



Service Manual

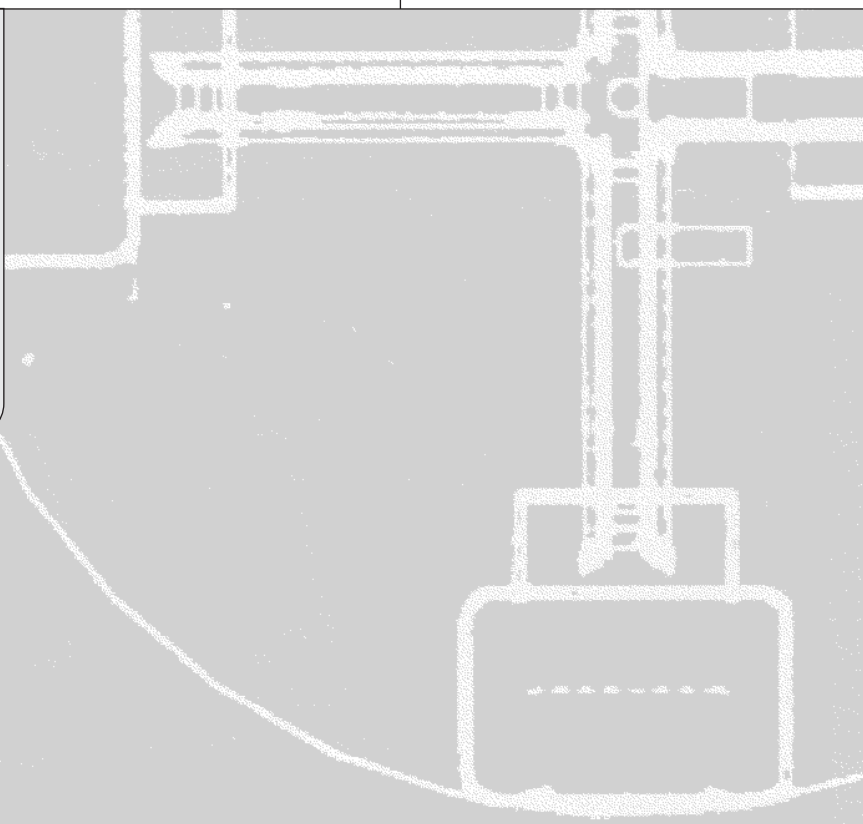


Part No. 72972
September 2006
Rev B2

GS™-2046

GS™-2646

GS™-3246



Important

Read, understand and obey the safety rules and operating instructions in the *Genie GS-2032 and GS-2632 and GS-2046 and GS-2646 and GS-3246 Operator's Manual* before attempting any maintenance or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting and repair procedures for qualified service professionals.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized Genie dealer service center.

Technical Publications

Genie Industries has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a Genie policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

Contact Us:

PO Box 97030
Redmond, WA 98073-9730 USA

www.genieindustries.com
e-mail: techsup@genieind.com

Serial Number Information

Genie Industries offers the following Service Manuals for these models:

Title	Part No.
Genie GS-2046 and GS-2646 and GS-3246 Service Manual (before serial number 17408)	48339

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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the *Genie GS-2032 and GS-2632 and GS-2046 and GS-2646 and GS-3246 Operator's Manual* will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- ☑ You are trained and qualified to perform maintenance on this machine.
- ☑ You read, understand and obey:
 - manufacturer's instructions and safety rules
 - employer's safety rules and worksite regulations
 - applicable governmental regulations
- ☑ You have the appropriate tools, lifting equipment and a suitable workshop.

SAFETY RULES

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.



Read each procedure thoroughly. This manual and the decals on the machine, use signal words to identify the following:



Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

▲ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

▲ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

▲ CAUTION

Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION

Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

Green—used to indicate operation or maintenance information.



Be sure to wear protective eye wear and other protective clothing if the situation warrants it.



Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety



Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.



Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.



Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.



Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.



Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe.



Be sure that your workshop or work area is properly ventilated and well lit.

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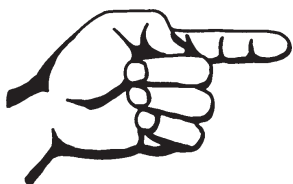
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REV B

Specifications

Machine Specifications

Batteries

Type	6V DC
Group	T-105
Quantity	4
Battery capacity, maximum	225AH
Reserve capacity @ 25A rate	447 minutes

Fluid Capacities

Hydraulic tank capacity (before serial number 26566)	5½ gallons 20.8 liters
Hydraulic system capacity (including tank) (before serial number 26566)	6 gallons 22.7 liters
Hydraulic tank capacity (after serial number 26565)	7 gallons 26.5 liters
Hydraulic system (including tank) (after serial number 26565)	7 gallons 26.5 liters

Tires and wheels

Tire size (solid rubber)	15 x 5 in 38.1 x 12.7 cm
Tire contact area	10 sq in 64.5 cm ²
Castle nut torque, dry	300 ft-lbs 406.7 Nm
Castle nut torque, lubricated	225 ft-lbs 305 Nm

For operational specifications, refer to the Operators Manual.

SPECIFICATIONS

REV B

Performance Specifications

Drive speed, maximum

Platform stowed	2.2 mph 40 ft / 12.4 sec 3.5 km/h 12.2 m / 12.4 sec
Platform raised	0.5 mph 40 ft / 54.5 sec 0.8 km/h 12.2 m / 54.5 sec

Braking distance, maximum

High range on paved surface	2 ft 61 cm
-----------------------------	---------------

Load capacity, maximum

GS-2046	1200 lbs 544 kg
GS-2646	1000 lbs 454 kg
GS-3246 (ANSI & CE models) (before serial number 24439)	700 lbs 318 kg
GS-3246 (CSA models) (before serial number 24439)	500 lbs 227 kg
GS-3246 (after serial number 24438)	700 lbs 318 kg
Extension deck load capacity, maximum	250 lbs 113.4 kg

Function speed, maximum from platform controls (with 1 person in platform)

GS-2046

Platform up	28 to 32 seconds
Platform down	26 to 30 seconds

GS-2646

Platform up	28 to 32 seconds
Platform down	22 to 26 seconds

GS-3246

Platform up	55 to 59 seconds
Platform down	38 to 42 seconds

Gradability

GS-2046, GS-2646	30%
GS-3246	25%

Continuous improvement of our products is a Genie policy. Product specifications are subject to change without notice.

REV B

SPECIFICATIONS

Hydraulic Specifications

Hydraulic Oil Specifications

Before serial number 52640

Hydraulic oil type Shell Donax TG (Dexron III)

After serial number 52639

Hydraulic oil type	Chevron Rykon MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.

Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids

Biodegradable Petro Canada Premium ECO 46
Statoil Hydra Way Bio Pa 32
BP Biohyd SE-S

Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
----------------	--

Mineral based	Shell Tellus T32
	Shell Tellus T46
	Chevron Aviation A

NOTICE

Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

Function pump

Type: gear

Displacement per revolution	0.244 cu in 4 cc
-----------------------------	---------------------

Flow rate	4 gallons per minute
@ 2500 psi / 172 bar	15.1 L/min

Hydraulic tank
return line filter

10 micron with
25 psi / 1.7 bar bypass

Function manifold, GS-2046 & GS-2646

System relief valve pressure	3500 psi 241.3 bar
------------------------------	-----------------------

Steer relief valve pressure	1500 psi 103.4 bar
-----------------------------	-----------------------

Lift relief valve pressure (after serial number 36044)	3000 to 3200 psi 207 to 221 bar
---	------------------------------------

Function manifold, GS-3246

System relief valve pressure	3500 psi 241.3 bar
------------------------------	-----------------------

Steer relief valve pressure	1500 psi 103.4 bar
-----------------------------	-----------------------

Lift relief valve pressure (before serial number 36045)	2000 psi 137.9 bar
--	-----------------------

Lift relief valve pressure (after serial number 36044)	3000 to 3200 psi 207 to 221 bar
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SPECIFICATIONS

REV B

Manifold Component Specifications

Plug torque

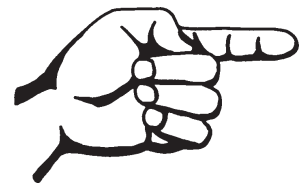
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Valve Coil Resistance

Description	Specification
Solenoid valve, N.C. 2 position 2 way 20V DC (schematic item D, before serial number 28937)	23 - 25 Ω
Solenoid valve, N.C. 2 position 2 way 20V DC with diode (schematic item D, after serial number 28936)	23 - 25 Ω
Solenoid valve, 2 position 2 way N.O. 20V DC with diode (schematic items AI, BK, CI and CL)	25 to 27 Ω
Solenoid valve, 2 position 4 way 20V DC with diode (schematic items AH, AJ, BI, BL, CJ and CN)	18 to 20 Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic items AK, BJ and CK)	18 to 20 Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic items AG, BH and CH)	25 to 27 Ω

REV B

SPECIFICATIONS



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SPECIFICATIONS

REV A

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with either 37° flared fittings and hose ends OR Parker Seal-Lok® fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

SAE O-ring Boss Port (tube fitting - installed into Aluminum)	
SAE Dash size	Torque
-4	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

Seal-Lok® Fittings (hose end)	
SAE Dash size	Torque
-4	18 ft-lbs / 24.4 Nm
-6	27 ft-lbs / 36.6 Nm
-8	40 ft-lbs / 54.2 Nm
-10	63 ft-lbs / 85.4 Nm
-12	90 ft-lbs / 122 Nm
-16	120 ft-lbs / 162.7 Nm
-20	140 ft-lbs / 190 Nm
-24	165 ft-lbs / 223.7 Nm

SAE O-ring Boss Port (tube fitting - installed into Steel)	
SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

JIC 37° Fittings (swivel nut or hose connection)		
SAE Dash size	Thread Size	Flats
-4	7/16-20	2
-6	9/16-18	1 1/4
-8	3/4-16	1
-10	7/8-14	1
-12	1 1/16-12	1
-16	1 5/16-12	1
-20	1 5/8-12	1
-24	1 7/8-12	1

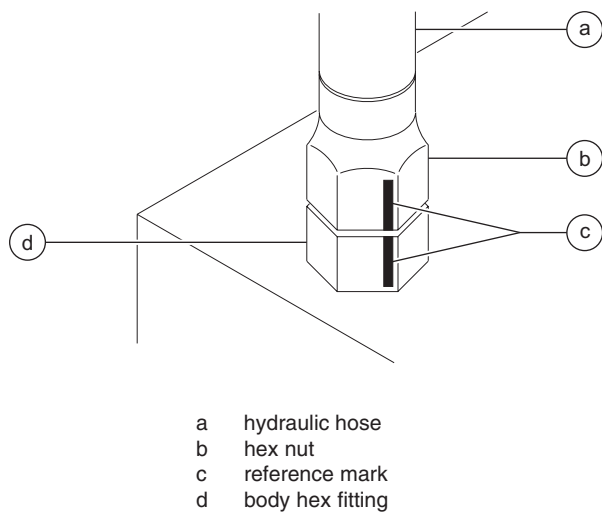
REV A

SPECIFICATIONS

Torque Procedure

JIC 37° fittings

- 1 Align the tube flare (hex nut) against the nose of the fitting body (body hex fitting) and tighten the hex nut to the body hex fitting to hand-tight, approximately 30 in-lbs / 3.4 Nm.
- 2 Make a reference mark on one of the flats of the hex nut, and continue it on to the body hex fitting with a permanent ink marker.



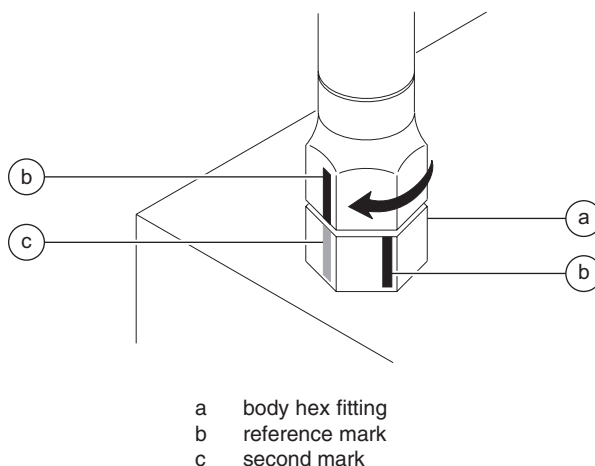
- 3 Working clockwise on the body hex fitting, make a second mark with a permanent ink marker to indicate the proper tightening position.

NOTICE

Use the *JIC 37° Fittings* table on the previous page to determine the correct number of flats for the proper tightening position.

NOTICE

The marks indicate that the correct tightening positions have been determined. Use the second mark on the body hex fitting to properly tighten the joint after it has been loosened.



- 4 Tighten the hex nut until the mark on the hex nut is aligned with the second mark on the body hex fitting.
- 5 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

SPECIFICATIONS

REV A

Seal-Lok® fittings

- 1 Replace the O-ring. The O-ring must be replaced anytime the seal has been broken. The O-ring cannot be re-used if the fitting or hose end has been tightened beyond finger tight.

NOTICE

The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are not standard SAE size O-rings. They are available in the O-ring field service kit.

- 2 Lubricate the O-ring before installation.
- 3 Be sure that the face seal O-ring is seated and retained properly.
- 4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.
- 5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table.
- 6 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

Scheduled Maintenance Procedures



Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, annually and every 2 years as specified on the *Maintenance Inspection Report*.

⚠ WARNING Failure to properly complete each inspection when required may cause death, serious injury or substantial machine damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Keep records on all inspections for three years.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
 - Machine parked on a firm, level surface
 - Platform in the stowed position
 - Key switch in the off position with the key removed
 - Wheels chocked
 - All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

Symbols Legend



Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION

Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

Green—used to indicate operation or maintenance information.

- ⦿ Indicates that a specific result is expected after performing a series of steps.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

NOTICE

The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appears at the beginning of a maintenance procedure, it conveys the meaning below.



Indicates that tools will be required to perform this procedure.



Indicates that new parts will be required to perform this procedure.



Indicates that a cold motor or pump will be required to perform this procedure.



Indicates that dealer service will be required to perform this procedure.

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies of the *Pre-delivery Preparation* report to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are four types of maintenance inspections that must be performed according to a schedule—daily, quarterly, annual, and two year. The *Scheduled Maintenance Procedures* and the *Maintenance Inspection Report* have been divided into four subsections—A, B, C and D. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Annual or every 1000 hours	A + B + C
Two year or every 2000 hours	A + B + C + D

Maintenance Inspection Report

The maintenance inspection report contains checklists for each type of scheduled inspection.

Make copies of the *Maintenance Inspection Report* to use for each inspection. Store completed forms for three years.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, completed

N = no, unable to complete

R = repaired

Comments

Pre-Delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

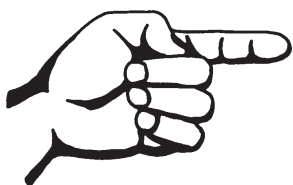
Inspector company



Genie Industries USA
18340 NE 76th Street
PO Box 97030
Redmond, WA 98073-9730
(425) 881-1800

Genie UK
The Maltings, Wharf Road
Grantham, Lincolnshire
NG31- 6BH England
(44) 1476-584333

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Maintenance Inspection Report

Model
Serial number
Date
Hour meter
Machine owner
Inspected by (print)
Inspector signature
Inspector title
Inspector company

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

<input type="checkbox"/>	Daily or 8 hour Inspection:	A
<input type="checkbox"/>	Quarterly or 250 hour Inspection:	A+B
<input type="checkbox"/>	Annual or 1000 hours Inspection:	A+B+C
<input type="checkbox"/>	2 Year or 2000 hour Inspection:	A+B+C+D

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in section 4 to learn how to perform these inspections.
- If any inspection receives an "N", tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the "R" box.

Legend

- Y = yes, acceptable
 N = no, remove from service
 R = repaired

Comments

Checklist A - Rev B		Y	N	R
A-1	Pre-operation inspect			
A-2	Function tests			
Perform after 40 hours:				
A-3	30 day service			
Perform every 100 hours:				
A-4	Grease steer yokes			

Checklist B - Rev C		Y	N	R
B-1	Batteries			
B-2	Electrical wiring			
B-3	Tires and wheels			
B-4	Key switch			
B-5	Horn (if equipped)			
B-6	Drive brakes			
B-7	Drive speed - stowed			
B-8	Drive speed - raised			
B-9	Hydraulic oil analysis			
B-10	Hydraulic filter			
B-11	Latch components			

Checklist C - Rev C		Y	N	R
C-1	Scissor arm wear pads			

Checklist D - Rev A		Y	N	R
D-1	Hydraulic oil			

Checklist A Procedures

REV B

A-1

Perform Pre-operation Inspection

Completing a Pre-operation Inspection is essential to safe machine operation. The Pre-operation Inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests. The Pre-operation Inspection also serves to determine if routine maintenance procedures are required.

Complete information to perform this procedure is available in the *Genie GS-1530 and GS-1532 and GS-1930 and GS-1932 Operator's Manual*. Refer to the Operator's Manual on your machine.

A-2

Perform Function Tests

Completing the function tests is essential to safe machine operation. Function tests are designed to discover any malfunctions before the machine is put into service. A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service.

Complete information to perform this procedure is available in the *Genie GS-1530 and GS-1532 and GS-1930 and GS-1932 Operator's Manual*. Refer to the Operator's Manual on your machine.

REV B

CHECKLIST A PROCEDURES

A-3
Perform 30 Day Service



The 30 day maintenance procedure is a onetime procedure to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance tables for continued scheduled maintenance.

- 1 Perform the following maintenance procedures:
 - B-3 Inspect the Tires and Wheels (including castle nut torque)
 - B-10 Replace the Hydraulic Tank Return Filter

A-4
Grease the Steer Yokes



NOTICE Genie specifications require that this procedure be performed every 100 hours of operation.

Regular application of lubrication to the steer yokes is essential to good machine performance and service life. Continued use of an insufficiently greased steer yoke will result in component damage.

- 1 Locate the grease fitting on the top of the steer yoke.
- 2 Pump multipurpose grease into the steer yoke until the steer yoke is full and grease is being forced past the bearings. Repeat this step for the other steer yoke.

Grease type	Multipurpose grease
-------------	---------------------

Checklist B Procedures

REV C

B-1

Check the Batteries



Proper battery condition is essential to good machine performance and operational safety. Improper fluid levels or damaged cables and connections can result in component damage and hazardous conditions.

⚠ WARNING Bodily injury hazard. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

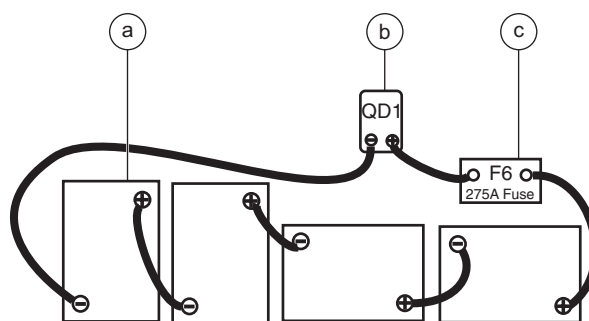
⚠ WARNING Electrocutation hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Perform this test after fully charging the batteries.

- 1 Put on protective clothing and eye wear.
- 2 Disconnect the battery pack from the machine.
- 3 Be sure that the battery cable connections are free of corrosion.
- 4 Be sure that the battery hold downs and cable connections are tight.

Models without maintenance-free or sealed batteries:

- 5 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.
- ⑥ Result: If any battery cell displays a specific gravity of less than 1.026, the battery must be replaced.
- 6 Check the battery acid level of each battery. If needed, replenish with distilled water to the bottom of the battery fill tube. Do not overfill.
- 7 Install the battery vent caps.
- 8 Check each battery pack and verify that the batteries are wired correctly.



- a batteries B5
- b quick disconnect QD1
- c 275A fuse F6

REV C

CHECKLIST B PROCEDURES

B-2 Inspect the Electrical Wiring



Maintaining electrical wiring in good condition is essential to safe operation and good machine performance. Failure to find and replace burnt, chafed, corroded or pinched wires could result in unsafe operating conditions and may cause component damage.

⚠ WARNING Electrocution hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 1 Inspect the underside of the chassis for damaged or missing ground strap(s).
 - 2 Inspect the following areas for burnt, chafed, corroded and loose wires:
 - Ground control panel
 - Hydraulic power unit module tray
 - Battery pack module tray
 - Scissor arms
 - Platform controls
 - 3 Inspect for a liberal coating of dielectric grease in all connections between the ECM and the platform controls.
 - 4 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
 - 5 Raise the platform approximately 8 feet / 2.4 m from the ground.
 - 6 Rotate the safety arm away from the machine and let it hang down.
 - 7 Lower the platform onto the safety arm.
- ⚠ WARNING** Crushing hazard. Keep hands clear of the safety arm when lowering the platform.
- 8 Inspect the center chassis area and scissor arms for burnt, chafed and pinched cables.
 - 9 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
 - Scissor arms
 - ECM to platform controls
 - Power to platform wiring
 - 10 Inspect for a liberal coating of dielectric grease in all connections between the ECM and the platform controls.
 - 11 Raise the platform and return the safety arm to the stowed position.
 - 12 Lower the platform to the stowed position and turn the machine off.

CHECKLIST B PROCEDURES

REV C

B-3**Inspect the Tires and Wheels
(including castle nut torque)**

Maintaining the tires and wheels in good condition is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

- 1 Check the tire surface and sidewalls for cuts, cracks or unusual wear.
- 2 Check each wheel for damage, bends and cracks.
- 3 Remove the cotter pin and check each castle nut for proper torque. Refer to Section 2, *Specifications*.

NOTICE

Always replace the cotter pin with a new one when removing the castle nut or when checking the torque of the castle nut.

- 4 Install a new cotter pin. Bend the cotter pin to lock it in place.

B-4**Test the Key Switch**

Proper key switch action and response is essential to safe machine operation. The machine can be operated from the ground or platform controls and the activation of one or the other is accomplished with the key switch. Failure of the key switch to activate the appropriate control panel could cause a hazardous operating situation.

NOTICE

Perform this procedure from the ground using the platform controls. Do not stand in the platform.

- 1 Pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 2 Turn the key switch to **platform control**.
- 3 Check the platform up/down function from the **ground controls**.
 - ⦿ Result: The machine functions should **not** operate.
- 4 Turn the key switch to **ground control**.
- 5 Check the machine functions from the **platform controls**.
 - ⦿ Result: The machine functions should **not** operate.
- 6 Turn the key switch to the off position.
 - ⦿ Result: No machine functions should operate.

REV C

CHECKLIST B PROCEDURES

B-5**Test the Automotive-style Horn
(if equipped)**

A functioning horn is essential to safe machine operation. The horn is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning horn will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

- 1 Turn the key switch to platform control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 2 Push down the horn button at the platform controls.

⦿ Result: The horn should sound.

CHECKLIST B PROCEDURES

REV C

B-6**Test the Drive Brakes**

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydraulically-released individual wheel brakes can appear to operate normally when not fully operational.

NOTICE Perform this procedure with the machine on a flat, level surface that is free of obstructions.

NOTICE Be sure the platform extension deck is fully retracted and the platform is in the stowed position.

- 1 Mark a test line on the ground for reference.
- 2 Turn the key switch to platform control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 2 Lower the platform to the stowed position.
- 3 **Models with drive function select button:**
Press the drive function select button. Refer to Illustration 1.

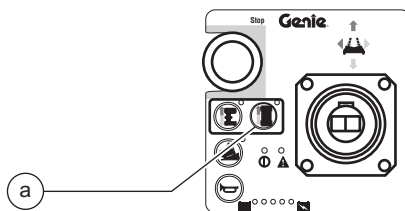


Illustration 1

a drive function select button BN8

- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the test line.

- 6 Bring the machine to full drive speed before reaching the test line. Release the function enable switch or the joystick on the platform controls when your reference point on the machine crosses the test line.
- 7 Measure the distance between the test line and your machine reference point. Refer to Section 2, *Specifications*.
- ⦿ **Result:** The machine stops within the specified braking distance. No action required.
- ✗ **Result:** The machine does not stop within the specified braking distance. Proceed to step 8 and determine if the machine is equipped with a dynamic braking valve.

NOTICE The brakes must be able to hold the machine on any slope it is able to climb.

- 8 Disconnect the battery pack from the machine.

⚠ WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 9 Locate the drive forward/reverse valve on the function manifold. Refer to Illustrations 2.

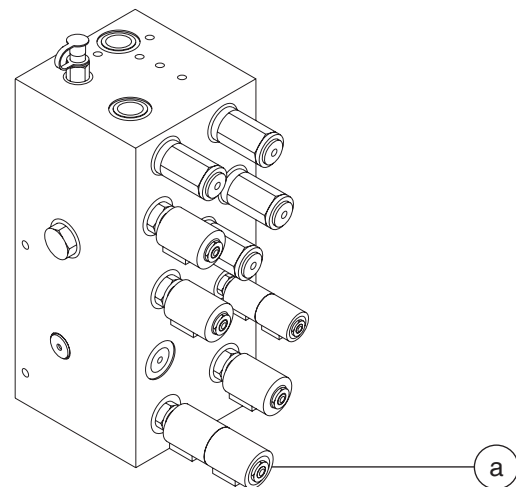


Illustration 2

a drive forward/reverse valve

REV C

CHECKLIST B PROCEDURES

- 10 Tag the forward and the reverse valve coils.
Remove the coils from the valve.

NOTICE The forward valve coil has white and brown wires attached.

NOTICE The reverse valve coil has white/black and brown wires attached.

NOTICE For reassembly, it will be helpful to leave the wire harness attached to the valve coils.

- 11 Remove the drive forward/reverse valve from the function manifold. Cap the open port of the manifold.
- 12 Carefully inspect the hex portion of the valve for an identification stamp.
- ⦿ Result: SV10-4727 is stamped on the hex portion of the drive forward/reverse valve. This indicates the machine is equipped with a dynamic brake valve. Proceed to step 13.
 - ✗ Result: SV10-4727 is not stamped on the hex portion of the drive forward/reverse valve. This indicates the machine is not equipped with a dynamic brake valve. Proceed to step 18.
- 13 Install the drive forward/reverse valve removed in step 11 into the function manifold and securely tighten. Torque to 25 ft-lbs / 34 Nm.
- 14 In order, install the reverse valve coil (with white/black and brown wires), spacer washer and the forward valve coil (with white and brown wires) onto the valve.
- NOTICE** For the machine to function correctly, the reverse valve coil must be closest to the manifold.
- 15 Install the coil nut onto the valve and tighten. Torque to 60 in-lbs / 7 Nm.
- 16 Connect the battery pack to the machine.
- 17 Replace the brakes and repeat this procedure beginning with step 1. Refer to Repair Procedure 9-1, *How to Remove a Drive Brake*.
- 18 Contact the Genie Industries Service Parts Department and order kit part number 105457.
- 19 Install the new valve received in the kit and mark the new valve with a white paint pen to identify new valve installation.
- 20 Repeat this procedure beginning with step 1.

If the machine fails to stop within the specified stopping distance after installing new brakes, please contact the Genie Industries Scissors Service Department, 1-800-536-1800 Ext. 8710.

CHECKLIST B PROCEDURES

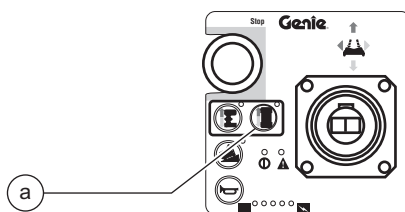
REV C

B-7**Test the Drive Speed -
Stowed Position**

Proper drive functions are essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE Perform this procedure with the machine on a firm, level surface that is free of obstructions.

- 1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
- 2 Turn the key switch to platform control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 3 Lower the platform to the stowed position.
- 4 **Models with drive function select button:**
Press the drive function select button.
- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.
- 6 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 7 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications*.



a drive function select button BN8

REV C

CHECKLIST B PROCEDURES

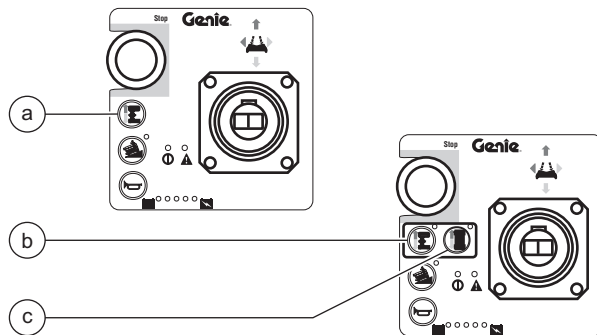
B-8**Test the Drive Speed -
Raised Position**

Proper drive functions are essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE

Perform this procedure with the machine on a firm, level surface that is free of obstructions.

- 1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
- 2 Turn the key switch to platform control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 3 **Models with lift function enable button:**
Press and hold the lift function enable button.
Models with drive function select button:
Press the lift function select button.
- 4 Press and hold the function enable switch on the joystick.
- 5 Raise the platform approximately 4 feet / 1.2 m from the ground.
- 6 **Models with lift function enable button:**
Release the lift function enable button.
Models with drive function select button:
Press the drive function select button.
- 7 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.
- 8 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 9 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications*.



- a lift function enable button BN9
b lift function select button BN9
c drive function select button BN8

CHECKLIST B PROCEDURES

REV C

B-9**Perform Hydraulic Oil Analysis**

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and a clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often.

NOTICE

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.** See D-1, *Test or Replace the Hydraulic Oil*.

B-10**Replace the Hydraulic Tank Return Filter**

Replacement of the hydraulic tank return filter is essential for good machine performance and service life. A dirty or clogged filter may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

CAUTION

Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE

The hydraulic filter is mounted on the function manifold next to the hydraulic power unit.

- 1 Clean the area around the oil filter. Remove the filter with an oil filter wrench.
- 2 Apply a thin layer of oil to the new oil filter gasket.
- 3 Install the new filter and tighten it securely by hand.
- 4 Use a permanent ink marker to write the date and number of hours from the hour meter (if equipped) on the filter.
- 5 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 6 Activate and hold the platform up toggle switch.
- 7 Inspect the filter and related components to be sure that there are no leaks.
- 8 Clean up any oil that may have spilled during the replacement procedure. Properly dispose of the used filter.

REV C

CHECKLIST B PROCEDURES

B-11**Check the Module Tray Latch Components**

Maintaining the module tray latch components in good condition is essential to good performance and service life. Failure to detect worn out latch components may result in module trays opening unexpectedly, creating an unsafe operating condition.

Models before serial number 36045:

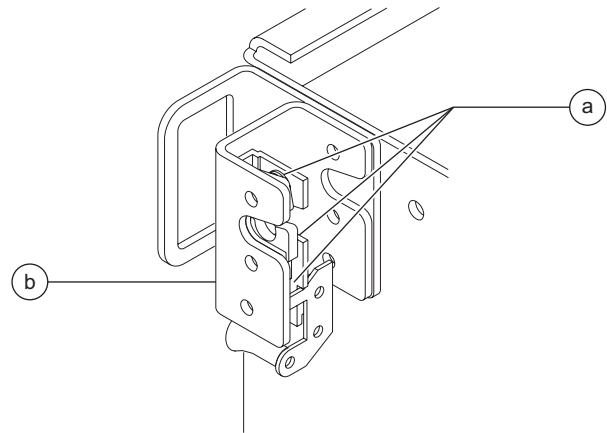
- 1 Open both module trays and lubricate each module tray latch. Using light oil, apply a few drops to the side of the latch pin.
- 2 Inspect each module tray latch pad (if equipped). Replace any worn pad before the latch fails to securely hold the module tray closed.

NOTICE

The module tray latch pad is attached to the drive chassis and located above the module tray latch when the module tray is closed.

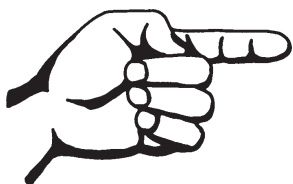
Models after serial number 36044:

- 1 Lubricate each module tray rotary latch. Using light oil, apply a few drops to each of the springs and to the sides of the rotary latch mechanism.



- a rotary latch springs
b module tray rotary latch

- 2 Inspect each module tray latch U-bolt. Tighten any loose U-bolt retaining fastener before the latch fails to securely hold the module tray closed.



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Checklist C Procedure

REV C

C-1

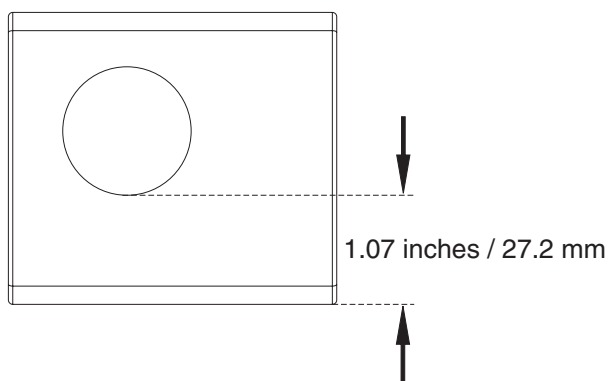
Check the Scissor Arm Wear Pads



Maintaining the scissor arm wear pads in good condition is essential to safe machine operation. Continued use of worn out wear pads may result in component damage and unsafe operating conditions.

NOTICE Perform this procedure with the platform in the stowed position.

- 1 Measure the thickness of each scissor arm wear pad at the non-steer end of the machine.
- 2 Replace both wear pads if either one is less than 1.07 inch / 27.2 mm thick. Refer to Repair Procedure 3-1 or 3-2, *How to Replace the Scissor Arm Wear Pads*.
- 3 Apply a thin layer of dry film lubricant to the area of the chassis where the scissor arm wear pads make contact.



Checklist D Procedure

REV A

D-1

Test or Replace the Hydraulic Oil



Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and a clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often.

NOTICE

Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

NOTICE

Perform this procedure with the platform in the stowed position.

- 1 Disconnect the battery pack from the machine.
- 2 Open the power unit module tray. Remove the drain plug from the hydraulic tank and allow all of the oil to drain into a suitable container. Refer to Section 2, *Specifications*, for capacity information.

AWARNING

Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 3 Tag, disconnect and cap the hydraulic hoses from the hydraulic tank.
- 4 Remove the hydraulic tank mounting fasteners. Remove the hydraulic tank from the machine.

- 5 Remove the suction strainer and clean it using a mild solvent.
- 6 Clean the inside of the hydraulic tank using a mild solvent.
- 7 Install the suction strainer using thread sealer on the threads.
- 8 Install the drain plug using thread sealer on the threads. Torque to specification.

Torque specifications

Hydraulic tank drain plug, dry	75 in-lbs 8.5 Nm
Hydraulic tank drain plug, lubricated	56 in-lbs 6.3 Nm

- 9 Install the hydraulic tank and install and tighten the hydraulic tank retaining fasteners. Torque to specification.

Torque specifications

Hydraulic tank retaining fasteners, dry	70 in-lbs 7.9 Nm
Hydraulic tank retaining fasteners, lubricated	52 in-lbs 5.9 Nm

- 10 Connect the hydraulic hoses to the hydraulic tank.
- 11 Fill the tank with hydraulic oil until the fluid is within the FULL and ADD marks on the oil level indicator decal. Do not overfill.
- 12 Activate the pump to fill the hydraulic system with oil and bleed the system of air and check for leaks.
- 13 Repeat steps 11 and 12 until the hydraulic tank and system are both full.
- 14 Clean up any oil that may have spilled. Properly discard the used oil.

Repair Procedures



Observe and Obey:

- ☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie GS-2032 and GS-2632 and GS-2046 and GS-2646 and GS-3246 Operator's Manual*.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a firm, level surface
 - Platform in the stowed position
 - Key switch in the off position with the key removed
 - Wheels chocked
 - All external AC power supply disconnected from the machine

About This Section

Most of the procedures in this section should only be performed by a trained service professional in a suitably equipped workshop. Select the appropriate repair procedure after troubleshooting the problem.

Perform disassembly procedures to the point where repairs can be completed. Then to re-assemble, perform the disassembly steps in reverse order.

Symbols Legend



Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION

Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

Green—used to indicate operation or maintenance information.

- ⦿ Indicates that a specific result is expected after performing a series of steps.

Platform Controls

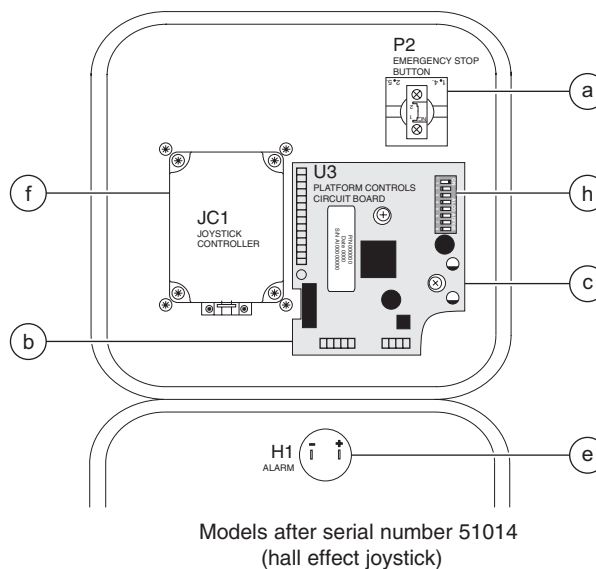
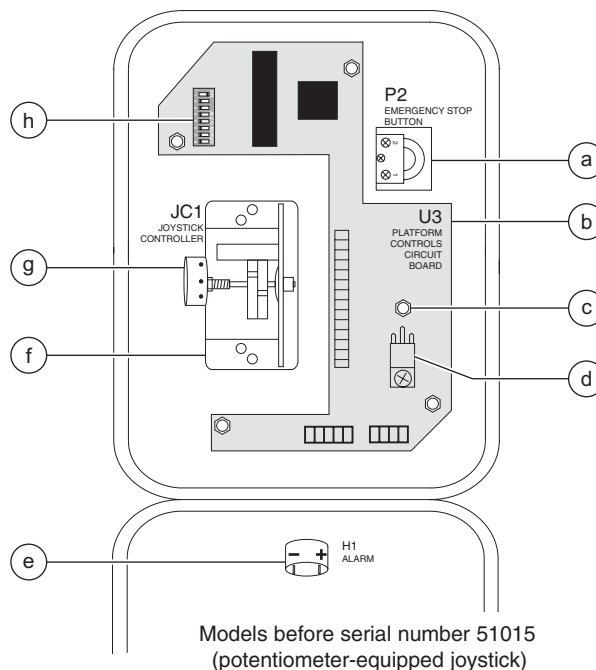
REV B

The platform controls, used to operate the machine from the platform or while standing on the ground, can also be used to tune the performance of the machine.

Moving the joystick or activating a button or toggle switch sends a signal to the Electronic Control Module (ECM). When the ECM is in the function mode, the platform controls are used to operate the various machine functions. When the ECM is in the programming mode (PS is shown in the diagnostic display window), the platform controls are used to adjust the function speed parameters.

The platform controls contains an electronic circuit board, joystick, membrane decal, buttons, switches and LEDs. Potentiometer-equipped joysticks can be adjusted to maintain performance.

For further information or assistance, consult the Genie Industries Service Department.



- a Emergency Stop button P2
- b platform controls circuit board U3
- c circuit board retaining fastener
- d circuit board voltage regulator
- e alarm H1
- f joystick controller JC1
- g potentiometer
- h DIP switch SW25

REV B

PLATFORM CONTROLS

1-1 Circuit Boards

How to Remove the Platform Controls Circuit Board

- 1 Push in the Emergency Stop button to the off position at both the ground and platform controls.
- 2 Loosen the platform control box lid retaining fasteners. Open the control box lid.
- 3 Locate the circuit board mounted to the inside of the platform control box lid.

⚠ WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠ CAUTION Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

- 4 Carefully disconnect the three wire harness connectors from the platform controls circuit board.
- 5 Carefully remove the platform controls circuit board retaining fasteners.
- 6 Carefully remove the platform controls circuit board from the platform control box lid.

1-2 Joystick Controller

Maintaining the joystick at the proper setting is essential to safe machine operation. The joystick should operate smoothly over its entire range of motion.

A Hall-effect joystick controller was incorporated into the platform controls after serial number 48054. It does not require any calibration.

How to Calibrate the Joystick Controller (before serial number 48055)

⚠ NOTICE This procedure applies only to models with a potentiometer-equipped joystick.

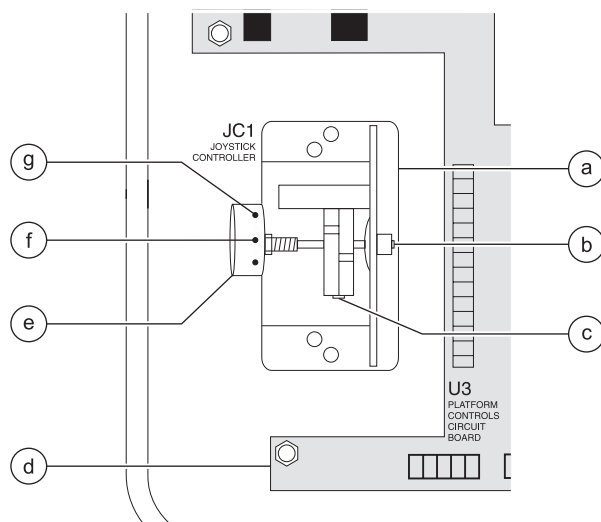
- 1 Turn the key switch to platform controls and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 2 Remove the platform control box lid retaining fasteners. Open the control box lid.

⚠ WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

PLATFORM CONTROLS

REV B

- 3 Locate the potentiometer on the base of the joystick.



- a joystick controller JC1
- b potentiometer shaft slot
- c potentiometer shaft set screw
- d platform controls circuit board U3
- e potentiometer
- f brown wire
- g purple wire

- 4 With a volt meter set to read DC voltage, place the volt meter negative lead on the purple wire. Place the volt meter positive lead on the brown wire.

WARNING

Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 5 Loosen the set screw on the potentiometer shaft just enough to let the shaft rotate.
- 6 With the joystick in the neutral position, adjust the potentiometer to 2.05V DC at the potentiometer shaft. Tighten the set screw.
- 7 Move the joystick full stroke in both directions several times. Return the joystick to the neutral position.
- ⦿ Result: The volt meter should read 2.05V DC.
 - ⦿ Result: If the volt meter does not read 2.05V DC, repeat steps 5 through 7.
- 8 Turn the key switch to the off position.
- 9 Wait a few seconds and then turn the key switch to platform controls.
- ⦿ Result: The error light on the top of the platform control box should go out and Code 47 should not be present on the diagnostic display at the battery module side of the machine.
 - ⦿ Result: If the error indicator light is still on or if code 47 is present on the diagnostic display, repeat steps 5 through 9.
- 10 Turn the key switch to the off position.
- 11 Close the lid and install the fasteners.

REV B

PLATFORM CONTROLS

1-3 Controller Adjustments

Platform lift speed and raised drive speed, controlled by the ECM and located in the hydraulic module tray, are adjustable to compensate for wear in the hydraulic pump and drive motors. The raised drive speed and lift speed are determined by the percentage of total controller output. For further information or assistance, consult the Genie Industries Service Department.

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

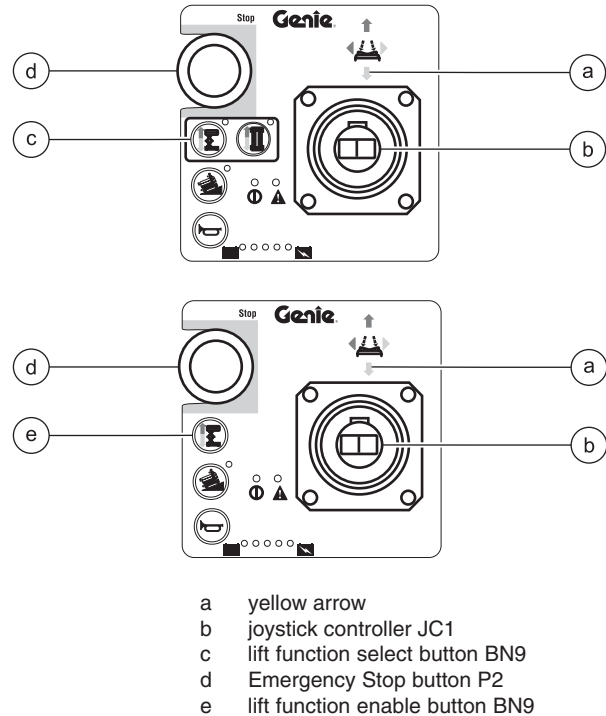
⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

NOTICE Select a test area that is firm, level and free of obstructions.

How to Determine the Revision Level

- 1 Remove the platform controls from the platform.
- 2 Place the platform controls close to the diagnostic display on the ground controls side of the machine.
- 3 Turn the key switch to platform control and pull out the Emergency Stop buttons to the on position at both the ground and platform controls.

- 4 Press and hold the lift function enable button OR press the lift function select button.



- 5 Slowly move the joystick in the direction indicated by the yellow arrow.
- ⦿ Result: The software revision level will appear in the diagnostic display.
- ⦿ Result: If the software revision level does not appear in the diagnostic display, turn the key switch to ground control and repeat steps 4 and 5. The software revision level will appear in the diagnostic display.
- 6 Push in the Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.

PLATFORM CONTROLS

REV B

How to Adjust the Lift Speed

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the drive speed greater than specifications will cause death or serious injury.

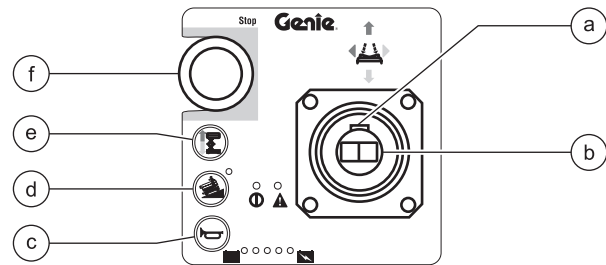
⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

Software revision A0 and B0:

- 1 Push in the Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the Emergency Stop button to the on position at the ground and platform controls.

- 3 Press and hold the lift function enable and horn buttons, and turn the key switch to platform controls.

⦿ Result: The diagnostic display will show "PS."



- a function enable switch SW5
- b joystick controller JC1 with thumb steering rocker SW6
- c horn button BN5
- d machine on incline button BN6
- e lift function enable button BN9
- f red Emergency Stop button P2

- 4 Release the lift function enable and horn buttons.
- 5 Press and hold the lift function enable button.
- ⦿ Result: The diagnostic display will show the maximum lift speed percentage.
- 6 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*.
- 7 Turn the key switch to the off position.

NOTICE Any change in software settings will not take effect until the key switch is turned to the off position.

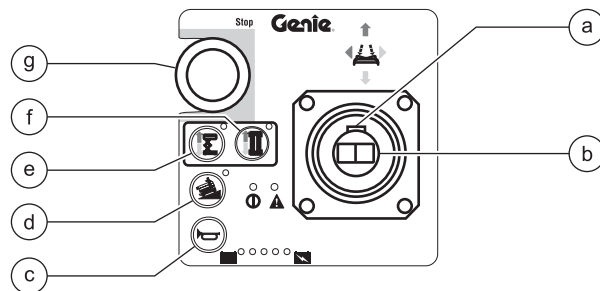
REV B

PLATFORM CONTROLS

Software revision C0 and higher:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.
- 3 At the platform controls, press and hold the lift function select and horn buttons and turn the key switch to platform controls.

⦿ Result: The diagnostic display will show "PS."



- a function enable switch SW5
- b joystick controller JC1 with thumb steering rocker SW6
- c horn button BN5
- d machine on incline button
- e lift function select button BN9
- f drive function select BN8
- g red Emergency Stop button P2

- 4 Release the lift function select and horn buttons.

⦿ Result: The diagnostic display will show the maximum lift speed percentage.

- 5 Press the lift function select button.

- 6 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*.
- 7 Turn the key switch to the off position.

NOTICE Any change in software settings will not take effect until the key switch is turned to the off position.

PLATFORM CONTROLS

REV B

How to Adjust the Stowed Drive Speed

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

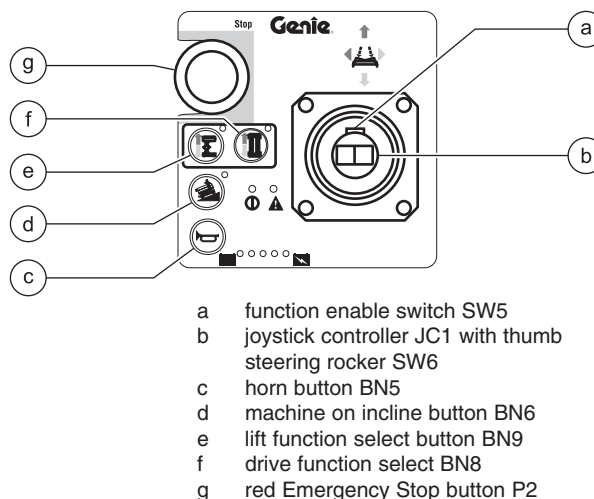
⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

Software revision D0 and higher:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.
- 3 Press and hold the lift function select and horn buttons and turn the key switch to platform controls.
- ⦿ Result: The diagnostic display will show "PS."
- 4 Release the lift function select and horn buttons.
- ⦿ Result: The diagnostic display will show the maximum lift speed percentage.

- 5 Press the drive function select button.

- ⦿ Result: The diagnostic display will show the stowed drive speed percentage.



- 6 Use the steering thumb rocker switch on the joystick to increase or decrease the stowed drive speed percentage. Refer to Section 2, *Specifications*.

- 7 Turn the key switch to the off position.

NOTICE Any change in software settings will not take effect until the key switch is turned to the off position.

REV B

PLATFORM CONTROLS

How to Adjust the High Torque Drive Speed

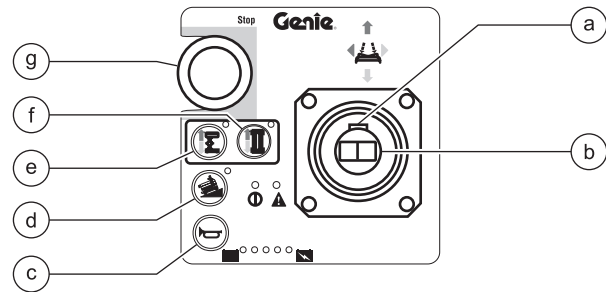
⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

Software revision D0 and higher:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.
- 3 Press and hold the lift function select and horn buttons and turn the key switch to platform controls.
- ⦿ Result: The diagnostic display will show "PS."
- 4 Release the lift function select and horn buttons.
- ⦿ Result: The diagnostic display will show the maximum lift speed percentage.

- 5 Press the drive function select button.
- ⦿ Result: The diagnostic display will show the stowed drive speed percentage.



- a function enable switch SW5
- b joystick controller JC1 with thumb rocker switch SW6
- c horn button BN5
- d machine on incline button BN6
- e lift function select button BN9
- f drive function select BN8
- g red Emergency Stop button P2

- 6 Press and hold the machine on incline button.
- ⦿ Result: The diagnostic display will show the stowed high torque drive speed percentage.
- 7 Use the steering thumb rocker switch on the joystick to increase or decrease the stowed high torque drive speed percentage. Refer to Section 2, *Specifications*.
- 8 Turn the key switch to the off position.

NOTICE Any change in software settings will not take effect until the key switch is turned to the off position.

PLATFORM CONTROLS

REV B

How to Adjust the Raised Drive Speed

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting the function speeds greater than specifications could cause the machine to tip over resulting in death or serious injury.

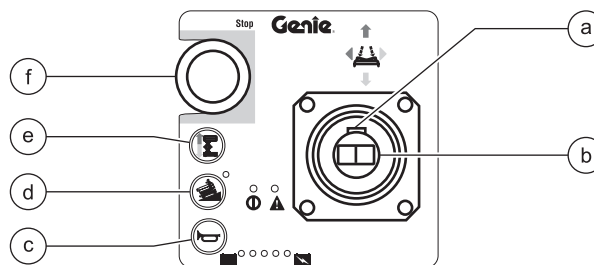
⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

Software revision A0 and B0:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.

- 3 Press and hold the lift function enable and horn buttons, and turn the key switch to platform controls.

⦿ Result: The diagnostic display will show "PS."



- a function enable switch SW5
- b joystick controller JC1 with thumb steering rocker SW6
- c horn button BN5
- d machine on incline button
- e lift function enable button BN9
- f red Emergency Stop button P2

- 4 Release the lift function enable and horn buttons.
- 5 Press and hold the horn button.
- ⦿ Result: The diagnostic display will show the raised drive speed percentage.
- 6 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum raised drive speed percentage. Refer to Section 2, *Specifications*.
- 7 Turn the key switch to the off position.

NOTICE Any change in software settings will not take effect until the key switch is turned to the off position.

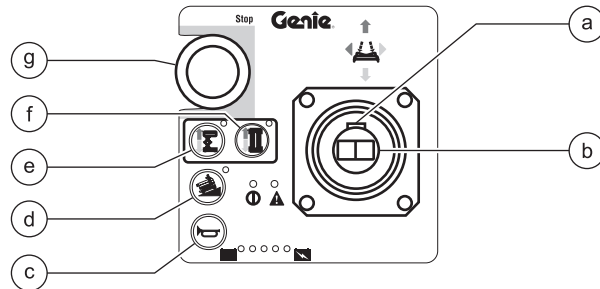
REV B

PLATFORM CONTROLS

Software revision C0:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.
- 3 Press and hold the lift function select and horn buttons, and turn the key switch to platform controls.

☉ Result: The diagnostic display will show "PS".



- a function enable switch SW5
- b joystick controller JC1 with thumb steering rocker SW6
- c horn button BN5
- d machine on/incline button
- e lift function select button BN9
- f drive function select BN8
- g red Emergency Stop button P2

- 4 Release the lift function select and horn buttons.

☉ Result: The diagnostic display will show the maximum lift speed percentage.

- 5 Press the drive function select button.

☉ Result: The diagnostic display will show "PS."

- 6 Press and hold the horn button.

☉ Result: The diagnostic display will show the raised drive speed percentage.

- 7 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*.

- 8 Turn the key switch to the off position.

NOTICE

Any change in software settings will not take effect until the key switch is turned to the off position.

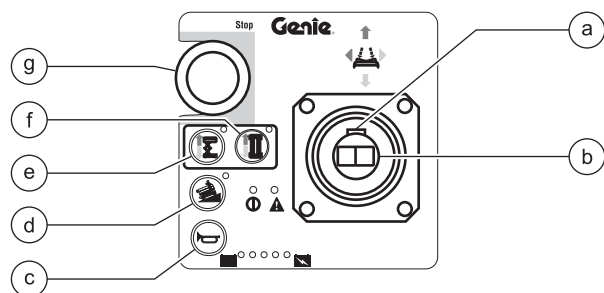
PLATFORM CONTROLS

REV B

Software revision D0 and higher:

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Pull out the red Emergency Stop button to the on position at the ground and platform controls.
- 3 Press and hold the lift function select and horn buttons, and turn the key switch to platform controls.

⦿ Result: The diagnostic display will show "PS."



- a function enable switch SW5
- b joystick controller JC1 with thumb steering rocker SW6
- c horn button BN5
- d machine on incline button
- e lift function select button BN9
- f drive function select BN8
- g red Emergency Stop button P2

- 4 Release the lift function select and horn buttons.

⦿ Result: The diagnostic display will show the maximum lift speed percentage.

- 5 Press and hold the horn button.

- ⦿ Result: The diagnostic display will show the raised drive speed percentage.
- 6 Use the steering thumb rocker switch on the joystick to increase or decrease the maximum lift speed percentage. Refer to Section 2, *Specifications*.
- 7 Turn the key switch to the off position.

NOTICE

Any change in software settings will not take effect until the key switch is turned to the off position.

