

Genie®

Service Manual

Part No. 128907
Rev A
January 2008

Z™-34/22

Bi-Energy Power

(before serial number 4800)

Introduction

Important

Read, understand and obey the safety rules and operating instructions in the appropriate *Genie Z-34/22 BE 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 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.

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128907 Rev A January 2008
Second Edition, First Printing

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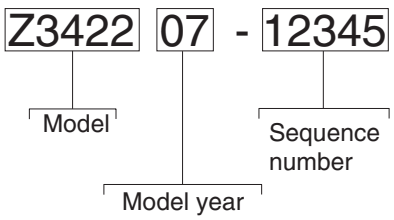
Serial Number Legend

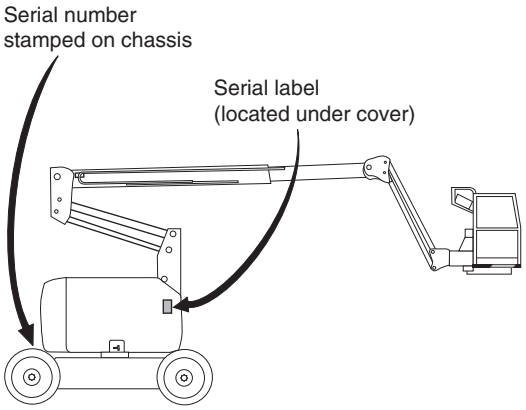
Model: Z-34/22
Serial number: Z342207-12345
Model year: 2007 **Manufacture date:** 02/01/07
Electrical schematic number: ESXXXX
Machine unladen weight:

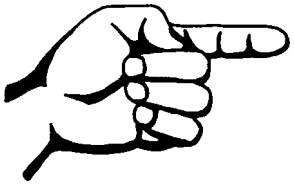
Rated work load (including occupants): XX kg
Maximum number of platfrm occupants: XX
Maximum allowable side force : XX N
Maximum allowable inclination of the chassis:
0 deg
Maximum wind speed : XX m/s
Maximum platform height : XX m
Maximum platform reach : XX m
Gradeability: N/A
Country of manufacture: USA
This machine complies with:
ANSI A92.5
CAN B.354.4

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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate *Genie Z-34/22 Bi-Energy Operator's Manual* will result in death or serious injury.

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

Do Not Perform Maintenance Unless:

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

SAFETY RULES

Personal Safety

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



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



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

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

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

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

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

NOTICE Green—used to indicate operation or maintenance information.



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



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

Workplace Safety



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



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



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



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



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



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

Table of Contents

Introduction

Important Information ..... *ii*

Serial Number Legend ..... *iii*

Section 1 **Safety Rules**

General Safety Rules ..... *v*

Section 2 **Rev** **Specifications**

A Machine Specifications ..... 2 - 1

Performance Specifications ..... 2 - 1

Hydraulic Oil Specifications ..... 2 - 3

Hydraulic Component Specifications ..... 2 - 4

Manifold Component Specifications ..... 2 - 5

Machine Torque Specifications ..... 2 - 5

Kubota Z482-E Engine Specifications ..... 2 - 6

Generator ..... 2 - 7

Generator Torque Specifications ..... 2 - 7

Hydraulic Hose and Fitting Specifications ..... 2 - 8

SAE and Metric Fasteners Torque Chart ..... 2 - 9

Section 3 **Rev** **Scheduled Maintenance Inspections**

A Introduction ..... 3 - 1

Pre-Delivery Preparation ..... 3 - 3

Maintenance Inspection Report ..... 3 - 5

A **Checklist A Procedures**

A-1 Inspect the Manuals and Decals ..... 3 - 7

A-2 Perform Pre-operation Inspection ..... 3 - 8

A-3 Perform Function Tests ..... 3 - 8

A-4 Perform Engine Maintenance ..... 3 - 9

A-5 Check the Generator Belts and Pulleys ..... 3 - 9

A-6 Perform 30 Day Service ..... 3 - 11

TABLE OF CONTENTS

Section 3	Rev	Scheduled Maintenance Procedures, continued	
	A	A-7 Perform Engine Maintenance	3 - 11
		A-8 Perform Engine Maintenance	3 - 12
		A-9 Perform Engine Maintenance	3 - 12
		A-10 Grease the Turntable Rotation Bearing and Worm Gear	3 - 13
		A-11 Replace the Drive Hub Oil	3 - 14
		A-12 Perform Engine Maintenance	3 - 14
	A	**Checklist B Procedures**	
		B-1 Check the Exhaust System	3 - 15
		B-2 Inspect the Batteries	3 - 15
		B-3 Inspect the Electrical Wiring	3 - 17
		B-4 Inspect the Tires, Wheels and Lug Nut Torque	3 - 17
		B-5 Confirm the Proper Brake Configuration	3 - 18
		B-6 Check the Oil Level in the Drive Hubs	3 - 18
		B-7 Check the Glow Plugs	3 - 19
		B-8 Check and Adjust the Engine RPM	3 - 19
		B-9 Test the Ground Control Override	3 - 20
		B-10 Test the Platform Self-leveling	3 - 21
		B-11 Test the Engine Idle Select	3 - 21
		B-12 Test the Drive Brakes	3 - 22
		B-13 Test the Drive Speed - Stowed Position	3 - 23
		B-14 Test the Drive Speed - Raised or Extended Position	3 - 23
		B-15 Test the Alarm Package - Optional Equipment	3 - 24
		B-16 Test the Turntable Rotation Stop	3 - 25
		B-17 Check the Electrical Contactors	3 - 25
		B-18 Inspect the Fuel and Hydraulic Cap Venting Systems	3 - 26
		B-19 Perform Hydraulic Oil Analysis	3 - 27
		B-20 Perform Engine Maintenance	3 - 27

