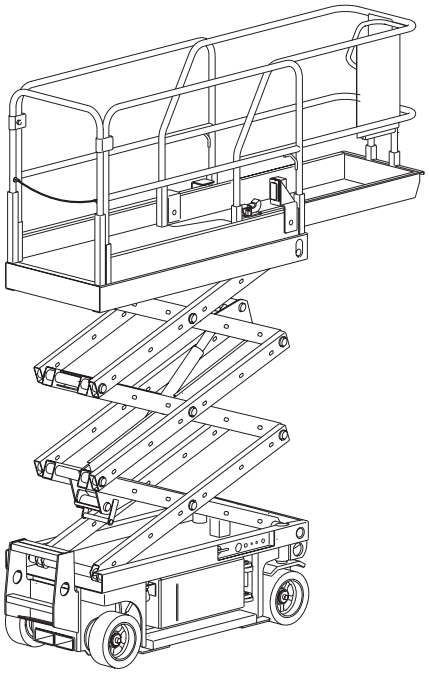
Genie Industries

Technical Publications

Genie® GS™-2032

Service Manual

(before serial number 17408)



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Genie GS-2032

Important

Read, understand and obey the safety rules and operating instructions in the *Genie GS-2032 & Genie GS-2046 & Genie GS-2646 & Genie 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.

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 other manuals. Please write to the technical publications team in care of Genie Industries, PO Box 97030, Redmond WA 98073-9730 USA.

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Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the *Genie GS-2032 & Genie GS-2046 & Genie GS-2646 & Genie 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 and 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 such as 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 that your workshop or work area is properly ventilated and well lit.

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 .

Theory of Operation

Power Source

The Genie GS-2032 machines are powered by four six-volt (225 AH) batteries. The four batteries are wired in series to produce 24 volts.

Hydraulic System

All machine functions are performed by the hydraulic system. The hydraulic system is powered by a single-section gear pump. When the pump is activated, it supplies hydraulic fluid under pressure to the function manifold, where the control valves are located. To protect from over-pressurization of the hydraulic system, the pump is provided with a pressure relief valve.

Activating a machine function is accomplished by actuating or moving a switch and/or control handle, which sends voltage to the ECM. The ECM then sends the signal to the appropriate directional control valve. The directional valve determines which direction the hydraulic fluid will travel. Computer software determines the volume of fluid in relation to the proportional valve input voltage.

Electrical System

Limit switches are found in various locations on the machine. The function of a limit switch is to communicate the operating position of the machine to the ECM (Electronic Control Module). When a change in signal is received from a limit switch, the ECM responds by limiting the drive speed to 0.5 miles per hour (0.8 km/h), according to the default settings in the ECM software.

Machine Controls

The GS-2032 machines are equipped with operational controls which are found in two locations: the ground controls, located on the hydraulic tank side of the machine, and the platform controls, located in the platform. All lift and drive functions are available at the platform controls. Only platform up/down functions are available at the ground controls.
The ECM uses input from the ground or platform controls to activate the various machine functions. The ECM has predetermined settings for the various machine functions.

The joystick is fitted with a 5000 ohm potentiometer. With the joystick in the neutral position, the potentiometer will measure 2730 ohms. These signals are sent to the multiplex card, then down to the ECM to control the voltage supplied to the proportional valve. Two microswitches mounted on the joystick tell the ECM the drive direction desired. A thumb rocker switch on the top of the joystick is used for steering.

Mounted on the platform control box lid of machines before serial number 17408 are buttons and a switch that, when activated, sends a signal to the ECM through the multiplex card. On machines after serial number 17407, the platform control box lid has a decal/membrane pad. This is a touch-activated pad incorporating wiring, switches and LEDs that are resistant to the environment. Activating any of the buttons on the pad will send a signal to the ECM through the multiplex card.

A diagnostic display is located at the battery pack side of the machine to aid in troubleshooting. If the

machine malfunctions, a fault code will be shown in the display window.

Washing electronic components is not suggested. Instead, use compressed air to remove debris from these components.

⚠CAUTION Component damage hazard. Avoid shock or impact to the ECM. Internal damage may not be visible from the outside.

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Specifications

Machine Specifications

Stowed dimensions		
Length	96 in	243.8 cm
Length, platform extended	135 1/2 in	344.2 cm
Width	32 in	81.3 cm
Height, stowed maximum Rails up - CE	82 7/8	210.3 cm
Height, stowed maximum Rails up - ANSI	78 1/2 in	199.1 cm
Height, stowed maximum Rails lowered	76 1/2 in	193.8 cm
Height, stowed maximum rails removed	39 in	99 cm
Height, guard rail level	39 in	99.1 cm
Weight	3438 lbs	1559 kg
Ground clearance	4.0 in	10.2 cm
Ground clearance Pothole guards deployed	7/8 in	2.2 cm

Operational dimensions		
Maximum platform height	20 ft	5.8 m
Maximum platform working height	25.1 ft	6.1 m
Maximum platform extension	39 in	1 m
Wheelbase	73 in	185 cm
Turning raduis, outside	92 in	233.7 cm
Turning raduis, inside	0 in	0 cm

Tires and wheels		
Tire size (solid rubber)		15 x 5 x11 1/4 in 38.1 x 12.7 x 28.5 cm
Load range	2,400 lbs	1,089 kg
Tire contact area	8 sq in	20.3 sq cm
Overall tire diameter	15 in	38.1 cm
Wheel diameter	11 1/4 in	28.5 cm
Wheel width	5 in	12.7 cm
Castle nut torque	300 ft-lbs	406.7 Nm

Platform dimensions		
Length	89 in	226.1 cm
Width	31 1/4 in	65 cm
Extension length	29 1/2 in	79.4 cm
Maximum load capacity	800 lbs	363 kg

Fluid Capacities		
Hydraulic tank capacity	5.5 gallons	20.8 liters
Hydraulic system capacity (including tank)	6 gallons	22.7 liters

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

SPECIFICATIONS

Performance Specifications

Drive speeds (maximum)		
Stowed, maximum	2.2 mph 40 ft / 12.4 sec	3.5 km/h 12.2 m / 12.4 sec
Platform raised, maximum	0.5 mph 40 ft / 54.5 sec	0.8 km/h 12.2 m / 54.5 sec
Gradeability		30%
Function speed, maximum from platform controls		
Platform up		29 to 31 seconds
Platform down		25 to 27 seconds

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
Lift pump	
Type:	gear
Displacement per revolution	.244 cu in 4 cc
Displacement (2500 psi/172 bar)	4 gpm 15 L/min
Hydraulic tank return line filter	10 micron with 25 psi (1.7 bar) bypass
Function manifold	
System relief valve pressure	3500 psi 241.3 bar
Steer relief valve pressure	1000 psi 69 bar

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. Machines that utilize Parker Seal-Lok® hoses and fittings require that the fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed. Machines equipped with 37° flared fittings and hose ends do not need to be torqued to these specifications.

Hydraulic Hose and Fitting Torque Specifications

SAE O-ring Boss Port - tube fitting				**Seal-Lok® -** hose end		
SAE Dash Size	Installing into...	ft. lbs.	Nm	SAE Dash Size	ft. lbs.	Nm
-4	Aluminum	11	14.9	-4	18	24.4
	Steel	16	21.7	-6	27	36.6
-6	Aluminum	23	31.2	-8	40	54.2
	Steel	35	47.5	-10	63	85.4
-8	Aluminum	40	54.2	-12	90	122
	Steel	60	81.3	-16	120	162.7
-10	Aluminum	69	93.6	-20	140	190
	Steel	105	142.4	-24	165	223.7
-12	Aluminum	93	126.1			
	Steel	140	190			
-16	Aluminum	139	188.5			
	Steel	210	284.7			
-20	Aluminum	172	233.2			
	Steel	260	352.5			
-24	Aluminum	208	282			
	Steel	315	427.1			

Torque Procedure

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 a custom-size O-ring. They are not a standard SAE size O-ring. They are available in the O-ring field service kit (Genie part number 49612).

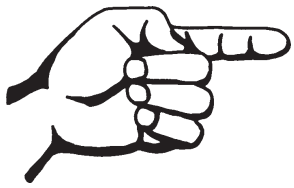
2 Lubricate the O-ring before installation.

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 above.

6 Operate all machine functions and inspect the hoses and fittings and related components to be sure that there are no leaks.



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Scheduled Maintenance Inspections

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 machine.
- ☑ Keep records on all inspections for three years.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.

About This Section

The Schedule

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

Inspection	Table or Checklist
Daily	A
Quarterly	A + B
Annual	A + B + C
Two year	A + B + C + D

Maintenance Tables

The maintenance tables contained in this section provide summary information on the specific physical requirements for each inspection.

Complete step-by-step instructions for each scheduled maintenance procedure are provided in section 4, *Scheduled Maintenance Procedures*.

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.

Maintenance Tables

Table A

		Tools are required	New parts required	Dealer service suggested
A-1	Inspect the Operator's and Safety Manuals			
A-2	Inspect the Decals and Placards			
A-3	Inspect for Damage and Loose or Missing Parts			
A-4	Check the Hydraulic Oil Level			
A-5	Check for Hydraulic Leaks			
A-6	Test the Platform and Ground Controls			
A-7	Test the Manual Platform Lowering Operation			
A-8	Test the Tilt Sensor			
A-9	Test the Pothole Guards			
A-10	Test the Lift/Drive Select Switch			
A-11	Perform 30 Day Service			

Table B

B-1	Check the Batteries			
B-2	Inspect the Electrical Wiring			
B-3	Inspect the Tires and Wheels (including castle nut torque)			

MAINTENANCE TABLES

Table B, continued		Tools are required	New parts required	Dealer service suggested
B-4	Test the Key Switch			
B-5	Test the Emergency Stop Buttons			
B-6	Test the Horn			
B-7	Test the Drive Brakes			
B-8	Test the Drive Speed - Stowed Position			
B-9	Test the Drive Speed - Raised Position			
B-10	Perform Hydraulic Oil Analysis See D-1 *Test or Replace the Hydraulic Oil*			
B-11	Check the Electrical Contactor (before serial number 6901)			
Every 250 hours, perform the following engine maintenance procedure.				
B-12	Replace the Hydraulic Return Filter			
Table C				
C-1	Check the Module Tray latch Components			
Table D				
D-1	Test or Replace the Hydraulic Oil			

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 page to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

☐	**Daily Inspection: A**
☐	**Quarterly Inspection: A+B**
☐	**Annual Inspection: A+B+C**
☐	**2 Year Inspection: A+B+C+D**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the maintenance tables in this section and 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	**Y**	**N**	**R**
Refer to Table A			
A-1 Operator's and Safety manuals			
A-2 Decals and placards			
A-3 Damage and loose or missing parts			
A-4 Hydraulic oil level			
A-5 Hydraulic leaks			
A-6 Platform and ground controls			
A-7 Manual Platform Lowering			
A-8 Tilt sensor			
A-9 Pothole Guards			
A-10 Lift/drive Select Switch			
A-11 30 Day Service			

Checklist B	**Y**	**N**	**R**
Refer to Table B			
B-1 Batteries			
B-2 Electrical wiring			
B-3 Tires and wheels			
B-4 Key Switch			
B-5 Emergency Stop			
B-6 Horn			
B-7 Drive Brakes			
B-8 Drive speed - stowed			
B-9 Drive speed - raised			
B-10 Hydraulic oil analysis			
B-11 Electrical contactor (before serial number 6901)			
Perform every 250 hours			
B-12 Hydraulic Return Filter			

Checklist C	**Y**	**N**	**R**
Refer to Table C			
C-1 Latch components			

Checklist D	**Y**	**N**	**R**
Refer to Table D			
D-1 Hydraulic oil			

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 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 flat level surface
  - Platform in the stowed position
  - Key switch in the OFF position with the key removed
  - Wheels chocked

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.

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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.

Table A Procedures

A-1
Inspect the Operator's and Safety Manuals

Maintaining the operator's and safety manuals in good condition is essential to safe machine operation. Manuals are included with each machine and should be stored in the container provided in the platform. An illegible or missing manual will not provide safety and operational information necessary for a safe operating condition.

1 Check to be sure the storage container is present and in good condition.

2 Check to make sure that the operator's, responsibilities and safety manuals are present and complete in the storage container in the platform.

3 Examine the pages of each manual to be sure that they are legible and in good condition.

4 Always return the manuals to the storage container after use.

NOTICE Contact your authorized Genie distributor or Genie Industries if replacement manuals are needed.

A-2
Inspect the Decals and Placards

Maintaining all of the safety and instructional decals and placards in good condition is mandatory for safe machine operation. Decals alert operators and personnel to the many possible hazards associated with using this machine. They also provide users with operation and maintenance information. An illegible decal will fail to alert personnel of a procedure or hazard and could result in unsafe operating conditions.

1 Refer to the *Decals* section in the *Genie GS-2032 & Genie GS-2046 & Genie GS-2646 & Genie GS-3246 Operator's Manual* and use the decal list and illustrations to determine that all decals and placards are in place.

2 Inspect all decals for legibility and damage. Replace any damaged or illegible decal immediately.

NOTICE Contact your authorized Genie distributor or Genie Industries if replacement decals are needed.

A-3
Inspect for Damage and Loose or Missing Parts

Daily machine condition inspections are essential to safe machine operation and good machine performance. Failure to locate and repair damage, and discover loose or missing parts may result in an unsafe operating condition.

1 Inspect the entire machine for damage and improperly installed or missing parts including:

- Electrical components, wiring and electrical cables
- Hydraulic power unit, tank, hoses, fittings, cylinders and manifolds
- Battery pack and connections
- Drive motors
- Wear pads
- Tires and wheels
- Limit switches, alarms and horn
- Nut, bolts and other fasteners
- Platform entry chain or gate
- Beacons and alarms (if equipped)
- Brake release components
- Safety arm
- Pothole guards
- Platform extension
- Scissor pins and retaining fasteners
- Platform control joystick
- Inverter (if equipped)

Check the entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine
- Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened
- Side rails installed and bolts are fastened
- Be sure that the chassis trays are in place, latched and properly connected

TABLE A PROCEDURES

A-4
Check the Hydraulic Oil Level

Maintaining the hydraulic oil at the proper level is essential to machine operation. Improper hydraulic oil levels can damage hydraulic components. Daily checks allow the inspector to identify changes in oil level that might indicate the presence of hydraulic system problems.

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

1 Visually inspect the oil level in the hydraulic tank through the sight gauge in the side of the power unit module.

⊙ Result: The hydraulic oil level should be within the FULL and ADD marks on the oil level indicator decal.

2 Add oil if necessary. Do not overfill.

Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
Hydraulic tank capacity	5.5 gallons 20.8 liters
Hydraulic system (including tank)	6 gallons 22.7 liters

A-5
Check for Hydraulic Leaks

Detecting hydraulic fluid leaks is essential to operational safety and good machine performance. Undiscovered leaks can develop into hazardous situations, impair machine functions and damage machine components.

1 Inspect for hydraulic oil puddles, dripping or residue on or around the following areas:

- Hydraulic tank, return filter, fittings and hoses
- Hydraulic power unit, fittings and hoses
- Hydraulic lift cylinder and manual lowering valve
- Function manifold
- The underside of the drive chassis
- Drive motors
- Drive brakes
- Ground area under the machine

A-6
Test the Platform and Ground Controls

Testing the machine functions and the Emergency Stop buttons for malfunctions is essential for safe machine operation. An unsafe working condition exists if any function fails to operate properly or either Emergency Stop button fails to stop all the machine functions. Each function should operate smoothly and be free of hesitation, jerking and unusual noise.

1 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.

2 Activate the platform up function.

⊙ Result: The platform should raise.

3 Activate the platform down function.

⊙ Result: The platform should lower. The descent alarm should sound while the platform is lowering.

4 Push in the ground controls Emergency Stop button to the OFF position.

⊙ Result: No function should operate.

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

6 Press and hold the lift function enable button OR move the lift/drive selector switch to the lift position.

7 Press and hold the function enable switch on the control handle.

⊙ Result: The green power light should come on OR the light below the lift selector button should come on.

8 Slowly move the control handle in the direction indicated by the blue arrow.

⊙ Result: The platform should raise. The pothole guards should deploy.

9 Release the control handle.

⊙ Result: The platform should stop raising.

10 Press and hold the function enable switch. Slowly move the control handle in the direction indicated by the yellow arrow.

⊙ Result: The platform should lower. The descent alarm should sound while the platform is lowering.

NOTICE

CE models: When lowering the platform, the platform should stop when it is 6 feet (1.8 m) from the ground. Be sure the area below the platform is clear of personnel and obstructions before continuing. To continue lowering, release the control handle, wait 4-6 seconds, then move the control handle again.

11 Push in the Emergency Stop button to the OFF position.

⊙ Result: No function should operate. The machine should stop.

NOTICE

As a safety feature, selecting and operating the ground controls will override the platform controls, except the Emergency Stop button.

TABLE A PROCEDURES

A-7
Test the Manual Platform Lowering Operation

Detection of Manual Platform Lowering system malfunctions is essential for safe machine operation. An unsafe working condition exists if the Manual Platform Lowering function does not operate in the event of a main power loss.

1 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.

2 Raise the platform approximately 2 feet (0.6 m).

3 Pull the Manual Platform Lowering handle located next to the ground controls.

⊙ Result: The platform should lower. The descent alarm will not sound.

A-8
Test the Tilt Sensor

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

1 Fully lower the platform.

2 Place a 2x4 block or similar piece of wood under both wheels on one side and drive the machine up onto them.

3 Raise the platform.

⊙ Result: When the platform is raised 7 feet (2.1 meters) from the ground, an alarm should sound.

4 Lower the platform and remove both pieces of wood.

A-9
Test the Pothole Guards

NOTICE The pothole guards should automatically deploy when the platform is raised. The pothole guards activate two limit switches which control the machine drive speed. If the pothole guards do not deploy and the platform is raised above 6 feet (1.8 meters), an alarm sounds and the machine will not drive.

1 Raise the platform.

⊙ Result: When the platform is raised 4 feet (1.2 meters) from the ground, the pothole guards should deploy.

2 Press on the pothole guards on one side, and then the other.

⊙ Result: The pothole guards should not move.

3 Lower the platform.

⊙ Result: The pothole guards should return to the stowed position.

4 Place a 2x4 block or similar piece of wood under the pothole guard. Raise the platform.

⊙ Result: When the platform is raised above 6 feet (1.8 meters), an alarm should sound and the drive function should not work.

5 Lower the platform and remove the block of wood.

A-10
Test the Lift/Drive Select Switch (before serial number 17408)

A properly functioning Lift/Drive Select Switch is essential for safe machine operation. An improperly operating Lift/Drive Select Switch will fail to activate the appropriate platform control which may result in a hazardous situation.

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

2 Move the lift/drive select switch to the LIFT position.

3 Press and hold the function enable switch.

⊙ Result: The green power light should come on.

4 Slowly move the control handle off center.

⊙ Result: The platform should raise or lower.

5 Move the lift/drive select switch to the DRIVE position.

6 Press and hold the function enable switch.

⊙ Result: The green power light should come on.

7 Slowly move the control handle off center.

⊙ Result: The drive and steer functions should operate.

TABLE A PROCEDURES

A-11
Perform 30 Day Service

The 30 day maintenance procedure is a one time sequence of procedures to be performed after the first 30 days or 50 hours of usage. After this interval, refer to the maintenance tables for continued scheduled maintenance.

1 Perform the following maintenance procedures:
- B-3 Inspect Tires and Wheels
- B-12 Replace the Hydraulic Return Filter

Table B Procedures

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 Electrocution hazard. Contact with hot or live circuits may 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 Be sure that the battery cable connections are free of corrosion.

3 Be sure that the battery hold downs and cable connections are tight.

4 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.

⊙ Result: If any battery cell displays a specific gravity of less than 1.098, the battery must be replaced.

5 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.

6 Install the battery vent caps.

7 Check each battery pack and verify that the batteries are wired correctly.

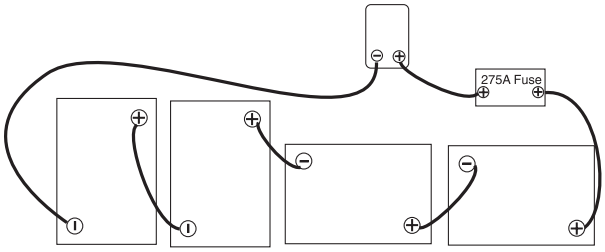


TABLE B PROCEDURES

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 may result in death or serious injury. Remove all rings, watches and other jewelry.

1 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

2 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.

3 Raise the platform approximately 8 feet (2.4 m) from the ground.

4 Lift the safety arm, move 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 Inspect the center chassis area and scissor arms for burnt, chafed and pinched cables.

7 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- ECM to platform controls
- Power to platform wiring

8 Raise the platform and return the safety arm to the stowed position.

9 Lower the platform to the stowed position and turn the machine off.

TABLE B PROCEDURES

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.

4 Install a new cotter pin.

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

Tires and wheels		
Castle nut torque, dry	300 ft-lbs	406.7 Nm
Castle nut torque, lubricated	225 ft-lbs	305 Nm

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.

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 function should operate.

TABLE B PROCEDURES

B-5
Test the Emergency Stop Buttons

Properly functioning Emergency Stop buttons are essential for safe machine operation. An improperly operating Emergency Stop button will fail to shut off power and stop all machine functions resulting in a hazardous situation.

NOTICE As a safety feature, selecting and operating the ground controls will override the platform controls, except the platform Emergency Stop button.

1 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.

2 Push in the Emergency Stop button at the ground controls to the OFF position.

⊙ Result: No functions should operate.

3 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.

4 Push down the Emergency Stop button at the platform controls to the OFF position.

⊙ Result: No machine functions should operate.

NOTICE The ground control Emergency Stop button will stop all machine operation, even if the key switch is switched to platform control.

B-6
Test the Horn

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.

NOTICE The standard machine uses the multifunction alarm to emit the horn sound. The optional horn will sound like an automotive type horn.

TABLE B PROCEDURES

B-7
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 firm, 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.

3 Lower the platform to the stowed position.

4 Move the drive select toggle switch down for normal drive operation OR press the drive speed selector button until the indicator light is OFF.

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.

Braking: paved surface		
Stopping distance	2 ft	0.6 m

⊙ Result: The machine stops within the specified braking distance. No action required.

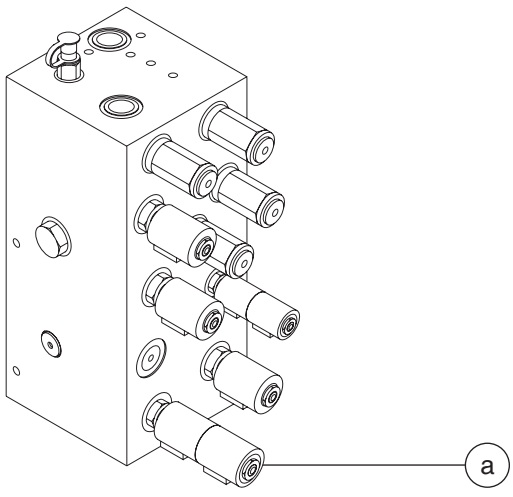
⊗ Result: The machine does not stop within the specified braking distance. Proceed to step 8 and determine if the machine is equipped with a dynamic braking valve.

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 Electrocution 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 and 3.



a drive forward/reserve valve

TABLE 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 8-1, *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.

TABLE B PROCEDURES

B-8
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 Select a test area that is firm, level and 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 Move the drive select toggle switch down for normal drive operation OR press the drive speed selector button until the indicator light is OFF.

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. Return the control handle to center.

Drive speed:

Stowed position	40 ft/ 12.4 sec	12.2 m/12.4 sec

B-9
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 Select a test area that is firm, level and 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 Raise the platform approximately 6 feet (2 m).

4 Move the drive select toggle switch down for normal drive operation OR press the drive speed selector button until the indicator light is OFF.

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. Return the control handle to center.

Drive speed (maximum):

Platform raised	40 ft / 54.5 sec	12.2 m / 54.5 sec

TABLE B PROCEDURES

B-10
Perform Hydraulic Oil Analysis

See D-1, *Test or Replace the Hydraulic Oil.*

B-11
Check the Electrical Contactor - (before serial number 6901)

Maintaining the electrical contactor in good condition is essential to safe machine operation. Failure to locate a worn or damaged contactor could result in an unsafe working condition and component damage.

1 Open the hydraulic power unit module and locate the electrical contactor mounted above the hydraulic power unit.

2 Visually inspect the contact points of each contactor for the following items:

- Excessive burns
- Excessive arcs
- Excessive pitting

NOTICE Replace the contactor if any damage is found.

B-12
Replace the Hydraulic Return Filter

Replacement of the hydraulic 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, then 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 (Genie part number 55616) and tighten it securely by hand. Clean up any oil that may have spilled during the replacement procedure.

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. Activate and hold the platform up toggle switch.

5 Inspect the filter and related components to be sure that there are no leaks.

Table C Procedure

C-1
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.

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

1 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 will fail to securely hold the module tray closed.

Table D Procedure

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 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 This machine uses Dexron equivalent hydraulic oil. 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 compartment and place a drain pan or other suitable container under the hydraulic tank.

3 Remove the drain plug from the hydraulic tank.

⚠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 Completely drain the tank into a suitable container. See capacity specifications listed at right.

5 Remove the return filter mounting bracket fasteners from the manifold. Push the filter and accumulator out of the way.

6 Remove the motor controller mounting bracket retaining fasteners and move the motor controller to the side.

7 Remove the hydraulic tank from the machine.

8 Remove the suction strainer and clean it using a mild solvent.

9 Clean the inside of the hydraulic tank using a mild solvent.

10 Install the suction strainer using thread sealer on the threads.

11 Install the drain plug using thread sealer on the threads.

TABLE D PROCEDURE

12 Install the hydraulic filter bracket and the motor controller bracket.

⚠WARNING Electrocution hazard. The connectors on the motor controller will short out to ground if the motor controller mounting bracket is not installed before the battery pack is connected.

13 Install the hydraulic tank.

14 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.

15 Clean up any oil that may have spilled. Properly dispose of the oil.

16 Operate all machine functions through a full cycle and check for leaks.

Hydraulic oil type - Dexron equivalent	
Hydraulic tank capacity	5.5 gallons 20.8 liters
Hydraulic system (including tank)	6 gallons 22.7 liters

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 flat level surface
  - · Platform in stowed position
  - · Key switch in the OFF position with the key removed
  - · Wheels chocked

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie GS-2032 & Genie GS-2046 & Genie GS-2646 & Genie GS-3246 Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate 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 may 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 Perform all troubleshooting on a firm level surface.

NOTICE Two persons will be required to safely perform some troubleshooting procedures.

TROUBLESHOOTING FLOW CHARTS

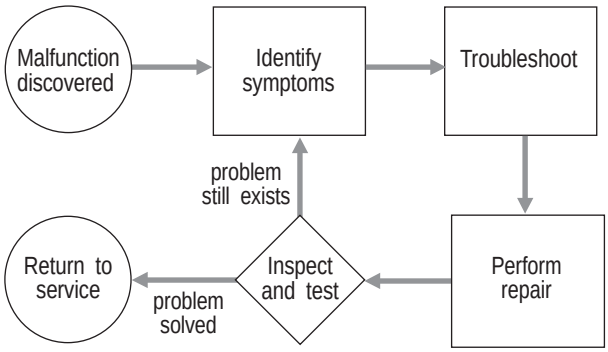
About This Section

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 and 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 Operation Code Chart are common operational status codes and malfunction codes that can be cleared easily.

