

SERVICE MANUAL

TELESCOPIC BOOMS

MODELS SJ61T SJ66T

194312AE February 2017

SKYJACK

This manual is based on Serial Number(s)

SJ61T & SJ66T97 001 396 to 97 001 832

Please refer to the website (www.skyjack.com) for older Serial Numbers.

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SERVICE AND MAINTENANCE

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The Safety Alert Symbol identifies important safety messages on aerial platforms, 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.



This Safety Alert Symbol means attention!

Become alert! Your safety is involved.

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 aerial platform.

Section 1
SCHEDULED MAINTENANCE

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

Aerial Platform Definition

A mobile device that has an adjustable position platform supported from ground level by a structure.

Purpose of Equipment

The SKYJACK Telescopic Boom Series (Models SJ 40T, 45T, 61T & 66T) aerial platform is designed to transport and raise personnel, tools and materials to overhead work areas

Use of Equipment

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

Manuals

Operating Manuals

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

Service & Maintenance Manuals

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

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

Service Policy and Warranty

SKYJACK warrants each new SJT series work platform to be free of defective parts and workmanship for the first 24 months. Any defective part will be replaced or repaired by your local SKYJACK dealer at no charge for parts or labor. Contact SKYJACK Service Department for warranty statement extensions or exclusions.

Operator Safety Reminders, Warnings, and Precautions

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

Maintenance and Inspection Schedule

The actual operating environment of the work platform governs the use of the maintenance schedule. The inspection points covered in Table 1.2 Pre-Delivery / Maintenance Inspection Checklist. Maintenance and Inspection Checklist, indicates the areas of the aerial platform to be maintained or inspected and at what intervals the maintenance and inspections are to be performed.

Owner's Annual Inspection Record

It is the responsibility of the owner to arrange quarterly and annual inspections of the aerial platform. Table 1.1 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.

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 aerial platform 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 aerial platform.

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.

Maintenance and Service Safety Tips

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

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

Anyone operating or servicing this aerial platform 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.

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, turn Battery Disconnect Switch to "◯" off position.

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

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 made 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.

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. What are they? 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.

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 sitewww.skyjackinc.com for updates related to service and maintenance of this aerial platform.

Maintenance and Inspection

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

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 aerial platform in the following configuration:

  - Aerial platform parked on a flat and level surface
  - Disconnect the battery by turning the main power disconnect switch to "◯"off position.

- Repair any damaged or malfunction components before operating aerial platform.
- Keep records on all inspections.

Maintenance Instructions

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

Inspection Schedule

PDI / Frequent	B
Annual	B + C
Additional	*

B - Perform PDI prior to each delivery, or Frequent Inspection every 3 months or 150 hours.
C - Perform Scheduled Maintenance Inspections every year.
*** -** Perform at time sensitive maintenance intervals.

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

Legend

P = Pass
F = Fail
R = Repaired
N/A = Not Applicable

Table 1.1 Owner's Annual Inspection Record

	Model Number: _____ Serial Number:_____								
*	20__	20__	20__	20__	20__	20__	20__	20__	20__
**	SKYJACK								

1001AB

This decal is located on the control compartment cowling. It must be completed after an annual inspection has been completed. Do not use the aerial platform if an inspection has not been recorded in the last 6 months.

	Pictorial	Description
*		**Inspection Date**
**		**Inspector Signature**

Pre-Delivery/Maintenance Inspection Checklist

Articulating Booms & Telescopic Booms

Serial Number: _____ Product Owner: _____

Model: _____

Hourmeter Reading: _____ Product User: _____

Date/Time: _____

Use this form for Pre-Delivery Inspections (PDI) prior to each rental, lease or sale, or as a guide for all Frequent Inspections and Annual Inspections. Refer to the applicable Operating and Service Manuals for inspection details (eg. Visual Inspection and Function Tests, Torque Specs., Engine Oil, Chain Inspection Intervals, etc.).

Inspection Type Schedule	
❑ PDI	B
❑ Frequent	B
❑ Annual	B + C
❑ Additional	*

B - Perform PDI prior to each delivery or Frequent Inspections every 3 months or 150 hrs. For further details refer to Service & Operating Manuals.

C - Perform Scheduled Maintenance Inspections every year. For further details refer to Service & Operating Manuals.

***** - Perform time sensitive maintenance intervals. Refer to the Service Manual.

P - Pass
F - Fail
R - Repaired
N/A - Not Applicable

Check the appropriate box as each item is inspected. If an item is found to be not acceptable, please describe the issue in the comments box provided.

Items for Inspection		P	F	R	N/A
Refer to skyjack.com for the latest service bulletins.	B, C				
Ensure Annual Inspection has been completed within the last 13 months.	B				
Manuals & Required Documents. In storage box, in good condition & legible.	B				
Labels. In place, secure & legible.	B				
Limit Switches. Secured & no obstructions or damage.	B				
Main Power Disconnect Switch. Cables secure & in working order.	B				
Battery. No damage, tight connections, adequate fluid levels. Clean terminals and cable ends.	B				
Swing Drive Motor. Tight fittings, hoses & bolts. No damage, missing parts or leaks.	B, C				
Turret Rotation Gear. No damage or missing parts.	B, C				
Rotary Manifold. Tight fittings & hoses, & no leaks.	B				
High Pressure Filter. Secure & no damage or leaks.	B, C				
Hydraulic Pumps. Tight fittings, hoses & bolts. No damage, missing parts or leaks.	B				
Muffler and Exhaust. Secure & no damage.	B				
Engine Pivot Tray. Secure & no damage or missing parts.	B				
Engine Oil. Level in the "safe" zone. Ensure oil change interval has not been exceeded.	B				
Engine Air Filter. No damage or missing parts.	B, C				
Engine Fuel Leaks. No damage or leaks from tank, shutoff valve & hoses and fittings.	B, C				
Engine Fuel Filter. No damage, missing parts or leaks.	B, C				
Base Control Console. Switches in neutral position & no damage or missing parts.	B				
Hydraulic Tank. Filler cap secure & no damage or leaks.	B				
Hydraulic Oil. Level between min. & max. marks.	*, B				
Hydraulic Filter. Secure & no damage, missing parts or leaks.	B, C				
Brake & Main Manifolds. Tight fittings and hoses & no leaks. Tight wire connections.	B, C				
Emergency Power Unit. Tight fittings and hoses & no leaks. Tight wire connections & no damage or missing parts.	B				
Fuel Tank. Filler cap is secure & no damage or leaks.	B, C				

Items for Inspection		P	F	R	N/A
Fuel Tank Leaks. Tight fittings and hoses & no damage or leaks.	B				
Base Weldment. No cracks or deformation.	B				
Turret Transportation Lock. Unlocked & no damage or missing parts.	B				
Drive Axle. Secure & no missing parts. Tight fittings and hoses & no leaks.	B, C				
Oscillating Cylinder Assembly. Secure & no missing parts. Tight fittings and hoses & no leaks.	B, C				
Steer Cylinder Assembly. Secure & no missing parts. Tight fittings and hoses & no leaks.	B				
Pins & Bushings. No damage/wear, or loose or missing parts.	B				
Steer Linkage. No damage/wear or missing parts.	B				
Wheel/Tire Assembly. Check all tires for damage, wear & proper alignment. Lug nuts torqued as recommended.	B, C				
Platform Assembly. No damage or missing parts.	B				
Raillings and Gate. Secure & no damage or missing parts.	B				
Lanyard Attachment Anchorage. Attachment rings secure & no damage.	B				
Platform Control Console. Switches in neutral position & secure. No damage or missing parts.	B				
Rotary Actuator. No damage or missing parts. Tight fittings, hoses and bolts & no leaks.	B				
Jib. No damage or missing parts. Tight hoses and bolts & no leaks.	B				
Boom. No damage or missing parts. No deformation or cracks in welds. Tight hoses and bolts & no leaks.	B				
Control Cables and Hoses. No damage or missing parts. No spring gaps. Ensure Inspection Interval has not been exceeded.	*, B				
Riser. Secure & no damage/deformation or missing parts.	B				
Cylinders. Secure & no damage or leaks.	B				
Wear Pads. No damage or missing parts. Bolts tightened.	B				
Cable Carrier. No damage or missing parts.	B				
Special Options and Approved Attachments. Secure & no damage or missing parts.					
Function Tests (Refer to your corresponding Serial #'s Operating Manual for information on running these tests.)		❑ PASS ❑ FAIL			

Comments: _____

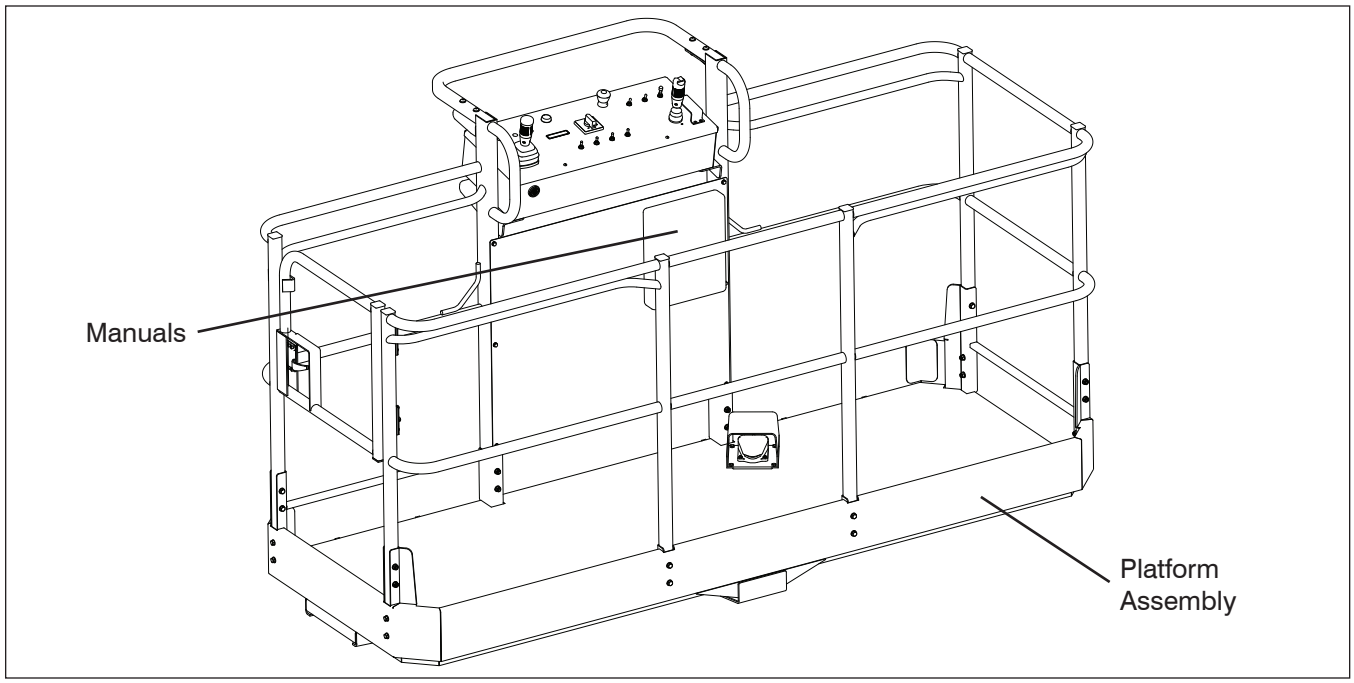
The undersigned confirms that all areas listed have been inspected, and any and all discrepancies have been brought to the attention of the owner. Furthermore, the undersigned confirms that all discrepancies have been corrected prior to using this machine.

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

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

Note: Visit skyjack.com for a printable copy of this form.

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1.1 Scheduled Maintenance Inspections

Begin the scheduled maintenance inspections by checking each item in sequence for the conditions listed in this section.

WARNING

To avoid injury, do not operate an aerial platform until all malfunctions have been corrected.

WARNING

To avoid possible injury, ensure aerial platform power is off during visual and daily maintenance inspections.

Electrical

Maintaining electrical components is essential to good performance and service life of aerial platform.

Perform a visual inspection around the following areas:

- boom to platform cable harness
- engine compartment electrical panel
- engine wiring harness
- rotary manifold wiring

Hydraulic

Maintaining hydraulic components is essential to good performance and service life of the aerial platform.

Perform a visual inspection around the following areas:

- hydraulic tank filter, fittings, hoses, emergency power unit and turret/base surface
- engine compartment fittings, hoses, main pump, filter and turret/base surface
- all hydraulic cylinders
- all hydraulic manifolds
- the underside of the turret
- the underside of the base
- ground area under the aerial platform

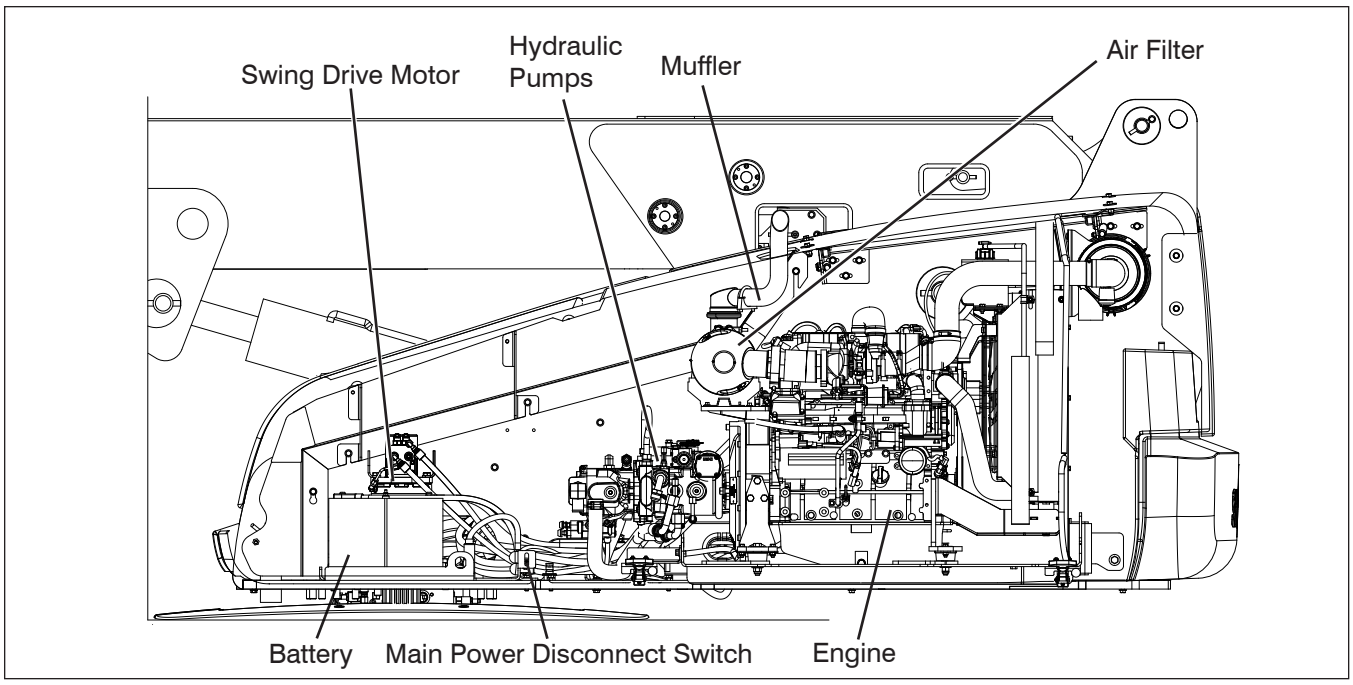
1.1-1 Manuals & Required Documents (B)

Ensure a copy of operating manual and other important documents are enclosed in the manual storage box.

- Check to be sure manual storage box is present and in good condition.
- Ensure manuals are legible and in good condition.
- Always return manuals to the manual storage box after use.

1.1-2 Labels (B)

Refer to the labels section in the operating manual and ensure that all labels are in place and are legible.



1.1-3 Limit Switches (B)

Ensure limit switches are properly secured and no signs of visible damage and movement is not obstructed. Detecting limit switch malfunction is essential to safe aerial platform operation.

Visually inspect all limit switch located inside the turret and under the power track. Inspect for the following:

- broken or missing actuator arm
- missing fasteners
- loose wiring

1.1-4 Engine Compartment

Ensure all compartment latches are secure and in proper working order.

- **Main Power Disconnect Switch (B)**
  - Turn main power disconnect switch to "◯" off position.
  - Ensure there are no loose or missing parts and there is no visible damage.
  - Ensure all cables are secure and switch is in proper working condition.
- **Battery (B)**
  Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions.

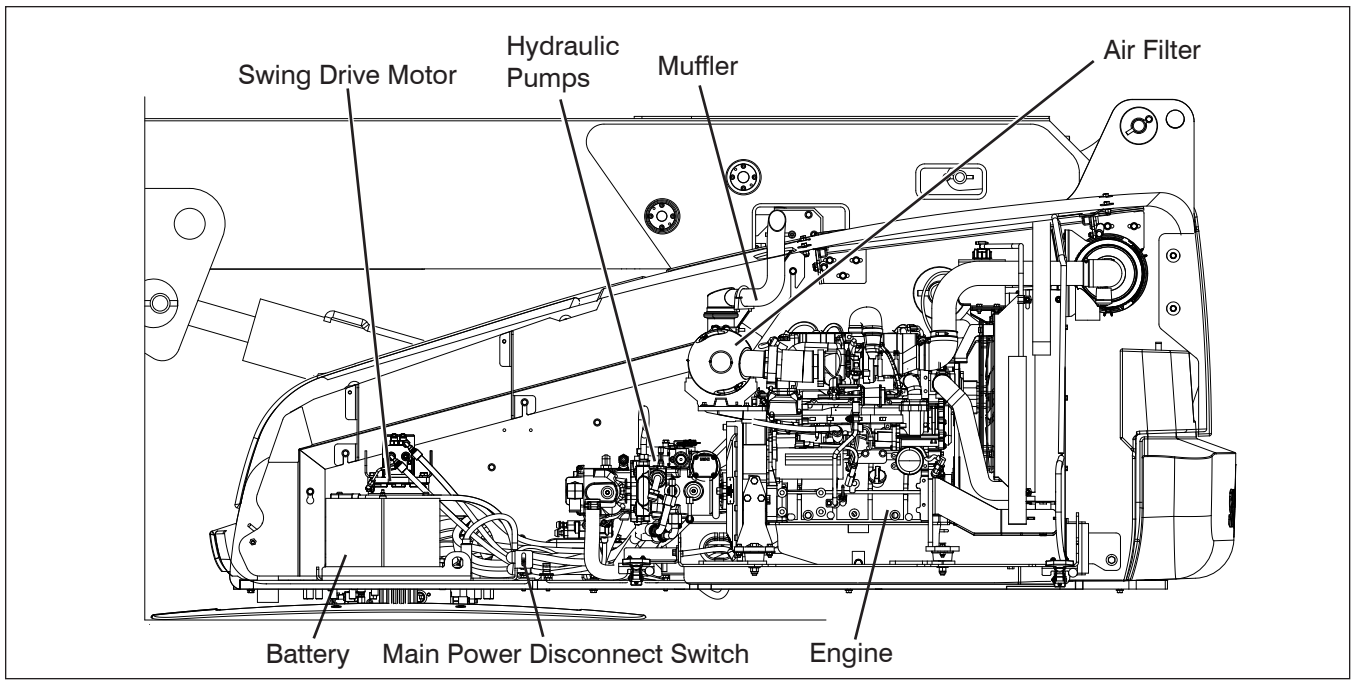
WARNING

Explosion hazard. Keep flames and sparks away. Do not smoke near batteries.

WARNING

Battery acid is extremely corrosive - Wear proper eye and facial protection as well as appropriate protective clothing. If contact occurs, immediately flush with cold water and seek medical attention.

1. Check battery case for damage.
2. **B - Frequent Inspection**
   Clean battery terminals and cable ends thoroughly with a terminal cleaning tool or wire brush.
3. Ensure all battery connections are tight.
4. If applicable, check battery fluid level.
   B - Frequent Inspection
   If plates are not covered by at least 1/2" (13 mm) of solution, add distilled or demineralized water.
5. **B - Frequent Inspection**
   Replace battery if damaged or incapable of holding a lasting charge.



WARNING

Use original or manufacturer-approved parts and components for the aerial platform.

- **Swing Drive Motor (B,C)**
  - Ensure there are no loose or missing parts and there is no visible damage.
  - Ensure all bolts are properly tightened.
  - Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

  C - Annual Inspection
  - For brake/motor oil replacement procedure, refer to 5.3-3 Check Swing Drive Motor Gearbox Oil.

- **Turret Rotation Gear (B,C)**
  - Ensure there are no loose or missing parts and there is no visible damage.

  C - Annual Inspection
  - For lube procedure, refer to 1.1 Scheduled Maintenance Inspections.

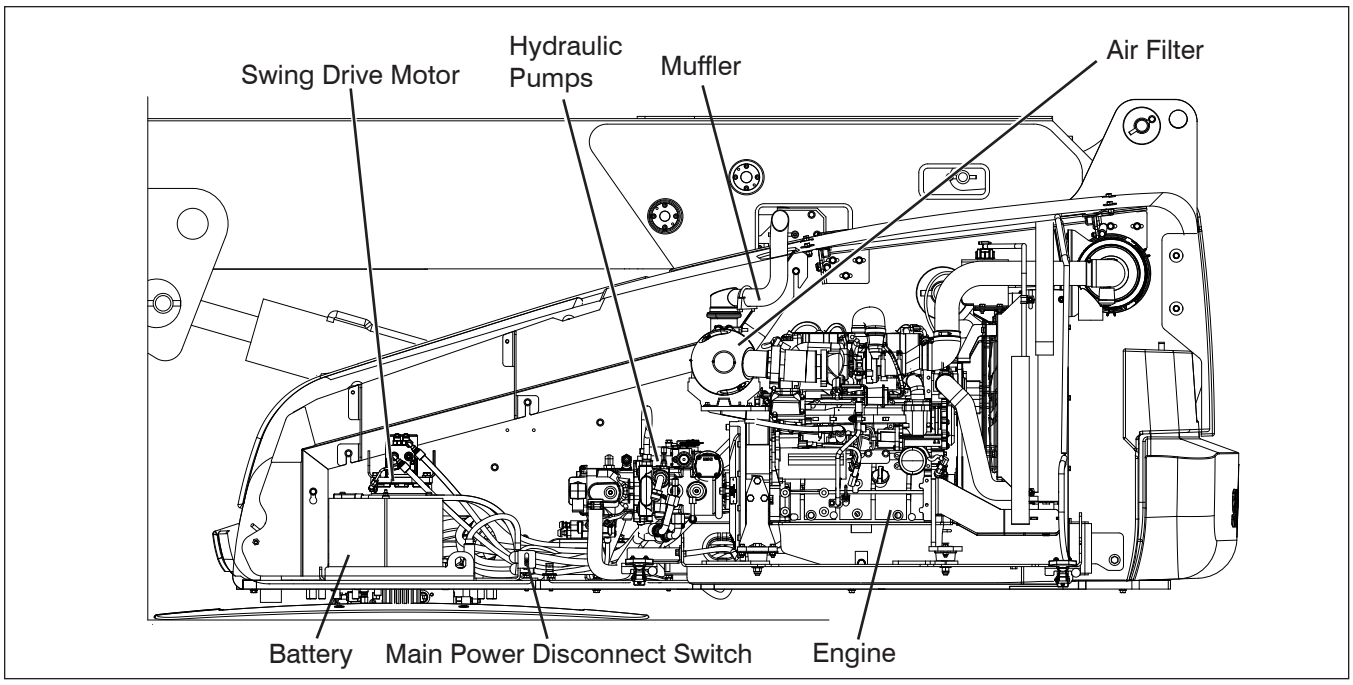
- **High Pressure Filter (B,C)**
  (see Control Compartment for 61T/66T)
  - Ensure housing is secure and shows no visible damage or leakage.

  C - Annual Inspection
  - For filter element replacement procedure, refer to For hydraulic oil replacement procedure, refer to 5.7-2 Change Hydraulic Oil..

- **Hydraulic Pumps (B)**
  - Ensure there are no loose or missing parts and there is no visible damage.
  - Ensure all bolts are properly tightened.
  - Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

- **Muffler and Exhaust (B)**
  - Ensure muffler and exhaust system are properly secured, with no evidence of damage.

- **Engine Pivot Tray (B)**
  - Ensure there are no loose or missing parts and no visible damage to the engine pivot tray. Ensure that each tray-securing bolt is in place.



- **Engine Oil Level (B)**
  - Maintaining the engine components is essential to good performance and service life of the aerial platform.

WARNING

Beware of hot engine components.

Check oil level on dipstick

- Oil level should be in the “safe" zone. Add oil as needed. Refer to Table 2.5 Tire Specifications for recommended oil type.

B - Frequent Inspection

- For recommand oil change, refer to engine manual

- **Engine Air Filter (B,C)**
  - Ensure there are no loose or missing parts and there is no visible damage.

B - Frequent Inspection

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

C - Annual Inspection

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

- **Engine Fuel Leaks (B,C)**
  - Ensure that there no fuel leaks at engine.

DANGER

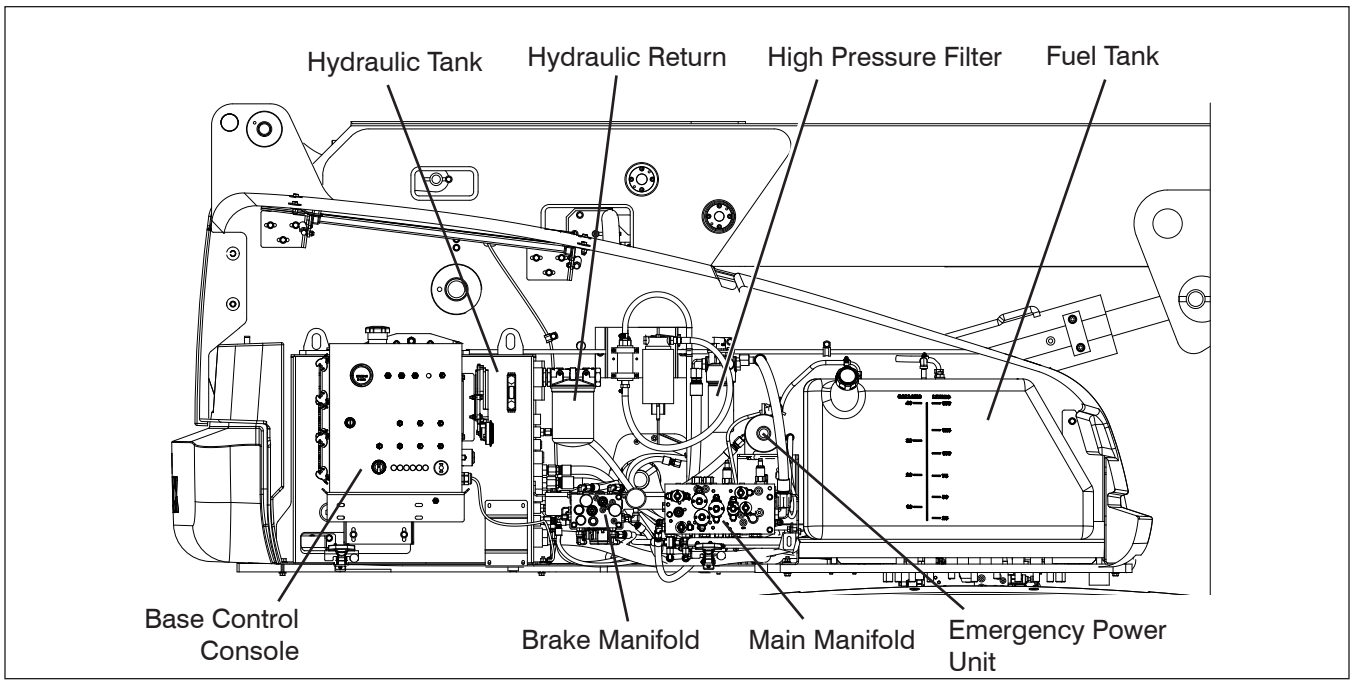
Engine fuels are combustible. Inspect the aerial platform in an open, well-ventilated area away from heaters, sparks and flames. Always have an approved fire extinguisher within easy reach.

- Ensure shutoff valve, hoses and fittings show no visible damage and no evidence of fuel leakage.

- **Engine Fuel Filter (B,C)**
  - Ensure there are no loose or missing parts and there is no visible damage.

C - Annual Inspection

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



1.1-5 Control Compartment

- Ensure all compartment latches are secure and in proper working order.

- **Base Control Console (B)**
  - Ensure all switches are returned to their neutral positions.
  - Ensure there are no loose or missing parts and there is no visible damage.

- **Hydraulic Tank (B)**
  - Ensure hydraulic filler cap is secure.
  - Ensure tank shows no visible damage and no evidence of hydraulic leakage.

- **Hydraulic Oil (*,B)**
  - Be sure that the boom is in the stowed position, and then visually inspect the sight gauge located on the side of the hydraulic oil tank.
  - The hydraulic oil level should be between the minimum and maximum marks on the sight glass. Add oil as needed. Refer to Table 2.12 Specifications and Features for recommended oil type.

*** - Bi-Annual Inspection**

- For hydraulic oil replacement procedure, refer to 5.7-2 Change Hydraulic Oil.

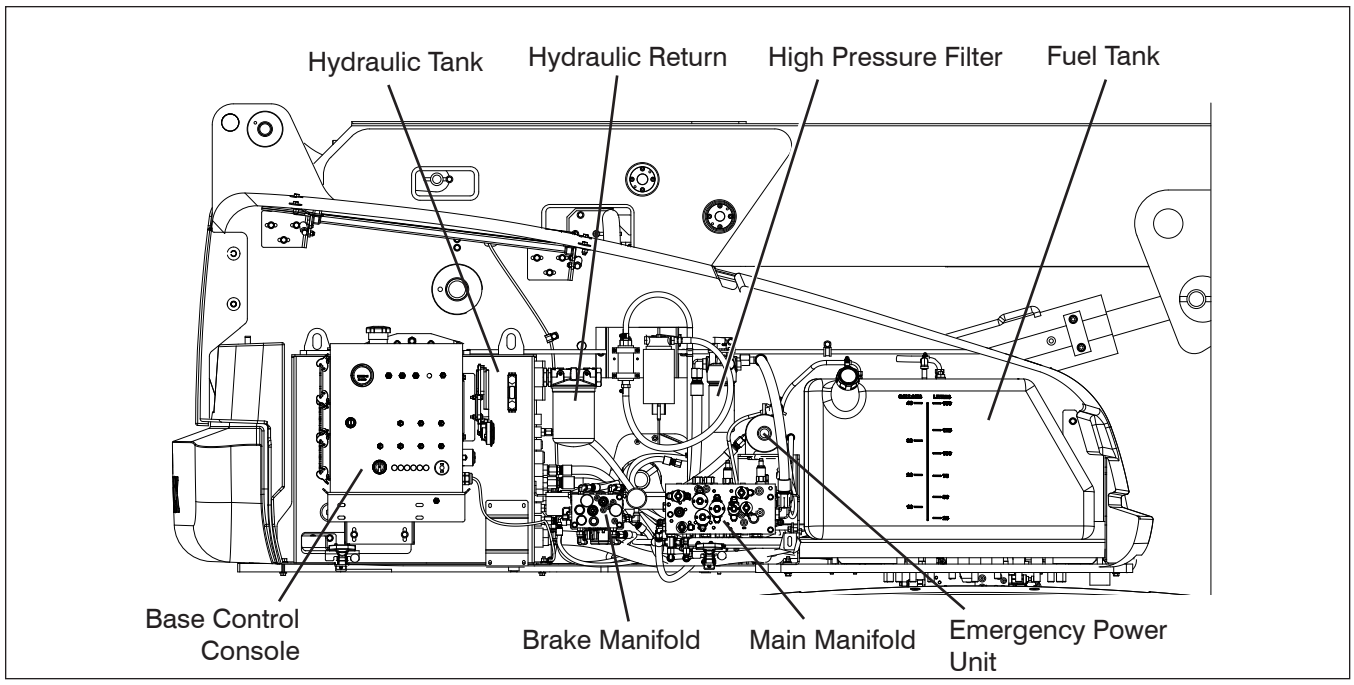
- **Hydraulic Return Filter (B,C)**
  - Ensure filter element is secure.
  - Ensure there are no signs of leakage or visible damage.

C - Annual Inspection

- For hydraulic tank filter replacement procedure, refer to Section 5.6-1.

- **Brake and Main Manifolds (B,C)**
  - Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.
  - Ensure there are no loose wire connections or missing fasteners.

- **Emergency Power Unit (B)**
  - Ensure there are no loose or missing parts and there is no visible damage.
  - Ensure there are no loose wire connections or missing fasteners.
  - Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.



- **Fuel Tank (B,C)**

IMPORTANT
Before using your aerial platform ensure there is enough fuel for expected use.

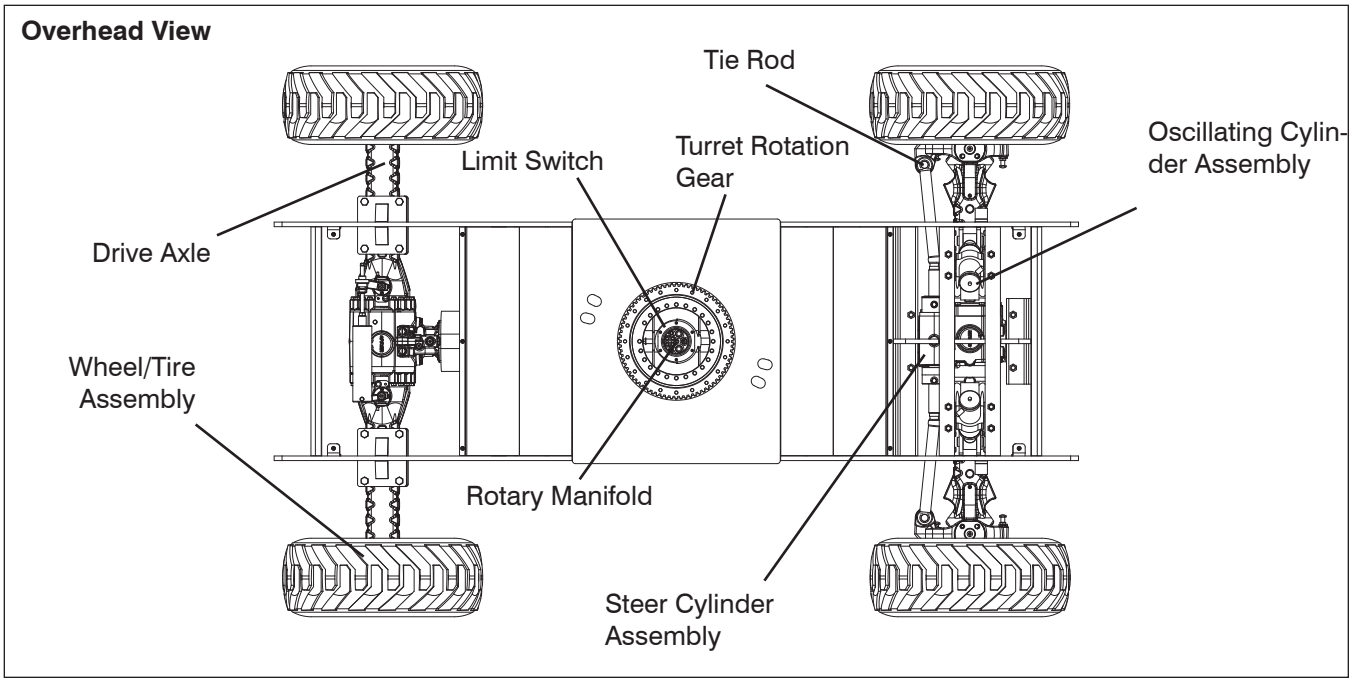
- Ensure fuel filler cap is secure.
- Ensure tank shows no visible damage and no evidence of fuel leakage.

- **Fuel Tank Leaks (B)**
  - Ensure that there no fuel leaks at tank.

DANGER

Engine fuels are combustible. Inspect the aerial platform in an open, well-ventilated area away from heaters, sparks and flames. Always have an approved fire extinguisher within easy reach.

- Ensure fuel tank, shutoff valve, hoses and fittings show no visible damage and no evidence of fuel leakage.



1.1-6 Base

- **Base Weldment (B)**
  - Ensure there are no visible cracks in welds or structure and there are no signs of deformation.

- **Rotary Manifold (B)**
  - Ensure all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

- **Turret Transportation Lock (B)**
  - Ensure turret transportation lock is unlocked, there are no loose or missing parts and there is no visible damage.

- **Drive Axle (B,C)**
  - Ensure drive axle is properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

-

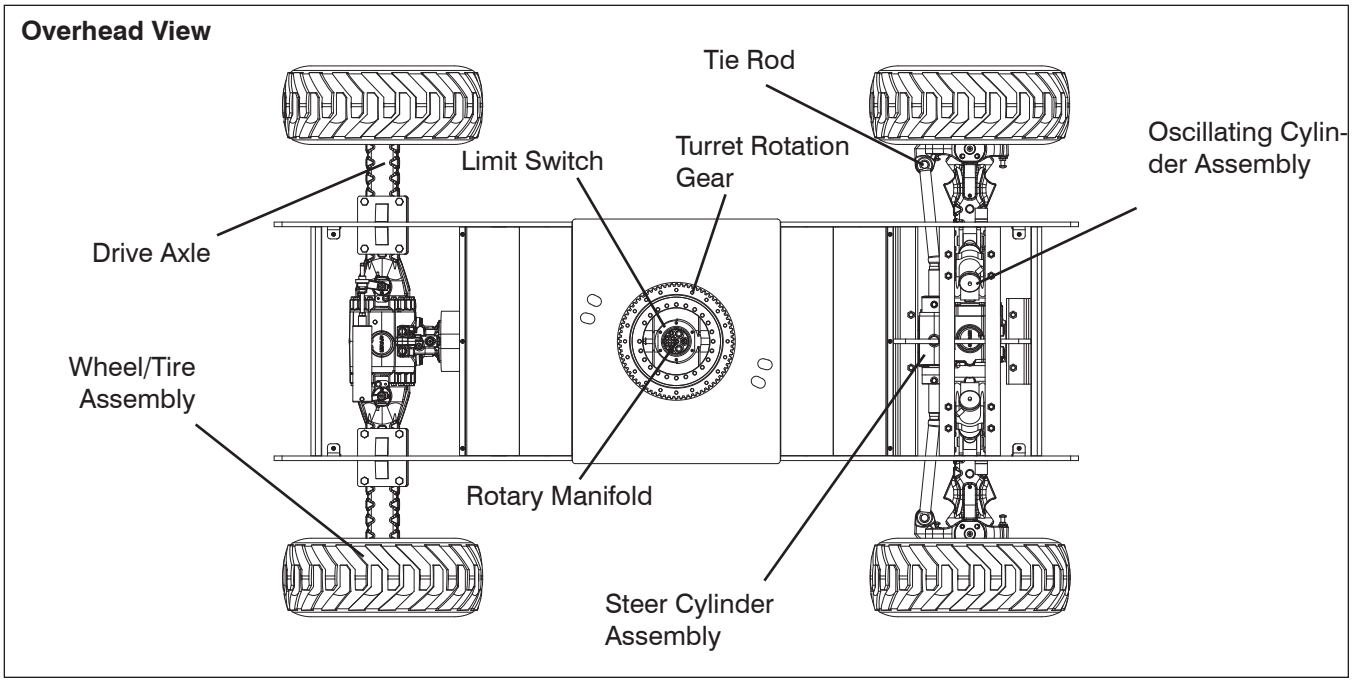
- **Oscillating Cylinder Assembly (B,C)**
  - Ensure oscillating cylinder assembly is properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

NOTE

Oscillating axle is locked when aerial platform is in work mode. Refer to Diagram 2.3 Axle Oscillation Diagrams.

- **Steer Cylinder Assembly (B)**
  - Ensure steer cylinder assembly is properly secured, there are no loose or missing parts, all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

- **Steer Linkage (B)**
  - Ensure there are no loose or missing parts, tie rod end studs are locked and there is no visible damage.



- **Wheel/Tire Assembly (B,C)**
  - The aerial platform is either equipped with air tires or foam-filled tires. Tire and/or wheel failure could result in an aerial platform tip over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

WARNING

An over-inflated tire can explode and may cause death or serious injury.

  - Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.
  - Check each wheel for damage and cracked welds.
  - Check each lug nut for proper torque to ensure none are loose.

B - Frequent Inspection

  - For proper torque information, refer to Table 2.2 Aerial Platform Torque Specifications.

To maximize stability, it is essential to maintain proper pressure in all air-filled tires.

  - Check each tire with an air pressure gauge and add air as needed.

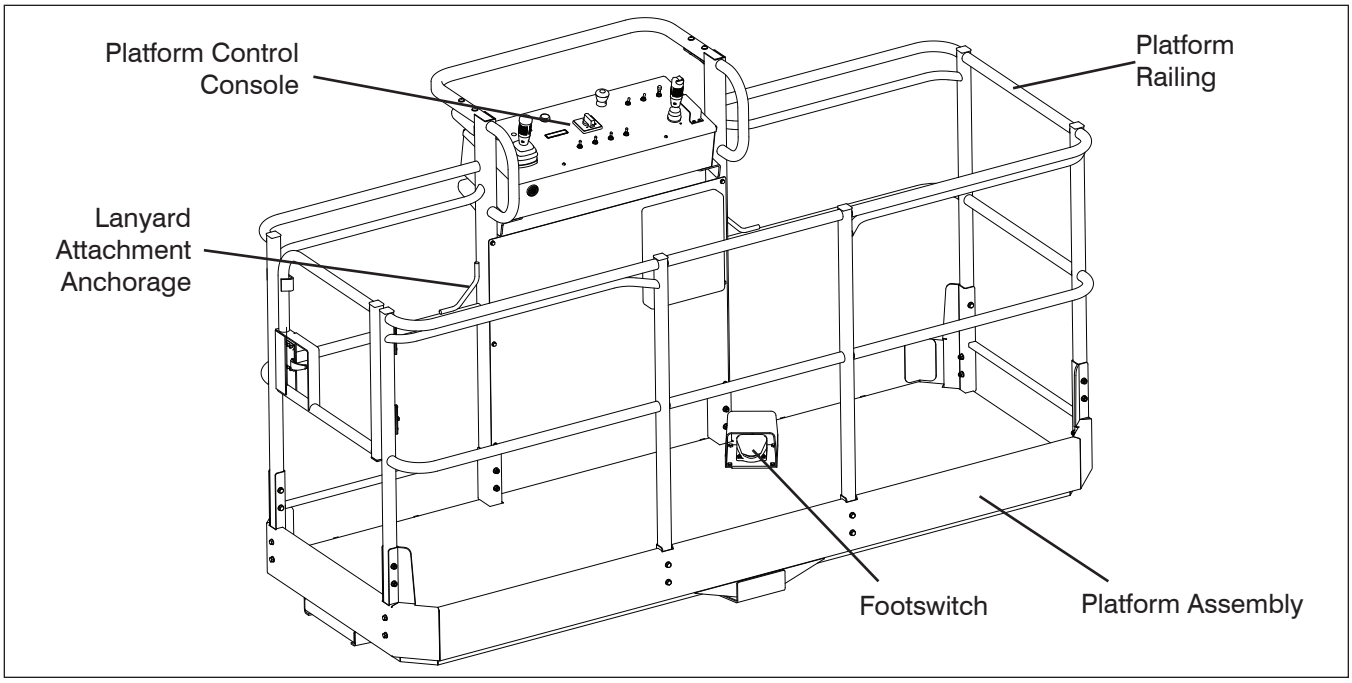
WARNING

Intermixing tires of different types or using tires of types other than those originally supplied with this equipment can adversely affect atability. Therefore, replace tires ONLY with exact Skyjack-approved types. Failure to operate with matched, approved tires in good condition may result in death or serious injury.

Refer to Table 2.8 Tire Specifications.

- **Brake Cylinder (B)**
  - Ensure there are no loose or missing parts.

Ensure that all fittings and hoses are properly tightened and there is no evidence of hydraulic leakage.

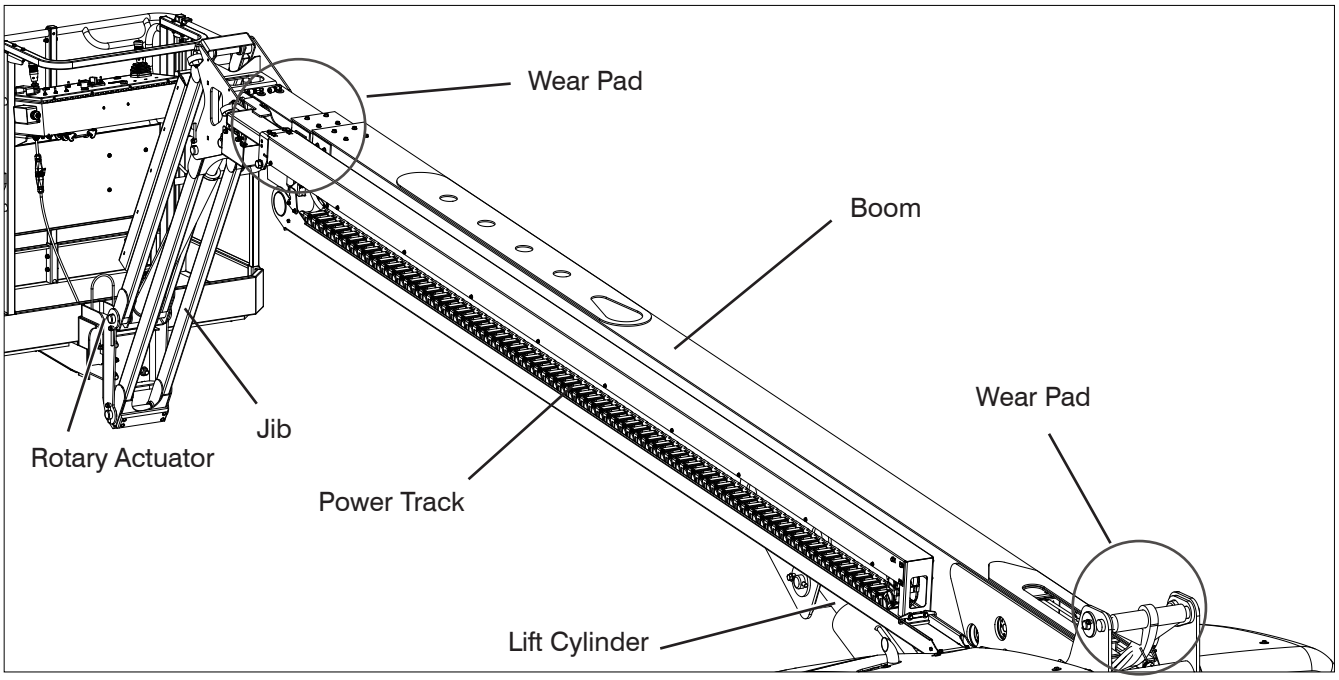


1.1-7 Platform Assembly (B)

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all fasteners are securely in place.
- Ensure all railings are properly positioned and secured.
- Ensure gate/drop-bar(s) are in good working order.
- Ensure footswitch is in good working order and has not been modified, disabled or blocked.
- Ensure lanyard attachment anchorages are secure and there is no visible damage.

1.1-8 Platform Control Console (B)

- Ensure all switches/controllers are returned to neutral and are properly secured.
- Ensure there are no loose or missing parts and there is no visible damage.



1.1-9 Rotatory Actuator (B)

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

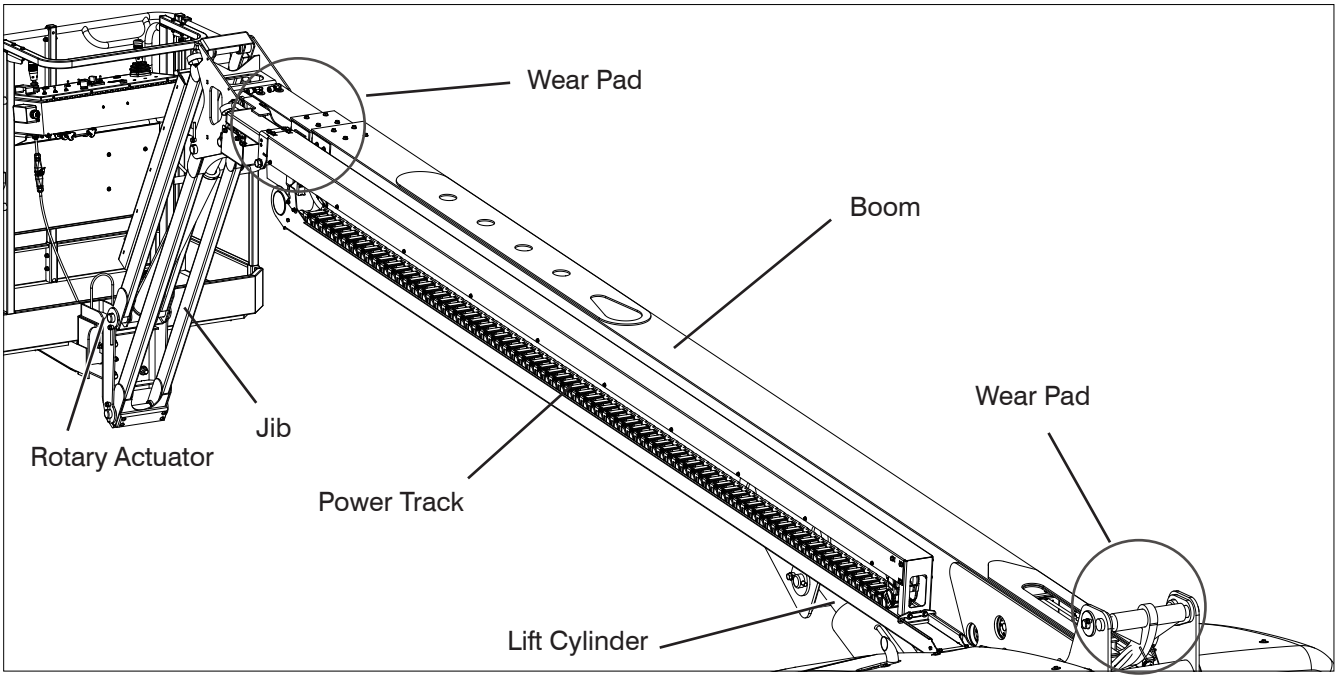
1.1-10 Jib (If Equipped) (B)

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

1.1-11 Boom (B)

- Ensure there are no loose or missing parts and there is no visible damage.
- Ensure all bolts and pins are properly tightened.
- Ensure there are no visible cracks in welds or structure and there are no signs of deformation.
- Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

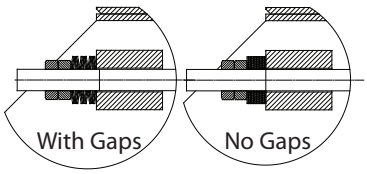
- **Cylinders (B)**
  - Ensure all cylinders are properly secured and there are no loose or missing parts and there is no evidence of damage.
  - Ensure all fittings and hoses are properlu tightened and there is no evidence of hydraulic leakage.
  - Ensure all pins and bushings are secures and properly tightened.
  -
- **Wear Pads (B)**
  - Ensure all bolts are tight, there is no visible damage to the wear pads and that no parts are missing.



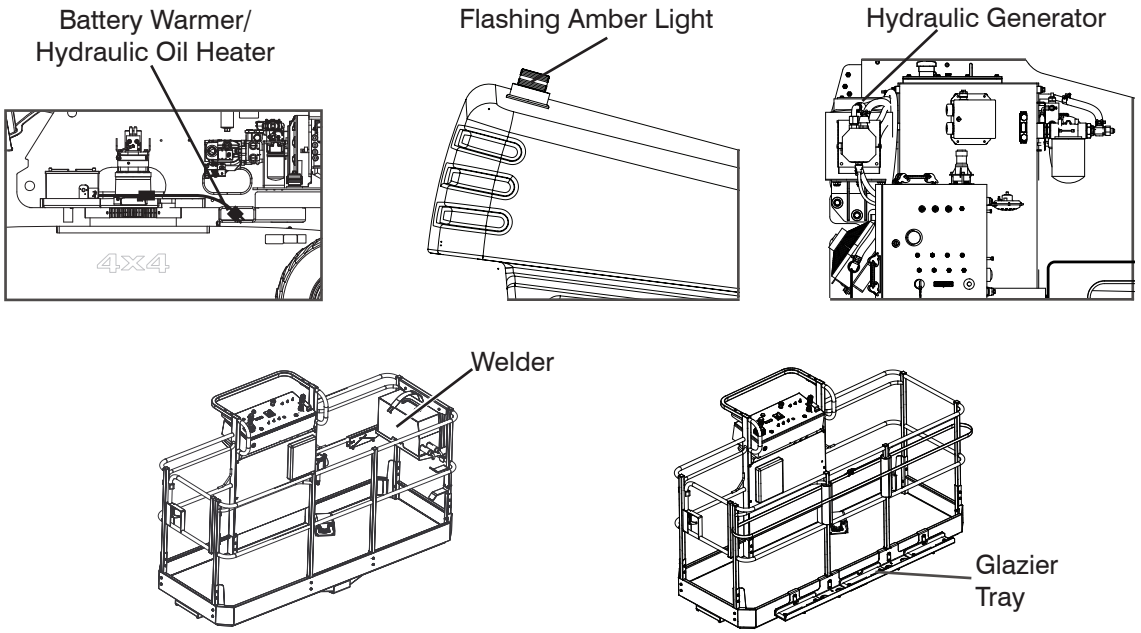
- **Control Cables and Hoses (*,B)**
  - Ensure all hoses and cables are properly tightened and there is no evidence of hydraulic leakage.

- **Cable Carrier (B)**
  - Ensure there are no loose or missing parts and there is no visible damage.

- **Cables (B)**
  - Ensure there are no loose or missing parts with no signs of visible damage.
  - Ensure that nuts are not loose and are locked together.
  - Ensure that there are no gaps between springs. For cable tension repair, refer to 5.2-7 Wire Rope Inspection.



Cable Disc Springs



1.1-12 Special Options

- **Hydraulic Generator (If Equipped) (B)**
  - Ensure there are no loose or missing parts with no signs of visible damage.
  - Ensure all hoses are properly tightened and there is no evidence of hydraulic leakage.

- **Battery Warmer/Hydraulic Oil Heater (If Equipped) (B)**
  - Ensure battery warmer/hydraulic oil heater cord is properly secured with no signs of visible damage and hydraulic leakage.

- **Arctic Weather Package (If Equipped) (B)**
  - Ensure battery/hydraulic oil/engine oil heater plug is properly secured with no signs of visible damage and hydraulic leakage.

- **Welder (If Equipped) (B)**
  - Ensure welder and welder tray are properly secured.
  - Ensure there are no loose or missing parts and there is no visible damage.
  - Ensure there are no loose wires or missing fasteners.

- **Flashing Amber Light (If Equipped) (B)**
  - Ensure lamp is properly secured with no signs of visible damage.

- **Glazier Tray (If Equipped) (B)**
  - Ensure tray, strap, foam supports and cover bumpers are properly secured with no signs of visible damage.

1.2 Function Tests

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

IMPORTANT

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

After repairs are completed, operator must perform a pre-operation inspection and a series of function tests again before putting aerial platform into service.

Prior to performing function tests, be sure to read and understand “Section 3.8 - Start Operation" of the operating manual.

For function test that are to be performed, please refer to the operating manual that corresponds to the correct serial number. Found there will be detailed instructions for which tests to preform, as well as how to properly and successfully perform them.

NOTE

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

Section 2
MAINTENANCE TABLES AND DIAGRAMS

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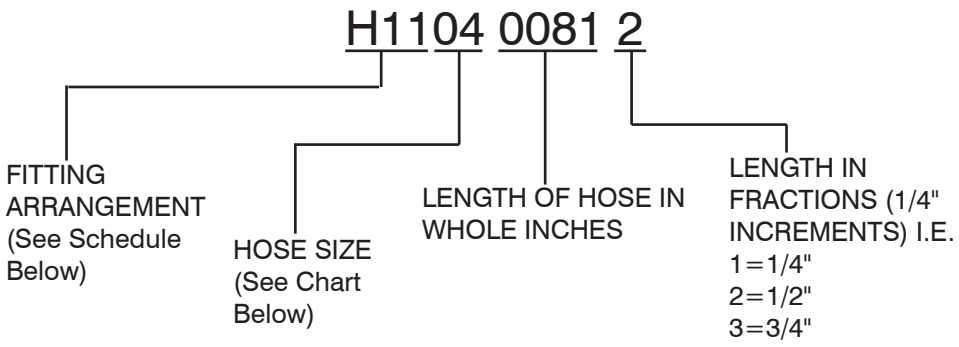
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Table 2.1 Standard Hose Numbering System



Using the number above as an example (H1104 0081 2). This hose requires a 37° JIC, female swivel fitting on one end. A medium length 90° JIC, female swivel fitting for the other end. The Hose must meet or exceed S.A.E. 100R13 hose specification, and be a total of 81-1/2" long. NOTEHose 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"

HOSE PREFIX	HOSE END FITTING	HOSE END FITTING	S.A.E. HOSE SPECIFICATION
H01	FEMALE, 37° JIC, SWIVEL	FEMALE, 37° JIC, SWIVEL	100R17
H02	FEMALE, 37° JIC, SWIVEL	FEMALE, 37° JIC, SWIVEL	100R13
H03	FEMALE, 37° JIC, SWIVEL	45°, FEMALE, 37° JIC, SWIVEL	100R17
H04	FEMALE, 37° JIC, SWIVEL	45°, FEMALE, 37° JIC, SWIVEL	100R13
H05	FEMALE, 37° JIC, SWIVEL	LONG 90°, FEMALE, 37° JIC, SWIVEL	100R17
H06	FEMALE, 37° JIC, SWIVEL	SHORT 90°, FEMALE, 37° JIC, SWIVEL	100R17
H07	LONG 90°, FEMALE, 37° JIC, SWIVEL	LONG 90°, FEMALE, 37° JIC, SWIVEL	100R17
H08	FEMALE, 37° JIC, SWIVEL	FEMALE, 37° JIC, SWIVEL	100R4
H09	FEMALE, 37° JIC, SWIVEL	45°, FEMALE, 37° JIC, SWIVEL	100R4
H10	FEMALE, 37° JIC, SWIVEL	MALE PIPE THREAD FITTING	100R17
H11	FEMALE, 37° JIC, SWIVEL	MEDIUM 90°, FEMALE, 37° JIC, SWIVEL	100R13
H12	SHORT 90°, FEMALE, 37° JIC, SWIVEL	SHORT 90°, FEMALE, 37° JIC, SWIVEL	100R17
H13	FEMALE, 37° JIC, SWIVEL	REUSABLE MALE PIPE THREAD FITTING	300 PSI
H14	REUSABLE MALE PIPE THREAD FITTING	NO FITTING	300 PSI
H15	REUSABLE FEMALE, 37° JIC, SWIVEL	REUSABLE FEMALE, 37° JIC, SWIVEL	300 PSI

Fitting Arrangement Schedule **(Continued on the following page)**

Table 2.1 Standard Hose Numbering System (Continued)

Fitting Arrangement Schedule (Continued from the previous page)

HOSE PREFIX	HOSE END FITTING	HOSE END FITTING	S.A.E. HOSE SPECIFICATION
H16	NO FITTING	NO FITTING	100R4
H17	NO FITTING	NO FITTING	300 PSI
H18	REUSABLE, FEMALE, 37º JIC, SWIVEL	NO FITTING	300 PSI
H19	LONG 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R13
H20	FEMALE, SHORT 37º JIC, SWIVEL	SHORT 90º, FEMALE, 37º JIC, SWIVEL	100R4
H21	FEMALE, SHORT 37º JIC, SWIVEL	SHORT 90º, FEMALE, 37º JIC, SWIVEL	100R2AT
H22	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R2AT
H23	FEMALE, LONG 37º JIC, SWIVEL	LONG 90º, FEMALE, 37º JIC, SWIVEL	100R2AT
H24	FEMALE, SHORT 37º JIC, SWIVEL	SHORT 90º, FEMALE, 37º JIC, SWIVEL	100R13
H25	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R4
H26	SHORT 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H27	LONG 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H28	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H29	SHORT 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H30	MEDIUM 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H31	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H32	SHORT 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H33	MEDIUM 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H34	SHORT 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H35	MEDIUM 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H36	LONG 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H37	SHORT 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R4
H38	SHORT 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R4
H39	LONG 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R4
H40	SHORT 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R16
H43	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R16
H51	FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H52	SHORT 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H53	MEDIUM 45º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H54	SHORT 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H55	MEDIUM 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17
H56	LONG 90º, FEMALE, 37º JIC, SWIVEL	FEMALE, 37º JIC, SWIVEL	100R17

Table 2.2 Aerial Platform Torque Specifications

AB

Location	Description	Torque (ft-lb)	Torque (Nm)
Base			
Trunnion Mount	BOLT, Hex head (3.4"-10 x 4.5", Grade 8)	210	285
Rear Axle Mount	BOLT, Hex head (M20 x 2.5 120mm, Grade 10.9)	210	285
Oscillating axle Mount	BOLT, Hex head (M20 x 2.5 120mm, Grade 10.9)	280	380
Lockout Cylinder Pin	BOLT, Hex head (3/8"-16 x 1", Grade 5)	23	31
Swing Drive Motor	BOLT, Hex head (3/4"-10 x 2", Grade 8)	280	380
Rotation Gear (40T / 45T)	BOLT, Hex head (5/8"-11 x 4.5", Grade 8)	205	278
Rotation Gear (61T / 66T)	BOLT, Hex head (3/4"-10 x 5", zinc, Grade 5)	280	380
Hydraulic Drive Motor	BOLT, Hex head (M14 x 2 x 30mm, ZP, Grade 8.8)	80	108
Wheel Nut	NUT, Wheel	247-302	335-410
Turret			
Rotation Gear (40T / 45T)	BOLT, Hex head (5/8"-11 x 4.5", Grade 8)	205	278
Rotation Gear (61T / 66T)	BOLT, Hex head (3/4"-10 x 4", zinc, Grade 5)	280	380
Engine (40T/45T)			
Deutz Engine Mount	BOLT, Hex head (1/2"-13 x 3.75", Grade 5)	55	75
Coupling Assembly (Deutz)	BOLT (M10)	29-33	39-45
Muffler	NUT	40	55
GM Engine Mount	NUT, Hex head (1/2"-13, Grade 5)	50	68
Cylinders			
Lift	ROD NUT	425	576
Extension (61T/66T)	ROD NUT	300	407
Extension (40T/45T)	ROD NUT	350	475
Master			
Slave			
Jib			
Axle Lockout			
Lift Cylinder Bracket (40T/45T)	BOLT, Hex head (3/4"-10 x 2.5", Grade 5)	210	285
	BOLT, Hex head (3/4"-10 x 2.5", Grade 8)	200	271
Master Cylinder Pin (40T/45T)	SCREW, Socket head cap (1/2"-13 x 1", nylon, patch, zinc)	80	108
Platform			
Rotary Mount	BOLT, Hex head, patch (3/8"-16 x 7/8", zinc, Grade 8)	35	48
	BOLT, Hex head (1"-8 x 10.5", zinc, Grade 8)	480	569
Rotary Manifold	BOLT, Hex head (1/2"-13 x 2", Grade 8)	80	108
Rotary Actuator	BOLT, Hex head (3/4"-10 x 3", Grade 8)	210	285
Load Cell Mounting (CE)	BOLT, Hex head patch (ZP, M16 x 1.5 x 4.5", Grade 8.8)	130	177
	BOLT, Hex head (1/2"-13 x 2.25", Grade 8)	80	108
Special Options (If equipped)			
Generator Support (40T/45T)	BOLT, Hex head (1/2"-13 x 2", Grade 8)	55	75
Oil Cooler Support (40T/45T)	BOLT, Hex head (1/2"-13 x 2", Grade 8)	55	75

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Table 2.3 Axles Torque Specifications

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

60571AA

Note1 Nm = 0.7376 ft-lb

Screw-locking, Sealing and Lubricating Materials

Loctite 242

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

Loctite 270

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

Table 2.4 Torque Specifications for Fasteners (Imperial)

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

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

Inch-Pound Force = in-lb Foot-Pound Force = ft-lb Newton-Meter = Nm

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

Table 2.5 Torque Specifications for Fasteners (Metric)

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

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

Table 2.6 Torque Specifications for Hydraulic Couplings & Hoses

HYDRAULIC COUPLING TORQUE CHART O-Ring Port Connectors				
SAE Size	Steel Ports		Non-ferrous Ports	
	ft-lb	Nm	ft-lb	Nm
4	14-16	20-22	9-10	12-13
6	24-26	33-35	15-16	20-21
8	50-60	68-78	30-36	41-47
10	72-80	98-110	43-48	60-66
12	125-135	170-183	75-81	102-110
16	200-220	270-300	120-132	162-180
20	210-280	285-380	126-168	171-228
24	270-360	370-490	162-216	222-294
32	-	-	-	-

HOSE END TORQUE CHART for JIC									
Size		Steel				Brass			
Dash	Frac.	ft-lb		Nm		ft-lb		Nm	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
-4	1/4"	10	11	13	15	5	6	6.75	9
-6	3/8"	17	19	23	26	12	15	17	20
-8	1/2"	34	38	47	52	20	24	27.66	33
-10	5/8"	50	56	69	76	34	40	46.33	55
-12	3/4"	70	78	96	106	53	60	72.33	82
-16	1"	94	104	127	141	74	82	100.5	111
-20	1 1/4"	124	138	169	188	75	83	101.5	113
-24	1 1/2	156	173	212	235	79	87	107	118
-32	2"	219	243	296	329	158	175	214	237

HOSE END TORQUE CHART for Flat-Face O-Ring Seal (Steel)					
Size		Torque Specification			
Dash	Frac.	ft-lb		Nm	
		Min.	Max.	Min.	Max.
-4	1/4"	10	12	14	16
-6	3/8"	18	20	24	27
-8	1/2"	32	40	43	54
-10	5/8"	46	56	60	75
-12	3/4"	65	80	90	110
-14	1"	65	80	90	110
-16	1 1/4"	92	105	125	240
-20	1 1/2	125	140	170	190
-24	2"	150	180	200	245

Table 2.7 Axles Maintenance Intervals

Operation		Frequency	Lubricants
Check Levels	Differential	monthly	**SAE85W90 (API GL4 - MIL L-2105)**
	Planetary reduction	every 200 hours	
	Gear box	monthly	**SAE 90 oil API GL3**
Oil Change	Differential	every 800 hours *	**SAE85W90 (API GL4 - MIL L-2105)**
	Planetary reduction	every 1000 hours *	
	Self-locking differential gear	every 700 hours * &	
	Gear box	once at 50 hours after every 1000 hours	**SAE 90 oil API GL3**
Tighten	Gear box screws/bolts	every 200 hours	
	Wheel Nuts	every 200 hours	

***** Initially after 100 working hours

& When it starts sounding noisy

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

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

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Note1 Nm = 0.7376 ft-lb

Table 2.8 Tire Specifications

	SJ 61T & SJ66T (ANSI/CSA)	SJ 66T (CE & AS)
Tire Size	15" x 19.5" (38.1 cm x 49.5 cm)	15" x 19.5" (38.1 cm x 49.5 cm)
Pressure	95 psi (655 kPa)	Foam Filled
Tire Ply Rating	16	16
Wheel Nuts Torque	290 ft-lb (393.2 Nm)	290 ft-lb (393.2 Nm)

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WARNING

Intermixing tires of different types or using tires of types other than those originally supplied with this equipment can adversely affect stability. Therefore, replace tires only with the exact original Skyjack-approved type. Failure to operate with matched approved tires in good condition may result in death or serious injury.

IMPORTANT

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

Table 2.9 Floor Loading Pressure

MODEL	Total Aerial Platform Weight		Total Aerial Platform Load					
			Wheel		LCP		OUP	
	lb.	kg	lb.	kg	psi	kPa	psf	kPa
SJ 61T (ANSI Standard configuration)	24,300	11,022	12,690	5,756	138	951.0	266	12.7
SJ 66T (ANSI Standard configuration)	27,500	12,473	14,573	6,610	145	1,001.0	304	14.6
SJ 66T (CE Standard configuration)	29,403	13,337	14,580	6,613	171	1,178.0	325	16.0
SJ 66T (AS Standard configuration)	28,903	13,110	14,573	6,610	171	1,178.0	325	16.0

1087-ALL Standards

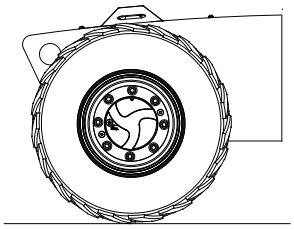
- ANSI Standard Configuration (**61**/**66T**)= 4WD + Oscillating Axle + 15" x 19.5" (38.1 cm x 49.5 cm) Air Tires
  CE & AS Standard Configuration (**61**/**66T**)= 4WD + Oscillating Axle + 15" x 19.5" (38.1 cm x 49.5 cm) Foam Tires
- Total Aerial Platform Weight = Weight + platform capacity
- LCP – Locally Concentrated Pressure – is a measure of how hard the aerial platform tire tread presses on the area in direct contact with the floor. The floor covering (tile, carpet, etc.) must be able to withstand more than the indicated values above.
- OUP – Overall Uniform Pressure – is a measure of the average load the aerial platform imparts on the whole surface projected directly underneath it. The structure of the operating surface (beams, etc.) must be able to withstand more than the indicated values above.
- **61**/**66T:** Foam tires option will add approximately 1364 lb. (616 kg) to total aerial platform weight and 340 lb. (154 kg) to max. wheel load. OUP will increase by 5% and LCP will increase by approx. 18%.
- Welder option will add approximately 350 lb. (158.8 kg) to total aerial platform weight and 175 lb. (79.4 kg) to max. wheel load.

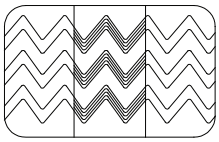
NOTE:
The LCP or OUP that an individual surface can withstand varies from structure to structure and is generally determined by the engineer or architect for that particular structure.

Locally Concentrated Pressure (LCP):

Foot Print Area = Tread Contact Area

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



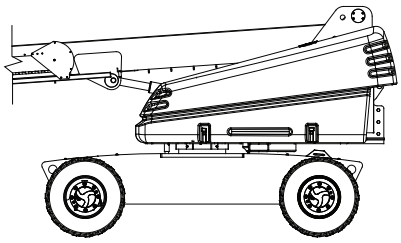


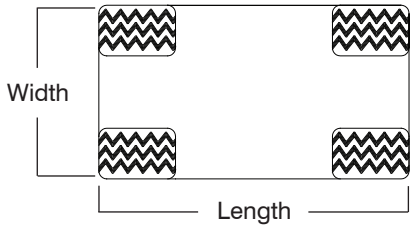
Tread Contact Area

Overall Uniform Pressure (OUP):

Base Area = Length x Width

$$OUP = \frac{\text{Aerial Platform Weight + Capacity}}{\text{Base Area}}$$





WARNING

Intermixing tires of different types or using tires of types other than those originally supplied with this equipment can adversely affect stability. Therefore, replace tires only with the exact original Skyjack-approved type. Failure to operate with matched approved tires in good condition may result in death or serious injury.

Table 2.10 Hydraulic Specifications

DESCRIPTION			SJ 61T / 66T ANSI/CSA	SJ66T CE	SJ66T AS
Pump Specifications	Drive Pump	Displacement - 2600 rpm	2.8 CIR 30 gpm @ 2600 rpm	46 CC	46 CC
		Drive Pump Pressure	4350 psi	300 bar	300 bar
		Charge Pump Displacement	0.85 CIR	13.9 CC	13.9 CC
		Charge Pump Pressure	313 psi	22 bar	22 bar
	System Pump	Displacement - Static	1.83 CIR / 20.6 gpm @ 2600 rpm	30 CC	30 CC
		System Pump Pressure	3000 psi	207 bar	207 bar
Filter Specifications		Charge Pump Filter	25 psi	9 µm/35	9 µm/35
		High Pressure Filter	87 psi	10 µm/25	10 µm/25
		Return Filter	25 psi	10 µm/60	10 µm/60
Motor Specifications	Drive Motor	Displacement - Low	0.88 CIR / 15.2 gpm @ 2600 rpm	14.4 CC	14.4 CC
		Displacement - High	2.32 CIR / 22.8 gpm @ 2600 rpm	38 CC	38 CC
	Swing Motor	Motor Displacement	4 CIR / 39.4 gpm @ 2600 rpm	65.56 CC	65.56 CC
		Maximum Swing Pressure	1400 psi	96 bar	96 bar
Cylinder Specifications	Extension Cylinder	Bore	2.5 in.	6.35 cm	6.35 cm
		Rod Diameter	1.5 in.	3.8 cm	3.8 cm
		Stroke	167 in.	4.45 m	4.45 m
		Maximum Boom Pressure	3000 psi	207 bar	207 bar
	Lift Cylinder	Bore	6 in.	15.24 cm	15.24 cm
		Rod Diameter	3 in.	7.6 cm	7.6 cm
		Stroke	44.28 in.	1.12 m	1.12 m
		Maximum Lift Pressure	3000 psi	207 bar	207 bar
	Steering Cylinder	Differential Area	3.07 in.	7.8 cm	7.8 cm
		Steering Cylinder Stroke	4.32 in.	10.9 cm	10.9 cm
		Maximum Steering Pressure	2175 psi	150 bar	150 bar
For other component specifications, refer to hydraulic schematic.					

