Genie®

Service Manual

First Edition
Third Printing
Part No. 35532

Z™-30/20N

including rotating jib models

Important

Read, understand and obey the safety rules and operating instructions in the *Genie Z-30/20N Operator's Manual* before attempting any maintenance or repair procedure.

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

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

Technical Publications

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

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

Contact us:

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

First Edition: Third Printing June, 2002

♻ Printed on recycled paper

Printed in U.S.A.

Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the *Genie Z-30/20N 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 sitiuation 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 presense of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Indicates special operation or maintenance information.

Workplace Safety

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

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

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

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

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

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

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

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

Table of Contents

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

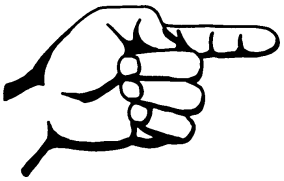
TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS



This page intentionally left blank.

Specifications

Machine Specifications

Stowed dimensions	
Length, stowed Models without rotating jib boom	16 ft 9 in 5.1 m
Length, stowed Models with rotating jib boom	17 ft 6 in 5.3 m
Width	3 ft 11 in 1.2 m
Height, stowed maximum	6 ft 7 in 2 m
Weight	See Serial Plate
Ground clearance	3 1/2 in 8.9 cm

Operational dimensions	
Platform height, maximum Models without rotating jib boom	30 ft 9.1 m
Platform height, maximum Models with rotating jib boom	29 ft 2 in 8.8 m
Working height, maximum Models without rotating jib boom	36 ft 11 m
Working height, maximum Models with rotating jib boom	35 ft 2 in 10.7 m
Horizontal reach, maximum Models without rotating jib boom	21 ft 6.4 m
Horizontal reach, maximum Models with rotating jib boom	20 ft 8 in 6.3 m
Up and over clearance	12 ft 6 in 3.8 m
Turntable tailswing	0°
Turntable rotation	359°
Platform rotation	180°
Jib boom rotation (optional)	200 °
Wheelbase	5 ft 2 in 1.57 m
Turning radius, outside	9 ft 10 in 3 m
Turning radius, inside	5 ft 5 in 1.65 m

Tires and wheels	
Tire size (solid rubber)	22 x 7 x 17.75 in 56 x 18 x 45 cm
Load range	7600 lbs 3447 kg
Tire contact area	35 sq in 226 sq cm
Overall tire diameter	22 in 56 cm
Wheel diameter	17.75 in 45 cm
Wheel width	7 in 18 cm

Wheel lugs	
Front Rear	8 @ 5/8 -18 9 @ 5/8 -18
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

Platform dimensions	
Length	46 in 1.17 m
Width	30 in 76 cm
Load capacity, maximum	500 lbs 227 kg

SPECIFICATIONS

Machine Specifications, continued

Fluid Capacities		
Hydraulic tank capacity		4 gallons 15.1 liters
Hydraulic tank capacity (including tank)		6 gallons 22.7 liters
Drive hubs		
35:1 and 49:1	17 ounces	0.5 liter
62.5:1	25.6 ounces	0.76 liter

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

Performance Specifications

Drive speed, maximum	
Stowed position (before serial number 3447)	
35:1 drive hubs	3.1 mph 5 km/h 40ft / 8.8 sec 12.2 m / 8.8 sec
Stowed position (before serial number 3447)	
49:1 drive hubs	2.8 mph 4.5 km/h 40 ft / 9.7 sec 12.2 m / 9.7 sec
Stowed position (after serial number 3446)	
62:1 drive hubs	3.3 mph 5.3 km/h 40 ft / 8.3 sec 12.2 m / 8.3 sec
Boom raised or extended	0.6 mph 1 km/h 40 ft / 44 sec 12.2 m / 44 sec

Gradeability	
35:1 drive hubs	17%
49:1 drive hubs	20%
62:1 drive hubs	35%

SPECIFICATIONS

Boom function speeds, maximum from platform controls (with rated load secured to platform) (before serial number 3447)	
Jib boom up	30 to 40 seconds
Jib boom down	15 to 25 seconds
Primary boom up	25 to 35 seconds
Primary boom down	15 to 25 seconds
Primary boom extend	25 to 35 seconds
Primary boom retract	15 to 25 seconds
Secondary boom up	15 to 25 seconds
Secondary boom down	10 to 15 seconds
Turntable rotate, 355°	50 to 70 seconds
Platform rotate, 160°	5 to 10 seconds
Platform level up	10 to 20 seconds
Platform level down	10 to 20 seconds

Boom function speeds, maximum from platform controls (with rated load secured to platform) (after serial number 3446)	
Jib boom up	20 to 30 seconds
Jib boom down	15 to 25 seconds
Jib boom rotate, 200°	12 to 18 seconds
Primary boom up	14 to 20 seconds
Primary boom down	13 to 19 seconds
Primary boom extend (models with rotating jib boom) (models without rotating jib boom)	 14 to 24 seconds 9 to 15 seconds
Primary boom retract	11 to 17 seconds
Secondary boom up	11 to 17 seconds
Secondary boom down	8 to 14 seconds
Turntable rotate, 355°	52 to 68 seconds
Platform rotate, 160°	5 to 11 seconds
Platform level up	14 to 19 seconds
Platform level down	13 to 18 seconds

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
Function pump	
Type:	Fixed displacement gear pump
Displacement	0.183 cu in 3 cc
Flow rate @ 2800 psi / 172 bar	2.1 gpm 7.9 L/min
Hydraulic tank return line filter	10 micron with 25 psi / 1.7 bar bypass
Function manifold	
System relief valve pressure	2800 psi 193 bar
Boom down relief pressure	1400 psi 97 bar
Secondary boom down relief pressure	1600 psi 110 bar
Primary boom extend relief pressure Models without rotating jib (after serial number 5619)	2800 psi 193 bar
Primary boom extend relief pressure Models without rotating jib (before serial number 5620)	1800 psi 124 bar
Primary boom extend relief pressure Models with rotating jib	1800 psi 124 bar
Turntable rotate relief pressures (after serial number 3446)	1100 psi 76 bar
(before serial number 3447)	1750 psi 121 bar
Auxiliary pump	
Type:	Fixed displacement gear pump
Displacement	0.5 gpm 1.9 L/min

SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

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

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)

SAE Dash size	Torque
-4	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

SAE O-ring Boss Port
(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

Seal-Lok® fittings

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

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

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

Seal-Lok® Fittings
(hose end)

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

Theory of Operation

Power Source

The Genie Z-30/20N is powered by eight six-volt (350 AH) batteries, separated into two groups of four. Each group of four batteries is wired in series to produce 24V DC. The two battery groups are then joined to produce 48V DC. The drive system uses 48V DC and the control system uses 24V DC.

Hydraulic System

All machine functions are performed by the hydraulic system. The hydraulic system is powered by a single-section gear pump, rated at 2.1 gpm @ 2800 psi / 7.9L/min @ 172 bar.

When the pump is activated, it supplies hydraulic fluid under pressure to the function manifold, where the directional flow control valves are located. To protect from over-pressurization of the hydraulic system, the pump is protected by a pressure relief valve, set at 2800 psi / 193 bar.

Activating a machine function is accomplished by actuating or moving a toggle switch and/or control handle, which sends voltage to the appropriate directional control valves. The directional valves determines which direction the hydraulic fluid will travel. When operating the machine from the platform controls, the amount of hydraulic fluid volume is determined by the proportional valve input voltage from the boom function speed controller at the platform controls. Each boom lift cylinder incorporates a counterbalance valve to prevent movement in the event of a hydraulic line failure.

Electrical System

Drive system

On machines before serial number 3447, the drive function is managed by a 48V DC motor controller. The motor controller, located under the non-steer end drive chassis cover, is activated when it receives electrical current from the platform controller (joystick) when it is moved in either direction.

On machines after serial number 3446, the drive function is managed by a Sepex motor controller. The motor controller, located under the non-steer end drive chassis cover, uses resistance input from the potentiometer to control the amount of electrical current supplied to the drive motors. Moving the joystick in either direction varies the resistance from the potentiometer. There are no adjustments needed on the joystick.

The Sepex system also incorporates regenerative braking. Regenerative braking occurs when the drive joystick is returned to the center position while driving and the electrical current produced by the drive motors is directed back into the batteries. This allows longer machine run time and higher performance.

The Sepex motor controller also incorporates self diagnostics. An LED on the motor controller will flash a fault code when a fault is present to aid in troubleshooting. Refer to the fault code chart in Section Six.

NOTICE A remote motor controller status LED is located under the level sensor behind the ground controls turntable cover.

THEORY OF OPERATION

Limit switches

There are two types of limit switches, which are found in various locations on the machine: drive speed limit switches and a drive enable limit switch. The function of a drive speed limit switch is to limit the raised machine drive speed to 0.6 miles per hour / 1 km/h when either the primary or secondary boom is raised more than 2 feet / 0.6 m OR when the primary boom is extended more than 12 inches / 30 cm. The function of the drive enable limit switch is to limit the ability of the machine to drive when the boom is rotated outside the area between the non-steer wheels.

Machine Controls

The Z-30/20N machine is equipped with operational controls which are found in two locations: the ground controls, located opposite the hydraulic tank side of the machine, and the platform controls, located in the platform. All boom and drive functions are available at the platform controls. Only boom functions are available at the ground controls. Moving a boom function toggle switch in the direction indicated on the control panel decal will determine which boom function will operate and its direction of travel.

The platform controls incorporate a rotary boom function speed controller which, by varying the position of the controller, controls the amount of voltage to the proportional valve. This determines the speed at which the function will operate.

The drive joystick is fitted with a potentiometer that communicates the joystick position with the motor controller. A thumb rocker switch on the top of the joystick is used for steering.

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

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

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 could result in 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 firm, level surface
  - · Boom in the stowed position
  - · Turntable rotated with the boom between the non-steer wheels
  - · 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.

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

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

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

NOTICE Green—used to indicate operation or maintenance information.

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

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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

Indicates that tools will be required to perform this procedure.

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

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

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

Maintenance Schedule

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

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

Maintenance Inspection Report

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

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

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 or 8 hour Inspection:**	**A**
☐	**Quarterly or 250 hour Inspection:**	**A+B**
☐	**Annual or 1000 hour Inspection:**	**A+B+C**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section 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**
A-1 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 Auxiliary power			
A-8 Tilt sensor			
A-9 Limit switches			
A-10 30 Day Service			
Perform every 100 hours:			
A-11 Grease rotation bearing			

Checklist B	**Y**	**N**	**R**
B-1 Batteries			
B-2 Electrical wiring			
B-3 Tires and wheels			
B-4 Brake configuration			
B-5 Drive hub oil level			
B-6 Key switch			
B-7 Emergency stop			
B-8 Ground control override			
B-9 Platform leveling			

Checklist B, continued	**Y**	**N**	**R**
B-10 Horn			
B-11 Foot switch			
B-12 Drive enable system			
B-13 Drive brakes			
B-14 Drive speed-stowed			
B-15 Drive speed-raised			
B-16 Alarm package (if equipped)			
B-17 Turntable rotation stop			
B-18 Electrical contactors			
B-19 Turntable bearing bolts			
B-20 Hydraulic return filter			
B-21 Hydraulic oil analysis			

Checklist C	**Y**	**N**	**R**
C-1 Boom wear pads			
C-2 Free-wheel configuration			
C-3 Drive hub oil			
C-4 Platform rotator			

Checklist D	**Y**	**N**	**R**
D-1 Hydraulic oil			
D-2 Wheel bearings			

Checklist 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 Confirm that the storage container is present and in good condition.

2 Confirm 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 Z-30/20N 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.

CHECKLIST A PROCEDURES

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
- Drive and turntable motors and drive hubs.
- Boom wear pads
- Tires and wheels
- Limit switches, alarms and horn
- Nuts, bolts and other fasteners
- Platform entry mid-rail/gate
- Beacon and alarms (if equipped)
- Battery packs and connections
- Compartment covers and latches

Check entire machine for:

- Cracks in welds or structural components
- Dents or damage to machine

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.

1 Be sure that the boom is in the stowed position, then visually inspect the hydraulic tank.

⊙ Result: The hydraulic oil level should be within **Before serial number 2008:** the top 2 inches / 5 cm of the hydraulic oil decal.
After serial number 2007: the FULL and ADD marks on the hydraulic tank.

Hydraulic oil type	Dexron equivalent
Hydraulic oil capacity	
Hydraulic tank	4 gallons 15.1 liters
Hydraulic system (including tank)	6 gallons 22.7 liters

CHECKLIST A PROCEDURES

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—filter, fittings, hoses and turntable surface
- Compartments—hydraulic power unit, auxiliary power unit, pumps, suction filter, fittings, hoses, and turntable surface
- All hydraulic cylinders
- All hydraulic manifolds
- Primary, secondary and jib booms
- The underside of the turntable
- The underside of the drive chassis
- 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 red Emergency Stop button fails to stop all the machine functions. Each function should operate smoothly and be free of hesitation, jerking and unusual noise.

Before serial number 747:

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

2 Attempt to activate each boom and platform function toggle switch.

⊙ Result: All machine functions should operate through a full cycle. The descent alarm (if equipped) should sound while the boom is lowering.

3 Push in the red Emergency Stop button to the OFF position.

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

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

5 Press down the foot switch and operate each machine function through a full cycle.

⊙ Result: All machine functions should operate smoothly.

6 Push in the red 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, including the red Emergency Stop button.

After serial number 746:

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

2 Do not hold the function enable toggle switch to either side. Attempt to activate each boom and platform function toggle switch.

⊙ Result: All boom and platform functions should **not** operate.

3 Hold the function enable toggle switch to either side and activate each boom and platform function toggle switch.

⊙ Result: All machine functions should operate through a full cycle. The descent alarm (if equipped) should sound while the boom is lowering.

NOTICE Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the primary boom is raised past the drive speed limit switch.

4 Push in the red Emergency Stop button to the OFF position.

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

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

6 Do not press down the foot switch. Activate each machine funtion.

⊙ Result: The machine functions should **not** operate.

7 Press down the foot switch.

8 Activate each machine function toggle switch.

⊙ Result: All boom/platform functions should operate through a full cycle.

9 Push in the red 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, including the red Emergency Stop button.

NOTICE Control the speed of the boom functions by adjusting the boom function speed controller. Drive and steer functions are not affected by the boom function speed controller.

CHECKLIST A PROCEDURES

A-7
Test the Auxiliary Power Operation

Detection of auxiliary power system malfunctions is essential for safe machine operation. An unsafe working condition exists if the auxiliary powered functions do not operate in the event of a main power loss. Auxiliary power is designed for short term emergency use only. Excessive use will result in battery drain and component damage.

1 Turn the key switch to ground controls and pull out the red Emergency Stop button to the ON position.

2 Lift the red auxiliary power switch cover (if equipped).

3 Simultaneously hold the auxiliary power toggle switch in the ON direction while activating each function through a partial cycle.

⊙ Result: Each function should operate smoothly.

NOTICE To conserve battery power, test each function through a partial cycle.

4 Turn the key switch to platform controls.

5 At the platform controls, pull out the red Emergency Stop button to the ON position, then press down the foot switch.

6 Lift the red auxiliary power switch cover (if equipped).

7 Simultaneously hold the auxiliary power toggle switch on while activating each function through a partial cycle.

⊙ Result: Each function should operate smoothly.

NOTICE To conserve battery power, test each function through a partial cycle.

A-8
Test the Tilt Sensor

The tilt sensor sounds an alarm in the platform when the incline of the drive chassis exceeds the rating on the serial plate.

NOTICE Select a level test area. The tilt alarm should not be sounding prior to test.

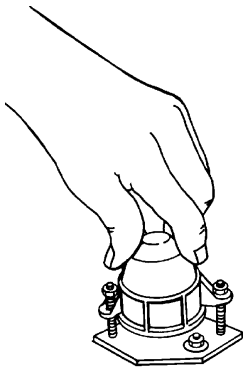
1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the ON position at both the ground and platform controls.

2 Open the ground control side turntable cover and locate the tilt sensor next to the function manifold.

3 Press down on one side of the tilt sensor.

⊙ Result: The alarm located in the platform should sound.

⚠WARNING Tip-over hazard. The alarm should be heard at the ground controls. If you can't hear the alarm at the ground controls, replace the alarm in the platform.



A-9
Test the Limit Switches

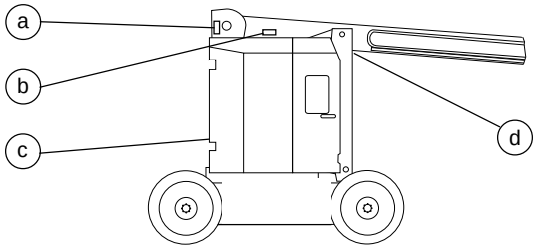
Detecting limit switch malfunctions is essential to safe machine operation. The drive limit switches are used to restrict drive speed when the boom is raised or extended. The drive enable limit switch activates a signal light to inform the operator that the platform is over the steering wheels, and stops drive movement unless the drive enable override switch is used. Improperly functioning limit switches will allow the boom to raise and/or drive into an unsafe position.

NOTICE Machines equipped with Platform Level Control Disable Function: The platform level toggle switch will not operate when the primary boom is raised past the drive speed limit switch.

Drive Limit Switches

1 With the boom in the stowed position, visually inspect the drive limit switches for the following:

- Broken or missing rollers or arms
- Missing fasteners
- Loose wiring



a primary boom drive limit switch (LS2) (after serial number 746)

b boom extend drive limit switch (LS1)

c secondary boom drive limit switch (LS4) (after serial number 746)

d primary/secondary boom drive limit switch (LS2) (before serial number 747)

2 Extend the primary boom approximately 12 inches / 30 cm.

3 Manually activate the boom extend drive limit switch (LS1).

⊙ Result: The boom extend drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

4 Fully retract the primary boom.

CHECKLIST A PROCEDURES

Before serial number 747:

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

6 Raise the primary boom approximately 12 inches / 30 cm.

7 Manually activate the primary and secondary boom drive limit switch (LS2).

⊙ Result: The primary and secondary boom drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

8 Lower the primary boom to the stowed position.

After serial number 746:

5 Remove the rear counterweight cover mounting fasteners. Remove the cover.

6 Manually activate the secondary boom drive limit switch (LS4).

⊙ Result: The secondary boom drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

7 Manually activate the primary boom drive limit switch (LS2).

⊙ Result: The primary boom drive limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.

8 Install the rear counterweight cover and tighten the mounting fasteners.

All models:

9 Turn the key switch to platform controls and pull out the red Emergency Stop buttons to the ON position at both the ground and platform controls.

10 Press down the foot switch and slowly move the drive control handle off center.

⊙ Result: The machine should move at normal drive speeds.

11 Raise the primary boom approximately 5 feet / 1.5 m.

12 Slowly move the drive control handle off center.

⊙ Result: The machine should move at a reduced drive speed.

13 Lower the primary boom to the stowed position.

14 Raise the secondary boom approximately 5 feet / 1.5 m.

15 Slowly move the drive control handle off center.

⊙ Result: The machine should move at a reduced drive speed.

16 Lower the secondary boom to the stowed position.

17 Extend the primary boom 12 inches / 30 cm.

18 Slowly move the drive control handle off center.

⊙ Result: The machine should move at a reduced drive speed.

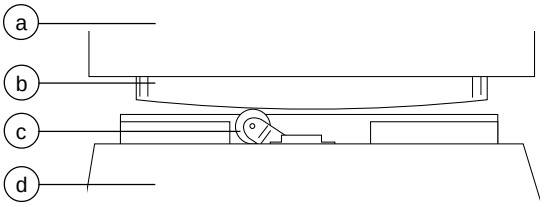
Drive speed, maximum	
Raised or extended position	40 ft / 40 sec 12.2 m / 40 sec

Drive Enable Limit Switch

1 With the boom in the stowed position, locate the drive enable limit switch (LS3) under the turntable.

2 Visually inspect the drive enable limit switch for the following:

- Broken or missing roller or arm
- Missing fasteners
- Loose wiring



a turntable
b limit switch cam
c drive enable limit switch (LS3)
d drive chassis

3 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the ON position at both the ground and platform controls.

4 Rotate the turntable to the left until the primary boom is past the left non-steer wheel.

5 Manually activate the drive enable limit switch.

⊙ Result: The drive enable limit switch roller should move freely and spring return to center. A distinct click should be felt and heard.

6 Rotate the boom until it is centered between the non-steer tires.

7 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the ON position at both the ground and platform controls.

8 Rotate the turntable to the left until the primary boom is past the left non-steer wheel.

⊙ Result: The drive enable indicator light should be ON. The drive function should not operate until the drive enable toggle switch is activated.

9 Rotate the turntable to the right until the primary boom is past the right non-steer wheel.

⊙ Result: The drive enable indicator light should be ON. The drive function should not operate until the drive enable toggle switch is activated.

CHECKLIST A PROCEDURES

A-10
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 checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- B-3 Inspect the Tires and Wheels (including lug nut torque)
- B-19 Check the Turnable Rotation Bearing Bolts
- B-20 Replace the Hydraulic Tank Return Filter

A-11
Grease the Turntable Rotation Bearing and Worm Drive Gear

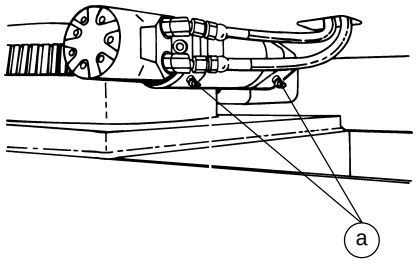
NOTICE Genie specifications require that this procedure be performed every 100 hours.

Frequent application of lubrication to the turntable bearing and worm drive gear is essential to good machine performance and service life. Continued use of an insufficently greased gear will result in component damage.

1 Locate the grease fitting on the tank side turntable cover bulkhead.

2 Pump grease into the turntable rotation bearing. Rotate the turntable in increments of 4 to 5 inches / 10 to 13 cm at a time and repeat this step until the entire bearing has been greased.

3 Locate the 2 grease fittings on the worm drive housing.



a grease fittings

4 Pump grease into the gear until you see it coming out of the side of the gear housing.

5 Grease each tooth on the outside of the turntable rotation bearing.

Lubricant specification	
Type	Multipurpose grease

Checklist 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 engine 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 could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Perform this test after fully charging the batteries.

NOTICE For a more accurate determination of the battery condition, fully charge the battery(s) and allow the battery(s) to rest 24 hours before performing this procedure to allow the battery cells to equalize.

1 Put on protective clothing and eye wear.

2 Open the latch on the battery packs. Swing open the battery packs.

3 Disconnect the battery pack from the machine.

4 Remove the battery box cover retaining fasteners. Remove the battery box cover.

5 Be sure that the battery cable connections are free of corrosion.

6 Be sure that the battery hold down and cable connections are tight.

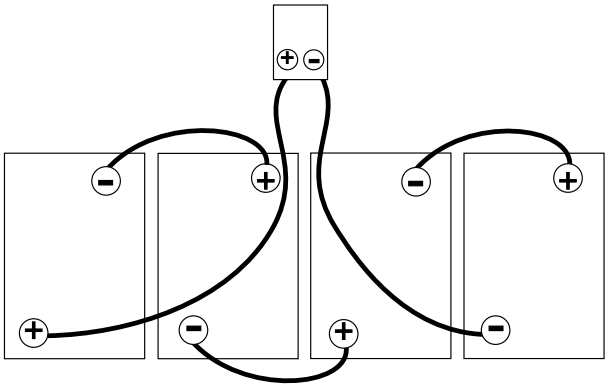
7 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.

⊙ Result: If any battery cell displays a specific gravity of less than 1.026, the battery must be replaced.

8 Check the battery acid level of the battery. If needed, replenish with distilled water to the bottom of the battery fill tube. Do not overfill.

9 Install the battery vent caps.

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



11 Install the battery box cover and tighten the retaining fasteners.

12 Connect the battery packs to the machine.

13 Close and latch the battery packs.

CHECKLIST B PROCEDURES

B-2
Inspect the Electrical Wiring

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

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

1 Inspect the following areas for burnt, chafed, corroded and loose wires:
   - Electrical power panel
   - Electrical relay panel
   - Ground control panel
   - Function manifold wiring
2 Turn the key switch to ground controls and pull out the red Emergency Stop button to the ON position at both the ground and platform controls.
3 Raise the secondary boom until the lower mid-pivot is 10 feet / 3 m off the ground.
4 Inspect the turntable center area for burnt, chafed and pinched cables.
5 Lower the boom to the stowed position and turn the machine off.
6 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
   - Cable track on the primary boom
   - Primary boom to platform cable harness
   - Inside of the platform control box

B-3
Inspect the Tires and Wheels (including lug 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, and unusual wear.
2 Check each wheel for damage, bends and cracked welds.
3 Check each lug nut for proper torque.

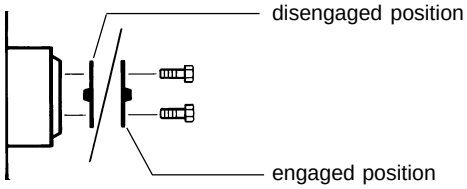
Tires and wheels	
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

CHECKLIST B PROCEDURES

B-4
Confirm the Proper Brake Configuration

Proper brake configuration is essential to safe operation and good machine performance. Hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

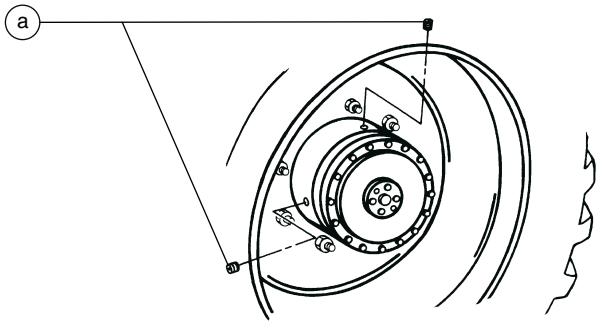
1 Check each drive hub disconnect cap to be sure it is in the engaged position.



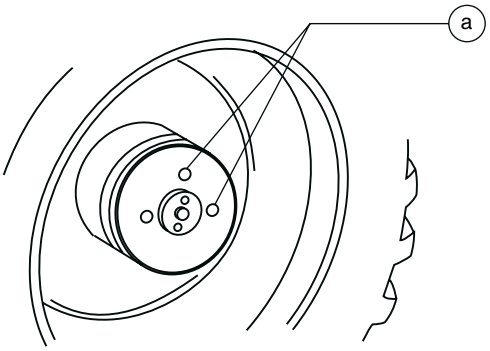
B-5
Check the Oil Level in the Drive Hubs

Failure to maintain proper drive hub oil levels may cause the machine to perform poorly and continued use may cause component damage.

1 Drive the machine to rotate the hub until one of the plugs is located on top and the other is at 90 degrees.



Before serial number 3447



After serial number 3446
a drive hub plugs

CHECKLIST B PROCEDURES

2 Remove the plug located at 90 degrees and check the oil level.

⊙ Result: The oil level should be even with the bottom of the side plug hole.

3 If necessary, remove the top plug and add oil until the oil level is even with the bottom of the side plug hole.

4 **Before serial number 3447:** Apply pipe thread sealant to the plugs. Install the plugs into the drive hub.

After serial number 3446: Install the plugs into the drive hub.

5 Repeat this procedure for each drive hub.

Drive hub oil capacity specification	
35:1 Drive Hubs	17 fl oz 0.5 liters
49:1 Drive Hubs	17 fl oz 0.5 liters
62.5:1 Drive Hubs	25.6 fl oz 0.76 liters
Type:	SAE 90 multipurpose hypoid gear oil - API service classification GL5

B-6
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 red Emergency Stop button to the ON position at both the ground and platform controls.

2 Turn the key switch to **platform controls**.

3 Check the machine functions from the **ground controls**.

⊙ Result: The machine functions should **not** operate.

4 Turn the key switch to **ground controls**.

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. The machine should stop.

B-7
Test the Emergency Stop

A properly functioning Emergency Stop is essential for safe machine operation. An improperly operating red 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, including the platform red Emergency Stop button.

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

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

⊙ Result: No functions should operate.

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

4 Push in the platform Emergency Stop button to the OFF position.

⊙ Result: No machine functions should operate.

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

B-8
Test the Ground Control Override

A properly functioning ground control override is essential to safe machine operation. The ground control override function is intended to allow ground personnel to operate the machine from the ground controls whether the red Emergency Stop button on the platform controls is in the ON or OFF position. This function is particularly useful if the operator at the platform controls cannot return the boom to the stowed position.

1 Push in the red Emergency Stop button at the platform controls to the OFF position.

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

3 Operate each boom function through a partial cycle at the ground controls.

⊙ Result: All boom functions should operate.

CHECKLIST B PROCEDURES

B-9
Test the Platform Self-leveling

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained level by the platform leveling slave cylinder which is controlled by the platform leveling master cylinder located at the base of the primary boom. A platform self-leveling failure creates an unsafe working condition.

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

2 Lower the boom to the stowed position.

3 Adjust the platform to a level position using the platform leveling toggle switch.

4 Raise and lower the primary boom through a full cycle.

⊙ Result: The platform should remain level at all times to within ±5 degrees.

B-10
Test the Horn

A properly 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 controls and pull out the red 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 If necessary, the horn can be adjusted to obtain the loudest volume by turning the adjustment screw near the wire terminals on the horn.

B-11
Test the Foot Switch

A properly functioning foot switch is essential to safe machine operation. Machine functions should activate and operate smoothly as long as the foot switch is pressed down, and promptly stop when the foot switch is released. An improperly functioning foot switch can cause an unsafe working condition.

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

2 Do not press down the foot switch. Attempt to operate the machine functions.

⊙ Result: The machine functions should **not** operate.

3 Press down the foot switch and operate the machine functions.

⊙ Result: The machine functions should operate.

B-12
Test the Drive Enable System

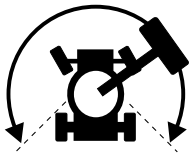
Proper drive enable system operation is essential to safe machine operation. When the primary boom is past the non-steering wheels, drive movement is stopped and the indicator light turns on. The drive enable toggle switch must be used to reactivate drive function and should inform the operator that the machine may move in the opposite direction that the drive and steer controls are moved. An improperly functioning drive enable system may allow the machine to be moved into an unsafe position.

NOTICE Perform this test with the boom in the stowed position.

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

2 Rotate the turntable until the boom moves past one of the non-steering wheels.

⊙ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown.



3 Slowly move the drive joystick off center.

⊙ Result: The drive function should **not** operate.

⚠CAUTION Collision hazard. Always use the color-coded direction arrows on the platform control panel and the drive chassis to identify which direction the machine will travel.

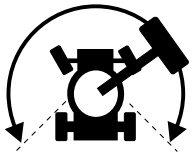
CHECKLIST B PROCEDURES

4 Hold the drive enable toggle switch up or down and slowly move the drive joystick off center.

⊙ Result: The drive function should operate.

5 Rotate the turntable until the boom moves past the other non-steering wheel.

⊙ Result: The drive enable indicator light should come on and remain on while the boom is anywhere in the range shown.



6 Slowly move the drive joystick off center.

⊙ Result: The drive function should **not** operate.

⚠CAUTION Collision hazard. Always use the color-coded direction arrows on the platform control panel and the drive chassis to identify which direction the machine will travel.

7 Hold the drive enable toggle switch up or down and slowly move the drive joystick off center.

⊙ Result: The drive function should operate.

B-13
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 they are actually not fully operational.

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-4 in this section, *Confirm the Proper Brake Configuration*.

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

1 Mark a test line on the ground for reference.

2 Lower the boom to the stowed position.

3 Turn the key switch to platform controls.

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

5 Bring the machine to top drive speed before reaching the test line. Release the drive joystick when your reference point on the machine crosses the test line.

6 Measure the distance between the test line and your machine reference point.

Braking distance, maximum	
High range on paved surface	2 to 4 ft 0.6 to 1.2m

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

B-14
Test the Drive Speed - Stowed Position

Proper drive function movement is 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.

NOTICE Be sure the boom is in the stowed position.

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 red Emergency Stop button to the ON position at both the ground and platform controls.

3 Choose a reference point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

4 Press down the foot switch and slowly move the drive joystick to the full drive position.

5 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.

6 Continue at full speed and note the time when your machine reference point passes over the finish line.

Drive speed, maximum (before serial number 3447)	
49:1 drive hubs	40 ft / 9.7 sec 12.2 m / 9.7 sec
35:1 drive hubs	40ft / 8.8 sec 12.2 m / 8.8 sec
Drive speed, maximum (after serial number 3446)	
62.5:1 drive hubs	40 ft / 8.3 sec 12.2 m / 8.3 sec

CHECKLIST B PROCEDURES

B-15
Test the Drive Speed - Raised or Extended Position

Proper drive function movement is 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 red Emergency Stop button to the ON position at both the ground and platform controls.

3 Raise the primary boom more than 5 feet / 1.5 m.

4 Choose a reference point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

5 Press down the foot switch and slowly move the drive joystick to the full drive position.

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 your machine reference point passes over the finish line.

Drive speed, maximum	
Raised or extended position	40 ft / 40 sec 12.2 m / 40 sec

B-16
Test the Alarm Package (if equipped)

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

Alarms and a beacon are installed to alert operators and ground personnel of machine proximity and motion. The alarm package is installed on the ground controls side turntable cover.

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

⊙ Result: The flashing beacon should be ON and flashing.

2 **Before serial number 747:** Move the primary boom toggle switch to the down position, hold for a moment then release it.
After serial number 746: Hold the function enable toggle switch to either side, then move the primary boom toggle switch to the down position, hold for a moment then release it.

3 **Before serial number 747:** Move the secondary boom toggle switch to the down position, hold for a moment then release it.
After serial number 746: Hold the function enable toggle switch to either side, then move the secondary boom toggle switch to the down position, hold for a moment then release it.

⊙ Result: The descent alarm should sound when each control toggle switch is held down.

4 Turn the key switch to platform controls.

⊙ Result: The flashing beacon should be ON and flashing.

5 Press down the foot switch.

6 Move the primary boom toggle switch to the down position, hold for a moment then release it. Move the secondary boom toggle switch to the down position, hold for a moment then release it.

⊙ Result: The descent alarm should sound when each control toggle switch is held down.

7 Press down the foot switch.

8 Move the drive joystick off center, hold for a moment then release it. Move the drive joystick off center in the opposite direction, hold for a moment then release it.

⊙ Result: The travel alarm should sound when the drive joystick is moved off center in either direction.

B-17
Test the Turntable Rotation Stop

The turntable is capable of rotating the boom 359 degrees and is stopped midpoint between the steering wheels by the rotation stop. Detecting a rotation stop malfunction is essential to safe operation and good machine performance. If the turntable rotates past the rotation stop, component damage may result.

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

2 Rotate the turntable to the left as far as it will go.

⊙ Result: Movement should stop when the primary boom reaches midpoint between the steer tires.

3 Rotate the turntable to the right as far as it will go.

⊙ Result: Movement should stop when the primary boom reaches mid-point between the steer tires.

CHECKLIST B PROCEDURES

B-18
Check the Electrical Contactors

Maintaining the electrical contactors 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 Remove the non-steer drive chassis cover and locate the electrical contactors mounted on the electrical component mounting panel.

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

- Excessive burns
- Excessive pitting

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

NOTICE Replace the contactors if any damage is found.

B-19
Check the Turntable Rotation Bearing Bolts

Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

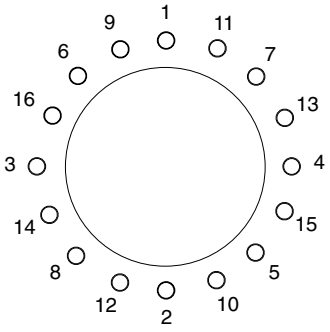
1 Raise the secondary boom and place a safety chock on the secondary boom lift cylinder. Carefully lower the boom onto the lift cylinder safety chock.

⚠WARNING Crushing hazard. Keep hands away from the cylinder and all moving parts when lowering the secondary boom.

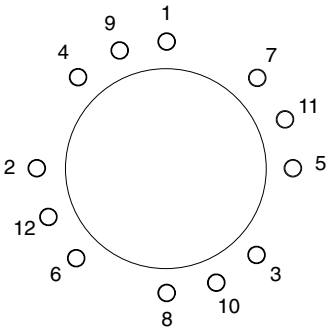
Lift cylinder safety chock	
Genie part number	36555

CHECKLIST B PROCEDURES

2 Check to verify that each turntable bearing bolt is torqued in specified order to 190 ft-lbs / 258 Nm.



Bolt torque sequence
(before serial number 3369)

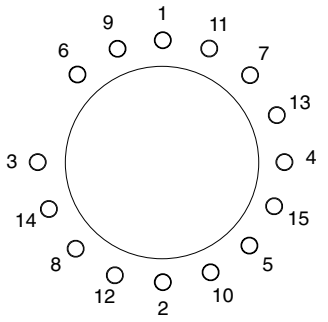


Bolt torque sequence
(after serial number 3368)

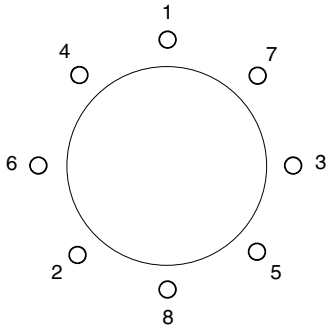
3 Raise boom and remove the safety chock. Lower the boom to the stowed position.

4 Open the latch on the battery packs and swing them out to expose the turntable bearing bolt access hole.

5 Check to verify that each bearing mounting bolt under the drive chassis is torqued in specified order to 190 ft-lbs / 258 Nm.



Bolt torque sequence
(before serial number 3369)



Bolt torque sequence
(after serial number 3368)

CHECKLIST B PROCEDURES

B-20
Replace the Hydraulic Tank Return Filter Element

NOTICE Genie requires that this procedure be performed quarterly or every 250 hours, whichever comes first. Perform this procedure more often if dusty conditions exist.

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

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE The hydraulic return filter is located on the bulkhead next to the hydraulic power unit.

Before serial number 2008:

1 Clean the area around the oil filter housing, then remove the filter element with an oil filter wrench.

2 Apply a thin layer of fresh oil to the gasket on the new oil filter element.

3 Install the new filter element and tighten it securely by hand.

Hydraulic tank return filter (before serial number 2008)	
Genie part number	46014

4 **Before serial number 747:** Turn the key switch to ground controls and pull out the red Emergency Stop button to the ON position at the ground controls. Move and hold the primary boom toggle switch in the UP direction.
After serial number 746: Turn the key switch to ground controls and pull out the red Emergency Stop button to the ON position at the ground controls. Move and hold the function enable toggle switch to either side and move and hold the primary boom toggle switch in the UP direction.

5 Inspect the filter and related components to be sure that there are no leaks. Clean up any oil that may have spilled during the replacement procedure. Properly discard the oil and oil filter.

After serial number 2007:

1 Clean the area around the oil filter housing cap located on top of the reservoir.

2 Remove the oil filter housing cap fasteners. Remove the cap.

3 Remove the oil filter element from the housing.

4 Clean the oil filter housing with a mild solvent.

5 Install the new oil filter element.

6 Install the housing cap and tighten the fasteners.

Hydraulic tank return filter element (from serial number 2008 to 4526)	
Genie part number	58995

Hydraulic tank return filter element (from serial number 4527 to 5522)	
Genie part number	74346

Hydraulic tank return filter element (after serial number 5522)	
Genie part number	74634

7 Turn the key switch to ground controls and pull out the red Emergency Stop button to the ON position. Move and hold the function enable toggle switch to either side and move and hold the primary boom toggle switch in the UP direction.

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

9 Clean up any oil that may have spilled during the replacement procedure.

10 Properly discard the oil and oil filter element.

B-21
Perform Hydraulic Oil Analysis

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers 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 The 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.** See D-1, *Test or Replace the Hydraulic Oil.*

Checklist C Procedures

C-1
Check the Primary Boom Wear Pads

Maintaining the primary boom wear pads in good condition is essential to safe machine operation. Wear pads are placed on boom tube surfaces to provide a low friction, replaceable wear pad between moving parts. Improperly shimmed wear pads or continued use of worn out wear pads may result in component damage and unsafe operating conditions.

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

2 Extend the primary boom 10 inches / 25 cm.

3 Measure each wear pad. Replace the wear pad if it is less than 0.41 inch / 1 cm thick. If the wear pad is more than 0.41 inch / 1 cm thick, shim as necessary to obtain zero clearance and zero drag.

4 Extend and retract the primary boom through the entire range of motion to check for tight spots that could cause binding or scraping.

NOTICE Always maintain squareness between the primary boom outer and inner tubes.

Primary boom wear pad specification	
Wear pad thickness, minimum	0.41 inch 1 cm

C-2
Check the Free-wheel Configuration

Proper use of the free-wheel configuration is essential to safe machine operation. The free-wheel configuration is used primarily for towing. A machine configured to free-wheel without operator knowledge may cause death or serious injury and property damage.

⚠WARNING Collision hazard. Select a work site that is firm and level.

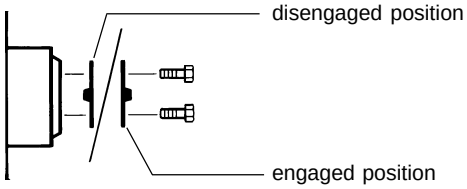
NOTICE Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

1 Chock the steer wheels to prevent the machine from rolling.

2 Center a lifting jack of ample capacity (15000 lbs / 6804 kg) under the drive chassis between the non-steer wheels.

3 Lift the wheels off the ground and then place blocks under the drive chassis for support.

4 Disengage the drive hubs by turning over the drive hub disconnect caps on each non-steer wheel hub.



5 Manually rotate each non-steer wheel.

⊙ Result: Each non-steer wheel should rotate with minimum effort.

6 Engage the drive hubs by turning over the drive hub disconnect caps.

7 Carefully remove the blocks, lower the machine and remove the jack.

⚠WARNING Collision hazard. Failure to engage the drive hubs could result in death or serious injury and property damage.

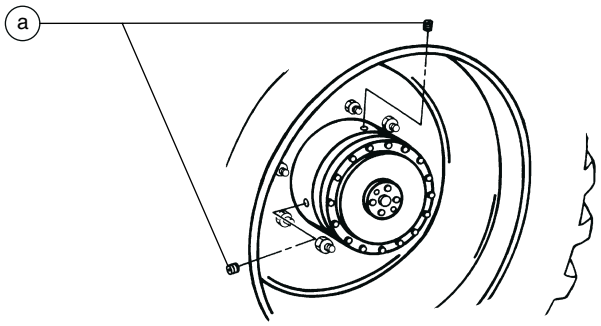
C-3
Replace the Drive Hub Oil

Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

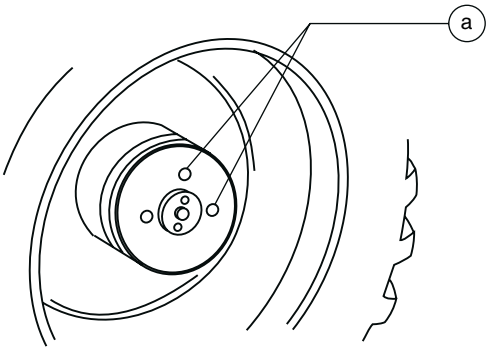
1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.

2 Remove both plugs and drain the oil.

3 Drive the machine until one plug is at the top and the other is at 90 degrees.



Before serial number 3447



After serial number 3446
a drive hub plugs

CHECKLIST C PROCEDURES

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side plug hole.

5 **Before serial number 3447:** Apply pipe thread sealant to the plugs. Install the plugs into the drive hub.

After serial number 3446: Install the plugs into the drive hub.

6 Repeat this procedure for each drive hub.

Drive hub oil capacity specification	
35:1 Drive Hubs	17 fl oz 0.5 liters
49:1 Drive Hubs	17fl oz 0.5 liters
62.5:1 Drive Hubs	25.6 fl oz 0.76 liters
Type:	SAE 90 multipurpose hypoid gear oil - API service classification GL5

C-4
Bleed the Platform Rotator

See Repair procedure 2-3, *How to Bleed the Platform Rotator.*

Checklist D Procedures

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 strainers may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the oil be changed more often.

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

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

Before serial number 2008:

1 Remove the reservoir mounting fasteners. Remove the reservoir from the power unit.

2 Completely drain the reservoir into a suitable container. See capacity specifications.

3 Remove the suction strainer and the magnet and then clean the reservoir with mild solvent.

4 Install the suction strainer.

5 Place the magnet inside the reservoir and install the reservoir onto the power unit.

6 Fill the reservoir with hydraulic oil until the level is within the top 2 inches / 5 cm of the hydraulic oil decal. Do not overfill.

7 Clean up any oil that may have spilled.

After serial number 2007:

1 Close the hydraulic shutoff valve located at the hydraulic tank.

CAUTION Component damage hazard. The machine must not be operated with the hydraulic tank shutoff valve in the CLOSED position or component damage will occur. If the tank valve is closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

2 Place a suitable container under the hydraulic tank. See capacity specifications.

CHECKLIST D PROCEDURES

3 Tag and disconnect and plug the hydraulic hose from the hydraulic tank shutoff valve.

⚠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 Open the valve on the hydraulic tank and drain the oil into a suitable container.

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

5 Tag, disconnect and plug the hydraulic hoses from the hydraulic tank filter. Cap the fittings on the filter.

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

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

6 Remove the hydraulic tank mounting fasteners. Remove the hydraulic tank from the machine.

7 Remove the tank lid retaining fasteners and remove the lid from the tank.

8 Clean the suction strainer using a mild solvent.

9 Rinse out the inside of the tank with a mild solvent.

10 Install the lid onto the hydraulic tank.

11 Install the hydraulic tank on the machine. Install the hydraulic tank mounting fasteners and torque to 8 ft-lbs / 10.8 Nm.

CAUTION Component damage hazard. The hydraulic tank may become damaged if the tank mounting fasteners are over tightened.

12 Install the hydraulic hoses.

13 Fill the tank with hydraulic oil until the fluid is within the FULL and ADD marks on the hydraulic tank. Do not overfill.

14 Clean up any oil that may have spilled. Properly discard of used oil.

15 Open the hydraulic tank shutoff valve.

CAUTION Component damage hazard. Be sure to open the hydraulic tank shutoff valve after installing the hydraulic tank.

Hydraulic oil type	Dexron equivalent
Hydraulic oil capacity	
Hydraulic tank	4 gallons 15.1 liters
Hydraulic system (including tank)	6 gallons 22.7 liters

D-2
Grease the Steer Axle Wheel Bearings

Maintaining the steer axle wheel bearings is essential for safe machine operation and service life. Operating the machine with loose or worn wheel bearings may cause an unsafe operating condition and continued use may result in component damage. Extremely wet or dirty conditions or regular steam cleaning and pressure washing of the machine may require that this procedure be performed more often.

1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer wheels.

3 Center a lifting jack under the steer axle and raise the machine 6 inches / 15 cm. Place blocks under the drive chassis for support.

4 Remove the lug nuts. Remove the tire and wheel assembly.

5 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.

⊙ Result: There should be no side to side or up and down movement.

Skip to step 9 if there is no movement.

6 Remove the dust cap from the hub, then remove the cotter pin from the castle nut.

NOTICE Always use a new cotter pin when installing a castle nut.

7 Tighten the castle nut to 35 ft-lbs / 47 Nm.

8 Check for wheel bearing wear by attempting to move the wheel hub side to side, then up and down.

⊙ Result: If there is side to side or up and down movement, proceed to step 9 to replace the old wheel bearings with new ones.

NOTICE When replacing a wheel bearing, both the inner and outer bearings, including the pressed-in races, must be replaced.

⊙ Result: If there is no side to side or up and down movement, proceed to step 10 to grease the wheel bearings.

9 Remove the dust cap from the hub, then remove the cotter pin from the castle nut.

NOTICE Always use a new cotter pin when installing a castle nut.

10 Remove the castle nut.

11 Pull the hub off of the spindle. The washer and outer bearing should fall loose from the hub.

12 Place the hub on a flat surface and gently pry the grease seal out of the hub. Remove the inner bearing.

13 Pack both bearings with clean, fresh grease.

14 Place the large inner bearing into the rear of the hub.

15 Install a new bearing grease seal into the hub by pressing it evenly into the hub until it is flush.

NOTICE Always replace the bearing grease seal when removing the hub.

Wheel hub grease seal	
Genie part number	45110

CHECKLIST D PROCEDURES

16 Slide the hub onto the spindle.

CAUTION Component damage hazard. Do not apply excessive force or damage to the lip of the seal may occur.

17 Place the outer bearing into the hub.

18 Install the washer and castle nut.

19 Tighten the castle nut to 35 ft-lbs / 47 Nm to seat the bearings.

20 Loosen the castle nut, then tighten to 8 ft-lbs / 11 Nm.

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

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

22 Install the dust cap.

23 Install the tire and wheel assembly.

24 Lower the machine and remove the blocks.

25 Torque the wheel lug nuts to 125 ft-lbs / 169.5 Nm.

26 Repeat steps 9 through 22 for the other wheel hub.

Tires and wheels	
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

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 Z-30/20N Operator's Manual*
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Boom in stowed position
  - · Turntable rotated with the boom between the non-steer wheels
  - · 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 reassemble, 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.

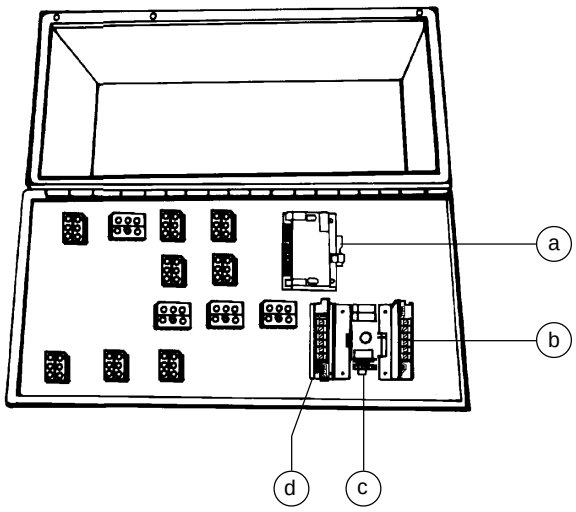
⊙ Indicates that a specific result is expected after performing a series of steps.

Platform Controls

1-1 Controllers

The drive joystick is connected to the drive motor controller, located under the drive chassis cover at the non-steer end of the machine. Maintaining the drive joystick and boom function speed controller at the proper settings is essential to safe machine operation. The drive joystick and boom function speed controller should operate smoothly and provide proportional speed control through its entire range of motion. For further information or assistance, contact the Genie Industries Service Department.

NOTICE The drive joystick is not adjustable after serial number 3446.



a boom function speed controller
b drive printed circuit board (before serial number 747)
c drive joystick
d brake printed circuit board (before serial number 747)

Drive Joystick Adjustments (before serial number 747)

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

NOTICE Do not adjust the drive joystick and boom function speed controller unless the static battery supply voltage is above 24V DC.

NOTICE This procedure will require the use of two multi-meters. One will be used for measuring amperage and the other for DC voltage.

NOTICE Individual trim potentiometers (trimpots) are used to adjust various output signals from the drive joystick and boom function speed controller. The trimpots will be identified as the following:

- Max out trim potentiometer (max out trimpot)
- High range trim potentiometer (max out trimpot)
- Lo range trim potentiometer (lo range trimpot)
- Dual range trim potentiometer (lo range trimpot)
- Threshold trim potentiometer (threshold trimpot)
- Ramp rate trim potentiometer (ramp rate trimpot)

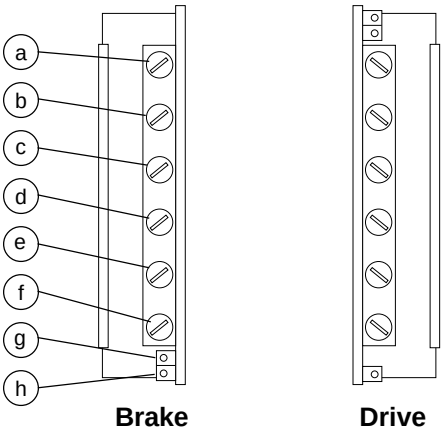
1 Block the steer wheels.

2 Center a lifting jack of ample capacity (15000 lbs / 6804 kg) under the drive chassis between the non-steer wheels.

PLATFORM CONTROLS

3 Lift the wheels off the ground 1 to 2 inches / 2.5 to 5 cm and place blocks under the chassis for support.

4 Open the platform control box lid and locate the brake printed circuit board.

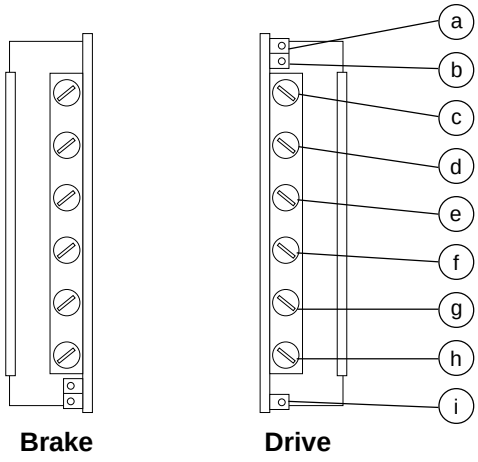


a not used
b not used
c terminal "X",
d terminal "-", ground
e terminal "+",
f terminal "A", proportional output
g threshold adjustable trimpot
h max-out adjustable trimpot

5 Disconnect the white/red wire from the "A" terminal on the brake printed circuit board.

6 Connect the negative lead from a multi-meter set to measure amperage to the white/red wire that was removed from the brake circuit board. Connect the positive lead of the multi-meter to the "A" terminal on the brake printed circuit board.

7 Locate the drive printed circuit board.



a high range adjustable trimpot
b threshold adjustable trimpot
c terminal "A", proportional output
d not used
e terminal "-", ground
f terminal (blank)
g not used
h terminal "R", activates max-out range
i dual (lo) range adjustable trimpot

8 Connect the positive lead from a multi-meter set to measure DC voltage to the "A" terminal on the drive joystick printed circuit board. Connect the negative lead of the multi-meter to ground.

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

PLATFORM CONTROLS

10 Set the threshold on the brake circuit board: Press down the foot switch and slowly move the drive joystick off center until you hear the pump motor turn ON. Adjust the amperage to 0.16A. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

11 Set the max out on the brake circuit board: Press down the foot switch and slowly move the drive joystick off center until you hear the pump motor turn OFF. Adjust the amperage to 0.91A. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

12 Set the threshold on the drive circuit board: Press down the foot switch and slowly move the drive joystick off center until you see 0.28A to 0.3A on the multi-meter. Adjust the threshold trimpot on the drive circuit board to 0.8V DC to 0.9V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

13 Set the max out on the drive circuit board: Press down the foot switch and slowly move the drive joystick all the way to the FORWARD position. Adjust the max out trimpot on the drive circuit board to 5V DC to 5.2V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

14 Raise the primary boom approximately 2 feet / 0.6 m.

15 Set the lo range on the drive circuit board: Press down the foot switch and move the drive joystick all the way to the FORWARD position. Adjust the lo range trimpot on the drive circuit board to 2.4V DC to 2.7V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

16 Lower the boom to the stowed position and remove the blocks from under the chassis.

17 Raise the primary boom approximately 2 feet / 0.6 m.

18 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart. Choose a reference point on the machine as a visual reference for use when crossing the start and finish lines.

19 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

20 Continue at full speed and note the time when your reference point on the machine crosses the finish line.

21 Adjust the lo range trimpot on the drive circuit board to achieve a 44 second drive speed time. Turn the lo range trimpot clockwise to decrease the time or counterclockwise to increase the time.

22 Lower the primary boom to the stowed position.

23 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

24 Continue at full speed and note the time when your reference point on the machine crosses the finish line.

25 Adjust high range trimpot on the drive circuit board to achieve the specified drive speed time (refer to table below). Turn the high range trimpot clockwise to decrease the time or counterclockwise to increase the time.

Drive controller specifications	
Brake board	
Threshold	0.16A when pump motor turns ON
Max-out	0.91A when pump motor turns OFF
Drive board	
Threshold	0.8V DC to 0.9V DC when amperage output is 0.28A to 0.3A
Max-out	5V DC to 5.2V DC when drive joystick is in full forward position
Lo range	2.4V DC to 2.7V DC when drive joystick is in full forward position
Drive speed, maximum	
Stowed position (before serial number 3447) 35:1 drive hubs	3.1 mph 5 km/h 40ft / 8.8 sec 12.2 m / 8.8 sec
Stowed position (before serial number 3447) 49:1 drive hubs	2.8 mph 4.5 km/h 40 ft / 9.7 sec 12.2 m / 9.7 sec
Boom raised or extended	0.6 mph 1 km/h 40 ft / 44 sec 12.2 m / 44 sec

Drive Joystick Adjustments (from serial number 747 to 3446)

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

NOTICE Do not adjust the drive joystick and boom function speed controller unless the static battery supply voltage is above 24V DC.

NOTICE This procedure will require the use of two multi-meters. One will be used for measuring amperage and the other for DC voltage.

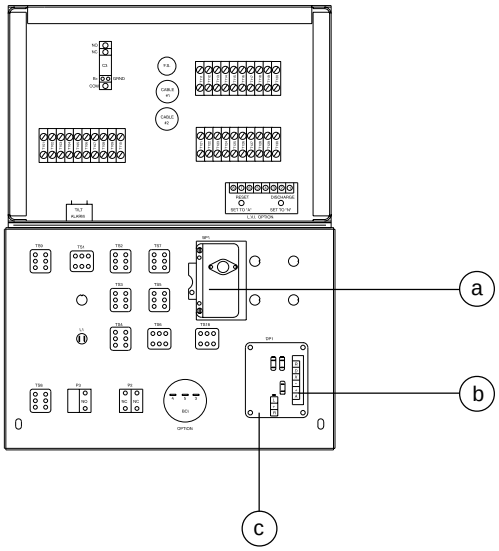
1 Block the steer wheels.

2 Center a lifting jack of ample capacity (15000 lbs / 6804 kg) under the drive chassis between the non-steer wheels.

3 Lift the wheels off the ground 1 to 2 inches / 2.5 to 5 cm and place blocks under the chassis for support.

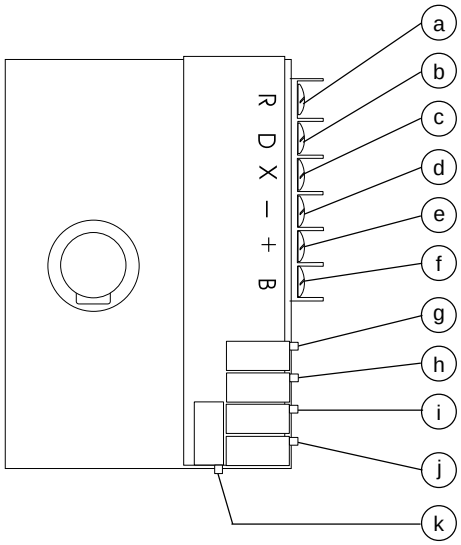
PLATFORM CONTROLS

4 Open the platform control box lid and locate the printed circuit board on the drive joystick.



a boom function speed controller
b drive and brake printed circuit board
c drive joystick

5 Disconnect the white/red wire from the "B" terminal on the printed circuit board.



a terminal "R", activates max out range
b terminal "D", drive output
c terminal "X"
d terminal "-", ground
e terminal "+", positive
f terminal "B", brake output
g drive lo range trimpot
h drive threshold trimpot
i drive hi range trimpot
j brake threshold trimpot
k brake max-out trimpot

6 Connect the negative lead from a multi-meter set to measure amperage to the white/red wire that was removed from the circuit board. Connect the positive lead of the mult-meter to the "B" terminal on the printed circuit board.

7 Connect the positive lead from a multi-meter set to read DC voltage to the "D" terminal on the drive controller printed circuit board. Connect the negative lead to ground.

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

9 Set the brake threshold on the circuit board: Press down the foot switch and slowly move the drive joystick off center until you hear the pump motor turn ON. Adjust the amperage to 0.16A. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

10 Set the brake max out on the circuit board: Press down the foot switch and slowly move the drive joystick off center until you hear the pump motor turn OFF. Adjust the amperage to 0.91A. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

11 Set the drive threshold on the circuit board: Press down the foot switch and slowly move the drive joystick off center until you see 0.28A to 0.3A on the multi-meter. Hold the drive joystick in this position and adjust the drive threshold trimpot on the circuit board to 0.8V DC to 0.9V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

12 Set the drive max out on the circuit board: Press down the foot switch and slowly move the drive joystick all the way to the FORWARD position. Adjust the max out trimpot on the circuit board to 5V DC to 5.2V DC. Turn the max out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

13 Raise the primary boom approximately 2 feet / 0.6 m to activate the drive limit switch.

14 Set the drive lo range on the circuit board: Press down the foot switch and move the drive joystick all the way in the direction indicated by the blue arrow on the platform control panel and on the chassis. Adjust the drive lo range trimpot on the circuit board to 2.4V DC to 2.7V DC. Turn the lo range trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

15 Lower the boom to the stowed position and remove the blocks from under the chassis.

16 Raise the primary boom off the drive limit switch.

17 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart. Choose a reference point on the machine as a visual reference for use when crossing the start and finish lines.

18 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

19 Continue at full speed and note the time when your reference point on the machine crosses the finish line.

20 Adjust the drive lo range trimpot on the circuit board to achieve a 44 second drive speed time. Turn the lo range trimpot clockwise to decrease the time or counterclockwise to increase the time.

PLATFORM CONTROLS

21 Lower the primary boom to the stowed position.

22 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

23 Continue at full speed and note the time when your reference point on the machine crosses the finish line.

24 Adjust drive max out trimpot on the circuit board to achieve a 10 second drive speed time. Turn the max out trimpot clockwise to decrease the time or counterclockwise to increase the time. Refer to the chart below.

Drive joystick specifications	
Brake	
Threshold	0.16A when pump motor turns ON
Max out	0.91A when pump motor turns OFF
Drive	
Threshold	0.8V DC to 0.9V DC when amperage output is 0.28A to 0.3A
Max out	5V DC to 5.2V DC when drive joystick is in full forward position
Lo range	2.4 to 2.7V DC when drive joystick is in full forward position

Drive speed, maximum	
Stowed position (before serial number 3447) 35:1 drive hubs	3.1 mph 5 km/h 40ft / 8.8 sec 12.2 m / 8.8 sec
Stowed position (before serial number 3447) 49:1 drive hubs	2.8 mph 4.5 km/h 40 ft / 9.7 sec 12.2 m / 9.7 sec
Boom raised or extended	0.6 mph 1 km/h 40 ft / 44 sec 12.2 m / 44 sec

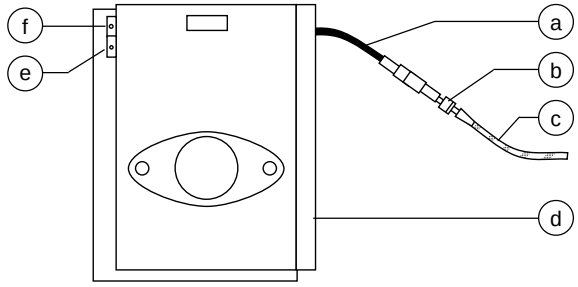
Boom Function Speed Controller Adjustments (before serial number 3750)

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

NOTICE Do not adjust the boom function speed controller unless the static battery supply voltage is above 24V DC.

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

2 Open the platform control box lid and locate the boom function speed controller.



a black wire
b diode
c white/red wire
d boom function speed controller
e threshold trimpot
f max out trimpot

3 Locate the diode between the black wire from the boom function speed controller and the white/red wire. Disconnect the white/red wire from the diode on the black wire.

4 Connect the negative lead from a multi-meter set to measure amperage to the wire connector of the white/red wire. Connect the positive lead of the multi-meter to the diode on the black wire.

5 Turn the boom function speed controller to the CREEP position.

6 Set the threshold: Press down the foot switch and move the primary boom toggle switch to the DOWN position. Adjust the amperage to 0 to 0.12A. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

7 Turn the boom function speed controller to the 9 position.

8 Set the max out: Press down the foot switch and move the primary boom toggle switch to the DOWN position. Adjust the amperage to 0.72A to 0.75A. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

Boom function speed controller specifications	
Threshold (controller turned to "CREEP")	0 to 0.12A
Max out (controller turned to "9")	0.72A to 0.75A

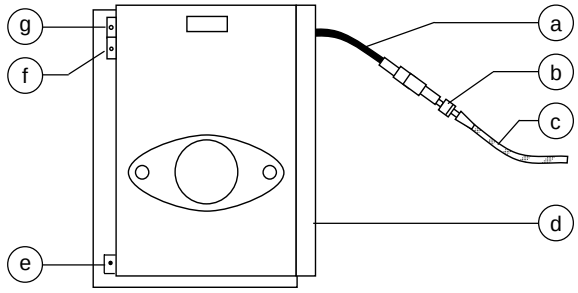
Boom Function Speed Controller Adjustments (after serial number 3749)

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

NOTICE Do not adjust the boom function speed controller unless the static battery supply voltage is above 24V DC.

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

2 Open the platform control box lid and locate the boom function speed controller.



a black wire
b diode
c white/red wire
d boom function speed controller
e ramp rate trimpot
f threshold trimpot
g max out trimpot

PLATFORM CONTROLS

3 Locate the diode between the black wire from the boom function speed controller and the white/red wire. Disconnect the white/red wire from the diode on the black wire.

4 Connect the negative lead from a multi-meter set to measure amperage to the wire connector of the white/red wire. Connect the positive lead of the multi-meter to the diode on the black wire.

5 Turn the boom function speed controller to the CREEP position.

6 Set the threshold: Press down the foot switch and move the primary boom toggle switch to the up position. Adjust the amperage to 0.28A. Turn the threshold trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

7 Turn the boom function speed controller to the 9 position.

8 Set the max out: Press down the foot switch and move the primary boom toggle switch to the DOWN position. Adjust the amperage to 0.65A. Turn the max out trimpot adjustment screw clockwise to increase the amperage or counterclockwise to decrease the amperage.

9 Start a timer and simultaneously press down the foot switch and move the primary boom toggle switch in the DOWN direction. Note how long it takes to reach 0.65A.

10 Set the ramp rate: Turn the ramp rate trimpot to obtain a 2 second delay from 0 to 0.65A. Turn the trimpot clockwise to increase the time or counterclockwise to decrease the time.

11 Disconnect the leads from the multi-meter and connect the white/red wire to the diode on the black wire.

Boom function speed controller specifications	
Threshold (controller turned to "CREEP")	0.28A
Max out (controller turned to "9")	0.65A
Ramp rate	2 seconds

1-2 Diodes

How to Test a Diode

1 Connect the leads from an ohmmeter to each end of the diode. Note the ohms.

2 Reverse the leads from the ohmmeter. The resistance of the diode should be high in one direction and low in the other direction.

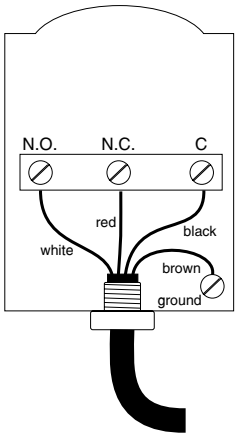
1-3 Foot Switch

How to Test the Foot Switch

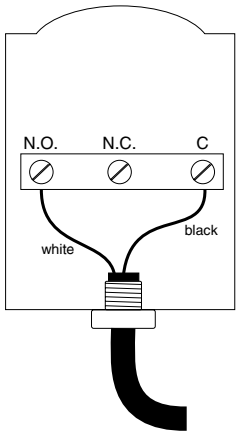
1 **Before serial number 4083:** Turn the key switch to the OFF position and separate the foot switch wiring quick disconnect plug from the platform toeboard.

After serial number 4082: Remove the platform control box lid retaining fasteners. Open the platform control box and locate the foot switch wiring.

2 Do not press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.



Before serial number 4083



After serial number 4082

Test	Desired result
red to black	continuity (zero Ω)
red to white	no continuity (infinite Ω)
black to white	no continuity (infinite Ω)

NOTICE

Before serial number 4083: Do not use the color of the connector as a guide for these tests. Use the actual wire color to identify which connector to use for testing.

3 Press down the foot switch. Connect the leads from an ohmmeter or continuity tester to each wire combination listed below and check for continuity.

Test	Desired result
red to black	no continuity (infinite Ω)
red to white	no continuity (infinite Ω)
black to white	continuity (zero Ω)

PLATFORM CONTROLS

1-4 Toggle Switches

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

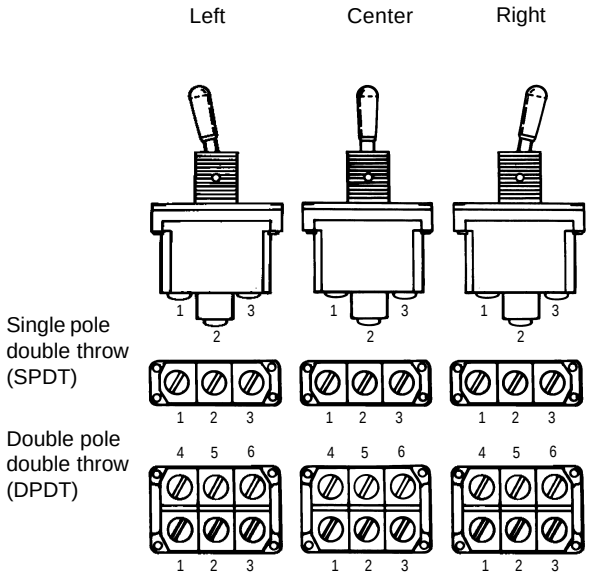
How to Test a Toggle Switch

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

NOTICE This procedure covers fundamental toggle 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.

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



Test	Desired result
Left position	
terminal 1 to 2, 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 2 to 3	continuity (zero Ω)
terminal 2 to 4, 5 and 6	no continuity (infinite Ω)
terminal 3 to 4, 5 and 6	no continuity (infinite Ω)
terminal 4 to 5 and 6	no continuity (infinite Ω)
terminal 5 to 6	continuity (zero Ω)
Center position	There are no terminal combinations that will produce continuity (infinite Ω)
Right position	
terminal 1 to 2	continuity (zero Ω)
terminal 1 to 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 2 to 3, 4, 5 and 6	no continuity (infinite Ω)
terminal 3 to 4, 5 and 6	no continuity (infinite Ω)
terminal 4 to 5	continuity (zero Ω)
terminal 4 to 6	no continuity (infinite Ω)
terminal 5 to 6	no continuity (infinite Ω)

Platform Components

2-1 Platform

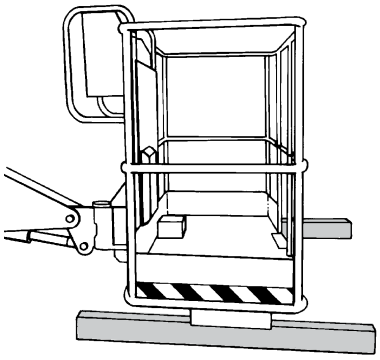
How to Remove the Platform (before serial number 4416)

1 Separate the foot switch wiring quick disconnect plug from the platform toeboard.

2 Remove the platform control box mounting fasteners and lower the control box.

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

3 Place blocks under the platform for support and carefully rest the platform on the blocks.



4 Remove the platform mounting fasteners and remove the platform.

CAUTION Component damage hazard. Platform can be damaged if the mounting fasteners are overtightened.

How to Remove the Platform (after serial number 4415)

1 Remove the fasteners from the power to platform cover.

2 Remove the power to platform box from the platform. Do not disconnect the wiring.

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

3 Remove the platform control box lid retaining fasteners. Open the control box lid.

4 Tag and disconnect the black foot switch wire from the red Emergency Stop button that originates at the foot switch.

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

5 Tag and disconnect the white foot switch wire from terminal #6 on the drive joystick.

6 Loosen the squeeze connector for the foot switch wiring and pull the wiring out through the bottom of the squeeze connector.

7 Remove the platform control box mounting fasteners and lower the control box.

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

8 Remove the platform mounting fasteners and carefully remove the platform.

CAUTION Component damage hazard. Platform can be damaged if the mounting fasteners are overtightened.

PLATFORM COMPONENTS

2-2 Platform Leveling Slave Cylinder

The slave cylinder and the rotator pivot are the two primary supports for the platform. The slave cylinder keeps the platform level through the entire range of primary boom motion. It operates in a closed loop hydraulic circuit with the master cylinder. The slave cylinder is equipped with counterbalance valves to prevent platform movement in the event of a hydraulic line failure.

How to Remove the Slave Cylinder

NOTICE Before cylinder removal is considered, bleed the slave cylinder to be sure there is no air in the closed loop hydraulic circuit.

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 Extend the boom until the slave cylinder barrel-end pivot pin is accessible.

2 Raise the boom slightly and place blocks under the platform for support. Lower the boom until the platform is resting on the blocks.

3 Remove the pin retaining fastener from the rod-end pivot pin. Do not remove the pin.

4 Remove the external snap ring from the barrel-end pivot pin.

5 Place a block of wood under the barrel of the slave cylinder.

6 Use a soft metal drift to remove the rod-end pivot pin.

7 Use a soft metal drift to drive out the barrel-end pivot pin.

8 Carefully pull the cylinder out of the boom.

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

9 Tag and disconnect the hydraulic hoses from the slave cylinder and connect them together with a connector. 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.

How to Bleed the Slave Cylinder

1 Raise the jib boom to a horizontal position.

2 Move the platform level toggle switch up and down through two platform leveling cycles to remove any air that might be in the system.

2-3 Platform Rotator

The platform rotator is a hydraulically activated helical gear assembly used to rotate the platform 180 degrees.

How to Remove the Platform Rotator

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

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

2 Tag, disconnect and plug the hydraulic hoses from the platform rotate manifold.

⚠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 Support the platform mounting weldment. Do not apply any lifting pressure.

4 Remove the six mounting bolts from the platform mounting weldment. Remove the center bolt and slide the platform mounting weldment off of the platform rotator.

5 Support the platform rotator with a suitable lifting device. Do not apply any lifting pressure.

6 Remove the pin retaining fasteners from the jib boom and leveling links to platform rotator pivot pins. Do not remove the pins.

7 Support the jib boom, jib boom cylinder and leveling links with an overhead crane.

8 Use a soft metal drift to drive both pins out, then remove the platform rotator from the machine.

⚠CAUTION Crushing hazard. The platform rotator will fall when the pins are removed if not properly supported.

How to Bleed the Platform Rotator

NOTICE This procedure will require two people.

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

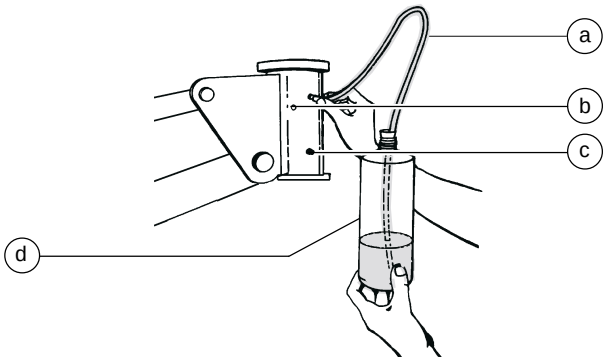
2 **Before serial number 747:** Move the primary boom toggle switch in the up direction until the platform is approximately 6 feet / 1.8 m off the ground.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the up direction until the platform is approximately 6 feet / 1.8 m off the ground.

3 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any discharge. Open the top bleed valve, but do not remove it.

PLATFORM COMPONENTS

4 **Before serial number 747:** Move and hold the platform rotate toggle switch to the right for approximately 5 seconds, then release it. Repeat three times.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the platform rotate toggle switch to the right for approximately 5 seconds, then release it. Repeat three times.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.



a clear hose
b top bleed valve
c bottom bleed valve
d container

5 **Before serial number 747:** Move and hold the platform rotate toggle switch to the left for approximately 5 seconds, then release it. Repeat three times.
After serial number 746: Move and hold the function enable switch to either side and move and hold the platform rotate toggle switch to the left for approximately 5 seconds, then release it. Repeat three times.

6 Fully rotate the platform to the left and continue holding the platform rotate toggle switch until air stops coming out of the bleed valve. Immediately release the platform rotate toggle switch and close the bleed valve.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.

7 Rotate the platform to the right until the platform is centered.

8 Connect the clear hose to the bottom bleed valve and open the valve.

9 Rotate the platform to the right and continue holding the platform rotate toggle switch until air stops coming out of the bleed valve.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.

10 Close the bleed valve and remove the hose.

11 Rotate the platform full left and right and inspect the bleed valves for leaks.

12 Turn the key switch to the OFF position and clean up any hydraulic oil that may have spilled.

Jib Boom Components

3-1
Jib Boom

How to Remove the Jib Boom

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

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

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

2 Remove the platform mounting weldment and the platform rotator. See 2-3, *How to Remove the Platform Rotator*.

3 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the jib boom lift 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.

4 Remove the cable cover from the side of the jib boom.

5 Remove the mounting fasteners from the jib boom/platform rotate manifold. Do not remove the hoses.

CAUTION Component damage hazard. Hoses and cables can be damaged if they are twisted or kinked.

6 Attach a lifting strap from an overhead crane to the jib boom.

7 **Models without rotating jib boom:** Remove the pin retaining fastener from the jib boom pivot pin at the jib boom bellcrank. Use a soft metal drift to remove the pin, then remove the jib boom from the jib boom bellcrank.

⚠WARNING Crushing hazard. The jib boom will fall when the pin is removed if not properly supported by the overhead crane.

Models with rotating jib boom: Remove the pin retaining fastener from the jib boom pivot pin at the jib boom rotator. Use a soft metal drift to remove the pin, then remove the jib boom from the jib boom rotator.

⚠WARNING Crushing hazard. The jib boom will fall when the pin is removed if not properly supported by the overhead crane.

8 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.

JIB BOOM COMPONENTS

9 **Models without rotating jib boom:** Remove both of the jib boom leveling links from the bell crank.

Models with rotating jib boom: Remove both of the jib boom leveling links from the jib boom rotator.

10 Attach a lifting strap from an overhead crane to the rod-end of the jib boom lift cylinder.

11 **Models without rotating jib boom:** Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the bell crank.

Models with rotating jib boom: Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the jib boom rotator.

⚠WARNING Crushing hazard. The jib boom lift cylinder will fall when the pin is removed if not properly supported by the overhead crane.

3-2
Jib Boom Bell Crank (models without rotating jib boom)

How to Remove the Jib Boom Bell Crank

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

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

1 Remove the Jib Boom, See 3-1, *How to Remove the Jib Boom.*

2 Support and secure the jib boom bell crank to an appropriate lifting device.

3 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin. Do not remove the pin.

4 Remove the pin retaining fasteners from the jib boom bell crank at the extension boom. Use a soft metal drift to remove the pin.

5 Use a soft metal drift to remove the slave cylinder rod-end pivot pin.

6 Remove the jib boom bell crank from the extension boom.

⚠WARNING Crushing hazard. The jib boom bell crank could become unbalanced and fall when the pins are removed if not properly supported and secured to the lifting device.

3-3
Jib Boom Rotator (models with rotating jib boom)

How to Remove the Jib Boom Rotator

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

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

1 Remove the Jib Boom, See 3-1, *How to Remove the Jib Boom.*

2 Tag, disconnect and plug the jib boom rotator hydraulic hoses. Cap the fittings on the rotator.

⚠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 Support and secure the jib boom rotator to an appropriate lifting device.

4 Remove the eight mounting bolts from the jib boom rotator mount.

5 Remove the center bolt. Carefully remove the jib boom rotator from the machine.

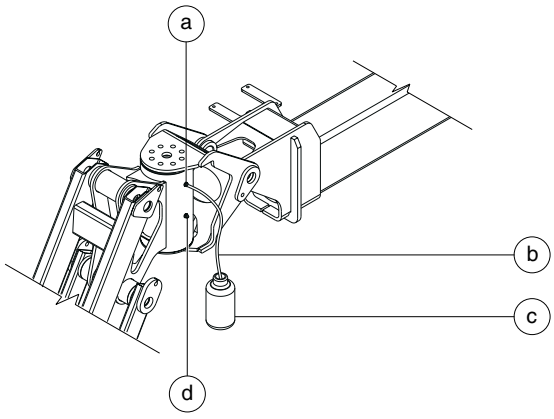
⚠WARNING Crushing hazard. The jib boom rotator could become unbalanced and fall when removed from the machine if not properly supported and secured to the lifting device.

How to Bleed the Jib Boom Rotator

NOTICE This procedure will require two people.

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

2 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any discharge. Open the top bleed valve, but do not remove it.



a top bleed valve
b clear hose
c container
d bottom bleed valve

JIB BOOM COMPONENTS

3 Move and hold the function enable toggle switch to either side and move and hold the jib boom rotate toggle switch to the right for approximately 5 seconds, then release it. Repeat three times.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.

4 Move and hold the function enable switch to either side and move and hold the jib boom rotate toggle switch to the left for approximately 5 seconds, then release it. Repeat three times.

5 Fully rotate the jib boom to the left and continue holding the jib boom rotate toggle switch until air stops coming out of the bleed valve. Immediately release the platform rotate toggle switch and close the bleed valve.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.

6 Rotate the jib boom to the right until the jib boom is centered.

7 Connect the clear hose to the bottom bleed valve and open the valve.

8 Rotate the jib boom to the right and continue holding the platform rotate toggle switch until air stops coming out of the bleed valve.

⚠WARNING Crushing hazard. Keep hands and head clear of the jib boom during rotation.

9 Close the bleed valve and remove the hose.

10 Rotate the jib boom full left and right and inspect the bleed valves for leaks.

⚠WARNING Crushing hazard. Keep hands and head clear of the platform pivot weldment during rotation.

11 Turn the key switch to the OFF position and clean up any hydraulic oil that may have spilled.

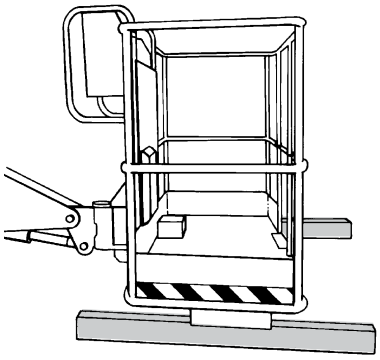
3-4
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

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

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 jib boom slightly and place blocks under the platform mounting weldment for support. Lower the jib boom until the platform is resting on the blocks.



2 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. 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 jib boom lift cylinder rod-end pivot pin. Do not remove the pin.

4 Use a soft metal drift to tap the rod-end pivot pin half way out and lower one of the leveling links to the ground. Tap the pin the other direction and lower the opposite leveling link. Do not remove the pin.

5 Attach a lifting strap from an overhead crane to the rod end of the jib boom lift cylinder.

6 Remove the pin retaining fasteners from the jib boom lift cylinder barrel-end pivot pin. Use a soft metal drift to remove the barrel-end pivot pin.

7 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The jib boom lift cylinder could fall when the pins are removed if not properly supported by the overhead crane.

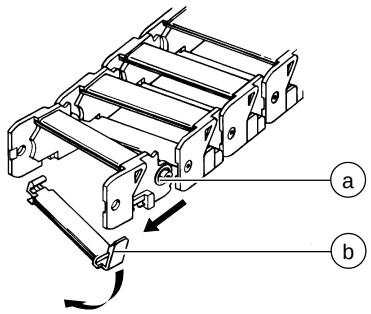
Primary Boom Components

4-1
Plastic Cable Track

The primary boom cable track guides the cables and hoses running up the boom. It can be repaired link by link without removing the cables and hoses that run through it. Removing the entire primary boom cable track is only necessary when performing major repairs that involve removing the primary boom.

How to Repair the Plastic Cable Track

CAUTION Component damage hazard. The primary boom cable track can be damaged if it is twisted.



a link separation point
b lower clip

1 Use a slotted screwdriver to pry down on the lower clip.

2 Repeat step 1 for each link.

3 To remove a single link, open the lower clip. Use a screwdriver to pry the link to the side.

4-2
Primary Boom

How to Shim the Primary Boom

NOTICE Measure each wear pad. Replace the pad if it is less than 0.41 inch / 1 cm thick. If the pad is more than 0.41 inch / 1 cm thick, perform the following procedure.

1 Extend the boom until the wear pads are accessible.

2 Loosen the wear pad mounting fasteners.

3 Install the new shims under the wear pad to obtain zero clearance and zero drag.

4 Tighten the mounting fasteners.

5 Extend and retract the boom through an entire cycle. Check for tight spots that could cause scraping or binding.

NOTICE Always maintain squareness between the outer and inner boom tubes.

How to Remove the Primary Boom

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

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

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

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

2 Remove the platform rotator. See 2-3, *How to Remove the Platform Rotator*.

3 Remove the jib boom. See 3-1, *How to Remove the Jib Boom*.

4 **Models without rotating jib boom:** Remove the jib boom bellcrank. See 3-2, *How to Remove the Jib Boom Bellcrank*.

Models with rotating jib boom: Remove the jib boom rotator. See 3-3, *How to Remove the Jib Boom Rotator*.

5 Tag, disconnect and cap the slave cylinder hydraulic hoses at the union. Plug the hoses from the slave cylinder.

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

6 Remove the upper cable track mounting fasteners from the platform end of the boom.

7 Remove the cable track mounting fasteners, then remove the cable track from the boom and lay it flat on the ground.

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

8 Raise the secondary boom until the primary boom lift cylinder rod-end pivot pin is accessible above the mid-pivot weldment.

9 Remove all the hose and cable clamps from the underside of the primary boom and at the pivot end of the primary boom.

10 Attach a lifting strap of ample capacity from an overhead 5 ton crane to the primary boom.

11 Locate the cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

12 Open the platform conrol box.

PRIMARY BOOM COMPONENTS

13 Tag and disconnect each wire from the cables in the platform control box.

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

14 Pull all the cables out of the platform control box.

15 Remove the front counterweight cover.

16 Remove the extension boom drive limit switch from the side of the primary boom at the pivot end. Do not disconnect the wiring.

17 Pull all the electrical cables and hydraulic hoses out of the plastic cable track.

18 Remove the pin retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pivot pin. Pull the cylinder back and secure it from moving.

19 Tag, disconnect and plug the extension cylinder hydraulic hoses. 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.

20 Attach a lifting strap from an overhead crane to the primary boom lift cylinder.

21 Place 2 x 4 x 18 inch / 5 x 10 x 46 cm support blocks under the cylinder, across the secondary boom.

22 Remove the pin retaining fastener from the primary boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The primary boom lift cylinder will fall when it is removed from the machine if not properly supported.

23 Lower the rod end of the primary boom lift cylinder onto support blocks. Protect the cylinder rod from damage.

24 Remove the pin retaining fastener from the primary boom pivot pin.

25 Remove the primary boom pivot pin with a soft metal drift. Carefully remove the primary boom assembly from the machine.

⚠WARNING Crushing hazard. The primary boom assembly could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

How to Disassemble the Primary Boom

NOTICE Complete disassembly of the boom is only necessary if the outer or inner boom tubes must be replaced. The extension cylinder can be removed without completely disassembling the boom. See 4-4, *How to Remove the Extension Cylinder*.

1 Remove the boom. See 4-2, *How to Remove the Primary Boom*.

2 Place blocks under the extension cylinder for support.

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

4 Remove and label the location of the wear pads from the top side of the boom tube at the platform end of the boom.

NOTICE Pay careful attention to the location and amount of shims used with each wear pad.

5 Support the extension tube with an overhead crane at the platform end of the boom.

⚠WARNING Crushing hazard. The boom extension tube will fall when they are removed from the boom if they are not properly supported.

6 Support and slide the extension tube out of the primary boom tube. Place the extension tube on blocks for support.

NOTICE During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

7 **Models without rotating jib boom:** Support the jib boom bellcrank with a suitable lifting device.

Models with rotating jib boom: Support the jib boom rotator mount with a suitable lifting device.

8 Remove the pin retaining fasteners from the slave cylinder rod-end pivot pin.

9 Use a soft metal drift to remove the slave cylinder rod-end pivot pin.

10 **Models without rotating jib boom:** Remove the pin retaining fasteners from the bellcrank pivot pin. Use a soft metal drift to remove the pin and remove the bellcrank from the extension boom tube.

Models with rotating jib boom: Remove the pin retaining fasteners from the jib boom rotator mountbellcrank pivot pin. Use a soft metal drift to remove the pin and remove the jib boom rotator mount from the extension boom tube.

⚠WARNING Crushing hazard. The bellcrank or jib boom rotator mount could fall when removed from the extension boom if not properly supported.

11 Remove the external snap rings from the slave cylinder barrel-end pivot pin.

12 Use a soft metal drift and drive the slave cylinder barrel-end pivot pin out.

13 Remove the slave cylinder from the primary extension boom tube.

14 Remove the external snap rings from the extension cylinder rod-end pivot pins at the platform end of the extension tube. Use a soft metal drift to remove the pins.

15 Support and slide the extension cylinder out of the pivot end of the boom extension tube. Place the extension cylinder on blocks for support.

NOTICE During removal, the overhead crane strap will need to be carefully adjusted for proper balancing.

16 Remove and label the wear pads from the extension cylinder.

NOTICE Pay careful attention to the location of each wear pad.

4-3 Primary Boom Lift Cylinder

The primary boom lift cylinder raises and lowers the primary boom. The primary boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Primary Boom Lift Cylinder

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

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

1 Raise the secondary boom enough to access the primary boom lift cylinder barrel-end pivot pin.

2 Raise the primary boom enough to access the primary boom lift cylinder rod-end pivot pin.

3 Place a block of wood across the upper secondary boom to support the cylinder when the rod-end pin is removed. Support the primary boom lift cylinder with a suitable lifting device.

4 Attach an overhead crane to the primary boom at the platform end for support. Do not lift it.

5 Remove the front counterweight cover fasteners. Remove the front counterweight cover from the machine.

6 Place a block of wood between the counterweight plate on the leveling link and the cross member of the upper secondary boom. Carefully lower the secondary boom onto the block.

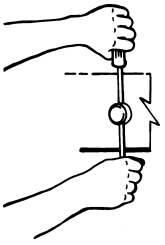
⚠WARNING Crushing hazard. Keep hands away from the block and all moving parts when lowering the secondary boom onto the block.

7 Remove the pin retaining fasteners from the primary boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

8 Lower the rod end of the cylinder onto the blocks that were placed on the upper secondary boom.

9 Remove the pin retaining fastener from the ground control side upper secondary leveling link pivot pin at the upper pivot (same side of machine as the primary boom lift cylinder barrel-end pivot pin retainer).

10 Place a rod through the upper secondary leveling link pivot pin at the upper pivot and twist to remove the pin.



11 Swing the leveling link up out of the way and secure it from moving.

12 Tag, disconnect and plug the primary boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

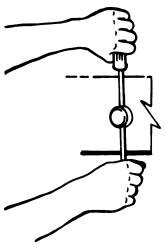
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

13 Support the barrel end of the primary boom lift cylinder with straps or ropes to restrict it from swinging freely.

14 Remove the pin retaining fastener from the primary boom lift cylinder barrel-end pivot pin. Do not remove the pivot pin.

15 Place a rod through the barrel-end pivot pin and twist to remove the pin.

⚠CAUTION Crushing hazard. When the barrel-end pivot pin is removed, the primary boom lift cylinder will fall if not properly supported.



PRIMARY BOOM COMPONENTS

16 Attach an overhead crane or similar lifting device to the lug on the rod-end of the primary boom lift cylinder. Carefully loosen the straps and allow the primary boom lift cylinder to slowly swing down.

17 Carefully remove the cylinder from the machine.

⚠CAUTION Crushing hazard. The primary boom lift cylinder will fall if not properly supported when it is removed from the machine.

4-4 Extension Cylinder

The extension cylinder extends and retracts the primary boom extension tube. The extension cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Extension Cylinder

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

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

1 Raise the primary boom to the horizontal position. Extend the boom 3 to 4 feet / 0.9 to 1.2 m until the extension cylinder rod-end pivot pins are accessible.

2 Remove the external snap rings from the extension cylinder rod-end pivot pins. Use a soft metal drift to remove the pins.

3 Remove the front counterweight cover fasteners. Remove the front counterweight cover from the machine.

4 Raise the secondary boom until the master cylinder rod-end pivot pin is accessible.

5 Remove the primary boom extend drive limit switch from the pivot end of the primary boom. Do not disconnect the wiring.

6 Remove the retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

7 Manually retract the master cylinder and push it toward the platform end of the boom to obtain enough clearance for extension cylinder removal.

8 Tag, disconnect and plug the extension cylinder hydraulic hoses. 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.

9 Remove the retaining fastener from the extension cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin.

10 Carefully pull out and properly support the extension cylinder from the primary boom.

⚠WARNING Crushing hazard. The cylinder will fall if not properly supported when it is pulled out of the extension tube.

NOTICE To make installation of the extension cylinder easier, be sure that the cylinder rod is extended 3 to 4 feet / 0.9 to 1.2 m.

PRIMARY BOOM COMPONENTS

4-5 Platform Leveling Master Cylinder

The platform leveling master cylinder acts as a pump for the slave cylinder. It is part of the closed-loop hydraulic circuit that keeps the platform level through the entire range of primary boom motion. The platform leveling master cylinder is located inside the upper mid-pivot at the pivot end of the primary boom.

How to Remove the Platform Leveling Master Cylinder

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

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

NOTICE Before cylinder removal is considered, bleed the cylinder to be sure that there is no air in the closed loop. See 2-2, *How to Bleed the Slave Cylinder.*

1 Remove the rear counterweight cover.

2 Raise the secondary boom until the master cylinder barrel-end pivot pin is above the turntable counterweights.

3 Raise the primary boom until the master cylinder rod-end pivot pin is accessible.

4 Attach an overhead crane to the pivot end of the primary boom. Do not lift it.

5 Secure the upper secondary boom to the pivot end of the primary boom with a strap (this will prevent the upper secondary boom from falling when the master cylinder barrel-end pivot pin is removed from the cylinder).

6 Tag, disconnect and plug the master cylinder hydraulic hoses. 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.

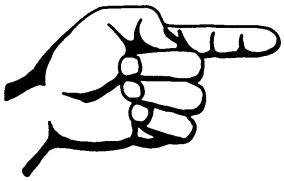
7 Attach a lifting strap from an overhead crane to the lug on the rod end of the master cylinder, then secure the strap to the primary boom (use this strap to lower the master cylinder out of the upper mid-pivot).

8 Remove the pin retaining fastener from the master cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

9 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin. Use a soft metal drift to remove the pin from the cylinder. Do not remove the pin from the upper mid-pivot. Push the pin to one side, only far enough to remove the cylinder. The pin should remain in one side of the upper secondary boom and upper mid-pivot.

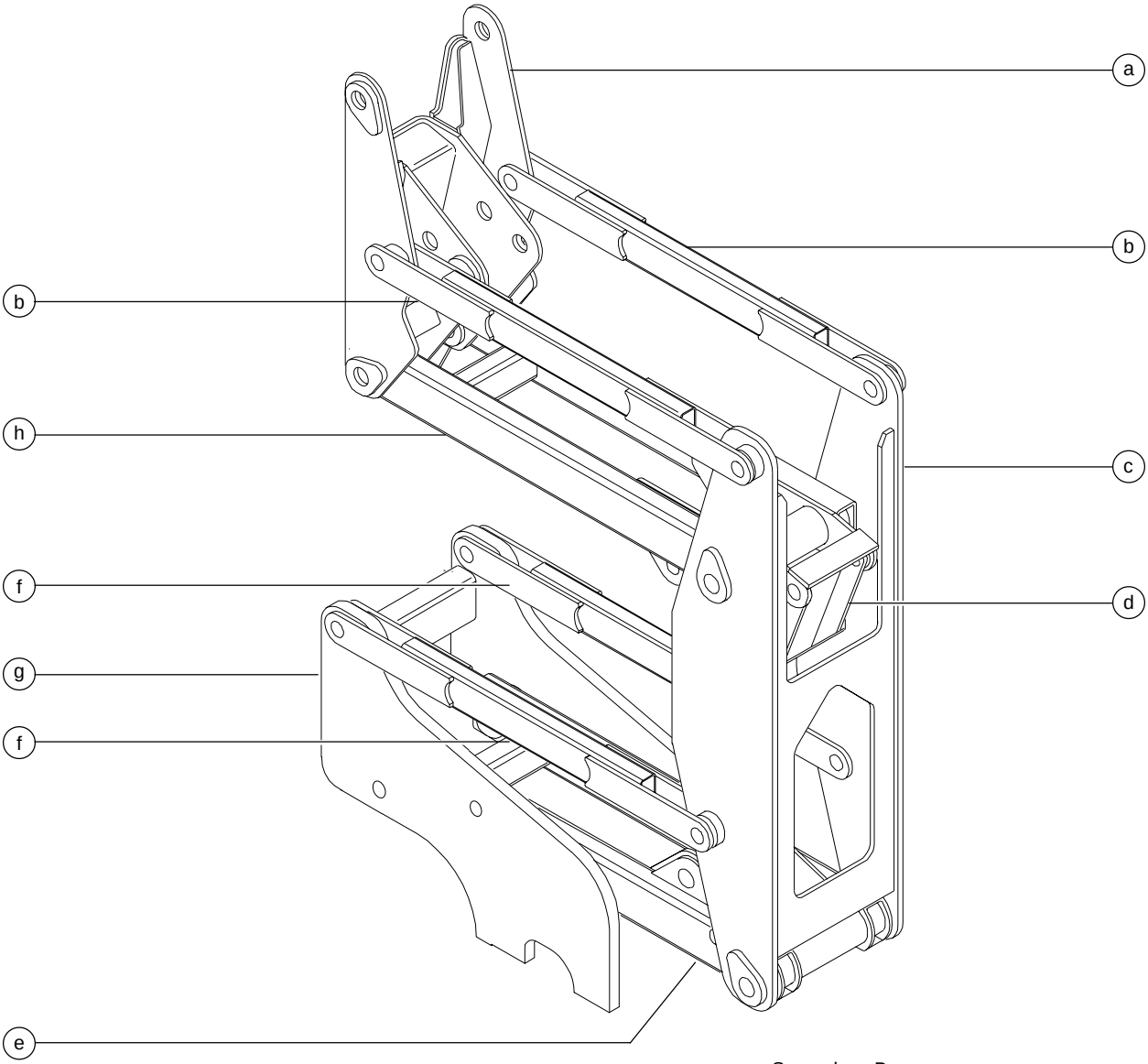
⚠WARNING Crushing Hazard. The upper secondary boom and the upper mid-pivot will fall if the pivot pin is completely removed.

10 Use the strap around the rod-end lug to lower the cylinder out of the machine.



This page intentionally left blank.

Secondary Boom Components



Secondary Boom
a upper pivot
b upper compression arm
c mid-pivot
d compression link
e lower secondary boom
f lower compression arm
g turntable pivot
h upper secondary boom

5-1
Secondary Boom

How to Disassemble the Secondary Boom

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

NOTICE Follow the disassembly steps to the point required to complete the repair. Reassemble the secondary boom by following the disassembly steps in reverse order.

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 Fully raise the secondary boom.

2 Remove the front counterweight cover.

3 Remove the counterweight from the lower compression arm.

4 Lower the boom to the stowed position.

5 Place a lifting device under the front of the platform.

6 Disconnect the battery packs from the machine.

7 Remove the cable cover from the side of the jib boom.

8 Remove the wire loom from the cables at the platform control box.

9 Locate the 4 cables from the primary boom cable track to the platform control box. Number each cable and its entry location at the platform control box.

10 Open the platform control box.

11 Label and disconnect each wire from the 4 cables in the platform control box.

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

12 Pull the cables out of the platform control box.

13 Pull all of the electrical cables out of the plastic cable track. Do not pull out the hydraulic hoses.

14 Remove the hose clamps from the bottom side of the primary boom.

SECONDARY BOOM COMPONENTS

15 Tag, disconnect and plug the platform rotator hydraulic hoses at the union located on the bottom side of the primary boom. Cap the fittings on the union.

⚠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.

16 Remove the hose clamp from the side of the primary boom at the pivot end.

17 Remove the primary boom extend drive speed limit switch (LS1) mounted on the side of the pivot end of the primary boom. Do not disconnect the wiring.

18 Attach a lifting strap from an overhead crane to the pivot end of the primary boom.

19 Carefully lift the secondary and primary boom assembly until the master cylinder and primary boom lift cylinder hydraulic hoses are accessible.

20 Remove the cable covers from the top of the upper secondary boom.

21 Tag, disconnect and plug the primary boom lift cylinder and master cylinder hydraulic hoses. Cap the fittings on the cylinders.

⚠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.

22 Lower the booms to the fully stowed position.

23 Pull all the cables and hoses through the upper mid-pivot.

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

24 Position the strap from the overhead crane approximately 2 feet / 0.6 m from the platform end of the primary boom. Measure from the platform end of the primary boom tube.

25 Remove the pin retaining fasteners from the upper mid-pivot to upper secondary compression arm pivot pins. Use a soft metal drift to remove the pins.

26 Swing the compression arms down and out of the way. Secure them from moving.

27 Remove the pin retaining fasteners from the upper mid-pivot to the upper secondary boom pivot pin. Use a soft metal drift to remove the pin.

28 Carefully remove the entire primary boom assembly from the machine (primary boom assembly, jib boom assembly, platform, master cylinder, primary lift cylinder and upper mid-pivot).

⚠WARNING Crushing hazard. The primary boom assembly could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane. Do not remove the assembly from the machine until it is properly balanced.

29 Place the entire assembly onto a structure capable of supporting it.

30 Remove the pin retaining fasteners from the upper secondary compression arm pivot pins. Do not remove the pins.

31 Position the lifting strap from an overhead crane at the center of the control box side upper secondary leveling link and remove the link from the machine. Repeat this step for the hydraulic tank side upper secondary leveling link.

⚠WARNING Crushing hazard. The upper secondary leveling link could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

32 Remove the pin retaining fastener from the rod end of the secondary boom lift cylinder. Use a soft metal drift to remove the pin. Secure the cylinder from moving.

33 Remove the pin retaining fastener from the lower pivot pin on the compression link. Use a soft metal drift to remove the pin.

34 Attach a lifting strap from an overhead crane to the upper secondary boom.

35 Remove the pin retaining fastener from the upper secondary boom to the lower mid-pivot pivot pin. Use a soft metal drift to remove the pin.

36 Remove the upper secondary boom with leveling link from the machine.

⚠WARNING Crushing hazard. The upper secondary boom with leveling link could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

37 Remove the cable covers from the top of the lower secondary boom. Pull all the cables and hoses towards the counterweight end of the turntable.

38 Remove the mounting fasteners from the counterweight attached to the lower leveling link.

39 Attach a lifting strap from an overhead crane to the counterweight. Remove the counterweight from the lower leveling link.

⚠DANGER Tip-over hazard. The counterweight is critical to machine stability. If the counterweight is not installed during re-assembly of the machine, the machine will become unstable and tip over.

40 **Before serial number 747:** Remove the drive speed limit switch (LS2) mounted on the inside of the lower mid-pivot. Do not disconnect the wiring.

41 Remove the mounting fasteners from the function manifold and slide the function manifold to the side. This will allow access to the barrel end mounting pin.

SECONDARY BOOM COMPONENTS

42 Remove the retaining fasteners from the secondary boom lift cylinder barrel-end pivot pins.

43 Attach a lifting strap from an overhead crane to the lug on the rod end of the secondary boom lift cylinder.

44 Tag, disconnect and plug the hydraulic hoses from the secondary boom lift 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.

45 Use a slide hammer to remove the barrel-end pins (access the pins from the access holes in the bulkheads, one on each side). Remove the secondary boom lift cylinder from the machine.

⚠WARNING Crushing hazard. The secondary boom lift cylinder could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

46 Attach a lifting strap from an overhead crane to the mid-pivot.

47 Remove the pin retaining fasteners from the mid-pivot to the lower secondary leveling link pivot pins. Use a slide hammer and remove the pins.

48 Remove the pin retaining fasteners from the mid-pivot to the lower secondary boom pivot pin. Use a soft metal drift to remove the pins.

49 Remove the mid-pivot from the machine.

⚠WARNING Crushing hazard. The mid-pivot could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

50 **After serial number 746:** Remove the secondary boom drive speed limit switch (LS4) mounted on the turntable on the ground controls side. Do not disconnect the wiring.