The codes listed in the Fault Code Chart describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

Fault Code Chart
Before Serial Number 17408

Fault Code	Problem	Possible Causes	Solution
00			Reset the ECM. If problem remains, replace the ECM.
18	Alarm sounds continuously. Error indicator light on at the platform controls when function enable switch is engaged. Machine will not drive. Machine is not level.	Pothole guard may be blocked or pothole limit switches may not be activating or there is a bad wire connection.	Remove obstruction to pothole guard OR check pothole limit switch wiring for open connections OR check pothole limit switch for proper adjustment and activation.
19	Alarm sounds continuously. Error indicator light on at the platform controls when function enable switch is engaged. Machine will not drive. Machine is level.	Pothole guard may be blocked or pothole limit switches may not be activating or there is a bad wire connection.	Remove obstruction to pothole guard OR check pothole limit switch wiring for open connections OR check pothole limit switch for proper adjustment and activation.
33	Machine will not operate. Error indicator light on at the platform controls.	Joystick initialization OK but function enable switch is tied down.	Release the function enable switch OR check the switch for continuity in the joystick controller box (see Repair Section).
34	Machine unit will not operate. Error indicator light on at the platform controls.	ECM does not recognize the platform controls.	Replace joystick controller box main circuit board OR replace the coil cord.
35	Machine unit will not operate. Error indicator light on at the platform controls.	ECM does not recognize the platform controls.	Replace joystick controller box main circuit board.
51	Only the platform down function operates; no other functions operate. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to the motor contactor.	Check wiring and terminal at motor contactor ckt A9-Curtis terminal 3 OR check wiring and terminal at control ECM pin A9, ckt A9-Curtis terminal 3.

Notes

Continued on next page

FAULT CODE CHART
(BEFORE SERIAL NUMBER 17408)

Fault Code	Problem	Possible Causes	Solution
52	Machine will not drive forward. Pump motor starts. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to the drive forward coil.	Check wiring and terminal at the forward coil, ckt C6-Forward coil OR check wiring and terminal at control ECM pin C6, ckt C6 Forward coil.
53	Machine will not drive in reverse. Pump motor starts. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to the drive reverse coil.	Check wiring and terminal at the reverse coil, ckt A7-Reverse coil OR check wiring and terminal at ECM pin A7, ckt A7 Reverse coil.
54	Platform will not raise. Pump motor starts. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to the platform up coil.	Check wiring and terminal at the platform up coil, ckt A6-Up coil OR check wiring and terminal at ECM pin A6, ckt A6 Up coil.
55	Platform will not lower. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to the platform lowering coil.	Check wiring and terminal at the platform lowering coil, ckt B6-Down coil OR check wiring and terminal at ECM pin B6, ckt B6 Down coil.
56	Machine will not steer right. Pump motor starts. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to steer right coil.	Check wiring and terminal at the steer right coil, ckt C7 Right coil OR check wiring and terminal at ECM pin C7, C7 Right coil.
57	Machine will not steer left. Pump motor starts. Error indicator light on at the platform controls when the function enable switch is engaged.	No power output from ECM to steer left coil.	Check wiring and terminal at the steer left coil, ckt B7 Left coil OR check wiring and terminal at ECM pin B7, B7 Left coil.

Notes

Continued on next page

FAULT CODE CHART
(BEFORE SERIAL NUMBER 17408)

Fault Code	Problem	Possible Causes	Solution
58	Machine will not drive but platform will still raise.	No power output from ECM to the brake orifice coil.	Check wiring and terminal at the orifice coil, ckt C9 orifice coil OR check wiring and terminal at ECM pin C9, C9 orifice coil OR replace Coil.
60	Machine will not operate. Error indicator light on at the platform controls.	Lift/drive switch is turned "off" or in a neutral position.	Check switch position OR Replace switch.
63	Machine will not operate. Flashing green LED at the platform controls.	Lift/drive switch turned from lift to drive or drive to lift while the function enable switch is engaged.	Release function enable switch and move lift/drive switch to either lift or drive.
88	Machine will not operate. ECM cannot be reset.	EPROM not programmed.	Replace ECM.
no code available	Green flashing LED at the platform controls.	Function enable switch held for more than 10 seconds without activating any function.	Release function enable switch OR check the function enable microswitch for continuity in the joystick controller box. Reset controller and check for fault code 33 at power up.
no code available	Machine drive speed reduces to off limit drive speed OR platform raises slowly. Red flashing LED at the platform controls while function enable switch is activated.	Low Voltage Cut Back (LVCB) is activated because battery supply voltage is 18.5V DC or less.	Charge batteries.

Notes

Continued on next page

Normal Operation Code Chart

Before Serial Number 17408

Code	Condition	Explanation
20 flashing	Key switch to platform control. Platform extended above 6 feet. Ground control and platform Emergency Stop buttons pulled out to the on position.	Machine was operating normally, then the platform Emergency Stop button was pushed in and the key switch was turned to ground control. Alarm will go off until key switch is turned to platform control or the platform Emergency Stop button is pulled out.
21 flashing	Key switch to platform control. Platform extended above 6 feet. Ground control and platform Emergency Stop buttons pulled out to the on position.	Normal operation.
22 flashing	Key switch to ground control. Ground control Emergency Stop button pulled out to the on position. Platform control Emergency Stop button pushed in to the off position.	To clear this code, be sure joystick is properly connected or pull the platform Emergency Stop button out to the on position.
23 flashing	Key switch to ground control. Ground control and platform Emergency Stop buttons pulled out to the on position. Error indicator light at platform controls is on.	Turn key switch to platform control.
24 flashing	Key switch to ground control. Ground control Emergency Stop button pulled out to the on position. Platform control Emergency Stop button pushed in to the off position. Platform extended less than 6 feet.	To clear this code, be sure joystick is properly connected or pull the platform Emergency Stop button out to the on position.
25 flashing	Key switch to ground control. Ground control and platform Emergency Stop buttons pulled out to the on position. Error indicator light at platform controls is on. Platform extended less than 6 feet.	Turn key switch to platform control.
31 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position.	Normal operation.
32 flashing	Key switch to platform control. Ground control Emergency Stop button pulled out to the on position. Platform control Emergency Stop button pushed in to the off position.	To clear this code, be sure joystick is properly connected or pull the platform Emergency Stop button out to the on position.
36 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position. Lift/drive switch to lift position.	Up function selected. Note: if joystick controller is returned to center position before function enable button is released, code 31 flashing will appear. If function enable button is released first, code 36 flashing will remain until another function is selected.
37 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position. Lift/drive switch to lift position.	Down function selected. Note: if joystick controller is returned to center position before function enable button is released, code 31 flashing will appear. If function enable button is released first, code 37 flashing will remain until another function is selected.
38 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position. Lift/drive switch to drive position.	Drive in blue direction function selected. Note: if joystick controller is returned to center position before function enable button is released, code 31 flashing will appear. If function enable button is released first, code 38 flashing will remain until another function is selected.
39 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position. Lift/drive switch to drive position.	Drive in yellow direction function selected. Note: if joystick controller is returned to center position before function enable button is released, code 31 flashing will appear. If function enable button is released first, code 39 flashing will remain until another function is selected.
40 flashing	Key switch to platform control. Ground control and platform Emergency Stop buttons pulled out to the on position. Function enable switch pressed.	Horn is being pressed. Note: Horn will operate without code 40 flashing if function enable switch is not pressed in.

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Fault Code Chart

After Serial Number 17407

Fault Code	Problem	Possible Causes	Solution
— —			Normal operation
01	Machine will not operate. ECM cannot be reset.	EPROM not programmed.	Replace ECM.
02	Platform ECM error.	Defective control cable OR platform controls.	Troubleshoot cable OR platform controls.
03	Undefined platform DIP switch settings.	DIP switch settings incorrect.	Correct DIP switch settings.
12	Chassis up/down switch closed at start up.	Malfunctioning up/down switch.	Troubleshoot up/down switch.
18	Pothole guard failure.	Malfunctioning pothole switch OR obstruction in pothole guard linkage.	Troubleshoot pothole switch OR remove obstruction.
42	Platform left turn switch closed at start up.	Malfunctioning steer left microswitch.	Troubleshoot steer left microswitch.
43	Platform right turn switch closed at start up.	Malfunctioning steer right microswitch.	Troubleshoot steer right microswitch.
45	Platform lift enable switch closed at start up.	Malfunctioning lift enable switch.	Troubleshoot lift enable switch.
46	Platform drive enable switch closed at start up.	Malfunctioning drive enable switch.	Troubleshoot drive enable switch.
47	Platform joystick off neutral at start up.	Joystick potentiometer not centered.	Verify potentiometer setting.
52	Forward coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
53	Reverse coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
54	Up coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
55	Down coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
56	Right coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
57	Left coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
58	Brake coil error.	Malfuctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
68	Low Voltage.	Batteries discharged.	Charge batteries.

Notes

Chart 1

All Functions Will Not Operate

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.

Be sure both Emergency Stop switches are pulled out to the ON position.

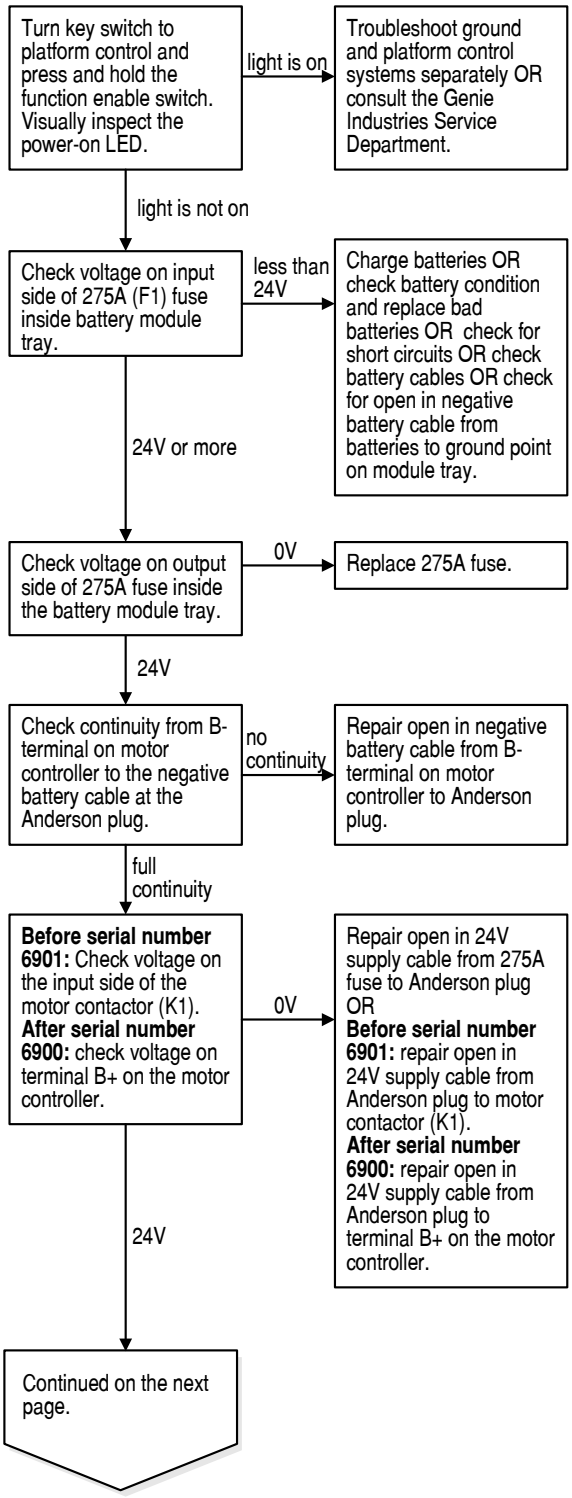


CHART 1

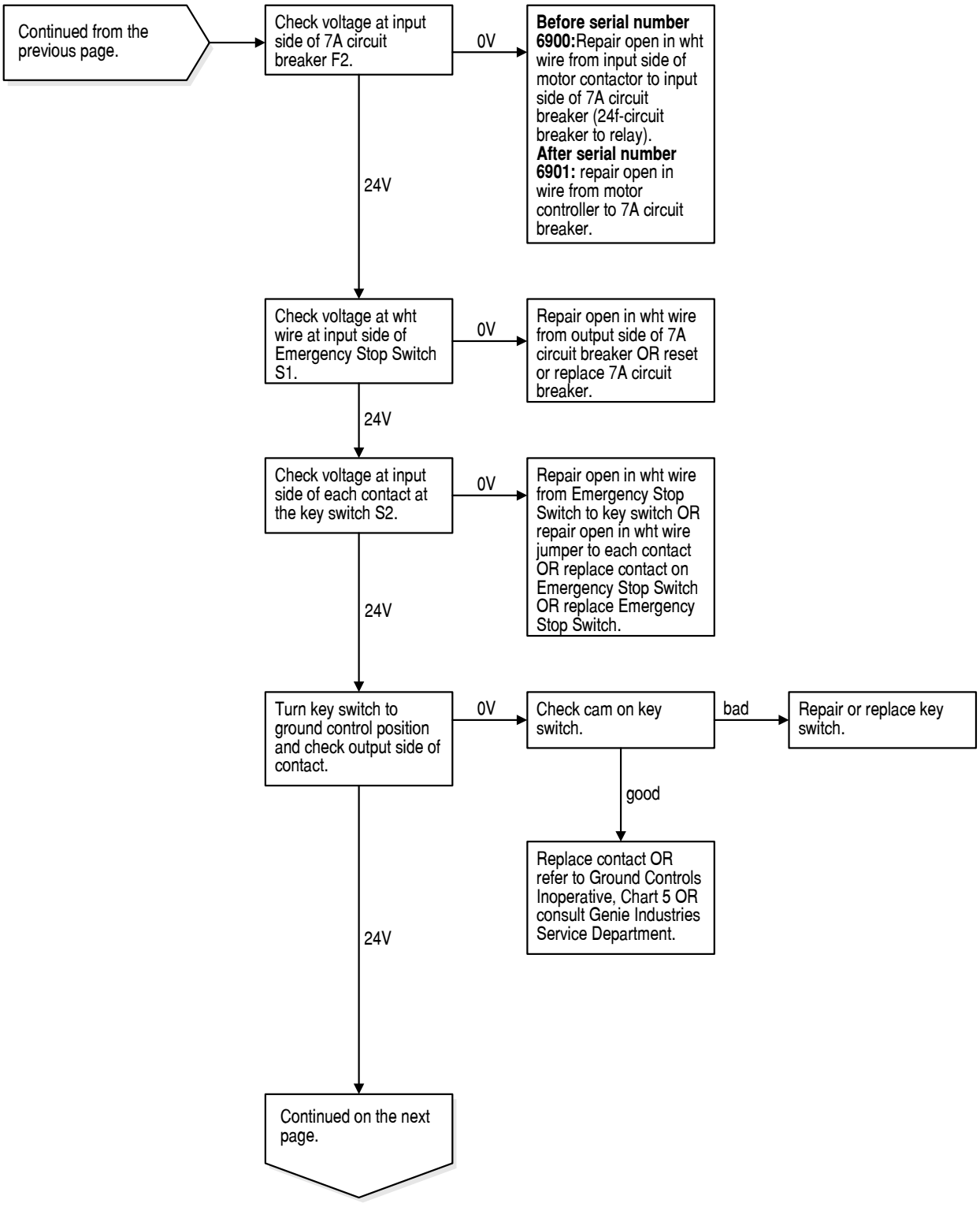

Continued from the previous page.
Check voltage at input side of 7A circuit breaker F2.
0V
Before serial number 6900:Repair open in wht wire from input side of motor contactor to input side of 7A circuit breaker (24f-circuit breaker to relay). After serial number 6901: repair open in wire from motor controller to 7A circuit breaker.
24V
Check voltage at wht wire at input side of Emergency Stop Switch S1.
0V
Repair open in wht wire from output side of 7A circuit breaker OR reset or replace 7A circuit breaker.
24V
Check voltage at input side of each contact at the key switch S2.
0V
Repair open in wht wire from Emergency Stop Switch to key switch OR repair open in wht wire jumper to each contact OR replace contact on Emergency Stop Switch OR replace Emergency Stop Switch.
24V
Turn key switch to ground control position and check output side of contact.
0V
Check cam on key switch.
bad
Repair or replace key switch.
good
Replace contact OR refer to Ground Controls Inoperative, Chart 5 OR consult Genie Industries Service Department.
24V
Continued on the next page.

CHART 1

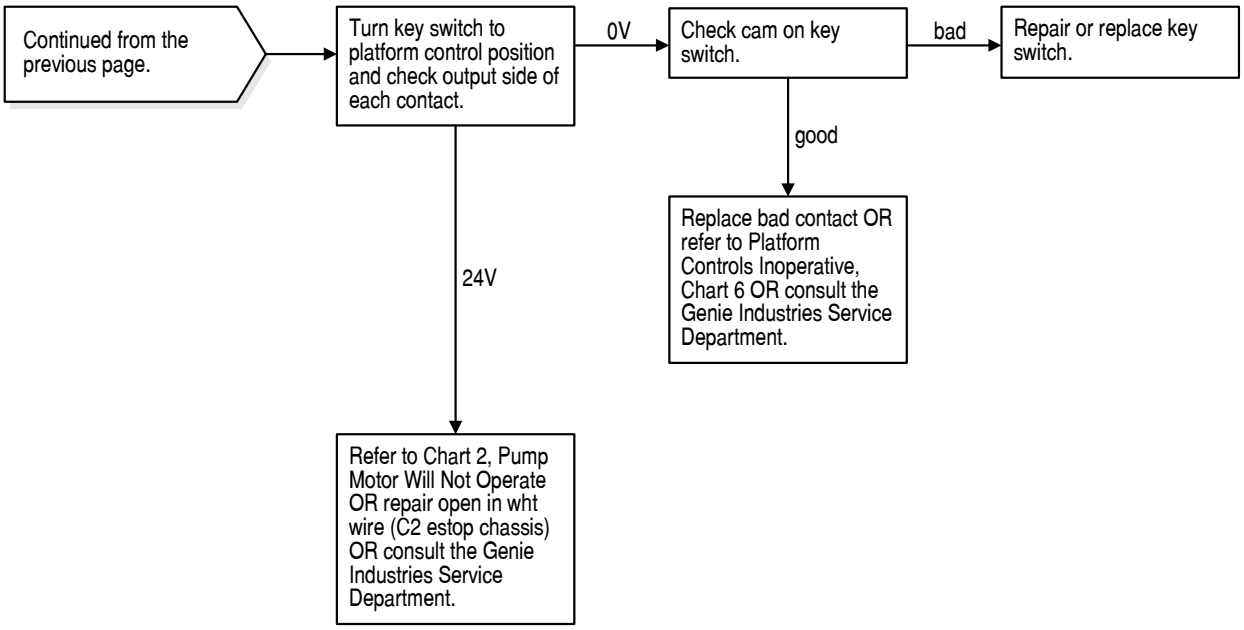

Continued from the previous page.
Turn key switch to platform control position and check output side of each contact.
0V
Check cam on key switch.
bad
Repair or replace key switch.
good
Replace bad contact OR refer to Platform Controls Inoperative, Chart 6 OR consult the Genie Industries Service Department.
24V
Refer to Chart 2, Pump Motor Will Not Operate OR repair open in wht wire (C2 estop chassis) OR consult the Genie Industries Service Department.

Chart 2

Pump Motor Will Not Operate

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.

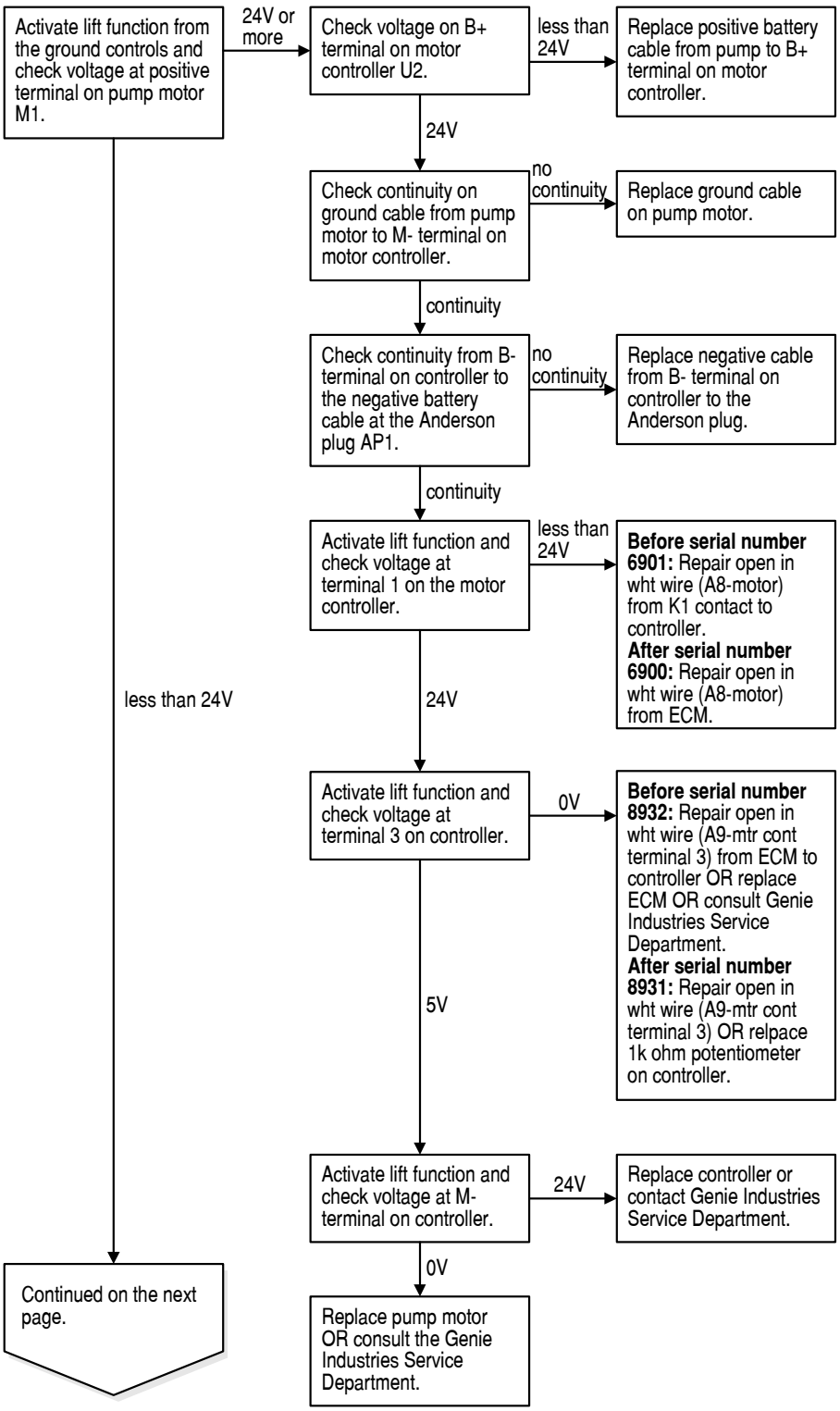


CHART 2

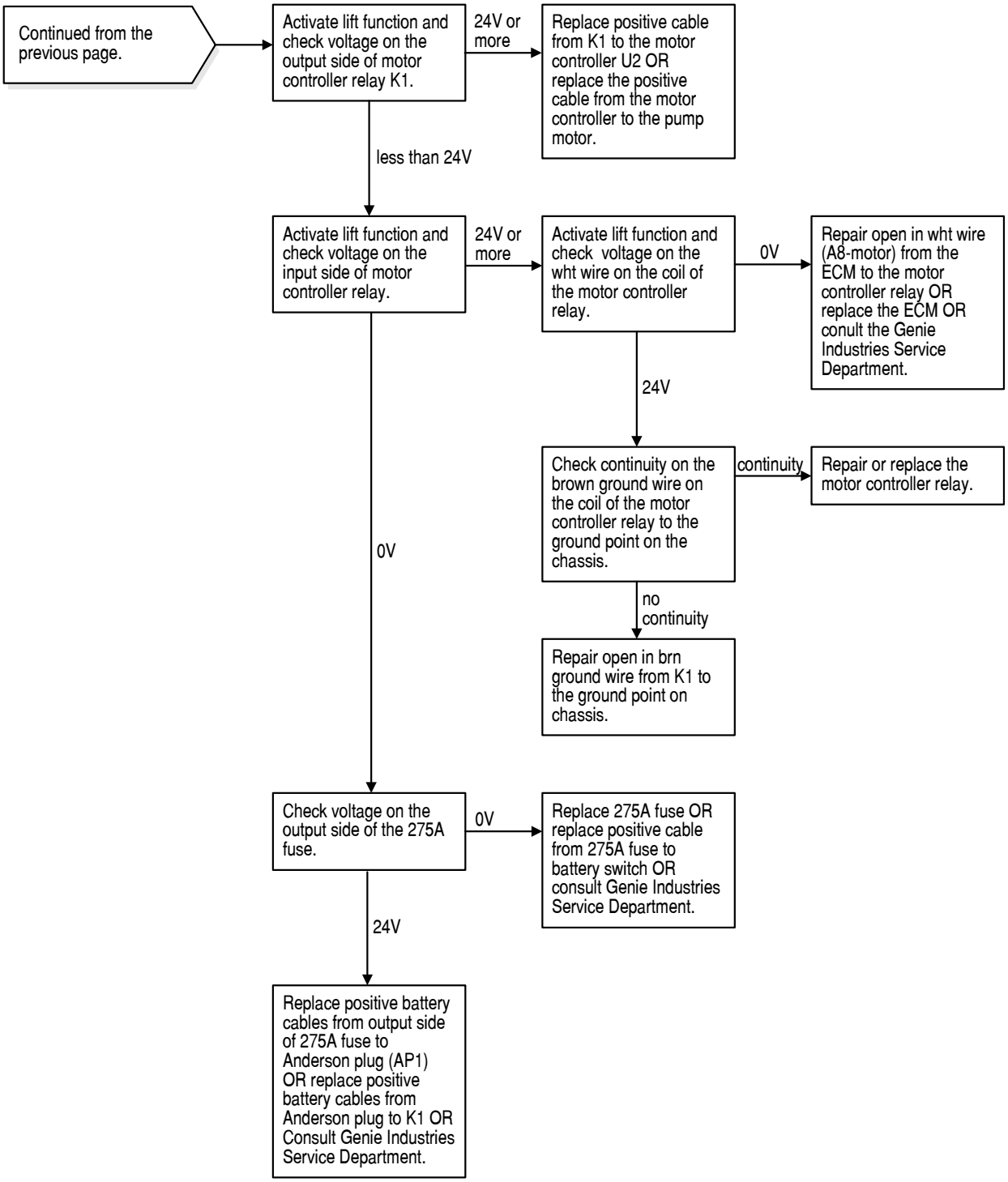

Continued from the previous page.
Activate lift function and check voltage on the output side of motor controller relay K1.
24V or more
Replace positive cable from K1 to the motor controller U2 OR replace the positive cable from the motor controller to the pump motor.
less than 24V
Activate lift function and check voltage on the input side of motor controller relay.
24V or more
Activate lift function and check voltage on the wht wire on the coil of the motor controller relay.
0V
Repair open in wht wire (A8-motor) from the ECM to the motor controller relay OR replace the ECM OR conult the Genie Industries Service Department.
24V
Check continuity on the brown ground wire on the coil of the motor controller relay to the ground point on the chassis.
continuity
Repair or replace the motor controller relay.
0V
no continuity
Repair open in brn ground wire from K1 to the ground point on chassis.
Check voltage on the output side of the 275A fuse.
0V
Replace 275A fuse OR replace positive cable from 275A fuse to battery switch OR consult Genie Industries Service Department.
24V
Replace positive battery cables from output side of 275A fuse to Anderson plug (AP1) OR replace positive battery cables from Anderson plug to K1 OR Consult Genie Industries Service Department.