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Table 2.11 Specifications and Features

	MODEL	SJ61T ANSI/CSA	SJ66T ANSI/CSA	SJ66T CE	SJ66T AS
Height & Reach	Working Height - Maximum	67' 8" (20.62 m)	72' 3" (22.02 m)	22.19 m	22.19 m
	Platform Height - Maximum	61' 8" (18.80 m)	66' 3" (20.19 m)	20.19 m	20.19 m
	Horizontal Reach - Maximum	51' 3" (15.62 m)	57' 1-1/4" (17.38 m)	17.38 m	17.38 m
	Horizontal Reach - at Maximum Height	13' 1/4" (3.97 m)	16' 1 in (4.90 m)	4.90 m	4.90 m
	Tailswing	52-1/2" (1.33 m)	52-1/2" (1.33 m)	1.33 m	1.33 m
Platform	Platform Size	36" x 72" (1.83 m) 36" x 96" (2.44 m)	36" x 72" (1.83 m) 36" x 96" (2.44 m)	0.91 x 1.83 m 0.91 x 2.44 m	0.91 x 1.83 m 0.91 x 2.44 m
	Platform Rotation	170°	175°	175°	175°
	Platform Height - Stowed	18-3/4"	10-3/4" (0.27 m)	0.27 m	0.27 m
	Railing Height - Overall	52-3/4"	52-3/4" (1.34 m)	1.34 m	1.34 m
	Railing Height - Stowed	43-1/2"	43-1/2" (1.10 m)	1.11 m	1.11 m
Dimensional Data	Height Stowed	8' 6" (2.59 m)	8' 6" (2.59 m)	2.59 m	2.59 m
	Length Stowed	30' 3-3/4" (9.24 m)	34' 1-1/2" (10.40 m)	10.40 m	10.40 m
	Width - Outside of Wheels	8' (2.44 m)	8' (2.44 m)	2.44 m	2.44 m
	Wheelbase	8' (2.44 m)	8' (2.44 m)	2.44 m	2.44 m
	Ground Clearance - Chassis	17" (0.43 m)	17" (0.43 m)	0.43 m	0.43 m
	Ground Clearance - Rear Axle	14-1/4" (0.36 m)	14-1/4" (0.36 m)	0.36 m	0.36 m
	Axle Oscillation	1.7°	1.7°	1.7°	1.7°
	Inside Turning Radius	6' 4" (1.93 m)	6' 4" (1.93 m)	1.93 m	1.93 m
	Outside Turning Radius	16' 7" (5.0 m)	16' 7" (5.05 m)	5.05 m	5.05 m
	Turning Angle	45°	45°	45°	45°
	Turret Rotation	360° continuous	360° continuous	360° continuous	360°s continuous
Lift Capacity	Lift Capacity to Maximum Gradeability	500 lbs (227 kg)	500 lbs (227 kg)	227 kg	227 kg
Jib	Jib Length	-	63" (1.60 m)	1.60 m	1.60 m
	Jib Travel - Down	-	63°	63°	63°
	Jib Travel - Up	-	61°	61°	61°
Performance & Speeds	Gradeability (torque equivalent to)	50%	50%	50%	50%
	Drive Speed (stowed/low torque)	4.5 mph (7.2 km/h)	4.5 mph (7.2 km/h)	7.2 km/h	7.2 km/h
	Drive Speed (stowed/high torque)	1.5 mph (2.4 km/h)	1.5 mph (2.4 km/h)	2.4 km/h	2.4 km/h
	Drive Speed (elevated)	0.5 mph (0.8 km/h)	0.5 mph (0.8 km/h)	0.8 km/h	0.8 km/h
	Turret rotate - 360°	90 - 110 seconds	90 - 110 seconds	160 - 180 seconds	160 - 180 seconds
	Platform rotate - full	5 - 9 seconds	5 - 9 seconds	7 - 15 seconds	7 - 15 seconds
	Main boom up	50 - 56 seconds	50 - 56 seconds	76 - 84 seconds	76 - 84 seconds
	Main boom down	50 - 56 seconds	50 - 56 seconds	76 - 84 seconds	76 - 84 seconds
	Boom extend	62 - 68 seconds	62 - 68 seconds	50 - 70 seconds	50 - 70 seconds
	Boom retract	37 - 43 seconds	37 - 43 seconds	40 - 50 seconds	40 - 50 seconds
	Jib up	-	18 - 28 seconds	25 - 45 seconds	25 - 45 seconds
	Jib down	-	10 - 16 seconds	16 - 20 seconds	16 - 20 seconds
Electrical	System Voltage	12 VDC	12 VDC	12 VDC	12 VDC
	Type	Lead/Acid	Lead/Acid	Lead/Acid	Lead/Acid
Weight & Pressure	Weight (with standard air tires)	23,500 lb. (10 650 kg)	26,700 lb. (12 100 kg)	-	-
	Weight (with standard foam tires)	25,000 lb. (11 340 kg)	28,200 lb. (12 790 kg)	12 800 kg	12 800 kg
	Wheel Load (standard air tires)	12,000 lbs (5450 kg)	13,500 lbs (6150 kg)	-	-
	Wheel Load (standard foam tires)	12,360 lbs (5600 kg)	13,900 lbs (6300 kg)	6300 kg	6300 kg
	Locally Concentrated Pressure - Air	140 psi (965 kPa)	160 psi (1100 kPa)	-	-
	Locally Concentrated Pressure - Foam	145 psi (1000 kPa)	165 psi (1140 kPa)	1140 kPa	1140 kPa
	Overall Uniform Pressure - Air	310 psf (14.8 kPa)	355 psf (17 kPa)	-	-
	Overall Uniform Pressure - Foam	330 psf (15.8 kPa)	372 psf (17.8 kPa)	17.8 kPa	17.8 kPa

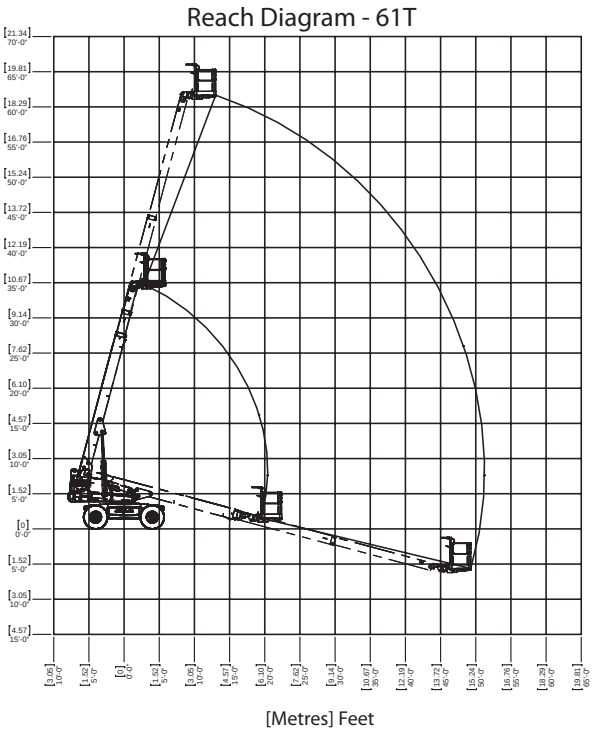
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Table 2.12 Specifications and Features (continued)

MODEL			SJ61T & SJ66T
Engine - Deutz TD2.9L	Engine Type		Deutz TD2.9L
	RPM Settings		900 Low / 1600 / 2600 High
	Gross Intermittent HP		55.4 kW / 75 Hp
	Horsepower @ 2600 rpm (intermittent)		55.4 kW / 75 Hp
	Fuel Type		Diesel
	Fuel Tank Capacity		47 gal (170.3 L)
	Standard Lube Oil	0°F to 115°F (- 18°C to 45°C)	SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil	- 20°F to 90°F (- 29°C to 32°C)	SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil	- 40°F to 115°F (- 40°C to 45°C)	SAE 0W-40 API CF/CG/CH-6
	Approved Alternates	-	See Engine Manual
	Lube Oil Sump Capacity		2.64 gal (10.0 L)
	Standard & Arctic Coolant	- 40°F to 115°F (- 40°C to 45°C)	Delo 50/50 Extended Life Coolant
	Coolant Capacity		3.0 gal (11.4 L)
Engine - Deutz D2011	Engine Type		Deutz D2011L04i
	RPM Settings		1600 Low / 2100 / 2675 High
	Gross Intermittent HP		48 kW / 65 Hp
	Horsepower @ 2600 rpm (intermittent)		48 kW / 65 Hp
	Fuel Type		Diesel
	Fuel Tank Capacity		47 gal (170.3 L)
	Standard Lube Oil	0°F to 115°F (- 18°C to 45°C)	SAE 15W-40 API CF/CG/CH-6
	Cold Lube Oil	- 20°F to 90°F (- 29°C to 32°C)	SAE 0W-30 API CF/CG/CH-6
	Arctic Lube Oil	- 40°F to 115°F (- 40°C to 45°C)	SAE 0W-40 API CF/CG/CH-6
	Approved Alternates	-	See Engine Manual
	Lube Oil Sump Capacity		2.64 gal (10.0 L)
Engine - GM	Engine Type		3.0L GM Dual Fuel
	RPM Settings		902 Low / 1600 / 2675 High
	Gross Intermittent HP		48 kW / 62 Hp
	Horsepower @ 2600 rpm (intermittent)		47 kW / 60 Hp
	Fuel Type - Dual		Gasoline/Propane
	Fuel Tank Capacity		47 gal (170.3 L)
	Standard Oil	- 40°F to 115°F (- 40°C to 45°C)	SAE 5W-30 API SL
	Approved Alternates	-	See Engine Manual
	Lube Oil Capacity		1.19 gal (4.5 L)
	Standard Coolant	- 20°F to 115°F (- 29°C to 45°C)	Delo 50/50 Extended Life Coolant
	Arctic Coolant	- 40°F to 115°F (- 40°C to 45°C)	Recochem 60/40 Extended Life Coolant
	Coolant Capacity		3.0 gal (11.4 L)
Engine - Kubota	Engine Type		Kubota 2.5L Dual Fuel WG2503
	RPM Settings		927 Low / 1700 / 2675 High
	Gross Intermittent HP		45.5 kW / 61 Hp
	Fuel Type - Dual		Gasoline/Propane
	Fuel Tank Capacity		45 gal (170.3 L)
	Standard Lube Oil	- 40°F to 115°F (- 40°C to 45°C)	SAE 5W-30 API SL
	Approved Alternates		See Engine Manual
	Lube Oil Capacity		2.5 gal (9 L)
	Standard Coolant	- 20°F to 115°F (- 29°C to +45°C)	Recochem 50/50 Extended Life Coolant
	Arctic Coolant	- 40°F to 115°F (- 40°C to 45°C)	Recochem 60/40 Extended Life Coolant
	Coolant Capacity		3.17 gal (12 L)
Hydraulic Oil	Oil Cooler Option	100°F to 115°F (38°C to 45°C)	Oil cooler option recommended
	Standard Hydraulic Oil	-15°F to 100°F (-26°C to 38°C)	Shell Tellus T48
	Arctic Hydraulic Oil	- 40°F to 100°F (- 40°C to 38°C)	Esso/Mobil UNIVIS HVI 26, Petro-Canada HYDREX EXTREME
	Approved Alternates	-15°F to 100°F (-26°C to 38°C)	Mobilfluid 424, Esso UNIVIS N46, Chevron Rycon MV
		- 40°F to 80°F (- 40°C to 27°C)	Mobil DTE 13M, Esso UNIVIS N22, Petro-Canada HYDREX MV Arctic 17
	Hydraulic Tank Capacity		61 gal (223.3 L)
Gear Oil	Standard Gear Oil	- 20°F to 115°F (- 29°C to 45°C)	LS 80W-90 GL5
	Arctic Gear Oil	- 40°F to 115°F (- 40°C to 45°C)	Duratran XL Synthetic Oil
	Gear Oil Capacity		10 gal (38 L)

192AC

Diagram 2.1 Dimension and Reach Diagram - SJ 61T



Dimensions - 61T

Diagram 2.2 Dimension and Reach Diagram - SJ 66T

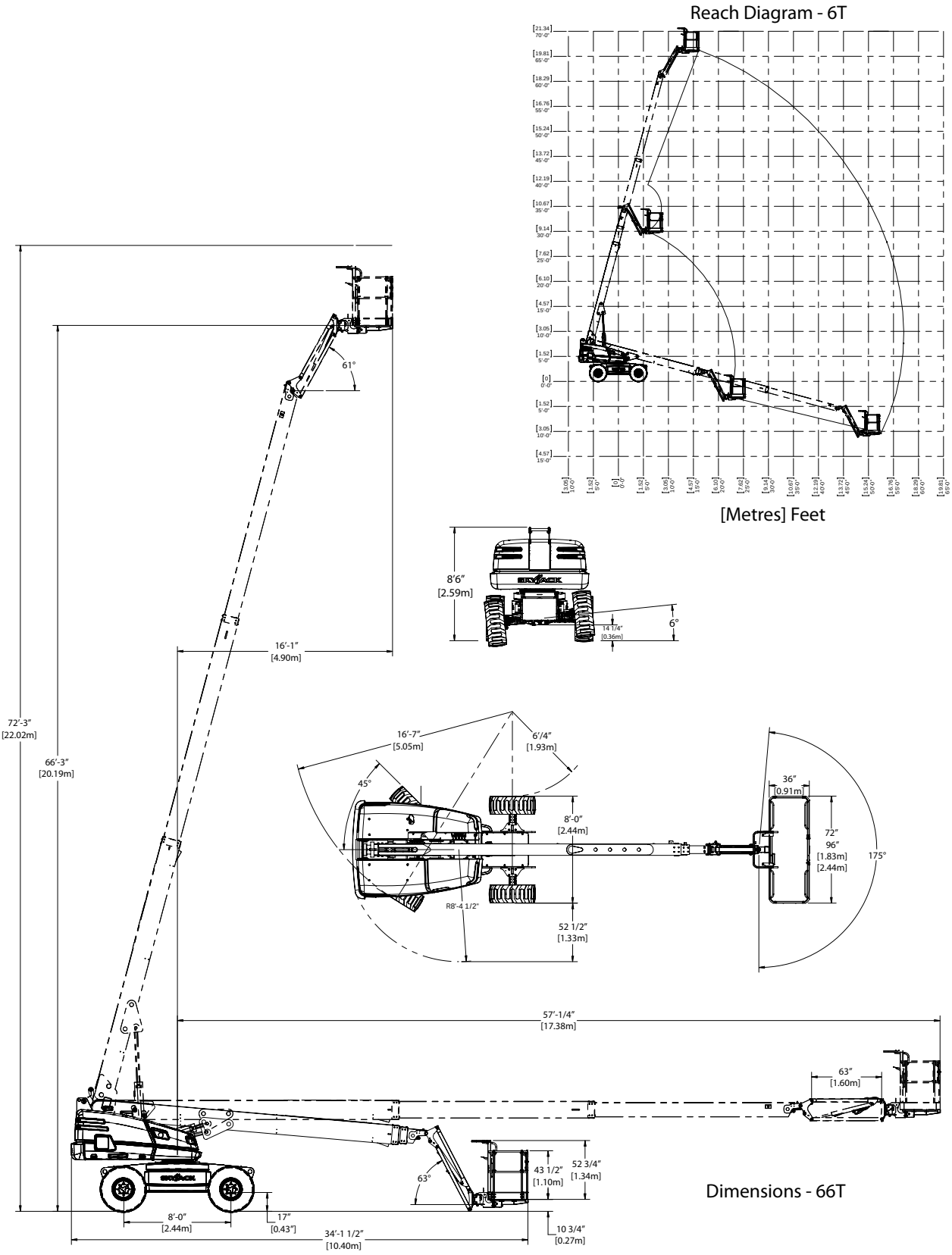
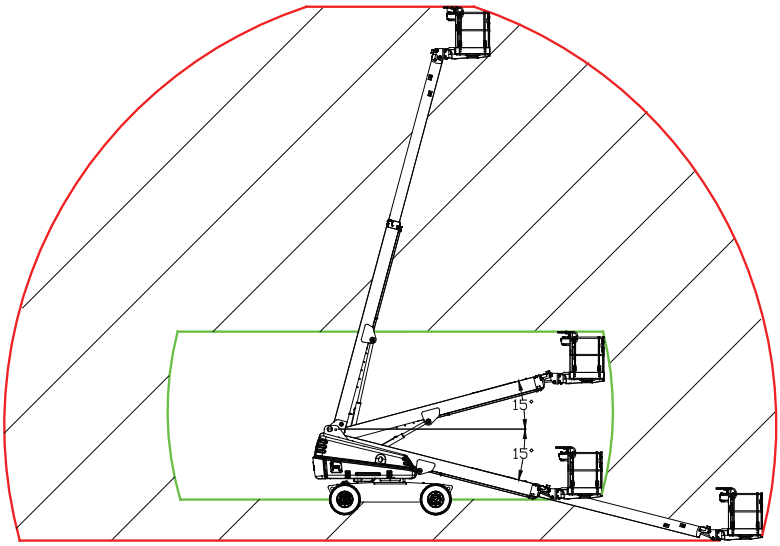


Diagram 2.3 Axle Oscillation Diagrams

WARNING

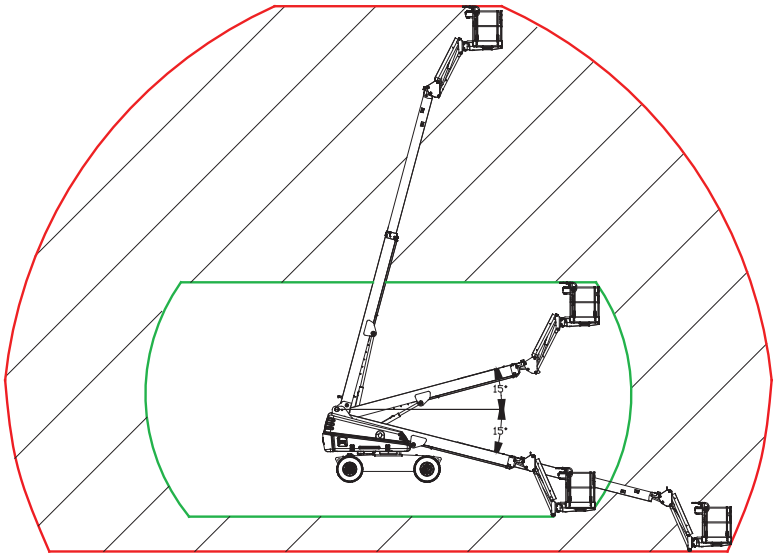
Do not raise the platform in work mode if it is not on a firm level surface.



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

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

Axle Oscillation - No Jib Boom



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

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

Axle Oscillation - Jib Boom

Notes

Section 3
SYSTEM COMPONENT IDENTIFICATION AND SCHEMATICS

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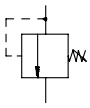
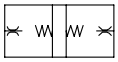
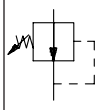
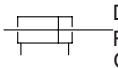
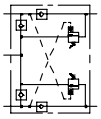
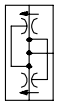
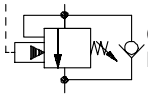
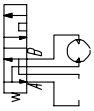
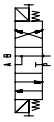
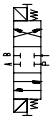
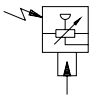
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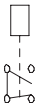
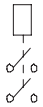
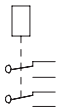
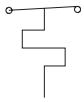
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3.1 Hydraulic Symbol Chart

 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			

3.2 Electrical Symbol Chart

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

3.3 Wire Number and Color Code

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

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

3.4 Hydraulic Schematic Parts List

Index No.	Skyjack Part No.	Qty.	Description
2H-21A	103656	1	VALVE, Control (Pressure Dump)
2H-42	166050	1	VALVE, Control (Flow Enable)
2H-85	166035	1	VALVE, Control (Flow Enable, 12kW Generator)
2H-85	146078	1	VALVE, Control (Flow Enable, 3.5kW Generator)
3H-26	159827	1	VALVE, Control (Brake Release)
3H-45	159827	1	VALVE, Control (2-Speed)
3H-65	159827	1	VALVE, Control (Axle Lock Out)
3H-V1	N/A	1	VALVE, Control (Pressure Compensator)
3H-V2	N/A	1	VALVE, Control (Load Sense Compensator)
4H-13	166052	1	VALVE, Control (Boom Down)
4H-14	166052	1	VALVE, Control (Boom Up)
4H-15	N/A	1	VALVE, Control (Drive Pump Control Reverse)
4H-16	N/A	1	VALVE, Control (Drive Pump Control Forward)
4H-23A	166036	1	VALVE, Control (Steer Right)
4H-24A	166036	1	VALVE, Control (Steer Left)
4H-32	166041	1	VALVE, Control (Swing Left)
4H-33	166041	1	VALVE, Control (Swing Right)
4H-34	166036	1	VALVE, Control (Jib Down)
4H-35	166036	1	VALVE, Control (Jib Up)
4H-36	166036	1	VALVE, Control (Platform Rotate Left)
4H-37	166036	1	VALVE, Control (Platform Rotate Right)
4H-38	166040	1	VALVE, Control (Boom Retract)
4H-39	166040	1	VALVE, Control (Boom Extend)
4H-40	166036	1	VALVE, Control (Platform Level Down)
4H-41	166036	1	VALVE, Control (Platform Level Up)
C1	146697	1	CYLINDER (Boom Lift)
C2	146699	1	CYLINDER (Boom Extend)
C3	146879	1	CYLINDER (Master)
C4	166948	1	CYLINDER (Slave)
C5	160037	1	CYLINDER (Jib)
C6	161095	1	CYLINDER (Axle Lock)
C7	161095	1	CYLINDER (Axle Lock)
C8	141046	1	CYLINDER (Steer, 4WD)
C9	N/A	1	CYLINDER (Brake, Front)
C10	N/A	1	CYLINDER (Brake, Rear)
CB1	144570	1	VALVE, Counterbalance (Swing Drive)
CB2	144570	1	VALVE, Counterbalance (Swing Drive)
CB3	149366	1	VALVE, Counterbalance (Boom Lift)
CB4	701827	1	VALVE, Counterbalance (Fly Boom)
CB5	701827	1	VALVE, Counterbalance (Fly Boom)
CB6	166772	1	VALVE, Counterbalance (Platform Level)
CB7	166772	1	VALVE, Counterbalance (Platform Level)
CB8	149488	1	VALVE, Counterbalance (Jib)
CB9	149488	1	VALVE, Counterbalance (Jib)
CB10	141399	1	VALVE, Counterbalance (Platform Rotate)
CB11	141399	1	VALVE, Counterbalance (Platform Rotate)
CB12	160028	1	VALVE, Counterbalance (Axle Lock)
CB13	160028	1	VALVE, Counterbalance (Axle Lock)

Parts list continued on following page.

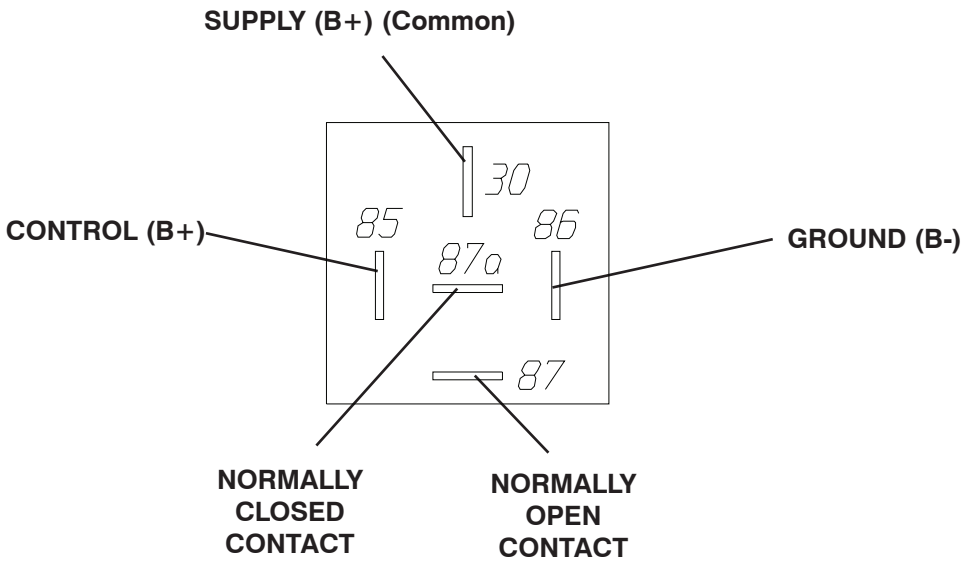
3.4 Hydraulic Schematic Parts List (Continued)

Index No.	Skyjack Part No.	Qty.	Description
			Parts list continued from previous page
CV1	166066	1	VALVE, Check (Auxiliary Pump)
CV2	159814	1	VALVE, Check (Main LS)
CV3	159814	1	VALVE, Check (Main LS)
CV4	159814	1	VALVE, Check (Main LS)
CV5	159814	1	VALVE, Check (Main LS)
CV6	159814	1	VALVE, Check (Main LS)
CV7	159814	1	VALVE, Check (Main LS)
CV8	159814	1	VALVE, Check (Main LS)
CV9	159814	1	VALVE, Check (Main LS)
CV10	159814	1	VALVE, Check (Main LS)
CV11	159814	1	VALVE, Check (Main LS)
CV12	159813	1	VALVE, Check (System Pump)
CV13	166065	1	VALVE, Check (Brake Manifold)
CV14	N/A	1	VALVE, Check (EPU)
CV15	159814	1	VALVE, Check (Generator LS)
CV16	159814	1	VALVE, Check (Generator LS)
CV17	168059	1	VALVE, Check (Generator)
CV18	168243	1	VALVE, Check (2 SPD)
DCV1	159817	1	VALVE, Check (Double, Steering)
DCV2	159817	1	VALVE, Check (Double, Platform Level)
DSV1	166062	1	COMPENSATOR (Swing)
DSV2	166061	1	COMPENSATOR (Boom Lift)
DSV3	166061	1	COMPENSATOR (Boom Extend)
EPU	160923	1	PUMP (Emergency)
F1	161932	1	FILTER (High Pressure)
F2	161933	1	FILTER (Return)
M1	163596	1	MOTOR (Axle Drive)
M2	N/A	1	MOTOR (Swing)
M3	144119	1	MOTOR (Generator, 3.5kW)
M4	N/A	1	MOTOR (Generator, 12kW)
MB1	162843	1	MANIFOLD (Main)
MB2	162844	1	MANIFOLD (Brake)
MB3	162497	1	MANIFOLD (Jib)
MB4	163541	1	MANIFOLD (No Jib)
MB5	166092	1	MANIFOLD (Jib Cylinder)
MB6	168158	1	MANIFOLD (Pressure Reducing)
MB7	168400	1	MANIFOLD (3.5kW Generator)
MB8	168401	1	MANIFOLD (12kW Generator)
OC1	160800	1	COOLER, Oil
OR1	166077	1	ORIFICE, 0.078" (Main Manifold)
OR2	166079	1	ORIFICE, 0.043" (Main Manifold)
OR3	166081	1	ORIFICE, 0.018" (Main Manifold)
OR4	166081	1	ORIFICE, 0.018" (Main Manifold)
OR5	166058	1	ORIFICE (Main Manifold)
OR6	166073	1	ORIFICE, 0.073" (Bleed Off)
OR7	168061	1	VALVE, Needle (3.5kw Generator)
			Parts list continued on following page.

3.4 Hydraulic Schematic Parts List (Continued)

Index No.	Skyjack Part No.	Qty.	Description
			Parts list continued from previous page
P1	154119	1	PUMP (Hydrostatic)
P1A	154119	1	PUMP (Charge)
P2	163595	1	PUMP (System)
PR1	166051	1	VALVE (Pressure Reducing)
PR2	168242	1	VALVE (Pressure Reducing)
QD1	122420	1	QUICK DISCONNECT
RA1	167209	1	ACTUATOR (Platform)
RA2	144710	1	ACTUATOR (Swing)
RV1	166042	1	RELIEF (Main Manifold)
RV2	166049	1	RELIEF (Swing)
RV3	166047	1	RELIEF (Platform Level)
RV4	166048	1	RELIEF (Boom Extend)
RV5	166045	1	RELIEF (Brake Manifold)
RV6	N/A	1	RELIEF (Drive)
RV7	N/A	1	RELIEF (Drive)
RV8	N/A	1	RELIEF (Charge)
RV9	N/A	1	RELIEF (EPU)
SV1	141414	1	VALVE, Shuttle (Main Manifold)
SV2	141414	1	VALVE, Shuttle (Main Manifold)
SV3	141414	1	VALVE, Shuttle (Main Manifold)
SV4	N/A	1	VALVE, Shuttle (Generator Option)
SV5	166054	1	VALVE, Shuttle (Brake Manifold)
SV6	141414	1	VALVE, Shuttle (Brake Manifold)
V1	141436	1	VALVE, Control (Brake Release Override)
V2	166053	1	VALVE, Control (Loop Flush)
V3	159831	1	VALVE, Control (Brake Hand Pump)
V4	166060	1	VALVE, Control (Pilot Operated)
V5	166060	1	VALVE, Control (Pilot Operated)
V6	N/A	1	VALVE, Control (Bypass, Towing)

3.5 Electrical Component Parts List



Index No.	Skyjack Part No.	Qty.	Description
01CR	127131	1	RELAY, 12 Volt 40 Amp (E-pump)
08BCR	127131	1	RELAY, 12 Volt 40 Amp (Enable)
08CR	127131	1	RELAY, 12 Volt 40 Amp (Engine start interlock)
08CR1	127131	1	RELAY, 12 Volt 40 Amp (Dump valve enable)
09CR	127131	1	RELAY, 12 Volt 40 Amp (Engine power on)
17ACR1	127131	1	RELAY, 12 Volt 40 Amp (Steering reversal)
17ACR2	127131	1	RELAY, 12 Volt 40 Amp (Steering reversal)
21CR	127131	1	RELAY, 12 Volt 40 Amp (Dump valve)
49CR	127131	1	RELAY, 12 Volt 40 Amp (Horn)
51CR	127131	1	RELAY, 12 Volt 40 Amp (Drive enable)
51CR1	127131	1	RELAY, 12 Volt 40 Amp (Tilt alarm)
54ACR	138844	1	RELAY, 12 Volt 80 Amp (Cold starter)
57ACR	127131	1	RELAY, 12 Volt 40 Amp (Anti restart)
57BCR	127131	1	RELAY, 12 Volt 40 Amp (Anti restart)
57BCR1	127131	1	RELAY, 12 Volt 40 Amp (Engine start)
59CR	127131	1	RELAY, 12 Volt 40 Amp (Optional axle lock)
60CR	127131	1	RELAY, 12 Volt 40 Amp (System power)
78CR	127131	1	RELAY, 12 Volt 40 Amp (High idle)
79CR	127131	1	RELAY, 12 Volt 40 Amp (Low idle)
81CR	127131	1	RELAY, 12 Volt 40 Amp (Optional light)
82CR	127131	1	RELAY, 12 Volt 40 Amp (Overload alarm) **(CE&AS)**
86CR	127131	1	RELAY, 12 Volt 40 Amp (Optional oil cooler)
107CR	127131	1	RELAY, 12 Volt 40 Amp (Platform level interlock)
108CR	127131	1	RELAY, 12 Volt 40 Amp (E-pump)

Parts list continued on following page.

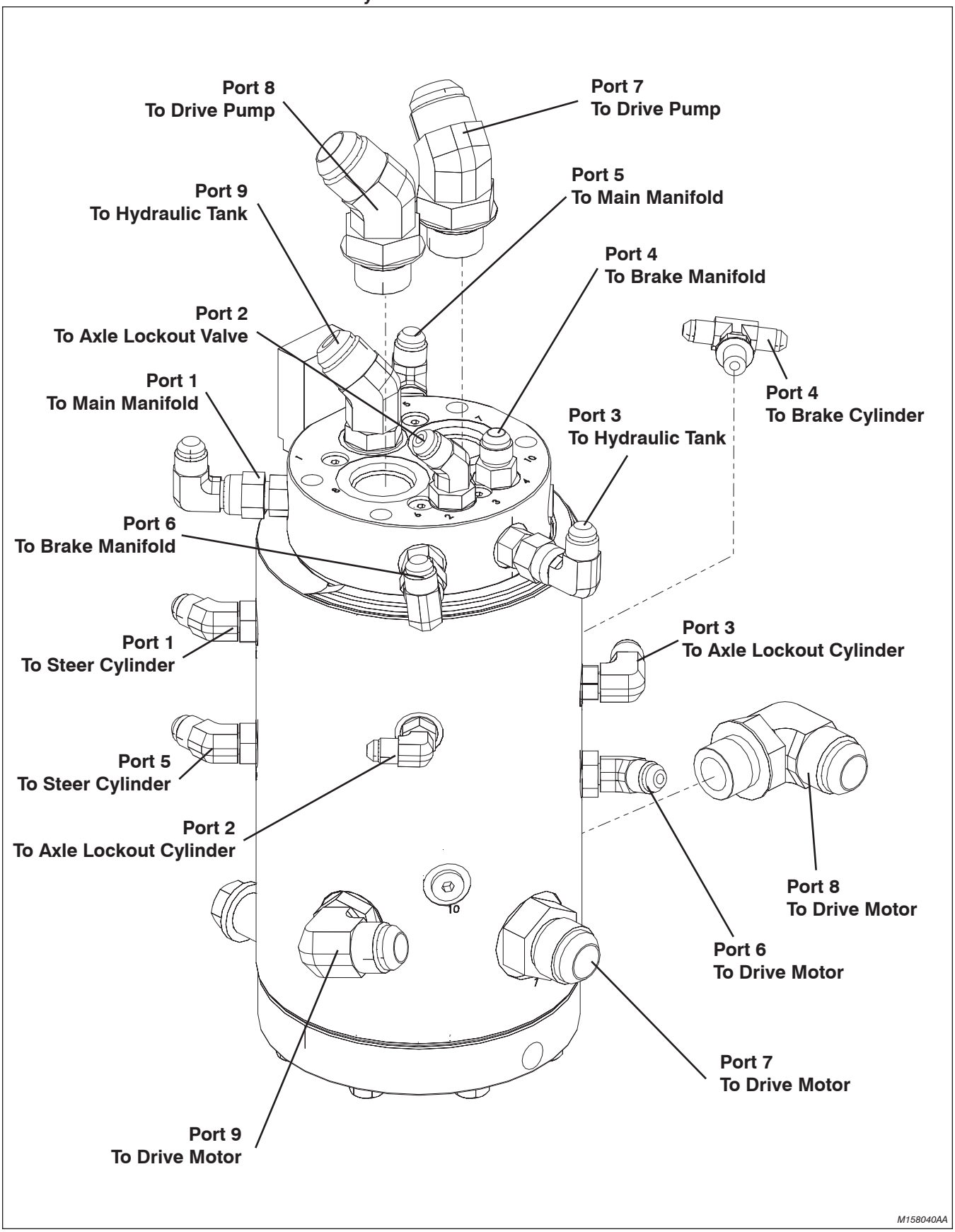
3.5 Electrical Component Parts List **AC**

Index No.	Skyjack Part No.	Qty.	Description
			Parts list continued from previous page
2H-21A	143970	1	COIL, 12 Volt (Dump valve)
2H-42	143966	1	COIL, 12 Volt (Proportional flow enable)
2H-85	146079	1	COIL, 12 Volt (Optional generator valve)
3H-45	141409	1	COIL, 12 Volt (Motor 2-speed valve)
3H-26	141409	1	COIL, 12 Volt (Brake valve)
3H-65	141409	1	COIL, 12 Volt (Optional axle lock valve)
4H-13	143964	1	COIL, 12 Volt (Boom down valve)
4H-14	143964	1	COIL, 12 Volt (Boom up valve)
3H-15	143965	1	COIL, 12 Volt (Reverse drive valve)
3H-16	143965	1	COIL, 12 Volt (Forward drive valve)
4H-23A	143968	1	COIL, 12 Volt (Right steer valve)
4H-24A	143968	1	COIL, 12 Volt (Left steer valve)
4H-32	143964	1	COIL, 12 Volt (Left turret rotate valve)
4H-33	143964	1	COIL, 12 Volt (Right turret rotate valve)
4H-34	141421	1	COIL, 12 Volt (Jib down valve) **(Model 66T)**
4H-35	141409	1	COIL, 12 Volt (Jib up valve) **(Model 66T)**
4H-36	141409	1	COIL, 12 Volt (Platform right rotate valve)
4H-37	141421	1	COIL, 12 Volt (Platform left rotate valve)
4H-38	143964	1	COIL, 12 Volt (Telescope in valve)
4H-39	143964	1	COIL, 12 Volt (Telescope out valve)
4H-40	143969	1	COIL, 12 Volt (Platform level down valve)
4H-41	143969	1	COIL, 12 Volt (Platform level up valve)
A1	138225	1	JOYSTICK (Boom/turret)
A2	138224	1	JOYSTICK (Drive/steer)
A3	138226	1	CONTROLLER, Speed control selector
B1	144676	1	BATTERY, 12V (Wet)
BP1	103057	1	BEEPER, 4-28 VDC Slow pulsing (Platform control console)
BP2	103056	1	BEEPER, 7.5-16 VDC (Base control console) **(ANSI/CSA)**
BP3	144387	1	ALARM, Overload **(CE)**
CB1	117325	1	CIRCUIT BREAKER (15 Amp)
CB2	117325	1	CIRCUIT BREAKER (15 Amp)
CB3	117325	1	CIRCUIT BREAKER (15 Amp)
CB4	117326	1	CIRCUIT BREAKER (20 Amp)
CB5	141631	1	CIRCUIT BREAKER (50 Amp)
CB6	141630	1	CIRCUIT BREAKER (15 Amp)
DXX	102921	AR	DIODE
FU1	138848	1	FUSE, 50 Amp
FS1	138230	1	SWITCH, Low fuel
H1	146652	1	HORN, 12 Volt
LB2	143971	1	LIGHT, Optional strobe
LB4	138806	1	LIGHT, Optional chassis
LB5	138806	1	LIGHT, Optional chassis
LS1	133075	1	LIMIT SWITCH, Direction sensing, N.O. held closed
LS2	144576	1	LIMIT SWITCH, High drive
LS3	144576	1	LIMIT SWITCH, High drive
M1	706921	1	PUMP, Emergency
PL1	138228	1	MODULE, Lower indicating
PL2	138229	1	MODULE, Upper indicating
			Parts list continued on following page.

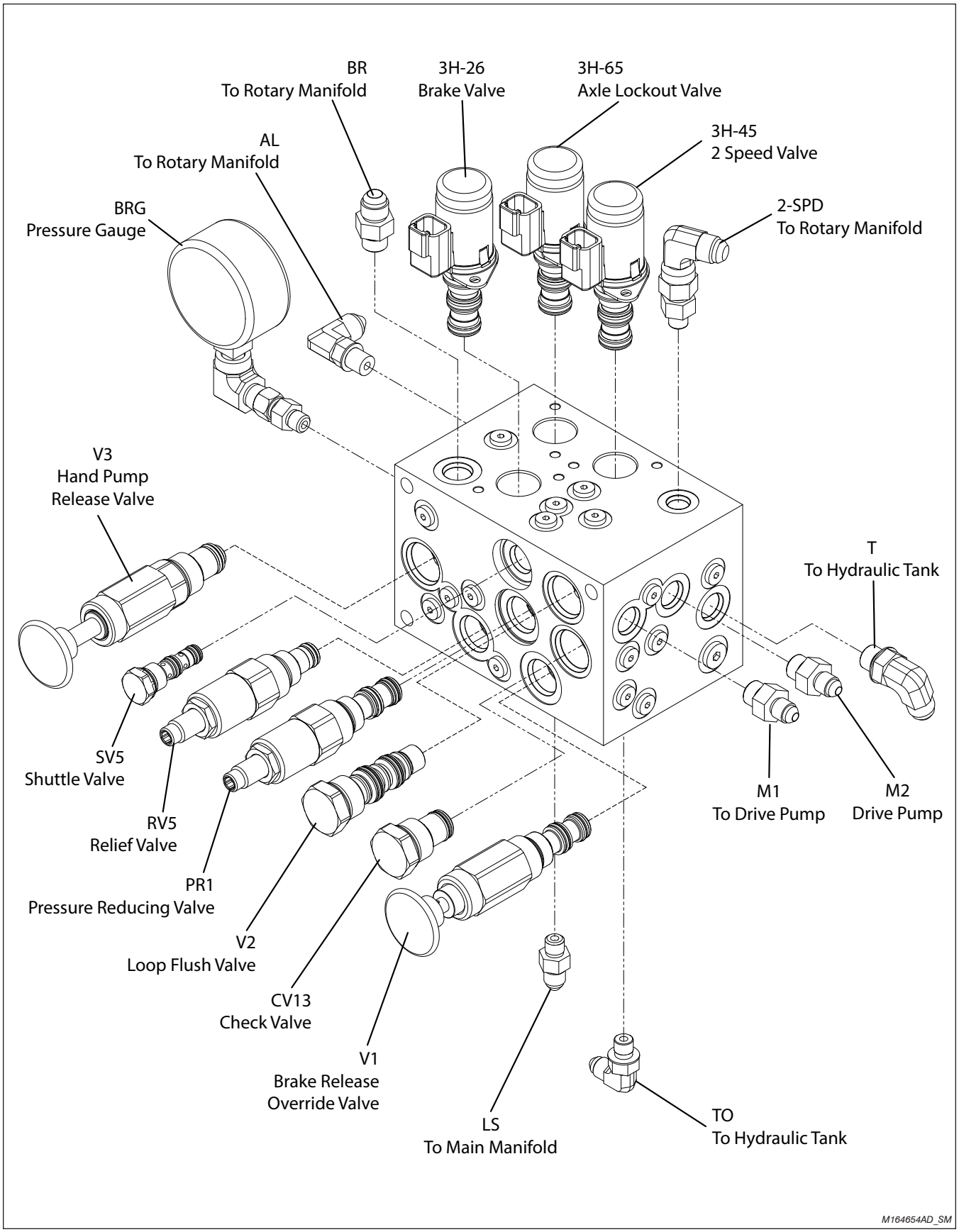
AD *3.5 Electrical Component Parts List (Continued)*

Index No.	Skyjack Part No.	Qty.	Description
			Parts list continued from previous page
PL3	147229	1	LED BLOCK, Red (12 volts) (Base control console)
PL4	147229	1	LED BLOCK, Red (12 volts) (Platform control console)
R1	144523	1	RESISTOR, 7 ohm 25 W **(Deutz D2011, GM and Kubota)**
	139088	1	RESISTOR, 6 ohm 25 W **(Deutz TD2.9L)**
R2	144714	1	RESISTOR, 12 ohm 25 W **(SJ61T)**
	144714	1	RESISTOR, 15 ohm 25 W **(SJ66T)**
R3	163021	1	RESISTOR, 120 ohm 1/2 W
R4	164855	1	RESISTOR, 1.0k ohm 1/2 W
R5	164856	1	RESISTOR, 3.3k ohm 1/2 W
R6	164857	1	RESISTOR, 3.9k ohm 1/2 W **(ANSI/CSA)**
	144492	1	RESISTOR, 380 ohm 1 W **(CE & AS)**
R7	143952	1	RESISTOR, 51 ohm 2 W **(Deutz D2011, GM and Kubota)**
	151643	1	RESISTOR, 250 ohm 1 W **(Deutz TD2.9L)**
R8	151643	1	RESISTOR, 250 ohm 1 W
R9	151643	1	RESISTOR, 250 ohm 1 W
R10	151643	1	RESISTOR, 250 ohm 1 W
R11	151643	1	RESISTOR, 250 ohm 1 W
S1	119725	1	SWITCH, Main power disconnect
S2	138277	1	KEYSWITCH, Base/Off/Platform (Base control) **(ANSI/CSA & AS Deutz D2011)**
	164833	1	KEYSWITCH, Base/Off/Platform (Base control) **(ANSI/CSA Deutz TD2.9L)**
	144366	1	KEYSWITCH, Base/Off/Platform (Base control) **(CE)**
S3	147053	1	N.C. CONTACT, Emergency stop (Base control console)
S4	147053	2	N.C. CONTACT, Emergency stop (Platform control console)
S5	138278	1	SWITCH, Ignition/emergency pump toggle (Base control console)
S6	138278	1	SWITCH, Ignition/emergency toggle (Platform control console)
S7	102853	1	SWITCH, Function enable toggle (Base control console)
S8	102853	1	SWITCH, Diagnose toggle (Base control console) (Deutz engine)
S10	115747	1	SWITCH, Throttle toggle (Platform control console)
S11	154127	1	ASSEMBLY, Footswitch
S12	138278	1	SWITCH, Boom up/down toggle (Base control console)
S13	102853	1	SWITCH, Turret rotate toggle (Base control console)
S14	102853	1	SWITCH, Telescope in/out toggle (Base control console)
S15	102853	1	SWITCH, Platform leveling toggle (Base control console)
S16	102853	1	SWITCH, Platform rotate toggle (Base control console)
S17	102853	1	SWITCH, Jib up/down toggle (Base control console) **(Model 66T)**
S18	102853	1	SWITCH, Telescope in/out toggle (Platform control console)
S19	102853	1	SWITCH, Platform leveling toggle (Platform control console) **(ANSI/CSA)**
S20	102853	1	SWITCH, Platform rotate toggle (Platform control console)
S21	102853	1	SWITCH, Jib up/down toggle (Platform control console) **(Model 66T)**
S22	144266	1	SWITCH, Electrical generator (Platform control console)
S23	147054	1	N.O. CONTACT, Horn (Platform control console) **(ANSI/CSA)**
	102853	1	SWITCH, Horn (Platform control console) **(CE)**
S24	115574	1	SWITCH, Optional lights (Platform control console)
S25	147054	1	N.O. CONTACT, Engine enable (Platform control console) **(CE)**
S26	102853	1	SWITCH, Fuel select (Platform control console) (GM engine)
S48	115574	1	SWITCH, Drive torque toggle (Platform control console)
TS1	166163	1	SWITCH, Tilt (analog 28°)
TT1	103336	1	HOUR METER
X22	138576	1	PORT, Diagnose (Deutz engine)
X23	138574	1	CONNECTOR, Engine (Deutz engine)

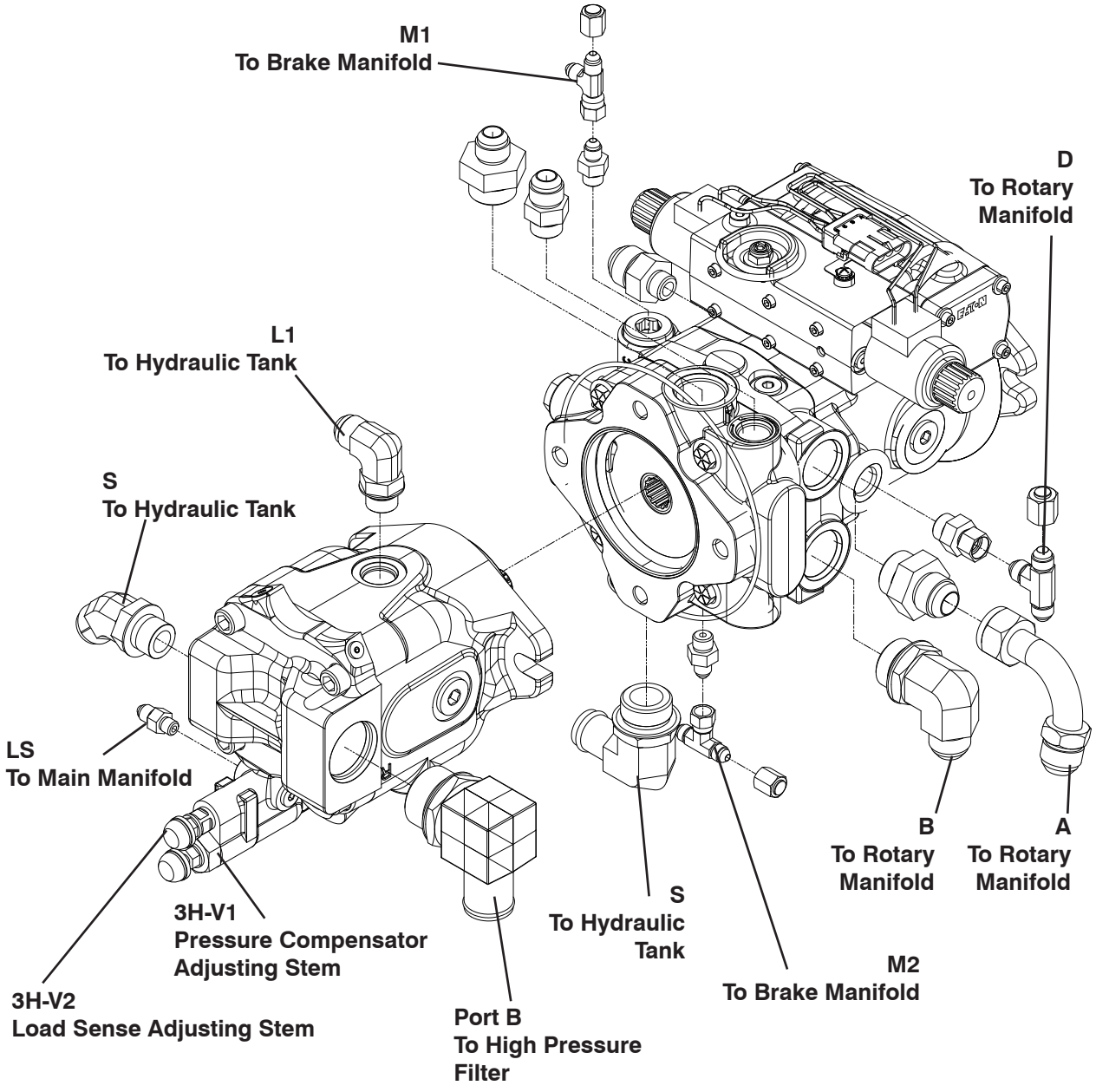
3.6 Rotary Manifold and Port Identifications



AD *3.7 Brake Manifold and Port Identifications*



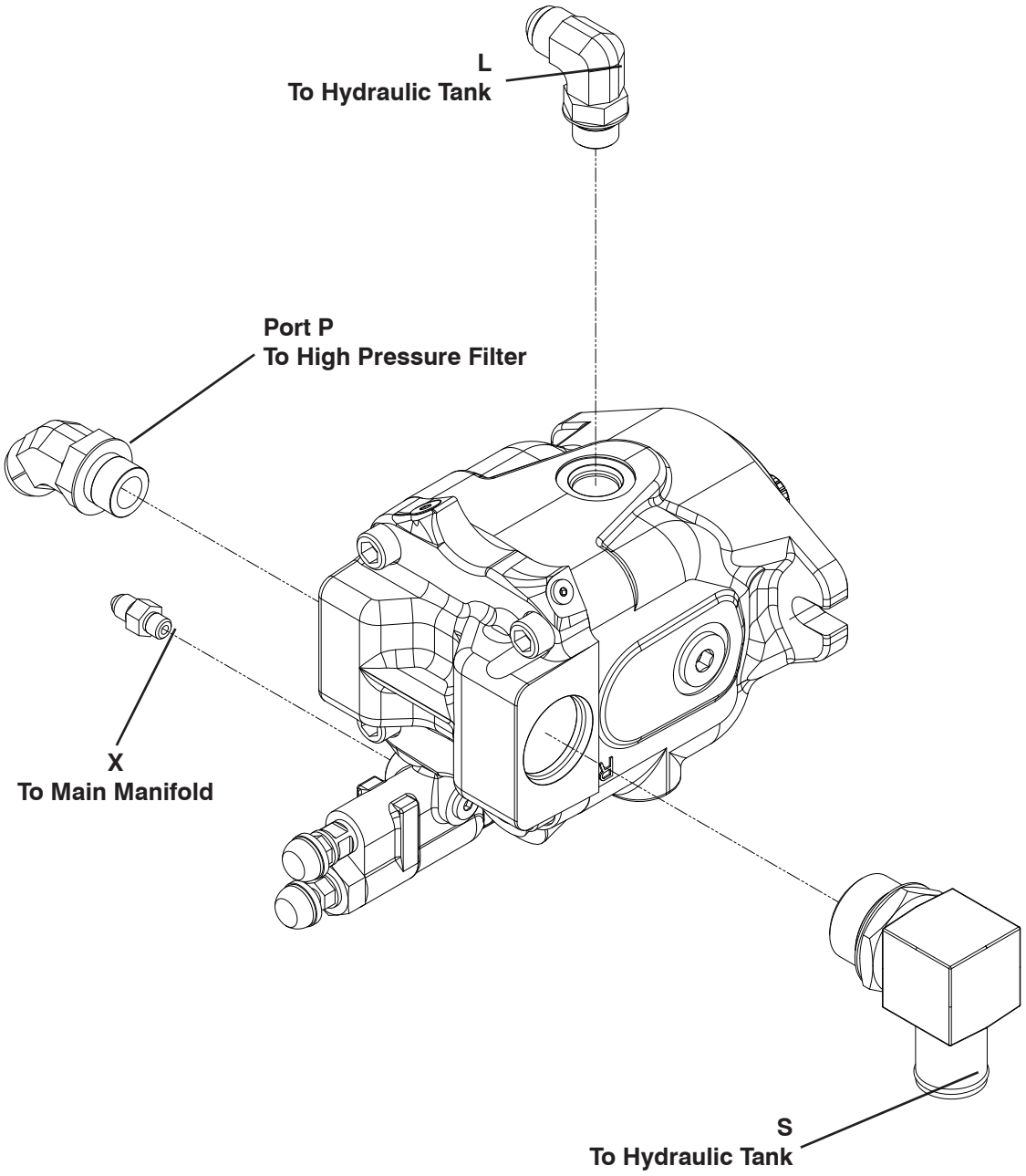
3.8 System and Drive Pumps and Port Identifications



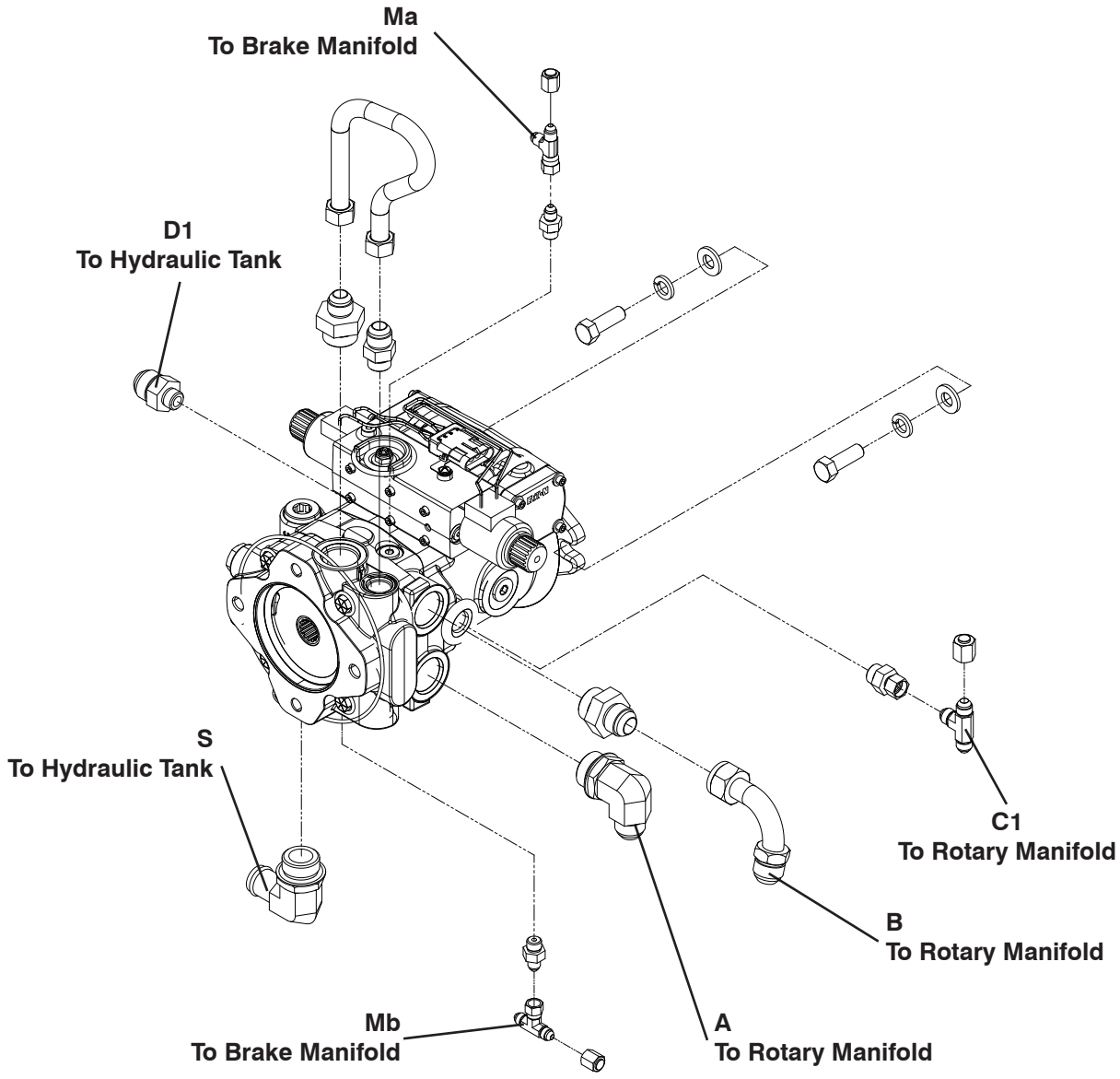
(For pressure adjustment, refer to Section 5)

M162661AA_SM

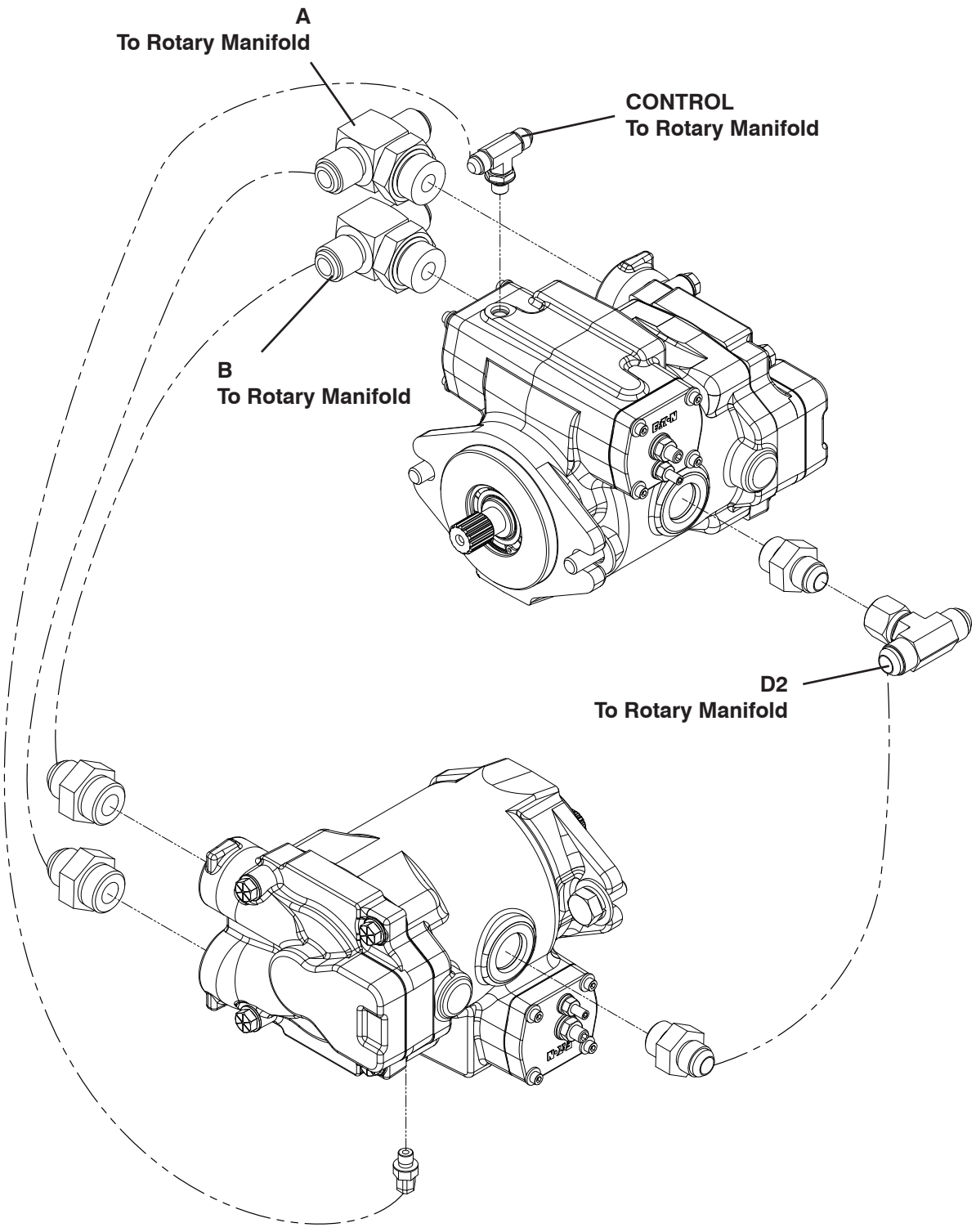
3.9 System Pump and Port Identifications



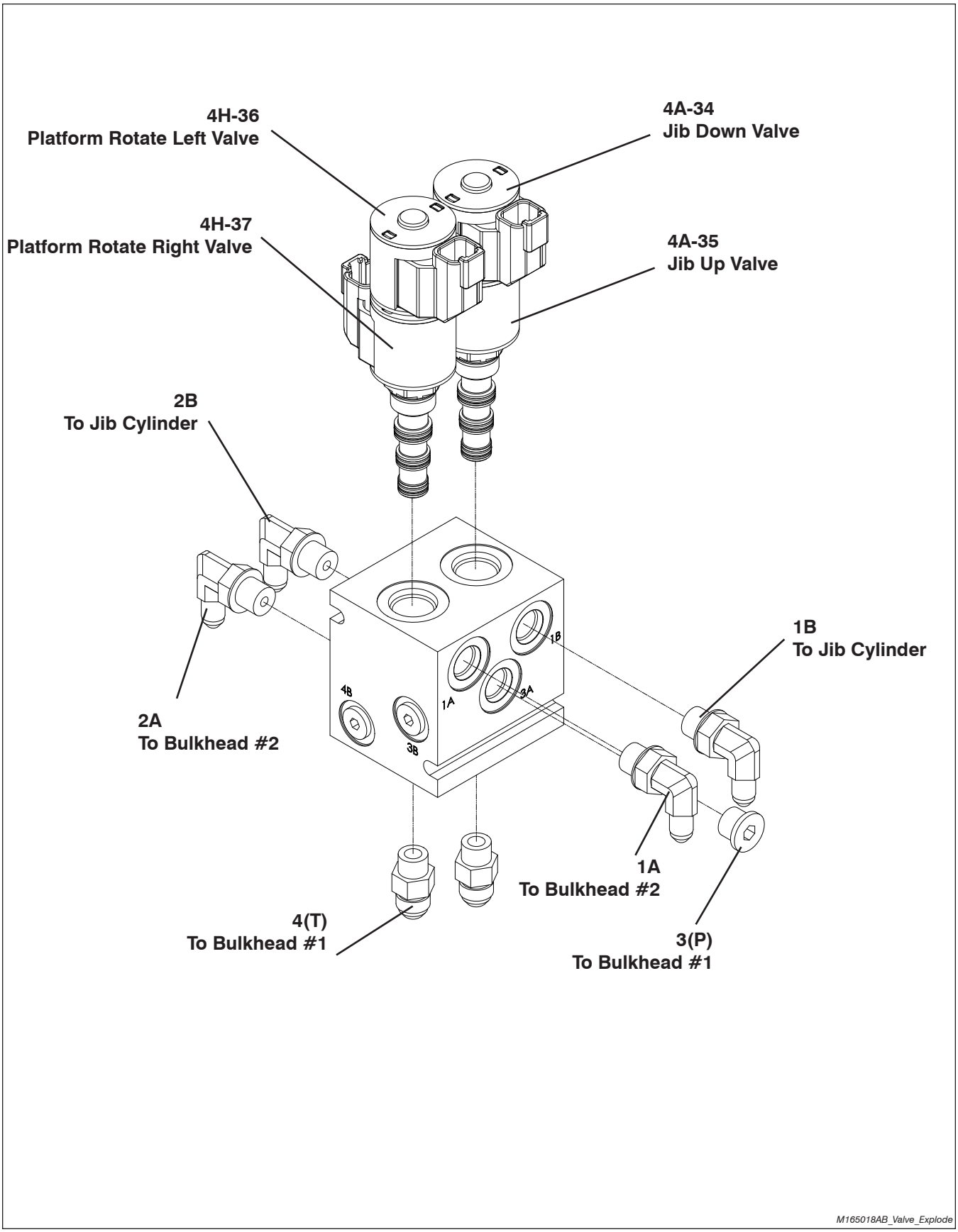
3.10 Drive Pump and Port Identifications



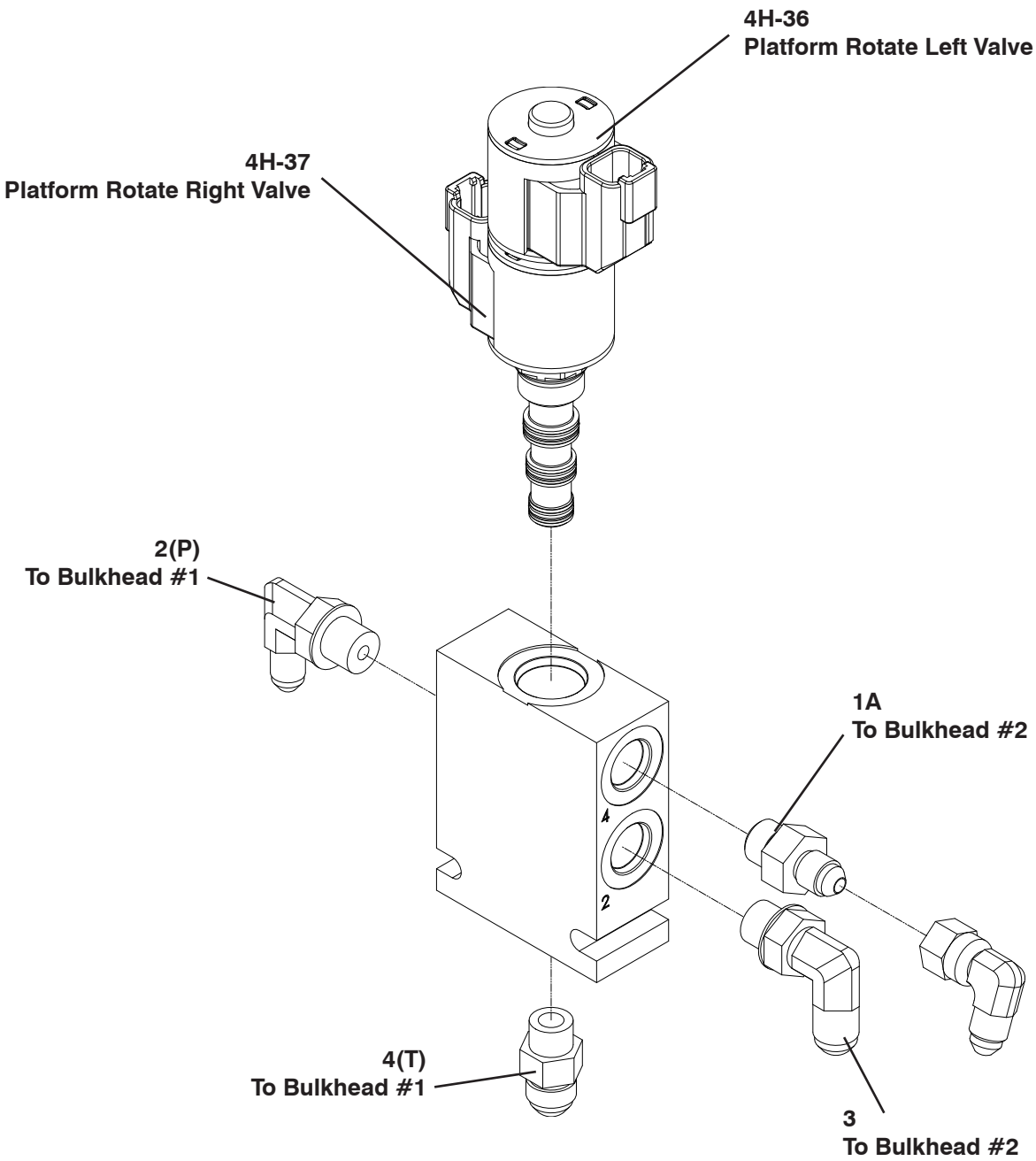
3.11 Drive Motors and Port Identifications



3.12 Jib Valve and Port Identifications

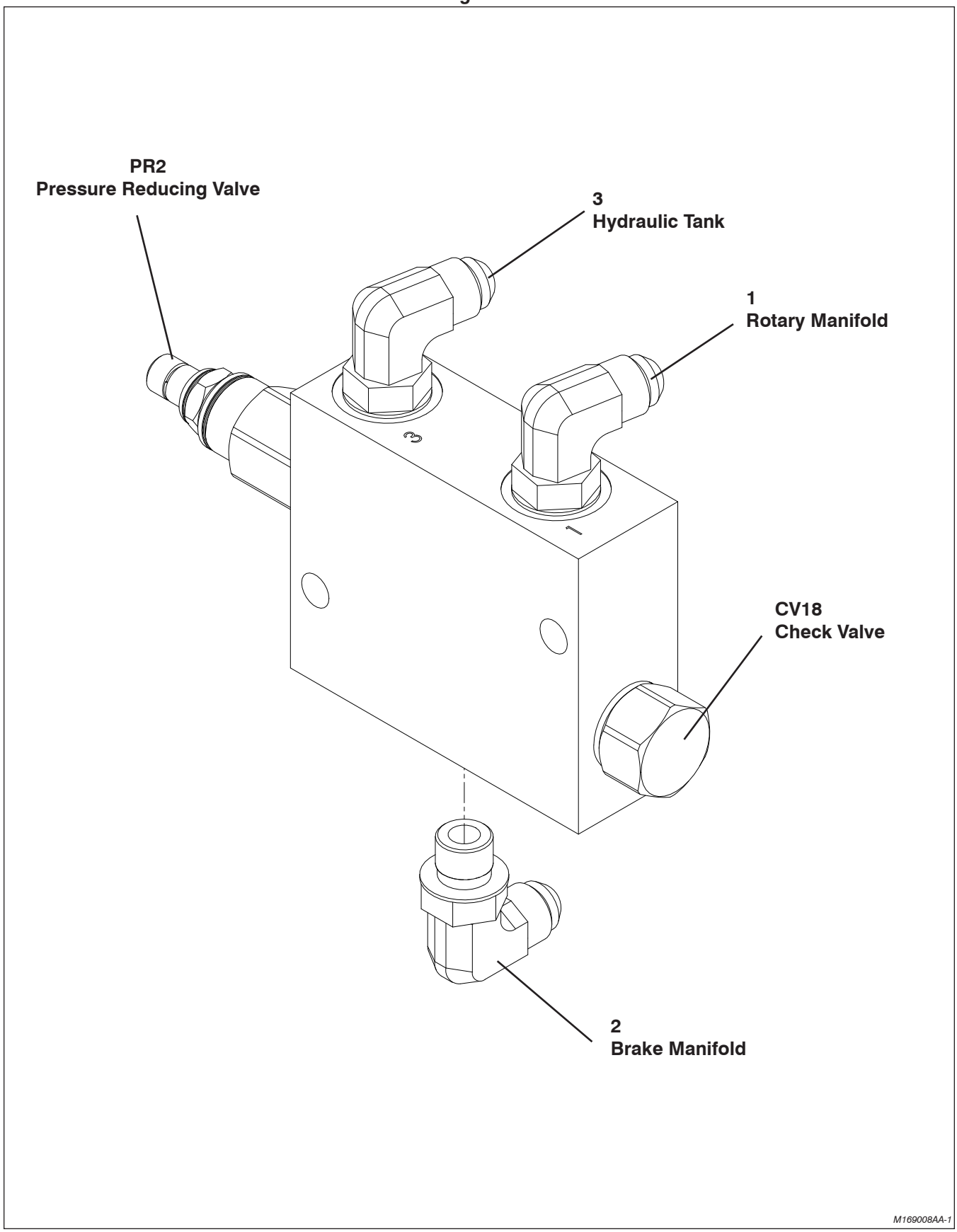


3.13 No Jib Valve and Port Identifications



165009AA_Valve_Explode

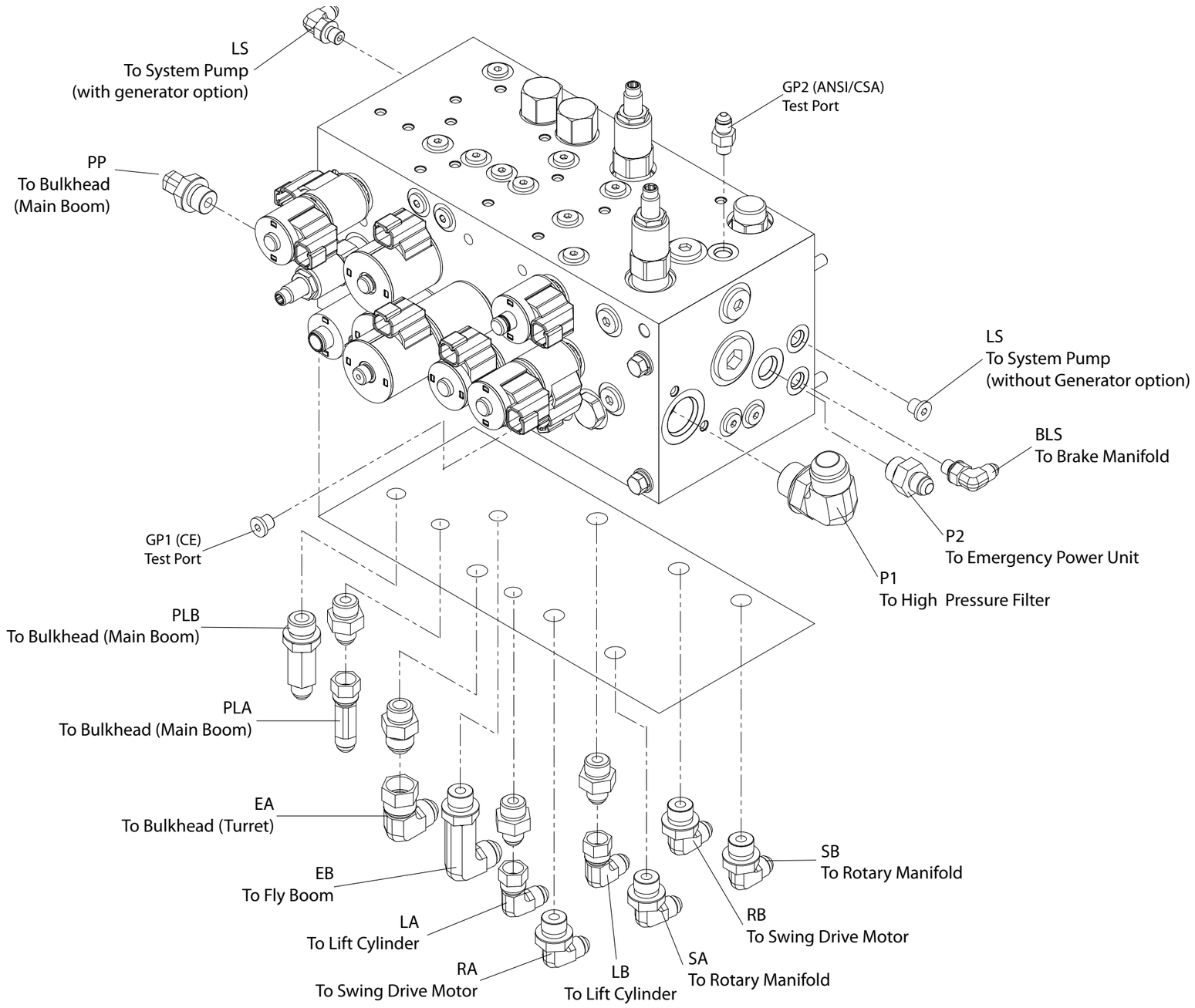
3.14 Pressure Reducing Valve Port Identifications



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3.15 Main Manifold Port Identification

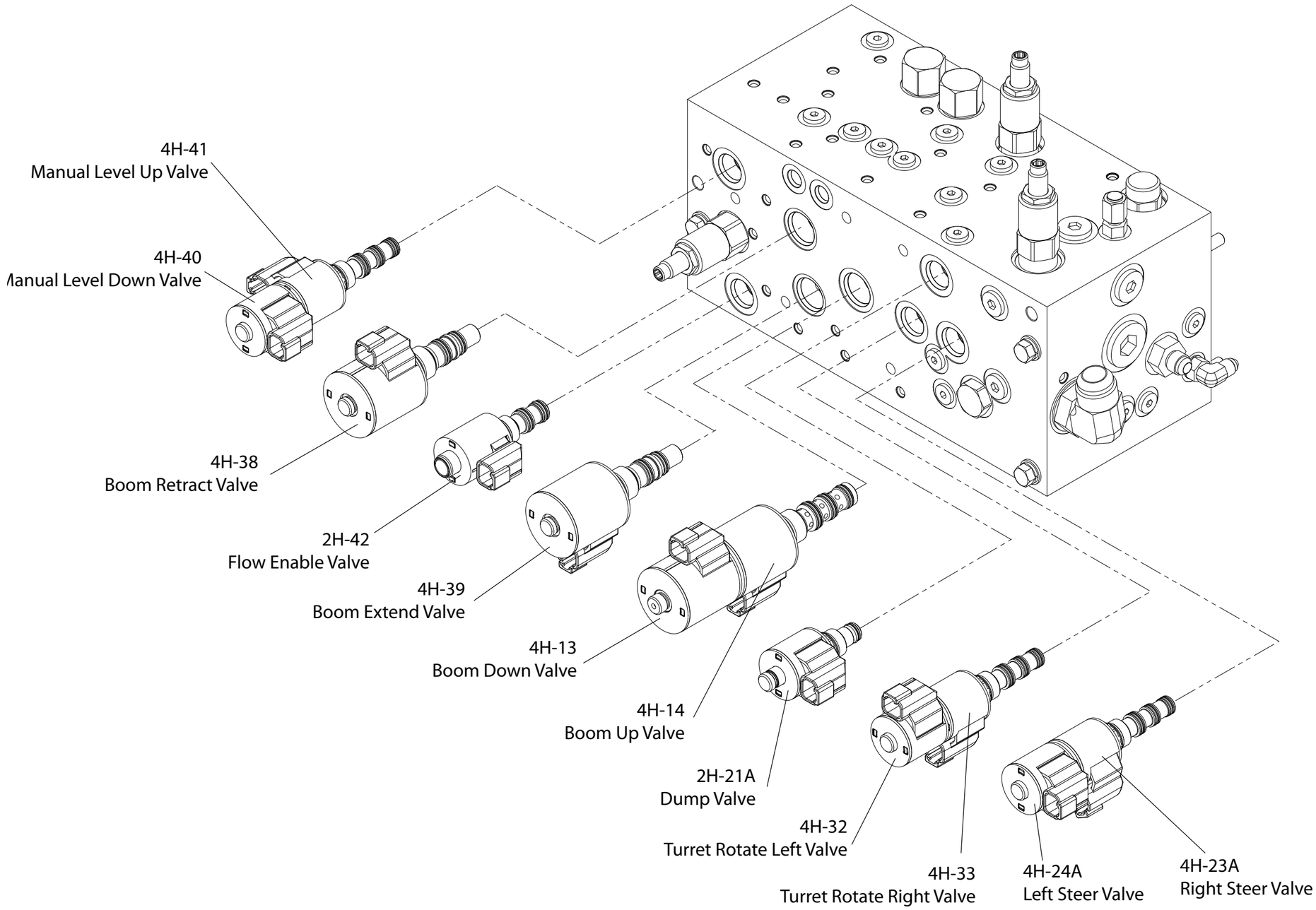
A	B	C	D	E	F	G	H



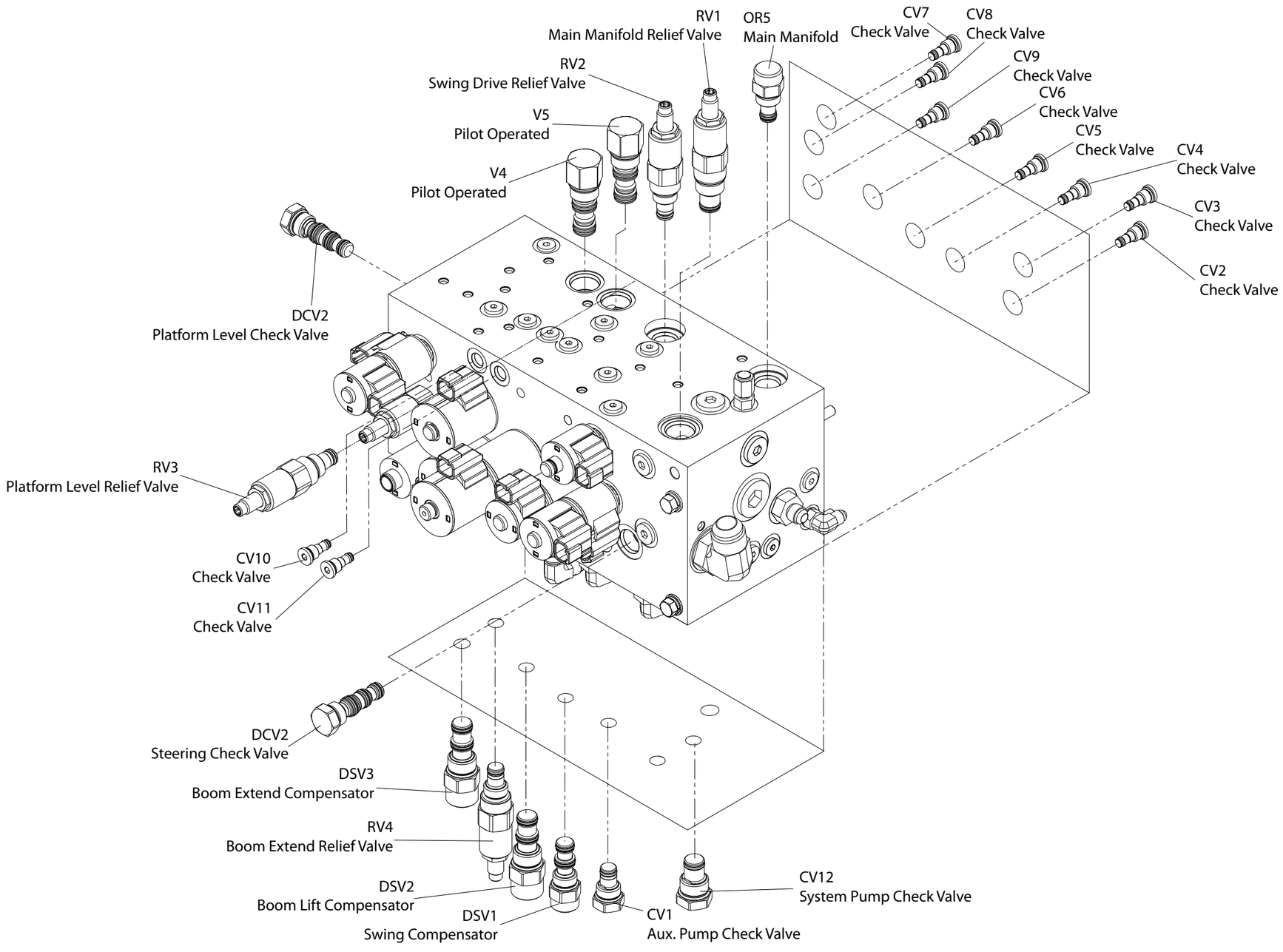
V W X Y Z

M161329AB_1

3.16 Main Manifold Electrical Component Identification



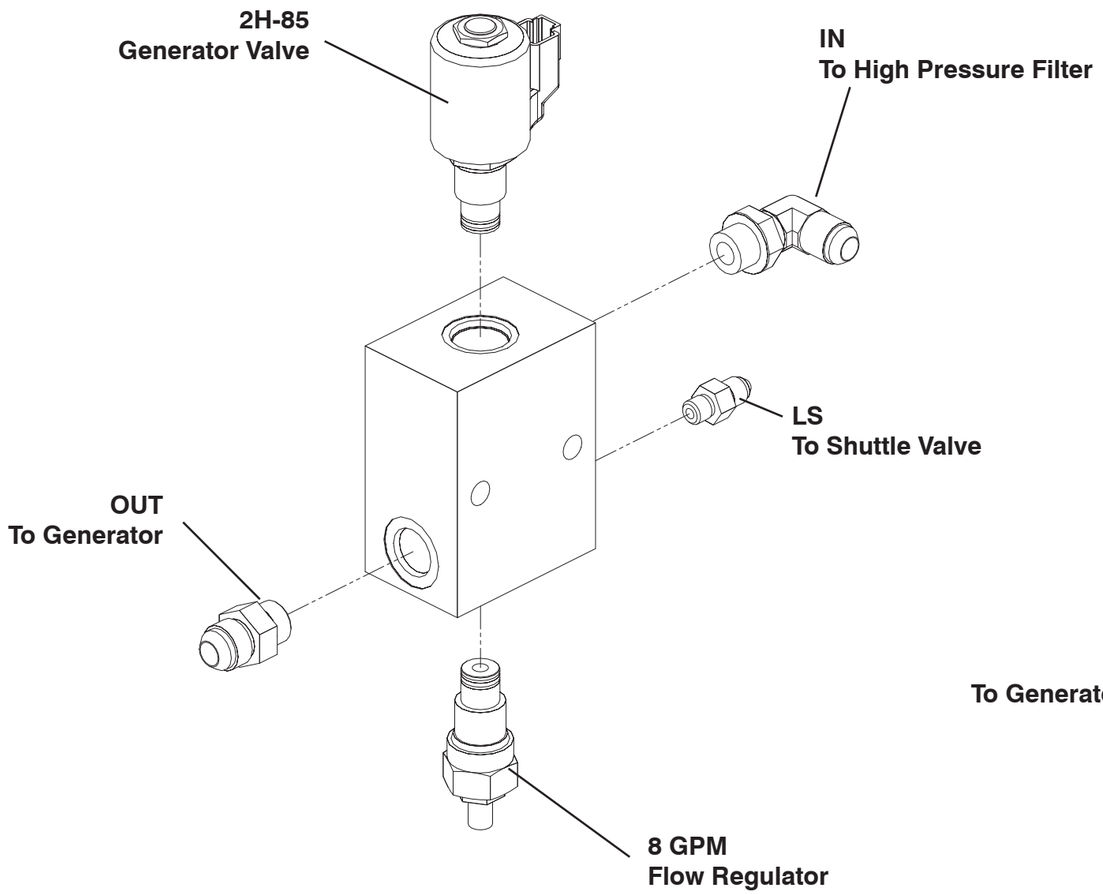
3.17 Main Manifold Hydraulic Component Identification