TABLE OF CONTENTS

Section 3 **Rev** **Scheduled Maintenance Procedures,** continued

A **Checklist C Procedures**

C-1 Grease the Platform Overload Mechanisim (if equipped) ..... 3 - 28

C-2 Test the Platform Overload System (if equipped) ..... 3 - 28

C-3 Clean the Fuel Tank ..... 3 - 31

C-4 Perform Engine Maintenance ..... 3 - 32

C-5 Perform Engine Maintenance ..... 3 - 32

A **Checklist D Procedures**

D-1 Check the Primary Boom Wear Pads ..... 3 - 33

D-2 Check the Turntable Rotation Bearing Bolts ..... 3 - 33

D-3 Inspect for Turntable Bearing Wear ..... 3 - 34

D-4 Check the Free-wheel Configuration ..... 3 - 36

D-5 Replace the Drive Hub Oil ..... 3 - 37

D-6 Replace the Hydraulic Tank Return Filter ..... 3 - 37

A **Checklist E Procedures**

E-1 Test or Replace the Hydraulic Oil ..... 3 - 38

E-2 Perform Engine Maintenance ..... 3 - 39

E-3 Grease the Steer Axle Wheel Bearings ..... 3 - 40

E-4 Perform Engine Maintenance ..... 3 - 41

Section 4 **Rev** **Repair Procedures**

Introduction ..... 4 - 1

A **Platform Controls**

1-1 Controllers ..... 4 - 2

1-2 Diodes ..... 4 - 4

1-3 Foot Switch ..... 4 - 4

1-4 Toggle Switches ..... 4 - 5

TABLE OF CONTENTS

Section 4 **Rev** **Repair Procedures,** continued

A **Platform Components**

2-1 Platform ..... 4 - 6
2-2 Platform Leveling Slave Cylinder ..... 4 - 6
2-3 Platform Rotator ..... 4 - 7
2-4 Platform Overload System ..... 4 - 9

A **Jib Boom Components**

3-1 Jib Boom ..... 4 - 11
3-2 Jib Boom Lift Cylinder ..... 4 - 12

A **Primary Boom Components**

4-1 Plastic Cable Track ..... 4 - 13
4-2 Primary Boom ..... 4 - 13
4-3 Primary Boom Lift Cylinder ..... 4 - 16
4-4 Extension Cylinder ..... 4 - 18
4-5 Platform Leveling Master Cylinder ..... 4 - 19

A **Secondary Boom Components**

5-1 Secondary Boom ..... 4 - 21
5-2 Secondary Boom Lift Cylinder ..... 4 - 24

A **Kubota Z-482-E Engine**

6-1 Timing Adjustment ..... 4 - 25
6-2 Glow Plugs ..... 4 - 25
6-3 Engine RPM ..... 4 - 25
6-4 Engine Drive Pulley ..... 4 - 25
6-5 Water Temperature and Oil Pressure Switches ..... 4 - 27

A **Generator**

7-1 Generator ..... 4 - 28
7-2 Generator Belts ..... 4 - 30
7-3 Generator Voltage Regulator ..... 4 - 30

Section 4 **Rev** **Repair Procedures,** continued

A **Ground Controls**

8-1 Control Relays ..... 4 - 33

8-2 Toggle Switches, See 1-4, *Toggle Switches* ..... 4 - 34

8-3 Wago® Components ..... 4 - 34

A **Hydraulic Pumps**

9-1 Auxiliary Pump ..... 4 - 35

9-2 Function Pump ..... 4 - 36

A **Function Manifolds**

10-1 Function Manifold Components (before serial number 1112) ..... 4 - 38

10-2 Function Manifold Components (after serial number 1111) ..... 4 - 40

10-3 Valve Adjustments - Function Manifold ..... 4 - 42

10-4 Jib Boom / Platform Rotate Manifold Components (before s/n 2006) ..... 4 - 46

10-5 Jib Boom / Platform Rotate Manifold Components (after s/n 2005) ..... 4 - 47

10-6 Steer/Brake Manifold Components (before serial number 1112) ..... 4 - 48

A **Fuel and Hydraulic Tanks**

11-1 Fuel Tank ..... 4 - 49

11-2 Hydraulic Tank ..... 4 - 50

A **Turntable Rotation Components**

12-1 Rotation Hydraulic Motor ..... 4 - 51

A **Steer Axle Components**

13-1 Yoke and Hub ..... 4 - 52

13-2 Steer Cylinder ..... 4 - 53

13-3 Tie Rod ..... 4 - 54

A **Non-steer Axle Components**

14-1 Drive Motor ..... 4 - 55

14-2 Drive Hub ..... 4 - 55

A **Motor Controller**

15-1 Motor Controller ..... 4 - 57

TABLE OF CONTENTS

Section 5	Rev	Troubleshooting Flow Charts	
	A	Introduction	5 - 1
		Fault Code Chart	5 - 3
		1 Engine Will Not Crank Over	5 - 6
		2 Engine Cranks Over But Will Not Start	5 - 9
		3 Engine Glow Plugs Inoperative	5 - 12
		4 Engine High Idle Inoperative	5 - 14
		5 Engine Low Idle Inoperative	5 - 16
		6 All Lift and Steer Functions Inoperative, Drive Function Operational (before serial number 1112)	5 - 17
		7 All Lift and Steer Functions Inoperative, Drive Function Operational (after serial number 1111)	5 - 18
		8 Ground Controls Inoperative, Platform Controls Operate Normally	5 - 19
		9 Platform Controls Inoperative, Ground Controls Operate Normally	5 - 20
		10 Primary Boom Up Function Inoperative	5 - 23
		11 Primary Boom Down Function Inoperative	5 - 26
		12 Secondary Boom Up Function Inoperative	5 - 29
		13 Secondary Boom Down Function Inoperative	5 - 32
		14 Primary Boom Extend Function Inoperative	5 - 35
		15 Primary Boom Retract Function Inoperative	5 - 38
		16 Turntable Rotate Left Function Inoperative	5 - 41
		17 Turntable Rotate Right Function Inoperative	5 - 44
		18 All Platform Leveling Functions Inoperative	5 - 47
		19 Platform Level Up Function Inoperative	5 - 48
		20 Platform Level Down Function Inoperative	5 - 51
		21 Platform Rotate Left Function Inoperative	5 - 54
		22 Platform Rotate Right Function Inoperative	5 - 57