Chart 3

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 properly connected.

Be sure the batteries are fully charged.

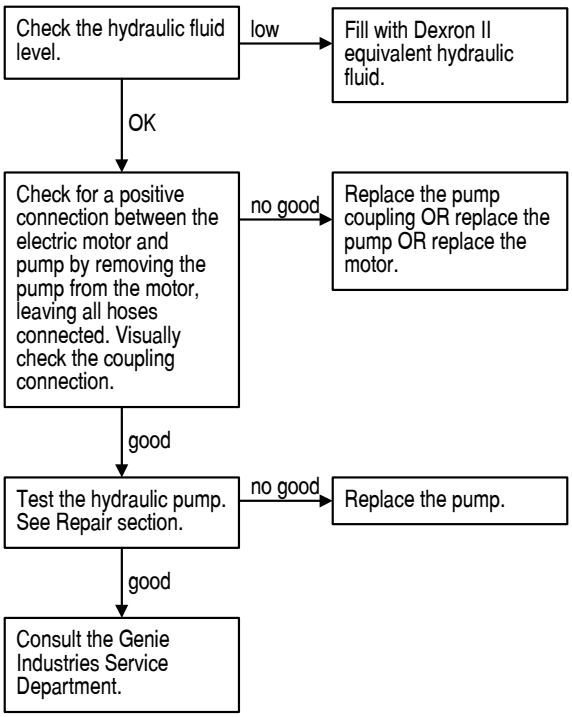


Chart 4

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.

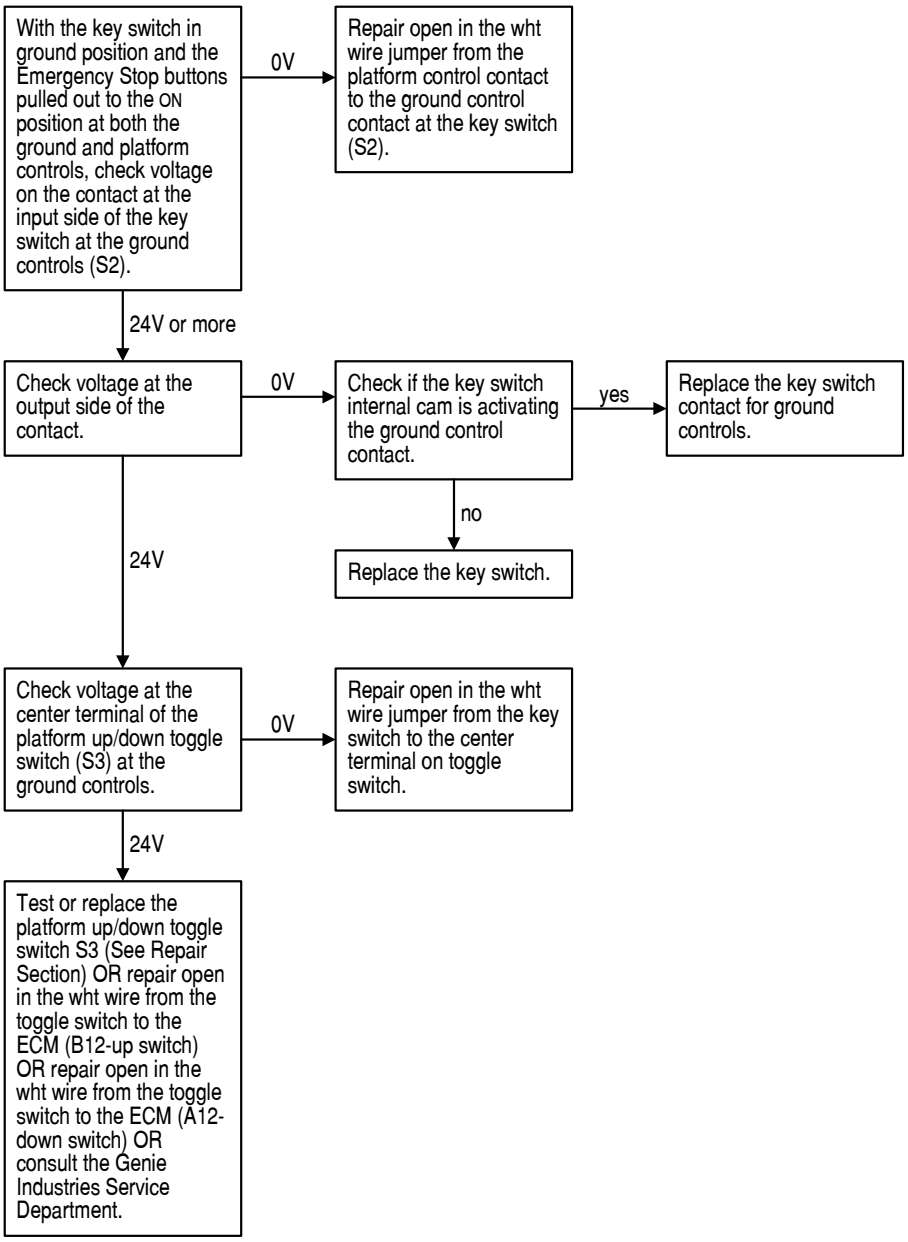


Chart 5

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 properly connected.

Be sure the batteries are fully charged.

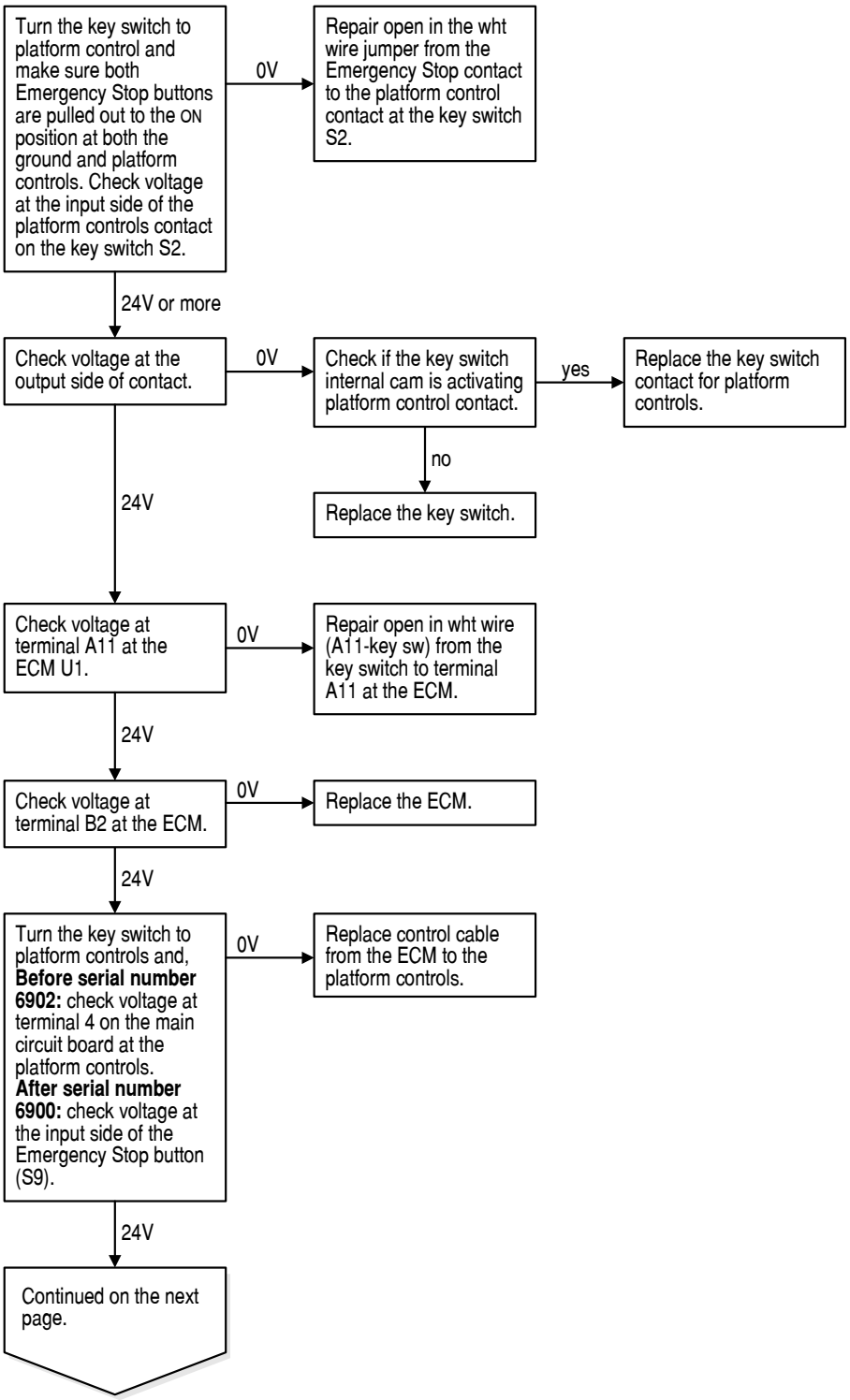


CHART 5

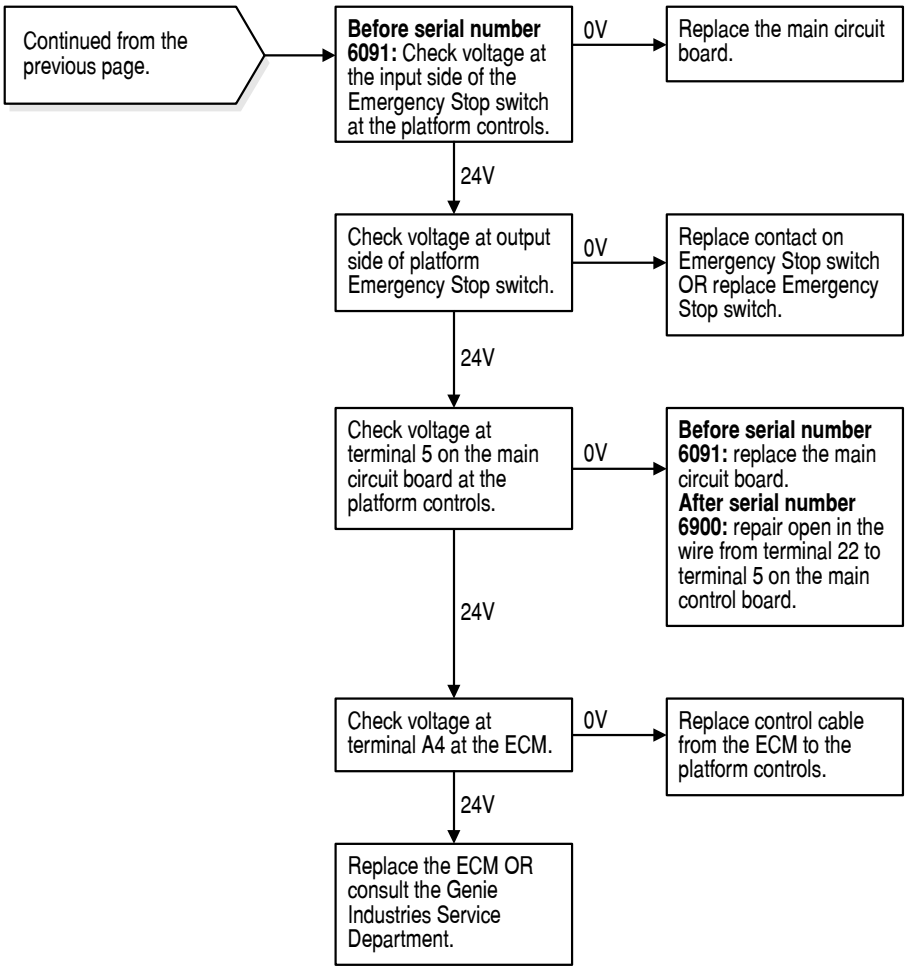

Continued from the previous page.
Before serial number 6091: Check voltage at the input side of the Emergency Stop switch at the platform controls.
0V
Replace the main circuit board.
24V
Check voltage at output side of platform Emergency Stop switch.
0V
Replace contact on Emergency Stop switch OR replace Emergency Stop switch.
24V
Check voltage at terminal 5 on the main circuit board at the platform controls.
0V
Before serial number 6091: replace the main circuit board.
After serial number 6900: repair open in the wire from terminal 22 to terminal 5 on the main control board.
24V
Check voltage at terminal A4 at the ECM.
0V
Replace control cable from the ECM to the platform controls.
24V
Replace the ECM OR consult the Genie Industries Service Department.

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 properly connected.

Be sure the batteries are fully charged.

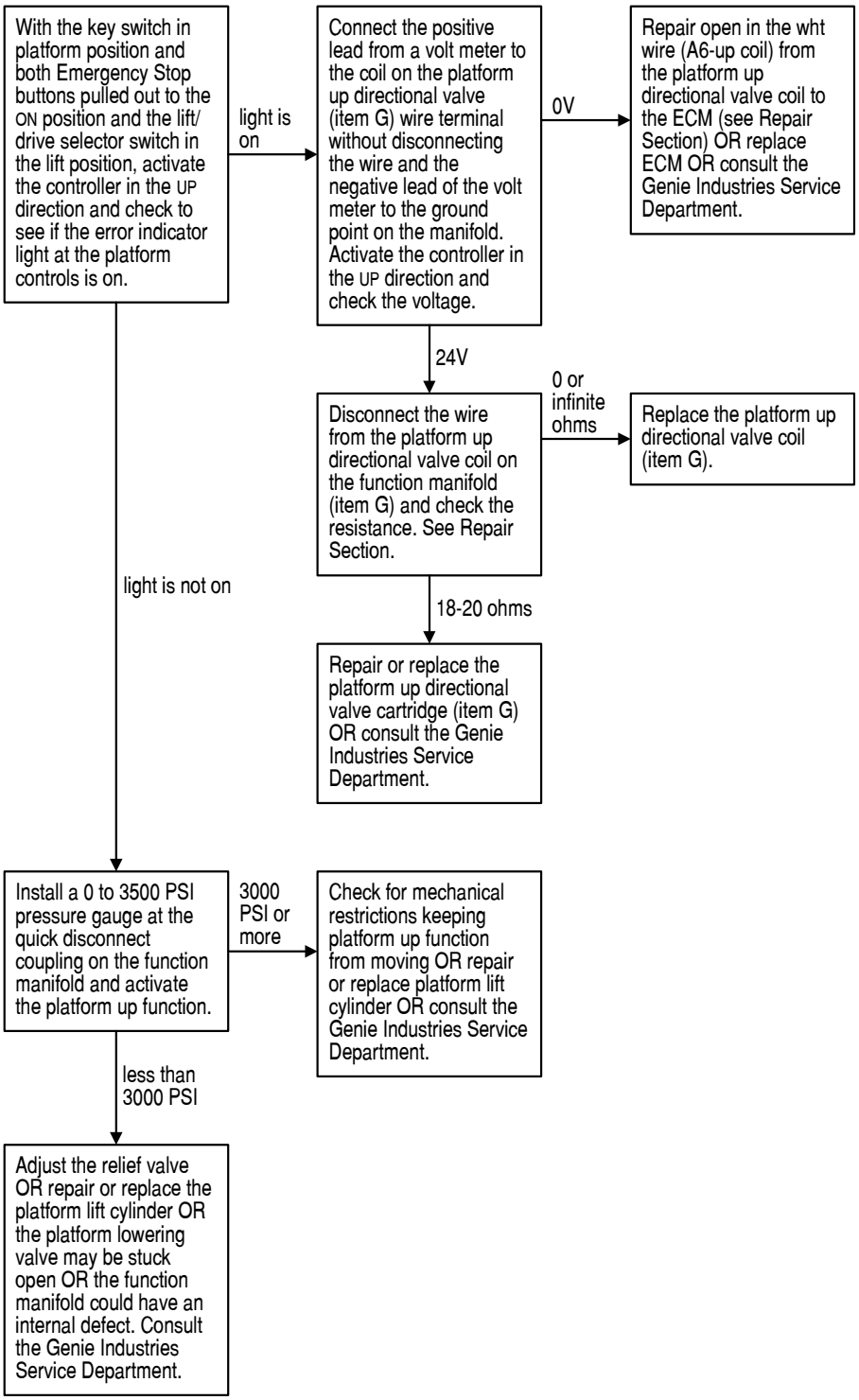


Chart 7

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 properly connected.

Be sure the batteries are fully charged.

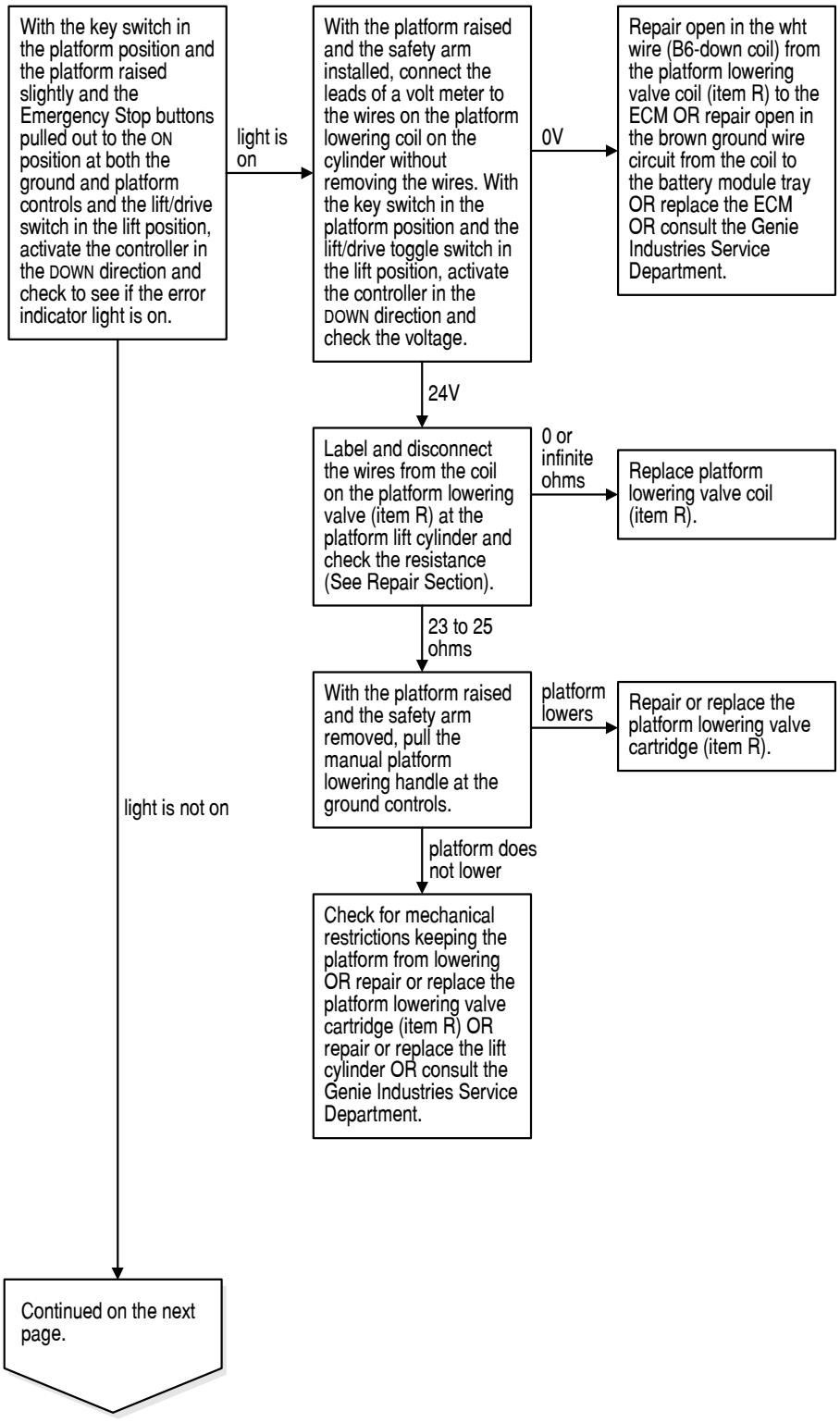


CHART 7

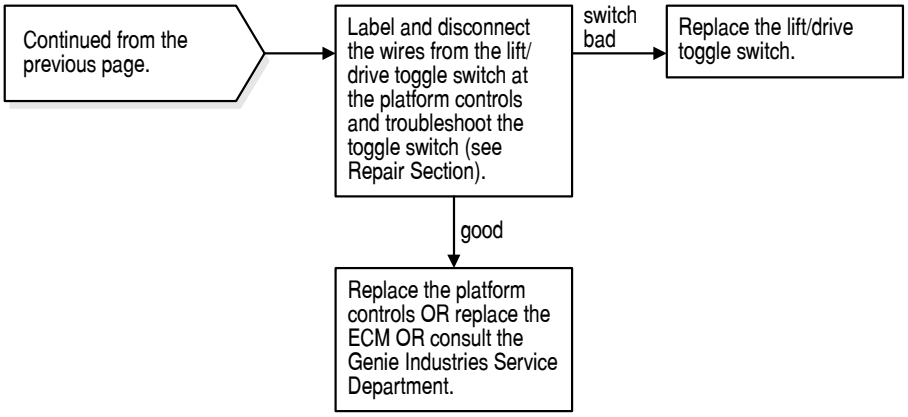

Continued from the previous page.
Label and disconnect the wires from the lift/ drive toggle switch at the platform controls and troubleshoot the toggle switch (see Repair Section).
switch bad
Replace the lift/drive toggle switch.
good
Replace the platform controls OR replace the ECM OR consult the Genie Industries Service Department.

Chart 8

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 properly connected.

Be sure the batteries are fully charged.

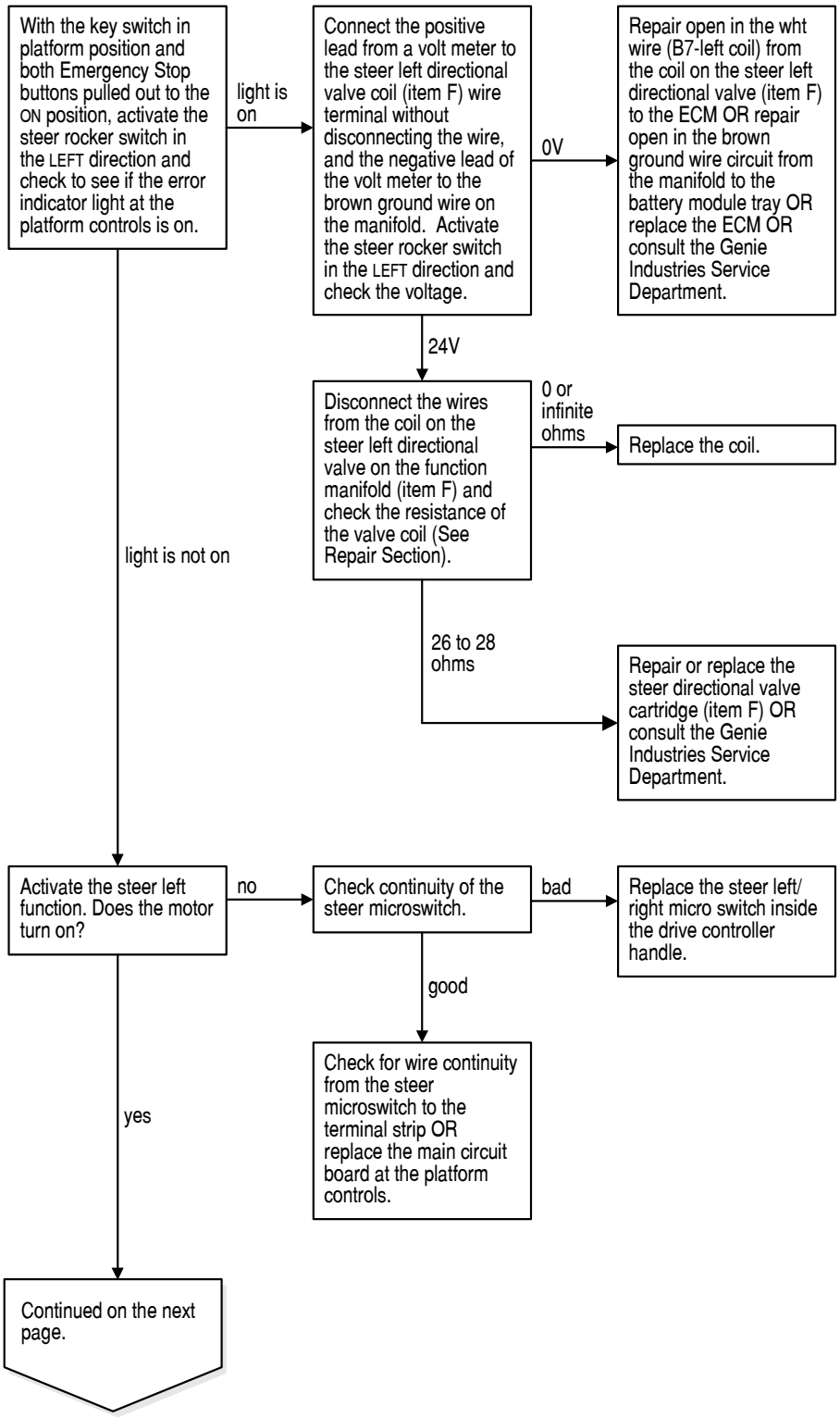


CHART 8

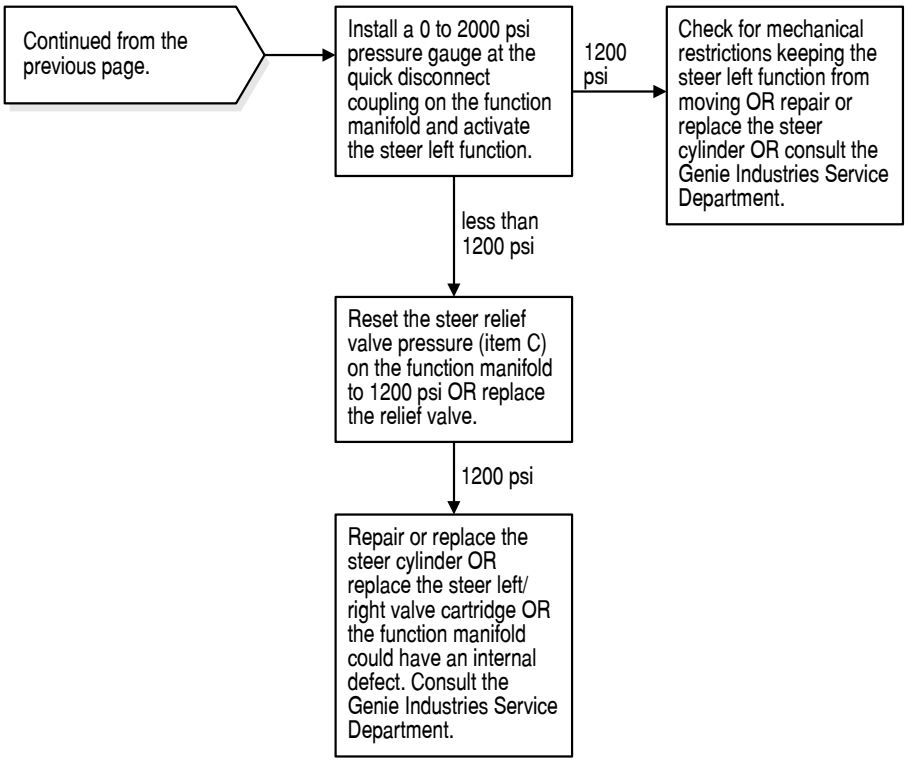

Continued from the previous page.
Install a 0 to 2000 psi pressure gauge at the quick disconnect coupling on the function manifold and activate the steer left function.
1200 psi
Check for mechanical restrictions keeping the steer left function from moving OR repair or replace the steer cylinder OR consult the Genie Industries Service Department.
less than 1200 psi
Reset the steer relief valve pressure (item C) on the function manifold to 1200 psi OR replace the relief valve.
1200 psi
Repair or replace the steer cylinder OR replace the steer left/ right valve cartridge OR the function manifold could have an internal defect. Consult the Genie Industries Service Department.

