulic generator)
3H-14A	106273	1	VALVE, Control (Lift)
3H-30	103623	1	VALVE, Control (Brake)
4H-15A	128321	1	VALVE, Control (Reverse drive)
2H-15B	153337	1	VALVE, Control (Parallel reverse drive)
4H-16A	128321	1	VALVE, Control (Forward drive)
4H-16B	153337	1	VALVE, Control (Parallel forward drive)

Index No.	Skyjack Part No.	Qty.	Description
4H-20A	139351	1	VALVE, Control (Series/Parallel)
4H-23	153337	1	VALVE, Control (Right steer)
4H-24	153337	1	VALVE, Control (Left steer)
4H-71	153337	1	VALVE, Control (Front left outrigger retract)
4H-72	153337	1	VALVE, Control (Front right outrigger retract)
4H-73	153337	1	VALVE, Control (Rear right outrigger retract)
4H-74	153337	1	VALVE, Control (Rear left outrigger retract)
4H-75	153337	1	VALVE, Control (Front left outrigger extend)
4H-76	153337	1	VALVE, Control (Extend outrigger right front)
4H-77	153337	1	VALVE, Control (Extend outrigger right rear)
4H-78	153337	1	VALVE, Control (Extend outrigger left rear)
M1	137479	1	MOTOR (Front left)
M2	137479	1	MOTOR (Front right)
M3	137479	1	MOTOR (Rear right)
M4	137479	1	MOTOR (Rear left)
MB1	137215	1	BLOCK, Manifold (Main)
MB2			
MB3	130443	1	BLOCK, Manifold (Lower holding valve) - KC
	210297	1	BLOCK, Manifold (Lower holding valve)
MB4	108778	1	BLOCK, Manifold (Upper holding valve)
MB5	140898	1	BLOCK, Manifold (Sandwich)
MB6	139450	1	BLOCK, Manifold (Splitter)
MB7			
MB8	111970	1	BLOCK, Manifold (Outrigger)
MB9	146082	1	BLOCK, Manifold (Hydraulic generator)
MB10	194323	1	BLOCK, Manifold (Flow Control)
O1	105281	1	ORIFICE (0.067 diameter)
O2	137510	AR	ORIFICE, Lowering (0.106 diameter) (Model 6826RT)
	137509	AR	ORIFICE, Lowering (0.089 diameter) (Model 6832RT)
O3	137510	AR	ORIFICE, Lowering (0.106 diameter) (Model 6826RT)
	137509	AR	ORIFICE, Lowering (0.089 diameter) (Model 6832RT)
O4	137508	2	ORIFICE, Brake (0.028 diameter)
P1	161943	1	PUMP, Dual hydraulic (11/6.4)
R1	104534	1	VALVE, Relief (System)
R2	104534	1	VALVE, Relief (Lift)
R3	106557	1	VALVE, Relief (Lift cylinder)
R4	106557	1	VALVE, Relief (Lift cylinder)
R5	104534	1	VALVE, Relief (Drive)
V1	107271	1	VALVE, Emergency lowering
V2	137182	1	VALVE, Freewheel
V6	113752	1	VALVE, Brake auto reset

3.5 Electrical Parts List



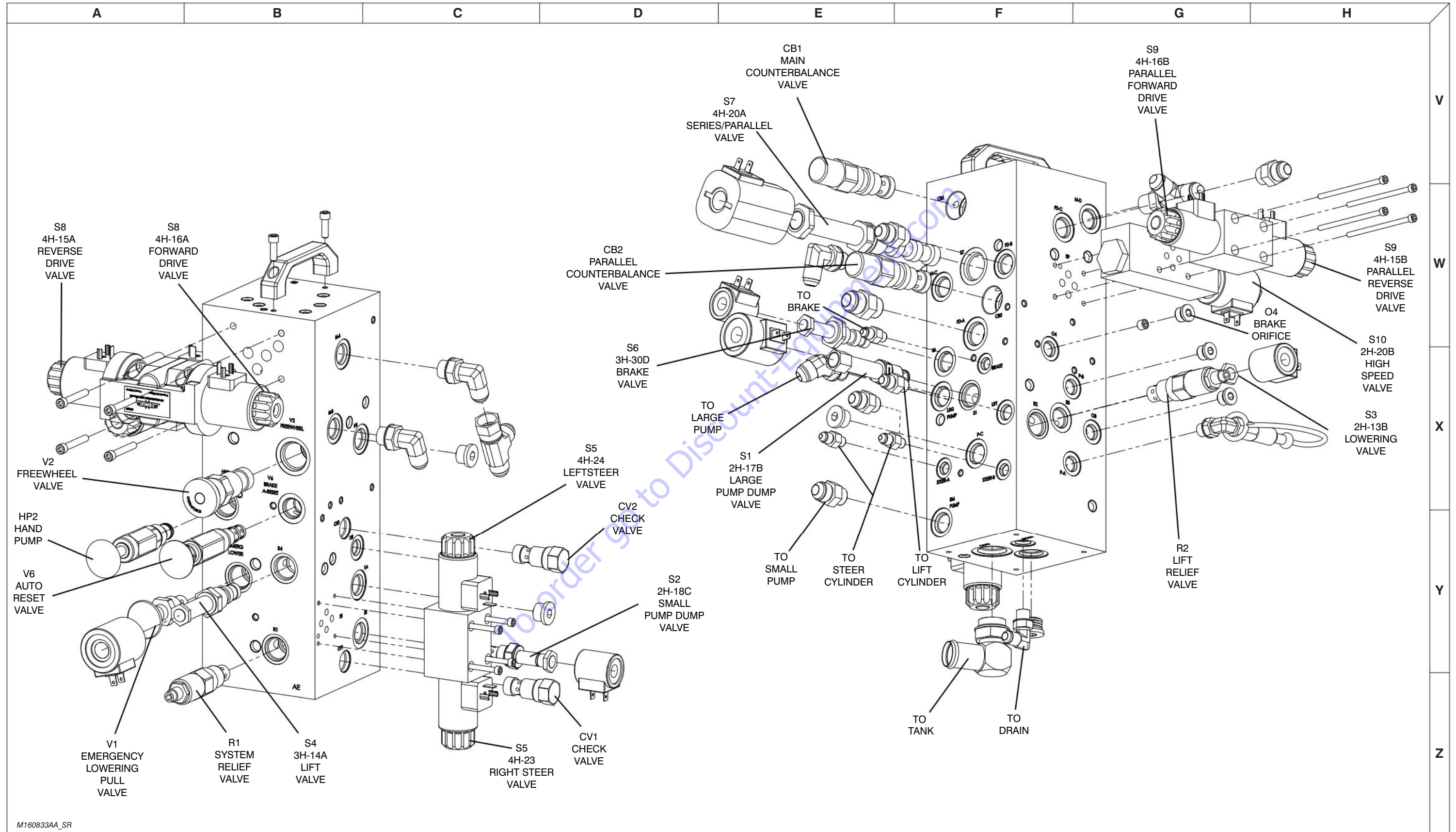
Index No.	Skyjack Part No.	Qty.	Description
8CCR	127035	1	ENABLE RELAY
9CR2	127131	1	RELAY, 12 Volt (Outrigger enable)
9CR3	127131	1	RELAY, 12 Volt (Outrigger enable proof)
10BCR	127035	1	RELAY, 12 Volt (40 Amp) (main power)
10CR1	127035	1	RELAY, 12 Volt (40 Amp)
10CR2	127035	1	RELAY, 12 Volt (40 Amp)
15CR	127035	1	RELAY, 12 Volt (40 Amp) (Reverse drive)
16CR	127035	1	RELAY, 12 Volt (40 Amp) (Forward drive)
17CR	127035	1	RELAY, 12 Volt (40 Amp) (Small pump)
17DCR	127131	1	RELAY, 12 Volt (Outrigger lift disable)
19CR	127035	1	RELAY, 12 Volt (40 Amp) (Large pump)
20CR	127035	1	RELAY, 12 Volt (40 Amp) (Series/Parallel drive)
20ACR1	127035	1	RELAY, 12 Volt (40 Amp) (Series/Parallel)
20ACR2	127035	1	RELAY, 12 Volt (40 Amp) (Series/Parallel)
28ACR1	127035	1	RELAY, 12 Volt (40 Amp) (Small pump dump enable)
28ACR2	127035	1	RELAY, 12 Volt (40 Amp) (Large pump dump enable)
31CR	127035	1	RELAY, 12 Volt (40 Amp) (Glow plug)
32ACR	127035	1	CONTACTOR, Engine start
32CR1	127035	1	RELAY, 12 Volt (40 Amp)
32CR2	127035	1	RELAY, 12 Volt (40 Amp) (Engine start)

Index No.	Skyjack Part No.	Qty.	Description
33CR	209028	1	RELAY, Power on-demand
34ACR	208882	1	RELAY, 12 Volt 40 Amp (Throttle)
35ACR	209028	1	RELAY, 12 Volt 40 Amp (Throttle enable)
35CR	208882	1	RELAY, 12 Volt 40 Amp (Elevation/High speed cutout)
61CR	209028	1	RELAY, 12 Volt 40 Amp (Outrigger drive enable)
65CR	208882	1	RELAY, 12 Volt (Outrigger lift enable)
86ACR	208882	1	RELAY, 12 Volt 40 Amp (Hydraulic generator stop)
86BCR	208882	1	RELAY, 12 Volt 40 Amp (Hydraulic generator latching)
86CCR	208881	1	RELAY, 12 Volt 40 Amp (Hydraulic generator)
2G-11	208881	1	SOLENOID, Gas shutoff (Kubota Dual Fuel Engine)
B1	208882	1	BATTERY, 12 Volt (Wet)
BP-29	208882	1	BEEPER (7.5 – 16 VDC)
CB1	208881	1	CIRCUIT BREAKER (25 Amp)
CB3	208881	1	CIRCUIT BREAKER (25 Amp)
CM1	158321	1	MODULE, Overload sensing system - ANSI, AS
CM1	139301	1	MODULE, Overload sensing system - CE
CPS1	138224	1	SENSOR, Crankshaft position
CRD1	138225	1	CONTROL CABLE ASSEMBLY (Control console)
CRD2	138226	1	CONTROL CABLE ASSEMBLY (Scissor arm) (Model 6826RT)
	144387	1	CONTROL CABLE ASSEMBLY (Scissor arm) (Model 6832RT)
CRD3	137354	1	CONTROL CABLE ASSEMBLY (Electrical panel)
CS-31A	103007	1	SOLENOID, Choke
DXX	102921	AR	DIODE
EGP1	KUBOTA	1	PLUG, Engine glow
F1	128595	1	FUSE (300 Amp)
F4	138091	1	FUSE (125 Amp) (Electrical inverter option)
FL-22	121476	1	FLASHING LIGHT
FL-29	103743	1	FLASHER
FP	136119	1	PUMP, Electric fuel
GPL1	133133	1	LIGHT, Glow plug indicator
GPT1	137868	1	TIMER, Glow plug
H1	146652	1	HORN, 12 Volt
HTS-34C	103007	1	SOLENOID, High throttle
ICM1	136121	1	MODULE, Igniter control
IG	137857	1	ALTERNATOR (Kubota Diesel D902)
	136101	1	ALTERNATOR (Kubota Dual Fuel WG752)
IGC1	136106	1	COIL, Ignition
IGC2	136106	1	COIL, Ignition
LED-1	137785	1	LIGHT, Power on
LED-2	137785	1	LIGHT, Power on (Base controls)

Index No.	Skyjack Part No.	Qty.	Description
LS5	204234	1	LIMIT SWITCH (High drive cutout/tilt override)
LS61	207009	1	LIMIT SWITCH (Front left outrigger up)
LS62	207009	1	LIMIT SWITCH (Front right outrigger retracted)
LS63	207009	1	LIMIT SWITCH (Rear right outrigger retracted)
LS64	207009	1	LIMIT SWITCH (Rear left outrigger retracted)
LS65	207008	1	LIMIT SWITCH (Front left outrigger extended)
LS66	207008	1	LIMIT SWITCH (Front right outrigger extended)
LS67	207008	1	LIMIT SWITCH (Rear right outrigger extended)
LS68	207008	1	LIMIT SWITCH (Rear left outrigger extended)
OCM1	132804	1	MODULE, Outrigger auto-level control
OPS1	102838	1	SWITCH, Oil pressure
PCBOARD	152137	1	PCBOARD, Outrigger auto leveling
RST1	119629	1	RESISTOR, 2.7 kohm
S1	119726	1	SWITCH, Main power disconnect
S2	102853	1	BLOCK, N.O. contact (Up/down)
S3	-	1	SWITCH ASSEMBLY (Lift/Drive low/Drive)
	137793	1	• HEAD, Switch selector (3-Way)
	137788	1	• SWITCH ASSEMBLY (Base)
	137783	3	• • BLOCK, N.C. Contact
	137782	4	• • BLOCK, N.O. Contact
	137781	1	• • LATCH
S4	-	1	SWITCH ASSEMBLY (Emergency stop)
	137795	1	• SWITCH HEAD, Emergency Stop (Red)
	137790	1	• SWITCH ASSEMBLY (Base)
	137785	1	• • SWITCH, LED block (Red)
	137783	2	• • BLOCK, N.C. Contact
	137781	1	• • LATCH
S6	137790	1	SWITCH BASE ASSEMBLY (NC/LED, Red) (Base controls)
	137795	1	SWITCH ASSEMBLY (Emergency stop)
S7	159109	1	CONTROLLER ASSEMBLY (Drive/steer)
S7-1	122869	1	• SWITCH W/ACTUATOR, 2nd Speed
S7-2	122877	1	• SWITCH, Right steer
S7-3	122877	1	• SWITCH, Left steer
S7-4	122869	1	• SWITCH W/ACTUATOR, Reverse drive
S7-5	122869	1	• SWITCH W/ACTUATOR, Forward drive
S7-6	122869	1	• SWITCH W/ACTUATOR, 3rd Speed
S7-7	122872	1	• SWITCH, Joystick enable
S8	-	1	SWITCH ASSEMBLY (Horn)
	147058	1	• SWITCH HEAD, Push button (Black)
	147054	1	• • BLOCK, N.O. Spring contact
S9A	102853	1	SWITCH, Outrigger Enable
S9B	127132	1	SWITCH, Outrigger Enable
S910	133762	1	BLOCK, N.O. Contact (Platform/Idle/Base) (Base controls)

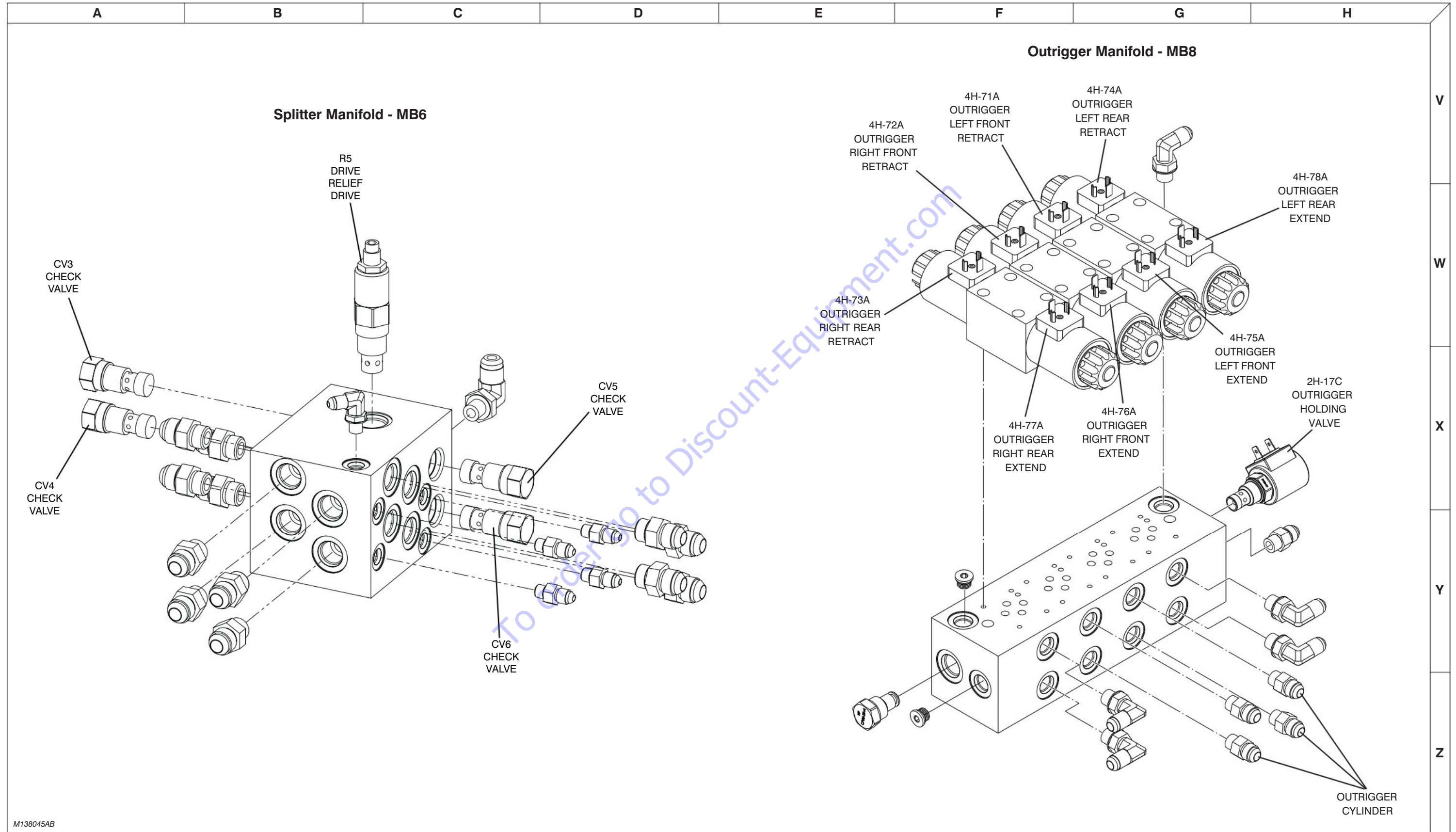
Index No.	Skyjack Part No.	Qty.	Description
S14		1	SWITCH ASSEMBLY (Low/High throttle select)
	137794	1	• HEAD, Switch Selector (2-Way)
	137786	1	• SWITCH ASSEMBLY (Base)
	137782	1	• • BLOCK, N.O. Spring contact
	137781	1	• • LATCH
S15	-	1	SWITCH ASSEMBLY (Start)
	137792	1	• SWITCH HEAD, Push button (Black)
	137786	1	• SWITCH ASSEMBLY (Base)
	137782	1	• • BLOCK, N.O. Spring contact
	137781	1	• • LATCH
S20	102853	1	SWITCH, Toggle (Front left outrigger up/down)
S20A	127132	1	SWITCH, Front left outrigger rocker
S21	102583	1	SWITCH, Toggle (Front right outrigger up/down)
S21A	127132	1	SWITCH, Front right outrigger rocker
S22	102853	1	SWITCH, Toggle (Rear right outrigger up/down)
S22A	127132	1	SWITCH, Rear right outrigger rocker
S23	102853	1	SWITCH, Toggle (Rear left outrigger up/down)
S23A	127132	1	SWITCH, Rear left outrigger rocker
S24	102853	1	SWITCH, Auto-level outrigger
S31	102692	1	SWITCH, Engine glow plug
S32	102692	1	SWITCH, Engine start push button
S33	115747	1	SWITCH, Fuel select
TPS1	113400	1	SWITCH, Engine temperature
TS1	146661	1	TILT SWITCH (KC Only)
TT	195940	1	HOUR METER
2H-13	103613	1	COIL, 12 Volt (Lowering valve)
2H-13-1	103613	1	COIL, 12 Volt (Lower lift cylinder holding valve)
2H-13-2	103613	1	COIL, 12 Volt (Upper lift cylinder holding valve)
2H-17A	106272	1	COIL, 12 Volt (Large pump dump valve)
2H-17C	106272	1	COIL, 12 Volt (Holding outrigger valve)
2H-18B	103613	1	COIL, 12 Volt (Small pump dump valve)
2H-86D	103613	1	COIL, 12 Volt (Hydraulic generator)
2P-50-1	125793	1	SOLENOID, Propane lock off valve, vaporizer (Kubota Dual Fuel Engine)
3H-14A	106272	1	COIL, 12 Volt (Lift valve)
3H-30	103613	1	COIL, 12 Volt (Brake valve)
4H-15A	128321	1	COIL, 12 Volt (Reverse drive valve)
4H-15B	128321	1	COIL, 12 Volt (Parallel reverse drive valve)
4H-16A	128321	1	COIL, 12 Volt (Forward drive valve)
4H-16B	128321	1	COIL, 12 Volt (Parallel forward drive valve)
4H-20A	137513	1	COIL 12 Volt (Series/Parallel drive)
4H-23	128321	1	COIL, 12 Volt (Right steer valve)

3.6 Hydraulic Manifold Valve Port Identification



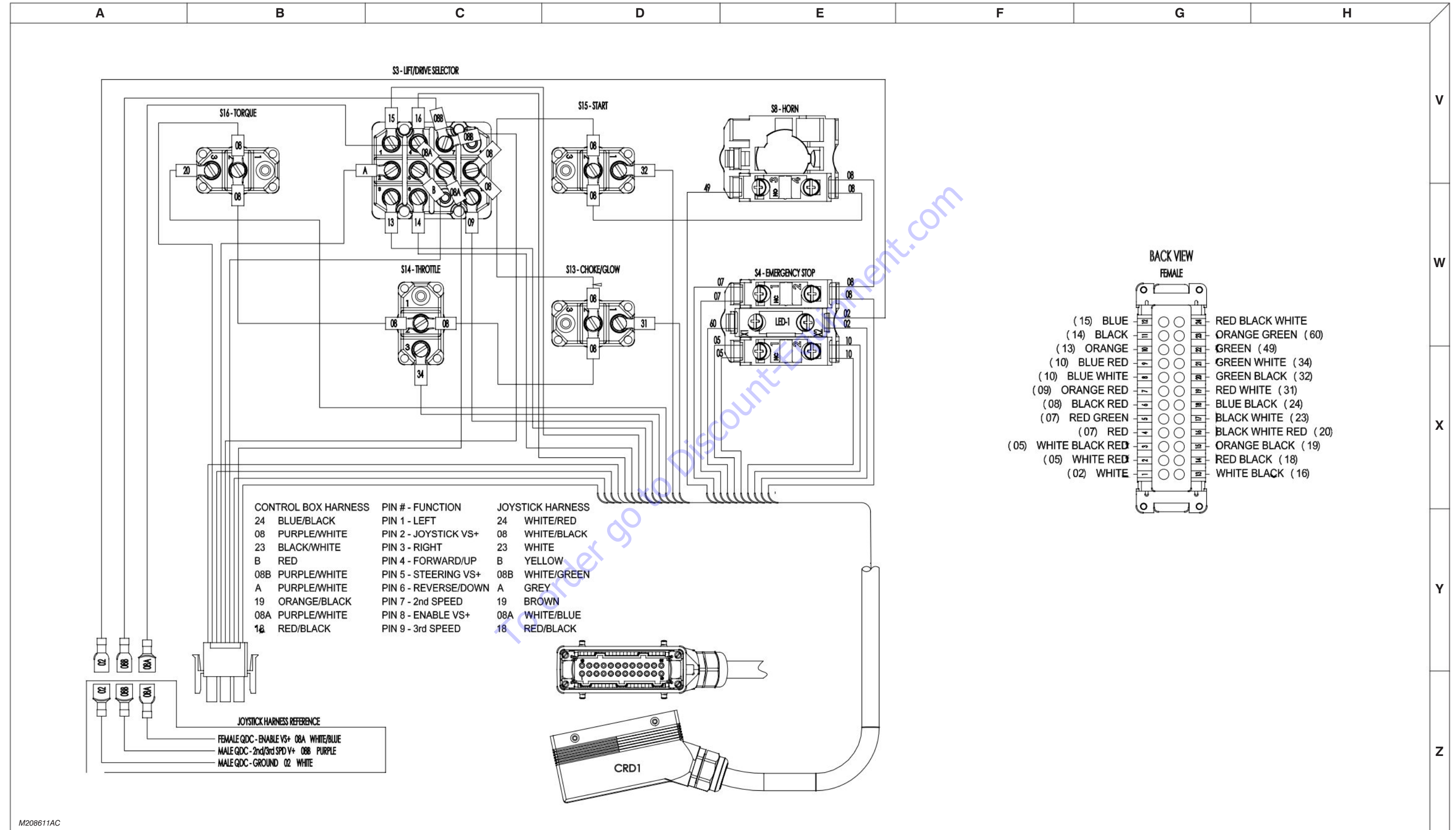
M160833AA_SR

3.7 Hydraulic Manifold Valve Assemblies and Port



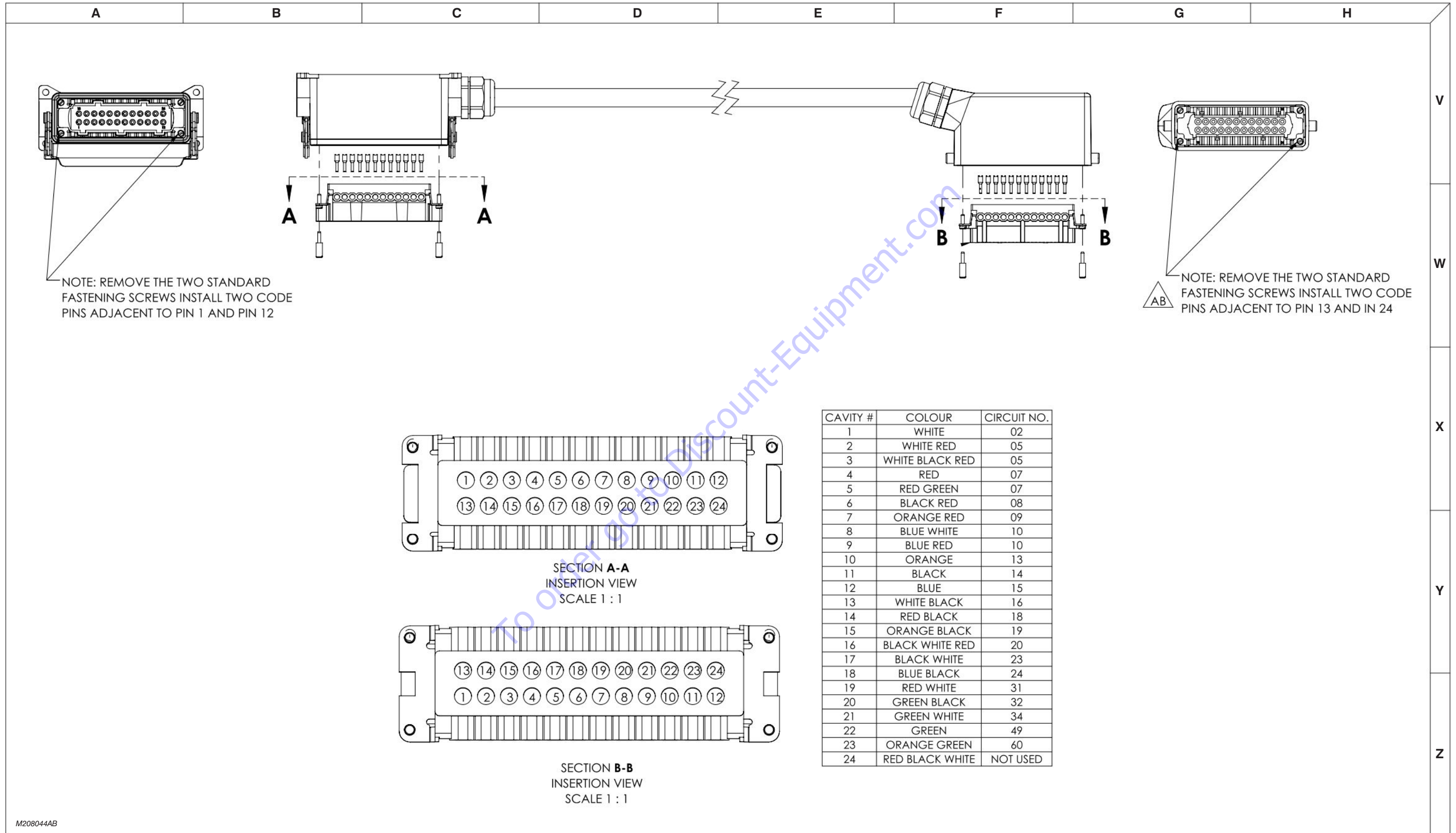
M138045AB

3.8 Control Box Wiring Diagram



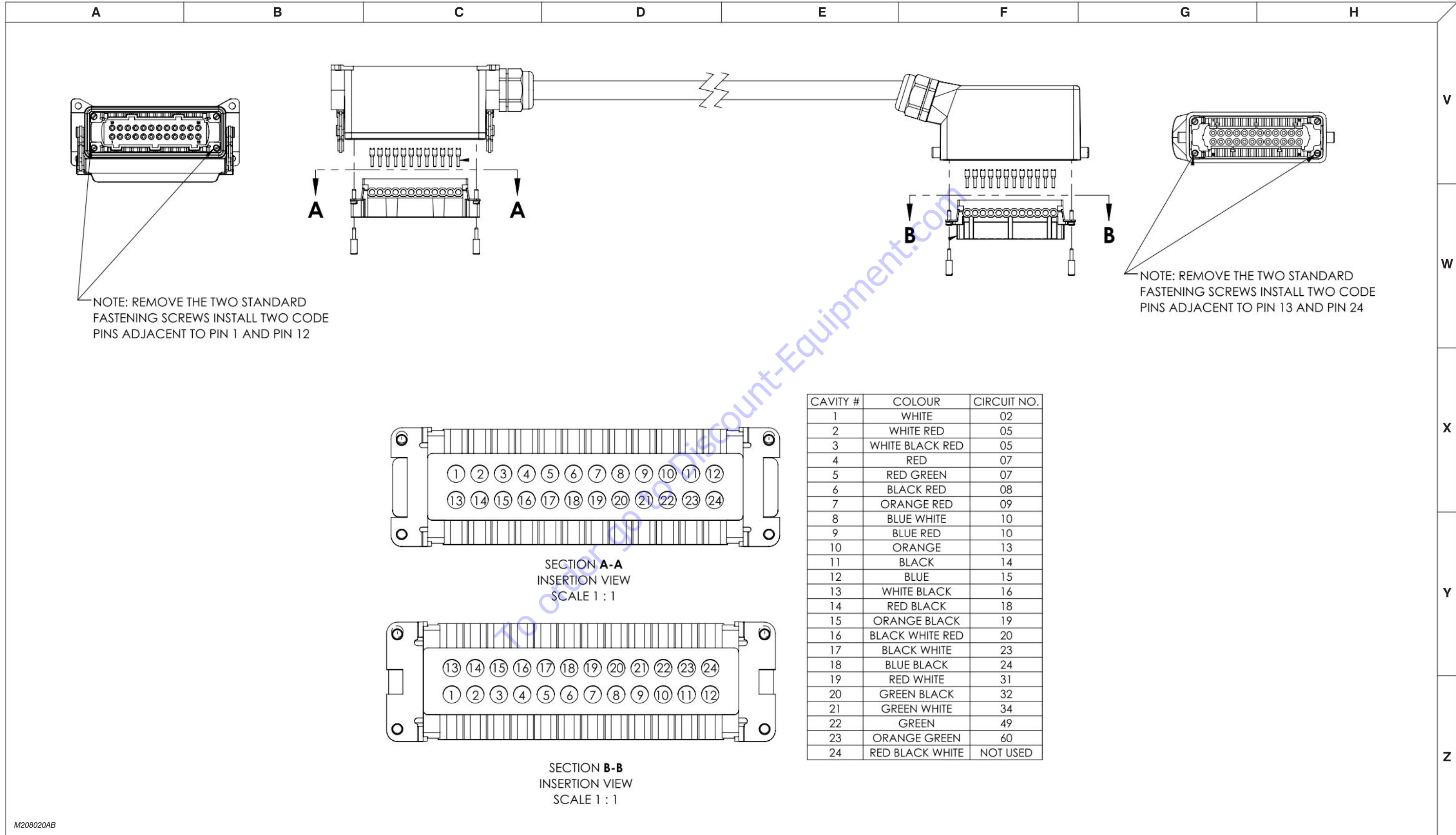
M208611AC

3.9 Base to Platform Control Cable - SJ6832 RT



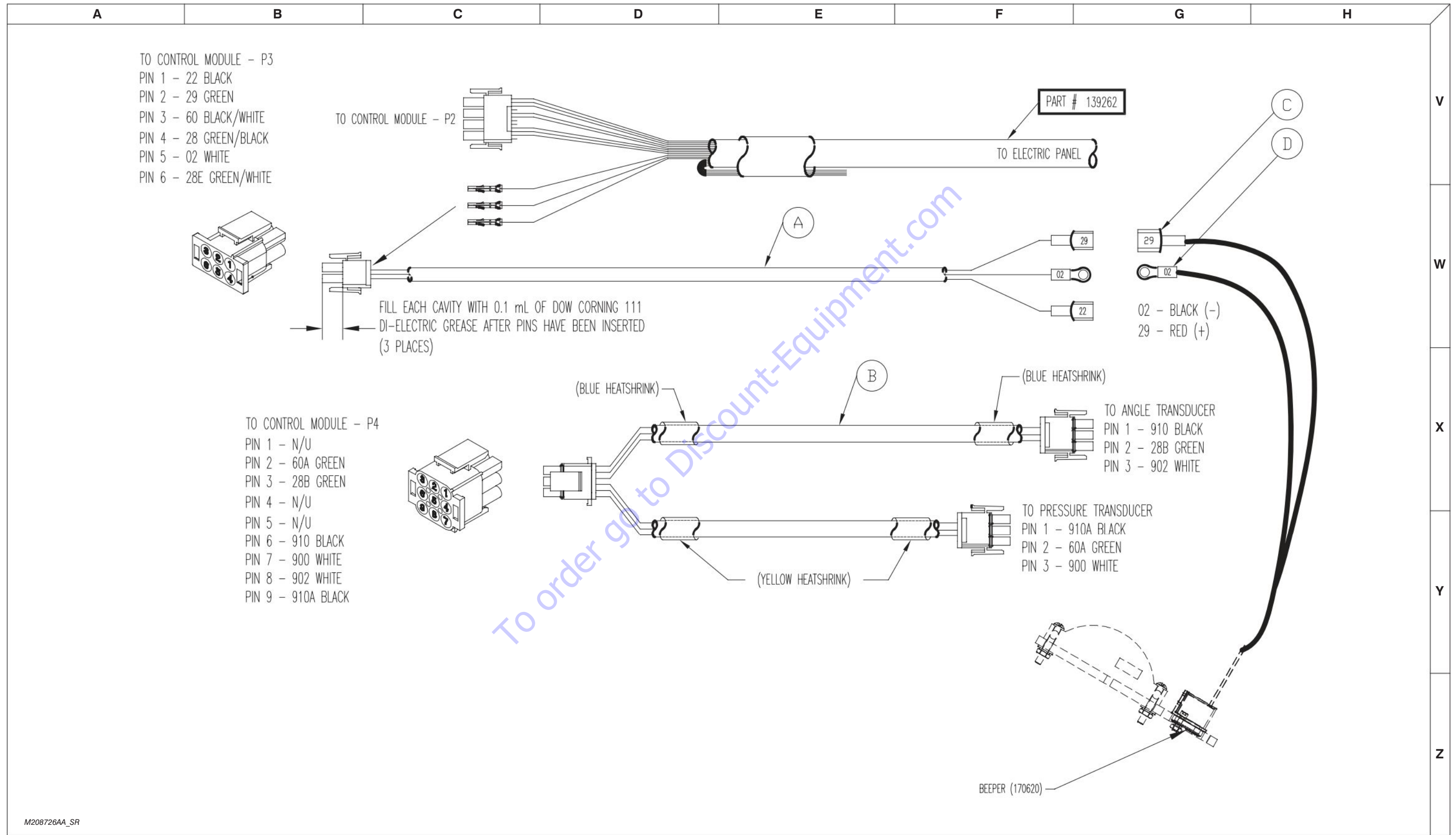
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3.10 Base to Platform Control Cable - SJ6826 RT



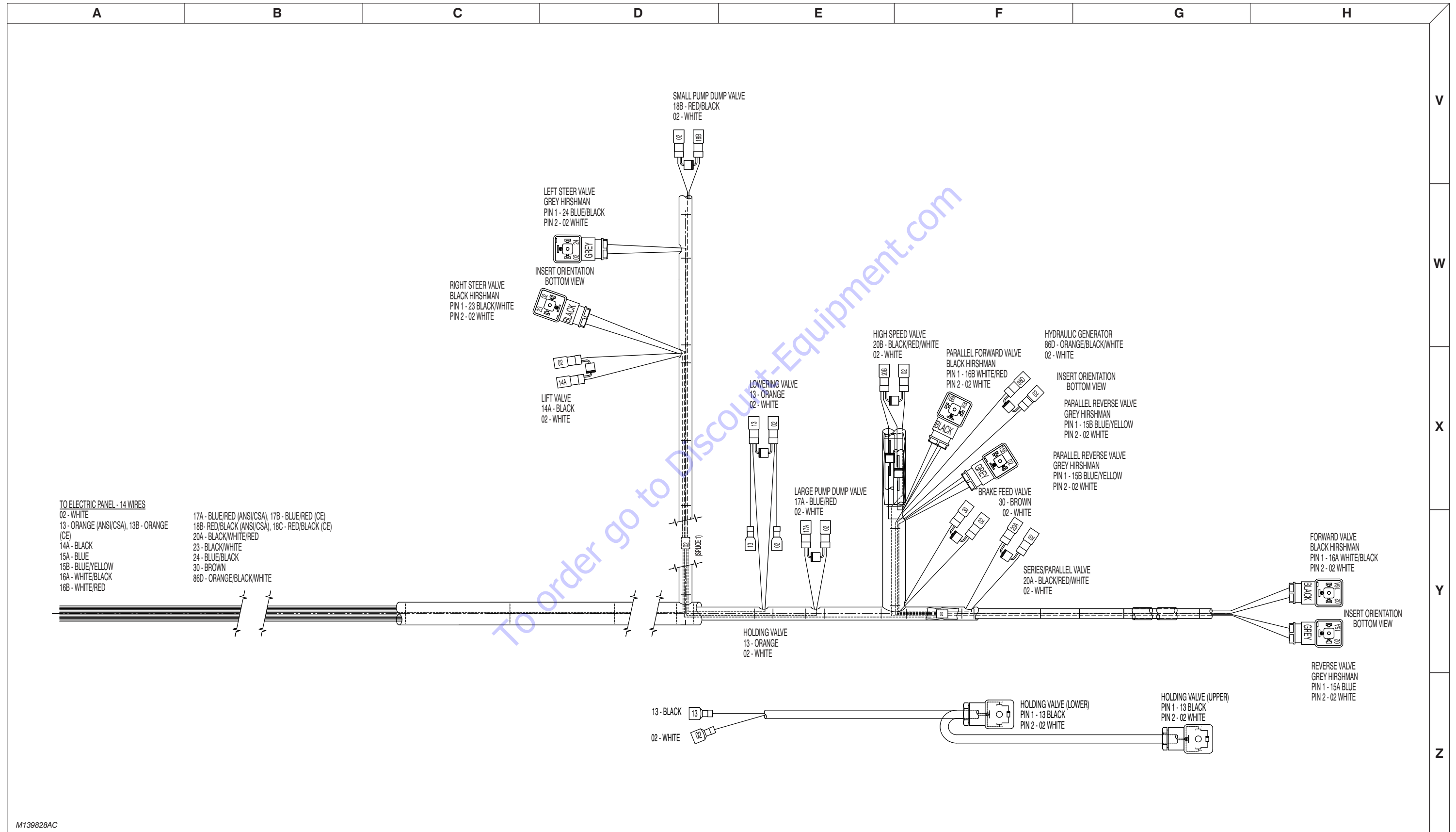
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3.11 Beeper Wiring Assembly



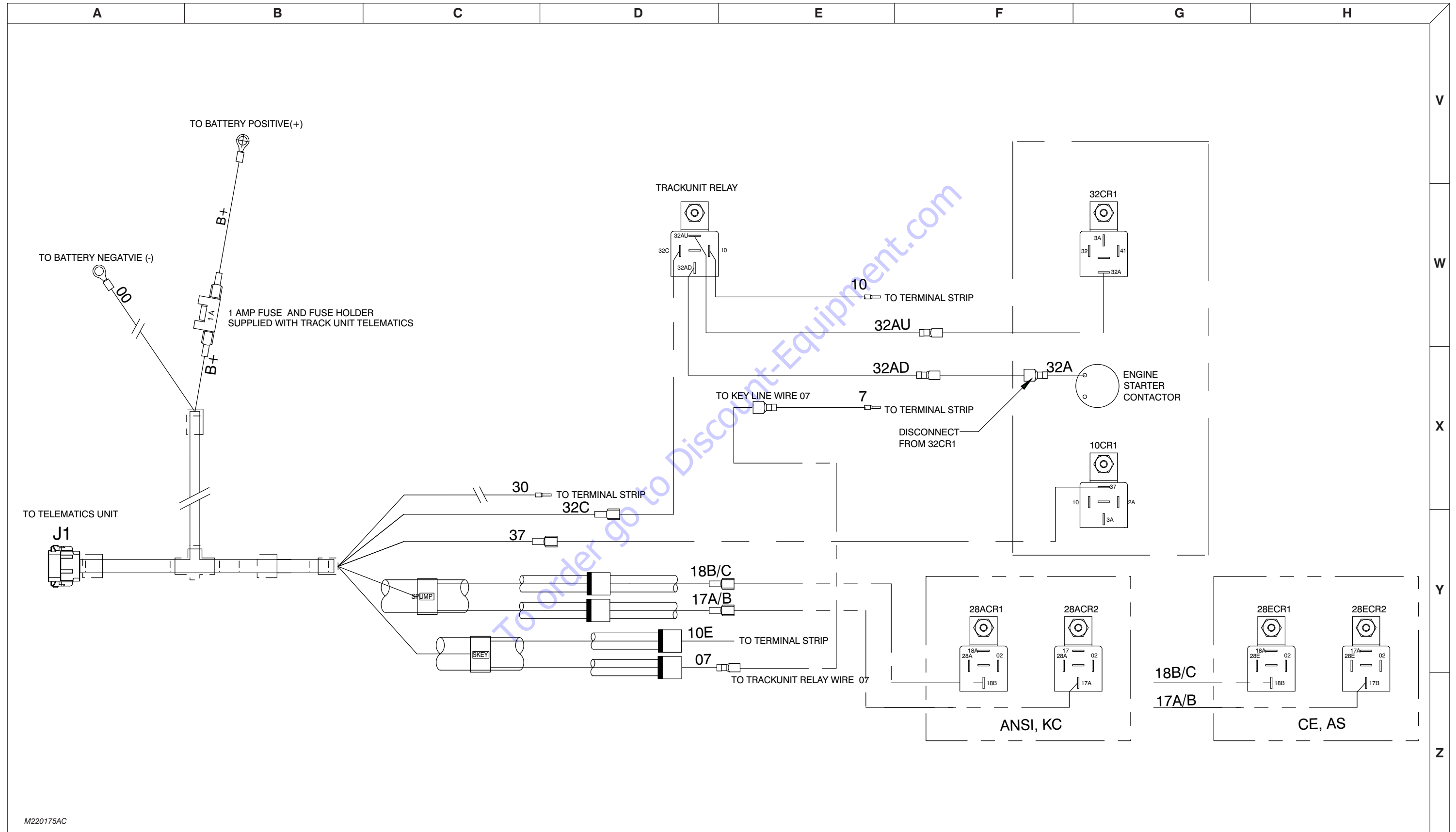
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3.12 Main Manifold Valve Harness Wiring Diagram