51 Attach a lifting strap from an overhead crane to the ground control side lower secondary leveling link.

52 Remove the pin retaining fastener from the lower secondary leveling link to the turntable pivot pin.

53 Use a slide hammer and remove the pin. Remove the leveling link from the machine. Repeat for the hydraulic tank side lower secondary leveling link.

⚠WARNING Crushing hazard. The lower secondary leveling link could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

54 Attach a strap from an overhead crane to the lower secondary boom.

55 Remove the pin retaining fastener from the lower secondary boom to the turntable pivot pin. Use a soft metal drift to remove the pin.

56 Remove the lower secondary boom from the machine.

⚠WARNING Crushing hazard. The lower secondary boom could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

5-2 Secondary Boom Lift Cylinder

The secondary boom lift cylinder raises and lowers the secondary boom. The secondary boom lift cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Secondary Boom Lift Cylinder

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

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

1 Rotate the turntable to either side until the boom is centered between the steer and non-steer tires.

2 Raise the primary boom to full height. Do not extend it.

SECONDARY BOOM COMPONENTS

3 Swing out the battery pack that is directly below the secondary boom lift cylinder.

4 Disconnect the battery packs from the machine.

5 Open the hydraulic tank side turntable cover.

6 Tag and disconnect the power cables on the auxiliary power unit.

7 Tag and disconnect and plug the hydraulic hose from the hydraulic tank shutoff valve.

⚠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 Open the valve on the hydraulic tank and drain the oil into a suitable container.

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

9 Tag, disconnect and plug the hydraulic hoses from the hydraulic tank filter. Cap the fittings on the filter.

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

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

10 Remove the hydraulic tank mounting fasteners. Remove the hydraulic tank from the machine.

11 Open the ground controls side turntable cover.

12 Remove the terminal strip cover retaining fasteners. Remove the cover.

13 Remove the terminal strip retaining fasteners. Do not disconnect the wiring.

14 Remove the plastic plug in the bulkhead to access the secondary boom lift cylinder rod-end pivot pin.

15 Remove the mounting fasteners from the function manifold and slide the manifold to the side This will allow access to the hydraulic tank side barrel-end pivot pin.

16 Attach a lifting strap from an overhead crane to the lug on the rod end of the secondary boom lift cylinder.

17 From the bottom side of the cylinder, remove the retaining fasteners from the secondary boom lift cylinder barrel-end pivot pins.

18 Remove the hose clamp under the lower secondary boom.

19 Use a slide hammer to remove both barrel-end pivot pins (access the pins from the access holes in the bulkheads, one on each side).

20 Remove the pin retaining fastener from the secondary boom lift cylinder rod-end pivot pin.

21 Use a soft metal drift to remove the secondary boom rod-end pivot pin.

22 Carefully lower the cylinder down through the secondary boom, enough to access the hydraulic hoses. Do not pinch the hoses.

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

23 Tag, disconnect and plug the hydraulic hoses from the secondary boom lift 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.

24 Remove the cylinder through the top of the secondary boom.

⚠WARNING Crushing hazard. The secondary boom lift cylinder could become unbalanced and fall when removed from the machine if not properly supported by the overhead crane.

Ground Controls

6-1
Control Relays

How to Test a Double Pole Double Throw Relay

Relays used for dual function switching are double pole double throw (DPDT) relays.

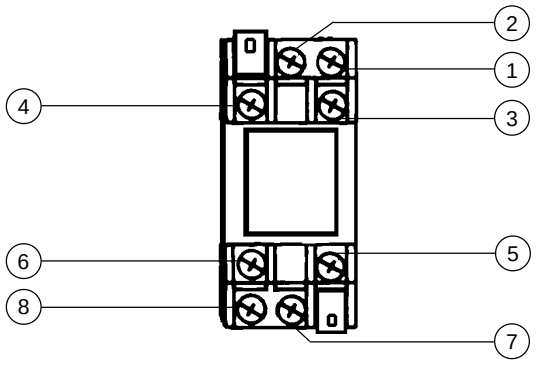
⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE This procedure covers fundamental relay testing and does not specifically apply to all varieties of relays.

1 Turn the key switch to the OFF position and remove the key.

2 Label and then disconnect all the wiring from the relay to be tested.

3 Connect the leads from an ohmmeter to each terminal combination and check for continuity. Terminals 7 and 8 represent the coil and should not be tested in any other combination.

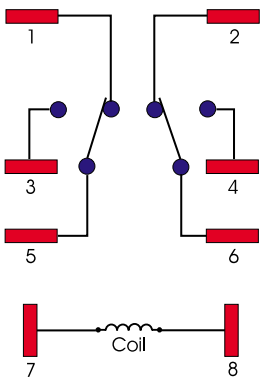


Bubble number represents the terminal number

Test	Desired result
terminal 7 to 8	640 to 650Ω
terminal 1 to 2, 3, 4 and 6	no continuity (infinite Ω)
terminal 2 to 3, 4 and 5	no continuity (infinite Ω)
terminal 3 to 6	no continuity (infinite Ω)
terminal 2 to 6	continuity (zero Ω)
terminal 1 to 5	continuity (infinite Ω)

4 Connect 24V DC to terminal 8 and a ground wire to terminal 7, then test the following terminal combinations.

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



Relay Schematic

How to Test a Single Pole Double Throw Relay

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

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

NOTICE This procedure covers fundamental relay testing and does not specifically apply to all varieties of relays.

1 Turn the key switch to the OFF position and remove the key.

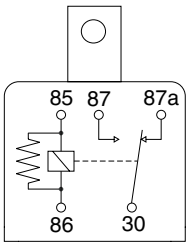
2 Label and then disconnect all the wiring from the relay to be tested.

3 Connect the leads from an ohmmeter to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

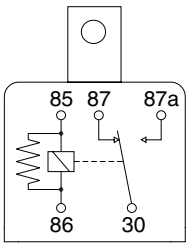
Test	Desired result
terminal 85 to 86	85 to 95Ω
terminal 87 to 87a and 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

4 Connect 24V DC to terminal 85 and a ground wire to terminal 86. Test the following terminal combinations.

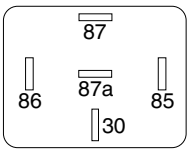
Test	Desired result
terminal 87a to 87 and 30	no continuity (infinite Ω)
terminal 87 to 30	continuity (zero Ω)



Relay deactivated



Relay activated



Terminal numbers

terminal no. 87a - N.C.
terminal no. 85 - ground
terminal no. 30 - common
terminal no. 86 - coil
terminal nol 87 - N.O.

GROUND CONTROLS

6-2 Toggle Switches

See 1-4, *Toggle Switches*.

6-3 Wago® Components

How to Remove a Wago® Component

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

1 Label the wiring from the component to be removed.

2 Use a small screwdriver to push in and release the wire from the component.

3 Locate the removal tab on the bottom or top of the component.

4 Use a small screwdriver to gently pry up on the tab of the component and remove it.

Hydraulic Pumps

7-1
Auxiliary Pump

How to Test the Auxiliary Pump

1 Disconnect and plug the high pressure hydraulic hose from the auxiliary 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.

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.*

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure port on the pump.

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

4 Activate any function using auxiliary power.

⊙ Result: If the pressure gauge reads 2800 psi / 193 bar, immediately stop. The pump is good.

⊙ Result: If pressure fails to reach 2800 psi / 193 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 Auxiliary Pump

1 Tag, disconnect and plug the hydraulic hoses from 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.

HYDRAULIC PUMPS

7-2 Function Pump

How to Test the Function Pump

1 Disconnect and plug the high pressure hydraulic hose from the function 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.

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.*

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure port on the pump.

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

4 **Before serial number 747:** Move and hold any boom function toggle switch at the ground controls.
After serial number 746: Move and hold the function enable switch to either side and move and hold any boom function toggle switch at the ground controls.

⊙ Result: If the pressure gauge reads 2800 psi / 193 bar, immediately stop. The pump is good.

⊙ Result: If pressure fails to reach 2800 psi / 193 bar,
Before serial number 996: the external relief valve setting is incorrect or the pump is faulty and will need to be serviced or replaced.
From serial number 996 to 2007: the internal relief valve setting is incorrect or the pump is faulty and will need to be serviced or replaced.
After serial number 2007: the relief valve setting on the function manifold is incorrect or the pump is faulty and will need to be serviced or replaced.

5 Remove the pressure gauge and reconnect the hydraulic hose.

How to Remove the Function Pump

Before serial number 2008:

1 Remove the support angle from the side of the hydraulic power unit.

2 Remove the mounting fasteners from the hydraulic reservoir. Remove the the hydraulic reservoir from the power unit.

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

After serial number 2007:

1 Tag, disconnect and plug the hoses from the function pump.

2 Remove the pump mounting bolts from the pump. Carefully remove the pump from the electric motor.

Manifolds

8-1
Function Manifold Components (before serial number 3447)

The function manifold is locate behind the ground controls turntable cover.

Index No.	Description	Schematic Item	Function	Torque
1	Flow regulator valve	A	Differential sensing circuit	10-12 ft-lbs / 14-16 Nm
2	Relief valve, 2800 psi / 193 bar	B	System relief	25-30 ft-lbs / 34-41 Nm
3	Solenoid valve, 2 position 3 way	C	Boom retract	8-10 ft-lbs / 11-14 Nm
4	Solenoid valve, 2 position 3 way	D	Primary boom up	8-10 ft-lbs / 11-14 Nm
5	Solenoid valve, 2 position 3 way	E	Secondary boom up	8-10 ft-lbs / 11-14 Nm
6	Solenoid valve, 2 position 3 way	F	Turntable rotate left	8-10 ft-lbs / 11-14 Nm
7	Solenoid valve, 2 position 3 way	G	Platform level up	8-10 ft-lbs / 11-14 Nm
8	Solenoid valve, 2 position 3 way	H	Boom extend	8-10 ft-lbs / 11-14 Nm
9	Solenoid valve, 2 position 3 way	I	Primary boom down	8-10 ft-lbs / 11-14 Nm
10	Solenoid valve, 2 position 3 way	J	Secondary boom down	8-10 ft-lbs / 11-14 Nm
11	Solenoid valve, 2 position 3 way	K	Turntable rotate right	8-10 ft-lbs / 11-14 Nm
12	Solenoid valve, 2 position 3 way	L	Platform level down	8-10 ft-lbs / 11-14 Nm
13	Orifice, 0.050 inch / 1.27 mm	M	Turntable rotate circuit	
14	Counterbalance valve	N	Platform level down	35-40 ft-lbs / 47-54 Nm
15	Counterbalance valve	O	Platform level up	35-40 ft-lbs / 47-54 Nm
16	Relief valve, 1750 psi / 121 bar	P	Turntable rotate left	25-30 ft-lbs / 34-41 Nm
17	Relief valve, 1750 psi / 121 bar	Q	Turntable rotate right	25-30 ft-lbs / 34-41 Nm
18	Relief valve, 1600 psi / 110 bar	R	Secondary boom down	25-30 ft-lbs / 34-41 Nm
19	Relief valve, 1400 psi / 97 bar	S	Primary boom down	25-30 ft-lbs / 34-41 Nm
20	Relief valve, 1800 psi / 124 bar	T	Boom extend	25-30 ft-lbs / 34-41 Nm
21	Proportional solenoid valve	U	System Flow regulating circuit	10-12 ft-lbs / 14-16 Nm
22	Diagnostic fitting		Testing	

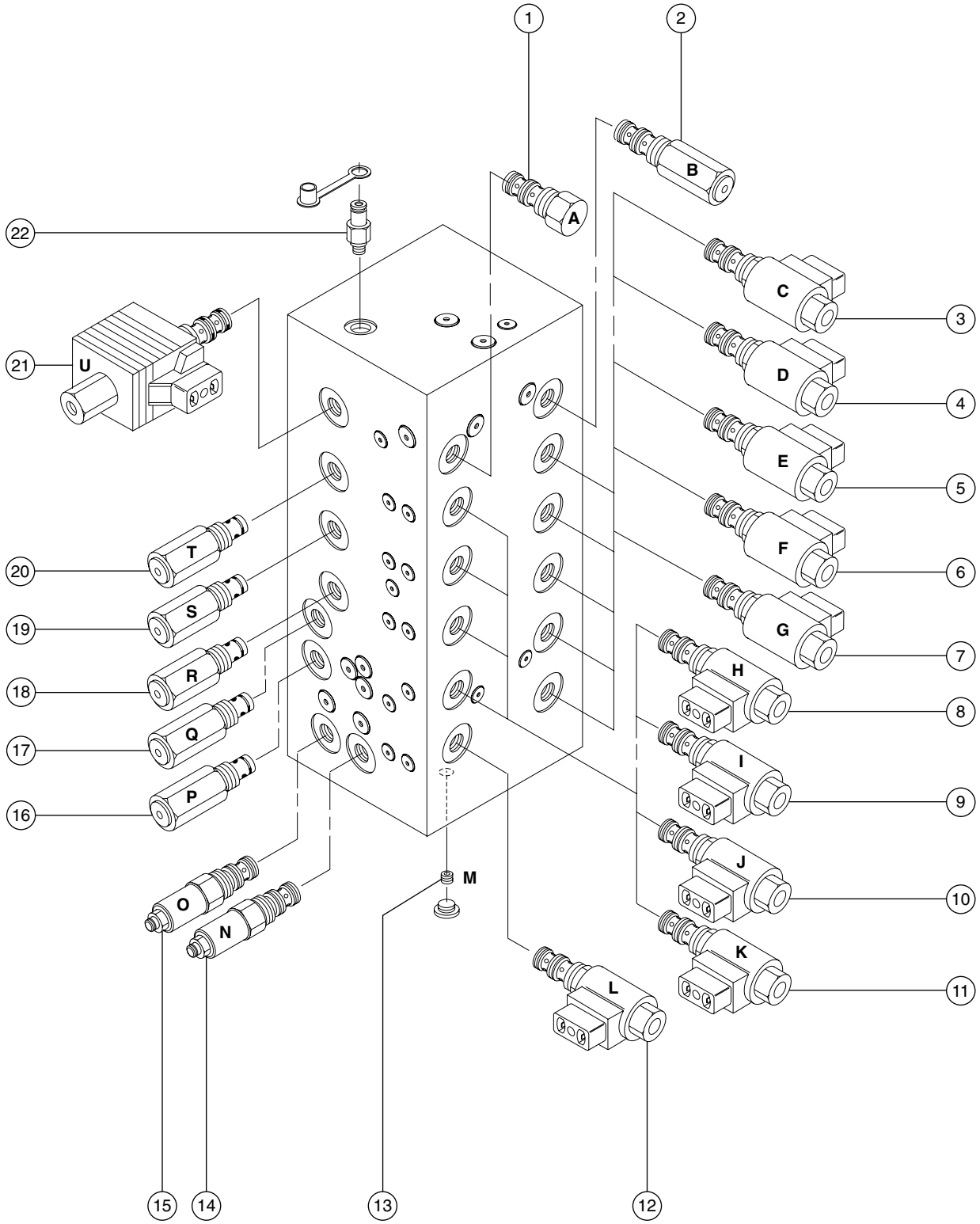
Plug Torque Specifications

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
SAE No. 8	5/16	50 ft-lbs / 68 Nm

Valve Coil Resistance Specification

Description	Specification
Proportional solenoid valve, 24V DC (schematic items C through L)	19.5 Ω
Solenoid valve, 2 position 3 way, 20V DC (schematic item U)	23.5 Ω

MANIFOLDS


1
2
A
B
22
C
3
21
U
D
4
E
5
T
F
6
20
S
G
7
19
R
H
8
18
Q
I
9
17
P
J
10
16
M
O
K
N
L
11
15
14
13
12

MANIFOLDS

8-2
Function Manifold Components (after serial number 3446)

The function manifold is locate behind the ground controls turntable cover.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	HH	Platform level up/down	10-12 ft-lbs / 14-16 Nm
2	Counterbalance valve	II	Platform level down	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	JJ	Platform level up	35-40 ft-lbs / 47-54 Nm
4	Relief valve, 1100 psi / 75.8 bar	KK	Turntable rotate left/right	25-30 ft-lbs / 34-41 Nm
5	Relief valve, 1600 psi / 110 bar	LL	Secondary boom down	25-30 ft-lbs / 34-41 Nm
6	Relief valve, (before serial number 5398) 1400 psi / 97 bar	MM	Primary boom down	25-30 ft-lbs / 34-41 Nm
	Relief valve, (after serial number 5397) 1600 psi / 110 bar	MM	Primary boom down	25-30 ft-lbs / 34-41 Nm
7	Relief valve, 1800 psi / 124 bar	NN	Primary boom extend	25-30 ft-lbs / 34-41 Nm
8	Proportional solenoid valve	OO	System flow regulating circuit	10-12 ft-lbs / 14-16 Nm
9	Check valve	PP	Brake circuit	25-30 ft-lbs / 34-41 Nm
10	Solenoid valve, 3 position 4 way	QQ	Steer left/right	10-12 ft-lbs / 14-16 Nm
11	Solenoid valve, 3 position 4 wa	RR	Primary boom extend/retract	10-12 ft-lbs / 14-16 Nm
12	Pressure switch	SS	Brake circuit	
13	Solenoid valve, N.C. poppet	TT	Brake circuit	25-30 ft-lbs / 34-41 Nm
14	Orifice, 0.045 inch / 1.02 mm	UU	Brake circuit	

This list continues. Please turn the page.

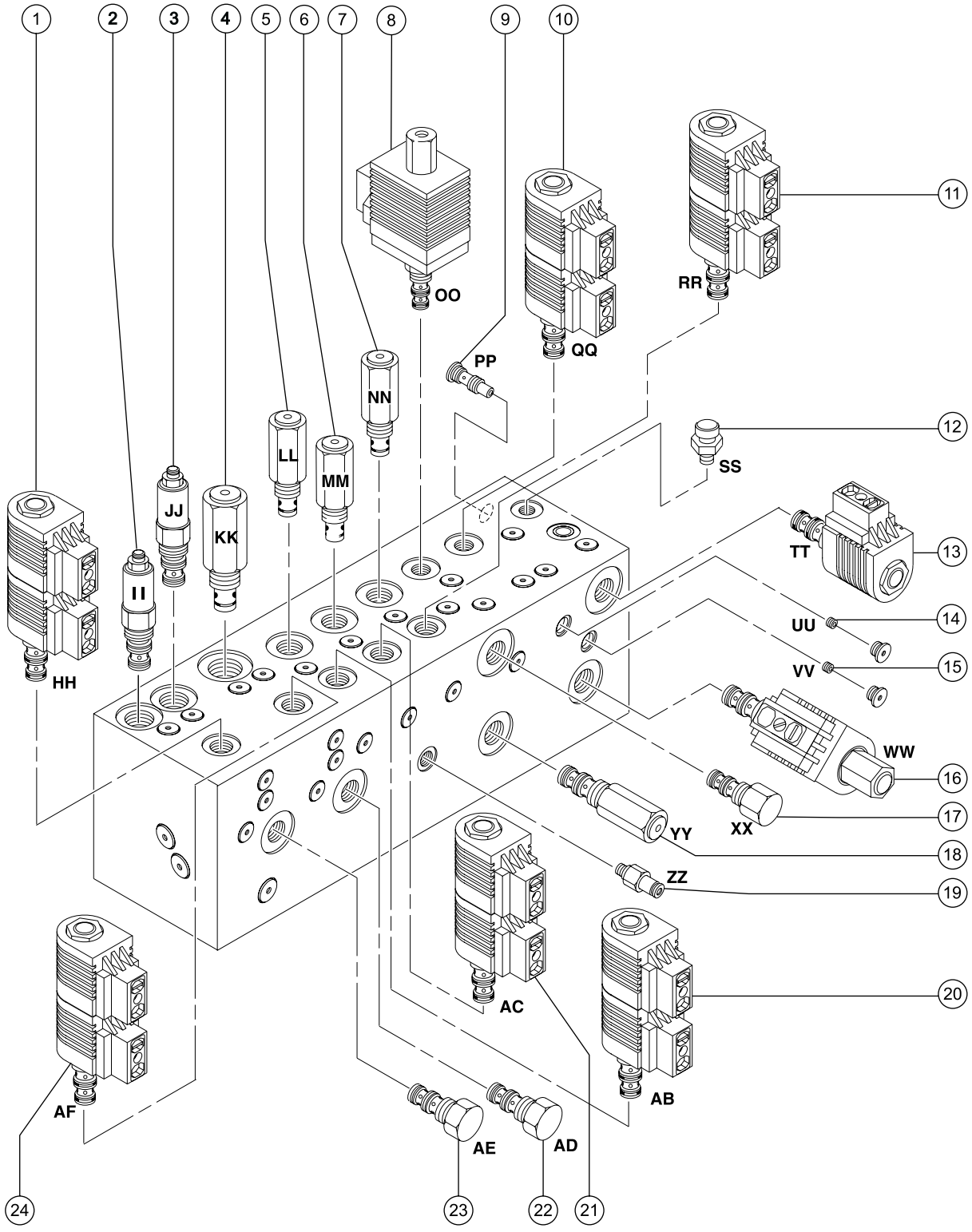
Plug Torque Specifications

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
SAE No. 8	5/16	50 ft-lbs / 68 Nm

Valve Coil Resistance Specification

Description	Specification
Proportional solenoid valve, 24V DC (schematic item OO)	19.5 Ω
Solenoid valve, 3 position 4 way, 20V DC (schematic items HH, QQ and RR)	22 Ω
Solenoid valve, N.C. poppet, 20V DC (schematic item TT)	23.5 Ω
Solenoid valve, N.O. poppet, 20V DC (schematic item WW)	23.5 Ω

MANIFOLDS


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
HH
II
JJ
KK
LL
MM
NN
OO
PP
QQ
RR
SS
TT
UU
VV
WW
XX
YY
ZZ
AB
AC
AD
AE
AF

MANIFOLDS

Function Manifold Components (after serial number 3446), continued

The function manifold is locate behind the ground controls turntable cover.

Index No.	Description	Schematic Item	Function	Torque
15	Orifice, (before serial number 4083) 0.060 inch / 1.5 mm	VV	Brake and steer circuit	
	Orifice, (after serial number 4082) 0.045 inch / 1.02 mm	VV	Brake and steer circuit	
16	Solenoid valve, N.O. poppet	WW	Brake circuit	25-30 ft-lbs / 34-41 Nm
17	Differential sensing valve	XX	Differential sensing circuit	10-12 ft-lbs / 14-16 Nm
18	Relief valve, 2800 psi / 193 bar	YY	System relief	25-30 ft-lbs / 34-41 Nm
19	Diagnostic fitting	ZZ	Testing	
20	Solenoid valve, 3 position 4 way	AB	Secondary boom up/down	10-12 ft-lbs / 14-16 Nm
21	Solenoid valve, 3 position 4 way	AC	Primary boom up/down	10-12 ft-lbs / 14-16 Nm
22	Flow regulator valve, 1.5 gpm / 5.7 L/min	AD	Turntable rotate circuit	10-12 ft-lbs / 14-16 Nm
23	Flow regulator valve, 0.8 gpm / 3 L/min	AE	Jib boom/platform rotate circuit	10-12 ft-lbs / 14-16 Nm
24	Solenoid valve, 3 position 4 way	AF	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm

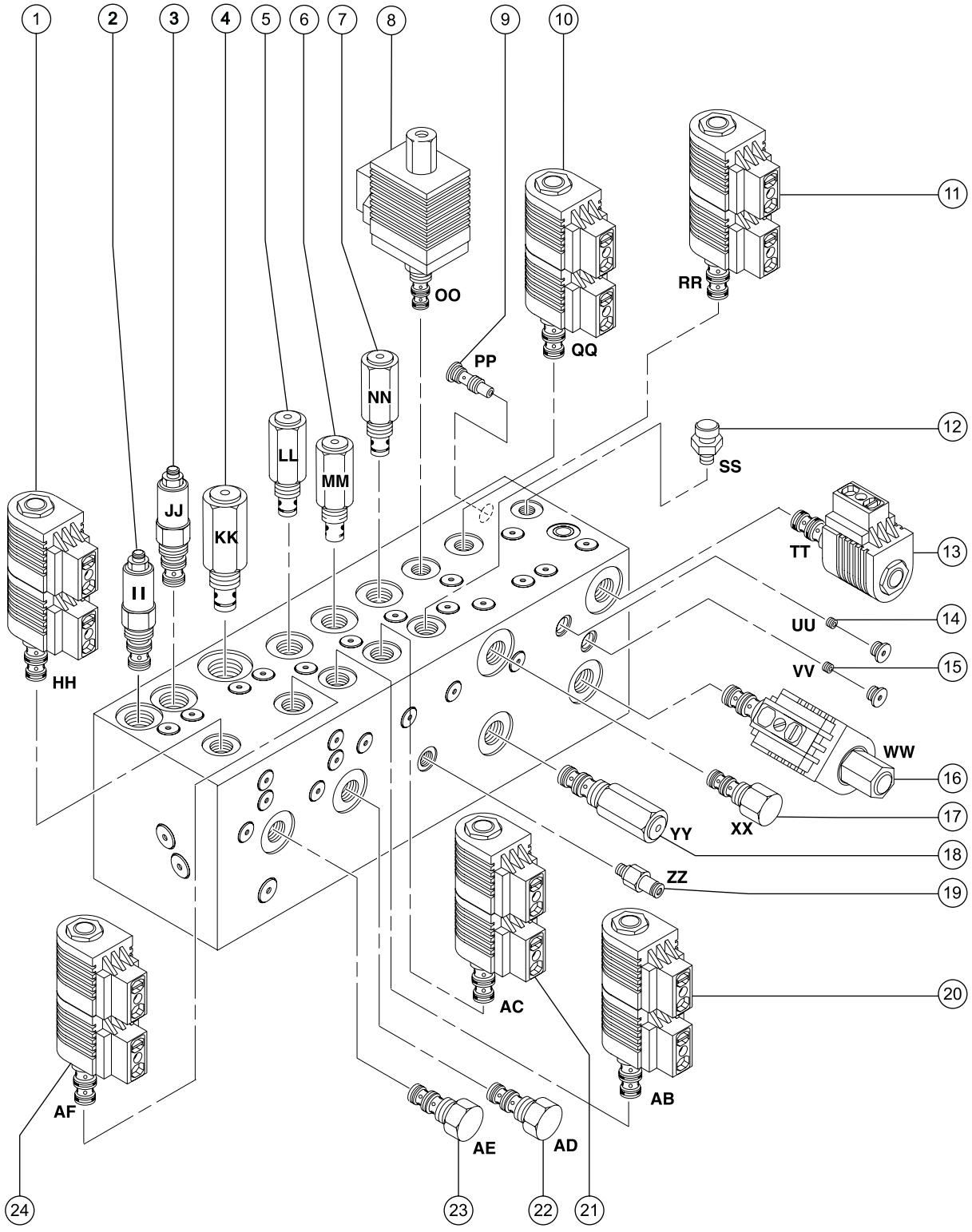
Plug Torque Specifications

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
SAE No. 8	5/16	50 ft-lbs / 68 Nm

Valve Coil Resistance Specification

Description	Specification
Proportional solenoid valve, 24V DC (schematic item OO)	23.5 Ω
Solenoid valve, 3 position 4 way, 20V DC (schematic items HH, QQ and RR)	19.5 Ω
Solenoid valve, N.C. poppet, 20V DC (schematic item TT)	19.5 Ω
Solenoid valve, N.O. poppet, 20V DC (schematic item WW)	19.5 Ω

MANIFOLDS


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
HH
II
JJ
KK
LL
MM
NN
OO
PP
QQ
RR
SS
TT
UU
VV
WW
XX
YY
ZZ
AB
AC
AD
AE
AF

MANIFOLDS

8-3 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

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

1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the function manifold.

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

3 **Before serial number 747:** Move and hold the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted. Observe the pressure reading on the pressure gauge.

System relief valve specifications	
Pressure	2800 psi 193 bar

4 Turn the machine off. Hold the system relief valve with a wrench and remove the cap (item B or YY).

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

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

6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

How to Adjust the Primary Boom Down Relief Valve

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

1 Connect a 0 to 3000 psi / 0 to 206 bar pressure gauge to the test port on the function manifold.

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

3 **Before serial number 747:** Move and hold the primary boom up/down toggle switch in the down direction with the primary boom fully lowered. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the primary boom up/down toggle switch in the down direction with the primary boom fully lowered. Observe the pressure reading on the pressure gauge.

Primary boom down relief valve specifications	
Pressure	
(before serial number 5398)	1400 psi 97 bar
(after serial number 5397)	1600 psi 110 bar

4 Turn the machine off. Hold the primary down relief valve with a wrench and remove the cap (item S or MM).

5 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 valve higher than specified.

6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 3000 psi / 0 to 206 bar pressure gauge to the test port on the function manifold.

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

3 **Before serial number 747:** Move and hold the secondary boom up/down toggle switch in the down direction with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the secondary boom up/down toggle switch in the down direction with the secondary boom fully lowered. Observe the pressure reading on the pressure gauge.

Secondary boom down relief valve specifications	
Pressure	1600 psi 110 bar

4 Turn the machine off. Hold the secondary boom down relief valve with a wrench and remove the cap (item R or LL).

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

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

6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

MANIFOLDS

How to Adjust the Primary Boom Extend Relief Valve

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

1 Connect a 0 to 3000 psi / 0 to 206 bar pressure gauge to the test port on the function manifold.

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

3 **Before serial number 747:** Move and hold the primary boom extend/retract toggle switch in the extend direction with the primary boom fully extended. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the primary boom extend/retract toggle switch in the extend direction with the primary boom fully extended. Observe the pressure reading on the pressure gauge.

Primary boom extend relief valve specifications

Pressure	
Models with rotating jib boom	1800 psi 124 bar
Models without rotating jib boom	2800 psi 193 bar

4 Turn the machine off. Hold the primary booom extend relief valve with a wrench and remove the cap (item T or NN).

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

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

6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

How to Adjust the Turntable Rotate Relief Valve(s)

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

1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.

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

3 **Before serial number 747:** Move and hold the turntable rotate toggle switch in the RIGHT direction until turntable stops against the rotation stop. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the turntable rotate toggle switch in the RIGHT direction (until turntable stops against the rotation stop). Observe the pressure reading on the pressure gauge.

Turntable rotate relief valve specifications

Pressure	
before serial number 3447	1750 psi 121 bar
after serial number 3446	1100 psi 75.8 bar

4 Turn the machine off. Hold the turntable relief valve(s) with a wrench and remove the cap (item Q or KK).

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

⚠WARNING Tip-over hazard. Do not adjust the relief valve(s) higher than specified.

6 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

Before serial number 3446:

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

8 **Before serial number 747:** Move and hold the turntable rotate toggle switch in the LEFT direction until turntable stops against the rotation stop. Observe the pressure reading on the pressure gauge.
After serial number 746: Move and hold the function enable toggle switch to either side and move and hold the turntable rotate toggle switch in the LEFT direction (until turntable stops against the rotation stop). Observe the pressure reading on the pressure gauge.

9 Turn the machine off. Hold the turntable rotate left relief valve with a wrench and remove the cap (item P).

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

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

11 Repeat steps 2 and 3 to confirm the relief valve pressure setting.

MANIFOLDS

8-4 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

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

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance.

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.

⊙ Result: The resistance should be within specification, plus or minus 30%.

⊙ Result: If the resistance is not within specification, plus or minus 30%, replace the coil.

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 3 position 4 way, 20V DC (schematic item G)	22 Ω
Proportional solenoid valve, 24V DC (schematic item H and AD)	19.5 Ω
Solenoid valve, N.C. poppet, 20V DC (schematic item AH)	23.5 Ω
Solenoid valve, N.O. poppet 20V DC (schematic items BA and BB)	23.5 Ω
Solenoid valve, 2 position 3 way 20V (schematic items BI and BJ)	23.5 Ω

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its valve coils. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

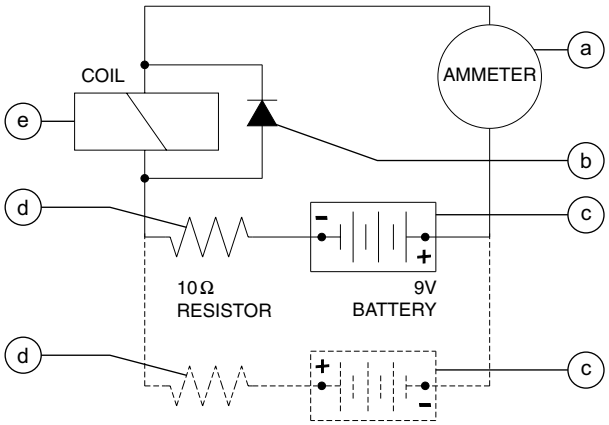
⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Test the coil for resistance. See 8-4, *How to Test a Coil.*

2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

NOTICE The battery should read 9V DC or more when measured across the terminals.

Resistor, 10Ω
Genie part number 27287



a multimeter
b diode
c 9V battery
d 10Ω resistor
e coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

3 Set a multimeter to read DC current.

NOTICE The multimeter, when set to read DC current, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

NOTICE If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V battery. Note and record the current reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

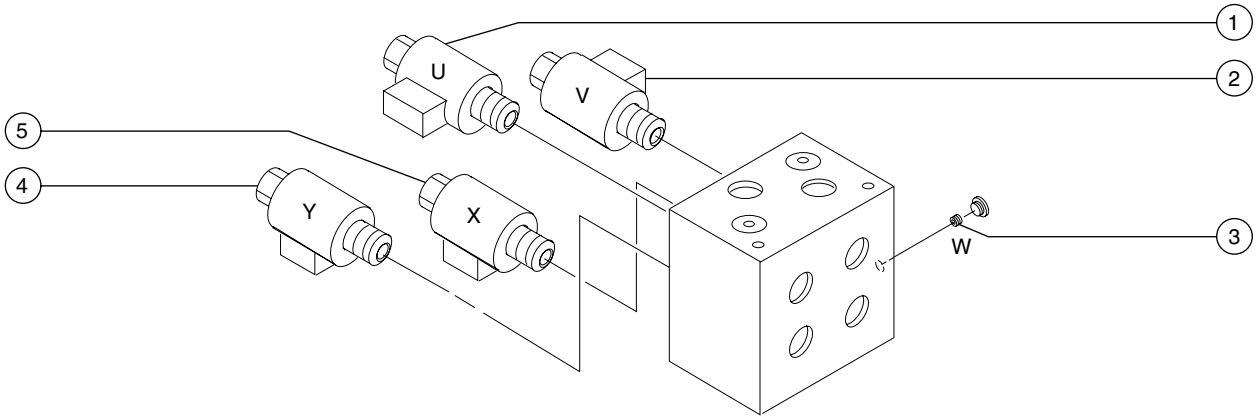
⊙ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

MANIFOLDS

8-5
Jib Boom / Platform Rotate Manifold Components (before serial number 4083)

The jib boom/platform rotate manifold is mounted to the jib boom.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	U	Jib boom up	8-10 ft-lbs / 11-14 Nm
2	Solenoid valve, 2 position 3 way	V	Platform rotate right	8-10 ft-lbs / 11-14 Nm
3	Orifice plug, 0.030 inch / 0.76 mm (before serial number 3447)	W	Platform rotate circuit	
	Orifice plug, 0.025 inch / 0.64 mm (after serial number 3446)	W	Platform rotate circuit	
4	Solenoid valve, 2 position 3 way	X	Platform rotate left	8-10 ft-lbs / 11-14 Nm
5	Solenoid valve, 2 position 3 way	Y	Jib boom down	8-10 ft-lbs / 11-14 Nm



Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 4	3/16	13 ft-lbs / 18 Nm

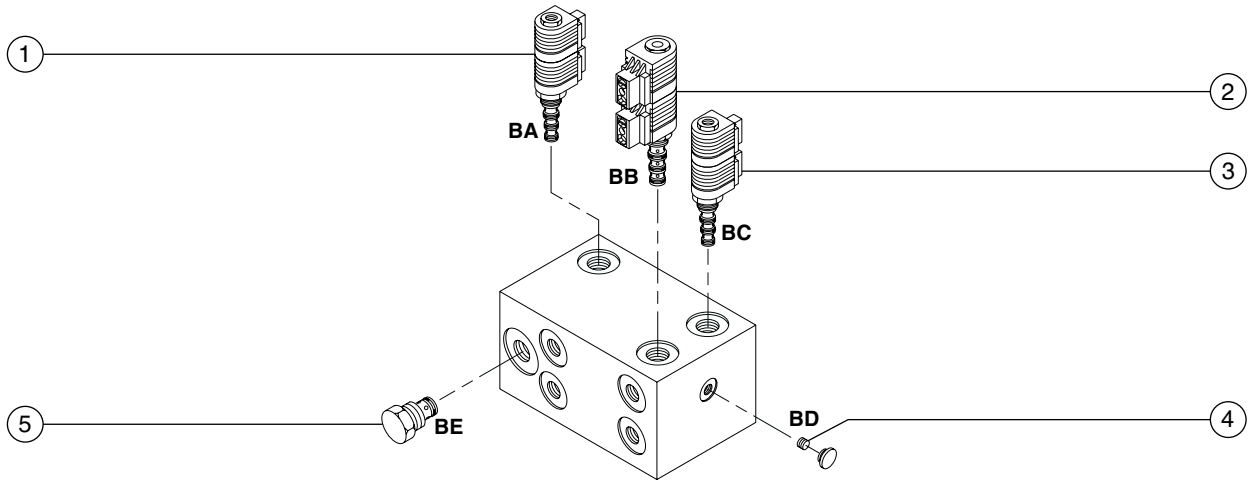
Valve Coil Resistance Specifications

Valve coil specification	
3 position 4 way valve, 20V DC (schematic items U, V, X and Y)	22 to 25Ω

8-6
Jib Boom and Platform / Jib Boom Rotate Manifold Components (after serial number 4082)

The jib boom and jib boom/platform rotate manifold is mounted to the jib boom.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 3 position 4 way	BA	Jib boom rotate left/right	8-10 ft-lbs / 11-14 Nm
2	Solenoid valve, 3 position 4 way	BB	Platform rotate left/right	8-10 ft-lbs / 11-14 Nm
3	Solenoid valve, 3 position 4 way	BC	Jib boom up/down	8-10 ft-lbs / 11-14 Nm
4	Orifice plug, 0.025 inch / 0.64 mm	BD	Jib boom rotate circuit	
5	Flow regulator valve, 0.3 gpm / 1.14 L/min	BE	Platform rotate circuit	10-12 ft-lbs / 14-16 Nm



Valve Coil Resistance Specifications

Valve coil specification	
3 position 4 way valve, 20V DC (schematic items BA, BB and BC)	22 to 25Ω

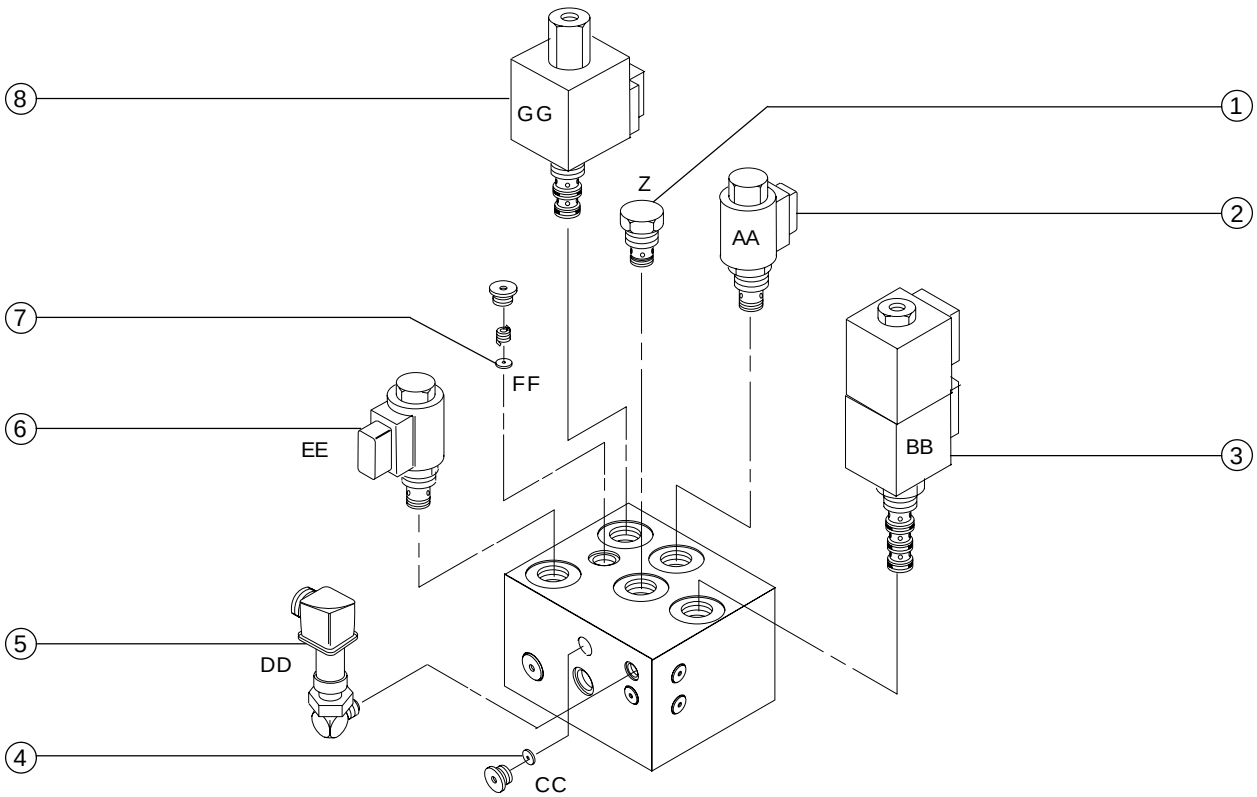
Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 4	3/16	13 ft-lbs / 18 Nm

MANIFOLDS

8-7
Steer / Brake Manifold Components (before serial number 3447)

Index No.	Description	Schematic Item	Function	Torque
1	Check valve	Z	Brake circuit	25-30 ft-lbs / 34-41 Nm
2	Normally open poppet valve	AA	Brake circuit	25-30 ft-lbs / 34-41 Nm
3	Solenoid valve, 3 position 4 way	BB	Steer left/right	10-12 ft-lbs / 14-16 Nm
4	Orifice, 0.040 inch / 1.02 mm	CC	Brake circuit	
5	Pressure switch	DD	Brake circuit	
6	Normally closed poppet valve	EE	Brake circuit	25-30 ft-lbs / 34-41 Nm
7	Orifice - Washer, 0.052 inch / 1.32 mm	FF	Brake circuit	
8	Proportional solenoid valve	GG	Brake circuit	10-12 ft-lbs / 14-16 Nm



Turntable Rotation Components

9-1 Turntable Rotation Hydraulic Motor

The turntable rotation hydraulic motor is the only serviceable component of the turntable rotation assembly. The worm gear must not be removed from the housing. In order to remove the housing, the turntable has to be removed.

How to Remove the Turntable Rotation 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 Tag, disconnect and plug the hydraulic hoses from the turntable rotation 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.

2 Remove the turntable rotation motor mounting bolts. Remove the motor from the machine.

Steering Axle Components

10-1
Yoke and Hub

How to Remove the Yoke and Hub

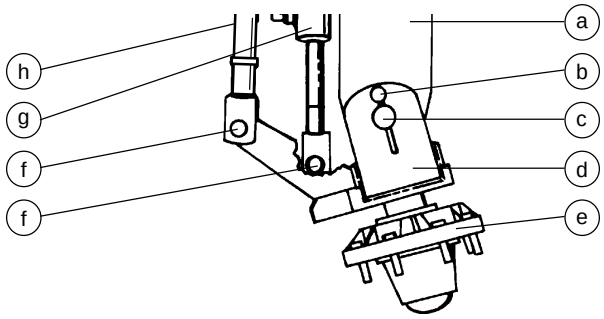
1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer wheels.
Center a lifting jack under the steering axle and raise the machine 6 inches / 15 cm. Place blocks under the drive chassis for support.

3 Remove the lug nuts. Remove the tire and wheel assembly.

4 **Before serial number 4526:** Remove the cotter pins from the clevis pins at each end of the tie rod. Remove the clevis pins from both the steer cylinder and tie rod.

After serial number 4525: Remove the retaining rings from the clevis pins at each end of the tie rod. Remove the clevis pins from both the steer cylinder and tie rod.



a axle
b retaining fastener
c yoke pivot pin
d yoke
e hub
f clevis pin and cotter pin
g steer cylinder
h tie rod

5 Remove the retaining fasteners from the upper and lower yoke pivot pins. Do not remove the pins.

6 Support and secure the yoke/hub assembly to a lifting jack.

7 Place a rod through the yoke pivot pins and twist to remove the pins.

⚠CAUTION Crushing hazard. The yoke/hub assembly may become unbalanced and fall when the yoke pivot pins are removed if not properly supported and secured to the lifting jack.

NOTICE Always use a new cotter pin when installing a clevis pin.

Torque specifications	
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

How to Remove the Hub and Bearings

1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer wheels and place a lifting jack under the steer axle.

3 Raise the machine. Place blocks under the drive chassis for support.

4 Remove the lug nuts. Remove the tire and wheel assembly.

5 Remove the dust cap, cotter pin and castle nut.

NOTICE Always use a new cotter pin when installing a castle nut.

6 Pull the hub off the yoke spindle. The washer and outer bearing should fall loose from the hub.

7 Place the hub on a flat surface and gently pry the inner bearing seal out of the hub. Remove the inner bearing.

NOTICE When removing a bearing, always use a new inner bearing seal.

How to Install the Hub and Bearings

NOTICE When replacing a wheel bearing, both the inner and outer bearings, including the pressed-in races, must be replaced.

1 Be sure that both bearings are packed with grease.

2 Place the large inner bearing into the rear of the hub.

3 Press the inner bearing seal evenly into the hub until it is flush.

4 Apply a small amount of grease onto the yoke spindle.

5 Slide the hub onto the yoke spindle.

CAUTION Component damage hazard. Damage to the lip of the seal may occur if excessive force is applied.

6 Place the outer bearing into the hub.

7 Install the washer and castle nut.

8 Torque the castle nut to 35 ft-lbs / 47 Nm.

9 Loosen the castle nut, then torque the castle nut to 8 ft-lbs / 11 Nm.

10 Install a new cotter pin. Bend the cotter pin to lock it. Install the dust cap.

11 Install the tire and wheel assembly. Torque the wheel lug nuts to 125 ft-lbs / 169.5 Nm.

Torque specifications	
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

STEERING AXLE COMPONENTS

10-2 Steer Cylinder

How to Remove a Steer Cylinder

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

1 Remove the drive chassis cover fasteners from the steer end of the machine. Remove the drive chassis cover.

2 Tag, disconnect and plug the hydraulic hoses from the steer 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 **Before serial number 4526:** Remove the cotter pins from the clevis pin from each end of the steer cylinder. Remove the clevis pins.

After serial number 4525: Remove the cotter pins from the clevis pin from each end of the steer cylinder. Remove the clevis pins.

4 Remove the steering cylinder from the machine.

NOTICE Always use a new cotter pin when installing a clevis pin.

10-3 Tie Rod

How to Remove the Tie Rod

1 **Before serial number 4526:** Remove the cotter pins from the clevis pins at each end of the tie rod. Remove the clevis pins.

After serial number 4525: Remove the retaining rings from the clevis pins at each end of the tie rod. Remove the clevis pins.

2 Remove the tie rod from the machine.

NOTICE Always use a new cotter pin when installing a clevis pin.

Non-steering Axle Components

11-1
Drive Motor

How to Remove a Drive Motor

NOTICE A drive motor can only be removed from the inside of the drive chassis.

1 Disconnect the battery packs from the machine.

2 Remove the drive chassis cover fasteners from the non-steer end of the machine. Remove the drive chassis cover.

3 Tag and disconnect the power cables from the drive motor.

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

4 Remove the drive motor mounting fasteners.

5 Guide the drive motor shaft out of the brake and remove the drive motor from the machine.

11-2
Drive Hub

How to Remove a Drive Hub

NOTICE The drive motor must be removed in order to access the drive hub mounting bolts.

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

1 Remove the drive motor. See 11-1, *How to Remove a Drive Motor*.

2 Disconnect and plug the hydraulic hose from the brake. Remove the hydraulic fitting and the bleed valve from 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.

3 Chock the steer wheels.

4 Loosen the wheel lug nuts on the wheel of the drive hub to be removed. Do not remove them.

NON-STEERING AXLE COMPONENTS

5 Center a lifting jack under the non-steer end of the machine. Raise the machine and place blocks under the chassis for support.

6 Remove the wheel lug nuts. Remove the tire and wheel assembly.

7 Place a second lifting jack under the drive hub for support. Secure the drive hub to the lifting jack.

8 Remove the brake mounting bolts. Remove the brake from the drive hub and set to the side.

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

9 Remove the drive hub mounting bolts. Remove the drive hub.

⚠CAUTION Crushing hazard. The drive hub may become unbalanced and fall when the mounting fasteners are removed if not properly supported and secured to the lifting jack.

Torque specifications	
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127 Nm
Drive hub bolt torqe, dry	210 ft-lbs 285 Nm
Drive hub bolt torque, lubricated	94 ft-lb 127 Nm

Motor Controller

12-1 Motor Controller (after serial number 3446)

The drive motor controller is located under the non-steer end drive chassis cover. The drive motor controller can recognize machine drive malfunctions and display motor controller fault codes by flashing an LED at the ground controls and on the motor controller. See the Troubleshooting section of this manual for a list of fault codes and additional information. There are no adjustments needed on the drive joystick. For further information or assistance, consult the Genie Industries Service Department.

How to Test the Motor Controller

NOTICE Use the following procedure to test the motor controller. If the motor controller is found to be faulty, note which test failed and which fault code (if any) was present at the time of failure.

1 Turn the key switch to the OFF position. Disconnect the battery packs from the machine.

2 Remove the drive chassis cover fasteners from the non-steer end of the machine. Remove the drive chassis cover.

3 Discharge the capacitors inside the motor controller by connecting a 10-50 Ω resistor or the coil of a 24V DC relay between the B+ and B- terminals of the motor controller. Hold for approximately 5-10 seconds.

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

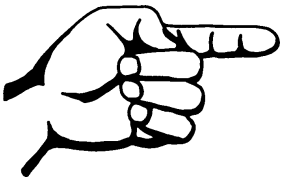
4 Tag and disconnect all power cables from the motor controller.

5 Press the release tab on the motor controller harness connector and remove the motor controller harness connector from the motor controller.

6 Connect the leads from an ohmmeter to test each motor controller terminal combination listed below. Check for resistance.

⊙ Result: All desired results must be 500 kilohms or more. If any test has a result of less than 500 kilohms, replace the motor controller.

Test	Desired result (in kilohms)
F1 to F2	(500k Ω or more)
F1 to B-	(500k Ω or more)
F1 to M-	(500k Ω or more)
F1 to B+	(500k Ω or more)
F2 to B-	(500k Ω or more)
F2 to M-	(500k Ω or more)
F2 to B+	(500k Ω or more)
B- to M-	(500k Ω or more)
M- to B+	(500k Ω or more)
Pin 17 to B-	(500k Ω or more)
Pin 20 to B-	(500k Ω or more)



This page intentionally left blank.

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
  - · Boom in stowed position
  - · Turntable rotated with the boom between the non-steering wheels
  - · 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 Z-30/20N Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

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

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

NOTICE 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, pressure gauges.

The location of terminals mentioned in this section can be found on the appropriate electrical or hydraulic schematics provided in Section 7, *Schematics*.

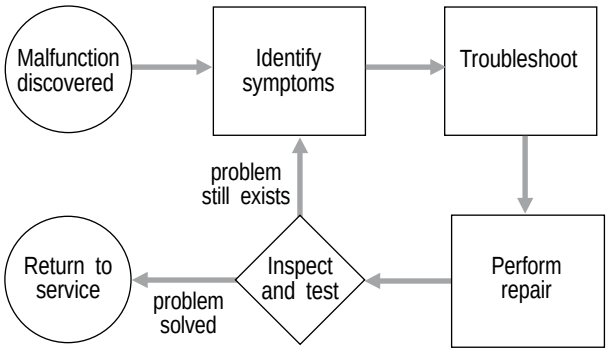
Since various degrees of a particular function loss may occur, selecting the appropriate flow chart may be troublesome. When a function will not operate with the same speed or power as a machine in good working condition, refer to the flow chart which most closely describes the problem.

⚠DANGER Tip-over hazard. When adjusting the raised drive speed settings, the maximum raised drive speed must not exceed 0.6 mph / 1Km/h or 40 feet/45 seconds / 12.2 meters / 45 seconds. If the machine is allowed to drive faster than specification, the machine may become unstable and tip-over.

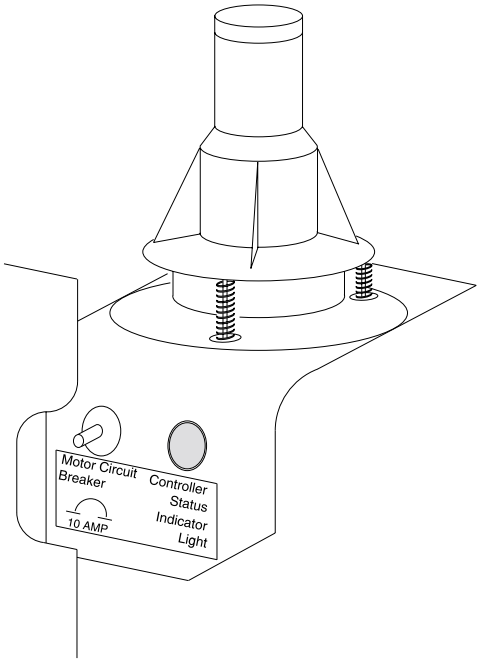
NOTICE Additional troubleshooting of the fault codes may by accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

NOTICE When using the hand-held pendant motor controller programmer, the M1 MAX SPEED needs to be set to 33. If needed, adjust the M1 MAX SPEED higher or lower to achieve the maximum raised drive speed of 0.6 mph / 1Km/h or 40 feet / 45 seconds / 12.2 meters / 45 seconds.

General Repair Process



On machines after serial number 3446, an LED will flash a fault code to aid in troubleshooting. This LED is mounted on the tilt level sensor mounting bracket, located behind the cover on the ground controls side.



Fault Code Chart
(after serial number 3446)

Fault codes are two digits. The Fault Indicator Light will blink the first digit of a two digit code, pause for 1 second, and then blink the second digit. There will be a 2 second pause between codes. For example: the Fault Indicator Light blinks 4 consecutive times, pauses for 1 second, and then blinks 1 time. That would indicate Fault Code 41.

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
Fault Indicator Light is OFF or is ON but not blinking	COMMUNICATION ERROR	Machine will not drive. Controller fault indicator light may or may not be on at the platform controls.	The key switch or Emergency Stop button(s) was cycled on and off faster than 5 seconds OR controller sensed an internal error during start up.	Turn the ground control Emergency Stop button to the OFF position and wait for 5 seconds. Pull out the ground control Emergency Stop button to the ON position. If problem persists, replace the motor controller.
01		Normal operation.		
12	HW FAILSAFE 1-2-3	Machine will not drive. Controller fault indicator light on at the platform controls.	The motor controller failed self test.	Replace the motor controller.
13	M- SHORTED	Machine will not drive. Controller fault indicator light on at the platform controls.	The motor controller has a internal short between M- and B- terminals.	Test the motor controller. See Repair Section.
	FIELD OPEN	Machine will not drive. Controller fault indicator light on at the platform controls.	Motor wiring is loose OR motor is defective OR motor controller has an internal short.	Check for loose or open connections at the drive motors and motor controller OR replace the defective drive motor OR test the motor controller. See Repair Section.
	ARM SENSOR	Machine will not drive. Controller fault indicator light on at the platform controls.	Defective motor controller.	Replace the motor controller.
	FLD SENSOR	Machine will not drive. Controller fault indicator light on at the platform controls.	Defective motor controller.	Replace the motor controller.

FAULT CODE CHART (AFTER SERIAL NUMBER 3446)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
21	THROTTLE FAULT 1	Machine will not drive. Controller fault indicator light on at the platform controls.	Open in wht/red wire #32 at pin 14 or red/wht wire #29 at pin 16 on the motor controller going from drive joystick to pins 14 and 16 at the motor controller OR pin 14 is internally shorted to power or ground OR the potentiometer on the drive joystick is defective.	See Chart 29A
	THROTTLE FAULT 2	Machine will not drive. Controller fault indicator light on at the platform controls.	Pin 14 (wht/red #32) is shorted to power or ground OR the potentiometer on the drive joystick is defective.	See Chart 29A
31	CONT DRVR OC	Machine will not drive. Controller fault indicator light on at the platform controls.	Main contactor (PR1) coil defective OR brake release relay CR5 defective.	Replace main contactor PR1 or brake release relay CR5 OR replace the motor controller.
32	MAIN CONT WELDED	Machine will not drive. Controller fault indicator light on at the platform controls.	Main contactor (PR1) contacts stuck closed OR grn wire at pin 17 on motor controller shorted to ground OR open in motor armature wiring OR motor controller has an internal short to ground.	See Chart 29B

FAULT CODE CHART (AFTER SERIAL NUMBER 3446)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
33	PRECHARGE FAULT	Machine will not drive. Controller fault indicator light on at the platform controls.	External short between B+ terminal on motor controller and ground OR motor controller is defective.	Repair short between B+ terminal on motor controller and ground OR replace motor controller. Note: Short can be on any part of circuit connected to the B+ terminal on the motor controller.
34	MISSING CONTACTOR	Machine will not drive. Controller fault indicator light on at the platform controls.	Motor controller does not detect the main contactor PR1 or brake release relay CR5.	See Chart 29C
	MAIN CONT DNC	Machine will not drive. Controller fault indicator light on at the platform controls.	Main contactor PR1 or brake release relay CR5 did not close OR open in org/red wire to PR1 and/or CR5 OR main contactor and/or brake release relay is defective.	See Chart 29C
41	LOW BATTERY VOLTAGE	Machine will not drive. Controller fault indicator light on at the platform controls.	Battery supply voltage to motor controller less than 32V.	Completely charge batteries OR check battery cable condition OR check for corrosion or loose connections at battery terminals and motor controller.

FAULT CODE CHART (AFTER SERIAL NUMBER 3446)

Fault Code	Programmer Diagnostic Display	Condition	Possible Causes	Solution
42	OVERVOLTAGE	Machine will not drive. Controller fault indicator light on at the platform controls.	Battery supply voltage to motor controller more than 55V OR machine is being operated with the battery charger plugged in.	Be sure the battery charger is disconnected OR check for loose battery cables or poor connections.
43	THERMAL CUTBACK	Machine will not drive. Controller fault indicator light on at the platform controls.	Machine being operated outside of temperature range of -13°F to 185°F (-25°C to 85°C) OR machine being driven under excessive load OR motor controller is not being cooled sufficently.	Operate machine within specified temperature limits OR check for debris around motor controller preventing proper cooling of the controller OR check for mechanical restrictions causing excessive load on the machine.

Chart 1

All Functions Will Not Operate

Be sure key switch is in the appropriate position.

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

Be sure the circuit breaker and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

If the Error Indicator light is on at the platform controls, please refer to the specific chart that relates to the error code that is displayed on the ECM.

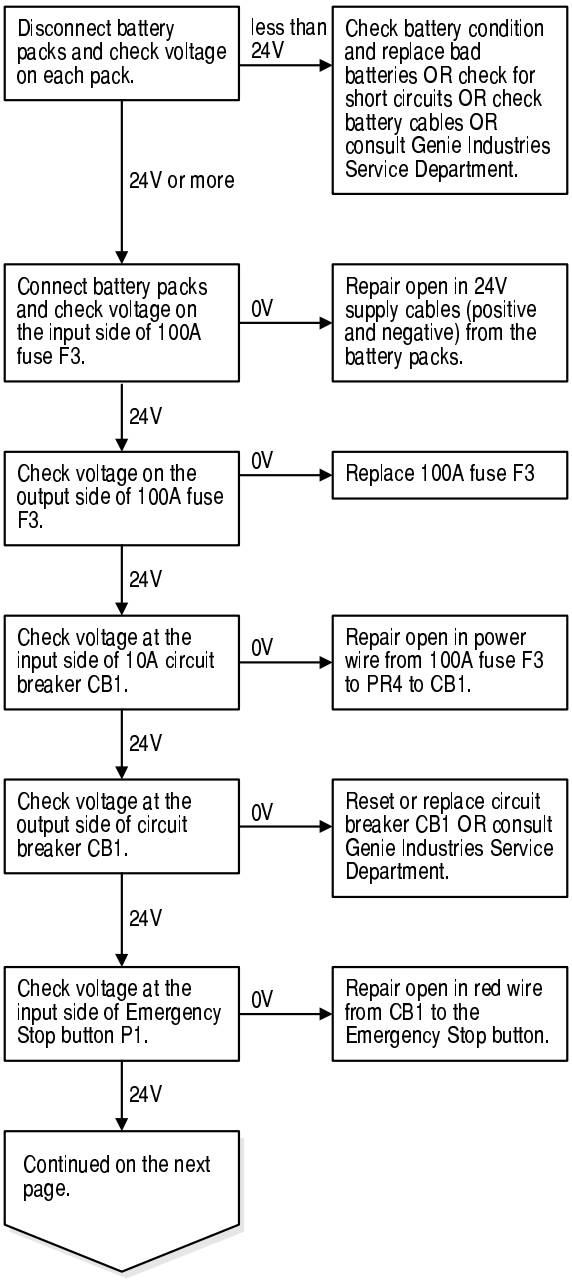


CHART 1

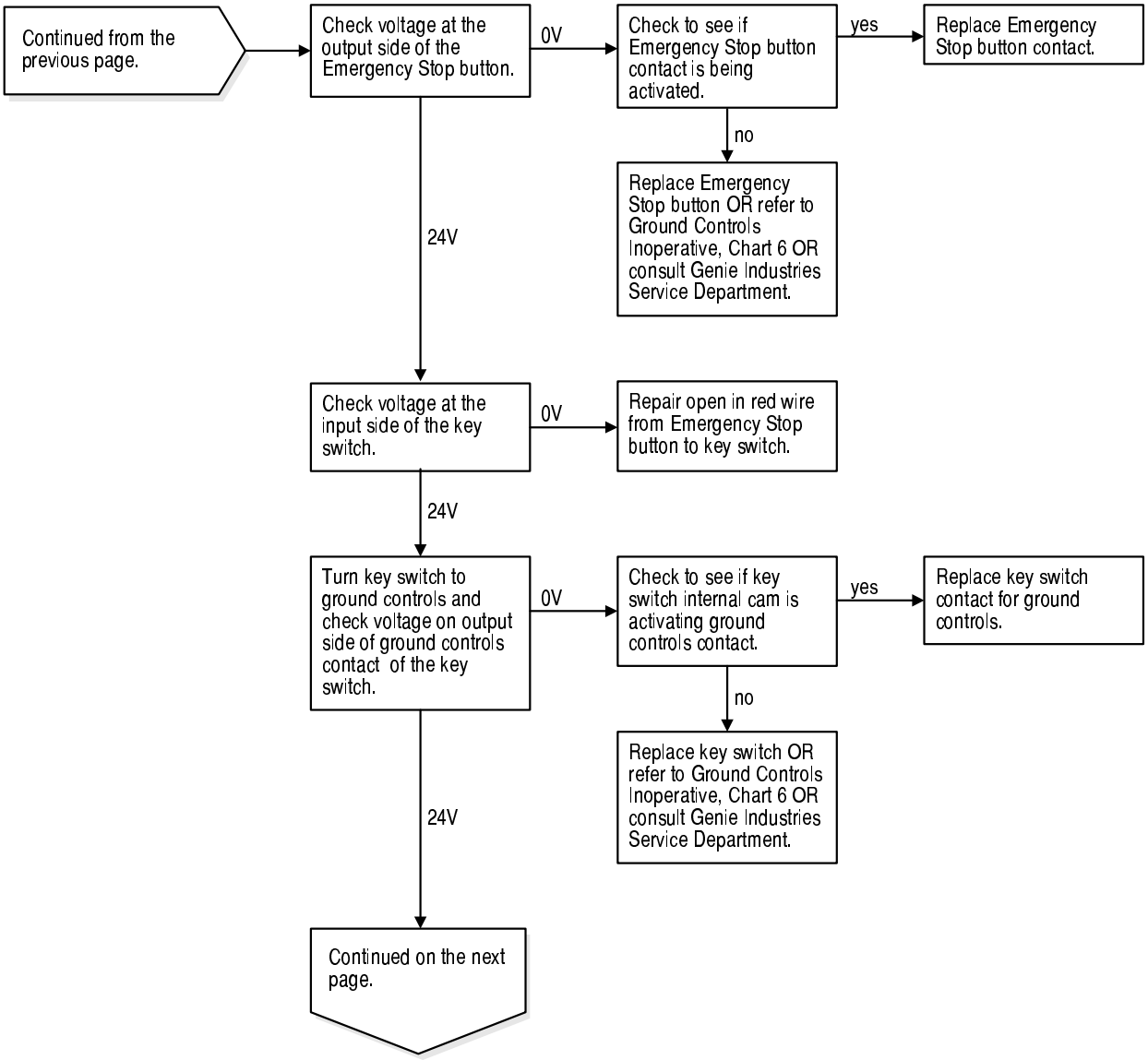

Continued from the previous page.
Check voltage at the output side of the Emergency Stop button.
0V
Check to see if Emergency Stop button contact is being activated.
yes
Replace Emergency Stop button contact.
no
Replace Emergency Stop button OR refer to Ground Controls Inoperative, Chart 6 OR consult Genie Industries Service Department.
24V
Check voltage at the input side of the key switch.
0V
Repair open in red wire from Emergency Stop button to key switch.
24V
Turn key switch to ground controls and check voltage on output side of ground controls contact of the key switch.
0V
Check to see if key switch internal cam is activating ground controls contact.
yes
Replace key switch contact for ground controls.
no
Replace key switch OR refer to Ground Controls Inoperative, Chart 6 OR consult Genie Industries Service Department.
24V
Continued on the next page.

CHART 1

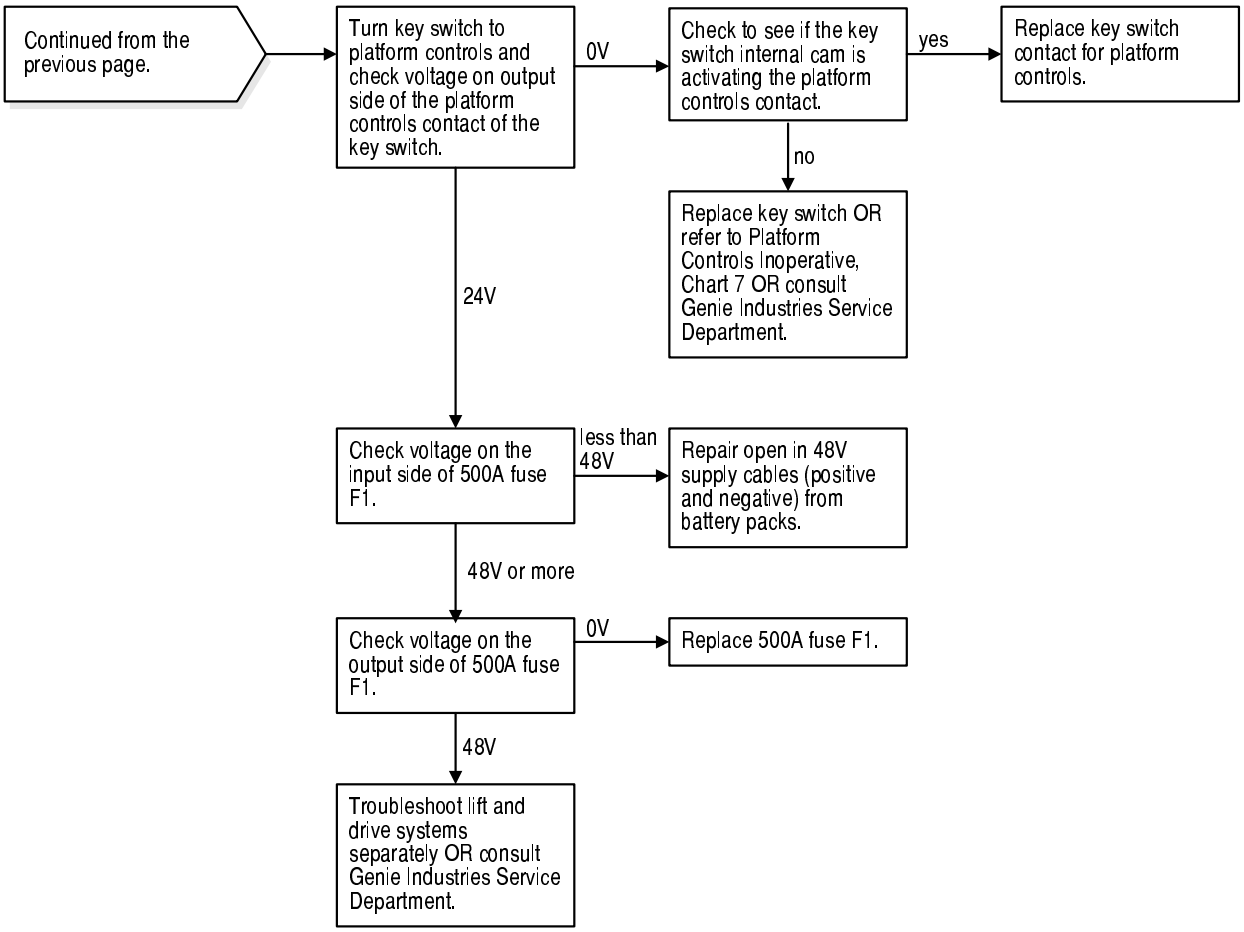

Continued from the previous page.
Turn key switch to platform controls and check voltage on output side of the platform controls contact of the key switch.
0V
Check to see if the key switch internal cam is activating the platform controls contact.
yes
Replace key switch contact for platform controls.
no
Replace key switch OR refer to Platform Controls Inoperative, Chart 7 OR consult Genie Industries Service Department.
24V
Check voltage on the input side of 500A fuse F1.
less than 48V
Repair open in 48V supply cables (positive and negative) from battery packs.
48V or more
Check voltage on the output side of 500A fuse F1.
0V
Replace 500A fuse F1.
48V
Troubleshoot lift and drive systems separately OR consult Genie Industries Service Department.

Chart 2

Lift Pump Motor Will Not Operate

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

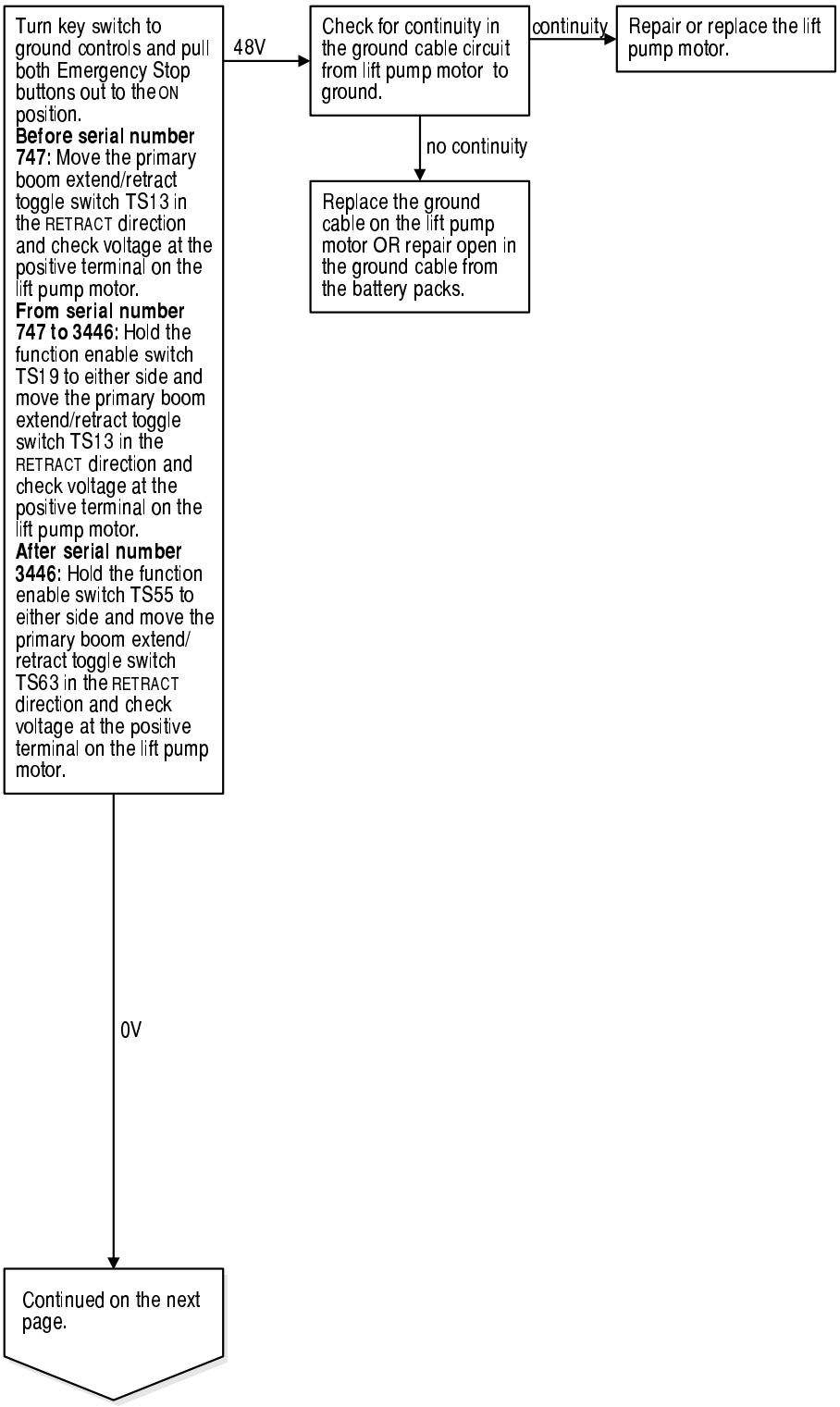


CHART 2

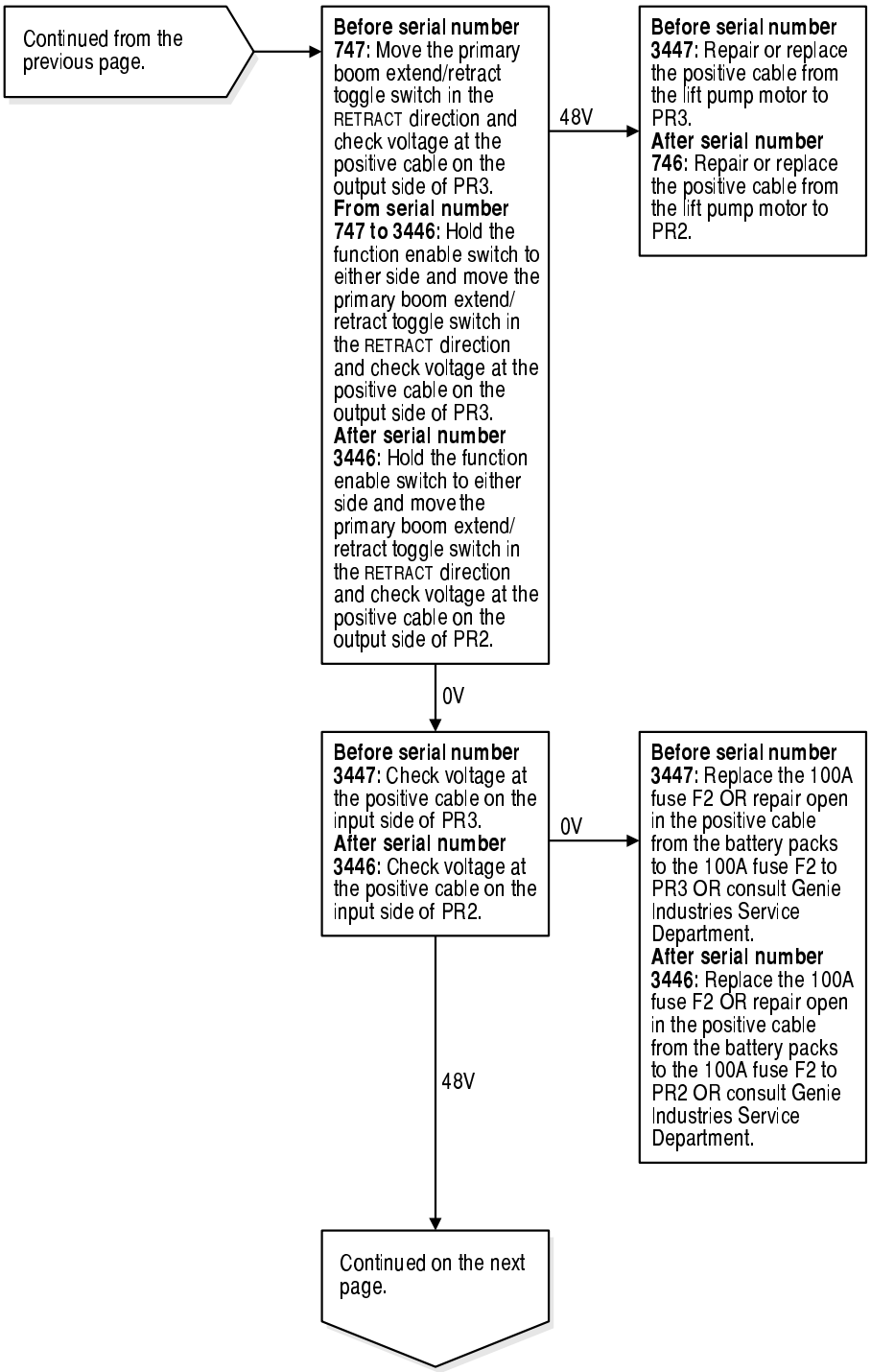

Continued from the previous page.
Before serial number 747: Move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage at the positive cable on the output side of PR3.
From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at the positive cable on the output side of PR3.
After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at the positive cable on the output side of PR2.
48V
Before serial number 3447: Repair or replace the positive cable from the lift pump motor to PR3.
After serial number 746: Repair or replace the positive cable from the lift pump motor to PR2.
0V
Before serial number 3447: Check voltage at the positive cable on the input side of PR3.
After serial number 3446: Check voltage at the positive cable on the input side of PR2.
0V
Before serial number 3447: Replace the 100A fuse F2 OR repair open in the positive cable from the battery packs to the 100A fuse F2 to PR3 OR consult Genie Industries Service Department.
After serial number 3446: Replace the 100A fuse F2 OR repair open in the positive cable from the battery packs to the 100A fuse F2 to PR2 OR consult Genie Industries Service Department.
48V
Continued on the next page.

CHART 2

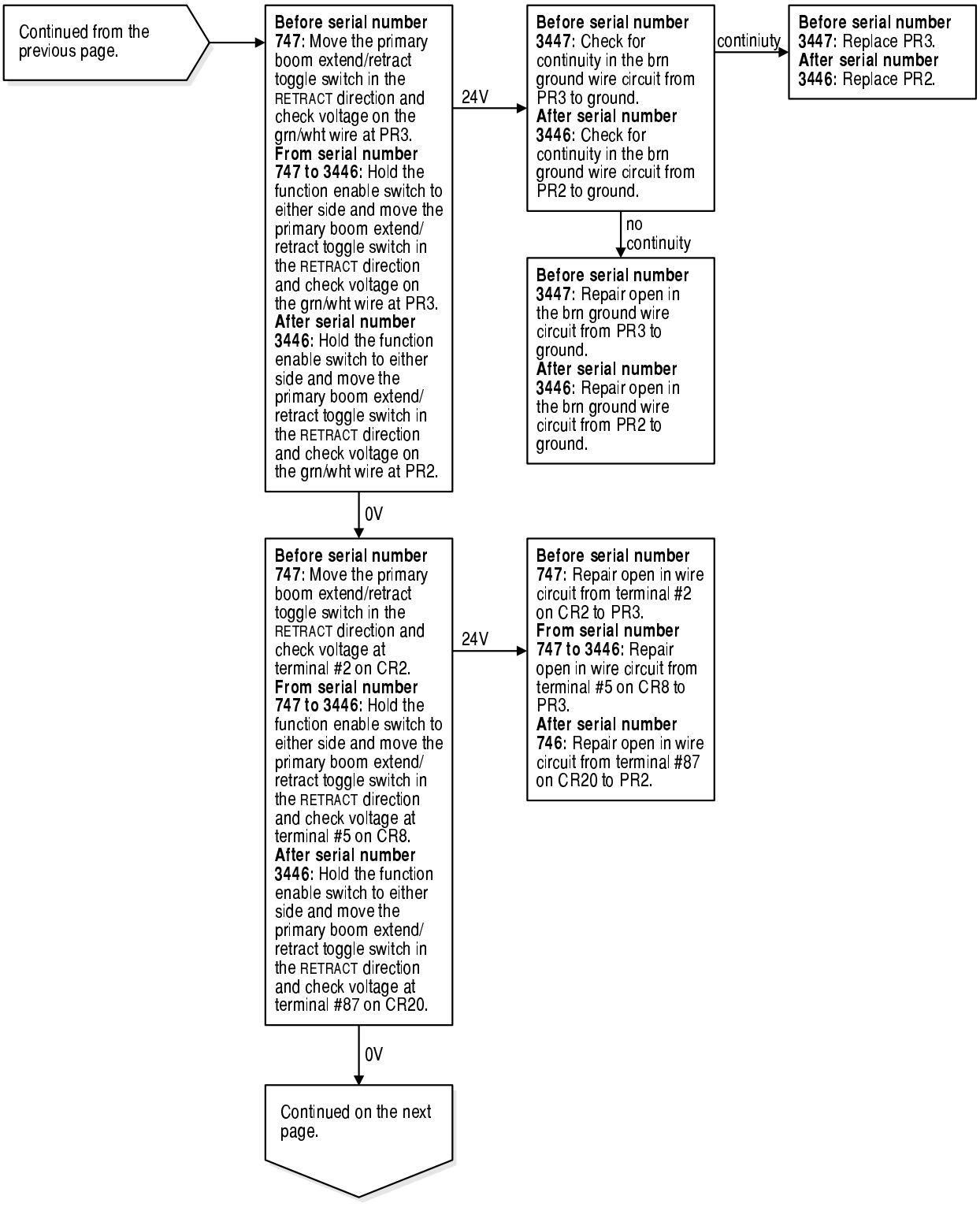

Continued from the previous page.
Before serial number 747: Move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage on the grn/wht wire at PR3. From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage on the grn/wht wire at PR3. After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage on the grn/wht wire at PR2.
24V
Before serial number 3447: Check for continuity in the brn ground wire circuit from PR3 to ground. After serial number 3446: Check for continuity in the brn ground wire circuit from PR2 to ground.
continiuty
Before serial number 3447: Replace PR3. After serial number 3446: Replace PR2.
no continuity
Before serial number 3447: Repair open in the brn ground wire circuit from PR3 to ground. After serial number 3446: Repair open in the brn ground wire circuit from PR2 to ground.
0V
Before serial number 747: Move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage at terminal #2 on CR2. From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage at terminal #5 on CR8. After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage at terminal #87 on CR20.
24V
Before serial number 747: Repair open in wire circuit from terminal #2 on CR2 to PR3. From serial number 747 to 3446: Repair open in wire circuit from terminal #5 on CR8 to PR3. After serial number 746: Repair open in wire circuit from terminal #87 on CR20 to PR2.
0V
Continued on the next page.

CHART 2

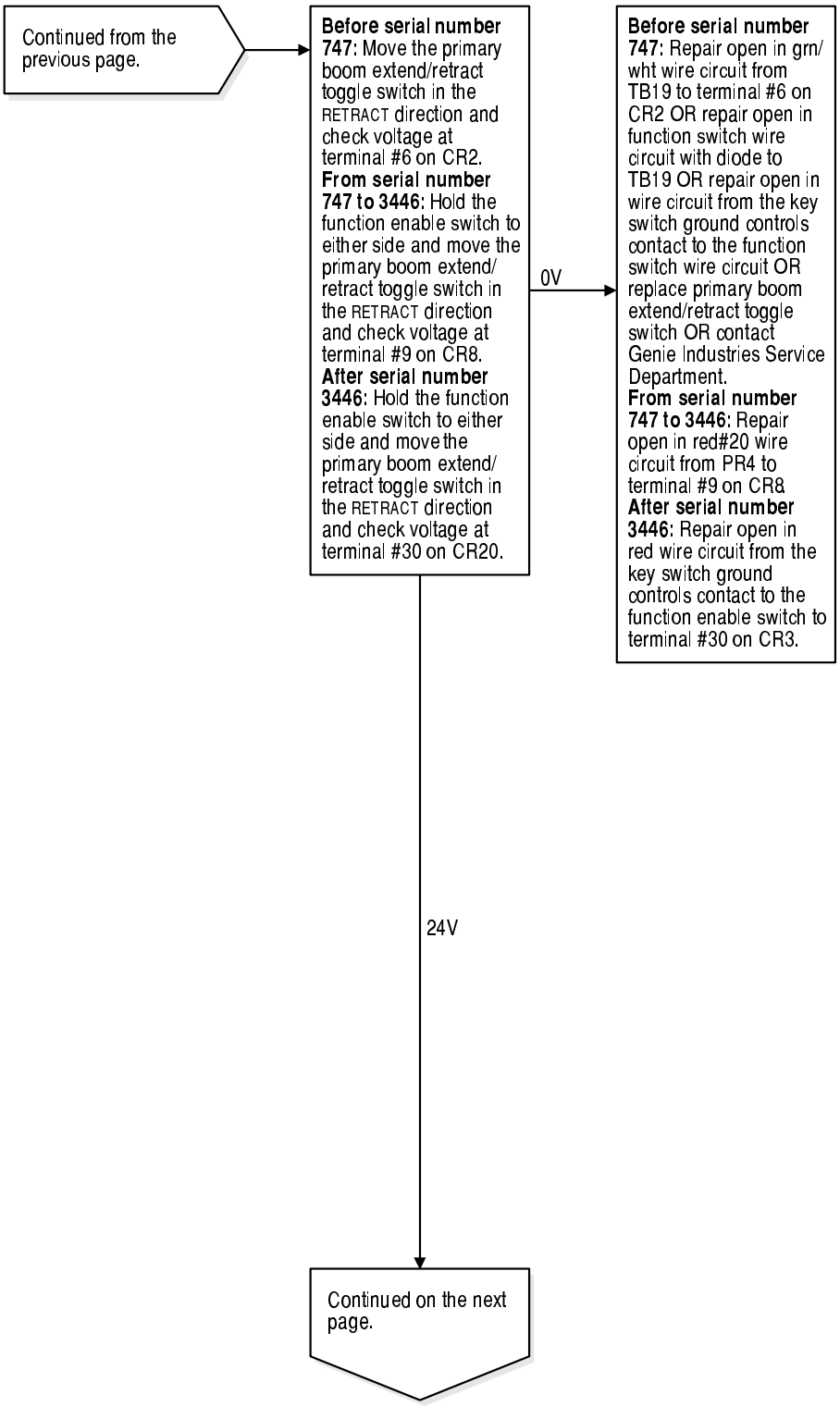

Continued from the previous page.
Before serial number 747: Move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage at terminal #6 on CR2.
From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #9 on CR8.
After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #30 on CR20.
0V
Before serial number 747: Repair open in grn/ wht wire circuit from TB19 to terminal #6 on CR2 OR repair open in function switch wire circuit with diode to TB19 OR repair open in wire circuit from the key switch ground controls contact to the function switch wire circuit OR replace primary boom extend/retract toggle switch OR contact Genie Industries Service Department.
From serial number 747 to 3446: Repair open in red#20 wire circuit from PR4 to terminal #9 on CR8.
After serial number 3446: Repair open in red wire circuit from the key switch ground controls contact to the function enable switch to terminal #30 on CR3.
24V
Continued on the next page.

CHART 2

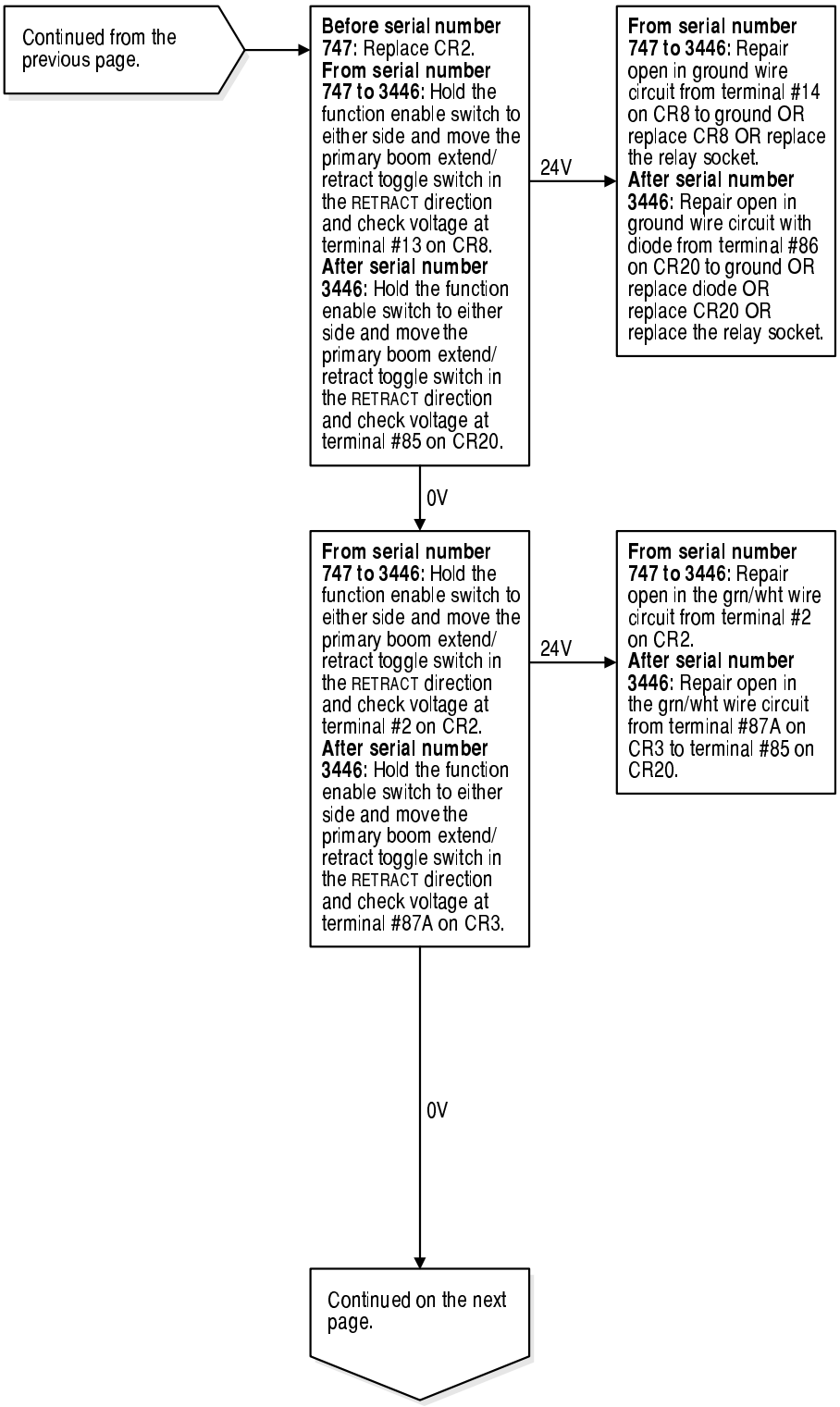

Continued from the previous page.
Before serial number 747: Replace CR2. From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #13 on CR8. After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #85 on CR20.
24V
From serial number 747 to 3446: Repair open in ground wire circuit from terminal #14 on CR8 to ground OR replace CR8 OR replace the relay socket. After serial number 3446: Repair open in ground wire circuit with diode from terminal #86 on CR20 to ground OR replace diode OR replace CR20 OR replace the relay socket.
0V
From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #2 on CR2. After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #87A on CR3.
24V
From serial number 747 to 3446: Repair open in the grn/wht wire circuit from terminal #2 on CR2. After serial number 3446: Repair open in the grn/wht wire circuit from terminal #87A on CR3 to terminal #85 on CR20.
0V
Continued on the next page.

CHART 2

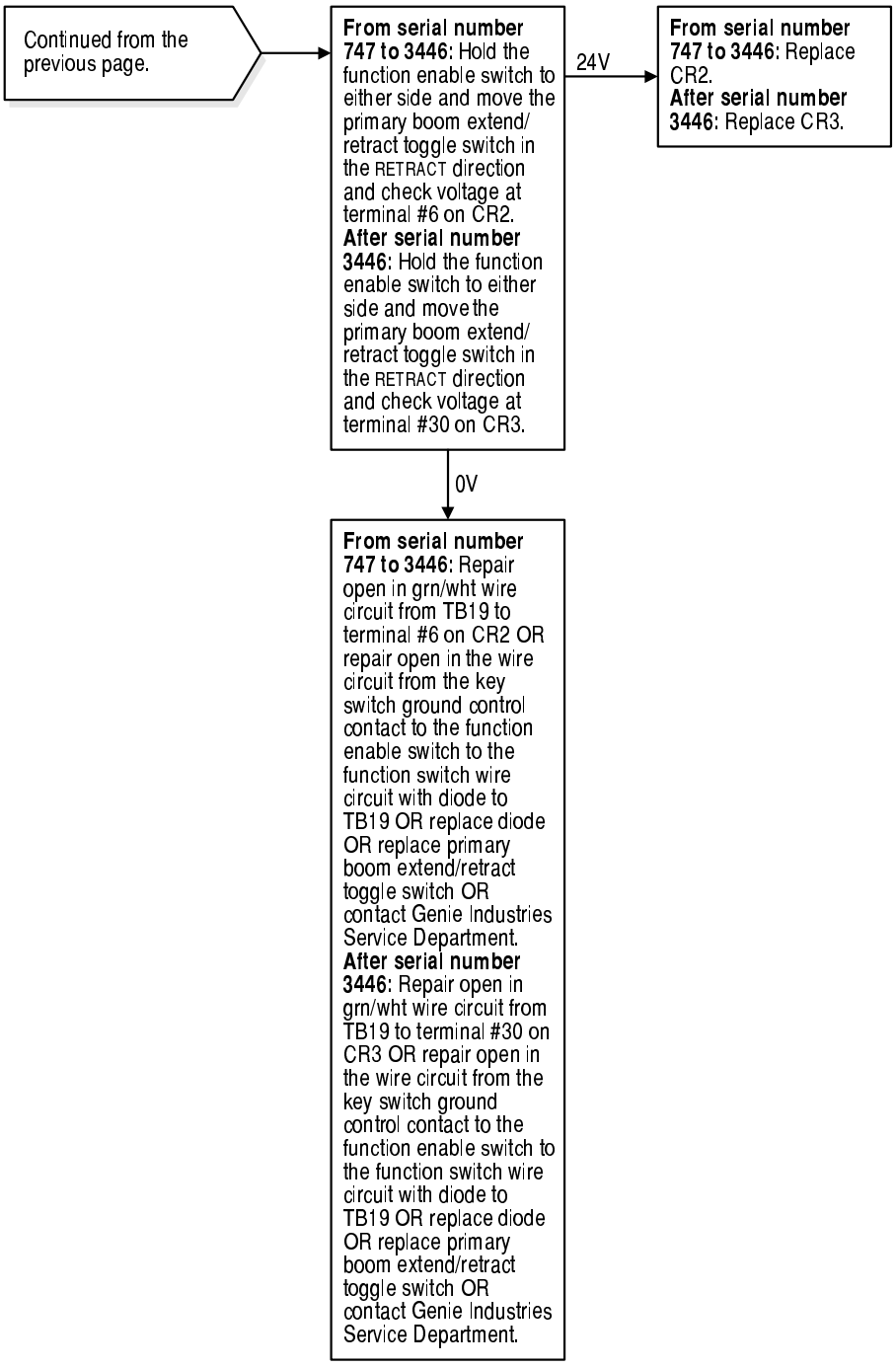

Continued from the previous page.
From serial number 747 to 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #6 on CR2. After serial number 3446: Hold the function enable switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage at terminal #30 on CR3.
24V
From serial number 747 to 3446: Replace CR2. After serial number 3446: Replace CR3.
0V
From serial number 747 to 3446: Repair open in grn/wht wire circuit from TB19 to terminal #6 on CR2 OR repair open in the wire circuit from the key switch ground control contact to the function enable switch to the function switch wire circuit with diode to TB19 OR replace diode OR replace primary boom extend/retract toggle switch OR contact Genie Industries Service Department. After serial number 3446: Repair open in grn/wht wire circuit from TB19 to terminal #30 on CR3 OR repair open in the wire circuit from the key switch ground control contact to the function enable switch to the function switch wire circuit with diode to TB19 OR replace diode OR replace primary boom extend/retract toggle switch OR contact Genie Industries Service Department.

Chart 3

Auxiliary Pump Motor Will Not Operate

Be sure all other functions operate normally.

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

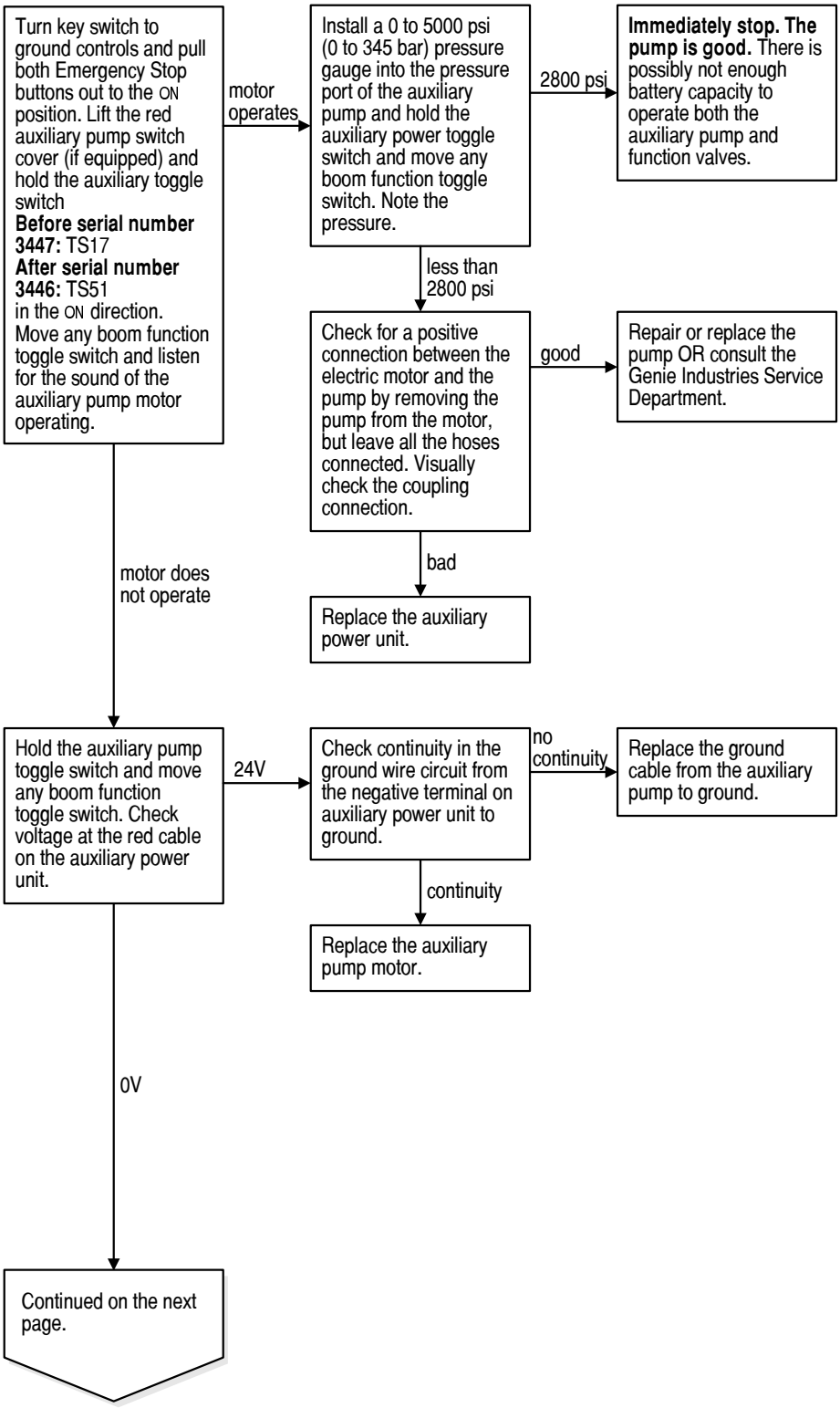


CHART 3

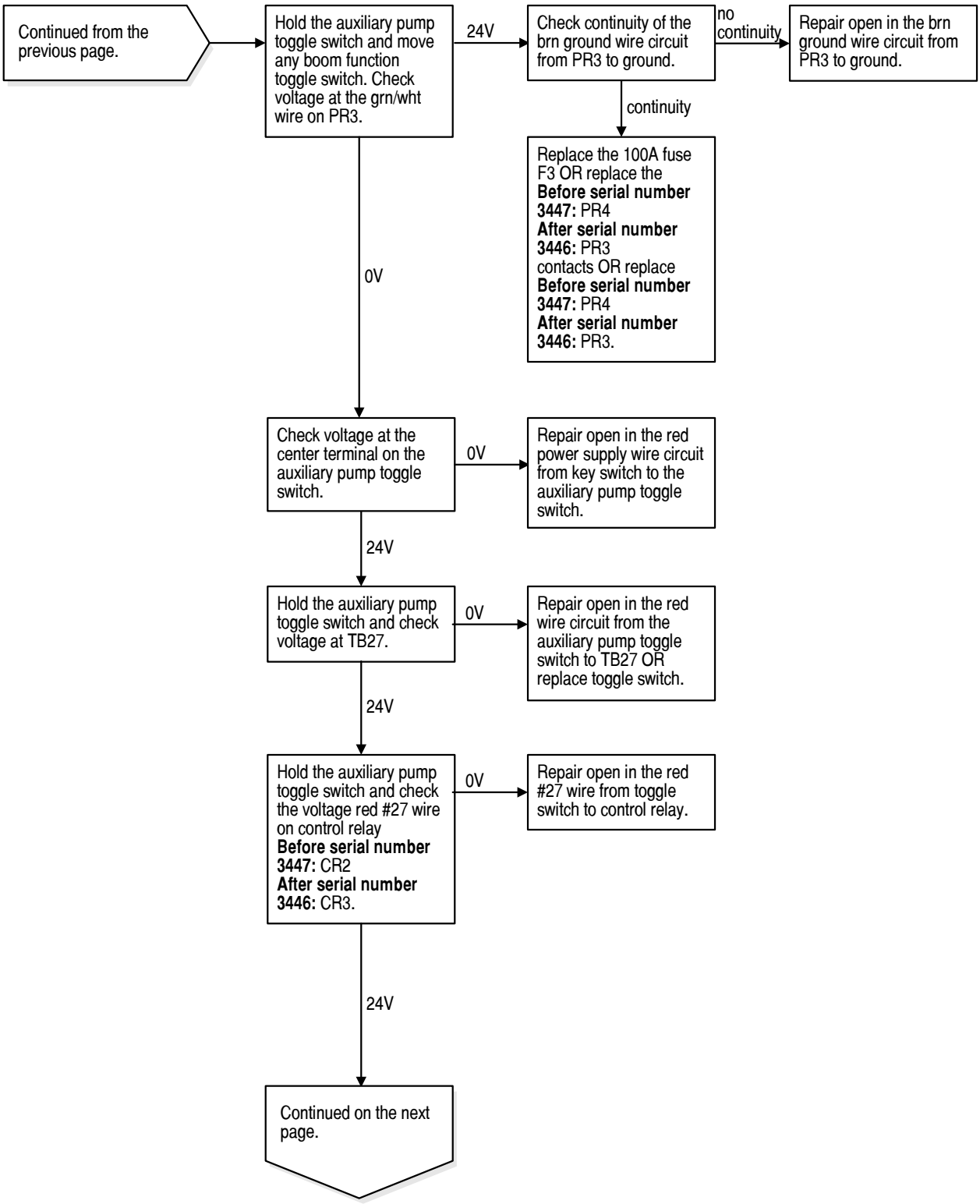

Continued from the previous page.
Hold the auxiliary pump toggle switch and move any boom function toggle switch. Check voltage at the grn/wht wire on PR3.
24V
Check continuity of the brn ground wire circuit from PR3 to ground.
no continuity
Repair open in the brn ground wire circuit from PR3 to ground.
continuity
Replace the 100A fuse F3 OR replace the **Before serial number 3447:** PR4 **After serial number 3446:** PR3 contacts OR replace **Before serial number 3447:** PR4 **After serial number 3446:** PR3.
0V
Check voltage at the center terminal on the auxiliary pump toggle switch.
0V
Repair open in the red power supply wire circuit from key switch to the auxiliary pump toggle switch.
24V
Hold the auxiliary pump toggle switch and check voltage at TB27.
0V
Repair open in the red wire circuit from the auxiliary pump toggle switch to TB27 OR replace toggle switch.
24V
Hold the auxiliary pump toggle switch and check the voltage red #27 wire on control relay **Before serial number 3447:** CR2 **After serial number 3446:** CR3.
0V
Repair open in the red #27 wire from toggle switch to control relay.
24V
Continued on the next page.