Chart 9

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 properly connected.

Be sure the batteries are fully charged.

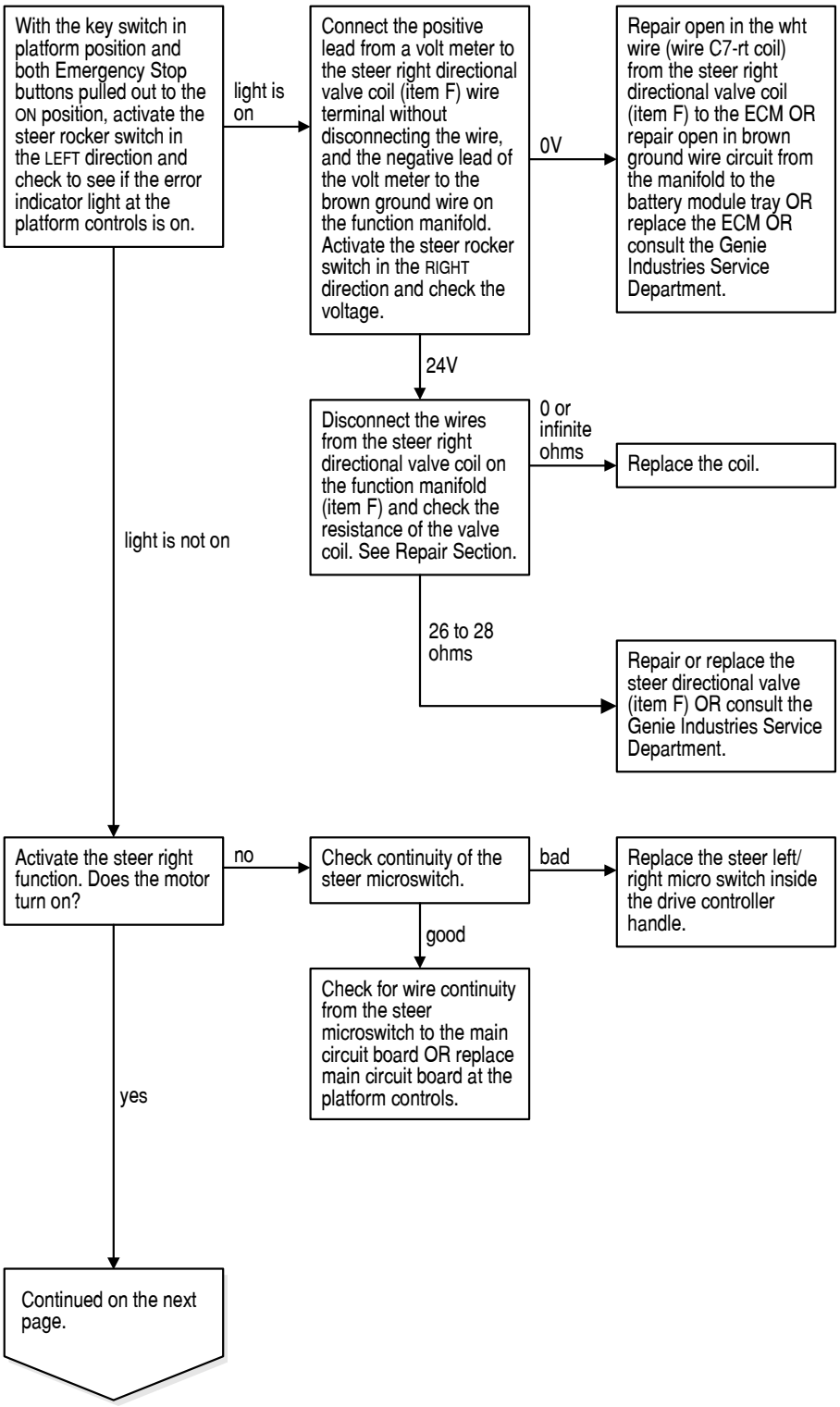


CHART 9

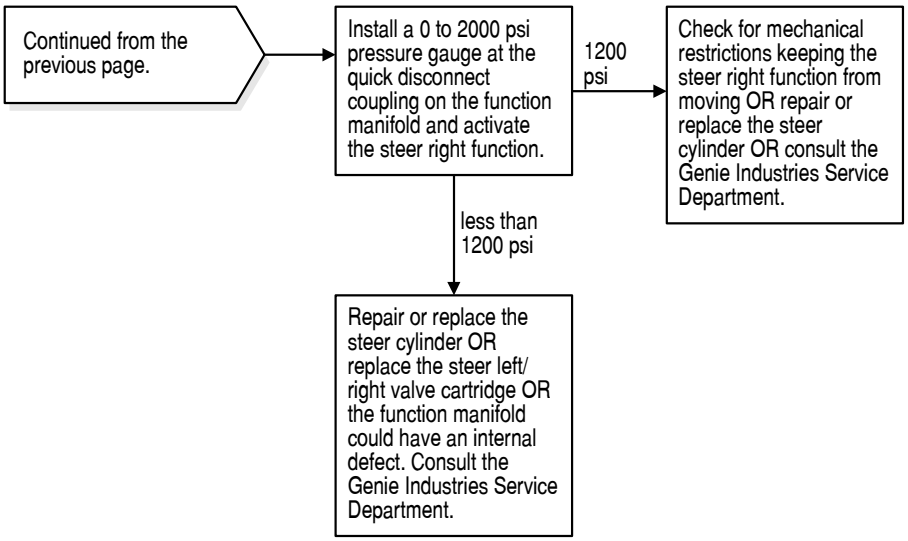

Continued from the previous page.
Install a 0 to 2000 psi pressure gauge at the quick disconnect coupling on the function manifold and activate the steer right function.
1200 psi
Check for mechanical restrictions keeping the steer right function from moving OR repair or replace the steer cylinder OR consult the Genie Industries Service Department.
less than 1200 psi
Repair or replace the steer cylinder OR replace the steer left/ right valve cartridge OR the function manifold could have an internal defect. Consult the Genie Industries Service Department.

Chart 10

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 properly connected.

Be sure the batteries are fully charged.

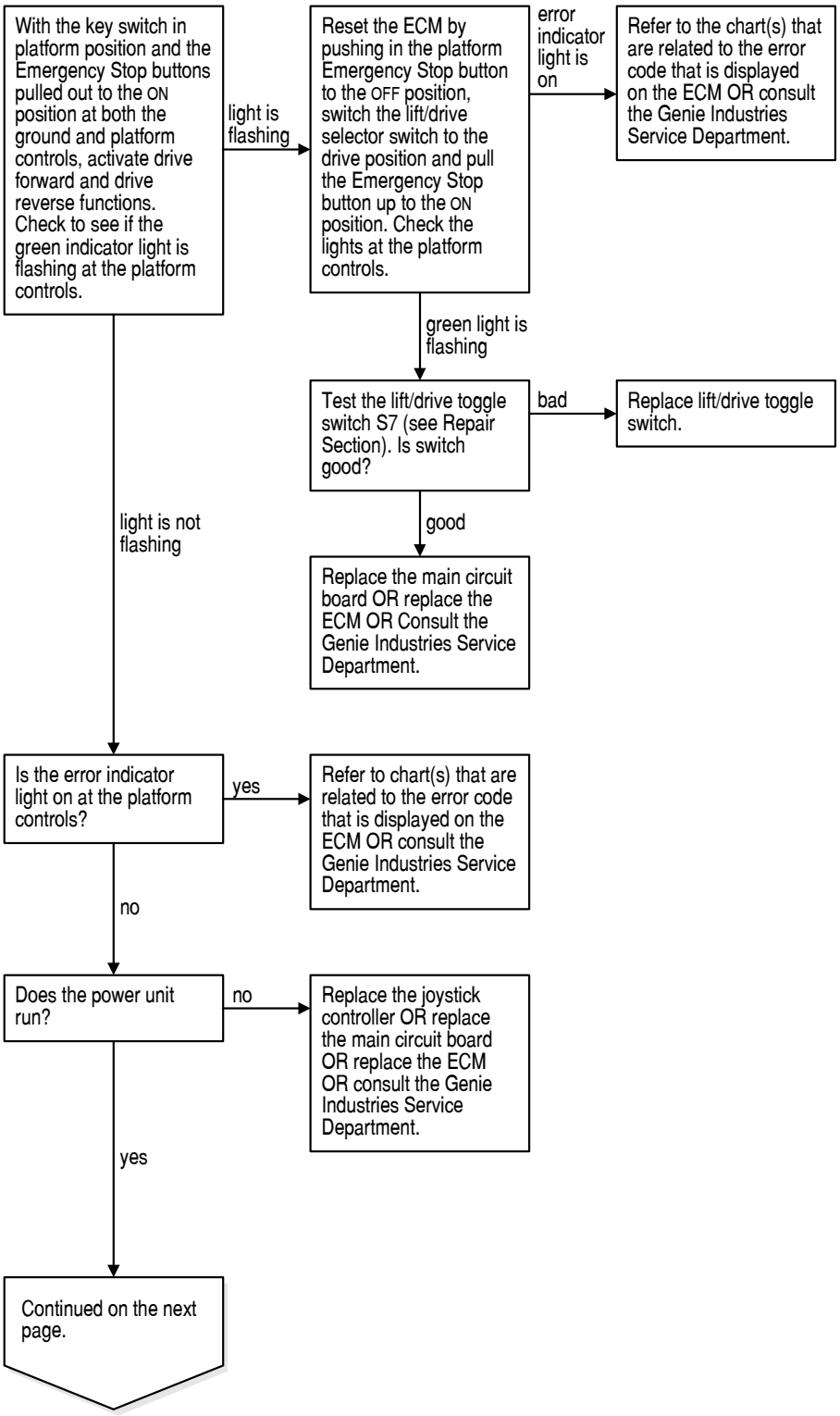


CHART 10

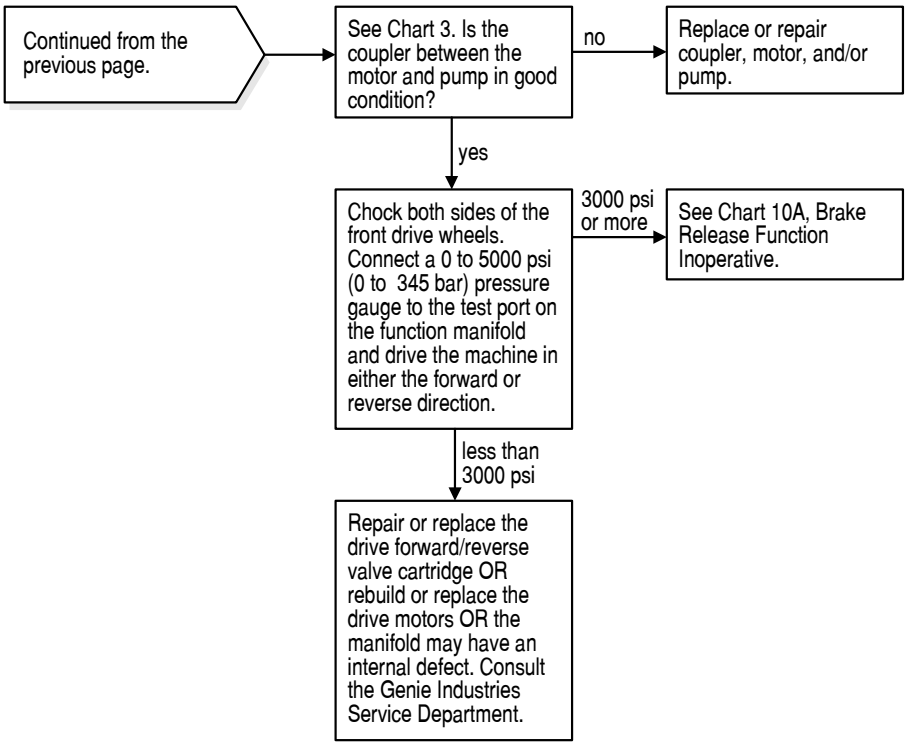

Continued from the previous page.
See Chart 3. Is the coupler between the motor and pump in good condition?
no
Replace or repair coupler, motor, and/or pump.
yes
Chock both sides of the front drive wheels. Connect a 0 to 5000 psi (0 to 345 bar) pressure gauge to the test port on the function manifold and drive the machine in either the forward or reverse direction.
3000 psi or more
See Chart 10A, Brake Release Function Inoperative.
less than 3000 psi
Repair or replace the drive forward/reverse valve cartridge OR rebuild or replace the drive motors OR the manifold may have an internal defect. Consult the Genie Industries Service Department.

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 properly connected.

Be sure the batteries are fully charged.

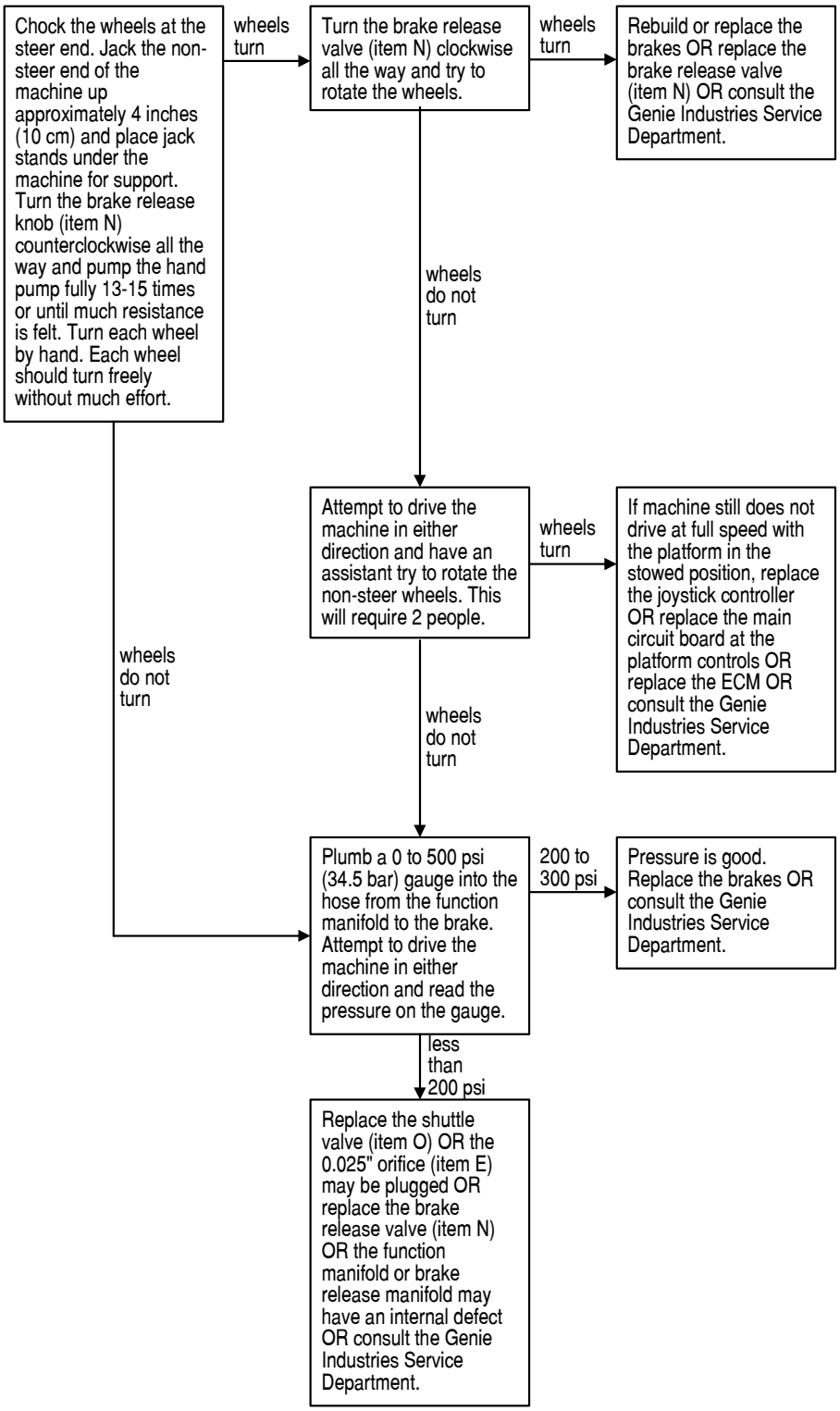


Chart 11

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 properly connected.

Be sure the batteries are fully charged.

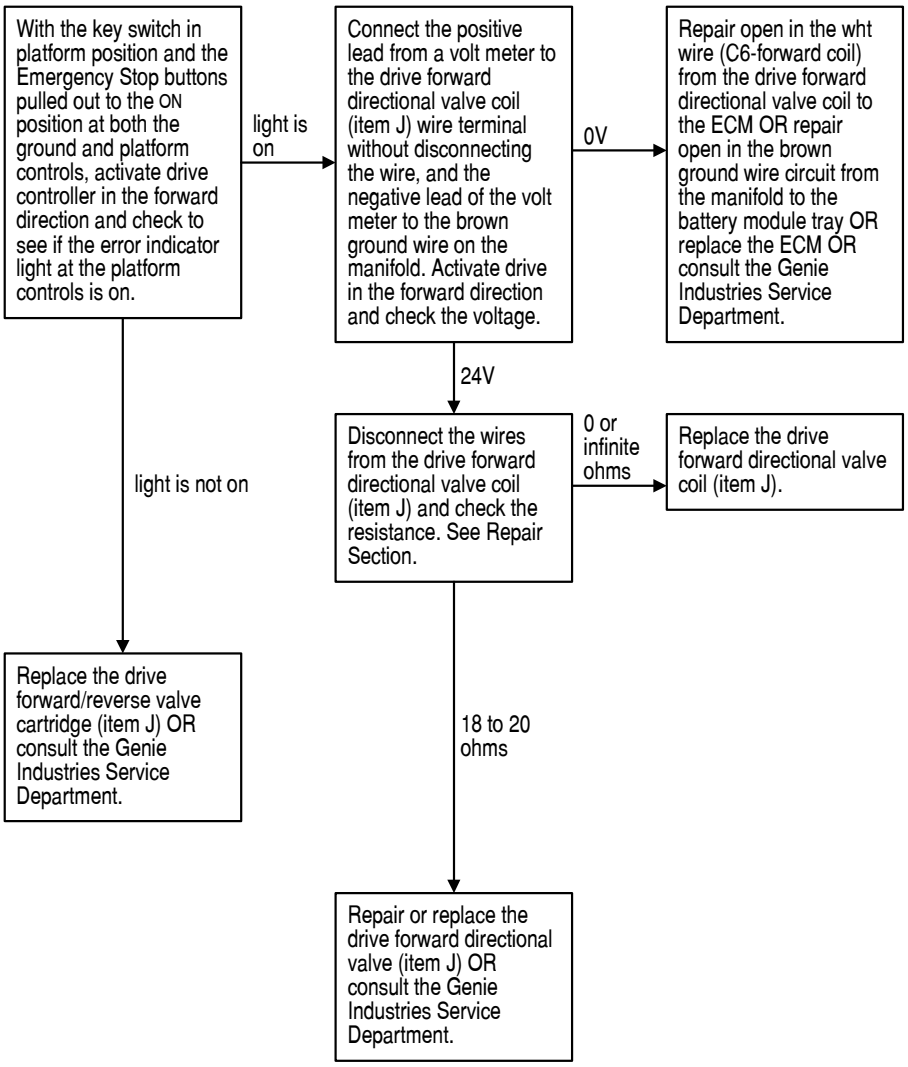


Chart 12

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 properly connected.

Be sure the batteries are fully charged.

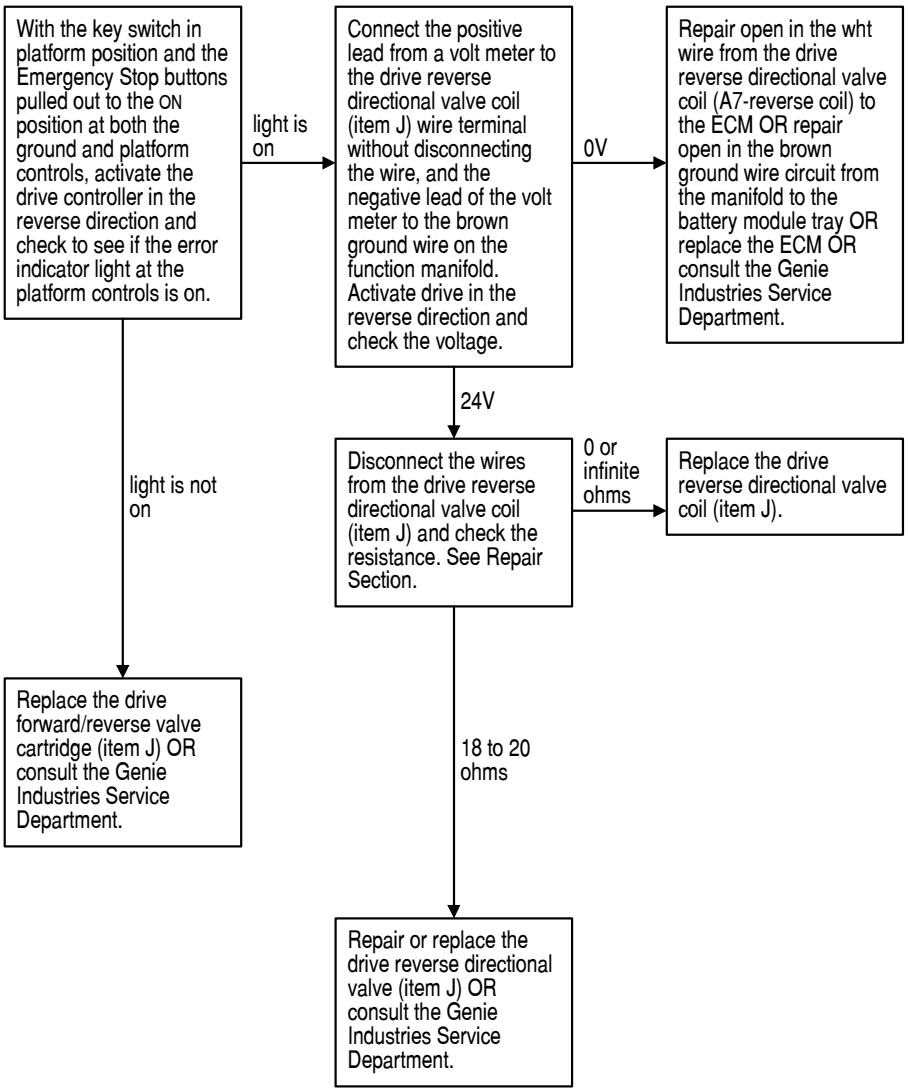


Chart 13

Machine Will Not Drive At Full Speed

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.