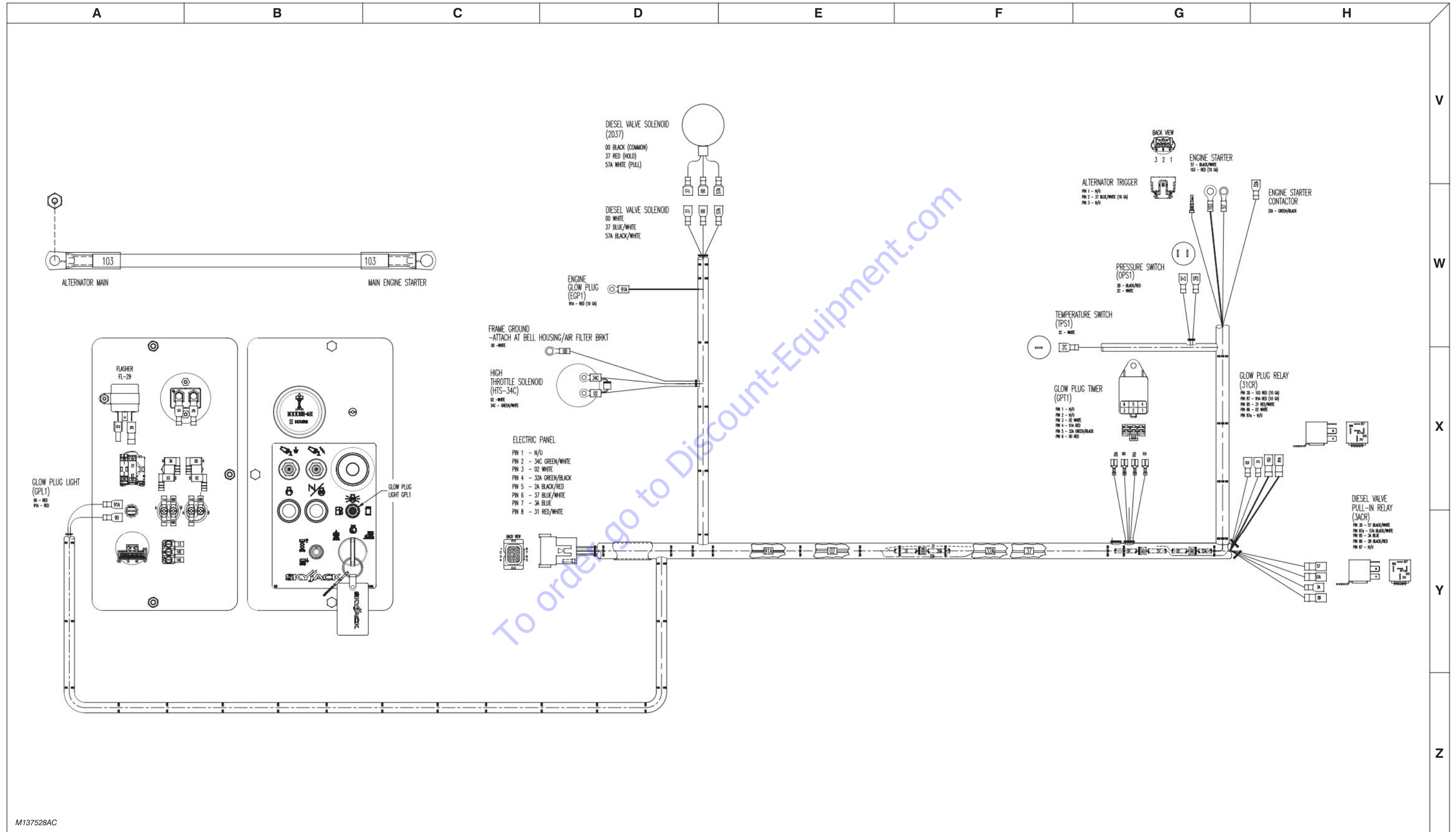
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3.13 Elevate Telematics Harness



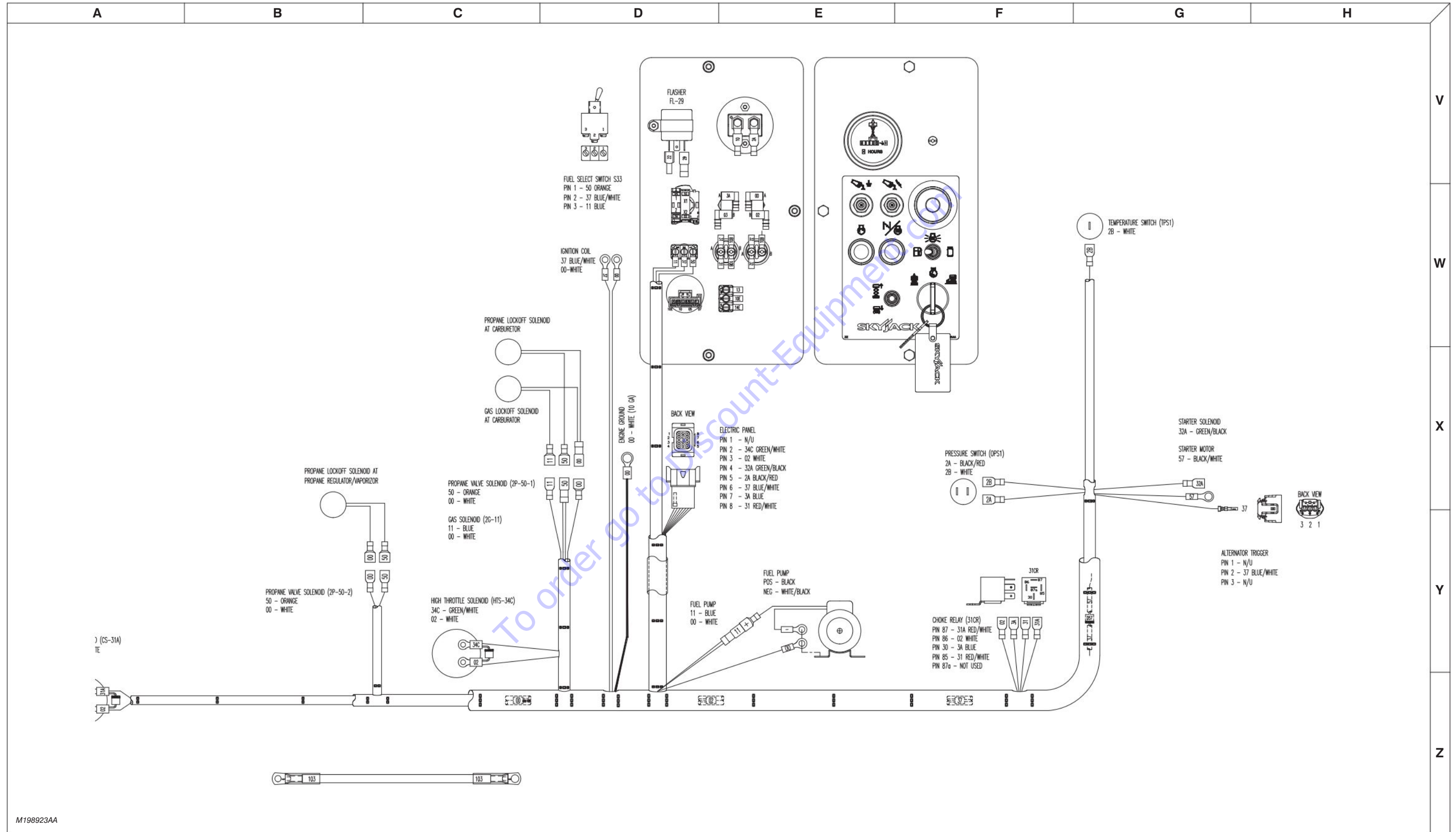
M220175AC

3.14 Kubota Engine Harness - Diesel



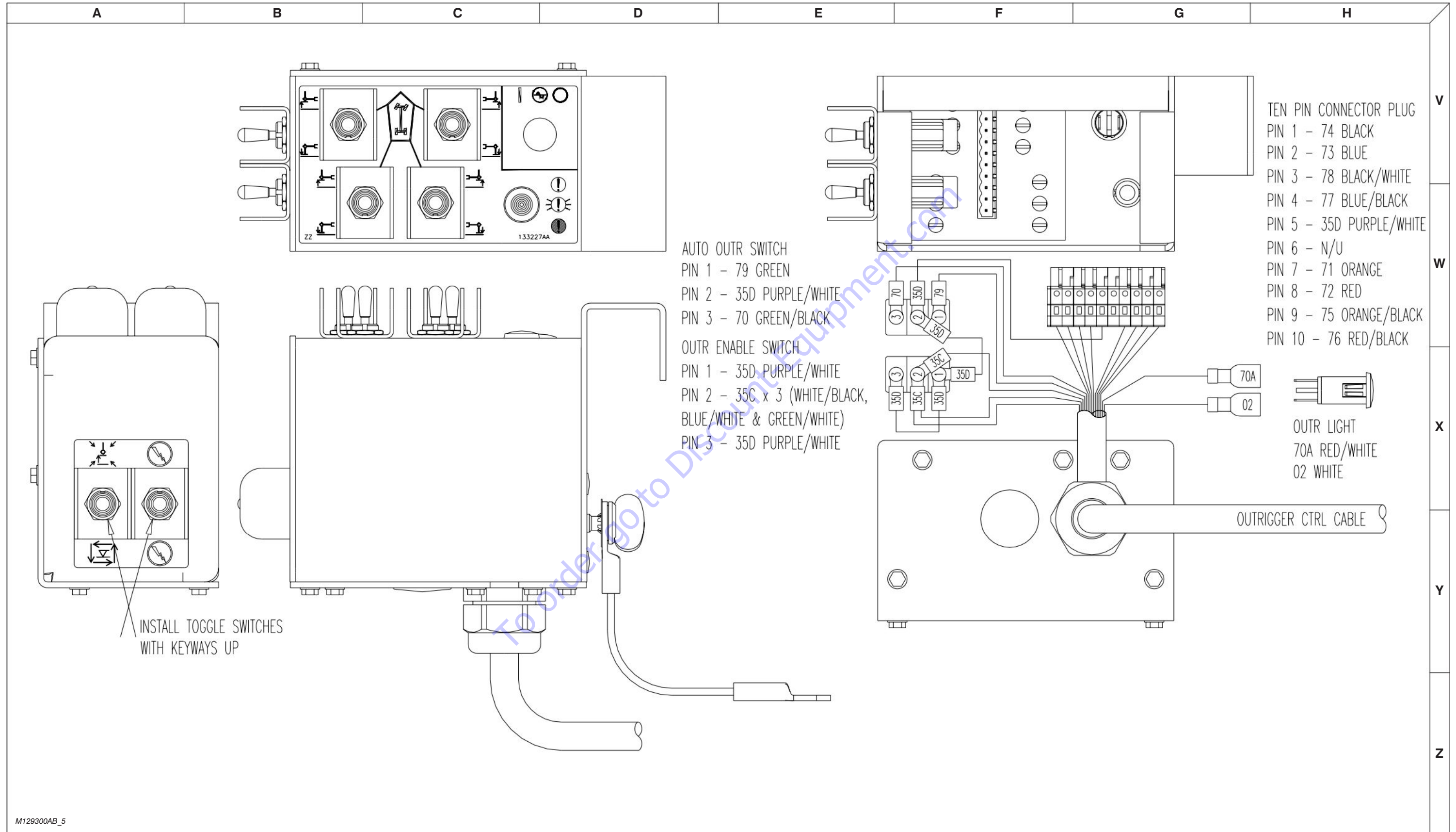
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3.15 Kubota Engine Harness - Dual Fuel

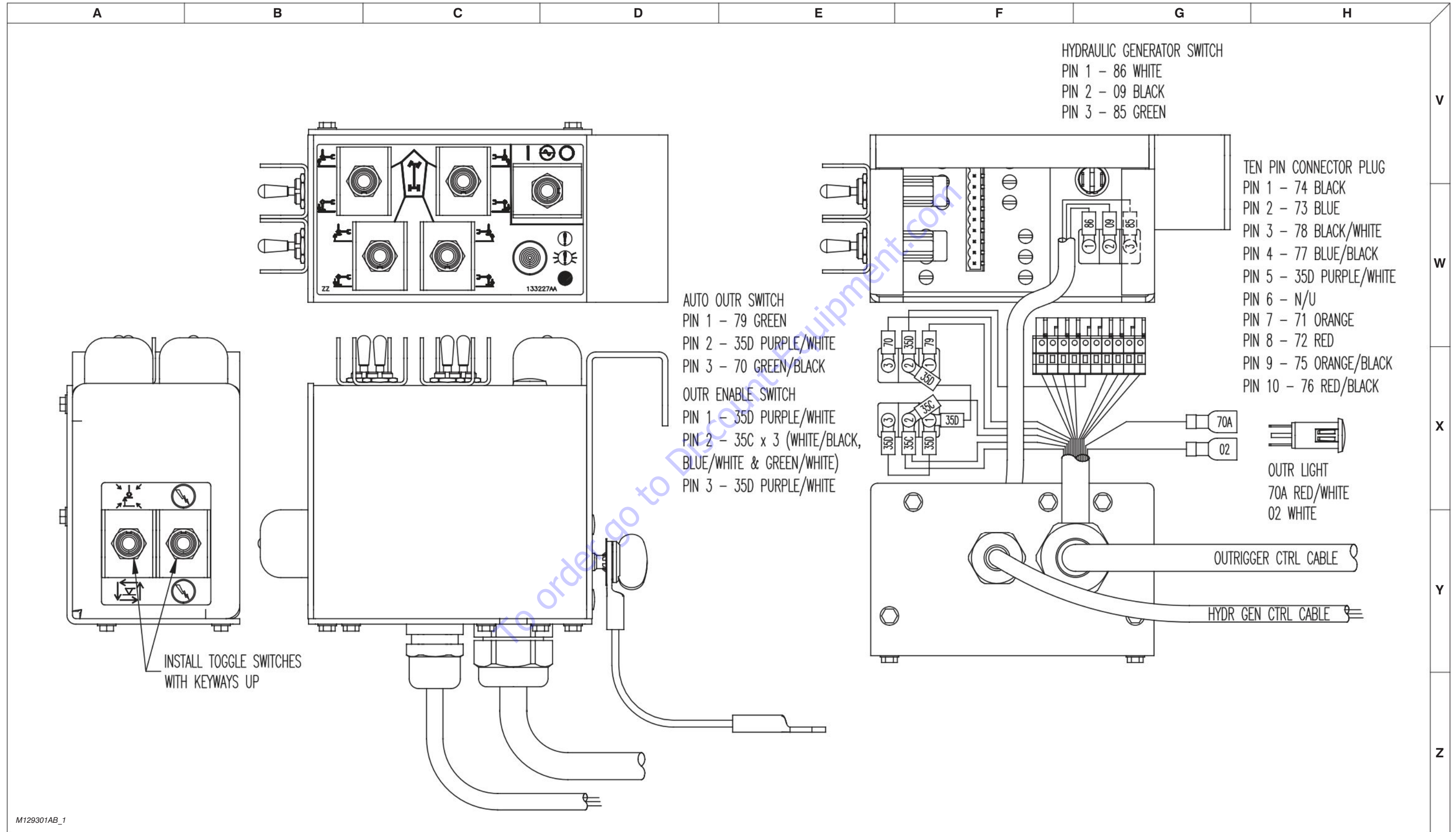


M198923AA

3.16 Outrigger Control Box

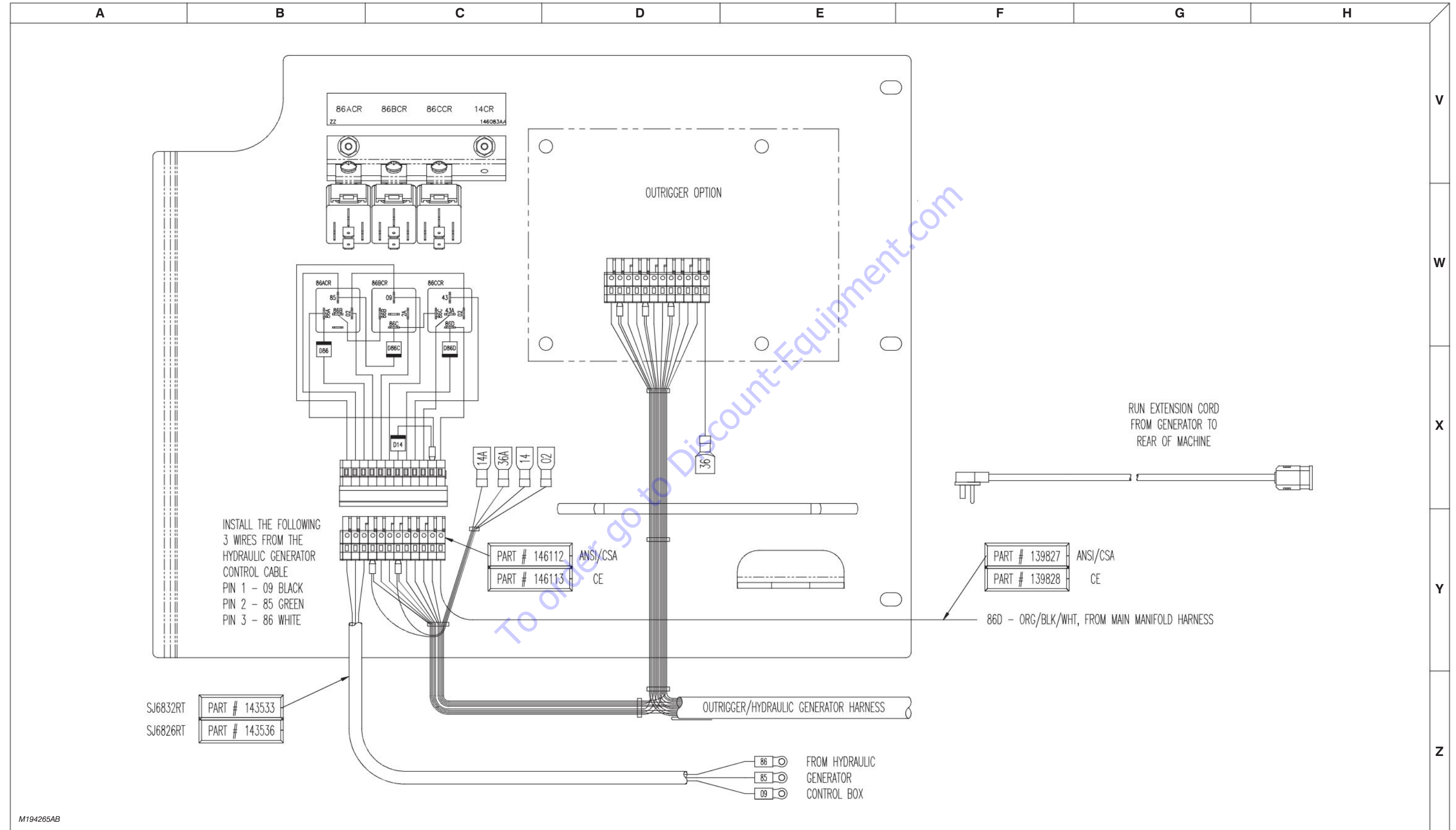


3.17 Outrigger/Hydraulic Generator Control Box

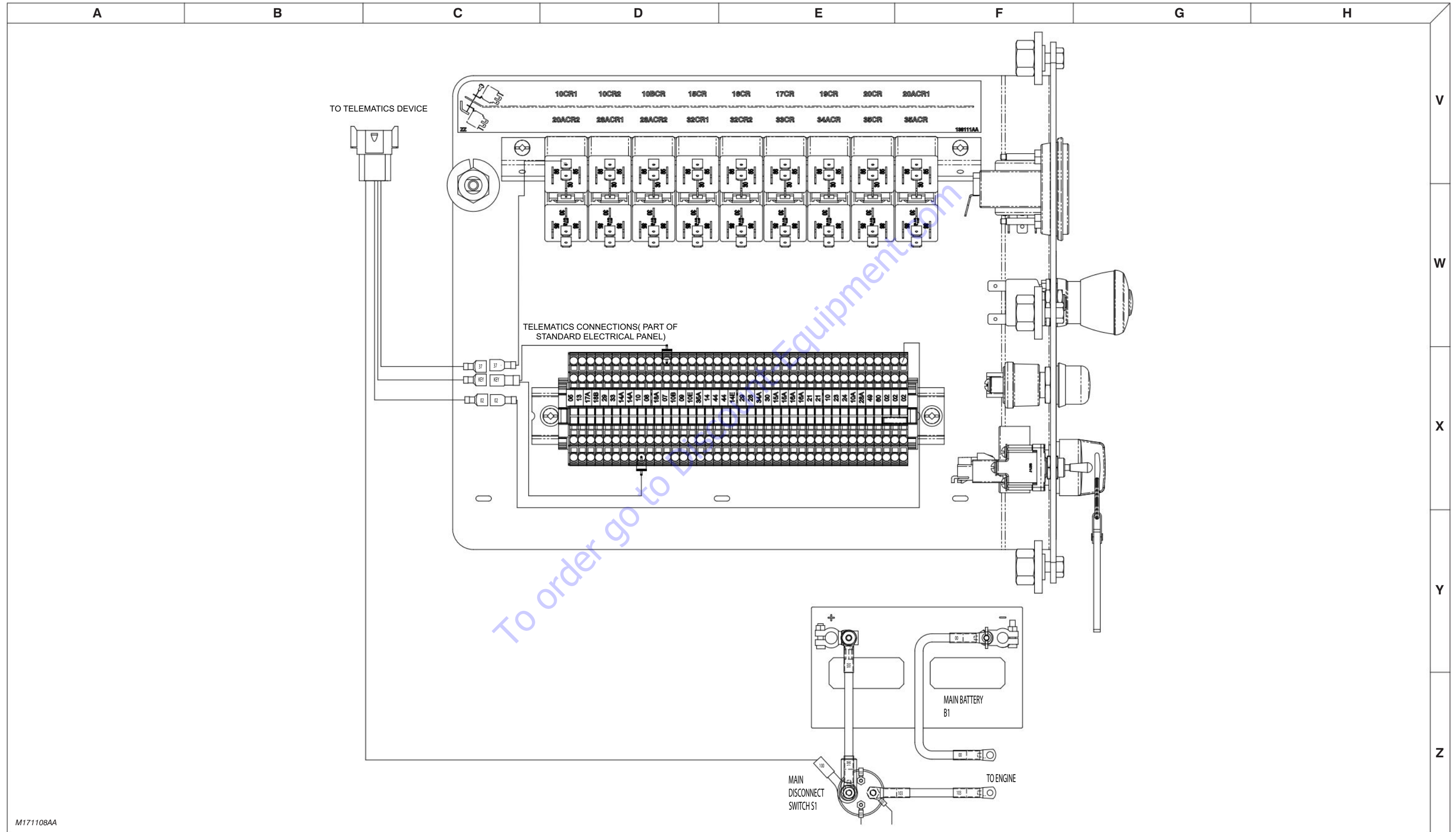


M129301AB_1

3.18 Hydraulic Generator Electrical Panel Assembly

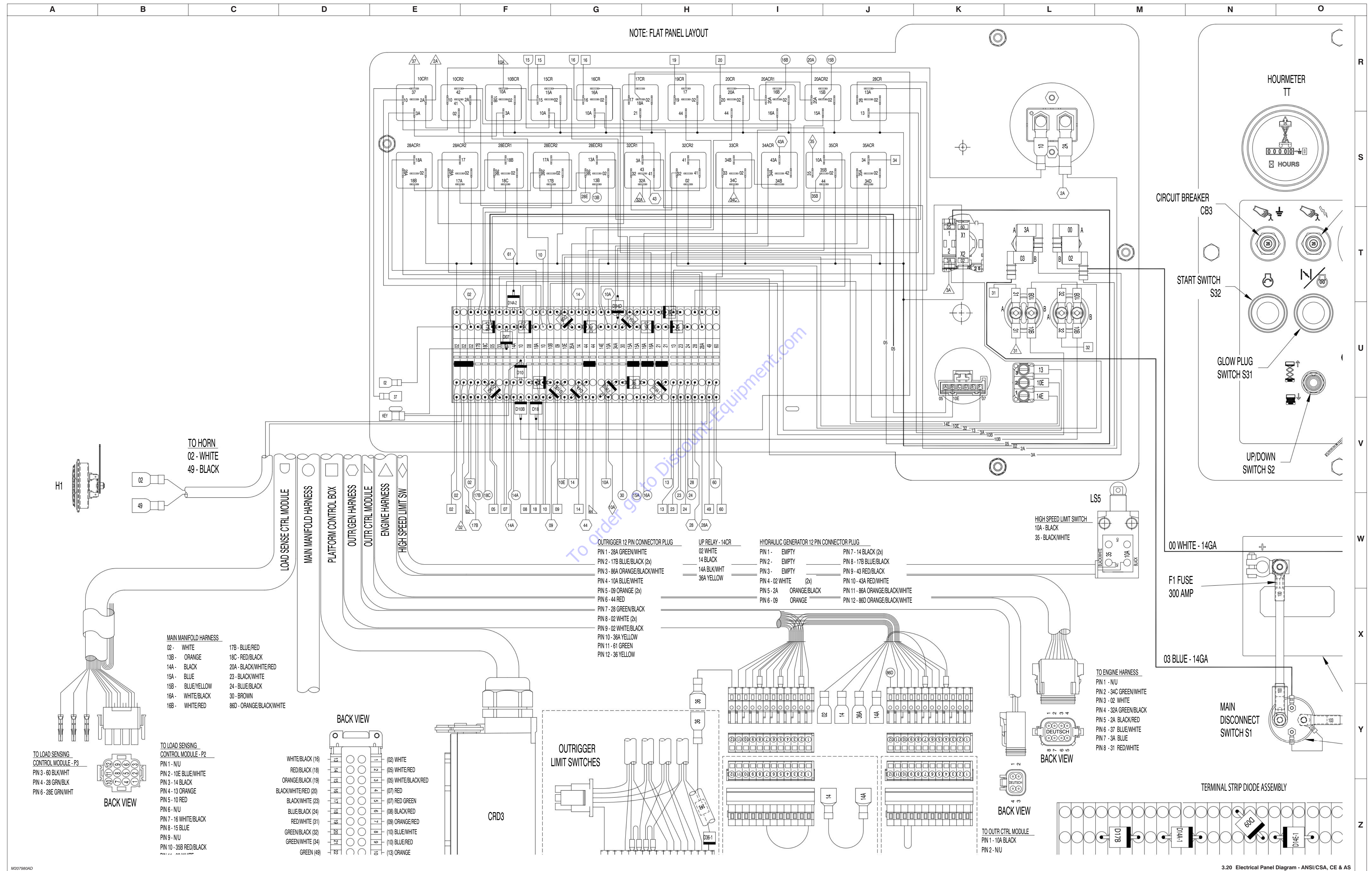


3.19 Telematic Harness Wiring Diagram



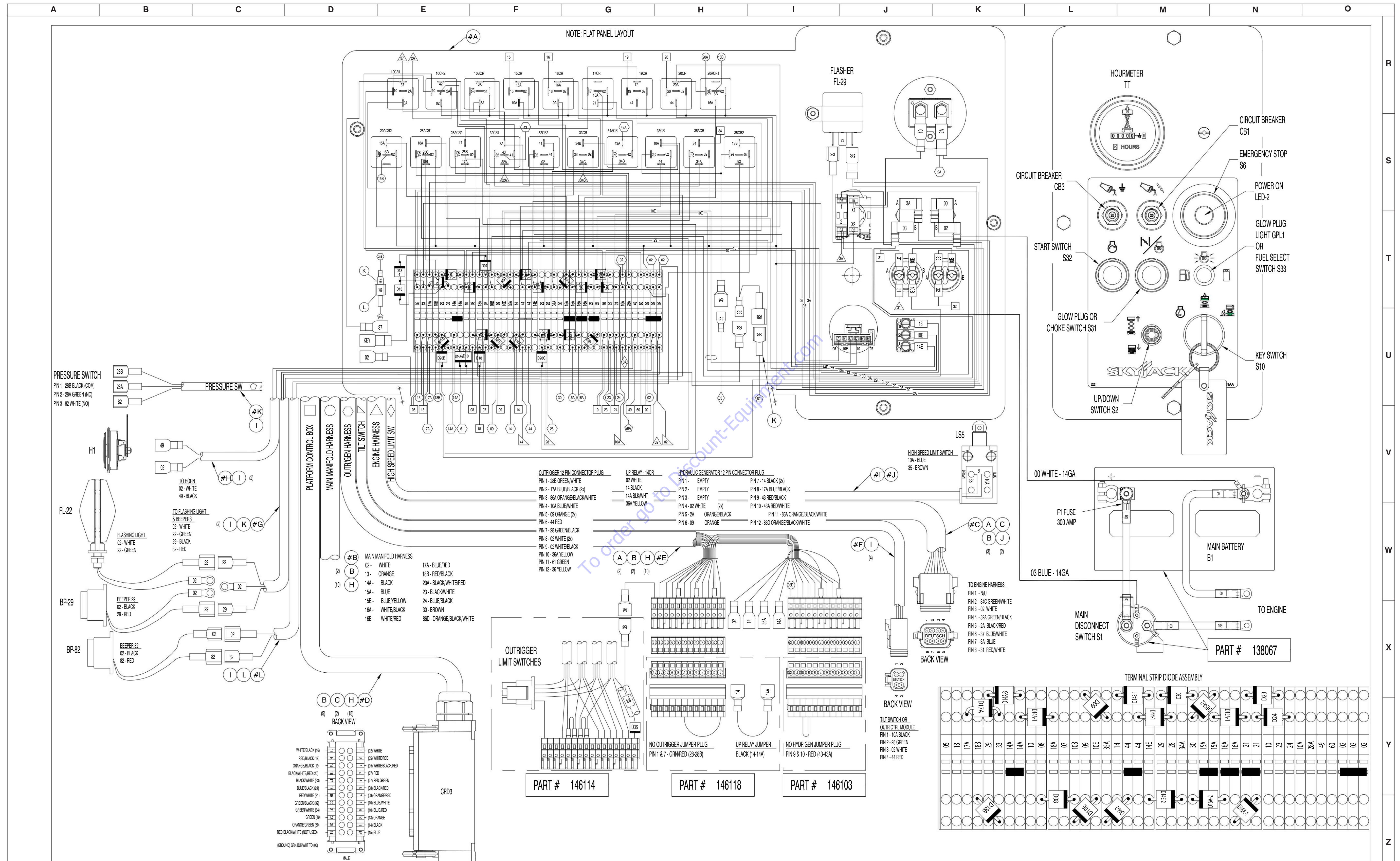
M171108AA

3.20 Electrical Panel Diagram - ANSI/CSA, CE & AS



M207980AD

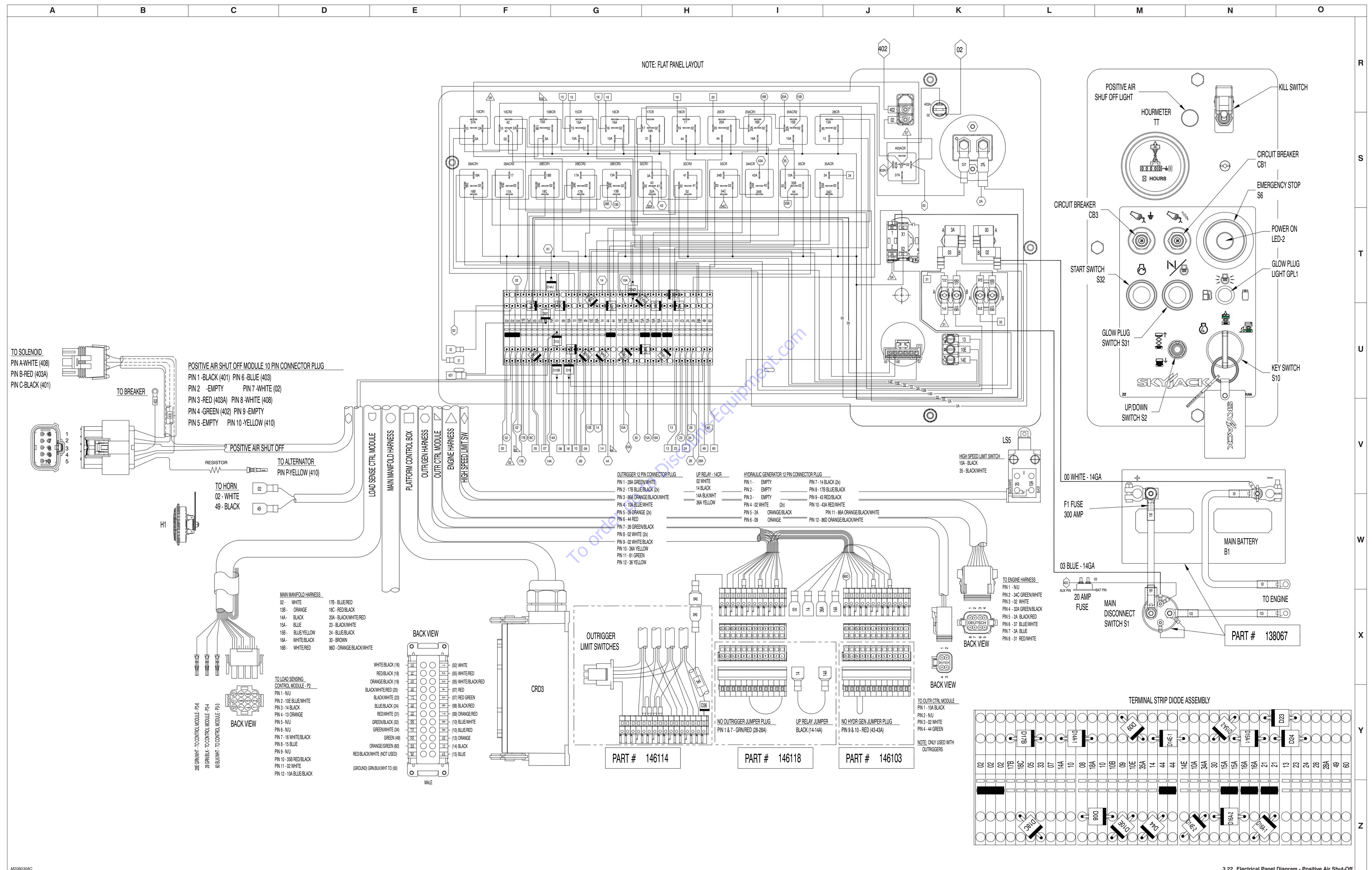
3.21 Electrical Panel Diagram - KC



M235014AB

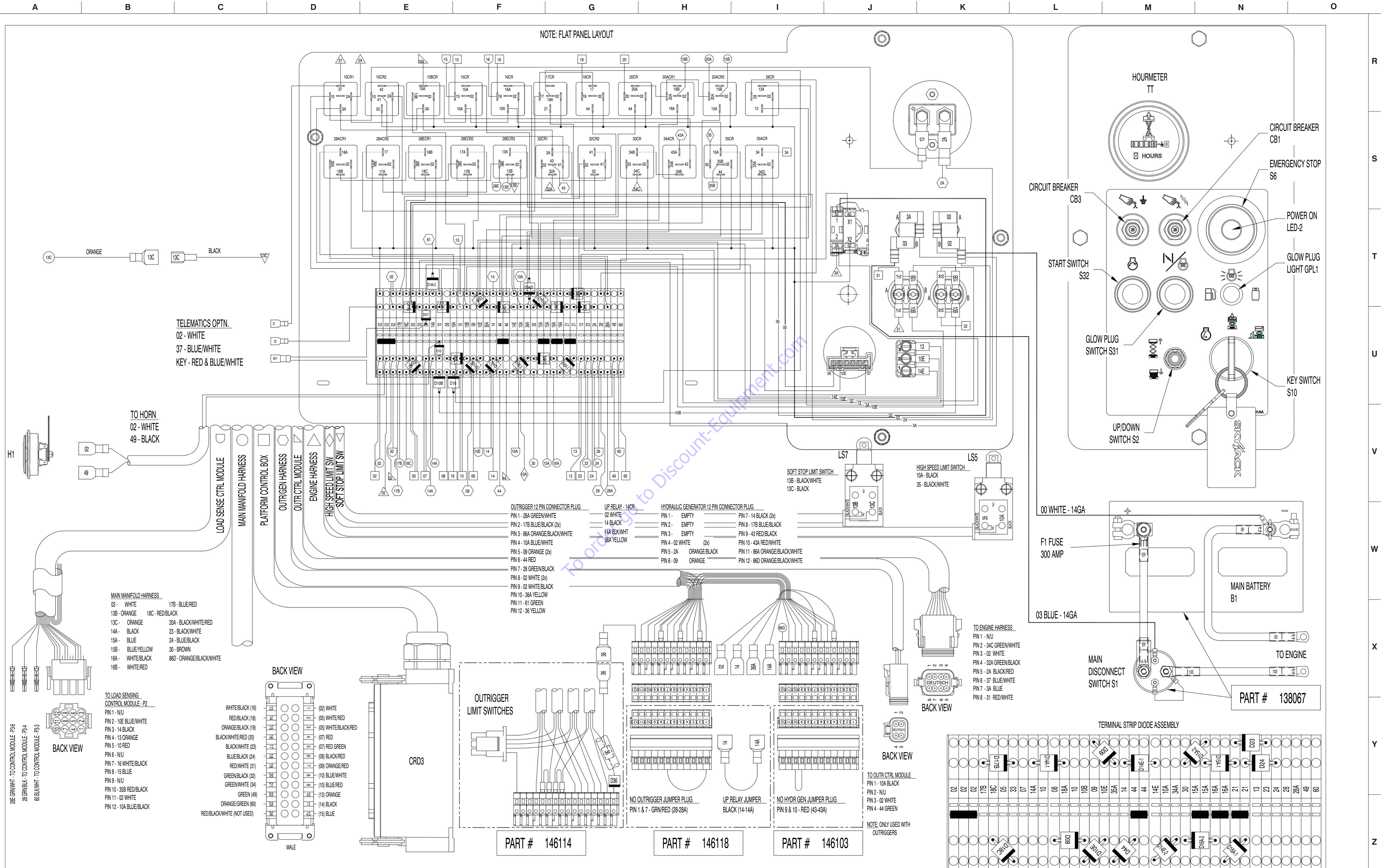
3.21 Electrical Panel Diagram - KC

3.22 Electrical Panel Diagram - Positive Air Shut-Off



M208030AC

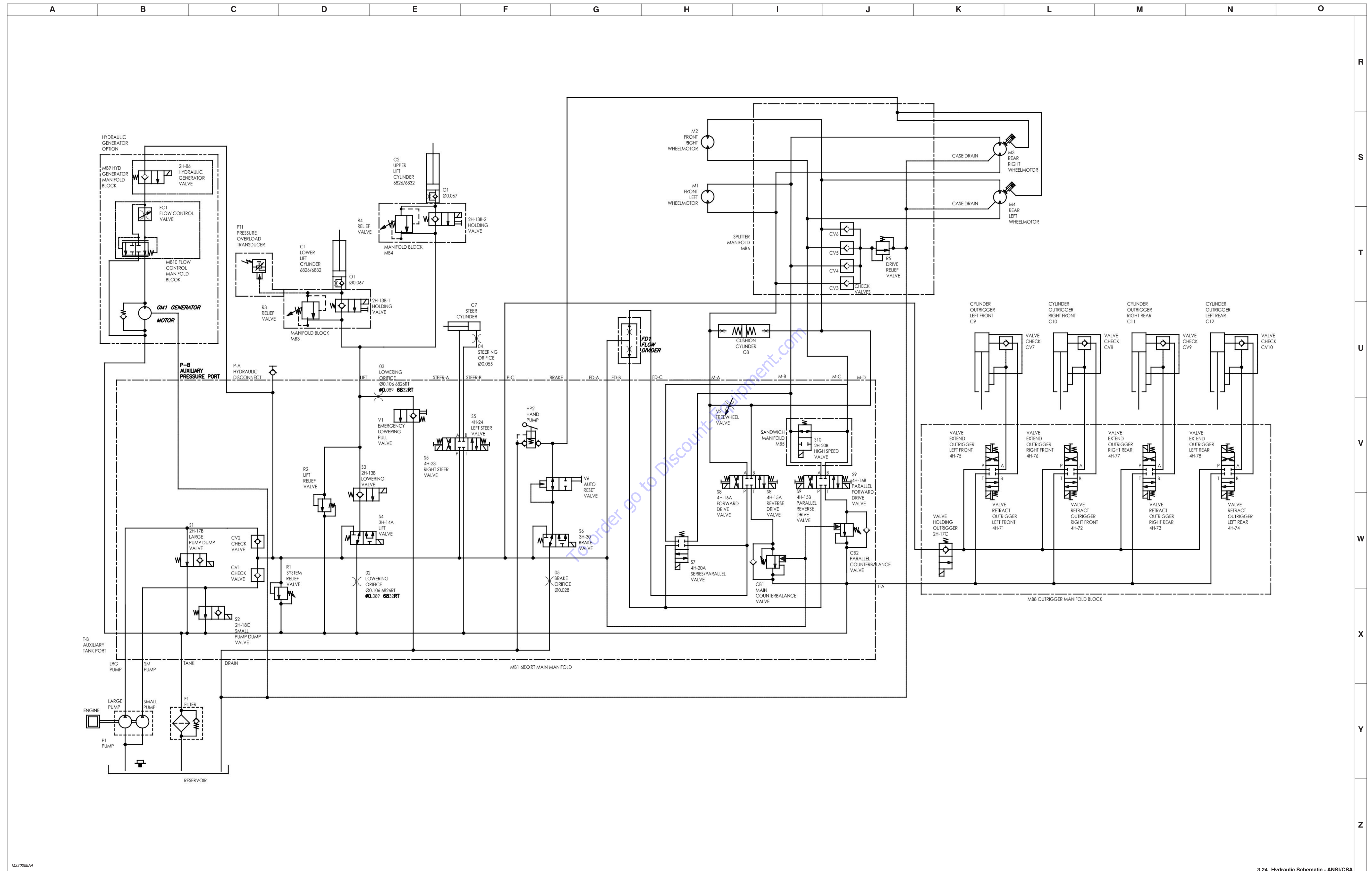
3.23 Electrical Panel Diagram - Soft Stop