TABLE OF CONTENTS

Section 5	Rev		Troubleshooting Flow Charts, continued	
	A	23	Jib Boom Up Function Inoperative	5 - 60
		24	Jib Boom Down Function Inoperative	5 - 63
		25	Steer Left Function Inoperative (before serial number 1112)	5 - 66
		26	Steer Right Function Inoperative (before serial number 1112)	5 - 68
		27	Steer Left Function Inoperative (after serial number 1111)	5 - 70
		28	Steer Right Function Inoperative (after serial number 1111)	5 - 72
		29	All Drive Functions Inoperative, All Other Functions Operate Normally	5 - 74
		29A	Motor Controller Fault Code 21: Throttle Fault	5 - 76
		29B	Motor Controller Fault Code 32: Main Contactor Welded	5 - 77
		29C	Motor Controller Fault Code 34: Mising Main Contactor or Main Contactor Did Not Close	5 - 78
		30	Brake Release Function Inoperative	5 - 80
		31	Traction Function Inoperative	5 - 82
		32	Machine Will Not Drive At Full Speed	5 - 83
		33	Machine Drives At Full Speed With Platform Raised or Extended	5 - 85
		34	Drive Enable System Inoperative	5 - 86
		35	Auxiliary Functions Inoperative	5 - 88

Section 6	Rev	Schematics	
	A	Introduction	6 - 1
	A	Electrical Components	6 - 2
	A	Electrical Symbols Legend	6 - 4
	A	Abbreviation Legend	6 - 5
	A	Hydraulic Symbols Legend	6 - 6
	A	Electrical Schematic (before serial number 1468)	6 - 7
	A	Electrical Schematic (from serial number 1468 to 3214)	6 - 9
	A	Electrical Schematic (from serial number 3215 to 3577)	6 - 11
	A	Electrical Schematic (from serial number 3578 to 4799)	6 - 13

TABLE OF CONTENTS

Section 6	**Rev**	**Schematics,** continued	
	A	Ground Control Box (before serial number 1468)	6 - 15
	A	Ground Control Box (from serial number 1468 to 3214)	6 - 16
	A	Ground Control Box (from serial number 3215 to 3577)	6 - 17
	A	Ground Control Box (from serial number 3578 to 4799)	6 - 18
	A	Platform Control Box (before serial number 1468)	6 - 19
	A	Platform Control Box (from serial number 1468 to 1786)	6 - 20
	A	Platform Control Box (from serial number 1787 to 2097)	6 - 21
	A	Platform Control Box (from serial number 2098 to 3577)	6 - 22
	A	Platform Control Box (from serial number 3578 to 4799)	6 - 23
	A	Power Cable Wiring Diagram (before serial number 1486)	6 - 24
	A	Power Cable Wiring Diagram (from serial number 1486 to 4799)	6 - 25
	A	Drive Contactor Panel Wiring Diagram (before serial number 1787)	6 - 26
	A	Drive Contactor Panel Wiring Diagram (from serial number 1787 to 2060)	6 - 27
	A	Drive Contactor Panel Wiring Diagram (from serial number 2061 to 4799)	6 - 28
	A	Manifold and Limit Switch Wiring Diagram (before serial number 1112)	6 - 29
	A	Manifold and Limit Switch Wiring Diagram (from serial number 1112 to 4799)	6 - 30
	A	Engine Wiring Diagram	6 - 31
	A	Load Sense Option Wiring Diagram (before serial number 2098)	6 - 32
	A	Load Sense Option Wiring Diagram (from serial number 2098 to 3577)	6 - 33
	A	LVI/BCI Option Wiring Diagram	6 - 34
	A	Hydraulic Schematic (before serial number 1112)	6 - 35
	A	Hydraulic Schematic (from serial number 1112 to 2005)	6 - 36
	A	Hydraulic Schematic (from serial number 2006 to 3215)	6 - 37
	A	Hydraulic Schematic (from serial number 3216 to 4799)	6 - 38

Specifications

REV A

Machine Specifications

Tires and wheels	Industrial
Tire size	9-14.5 LT
Tire ply rating	Tread 6 Sidewall 6
Overall tire diameter	28 in 71.1 cm
Wheel diameter	14.5 in 36.8 cm
Wheel width	7 in 17.8 cm
Wheel lugs Front Rear	 8 @ 5/8-18 9 @ 5/8-18
Tire pressure	100 psi 6.89 bar
Lug nut torque	125 ft-lbs 169.5 Nm
Fluid capacities	
Fuel tank capacity (before serial number 1947)	12 gallons 45.4 liters
Fuel tank capacity (after serial numbar 1946)	9.3 gallons 35.2 liters
Hydraulic tank capacity	4 gallons 15.1 liters
Hydraulic system capacity (including tank)	6 gallons 22.7 liters
Drive hubs	17 ounces 0.5 liters
Drive hub oil type:	EP 80-90W gear oil API service classification GL5

For operational specifications, refer to the Operator's Manual.

Performance Specifications

Drive speeds (maximum)	
Boom stowed	3.7 mph 5.9 km/h 40 ft/7.5 sec 12.2 m/7.5 sec
Boom raised or extended	0.6 mph 1 km/h 40 ft/45.5 sec 12.2 m/45.5 sec
Braking distance, maximum	
High range on paved surface	3 to 4 ft 0.9 to 1.2 m
Gradeability (stowed)	See Operator's Manual

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SPECIFICATIONS REV A

Boom function speeds, maximum from platform controls (with 500 lbs in platform) Before serial number 1734	
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 500 lbs in platform) After serial number 1733	
Jib boom up	23 to 29 seconds
Jib boom down	20 to 26 seconds
Primary boom up	15 to 21 seconds
Primary boom down	12 to 18 seconds
Primary boom extend	12 to 18 seconds
Primary boom retract	12 to 18 seconds
Secondary boom up	15 to 21 seconds
Secondary boom down	12 to 18 seconds
Turntable rotate, 355°	57 to 63 seconds
Platform rotate, 160° (before serial number 1892)	5 to 10 seconds
Platform rotate, 180° (after serial number 1891)	6 to 11 seconds
Platform level up	10 to 20 seconds
Platform level down	10 to 20 seconds

Hydraulic Oil Specifications

Hydraulic Oil Specifications	
Hydraulic oil type	Chevron Rykon MV equivalent
Viscosity grade	Multi-viscosity
Viscosity index	200
Cleanliness level, minimum	15/13
Water content, maximum	200 ppm

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and the viscosity index should exceed 140. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Environ MV46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

CAUTION Component damage hazard. Continued use of Chevron Aviation A hydraulic fluid when ambient temperatures are consistently above 32°F / 0°C may result in component damage.