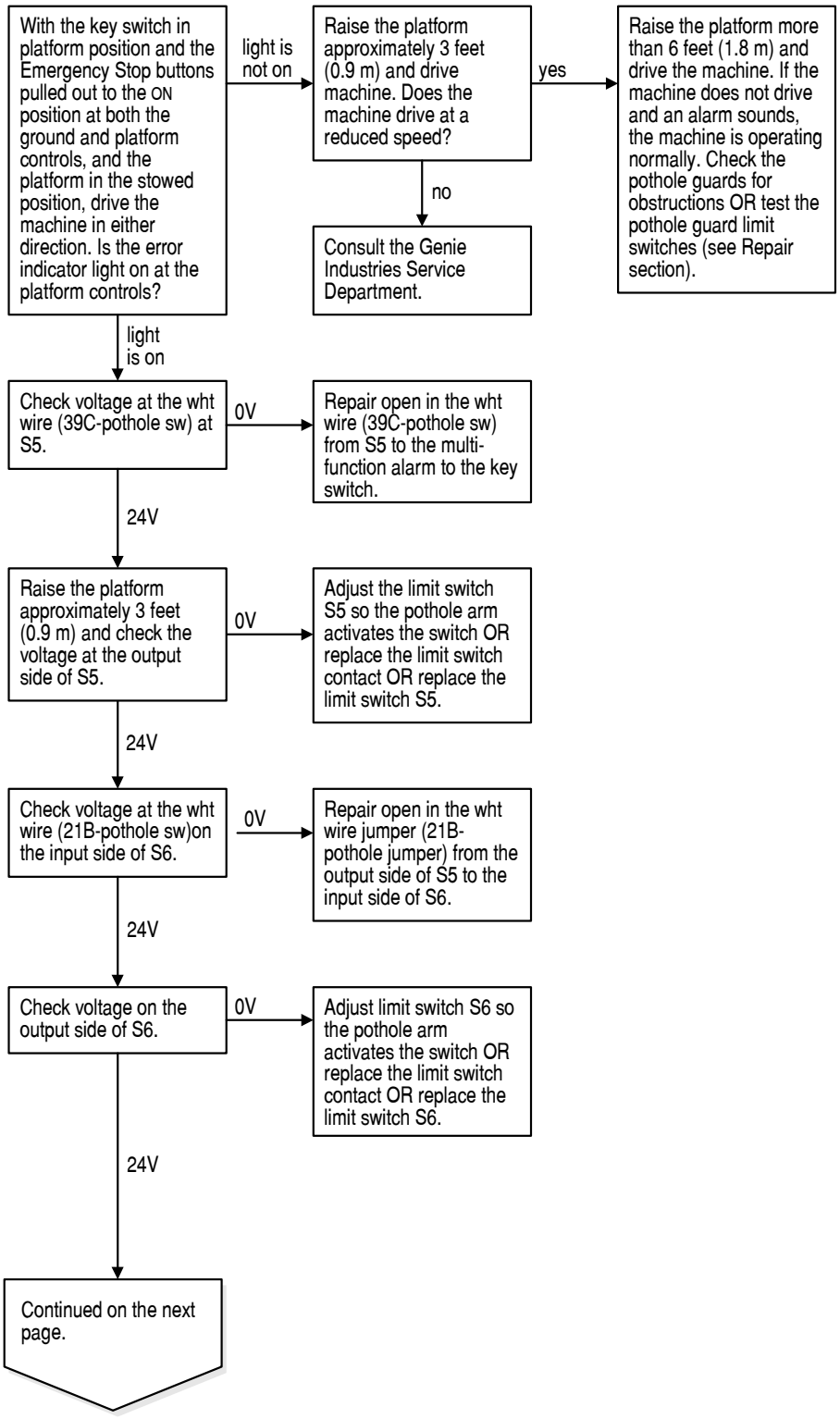


CHART 13

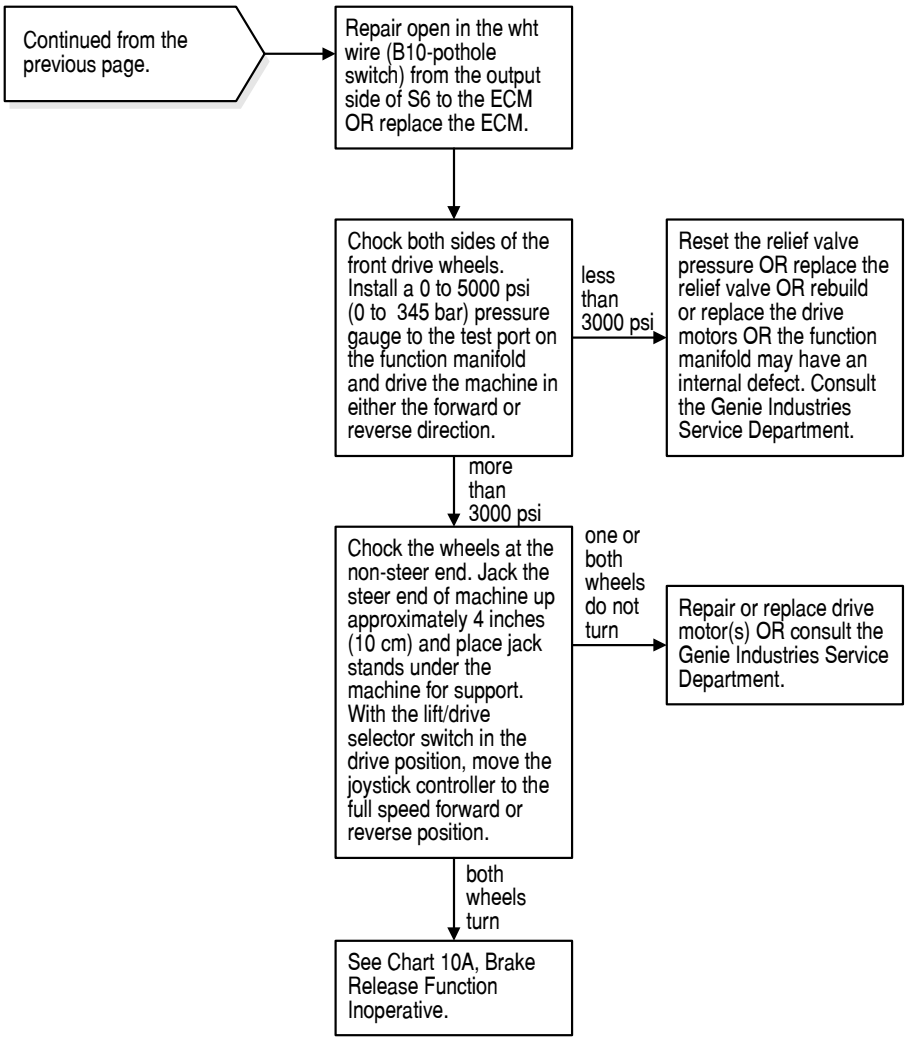

Continued from the previous page.
Repair open in the wht wire (B10-pothole switch) from the output side of S6 to the ECM OR replace the ECM.
Chock both sides of the front drive wheels. Install a 0 to 5000 psi (0 to 345 bar) pressure gauge to the test port on the function manifold and drive the machine in either the forward or reverse direction.
less than 3000 psi
Reset the relief valve pressure OR replace the relief valve OR rebuild or replace the drive motors OR the function manifold may have an internal defect. Consult the Genie Industries Service Department.
more than 3000 psi
Chock the wheels at the non-steer end. Jack the steer end of machine up approximately 4 inches (10 cm) and place jack stands under the machine for support. With the lift/drive selector switch in the drive position, move the joystick controller to the full speed forward or reverse position.
one or both wheels do not turn
Repair or replace drive motor(s) OR consult the Genie Industries Service Department.
both wheels turn
See Chart 10A, Brake Release Function Inoperative.

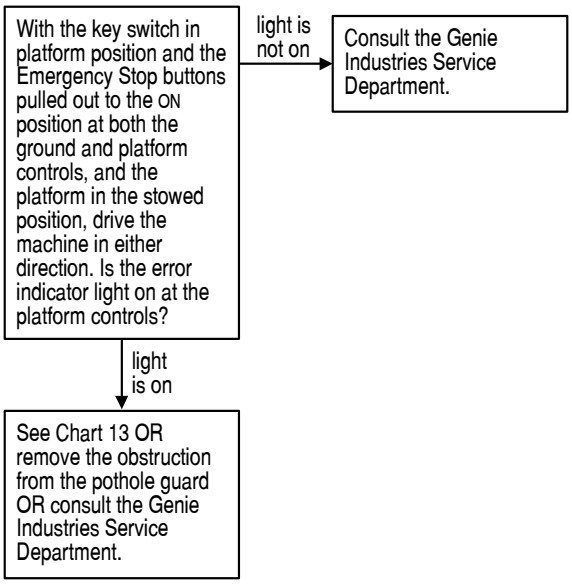
Chart 14

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 properly connected.

Be sure the batteries are fully charged.



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 & Genie GS-2046 & Genie GS-2646 & Genie 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.

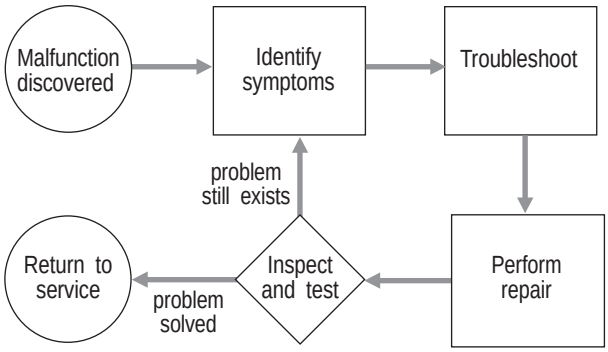
Electrical Schematics

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

Hydraulic Schematics

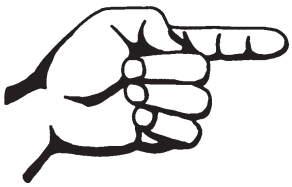
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process



Electrical Components

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
AP1	Anderson connector	19436	Anderson	6325-G1	2
B1	Alarm, steady tone	39540	Floyd Bell Inc.	UC-09628-Q	1
B2	Alarm, intermittent	18963	Floyd Bell Inc.	XB-09-630-Q	1
F1	Fuse, 275 amp	40833	Buss	ANN-275	1
F2	Circuit breaker	47811	ETA	45-700-IG1-P10	2
FB1	Flashing beacon	39676	ECCO Electronic Controls	6220A	2
G1	Battery, 225AH, 6V DC	62201	Allied Battery Co.	T-105, dry	8
H1	Hour meter	56100	Curtis Instruments	17305666	1
K1	Relay, 180 amp	19550	Curtis Instruments	13220544	1
P2	Level sensor, Dual Axis	40836	Power Comp. of Midwest	L36	1
R1	Resistor, 75 Ohm	51590	Dale	RS-10-38, 75 Ohm	1
S1	Contact, N.C.	33020	Square D	1863	1
S2	Contact - keyswitch, N.O.	45081	Telemecanique	ZB2-BE101	1
S3	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	1
S4, S5, S6	Contact - limit switch, N.C.H.O.	19491	Telemecanique	XESP2051	3
S7	Toggle switch, DPDT 2 position maintained	44987	ITT Schadow.	220536	1
S9	Contact, N.C.	44990	Telemecanique	ZA2-BZ1026	1
S10	Contact, N.O.	44989	Telemecanique	ZA2-BZ1016	1
U2	Motor controller, 48V, 275 amp	39472	Curtis Instruments	1204-036	1
Y2, Y3, Y4	Coil, 20V DC with diode	39347	Hydra Power Systems	6309757	3
Y5, Y6, Y8	Coil, 20V DC with diode	44176	Hydra Power Systems	6359752	3
Y7	Coil, 20V DC	44787	Hydra Power Systems	10166-25	1



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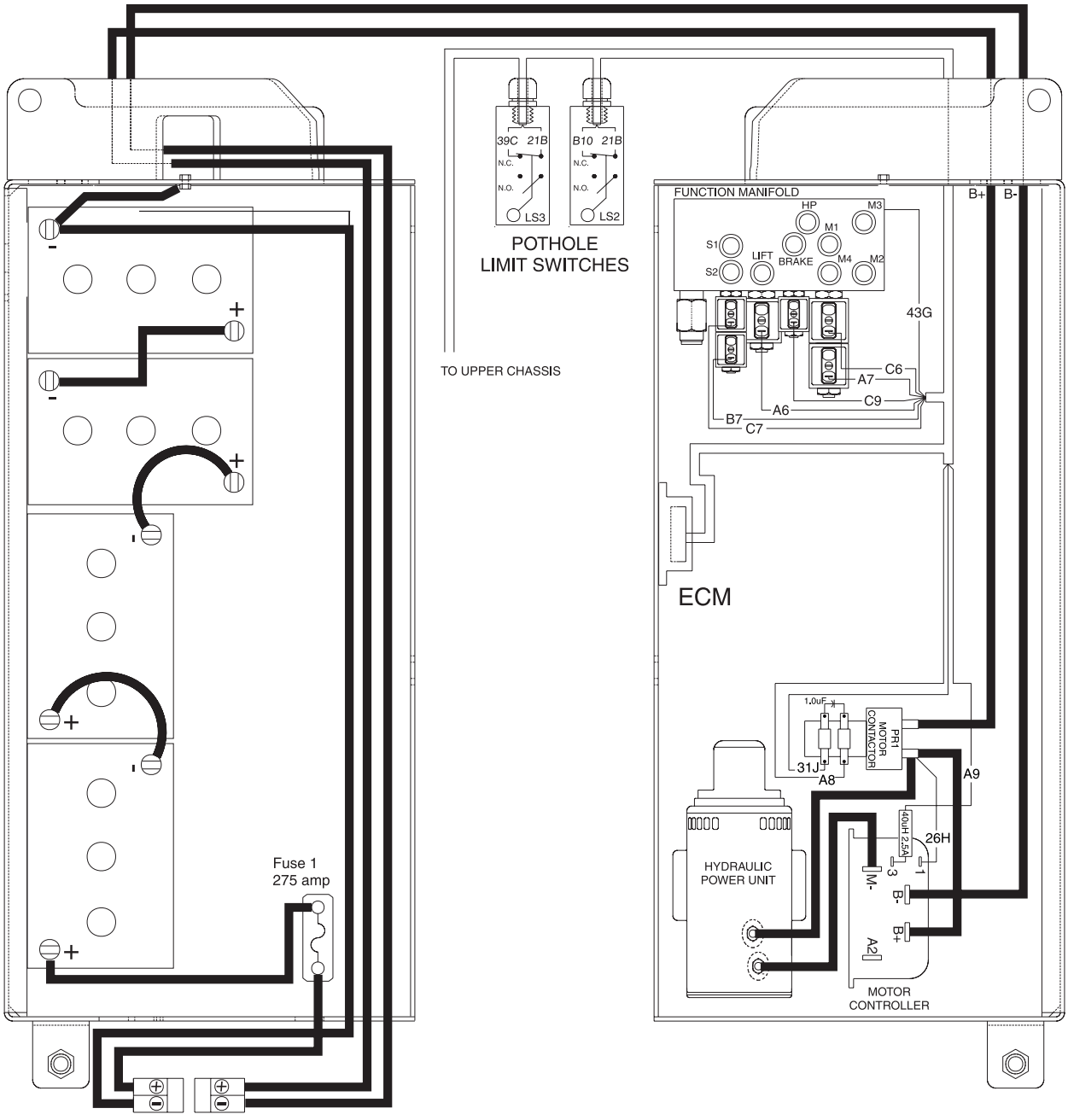
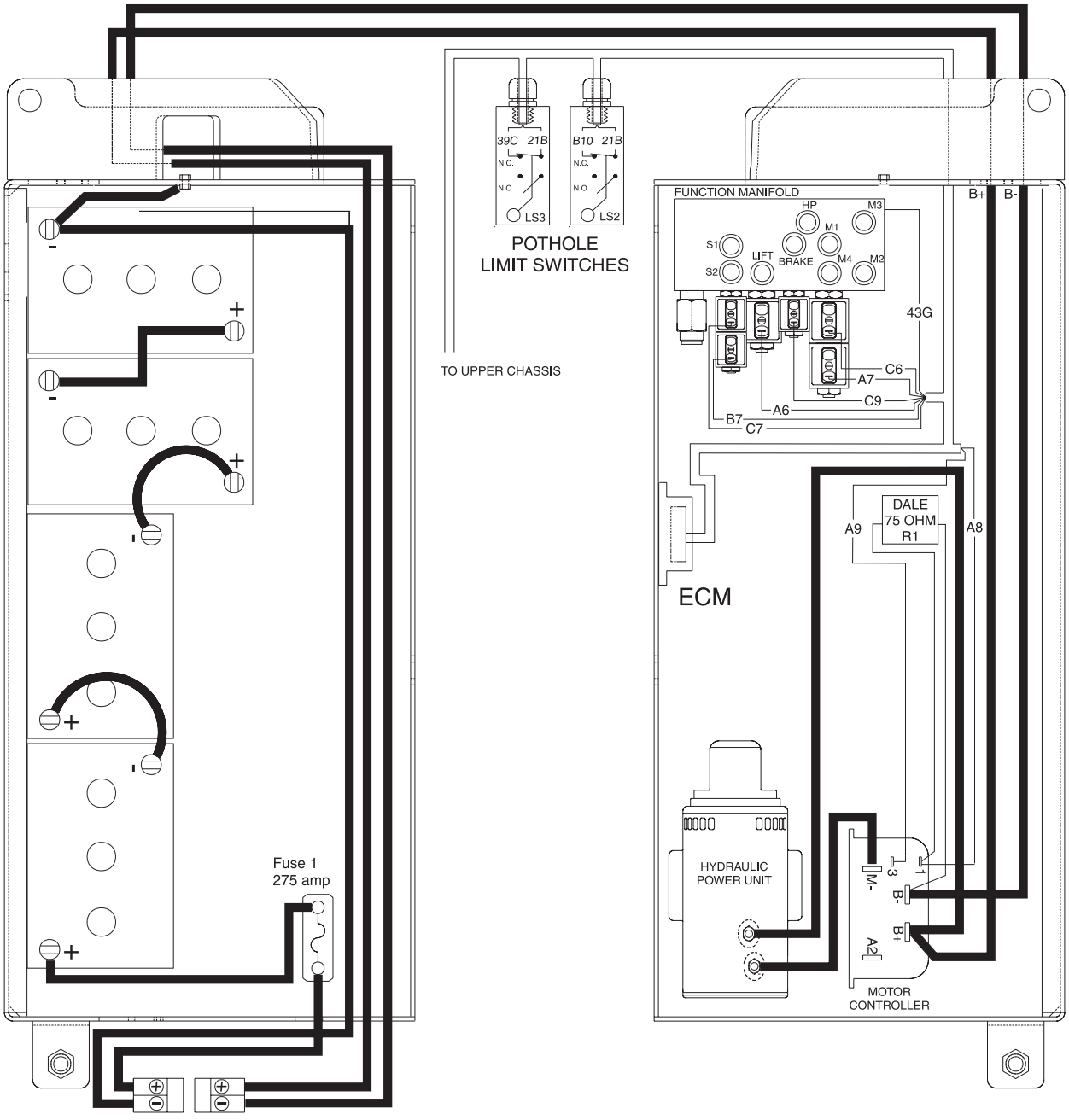
Module Tray Legend (before serial number 6901)

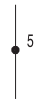


Module Tray Legend (after serial number 6900)



Electrical Symbols Legend

Wire with description



Terminal


Light

T-circuits connect at terminal

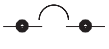

T-circuits connect


Connection no terminal


Circuits crossing no connection


Diode

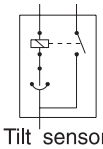
Battery

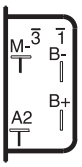

Circuit breaker


Solenoid or relay coil


Horn

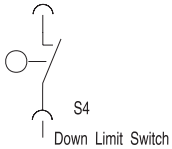

Alarm


Tilt sensor

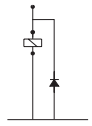


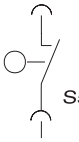
Curtis motor controller


Connector

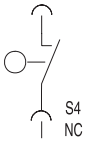


Limit switch normally closed

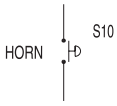

Ground supression circuit



Pothole switch



Down limit switch normally closed

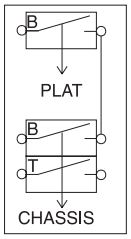


Horn button normally open

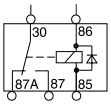
Emergency Stop button normally closed

Toggle switch SPDT


Solenoid valve

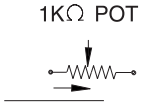


Key switch



Relay

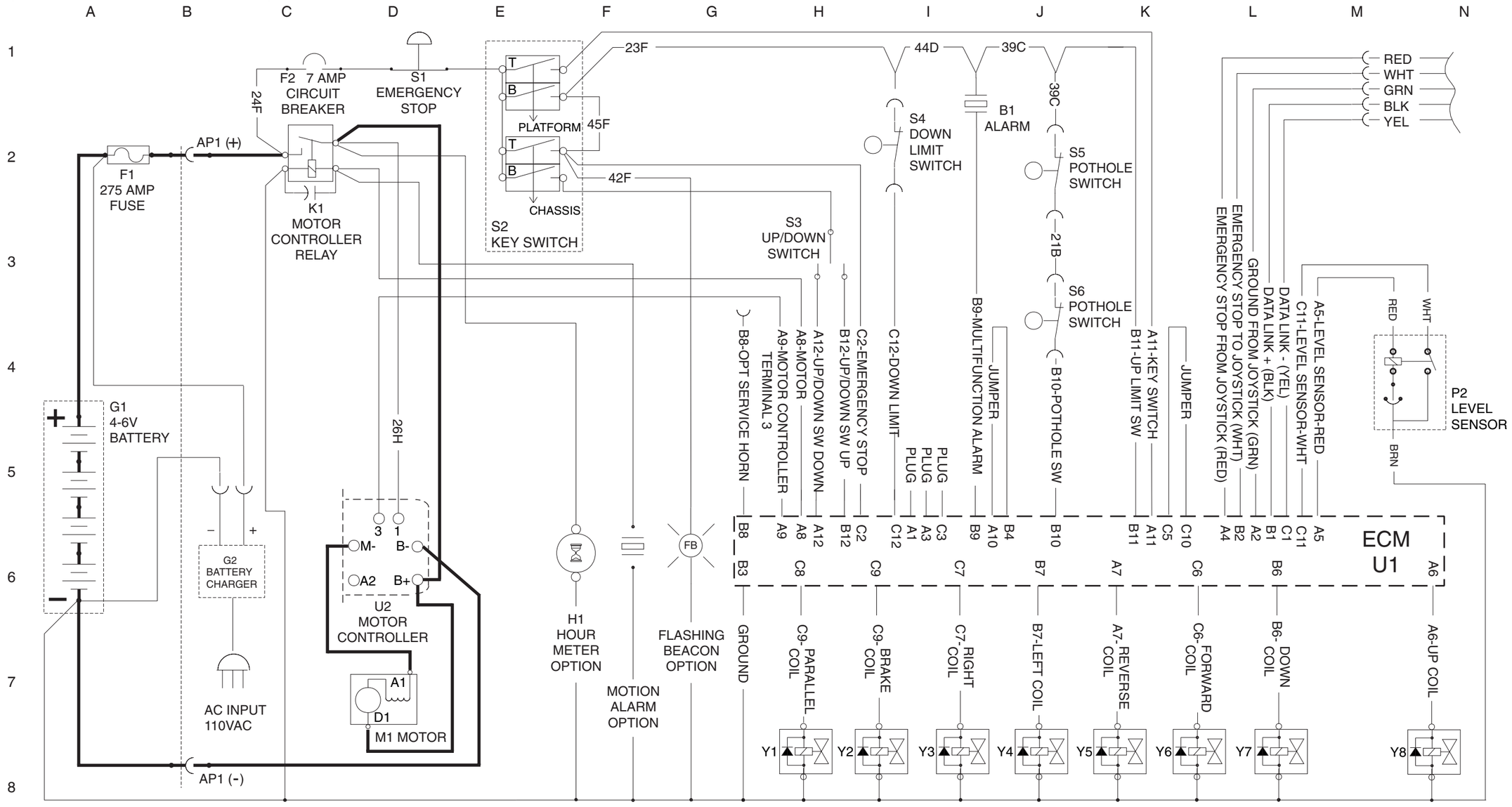

Fuse



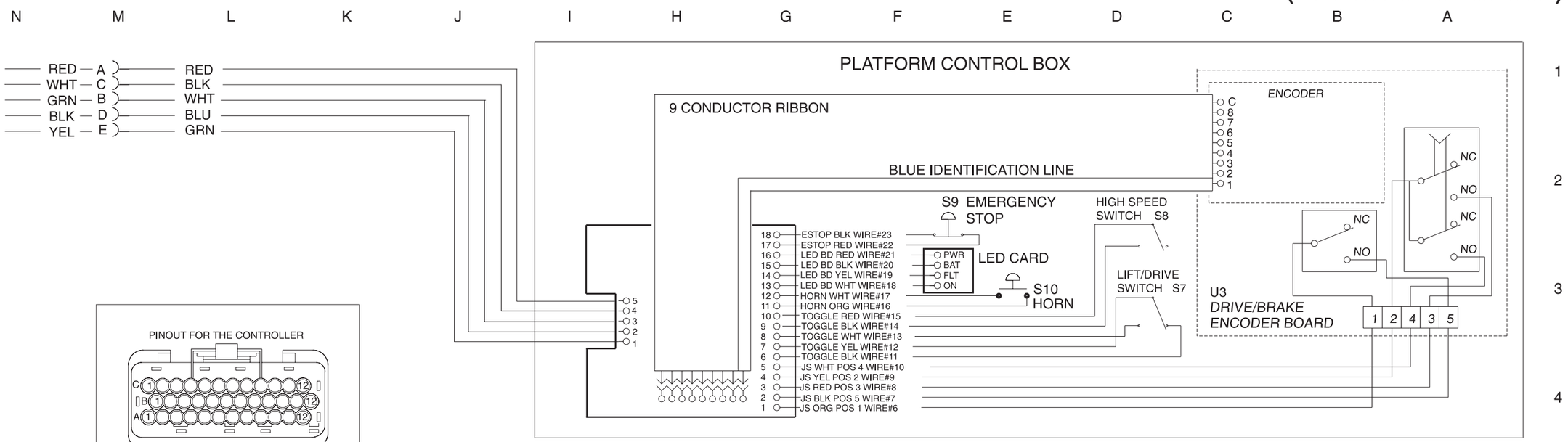
1K Ohm Potentiometer

Hour meter

Electrical Schematic (before serial number 6901)



Electrical Schematic (before serial number 6901)



PINOUT FOR THE CONTROLLER

A1 PLUG
A2 PLATGROUND (BLUE/ PIN B)
A3 PLUG
A4 ESTOP FROM PLAT (WHITE/PIN A)
A5 LEVEL SENSOR POWER
A6 UP COIL
A7 REVERSE COIL
A8 MOTOR CONTACTOR
A9 MOTOR CONTROLLER
A10 JUMPER TO B4
A11 KEY SWITCH TO PLAT
A12 DOWN

B1 PLAT DATA + (BLACK/PIN D)
B2 ESTOP TO PLAT (WHITE/PIN C)
B3 GROUND
B4 JUMPER TO A10
B5 PLUG
B6 DOWN COIL
B7 LEFT COIL
B8 HORN OPTION
B9 ALARM
B10 POTHOLE LIMIT SWITCH
B11 PLUG
B12 UP

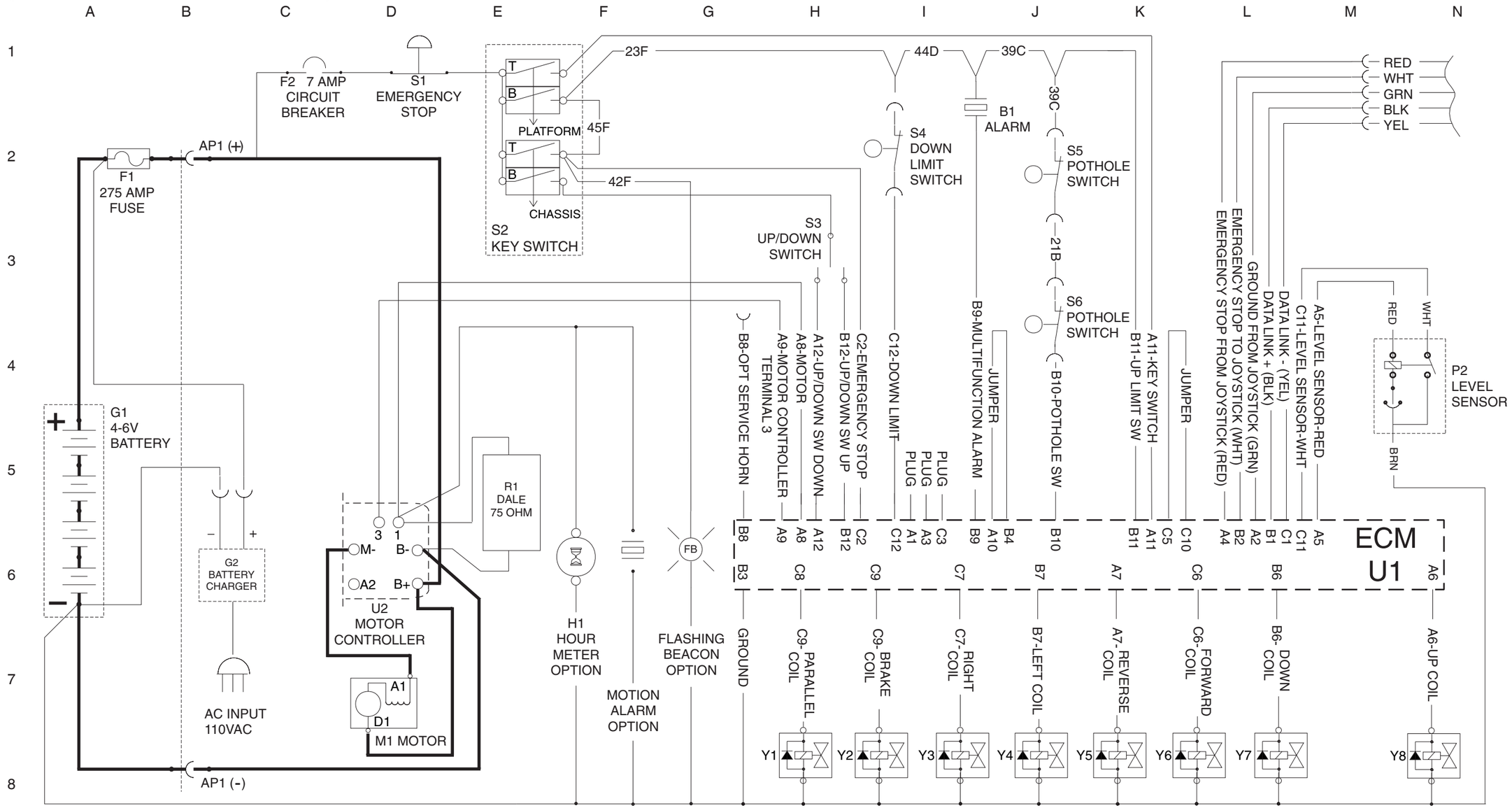
C1 PLAT DATA - (YELLOW/PIN E)
C2 CHASSIS ESTOP
C3 PLUG
C4 PLUG
C5 JUMPER TO C10
C6 FORWARD COIL
C7 RIGHT COIL
C8 PLUG
C9 BRAKE COIL
C10 JUMPER TO C5
C11 LEVEL SENSOR SIGNAL
C12 DOWN LIMIT SWITCH