M220073AC

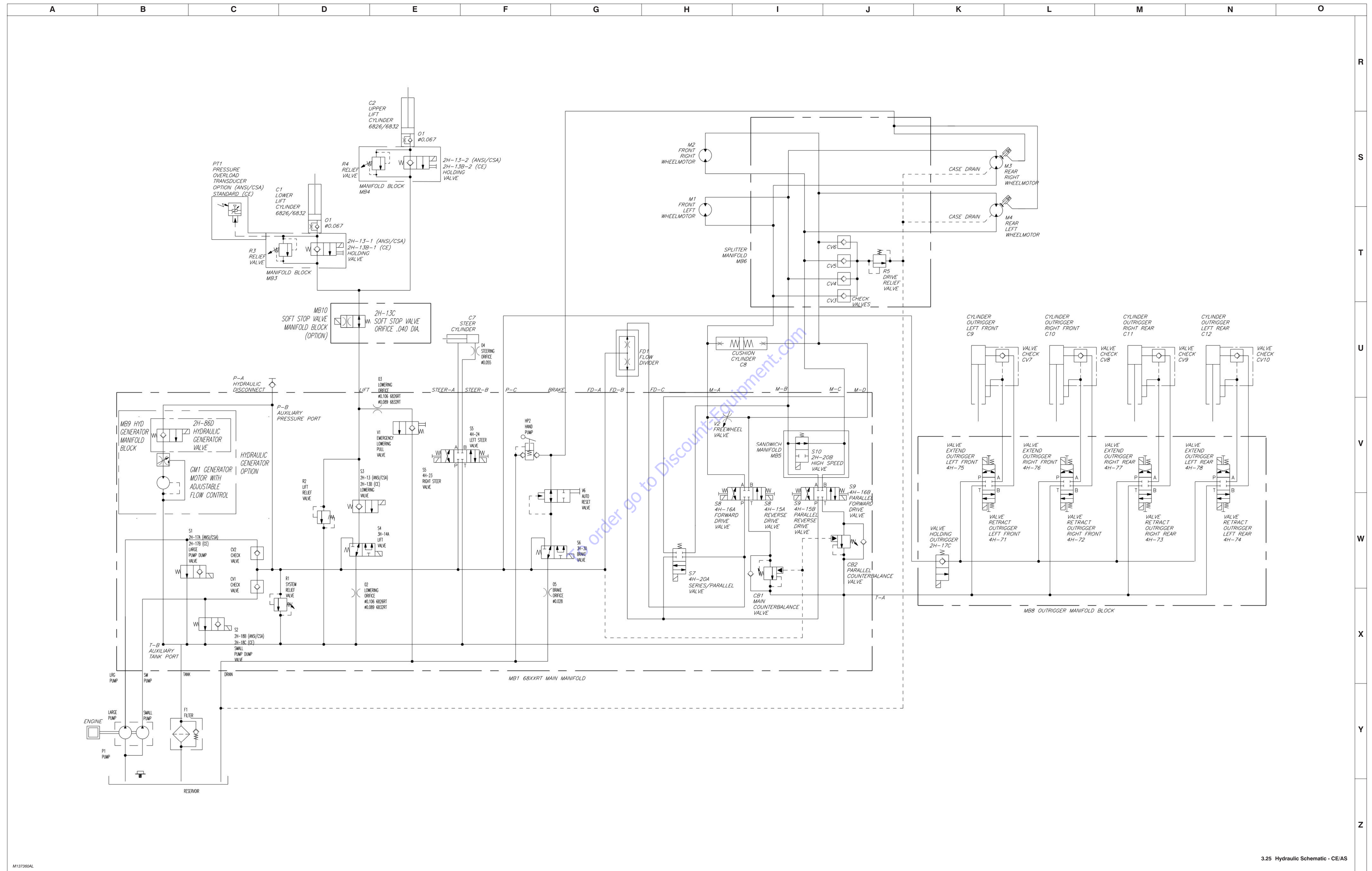
3.23 Electrical Panel Diagram - Soft Stop

3.24 Hydraulic Schematic - ANSI/CSA



M22009AA

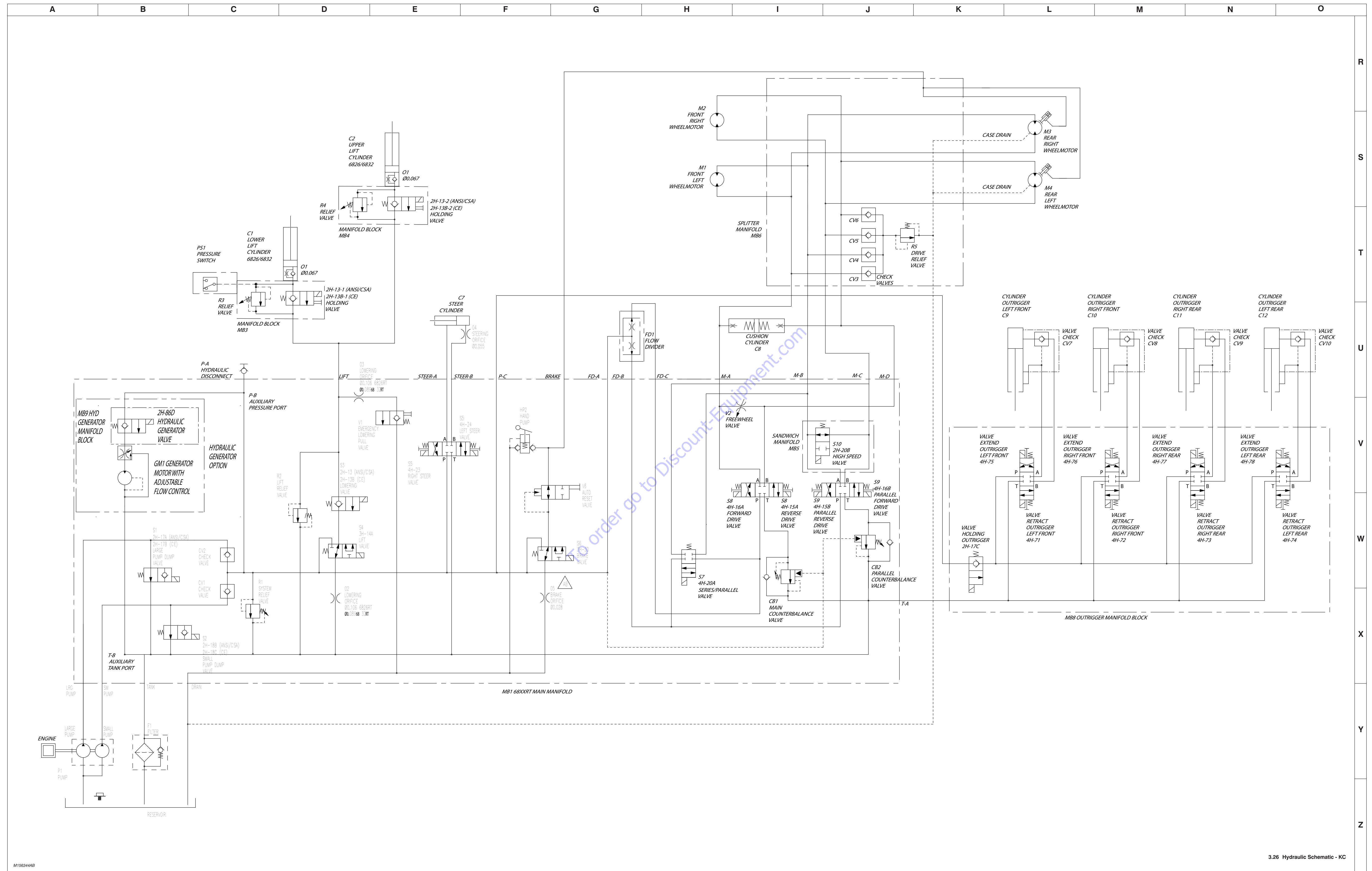
3.25 Hydraulic Schematic - CE/AS



M137360AL

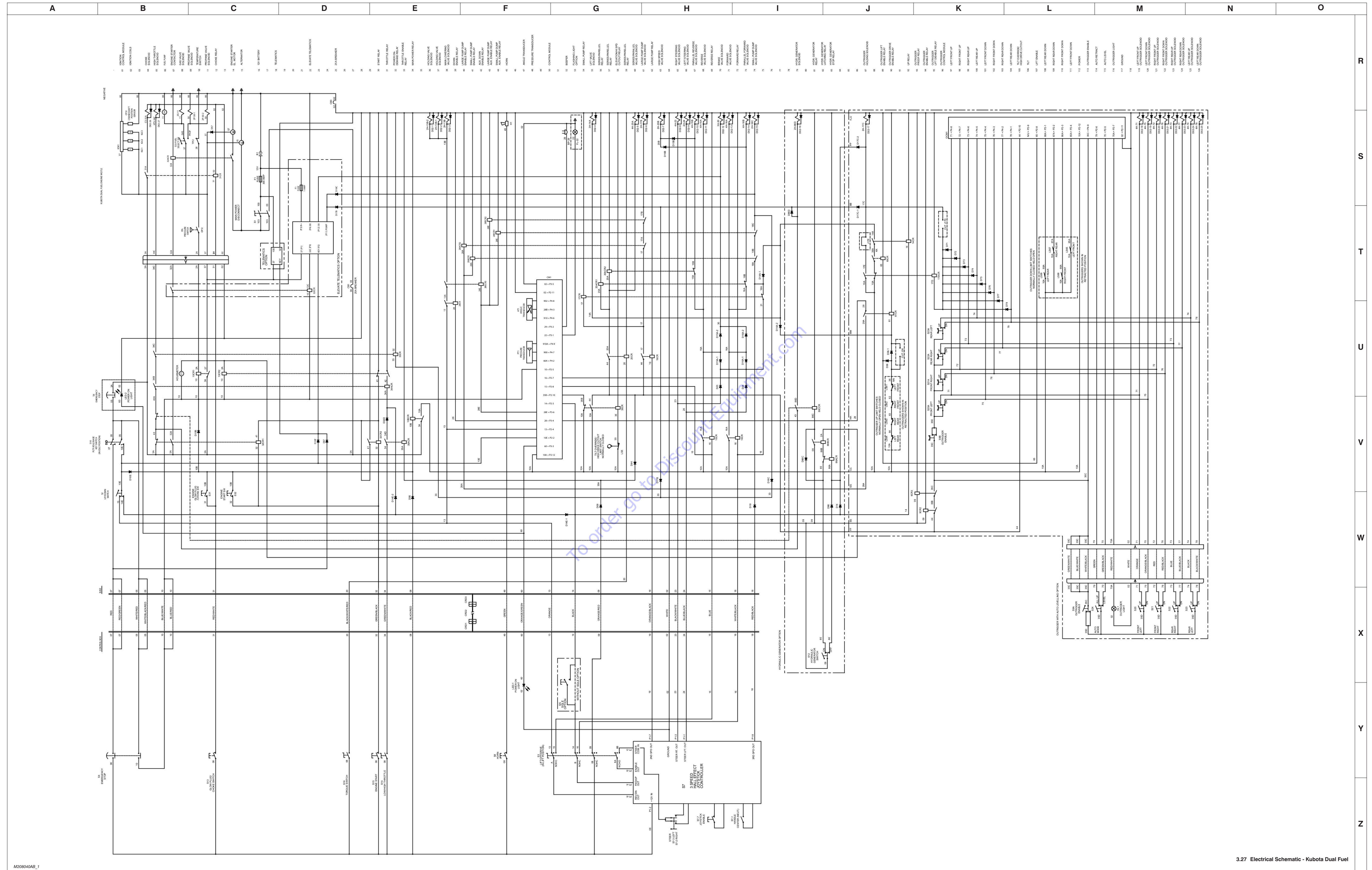
3.25 Hydraulic Schematic - CE/AS

3.26 Hydraulic Schematic - KC



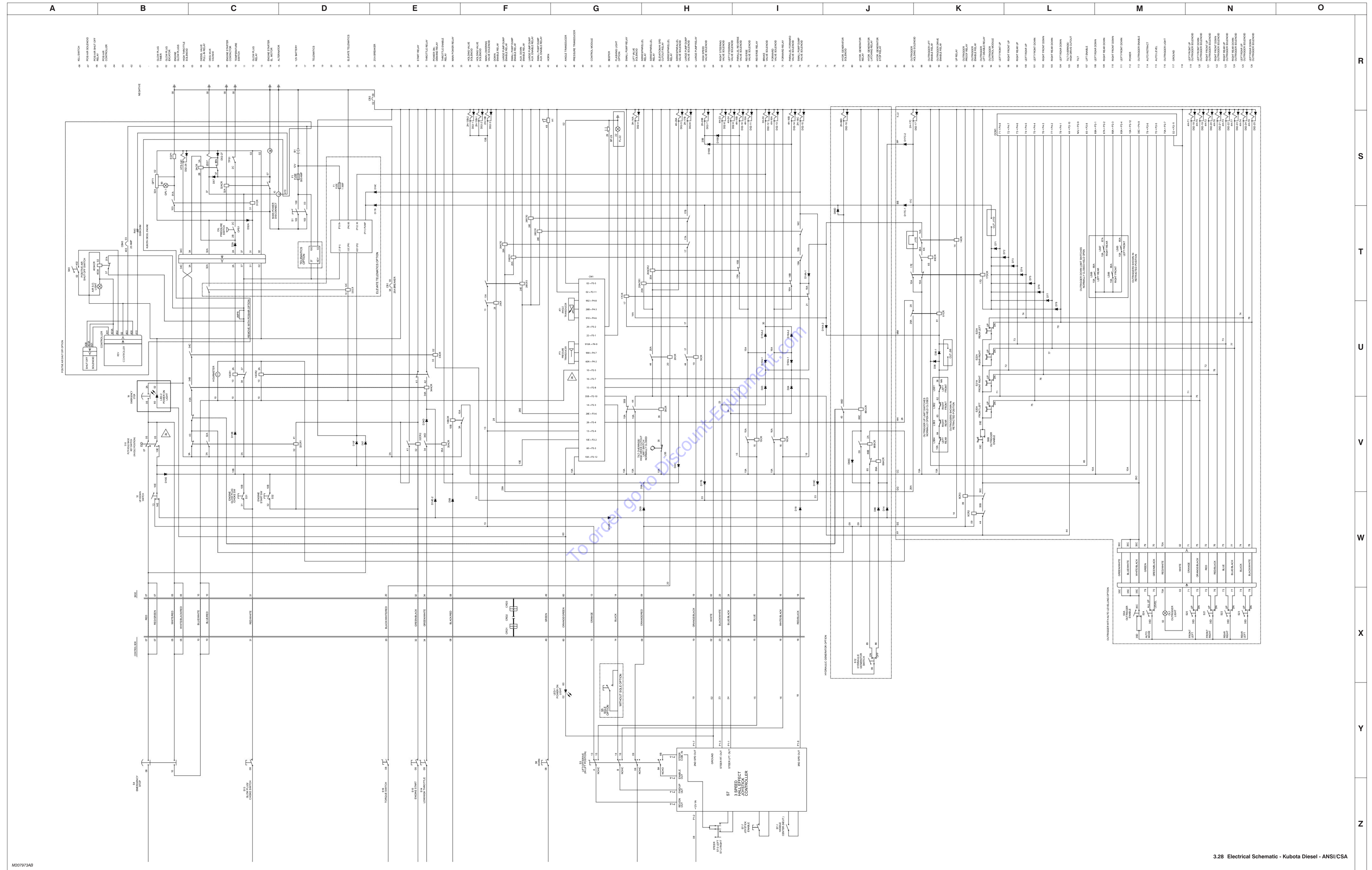
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3.27 Electrical Schematic - Kubota Dual Fuel WG752 - ANSI/CSA



M208040AB_1

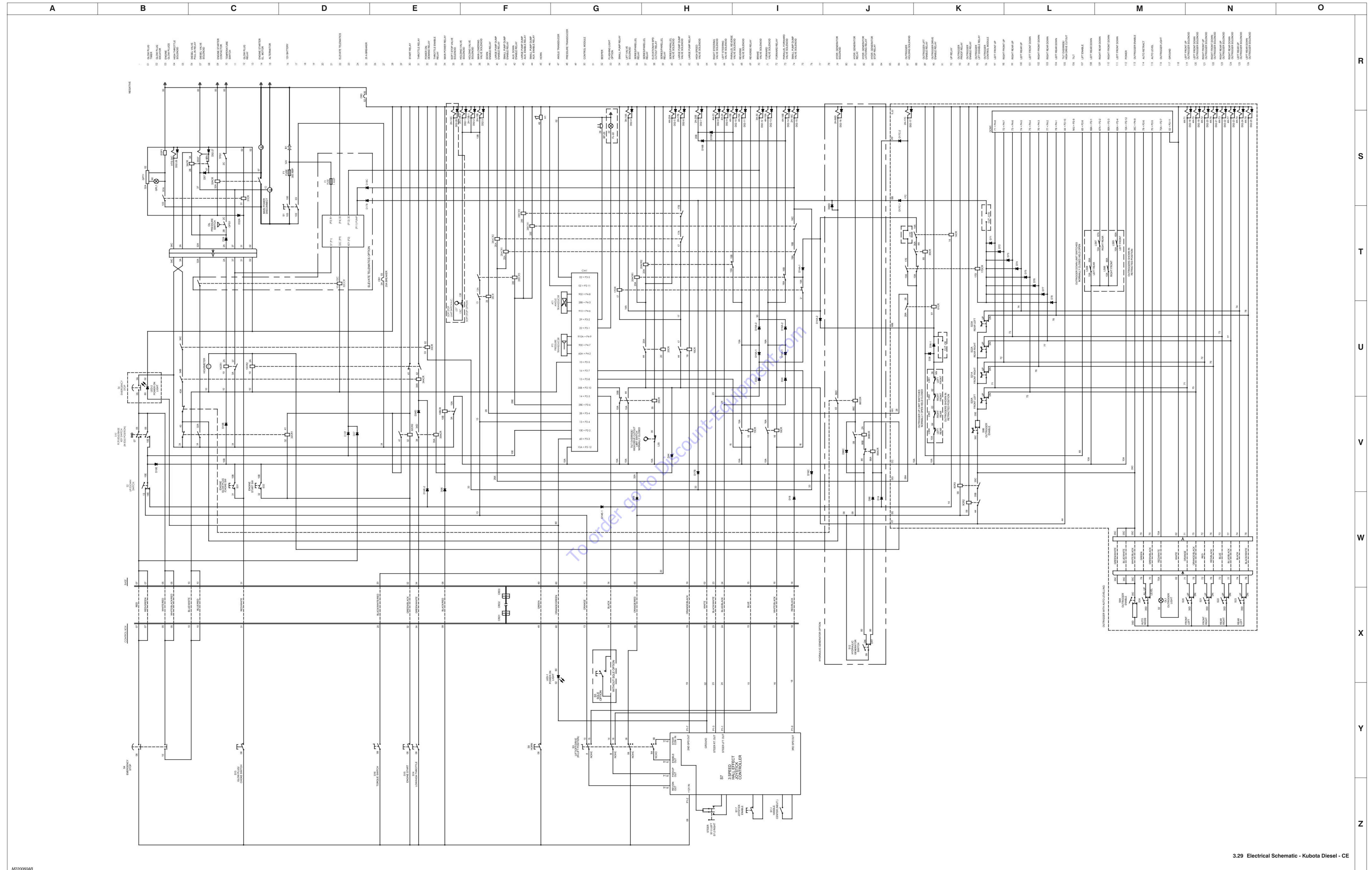
3.28 Electrical Schematic - Kubota Diesel D902 - ANSI/CSA



M20797348

3.28 Electrical Schematic - Kubota Diesel - ANSI/CSA

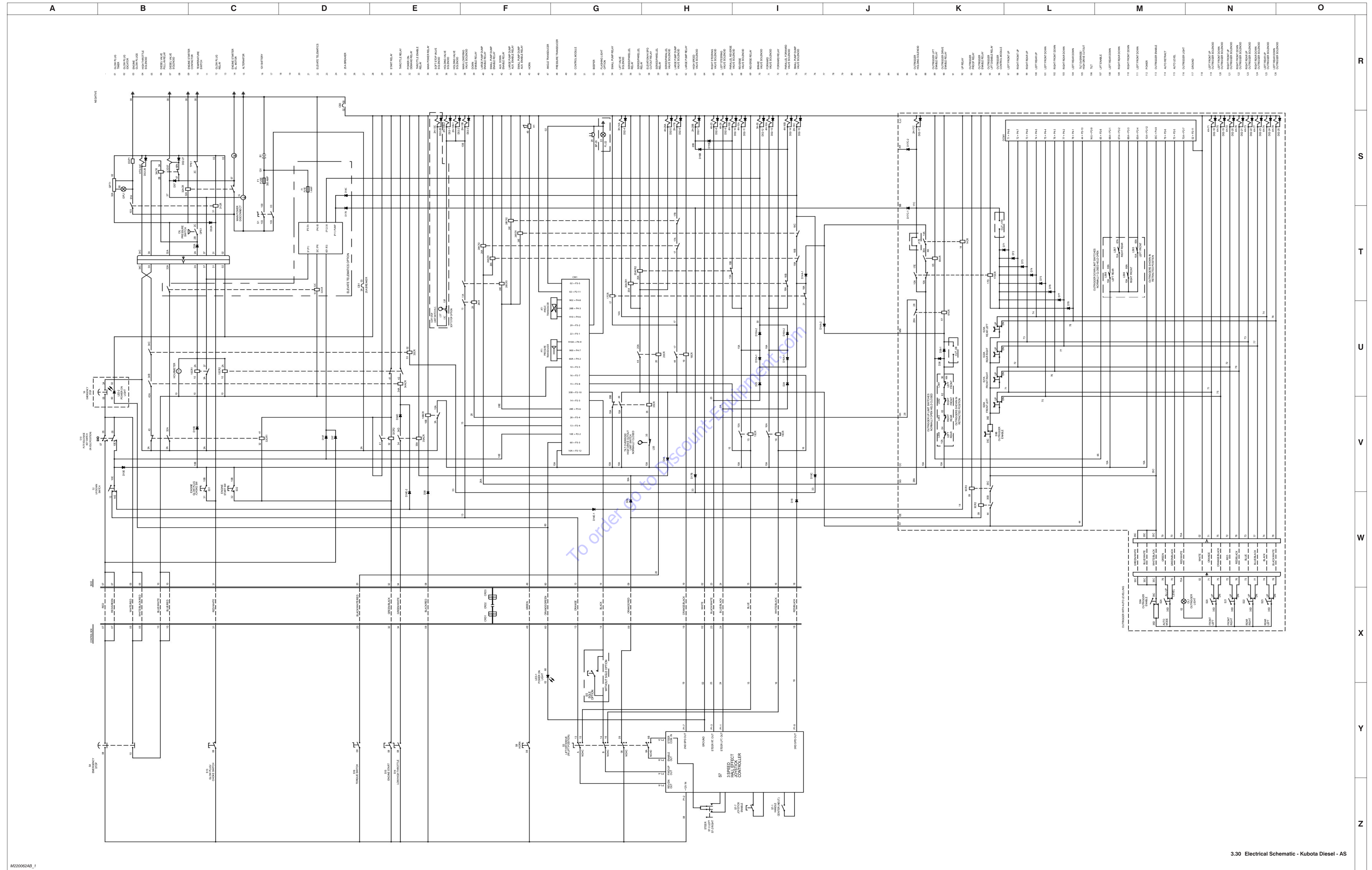
3.29 Electrical Schematic - Kubota Diesel D902- CE



3.29 Electrical Schematic - Kubota Diesel - CE

M2200640

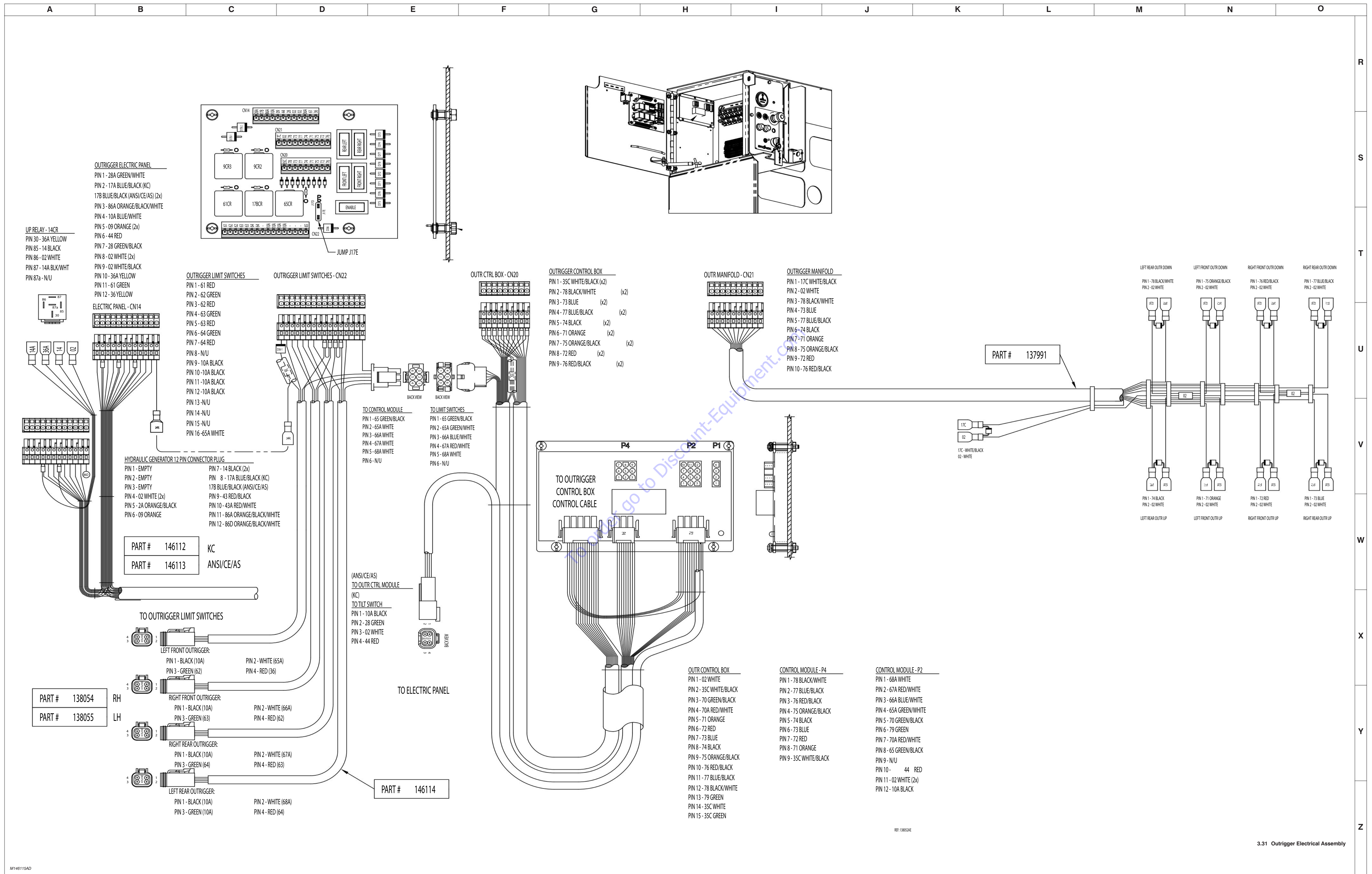
3.30 Electrical Schematic - Kubota Diesel D902 - AS



M220062AB_1

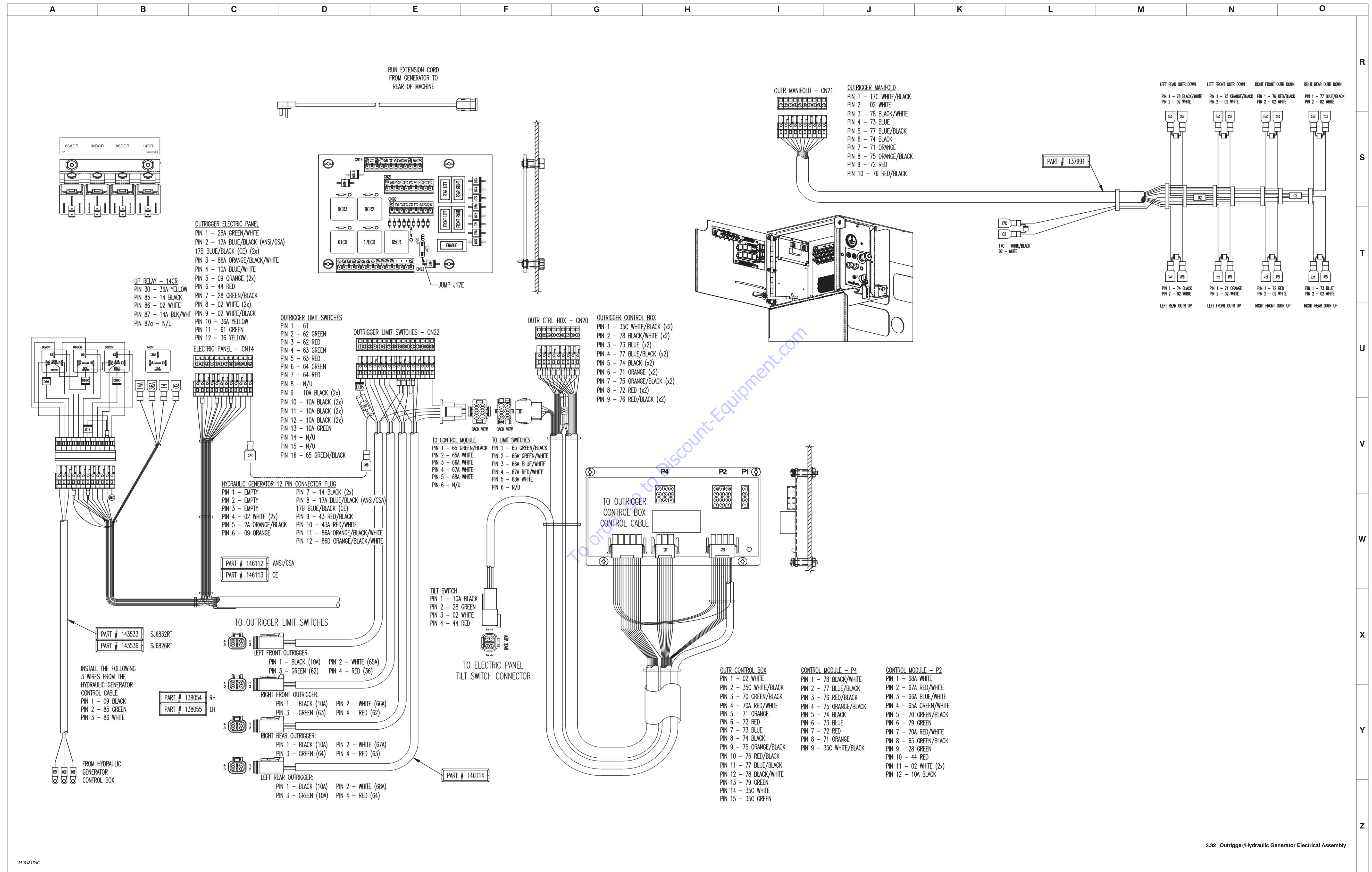
3.30 Electrical Schematic - Kubota Diesel - AS

3.31 Outrigger Electrical Assembly



M146115AD

3.32 Outrigger/Hydraulic Generator Electrical Assembly



M194317AC

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

4.2-1 All Controls Inoperative

1. Battery disconnected or faulty.	Connect battery and test for proper supply voltage
2. Dirty or loose battery terminals.	Clean and tighten connections.
3. Battery charge low.	Check with a hydrometer. Reading should be 1.275 (fully charged). Recharge if low reading. Replace if reading difference between cells is 0.050.
4. Main battery cables open or defective.	Check continuity. Replace if defective.
5. Defective Main Fuse F1 (300 Amp).	Check fuse. Replace if defective.
6. Open or defective Main Power Disconnect switch S1.	Close switch. Check continuity between wire #100 and wire #103 on switch. Check continuity between wire #03 and wire #103 on switch. Replace switch if no continuity between either one of the two switch poles.
7. Loose or broken wire #03 from Main Power Disconnect switch S1 to circuit breaker CB1.	Check continuity. Replace if defective.
8. Tripped or defective circuit breaker CB1.	Reset breaker. Check for defective wiring. Replace breaker if defective.
9. Loose or broken wire #3A from circuit breaker CB1 to Power Relay 10CR1.	Check continuity. Replace if defective.
10. Loose or broken wire #3A from Power Relay 10CR1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
11. Loose or broken wire #3A from Main Power Relay 10BCR to Anti-Start Relay 32CR1.	Check continuity. Replace if defective.
12. Loose or broken wire #3A from Anti-Start Relay 32CR1 to Base Emergency Stop switch S6.	Check continuity. Replace if defective.
13. Defective Base Emergency Stop switch S6.	Operate switch. Check continuity between wire #3A and wire #05 on switch when closed. Replace if defective.
14. Loose or broken wire #05 from Base Emergency Stop switch S6 to Base terminal block TB-1.	Check continuity. Replace if defective.
15. Defective Idle/Platform/Base Key switch S10.	Select function with switch. Check continuity between wire #05 and wire #07 on switch. (Platform selected) Check continuity between wire #05 and wire #10E on switch. (Base selected) Replace switch if no continuity during correct switch function.

4.2-2 No Power to Platform

1. Open or defective Idle/Platform/Base Key switch S10.	<p>Select function with switch.</p> <p>Check continuity between wire #05 and wire #07 on switch. (Platform selected)</p> <p>Check continuity between wire #05 and wire #10E on switch. (Base selected)</p> <p>Replace switch if no continuity during correct switch function.</p>
2. Loose or broken wire #07 from Idle/PLTF/Base Key switch S10 to Base terminal block TB-1.	Check continuity. Replace if defective.
3. Loose or broken wire #07 from Base terminal block TB-1 to Platform Emergency Stop switch S4.	Check continuity. Replace if defective.
4. Loose or broken wire #05 from Base terminal block TB-1 to Platform Emergency Stop switch S4.	Check continuity. Replace if defective.
5. Defective Platform Emergency Stop switch S4.h	<p>Close switch. Check continuity between wire #07 and wire #08 on switch.</p> <p>Check continuity between wire #05 and wire #10 on switch.</p> <p>Replace switch if no continuity between either one of the two contacts.</p>

4.2-3 All Functions Inoperative from The Base

1. Loose or broken wire #00 from Battery negative (-) to circuit breaker CB3.	Check continuity. Replace if defective.
2. Tripped or defective negative circuit breaker CB3.	Reset breaker. Check for defective wiring. Replace breaker if defective.
3. Loose or broken wire #02 from circuit breaker CB3 to Base terminal block TB-1.	Check continuity. Replace if defective.
4. Tripped or defective circuit breaker CB1.	Reset breaker. Check for defective wiring. Replace breaker if defective.
5. Loose or broken wire #3A from circuit breaker CB1 to Power Relay 10CR1.	Check continuity. Replace if defective.
6. Loose or broken wire #3A from Power Relay 10CR1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
7. Loose or broken wire #10E from Idle/PLTF/Base Key switch S10 to Base terminal block TB-1.	Check continuity. Replace if defective.
8. Open diode D10E at Base terminal block TB-1.	Check diode. Replace if defective.

9. Loose or broken wire #10B from Base terminal block TB-1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
10. Loose or broken wire #02 from Base terminal block TB-1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
11. Defective Relay Main Power Relay 10BCR.	Check Relay. Replace if defective.
12. Loose or broken wire #10A from Main Power Relay 10BCR to Base terminal block TB-1.	Check continuity. Replace if defective.
13. Loose or broken wire #10A from Base terminal block TB-1 to Control Module CM1 pin #P2-12.	Check for 12 Volts at P2-12. If no voltage present, check wire continuity. Replace if defective.
14. Loose or broken wire #02 from Base terminal block TB-1 to Control Module CM1 pin #P2-11.	Check continuity. Replace if defective.
15. Loose or broken wire #10E from Base terminal block TB-1 to Control Module pin #P2-2.	Check continuity. Replace if defective
16. Loose or broken wire #28E from Control Module CM1 pin #P3-6 to Small Pump Dump Auxiliary Enable Relay 28ECR1, and Large Pump Dump Auxiliary Enable Relay 28ECR2, and Auxiliary Down Enable Relay 28ECR3.	Check for 12 Volts at P3-6. If voltage present, check for 12 Volts at wire #28E at 28ECR1, 28ECR2 and 28ECR3 relays. If voltage present, check operation of relays. If no voltage present, check wire continuity. Replace if defective.
17. Defective Pressure Transducer PT1 or Angle Transducer AT1 or related wiring.	Check Transducer(s) functionality.
18. Open diode D10B at base terminal block TB-1.	Check diode. Replace if defective.
19. Loose or broken wire #10 from Base terminal block TB-1 to Power Relay 10CR1 and Power Relay 10CR2.	Check continuity. Replace if defective.
20. Defective Power Relay 10CR1 and/or Power Relay 10CR2	Check Relays. Replace if defective.
21. Ground not getting through to Power Relays 10CR1 and 10CR2.	Check continuity. Replace if defective.
22. Loose or broken wire #2A from Power Relay 10CR1 and Power Relay 10CR2 to Engine Harness.	Check continuity. Replace if defective.
23. Open diode D2A in Engine Harness.	Check diode. Replace if defective.
24. Loose or broken wire #2B from Diode D2A to Oil Pressure switch OPS1.	Check continuity. Replace if defective.
25. Defective Oil Pressure switch OPS1	Check switch. Check continuity between wire #2B and wire #2C on switch when closed. Replace if defective.
26. Loose or broken wire #2C from Oil Pressure switch OPS1 to Temperature switch TPS1.	Check continuity. Replace if defective.

27. Defective Temperature switch TPS1.	Check switch. Check continuity between wire #2C and wire #00 on switch when closed. Replace if defective.
28. Loose or broken wire #00 from Temperature switch TPS1 to Engine GND (-).	Check continuity. Replace if defective.

4.2-4 All Functions Inoperative from Platform

1. Loose or broken wire #00 from Battery negative (-) to circuit breaker CB3.	Check continuity. Replace if defective.
2. Tripped or defective negative circuit breaker CB3.	Reset breaker. Check for defective wiring. Replace breaker if defective.
3. Loose or broken wire #02 from circuit breaker CB3 to Base terminal block TB-1.	Check continuity. Replace if defective.
4. Tripped or defective circuit breaker CB1.	Reset breaker. Check for defective wiring. Replace breaker if defective.
5. Loose or broken wire #3A from circuit breaker CB1 to Power Relay 10CR1.	Check continuity. Replace if defective.
6. Loose or broken wire #3A from Power Relay 10CR1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
7. Open or defective Platform Emergency Stop switch S4.	Close switch. Check continuity between wire #07 and wire #08 on switch. Check continuity between wire #05 and wire #10 on switch. Replace switch if no continuity between either one of the two contacts.
8. Loose or broken wire #08 from Platform Emergency Stop switch S4 to Base terminal block TB-1.	Check continuity. Replace if defective.
9. Open diode D08 at base terminal block TB-1.	Check diode. Replace if defective.
10. Loose or broken wire #10B from Base terminal block TB-1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
11. Loose or broken wire #02 from Base terminal block TB-1 to Main Power Relay 10BCR.	Check continuity. Replace if defective.
12. Defective Relay Main Power Relay 10BCR.	Check Relay. Replace if defective.
13. Loose or broken wire #10A from Main Power Relay 10BCR to Base terminal block TB-1.	Check continuity. Replace if defective.

14. Loose or broken wire #10A from Base terminal block TB-1 to Control Module CM1 pin #P2-12.	Check for 12 Volts at P2-12. If no voltage present, check wire continuity. Replace if defective.
15. Loose or broken wire #02 from Base terminal block TB-1 to Control Module CM1 pin #P2-11.	Check continuity. Replace if defective.
16. Loose or broken wire #10E from Base terminal block TB-1 to Control Module pin #P2-2.	Check continuity. Replace if defective
17. Loose or broken wire #28E from Control Module CM1 pin #P3-6 to Small Pump Dump Auxiliary Enable Relay 28ECR1, and Large Pump Dump Auxiliary Enable Relay 28ECR2, and Auxiliary Down Enable Relay 28ECR3.	Check for 12 Volts at P3-6. If voltage present, check for 12 Volts at wire #28E at 28ECR1, 28ECR2 and 28ECR3 relays. If voltage present, check operation of relays. If no voltage present, check wire continuity. Replace if defective.
18. Defective Pressure Transducer PT1 or Angle Transducer AT1 or related wiring.	Check Transducer(s) functionality.
19. Open diode D10B at base terminal block TB-1.	Check diode. Replace if defective.
20. Loose or broken wire #10 from Base terminal block TB-1 to Power Relay 10CR1 and Power Relay 10CR2.	Check continuity. Replace if defective.
21. Defective Power Relay 10CR1 and/or Power Relay 10CR2	Check Relays. Replace if defective.
22. Ground not getting through to Power Relays 10CR1 and 10CR2.	Check continuity. Replace if defective.
23. Loose or broken wire #2A from Power Relay 10CR1 and Power Relay 10CR2 to Engine Harness.	Check continuity. Replace if defective.
24. Open diode D2A in Engine Harness.	Check diode. Replace if defective.
25. Loose or broken wire #2B from Diode D2A to Oil Pressure switch OPS1.	Check continuity. Replace if defective.
26. Defective Oil Pressure switch OPS1	Check switch. Check continuity between wire #2B and wire #2C on switch when closed. Replace if defective.
27. Loose or broken wire #2C from Oil Pressure switch OPS1 to Temperature switch TPS1.	Check continuity. Replace if defective.