NOTICE Use Chevron Aviation A hydraulic fluid when ambient temperatures are consistently below 0°F / -18°C.

NOTICE Use Shell Tellus T46 hydraulic oil when oil temperatures consistently exceed 205°F / 96°C.

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

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SPECIFICATIONS REV A

Hydraulic Component Specifications

Function pump	
Type:	Fixed displacement gear pump
Displacement per revolution	0.183 cu in 3 cc
Hydraulic tank return line filter	10 micron with with 25 psi / 1.7 bar bypass
Hydraulic tank suction line filter.	25 micron with 5 psi / .34 bar bypass
Function manifold	
Function relief valve pressure	3200 psi 220.6 bar
Primary boom down relief Function relief	1400 psi 96.5 bar
Secondary boom down relief valve pressure	1600 psi 110.3 bar
Primary boom extend relief valve pressure	1800 psi 124 bar
Turntable rotate relief valve pressures	1100 psi 75.8 bar
Auxiliary pump	
Type	Fixed displacement gear pump
Displacement	0.75 gpm 2.8 L / min

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Manifold Component Specifications

Plug torque	
SAE No. 2	36 in-lbs / 4 Nm
SAE No. 4	10 ft-lbs / 13 Nm
SAE No. 6	14 ft-lbs / 19 Nm
SAE No. 8	38 ft-lbs / 51 Nm
SAE No. 10	41 ft-lbs / 55 Nm
SAE No. 12	56 ft-lbs / 76 Nm

Valve Coil Resistance

Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / 10°C that your air temperature increases or decreases from 68°F / 20°C.

Valve coil specifications	
3 position 4 way solenoid valve 20V DC (schematic items A, I, J, K, M, N, P, Q, R, S, T, U, W, X, BA, BB, BC, BD, CA and CB)	22 - 25Ω
Proportional solenoid valve 24V DC (schematic item H)	4 - 5.2Ω

Machine Torque Specifications

Platform rotator	
3/4 -10 center bolt, GR 8 (dry)	380 ft-lbs 515 Nm
3/4 -10 center bolt, GR 8 (lubricated)	280 ft-lbs 379 Nm
3/8 -16 bolts, GR 8 (dry)	44 ft-lbs 60 Nm
3/8 -16 bolts, GR 8 (lubricated)	33 ft-lbs 45 Nm

Turntable rotate assembly	
Rotate bearing mounting bolts, lubricated	180 ft-lbs 244 Nm
Rotate bearing motor mounting bolts, lubricated	93 ft-lbs 126 Nm

Drive motor and hubs	
Drive hub mounting bolts, lubricated	180 ft-lbs 244 Nm
Drive motor mounting bolts, lubricated	
3/8 -16, GR 5	23 ft-lbs 31 Nm
7/16 -14, GR 5	37 ft-lbs 50 Nm

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SPECIFICATIONS REV A

Kubota Z482-E Engine

Displacement	29.23 cu in 0.48 liters
Number of cylinders	2
Bore and stroke	2.64 x 2.68 inches 67 x 68 mm
Horsepower Gross intermitent	12.5 @ 3600 rpm
Firing order	1 - 2
Compression ratio	23:1
Compression pressure	412 to 469 psi 28.4 to 32.3 bar
Low idle	2000 rpm
High idle	3000 rpm
Governor	centrifugal mechanical
Valve clearance, cold	0.0057 to 0.0072 in 0.145 to 0.183 mm
Engine coolant	
Capacity	2.9 quarts 2.8 liters
Lubrication system	
Oil pressure	36 to 64 psi 2.48 to 4.41 bar
Oil capacity (including filter)	2.6 quarts 2.5 liters
Oil viscosity requirements	10W-30
Engine oil should have properties of API classification CC/SE, CD/SE, CC/SF or CD/SF grades.	
Injection system	
Injection pump make	Bocsh MD
Injection timing	21° BTDC
Injection pump pressure	1991 psi 137 bar
Fuel requirement	diesel number 2-D
Alternator Output	12V, 150 watts
Starter motor	
Brush length, new	0.5188 in 13 mm
Brush length, minimum	0.3346 in 8.5 mm
Battery	
Type	12V, Group 70
Quantity	1
Cold cranking ampere	450A
Reserve capacity @ 25A rate	125 minutes
Fan belt deflection	1/4 to 3/8 inch 7 to 9 mm

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REV A SPECIFICATIONS

Generator

Generator output with engine @ 3000 rpm	54V DC, 100A
Generator pulley to engine pulley offset, maximum	1/16 inch 1.6 mm
Belt deflection, maximum	1/4 inch 6.4 mm

Generator Torque Specifications

Generator pulley retaining nut torque	80-90 ft-lbs 108-122 Nm
Engine pulley retaining bolts	108 in-lbs 12.2 Nm
#10 screw	25 in-lbs 2.8 Nm
#10 nut	25 in-lbs 2.8 Nm
#4 nut	8-10 in-lbs 0.9-1.1 Nm
Voltage regulator mounting fasteners	25 in-lbs 2.8 Nm

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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 / 15 Nm
-6	23 ft-lbs / 31 Nm
-8	40 ft-lbs / 54 Nm
-10	69 ft-lbs / 94 Nm
-12	93 ft-lbs / 126 Nm
-16	139 ft-lbs / 188 Nm
-20	172 ft-lbs / 233 Nm
-24	208 ft-lbs / 282 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.