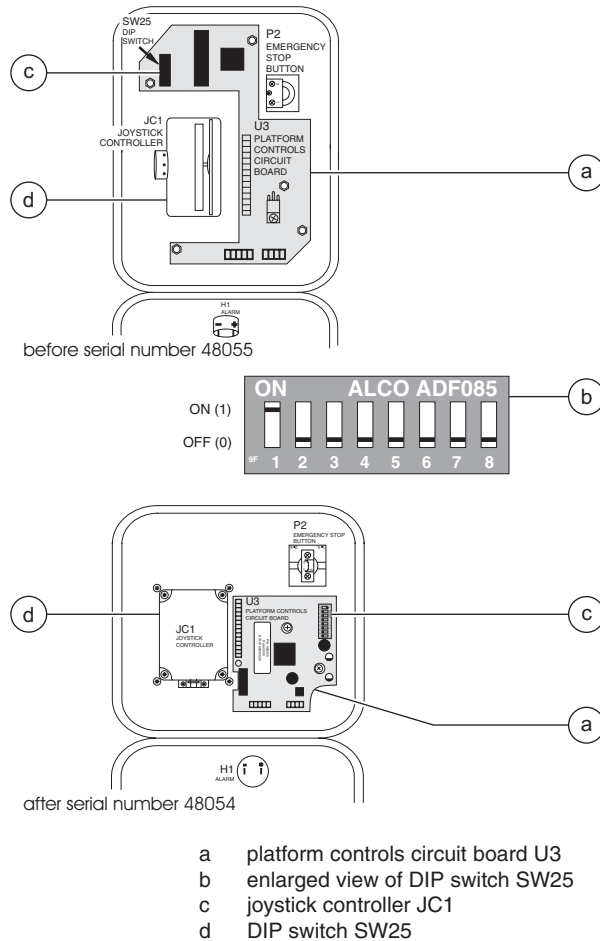
REV B

PLATFORM CONTROLS

1-4 Software Configuration

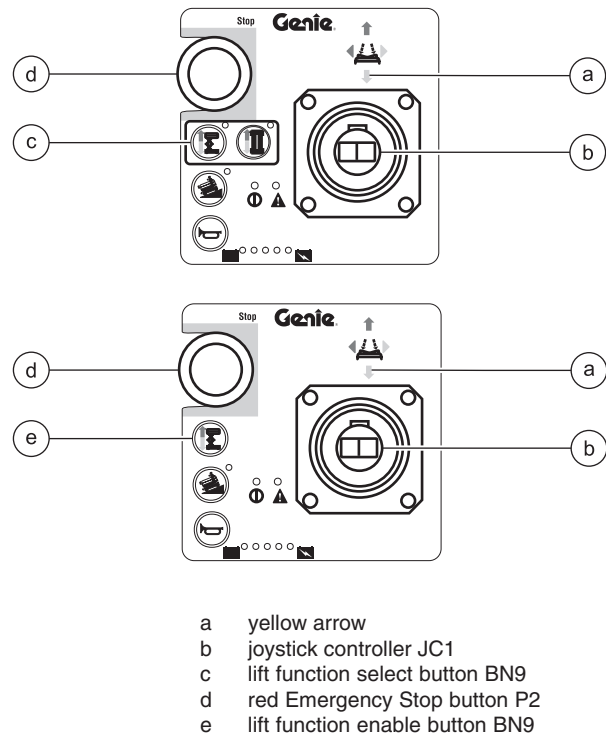
The ECM (Electronic Control Module) contains programming for all configurations of the Genie GS-2646 and GS-2646 and the GS-3246. The platform controls can be adjusted to a different configuration by changing the combination of the DIP switch settings. The DIP switch is located on the circuit board inside the platform control box.

Each of the eight toggles of the DIP switch have two positions: ON or OFF. When reading the DIP switch code in the *DIP Switch Code Chart*, the ON and OFF are represented by the numbers 1 (ON) and 0 (OFF).



How to Determine the DIP Switch Configuration

- 1 Remove the platform controls from the platform.
 - 2 Place the platform controls close to the diagnostic display on the hydraulic module side of the machine.
 - 3 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.
 - 4 Press and hold the lift function enable button OR press the lift function select button.
 - 5 Slowly move the joystick in the direction indicated by the blue arrow.
- Result: The DIP switch configuration will appear in the diagnostic display.



PLATFORM CONTROLS

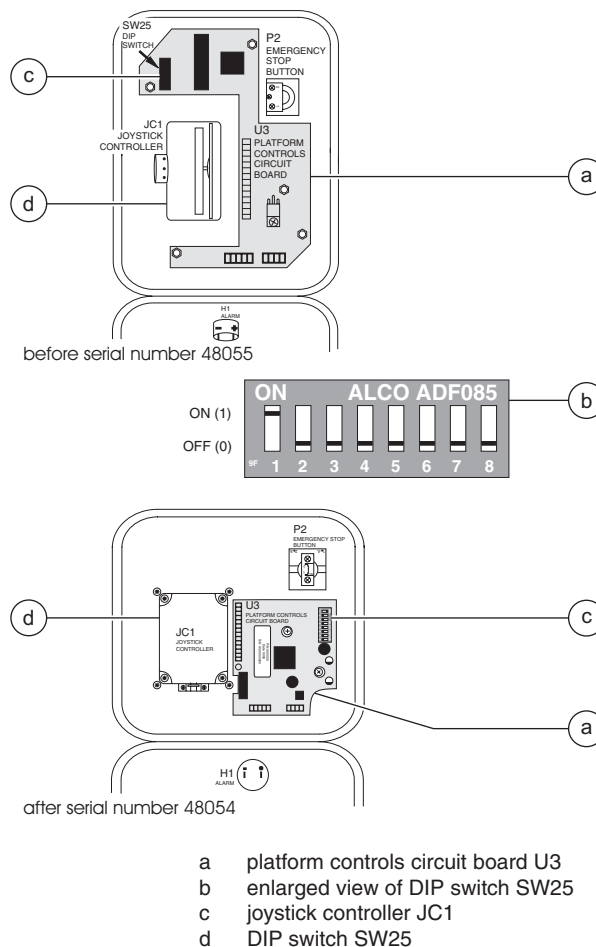
REV B

How to Set the DIP Switch Codes

⚠ DANGER Tip-over hazard. Do not adjust the DIP switch settings to other than what is specified in this procedure. Exceeding specifications could cause the machine to tip over resulting in death or serious injury.

NOTICE If replacing the circuit board, note the toggle positions on the DIP switch. Set the DIP switch on the new circuit board to the same configuration as the old board.

- 1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.
- 2 Remove the fasteners securing the top of the platform controls and open the platform control box.
- 3 Rotate the platform control box to the position shown to correctly identify the configuration of the DIP switch settings.
- 4 Locate the DIP switch on the circuit board. Move the DIP switch settings to correspond with the configuration of the machine options, indicated in the *DIP Switch Code Chart*.



- 5 Close the lid and install the fasteners.
- 6 Confirm the settings. See 1-3, *How to Determine the DIP Switch Configuration*.
- 7 Push in the red Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.

NOTICE Any change in DIP settings will not take effect until the key switch is turned to the off position.

REV B

PLATFORM CONTROLS

DIP Switch Code Chart

A mark in the column indicates that the machine configuration includes this option.

Diagnostic Display Code	DIP Switch Code	ON for GS-46 models	Motion Beacon	Motion Alarm	Lift Drive Cut Out	Overload Cut Out	Descent Delay	Battery Drain Alarm	OFF for all models
32	10000000	•							
33	10000100	•					•		
34	10001000	•				•			
35	10010000	•			•				
36	10100000	•	•						
37	11000000	•	•						
38	10001100	•				•	•		
39	10010100	•			•		•		
40	10100100	•		•			•		
41	11000100	•	•				•		
42	10011100	•			•	•	•		
43	10101100	•		•		•	•		
44	11001100	•	•			•	•		
45	10110100	•		•	•		•		
46	11010100	•	•		•		•		
47	11100100	•	•	•			•		
48	10111100	•		•	•	•	•		
49	11011100	•	•		•	•	•		
50	11101100	•	•	•		•	•		
51	11110100	•	•	•	•		•		
52	11111100	•	•	•	•	•	•		
53	10011000	•			•	•			
54	10101000	•		•		•			
55	11001000	•	•			•			
56	10111000	•		•	•	•			
57	11011000	•	•		•	•			
58	11101000	•	•	•		•			
59	11111000	•	•	•	•	•			
60	10110000	•		•	•				
61	11010000	•	•		•				
62	11110000	•	•	•	•				
63	11100000	•	•	•					

DIP Switch Function Definitions

NOTICE Before replacing the circuit board, note the toggle positions on the DIP switches. Set the DIP switches on the new circuit board to the same configuration as the old one.

NOTICE If replacing the circuit board, use dielectric grease on all plug-in connectors.

Motion Beacon: The motion beacon option flashes only when operating a function.

Motion Alarm: The motion alarm will sound when operating any function.

Lift/Drive Cut Out: This cuts out lift and drive functions when the machine exceeds the rating on the serial plate. Required for Europe and Australia before serial number 47055. Installed on all machines after serial number 47054.

Overload: This cuts out all functions when the pressure sensor is overloaded. The Emergency Stop button must be cycled before any function can be resumed. Required for France.

Descent Delay: This option halts descent at approximately 7 feet / 2.1 m. All controls must be released for 4 to 6 seconds before descent is re-enabled. Required for Europe.

Battery Drain Alarm: When the machine is turned on and no function is activated for 10 minutes, the alarm will sound once every 3 seconds. This option can be activated by moving DIP switch 7 to position 1.

Platform Components

REV A

2-1 Platform

How to Remove the Platform

NOTICE Perform this procedure with the platform extension fully retracted and locked in position.

- 1 **Machines with voltage inverter:** Disconnect the battery pack from the machine.

WARNING Electrocuting hazard. Contact with electrically charged circuits could result in death or serious injury. Disconnect the battery pack from the machine before removing the platform.

- 2 Lower the platform to the stowed position.
- 3 Remove the retaining fastener that holds the platform controls quick disconnect plug to the bottom of the platform.
- 4 Disconnect the plug from the platform controls.
- 5 Remove the cover from the AC outlet. Label and disconnect the wiring from the outlet.
- 6 Pull the wiring through the platform tube.

NOTICE If your machine is equipped with an air line to platform option, the air line must be disconnected from the platform before removal.

- 7 Support the platform with a forklift at the non-steer end. Do not lift it.

- 8 Attach a strap from the platform railings to the carriage on the forklift to help support the platform.

- 9 Remove the platform pivot pin retaining fasteners from the platform pivot pins at the steer end of the machine.

- 10 Use a slide hammer to remove the pins.

WARNING Crushing hazard. The platform will fall if it is not properly supported.

- 11 Remove the plugs from the access holes in the side of the platform.

- 12 Lift the steer end of the platform slightly to clear the scissor arms and slide the platform towards the non-steer end of the machine until the non-steer end platform pivot pins are visible through the access holes in the side of the platform.

- 13 Remove the platform pivot pin retaining fasteners from the platform pivot pins at the non-steer end of the machine.

- 14 Use a slide hammer to remove the pins.

WARNING Crushing hazard. The platform will fall if it is not properly supported.

- 15 Carefully lift the platform off of the machine and place it on a structure capable of supporting it.

NOTICE Note the position of the wear pads before the platform is removed so when the platform is installed they will be in the correct position.

REV A

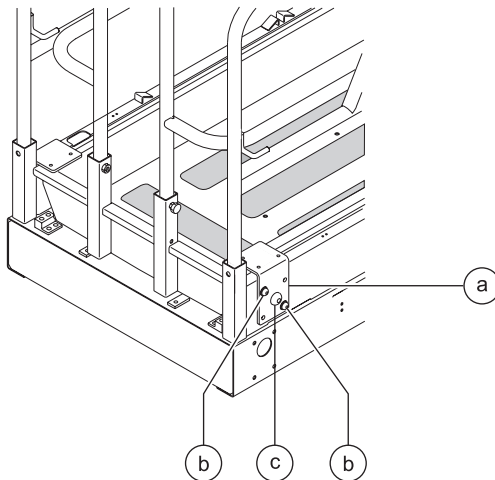
PLATFORM COMPONENTS

2-2 Platform Extension

How to Remove the Platform Extension

- 1 Lower the platform to the stowed position.
- 2 Extend the platform approximately 3 feet (1 m).
- 3 Remove the platform controls from the platform and lay them off to the side of the machine.
- 4 Support the platform extension with a forklift at the steer end. Do not lift it.
- 5 Attach a strap from the platform extension railings to the carriage on the forklift to help support the platform extension.
- 6 Remove the two retaining fasteners from each platform extension roller bracket assembly. Remove each assembly from the machine.

NOTICE Do not remove the platform roller bolt.



- a roller bracket assembly
b assembly retaining fastener
c platform roller bolt

- 7 Remove the platform roller wheels from the machine.
- 8 Carefully slide the platform extension out from the platform and place it on a structure capable of supporting it.

WARNING Crushing hazard. The platform extension could become unbalanced and fall if not properly supported and secured to the forklift.

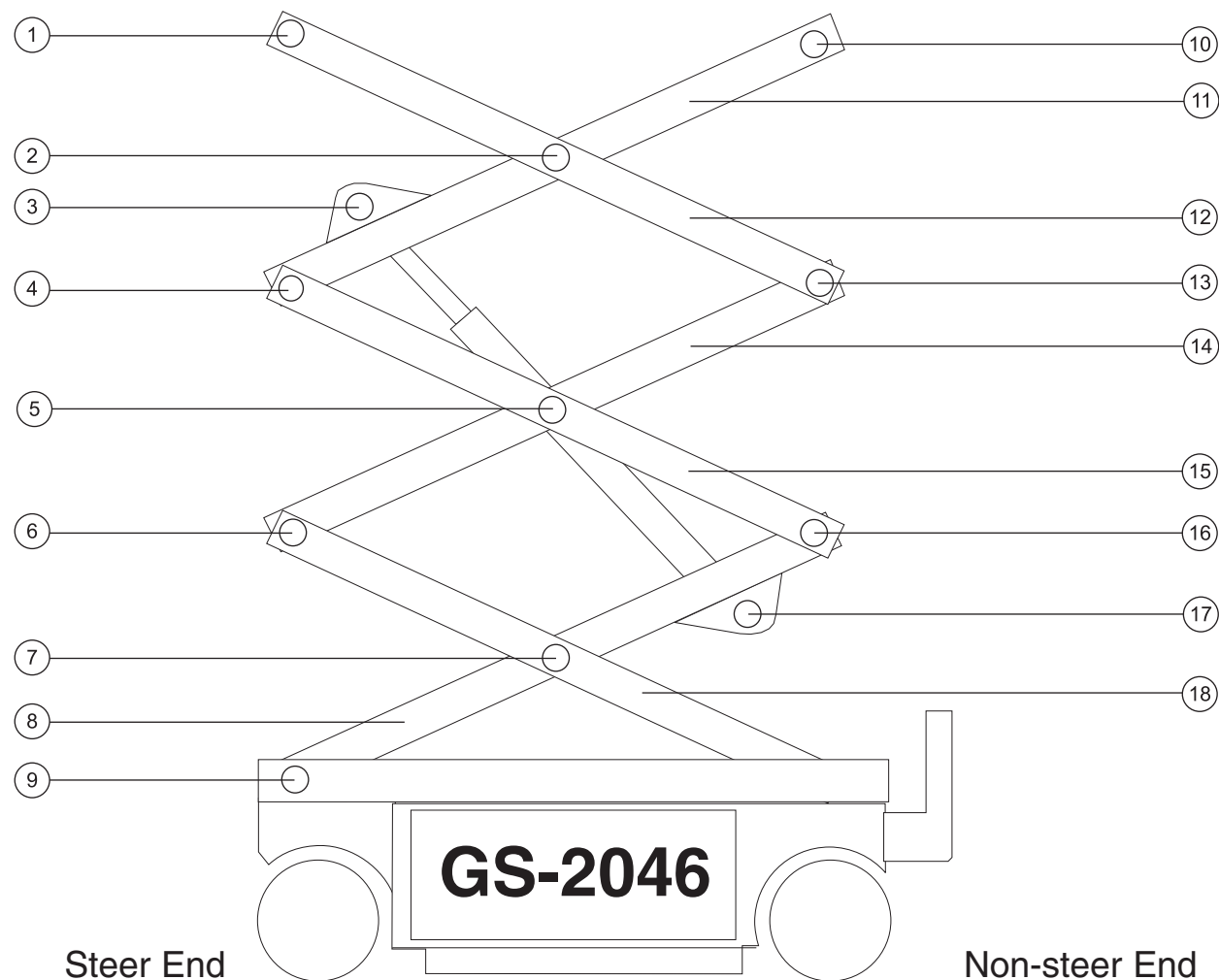
How to Replace the Platform Extension Wear Pads

- 1 Remove the Platform Extension. See 2-2, *How to Remove the Platform Extension*.
- 2 Drill out the rivets which hold the wear pads in place.
- 3 Install the new wear pads using new rivets.

NOTICE When installing new rivets, make sure the rivet heads are not above the surface of the wear pad.

Scissor Components

REV A



- 1 Number 4 pivot pin (steer end)
- 2 Number 3 center pivot pin
- 3 Lift cylinder rod-end pivot pin
- 4 Number 3 pivot pin (steer end)
- 5 Number 2 center pivot pin (2pins)
- 6 Number 2 pivot pin (steer end)
- 7 Number 1 center pivot pin
- 8 Number 1 inner arm
- 9 Number 1 pivot pin (steer end) (2pins)

- 10 Number 4 pivot pin (non-steer end)
- 11 Number 3 inner arm
- 12 Number 3 outer arm
- 13 Number 3 pivot pin (non-steer end)
- 14 Number 2 inner arm
- 15 Number 2 outer arm
- 16 Number 2 pivot pin (non-steer end)
- 17 Lift cylinder barrel-end pivot pin
- 18 Number 1 outer arm

REV A

SCISSOR COMPONENTS

3-1 Scissor Assembly, GS-2046

How to Disassemble the Scissor Assembly, GS-2046

⚠ WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the cables from the side of the number 3 outer arm (index #12) at the ground controls side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 3 Attach a lifting strap from an overhead crane to the number 3 outer arm (index #12).
- 4 Remove the external snap rings from the number 3 center pivot pin (index #2).
- 5 Use a soft metal drift to remove the number 3 center pivot pin (index #2).
- 6 Remove the external snap rings from the number 3 pivot pin (index #13).
- 7 Use a soft metal drift to remove the number 3 pivot pin (index #13) from the non-steer end of the machine. Remove the number 3 outer arm (index #12) from the machine.

⚠ CAUTION Crushing hazard. The number 3 outer arm (index #12) may become unbalanced and fall if not properly supported when it is removed from the machine.

- 8 Remove the cable clamps from the number 3 inner arm (index #11).
- 9 Remove the mounting fasteners from the cable tray support at the steer end.
- 10 Remove the external snap rings from the number 2 center pivot pin (index #5) at the ground controls side. Do not remove the pin.
- 11 Slide the cable tray towards the battery pack side of the machine and remove it from the machine.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

SCISSOR COMPONENTS

REV A

- 12 Attach a lifting strap from an overhead crane to the lug on the rod end of the lift cylinder.
- 13 Remove the pin retaining fasteners from the cylinder rod-end pivot pin (index #3). Use a soft metal drift to remove the pin.

CAUTION Bodily injury hazard. The cylinder may fall if not properly supported when the pin is removed.

- 14 Lower the cylinder onto the number 1 center pivot pin (index #7).
- 15 Attach a lifting strap from an overhead crane to the number 3 inner arm (index #11).
- 16 Remove the external snap rings from the number 3 pivot pin (index #4).
- 17 Use a soft metal drift to remove the number 3 pivot pin (index #4). Remove the number 3 inner arm (index #11) from the machine.

CAUTION Bodily injury hazard. The number 3 inner arm (index #11) may become unbalanced and fall if not properly supported when it is removed from the machine.

- 18 Attach a strap from an overhead crane to the number 2 outer arm (index #15) at the ground controls side.
- 19 Use a soft metal drift to remove the number 2 center pivot pin (index #5) at the ground controls side.
- 20 Remove the external snap rings from the number 2 pivot pin (index #16) at the non-steer end.

- 21 Use a soft metal drift to remove the number 2 pivot pin (index #16) at the non-steer end. Remove the number 2 outer arm (index #15) from the ground controls side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #15) at the ground controls side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 22 Attach a lifting strap from an overhead crane to the number 2 outer arm (index #15) at the battery pack side.
- 23 Remove the external snap rings from the number 2 center pivot pin (index #5) at the battery pack side.
- 24 Use a soft metal drift to remove the number 2 center pivot pin (index #5) at the battery pack side. Remove the number 2 outer arm (index #15) from the battery pack side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #15) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 25 Attach a lifting strap from an overhead crane to the number 2 inner arm (index #14).
- 26 Remove the external snap rings from the number 2 pivot pin (index #6) from the steer end of the machine.

REV A

SCISSOR COMPONENTS

- 27 Use a soft metal drift to remove the number 2 pivot pin (index #6). Remove the number 2 inner arm (index #14) from the machine.

CAUTION Bodily injury hazard. The number 2 inner arm (index #14) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 28 Remove the safety arm from the number 2 inner arm (index #14) that was just removed.

- 29 Attach a lifting strap from an overhead crane to the number 1 inner arm (index #8) at the non-steering end.

- 30 Raise the number 1 inner arm (index #8) approximately 2 feet (60 cm) and insert the safety arm between the number 1 inner arm (index #8) and the number 1 outer arm (index #18). Lower the scissor arms onto the safety arm.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when inserting the safety arm.

- 31 Disconnect and plug the hydraulic hose on the lift cylinder. Cap the fitting on the cylinder.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 32 Tag and disconnect the wires from the solenoid valve on the cylinder.

- 33 Attach a lifting strap from an overhead crane to the lug on the rod end of the lift cylinder. Raise the lift cylinder to a vertical position.

- 34 Remove the pin retaining fasteners from the lift cylinder barrel-end pivot pin (index #17). Use a soft metal drift to remove the pin. Remove the cylinder from the machine.

WARNING Crushing hazard. The cylinder may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

- 35 Place a 4 x 4 x 48 inch / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #7).

- 36 Attach a lifting strap from an overhead crane to the number 1 inner arm (index #8) at the non-steer end. Raise the number 1 inner arm (index #18) and remove the safety arm. Lower the number 1 inner arm (index #8) onto the block that was placed across the chassis.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the arms onto the block.

- 37 Remove the cables from the number 1 inner arm (index #8) and lay them off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 38 Support and secure the entry ladder to an appropriate lifting device.

SCISSOR COMPONENTS

REV A

- 39 Remove the entry ladder mounting fasteners.
Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 40 Attach the strap from the overhead crane to the number 1 outer arm (index #18). Do not lift it.

- 41 Remove the external snap rings from the number 1 center pivot pin (index #7).

- 42 Use a soft metal drift to remove the number 1 center pivot pin (index #7).

CAUTION Bodily injury hazard. The number 1 inner arm (index #18) may become unbalanced and fall if not properly supported when the pin is removed.

- 43 Slide the number 1 outer arm (index #18) to the non-steer end and remove it from the machine.

CAUTION Bodily injury hazard. The number 1 outer arm (index #18) may become unbalanced and fall if not properly supported when removing it from the machine.

- 44 Attach the strap from an overhead crane to the number 1 inner arm (index #8). Do not lift it.

- 45 Remove the pin retaining fasteners from both of the number 1 pivot pins (index #9). Use a slide hammer to remove the pins.

- 46 Remove the number 1 inner arm (index #8) from the machine.

CAUTION Bodily injury hazard. The number 1 inner arm (index #8) may become unbalanced and fall if not properly supported when removed from the machine.

How to Replace the Scissor Arm Wear Pads

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.

- 2 Remove the mounting fasteners from the stationary wear pads on the platform.

NOTICE Note the position of the wear pads before they are removed so when the new ones are installed they will be in the correct position.

- 3 Support and secure the entry ladder to an appropriate lifting device.

- 4 Remove the entry ladder mounting fasteners.
Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 5 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

- 6 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

- 7 Lower the scissor arms onto the safety arm.

WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 8 Mark the mounting position of the level sensor box on the drive chassis.

- 9 Remove the level sensor box cover.

- 10 Mark the mounting position of the level sensor on the level sensor box.

- 11 Remove the level sensor mounting fasteners.

REV A

SCISSOR COMPONENTS

- 12 Remove the level sensor box mounting fasteners and slide the box towards the non-steer end of the machine as far as it can go.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch, level sensor or wiring while moving the level sensor box.

- 13 Secure the ends of the scissor arms together at both ends of the machine with a tie down strap or other appropriate device.

- 14 Remove the pin retaining fasteners from the number 1 inner arm pivot pins (item #9) at the steer end of the machine. Use a slide hammer to remove the pins.

- 15 Attach a lifting strap from an overhead crane to the steer end of the scissor arms.

- 16 Carefully slide the forks from a forklift under the scissor arms at the non-steer end of the machine.

- 17 Raise the scissor arms up until the number 1 inner arm will clear the level sensor box.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while moving the scissor assembly.

- 18 Move the scissor assembly towards the non-steer end of the machine slightly and to one side of the machine until one of the scissor arm wear pads is accessible. Do not allow both wear pads to slide out of the drive chassis.

DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

- 19 Remove the old wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

- 20 Install the new wear pad.

- 21 Move the scissor assembly towards the other side of the machine until the other scissor arm wear pad is accessible.

DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

- 22 Remove the old wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

- 23 Install the new wear pad.

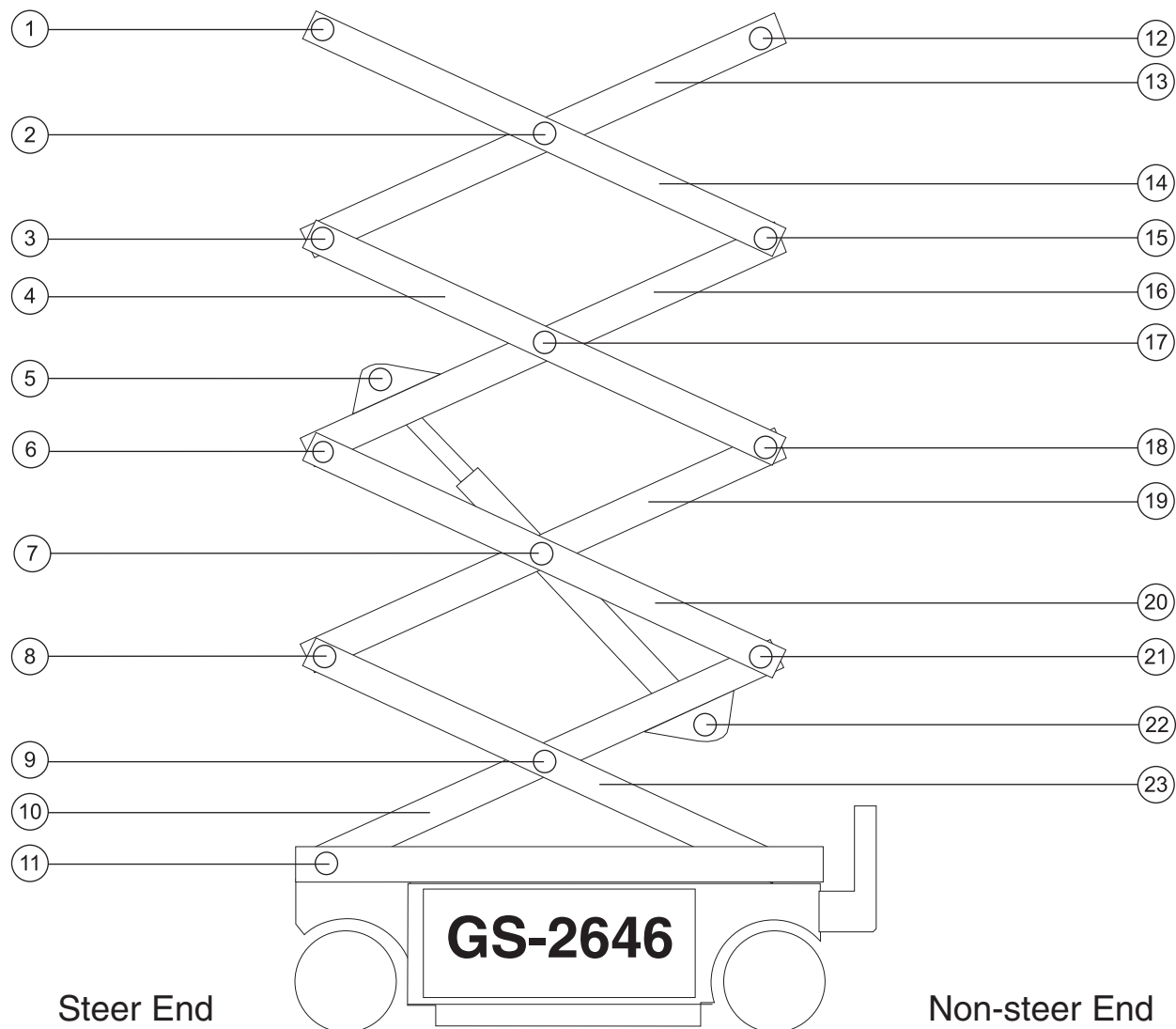
- 24 Slide the scissor assembly back into the drive chassis.

- 25 Lower the scissor assembly into position and install the pivot pins.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while installing the scissor assembly.

SCISSOR COMPONENTS

REV A



- 1 Number 5 pivot pin (steer end)
- 2 Number 4 center pivot pin
- 3 Number 4 pivot pin (steer end)
- 4 Number 3 outer arm
- 5 Lift cylinder rod-end pivot pin
- 6 Number 3 pivot pin (steer end)
- 7 Number 2 center pivot pin (2 pins)
- 8 Number 2 pivot pin (steer end)
- 9 Number 1 center pivot pin
- 10 Number 1 inner arm
- 11 Number 1 pivot pin (steer end) (2 pins)
- 12 Number 5 pivot pin (non-steer end)

- 13 Number 4 inner arm
- 14 Number 4 outer arm
- 15 Number 4 pivot pin (non-steer end)
- 16 Number 3 inner arm
- 17 Number 3 center pivot pin
- 18 Number 3 pivot pin (non-steer end)
- 19 Number 2 inner arm
- 20 Number 2 outer arm
- 21 Number 2 pivot pin (non-steer end)
- 22 Lift cylinder barrel-end pivot pin
- 23 Number 1 outer arm

REV A

SCISSOR COMPONENTS

3-2 Scissor Assembly, GS-2646

How to Disassemble the Scissor Assembly, GS-2646

⚠ WARNING Bodily injury hazard. The procedures in this section require specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the cables from the side of the number 4 outer arm (index #14) at the ground controls side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 3 Attach a lifting strap from an overhead crane to the number 4 outer arm (index #14).
- 4 Remove the external snap rings from the number 4 center pivot pin (index #2).
- 5 Use a soft metal drift to remove the number 4 center pivot pin (index #2).
- 6 Remove the external snap ring from the number 4 pivot pin (index #2).
- 7 Use a soft metal drift to remove the number 4 pivot pin (index #15) from the non-steer end of the machine. Remove the number 4 outer arm (index #14) from the machine.

⚠ CAUTION Crushing hazard. The number 4 outer arm (index #14) may become unbalanced and fall if not properly supported when it is removed from the machine.

- 8 Remove the cables from the upper cable tray and lay them off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 9 Remove the mounting fasteners from the upper cable tray supports.
- 10 Remove the upper cable tray from the scissor assembly.
- 11 Attach a lifting strap from an overhead crane to the number 4 inner arm (index #13).
- 12 Remove the external snap rings from the number 4 pivot pin (index #3).

SCISSOR COMPONENTS

REV A

- 13 Use a soft metal drift to remove the number 4 pivot pin (index #3) at the steer end. Remove the number 4 inner arm (index #13) from the machine.

⚠ CAUTION Crushing hazard. The number 4 inner arm (index #13) may become unbalanced and fall if not properly supported when it is removed.

- 14 Attach a lifting strap from an overhead crane to the number 3 outer arm (index #4) at the ground controls side.
- 15 Remove the external snap rings from the number 3 center pivot pin (index #17).
- 16 Use a soft metal drift to remove the number 3 center pivot pin (index #17).
- 17 Remove the external snap rings from the number 3 pivot pin (index #18) at the non-steer end of the machine. Do not remove the pin.
- 18 Use a soft metal drift to tap the number 3 pivot pin (index #18) halfway out at the non-steer end of the machine. Remove the number 3 outer arm (index #4) at the ground controls side from the machine.

⚠ CAUTION Bodily injury hazard. The number 3 outer arm (index #4) at the ground controls side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 19 Attach a lifting strap from an overhead crane to the number 3 outer arm (index #4) at the battery pack side.

- 20 Use a soft metal drift to tap the number 3 pivot pin (index #18) in the other direction. Remove the number 3 outer arm (index #4) from the battery pack side of the machine.

⚠ CAUTION Bodily injury hazard. The number 3 outer arm (index #4) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 21 Remove the number 3 pivot pin (index #18) from the non-steer end of the machine.
- 22 Attach a lifting strap from an overhead crane to the lug on the rod end of the lift cylinder for support. Do not lift it.
- 23 Remove the pin retaining fasteners from the lift cylinder rod-end pivot pin (index #5). Use a soft metal drift to remove the pin.

⚠ CAUTION Bodily injury hazard. The cylinder may fall when the rod-end pivot pin is removed if it is not properly supported.

- 24 Lower the cylinder onto the number 1 center pivot pin (index #9).
- 25 Remove the cables from the number 3 inner arm (index #16) and lay them to the side.
- 26 Attach a lifting strap from an overhead crane to the number 3 inner arm (index #16).
- 27 Remove the external snap rings from the number 3 pivot pin (index #6) at the steer end.

REV A

SCISSOR COMPONENTS

- 28 Use a soft metal drift to remove the number 3 pivot pin (index #6). Remove the number 3 inner arm (index #16) from the machine.

CAUTION Bodily injury hazard. The number 3 inner arm (index #16) may become unbalanced and fall if not properly supported when it is removed from the machine.

- 29 Remove the cable clamps from the lower cable tray. Lay the cables to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 30 Remove the mounting fasteners from the lower cable tray supports.
- 31 Remove the mounting fasteners from the lower cable tray mounting bracket on the number 2 center pivot pin (index #7) at the ground controls side of the machine.
- 32 Slide the cable tray towards the battery pack side of the machine and remove it from the machine.
- 33 Attach a lifting strap from an overhead crane to the number 2 outer arm (index #20) at the ground controls side.
- 34 Remove the external snap rings from the number 2 center pivot pin (index #7) at the ground controls side.
- 35 Use a soft metal drift to remove the number 2 center pivot pin (index #7) at the ground controls side.

- 36 Use a soft metal drift to tap the number 2 pivot pin (index #21) halfway out at the non-steer end of the machine. Remove the number 2 outer arm (index #20) from the ground controls side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #20) at the ground controls side may become unbalanced and fall if not properly supported when it is removed from the machine.

- 37 Attach a lifting strap from an overhead crane to the number 2 outer arm (index #20) at the battery pack side.
- 38 Remove the external snap rings from the number 2 center pivot pin (index #7) at the battery pack side.
- 39 Use a soft metal drift to remove the number 2 center pivot pin (index #7) at the battery pack side.

CAUTION Bodily injury hazard. The number 2 outer arm (index #20) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

SCISSOR COMPONENTS

REV A

40 Use a soft metal drift to tap the number 2 pivot pin (index #21) in the other direction. Remove the number 2 outer arm (index #20) from the battery pack side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #20) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

41 Attach a lifting strap from an overhead crane to the number 2 inner arm (index #19).

42 Remove the external snap rings from the number 2 pivot pin (index #8) at the steer end of the machine.

43 Use a soft metal drift to remove the number 2 pivot pin (index #8). Remove the number 2 inner arm (index #19) from the machine.

CAUTION Bodily injury hazard. The number 2 inner arm (index #19) may become unbalanced and fall if not properly supported when it is removed from the machine.

44 Remove the safety arm from the number 2 inner arm (index #19) that was just removed.

45 Attach a lifting strap from an overhead crane to the number 1 inner arm (index #10).

46 Raise the number 1 inner arm (index #10) approximately 2 feet (60 cm) and install the safety arm between the number 1 inner arm (index #10) and the number 1 outer arm (index #23). Lower the scissor arms onto the safety arm.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when inserting the safety arm.

47 Disconnect and plug the hydraulic hose on the lift cylinder. Cap the fitting on the cylinder.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

48 Tag and disconnect the wires from the solenoid valve on the cylinder.

49 Attach a lifting strap from an overhead crane to the lug on the rod end of the lift cylinder. Raise the lift cylinder to a vertical position.

REV A

SCISSOR COMPONENTS

- 50 Remove the pin retaining fasteners from the lift cylinder barrel-end pin (index #22). Use a soft metal drift to remove the pin. Remove the cylinder from the machine.

CAUTION Crushing hazard. The cylinder may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

- 51 Place a 4 x 4 x 48 inch / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #9).
- 52 Attach a lifting strap from an overhead crane to the number 1 inner arm (index #10) at the non-steer end. Raise the number 1 inner arm and remove the safety arm. Lower the number 1 inner arm (index #10) onto the block that was placed across the chassis.
- WARNING** Bodily injury hazard. Keep hands clear of moving parts when lowering the arms onto the block.
- 53 Remove the cables and hydraulic hoses from the number 1 inner arm (index #10) and lay them to the side.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

- 54 Support and secure the entry ladder to an appropriate lifting device.

- 55 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 56 Attach a lifting strap from an overhead crane to the number 1 outer arm (index #23). Do not lift it.
- 57 Remove the external snap rings from the number 1 center pivot pin (index #9).
- 58 Use a soft metal drift to remove the number 1 center pivot pin (index #9).

CAUTION Bodily injury hazard. The number 1 outer arm (index #23) may become unbalanced and fall if not properly supported when the pin is removed.

- 59 Slide the number 1 outer arm (index #23) to the non-steer end and remove it from the machine.

CAUTION Bodily injury hazard. The number 1 outer arm (index #23) may become unbalanced and fall if not properly supported when it is removed from the machine.

NOTICE Note the position of the wear pads before the arm is removed so when the scissor is assembled they will be in the correct position.

SCISSOR COMPONENTS

REV A

60 Attach the strap from an overhead crane to the number 1 inner arm (index #10). Do not lift it.

61 Remove the pin retaining fasteners from both of the number 1 pivot pins (index #11) at the steer end of the machine. Use a slide hammer to remove the pins.

62 Remove the number 1 inner arm (index #10) from the machine.

CAUTION Bodily injury hazard. The number 1 inner arm (index #10) may become unbalanced and fall if not properly supported when it is removed from the machine.

CAUTION Component damage hazard. Be sure not to damage the limit switch or level sensor box components when the number 1 inner arm (index #10) is removed from the machine.

How to Replace the Scissor Arm Wear Pads

1 Remove the platform. See 2-1, *How to Remove the Platform*.

2 Remove the mounting fasteners from the stationary wear pads on the platform.

NOTICE Note the position of the wear pads before they are removed so when the new ones are installed they will be in the correct position.

3 Support and secure the entry ladder to an appropriate lifting device.

4 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

5 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

6 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

7 Lower the scissor arms onto the safety arm.

WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

8 Mark the mounting position of the level sensor box on the drive chassis.

REV A

SCISSOR COMPONENTS

- 9 Remove the level sensor box cover.
- 10 Mark the mounting position of the level sensor on the level sensor box.
- 11 Remove the level sensor mounting fasteners.
- 12 Remove the level sensor box mounting fasteners and slide the box towards the non-steer end of the machine as far as it can go.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch, level sensor or wiring while moving the level sensor box.

- 13 Secure the ends of the scissor arms together at both ends of the machine with a tie down strap or other appropriate device.
- 14 Remove the pin retaining fasteners from the number 1 inner arm pivot pins (item #11) at the steer end of the machine. Use a slide hammer to remove the pins.
- 15 Attach a lifting strap from an overhead crane to the steer end of the scissor arms.
- 16 Carefully slide the forks from a forklift under the scissor arms at the non-steer end of the machine.
- 17 Raise the scissor arms up until the number 1 inner arm will clear the level sensor box.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while moving the scissor assembly.

- 18 Move the scissor assembly towards the non-steer end of the machine slightly and to one side of the machine until one of the scissor arm wear pads is accessible. Do not allow both wear pads to slide out of the drive chassis.

⚠ DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

- 19 Install the new wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

- 20 Move the scissor assembly towards the other side of the machine until the other scissor arm wear pad is accessible.

⚠ DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

- 21 Install the new wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

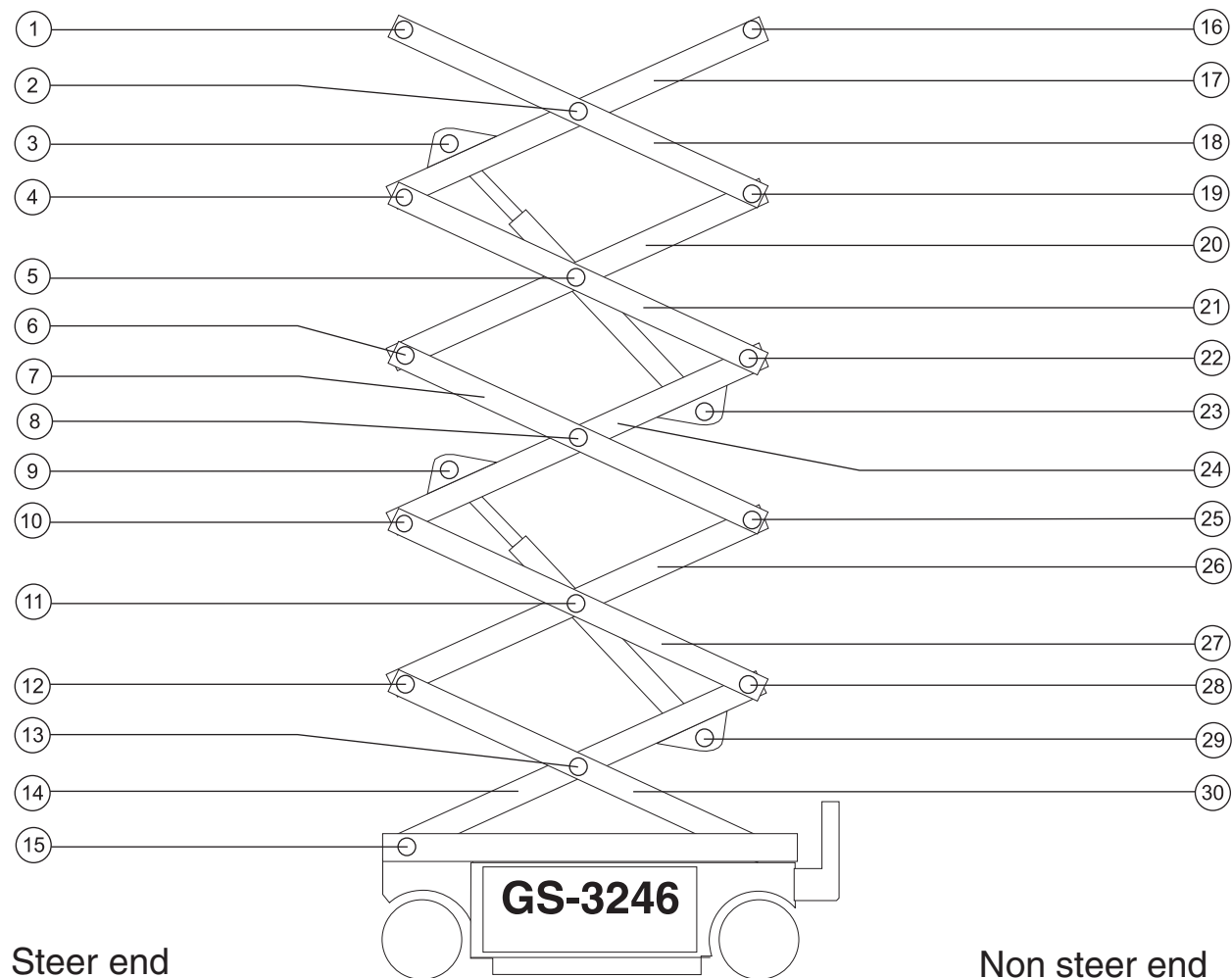
- 22 Slide the scissor assembly back into the drive chassis.

- 23 Lower the scissor assembly into position and install the pivot pins.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while installing the scissor assembly.

SCISSOR COMPONENTS

REV A



- 1 Number 6 pivot pin (steer end)
- 2 Number 5 center pivot pin
- 3 Upper lift cylinder rod-end pivot pin
- 4 Number 5 pivot pin (steer end)
- 5 Number 4 center pivot pin (2 pins)
- 6 Number 4 pivot pin (steer end)
- 7 Number 3 outer arm
- 8 Number 3 center pivot pin
- 9 Lower lift cylinder rod-end pivot pin
- 10 Number 3 pivot pin (steer end)
- 11 Number 2 center pivot pin (2 pins)
- 12 Number 2 pivot pin (steer end)
- 13 Number 1 center pivot pin
- 14 Number 1 inner arm
- 15 Number 1 pivot pin (steer end) (2 pins)

- 16 Number 6 pivot pin (non-steer end)
- 17 Number 5 inner arm
- 18 Number 5 outer arm
- 19 Number 5 pivot pin (non-steer end)
- 20 Number 4 inner arm
- 21 Number 4 outer arm
- 22 Number 4 pivot pin (non-steer end)
- 23 Upper lift cylinder barrel-end pivot pin
- 24 Number 3 inner arm
- 25 Number 3 pivot pin (non-steer end)
- 26 Number 2 inner arm
- 27 Number 2 outer arm
- 28 Number 2 pivot pin (non-steer end)
- 29 Lower lift cylinder barrel-end pivot pin
- 30 Number 1 outer arm

REV A

SCISSOR COMPONENTS

3-3 Scissor Assembly, GS-3246

How to Disassemble the Scissor Assembly, GS-3246

⚠ WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the cables from the side of the number 5 outer arm (index #18) at the ground controls side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 3 Attach a lifting strap from an overhead crane to the number 5 outer arm (index #18).
- 4 Remove the external snap rings from the number 5 center pivot pin (index #2).
- 5 Use a soft metal drift to remove the number 5 center pivot pin (index #2).
- 6 Remove the external snap rings from the number 5 pivot pin (index #19).
- 7 Use a soft metal drift to remove the number 5 pivot pin (index #19) from the non-steer end of the machine. Remove the number 5 outer arm (index #18) from the machine.

⚠ CAUTION Crushing hazard. The number 5 outer arm (index #18) may become unbalanced and fall if not properly supported when it is removed from the machine.

- 8 Remove the cable clamps from the number 5 inner arm (index #17). Lay the cables off to the side of the machine.
- 9 Remove the mounting fasteners from the upper cable tray supports.
- 10 Remove the mounting fasteners from the upper cable tray mounting bracket on the number 4 center pivot pin (index #5) at the ground controls side of the machine.
- 11 Remove the upper cable tray from the scissor assembly.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

SCISSOR COMPONENTS

REV A

12 Attach a lifting strap from an overhead crane to the lug on the rod end of the upper lift cylinder.

13 Remove the pin retaining fasteners from the upper cylinder rod-end pivot pin (index #3). Use a soft metal drift to remove the pin.

CAUTION Crushing hazard. The cylinder may fall if not properly supported when the pin is removed.

14 Lower the cylinder onto the number 3 center pivot pin (index #8).

15 Attach a lifting strap from an overhead crane to the number 5 inner arm (index #17).

16 Remove the external snap rings from the number 5 pivot pin (index #4).

17 Use a soft metal drift to remove the number 5 pivot pin (index #4). Remove the number 5 inner arm (index #17) from the machine.

CAUTION Bodily injury hazard. The number 5 inner arm (index #17) may become unbalanced and fall if not properly supported when it is removed from the machine.

18 Remove the external snap rings from the number 4 center pivot pin (index #5) at the ground controls side.

19 Remove the external snap rings from the number 4 center pivot pin (index #5) at the battery pack side.

20 Use a soft metal drift to remove both of the number 4 center pivot pins (index #5).

21 Remove the external snap rings from the number 4 pivot pin (index #22) at the non-steer end of the machine.

22 Use a soft metal drift to remove the number 4 pivot pin (index #22). Remove the number 4 outer arm (index #21) from the machine.

CAUTION Bodily injury hazard. The number 4 outer arm (index #21) may become unbalanced and fall if not properly supported when it is removed from the machine.

23 Attach a lifting strap from an overhead crane to the number 4 inner arm (index #20).

24 Remove the external snap rings from the number 4 pivot pin (index #6) from the steer end of the machine.

25 Use a soft metal drift to remove the number 4 pivot pin (index #6). Remove the number 4 inner arm (index #20) from the machine.

CAUTION Bodily injury hazard. The number 4 inner arm (index #20) may become unbalanced and fall if not properly supported when it is removed from the machine.

26 Remove the safety arm from the number 4 inner arm (index #20) that was just removed.

REV A

SCISSOR COMPONENTS

- 27 Disconnect and plug the hydraulic hose on the upper lift cylinder. Cap the fitting on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 28 Tag and disconnect the wires from the solenoid valve on the cylinder.

- 29 Connect the platform controls to the control cable that was removed from the platform.

- 30 Connect the battery pack. Turn the key switch to ground control and pull out the Emergency Stop button to the **ON** position at both the platform and ground controls.

- 31 Activate the up function and raise the number 2 inner arm (index #26) approximately 2 feet (60 cm). Then install the safety arm between the number 2 inner arm (index #26) and the number 1 inner arm (index #14).

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when inserting the safety arm.

- 32 Activate the down function to lower the scissor assembly onto the safety arm. Push in the Emergency Stop buttons and turn the key to the **OFF** position.

⚠ WARNING Bodily injury hazard. The scissor assembly may become unbalanced and fall if not properly supported by the safety arm.

⚠ CAUTION Bodily injury hazard. Keep hands clear of moving parts when inserting the safety arm.

- 33 Attach a lifting strap from an overhead crane to the lug on the rod end of the upper lift cylinder. Raise the rod end of the cylinder to a vertical position.

- 34 Remove the pin retaining fasteners from the upper lift cylinder barrel-end pivot pin (index #23). Use a soft metal drift to remove the pin. Remove the cylinder from the machine.

⚠ WARNING Crushing hazard. If the overhead crane is not properly attached, the cylinder may become unbalanced and fall when it is removed from the machine.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

- 35 Turn the key switch to ground control and pull out the Emergency Stop button to the **ON** position at both the platform and ground controls.

SCISSOR COMPONENTS

REV A

36 Activate the up function and raise the number 2 inner arm (index #26) approximately 2 feet (60 cm). Remove the safety arm from the machine.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when removing the safety arm.

37 Activate the down function and fully lower the scissor assembly. Push in the Emergency Stop button and turn the key to the OFF position. Disconnect the battery pack.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the scissor assembly.

38 Attach a lifting strap from an overhead crane to the number 3 outer arm (index #7) at the ground controls side.

39 Remove the external snap rings from the number 3 center pivot pin (index #8).

40 Use a soft metal drift to remove the number 3 center pivot pin (index #8).

41 Remove the external snap rings from the number 3 pivot pin (index #25) at the non-steer end of the machine. Do not remove the pin.

42 Use a soft metal drift to tap the number 3 pivot pin (index #25) halfway out at the non-steer end of the machine. Remove the number 3 outer arm (index #7) at the ground controls side from the machine.

CAUTION Bodily injury hazard. The number 3 outer arm (index #7) at the ground controls side may become unbalanced and fall if not properly supported when removed from the machine.

43 Attach a lifting strap from an overhead crane to the number 3 outer arm (index #7) at the battery pack side.

44 Use a soft metal drift to tap the number 3 pivot pin (index #10) at the steer end in the other direction. Remove the number 3 outer arm (index #7) from the battery pack side of the machine.

CAUTION Bodily injury hazard. The number 3 outer arm (index #7) at the battery pack side may become unbalanced and fall if not properly supported when it is removed from the machine.

45 Remove the cables from the number 3 inner arm (index #24) and lay them off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

46 Remove the cables from the lower cable tray on the number 2 inner arm (index #26). Lay the cables off to the side.

REV A

SCISSOR COMPONENTS

47 Remove the mounting fasteners from the lower cable tray supports.

48 Remove the external snap rings from the number 2 center pivot pin (index #11) at the ground controls side. Do not remove the pin.

49 Slide the cable tray towards the battery pack side of the machine and remove it from the machine.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

50 Attach a lifting strap from an overhead crane to the lug on the rod end of the lower lift cylinder.

51 Remove the pin retaining fasteners from the lower lift cylinder rod-end pivot pin (index #9). Use a soft metal drift to remove the pin.

52 Lower the cylinder onto the number 1 center pivot pin (index #13).

CAUTION Crushing hazard. The cylinder may become unbalanced and fall when it is lowered if it is not properly attached to the overhead crane.

53 Attach a lifting strap from an overhead crane to the number 3 inner arm (index #24).

54 Remove the external snap rings from the number 3 pivot pin (index #10).

55 Use a soft metal drift to remove the number 3 pivot pin (index #10). Remove the number 3 inner arm (index #24) from the machine.

CAUTION Bodily injury hazard. The number 3 inner arm (index #24) may become unbalanced and fall if not properly supported when it is removed from the machine.

56 Attach a lifting strap from an overhead crane to the number 2 outer arm (index #27) at the ground controls side.

57 Use a soft metal drift to remove the number 2 center pivot pin (index #11) at the ground controls side.

58 Remove the external snap rings from the number 2 pivot pin (index #28) at the non-steer end of the machine. Do not remove the pin.

59 Use a soft metal drift to tap the number 2 pivot pin (index #28) halfway out at the non-steer end of the machine. Remove the number 2 outer arm (index #27) from the ground controls side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #27) at the ground controls side may become unbalanced and fall if not properly supported when it is removed from the machine.

60 Attach a lifting strap from an overhead crane to the number 2 outer arm (index #27) at the battery pack side.

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61 Remove the external snap rings from the number 2 center pivot pin (index #11) at the battery pack side of the machine.

62 Use a soft metal drift to remove the number 2 center pivot pin (index #11) at the battery pack side of the machine.

63 Use a soft metal drift to tap the number 2 pivot pin (index #28) in the other direction. Remove the number 2 outer arm (index #27) from the battery pack side of the machine.

CAUTION Bodily injury hazard. The number 2 outer arm (index #27) at the ground controls side may become unbalanced and fall if not properly supported when it is removed from the machine.

64 Use a soft metal drift to remove the number 2 pivot pin (index #28) from the machine.

65 Attach a lifting strap from an overhead crane to the number 2 inner arm (index #26).

66 Remove the external snap rings from the number 2 pivot pin (index #12) from the steer end of the machine.

67 Use a soft metal drift to remove the number 2 pivot pin (index #12). Remove the number 2 inner arm (index #26) from the machine.

CAUTION Bodily injury hazard. The number 2 inner arm (index #26) may become unbalanced and fall if not properly supported when it is removed from the machine.

68 Attach the strap from the overhead crane to the number 1 inner arm (index #14).

69 Using the overhead crane, lift the number 1 inner arm (index #14) approximately 2 feet / 60 cm. Place a 4 x 4 x 48 inch / 10 cm x 10 cm x 1.2 m long block across both sides of the chassis under the number 1 center pivot pin (index #13). Lower the scissor arms onto the block.

CAUTION Bodily injury hazard. Keep hands clear of moving parts when lowering the arms onto the block.

70 Disconnect and plug the hydraulic hose on the lower lift cylinder. Cap the fitting on the cylinder.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

71 Tag and disconnect the wires from the solenoid valve on the cylinder.

72 Attach a lifting strap from an overhead crane to the lug on the rod end of the lower lift cylinder.

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- 73 Remove the pin retaining fasteners from the lower lift cylinder barrel-end pivot pin (index #29). Use a soft metal drift to remove the pin. Remove the cylinder from the machine.

CAUTION Crushing hazard. The cylinder may become unbalanced and fall when it is removed from the machine if it is not properly attached to the overhead crane.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

- 74 Support and secure the entry ladder to an appropriate lifting device.