28. Defective Temperature switch TPS1.	<p>Check switch.</p> <p>Check continuity between wire #2C and wire #00 on switch when closed.</p> <p>Replace if defective.</p>
29. Loose or broken wire #00 from Temperature switch TPS1 to Engine GND (-).	<p>Check continuity.</p> <p>Replace if defective.</p>

4.2-5 Engine Does not Crank from Platform nor Base Control Console

1. Loose or broken wire #08 from Horn switch S8 to Engine Start switch S15 (Platform only).	<p>Check for 12 volts on wire #08 starting at Platform Emergency Stop switch S4 jumping to all switches.</p> <p>Check continuity of wire #08. Replace defective portion.</p>
2. Defective Engine Start switch S15 (Platform only).	<p>Close switch.</p> <p>Check continuity between wire #08 and wire #32 on switch.</p> <p>Replace if defective.</p>
3. Loose or broken wire #32 from Engine Start switch S15 to Engine Start switch S32 (Platform only).	<p>Check continuity. Replace if defective.</p>
4. Open or defective Idle/PLTF/Base Key switch S10. (Base only)	<p>Select function with switch.</p> <p>Check continuity between wire #05 and wire #07 on switch. (Platform selected).</p> <p>Check continuity between wire #05 and wire #10E on switch. (Base selected).</p> <p>Replace switch if no continuity during correct switch function.</p>
5. Loose or broken wire #10E from Idle/PLTF/Base Key switch S10 to Base terminal block TB-1 (Base only).	<p>Check continuity. Replace if defective.</p>
6. Open or defective diode D10E at Base terminal block TB-1 (Base only).	<p>Check diode. Replace if defective.</p>
7. Defective Engine Glow Plug/Choke switch S13 (Platform only).	<p>Operate switch.</p> <p>Check continuity between wire #08 and wire #31 on switch.</p> <p>Replace if defective.</p>
8. Loose or broken wire #31 from Engine Glow Plug/Choke switch S13 to Engine Glow Plug/Choke switch S31 (Platform only).	<p>Check continuity. Replace if defective.</p>

9. Loose or broken wire #10B from Base terminal block TB-1 to Engine Glow Plug/Choke switch S31 (Base only).	Check continuity. Replace if defective.
10. Loose or broken wire #10B from Engine Glow Plug/Choke switch S31 to Engine Start switch S32 (Base only).	Check continuity. Replace if defective.
11. Defective Engine Start switch S32 (Base only).	Operate switch. Check continuity between wire #32 and wire #10B on switch. Replace if defective.
12. Loose or broken wire #32 from Engine Start switch S32 to Start Relay 32CR2.	Check continuity. Replace if defective.
13. Defective Start Relay 32CR2.	Check Relay. Replace if defective.
14. Loose or broken wire #41 from Anti-Start Relay 32CR1 to Start Relay 32CR2 and Power Relay 10CR2.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from Start Relay 32CR2 to Base terminal block TB-1.	Check continuity. Replace if defective.
16. Loose or broken wire #02 from Relay 10CR2 to Base terminal block TB-1.	Check continuity. Replace if defective.
17. Open contact for ground not getting through N/C set of contacts on Relay 10CR2.	Check continuity between wire #02 and wire #41 on Relay. Replace if defective.
18. Loose or broken wire #3A from Relay 10BCR to Anti-Start Relay 32CR1.	Check continuity. Replace if defective.
19. Loose or broken wire #3A from Anti-Start Relay 32CR1 to Base Emergency Stop switch S6.	Check continuity. Replace if defective.
20. Loose or broken wire #3A from Base Emergency Stop switch S6 to Engine Harness.	Check continuity. Replace if defective.
21. Loose or broken wire #32A from Anti-Start Relay 32CR1 to Engine Harness.	Check continuity. Replace if defective.
22. Loose or broken wire #32 from Start Relay 32CR2 to Anti-Start Relay 32CR1.	Check continuity. Replace if defective.
23. Defective Anti-Start Relay 32CR1.	Check Relay. Replace if defective.
24. Loose or broken wire #32A from Engine Harness to Starter Contactor 32ACR.	Check continuity. Replace if defective.

25. Defective Starter Contactor 32ACR.	Check contactor. Replace if defective.
26. Loose or broken wire #00 from Starter Contactor 32ACR to Base terminal block TB-1.	Check continuity. Replace if defective.
27. Loose or broken wire #103 from Main Power Disconnect S1 to Starter Contactor 32ACR.	Check continuity. Replace if defective.
28. Loose or broken wire #57 from Starter Contactor 32ACR to Starter Motor.	Check continuity. Replace if defective.
29. Loose or broken wire #00 from battery negative (-) to Starter Motor.	Check continuity. Replace if defective
30. Defective Starter Motor.	Check Motor. Repair or replace if defective.

4.2-6 Engine Cranks but Does not Start – Kubota Diesel

1. Open diode D32A from Engine Start switch S32 to Engine Glow Plug/Choke switch S31.	(Diode located in Engine Harness. Refer to Engine wiring diagram- Diesel Fuel System). Check diode. Replace if defective.
2. Loose or broken wire #37 from Engine Harness to Diesel Valve solenoid 2D37.	Check continuity. Replace if defective.
3. Loose or broken wire #57 from Starter Contactor 32ACR to Diesel Valve solenoid 2D37.	Check continuity. Replace if defective.
4. Loose or broken wire #00 from Diesel Valve solenoid 2D37 to battery negative (-).	Check continuity. Replace if defective.
5. Defective Diesel Valve solenoid 2D37.	Check coil. Replace if defective.
6. Loose or broken wire #31 from Engine Harness to Glow Plug Relay 31CR.	Check continuity. Replace if defective.
7. Loose or broken wire #02 from Engine Harness to Glow Plug Relay 31CR.	Check continuity. Replace if defective.
8. Defective Glow Plug Relay 31CR.	Check Relay. Replace if defective.
9. Loose or broken wire #103 from Main Power Disconnect switch S1 to Glow Plug Relay 31CR.	Check continuity. Replace if defective.
10. Loose or broken wire #91A from Glow Plug Relay 31CR to Engine Glow Plugs EGP1.	Check continuity. Replace if defective
11. Defective Engine Glow Plugs EGP1.	Check glow plugs. Repair if necessary.

12. Loose or broken wire #32A from Engine Harness to Glow Plug Timer GPT1.	Check continuity. Replace if defective.
13. Loose or broken wire #02 from Glow Plug Timer GPT1 to Engine Harness.	Check continuity. Replace if defective.
14. Defective Glow Plug Timer GPT1.	Check timer. Replace if defective.

4.2-7 Engine Cranks but Does not Start – Kubota Dual Fuel (Propane/ Gas)

1. Loose or broken wire #37 from Engine Harness to Ignition Control Module ICM1, Fuel Select switch S33, and Ignition Coils IGC1, 2, and 3.	Check continuity. Replace if defective.
2. Defective Fuel Select switch S33.	Operate switch. Check continuity between wire #37 and wire #11 on switch (Gas selected). Check continuity between wire #37 and wire #50 on switch (Propane selected). Replace if defective.
3. Loose or broken wire #11 from Fuel Select switch S33 to Gas Valve Solenoid 2G-11 and/or Fuel Pump FP.	Check continuity. Replace if defective.
4. Loose or broken wire #00 from Gas Valve Solenoid 2G-11 and/or Fuel Pump FP to battery negative (-).	Check continuity. Replace if defective.
5. Defective Gas Valve solenoid 2G-11.	Check coil. Replace if defective.
6. Defective Fuel Pump FP.	Check pump. Replace if defective.
7. Loose or broken wire #50 from Fuel Select switch S33 to Propane Valve solenoids 2P-50-1 and/or -2.	Check continuity. Replace if defective.
8. Loose or broken wire #00 from Propane Valve solenoids 2P-50-1 and/or -2 to battery negative (-).	Check continuity. Replace if defective.
9. Defective Propane Valve solenoids 2P-50-1 and/or -2	Check coils. Replace if defective.
10. Loose or broken wire #31 from Engine Harness to Choke Relay 31CR.	Check continuity. Replace if defective.
11. Loose or broken wire #02 from Engine Harness to Choke Relay 31CR.	Check continuity. Replace if defective.
12. Defective Choke Relay 31CR.	Check Relay. Replace if defective.
13. Loose or broken wire #3A from Engine Harness to Choke Relay 31CR.	Check continuity. Replace if defective.

14. Loose or broken wire #31A from Choke Relay 31CR to Choke Solenoid CS-31A.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from Choke Solenoid CS-31A to Engine Harness.	Check continuity. Replace if defective.
16. Defective Choke Solenoid CS-31A.	Check coils. Replace if defective

4.2-8 Glow Plugs Inoperative from neither Engine Controls nor Platform (Diesel Models)

1. Loose or broken wire #08 from Lift/Off/Drive switch S3 to Glow Plug/Choke switch S13 (Platform only).	<p>Check for 12 volts on wire #08 starting at Platform Emergency Stop switch S4 jumping to all switches.</p> <p>Check continuity of wire #08.</p> <p>Replace defective portion.</p>
2. Defective Glow Plug/Choke switch S13 (Platform only).	<p>Operate switch.</p> <p>Check continuity between wire #08 and wire #31 on switch.</p> <p>Replace if defective.</p>
3. Loose or broken wire #31 from Glow Plug/Choke switch S13 to Engine Glow Plug/Choke switch S31 (Platform only).	Check continuity. Replace if defective.
4. Loose or broken wire #10B from Base terminal block TB-1 to Engine Glow Plug/Choke switch S31 (Base only).	Check continuity. Replace if defective.
5. Defective Engine Glow Plug/Choke switch S31 (Base only).	<p>Operate switch.</p> <p>Check continuity between wire #31 and wire #10B on switch.</p> <p>Replace if defective.</p>
6. Loose or broken wire #31 from Engine Glow Plug/Choke switch S31 to Engine Harness.	Check continuity. Replace if defective.
7. Loose or broken wire #31 from Engine Harness to Glow Plug Relay 31CR.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Glow Plug Relay 31CR to Engine Harness.	Check continuity. Replace if defective.
9. Loose or broken wire #103 from Main Power Disconnect switch S1 to Glow Plug Relay 31CR.	Check continuity. Replace if defective.
10. Loose or broken wire #91A from Glow Plug Relay 31CR to Engine Glow Plugs EGP1.	Check continuity. Replace if defective

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| 11. Defective Engine Glow Plugs EGP1. | Check glow plugs. Repair if necessary. |
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4.2-9 High Throttle Inoperative

NOTE: If machine is in Drive mode and is elevated above LS5 High Speed limit switch, high throttle is inoperative.

1. Loose or broken wire #08 from Glow Plug/Choke switch S13 to Low/High Throttle switch S14.	<p>Check for 12 volts on wire #08 starting at Platform Emergency Stop switch S4 jumping to all switches.</p> <p>Check continuity of wire #08.</p> <p>Replace defective portion.</p>
2. Defective Low/High Throttle switch S14.	<p>Operate switch.</p> <p>Check continuity between wire #08 and wire #34 on switch.</p> <p>Replace if defective.</p>
3. Loose or broken wire #34 from Low/High Throttle switch S14 to Throttle Enable Relay 35ACR.	Check continuity. Replace if defective.
4. Defective Throttle Enable Relay 35ACR.	Check Relay. Replace if defective.
5. Loose or broken wire #34D from Throttle Enable Relay 35ACR to Throttle Relay 34ACR.	<p>Check continuity of wire #34D thru diode D34D to wire #34A in Base terminal Block TB-1.</p> <p>Check that diode D34D is not open or defective.</p> <p>Replace if defective.</p>
6. Defective Throttle Relay 34ACR.	Check Relay. Replace if defective.
7. Loose or broken wire #42 from Throttle Relay 34ACR to Power Relay 10CR2.	Check continuity. Replace if defective.
8. Defective Power Relay 10CR2.	Check Relay. Replace if defective.
9. Loose or broken wire #09 from Lift/Off/Drive Select switch S3 to Base terminal block TB-1.	Check continuity. Replace if defective.
10. Open diode D09 (when in lift only).	Check diode. Replace if defective.
11. Open diode D44 (when in drive only).	Check diode. Replace if defective.
12. Loose or broken wire #35A from Base terminal block TB-1 to Throttle Enable Relay 35ACR.	Check continuity. Replace if defective.
13. Loose or broken wire #2A from Power Relay 10CR2 to Power Relay 10CR1.	Check continuity. Replace if defective.

14. Loose or broken wire #3A from Base terminal block TB-1 to Anti-Start Relay 32CR1.	Check continuity. Replace if defective.
15. Defective Anti-Start Relay 32CR1.	Check Relay. Replace if defective.
16. Loose or broken wire #43 from Anti-Start Relay 32CR1 to Throttle Relay 34ACR.	Check continuity. Replace if defective.
17. Loose or broken wire #34B from Throttle Relay 34ACR to Power On Demand Relay 33CR.	Check continuity. Replace if defective.
18. Defective Power On Demand Relay 33CR.	Check Relay. Replace if defective.
19. Loose or broken wire #34C from Power On Demand Relay 33CR to Engine wire Harness.	Check continuity. Replace if defective.
20. Loose or broken wire #34C from Engine Harness to High Throttle Solenoid HTS-34C.	Check continuity. Replace if defective.
21. Loose or broken wire #02 from High Throttle solenoid HTS-34C to Base terminal block TB-1.	Check continuity. Replace if defective.
22. Defective High Throttle Solenoid HTS-34C.	Check coil. Replace if defective.

4.2-10 Drive and Steer Inoperative (Machines without outriggers option)

1. Loose or broken wire #08 from Torque switch S16 to Joystick Controller S7 Vsupply+ P1-2.	<p>Check for 12 volts on wire #08 starting at Platform Emergency Stop switch S4 jumping to all switches.</p> <p>Check continuity of wire #08.</p> <p>Replace defective portion.</p>
2. Defective Joystick Handle Center (Neutral) switch S7-1 in Joystick S7.	<p>Operate switch.</p> <p>Check continuity on switch when closed.</p> <p>Replace if defective.</p>
3. Defective Joystick Enable switch S7-7 in Joystick S7.	<p>Operate switch.</p> <p>Check continuity on switch when closed.</p> <p>Replace if defective.</p>
4. Loose or broken wire #8A from Joystick S7 Enable Out P1-8 to Lift/Off/Drive switch S3.	Check continuity. Replace if defective.
5. Lift/Off/Drive Select switch S3 is set to an incorrect position.	<p>Select Drive position.</p> <p>Check switch.</p> <p>Replace if defective.</p>

6. Defective Lift/Off/Drive Select switch S3.	<p>Check continuity between wire #8A and wire #8B on switch.</p> <p>Replace if defective.</p>
7. Defective or loose wire #8B from Lift/Off/Drive Select switch S3 to Joystick S7 Steer Common P1-5.	<p>Check continuity. Replace if defective.</p>
8. Defective Joystick S7.	<p>Operate Joystick. Check Steer direction switches S7-2 and S7-3.</p> <p>Check for output to wire #A from Rev/Dn direction P1-6.</p> <p>Check for output to wire #B from Fwd/Up direction P1-4.</p> <p>Check for output to wire #23 from Steer Right P1-3.</p> <p>Check for output to wire #24 from Steer Left P1-1.</p> <p>Replace if defective.</p>
9. Defective Lift/Off/Drive Select switch S3.	<p>Check continuity between wire #A and wire #15 on switch when Drive selected.</p> <p>Check continuity between wire #B and wire #16 on switch when Drive selected.</p> <p>Replace switch if defective.</p>
10. Loose or broken wire #15 from Lift/Off/Drive Select switch S3 to Reverse Relay 15CR.	<p>Check continuity. Replace if defective.</p>
11. Loose or broken wire #02 from Reverse Relay 15CR to Base terminal block TS-1.	<p>Check continuity. Replace if defective.</p>
12. Defective Reverse Relay 15CR.	<p>Check Relay. Replace if defective.</p>
13. Loose or broken wire #15 from Reverse Relay 15CR to Control Module CM1 pin #P2-8.	<p>Check continuity. Replace if defective.</p>
14. Loose or broken wire #16 from Lift/Off/Drive Select switch S3 to Forward Relay 16CR.	<p>Check continuity. Replace if defective.</p>
15. Loose or broken wire #02 from Forward Relay 16CR to Base terminal block TS-1.	<p>Check continuity. Replace if defective.</p>
16. Defective Forward Relay 16CR.	<p>Check Relay. Replace if defective.</p>
17. Loose or broken wire #16 from Forward Relay 16CR to Control Module CM1 pin #P2-7.	<p>Check continuity. Replace if defective.</p>
18. Loose or broken wire #10A from Base terminal block TS-1 to Tilt Override/High Drive Cutout switch LS5.	<p>Check continuity. Replace if defective.</p>

19. Defective Tilt Override/High Drive Cutout switch LS5.	<p>Operate N.C. switch.</p> <p>Check continuity between wire #10A and wire #35 on switch when closed.</p> <p>Replace if defective.</p>
20. Loose or broken wire #35 from Tilt Override/High Drive Cutout switch LS5 to Elevation/Hi Spd Cutout Relay 35CR.	Check continuity. Replace if defective.
21. Loose or broken wire #02 from Elevation/Hi Spd Cutout Relay 35CR to Base terminal block TB-1.	Check continuity. Replace if defective.
22. Loose or broken wire #35B from Elevation/Hi Spd Cutout Relay 35CR to Control Module CM1 pin #P2-10.	Check continuity. Replace if defective.
23. Loose or broken jumper wire from #28 to # 28A on outrigger connector CN14 between pin #1 and pin #7.	Check continuity. Replace if defective
24. Loose or broken wire #28A from outrigger connector CN14 at pin #1 to base terminal block TB-1.	Check continuity. Replace if defective.
25. Outriggers not fully retracted	Fully retract outrigger cylinders
26. Loose or broken wire #10A from Base terminal block TB-1 to Outrigger Control Module OCM1 at pin #P2-12.	Check continuity. Replace if defective.
27. Left rear outrigger N.O.-held closed limit switch LS64 is out of adjustment or defective.	<p>Check continuity from wire #10A and wire #64 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
28. Right rear outrigger N.O.-held closed limit switch LS63 is out of adjustment or defective.	<p>Check continuity from wire #64 and wire #63 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
29. Right front outrigger N.O.-held closed limit switch LS62 is out of adjustment or defective.	<p>Check continuity from wire #63 and wire #62 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
30. Left front outrigger N.O.-held closed limit switch LS61 is out of adjustment or defective.	<p>Check continuity from wire #62 and wire #36 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>

31. Loose or broken wire #36 from outrigger limit switch LS61 to diode D36-1.	Check continuity. Replace if defective.
32. Open diode D36-1.	Check diode. Replace if defective.
33. Loose or broken wire #61 from diode D36-1 to Outrigger Drive Enable Relay 61CR.	Check continuity. Replace if defective.
34. Loose or broken wire #02 from Outrigger Drive Enable Relay 61CR to Base terminal block TB-1.	Check continuity. Replace if defective.
35. Defective Outrigger Drive Enable Relay 61CR.	Check Relay. Replace if defective.
36. Loose or broken wire #28 from Control Module CM1 pin # P3-4 to Outrigger Drive Enable Relay 61CR	Check continuity. Replace if defective.
4.2-11 Brakes Do not Release	
1. Loose or broken wire #15A from Reverse Relay 15CR to Base terminal Block TB-1.	Check continuity. Replace if defective.
2. Loose or broken wire #15A from Base terminal Block TB-1 to diode D15A-2.	Check continuity. Replace if defective.
3. Defective or open diode D15A-2.	Check diode. Replace if defective.
4. Loose or broken wire #30 from diode D15A-2 to Base terminal block TB-1.	Check continuity. Replace if defective.
5. Loose or broken wire #16A from Forward Relay 16CR to Base terminal block TB-1.	Check continuity. Replace if defective.
6. Loose or broken wire #16A from Base terminal block TB-1 to diode D16A-2.	Check continuity. Replace if defective.
7. Defective or open diode D16A-2.	Check diode. Replace if defective.
8. Loose or broken wire #30 from diode D16A-2 to Base terminal block TB-1.	Check continuity. Replace if defective.
9. Loose or broken wire #30 from Base terminal block TB-1 to Brake Valve solenoid 3H-30.	Check continuity. Replace if defective.
10. Loose or broken wire #02 from Brake Valve solenoid 3H-30 to Base terminal block TB-1.	Check continuity. Replace if defective
11. Defective Brake Valve solenoid 3H-30.	Check coil. Replace if defective.

4.2-12 Steer Right Inoperative

1. Loose or broken wire #23 from Joystick S7 P1-3 to Base terminal block TB-1.	Check continuity. Replace if defective.
2. Loose or broken wire #23 from Base terminal block TB-1 to Steer Right Valve solenoid 4H-23.	Check continuity. Replace if defective.
3. Defective Steer Right Valve solenoid 4H-23.	Check coil. Replace if defective.
4. Loose or broken wire #02 from Steer Right Valve solenoid 4H-23 to Base terminal block TB-1.	Check continuity. Replace if defective.
5. Open Diode D23	Check diode. Replace if defective.

4.2-13 Steer Left Inoperative

1. Loose or broken wire #24 from Joystick S7 P1-1 to Base terminal block TB-1.	Check continuity. Replace if defective.
2. Loose or broken wire #24 from Base terminal block TB-1 to Steer Left Valve solenoid 4H-24.	Check continuity. Replace if defective.
3. Defective Steer Left Valve solenoid 4H-24.	Check coil. Replace if defective.
4. Loose or broken wire #02 from Steer Left Valve solenoid 4H-24 to Base terminal block TB-1.	Check continuity. Replace if defective.
5. Open Diode D24	Check diode. Replace if defective.

4.2-14 Reverse Drive Inoperative

1. Lift//Off/Drive Select switch S3 is set to an incorrect mode.	Select Drive. Check switch. Replace if defective.
2. Defective Lift//Off/Drive Select switch S3.	Check continuity between wire #A and wire #15 on switch when Drive selected. Replace switch if defective.
3. Loose or broken wire #15 from Lift//Off/Drive Select switch S3 to Reverse Relay 15CR.	Check continuity. Replace if defective.
4. Loose or broken wire #02 from Reverse Relay 15CR to Base terminal block TS-1.	Check continuity. Replace if defective.
5. Defective Reverse Relay 15CR.	Check relay. Replace if defective.

6. Loose or broken wire #15 from Reverse Relay 15CR to Control Module CM1 pin #P2-8.	Check continuity. Replace if defective.
7. Loose or broken wire #10A from Base terminal block TB-1 to Relay 15CR.	Check continuity. Replace if defective.
8. Loose or broken wire #15A from Relay 15CR to Reverse Drive Valve Solenoid 4H-15A.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from Reverse Drive Valve Solenoid 4H-15A to Base terminal block TB-1.	Check continuity. Replace if defective.
10. Loose or broken wire #15A from Base terminal block TB-1 to Series/Parallel Relay 20ACR2 (In Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
11. Defective Series/Parallel Relay 20ACR2 (in Parallel Drive- High Torque mode).	Check Relay. Replace if defective.
12. Loose or broken wire #15B from Series/Parallel Relay 20ACR2 to Parallel Reverse Drive Valve solenoid 4H-15B (in Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
13. Loose or broken wire #02 from Base terminal block TB-1 to Parallel Reverse Drive Valve Solenoid 4H-15B (in Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
14. Defective Parallel Reverse Drive Valve solenoid 4H-15B (in Parallel Drive –High Torque Mode).	Check coil. Replace if defective.
15. Defective or open diodes D15A-1 and/or D15A-2.	Check diodes. Replace if defective.

4.2-15 Forward Drive Inoperative

1. Lift//Off/Drive Select switch S3 is set to an incorrect mode.	Select Drive. Check switch. Replace if defective.
2. Defective Lift/Off/Drive Select switch S3.	Check continuity between wire #B and wire #16 on switch when Drive selected. Replace switch if defective.
3. Loose or broken wire #16 from Lift/Off/Drive Select switch S3 to Forward Relay 16CR.	Check continuity. Replace if defective.
4. Loose or broken wire #02 from Forward Relay 16CR to Base terminal block TS-1.	Check continuity. Replace if defective.
5. Defective Forward Relay 16CR.	Check relay. Replace if defective.

6. Loose or broken wire #16 from Forward Relay 16CR to Control Module CM1 pin #P2-7.	Check continuity. Replace if defective.
7. Loose or broken wire #10A from Base terminal block TB-1 to Forward Relay 16CR.	Check continuity. Replace if defective.
8. Loose or broken wire #16A from Forward Relay 16CR to Forward Drive Valve solenoid 4H-16A.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from Forward Drive Valve solenoid 4H-16A to Base terminal block TB-1.	Check continuity. Replace if defective.
10. Loose or broken wire #16A from Base terminal block TB-1 to Series/Parallel Relay 20ACR1 (in Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
11. Defective Series/Parallel Relay 20ACR1 (in Parallel Drive –High Torque mode).	Check Relay. Replace if defective.
12. Loose or broken wire #16B from Base terminal block TB-1 to Parallel Forward Drive Valve solenoid 4H-16B (in Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
13. Loose or broken wire #02 from Base terminal block TB-1 to Parallel Forward Drive Valve solenoid 4H-16B (in Parallel Drive –High Torque mode).	Check continuity. Replace if defective.
14. Defective Parallel Forward Drive Valve solenoid 4H-16B (in Parallel Drive –High Torque mode).	Check coil. Replace if defective.
15. Defective or open diodes D16A-1 and/or D16A-2.	Check diodes. Replace if defective.

4.2-16 First Drive Speed and Steering Inoperative

1. Loose or broken wire #21 from Base terminal block TB-1 to Small Pump Relay 17CR.	Check continuity. Replace if defective.
2. Loose or broken wire #02 from Small Pump Relay 17CR to Base terminal block TB-1.	Check continuity. Replace if defective.
3. Defective Small Pump Relay 17CR.	Check Relay. Replace if defective.
4. Defective or open diodes D23, D24, D15A-1, and/or D16A-1.	Check diodes. Replace if defective.
5. Loose or broken wire #18A from Small Pump Relay 17CR to Base terminal block TB-1.	Check continuity. Replace if defective.
6. Loose or broken wire #18A from Base terminal block TB-1 to Small Pump Dump Enable Relay 28ACR1.	Check continuity. Replace if defective.

7. Defective Small Pump Dump Enable Relay 28ACR1.	Check Relay. Replace if defective.
8. Loose or broken wire #18B from Small Pump Dump Enable Relay 28ACR1 to Small Pump Dump Aux. Enable Relay 28ECR1.	Check continuity. Replace if defective.
9. Loose or broken wire #28E from Control Module CM1 pin #P3-6 to Small Pump Dump Aux. Enable Relay 28ECR1, 2 & 3.	Check continuity. Replace if defective.
10. Defective Small Pump Dump Aux. Enable Relay 28ECR1.	Check Relay. Replace if defective.
11. Loose or broken wire #18C from Small Pump Dump Aux. Enable Relay 28ECR1 to Base terminal block TB-1.	Check continuity. Replace if defective.
12. Loose or broken wire #18C from Base terminal block TB-1 to Small Pump Dump Valve solenoid 2H-18C.	Check continuity. Replace if defective.
13. Loose or broken wire #02 from Small Pump Dump Valve solenoid 2H-18C to Base terminal block TB-1.	Check continuity. Replace if defective.
14. Defective Small Pump Dump Valve solenoid 2H-18C.	Check coil. Replace if defective.

4.2-17 Second Drive Speed Inoperative

1. Defective Joystick S7.	Operate Joystick. Check output to wire #19 Second Speed Out P1-7. Replace if defective.
2. Loose or broken wire #19 from Joystick S7 P1-7 to Large Pump Relay 19CR.	Check continuity. Replace if defective.
3. Loose or broken wire #02 from Base terminal block TB-1 to Large Pump Relay 19CR.	Check continuity. Replace if defective.
4. Defective Large Pump Relay 19CR.	Check relay. Replace if defective.
5. Loose or broken wire #10A from Base terminal block TB-1 to Tilt Override/High Drive Cutout switch LS5.	Check continuity. Replace if defective.
6. Defective Tilt Override/High Drive Cutout switch LS5.	Operate N.C. switch. Check continuity between wire #10A and wire #35 on switch when closed. Replace if defective.

7. Loose or broken wire #35 from Tilt Override/High Drive Cutout switch LS5 to Elevation/Hi Speed Cutout Relay 35CR.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Elevation/Hi Speed Cutout Relay 35CR to Base terminal block TB-1.	Check continuity. Replace if defective.
9. Loose or broken wire #35B from Elevation/Hi Speed Cutout Relay 35CR to Control Module CM1 pin #P2-10.	Check continuity. Replace if defective.
10. Defective Elevation/Hi Speed Cutout Relay 35CR.	Check relay. Replace if defective.
11. Loose or broken wire #10A from Base terminal block TB-1 to Elevation/Hi Speed Cutout Relay 35CR.	Check continuity. Replace if defective.
12. Loose or broken wire #44 from Elevation/Hi Speed Cutout Relay 35CR to Base terminal block TB-1.	Check continuity. Replace if defective.
13. Loose or broken wire #44 from Base terminal block TB-1 to Large Pump Relay 19CR.	Check continuity. Replace if defective.
14. Loose or broken wire #17 from Large Pump Relay 19CR to Small Pump Relay 17CR.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from Small Pump Relay 17CR to Base terminal block TB-1.	Check continuity. Replace if defective.
16. Defective Small Pump Relay 17CR.	Check relay. Replace if defective.
17. Loose or broken wire #17 from Small Pump Relay 17CR to Large Pump Dump Enable Relay 28ACR2.	Check continuity. Replace if defective.
18. Loose or broken wire #17A from Large Pump Dump Enable Relay 28ACR2 to Large Pump Dump Aux. Enable Relay 28ECR2.	Check continuity. Replace if defective.
19. Defective Large Pump Dump Aux. Enable Relay 28ECR2.	Check relay. Replace if defective.
20. Loose or broken wire #17B from Large Pump Dump Aux. Enable Relay 28ECR2 to Base terminal Block TB-1.	Check continuity. Replace if defective.
21. Defective Large Pump Dump Aux. Enable Relay 28ECR2	Check relay. Replace if defective.
22. Loose or broken wire #17B from Base terminal block TB-1 to Large Pump Dump Valve solenoid 2H-17B.	Check continuity. Replace if defective.
23. Loose or broken wire #02 from Large Pump Dump Valve solenoid 2H-17B to Base terminal block TB-1.	Check continuity. Replace if defective.

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| 24. Defective Large Pump Dump Valve solenoid 2H-17B. | Check coil. Replace if defective. |
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4.2-18 Third Drive Speed Inoperative

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| 1. Defective Joystick S7. | Operate Joystick.
Check output to wire #18 Third Speed Out P1-9.
Replace if defective. |
| 2. Loose or broken wire #18 from Joystick S7 P1-9 to diode D18 at Base terminal block TB-1. | Check continuity. Replace if defective. |
| 3. Defective Diode D18. | Check diode. Replace if defective. |

4.2-19 High Torque/Parallel Drive Inoperative

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| 1. Lift/Off/Drive Select switch S3 is set to an incorrect mode. | Select Drive.
Check switch.
Replace if defective. |
| 2. Defective High Torque Select switch S16. | Operate switch.
Check continuity between wire #08 and wire #20 on switch when High Torque selected.
Replace if defective. |
| 3. Loose or broken wire #20 from Torque switch S16 to Series/Parallel Relay 20CR. | Check continuity. Replace if defective. |
| 4. Loose or broken wire #02 from Series/Parallel Relay 20CR to Base terminal block TB-1. | Check continuity. Replace if defective. |
| 5. Defective Series/Parallel Relay 20CR. | Check relay. Replace if defective. |
| 6. Loose or broken wire #44 from Base terminal block TB-1 to Series/Parallel Relay 20CR. | Check continuity. Replace if defective. |
| 7. Loose or broken wire #20A from Series/Parallel Reverse Relay 20ACR2 to Series/Parallel Valve solenoid 4H-20A. | Check continuity. Replace if defective. |
| 8. Loose or broken wire #02 from Series/Parallel Valve solenoid 4H-20A to Base terminal block TB-1. | Check continuity. Replace if defective. |
| 9. Defective Series/Parallel Valve solenoid 4H-20A. | Check coil. Replace if defective. |

Forward Inoperative

10. Loose or broken wire #20A from Series Parallel Relay 20CR to Series/Parallel Forward Relay 20ACR1.	Check continuity. Replace if defective.
11. Loose or broken wire #02 from Series/Parallel Forward Relay 20ACR1 to Base terminal block TB-1	Check continuity. Replace if defective.
12. Defective Series/Parallel Forward Relay 20ACR1.	Check relay. Replace if defective.
13. Loose or broken wire #16A from Base terminal block TB-1 to Series/Parallel Forward Relay 20ACR1.	Check continuity. Replace if defective.
14. Loose or broken wire #16B from Series/Parallel Forward Relay 20ACR1 to diode D16B.	Check continuity. Replace if defective.
15. Defective diode D16B.	Check diode. Replace if defective.
16. Loose or broken wire #20B from diode D16B to High Speed Valve solenoid 2H-20B.	Check continuity. Replace if defective.
17. Loose or broken wire #02 from High Speed Valve 2H-20B to Base terminal block TB-1	Check continuity. Replace if defective.
18. Defective High Speed Valve solenoid 2H-20B.	Check coil. Replace if defective.

Reverse Inoperative

19. Loose or broken wire #20A from Series/Parallel 20ACR1 Forward Relay to Series/Parallel Reverse Relay 20ACR2.	Check continuity. Replace if defective.
20. Loose or broken wire #02 from Series/Parallel Reverse Relay 20ACR2 to Base terminal block TB-1.	Check continuity. Replace if defective.
21. Defective Series/Parallel Reverse Relay 20ACR2.	Check Relay. Replace if defective.
22. Loose or broken wire #15A from Base terminal block TB-1 to Series/Parallel Reverse Relay 20ACR2.	Check continuity. Replace if defective.
23. Loose or broken wire #15B from Series/Parallel Reverse Relay 20ACR2 to diode D15B.	Check continuity. Replace if defective.
24. Defective diode D15B.	Check diode. Replace if defective.
25. Loose or broken wire #20B from diode D15B to High Speed Valve solenoid 2H-20B.	Check continuity. Replace if defective.

26. Loose or broken wire #02 from High Speed Valve 2H-20B to Base terminal block TB-1 **Check continuity. Replace if defective.**

27. Defective High Speed Valve solenoid 2H-20B. **Check coil. Replace if defective.**

4.2-20 Up Circuit Inoperative from Platform

1. Lift/Off/Drive Select switch S3 is set to an incorrect mode. **Select Lift. Check switch. Replace if defective.**

2. Defective Joystick S7. **Operate Joystick.
Check output to wire #B P1-4.
Replace if defective**

3. Loose or broken wire #B from Joystick S7 P1-4 to Lift/Off/Drive Select switch S3. **Check continuity. Replace if defective.**

4. Defective Lift/Off/Drive Select switch S3. **Check continuity between wire #B and wire #14 on switch when Lift selected.
Replace if defective.**

5. Loose or broken wire #14 from Lift/Off/Drive Select switch S3 to Base terminal block TB-1. **Check continuity. Replace if defective.**

6. Loose or broken wire #14 from Base terminal block TB-1 to Control module CM1 pin #P2-3. **Check continuity. Replace if defective.**

4.2-21 Up Circuit Inoperative from Base Control Console

1. Loose or broken wire #10E from Base terminal block TB-1 to Base Up/Down switch S2. **Check continuity. Replace if defective.**

2. Defective Base Up/Down switch S2. **Operate switch.
Check continuity between wire #10E and wire #14E on switch.
Replace if defective.**

3. Loose or broken wire #14E from Base Up/Down switch S2 to Base terminal block TB-1. **Check continuity. Replace if defective.**

4. Open diode D14E-1. **Check diode. Replace if defective.**

5. Loose or broken wire #14 from Base terminal block TB-1 to Control module CM1 pin #P2-3. **Check continuity. Replace if defective.**

4.2-22 Up Circuit Inoperative from Platform or Base Control Console (without Outriggers)

1. Loose or broken wire #14 from Base terminal block TB-1 to Up Relay jumper between wire #14 and #14A.	Check continuity. Replace if defective.
2. Loose or broken Up Relay jumper wire between wires #14 and #14A on Base terminal block TB-1.	Check continuity. Replace if defective.
3. Loose or broken wire #14A from Up Relay jumper wire to Base terminal block TB-1.	Check continuity. Replace if defective.
4. Loose or broken wire #14A from Base terminal block TB-1 to Lift Valve solenoid 3H-14A.	Check continuity. Replace if defective.
5. Loose or broken wire #02 from Lift Valve solenoid 3H-14A to Base terminal block TB-1.	Check continuity. Replace if defective.
6. Defective Lift Valve solenoid 3H-14A.	Check coil. Replace if defective.
7. Defective diode D14A-1.	Check diode. Replace if defective.

4.2-23 Platform does not Lift from Platform or Base Control Console with Outriggers Retracted (Lift Operates Correctly with Outriggers Extended)

1. Outriggers not fully retracted.	Fully retract outrigger cylinders.
2. Loose or broken wire #10A from Base terminal block TB-1 to pin #4 on connector CN14 at the outrigger board.	Check continuity. Replace if defective.
3. Loose or broken wire #10A from outrigger board to outrigger limit switch LS64.	Check continuity. Replace if defective.
4. Left rear outrigger N.O.-held closed limit switch LS64 is out of adjustment or defective.	Check continuity from wire #10A and wire #64 through switch when closed. Adjust switch if out of adjustment. Replace if defective.
5. Loose or broken wire #64 from outrigger limit switch LS64 to outrigger board.	Check continuity. Replace if defective.
6. Loose or broken wire #64 from outrigger board to outrigger limit switch LS63.	Check continuity. Replace if defective.

7. Right rear outrigger N.O.-held closed limit switch LS63 is out of adjustment or defective.	<p>Check continuity from wire #64 and wire #63 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
8. Loose or broken wire #63 from outrigger limit switch LS63 to outrigger board.	Check continuity. Replace if defective.
9. Loose or broken wire #63 from outrigger board to outrigger limit switch LS62.	Check continuity. Replace if defective.
10. Right front outrigger N.O.-held closed limit switch LS62 is out of adjustment or defective.	<p>Check continuity from wire #63 and wire #62 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
11. Loose or broken wire #62 from outrigger limit switch LS62 to outrigger board.	Check continuity. Replace if defective.
12. Loose or broken wire #62 from outrigger board to outrigger limit switch LS61.	Check continuity. Replace if defective.
13. Left front outrigger N.O.-held closed limit switch LS61 is out of adjustment or defective.	<p>Check continuity from wire #62 and wire #36 through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
14. Loose or broken wire #36 from outrigger limit switch LS61 to outrigger board.	Check continuity. Replace if defective.
15. Open diode D36 on outrigger board.	Check diode. Replace if defective.
16. Open diode D36-1 at pin #1 on CN22 on outrigger board.	Check diode. Replace if defective.

4.2-24 Platform does not Lift from Platform or Base Control Console with Outriggers Extended

1. Outriggers not extended enough.	Extend outriggers to take weight off tires (refer to operator section).
2. Loose or broken wire #10A from Base terminal block TB-1 to pin #4 on connector CN14 at the outrigger board.	Check continuity. Replace if defective.
3. Loose or broken wire #10A from outrigger board CN22 to outrigger down limit switch LS68.	Check continuity. Replace if defective.

4. Left Rear outrigger N.C.-held open limit switch LS68 is out of adjustment or defective.	<p>Check continuity from wire #10A and wire #68A through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
5. Loose or broken wire #68A from outrigger limit switch LS68 to outrigger control module pin #P2-1.	<p>Check continuity. Replace if defective.</p>
6. Loose or broken wire #10A from outrigger board to outrigger down limit switch LS67.	<p>Check continuity. Replace if defective.</p>
7. Right Rear outrigger N.C.-held open limit switch LS67 is out of adjustment or defective.	<p>Check continuity from wire #10A and wire #67A through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
8. Loose or broken wire #67A from outrigger limit switch LS67 to outrigger control module pin #P2-2.	<p>Check continuity. Replace if defective.</p>
9. Loose or broken wire #10A from outrigger board to outrigger down limit switch LS66.	<p>Check continuity. Replace if defective.</p>
10. Right Front outrigger N.C.-held open limit switch LS66 is out of adjustment or defective.	<p>Check continuity from wire #10A and wire #66A through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
11. Loose or broken wire #66A from outrigger limit switch LS66 to outrigger control module pin #P2-3.	<p>Check continuity. Replace if defective.</p>
12. Loose or broken wire #10A from outrigger board to outrigger down limit switch LS65.	<p>Check continuity. Replace if defective.</p>
13. Left Front outrigger N.C.-held open limit switch LS65 is out of adjustment or defective.	<p>Check continuity from wire #10A and wire #65A through switch when closed.</p> <p>Adjust switch if out of adjustment.</p> <p>Replace if defective.</p>
14. Loose or broken wire #65A from outrigger limit switch LS65 to outrigger control module pin #P2-4.	<p>Check continuity. Replace if defective.</p> <p>Check for output power for Lift Enable signal on wire #65 at outrigger control module at pin #P2-8.</p> <p>If no voltage present, proceed to outrigger control module troubleshooting.</p>
15. Loose or broken wire #65 from outrigger control module at pin P2-8 to Outrigger Lift Enable Relay 65CR.	<p>Check continuity. Replace if defective.</p>

16. Loose or broken wire #02 from Outrigger Lift Enable Relay 65CR to Base terminal block TB-1.	Check continuity. Replace if defective.
17. Defective Outrigger Lift Enable Relay 65CR.	Check Relay. Replace if defective.
18. Open diode D14A-2 at base terminal block TB-1.	Check diode. Replace if defective.

4.2-25 Platform does not Lift from Platform or Base Control Console with Outriggers Extended or Retracted

1. Defective Outrigger Lift Enable Relay 65CR.	Check Relay. Replace if defective.
2. Defective Outrigger Lift Disable Relay 17DCR.	Check Relay. Replace if defective.
3. Loose or broken wire #14 from Base terminal block TB-1 to outrigger/ generator harness connector.	Check continuity. Replace if defective.
4. Loose or broken wire #02 from Base terminal block TB-1 to outrigger/ generator harness connector.	Check continuity. Replace if defective.
5. Loose or broken wire #14 from Base terminal block to Control Module CM1 at pin #P2-3.	Check continuity. Replace if defective.
6. Defective Up Relay 14CR.	Check Relay. Replace if defective.
7. Loose or broken wire #36A from Outrigger Lift Enable Relay 65CR to Up Relay 14CR.	Check continuity. Replace if defective.
8. Loose or broken wire #14A from Up Relay 14CR to Base terminal block TB-1.	Check continuity. Replace if defective.

4.2-26 Down Function Inoperative from Platform

1. Lift/Off/Drive Select switch S3 is set to an incorrect mode.	Select Lift. Check switch. Replace if defective.
2. Defective Joystick S7.	Operate Joystick. Check output to wire #A P1-6. Replace if defective
3. Loose or broken wire #A from Joystick S7 to Lift/Off/Drive Select switch S3.	Check continuity. Replace if defective
4. Defective Lift/Off/Drive Select switch S3.	Check continuity between wire #A and wire #13 on switch when Lift selected. Replace if defective.