Note: 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.

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

SAE Dash size	Torque
-4	16 ft-lbs / 22 Nm
-6	35 ft-lbs / 47 Nm
-8	60 ft-lbs / 81 Nm
-10	105 ft-lbs / 142 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 285 Nm
-20	260 ft-lbs / 353 Nm
-24	315 ft-lbs / 427 Nm

Seal-Lok® Fittings
(hose end)

SAE Dash size	Torque
-4	18 ft-lbs / 25 Nm
-6	30 ft-lbs / 40 Nm
-8	40 ft-lbs / 55 Nm
-10	60 ft-lbs / 81 Nm
-12	85 ft-lbs / 115 Nm
-16	110 ft-lbs / 150 Nm
-20	140 ft-lbs / 190 Nm
-24	180 ft-lbs / 244 Nm

SAE FASTENER TORQUE CHART

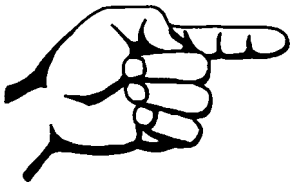
• This chart is to be used as a guide only unless noted elsewhere in this manual •

SIZE	THREAD	Grade 5				Grade 8				A574 High Strength Black Oxide Bolts	
		LUBED		DRY		LUBED		DRY		LUBED	
		in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/4	20	80	9	100	11.3	110	12.4	140	15.8	130	14.7
	28	90	10.1	120	13.5	120	13.5	160	18	140	15.8
		LUBED		DRY		LUBED		DRY		LUBED	
		ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
5/16	18	13	17.6	17	23	18	24	25	33.9	21	28.4
	24	14	19	19	25.7	20	27.1	27	36.6	24	32.5
3/8	16	23	31.2	31	42	33	44.7	44	59.6	38	51.5
	24	26	35.2	35	47.4	37	50.1	49	66.4	43	58.3
7/16	14	37	50.1	49	66.4	50	67.8	70	94.7	61	82.7
	20	41	55.5	55	74.5	60	81.3	80	108.4	68	92.1
1/2	13	57	77.3	75	101.6	80	108.4	110	149	93	126
	20	64	86.7	85	115	90	122	120	162	105	142
9/16	12	80	108.4	110	149	120	162	150	203	130	176
	18	90	122	120	162	130	176	170	230	140	189
5/8	11	110	149	150	203	160	217	210	284	180	244
	18	130	176	170	230	180	244	240	325	200	271
3/4	10	200	271	270	366	280	379	380	515	320	433
	16	220	298	300	406	310	420	420	569	350	474
7/8	9	320	433	430	583	450	610	610	827	510	691
	14	350	474	470	637	500	678	670	908	560	759
1	8	480	650	640	867	680	922	910	1233	770	1044
	12	530	718	710	962	750	1016	990	1342	840	1139
1 1/8	7	590	800	790	1071	970	1315	1290	1749	1090	1477
	12	670	908	890	1206	1080	1464	1440	1952	1220	1654
1 1/4	7	840	1138	1120	1518	1360	1844	1820	2467	1530	2074
	12	930	1260	1240	1681	1510	2047	2010	2725	1700	2304
1 1/2	6	1460	1979	1950	2643	2370	3213	3160	4284	2670	3620
	12	1640	2223	2190	2969	2670	3620	3560	4826	3000	4067

METRIC FASTENER TORQUE CHART

• This chart is to be used as a guide only unless noted elsewhere in this manual •

Size (mm)	Class 4.6				Class 8.8				Class 10.9				Class 12.9			
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
5	16	1.8	21	2.4	41	4.63	54	6.18	58	6.63	78	8.84	68	7.75	91	10.3
6	19	3.05	36	4.07	69	7.87	93	10.5	100	11.3	132	15	116	13.2	155	17.6
7	45	5.12	60	6.83	116	13.2	155	17.6	167	18.9	223	25.2	1.95	22.1	260	29.4
	LUBED		DRY		LUBED		DRY		LUBED		DRY		LUBED		DRY	
	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm	ft-lbs	Nm
8	5.4	7.41	7.2	9.88	14	19.1	18.8	25.5	20.1	27.3	26.9	36.5	23.6	32	31.4	42.6
10	10.8	14.7	14.4	19.6	27.9	37.8	37.2	50.5	39.9	54.1	53.2	72.2	46.7	63.3	62.3	84.4
12	18.9	25.6	25.1	34.1	48.6	66	64.9	88	69.7	94.5	92.2	125	81	110	108	147
14	30.1	40.8	40	54.3	77.4	105	103	140	110	150	147	200	129	175	172	234
16	46.9	63.6	62.5	84.8	125	170	166	226	173	235	230	313	202	274	269	365
18	64.5	87.5	86.2	117	171	233	229	311	238	323	317	430	278	377	371	503
20	91	124	121	165	243	330	325	441	337	458	450	610	394	535	525	713
22	124	169	166	225	331	450	442	600	458	622	612	830	536	727	715	970
24	157	214	210	285	420	570	562	762	583	791	778	1055	682	925	909	1233



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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, semi-annually, annually and every two 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.
- ☑ Use only Genie approved replacement parts.
- ☑ 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



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

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

⚠CAUTION Used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Used to indicate the presense of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Used to indicate operation or maintenance information.

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

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

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 engine will be required to perform this procedure.



Indicates that a warm engine will be required to perform this procedure.



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

Pre-delivery Preparation Report

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

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

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annual and two year. The *Scheduled Maintenance Procedures Section* and the *Maintenance Inspection Report* have been divided into five subsections—A, B, C, D and E. 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
Semi-annually or every 500 hours	A + B + C
Annually or every 1000 hours	A + B + C + D
Two years or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

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

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

Pre-Delivery Preparation

Fundamentals

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

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

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

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

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

Instructions

Use the operator's manual on your machine.