CHART 3

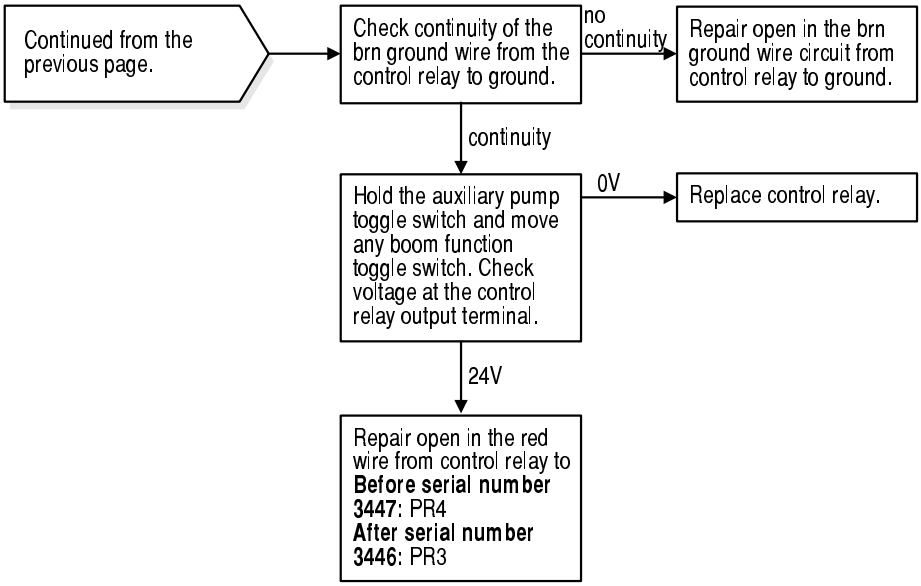

Continued from the previous page.
Check continuity of the brn ground wire from the control relay to ground.
no continuity
Repair open in the brn ground wire circuit from control relay to ground.
continuity
Hold the auxiliary pump toggle switch and move any boom function toggle switch. Check voltage at the control relay output terminal.
0V
Replace control relay.
24V
Repair open in the red wire from control relay to
Before serial number 3447: PR4
After serial number 3446: PR3

Chart 4

All Functions Inoperative, Power Unit Starts and Runs

Be sure the circuit breaker and fuse are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

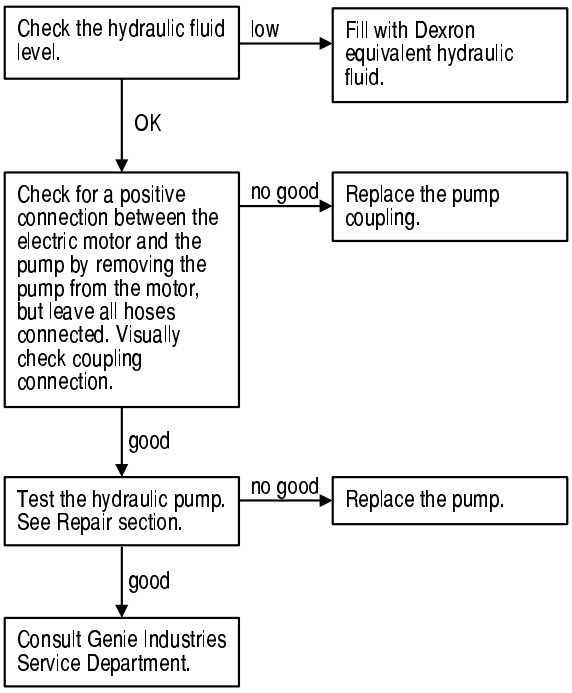


Chart 5

All Lift and Steer Functions Inoperative, Drive Function Operational

Be sure the battery packs are properly connected and fully charged.

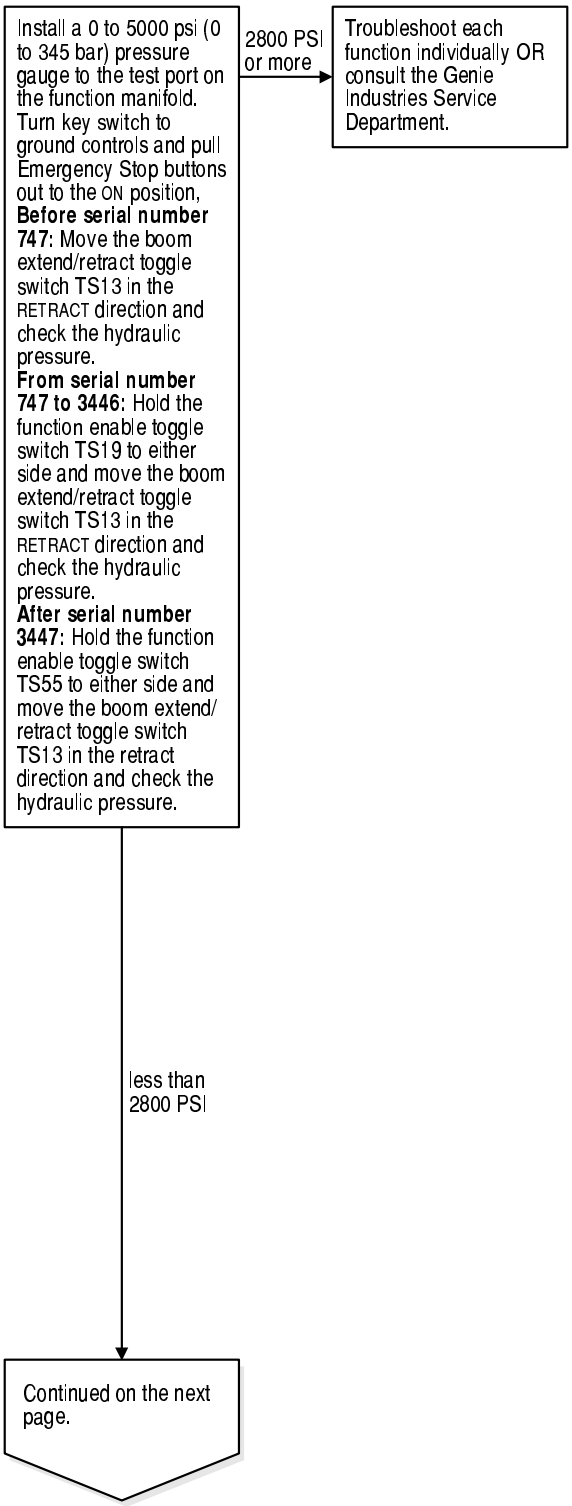


CHART 5

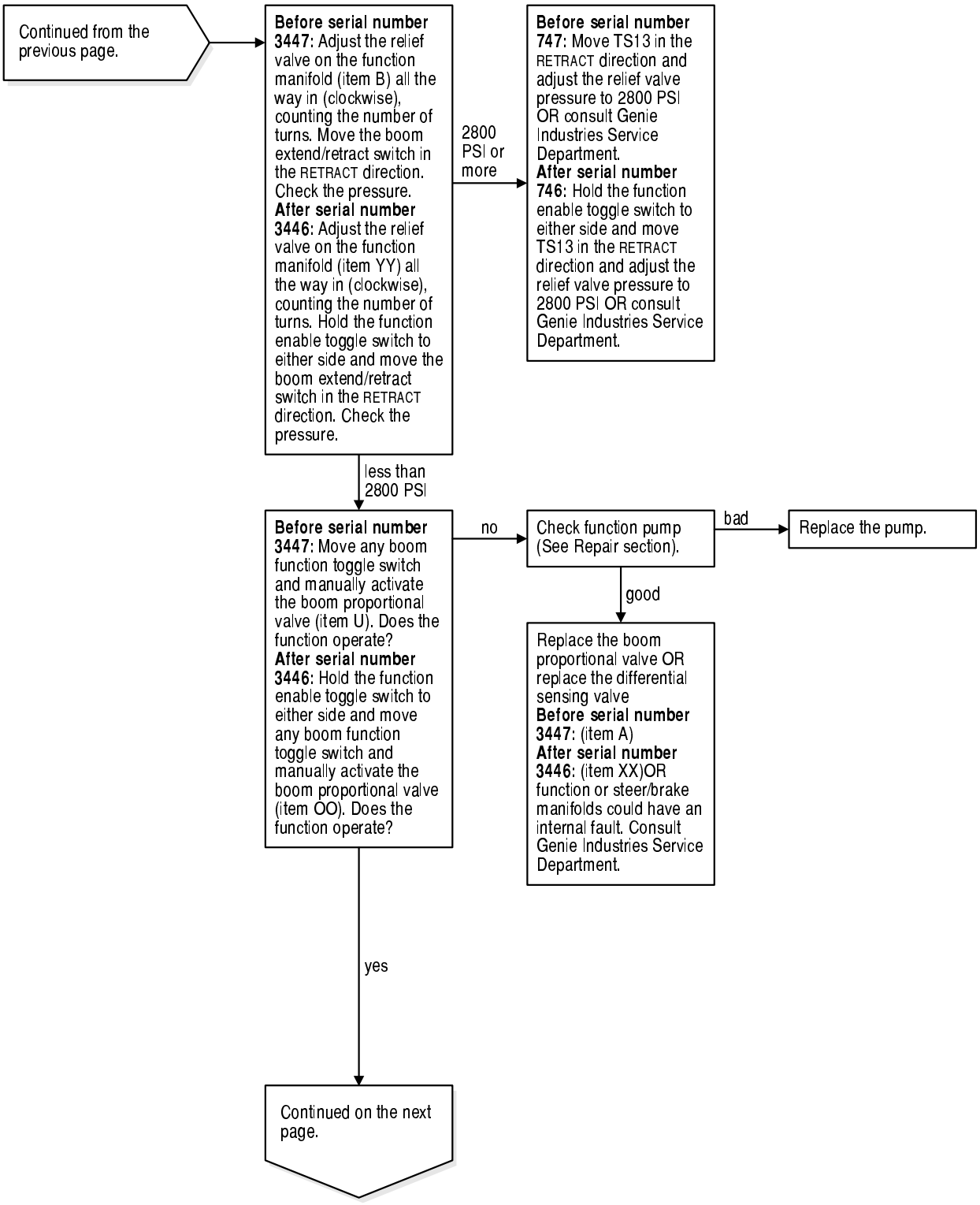

Continued from the previous page.
Before serial number 3447: Adjust the relief valve on the function manifold (item B) all the way in (clockwise), counting the number of turns. Move the boom extend/retract switch in the RETRACT direction. Check the pressure.
After serial number 3446: Adjust the relief valve on the function manifold (item YY) all the way in (clockwise), counting the number of turns. Hold the function enable toggle switch to either side and move the boom extend/retract switch in the RETRACT direction. Check the pressure.
2800 PSI or more
Before serial number 747: Move TS13 in the RETRACT direction and adjust the relief valve pressure to 2800 PSI OR consult Genie Industries Service Department.
After serial number 746: Hold the function enable toggle switch to either side and move TS13 in the RETRACT direction and adjust the relief valve pressure to 2800 PSI OR consult Genie Industries Service Department.
less than 2800 PSI
Before serial number 3447: Move any boom function toggle switch and manually activate the boom proportional valve (item U). Does the function operate?
After serial number 3446: Hold the function enable toggle switch to either side and move any boom function toggle switch and manually activate the boom proportional valve (item OO). Does the function operate?
no
Check function pump (See Repair section).
bad
Replace the pump.
good
Replace the boom proportional valve OR replace the differential sensing valve
Before serial number 3447: (item A)
After serial number 3446: (item XX)OR function or steer/brake manifolds could have an internal fault. Consult Genie Industries Service Department.
yes
Continued on the next page.

CHART 5

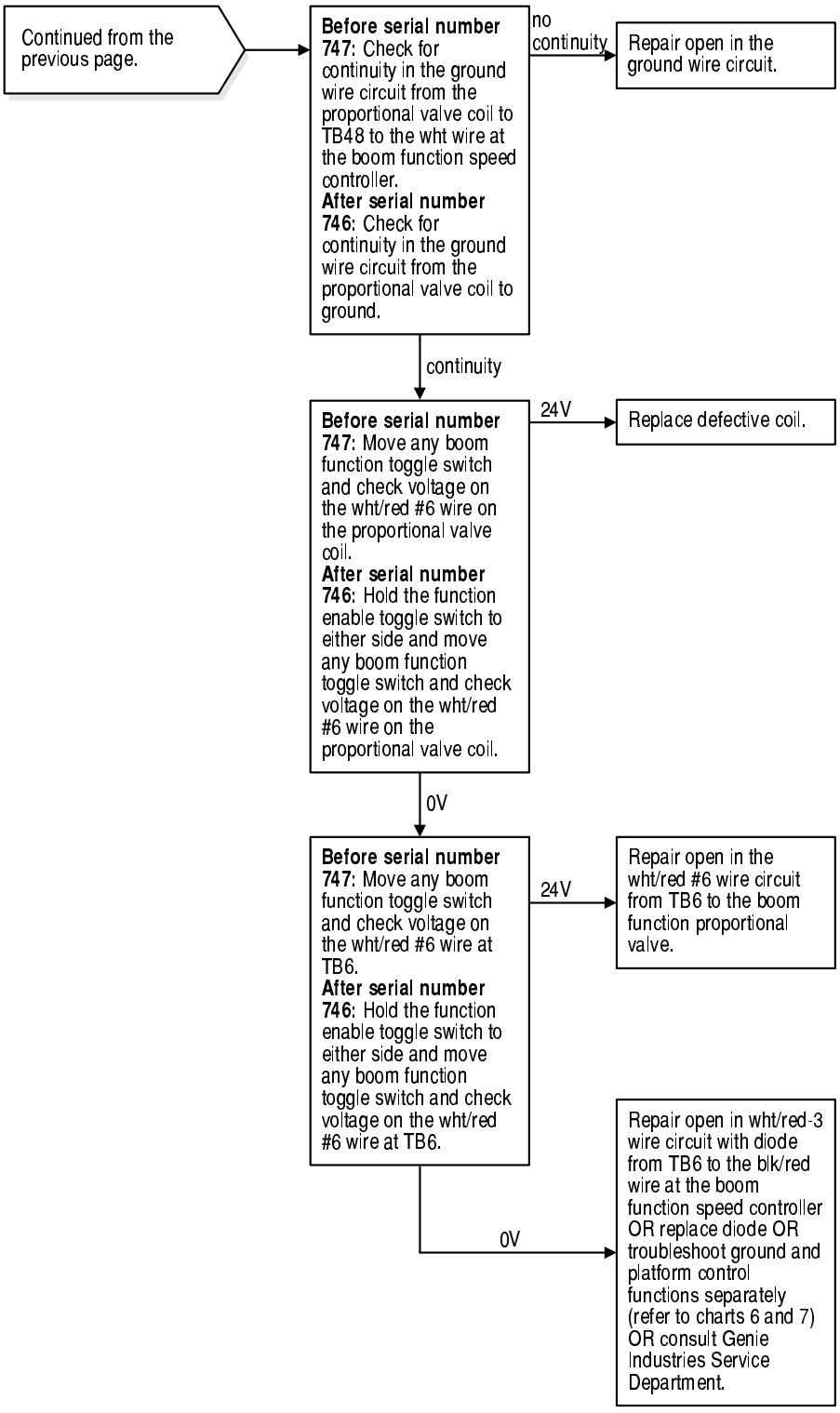

Continued from the previous page.
Before serial number 747: Check for continuity in the ground wire circuit from the proportional valve coil to TB48 to the wht wire at the boom function speed controller.
After serial number 746: Check for continuity in the ground wire circuit from the proportional valve coil to ground.
no continuity
Repair open in the ground wire circuit.
continuity
Before serial number 747: Move any boom function toggle switch and check voltage on the wht/red #6 wire on the proportional valve coil.
After serial number 746: Hold the function enable toggle switch to either side and move any boom function toggle switch and check voltage on the wht/red #6 wire on the proportional valve coil.
24V
Replace defective coil.
0V
Before serial number 747: Move any boom function toggle switch and check voltage on the wht/red #6 wire at TB6.
After serial number 746: Hold the function enable toggle switch to either side and move any boom function toggle switch and check voltage on the wht/red #6 wire at TB6.
24V
Repair open in the wht/red #6 wire circuit from TB6 to the boom function proportional valve.
0V
Repair open in wht/red-3 wire circuit with diode from TB6 to the blk/red wire at the boom function speed controller OR replace diode OR troubleshoot ground and platform control functions separately (refer to charts 6 and 7) OR consult Genie Industries Service Department.

Chart 6

Ground Controls Inoperative, Platform Controls Operate Normally

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

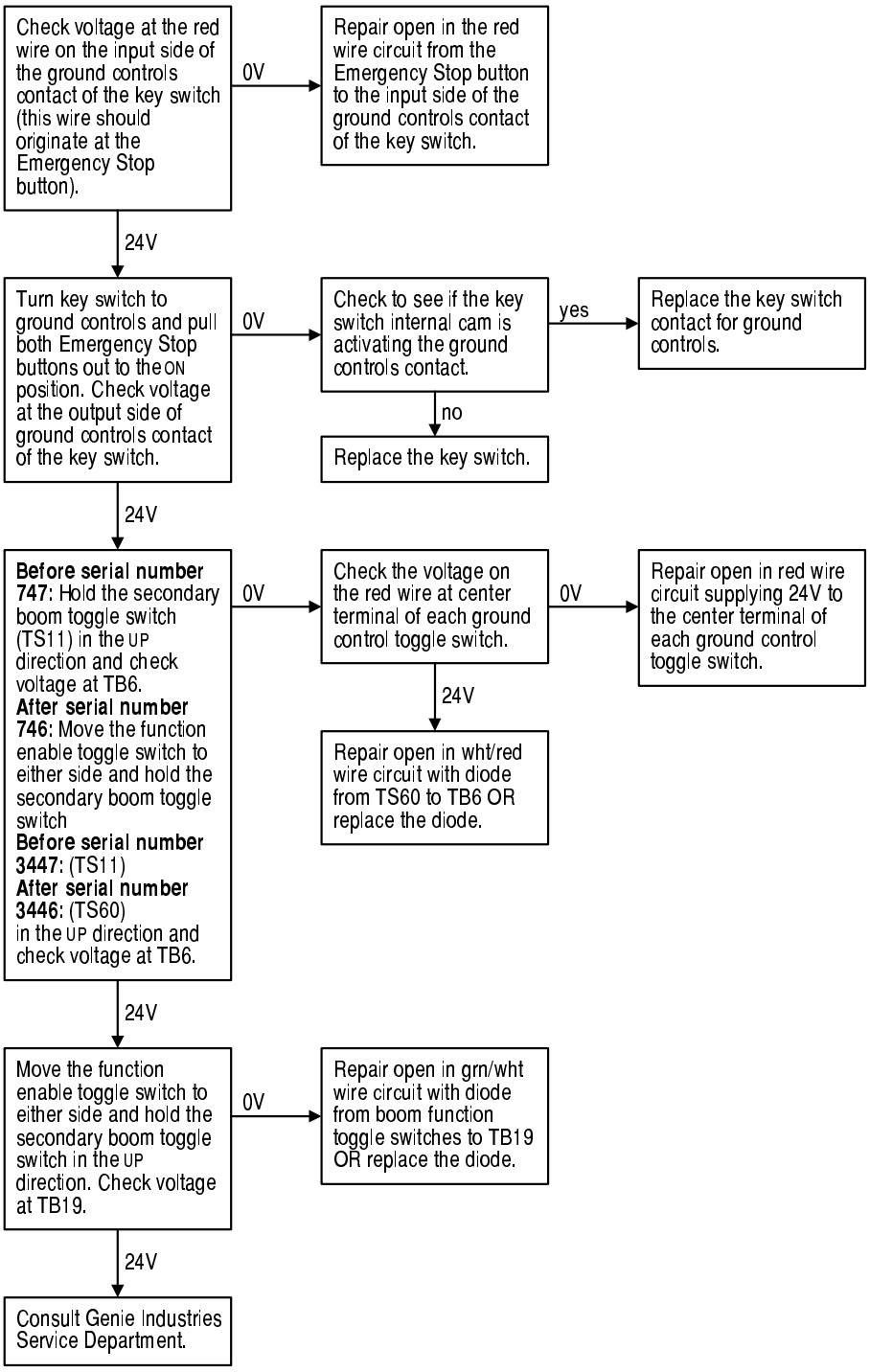


Chart 7

Platform Controls Inoperative, Ground Controls Operate Normally (before serial number 3447)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

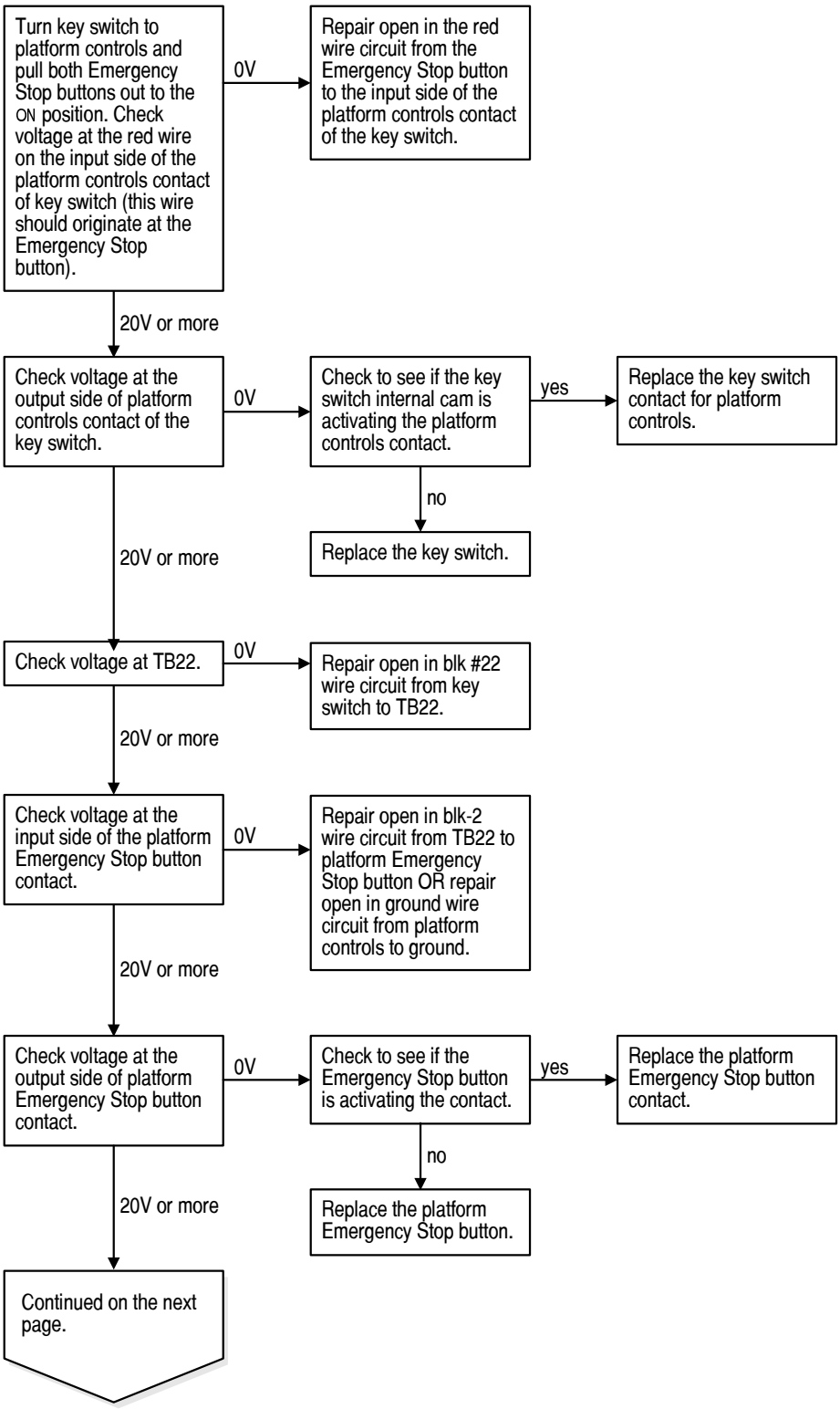


CHART 7

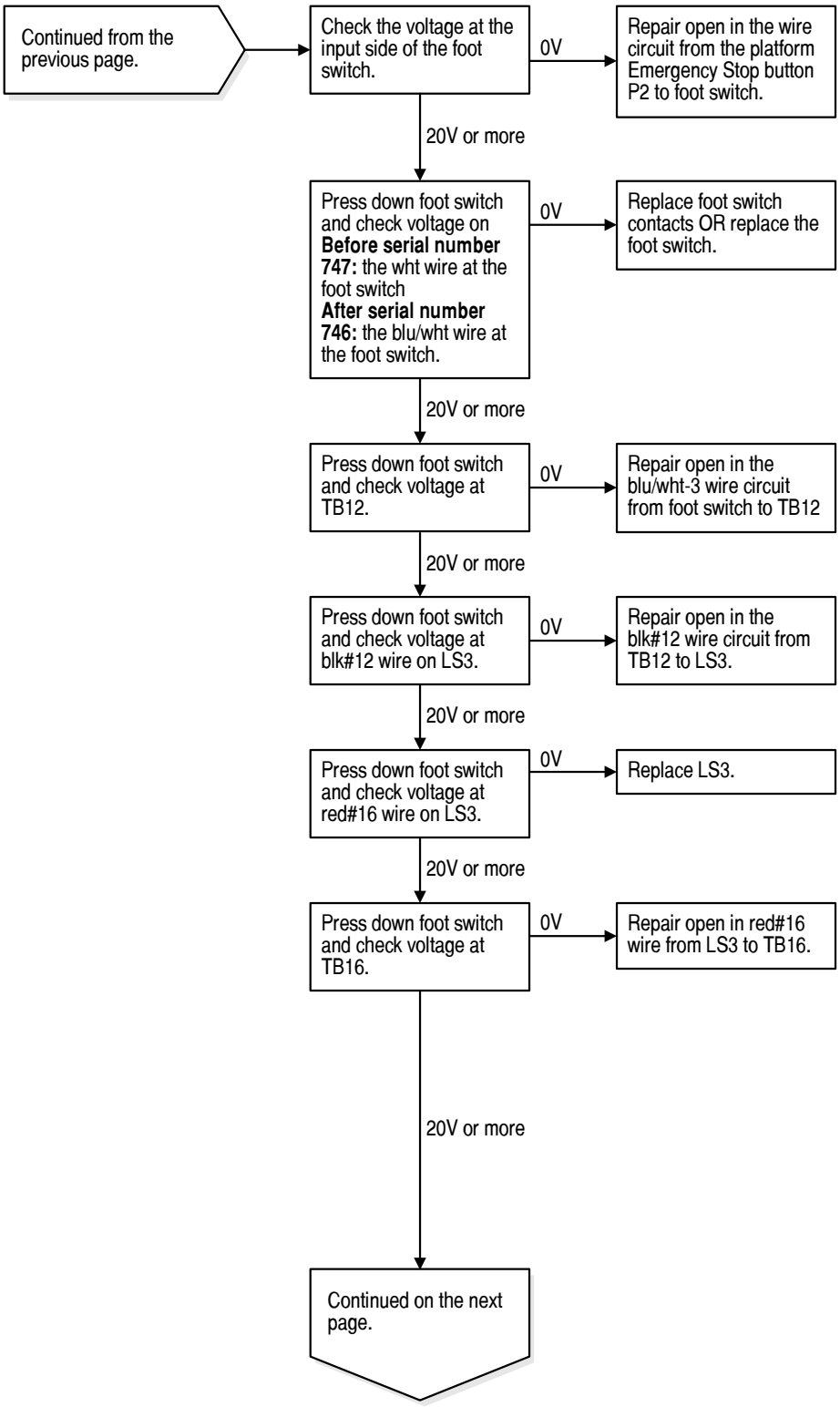

Continued from the previous page.
Check the voltage at the input side of the foot switch.
0V
Repair open in the wire circuit from the platform Emergency Stop button P2 to foot switch.
20V or more
Press down foot switch and check voltage on **Before serial number 747:** the wht wire at the foot switch **After serial number 746:** the blu/wht wire at the foot switch.
0V
Replace foot switch contacts OR replace the foot switch.
20V or more
Press down foot switch and check voltage at TB12.
0V
Repair open in the blu/wht-3 wire circuit from foot switch to TB12
20V or more
Press down foot switch and check voltage at blk#12 wire on LS3.
0V
Repair open in the blk#12 wire circuit from TB12 to LS3.
20V or more
Press down foot switch and check voltage at red#16 wire on LS3.
0V
Replace LS3.
20V or more
Press down foot switch and check voltage at TB16.
0V
Repair open in red#16 wire from LS3 to TB16.
20V or more
Continued on the next page.

CHART 7

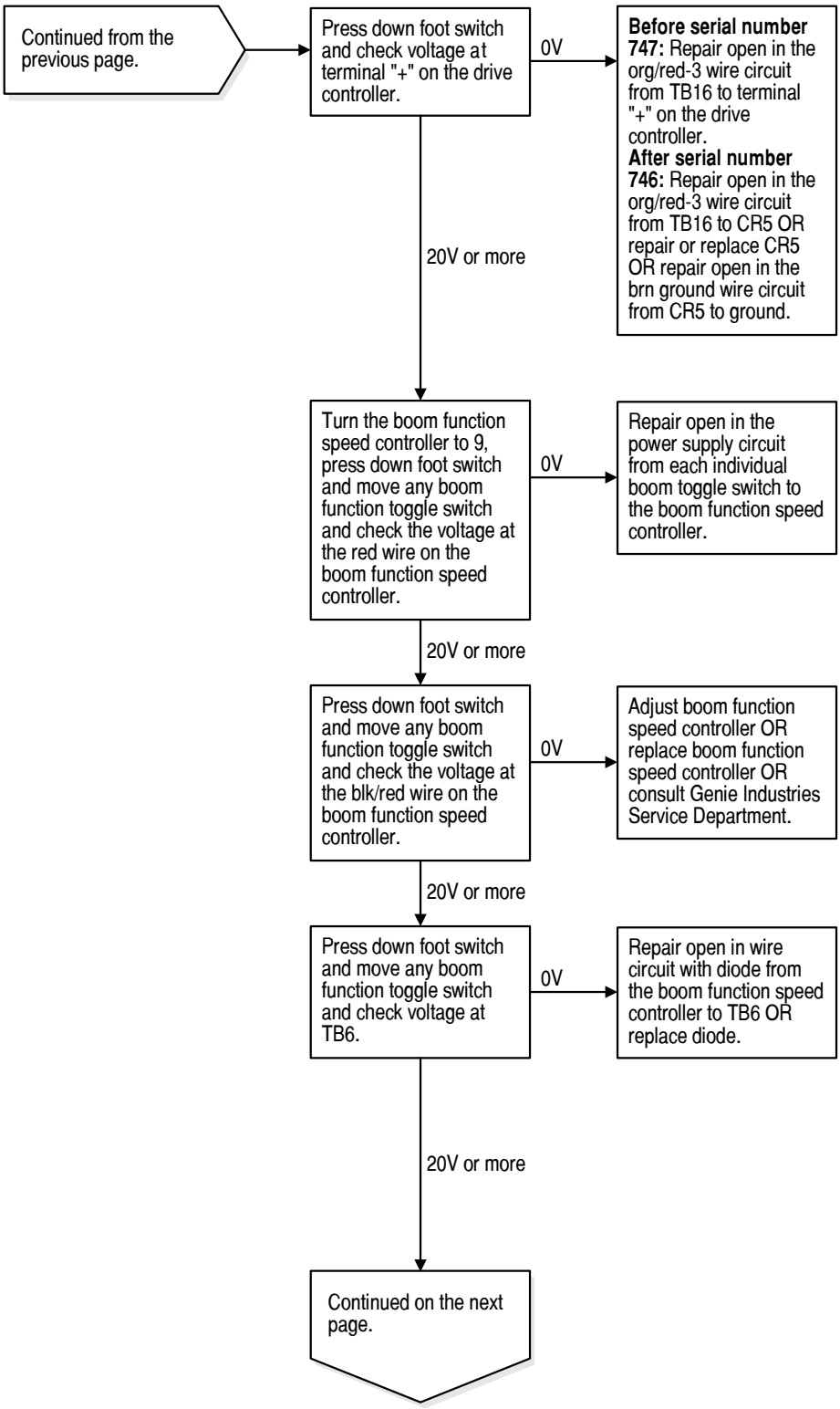

Continued from the previous page.
Press down foot switch and check voltage at terminal "+" on the drive controller.
0V
Before serial number 747: Repair open in the org/red-3 wire circuit from TB16 to terminal "+" on the drive controller.
After serial number 746: Repair open in the org/red-3 wire circuit from TB16 to CR5 OR repair or replace CR5 OR repair open in the brn ground wire circuit from CR5 to ground.
20V or more
Turn the boom function speed controller to 9, press down foot switch and move any boom function toggle switch and check the voltage at the red wire on the boom function speed controller.
0V
Repair open in the power supply circuit from each individual boom toggle switch to the boom function speed controller.
20V or more
Press down foot switch and move any boom function toggle switch and check the voltage at the blk/red wire on the boom function speed controller.
0V
Adjust boom function speed controller OR replace boom function speed controller OR consult Genie Industries Service Department.
20V or more
Press down foot switch and move any boom function toggle switch and check voltage at TB6.
0V
Repair open in wire circuit with diode from the boom function speed controller to TB6 OR replace diode.
20V or more
Continued on the next page.

CHART 7

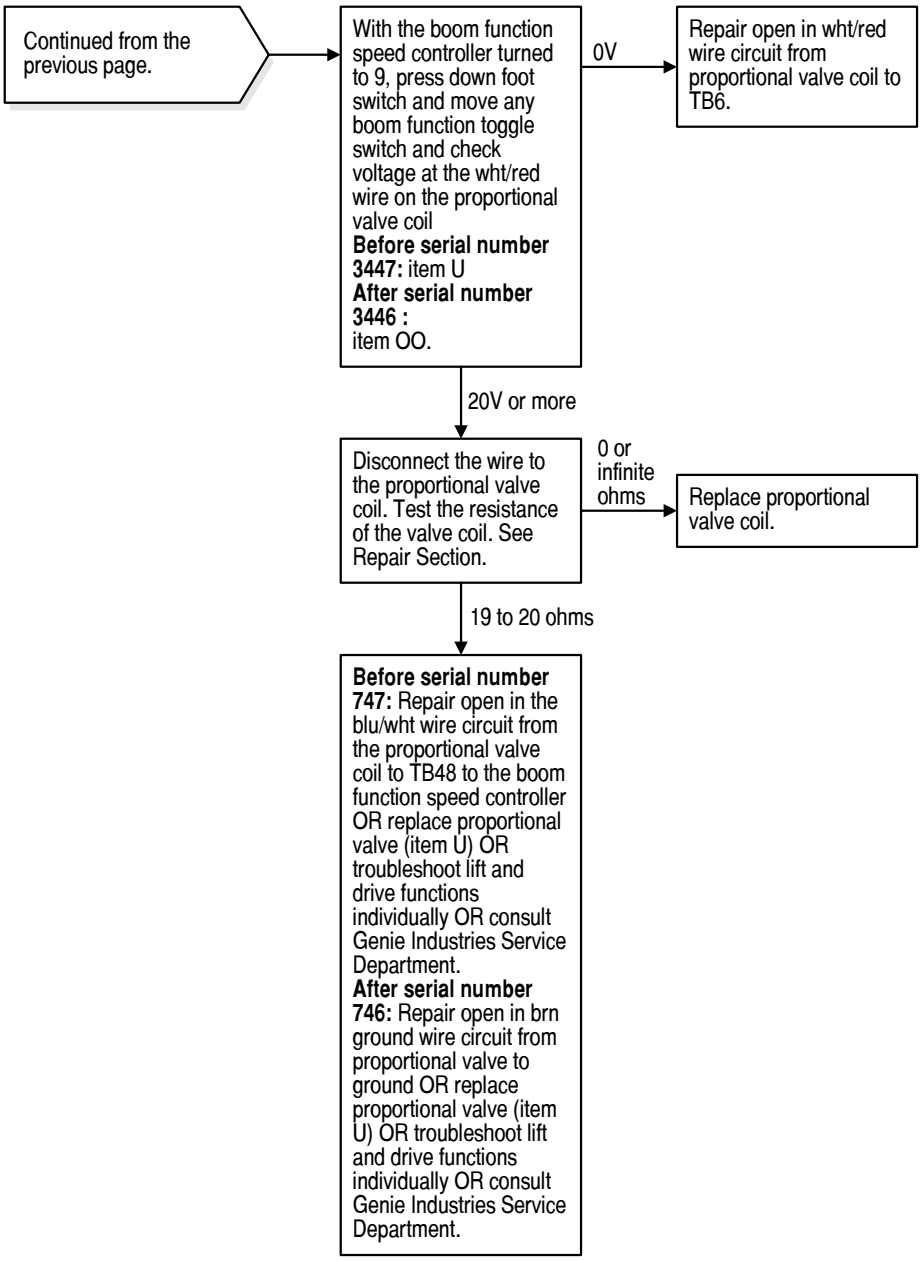

Continued from the previous page.
With the boom function speed controller turned to 9, press down foot switch and move any boom function toggle switch and check voltage at the wht/red wire on the proportional valve coil
Before serial number 3447: item U
After serial number 3446 : item OO.
0V
Repair open in wht/red wire circuit from proportional valve coil to TB6.
20V or more
Disconnect the wire to the proportional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace proportional valve coil.
19 to 20 ohms
Before serial number 747: Repair open in the blu/wht wire circuit from the proportional valve coil to TB48 to the boom function speed controller OR replace proportional valve (item U) OR troubleshoot lift and drive functions individually OR consult Genie Industries Service Department.
After serial number 746: Repair open in brn ground wire circuit from proportional valve to ground OR replace proportional valve (item U) OR troubleshoot lift and drive functions individually OR consult Genie Industries Service Department.

Chart 8

Platform Controls Inoperative, Ground Controls Operate Normally (after serial number 3446)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

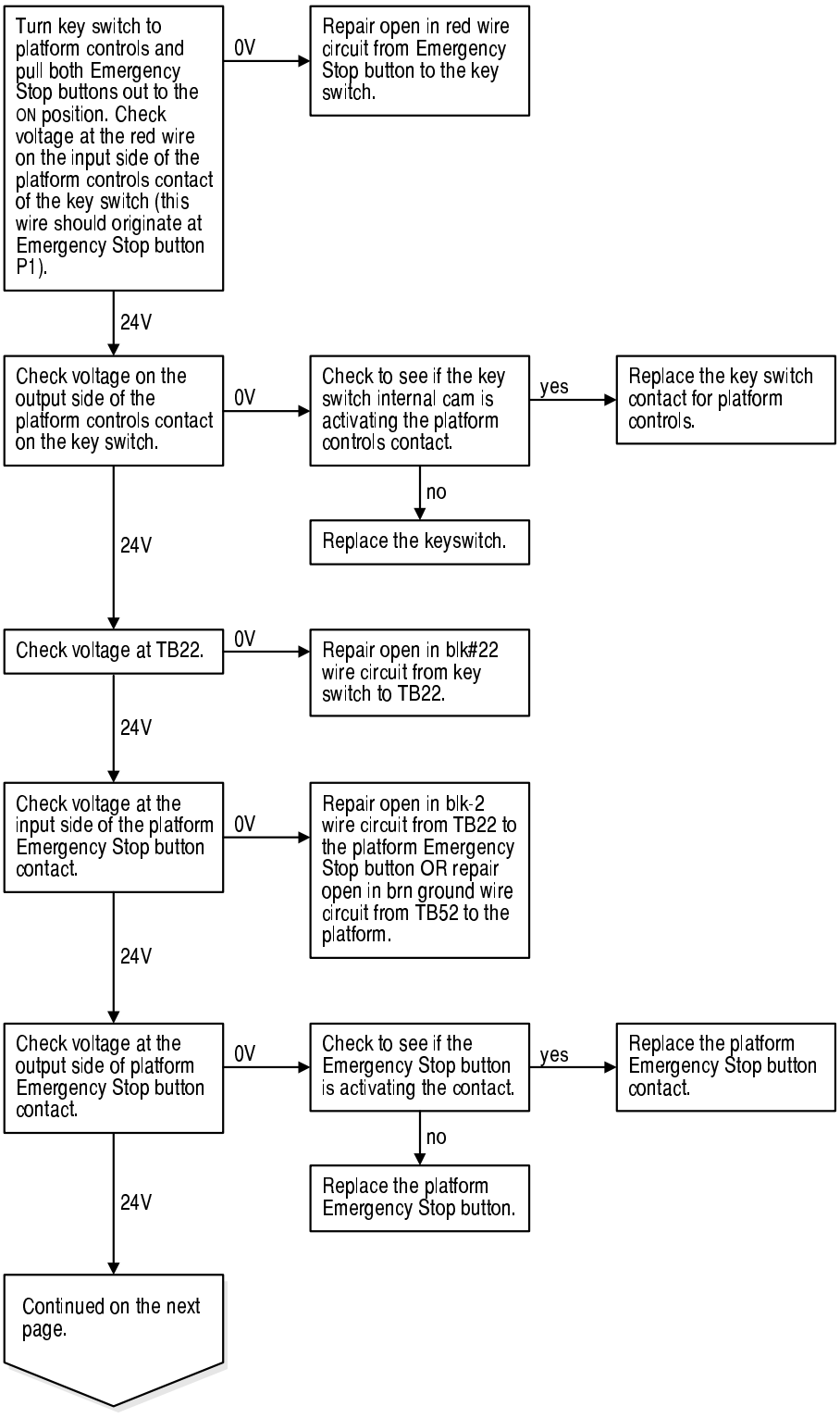


CHART 8

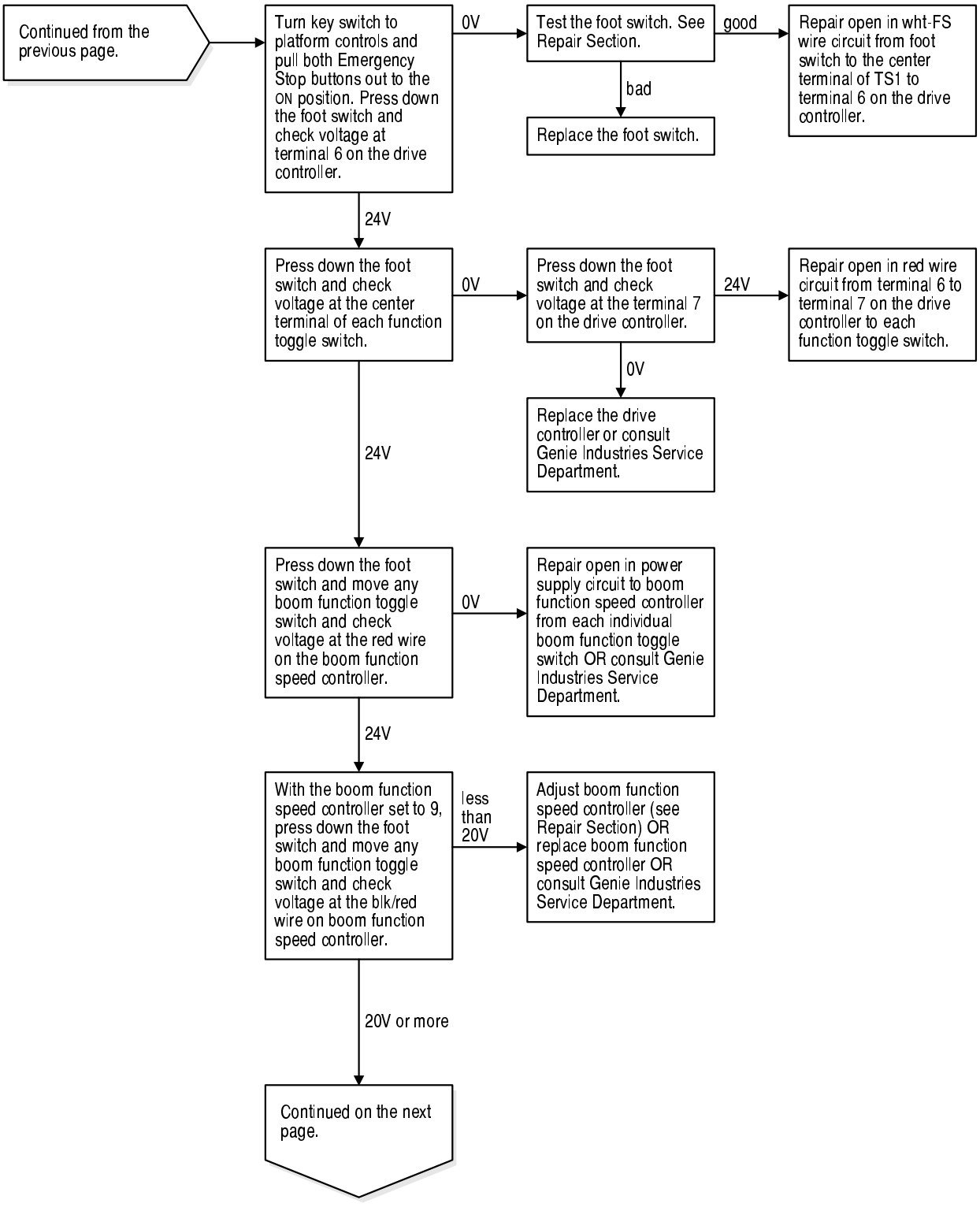

Continued from the previous page.
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. Press down the foot switch and check voltage at terminal 6 on the drive controller.
0V
Test the foot switch. See Repair Section.
good
Repair open in wht-FS wire circuit from foot switch to the center terminal of TS1 to terminal 6 on the drive controller.
bad
Replace the foot switch.
24V
Press down the foot switch and check voltage at the center terminal of each function toggle switch.
0V
Press down the foot switch and check voltage at the terminal 7 on the drive controller.
24V
Repair open in red wire circuit from terminal 6 to terminal 7 on the drive controller to each function toggle switch.
0V
Replace the drive controller or consult Genie Industries Service Department.
24V
Press down the foot switch and move any boom function toggle switch and check voltage at the red wire on the boom function speed controller.
0V
Repair open in power supply circuit to boom function speed controller from each individual boom function toggle switch OR consult Genie Industries Service Department.
24V
With the boom function speed controller set to 9, press down the foot switch and move any boom function toggle switch and check voltage at the blk/red wire on boom function speed controller.
less than 20V
Adjust boom function speed controller (see Repair Section) OR replace boom function speed controller OR consult Genie Industries Service Department.
20V or more
Continued on the next page.

CHART 8

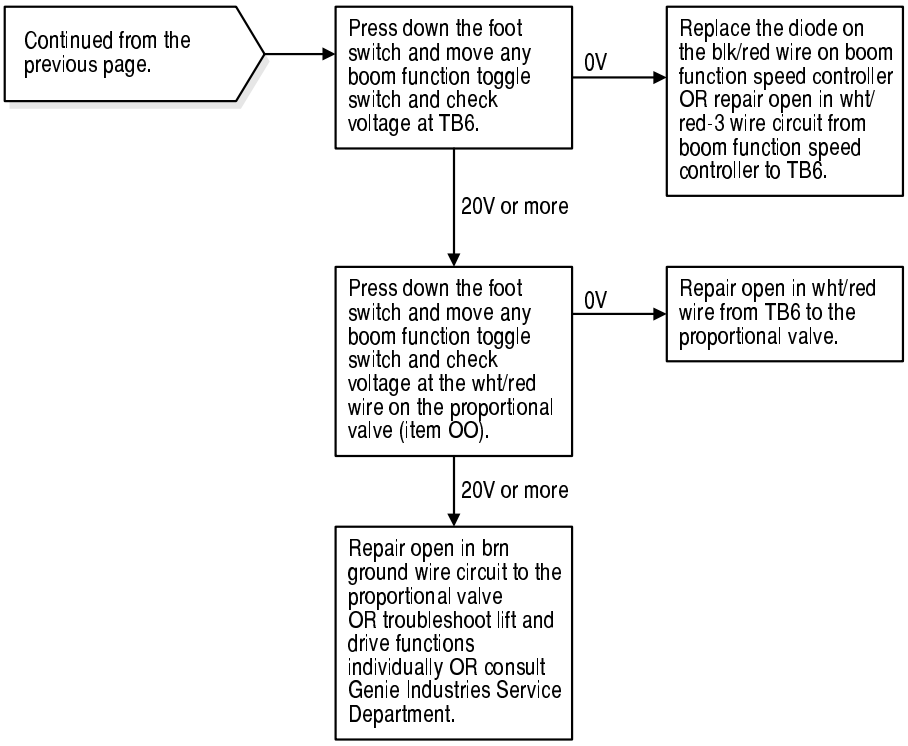

Continued from the previous page.
Press down the foot switch and move any boom function toggle switch and check voltage at TB6.
0V
Replace the diode on the blk/red wire on boom function speed controller OR repair open in wht/red-3 wire circuit from boom function speed controller to TB6.
20V or more
Press down the foot switch and move any boom function toggle switch and check voltage at the wht/red wire on the proportional valve (item OO).
0V
Repair open in wht/red wire from TB6 to the proportional valve.
20V or more
Repair open in brn ground wire circuit to the proportional valve OR troubleshoot lift and drive functions individually OR consult Genie Industries Service Department.

Chart 9

Primary Boom Up Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

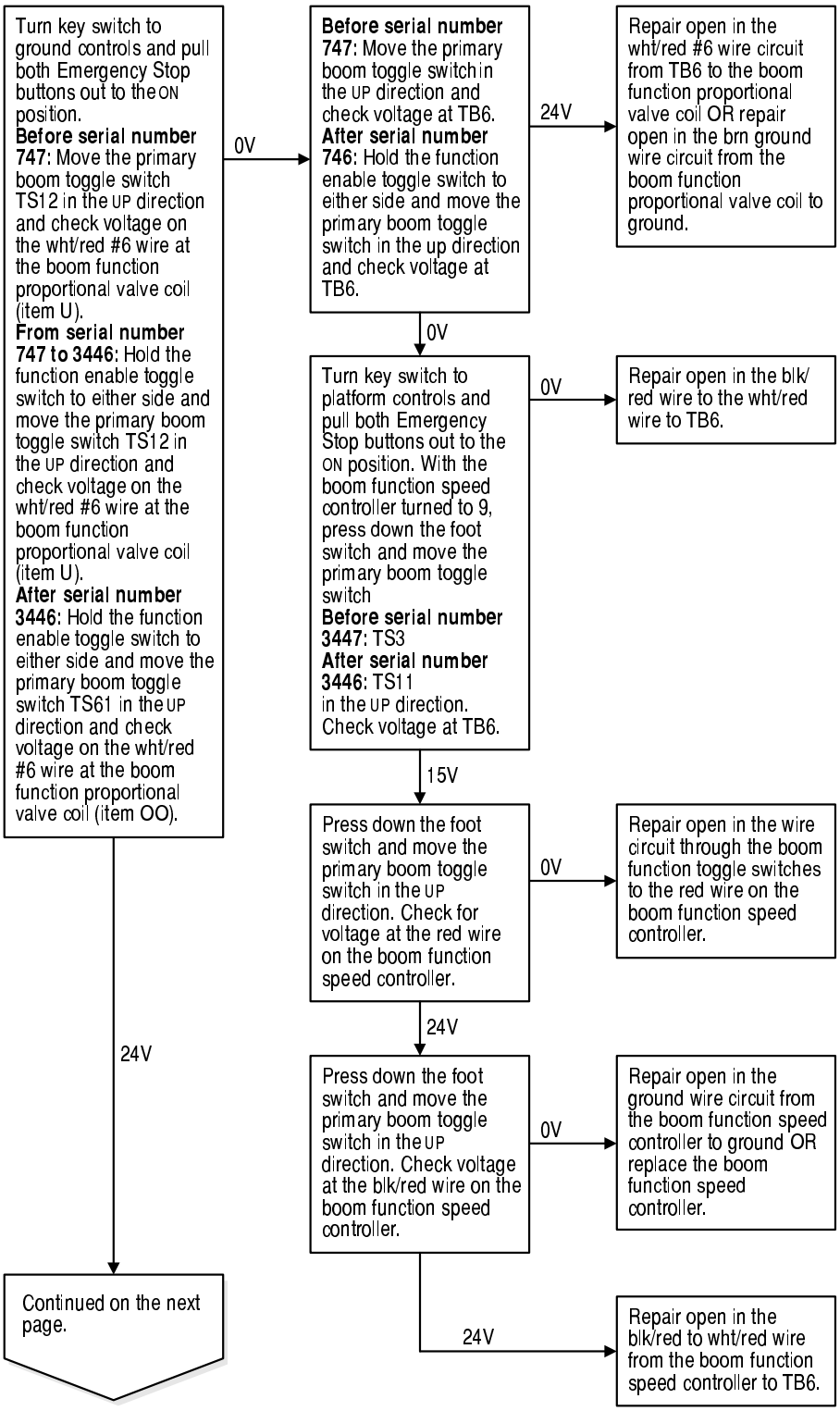


CHART 9

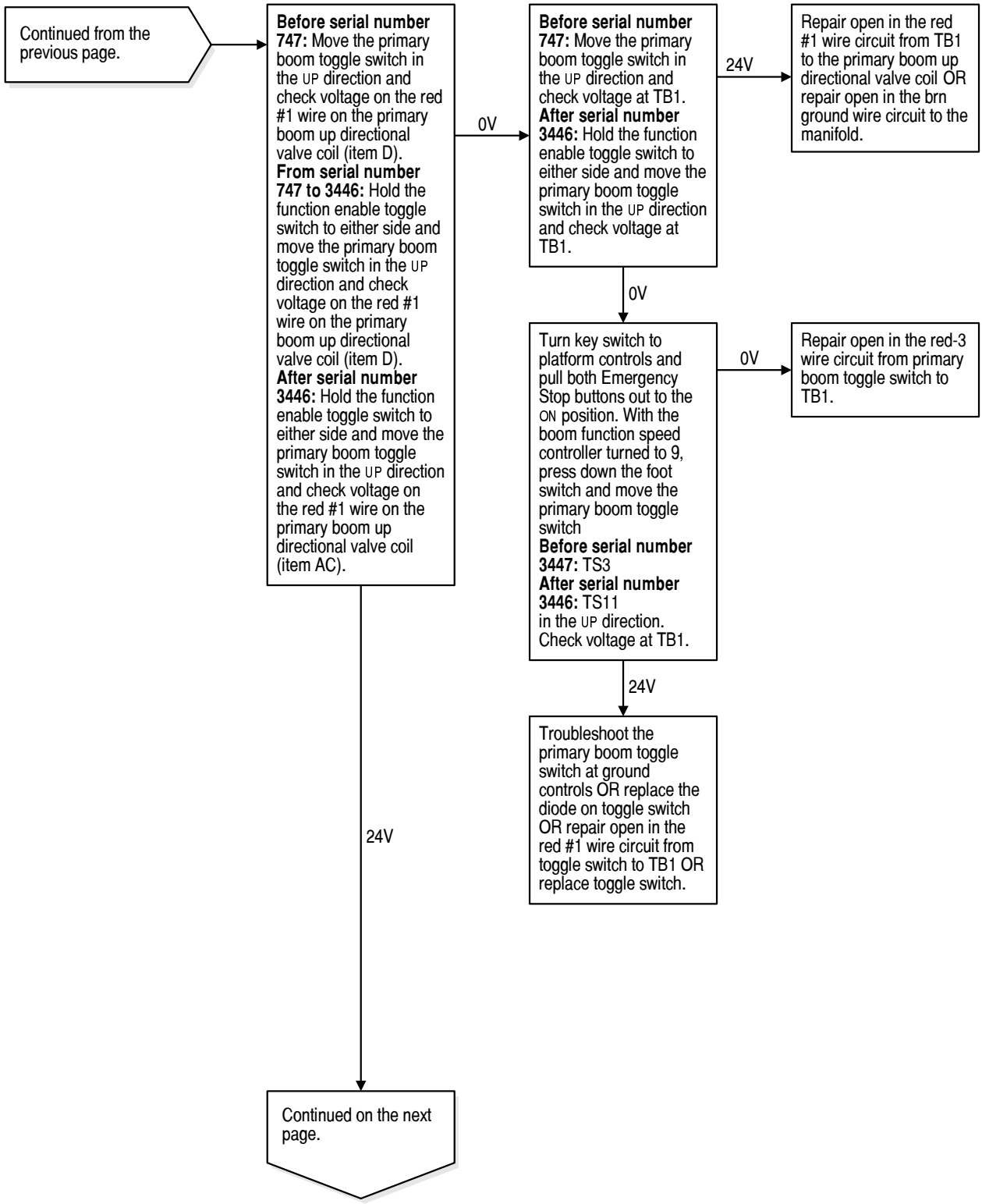

Continued from the previous page.
Before serial number 747: Move the primary boom toggle switch in the UP direction and check voltage on the red #1 wire on the primary boom up directional valve coil (item D).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the UP direction and check voltage on the red #1 wire on the primary boom up directional valve coil (item D).
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the UP direction and check voltage on the red #1 wire on the primary boom up directional valve coil (item AC).
0V
Before serial number 747: Move the primary boom toggle switch in the UP direction and check voltage at TB1.
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the UP direction and check voltage at TB1.
24V
Repair open in the red #1 wire circuit from TB1 to the primary boom up directional valve coil OR repair open in the brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the primary boom toggle switch
Before serial number 3447: TS3
After serial number 3446: TS11
in the UP direction. Check voltage at TB1.
0V
Repair open in the red-3 wire circuit from primary boom toggle switch to TB1.
24V
Troubleshoot the primary boom toggle switch at ground controls OR replace the diode on toggle switch OR repair open in the red #1 wire circuit from toggle switch to TB1 OR replace toggle switch.
24V
Continued on the next page.

CHART 9

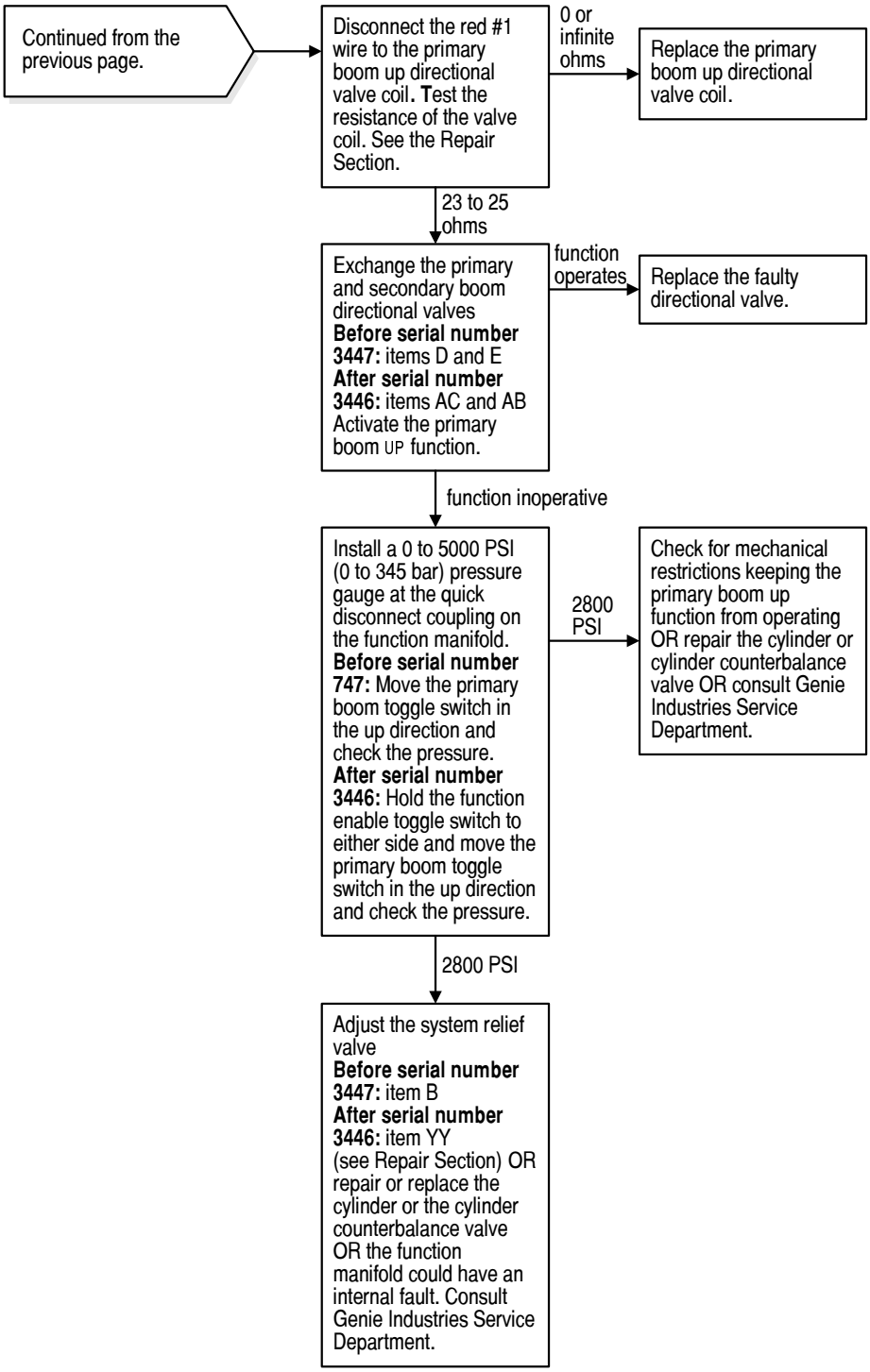

Continued from the previous page.
Disconnect the red #1 wire to the primary boom up directional valve coil. Test the resistance of the valve coil. See the Repair Section.
0 or infinite ohms
Replace the primary boom up directional valve coil.
23 to 25 ohms
Exchange the primary and secondary boom directional valves
Before serial number 3447: items D and E
After serial number 3446: items AC and AB
Activate the primary boom UP function.
function operates
Replace the faulty directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold.
Before serial number 747: Move the primary boom toggle switch in the up direction and check the pressure.
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the up direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping the primary boom up function from operating OR repair the cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
2800 PSI
Adjust the system relief valve
Before serial number 3447: item B
After serial number 3446: item YY
(see Repair Section) OR repair or replace the cylinder or the cylinder counterbalance valve OR the function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 10

Primary Boom Down Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

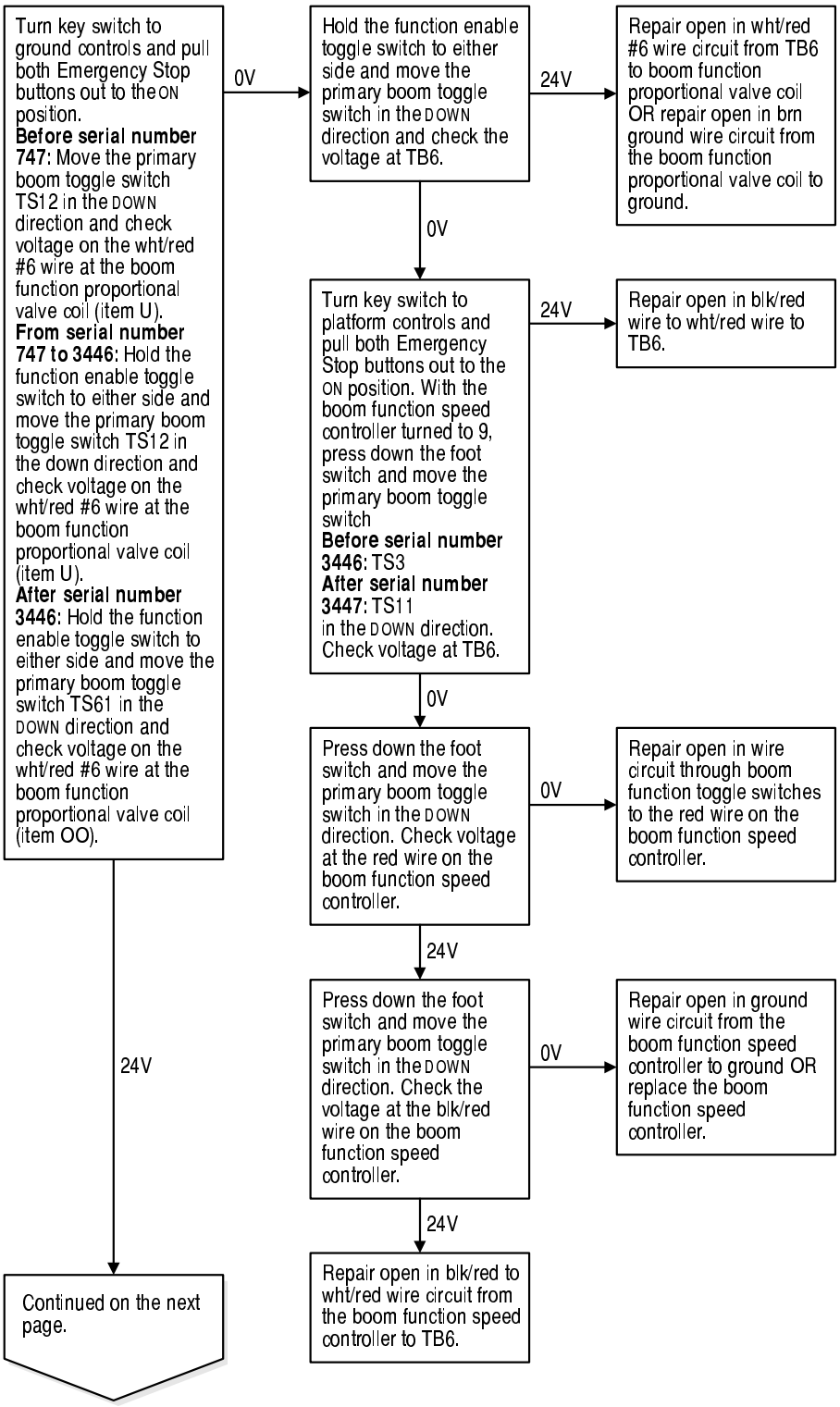


CHART 10

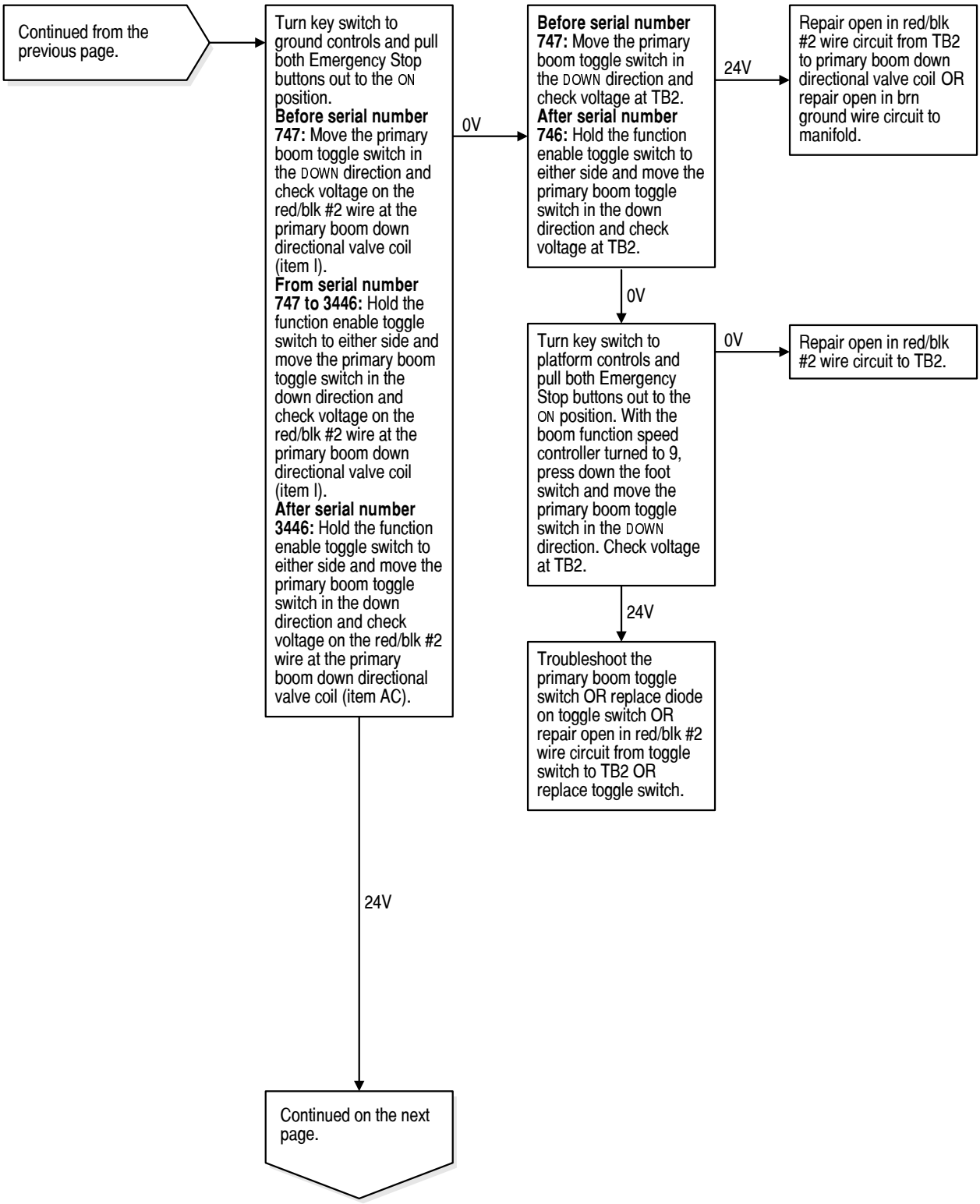

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move the primary boom toggle switch in the DOWN direction and check voltage on the red/blk #2 wire at the primary boom down directional valve coil (item l).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the down direction and check voltage on the red/blk #2 wire at the primary boom down directional valve coil (item l).
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the down direction and check voltage on the red/blk #2 wire at the primary boom down directional valve coil (item AC).
0V
Before serial number 747: Move the primary boom toggle switch in the DOWN direction and check voltage at TB2.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the down direction and check voltage at TB2.
24V
Repair open in red/blk #2 wire circuit from TB2 to primary boom down directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the primary boom toggle switch in the DOWN direction. Check voltage at TB2.
0V
Repair open in red/blk #2 wire circuit to TB2.
24V
Troubleshoot the primary boom toggle switch OR replace diode on toggle switch OR repair open in red/blk #2 wire circuit from toggle switch to TB2 OR replace toggle switch.
24V
Continued on the next page.

CHART 10

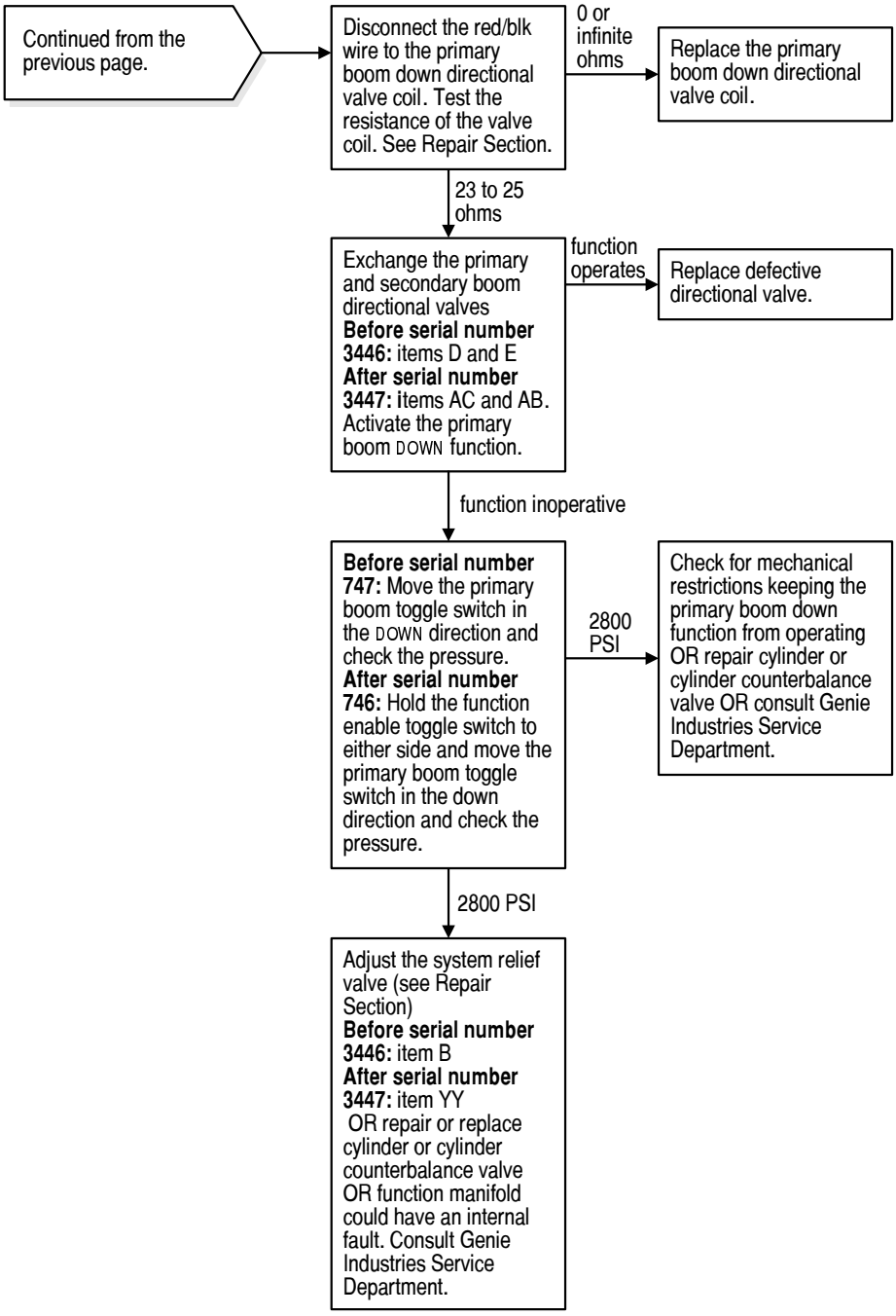

Continued from the previous page.
Disconnect the red/blk wire to the primary boom down directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the primary boom down directional valve coil.
23 to 25 ohms
Exchange the primary and secondary boom directional valves
Before serial number 3446: items D and E
After serial number 3447: items AC and AB.
Activate the primary boom DOWN function.
function operates
Replace defective directional valve.
function inoperative
Before serial number 747: Move the primary boom toggle switch in the DOWN direction and check the pressure.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom toggle switch in the down direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping the primary boom down function from operating OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
2800 PSI
Adjust the system relief valve (see Repair Section)
Before serial number 3446: item B
After serial number 3447: item YY
OR repair or replace cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 11

Secondary Boom Up Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

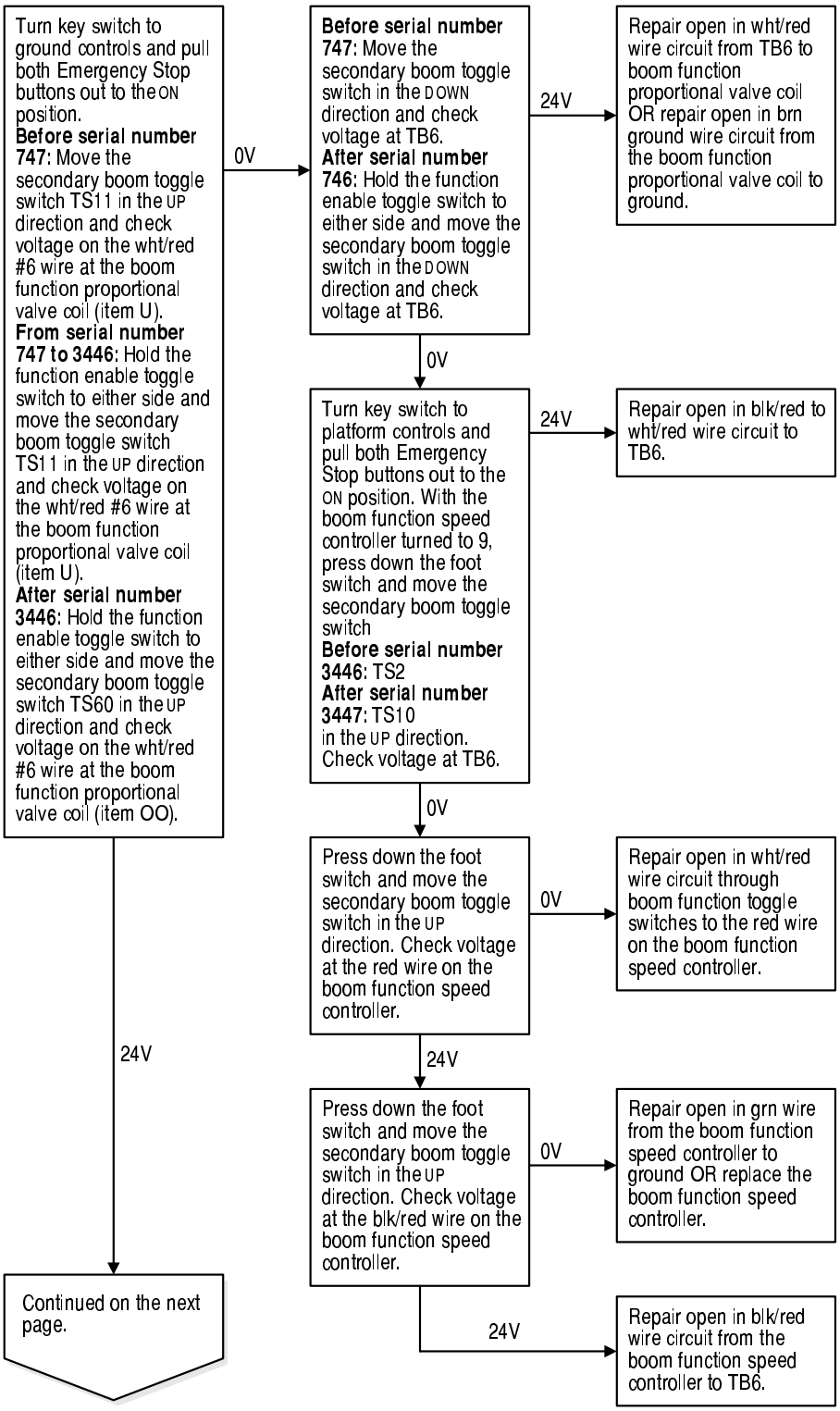


CHART 11

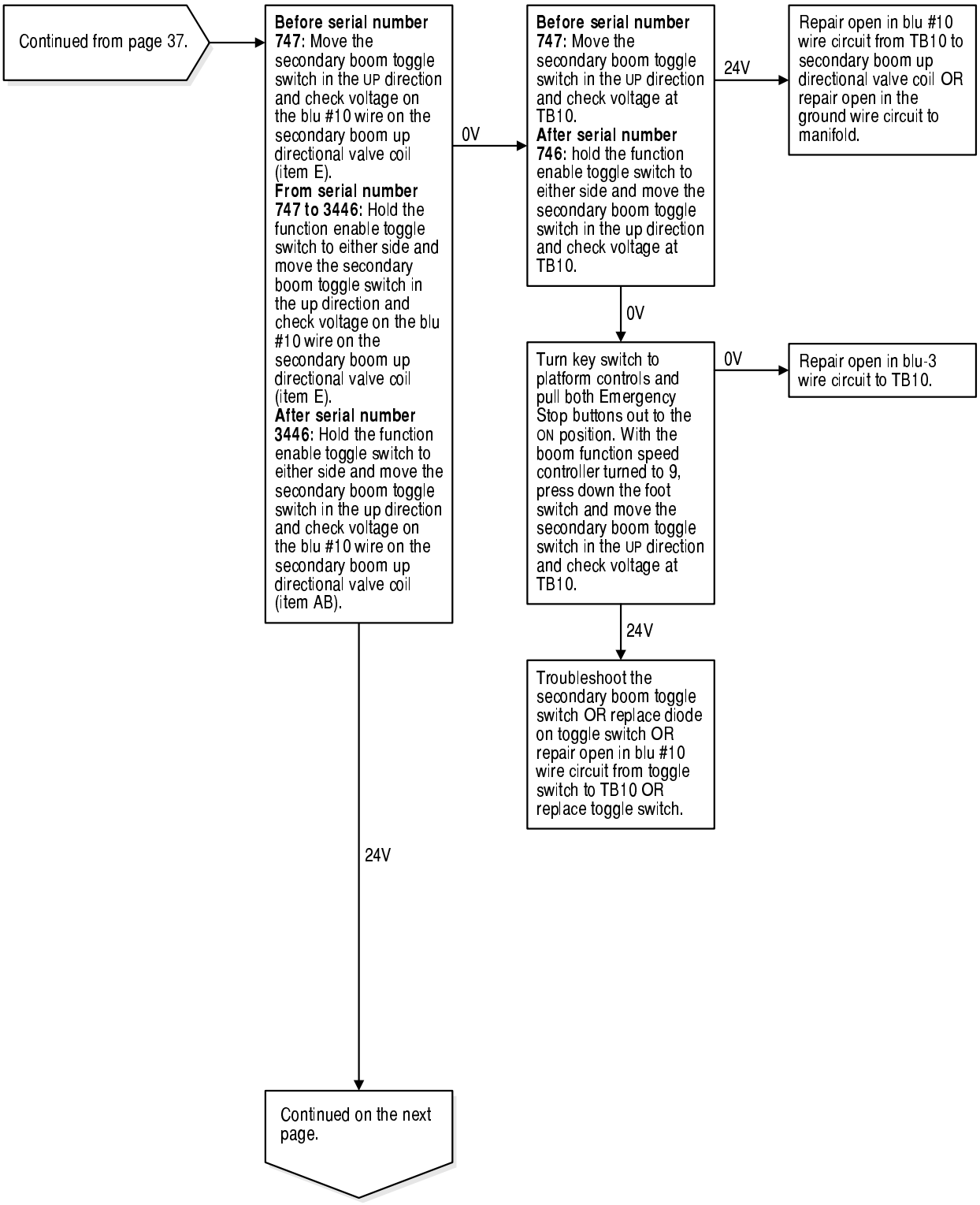

Continued from page 37.
Before serial number 747: Move the secondary boom toggle switch in the UP direction and check voltage on the blu #10 wire on the secondary boom up directional valve coil (item E).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the up direction and check voltage on the blu #10 wire on the secondary boom up directional valve coil (item E).
After serial number 3446: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the up direction and check voltage on the blu #10 wire on the secondary boom up directional valve coil (item AB).
0V
Before serial number 747: Move the secondary boom toggle switch in the UP direction and check voltage at TB10.
After serial number 746: hold the function enable toggle switch to either side and move the secondary boom toggle switch in the up direction and check voltage at TB10.
24V
Repair open in blu #10 wire circuit from TB10 to secondary boom up directional valve coil OR repair open in the ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the secondary boom toggle switch in the UP direction and check voltage at TB10.
0V
Repair open in blu-3 wire circuit to TB10.
24V
Troubleshoot the secondary boom toggle switch OR replace diode on toggle switch OR repair open in blu #10 wire circuit from toggle switch to TB10 OR replace toggle switch.
24V
Continued on the next page.

CHART 11

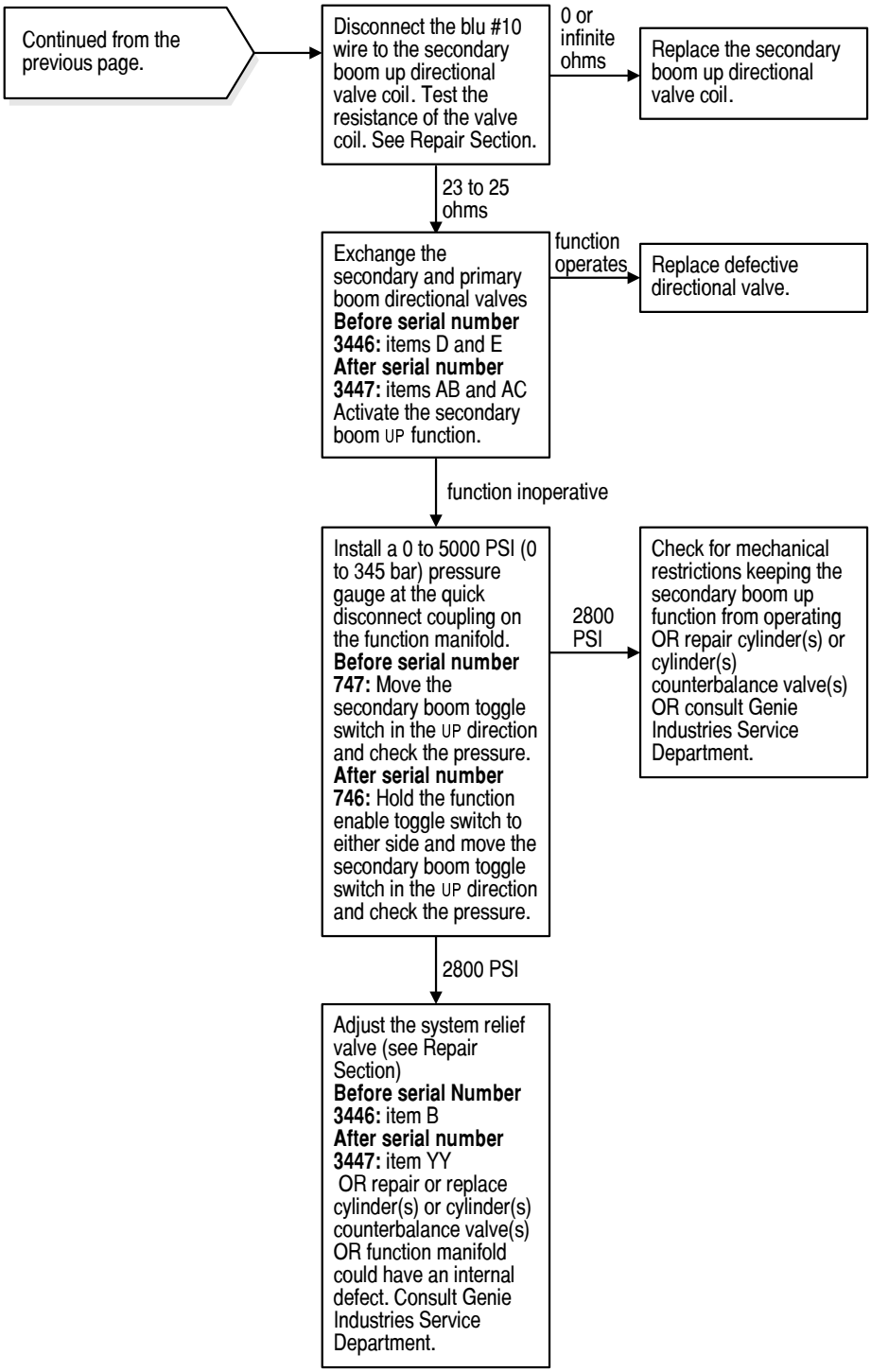

Continued from the previous page.
Disconnect the blu #10 wire to the secondary boom up directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the secondary boom up directional valve coil.
23 to 25 ohms
Exchange the secondary and primary boom directional valves
Before serial number 3446: items D and E
After serial number 3447: items AB and AC
Activate the secondary boom UP function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold.
Before serial number 747: Move the secondary boom toggle switch in the UP direction and check the pressure.
After serial number 746: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the UP direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping the secondary boom up function from operating OR repair cylinder(s) or cylinder(s) counterbalance valve(s) OR consult Genie Industries Service Department.
2800 PSI
Adjust the system relief valve (see Repair Section)
Before serial Number 3446: item B
After serial number 3447: item YY
OR repair or replace cylinder(s) or cylinder(s) counterbalance valve(s) OR function manifold could have an internal defect. Consult Genie Industries Service Department.

Chart 12

Secondary Boom Down Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

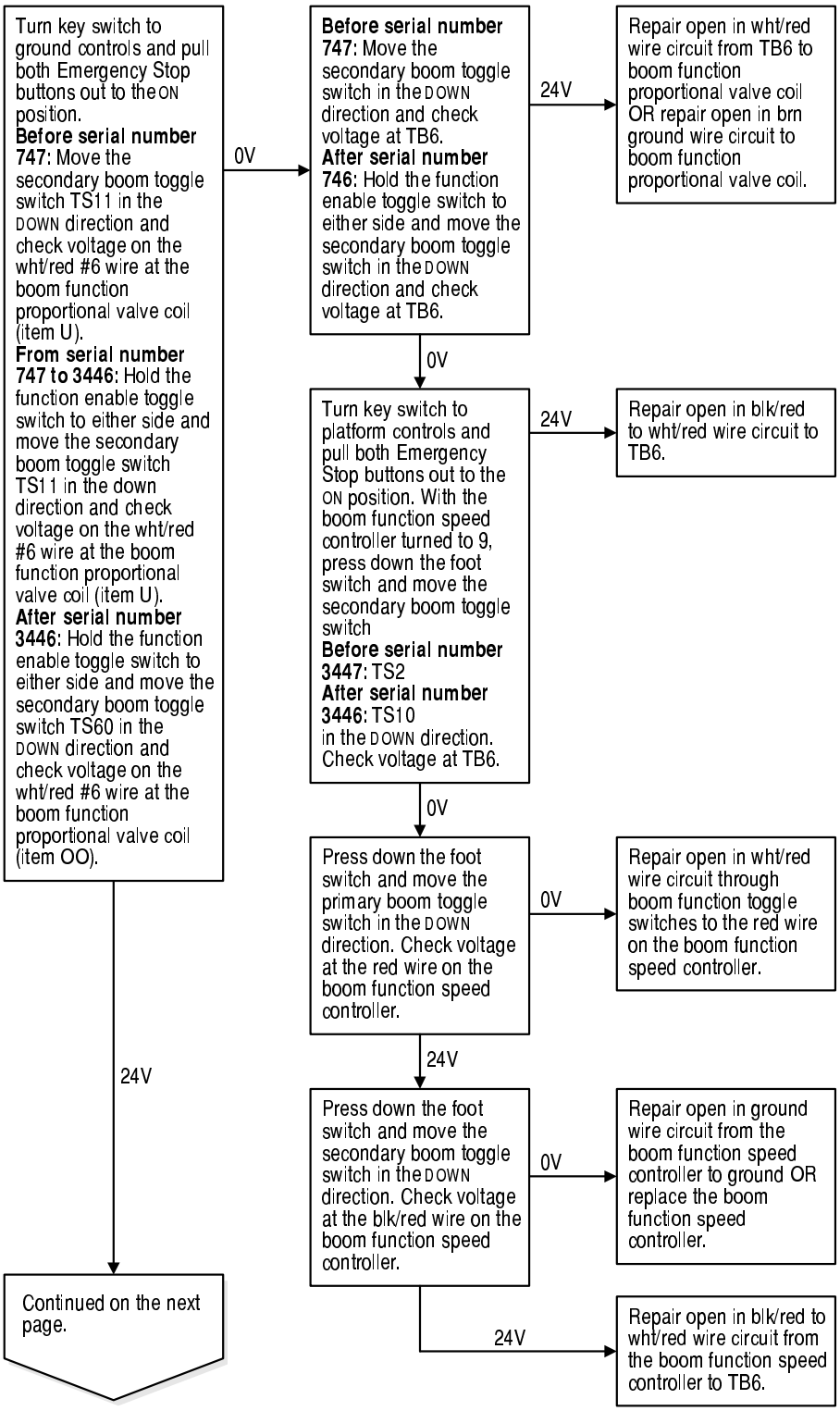


CHART 12

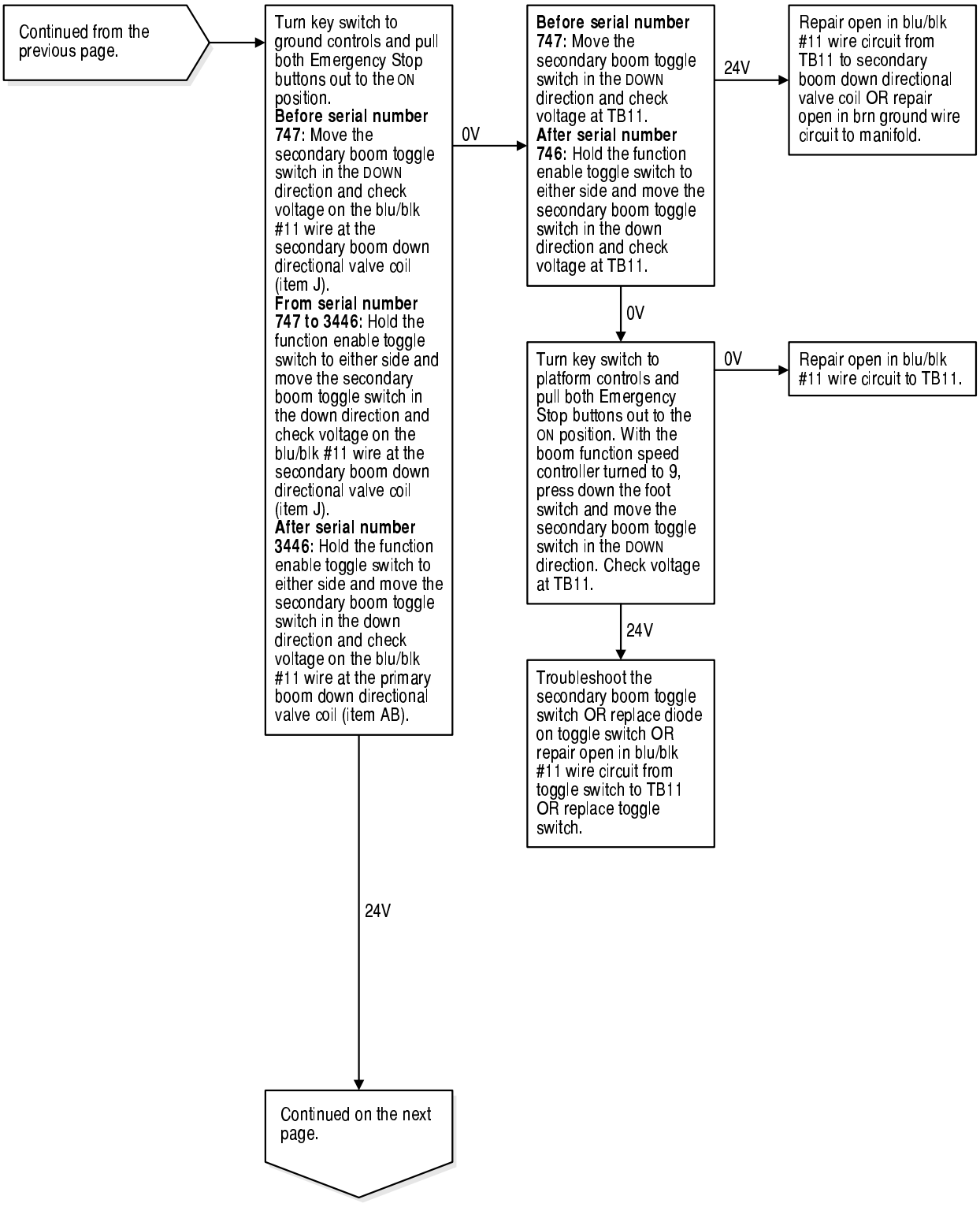

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move the secondary boom toggle switch in the DOWN direction and check voltage on the blu/blk #11 wire at the secondary boom down directional valve coil (item J).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the down direction and check voltage on the blu/blk #11 wire at the secondary boom down directional valve coil (item J).
After serial number 3446: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the down direction and check voltage on the blu/blk #11 wire at the primary boom down directional valve coil (item AB).
0V
Before serial number 747: Move the secondary boom toggle switch in the DOWN direction and check voltage at TB11.
After serial number 746: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the down direction and check voltage at TB11.
24V
Repair open in blu/blk #11 wire circuit from TB11 to secondary boom down directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the secondary boom toggle switch in the DOWN direction. Check voltage at TB11.
0V
Repair open in blu/blk #11 wire circuit to TB11.
24V
Troubleshoot the secondary boom toggle switch OR replace diode on toggle switch OR repair open in blu/blk #11 wire circuit from toggle switch to TB11 OR replace toggle switch.
24V
Continued on the next page.

CHART 12

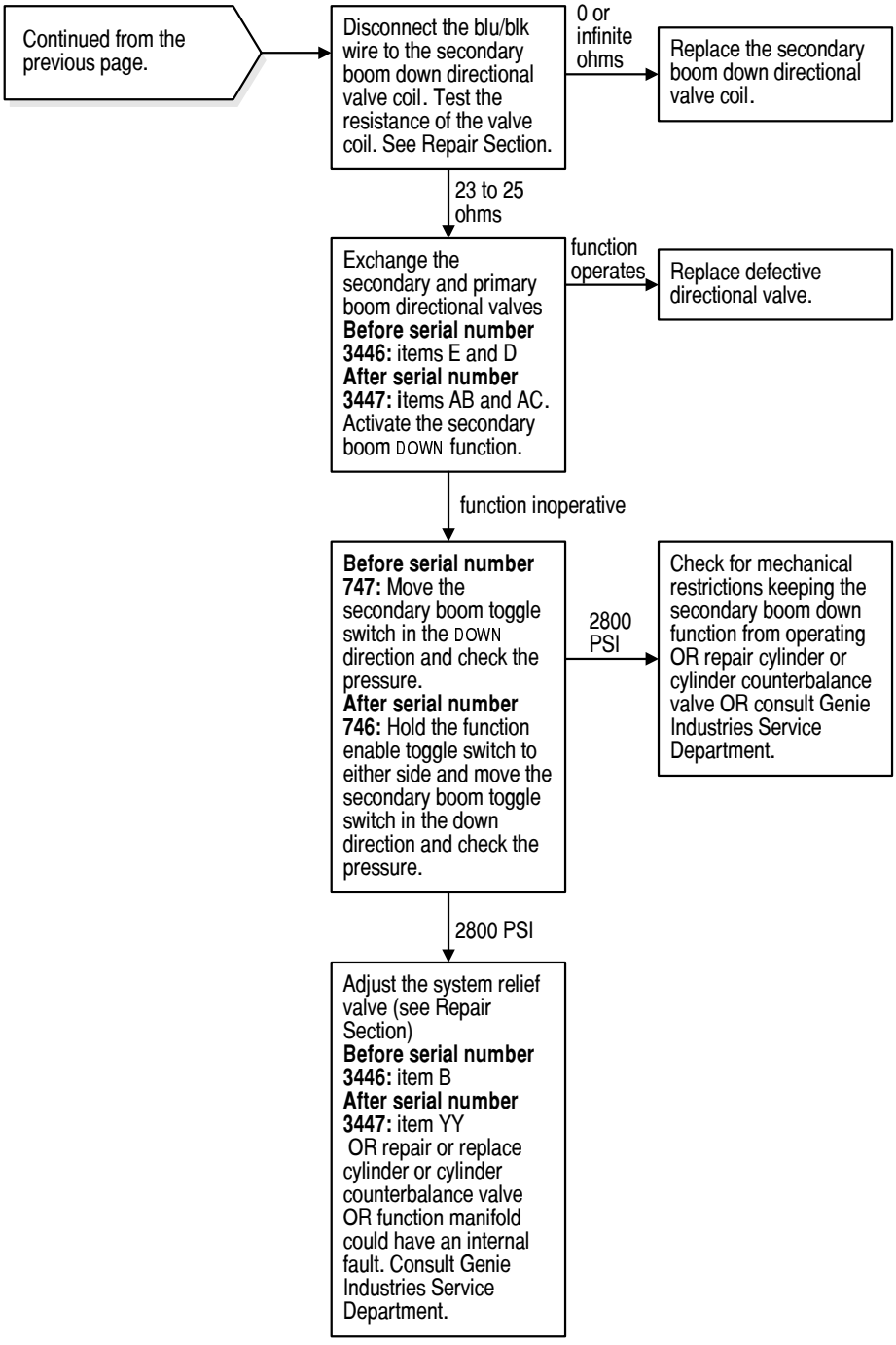

Continued from the previous page.
Disconnect the blu/blk wire to the secondary boom down directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the secondary boom down directional valve coil.
23 to 25 ohms
Exchange the secondary and primary boom directional valves
Before serial number 3446: items E and D
After serial number 3447: items AB and AC.
Activate the secondary boom DOWN function.
function operates
Replace defective directional valve.
function inoperative
Before serial number 747: Move the secondary boom toggle switch in the DOWN direction and check the pressure.
After serial number 746: Hold the function enable toggle switch to either side and move the secondary boom toggle switch in the down direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping the secondary boom down function from operating OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
2800 PSI
Adjust the system relief valve (see Repair Section)
Before serial number 3446: item B
After serial number 3447: item YY
OR repair or replace cylinder or cylinder counterbalance valve OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 13

Primary Boom Extend Function Inoperative (before serial number 5398)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

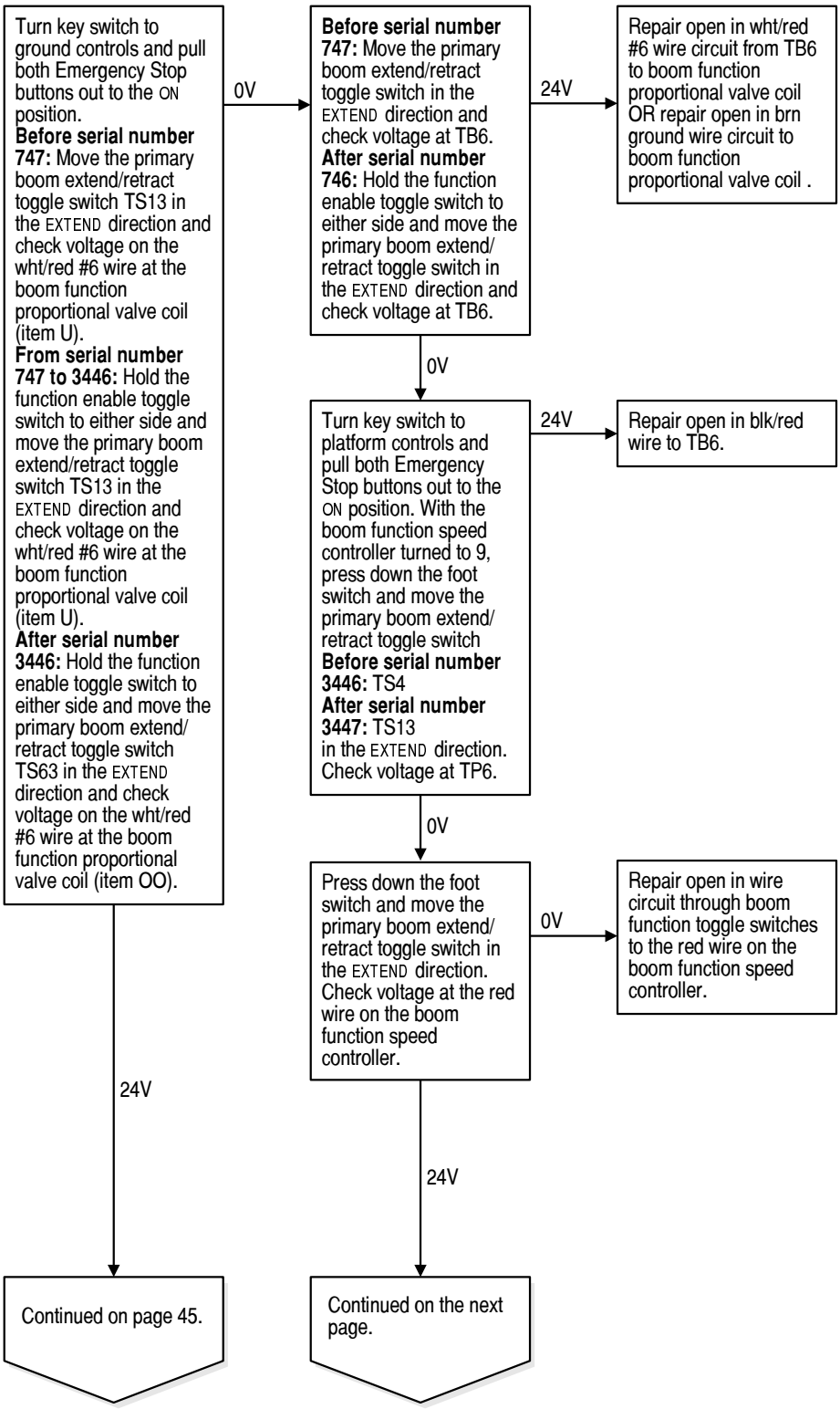


CHART 13

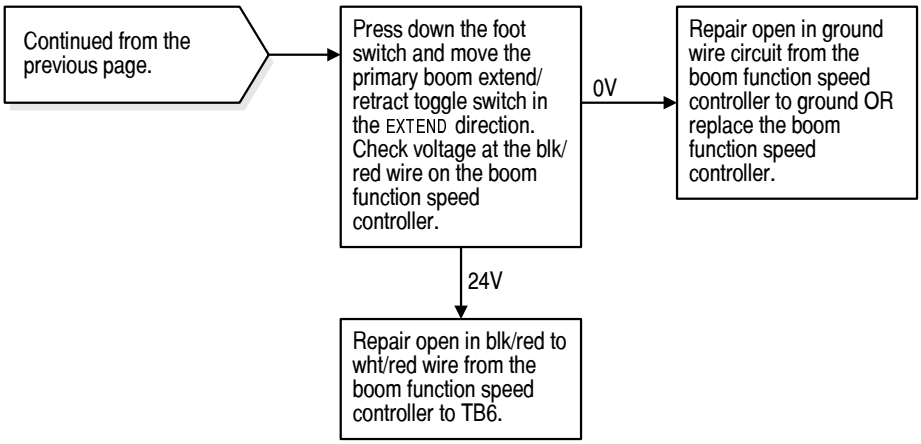

Continued from the previous page.
Press down the foot switch and move the primary boom extend/ retract toggle switch in the EXTEND direction. Check voltage at the blk/ red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red to wht/red wire from the boom function speed controller to TB6.