5. Loose or broken wire #13 from Lift/Off/Drive Select switch S3 to Base terminal block TB-1.	Check continuity. Replace if defective.
6. Loose or broken wire #13 from Base terminal block TB-1 to Control module CM1 pin #P2-4.	Check continuity. Replace if defective.
7. Loose or broken wire #28 from Control module CM1 pin #P3-4 to Down Enable Relay 28CR.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Down Enable Relay 28CR to Base terminal block TB-1	Check continuity. Replace if defective.
9. Defective Down Enable Relay 28CR.	Check Relay. Replace if defective.
10. Loose or broken wire #13 from Base terminal block TB-1 to Down Enable Relay 28CR.	Check continuity. Replace if defective.
11. Defective Down Enable Relay 28CR.	Check Relay. Replace if defective.
12. Loose or broken wire #13A from Down Enable Relay 28CR to Aux. down Enable Relay 28ECR3.	Check continuity. Replace if defective.
13. Loose or broken wire #28E from Control module CM1 pin #P3-6 to Aux. Down Enable Relay 28ECR3.	Check continuity. Replace if defective.
14. Loose or broken wire #02 from Aux. Down Enable Relay 28ECR3 to Base terminal block TB-1	Check continuity. Replace if defective.
15. Defective Aux. Down Enable Relay 28ECR3.	Check Relay. Replace if defective.
16. Loose or broken wire #13B from Aux. Down Enable Relay 28ECR3 to Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2.	Check continuity. Replace if defective.
17. Loose or broken wire #02 from Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2 to Base terminal block TB-1.	Check continuity. Replace if defective.
18. Defective Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2.	Check Coils. Replace if defective.

4.2-27 Down Function Inoperative from Base

1. Loose or broken wire #10E from Base terminal block TB-1 to Base Up/Down switch S2.	Check continuity. Replace if defective.
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2. Defective Base Up/Down switch S2.	Operate switch. Check continuity between wire #10E and wire #13 on switch. Replace if defective.
3. Loose or broken wire #13 from Base Up/Down switch S2 to Base terminal block TB-1.	Check continuity. Replace if defective.
4. Loose or broken wire #13 from Base terminal block TB-1 to Control module CM1 pin #P2-4.	Check continuity. Replace if defective.
5. Loose or broken wire #28 from Control module CM1 pin #P3-4 to Down Enable Relay 28CR.	Check continuity. Replace if defective.
6. Loose or broken wire #02 from Down Enable Relay 28CR to Base terminal block TB-1	Check continuity. Replace if defective.
7. Defective Down Enable Relay 28CR.	Check Relay. Replace if defective.
8. Loose or broken wire #13 from Base terminal block TB-1 to Down Enable Relay 28CR.	Check continuity. Replace if defective.
9. Defective Down Enable Relay 28CR.	Check Relay. Replace if defective.
10. Loose or broken wire #13A from Down Enable Relay 28CR to Aux. down Enable Relay 28ECR3.	Check continuity. Replace if defective.
11. Loose or broken wire #28E from Control module CM1 pin #P3-6 to Aux. Down Enable Relay 28ECR3.	Check continuity. Replace if defective.
12. Loose or broken wire #02 from Aux. Down Enable Relay 28ECR3 to Base terminal block TB-1	Check continuity. Replace if defective.
13. Defective Aux. Down Enable Relay 28ECR3.	Check Relay. Replace if defective.
14. Loose or broken wire #13B from Aux. Down Enable Relay 28ECR3 to Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2 to Base terminal block TB-1.	Check continuity. Replace if defective.
16. Defective Main Lowering Valve solenoid 2H-13B, Holding Valve solenoid 2H-13B-1, and/or Holding Valve solenoid 2H-13B-2.	Check Coils. Replace if defective.

4.2-28 Hydraulic Generator Inoperative

1. Lift/Off/Drive Select switch S3 is set to an incorrect mode.	Select Lift. Check switch. Replace if defective.
2. Defective Lift/Off/Drive Select switch S3.	Check continuity between wire #08 and wire #09 on switch when Lift selected. Replace if defective.
3. Loose or broken wire #09 from Lift/Off/Drive Select switch S3 to Base terminal block TB-1.	Check continuity. Replace if defective.
4. Loose or broken wire #09 from Base terminal block TB-1 to Hydr.Generator switch S12.	Check continuity. Replace if defective.
5. Loose or broken wire #09 from Base terminal block TB-1 to Hydr.Generator Latching Relay 86BCR.	Check continuity. Replace if defective.
6. Defective Hydr.Generator switch S12.	Operate switch. Check continuity between wire #09 and wire #85 when switched to "ON". Replace if defective.
7. Loose or broken wire #85 from Hydr.Generator switch S12 to Hydr.Generator Stop Relay 86ACR.	Check continuity. Replace if defective.
8. Loose or broken wire #86B from Hydr.Generator Stop Relay 86ACR to Hydr.Generator Latching Relay 86BCR.	Check continuity. Replace if defective.
9. Defective Hydr.Generator Stop Relay 86ACR.	Check relay. Replace if defective.
10. Defective Hydr.Generator Latching Relay 86BCR.	Check relay. Replace if defective.
11. Open diode D86C.	Check diode. Replace if defective.
12. Loose or broken wire #2A from Hydr.Generator Latching Relay 86BCR to Hour Meter TT.	Check continuity. Replace if defective.
13. Loose or broken wire #86C from Hydr.Generator Latching Relay 86BCR to Hydr.Generator Relay 86CCR.	Check continuity. Replace if defective.
14. Loose or broken wire #85 from diode D86C to Hydr. Generator Stop Relay 86ACR.	Check continuity. Replace if defective.
15. Loose or broken wire #02 from Base terminal block TB-1 to Hydr.Generator Relay 86CCR.	Check continuity. Replace if defective.
16. Defective Hydr.Generator Relay 86CCR.	Check relay. Replace if defective.

17. Loose or broken wire #43 from Anti-Start Relay 32CR1 to Hydr.Generator Relay 86CCR.	Check continuity. Replace if defective.
18. Loose or broken wire #86D from Hydr.Generator Relay 86CCR to Hydr.Generator Valve solenoid 2H-86D.	Check continuity. Replace if defective.
19. Loose or broken wire #02 from Base terminal block TB-1 to Hydr.Generator Valve solenoid 2H-86D.	Check continuity. Replace if defective.
20. Defective Hydr.Generator Valve solenoid 2H-86D.	Check coil. Replace if defective.
21. Open diode D86D.	Check diode. Replace if defective.
22. Loose or broken wire #17B from diode D86D to Base terminal block TB-1.	Check continuity. Replace if defective.

4.2-29 Hydraulic Generator does not Shut Off from Generator Switch

1. Defective Hydr.Generator switch S12.	Operate switch. Check continuity between wire #09 and wire #86 when switched to "OFF". Replace if defective.
2. Loose or broken wire #86 from Hydr.Generator switch S12 to diode D86.	Check continuity. Replace if defective.
3. Open diode D86.	Check diode. Replace if defective.
4. Loose or broken wire #86A from diode D86 to Hydr. Generator Stop Relay 86ACR.	Check continuity. Replace if defective.
5. Loose or broken wire #02 from Base terminal block TB-1 to Hydr.Generator Stop Relay 86ACR.	Check continuity. Replace if defective.
6. Defective Hydr.Generator Stop Relay 86ACR.	Check relay. Replace if defective.

4.2-30 All Outriggers Inoperative (Auto-Level and Manual)

WARNING

Scissor lift must be below the Tilt Override/High Drive Cutout switch LS5 for outriggers to function.

NOTE: For the outriggers to function the Platform's upper control box Lift/Off/Drive switch S3 must be in Lift mode and the Scissor Stack stowed or fully retracted down.

1. Loose or broken wire #44 from Base terminal block TB-1 to pin #6 on connector CN14 of outrigger board. (Tilt Override/High Drive Cutout signal)	Check for power at connector. Replace if defective.
2. Loose or broken wire #09 from Base Terminal block TB-1 to pin #5 on connector CN14 on outrigger board. (Outrigger Enable signal)	Check for power at connector. Replace if defective.
3. Loose or broken wire #02 from Base terminal block TB-1 to pin #8/#9 on connector CN14 on outrigger board. (Battery negative – wire)	Check for continuity. Replace if defective.
4. Defective Outrigger Enable Relay 9CR2 and/or Outrigger Proof Relay 9CR3 on outrigger board.	Check relays. Replace if defective.
5. Loose or broken wire #10A from Base Terminal block TB-1 to pin #4 on connector CN14 on outrigger board. (Main Power signal)	Check for power at connector. Replace if defective.
6. Defective Outrigger Lift Disable Relay 17DCR on outrigger board.	Check relay. Replace if defective.
7. Open or defective Fuse Jumper J17E on outrigger board.	Check fuse. Replace if defective.
8. Loose or broken wire #17B from pin #2 on connector CN14 on outrigger board to Base terminal block TB-1. (Large Pump Dump Valve solenoid "On" signal)	Check for continuity. Replace if defective.
9. Open diode D17C-1 on outrigger board.	Check diode. Replace if defective.
10. Loose or broken wire #17C at pin #1 and/or wire #02 at pin #2 on connector CN21 on outrigger board to outrigger Holding Valve solenoid 2H-17C.	Check for continuity. Replace if defective.
11. Defective outrigger Holding Valve solenoid 2H-17C.	Check coil. Replace if defective.

4.2-31 All Outriggers Inoperative (Auto-Level and Manual from Platform Controls)

- | | |
|---|---|
| 1. Loose or broken wires #35C at pin #1 on connector CN20 on outrigger board through outrigger cables and plugs to the Outrigger Enable switch S9A in the Platform outrigger control box. | Check for continuity. Replace if defective. |
| 2. Loose or broken wire #35C to Outrigger Control Module OCM1 pin #P4-9 (Outrigger Enable signal). | Check for power at module and check wire continuity. |
| 3. Defective outrigger enable switch S9A. | Operate switch.
Check continuity between wire #35C and wire #35D on switch (both contacts).
Replace if defective. |
| 4. Loose or broken wire #35D from Outrigger Enable switch S9A to pin #5 on the Platform outrigger control 10 pin connector console plug. | Check for continuity. Replace if defective. |

4.2-32 All Outriggers Inoperative (Base Controls only)

- | | |
|--|--|
| 1. Loose or broken wire #35C to Outrigger Control Module OCM1 pin #P4-9 (Outrigger Enable signal). | Check for power at module and check wire continuity. |
| 2. Defective outrigger enable switch S9B. | Check switch. Replace if defective. |

4.2-33 All Outriggers Inoperative (Auto Level only)

A : LED Power Indicator Light at Outrigger Control Module (OCM1) Not On (Constant)

- | | |
|--|---|
| 1. Loose or broken wire #10A at pin #1 of the Tilt Override/High Drive Cutout switch LS5 connector to pin #P2-12 on the Outrigger Control Module OCM1. | Check for continuity. Replace if defective. |
| 2. Loose or broken wire #10A at pin #1 of the Tilt Override/High Drive Cutout switch LS5 connector to Base terminal block TB-1. | Check for continuity. Replace if defective. |
| 3. Loose or broken wire # 02 at pin #3 of the Tilt Override/High Drive Cutout switch LS5 connector to pin P2-11 on the Outrigger Control Module OCM1. | Check for continuity. Replace if defective. |

4. Loose or broken wire #02 at pin #3 of the Tilt Override/High Drive Cutout switch LS5 connector to Base terminal block TB-1. **Check for continuity. Replace if defective.**
5. Defective Outrigger Control Module OCM1. **Check Module. Replace if defective.**

4.2-34 All Outriggers Inoperative (Auto Level only)

A : LED Power Indicator Light at Outrigger Control Module (OCM1) Not On (Constant)

Flash Code	Probable Cause	Remedy
1/1	1. Outriggers are all up and machine is tilted.	1. Level the machine.
1/2	1. Machine is elevated. 2. Loose or broken wire # 35.	1. Lower the scissor stack below high speed limit switch. 2. Check for input voltage on wire #44 at pin P2-10 of the outrigger control module (OCM1). Replace if defective.
2/2	1. At least one outrigger is not fully retracted. 2. Defective outrigger rod limit switch (LS61, LS62, LS63, LS64) or wiring. 3. Defective diode (D36) on outrigger board.	1. Fully retract all outriggers. 2. Replace defective or damaged switch(es) or wiring. 3. Check for continuity. Replace if defective.
2/1	1. Outriggers are all down and the machine is not fully level.	1. Move machine to less sloped terrain if it will not lift.
5/5	1. Power on wire #70 or #79 at power on. 2. Power on wire #70 or #79 when manually operating outriggers.	1. Check for power on wire #70 or #79 at pin P2-5 or P2-6 of the outrigger control module. Replace defective component. 2. Check for power on wire #70 or #79 while manually operating an outrigger.
5/2	1. Low or no voltage on wire #35C. 2. Loose or broken wire on #35C.	1. Check battery and charging system to ensure minimum 9 volts. 2. Check for input voltage on wire #35C at pin P4-9 of outrigger control module (OCM1).
7/1	1. Excessive vibration. 2. Defective outrigger control module.	1. Outrigger control module (OCM1) cannot read tilt sensor. 2. Replace.
6/6	1. Outriggers are being manually controlled.	1. Indicates function activated. No repair necessary.
7/8	1. Error occurred while self diagnosing the hardware fail safe.	1. Turn off power to reset the outrigger control module (OCM1). 2. Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module (OCM1).
5/1	1. Low input voltage to outrigger control module (OCM1).	1. Check for minimum 9 volts between wire #02 at pin P2-11 and wire #10A at pin P2-12 at outrigger control module (OCM1).
7/7	1. Startup error occurred while self diagnosing.	1. Turn off power to reset the outrigger control module (OCM1). Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module.
7/5	1. Internal failure of outrigger control module (OCM1).	1. Turn off power to reset the outrigger control module (OCM1). Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module.
7/2	1. Internal failure of outrigger control module (OCM1).	1. Turn off power to reset the outrigger control module (OCM1). 2. Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module.
8/1	1. Internal failure of outrigger control module (OCM1).	1. Turn off power to reset the outrigger control module (OCM1). 2. Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module.
8/2	1. Internal failure of outrigger control module (OCM1).	1. Turn off power to reset the outrigger control module (OCM1). 2. Turn power back on and see if the code has cleared. If problem persists, replace outrigger control module.

1. Defective Left Front Outrigger switch S20 at Platform control console.	<p>Operate switch.</p> <p>Check continuity between wire #35D and wire #71 at switch for UP function.</p> <p>Check continuity between wire #35D and wire #75 at switch for DOWN function.</p> <p>Replace if defective.</p>
2. Defective Left Front Outrigger switch S20A at Base control console.	<p>Operate switch.</p> <p>Check continuity between wire #35E and wire #71 at switch for UP function.</p> <p>Check continuity between wire #35E and wire #75 at switch for DOWN function.</p> <p>Replace if defective.</p>
3. Loose or broken wire #71 (for UP function) from outrigger control console to pin #6 on connector CN20 at outrigger board.	<p>Check continuity. Replace if defective.</p>
4. Loose or broken wire #75 (for DOWN function) from outrigger control console to pin #7 on connector CN20 at outrigger board.	<p>Check continuity. Replace if defective.</p>
5. Open diode D71 (for UP function) or D75 (for DOWN function) on outrigger board.	<p>Check diodes. Replace if defective.</p>
6. Loose or broken wire #71 (for UP function) at pin #7 on connector CN21 at outrigger board to Left Front Up Outrigger Valve solenoid 4H-71.	<p>Check continuity. Replace if defective.</p>
7. Loose or broken wire #75 (for DOWN function) at pin #8 on connector CN21 at outrigger board to Left Front Down Outrigger Valve solenoid 4H-75.	<p>Check continuity. Replace if defective.</p>
8. Loose or broken wire #02 from Left Front Up Outrigger Valve solenoid 4H-71 to pin #2 on connector CN21 at the outrigger board.	<p>Check continuity. Replace if defective.</p>
9. Loose or broken wire #02 from Left Front Down Outrigger Valve solenoid 4H-75 to pin #2 on connector CN21 at the outrigger board.	<p>Check continuity. Replace if defective.</p>
10. Defective Left Front Up Outrigger Valve solenoid 4H-71.	<p>Check coil. Replace if defective.</p>
11. Defective Left Front Down Outrigger Valve solenoid 4H-75.	<p>Check coil. Replace if defective.</p>

4.2-35 Right Front Outrigger Inoperative Manually

1. Defective Right Front Outrigger switch S21 at Platform control console.	<p>Operate switch. Check continuity between wire #35D and wire #72 at switch for UP function.</p> <p>Check continuity between wire #35D and wire #76 at switch for DOWN function.</p> <p>Replace if defective.</p>
2. Defective Right Front Outrigger switch S21A at Base control console.	<p>Operate switch. Check continuity between wire #35E and wire #72 at switch for UP function.</p> <p>Check continuity between wire #35E and wire #76 at switch for DOWN function.</p> <p>Replace if defective.</p>
3. Loose or broken wire #72 (for UP function) from outrigger control console to pin #8 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
4. Loose or broken wire #76 (for DOWN function) from outrigger control console to pin #9 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
5. Open diode D72 (for UP function) or D76 (for DOWN function) on outrigger board.	Check diodes. Replace if defective.
6. Loose or broken wire #72 (for UP function) at pin #9 on connector CN21 at outrigger board to Right Front Up Outrigger Valve solenoid 4H-72.	Check continuity. Replace if defective.
7. Loose or broken wire #76 (for DOWN function) at pin #10 on connector CN21 at outrigger board to Right Front Down Outrigger Valve solenoid 4H-76.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Right Front Up Outrigger Valve solenoid 4H-72 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from Right Front Down Outrigger Valve solenoid 4H-76 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
10. Defective Right Front Up Outrigger Valve solenoid 4H-72.	Check coil. Replace if defective.
11. Defective Right Front Down Outrigger Valve solenoid 4H-76.	Check coil. Replace if defective.

4.2-36 Right Rear Outriggers Inoperative Manually

1. Defective Right Rear Outrigger switch S22 at Platform control console.	<p>Operate switch. Check continuity between wire #35D and wire #73 at switch for UP function.</p> <p>Check continuity between wire #35D and wire #77 at switch for DOWN function.</p> <p>Replace if defective.</p>
2. Defective Right Rear Outrigger switch S22A at Base control console.	<p>Operate switch. Check continuity between wire #35E and wire #73 at switch for UP function.</p> <p>Check continuity between wire #35E and wire #77 at switch for DOWN function.</p> <p>Replace if defective.</p>
3. Loose or broken wire #73 (for UP function) from outrigger control console to pin #3 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
4. Loose or broken wire #77 (for DOWN function) from outrigger control console to pin #4 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
5. Open diode D73 (for UP function) or D77 (for DOWN function) on outrigger board.	Check diodes. Replace if defective.
6. Loose or broken wire #73 (for UP function) at pin #4 on connector CN21 at outrigger board to Right Rear Up Outrigger Valve solenoid 4H-73.	Check continuity. Replace if defective.
7. Loose or broken wire #77 (for DOWN function) at pin #5 on connector CN21 at outrigger board to Right Rear Down Outrigger Valve solenoid 4H-77.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Right Rear Up Outrigger Valve solenoid 4H-73 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from Right Rear Down Outrigger Valve solenoid 4H-77 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
10. Defective Right Rear Up Outrigger Valve solenoid 4H-73.	Check coil. Replace if defective.
11. Defective Right Rear Down Outrigger Valve solenoid 4H-77.	Check coil. Replace if defective.

4.2-37 Left Rear Outriggers Inoperative Manually

1. Defective Left Rear Outrigger switch S23 at Platform control console.	<p>Operate switch. Check continuity between wire #35D and wire #74 at switch for UP function.</p> <p>Check continuity between wire #35D and wire #78 at switch for DOWN function.</p> <p>Replace if defective.</p>
2. Defective Left Rear Outrigger switch S23A at Base control console.	<p>Operate switch. Check continuity between wire #35E and wire #74 at switch for UP function.</p> <p>Check continuity between wire #35E and wire #78 at switch for DOWN function.</p> <p>Replace if defective.</p>
3. Loose or broken wire #74 (for UP function) from outrigger control console to pin #5 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
4. Loose or broken wire #78 (for DOWN function) from outrigger control console to pin #2 on connector CN20 at outrigger board.	Check continuity. Replace if defective.
5. Open diode D74 (for UP function) or D78 (for DOWN function) on outrigger board.	Check diodes. Replace if defective.
6. Loose or broken wire #74 (for UP function) at pin #6 on connector CN21 at outrigger board to Left Rear Up Outrigger Valve solenoid 4H-74.	Check continuity. Replace if defective.
7. Loose or broken wire #78 (for DOWN function) at pin #3 on connector CN21 at outrigger board to Left Rear Down Outrigger Valve solenoid 4H-78.	Check continuity. Replace if defective.
8. Loose or broken wire #02 from Left Rear Up Outrigger Valve solenoid 4H-74 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
9. Loose or broken wire #02 from Left Rear Down Outrigger Valve solenoid 4H-78 to pin #2 on connector CN21 at the outrigger board.	Check continuity. Replace if defective.
10. Defective Left Rear Up Outrigger Valve solenoid 4H-74.	Check coil. Replace if defective.
11. Defective Left Rear Down Outrigger Valve solenoid 4H-78.	Check coil. Replace if defective.

4.2-38 Individual Outrigger Functions Inoperative (Auto-Level)

- | | |
|---|---|
| 1. Loose or broken wire #71 to wire #78 (depending on which outrigger function is not working) at Outrigger Control Module OCM1 plug P4 pins 1-8. | Check connections of the outrigger function not working. (refer to Section 5 for pin reference chart).
Replace if defective. |
| 2. No output from Outrigger Control Module OCM1 at plug P4 pins 1-8. | Cycle power off to reset the Outrigger Control Module OCM1.
Turn power back on and retest outputs.
If problem persists, replace Outrigger Control Module OCM1. |

4.2-39 Auto-Level Inoperative

- | | |
|--|---|
| 1. Loose or broken wire #35D from Outrigger Enable switch S9A to Auto Level Mode switch S24. | Check continuity. Replace if defective. |
| 2. Defective Level Auto Mode switch S24. | Operate switch.
Check continuity between wire #35D and wire #70 on switch when Level selected.
Replace if defective. |
| 3. Loose or broken wire #70 from Auto Level Mode switch S24 to Outrigger Control Module OCM1 pin #P2-5 (Auto Level signal). | Check continuity. Replace if defective. |
| 4. Loose or broken wire #10A from pin #4 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin #P2-12. (Power signal) | Check for power at P2-12.
If no voltage present, check continuity of wire.
Replace if defective. |
| 5. Loose or broken wire #44 from pin #6 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin #P2-10. (Tilt Override/High Drive Cutout signal) | Check for power at P2-10.
If no voltage present, check continuity of wire.
Replace if defective. |
| 6. Loose or broken wire #02 from pin #8/9 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin # P2-11. (Battery negative – signal) | Check for ground at P2-11.
If no ground present, check continuity of wire.
Replace if defective. |

For additional information, refer to sections 4 & 5 Outrigger Control Module – Troubleshooting.

4.2-40 Auto All Up Inoperative (Retract)

- | | |
|--|--|
| 1. Loose or broken wire #35D from Outrigger Enable switch S9A to Auto Level Mode switch S24. | Check continuity. Replace if defective. |
| 2. Defective Level Auto Mode switch S24. | Operate switch. Check continuity between wire #35D and wire #79 on switch when ALL UP selected. Replace if defective. |
| 3. Loose or broken wire #79 from Auto Level Mode switch S24 to Outrigger Control Module OCM1 pin #P2-6 (ALL UP signal). | Check continuity. Replace if defective. |
| 4. Loose or broken wire #10A from pin #4 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin #P2-12. (Power signal) | Check for power at P2-12. If no voltage present, check continuity of wire. Replace if defective. |
| 5. Loose or broken wire #44 from pin #6 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin #P2-10. (Tilt Override/High Drive Cutout signal) | Check for power at P2-10. If no voltage present, check continuity of wire. Replace if defective. |
| 6. Loose or broken wire #02 from pin #8/9 on connector CN14 of outrigger board to Outrigger Control Module OCM1 pin # P2-11. (Battery negative – signal) | Check for ground at P2-11. If no ground present, check continuity of wire. Replace if defective. |

For additional information, refer to sections 4 & 5 Outrigger Control Module.

4.3 Hydraulic Systems

4.3-1 All Functions Inoperative

1. Hydraulic oil level is low or empty.	Check fluid level and refill tank to proper level.
2. Defective Pump P1.	Check system pressures and Pump P1 functionality. Replace if defective.
3. Broken Engine to Pump coupler.	Check coupler. Replace if defective.
4. Defective or stuck Check Valves CV1 and/or CV2.	Check valves. Clean or replace if defective.
5. System Relief Valve R1 defective or not adjusted properly.	Adjust valve. Replace if defective.

4.3-2 Steering Inoperative

1. Stuck or defective Steer Right Valve 4H-23 or Steer Left Valve 4H-24.	Check valves. Replace if defective.
2. Plugged Steer Orifice O4.	Clean orifice. Replace if defective.
3. Steer Cylinder C7 damaged or bypassing internally.	Check cylinder. Repair or replace if defective.

4.3-3 Lift, Steer and First Drive Speed Inoperative

1. Small Pump Dump Valve 2H-18C is stuck open.	Check valve. Repair or replace if defective.
2. Worn or defective Small Pump section of Pump P1.	Check system pressures and Small Pump functionality. Repair or replace if defective.
3. Check Valve CV1 or CV2 defective or stuck.	Check valves. Clean or replace if defective.

4.3-4 Second Drive Speed Inoperative

1. Large Pump Dump Valve 2H-17B stuck open.	Check valve. Repair or replace if defective.
2. Worn or defective Large Pump section of Pump P1.	Check system pressures and Large Pump functionality. Repair or replace if defective.
3. Check Valve CV1 or CV2 defective or stuck.	Check valves. Clean or replace if defective.

4.3-5 Drive Inoperative

1. Stuck or defective Reverse Drive Valve solenoid 4H-15A and/or Forward Drive Valve solenoid 4H-16A.	Check valves. Repair or replace if defective.
2. Drive Relief Valve R5 defective or not adjusted properly.	Adjust valve. Replace if defective.
3. Stuck or defective Main Counterbalance Valve CB1.	Check valve. Repair or replace if defective.
4. Defective Drive Motors M1, M2, M3 and/or M4.	Check motors. Repair or replace if defective.
5. Freewheel Valve V2 open or defective.	Close valve. Repair or replace if defective.
6. Stuck or defective High Speed Valve 2H-20B.	Check valve. Repair or replace if defective.
7. Cushion Cylinder C8 bypassing internally.	Check cylinder. Repair or replace if defective.

4.3-6 Drive Sluggish

1. Stuck open or defective Check Valve CV3, CV4, CV5, and/or CV6.	Check Valves. Replace if defective.
2. Drive Relief Valve R5 set too low.	Refer to Section 5 of this manual for setup procedure.
3. Defective Flow Divider FD1.	Check valve. Replace if defective.

4.3-7 Reverse Drive Inoperative

1. Stuck or defective Reverse Drive Valve 4H-15A.	Check valve. Repair or replace if defective.
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4.3-8 Forward Drive Inoperative

1. Stuck or defective Forward Drive Valve 4H-16A.	Check valve. Repair or replace if defective.
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4.3-9 Drive Inoperative When in Low Drive

1. Stuck or defective Parallel Counterbalance Valve CB2.	Check valve. Replace if defective.
2. Stuck or defective Parallel Forward Drive Valve 4H-16B or Parallel Reverse Drive Valve 4H-15B.	Check valves. Replace if defective.

4.3-10 Drive Inoperative When in High Drive

- | | |
|--|---|
| 1. Stuck or defective Series/Parallel Valve 4H-20A. | Check valve. Replace if defective. |
| 2. Stuck or defective Main Counterbalance Valve CB1. | Check valve. Replace if defective. |

4.3-11 Brakes Do Not Release

- | | |
|--|---|
| 1. Stuck or defective Brake Valve 3H-30. | Check valve. Repair or replace if defective. |
| 2. Stuck or defective Auto Reset Valve V6. | Check valve. Repair or replace if defective. |

4.3-12 Up Circuit Inoperative

- | | |
|--|--|
| 1. Stuck or defective Lift Valve 3H-14A. | Check valve. Repair or replace if defective. |
| 2. Lift Relief Valve R2 defective or not adjusted properly. | Adjust valve. Replace if defective. |
| 3. Stuck or defective main Lowering Valve 2H-13B. | Check valve. Repair or replace if defective. |
| 4. Stuck or defective manual Emergency Lowering Pull Valve V1. | Check valve. Repair or replace if defective. |
| 5. The manual overrides are open on Holding Valves 2H-13B-1 and/or 2H-13B-2. | Depress and turn manual overrides clockwise to close.
Replace if defective. |
| 6. Stuck Holding Valves 2H-13B-1 and/or 2H-13B-2. | Check valves. Repair or replace if defective |

4.3-13 Down Circuit Inoperative

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|---|--|
| 1. Stuck or defective main Lowering Valve 2H-13B. | Check valve. Repair or replace if defective. |
| 2. Stuck Holding Valves 2H-13B-1 and/or 2H-13B-2. | Check valves. Repair or replace if defective. |
| 3. Plugged Lowering Orifice O2. | Clean or replace orifice. |

4.3-14 Hydraulic Generator Inoperative

- | | |
|--|---|
| 1. Stuck or defective Hydr.Generator Valve 2H-86D. | Check valve. Repair or replace if defective. |
| 2. Incorrectly adjusted or defective Flow Control Valve FC1. | Adjust valve. Replace if defective. |
| 3. Stuck or defective Large Pump Dump Valve 2H-17B. | Check valve. Repair or replace if defective. |
| 4. Defective Hydr.Generator Motor GM1. | Check motor. Repair or replace if defective. |

4.3-15 All Outriggers Inoperative

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|---|---|
| 1. Stuck or defective Outrigger Holding Valve 2H-17C. | Check valve. Repair or replace if defective. |
|---|---|

4.3-16 Outriggers Inoperative

Left Front

- | | |
|---|--|
| 1. Stuck or defective Left Front Up Outrigger Valve 4H-71 (Retract). | Clean valve. Replace if defective. |
| 2. Stuck or defective Left Front Down Outrigger Valve 4H-75 (Extend). | Clean valve. Replace if defective. |
| 3. Stuck or defective Check Valve CV7. | Check valve. Replace if defective. |
| 4. Fluid is bypassing Outrigger Cylinder C9 internally. | Check cylinder and repack if necessary.
Replace if defective. |

Right Front

- | | |
|--|--|
| 5. Stuck or defective Right Front Up Outrigger Valve 4H-72 (Retract). | Clean valve. Replace if defective. |
| 6. Stuck or defective Right Front Down Outrigger Valve 4H-76 (Extend). | Clean valve. Replace if defective. |
| 7. Stuck or defective Check Valve CV8. | Check valve. Replace if defective. |
| 8. Fluid is bypassing Outrigger Cylinder C10 internally. | Check cylinder and repack if necessary.
Replace if defective. |

Right Rear

- | | |
|--|--|
| 9. Stuck or defective Right Rear Up Outrigger Valve 4H-73 (Retract). | Clean valve. Replace if defective. |
| 10. Stuck or defective Right Rear Down Outrigger Valve 4H-77 (Extend). | Clean valve. Replace if defective. |
| 11. Stuck or defective Check Valve CV9. | Check valve. Replace if defective. |
| 12. Fluid is bypassing Outrigger Cylinder C11 internally.. | Check cylinder and repack if necessary.
Replace if defective. |

Left Rear

- | | |
|---|--|
| 13. Stuck or defective Left Rear Up Outrigger Valve 4H-74 (Retract). | Clean valve. Replace if defective. |
| 14. Stuck or defective Left Rear Down Outrigger Valve 4H-78 (Extend). | Clean valve. Replace if defective. |
| 15. Stuck or defective Check Valve CV10. | Check valve. Replace if defective. |
| 16. Fluid bypassing Outrigger Cylinder C12 internally. | Check cylinder and repack if necessary.
Replace if defective. |

4.3-17 Outriggers Drift In

- | | |
|--|---|
| 1. Defective Check valve(s) left front CV7, right front CV8, right rear CV9 and/or left rear CV10. | Clean valve(s). Replace if defective. |
| 2. Fluid bypassing Outriggers cylinder(s) left front C9, right front C10, right rear C11 or left rear C12. | Check cylinder and repack if necessary.
Replace if defective |

4.3-18 Load Sense System Codes

1. Flash Code F01: Check HWFS -	Check HELP message for more information.
This message is given if the GP102 startup tests have not completed.	
2. Flash Code F02: Not Ground Mode -	Calibration can only be carried out in ground mode.
This message is given if the machine is not in ground mode, P2-2 must be high.	
3. Flash Code F03: Not Stopped -	Check DIAGNOSTICS / SWITCHES to see which function switch is closed.
This message is given if the machine is not in ground mode, P2-2 must be high.	
4. Flash Code F04: Tilted -	Calibration must be carried out with the machine level. If the machine is level, use the
This message is given if the machine is tilted.	
5. Flash Code F05: Bad Height -	The height sensor output must be between 1.0V and 4.0V. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0V or 5V is probably due to a wiring problem.
This message is given if the height sensor output P4-3 is out of range at the start of calibration.	
6. Flash Code F06: Check Elev -	If the platform is down, check the elevation switch wiring.
This message is given if the elevation switch P2-10 is open at the start of calibration, when the operator has confirmed the PLATFORM DOWN? question.	
7. Flash Code F08: Check Elev -	This message would occur if the UP switch was accidentally opened near the start of the DYNAMIC lift. If the platform is fully raised, check the elevation switch wiring.
This message is given if the elevation switch P2-10 is closed at the end of the DYNAMIC lift, when the platform should be fully raised.	
8. Flash Code F09: Bad Height -	The height sensor output must be between 1.0V and 4.0V. Check DIAGNOSTICS / SENSORS to see the output.
This message is given if the height sensor output P4-3 is out of range at the start of the DYNAMIC lift.	
9. Flash Code F10: Bad Height -	The height sensor output must be between 1.0V and 4.0V. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0 V or 5 V is probably due to a wiring problem.
This message is given if the height sensor output P4-3 is out of range at the end of the DYNAMIC lift.	
10. Flash Code F11: Not Up -	Select the UP function.
This message occurs at the start of the DYNAMIC lift if the operator selects a function other than UP.	

<p>11. Flash Code F12: Too Many - This message occurs if the DYNAMIC lift takes too long. This message could occur if the UP switch was not released at the end of the dynamic lift.</p>	<p>If the machine takes more than two minutes to lift, the GP102 may need modification to avoid this problem.</p>
<p>12. Flash Code F13: Low Height Range - This message occurs at the end of the DYNAMIC lift if the height sensor output did not change sufficiently to give a reasonably accurate platform height estimate. This message could occur if the UP switch was accidentally opened too early (when the platform is not fully raised).</p>	<p>This message will occur if the UP switch was accidentally opened near the start of the DYNAMIC lift. If the platform is fully raised, check the elevation switch wiring.</p>
<p>13. Flash Code F14: Bad Height - This message occurs if the height sensor output P4-3 is out of range during the DYNAMIC lift.</p>	<p>The height sensor output must be between 1.0V and 4.0V. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0 V or 5 V is probably due to a wiring problem.</p>
<p>14. Flash Code F15: Check Elev - This message is given if the elevation switch P2-10 is open when the platform has been fully lowered after the DYNAMIC lift.</p>	<p>This message would occur if the DOWN switch was accidentally opened before the platform was fully lowered. If the platform is fully lowered, check the elevation switch.</p>
<p>15. Flash Code F16: Low Elev.open - This message is given if the elevation switch P2-10 opened during lift at a too low height (below 5%).</p>	<p>If it opens below 5%, the pressure is probably too unpredictable to allow reliable detection of an overloaded platform when initially raised. Check CALIBRATIONS / HEIGHT CALS. The ElevUp value shows the recorded height where the switch opened.</p>
<p>16. Flash Code F17: High Elev.open - This message is given if the elevation switch P2-10 opened during lift at a too high height (above 25%).</p>	<p>If it opens above 25%, the platform is too high when the overloaded platform is detected. Check CALIBRATIONS / HEIGHT CALS The ElevUp value shows the recorded height where the switch opened.</p>
<p>17. Flash Code F18: Low Elev.close - This message is given if the elevation switch P2-10 closed during lower at a too low height (below 5%).</p>	<p>If it closes below 5%, height sensor fault detection is compromised. Check CALIBRATIONS / HEIGHT CALS The ElevDown value shows the recorded height where the switch opened.</p>
<p>18. Flash Code F19: High Elev.close - This message is given if the elevation switch P2-10 closed during lower at a too high height (above 25%).</p>	<p>When the switch is closed, overload detection is normally disabled but if the switch closes above 25%, the platform is too high to allow disabled overload. Check CALIBRATIONS / HEIGHT CALS The ElevUp value shows the recorded height where the switch opened.</p>

<p>19. Flash Code F20: Height<>0% - This message occurs if the platform height is not 0% after the platform has been fully lowered during either STATIC lift</p>	<p>The platform must return to the same height each time it is fully lowered. Check DIAGNOSTICS / SYSTEM to check the height.</p>
<p>20. Flash Code F21:Height<>0% - This message occurs if the platform height is not 0% before the platform is raised during either STATIC lift.</p>	<p>The platform must be at 0% height when it is fully lowered. Check DIAGNOSTICS / SYSTEM to check the height.</p>
<p>21. Flash Code F22:Height<>100% - This message occurs if the platform height is not 100% after the platform has been fully raised during either STATIC lift.</p>	<p>The platform must return to the same height each time it is fully raised. Check DIAGNOSTICS / SYSTEM to check the height.</p>
<p>22. Flash Code F23:Height<>100% - This message occurs if the platform height is not 100% before the platform is lowered during either STATIC lift.</p>	<p>The platform must be at 100% height when it is fully raised. Check DIAGNOSTICS / SYSTEM to check the height.</p>
<p>23. Flash Code F24:Too Many - This message occurs if too many static measurements are taken during either STATIC lift or lower.</p>	<p>It is likely that there is a problem with the lift cylinder pressure; the GP102 should only need about 10 measurements for most vehicles. The SETUPS / HEIGHT SETUPS / MIN LIFT time could be increased to force a longer time between static measurements, but this should not be necessary.</p>
<p>24. Flash Code F25:Check Elev - This message indicates a problem with the elevation switch P2-10 during the STATIC phases.</p>	<p>The switch is either staying closed to a higher height, or staying open to a lower height, than that recorded during the DYNAMIC phase.</p>
<p>25. Flash Code F26:Check Elev - This message indicates a problem with the elevation switch P2-10 during the STATIC phases.</p>	<p>The switch is opening or closing at a different height than that recorded during the DYNAMIC phase.</p>
<p>26. Flash Code F27:Bad Height - This message indicates a problem with the height sensor output P4-3 during the STATIC phases.</p>	<p>The height sensor output must be between 1.0V and 4.0V at all times. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0 V or 5 V is probably due to a wiring problem.</p>
<p>27. Flash Code F30:Bad Heights - This message indicates that the recorded heights are not increasing during either STATIC lift, or are not decreasing during either STATIC lower.</p>	<p>It may be possible to cause this problem by repeatedly opening and closing the UP or DOWN switch during the STATIC phases.</p>
<p>28. Flash Code F31:Reject Curve - The DYNAMIC pressure curve is unacceptable.</p>	<p>An initial pressure peak when the platform lifted cannot be found between 0% and 15% height. Check the pressure sensor and lift cylinder hydraulics.</p>

29. Flash Code F32:Reject Curve -	There should be a lowest pressure about halfway through the lift (50% height); the lowest pressure measured is at too low a height..
The DYNAMIC pressure curve is unacceptable.	Check the pressure sensor and lift cylinder hydraulics.
30. Flash Code F33:Reject Curve -	There should be a lowest pressure about halfway through the lift (i.e.: near 50% height); the lowest pressure measured is at too high a height.
The DYNAMIC pressure curve is unacceptable.	Check the pressure sensor and lift cylinder hydraulics.
31. Flash Code F34:Reject Curve -	There is not enough difference between the initial pressure peak and the minimum pressure.
The DYNAMIC pressure curve is unacceptable.	Check the pressure sensor and lift cylinder hydraulics.
32. Flash Code F40:Reject Delta -	This message could also occur if the wrong pressure sensor was fitted (e.g.: a 5000 psi sensor when a 2000 psi one is needed).
This message indicates that there is not enough difference between the loaded & empty pressure.	This message could occur if the platform were not properly loaded during the STATIC LOADED phase, or if the platform were not properly empty during the STATIC EMPTY phase.
	Check CALIBRATIONS / HEIGHT CALS; the Height indicates the first height at which there was insufficient difference and the Up and Down values show the loaded pressure (first) and the difference between loaded and empty pressure (second).
33. Flash Code F42:Low Pressure -	This message would occur if the pressure sensor was disconnected, or if there were some other wiring error.
This message indicates that the pressure is too low (0.5 V or less) when the elevation switch opens during the DYNAMIC lift.	Check DIAGNOSTICS / SENSORS to check the pressure.
34. Flash Code F43:High Pressure -	This message would occur if the pressure sensor was disconnected, or if there were some other wiring error.
This message indicates that the pressure is too high (4.5 V or more) when the elevation switch opens during the DYNAMIC lift.	Check DIAGNOSTICS / SENSORS to check the pressure.
35. Flash Code F44:Low Pressure -	This message would occur if the pressure sensor was disconnected, or if there were some other wiring error.
This message indicates that the pressure is too low (0.5 V or less) at a STATIC measurement point.	Check DIAGNOSTICS / SENSORS to check the pressure.
36. Flash Code F45:High Pressure -	This message would occur if the wrong pressure sensor was fitted, or if there were some other wiring error.
This message indicates that the pressure is too high (4.5 V or more) at a STATIC measurement point.	Check DIAGNOSTICS / SENSORS to check the pressure.
37. Flash Code F46:Check Elev -	
This message indicates that the elevation switch opened more than once during the DYNAMIC lift.	
38. Flash Code F47:Check Elev -	
This message indicates that the elevation switch closed more than once during the DYNAMIC lower.	

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.

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.

5.1-2 Hydraulic System

All service and repairs to the hydraulic system or hydraulic components must be done in a clean work environment. See *1.2-4 Hydraulic System & Component Maintenance and Repair*

5.2 Base

5.2-1 Winching and Towing Procedures and Parking Brake System

This section provides the operator with procedures about towing and winching and on how to manually release the parking brake.

WARNING

Ensure platform is fully lowered before winching or towing. Sudden motion could cause the aerial platform to become unstable. Death or serious injury could result.

WARNING

In emergency situations where machine functions are not available and lowering is impeded by an obstacle, the utmost care must be taken to move the machine far enough to clear the obstacle. In such cases operation must be extremely smooth with no sudden movements and must not exceed a speed of 2 in/sec. When pushing, towing or winching, do not exceed 2 mph (3.2 km/h).