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

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

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

Legend

Y = yes, completed
N = no, unable to complete
R = repaired

Comments

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

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

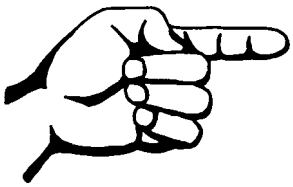
Inspector company

Genie®
A TEREX COMPANY

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

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

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Rev B



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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this 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**
☐	**Semi-annually or 500 hour Inspection:**	**A+B+C**
☐	**Annual or 1000 hours Inspection:**	**A+B+C+D**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D+E**

- 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

Checklist A - Rev A	**Y**	**N**	**R**
A-1 Manuals and decals			
A-2 Pre-operation inspection			
A-3 Function tests			
A-4 Engine maintenance			
A-5 Generator belts			
Perform after 40 hours:			
A-6 30 Day Service			
Perform after 50 hours:			
A-7 Engine maintenance			
Perform every 50 hours:			
A-8 Engine maintenance			
Perform every 100 hours:			
A-9 Engine maintenance			
A-10 Grease rotation bearing			
Perform after 150 hours:			
A-11 Drive hub oil			
Perform every 200 hours:			
A-12 Engine maintenance			

Checklist B - Rev A	**Y**	**N**	**R**
B-1 Exhaust system			
B-2 Batteries			
B-3 Electrical wiring			
B-4 Tires, wheels and lug nut torque			
B-5 Brake configuration			
B-6 Drive hub oil level			
B-7 Glow plugs			
B-8 Engine RPM			
B-9 Ground control override			
B-10 Platform self leveling			
B-11 Engine idle select			
B-12 Drive brakes			
B-13 Drive speed - stowed			
B-14 Drive speed - raised or extended			
B-15 Alarm package (if equipped)			
B-16 Turntable rotation stop			
B-17 Electrical contactors			
B-18 Fuel and hydraulic tank cap venting			
B-19 Hydraulic oil analysis			
Perform every 400 hours:			
B-20 Engine maintenance			

Comments

MAINTENANCE INSPECTION REPORT REV A

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
	Semi-annually or 500 hour Inspection: A+B+C
	Annual or 1000 hours Inspection: A+B+C+D
	2 Year or 2000 hour Inspection: A+B+C+D+E

- 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

Checklist C - Rev A	**Y**	**N**	**R**
C-1 Grease platform overload (if equipped)			
C-2 Test platform overload (if equipped)			
C-3 Clean the fuel tank			
C-4 Engine maintenance			
Perform every 800 hours:			
C-5 Engine maintenance			

Checklist D - Rev A	**Y**	**N**	**R**
D-1 Boom wear pads			
D-2 Turntable rotation bolts			
D-3 Turntable bearing wear			
D-4 Free-wheel configuration			
D-5 Drive hub oil			
D-6 Replace hydraulic filter			

Checklist E - Rev A	**Y**	**N**	**R**
E-1 Replace hydraulic oil			
E-2 Engine maintenance			
E-3 Grease wheel bearings			
Perform every 3000 hours:			
E-4 Engine maintenance			

Comments

Checklist A Procedures

REV A

A-1
Inspect the Manuals and Decals

NOTICE Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

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.

In addition, maintaining all of the safety and instructional decals 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 Check to make sure that the operator's and safety manuals are present and complete in the storage container on the platform.

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

⊙ Result: The operator's manual is appropriate for the machine and all manuals are legible and in good condition.

⊠ Result: The operator's manual is not appropriate for the machine or all manuals are not in good condition or are illegible. Remove the machine from service until the manual is replaced.

3 Open the operator's manual to the decals inspection section. Carefully and thoroughly inspect all decals on the machine for legibility and damage.

⊙ Result: The machine is equipped with all required decals, and all decals are legible and in good condition.

⊠ Result: The machine is not equipped with all required decals, or one or more decals are illegible or in poor condition. Remove the machine from service until the decals are replaced.

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.

CHECKLIST A PROCEDURES REV A

A-2
Perform Pre-operation Inspection

NOTICE Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

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

Complete information to perform this procedure is available in the appropriate *Genie Z-34/22 Bi-Energy Operator's Manual.* Refer to the Operator's Manual on your machine.

A-3
Perform Function Tests

NOTICE Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

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

Complete information to perform this procedure is available in the appropriate *Genie Z-34/22 Bi-Energy Operator's Manual.* Refer to the Operator's Manual on your machine.

REV A CHECKLIST A PROCEDURES

A-4
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

A-5
Check the Generator Belts and Pulleys



NOTICE Genie specifications require that this procedure be performed daily or every 8 hours, whichever comes first.

Maintaining the generator belts and the pulleys is essential to good engine performance and service life. The generator will not operate properly with loose or defective belts and continued use may cause component damage.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

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

NOTICE Charging the batteries with the engine does not fully charge the batteries. Periodically, use the AC battery charger to fully charge the batteries.

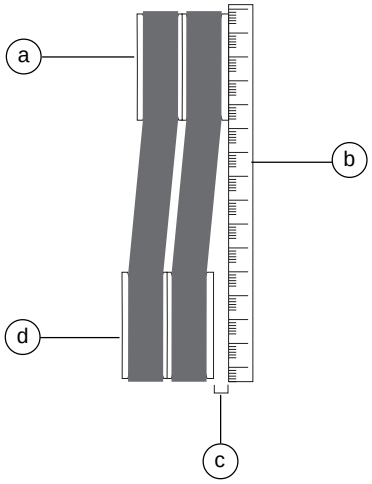
1 Be sure that all fasteners and cables on the generator are tight.

2 Remove the engine flywheel cover mounting fasteners, then remove the cover.

3 Be sure that the pulley mounting fasteners are tight and that the pulleys show no signs of damage or unusual wear.

CHECKLIST A PROCEDURES REV A

4 Check to be sure the engine pulley and the generator pulley are aligned within specification using a straightedge.



a engine pulley
b straightedge
c maximum pulley offset
d generator pulley

NOTICE If alignment does not meet specification, refer to 6-4, *How to Install the Engine Drive Pulley* to adjust the pulley alignment.