CHART 13

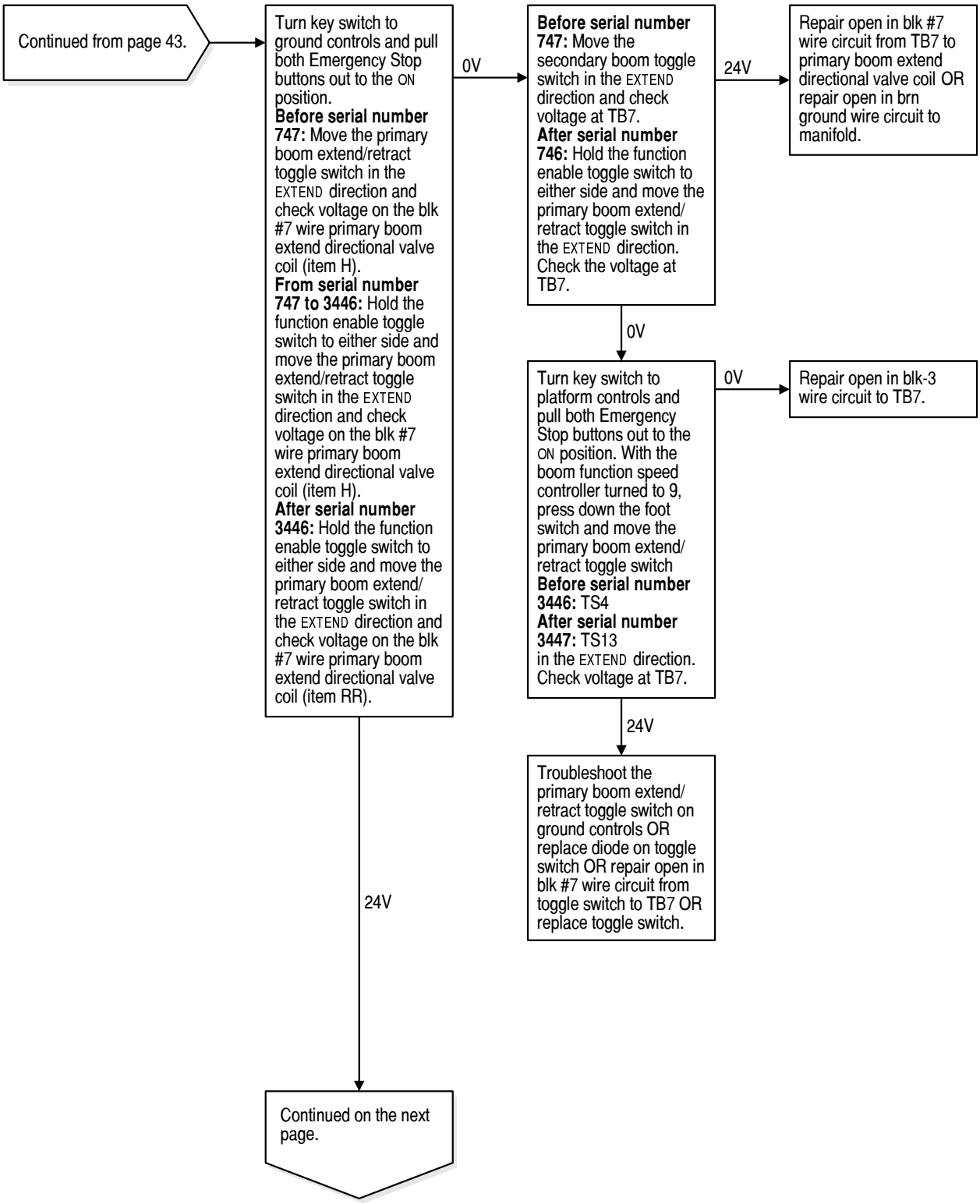

Continued from page 43.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move the primary boom extend/retract toggle switch in the EXTEND direction and check voltage on the blk #7 wire primary boom extend directional valve coil (item H).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the primary boom extend/retract toggle switch in the EXTEND direction and check voltage on the blk #7 wire primary boom extend directional valve coil (item H).
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom extend/ retract toggle switch in the EXTEND direction and check voltage on the blk #7 wire primary boom extend directional valve coil (item RR).
0V
Before serial number 747: Move the secondary boom toggle switch in the EXTEND direction and check voltage at TB7.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom extend/ retract toggle switch in the EXTEND direction. Check the voltage at TB7.
24V
Repair open in blk #7 wire circuit from TB7 to primary boom extend directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the primary boom extend/ retract toggle switch
Before serial number 3446: TS4
After serial number 3447: TS13
in the EXTEND direction. Check voltage at TB7.
0V
Repair open in blk-3 wire circuit to TB7.
24V
Troubleshoot the primary boom extend/ retract toggle switch on ground controls OR replace diode on toggle switch OR repair open in blk #7 wire circuit from toggle switch to TB7 OR replace toggle switch.
24V
Continued on the next page.

CHART 13

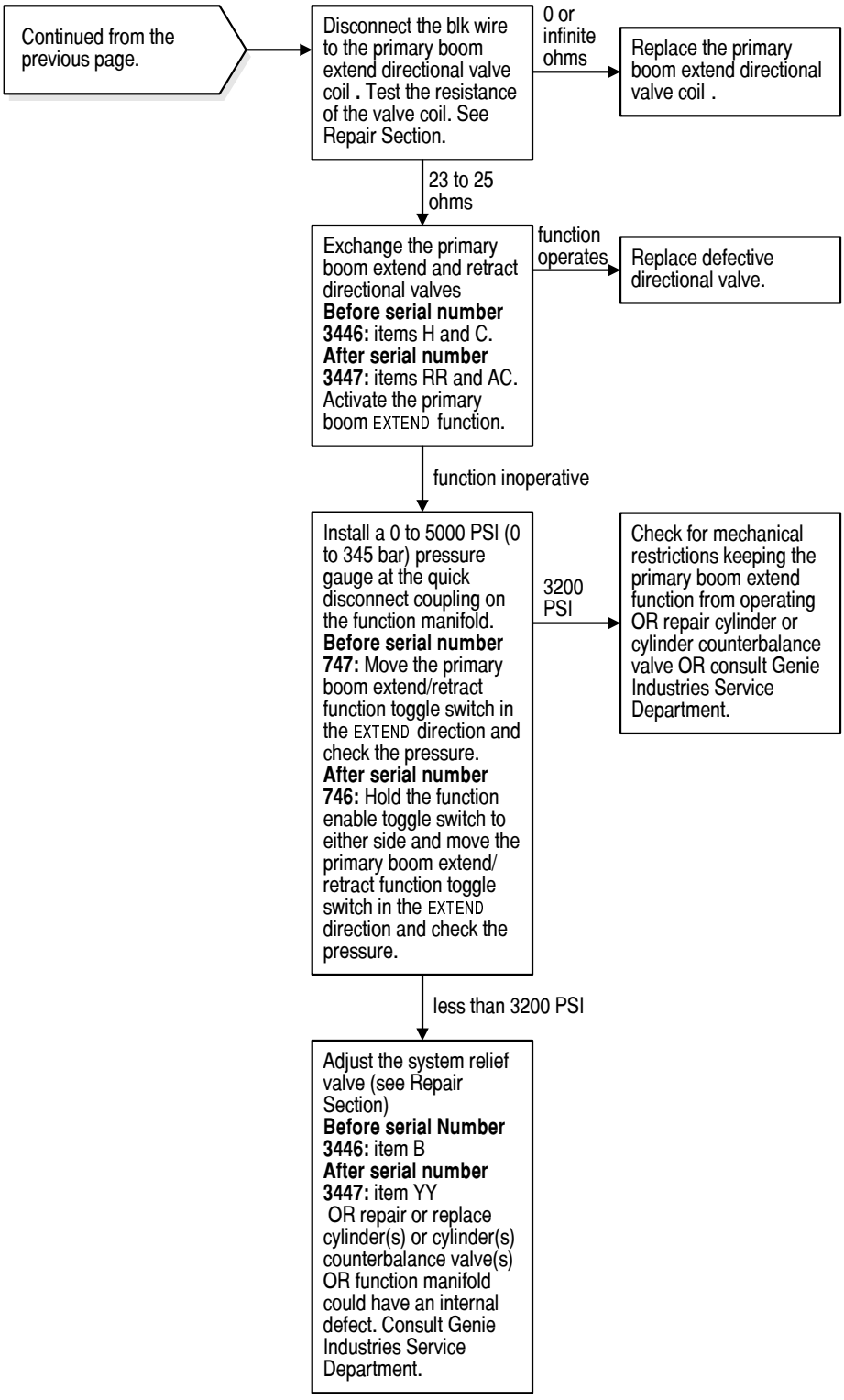

Continued from the previous page.
Disconnect the blk wire to the primary boom extend directional valve coil . Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the primary boom extend directional valve coil .
23 to 25 ohms
Exchange the primary boom extend and retract directional valves
Before serial number 3446: items H and C.
After serial number 3447: items RR and AC.
Activate the primary boom EXTEND function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold.
Before serial number 747: Move the primary boom extend/retract function toggle switch in the EXTEND direction and check the pressure.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom extend/ retract function toggle switch in the EXTEND direction and check the pressure.
3200 PSI
Check for mechanical restrictions keeping the primary boom extend function from operating OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3200 PSI
Adjust the system relief valve (see Repair Section)
Before serial Number 3446: item B
After serial number 3447: item YY
OR repair or replace cylinder(s) or cylinder(s) counterbalance valve(s) OR function manifold could have an internal defect. Consult Genie Industries Service Department.

Chart 14

Primary Boom Extend Function Inoperative (after serial number 5397)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

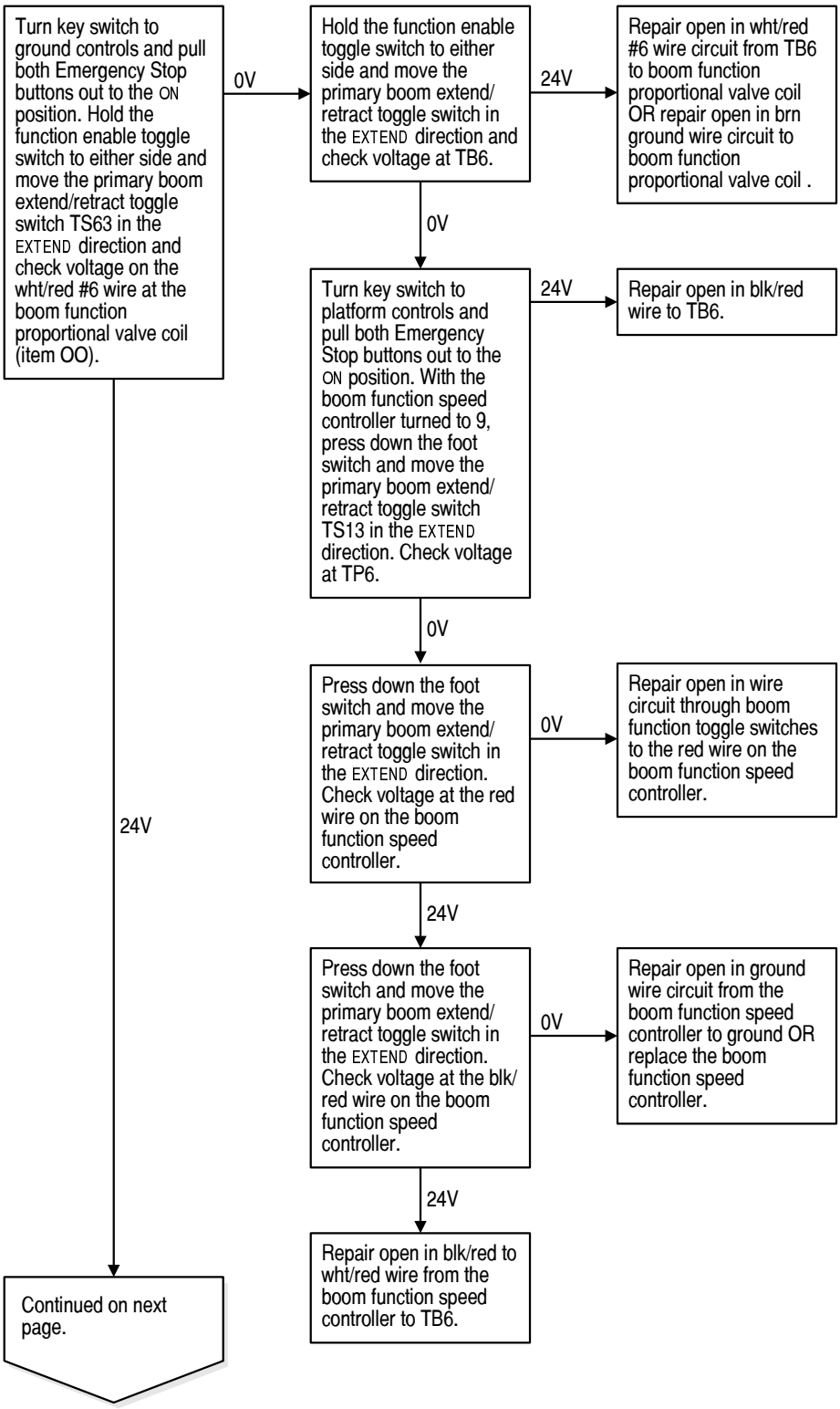


CHART 14

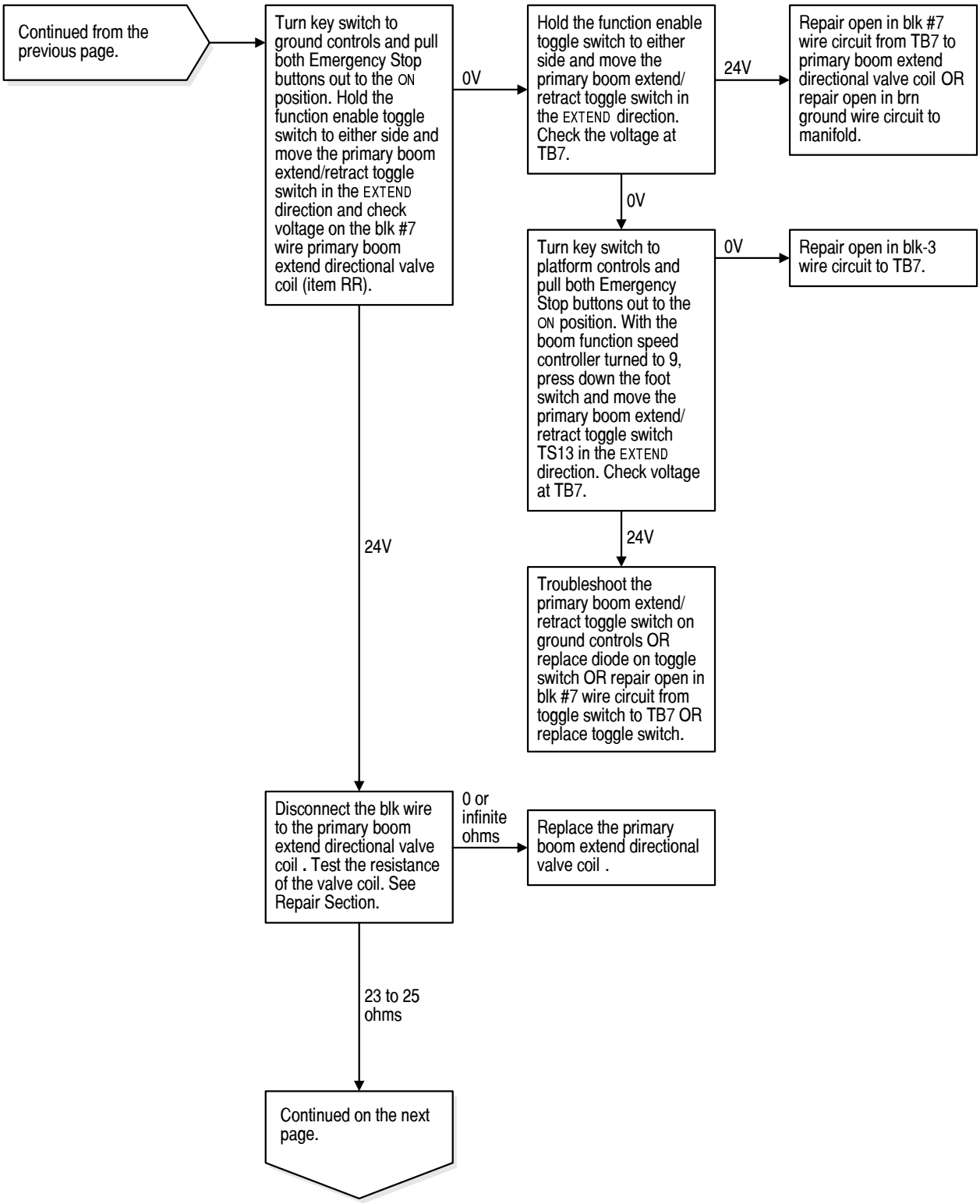

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move the primary boom extend/retract toggle switch in the EXTEND direction and check voltage on the blk #7 wire primary boom extend directional valve coil (item RR).
0V
Hold the function enable toggle switch to either side and move the primary boom extend/ retract toggle switch in the EXTEND direction. Check the voltage at TB7.
24V
Repair open in blk #7 wire circuit from TB7 to primary boom extend directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the primary boom extend/ retract toggle switch TS13 in the EXTEND direction. Check voltage at TB7.
0V
Repair open in blk-3 wire circuit to TB7.
24V
Troubleshoot the primary boom extend/ retract toggle switch on ground controls OR replace diode on toggle switch OR repair open in blk #7 wire circuit from toggle switch to TB7 OR replace toggle switch.
24V
Disconnect the blk wire to the primary boom extend directional valve coil . Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the primary boom extend directional valve coil .
23 to 25 ohms
Continued on the next page.

CHART 14

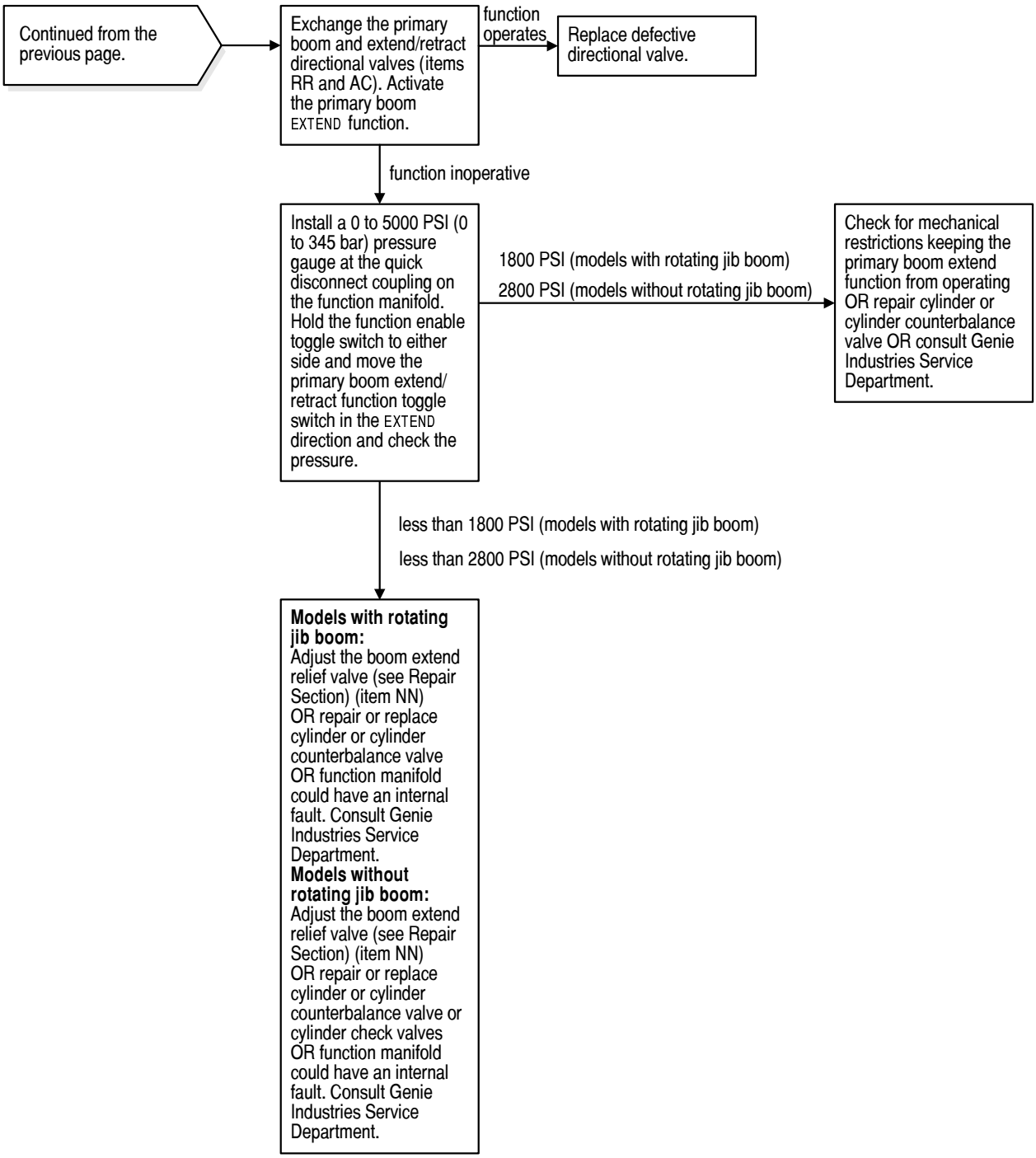

Continued from the previous page.
Exchange the primary boom and extend/retract directional valves (items RR and AC). Activate the primary boom EXTEND function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold. Hold the function enable toggle switch to either side and move the primary boom extend/ retract function toggle switch in the EXTEND direction and check the pressure.
1800 PSI (models with rotating jib boom)
2800 PSI (models without rotating jib boom)
Check for mechanical restrictions keeping the primary boom extend function from operating OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 1800 PSI (models with rotating jib boom)
less than 2800 PSI (models without rotating jib boom)
Models with rotating jib boom:
Adjust the boom extend relief valve (see Repair Section) (item NN)
OR repair or replace cylinder or cylinder counterbalance valve
OR function manifold could have an internal fault. Consult Genie Industries Service Department.
Models without rotating jib boom:
Adjust the boom extend relief valve (see Repair Section) (item NN)
OR repair or replace cylinder or cylinder counterbalance valve or cylinder check valves
OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 15

Primary Boom Retract Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

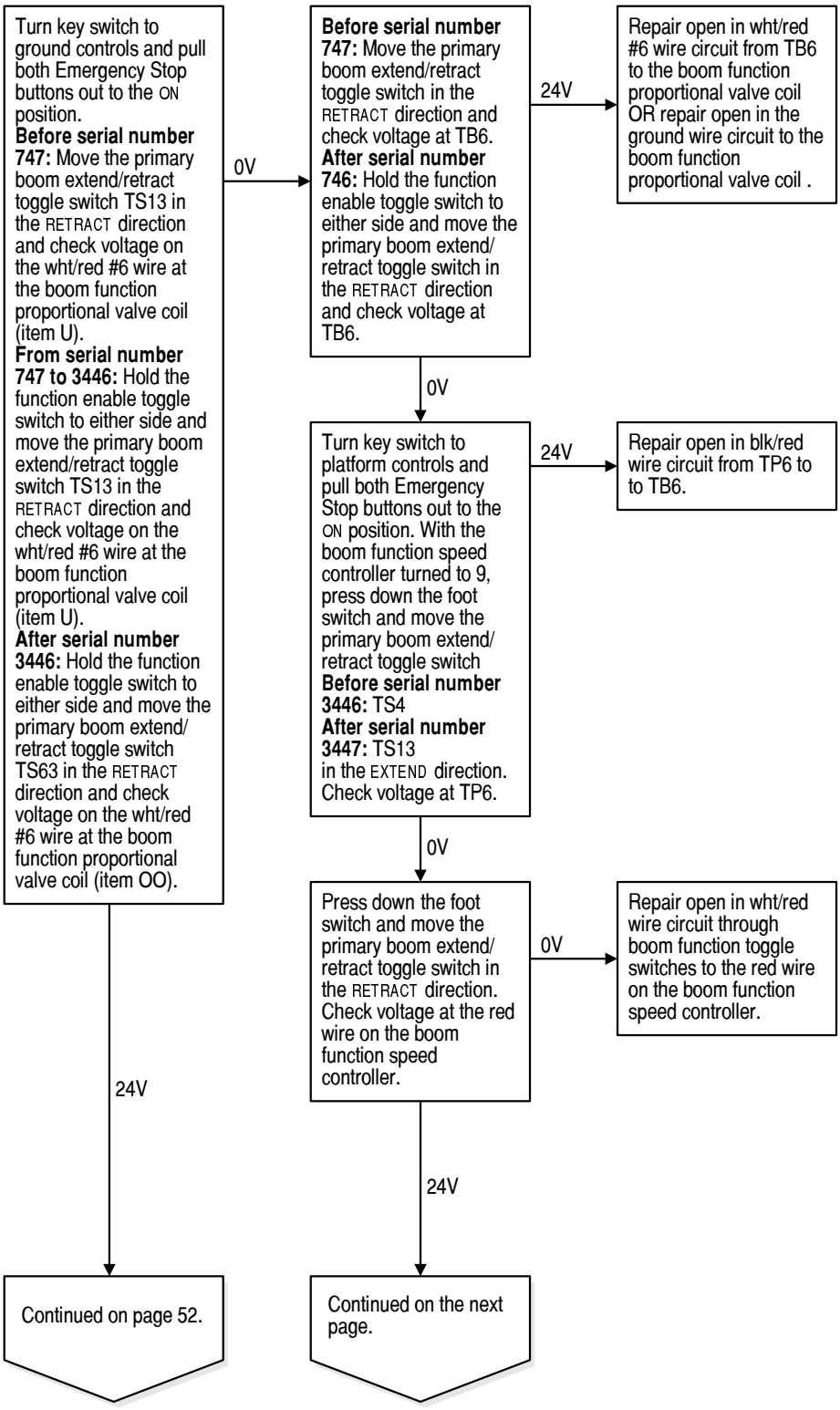


CHART 15

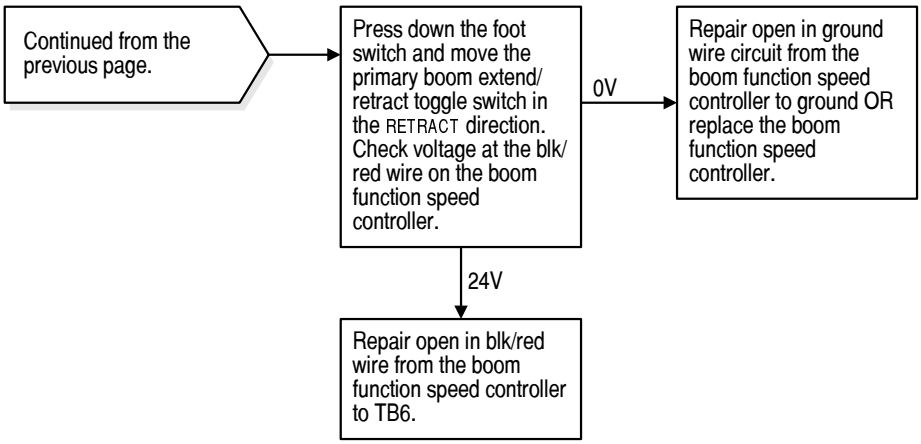

Continued from the previous page.
Press down the foot switch and move the primary boom extend/ retract toggle switch in the RETRACT direction. Check voltage at the blk/ red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 15

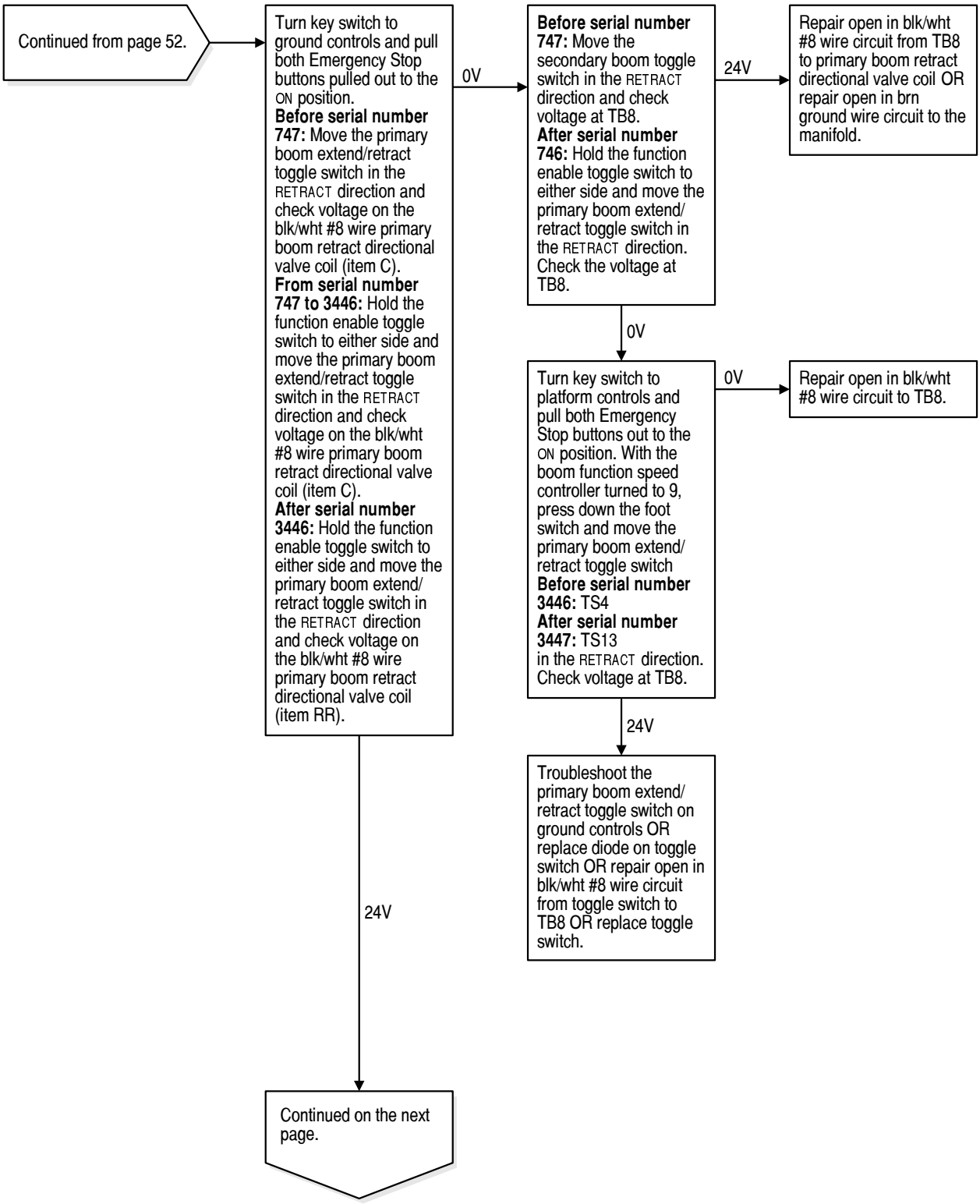

Continued from page 52.
Turn key switch to ground controls and pull both Emergency Stop buttons pulled out to the ON position.
Before serial number 747: Move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage on the blk/wht #8 wire primary boom retract directional valve coil (item C).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the primary boom extend/retract toggle switch in the RETRACT direction and check voltage on the blk/wht #8 wire primary boom retract directional valve coil (item C).
After serial number 3446: Hold the function enable toggle switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction and check voltage on the blk/wht #8 wire primary boom retract directional valve coil (item RR).
0V
Before serial number 747: Move the secondary boom toggle switch in the RETRACT direction and check voltage at TB8.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom extend/ retract toggle switch in the RETRACT direction. Check the voltage at TB8.
24V
Repair open in blk/wht #8 wire circuit from TB8 to primary boom retract directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the primary boom extend/ retract toggle switch
Before serial number 3446: TS4
After serial number 3447: TS13
in the RETRACT direction. Check voltage at TB8.
0V
Repair open in blk/wht #8 wire circuit to TB8.
24V
Troubleshoot the primary boom extend/ retract toggle switch on ground controls OR replace diode on toggle switch OR repair open in blk/wht #8 wire circuit from toggle switch to TB8 OR replace toggle switch.
24V
Continued on the next page.

CHART 15

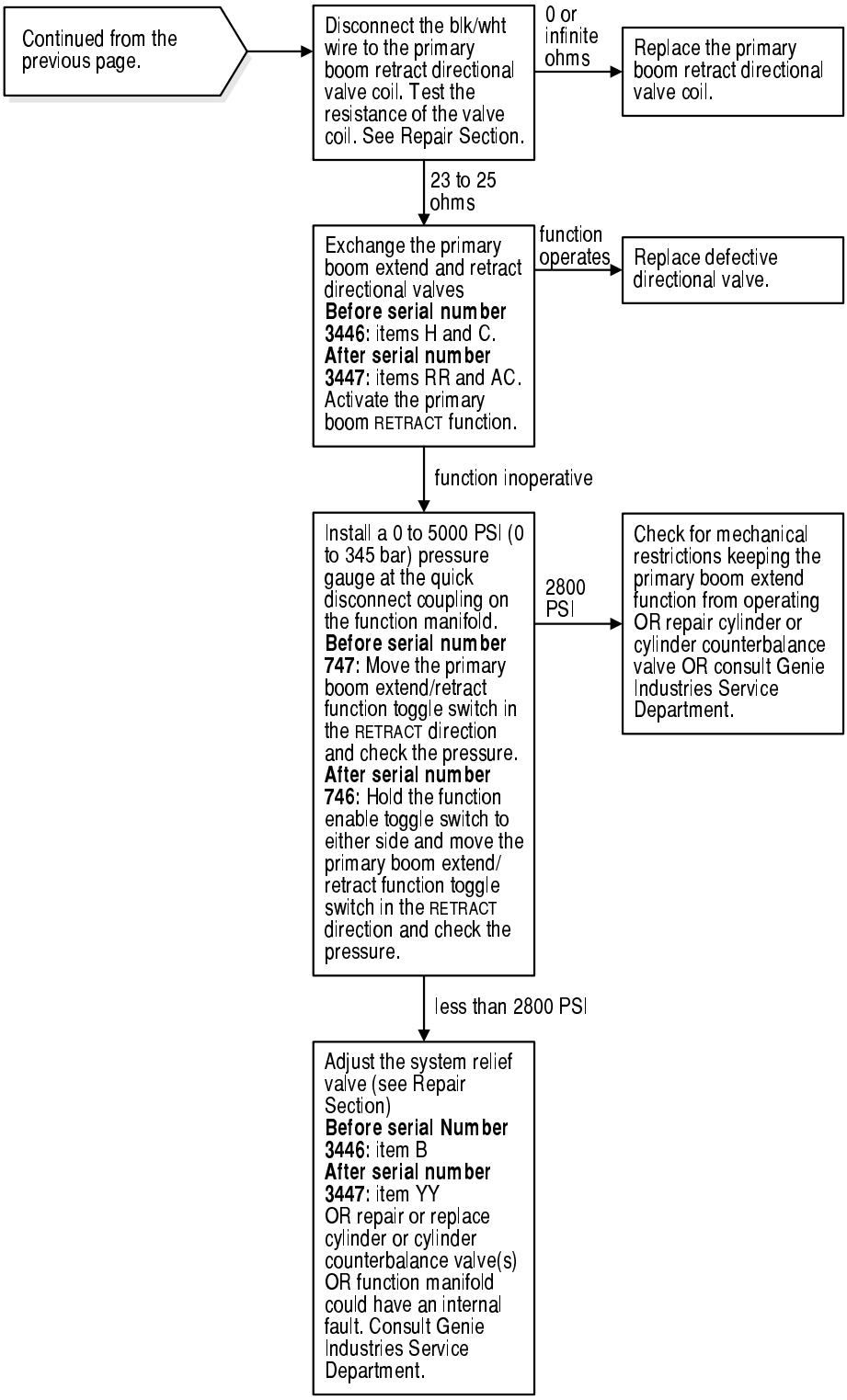

Continued from the previous page.
Disconnect the blk/wht wire to the primary boom retract directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the primary boom retract directional valve coil.
23 to 25 ohms
Exchange the primary boom extend and retract directional valves
Before serial number 3446: items H and C.
After serial number 3447: items RR and AC.
Activate the primary boom RETRACT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold.
Before serial number 747: Move the primary boom extend/retract function toggle switch in the RETRACT direction and check the pressure.
After serial number 746: Hold the function enable toggle switch to either side and move the primary boom extend/ retract function toggle switch in the RETRACT direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping the primary boom extend function from operating OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 2800 PSI
Adjust the system relief valve (see Repair Section)
Before serial Number 3446: item B
After serial number 3447: item YY
OR repair or replace cylinder or cylinder counterbalance valve(s) OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 16

Turntable Rotate Left Function Inoperative (before serial number 3447)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

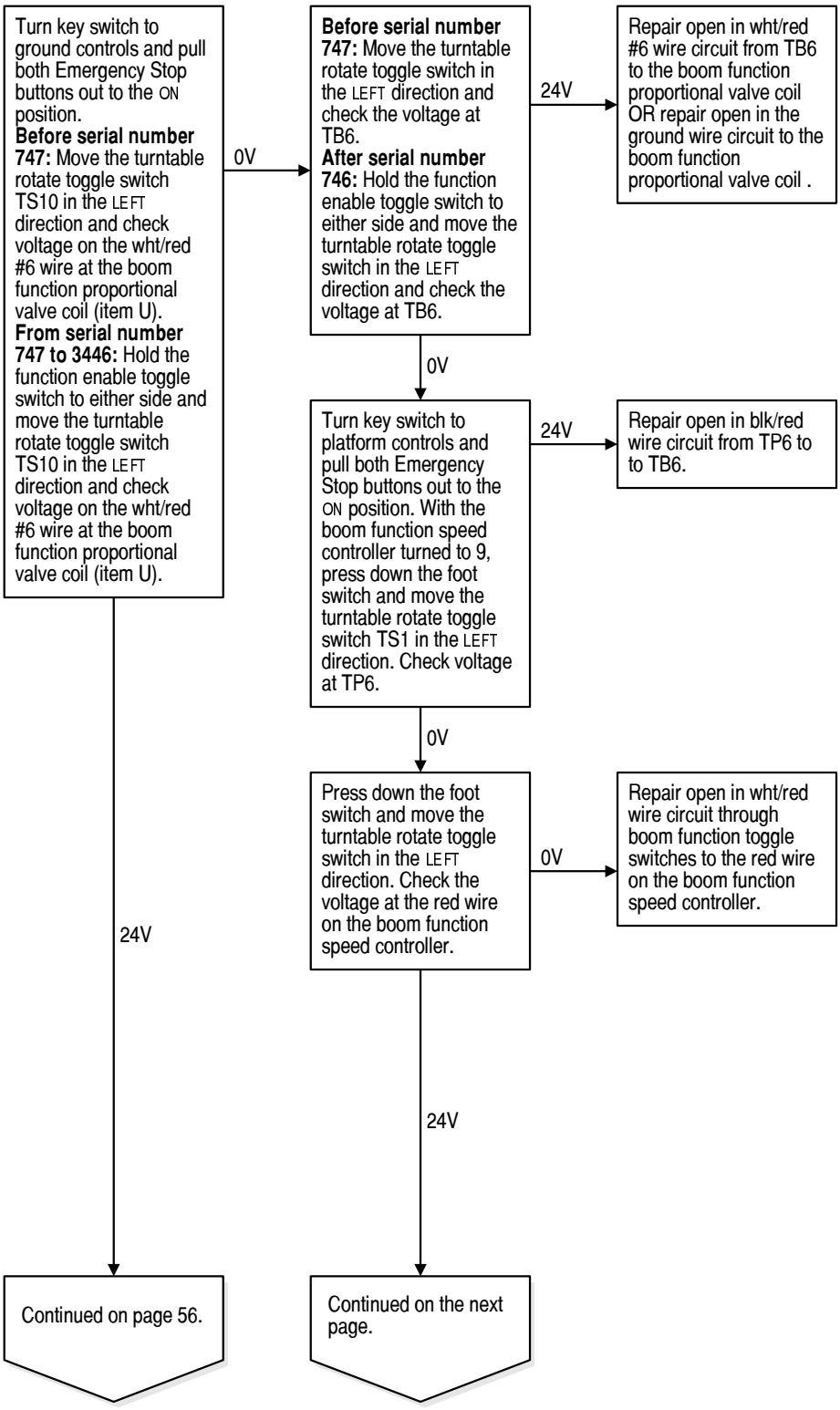


CHART 16

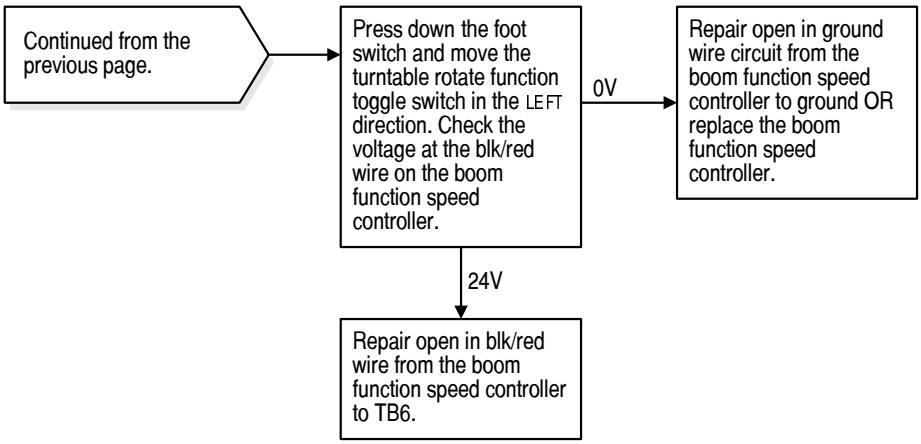

Continued from the previous page.
Press down the foot switch and move the turntable rotate function toggle switch in the LEFT direction. Check the voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 16

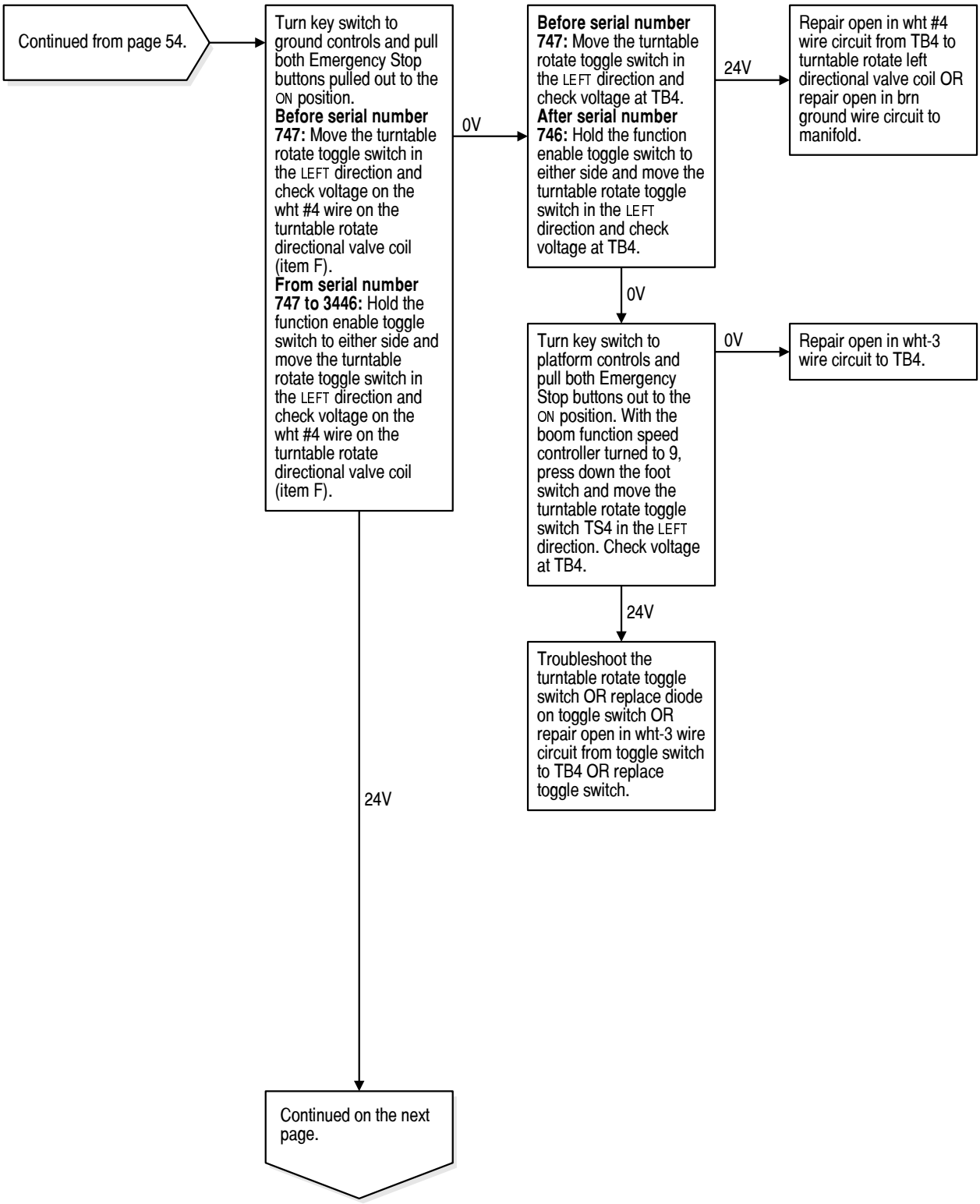

Continued from page 54.
Turn key switch to ground controls and pull both Emergency Stop buttons pulled out to the ON position.
Before serial number 747: Move the turntable rotate toggle switch in the LEFT direction and check voltage on the wht #4 wire on the turntable rotate directional valve coil (item F).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check voltage on the wht #4 wire on the turntable rotate directional valve coil (item F).
0V
Before serial number 747: Move the turntable rotate toggle switch in the LEFT direction and check voltage at TB4.
After serial number 746: Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check voltage at TB4.
24V
Repair open in wht #4 wire circuit from TB4 to turntable rotate left directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the turntable rotate toggle switch TS4 in the LEFT direction. Check voltage at TB4.
0V
Repair open in wht-3 wire circuit to TB4.
24V
Troubleshoot the turntable rotate toggle switch OR replace diode on toggle switch OR repair open in wht-3 wire circuit from toggle switch to TB4 OR replace toggle switch.
24V
Continued on the next page.

CHART 16

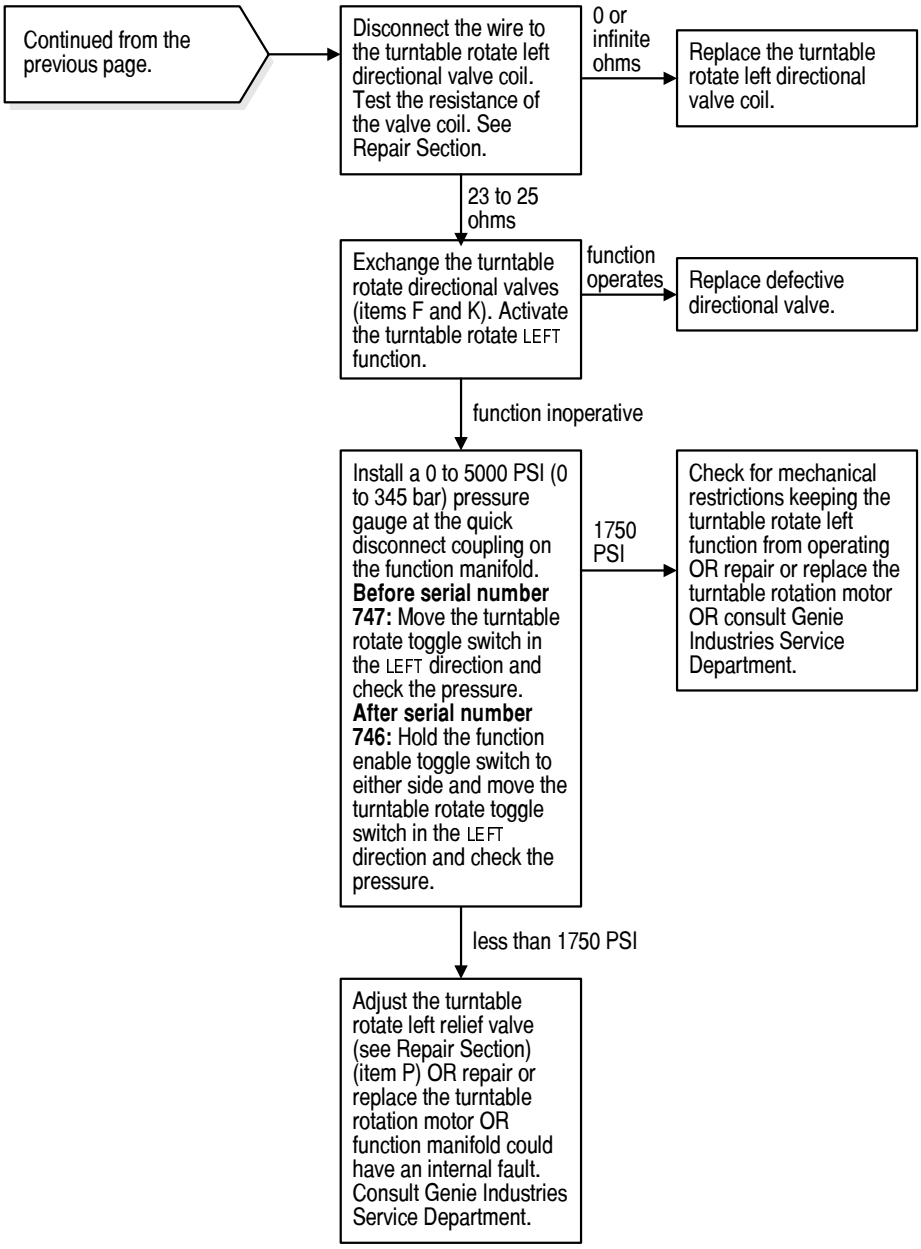

Continued from the previous page.
Disconnect the wire to the turntable rotate left directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the turntable rotate left directional valve coil.
23 to 25 ohms
Exchange the turntable rotate directional valves (items F and K). Activate the turntable rotate LEFT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold. **Before serial number 747:** Move the turntable rotate toggle switch in the LEFT direction and check the pressure. **After serial number 746:** Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check the pressure.
1750 PSI
Check for mechanical restrictions keeping the turntable rotate left function from operating OR repair or replace the turntable rotation motor OR consult Genie Industries Service Department.
less than 1750 PSI
Adjust the turntable rotate left relief valve (see Repair Section) (item P) OR repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 17

Turntable Rotate Left Function Inoperative (after serial number 3446)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

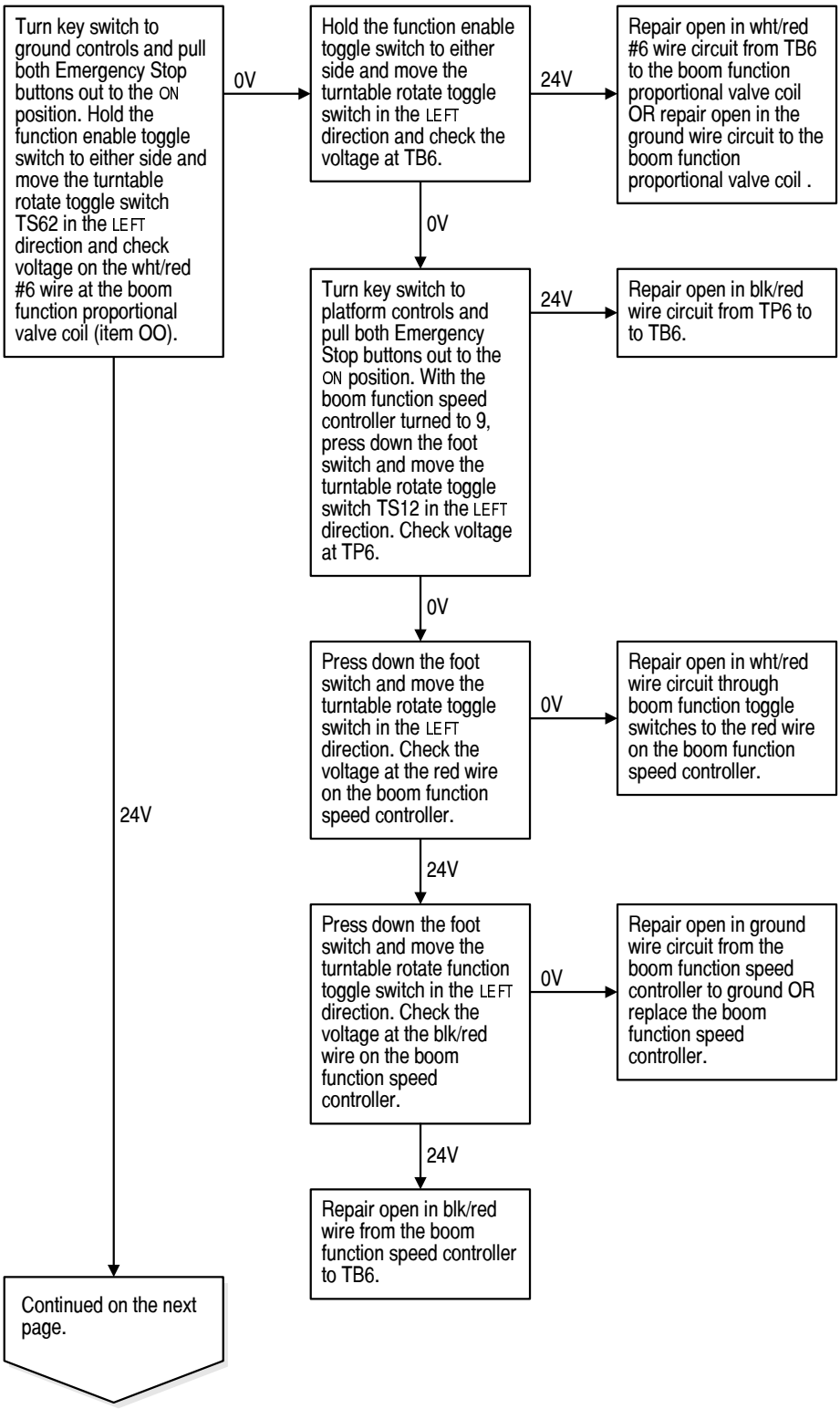


CHART 17

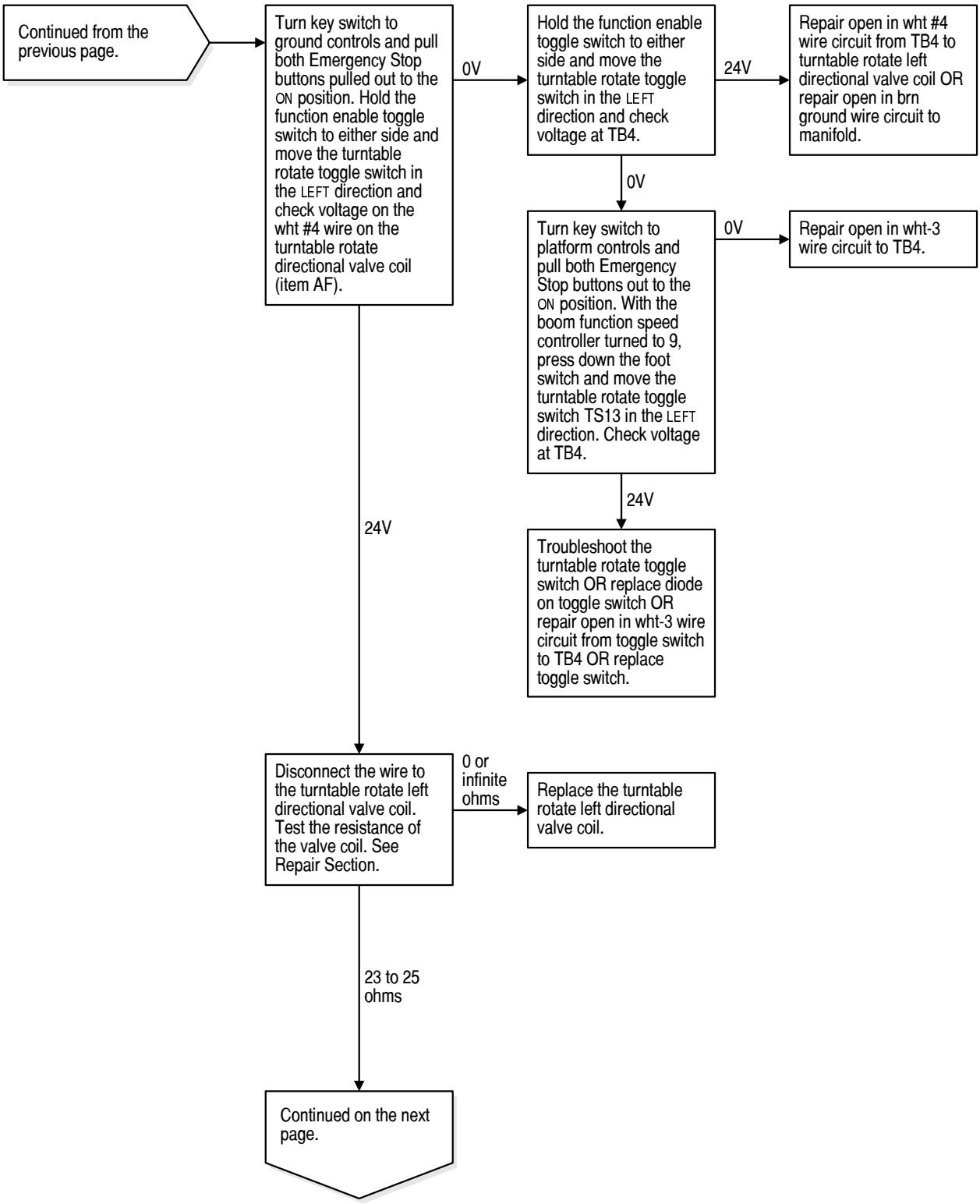

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons pulled out to the ON position. Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check voltage on the wht #4 wire on the turntable rotate directional valve coil (item AF).
0V
Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check voltage at TB4.
24V
Repair open in wht #4 wire circuit from TB4 to turntable rotate left directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the turntable rotate toggle switch TS13 in the LEFT direction. Check voltage at TB4.
0V
Repair open in wht-3 wire circuit to TB4.
24V
Troubleshoot the turntable rotate toggle switch OR replace diode on toggle switch OR repair open in wht-3 wire circuit from toggle switch to TB4 OR replace toggle switch.
24V
Disconnect the wire to the turntable rotate left directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the turntable rotate left directional valve coil.
23 to 25 ohms
Continued on the next page.

CHART 17

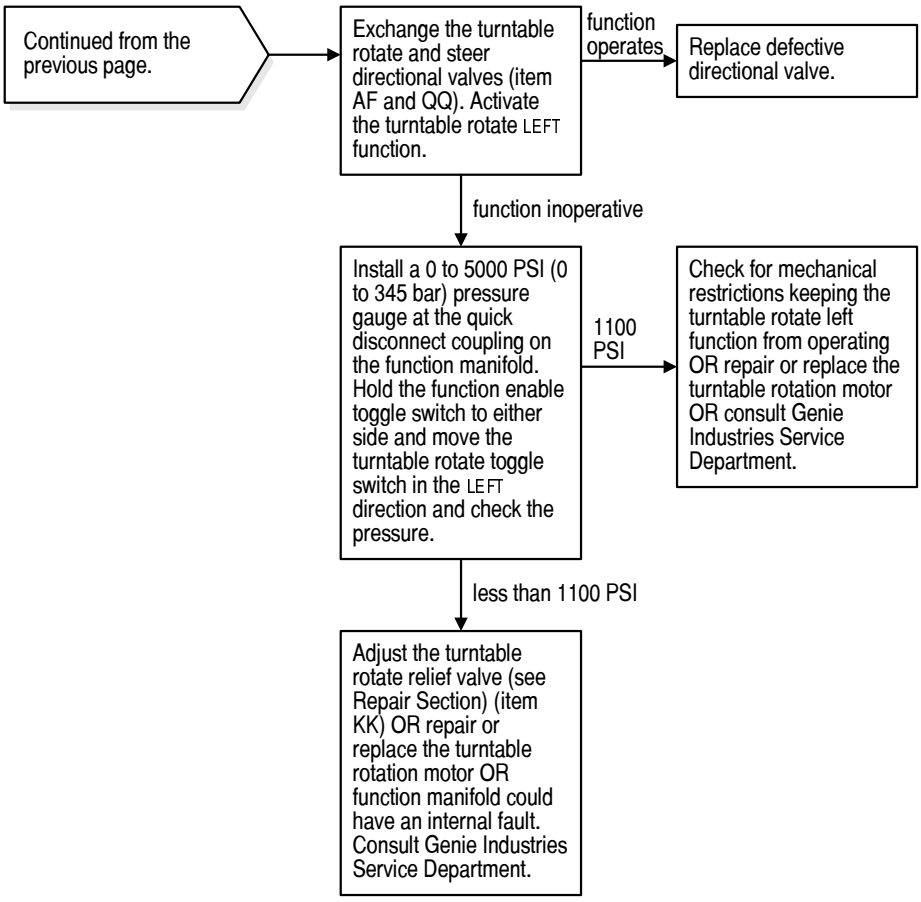

Continued from the previous page.
Exchange the turntable rotate and steer directional valves (item AF and QQ). Activate the turntable rotate LEFT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold. Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the LEFT direction and check the pressure.
1100 PSI
Check for mechanical restrictions keeping the turntable rotate left function from operating OR repair or replace the turntable rotation motor OR consult Genie Industries Service Department.
less than 1100 PSI
Adjust the turntable rotate relief valve (see Repair Section) (item KK) OR repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 18

Turntable Rotate Right Function Inoperative (before serial number 3447)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

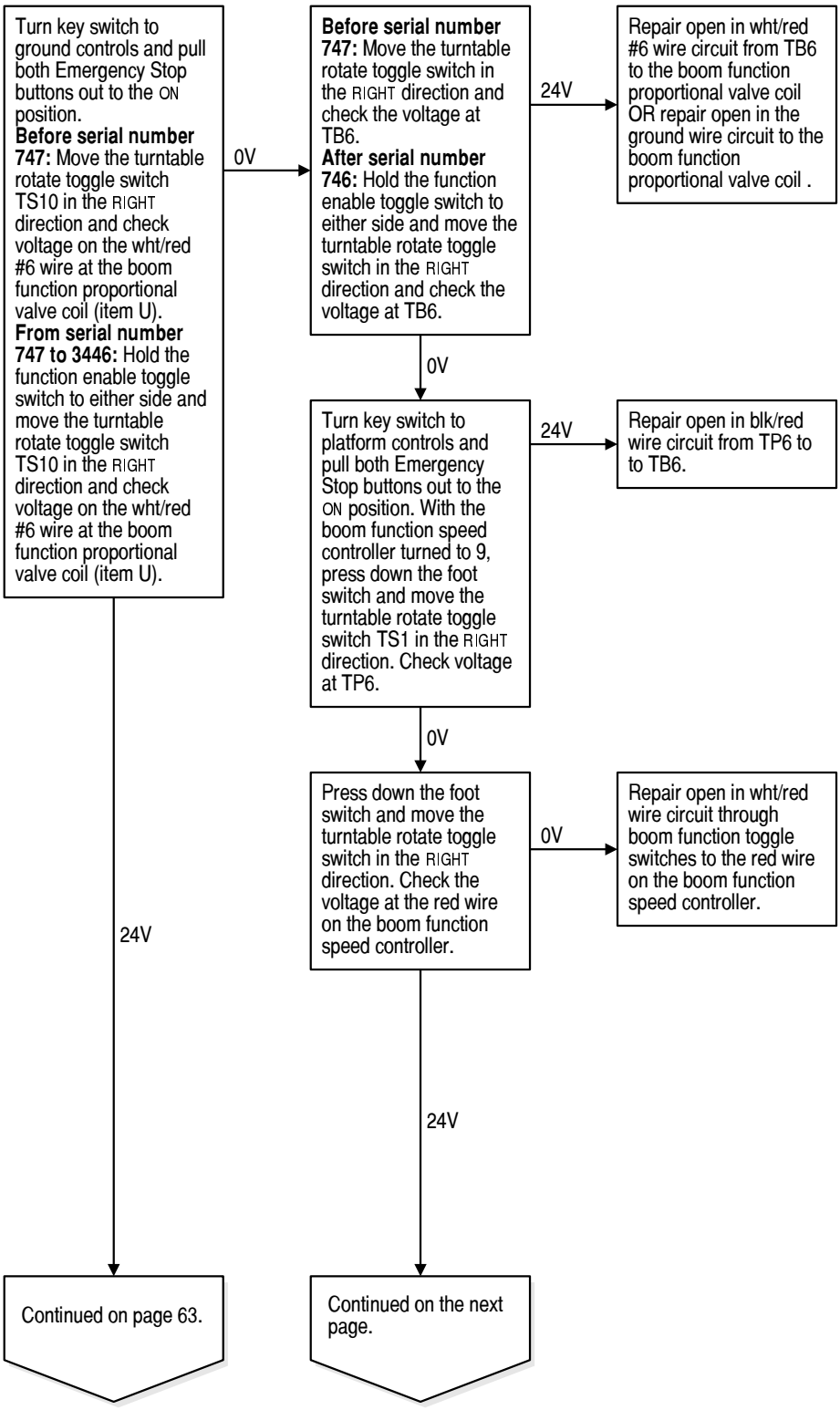


CHART 18

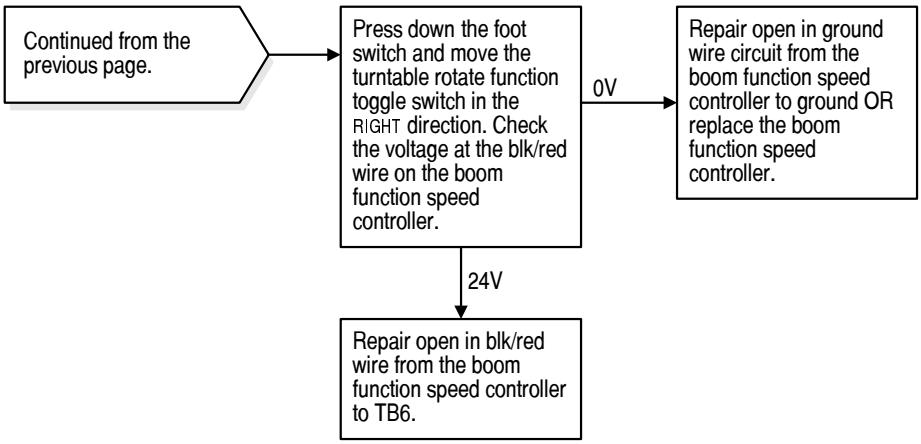

Continued from the previous page.
Press down the foot switch and move the turntable rotate function toggle switch in the RIGHT direction. Check the voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 18

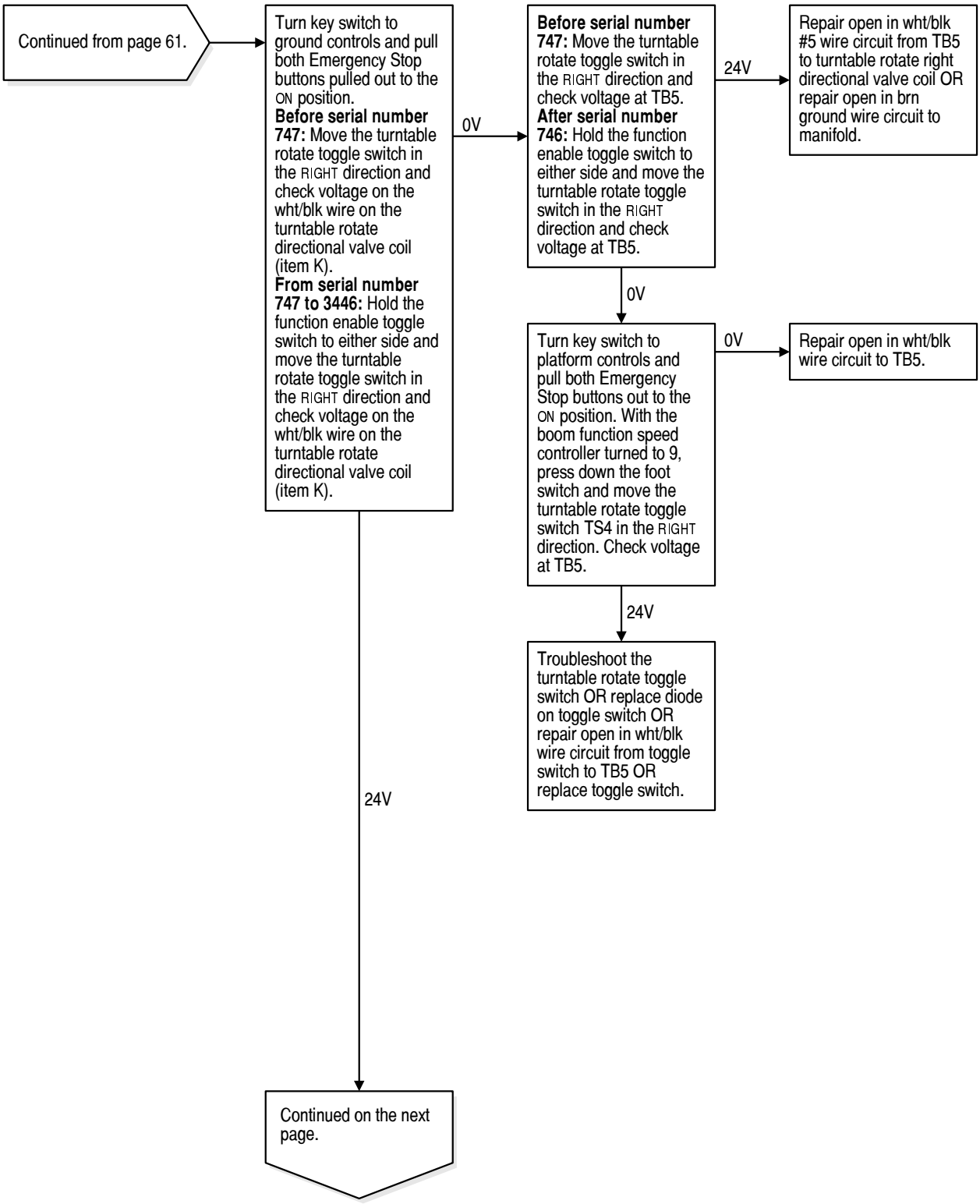

Continued from page 61.
Turn key switch to ground controls and pull both Emergency Stop buttons pulled out to the ON position.
Before serial number 747: Move the turntable rotate toggle switch in the RIGHT direction and check voltage on the wht/blk wire on the turntable rotate directional valve coil (item K).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check voltage on the wht/blk wire on the turntable rotate directional valve coil (item K).
0V
Before serial number 747: Move the turntable rotate toggle switch in the RIGHT direction and check voltage at TB5.
After serial number 746: Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check voltage at TB5.
24V
Repair open in wht/blk #5 wire circuit from TB5 to turntable rotate right directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the turntable rotate toggle switch TS4 in the RIGHT direction. Check voltage at TB5.
0V
Repair open in wht/blk wire circuit to TB5.
24V
Troubleshoot the turntable rotate toggle switch OR replace diode on toggle switch OR repair open in wht/blk wire circuit from toggle switch to TB5 OR replace toggle switch.
24V
Continued on the next page.

CHART 18

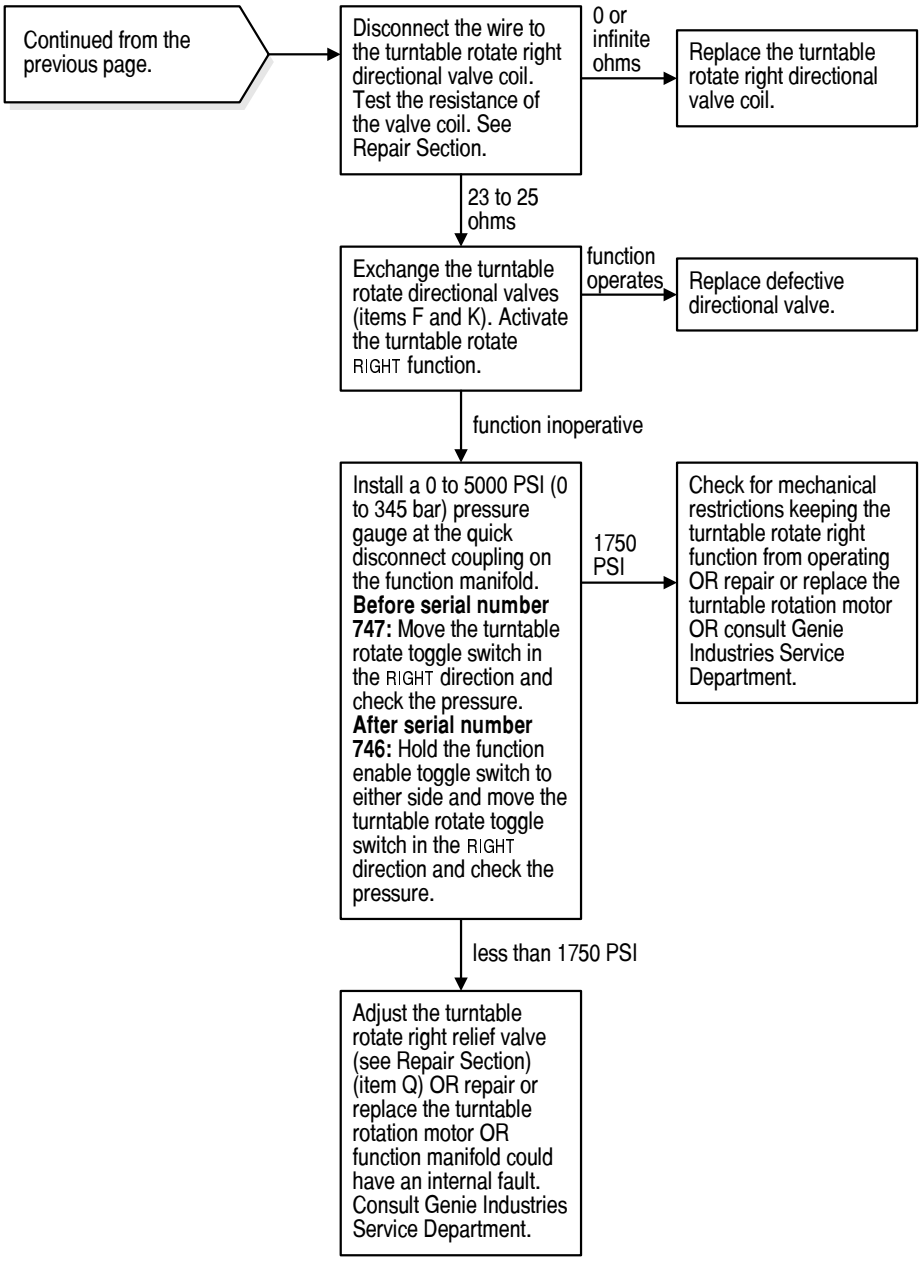

Continued from the previous page.
Disconnect the wire to the turntable rotate right directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the turntable rotate right directional valve coil.
23 to 25 ohms
Exchange the turntable rotate directional valves (items F and K). Activate the turntable rotate RIGHT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold. **Before serial number 747:** Move the turntable rotate toggle switch in the RIGHT direction and check the pressure. **After serial number 746:** Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check the pressure.
1750 PSI
Check for mechanical restrictions keeping the turntable rotate right function from operating OR repair or replace the turntable rotation motor OR consult Genie Industries Service Department.
less than 1750 PSI
Adjust the turntable rotate right relief valve (see Repair Section) (item Q) OR repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 19

Turntable Rotate Right Function Inoperative (after serial number 3446)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

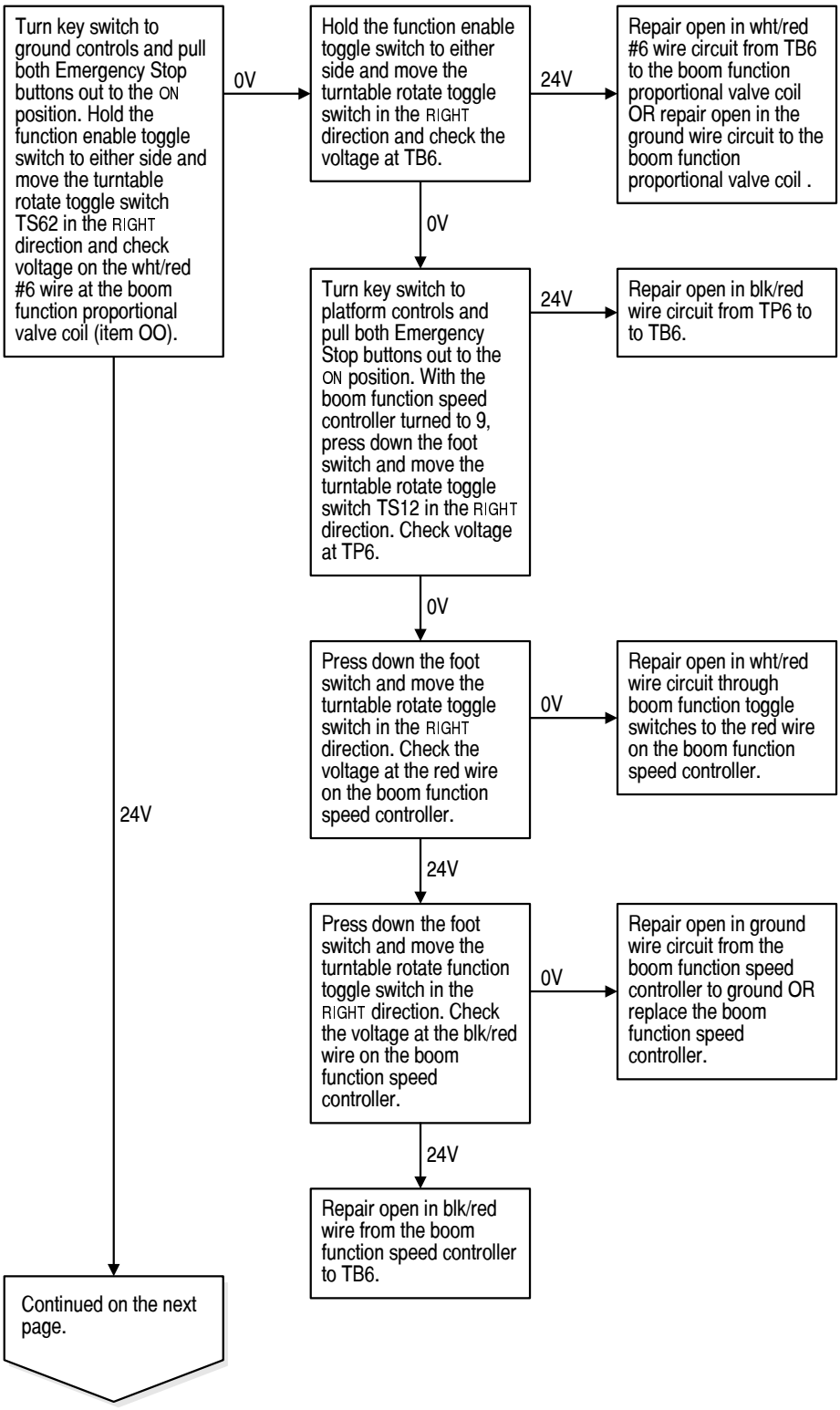


CHART 19

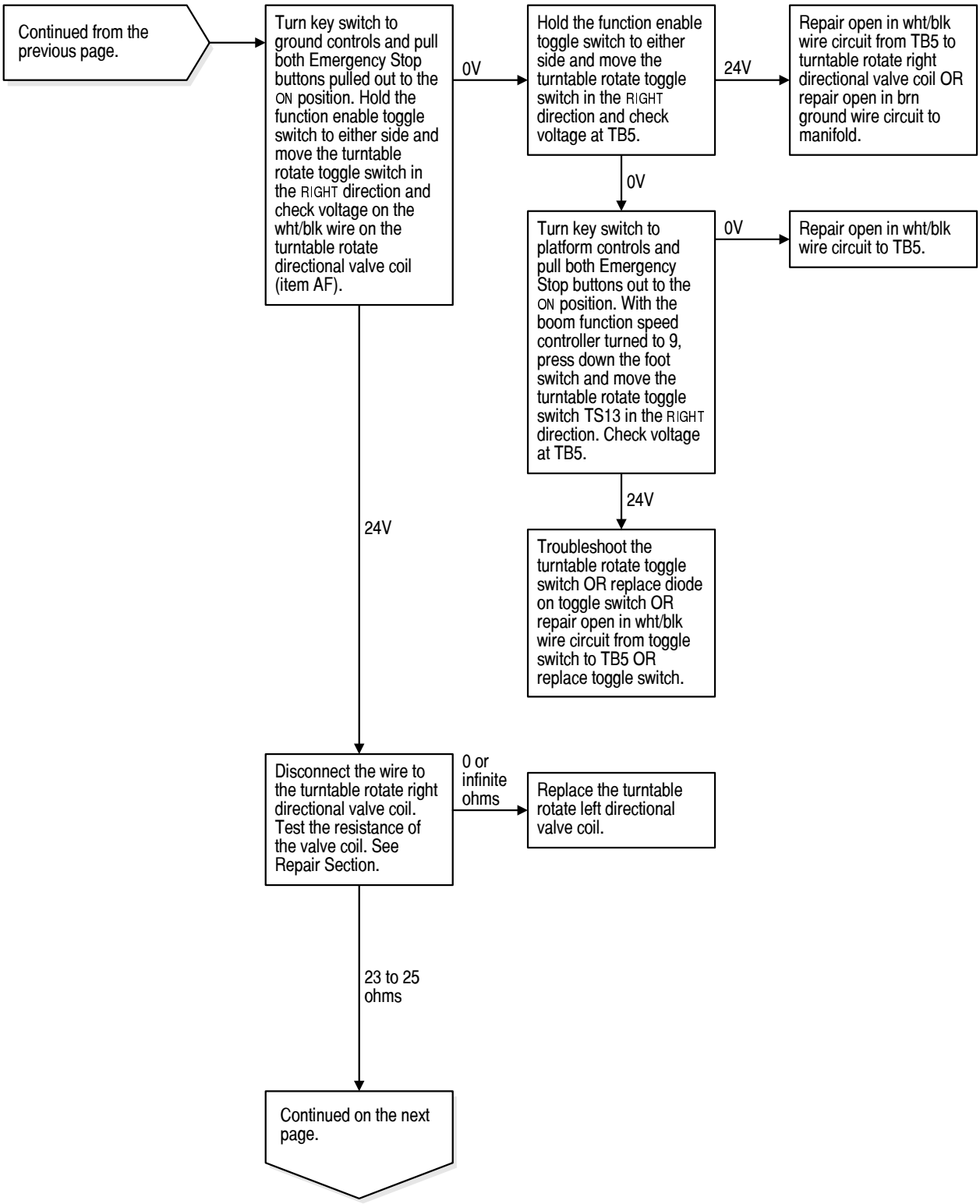

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons pulled out to the ON position. Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check voltage on the wht/blk wire on the turntable rotate directional valve coil (item AF).
0V
Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check voltage at TB5.
24V
Repair open in wht/blk wire circuit from TB5 to turntable rotate right directional valve coil OR repair open in brn ground wire circuit to manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the turntable rotate toggle switch TS13 in the RIGHT direction. Check voltage at TB5.
0V
Repair open in wht/blk wire circuit to TB5.
24V
Troubleshoot the turntable rotate toggle switch OR replace diode on toggle switch OR repair open in wht/blk wire circuit from toggle switch to TB5 OR replace toggle switch.
24V
Disconnect the wire to the turntable rotate right directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace the turntable rotate left directional valve coil.
23 to 25 ohms
Continued on the next page.

CHART 19

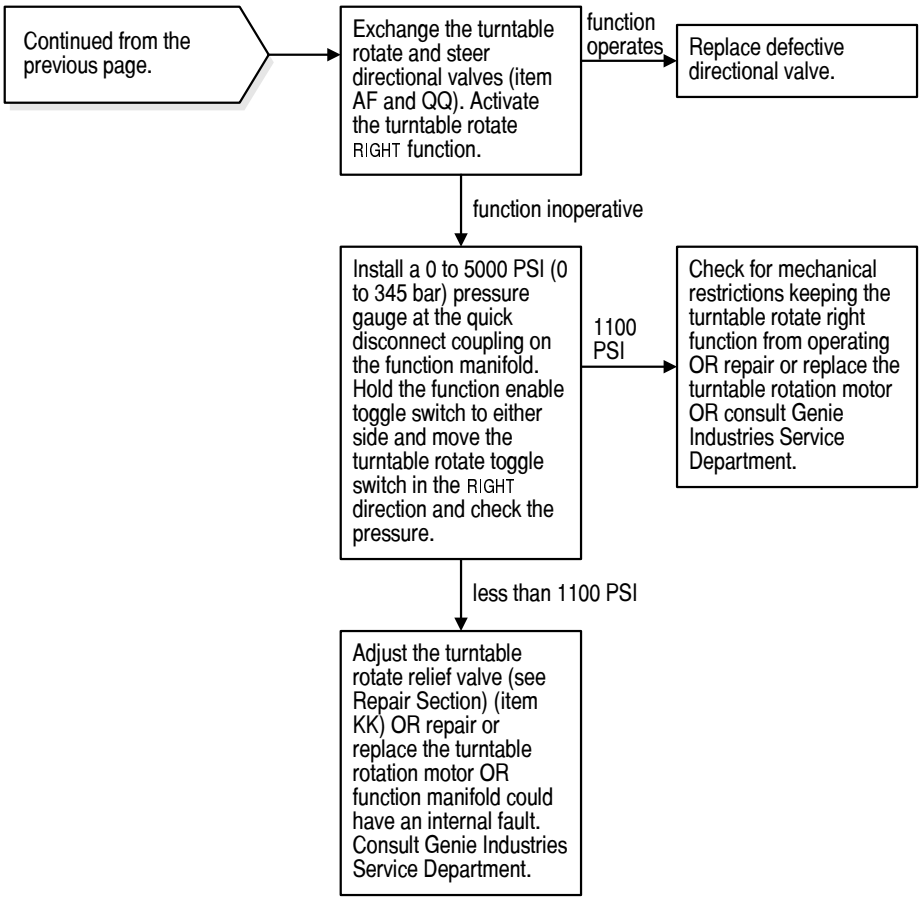

Continued from the previous page.
Exchange the turntable rotate and steer directional valves (item AF and QQ). Activate the turntable rotate RIGHT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the function manifold. Hold the function enable toggle switch to either side and move the turntable rotate toggle switch in the RIGHT direction and check the pressure.
1100 PSI
Check for mechanical restrictions keeping the turntable rotate right function from operating OR repair or replace the turntable rotation motor OR consult Genie Industries Service Department.
less than 1100 PSI
Adjust the turntable rotate relief valve (see Repair Section) (item KK) OR repair or replace the turntable rotation motor OR function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 20

All Platform Level Functions Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

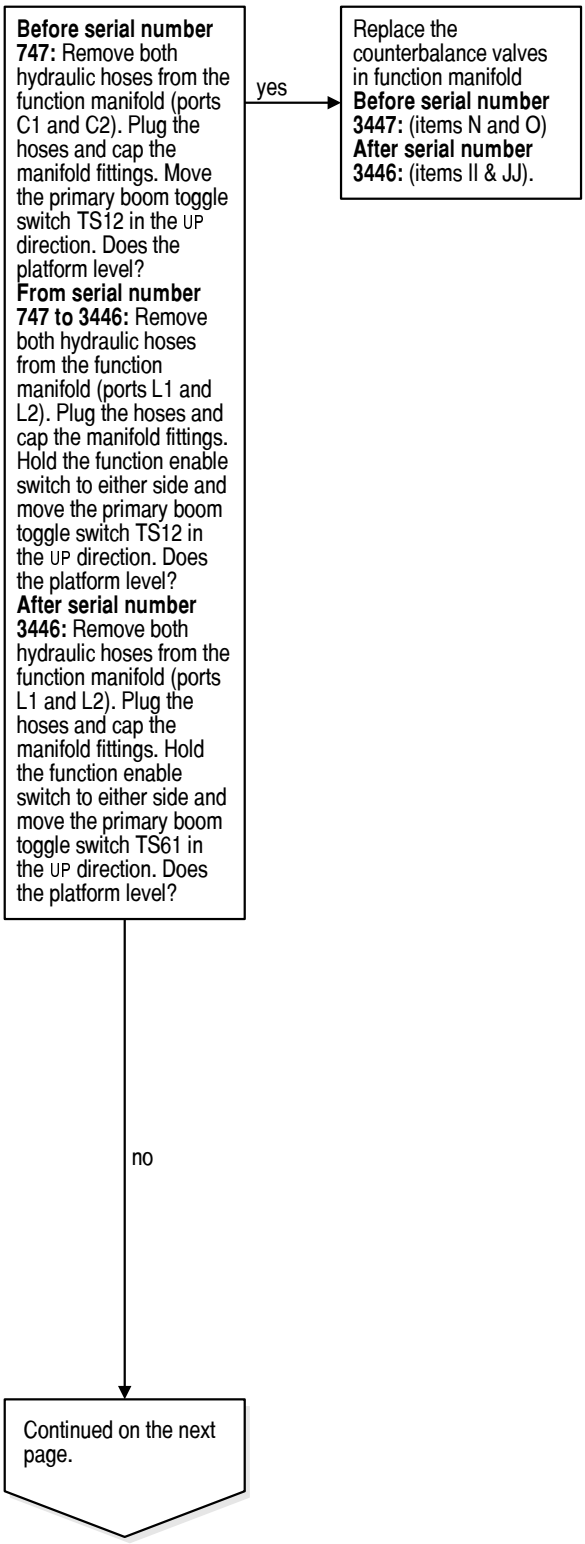


CHART 20

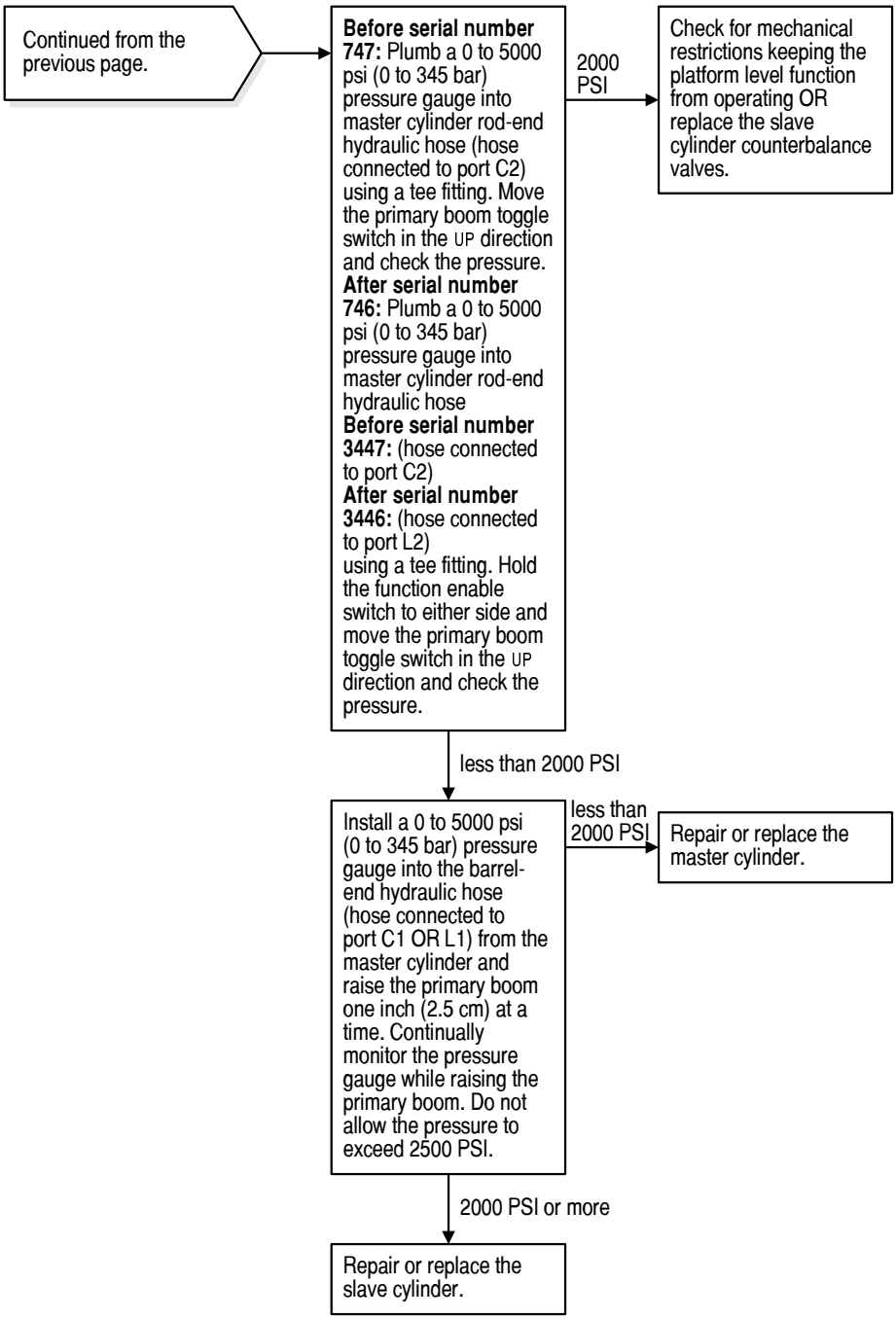

Continued from the previous page.
Before serial number 747: Plumb a 0 to 5000 psi (0 to 345 bar) pressure gauge into master cylinder rod-end hydraulic hose (hose connected to port C2) using a tee fitting. Move the primary boom toggle switch in the UP direction and check the pressure.
After serial number 746: Plumb a 0 to 5000 psi (0 to 345 bar) pressure gauge into master cylinder rod-end hydraulic hose
Before serial number 3447: (hose connected to port C2)
After serial number 3446: (hose connected to port L2)
using a tee fitting. Hold the function enable switch to either side and move the primary boom toggle switch in the UP direction and check the pressure.
2000 PSI
Check for mechanical restrictions keeping the platform level function from operating OR replace the slave cylinder counterbalance valves.
less than 2000 PSI
Install a 0 to 5000 psi (0 to 345 bar) pressure gauge into the barrel-end hydraulic hose (hose connected to port C1 OR L1) from the master cylinder and raise the primary boom one inch (2.5 cm) at a time. Continually monitor the pressure gauge while raising the primary boom. Do not allow the pressure to exceed 2500 PSI.
less than 2000 PSI
Repair or replace the master cylinder.
2000 PSI or more
Repair or replace the slave cylinder.

Chart 21

Platform Level Up Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

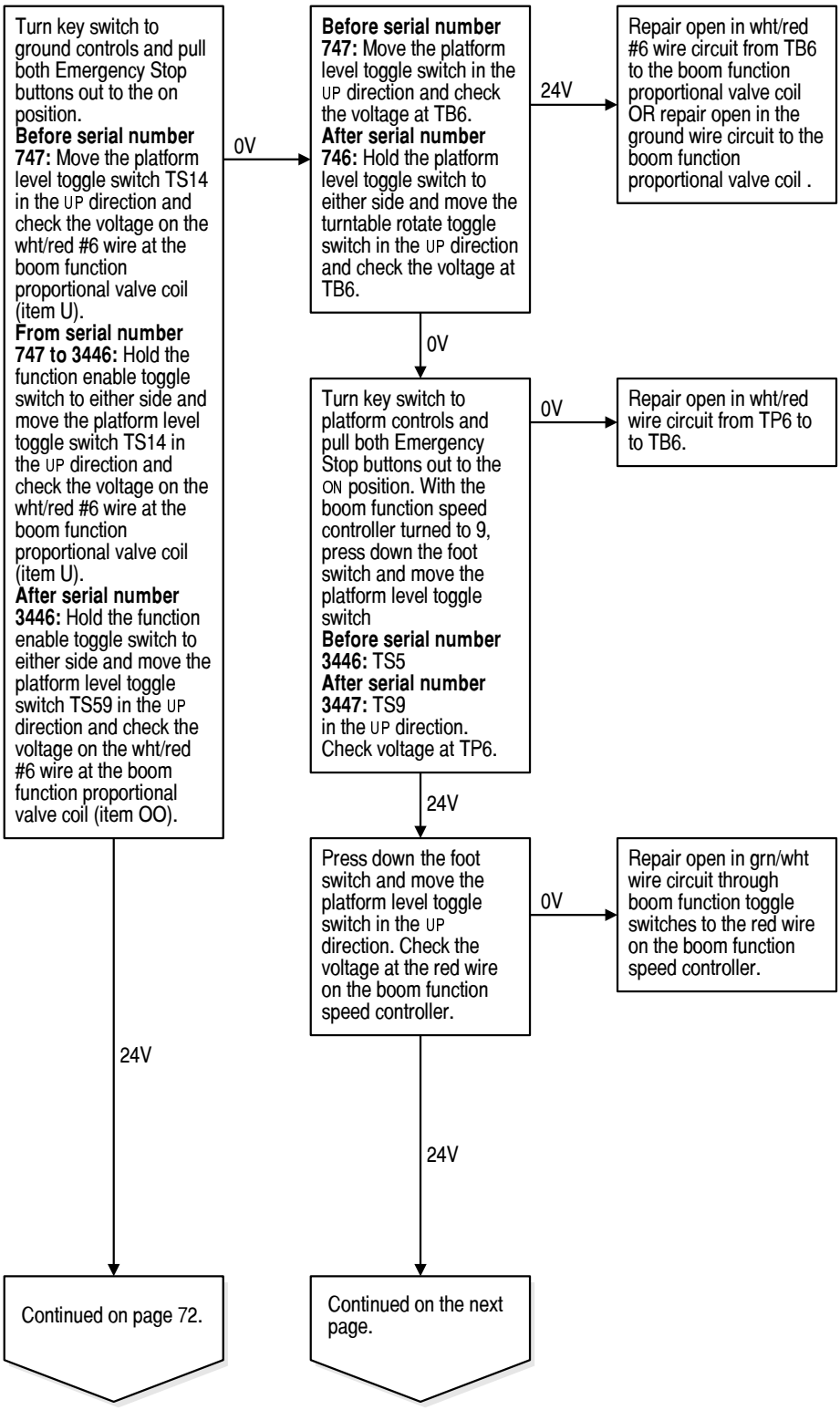


CHART 21

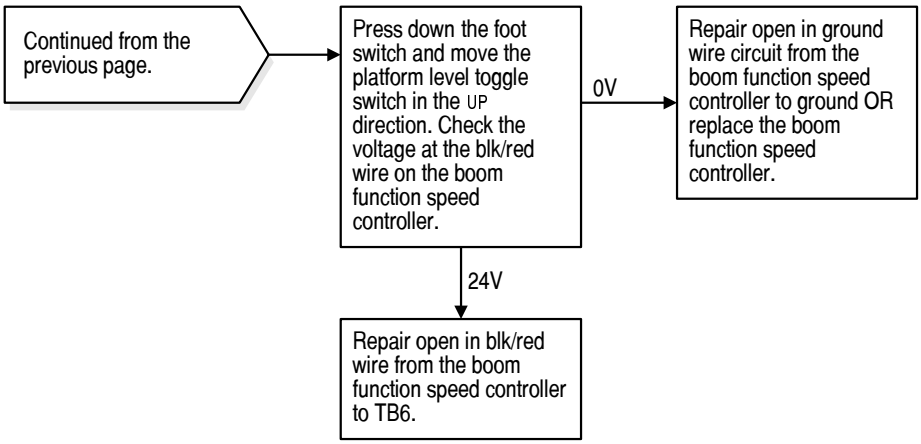

Continued from the previous page.
Press down the foot switch and move the platform level toggle switch in the UP direction. Check the voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 21

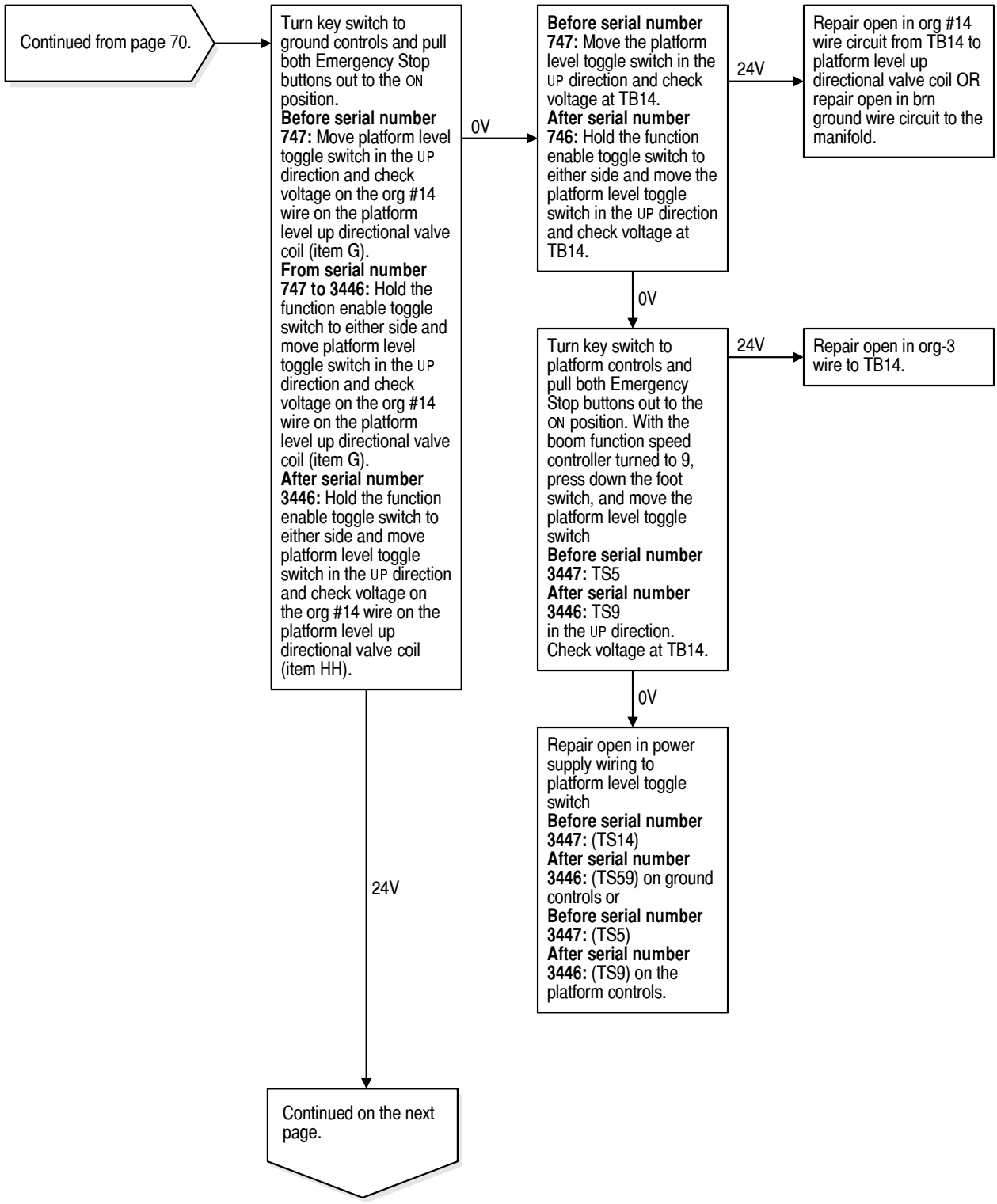

Continued from page 70.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move platform level toggle switch in the UP direction and check voltage on the org #14 wire on the platform level up directional valve coil (item G).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move platform level toggle switch in the UP direction and check voltage on the org #14 wire on the platform level up directional valve coil (item G).
After serial number 3446: Hold the function enable toggle switch to either side and move platform level toggle switch in the UP direction and check voltage on the org #14 wire on the platform level up directional valve coil (item HH).
0V
Before serial number 747: Move the platform level toggle switch in the UP direction and check voltage at TB14.
After serial number 746: Hold the function enable toggle switch to either side and move the platform level toggle switch in the UP direction and check voltage at TB14.
24V
Repair open in org #14 wire circuit from TB14 to platform level up directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch, and move the platform level toggle switch
Before serial number 3447: TS5
After serial number 3446: TS9
in the UP direction. Check voltage at TB14.
24V
Repair open in org-3 wire to TB14.
0V
Repair open in power supply wiring to platform level toggle switch
Before serial number 3447: (TS14)
After serial number 3446: (TS59) on ground controls or
Before serial number 3447: (TS5)
After serial number 3446: (TS9) on the platform controls.
24V
Continued on the next page.