- 75 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 76 Remove the cables from the number 1 inner arm (index #14) and lay them off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

- 77 Attach a lifting strap from an overhead crane to the number 1 outer arm (index #30). Do not lift it.

- 78 Remove the external snap rings from the number 1 center pivot pin (index #13).

- 79 Use a soft metal drift to remove the number 1 center pivot pin (index #13).

CAUTION Crushing hazard. The number 1 outer arm (index #30) may become unbalanced and fall if not properly supported when the pin is removed.

- 80 Slide the number 1 outer arm (index #30) to the non-steer end and remove it from the machine.

CAUTION Crushing hazard. The number 1 outer arm (index #30) may become unbalanced and fall if not properly supported when removing it from the machine.

NOTICE Note the position of the wear pads before the arm is removed so when the scissor is assembled they will be in the correct position.

- 81 Attach a lifting strap from an overhead crane to the number 1 inner arm (index #14). Do not lift it.

- 82 Remove the pin retaining fasteners from both of the number 1 pivot pins (index #15). Use a slide hammer to remove the pins.

- 83 Remove the number 1 inner arm (index #14) from the machine.

CAUTION Crushing hazard. The number 1 inner arm (index #14) may become unbalanced and fall if not properly supported when removed from the machine.

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How to Replace the Scissor Arm Wear Pads

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the mounting fasteners from the stationary wear pads on the platform.

NOTICE Note the position of the wear pads before they are removed so when the new ones are installed they will be in the correct position.

- 3 Support and secure the entry ladder to an appropriate lifting device.
- 4 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 5 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.
- 6 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.
- 7 Lower the scissor arms onto the safety arm.

WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 8 Mark the mounting position of the level sensor box on the drive chassis.

- 9 Remove the level sensor box cover.
- 10 Mark the mounting position of the level sensor on the level sensor box.
- 11 Remove the level sensor mounting fasteners.
- 12 Remove the fasteners from the level sensor box and slide the box towards the non-steer end of the machine as far as it can go.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch, level sensor or wiring while moving the level sensor box.

- 13 Secure the ends of the scissor arms together at both ends of the machine with a tie down strap or other appropriate device.
- 14 Remove the pin retaining fasteners from the number 1 inner arm pivot pins (index #15) at the steer end of the machine. Use a slide hammer to remove the pins.
- 15 Attach a lifting strap from an overhead crane to the steer end of the scissor arms.
- 16 Carefully slide the forks from a forklift under the scissor arms at the non-steer end of the machine.
- 17 Raise the scissor arms up until the number 1 inner arm will clear the level sensor box.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while moving the scissor assembly.

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18 Move the scissor assembly towards the non-steer end of the machine slightly and to one side of the machine until one of the scissor arm wear pads is accessible. Do not allow both wear pads to slide out of the drive chassis.

⚠ DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

19 Install the new wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

20 Move the scissor assembly towards the other side of the machine until the other scissor arm wear pad is accessible.

⚠ DANGER Crushing hazard. The scissor assembly will fall if both wear pads are allowed to slide out of the drive chassis.

21 Install the new wear pad.

NOTICE Note the position of the wear pad before it is removed so when the new one is installed it will be in the correct position.

22 Slide the scissor assembly back into the drive chassis.

23 Lower the scissor assembly into position and install the pivot pins.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while installing the scissor assembly.

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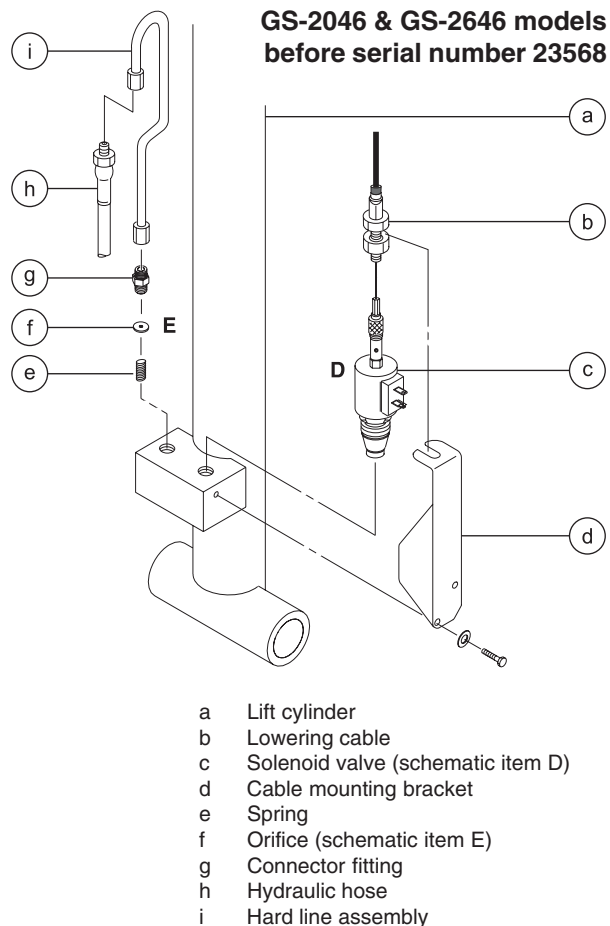
3-4 Lift Cylinder

How to Remove the Lift Cylinder, GS-2046 & GS-2646

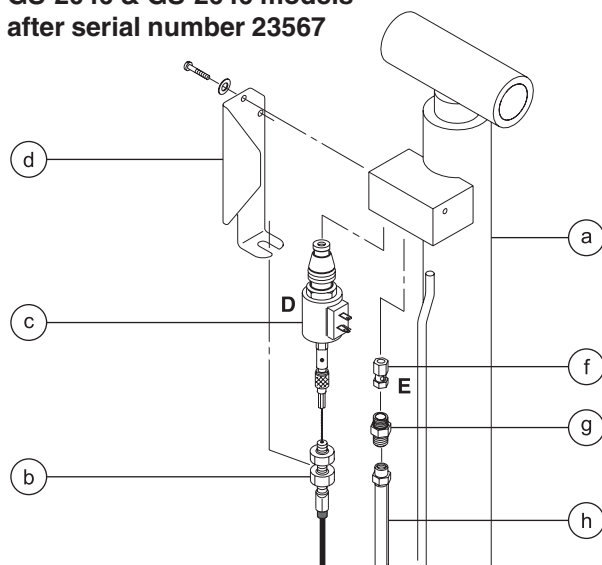
⚠ WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.
- 2 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position



**GS-2046 & GS-2646 models
after serial number 23567**



REV A

SCISSOR COMPONENTS

- 3 Lower the scissor arms onto the safety arm.

▲WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 4 Tag and disconnect the wiring from the solenoid at the barrel end of the lift cylinder.
- 5 Loosen the adjustment nuts on the solenoid, then disconnect the manual lowering cable from the solenoid.

NOTICE During assembly, the manual platform lowering cable needs to be properly adjusted. Refer to 4-1, *How to Adjust the Manual Platform Lowering Cable*.

- 6 Remove the mounting fasteners from the manual lowering cable mounting bracket. Remove the bracket from the cylinder.
- 7 **Before serial number 23568:** Disconnect and plug the hydraulic hardline from the lift cylinder. Cap the fitting on the cylinder.
After serial number 23567: Disconnect and plug the hydraulic hose from the lift cylinder. Cap the fitting on the cylinder.

▲WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 8 **Before serial number 23568:** Remove the hardline retaining strap from the cylinder.
- 9 Attach a lifting strap from an overhead crane or similar lifting device to the rod end of the lift cylinder for support.

- 10 Remove the external snap ring from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

▲WARNING Crushing hazard. The lift cylinder will fall if not properly supported.

- 11 Lower the cylinder.

CAUTION Component damage hazard. Be careful not to damage the level sensor box, limit switch or level sensor while lowering the cylinder.

- 12 Support and secure the entry ladder to an appropriate lifting device.
- 13 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

▲CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 14 Attach a lifting strap from an overhead crane or similar lifting device to the barrel end of the lift cylinder for support.
- 15 Remove the external snap ring from the lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

▲WARNING Crushing hazard. The lift cylinder will fall if not properly supported.

- 16 Support and secure the lift cylinder to an appropriate lifting device.

▲WARNING Crushing hazard. The lift cylinder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 17 Carefully pull the cylinder out the non-steer end of the machine through the scissor arms.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

SCISSOR COMPONENTS

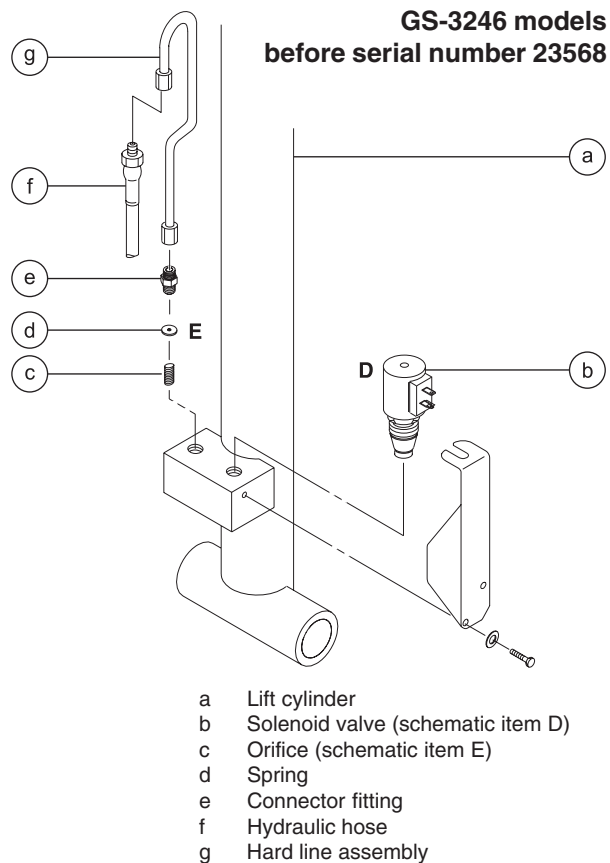
REV A

How to Remove the Lift Cylinder(s), GS-3246

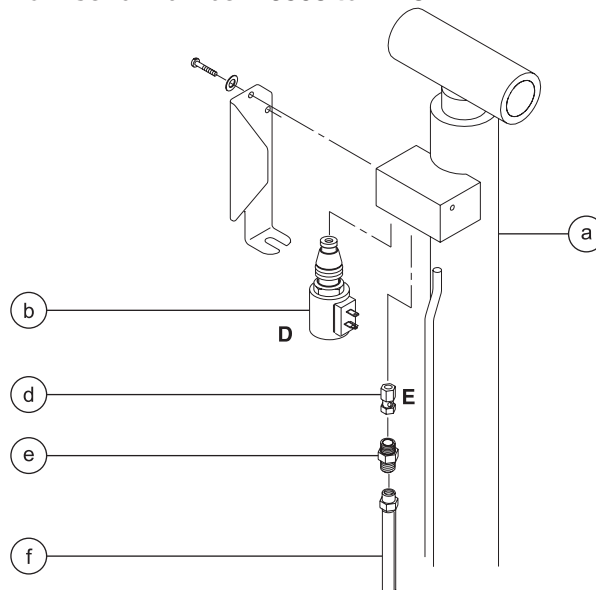
⚠ WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Raise the platform approximately 10 feet / 3 m.
 - 2 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.
 - 3 Lower the scissor arms onto the safety arm.
- ⚠ CAUTION** Bodily injury hazard. Keep hands clear of moving parts when inserting the safety arm.
- 4 Tag and disconnect the wiring from the solenoid valve at the barrel end of the lift cylinder.

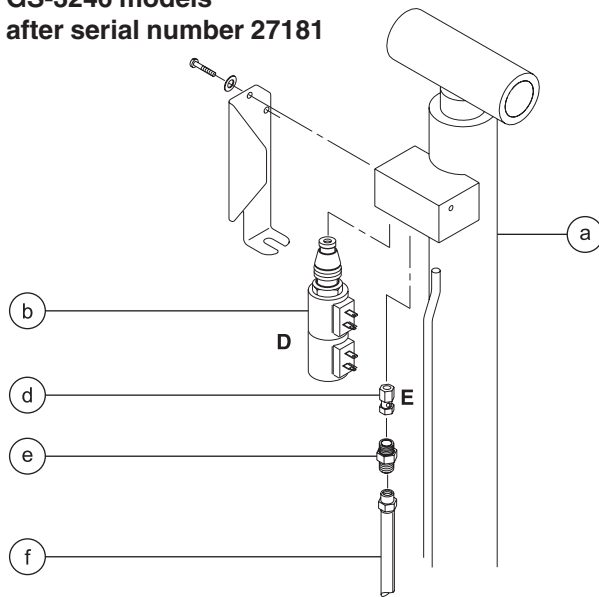


GS-3246 models from serial number 23568 to 27181



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SCISSOR COMPONENTS

**GS-3246 models
after serial number 27181**

- 5 **Before serial number 23568:** Disconnect and plug the hydraulic hardline from the lift cylinder. Cap the fitting on the cylinder.
After serial number 23567: Disconnect and plug the hydraulic hose from the lift cylinder. Cap the fitting on the cylinder.

⚠ WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 6 Attach a lifting strap from an overhead crane or similar lifting device to the rod end of the lift cylinder for support.

- 7 Remove the external snap rings from the lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠ WARNING Crushing hazard. The lift cylinder could become unbalanced and fall if not properly supported.

- 8 Lower the cylinder to a horizontal position.

Skip to step 11 if removing the upper cylinder.

- 9 Support and secure the entry ladder to an appropriate lifting device.
 10 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

⚠ CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if not properly supported and secured to the lifting device.

- 11 Support and secure the lift cylinder to an appropriate lifting device.

- 12 Remove the external snap ring from the lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

⚠ WARNING Crushing hazard. The lift cylinder may become unbalanced and fall if not properly supported.

- 13 Carefully pull the cylinder out the non-steer end of the machine through the scissor arms.

CAUTION Component damage hazard. Be careful not to damage the valve or fittings on the cylinder while removing it from the machine.

Ground Controls

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4-1

Manual Platform Lowering Cable, GS-2046 & GS-2646

The manual platform lowering cable lowers the platform in the event of a main power failure. The manual platform lowering cable is attached to the barrel end of the lift cylinder and is activated next to the ground controls.

How to Adjust the Manual Platform Lowering Cable

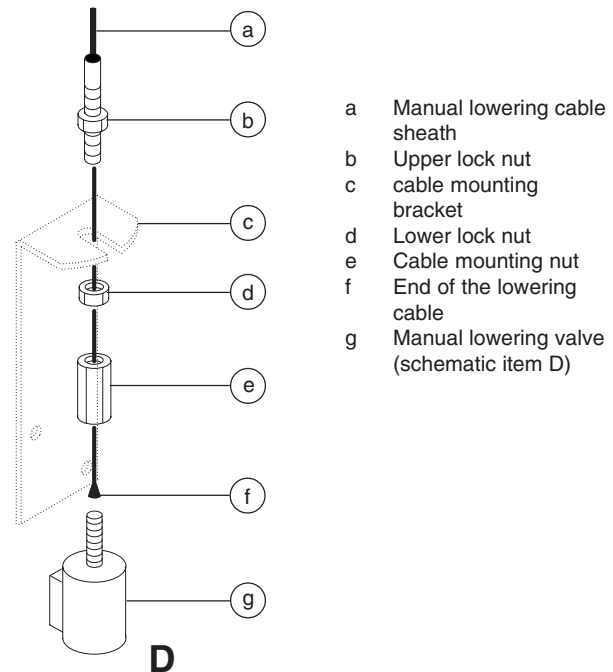
- 1 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.
- 2 Lift the safety arm, move it to the center of the scissor arm and rotate to a vertical position.
- 3 Lower the platform onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 4 Push the handle on the manual platform lowering cable all the way in.
- 5 Disconnect the cable mounting nut from the lowering valve at the barrel end of the lift cylinder.
- 6 Pull the cable tight and measure the distance between the end of the lowering cable and the end of the lowering valve.

- ⊙ Result: The measurement should be $\frac{3}{16}$ to $\frac{1}{4}$ inch / 4.7 to 6.4 mm.

- 7 To adjust, loosen the upper lock nut on the cable mounting bracket. Turn the lower lock nut clockwise to decrease the distance or counterclockwise to increase the distance.



- 8 Tighten the upper lock nut and re-measure the distance between the end of the lowering cable and the end of the lowering valve. Re-adjust if needed.
- 9 Install the cable mounting nut onto the lowering valve.
- 10 Raise the platform and return the safety arm to the stowed position.
- 11 Pull the manual lowering handle at the ground controls 2 to 3 times to ensure it is functioning correctly.

Cable distance	$\frac{3}{16}$ to $\frac{1}{4}$ inch 4.7 to 6.4 mm
-----------------------	---

REV B

GROUND CONTROLS

4-2**Manual Platform Lowering,
GS-3246**

When activated, the manual platform lowering button lowers the platform in the event of a main power failure. The manual platform lowering button is located at the ground control panel. There is no adjustment required.

Before serial number 49200, two 12V batteries are wired in series supplying 24V to the manual platform lowering button. The batteries are located inside the ground control panel.

**How to Replace the Manual
Platform Lowering Batteries
(before serial number 49200)**

- 1 Remove the ground control cover retaining fasteners. Remove the cover.
- 2 Tag and disconnect the wires from the battery to be removed.
- 3 Remove the battery from the machine.
- 4 Install the new battery and connect the wires.
- 5 Install the ground control cover.

GROUND CONTROLS

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4-3 Toggle Switches

Toggle switches used for single function switching are single pole double throw (SPDT) switches.

How to Test a Single Pole Double Throw Toggle Switch

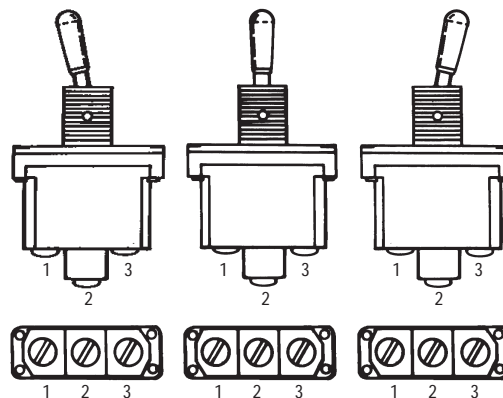
NOTICE Continuity is the equivalent of 0 to 3 ohms. A simple continuity tester may not accurately test the switch.

This procedure covers fundamental switch testing and does not specifically apply to all varieties of toggle switches.

- 1 Turn the key switch to the OFF position. Tag and disconnect all wiring from the toggle switch to be tested.

NOTICE Disconnect the wires from the toggle switch before testing.

- 2 Connect the leads of an ohmmeter to the switch terminals in the combinations listed below to check for continuity.



Test	Desired result
Left position	
terminal 1 to 2, 3	no continuity (infinite Ω)
terminal 2 to 3	continuity (zero Ω)
Center position	
There are no terminal combinations that will produce continuity (infinite Ω)	
Right position	
terminal 1 to 2	continuity (zero Ω)
terminal 1 to 3	no continuity (infinite Ω)
terminal 2 to 3	no continuity (infinite Ω)

REV B

GROUND CONTROLS

4-4 Control Relays

Relays used for single function switching are single pole double throw (SPDT) relays.

How to Test a Single Pole Double Throw Relay

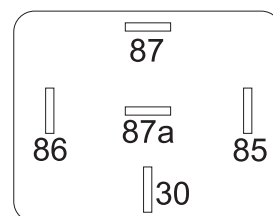
⚠ WARNING Electrocution hazard. Contact with electrically charged circuits could cause death or serious injury. Remove all rings, watches and other jewelry.

- 1 Label and then disconnect all the wiring from the relay to be tested.
- 2 Connect the leads from an ohmmeter or continuity tester to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

Test	Desired result
terminal 85 to 86 with resistor	310 to 330 Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

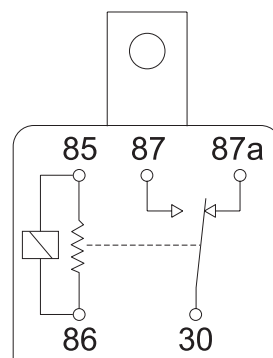
- 3 Connect 24V DC and a ground wire to terminals 85 and 86, then test the following terminal combinations.

Test	Desired result
terminal 87a to 87 & 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



terminal no. 87a - normally closed
terminal no. 85 - ground
terminal no. 30 - common
terminal no. 86 - coil
terminal no. 87 - normally open

Control Relay Schematic - with resistor



GROUND CONTROLS

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4-5 Tilt Level Sensor (before serial number 50444)

How to Install and Calibrate the 2° Level Sensor

This procedure is for models equipped with a 2° side / 3° front / 5° rear level sensor.

⚠ DANGER Tip-over hazard. Failure to install or calibrate the tilt level sensor as instructed will compromise machine stability and cause the machine to tip over, resulting in death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

NOTICE Perform this procedure with the machine on a firm, level surface that is free of obstructions.

- 1 Remove the platform controls from the platform.
- 2 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.
- 3 Block the wheels at the non-steer end of the machine.
- 4 Center a lifting jack under the drive chassis at the steer end of the machine.
- 5 Raise the machine approximately 2 inches / 5 cm.

- 6 Place a 1.27 x 6 x 6 inch / 23.1 mm x 15 cm x 15 cm thick steel block under both wheels at the steer end of the machine.
- 7 Lower the machine onto the blocks.
- 8 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.
- 9 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.
- 10 Lower the scissor arms onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 11 Remove the tilt level sensor box cover retaining fasteners. Remove the cover.

NOTICE The tilt level sensor box is located on top of the chassis at the steer end of the machine.

If you are not installing a new level sensor, proceed to step 20.

- 12 Turn the key switch to the OFF position and push in the red Emergency Stop button to the OFF position at the ground controls.
- 13 Tag and disconnect the wiring harness from the level sensor, limit switch and alarm.
- 14 Remove the tilt level sensor box retaining fasteners. Remove the tilt level sensor box from the machine.
- 15 Remove the tilt level sensor retaining fasteners. Remove the tilt level sensor from the level sensor box.

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GROUND CONTROLS

- 16 Place the new tilt level sensor in the tilt level sensor box with the "X" on the level sensor base closest to the long side of the tilt level sensor box and the "Y" on the level sensor base closest to the short side of the tilt level sensor box.

⚠ DANGER

Tip-over hazard. The tilt level sensor must be installed with the "X" on the level sensor base closest to the long side of the tilt level sensor box and the "Y" on the level sensor base closest to the short side of the tilt level sensor box. Failure to install the tilt level sensor as instructed could cause the machine to tip over resulting in death or serious injury.

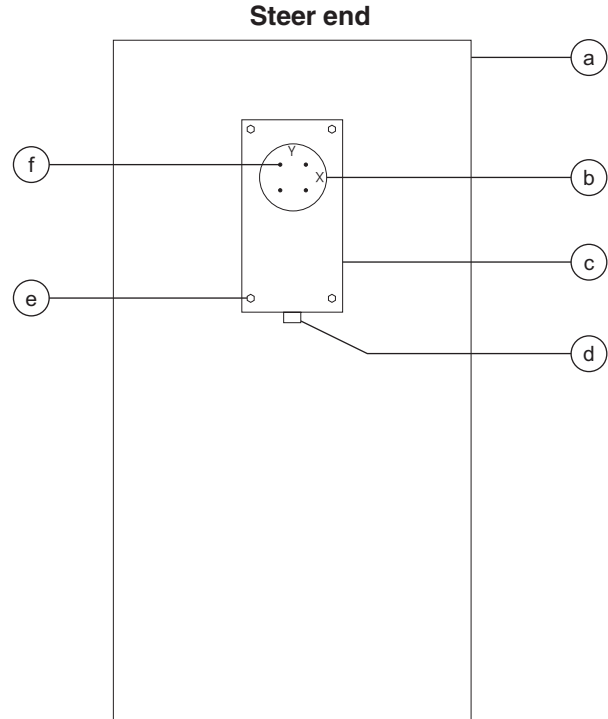
- 17 Install the level sensor box onto the machine.
Install the level sensor box retaining fasteners.
- 18 Connect the wiring harness to the level sensor, limit switch and alarm.
- 19 Turn the key switch to the ground control and pull out the red Emergency Stop button to the ON position at the ground controls.
- 20 Tighten the level sensor adjusting fasteners until the bubble in the top of the level sensor is centered in the circles.

NOTICE

Be sure there are threads showing through the top of the adjusting fasteners.

- ☉ Result: The tilt sensor alarm should not sound.

- 21 Raise the platform slightly.
- 22 Return the safety arm to the stowed position.
- 23 Lower the platform to the stowed position.

**Non-steer end**

- a scissor chassis
- b tilt level sensor
- c level sensor box
- d alarm
- e box retaining fastener
- f level sensor retaining fastener

- 24 Raise the machine approximately 2 inches / 5 cm.
- 25 Remove the blocks from under both wheels.
- 26 Lower the machine and remove the jack.
- 27 Remove the blocks from the wheels at the non-steer end of the machine.
- 28 Block the wheels at the steer end of the machine.

GROUND CONTROLS

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29 Center a lifting jack under the drive chassis at the non-steer end of the machine.

30 Raise the machine approximately 5 inches / 13 cm.

31 Place a 6.63 x 6 x 6 inch / 12.1 x 15 x 15 cm thick steel block under both wheels at the non-steer end of the machine.

32 Lower the machine onto the blocks.

33 **Models before serial number 48817:** Raise the platform 7 to 8 feet / 2.1 to 2.1 m.

- ⦿ Result: The tilt sensor alarm should sound.
- ⦿ Result: If the tilt sensor alarm does not sound, adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

NOTICE

CE models: When the platform is raised 7 to 8 feet / 2.1 to 2.4 m from the ground, an alarm should sound and the lift and drive functions should not operate.

Models after serial number 48816: Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

- ⦿ Result: The platform should stop and an alarm should sound.
 - ⦿ Result: If the platform does not stop or the tilt sensor alarm does not sound, adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.
- 34 Lower the platform to the stowed position.

35 Raise the machine approximately 5 inches / 13 cm.

36 Remove the blocks from under both wheels.

37 Lower the machine and remove the jack.

38 Remove the blocks from the wheels at the steer end of the machine.

39 Center a lifting jack under the drive chassis at the ground controls side of the machine.

40 Raise the machine approximately 2 inches / 5 cm.

41 Place a 1.36 x 6 x 6 inch / 21.5 mm x 15 cm x 15 cm thick steel block under both wheels at the ground controls side of the machine.

42 Lower the machine onto the blocks.

43 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

- ⦿ Result: The tilt sensor alarm should sound.
- 44 Adjust the tilt level sensor retaining fasteners just until the tilt sensor alarm does not sound.

45 Lower the platform to the stowed position.

46 Raise the machine approximately 2 inches / 5 cm.

47 Remove the blocks from under both wheels.

48 Lower the machine and remove the jack.

49 Center a lifting jack under the drive chassis at the battery pack side of the machine.

50 Raise the machine approximately 2 inches / 5 cm.

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GROUND CONTROLS

51 Place a 1.57 x 6 x 6 inch / 25 mm x 15 cm x 15 cm thick steel block under both wheels at the battery pack side of the machine.

52 Lower the machine onto the blocks.

53 **Models before serial number 48817:** Raise the platform 7 to 8 feet / 2.1 to 2.1 m.

⦿ Result: The tilt sensor alarm should sound.

⦿ Result: If the tilt sensor alarm does not sound, adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

NOTICE

CE models: When the platform is raised 7 to 8 feet / 2.1 to 2.4 m from the ground, an alarm should sound and the lift and drive functions should not operate.

Models after serial number 48816: Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

⦿ Result: The platform should stop and an alarm should sound.

⦿ Result: If the platform does not stop or the tilt sensor alarm does not sound, adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

54 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

55 Lower the scissor arms onto the safety arm.

WARNING

Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

56 Install the tilt level sensor box cover.

57 Raise the platform slightly.

58 Return the safety arm to the stowed position.

59 Lower the platform to the stowed position.

60 Raise the machine approximately 2 inches / 5 cm.

61 Remove the blocks from under both wheels.

62 Lower the machine and remove the jack.

GROUND CONTROLS

REV B

4-6**Tilt Level Sensor
(after serial number 50443)****How to Install and Calibrate the
2° Level Sensor**

This procedure is for models equipped with a 2° side / 3° front / 3° rear level sensor.

⚠ DANGER Tip-over hazard. Failure to install or calibrate the tilt level sensor as instructed will compromise machine stability and cause the machine to tip over, resulting in death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

NOTICE Perform this procedure with the machine on a firm, level surface that is free of obstructions.

- 1 Remove the platform controls from the platform.
- 2 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.
- 3 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.
- 4 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

- 5 Lower the platform onto the safety arm.

⚠ WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

- 6 Remove the tilt level sensor box cover retaining fasteners. Remove the cover.

NOTICE The tilt level sensor box is located on top of the chassis at the steer end of the machine.

If you are not installing a new level sensor, proceed to step 15.

- 7 Turn the key switch to the OFF position and push in the red Emergency Stop button to the OFF position at the ground controls.
- 8 Tag and disconnect the wiring harness from the level sensor, limit switch and alarm.
- 9 Remove the tilt level sensor box retaining fasteners. Remove the tilt level sensor box from the machine.
- 10 Remove the tilt level sensor retaining fasteners. Remove the tilt level sensor from the level sensor box.

REV B

GROUND CONTROLS

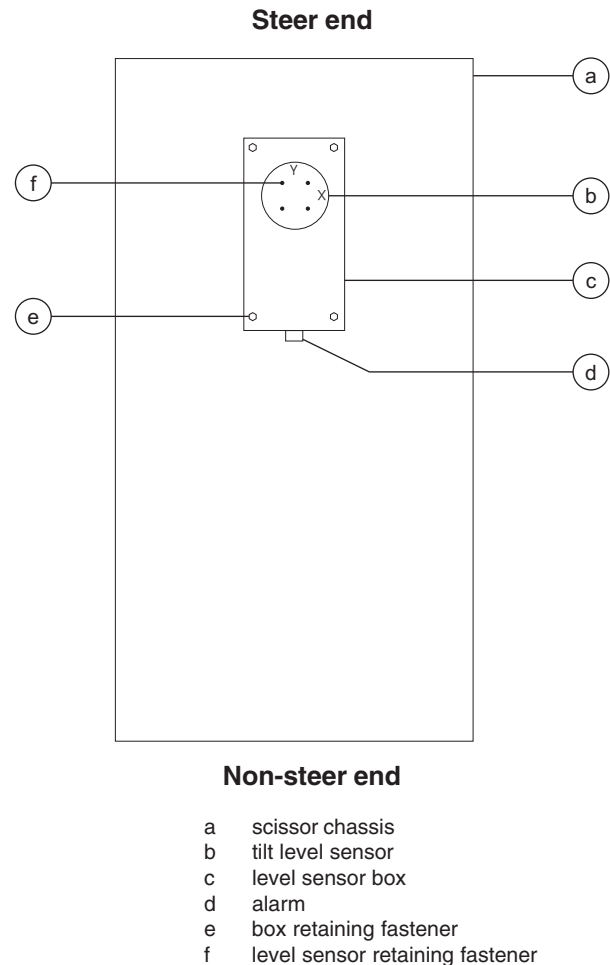
- 11 Place the new tilt level sensor in the tilt level sensor box with the "X" on the level sensor base closest to the long side of the tilt level sensor box and the "Y" on the level sensor base closest to the short side of the tilt level sensor box. Install the level sensor retaining fasteners.

⚠ DANGER Tip-over hazard. The tilt level sensor must be installed with the "X" on the level sensor base closest to the long side of the tilt level sensor box and the "Y" on the level sensor base closest to the short side of the tilt level sensor box. Failure to install the tilt level sensor as instructed could cause the machine to tip over resulting in death or serious injury.

- 12 Install the level sensor box onto the machine.
Install the level sensor box retaining fasteners.
- 13 Connect the wiring harness to the level sensor, limit switch and alarm.
- 14 Turn the key switch to the ground control and pull out the red Emergency Stop button to the ON position at the ground controls.
- 15 Tighten the level sensor adjusting fasteners until the bubble in the top of the level sensor is centered in the circles.
- ⓘ Result: The tilt sensor alarm should not sound.

NOTICE Be sure there are threads showing through the top of the adjusting fasteners.

- 16 Raise the platform slightly.



GROUND CONTROLS

REV B

17 Return the safety arm to the stowed position.

18 Lower the platform to the stowed position.

19 Center a lifting jack under the drive chassis at the ground controls side of the machine.

20 Raise the machine approximately 2 inches / 5 cm.

21 Place a 1.36 x 6 x 6 inch / 21.6 mm x 15 cm x 15 cm thick steel block under both wheels at the ground controls side of the machine.

22 Lower the machine onto the blocks.

23 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

⦿ Result: The tilt sensor alarm should not sound.

⦿ Result: The tilt sensor alarm does sound. Adjust the tilt level sensor retaining fasteners just until the tilt sensor alarm does not sound.

24 Lower the platform to the stowed position.

25 Raise the machine approximately 2 inches / 5 cm.

26 Remove the blocks from under both wheels.

27 Lower the machine and remove the jack.

28 Center a lifting jack under the drive chassis at the battery pack side of the machine.

29 Raise the machine approximately 2 inches / 5 cm.

30 Place a 1.57 x 6 x 6 inch / 24.9 mm x 15 cm x 15 cm thick steel block under both wheels at the ground controls side of the machine.

31 Lower the machine onto the blocks.

32 **Models before serial number 48817:** Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

⦿ Result: The tilt sensor alarm should sound.

⦿ Result: The tilt sensor alarm does not sound. Adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

NOTICE

CE models: When the platform is raised 7 to 8 feet / 2.1 to 2.4 m from the ground, an alarm should sound and the lift and drive functions should not operate.

Models after serial number 48816: Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

⦿ Result: The platform should stop and an alarm should sound.

⦿ Result: The platform does not stop or the tilt sensor alarm does not sound. Adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

33 Lift the safety arm, move it to the center of the scissor arm and rotate down to a vertical position.

34 Lower the scissor arms onto the safety arm.

⚠ WARNING

Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

35 Install the tilt level sensor box cover.

36 Raise the platform 7 to 8 feet / 2.1 to 2.4 m.

REV B

GROUND CONTROLS

- 37 Return the safety arm to the stowed position.
- 38 Lower the platform to the stowed position.
- 39 Raise the machine approximately
2 inches / 5 cm.
- 40 Remove the blocks from under both wheels.
- 41 Lower the machine and remove the jack.

Hydraulic Pump

REV A

5-1 Function Pump

The hydraulic pump is attached to an electric motor which makes up the Hydraulic Power Unit.

How to Test the Hydraulic Pump

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Disconnect and plug the high pressure hydraulic hose from the hydraulic pump.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure port on the pump.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.

- 4 Activate the platform up function from the ground controls.
- ⦿ Result: If the pressure gauge reads 3200 psi / 221 bar, immediately stop. The pump is good.
- ⦿ Result: If pressure fails to reach 3200 psi / 221 bar, the pump is bad and will need to be serviced or replaced.

CAUTION Component damage hazard. There is no relief valve in the hydraulic pump and the pump can be damaged if the pressure is allowed to exceed 3200 psi / 221 bar. When testing the pump, activate the pump in one second intervals until 3200 psi / 221 bar is confirmed. Do not over-pressurize the pump.

- 5 Remove the pressure gauge and reconnect the hydraulic hose.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

REV A

HYDRAULIC PUMP

How to Remove the Hydraulic Pump

NOTICE

When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Remove the mounting fasteners from the hydraulic filter bracket at the function manifold. Move the filter off to the side.
- 2 Tag, disconnect and plug the hydraulic hoses on the pump. Cap the fittings on the pump.

⚠WARNING

Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 3 Remove the pump mounting bolts. Carefully remove the pump.

Manifolds

REV B

6-1

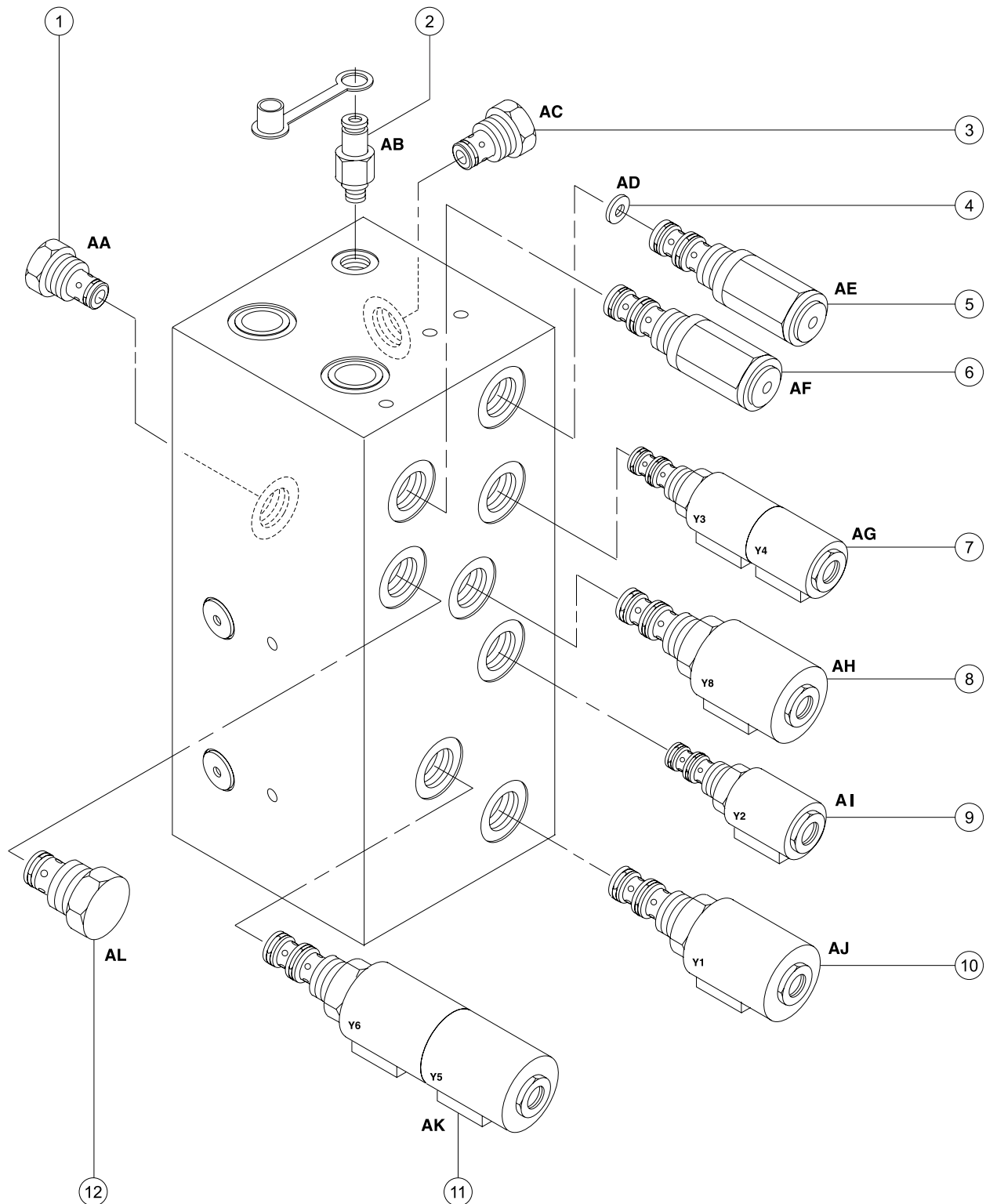
Function Manifold Components (from serial number 17408 to 17481)

The function manifold is mounted inside the hydraulic power unit module tray.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, 30 psi / 2 bar	AA	Steer circuit	20 ft-lbs / 27 Nm
2	Diagnostic nipple	AB	Testing	10 ft-lbs / 14 Nm
3	Flow regulator, 0.75 gpm / 2.8 L/min	AC	Steer circuit	35 ft-lbs / 47 Nm
4	Orifice - washer, 0.040 in / 1 mm	AD	Steer circuit	
5	Relief valve, 1500 psi / 103.4 bar	AE	Steering relief	20 ft-lbs / 27 Nm
6	Relief valve, 3500 psi / 241.3 bar	AF	System relief	20 ft-lbs / 27 Nm
7	Solenoid valve, 3 position 4 way	AG	Steer left/right	20 ft-lbs / 27 Nm
8	Solenoid valve, 2 position 4 way	AH	Platform up	25 ft-lbs / 34 Nm
9	Solenoid valve, 2 position 2 way, N.O.	AI	Brake circuit	20 ft-lbs / 27 Nm
10	Solenoid valve, 2 position 4 way	AJ	Drive speed select circuit	25 ft-lbs / 34 Nm
11	Solenoid valve, 3 position 4 way	AK	Drive forward/reverse	25 ft-lbs / 27 Nm
12	Check valve, 200 psi / 13.8 bar	AL	Brake circuit	25 ft-lbs / 34 Nm

REV B

MANIFOLDS



MANIFOLDS

REV B

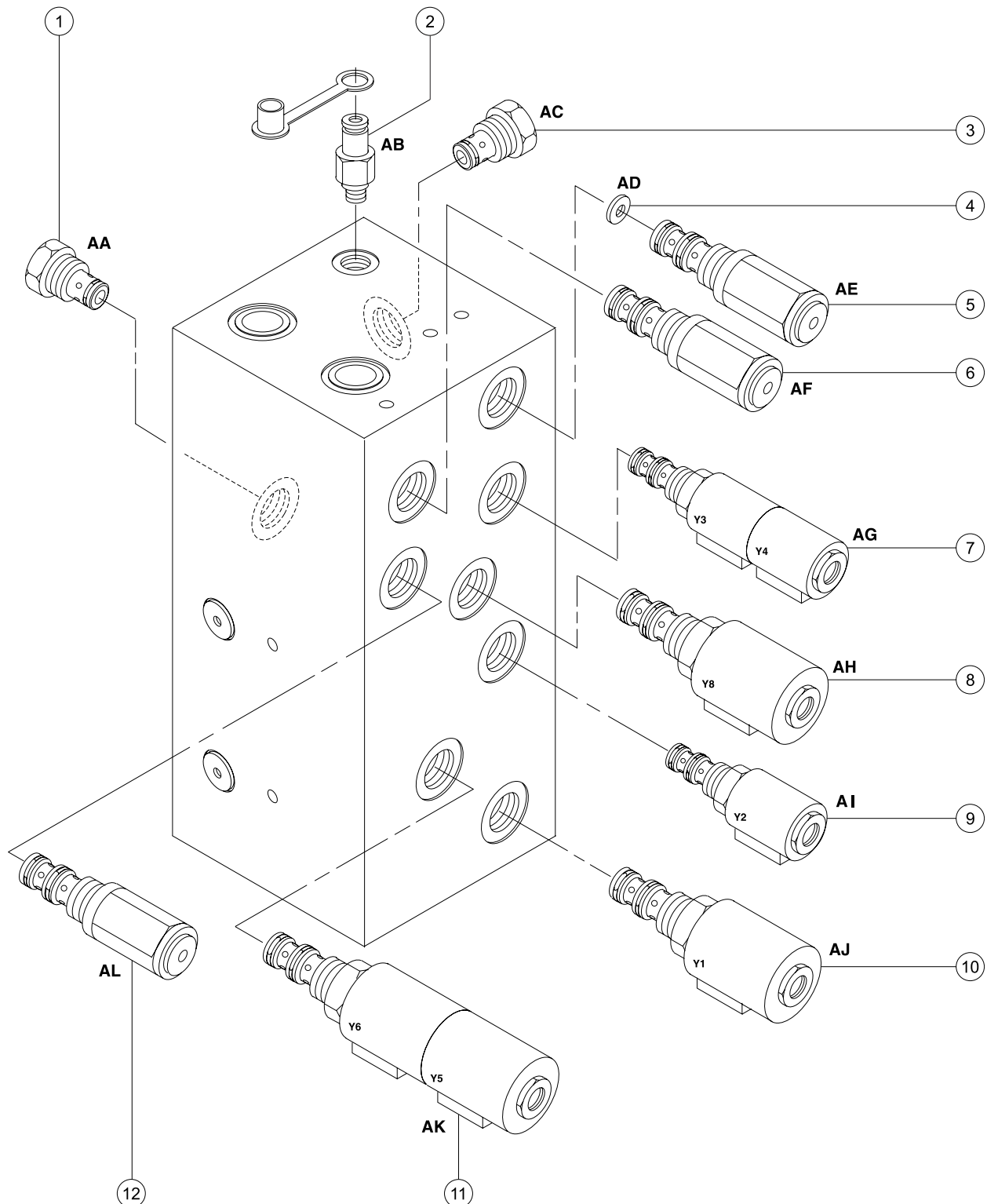
6-2**Function Manifold Components (from serial number 17482 to 36044)**

The function manifold is mounted inside the hydraulic power unit module tray.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, 30 psi / 2 bar	AA	Steer circuit	20 ft-lbs / 27 Nm
2	Diagnostic nipple	AB	Testing	10 ft-lbs / 14 Nm
3	Flow regulator, 0.75 gpm / 2.8 L/min	AC	Steer circuit	35 ft-lbs / 47 Nm
4	Orifice - washer, 0.040 in / 1 mm	AD	Steer circuit	
5	Relief valve, 1500 psi / 103.4 bar	AE	Steering relief	20 ft-lbs / 27 Nm
6	Relief valve, 3500 psi / 241.3 bar	AF	System relief	20 ft-lbs / 27 Nm
7	Solenoid valve, 3 position 4 way	AG	Steer left/right	20 ft-lbs / 27 Nm
8	Solenoid valve, 2 position 4 way	AH	Platform up	25 ft-lbs / 34 Nm
9	Solenoid valve, 2 position 2 way, N.O.	AI	Brake circuit	20 ft-lbs / 27 Nm
10	Solenoid valve, 2 position 4 way	AJ	Drive speed select circuit	25 ft-lbs / 34 Nm
11	Solenoid valve, 3 position 4 way	AK	Drive forward/reverse	25 ft-lbs / 34 Nm
12	Relief valve, 130 psi / 9 bar	AL	Brake circuit	20 ft-lbs / 27 Nm

REV B

MANIFOLDS



MANIFOLDS

REV B

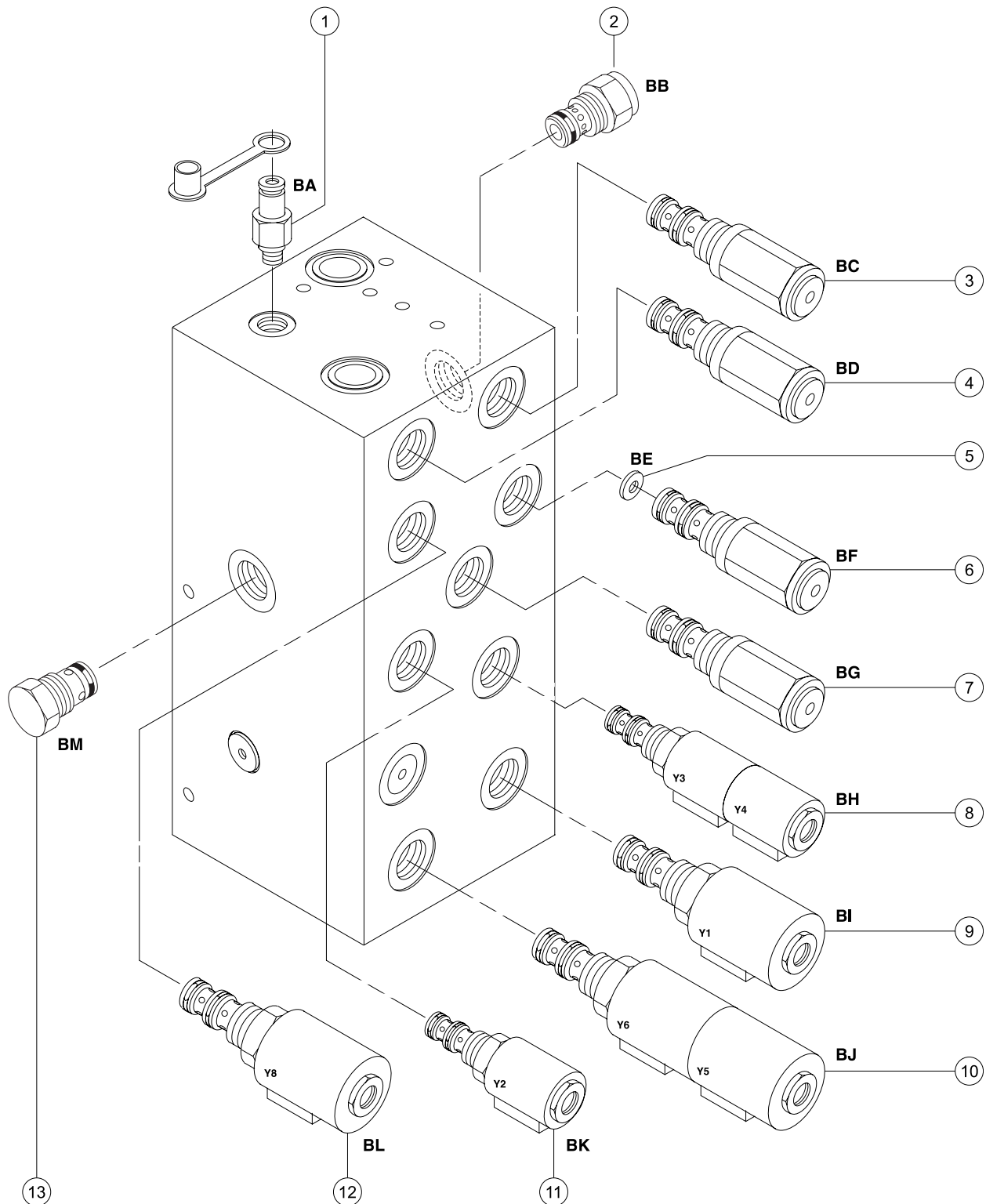
6-3**Function Manifold Components (after serial number 36044)**

The function manifold is mounted inside the hydraulic power unit module tray.

Index No.	Description	Schematic Item	Function	Torque
1	Diagnostic nipple	BA	Testing	10 ft-lbs / 14 Nm
2	Flow regulator valve, 0.75 gpm / 2.8 L/min	BB	Steer circuit	35 ft-lbs / 47 Nm
3	Relief valve, 3000 to 3200 psi / 207 to 221 bar	BC	Platform up	20 ft-lbs / 27 Nm
4	Relief valve, 3500 psi / 241.3 bar	BD	System relief	20 ft-lbs / 27 Nm
5	Orifice - washer, 0.040 in / 1 mm	BE	Steer circuit	
6	Relief valve, 1500 psi / 103.4 bar	BF	Steering relief	20 ft-lbs / 27 Nm
7	Relief valve, 130 psi / 9 bar	BG	Brake relief	20 ft-lbs / 27 Nm
8	Solenoid valve, 3 position 4 way	BH	Steer left/right	20 ft-lbs / 27 Nm
9	Solenoid valve, 2 position 4 way	BI	Drive speed select circuit	25 ft-lbs / 34 Nm
10	Solenoid valve, 3 position 4 way	BJ	Drive forward/reverse	25 ft-lbs / 34 Nm
11	Solenoid valve, 2 position 2 way, N.O.	BK	Brake circuit	20 ft-lbs / 27 Nm
12	Solenoid valve, 2 position 4 way	BL	Platform up	25 ft-lbs / 34 Nm
13	Check valve, 5 psi / 0.3 bar	BM	Steer circuit	20 ft-lbs / 27 Nm

REV B

MANIFOLDS



MANIFOLDS

REV B

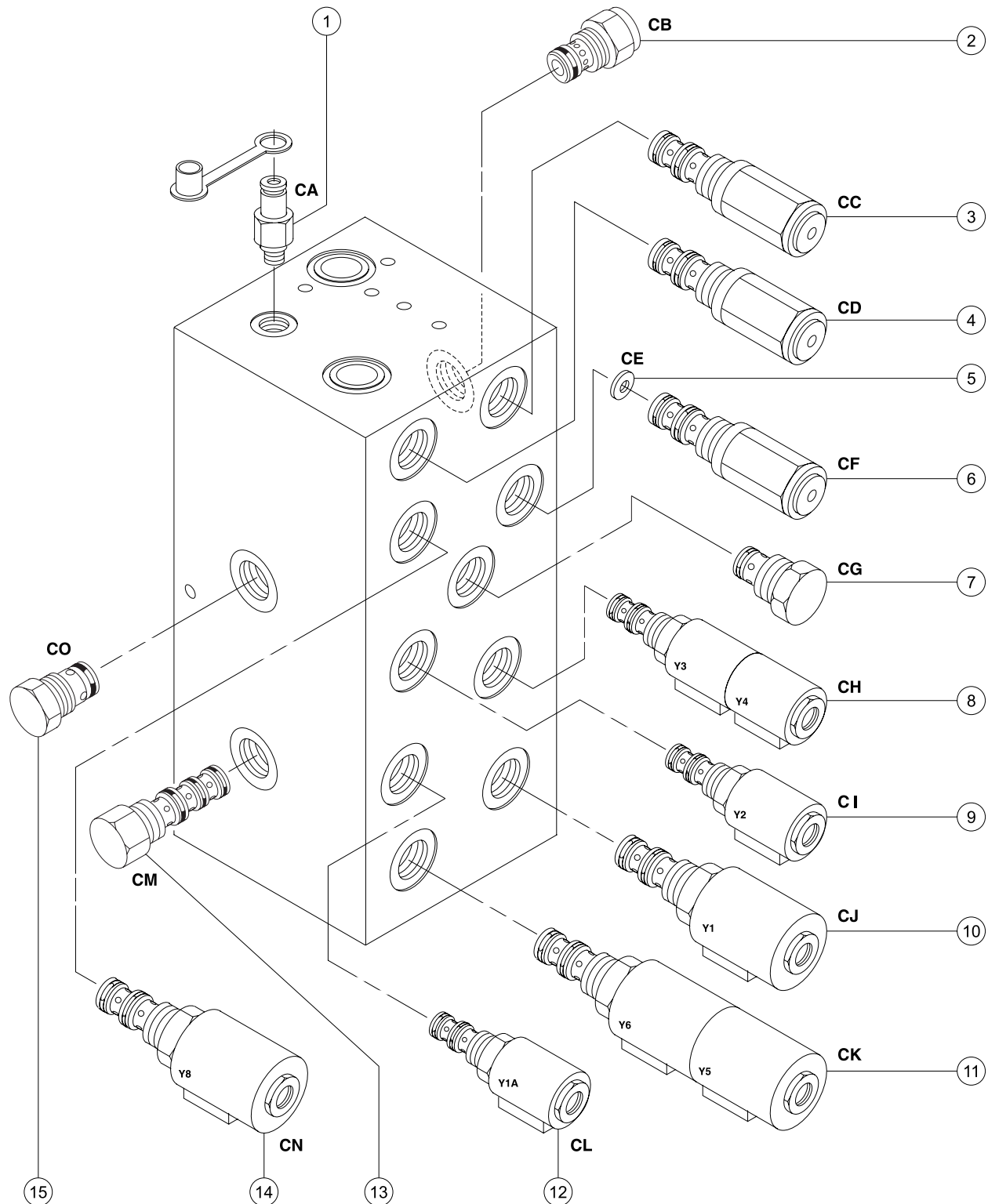
6-4**Function Manifold Components - Models with Traction Control**

The function manifold is mounted inside the hydraulic power unit module tray.