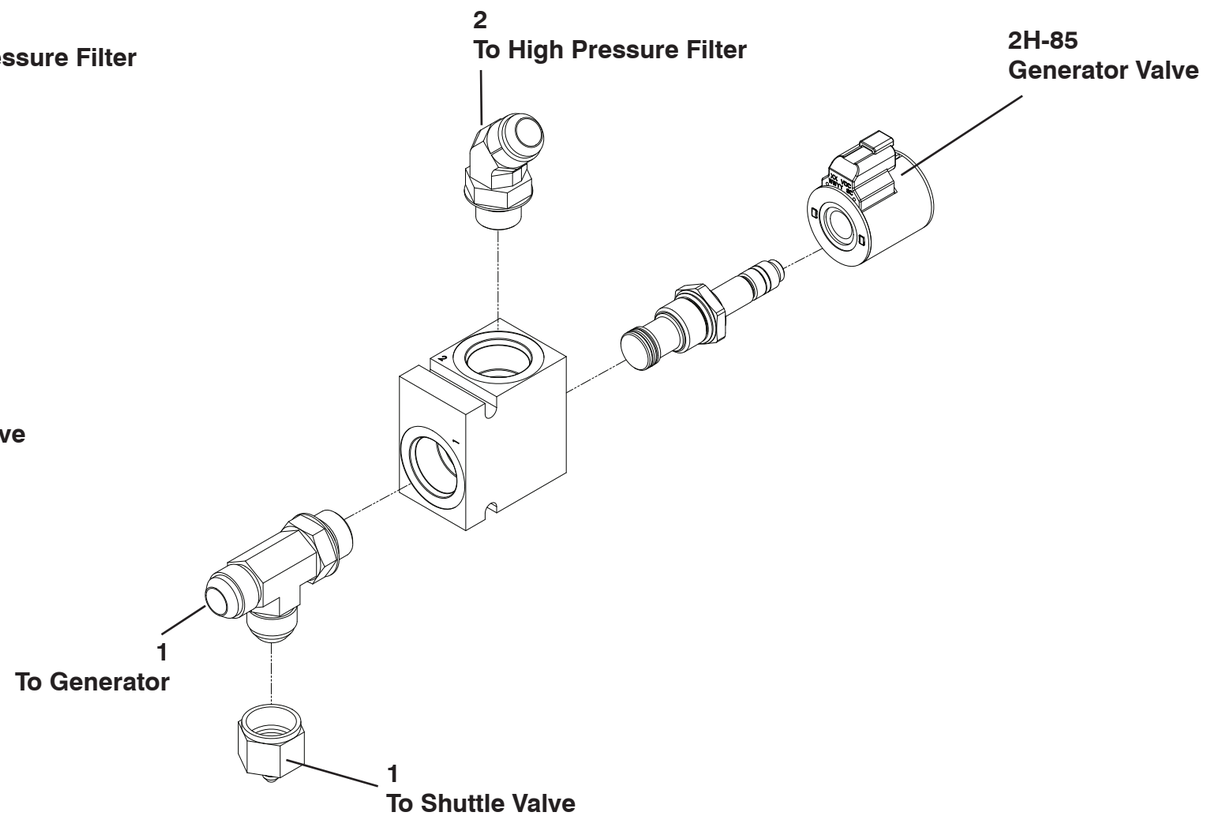
M164760AC-1

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3500W Generator

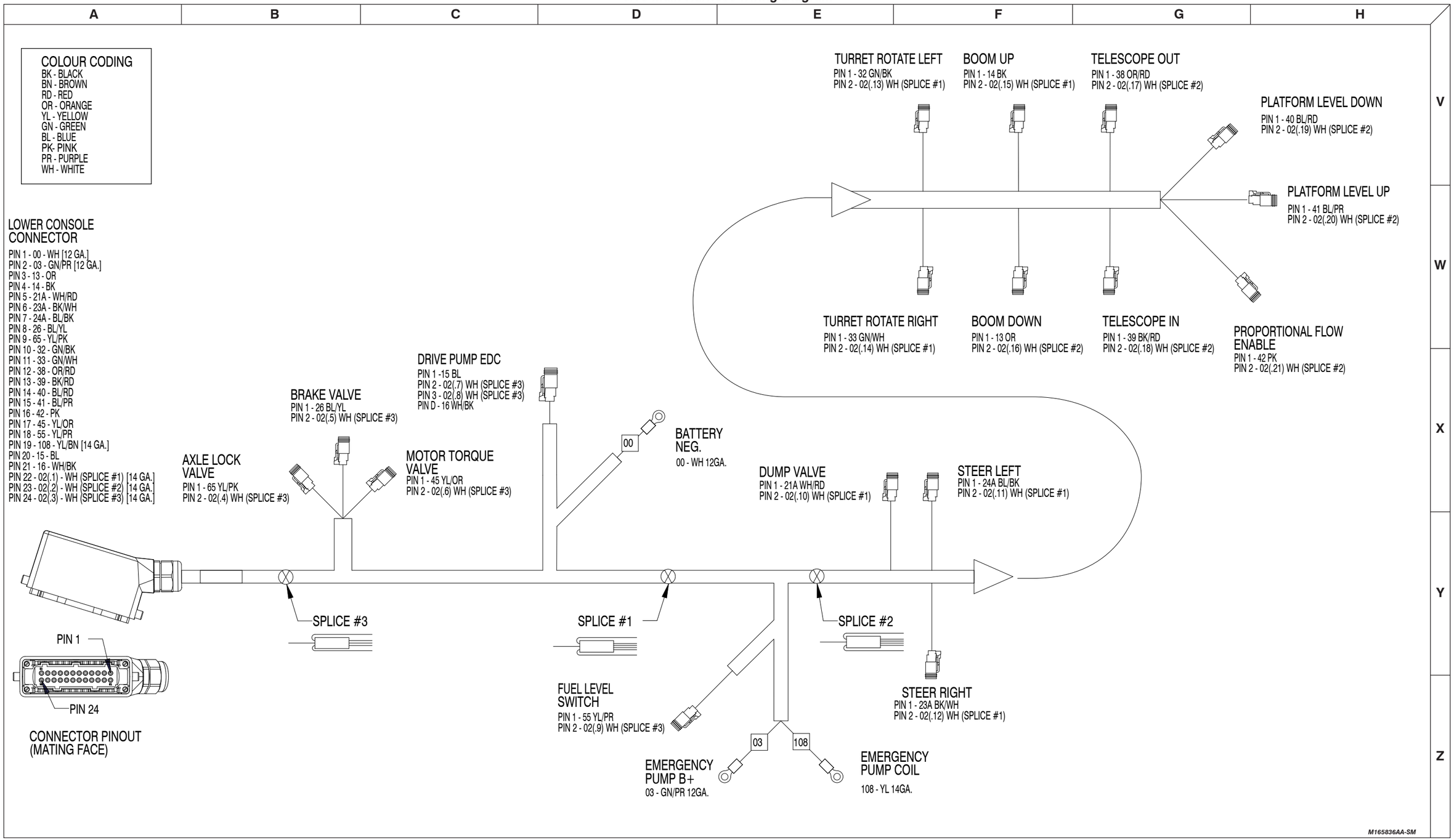


12kW Generator (Welder option)



M138405AB_M163543AB

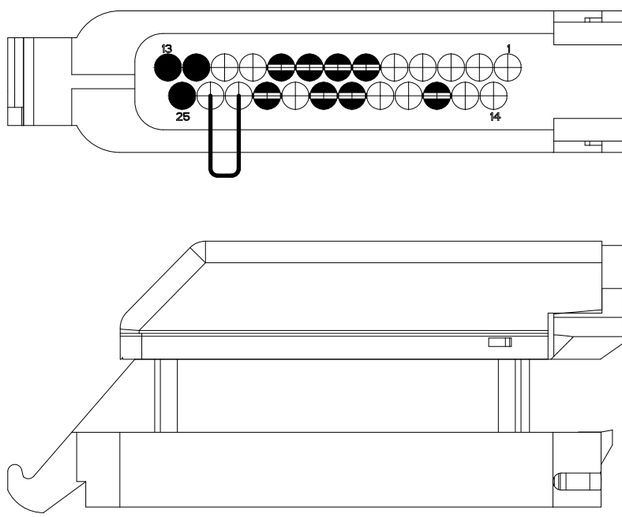
3.19 Main Harness Wiring Diagram

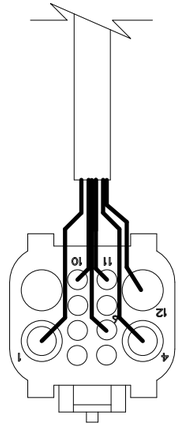


3.20 ECU Engine Wiring Diagram (Deutz Diesel Engine)

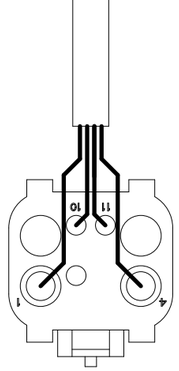
A	B	C	D	E	F	G	H

PIN 1 - 02 - WHITE
PIN 2 - 106 - GREEN/PINK
PIN 3 - 96 - WHITE/GREY
PIN 4 - 76 - BROWN/BLUE
PIN 5 - 74 - GREEN/GREY
PIN 6 - PLUGGED
PIN 7 - PLUGGED
PIN 8 - PLUGGED
PIN 9 - PLUGGED
PIN 10 - 105 - GREEN/BROWN
PIN 11 - 104 - GREEN/ORANGE
PIN 12 - PLUGGED
PIN 13 - PLUGGED
PIN 14 - 54A - PURPLE/RED
PIN 15 - 84 - WHITE/BLACK/PURPLE
PIN 16 - PLUGGED
PIN 17 - 103 - BLACK/PURPLE
PIN 18 - 99 - BLACK/GREY
PIN 19 - PLUGGED
PIN 20 - PLUGGED
PIN 21 - 90 - RED/GREY
PIN 22 - PLUGGED
PIN 23 - JUMPER TO PIN 24
PIN 24 - JUMPER TO PIN 23
PIN 25 - PLUGGED

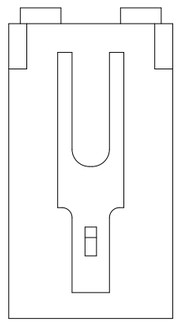




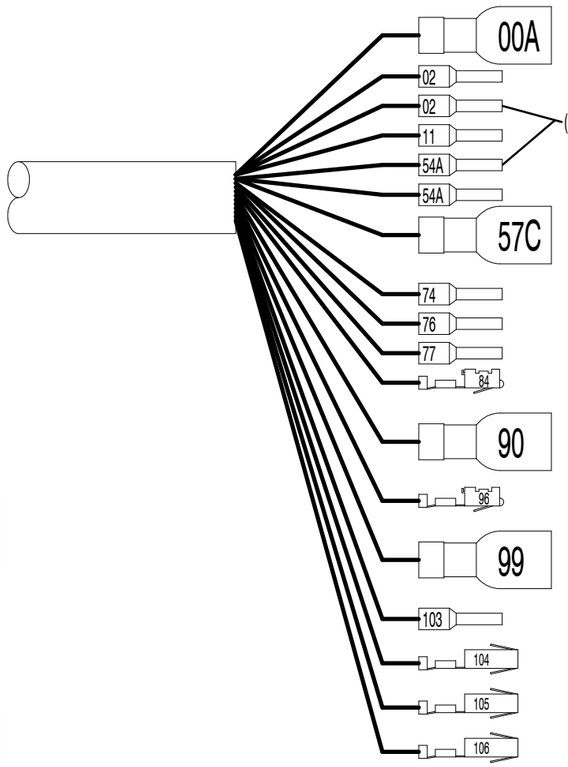
6 PIN CONNECTOR (IF EQUIPPED)



4 PIN CONNECTOR



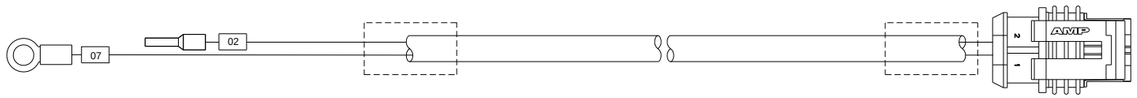
PIN 1 - 77 - BROWN/GREY
PIN 4 - 57C - BROWN/GREEN [12 GA.]
PIN 6 - 02 - WHITE (IF EQUIPPED)
PIN 10 - 11 - WHITE/ORANGE
PIN 11 - 00A - WHITE
PIN 12 - 54A - PURPLE/RED (IF EQUIPPED)



V W X Y Z

M138708AA

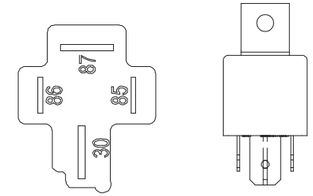
3.21 Glow Plug and EGR Harnesses (Deutz Diesel Engine)



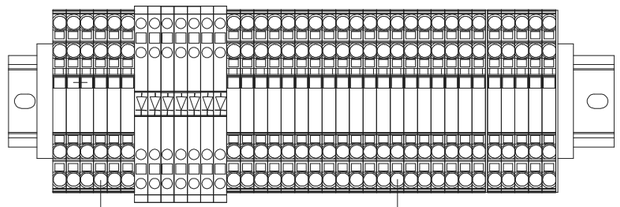
EGR CONNECTOR PIN OUT
CAVITY 1 = 07 WHITE
CAVITY 2 = 02 BLACK

TO AIR BOX

RELAY CONNECTOR PIN-OUT
30 - 11A RED
85 - 54A BLK
86 - 11 WHT
87 - 11B RED



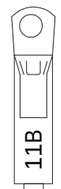
BASE CONTROL BOX TERMINAL STRIP WIRING:



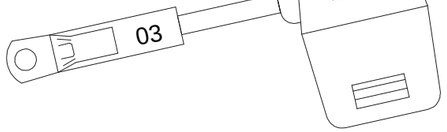
11 WHT

54A BLK

TO ENGINE GLOW PLUG
POWER FEED STUD

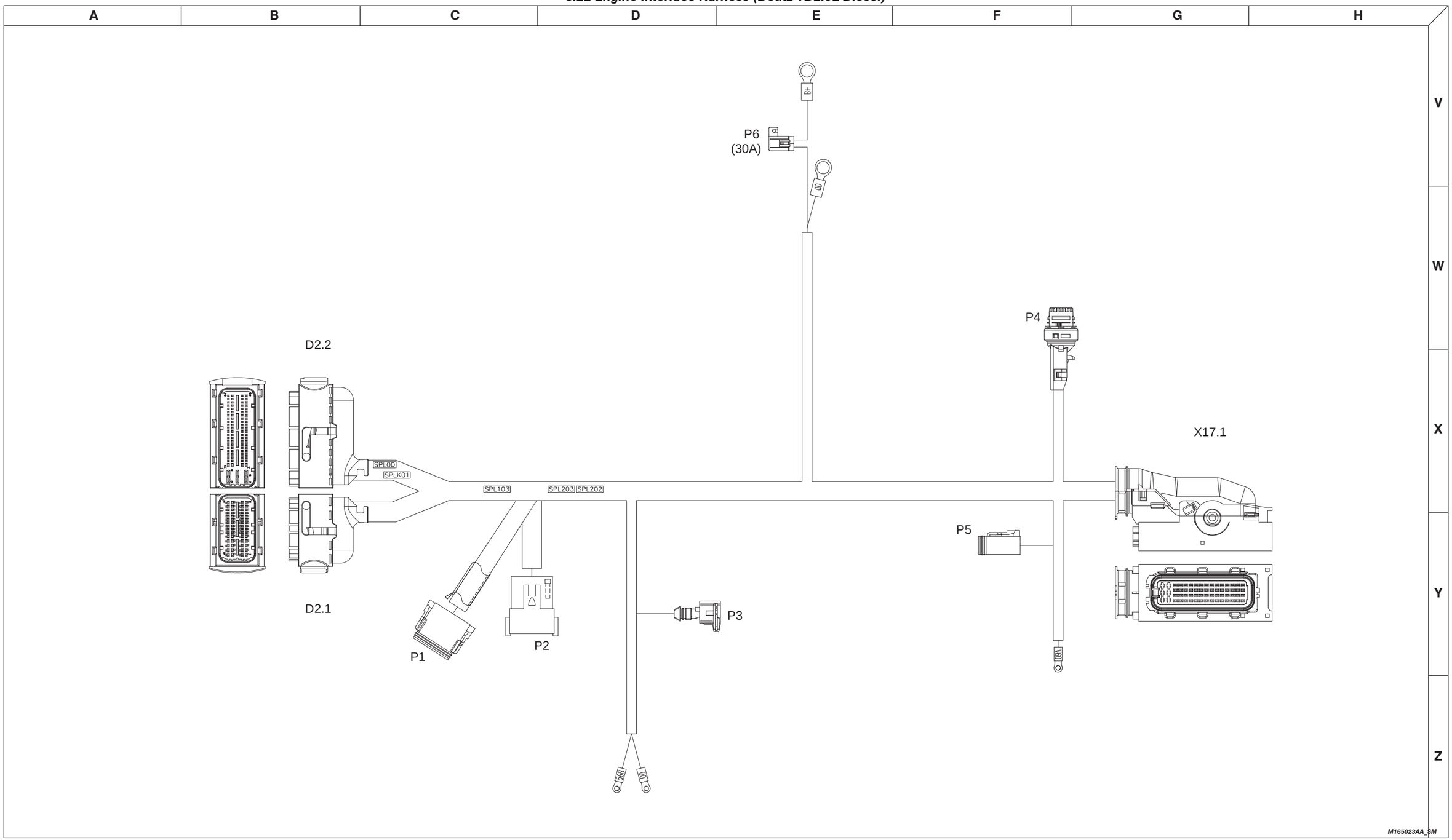


TO ENGINE STARTER



M138849AB

3.22 Engine Interface Harness (Deutz TD2.9L Diesel)



3.23 Engine Interface Harness (GM Dual Fuel Engine)

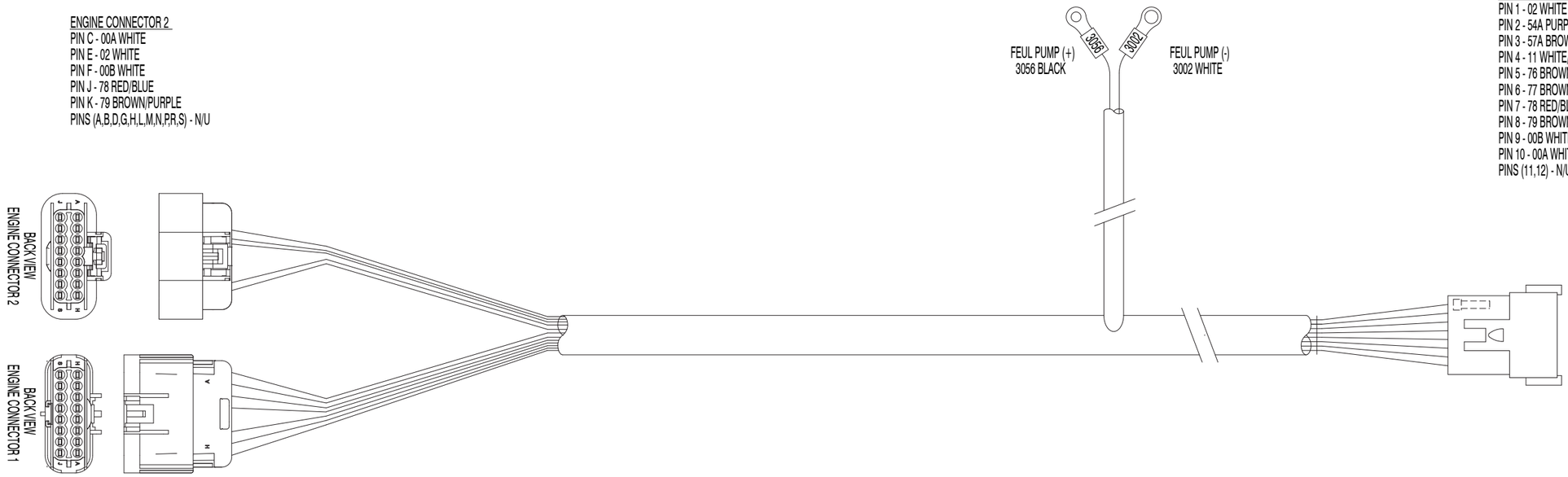
A	B	C	D	E	F	G	H

ENGINE CONNECTOR 2
PIN C - 00A WHITE
PIN E - 02 WHITE
PIN F - 00B WHITE
PIN J - 78 RED/BLUE
PIN K - 79 BROWN/PURPLE
PINS (A,B,D,G,H,L,M,N,P,R,S) - N/U

FEUL PUMP (+)
3056 BLACK

FEUL PUMP (-)
3002 WHITE

ENGINE CONNECTOR 1
PIN 1 - 02 WHITE
PIN 2 - 54A PURPLE/RED
PIN 3 - 57A BROWN/GREEN
PIN 4 - 11 WHITE/ORANGE
PIN 5 - 76 BROWN/BLUE
PIN 6 - 77 BROWN/GREY
PIN 7 - 78 RED/BLUE
PIN 8 - 79 BROWN/PURPLE
PIN 9 - 00B WHITE
PIN 10 - 00A WHITE
PINS (11,12) - N/U

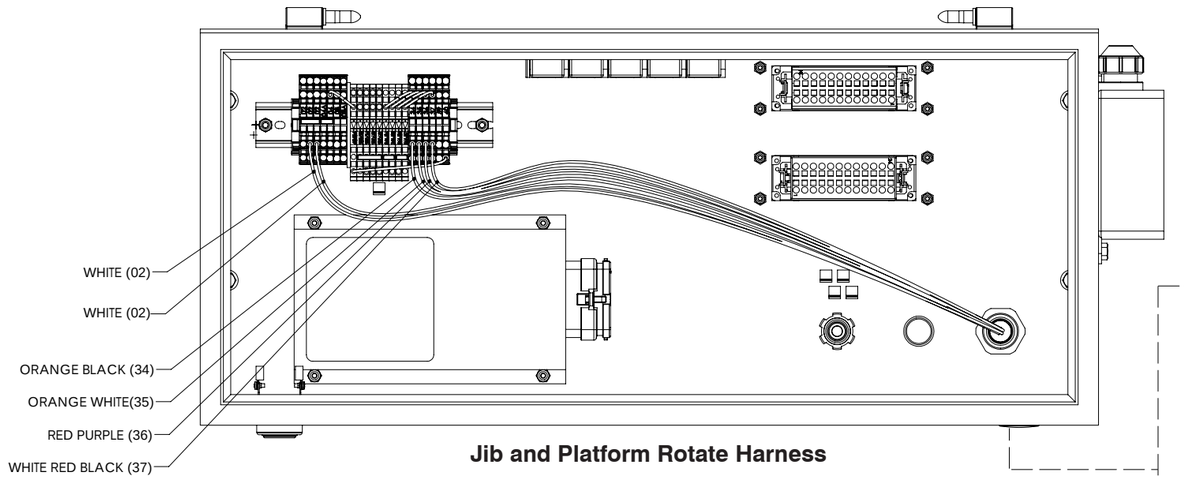


ENGINE CONNECTOR 1
PIN A - 54A PURPLE/RED
PIN B - 77 BROWN/GREY
PIN C - 3002 WHITE
PIN D - 3056 BLACK
PIN F - 57A BROWN/GREEN
PIN G - 76 BROWN/BLUE
PIN H - 11 WHITE/ORANGE
PINS (E,J,K,L,M,N,P,R,S) - N/U

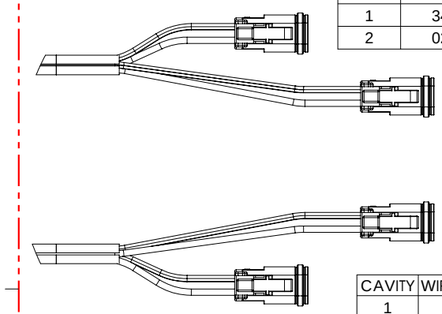
V W X Y Z

M144265AD

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Jib and Platform Rotate Harness



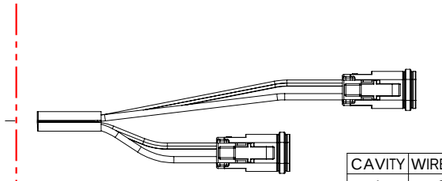
CAVITY	WIRE NO.	COLOUR	DESCRIPTION
1	34	ORANGE/BLK	JIB DOWN
2	02	WHITE (SPLICE 2)	GROUND

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

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

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

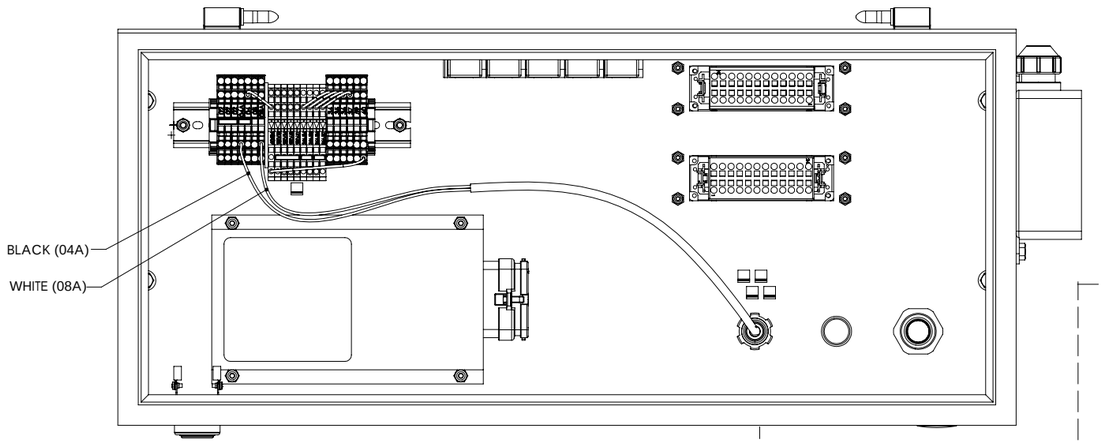
JIB & PLATFORM ROTATE HARNESS (45T/66T)



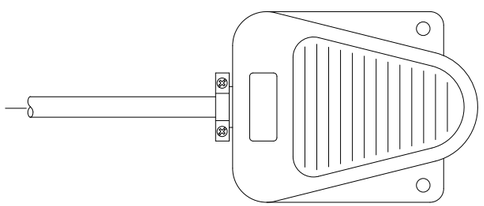
CAVITY	WIRE NO.	COLOUR	DESCRIPTION
1	36	RED/PURPLE	ROTATE CW
2	02	WHITE (SPLICE)	GROUND

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

PLATFORM ROTATE HARNESS (40T/61T)

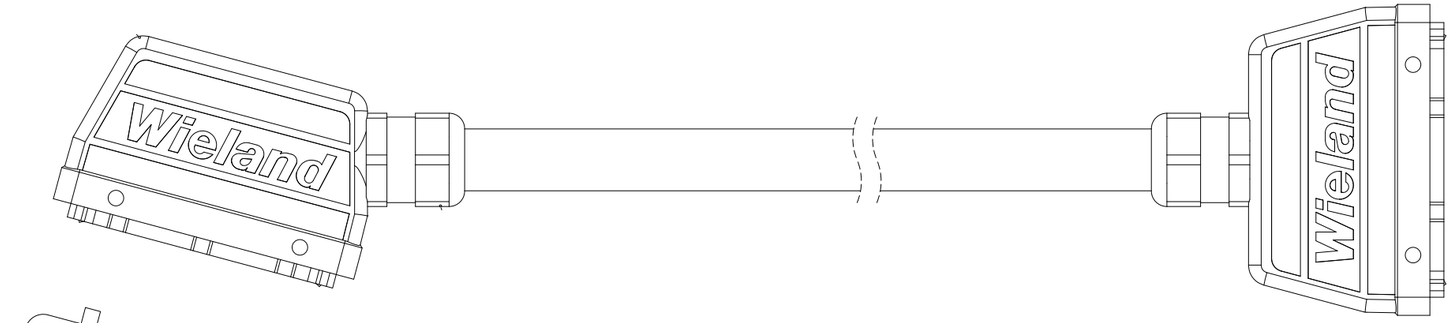


Foot Pedal Connections

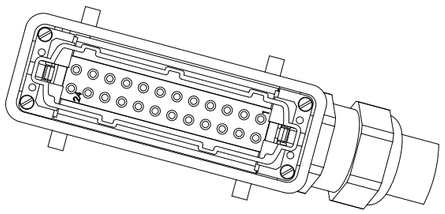


M167760AA_M167698AB_M167740AB

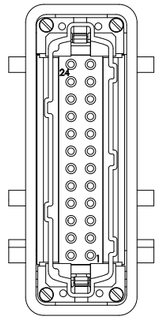
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Male



Male

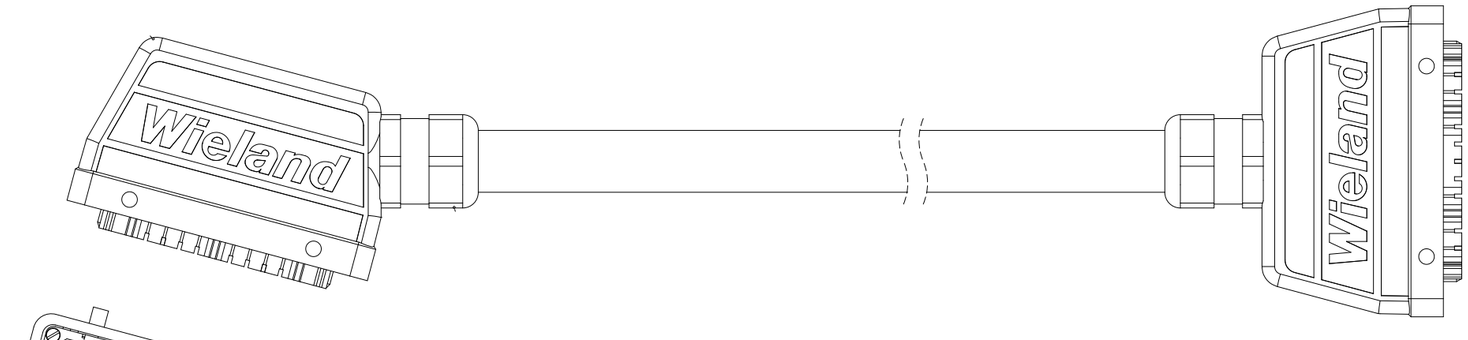


Male

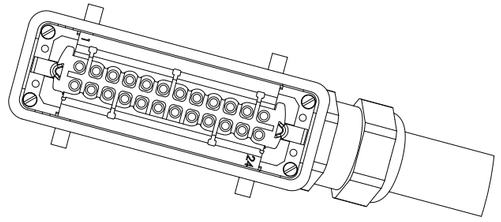
Control Cable “C”

BASE & PLATFORM CONNECTIONS

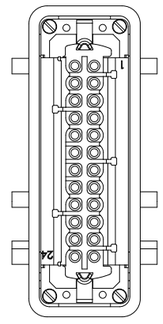
POSITION 1 - PURPLE/BLACK
POSITION 2 - RED
POSITION 3 - RED
POSITION 4 - BLUE/WHITE
POSITION 5 - RED/YELLOW/BLACK
POSITION 6 - ORANGE
POSITION 7 - BLACK
POSITION 8 - ORANGE/BLUE
POSITION 9 - BLACK/WHITE
POSITION 10 - BLUE/BLACK
POSITION 11 - BLUE/YELLOW
POSITION 12 - RED/GREEN
POSITION 13 - RED/WHITE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



Female



Female



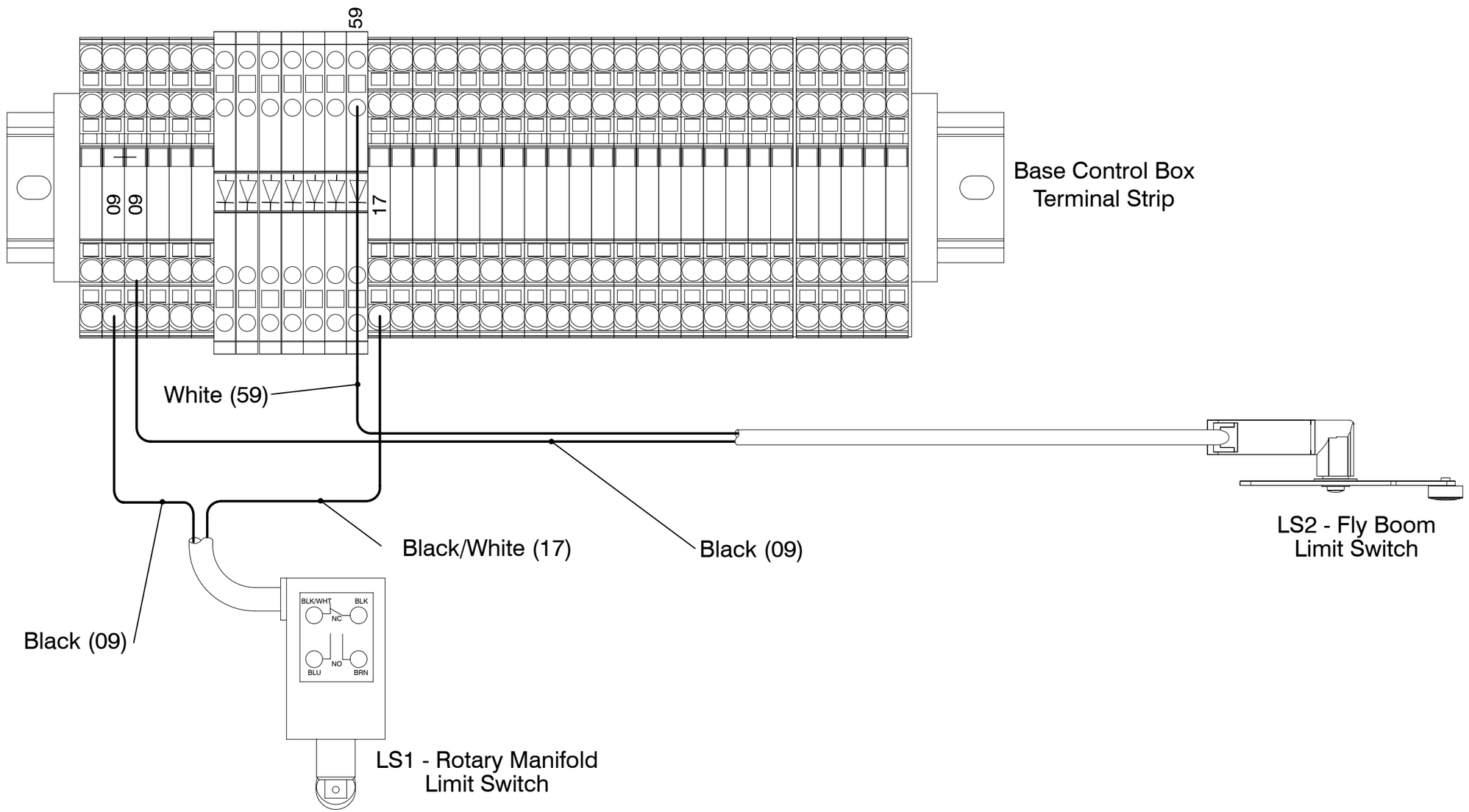
Female

Control Cable “D”

BASE & PLATFORM CONNECTIONS

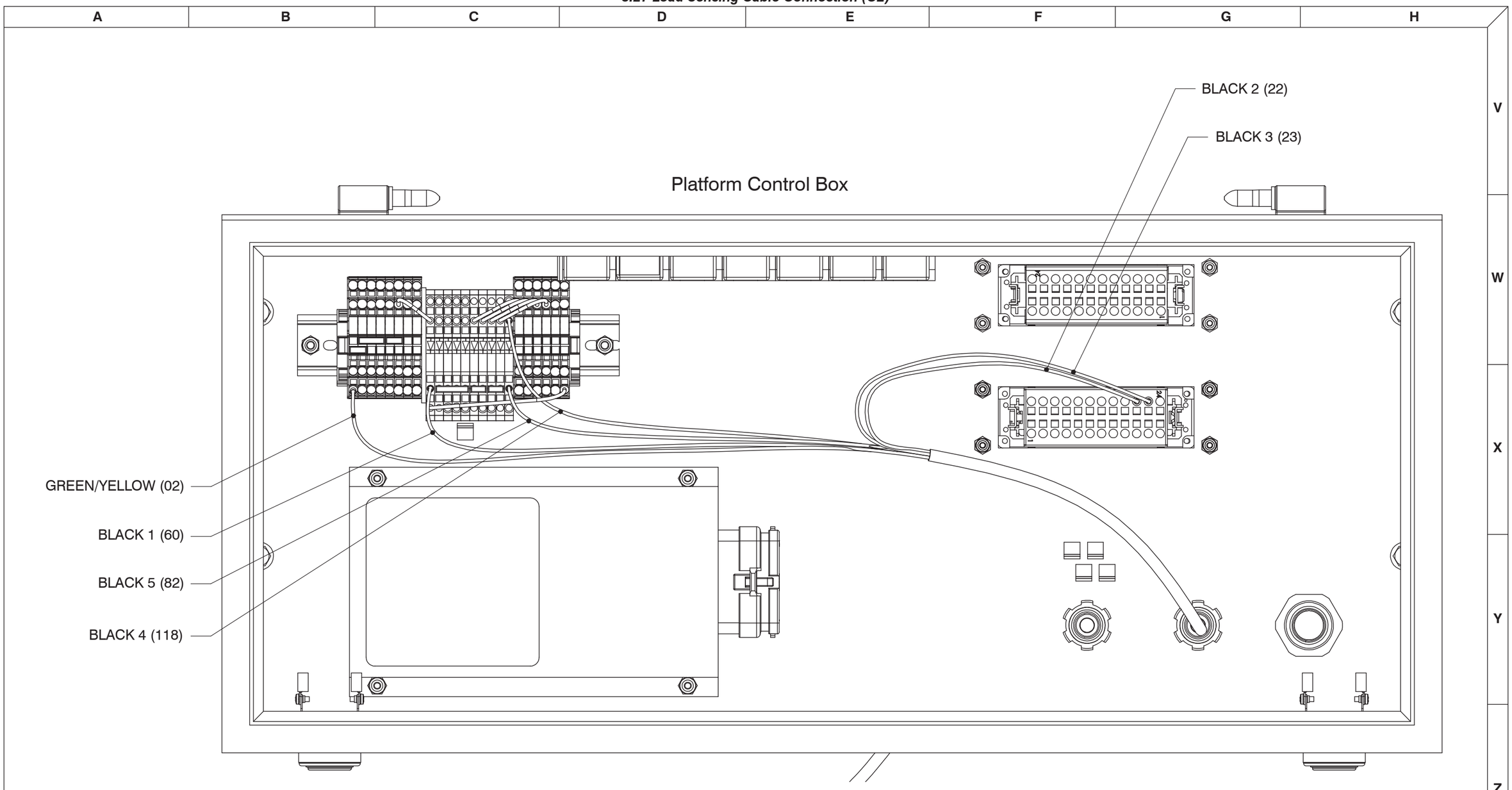
POSITION 1 - WHITE
POSITION 2 - WHITE
POSITION 3 - WHITE/ORANGE
POSITION 4 - BLUE
POSITION 5 - WHITE/BLACK
POSITION 6 - BLUE/GREEN
POSITION 7 - GREEN
POSITION 8 - ORANGE/RED
POSITION 9 - BLACK/RED
POSITION 10 - BLUE/RED
POSITION 11 - BLUE/PURPLE
POSITION 12 - GREEN/RED
POSITION 13 - YELLOW/PURPLE
POSITION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

M165528AA_M165525AA



M165674AB_M167237AA

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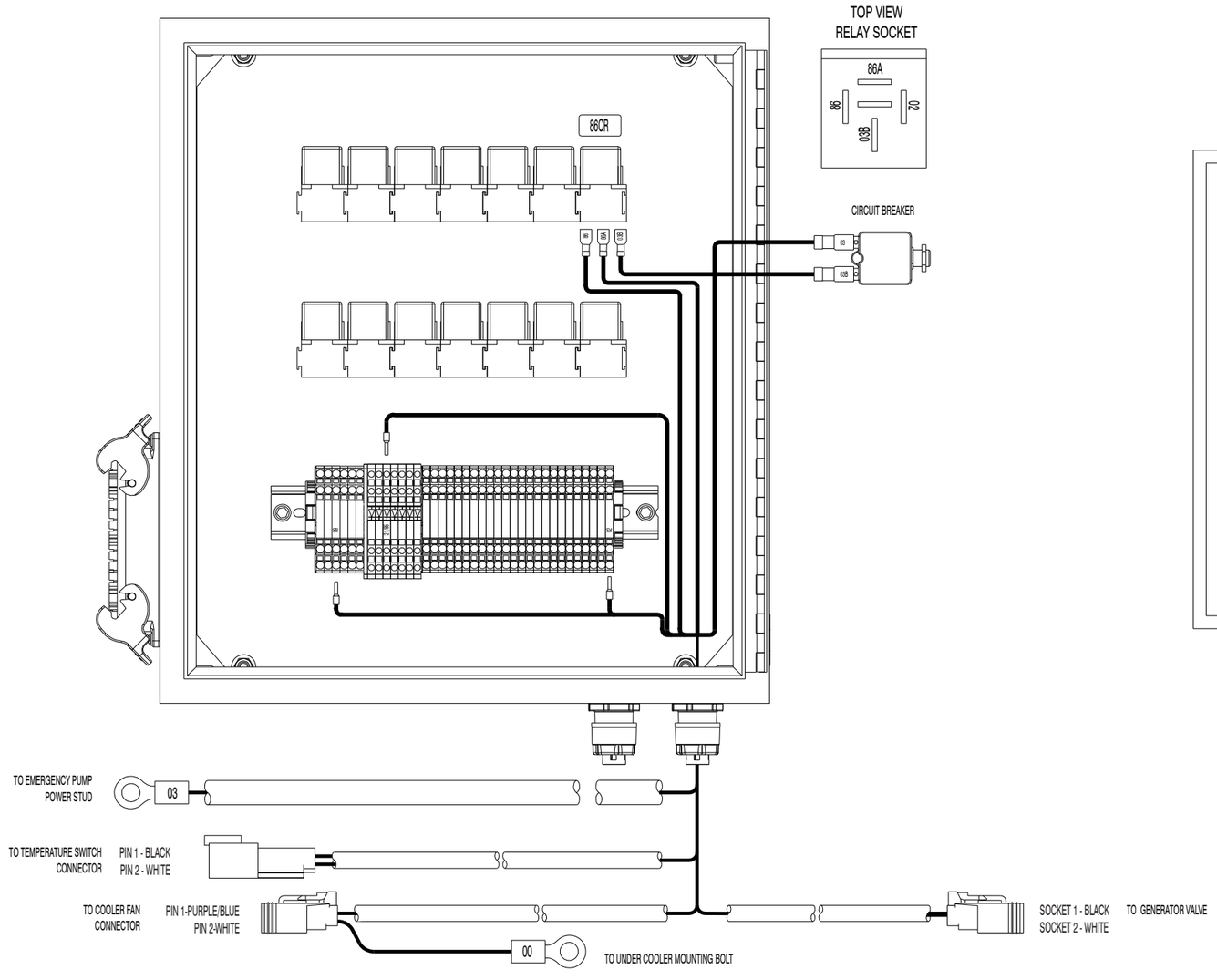


Load Sense Cable Connections

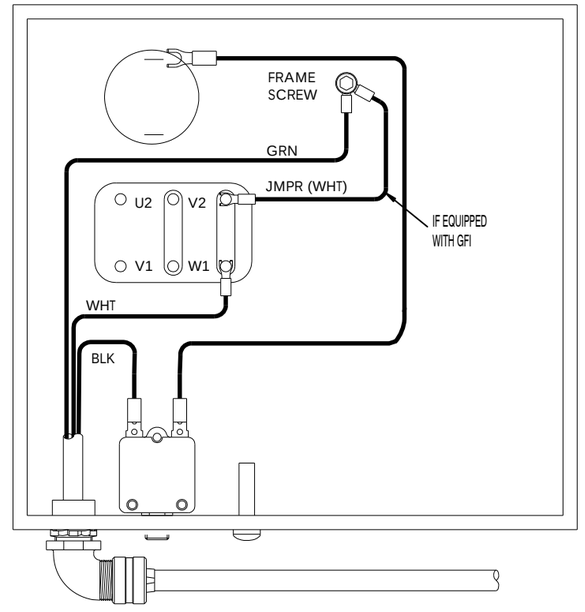
M167781AC-4

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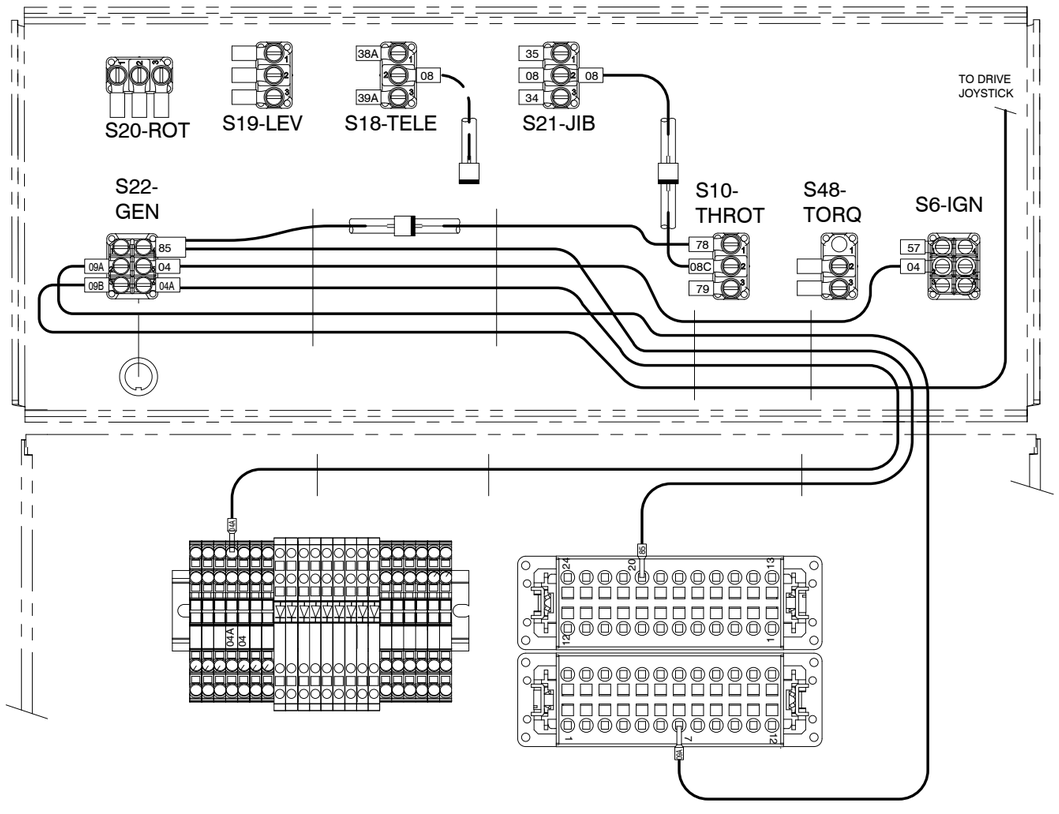
BASE CONTROL CONSOLE



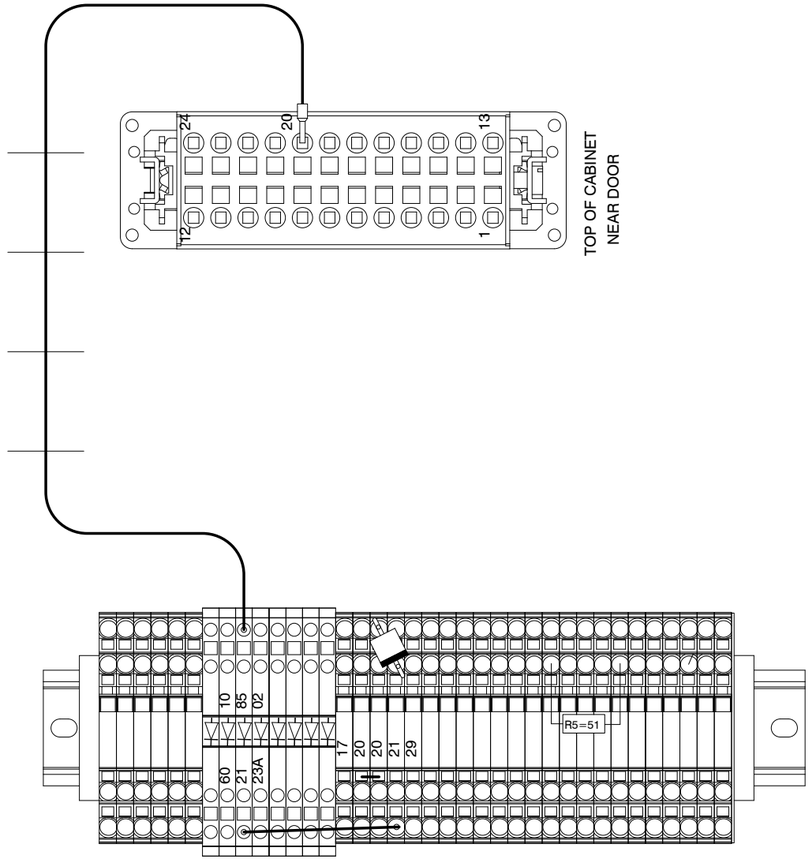
GENERATOR TERMINAL CONSOLE



M148489AA_S3



PLATFORM CONTROL CONSOLE GENERATOR WIRE KIT



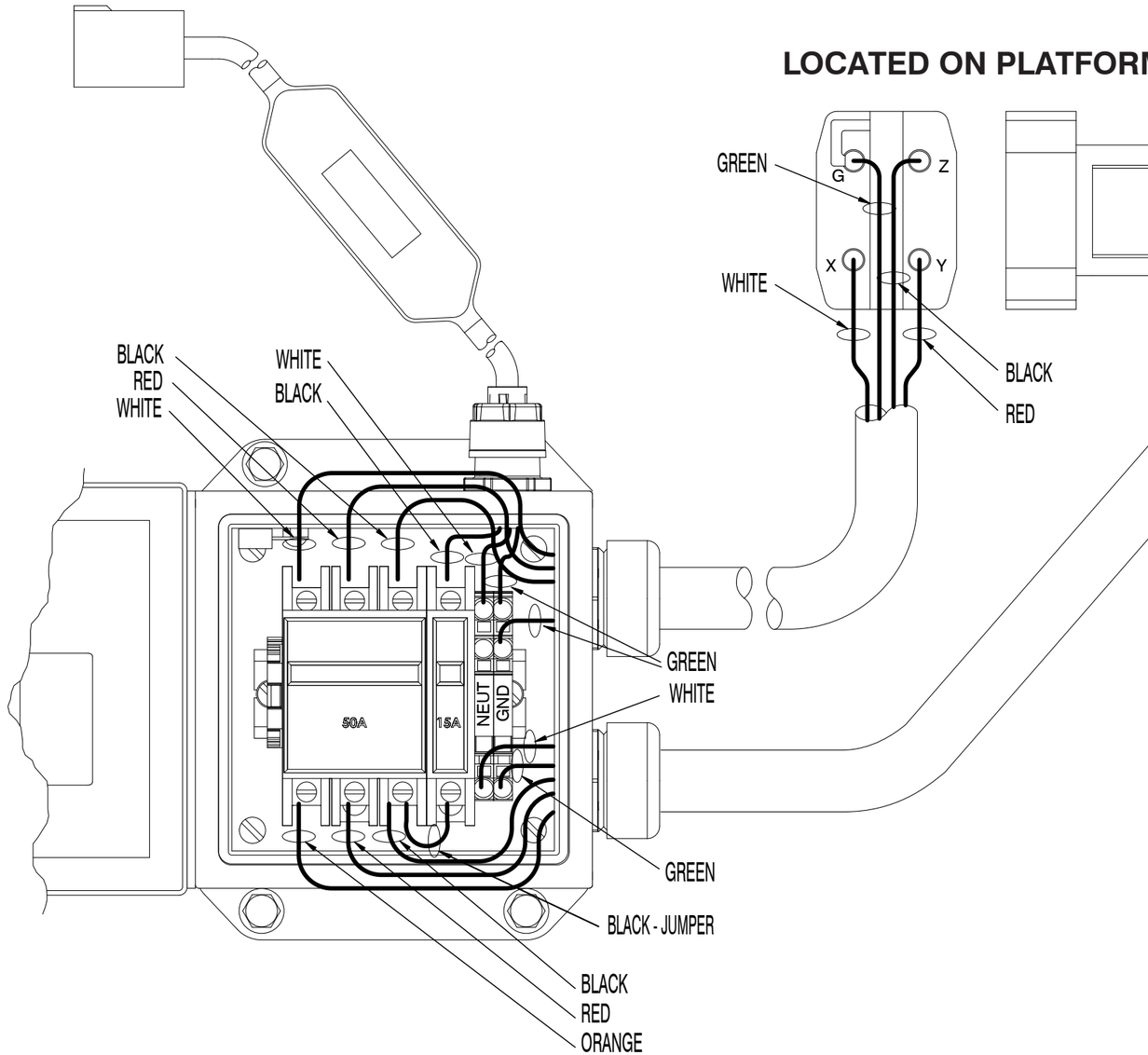
BASE CONTROL CONSOLE GENERATOR WIRE KIT

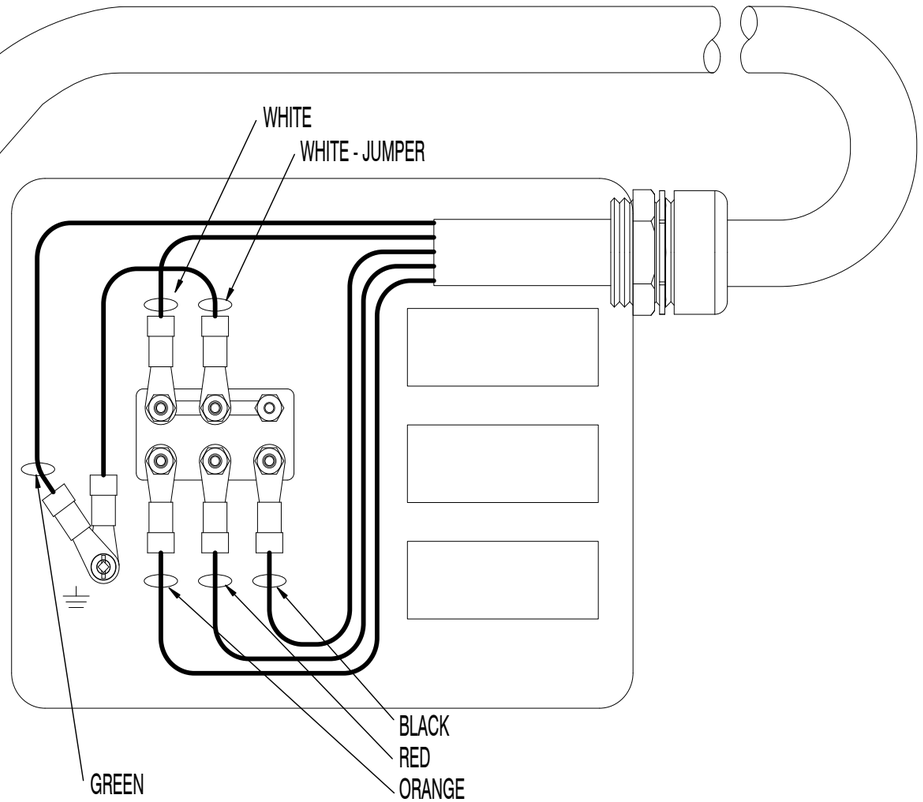
M144108AB M144109AB

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

V | W | X | Y | Z

LOCATED ON PLATFORM

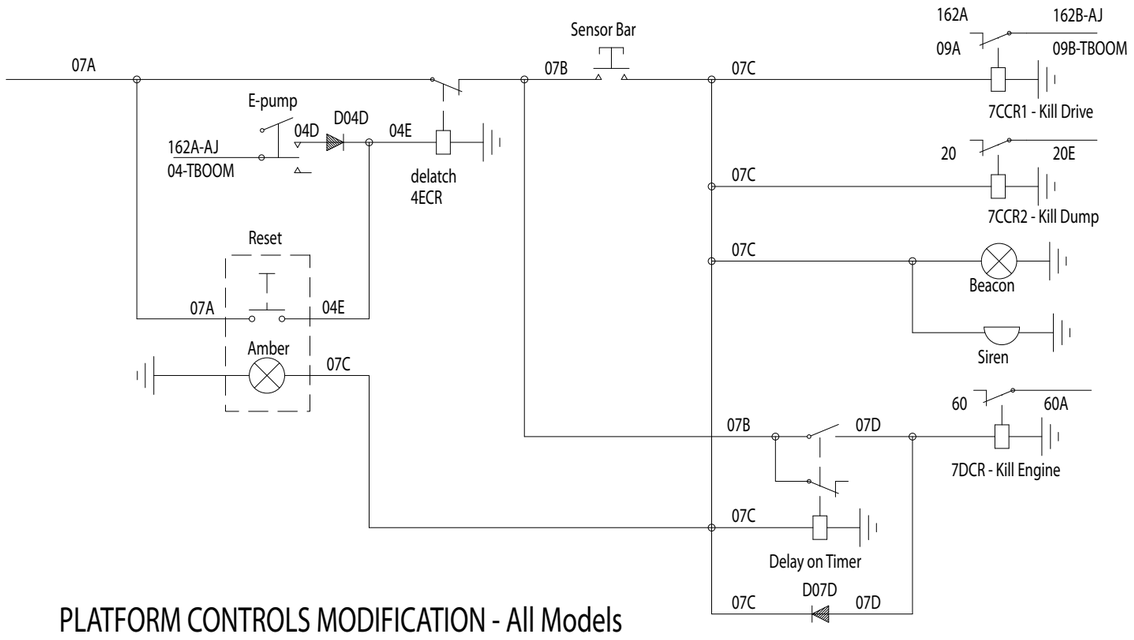




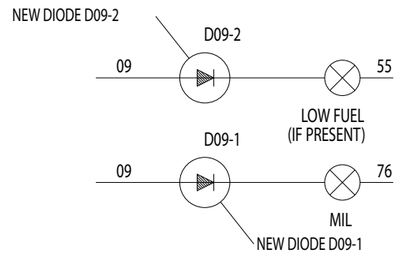
VIEW UNDER GENERATOR COVER

M148494AA_S3

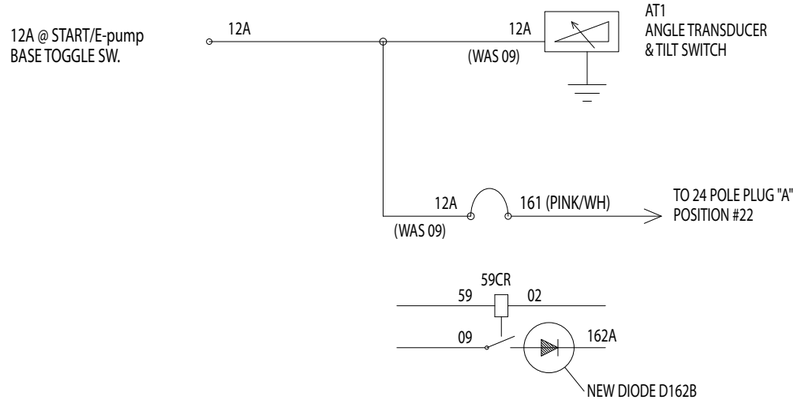
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PLATFORM CONTROLS MODIFICATION - All Models



BASE CONTROLS MODIFICATION -
Models with Deutz D2.9 or TD2.9 Engines



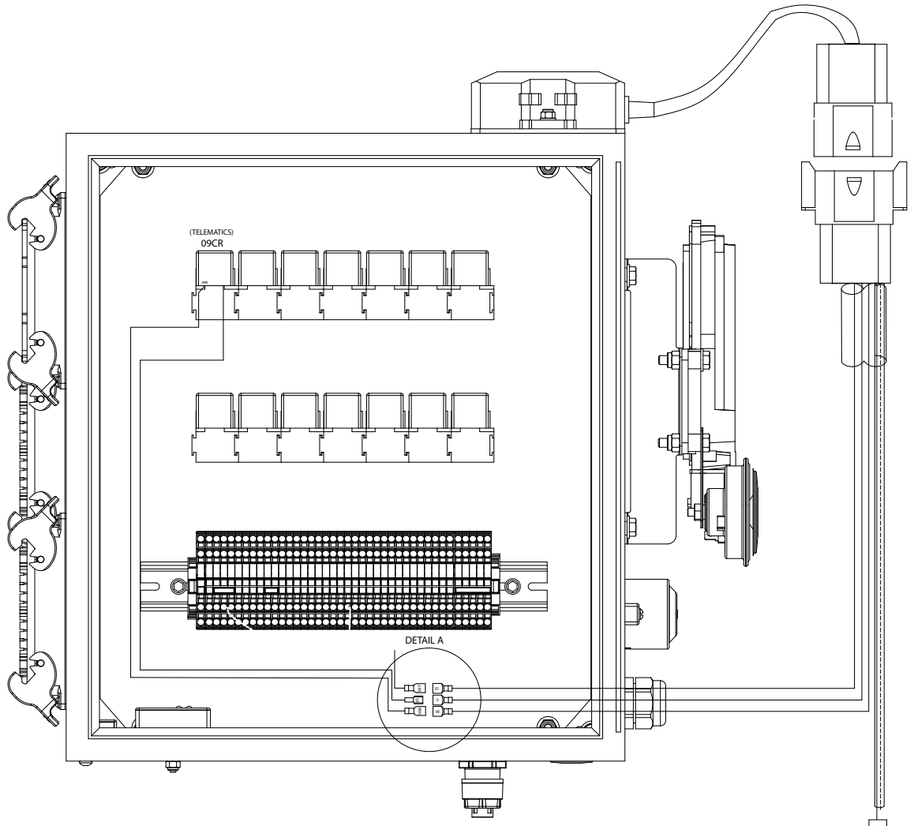
BASE CONTROLS MODIFICATION - AJ Models



BASE CONTROLS MODIFICATION - T Models

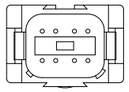
M166133AC

3.32 Telematics Wiring Diagram



DETAIL A SCALE 4:1



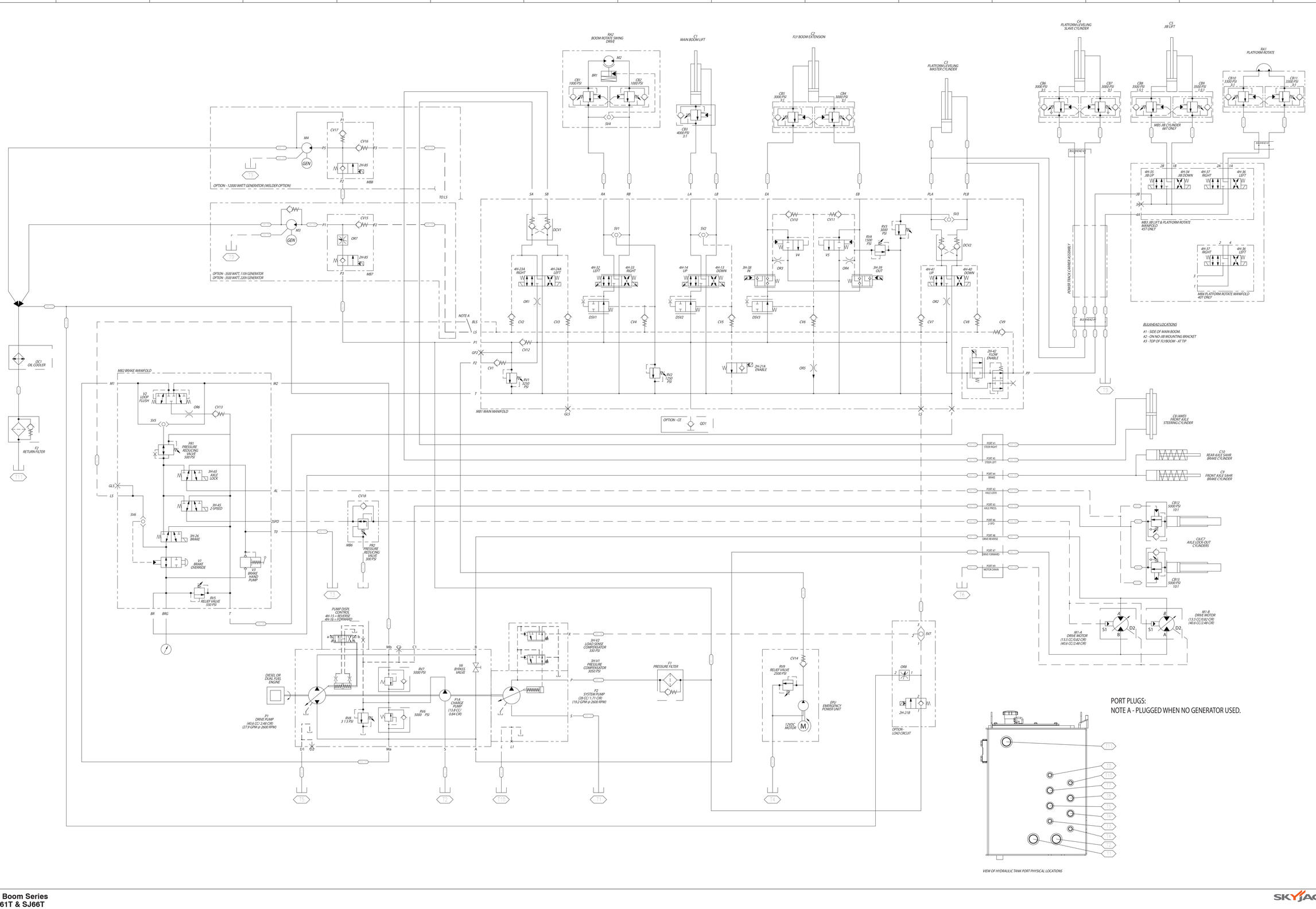


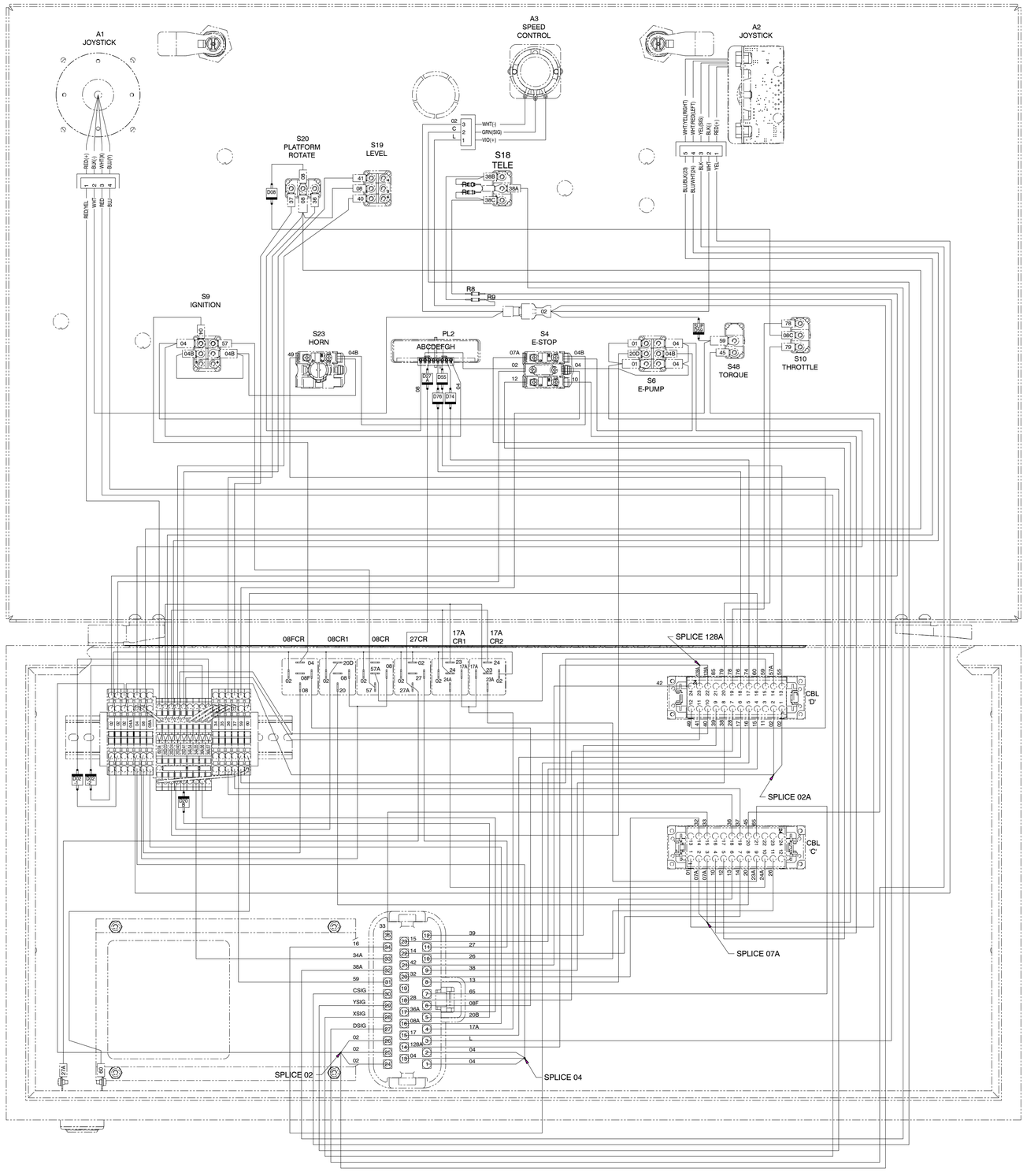
USE SEALING PLUG FOR ALL UNUSED CONNECTOR, CAVITIES, FOR THE FOLLOWING PINS # 5, 6, 7, 8.