CHART 21

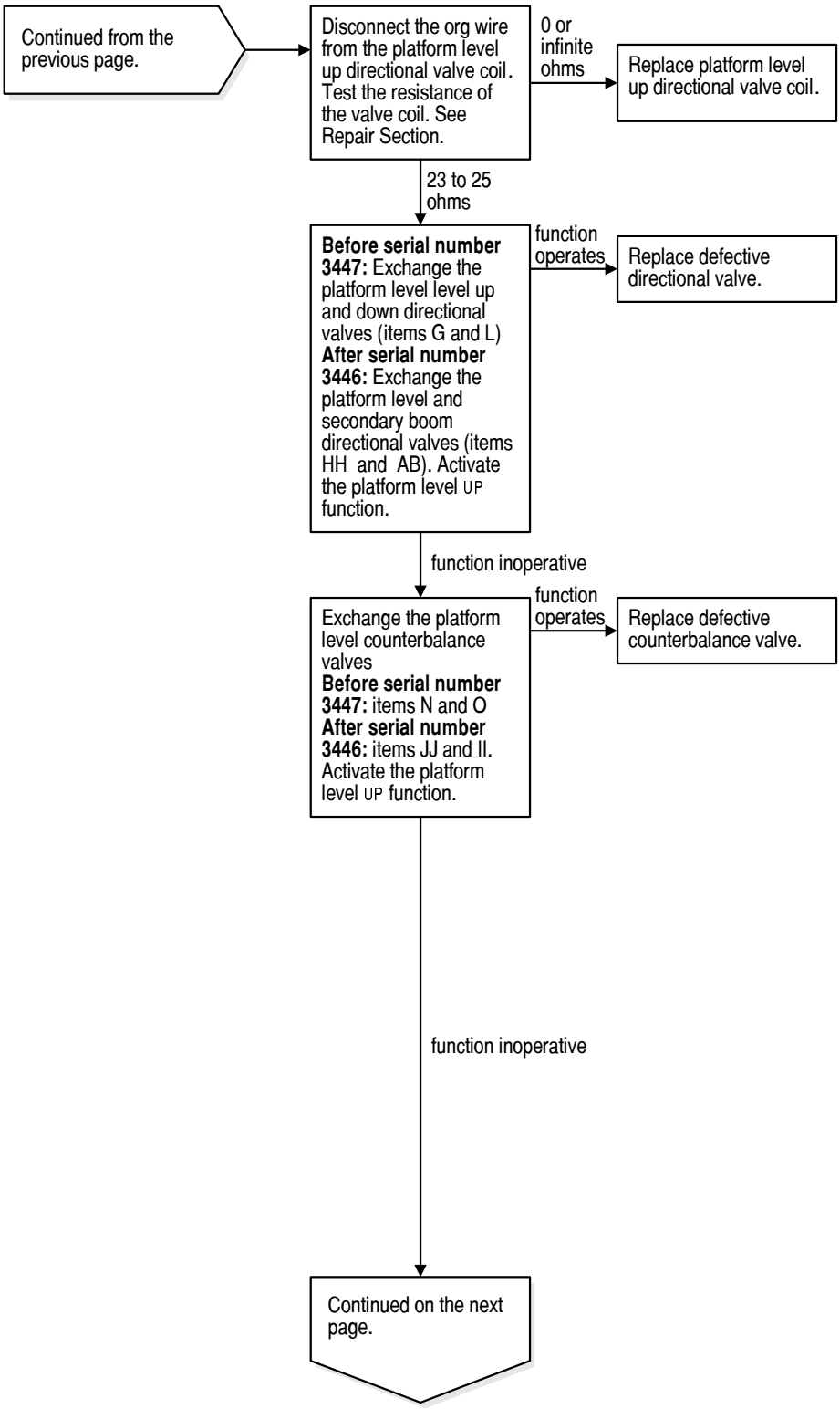

Continued from the previous page.
Disconnect the org wire from the platform level up directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform level up directional valve coil.
23 to 25 ohms
Before serial number 3447: Exchange the platform level level up and down directional valves (items G and L) After serial number 3446: Exchange the platform level and secondary boom directional valves (items HH and AB). Activate the platform level UP function.
function operates
Replace defective directional valve.
function inoperative
Exchange the platform level counterbalance valves Before serial number 3447: items N and O After serial number 3446: items JJ and II. Activate the platform level UP function.
function operates
Replace defective counterbalance valve.
function inoperative
Continued on the next page.

CHART 21

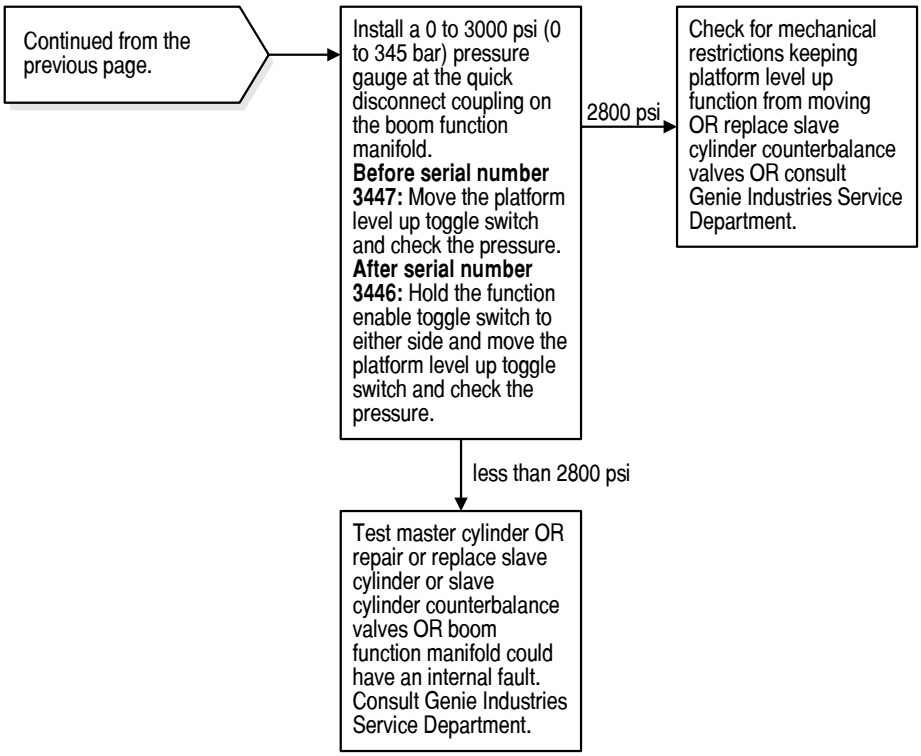

Continued from the previous page.
Install a 0 to 3000 psi (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold.
Before serial number 3447: Move the platform level up toggle switch and check the pressure.
After serial number 3446: Hold the function enable toggle switch to either side and move the platform level up toggle switch and check the pressure.
2800 psi
Check for mechanical restrictions keeping platform level up function from moving OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 2800 psi
Test master cylinder OR repair or replace slave cylinder or slave cylinder counterbalance valves OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 22

Platform Level Down Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

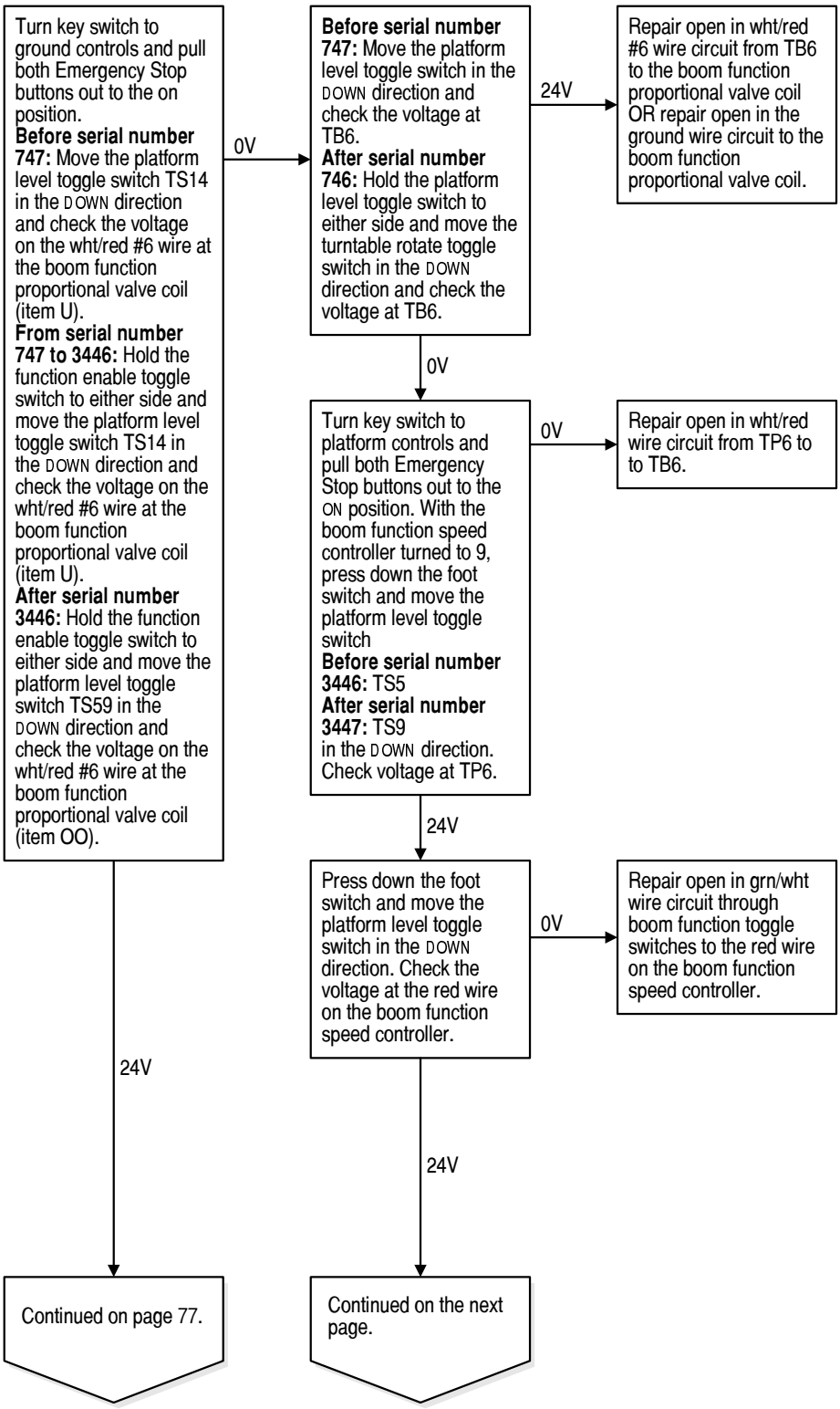


CHART 22

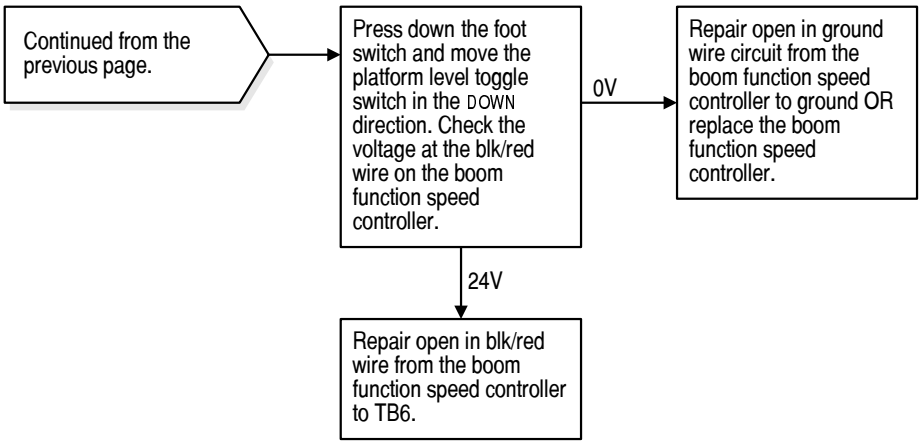

Continued from the previous page.
Press down the foot switch and move the platform level toggle switch in the DOWN direction. Check the voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 22

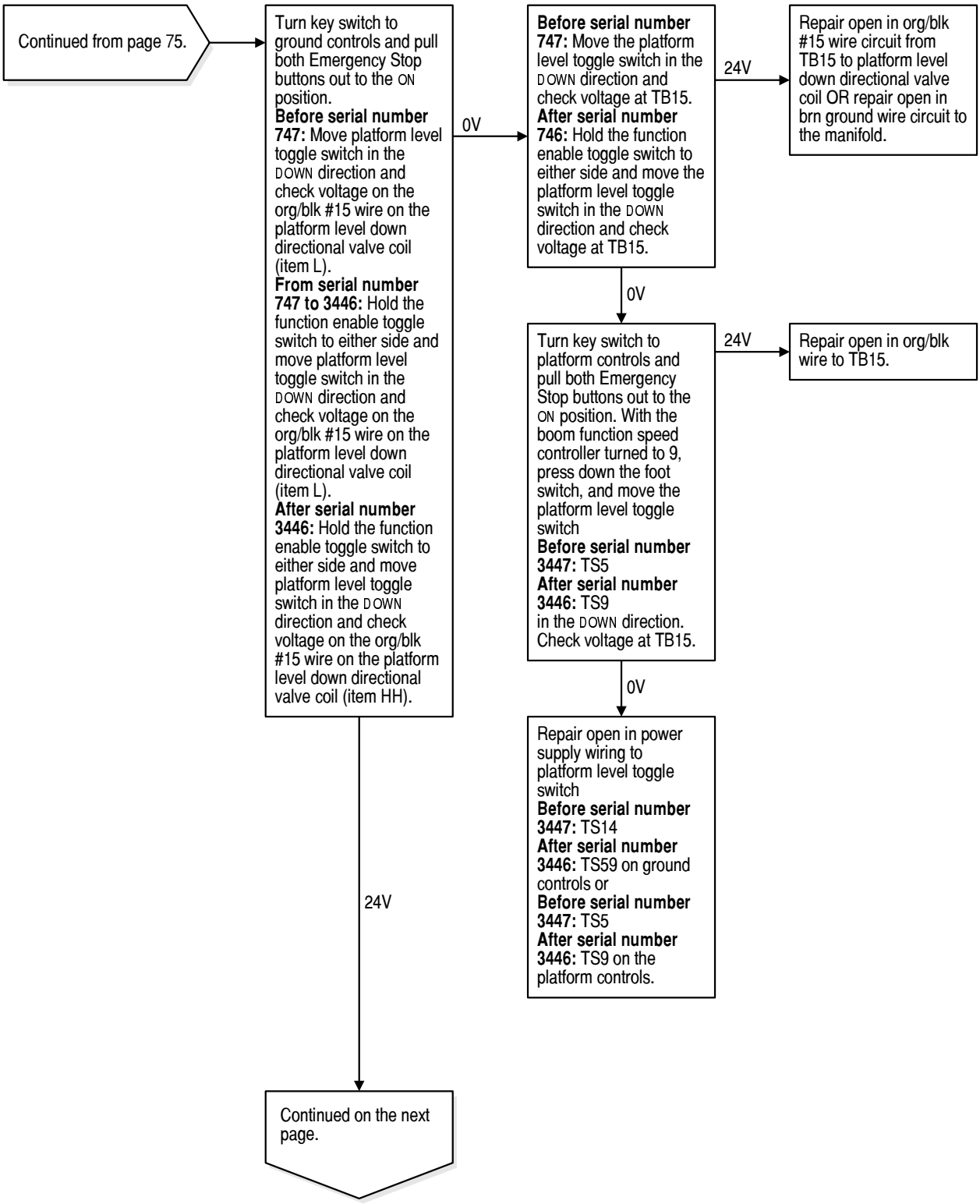

Continued from page 75.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move platform level toggle switch in the DOWN direction and check voltage on the org/blk #15 wire on the platform level down directional valve coil (item L).
From serial number 747 to 3446: Hold the function enable toggle switch to either side and move platform level toggle switch in the DOWN direction and check voltage on the org/blk #15 wire on the platform level down directional valve coil (item L).
After serial number 3446: Hold the function enable toggle switch to either side and move platform level toggle switch in the DOWN direction and check voltage on the org/blk #15 wire on the platform level down directional valve coil (item HH).
0V
24V
Continued on the next page.
Before serial number 747: Move the platform level toggle switch in the DOWN direction and check voltage at TB15.
After serial number 746: Hold the function enable toggle switch to either side and move the platform level toggle switch in the DOWN direction and check voltage at TB15.
24V
Repair open in org/blk #15 wire circuit from TB15 to platform level down directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch, and move the platform level toggle switch
Before serial number 3447: TS5
After serial number 3446: TS9
in the DOWN direction. Check voltage at TB15.
24V
Repair open in org/blk wire to TB15.
0V
Repair open in power supply wiring to platform level toggle switch
Before serial number 3447: TS14
After serial number 3446: TS59 on ground controls or
Before serial number 3447: TS5
After serial number 3446: TS9 on the platform controls.

CHART 22

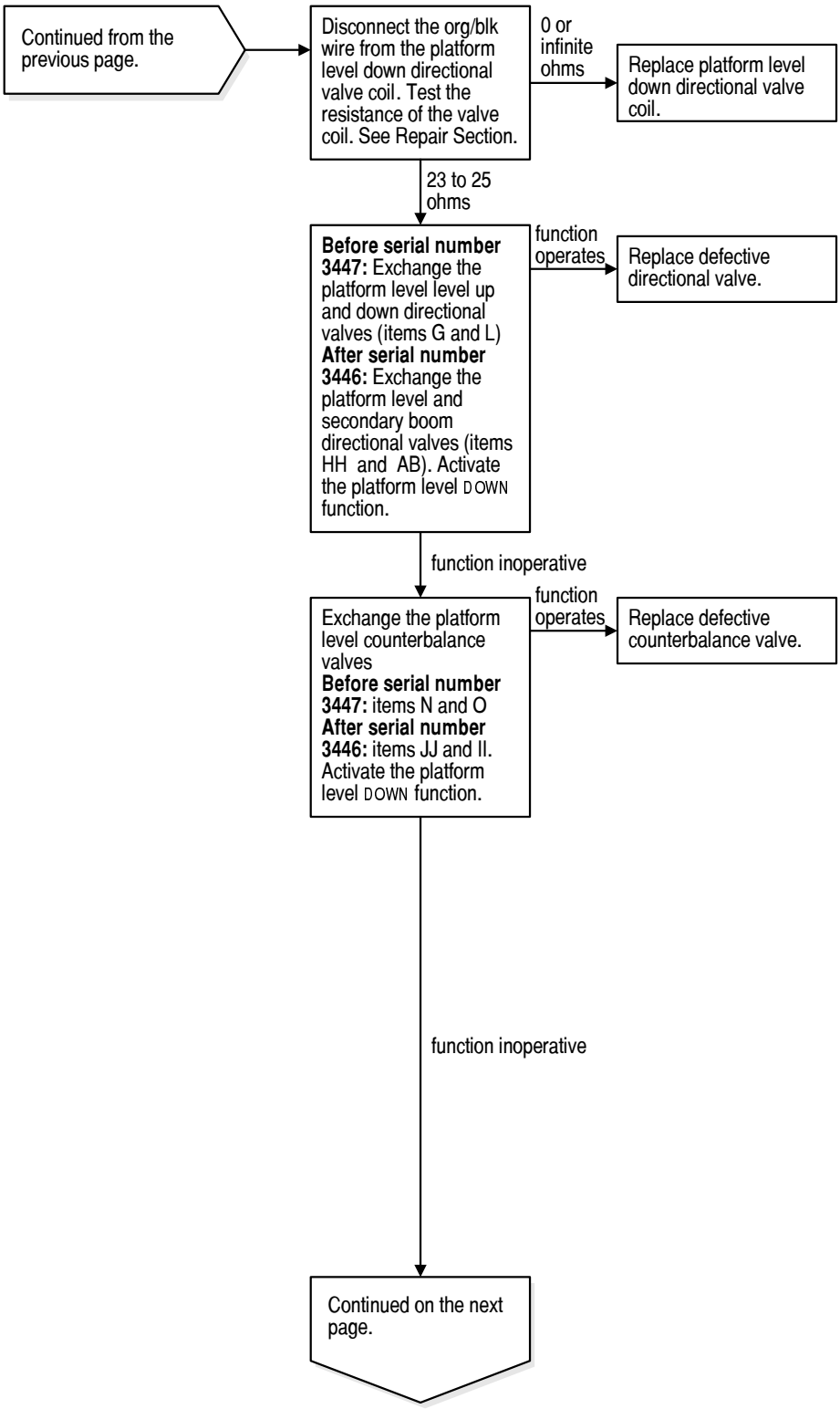

Continued from the previous page.
Disconnect the org/blk wire from the platform level down directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform level down directional valve coil.
23 to 25 ohms
Before serial number 3447: Exchange the platform level level up and down directional valves (items G and L) After serial number 3446: Exchange the platform level and secondary boom directional valves (items HH and AB). Activate the platform level DOWN function.
function operates
Replace defective directional valve.
function inoperative
Exchange the platform level counterbalance valves Before serial number 3447: items N and O After serial number 3446: items JJ and II. Activate the platform level DOWN function.
function operates
Replace defective counterbalance valve.
function inoperative
Continued on the next page.

CHART 22

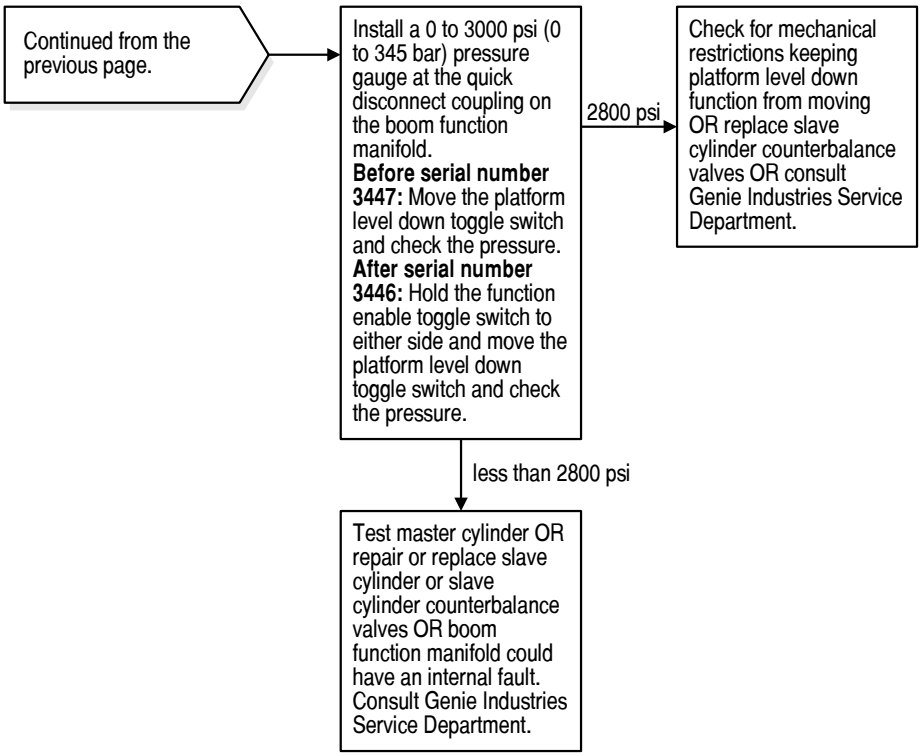

Continued from the previous page.
Install a 0 to 3000 psi (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold.
Before serial number 3447: Move the platform level down toggle switch and check the pressure.
After serial number 3446: Hold the function enable toggle switch to either side and move the platform level down toggle switch and check the pressure.
2800 psi
Check for mechanical restrictions keeping platform level down function from moving OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 2800 psi
Test master cylinder OR repair or replace slave cylinder or slave cylinder counterbalance valves OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 23

Platform Rotate Left Function Inoperative (before serial number 4083)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

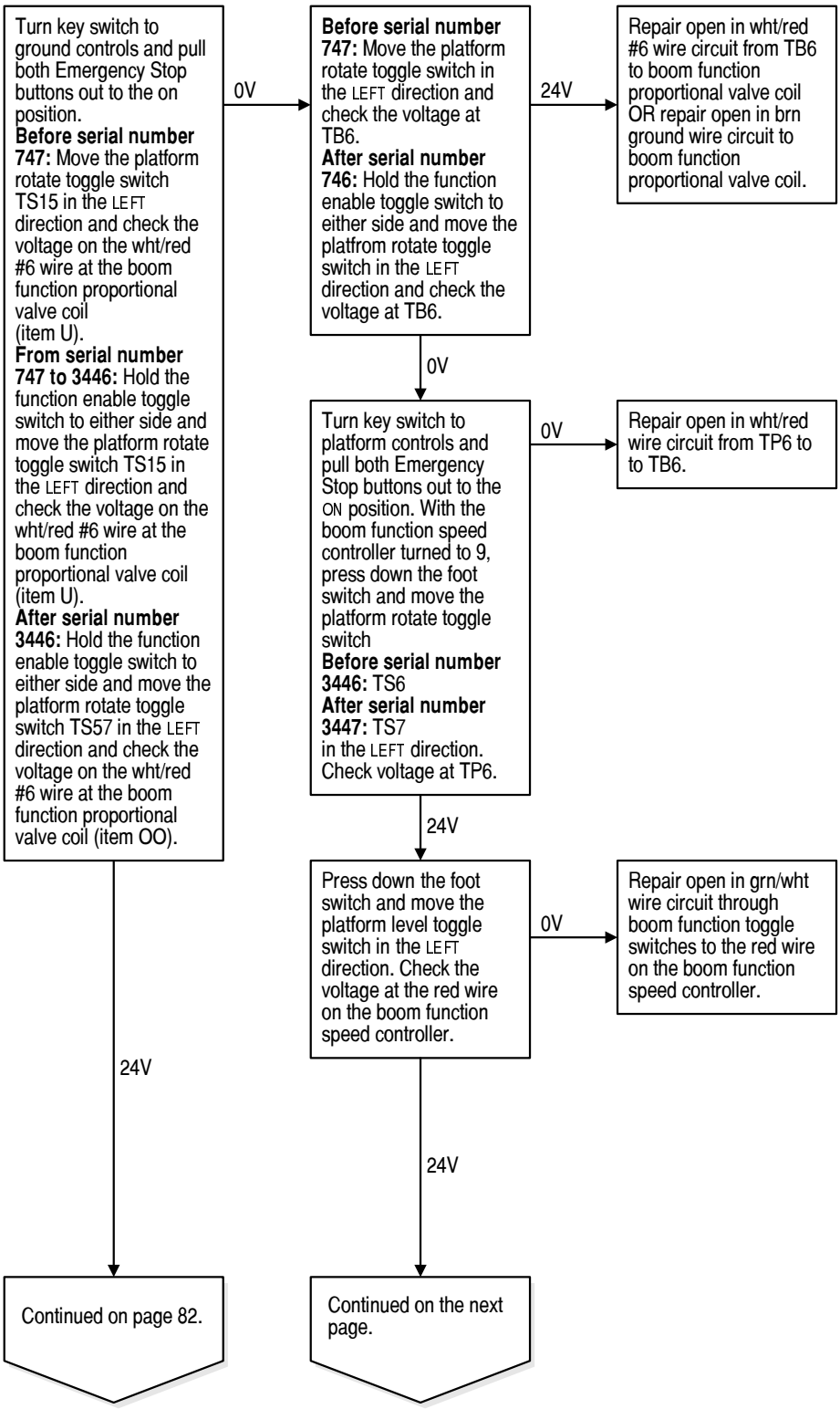


CHART 23

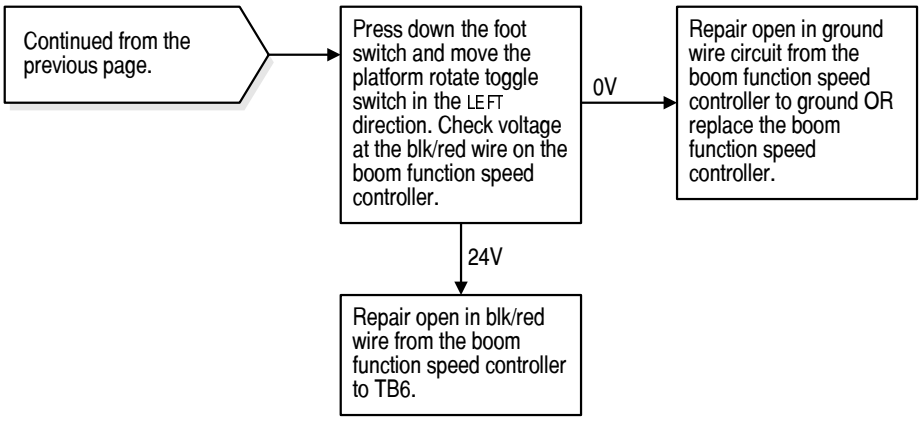

Continued from the previous page.
Press down the foot switch and move the platform rotate toggle switch in the LEFT direction. Check voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 23

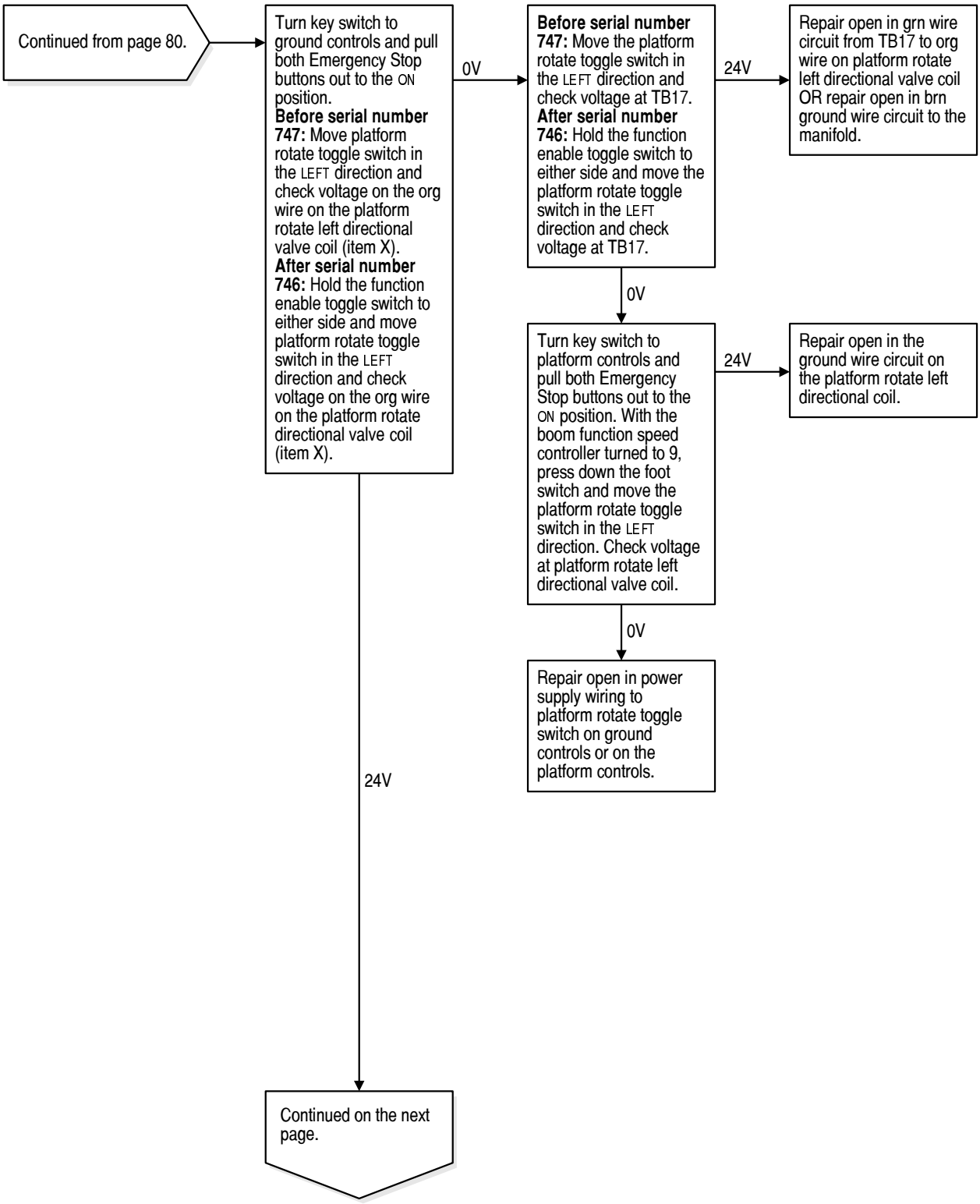

Continued from page 80.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move platform rotate toggle switch in the LEFT direction and check voltage on the org wire on the platform rotate left directional valve coil (item X).
After serial number 746: Hold the function enable toggle switch to either side and move platform rotate toggle switch in the LEFT direction and check voltage on the org wire on the platform rotate directional valve coil (item X).
0V
Before serial number 747: Move the platform rotate toggle switch in the LEFT direction and check voltage at TB17.
After serial number 746: Hold the function enable toggle switch to either side and move the platform rotate toggle switch in the LEFT direction and check voltage at TB17.
24V
Repair open in grn wire circuit from TB17 to org wire on platform rotate left directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the platform rotate toggle switch in the LEFT direction. Check voltage at platform rotate left directional valve coil.
24V
Repair open in the ground wire circuit on the platform rotate left directional coil.
0V
Repair open in power supply wiring to platform rotate toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 23

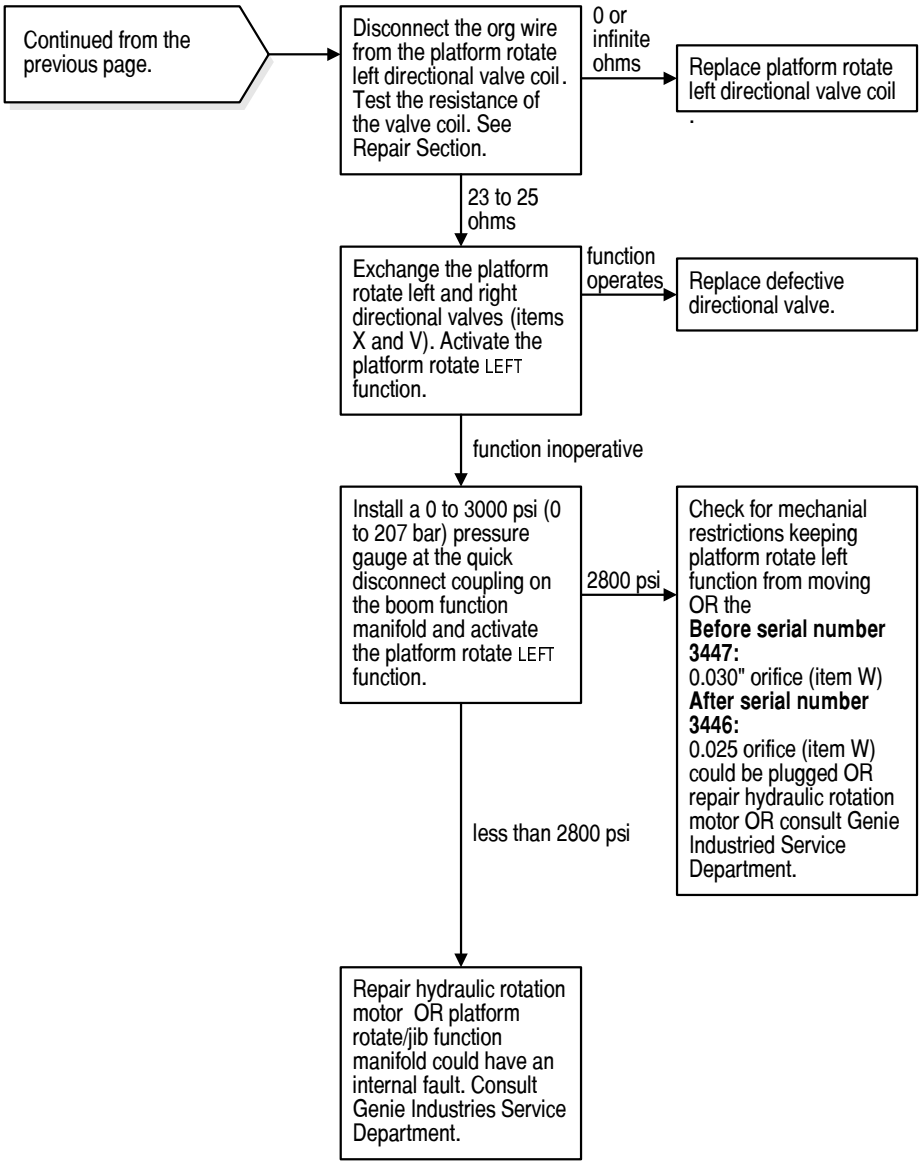

Continued from the previous page.
Disconnect the org wire from the platform rotate left directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform rotate left directional valve coil .
23 to 25 ohms
Exchange the platform rotate left and right directional valves (items X and V). Activate the platform rotate LEFT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate LEFT function.
2800 psi
Check for mechanial restrictions keeping platform rotate left function from moving OR the
Before serial number 3447:
0.030" orifice (item W)
After serial number 3446:
0.025 orifice (item W)
could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 24

Platform Rotate Left Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

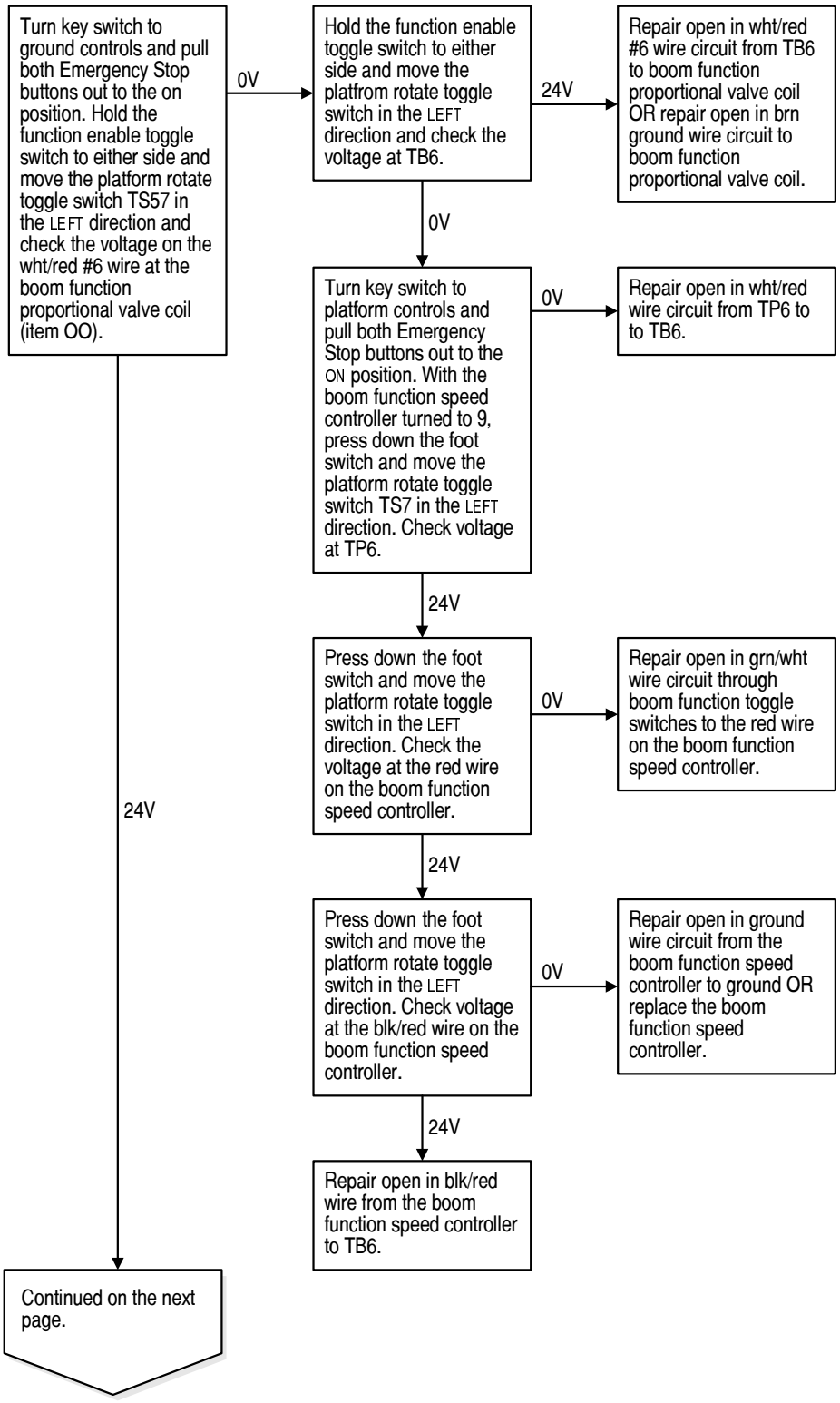


CHART 24

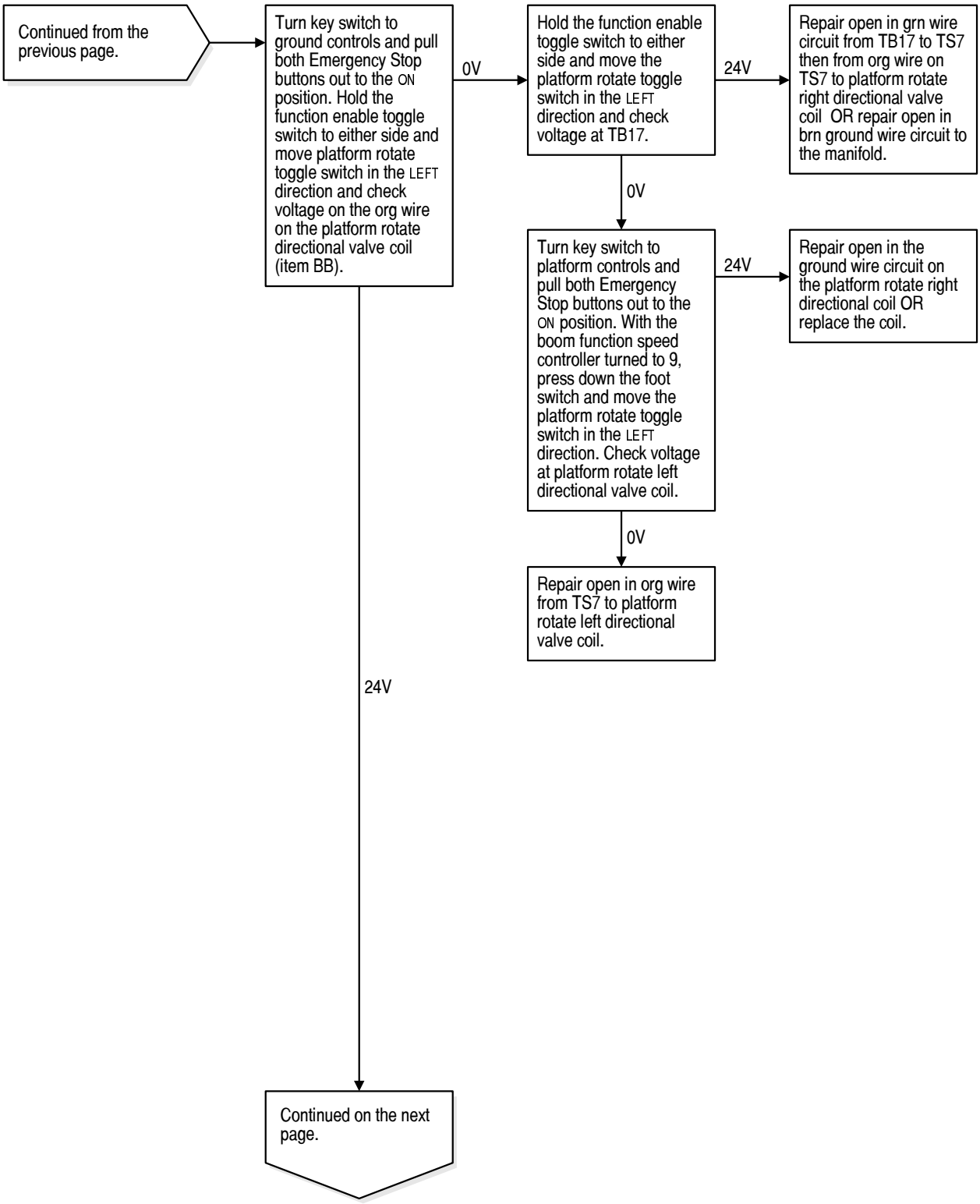

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move platform rotate toggle switch in the LEFT direction and check voltage on the org wire on the platform rotate directional valve coil (item BB).
0V
Hold the function enable toggle switch to either side and move the platform rotate toggle switch in the LEFT direction and check voltage at TB17.
24V
Repair open in grn wire circuit from TB17 to TS7 then from org wire on TS7 to platform rotate right directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the platform rotate toggle switch in the LEFT direction. Check voltage at platform rotate left directional valve coil.
24V
Repair open in the ground wire circuit on the platform rotate right directional coil OR replace the coil.
0V
Repair open in org wire from TS7 to platform rotate left directional valve coil.
24V
Continued on the next page.

CHART 24

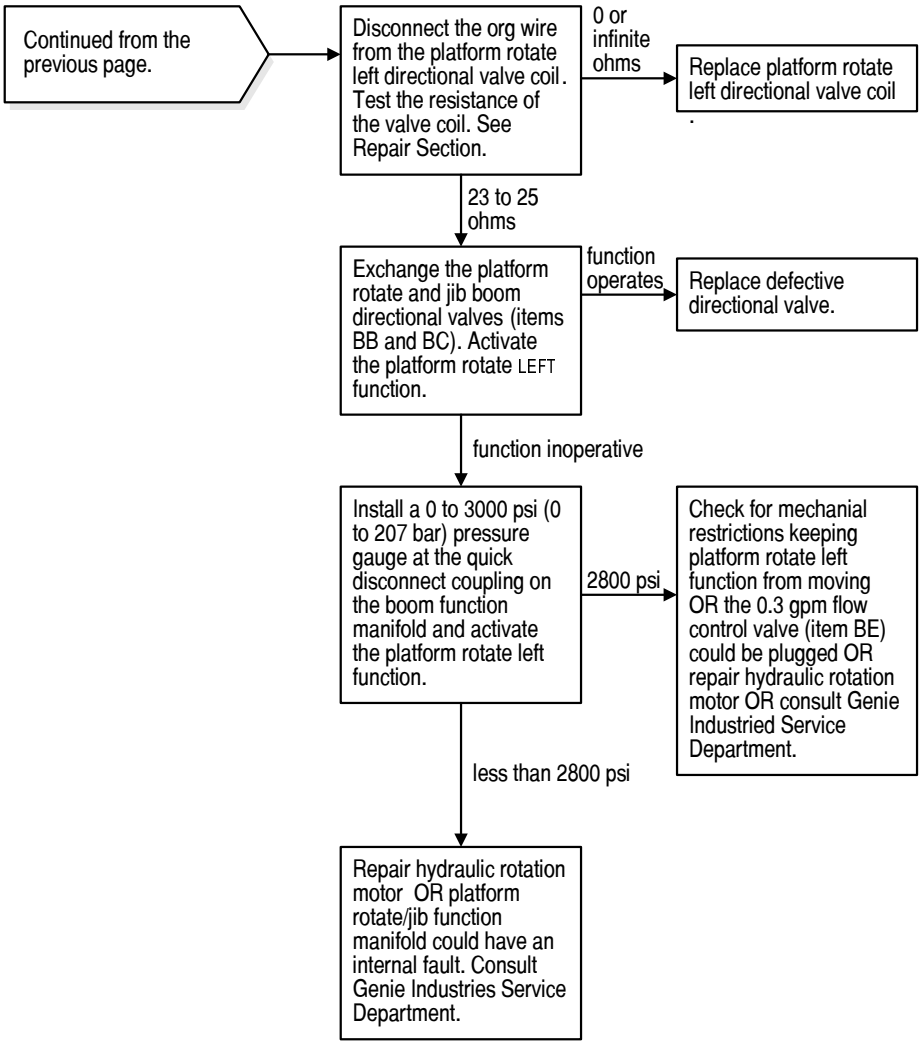

Continued from the previous page.
Disconnect the org wire from the platform rotate left directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform rotate left directional valve coil .
23 to 25 ohms
Exchange the platform rotate and jib boom directional valves (items BB and BC). Activate the platform rotate LEFT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate left function.
2800 psi
Check for mechanial restrictions keeping platform rotate left function from moving OR the 0.3 gpm flow control valve (item BE) could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 25

Platform Rotate Right Function Inoperative (before serial number 4083)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

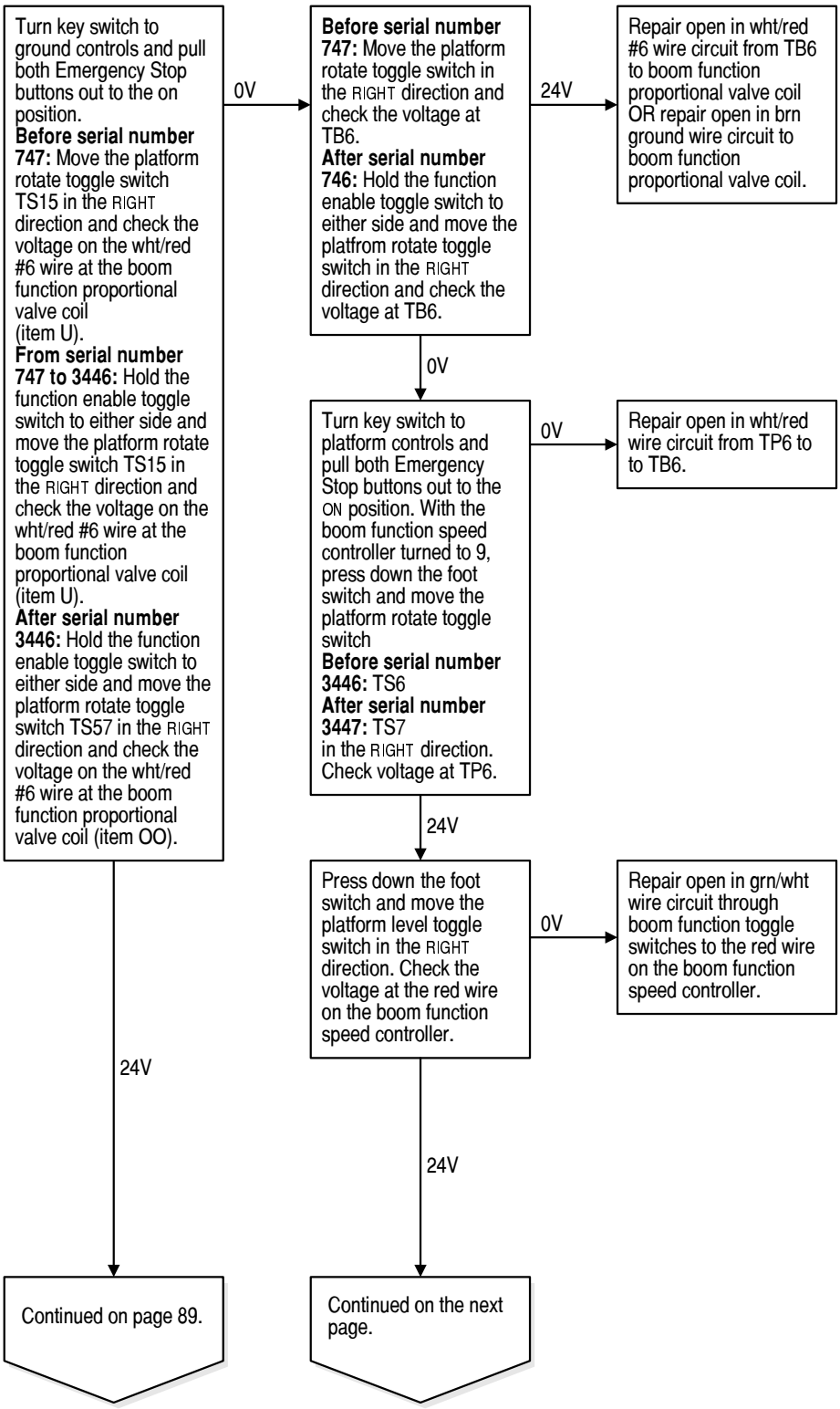


CHART 25

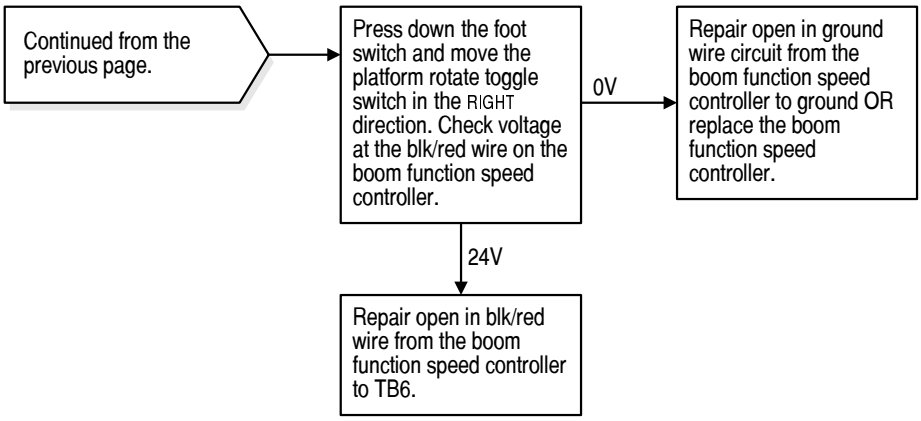

Continued from the previous page.
Press down the foot switch and move the platform rotate toggle switch in the RIGHT direction. Check voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 25

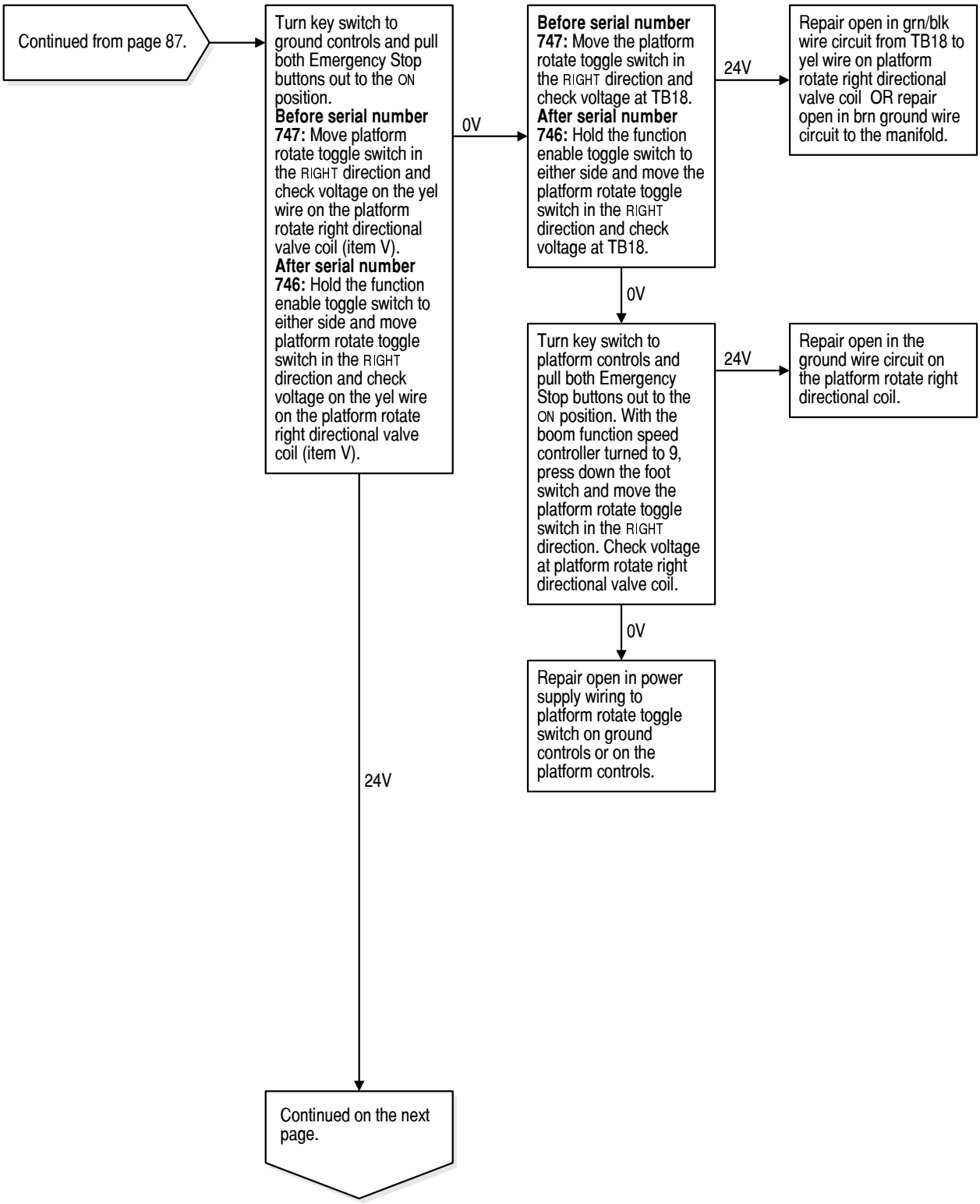

Continued from page 87.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move platform rotate toggle switch in the RIGHT direction and check voltage on the yel wire on the platform rotate right directional valve coil (item V).
After serial number 746: Hold the function enable toggle switch to either side and move platform rotate toggle switch in the RIGHT direction and check voltage on the yel wire on the platform rotate right directional valve coil (item V).
0V
Before serial number 747: Move the platform rotate toggle switch in the RIGHT direction and check voltage at TB18.
After serial number 746: Hold the function enable toggle switch to either side and move the platform rotate toggle switch in the RIGHT direction and check voltage at TB18.
24V
Repair open in grn/blk wire circuit from TB18 to yel wire on platform rotate right directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the platform rotate toggle switch in the RIGHT direction. Check voltage at platform rotate right directional valve coil.
24V
Repair open in the ground wire circuit on the platform rotate right directional coil.
0V
Repair open in power supply wiring to platform rotate toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 25

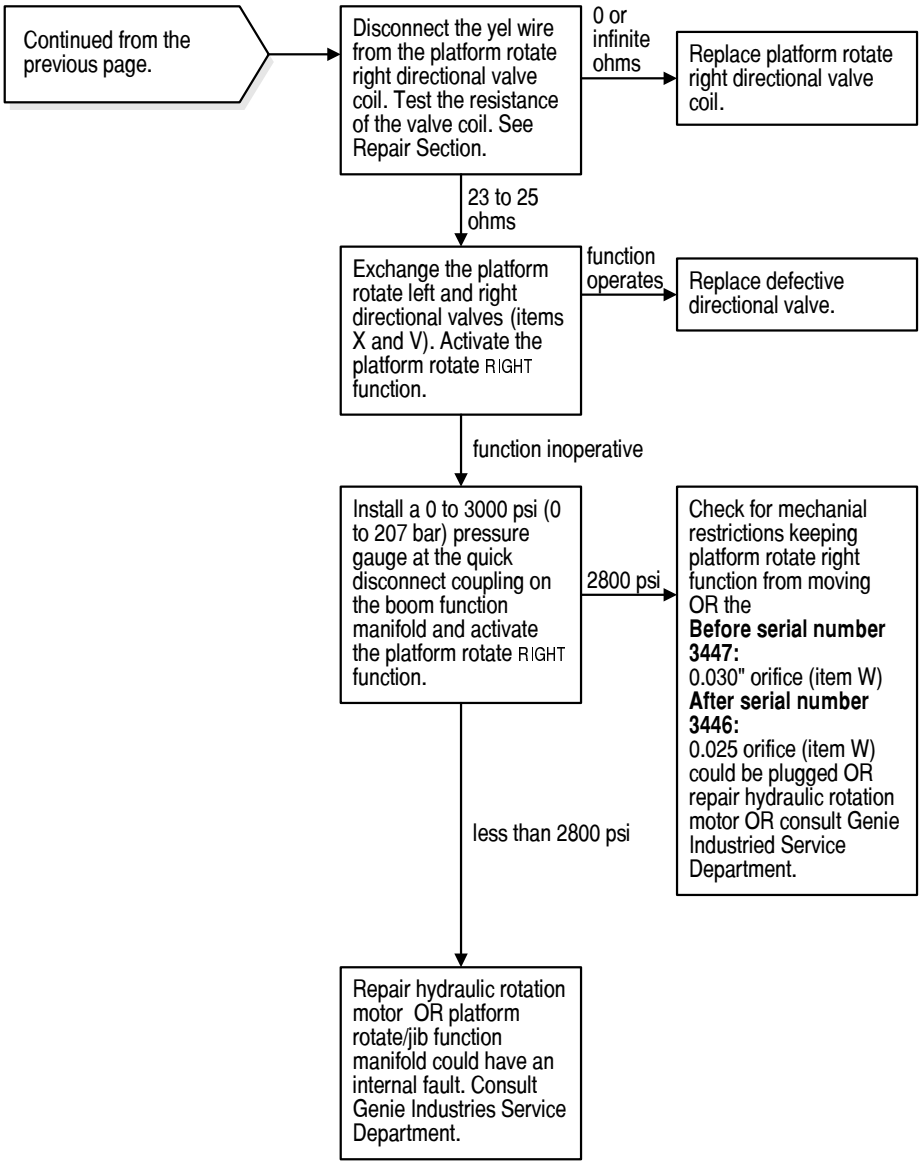

Continued from the previous page.
Disconnect the yel wire from the platform rotate right directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform rotate right directional valve coil.
23 to 25 ohms
Exchange the platform rotate left and right directional valves (items X and V). Activate the platform rotate RIGHT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate RIGHT function.
2800 psi
Check for mechanial restrictions keeping platform rotate right function from moving OR the
Before serial number 3447:
0.030" orifice (item W)
After serial number 3446:
0.025 orifice (item W)
could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 26

Platform Rotate Right Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

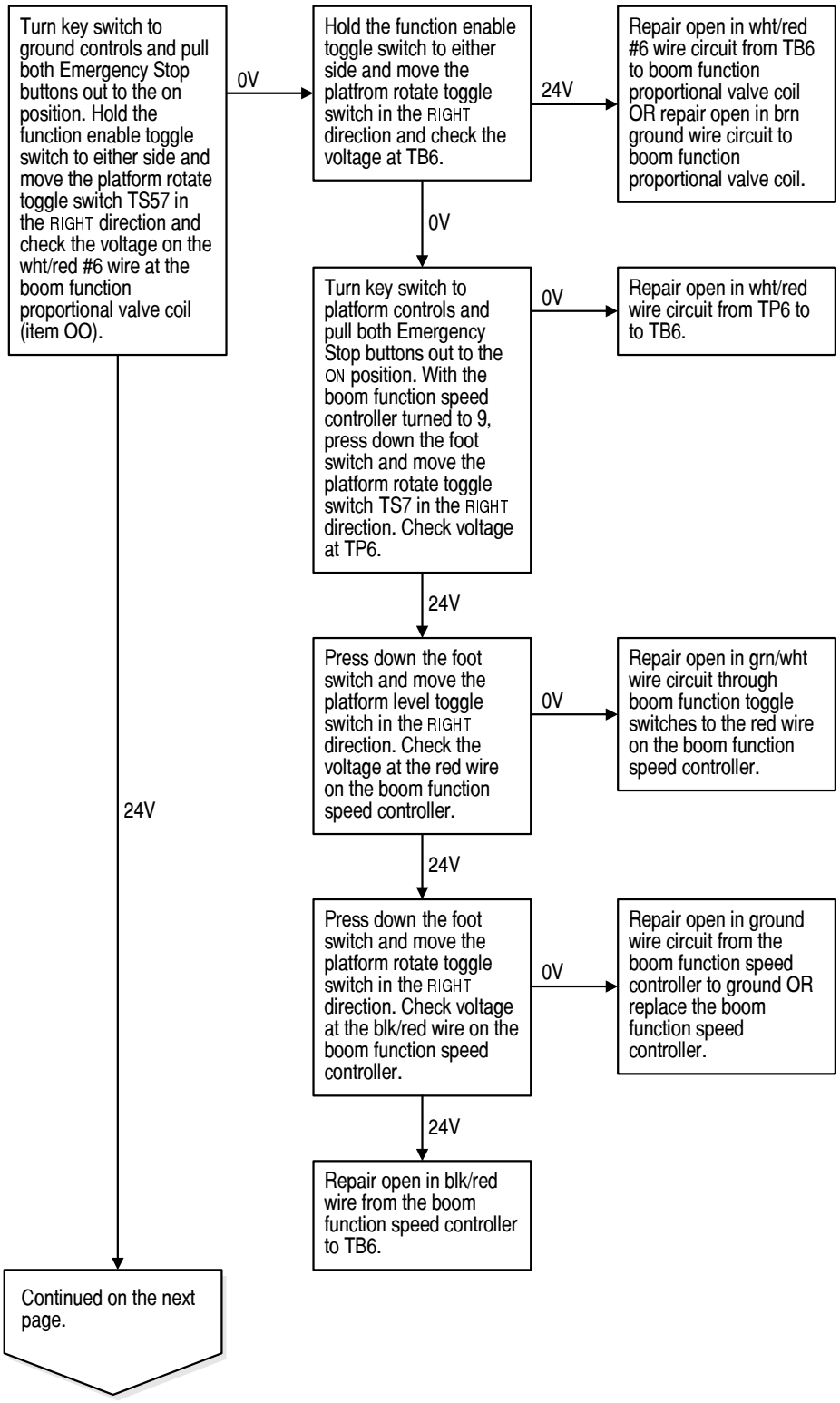


CHART 26

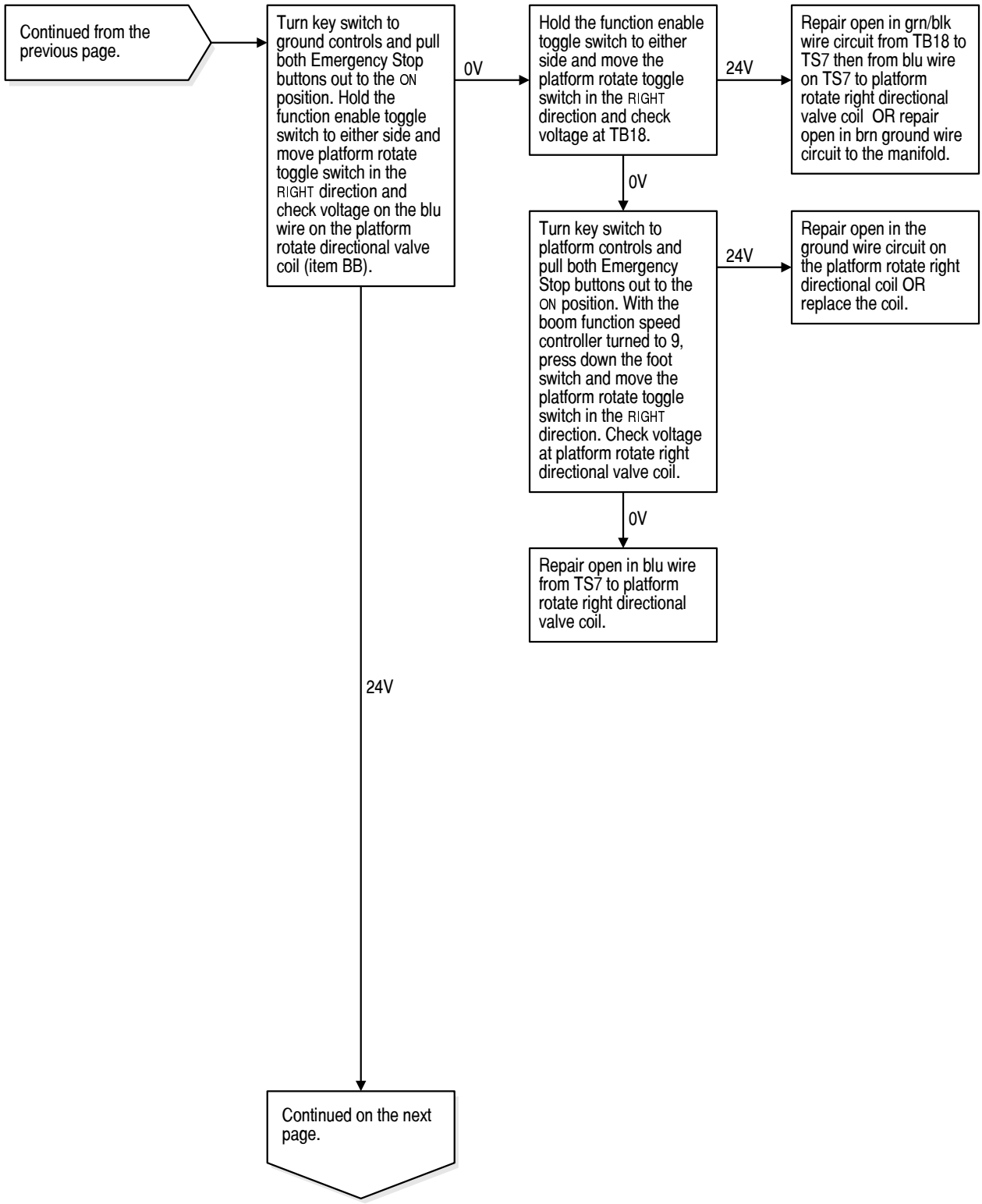

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move platform rotate toggle switch in the RIGHT direction and check voltage on the blu wire on the platform rotate directional valve coil (item BB).
0V
Hold the function enable toggle switch to either side and move the platform rotate toggle switch in the RIGHT direction and check voltage at TB18.
24V
Repair open in grn/blk wire circuit from TB18 to TS7 then from blu wire on TS7 to platform rotate right directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the platform rotate toggle switch in the RIGHT direction. Check voltage at platform rotate right directional valve coil.
24V
Repair open in the ground wire circuit on the platform rotate right directional coil OR replace the coil.
0V
Repair open in blu wire from TS7 to platform rotate right directional valve coil.
24V
Continued on the next page.

CHART 26

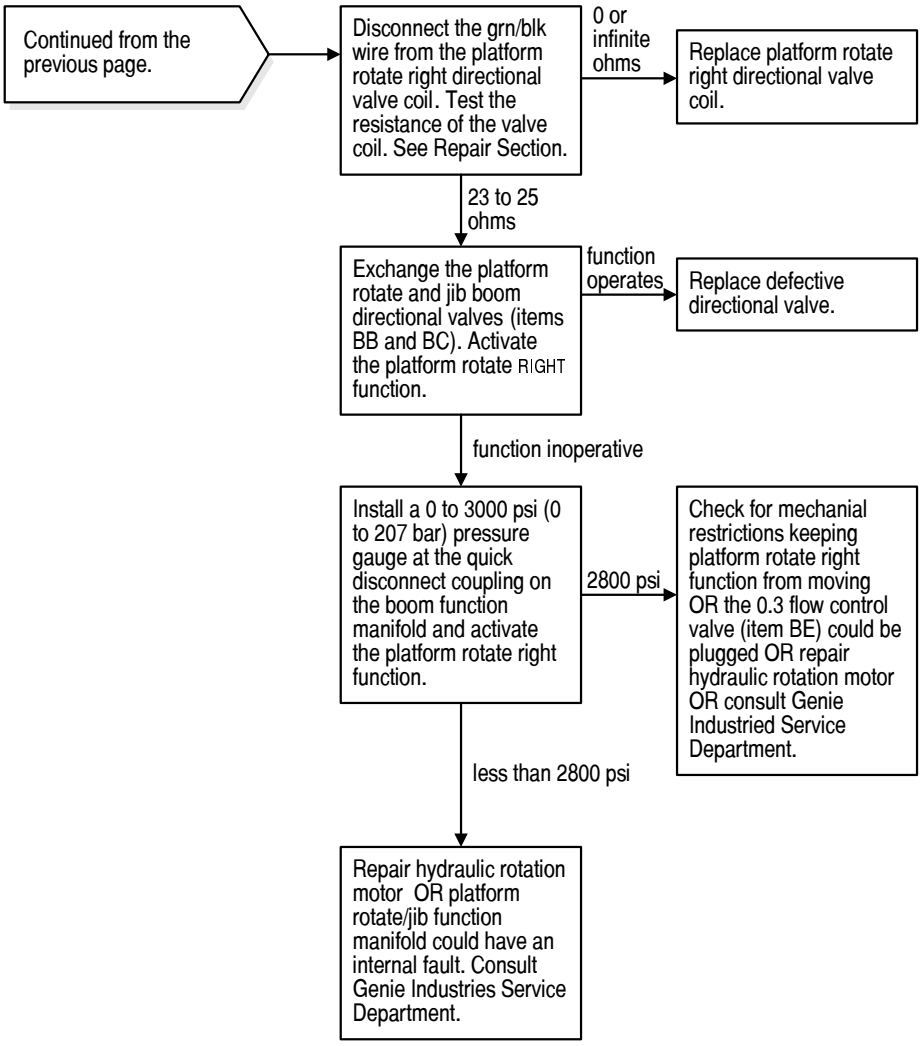

Continued from the previous page.
Disconnect the grn/blk wire from the platform rotate right directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace platform rotate right directional valve coil.
23 to 25 ohms
Exchange the platform rotate and jib boom directional valves (items BB and BC). Activate the platform rotate RIGHT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate right function.
2800 psi
Check for mechanial restrictions keeping platform rotate right function from moving OR the 0.3 flow control valve (item BE) could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 27

Jib Boom Up Function Inoperative (before serial number 4083)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

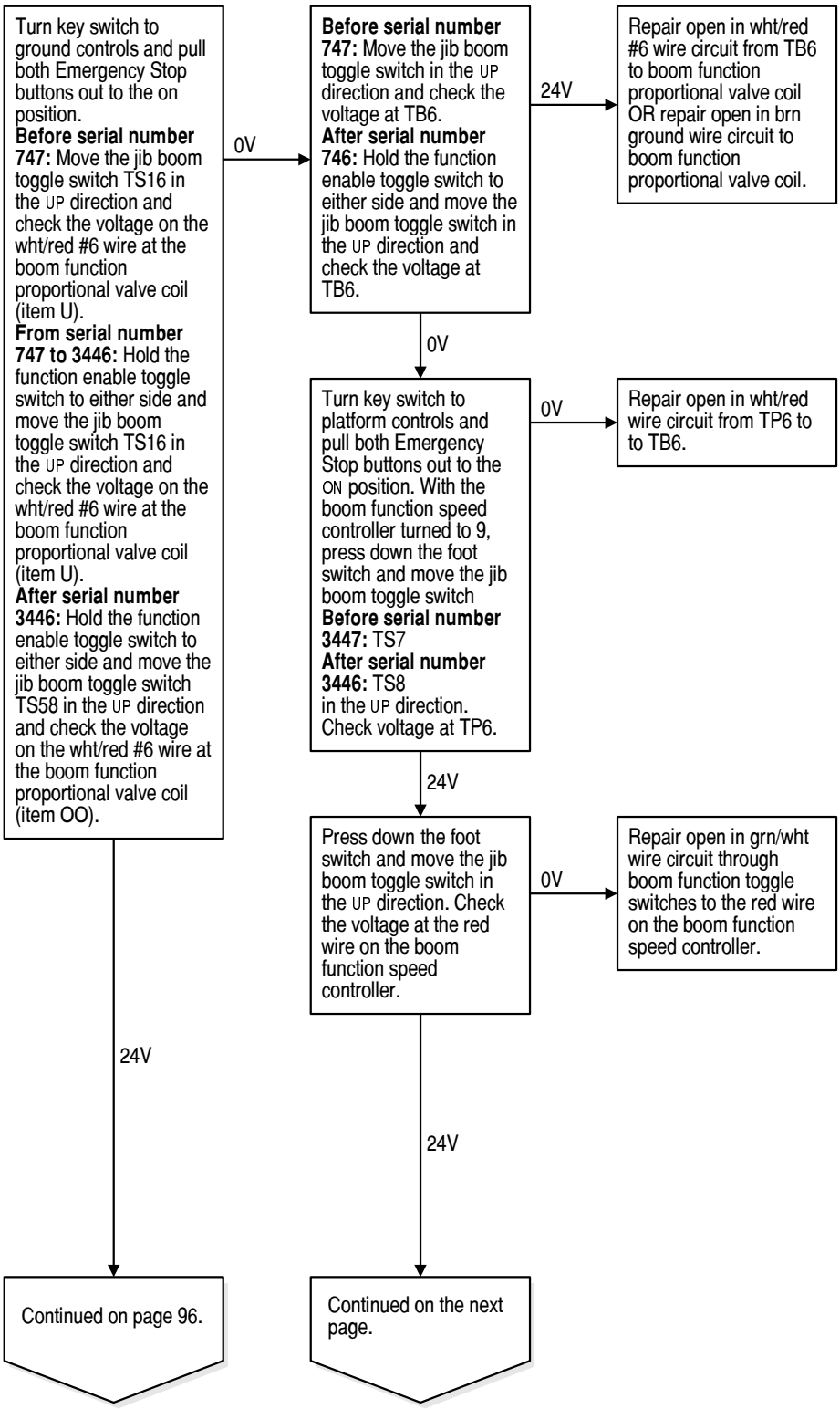


CHART 27

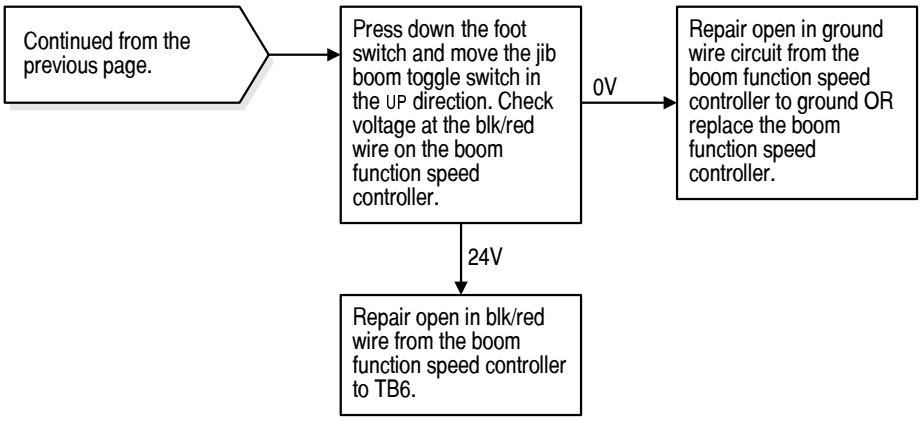

Continued from the previous page.
Press down the foot switch and move the jib boom toggle switch in the UP direction. Check voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 27

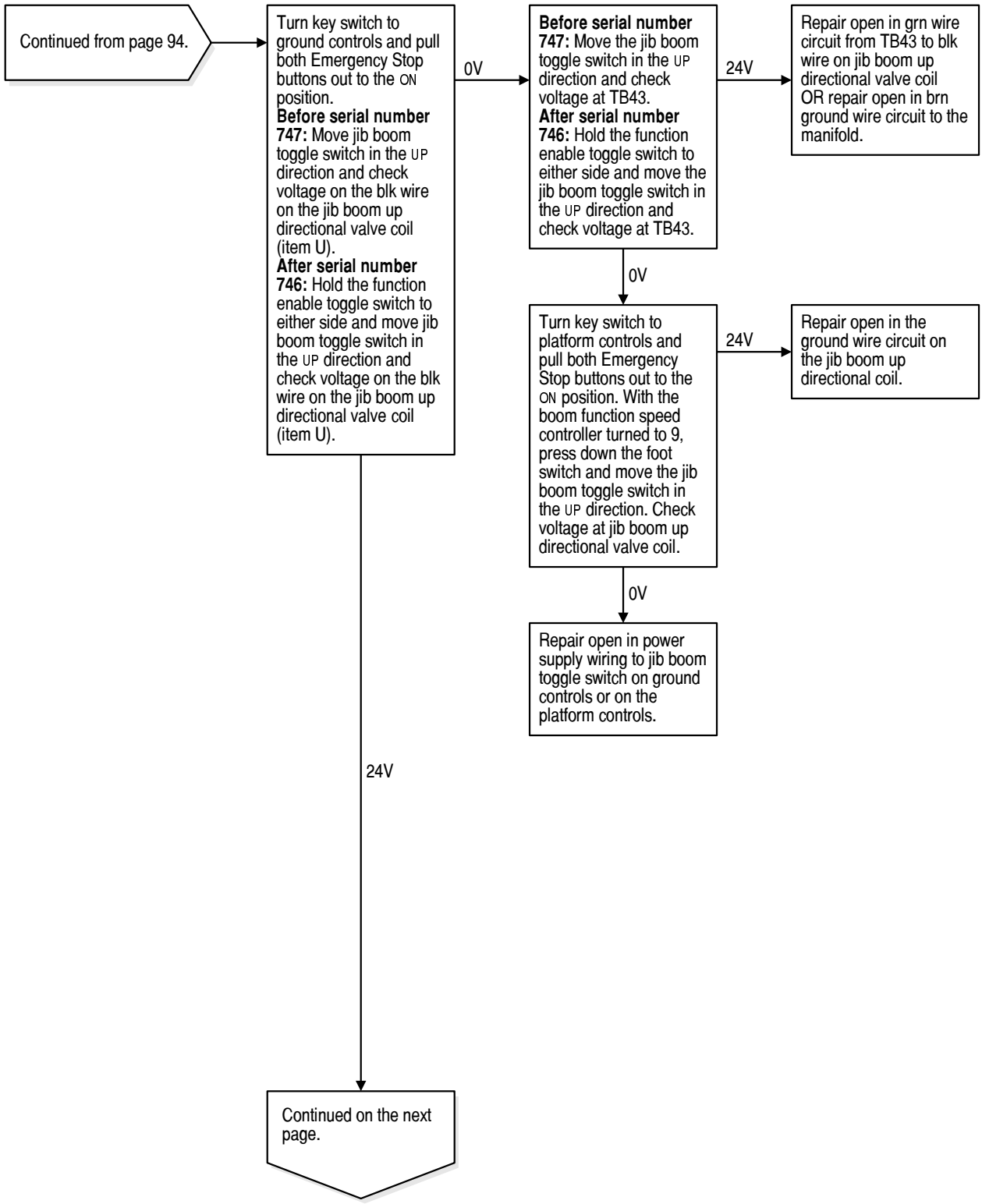

Continued from page 94.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move jib boom toggle switch in the UP direction and check voltage on the blk wire on the jib boom up directional valve coil (item U).
After serial number 746: Hold the function enable toggle switch to either side and move jib boom toggle switch in the UP direction and check voltage on the blk wire on the jib boom up directional valve coil (item U).
0V
Before serial number 747: Move the jib boom toggle switch in the UP direction and check voltage at TB43.
After serial number 746: Hold the function enable toggle switch to either side and move the jib boom toggle switch in the UP direction and check voltage at TB43.
24V
Repair open in grn wire circuit from TB43 to blk wire on jib boom up directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom toggle switch in the UP direction. Check voltage at jib boom up directional valve coil.
24V
Repair open in the ground wire circuit on the jib boom up directional coil.
0V
Repair open in power supply wiring to jib boom toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 27

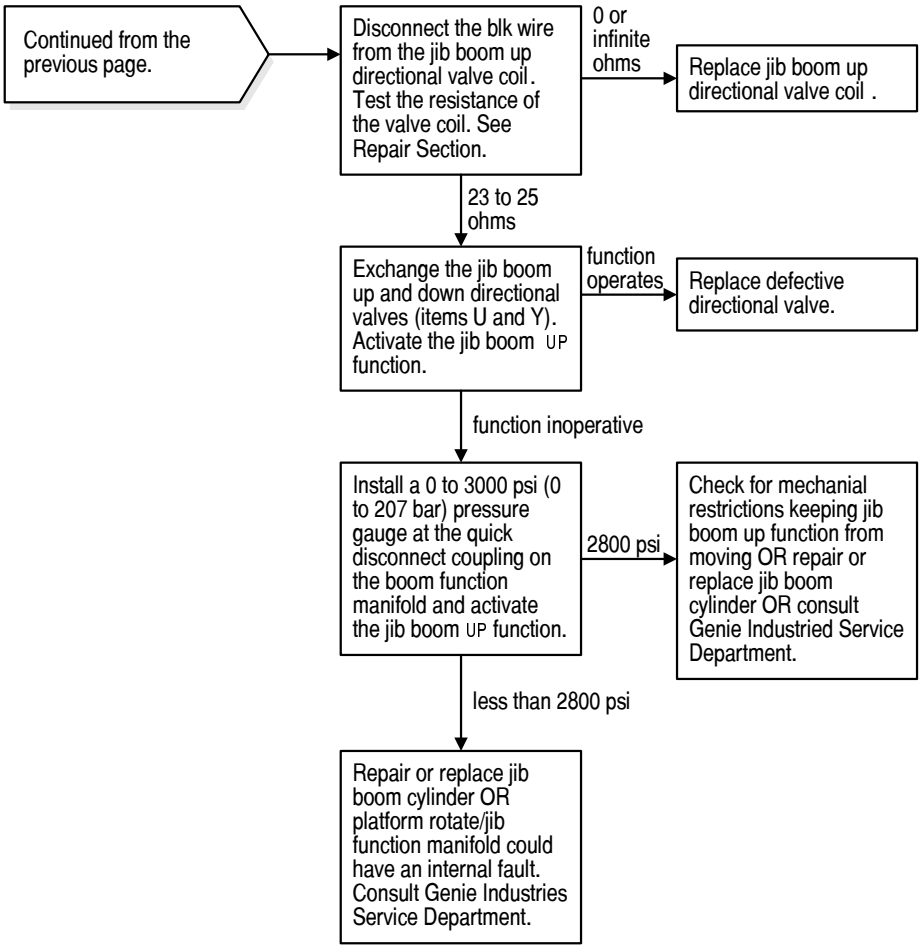

Continued from the previous page.
Disconnect the blk wire from the jib boom up directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom up directional valve coil .
23 to 25 ohms
Exchange the jib boom up and down directional valves (items U and Y). Activate the jib boom UP function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom UP function.
2800 psi
Check for mechanial restrictions keeping jib boom up function from moving OR repair or replace jib boom cylinder OR consult Genie Industried Service Department.
less than 2800 psi
Repair or replace jib boom cylinder OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 28

Jib Boom Up Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

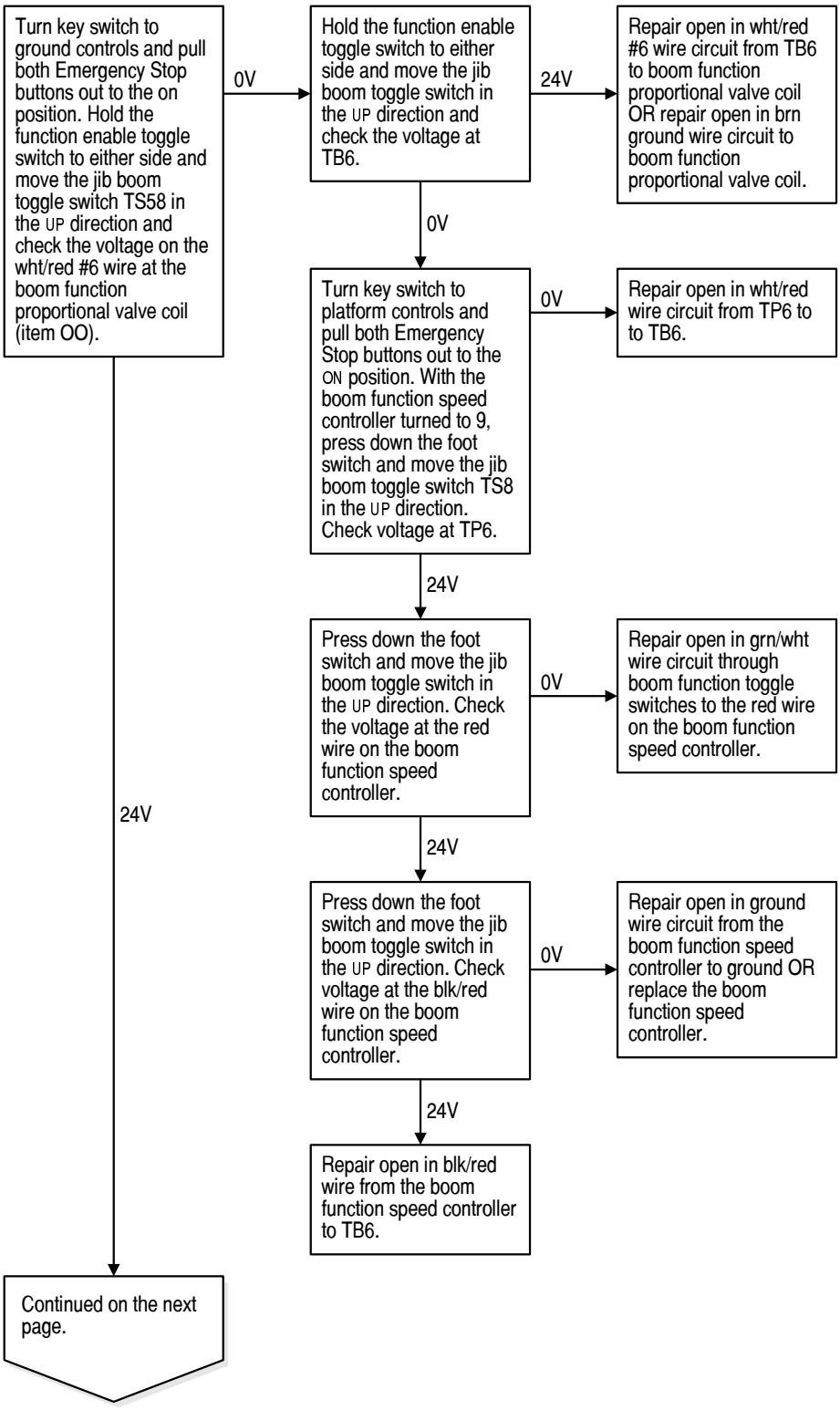


CHART 28

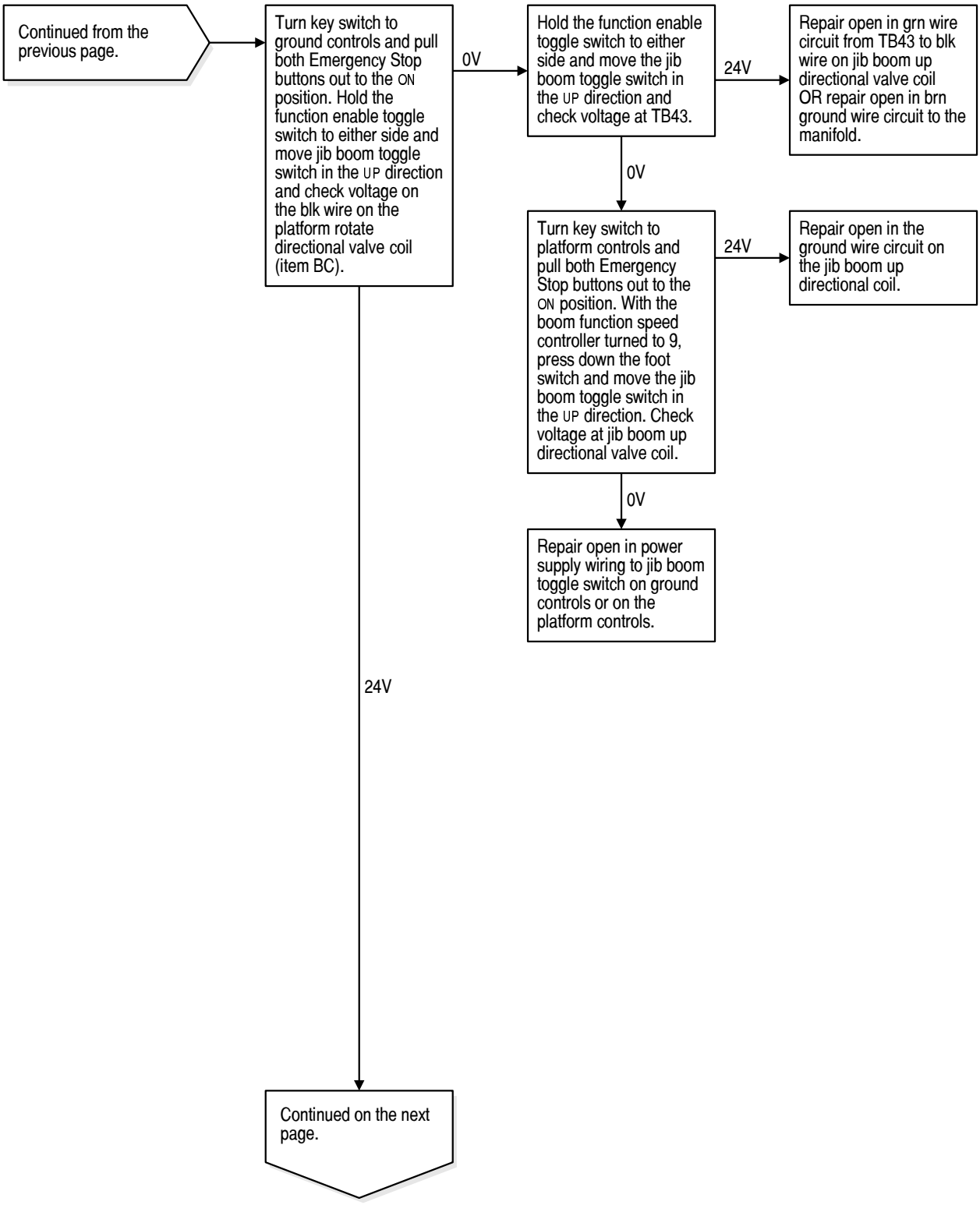

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move jib boom toggle switch in the UP direction and check voltage on the blk wire on the platform rotate directional valve coil (item BC).
0V
Hold the function enable toggle switch to either side and move the jib boom toggle switch in the UP direction and check voltage at TB43.
24V
Repair open in grn wire circuit from TB43 to blk wire on jib boom up directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom toggle switch in the UP direction. Check voltage at jib boom up directional valve coil.
24V
Repair open in the ground wire circuit on the jib boom up directional coil.
0V
Repair open in power supply wiring to jib boom toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 28

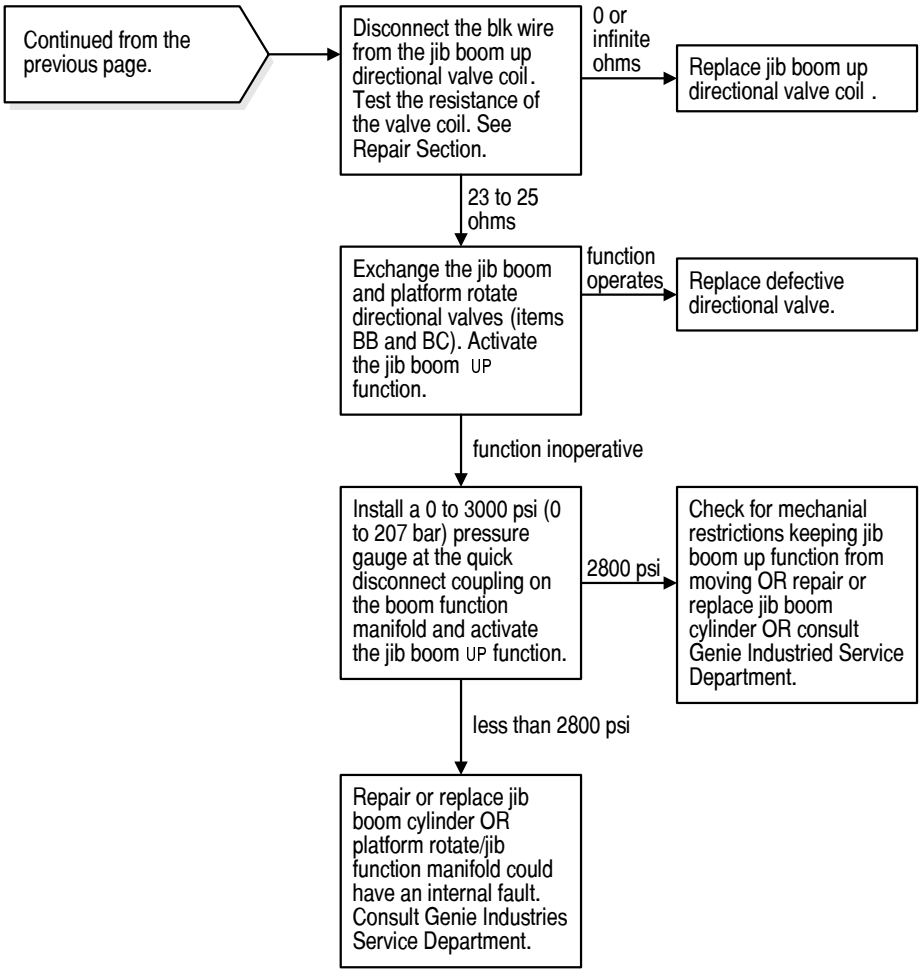

Continued from the previous page.
Disconnect the blk wire from the jib boom up directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom up directional valve coil .
23 to 25 ohms
Exchange the jib boom and platform rotate directional valves (items BB and BC). Activate the jib boom UP function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom UP function.
2800 psi
Check for mechanial restrictions keeping jib boom up function from moving OR repair or replace jib boom cylinder OR consult Genie Industried Service Department.
less than 2800 psi
Repair or replace jib boom cylinder OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 29

Jib Boom Down Function Inoperative (before serial number 4083)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

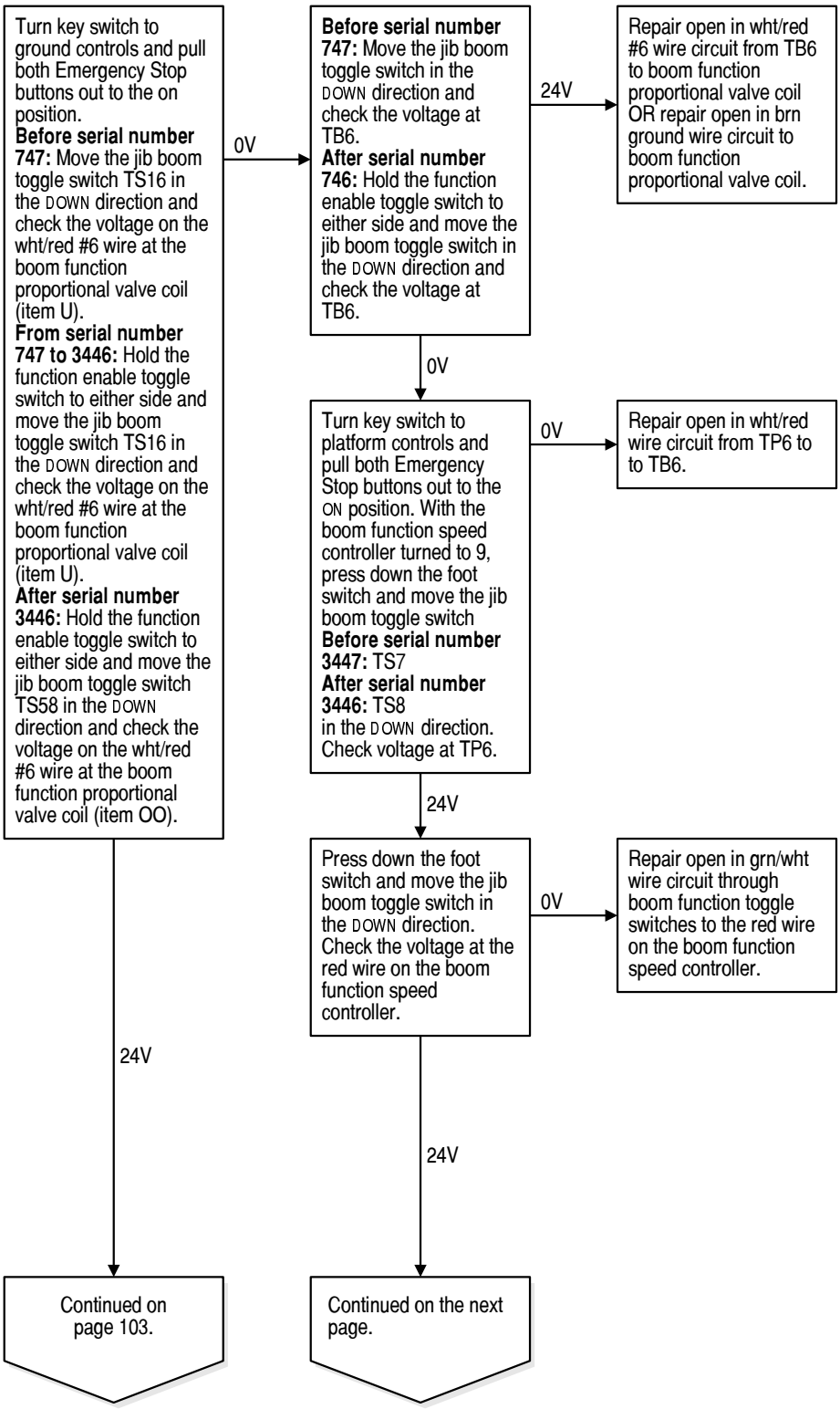


CHART 29

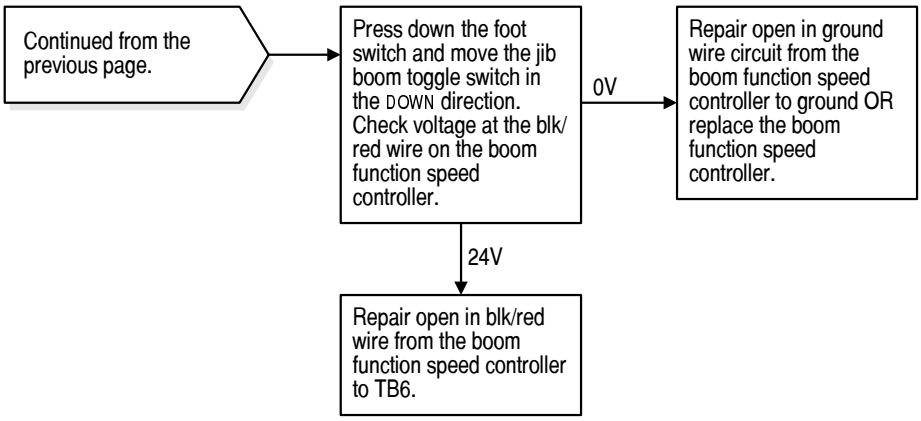

Continued from the previous page.
Press down the foot switch and move the jib boom toggle switch in the DOWN direction. Check voltage at the blk/red wire on the boom function speed controller.
0V
Repair open in ground wire circuit from the boom function speed controller to ground OR replace the boom function speed controller.
24V
Repair open in blk/red wire from the boom function speed controller to TB6.