Index No.	Description	Schematic Item	Function	Torque
1	Diagnostic nipple	CA	Testing	10 ft-lbs / 14 Nm
2	Flow regulator valve, 0.75 gpm / 2.8 L/min	CB	Steer circuit	35 ft-lbs / 47 Nm
3	Relief valve, 3000 to 3200 psi / 207 to 221 bar	CC	Platform up	20 ft-lbs / 27 Nm
4	Relief valve, 3500 psi / 241.3 bar	CD	System relief	20 ft-lbs / 27 Nm
5	Orifice - washer, 0.040 in / 1 mm	CE	Steer circuit	
6	Relief valve, 1500 psi / 103.4 bar	CF	Steering relief	20 ft-lbs / 27 Nm
7	Check valve, 30 psi / 2 bar	CG	Brake circuit	20 ft-lbs / 27 Nm
8	Solenoid valve, 3 position 4 way	CH	Steer left/right	20 ft-lbs / 27 Nm
9	Solenoid valve, 2 position 2 way, N.O.	CI	Brake circuit	20 ft-lbs / 27 Nm
10	Solenoid valve, 2 position 4 way	CJ	Drive speed select circuit	25 ft-lbs / 34 Nm
11	Solenoid valve, 3 position 4 way	CK	Drive forward/reverse	25 ft-lbs / 34 Nm
12	Solenoid valve, 2 position 2 way	CL	High speed bypass	20 ft-lbs / 27 Nm
13	Flow divider/combiner valve	CM	Drive slip limit	25 ft-lbs / 34 Nm
14	Solenoid valve, 2 position 4 way	CN	Platform up	25 ft-lbs / 34 Nm
15	Check valve, 10 psi / 0.7 bar	CO	Steer circuit	20 ft-lbs / 27 Nm

REV B

MANIFOLDS



MANIFOLDS

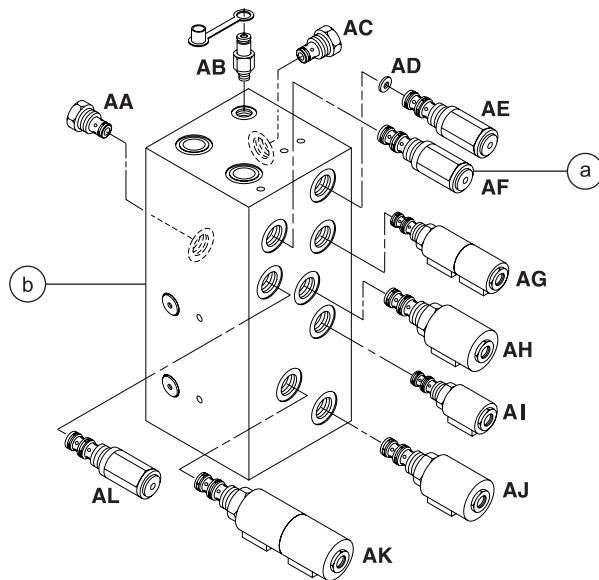
REV B

6-5 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve (before serial number 36045)

NOTICE Be sure that the hydraulic oil level is between the **FULL** and **ADD** marks on the oil level indicator decal.

- 1 Open the hydraulic power unit module tray and locate the system relief valve on the function manifold (item AF).
- 2 Place maximum rated load into the platform. Secure the load to the platform. Refer to Section 2, *Specifications*.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 4 Hold the system relief valve with a wrench and remove the cap (item AF).



a system relief valve
b function manifold

- 5 While activating the platform up function, adjust the internal hex socket clockwise to increase lift capacity or counterclockwise to decrease lift capacity. Adjust the relief valve until the platform just begins to raise.
 - 6 Fully lower the platform.
 - 7 Add an additional 100 pounds / 45.4 kg to the platform. Secure the additional weight.
 - 8 Activate the platform up function.
- ⊗ Result: The power unit should not be able to lift the platform.
- ⊗ Result: If the power unit lifts the platform, adjust the internal hex socket counterclockwise until the platform will not raise.

⚠ DANGER Tip-over hazard. Do not adjust the relief valve to allow the power unit to lift more than maximum rated load.

- 9 Install the relief valve cap.
 - 10 Remove the weight from the platform.
 - 11 Bleed the hydraulic system. Raise the platform to full height, and then lower it to the stowed position through two complete cycles.
- ⊗ Result: If the pump cavitates or platform fails to reach full height, add hydraulic oil until the pump is functioning correctly. Do not overfill the hydraulic reservoir.

CAUTION Component damage hazard. Do not continue to operate the machine if the hydraulic pump is cavitating. If the pump is still cavitating, see 5-1, *How to Test the Hydraulic Pump*.

- 12 Re-test the system by performing steps 8 through 11.

REV B

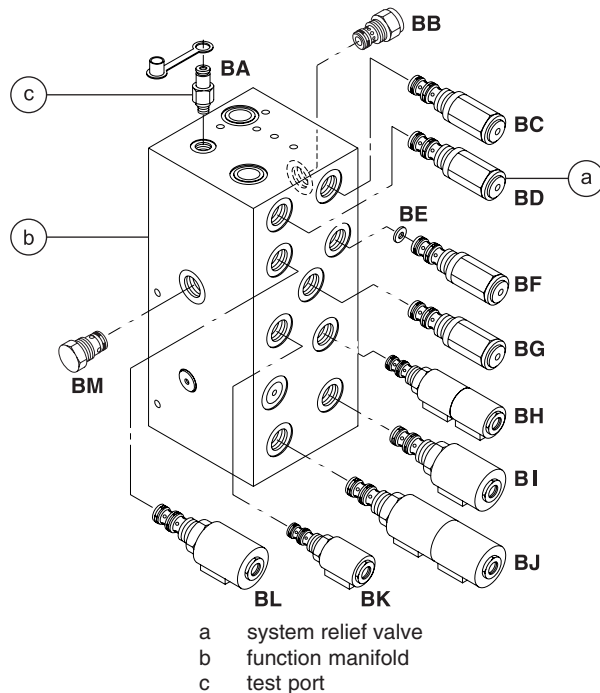
MANIFOLDS

How to Adjust the System Relief Valve (after serial number 36044)

NOTICE Be sure that the hydraulic oil level is between the **FULL** and **ADD** marks on the oil level indicator decal.

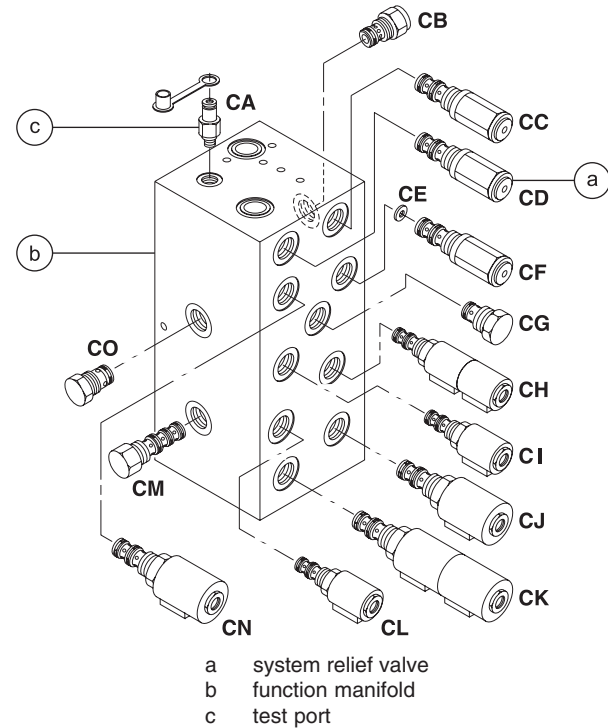
- 1 Open the hydraulic power unit module tray and locate the system relief valve on the function manifold (item BD or CD).

Models without traction control



- 2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold (item BA or CA).

Models with traction control



- 3 Chock both sides of the wheels at the steer end of the machine.
- 4 Remove the platform controls from the platform.

NOTICE Perform this test from the ground with the platform controls. Do not stand in the platform.

MANIFOLDS

REV B

- 5 Turn the key switch to platform control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 6 Press and hold the function enable switch.
- 7 Move and hold the joystick controller fully in either direction while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.
- 8 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (item BD or CD).
- 9 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

▲ DANGER

Tip-over hazard. Failure to adjust the relief valves to specification could cause the machine to tip over resulting in death or serious injury. Do not adjust the relief valve pressures higher than specifications.

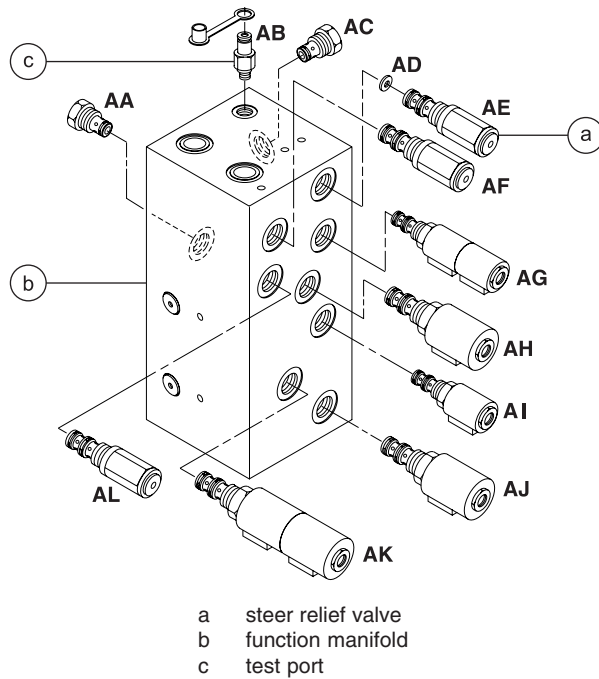
- 10 Install the relief valve cap.
- 11 Repeat steps 5 through 7 to confirm the relief valve pressure.

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MANIFOLDS

How to Adjust the Steering Relief Valve (before serial number 36045)

- 1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item AB) on the function manifold.



- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.

- 3 Press and hold the steer thumb rocker switch to the right. Allow the wheels to completely turn to the right, then continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure.
- 4 Press and hold the steer thumb rocker switch to the left. Allow the wheels to completely turn to the left, then continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.
- 5 Turn the machine off. Hold the steering relief valve with a wrench and remove the cap (item AE).
- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

⚠ DANGER Tip-over hazard. Failure to adjust the relief valves to specification could cause the machine to tip over resulting in death or serious injury. Do not adjust the relief valve pressures higher than specifications.

- 7 Repeat steps 3 and 4 to confirm the relief valve pressure.

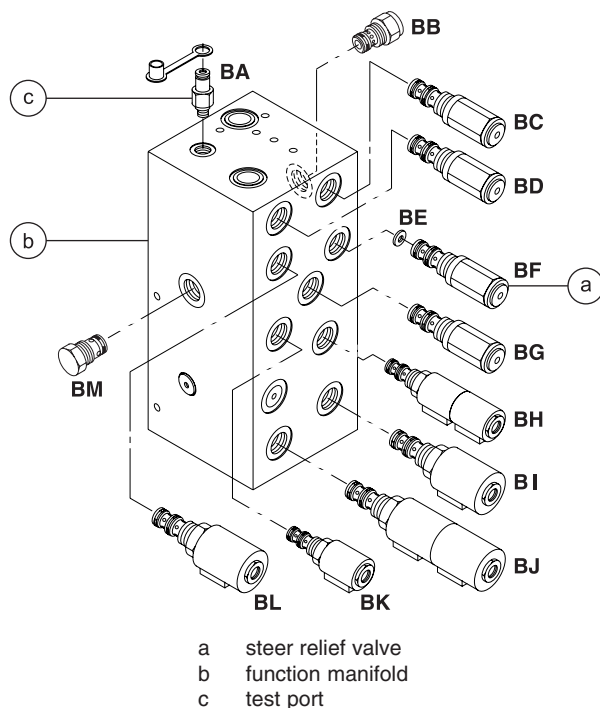
MANIFOLDS

REV B

How to Adjust the Steering Relief Valve (after serial number 36044)

- 1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item BA or CA) on the function manifold.

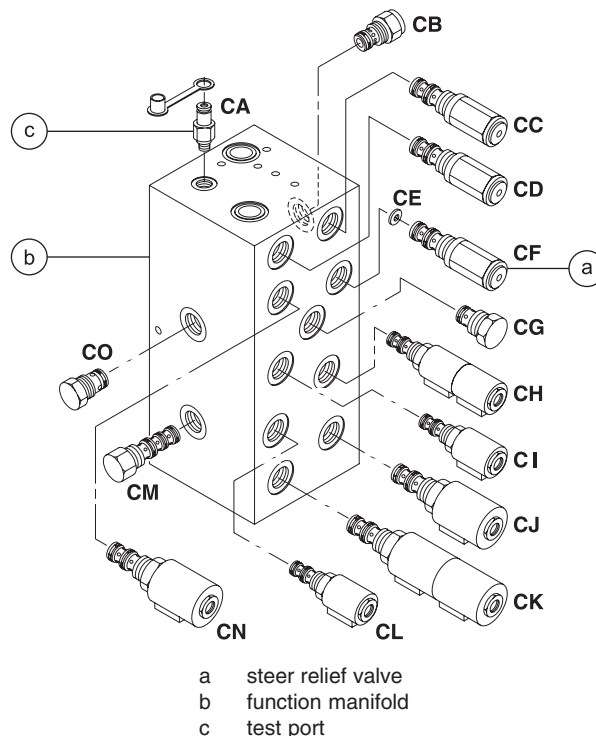
Models without traction control



- 2 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 3 Press and hold the steer thumb rocker switch to the right. Allow the wheels to completely turn to the right, then continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure.
- 4 Press and hold the steer thumb rocker switch to the left. Allow the wheels to completely turn to the left, then continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.

- 5 Turn the machine off. Hold the steering relief valve with a wrench and remove the cap (item BF or CF).

Models with traction control



- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

⚠ DANGER

Tip-over hazard. Failure to adjust the relief valves to specification could cause the machine to tip over resulting in death or serious injury. Do not adjust the relief valve pressures higher than specifications.

- 7 Repeat steps 3 and 4 to confirm the relief valve pressure.

REV B

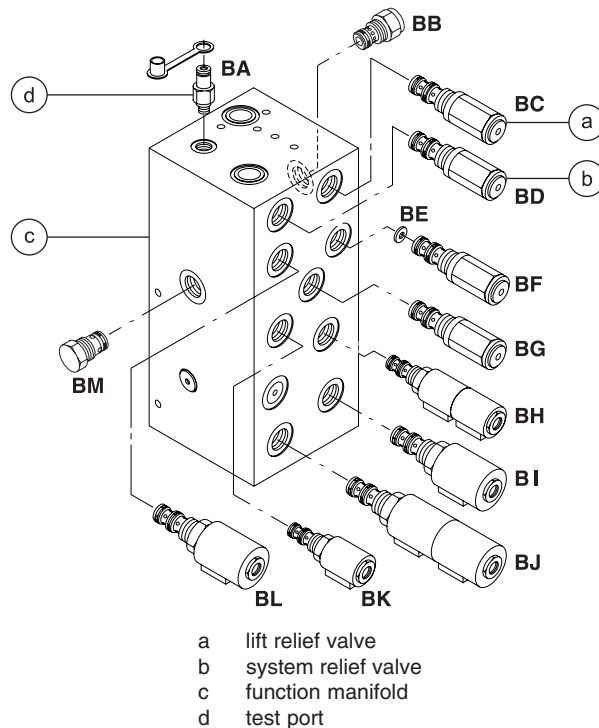
MANIFOLDS

How to Adjust the Platform Lift Relief Valve (after serial number 36044)

NOTICE Be sure that the hydraulic oil level is between the **FULL** and **ADD** marks on the oil level indicator decal.

- 1 Open the hydraulic power unit module tray and locate the system relief valve on the function manifold (item BD or CD).

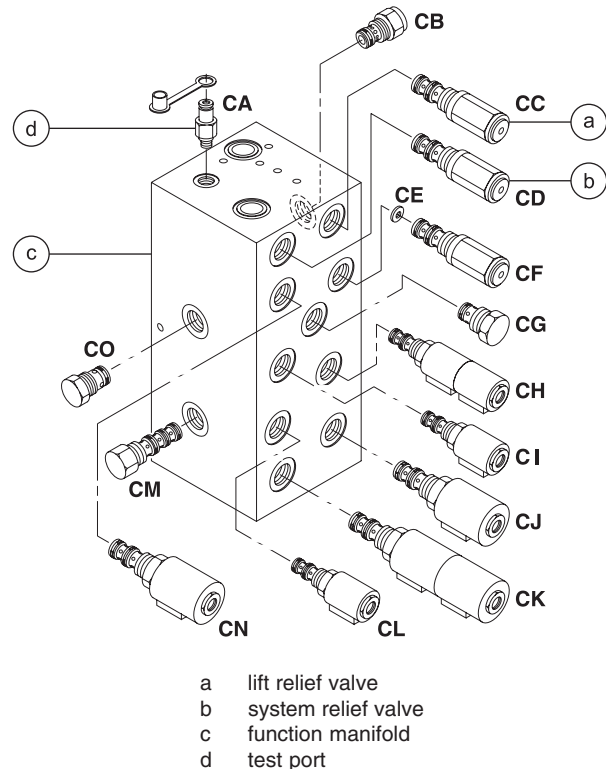
Models without traction control



- 2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port on the function manifold (item BA or CA).
- 3 Chock both sides of the wheels at the steer end of the machine.
- 4 Remove the platform controls from the platform.

NOTICE Perform this test from the ground with the platform controls. Do not stand in the platform.

Models with traction control



Confirm the System Relief Valve Pressure:

- 5 Turn the key switch to platform control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 6 Press and hold the function enable switch.
- 7 Move and hold the joystick controller fully in either direction while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.
- 8 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (item BD or CD).

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- 9 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.

⚠ DANGER Tip-over hazard. Failure to adjust the relief valves to specification could cause the machine to tip over resulting in death or serious injury. Do not adjust the relief valve pressures higher than specifications.

- 10 Install the relief valve cap.
11 Repeat steps 5 through 7 to confirm the relief valve pressure.

Confirm the Lift Relief Valve Pressure:

- 12 Place the maximum rated load in the platform. Secure the load to the platform. Refer to Section 2, *Specifications*.
13 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
14 Hold the lift relief valve with a wrench and remove the cap (item BC or CC).
15 While activating the platform up function, adjust the internal hex socket clockwise, just until the platform begins to raise.
16 Fully lower the platform.
17 Add an additional 100 pounds / 45.4 kg to the platform. Secure the additional weight.

- 18 Raise the platform slightly.

- ⦿ Result: The power unit should not be able to lift the platform.
- ⦿ Result: If the power unit lifts the platform, adjust the internal hex socket counterclockwise until the adjustment is correct.

- 19 Install the relief valve cap.
20 Remove the weight from the platform.
21 Bleed the hydraulic system by raising the platform to full height. If the pump cavitates or the platform fails to reach full height, add hydraulic oil until the pump is functioning correctly. Do not overfill the hydraulic reservoir.

CAUTION Component damage hazard. Do not continue to operate the machine if the hydraulic pump is cavitating.

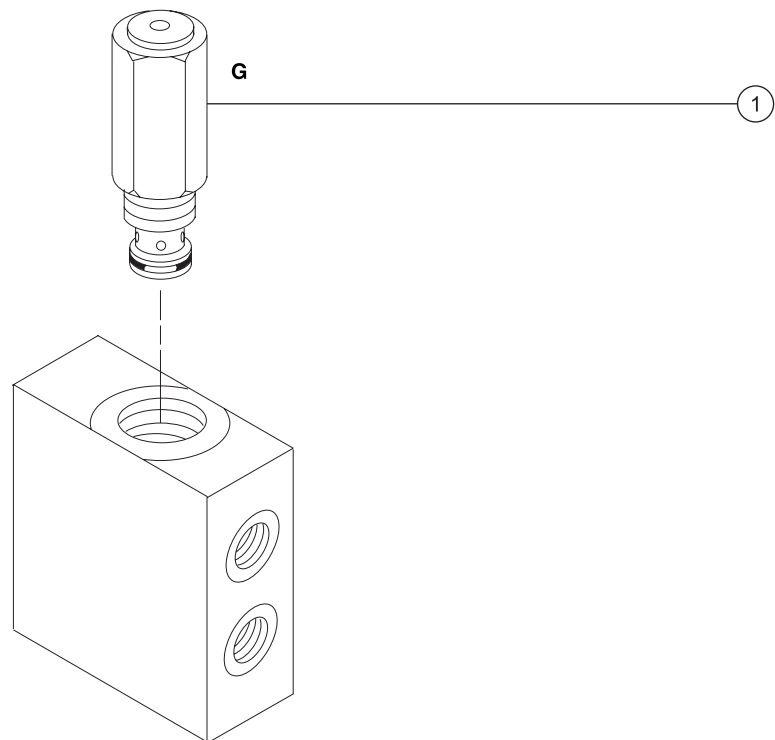
REV B

MANIFOLDS

6-6**Platform Lift Relief Valve Manifold Components, GS-3246 Models
(before serial number 36045)**

The platform lift relief manifold is mounted inside the hydraulic power unit module tray.

Index No.	Description	Schematic Item	Function	Torque
1	Relief valve, 2000 psi / 137.9 bar	G	Platform up	25-30 ft-lbs / 34-41 Nm



MANIFOLDS

REV B

6-7 Valve Adjustments - Lift Relief Manifold, GS-3246 Models (before serial number 36045)

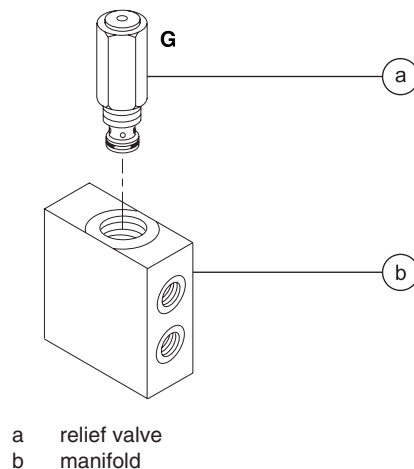
How to Adjust the Lift Relief Valve

NOTICE Be sure that the hydraulic oil level is between the **FULL** and **ADD** marks on the oil level indicator decal.

NOTICE For machines before serial number 27182, contact the Genie Industries Service Parts Department and order a lift relief kit (Genie part number 66174). After installing the kit, complete the following procedure.

- 1 Open the hydraulic power unit module tray and locate the lift relief valve located next to the function manifold (item G).

- 2 Place maximum rated load in the platform. Secure the load to the platform. Refer to Section 2, *Specifications*.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
- 4 Hold the function relief valve (item G) with a wrench and remove the cap.
- 5 While activating the platform up function, adjust the internal hex socket clockwise to increase lift capacity or counterclockwise to decrease lift capacity. Adjust the relief valve until the platform just begins to raise.
- 6 Install the relief valve cap.
- 7 Fully lower the platform.
- 8 Add an additional 100 pounds / 45.4 kg to the platform. Secure the additional weight.



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MANIFOLDS

9 Activate the platform up function.

- ⦿ Result: The power unit should not be able to lift the platform.
- ⦿ Result: If the power unit lifts the platform, remove the additional weight and repeat steps 4 through 9.

⚠ DANGER Tip-over hazard. Do not adjust the relief valve to allow the power unit to lift more than maximum rated load.

CAUTION Component damage hazard. If the pump cavitates or platform fails to reach full height, add hydraulic oil until the pump is functioning correctly. Do not overfill the hydraulic reservoir.

10 Remove the weight from the platform.

11 Bleed the hydraulic system. Raise the platform to full height and then lower it to the stowed position through two complete cycles.

CAUTION Component damage hazard. Do not continue to operate the machine if the hydraulic pump is cavitating. If the pump is still cavitating, see 5-1, *How to test the Hydraulic Pump*.

MANIFOLDS

REV B

6-8 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

⚠ WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 1 Tag and disconnect the wire harness from the coil to be tested.
 - 2 Test the coil resistance.
- ⦿ Result: The resistance should be within specification, plus or minus 30%.
 - ⦿ Result: If the resistance is not within specification, plus or minus 30%, replace the coil.

Valve Coil Resistance Specifications

Description	Specification
Solenoid valve, N.C. 2 position 2 way 20V DC (schematic item D, before serial number 28937)	23 - 25Ω
Solenoid valve, N.C. 2 position 2 way 20V DC with diode (schematic item D, after serial number 28936)	23 - 25Ω
Solenoid valve, 2 position 2 way N.O. 20V DC with diode (schematic items AI, BK, CI and CL)	25 to 27Ω
Solenoid valve, 2 position 4 way 20V DC with diode (schematic items AH, AJ, BI, BL, CJ and CN)	18 to 20Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic items AK, BJ and CK)	18 to 20Ω
Solenoid valve, 3 position 4 way 20V DC with diode (schematic items AG, BH and CH)	25 to 27Ω

REV B

MANIFOLDS

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its coils. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

⚠ WARNING Electrocuting hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

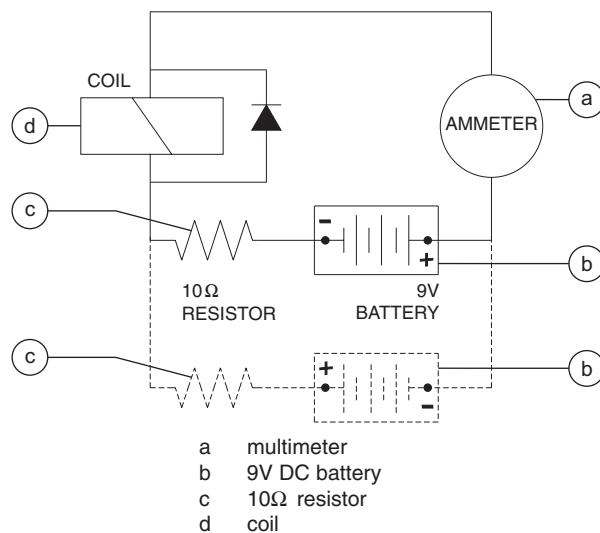
- 1 Test the coil for resistance. See 6-8 *How to Test a Coil*.
- 2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

NOTICE The battery should read 9V DC or more when measured across the terminals.

Resistor, 10Ω

Genie part number

27287



Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

- 3 Set a multimeter to read DC voltage.

NOTICE The multimeter, when set to read DC voltage, should be capable of reading up to 800 mA.

- 4 Connect the negative lead to the other terminal on the coil.

NOTICE If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.

- 5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V battery. Note and record the current reading.

- 6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

- ⦿ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.
- ⦿ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Hydraulic Tank

REV A

7-1

Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply lines and has an external return line filter.

How to Remove the Hydraulic Tank

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

NOTICE Perform this procedure with the platform in the stowed position.

- 1 Disconnect the battery pack from the machine.

WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

- 2 Open the power unit module tray.
- 3 Remove the drain plug from the hydraulic tank and allow all of the oil from the tank to drain into a suitable container. Refer to Section 2, *Specifications*.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 4 Tag, disconnect and plug the hydraulic tank return hose at the top of the hydraulic tank.
- 5 Remove the motor controller mounting bracket retaining fasteners and move the motor controller to the side.
- 6 Remove the return filter mounting bracket fasteners from the manifold. Push the filter and accumulator out of the way.
- 7 Tag, disconnect and plug the hydraulic pump inlet hose at the side of the hydraulic tank.
- 8 Remove the hydraulic tank retaining fasteners and remove the hydraulic tank from the machine.

REV A

Steer Axle Components

8-1 Yoke and Drive Motor

How to Remove the Yoke and Drive Motor

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Block the non-steer wheels.
 - 2 Center a lifting jack under the drive chassis at the steer end of the machine.
 - 3 Remove the cotter pin from the wheel castle nut.
- NOTICE** Always replace the cotter pin with a new one when removing the castle nut.
- 4 Loosen the wheel castle nut. Do not remove it.
 - 5 Raise the machine approximately 14 inches / 36 cm. Place blocks under the chassis for support.

WARNING Crushing hazard. The chassis will fall if it is not properly supported.

- 6 Remove the wheel castle nut. Remove the wheel.

- 7 Tag, disconnect and cap the hydraulic hoses on the drive motor.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

- 8 Support and secure the yoke assembly to an appropriate lifting device.
- 9 Remove the retaining fastener from the steer link at the yoke assembly.

NOTICE Note the quantity and location of the spacers when disconnecting the steer link from the yoke assembly.

- 10 Remove the retaining fastener from the top of the yoke pivot shaft.
- 11 Lower the yoke assembly out of the chassis.

CAUTION Bodily injury hazard. The yoke/motor assembly may fall if not properly supported when it is removed from the chassis.

NOTICE During re-assembly, be sure that the spacers are installed onto the steer link.

STEER AXLE COMPONENTS

REV A

How to Remove a Drive Motor

- 1 Block the non-steer wheels.
- 2 Center a lifting jack under the drive chassis at the steer end.
- 3 Remove the cotter pin on the wheel lug nut of the motor to be removed.
- NOTICE** Always replace the cotter pin with a new one when removing the castle nut.
- 4 Loosen the wheel castle nut. Do not remove it.
- 5 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

WARNING Crushing hazard. The chassis will fall if it is not properly supported.

- 6 Remove the wheel castle nut. Remove the wheel.

- 7 Tag, disconnect and plug the hydraulic hoses on the drive motor. Cap the fittings.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

- 8 Remove the drive motor mounting fasteners. Remove the drive motor.

Torque specifications	
Drive motor mounting fasteners, dry	75 ft-lbs 101.7 Nm
Drive motor mounting fasteners, lubricated	56 ft-lbs 76.3 Nm

REV A

STEER AXLE COMPONENTS

8-2 Steer Cylinder

How to Remove the Steer Cylinder

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Block the non-steer wheels.
- 2 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings on the cylinder.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

- 3 Remove the pin retaining fasteners from the barrel-end pivot pin. Remove the pivot pin.

NOTICE Note the quantity and location of the spacers when removing the barrel-end pivot pin.

- 4 Remove the pin retaining fasteners from the rod-end pivot pin. Remove the pin.

NOTICE Note the quantity and location of the spacers when removing the rod-end pivot pin.

- 5 Remove the steering cylinder from the machine.

STEER AXLE COMPONENTS

REV A

8-3**Steer Bellcrank****How to Remove the Steer Bellcrank**

NOTICE Perform this procedure with the machine on a flat, level surface.

- 1 Remove the steering cylinder. See 7-2, *How to Remove the Steering Cylinder*.
- 2 **From serial number 17408 to 43000:** Remove the retaining fastener from the center pivot pin of the bellcrank.
After serial number 43000: Remove the retaining fastener from the center pivot pin of the bellcrank. Remove the pin.

NOTICE Note the quantity and the location of the spacers on the bellcrank.

- 3 Remove the retaining fasteners from the steer links at each end of the bellcrank.

NOTICE Note the quantity and the location of the spacers in between the bellcrank and the steer links.

- 4 Raise the machine approximately 14 inches / 36 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if it is not properly supported.

- 4 Turn the yokes to the side so the bellcrank can be removed.

- 5 Remove the bellcrank from the machine.

NOTICE Note the quantity and the location of the spacers in between the bellcrank and the steer links.

REV A

Non-Steer Axle Components

9-1 Drive Brake

How to Remove a Drive Brake

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Support and secure the entry ladder to an appropriate lifting device.
- 2 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

CAUTION Crushing hazard. The entry ladder may become unbalanced and fall if it is not properly supported and secured to the lifting device.

- 3 Block the steer wheels.
- 4 Center a lifting jack under the drive chassis at the non-steer end.
- 5 Remove the cotter pin from the wheel castle nut.

NOTICE Always replace the cotter pin with a new one when removing the castle nut.

- 6 Loosen the wheel castle nut. Do not remove it.

- 7 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

WARNING Crushing hazard. The chassis will fall if it is not properly supported.

- 8 Remove the wheel castle nut. Remove the wheel.
- 9 Disconnect and plug the hydraulic hose from the brake. Cap the fittings on the brake.

WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

- 10 Place a lifting jack under the brake for support.
- 11 Remove the fasteners that attach the brake to the drive chassis. Remove the brake.

CAUTION Crushing hazard. The brake will fall if it is not properly supported when the mounting fasteners are removed.

Torque specifications

Brake mounting fasteners, dry	75 ft-lbs 101.7 Nm
Brake mounting fasteners, lubricated	56 ft-lbs 76.3 Nm

Brake Release Hand Pump Components

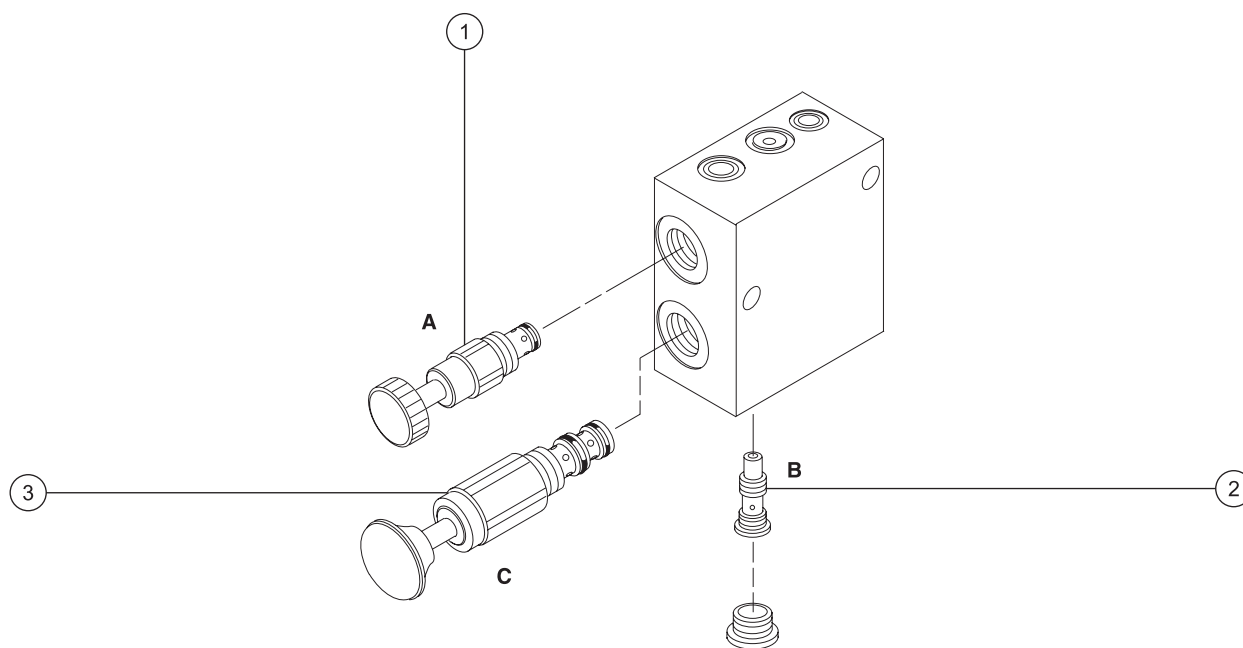
REV A

10-1

Brake Release Hand Pump Components

The brake release hand pump manifold is mounted behind the entry ladder, next to the battery charger.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, pilot operated	A	Manual brake release	25-30 ft-lbs / 34-41 Nm
2	Shuttle valve	B	Brake release	8-10 ft-lbs / 11-14 Nm
3	Hand pump	C	Manual brake release	25-30 ft-lbs / 34-41 Nm



Troubleshooting Flow Charts



Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a firm, level surface
 - Platform in the stowed position
 - Key switch in the off position with the key removed
 - Wheels chocked
 - All external AC power supply disconnected from the machine

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie GS-2032 and GS-2632 and GS-2046 and GS-2646 and GS-3246 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠ DANGER

Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

⚠ DANGER

Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠ WARNING

Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

NOTICE

Two persons will be required to safely perform some troubleshooting procedures.

TROUBLESHOOTING FLOW CHARTS

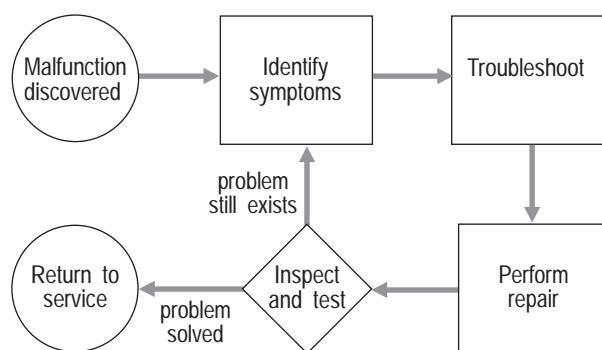
About This Section

When a malfunction is discovered, the flow charts in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required—voltmeter, ohmmeter, pressure gauges.

The location of terminals mentioned in this section can be found on the appropriate electrical or hydraulic schematics provided in Section 6, *Schematics*.

Since various degrees of a particular function loss may occur, selecting the appropriate flow chart may be troublesome. When a function will not operate with the same speed or power as a machine in good working condition, refer to the flow chart which most closely describes the problem.

General Repair Process



LED Diagnostic Readout

The diagnostic readout displays numerical codes that provide information about the machine operating status and about malfunctions. The dot to the right of the numbers will blink during normal operation codes and remain on with fault codes.

The codes listed in the Fault Code Chart describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

REV A

Fault Code Chart

(after serial number 17407)

Fault Code	Problem	Possible Causes	Solution
01	Internal ECM error.	EPROM not programmed.	Replace ECM.
02 (See Chart 16)	ECM/Platform communication error.	Malfunctioning control cable OR malfunctioning platform controls.	Troubleshoot control cable OR troubleshoot platform controls.
03	Undefined platform DIP switch settings.	DIP switch settings incorrect.	Correct DIP switch settings.
12 (See Chart 4)	Chassis up/down toggle closed at start up.	Malfunctioning up/down switch.	Troubleshoot up/down switch.
18 (See Charts 10, 13 or 14)	Pothole guard failure.	Malfunctioning pothole switch OR obstruction in pothole guard linkage.	Troubleshoot pothole switch OR remove obstruction.
19 (See Chart 15)	Limit switch failure.	Malfunctioning limit switch OR wire disconnected from limit switch.	Troubleshoot limit switch OR inspect wire connection.
42 (See Chart 5 or Chart 8)	Platform left turn switch fault.	Malfunctioning steer left microswitch.	Troubleshoot steer left microswitch.
43 (See Chart 5 or Chart 9)	Platform right turn switch fault.	Malfunctioning steer right microswitch.	Troubleshoot steer right microswitch.
46 (See Chart 5)	Platform drive enable switch fault.	Malfunctioning drive enable switch.	Troubleshoot drive enable switch.
47	Platform joystick fault.	Joystick potentiometer not centered.	Verify potentiometer setting.
52 (See Chart 11)	Forward coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
53 (See Chart 12)	Reverse coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
54 (See Chart 6)	Up coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
55 (See Chart 7)	Down coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
56 (See Chart 9)	Right coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
57 (See Chart 8)	Left coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
58 (See Chart 10 or Chart 10A)	Brake coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
59 (See Chart 17)	Series/parallel coil fault.	DIP switch settings are incorrect.	Troubleshoot and correct DIP switch settings.
68	Low battery voltage.	Batteries discharged.	Charge batteries.
88	ECM has been erased.	Static strap may be missing from the machine.	Replace static strap.

Chart 1

REV A

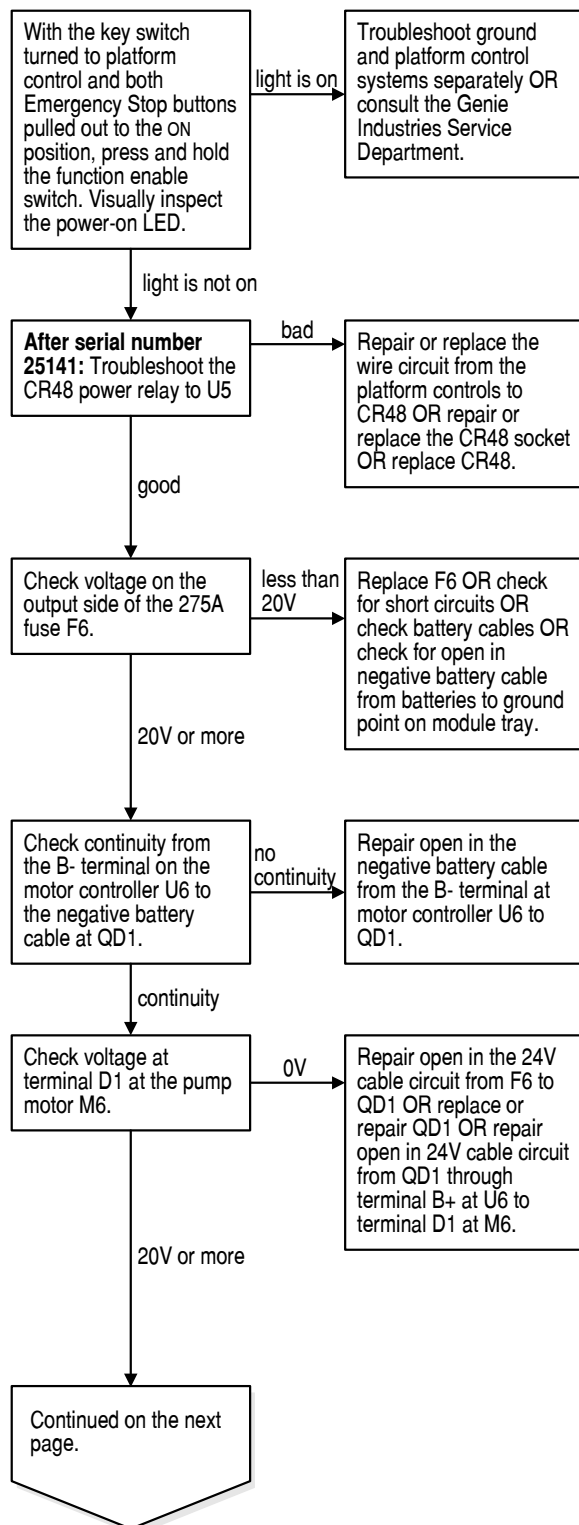
All Functions Will Not Operate

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure both Emergency Stop switches are pulled out to the ON position.

Be sure the batteries are fully charged and properly connected.

Be sure the hydraulic tank is filled to the correct level.



REV A

CHART 1

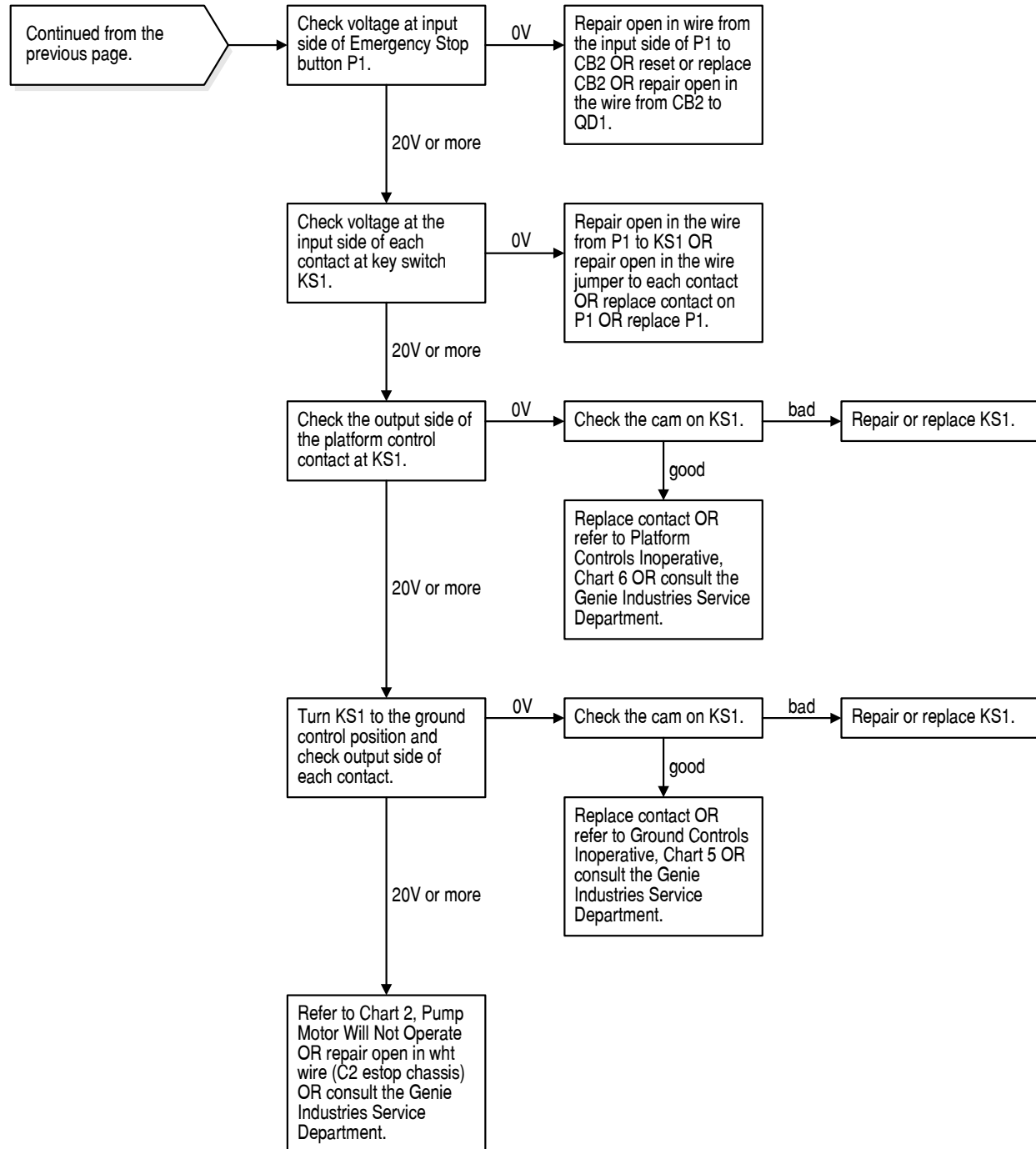


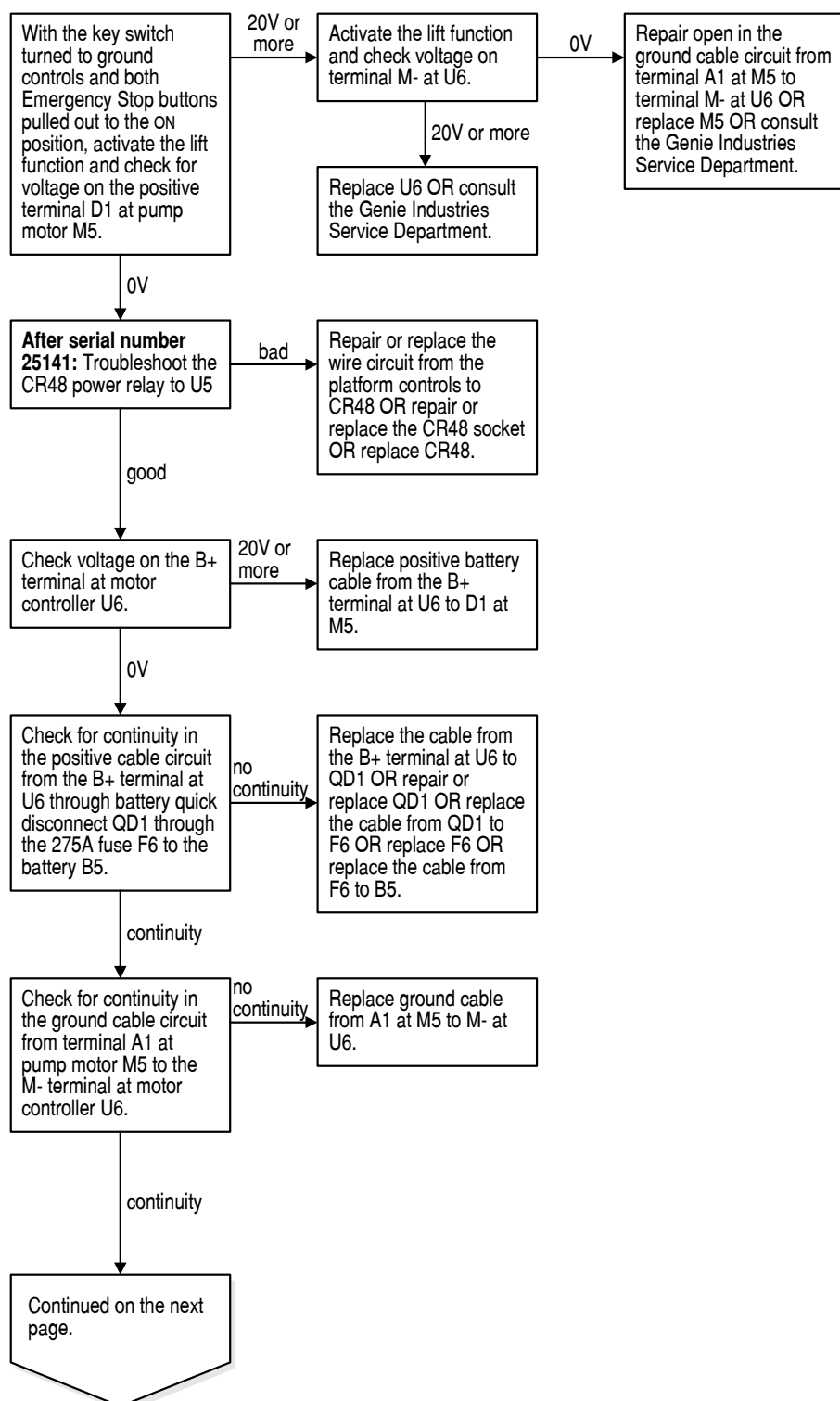
Chart 2

REV A

Pump Motor Will Not Operate

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

CHART 2

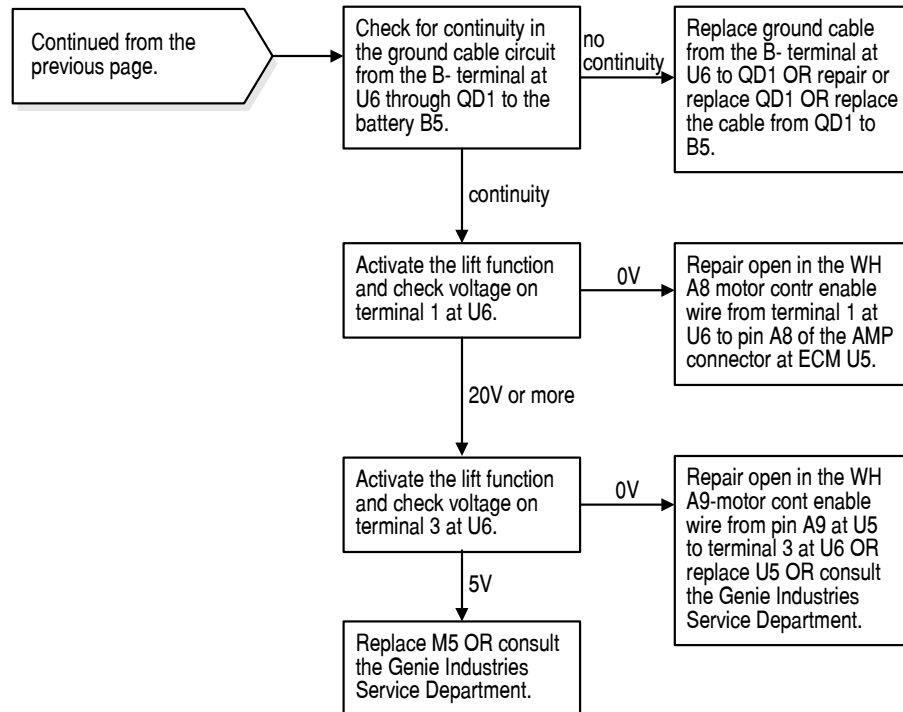


Chart 3

REV A

All Functions Inoperative, Power Unit Starts and Runs

Be sure, if the Error Indicator light is on at the platform controls, you refer to the specific chart that relates to the error code that is displayed on the ECM.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.

Be sure the hydraulic tank is filled to the correct level.

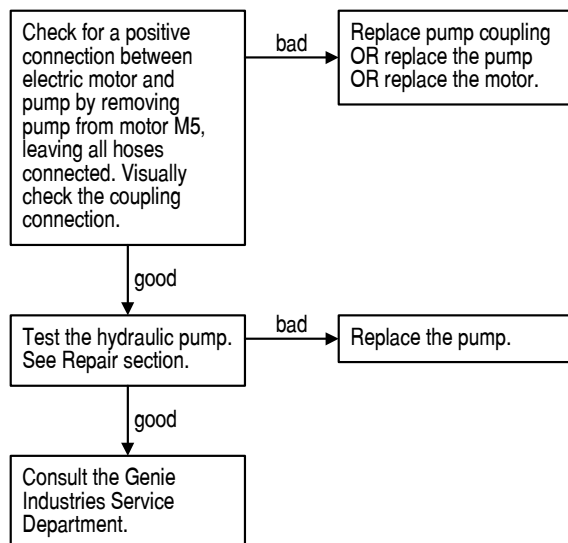


Chart 4

REV A

Ground Controls Inoperative, Platform Controls Operate Normally

Be sure, if the Error Indicator light is on at the platform controls, you refer to the specific chart that relates to the error code that is displayed on the ECM.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are properly connected.

Be sure the batteries are fully charged.