Do not push, tow or winch vehicle onto a slope, or brake the towing vehicle rapidly. Do not pull the aerial platform down an incline towards a winch.

5.2-2 Release the Free-Wheeling Valve

- Make sure that the aerial platform is on level ground. Chock or block the wheels to keep aerial platform from rolling.

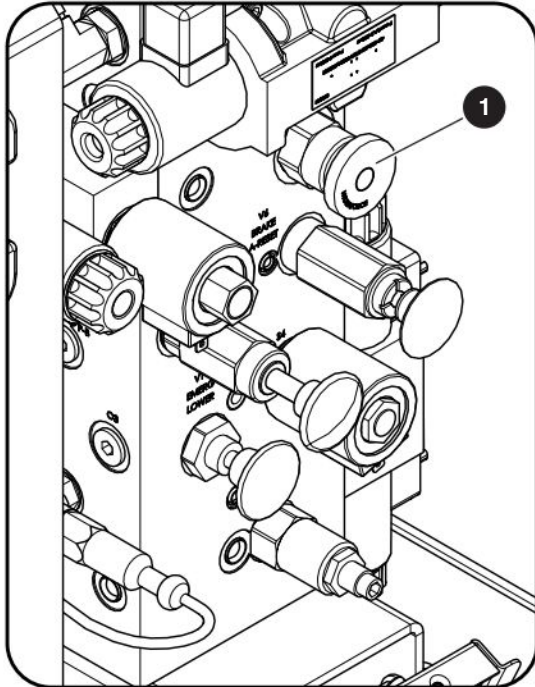


Figure 01 Free-Wheeling Valve

- Turn the free-wheeling valve knob ① counterclockwise to a fully open position to provide *free-wheeling*. This allows hydraulic oil to flow freely through the wheel motors.

⚠ WARNING

The free-wheeling valve must be closed tightly (clockwise) for normal operation.

5.2-3 To Release the Parking Brakes Manually

⚠ WARNING

Do not manually disengage the parking brakes if the aerial platform is on a slope.

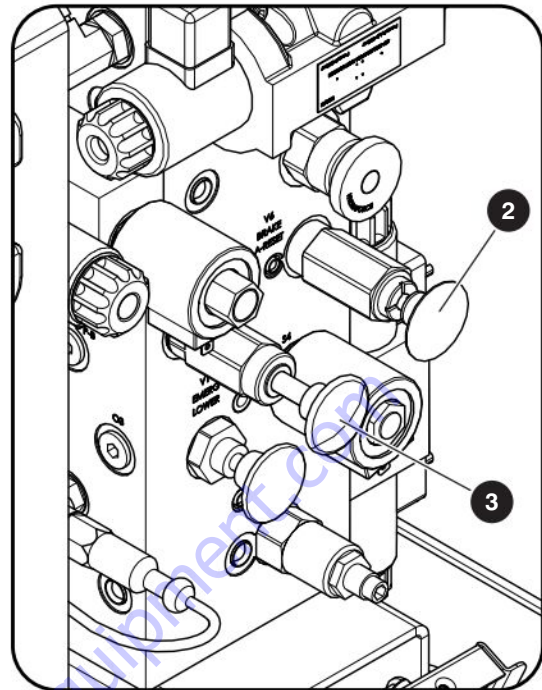


Figure 02 Disc Brakes System

Parking Brakes – The brakes must be manually disengaged for pushing, towing or winching.

- Make sure that the aerial platform is on level ground. Chock or block the wheels to keep aerial platform from rolling.
- Turn main power disconnect switch to off position.
- Locate brake hand pump and brake auto reset valve at main manifold in hydraulic/fuel cabinet.
- Push in brake auto reset valve ②.
- Grasp the red hand pump ③ and rapidly depress until firm resistance is felt. The brakes are now released.
- Remove the wheel chocks or blocks, then push, tow or winch the aerial platform to the desired location.

⚠ WARNING

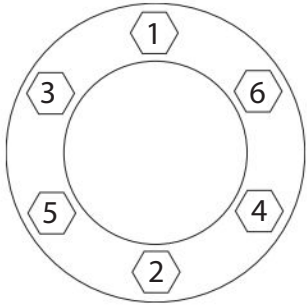
The parking brake **MUST** be re-engaged immediately after reaching the desired location.

- Position the machine on a firm and level surface.
- Chock or block the wheels to prevent the aerial platform from rolling.
- Re-engage the parking brakes by pulling out the black brake valve plunger.

5.2-4 Wheel Bolt / Nut Inspection and Torquing Procedure

It is necessary to check the torque on all wheel nuts and wheel bolts at pre-delivery, after 8 hours of operation and at weekly intervals using the following procedure:

1. Confirm that each wheel fastener is torqued to $90 \pm 5 \text{ ft}\cdot\text{lb}$. All fasteners must be torqued using the tightening sequence below.



2. Re-torque as necessary until all fasteners are properly torqued.

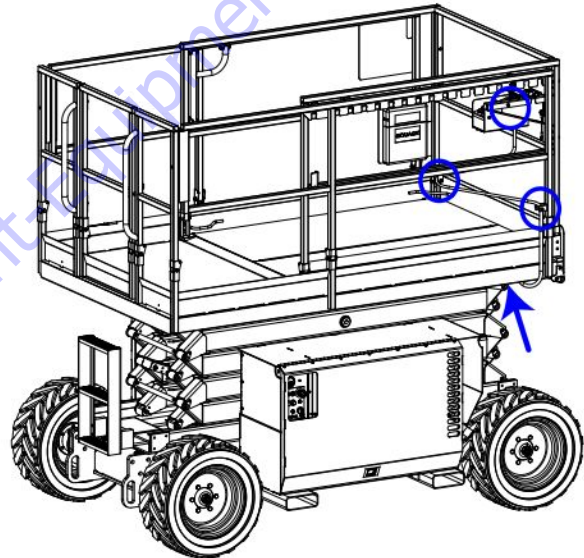
5.2-5 Wheel Reinstallation and Torquing Procedure

When a Wheel/Tire Assembly has been removed or replaced, it will be necessary to follow the procedure below to ensure proper installation:

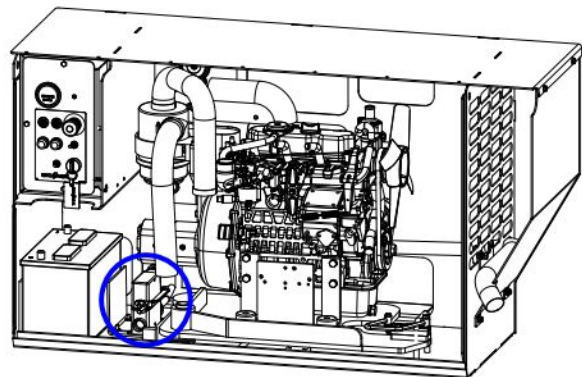
1. Inspect wheel fastener threads for damage and defects. Replace if defective.
2. Clean the mounting surfaces of hub and the wheel rim of debris, rust, excess paint, etc.
3. Mount wheel on the hub, centering mounting holes on the wheel studs or bolt holes. Use appropriate lifting device as required.
4. Install wheel nuts or wheel bolts and hand tighten to center the rim.
5. Tighten nuts or bolts to approximately $50 \text{ ft}\cdot\text{lb}$ torque using the tightening sequence shown above.
6. Tighten to $90 \text{ ft}\cdot\text{lb}$ using the same sequence.
7. Repeat the torque sequence to confirm that none have changed from $90 \text{ ft}\cdot\text{lb}$. If any are found below $90 \text{ ft}\cdot\text{lb}$, repeat complete sequence until there is no change in torque values. If possible, drive the machine prior to checking torques.
8. Check torque values after 8 hours of operation and then at weekly intervals.

5.2-6 Reconnecting the Platform Control Box for Use from the Ground

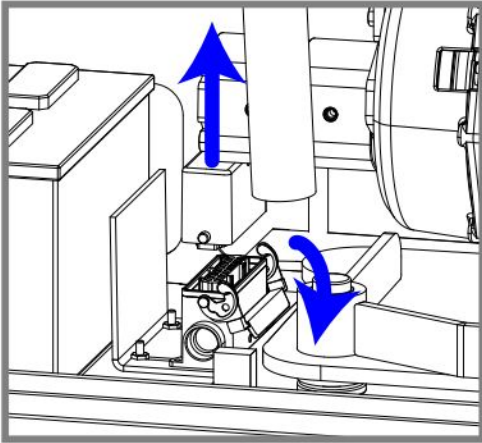
1. To facilitate servicing the aerial platform, the platform control box may be removed from the platform, and reconnected inside the hydraulic cabinet, to allow functions to be accessed from the ground.
2. From the platform, remove the quick release pins securing the platform control box to the control box mount and cable guides.
3. Disconnect the control box cable from the scissor control cable (swing down the small latch on the side of the connector and pull the connectors apart). The connectors are located near the front right corner of the platform on the underside.



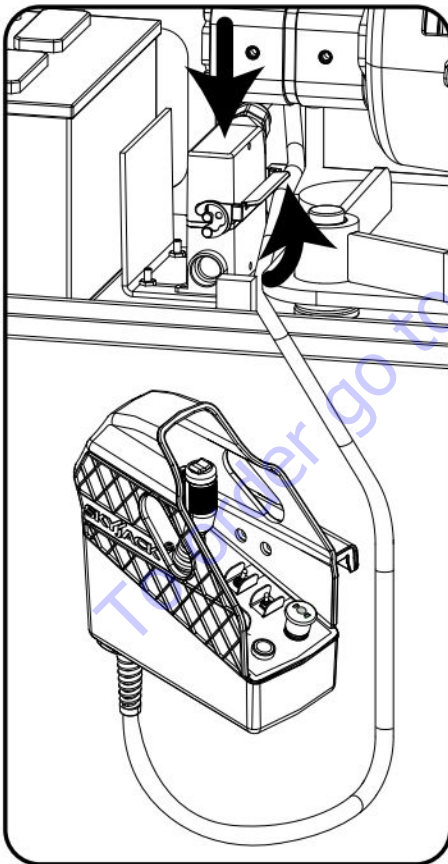
4. Bring the control box down from the platform to the ground.
5. Locate the control cable connectors inside the engine cabinet.



- Disconnect the existing control cable connector by swinging down the latch on the side, and pulling the connectors apart.



- Plug the control box control cable connector in its place. Swing up the latch to lock them together.

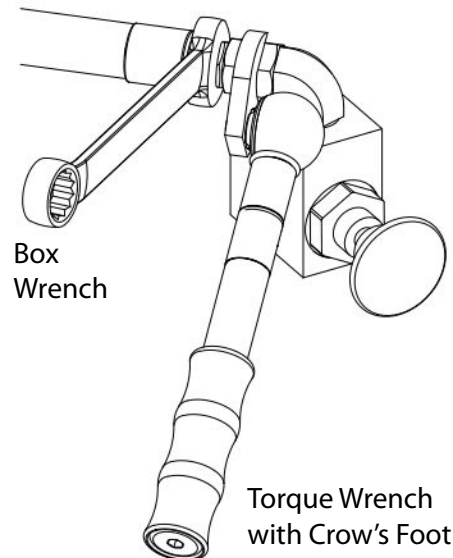


- The control box functions may now be accessed from the base.

5.2-7 Tightening and Torque Recommendations for Hydraulic Couplings and Hoses

General Work Practices

- All components must be free of damage or contamination. O-rings cannot be reused anytime the component has been installed beyond finger tight. Clean or replace components, as required.
- Over tightening a coupling may result in overstressing and/or cracking, and may lead to leaking or failure.
- When tightening hose couplings, ensure the hose does not twist on the adapter. Twisting will shorten hose life and scar the sealing surfaces of swivel type couplings (JIC, 45°, etc.), which can create leaks.
- When tightening hose couplings, use a torque wrench (with crow's foot) on the hose end hex swivel nut, and a standard box wrench on the hose end stem hex to hold the hose from twisting.



- Lubricate all O-ring surfaces with suitable hydraulic oil prior to installation in the flange head and O-ring seal grooves. This will minimize the possibility of damage to the O-ring when installed.
- Install any 45° and 90° hydraulic hose ends first, then align direction and tighten. Adjust the swivel nut on the straight hose end before tightening to create the desired flow.

Using a Torque Wrench

1. This method is applicable for JIC (37°) and FFOR (Flat Face O-ring) hose ends and fittings, wherever the components are accessible with torque wrench / crow's foot tools.
2. Align the hose end or fitting to the mating component.
3. Install the nut two or three turns by hand to assure proper alignment. Jiggle the hose while tightening to ensure the faces contact fully.
4. Using a properly calibrated torque wrench, tighten the coupling using a smooth, even motion until an indication (audible click) is heard and felt. Do NOT over tighten. For recommended torque values, refer to *2.4 Torque Specifications for Hydraulic Couplings & Hoses*. Apply a drop of torque seal to the connection.

5. Referencing the following table, use a second box wrench to tighten the nut the appropriate number of flats past the mark. Do NOT over tighten.

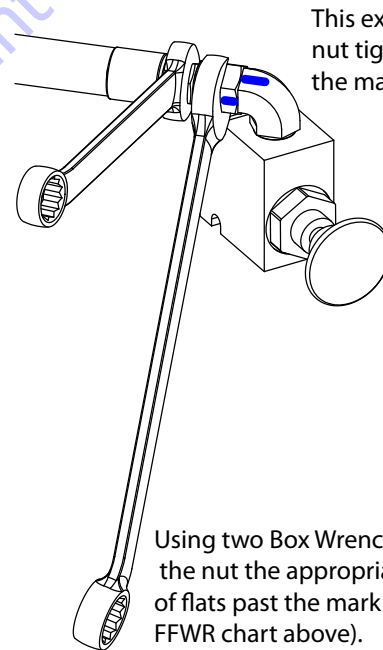
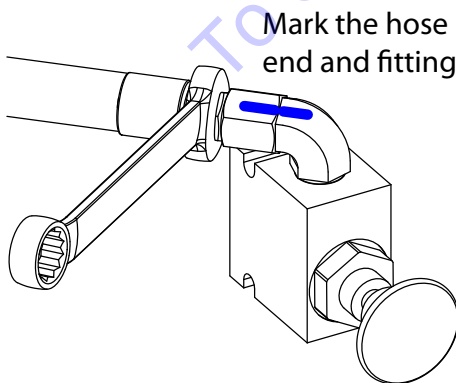
FLATS FROM WRENCH RESISTANCE CHART for JIC Hose Ends			
Size		FFWR	
Dash	Frac. (In.)	37° Tube Nut	Swivel Nut
-4	1/4"	2	1.5
-5	5/16"	2	2
-6	3/8"	1.5	1.5
-8	1/2"	1.5	1.25
-10	5/8"	1.5	-
-12	3/4"	1.25	-
-10	1"	1	-
-20	1 1/4"	1	-
-24	1 1/2"	1	-
-32	2"	1	-

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5.2-8 Torquing Using the Flats-From-Wrench-Resistance Method

This method is applicable for JIC (37°) and FFOR (Flat Face O-ring) hose ends only, wherever the components are inaccessible with torque wrench/crow's foot tools, or when a properly calibrated torque wrench is not available.

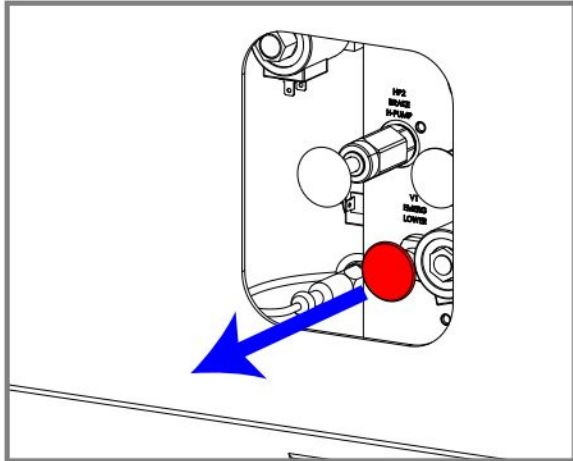
1. Align the hose end or fitting to the mating component.
2. Install the swivel hose end nut hand tight to the fitting to assure proper alignment. Jiggle the hose while tightening to ensure the faces contact fully.
3. Tighten the nut using a box wrench until minor resistance is felt.
4. Mark the position of the nut relative to the fitting with a marking device (paint marker).



6. Apply a drop of torque seal to the connection.

5.2-9 Checking the Holding Valve

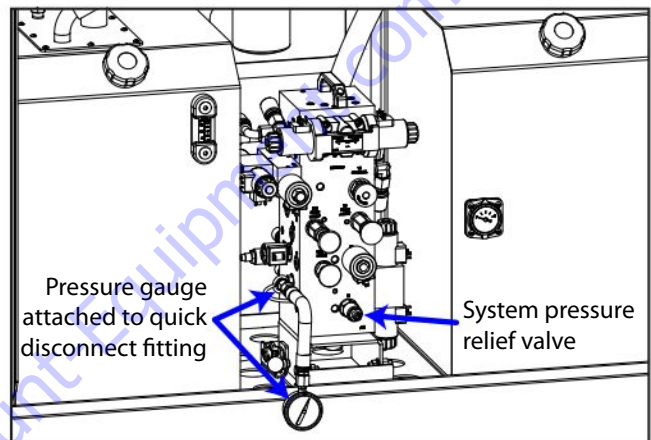
1. Raise the platform to an approximate height of 13 ft (4 m).
2. Locate the emergency lowering valve in the cutout on the front of the tank side cabinet.
3. Pull the knob, and hold it. If the platform does not lower with the knob pulled out, the holding valves are in good working condition. If however the platform lowers, the holding valves must be replaced.



5.2-10 System Pressure Setting

Checking the Pressure

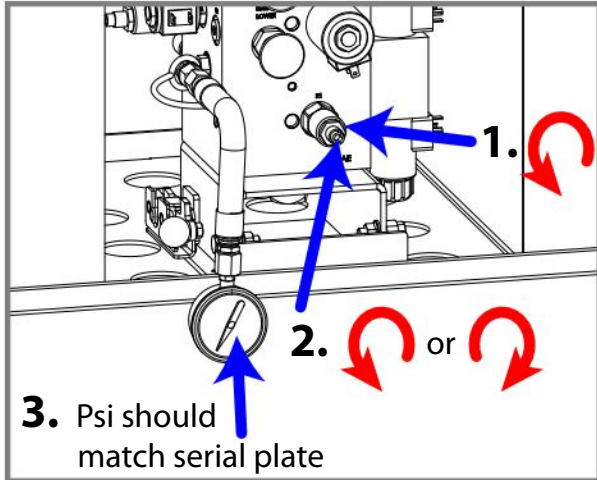
1. Bring the control box down from the platform to the ground so it will be accessible while working [5.2-6 Reconnecting the Platform Control Box for Use from the Ground](#). Refer to the aerial platform's serial plate for the correct system pressure for the unit.
2. Connect a pressure gauge to the quick disconnect fitting located on the lift side of the main manifold in the tank side cabinet.



3. With the engine on, use the control box joystick to steer fully left or right to produce pressure. Read the pressure on the gauge.
4. If the pressure shown on the gauge matches that on the serial plate, no further action is needed. However, if it does not match that on the serial plate, proceed to the next step.

Adjusting the Pressure

1. Loosen the jam nut (counterclockwise) on the system pressure relief valve.
2. Still steering fully left or right to create pressure, turn the system relief valve adjustment screw clockwise to raise the pressure, or counterclockwise to lower the pressure, until it matches the value given on the serial plate.

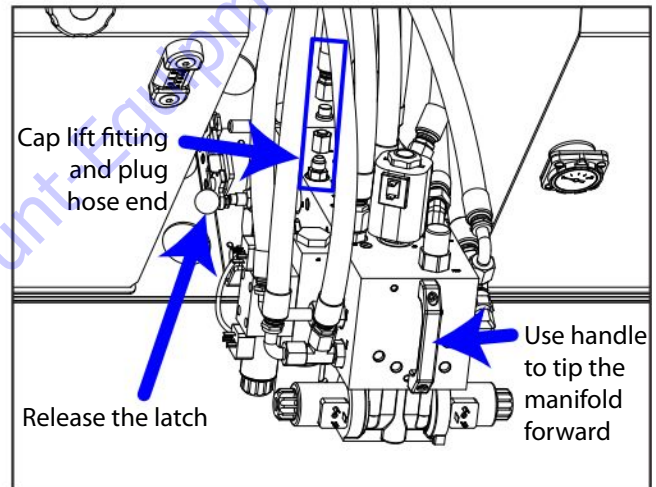


3. Tighten the jam nut and apply a dab of torque seal where the jam nut and adjuster screw meet.
4. Remove the pressure gauge and reconnect the control box to the platform.

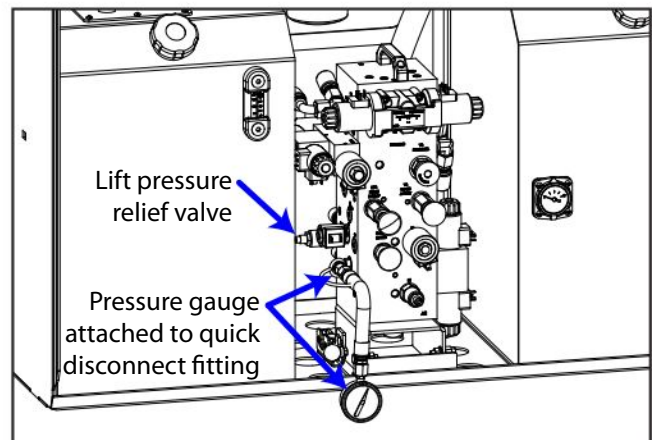
5.2-11 Lift Pressure Setting

Checking the Pressure

1. Bring the control box down from the platform to the ground so it will be accessible while working *5.2-6 Reconnecting the Platform Control Box for Use from the Ground.*
2. Refer to the aerial platform's serial plate for the correct lift pressure for the unit.
3. The lift manifold hose and port is located on the rear side of the main manifold in the tank side cabinet. To access it, release the latch beside the manifold, then using the handle, tip the manifold forward.
4. With an oil pan and rag handy, disconnect the hose, capping off or plugging both the hose and the fitting on the manifold.



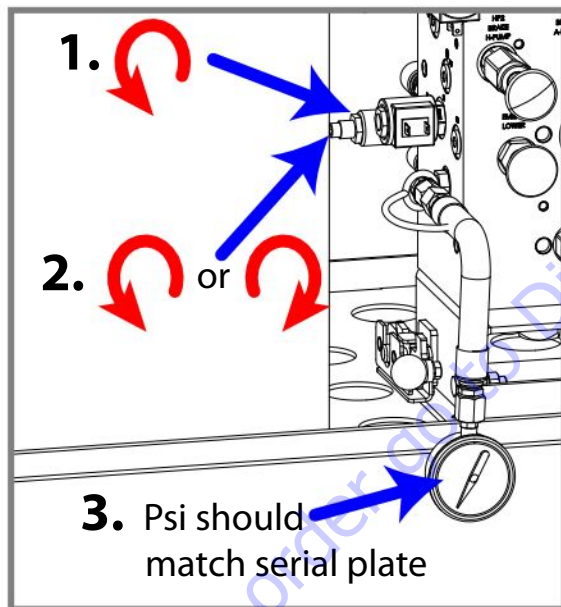
5. Connect a pressure gauge to the quick disconnect fitting located on the top of the main manifold.



6. To create pressure, with the engine on and the lift/off/lower switch in the lift position, tilt the joystick forward, as though trying to raise the platform. Read the pressure on the gauge.
7. If the pressure shown on the gauge matches that on the serial plate, no further action is needed. However, if it does not match that on the serial plate, proceed to the next step.

Adjusting the Pressure

8. Continuing from Step 6 above, loosen the jam nut (counterclockwise) on the lift pressure relief valve.
9. With the joystick still forward as though attempting to raise the platform, turn the lift relief valve adjustment screw clockwise to raise the pressure, or counterclockwise to lower the pressure, until it matches the value given on the serial plate.



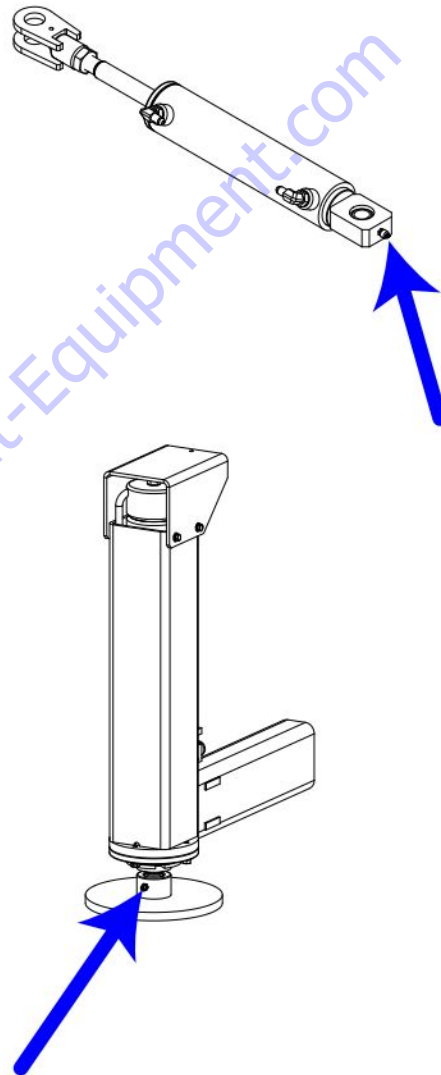
10. Tighten the jam nut and apply a dab of torque seal where the jam nut and adjuster screw meet.
11. Reconnect the lift hose to the main manifold lift port. Refer to [5.2-7 Tightening and Torque Recommendations for Hydraulic Couplings and Hoses](#).
12. Remove the pressure gauge and reconnect the control box to the platform.

5.2-12 Grease Points

Grease Fitting Locations

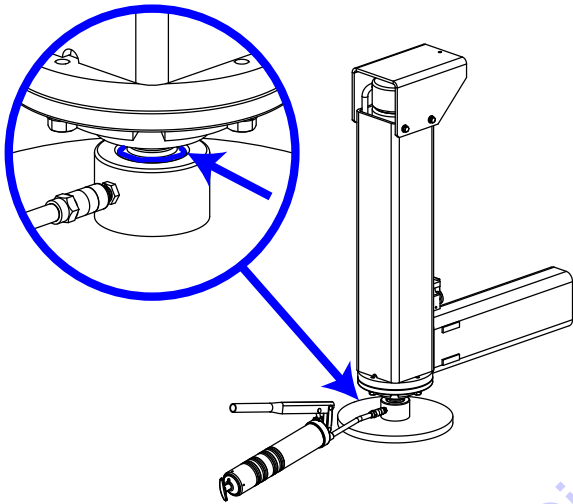
There are either 1 or 5 grease fittings on the 6826 RT / 6832 RT, depending on options. They are located:

- On the stationary end of the steer cylinder (1 fitting per unit).
- On each outrigger foot (1 fitting per outrigger, if equipped, 4 per unit).



Applying Grease

1. Remove the cap from the grease fitting.
2. Using a clean rag, wipe off any dirt or debris from the grease fitting.
3. Connect a grease gun to the grease fitting, and pump until a small amount of grease can be seen coming out around the joint or bearing.
4. Disconnect the grease gun.
5. Wipe off any excess grease from around the joint or bearing, and from the grease fitting.
6. Replace the grease fitting cap.



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5.2-13 Electronic Tilt Switch Setup Procedure (KC only)

Machines that are not equipped with outriggers have an electronic tilt switch located inside the engine compartment. During operation, the switch monitors machine tilt front to back, and side to side. Aerial platform tilt is measured relative to a learned zero position.

The zero position is calibrated using the following set-up procedure, based on the position of the machine with the platform leveled and fully lowered.

Two LED indicator lights on the top of the switch show operating conditions.

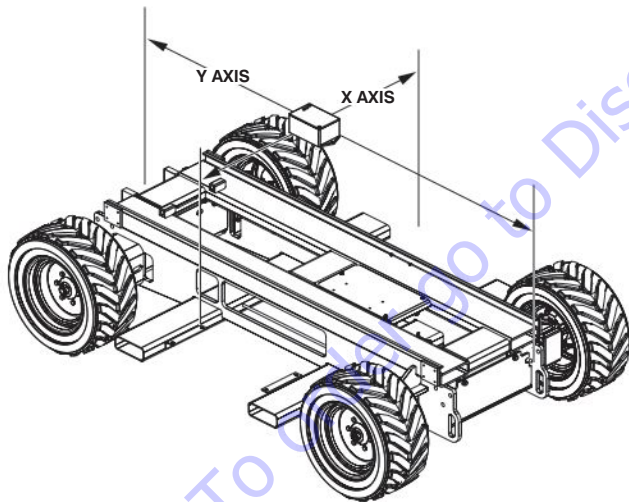
Tilt Switch Replacement

Follow this procedure to install and program a new zero position in a replacement tilt switch.



NOTE

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



1. Park aerial platform on a firm level surface.
2. Fully lower the platform.
3. Chock or block wheels to keep the aerial platform from rolling forward or backward.
4. Push in emergency stop buttons and turn main power disconnect switch off.
5. Disconnect tilt switch from 4 pin connector.
6. Remove old tilt switch from mount.

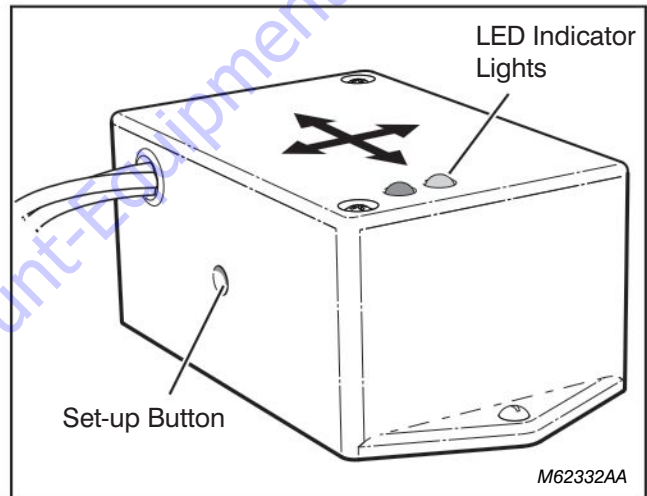
7. Install the new switch in the same orientation as the old switch. Connect switch plug to 4 pin connector.



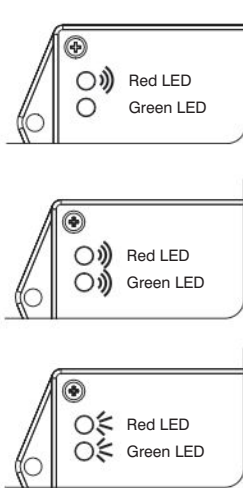
NOTE

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

8. Turn main power disconnect switch on.
9. Select Off-Lift-Drive key switch to *Lift* position or *Drive* position.
10. Pull out all emergency stop buttons.
11. Verify switch is powered. The red and green LED indicator lights should be flashing.
12. On the back side of the switch, press and release the Set-up button 3 times.



13. The red LED then flashes for 4 seconds during a *stabilization* period.
14. Both LEDs then flash for 1 second, indicating the switch is learning the new zero position.
15. When both LEDs are on continuously, it indicates the switch has learned the new zero position.



16. The green LED then flashes and the red LED stays on for 2 seconds indicating the switch is verifying the new zero position.
17. The green LED stays on continuously indicating the switch is ready for normal operation.
18. Turn main power disconnect switch off.
19. Push in all emergency stop buttons.
20. Remove wheel chocks.

Reprogramming Existing Tilt Switch

Follow this procedure to reprogram an existing tilt switch. Reprogramming the switch records a new zero position.

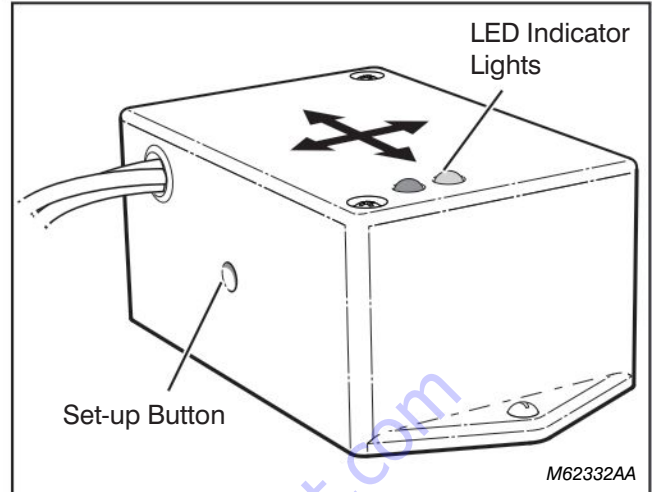
1. Park aerial platform on a firm level surface.
2. Fully lower the platform. Reprogramming the switch learns
3. Chock or block wheels to keep the aerial platform from rolling forward or backward.



NOTE

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

4. Turn main power disconnect switch on.
5. Select Off–Lift–Drive key switch to *Lift* position or *Drive* position.
6. Pull out all emergency stop buttons.
7. Verify switch is powered. The red and green LED indicator lights should be flashing.
8. On the back side of the switch, press and hold the Set-up button for 3 seconds.



9. Both LEDs turn off, then begin flashing for a 5 second period.
10. During this 5 second period, press and release the Set-up button 3 times.
11. The red LED then flashes for 4 seconds during a *stabilization* period.
12. Both LEDs then flash for 1 second indicating the switch is learning the new zero position. When both LEDs are on continuously, it indicates the switch learned the new zero position.
13. The green LED then flashes and the red LED stays on for 2 seconds indicating the switch is verifying the new zero position.
14. The green LED stays on continuously indicating the switch is ready for normal operation.



NOTE

If the Set-up button is not pressed 3 times during Step 10, the switch exits the program mode and returns to normal operation using the previous zero point.

15. Turn main power disconnect switch off.
16. Push in all emergency stop buttons.
17. Remove wheel chocks.

Tilt Switch LED Operation

The following describes LED operation with the system powered.

Green LED on	<p>The green LED on continuously indicates normal operation. Both tilt axes are within the specified degrees of the learned zero position.</p> <p>The green LED flashing indicates the aerial platform is moving in or out of tilt angle limits. The time delay has not occurred yet.</p>
Red LED on	<p>The red LED is on continuously when the tilt angle on one or more axes is off more than the allowable degrees from the zero position.</p>
Green and Red LEDs on	<p>Both LEDs on continuously indicates a fault in the system is detected. The switch does not function.</p> <p>After a period of 5 seconds or on power up, the switch attempts to return to normal operation. If the fault is still detected, both LEDs remain on.</p>

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5.3 Engine

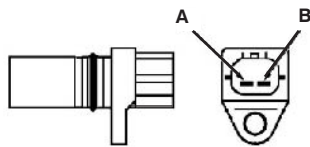
5.3-1 Kubota Dual Fuel (DF972 / WG752) Resistance Checks

Resistance of Pick-Up Sensor

1. Disconnect the connector.
2. Measure the resistance with the ohmmeter.
3. If the resistance is not within the factory specifications, replace it.

Resistance Factory Spec.	A-B	1.85 to 2.45 Ω at 20°C
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Resistance of Ignition Coil

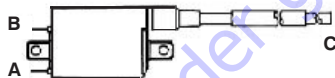
1. Disconnect the connector.
2. Measure the resistance with an ohmmeter.
3. If the resistance is not within the factory specifications, replace it.

Resistance Factory Spec.	A-B	1.87 to 2.53 Ω at 20°C
	A-C	10.4 to 15.6 Ω at 20°C

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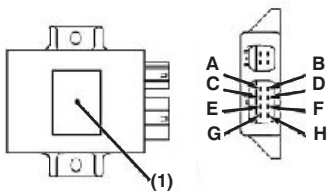
A: Terminal (+) C: High Tension Cord

B: Terminal (-)



Resistance of Ignitor

1. Disconnect the connector.
2. Measure the resistance with an ohmmeter.
3. If the resistance is not within the factory specifications, replace it.



IMPORTANT

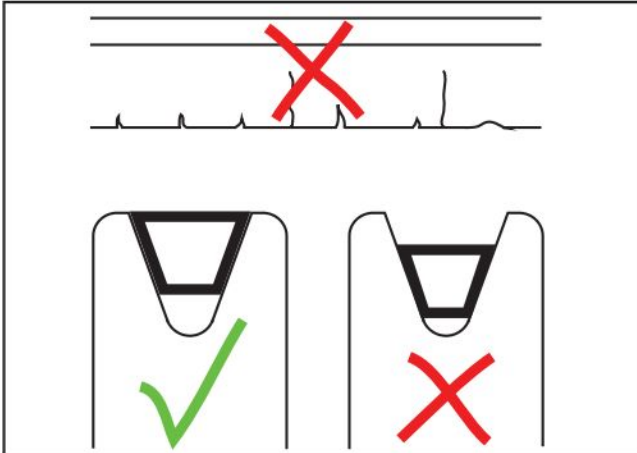
To replace the ignitor with a service part, make sure the ignitor has the same part cord No /ID mark as the old one. (See the information label 1.)

5.3-2 Fan Belt Replacement and Adjustment

Kubota recommends inspecting the fan belt every 100 hours, and replacing it every 500 hours.

Inspect the Fan Belt for Wear

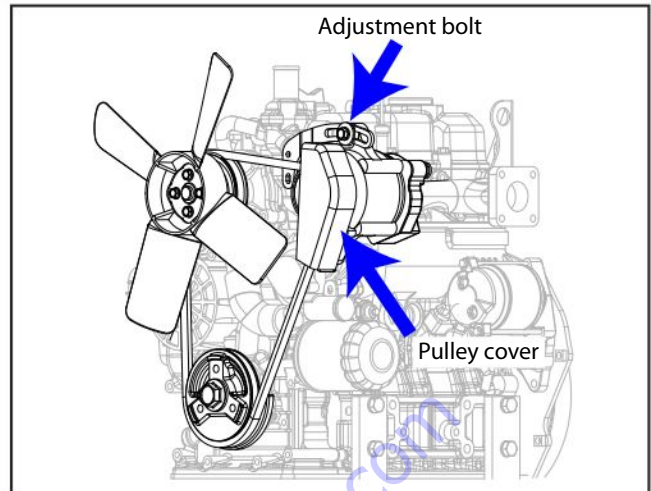
1. Inspect the fan belt for any signs of damage, such as cracks or tears. Inspect the fan belt for signs of wear, which may include the belt sinking into the pulley groove.



2. If damage or wear is found, replace the fan belt as described in the next section.

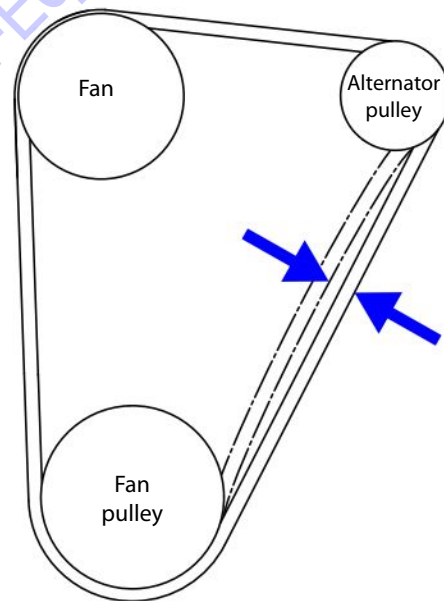
Replace the Fan Belt

1. Remove the alternator pulley cover, and loosen the alternator adjustment bolt.
2. Remove the old fan belt, and install a new one.
3. Replace the alternator pulley cover, and tighten the adjustment bolt.
4. Measure and adjust the fan belt deflection as described in the next section.

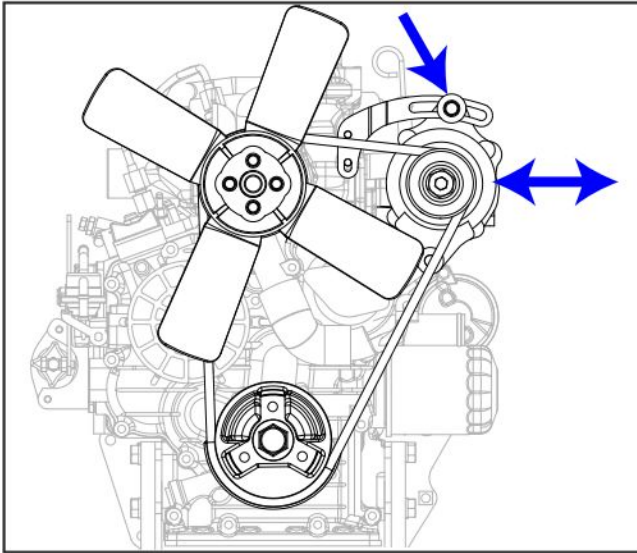


Test and Adjust the Deflection

1. Measure the fan belt deflection by depressing the belt halfway between the fan drive pulley and the alternator pulley, at about 22 ft•lb (98 N•m) of force.



2. If the deflection is greater than or $\frac{1}{4}$ – $\frac{5}{16}$ in (7–9 mm), loosen the alternator adjustment bolt. Use a pry between the alternator and engine block to adjust the position of the alternator. Tighten the bolt.

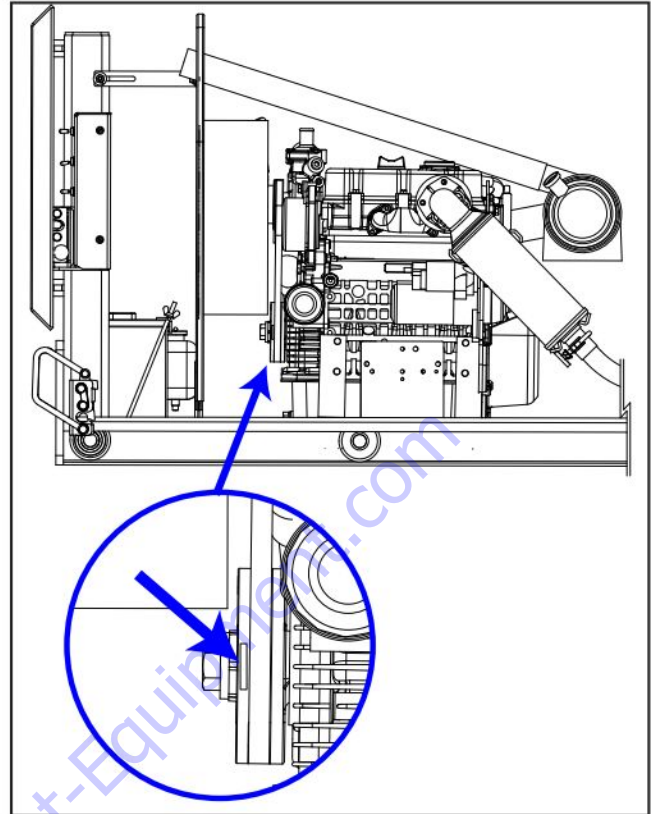


3. Retest the deflection, and continue to adjust as needed until it falls within the range specified above.

5.3-3 Kubota Dual Fuel (DF972 / WG752) Engine Throttle Setting

Preparation

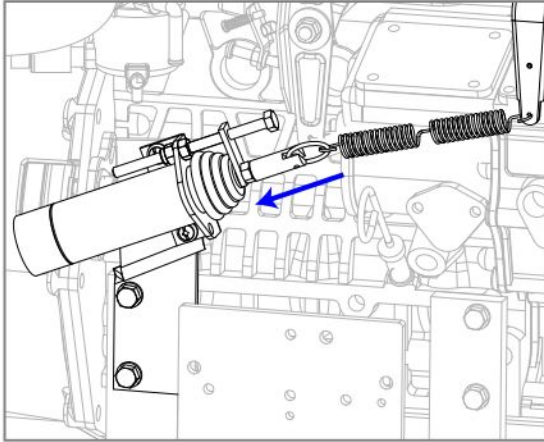
1. Look for a piece of reflective tape on the fan belt pulley. If the reflective tape is missing, attach a small piece.
2. When measuring the engine speed using a digital tachometer, aim the tachometer at this reflective strip while the engine is running.