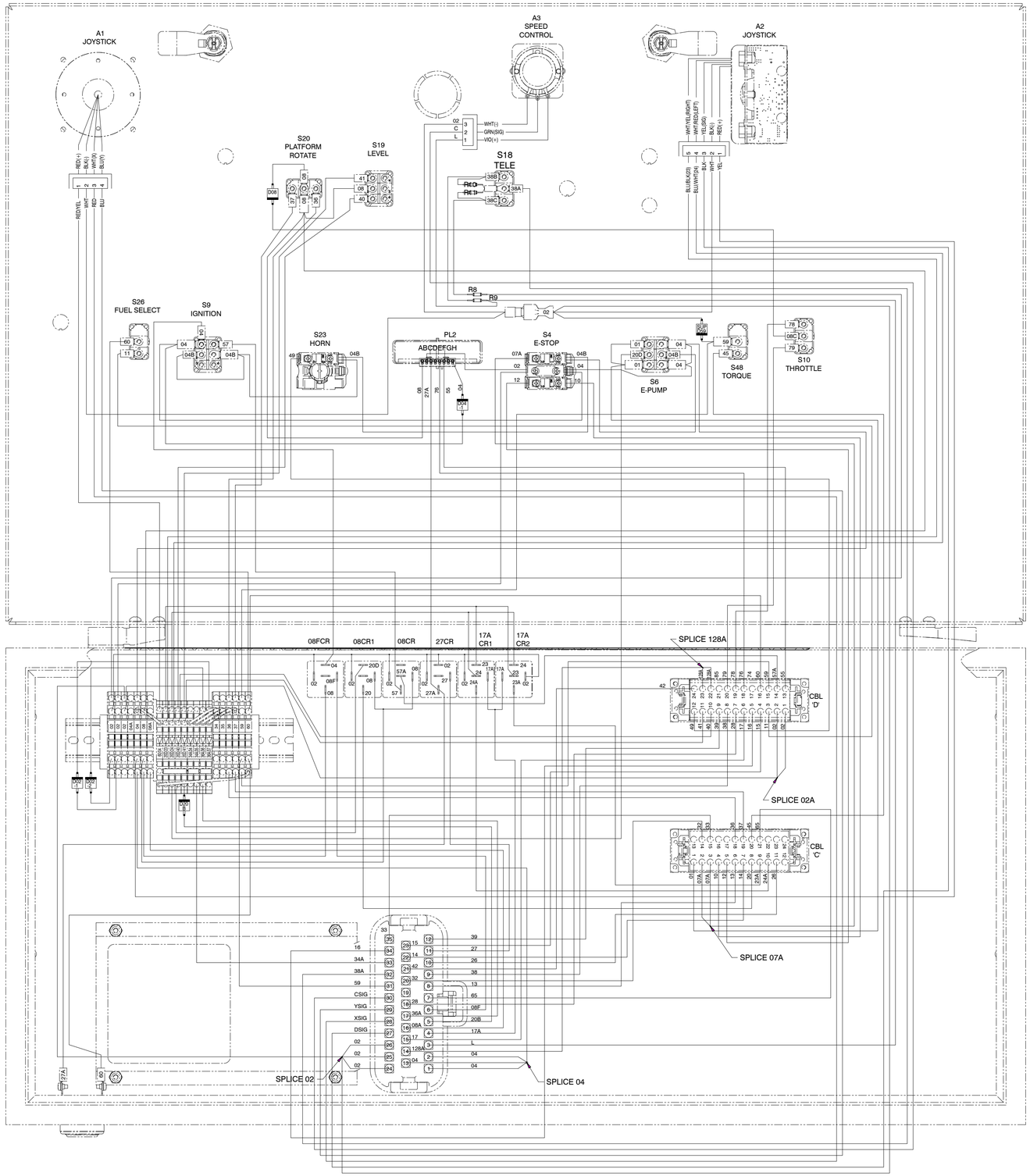
8 PIN CONNECTOR

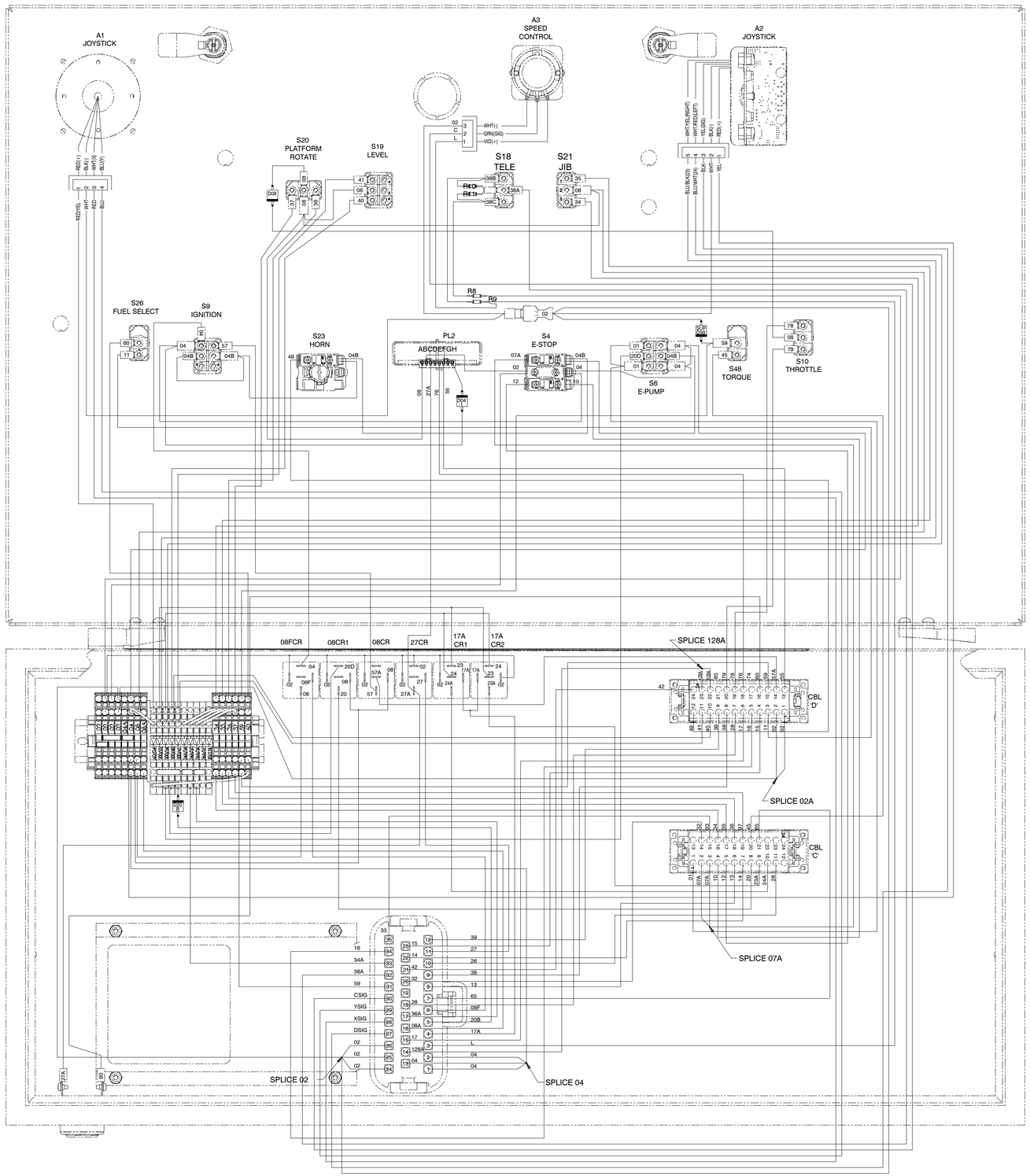
1	03B
2	02
3	9B
4	KEY
5	
6	
7	
8	

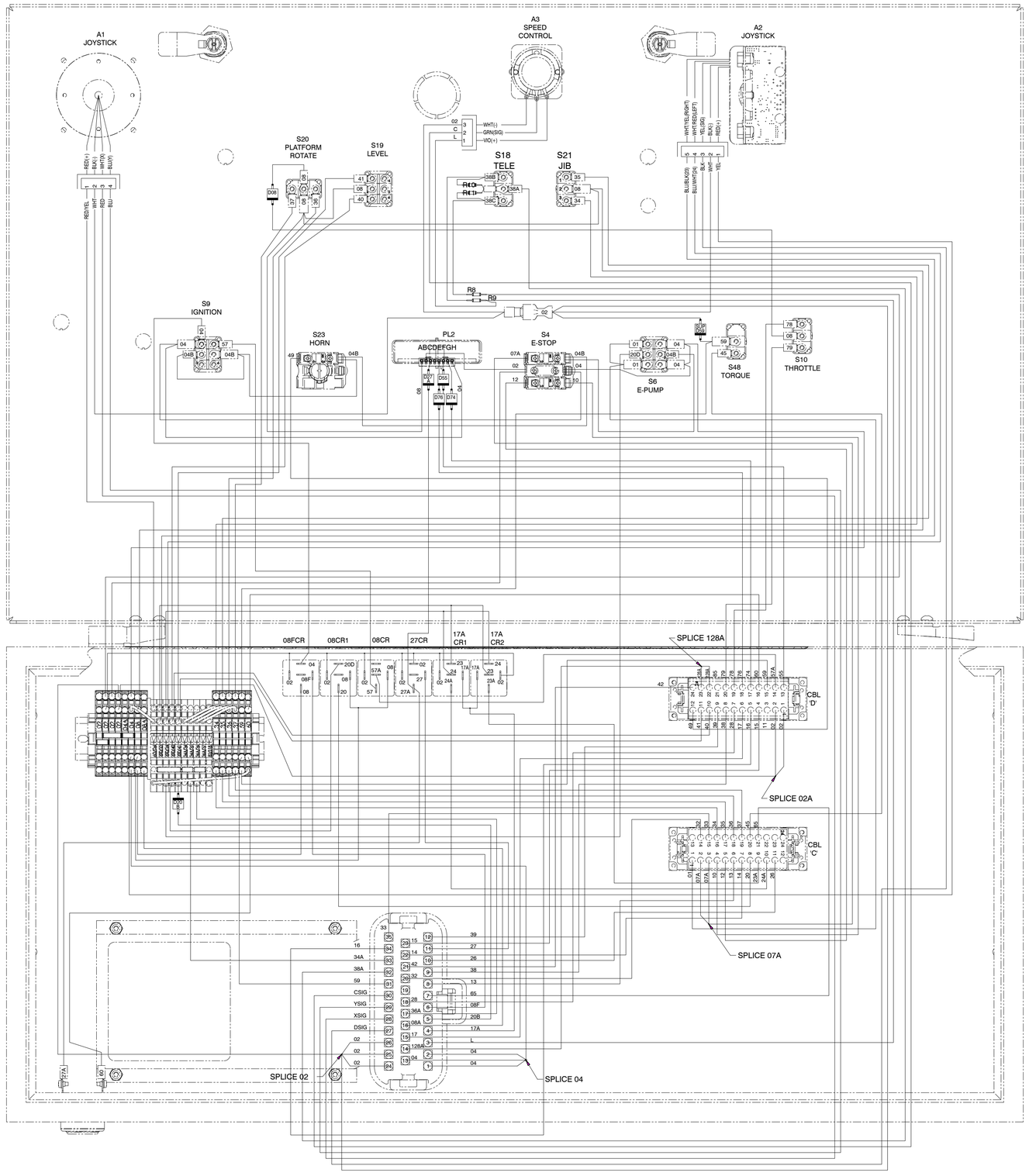
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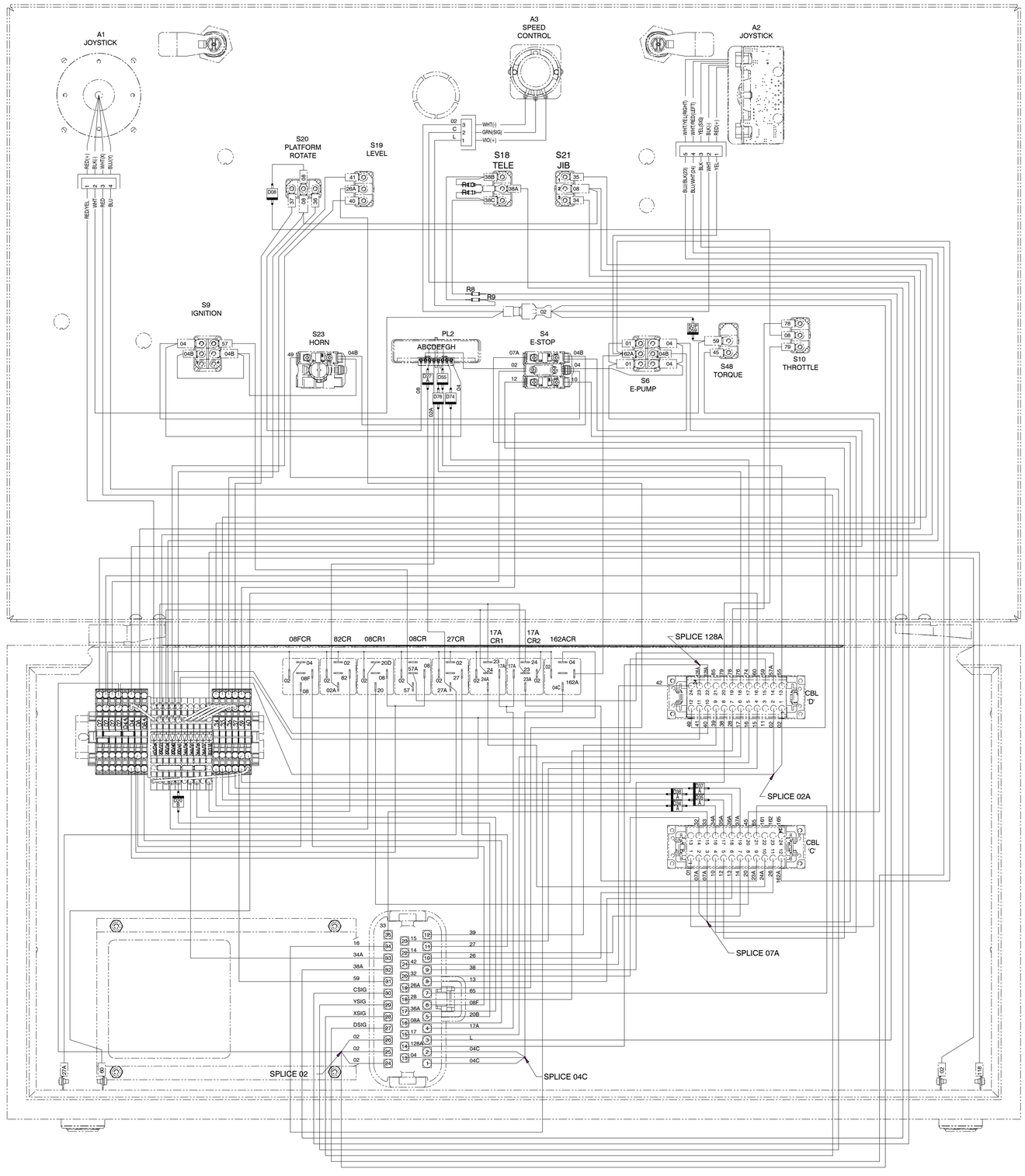

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R
S
T
U
V
W
X
Y
Z
OPTION - 12000 WATT GENERATOR (WELDER OPTION)
OPTION - 3500 WATT, 110V GENERATOR
OPTION - 3500 WATT, 220V GENERATOR
TO LS
NOTE A
OC1 OIL COOLER
F3 RETURN FILTER
MB2 BRAKE MANIFOLD
MB1 MAIN MANIFOLD
MB3 JIB LIFT & PLATFORM ROTATE MANIFOLD 437 ONLY
MB4 PLATFORM ROTATE MANIFOLD 407 ONLY
MB5 JIB CYLINDER 663 ONLY
RA2 BOOM ROTATE SWING DRIVE
C1 MAIN BOOM LIFT
C3 FLY BOOM EXTENSION
C2 PLATFORM LEVELING MASTER CYLINDER
C4 PLATFORM LEVELING SLAVE CYLINDER
C5 JIB LIFT
RA1 PLATFORM ROTATE
POWER TRACK CARRIER ASSEMBLY
BULKHEAD #1
BULKHEAD #2
BULKHEAD #3
BULKHEAD LOCATIONS
#1 - SIDE OF MAIN BOOM.
#2 - ON NO-JIB MOUNTING BRACKET
#3 - TOP OF FLYBOOM - AT TIP
PRESSURE REDUCING VALVE 500 PSI
AXLE LOCK
2-SPEED
BRAKE
BRAKE OVERRIDE
BRAKE HAND PUMP
RELIEF VALVE 550 PSI
LOOP FLUSH
PRESSURE REDUCING VALVE 3000 PSI
PUMP DISP. CONTROL 4H-15 = REVERSE 4H-16 = FORWARD
DIESEL OR DUAL FUEL ENGINE
P1 DRIVE PUMP 40.6 CC / 2.48 CIR) (27.9 GPM @ 2600 RPM)
P1A CHARGE PUMP (13.8 CC/ 0.84 CIR)
RV6 5000 PSI
RV7 5000 PSI
RV8 3 13 PSI
VA BYPASS VALVE
3H-V2 LOAD SENSE COMPENSATOR 330 PSI
3H-V1 PRESSURE COMPENSATOR 3050 PSI
P2 SYSTEM PUMP (28 CC/ 1.71 CIR) (19.2 GPM @ 2600 RPM)
F1 PRESSURE FILTER
RV9 RELIEF VALVE 2500 PSI
12VDC MOTOR
EPU EMERGENCY POWER UNIT
OPTION - LOAD CIRCUIT
OPTION - CE
QD1
RV1 3250 PSI
RV2 1250 PSI
RV3 3000 PSI
RV4 1500 PSI
2H-21A ENABLE
2H-21B FLOW ENABLE
4H-23A RIGHT
4H-24A LEFT
4H-32 LEFT
4H-33 RIGHT
4H-14 UP
4H-13 DOWN
3H-38 IN
3H-39 OUT
4H-41 UP
4H-40 DOWN
4H-35 JIB UP
4H-34 JIB DOWN
4H-37 RIGHT
4H-36 LEFT
4H-37 RIGHT
4H-36 LEFT
CB1 1000 PSI
CB2 1000 PSI
CB3 4000 PSI 3:1
CB4 3000 PSI 1:1
CB5 3000 PSI X1
CB6 3000 PSI X1
CB7 3000 PSI X1
CB8 3500 PSI 1.5:1
CB9 3500 PSI 1.5:1
CB10 3300 PSI X1
CB11 3300 PSI X1
CB12 5000 PSI 10:1
CB13 5000 PSI 10:1
C8 (4WD) FRONT AXLE STEERING CYLINDER
C7/C7 AXLE LOCK-OUT CYLINDERS
C10 REAR AXLE SAHR BRAKE CYLINDER
C9 FRONT AXLE SAHR BRAKE CYLINDER
M1-A DRIVE MOTOR (13.5 CC/0.82 CIR) (40.6 CC/2.48 CIR)
M1-B DRIVE MOTOR (13.5 CC/0.82 CIR) (40.6 CC/2.48 CIR)
PORT #1 STEER RIGHT
PORT #2 STEER LEFT
PORT #3 BRAKE
PORT #4 BRAKE
PORT #5 AXLE LOCK
PORT #5 AXLE PRESS.
PORT #6 3-SPD
PORT #6 DRIVE REVERSE
PORT #7 DRIVE FORWARD
PORT #8 MOTOR DRAIN
PORT PLUGS:
NOTE A - PLUGGED WHEN NO GENERATOR USED.
VIEW OF HYDRAULIC TANK PORT PHYSICAL LOCATIONS
M160062AB

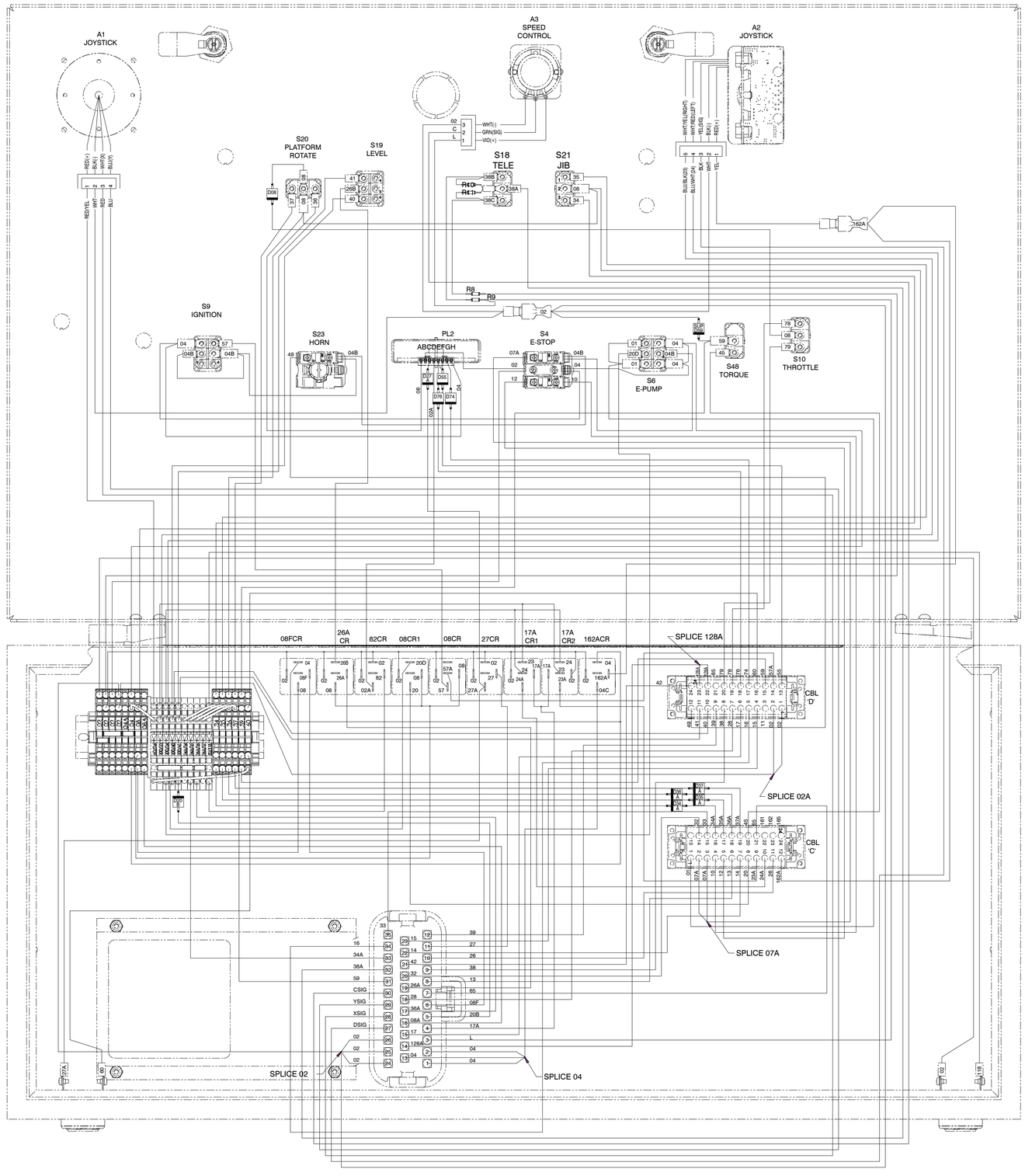

A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
08FCR
08CR1
08CR
27CR
17A CR1
17A CR2
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL 'D'
CBL 'C'
Boom-A


A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S26 FUEL SELECT
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
R8
R9
08FCR
08CR1
08CR
27CR
17A CR1
17A CR2
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL D
CBL C

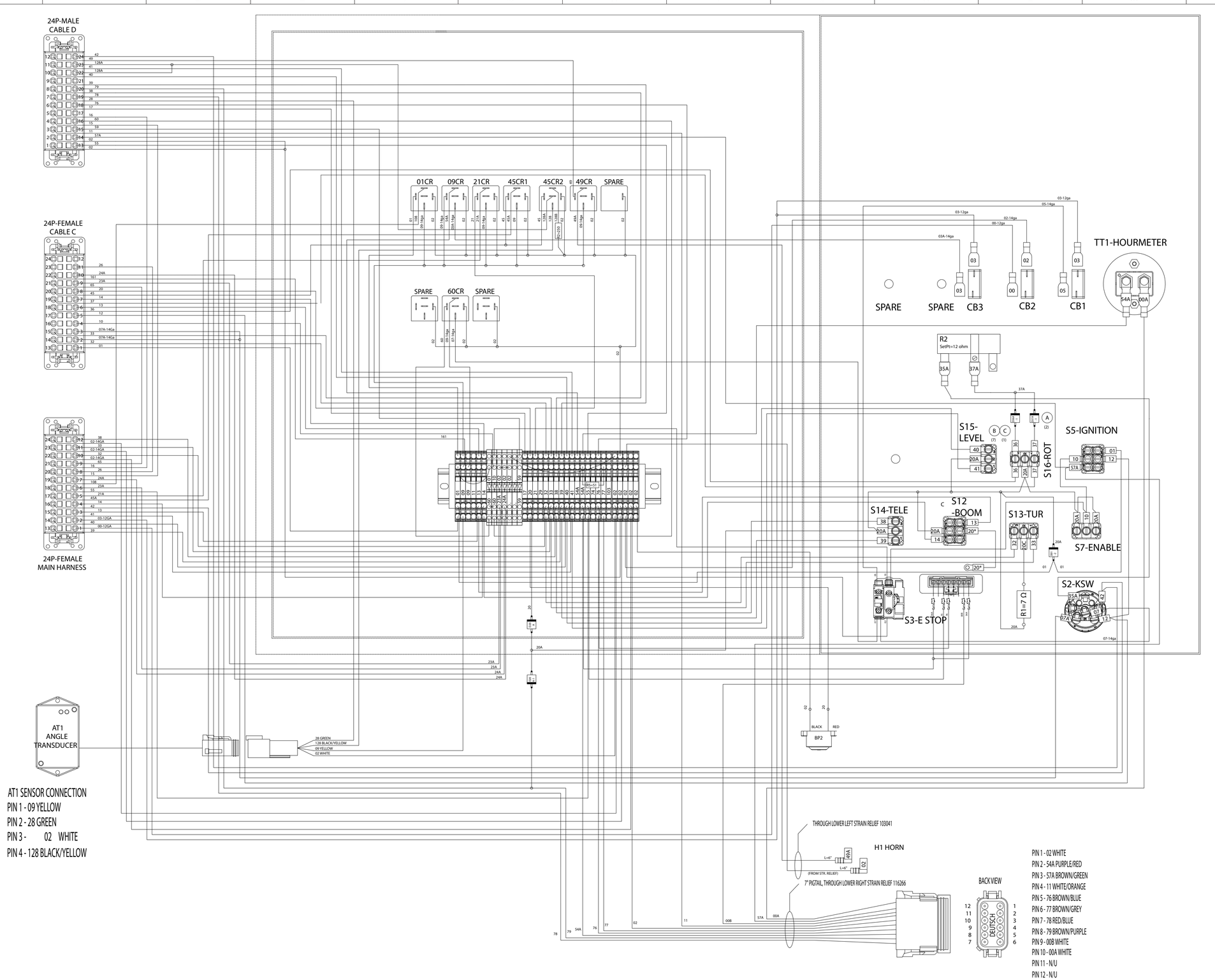

A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S21 JIB
S26 FUEL SELECT
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
R8
R9
08FCR
08CR1
08CR
27CR
17A CR1
17A CR2
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL D
CBL C


A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S21 JIB
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
08FCR
08CR1
08CR
27CR
17A CR1
17A CR2
SPLICE 128A
SPLICE 02A
SPLICE 07A
SPLICE 02
SPLICE 04
CBL 'D'
CBL 'C'


A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S21 JIB
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
R8
R9
08FCR
82CR
08CR1
08CR
27CR
17A CR1
17A CR2
162ACR
SPLICE 128A
CBL 'D'
SPLICE 02A
CBL 'C'
SPLICE 07A
SPLICE 02
SPLICE 04C


A1 JOYSTICK
A3 SPEED CONTROL
A2 JOYSTICK
S20 PLATFORM ROTATE
S19 LEVEL
S18 TELE
S21 JIB
S9 IGNITION
S23 HORN
PL2 ABCDEFGH
S4 E-STOP
S6 E-PUMP
S48 TORQUE
S10 THROTTLE
R8
R9
162A
08FCR
26A CR
82CR
08CR1
08CR
27CR
17A CR1
17A CR2
162ACR
SPLICE 128A
CBL 'D'
SPLICE 02A
CBL 'C'
SPLICE 07A
SPLICE 02
SPLICE 04

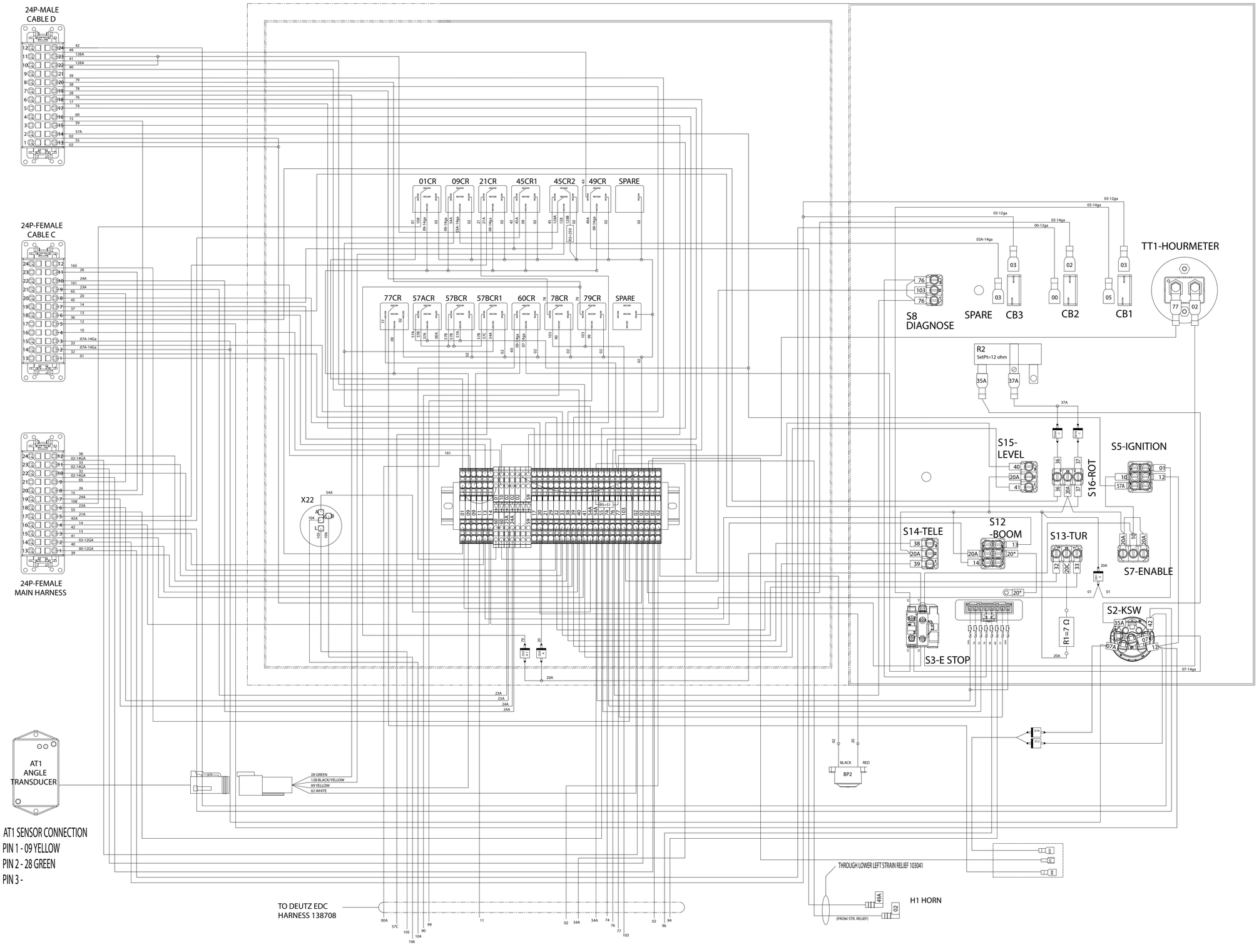
3.40 Base Control Console Diagram (61T ANSI/CSA - GM Dual Fuel Engine)



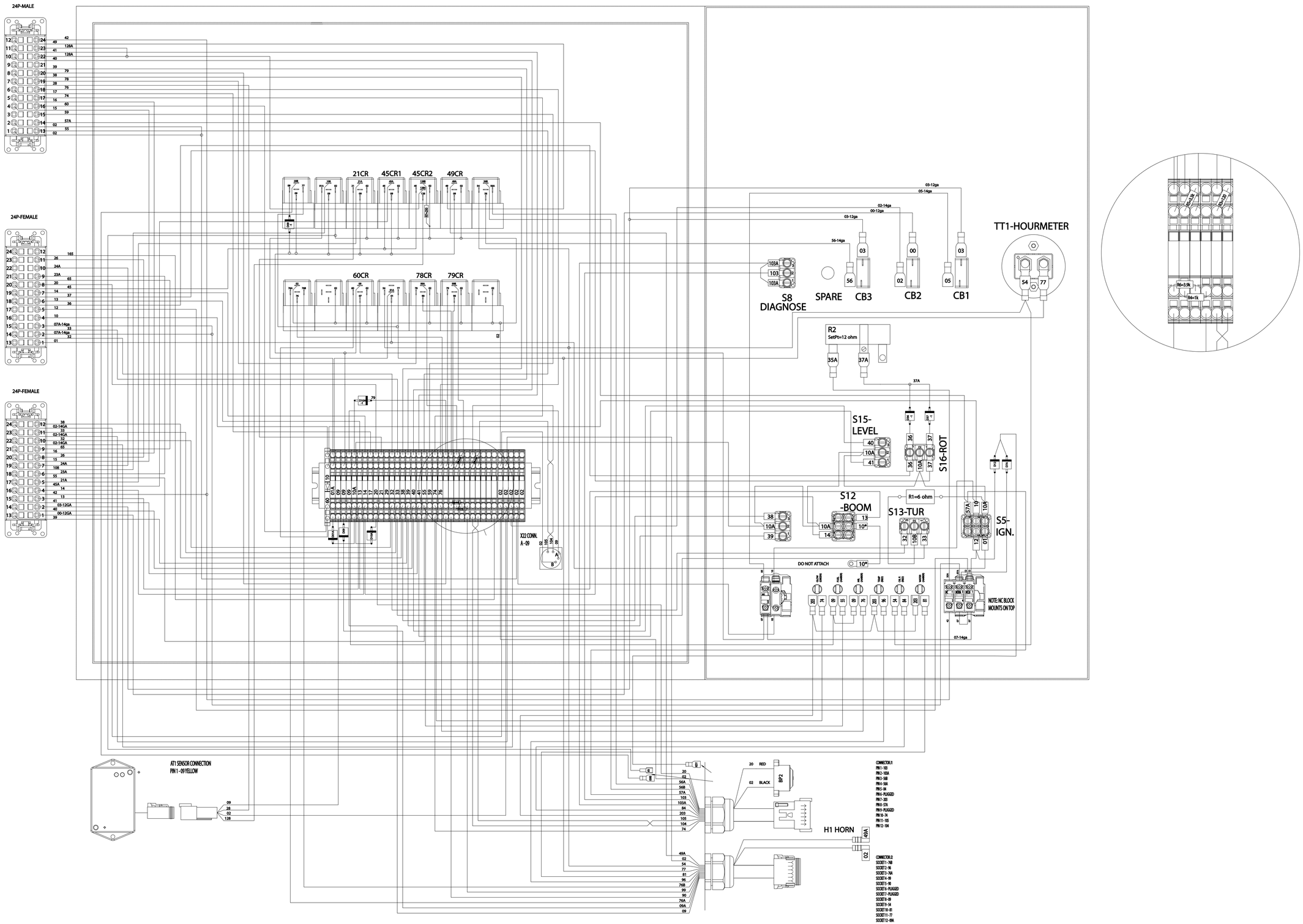
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

PIN 1 - 02 WHITE
PIN 2 - 54A PURPLE/RED
PIN 3 - 57A BROWN/GREEN
PIN 4 - 11 WHITE/ORANGE
PIN 5 - 76 BROWN/BLUE
PIN 6 - 77 BROWN/GREY
PIN 7 - 78 RED/BLUE
PIN 8 - 79 BROWN/PURPLE
PIN 9 - 00B WHITE
PIN 10 - 00A WHITE
PIN 11 - N/U
PIN 12 - N/U

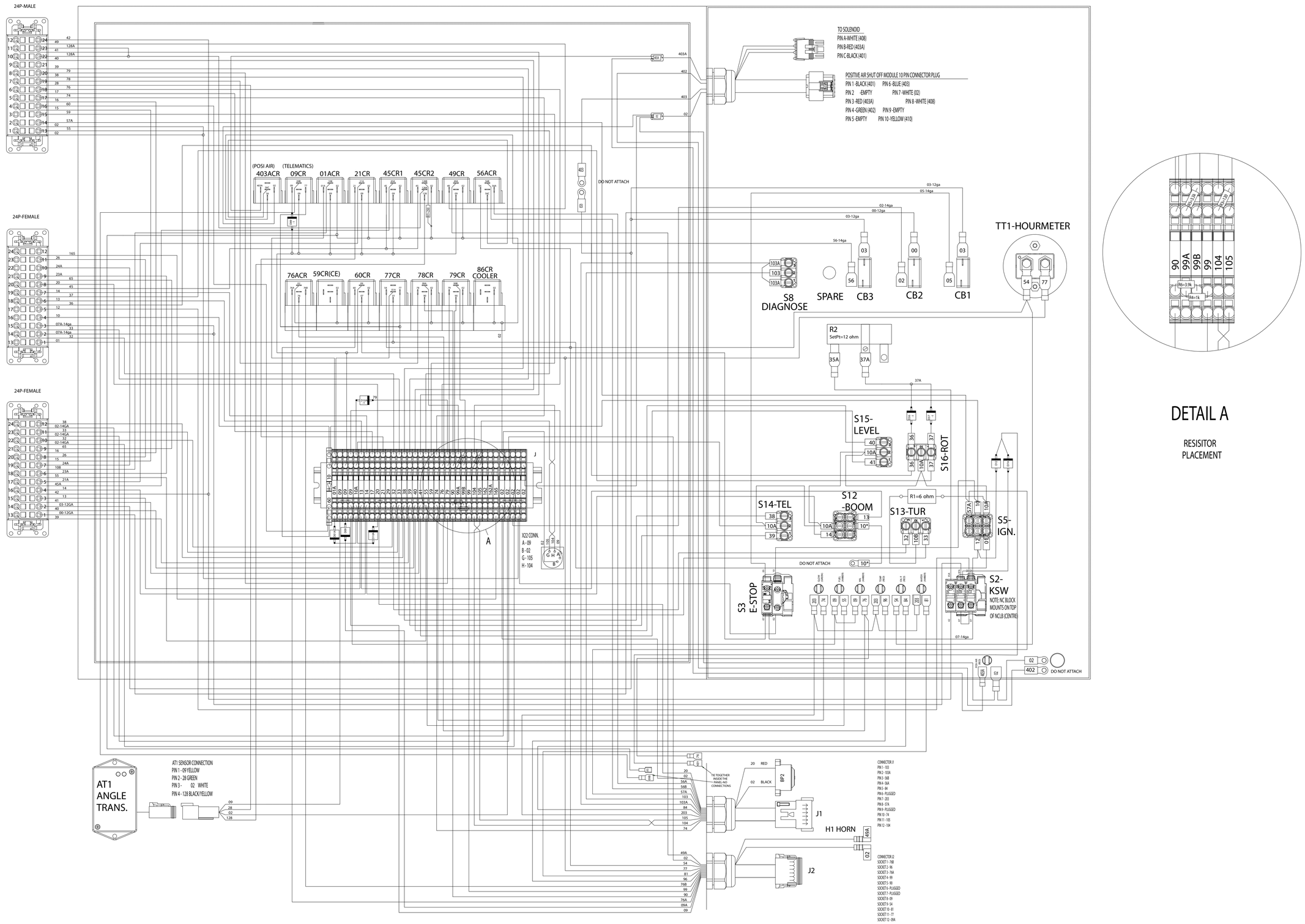
M16551BAB


24P-MALE
CABLE D
24P-FEMALE
CABLE C
24P-FEMALE
MAIN HARNESS
01CR
09CR
21CR
45CR1
45CR2
49CR
SPARE
77CR
57ACR
57BCR
57BCR1
60CR
78CR
79CR
SPARE
X22
TT1-HOURMETER
S8
DIAGNOSE
SPARE
CB3
CB2
CB1
R2
SetPt=12 ohm
S15-
LEVEL
S16-ROT
S5-IGNITION
S14-TELE
S12
-BOOM
S13-TUR
S7-ENABLE
S2-KSW
S3-E STOP
R1=7 Ω
AT1
ANGLE
TRANSDUCER
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 -
28 GREEN
128 BLACK/YELLOW
09 YELLOW
02 WHITE
BP2
BLACK
RED
THROUGH LOWER LEFT STRAIN RELIEF 103041
H1 HORN
(FROM STR. RELIEF)
TO DEUTZ EDC
HARNESS 138708
07-14ga
M16551EAE

3.42 Base Control Console Diagram (61T ANSI/CSA - Deutz TD2.9L Diesel Engine)



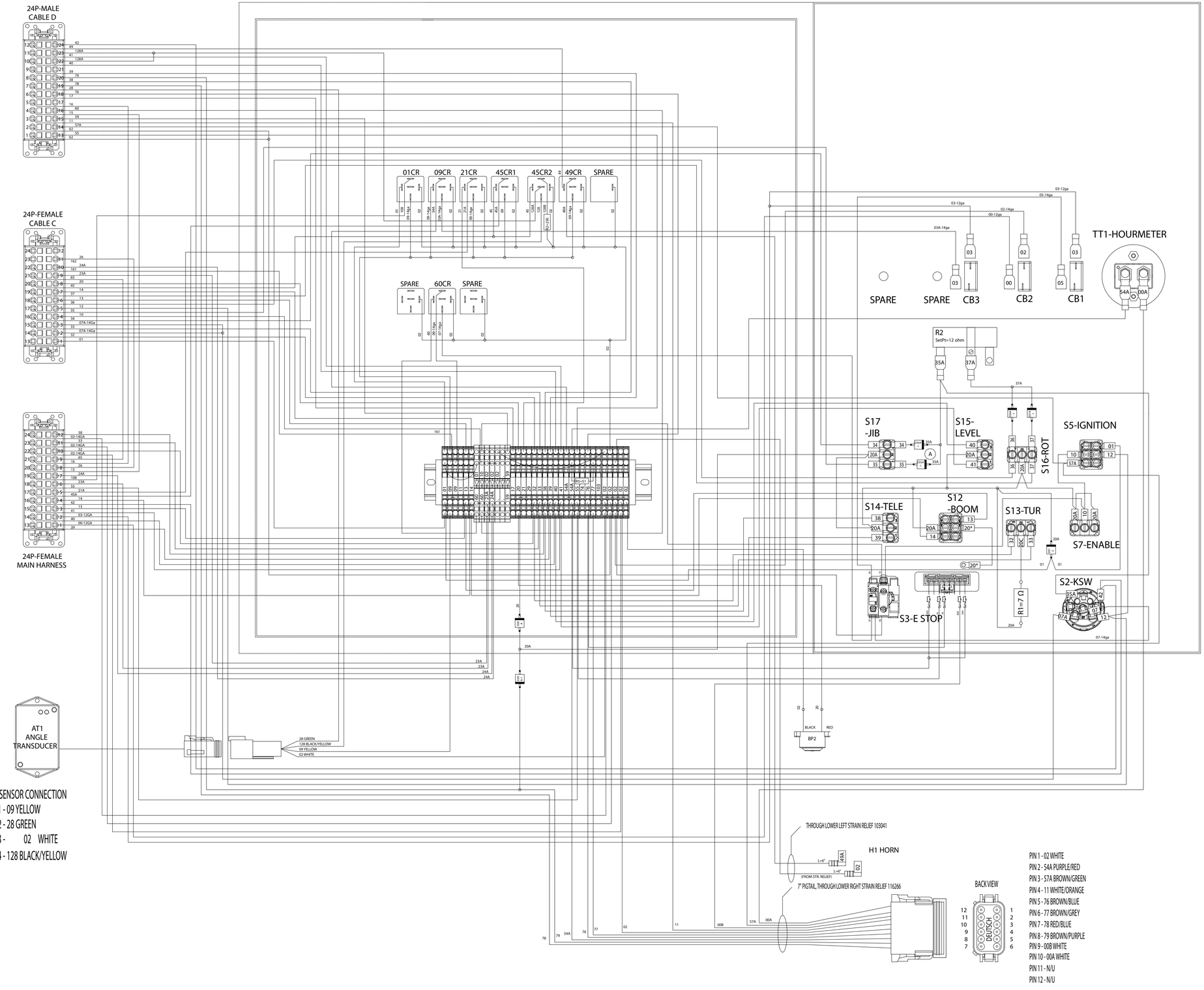
3.43 Base Control Console Diagram (61T ANSI/CSA - Deutz TD2.9L Diesel Engine with Positive Air Shut-Off Option)



DETAIL A

RESISITOR PLACEMENT

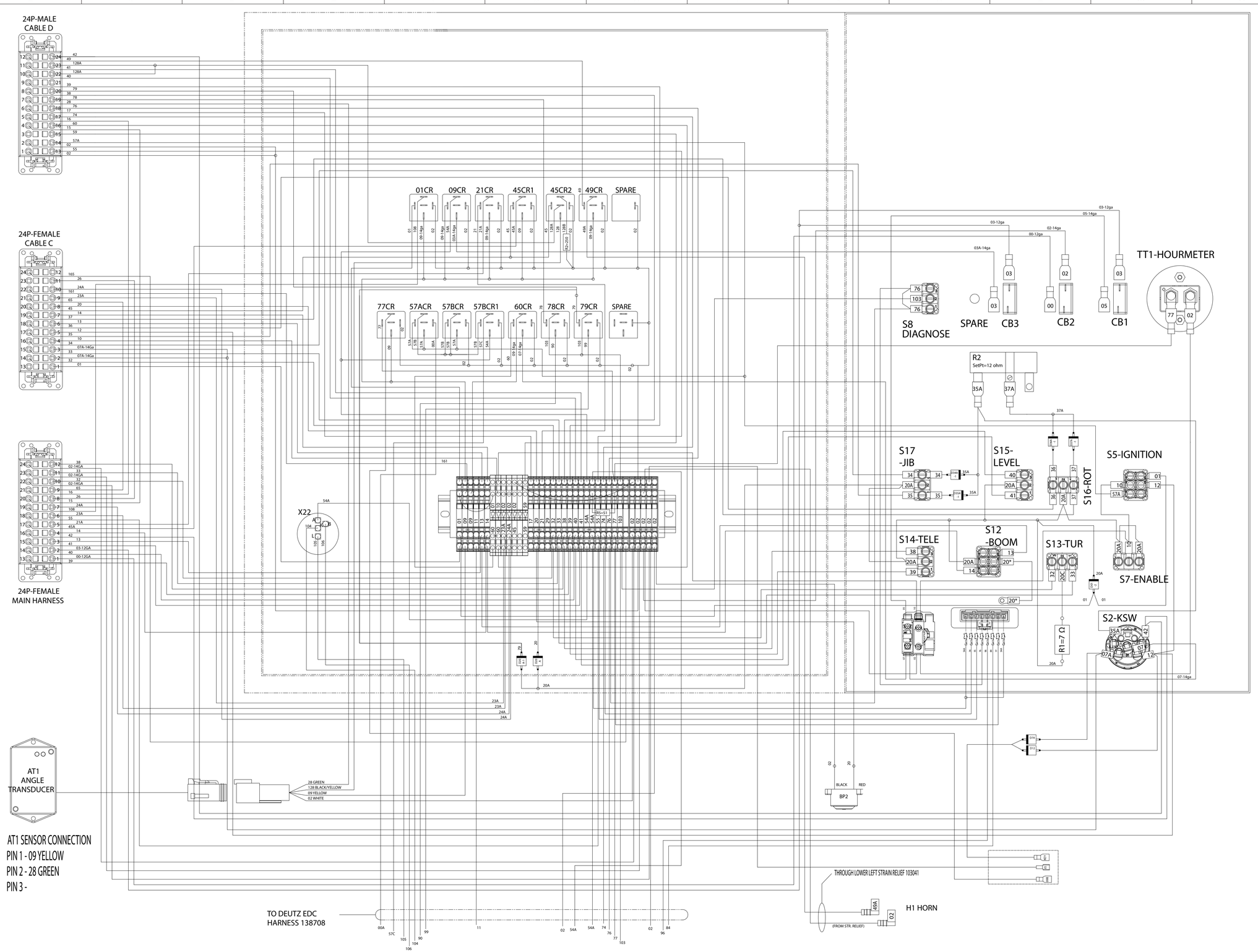
3.44 Base Control Console Diagram (66T ANSI/CSA - GM Dual Fuel)



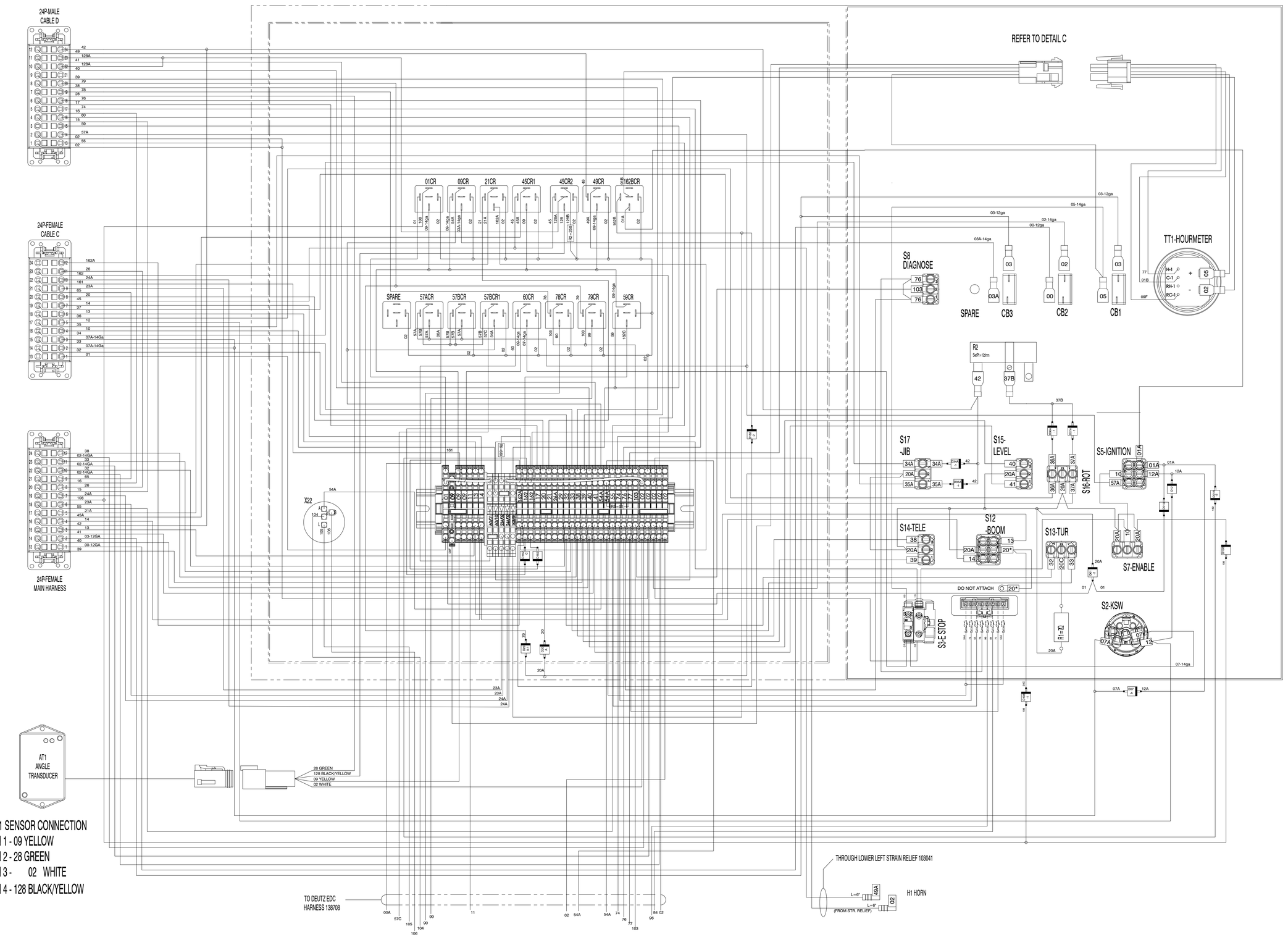
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

PIN 1 - 02 WHITE
PIN 2 - 54A PURPLE/RED
PIN 3 - 57A BROWN/GREEN
PIN 4 - 11 WHITE/ORANGE
PIN 5 - 76 BROWN/BLUE
PIN 6 - 77 BROWN/GREY
PIN 7 - 78 RED/BLUE
PIN 8 - 79 BROWN/PURPLE
PIN 9 - 00B WHITE
PIN 10 - 00A WHITE
PIN 11 - N/U
PIN 12 - N/U

M16581AB


24P-MALE
CABLE D
24P-FEMALE
CABLE C
24P-FEMALE
MAIN HARNESS
01CR
09CR
21CR
45CR1
45CR2
49CR
SPARE
77CR
57ACR
57BCR
57BCR1
60CR
78CR
79CR
SPARE
X22
TT1-HOURMETER
S8
DIAGNOSE
SPARE
CB3
CB2
CB1
R2
SetPt=12 ohm
S17
-JIB
S15-
LEVEL
S16-ROT
S5-IGNITION
S14-TELE
S12
-BOOM
S13-TUR
S7-ENABLE
S2-KSW
R1=7 Ω
AT1
ANGLE
TRANSDUCER
AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 -
28 GREEN
128 BLACK/YELLOW
09 YELLOW
02 WHITE
BP2
BLACK
RED
THROUGH LOWER LEFT STRAIN RELIEF 103041
H1 HORN
(FROM STR. RELIEF)
TO DEUTZ EDC
HARNESS 138708

3.46 Base Control Console Diagram (66T CE - Deutz D2011 Diesel Engine)



DETAIL C

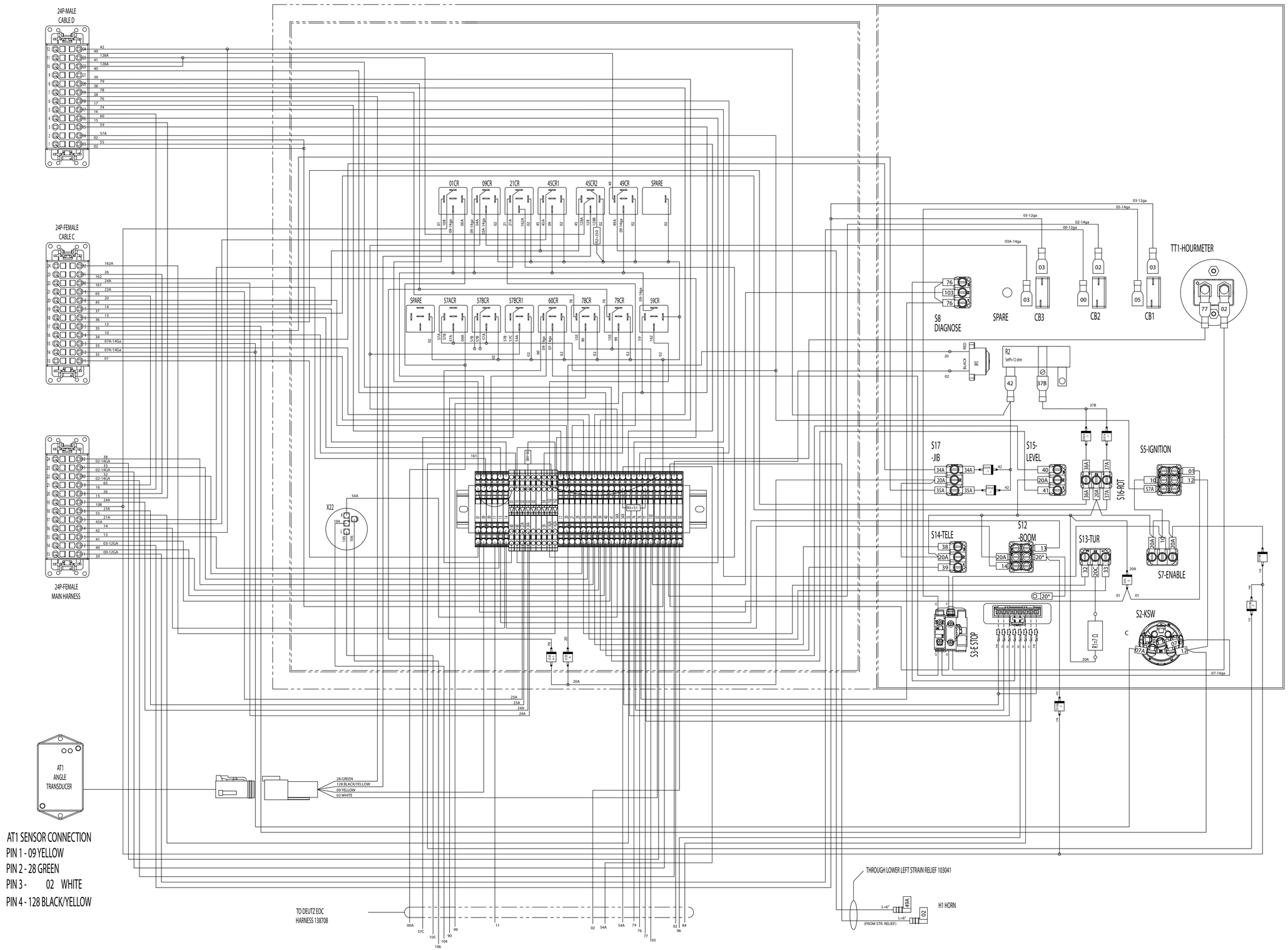


CONNECTOR(FEMALE)

PIN1 - 05 PURPLE
PIN2 - 77 BROWN
PIN3 - 01B
PIN4 - 128 BLACK
PIN5 - 09F YELLOW
PIN6 - 02 WHITE

AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

3.47 Base Control Console Diagram (66T AS - Deutz D2011 Diesel Engine)



Print This Page

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

R S T U V W X Y Z

24P-MALE

24P-FEMALE

24P-FEMALE

21CR 45CR1 45CR2 49CR

60CR 78CR 79CR

TT1-HOURMETER

S8 DIAGNOSE

SPARE

CB3

CB2

CB1

R2 SetPt=12 ohm

S17 -JIB

S15- LEVEL

S16-ROT

S12 -BOOM

R1=6 ohm

S13-TUR

S5- IGN.

DO NOT ATTACH

NOTE: NC BLOCK MOUNTS ON TOP

07-14ga

X22 CONN. A - 09

ATI SENSOR CONNECTION PIN 1 - 09 YELLOW

H1 HORN

BP2

20 RED

02 BLACK

CONNECTOR J1
PIN 1 - 103
PIN 2 - 103A
PIN 3 - 56B
PIN 4 - 56A
PIN 5 - 84
PIN 6 - PLUGGED
PIN 7 - 203
PIN 8 - 57A
PIN 9 - PLUGGED
PIN 10 - 74
PIN 11 - 105
PIN 12 - 104

CONNECTOR J2
SOCKET 1 - 76B
SOCKET 2 - 96
SOCKET 3 - 76A
SOCKET 4 - 99
SOCKET 5 - 90
SOCKET 6 - PLUGGED
SOCKET 7 - PLUGGED
SOCKET 8 - 09
SOCKET 9 - 54
SOCKET 10 - 81
SOCKET 11 - 77
SOCKET 12 - 09A

M16481BAE

24P-MALE

24P-FEMALE

24P-FEMALE

(POSI AIR) (TELEMATICS)

403ACR | 09CR | 01ACR | 21CR | 45CR1 | 45CR2 | 49CR | 56ACR

76ACR | 59CR(CE) | 60CR | 77CR | 78CR | 79CR | 86CR COOLER

DO NOT ATTACH

TO SOLENOID
PIN A-WHITE (408)
PIN B-RED (403A)
PIN C-BLACK (401)

POSITIVE AIR SHUT OFF MODULE 10 PIN CONNECTOR PLUG
PIN 1 -BLACK (401) PIN 6 -BLUE (403)
PIN 2 -EMPTY PIN 7 -WHITE (02)
PIN 3 -RED (403A) PIN 8 -WHITE (408)
PIN 4 -GREEN (402) PIN 9 -EMPTY
PIN 5 -EMPTY PIN 10 -YELLOW (410)

TT1-HOURMETER

S8 DIAGNOSE | SPARE | CB3 | CB2 | CB1

R2 SetPt=12 ohm

S17 -JIB | S15- LEVEL | S16-ROT

S14-TEL | S12 -BOOM | S13-TUR | S5- IGN.

R1=6 ohm

S3 E-STOP

S2- KSW
NOTE: NC BLOCK MOUNTS ON TOP OF NCLB (CENTRE)

DETAIL A

RESISITOR PLACEMENT

90 | 99A | 99B | 99 | 104 | 105

R6=3.9k | R4=1k

X22 CONN.
A - 09
B - 02
G - 105
H - 104

AT1 ANGLE TRANS.

AT1 SENSOR CONNECTION
PIN 1 - 09 YELLOW
PIN 2 - 28 GREEN
PIN 3 - 02 WHITE
PIN 4 - 128 BLACK/YELLOW

TIE TOGETHER INSIDE THE PANEL-NO CONNECTIONS

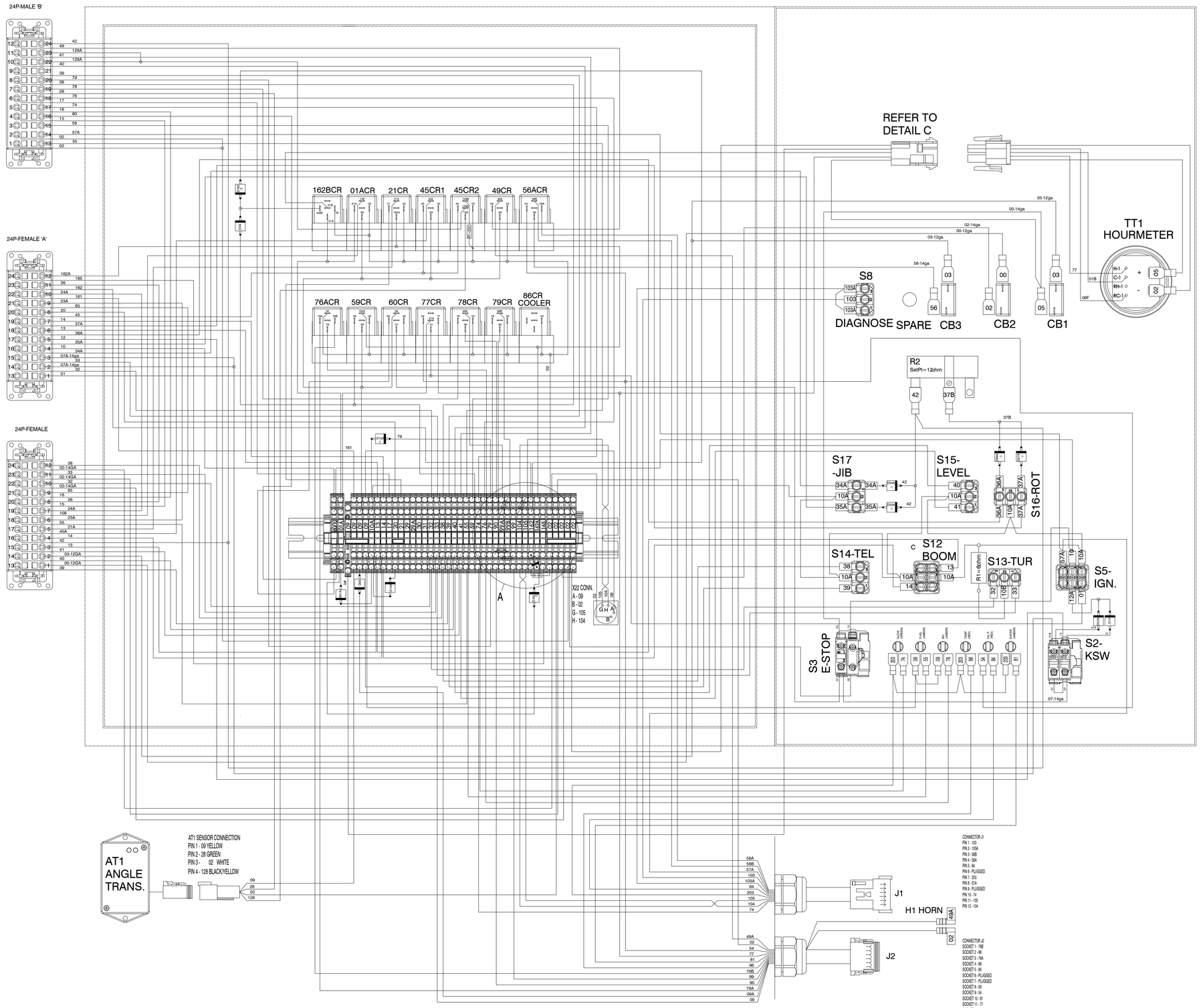
BP2 | J1 | H1 HORN | J2

CONNECTOR J1
PIN 1 - 103
PIN 2 - 103A
PIN 3 - 56B
PIN 4 - 56A
PIN 5 - 84
PIN 6 - PLUGGED
PIN 7 - 203
PIN 8 - 57A
PIN 9 - PLUGGED
PIN 10 - 74
PIN 11 - 105
PIN 12 - 104

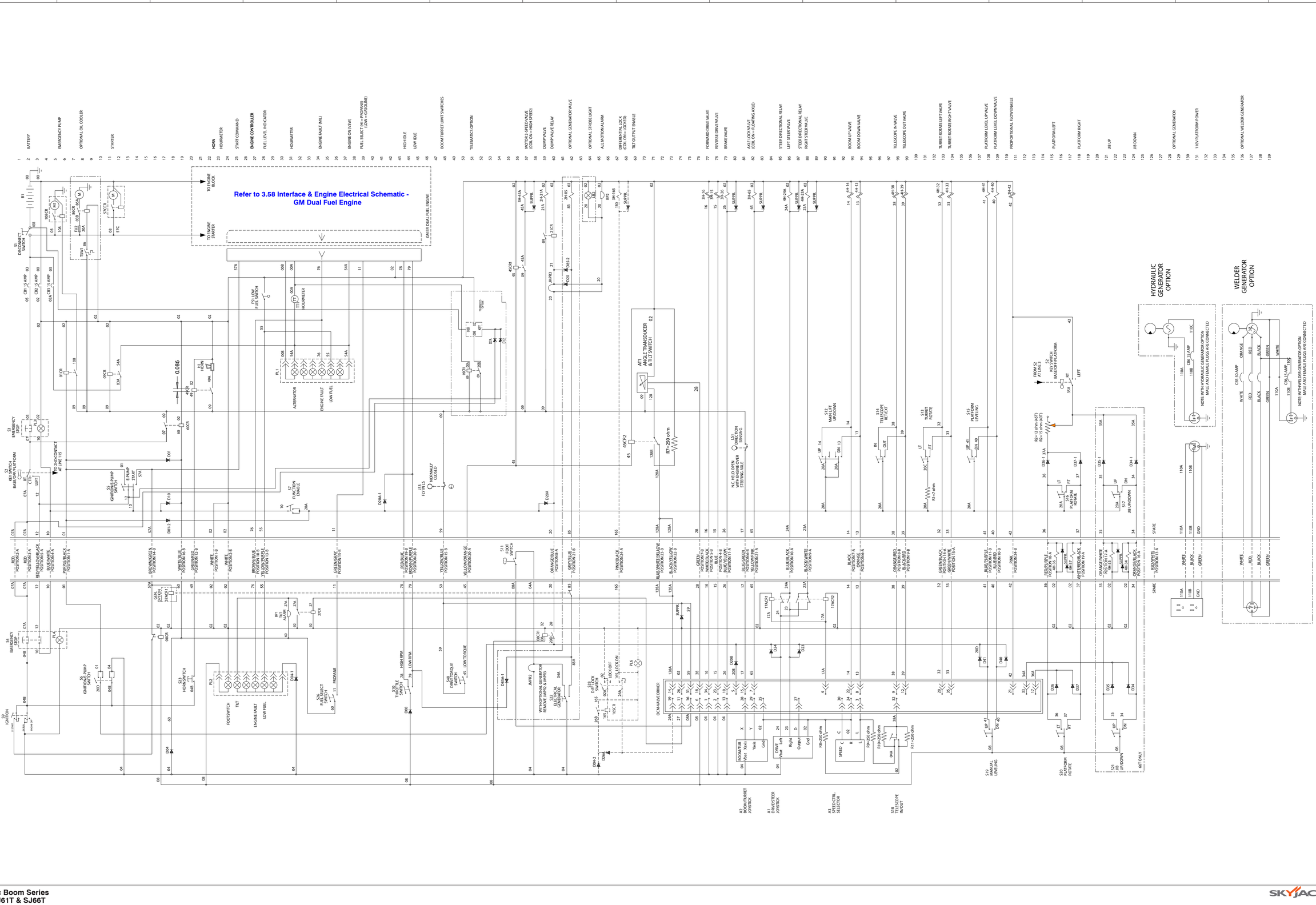
CONNECTOR J2
SOCKET 1 - 76B
SOCKET 2 - 96
SOCKET 3 - 76A
SOCKET 4 - 99
SOCKET 5 - 90
SOCKET 6 - PLUGGED
SOCKET 7 - PLUGGED
SOCKET 8 - 09
SOCKET 9 - 54
SOCKET 10 - 81
SOCKET 11 - 77
SOCKET 12 - 09A

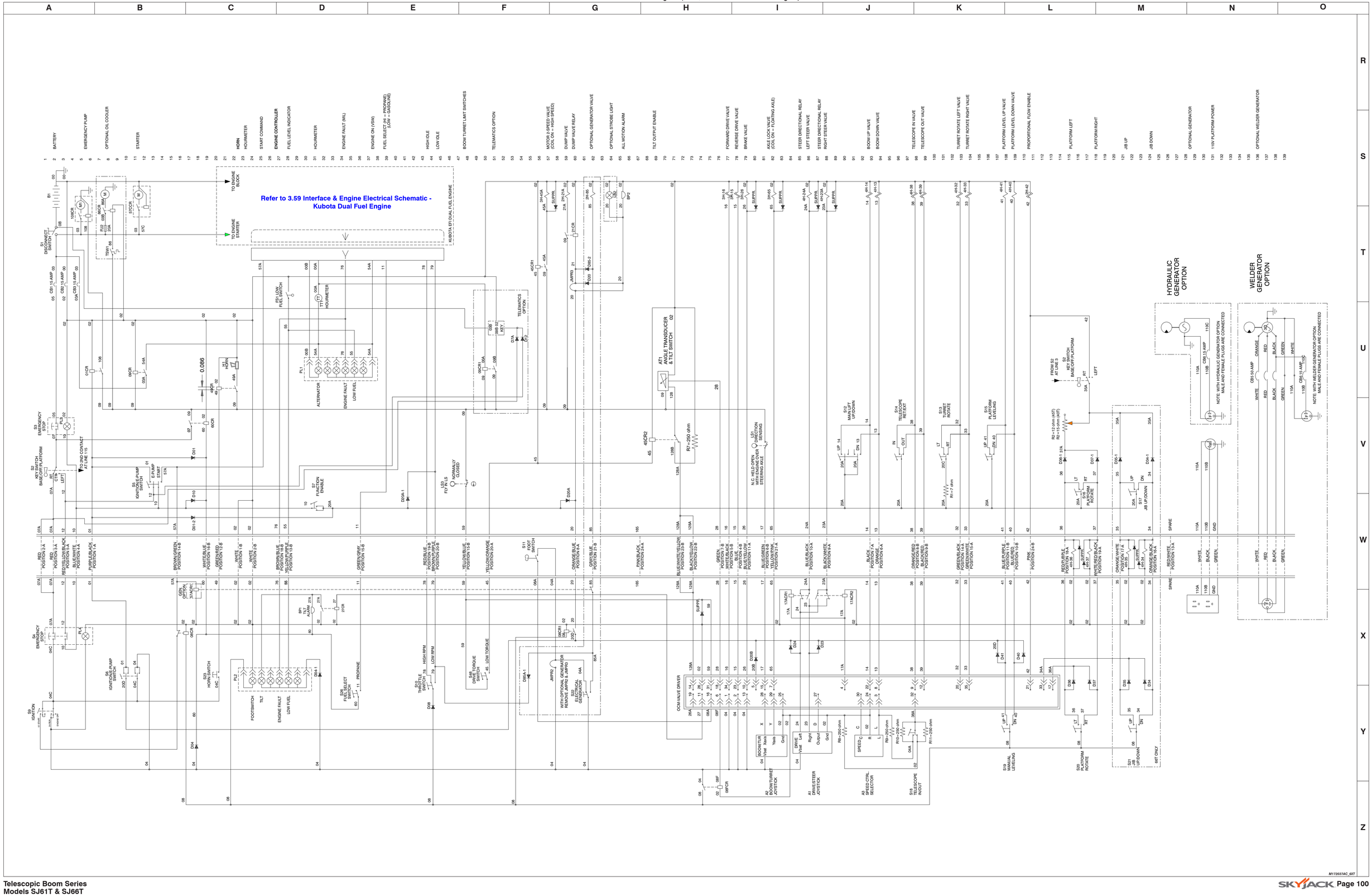
M171648AB

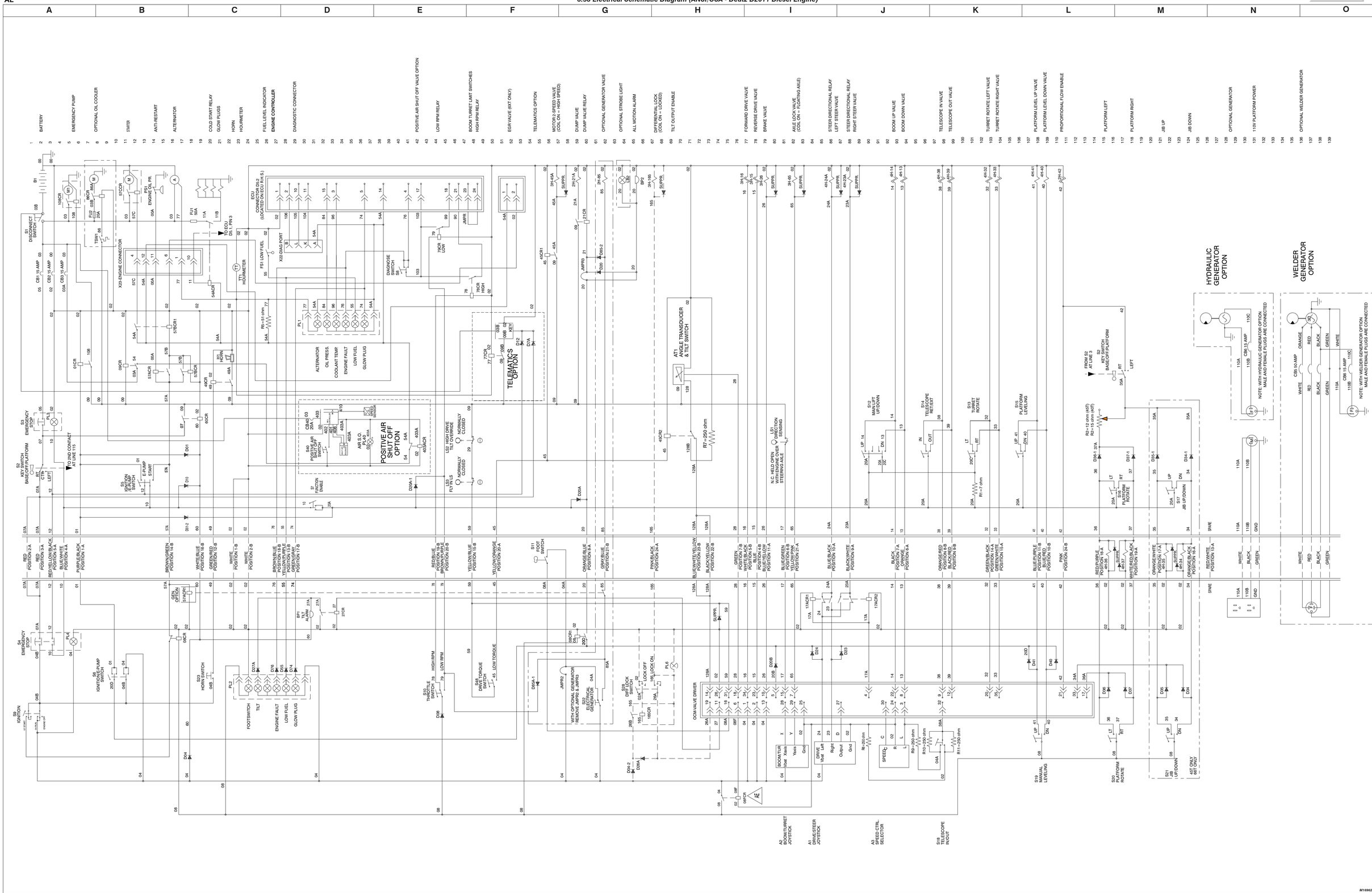
3.50 Base Control Console Diagram (66T CE - Deutz TD2.9L Diesel Engine)

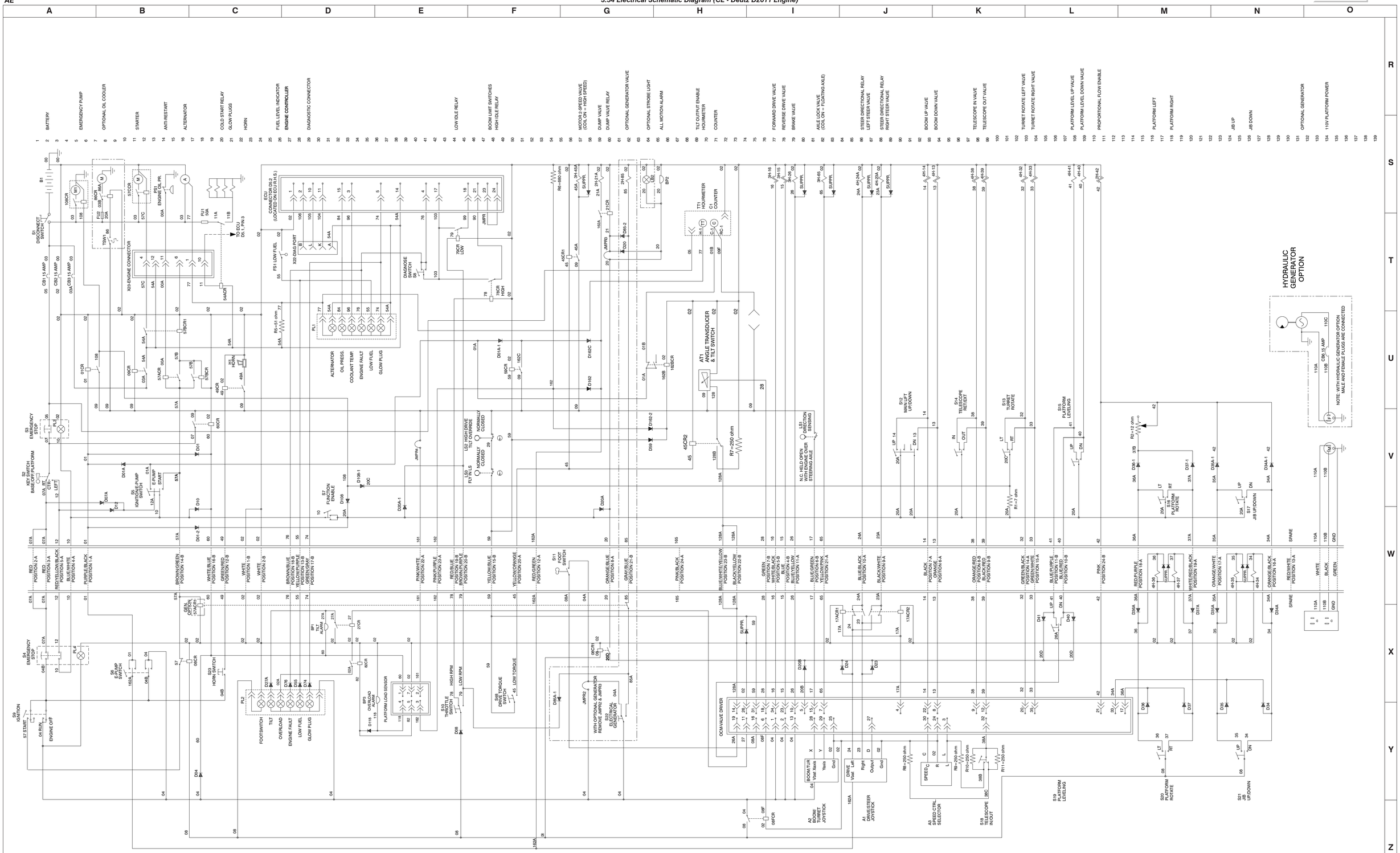


3.51 Electrical Schematic Diagram (ANSI/CSA - GM Dual Fuel Engine)

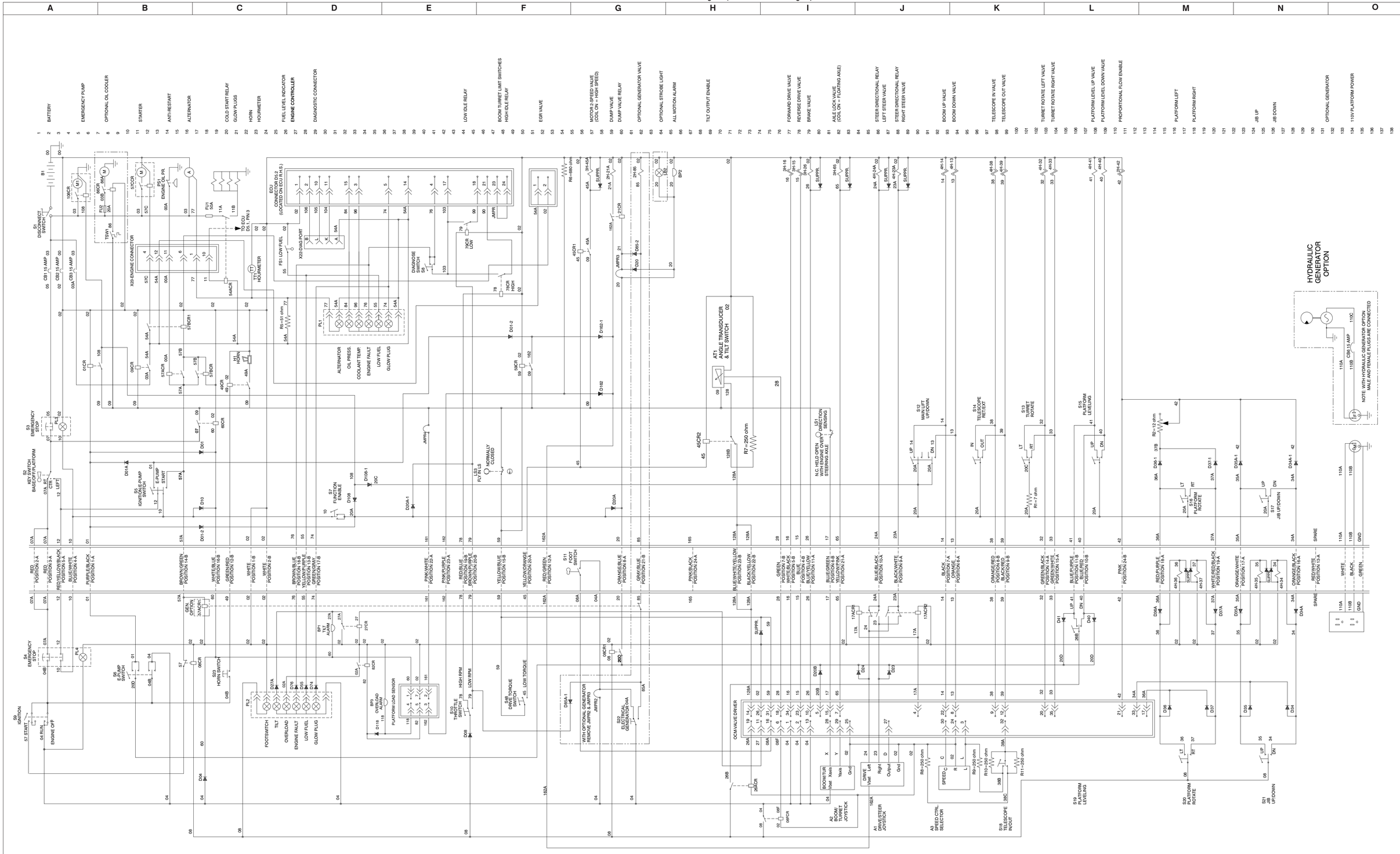



Refer to 3.59 Interface & Engine Electrical Schematic - Kubota Dual Fuel Engine
KUBOTA EFI DUAL FUEL ENGINE
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
STARTER
HORN
HOURMETER
START COMMAND
ENGINE CONTROLLER
FUEL LEVEL INDICATOR
HOURMETER
ENGINE FAULT (MIL)
ENGINE ON (VSW)
FUEL SELECT (IN = PROPANE) (OUT = GASOLINE)
HIGH IDLE
LOW IDLE
BOOM TURRET LIMIT SWITCHES
TELEMATICS OPTION
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
TILT OUTPUT ENABLE
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL OFF = 4 STEERING AXLE)
STEER DIRECTIONAL RELAY
LEFT STEER VALVE
STEER DIRECTIONAL RELAY
RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL GENERATOR
110V PLATFORM POWER
OPTIONAL WELDER GENERATOR
S1 DISCONNECT SWITCH
B1
CB1 15 AMP
CB2 15 AMP
CB3 15 AMP
TSW1
105CR
85CR
57CCR
57C
TO ENGINE BLOCK
TO ENGINE STARTER
FS1 LOW FUEL SWITCH
TM1 HOURMETER
ALTERNATOR
ENGINE FAULT
LOW FUEL
PL1
H1 HORN
01CR
09CR
0.086
45CR
S3 EMERGENCY STOP
S2 KEY SWITCH BASE/OFF/PLATFORM
TO 2ND CONTACT AT LINE 15
S5 IGNITION PUMP SWITCH
E.PUMP START
S7 FUNCTION ENABLE
S4 EMERGENCY STOP
S8 IGNITION PUMP SWITCH
HORN SWITCH
PL2
FOOTSWITCH
TILT
ENGINE FAULT
LOW FUEL
S9 IGNITION
S10 THROTTLE SWITCH
HIGH RPM
LOW RPM
S6 FUEL SELECT SWITCH
PROPANE
S11 FOOT SWITCH
A4 DRIVE TORQUE SWITCH
LOW TORQUE
45CR1
45CR2
L53 FUEL VALVE
NORMALLY CLOSED
AT1 ANGLE TRANSDUCER & TILT SWITCH
L51 OSCILLATION SENSING
N.C. HELD OPEN WHEN STEERING AXLE
R7 ~250 ohm
OPTIONAL GENERATOR REMOVE JMPR2 & JMPR3
ELECTRICAL GENERATOR
JMPR2
JMPR3
BP1 TILT ALARM
BP2
OCM VALVE DRIVER
A2 BOOM/TURRET JOYSTICK
A1 STEER/DRIVE JOYSTICK
A3 SPEED CTRL SELECTOR
S18 TELESCOPE IN/OUT
S19 MANUAL LEVELING
S20 PLATFORM ROTATE
S21 JIB UP/DOWN
S13 TURRET ROTATE
S14 TELESCOPE
S15 PLATFORM LEVELING
S12 MAN LIFT UP/DOWN
FROM S2 AT LINE 3
KEY SWITCH BASE/OFF/PLATFORM
R2 ~12 ohm (45T) R2 ~15 ohm (40T)
R3 ~7 ohm
R5 ~250 ohm
R6 ~250 ohm
R11 ~250 ohm
R10 ~250 ohm
NOTE: WITH HYDRAULIC GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
NOTE: WITH WELDER GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
SPARE
66T ONLY
M172037AC_ISXT

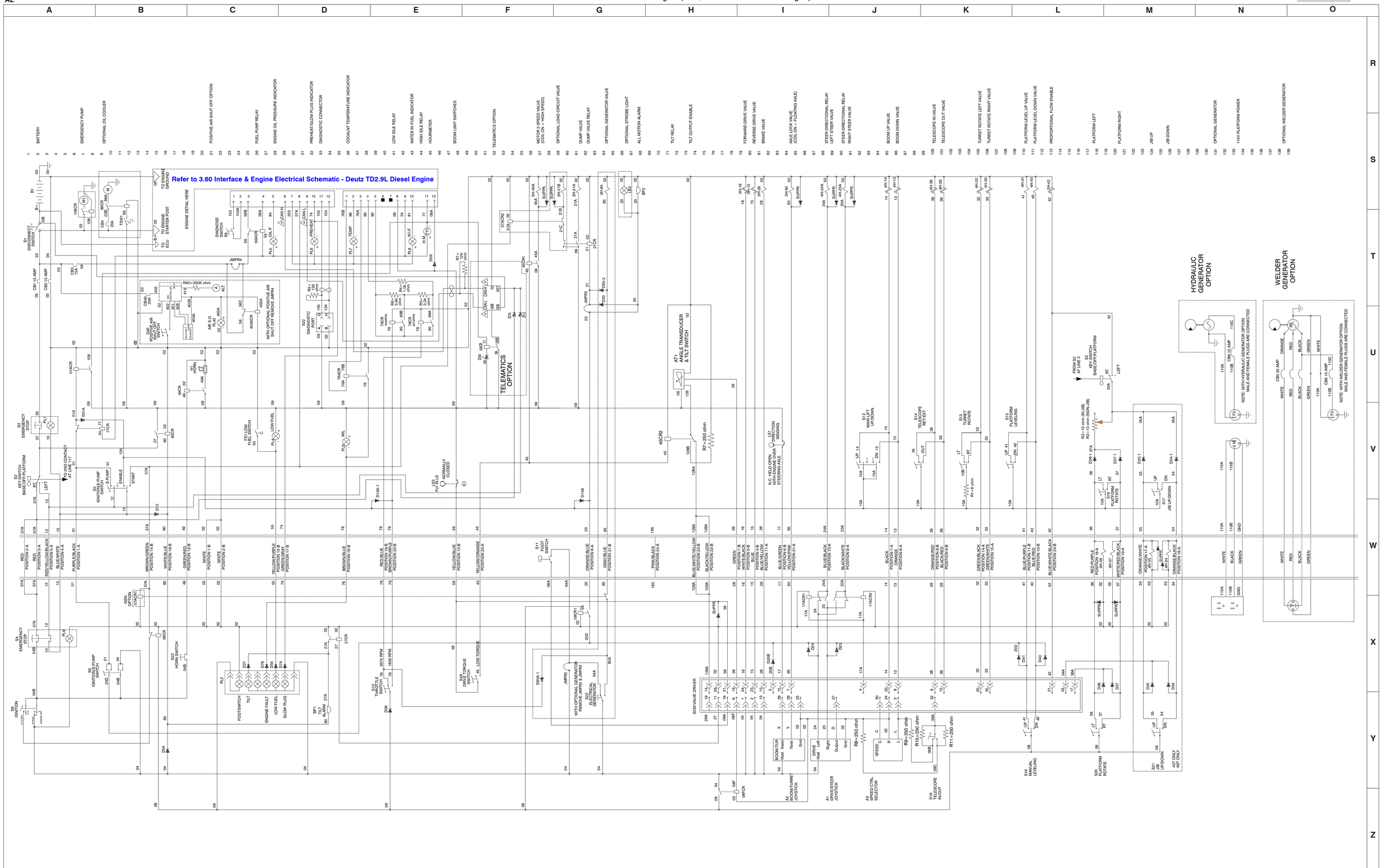

TELEMATICS OPTION
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
POSITIVE AIR SHUT OFF OPTION
S1 DISCONNECT SWITCH
S2 KEY SWITCH BASE/OFF/PLATFORM
S3 EMERGENCY STOP
S4 EMERGENCY STOP
S5 IGNITION/ESTOP SWITCH
S6 IGNITION/PUMP SWITCH
S9 IGNITION
S10 THROTTLE SWITCH
S11 FOOT SWITCH
S12 MAIN LIFT UP/DOWN
S13 TURRET ROTATE
S14 TELESCOPE RET/EXT
S15 PLATFORM LEVELING
S16 PLATFORM ROTATE
S17 JIB UP/DOWN
S18 MANUAL LEVELING
S19 TELESCOPE IN/OUT
S20 BOOM/TURRET JOYSTICK
S21 JIB UP/DOWN
S22 ELECTRICAL GENERATOR
S23 HORN SWITCH
S24 DRIVE TORQUE SWITCH
S40 POSITIVE AIR SHUT OFF SWITCH
S51 FUEL LEVEL INDICATOR
S52 HIGH DRIVE PRESSURE
S53 N.O.- FIELD OPEN DIRECTION SENSING STEERING AXLE
AT1 ANGLE TRANSDUCER & TILT SWITCH
A0 BOOM/TURRET JOYSTICK
A1 DRIVE/STEER JOYSTICK
A2 SPEED CTRL SELECTOR
A3 TELESCOPE IN/OUT
ECU CONNECTOR DX:2 (LOCATED ON ECM I.M.S.)
X28 ENGINE CONNECTOR
X29 DIAG PORT
DIAGNOSE SWITCH
ODM VALVE DRIVER
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
SWTR
ANTI-RESTART
ALTERNATOR
COLD START RELAY
GLOW PLUGS
HORN
HOURMETER
FUEL LEVEL INDICATOR
ENGINE CONTROLLER
DIAGNOSTIC CONNECTOR
POSITIVE AIR SHUT OFF VALVE OPTION
LOW RPM RELAY
BOOM TURRET LIMIT SWITCHES
HIGH RPM RELAY
EGR VALVE (KIT ONLY)
TELEMATICS OPTION
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
DIFFERENTIAL LOCK (COIL ON = LOCKED)
TILT OUTPUT ENABLE
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
STEER DIRECTIONAL RELAY LEFT STEER VALVE
STEER DIRECTIONAL RELAY RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL-FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL GENERATOR
110V PLATFORM POWER
OPTIONAL WELDER GENERATOR
NOTE: WITH HYDRAULIC GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
NOTE: WITH WELDER GENERATOR OPTION MALE AND FEMALE PLUGS ARE CONNECTED
ALTERNATOR
OIL PRESS.
COOLANT TEMP.
ENGINE FAULT
LOW FUEL
GLOW PLUG
FOOTSWITCH
TILT
HORN
ENGINE
GEN OPTION
45T ONLY
60T ONLY
SPARE
M1169629AA