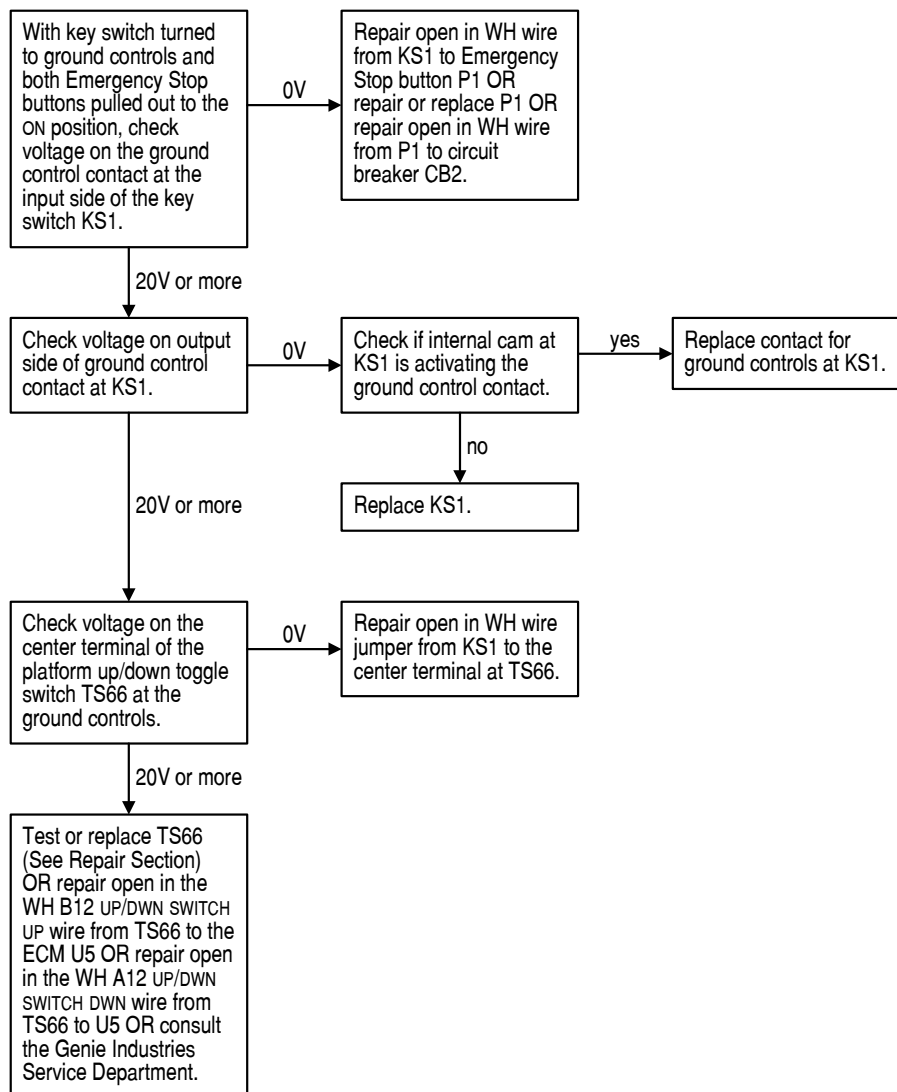


Chart 5

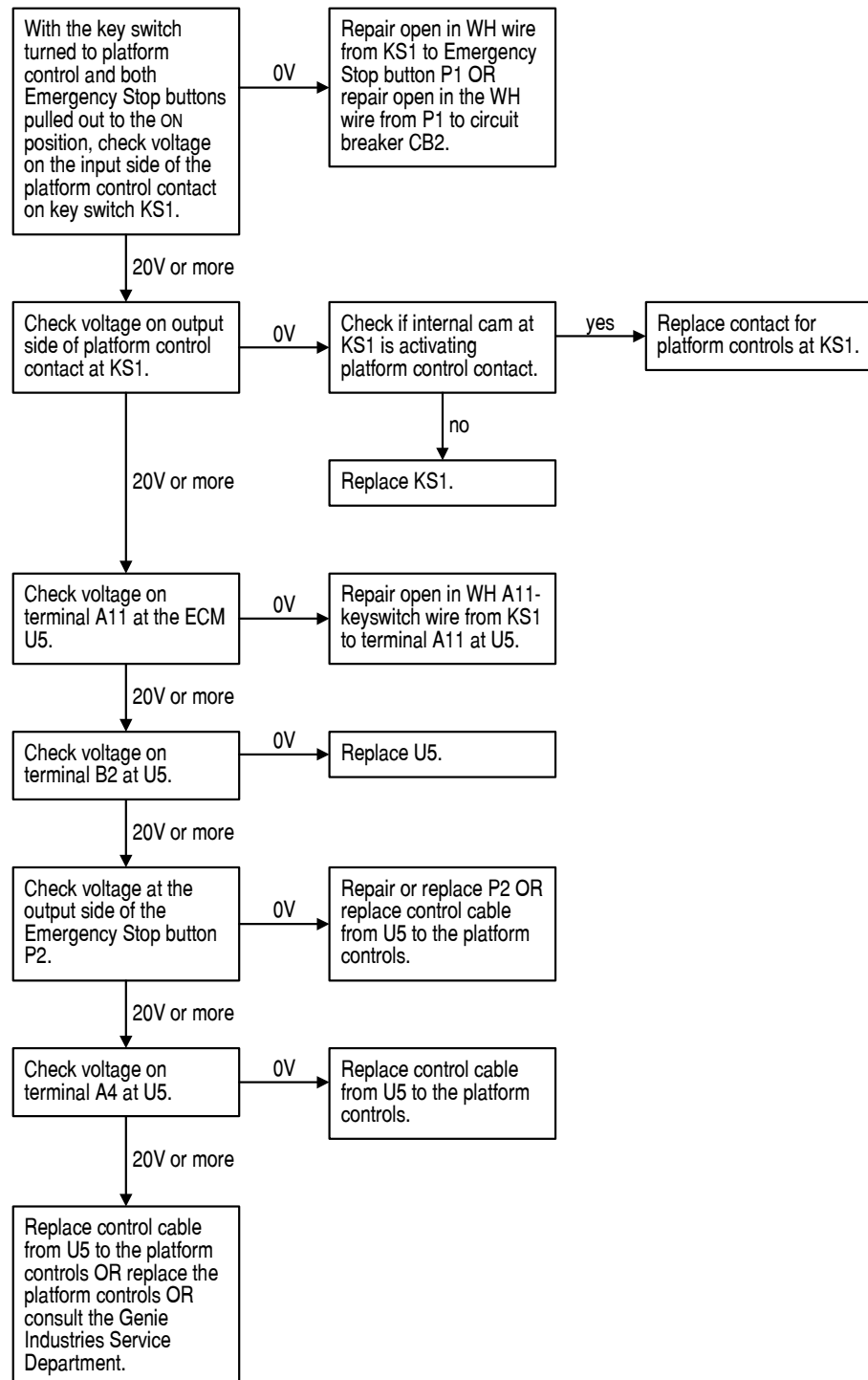
REV A

Platform Controls Inoperative, Ground Controls Operate Normally

Be sure, if the Error Indicator light is on at the platform controls, you refer to the specific chart that relates to the error code that is displayed on the ECM.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

Chart 6

Platform Up Function Inoperative

Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.

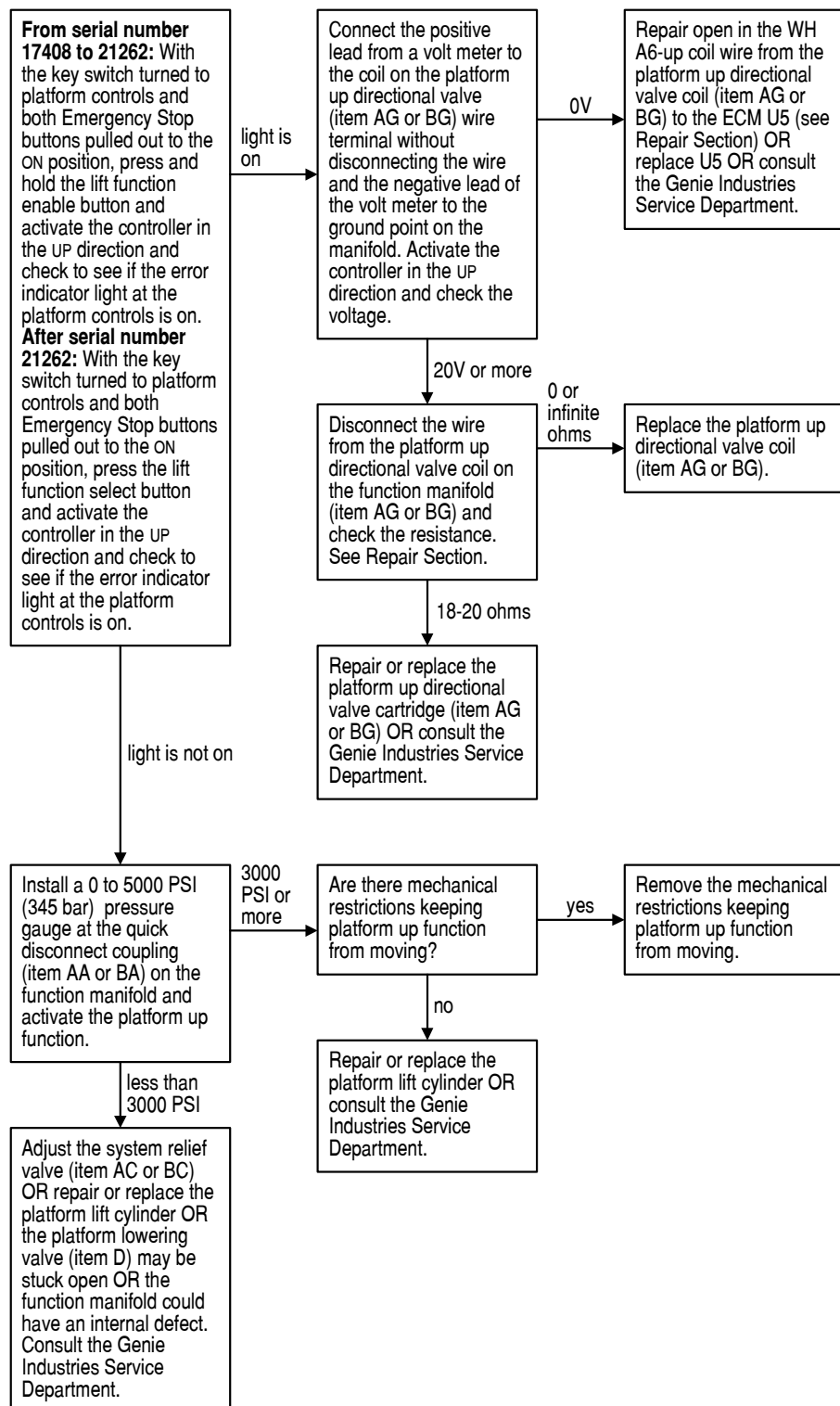


Chart 7

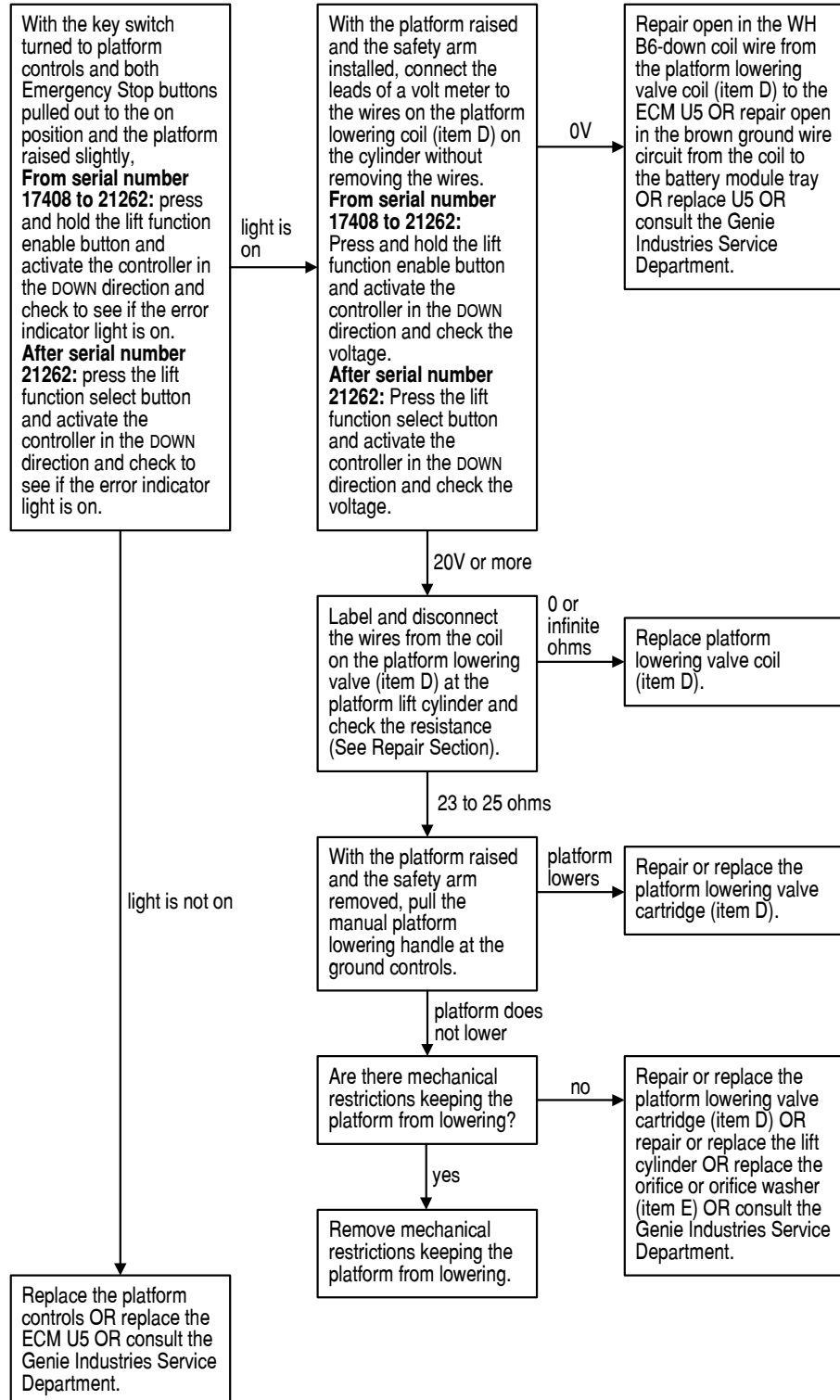
REV A

Platform Down Function Inoperative

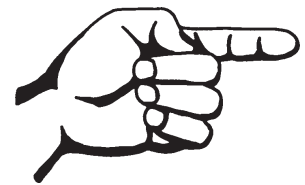
Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A



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Chart 8

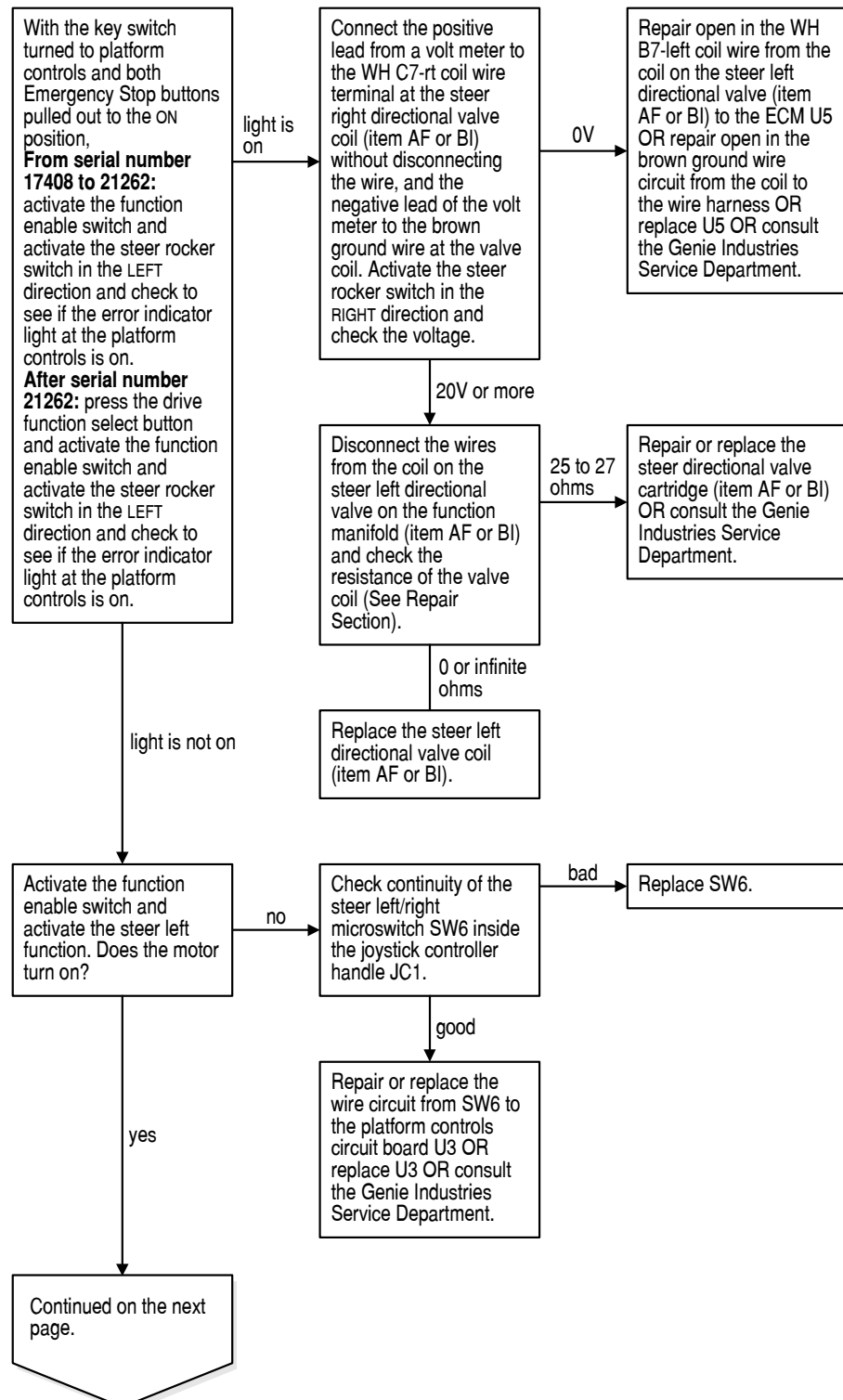
REV A

Steer Left Function Inoperative

Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

CHART 8

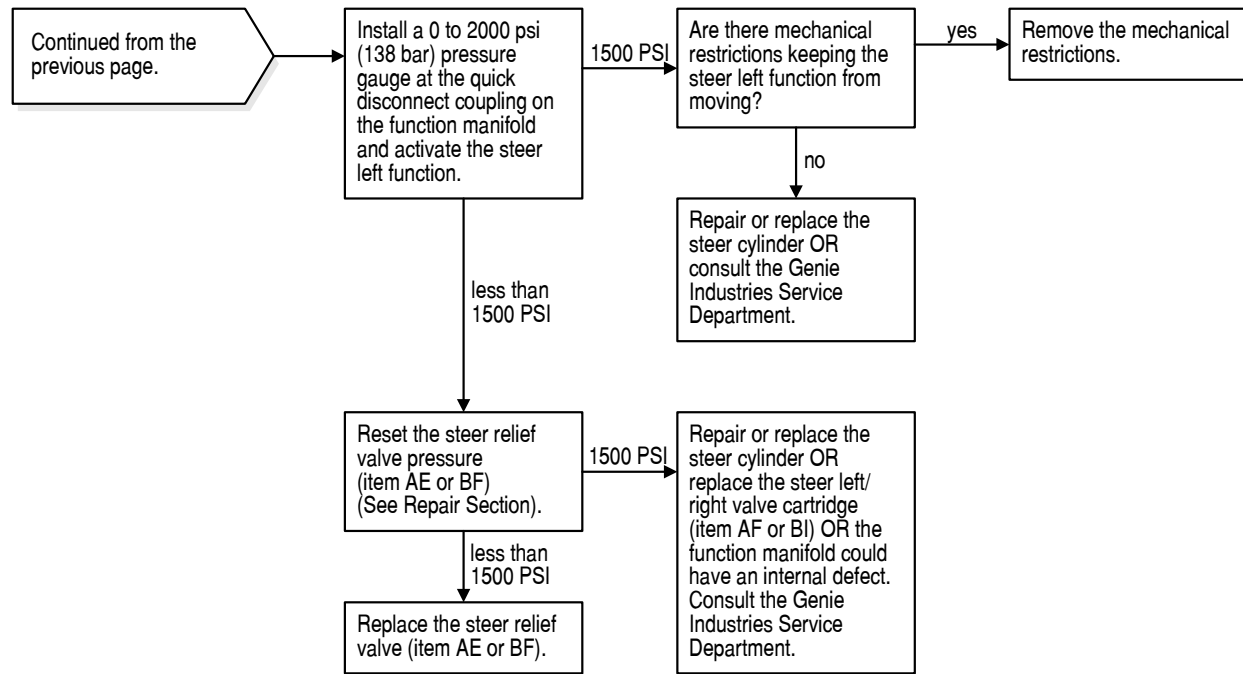


Chart 9

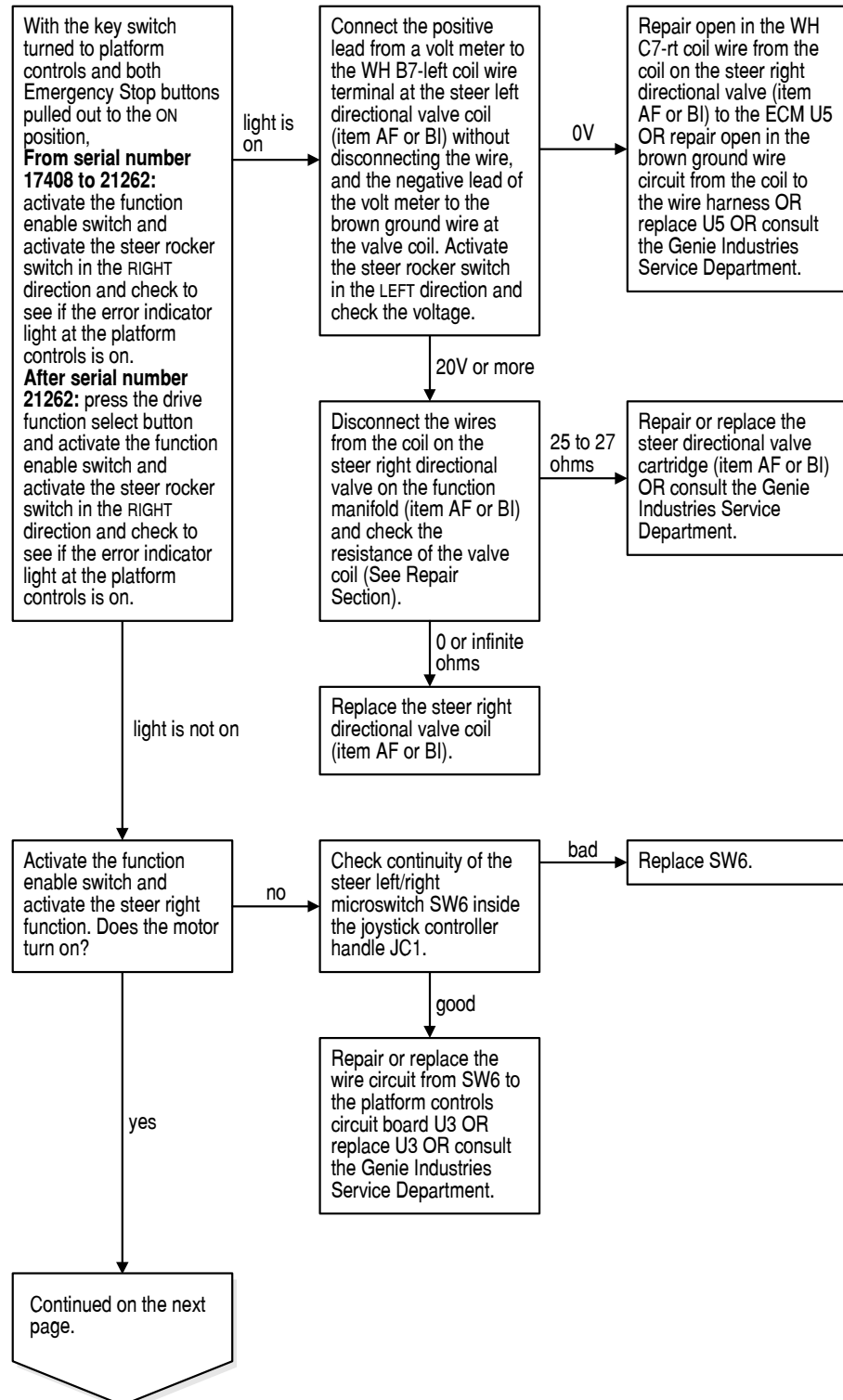
REV A

Steer Right Function Inoperative

Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

CHART 9

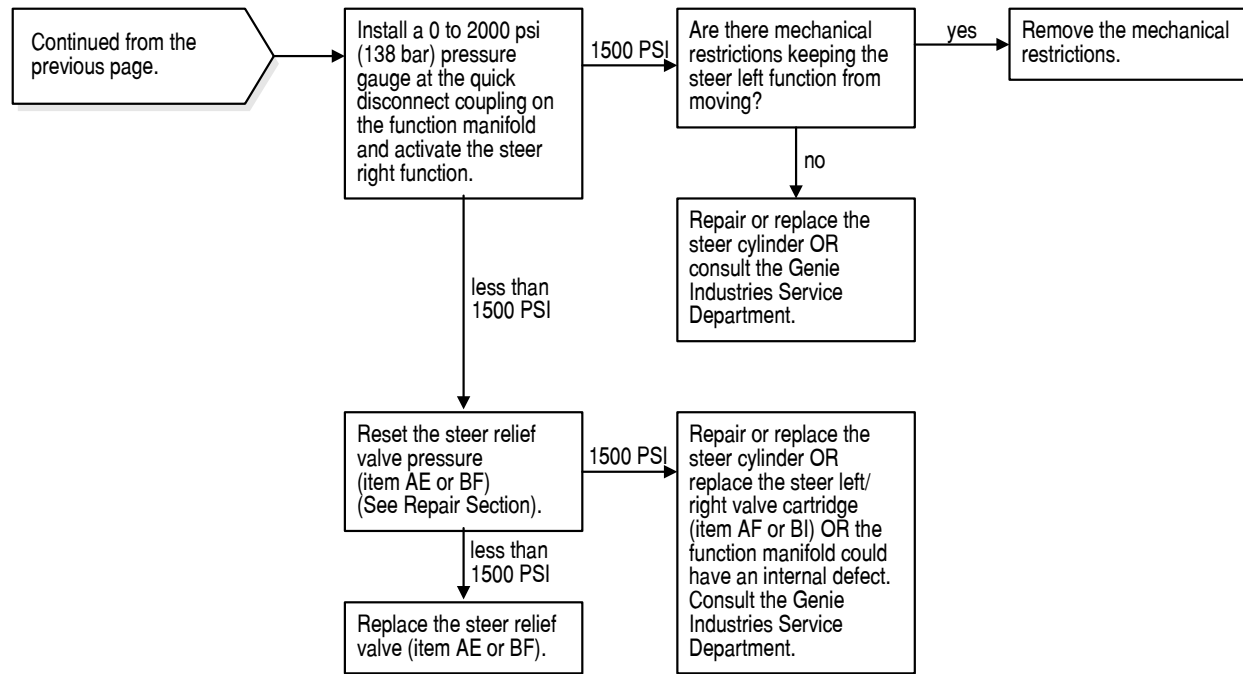


Chart 10

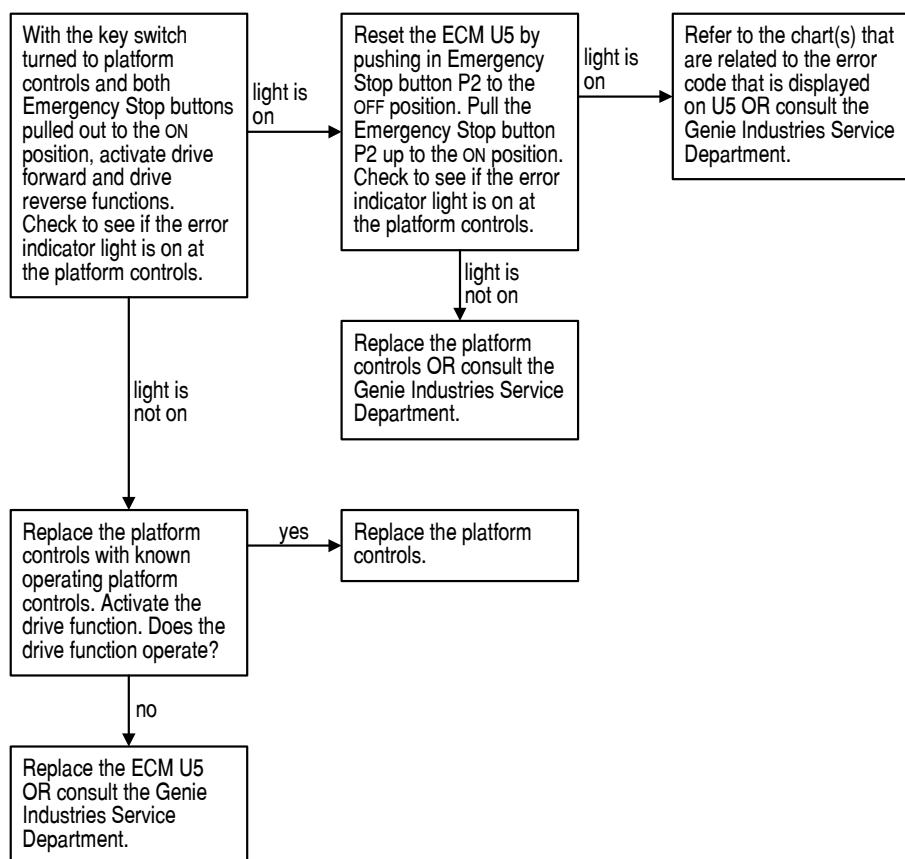
REV A

All Drive Functions Inoperative, All Other Functions Operate Normally

Be sure, if the Error Indicator light is on at the platform controls, you refer to the specific chart that relates to the error code that is displayed on the ECM.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

Chart 10A

Brake Release Function Inoperative

Be sure, if the Error Indicator light is on at the platform controls, you refer to the specific chart that relates to the error code that is displayed on the ECM.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.

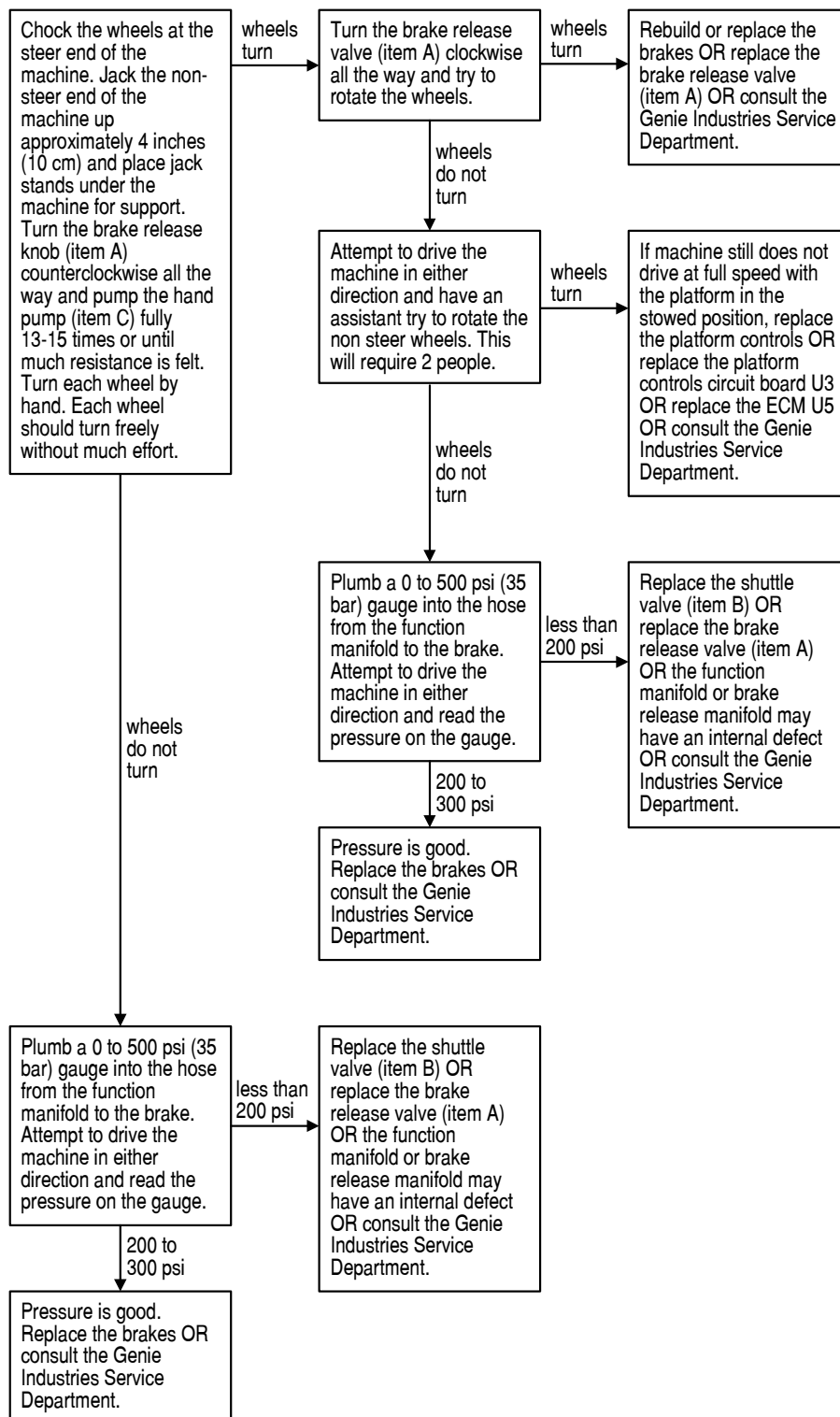


Chart 11

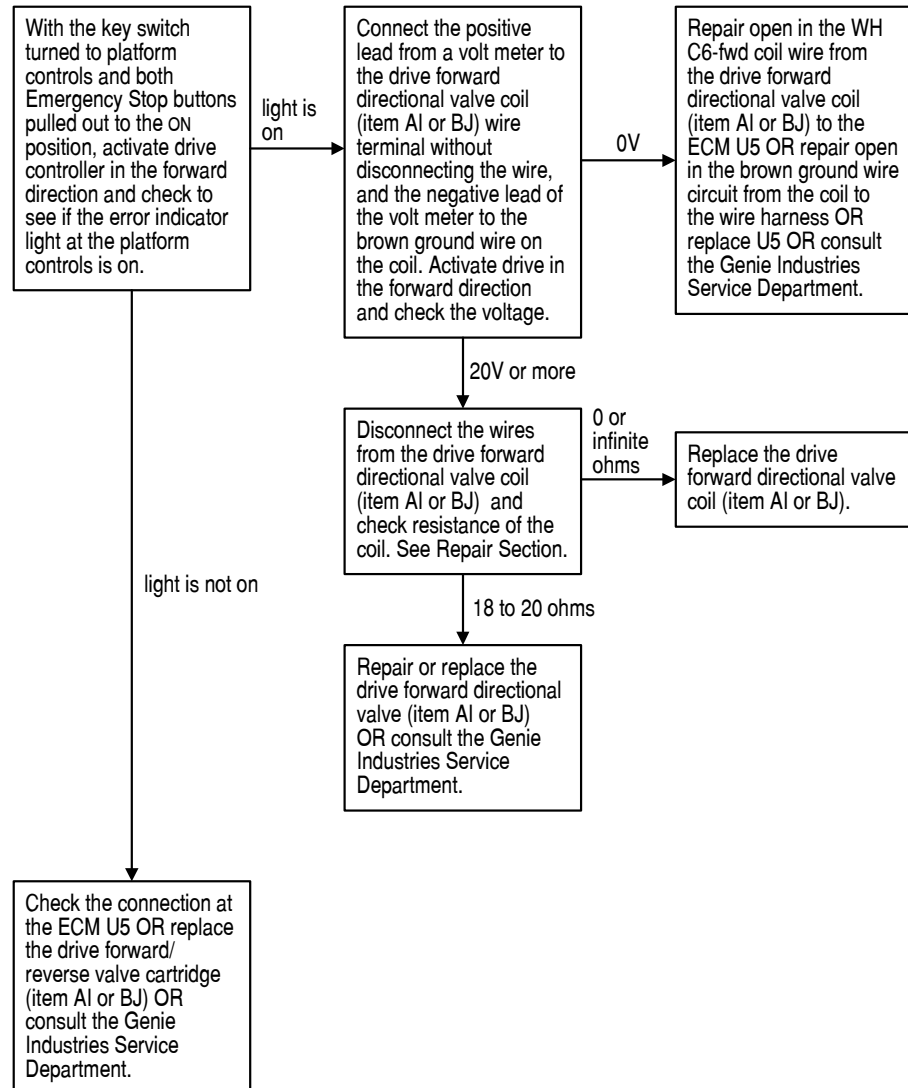
REV A

Drive Forward Function Inoperative

Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

Chart 12

Drive Reverse Function Inoperative

Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.

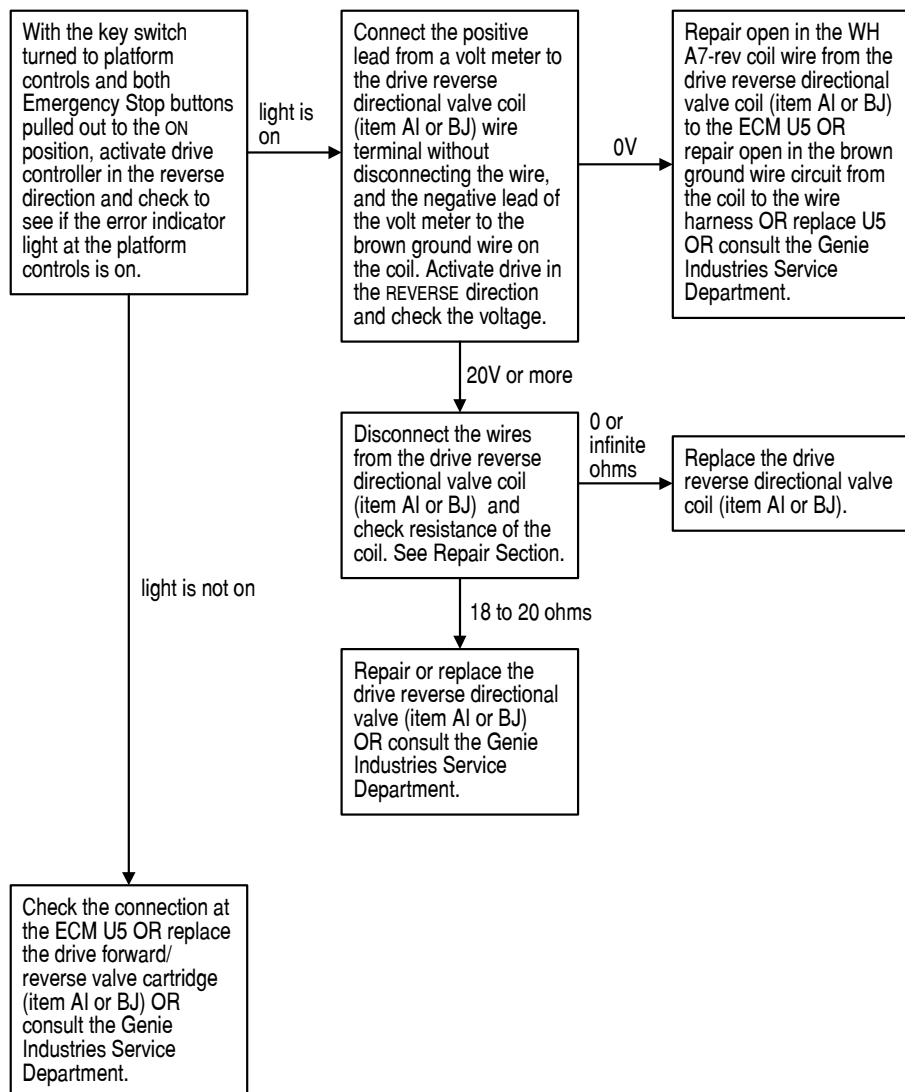


Chart 13

REV A

Machine Will Not Drive At Full Speed

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.

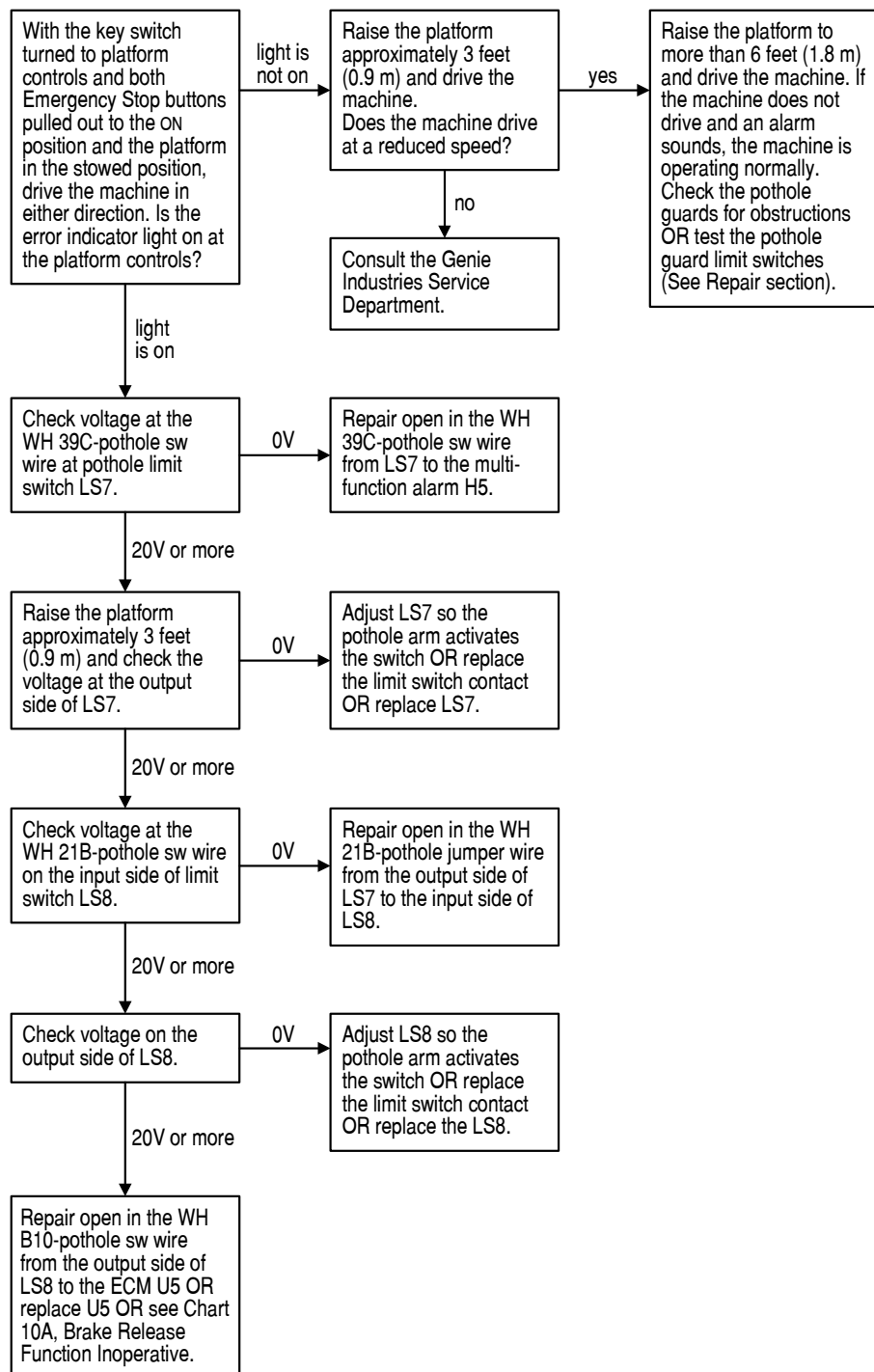


Chart 14

REV A

Machine Drives At Full Speed With Platform Raised

Be sure the circuit
breaker and fuse are
not tripped or blown.

Be sure the batteries
are fully charged and
properly connected.

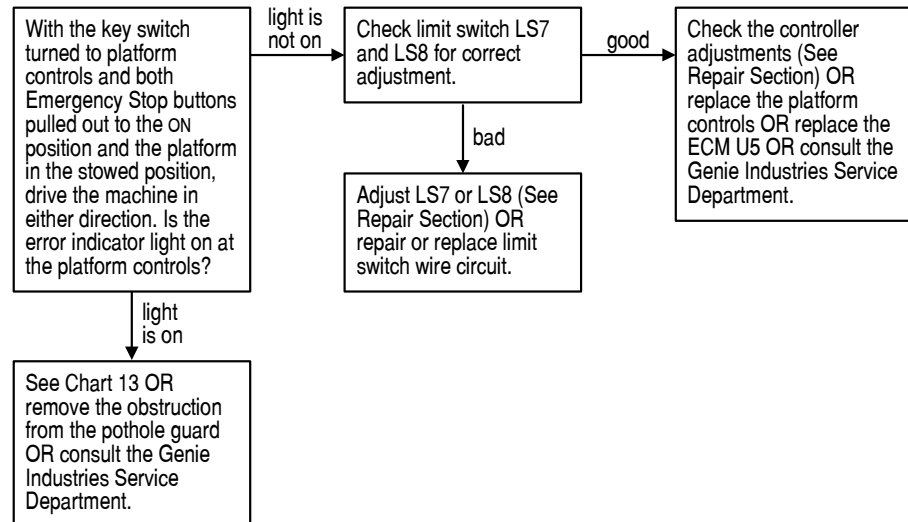


Chart 15

REV A

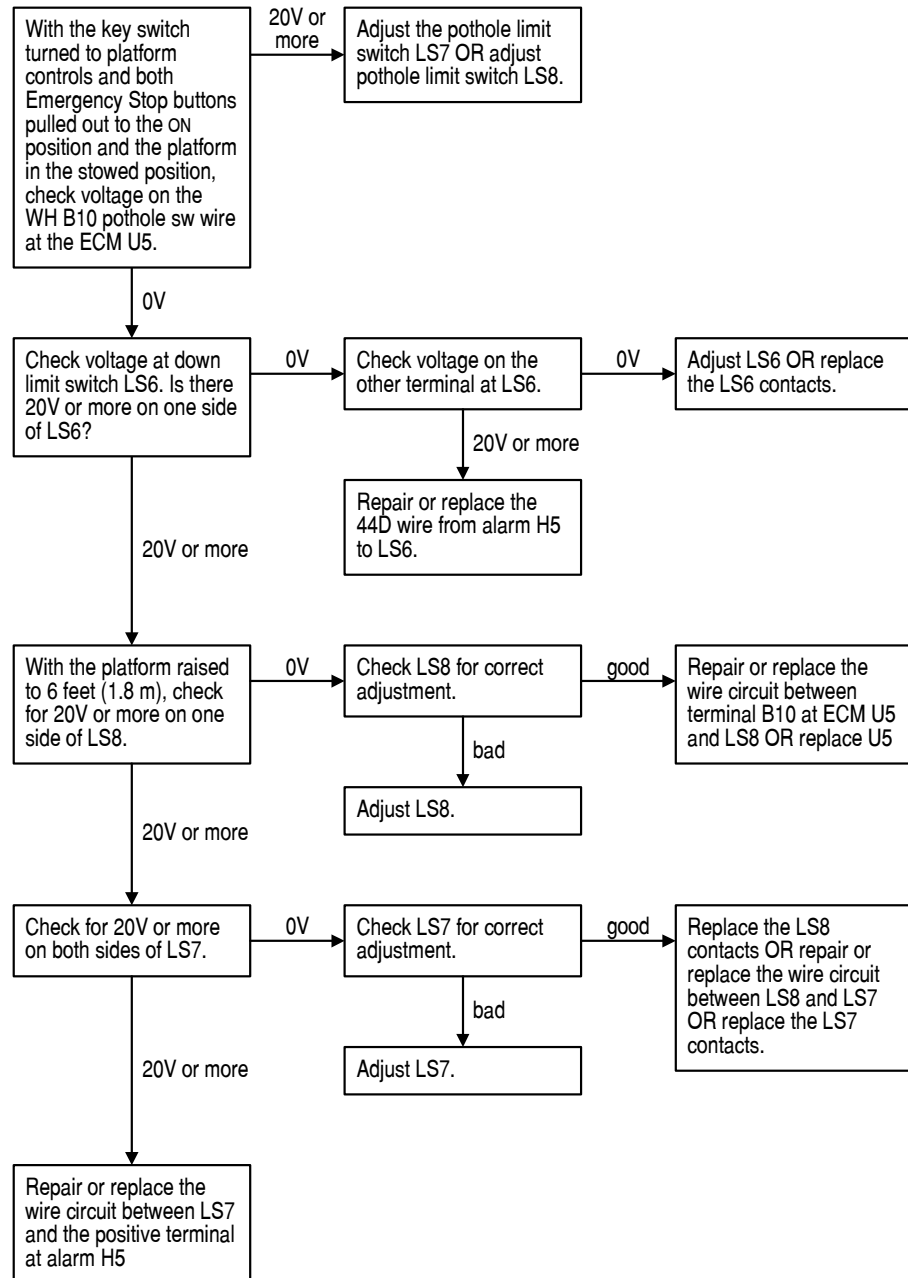
Limit Switch Function Inoperative

Be sure the circuit breaker and fuse are not tripped or blown.

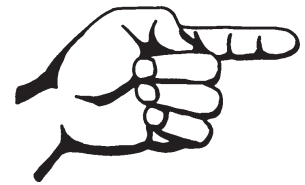
Be sure the limit switches are clear of debris.

Be sure the pothole guards are deploying.

Be sure the batteries are fully charged and properly connected.



REV A



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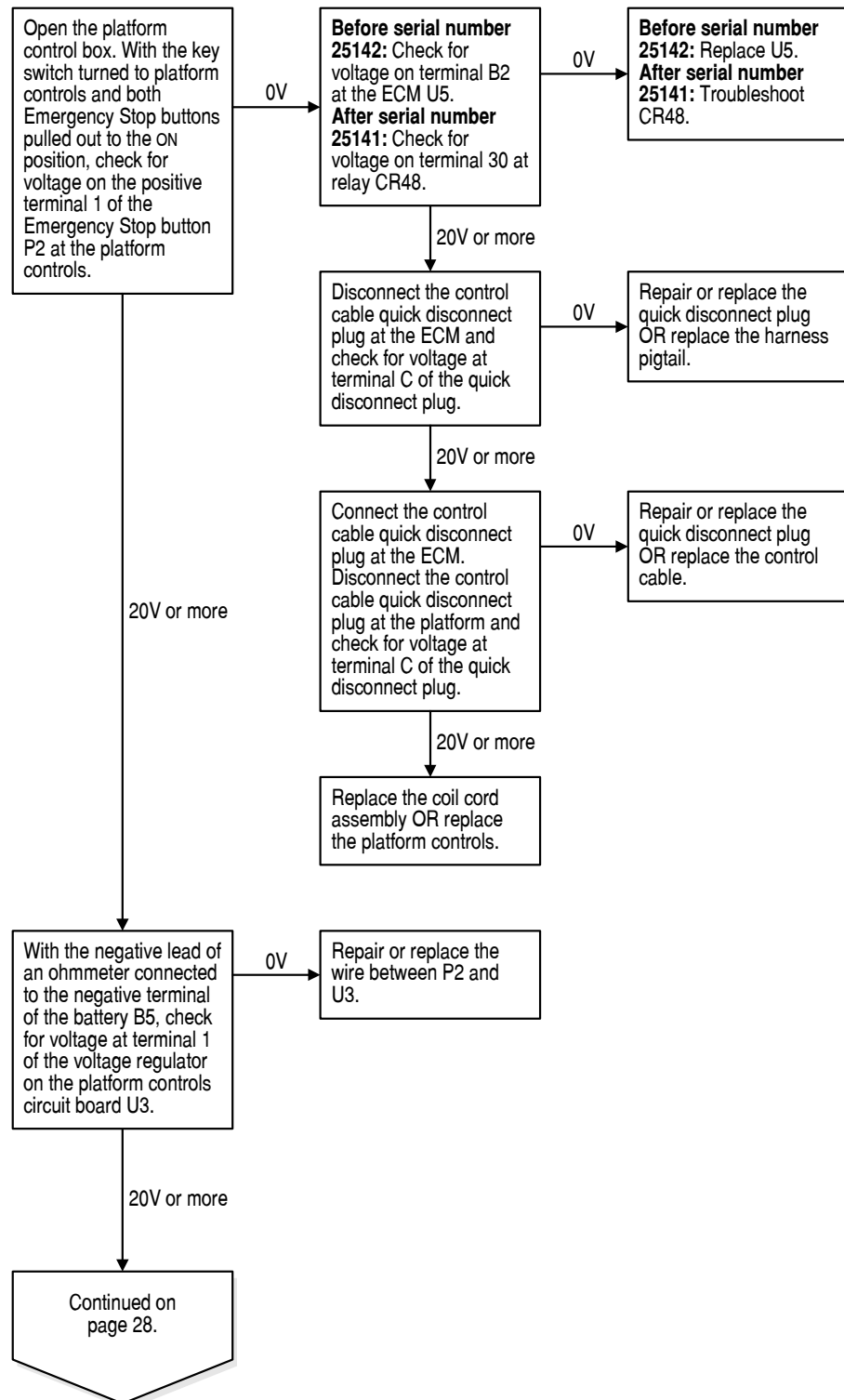
Chart 16

REV A

Fault Code 02 - ECM / Platform Communication Error

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A

CHART 16

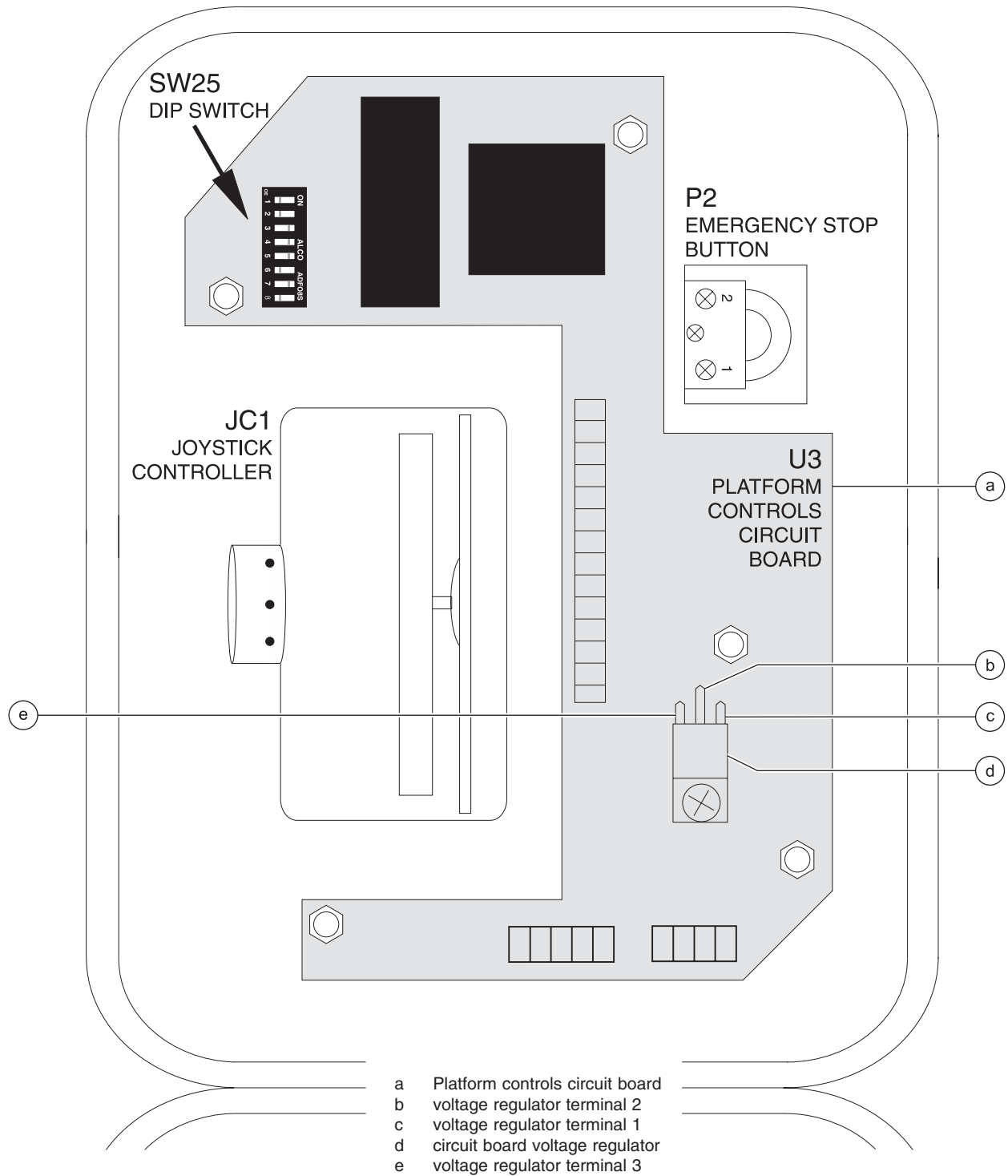


CHART 16

REV A

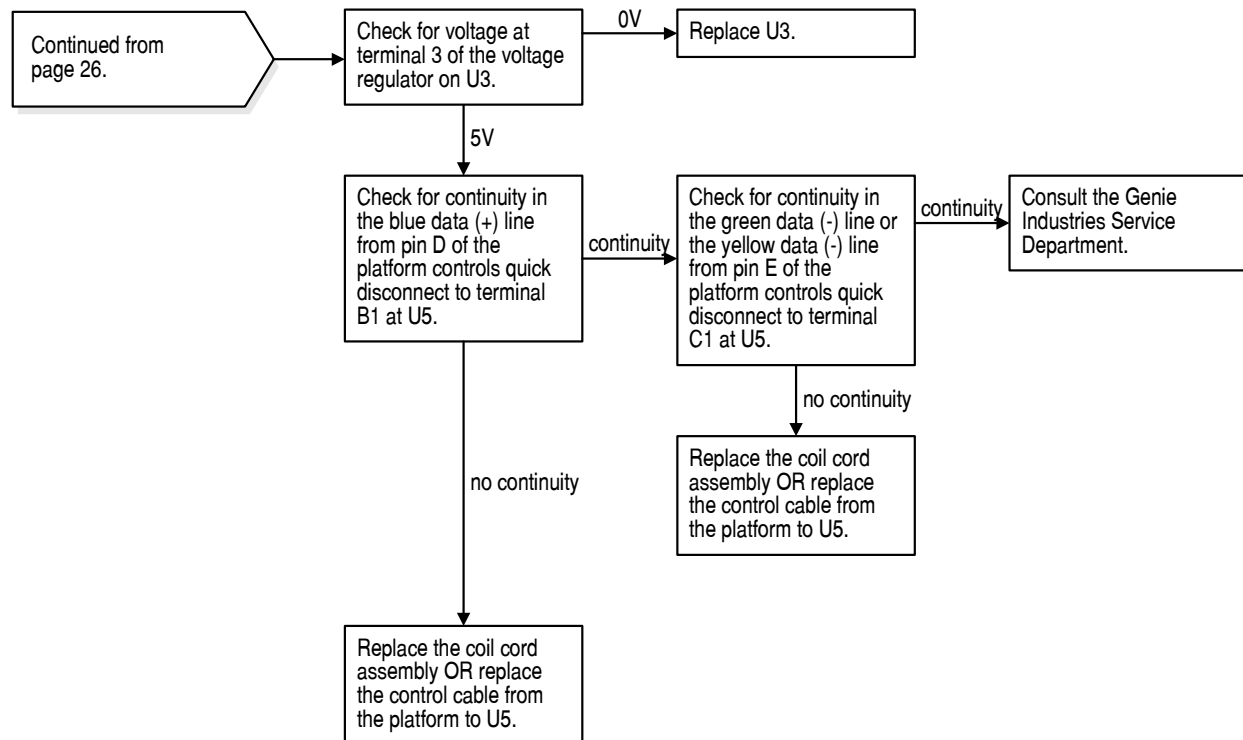


Chart 17

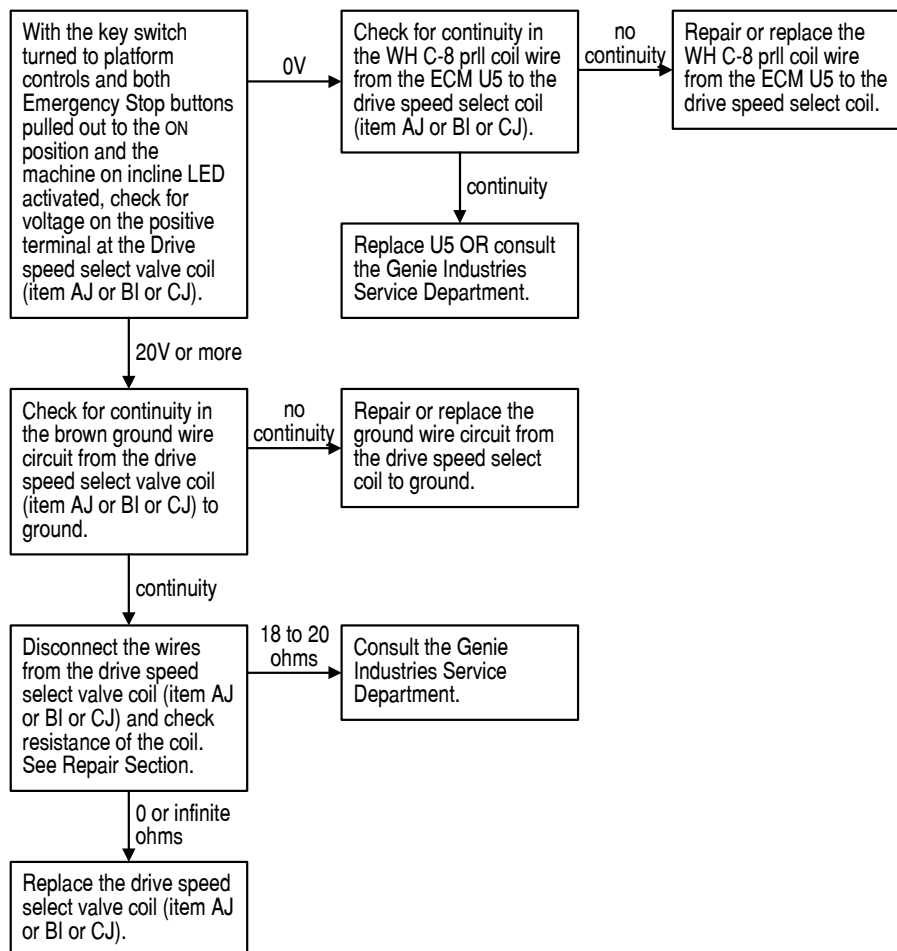
REV B

Fault Code 59 - Parallel/Series Coil Fault

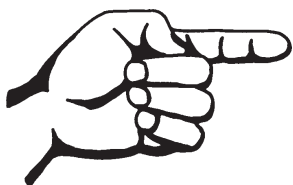
Be sure all other functions operate normally.