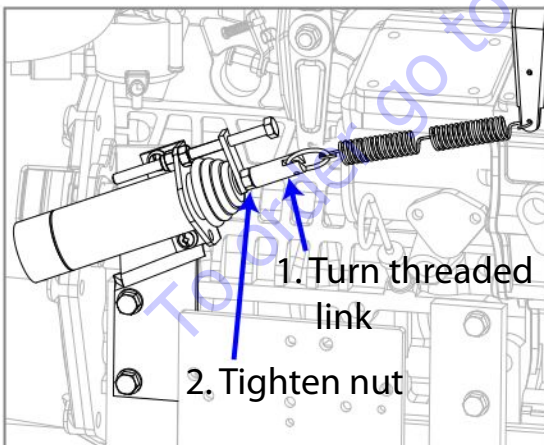
3. On the platform control box, set the low/high throttle switch to low. Start the engine and let it run until it reaches normal operating temperature.

High Throttle Check and Setting

1. Push the solenoid plunger in, and hold it there. Measure the rpm using a digital tachometer, as described in Step 2.

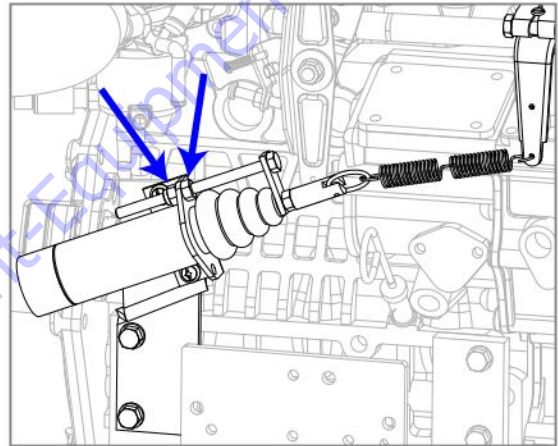


2. If the tachometer reads 3500 ± 50 rpm , the high throttle rpm is already properly set. Skip to Step 8 to check the low throttle rpm. If the tachometer reading is outside of the range given above, proceed to the next step to adjust it.
3. Adjust the length of the stroke by first loosening the jam nut, then turning the threaded link and measuring the rpm until it reaches 3500 ± 50 rpm.
4. Once the correct rpm is reached, apply a drop of Loctite 242 to the thread, and tighten the nut against the threaded link. Use vice grips to hold the link stationary, and a wrench to tighten the nut.



Low Throttle Check and Setting

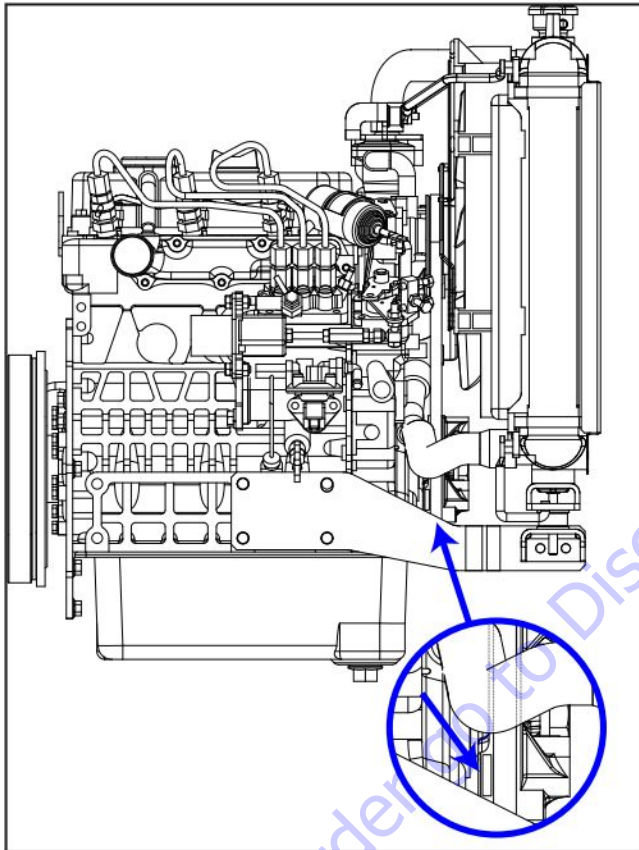
5. Measure the rpm using a digital tachometer, as described in Step 2.
6. If the tachometer reads 2050 ± 50 rpm , the low throttle is already properly set. No further action is required. If the tachometer reading is outside of the correct range, proceed to the next step to adjust it.
7. Adjust the length of the long threaded bolt by turning the locknut and measuring the low throttle rpm until it reaches 2050 ± 50 rpm.
8. Once the correct rpm is reached, apply a drop of Loctite 242 to the thread of the long bolt. Tighten the jam nut.



5.3-4 Kubota Diesel (D902) Engine Throttle Setting

Preparation

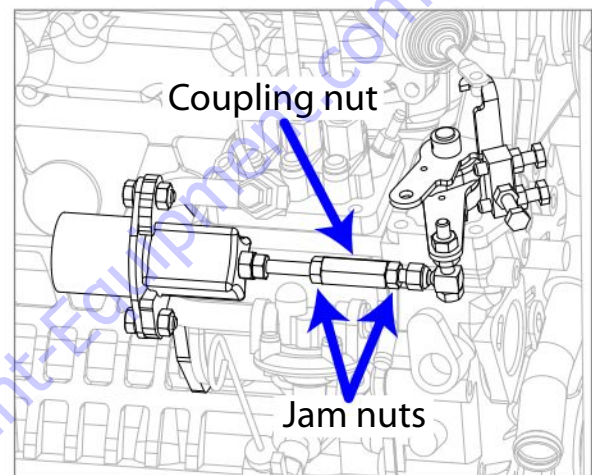
1. Look for a piece of reflective tape on the fan belt pulley. If the reflective tape is missing, attach a small piece.
2. When measuring the rpm using a digital tachometer, aim the tachometer at this reflective strip while the engine is running.



3. On the platform control box, set the low/high throttle switch to low. Start the engine and let it run until it reaches normal operating temperature, then switch it to high throttle for the next step.

High Throttle Check and Setting

4. Measure the rpm using a digital tachometer, as described in Step 2.
5. If the tachometer reads 3500 ± 50 rpm, the high throttle is already properly set. No further action is required. If the tachometer reading is outside of the correct range, proceed to the next step to adjust it.
6. Adjust the high throttle by first loosening the jam nuts on either end of the long coupling nut, then turning the coupling nut and measuring the rpm until it reaches 3500 ± 50 rpm.



7. Once the correct rpm is reached, apply a drop of Loctite 242 to the threads, and tighten the jam nuts on each end.

Low Throttle Check and Setting

8. On the platform control box, set the low/high throttle switch to low.
9. With the engine in low throttle, measure the rpm using a digital tachometer, as described in Step 2.
10. If the tachometer reads 2050 ± 50 rpm, the low throttle rpm is already properly set. No further action is required. If the tachometer reading is outside of the range given above, proceed to the next step to adjust it.
11. Adjust the low idle by first loosening the low idle stop jam nut, then turning the low idle stop screw and measuring the engine speed until it reaches 2050 ± 50 rpm.

- Once the correct rpm is reached, apply a drop Loctite 242 to the thread, and tighten the jam nut.

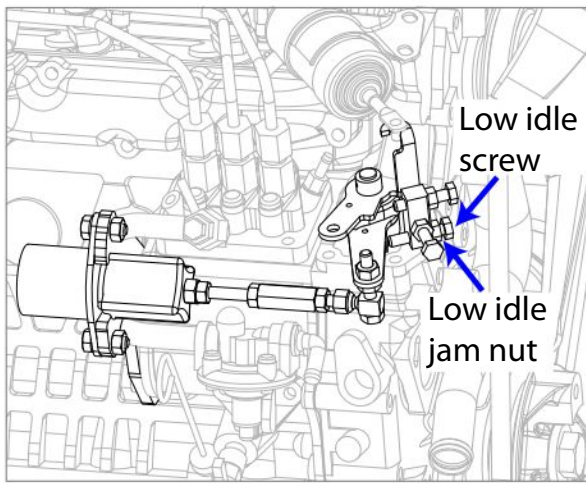
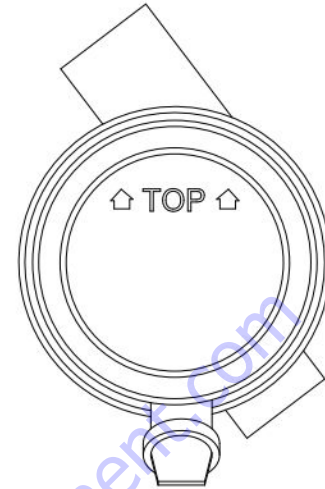


Figure 03

- Reinstall and latch the air cleaner cap, ensuring the TOP mark is facing up.



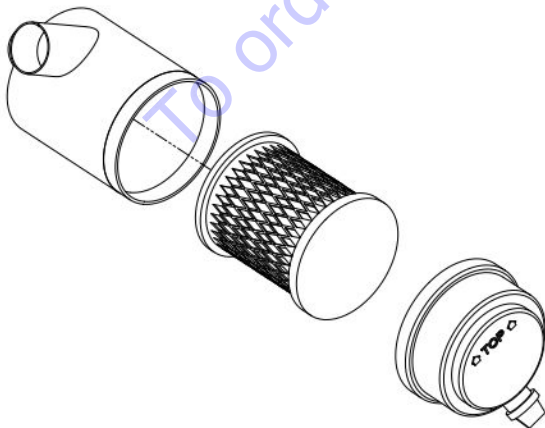
5.3-5 Replacing the Air Cleaner Element

Kubota recommends replacing the air cleaner element once a year. More frequent changes may be needed in dusty environments.

IMPORTANT

The air cleaner uses a dry element. Never apply oil to it.

- Unlatch and remove the air cleaner cap. Use a cloth to clean any dirt or dust from out of the cap.
- Remove the old air cleaner element by pulling it straight out.

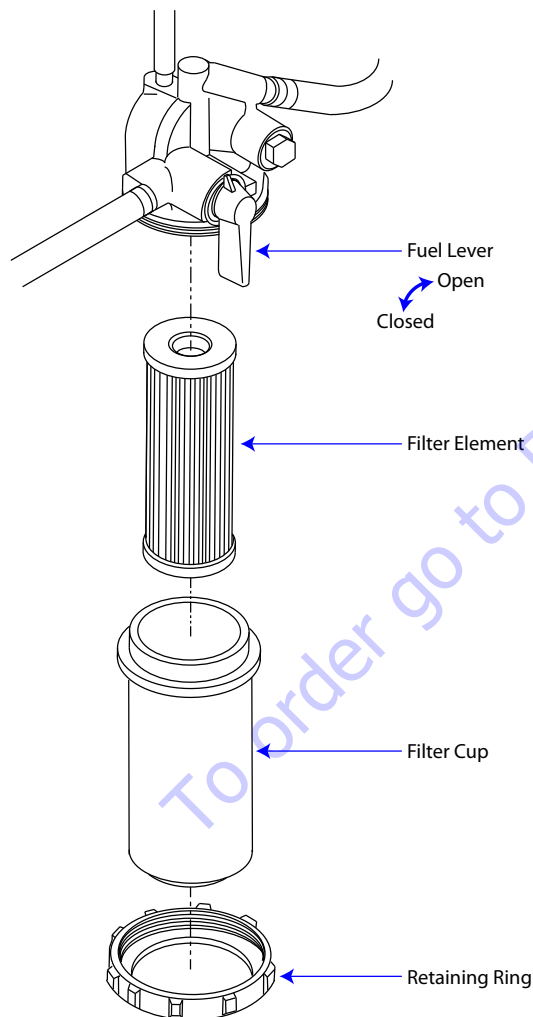


- Install a new air cleaner element, pushing firmly to seat it.

5.3-6 Replacing the Fuel Filter Element (Kubota D902)

Kubota recommends replacing the fuel filter every 400 hours.

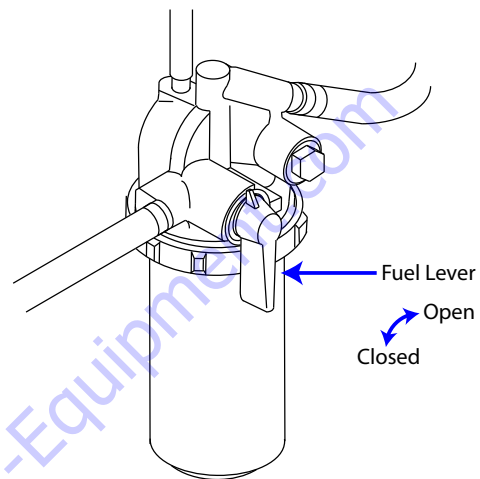
1. Close the fuel filter lever (turn counterclockwise).
2. Unscrew the retaining ring and remove the filter cup.
3. Remove the old fuel filter element.
4. Rinse the inside of the cup with diesel fuel or kerosene.
5. Install a new fuel filter element, and reassemble the fuel filter cup and retaining ring, ensuring all components are free of dirt and dust.
6. Bleed the fuel system of air (refer to 5.2-7).



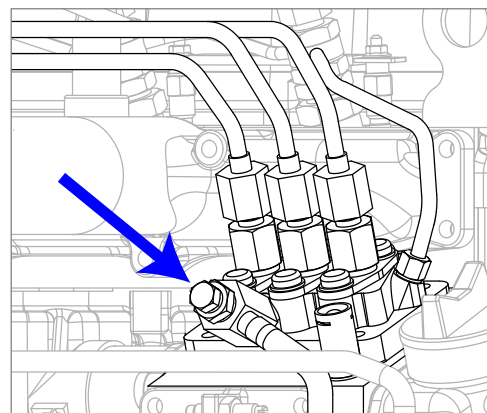
5.3-7 Bleeding the Fuel System of Air (Kubota D902)

Bleeding the fuel system of air is required after changing fuel hoses or filters, or after the fuel tank has become empty.

1. Allow the engine to cool, if it has been running.
2. Fill up the fuel tank with fuel.
3. Open the fuel filter lever (vertical position).



4. Open the air vent plug on the top of the fuel injection pump a few turns. Some air bubbles should come out.



5. When no more air bubbles are seen, close the air vent plug.

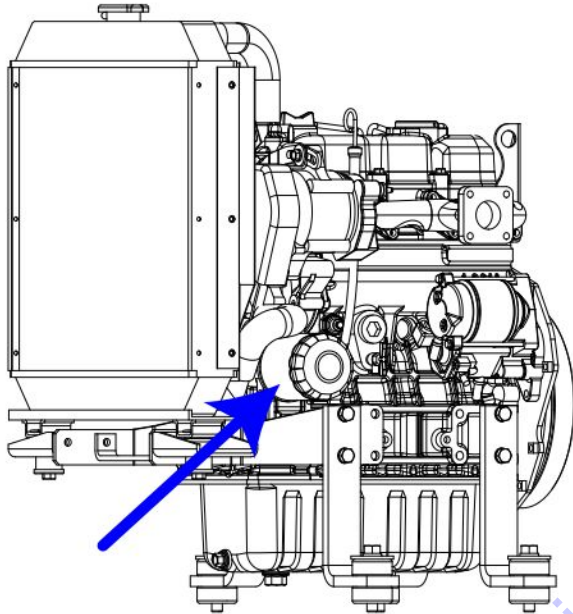
5.3-8 Replacing the Oil Filter Cartridge

Kubota recommends replacing the oil cartridge every 400 hours.

IMPORTANT

Be sure to stop the engine before changing the oil filter cartridge.

1. Remove the old oil filter cartridge with a filter wrench.



2. Prepare a new filter cartridge by applying a light coating of oil to the new cartridge gasket.
3. Install the new cartridge by screwing it in by hand.

IMPORTANT

Do not over tighten the filter as it may cause deformation of the rubber gasket.

4. The engine oil level normally decreases a little after replacing the oil filter cartridge, so run the engine for 10 to 15 minutes, then shut it off and allow it to cool.
5. Check for oil leaks around the gasket, and if no leaks are found, check the oil level using the dipstick.
6. Replenish the oil if needed.

5.3-9 Changing the Oil

Kubota recommends changing the oil every 200 hours.

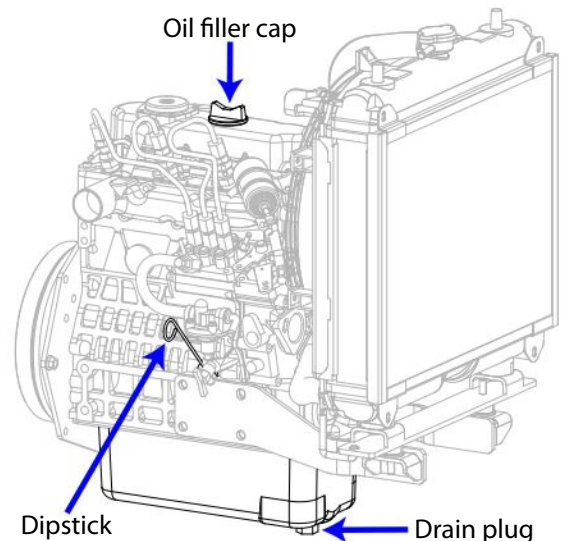
1. With the aerial platform on a level surface, start the engine and warm it up for approximately 5 minutes. Shut off the engine.
2. Place a container underneath the engine's oil pan drain plug.
3. Remove the drain plug, and allow the oil to drain completely.
4. Screw the plug back into the oil pan, tightening it to 24 – 27 ft•lb (33 – 37 N•m).
5. Unscrew one of the oil filler caps and fill the engine with new oil, up to the upper line on the dipstick. Reinstall the cap.

Above 25°C (77 °F)	SAE30, SAE 10W-30 or 10W-40
0° to 25°C (32°F to 77°F)	SAE20, SAE10W-30 or 10W-40
Below 0°C (32°F)	SAE10W, SAE10W-30 or 10W-40

IMPORTANT

If changing to a different oil manufacturer or different oil viscosity, be sure to completely drain all of the old oil first before refilling with new oil. Do not mix oil of different types.

6. Start the engine and run it for 10 to 15 minutes, checking for leaks at the oil pan drain plug.



5.3-10 Checking and Replenishing the Radiator Coolant Level

Kubota recommends checking the coolant level daily.

Checking and Replenishing Coolant

1. Check the coolant level via the recovery tank. Coolant should be between the FULL and LOW marks.
2. If the coolant is too low, determine the cause and remedy it by following Step A or B below:

A – Leaks

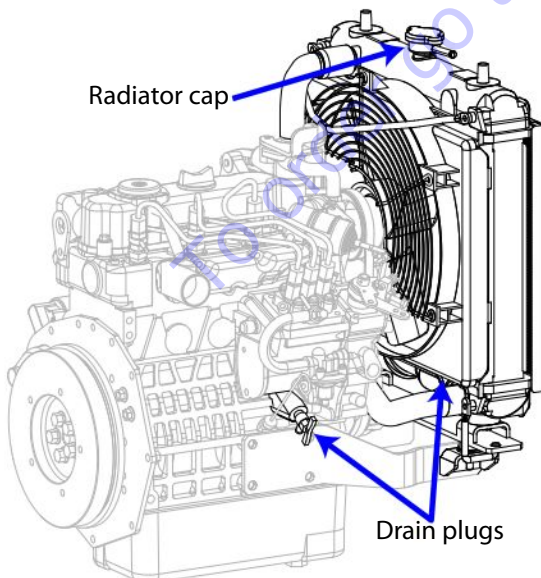
3. Inspect both drain plugs and the radiator hoses. Repair or replace faulty or leaking components.
4. Pre-mix 50% long-life coolant and 50% clean, soft water, stirring it well, and replenish the recovery tank up to the FULL line.

IMPORTANT

Do not intermix different brands of coolant. If the existing coolant cannot be identified, drain the remaining coolant and refill with new coolant. Refer to 5.2-11 for instructions on draining the coolant.

B – Evaporation

5. Replenish the recovery tank up to the FULL line with clean, soft water.



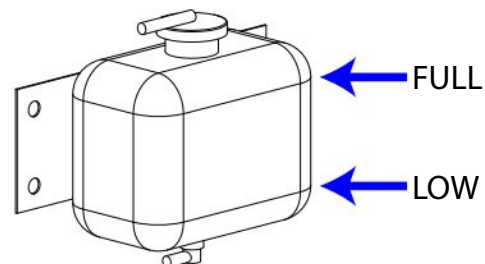
5.3-11 Draining and Refilling the Radiator

Kubota recommends completely draining and replacing coolant once a year.

WARNING

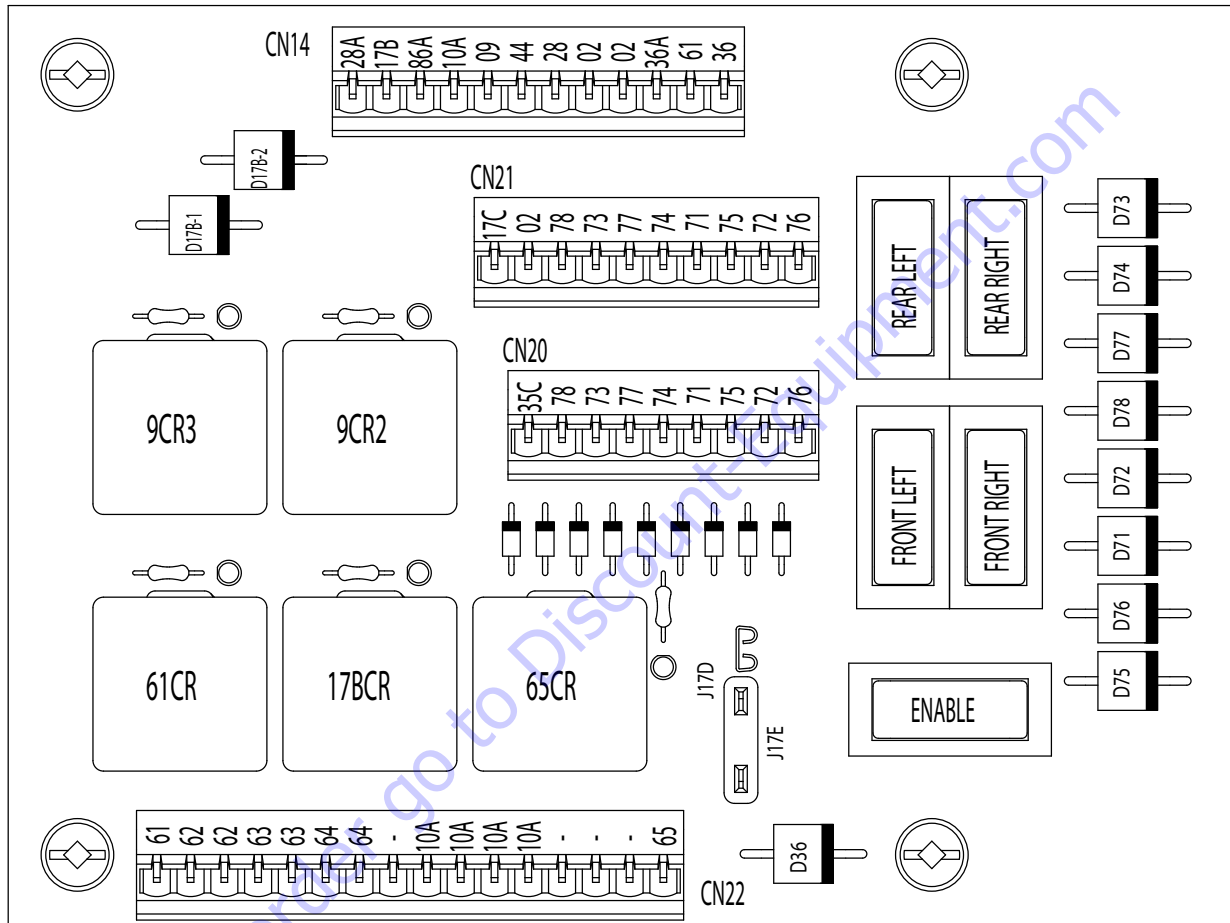
Do not remove the radiator cap until the coolant had dropped below its boiling point.

1. Place containers under the drain plugs to catch the coolant. One drain plug is located on the underside of the radiator, and the other on the body of the engine.
2. Open both drain plugs, and slowly open the radiator cap to relieve pressure. Then open the radiator cap fully. The coolant will start to drain.
3. Place a container under the recovery tank, and disconnect the overflow hose from the underside of the tank. Drain the tank.
4. When all the coolant has drained from the radiator, engine, and recovery tank, reconnect the recovery tank hose, and close both drain plugs.
5. Pre-mix 50% long-life coolant and 50% clean, soft water, stirring it well.
6. Refill the radiator, venting air from the upper and lower radiator hoses by jiggling them while filling the radiator with coolant. The coolant should reach the FULL line on the recovery tank, but not go past it.
7. Securely close the radiator cap.
8. Start the engine and run it for a few minutes, then shut it off.
9. Check the coolant level on the recovery tank once again, and add more coolant to the tank if needed.

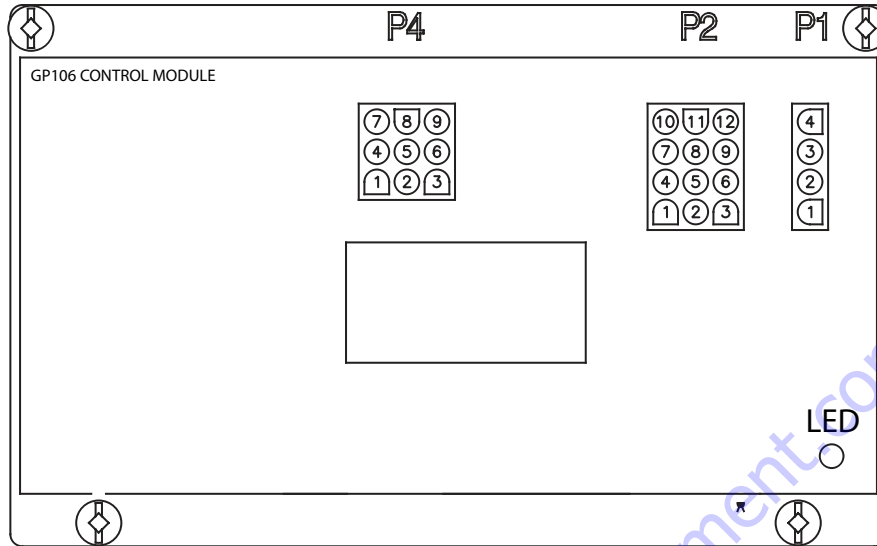


5.4 Outriggers

5.4-1 Auto-Leveling Outrigger PC Board Layout



5.4-2 Outrigger Control Module (OCM1) Pin Reference Table (GP-106)



PLUG	PIN #	WIRE # AND COLOUR	WIRE FUNCTION
Calibration Connection (RS232)			
P1	1	B+	Not connected –used for hand held calibration device connection
P1	2	Rx	
P1	3	Tx	
P1	4	GND (-)	
Inputs			
P2	1	68A White	12V Input from LS68 Left Rear Outrigger Down limit switch
P2	2	67A Red/White	12V Input from LS67 Right Rear Outrigger Down limit switch
P2	3	66A Blue/White	12V Input from LS66 Right Front Outrigger Down limit switch
P2	4	65A Green/White	12V Input from LS65 Left Front Outrigger Down limit switch
P2	5	70 Green/Black	12V Input from S24 Outrigger Auto Level request signal
P2	6	79 Green	12V Input from S24 Outrigger Auto All-Up request signal
P2	7	70A Red/White	12V Output for Outrigger Light OL1
P2	8	65 Green/Black	12V Input from LS61, LS62, LS63 & LS64 Outriggers limit switch Up signal ** (all switch contacts must be closed to produce in series signal)
P2	9	Not Used	Not Used
P2	10	44 Red	12V Input from 35CR Elevation Tilt Override/High Speed Cutout Relay
P2	11	02 White	GND B- 0V Reference Input from Base Terminal Strip
P2	12	10A Black	12V B+ Input thru Main Power Relay 10BCR From Base Terminal Strip
Outputs			
P4	1	78 Black/White	12V Output for Outrigger Left Rear Down signal to 4H-78 Solenoid
P4	2	77 Blue/Black	12V Output for Outrigger Right Rear Down signal to 4H-77 Solenoid
P4	3	76 Red/Black	12V Output for Outrigger Right Front Down signal to 4H-76 Solenoid
P4	4	75 Orange/Black	12V Output for Outrigger Left Front Down signal to 4H-75 Solenoid
P4	5	74 Black	12V Output for Outrigger Left Rear Up signal to 4H-74 Solenoid
P4	6	73 Blue	12V Output for Outrigger Right Rear Up signal to 4H-73 Solenoid
P4	7	72 Red	12V Output for Outrigger Right Front Up signal to 4H-72 Solenoid
P4	8	71 Orange	12V Output for Outrigger Left Front Up signal to 4H-71 Solenoid
P4	9	35C White/Black	12V Output for Outrigger Enable signal from Enable switch S9A or Relay 9CR3

5.4-3 Auto-Leveling Outrigger Settings and Error Codes

Reading the Codes:

Error codes are indicated with the flashing LED on the control module. When there is a fault, the LED on the outrigger control module flashes to indicate the error code number.

Identify the error code by counting the flashes as follows:

1. The first digit is indicated by half-second flashes followed by half-second pauses.
2. A 2.5-second pause follows.
3. The second digit is then indicated by half-second flashes followed by half-second pauses.
4. A 5-second pause follows, then the cycle repeats.

Codes are continuously displayed by the LED until the fault is cleared, the outrigger control module is reset and no longer detects the fault, or idle timeout becomes active.

Since the outrigger control module only reports one error, only one code can be read from the LED per instance. If the error is cleared and another error is present, it will then be presented.

LED ERROR CODES	
EVERYTHING OK	ON
VEHICLE TILTED	1/1
OUTRIFTERS CANNOT BE MOVED!	1/2
OUTRIGGERS NOT HOME	2/2
NOT FULLY LEVEL	2/1
RELEASE OUTRIGGER DEMAND!	5/5
CHECK OUTRIGGER SUPPLY (P4-9)	5/2
CANNOT LEVEL: BAD TILT SENSOR	7/1
OUTRIGGERS MANUALLY CONTROLLED!	8/8
TESTING HWFS	7/8
B+ SUPPLY TOO LOW	5/1
STARTUP!	7/7
FAULT: BAD SLAVE MICRO	7/5
FAULT: BAD TILT SENSOR	7/1
FAULT: BAD HWFS	7/2
FAULT: P2-5 FAULTY	8/1
FAULT: P2-6 FAULTY	8/2
FAULT: P2-9 STUCK ON	8/3
FAULT: P2-8 ALWAYS ON	8/4
FAULT: P2-8 ALWAYS OFF	8/5
FAULT: HWFS STALLED!	7/8

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5.4-4 Auto-Leveling Outrigger Error Code Breakdown

RELEASE OUTRIGGER DEMAND!	5/5
Check inputs on P2 pins 5 & 6 - the “auto-level” or “auto-retract” input is active at power-on or when it is not allowed to carry out the function.	
OUTRIGGERS CANNOT BE MOVED!	1/2
Check input on P2 pin 10 – “auto-level” or “auto-retract” has been requested but the platform is elevated.	
NOT FULLY LEVEL	2/1
The outrigger legs are all down (touching the ground) but the platform is not fully level.	
OUTRIGGERS NOT HOME	2/2
The outrigger legs are not all down (touching the ground) and also are not all home (fully retracted).	
B+ SUPPLY TOO LOW	5/1
CHECK OUTRIGGER SUPPLY (P4-9)	5/2
Check that the battery voltage is not too low.	
VEHICLE TILTED	1/1
This is not a true fault – move the vehicle to level ground!	
TESTING HWFS	7/8
STARTUP!	7/7
These are not true faults unless they do not clear – the start-up tests should only occur for a short time.	
OUTRIGGERS MANUALLY CONTROLLED!	6/6
This is not a true fault – the outriggers are being manually operated (one or more outrigger legs on P4 pins 1-8 is high, when the outrigger control module is not active).	
CANNOT LEVEL (BAD TILT SENSOR)	7/1
FAULT: BAD TILT SENSOR	7/1
FAULT: BAD HWFS	7/2
FAULT: BAD SLAVE MICRO	7/5
FAULT: HWFS STALLED!	7/6
FAULT: P2-5 FAULTY	8/1
FAULT: P2-6 FAULTY	8/2
FAULT: P2-8 STUCK ON	8/3
FAULT: P2-8 ALWAYS ON	8/4
FAULT: P2-8 ALWAYS OFF	8/5
These are internal faults. If the fault persists after the power has been reset, the outrigger control module may need to be replaced.	

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5.4-5 Hand Held (EZcal) Calibration / Diagnostic Tool Key Functions

⚠ WARNING




Only trained and authorized personnel shall be permitted to service an aerial platform.

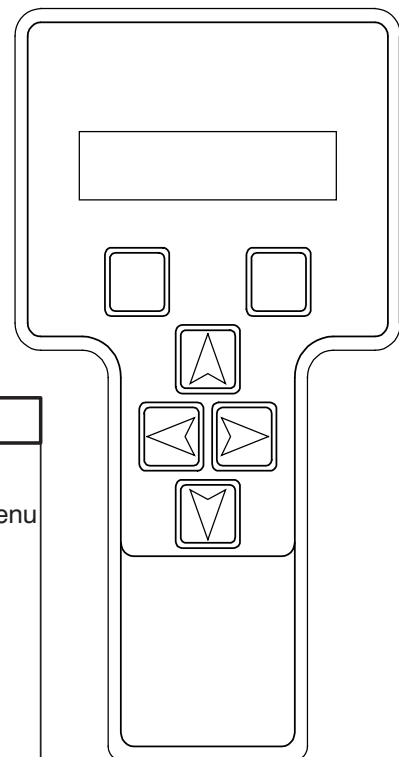
⚠ WARNING

Read all instructions closely before attempting each phase of this procedure.

Outrigger Settings		
Model	6826RT	6832RT
O.R. Settings	7	7

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SYMBOL	KEY FUNCTIONS
	<p>ESC/ENTER BUTTONS To move back and forth between menu and sub-menu</p>
	<p>LEFT/RIGHT BUTTONS Select menus and setting to be adjusted</p>
	<p>UP/DOWN BUTTONS Adjust setting values</p>



5.4-6 Outrigger Control Module (OCM1) Instructions

When an EZcal hand-held device is connected to the OCM1, a two line display shows various menus and settings. At any time the top line of the display describes the currently selected menu. The bottom line shows the currently selected item in that menu.

Six buttons on **EZcal** allow easy navigation through the menus:

- ← and → change the selected item (the bottom line display)
- ENTER enters the selected new menu when available (top line display changes)
- ↑ and ↓ adjusts the selected item when available
- ESC exits the current menu back to the previous menu

Top Level Menu Options	
Help	Select This Menu To See A Description Of Current OCM1 Status
Diagnostics	Select this menu to see switch input status and logged data
Access Level	Select this menu and enter correct code to enable adjustments and calibrations
Adjustments	Select This menu to see and adjust OCM1 settings. NOTE: this menu provides adjustments which may be needed for different work activities
Setups	Select this menu to carry out initial set-up of the OCM1. NOTE: This menu provides set-ups needed to configure the OCM1 for a particular vehicle.
Help Menu Options	
(help message)	A message displays current OCM1 status, indicating if everything is OK or if there is an error code (Refer to 5.4-3 Auto-Leveling Outrigger Settings and Error Codes)
Diagnostic Menu Options	
System	Select this menu to see general OCM1 system information.
Switches	Select this menu to see switch input status
Outputs	Select this menu to see OCM1 output status
Log	Select this menu to see logged information
Diagnostic/ System Menu Options	
Outriggers	Displays various status during the auto-level function
Tilt	Displays vehicle tilt in X and Y orientations measured by integral sensor
Tilted	Displays whether vehicle is tilted (YES or NO)
Battery	Displays battery supply voltage (on P2-12)

Diagnostic/Switches Menu Options

LR/P2-1	High when the left rear outrigger is in contact with the ground.
RR/P2-2	High when the right rear outrigger is in contact with the ground
RF/P2-3	High when the right front outrigger is in contact with the ground
EXTEND/P2-5	High to activate the auto-level function
RETRACT/P2-6	High to activate the auto-retract function
ELEV/P2-10	High when the scissor stack is stowed (elevated input indicates that the vehicle is stowed).

Diagnostic/Outputs Menu Options

LAMP/P2-7	Displays state of outrigger control box light
STABLE/P2-8	Displays state of stable (all legs touching the ground) output
TILT/P2-9	Displays state of tilt
LRe/P4-1	Displays state of left rear outrigger extend valve
RRe/P4-2	Displays state of right rear outrigger extend valve
RFe/P4-3	Displays state of right front outrigger extend valve
LFfe/P4-4	Displays state of left front outrigger extend valve
LRr/P4-5	Displays state of left rear outrigger retract valve
RRr/P4-6	Displays state of right rear outrigger retract valve
RFr/P4-7	Displays state of right front outrigger retract valve
LFr/P4-8	Displays state of left front outrigger retract valve
P4-9 MON	Displays the voltage to the outrigger valve (can only be seen when operating in auto-level or retract)

Diagnostic/Log Menu Options

MAX.BATTERY	Displays maximum recorded battery supply voltage
OCM1 version	Displays part number and software version of GP106
EZcal version	Displays software version of EZcal

Access Level Menu Options

CODE xxxx	ACCESS LEVEL 3 (allows viewing only) ACCESS LEVEL 2 (allows setup on OCM1)
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Adjustments Menu Options (Factory set - non adjustable)

Xtilt TRIP	Displays the tilt trip point in the X orientation
Ytilt TRIP	Displays the tilt trip point in the Y orientation
TILT ENTRY	Displays the tilt delay time
TILT EXIT	Displays the tilt delay time
Xlevel TRIP	Displays the tilt trip point in the X orientation during the auto-level function
Ylevel TRIP	Displays the tilt trip point in the Y orientation which applies during the auto-level function

Machine Setup Menu Options (Factory set - non adjustable)

DEFAULTS	Allows all adjustments and machine settings to be set to defaults. WARNING: All GP106 settings will be changed. Use with caution!
CALIBRATE LEVEL	Allows levelling of the integral tilt sensor of the GP106, when the vehicle is positioned on level ground.
TILT MODE	Allows configuration of the GP106 tilt output (P2-9): <ol style="list-style-type: none"> 1. Output turns on to light lamp when tilted. 2. Output turns off to cutout functions when tilted 3. Output turns off to cutout functions when tilted AND elevated
TILT FILTER	Displays the filter applied to the tilt measurements during the auto-level function (used to minimize the effect of vehicle vibrations on the tilt measurement).
Xlevel TARGET	Displays the tilt in the X orientation at which the auto-level function will complete.
Ylevel TARGET	Displays the tilt in the Y orientation at which the auto-level function will complete.
tilt SLACK	Displays the amount of vehicle tilt exceeding the Xtilt TARGET and/or Ytilt TARGET in which the auto-level function does not attempt to level. <i>Example:</i> Xtilt TARGET=0.3°, Ytilt TARGET=0.7°, tilt SLACK=0.5° If machine is tilted to 1.0° in the X and Y orientations, the auto-level function will attempt to level the X orientation (0.3+0.5<1.0) but does not attempt to level the Y orientation (0.7+0.5>1.0) RANGE: 0.0° to 1.0°, default 0.3°

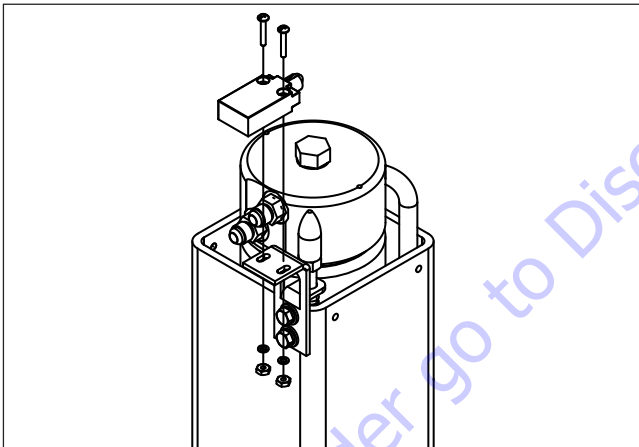
5.4-7 Outrigger Upper Limit Switch (LS61, LS62, LS63, LS64) Replacement and Adjustment

Machine Preparation

1. Ensure the aerial platform is parked on a firm level surface.
2. Fully retract the outriggers.
3. Turn the main power disconnect switch off.
4. Chock or block the wheels to keep the aerial platform from rolling forward or backward.

Limit Switch Removal

1. Remove the bolts and washers securing the upper limit switch/hose cover. Set aside the hardware and cover for reinstallation later.
2. Remove the washers, bolts, and nuts securing the limit switch to the bracket. Set aside for reinstallation later.