LEGEND

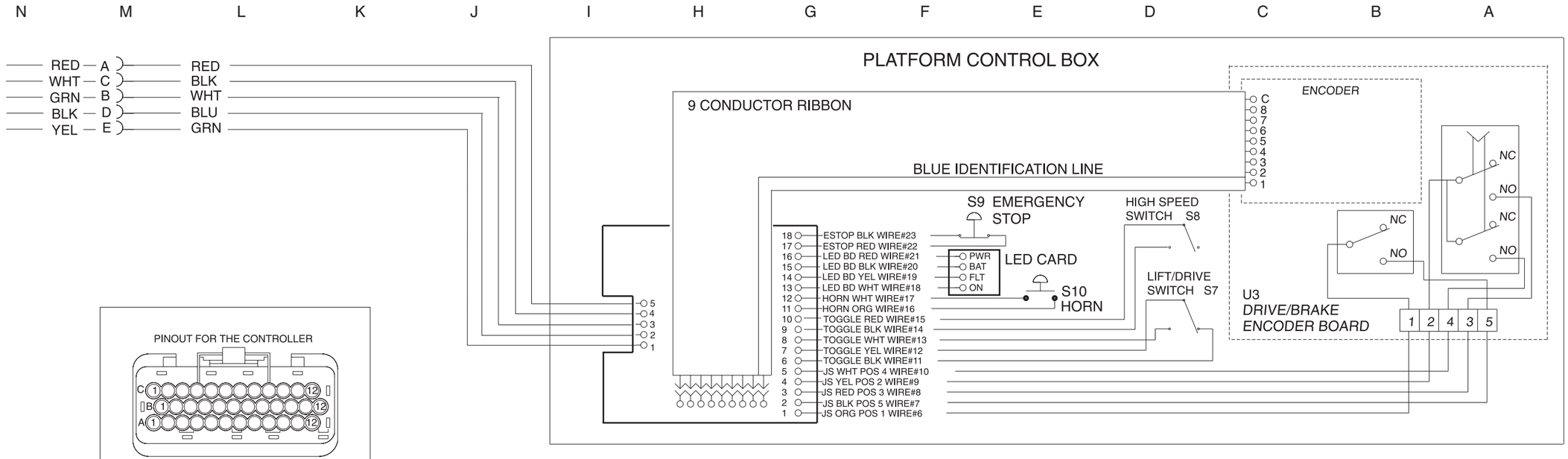
DES	COMPONENT	DES	COMPONENT
AP1	ANDERSON PLUG	S8	HIGH SPEED SWITCH
B1	MULTIFUNCTION ALARM	S9	PLATFORM EMERGENCY STOP
F1	275 AMP FUSE	S10	HORN BUTTON
F2	7A CIRCUIT BREAKER	U1	CHASSIS CONTROLLER
G1	BATTERIES (4-6 VOLT)	U2	MOTOR CONTROLLER
G2	BATTERY CHARGER	U3	DRIVE/BRAKE ENCODER BOARD
H1	OPTIONAL HOUR METER	Y1	PARALLEL COIL
P2	LEVEL SENSOR	Y2	BRAKE COIL
S1	CHSSIS EMERGENCY STOP	Y3	RIGHT TURN COIL
S2	CHASSIS KEY SWITCH	Y4	LEFT TURN COIL
S3	CHASSIS UP/DOWN SWITCH	Y5	REVERSE COIIL
S4	DOWN LIMIT SWITCH	Y6	FORWARD COIL
S5	POTHOLE SWITCH	Y7	DOWN COIL
S6	POTHOLE SWITCH	Y8	UP COIL
S7	DRIVE/LIFT SELECTOR SWITCH		

Electrical Schematic
(before serial number 6901)

Electrical Schematic (from serial number 6901 to 8931)



Electrical Schematic (from serial number 6901 to 8931)



PINOUT FOR THE CONTROLLER

A1 PLUG
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A9 MOTOR CONTROLLER
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A12 DOWN

B1 PLAT DATA + (BLACK/PIN D)
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B3 GROUND
B4 JUMPER TO A10
B5 PLUG
B6 DOWN COIL
B7 LEFT COIL
B8 HORN OPTION
B9 ALARM
B10 POTHOLE LIMIT SWITCH
B11 PLUG
B12 UP

C1 PLAT DATA - (YELLOW/PIN E)
C2 CHASSIS ESTOP
C3 PLUG
C4 PLUG
C5 JUMPER TO C10
C6 FORWARD COIL
C7 RIGHT COIL
C8 PLUG
C9 BRAKE COIL
C10 JUMPER TO C5
C11 LEVEL SENSOR SIGNAL
C12 DOWN LIMIT SWITCH

LEGEND

DES	COMPONENT	DES	COMPONENT
AP1	ANDERSON PLUG	S8	HIGH SPEED SWITCH
B1	MULTIFUNCTION ALARM	S9	PLATFORM EMERGENCY STOP
F1	275 AMP FUSE	S10	HORN BUTTON
F2	7A CIRCUIT BREAKER	U1	CHASSIS CONTROLLER
G1	BATTERIES (4-6 VOLT)	U2	MOTOR CONTROLLER
G2	BATTERY CHARGER	U3	DRIVE/BRAKE ENCODER BOARD
H1	OPTIONAL HOUR METER	Y1	PARALLEL COIL
P2	LEVEL SENSOR	Y2	BRAKE COIL
S1	CHSSIS EMERGENCY STOP	Y3	RIGHT TURN COIL
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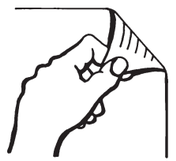
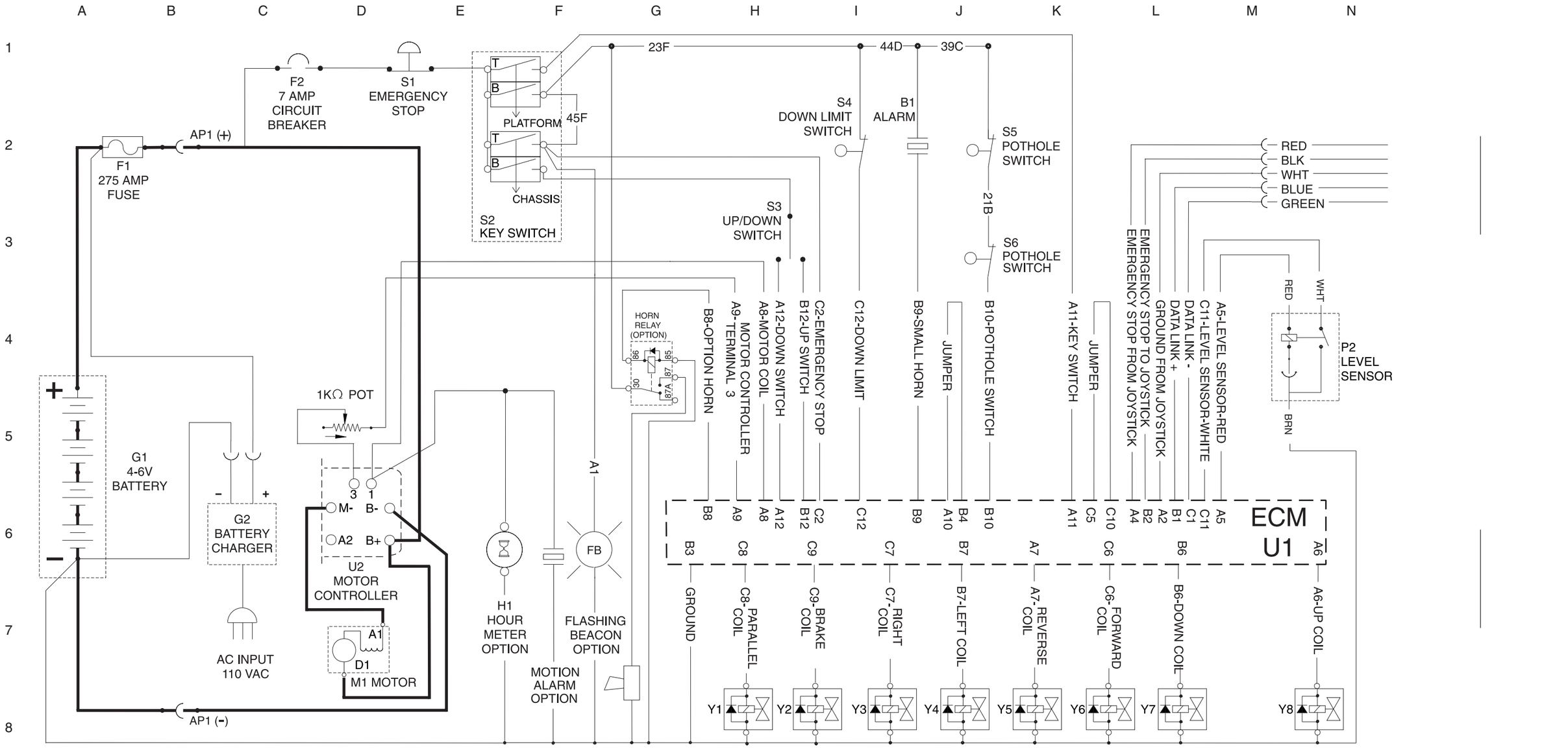
S3	CHASSIS UP/DOWN SWITCH	Y5	REVERSE COIIL
S4	DOWN LIMIT SWITCH	Y6	FORWARD COIL
S5	POTHOLE SWITCH	Y7	DOWN COIL
S6	POTHOLE SWITCH	Y8	UP COIL
S7	DRIVE/LIFT SELECTOR SWITCH		

Electrical Schematic
(from serial number 6901 to 8931)



Electrical Schematic (from serial number 8932 to 17407)



Electrical Schematic (from serial number 8932 to 17407)

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

1 2 3 4 5 6 7 8

PLATFORM CONTROL BOX

RED (A4 E-STOP FROM JOYSTICK) — A
BLK (B2 E-STOP TO JOYSTICK) — C
WHT (A2 GROUND FROM JOYSTICK) — B
BLUE (B1 DATA LINK +) — D
GREEN (C1 DATA LINK -) — E

9 CONDUCTOR RIBBON

BLUE IDENTIFICATION LINE

ENCODER

C 8 7 6 5 4 3 2 1

S9 EMERGENCY STOP

HIGH SPEED SWITCH S8

LIFT/DRIVE SWITCH S7

LED CARD

PWR BAT FLT ON

S10 HORN

U3 DRIVE/BRAKE ENCODER BOARD

6 9 10 8 7

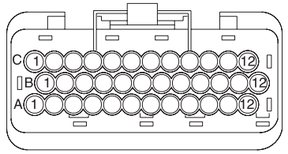
NC NO NC NO NC NO

GROUND

22 ESTOP-BLK WIRE
21 ESTOP-WHT/BLK WIRE
20 LED BD RED WIRE
19 LED BD WHT/RED WIRE
18 LED BD-YEL WIRE
17 LED BD-WHT/YEL WIRE
16 HORN-VIOLET WIRE
15 HORN-WHT/VIOLET WIRE
14 TOGGLE HS-GRAY WIRE
13 TOGGLE HS-WHT/GRAY WIRE
12 TOGGLE L/D-BLUE WIRE
11 TOGGLE L/D WHT/BLUE WIRE
10 TOGGLE L/D-GREEN
9 JS WHT/GRN-POS10
8 JS ORANGE-POS 9
7 JS WHT/ORG-POS 8
6 JS WHITE-POS 7
JS WHT/BRN-POS 6

5 4 3 2 1

PINOUT FOR THE CONTROLLER



A1 PLUG
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A6 UP COIL
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A9 MOTOR CONTROLLER
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A11 KEY SWITCH TO PLAT
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B2 ESTOP TO PLAT (WHITE/PIN C)
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B4 JUMPER TO A10
B5 PLUG
B6 DOWN COIL
B7 LEFT COIL
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B9 ALARM
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B11 PLUG
B12 UP

C1 PLAT DATA - (YELLOW/PIN E)
C2 CHASSIS ESTOP
C3 PLUG
C4 PLUG
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C9 BRAKE COIL
C10 JUMPER TO C5
C11 LEVEL SENSOR SIGNAL
C12 DOWN LIMIT SWITCH

LEGEND

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F1	275 AMP FUSE	S10	HORN BUTTON
F2	7 AMP CIRCUIT BREAKER	U1	CHASSIS CONTROLLER
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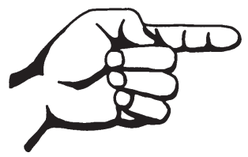
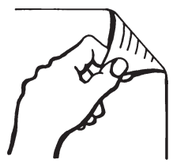
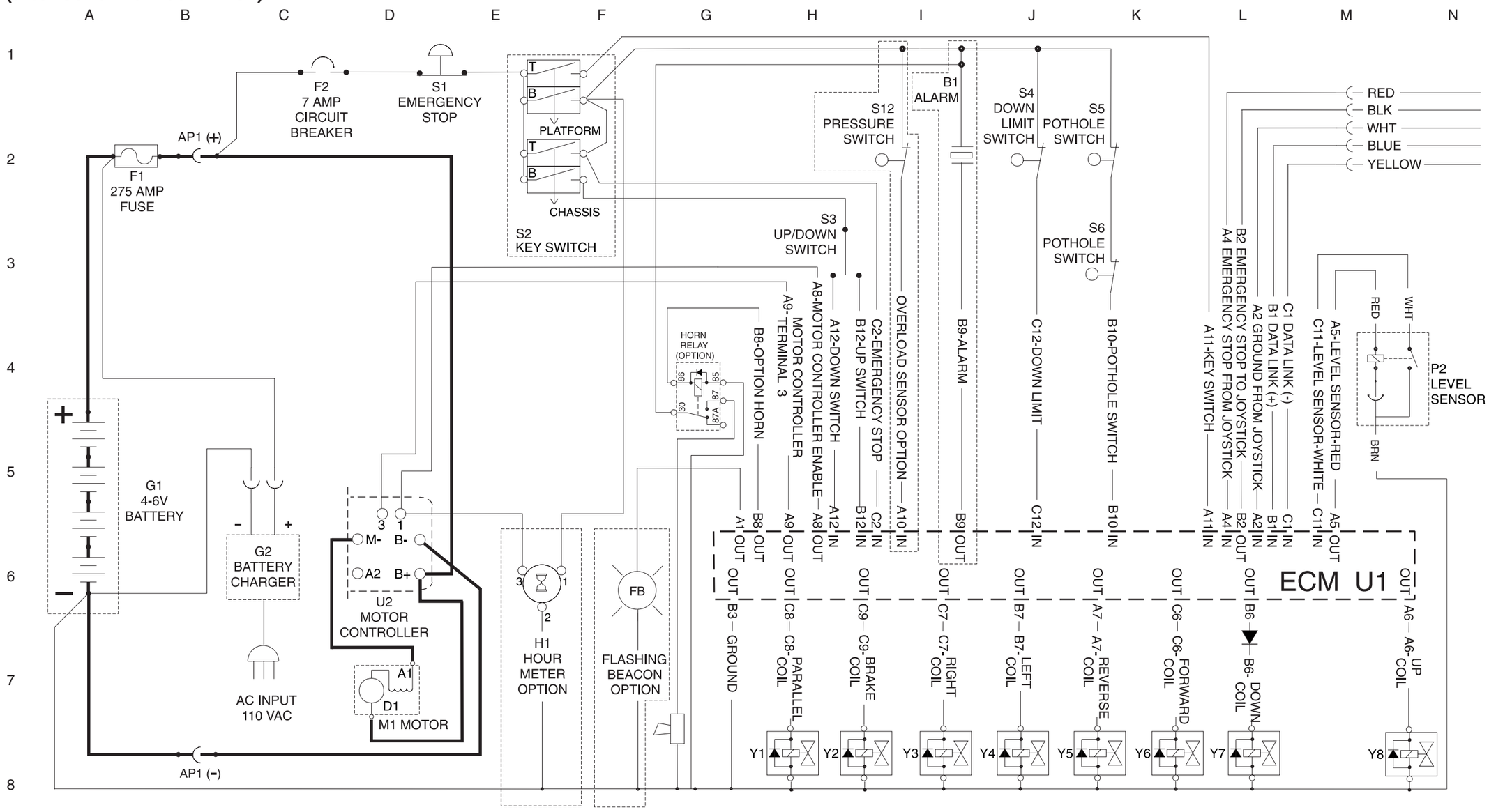
S3	CHASSIS UP/DOWN SWITCH	Y5	REVERSE COIIL
S4	DOWN LIMIT SWITCH	Y6	FORWARD COIL
S5	POTHOLE SWITCH	Y7	DOWN COIL
S6	POTHOLE SWITCH	Y8	UP COIL
S7	LIFT/DRIVE SELECTOR SWITCH		

Electrical Schematic
(from serial number 8932 to 17407)

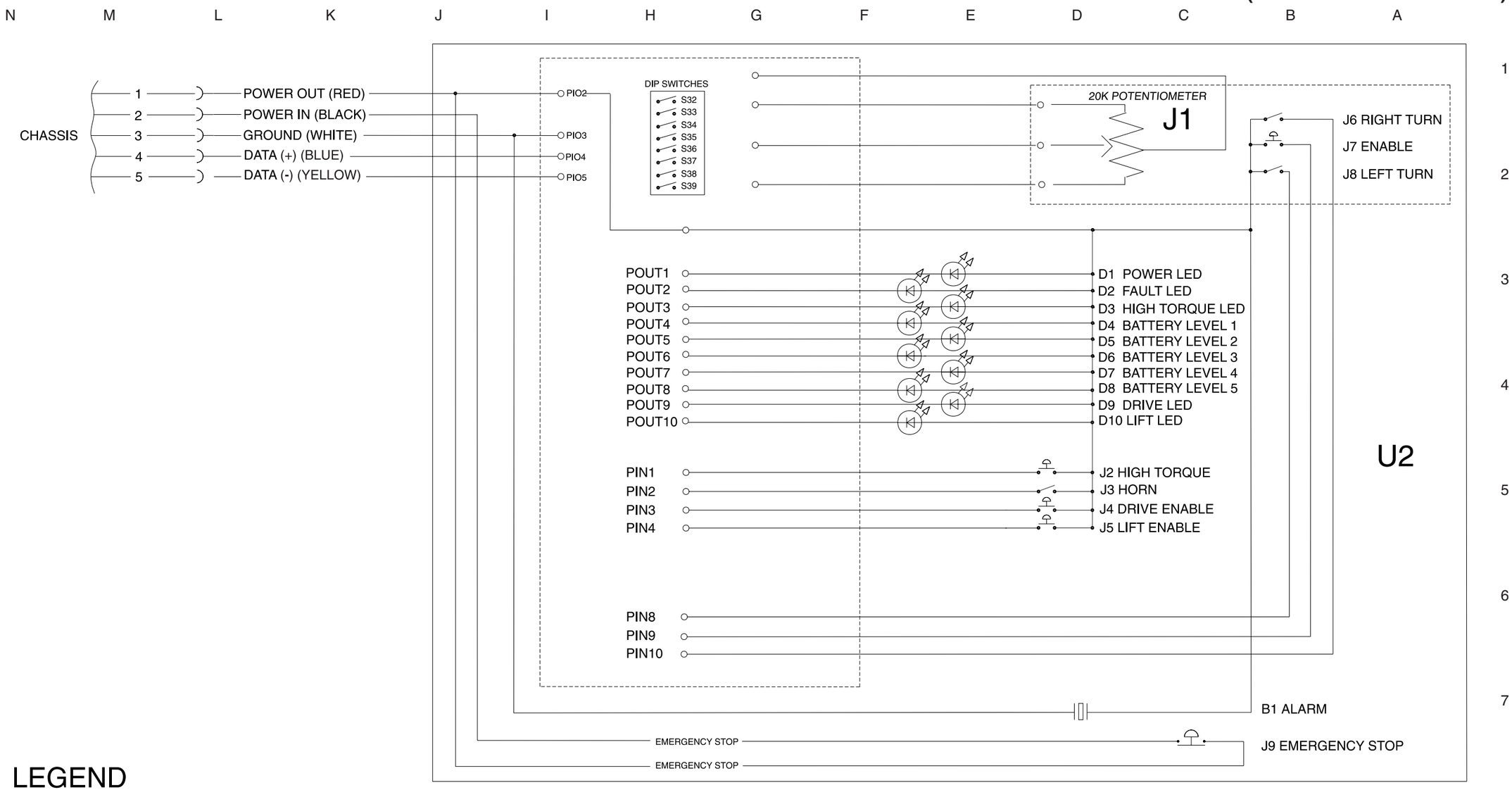




Electrical Schematic (after serial number 17407)



Electrical Schematic (after serial number 17407)



LEGEND

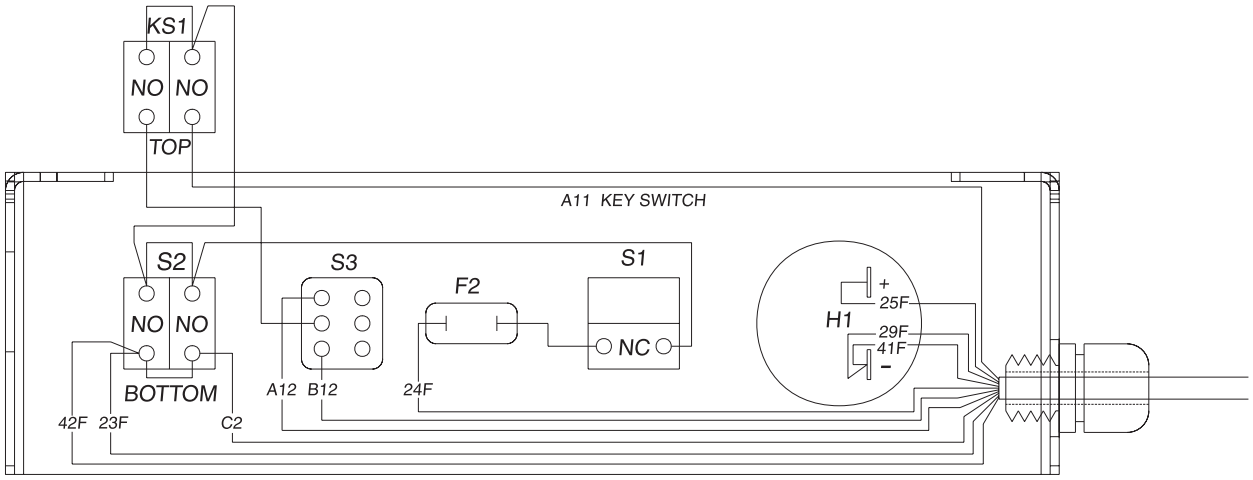
BUTTON ALARM SWITCH

LED CONNECTOR

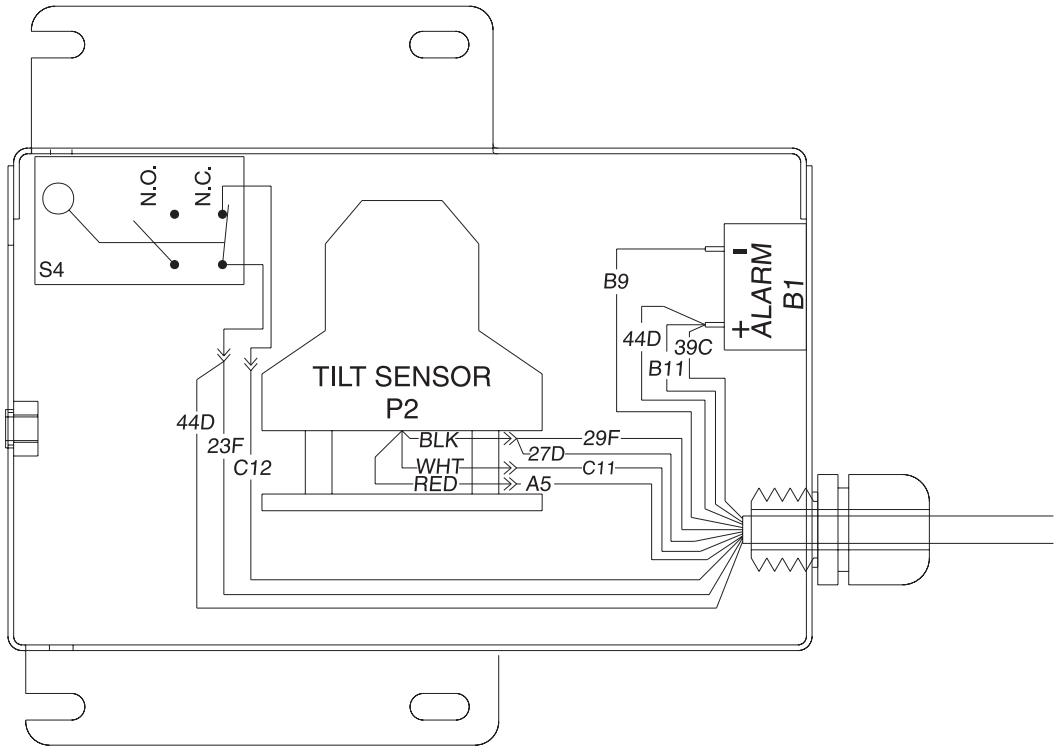
PLATFORM CONTROLLER

Electrical Schematic
(after serial number 17407)