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the batteries are fully charged and properly connected.



REV A



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Schematics



Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie GS-2032 and GS-2632 and GS-2046 and GS-2646 and GS-3246 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

Electrical Schematics

⚠ WARNING

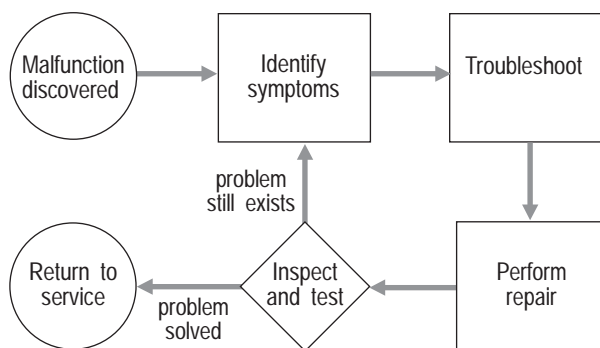
Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Hydraulic Schematics

⚠ WARNING

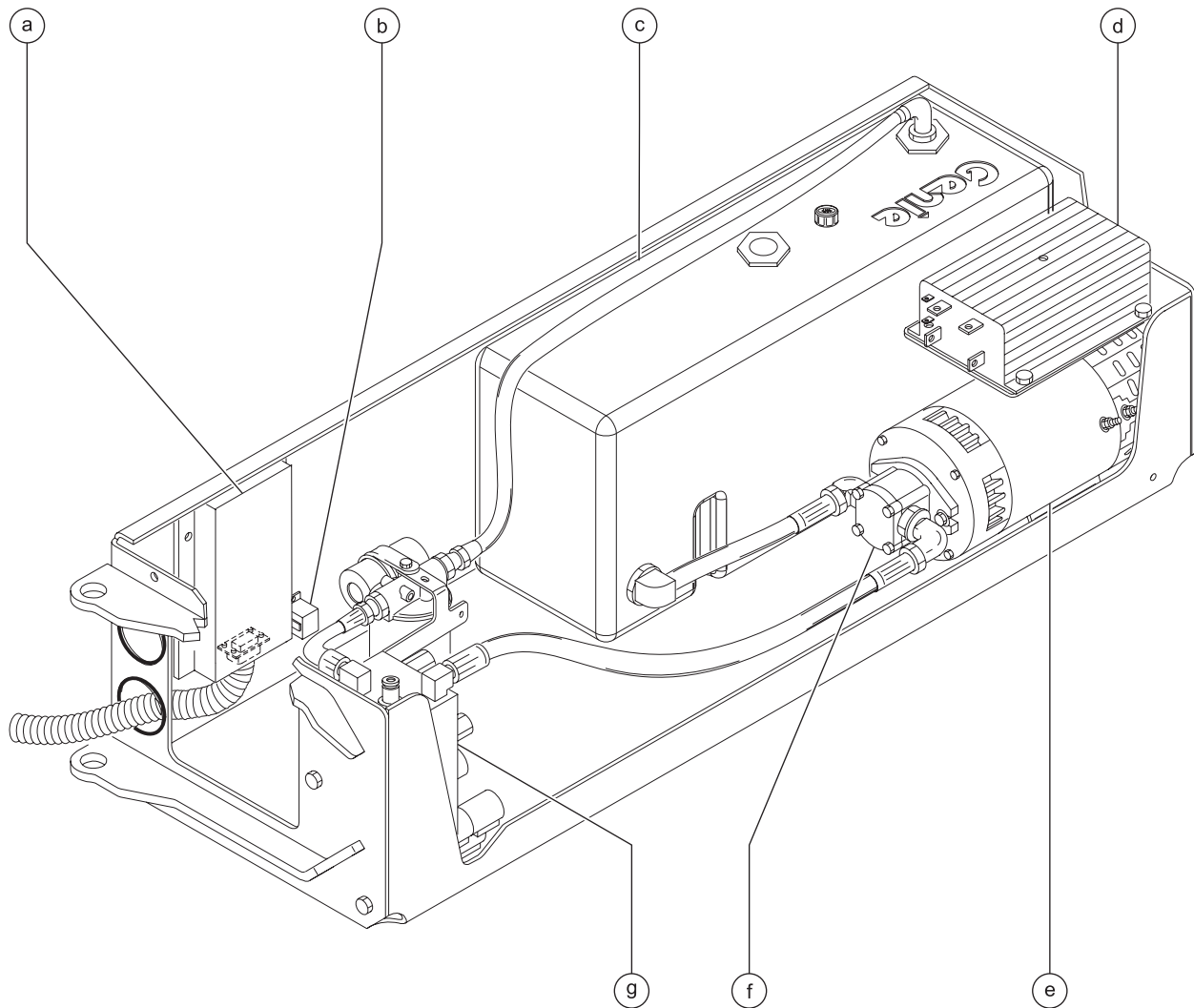
Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process



Control Relay Layout

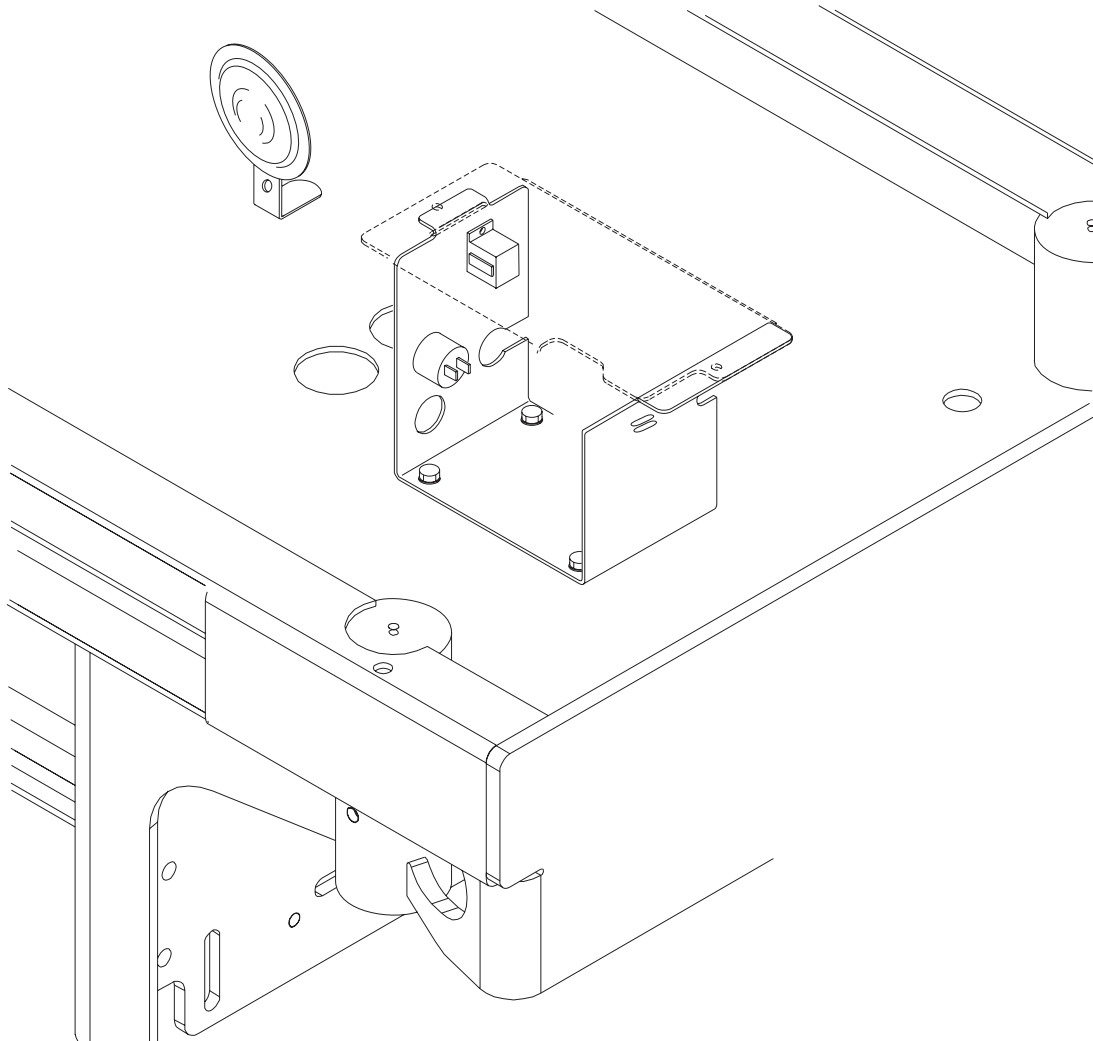
REV A



- a electronic control module (ECM) U5
- b CR48 power relay to U5 (not used before serial number 25142)
- c hydraulic tank
- d motor controller U6
- e hydraulic power unit M5
- f hydraulic pump
- g function manifold

REV A

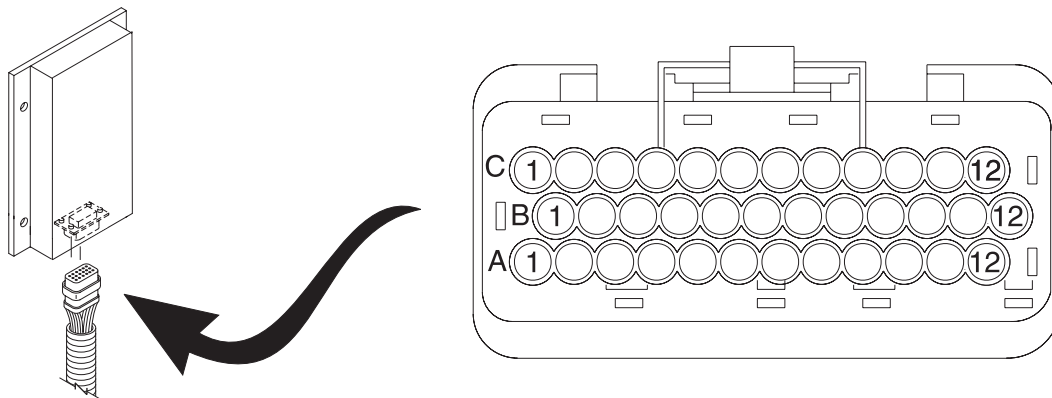
CONTROL RELAY LAYOUT



- a automotive-style horn H2 (option)
- b CR5 horn relay
- c tilt level sensor S7

ECM Pin-out Legend

REV B

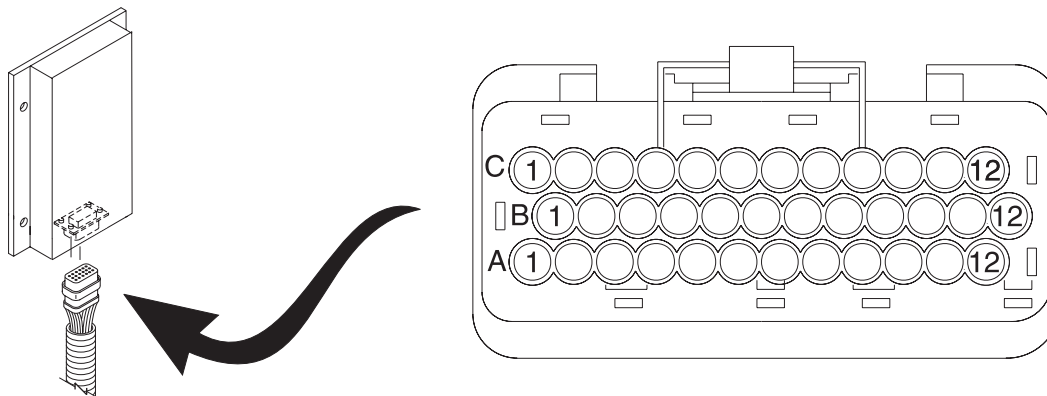


ECM PIN-OUT LEGEND From serial number 17408 to 21064	
Item	Description
A1	Spare
A2	Ground from platform controls (input) (White wire at platform)
A3	Spare
A4	Power from platform controls to ECM (input) (Red wire at platform)
A5	Level sensor power S7 (output)
A6	Platform up coil Y8 (output)
A7	Drive reverse coil Y5 (output)
A8	Motor controller U6, terminal 1 (output)
A9	Motor controller U6, terminal 3 (output)
A10	Overload sensor PS2 (input)
A11	Key switch to platform control (input)
A12	Platform down TS66
B1	Platform data link + (input) (Blue wire at platform)
B2	Power to platform controls (output) (Black wire at platform)
B3	ECM ground (output)
B4	Spare
B5	Spare
B6	Platform down coil Y7 (output)
B7	Steer left coil Y4 (output)
B8	Automotive-style horn H2 (option) (output)
B9	Multifunction alarm H5 (output)
B10	Pothole limit switch (input)
B11	Drive enable power (input)
B12	Platform up at ground controls TS66 (input)
C1	Platform data link – (input) (yellow or orange wire at platform)
C2	Key switch to ground controls (input)
C3	Spare
C4	Spare
C5	Spare
C6	Drive forward coil Y6 (output)
C7	Steer right coil Y3 (output)
C8	Spare
C9	Brake release coil Y2 (output)
C10	Spare
C11	Level sensor signal S7 (input)
C12	Down limit switch LS6 (input)

ECM PIN-OUT LEGEND From serial number 21065 to 25141	
Item	Description
A1	Flashing beacon FB1 (output)
A2	Ground from platform controls (input) (White wire at platform)
A3	Spare
A4	Power from platform controls to ECM (input) (Red wire at platform)
A5	Level sensor power S7 (output)
A6	Platform up coil Y8 (output)
A7	Drive reverse coil Y5 (output)
A8	Motor controller U6, terminal 1 (output)
A9	Motor controller U6, terminal 3 (output)
A10	Overload sensor PS2 (input)
A11	Key switch to platform control (input)
A12	Platform down TS66
B1	Platform data link + (input) (Blue wire at platform)
B2	Power to platform controls (output) (Black wire at platform)
B3	ECM ground (output)
B4	Spare
B5	Spare
B6	Platform down coil Y7 (output)
B7	Steer left coil Y4 (output)
B8	Automotive-style horn H2 (option) (output)
B9	Multifunction alarm H5 (output)
B10	Pothole limit switch (input)
B11	Drive enable power (input)
B12	Platform up at ground controls TS66 (input)
C1	Platform data link – (input) (yellow or orange wire at platform)
C2	Power to ECM (input)
C3	Spare
C4	Spare
C5	Spare
C6	Drive forward coil Y6 (output)
C7	Steer right coil Y3 (output)
C8	Spare
C9	Brake release coil Y2 (output)
C10	Spare
C11	Level sensor signal S7 (input)
C12	Down limit switch LS6 (input)

REV B

ECM PIN-OUT LEGEND

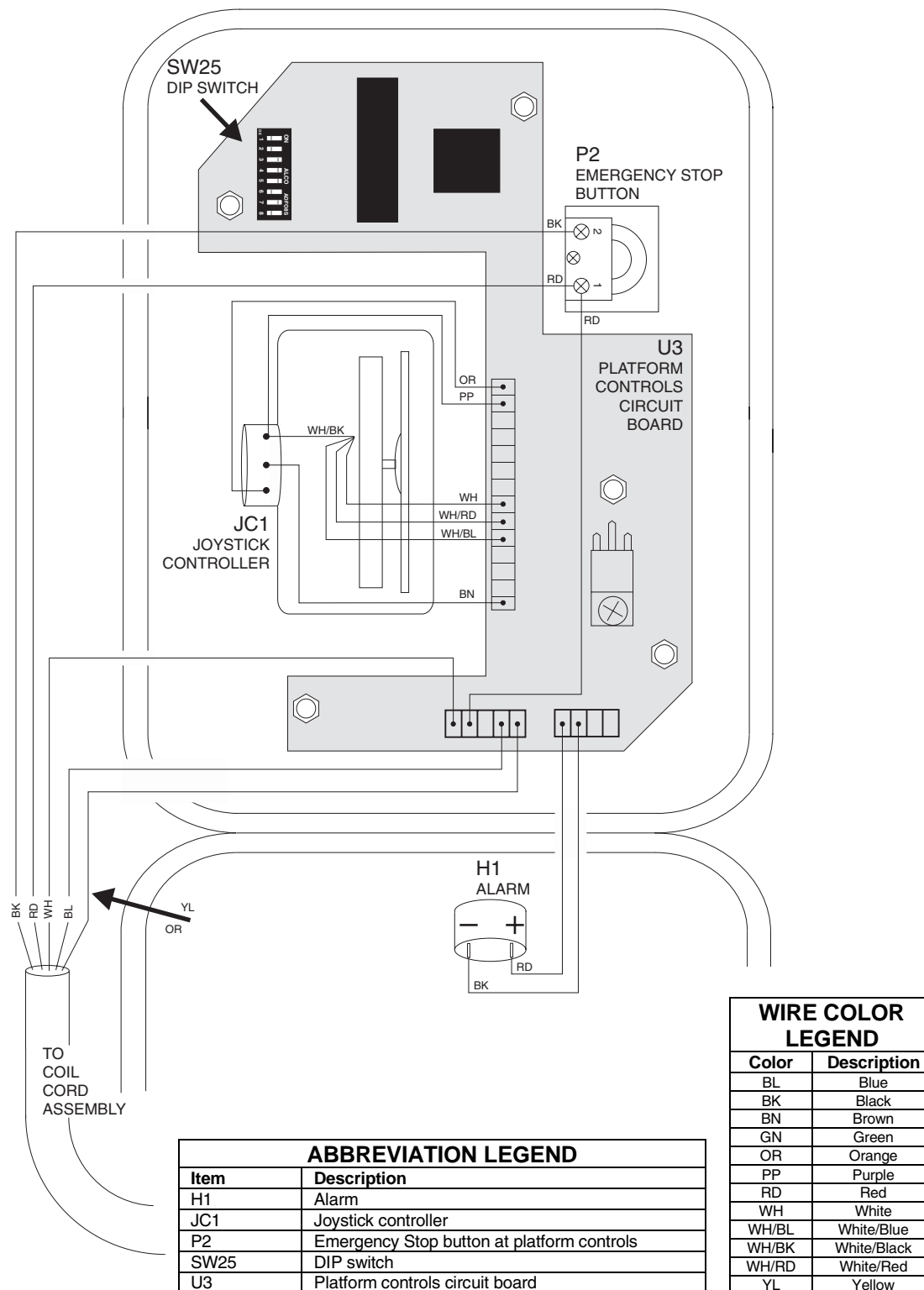


ECM PIN-OUT LEGEND From serial number 25142 to 36044	
Item	Description
A1	Flashing beacon FB1 (output)
A2	Ground from platform controls (input) (Blue wire at platform)
A3	Spare
A4	Power from platform controls to ECM (input) (White wire at platform)
A5	Level sensor power S7 (output)
A6	Platform up coil Y8 (output)
A7	Drive reverse coil Y5 (output)
A8	Motor controller U6, terminal 1 (output)
A9	Motor controller U6, terminal 3 (output)
A10	Overload sensor PS2 (input)
A11	Key switch to platform control (input)
A12	Platform down TS66
B1	Platform data link + (input) (Black wire at platform)
B2	Spare
B3	ECM ground (output)
B4	Spare
B5	Spare
B6	Platform down coil Y7 (output)
B7	Steer left coil Y4 (output)
B8	Automotive-style horn H2 (option) (output)
B9	Multifunction alarm H5 (output)
B10	Pothole limit switch (input)
B11	Drive enable power (input)
B12	Platform up at ground controls TS66 (input)
C1	Platform data link – (input) (yellow or orange wire at platform)
C2	Power to ECM (input)
C3	Spare
C4	Spare
C5	Spare
C6	Drive forward coil Y6 (output)
C7	Steer right coil Y3 (output)
C8	Spare
C9	Brake release coil Y2 (output)
C10	Spare
C11	Level sensor signal S7 (input)
C12	Down limit switch LS6 (input)

ECM PIN-OUT LEGEND After serial number 36044	
Item	Description
A1	Flashing beacon FB1 (output)
A2	Ground from platform controls (input) (Blue wire at platform)
A3	Spare
A4	Power from platform controls to ECM (input) (White wire at platform)
A5	Level sensor power S7 (output)
A6	Platform up coil Y8 (output)
A7	Drive reverse coil Y5 (output)
A8	Motor controller U6, terminal 1 (output)
A9	Motor controller U6, terminal 3 (output)
A10	Overload sensor PS2 (input)
A11	Key switch to platform control (input)
A12	Platform down TS66
B1	Platform data link + (input) (Black wire at platform)
B2	Spare
B3	ECM ground (output)
B4	Spare
B5	Spare
B6	Platform down coil Y7 (output)
B7	Steer left coil Y4 (output)
B8	Automotive-style horn H2 (option) (output)
B9	Multifunction alarm H5 (output)
B10	Pothole limit switch (input)
B11	Drive enable power (input)
B12	Platform up at ground controls TS66 (input)
C1	Platform data link – (input) (yellow or orange wire at platform)
C2	Power to ECM (input)
C3	Spare
C4	Spare
C5	Spare
C6	Drive forward coil Y6 (output)
C7	Steer right coil Y3 (output)
C8	Spare
C9	Brake release coil Y2 (output)
C10	Spare
C11	Level sensor signal S7 (input)
C12	Down limit switch LS6 (input)

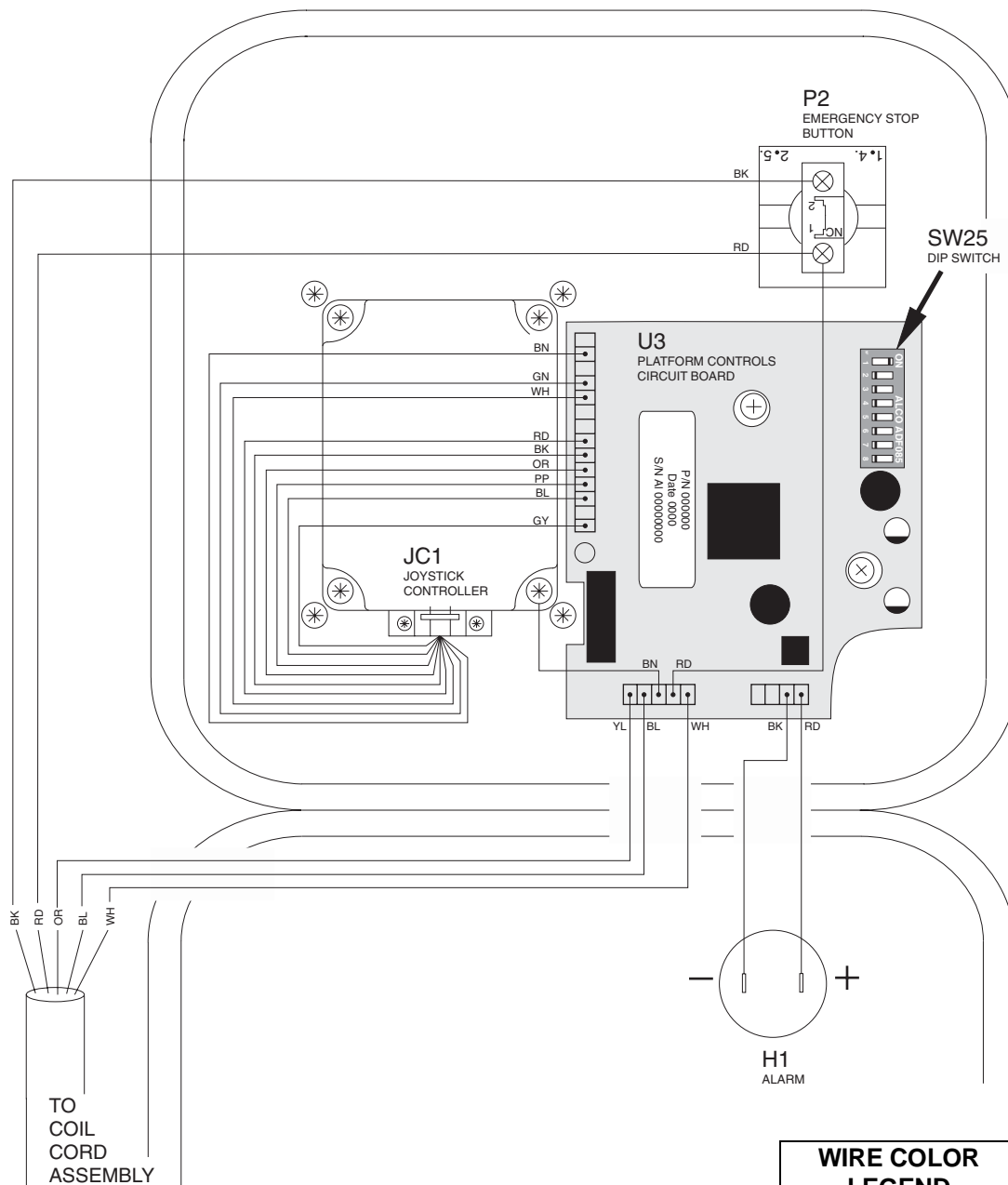
Platform Controls Wiring Diagram (from serial number 17408 to 48054)

REV B



REV A

Platform Controls Wiring Diagram (after serial number 48054)



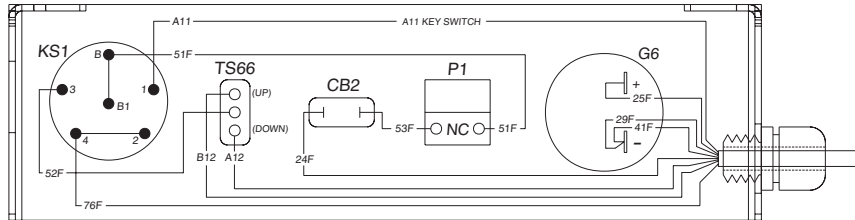
ABBREVIATION LEGEND	
Item	Description
H1	Alarm
JC1	Joystick controller
P2	Emergency Stop button at platform controls
SW25	DIP switch
U3	Platform controls circuit board

WIRE COLOR LEGEND	
Color	Description
BL	Blue
BK	Black
BN	Brown
GN	Green
GY	Gray
OR	Orange
PP	Purple
RD	Red
WH	White
YL	Yellow

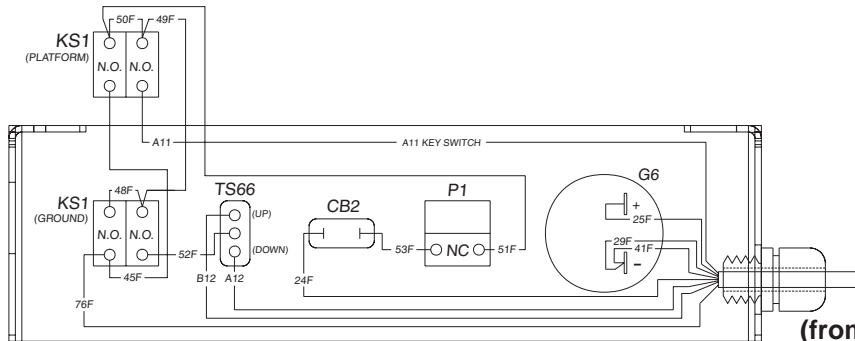
Ground Controls Wiring Diagram

GS-2046 and GS-2646

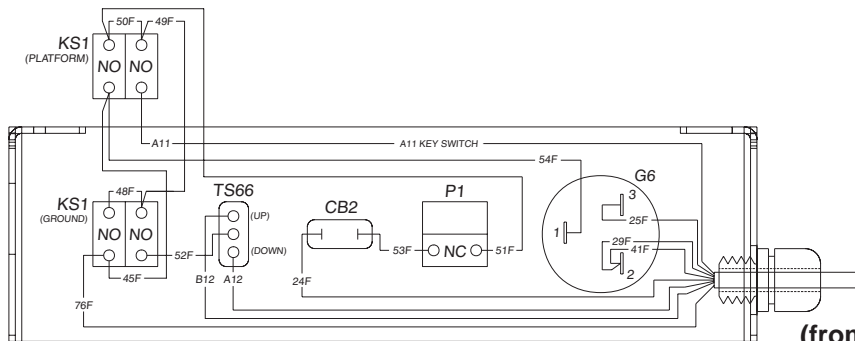
REV B



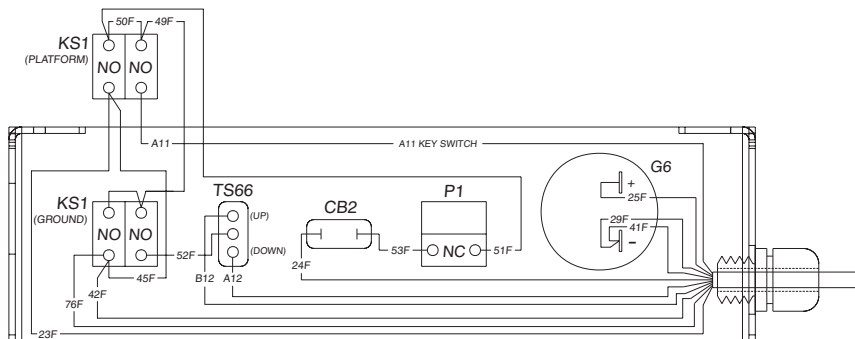
(after serial number 48717)



(from serial number 40926 to 48717)



(from serial number 21065 to 40925)



(before serial number 21065)

ABBREVIATION LEGEND

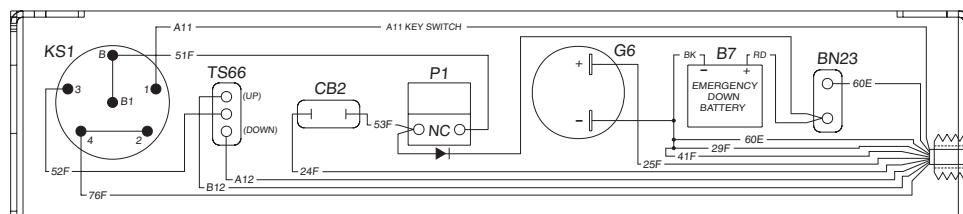
Item	Description
CB2	Circuit breaker, 7A
G6	Hour meter
KS1	Key switch
P1	Emergency Stop at ground controls
TS66	Platform up/down toggle switch

Ground Controls Wiring Diagram

GS-3246

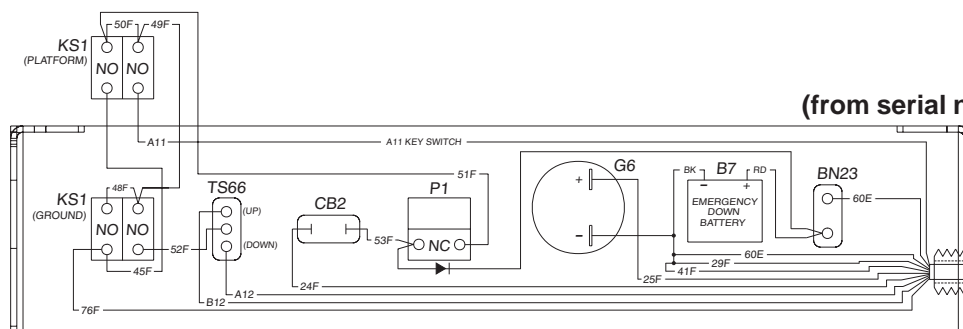
REV B

(after serial number 48717)

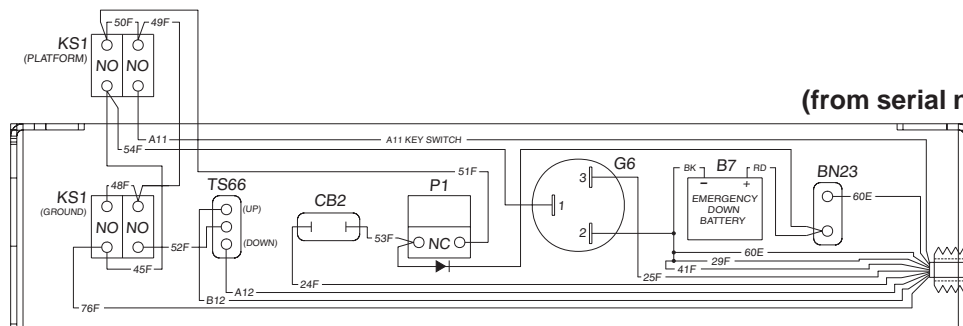


(B7 not used after serial number 49199)

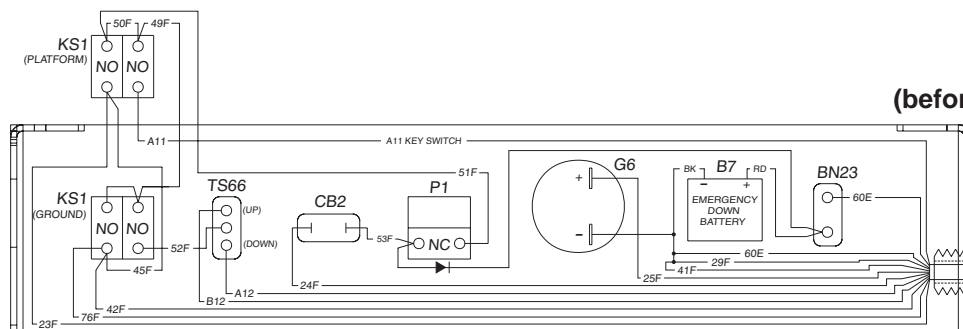
(from serial number 40926 to 48717)



(from serial number 21065 to 40925)



(before serial number 21065)

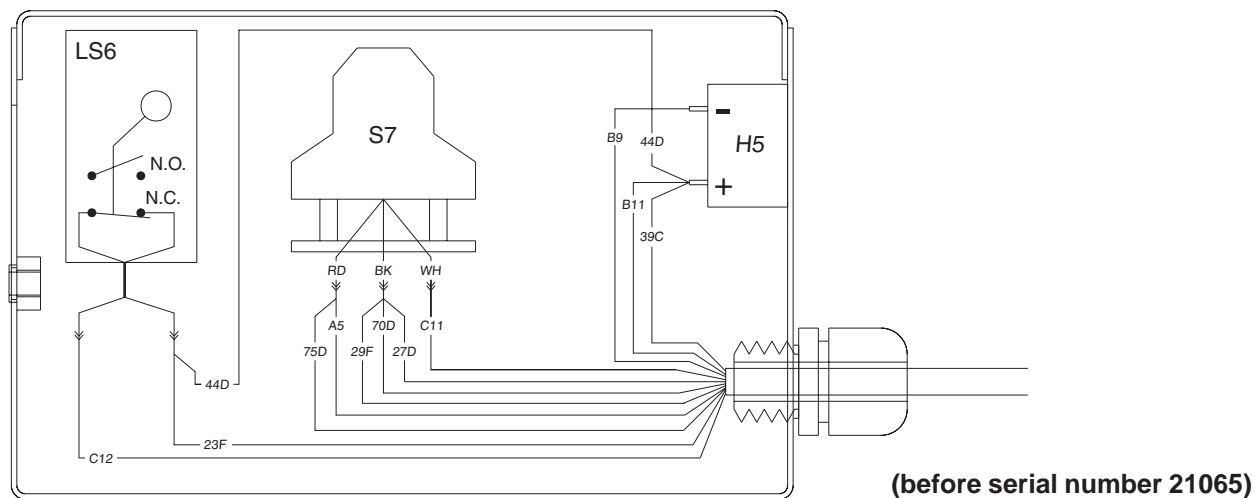
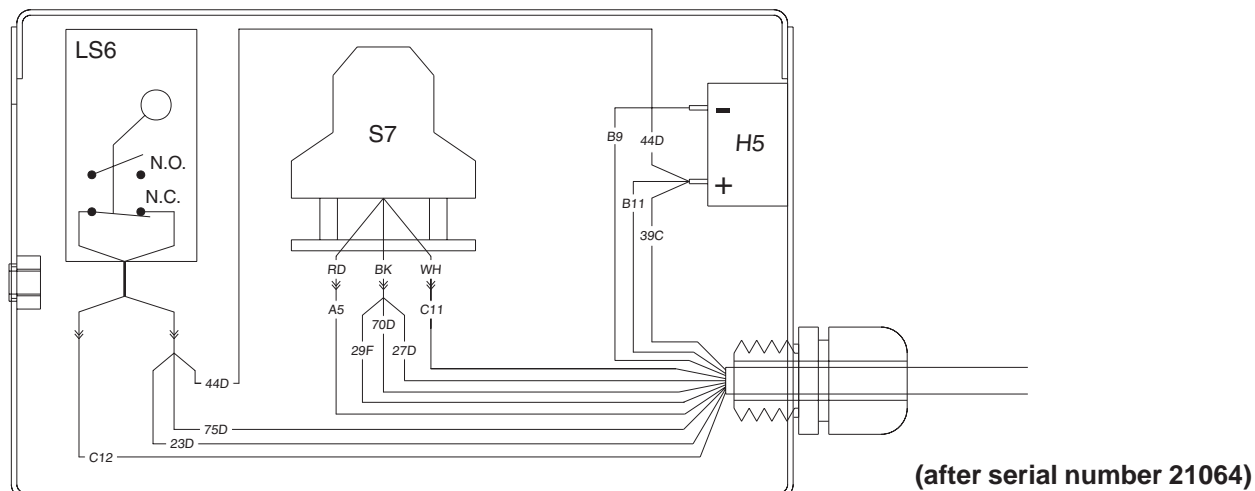


ABBREVIATION LEGEND

Item	Description
B7	Auxiliary down battery (GS-3246)
BN23	Auxiliary down button (GS-3246)
CB2	Circuit breaker, 7A
G6	Hour meter
KS1	Key switch
P1	Emergency Stop at ground controls
TS66	Platform up/down toggle switch

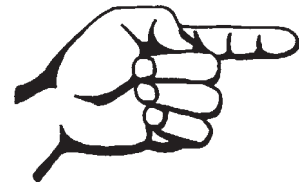
Level Sensor Box Wiring Diagram

REV A



WIRE COLOR LEGEND	
Color	Description
BK	Black
RD	Red
WH	White

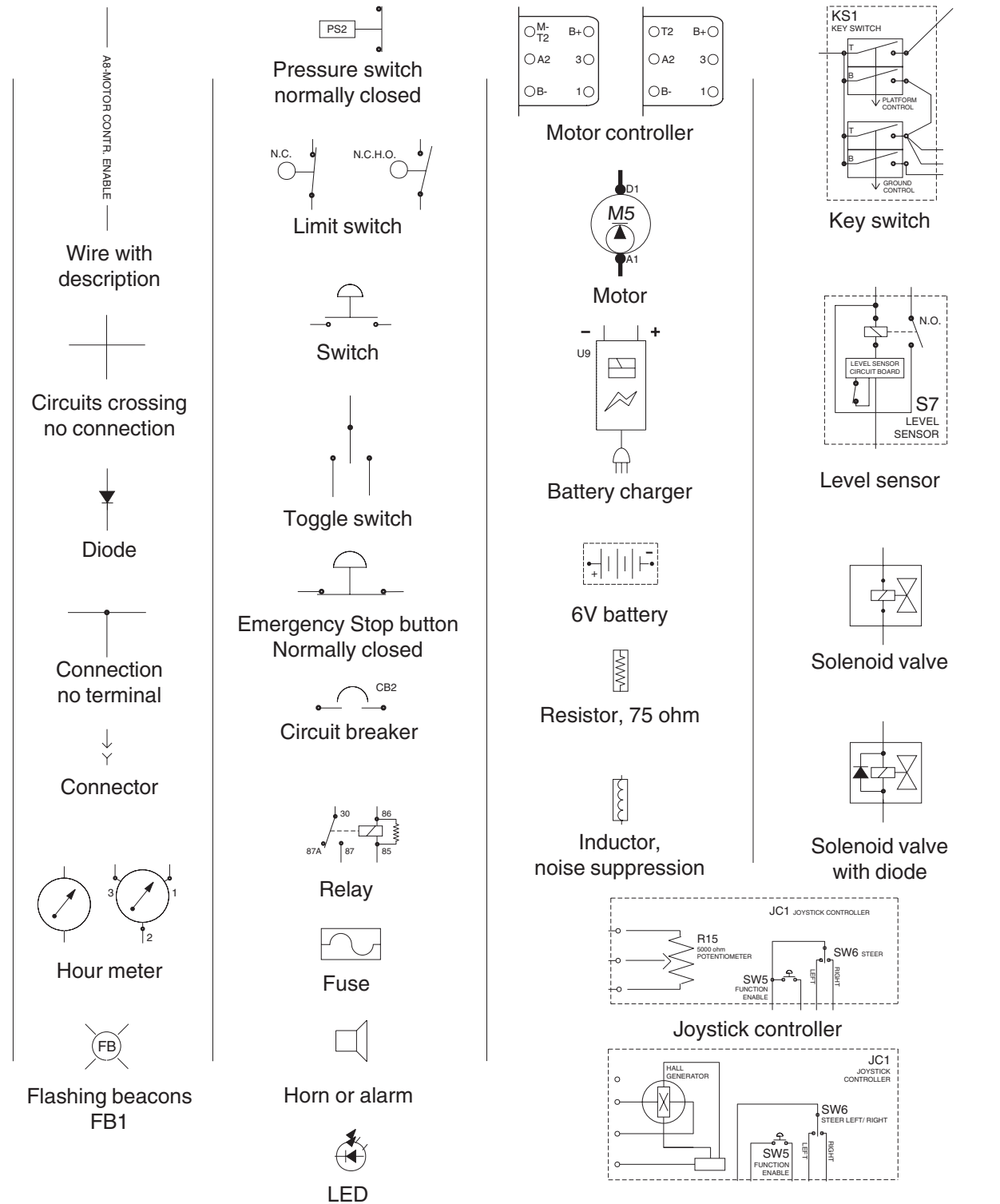
ABBREVIATION LEGEND	
Item	Description
H5	Multi-function alarm
LS6	Down limit switch
S7	Level sensor

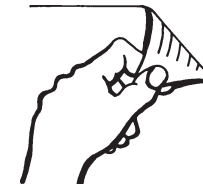
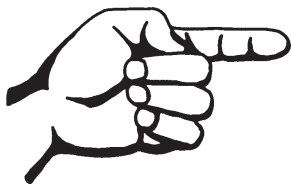


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Electrical Symbols Legend

REV B



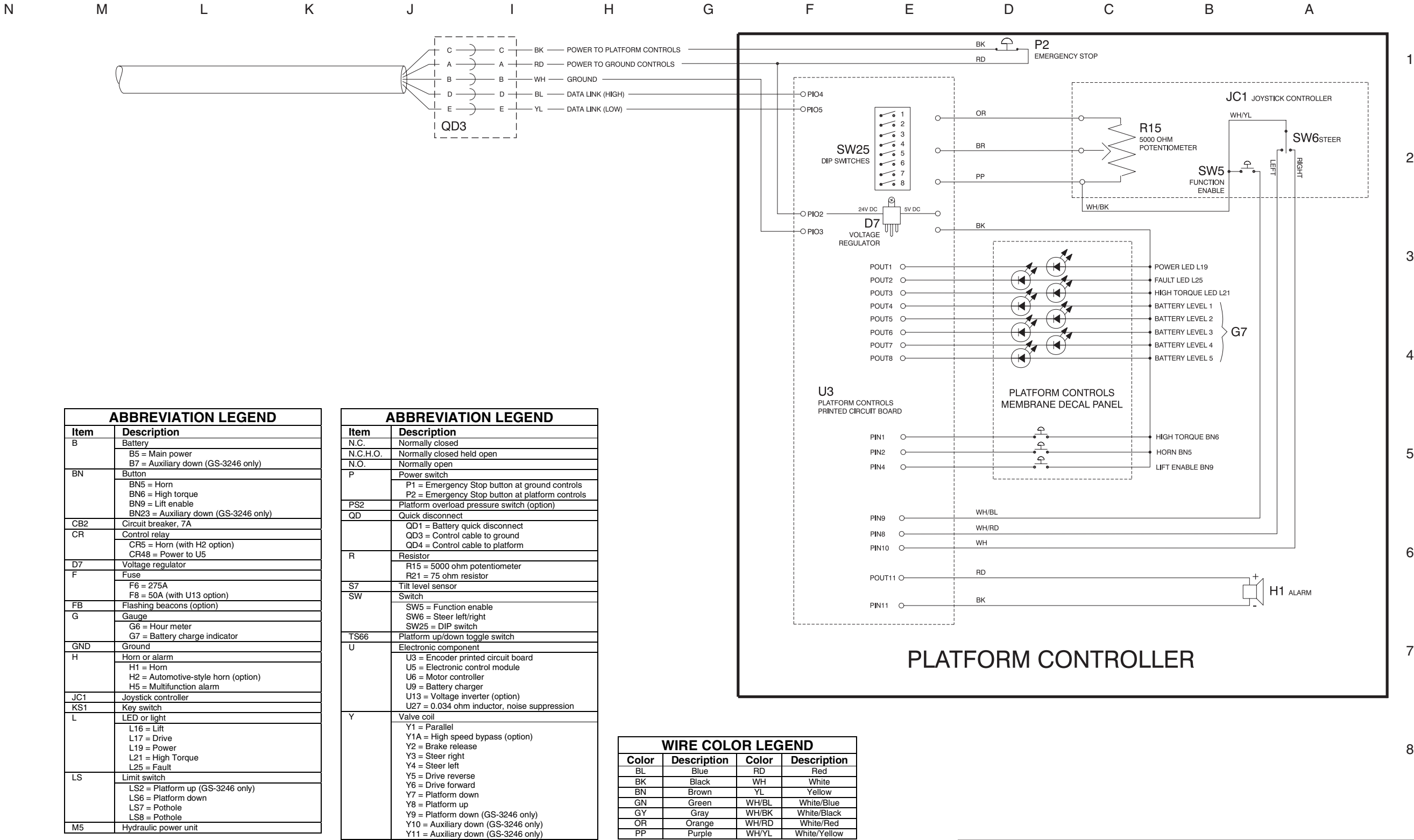


REV B



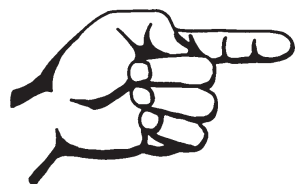
REV B

Electrical Schematic
(from serial number 17408 to 21064)



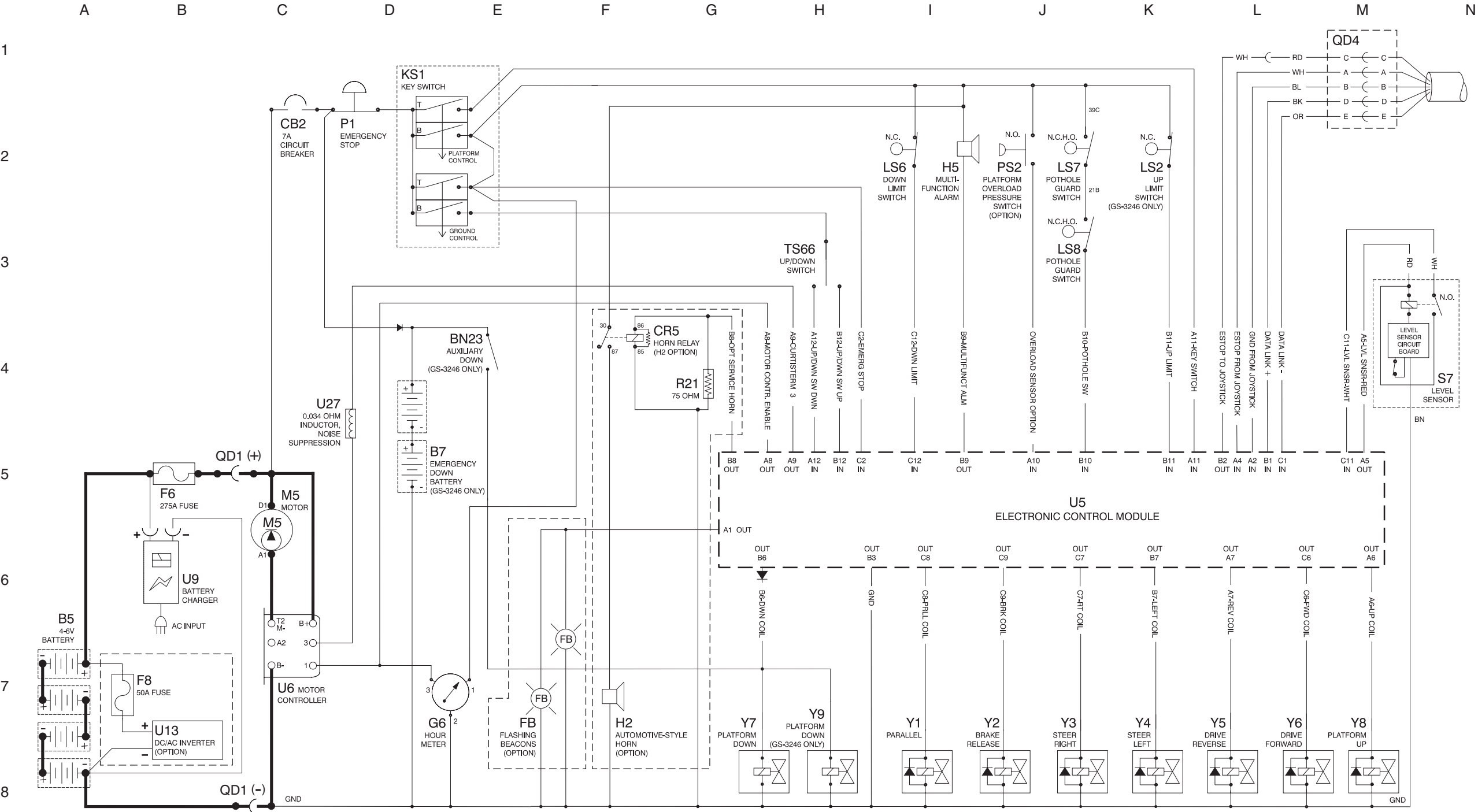
Electrical Schematic
(from serial number 17408 to 21064)