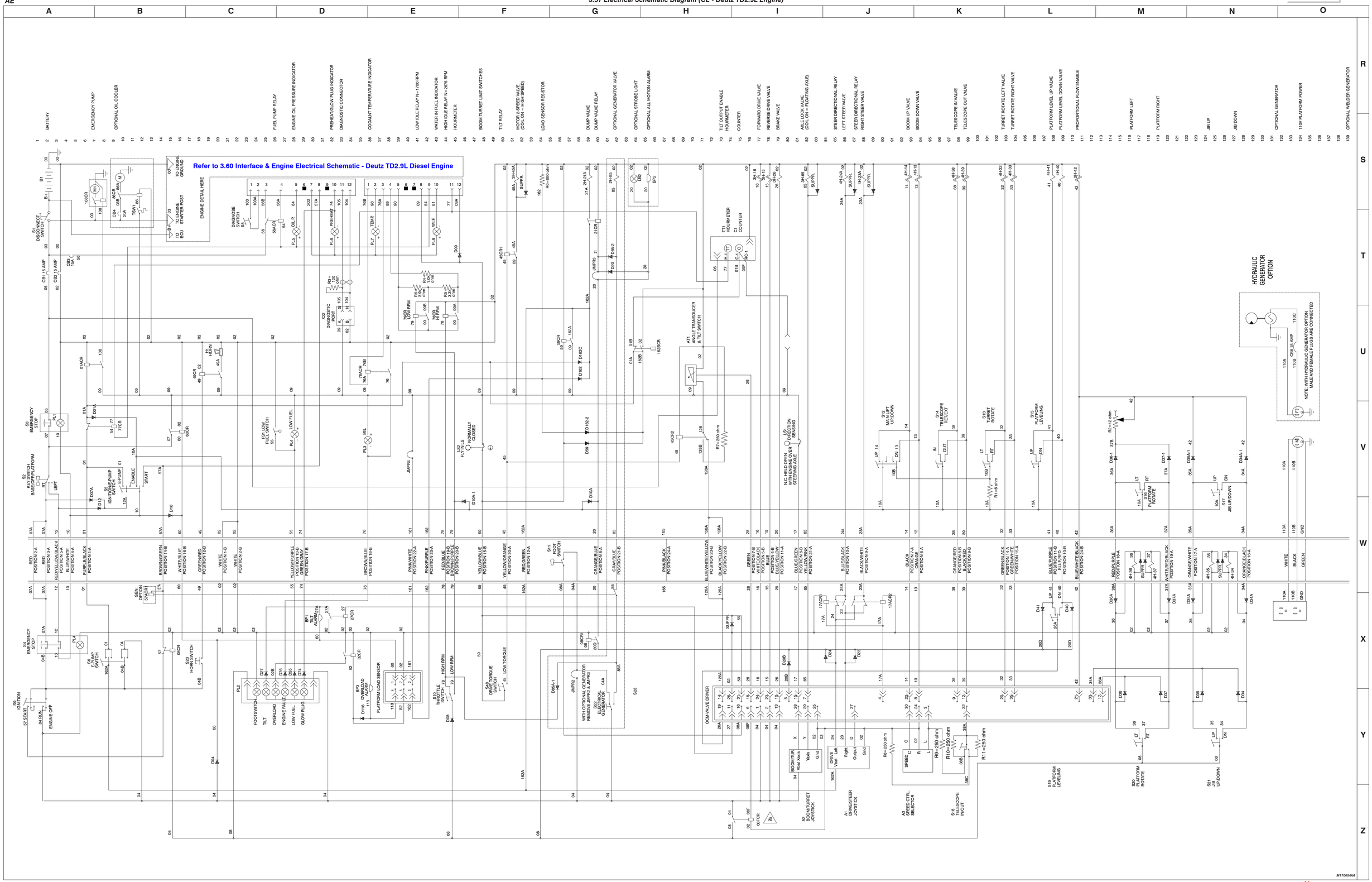

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
R
S
T
U
V
W
X
Y
Z
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
STARTER
ANTI-RESTART
ALTERNATOR
COLD START RELAY
GLOW PLUGS
HORN
FUEL LEVEL INDICATOR
ENGINE CONTROLLER
DIAGNOSTIC CONNECTOR
LOW IDLE RELAY
BOOM LIMIT SWITCHES
HIGH IDLE RELAY
MOTOR 2 SPEED VALVE (COIL ON = HIGH SPEED)
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
ALL MOTION ALARM
TILT OUTPUT ENABLE
HOURMETER
COUNTER
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
STEER DIRECTIONAL RELAY LEFT STEER VALVE
STEER DIRECTIONAL RELAY RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL GENERATOR
110V PLATFORM POWER
HYDRAULIC GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION, MALE AND FEMALE PLUGS ARE CONNECTED
B1
ON DISCONNECT SWITCH
CB1 15 AMP
CB2 15 AMP
CB3 15 AMP
X23 ENGINE CONNECTOR
X22 DIAG PORT
ECU CONNECTOR DS2 (LOCATED ON ECU R.H.S.)
ECU CONNECTOR DS1 (LOCATED ON ECU R.H.S.)
TO ECU DS 1, PIN 3
FU1 10A
FU2 20A
FU3 30A
FU4 20A
105CR
106CR
57CCR
86CR
PS1 ENGINE OIL PR.
FSW
FS1 LOW FUEL
DIAGNOSE SWITCH
79CR LOW
78CR HIGH
JMPR
R6=680 ohm
R5=51 ohm
PL1
ALTERNATOR
OIL PRESS
COOLANT TEMP.
ENGINE FAULT
LOW FUEL
GLOW PLUG
57BCR1
54ACR
H1 HORN
49CR
66CR
D01
D01-2
D01A
D01A-1
D07A
D12
D10
D108
D108-1
D106-1
D200A
D36A-1
JMPH
LS2 HIGH DRIVE TILT SWITCH
LS1 FUNCTION SENSING
NORMALLY CLOSED
N.C. HELD OPEN WHEN DRIVER IN STEERING AXLE
S7 IGNITION ENGINE
S8 IGNITION PUMP
E PUMP START
S3 EMERGENCY STOP
S2 KEY SWITCH BASE/OFF/PLATFORM
S4 EMERGENCY STOP
S9 IGNITION
57 START
04 RUN
ENGINE OFF
S6 E-PUMP SWITCH
S23 HORN SWITCH
57ACR
57BCR
57CR
00A
03A
03B
04B
07A
07B
10A
10B
11A
11B
12A
12B
PL4
PL2
FOOTSWITCH
TILT
OVERLOAD
ENGINE FAULT
LOW FUEL
GLOW PLUG
D27A
D28
D75
D74
D44
BP1 TILT ALARM
27A
27CR
BP3 OVERLOAD ALARM
D118
PLATFORM LOAD SENSOR
S10 THROTTLE SWITCH
HIGH RPM
LOW RPM
D08
SAE DRIVE TORQUE SWITCH
LOW TORQUE
D36A-1
JMPR2
WITH OPTIONAL GENERATOR REMOVE JMPR & JMPR3
ELECTRICAL GENERATOR
10A
08CR
08CR1
20D
SUPPR
OCM/VALVE DRIVER
D24
D23
17ACR
17A
D41
D40
D42
D43
D39
D38
D37
D36
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D10
D09
D08
D07
D06
D05
D04
D03
D02
D01
S11 FOOT SWITCH
S12 MAIN LIFT UP/DOWN
S14 TELESCOPE RETEXT
S13 TURRET ROTATE
S15 PLATFORM LEVELING
S16 PLATFORM ROTATE
S17 JIB UP/DOWN
S18 TELESCOPE IN/OUT
S19 PLATFORM LEVELING
S20 PLATFORM ROTATE
S21 JIB UP/DOWN
A1 DRIVE/STEER JOYSTICK
A2 DRIVE/ TURRET JOYSTICK
A3 SPEED CTRL SELECTOR
TT1 HOURMETER
CT1 COUNTER
AT1 ANGLE TRANSDUCER & TILT SWITCH
R7=250 ohm
R8=250 ohm
R9=250 ohm
R10=250 ohm
R11=250 ohm
R12=10 ohm
R1=7 ohm
45CR2
BOOM/TUR Y/ar Axis
DRIVE Y/ar Left
SPEED C
TELESCOPE
BP2
21CR
21A
16CR
16CR1
16A
16B
16C
45
45A
45CR1
45A
JMPR3
DS5-2
DS0
DS6-2
DS9
DS8
DS7
DS10
DS11
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DS139

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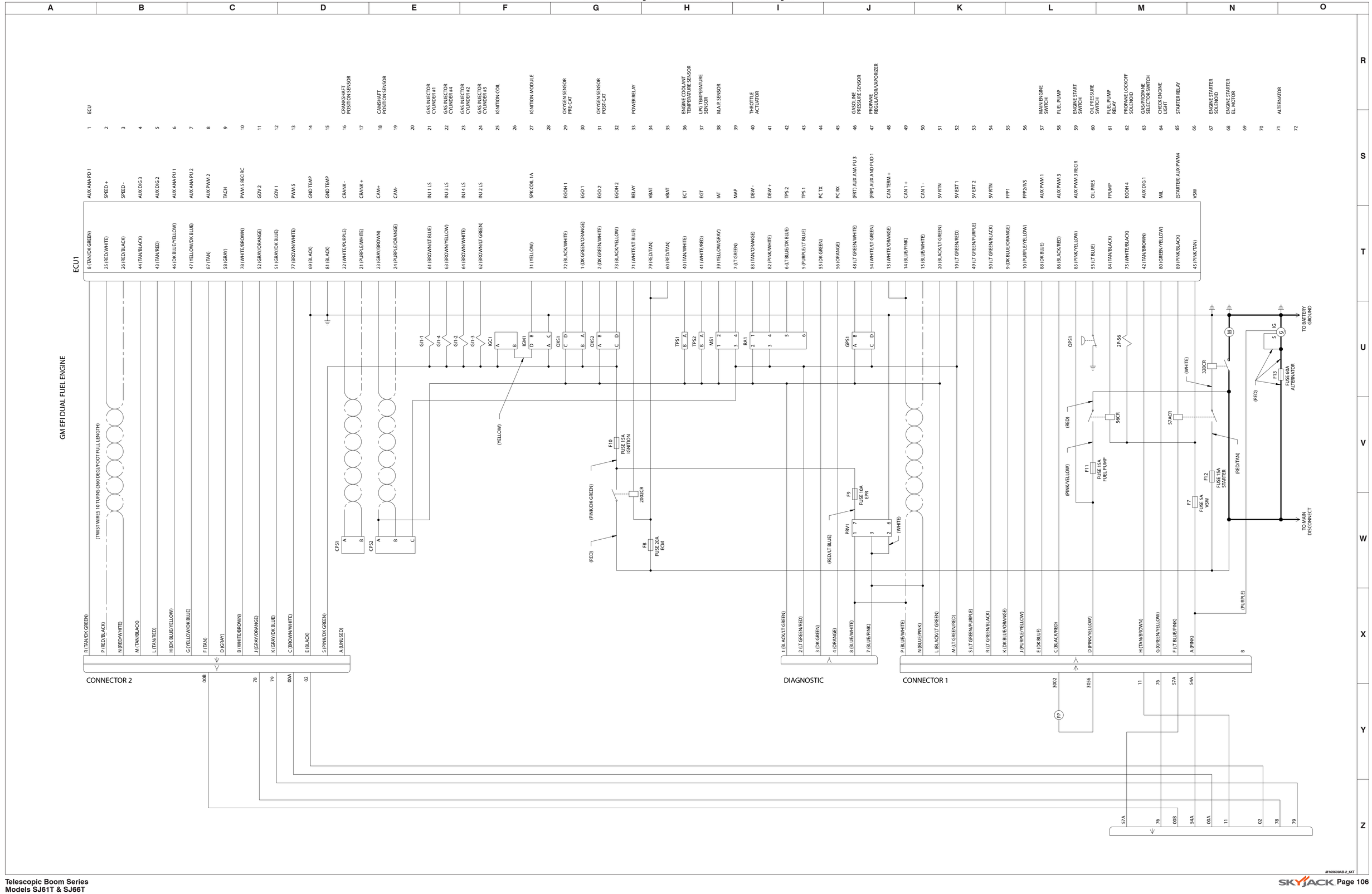


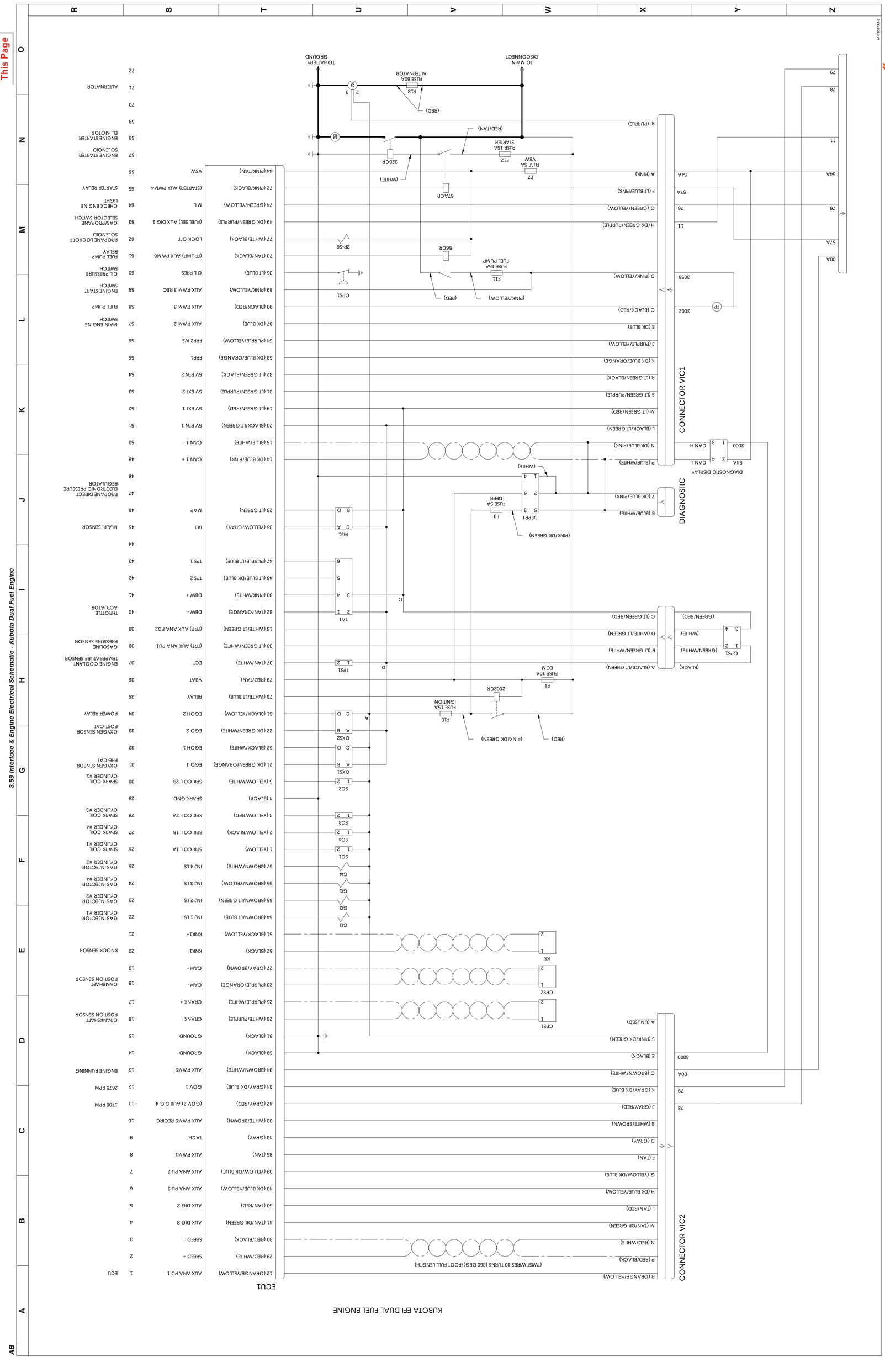
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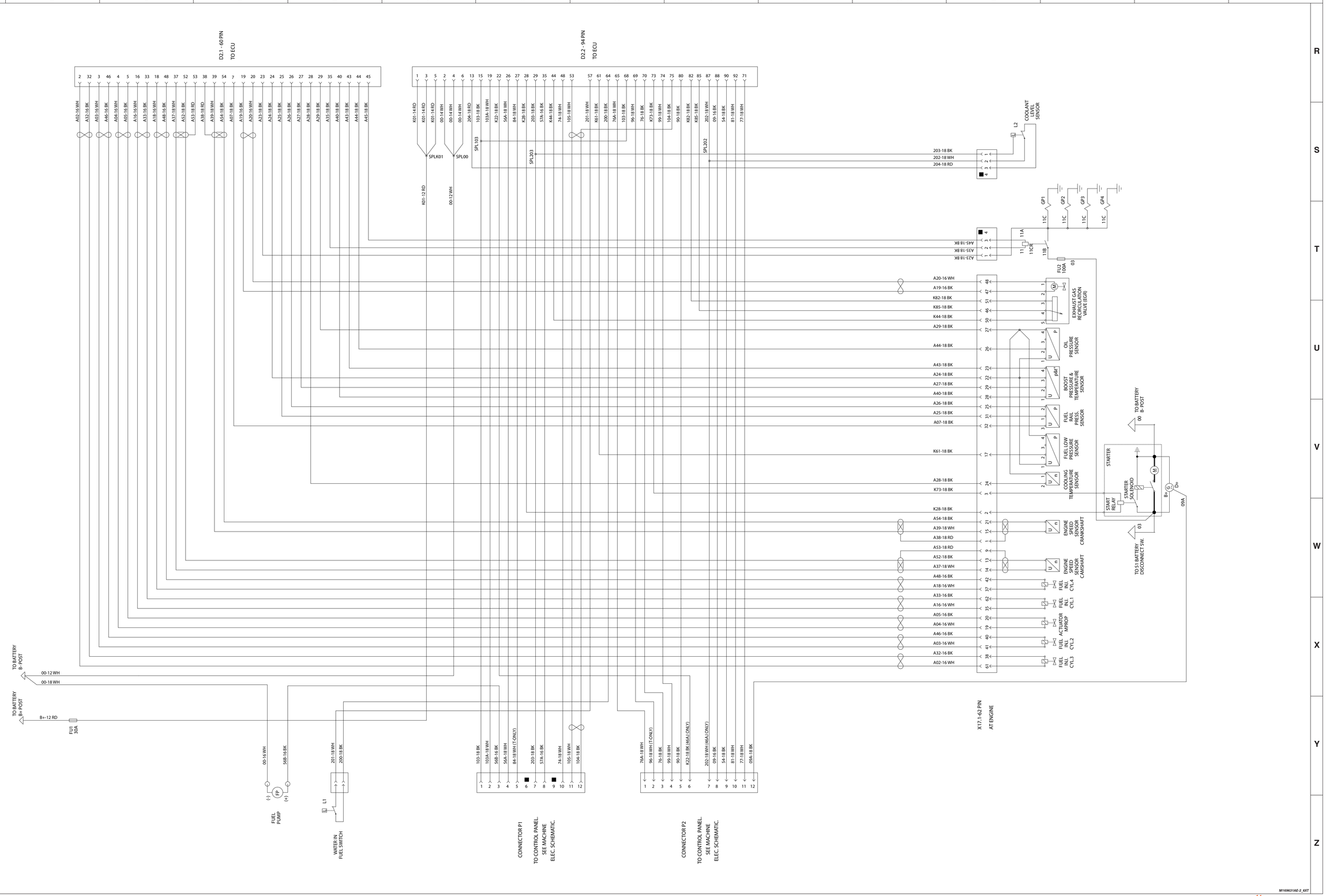

Refer to 3.60 Interface & Engine Electrical Schematic - Deutz TD2.9L Diesel Engine
TELEMATICS OPTION
HYDRAULIC GENERATOR OPTION
WELDER GENERATOR OPTION
M169631AH_6XT


Refer to 3.60 Interface & Engine Electrical Schematic - Deutz TD2.9L Diesel Engine
HYDRAULIC GENERATOR OPTION
NOTE: WITH HYDRAULIC GENERATOR OPTION VALVE BANK PANEL PLUGS ARE CONNECTED
BATTERY
EMERGENCY PUMP
OPTIONAL OIL COOLER
FUEL PUMP RELAY
ENGINE OIL PRESSURE INDICATOR
PREHEAT/GLOW PLUG INDICATOR
DIAGNOSTIC CONNECTOR
COOLANT TEMPERATURE INDICATOR
LOW IDLE RELAY N=1700 RPM
WATER IN FUEL INDICATOR
HIGH IDLE RELAY N=2615 RPM
HOURMETER
BOOM TURRET LIMIT SWITCHES
TILT RELAY
MOTOR 2-SPEED VALVE (COIL ON = HIGH SPEED)
LOAD SENSOR RESISTOR
DUMP VALVE
DUMP VALVE RELAY
OPTIONAL GENERATOR VALVE
OPTIONAL STROBE LIGHT
OPTIONAL ALL MOTION ALARM
TILT OUTPUT ENABLE
HOURMETER
COUNTER
FORWARD DRIVE VALVE
REVERSE DRIVE VALVE
BRAKE VALVE
AXLE LOCK VALVE (COIL ON = FLOATING AXLE)
STEER DIRECTIONAL RELAY
LEFT STEER VALVE
STEER DIRECTIONAL RELAY
RIGHT STEER VALVE
BOOM UP VALVE
BOOM DOWN VALVE
TELESCOPE IN VALVE
TELESCOPE OUT VALVE
TURRET ROTATE LEFT VALVE
TURRET ROTATE RIGHT VALVE
PLATFORM LEVEL UP VALVE
PLATFORM LEVEL DOWN VALVE
PROPORTIONAL FLOW ENABLE
PLATFORM LEFT
PLATFORM RIGHT
JIB UP
JIB DOWN
OPTIONAL GENERATOR
110V PLATFORM POWER
OPTIONAL WELDER GENERATOR
S1 DISCONNECT SWITCH
CB1 15 AMP
CB2 15 AMP
CB3 15A
S3 EMERGENCY STOP
S4 EMERGENCY STOP
S9 IGNITION 5/7 START 04 RUN ENGINE OFF
S2 KEY SWITCH BASE/OFF/PLATFORM
S5 IGNITION SWITCH
S6 E-PUMP SWITCH
S7 HORN SWITCH
S8 E-PUMP SWITCH
S10 THROTTLE SWITCH
S11 FOOT SWITCH
S12 MAN LIFT UP/DOWN
S13 TURRET ROTATE
S14 TELESCOPE RETEXT
S15 PLATFORM LEVELING
S16 PLATFORM ROTATE
S17 JIB UP/DOWN
S18 TELESCOPE IN/OUT
S19 PLATFORM LEVELING
S20 PLATFORM ROTATE
S21 JIB UP/DOWN
S28
A1 DRIVE/STEER JOYSTICK
A2 BOOM/TURRET JOYSTICK
A3 SPEED CTRL SELECTOR
AT1 ANGLE TRANSDUCER & TILT SWITCH
H1 HORN
PL1 FOOTSWITCH
PL2 TILT
PL3 OVERLOAD
PL4 ENGINE FAULT
PL5 LOW FUEL
PL6 GLOW PLUG
PL7 PREHEAT
PL8 TEMP
PL9 W.I.F.
TT1 HOURMETER COUNTER
X22 DIAGNOSTIC PORT
DIAGNOSE SWITCH
OIL P.
PREHEAT
TEMP
W.I.F.
R3=120 ohm
R4=150 ohm
R5=68 ohm
R6=3.3k ohm
R7=250 ohm
R8=250 ohm
R9=250 ohm
R10=250 ohm
R11=250 ohm
R0=12 ohm
R1=6 ohm
BP1 TILT ALARM
BP2
BP3 OVERLOAD
PLATFORM LOAD SENSOR
ELECTRICAL GENERATOR
WITH OPTIONAL GENERATOR REMOVE JMPR2 & JMPR3
OCM VALVE DRIVER
BOOM/TUR Vout Xaxis Yaxis Gnd
DRIVE Vout Left Right Output Gnd
SPEED C R L
TO ENGINE GROUND
TO ENGINE STARTER POST
TO ECU
ENGINE DETAIL HERE
FOOTSWITCH
TILT
OVERLOAD
ENGINE FAULT
LOW FUEL
GLOW PLUG
HIGH RPM
LOW RPM
LOW TORQUE
FS1 LOW FUEL SWITCH
LS1 N.C. HELD OPEN WHEN LIFT OVER STEERING AXLE
LS2 FLATTEN 4.3 NORMALLY CLOSED
DRIVE DISABLE SENSING
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D10A D11 D12 D13 D14 D15 D16 D17 D18 D19 D20 D20A D20B D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D34A D35 D36 D37 D38 D39 D40 D41 D42 D43 D44 D45 D46 D47 D48 D49 D50 D51 D52 D53 D54 D55 D56 D57 D58 D59 D60 D61 D62 D63 D64 D65 D66 D67 D68 D69 D70 D71 D72 D73 D74 D75 D76 D77 D78 D79 D80 D81 D82 D83 D84 D85 D86 D87 D88 D89 D90 D91 D92 D93 D94 D95 D96 D97 D98 D99 D100 D101 D102 D103 D104 D105 D106 D107 D108 D109 D110 D111 D112 D113 D114 D115 D116 D117 D118 D119 D120 D121 D122 D123 D124 D125 D126 D127 D128 D129 D130 D131 D132 D133 D134 D135 D136 D137 D138 D139 D140 D141 D142 D143 D144 D145 D146 D147 D148 D149 D150 D151 D152 D153 D154 D155 D156 D157 D158 D159 D160 D161 D162 D163 D164 D165 D166 D167 D168 D169 D170 D171 D172 D173 D174 D175 D176 D177 D178 D179 D180 D181 D182 D183 D184 D185 D186 D187 D188 D189 D190 D191 D192 D193 D194 D195 D196 D197 D198 D199 D200 D201 D202 D203 D204 D205 D206 D207 D208 D209 D210 D211 D212 D213 D214 D215 D216 D217 D218 D219 D220 D221 D222 D223 D224 D225 D226 D227 D228 D229 D230 D231 D232 D233 D234 D235 D236 D237 D238 D239 D240 D241 D242 D243 D244 D245 D246 D247 D248 D249 D250 D251 D252 D253 D254 D255 D256 D257 D258 D259 D260 D261 D262 D263 D264 D265 D266 D267 D268 D269 D270 D271 D272 D273 D274 D275 D276 D277 D278 D279 D280 D281 D282 D283 D284 D285 D286 D287 D288 D289 D290 D291 D292 D293 D294 D295 D296 D297 D298 D299 D300 D301 D302 D303 D304 D305 D306 D307 D308 D309 D310 D311 D312 D313 D314 D315 D316 D317 D318 D319 D320 D321 D322 D323 D324 D325 D326 D327 D328 D329 D330 D331 D332 D333 D334 D335 D336 D337 D338 D339 D340 D341 D342 D343 D344 D345 D346 D347 D348 D349 D350 D351 D352 D353 D354 D355 D356 D357 D358 D359 D360 D361 D362 D363 D364 D365 D366 D367 D368 D369 D370 D371 D372 D373 D374 D375 D376 D377 D378 D379 D380 D381 D382 D383 D384 D385 D386 D387 D388 D389 D390 D391 D392 D393 D394 D395 D396 D397 D398 D399 D400 D401 D402 D403 D404 D405 D406 D407 D408 D409 D410 D411 D412 D413 D414 D415 D416 D417 D418 D419 D420 D421 D422 D423 D424 D425 D426 D427 D428 D429 D430 D431 D432 D433 D434 D435 D436 D437 D438 D439 D440 D441 D442 D443 D444 D445 D446 D447 D448 D449 D450 D451 D452 D453 D454 D455 D456 D457 D458 D459 D460 D461 D462 D463 D464 D465 D466 D467 D468 D469 D470 D471 D472 D473 D474 D475 D476 D477 D478 D479 D480 D481 D482 D483 D484 D485 D486 D487 D488 D489 D490 D491 D492 D493 D494 D495 D496 D497 D498 D499 D500 D501 D502 D503 D504 D505 D506 D507 D508 D509 D510 D511 D512 D513 D514 D515 D516 D517 D518 D519 D520 D521 D522 D523 D524 D525 D526 D527 D528 D529 D530 D531 D532 D533 D534 D535 D536 D537 D538 D539 D540 D541 D542 D543 D544 D545 D546 D547 D548 D549 D550 D551 D552 D553 D554 D555 D556 D557 D558 D559 D560 D561 D562 D563 D564 D565 D566 D567 D568 D569 D570 D571 D572 D573 D574 D575 D576 D577 D578 D579 D580 D581 D582 D583 D584 D585 D586 D587 D588 D589 D590 D591 D592 D593 D594 D595 D596 D597 D598 D599 D600 D601 D602 D603 D604 D605 D606 D607 D608 D609 D610 D611 D612 D613 D614 D615 D616 D617 D618 D619 D620 D621 D622 D623 D624 D625 D626 D627 D628 D629 D630 D631 D632 D633 D634 D635 D636 D637 D638 D639 D640 D641 D642 D643 D644 D645 D646 D647 D648 D649 D650 D651 D652 D653 D654 D655 D656 D657 D658 D659 D660 D661 D662 D663 D664 D665 D666 D667 D668 D669 D670 D671 D672 D673 D674 D675 D676 D677 D678 D679 D680 D681 D682 D683 D684 D685 D686 D687 D688 D689 D690 D691 D692 D693 D694 D695 D696 D697 D698 D699 D700 D701 D702 D703 D704 D705 D706 D707 D708 D709 D710 D711 D712 D713 D714 D715 D716 D717 D718 D719 D720 D721 D722 D723 D724 D725 D726 D727 D728 D729 D730 D731 D732 D733 D734 D735 D736 D737 D738 D739 D740 D741 D742 D743 D744 D745 D746 D747 D748 D749 D750 D751 D752 D753 D754 D755 D756 D757 D758 D759 D760 D761 D762 D763 D764 D765 D766 D767 D768 D769 D770 D771 D772 D773 D774 D775 D776 D777 D778 D779 D780 D781 D782 D783 D784 D785 D786 D787 D788 D789 D790 D791 D792 D793 D794 D795 D796 D797 D798 D799 D800 D801 D802 D803 D804 D805 D806 D807 D808 D809 D810 D811 D812 D813 D814 D815 D816 D817 D818 D819 D820 D821 D822 D823 D824 D825 D826 D827 D828 D829 D830 D831 D832 D833 D834 D835 D836 D837 D838 D839 D840 D841 D842 D843 D844 D845 D846 D847 D848 D849 D850 D851 D852 D853 D854 D855 D856 D857 D858 D859 D860 D861 D862 D863 D864 D865 D866 D867 D868 D869 D870 D871 D872 D873 D874 D875 D876 D877 D878 D879 D880 D881 D882 D883 D884 D885 D886 D887 D888 D889 D890 D891 D892 D893 D894 D895 D896 D897 D898 D899 D900 D901 D902 D903 D904 D905 D906 D907 D908 D909 D910 D911 D912 D913 D914 D915 D916 D917 D918 D919 D920 D921 D922 D923 D924 D925 D926 D927 D928 D929 D930 D931 D932 D933 D934 D935 D936 D937 D938 D939 D940 D941 D942 D943 D944 D945 D946 D947 D948 D949 D950 D951 D952 D953 D954 D955 D956 D957 D958 D959 D960 D961 D962 D963 D964 D965 D966 D967 D968 D969 D970 D971 D972 D973 D974 D975 D976 D977 D978 D979 D980 D981 D982 D983 D984 D985 D986 D987 D988 D989 D990 D991 D992 D993 D994 D995 D996 D997 D998 D999 D1000
M1706044A

Print This Page




KUBOTA EFI DUAL FUEL ENGINE
ECU1
1 ECU
2 SPEED +
3 SPEED -
4 AUX DIG 3
5 AUX DIG 2
6 AUX ANA PU 3
7 AUX ANA PU 2
8 AUX PWM1
9 TACH
10 AUX PWM5 RCIRC
11 1700 RPM
12 2675 RPM
13 ENGINE RUNNING
14 GROUND
15 GROUND
16 CRANKSHAFT POSITION SENSOR
17 CRANK +
18 CAMSHAFT POSITION SENSOR
19 CAM+
20 KNOCK SENSOR
21 KNK1+
22 GAS INJECTOR CYLINDER #1
23 GAS INJECTOR CYLINDER #3
24 GAS INJECTOR CYLINDER #4
25 GAS INJECTOR CYLINDER #2
26 SPARK COIL CYLINDER #1
27 SPARK COIL CYLINDER #4
28 SPARK COIL CYLINDER #3
29 SPARK GND
30 SPARK COIL CYLINDER #2
31 OXYGEN SENSOR PRE-CAT
32 EGOH 1
33 OXYGEN SENSOR POST-CAT
34 POWER RELAY
35 RELAY
36 VBAT
37 ECT
38 GASOLINE PRESSURE SENSOR
39 ENGINE COOLANT TEMPERATURE SENSOR
40 THROTTLE ACTUATOR
41 DBW +
42 TPS 2
43 TPS 1
44
45 M.A.P. SENSOR
46 MAP
47 PROPANE DIRECT ELECTRONIC PRESSURE REGULATOR
48
49 GAS/PROPANE SELECTOR SWITCH
50 CAN 1 -
51 5V RTN 1
52 5V EXT 1
53 5V EXT 2
54 5V RTN 2
55 FPP1
56 FPP2 NS
57 MAIN ENGINE SWITCH
58 FUEL PUMP
59 ENGINE START SWITCH
60 OIL PRESSURE SWITCH
61 FUEL PUMP RELAY
62 PROPANE LOCKOFF SOLENOID
63 GAS/PROPANE SELECTOR SWITCH
64 CHECK ENGINE LIGHT
65 STARTER RELAY
66 VSW
67 ENGINE STARTER SOLENOID
68 ENGINE STARTER EL MOTOR
69
70
71 ALTERNATOR
72
R
S
T
AUX ANA PD 1 (ORANGE/YELLOW)
SPEED + (RED/WHITE)
SPEED - (RED/BLACK)
AUX DIG 3 (TAN/DK GREEN)
AUX DIG 2 (TAN/RED)
AUX ANA PU 3 (DK BLUE/YELLOW)
AUX ANA PU 2 (YELLOW/DK BLUE)
AUX PWM1 (TAN)
TACH (GRAY)
AUX PWM5 RCIRC (WHITE/BROWN)
GOV 2) AUX DIG 4 (GRAY/RED)
GOV 1 (GRAY/DK BLUE)
AUX PWM5 (BROWN/WHITE)
GROUND (BLACK)
GROUND (BLACK)
CRANK - (WHITE/PURPLE)
CRANK + (PURPLE/WHITE)
CAM- (PURPLE/ORANGE)
CAM+ (GRAY/BROWN)
KNK1- (BLACK)
KNK1+ (BLACK/YELLOW)
IN3 1 LS (BROWN/LT BLUE)
IN3 2 LS (BROWN/LT GREEN)
IN3 3 LS (BROWN/YELLOW)
IN3 4 LS (BROWN/WHITE)
SPK COIL 1A (YELLOW)
SPK COIL 1B (YELLOW/BLACK)
SPK COIL 2A (YELLOW/RED)
SPARK GND (BLACK)
EGO 1 (DK GREEN/ORANGE)
EGOH 1 (BLACK/WHITE)
EGO 2 (DK GREEN/WHITE)
EGOH 2 (BLACK/YELLOW)
RELAY (WHITE/LT BLUE)
VBAT (RED/TAN)
ECT (TAN/WHITE)
AUX ANA PU1 (RET) (LT GREEN/WHITE)
AUX ANA PD2 (RPP) (WHITE/LT GREEN)
DBW - (TAN/ORANGE)
DBW + (PINK/WHITE)
TPS 2 (LT BLUE/DK BLUE)
TPS 1 (PURPLE/LT BLUE)
IAT (YELLOW/GRAY)
MAP (LT GREEN)
CAN 1 + (DK BLUE/PINK)
CAN 1 - (BLUE/WHITE)
5V RTN 1 (BLACK/LT GREEN)
5V EXT 1 (LT GREEN/RED)
5V EXT 2 (LT GREEN/PURPLE)
5V RTN 2 (LT GREEN/BLACK)
FPP1 (DK BLUE/ORANGE)
FPP2 NS (PURPLE/YELLOW)
AUX PWM 2 (DK BLUE)
AUX PWM 3 (BLACK/RED)
AUX PWM 3 REC (PINK/YELLOW)
OIL PRES (LT BLUE)
(FPUMP) AUX PWM6 (TAN/BLACK)
LOCK OFF (WHITE/BLACK)
(FUEL SEL) AUX DIG 1 (DK GREEN/PURPLE)
MIL (GREEN/YELLOW)
(STARTER) AUX PWM4 (PINK/BLACK)
VSW (PINK/TAN)
S
T
U
V
W
X
Y
Z
CONNECTOR VIC2
P (RED/BLACK)
N (RED/WHITE)
M (TAN/DK GREEN)
L (TAN/RED)
H (DK BLUE/YELLOW)
G (YELLOW/DK BLUE)
F (TAN)
D (GRAY)
B (WHITE/BROWN)
J (GRAY/RED)
K (GRAY/DK BLUE)
C (BROWN/WHITE)
E (BLACK)
S (PINK/DK GREEN)
A (UNUSED)
CONNECTOR VIC1
R (ORANGE/YELLOW)
P (BLUE/WHITE)
N (DK BLUE/PINK)
M (LT GREEN/RED)
L (BLACK/LT GREEN)
K (DK BLUE/ORANGE)
J (PURPLE/YELLOW)
E (DK BLUE)
C (BLACK/RED)
D (PINK/YELLOW)
H (DK GREEN/PURPLE)
G (GREEN/YELLOW)
F (LT BLUE/PINK)
A (PINK)
B (PURPLE)
DIAGNOSTIC
7 (DK BLUE/PINK)
8 (BLUE/WHITE)
DIAGNOSTIC DISPLAY
54A CAN L
3000 CAN H
(TWIST WIRES 10 TURNS (360 DEG)/FOOT FULL LENGTH)
(WHITE)
(PINK/DK GREEN)
(RED)
(PINK/YELLOW)
(RED)
(RED/TAN)
(WHITE)
(RED)
TO MAIN DISCONNECT
TO BATTERY GROUND
ALTERNATOR
(BLACK)
A (BLACK/LT GREEN)
B (LT GREEN/WHITE)
C (LT GREEN/RED)
D (WHITE/LT GREEN)
(WHITE)
(GREEN/RED)
(GREEN/WHITE)
GPS1
(BLACK)
(GREEN/WHITE)
(WHITE)
(GREEN/RED)
3002
3056
54A
57A
00A
79
78
11
76
54A
57A
00A
79
78
3000
00A
79
78
11
76
54A
57A
00A
FUSE 10A ECM
F8
FUSE 15A IGNITION
F10
200ZCR
FUSE 5A DEPR
F9
DEPR1
FUSE 15A FUEL PUMP
F11
56CR
2P-56
OPS1
FUSE 15A STARTER
F12
57ACR
33BCR
FUSE 5A VSW
F7
FUSE 60A ALTERNATOR
F13
(RED)
(RED/TAN)
(WHITE)
M
G
2
3
1
TPS1
M51
TA1
OXS1
OXS2
SC2
SC3
SC4
SC1
GI4
GI3
GI2
GI1
K5
CPS2
CPS1


D2.1 - 60 PIN TO ECU
D2.2 - 94 PIN TO ECU
SPLK01
SPL00
SPL103
SPL203
SPL202
K01-12 RD
00-12 WH
L2
COOLANT LEVEL SENSOR
GP1
GP2
GP3
GP4
11C
11A
11CR
11B
FU2 100A
03
EXHAUST GAS RECIRCULATION VALVE (EGR)
OIL PRESSURE SENSOR
BOOST PRESSURE & TEMPERATURE SENSOR
FUEL RAIL PRESS. SENSOR
FUEL LOW PRESSURE SENSOR
COOLING TEMPERATURE SENSOR
ENGINE SPEED SENSOR CRANKSHAFT
ENGINE SPEED SENSOR CAMSHAFT
FUEL INJ. CYL4
FUEL INJ. CYL1
ACTUATOR MPROP
FUEL INJ. CYL2
FUEL INJ. CYL3
TO BATTERY B+ POST
TO BATTERY B- POST
00-12 WH
00-18 WH
B+-12 RD
FU1 50A
FUEL PUMP
WATER IN FUEL SWITCH
L1
CONNECTOR P1
TO CONTROL PANEL. SEE MACHINE ELEC. SCHEMATIC.
CONNECTOR P2
TO CONTROL PANEL. SEE MACHINE ELEC. SCHEMATIC.
X17.1-62 PIN AT ENGINE
STARTER
START RELAY
STARTER SOLENOID
TO BATTERY B- POST
TO S1 BATTERY DISCONNECT SW.
09A

Section 4
TROUBLESHOOTING INFORMATION

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4.1 Electrical System

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4.1-2 No Power To Platform 112
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Introduction

The following pages contain a table of Troubleshooting Information for locating and correcting most service trouble which can develop. Careful and accurate analysis of the systems listed in the table of Troubleshooting Information 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 preceded by a number represents the “probable cause." The following line, noted by a dash represents the “remedy" to the “probable cause" directly above it. See example below for clarification.

1. Probable Cause
   - Remedy

NOTE

All tests should be performed with boom over non-steering axle.

4.1 Electrical System

4.1-1 All Controls Inoperative

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

4.1-2 No Power To Platform

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

4.1-3 No Power to Base

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

4.1-4 Engine Will Not Crank from Base

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

4.1-5 Engine Will Not Crank from Platform

NOTE

Engine will not crank from platform with footswitch depressed.

1. Loose or broken wire #4 from emergency stop switch S4 to start switch S6.
   - Check continuity. Replace if defective.
2. Defective start switch S6.
   - Check continuity through switch. Replace if defective.
3. Loose or broken wire #57 from start switch S6 to relay 08CR.
   - Check continuity. Replace if defective.
4. Defective relay 08CR.
   - Check continuity through contacts of relay. Replace if defective.
5. Loose or broken wire #57A from relay 08CR to plug B pin #14.
   - Check continuity. Replace if defective.

6. Loose or broken wire #57A in boom cable B or its connectors.
   - Check for continuity between pin #14 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #57A from plug B pin #14 to relay 57ACR in base control console (Deutz D2011, GM 3.0L) or to base start switch S5 (Deutz TD2.9L).
   - Check continuity. Replace if defective.

4.1-6 Engine Will Not Crank from Platform or Base (Deutz TD2.9L)

1. Loose or broken wire #57A from base start switch S5 to 12 pin connector (J1) pin 8.
   - Check continuity. Replace if defective.
2. Loose or broken wire #57A from 12 pin connector (P1) pin 8 to 94 pin ECU connector, pin 35.
   - Check continuity. Replace if defective.
3. Loose or broken B+ wire from battery B+ to ECU fuse connector P6 pin A .
   - Check continuity. Replace if defective.
4. ECU 30A fuse open or defective.
   - Check for defective wiring. Replace if defective. Replace fuse.
5. Loose or broken wire #K01 from ECU fuse connector P6 pin B to 94 pin ECU connector 3 places pins 1, 3, and 5.
   - Check continuity. Replace if defective.
6. Loose or broken ground wire #00 from battery B- to 94 pin ECU connector 3 places pins 2, 4, and 6.
   - Check continuity. Replace if defective.

4.1-7 Engine Cranks but Will Not Start (Deutz TD2.9L)

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

NOTE

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

4.1-8 Engine Will Not Crank from Platform or Base (Deutz Diesel D2011)

1. Loose or broken wire #57A at relay 57ACR (2 places).
   - Check for connections at relay. Check for voltage on relay (2 places).
2. Loose or broken wire #57A from relay 57ACR to relay 57BCR.
   - Check continuity. Replace if defective.
3. Loose or broken wire #00A from X23 engine connector pin #11 to relay 57ACR.
   - Check continuity. Replace if defective.
4. Loose or broken wire #00A from X23 engine connector pin #11 to engine oil pressure switch.
   - Check continuity. Replace if defective.
5. Defective relay 57ACR.
   - Check relay. Replace if defective.
6. Loose or broken wire #09 from base terminal block to relay 09CR.
   - Check continuity. Replace if defective.
7. Loose or broken wire #03A from circuit breaker CB3 to relay 09CR.
   - Check continuity. Replace if defective.
8. Tripped or defective circuit breaker CB3.
   - Reset circuit breaker. Check continuity through circuit breaker. Replace if defective.
9. Loose or broken wire #3 from circuit breaker CB3 to turret harness plug pin #2.
   - Check continuity. Replace if defective.
10. Loose or broken wire #02 from relay 09CR to base terminal block.
    - Check continuity. Replace if defective.
11. Defective relay 09CR.
    - Check relay. Replace if defective.
12. Loose or broken wire #54A from relay 09CR to base terminal block.
    - Check continuity. Replace if defective.
13. Loose or broken wire #54A from base terminal block to relay 57BCR1.
    - Check continuity. Replace if defective.
14. Defective contacts in relay 57BCR1.
    - Check continuity between wires #54A and #57C when cranking. If no continuity, replace relay.
15. Loose or broken wire #57C from relay 57BCR1 to X23 engine connector pin #4.
    - Check continuity. Replace if defective.
16. Loose or broken wire #57C from X23 engine plug to start solenoid 57CCR.
    - Check continuity. Replace if defective.
17. Loose or broken starter cable #03 from disconnect switch S1 to start solenoid 57CCR.
    - Check continuity. Replace if defective.
18. Defective start solenoid 57CCR.
    - Check solenoid. Replace if defective.
19. Defective starter motor.
    - Check starter motor. Replace if defective.

4.1-9 Engine Cranks but Will Not Start (Deutz Diesel D2011)

1. Loose or broken wire #57B from relay 57ACR to relay 57BCR (2 places).
   - 57BCR maintains power for start circuit before engine starts and after oil pressure switch opens to relay 57BCR1. Check wire #57B for continuity. Replace if defective.
2. Loose or broken wire #57A from relay 57ACR to relay 57BCR.
   - Check continuity. Replace if defective.
3. Loose or broken wire #02 from base terminal block to relay 57BCR.
   - Check continuity. Replace if defective.
4. Defective relay 57BCR.
   - Check relay. Replace if defective.
5. Glow plug circuit not operating.
   - See “Glow Plug Circuit Inoperative" in this section.

6. No fuel in fuel tank or fuel line obstructions.
   - Check fuel level and flow through lines. Fill or repair if necessary.

NOTE

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

4.1-10 Engine Will Not Crank from Platform or Base Control (GM Dual Fuel)

1. Loose or broken wire #54A from base terminal block TB1 to engine harness plug.
   - Check continuity. Replace if defective.
2. Loose or broken wire #54A from engine harness plug to GM engine connector 1.
   - Check continuity. Replace if defective.
3. Loose or broken pink wire from GM engine connector 1 to fuse F7.
   - Check continuity. Replace if defective.
4. Defective fuse F7.
   - Check fuse. Replace if defective
5. Loose or broken pink/tan wire from fuse F7 to ECU connector pin #45.
   - Check continuity. Replace if defective
6. Loose or broken red wire from battery positive to ECU fuse F8.
   - Check continuity. Replace if defective.
7. Defective fuse F8.
   - Check fuse. Replace if defective.
8. Loose or broken red/tan wire from fuse F8 to ECU connector pin #60 and pin #79.
   - Check continuity. Replace if defective.
9. Loose or broken black wire from engine ground to ECU connector pin #69 and #81.
   - Check continuity. Replace if defective.
10. Loose or broken light blue/pink wire from GM engine connector 1 to relay 57ACR.
    - Check continuity. Replace if defective.
11. Loose or broken pink/black wire from ECU connector pin #89 to relay 57ACR.
    - Check continuity. Replace if defective.
12. Defective relay 57ACR.
    - Check relay. Replace if defective.
13. Loose or broken red wire from battery positive to starter fuse F12.
    - Check continuity. Replace if defective.
14. Defective fuse F12.
    - Check fuse. Replace if defective.
15. Loose or broken red/tan wire from fuse F12 to relay 57ACR.
    - Check continuity. Replace if defective.
16. Loose or broken white wire from relay 57ACR to start solenoid 32BCR.
    - Check continuity. Replace if defective.
17. Defective starter solenoid 32BCR.
    - Check solenoid. Replace if defective.
18. Loose or broken battery cable from starter solenoid 32BCR to starter motor.
    - Check continuity. Replace if defective.
19. Defective starter motor.
    - Check motor. Repair or replace if defective.

4.1-11 Engine Cranks but Will Not Start (GM Dual Fuel)

NOTE

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

1. Loose or broken red wire from battery positive to relay 2002CR.
   - Check continuity. Replace if defective.
2. Loose or broken red/tan wire from ECU fuse F8 to relay 2002CR.
   - Check continuity. Replace if defective.
3. Loose or broken white/ light blue wire from ECU connector pin #71 to relay 2002CR.
   - Check continuity. Replace if defective.
4. Defective relay 2002CR.
   - Check relay. Replace if defective.
5. Loose or broken pink/dark green wire from relay 2002CR to ignition fuse F10.
   - Check continuity. Replace if defective.
6. Defective fuse F10.
   - Check fuse. Replace if defective.
7. Loose or broken pink/dark green wire from fuse F10 to ignition coil IGC1 pin #A.
   - Check continuity. Replace if defective.
8. Loose or broken yellow wire from ignition coil IGC1 pin #B to ignition module IGM1.
   - Check continuity. Replace if defective.
9. Defective ignition coil IGC1.
   - Check coil for spark. Replace if defective.
10. Loose or broken pink/dark green wire from fuse F10 to ignition module IGM1 pin #A.
    - Check continuity. Replace if defective.
11. Loose or broken black wire from ignition module IGM1 pin #C to engine ground.
    - Check continuity. Replace if defective.
12. Loose or broken yellow wire from ignition module IGM1 pin #B to ECU connector pin #31.
    - Check continuity. Replace if defective.
13. Defective ignition module IGM1.
    - Check module for operation. Replace if defective.
14. Loose or broken pink/dark green wire from fuse F10 to gas injectors GI-1, GI-2, GI-3 and GI-4.
    - Check continuity. Replace if defective.
15. Loose or broken pink/white wire from ECU connector pin #82 to throttle actuator RA1.
    - Check continuity. Replace if defective.
16. Loose or broken tan/orange wire from ECU connector pin #83 to throttle actuator RA1.
    - Check continuity. Replace if defective.
17. Loose or broken light green/red wire from ECU connector pin #19 to throttle actuator RA1.
    - Check continuity. Replace if defective.
18. Loose or broken black/light green wire from ECU connector pin #20 to throttle actuator RA1.
    - Check continuity. Replace if defective.
19. Loose or broken light blue/dark blue wire from ECU connector pin #6 to throttle actuator RA1.
    - Check continuity. Replace if defective.
20. Loose or broken purple/light blue wire from ECU connector pin #5 to throttle actuator RA1.
    - Check continuity. Replace if defective.

Fuel Related Problems
(Gasoline Only)

21. Loose or broken pink/tan wire from fuse F7 to fuel pump relay 56CR.
    - Check continuity. Replace if defective.
22. Loose or broken red wire from battery positive to fuel pump relay 56CR.
    - Check continuity. Replace if defective.

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

(Propane Only)

NOTE

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

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

4.1-12 Glow Plug Circuit Inoperative

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

NOTE

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

4.1-13 All Controls Inoperative from Base Console

1. Loose or broken wire #10 from base emergency stop switch S3 to ignition/ pump switch S5.
   - Check continuity. Replace if defective.
2. Defective ignition/ pump switch S5.
   - Check continuity through switch when activated. Replace if defective.
3. Loose or broken wire #10A from ignition/ pump switch S5 to basket rotation switch S16.
   - Check continuity. Replace if defective.
4. Loose or broken wire #10A from jib switch S17 to base terminal block.
   - Check continuity. Replace if defective.
5. Loose or broken wire #10A from base terminal block to diode D10A.
   - Check continuity. Replace if defective.
6. Open or defective diode D10A.
   - Check diode. Replace if defective.
7. Loose or broken wire #20 from diode D10A to base terminal block.
   - Check continuity. Replace if defective.
8. Missing or broken jumper JMPR3 on base terminal block between wires #20 and #21.
   - Check for jumper. Replace if missing or broken.

NOTE

Jumper is removed if equipped with generator option.

9. Loose or broken wire #21 from base terminal block to relay 21CR.
   - Check continuity. Replace if defective.
10. Loose or broken wire #02 from base terminal block to relay 21CR.
    - Check continuity. Replace if defective.
11. Loose or broken wire #09 from base terminal block to relay 21CR.
    - Check continuity. Replace if defective.
12. Defective relay 21CR.
    - Check relay. Replace if defective.
13. Loose or broken wire #21A from relay 21CR to turret harness plug pin #5.
    - Check continuity. Replace if defective.

14. Loose or broken wire #21A from turret harness plug pin #5 to dump valve 2H-21A.
    - Check continuity. Replace if defective.
15. Loose or broken wire #02 from dump valve 2H-21A to turret harness plug.
    - Check continuity. Replace if defective.
16. Defective dump valve coil 2H-21A.
    - Check continuity and resistance through coil. Replace if defective.

4.1-14 No Boom Up from Base Control Console

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

4.1-15 No Boom Down from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to boom switch S12.
    - Check continuity. Replace if defective.
2. Defective boom switch S12.
    - Check continuity through switch while activating down function between wires #10A and #13.
3. If no continuity found, replace switch.
4. Loose or broken wire #13 from boom down switch S12 to base terminal block.
    - Check continuity. Replace if defective.
5. Loose or broken wire #13 from base terminal block to turret harness plug pin #3.
    - Check continuity. Replace if defective.
6. Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13.
    - Check continuity. Replace if defective.
7. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13.
    - Check continuity. Replace if defective.
8. Defective boom down coil 4H-13.
    - Check continuity and resistance through coil. Replace if defective.

4.1-16 No Turret Rotate Left from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1.
    - Check continuity. Replace if defective.
2. Open resistor R1.
    - Check resistor for 6 ohms. If no resistance found, replace resistor.
3. Loose or broken wire #10B from resistor R1 to turret rotate switch S13.
    - Check continuity. Replace if defective.
4. Defective turret rotate switch S13.
    - Check continuity through switch while activating rotate left function between wires #10B and #32. If no continuity found, replace switch.
5. Loose or broken wire #32 from turret rotate switch S13 to base terminal block.
    - Check continuity. Replace if defective.

6. Loose or broken wire #32 from base terminal block to turret harness plug pin #10.
   - Check continuity. Replace if defective.
7. Loose or broken wire #32 from turret harness plug pin #10 to turret rotate left valve 4H-32.
   - Check continuity. Replace if defective.
8. Loose or broken wire #02 from turret harness plug to turret rotate left valve 4H-32.
   - Check continuity. Replace if defective.
9. Defective turret rotate left valve coil 4H-32.
   - Check continuity and resistance through coil. Replace if defective.

4.1-17 No Turret Rotate Right from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to resistor R1.
   - Check continuity. Replace if defective.
2. Open resistor R1.
   - Check resistor for 6 ohms. If no resistance found, replace resistor.
3. Loose or broken wire #10B from resistor R1 to turret rotate switch S13.
   - Check continuity. Replace if defective.
4. Defective turret rotate switch S13.
   - Check continuity through switch while activating rotate right function between wires #10B and #33. If no continuity found, replace switch.
5. Loose or broken wire #33 from turret rotate switch S13 to base terminal block.
   - Check continuity. Replace if defective.
6. Loose or broken wire #33 from base terminal block to turret harness plug pin #11.
   - Check continuity. Replace if defective.
7. Loose or broken wire #33 from turret harness plug pin #10 to turret rotate right valve 4H-33.
   - Check continuity. Replace if defective.
8. Loose or broken wire #02 from turret harness plug to turret rotate right valve 4H-33.
   - Check continuity. Replace if defective.
9. Defective turret rotate right valve coil 4H-33.
   - Check continuity and resistance through coil. Replace if defective.

4.1-18 No Telescope Retract From Base Control Console

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

4.1-19 No Telescope Extend From Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to telescope switch S14.
   - Check continuity. Replace if defective.
2. Defective telescope switch S14.
   - Check continuity through switch while activating extend function between wires #10A and #39. If no continuity found, replace switch.

3. Loose or broken wire #39 from telescope switch S14 to base terminal block.
   - Check continuity. Replace if defective.
4. Loose or broken wire #39 from base terminal block to turret harness plug pin #13.
   - Check continuity. Replace if defective.
5. Loose or broken wire #39 from turret harness plug pin #13 to telescope extend valve 3H-39.
   - Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to telescope extend valve 3H-39.
   - Check continuity. Replace if defective.
7. Defective telescope extend valve coil 3H-39.
   - Check continuity and resistance through coil. Replace if defective.

4.1-20 No Platform Rotate Left From Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16.
   - Check continuity. Replace if defective.
2. Defective platform rotate switch S16.
   - Check continuity through switch while activating rotate left function between wires #10A and #36. If no continuity found, replace switch.
3. Open or defective diode D36-1.
   - Check diode. Replace if defective.
4. Loose or broken wire #37A from diode D36-1 to resistor R2.
   - Check continuity. Replace if defective.
5. Loose or broken wire #36 from platform rotate switch S16 to base connector plug A pin #18.
   - Check continuity. Replace if defective.
6. Loose or broken wire #36 in boom cable A or its connectors.
   - Check for continuity between pins #18 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #36 plug A pin #18 to platform terminal block.
   - Check continuity. Replace if defective.
8. Loose or broken wire #36 from platform terminal block to platform rotate left valve 4H-36.
   - Check continuity. Replace if defective.
9. Loose or broken wire #02 from platform terminal block to platform rotate left valve 4H-36.
   - Check continuity. Replace if defective.
10. 10. Defective platform rotate left valve coil 4H-36.
   - Check continuity and resistance through coil. Replace if defective.

4.1-21 No Platform Rotate Right from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform rotate switch S16.
   - Check continuity. Replace if defective.
2. Defective platform rotate switch S16.
   - Check continuity through switch while activating rotate right function between wires #10A and #37. If no continuity found, replace switch.
3. Open or defective diode D37-1.
   - Check diode. Replace if defective.
4. Loose or broken wire #37A from diode D37-1 to resistor R2.
   - Check continuity. Replace if defective.
5. Loose or broken wire #37 from platform rotate switch S16 to base connector plug A pin #19.
   - Check continuity. Replace if defective.
6. Loose or broken wire #37 in boom cable A or its connectors.
   - Check for continuity between pins #19 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #37 plug A pin #19 to platform terminal block.
   - Check continuity. Replace if defective.

8. Loose or broken wire #37 from platform terminal block to platform rotate right valve 4H-37.
   - Check continuity. Replace if defective.
9. Loose or broken wire #02 from platform terminal block to platform rotate right valve 4H-37.
   - Check continuity. Replace if defective.
10. 10. Defective platform rotate right valve coil 4H-37.
   - Check continuity and resistance through coil. Replace if defective.

4.1-22 No Platform Rotate Left or Right from Base Control Console

1. Open resistor R2.
   - Check resistor for 10 ohms (66T) or 13 ohms (61T). If no resistance found, replace resistor.
2. Loose or broken wire #35A from resistor R2 to base key switch S2.
   - Check continuity. Replace if defective.
3. Open or defective base key switch S2.
   - Select base control on switch. Check continuity through switch. Replace if defective.
4. Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16.
   - Check continuity. Replace if defective.
5. Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
7. Defective proportional flow enable valve coil 2H-42.
   - Check continuity and resistance through coil. Replace if defective.

4.1-23 No Jib Up from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17.
   - Check continuity. Replace if defective.
2. Defective jib up switch S17.
   - Check continuity through switch while activating jib up function between wires #10A and #35. If no continuity found, replace switch.
3. Open or defective diode D35-1.
   - Check diode. Replace if defective.
4. Loose or broken wire #35A from diode D35-1 to resistor R2.
   - Check continuity. Replace if defective.
5. Loose or broken wire #35 from jib up switch S17 to base connector plug A pin #17.
   - Check continuity. Replace if defective.
6. Loose or broken wire #35 in boom cable A or its connectors.
   - Check for continuity between pins #17 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #35 from plug A pin #17 to platform terminal block.
   - Check continuity. Replace if defective.
8. Loose or broken wire #35 from platform terminal block to jib up valve 4H-35.
   - Check continuity. Replace if defective.
9. Loose or broken wire #02 from platform terminal block to jib up valve 4H-35.
   - Check continuity. Replace if defective.
10. 10. Defective jib up valve coil 4H-35.
   - Check continuity and resistance through coil. Replace if defective.

4.1-24 No Jib Down from Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to jib switch S17.
   - Check continuity. Replace if defective.
2. Defective jib down switch S17.
   - Check continuity through switch while activating jib down function between wires #10A and #34. If no continuity found, replace switch.

3. Open or defective diode D34-1.
   - Check diode. Replace if defective.
4. Loose or broken wire #35A from diode D34-1 to resistor R2.
   - Check continuity. Replace if defective.
5. Loose or broken wire #34 from jib down switch S17 to base connector plug A pin #16.
   - Check continuity. Replace if defective.
6. Loose or broken wire #34 in boom cable A or its connectors.
   - Check for continuity between pins #16 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #34 from plug A pin #16 to platform terminal block.
   - Check continuity. Replace if defective.
8. Loose or broken wire #34 from platform terminal block to jib down valve 4H-34.
   - Check continuity. Replace if defective.
9. Loose or broken wire #02 from platform terminal block to jib down valve 4H-34.
   - Check continuity. Replace if defective.
10. Defective jib down valve coil 4H-34.
    - Check continuity and resistance through coil. Replace if defective.

4.1-25 No Jib Up Or Down From Base Control Console

1. Loose or broken wire #35A from resistor R2 to base key switch S2.
   - Check continuity. Replace if defective.
2. Open or defective base key switch S2.
   - Select base control console on switch. Check continuity through switch. Replace if defective.
3. Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16.
   - Check continuity. Replace if defective.
4. Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
5. Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
6. Defective proportional flow enable valve coil 2H-42.
   - Check continuity and resistance through coil. Replace if defective.

4.1-26 No Manual Platform Level Up From Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15.
   - Check continuity. Replace if defective.
2. Defective platform level switch S15.
   - Check continuity through switch while activating level up function between wires #10A and #41. If no continuity found replace switch.
3. Loose or broken wire #41 from platform level switch S15 to base terminal block.
   - Check continuity. Replace if defective.
4. Loose or broken wire #41 from base terminal block to turret harness pin plug pin#15.
   - Check continuity. Replace if defective.
5. Loose or broken wire #41 from turret harness pin plug pin#15 platform level up valve 4H-41.
   - Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness pin plug platform level up valve 4H-41.
   - Check continuity. Replace if defective.
7. Defective platform level up valve coil 4H-41.
   - Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #41 from base terminal block to base connector plug B pin #11.
   - Check continuity. Replace if defective.
9. Loose or broken wire #41 in boom cable B or its connectors.
   - Check for continuity between pins #11 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.

10. Loose or broken wire #41 from plug B pin #11 to platform terminal block.
    - Check continuity. Replace if defective.
11. Open diode D41 located in platform terminal block.
    - Check diode. Replace if defective.
    -

4.1-27 No Manual Platform Level Down From Base Control Console

1. Loose or broken wire #10A from ignition/ pump switch S5 to platform level switch S15.
    - Check continuity. Replace if defective.
2. Defective platform level switch S15.
    - Check continuity through switch while activating level down function between wires #10A and #40. If no continuity found replace switch.
3. Loose or broken wire #40 from platform level switch S15 to base terminal block.
    - Check continuity. Replace if defective.
4. Loose or broken wire #40 from base terminal block to turret harness pin plug pin #14.
    - Check continuity. Replace if defective.
5. Loose or broken wire #40 from turret harness pin plug pin #14 platform level down valve 4H-40.
    - Check continuity. Replace if defective.
6. Loose or broken wire #02 from turret harness pin plug platform level down valve 4H-40.
    - Check continuity. Replace if defective.
7. Defective platform level down valve coil 4H-40.
    - Check continuity and resistance through coil. Replace if defective.
8. Loose or broken wire #40 from base terminal block to base connector plug B pin #10.
    - Check continuity. Replace if defective.
9. Loose or broken wire #40 in boom cable B or its connectors.
    - Check for continuity between pins #10 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
10. Loose or broken wire #40 from plug B pin #10 to platform terminal block.
    - Check continuity. Replace if defective.
11. Open diode D40 located in platform terminal block.
    - Check diode. Replace if defective.

4.1-28 No Manual Platform Level Up From Platform Control Console

NOTE

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

1. Loose or broken wire #08 from platform terminal block to platform level switch S19.
    - Check continuity. Replace if defective.
2. Defective platform level switch S19.
    - Check continuity through switch while activating level up function between wires #08 and #41. If no continuity found replace switch.
3. Loose or broken wire #41 from platform level switch S19 to platform terminal block.
    - Check continuity. Replace if defective.
4. Open diode D41 located in platform terminal block.
    - Check diode. Replace if defective.

4.1-29 No Manual Platform Level Down From Platform Control Console

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

1. Loose or broken wire #08 from platform terminal block to platform level switch S19.
   - Check continuity. Replace if defective.
2. Defective platform level switch S19.
   - Check continuity through switch while activating level down function between wires #08 and #40. If no continuity found replace switch.
3. Loose or broken wire #40 from platform level switch S19 to platform terminal block.
   - Check continuity. Replace if defective.
4. Open diode D40 located in platform terminal block.
   - Check diode. Replace if defective.

4.1-30 All Controls Inoperative From Platform Control Console

1. Open or defective emergency stop switch S4.
   - Pull emergency switch out. Check continuity through switch. Replace if defective.
2. Loose or broken wire #4 from emergency stop switch S4 to platform terminal block.
   - Check continuity. Replace if defective.
3. Loose or broken jumper wire #4 on emergency stop switch S4.
   - Check continuity. Replace if defective.
4. Loose or broken pin jumper between #04 and #04A on platform terminal block (without generator option only).
   - Check continuity. Replace if defective.
5. Loose or broken wire #04 from platform terminal block to generator switch S22 (generator option only).
   - Check continuity. Replace if defective.
6. Generator switch S22 in generator mode or is open or defective (generator option only).
   - Select OFF mode on generator switch. Check continuity through switch from #04 to #04A. Replace if defective.
7. Loose or broken wire #04A from generator switch S22 to platform terminal block (generator option only).
   - Check continuity. Replace if defective.
8. Loose or broken wire #04A from platform terminal block to footswitch S11.
   - Check continuity. Replace if defective.
9. Open or defective footswitch S11.
   - Check continuity through switch while activating footswitch function between wires #04A and #08A. If no continuity found replace switch.
10. Loose or broken wire #08A from footswitch S11 to valve driver pin #16.
    - Check continuity. Replace if defective.
11. Loose or broken wire #04 from platform terminal block to valve driver pin #1, 2, & 13.
    - Check continuity. Replace if defective.
12. Loose or broken wire #02 from platform terminal block to valve driver pin #26.
    - Check continuity. Replace if defective.
13. No output on pin #6 of the valve driver to wire #08.
    - Check pin #6 for 12 volts. If no voltage present with foot on footswitch check section 5 for valve driver test procedure.
14. Loose or broken wire #08 from valve driver pin #6 to relay 08CR-1.
    - Check continuity. Replace if defective.
15. Loose or broken wire #02 from platform terminal block to relay 08CR1.
    - Check continuity. Replace if defective.

16. Loose or broken wire #20D from platform terminal block to relay 08CR1.
    - Check continuity. Replace if defective.
17. Loose or broken wire #20 from 08CR1 relay to plug A pin #8 in platform control console.
    - Check continuity. Replace if defective.
18. Defective relay 08CR1.
    - Check relay. Replace if defective.

4.1-31 No Boom Up From Platform Control Console

1. Loose or broken wire #04 from platform terminal block to joystick controller A1.
    - Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to joystick controller A1.
    - Check continuity. Replace if defective.
3. No output on y-axis of joystick controller A1.
    - Refer to joystick test procedure in section 5.
4. Loose or broken wire “Y" from joystick controller A1 to valve driver pin #29.
    - Check continuity. Replace if defective.
5. No output on pin #5 of the valve driver to wire #20B.
    - Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
6. No output on pin #22 of the valve driver to wire #14.
    - Check pin #22 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
7. Loose or broken wire #14 from valve driver pin #22 to plug A pin #7 in platform control console.
    - Check continuity. Replace if defective.
8. Loose or broken wire #14 in boom cable A or its connectors.
    - Check for continuity between pins #7 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #14 from base connector plug A pin #7 to base terminal block.
    - Check continuity. Replace if defective.
10. Loose broken wire #14 from base terminal block to turret harness plug pin #4.
    - Check continuity. Replace if defective.
11. Loose or broken wire #14 from turret harness plug pin #4 to boom up valve 4H-14.
    - Check continuity. Replace if defective.
12. Loose or broken wire #02 from turret harness plug to boom up valve 4H-14.
    - Check continuity. Replace if defective.
13. Defective boom up valve coil 4H-14.
    - Check continuity and resistance through coil. Replace if defective.
    -

4.1-32 No Boom Down From Platform Control Console

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

6. No output on pin #8 of the valve driver to wire #13.
   - Check pin #8 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
7. Loose or broken wire #13 from valve driver pin #8 to plug A pin #6 in platform control console.
   - Check continuity. Replace if defective.
8. Loose or broken wire #13 in boom cable A or its connectors.
   - Check for continuity between pins #6 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #13 from base connector plug A pin #6 to base terminal block.
   - Check continuity. Replace if defective.
10. Loose or broken wire #13 from base terminal block to turret harness plug pin #3.
    - Check continuity. Replace if defective.
11. Loose or broken wire #13 from turret harness plug pin #3 to boom down valve 4H-13.
    - Check continuity. Replace if defective.
12. Loose or broken wire #02 from turret harness plug to boom down valve 4H-13.
    - Check continuity. Replace if defective.
13. Defective boom down valve coil 4H-13.
    - Check continuity and resistance through coil. Replace if defective.

4.1-33 No Turret Left from Platform Control Console

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

4.1-34 No Turret Right from Platform Control Console

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

4.1-35 No Telescope Out from Platform Control Console

1. Loose or broken purple wire from speed controller to resistor R9 in platform control console.
   - Check continuity. Replace if defective.
2. Open or defective resistor R9.
   - Check resistor. Replace if defective.
3. Loose or broken wire #38B from resistor R9 to telescope switch S18.
   - Check continuity. Replace if defective.
4. Defective telescope switch S18.
   - Check continuity through switch while activating the function between wires #38B and #38A.
5. Loose or broken wire #38A from telescope switch S18 to valve driver pin #32.
   - Check continuity. Replace if defective.
6. Voltage out of range at valve driver pin #32.
   - Check voltage while operating telescope in. Voltage should be between 4.75 and 5.25 volts. Refer to telescope voltage reference table in section 5 if out of this range.
7. No output on pin #5 of the valve driver to wire #20B.
   - Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
8. No output on pin #9 of the valve driver to wire #38.
   - Check pin #9 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.

9. Loose or broken wire #38 from valve driver pin #9 to plug B pin #8 in platform control console.
   - Check continuity. Replace if defective.
10. Loose or broken wire #38 in boom cable B or its connectors.
   - Check for continuity between pins #8 on cable B. Check for loose or corroded connections onable connectors. Replace if wire is defective.
11. Loose or broken wire #38 from base connector plug B pin #8 to base terminal block.
   - Check continuity. Replace if defective.
12. Loose or broken wire #38 from base terminal block to turret harness plug pin #12.
   - Check continuity. Replace if defective.
13. Loose or broken wire #38 from turret harness plug pin #12 to telescope in valve 3H-38.
   - Check continuity. Replace if defective.
14. Loose or broken wire #02 from turret harness plug to telescope in valve 3H-38.
   - Check continuity. Replace if defective.
15. Defective telescope in valve coil 3H-38.
   - Check continuity and resistance through coil. Replace if defective.

4.1-36 No Telescope Out from Platform Control Console

1. Loose or broken purple wire from speed controller to resistor R9 in platform control console.
   - Check continuity. Replace if defective.
2. Open or defective resistor R9.
   - Check resistor. Replace if defective.
3. Loose or broken wire #38B from resistor R9 to telescope switch S18.
   - Check continuity. Replace if defective.
4. Open or defective resistor R10.
   - Check resistor. Replace if defective.
5. Defective telescope switch S18.
   - Check continuity through switch while activating the function between wires #38C and #38A.
6. Loose or broken wire #38A from telescope switch S18 to valve driver pin #32.
   - Check continuity. Replace if defective.
7. Voltage out of range at valve driver pin #32.
   - Check voltage while operating telescope out. Voltage should be between 2.25 and 2.75 volts. Refer to telescope voltage reference table in section 5 if out of this range.
8. No output on pin #5 of the valve driver to wire #20B.
   - Check pin #5 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
9. No output on pin #12 of the valve driver to wire #39.
   - Check pin #12 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
10. Loose or broken wire #39 from valve driver pin #12 to plug B pin #9 in platform control console.
   - Check continuity. Replace if defective.
11. Loose or broken wire #39 in boom cable B or its connectors.
   - Check for continuity between pins #9 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
12. Loose or broken wire #39 from base connector plug B pin #9 to base terminal block.
   - Check continuity. Replace if defective.
13. Loose or broken wire #39 from base terminal block to turret harness plug pin #13.
   - Check continuity. Replace if defective.
14. Loose or broken wire #39 from turret harness plug pin #13 to telescope out valve 3H-39.
   - Check continuity. Replace if defective.
15. Loose or broken wire #02 from turret harness plug to telescope out valve 3H-39.
   - Check continuity. Replace if defective.
16. Defective telescope out valve coil 3H-39.
   - Check continuity and resistance through coil. Replace if defective.

4.1-37 No Platform Rotate or Jib Function from Platform Control Console

1. Loose or broken wire #08 from platform terminal block to rotate switch S20 and jib switch S21.
   - Check continuity. Replace if defective.
2. No output on pin #21 of the valve driver to wire #42.
   - Check pin #20 for minimum 3.5 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
3. Loose or broken wire #42 from valve driver pin #21 to plug B pin #24 in platform control console.
   - Check continuity. Replace if defective.
4. Loose or broken wire #42 in boom cable B or its connectors.
   - Check for continuity between pins #24 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
5. Loose or broken wire #42 from base connector plug B pin #24 to base key switch S2.
   - Check continuity. Replace if defective.
6. Loose or broken wire #42 from base key switch S2 to turret harness plug pin #16.
   - Check continuity. Replace if defective.
7. Loose or broken wire #42 from turret harness plug pin #16 to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
8. Loose or broken wire #02 from turret harness plug to proportional flow enable valve 2H-42.
   - Check continuity. Replace if defective.
9. Defective proportional flow enable valve 2H-42.
   - Check continuity and resistance through coil. Replace if defective.

4.1-38 No Platform Rotate Left from Platform Control Console

1. Defective platform rotate switch S20.
   - Check continuity through switch while activating rotate left function between wires #08 and #36.
2. Loose or broken wire #36 from platform rotate switch S20 to platform terminal block.
   - Check continuity. Replace if defective.
3. Loose or broken jumper wire #36 on platform terminal block.
   - Check continuity. Replace if defective.
4. Open or defective diode D36 in platform terminal block.
   - Check diode. Replace if defective.
5. Loose or broken wire #36A from platform terminal block to valve driver pin #17.
   - Check continuity. Replace if defective.
6. Loose or broken wire #36 or #02 from platform terminal block to rotate left valve 4H-36.
   - Check continuity. Replace if defective.
7. Defective rotate left valve coil 4H-36.
   - Check continuity and resistance through coil. Replace if defective.

4.1-39 No Platform Rotate Right from Platform Control Console

1. Defective platform rotate switch S20.
   - Check continuity through switch while activating rotate right function between wires #08 and #37.
2. Loose or broken wire #37 from platform rotate switch S20 to platform terminal block.
   - Check continuity. Replace if defective.
3. Loose or broken jumper wire #37 on platform terminal block.
   - Check continuity. Replace if defective.
4. Open or defective diode D37 in platform terminal block.
   - Check diode. Replace if defective.
5. Loose or broken wire #36A from platform terminal block to valve driver pin #17.
   - Check continuity. Replace if defective.
6. Loose or broken wire #37 or #02 from platform terminal block to rotate right valve 4H-37.
   - Check continuity. Replace if defective.
7. Defective rotate right Valve coil 4H-37.
   - Check continuity and resistance through coil. Replace if defective.

4.1-40 No Jib Up from Platform Control Console

1. Defective jib switch S21.
   - Check continuity through switch while activating jib up function between wires #08 and #35.
2. Loose or broken wire #35 from jib switch S21 to platform terminal block.
   - Check continuity. Replace if defective.
3. Loose or broken jumper wire #35 on platform terminal block.
   - Check continuity. Replace if defective.
4. Open or defective diode D35 in platform terminal block.
   - Check diode. Replace if defective.
5. Loose or broken wire #34A from platform terminal block to valve driver pin #33.
   - Check continuity. Replace if defective.
6. Loose or broken wire #35 or #02 from platform terminal block to jib up valve 4H-35.
   - Check continuity. Replace if defective.
7. Defective jib up valve coil 4H-35.
   - Check continuity and resistance through coil. Replace if defective.

4.1-41 No Jib Down from Platform Control Console

1. Defective jib switch S21.
   - Check continuity through switch while activating jib down function between wires #08 and #34.
2. Loose or broken wire #34 from jib switch S21 to platform terminal block.
   - Check continuity. Replace if defective.
3. Loose or broken jumper wire #34 on platform terminal block.
   - Check continuity. Replace if defective.
4. Open or defective diode D34 in platform terminal block.
   - Check diode. Replace if defective.
5. Loose or broken wire #34A from platform terminal block to valve driver pin #33.
   - Check continuity. Replace if defective.
6. Loose or broken wire #34 or #02 from platform terminal block to jib down valve 4H-34.
   - Check continuity. Replace if defective.
7. Defective jib down valve coil 4H-34.
   - Check continuity and resistance through coil. Replace if defective.