Ground Controls and Level Sensor Box Legend

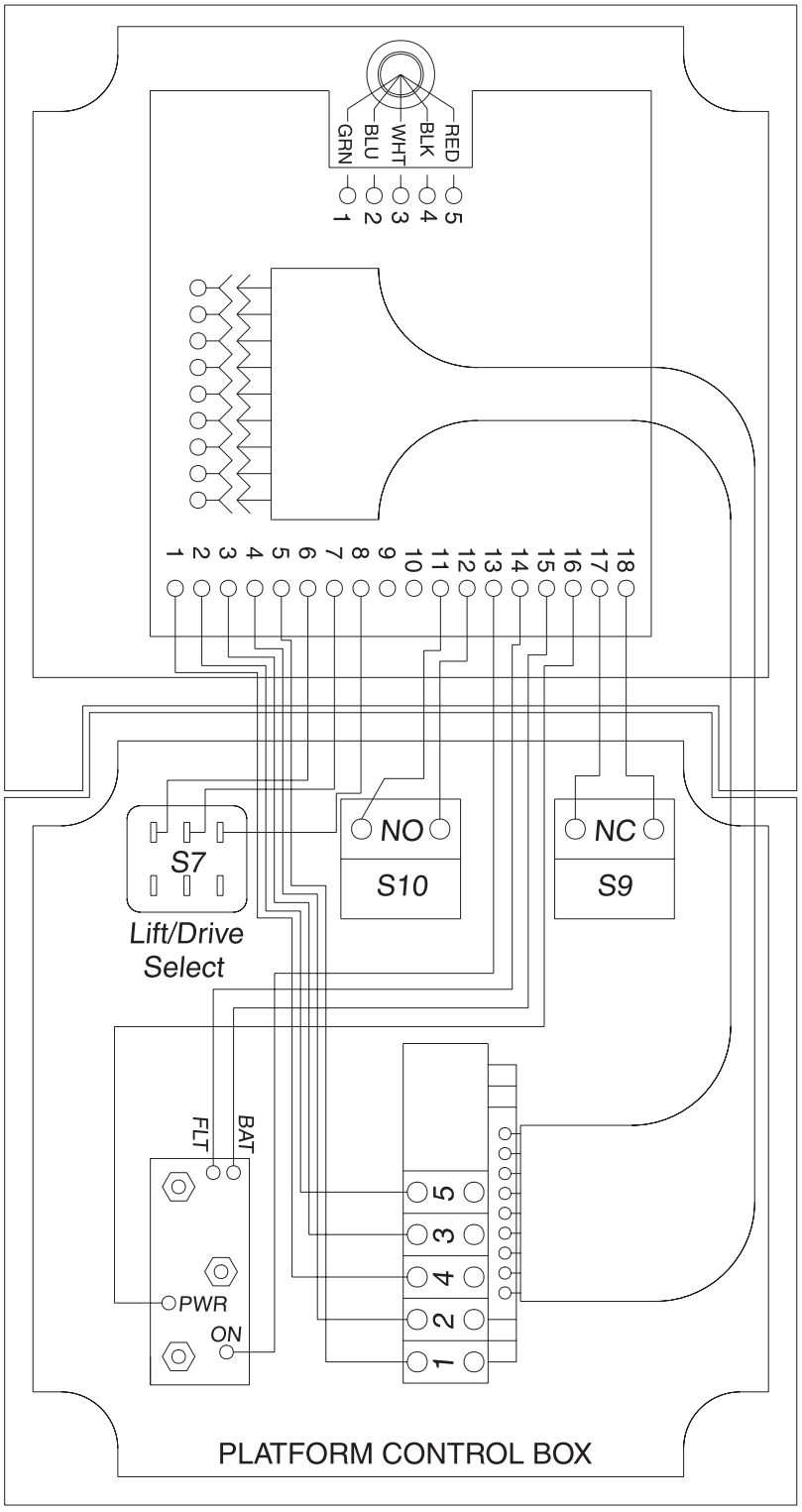


GROUND CONTROL BOX

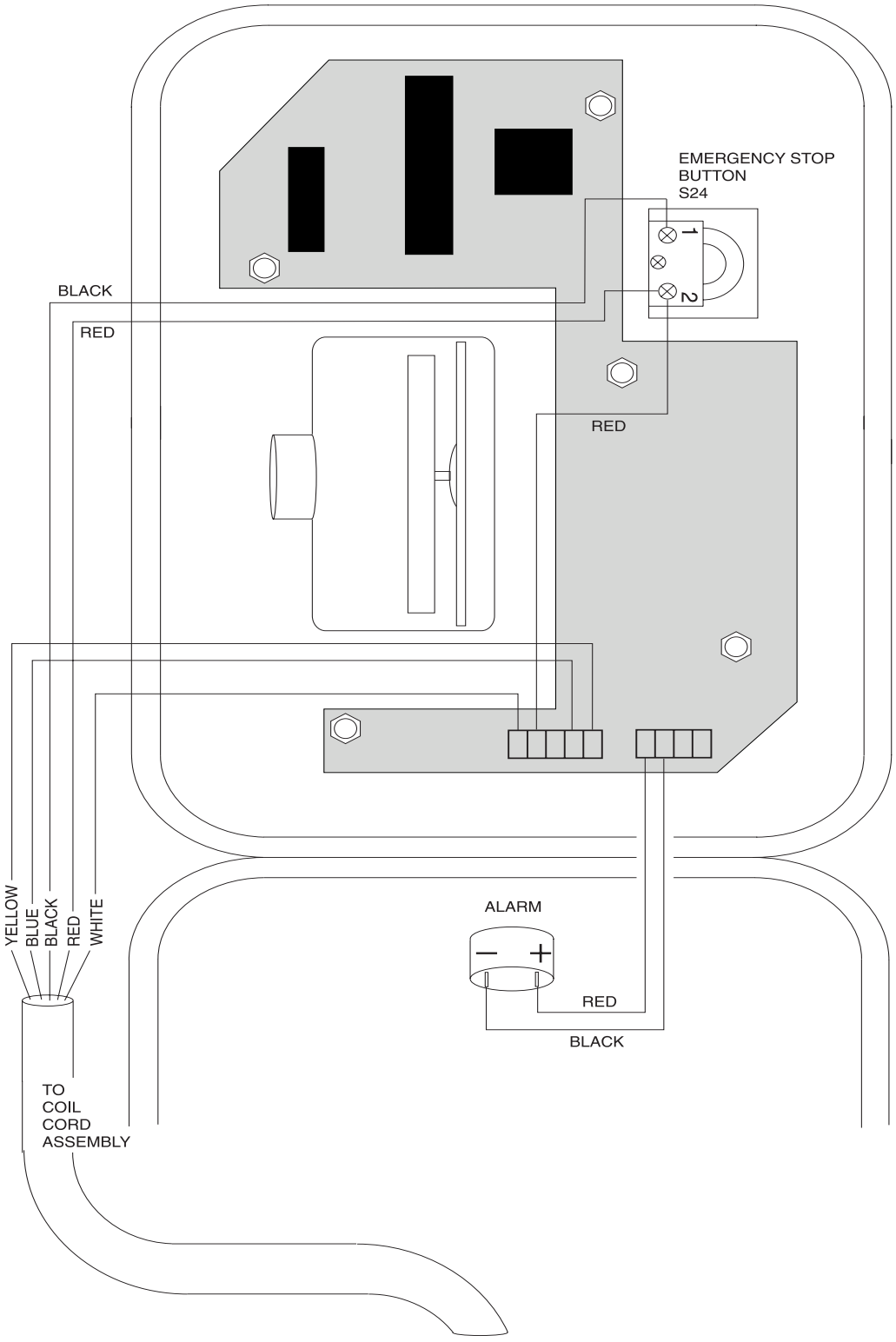


LEVEL SENSOR BOX

Platform Controls Legend (before serial number 17408)



Platform Controls Legend (after serial number 17407)



Hydraulic Symbols Legend

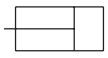
Pressure gauge

Filter

Fixed displacement pump

Bi-directional motor

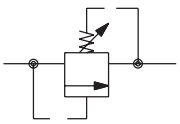
Pump prime mover engine or motor



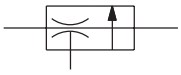
Double acting cylinder

Orifice with size

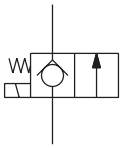
Check valve



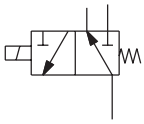
Relief valve



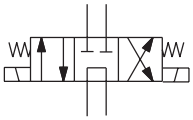
Priority flow divider



Solenoid operated dump valve

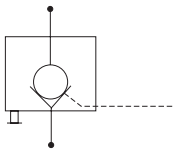


Solenoid operated 2 pos., 3 way, directional valve



Solenoid operated 3 pos., 4 way, directional valve (D01)

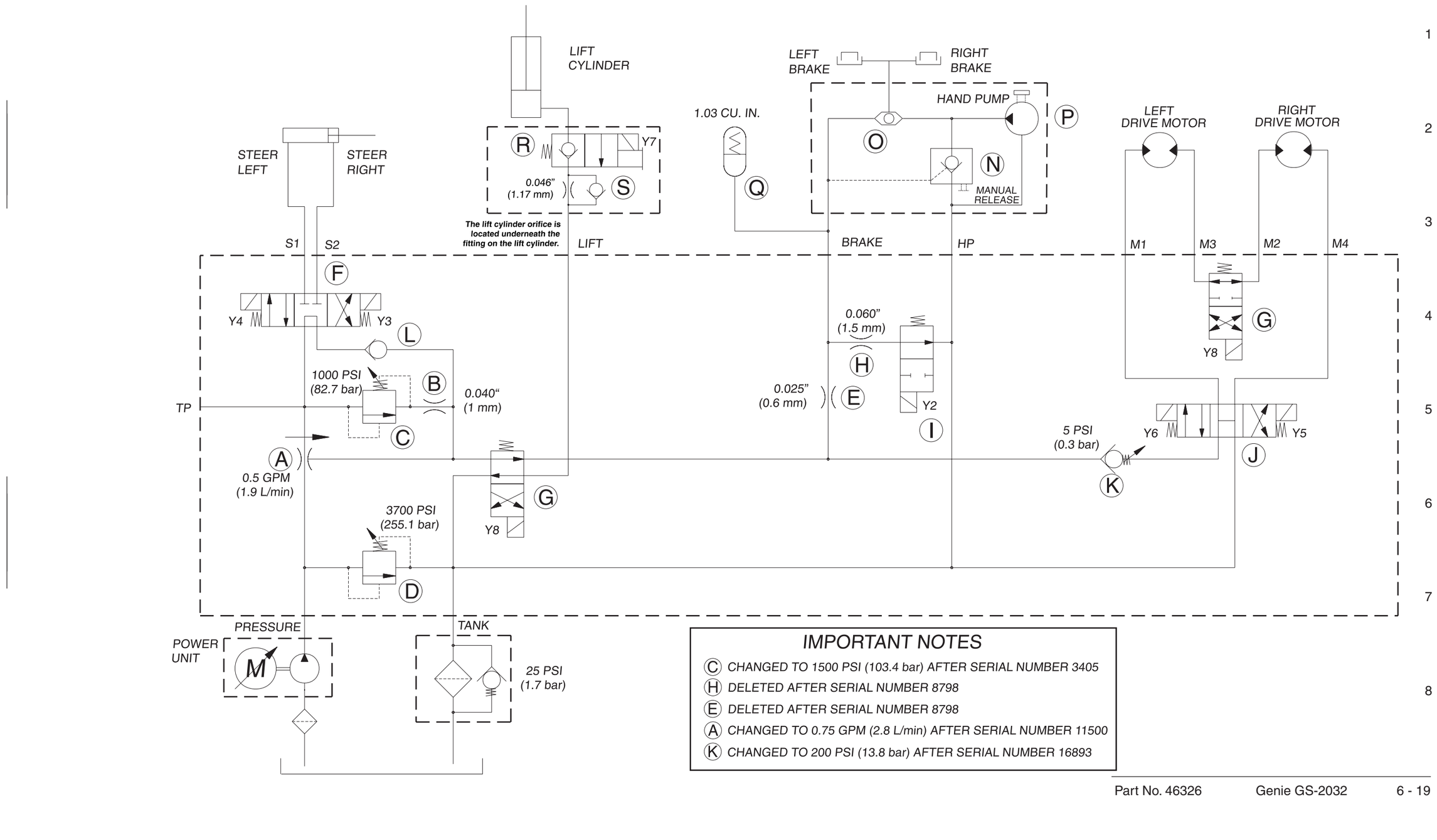
Brake



Check valve, pilot to open

Shuttle valve

Hydraulic Schematic (before serial number 17482)

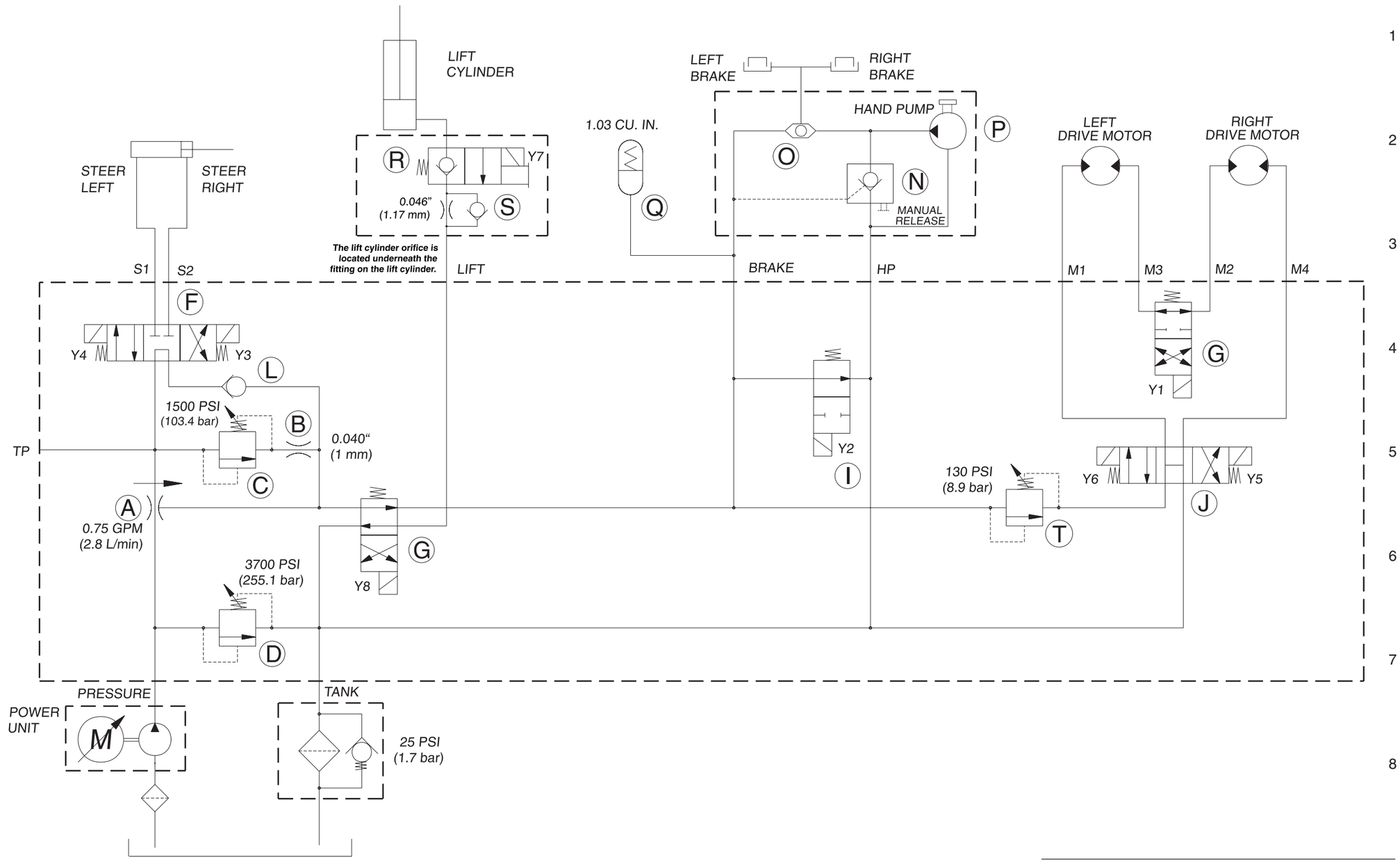


IMPORTANT NOTES

- (C) *CHANGED TO 1500 PSI (103.4 bar) AFTER SERIAL NUMBER 3405*
- (H) *DELETED AFTER SERIAL NUMBER 8798*
- (E) *DELETED AFTER SERIAL NUMBER 8798*
- (A) *CHANGED TO 0.75 GPM (2.8 L/min) AFTER SERIAL NUMBER 11500*
- (K) *CHANGED TO 200 PSI (13.8 bar) AFTER SERIAL NUMBER 16893*

Hydraulic Schematic
(before serial number 17482)

Hydraulic Schematic (after serial number 17481)



Hydraulic Schematic
(after serial number 17481)

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 & Genie GS-2046 & Genie GS-2646 & Genie 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 flat level surface
  - Platform in the stowed position
  - Key switch in the OFF position with the key removed
  - Wheels chocked

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.

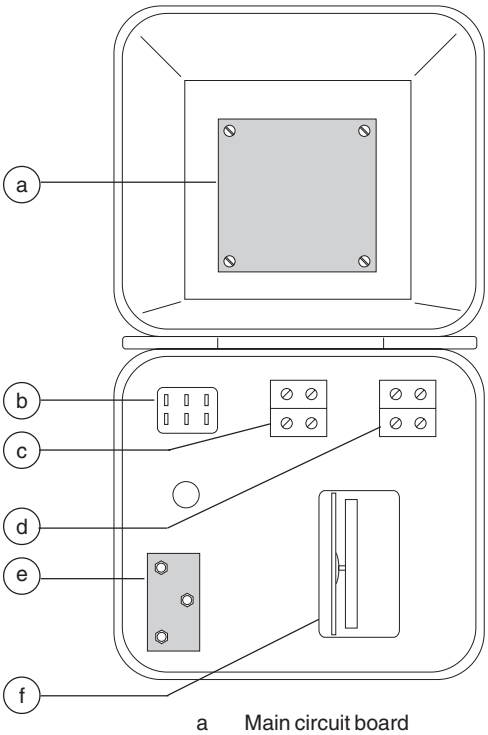
⊙ Indicates that a specific result is expected after performing a series of steps.

Platform Controls

1-1
Platform Controller

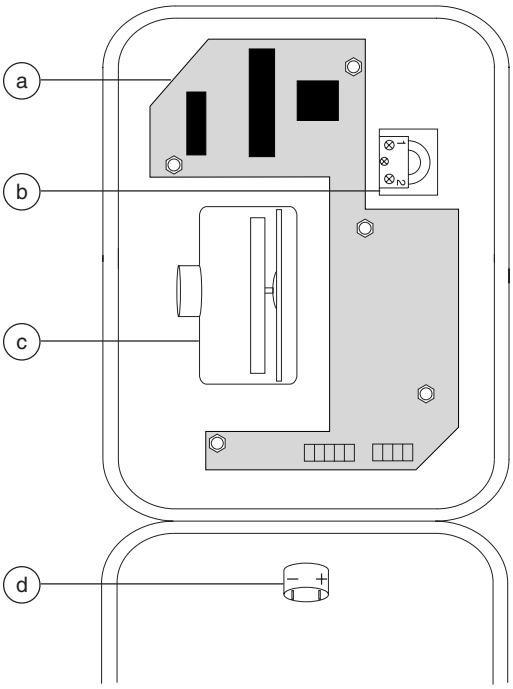
The platform controller is controlled by an ECM (Electronic Control Module) located in the power unit module tray. The ECM aids in troubleshooting by recognizing machine malfunctions and displaying fault codes on an LED screen on the ECM. See the Troubleshooting section of this manual for a list of fault codes and additional information. The ECM is not user-serviceable. The joystick controller is calibrated at the factory and does not need to be adjusted. For further information or assistance, consult the Genie Industries Service Department.

Platform Controller (before serial number 17408)



a Main circuit board
b Lift/drive selector toggle switch
c Horn button
d Emergency stop button
e LED circuit board
f Joystick controller

Platform Controller (after serial number 17407)



a Main circuit board
b Emergency stop button
c Joystick controller
d Alarm

1-2 Software Configuration

The ECM (Electronic Control Module) contains programming for all configurations of the GS-2032. 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. DIP switches have two positions - ON or OFF. When reading the DIP switch code in the *DIP Switch Codes Chart* on page 7-5, the ON and OFF are represented by the numbers 1 (ON) and 0 (OFF).

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

NOTICE Machines manufactured before serial number 17408 were not adjustable. If your ECM has been replaced, or if the machine serial number is after 17407, you can verify the revision level of the ECM by using the following procedure:

How to Determine the Revision Level

1 Remove the platform controls from the platform.

2 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.

3 Press and hold the lift enable button and the function enable switch. Move the joystick handle to the UP position to raise the platform. Observe the code shown in the LED display window, located on the battery pack side of the machine.

⊙ Result: The configuration code of the DIP switch will appear in the LED display window.

4 Press and hold the lift enable button and the function enable switch. Move the joystick handle to the DOWN position to lower the platform. Observe the code shown in the LED display window, located on the battery pack side of the machine.

⊙ Result: The software revision level will appear in the LED display window. If revision level "b0" or later appears in the display window, the following procedures will apply. If revision level "A0" is displayed, the following procedures will not apply.

5 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

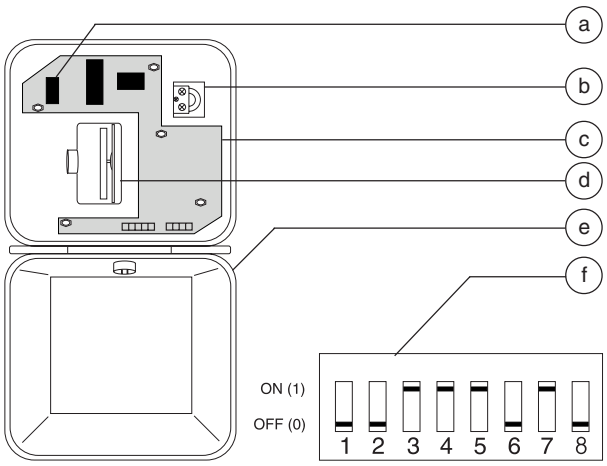
How to Set the DIP Switch Codes

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

NOTICE If replacing the circuit board, note the individual switch positions on the DIP switch. Set the DIP switch 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.

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.



a DIP switch
b Emergency stop button
c Circuit boards
d Joystick controller
e Controller box
f Enlarged view of DIP switch

2 Remove the fasteners securing the top of the controller to the controller case.

3 Rotate the platform controller box to the position shown to correctly identify the configuration of the DIP switch settings.

4 Open the controller box lid and 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 Confirm the settings. See 1-3, *How to Determine the Revision Level*.

6 Cover the DIP switch with dielectric grease.

7 Close the lid and install the fasteners.

8 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.

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

DIP Switch Code Chart

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

Diagnostic Display Code	Dip Switch Code	Motion Beacon	Motion Alarm	Lift Drive Cut Out	Overload Cut Out	Descent Delay
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

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

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

Lift/Drive Cut Out: This cuts out lift and drive functions when the machine goes out of level. Required for Europe and Australia.

Overload: This cuts out lift when the cylinder is overloaded. Required for France.

Descent Delay: This option halts descent for 4 seconds at approximately 6 feet (2 m). Required for Europe.

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

NOTICE If 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 of the old one.

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

PLATFORM CONTROLS

1-3 Toggle Switches

Toggle switches used for single function switching are single pole double throw (SPDT) switches. Dual function switching requires a double pole double throw (DPDT) switch.

How to Test a Toggle Switch

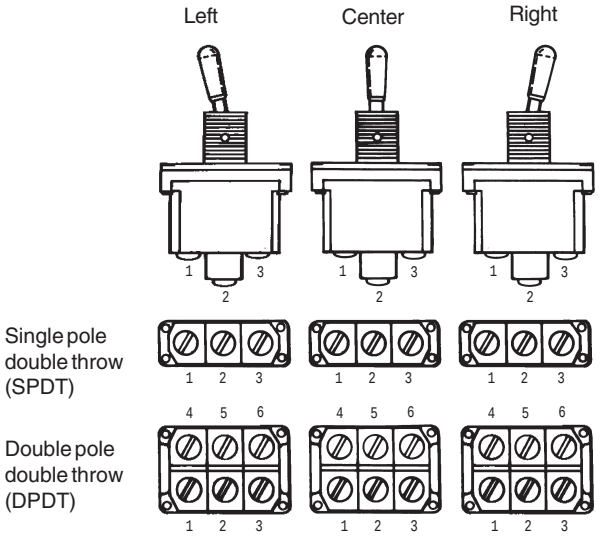
NOTICE Continuity is the equivalent of 0 to 3 ohms. A simple continuity tester may not accurately test the switch.

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

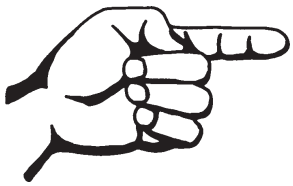
1 Turn the key switch to the OFF position. Tag and disconnect all wiring from the toggle switch to be tested.

NOTICE The toggle switch at the platform controls requires that the wires are unplugged from the main circuit board before testing.

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



Test	Desired result
Left position	
terminal 1 to 2, 3, 4, 5 & 6	no continuity (infinite Ω)
terminal 2 to 3	continuity (zero Ω)
terminal 2 to 4, 5 & 6	no continuity
terminal 3 to 4, 5 & 6	no continuity
terminal 4 to 5 & 6	no continuity
terminal 5 to 6	continuity
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, 4, 5 & 6	no continuity (infinite Ω)
terminal 2 to 3, 4, 5 & 6	no continuity
terminal 3 to 4, 5 & 6	no continuity
terminal 4 to 5	continuity
terminal 4 to 6	no continuity
terminal 5 to 6	no continuity



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Platform Components

2-1 Platform

How to Remove the Platform

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

1 Lower the platform to the stowed position.

2 Remove the retaining fastener that holds the platform controls quick disconnect plug to the bottom of the platform.

3 Twist to disconnect the plug from the platform controls.

4 Remove the cover to the AC outlet. Label and disconnect the wiring from the outlet.

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

5 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.

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

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

8 Remove the retaining fasteners from the scissor platform pivot pins at the steer end of the machine.

9 Use a slide hammer to remove the pins.

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

10 Remove the plugs from the access holes in the side of the platform.

11 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.

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

13 Use a slide hammer to remove the pins.

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

14 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.

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 mounting fasteners from the platform extension roller support on both sides of the machine at the non-steer end of the platform extension. Remove the roller supports.