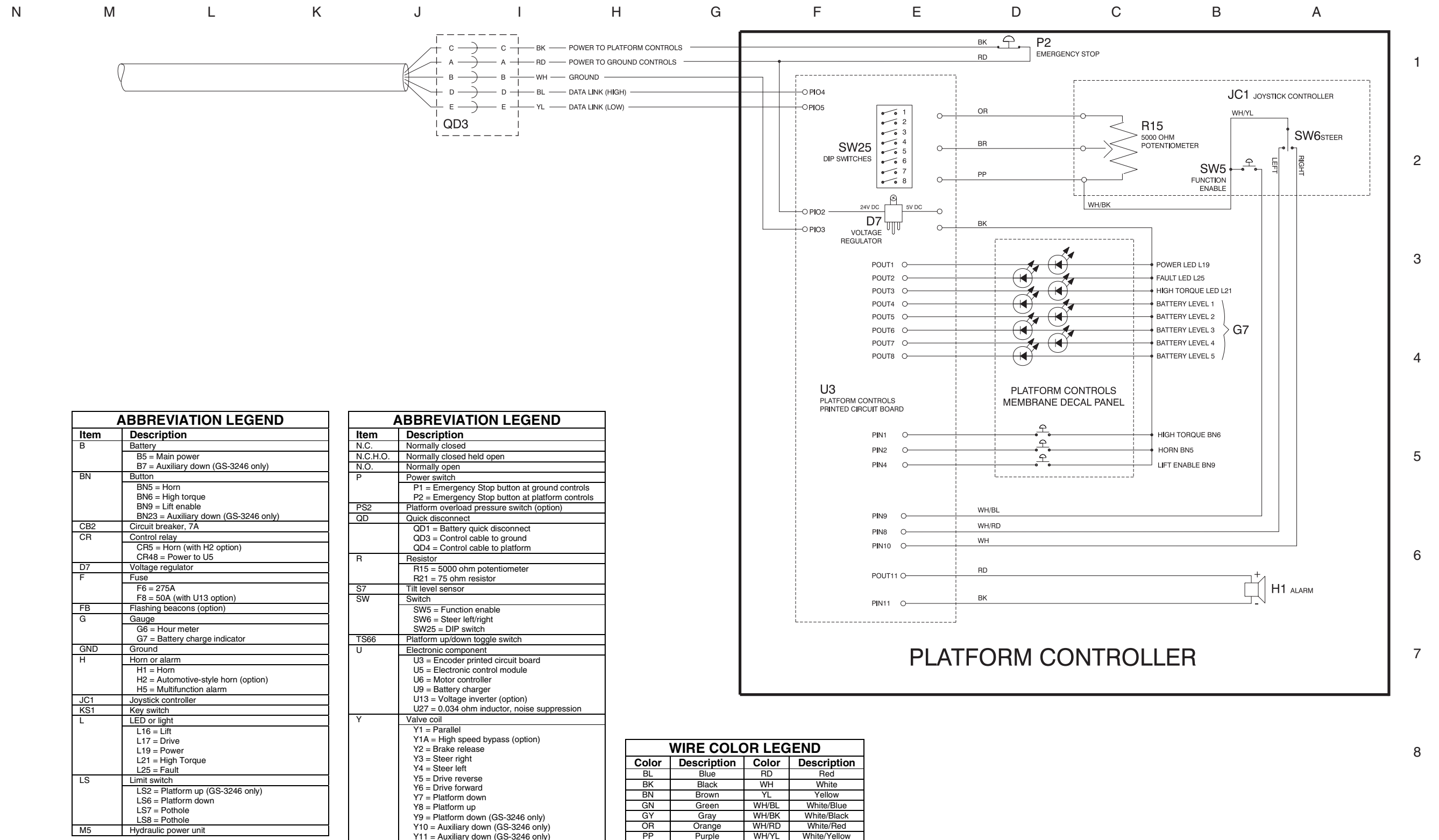


Electrical Schematic
(from serial number 21065 to 21262)

REV B

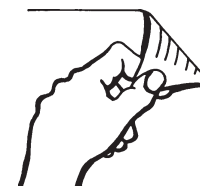
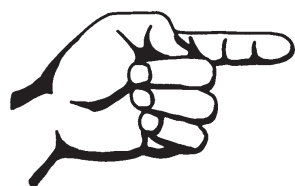


REV B



Electrical Schematic
(from serial number 21065 to 21262)





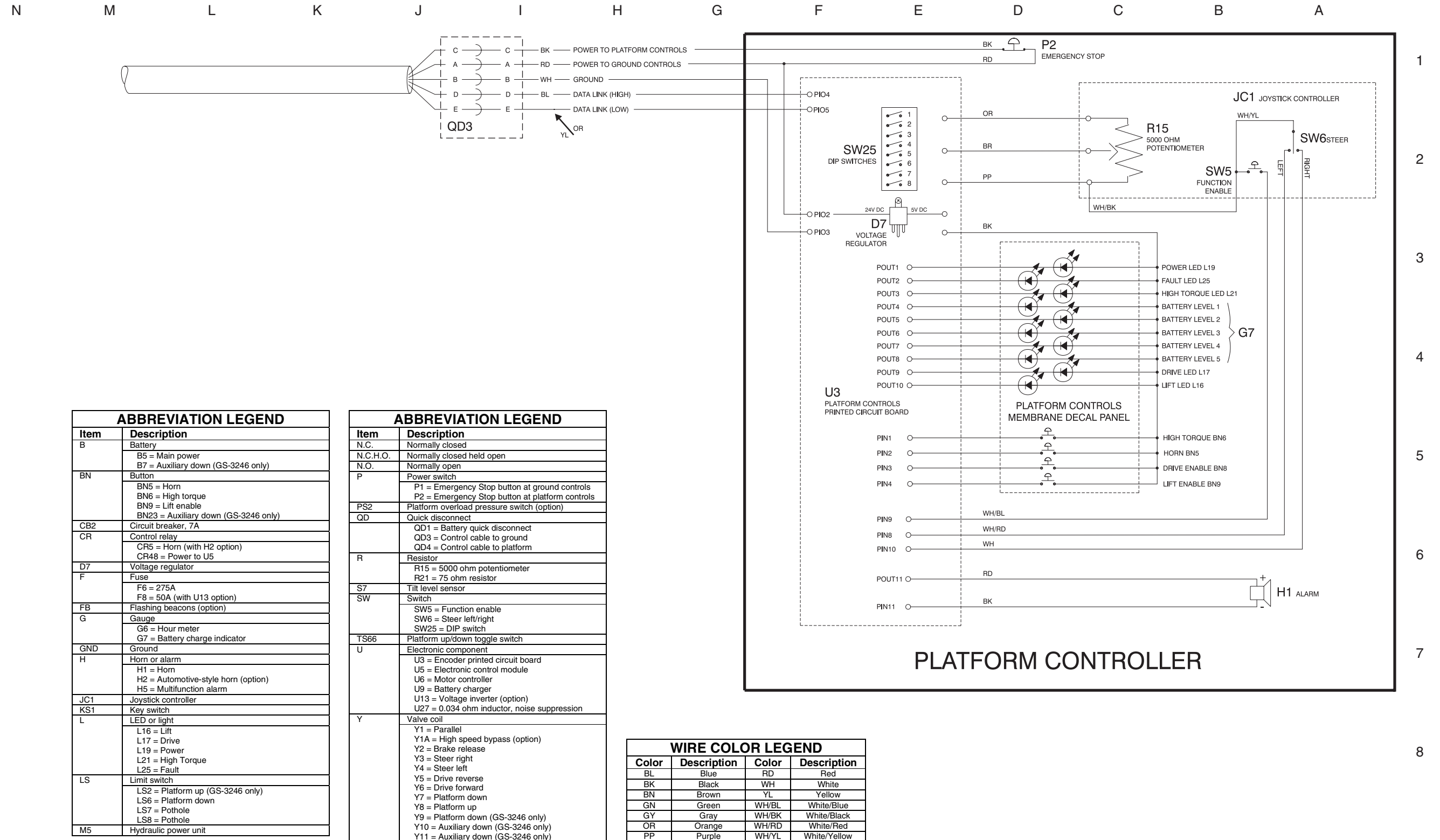
REV B



REV B

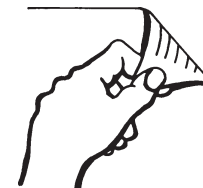
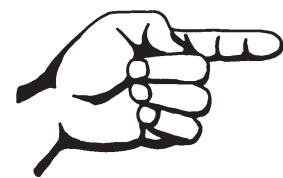
Electrical Schematic

(from serial number 21263 to 24438)



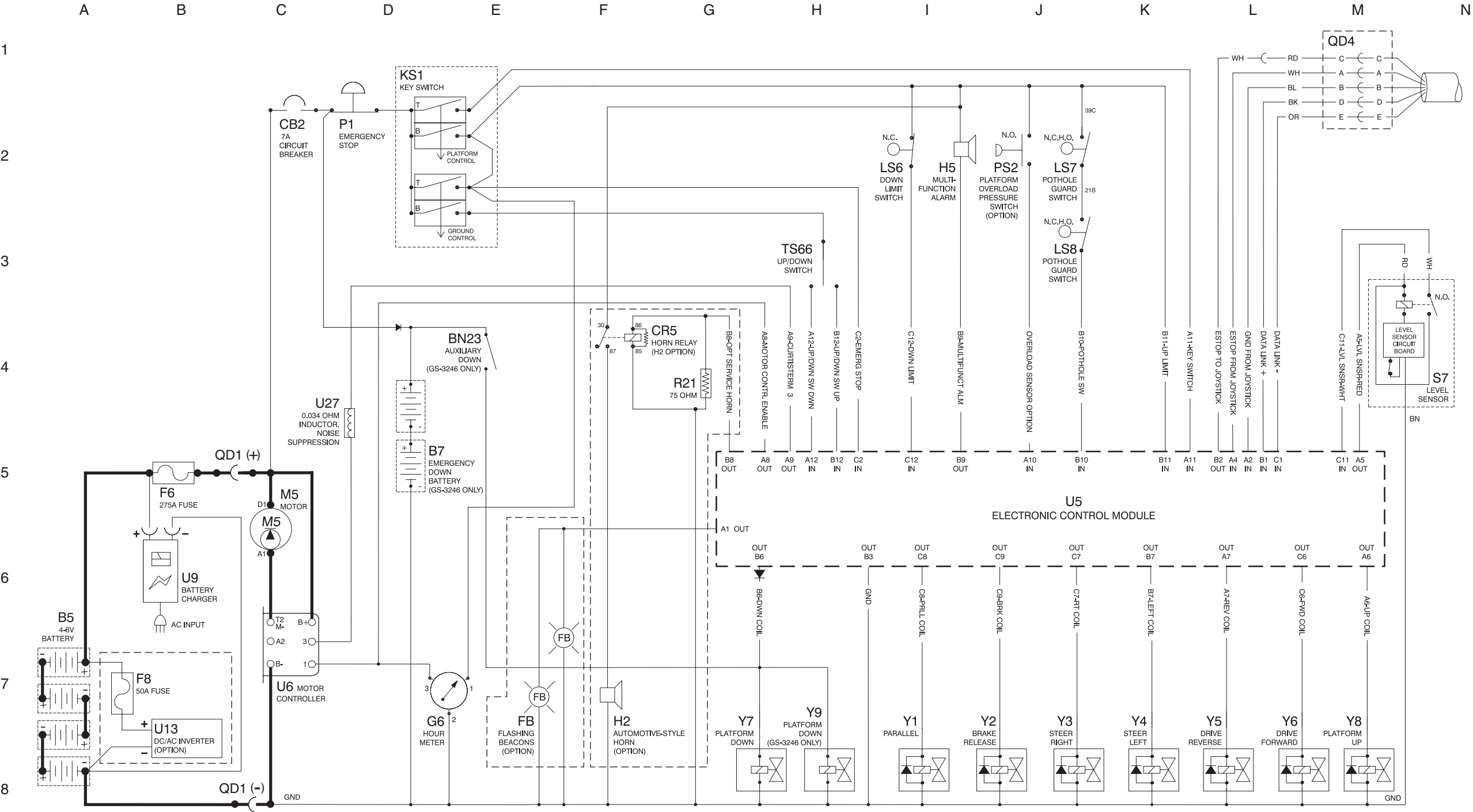
Electrical Schematic
(from serial number 21263 to 24438)





Electrical Schematic
(from serial number 24439 to 25141)

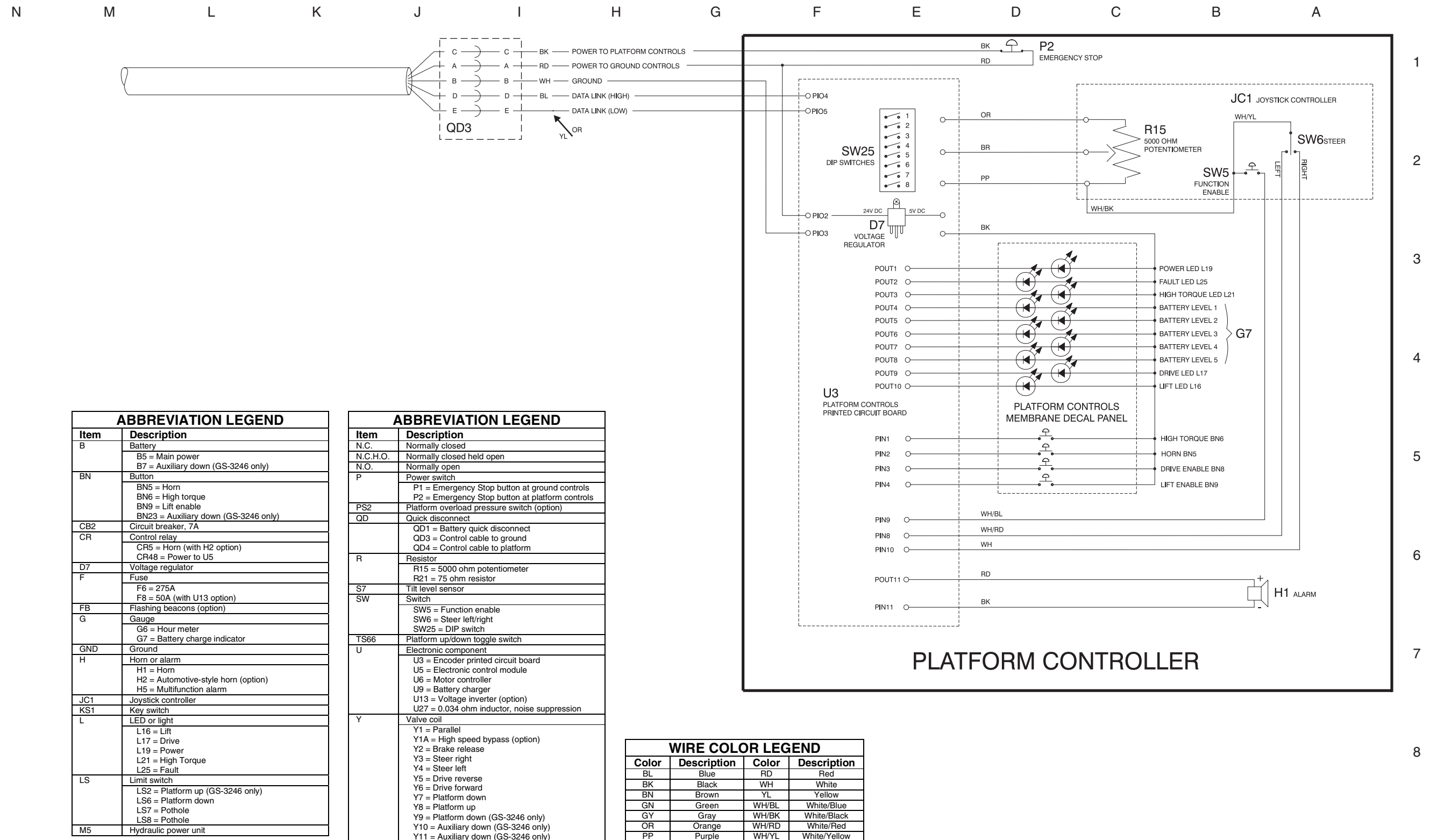
REV B



REV B

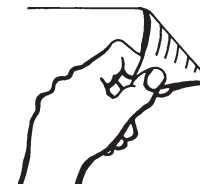
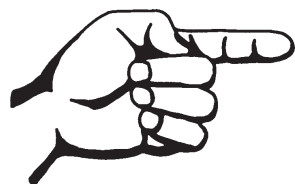
Electrical Schematic

(from serial number 24439 to 25141)



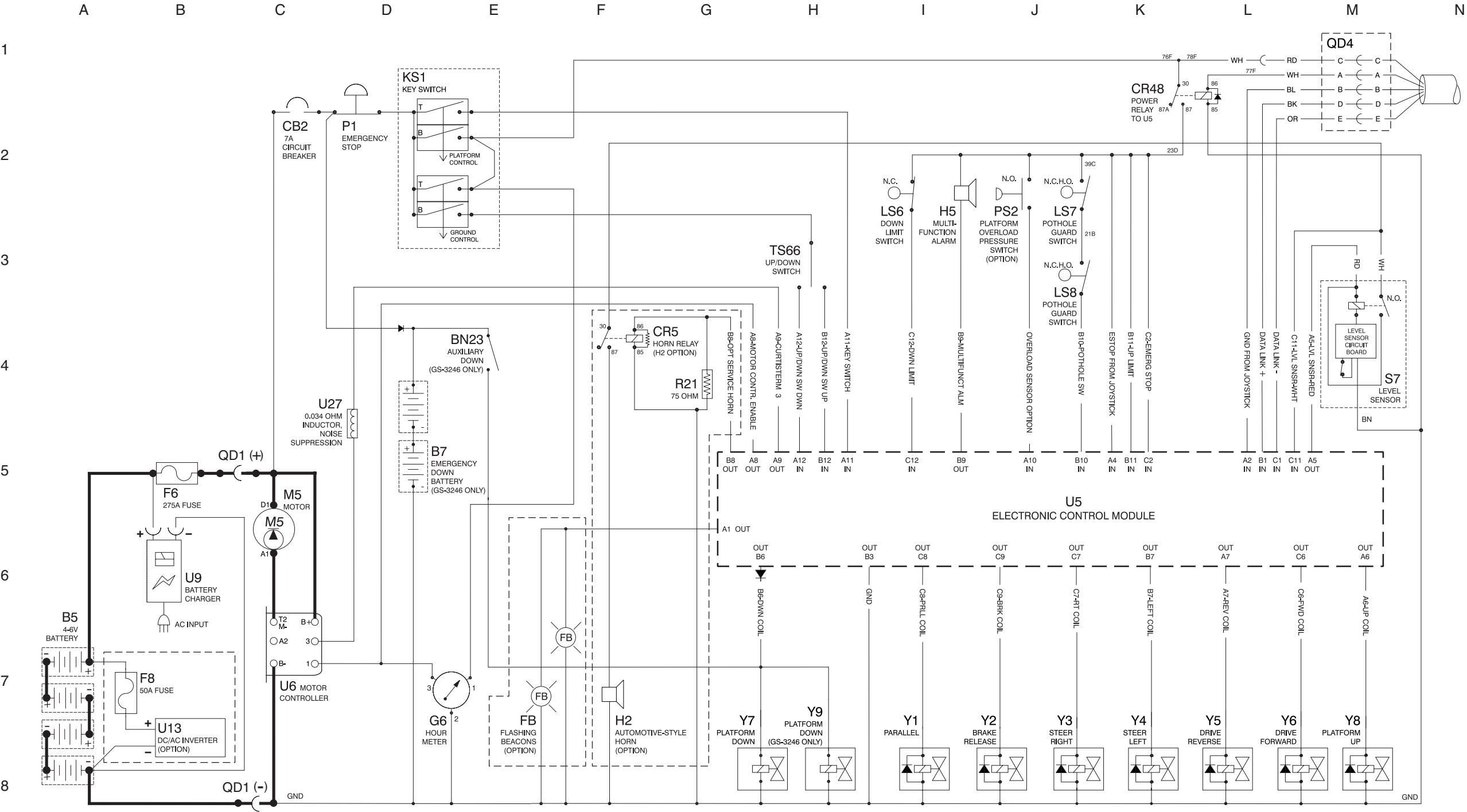
Electrical Schematic
(from serial number 24439 to 25141)





Electrical Schematic
(from serial number 25142 to 27181)

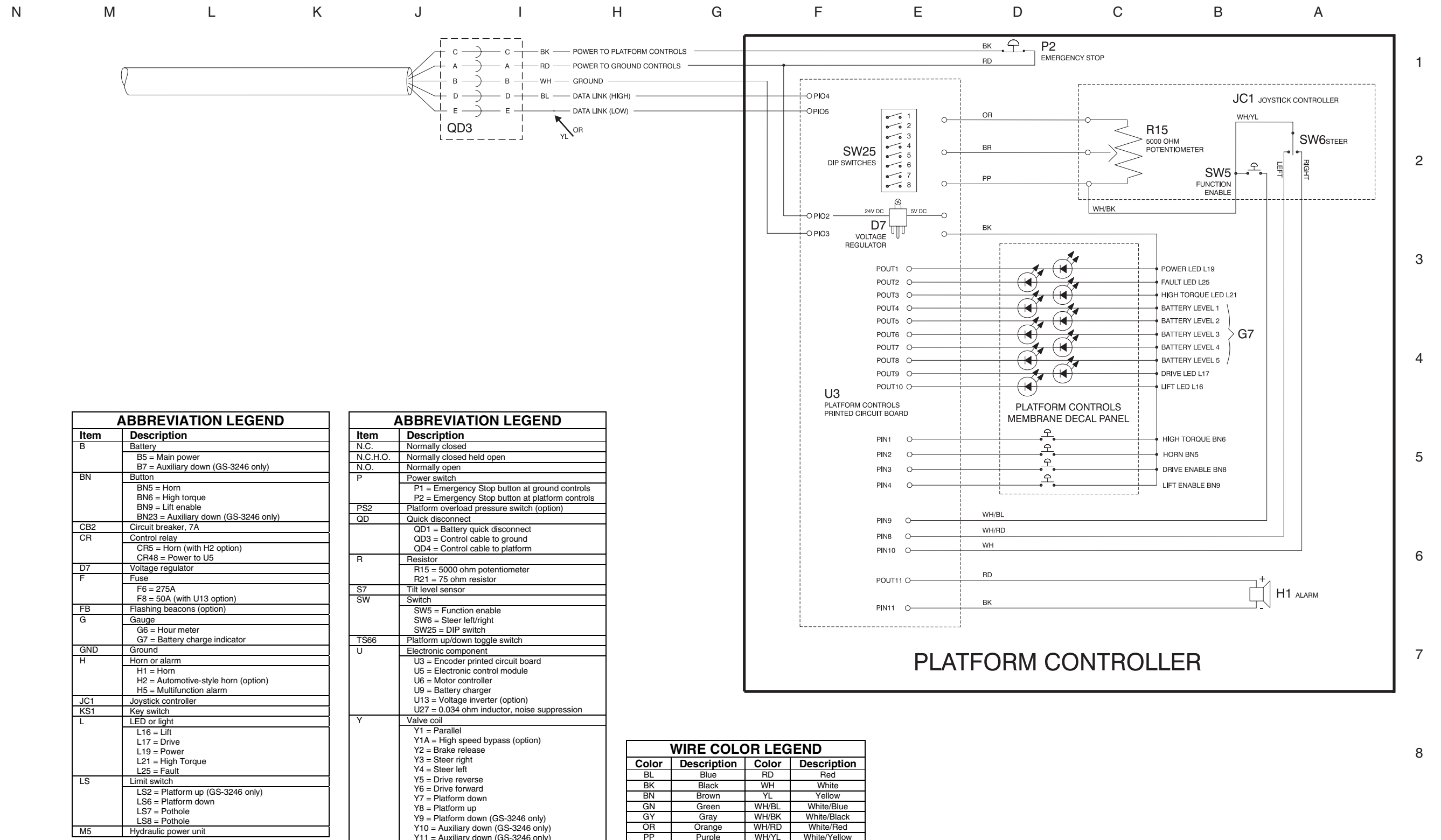
REV B



REV B

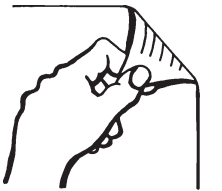
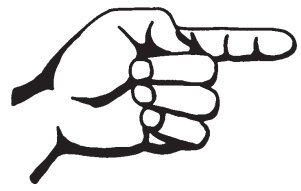
Electrical Schematic

(from serial number 25142 to 27181)



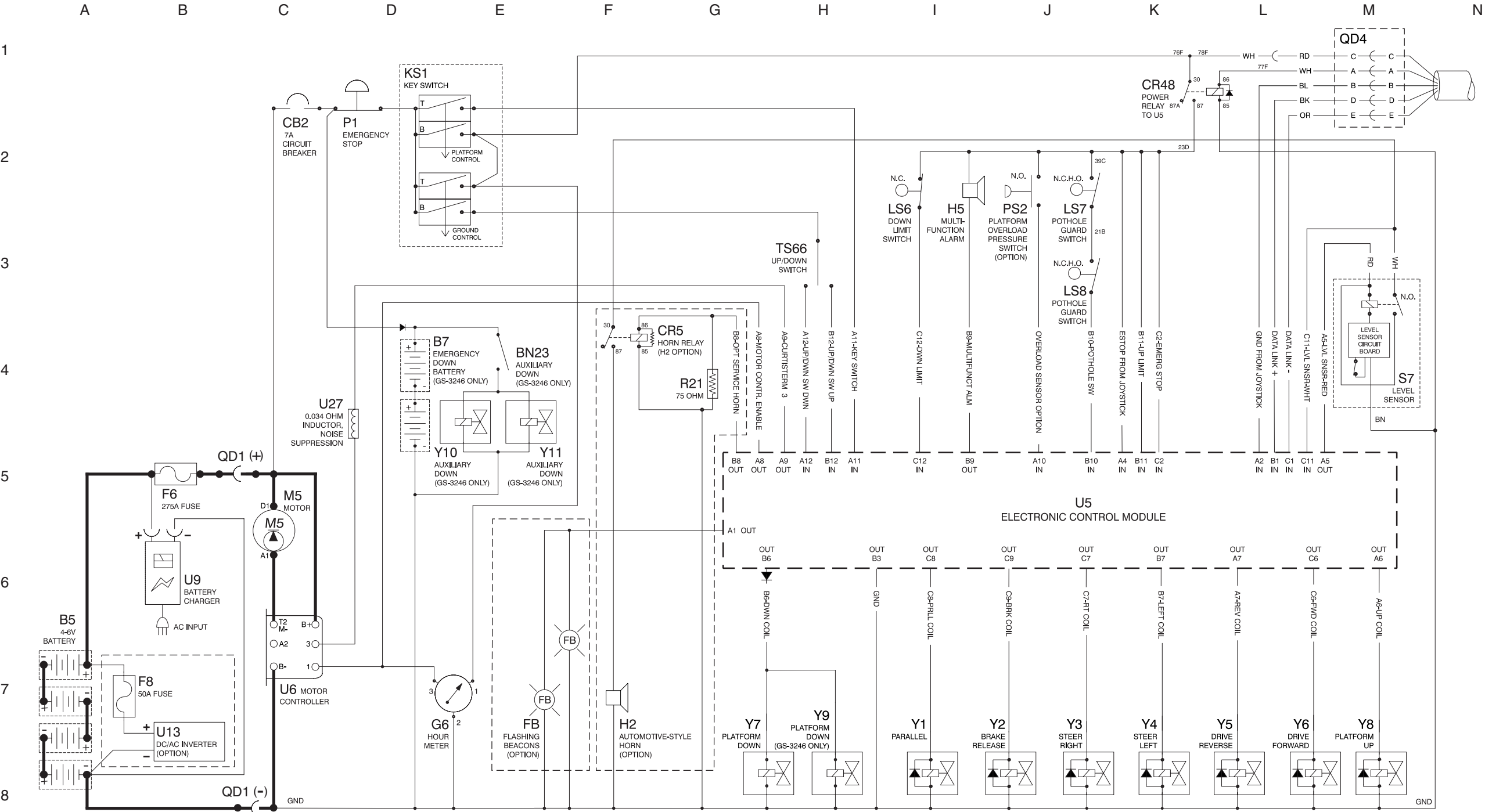
Electrical Schematic
(from serial number 25142 to 27181)





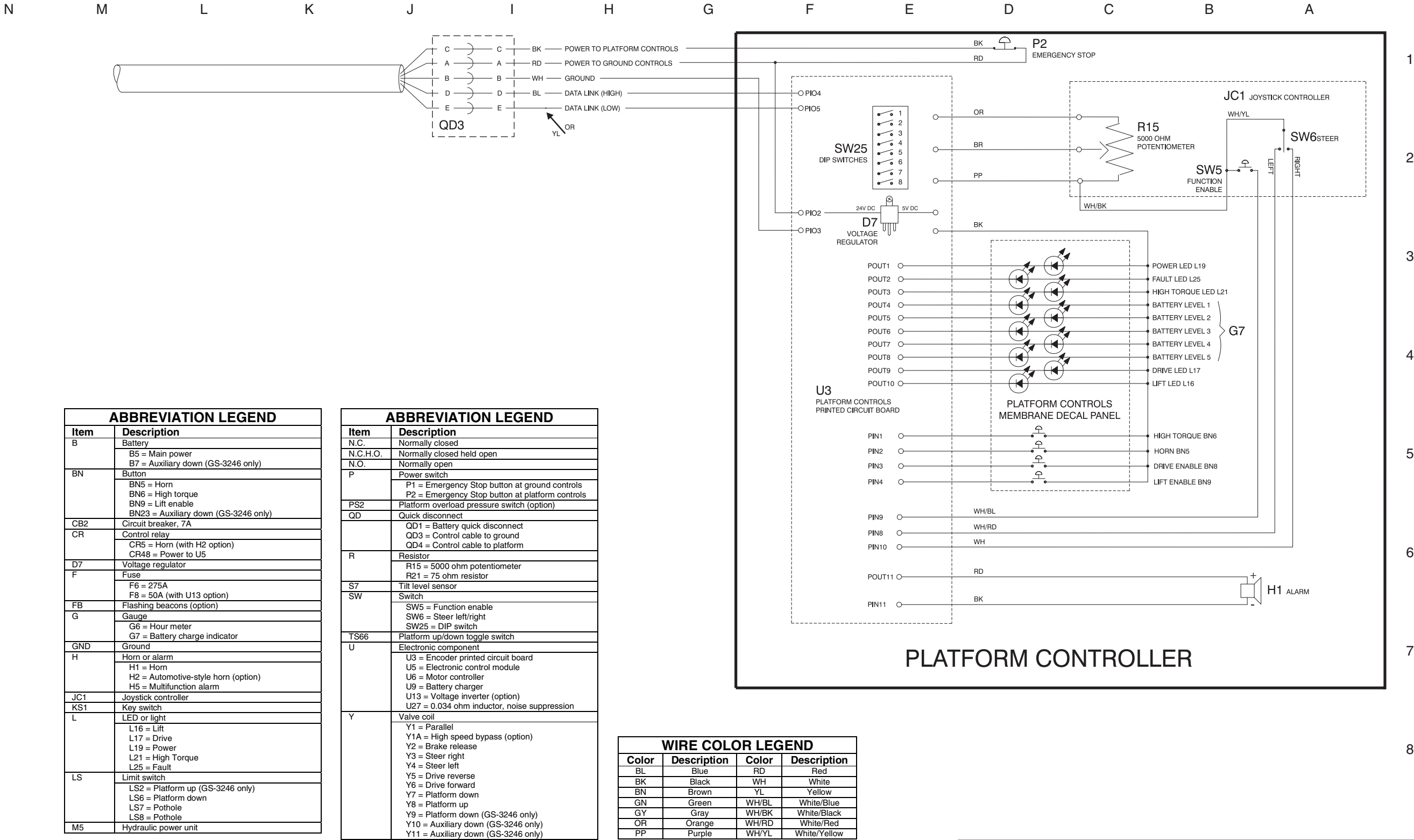
Electrical Schematic
(from serial number 27182 to 28936)

REV B



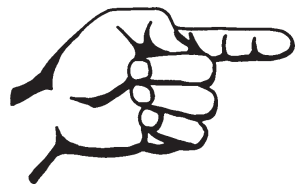
REV B

Electrical Schematic
(from serial number 27182 to 28936)



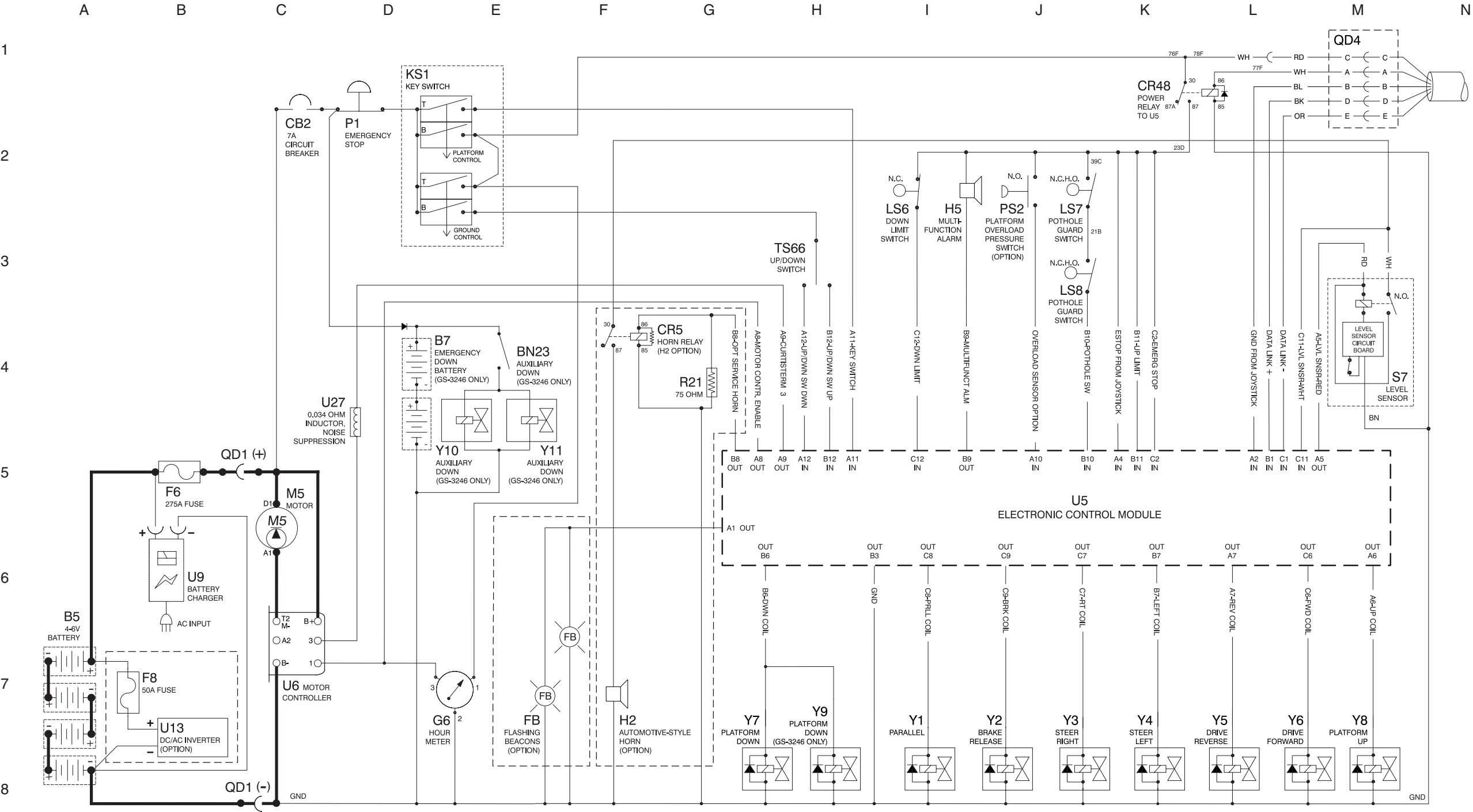
Electrical Schematic
(from serial number 27182 to 28936)





Electrical Schematic
(from serial number 28937 to 33721)

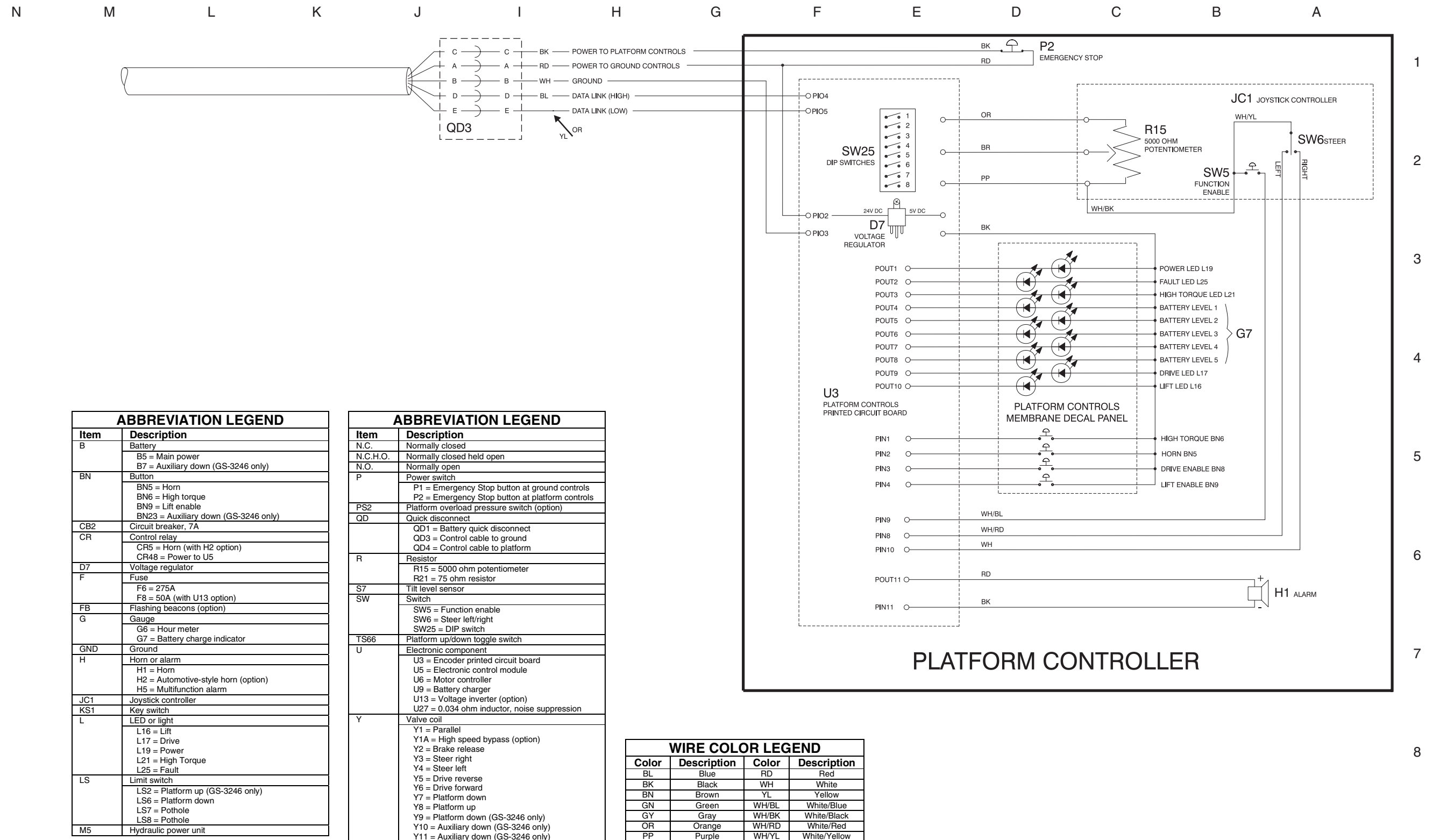
REV B



REV B

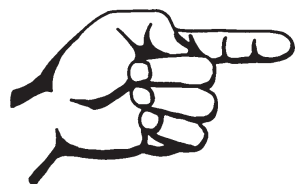
Electrical Schematic

(from serial number 28937 to 33721)



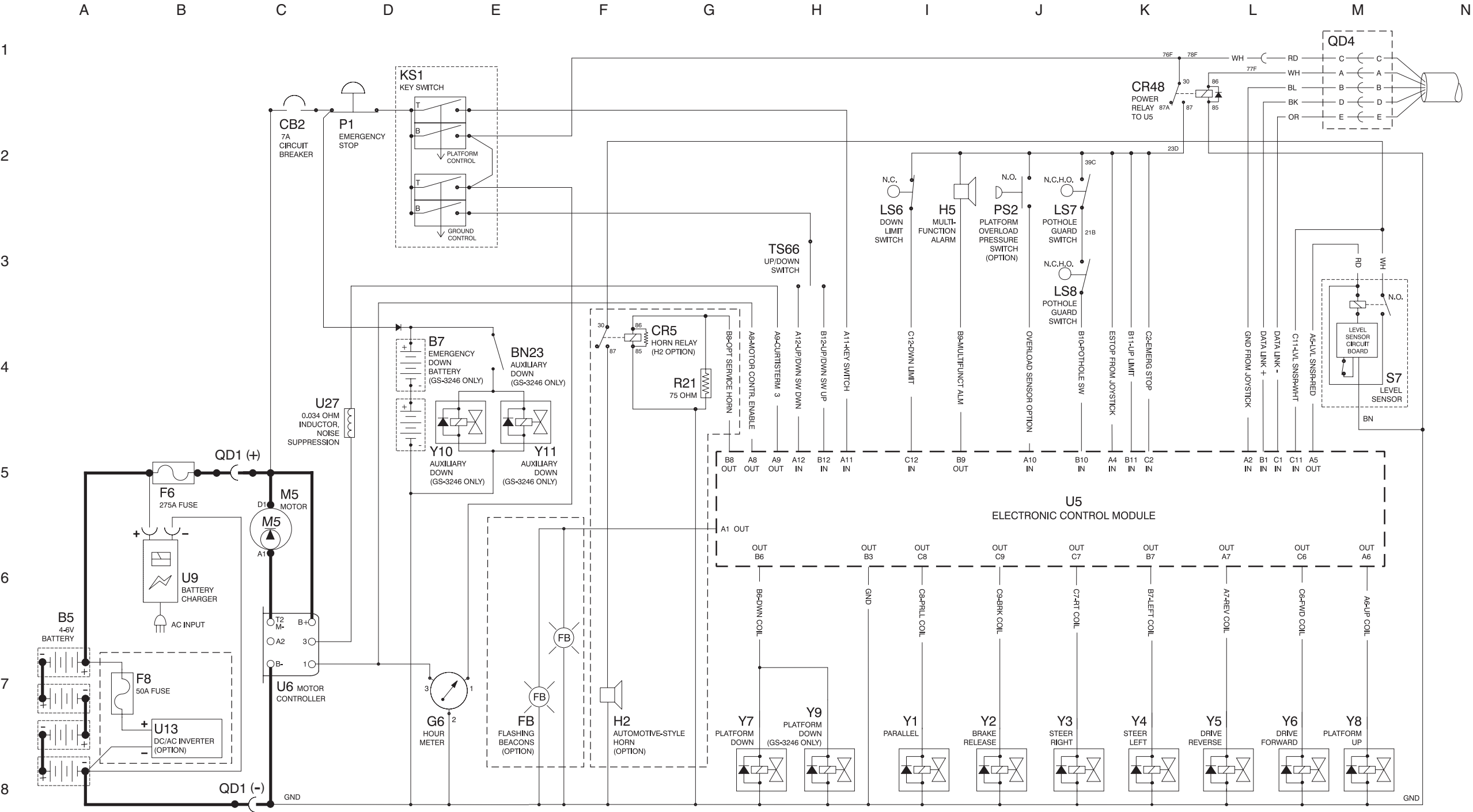
Electrical Schematic
(from serial number 28937 to 33721)





Electrical Schematic
(from serial number 33722 to 40925)

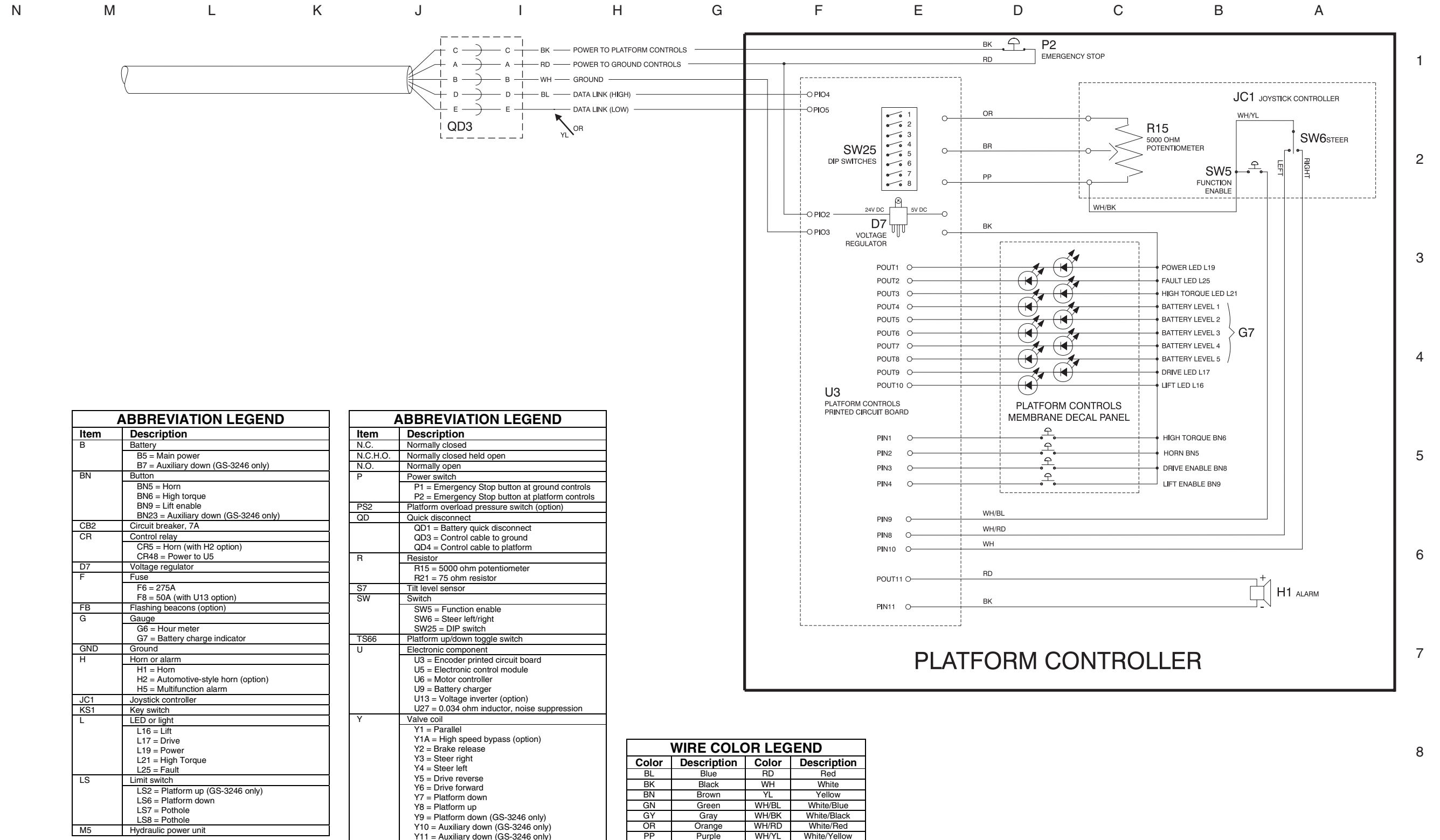
REV B



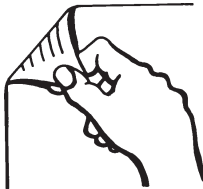
REV B

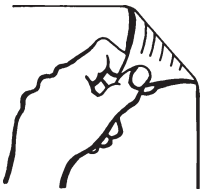
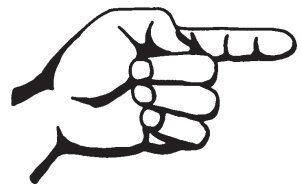
Electrical Schematic

(from serial number 33722 to 40925)



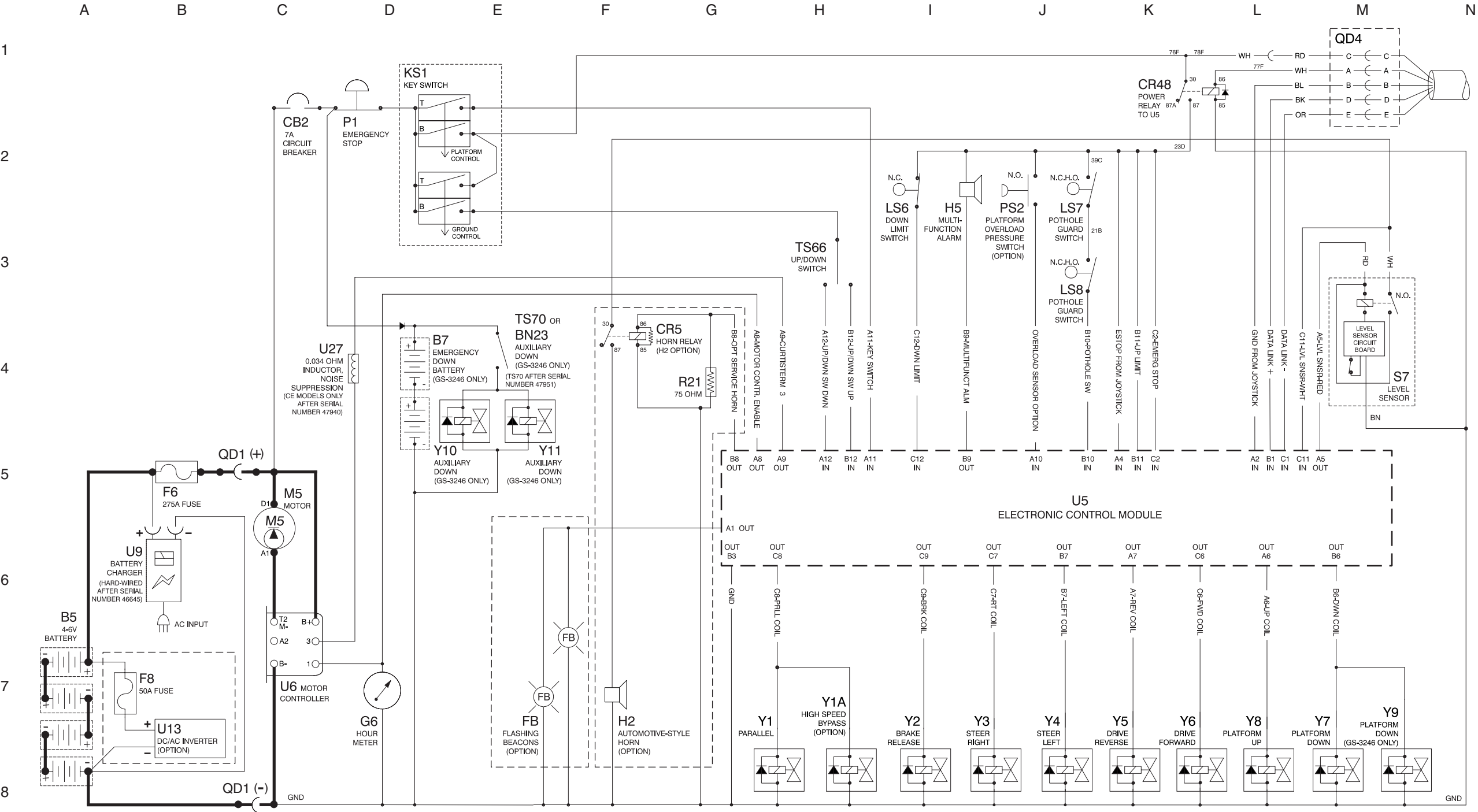
Electrical Schematic
(from serial number 33722 to 40925)





Electrical Schematic
(from serial number 40926 to 48054)

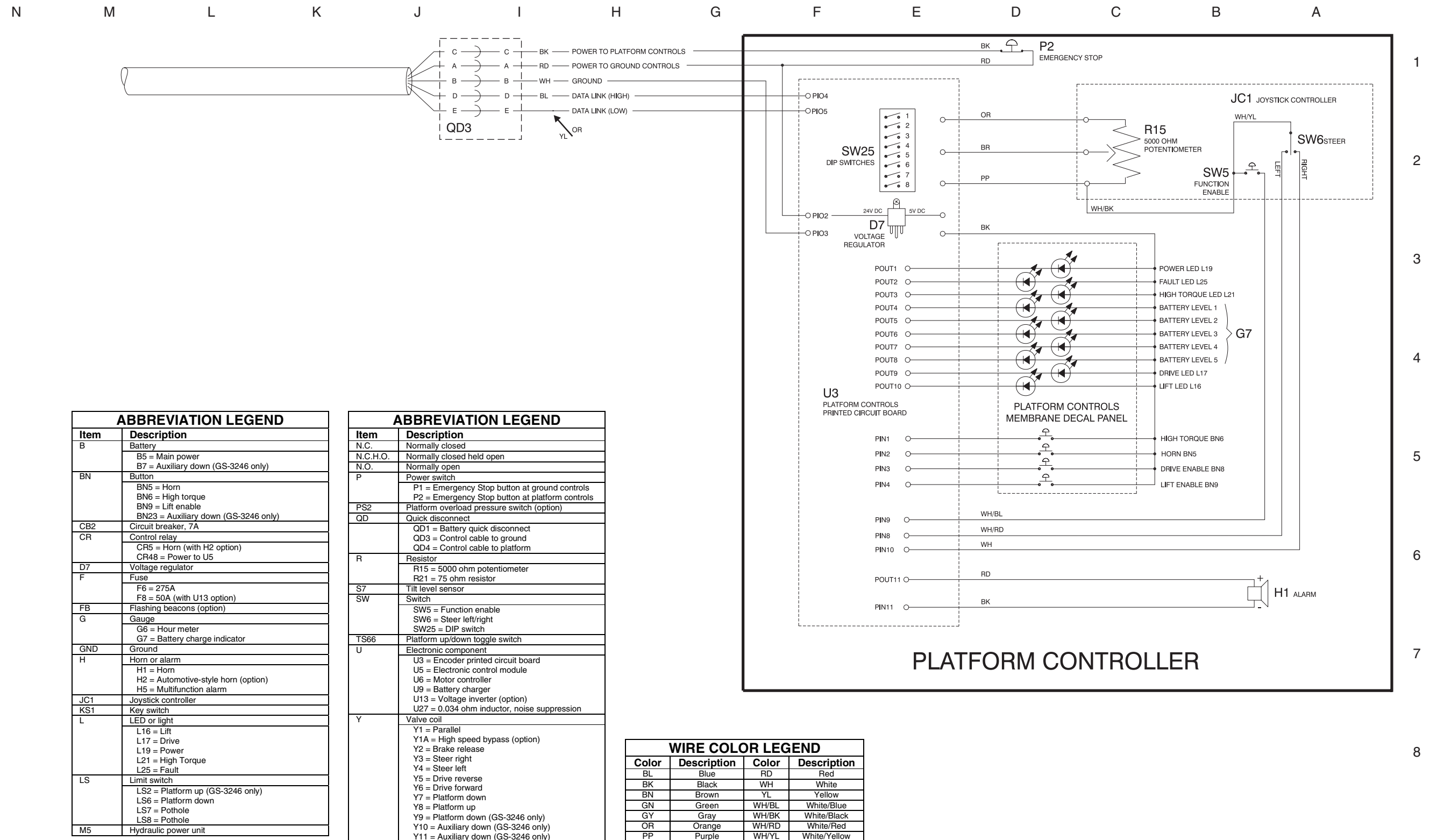
REV B



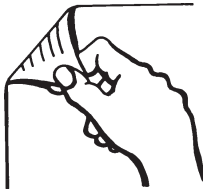
REV B

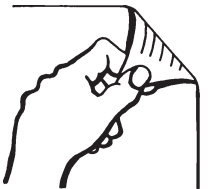
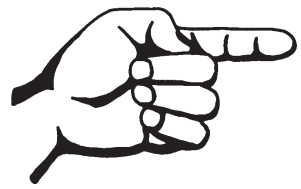
Electrical Schematic

(from serial number 40926 to 48054)