CHART 29

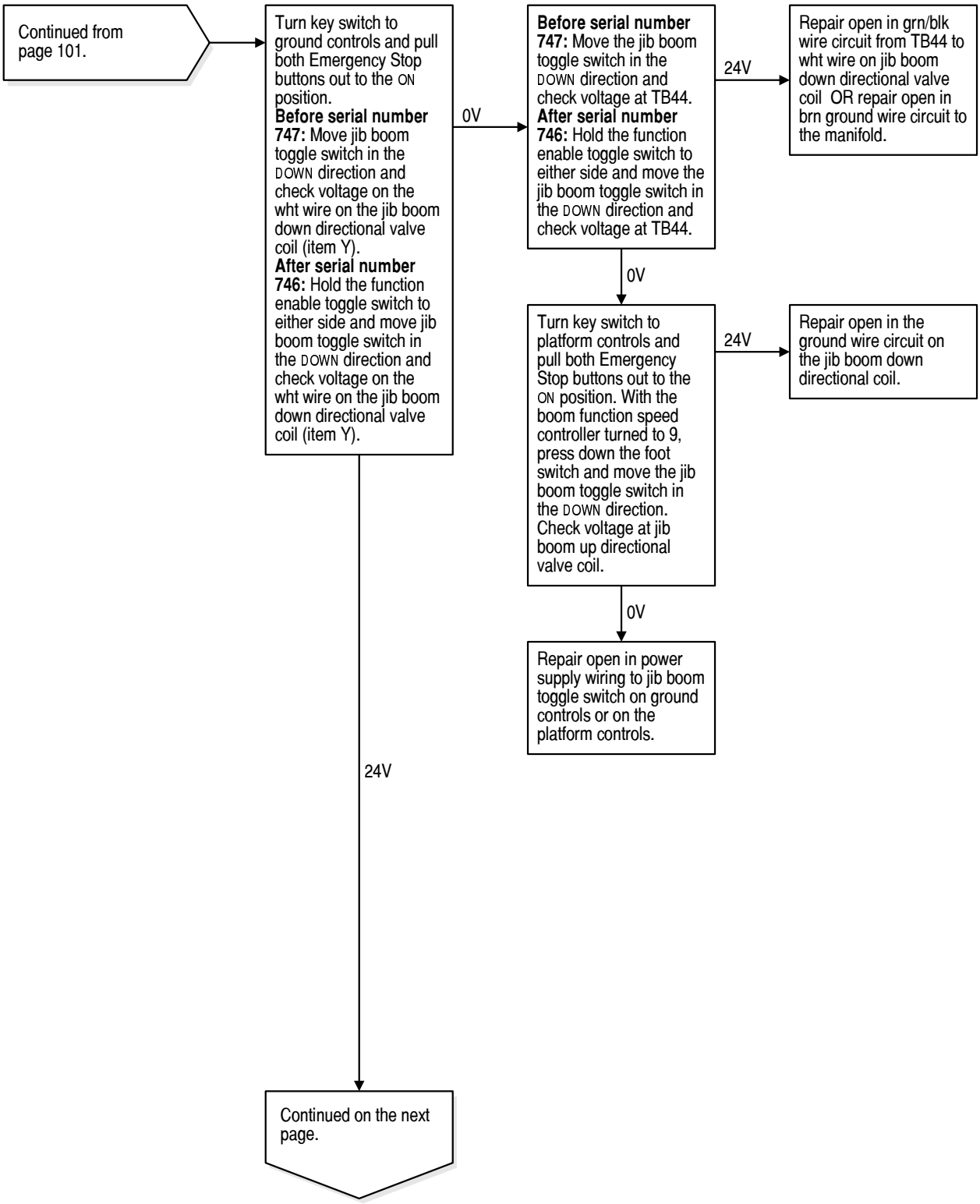

Continued from page 101.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position.
Before serial number 747: Move jib boom toggle switch in the DOWN direction and check voltage on the wht wire on the jib boom down directional valve coil (item Y).
After serial number 746: Hold the function enable toggle switch to either side and move jib boom toggle switch in the DOWN direction and check voltage on the wht wire on the jib boom down directional valve coil (item Y).
0V
Before serial number 747: Move the jib boom toggle switch in the DOWN direction and check voltage at TB44.
After serial number 746: Hold the function enable toggle switch to either side and move the jib boom toggle switch in the DOWN direction and check voltage at TB44.
24V
Repair open in grn/blk wire circuit from TB44 to wht wire on jib boom down directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom toggle switch in the DOWN direction. Check voltage at jib boom up directional valve coil.
24V
Repair open in the ground wire circuit on the jib boom down directional coil.
0V
Repair open in power supply wiring to jib boom toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 29

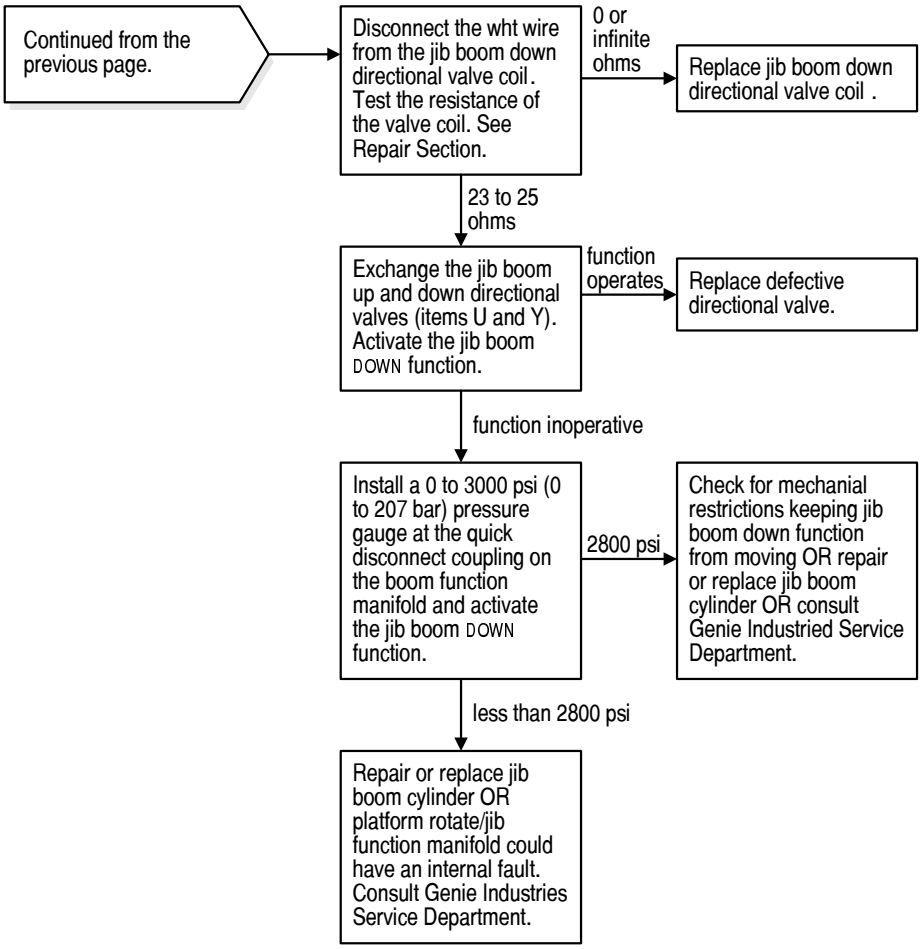

Continued from the previous page.
Disconnect the wht wire from the jib boom down directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom down directional valve coil .
23 to 25 ohms
Exchange the jib boom up and down directional valves (items U and Y). Activate the jib boom DOWN function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom DOWN function.
2800 psi
Check for mechanial restrictions keeping jib boom down function from moving OR repair or replace jib boom cylinder OR consult Genie Industried Service Department.
less than 2800 psi
Repair or replace jib boom cylinder OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 30

Jib Boom Down Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

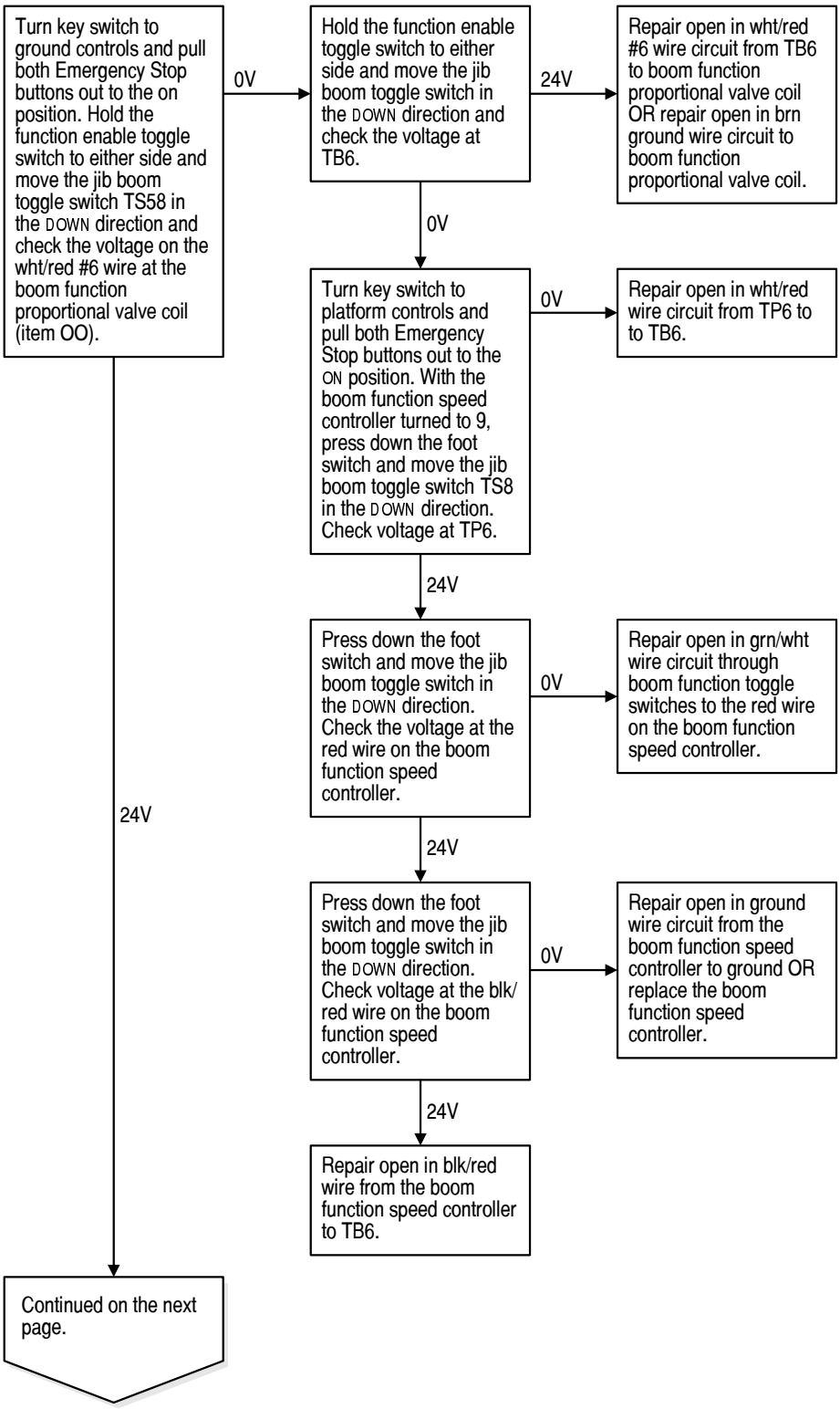


CHART 30

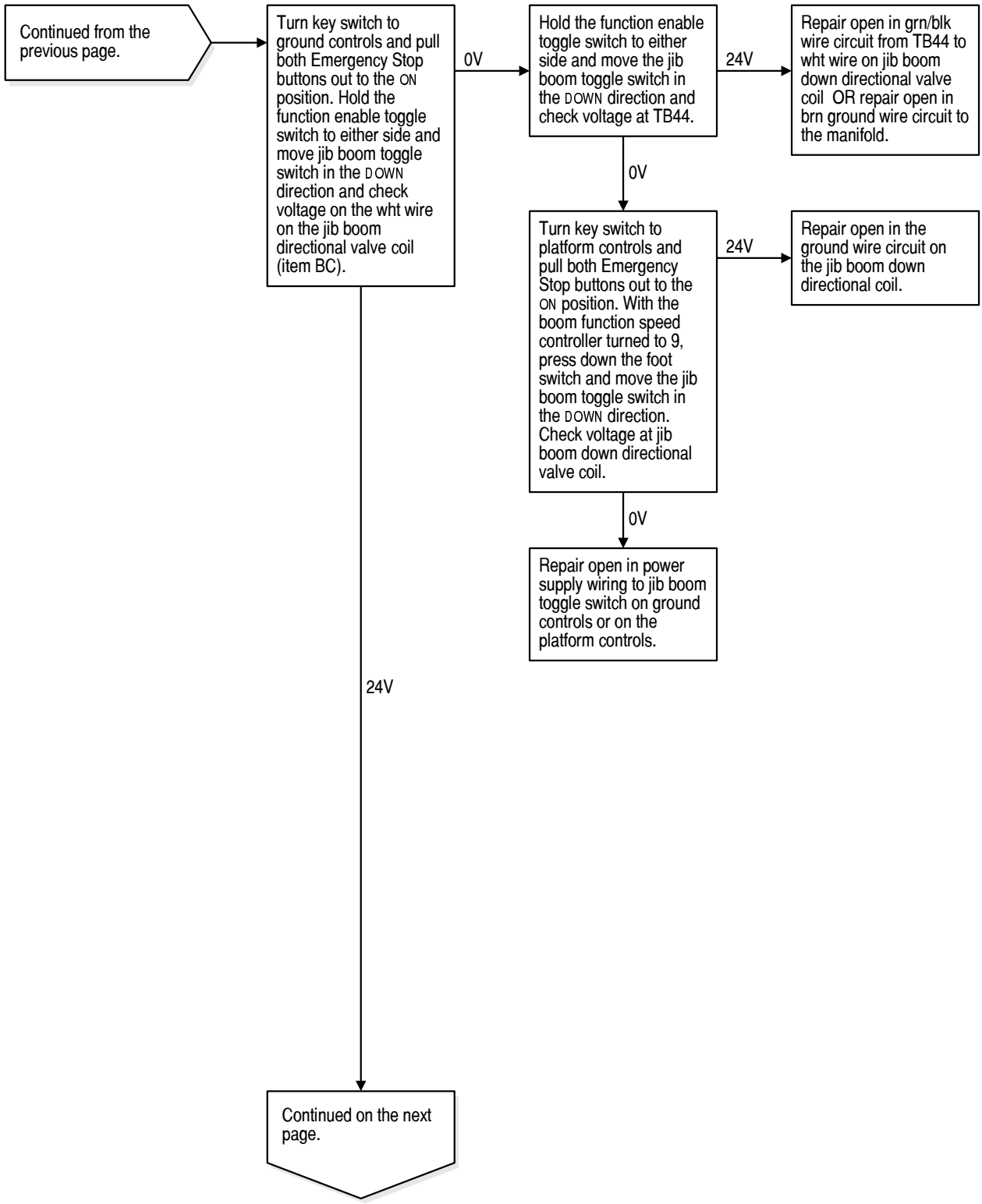

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move jib boom toggle switch in the DOWN direction and check voltage on the wht wire on the jib boom directional valve coil (item BC).
0V
Hold the function enable toggle switch to either side and move the jib boom toggle switch in the DOWN direction and check voltage at TB44.
24V
Repair open in grn/blk wire circuit from TB44 to wht wire on jib boom down directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom toggle switch in the DOWN direction. Check voltage at jib boom down directional valve coil.
24V
Repair open in the ground wire circuit on the jib boom down directional coil.
0V
Repair open in power supply wiring to jib boom toggle switch on ground controls or on the platform controls.
24V
Continued on the next page.

CHART 30

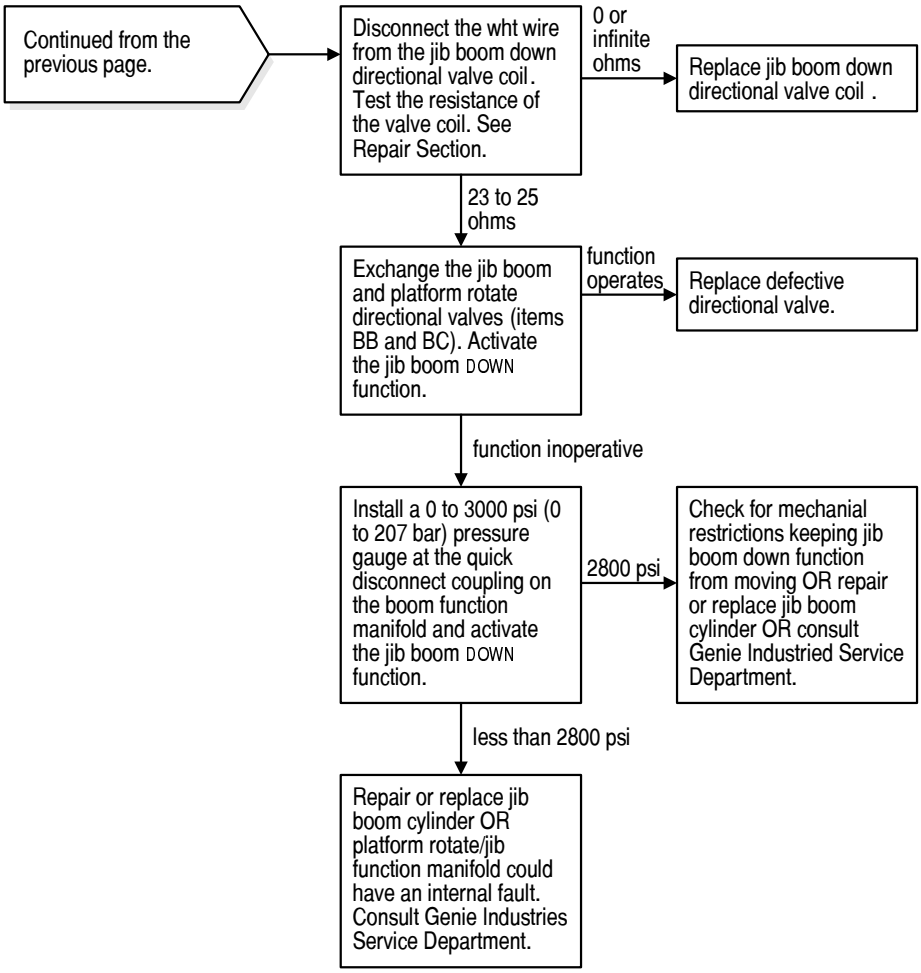

Continued from the previous page.
Disconnect the wht wire from the jib boom down directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom down directional valve coil .
23 to 25 ohms
Exchange the jib boom and platform rotate directional valves (items BB and BC). Activate the jib boom DOWN function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom DOWN function.
2800 psi
Check for mechanial restrictions keeping jib boom down function from moving OR repair or replace jib boom cylinder OR consult Genie Industried Service Department.
less than 2800 psi
Repair or replace jib boom cylinder OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 31

Jib Boom Rotate Left Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

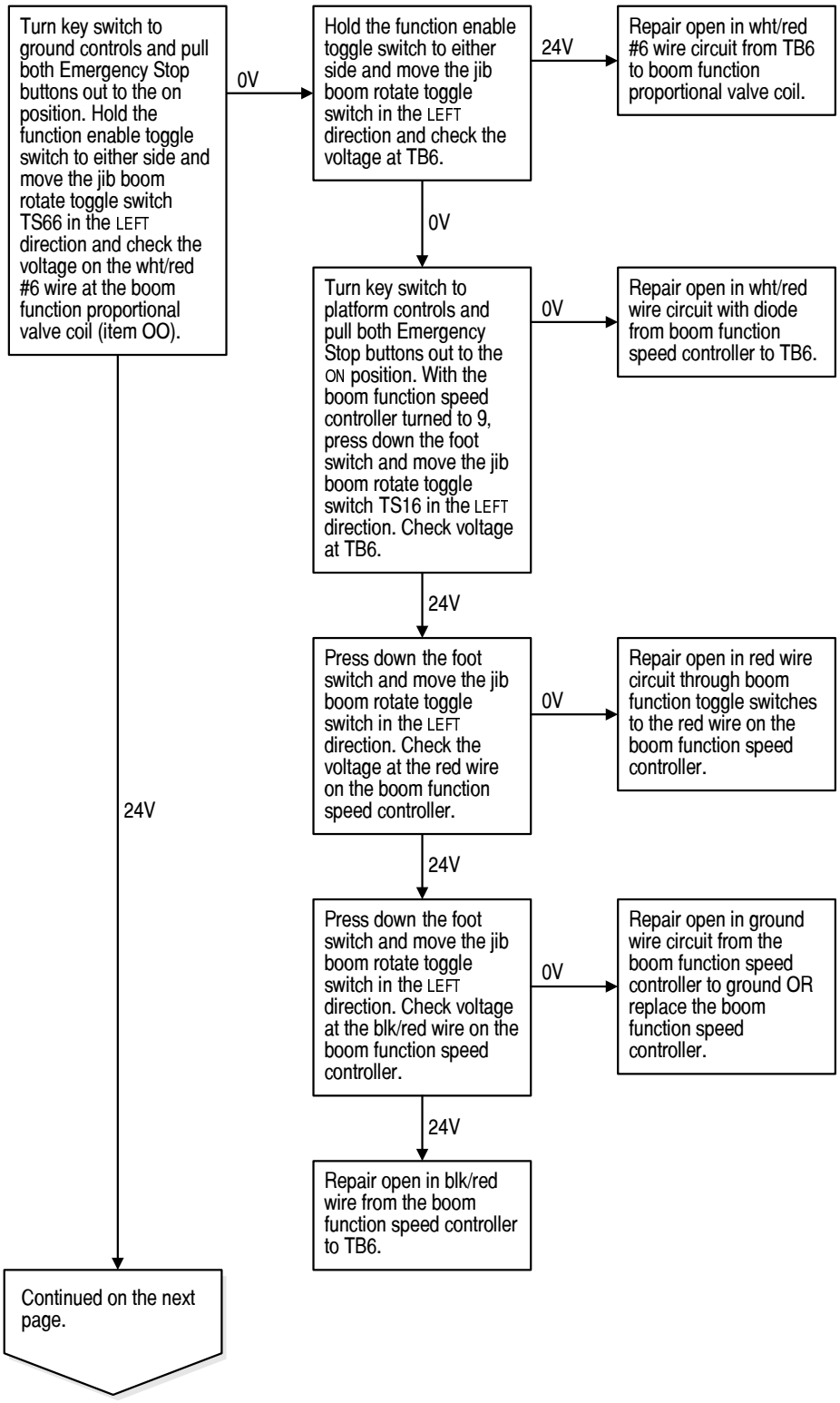


CHART 31

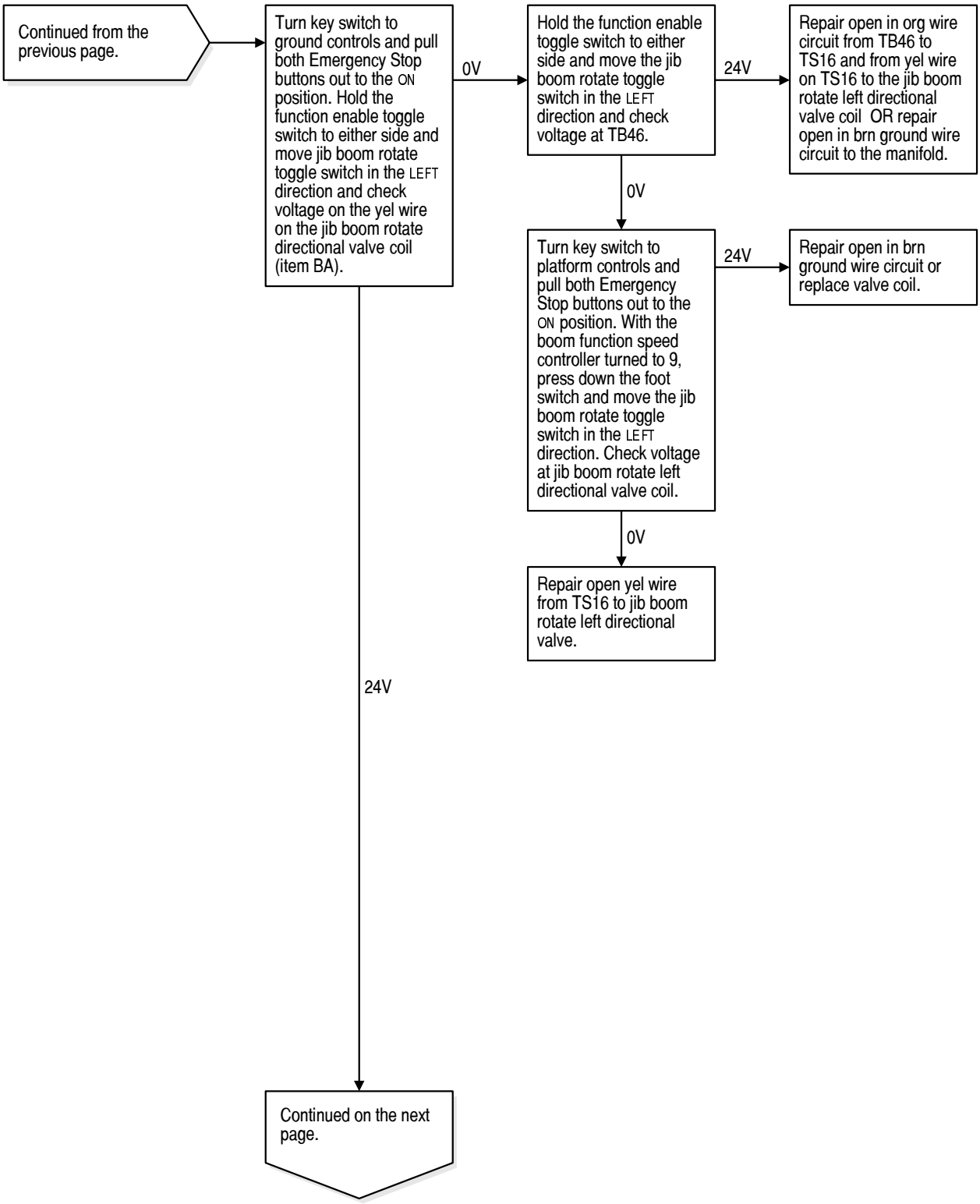

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move jib boom rotate toggle switch in the LEFT direction and check voltage on the yel wire on the jib boom rotate directional valve coil (item BA).
0V
Hold the function enable toggle switch to either side and move the jib boom rotate toggle switch in the LEFT direction and check voltage at TB46.
24V
Repair open in org wire circuit from TB46 to TS16 and from yel wire on TS16 to the jib boom rotate left directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom rotate toggle switch in the LEFT direction. Check voltage at jib boom rotate left directional valve coil.
24V
Repair open in brn ground wire circuit or replace valve coil.
0V
Repair open yel wire from TS16 to jib boom rotate left directional valve.
24V
Continued on the next page.

CHART 31

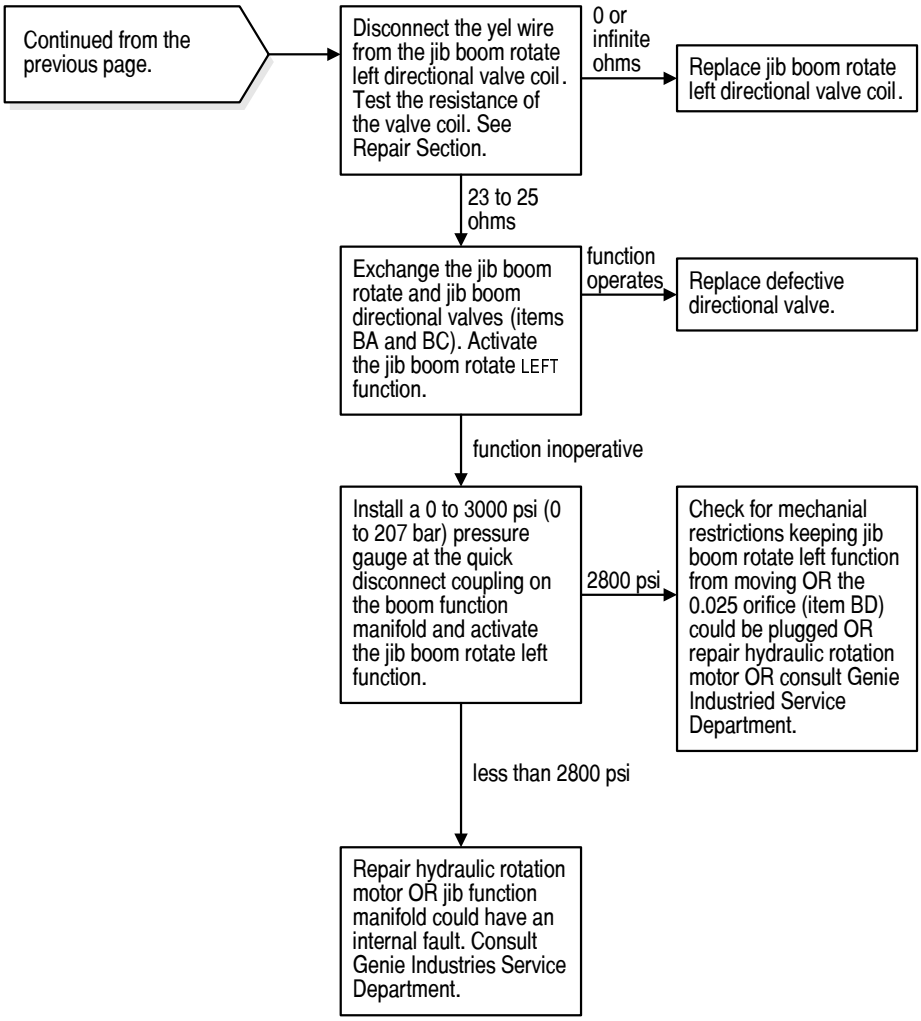

Continued from the previous page.
Disconnect the yel wire from the jib boom rotate left directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom rotate left directional valve coil.
23 to 25 ohms
Exchange the jib boom rotate and jib boom directional valves (items BA and BC). Activate the jib boom rotate LEFT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom rotate left function.
2800 psi
Check for mechanial restrictions keeping jib boom rotate left function from moving OR the 0.025 orifice (item BD) could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 32

Jib Boom Rotate Right Function Inoperative (after serial number 4082)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

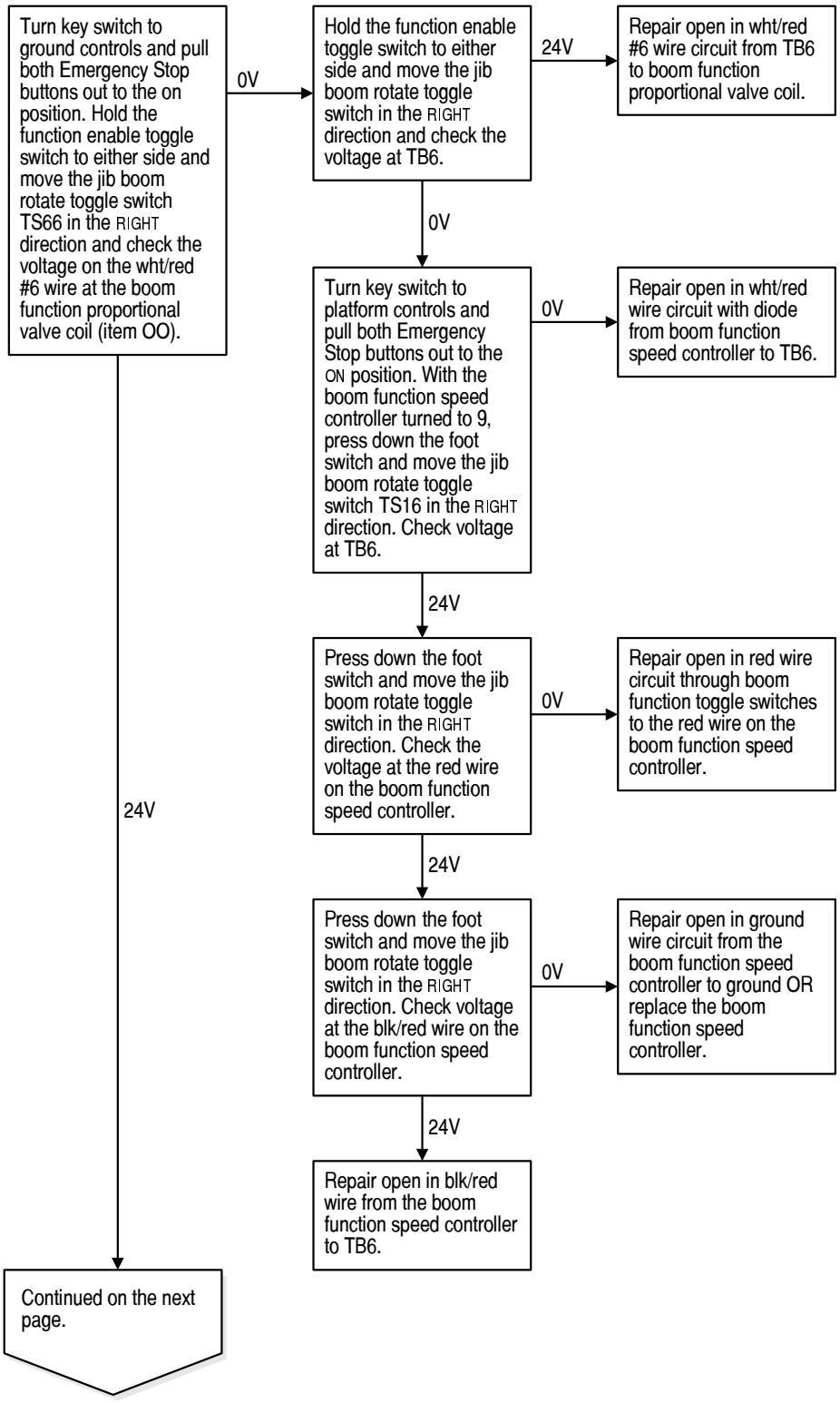


CHART 32

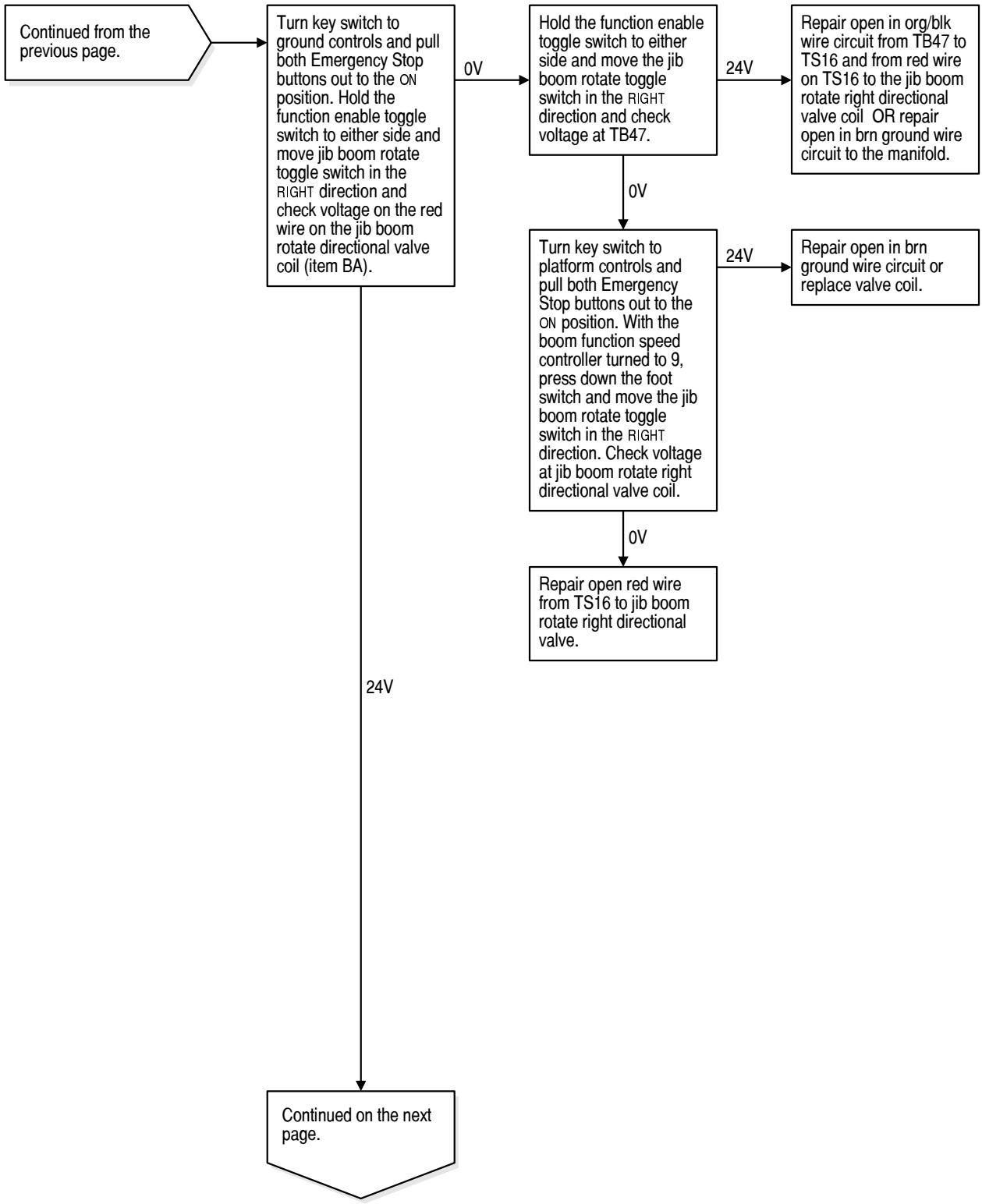

Continued from the previous page.
Turn key switch to ground controls and pull both Emergency Stop buttons out to the ON position. Hold the function enable toggle switch to either side and move jib boom rotate toggle switch in the RIGHT direction and check voltage on the red wire on the jib boom rotate directional valve coil (item BA).
0V
Hold the function enable toggle switch to either side and move the jib boom rotate toggle switch in the RIGHT direction and check voltage at TB47.
24V
Repair open in org/blk wire circuit from TB47 to TS16 and from red wire on TS16 to the jib boom rotate right directional valve coil OR repair open in brn ground wire circuit to the manifold.
0V
Turn key switch to platform controls and pull both Emergency Stop buttons out to the ON position. With the boom function speed controller turned to 9, press down the foot switch and move the jib boom rotate toggle switch in the RIGHT direction. Check voltage at jib boom rotate right directional valve coil.
24V
Repair open in brn ground wire circuit or replace valve coil.
0V
Repair open red wire from TS16 to jib boom rotate right directional valve.
24V
Continued on the next page.

CHART 32

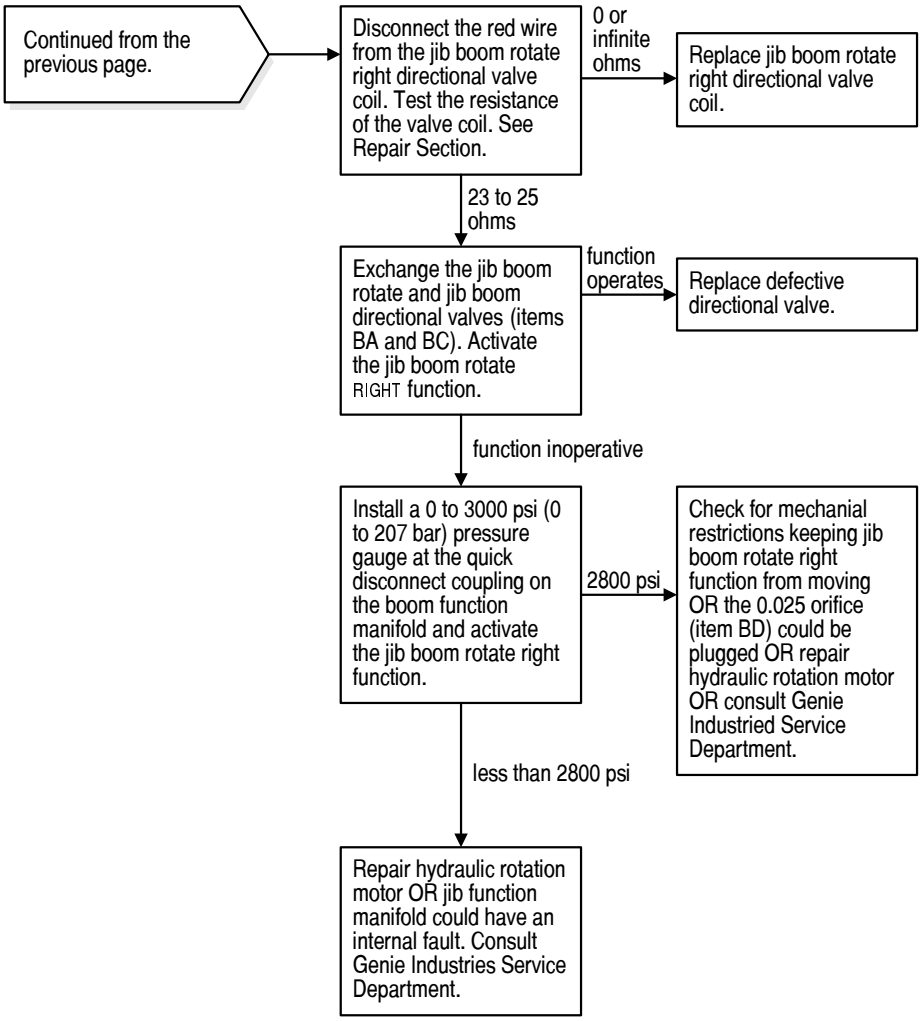

Continued from the previous page.
Disconnect the red wire from the jib boom rotate right directional valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace jib boom rotate right directional valve coil.
23 to 25 ohms
Exchange the jib boom rotate and jib boom directional valves (items BA and BC). Activate the jib boom rotate RIGHT function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib boom rotate right function.
2800 psi
Check for mechanial restrictions keeping jib boom rotate right function from moving OR the 0.025 orifice (item BD) could be plugged OR repair hydraulic rotation motor OR consult Genie Industried Service Department.
less than 2800 psi
Repair hydraulic rotation motor OR jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 33

Steer Left Function Inoperative (before serial number 3447)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

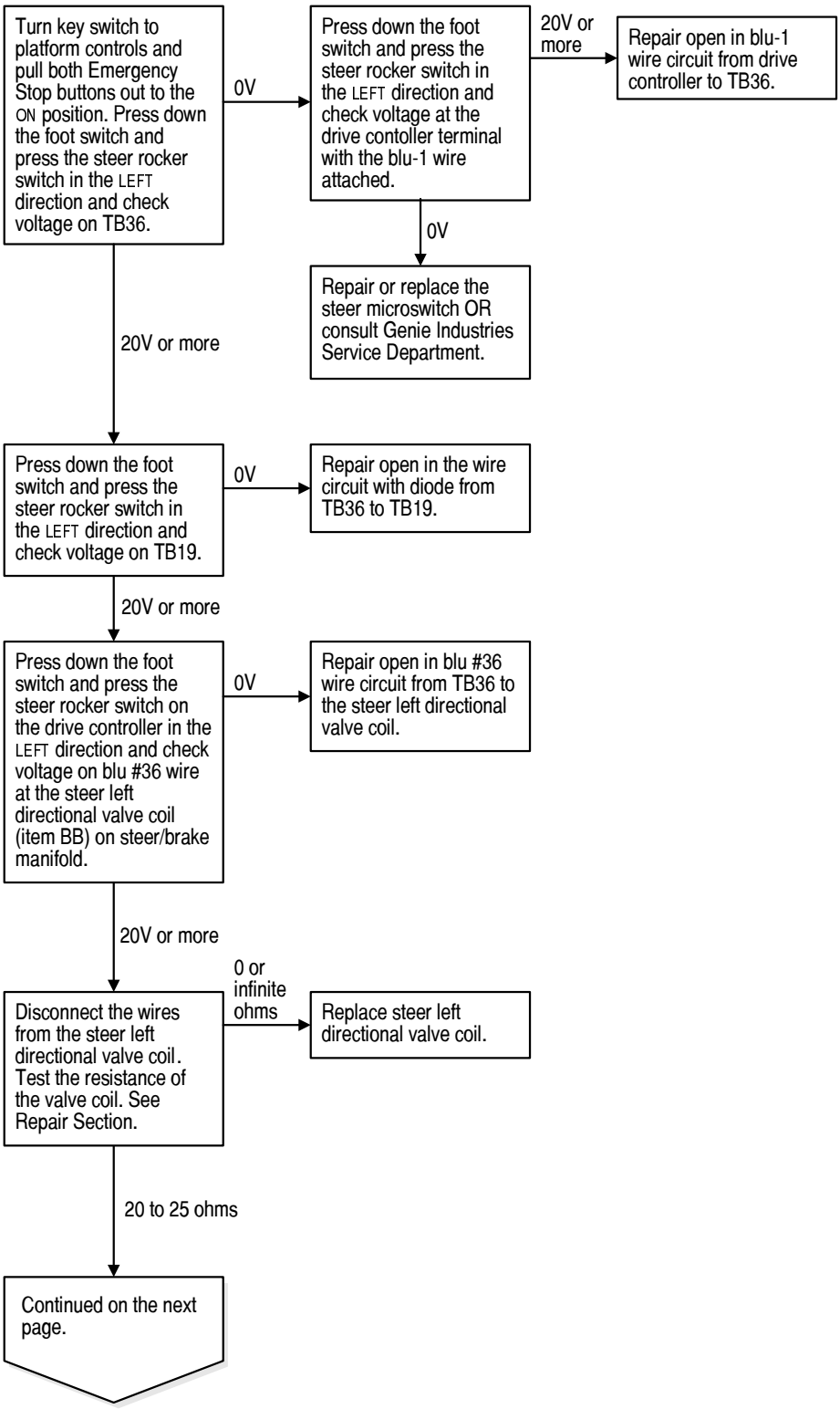


CHART 33

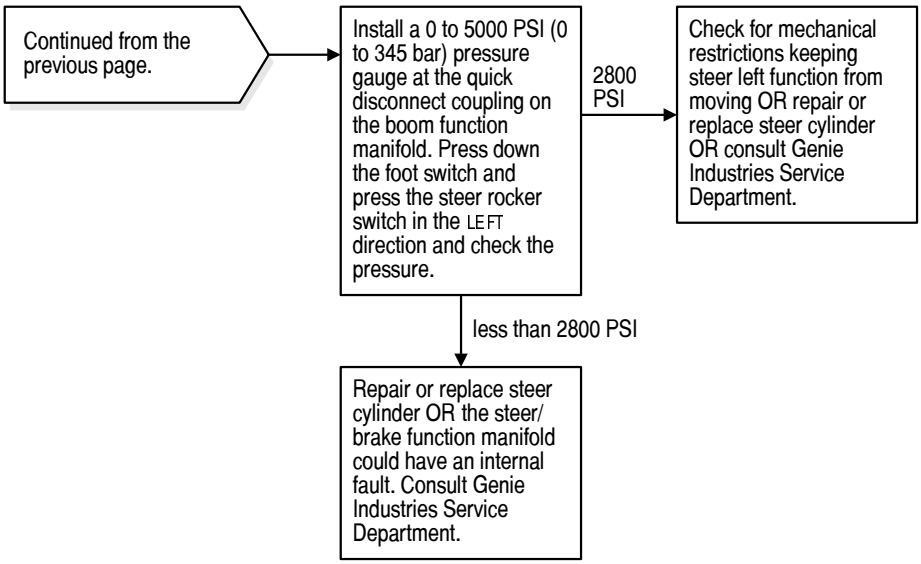

Continued from the previous page.
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold. Press down the foot switch and press the steer rocker switch in the LEFT direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping steer left function from moving OR repair or replace steer cylinder OR consult Genie Industries Service Department.
less than 2800 PSI
Repair or replace steer cylinder OR the steer/ brake function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 34

Steer Left Function Inoperative (after serial number 3446)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

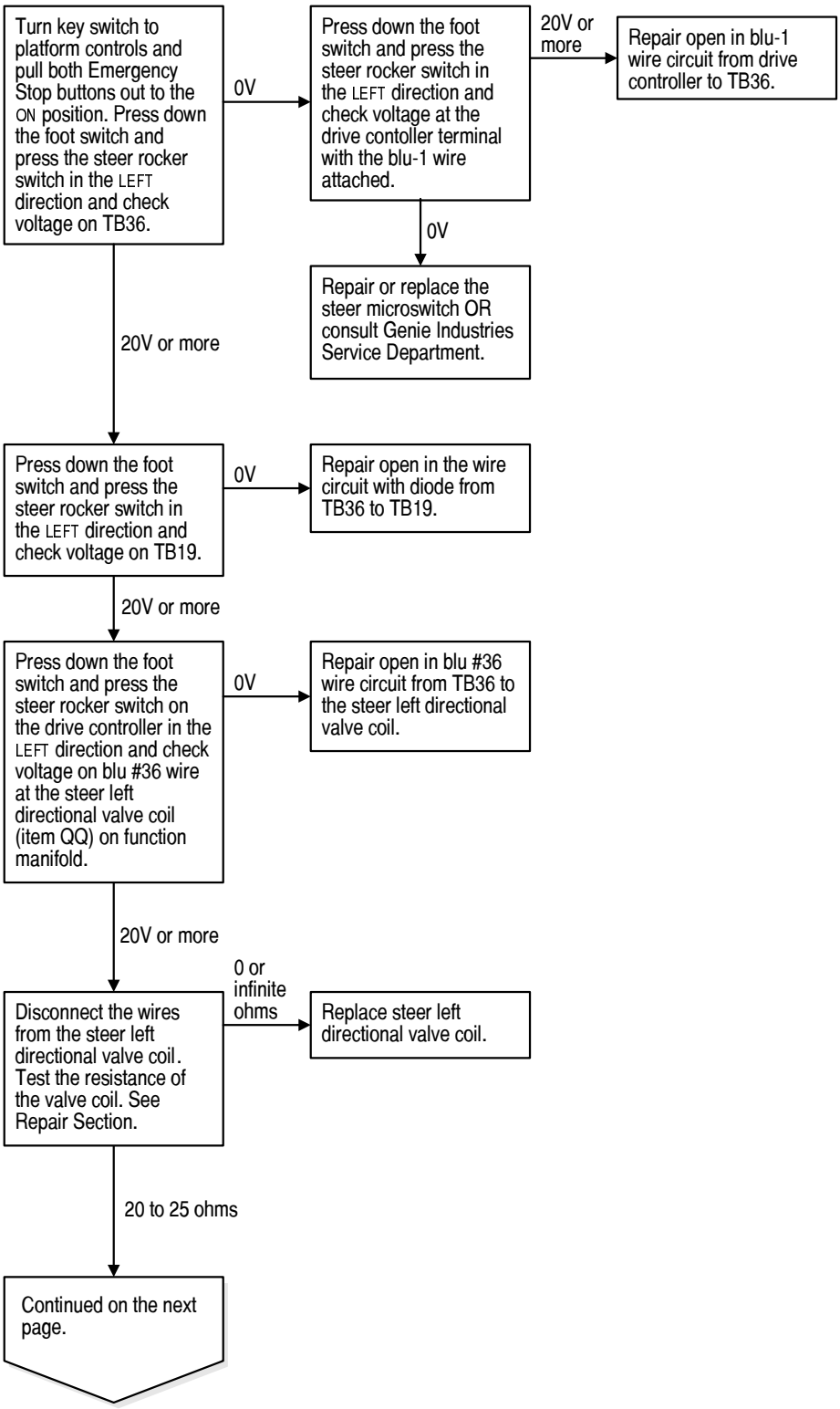


CHART 34

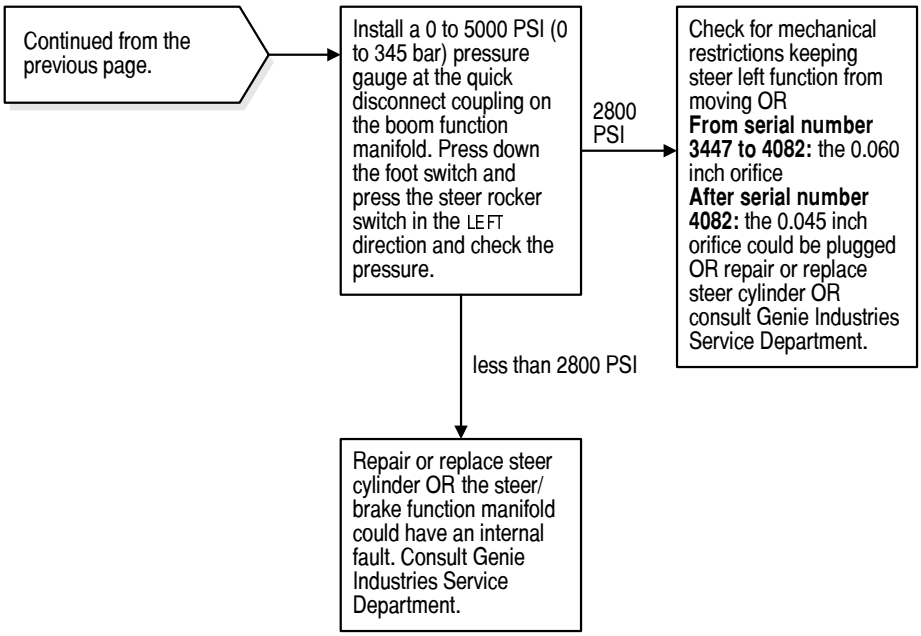

Continued from the previous page.
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold. Press down the foot switch and press the steer rocker switch in the LEFT direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping steer left function from moving OR
From serial number 3447 to 4082: the 0.060 inch orifice
After serial number 4082: the 0.045 inch orifice could be plugged OR repair or replace steer cylinder OR consult Genie Industries Service Department.
less than 2800 PSI
Repair or replace steer cylinder OR the steer/ brake function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 35

Steer Right Function Inoperative (before serial number 3447)

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

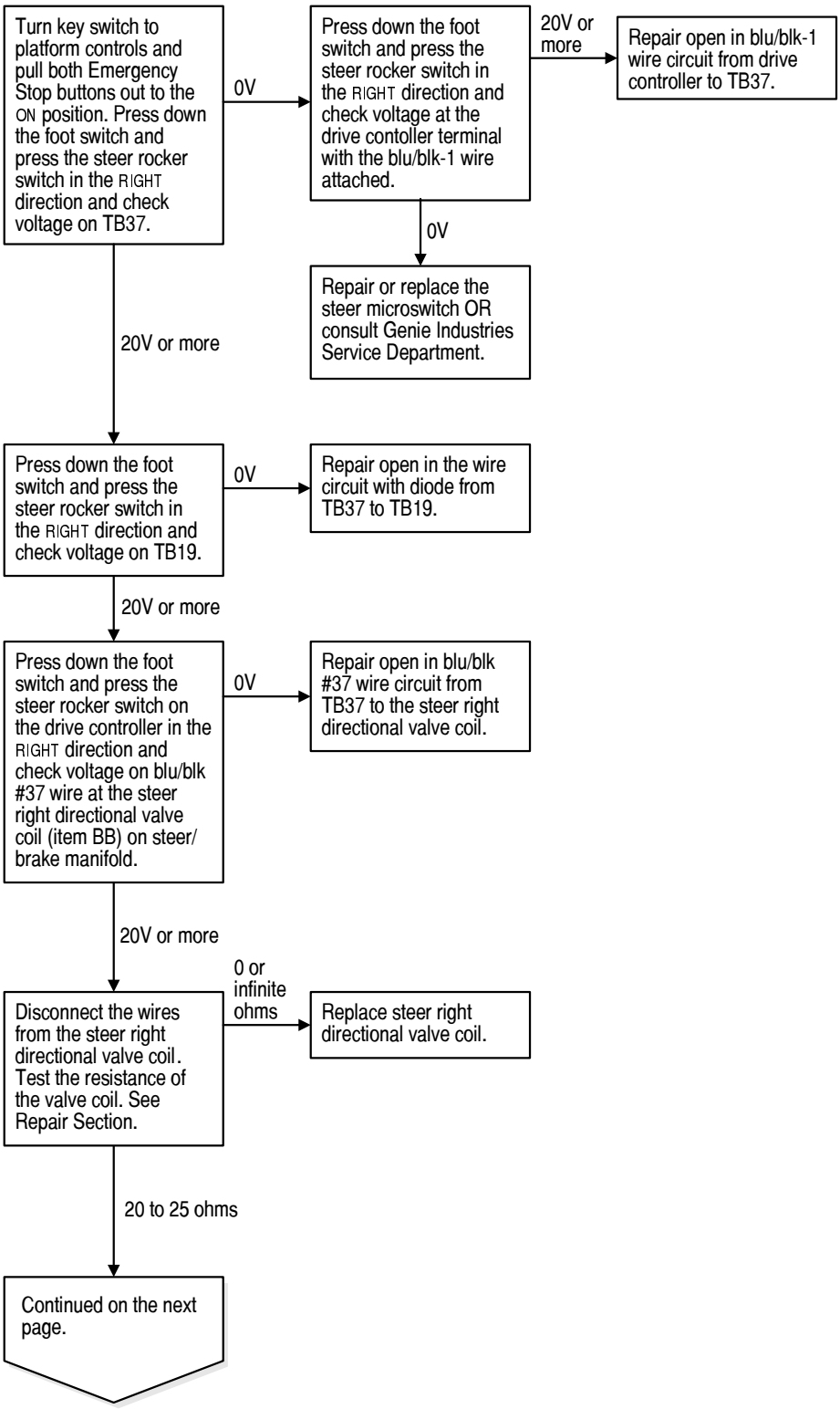


CHART 35

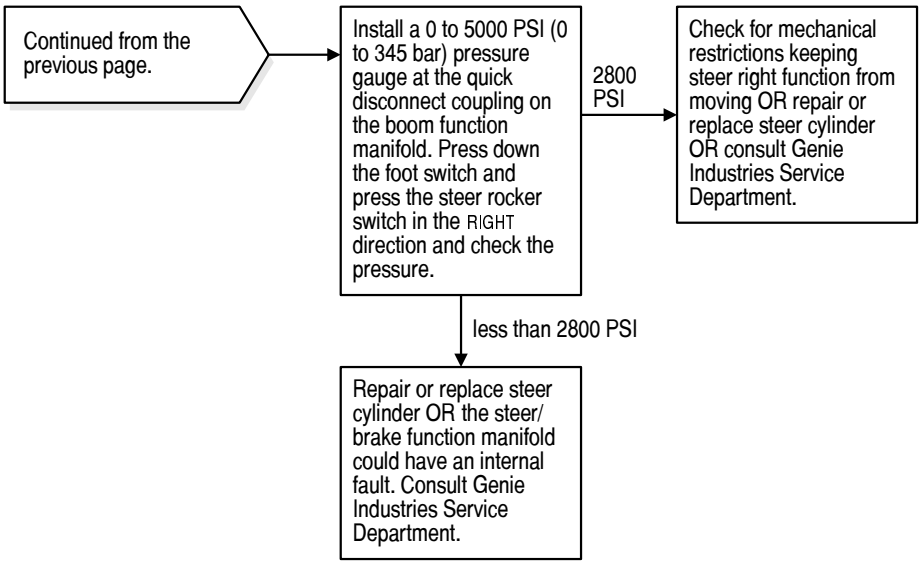

Continued from the previous page.
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold. Press down the foot switch and press the steer rocker switch in the RIGHT direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping steer right function from moving OR repair or replace steer cylinder OR consult Genie Industries Service Department.
less than 2800 PSI
Repair or replace steer cylinder OR the steer/ brake function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 36

Steer RightFunction Inoperative (after serial number 3446)

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

Be sure all other functions operate normally.

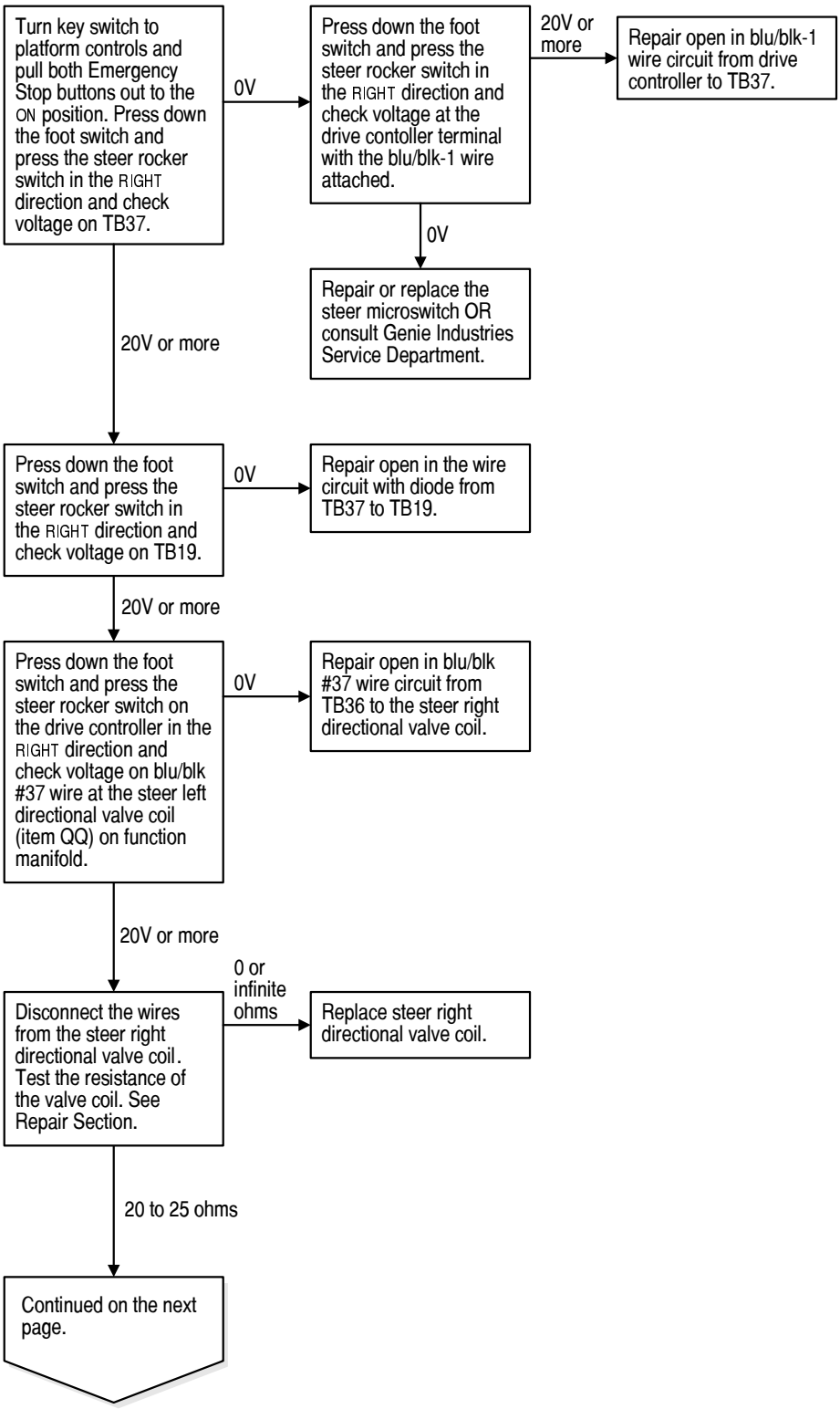


CHART 36

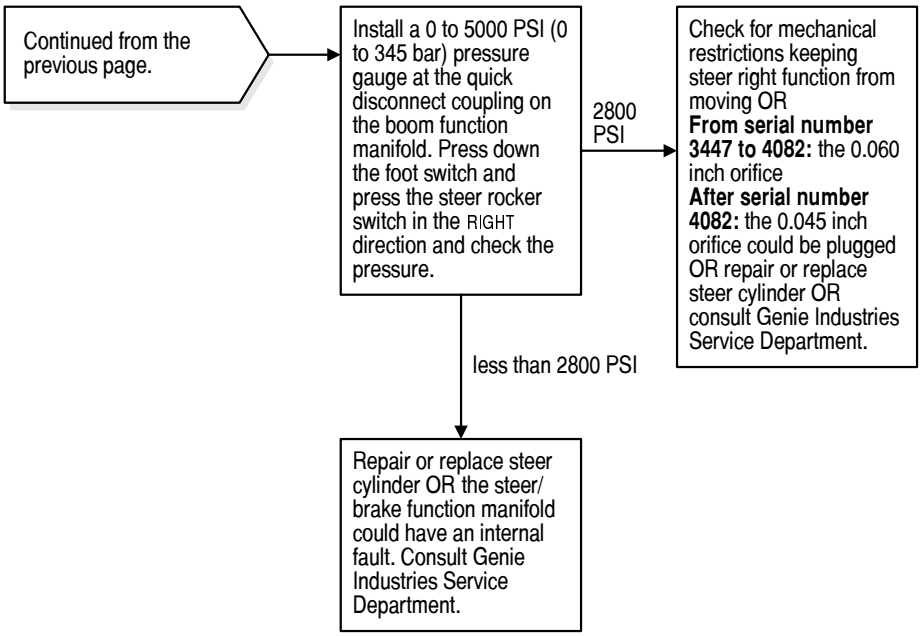

Continued from the previous page.
Install a 0 to 5000 PSI (0 to 345 bar) pressure gauge at the quick disconnect coupling on the boom function manifold. Press down the foot switch and press the steer rocker switch in the RIGHT direction and check the pressure.
2800 PSI
Check for mechanical restrictions keeping steer right function from moving OR
From serial number 3447 to 4082: the 0.060 inch orifice
After serial number 4082: the 0.045 inch orifice could be plugged OR repair or replace steer cylinder OR consult Genie Industries Service Department.
less than 2800 PSI
Repair or replace steer cylinder OR the steer/ brake function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 37

All Drive Functions Inoperative, all Other Functions Operate Normally (before serial number 3447)

Be sure the unit is in the fully stowed position with the boom located between the drive tires.

Be sure the battery packs are properly connected and fully charged.

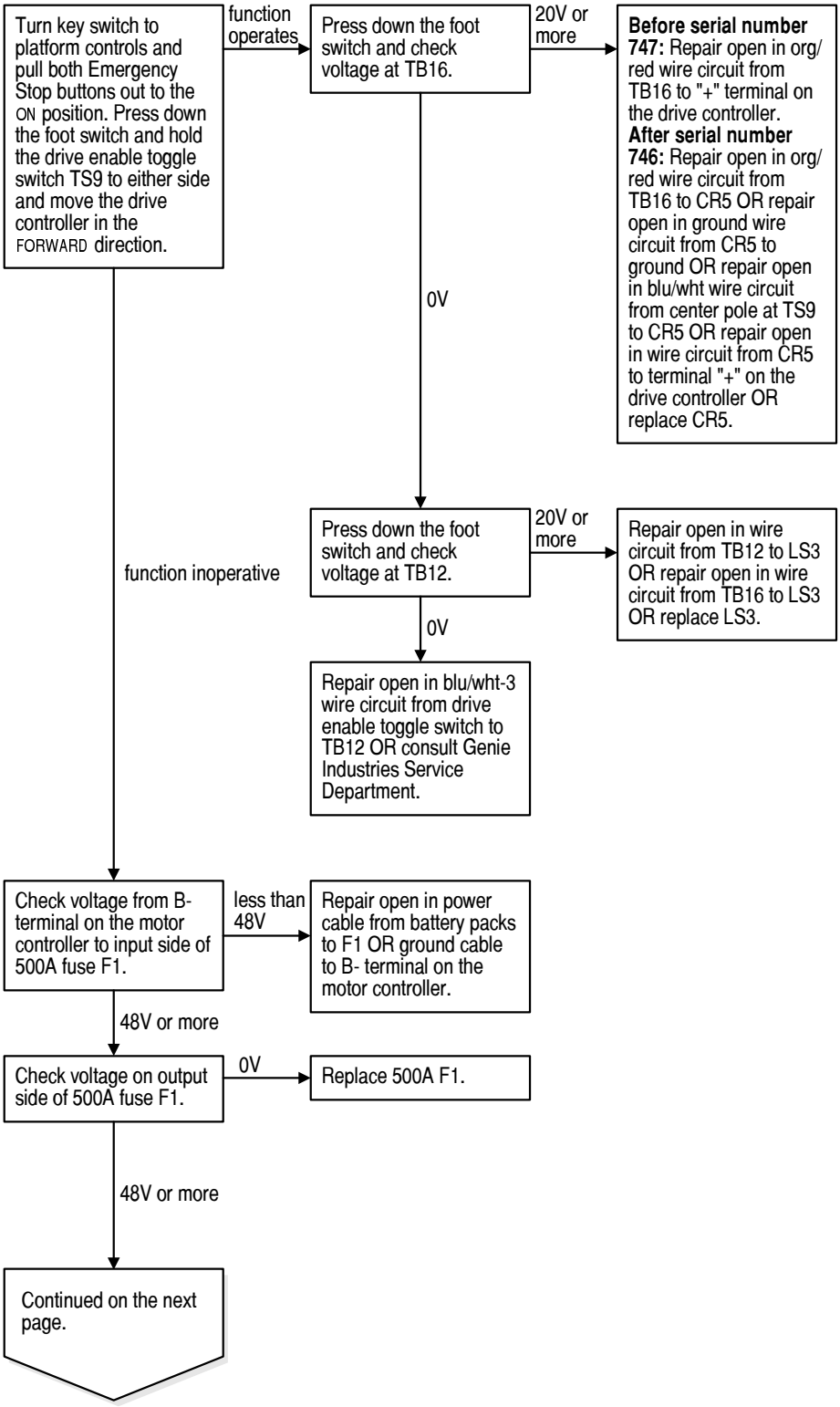


CHART 37

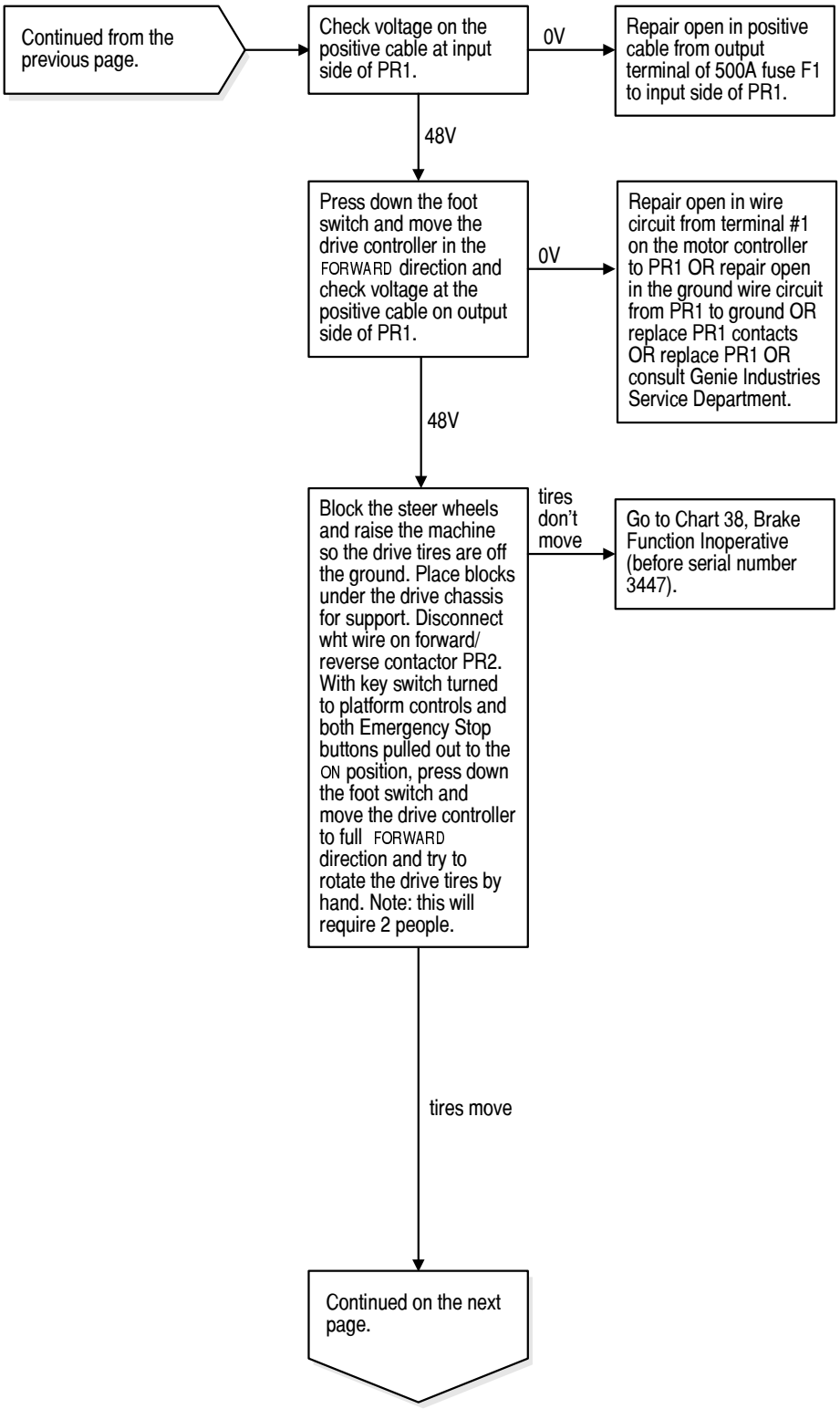

Continued from the previous page.
Check voltage on the positive cable at input side of PR1.
0V
Repair open in positive cable from output terminal of 500A fuse F1 to input side of PR1.
48V
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage at the positive cable on output side of PR1.
0V
Repair open in wire circuit from terminal #1 on the motor controller to PR1 OR repair open in the ground wire circuit from PR1 to ground OR replace PR1 contacts OR replace PR1 OR consult Genie Industries Service Department.
48V
Block the steer wheels and raise the machine so the drive tires are off the ground. Place blocks under the drive chassis for support. Disconnect wht wire on forward/ reverse contactor PR2. With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, press down the foot switch and move the drive controller to full FORWARD direction and try to rotate the drive tires by hand. Note: this will require 2 people.
tires don't move
Go to Chart 38, Brake Function Inoperative (before serial number 3447).
tires move
Continued on the next page.

CHART 37

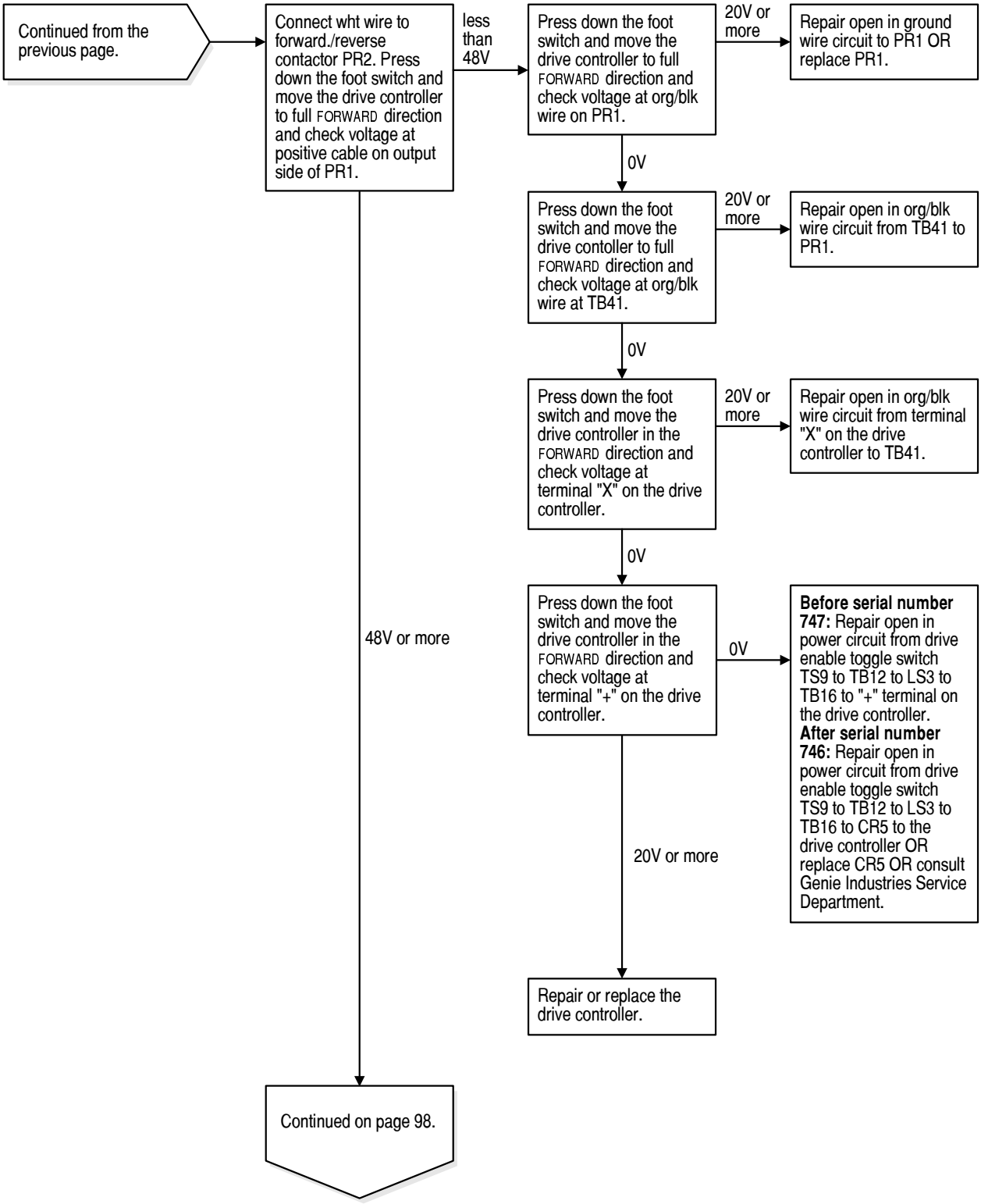

Continued from the previous page.
Connect wht wire to forward./reverse contactor PR2. Press down the foot switch and move the drive controller to full FORWARD direction and check voltage at positive cable on output side of PR1.
less than 48V
Press down the foot switch and move the drive controller to full FORWARD direction and check voltage at org/blk wire on PR1.
20V or more
Repair open in ground wire circuit to PR1 OR replace PR1.
0V
Press down the foot switch and move the drive contoller to full FORWARD direction and check voltage at org/blk wire at TB41.
20V or more
Repair open in org/blk wire circuit from TB41 to PR1.
0V
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage at terminal "X" on the drive controller.
20V or more
Repair open in org/blk wire circuit from terminal "X" on the drive controller to TB41.
0V
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage at terminal "+" on the drive controller.
0V
Before serial number 747: Repair open in power circuit from drive enable toggle switch TS9 to TB12 to LS3 to TB16 to "+" terminal on the drive controller. After serial number 746: Repair open in power circuit from drive enable toggle switch TS9 to TB12 to LS3 to TB16 to CR5 to the drive controller OR replace CR5 OR consult Genie Industries Service Department.
20V or more
Repair or replace the drive controller.
48V or more
Continued on page 98.

CHART 37

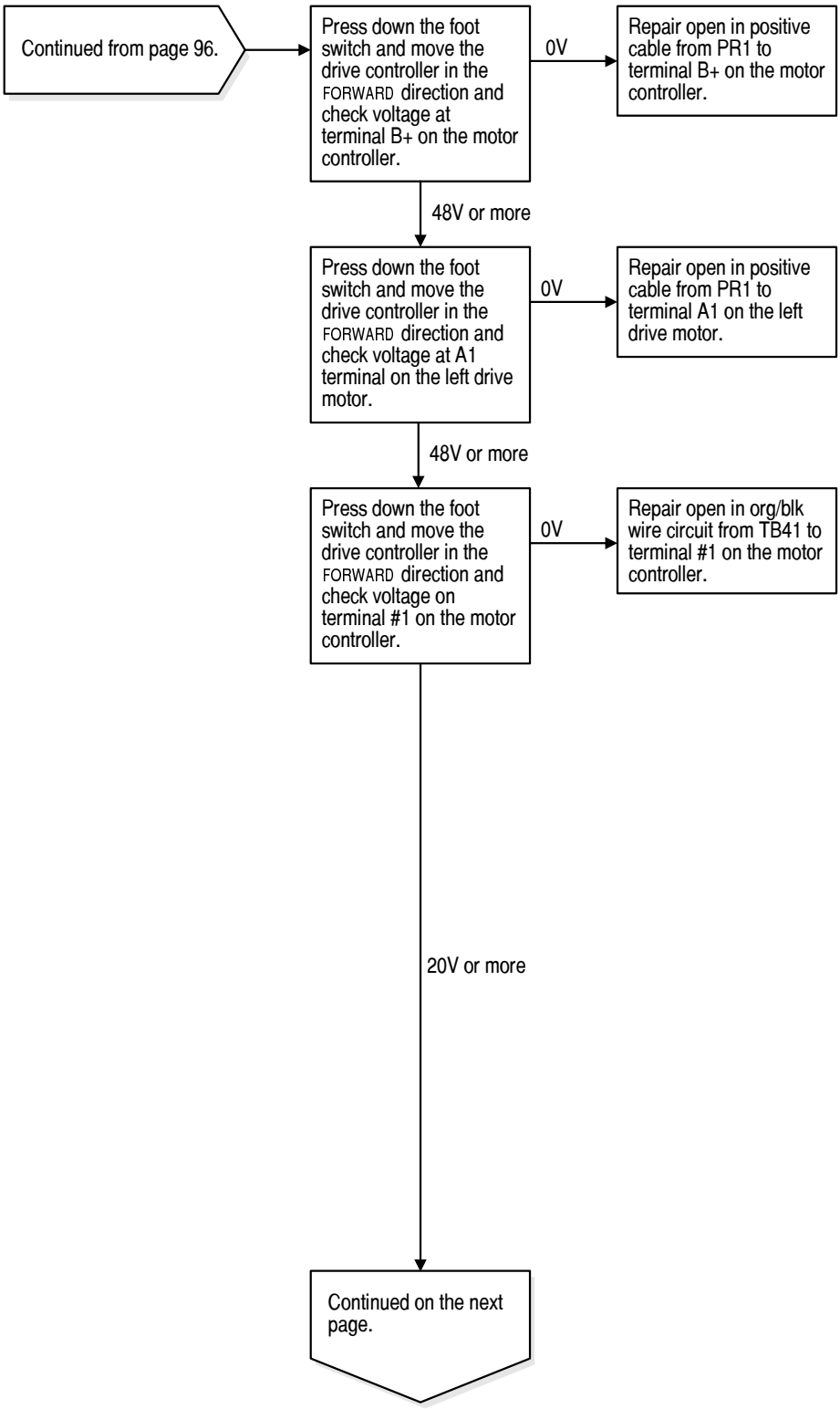

Continued from page 96.
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage at terminal B+ on the motor controller.
0V
Repair open in positive cable from PR1 to terminal B+ on the motor controller.
48V or more
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage at A1 terminal on the left drive motor.
0V
Repair open in positive cable from PR1 to terminal A1 on the left drive motor.
48V or more
Press down the foot switch and move the drive controller in the FORWARD direction and check voltage on terminal #1 on the motor controller.
0V
Repair open in org/blk wire circuit from TB41 to terminal #1 on the motor controller.
20V or more
Continued on the next page.

CHART 37

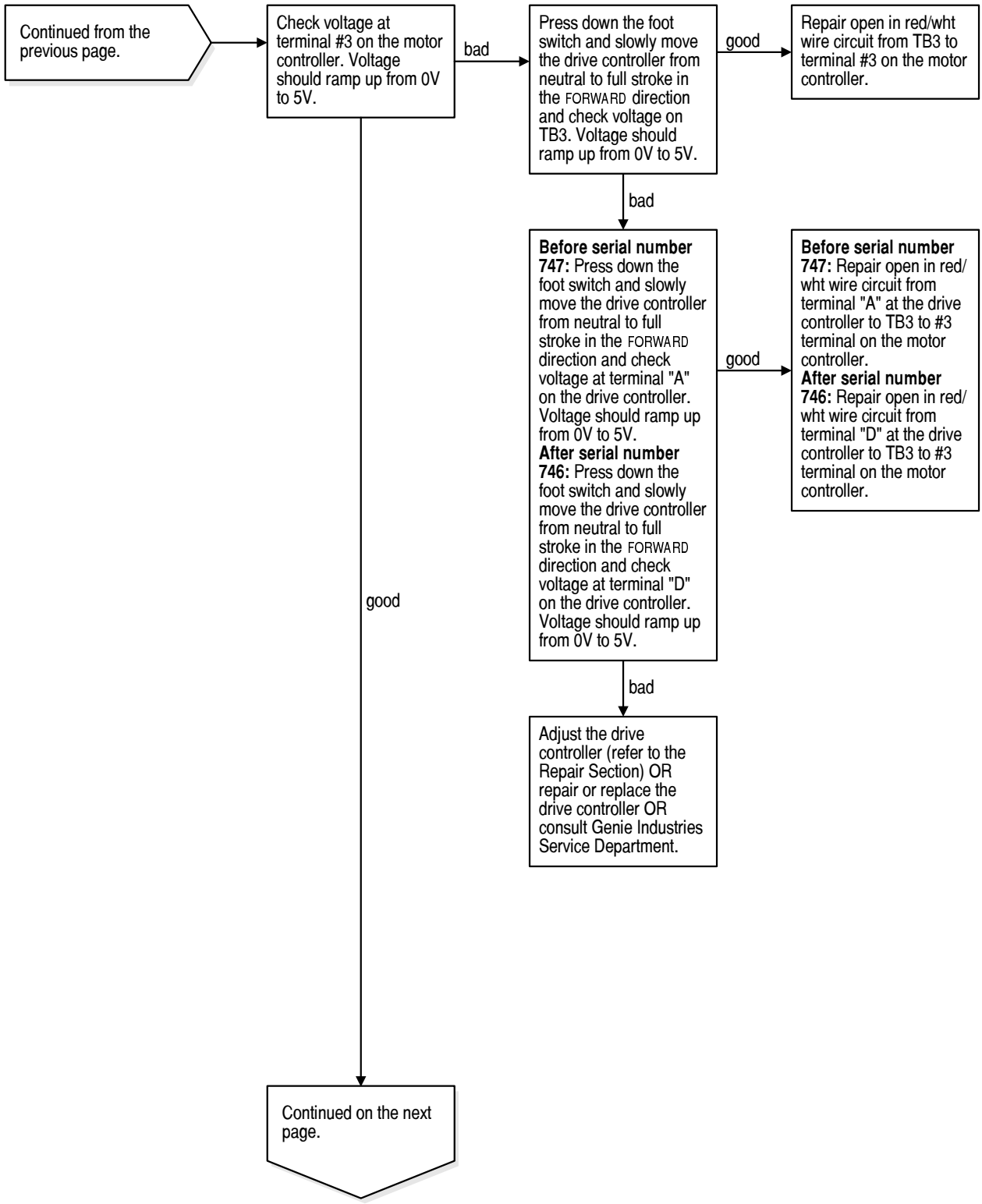

Continued from the previous page.
Check voltage at terminal #3 on the motor controller. Voltage should ramp up from 0V to 5V.
bad
Press down the foot switch and slowly move the drive controller from neutral to full stroke in the FORWARD direction and check voltage on TB3. Voltage should ramp up from 0V to 5V.
good
Repair open in red/wht wire circuit from TB3 to terminal #3 on the motor controller.
bad
Before serial number 747: Press down the foot switch and slowly move the drive controller from neutral to full stroke in the FORWARD direction and check voltage at terminal "A" on the drive controller. Voltage should ramp up from 0V to 5V.
After serial number 746: Press down the foot switch and slowly move the drive controller from neutral to full stroke in the FORWARD direction and check voltage at terminal "D" on the drive controller. Voltage should ramp up from 0V to 5V.
good
Before serial number 747: Repair open in red/wht wire circuit from terminal "A" at the drive controller to TB3 to #3 terminal on the motor controller.
After serial number 746: Repair open in red/wht wire circuit from terminal "D" at the drive controller to TB3 to #3 terminal on the motor controller.
bad
Adjust the drive controller (refer to the Repair Section) OR repair or replace the drive controller OR consult Genie Industries Service Department.
good
Continued on the next page.

CHART 37

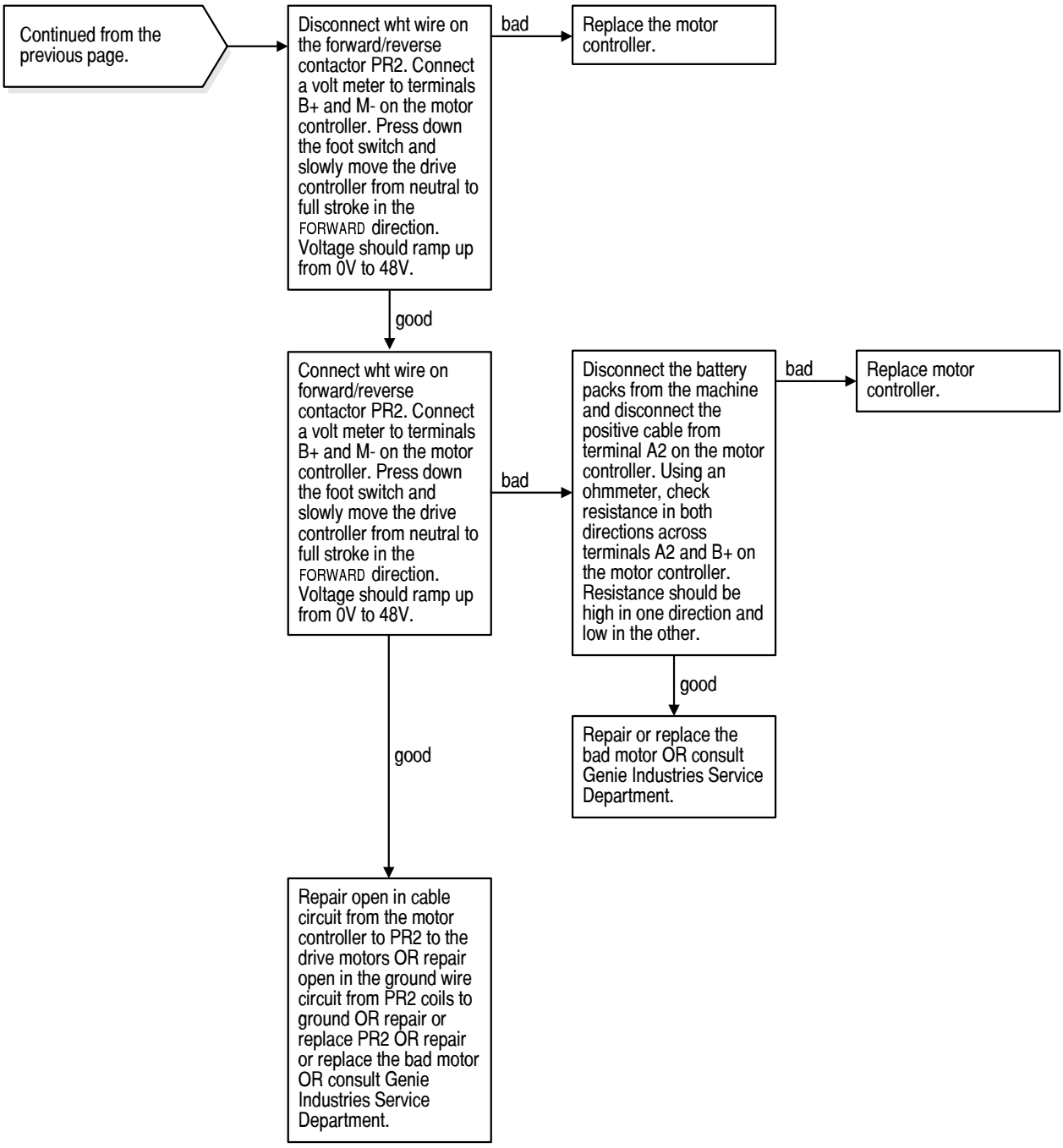

Continued from the previous page.
Disconnect wht wire on the forward/reverse contactor PR2. Connect a volt meter to terminals B+ and M- on the motor controller. Press down the foot switch and slowly move the drive controller from neutral to full stroke in the FORWARD direction. Voltage should ramp up from 0V to 48V.
bad
Replace the motor controller.
good
Connect wht wire on forward/reverse contactor PR2. Connect a volt meter to terminals B+ and M- on the motor controller. Press down the foot switch and slowly move the drive controller from neutral to full stroke in the FORWARD direction. Voltage should ramp up from 0V to 48V.
bad
Disconnect the battery packs from the machine and disconnect the positive cable from terminal A2 on the motor controller. Using an ohmmeter, check resistance in both directions across terminals A2 and B+ on the motor controller. Resistance should be high in one direction and low in the other.
bad
Replace motor controller.
good
Repair or replace the bad motor OR consult Genie Industries Service Department.
good
Repair open in cable circuit from the motor controller to PR2 to the drive motors OR repair open in the ground wire circuit from PR2 coils to ground OR repair or replace PR2 OR repair or replace the bad motor OR consult Genie Industries Service Department.

Chart 38

Brake Function Inoperative (before serial number 3447)

Be sure the drive hubs are not disengaged

Be sure the remote brake release is removed.

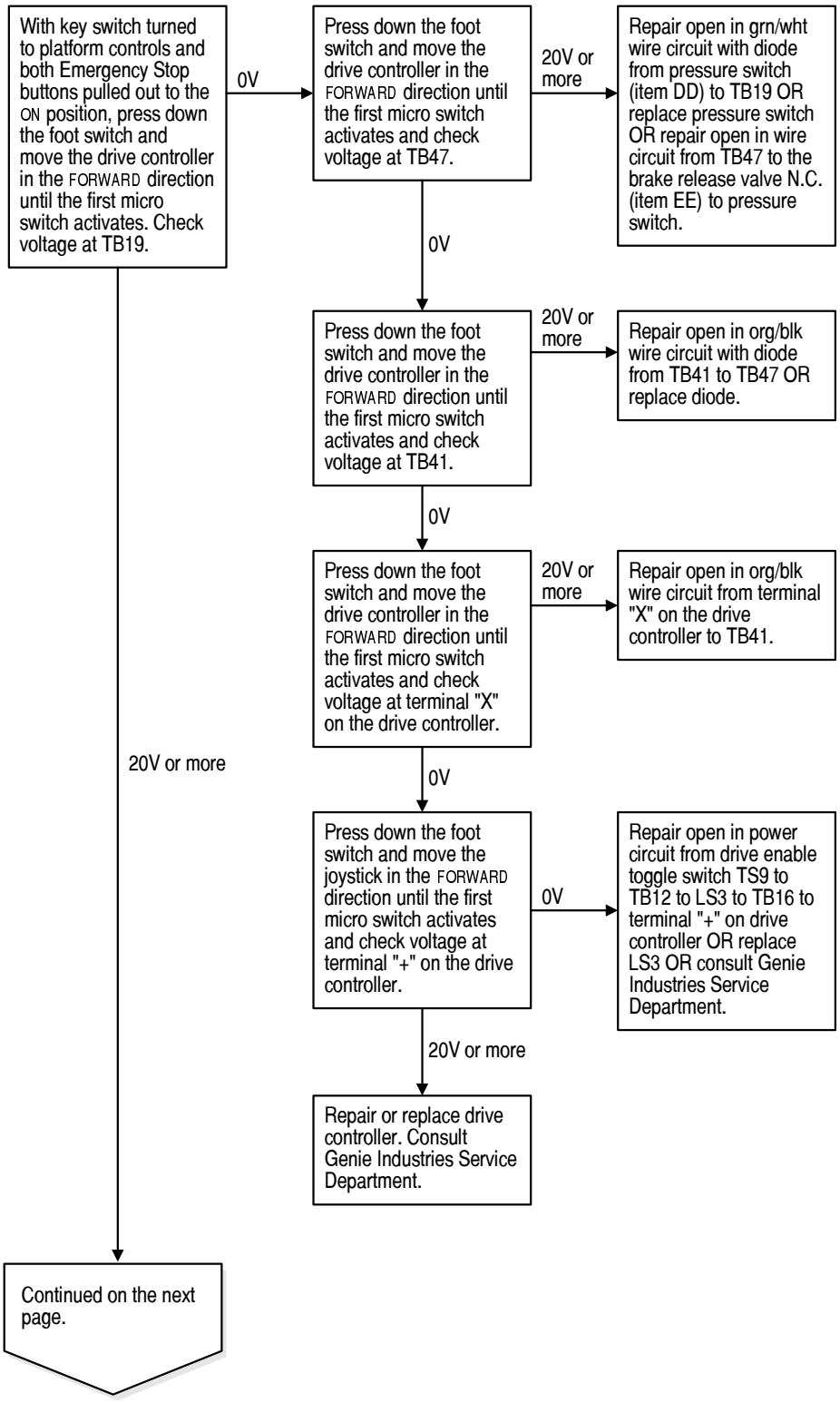


CHART 38

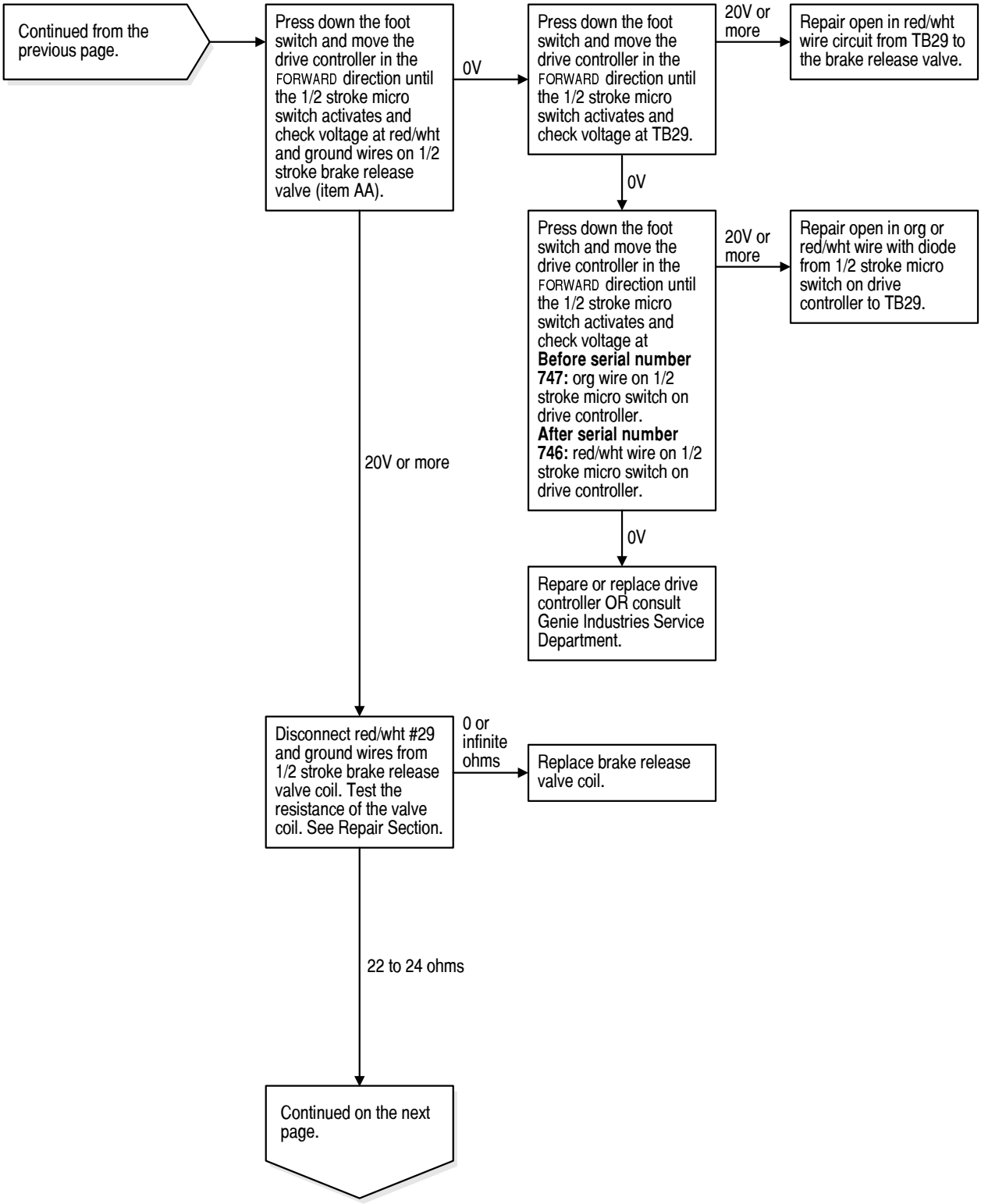

Continued from the previous page.
Press down the foot switch and move the drive controller in the FORWARD direction until the 1/2 stroke micro switch activates and check voltage at red/wht and ground wires on 1/2 stroke brake release valve (item AA).
0V
Press down the foot switch and move the drive controller in the FORWARD direction until the 1/2 stroke micro switch activates and check voltage at TB29.
20V or more
Repair open in red/wht wire circuit from TB29 to the brake release valve.
0V
Press down the foot switch and move the drive controller in the FORWARD direction until the 1/2 stroke micro switch activates and check voltage at
Before serial number 747: org wire on 1/2 stroke micro switch on drive controller.
After serial number 746: red/wht wire on 1/2 stroke micro switch on drive controller.
20V or more
Repair open in org or red/wht wire with diode from 1/2 stroke micro switch on drive controller to TB29.
0V
Repare or replace drive controller OR consult Genie Industries Service Department.
20V or more
Disconnect red/wht #29 and ground wires from 1/2 stroke brake release valve coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace brake release valve coil.
22 to 24 ohms
Continued on the next page.