4.1-42 Throttle Inoperative, Mid and High (Deutz TD2.9L only)

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

4.1-43 Mid Throttle Inoperative

1. Loose or broken wire #08 from platform terminal block to throttle switch S10.
   - Check continuity. Replace if defective.
2. Open or defective diode D08. (Generator option only)
   - Check diode. Replace if defective.
3. Defective throttle switch S10.
   - Check continuity through switch while activating mid throttle function between wires #08 and #79. If no continuity found replace switch.
4. Loose or broken wire #79 from throttle switch S10 to plug B pin #20 in platform control console.
   - Check continuity. Replace if defective.
5. Loose or broken wire #79 in Cable B or its connectors.
   - Check for continuity between pins #20 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.

(Deutz TD2.9L Diesel Only)

6. Loose or broken wire #79 from base plug B pin #20 to relay 79CR.
   - Check continuity. Replace if defective.
7. Loose or broken wire #02 from base terminal block to relay 79CR.
   - Check continuity. Replace if defective.
8. Loose or broken wire #90 from relay 79CR to base terminal block.
   - Check continuity. Replace if defective.
9. Loose or broken wire #99B from relay 79CR to base terminal block.
   - Check continuity. Replace if defective.
10. 9. Defective relay 79CR.
    - Check relay. Replace if defective.

(Deutz D2011 Diesel Only)

11. Loose or broken wire #79 from base plug B pin #18 to relay 79CR.
    - Check continuity. Replace if defective.
12. Loose or broken wire #02 from base terminal block to relay 79CR.
    - Check continuity. Replace if defective.
13. Loose or broken wire #99 from relay 79CR to ECU connector pin #18.
    - Check continuity. Replace if defective.
14. Loose or broken wire #103 from relay 79CR to base terminal block.
    - Check continuity. Replace if defective.
15. 10. Loose or broken wire #103 from base terminal block to ECU connector pin #17.
    - Check continuity. Replace if defective.
16. 11. Defective relay 79CR.
    - Check relay. Replace if defective.

(GM Engine Only)

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

4.1-44 High Throttle Inoperative

1. Loose or broken wire #08 from platform terminal block to throttle switch S10.
   - Check continuity. Replace if defective.
2. Defective throttle switch S10.
   - Check continuity through switch while activating high throttle function between wires #08 and #78. If no continuity found replace switch.
3. Loose or broken wire #78 from throttle switch S10 to plug B pin #17 in platform control console.
   - Check continuity. Replace if defective.
4. Loose or broken wire #78 in Cable B or its connectors.
   - Check for continuity between pins #17 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.

(Deutz TD2.9L Diesel Only)

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

(Deutz D2011 Diesel Only)

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

(GM Engine Only)

16. Loose or broken wire #78 from base plug B pin #17 to engine harness plug.
    - Check continuity. Replace if defective.
17. Loose or broken wire #78 from engine harness plug to GM engine connector 2.
    - Check continuity. Replace if defective.
18. Loose or broken gray/orange wire from GM engine connector 2 to ECU connector pin #52.
    - Check continuity. Replace if defective.
19. Loose or broken light blue/dark blue wire from ECU connector pin #6 to throttle actuator RA1.
    - Check continuity. Replace if defective.
20. Defective throttle actuator RA1.
    - Check actuator. Replace if defective.

4.1-45 Brake will not Release

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

4.1-46 No Drive and Steer

NOTE

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

1. Loose or broken wire #4 from platform terminal block to drive joystick A2 in platform control console.
   - Check continuity. Replace if defective.
2. Loose or broken wire #02 from platform terminal block to drive joystick A2.
   - Check continuity. Replace if defective.
3. Defective drive joystickA2.
   - See drive joystick test procedure in section 5.

4.1-47 No Forward Drive

1. No output on “D" when forward is selected on drive joystick A2.
   - See drive joystick test procedure in section 5.
2. Loose or broken wire "D-signal" from drive joystick A2 to valve driver pin #27.
   - Check continuity. Replace if defective.
3. No output from valve driver pin #34 to wire #16.
   - Check pin #34 for minimum 2 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
4. Loose or broken wire #16 from valve driver pin #34 to plug B pin #5 in platform control console.
   - Check continuity. Replace if defective.
5. Loose or broken wire #5 in cable B or its connectors.
   - Check for continuity between pins #5 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
6. Loose or broken wire #16 from base plug B pin #5 to turret harness plug pin #21.
   - Check continuity. Replace if defective.
7. Loose or broken wire #16 or #02 from turret harness plug to forward drive valve 3H-16.
   - Check continuity. Replace if defective.
8. Defective forward drive valve coil 3H-16.
   - Check continuity and resistance through coil. Replace if defective.

4.1-48 No Reverse Drive

1. No output on “D" when forward is selected on drive joystick A2.
   - See drive joystick test procedure in section 5.
2. Loose or broken wire "D-signal" from drive joystick A2 to valve driver pin #27.
   - Check continuity. Replace if defective.

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

4.1-49 No High Speed Drive

NOTE

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

1. Loose or broken wire #09 from base terminal block to limit switch LS2.
   - Check continuity. Replace if defective.
2. Open or defective limit switch LS2.
   - Ensure boom is below 15 degrees. Adjust switch if required. Check continuity through switch. Replace if required.
3. Loose or broken wire #29 from limit switch LS2 to base terminal block.
   - Check continuity. Replace if defective.
4. Loose or broken wire #29 from base terminal block to limit switch LS3.
   - Check continuity. Replace if defective.
5. Open or defective limit switch LS3.
   - Ensure boom is fully retracted. Adjust switch if required. Check continuity through switch. Replace if defective.
6. Loose or broken wire #59 from limit switch LS3 to base terminal block.
   - Check continuity. Replace if defective.
7. Loose or broken wire #59 from base terminal block to plug B pin #15.
   - Check continuity. Replace if defective.
8. Loose or broken wire #59 in boom cable B or its connectors.
   - Check for continuity between pins #15 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
9. Loose or broken wire #59 from plug B pin #15 in platform control console to platform terminal block.
   - Check continuity. Replace if defective.
10. Loose or broken wire #59 from platform terminal block to valve driver pin #31.
    - Check continuity. Replace if defective.
11. Defective valve driver channel input for high drive enable.
    - See section 5 for OCM pin voltage reference.
12. Loose or broken wire #59 from platform terminal block to torque switch S48.
    - Check continuity. Replace if defective.
13. Open or defective torque switch S48.
    - Check continuity through switch while activating low torque function between wires #59 and #45. If no continuity found replace switch.
14. Loose or broken wire #45 from torque switch S48 to plug A pin #20 in platform control console.
    - Check continuity. Replace if defective.

15. Loose or broken wire #45 in cable A or its connectors.
    - Check for continuity between pins #20 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
16. Loose or broken wire #45 from base plug A pin #20 to relay 45CR1.
    - Check continuity. Replace if defective.
17. Loose or broken wire #02 from base terminal block to relay 45CR1.
    - Check continuity. Replace if defective.
18. Loose or broken wire #09 from base terminal block to relay 45CR1.
    - Check continuity. Replace if defective.
19. Defective relay 45CR1.
    - Check relay. Replace if defective.
20. Loose or broken wire #45A from base terminal block to turret harness plug pin #17.
    - Check continuity. Replace if defective.
21. Loose or broken wire #45A or #02 from turret harness plug to 2 speed valve 3H-45A.
    - Check continuity. Replace if defective.
22. Defective 2 speed valve 3H-45A.
    - Check continuity and resistance through coil. Replace if defective.

4.1-50 No Elevated Drive

NOTE

Aerial platform must be level to drive elevated.

1. Loose or broken wire #09 or #02 from base terminal block to angle transducer/ tilt switch AT1.
    - Check continuity. Replace if defective.
2. Misadjusted, no output or defective angle transducer/ tilt switch AT1.
    - Adjust angle transducer/ tilt switch if required. Check for 12 volts on wire #28. If no voltage present with angle transducer/ tilt switch adjusted it is defective, replace angle transducer/ tilt switch.
3. Loose or broken wire #28 from level sensor TS1 to plug B pin #7.
    - Check continuity. Replace if defective.
4. Loose or broken wire #28 in cable B or its connectors.
    - Check for continuity between pins #7 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
5. Loose or broken wire #28 from plug B pin #7 to platform terminal block.
    - Check continuity. Replace if defective.
6. Loose or broken wire #28 from platform terminal block to valve driver pin #18.
    - Check continuity. Replace if defective.

4.1-51 No Left Steer

NOTE

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

1. Loose or broken wire #24 from drive joystick A2 to platform terminal block.
    - Check continuity. Replace if defective.
2. Open or defective diode D24 in platform terminal block.
    - Check diode. Replace if defective.
3. Loose or broken wire #24 from platform terminal block to relay 17ACR1.
    - Check continuity. Replace if defective.
4. Defective N/C contacts in relay 17ACR1.
    - Check relay. Replace if defective.
5. Loose or broken wire #24A from relay 17ACR1 to plug A pin #10 in platform control console.
    - Check continuity. Replace if defective.

6. Loose or broken wire #24A in boom cable A or its connectors.
   - Check for continuity between pins #10 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #24A from base plug A pin #10 in base terminal block.
   - Check continuity. Replace if defective.
8. Loose or broken wire #24A from base terminal block to turret harness plug pin #7.
   - Check continuity. Replace if defective.
9. Loose or broken wire #24A or #02 from turret harness plug to left steer valve 4H-24A.
   - Check continuity. Replace if defective.
10. 10. Defective left steer valve coil 4H-24A.
   - Check continuity and resistance through coil. Replace if defective.

4.1-52 No Right Steer

NOTE

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

1. Loose or broken wire #23 from drive joystick A2 to platform terminal block.
   - Check continuity. Replace if defective.
2. Open or defective diode D23 in platform terminal block.
   - Check diode. Replace if defective.
3. Loose or broken wire #23 from platform terminal block to relay 17ACR2.
   - Check continuity. Replace if defective.
4. Defective N/C contacts in relay 17ACR2.
   - Check relay. Replace if defective.
5. Loose or broken wire #23A from relay 17ACR2 to plug A pin #9 in platform control console.
   - Check continuity. Replace if defective.
6. Loose or broken wire #23A in boom cable A or its connectors.
   - Check for continuity between pins #9 on cable A. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
7. Loose or broken wire #23A from base plug A pin #9 to base terminal block.
   - Check continuity. Replace if defective.
8. Loose or broken wire #23A from base terminal block to turret harness plug pin #6.
   - Check continuity. Replace if defective.
9. Loose or broken wire #23A or #02 from turret harness plug to right steer valve 4H-23A.
   - Check continuity. Replace if defective.
10. 10. Defective left steer valve coil 4H-23A.
   - Check continuity and resistance through coil. Replace if defective.

4.1-53 Direction Sensing Inoperative

1. Loose or broken wire #09 from base terminal block to limit switch LS1.
   - Check continuity. Replace if defective.
2. Open or defective limit switch LS1.
   - Adjust limit switch if required. Check continuity through switch. Replace if defective.
3. Loose or broken wire #17 from limit switch LS1 to base terminal block.
   - Check continuity. Replace if defective.
4. Loose or broken wire #17 from base terminal block to base plug B pin #6.
   - Check continuity. Replace if defective.
5. Loose or broken wire #17 in boom cable B or its connectors.
   - Check for continuity between pins #6 on cable B. Check for loose or corroded connections on cable connectors. Replace if wire is defective.
6. Loose or broken wire #17 from base plug B pin #6 to valve driver pin #15 in platform control console.
   - Check continuity. Replace if defective.

7. Defective valve driver channel input for direction sense enable.
   - See section 5 for OCM pin voltage reference.

4.1-54 Steer Direction Sensing Inoperative

1. No output on valve driver pin #4 to wire #17A.
   - Check pin #4 for 12 volts. If no voltage present with foot on footswitch check section 5 for OCM pin voltage reference.
2. Loose or broken wire #17A from valve driver pin #4 to relays 17ACR1 and 17ACR2.
   - Check continuity. Replace if defective.
3. Loose or broken wire #02 from platform terminal block to relays 17ACR1 and 17ACR2.
   - Check continuity. Replace if defective.
4. Defective relays 17ACR1 and 17ACR2.
   - Check relay. Replace if defective.

NOTE

If only one relay is bad and one is OK, you will have steer in one direction only.

4.2 Hydraulic System

4.2-1 All Controls Inoperative

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

4.2-2 All Boom Functions Inoperative

1. Open or defective dump/ enable valve 2H-21A.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective relief valve RV1.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
3. System pump P2 out of adjustment or is defective.
   - Refer to section 5 for pump set up procedure. Replace if defective.
4. Defective load sense adjusting valve 3H-V2.
   - Check valve. Replace if defective.
5. Defective pressure compensator valve 3H-V1.
   - Check valve. Replace if defective.
6. Plugged or defective high pressure filter F1.
   - Check filter. Replace if plugged or defective.

4.2-3 No Main Boom Up

1. Stuck or defective differential sensing valve DSV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective lift up valve 4H-14.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective shuttle valve SV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV5.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.

5. Stuck or defective counterbalance valve CB3.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective lift cylinder C1.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-4 No Main Boom Down

1. Stuck or defective differential sensing valve DSV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective lift down valve 4H-13.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective shuttle valve SV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV5.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective counterbalance valve CB3.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
6. Defective lift cylinder C1.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-5 No Turret Rotate Left

1. Stuck or defective differential sensing valve DSV1.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective rotate left valve 4H-32.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective shuttle valve SV1.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV4.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV2.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective shuttle valve SV7.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
7. Stuck or defective counterbalance valve CB2.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Turret rotate brake BR1 not releasing.
   - Inspect brake for worn seals or broken components. Repair and replace as necessary.
9. Worn or defective swing drive motor M2.
   - Check motor. Repair or replace if defective.

4.2-6 No Turret Rotate Right

1. 1. Stuck or defective differential sensing valve DSV1.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective rotate right valve 4H-33.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective shuttle valve SV1.

- Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.

4. Stuck or defective check valve CV4.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV2.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective shuttle valve SV7.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
7. Stuck or defective counterbalance valve CB1.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Turret rotate brake BR1 not releasing.
   - Inspect brake for worn seals or broken components. Repair and replace as necessary.
9. Worn or defective swing drive motor M2.
   - Check motor. Repair or replace if defective.

4.2-7 No Boom Extend

1. Stuck or defective differential sensing valve DSV3.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective boom extend valve 3H-39.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV11.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV6.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV4.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Return valve V5 stuck in the open position.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
7. Stuck or defective counterbalance valve CB4.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Return valve V4 stuck in the closed position or is defective.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
9. Defective extension cylinder C2.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-8 No Boom Retract

1. 1. Stuck or defective differential sensing valve DSV3.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective boom retract valve 3H-38.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV10.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective check valve CV6.

- Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.

5. Stuck or defective relief valve RV4.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Return valve V4 stuck in the open position.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
7. Stuck or defective counterbalance valve CB5.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Return valve V5 stuck in the closed position or is defective.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
9. Defective extension cylinder C2.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-9 No Jib Up

1. Stuck or defective proportional flow enable valve 2H-42.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective check valve CV9.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective jib up valve 4H-35.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective counterbalance valve CB9.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
5. Defective jib cylinder C5.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-10 No Jib Down

1. Stuck or defective proportional flow enable valve 2H-42.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective check valve CV9.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective jib down valve 4H-34.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective counterbalance valve CB8.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
5. Defective jib cylinder C5.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-11 No Platform Rotation Right

1. Stuck or defective proportional flow enable valve 2H-42.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective check valve CV9.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective rotate right valve 4H-37.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective counterbalance valve CB11.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.

5. Defective rotary actuator RA1.
   - Check actuator. Repair or replace as necessary.

4.2-12 No Platform Rotation Left

1. Stuck or defective proportional flow enable valve 2H-42.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective check valve CV9.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective rotate left valve 4H-36.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective counterbalance valve CB10.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
5. Defective rotary actuator RA1.
   - Check actuator. Repair or replace as necessary.

4.2-13 Platform will not Level Down

1. Stuck or defective platform level down valve 4H-40.
   - - Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective dual check valve DCV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV8.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective shuttle valve SV3.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV3.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective counterbalance valve CB6.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Plugged orifice OR2.
   - Check orifice. Clean if plugged or replace if defective.
8. Defective leveling cylinder C3 or slave cylinder C4.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-14 Platform will not Level Up

1. Stuck or defective platform level up valve 4H-41.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective dual check valve DCV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV7.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective shuttle valve SV3.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Stuck or defective relief valve RV3.

- Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.

6. Stuck or defective counterbalance valve CB7.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Plugged orifice OR2.
   - Check orifice. Clean if plugged or replace if defective.
8. Defective leveling cylinder C3 or slave cylinder C4.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-15 Brake will not Release

1. Stuck or defective shuttle valve SV5.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Defective or misadjusted pressure reducing valve PR1.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
3. Stuck or defective brake valve 3H-26.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Stuck or defective shuttle valve SV6.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
5. Defective or misadjusted relief valve RV5.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
6. Stuck or defective brake release override valve V1.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
7. Bypassing or defective brake hand pump V3.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.
8. Bypassing or defective brake cylinder BR1.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-16 Brake will not Engage

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

4.2-17 No Drive Forward or Reverse

1. Brake not releasing.
   - See “brake will not release" in this section.
2. Defective or misadjusted charge pump relief valve RV8.
   - Set valve to specifications. Check O-rings and clean valve. Repair or replace valve as required.
3. Worn charge pump P1A.
   - Check pump. Replace if defective.
4. Defective pump displacement control 4H-15 and 4H-16.
   - Check control. Replace if defective.
5. Open bypass valve V6.
   - Close bypass valve.
6. Worn or defective drive pump P1.
   - Check pump. Replace if defective.
7. Worn or defective drive motor M1.

- Check motor. Replace if defective.

4.2-18 No Forward Drive

1. Defective pump displacement control 4H-16.
   - Check control. Replace if defective.
2. Defective or misadjusted drive relief valve RV6.
   - See section 5 for drive pump set up procedures.

4.2-19 No Reverse Drive

1. Defective pump displacement control 4H-15.
   - Check control. Replace if defective.
2. Defective or misadjusted drive relief valve RV7.
   - See section 5 for drive pump set up procedures.

4.2-20 No High Speed Drive

1. Stuck or defective 2 speed valve 3H-45.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Defective shift spool in drive motor M1.
   - Check motor. Repair or replace if necessary.

4.2-21 No Right Steer

1. Stuck or defective right valve 4H-23A.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective dual check valve DCV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Plugged orifice OR1.
   - Check orifice. Clean if plugged or replace if defective.
5. Defective steer cylinder C8 for 4WD or C9 for 2WD.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-22 No Left Steer

1. Stuck or defective left steer valve 4H-24A.
   - Clean valve. Check operation of valve. Repair or replace valve as required.
2. Stuck or defective dual check valve DCV2.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
3. Stuck or defective check valve CV3.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
4. Plugged orifice OR1.
   - Check orifice. Clean if plugged or replace if defective.
5. Defective steer cylinder C8 for 4WD or C9 for 2WD.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.

4.2-23 Axle Will Not Oscillate

NOTE

Axle will only oscillate when boom is fully retracted and is no greater than 15 degress above horizontal.

1. Stuck or defective axle lockout valve 3H-65.
   - Clean valve. Replace if defective.
2. One or more counterbalance valves (CB12 or CB13) failed to shift or is defective.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.

4.2-24 Axle Will Not Lock

NOTE

Axle is in constant float if boom is fully retracted and is below 15 degrees of elevation.

1. Axle lockout valve 3H-65 is stuck in shifted position or is defective.
   - Clean valve. Check O-rings on valve. Check operation of valve. Repair or replace valve as required.
2. Bypassing or defective axle cylinders C6 and C7.
   - Check seals on cylinder. Replace as necessary. Replace cylinder if defective.
3. Counterbalance valves (CB12 or CB13) out of adjustment or are defective.
   - Clean valve. Check O-rings on valve. Repair or replace valve as required.

4.3 Load Sensing System - CE

4.3-1 Green Power LED is not Flashing

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

4.3-2 Load Cell red Alarm LED is ON (with platform empty)

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

4.3-3 Red Error LED is ON

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

4.3-4 Load Cell red Alarm LED is OFF (with platform overloaded)

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

4.3-5 Platform Indicator Light does not turn ON

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

4.3-6 Audible Alarm does not turn ON

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

4.3-7 Boom and Drive Functions are Enabled (with boom extended)

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

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PROCEDURES

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General

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

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.

Platform

5.1-1 Human Machine Interface (HMI)

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

1. Ensure aerial platform is on a firm level surface, and is in stowed position and engine is off.
2. On base control, turn base/off/platform key switch to "" platform position.
3. Pull out "" emergency stop button.

WARNING

Ensure that you maintain three points of contact to mount/dismount platform.

3. Enter platform and close gate.

WARNING

DO NOT operate any control on platform control console without proper fall protection secured to designated location in platform. Failure to avoid this hazard could result in death or serious injury!

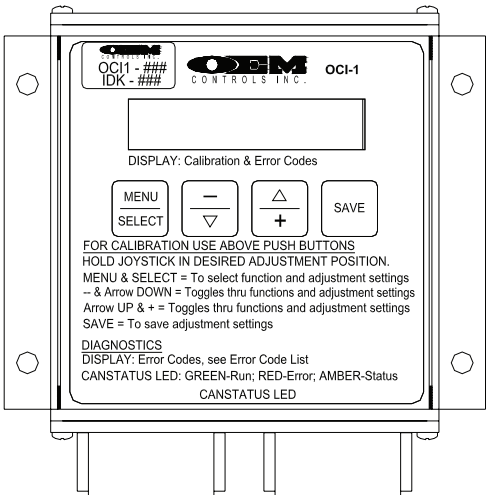
WARNING

Ensure that there are no personnel or obstructions in test area and that there is sufficient room for boom to swing.

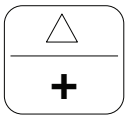
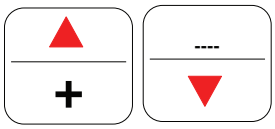
4. At platform control, open the cover of the console to access the OCI-1 console.

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

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



5.1-2 User Interface Keys

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

OCM Character Functions Charts

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

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

OCM Function (Channel) Names	
DRIVE REV Fn01A	Drive Reverse
DRIVE FWD Fn01B	Drive Forward
ROTATE L Fn02A	Turret Rotate Left
ROTATE R Fn02B	Turret Rotate Right
BOOM DOWN Fn03A	Main Boom Down
BOOM UP Fn03B	Main Boom Up
FLY IN Fn04A	Boom Telescope Retract
FLY OUT Fn04B	Boom Telescope Extend
PROP FLOW Fn05A	Jib and Platform Rotate
PROP FLOW Fn05B	Unused Channel
LR REV FN06A	Virtual Channel
LR FEW FN06B	Virtual Channel

60585AB

OCM Operating Values Chart

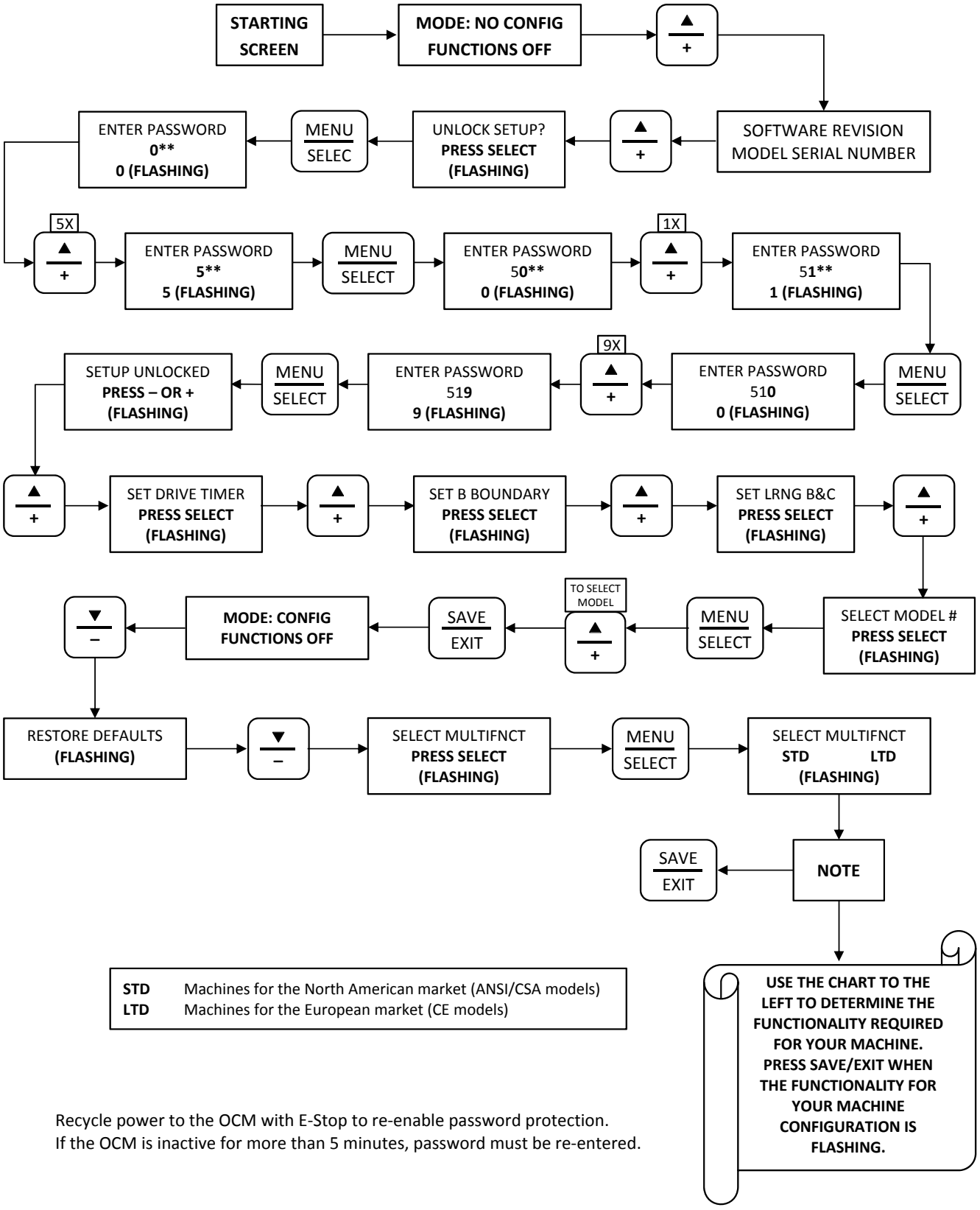
Input	Expected Value	Description
AI 1	0.5V to 8.5V	Drive Joystick
AI 2	0.5V to 8.5V	Turret Rotation Joystick
AI 3	0.5V to 8.5V	Boom Elevation Joystick
AI 4	0.5V to 7.5V	Flow Enable Rotary Potentiometer
DI 1	0 or 1	Direction Reverse Limit Sw.
DI 2	0 or 1	Footswitch Actuated
DI 3	0 or 1	Telescope Out Toggle Switch
DI 4	0 or 1	Telescope In Toggle Switch
DI 5	0 or 1	Jib Toggle Enabled
DI 6	0 or 1	Platform Rotation Toggle Enabled
DI 11	0 or 1	High Speed Drive Enable Limit Switch

Output	Adjustable Parameter	Description
PWM 1	25 to 75%	Drive Reverse
PWM 2	25 to 75%	Drive Forward
PWM 3	21 to 35%	Turret Rotate Left
PWM 4	21 to 35%	Turret Rotate Right
PWM 5	21 to 35%	Main Boom Down
PWM 6	38 to 47%	Main Boom Up
PWM 7	0 to 100%	Jib and Platform Rotate
PWM 11	40 to 48%	Boom Telescope Retract
PWM 12	45 to 70%	Boom Telescope Extend
Output	**Expected Value**	**Description**
DOUT 1	0 or 1	Steering Reverse Relay
DOUT 2	0 or 1	Load Sense Valve Enable
DOUT 3	0 or 1	Footswitch Actuated Indicator
DOUT 4	0 or 1	Holding Brake OFF (Energize to release)
DOUT 5	0 or 1	Manual Platform Level Enable

60583AB

5.1-3 How to Select Functionality

AC

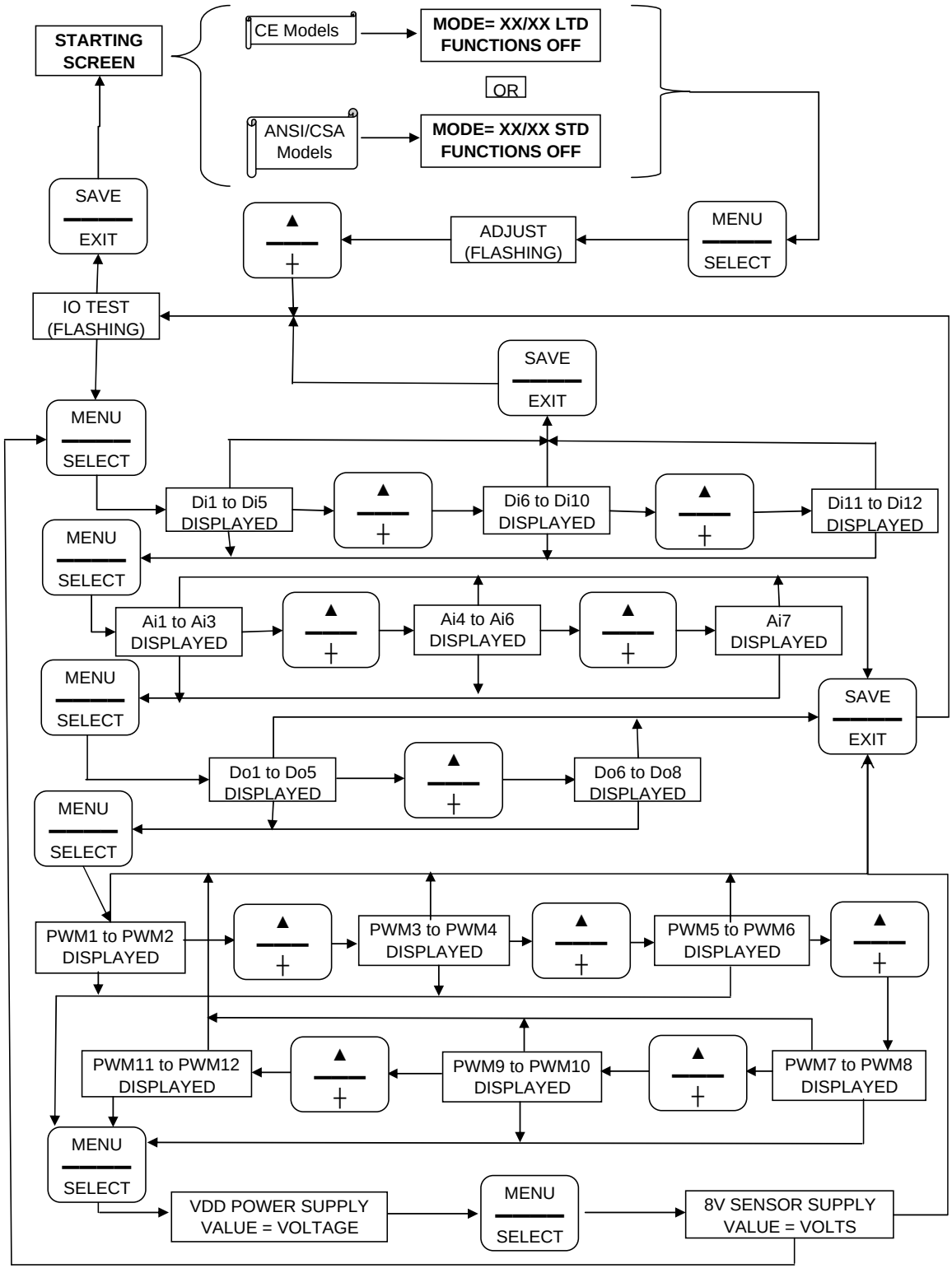


STD	Machines for the North American market (ANSI/CSA models)
LTD	Machines for the European market (CE models)

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

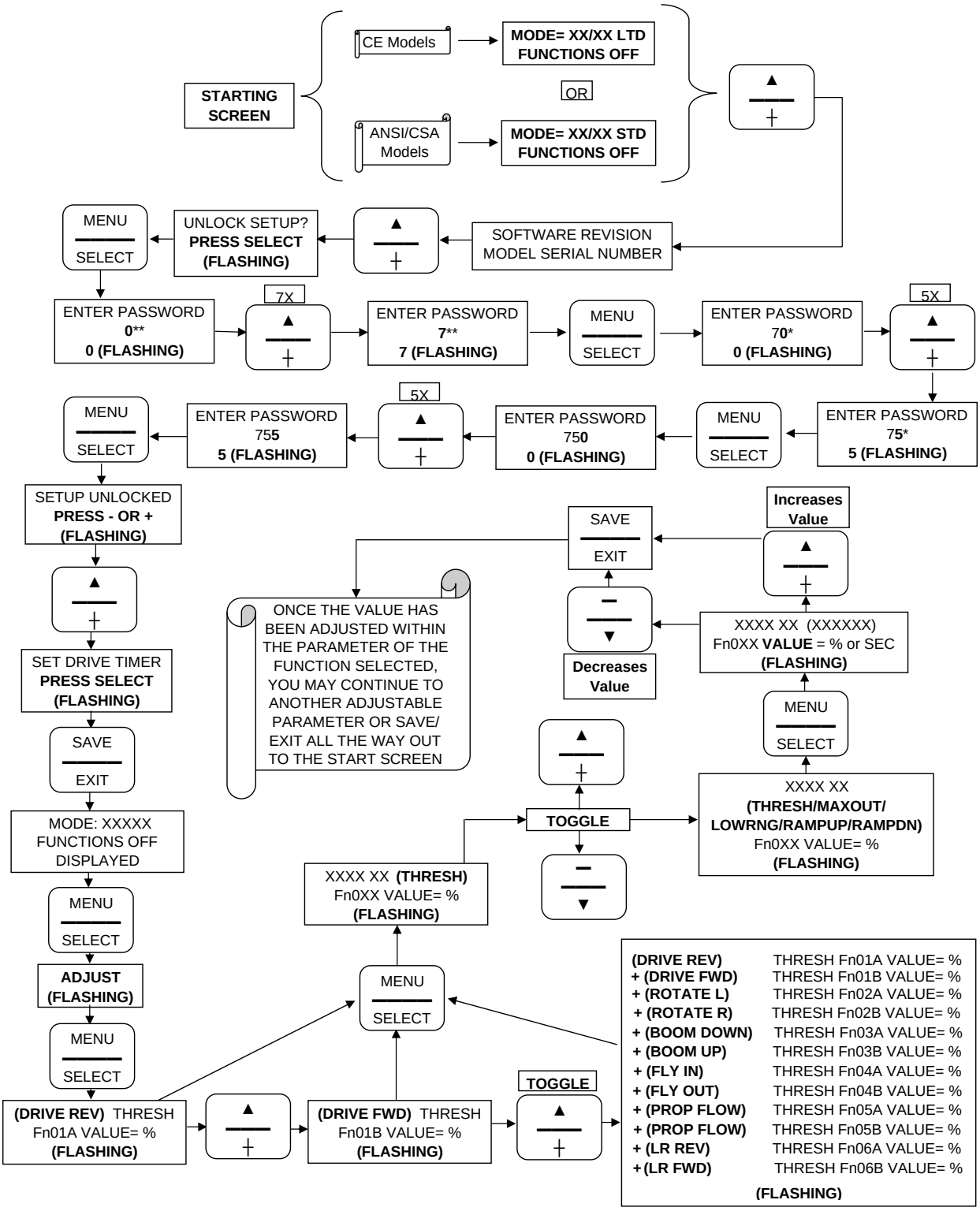
5.1-4 How to View OCM Operation

As a joystick or toggle switch is being activated, the OCM screen will display the active function and % output. Also, the following procedure will allow monitoring of all input and output channels:



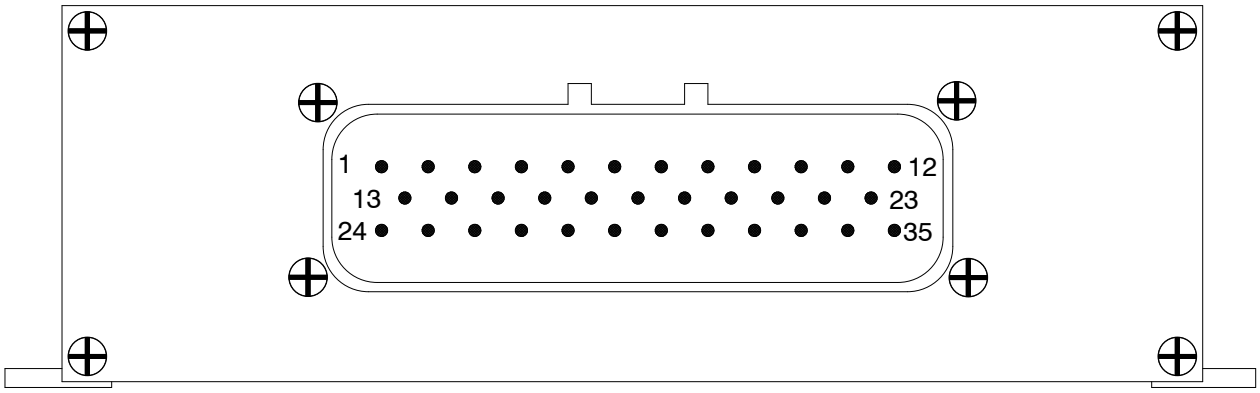
See “OCM Operating Values Chart" on page 145 for operating valves for the previous observations.

5.1-5 How to Unlock and Modify OCM Settings



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

5.1-6 OCM Pin Voltage Reference



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

Pin 1 - 12 volt input from wire 4.
Test between pin 1 and 02 wire.

Pin 2 - 12 volt input from wire 4.
Test between pin 2 and 02 wire.

Pin 3 - 8 volt output (purple wire) to boom speed controller.
7.5 volts= speed control in circuit. Test between pin 3 and 02 wire.

Pin 4 - Turret position. 12 volt output on wire 17A to relays 17ACR1 and 17ACR2 for directional sensing.
0 volts= Platform over drive axle.
12 volts= Platform over steer axle. Test between pin 4 and 02 wire.

Pin 5 - 12 volt output on wire 20B to load sense dump valve when any function selected.
Test between pin 5 and 02 wire while selecting a function.

Pin 6 - 12 volt output on wire 08 to boom control switches.
Test between pin 6 and 02 wire.

Pin 7 - 12 volt output on wire 65 to axle lock valve 3H-65 to float axle. 0 volts when above limit switches.
Test between pin 7 and 02 wire.

Pin 8 - Boom down selected. Proportional output on wire 13 to boom down valve 4H-13.
0 volts to 4.85 volts depending on position of joystick. Threshold= 1.5 volts. Test between pin 8 and 02 wire while operating boom down.

Pin 9 - Telescope in selected. Proportional output on wire 38 to telescope in valve 3H-38.
0 volts to 4.65 volts depending on boom speed control potentiometer.
Threshold= .95 volts.
Test between pin 9 and 02 wire while operating telescope in.

Pin 10 - 12 volt output on wire 26 to brake valve 3H-26 to release brakes.
Test between pin 10 and 02 wire.

Pin 11 - 12 volt output on wire 27 to tilt alarm relay 27CR.
Test between pin 11 and 02 wire.

Pin 12 - Telescope out selected. Proportional output on wire 39 to telescope out valve 3H-39.
0 volts to 6.8 volts depending on boom speed control potentiometer position. Threshold= .95 volts.
Test between pin 12 and 02 wire while operating telescope out.

Pin 13 - 12 volt input from wire 4.
Test between pin 13 and 02 wire.

Pin 14 - Variable input from wire 128A.
1 volt to 5 volts depending on angle of machine.
1 volt = Level.
Test between pin 14 and 02 wire.

Pin 15 - Turret position. 12 volt input from wire 17 (limit switch LS1).
0 volts= Platform over drive axle.
12 volts= Platform over steer axle.
Test between 15 and 02 wire.

Pin 16 - Foot switch activated. 12 volt input from wire 08A.
Test between pin 16 and 02 wire.

Pin 17 - Platform rotate selected. 12 volt input from wire 36A.
Test between pin 17 and 02 wire.

Pin 18 - 12 volt input from angle sensor on wire 28. 12V= <5 degrees.
Test between pin 18 and 02 wire.

Pin 19 - Not used.

Pin 20 - Turret rotate left selected. Proportional output on wire 32 to turret rotate left valve 4H-32.
0 volts to 5 volts depending on position of joystick. Threshold= .5 volts. Test between pin 20 and 02 wire while operating turret rotate left.

Pin 21 - Platform rotate or jib function selected. Proportional output on wire 42 to proportional flow enable valve 2H-42.
0 volts to 3.85 volts while operating platform rotate depending on boom speed control potentiometer position. Threshold= 2.3 volts.
0 volts to 9 volts while operating jib function depending on boom speed control potentiometer position. Threshold= 2.3 volts.
Test between pin 21 and 02 wire.

Pin 22 - Boom up selected. Proportional output on wire 14 to boom up valve 4H-14.
0 volts to 6.3 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 22 and 02 wire while operating boom up.

Pin 23 - Reverse drive selected. Proportional output on wire 15 to reverse drive valve 3H-15.
0 volts to 7.5 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 23 and 02 wire while operating reverse drive.

Pin 24 - Battery negative. Wire 02.

Pin 25 - Battery negative. Wire 02.

Pin 26 - Battery negative. Wire 02.

Pin 27 - Accelerator input. Wire D from drive joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Forward function= 4.9 volts to 8.5 volts. Reverse function= 4.1 volts to .5 volts. Test between pin 27 and 02 wire.

Pin 28 - Turret rotate input. Wire X from boom joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Rotate right function= 4.9 volts to 8.5 volts. Rotate left function= 4.1 volts to .5 volts. Test between pin 28 and 02 wire.

Pin 29 - Boom elevation input. Wire Y from boom joystick controller.
Neutral position= 4.2 volts to 4.8 volts. Boom up function= 4.9 volts to 8.5 volts. Boom down function= 4.1 volts to .5 volts. Test between pin 29 and 02 wire.

Pin 30 - Accelerator input. Signal wire (green wire) from boom speed controller.
Proportional voltage. .5 volts= slow speed up to 7.5 volts= fast speed.
Test between pin 30 and 02 wire while operating telescope in/out, jib up/down or basket rotate.

Pin 31 - 12 volt input from wire 59. From LS2 boom elevation limit switch and LS3 telescope limit switch.
12 volts= full speed. 0 volts= creep speed (one or more limit switches open). Test between pin 31 and 02 wire.

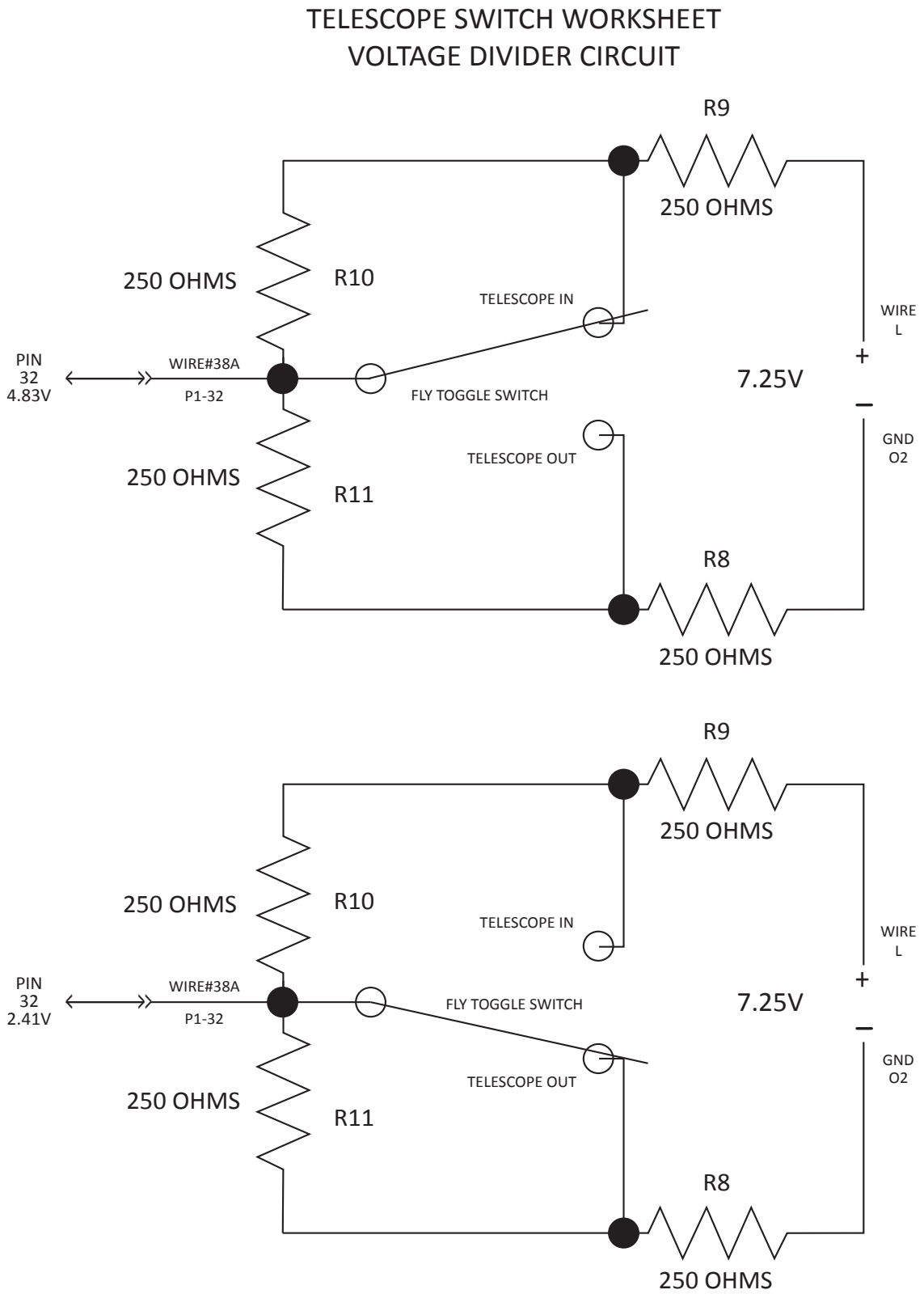
Pin 32 - Telescope selected. Input from wire 38A.
Neutral position= 3.58 volts.
Telescope in function= 4.83 volts.
Telescope out function= 2.41 volts.
Test between pin 32 and 02 wire.

Pin 33 - Jib function enable. 12 volt input from wire 34A.
Test between pin 33 and 02 wire.

Pin 34 - Forward drive selected. Proportional output on wire 16 to forward drive valve 3H-16.
0 volts to 7.5 volts depending on joystick position. Threshold= 1.5 volts. Test between pin 34 and 02 wire while operating forward drive.

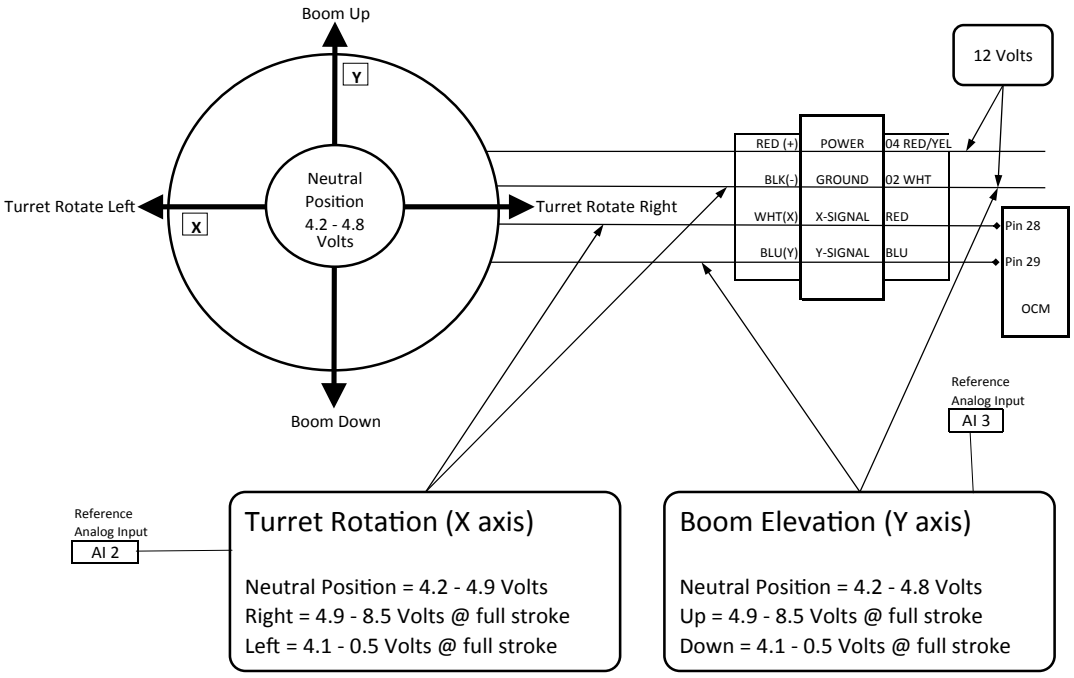
Pin 35 - Turret rotate right selected. Proportional output on wire 33 to turret rotate right valve 4H-33.
0 volts to 5 volts depending on position of joystick. Threshold= .5 volts. Test between pin 10 and 02 wire while operating turret rotate right.

5.1-7 Fly Boom Switch Voltage References

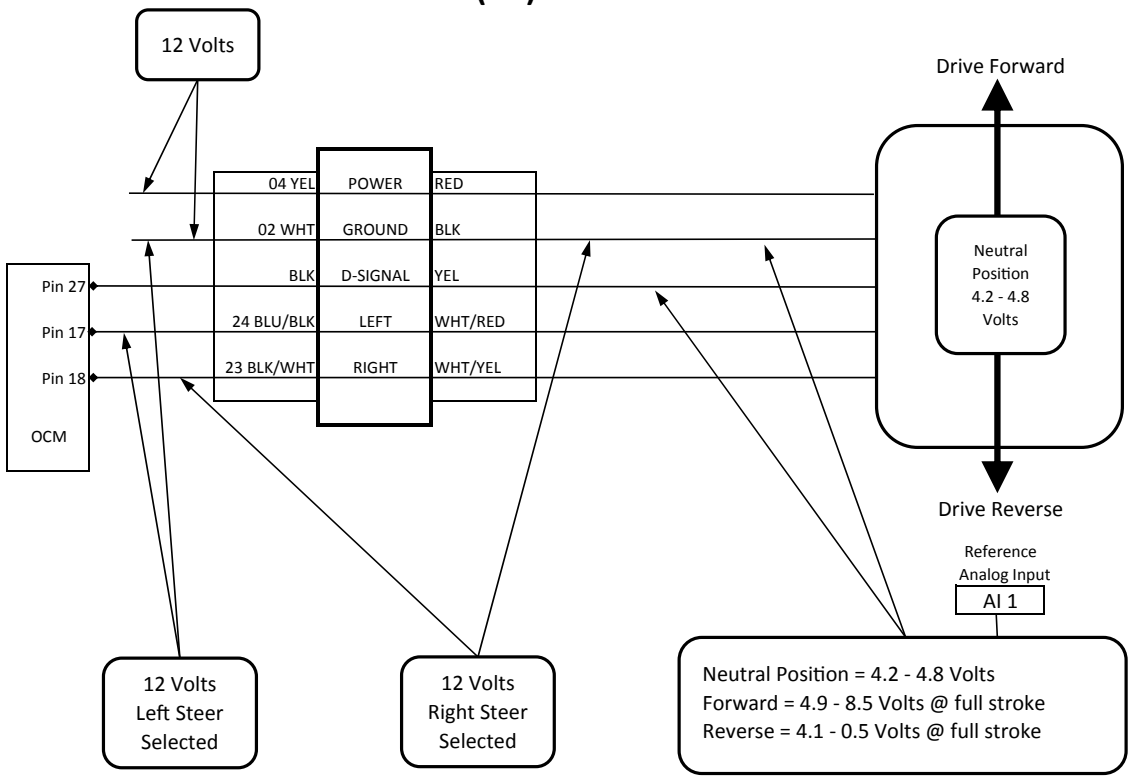


5.1-8 Platform Controller Voltage References

Boom/Turret (A1) Controller



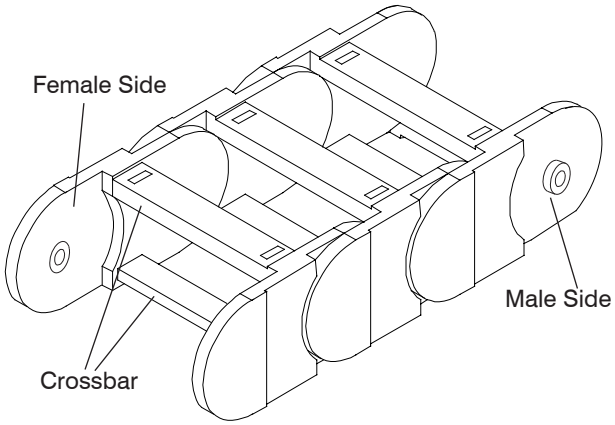
Drive (A2) Controller



Boom

5.2-1 Cable Carrier Repair

The cable carrier can be repaired by simply using a screwdriver. Each crossbar can be snapped off from either side of the chain either by hand or by using the screwdriver as a lever. New crossbars may be installed by snapping links together.



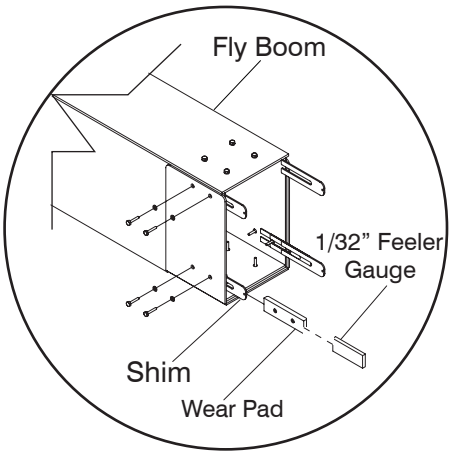
Cable Carrier Assembly

5.2-2 Check Wear Pads

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Start engine from base control console.
3. Raise main boom to a comfortable working height (chest high), and then extend fly boom approximately 1 ft (30 cm).
4. Measure the thickness of each wear pad and replace wear pad if it is less than 7/16" (11 mm)
5. If wear pad is not within specified thickness, shim as necessary.

5.2-3 Shimming Wear Pads

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Raise main boom to a comfortable working height (chest high) and extend fly boom until wear pads are accessible.
3. Loosen wear pad fasteners.
4. Shim as necessary to obtain 0–1/32" clearance and zero drag.



Shim & Feeler Gauge

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

NOTE

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

5.2-4 Boom Section Wear Pad Replacement

If wear pads inside the boom sections are worn and cannot be shimmed to meet the specification, they must be replaced. Wear pads that are worn past the specification can impair machine operation. For wear pad limit specification, refer to Check Wear Pads on page 162.

The boom sections must be disassembled to replace the wear pads. Typically the bottom platform-end and the top counterweight-end pads on each boom section wear out first. Check which ones need to be replaced before disassembly.

NOTE

To disassemble the boom sections, the extension cylinder and cable assembly inside the boom must be removed first. See Extension Cylinder and Cable Assembly Removal on page 176.

To disassemble the boom sections, the fly boom and mid boom must be slid fully out of the main boom. Provide enough space at the platform end of the machine at least the length of boom assembly.

Preparation:

- Remove the jib boom and the platform before disassembly. Removing these components limits twisting when lifting, and provides better control when sliding the boom sections out. See Platform and Jib Boom Removal on page 164. If the machine does not have a jib boom, just the platform is removed.
- Before beginning, place the machine in the proper shut down position, parked on level ground.
- Make sure the e-stops are pushed in and the key is off.
- Turn main power disconnect switch off. Lock out the switch.

CAUTION

Risk of personal injury or equipment damage if repositioning boom during this procedure. Use base controls with auxiliary power (engine off) to reposition safely.

IMPORTANT

If boom repositioning is necessary during this procedure, select emergency power position from start–function enable–emergency power switch, then activate desired boom function.

When operating on auxiliary power, do not operate more than one function at a time to avoid overloading the 12-volt auxiliary pump motor.

CAUTION

Risk of personal injury or equipment damage. Always use suitable lifting equipment and safe rigging practices when performing the following procedures.

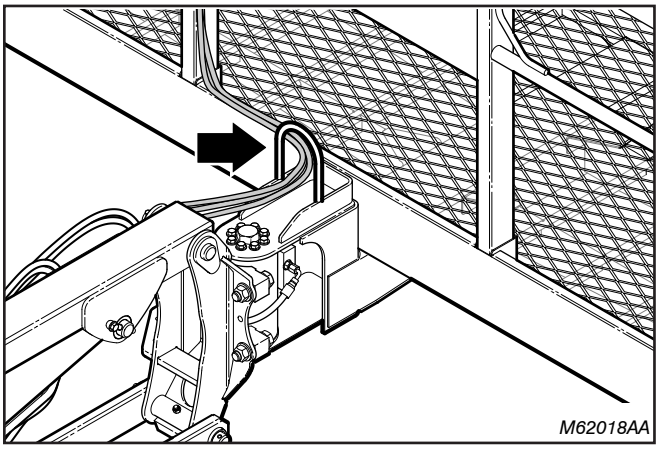
NOTE

If boom repositioning is required with the platform removed and control cables disconnected, reconnect the two main (24 pin) control cables and the jib and platform rotate harness (as equipped) to the platform control box. See Extension Cylinder and Cable Assembly Removal on page 176.

The machine cannot operate with the two platform control harnesses disconnected.

Platform and Jib Boom Removal

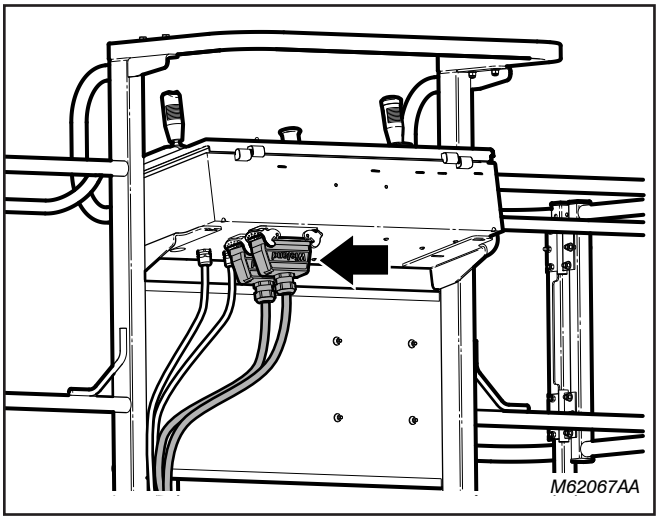
Before removing the platform and jib boom from the machine, the electrical harnesses routed across the platform swivel joint must be disconnected.



Electrical Harness at Platform Swivel Joint

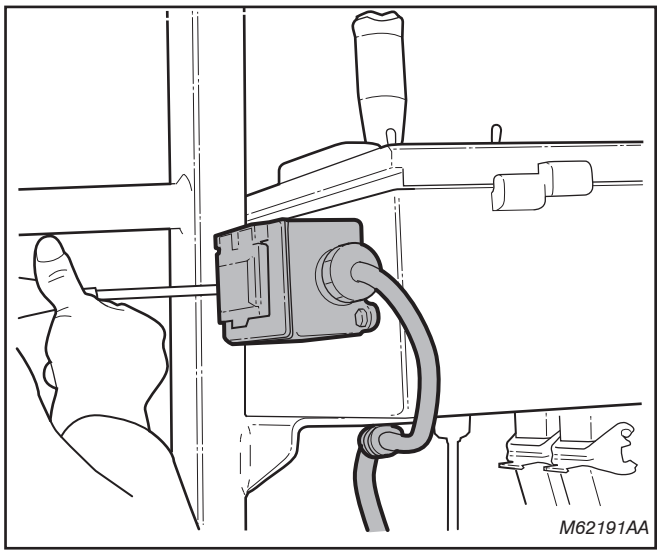
Procedure:

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



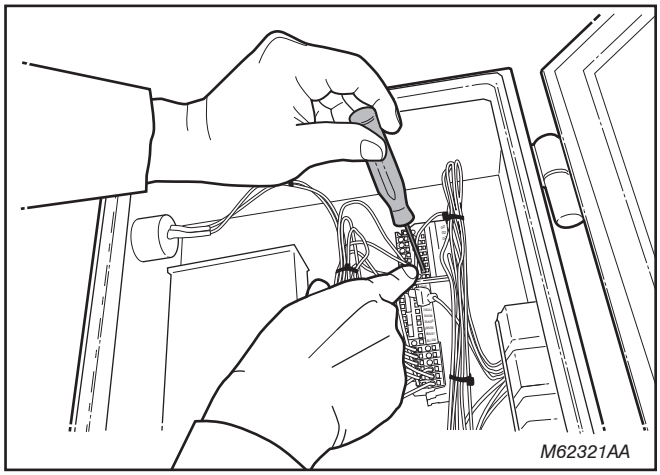
24-pin Control Cables

2. Remove the auxiliary AC receptacle box (as equipped) if its harness is bundled with the other harnesses. Remove the harness clamps.



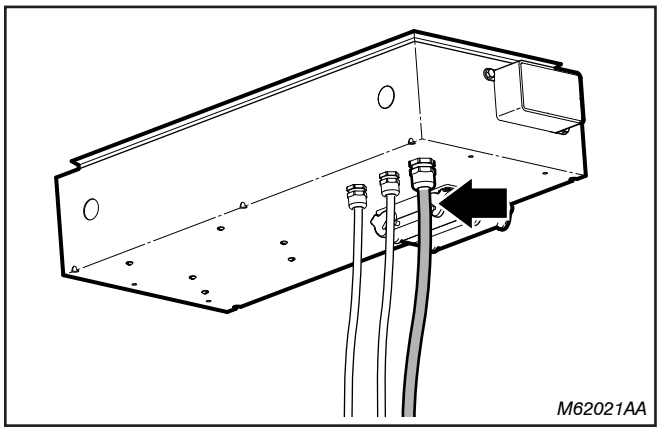
Auxiliary AC Receptacle Box

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



Control Console

6. Pull the disconnected harness out of the strain relief connector in the box.

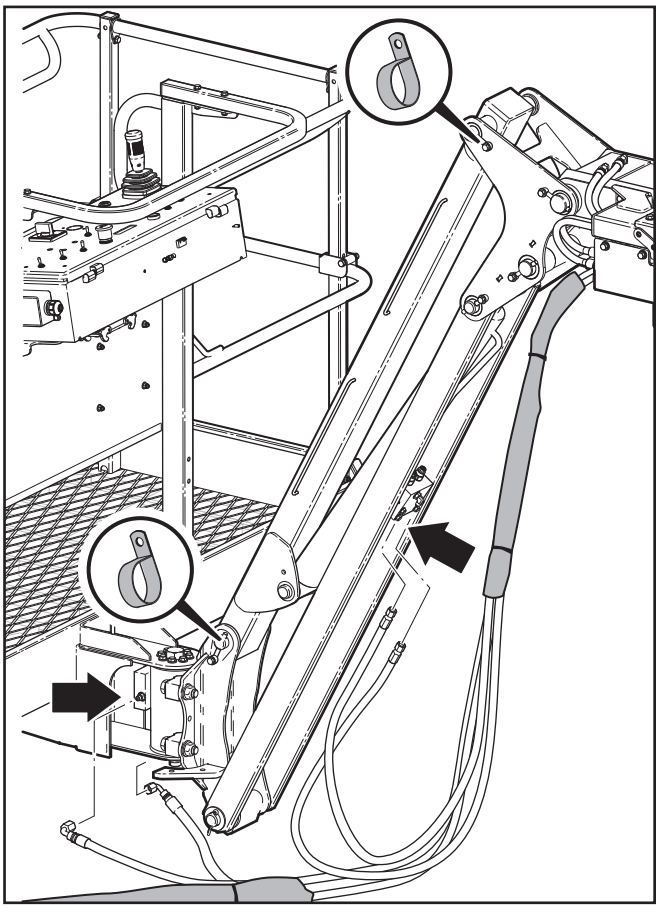


Jib and Platform Rotate Harness

7. Pull all harnesses through the cable guard on the swivel joint.

8. Mark and disconnect the hydraulic hoses for the jib cylinder and the platform rotary actuator. Provide a suitable container or rags to catch any oil spillage. Cap hoses and ports to keep them clean.

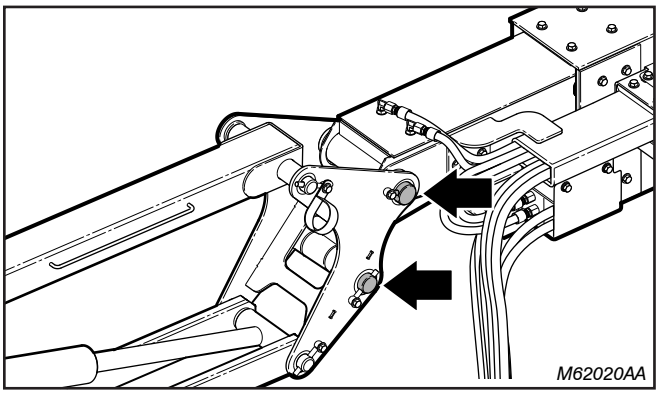
9. Remove the hoses and wire cable bundle from the P-clamps on the side of the jib boom.



Jib Cylinder and Platform Rotate Hoses

10. Using suitable lift equipment and safe rigging practices, connect lifting slings to the jib boom and platform. Tension the slings enough to lightly take the weight off the mounting bracket pins.

11. Remove the pins mounting the jib boom to the fly boom and the slave cylinder.

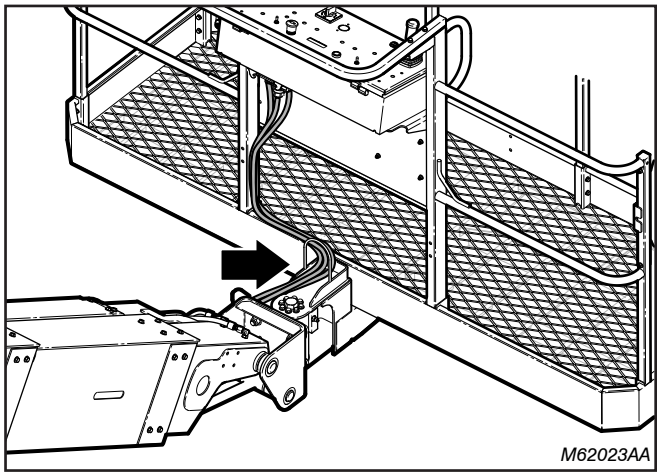


Jib Boom / Slave Cylinder Pins

12. Carefully move the jib/platform assembly away from the end of the machine. Set it down on suitable blocking nearby. Place it close enough to the end of the main boom so the control cables can be reconnected in the event boom repositioning is required.

Platform Removal (no Jib Boom)

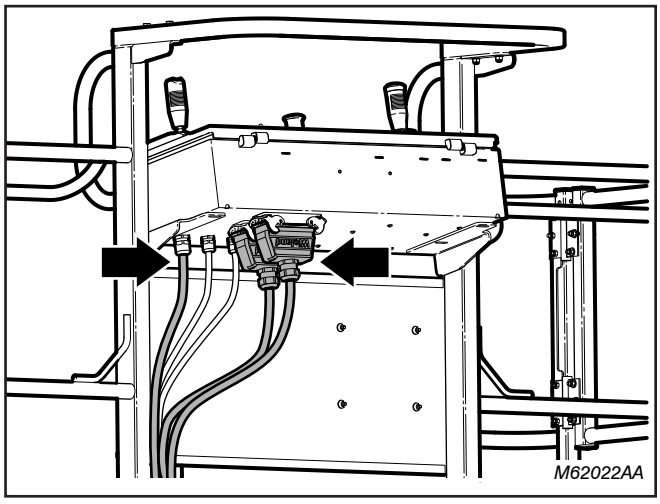
Before removing the platform from the machine, disconnect the electrical harnesses routed across the platform swivel joint.



Electrical Harness at Platform Swivel Joint

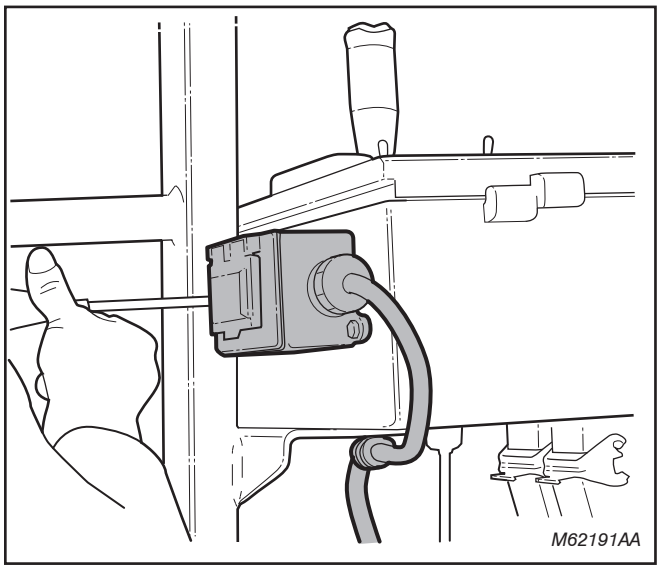
Procedure:

1. Disconnect the two 24-pin control cables from the control box.



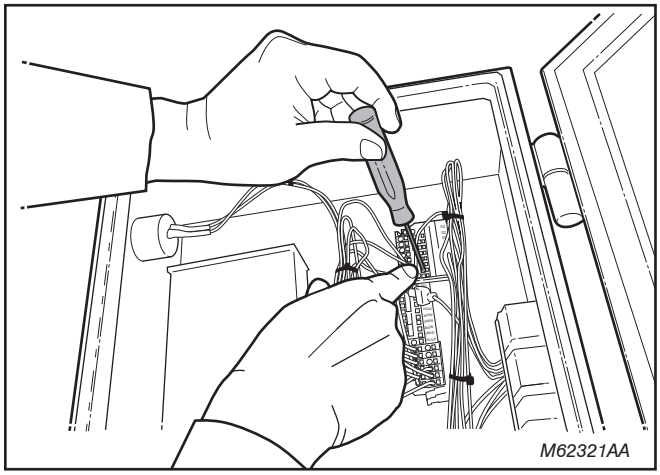
Harnesses to Disconnect

2. Remove the auxiliary AC receptacle box (as equipped) if its harness is bundled with the other harnesses. Remove the harness clamps.



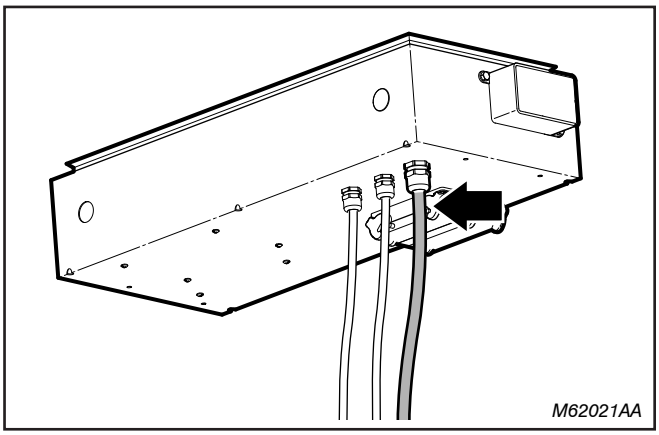
Auxiliary AC Receptacle Box

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



Control Console

6. Pull the disconnected harness out of the strain relief connector in the box.



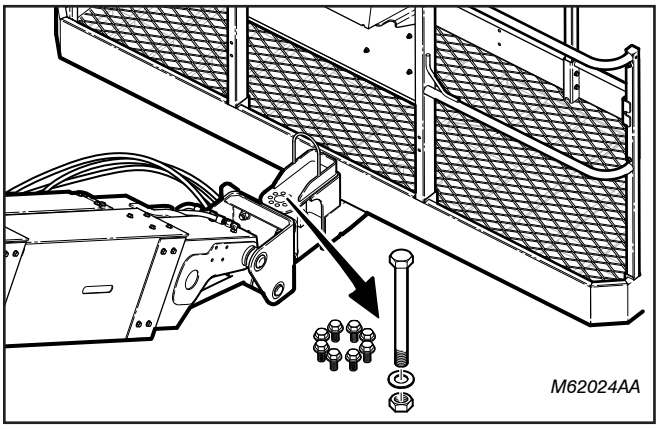
Platform Rotate Harness

7. Pull all harnesses through the cable guard on the swivel joint.
8. Remove the hoses and wire cables from the P-clamp on the side of the fly boom.

9. Using suitable lift equipment and safe rigging practices, attach slings to the platform assembly. Tension the slings to lightly support the platform.

10. Remove the 8 bolts that secure the rotary actuator valve to the platform base mount.

11. Remove the main pivot bolt.



Rotary Actuator Bolts and Main Pivot Bolt

12. Carefully move the platform assembly away from the end of the machine. Set it down on suitable blocking nearby. Place it close enough to the end of the main boom so the control cables can be reconnected in the event boom repositioning is required.

Operating Machine Functions from Base Controls

CAUTION

Risk of personal injury or equipment damage if repositioning boom with platform removed. Use base controls with auxiliary power (engine off) to reposition safely.

If boom repositioning is necessary with the platform removed, reconnect the two cable harnesses and the jib (as equipped) and platform rotate harness to the platform control box.

IMPORTANT

If boom repositioning is necessary during this procedure, select emergency power position from start–function enable–emergency power switch, then activate desired boom function.

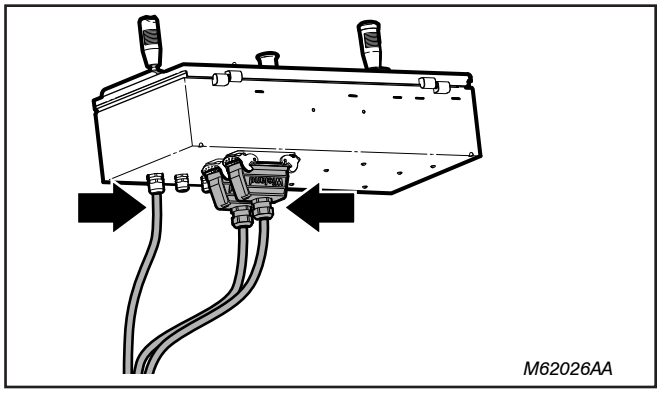
When operating on auxiliary power, do not operate more than one function at a time to avoid overloading the 12-volt auxiliary pump motor.

IMPORTANT

Be aware that the short length of control cables connected to the platform control box limits boom movement.

Procedure:

1. Connect the jib and platform rotate harness as shown on the diagram Jib and Platform Rotate Harness on page 72.

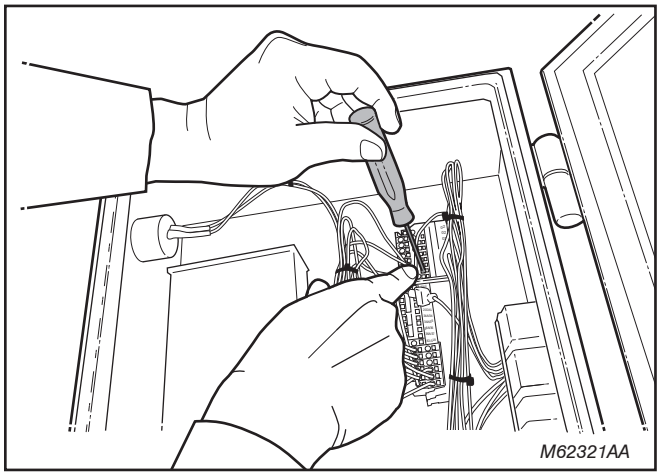


Jib and Platform Rotate Harness and Platform Control Harnesses

2. Pull jib and platform rotate harness through the strain relief connector on the bottom of the box and tighten the connector. Make sure the wires can reach the terminal block on the left-hand side

on the box. Note the color and markings for each wire.

3. Insert a small flat screwdriver into the slot beside the wire position in the terminal strip to depress the spring mechanism. Insert the end of the wire, then pull out the screwdriver to secure it.



Control Console

4. Once the wires are all connected, close the lid and turn the two box latches to fasten it.

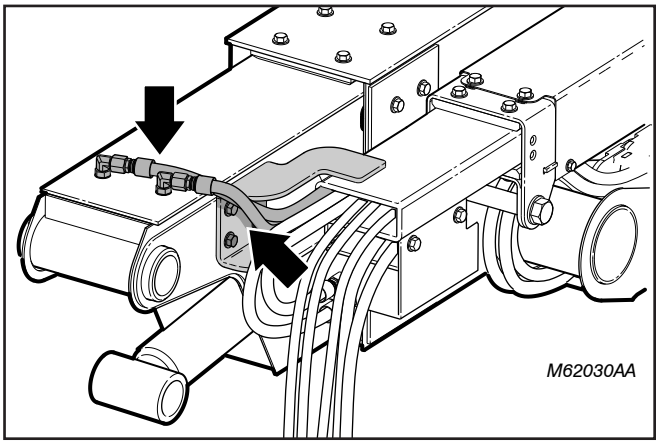
The machine can now be operated for boom repositioning purposes. Refer to the operator's manual for information on using emergency power.

Fly Boom Section Removal

Procedure:

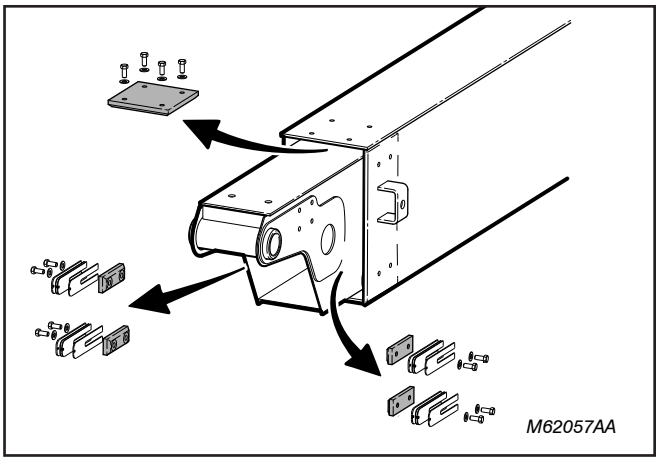
1. On the platform end of the boom, mark and remove the slave cylinder hoses on the top side of the fly boom tip. Crack the lines slowly to relieve any residual pressure. Provide a suitable container or rags to catch any oil spillage. Cap hoses and ports to keep them clean.

2. Remove the fasteners for the cable/hose tube support on the side of the fly boom.



Platform Level Hoses and Cable/hose Tube Support

3. Remove the top and side wear pads and shims inside the platform end of the mid boom. Store shims with appropriate parts for reassembly.



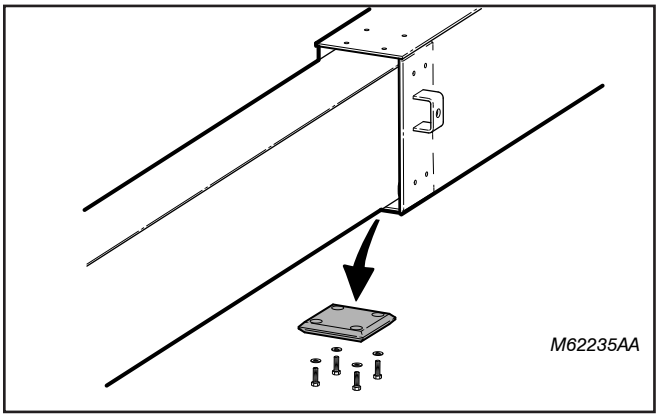
Remove Top and Side Wear Pads

4. Place a suitable stand that can bear the weight of the fly boom ahead of the machine.

5. Attach a lifting sling to the fly boom tip and using suitable lift equipment, slide it out ⅔ of the way. Pull it out straight to avoid binding.

6. Set it down on the stand and re-sling to lift from two points.

7. Remove bottom wear pad from the mid boom.



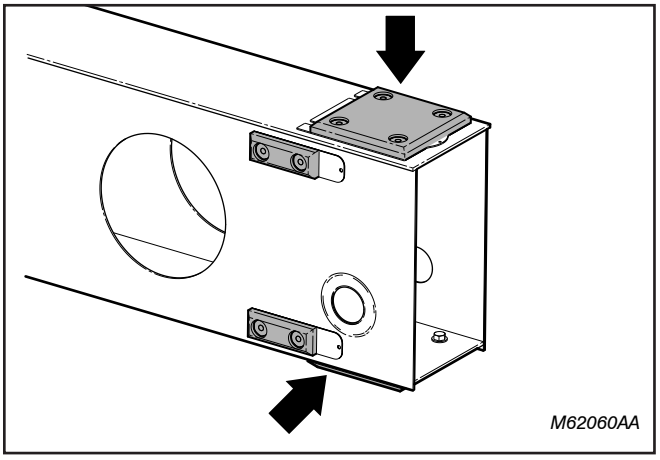
Remove Bottom Wear Pad

NOTE

All the wear pads must be removed from the platform end of the mid boom so the fly boom section can be pulled all the way out. The wear pads on the counterweight end of the fly boom section would otherwise prevent removal.