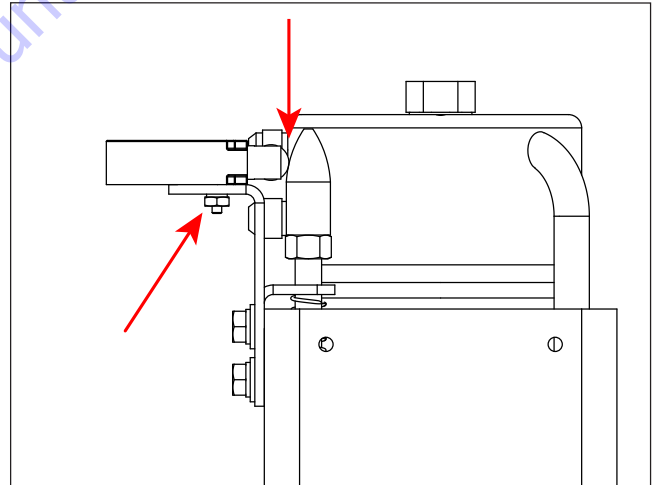
3. Remove the limit switch cable from the split loom tubing, cutting tie wraps and tape as needed to free it.
4. Disconnect the connector, and remove the limit switch wires and ferrules, retaining the connector for reuse later. Discard the old limit switch and cable.

Limit Switch Replacement

1. Mount the new limit switch loosely on the bracket, using the hardware removed previously.
2. Starting from the top, place the new limit switch cable in the split loom.
3. Adjust the cable in the split loom as needed, and close the split loom by wrapping electrical tape around it at regular intervals. Tie wrap the split loom to the hoses.
4. Cut off any unneeded length from the cable, and strip the end to exposed the wires beneath.
5. Strip the ends from each wire and crimp a ferrule to each wire end.
6. Insert the wires into the connector end removed previously. Reconnect the connector.

Limit Switch Adjustment

1. With the outriggers retracted, slide the limit switch on the bracket until the plunger is depressed against the actuator rod cap. Apply a small amount of Loctite to the bolts, and tighten the bolts and nuts.



Limit Switch Testing

1. Turn main power disconnect switch to the ON position, and start the engine.
2. With the outriggers fully retracted, the unit should be drivable. With the outriggers extended more than halfway, the unit should not be drivable.

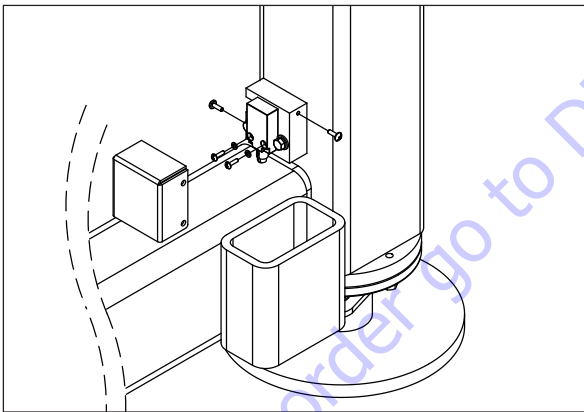
5.4-8 Outrigger Lower Limit Switch (LS65, LS66, LS67, LS68) Replacement and Adjustment

Machine Preparation

1. Ensure the aerial platform is parked on a firm level surface.
2. Fully retract the outriggers.
3. Turn the main power disconnect switch to the OFF position.
4. Chock or block the wheels to keep the aerial platform from rolling forward or backward.

Limit Switch Removal

1. Remove the bolts and washers securing the upper limit switch/hose cover. Set aside the hardware and cover for reinstallation later.
2. Remove the screws securing the lower limit switch cover. Set aside the hardware and cover for reinstallation later.
3. Remove the washers and screws securing the limit switch to the mount. Set aside for reinstallation later.



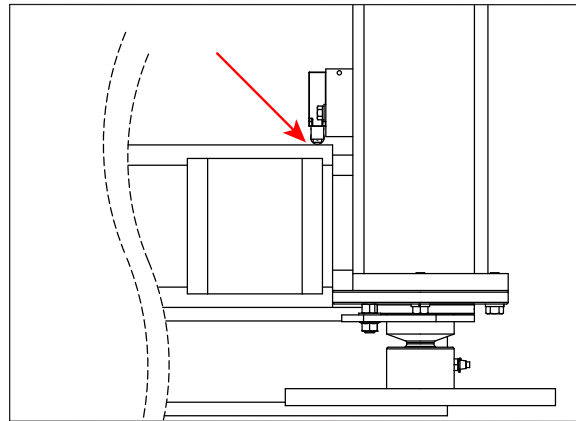
4. Cut the tie wraps and tape around the split loom as needed to expose the limit switch cable.
5. Disconnect the applicable wires from the connector, and cut the ferrules off of the wires at the end of the cable. Retain the connector for reuse later.
6. Remove the cable from the split loom. Gently pull the cable down through the outrigger weldment, and through the rubber grommet. Retain the rubber grommet. Discard the old limit switch and cable.

Limit Switch Replacement

1. Install a new limit switch to the mounting block using the hardware removed earlier.
2. Feed the new cable through the rubber grommet, and place the grommet in the hole in the outrigger weldment.
3. Feed the cable up through the outrigger weldment, until it comes out the top.
4. Working from top to bottom, adjust the cable in the split loom and close the split loom by wrapping electrical tape around it at regular intervals. Tie wrap the split loom to the hoses.
5. Cut off any unneeded length from the cable, and strip the end to exposed wires beneath.
6. Strip the ends from each wire and crimp a ferrule to each wire end.
7. Insert the wires into the connector end removed previously. Reconnect the connector.

Limit Switch Adjustment

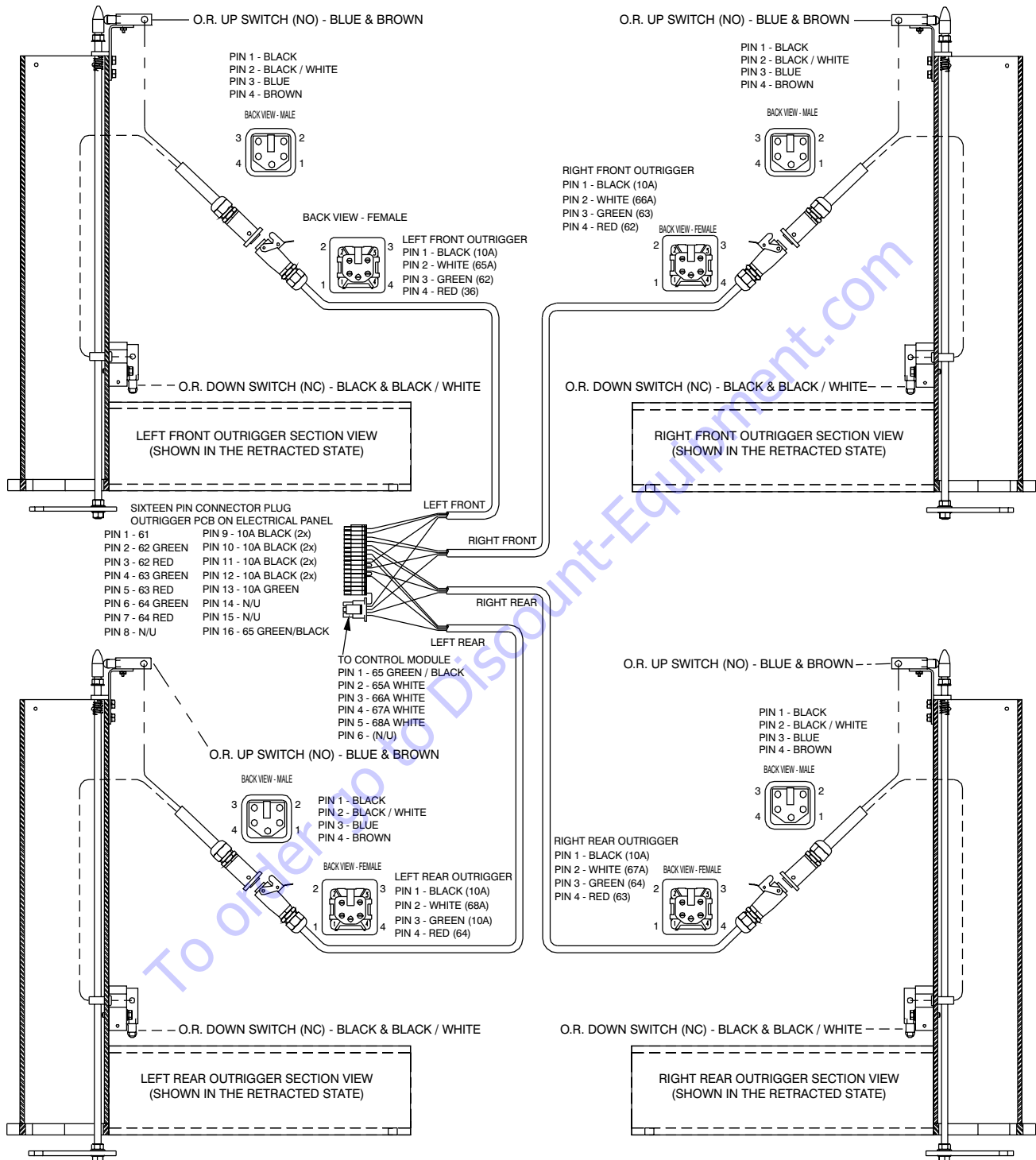
1. Loosen the bolts securing the mounting block to the outrigger, and slide the block until the limit switch plunger is depressed halfway against the base weldment. Apply a small amount of Loctite to the bolts, and tighten them.



Limit Switch Testing

1. Turn main power disconnect switch to the ON position, and start the engine.
2. With the outriggers fully retracted, the unit should be drivable. With the outriggers extended more than halfway, the unit should not be drivable.

5.4-9 Outrigger Mechanical Limit Switch Wiring Diagram



5.5 Load Sensing System



NOTE

Load sensing system should be tested on the first anniversary of the unit being in service. Afterwards, it should only be tested if major component is replaced.



WARNING

Remove all equipment, tools, or accessories, before starting system checks.

5.5-1 Calibrate Load/Checking Load Procedure

1. Ensure batteries are fully charged.
2. Ensure you are familiar with the emergency lowering system and that it is fully functional.
3. Ensure fuel tank has enough fuel to carry out test.
4. Perform system functionality check as listed in the Operation manual.
5. Fully-lower platform.
6. Plug calibrator (EasyCal) into appropriate port on GP102 overload sensing controller.
7. Retract all extension decks.
8. Place rated load centered onto empty platform. Be sure to account for the weight, options or accessories on the platform or railings or remove all items.
9. The following steps may trigger an overload event, preventing upward motion on some machines. If this occurs, fully-lower the platform and repeat up to 2 more times. If overload is still triggered, stopping motion, recalibrate as per Step 16. If the overload prevents lowering, use the emergency lowering procedure, as outlined in Operation manual, to lower machine.
10. Use base controls for all following movements. Holding enable (or key) switch in platform mode while calibrator is in use will prevent it from returning to its main menu.
11. If at any time it is not possible to perform the required operation, go to Step 16.
12. Select the Diagnostics>System>Height menu.
13. Elevate until height is between 45% and 55%. Be sure to watch for overhead obstructions during this operation. If you accidentally pass 55%, lower to less than 40% and elevate into the required range. Ensure last motion was Raise and was at least 2s in duration.
14. Select the Diagnostics>System>Load menu.
15. Load reading should range from 95% to 110%. If not, recalibrate as per Step 16.
16. If necessary, recalibrate as per procedure listed in Service manual with the following exceptions:
 1. Leave rated load on platform.
 2. When the calibrator displays Calibrate Load: Empty? No, press Enter.
 3. When the calibrator displays Calibrate Load: Loaded? No, using the UP button select Calibrate Load: Loaded? Yes, and press Enter.
17. Repeat Steps 6–16 as necessary. If test cannot be passed after 2 calibration attempts, contact Skyjack Customer Service.
18. Fully lower platform.
19. Remove load.
20. Unplug calibrator.

5.5-2 Machine Level Calibration Procedure

IMPORTANT

Each phase must be completed before the next phase can be carried out. All phases must be completed before the aerial platform can be operated. Always follow the instructions of the Calibration instrument.

1. Ensure aerial platform is parked on a firm and level surface.
2. Elevate the scissors high enough to lay a level across the base tubes. Ensure there is no debris on the base and the level sits flat. Do not elevate aerial platform higher than the high speed/tilt override limit switch.
3. Manually operate the outriggers and level the machine in 4 places: left side, right side, front and rear. All 4 outriggers must be firmly placed and all 4 tires are off the ground.
4. Double check that the aerial platform is level at all 4 points.
5. Connect the EZcal tool to the P1 connector on the **CONTROL MODULE**.
6. The display will show **Help: Press Enter**.

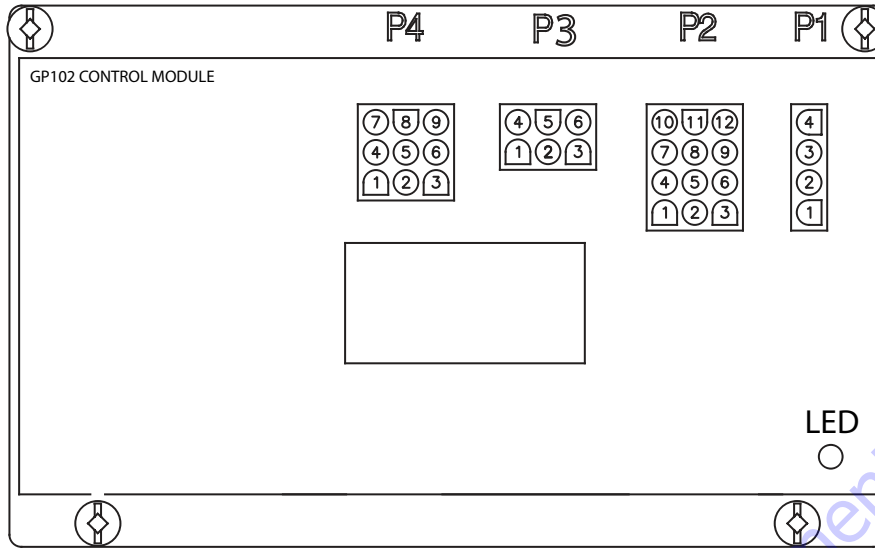
Access Level Procedure

7. By using Left/Right buttons, select the **Access Level (3)** from the menu and press the **ENTER** button.
8. The display will show **Access Level: Code (0000)**.
9. By using the Up/Down buttons, enter the Access Level Code (1 → 1 → 2 → 2) followed by pressing the **ENTER** button.
10. The display will show **Access Level 2**. By using Left/Right buttons, select the **Setups** from the menu and press the **ENTER** button.
11. The display will show **Setups: Change Defaults**. Select the **Change Defaults** from the menu and press the **ENTER** button.
12. The display will show **Defaults, 0 = Custom**. By using Up/Down buttons, select the Defaults: Code Setting for your Model (For default code, refer to [5.5-9 Curved/Group codes chart](#)) from the menu.
13. Press **ENTER** and followed by **ESCAPE**.

Calibrate Level Procedure

14. The display will show **Setups Change Defaults**. By using Left/Right buttons, select the **Calibrate Level** from the menu and press the **ENTER**.
15. The display will show **Calibrate Level: Yes: Enter, No: ESC**. Select the **Yes** from the menu by press the **ENTER** button.
16. The display will show **Calibrate Level: Tilt 0.0' , 0.0'**. Select the **ESCAPE** from the menu once.
17. The display will show **Setups Calibrate Level** Select the **ESCAPE** from the menu once again.
18. The Calibration procedure is complete, unplug and remove the EZcal.
19. Close the hydraulic/electric cabinet.

5.5-3 Load Sense Module (CM1) Pin Reference Table (GP-102)



PLUG	PIN #	WIRE # AND COLOUR	WIRE FUNCTION
Calibration Connection (RS232)			
P1	1	B+	Not connected –used for hand held calibration device connection
P1	2	Rx	
P1	3	Tx	
P1	4	GND (-)	
Inputs			
P2	1	Not Used	Not Used
P2	2	10E Blue/White	12V Input from S10 PLTF/Idle/Base Key Switch for Base selected *required for any movement from Base*
P2	3	14 Black	12V Input from S3 Lift/Off/Drive switch for Raise requested
P2	4	13 Orange	12V Input from S3 Lift/Off/Drive switch for Lower requested
P2	5	10 Red	12V Input IF BOTH Emergency Stops are energized *required for any movement from Platform*
P2	6	Not Used	Not Used
P2	7	16 White/Black	12V Input thru S3 Lift/Off/Drive switch from Joystick Forward drive requested
P2	8	15 Blue	12V Input thru S3 Lift/Off/Drive switch from Joystick Reverse drive requested
P2	9	Not Used	Not Used
P2	10	35B Red/Black	12V Input From LS1 High Speed Limit Switch To Verify ON/OFF Limits
P2	11	02 White	0V GND (-) Negative Reference From Base Terminal Strip
P2	12	10A Blue/Black	12V Main Power Input thru Main Power Relay 10BCR From Base Terminal Strip
Outputs			
P3	1	22 Red	12V Output To FL-22 Flashing Light
P3	2	29 Black	12V Output To BP-29 Beeper
P3	3	60 Black/White	12V Output To Overload Warning Lights On Base and Platform Emergency Stops
P3	4	28 Green/Black	12V Output To 28ACR1 & 28ACR2 Pump Dump Enable Relay's and 28CR Down Enable Relay
P3	5	02 White	0V GND (-) Negative Reference for Flashing Light and Beeper
P3	6	28E Green/White	12V Output To 28ECR1, 28ECR2 and 28ECR3 Pump Dumps Aux. Enable Relay's
Analog			
P4	1	Not Used	Not Used
P4	2	60A Green	0-5V Proportional Input from PT1 Pressure Transducer Analog Output signal
P4	3	28B Green	0-5V Proportional Input from AT1 Angle Transducer Analog Output signal
P4	4	Not Used	Not Used
P4	5	Not Used	Not Used
P4	6	910 Black	Output supply 12V (B+) for AT1 Angle Transducer
P4	7	900 White	0V GND (-) Negative Reference for PT1 Pressure Transducer
P4	8	902 White	0V GND (-) Negative Reference for AT1 Angle Transducer
P4	9	910A Black	Output supply 12V (B+) for PT1 Pressure Transducer

5.5-4 Control Module Initial Set-up Procedures

1. Move the aerial platform to a test area where the platform can be elevated to its maximum working height and reach.
2. Ensure the aerial platform is parked on a firm, level surface.

IMPORTANT

Each phase must be completed before the next phase can be carried out.
All phases must be completed before the aerial platform can be operated.

IMPORTANT

Always follow the instructions of the Calibration instrument.

IMPORTANT

Make sure the aerial platform is on BASE mode.

3. Locate the main manifold inside the hydraulic/electric tray.
4. Disconnect the black wire #14 from the lift coil.
5. Locate the contactor on the electrical panel assembly.
6. The jumper connection must be connected between the contractor (wire #19B) and the lift coil (instead of the black wire #14)
7. Connect the Easy-Cal tool to the P1 connector on the CONTROL MODULE.
8. The display will show "**Help: Press Enter**". By using Left/Right buttons, select the "Access Level (?)" from the menu and press the **ENTER** button. Refer to [5.5-2 Machine Level Calibration Procedure](#)
9. The display will show "**Access Level Code (xxxx)**".

By using the Up/Down buttons, enter the Access Level Code (xxxx) followed by pressing the **ENTER** button.

10. The display will show "**Access Level 2**".

By using Left/Right buttons, select the "Setups" from the menu and press the **ENTER** button.

11. The display will show "**Machine Defaults**".

Select the "Machine Defaults" from the menu and press the **ENTER** button.

12. The display will show "**Defaults, 0 = Custom**".

By using Left/Right buttons, select the "**X = Group Code**" from the menu and press the **ENTER** button.

13. The display will show "**X=GROUP CODE**".

- By using the Up/Down buttons, enter the "Group Code (?)" then by using Left/Right buttons, select the "**Curve**" from the menu.

14. The display will show "**X=CURVE**".

- By using the Up/Down buttons, enter the "Curve Code (?)" followed by pressing the **ESCAPE** button.
Refer to [5.5-9 Curved/Group codes chart](#)

15. The display will show "**Machine Defaults**".

- By using Left/Right buttons, select the "Tilt Setups" from the menu and press the **ENTER** button.

16. The display will show "**Tilt Setups: Calibrate Level**".

- Select the "**Tilt Setups: Calibrate Level**" from the menu and press the **ENTER** button.

17. The display will show "**Calibrate Level: Yes: Enter, No: ESC**".

- Select the “Yes” from the menu by press the **ENTER** button.
18. The display will show “**Calibrate Level: Tilt 0.0’ , 0.0”**.
 - Select the “**ESCAPE**” from the menu once.
 19. The display will show “**Tilt Setups Calibrate Level**”.
 - Select the “**ESCAPE**” from the menu once again.
 20. The display will show “**Setups Tilt Setups**”.
 - By using Left/Right buttons, select the “Load Setups” from the menu and press the **ENTER** button.
 21. The display will show “**Load Setups: Calibrate Load**”.
 - Select the “**Load Setups: Calibrate Load**” from the menu and press the **ENTER** button.
 22. At this point, elevate the aerial platform at full height, check the harness and making sure it is not stretched tight, then lower down the platform.
 23. The display will show “**Calibrate Load: Platform Down?**”.
 - Asking for confirmation that the platform is fully lowered?
 - Check that the platform is fully lowered then press the **ENTER** button to confirm.
 24. The display will show “**Calibrate: Loaded Empty? No**”.
 - Asking for confirmation that the platform is empty?
 - Check that the platform is empty
 25. By using the Up/Down buttons, enter the “Yes” followed by pressing the **ENTER** button. The display will show “**Calibrate Load: Please Lift.....**”.
 - Waiting for the lift switch to be activated.
 26. Hold the lift switch and keep holding it until the platform is fully elevated.

IMPORTANT

If the lift switch is released earlier than full-height position, the calibration will have to be aborted and repeated from the beginning!

27. When the system detects the lift switch closed, the display shows **Calibrate Load: Lift Empty**.
28. After a delay, the system stops the platform lifting and takes height and pressure measurements. The display shows **MEASURING # xx** When the measurements have been taken, the platform resumes lifting.

NOTE

The Lifting, stopping, measuring, lifting process continues until the platform reaches full height.

29. When the platform reaches full height release the lift switch.
30. The display briefly shows **TOTAL DATA: 04** to indicate the number of measurements taken.
31. The display shows **Calibrate Load: Please Lower**.

IMPORTANT

If the lower switch is released earlier than full-lower position, the calibration must be aborted and repeated from the beginning!

32. Hold the lower switch and keep holding it until the platform is fully lowered.
33. When the system detects the lower switch closed, the display shows **Calibrate Load: Lower Empty**
34. After a delay, the system stops the platform lowering and takes height and pressure measurements. The display shows **MEASURING #xx**. When the measurements have been taken, the platform resumes lowering.

NOTE

The lowering, stopping, measuring, lowering process continues until the platform is fully lowered.

35. When the platform is fully lowered (and height 0% is displayed), release the lower switch.
36. The display shows briefly **TOTAL DATA: 04** to indicate the number of measurements taken.
37. The display shows **Calibrate Load: Caldate: mm/dd/yy**.
 - It is recommended that the current date be entered here to provide easy taking of the data of last calibration.
 - The current date must be entered using the **LEFT/RIGHT** and **UP/DOWN** buttons
38. Press **ENTER** to complete date entry (the information is stored).
39. The display shows **Calibrate Load** option.
40. Press the **ESC** button to exit the **Calibrate Load** option. Remove the jumper wire and re-connect the black wire #14 to the coil removed earlier.
41. Close the hydraulic/electric tray.

NOTE

Continuing partially complete load calibration.

Once a calibration phase has been successfully completed, it is not required to do it again (unless of course a change to the vehicle such as a replacement sensor requires that calibration be repeated). This is useful if the calibration procedure is interrupted – the remaining phases can be completed at a later time.

- If a calibration phase has been successfully completed, a **REDO** message is displayed:
 - **REDO DYNAMIC: NO**
 - **REDO LOADED: NO**
 - **REDO EMPTY: NO**
- If the phase does not need to be repeated, just press **ENTER** to move on.
- If the phase does need to be repeated, press **UP** or **DOWN** to change **NO** to **YES** then press **ENTER**.

5.5-5 LED Error Codes – Quick Reference Chart

HELP Message	LED indication
EVERYTHING OK	Steady on
IN GROUND MODE!	Steady on
OVERLOAD FUNCTIONS DISABLED!	6/6
VEHICLE TILTED	1/1
VEHICLE OVERLOADED	1/2
WAITING FOR B+ ON P2-12	5/2
ARMGUARD ACTIVE!	1/3
TOO HIGH - DRIVE PREVENTED	1/4
TOO HIGH - LIFT UP PREVENTED	1/5
TESTING HWFS	7/8
IDLE TIMEOUT ACTIVE!	Always off
WAITING FOR NEUTRAL	5/5
ELEVATION SWITCH SHIFTED?	2/1
ELEVATION SWITCH STUCK?	2/2
NO LAST CALDATE!	6/3
LOAD NOT CALIBRATED	6/2
DRIVE/LIFT INPUTS FAULTY!	5/6
UP/DOWN SELECT INPUTS ACTIVE TOGETHER	5/4
INVALID LOAD - CHECK SENSORS	6/4
HEIGHT NOT CALIBRATED	6/1
INVALID HEIGHT - CHECK SENSOR	6/5
EMS INPUTS FAULTY!	5/2
B+ SUPPLY TOO LOW	5/1
P4-1 OR P5-1 SHORT TO 0V?	4/1
P3-4 SHORT TO SUPPLY!	4/2
P3-4 SHORT TO 0V?	4/3
P3-4 SHORT TO SUPPLY?	4/4
P3-6 SHORT TO 0V?	4/5
P3-6 SHORT TO SUPPLY?	4/6
FAULT: BAD TILT SENSOR	7/1
FAULT: BAD HWFS	7/2
FAULT: BAD SLAVE ANALOGS	7/3
FAULT: BAD STRAIN MONITORS	7/4
FAULT: BAD SLAVE MICRO	7/5
FAULT: HWFS STALLED!	7/6
STARTUP!	7/7
FACTORY OVERRIDE	6/7

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Reading the Codes:

In order to read the fault codes, a sequence of pauses and flashes can be seen on the LED mounted on the GP102 module. The codes are continuously displayed by the LED until the fault is cleared, the GP102 reset and no longer detects the fault, or idle timeout becomes active.

The sequence is as follows:

1. Quarter second flashes followed by quarter second pauses indicate the first digit.
2. A 1.5 second pause.
3. Quarter second flashes followed by quarter second pauses indicate the second digit
4. A 4 second pause. Repeat Steps 1–4

Since the GP102 only reports one error, only one code can be read from the LED per instance. If the error is cleared and another error is present, it will then be presented.

5.5-6 LED Error Codes – Code Breakdown Chart

LED Flash Code	Description	Action
63	No Last Caldate	An EZcal is required!
62	Load Not Calibrated	
61	Height Not Calibration	
55	Waiting For Neutral	Check inputs on P2 pins 1,2,3,4,5,6,7,8.
56	Drive/Lift Inputs Faulty!	
54	Up/Down Select Inputs Active Together	
52	EMS Inputs Faulty!	
42	P3-4 Short To Supply!	Disconnect plug P3. If fault clears there is a problem with the wiring from P3-4 or P3-6 to the rest of the vehicle.
44	P3-4 Short To Supply?	
46	P3-6 Short To Supply?	
23	Armguard Active!	If the 23 flash code is triggered by armguard, it will occur once then clean. This is not a true fault but just an indication of the reason for the vehicle stop. If the 21 or 22 flash code is triggered by a fault with the elevation switch, it does not clear. Check that the elevation switch correctly opens/closes when the platform is raised/ lowered.
21	Elevation Switch Shifted?	
22	Elevation Switch Stuck?	
43	P3-4 Short To 0 V?	Disconnect plug P3. If fault clears there is a wiring fault from P3-4 or P3-6 to the rest of the vehicle.
45	P3-6 Short To 0 V?	
45	Invalid Load – Check Sensors	Check the voltage out of the pressure transducer, into P4-2. It should be between 0.5 V (zero pressure) and 4.5 V (maximum pressure) and should vary as the platform load & position varies.
52	Waiting For B+ on P2-12	Check that the battery voltage is not too low. Verify battery voltage on P2-12.
51	B+ Supply Too Low	
41	P4-1 Or P5-1 Short To 0V?	Disconnect plug P4 – if the fault clears there is a wiring fault from P4-1 to the rest of the vehicle.

5.5-7 LED Error Codes – Code Breakdown Chart (Continued)

LED Flash Code	Description	Action
11	Vehicle Tilted	These are not true faults but an indication that vehicle movement is prevented. Remove excessive load from the platform. Lower the platform if close to maximum height. Move the vehicle to level ground.
12	Vehicle Overloaded	
14	Too High – Drive Prevented	
15	Too High – Lift Up Prevented	
65	Invalid Height – Check Sensor	Check the voltage out of the height transducer, into P4-3. It should be between 0.4 V and 4.6 V and should vary as the platform position varies.
78	Testing HWFS	These are not true faults unless they do not clear the start-up tests should only occur for a short time.
77	Start Up!	
66	Overload Functions Disabled!	These are not true faults – the GP102 has been configured to suppress overload functionality.
67	Factory Override	
Always Off	Idle Timeout Active!	Action a function to clear the idle timeout if it occurred. Ensure the GP102 is correctly mounted – incorrect mounting can cause the bad tilt sensor diagnostic to occur. Otherwise there may be an internal problem with the GP102.
71	Fault: Bad Tilt Sensor	
72	Fault: Bad HWFS	
73	Fault: Bad Slave Analogs	
74	Fault: Bad Strain Monitors	
75	Fault: Bad Slave Micro	
76	Fault HWFS Stalled!	

5.5-8 Control Module Load Calibration - Code Messages & Definitions

During calibration the following failure message may appear:

Refer to [5.4-5 Hand Held \(EZcal\) Calibration / Diagnostic Tool Key Functions](#).

Code F01: Check HWFS

This message is given if the GP102 startup tests have not completed.

- Check HELP message for more information.

Code F02: Not Ground Mode

This message is given if the machine is not in ground mode (P2-2 must be high).

- Calibration can only be carried out in ground mode.

Code F03: Not Stopped

This message is given if any function switch is closed.

- Check DIAGNOSTICS / SWITCHES to see which function switch is closed.

Code F04: Tilted

This message is given if the machine is tilted.

- Calibration must be carried out with the machine level. If the machine is level, use the SETUPS / TILT SETUPS to set the GP102 level.

Code F05: Bad Height

This message is given if the height sensor output (P4-3) is out of range at the start of calibration.

- The height sensor output must be 3.7V. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0V or 5V is probably due to a wiring problem.

Code F06: Check Elev

This message is given if the elevation switch (P2-10) is closed at the start of calibration, when the operator has confirmed the "PLATFORM DOWN?" question.

- If the platform is down, check the elevation switch wiring.

Code F08: Check Elev

This message is given if the elevation switch (P2-10) is closed at the end of calibration, when the platform should be fully raised.

- This message would occur if the UP switch was accidentally opened near the start of the lift. If the platform is fully raised, check the elevation switch wiring.

Code F09: Bad Height

This message is given if the height sensor output (P4-3) is out of range at the start of calibration.

- The height sensor output must be 3.7V. Check DIAGNOSTICS / SENSORS to see the output.

Code F10: Bad Height

This message is given if the height sensor output (P4-3) is out of range at the end of calibration.

- The height sensor output must be between 0.9V and 4.1V. Check DIAGNOSTICS / SENSORS to see the output. A reading of 0V or 5V is probably due to a wiring problem.

Code F11: Not Up

This message occurs at the start of calibration if the operator selects a function other than UP.

- Select the UP function only.

Code F13: Low Height Range

This message occurs at the end of calibration if the height sensor output did not change sufficiently to give a reasonably accurate platform height estimate.

This message could occur if the UP switch was accidentally opened too early (when the platform is not fully raised). DIAGNOSTICS / SENSORS can be used to check the height sensor output (P4-3). A difference of at least 1V is to be expected.

Code F15: Check Elev

This message is given if the elevation switch (P2-10) is closed when the platform has been fully lowered at the end of calibration.

This message would occur if the DOWN switch was accidentally opened before the platform was fully lowered. If the platform is fully lowered, check the elevation switch.

Code F16: Low Elev.open

This message is given if the elevation switch (P2-10) opened during lift at a too low height (below 5%).

- Check CALIBRATIONS / HEIGHT CALS; the “ElevUp” value shows the recorded height where the switch opened. Set up elevation switch to manufacturers’ specifications and calibrate load.

Code F17: High Elev.open

This message is given if the elevation switch (P2-10) opened during lift at a too high height (above 25%).

- Check CALIBRATIONS / HEIGHT CALS; the “ElevUp” value shows the recorded height where the switch opened. Set up elevation switch to manufacturers’ specifications and calibrate load.

Code F18: Low Elev.close

This message is given if the elevation switch (P2-10) closed during lower at a too low height (below 5%).

- Check CALIBRATIONS / HEIGHT CALS; the “ElevDown” value shows the recorded height where the switch opened. Set up elevation switch to manufacturers’ specifications and calibrate load.

Code F19: High Elev.close

This message is given if the elevation switch (P2-10) closed during lower at a too high height (above 25%).

- Check CALIBRATIONS / HEIGHT CALS; the “ElevUp” value shows the recorded height where the switch opened. Set up elevation switch to manufacturers’ specifications and calibrate load.

Code F20: Height<>0%

This message occurs if the platform height is not 0% after the platform has been fully lowered during either STATIC lift.

The platform must return to the same height each time it is fully lowered.

- Check DIAGNOSTICS / SYSTEM to check the height.

Code F28: Bad Height

This message indicates a problem with the height sensor output (P4-3) during calibration.

The height sensor output must be between 1.0V and 4.0V at all times.

- Check DIAGNOSTICS / SENSORS to see the output. A reading of 0V or 5V is probably due to a wiring problem.

Code F42: Low Pressure

This message indicates that the pressure transducer output (P4-2) is too low (0.5V or less) at the beginning of calibration.

- Check DIAGNOSTICS / SENSORS to read output.

Code F43: High Pressure

This message indicates that the pressure transducer output (P4-2) is too high (4.5 V or more) at the beginning of calibration.

- Check DIAGNOSTICS / SENSORS to read output.

Code F44: Low Pressure

This message indicates that the pressure transducer output (P4-2) is too low (0.5 V or less) at a measurement point.

- Check DIAGNOSTICS / SENSORS to read output.

Code F45: High Pressure

This message indicates that the pressure transducer output (P4-2) is too high (4.5 V or more) at a measurement point.

- Check DIAGNOSTICS / SENSORS to read output.

Code F46: Check Elev

This message indicates that the elevation switch opened more than once during calibration lifting.

Code F47: Check Elev

This message indicates that the elevation switch closed more than once during calibration lower.

Code F48: Bad Pressure

This message indicates that the pressure transducer output (P4-2) is out of range at the beginning of calibration.

- Check DIAGNOSTICS / SENSORS to read output.

Code F52: Too Few

This message indicates that not enough measurements were recorded during calibration lifting or lowering.

Code F98: Out of Range

This message indicates that the fine tune calibration is unacceptable.

This is probably due to a faulty transducer or faulty/open holding valve(s)/ emergency lowering valve.

During calibration the following information messages may appear:**Platform Down?**

This message is prompting for confirmation that the platform is fully lowered. If necessary the DOWN switch can be activated to lower the platform. Press ENTER to confirm when the platform is fully lowered.

Platform Empty?

This message is prompting for confirmation that the platform is completely empty. Press ENTER to confirm if the platform is empty.

Platform Loaded?

This message is prompting for confirmation that the platform is loaded to rated load. Press ENTER to confirm if the platform is loaded.

Please Lift

This message is prompting for the platform to be raised. The UP switch should be closed.

Please Lower

This message is prompting for the platform to be lowered. The DOWN switch should be closed.

Lift Empty

This message is displayed while the platform is being raised to the next measurement height, when an EMPTY platform is being calibrated.

Lift Loaded

This message is displayed while the platform is being raised to the next measurement height, when a LOADED platform is being calibrated.

Lifting

This message is displayed while the platform is being raised, during HEIGHT-only calibration.

Measuring #

This message is displayed when the platform is stopped during calibration, when the GP102 takes a measurement. There is a short delay while the machine is allowed to stabilize after movement is stopped.

Must Go Down!

This message occurs if the wrong switch is closed when the GP102 is waiting for the platform to be lowered.

Must Go Up!

This message occurs if the wrong switch is closed when the GP102 is waiting for the platform to be raised.

Please Wait

This message indicates that the GP102 is busy; the delay is short (no more than 5 seconds).

Lower Empty

This message is displayed while the platform is being lowered to the next measurement height, when an EMPTY platform is being calibrated.

Lower Loaded

This message is displayed while the platform is being lowered to the next measurement height, when an EMPTY platform is being calibrated.

Lowering

This message is displayed while the platform is being lowered, during HEIGHT-only calibration.

Total Data:

This message is displayed at the end of each phase, to confirm the number of measurements recorded by the GP102.

Caldate

This message is prompting for the date to be entered; it is stored to identify when the machine was calibrated.

The last calibrate date can be viewed in DIAGNOSTICS / LOG. Press LEFT and RIGHT to select the flashing digits. Press UP and DOWN to change the flashing digits. Press ENTER when the entry is complete. IMPORTANT: The date 00/00/00 is not allowed!

Finished

This message confirms that calibration is complete and successful.

5.5-9 Curved/Group codes chart

Model	Number of Extension Decks	Curve Code	Group Code
SJ6832 RT	1 Manual extension deck	56	15
SJ6826 RT	1 Manual extension deck	57	15

5.6 Scissors

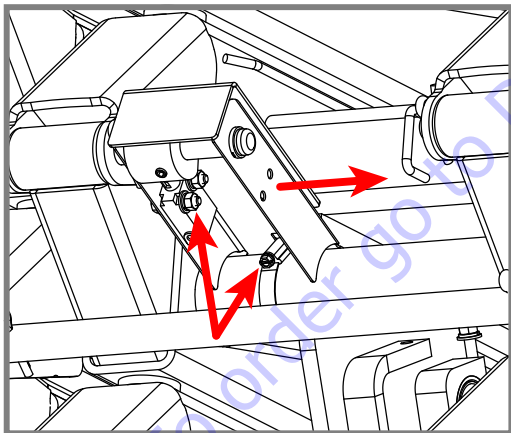
5.6-1 High Speed Cutout Limit Switch (LS5) Replacement and Adjustment

Machine Preparation

1. Ensure the aerial platform is parked on a firm level surface.
2. Chock or block the wheels to keep the aerial platform from rolling forward or backward.

Limit Switch Removal

1. Raise the platform to give access to the limit switch cable, and deploy the maintenance stand.
2. Turn the main power disconnect switch off.
3. Remove the gear clamp securing the limit switch cover, and slide the limit switch cover off of the pin. Set aside the clamp for reinstallation later.
4. Remove the bolts, washers, and nuts (x2) securing the limit switch to the cover. Set the cover and hardware aside for reinstallation later.



5. Remove the limit switch and free the limit switch cable by cutting the tie wraps.
6. Follow the cable into the electrical panel, and disconnect the limit switch wires from the electrical panel. Discard the limit switch.

Limit Switch Replacement

1. Mount the new limit switch (**122010**) on the cover, using the hardware removed previously (apply a small amount of Loctite to the bolts).
2. Slide the limit switch cover back onto the pin. Secure it with the gear clamp removed previously.

Limit Switch Electrical Connections

1. Route the new limit switch cable along the same path as the old one into the electrical panel cabinet. Use tie wraps as needed to secure them at regular intervals.
2. Strip the cable jacket back to separate the wires. Cut the wires to length if needed, and strip the ends.
3. Crimp a 18 GA red ferrule onto the end of the blue wire, and a 14-16 GA x 1/4 Terminal onto the end of the brown wire.
4. Connect both wires to the electrical panel.
5. Stow the maintenance stand and fully lower the platform.

Limit Switch Cam Setup

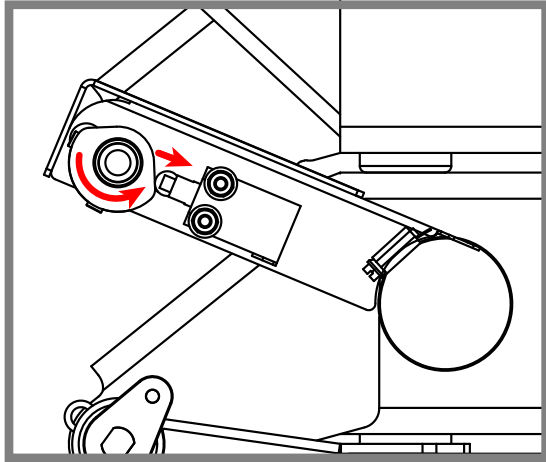
1. Turn the main power disconnect switch to the ON position, and start the engine.
2. Attach the end of a measuring tape to the side of the platform with a tie wrap, in such a way that the measuring tape will hang down freely to the ground.



NOTE

The end of the measuring tape should be level with the standing surface of the platform.

3. Raise the platform until the distance from the standing surface of the platform to the ground measures 7 ft (2.13 m).
4. Loosen the set screws (x2) on the limit switch cam, and rotate the cam until it depresses the limit switch plunger. Apply a small amount of Loctite to both set screws, and tighten them.



5.7 Platform

5.7-1 Gate Spring Hinge Adjustment

1. The tension of the spring hinges should be such that when the gate is opened halfway and released, it will close fully and latch.
2. To adjust the tension of the spring hinges, first remove the safety locking screw located at the top or bottom of each hinge. Retain the screws for reinstallation later.
3. To increase the tension, insert a $\frac{5}{32}$ hex wrench in the screw socket, and turn the wrench clockwise. To release the tension, depress the hex wrench in the socket, let it rotate counterclockwise, then release the hex wrench.

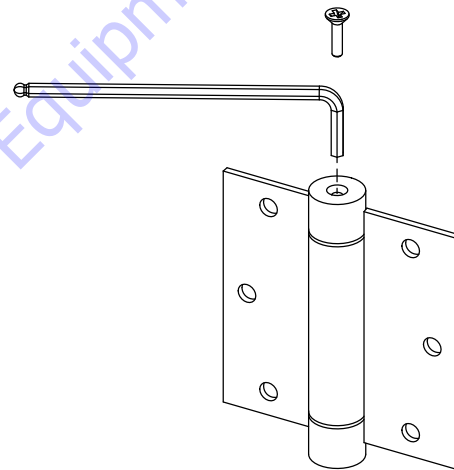
5.6-2 High Speed Cutout Limit Switch Testing

1. Raise the platform less than 84 in (213 cm), and drive the unit at full speed. The unit should move at high speed.
2. Then raise the platform over 84 in (213 cm). Drive forward with joystick fully forward. Machine should drive in low speed.



NOTE

High Speed Cutout should occur within the tolerance zone of 81–87 in (206–221 cm).



4. Adjust the tension on both hinges until the gate releases and latches from a half open position.
5. Reinstall the safety locking screws into the hinges when tension adjustment is complete.

5.7-2 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.

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