CHART 38

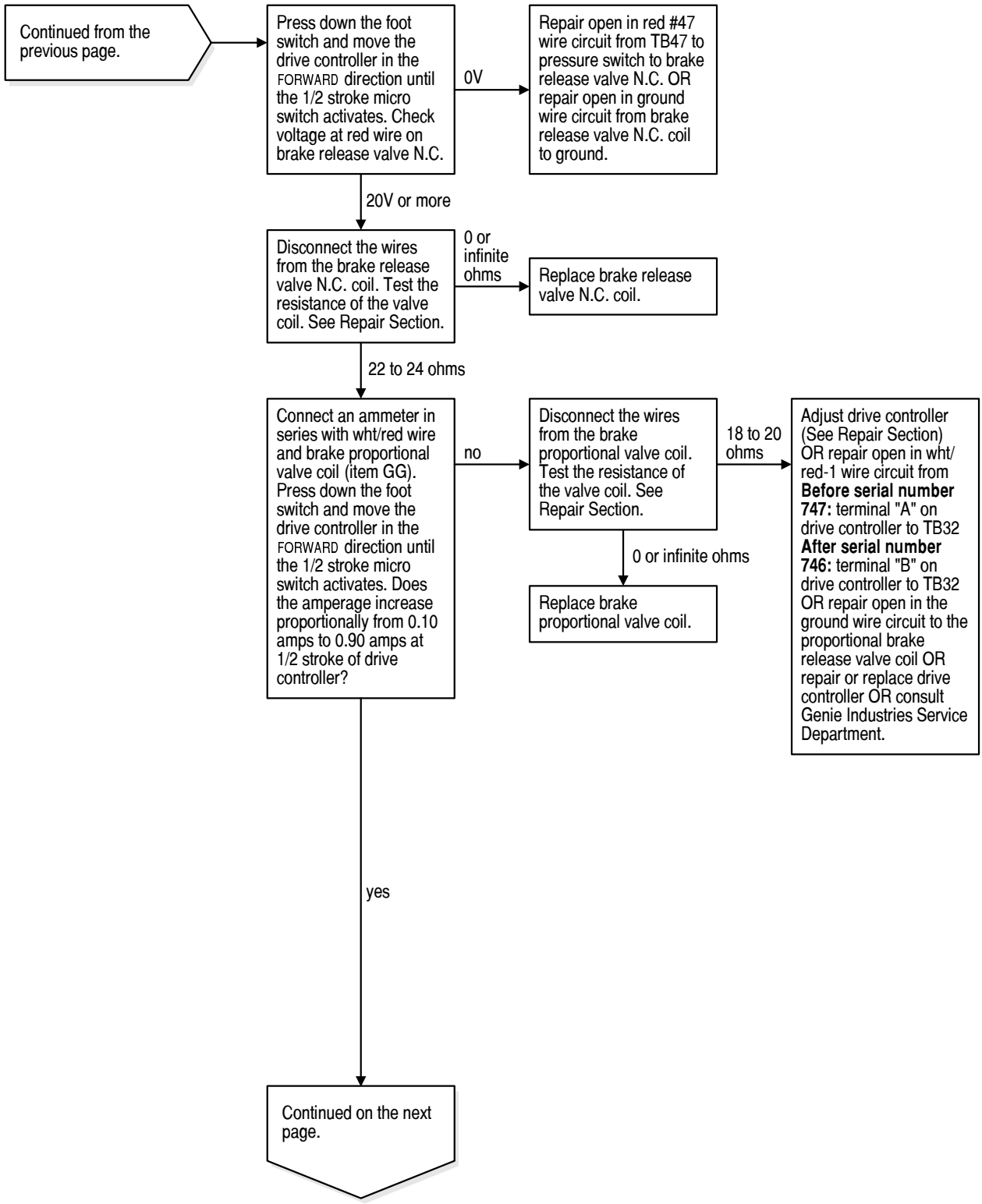

Continued from the previous page.
Press down the foot switch and move the drive controller in the FORWARD direction until the 1/2 stroke micro switch activates. Check voltage at red wire on brake release valve N.C.
0V
Repair open in red #47 wire circuit from TB47 to pressure switch to brake release valve N.C. OR repair open in ground wire circuit from brake release valve N.C. coil to ground.
20V or more
Disconnect the wires from the brake release valve N.C. coil. Test the resistance of the valve coil. See Repair Section.
0 or infinite ohms
Replace brake release valve N.C. coil.
22 to 24 ohms
Connect an ammeter in series with wht/red wire and brake proportional valve coil (item GG). Press down the foot switch and move the drive controller in the FORWARD direction until the 1/2 stroke micro switch activates. Does the amperage increase proportionally from 0.10 amps to 0.90 amps at 1/2 stroke of drive controller?
no
Disconnect the wires from the brake proportional valve coil. Test the resistance of the valve coil. See Repair Section.
18 to 20 ohms
Adjust drive controller (See Repair Section) OR repair open in wht/red-1 wire circuit from **Before serial number 747:** terminal "A" on drive controller to TB32 **After serial number 746:** terminal "B" on drive controller to TB32 OR repair open in the ground wire circuit to the proportional brake release valve coil OR repair or replace drive controller OR consult Genie Industries Service Department.
0 or infinite ohms
Replace brake proportional valve coil.
yes
Continued on the next page.

CHART 38

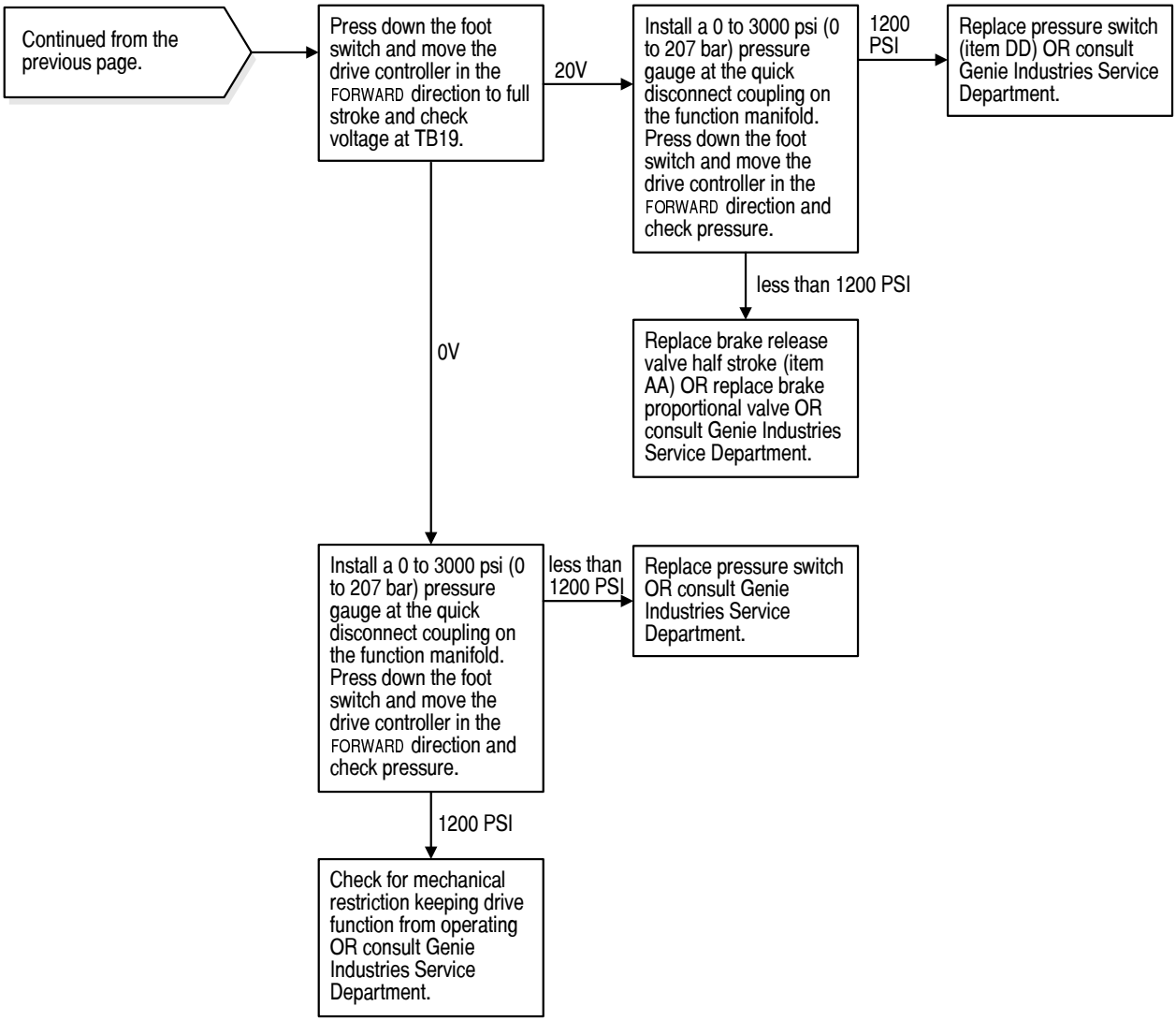

Continued from the previous page.
Press down the foot switch and move the drive controller in the FORWARD direction to full stroke and check voltage at TB19.
20V
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the function manifold. Press down the foot switch and move the drive controller in the FORWARD direction and check pressure.
1200 PSI
Replace pressure switch (item DD) OR consult Genie Industries Service Department.
less than 1200 PSI
Replace brake release valve half stroke (item AA) OR replace brake proportional valve OR consult Genie Industries Service Department.
0V
Install a 0 to 3000 psi (0 to 207 bar) pressure gauge at the quick disconnect coupling on the function manifold. Press down the foot switch and move the drive controller in the FORWARD direction and check pressure.
less than 1200 PSI
Replace pressure switch OR consult Genie Industries Service Department.
1200 PSI
Check for mechanical restriction keeping drive function from operating OR consult Genie Industries Service Department.

Chart 39

All Drive Functions Inoperative, all Other Functions Operate Normally (after serial number 3446)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the batteries are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

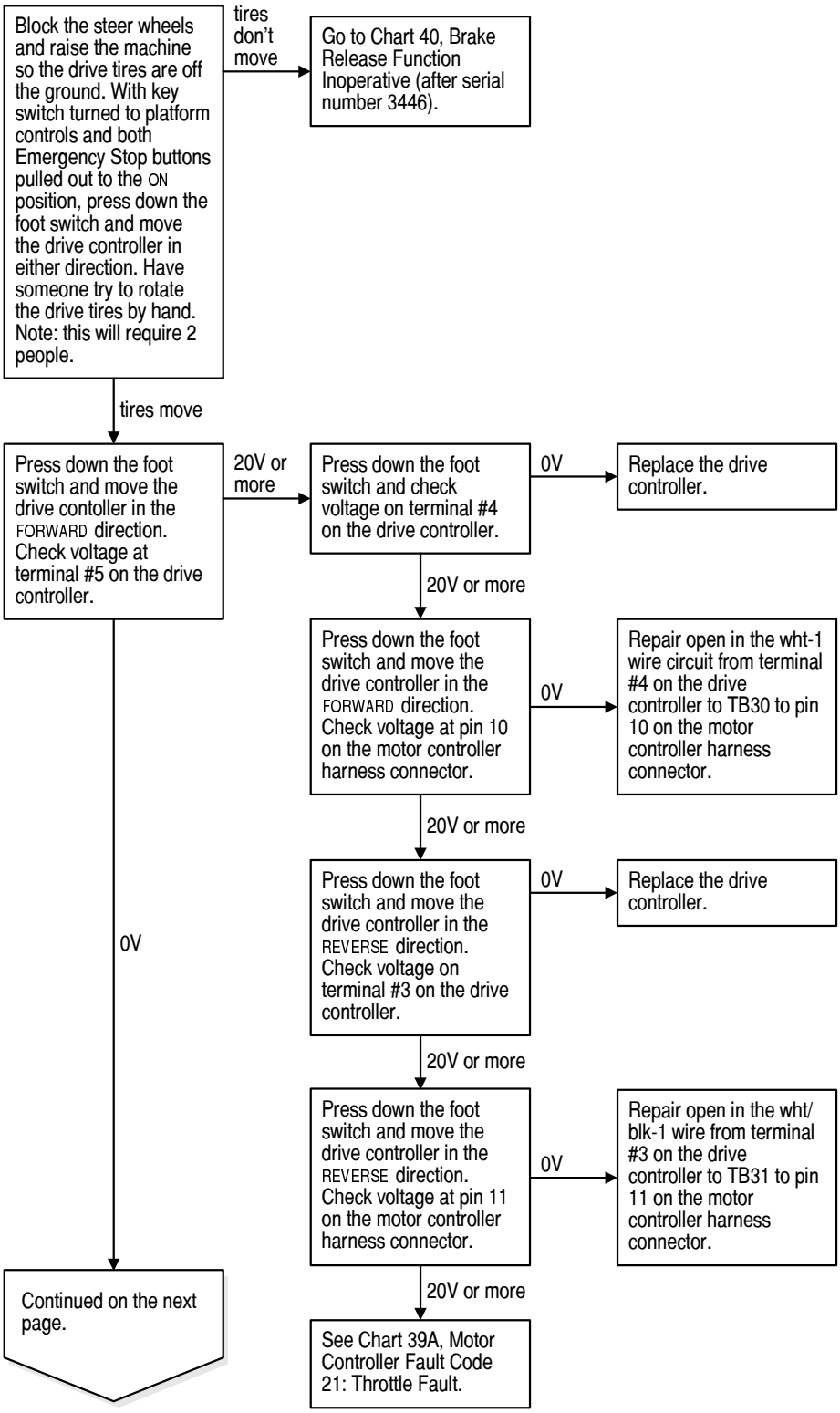


CHART 39

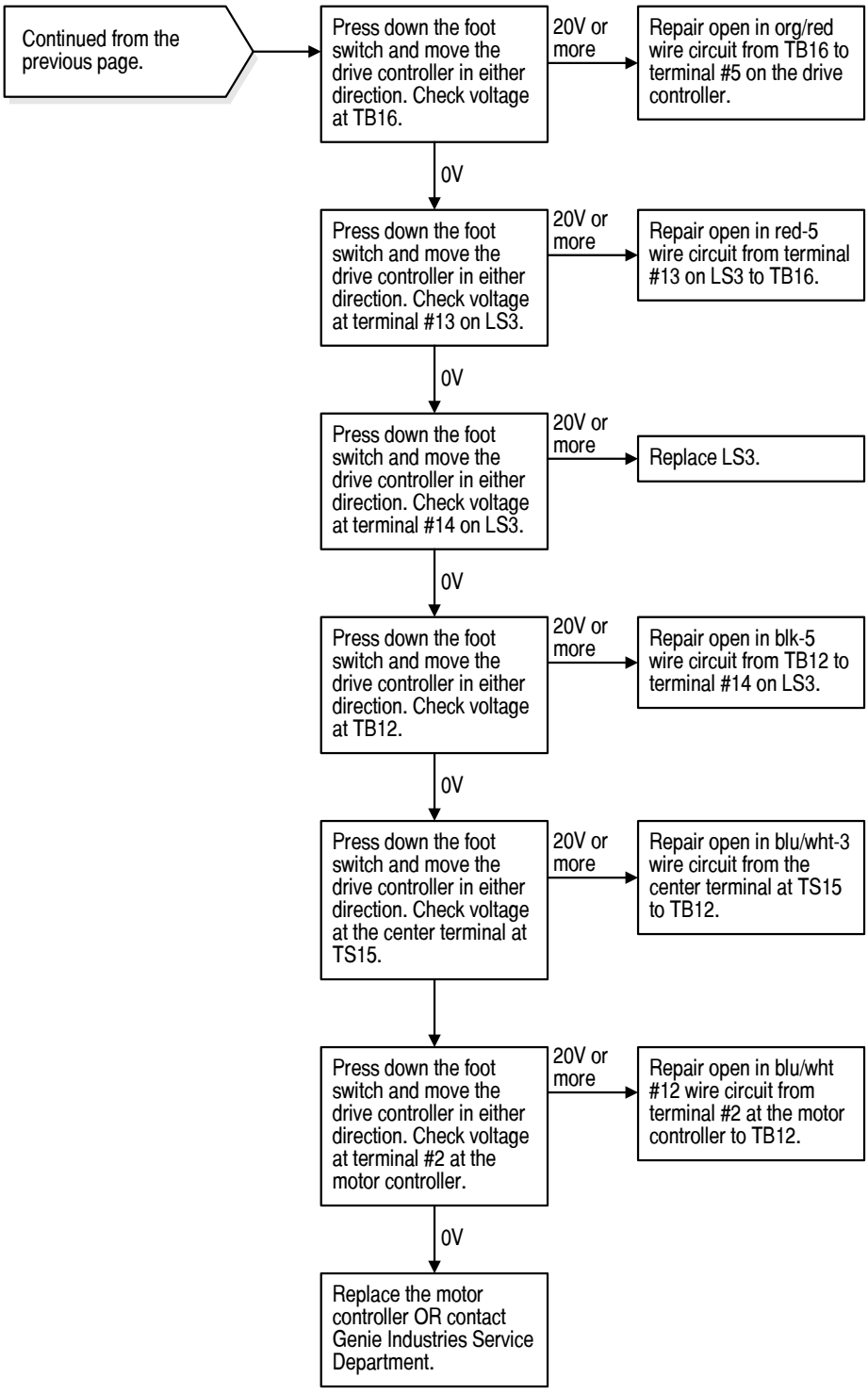

Continued from the previous page.
Press down the foot switch and move the drive controller in either direction. Check voltage at TB16.
20V or more
Repair open in org/red wire circuit from TB16 to terminal #5 on the drive controller.
0V
Press down the foot switch and move the drive controller in either direction. Check voltage at terminal #13 on LS3.
20V or more
Repair open in red-5 wire circuit from terminal #13 on LS3 to TB16.
0V
Press down the foot switch and move the drive controller in either direction. Check voltage at terminal #14 on LS3.
20V or more
Replace LS3.
0V
Press down the foot switch and move the drive controller in either direction. Check voltage at TB12.
20V or more
Repair open in blk-5 wire circuit from TB12 to terminal #14 on LS3.
0V
Press down the foot switch and move the drive controller in either direction. Check voltage at the center terminal at TS15.
20V or more
Repair open in blu/wht-3 wire circuit from the center terminal at TS15 to TB12.
Press down the foot switch and move the drive controller in either direction. Check voltage at terminal #2 at the motor controller.
20V or more
Repair open in blu/wht #12 wire circuit from terminal #2 at the motor controller to TB12.
0V
Replace the motor controller OR contact Genie Industries Service Department.

Chart 39A

Motor Controller Fault Code 21: Throttle Fault (after serial number 3446)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

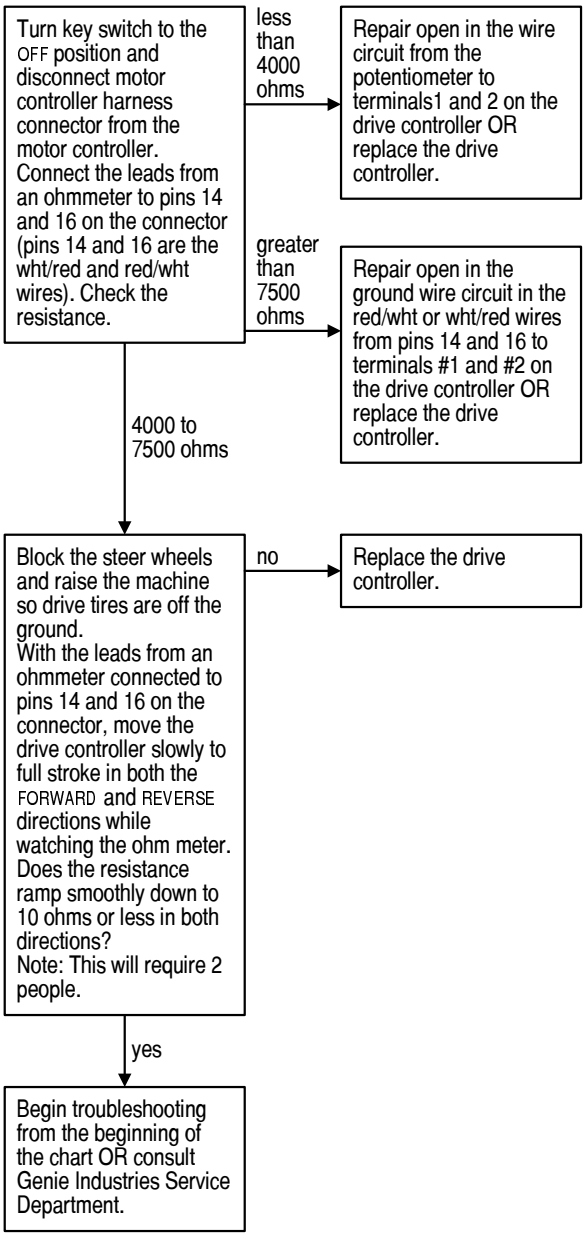


Chart 39B

Motor Controller Fault Code 32: Main Contactor Welded (after serial number 3446)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

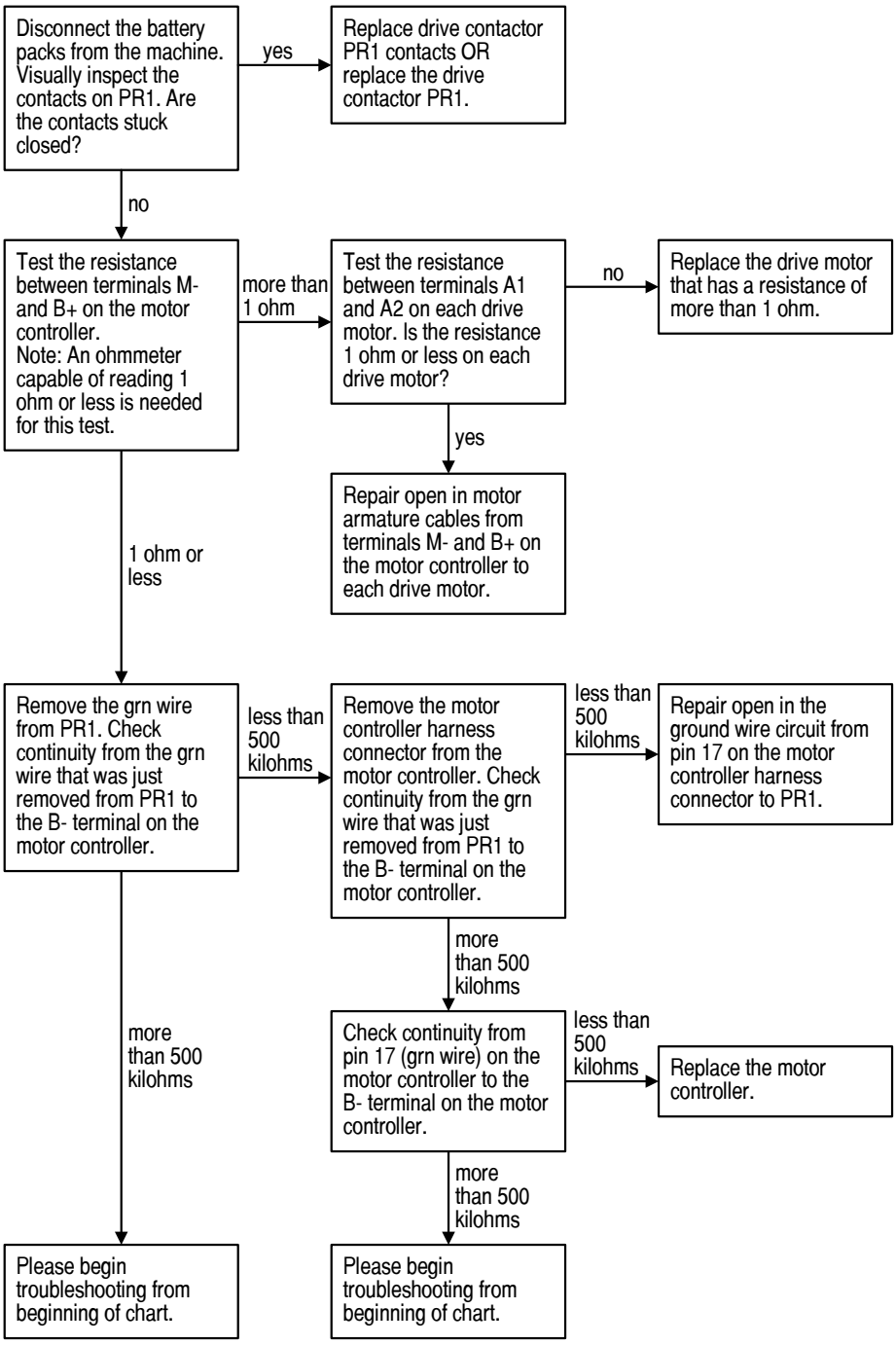


Chart 39C

Motor Controller Fault Code 34: Missing Main Contactor OR Main Contactor Did Not Close (after serial number 3446)

Troubleshooting drive function faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the battery packs are properly connected and fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

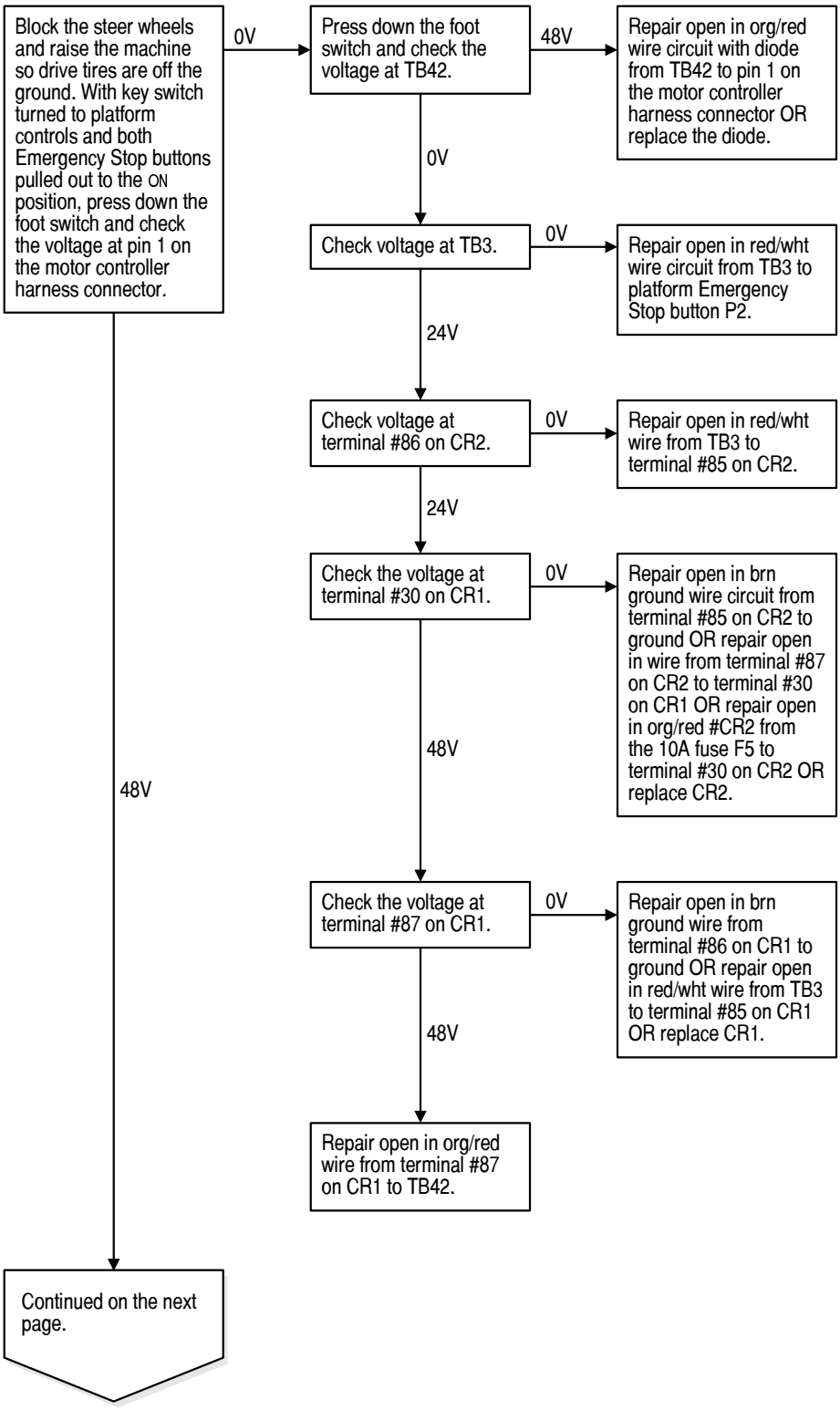


CHART 39C

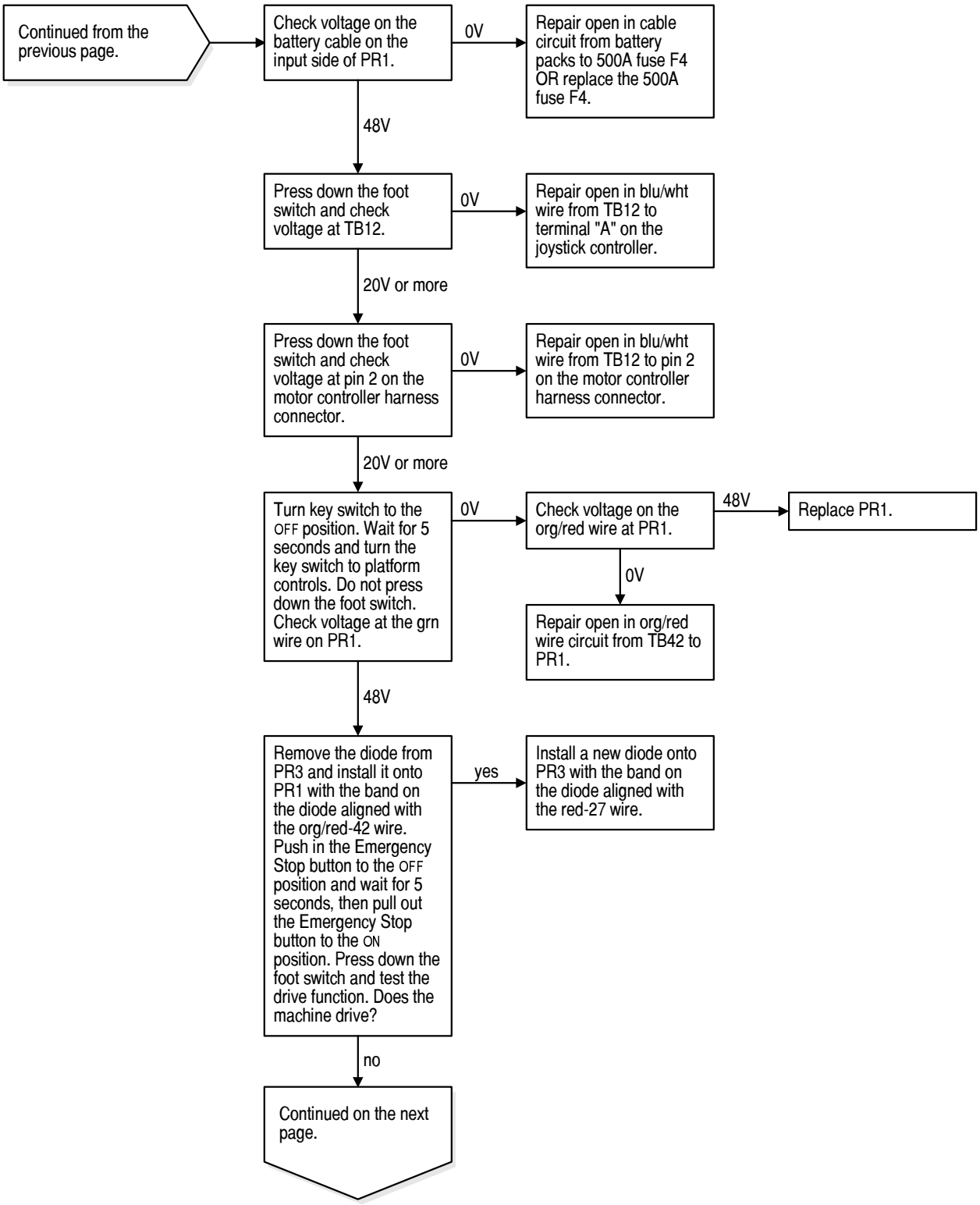

Continued from the previous page.
Check voltage on the battery cable on the input side of PR1.
0V
Repair open in cable circuit from battery packs to 500A fuse F4 OR replace the 500A fuse F4.
48V
Press down the foot switch and check voltage at TB12.
0V
Repair open in blu/wht wire from TB12 to terminal "A" on the joystick controller.
20V or more
Press down the foot switch and check voltage at pin 2 on the motor controller harness connector.
0V
Repair open in blu/wht wire from TB12 to pin 2 on the motor controller harness connector.
20V or more
Turn key switch to the OFF position. Wait for 5 seconds and turn the key switch to platform controls. Do not press down the foot switch. Check voltage at the grn wire on PR1.
0V
Check voltage on the org/red wire at PR1.
48V
Replace PR1.
0V
Repair open in org/red wire circuit from TB42 to PR1.
48V
Remove the diode from PR3 and install it onto PR1 with the band on the diode aligned with the org/red-42 wire. Push in the Emergency Stop button to the OFF position and wait for 5 seconds, then pull out the Emergency Stop button to the ON position. Press down the foot switch and test the drive function. Does the machine drive?
yes
Install a new diode onto PR3 with the band on the diode aligned with the red-27 wire.
no
Continued on the next page.

CHART 39C

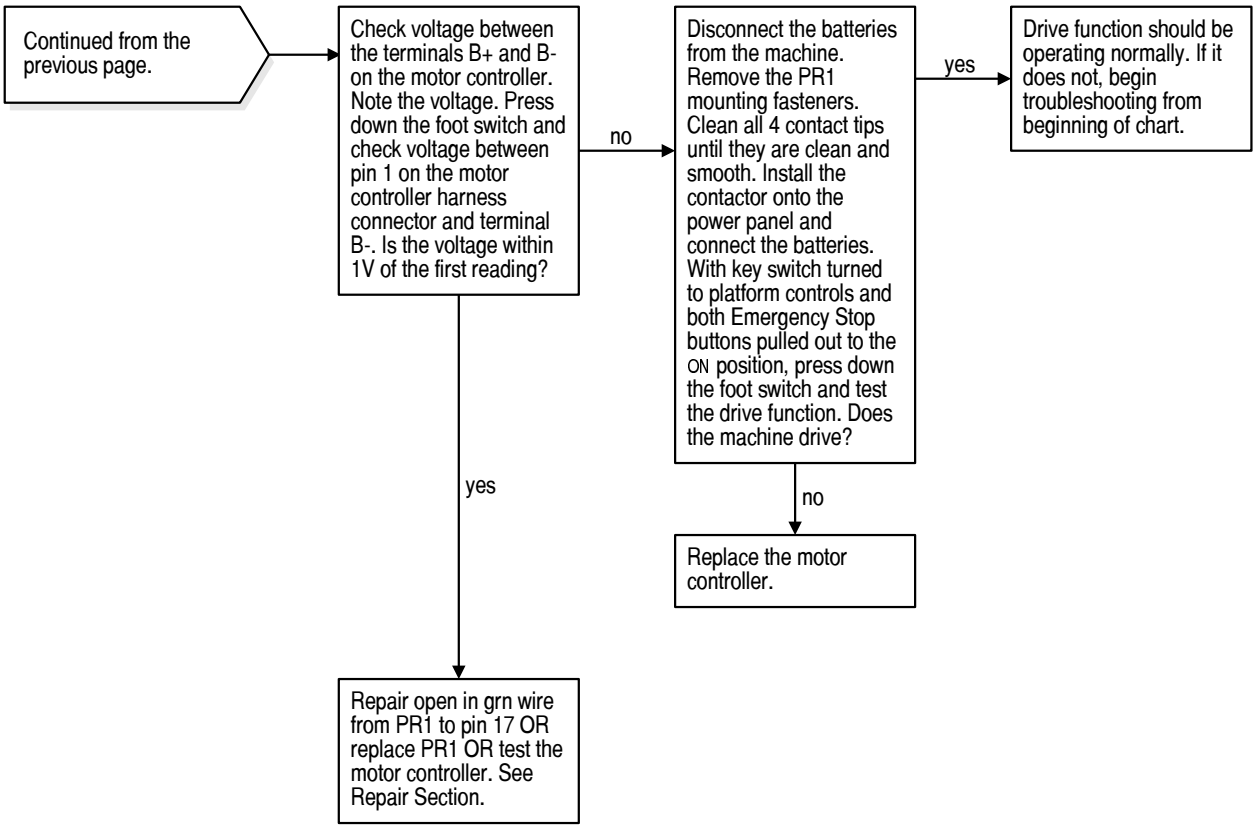

Continued from the previous page.
Check voltage between the terminals B+ and B- on the motor controller. Note the voltage. Press down the foot switch and check voltage between pin 1 on the motor controller harness connector and terminal B-. Is the voltage within 1V of the first reading?
no
Disconnect the batteries from the machine. Remove the PR1 mounting fasteners. Clean all 4 contact tips until they are clean and smooth. Install the contactor onto the power panel and connect the batteries. With key switch turned to platform controls and both Emergency Stop buttons pulled out to the ON position, press down the foot switch and test the drive function. Does the machine drive?
yes
Drive function should be operating normally. If it does not, begin troubleshooting from beginning of chart.
no
Replace the motor controller.
yes
Repair open in grn wire from PR1 to pin 17 OR replace PR1 OR test the motor controller. See Repair Section.

Chart 40

Brake Release Function Inoperative (after serial number 3446)

Be sure all other functions operate normally.

Troubleshooting brake release faults may also be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure to check the motor controller status indicator light on the ground control box or on the motor controller. If the motor controller status indicator light is flashing a fault code, refer to the fault code chart at the beginning of this section.

Be sure the battery packs are properly connected and fully charged.

Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

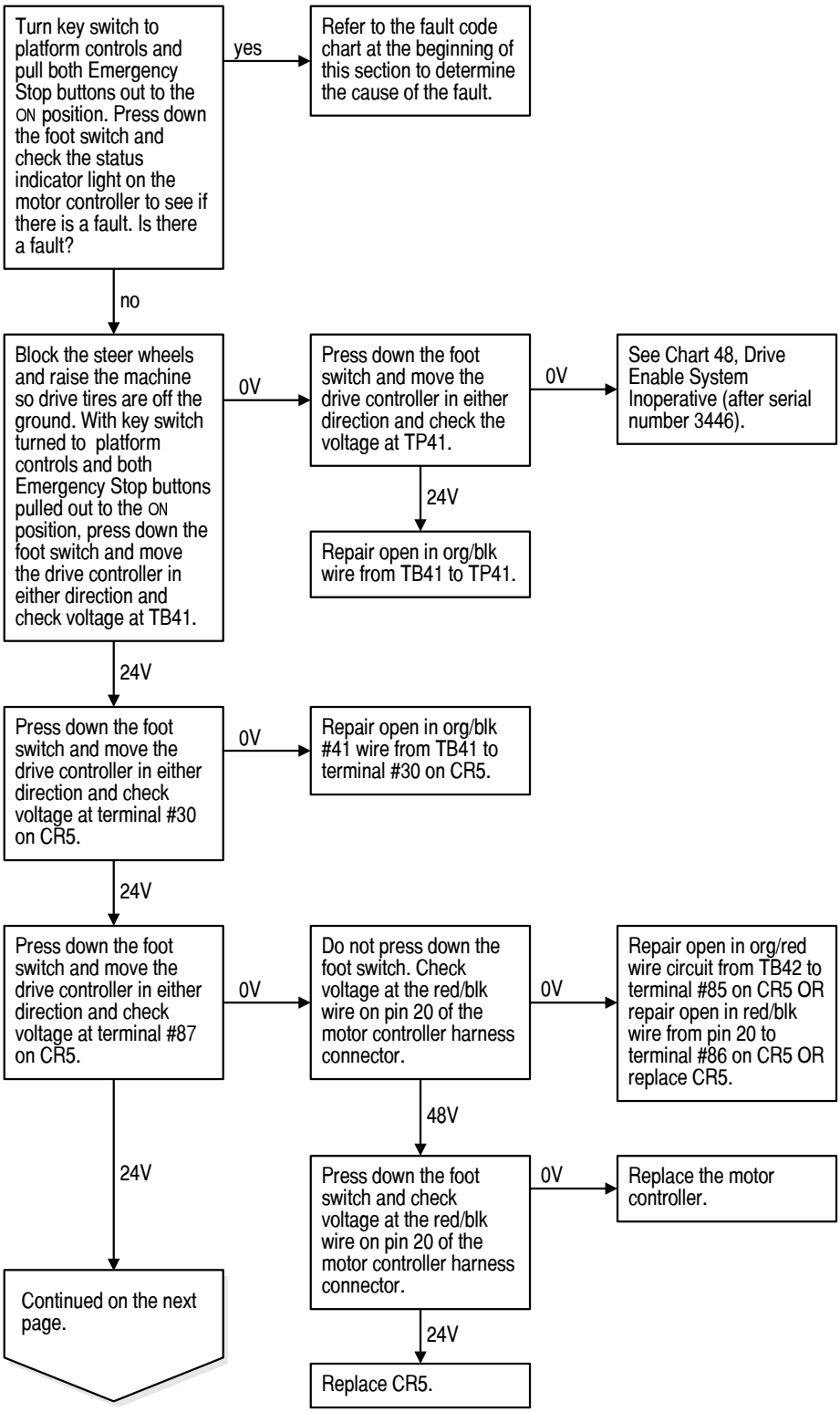


CHART 40

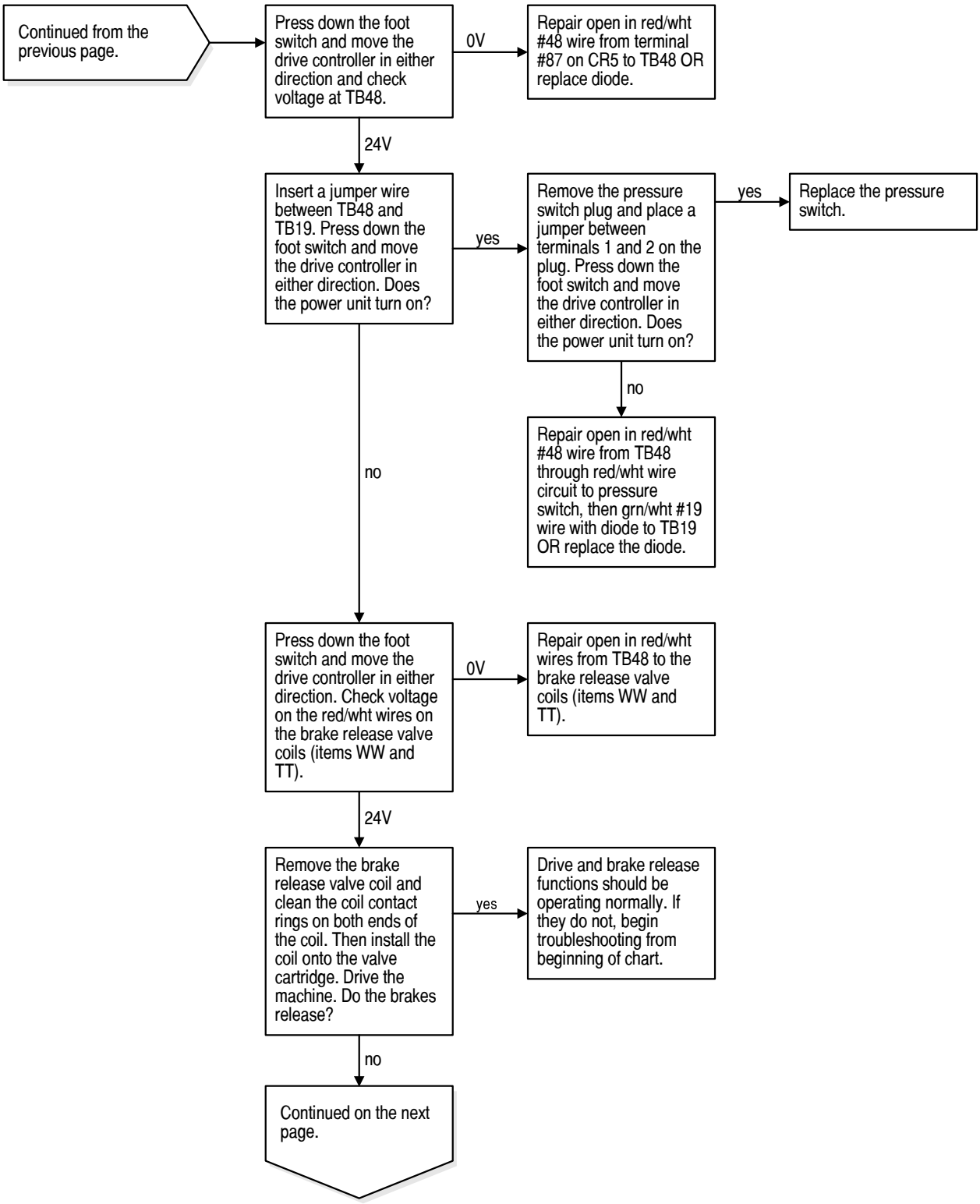

Continued from the previous page.
Press down the foot switch and move the drive controller in either direction and check voltage at TB48.
0V
Repair open in red/wht #48 wire from terminal #87 on CR5 to TB48 OR replace diode.
24V
Insert a jumper wire between TB48 and TB19. Press down the foot switch and move the drive controller in either direction. Does the power unit turn on?
yes
Remove the pressure switch plug and place a jumper between terminals 1 and 2 on the plug. Press down the foot switch and move the drive controller in either direction. Does the power unit turn on?
yes
Replace the pressure switch.
no
Repair open in red/wht #48 wire from TB48 through red/wht wire circuit to pressure switch, then grn/wht #19 wire with diode to TB19 OR replace the diode.
no
Press down the foot switch and move the drive controller in either direction. Check voltage on the red/wht wires on the brake release valve coils (items WW and TT).
0V
Repair open in red/wht wires from TB48 to the brake release valve coils (items WW and TT).
24V
Remove the brake release valve coil and clean the coil contact rings on both ends of the coil. Then install the coil onto the valve cartridge. Drive the machine. Do the brakes release?
yes
Drive and brake release functions should be operating normally. If they do not, begin troubleshooting from beginning of chart.
no
Continued on the next page.

CHART 40

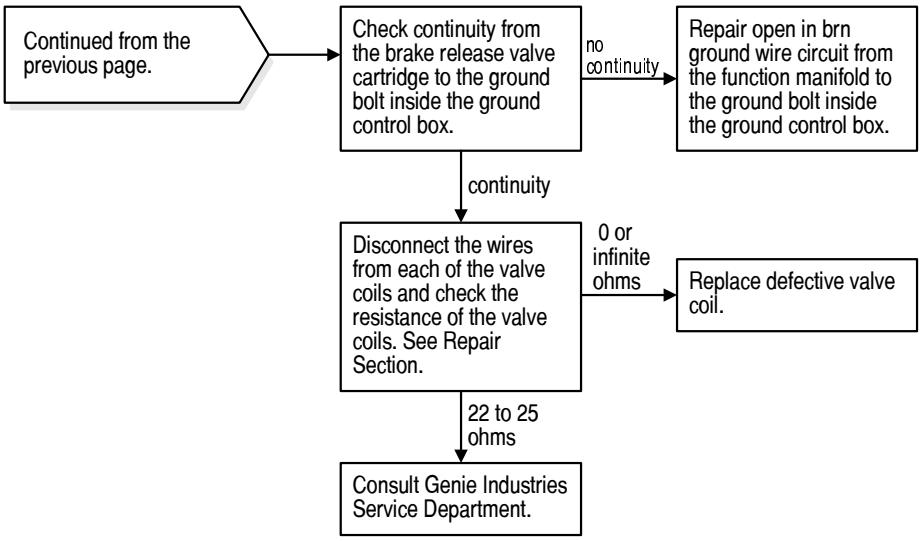

Continued from the previous page.
Check continuity from the brake release valve cartridge to the ground bolt inside the ground control box.
no continuity
Repair open in brn ground wire circuit from the function manifold to the ground bolt inside the ground control box.
continuity
Disconnect the wires from each of the valve coils and check the resistance of the valve coils. See Repair Section.
0 or infinite ohms
Replace defective valve coil.
22 to 25 ohms
Consult Genie Industries Service Department.

Chart 41

Drive Forward Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

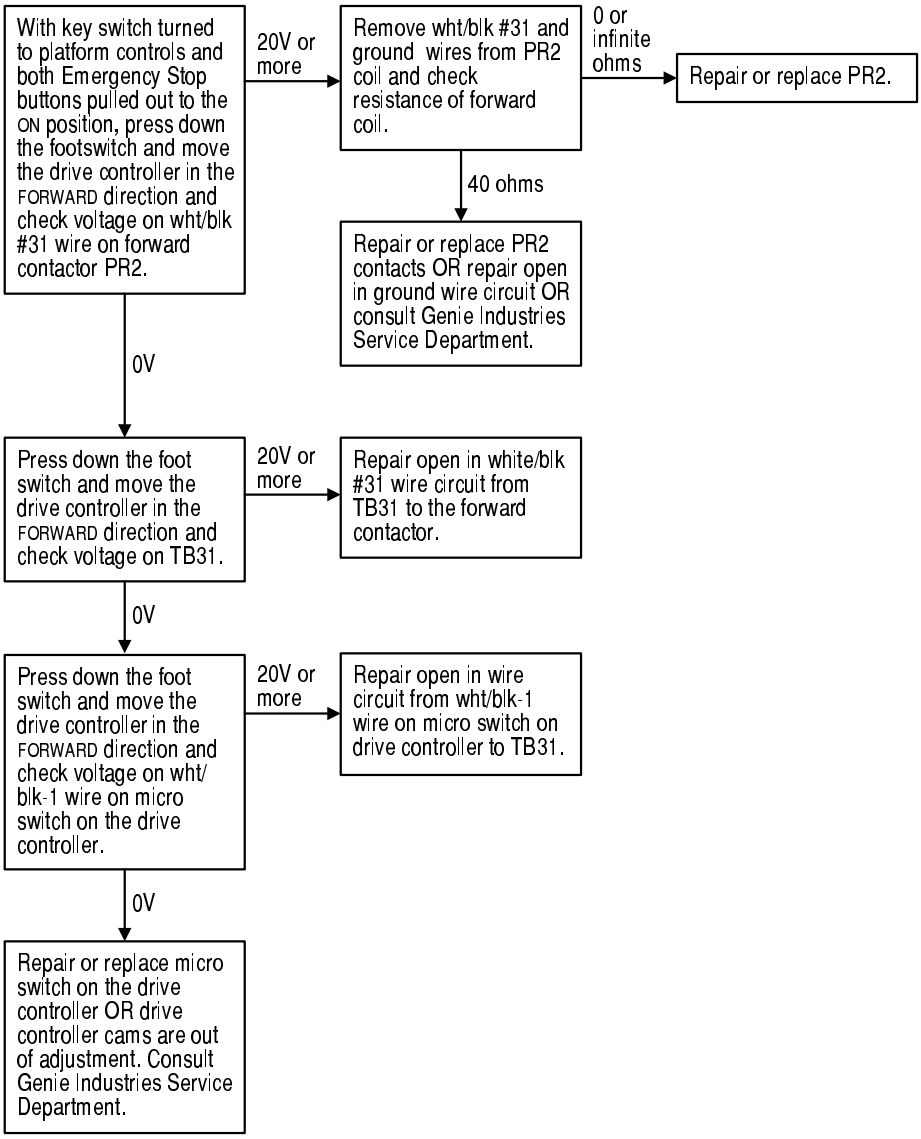


Chart 42

Drive Reverse Function Inoperative

Be sure key switch is in the appropriate position.

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

Be sure the battery packs are properly connected and fully charged.

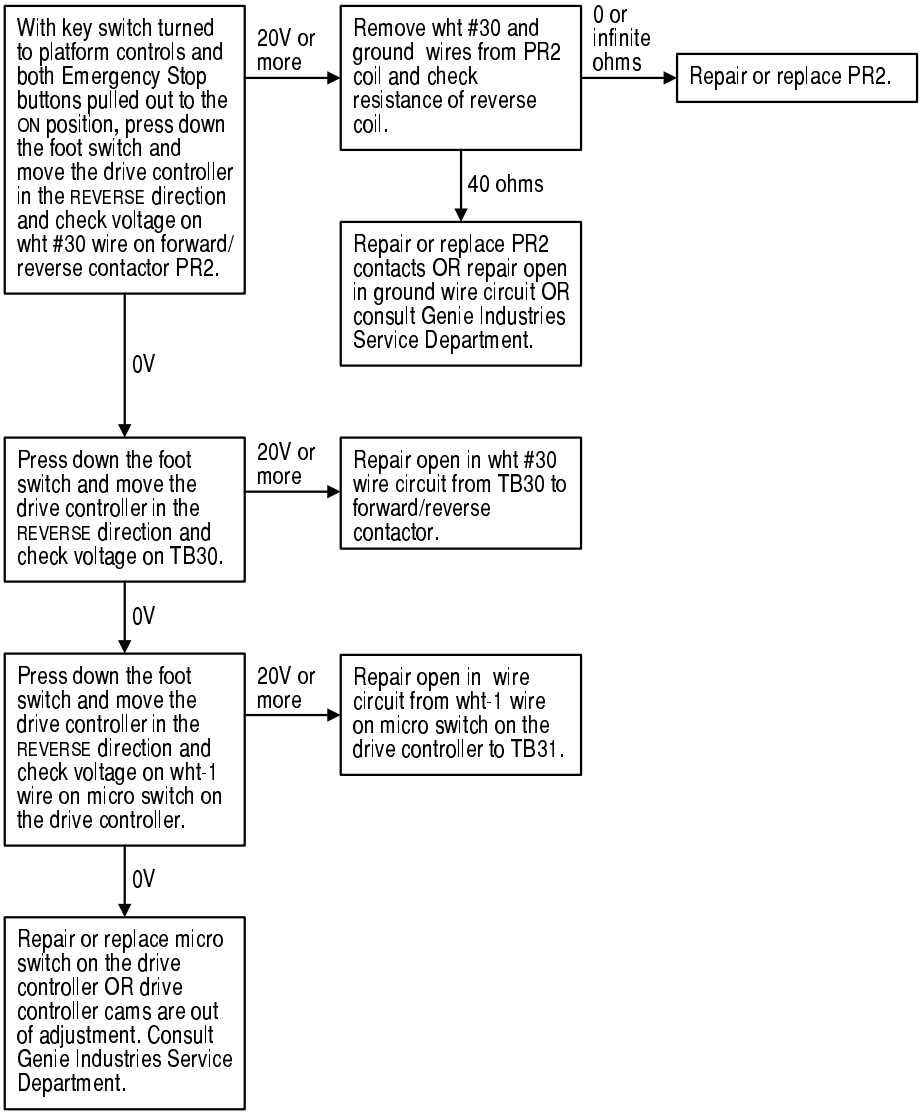


Chart 43

Machine Will Not Drive At Full Speed (before serial number 3447)

Be sure the unit is in the fully stowed position with the boom located between the non-steer end tires.

Be sure the battery packs are properly connected and fully charged.

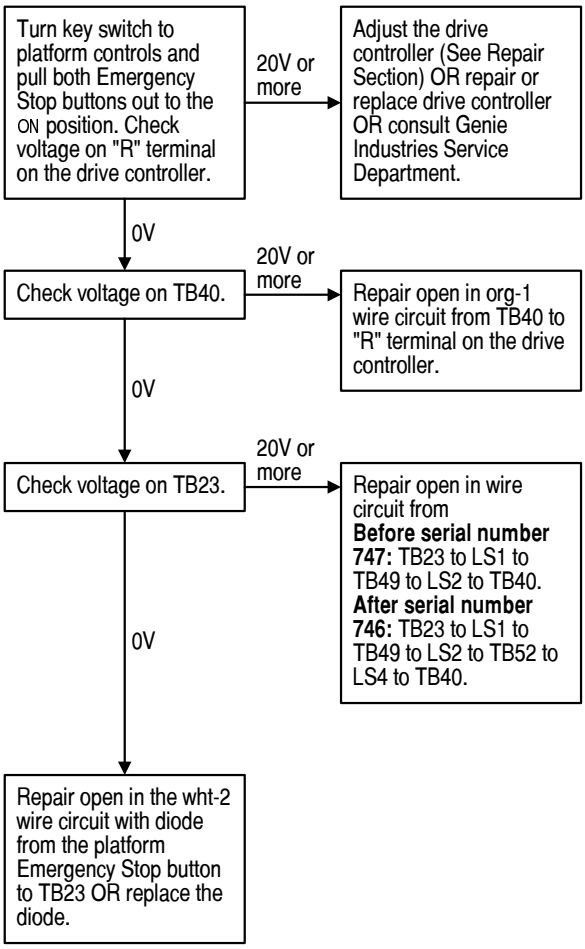


Chart 44

Machine Will Not Drive At Full Speed (after serial number 3446)

Be sure all other functions operate normally.

Be sure the boom is in the stowed position with the primary boom fully retracted.

Be sure that the primary boom extension limit switch (LS1) is being activated when the primary boom is retracted.

Be sure that the primary boom and secondary boom limit switches (LS2 and LS3) are not being activated when the primary and secondary booms are in the stowed position.

Be sure the battery packs are properly connected and fully charged.

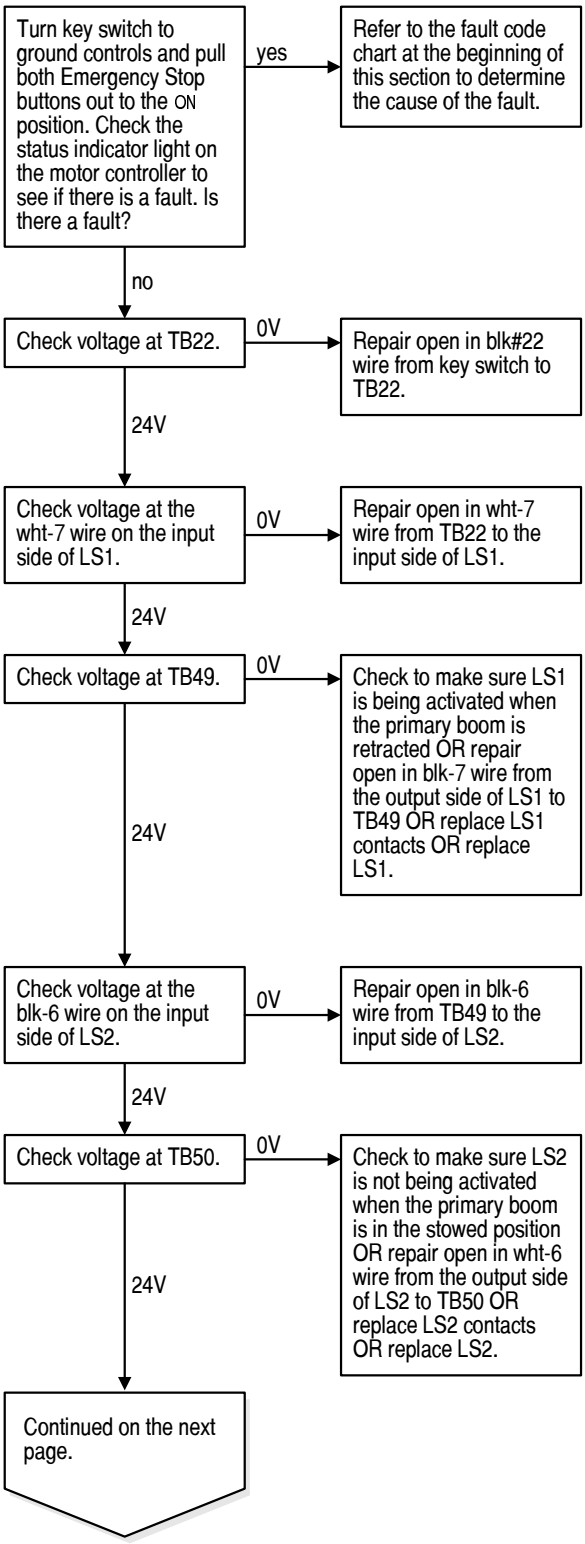


CHART 44

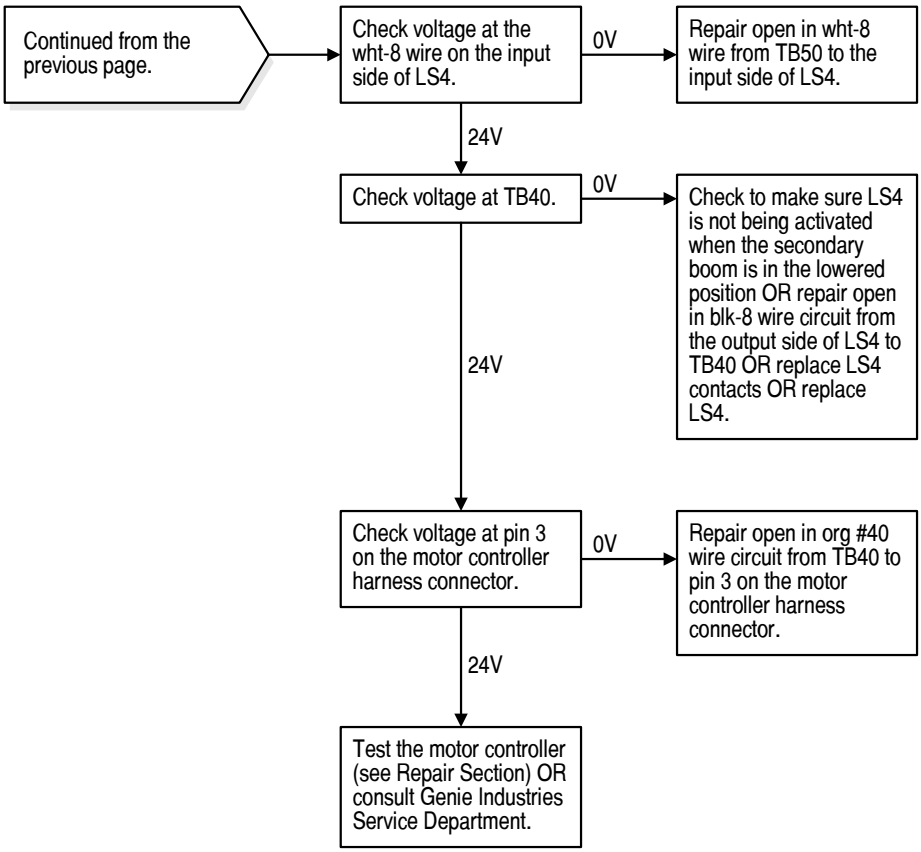

Continued from the previous page.
Check voltage at the wht-8 wire on the input side of LS4.
0V
Repair open in wht-8 wire from TB50 to the input side of LS4.
24V
Check voltage at TB40.
0V
Check to make sure LS4 is not being activated when the secondary boom is in the lowered position OR repair open in blk-8 wire circuit from the output side of LS4 to TB40 OR replace LS4 contacts OR replace LS4.
24V
Check voltage at pin 3 on the motor controller harness connector.
0V
Repair open in org #40 wire circuit from TB40 to pin 3 on the motor controller harness connector.
24V
Test the motor controller (see Repair Section) OR consult Genie Industries Service Department.

Chart 45

Machine Drives At Full Speed With Platform Raised Or Extended (before serial number 3447)

Remove the machine from service immediately.

Be sure the wiring to the limit switches is intact and shows no signs of damage or corrosion.

Be sure the primary boom drive limit switch is being activated by the cam on the boom when the primary boom is raised.

Be sure the secondary boom drive limit switch is being activated by the secondary boom compression arm when the secondary boom is raised.

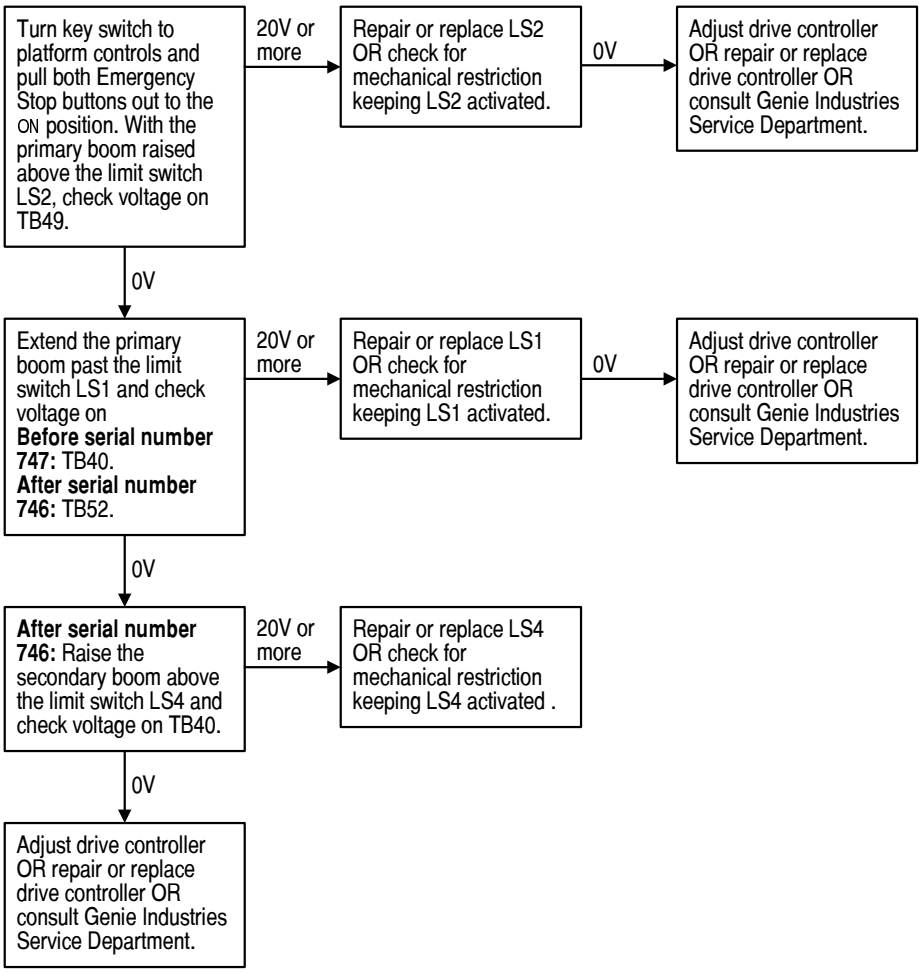


Chart 46

Machine Drives At The Incorrect Speed With Platform Raised Or Extended (after serial number 3446)

Troubleshooting the raised drive speed faults may be accomplished by using the hand-held pendant motor controller programmer (Genie part number 56303).

Be sure the M1 MAX SPEED is set to 33. If needed, adjust the M1 MAX SPEED higher or lower to achieve the maximum raised drive speed of 0.6 mph / 1Km/h or 40 feet / 45 seconds / 12.2 meters / 45 seconds.

Be sure wiring to limit switches is intact and shows no signs of damage or corrosion.

Be sure the primary boom drive limit switch is being activated by the cam on the boom when the primary boom is raised.

Be sure the secondary boom drive limit switch is being activated by the secondary boom compression arm when the secondary boom is raised.

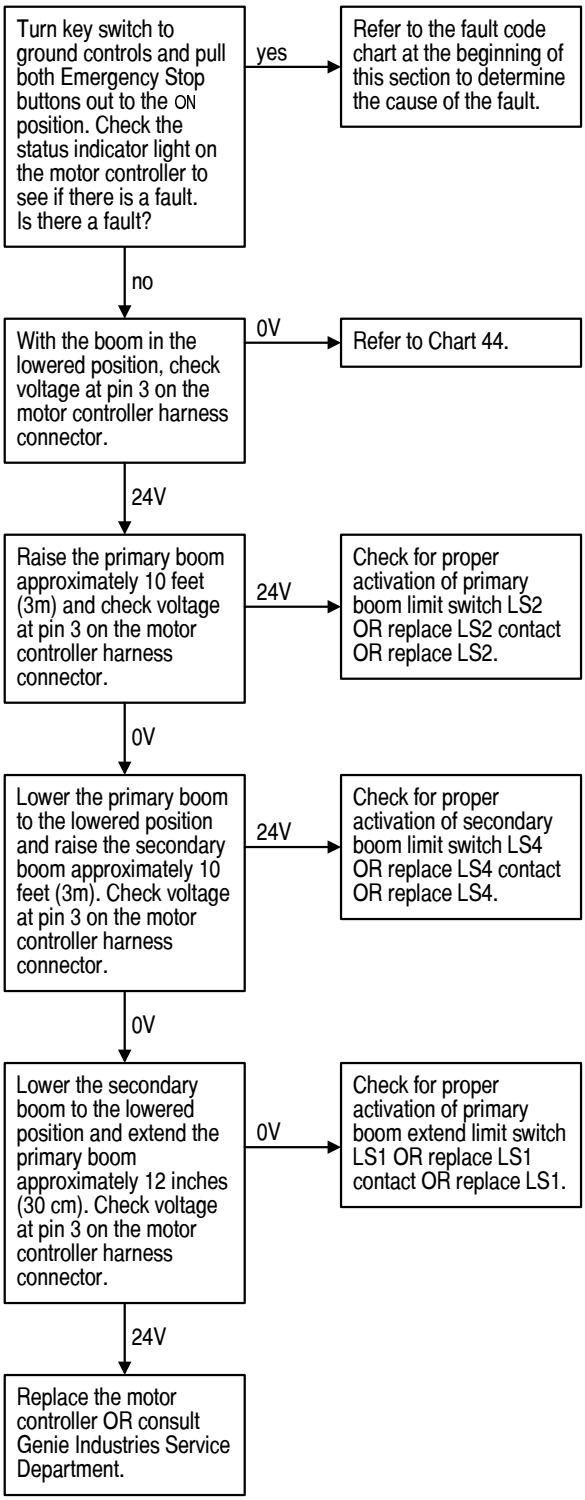


Chart 47

Drive Enable System Is Malfunctioning (before serial number 3447)

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer wheels.

Be sure all other functions operate normally.

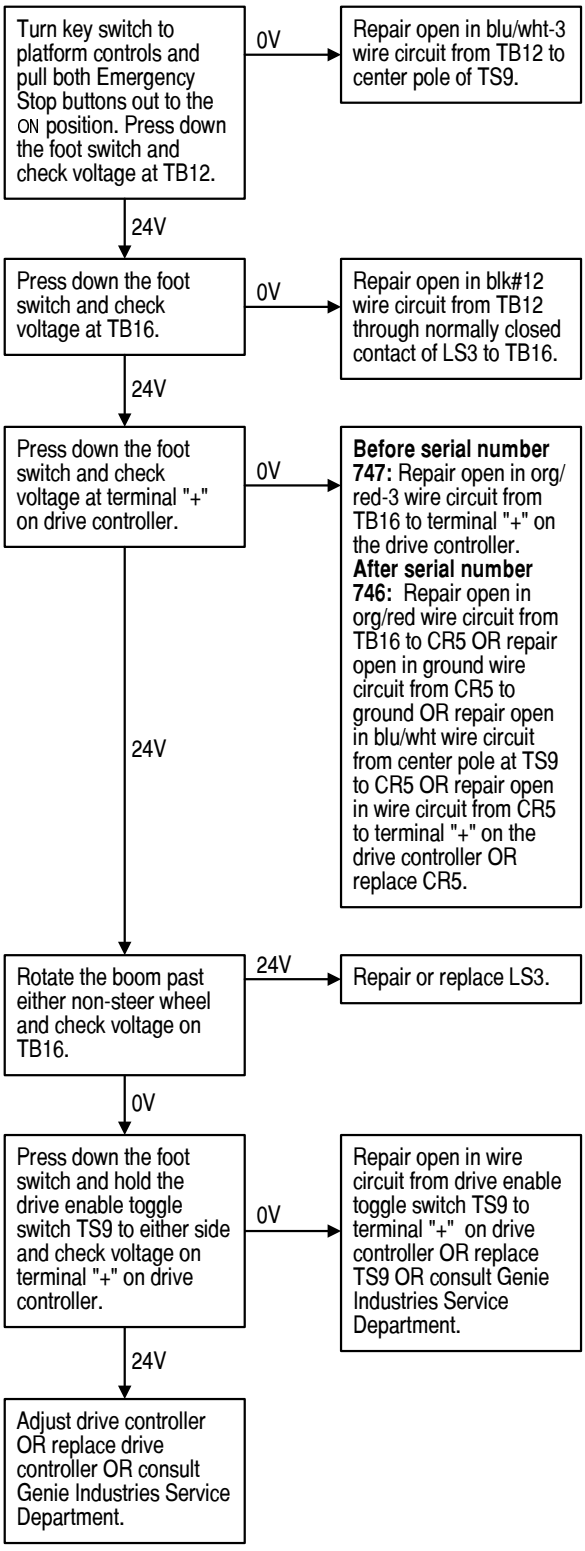


Chart 48

Drive Enable System Is Malfunctioning (after serial number 3446)

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer wheels.

Be sure all other functions operate normally.

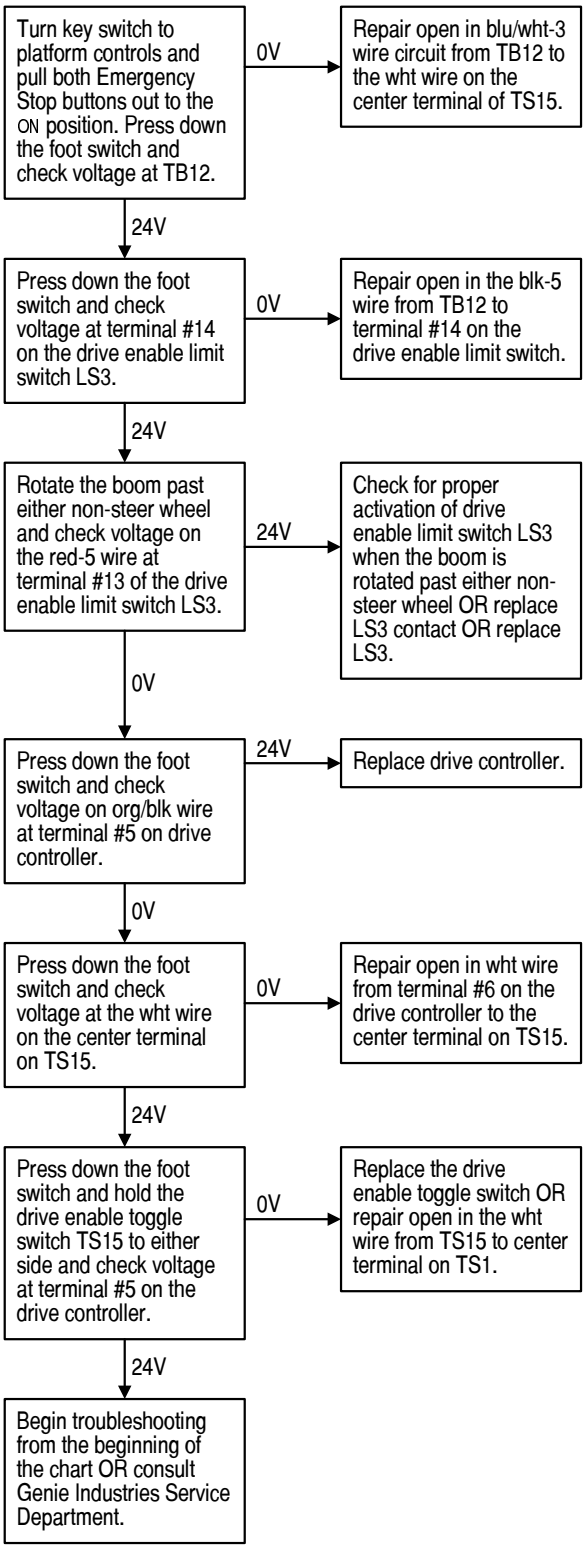
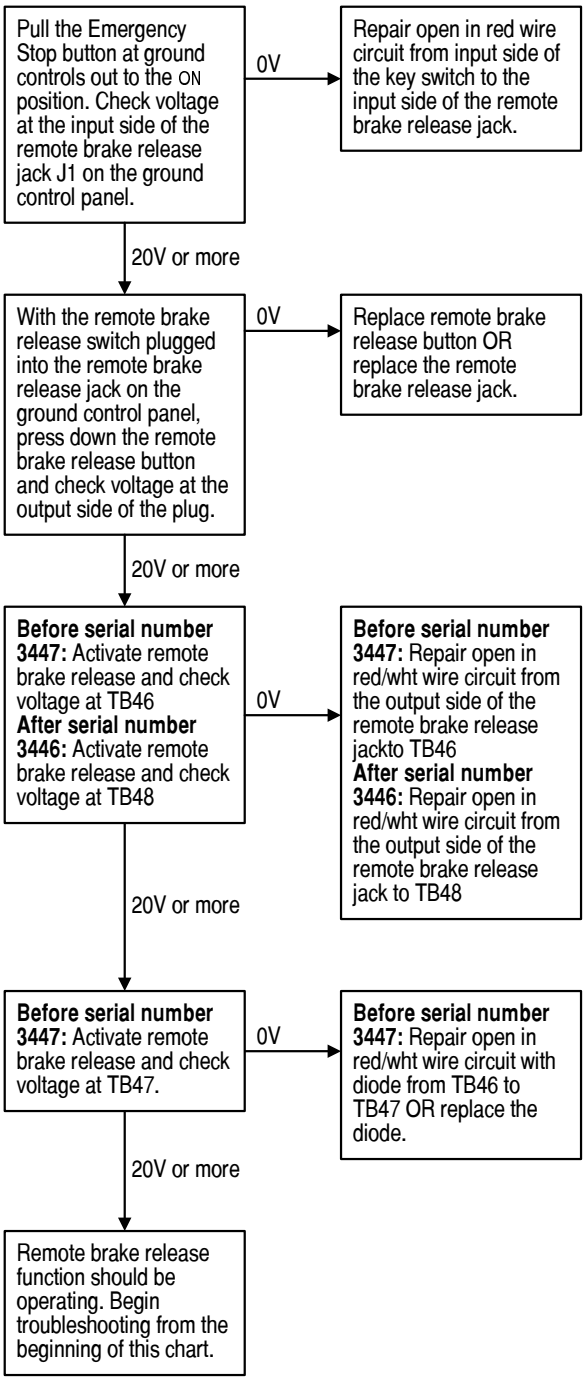


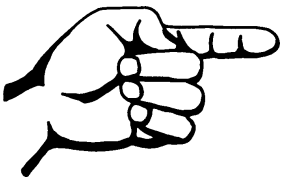
Chart 49

Remote Brake Release Inoperative

Be sure all other functions operate normally.

Be sure the battery packs are properly connected and fully charged.





This page intentionally left blank.

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 Z-30/20N 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.

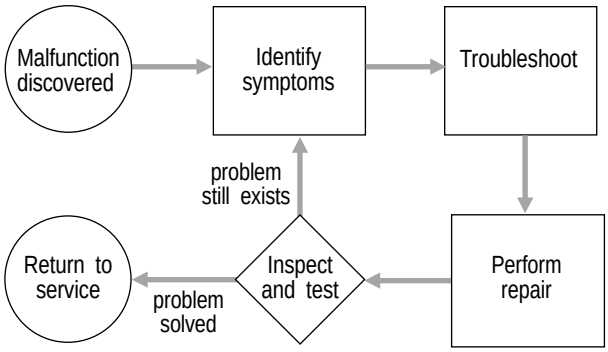
Electrical Schematics

⚠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

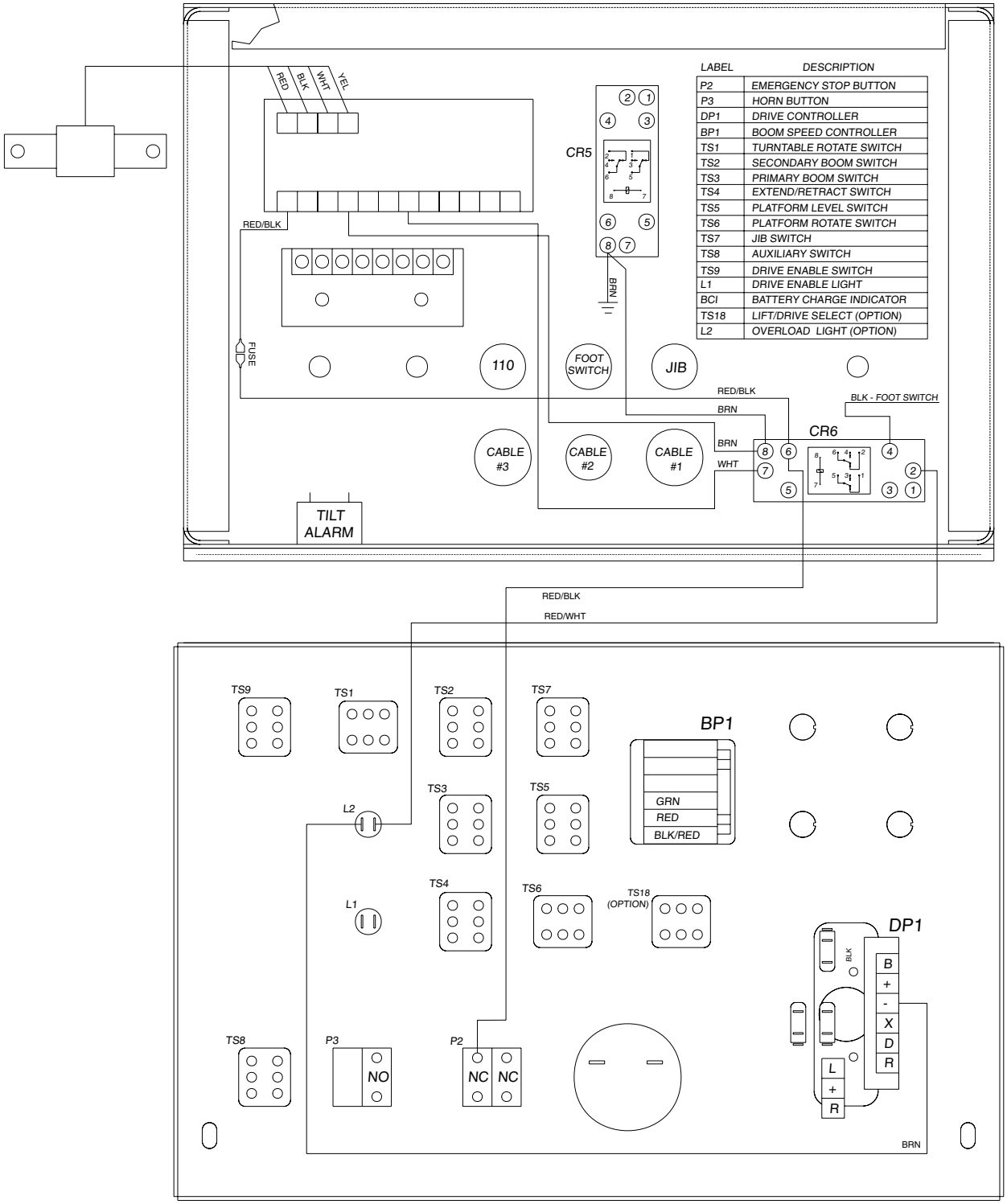
Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
AP1, AP2	Anderson connector	19436	Anderson	63325-G1	2
BAT1	Battery, 6V DC, 350 AH	56461	Trojan	L-16GH	8
BCI	Battery charge indicator	23868	Curtis Instruments	900R48BN	1
BP1	Rotational Controller	56886	OEM Controls	RS10T6585	1
CB1	Circuit breaker	375785	ETA	45-700-IG1-P10	1
CR	Relay, DPDT, 24V DC	42616	Potter and Brumfield	K10P 11D15-24	3
CR	Relay, SPST, 24V DC	56302	Potter and Brumfield	VF4-15H11-CO5	9
Diode	Diode, 6 amp, 200 PIV	45782	Motorola	MOTMR752	36
DP1	Joystick controller	56773	OEM Controls	MS4M11750	1
FB	Flashing beacon	20189	ECCO Electronic Controls	6400X	1
F1	Fuse, 500A	43179	Buss	ANN-500	1
F2, F3	Fuse, 100A	36355	Buss	ANN-100	2
FS1	Footswitch	13482	Linemaster Switch Corp.	632-S	1
H1	Alarm, Warble tone	45383	Floyd Bell Inc.	MW-09-530-Q	1
H2	Horn, 24V DC, 108 dB	81579	Hella	95348	1
H3	Alarm, intermittent	18963	Floyd Bell Inc.	XB-09-630-Q	1
H4	Alarm, chime tone	45462	Floyd Bell Inc.	CH-09-525-Q	1
HM	Hourmeter	19506	ENM Corporation	T40A4508	1

This list continues on the next page.

ELECTRICAL COMPONENTS

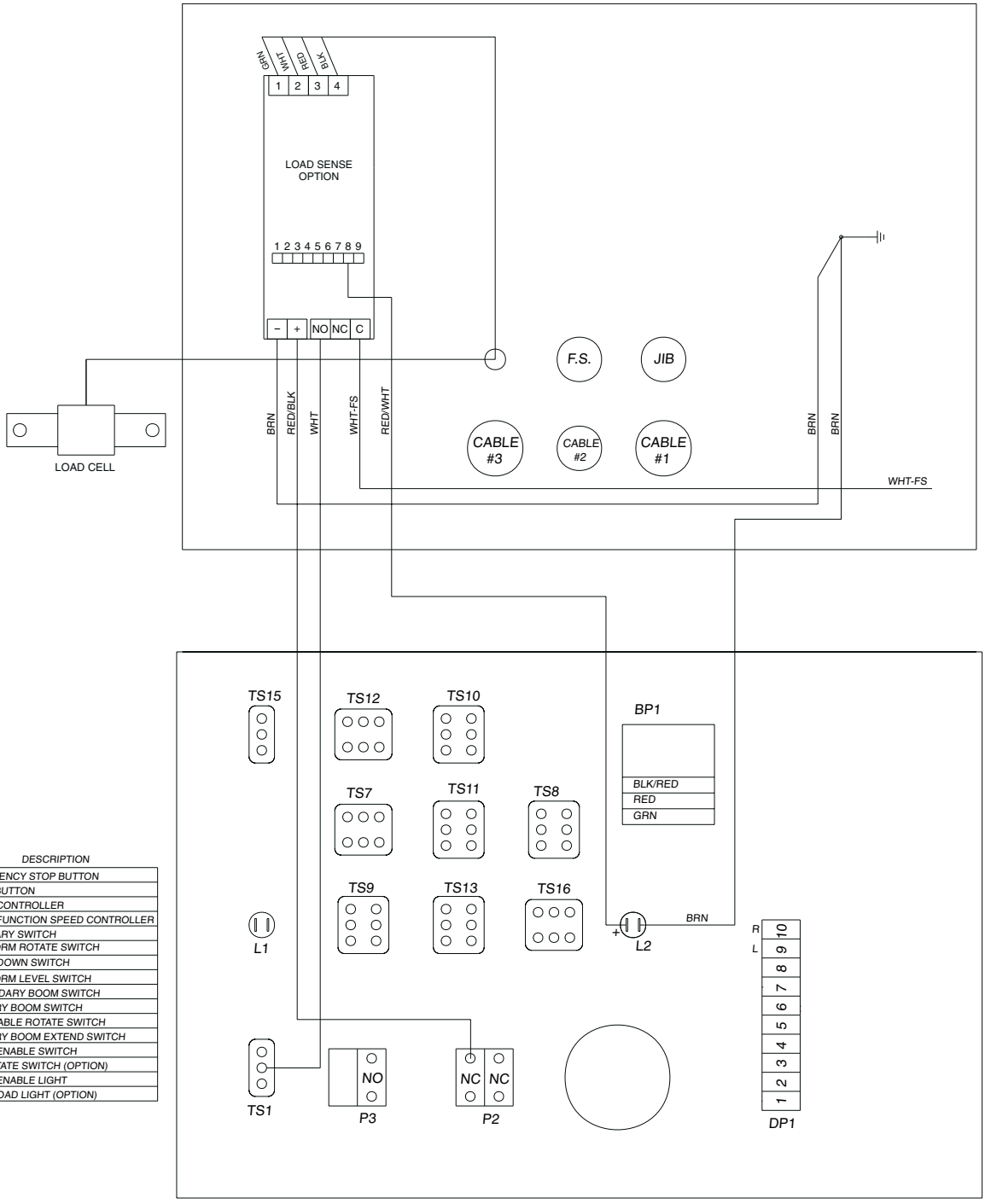
Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
KS1	Contact - Key switch, N.O.	45081	Telemecanique	ZB2-BE101	2
LS1-LS4	Contact - Limit switch	19491	Telemecanique	XESP2051	1
Level sensor	Level sensor, 4.5° (ANSI & CSA)	44586	Power Comp. of Midwest	LS60-00733	1
MC1	Motor controller, Curtis	23314	Curtis Instruments	1205-205	1
MC1	Motor controller, Sepex, 48V DC, 500A	56774-03	Curtis Instruments	1244-5508	1
P1, P2	Contact, N.C.	29732	Telemecanique	ZB2-BE102	4
P3	Contact, N.O.	45081	Telemecanique	ZB2-BE101	1
PR1	Relay, 180A	74267	Curtis Instruments	13221947	1
PR2	Relay, 180A	74266	Curtis Instruments	13221946	1
PR3	Relay, 80A	74268	Curtis Instruments	13221948	1
TS	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	2
TS	Toggle switch, DPDT 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	16
TS	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	6
TS	Toggle switch, SPDT 2 position momentary	42730	Microswitch Control Inc.	1NT1-8	2

Load Sensor Option Diagram (before serial number 4083)



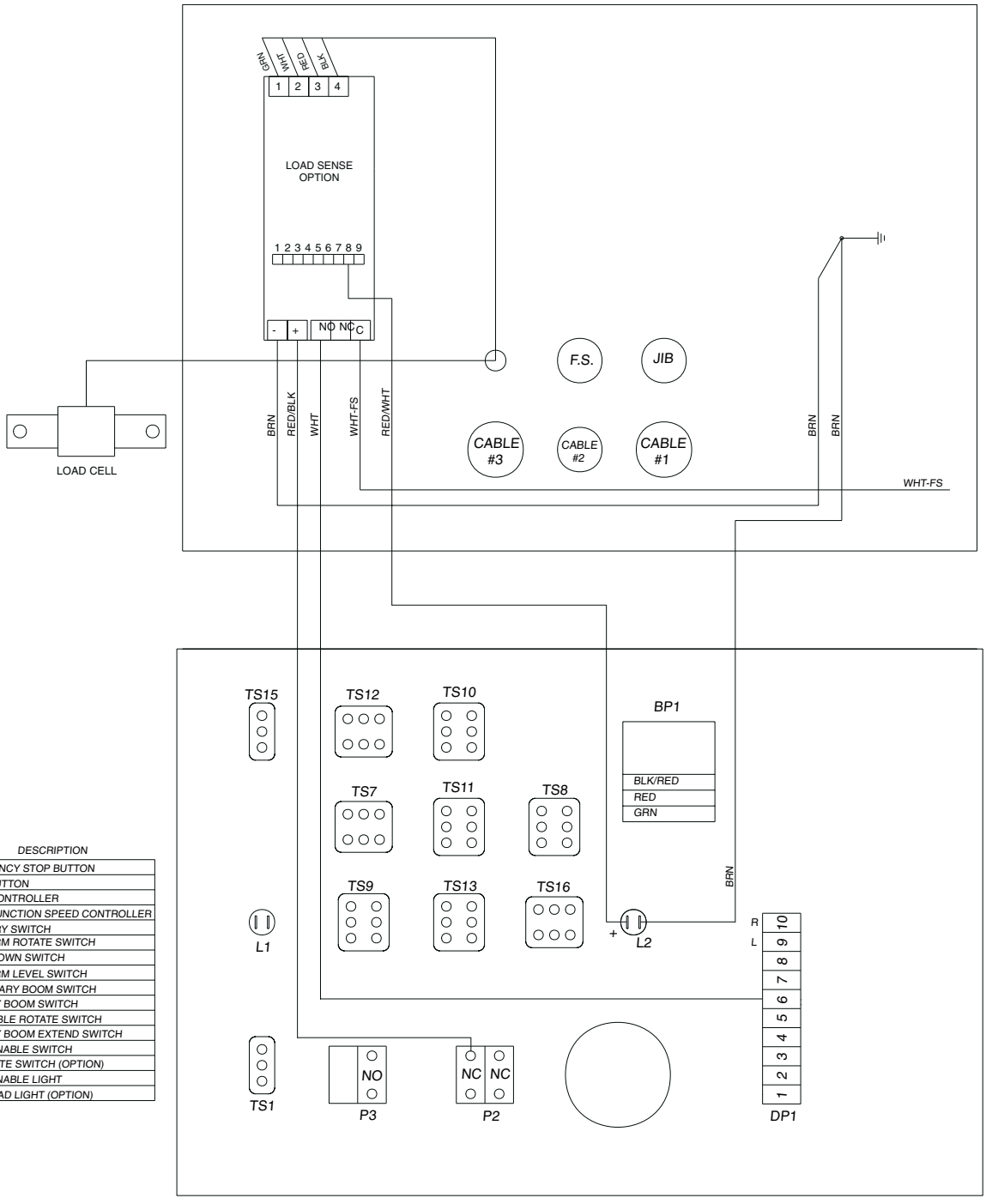
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
DP1	DRIVE CONTROLLER
BP1	BOOM SPEED CONTROLLER
TS1	TURNTABLE ROTATE SWITCH
TS2	SECONDARY BOOM SWITCH
TS3	PRIMARY BOOM SWITCH
TS4	EXTEND/RETRACT SWITCH
TS5	PLATFORM LEVEL SWITCH
TS6	PLATFORM ROTATE SWITCH
TS7	JIB SWITCH
TS8	AUXILIARY SWITCH
TS9	DRIVE ENABLE SWITCH
L1	DRIVE ENABLE LIGHT
BCI	BATTERY CHARGE INDICATOR
TS18	LIFT/DRIVE SELECT (OPTION)
L2	OVERLOAD LIGHT (OPTION)

Load Sensor Option Diagram (from serial number 4083 to 4255)



LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
DP1	DRIVE CONTROLLER
BP1	BOOM FUNCTION SPEED CONTROLLER
TS1	AUXILIARY SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM SWITCH
TS11	PRIMARY BOOM SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND SWITCH
TS15	DRIVE ENABLE SWITCH
TS16	JIB ROTATE SWITCH (OPTION)
L1	DRIVE ENABLE LIGHT
L2	OVERLOAD LIGHT (OPTION)

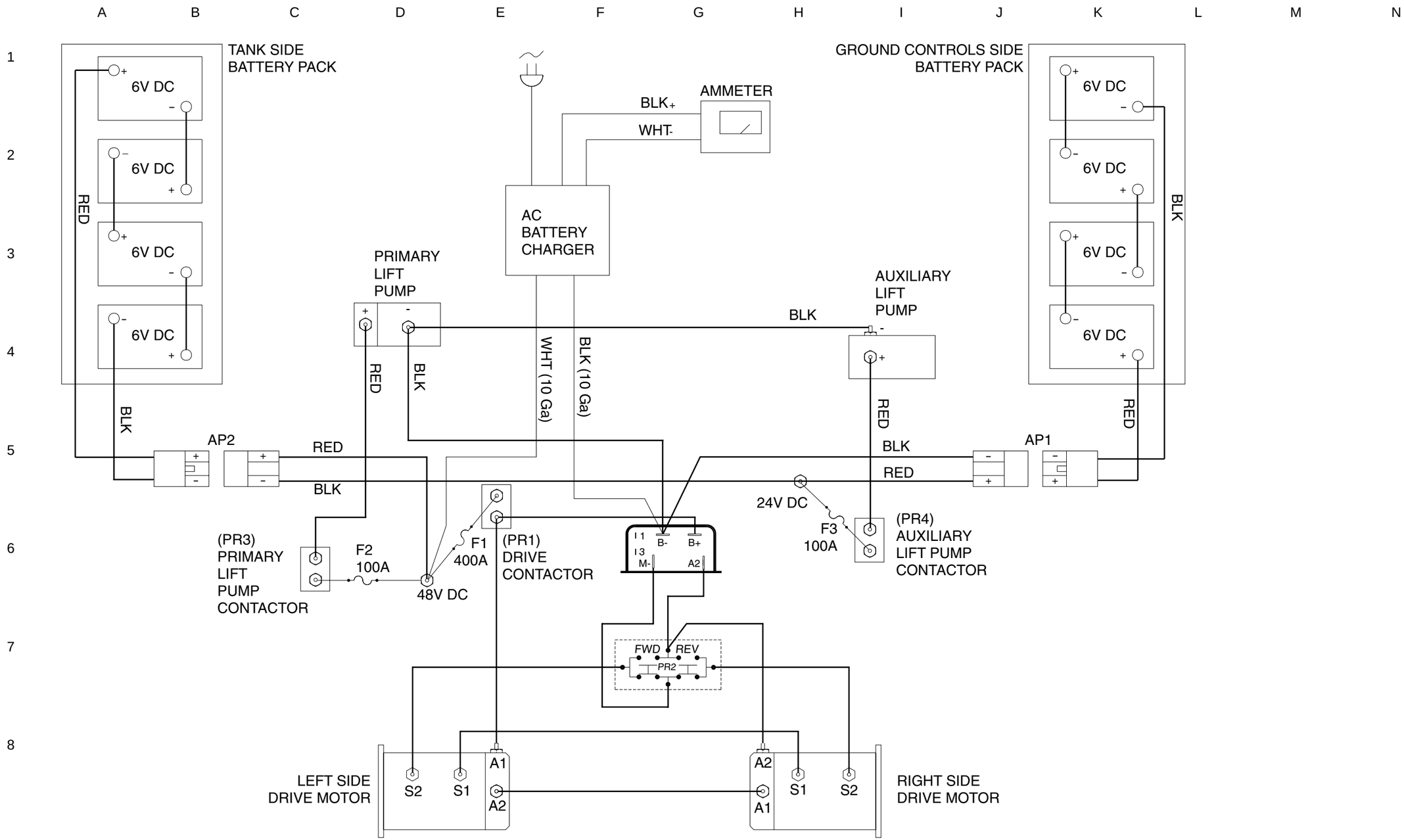
Load Sensor Option Diagram (after serial number 4255)



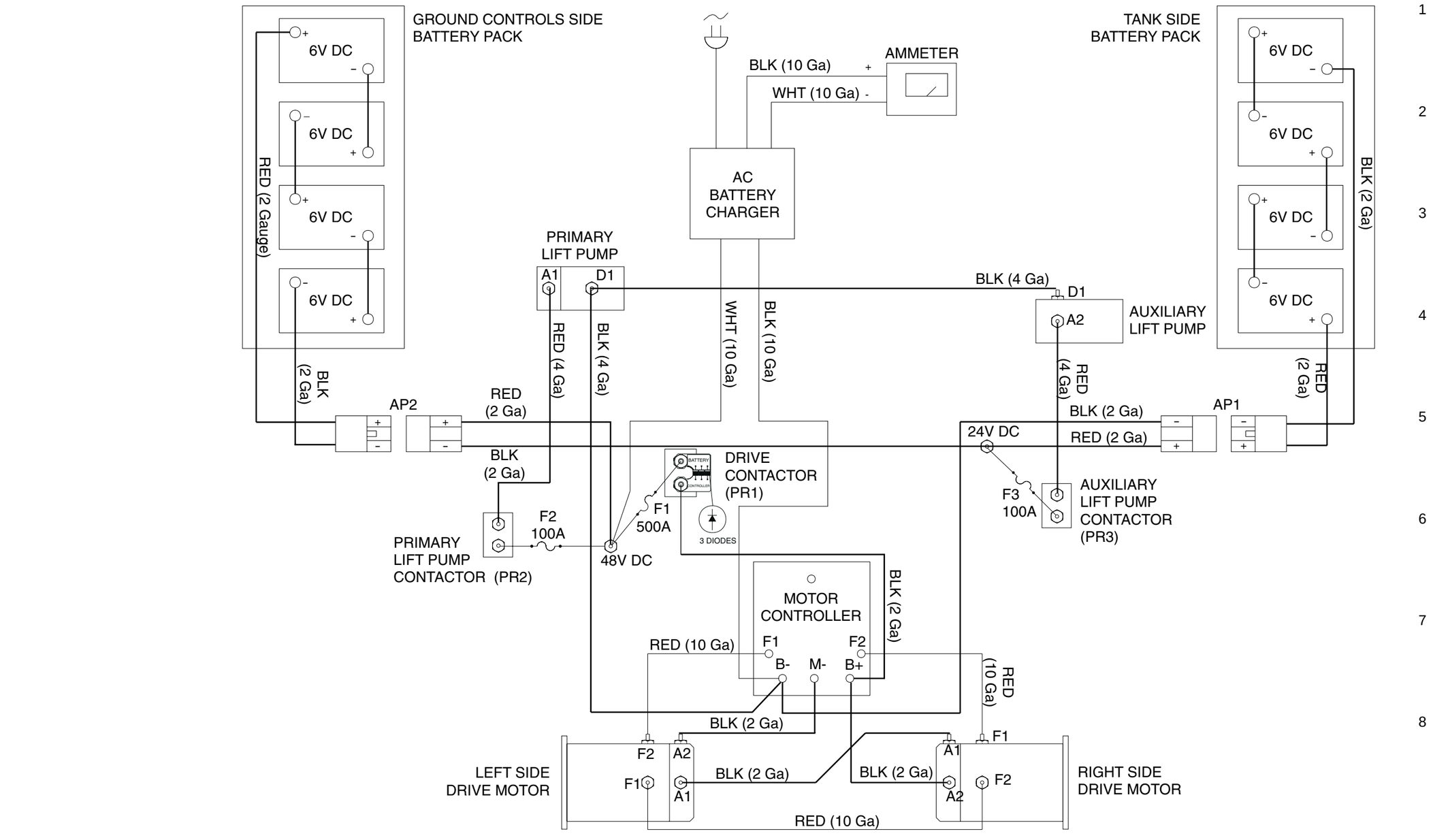
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
DP1	DRIVE CONTROLLER
BP1	BOOM FUNCTION SPEED CONTROLLER
TS1	AUXILIARY SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM SWITCH
TS11	PRIMARY BOOM SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	PRIMARY BOOM EXTEND SWITCH
TS15	DRIVE ENABLE SWITCH
TS16	JIB ROTATE SWITCH (OPTION)
L1	DRIVE ENABLE LIGHT
L2	OVERLOAD LIGHT (OPTION)

Power Cable Diagram
(before serial number 3447)

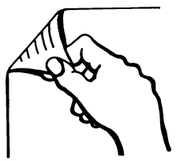
Power Cable Diagram (before serial number 3447)

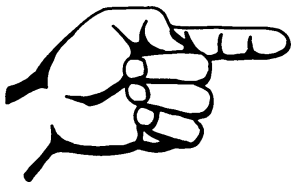


Power Cable Diagram (after serial number 3446)



Power Cable Diagram
(after serial number 3446)

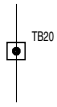




This page intentionally left blank.