8. Slide the fly boom completely out of the mid boom and set it down on suitable blocking.

9. Replace the wear pads on the counterweight end of the fly boom. Use Loctite 242 or 243 on the wear pad fasteners.



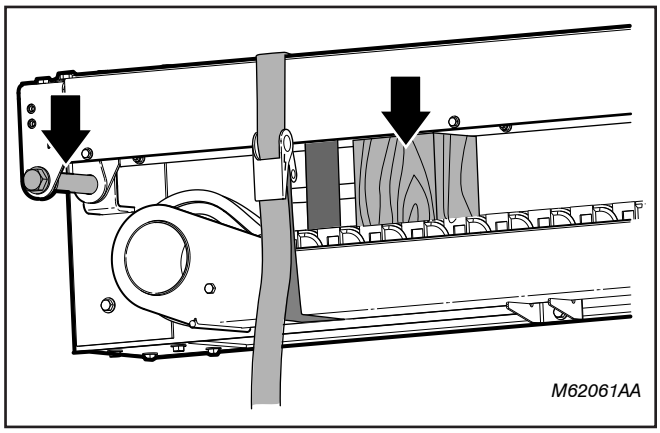
Wear Pads on Fly Boom

Mid Boom Section Removal

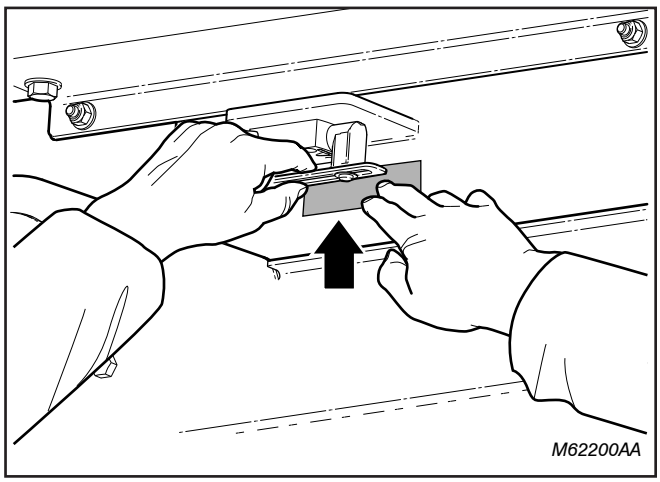
Procedure:

1. Place blocking inside the cable/hose tube to support the e-chain track when the main support bolt is removed. Cut the blocks about 5" (12 cm) high. Place them about 4 ft (1.2 m) apart.

2. Remove the main power track carrier bolt from the platform end of the mid boom. Allow the cable/ hose tube to rest on the blocking. Secure it with a strap.



3. Locate the limit switch on the left-hand side of the main boom, at the platform end of the lower e-chain tube. Pull in the limit switch arm and place a piece of tape over the switch hole. The tape prevents the switch from being damaged as the fly boom is removed.

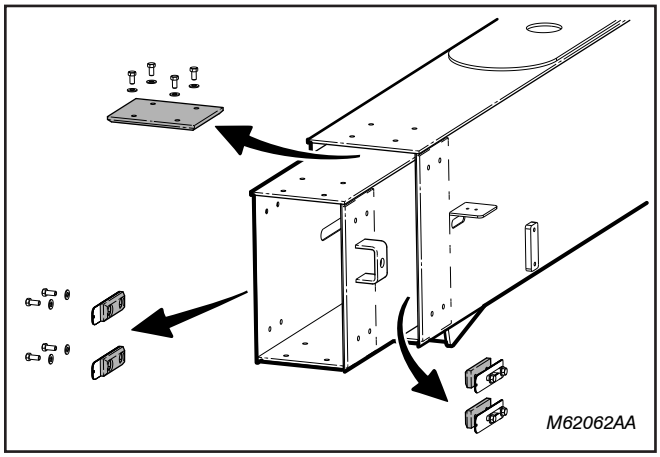


Place Tape over Limit Switch Hole

4. Place a suitable stand that can bear the weight of the mid boom about ⅔ the boom length ahead of the machine.

5. Connect lifting slings to the platform end of the mid boom.

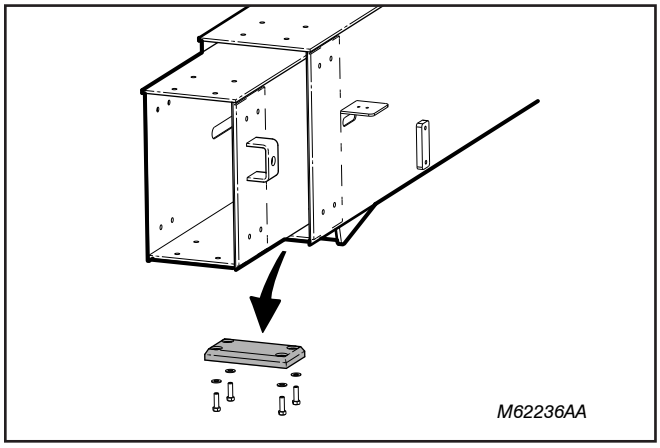
6. Remove the top and side wear pads and shims inside the platform end of the main boom. Store shims with appropriate parts for reassembly.



7. Slide the mid boom out ⅔ of the way. Slide it out straight to avoid binding.

8. Set it down on the stand and re-sling to lift from two points.

9. Remove bottom wear pad from the main boom.



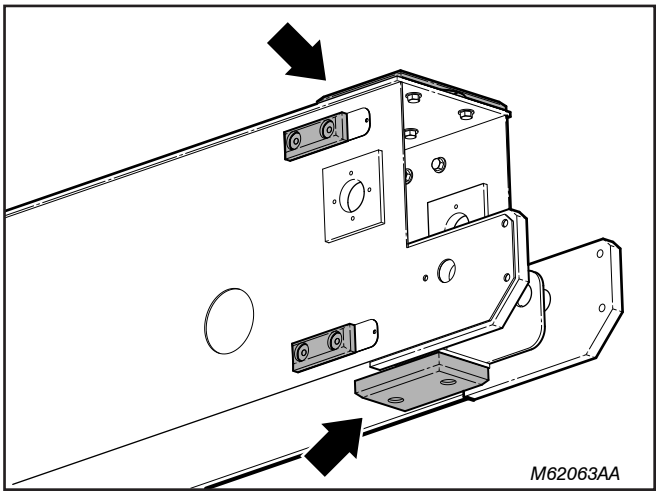
Remove Bottom Wear Pad

NOTE

All the wear pads must be removed from the platform end of the main boom so the mid boom section can be pulled all the way out. The wear pads on the counterweight end of the mid boom section would otherwise prevent removal.

10. Slide the mid boom completely out of the main boom and set it down on suitable blocking.

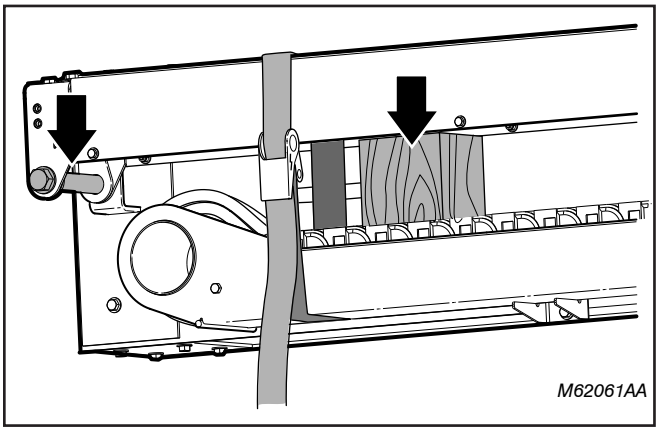
11. Replace the wear pads on the counterweight end of the boom section. Install with the shims that were removed. Apply Loctite 242 or 243 to the wear pad fasteners.



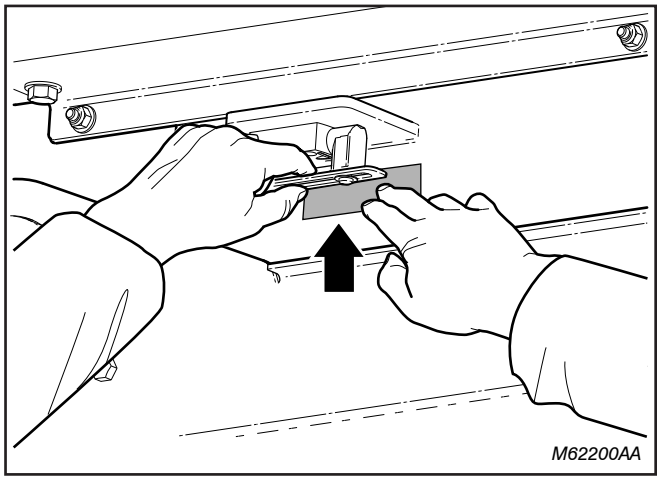
Mid Boom Section Installation

Procedure:

1. Attach two lifting slings to the mid boom. Using suitable lifting equipment, slide the mid boom section slowly into the platform end of the main boom. Be careful not to damage the wear pads.
2. When it is about ⅓ of the way in, install the bottom wear pad. Apply Loctite 242 or 243 to the wear pad fasteners.
3. Place a suitable stand under the end of the boom. Lower it onto the stand and remove one lifting sling.
4. Continue sliding the boom all the way in until the holes in the mid boom nose and the cable/hose tube support line up.
5. Install the top and side wear pads and shims in the main boom nose. Apply Loctite 242 or 243 to the fasteners.
6. Install the main power track carrier bolt. Remove the blocking and strap supporting the cable/hose tube.



7. Remove the tape from the limit switch hole.

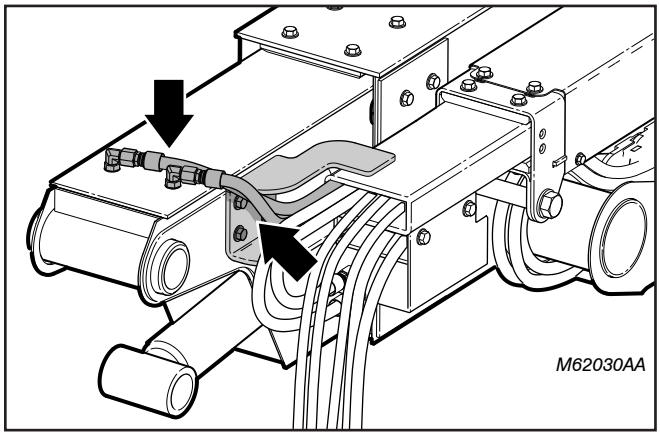


Limit Switch Hole

Fly Boom Section Installation

Procedure:

1. Attach two lifting slings to the fly boom. Using suitable lifting equipment, slide it slowly into the nose of the mid boom. Be careful not to damage the wear pads.
2. When it is about ⅓ of the way in, install the bottom wear pad. Apply Loctite 242 or 243 to the wear pad fasteners.
3. Place a suitable stand under the end of the boom. Lower it onto the stand and remove one lifting sling.
4. Continue sliding the boom all the way in until the holes in the boom tip and the e-chain support bracket line up.
5. Install the top and side wear pads and shims in the mid boom nose. Apply Loctite 242 or 243 to the wear pad fasteners.
6. Install the fasteners for cable/hose tube support in the fly boom. Connect the platform level hydraulic hoses.



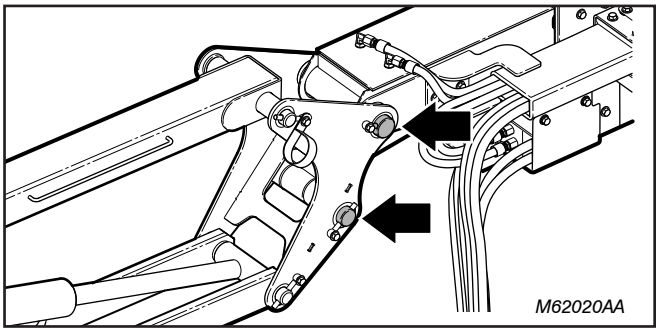
Platform Level Hoses and Cable/hose Tube Support

Platform and Jib Boom Installation

For torque specifications, refer to Table 2.2 Aerial Platform Torque Specifications on page 28.

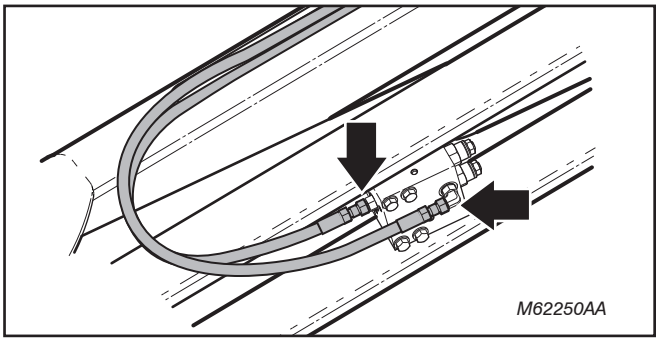
Procedure:

1. Connect lifting slings to the jib assembly.
2. Using suitable lift equipment, move it into position and insert the jib pin and slave cylinder pin. Insert the keeper pins.



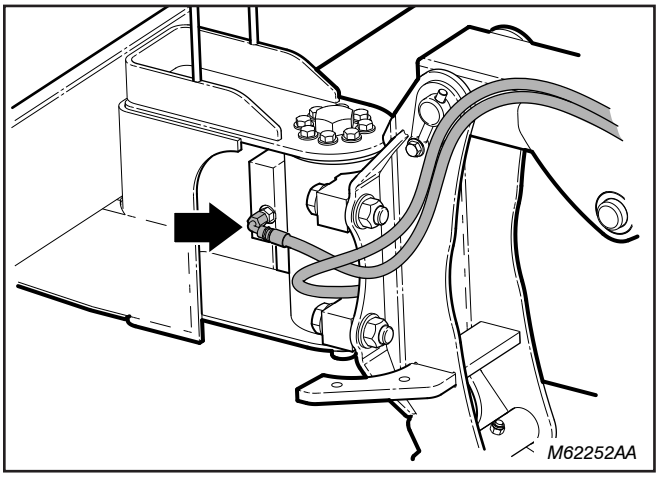
Jib and Slave Cylinder Pins

3. Connect the hydraulic hoses for the jib cylinder.



Jib Cylinder Hoses

4. Connect the hoses for the platform rotary actuator.



Platform Rotary Actuator Hoses

5. Install the hoses and P-clamps to the side of the jib boom.

IMPORTANT

Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.

6. Connect the platform control console, see on page 175.

CAUTION

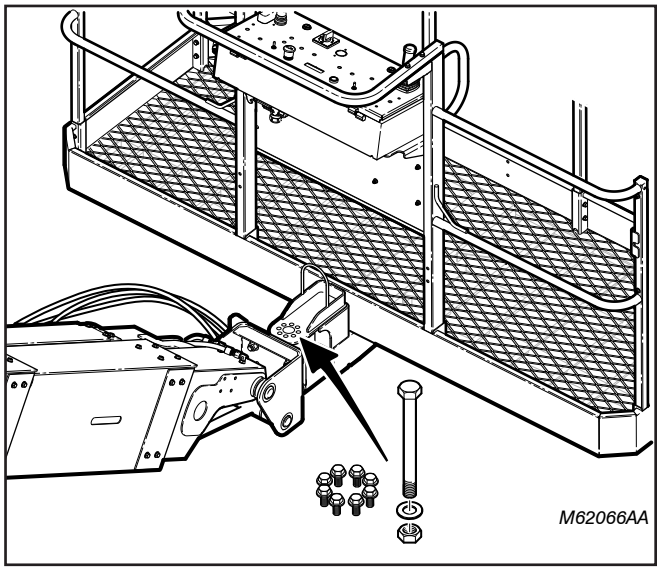
Risk of personal injury or equipment damage. Test equipment operation before putting machine into service. See Function Tests in the Operating Manual.

Platform Installation (no Jib Boom)

For torque specifications, refer to Table 2.2 Aerial Platform Torque Specifications on page 28.

Procedure:

1. Connect lifting slings to the platform assembly.
2. Using suitable lift equipment, move the platform into place.
3. Install the main pivot bolt pin, flat washer and hex nut. Tighten to correct torque.
4. Install the bolts that secure the rotary actuator to the platform base mount. Apply Loctite 242 to the bolt threads. Tighten to correct torque.



Main Pivot Bolt and Rotary Actuator Bolts

5. Connect the hydraulic hoses to the platform rotator.
6. Install the P-clamp for the hoses and wire cables to the side of the fly boom nose.

IMPORTANT

Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.

7. Connect the platform control console, see on page 175.

CAUTION

Risk of personal injury or equipment damage. Test equipment operation before putting machine into service. See Function Tests in the Operating Manual.

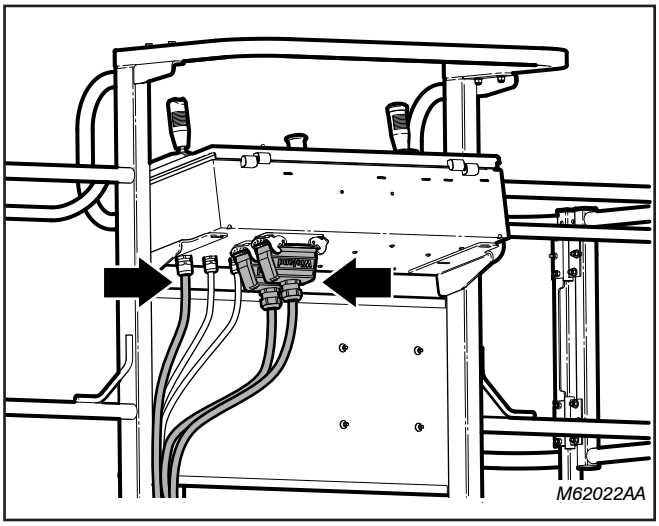
Platform Control Console Connection

Refer to the Jib and Platform Rotate Harness on page 72 to properly identify control console wiring connections.

Procedure:

Once the platform is installed, make sure all harnesses to be connected to the platform control box are routed through the guard hoop on the platform base.

1. Connect the two platform control cable harnesses.
2. Pull the jib (as equipped) and platform rotate harness through the strain relief connector in the bottom of the platform control box. Make sure the wires can reach the terminal block on the left-hand side of the box.
3. Tighten the strain relief connector locknut to secure it.



Harnesses to Connect

4. Note the color and markings for each wire. Connect the wires as shown on the wiring diagram.
5. Tie-wrap the harnesses inside the control box as before.

IMPORTANT

Make sure all wiring cables are routed and secured to avoid pinching or chafing as the platform moves.

CAUTION

Risk of personal injury or equipment damage. Perform a function and range of controls check before putting machine into service. See Function Tests in the Operating Manual.

5.2-5 Inspection and Replacement of Extension Cylinder and Boom Cables

Inspecting the cable assembly and extension cylinder for wear requires completely removing them from inside the boom assembly. Adequate space must be provided to do so. See 5.2-7 Wire Rope Inspection on page 184.

CAUTION

Risk of personal injury or equipment damage if repositioning boom during this procedure. Use base controls with auxiliary power (engine off) to reposition safely.

CAUTION

Risk of personal injury or equipment damage. Always use suitable lifting equipment and safe rigging practices when performing the following procedures.

IMPORTANT

If boom repositioning is necessary during this procedure, select emergency power position from start–function enable–emergency power switch, then activate desired boom function.

When operating on auxiliary power, do not operate more than one function at a time to avoid overloading the 12-volt auxiliary pump motor.

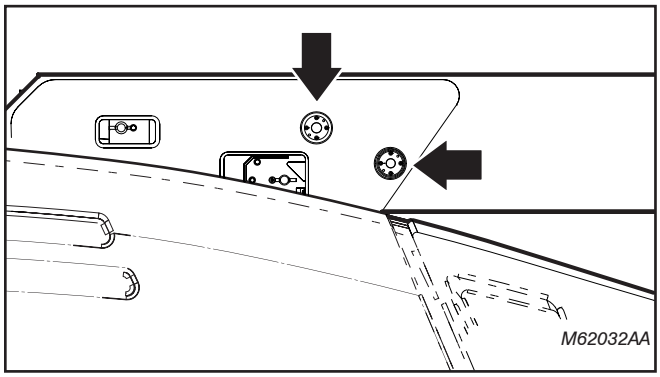
IMPORTANT

Prevent hydraulic system contamination by capping all hydraulic connections after disconnecting.

Extension Cylinder and Cable Assembly Removal

Preparation:

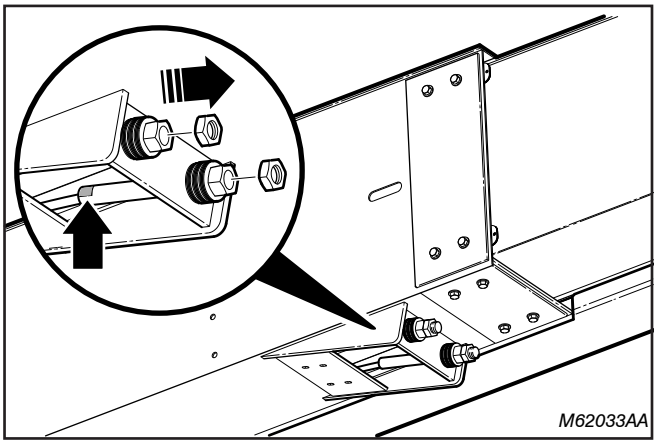
- Park the machine on a flat, level surface. Position the boom so it is horizontal.
- Extend/retract the boom to align the flanges with the holes in the side of the main boom. The lower flanges connect the cable support to the fly boom. The upper flanges connect the cylinder base to the mid boom.



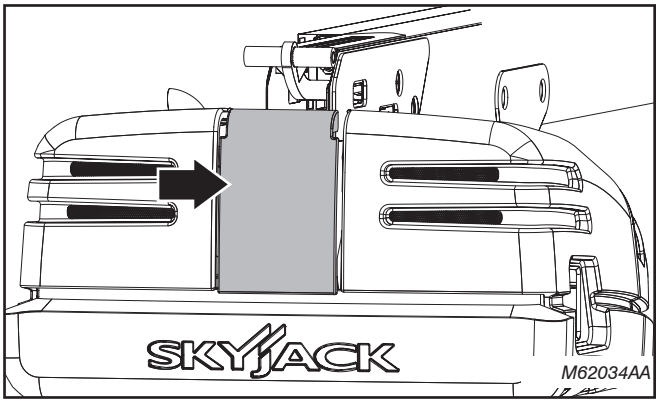
- Make sure the e-stops are pushed in and the key is off.
- Turn main power disconnect switch off. Lock out the switch.

Procedure:

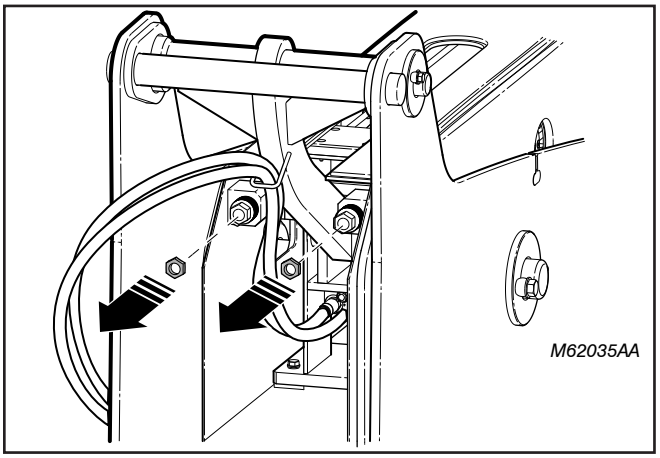
1. The cables (wire ropes) inside of the boom assembly must be loosened. Loosen the cables on the platform end of the machine first. Remove the jam nut, then use the flat on the end of cable adjuster to hold it while backing off the main nut. Leave the main nut on the cable adjuster about one full nut thread.



2. Remove the center cowling from the turret.



3. Loosen the cables on the counterweight end of the machine. Remove the jam nut, then use the flat on the end of cable adjuster to hold it while backing off the main nut. Leave the main nut on the cable adjuster about one full nut thread.



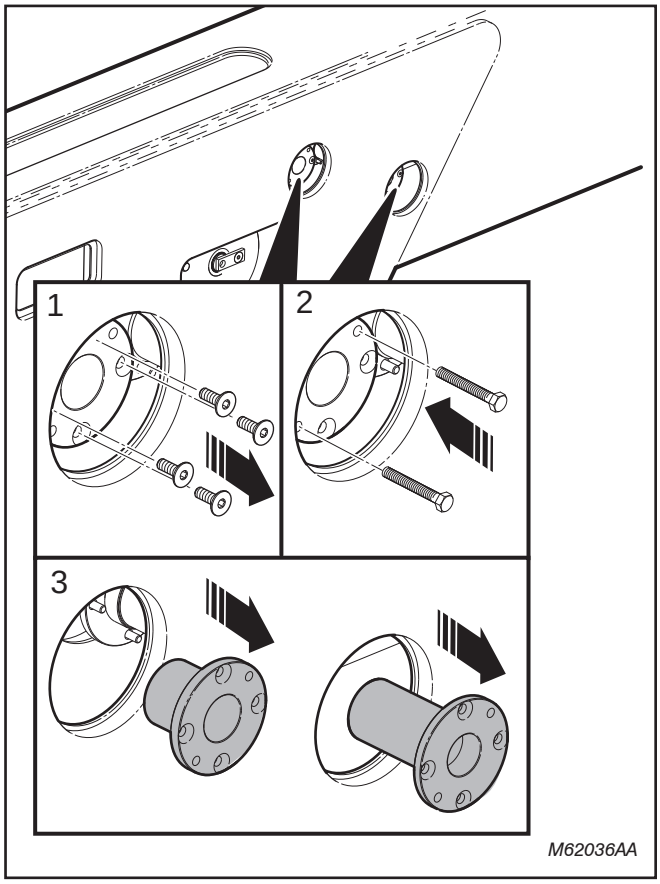
4. Once all cables are slackened, the spring discs (washers) can be removed from the cable adjusters. Remove the washers, then put the hex nut back on one full nut thread to temporarily hold the cable in place.

5. Once the cables are slackened, remove the boom flange pins and fasteners.

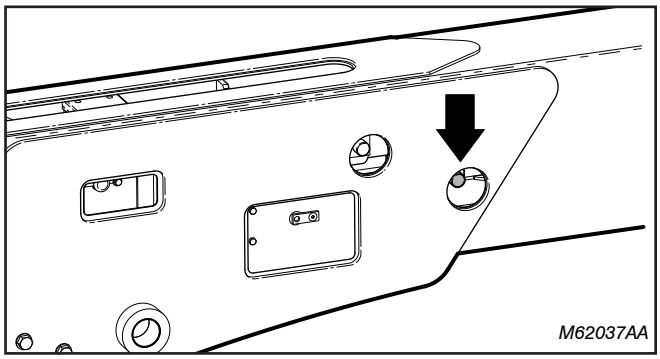
NOTE

The flange pins may not line up in the holes exactly, but can be moved into place using a pry bar once the cables are slackened.

6. Use two ¼-20 UNC bolts to help as a puller when removing the flange pins. Threaded holes are located in the flange pin collar. The bolts should be full thread with no shoulder, and at least 2 in. (50 mm) long.



7. Once the flanges are removed, tap out the cable support pin.



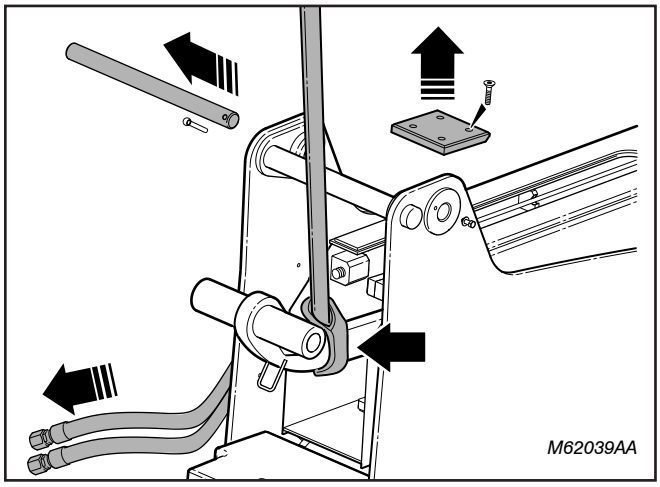
Cable Support Pin

8. Remove the hex nuts from all 4 cable adjusters.

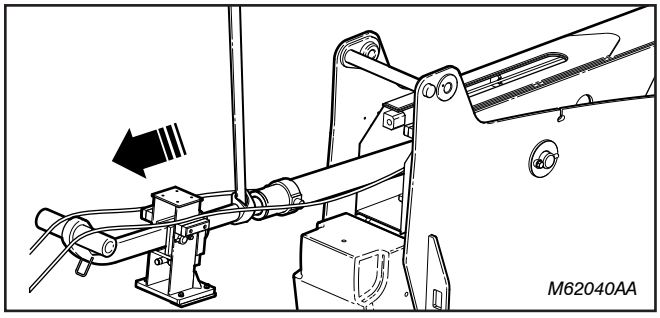
9. Mark and disconnect the hoses from the extension cylinder. Cap hoses and ports to keep them clean. Take the hoses out of the hanger on the cylinder link.

10. Support the link, then remove the link pin.

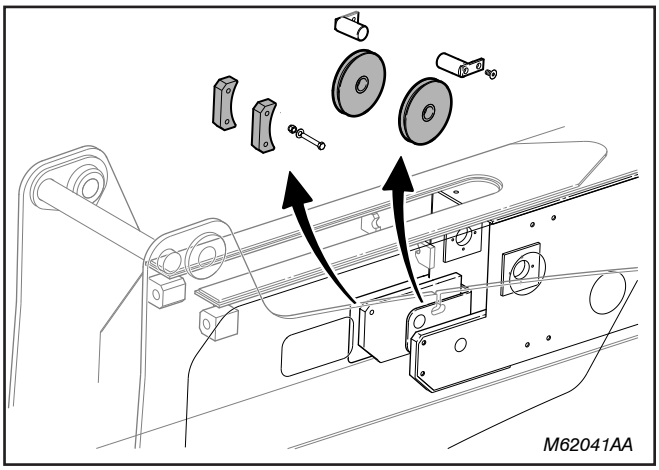
11. Remove the top wear pad on the extension cylinder guide.



12. Place a lifting strap on the extension cylinder rod. Pull the cylinder out along with the upper cables to about ⅓ of the way. The cable ends can be tie-wrapped to the cylinder to help keep them from getting tangled.

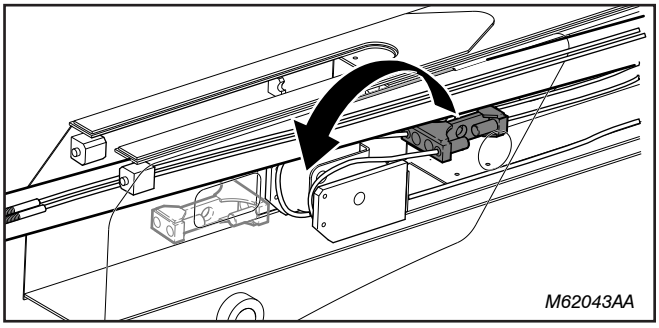


13. Remove the mid boom pulleys and cable stops. Continue to pull the cylinder out.

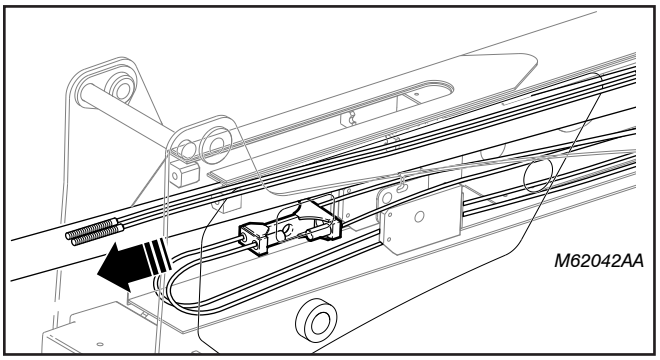


Mid Boom Pulleys and Cable Stops

14. Flip the cable support over so the narrow end faces the counterweight end of the machine. Flipping it over makes it easier to remove with the cylinder.



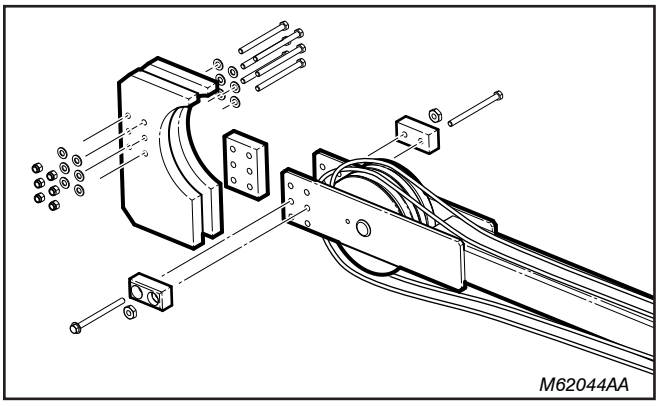
15. Pull the cylinder out ⅔ of the way. Allow the upper cables to come out with the cylinder.



NOTE

Make sure the cables do not get tangled or caught on other components.

16. Lower the end of cylinder onto a support. Connect lifting straps at both ends of the extension cylinder.
17. Continue to slide the cylinder completely out of the boom. Balance the load as it is being removed.
18. Lower the cylinder onto suitable supports.
19. Remove the cable stop and cables from the extension cylinder pulley.



Removal of Cable Stop and Cables

20. Inspect the extension cylinder wear pads for wear or damage. Replace if required.
21. Perform a cable inspection at this time. See Wire Rope Inspection on page 184.

Extension Cylinder and Cable Assembly Installation

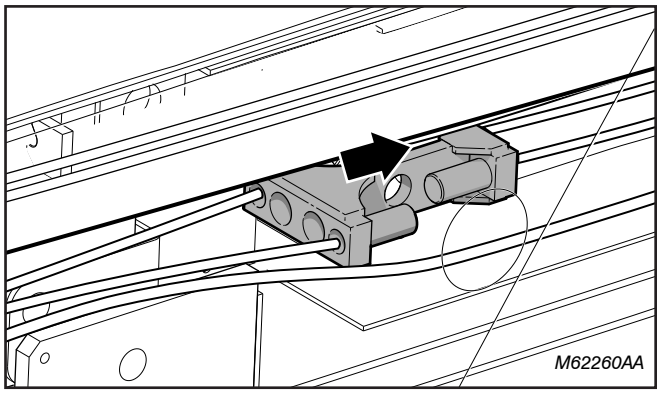
Procedure:

1. Attach two lifting slings to the extension cylinder. Using suitable lifting equipment, raise and slide the end slowly into the counterweight end of the boom assembly. The upper cables can be tie-wrapped to the cylinder to keep them from getting tangled. Be sure to remove the tie wraps as the cylinder is being installed.

NOTE

Make sure the cables do not get tangled or caught on other components.

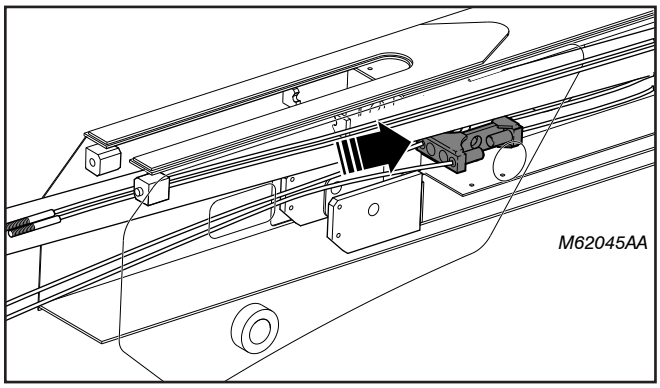
2. Orient the cables correctly. Identify which cable ends go to the platform end, and which go to the counterweight end of the machine. The narrow end of the cable support is towards the platform end of the machine when installed.



Flip Cable Support

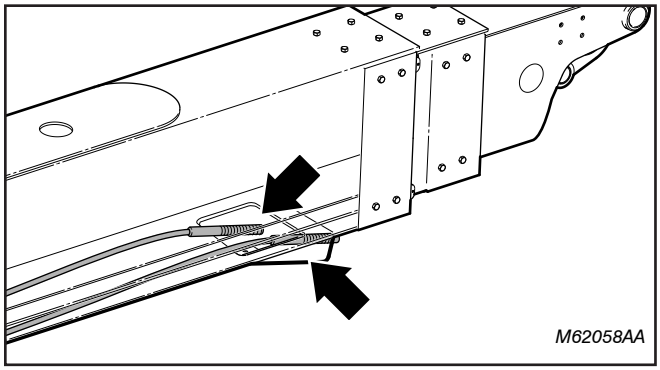
3. Lift and slide the end of the cylinder into the boom, being careful not to tangle the cables.
4. Once the pulley end of the cylinder is into the boom, one lifting sling can be removed. Lower the cylinder onto a suitable stand or support and remove one sling. Connect the lifting sling to the link on the end of the cylinder support.
5. Carefully feed the cables in as the cylinder is being pushed in.

6. Slide the cylinder ⅔ of the way in until the cable support has passed where the mid boom pulleys mount.



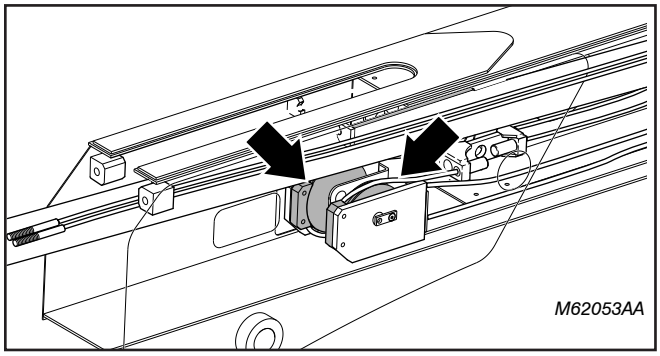
Cable Support Past Mid Boom Pulleys

7. Route the platform end cables between the main and mid booms, through to the anchor points at the platform end. Install one hex nut on each cable end.



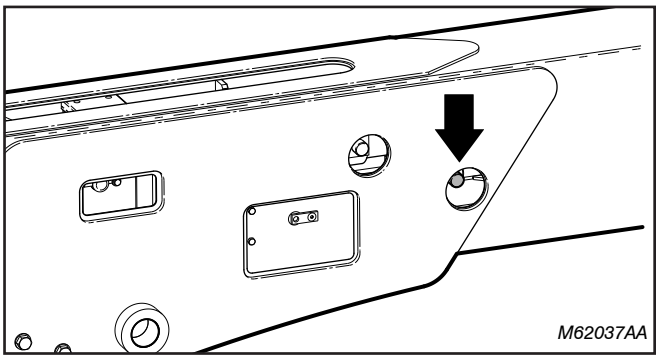
Cables Routed to Platform End

8. Install the mid boom pulleys. Pull the cable slack and fit it onto the pulleys. Install the cable stops.



Install Mid Boom Pulleys and Cable Stops

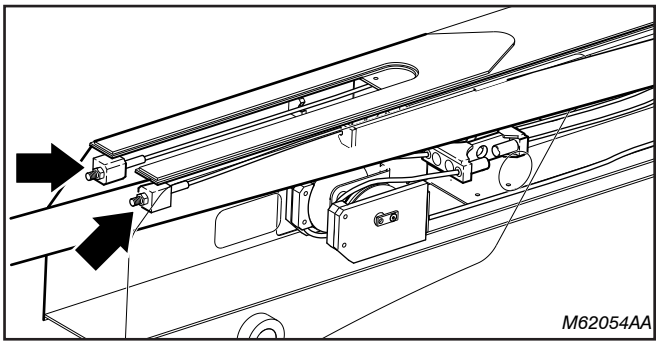
9. Once lined up, install the (lower) cable support pin through the cable support.



Install Cable Support Pin

10. Continue sliding the cylinder inward, making sure the cables do not get tangled.

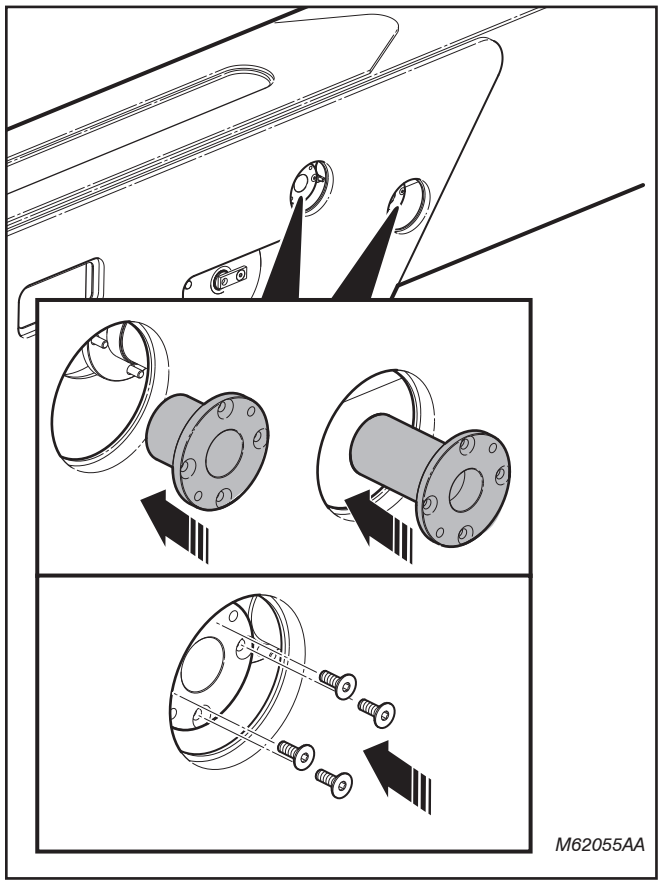
11. Install the counterweight end of the cables into the anchor points. Install one hex nut on each cable end.



Counterweight End Cables

12. Install the (lower) flange pins for the cable support onto the cable support pin and into the side of the boom. If the flanges need to be rotated, thread in two bolts into the puller holes and turn with a pry bar.

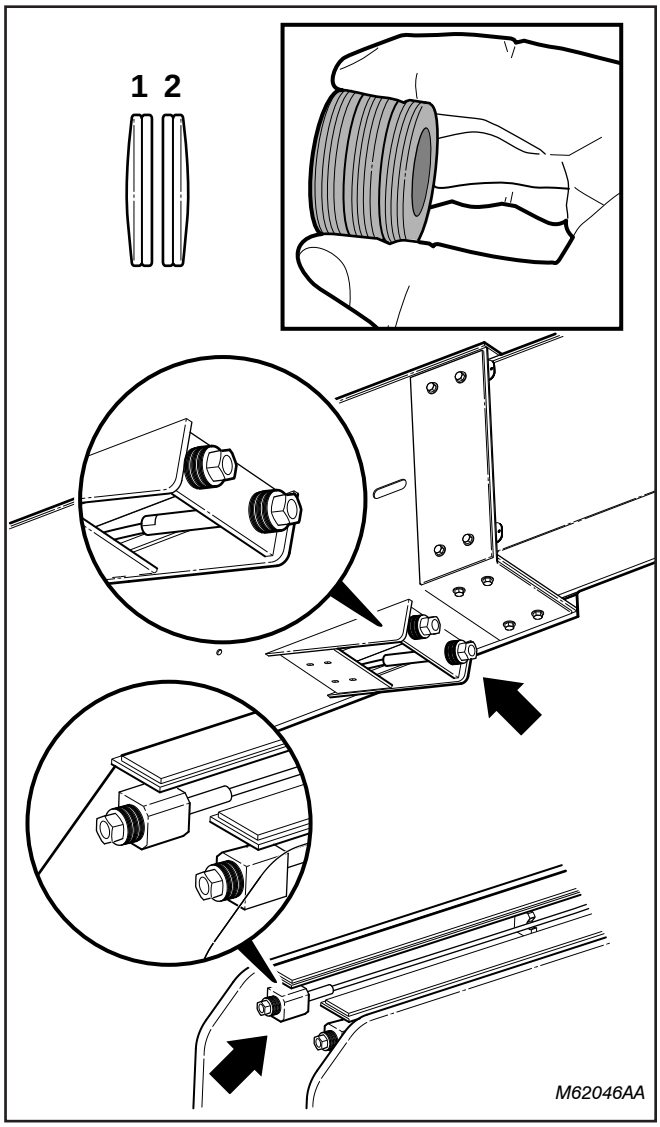
13. Install the (upper) flange pins onto the pin of the cylinder base end.



14. Remove the hex nut on each cable end and install the 12 spring discs. The orientation of the spring discs is important. They must be installed by reversing the direction of every second pair. Turn the hex nuts on one thread to secure them.

IMPORTANT

Reverse direction of every second pair of spring discs. Orientation of spring discs is critical for proper wire rope tension.

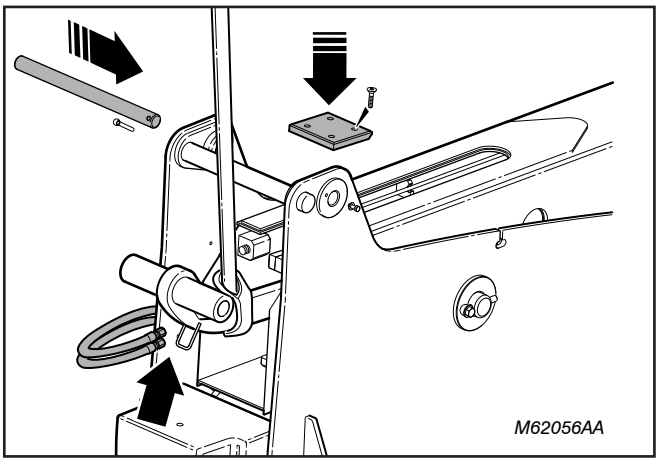


Spring Disc Installation

15. Install the link pin.

16. Install the wear pad on the top of the cylinder support. The chamfer faces the platform end of the machine. Apply Loctite® 242 or 243 (removable) to the fasteners.

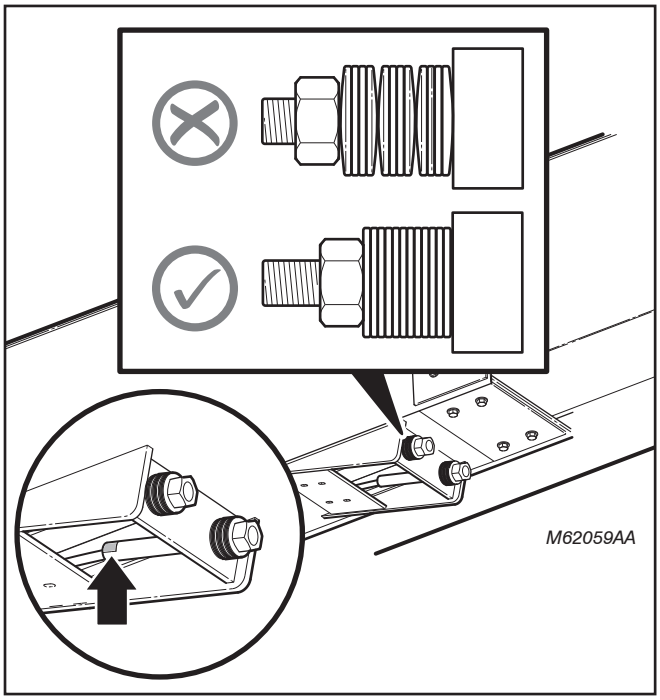
17. Install the extension cylinder hydraulic hoses. Route the hoses through the hanger on the cylinder link.



18. Tighten all cable ends at the anchors.

5.2-6 Proper Wire Rope Tension

19. Tighten each hex nut until all the spring discs are fully compressed, then turn one additional ½ turn.



20. Install the jam nuts on the cable anchors.

21. Install the center cowling on the turret.

CAUTION

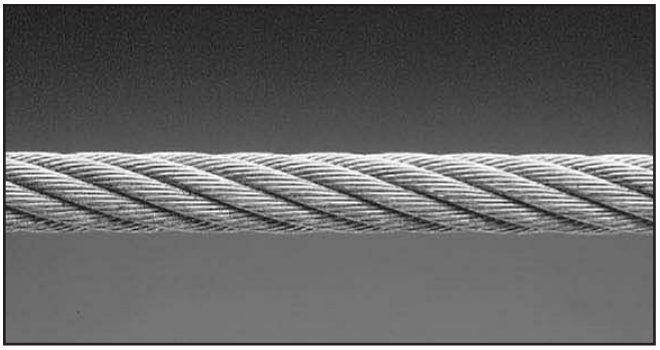
Risk of personal injury or equipment damage. Test equipment operation before putting machine into service. See Function Tests in the Operating Manual.

5.2-7 Wire Rope Inspection

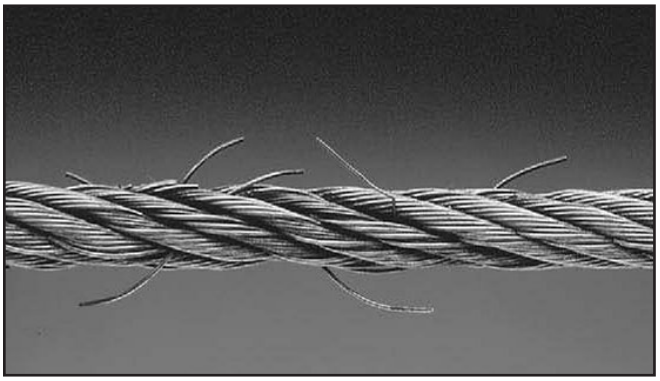
NOTE

This inspection procedure must be done at the start of the first 10th year of boom cable life or every 2 years if boom cable is not replaced after initial inspection.

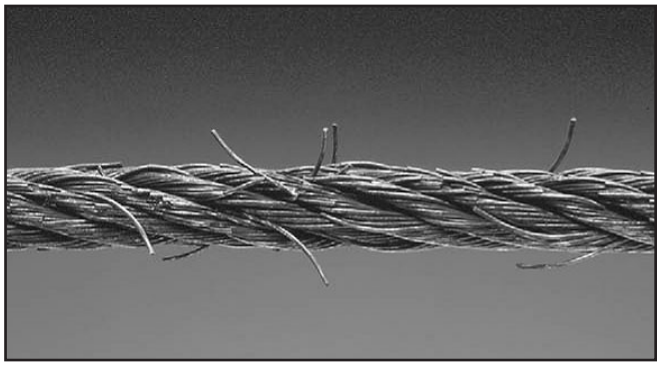
Check wire rope cables for wear or damage. Any cable with broken wires, severe corrosion, excessive stretch, deformed strands, variations in diameter (necking), or any change from its normal appearance, must be replaced. If any cable is found to be in need of replacement, the entire cable set must be replaced immediately. Refer to figures below.



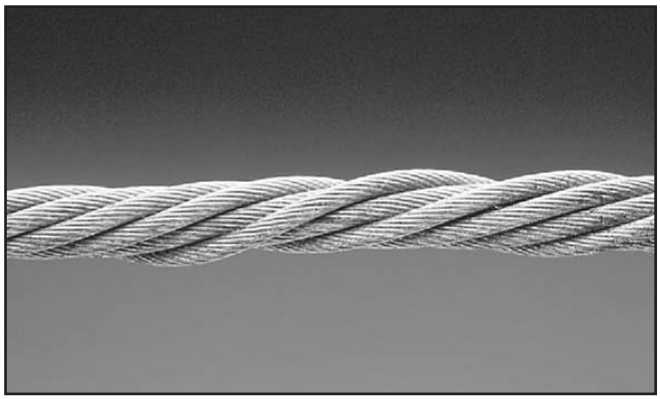
Cable in Good Condition



Cable with Broken Wires



Cable with Rust



Cable with Necking

Sheave Inspection

Check sheaves (pulleys) for wear or damage, For example, wobble (tilt), cracks, loose on pin, or excessive noise during operation.

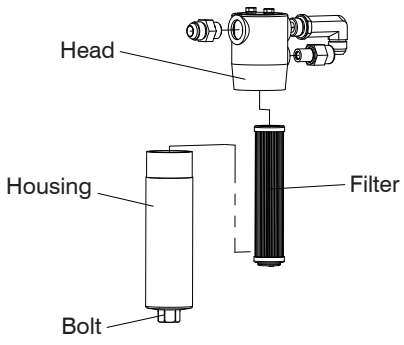
Sheave Pins Inspection

Check for loose or missing sheave (pulley) pins.

Turret

5.3-1 Check and Replace High Pressure Filter

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



High Pressure Filter

5. Using a 30 mm box wrench, loosen bolt and remove high pressure filter housing from filter head.
6. Remove high pressure filter from filter head and install a new high pressure filter.
7. Apply hydraulic oil to the o-ring on the high pressure filter housing.
8. Reinstall filter and re-tighten bolt. For torque specification, refer to Section 2.

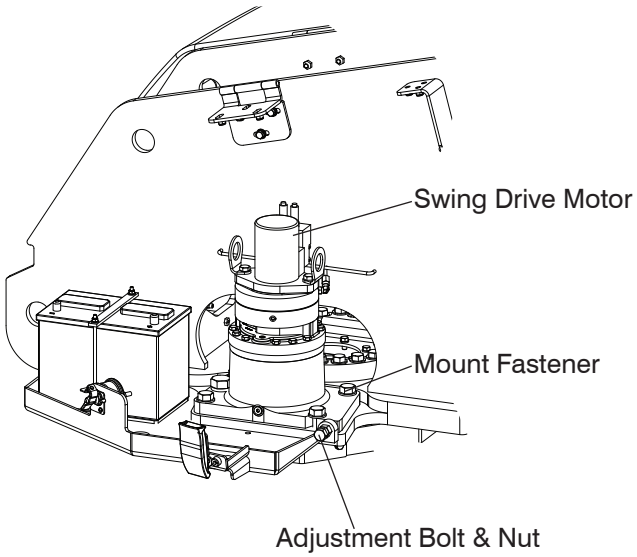
5.3-2 Adjust Turret Rotation Gear Backlash

The swing drive motor is located in the engine compartment.

NOTE

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

1. Ensure aerial platform is on a firm level surface.

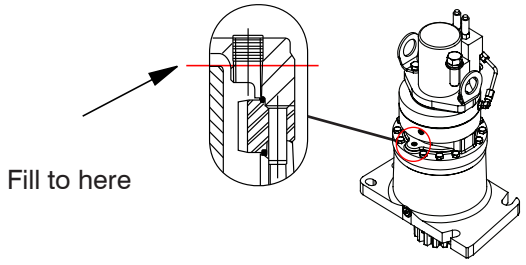


Swing Drive Assembly

2. Loosen mounting fasteners on the swing drive motor.
3. Push the swing drive motor towards the turret as close as possible. (this will push the rotation gear into the rotation bearing)
4. Loosen lock nut on adjustment bolt.
5. Tighten adjustment bolt clockwise until it contacts the plate of gearbox.
6. Turn adjustment bolt ½ turn counterclockwise, then tighten lock nut on adjustment bolt.
7. Pull swing drive motor away from turret until it contacts the adjustment bolt.
8. Tighten mounting fasteners on swing drive motor.
7. Rotate turret through an entire rotation and check for a smooth rotation of the turret.

5.3-3 Check Swing Drive Motor Gearbox Oil

1. Remove gearbox fill plug.
2. Check oil level (oil level should be slightly below the plug, see figure below). Add oil if needed. For oil specification, Refer to Section 2.

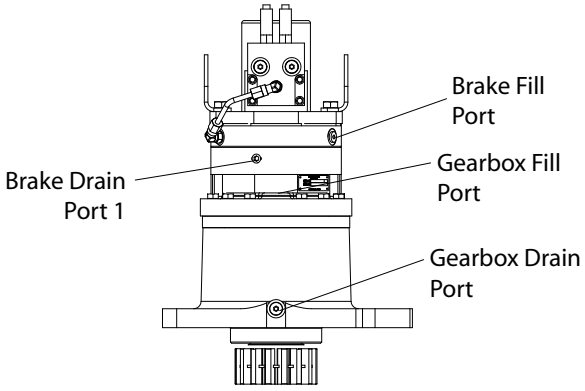


Gearbox Fill Port

5.3-4 Change Swing Drive Motor Oil

NOTE

Oil change must be performed on a flat level surface.



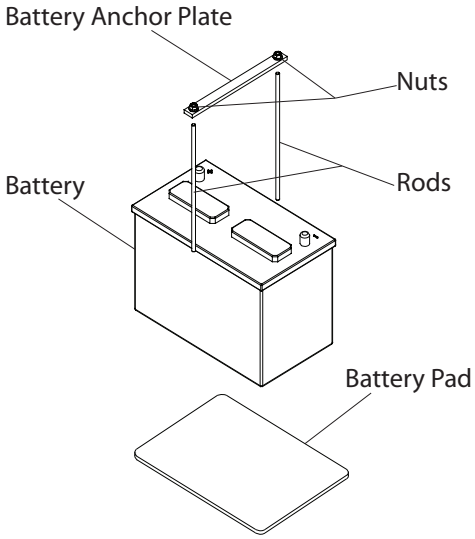
Gearbox Ports

- **Change Gearbox Oil**
  1. Remove plug at fill port.
  2. Place suitable container under drain port.
  3. Remove plug at drain port to drain the oil.
  4. Reinstall the drain plug.
  5. Refill gearbox with oil (32oz, 80W90)
  6. Reinstall plug at fill port.

- **Change Brake Oil**
  1. Remove plug at fill port.
  2. Place suitable container under drain port.
  2. Remove plug at drain port to drain the oil.
  3. Reinstall the drain plug.
  4. Refill brake with hydraulic oil (2.7oz, VG32)
  5. Reinstall plug at fill port.

5.3-5 Battery Replacement

1. Turn main power disconnect switch to off position.



Battery Assembly

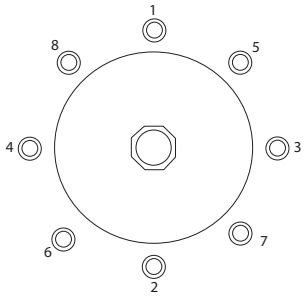
2. Remove positive and negative connectors from battery.
3. Remove the battery.
4. Replace battery pad if needed.
5. Replace and secure the battery.
6. Clean terminal posts and clamps of battery, and apply acid-free and acid-resistant grease.
7. Re-connect battery with the positive and negative connector cables. (Ensure the clamps make good contact)

5.3-6 Bolt Torque Procedure

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

Rotary Actuator Bolt Torque Sequence

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Turn main power disconnect switch to off position.
3. Set the torque wrench to 17 ft.lb and tighten mounting bolts in a cross pattern sequence.

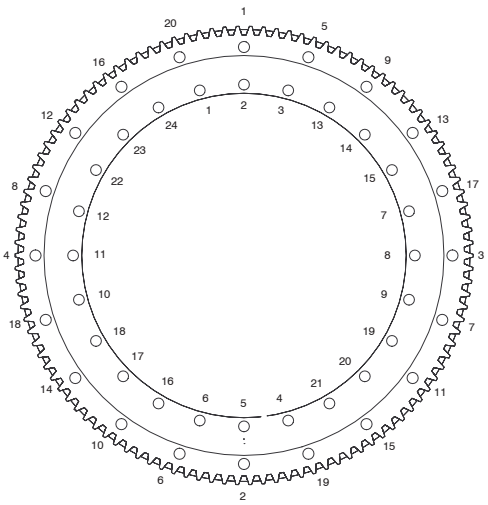


Bolt Torque Sequence

4. Set torque wrench to 35 ft.lb and tighten mounting bolts with the same sequence.
5. Torque the center bolt to 480 ft.lb.

Turret Rotation Gear Bolt Torque Sequence

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Turn main power disconnect switch to off position.
3. Set the torque wrench to 140 ft.ib and tighten mounting bolts in a cross pattern sequence.



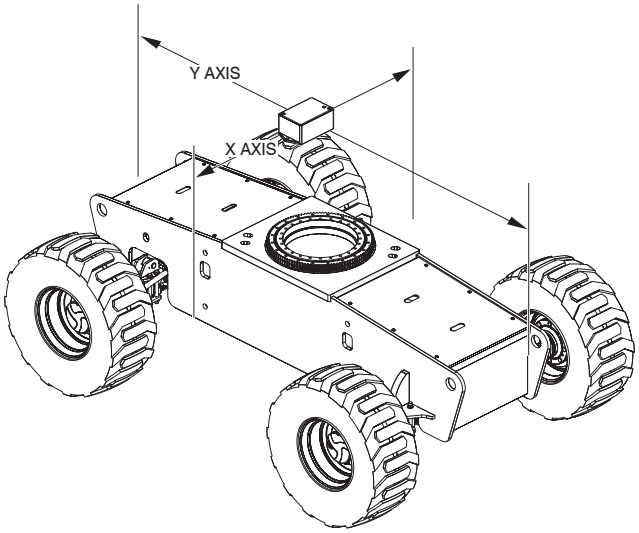
Bolt Torque Sequence

4. Set torque wrench to 280 ft.lb and tighten mounting bolts with the same sequence.

5.3-7 Electronic Tilt Switch Setup Procedure

The following information is supplied for replacement or reprogramming of the electronic tilt switch. Also included are test and verification instructions. Follow the appropriate procedures below.

Tilt Switch Replacement

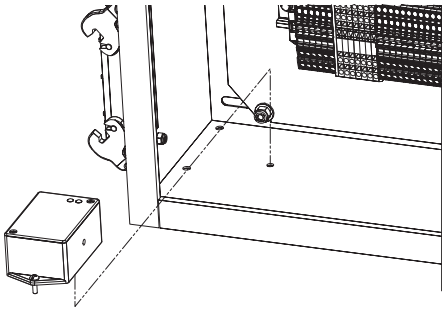


1. Ensure aerial platform is parked on a firm level surface.
2. Fully lower platform and retract fly boom.
3. Chock or block wheels to keep the aerial platform from rolling forward or backward.
4. Push in "" emergency stop buttons and turn main disconnect switch to "" off position.
5. Disconnect tilt switch from 4 pin connector.

NOTE

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

6. Remove old tilt switch from mount.

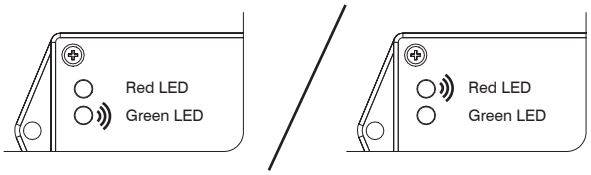


7. Install new switch to mount and connect switch plug to 4 pin connector.

NOTE

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

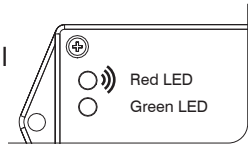
8. Turn main disconnect switch to "|" ON position.
9. Turn base/off/platform key switch to "" base position.
10. Pull out "" all emergency stop buttons.
11. Verify switch is powered. (Red or green LED will be continually blinking)



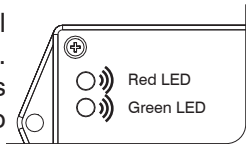
12. Program the Tilt Switch

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

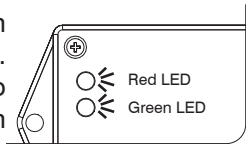
b. Only the red LED will blink for 4 seconds.



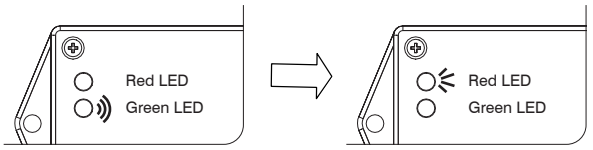
c. Both LEDs will flash for 1 second. **Results:** The switch is learning the new zero position.



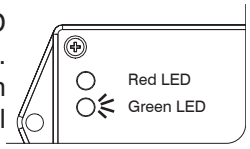
d. Both LEDs will turn on solid for 1 second. **Results:** The new zero position has been learned.



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



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

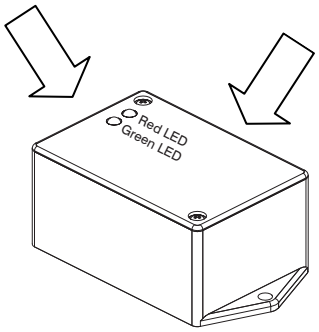


13. Turn main power disconnect switch to "O" off position
14. Push in "●" emergency stop buttons.
15. Remove chock or wheel blocks.
16. Proceed to Test and Verify Tilt Circuit.

Reprogramming Existing Tilt Switch

Light Indicators

Set up button is located on this face next to harness

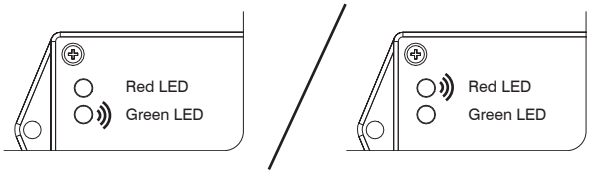


1. Ensure aerial platform is parked on a firm level surface.
2. Fully lower platform and retract fly boom.
3. Chock or block wheels to keep the aerial platform from rolling forward or backward.

NOTE

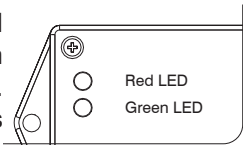
The tilt circuit is only powered when controls are powered up.

4. Turn main disconnect switch to "|" ON position.
5. Pull out "●" all emergency stop buttons.
6. Turn base/off/platform key switch to "♿" base position.
7. Verify switch is powered. (Red or green LED will be continually blinking)

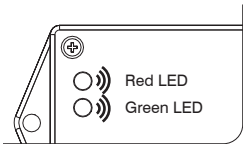


8. Reprogram the Tilt Switch

a. Press and hold the set up button for 3 seconds. **Results:** Both LEDs will be OFF.



b. Both LEDs will flash.



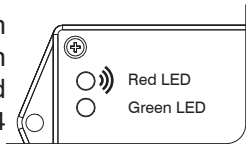
IMPORTANT

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

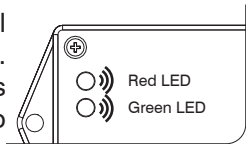
c. Press and release set up button 3 times.

d. If 5 second period has expired prior completion, repeat Step "a", "b" and "c".

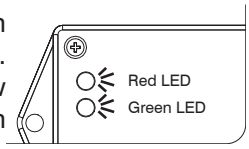
e. Observe program delay / stabilization time. (Only the red LED will blink for 4 seconds)



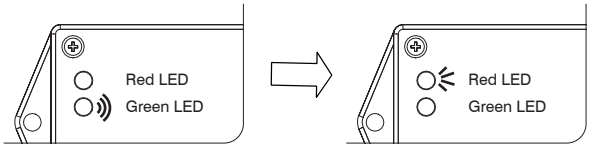
f. Both LEDs will flash for 1 second. **Results:** The switch is learning the new zero position.



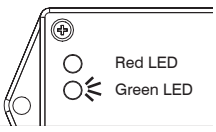
g. Both LEDs will turn on solid for 1 second. **Results:** The new zero position has been learned.



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



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



9. Turn main disconnect switch to "○" off position.

10. Push in "●" emergency stop buttons.

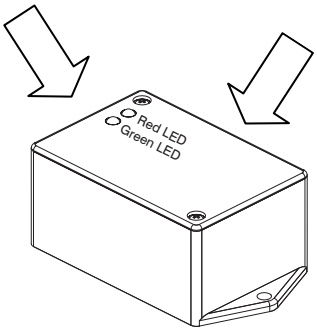
11. Remove chock or wheel blocks.

12. Proceed to Test and Verify Tilt Circuit - Telescopic Booms.

Test and Verify Tilt Circuit

Light Indicators

Set up button is located on this face next to harness



Operations of Tilt Switch

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

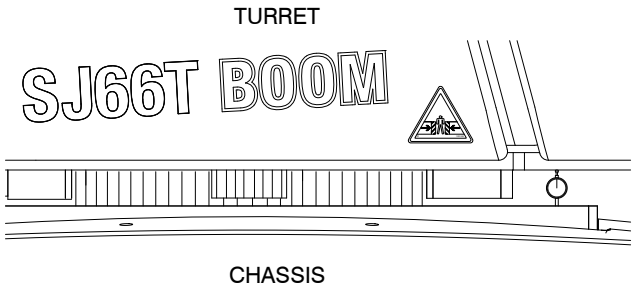
Green LED	Illuminated whenever both tilt axes are within the specified degrees of the zero/ home learned position. Flashes when transitioning in or out of tilt angle limits, but built in time delay has not fully occurred.
Red LED	Illuminated whenever tilt on one or more axes is more than the specified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

Tilt Circuit Test

1. Refer to Section 2 for test tilt sensor procedure.

5.3-8 Check Rotation Bearing for Axial Wear

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



Check Axial Wear of the Rotation Bearing

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

Deutz Diesel Engine

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

5.4-1 Replace Engine Oil and Filter

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

NOTE

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

CAUTION

Beware of hot engine components. Contact with hot engine components may cause severe burns.

CAUTION

When draining hot oil, there is a risk of scalding. Do not let used oil run into the soil, rather collect it in a container. Dispose of this in accordance with environmental regulations.

1. Ensure aerial platform is on a firm level surface.
2. Allow engine to warm up.
3. Remove bolts from engine tray.
4. Pull locking pin down and swing the engine tray away from the turret until it locks in place.
5. Place suitable container under engine.
6. Remove oil drain plug and allow all engine oil to drain into container.
7. Install oil drain plug with new seal ring and tighten firmly.
8. Remove oil filter and catch any escaping oil.
9. Clean inside the filter head.
10. Add clean engine oil to oil filter.
11. Apply a thin layer of engine oil to the new oil filter gasket.
12. Install filter and tighten it by hand.
13. Clean up any oil that may have spilled during this procedure.
14. Refill engine with new oil as per specifications (Refer to engine manual).
15. Swing engine tray back to its original position.
16. Reinstall bolts to engine tray.
17. Start engine from base control console and allow engine to run for 30 seconds then stop the engine.
18. Check for oil leakage.
19. Check engine oil level on dipstick and add oil if needed.

NOTE

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

5.4-2 Replace Fuel Filter

1. Remove bolts from engine tray.
2. Pull locking pin down and swing the engine tray away from the turret until it locks in place.
3. Close fuel shut-off valve.
4. Place suitable container under engine.
5. Remove fuel filter and catch any escaping fuel.
6. Clean any dirt from filter carrier sealing surface.
7. Apply a thin layer of oil or diesel fuel to rubber gasket of new fuel filter.
8. Install fuel filter and tighten it by hand then tighten filter cartridge with final half-turn.
9. Clean up any fuel that may have spilled during this procedure.
10. Open fuel shut-off valve.
11. Check for fuel leakage.
12. Swing engine tray back to its original position.
13. Reinstall bolts to engine tray.

NOTE

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

5.4-3 Replace Air Filter

Engine specifications require that this procedure be performed more often if dusty conditions exist. Refer to engine manual.

CAUTION

Perform this procedure with the engine off.

1. Remove mounting fasteners from air filter canister and remove end cap.
2. Remove filters from inside of canister.
3. Clean inside of canister and gasket with a dry cloth.
4. Insert new filters inside of canister.
5. Reinstall end cap.

5.4-4 Check Engine Belt

The aerial platform will not operate properly with a loose or defective belt. Continuous usage may cause component damage.

WARNING

Do not inspect while the engine is running. Remove the key to secure from operation.

CAUTION

Beware of hot engine components. Contact with hot engine components may cause severe burns.

1. Inspect the engine belt for:
   - cracking
   - glazing
   - separation
   - breaks
2. For correct tension of engine belt, refer to engine manual.

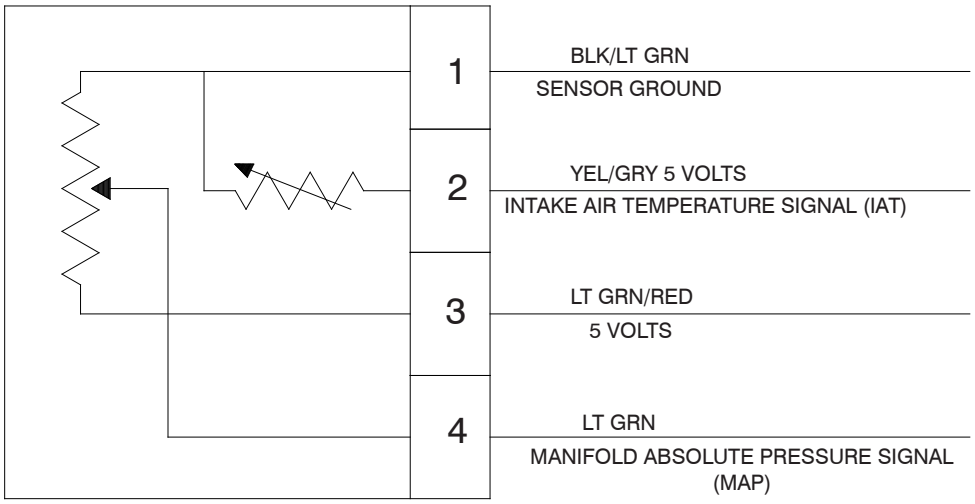
5.4-5 Check Oil Cooler

1. Remove cover from the side of engine.
2. Inspect oil cooler for leaks and physical damage.
3. Clean oil cooler of any kind of debris.
4. Reinstall cover.