7 Carefully slide the platform extension out from the platform and place it on a structure capable of supporting it.

How to Replace the Platform Extension Wear Pads

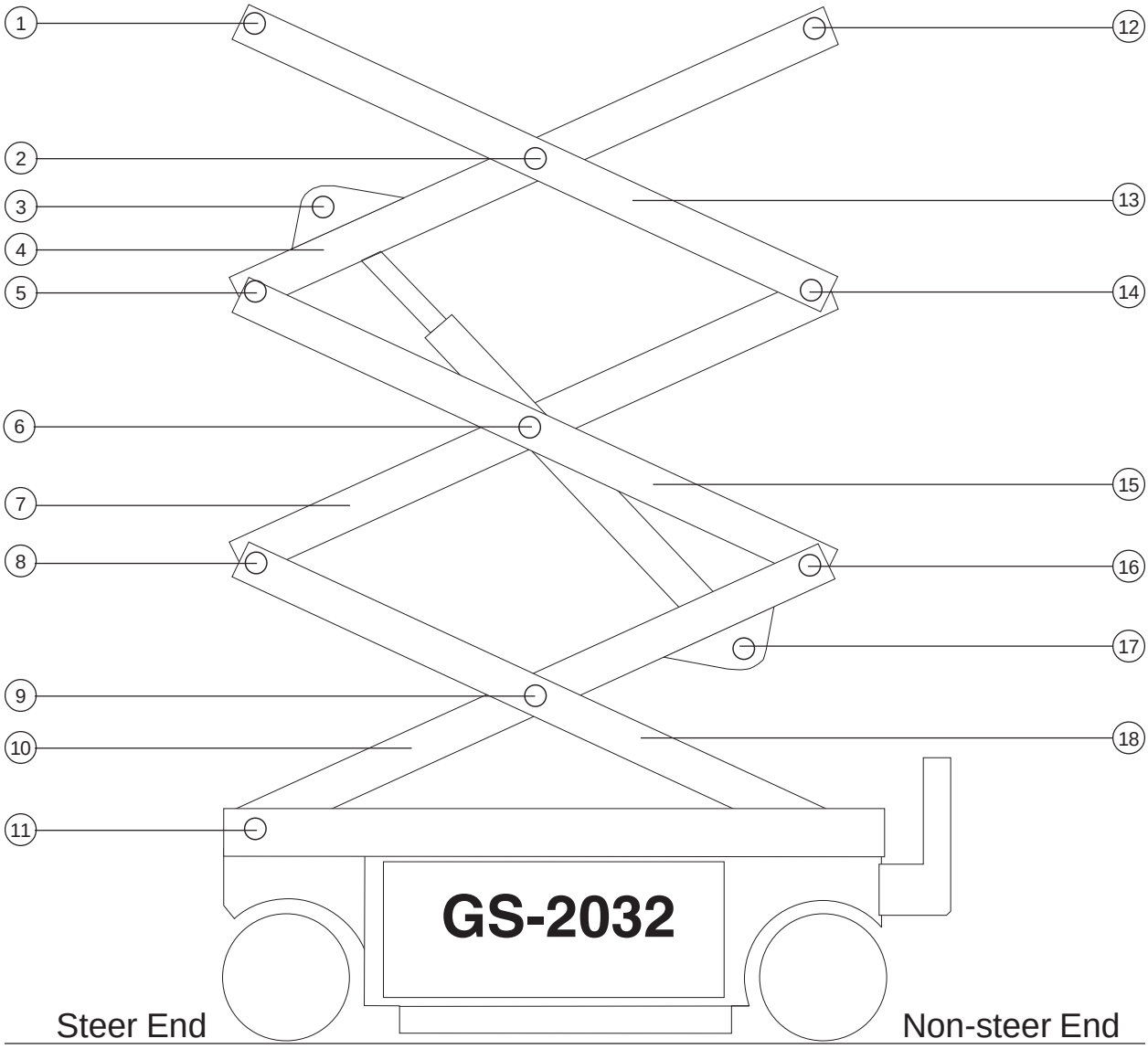
1 Remove the Platform Extension. See 2-2, *How to Remove the Platform Extension.*

2 Drill out the rivets which hold the wear pads in place.

3 Install the new wear pad using new rivets.

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

Scissor Components (machines before serial number 632)



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

3-1
Scissor Assembly

How to Disassemble the Scissor Assembly GS-2032 Models

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

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 #13) 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 #13).

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 #14).

7 Use a soft metal drift to remove the number 3 pivot pin (index #14). Remove the number 3 outer arm (index #13) from the machine.

⚠CAUTION Bodily injury hazard. The number 3 outer arm (index #13) 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 #4).

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 #6) 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 and lay it off to the side.

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

12 Attach a lifting strap from an overhead crane to 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 #9).

SCISSOR COMPONENTS

15 Attach a lifting strap from an overhead crane to the number 3 inner arm (index #4).

16 Remove the external snap rings from the number 3 pivot pin (index #5).

17 Use a soft metal drift to remove the number 3 pivot pin (index #5). Remove the number 3 inner arm (index #4) from the machine.

⚠CAUTION Bodily injury hazard. The number 3 inner arm (index #4) 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).

19 Remove the external snap rings from the number 2 center pivot pin (index #6) at the battery pack side.

20 Use a soft metal drift to remove both of the number 2 center pivot pins (index #6).

21 Remove the external snap rings from the number 2 pivot pin (index #16).

22 Use a soft metal drift to remove the number 2 pivot pin (index #16). Remove the number 2 outer arm (index #15) from the machine.

⚠CAUTION Bodily injury hazard. The number 2 outer arm (index #15) 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 2 inner arm (index #7).

24 Remove the external snap rings from the number 2 pivot pin (index #8).

25 Use a soft metal drift to remove the number 2 pivot pin (index #8). Remove the number 2 inner arm (index #7) from the machine.

⚠CAUTION Bodily injury hazard. The number 2 inner arm (index #7) may become unbalanced and fall if not properly supported when it is removed from the machine.

26 Remove the safety arm from the number 2 inner arm (index #7) that was just removed.

27 Attach the strap from the overhead crane to the number 1 inner arm (index #10).

28 Raise the number 1 inner arm (index #10) approximately 2 feet (0.6 m) and insert the safety arm between the number 1 inner arm (index #10) and the number 1 outer arm (index #18).

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

29 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.

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

31 Attach the strap from an overhead crane to the lug on the rod-end of the lift cylinder.

32 Remove the pin retaining fasteners from the cylinder barrel-end pin (index #17). 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.

33 Place a 4 x 4 x 32 inch (10 x 10 x 80 cm) long block across both sides of the chassis under the number 1 center pivot pin (index number #9).

34 Attach the strap from the overhead crane to the number 1 inner arm (index #10). Raise the inner arm slightly and remove the safety arm. Lower the arms on to the block.

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

35 Remove the cables from the number 1 inner arm (index #10) and lay them off to the side.

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

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

37 Remove the external snap rings from the number 1 center pivot pin (index #9).

38 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 #18) may become unbalanced and fall if not properly supported when the pin is removed.

39 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.

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.

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

41 Remove the pin retaining fasteners from both of the number 1 pivot pins (index #10). Use a slide hammer to remove the pins.

42 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 removed from the machine.

SCISSOR COMPONENTS

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. Then remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

4 Raise the platform approximately 7 to 8 feet (2.1 to 2.4 m).

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

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

6 Lower the platform onto the safety arm.

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

8 Remove the fasteners from the level sensor box and slide it towards the non-steer end of the machine until it contacts the level sensor.

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

10 Remove the pin retaining fasteners from the number 1 inner arm pivot pins at the steer end of the machine. Use a slide hammer to remove the pins.

11 Attach a strap from an overhead crane to the steer end of the scissor arms.

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

13 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.

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

15 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.

16 Install the new wear pad.

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

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

18 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.

19 Install the new wear pad.

20 Slide the scissor assembly back into the drive chassis.

21 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

3-2
Lift Cylinder

How to Remove the Lift Cylinder

⚠WARNING This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools may 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 7 to 8 feet (2.1 to 2.4 m).

2 Lift the safety arm, move to the center of the scissor arm and rotate down 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 Tag and disconnect the wiring from the solenoid valve at the barrel end of the lift cylinder.

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

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

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

10 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.

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

12 Remove the mounting fasteners from the entry ladder and 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.

13 Support the barrel end of the lift cylinder with a lifting device.

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

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

15 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.

How to Check the Resistance of a Lowering Valve Coil

1 Turn the key switch to the OFF position and disconnect the wires from the valve coil to be tested.

2 Connect the positive lead from the ohmmeter to the valve coil terminal, then connect the negative lead from the ohmmeter to the internal ring of the valve coil.

Platform lowering valve coil specifications	
2 position 2 way N.C. solenoid valve - 20V (hydraulic schematic item R)	23 - 25**W**

Ground Controls

4-1
Manual Platform Lowering Cable

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 approximately 7 to 8 feet (2.1 to 2.4 m).

2 Lift the safety arm, move to the center of the scissor arm and rotate down 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 3/16 to 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.

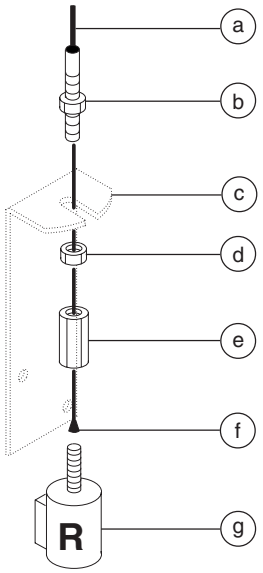
8 Tighten the upper lock nut and re-measure the distance between the end of the lowering cable and the end of the lowering valve. Re-adjust if needed.

9 Install the cable mounting nut onto the lowering valve.

10 Raise the platform and rotate the safety arm to the storage position.

11 Pull the manual lowering handle at the ground controls 2 to 3 times to ensure it is functioning correctly.

Cable distance	3/16 to 1/4 inch	4.7 to 6.4 mm



a manual lowering cable sheath
b upper lock nut
c cable mounting bracket
d lower lock nut
e cable mounting nut
f end of the lowering cable
g manual lowering valve

4-2
Toggle Switches

See 1-3, *Toggle Switches*.

Hydraulic Pump

5-1 Hydraulic Pump

The hydraulic pump is attached to the 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 345 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 3000 psi (207 bar), immediately stop. The pump is good.

⊙ Result: If pressure fails to reach 3000 psi (207 bar), the pump is bad and will need to be serviced or replaced.

5 Remove the pressure gauge and reconnect the hydraulic hose.

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 Tag, disconnect and plug the 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.

2 Remove the pump mounting bolts. Carefully remove the pump.

Function Manifold

6-1
Function Manifold Components (before serial number 17482)

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

Index No.	Description	Schematic Item	Function	Torque
1	Flow Regulator, 0.5 gpm (1.9 L/min)	A	Steer circuit	35-40 ft-lbs (47-54 Nm)
2	Diagnostic nipple	B	Testing	10-12 ft-lbs (14-16 Nm)
3	Orifice Plug, 0.025 in (0.6 mm)	C	Brake circuit	
4	Orifice Washer 0.040 inch (1 mm)	D	Steering circuit	
5	Relief valve, 1500 psi (103.4 bar)	E	Steering relief	25-30 ft-lbs (34-41 Nm)
6	Relief valve, 3700 psi (255.1 bar)	F	System relief	25-30 ft-lbs (34-41 Nm)
7	3 position 4 way solenoid valve	G	Steer left/right	18-20 ft-lbs (24-27 Nm)
8	2 position 4 way solenoid valve	H	Platform up	23-25 ft-lbs (31-34 Nm)
9	2 position 2 way solenoid valve	I	Brake circuit	18-20 ft-lbs (24-27 Nm)
10	Orifice Washer, 0.060 in (1.5 mm)	J	Brake circuit	
11	Check valve	K	Brake circuit	35-40 ft-lbs (47-54 Nm)
12	2 position 4 way solenoid valve	L	Drive speed select circuit	25-30 ft-lbs (34-41 Nm)
13	3 position 4 way solenoid valve	M	Drive forward/reverse	18-20 ft-lbs (24-27 Nm)

Important notes:

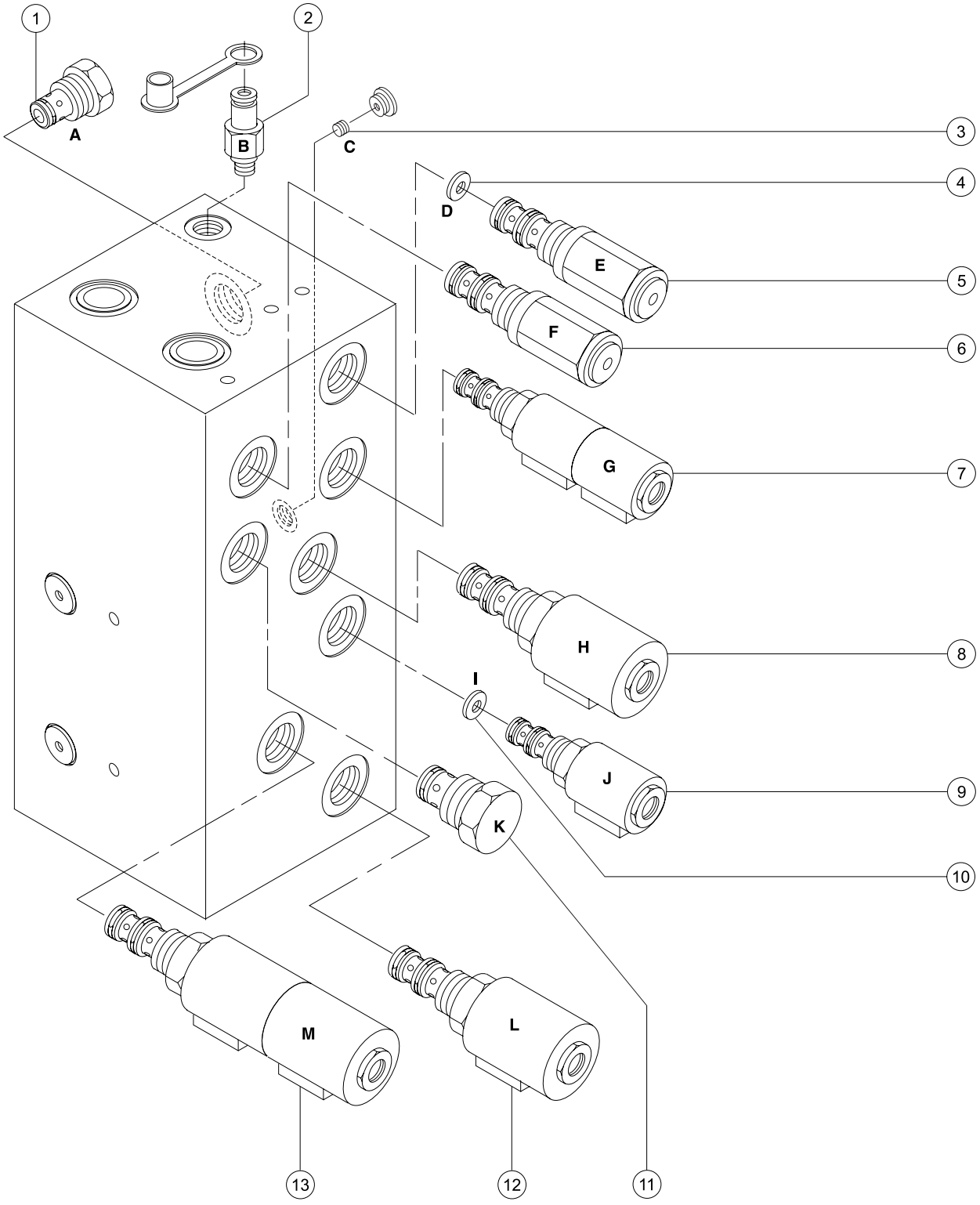
Schematic item E changed to 1500 PSI (103.4 bar) after serial number 3405
Schematic item C was deleted after serial number 8798
Schematic item J was deleted after serial number 8798
Schematic item A changed to 0.75 GPM (2.8 L/min) after serial number 11500
Schematic item K changed to 200 PSI (13.8 bar) after serial number 16893

Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm

Description	Hex Size	Torque
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

FUNCTION MANIFOLD



FUNCTION MANIFOLD

6-2
Function Manifold Components (after serial number 17481)

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

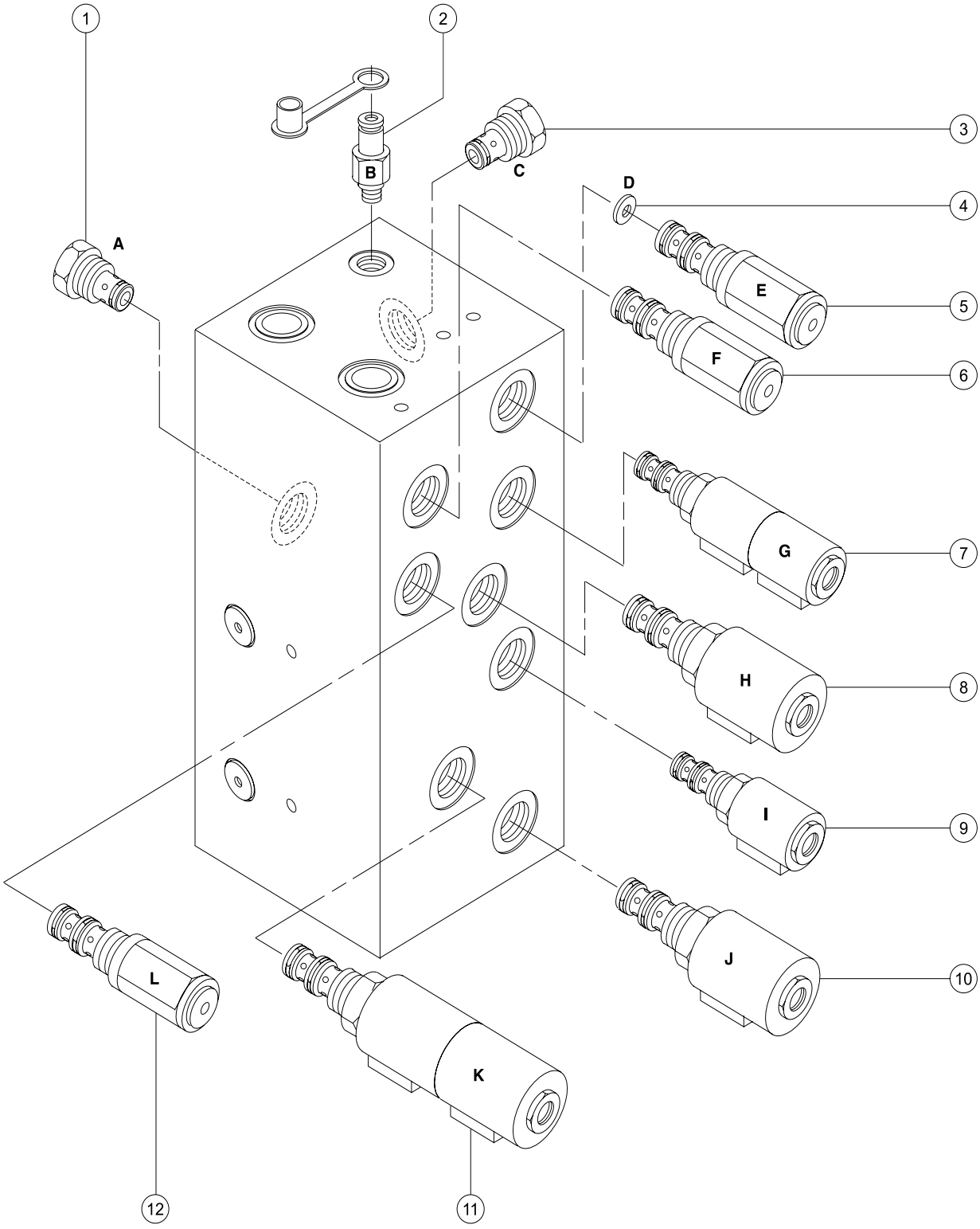
Index No.	Description	Schematic Item	Function	Torque
1	Check valve	A	Steer circuit	35-40 ft-lbs (47-54 Nm)
2	Diagnostic nipple	B	Testing	10-12 ft-lbs (14-16 Nm)
3	Flow Regulator, 0.75 gpm (2.83 L/min)	C	Steer circuit	35-40 ft-lbs (47-54 Nm)
4	Orifice Washer 0.040 inch (1 mm)	D	Steering circuit	
5	Relief valve, 1500 psi (103.4 bar)	E	Steering relief	25-30 ft-lbs (34-41 Nm)
6	Relief valve, 3700 psi (255.1 bar)	F	System relief	25-30 ft-lbs (34-41 Nm)
7	3 position 4 way solenoid valve	G	Steer left/right	18-20 ft-lbs (24-27 Nm)
8	2 position 4 way solenoid valve	H	Platform up	23-25 ft-lbs (31-34 Nm)
9	2 position 2 way solenoid valve	I	Brake circuit	18-20 ft-lbs (24-27 Nm)
10	2 position 4 way solenoid valve	J	Drive speed select circuit	25-30 ft-lbs (34-41 Nm)
11	3 position 4 way solenoid valve	K	Drive forward/reverse	18-20 ft-lbs (24-27 Nm)
12	Relief valve, 130 psi (9 bar)	L	Back pressure	25-30 ft-lbs (34-41 Nm)

Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm

Description	Hex Size	Torque
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

FUNCTION MANIFOLD



FUNCTION MANIFOLD

6-3 Valve Adjustments - Function Manifold

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

How to Adjust the System Relief Valve

1 Open the hydraulic power unit module tray and locate the system relief valve on the function manifold.

2 Place maximum rated load onto the platform. Secure the load to the platform.

Maximum Capacity		
GS-2032	1000 lbs	454 kg

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 6, 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.

9 The power unit should not be able to lift the platform. 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.

10 Install the relief valve cap.

11 Remove the weight from the platform.

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

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.*

How to Adjust the Steering Relief Valve

1 Connect a 0 to 5000 psi (0 to 345 bar) pressure gauge to the test port on the function manifold (item 2, function manifold).

2 Turn the key switch to the ground controls 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.

5 Turn the machine off. Hold the steering relief valve and remove the cap (item 5, function manifold).

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

⚠WARNING Tip-over hazard. Do not adjust the relief valves higher than specified.

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

Steering relief valve specification		
Pressure	1500 psi	103.4 bar

How to Check the Resistance of a Valve Coil

1 Turn the key switch to the OFF position and disconnect the wires from the valve coil to be tested.

2 **Coils with 2 terminals:** Connect the leads from the ohmmeter to the valve coil terminals.

Coils with 1 terminal: Connect the positive lead from the ohmmeter to the valve coil terminal, then connect the negative lead from the ohmmeter to the internal ring of the valve coil.

Valve coil specifications Before serial number 11501	
Coil, 20V (function manifold items G, J)	26 - 28W
Coil, 20V (function manifold items H, L, M)	18 - 20**W**

Valve coil specifications After serial number 11500	
Coil, 20V (function manifold items G, I)	26 - 28**W**
Coil, 20V (function manifold items H, J, K)	18 - 20**W**

Steering Axle Components

7-1
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-steering wheels, and then center a lifting jack under the drive chassis at the steer end of the machine.

2 Remove the cotter pin from the wheel castle nut.

NOTICE Always replace the cotter pin with a new one when removing the castle nut.

3 Loosen the wheel castle nut. Do not remove it.

4 Raise the machine approximately 14 inches (36 cm) and place blocks under the drive chassis for support.

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

5 Remove the castle nut, then remove the wheel.

6 Tag, disconnect and plug the hoses on the drive motor. Cap the fittings on the 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.

7 Support and secure the yoke assembly to an appropriate lifting device.

8 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.

9 Remove the retaining fastener from the top of the yoke pivot shaft.

10 Lower the yoke assembly out of the chassis while guiding the bellcrank pivot shaft out of the bellcrank.

⚠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.

Torque specifications		
Castle nut	300 ft-lbs	406.7 Nm

How to Remove a Drive Motor

1 Block the non-steering wheels, and then center a lifting jack under the drive chassis at the steer end of the machine.

2 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.

3 Loosen the wheel castle nut. Do not remove it.

4 Raise the machine approximately 2 inches (5 cm) and place blocks under the drive chassis for support.

5 Remove the wheel castle nut, then remove the wheel.

6 Tag, disconnect and plug the hoses on the drive motor. Cap the fittings on the 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.

7 Remove the drive motor mounting fasteners, then remove the motor.

Torque specifications		
Castle nut	300 ft-lbs	406.7 Nm

7-2 Steering Cylinder

How to Remove the Steering 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.

3 Remove the pin retaining fasteners from the barrel-end pivot pin. Use a soft metal drift to remove the pivot pin.

NOTICE Note the quantity and location of the spacers when removing the barrel-end pivot pin.

STEERING AXLE COMPONENTS

4 Remove the pin retaining fasteners from the rod-end pivot pin. Use a soft metal drift to 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.

7-3 Steering Bellcrank

1 Remove the steering cylinder. *See 7-2, How to Remove the Steering Cylinder.*

2 Remove the retaining fastener from the center of the bellcrank.

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. Remove the bellcrank from the machine.

NOTICE Note the quantity and the location of the spacers in between the bellcrank and the steer links.

Non-steering Axle Components

8-1
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. Then 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.

2 Block the steer wheels and center a lifting jack under the drive chassis at the non-steer end.

3 Remove the cotter pin on 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 2 inches (5 cm) and place blocks under the drive chassis for support.

6 Remove the wheel castle nut, then remove the wheel.

7 Tag, disconnect and plug the hose on 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.

8 Place a lifting jack under the brake for support.

9 Remove the brake mounting fasteners from the drive chassis. Remove the brake.

⚠CAUTION Crushing hazard. The brake may become unbalanced and fall if it is not properly supported when the mounting fasteners are removed.

Torque specifications

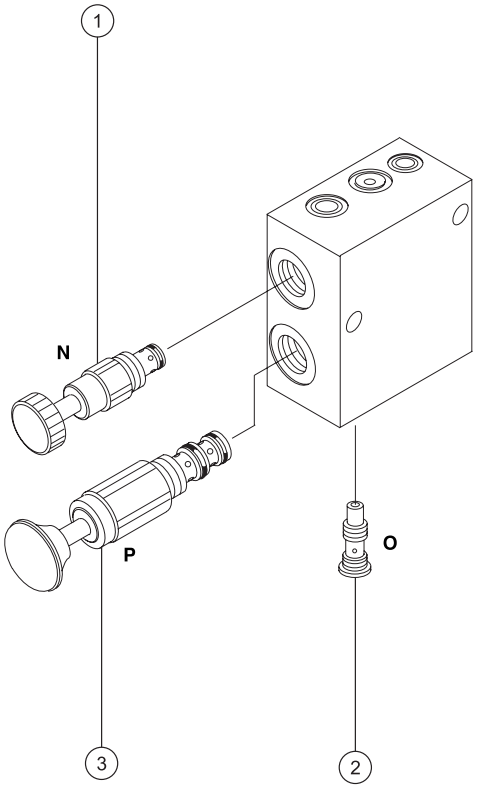
Castle nut	300 ft-lbs	406.7 Nm

Brake Release Hand Pump Components

9-1
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	N	Manual brake release	25-30 ft-lbs (34-41 Nm)
2	Shuttle valve	O	Brake release	8-10 ft-lbs (11-14 Nm)
3	Hand pump	P	Manual brake release	25-30 ft-lbs (34-41 Nm)



Plug Torque Specifications

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SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm

Description	Hex Size	Torque
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SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

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