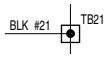
Electrical Symbols Legend

Wire color with cable number



Terminal

Quick disconnect terminal



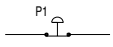
T-circuits connect at terminal

T-circuits connect

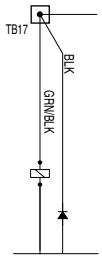
Connection no terminal

Circuits crossing no connection

Diode

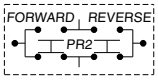


Emergency Stop button normally closed

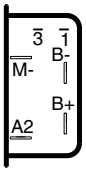


Ground supression circuit

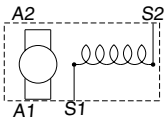
Circuit breaker



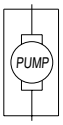
Dual pole relay



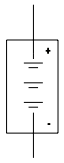
Motor controller



Drive motor



Auxiliary lift pump

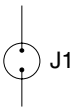


6V DC Battery

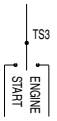
Light

Flashing beacon

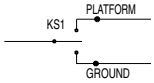
Hour meter



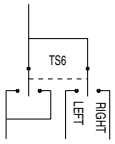
Brake release jack



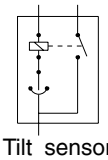
Toggle switch SPDT



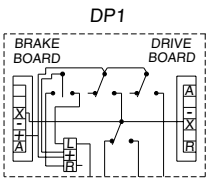
Key switch



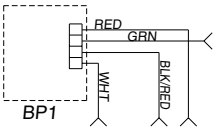
Toggle switch DPDT



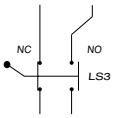
Tilt sensor



Drive controller Joystick



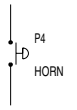
Boom function speed controller



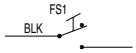
Limit switch

Relay panel contactor

Limit switch normally open held closed



Horn button normally open



Foot switch

Pressure switch

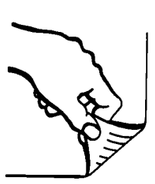
Horn

Solenoid or relay coil

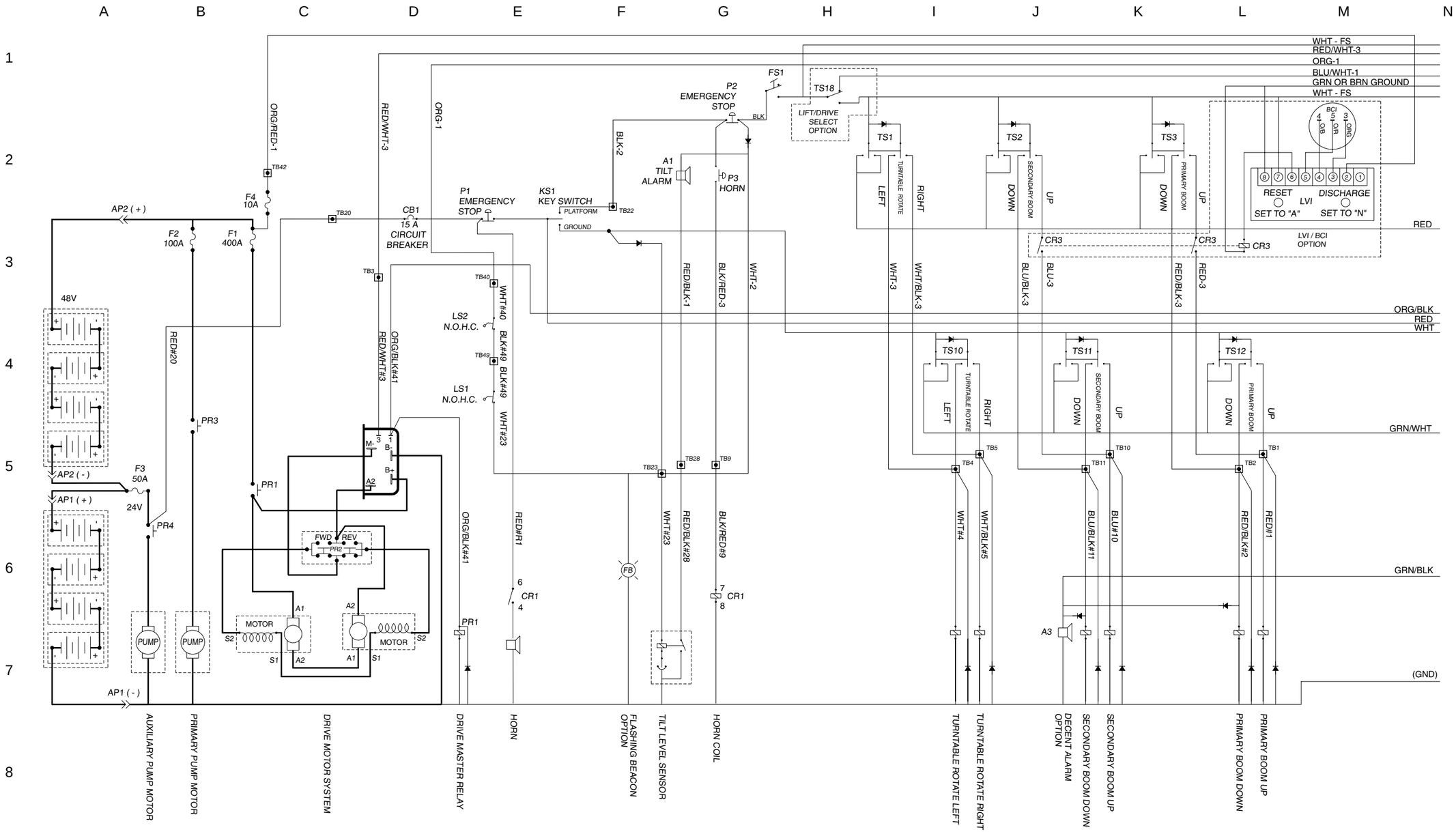
Relay contact normally open

Relay contact normally closed

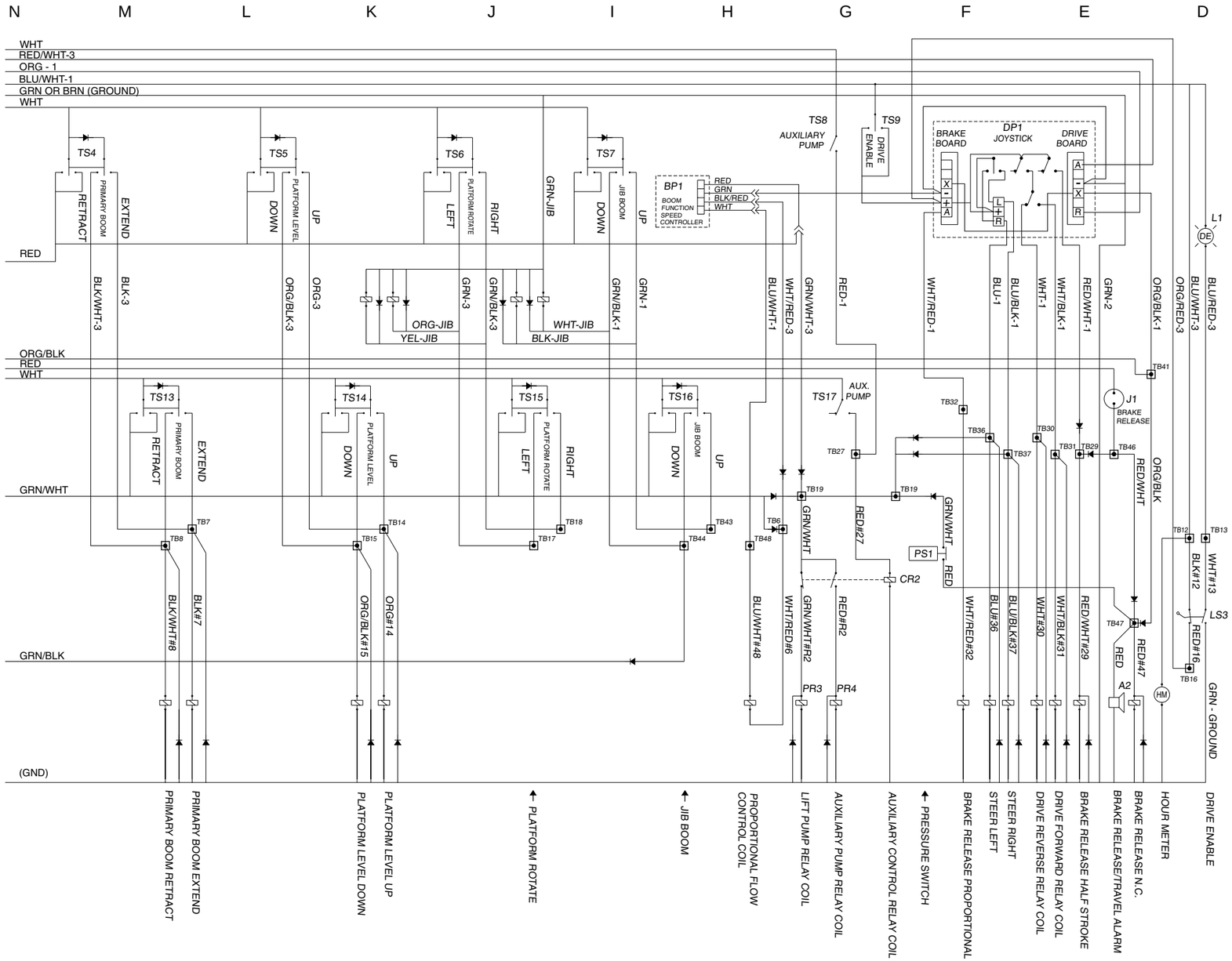
Fuse



Electrical Schematic (before serial number 747)

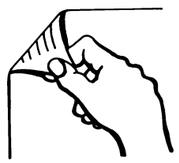


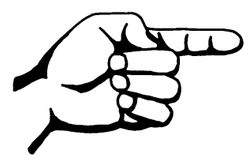
Electrical Schematic (before serial number 747)

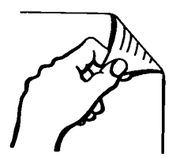


LABEL	DESCRIPTION
A	ALARM
AP	ANDERSON PLUG
BP	BOOM PROPORTIONAL CONTROLLER
CB	CIRCUIT BREAKER
CR	CONTROL RELAY
DE	DRIVE ENABLE
DP	DRIVE PROPORTIONAL CONTROLLER
FB	FLASHING BEACON
FS	FOOT SWITCH
HM	HOUR METER
J	BRAKE RELEASE RECEPTACLE
L	LIGHT
LS	LIMIT SWITCH
P	POWER SWITCH
PR	POWER RELAY
PS	PRESSURE SWITCH
TB	TERMINAL BASE LOCATION
TS	TOGGLE SWITCH
B.C.I.	BATTERY CHARGE INDICATOR
L.V.I.	LOW VOLTAGE INTERRUPT

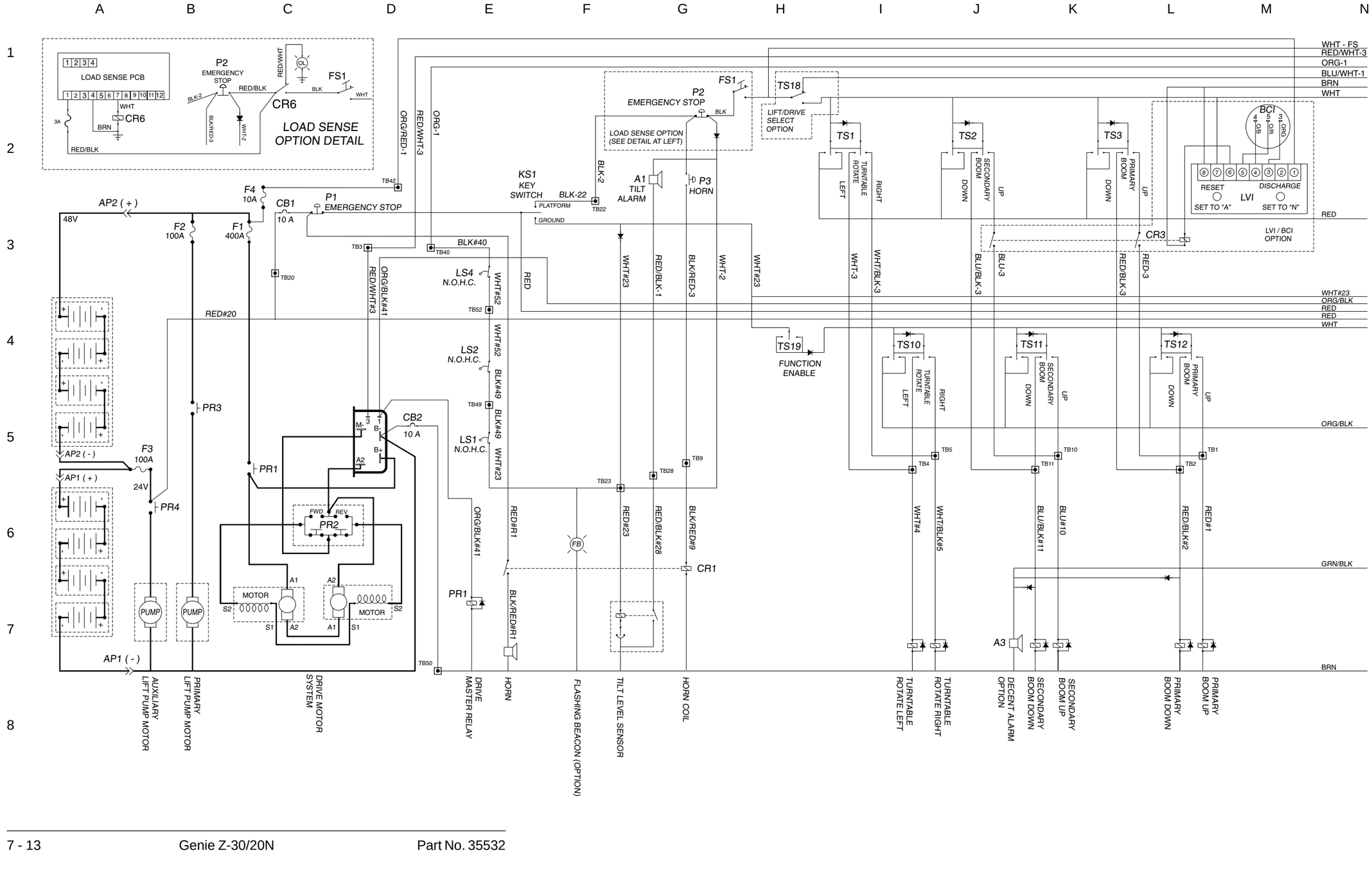
Electrical Schematic
(before serial number 747)



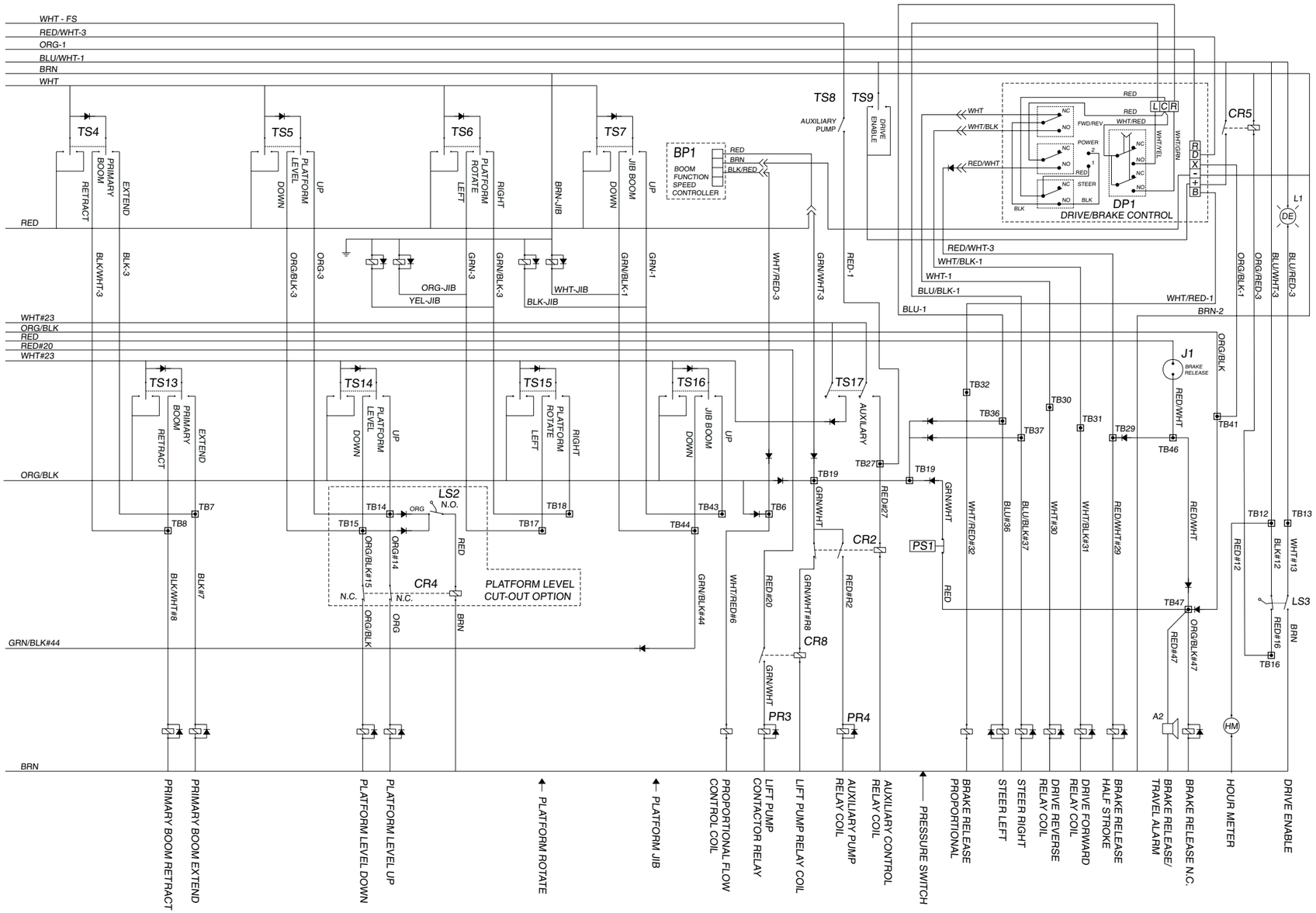




Electrical Schematic (from serial number 747 to 3446)

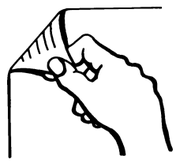


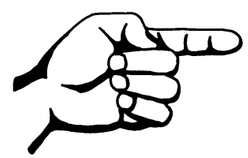
Electrical Schematic (from serial number 747 to 3446)

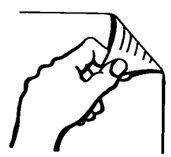


LABEL	DESCRIPTION
A	ALARM
AP	ANDERSON PLUG
BP	BOOM PROPORTIONAL CONTROLLER
CB	CIRCUIT BREAKER
CR	CONTROL RELAY
DE	DRIVE ENABLE
DP	DRIVE PROPORTIONAL CONTROLLER
FB	FLASHING BEACON
FS	FOOT SWITCH
HM	HOUR METER
J	BRAKE RELEASE
LS	LIMIT SWITCH
P	POWER SWITCH
PR	POWER RELAY
PS	PRESSURE SWITCH
TB	TERMINAL BASE LOCATION
TS	TOGGLE SWITCH
B.C.I.	BATTERY CHARGE INDICATOR (OPTION)
L.V.I.	LOW VOLTAGE INTERRUPT (OPTION)
OL	OVERLOAD LIGHT (OPTION)

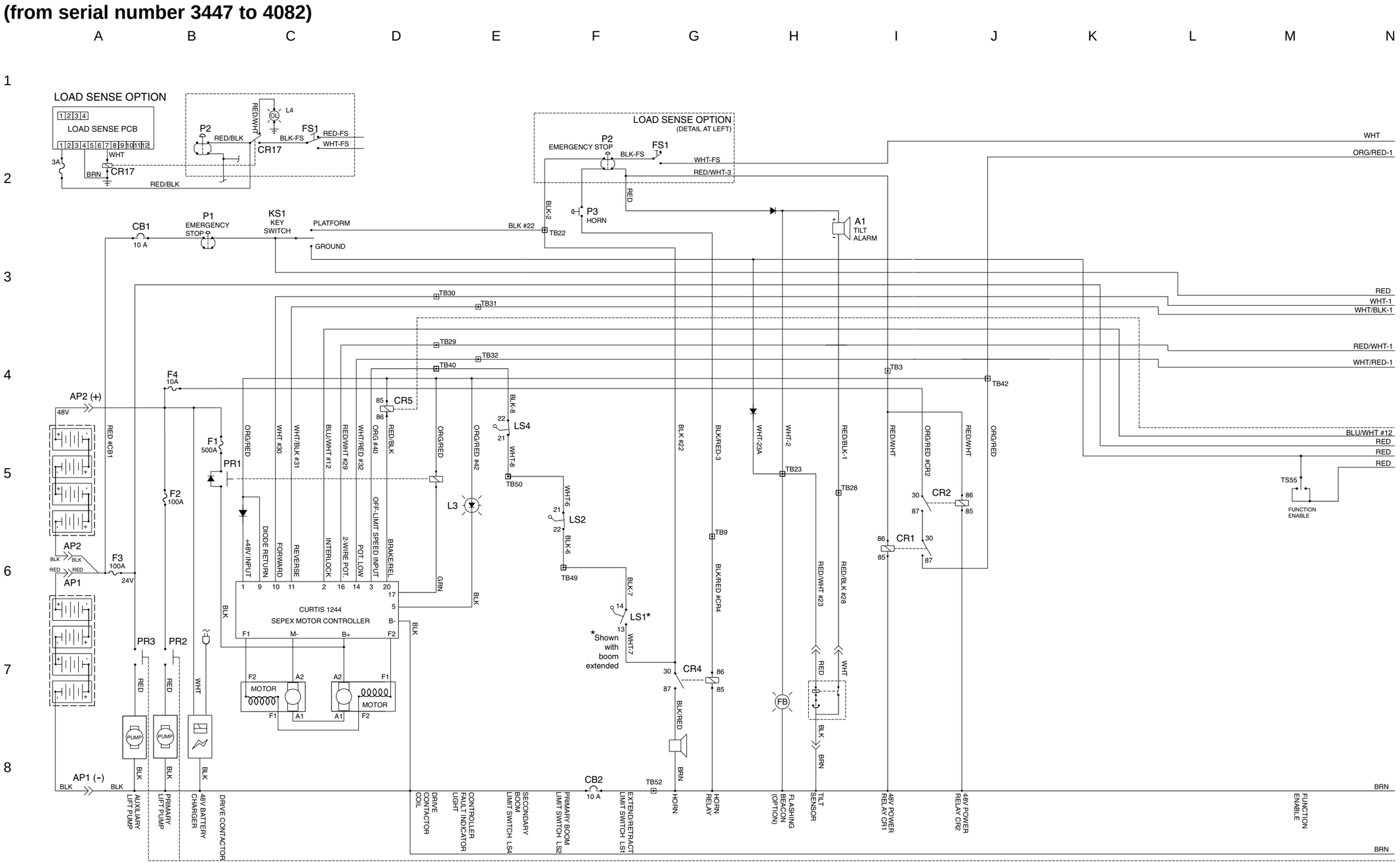
Electrical Schematic
(from serial number 747 to 3446)



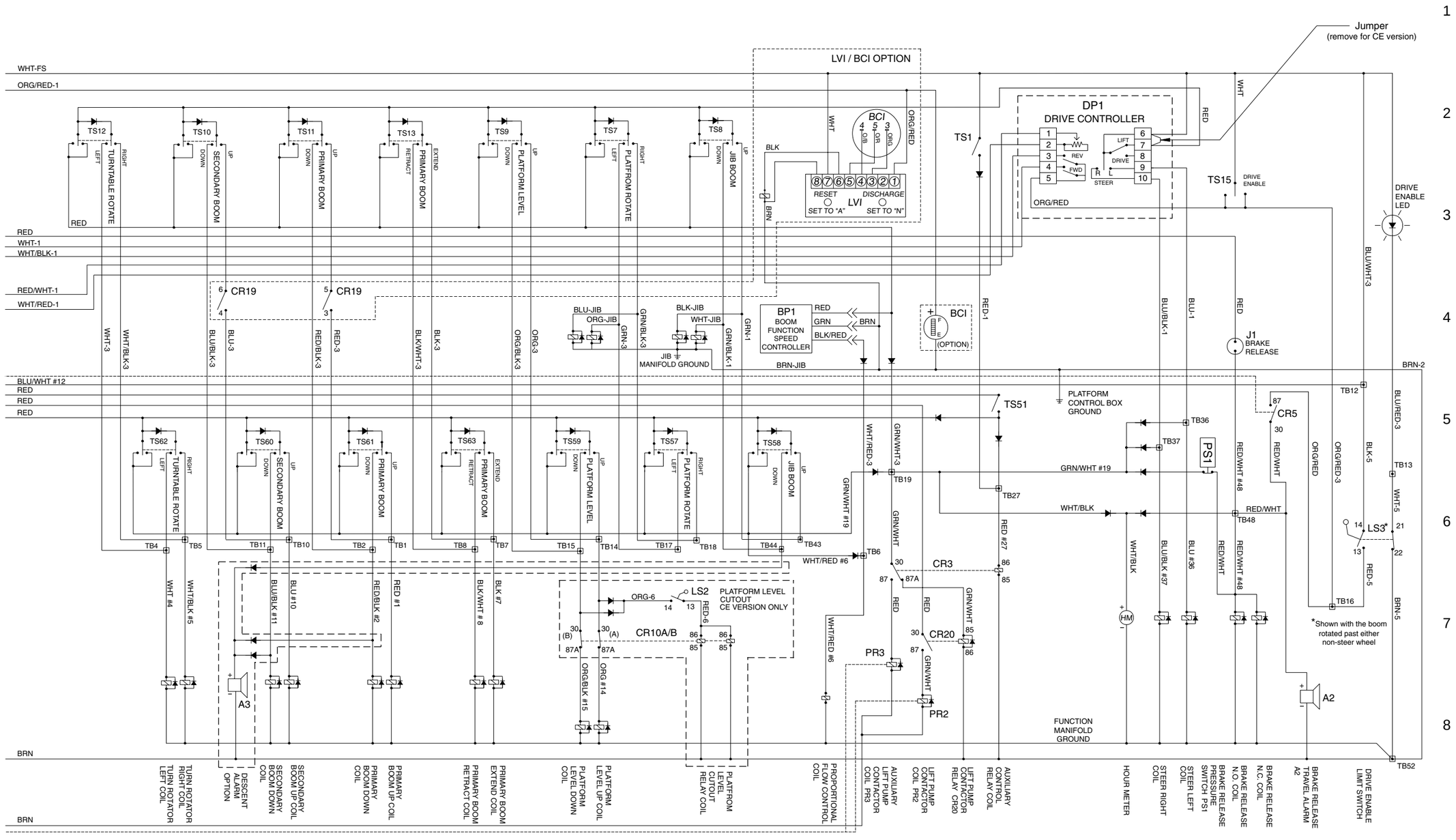




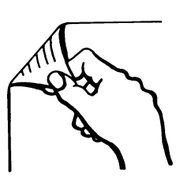
Electrical Schematic (from serial number 3447 to 4082)

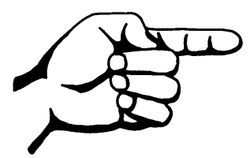


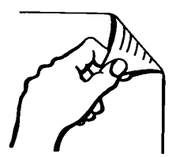
Electrical Schematic (from serial number 3447 to 4082)



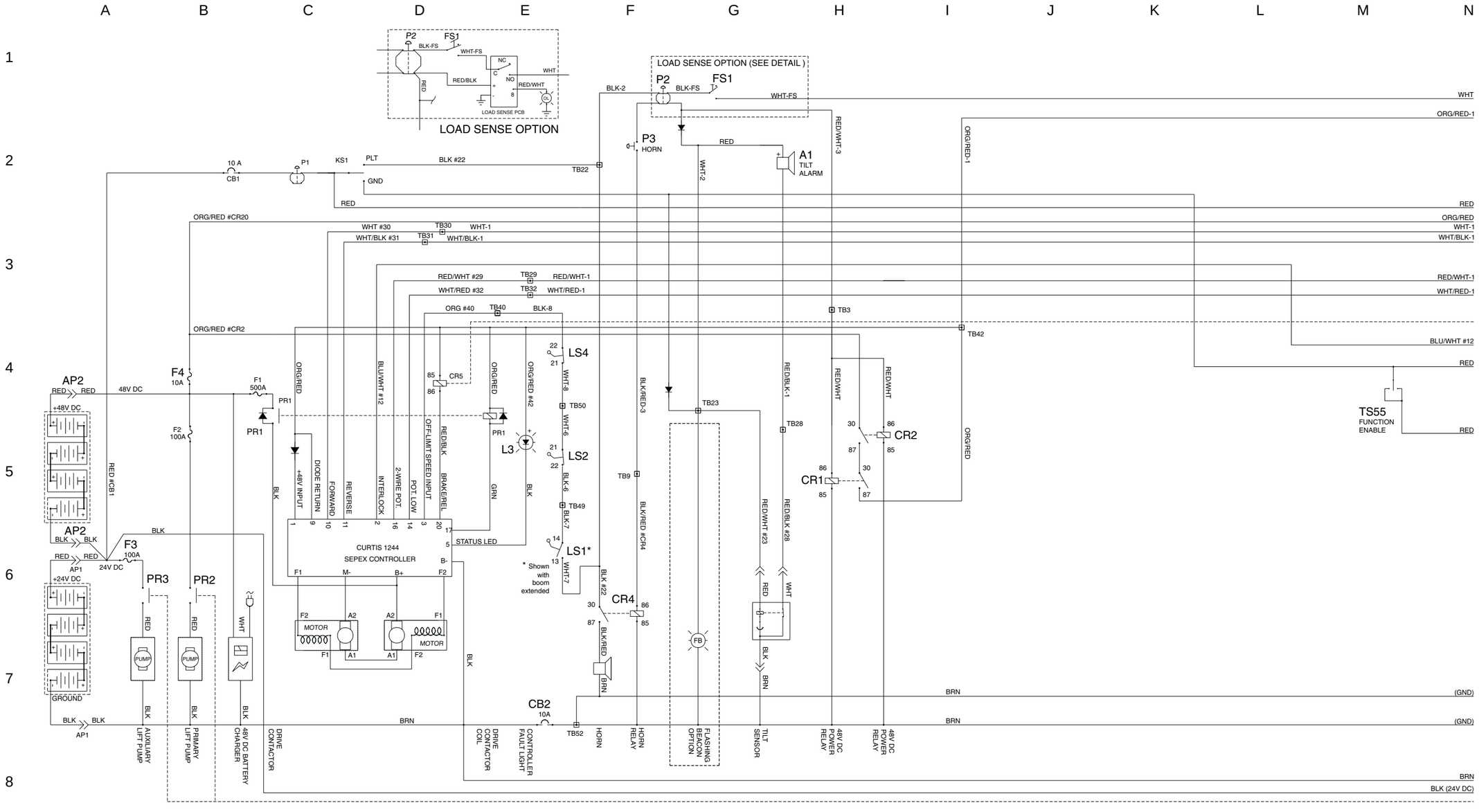
Electrical Schematic
(from serial number 3447 to 4082)



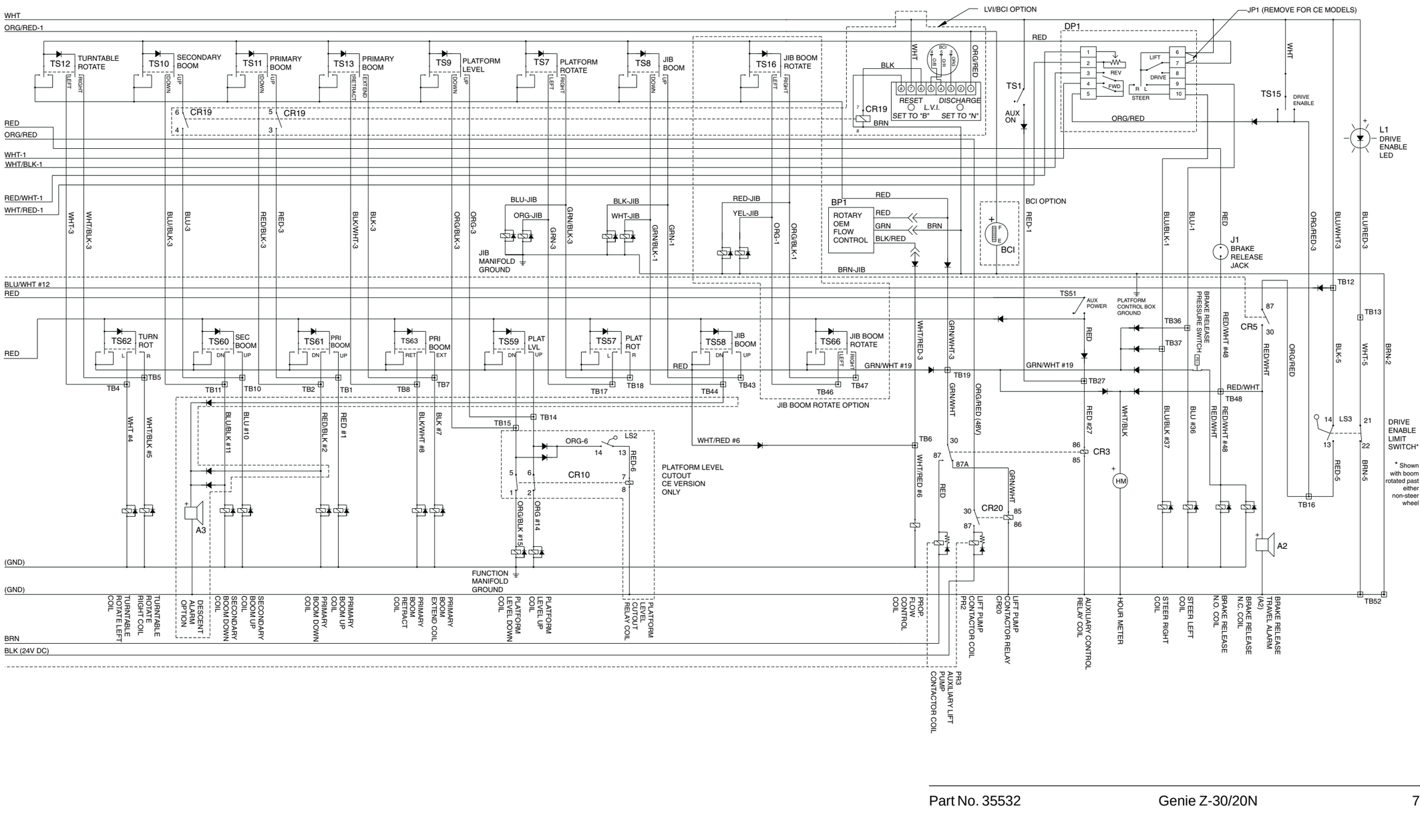




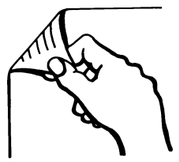
Electrical Schematic (after serial number 4082)



Electrical Schematic (after serial number 4082)

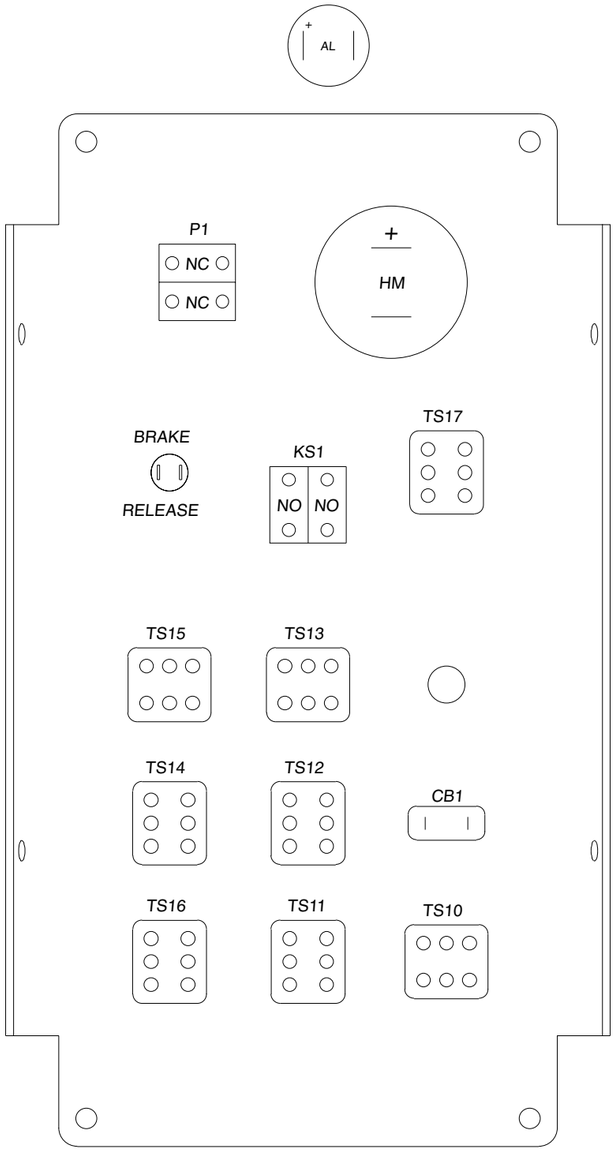


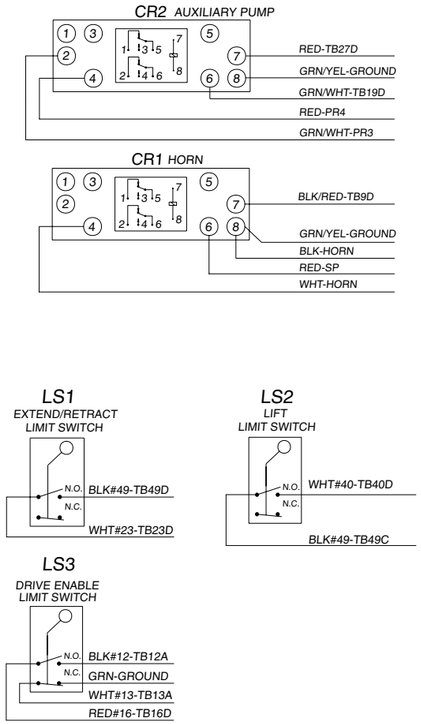
Electrical Schematic
(after serial number 4082)



Ground Control Panel Legend (before serial number 747)

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



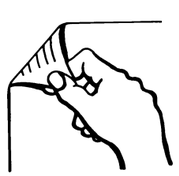


LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS10	TURNTABLE ROTATE SWITCH
TS11	SECONDARY BOOM SWITCH
TS12	PRIMARY BOOM SWITCH
TS13	EXTEND/RETRACT SWITCH
TS14	PLATFORM LEVEL SWITCH
TS15	PLATFORM ROTATE SWITCH
TS16	JIB SWITCH
TS17	AUXILIARY SWITCH
CB1	15amp. CIRCUIT BREAKER
HM	HOUR METER
CR1	CONTROL RELAY, HORN
CR2	CONTROL RELAY, AUXILIARY PUMP

D	C		B	A	
BLK-TILT AL.	GRN/YEL-2	51	GRN/YEL-CR2	GRN/YEL-TB50	GROUND
GRN/YEL-TB51	GR/YL-PUMP	50	GRN/YEL-S.P.	GRN/YEL-LS3	GROUND
BLK-LS1	BLK-LS2	49			LIMIT SWITCH
BLU/WHT-4	BLU/WHT-1	48			HOUR METER
RED-B.R.V.	RED-S.P. AL.	47	RD/WT-TB46	OR/BLK-TB41 ⊣	BRAKE RELEASE N.C.
	RD/WT-TB29	46	RD/WT-TB47 ⊢	RD/WT S.P.	EMERGENCY BRAKE RELEASE N.C.
	GRN/BLK-1	44	GR/BK-S.P.	GR/BK-D.A. ⊢	JIB BOOM DOWN
	GRN-1	43	GRN S.P.		JIB BOOM UP
OG/RD-POW.	ORG/RED-1	42			48V DC SUPPLY
ORG/BLK-PR1	ORG/BLK-1	41		ORG/BLK-TB47	DRIVE COIL PR1
WHT-LS2	ORG-1	40			LIMIT SWITCH
BLU/BLK-S.V.	BLU/BLK-1	37		BL/BK-TB19 ⊢	STEER LEFT
BLU-STEER V.	BLU-1	36		BU-TB19 ⊢	STEER RIGHT
WT/RD-BK.F.C.	WHT/RED-1	32			BRAKE FLOW CONTROL
WT/BK-PR2	WHT/BLK-1	31			REVERSE PR2
WHT-PR2	WHT-1	30			FORWARD PR2
RD/WT-B.V.	R/W-1	29	R/W-TB46 ⊣		BRAKE H.S.
WHT-T. AL.	RED/BLK-1	28			TILT ALARM
RED-CR2	RED-1	27	RED-S.P.		AUXILIARY POWER PR4
WHT-LS1	RED-TILT AL.	23	WT-S.P.	WHT-2	KEY SWITCH POWER
		22	BLK S.P.	BLK-2	POWER TO PLATFORM
RED-POWER		20	RED S.P.		24V DC BATTERY SUPPLY
⊢ GN/WT-P.S.		19	GR/WT-TB36&37		
GRN/WHT-CR2	GRN/WHT-3	19	GR/WT S.P.		LIFT PUMP PR3
	GRN/BLK-3	18	GR/BK S.P.		PLATFORM ROTATE RIGHT
	GRN-3	17	GRN S.P.		PLATFORM ROTATE LEFT
	ORG/RED-3	16		RED-LS3	DRIVE ENABLE
ORG/BLK-4	ORG/BLK-3	15	OG/BK S.P.		PLATFORM LEVEL DOWN
ORG-4	ORG-3	14	ORG S.P.		PLATFORM LEVEL UP
	BLU/RED-3	13		WHT-LS3	DRIVE ENABLE LIGHT
	BLU/WHT-3	12	RED S.P.-H.M.	BLK-LS3	DRIVE ENABLE
BLU/BLK-4	BLU/BLK-3	11	BU/BK S.P.	BU/BK-D.A. ⊢	SECONDARY BOOM DOWN
BLU-4	BLU-3	10	BLU S.P.		SECONDARY BOOM UP
	BLK/RED-3	9		BK/RD-CR1	HORN
BLK/WHT-4	BLK/WHT-3	8	BK/WT S.P.		BOOM RETRACT
BLK-4	BLK-3	7	BLK S.P.		BOOM EXTEND
W/R-4	WHT/RED-3	6	WT/RD S.P. ⊣		LIFT FLOW CONTROL
WHT/BLK-4	WHT/BLK-3	5	WT/BK S.P.		TURNTABLE ROTATE LEFT
WHT-4	WHT-3	4	WHT S.P.		TURNTABLE ROTATE RIGHT
R/W-CURTIS	RED/WHT-3	3			0-5V DC TO MOTOR CONTROLLER
RED/BLK-4	RED/BLK-3	2	RD/BK S.P.	RD/BK-D.A. ⊢	PRIMARY BOOM DOWN
RED-4	RED-3	1	RED S.P.		PRIMARY BOOM UP

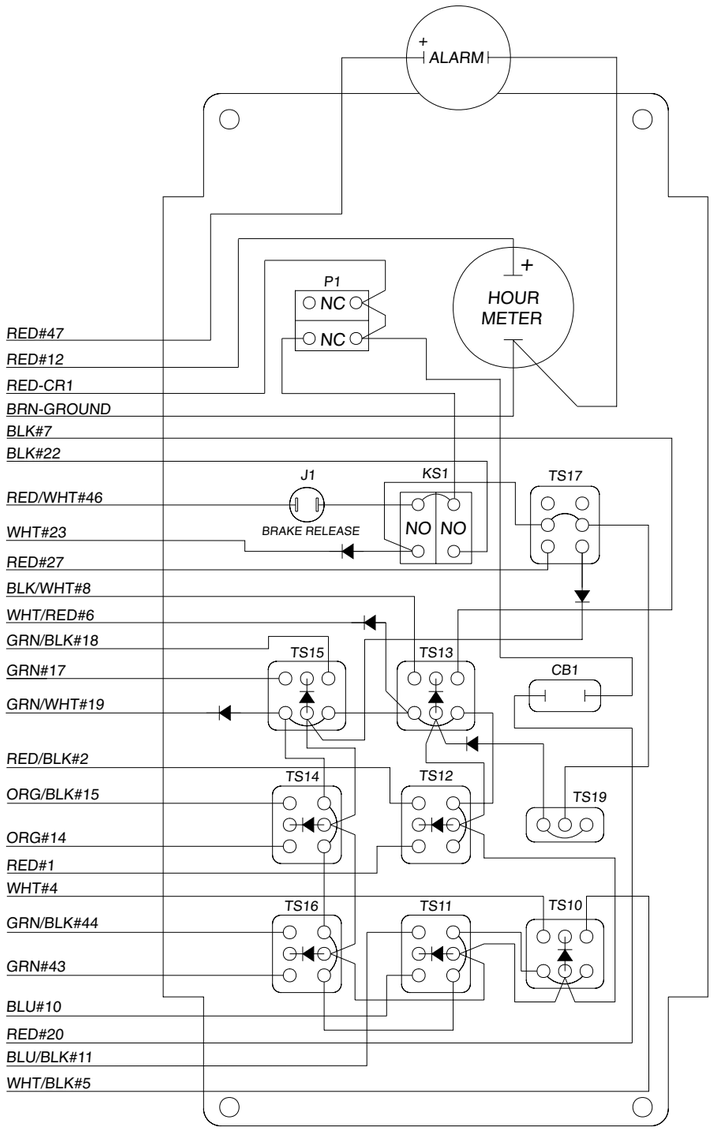
1 2 3 4 5 6 7 8

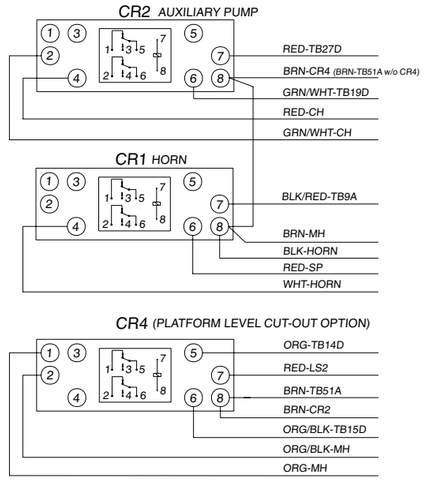
Ground Control Panel Legend (before serial number 747)

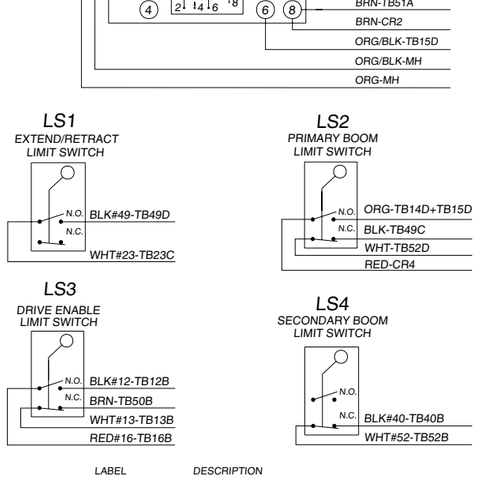


Ground Control Panel Wiring Diagram (from serial number 747 to 3446)

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







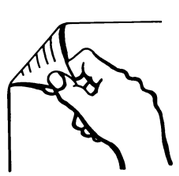
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS10	TURNTABLE ROTATE SWITCH
TS11	SECONDARY BOOM UP/DOWN SWITCH
TS12	PRIMARY BOOM UP/DOWN SWITCH
TS13	BOOM EXTEND/RETRACT SWITCH
TS14	PLATFORM LEVEL SWITCH
TS15	PLATFORM ROTATE SWITCH
TS16	JIB UP/DOWN SWITCH
TS17	AUXILIARY SWITCH
TS19	FUNCTION ENABLE SWITCH
CB1	CIRCUIT BREAKER, CONTROLS, 10A
HM	HOUR METER
CR1	CONTROL RELAY - HORN
CR2	CONTROL RELAY - AUXILIARY PUMP
CR4	PLATFORM LEVEL CUT-OUT (OPTION)
CH	CHASSIS HARNESS
MH	MANIFOLD HARNESS
SP	SWITCH PANEL
AL	TRAVEL ALARM
J1	BRAKE RELEASE JACK

WHT-LS2		52	WHT-LS4		LIMIT SWITCH
	BLK-TILT ALARM	51	BRN-2	BRN-CR4 (BRN-CR2 w/o CR4)	GROUND
	BRN-CH	50	BRN-LS3	BRN-SP	GROUND
BLK-LS1	BLK-LS2	49			LIMIT SWITCH
BLU/WHT-MH	BLU/WHT-1	48			HOUR METER
RED/WHT-TB46	RED-CH	47	RED-SP ALARM	ORG/BLK-TB41 ⊣	BRAKE RELEASE N.C.
RED/WHT-TB47 ▶	RED/WHT-TB29	46		RED/WHT SP	BRAKE RELEASE REMOTE
	GRN/BLK-1	44	GRN/BLK-D/A ⊣	GRN/BLK-SP	JIB BOOM DOWN
	GRN-1	43		GRN SP	JIB BOOM UP
ORG/RED-CH	ORG/RED-1	42			48V DC SUPPLY
ORG/BLK-CH	ORG/BLK-1	41		ORG/BLK-TB47	DRIVE COIL PR1
	ORG-1	40	BLK-LS4		LIMIT SWITCH
BLU/BLK-CH	BLU/BLK-1	37		BLU/BLK-TB19 ▶⊣	STEER LEFT
BLU-CH	BLU-1	36		BLU-TB19 ▶⊣	STEER RIGHT
WHT/RED-CH	WHT/RED-1	32			BRAKE FLOW CONTROL
WHT/BLK-CH	WHT/BLK-1	31			REVERSE PR2
WHT-CH	WHT-1	30			FORWARD PR2
RED/WHT-CH	RED/WHT-1	29		RED/WHT-TB46 ⊣	BRAKE HS
WHT-TILT ALARM	RED/BLK-1	28			TILT ALARM
RED-CR3	RED-1	27		RED-SP	AUXILIARY PWR PR4
RED-TILT ALARM	WHT-LS1	23	WHT-2	WHT-SP	KEY SWITCH POWER
		22	BLK-2	BLK SP	POWER TO PLATFORM
RED-CH		20		RED SP	24V DC BATT SUPPLY
▶⊣ GRN/WHT-PS		19		BLU+BLU/BLK TB36 & 37	
GRN/WHT-CR2,CR3	GRN/WHT-3	19		GRN/WHT-SP	LIFT PUMP PR3
	GRN/BLK-3	18		GRN/BLK SP	PLATFORM ROTATE RIGHT
	GRN-3	17		GRN SP	PLATFORM ROTATE LEFT
	ORG/RED-3	16	RED-LS3		DRIVE ENABLE
ORG/BLK-CR4	ORG/BLK-3	15	ORG-LS2 ▶⊣ (OPT)	ORG/BLK-SP	PLATFORM LEVEL DOWN
ORG-CR4	ORG-3	14	ORG-LS2 ▶⊣ (OPT)	ORG-SP	PLATFORM LEVEL UP
	BLU/RED-3	13	WHT-LS3		DRIVE ENABLE LIGHT
	BLU/WHT-3	12	BLK-LS3	RED SP-HM	DRIVE ENABLE
BLU/BLK-MH	BLU/BLK-3	11	BLU/BLK-D/A ⊣	BLU/BLK SP	SECONDARY BOOM DOWN
BLU-MH	BLU-3	10		BLU SP	SECONDARY BOOM UP
	BLK/RED-3	9		BLK/RED-CR1	HORN
BLK/WHT-MH	BLK/WHT-3	8		BLK/WHT S.P	BOOM RETRACT
BLK-MH	BLK-3	7		BLK SP	BOOM EXTEND
WHT/RED-MH	WHT/RED-3	6		WHT/RED SP ⊣	LIFT FLOW CONTROL
WHT/BLK-MH	WHT/BLK-3	5		WHT/BLK SP	TURNTABEL ROTATE LEFT
WHT-MH	WHT-3	4		WHT SP	TURNTABEL ROTATE RIGHT
RED/WHT-CH	RED/WHT-3	3			0-5V DC TO MOTOR CONT.
RED/BLK-MH	RED/BLK-3	2	RED/BLK D/A ⊣	RED/BLK SP	PRIMARY BOOM DOWN
RED-MH	RED-3	1		RED SP	PRIMARY BOOM UP

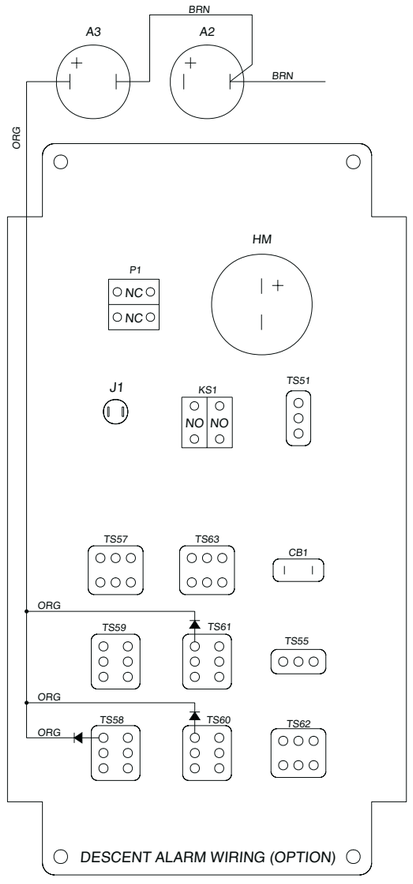
D C B A

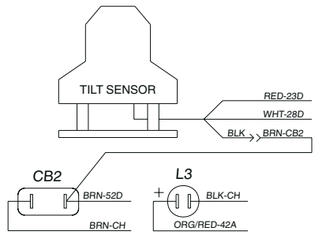
1 2 3 4 5 6 7 8

Ground Control Panel Wiring Diagram (from serial number 747 to 3446)



Ground Control Panel Wiring Diagram (from serial number 3447 to 4082)





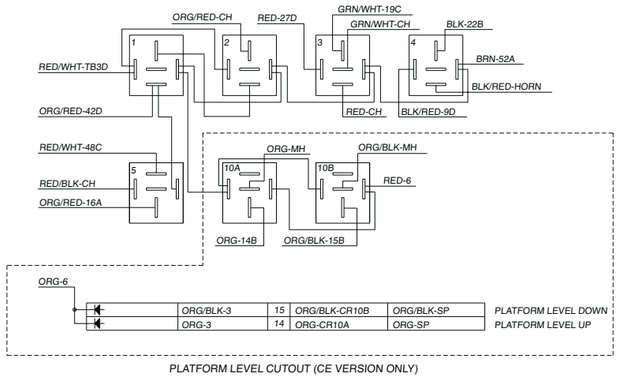
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB BOOM UP/DOWN TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	BOOM EXTEND/RETRACT TOGGLE SWITCH
CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CIRCUIT BREAKER, CONTROLS RETURN, 10A
J1	BRAKE RELEASE JACK
HM	HOURMETER
CH	CHASSIS HARNESS
MH	MANIFOLD HARNESS
SP	SWITCH PANEL
CR	CONTROL RELAY
A2	BRAKE RELEASE/TRAVEL ALARM
A3	DESCENT ALARM (OPTION)
L3	CONTROLLER STATUS LED

BRN-CB2	BLK [OPTION 2]	52		BRN-CH	GROUND
BRN-5		52		BRN-CR4	GROUND
BRN-2		52	BRN-MH	BRN-SP	GROUND
WHT-6	WHT-8	50			LS2-LS4 JUNCTION
BLK-7	BLK-6	49			LS1-LS2 JUNCTION
WHT/BLK-SP	RED/WHT-CR5	48	RED/WHT-MH	RED/WHT-SP	BRAKE RELEASE
	GRN/BLK-1	44		GRN/BLK-SP	JIB DOWN
	GRN-1	43		GRN-SP	JIB UP
ORG/RED-CR1	ORG/RED-1	42	ORG/RED-CH	ORG/RED-L3	SWITCHED 48V
BLK-8		40		ORG-CH	OFF-LIMIT SPEED
BLU/BLK-19D	BLU/BLK-1	37		BLU/BLK-MH	STEER RIGHT
BLU-19D	BLU-1	36		BLU-MH	STEER LEFT
	WHT/RED-1	32		WHT/RED-CH	JOYSTICK POT. LOW
	WHT/BLK-1	31		WHT/BLK-CH	REVERSE
	WHT-1	30		WHT-CH	FORWARD
	RED/WHT-1	29		RED/WHT-CH	2-WIRE POT.
WHT-TILT	RED/BLK-1	28			TILT ALARM
RED-CR3	RED-1	27		RED-SP	AUXILIARY PUMP SELECT
[OPTION 2]		23			KEYSWITCH POWER
RED-TILT	WHT-2	23	WHT-SP		KEYSWITCH POWER
WHT-7	BLK-2	22	BLK-CR4	BLK-SP	+24V TO PLATFORM
TB36/TB37	GRN/WHT-CR3	19		GRN/WHT-MH	LIFT PUMP
WHT/BLK-SP	GRN/WHT-3	19		GRN/WHT-SP	LIFT PUMP
	GRN/BLK-3	18		GRN/BLK-SP	PLAT. ROTATE RIGHT
	GRN-3	17		GRN-SP	PLAT. ROTATE LEFT
RED-5	ORG/RED-3	16		ORG/RED-CR5	DRIVE ENABLE
*	ORG/BLK-3	15	ORG/BLK-MH *	ORG/BLK-SP	PLAT. LEVEL DOWN
*	ORG-3	14	ORG-MH *	ORG-SP	PLAT. LEVEL UP
WHT-5	BLU/RED-3	13			DRIVE ENABLE LIGHT
BLK-5	BLU/WHT-3	12		BLU/WHT-CH	FOOTSWITCH
	BLU/BLK-3	11	BLU/BLK-MH	BLU/BLK-SP	SEC. BOOM DOWN
	BLU-3	10	BLU-MH	BLU-SP	SEC. BOOM UP
BLK/RED-CR4	BLK/RED-3	9			HORN
	BLK/WHT-3	8	BLK/WHT-MH	BLK/WHT-SP	BOOM RETRACT
	BLK-3	7	BLK-MH	BLK-SP	BOOM EXTEND
	WHT/RED-3	6	WHT/RED-MH	WHT/RED-SP	BOOM FUNCTION F.C.
	WHT/BLK-3	5	WHT/BLK-MH	WHT/BLK-SP	TURN. ROTATE RIGHT
	WHT-3	4	WHT-MH	WHT-SP	TURN. ROTATE LEFT
RED/WHT-CR1	RED/WHT-3	3			48V RELAY COIL PWR.
	RED/BLK-3	2	RED/BLK-MH	RED/BLK-SP	PRIMARY BOOM DOWN
	RED-3	1	RED-MH	RED-SP	PRIMARY BOOM UP

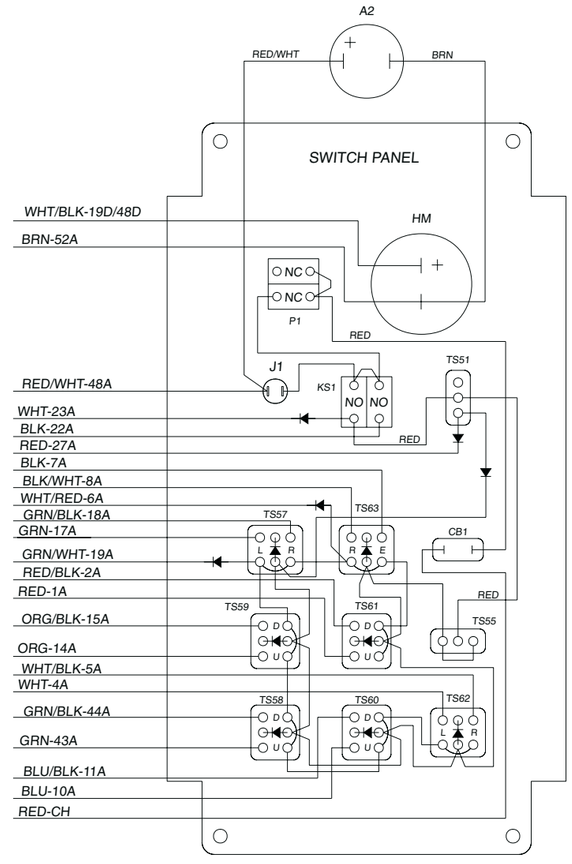
D C B A

* [SEE OPTIONAL WIRING]

[DENOTES TEST PORT]



PLATFORM LEVEL CUTOUT (CE VERSION ONLY)



CONTROL RELAY I.D.

CR1 - SECONDARY 48V DC POWER
CR2 - PRIMARY 48V DC POWER
CR3 - AUXILIARY PUMP
CR4 - HORN
CR5 - BRAKE RELEASE
CR10A - PLATFORM LEVEL CUTOUT (CE ONLY)
CR10B - PLATFORM LEVEL CUTOUT (CE ONLY)

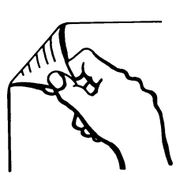
SPARE WIRE LIST

BLK-1
BLK/WHT-1
BLK/RED-1
BLU/WHT-1
BLU/RED-1
ORG-1
ORG/BLK-1
GRN/WHT-1

OPTION NUMBERS

1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM

Ground Control Panel Wiring Diagram (from serial number 3447 to 4082)



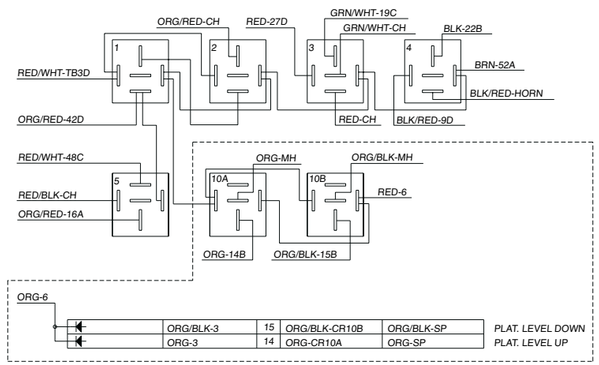
Ground Control Panel Wiring Diagram (after serial number 4082)

N	M		L	K
BRN-CB2	BLK [OPTION 2]	52	BRN-CH	BRN-CR4
BRN-5	BRN-2	52	BRN-MH	BRN-SP
WHT-6	WHT-8	50		
BLK-7	BLK-6	49		
WHT/BLK-SP	RED/WHT-CR5	48	RED/WHT-MH	RED/WHT-SP
	ORG/BLK-1	47		ORG/BLK-SP **
	ORG-1	46		ORG-SP **
	GRN/BLK-1	44		GRN/BLK-SP
	GRN-1	43		GRN-SP
ORG/RED-CR1	ORG/RED-1	42	ORG/RED-CH	ORG/RED-L3
BLK-8		40		ORG-CH
BLU/BLK-19D	BLU/BLK-1	37		BLU/BLK-MH
BLU-19D	BLU-1	36		BLU-MH
	WHT/RED-1	32		WHT/RED-CH
	WHT/BLK-1	31		WHT/BLK-CH
	WHT-1	30		WHT-CH
	RED/WHT-1	29		RED/WHT-CH
WHT-TILT	RED/BLK-1	28		
RED-CR3	RED-1	27		RED-SP
[OPTION 2]		23		
RED-TILT	WHT-2	23		WHT-SP
WHT-7	BLK-2	22	BLK-CR4	BLK-SP
TB36/TB37	GRN/WHT-CR3	19		GRN/WHT-MH
WHT/BLK-SP	GRN/WHT-3	19		GRN/WHT-SP
	GRN/BLK-3	18		GRN/BLK-SP
	GRN-3	17		GRN-SP
RED-5	ORG/RED-3	16		ORG/RED-CR5
*	ORG/BLK-3	15	ORG/BLK-MH *	ORG/BLK-SP
*	ORG-3	14	ORG-MH *	ORG-SP
WHT-5	BLU/RED-3	13		
BLK-5	BLU/WHT-3	12		BLU/WHT-CH
	BLU/BLK-3	11	BLU/BLK-MH	BLU/BLK-SP
	BLU-3	10	BLU-MH	BLU-SP
BLK/RED-CR4	BLK/RED-3	9		
	BLK/WHT-3	8	BLK/WHT-MH	BLK/WHT-SP
	BLK-3	7	BLK-MH	BLK-SP
	WHT/RED-3	6	WHT/RED-MH	WHT/RED-SP
	WHT/BLK-3	5	WHT/BLK-MH	WHT/BLK-SP
	WHT-3	4	WHT-MH	WHT-SP
RED/WHT-CR1	RED/WHT-3	3		
	RED/BLK-3	2	RED/BLK-MH	RED/BLK-SP
	RED-3	1	RED-MH	RED-SP

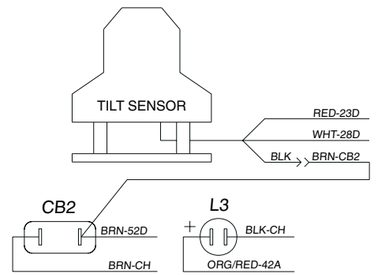
D C B A

J	
GROUND	
GROUND	
LS2-LS4 JUNCTION	
LS1-LS2 JUNCTION	
BRAKE RELEASE	
JIB BOOM ROTATE RIGHT	
JIB BOOM ROTATE LEFT	
JIB BOOM DOWN	
JIB BOOM UP	
SWITCHED 48V DC	
OFF-LIMIT SPEED	
STEER RIGHT	
STEER LEFT	
JOYSTICK POT. LOW	
DRIVE REVERSE	
DRIVE FORWARD	
2-WIRE POT.	
TILT ALARM	
AUXILIARY PUMP SELECT	
KEY SWITCH POWER	
KEY SWITCH POWER	
+24V DC TO PLATFORM	
LIFT PUMP	
LIFT PUMP	
PLATFORM ROTATE RIGHT	
PLATFORM ROTATE LEFT	
DRIVE ENABLE	
PLATFORM LEVEL DOWN	
PLATFORM LEVEL UP	
DRIVE ENABLE LIGHT	
FOOTSWITCH	
SECONDARY BOOM DOWN	
SECONDARY BOOM UP	
HORN	
BOOM RETRACT	
BOOM EXTEND	
BOOM FUNCTION FLOW CONTROL	
TURNTABLE ROTATE RIGHT	
TURNTABLE ROTATE LEFT	
48V DC RELAY COIL POWER	
PRIMARY BOOM DOWN	
PRIMARY BOOM UP	

I H G F

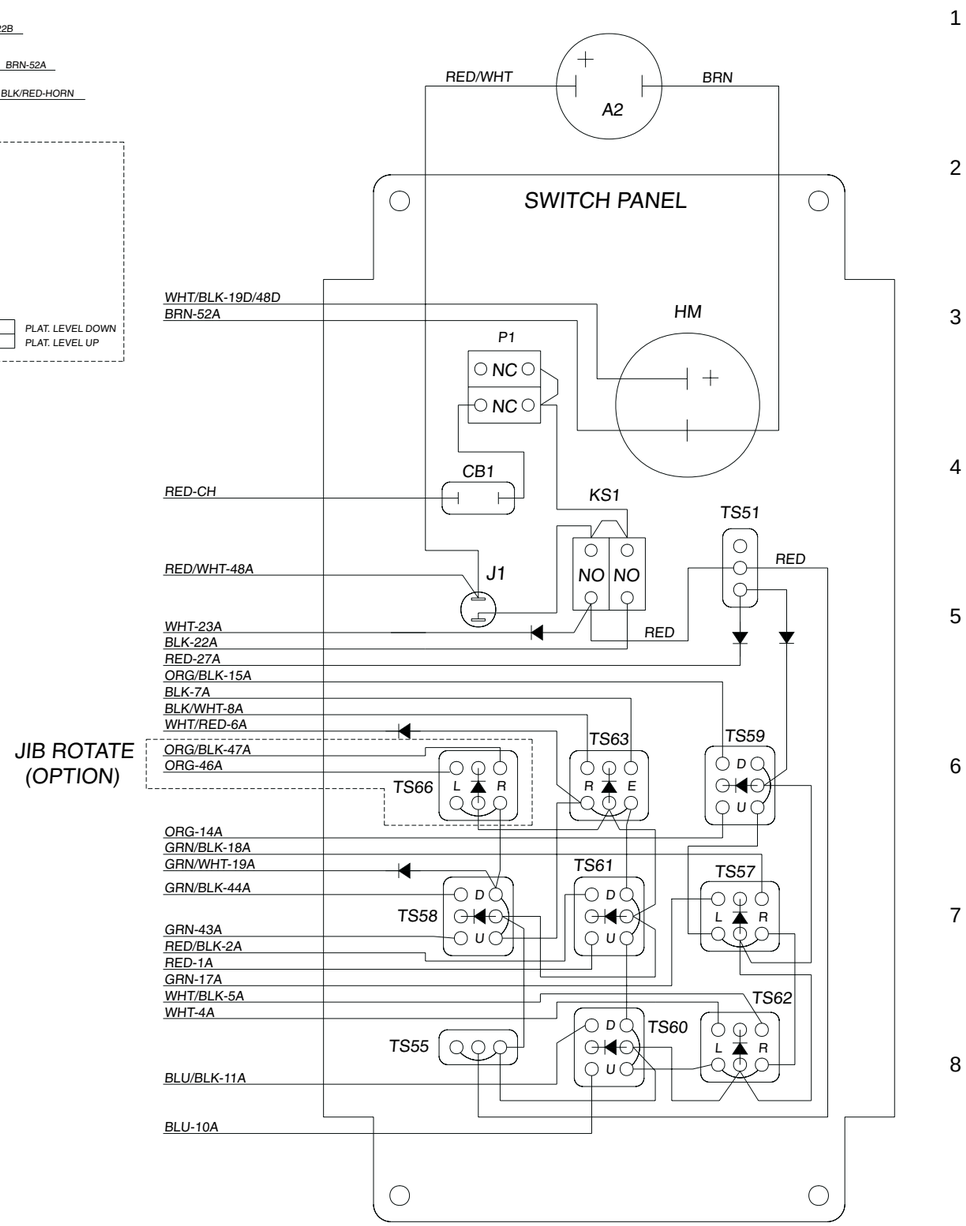


PLATFORM LEVEL CUTOUT (CE VERSION ONLY)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB BOOM UP/DOWN TOGGLE SWITCH
TS59	PLATFORM LEVEL TOGGLE SWITCH
TS60	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS61	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
TS62	TURNTABLE ROTATE TOGGLE SWITCH
TS63	BOOM EXTEND/RETRACT TOGGLE SWITCH
TS66	JIB BOOM ROTATE TOGGLE SWITCH (OPTION)
CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CIRCUIT BREAKER, CONTROLS RETURN, 10A
J1	BRAKE RELEASE JACK
HM	HOURMETER
CH	CHASSIS HARNESS
MH	MANIFOLD HARNESS
SP	SWITCH PANEL
CR_	CONTROL RELAY
A2	BRAKE RELEASE/TRAVEL ALARM
A3	DESCENT ALARM (OPTION)
L3	CONTROLLER STATUS LED

E D C B A



1 2 3 4 5 6 7 8

[SEE OPTIONAL WIRING]*

*[** JIB BOOM ROTATE OPTION]*

CONTROL RELAY I.D.

CR1 - SECONDARY 48V DC POWER
CR2 - PRIMARY 48V DC POWER
CR3 - AUXILIARY PUMP
CR4 - HORN
CR5 - BRAKE RELEASE
CR10A - PLATFORM LEVEL CUTOUT (CE ONLY)
CR10B - PLATFORM LEVEL CUTOUT (CE ONLY)

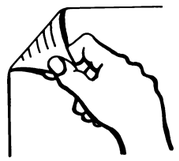
SPARE WIRE LIST

BLK-1
BLK/WHT-1
BLK/RED-1
BLU/WHT-1
BLU/RED-1
GRN/WHT-1

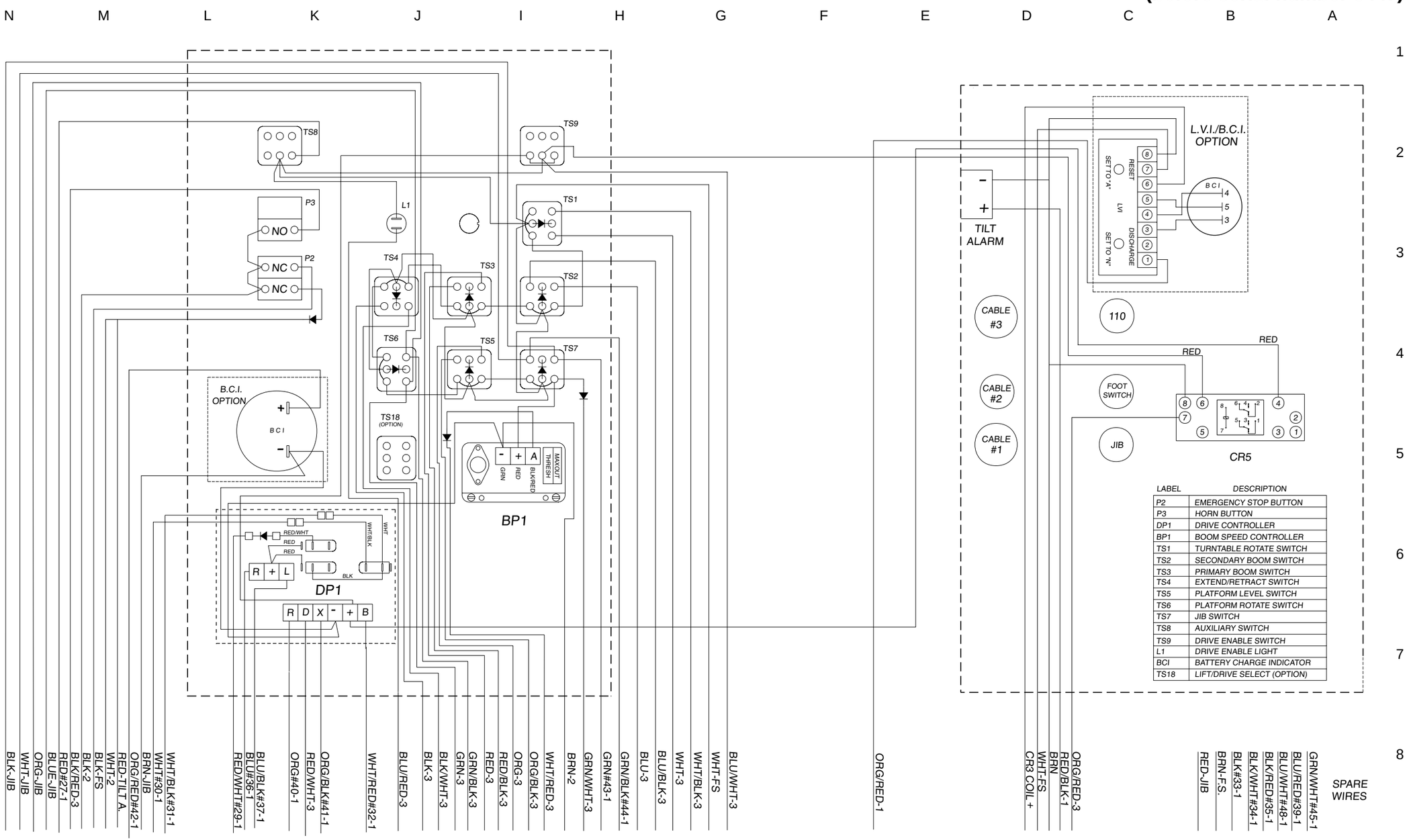
OPTION NUMBERS

1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM

Ground Control Panel Wiring Diagram (after serial number 4082)

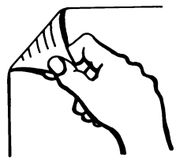


Platform Control Box Wiring Diagram (before serial number 3447)

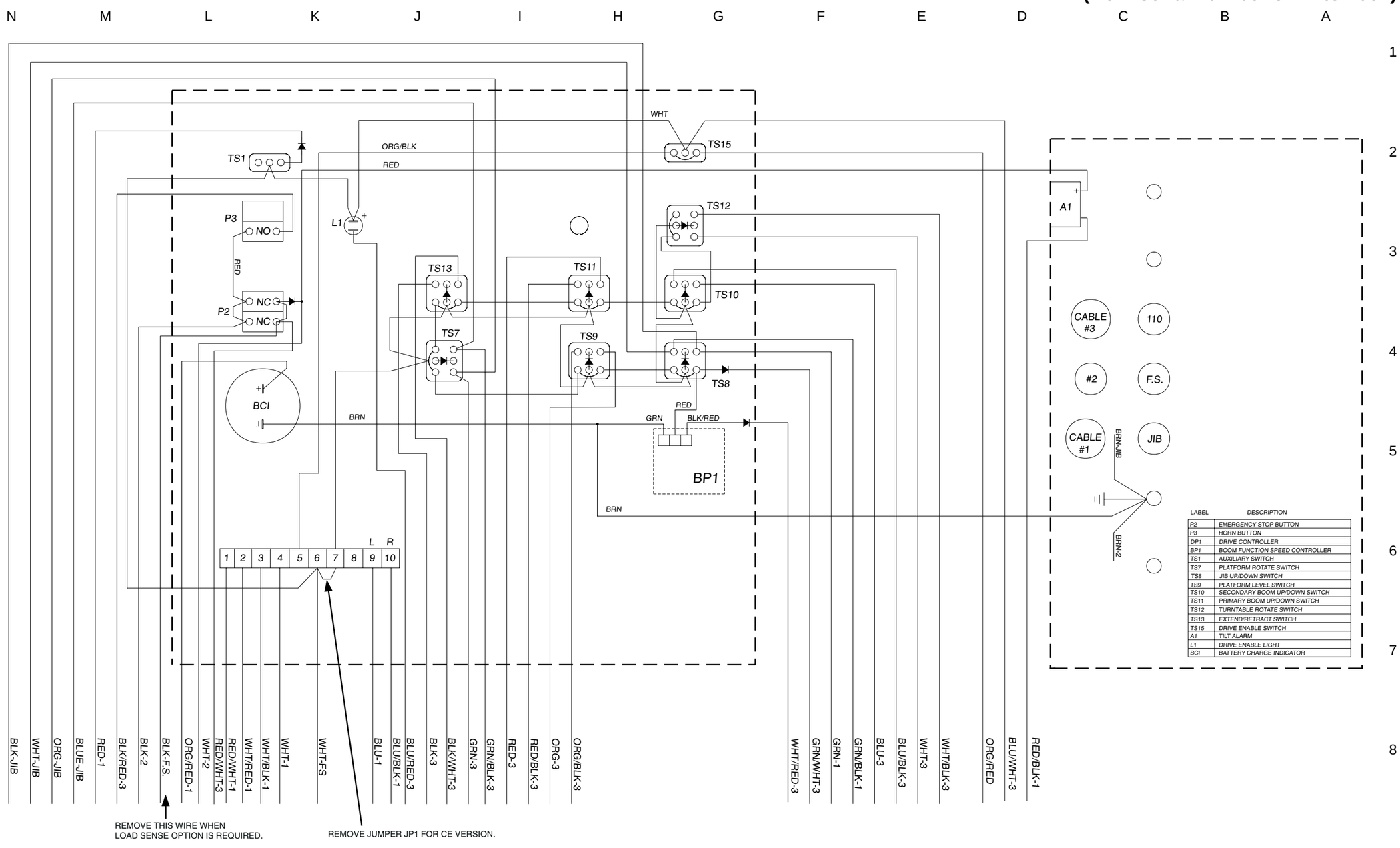


LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
DP1	DRIVE CONTROLLER
BP1	BOOM SPEED CONTROLLER
TS1	TURNTABLE ROTATE SWITCH
TS2	SECONDARY BOOM SWITCH
TS3	PRIMARY BOOM SWITCH
TS4	EXTEND/RETRACT SWITCH
TS5	PLATFORM LEVEL SWITCH
TS6	PLATFORM ROTATE SWITCH
TS7	JIB SWITCH
TS8	AUXILIARY SWITCH
TS9	DRIVE ENABLE SWITCH
L1	DRIVE ENABLE LIGHT
BCI	BATTERY CHARGE INDICATOR
TS18	LIFT/DRIVE SELECT (OPTION)

Platform Wiring Diagram (before serial number 3447)



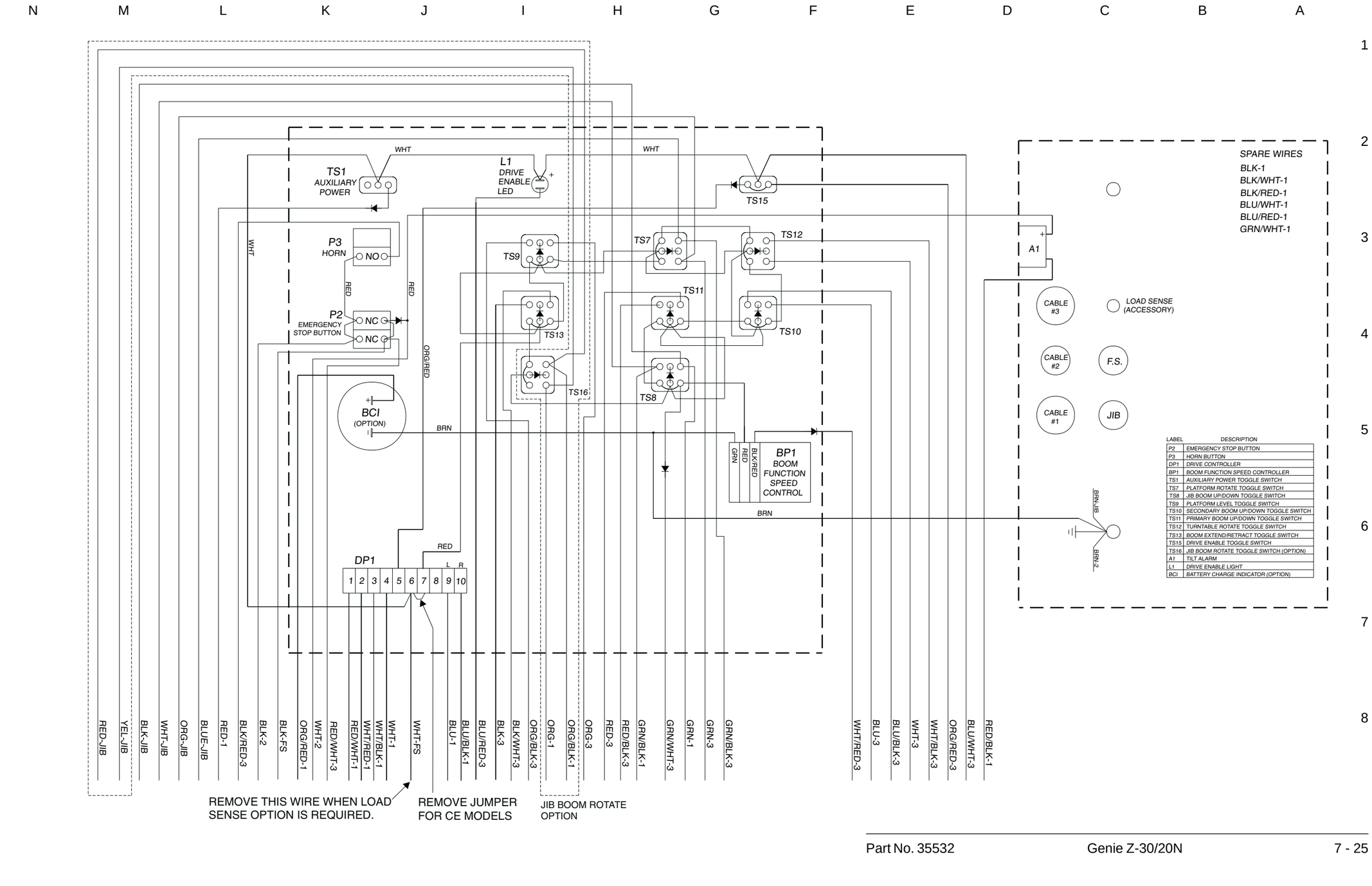
Platform Control Box Wiring Diagram (from serial number 3447 to 4082)



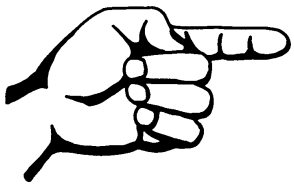
LABEL	DESCRIPTION
P2	EMERGENCY STOP BUTTON
P3	HORN BUTTON
DP1	DRIVE CONTROLLER
BP1	BOOM FUNCTION SPEED CONTROLLER
TS1	AUXILIARY SWITCH
TS7	PLATFORM ROTATE SWITCH
TS8	JIB UP/DOWN SWITCH
TS9	PLATFORM LEVEL SWITCH
TS10	SECONDARY BOOM UP/DOWN SWITCH
TS11	PRIMARY BOOM UP/DOWN SWITCH
TS12	TURNTABLE ROTATE SWITCH
TS13	EXTEND/RETRACT SWITCH
TS15	DRIVE ENABLE SWITCH
A1	TILT ALARM
L1	DRIVE ENABLE LIGHT
BCI	BATTERY CHARGE INDICATOR

Platform Control Box Wiring Diagram (from serial number 3447 to 4082)

Platform Control Box Wiring Diagram (after serial number 4082)

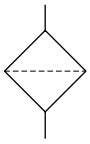


Platform Control Box Wiring Diagram (after serial number 4082)



This page intentionally left blank.

Hydraulic Symbols Legend



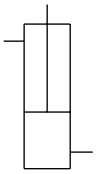
Hydraulic filter

Check valve

0.045 /
1.14 mm

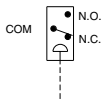
Orifice with size

Brake

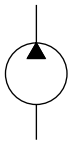


Double acting
cylinder

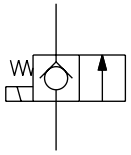
Pump prime mover
(motor)



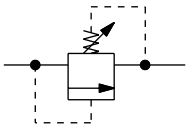
Pressure switch



Fixed displacement
pump

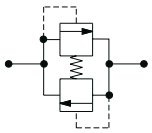


Solenoid operated
dump valve



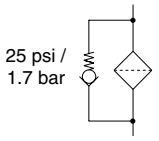
2800 psi /
193 bar

Relief valve
with pressure

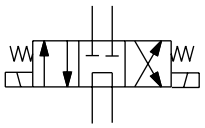


1100 psi /
75.8 bar

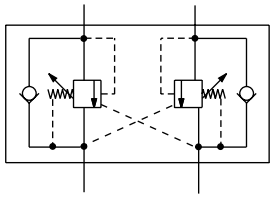
Dual relief valve
with pressure



Filter with by-pass

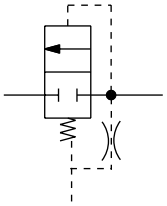


Solenoid operated 3 position,
4 way, directional valve

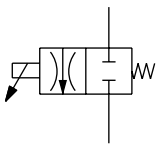


3000 psi /
207 bar
3:1

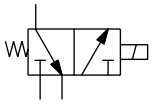
Counterbalance valve



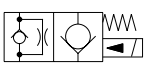
Differential
sensing valve



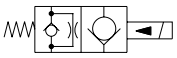
Solenoid operated
proportional valve



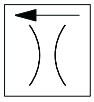
Solenoid operated
2 position, 3 way
directional valve



Normally closed
poppet valve



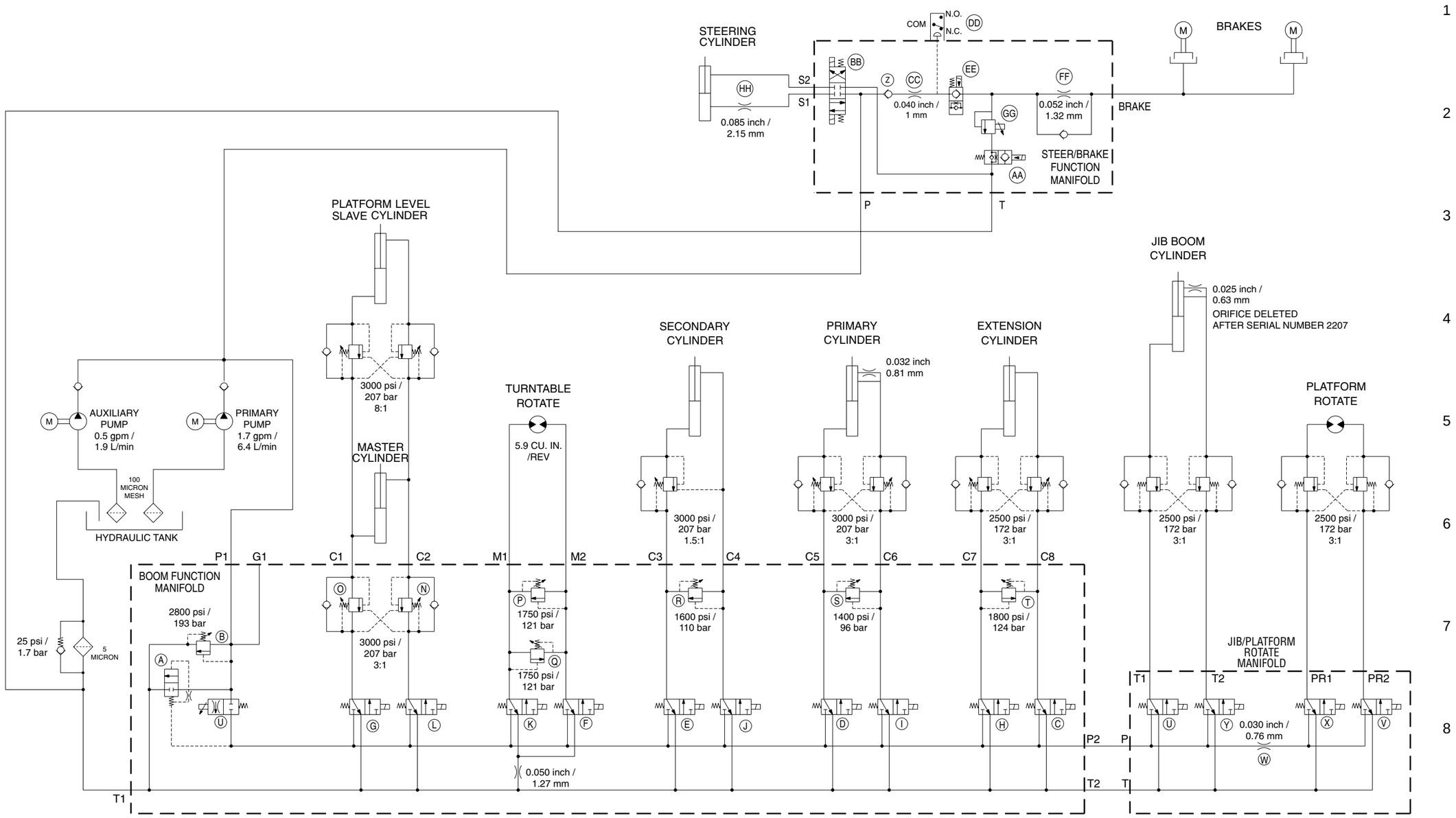
Normally open
poppet valve



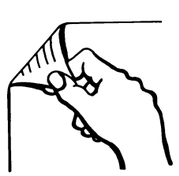
1.5 gpm /
5.7 L/min

Flow regulator valve

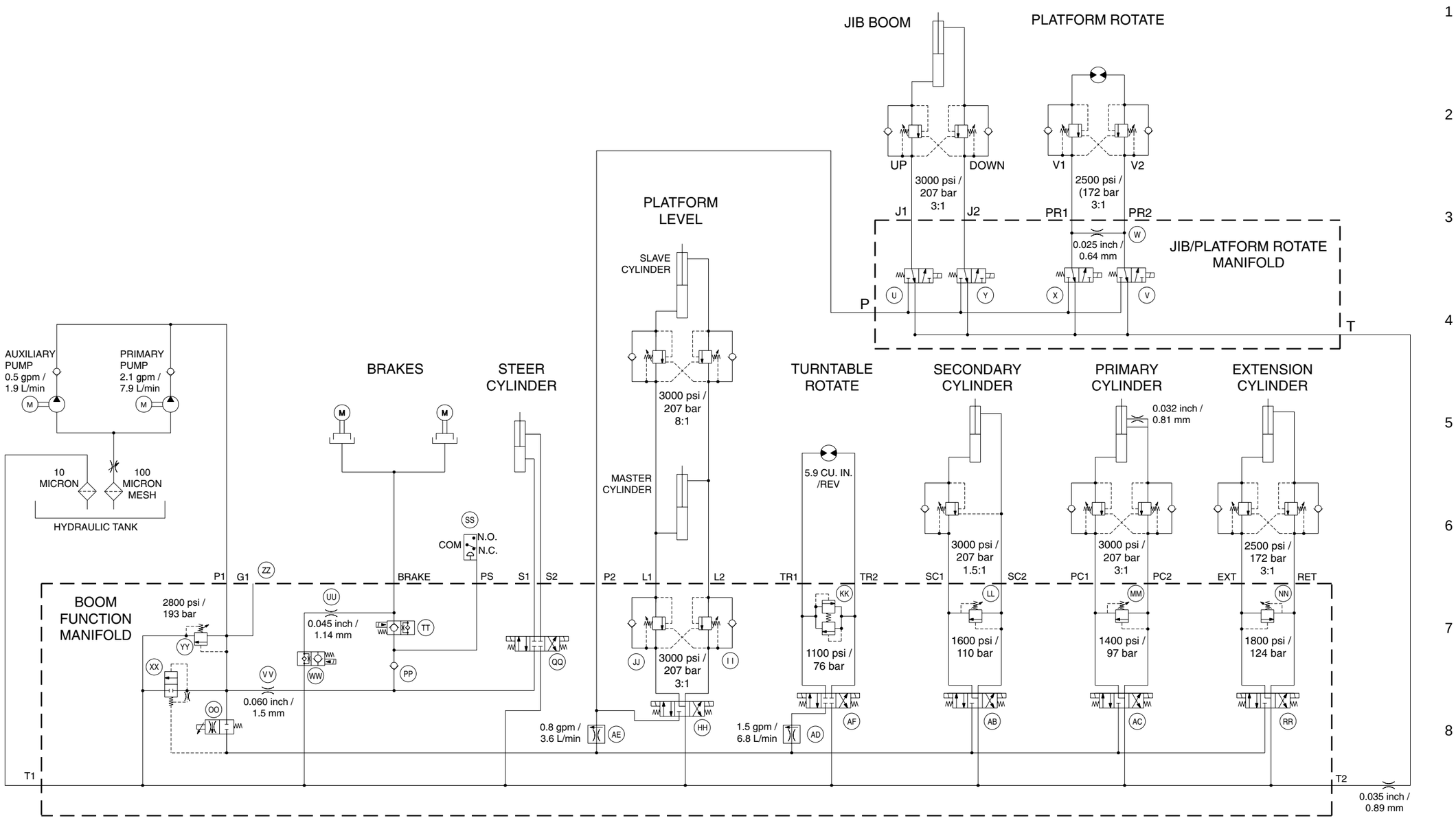
Hydraulic Schematic (before serial number 3447)



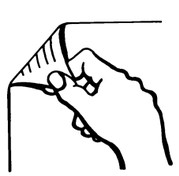
Hydraulic Schematic
(before serial number 3447)



Hydraulic Schematic
(from serial number 3447 to 4082)



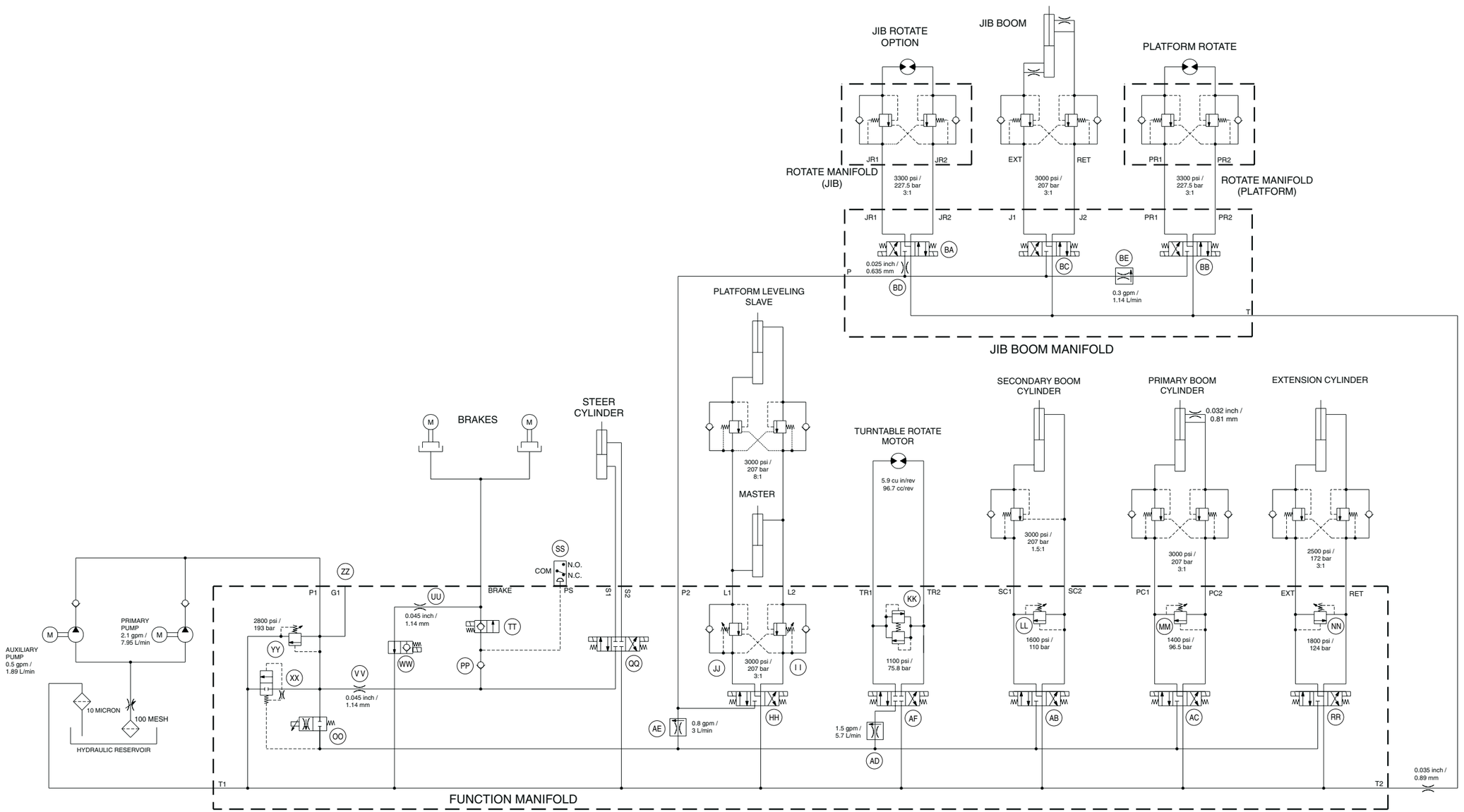
Hydraulic Schematic
(from serial number 3447 to 4082)



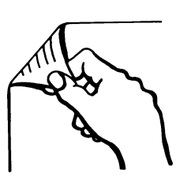
Hydraulic Schematic (from serial number 4083 to 5397)

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

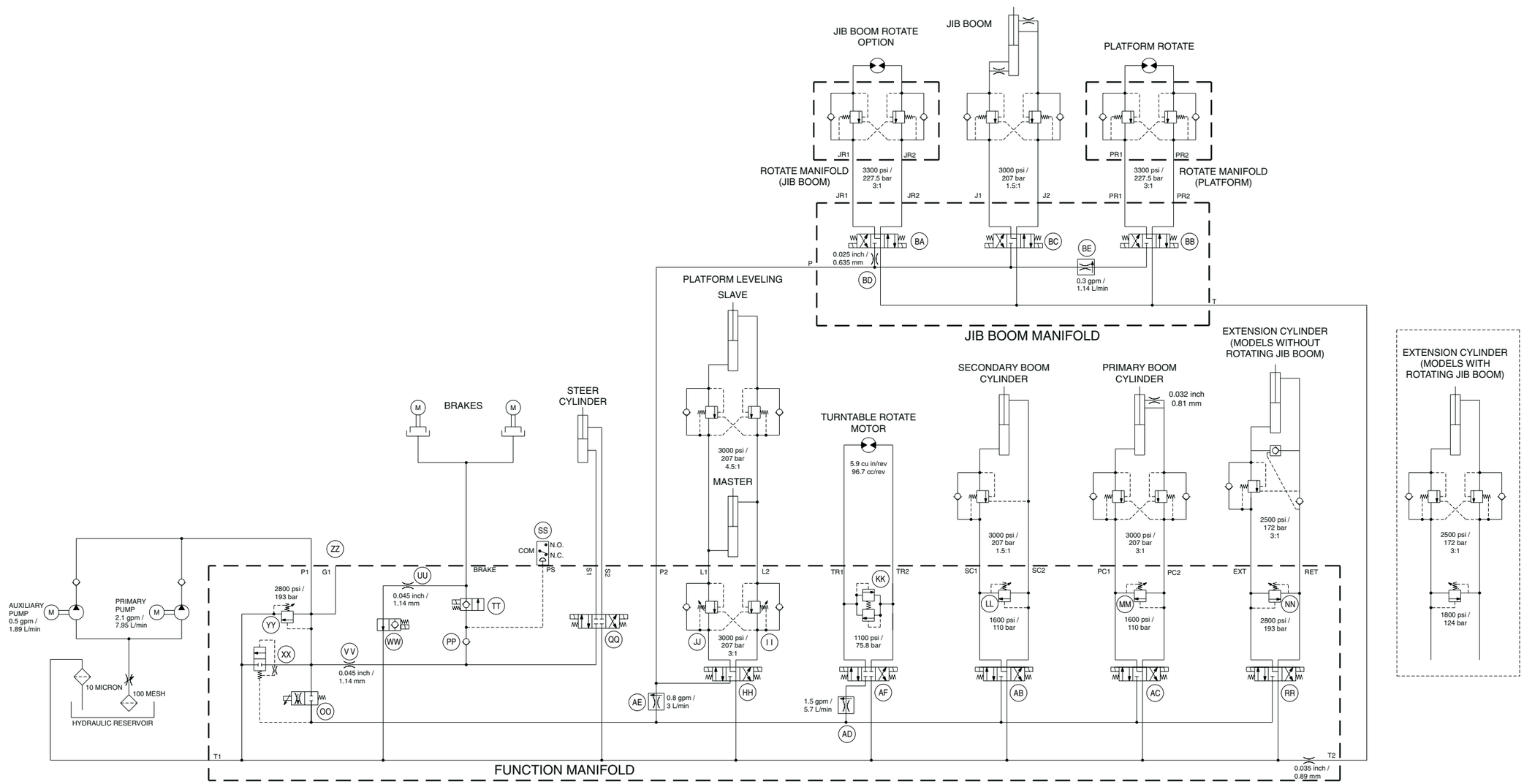
1 2 3 4 5 6 7 8



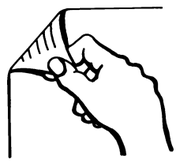
Hydraulic Schematic
(from serial number 4083 to 5397)



Hydraulic Schematic (after serial number 5397)



Hydraulic Schematic
(after serial number 5397)



Distributed By:

Genie North America
Phone 425.881.1800
Toll Free USA and Canada
800.536.1800
Fax 425.883.3475

Genie Australia Pty Ltd.
Phone +61 7 3375 1660
Fax +61 7 3375 1002

Genie China
Phone +86 21 53852570
Fax +86 21 53852569

Genie Malaysia
Phone +65 98 480 775
Fax +65 67 533 544

Genie Japan
Phone +81 3 3453 6082
Fax +81 3 3453 6083

Genie Korea
Phone +82 25 587 267
Fax +82 25 583 910

Genie Brasil
Phone +55 11 41 665 755
Fax +55 11 41 665 754

Genie Holland
Phone +31 183 581 102
Fax +31 183 581 566

Genie Scandinavia
Phone +46 31 575100
Fax +46 31 579020

Genie France
Phone +33 (0)2 37 26 09 99
Fax +33 (0)2 37 26 09 98

Genie Iberica
Phone +34 93 579 5042
Fax +34 93 579 5059

Genie Germany
Phone 0800 180 9017
Phone +49 422 149 1818
Fax +49 422 149 1820

Genie U.K.
Phone +44 (0)1476 584333
Fax +44 (0)1476 584334

Genie Mexico City
Phone +52 55 5666 5242
Fax +52 55 5666 3241