GM Dual Fuel Engine

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

5.5-1 GM Map and IAT Sensor

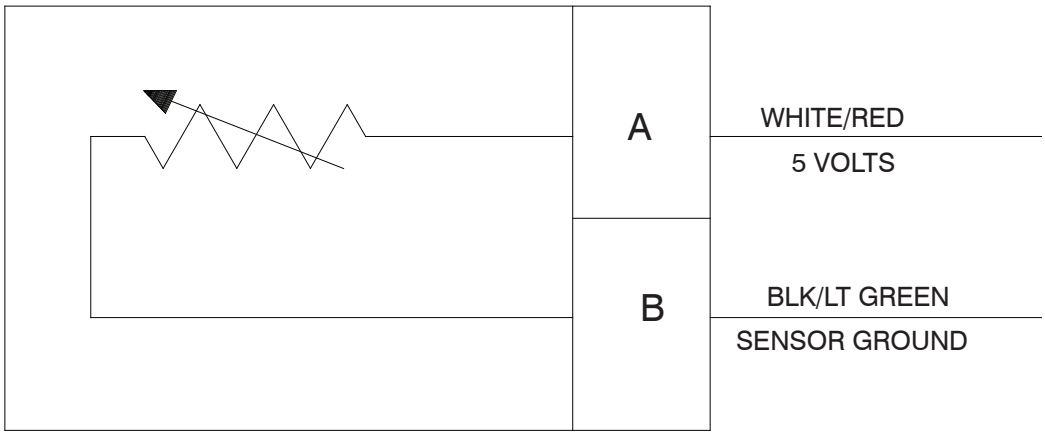


IAT Sensor Resistance

TEMPERATURE ° F	TOLERANCE ±10% OHMS
248	110
239	125
221	162
203	214
185	284
167	383
149	522
131	721
104	1,200
77	2,063
50	3,791
23	7,419
-4	15,614
-22	26,854
-31	35,763
-40	48,153

60597AA

5.5-2 LPG Temperature Sensor

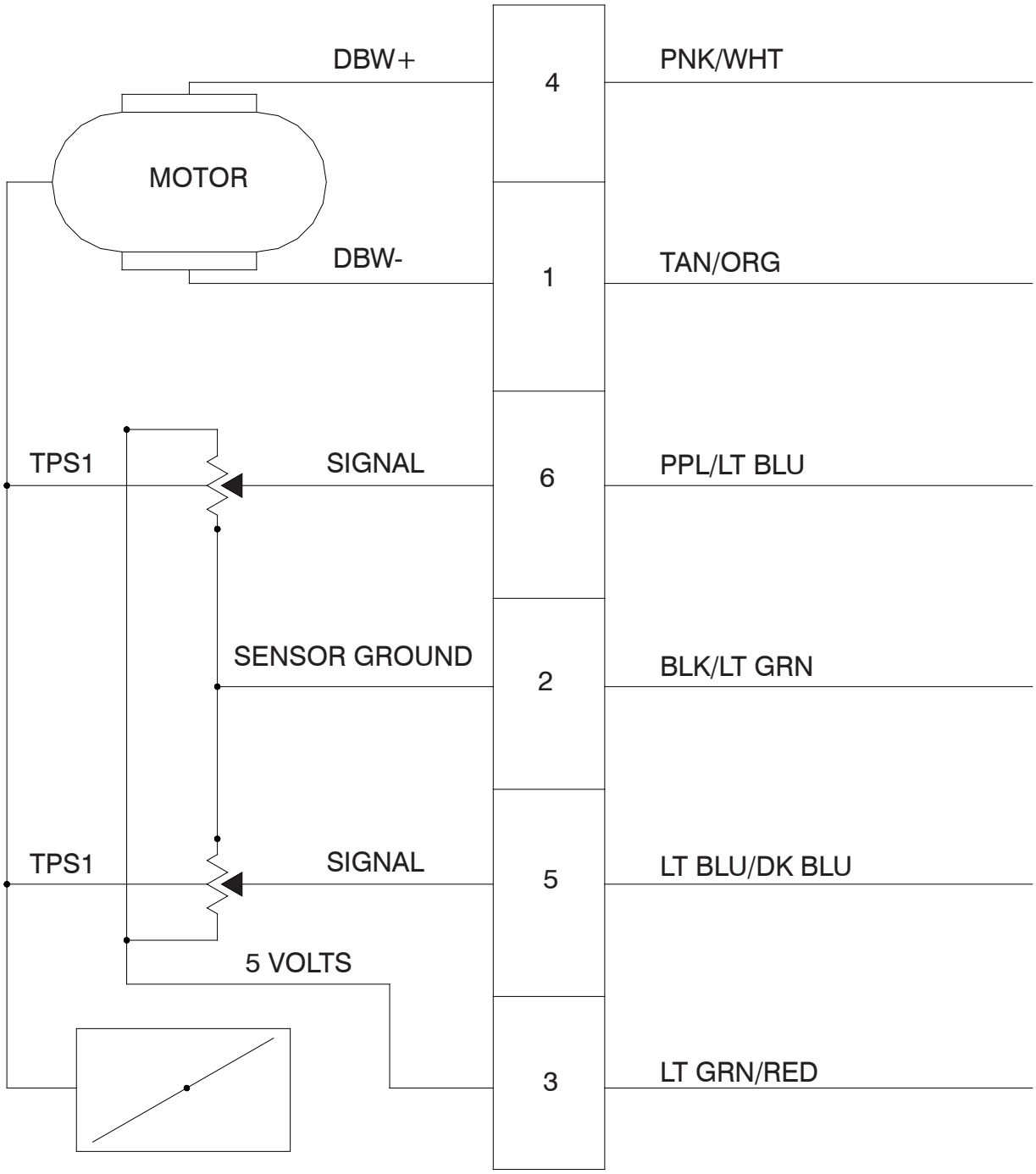


Temperature Sensor Resistance

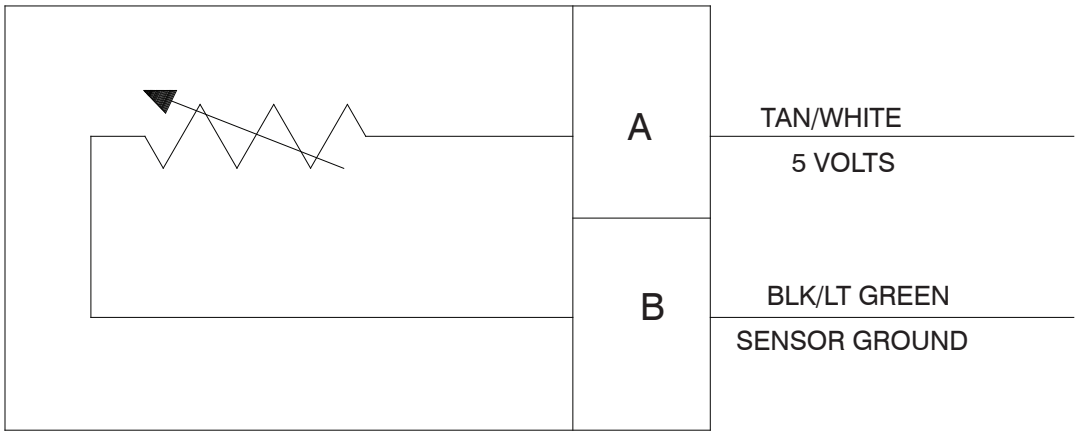
TEMPERATURE DEGREES F	TOLERANCE ±10% OHMS
220	153.7
200	214.6
190	255.4
180	305.5
170	367.3
160	444.1
140	660.6
120	1008
100	1582
80	2554
70	3284
60	4259
40	7357
20	13214
0	24705
-20	48300
-40	99318

60596AA

5.5-3 Throttle Actuator



5.5-4 Engine Coolant Temperature Sensor

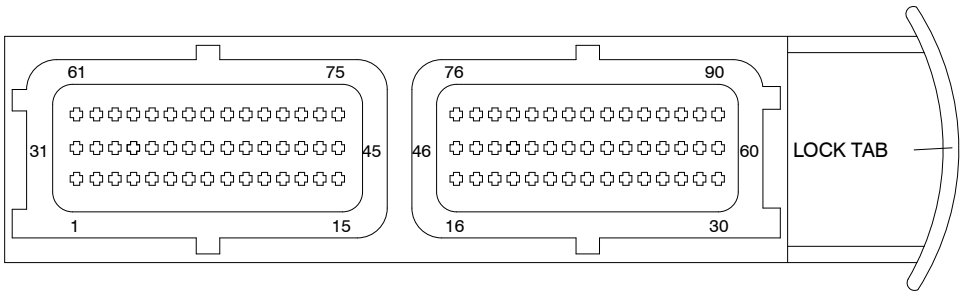


Temperature Sensor Resistance

TEMPERATURE ° F	TOLERANCE ±10% OHMS
242.4	101
231.9	121
211.6	175
201.4	209
181.9	302
163.1	434
144.9	625
127.4	901
102.4	1,556
78.9	2,689
49.9	5,576
23.5	11,562
-5.7	28,770
-21.7	49,715
-30.8	71,589
-40	99,301

60595AA

5.5-5 ECU Pin Reference Chart

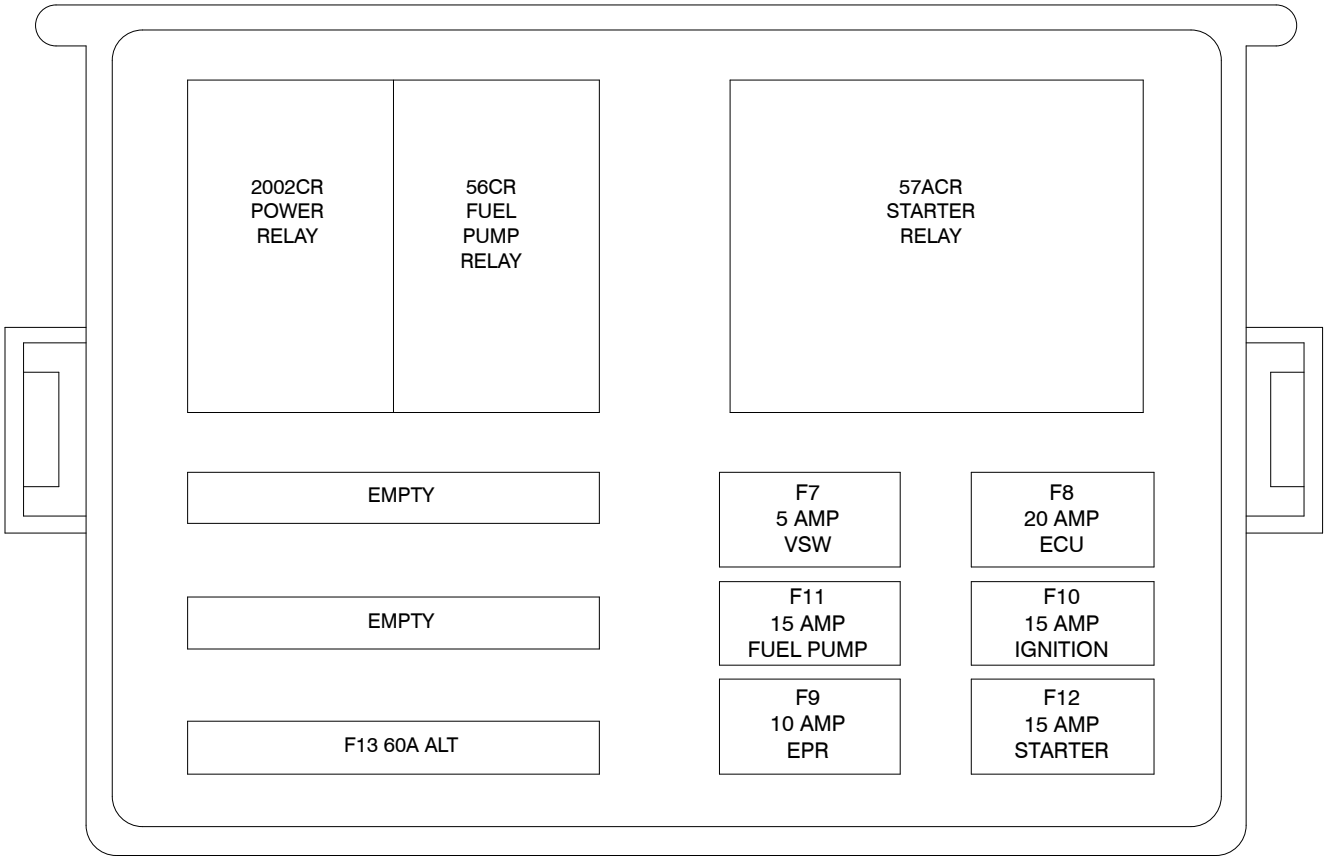


Diagnostics

Pin #	Wire Color	Description	Pin #	Wire Color	Description
1	DK GRN/ORN	EGO1 Signal	46	DK BLU/YEL	Not used
2	DK GRN/WHT	EGO2 Signal	47	YEL/DK BLU	Not used
3	EMPTY		48	LT GRN/WHT	Output to gasoline temp sensor
4	EMPTY		49	LT GRN/PPL	Not used
5	PPL/LT BLUE	Throttle position 1 signal	50	LT GRN/BLK	Not used
6	LT BLU/DK BLU	Throttle position 2 signal	51	GRY/DK BLU	Mid throttle input
7	LT GRN	MAP Signal	52	GRY/ORN	High throttle input
8	TAN/DK GRN	Not Used	53	LT BLU	Input from oil pressure switch
9	DK BLU/ORN	Not Used	54	WHT/LT GRN	Signal from gasoline pressure sensor
10	PPL/YEL	Not Used	55	DK GRN	To diagnostic connector (PC)
11	EMPTY		56	ORN	To diagnostic connector (PC)
12	EMPTY		57	EMPTY	
13	WHT/ORN	Connected to pin #14 below	58	GRY	Not used
14	BLU/PNK	CAN + to propane regulator	59	EMPTY	
15	BLU/WHT	CAN – from propane regulator	60	RED/TAN	Battery positive
16	EMPTY		61	BRN/LT BLU	To injector #1
17	EMPTY		62	BRN/LT GRN	To injector #3
18	EMPTY		63	BRN/YEL	To injector #4
19	LT GRN/RED	5 volt + from ECU to sensors	64	BRN/WHT	To injector #2
20	BLK/LT GREEN	5 volt – to ECU from sensors	65	EMPTY	
21	PPL/WHT	+V from crank position sensor	66	EMPTY	
22	WHT/PPL	-V from crank position sensor	67	EMPTY	
23	GRY/BRN	+V from camshaft position sensor	68	EMPTY	
24	PPL/ORN	-V from camshaft position sensor	69	BLK	Ground from engine block
25	RED/WHT	Not used	70	EMPTY	
26	RED/BLK	Not used	71	WHT/LT BLU	Negative supply to power relay 2002CR
27	EMPTY		72	BLK/WHT	EGO 1 Heater ground
28	EMPTY		73	BLK/YEL	EGO 2 Heater ground
29	EMPTY		74	EMPTY	
30	EMPTY		75	WHT/BLK	Negative supply to propane lock off
31	YEL	Output to igition module	76	EMPTY	
32	EMPTY		77	BRN/WHT	Not used
33	EMPTY		78	WHT/BRN	Not used
34	EMPTY		79	RED/TAN	Battery positive
35	EMPTY		80	GRN/YEL	To check engine light (MIL)
36	EMPTY		81	BLK	Ground from engine block
37	EMPTY		82	PNK/WHT	Positive to throttle actuator motor
38	EMPTY		83	TAN/ORN	Negative from throttle actuator motor
39	YEL/GRY	Output to IAT (part of MAP)	84	TAN/BLK	Negative supply to fuel pump relay 56CR
40	TAN/WHT	Output to TPS1	85	PNK/YEL	Fuel pump excite wire
41	WHT/RED	Output to TPS2	86	BLK/RED	Negative supply to fuel pump
42	TAN/BRN	Propane selected	87	TAN	Not used
43	TAN/RED	Not used	88	DK BLU	Not used
44	TAN/BLK	Not used	89	PNK/BLK	Negative supply to starter relay 57ACR
45	PNK/TAN	12 volt input	90	EMPTY	

60594AB

5.5-6 Fuse Block Layout



Kubota WG2503 Dual Fuel Engine

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

5.6-1 Engine Parameter Display (KAntrak 1700)

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



Menu Browsing

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

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

Display Modes

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

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

Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Codes (DTCs) are manufacturer's codes to indicate specific engine malfunction. These codes will appear on the KAntrak screen whenever an engine malfunction occurs. For DTCs, see *5.6-2 Diagnostic Trouble Codes*.

Selecting DTC Screen

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

1. To access the DTC Screen, select the "🔧" tool to access the Settings Menu.
2. On the Display Mode option, select **Dtc**.
3. To display the DTC detailed info, select the "**?**" function. A detailed screen of the selected DTC including the SPN description (Header), the FMI Description (Header), the fault status (Status), the SPN Number (SPN), the FMI Number (FMI), the total number of occurrences (OCC) and the related node source address (SRC) will then appear.
4. Note the SPN Number on the display and check it against the list found in *5.6-2 Diagnostic Trouble Codes.* Look for the Detected Item/Hardware information and correct the error. Once the fault is fixed, the amber lights on KAntrak unit and on Engine Control Console will turn off.
5. To exit from DTC Screen, select "↩" tool to continue browsing for other parameters. The menu will be hidden after a few seconds.

5.6-2 Diagnostic Trouble Codes

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

5.6-2 Diagnostic Trouble Codes (continued)

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

5.6-2 Diagnostic Trouble Codes (continued)

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
341	723	2	-Cam+ or Cam- circuits in wrong connector terminal slot -Loss of feed voltage to Cam sensor -Loss of sensor feed -Open sensor ground -Open or shorted to ground signal wire -Sensor malfunctioning
342	723	4	-Loss of feed voltage to Cam sensor -Loss of signal or ground circuits -Faulty sensor
359	n/a	n/a	n/a
420	3050	n/a	n/a
524	100	1	-Low Oil Pressure
562	168	17	-Wiring harness open/short/damage -Battery abnormality
563	168	15	-System voltage abnormality (High Side)
601	628	13	-Faulty ECU -ROM Malfunction
604	630	12	- Faulty ECU
606	629	31	-Faulty ECU
627	1348	5	-Open coil in relay -Open in relay driver circuit in engine harness
628	1347	5	-Relay pull in coil shorted internally -Relay driver circuit shorted to ground in wire harness
629	1347	6	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness
642	1079	4	-Wiring harness short to ground -ECM malfunction
643	1079	3	-Wiring harness short to 12.0 V power -ECM malfunction
652	1080	4	-Wiring harness short to ground -ECM malfunction
653	1080	3	-Wiring harness short to 10.0 V power -ECM malfunction
686	1485	4	-Short to ground in relay pull in coil -Short to ground in relay driver circuit in wire harness
687	1485	3	-Shorted relay pull in coil -Relay driver circuit shorted to voltage in wire harness -Power Relay Error
1111	515	16	-Engine overspeed condition, faulty Crank sensor or input
1112	515	0	-Engine overspeed condition, faulty Crank sensor or input
1151	4236	0	•exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor

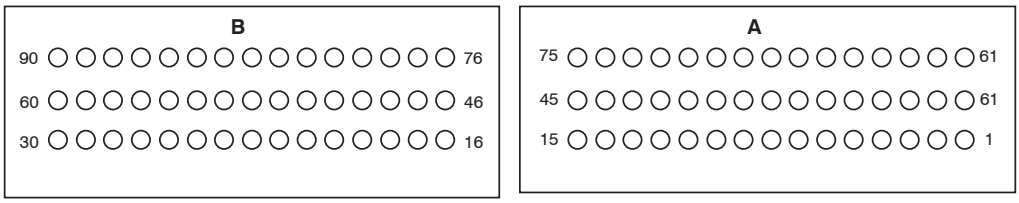
5.6-2 Diagnostic Trouble Codes (continued)

DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
1152	4236	1	• high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1153	4236	0	• exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1154	4236	1	• high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1155	4236	0	• exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure • an injector that is stuck closed
1156	4236	1	• high fuel supply pressure to the fuel injection system • a non-responsive HEGO sensor • an injector that is stuck open
1161	4237	0	• exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1162	4237	1	• high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1163	4237	0	• exhaust leaks upstream or near the HEGO sensor • reduced fuel supply pressure to the gaseous fuel control system • a fuel supply or manifold leak • a non-responsive HEGO sensor
1164	4237	1	• high fuel supply pressure to the gaseous fuel control or faulty pressure regulator • a non-responsive HEGO sensor
1165	3050	11	n/a
1166	3050	11	n/a
1173	520620	31	n/a
1612	629	31	• Faulty ECU
1613	629	31	• Faulty ECU
1614	629	31	• Faulty ECU
1615	629	31	• Faulty ECU
1616	629	31	• Faulty ECU
2111	51	7	• TPS malfunction
2112	51	7	• TPS malfunction
2115	51	0	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction

5.6-2 Diagnostic Trouble Codes (continued)

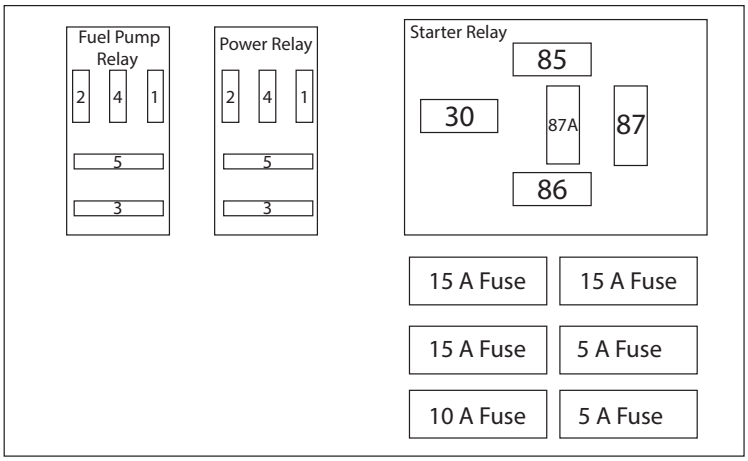
DTC	(J1939) SPN	(J1939) FMI	Detected Item/Hardware
2116	29	0	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2122	91	3	• Wiring harness open/short/damage • FPP malfunction
2123	91	3	• Wiring harness open/short/damage • FPP malfunction
2127	29	4	• Wiring harness open/short/damage • FPP malfunction
2128	29	3	• Wiring harness open/short/damage • FPP malfunction
2135	51	31	• TPS malfunction
2139	91	1	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2140	29	1	• Wiring harness open/short/damage • FPP malfunction • IVS malfunction
2300	1268	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2301	1268	6	• a short to power in the harness • a short internal to the primary coil
2303	1269	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2304	1269	6	• a short to power in the harness • a short internal to the primary coil
2306	1270	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2307	1270	6	• a short to power in the harness • a short internal to the primary coil
2309	1271	5	• a short to ground or open circuit in the harness • an open internal to the primary coil
2310	1271	6	• a short to power in the harness • a short internal to the primary coil

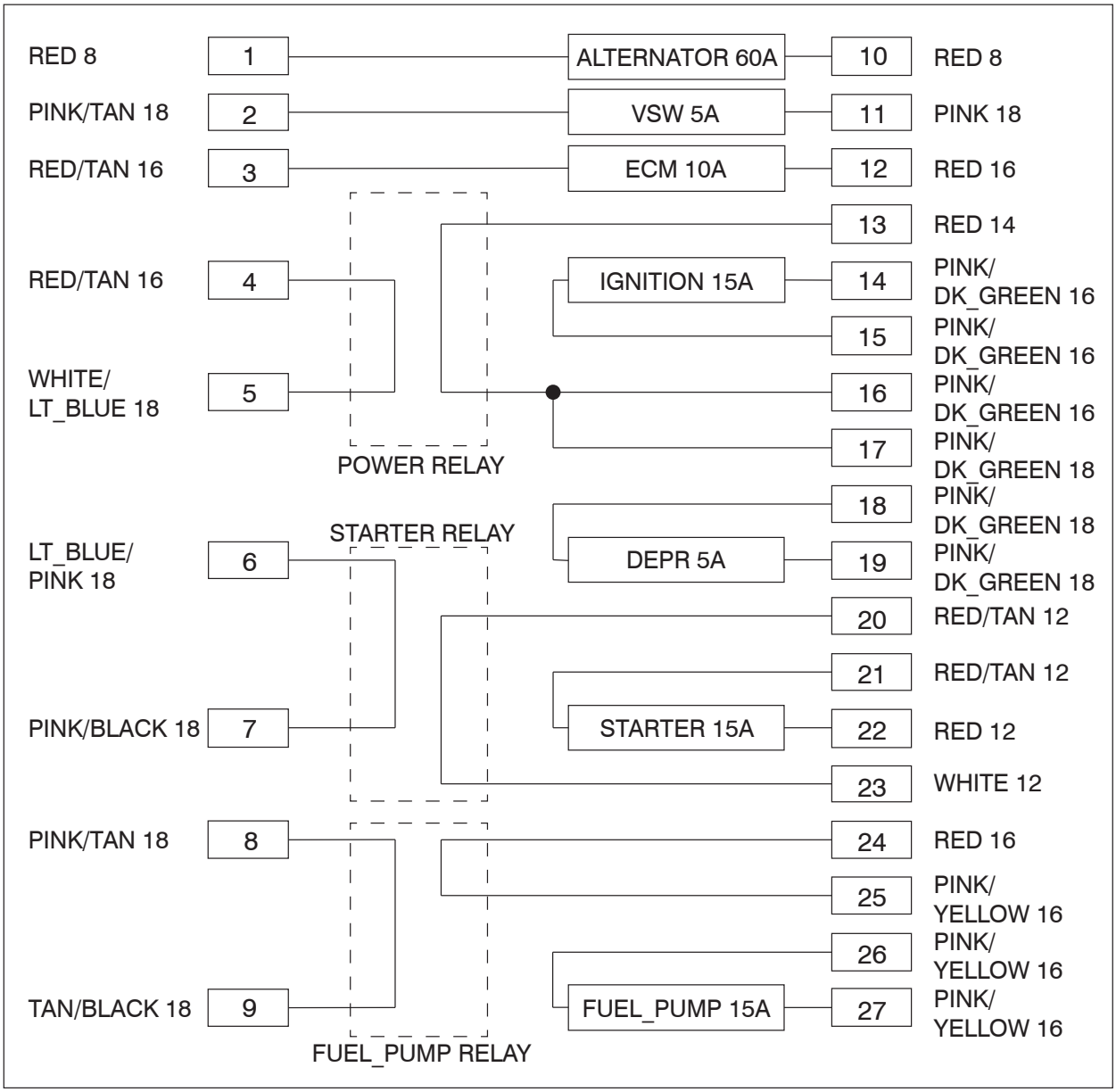
5.6-3 ECU Pin Reference Chart (Kubota WG2503)



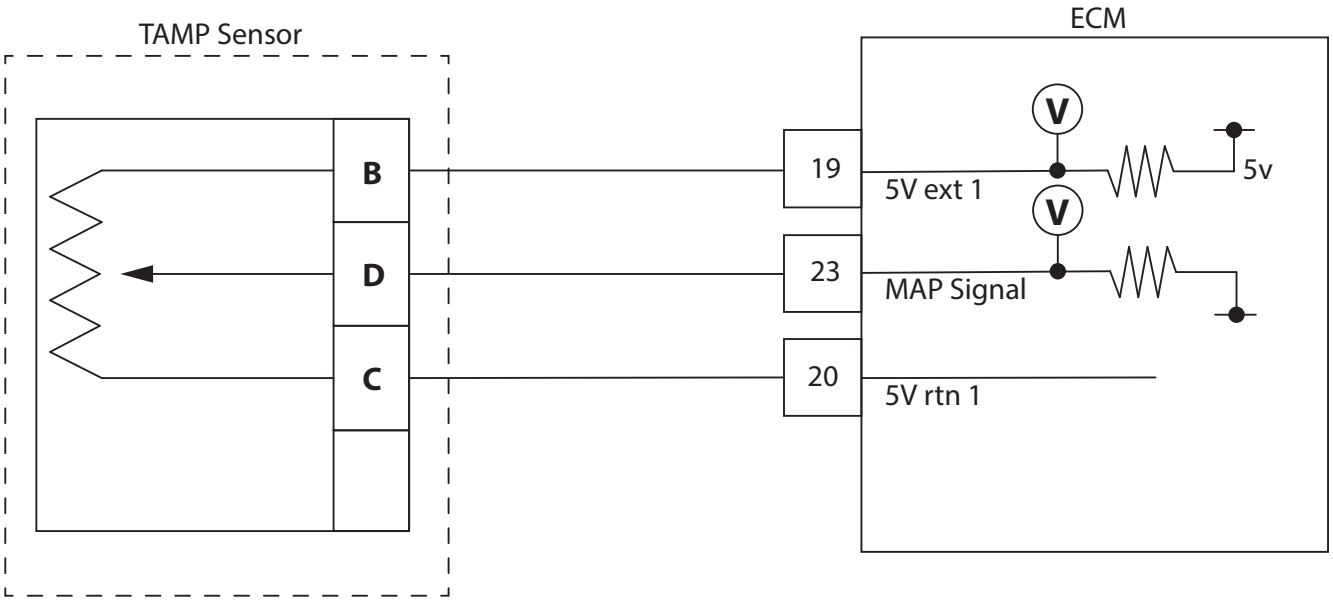
Pin	Wire Colour	Description	Pin	Wire Colour	Description
1	YELLOW 18	SPK_COIL 1A	46	BLANK	AUX ANA PUD 1
2	YELLOW/BLACK 18	SPK_COIL 1B	47	PURPLE/LT_BLUE 18	TPS 1
3	YELLOW/RED 18	SPK_COIL 2A	48	LT_BLUE/DK_BLUE 18	TPS 2
4	BLACK 16	SPK_GRND	49	DK_GREEN/PURPLE 18	AUX DIG 1
5	YELLOW/WHITE 18	SPK_COIL 2B	50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

5.6-4 Fuse Box (Kubota WG2503)

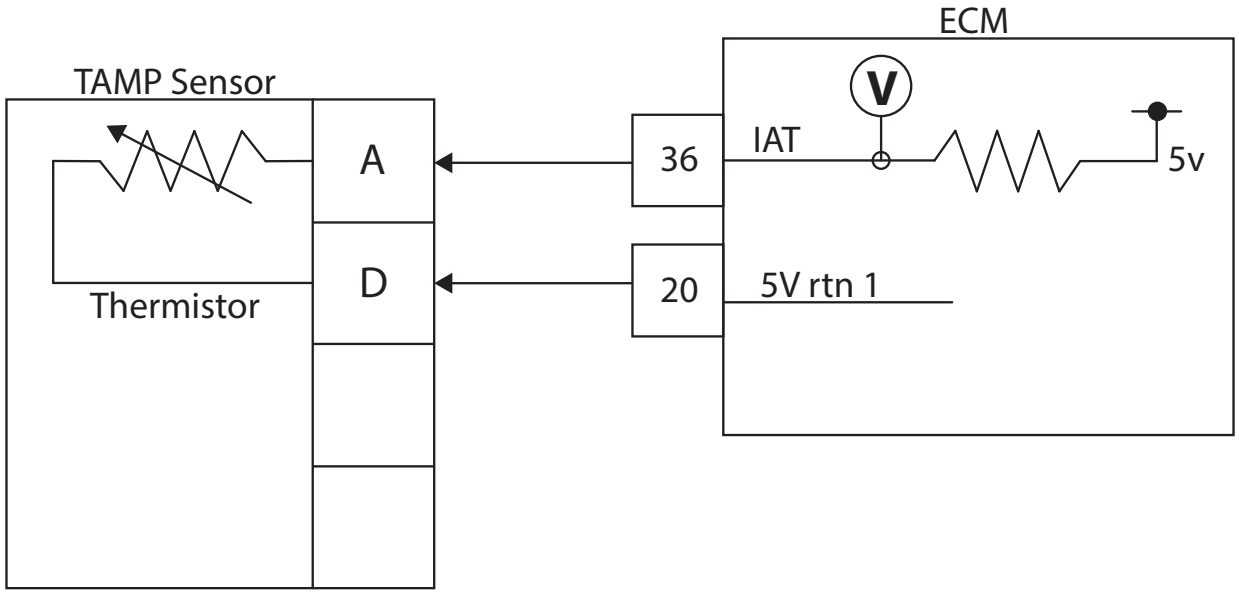




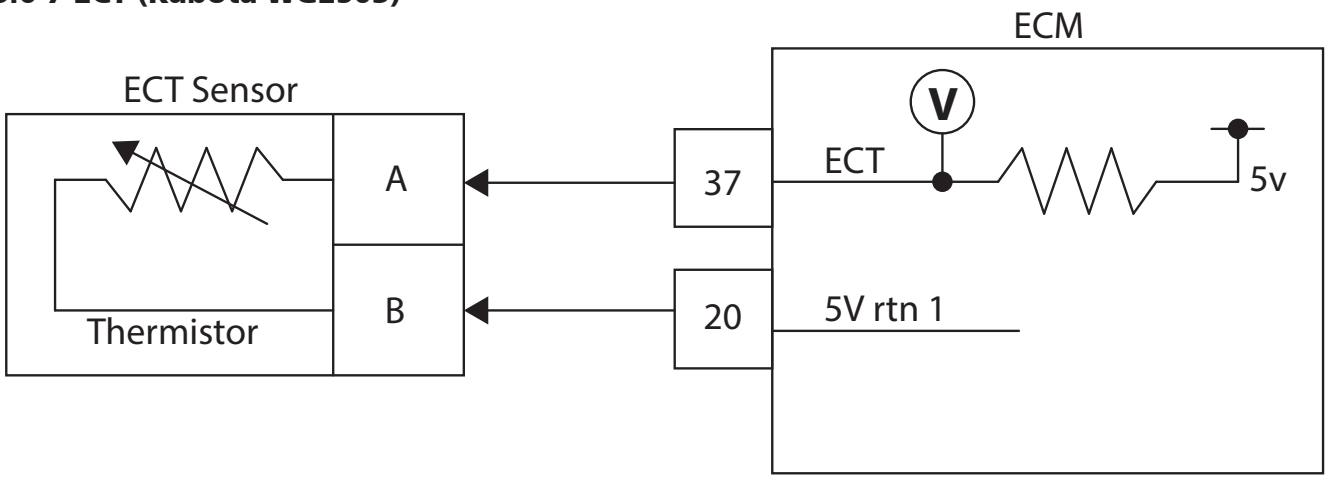
5.6-5 MAP Sensor (Kubota WG2503)



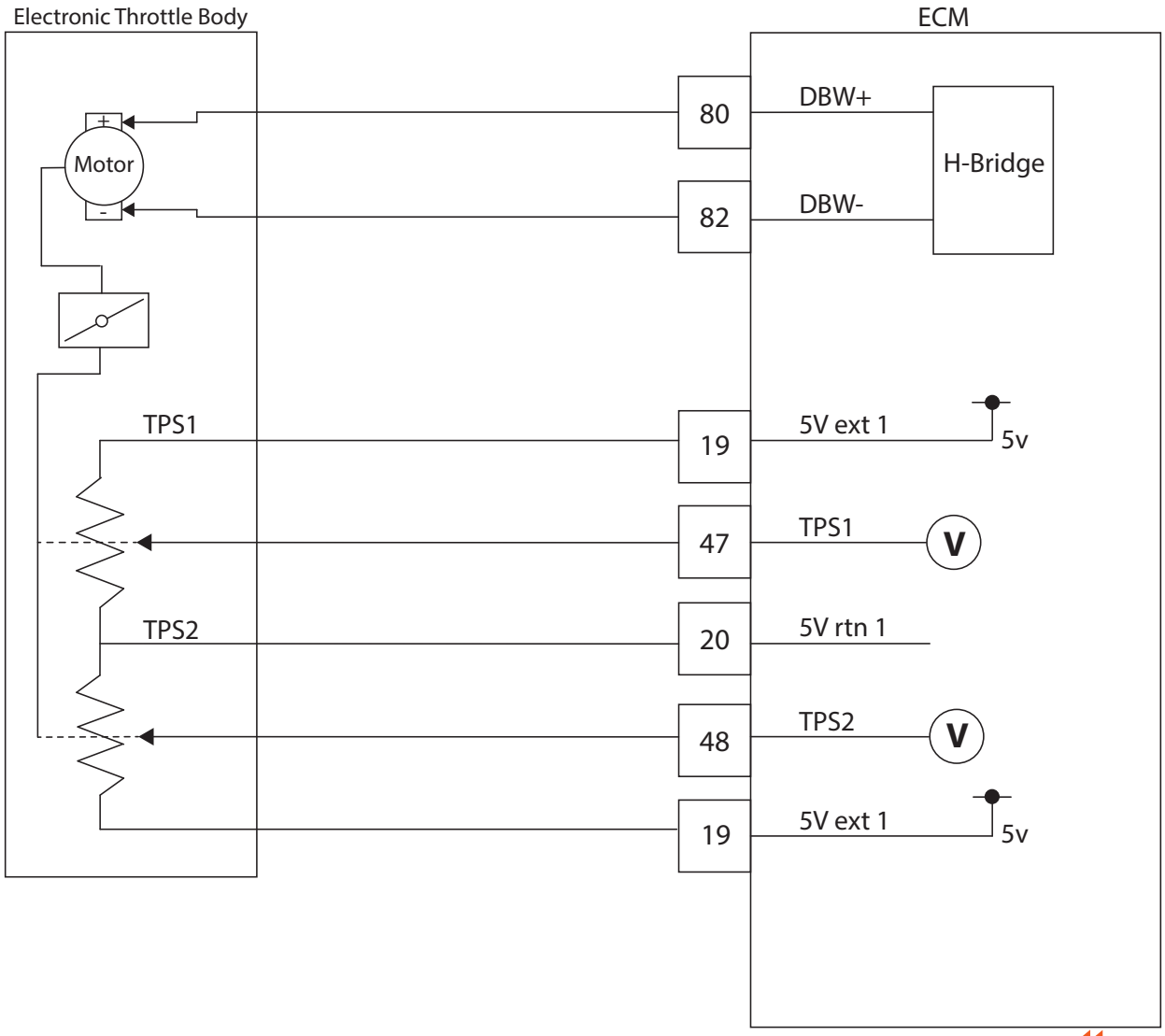
5.6-6 IAT Sensor (Kubota WG2503)



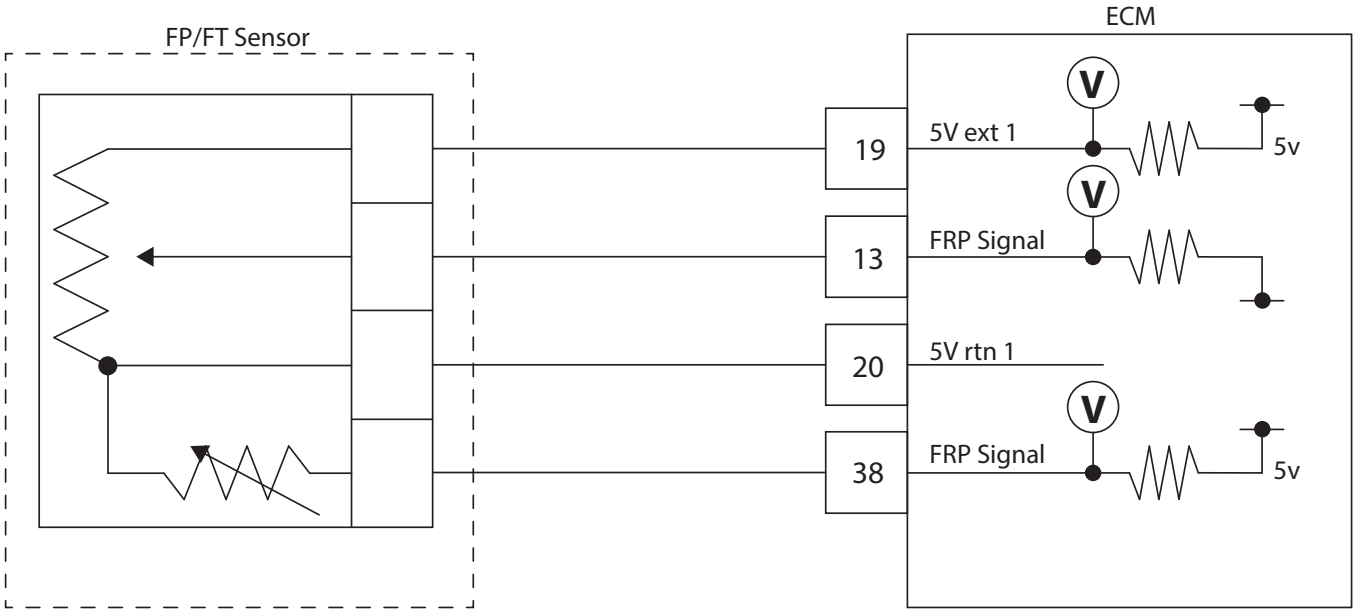
5.6-7 ECT (Kubota WG2503)



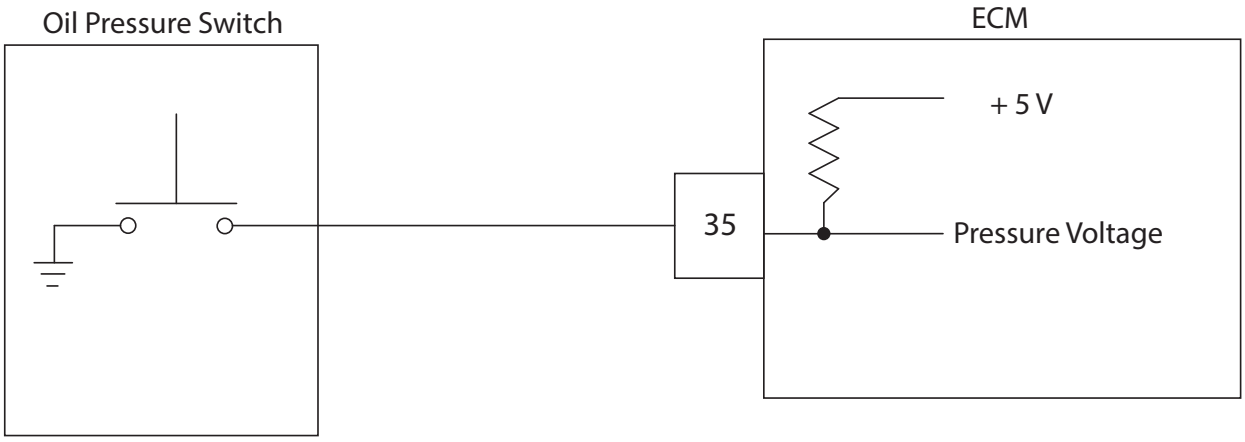
5.6-8 TPS & Engine Speed (Kubota WG2503)



5.6-9 Fuel Temperature Sensor (Kubota WG2503)



5.6-10 Oil Pressure Sensor (Kubota WG2503)



Hydraulic Tank

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

5.7-1 Change Hydraulic Tank Filter

1. Ensure aerial platform is on a firm level surface, is in stowed position and engine is off.
2. Place suitable container under the hydraulic tank filter.
3. Remove oil filter and catch any escaping oil.
4. Clean inside the filter head.
5. Apply a thin layer of clean hydraulic oil to the new oil filter gasket.
6. Install filter and tighten firmly.
7. Clean up any oil that may have spilled during this procedure.
8. Start engine from base control console.
9. Check for leakage.

NOTE

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

5.7-2 Change Hydraulic Oil

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Allow hydraulic oil to warm up.
3. Turn main power disconnect switch to off position.
4. Place suitable container under the hydraulic tank.
5. Remove oil drain plug and allow all hydraulic oil to drain into container.
6. Install oil drain plug with new seal ring and tighten firmly.
7. Refill hydraulic tank with new oil as per specifications. (Refer to Section 2 of this manual)
8. Check for leakage.
9. Clean up any oil that may have spilled during this procedure.
10. Check hydraulic oil level. (The hydraulic oil level should be at or slightly above the top mark on the sight gauge)

NOTE

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

NOTE

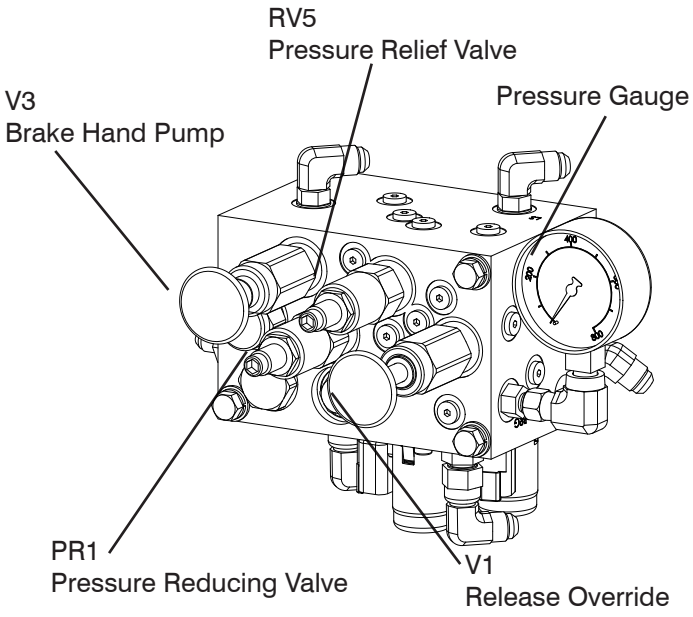
Samples of hydraulic oil should be drawn from the reservoir and tested annually. These samples should be taken when the oil is warmed through normal operation of the system. The sample should be analyzed by a qualified lubrication specialist to determine if it is suitable for continued use. Oil change intervals will depend on the care used in keeping the oil clean, and the operating conditions. Dirt and/or moisture contamination will dictate that the oil should be changed more often. Under normal use and operating conditions, the hydraulic oil should be changed every two years. Refer to Table 1.2 of this manual.

Manifold and Hydraulic Pumps

5.8-1 Hydraulic Brake Pressure Adjustment

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

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



Brake Manifold

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

CAUTION

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

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

CAUTION

Valve damage will occur if tightened too much.

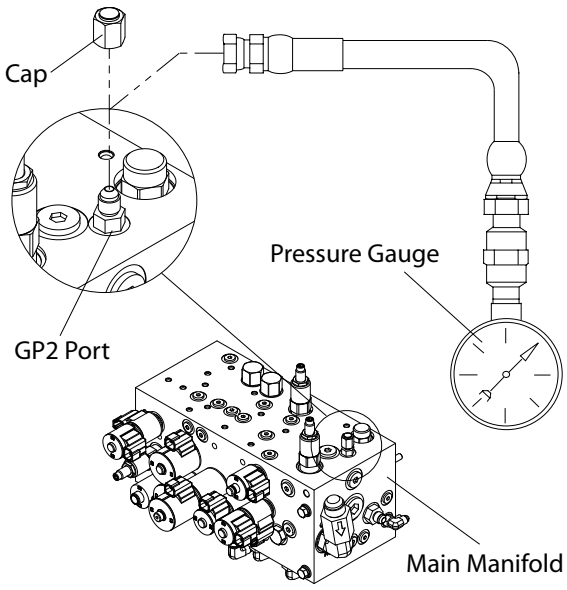
WARNING

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

5. Start the engine from the platform control console and extend the boom slightly to achieve low speed drive.
6. Drive aerial platform forward or reverse. The pressure gauge reading should be 550 psi. Stop the aerial platform. Follow the next steps for adjusting relief valve pressure if needed. If no adjustment is required continue to step 10.
7. Locate brake pressure relief valve RV5 and loosen the lock nut.
8. Turn the adjusting stem on the pressure relief valve RV5 ¼ of a revolution at a time clockwise to increase pressure or counterclockwise to decrease pressure. Drive aerial platform forward or reverse, note pressure and stop the aerial platform.
9. Repeat step 8 until brake pressure is achieved (550 psi) then tighten lock nut on brake system pressure relief valve RV5.
10. Locate brake system pressure reducing valve PR1 and turn the valve gently counterclockwise to the initial position.
11. Drive aerial platform forward or reverse. Pressure gauge reading should be 500 psi.
12. Stop aerial platform and adjust pressure reducing valve PR1 1/4 turn at a time by turning either clockwise to increase pressure or counterclockwise to decrease pressure.
13. Repeat step 11 and 12 until brake pressure is achieved (500 psi) then tighten lock nut on brake system pressure reducing valve PR1.
14. Reinstall the wiring in the same positions it was removed from in step 4.
15. Test the brake and two speed functions.

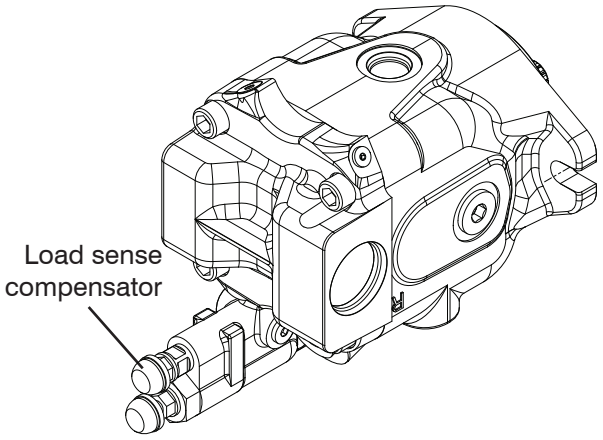
5.8-2 Hydraulic Standby Pressure Adjustment

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



Main Manifold and Pressure Gauge

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

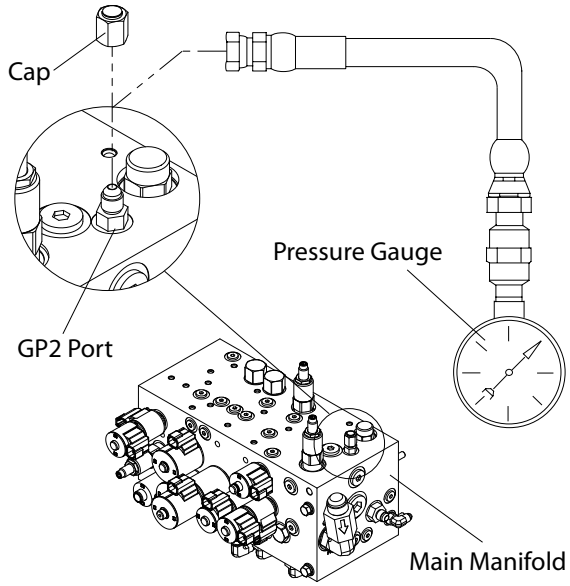


System Pump

6. Loosen the lock nut.
7. Adjust the load sensing pressure by turning the adjusting stem either clockwise to increase pressure or counterclockwise to decrease pressure.
8. Tighten the lock nut after pressure is set to 330 psi.
9. Turn the engine off.
10. Remove the pressure gauge from the GP2 port and cap the port.

5.8-3 Hydraulic High Pressure Adjustment

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



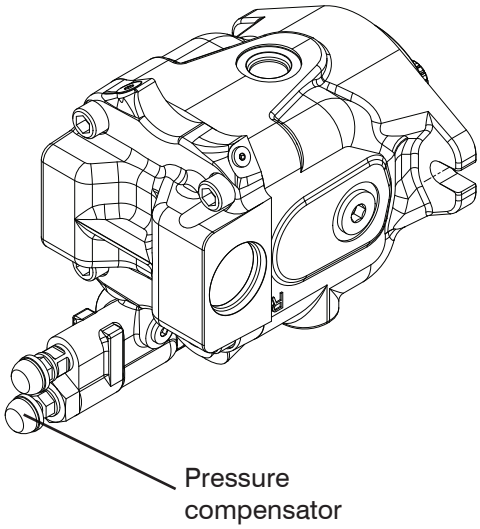
Main Manifold and Pressure Gauge

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

WARNING

Do not activate any controls during procedure to protect gauge.

3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Steer fully to one direction and then check the reading on the gauge. Standard pressure should be 3050 psi. Follow the next steps for adjusting pressure if needed.
5. Locate the pressure compensator on the system pump.

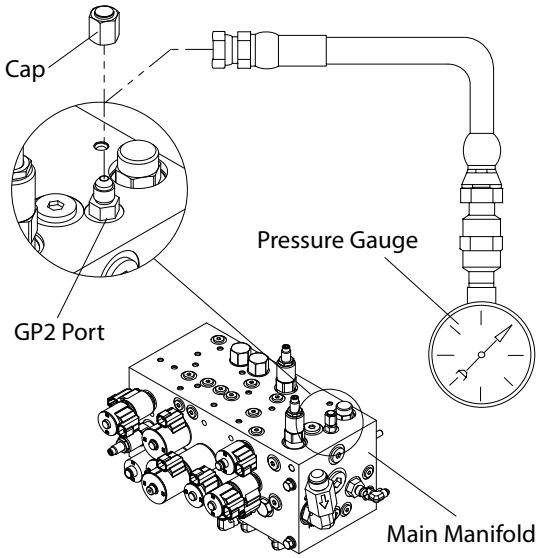


System Pump

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

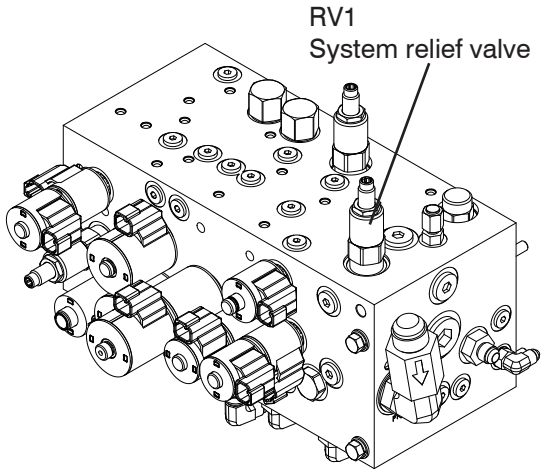
5.8-4 Hydraulic System Relief Valve Adjustment

1. To adjust the system relief valve (RV1), you are required to temporarily adjust the high pressure setting on the system pump to 3300 psi. Refer to 5.7-3 HydraulicHigh Pressure Adjustment.
2. Locate the GP2 port on the main manifold and remove the cap.



Main Manifold and Pressure Gauge

3. Connect a pressure gauge (5000 psi) to the GP2 port.
4. Start the engine from the base control console and let it run for 2-5 minutes.
5. Steer fully to one direction and then check the reading on the gauge. Standard pressure should be 3250 psi. Follow the next steps for adjusting pressure if needed.
6. Locate the system relief valve (RV1).

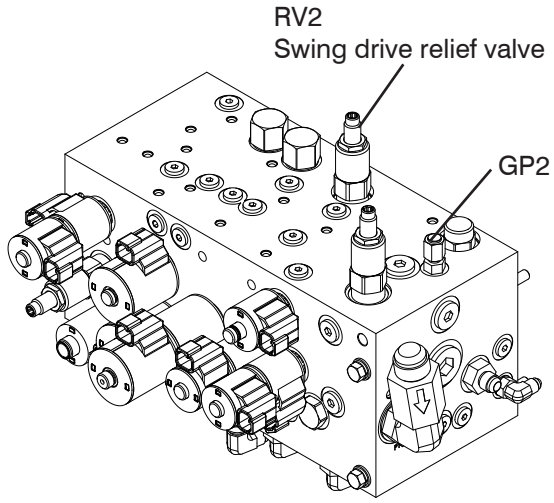


Main Manifold

7. Loosen the lock nut on the system relief valve. Turn the adjusting stem clockwise to increase pressure and counterclockwise to decrease pressure.
8. Tighten the lock nut on the system relief valve once 3250 psi is observed on the gauge. You must steer fully in one direction to activate pressure reading on gauge.
9. Reset the system pump to 3050 psi. Refer to 5.7-3Hydraulic High Pressure Adjustment.

5.8-5 Turret Rotate Relief Valve Adjustment

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

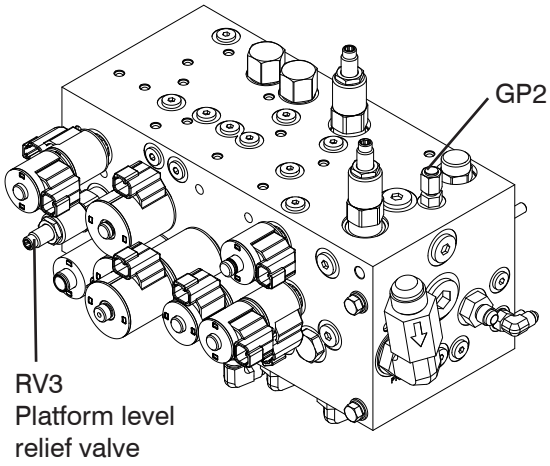


Main Manifold

3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Raise main boom to ensure basket will not contact the ground.
5. Engage the turret transport lock.
6. Attempt to rotate turret. Pressure should be 1250 psi. Follow the next steps for adjusting pressure if needed.
7. Locate turret rotate relief valve RV2.
8. Loosen lock nut on turret rotate relief valve RV2. Turn adjusting stem clockwise to increase pressure and counterclockwise to decrease pressure.
9. Tighten lock nut on turret rotate relief valve RV2 once 1250 psi is observed on the gauge. You must activate turret rotate to obtain pressure reading on gauge.
10. Disengage turret transport lock.

5.8-6 Platform Level Relief Valve Adjustment

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

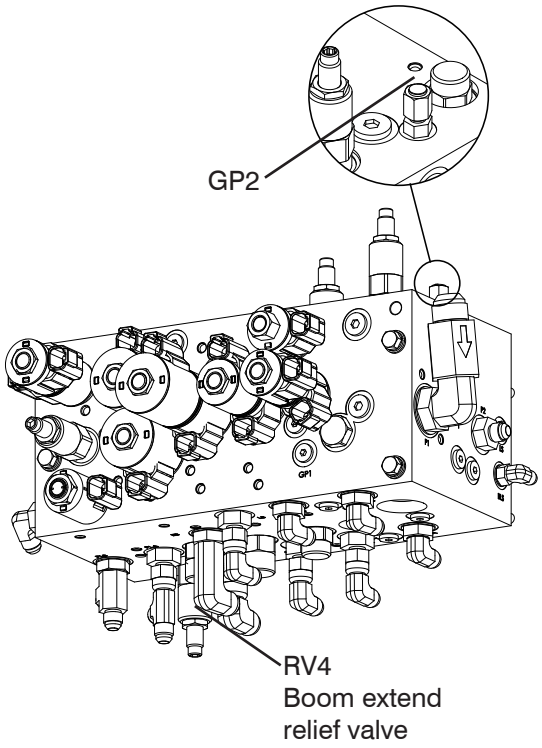


Main Manifold

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

5.8-7 Fly Boom Relief Valve Adjustment

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

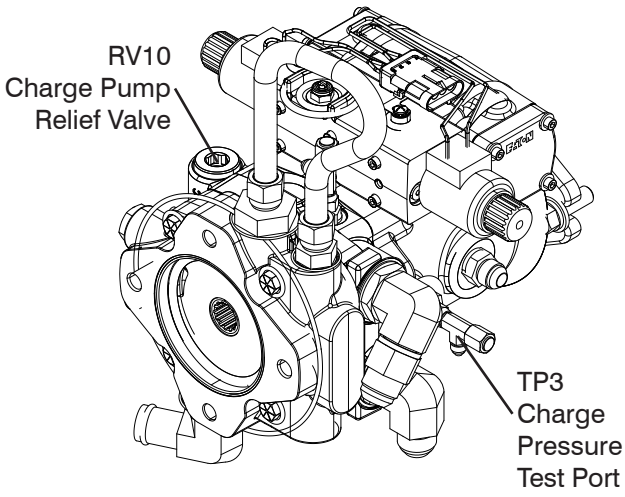


Main Manifold

2. Connect a pressure gauge (5000 psi) to the GP2 port.
3. Start the engine from the base control console and let it run for 2-5 minutes.
4. Fully extend the boom and check the reading on the gauge. Pressure should be 1500 psi. Follow the next steps for adjusting pressure if needed.
5. Locate fly boom relief valve RV4.
6. Loosen the lock nut on fly boom relief valve RV4. Turn the adjusting stem clockwise to increase pressure and counterclockwise to decrease pressure.
7. Tighten the lock nut on fly boom relief valve RV4 once 1500 psi is observed on the gauge. You must fully extend boom to activate pressure reading on gauge.

5.8-8 Test Charge Pump Pressure on Drive Pump

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



Drive Pump - TP3

3. Start engine from base control console.

WARNING

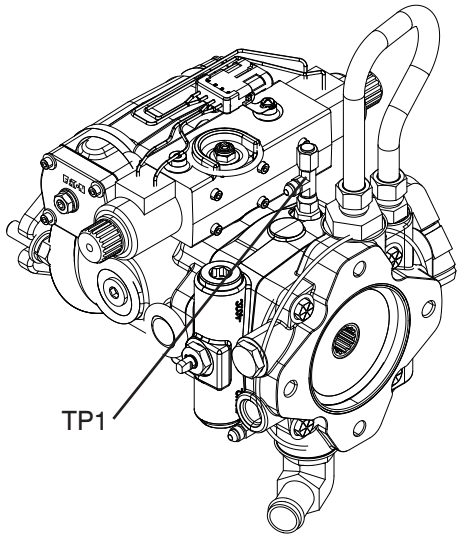
Do not activate any controls during procedure to protect gauge.

4. Check reading on gauge (standard pressure should be 313 ±10% psi.)
5. Replace charge pump relief valve RV10 if pressure is not achieved.
6. Repeat steps 2, 3, and 4 after charge pump relief valve is replaced.
7. if pressure still not in range, repair or replace the pump as necessary.

5.8-9 Test Forward Drive Pressure on Drive Pump

NOTE
Make sure charge pump pressure test is completed first.

1. Locate test port TP1 on the drive pump.
2. Connect a pressure gauge (10000 psi) to test port TP1.



Drive Pump - TP1

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

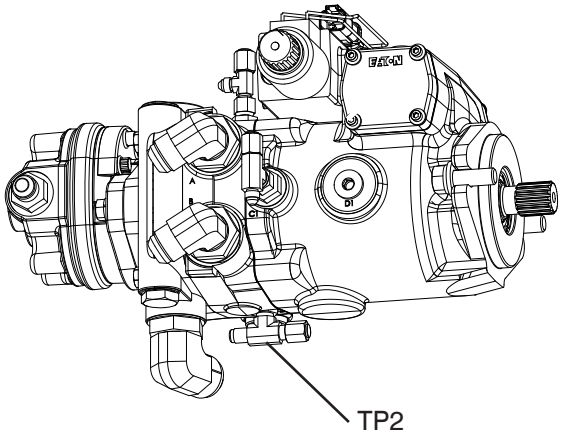
NOTE
Activating drive function too fast will stall the engine.

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

5.8-10 Test Reverse Drive Pressure on Drive Pump

NOTE
Make sure charge pump pressure test is completed first.

1. Locate test port 2 on the drive pump.



Drive Pump - TP2

2. Connect a pressure gauge (10000 psi) to test port 2.

WARNING

Do not activate any controls during procedure to protect gauge.

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

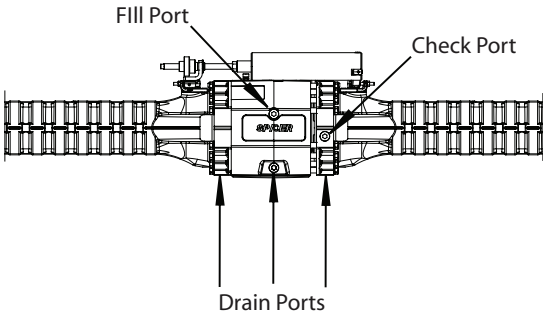
NOTE
Activating drive function too fast will stall the engine.

6. Check the reading on the gauges. Standard pressure should be 5000 psi. Go to step 8 if pump pressure is achieved.
7. Replace pump if pressure is not achieved.
8. Turn engine off.

Axles

5.9-1 Change Oil in Axles

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Turn main power disconnect switch to off position.
3. Place suitable container under the axle
4. Remove fill plug.
5. Remove all three drain plugs to allow oil to drain into container.



Rear Axle (shown)

6. Reinstall all drain plugs.
7. Remove check plug.

NOTE

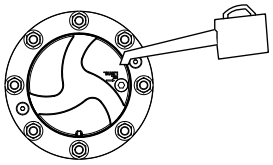
Axle is filled when oil is leaking from the check port.

8. Refill axle with new oil as per specifications. (Refer to Section 2 of this manual)
9. Reinstall both fill and check plugs.

5.9-2 Check Oil Level in Torque Hub

1. Drive the aerial platform to rotate the hub until the plug is located at 90 degrees.

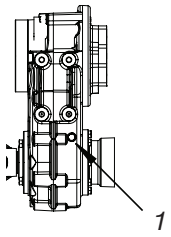
2. Remove the plug and check the oil level. The oil level should be even with the bottom of the plug hole. Add oil if needed. For oil specification, Refer to Section 2 for specifications.



Drive Torque Hub

5.9-3 Check Oil Level in Axle Gearbox

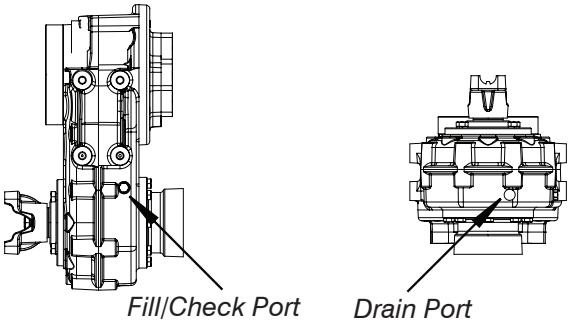
1. Remove plug 1 from gear box.
2. Check oil level. Oil level should be even with the bottom of plug hole 1. Add oil if needed. (Refer to Section 2 for specifications).



Gearbox

5.9-4 Change Oil in Axle Gearbox

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Turn main power disconnect switch to off position.
3. Place suitable container under the gearbox.
4. Remove fill plug.
5. Remove drain plug to allow oil to drain into container.



Gearbox

6. Reinstall drain plug.

NOTE

Gearbox is filled when oil is leaking from the check port.

7. Refill gearbox with new oil as per specifications. (Refer to Section 2 of this manual)
8. Reinstall fill/check plug.

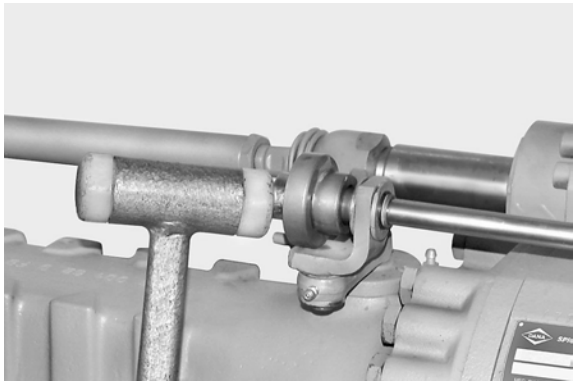
5.9-5 Bleeding Oscillating Axle Cylinders

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

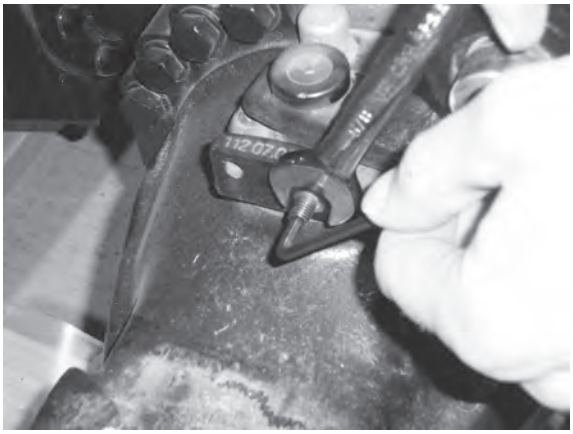
Items you will need before starting
- oil container
- hose lines (to reach from bleeders to bucket)
- 10" high ramp

1. Locate bleeders on either side of the axle cylinder.
3. Start bleeding from one side of the aerial platform that will be driven up the ramp.
4. Hook up hose line to top bleeder and keep bottom bleeder capped.
5. Ensure bleeder hose drains oil into container when aerial platform is driving.
6. Drive aerial platform up and down the ramp until only a continuous stream of fluid is being released from the bleeders.
7. Repeat step 6 with the otherside.
8. Ensure bleeders are capped.

5.9-6 Pin Brake Adjustments



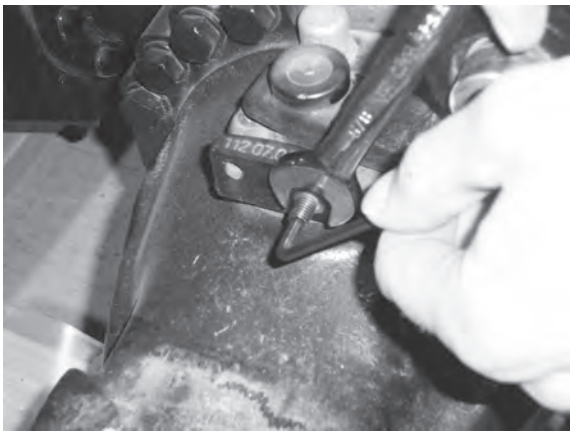
1. To manually release the brake give a light blow to the external ring of the check unit.



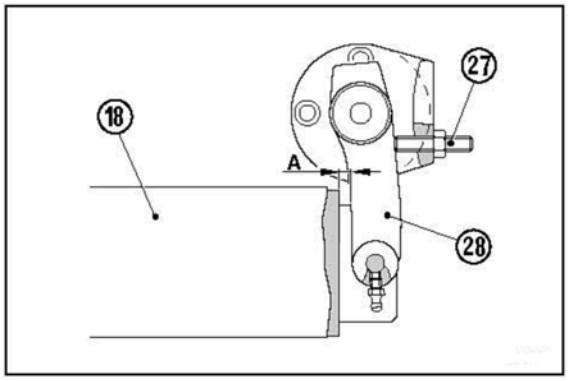
2. To adjust the idle elimination loosen jam nut and back out adjustment stem a few turns.



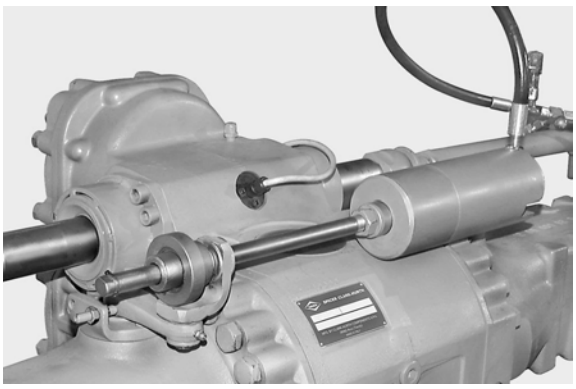
3. Apply a 2lb. force (1Kg) in the direction of brake application and turn adjusting stem so that it touches the stop.



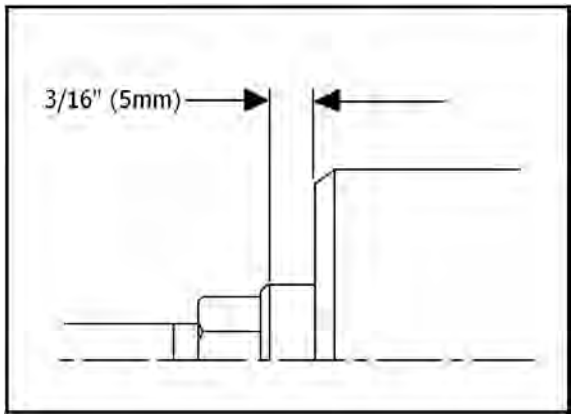
4. Tighten the Jam nut. Repeat this procedure for the other side.



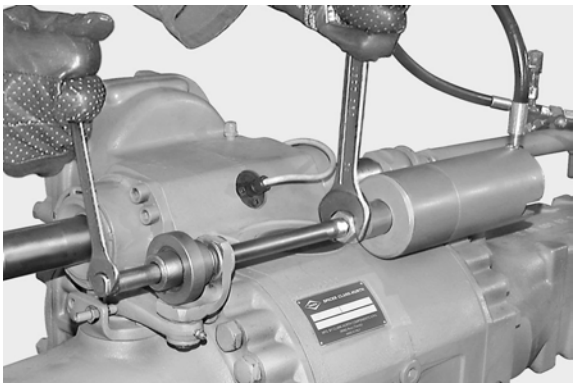
5. On the Cylinder side ensure that there is some clearance between the cylinder and the lever “A" with the lever against the stop.



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



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



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

Grease Points

5.10-1 Lubrication

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

WARNING

Ensure that there are no personnel or obstructions in maintenance area and there is sufficient room for boom to swing.

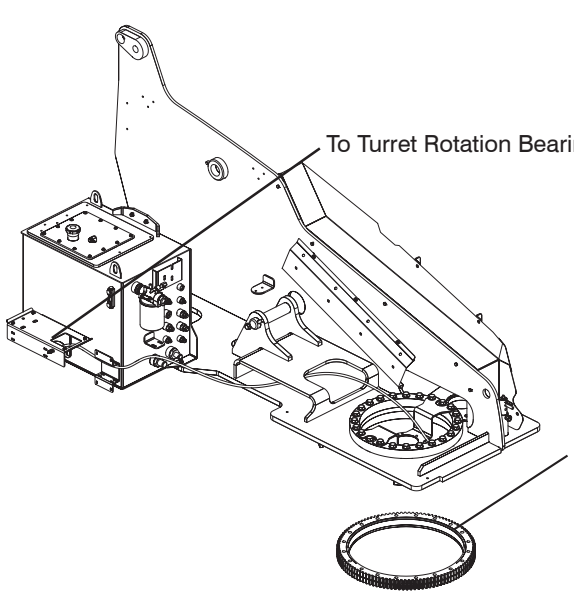
5.10-2 Grease Turret Rotation Bearing

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Open control compartment and locate grease fitting beside the hydraulic tank.
3. Pump grease into the turret rotation bearing and continue pumping until new lube appears continuously around the grease seal lip. (Refer to the Race column in the Table below)
4. Rotate the turret in increments of 4 to 5 inches (10 to 13 cm) at a time, and repeat step 3 until the entire bearing has been greased.

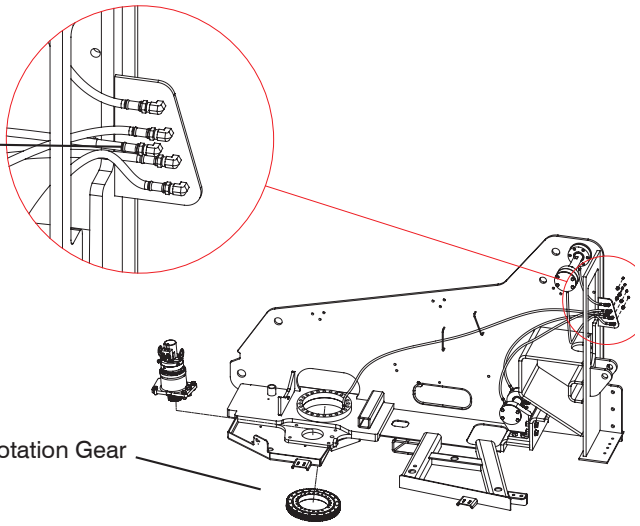
5.10-3 Grease Turret Rotation Gear

1. Apply grease to each tooth of the drive gear, located under the turret. (Refer to the Gear column in the Table below)

GREASE		
Model	Recommended Grease Type	
	Race	Gear
SJ40T / 45T SJ61T / 66T	Mobil Mobillux EP2	Mobil Mobiltac C
	Texaco Multifax EP2	Texaco Crater 2X or 3X
	Sun Prestige 742 EP	Sun Gear Compound 407
	Shell Alvania EP2	Shell Cardium EP
	Exxon Ronex WB	Exxon Surrett Fluid 30



61T/66T Turret



40T/45T Turret

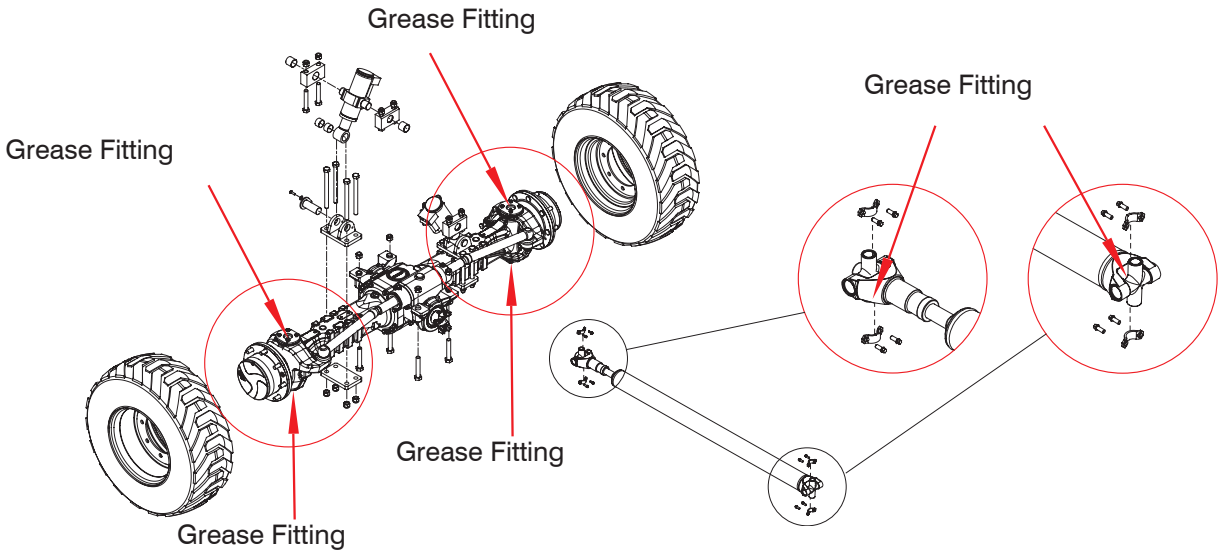
5.10-4 Grease Drive Axle

1. Ensure aerial platform is on a firm level surface and is in stowed position.
2. Open axle cover plate and locate grease fitting. (see diagram below)
3. Pump grease into the grease fittings. (Refer to the Table below)

5.10-5 Grease Drive Shaft

1. Locate the grease fittings on the drive shaft and pump grease. (Refer to the Table below)

*GREASE	
Model	**Recommended Grease Type**
SJ40T / 45T SJ61T / 66T	Mobil Mobillux EP2
	Texaco Multifax EP2
	Sun Prestige 742 EP
	Shell Alvania EP2
	Exxon Ronex WB

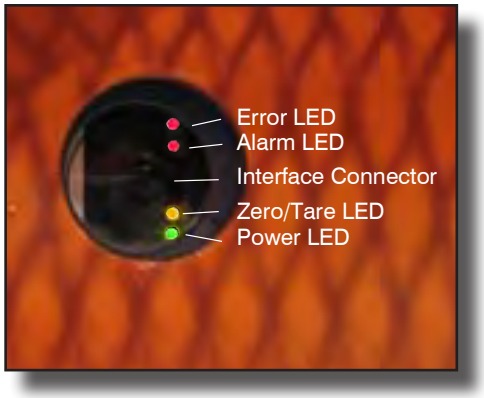


Drive Axle

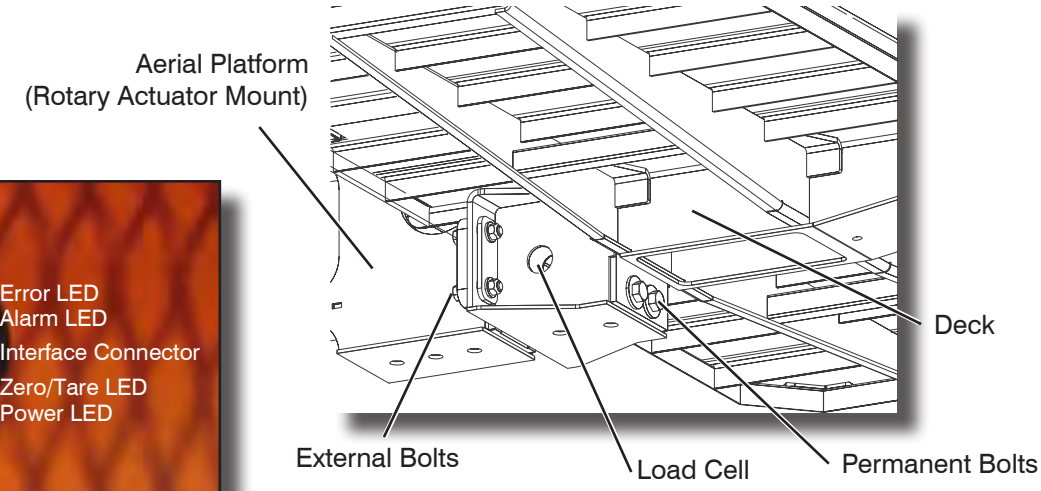
Options

5.11-1 Load Sensing System - CE

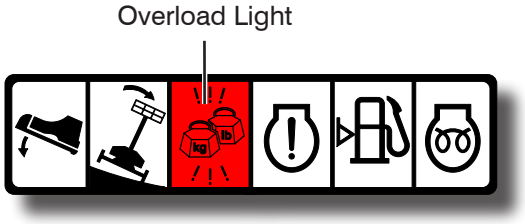
The Skyjack boom platform overload sensing system is based on load cell or electronic scale technology. The deck steel structure is isolated from the aerial platform. The load cell is permanently bolted between the deck and the rotary actuator mount. The load cell will only respond to the vertical component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



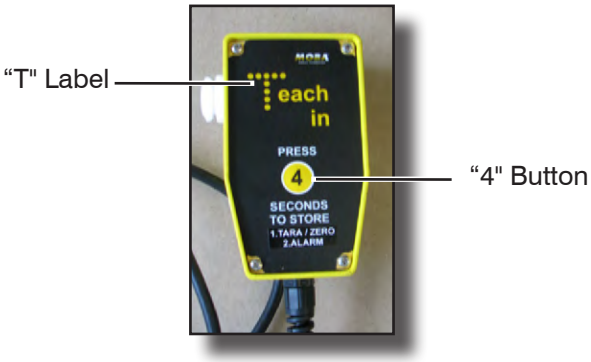
Load Cell LED Display



Bottom View of Deck



Platform Control Console Indicator Module



"Teach in" Handset (Service only)

Error LED - Continously on when system error

Alarm LED - Continously on when platform is overload or has base contact

Interface Connector - Storage of limit valve ("Teach in" handset connects here)

Orange LED - Continously on when tare value is zero ± 15kg

Green LED - Flashes slowly on when system powered and calibrated

NOTE

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

Verify Proper Operation of the Load Sensing System

Overload Status Chart

Weight	Indicator Light	Load Cell LED Display	Audible Alarm	Aerial Platform Functions
(Zero)	OFF	Error - OFF Alarm - OFF Zero/Tare - ON (orange) Power - FLASHING (green)	OFF	ENABLED
(Work Mode @ 244+)	FLASHING	Error - OFF Alarm - FLASHING (red) Zero/Tare - OFF Power - FLASHING (green)	PULSING	DISABLED
(Travel Mode @ 244+)	FLASHING	Error - OFF Alarm - FLASHING (red) Zero/Tare - OFF Power - FLASHING (green)	PULSING	ENABLED

1. Ensure aerial platform is on firm level ground.
2. Fully "" retract and "" lower boom.
3. Turn engine "" off.
4. Ensure both "" emergency stops are pulled out and platform engine enable switch is in "" on position.
   ResultOverload indicator light and audible alarm will pulse two times.
5. Ensure platform is unloaded and is free from any surface contact.
   ResultGreen power LED is flashing, orange LED is ON, red alarm LED is OFF and red error LED is OFF.
6. Place a 244kg load on platform.
   ResultPlatform indicator light is flashing, load cell red alarm LED is ON, and audible alarm is pulsing.
7. On base control console, start engine and extend boom by > 300mm.
   ResultAll drive and boom function are disabled.
8. Remove load from platform.
   ResultAll drive and boom function are enabled and all warning indicators are OFF.

NOTE

Refer to Section 4 for load sensing system troubleshooting.

Calibration of Load Sensing System (with “Teach In" Handset)

WARNING

Do not interrupt system power and rest your hand or foot on platform during this procedure.

1. Ensure aerial platform is on firm level ground.
2. Fully “" retract and “" lower boom.
3. Turn engine “” off.
4. Ensure both “" emergency stops are pulled out and platform engine enable switch is in “ | " on position.

   ResultOverload indicator light and audible alarm pulse two times.
5. Ensure platform is unloaded and is free from any surface contact.
6. Remove cap from load cell interface connector.
7. Connect “Teach in" handset to interface connector.

   ResultThe “T" label on handset will flash at a high frequency of 5Hz. If not, recheck that power is on and handset is properly connected.

WARNING

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

8. On “Teach in" handset, depress “4" button for four seconds.

   ResultThe “T" label on handset will light on constantly and then flash at a lower frequency of 1.25Hz.
9. Add a test load of 244kg onto the center of platform.
10. Depress “4" button for four seconds.

    ResultThe “T" label on handset will go from flashing to constantly on.
11. Disconnect “Teach in" handset from interface connector.
12. Wait for four seconds and then add a test load exceeding 244kg to test load sensing system.

    ResultOn platform control console, the overload light will flash and an audible alarm will pulse.
13. Remove test load from platform.

    ResultGreen power LED is flashing, orange LED is ON, red alarm LED is OFF, audible alarm is OFF and red error LED is OFF.
14. Re-cap interface connector and place provided “calibrated" label over interface connector.

5.11-2 Generator Troubleshooting

Problem	Cause	Remedy
Generator not rotating	- Motor not turning - Directional valve not working - Broken drive key	- Check for proper hydraulic flow - Check voltage to coil - Bad coil or valve - Check and replace
Frequency falls under load	- Hydraulic flow to motor falling - Bad motor	- Check flow to motor is constant - Replace motor
Generator does not excite	- Low speed - Faulty capacitor - Breakdown in windings	- Check and adjust speed - Check and replace - Check winding resistance
High no-load voltage	- Excessive speed - High capacity of capacitor	- Check and adjust speed - Check and replace
Low no-load voltage	- Low speed - Faulty rotary diodes - Worn windings - Low capacity of capacitor	- Check and adjust RPM - Check and replace - Check winding resistance - Check and replace
Proper no-load but low loaded voltage	- Low speed when loaded - Excessive load - Short-circuited diodes	- Check and adjust RPM - Check and repair - Check and replace
Proper voltage in no-load conditions but high voltage at load	- High speed in loaded condition	- Check and adjust speed
Unstable voltage	- Poor contacts - Uneven rotation	- Check connections - Check for uniform rotation speed
Noisy generator	- Broken bearings - Poor coupling	- Replace bearings - Check and repair

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5.11-3 Generator Frequency/Voltage Check & Adjustment (3.5 kW)

Check the Frequency and Voltage

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

Adjust the Frequency and Voltage

7. Loosen the generator control valve jam nut.
8. Turn the control valve screw with an allen head wrench. Turning it counterclockwise (out) increases voltage and frequency, turning it clockwise (in) decreases voltage and frequency.
9. Output must be:

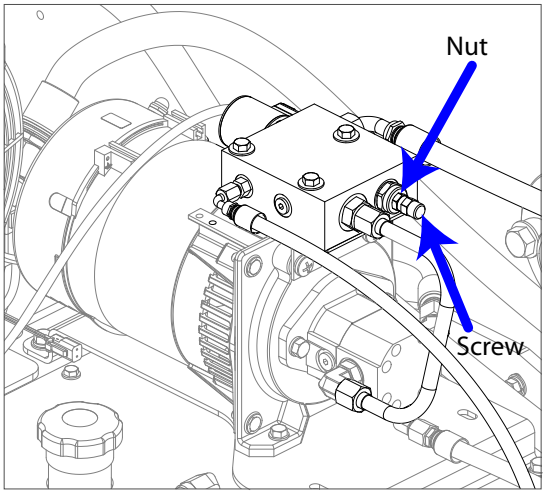
ANSI/CSA

Voltage104.4 VAC to 127.2 VAC
Frequency57 Hz to 63 Hz

CE & AS

Voltage207.0 VAC to 243.8 VAC
Frequency47.5 Hz to 52.5 Hz

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



Notes



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