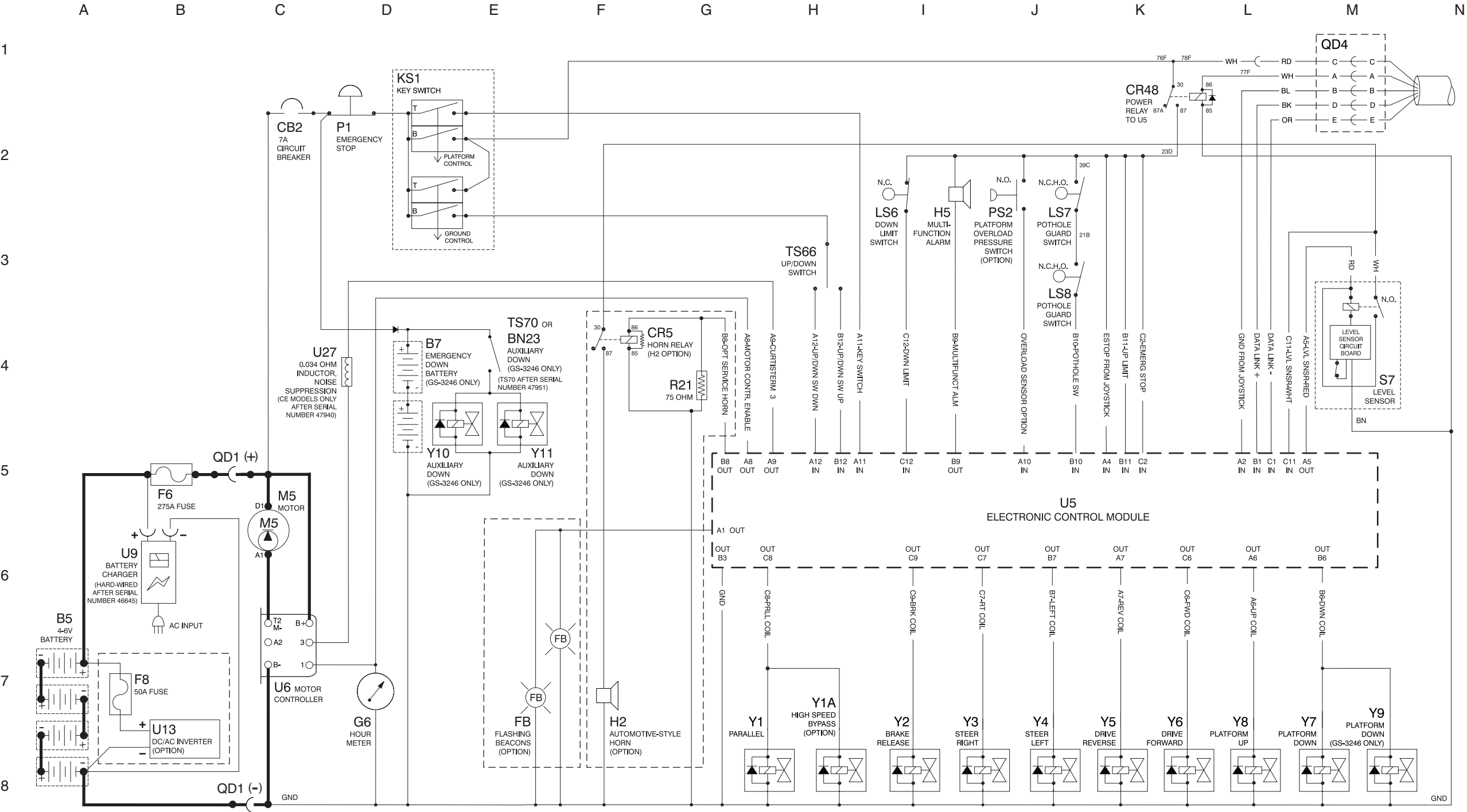
Electrical Schematic
(from serial number 40926 to 48054)





Electrical Schematic
(from serial number 48055 to 48717)

REV A



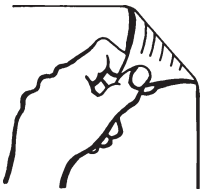
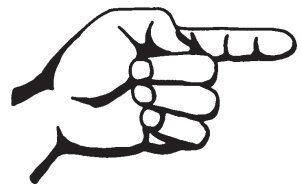
Electrical Schematic

(from serial number 48055 to 48717)



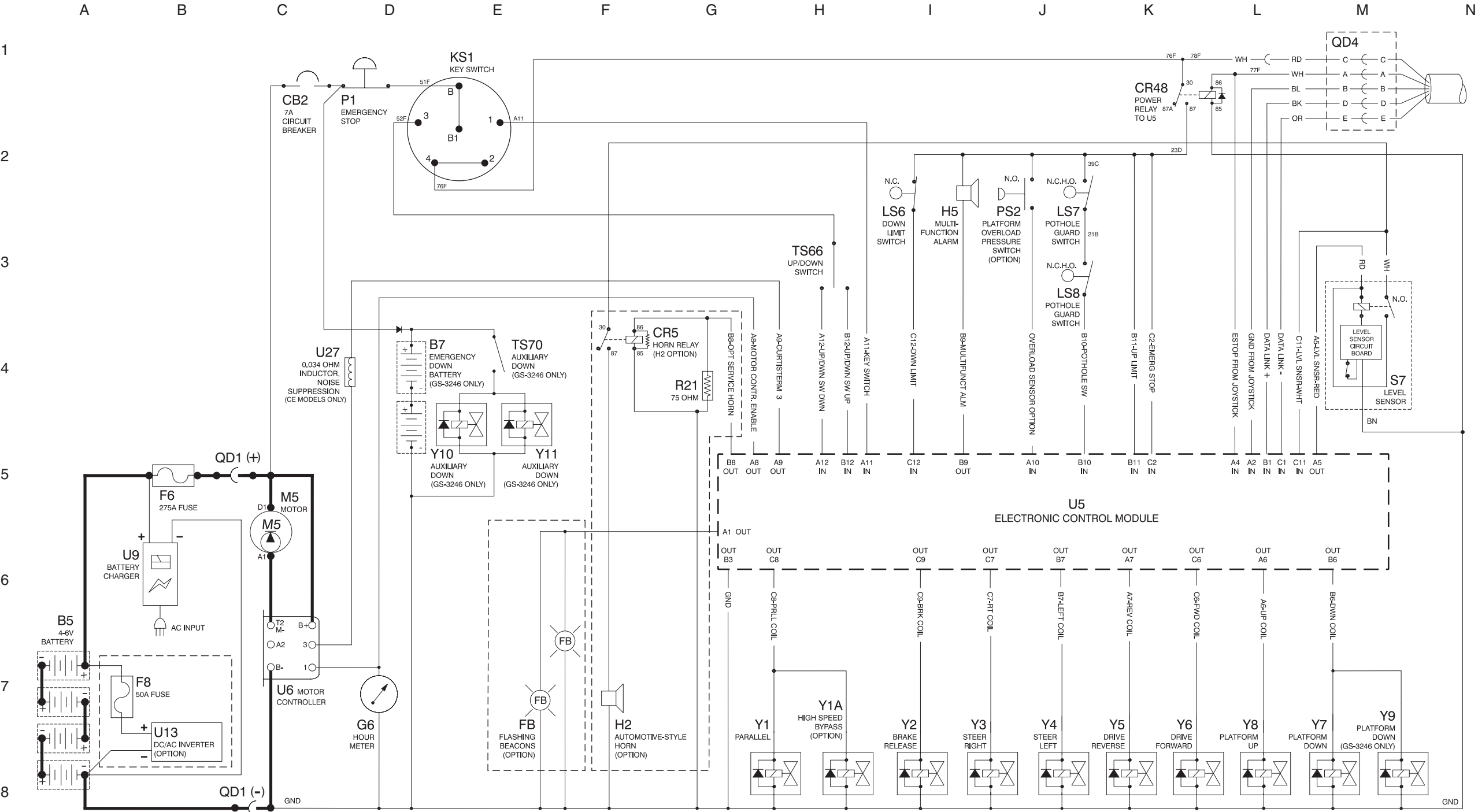
Electrical Schematic
(from serial number 48055 to 48717)





Electrical Schematic
(from serial number 48718 to 49199)

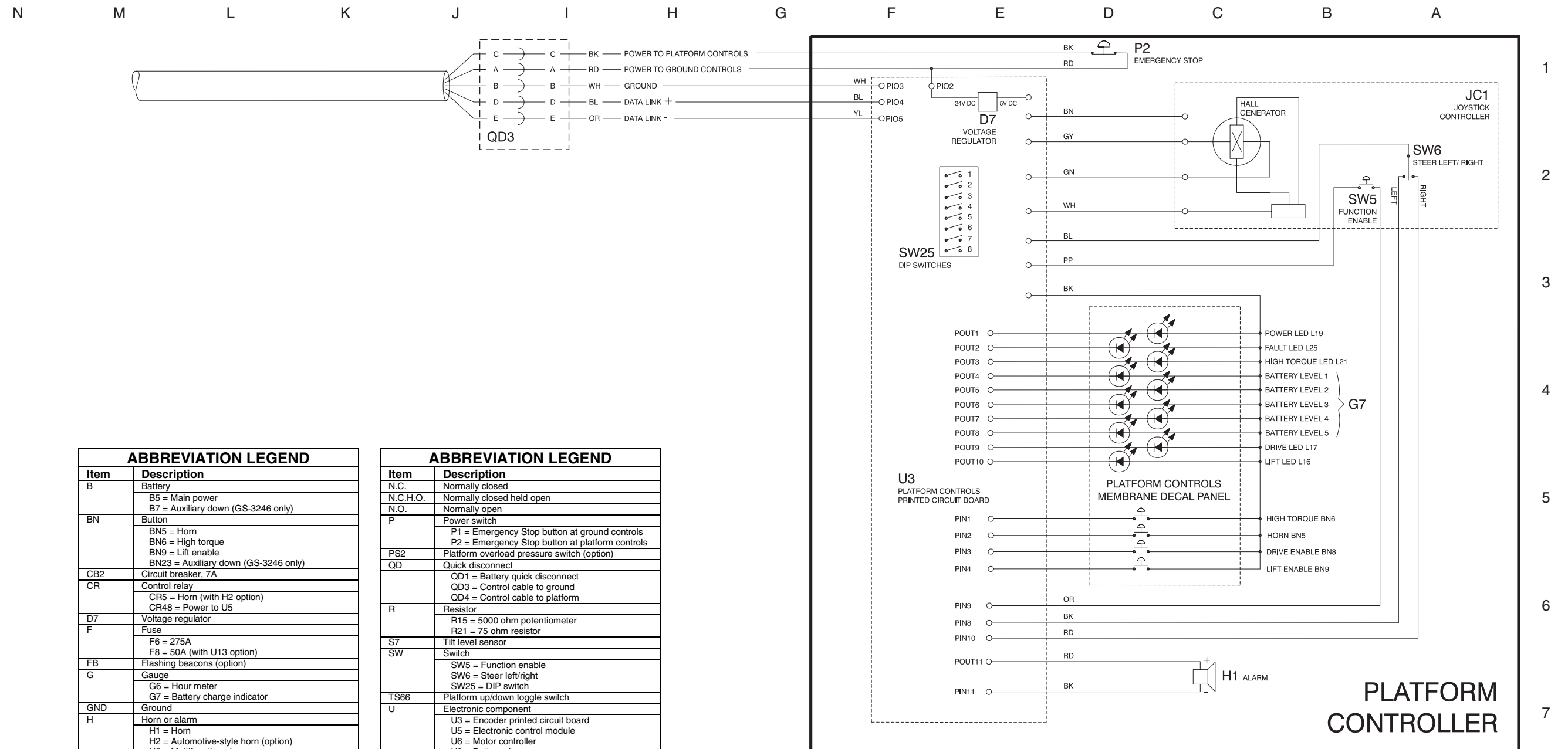
REV A



REV A

Electrical Schematic

(from serial number 48718 to 49199)



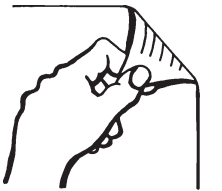
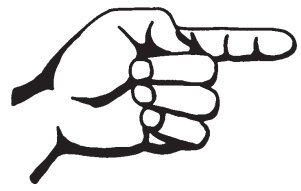
ABBREVIATION LEGEND	
Item	Description
B	Battery B5 = Main power B7 = Auxiliary down (GS-3246 only)
BN	Button BN5 = Horn BN6 = High torque BN9 = Lift enable BN23 = Auxiliary down (GS-3246 only)
CB2	Circuit breaker, 7A
CR	Control relay CR5 = Horn (with H2 option) CR48 = Power to U5
D7	Voltage regulator
F	Fuse F6 = 275A F8 = 50A (with U13 option)
FB	Flashing beacons (option)
G	Gauge G6 = Hour meter G7 = Battery charge indicator
GND	Ground
H	Horn or alarm H1 = Horn H2 = Automotive-style horn (option) H5 = Multifunction alarm
JC1	Joystick controller
KS1	Key switch
L	LED or light L16 = Lift L17 = Drive L19 = Power L21 = High Torque L25 = Fault
LS	Limit switch LS2 = Platform up (GS-3246 only) LS6 = Platform down LS7 = Pothole LS8 = Pothole
M5	Hydraulic power unit

ABBREVIATION LEGEND	
Item	Description
N.C.	Normally closed
N.C.H.O.	Normally closed held open
N.O.	Normally open
P	Power switch
	P1 = Emergency Stop button at ground controls P2 = Emergency Stop button at platform controls
PS2	Platform overload pressure switch (option)
QD	Quick disconnect
R	QD1 = Battery quick disconnect QD3 = Control cable to ground QD4 = Control cable to platform
	Resistor
S7	R15 = 5000 ohm potentiometer R21 = 75 ohm resistor
	Tilt level sensor
SW	Switch
	SW5 = Function enable SW6 = Steer left/right SW25 = DIP switch
TS66	Platform up/down toggle switch
U	Electronic component
	U3 = Encoder printed circuit board U5 = Electronic control module U6 = Motor controller U9 = Battery charger U13 = Voltage inverter (option) U27 = 0.034 ohm inductor, noise suppression
Y	Valve coil
	Y1 = Parallel Y1A = High speed bypass (option) Y2 = Brake release Y3 = Steer right Y4 = Steer left Y5 = Drive reverse Y6 = Drive forward Y7 = Platform down Y8 = Platform up Y9 = Platform down (GS-3246 only) Y10 = Auxiliary down (GS-3246 only) Y11 = Auxiliary down (GS-3246 only)

WIRE COLOR LEGEND			
Color	Description	Color	Description
BL	Blue	RD	Red
BK	Black	WH	White
BN	Brown	YL	Yellow
GN	Green	WH/BL	White/Blue
GY	Gray	WH/BK	White/Black
OR	Orange	WH/RD	White/Red
PP	Purple	WH/YL	White/Yellow

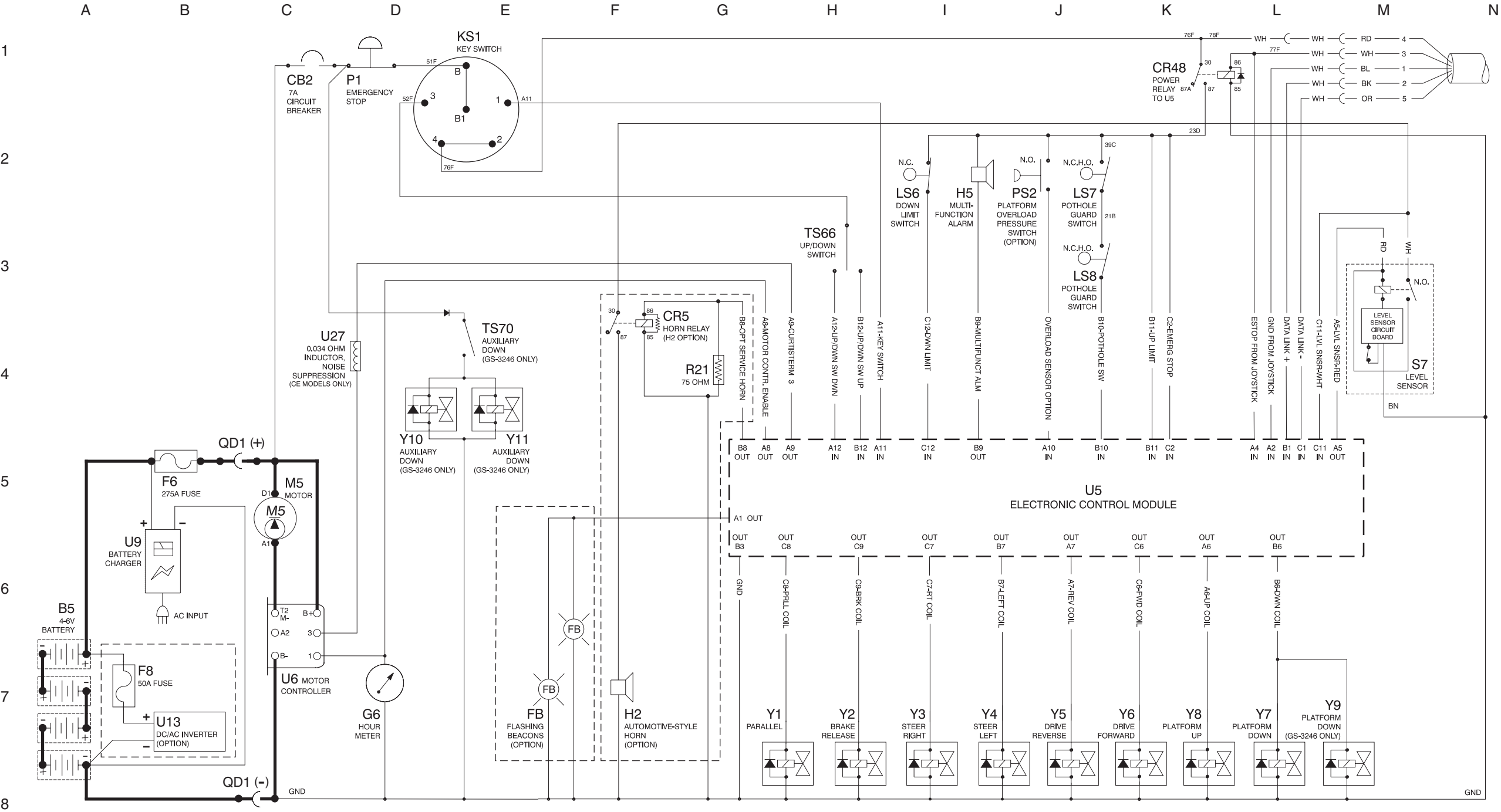
Electrical Schematic
(from serial number 48718 to 49199)





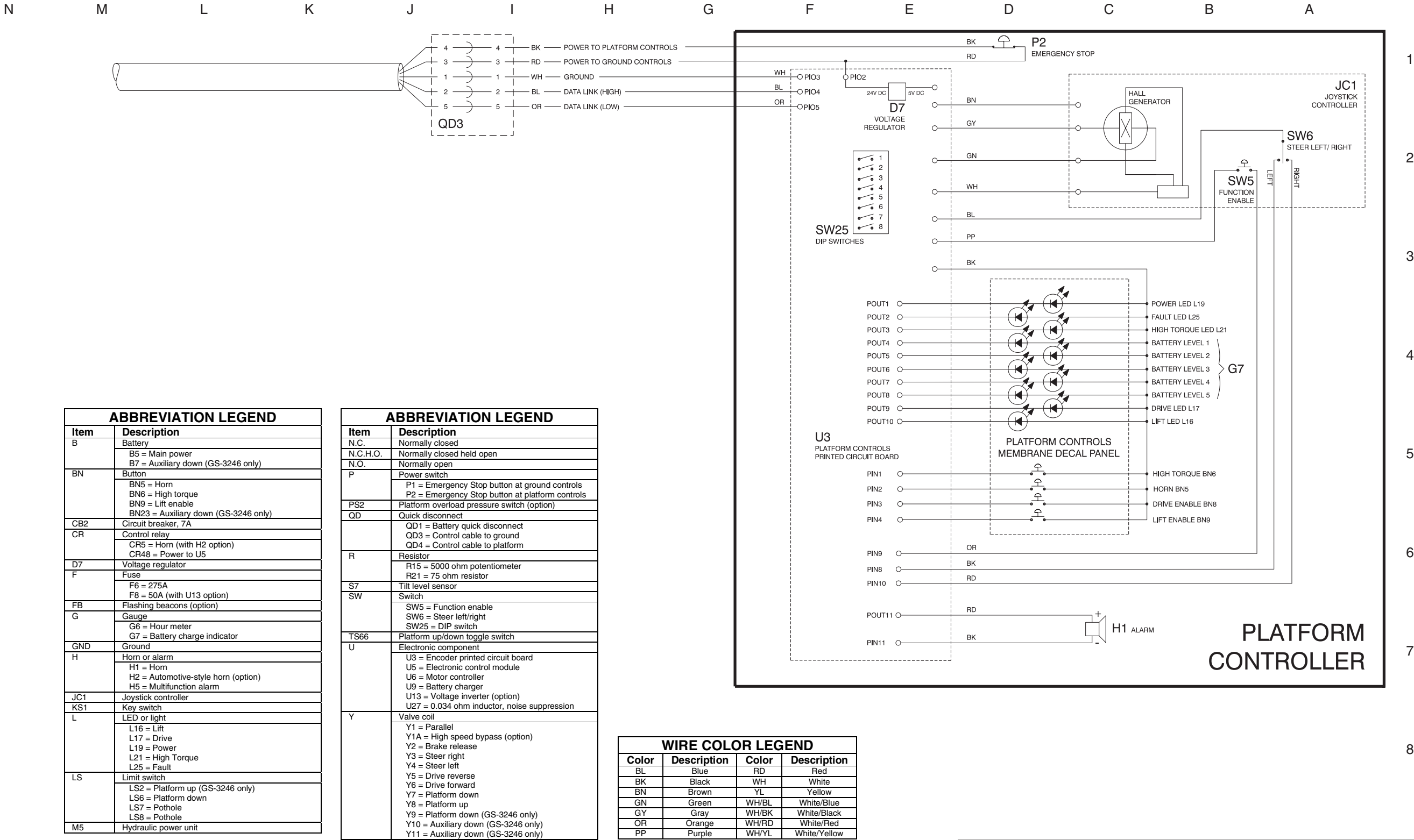
Electrical Schematic
(after serial number 49199)

REV A



REV A

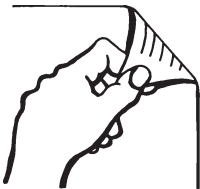
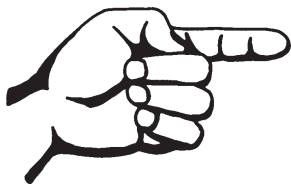
Electrical Schematic
(after serial number 49199)



Electrical Schematic
(after serial number 49199)

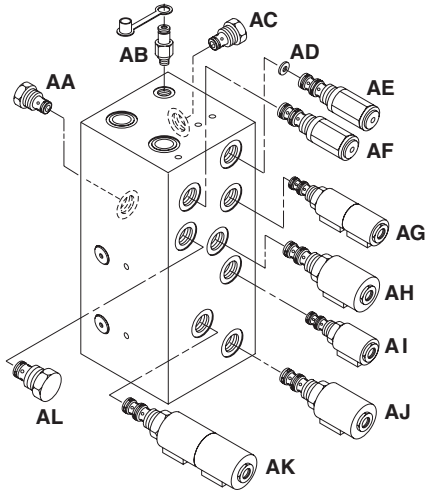


**Hydraulic Symbols Legend and
Component Reference**

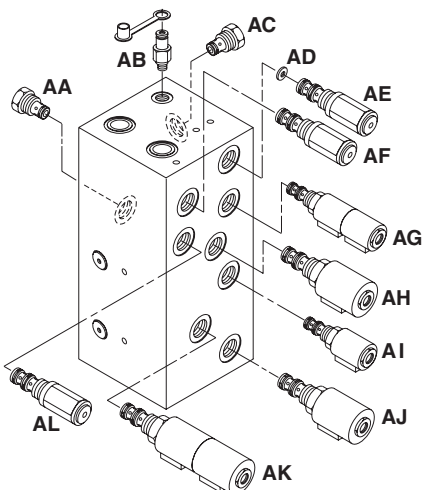


Hydraulic Symbols Legend and
Component Reference

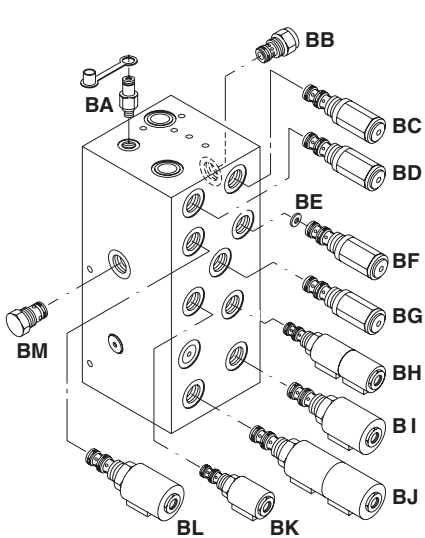
REV B



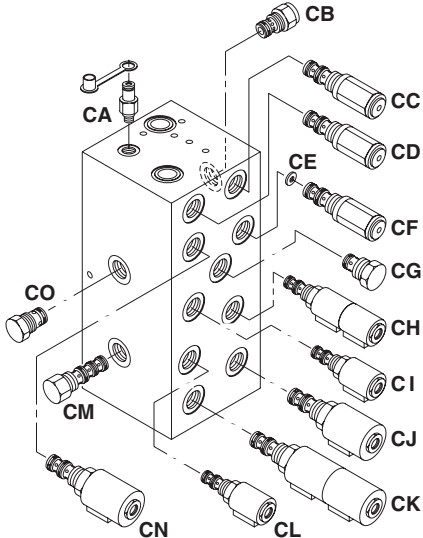
Function manifold components
(from serial number 17408 to 17481)



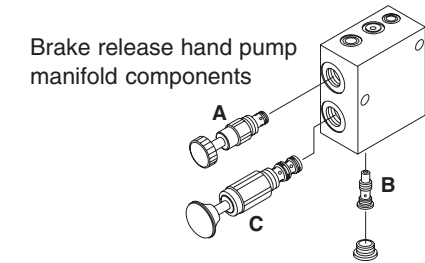
Function manifold components
(from serial number 17482 to 36044)



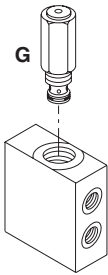
Function manifold components
(after serial number 36044)



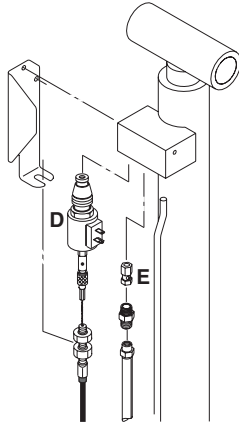
Function manifold components
Models with Traction Control



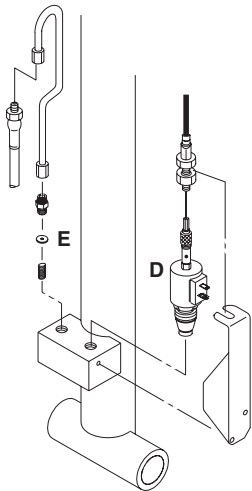
Brake release hand pump
manifold components



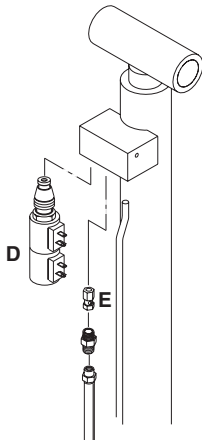
Platform lift relief manifold components
GS-3246
(from serial number 22447 to 36044)



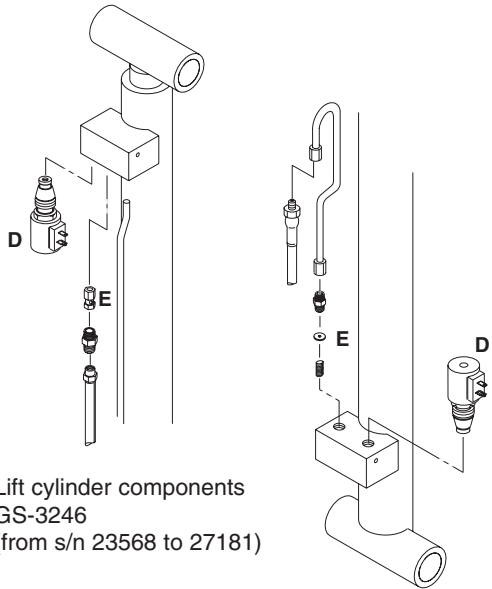
Lift cylinder components
GS-2046 and GS-2646
(after serial number 23567)



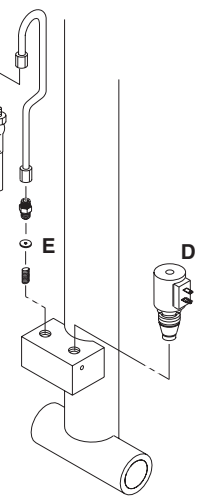
Lift cylinder components
GS-2046 and GS-2646
(before serial number 23567)



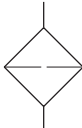
Lift cylinder components
GS-3246
(after serial number 27181)



Lift cylinder components
GS-3246
(from s/n 23568 to 27181)



Lift cylinder components
GS-3246
(before serial number 23568)



Filter



Fixed displacement
pump



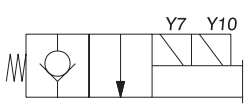
Bi-directional motor



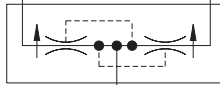
Variable speed motor



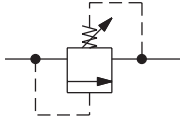
Check valve



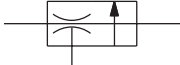
Solenoid operated
2 position 2 way valve,
normally closed with manual
over-ride



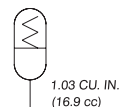
Flow
divider/combiner valve



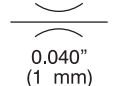
Relief valve



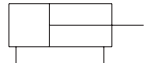
Priority
flow regulator



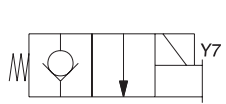
Accumulator



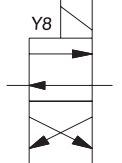
Orifice with size



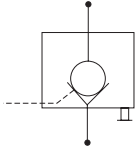
Dual acting cylinder



Solenoid operated
2 position 2 way valve,
normally closed with
manual over-ride



Solenoid operated
2 position 4 way
directional valve



Check valve,
pilot to open



Shuttle valve



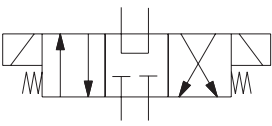
Brake



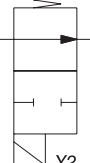
Hand pump



Single acting cylinder



Solenoid operated
3 position 4 way
directional valve



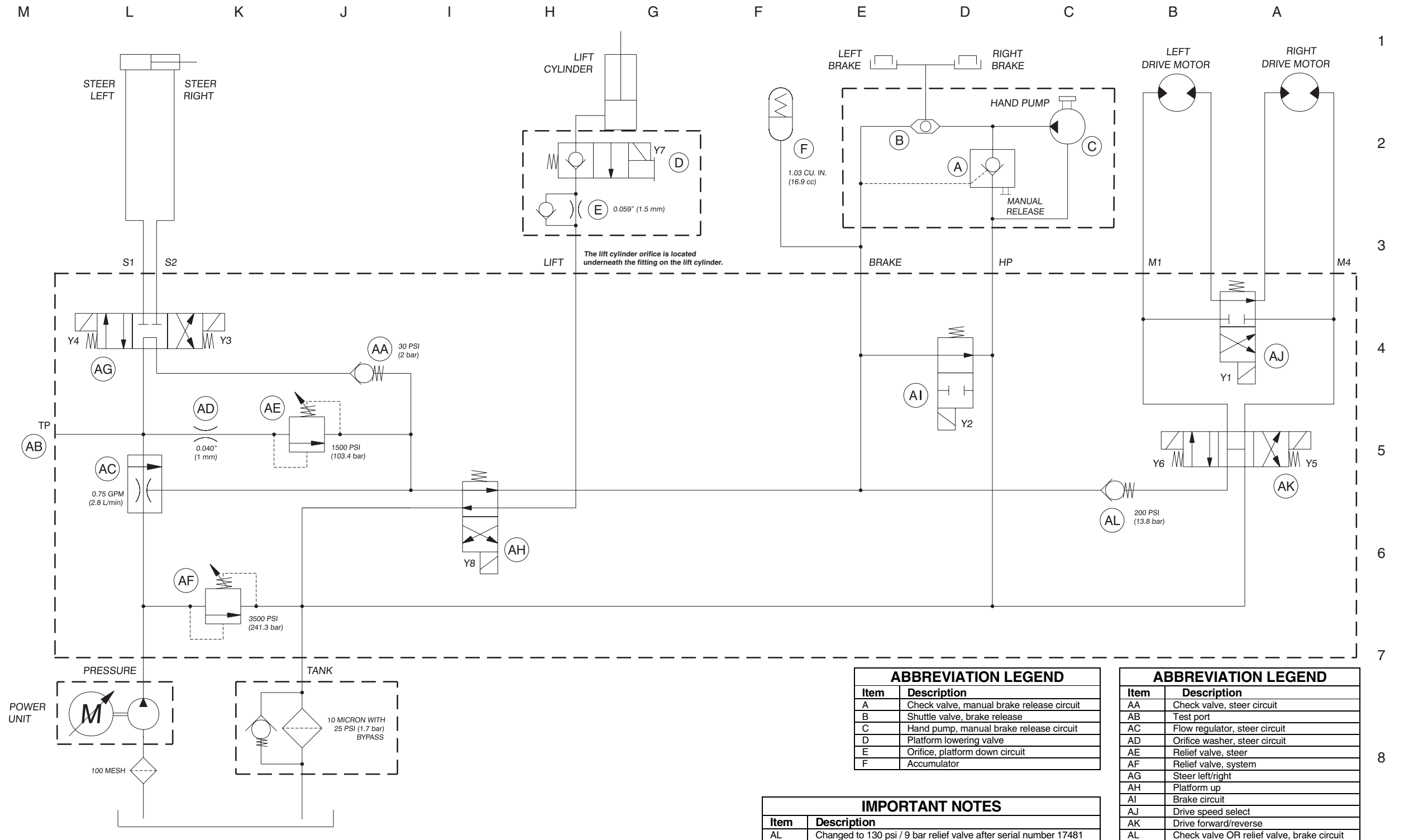
Solenoid operated
2 position 2 way
directional valve

REV A

Hydraulic Schematic

GS-2046 and GS-2646

(from serial number 17408 to 36044)



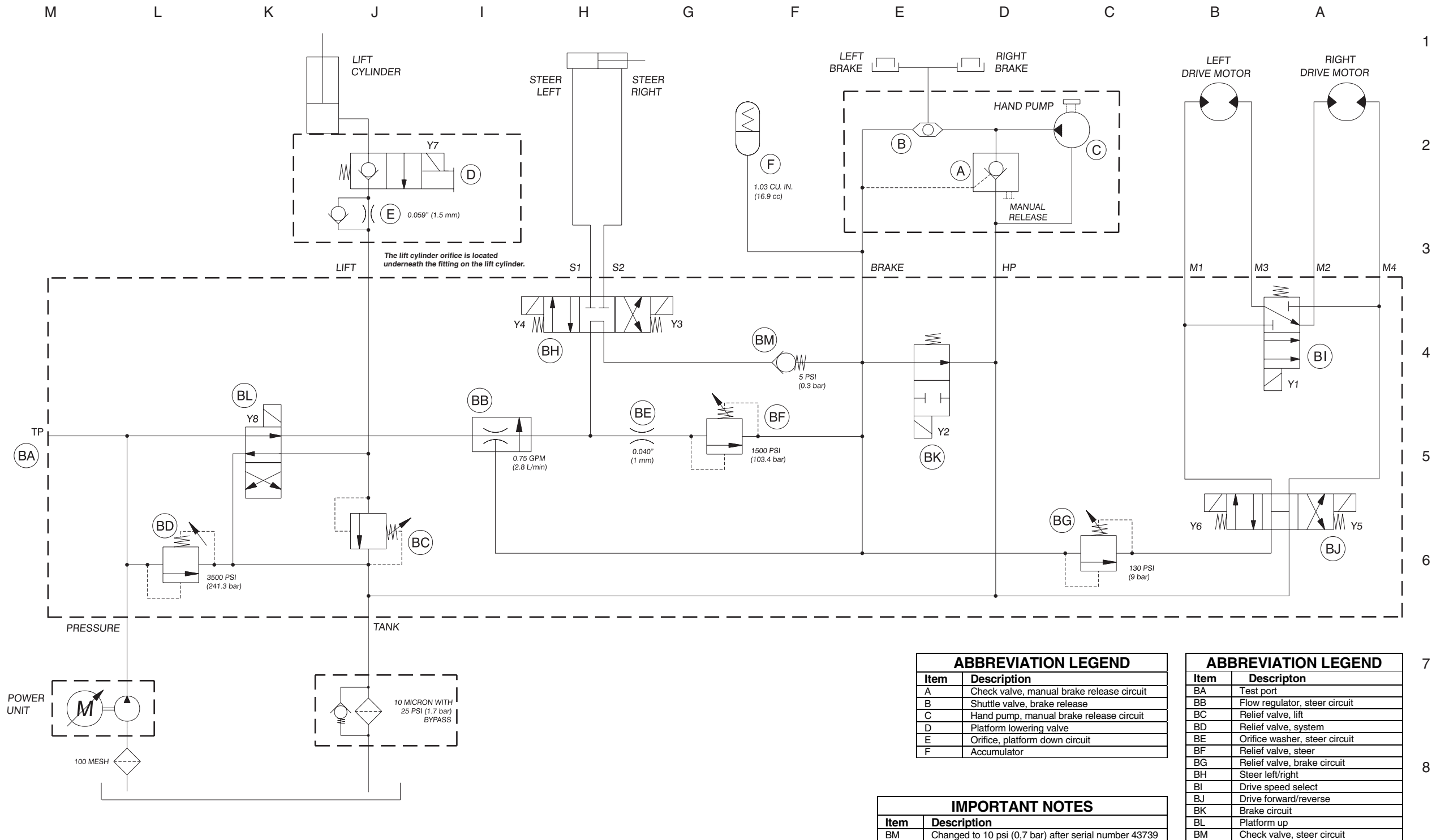
Hydraulic Schematic
GS-2046 and GS-2646
(from serial number 17408 to 36044)



REV A

Hydraulic Schematic

GS-2046 and GS-2646
(after serial number 36044)

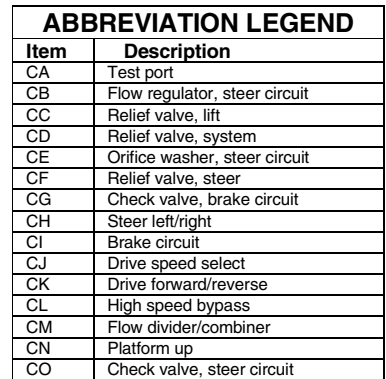


Hydraulic Schematic
GS-2046 and GS-2646
(after serial number 36044)



Hydraulic Schematic

GS-2046 and GS-2646
Models with Traction Control



Hydraulic Schematic
GS-2046 and GS-2646
Models with Traction Control

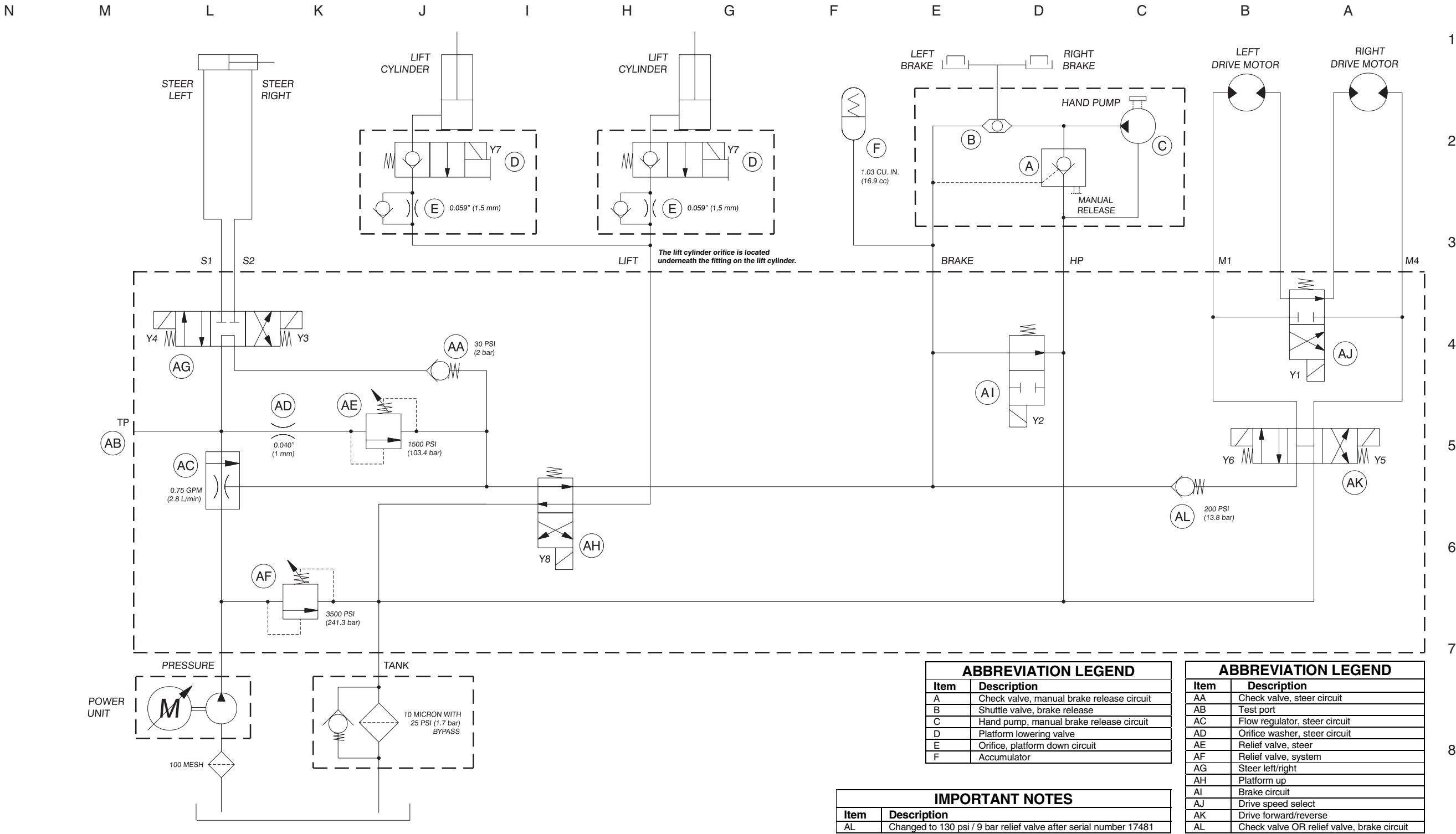


REV A

Hydraulic Schematic

GS-3246

(from serial number 17408 to 22446)



Hydraulic Schematic
GS-3246
(from serial number 17408 to 22446)

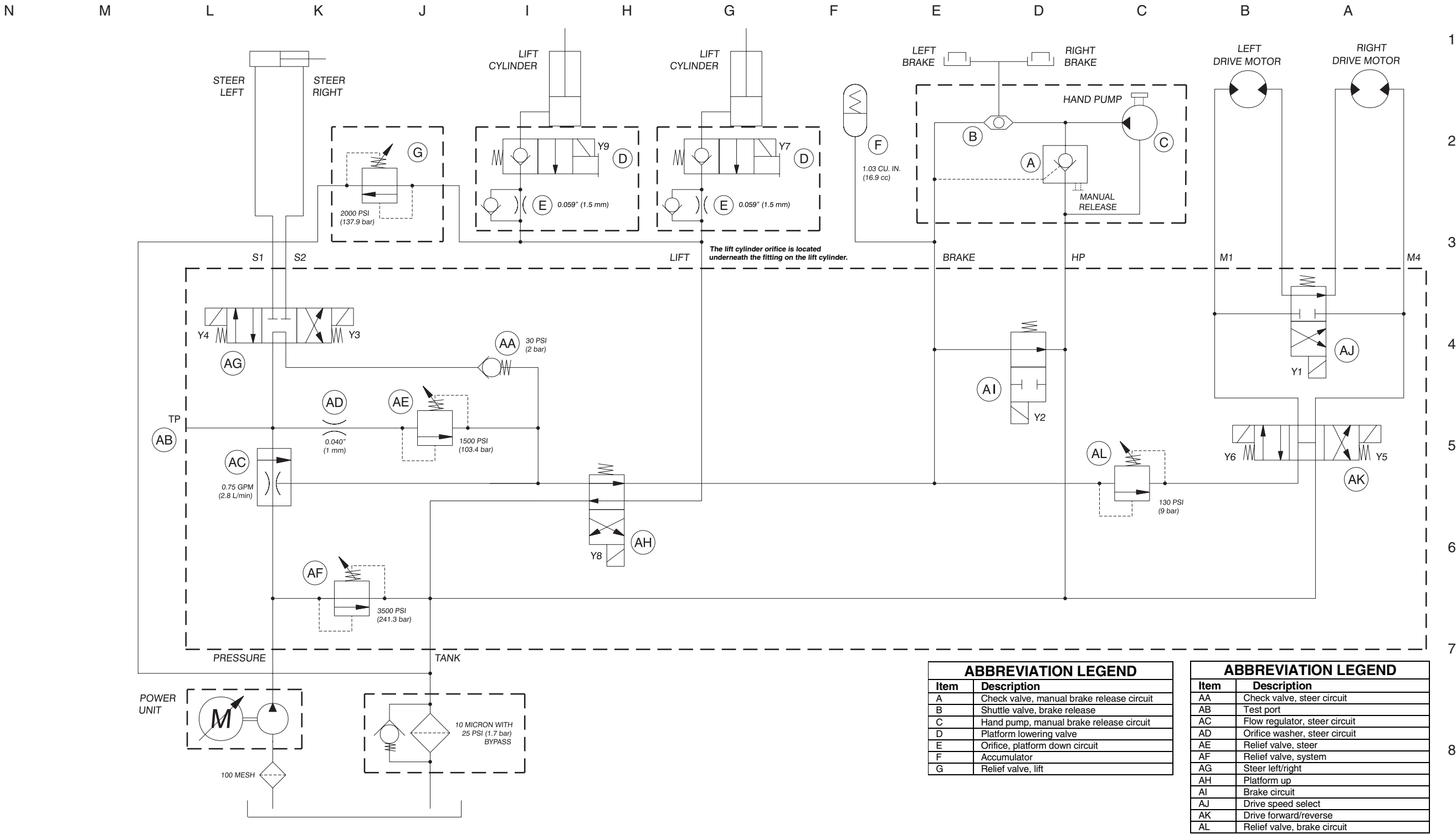


REV A

Hydraulic Schematic

GS-3246

(from serial number 22447 to 27181)



Hydraulic Schematic
GS-3246
(from serial number 22447 to 27181)



Hydraulic Schematic
GS-3246
(from serial number 27182 to 36044)

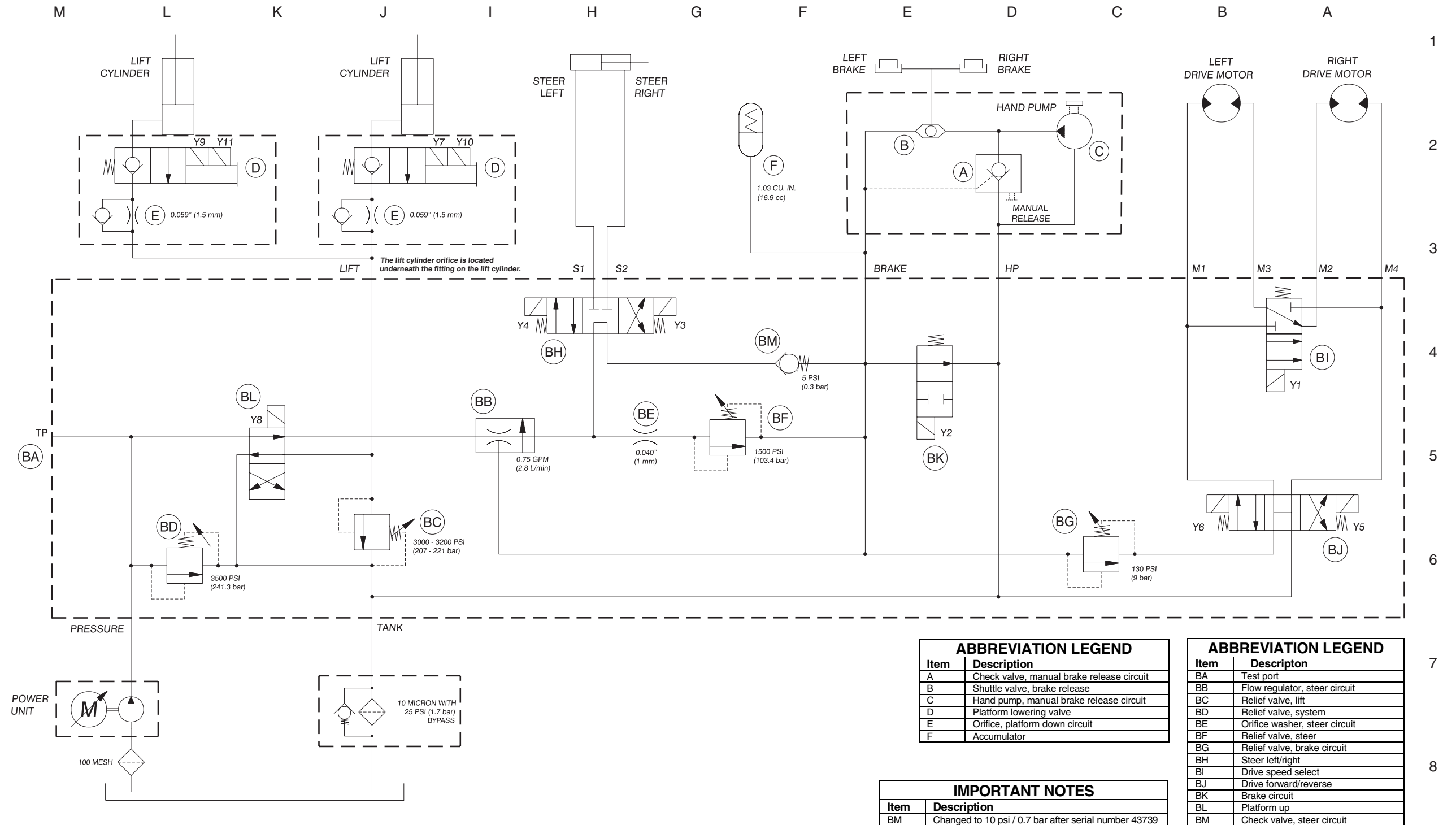


REV A

Hydraulic Schematic

GS-3246

(after serial number 36044)



Hydraulic Schematic
GS-3246
(after serial number 36044)

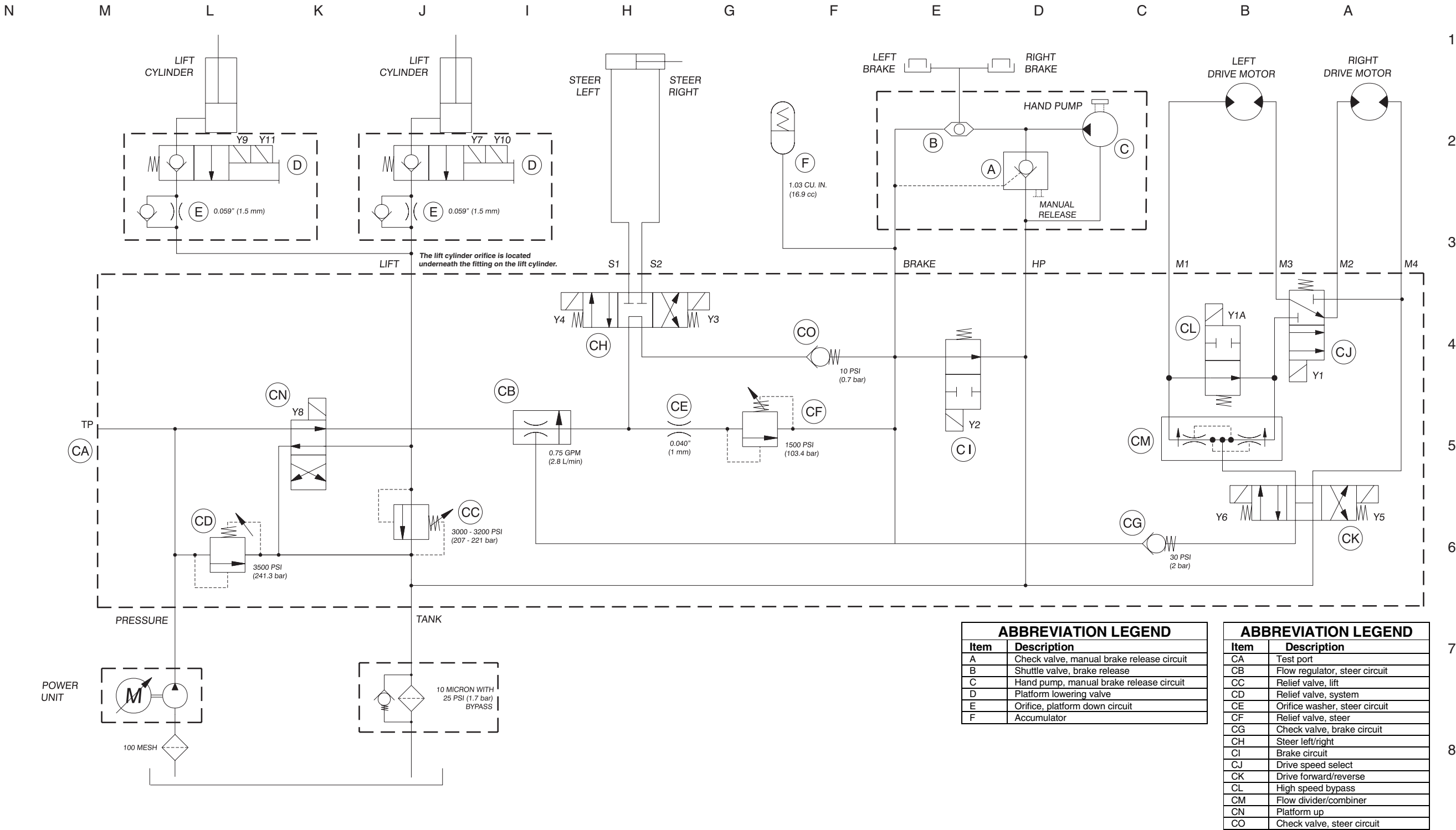


REV A

Hydraulic Schematic

GS-3246

Models with Traction Control



Hydraulic Schematic
GS-3246
Models with Traction Control



Service Manual GS-2046 & GS-2646 & GS-3246

**Part No.
72972**

Rev B2

Genie Scandinavia

Phone +46 31 575100

Fax +46 31 579020

Genie France

Phone +33 (0)2 37 26 09 99

Fax +33 (0)2 37 26 09 98

Genie Iberica

Phone +34 93 579 5042

Fax +34 93 579 5059

Genie Germany

Phone 0800 180 9017

Phone +49 422 149 1818

Fax +49 422 149 1820

Genie U.K.

Phone +44 (0)1476 584333

Fax +44 (0)1476 584334

Genie Mexico City

Phone +52 55 5666 5242

Fax +52 55 5666 3241

Genie North America

Phone 425.881.1800

Toll Free USA and Canada

800.536.1800

Fax 425.883.3475

Genie Australia Pty Ltd.

Phone +61 7 3375 1660

Fax +61 7 3375 1002

Genie China

Phone +86 21 53852570

Fax +86 21 53852569

Genie Malaysia

Phone +65 98 480 775

Fax +65 67 533 544

Genie Japan

Phone +81 3 3453 6082

Fax +81 3 3453 6083

Genie Korea

Phone +82 25 587 267

Fax +82 25 583 910

Genie Brasil

Phone +55 11 41 665 755

Fax +55 11 41 665 754

Genie Holland

Phone +31 183 581 102

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