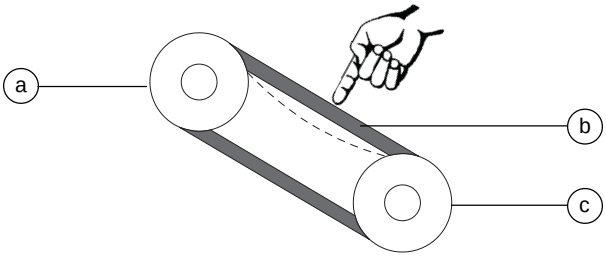
Pulley alignment, maximum offset	1/16 inch 1.58 mm

5 Inspect the generator belts for:

- Cracking
- Glazing
- Separation
- Breaks

6 Replace both belts if any damage is found.

7 Check the generator belts for proper tension. If the belt deflection is not within specification, see 7-2, *How to Adjust the Generator Belts.*



a engine pulley
b generator belts
c generator pulley

Belt deflection, maximum allowable	1/4 inch 6.5 mm

8 Check the torque of the pulley retaining nut on the generator. Refer to Section 2, *Specifications.*

A-6
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 40 hours of usage. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:

- A-10 Grease the Turntable Rotation Bearing and Worm Drive Gear
- B-4 Inspect the Tires, Wheels and Lug Nut Torque
- D-2 Check the Turnable Rotation Bearing Bolts
- D-6 Replace the Hydraulic Tank Return Filter

A-7
Perform Engine Maintenance



NOTICE Engine specifications require that this one time procedure be performed after the first 50 hours of operation.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

CHECKLIST A PROCEDURES REV A

A-8
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 50 hours or weekly, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

A-9
Perform Engine Maintenance



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

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

REV A CHECKLIST A PROCEDURES

A-10
Grease the Turntable Rotation Bearing and Worm Drive Gear

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

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

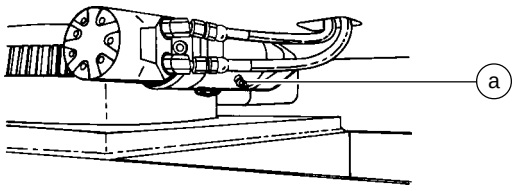
NOTICE The lift cylinder safety chock is available through Genie Service Parts (part number 36555).

2 Locate the grease fitting on the inside of the bearing in the middle of the turntable.

3 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.

4 Remove the safety chock. Lower the boom to the stowed position.

5 Locate the grease fitting on the worm drive housing.



a grease fitting

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

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

Grease Specification
Chevron Ultra-duty grease, EP NLGI 2 (lithium based) or equivalent

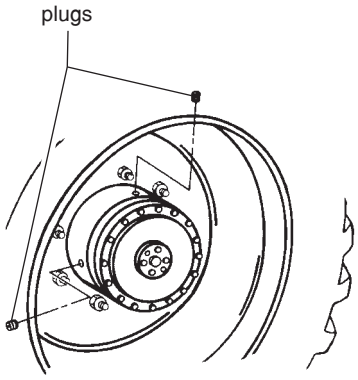
A-11
Replace the Drive Hub Oil

NOTICE Manufacturer drive hub specifications require that this one-time procedure be performed after the first 150 hours.

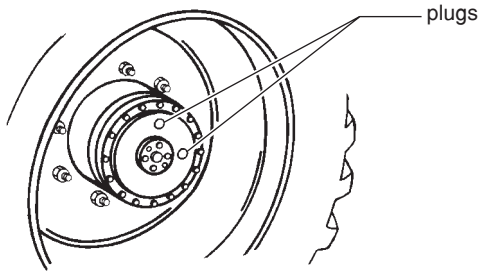
Replacing the torque hub oil is essential for good machine performance and service life. Failure to replace the torque hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

1 Select the drive torque 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 into a suitable container.



Models with pipe plugs



Models with O-ring plugs

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

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Refer to Section 2, *Specifications*.

5 **Models with pipe plugs:** Apply pipe thread sealant to the plugs. Install the plugs into the drive hub.

Models with O-ring plugs: Install the plugs into the drive hub.

6 Repeat this procedure for each torque hub.

REV A CHECKLIST A PROCEDURES

A-12
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 200 hours.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

Checklist B Procedures

REV A

B-1
Check the Exhaust System



NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the exhaust system is essential to good engine performance and service life. Running the engine with a damaged or leaking exhaust system can cause component damage and unsafe operating conditions.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

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

1 Pull up on the pull pin on the engine pivot plate located under the pump. Swing the engine pivot plate away from the machine to access the exhaust system.

2 Be sure that all nuts and bolts are tight.

3 Inspect all welds for cracks.

4 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.

B-2
Inspect the Batteries



NOTICE Genie require that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

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

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

1 Disconnect each battery pack from the machine.

2 Release the battery pack latches and rotate each battery pack out and away from the chassis.

3 Remove the cover from each battery box.

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

NOTICE Adding terminal protectors and a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.

REV A CHECKLIST B PROCEDURES

5 Be sure that the battery retainers and cable connections are tight.

6 Fully charge the batteries. Allow the batteries to rest 24 hours before continuing this procedure to allow the battery cells to equalize.

7 Put on protective clothing and eye wear.

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

9 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display an adjusted specific gravity of 1.277 or higher. The battery is fully charged. Proceed to step 13.

⊠ Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 10.

10 Perform an equalizing charge OR fully charge the batteries and allow the batteries to rest at least 6 hours.

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

12 Check the ambient air temperature and adjust the specific gravity reading for each cell as follows:

- Add 0.004 to the reading of each cell for every 10° / 5.5° C above 80° F / 26.7° C.
- Subtract 0.004 from the reading of each cell for every 10° / 5.5° C below 80° F / 26.7° C.

⊙ Result: All battery cells display a specific gravity of 1.277 or greater. The battery is fully charged. Proceed to step 13.

⊠ Result: The difference in specific gravity readings between cells is greater than 0.1 OR the specific gravity of one or more cells is less than 1.217. Replace the battery.

13 Check the battery acid level. If needed, replenish with distilled water to 1/8 inch / 3 mm below the bottom of the battery fill tube. Do not overfill.

14 Install the vent caps and neutralize any electrolyte that may have spilled.

CHECKLIST B PROCEDURES REV A

B-3
Inspect the Electrical Wiring

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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:

- Engine compartment electrical panel
- Engine wiring harness
- Inside of the ground control box
- Turntable manifold wiring

2 Start the engine from the ground controls.

3 Raise the secondary boom until the 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 engine off.

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

- Cable track on the primary, jib and secondary booms
- Jib boom to platform cable harness
- Inside of the platform control box

B-4
Inspect the Tires, Wheels and Lug Nut Torque

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the tires and wheels, including proper wheel fastener torque, 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.

⚠WARNING Bodily injury hazard. An over-inflated tire can explode and could result in death or serious injury.

⚠WARNING Tip-over hazard. Do not use temporary flat tire repair products.

NOTICE The tires on some machines are foam-filled and do not need air added to them.

1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracked welds.

3 Check each lug nut for proper torque. Refer to Section 2, *Specifications*.

4 Check the pressure in each air-filled tire. Refer to Section 2, *Specifications*.

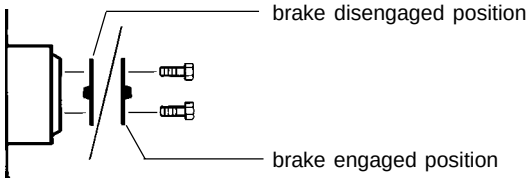
REV A CHECKLIST B PROCEDURES

B-5
Confirm the Proper Brake Configuration

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 torque hub disconnect cap to be sure it is in the engaged position.

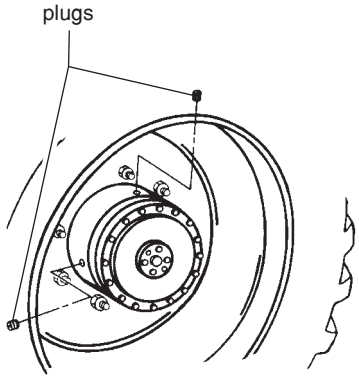


B-6
Check the Oil Level in the Drive Hubs

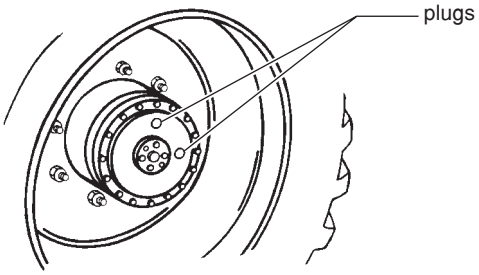
NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 the plugs are located one on top and the other at 90 degrees.



Models with pipe plugs



Models with O-ring plugs

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 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 **Models with pipe plugs:** Apply pipe thread sealant to the plugs. Install the plugs into the drive hub.

Models with O-ring plugs: Install the plugs into the drive hub.

5 Check the torque of the drive hub mounting bolts. Refer to Section 2, *Specifications*.

6 Repeat this procedure for each drive hub.

B-7
Check the Glow Plugs




NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the glow plugs in good condition is essential to good engine performance and service life. Improperly functioning glow plugs will cause the engine to perform poorly and may result in component damage.

NOTICE Perform this procedure with the engine turned off.

1 Connect the leads from an ohmmeter between machine ground and the wire connected to the glow plugs.

⊙ Result: The resistance should be approximately 1Ω.

2 If the ohm reading is different than 1Ω, remove the wire and connector plate from the two individual glow plugs. Then, one glow plug at a time, check the resistance between the glow plug and machine ground.

⊙ Result: The resistance should be approximately 0.6Ω for each individual glow plug.

3 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

4 Connect the red (+) lead from a volt meter to one of the glow plugs. Connect the black (-) lead to ground.

5 Hold the glow plug switch in the on position.

⊙ Result: The volt meter should read 12 volts.

6 Repeat steps 4 and 5 for the other glow plug.

REV A CHECKLIST B PROCEDURES

B-8
Check and Adjust the Engine RPM

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

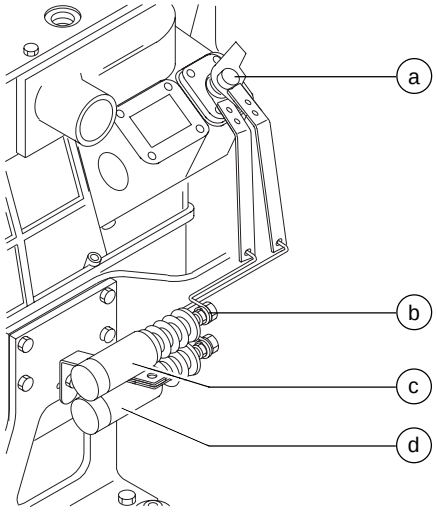
Maintaining the engine rpm at the proper setting for both low and high idle is essential to good engine performance and service life. The machine will not operate properly if the rpm is incorrect and continued use may cause component damage.

1 Connect an rpm gauge to the engine, and then start the engine from the ground controls.

⊙ Result: Low idle should be 2000 rpm.

Skip to step 3 if the low idle rpm is correct.

2 Loosen the lock nut, then turn the low idle adjustment screw clockwise to increase the rpm or counterclockwise to decrease the rpm. Tighten the lock nut and recheck the rpm.



a low idle adjustment screw (not shown)
b high idle adjustment nut
c rpm solenoid
d fuel shut off solenoid

3 Move the engine idle control switch to high idle (rabbit symbol) from the ground controls.

⊙ Result: High idle should be 3000 rpm.

If high idle rpm is correct, disregard adjustment step 4.

4 Loosen the lock nut on the solenoid, then turn the solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the lock nut and recheck the rpm.

CHECKLIST B PROCEDURES REV A

B-9
Test the Ground Control Override

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 or not 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 platform red Emergency Stop button to the off position.

2 Turn the key switch to ground control 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.

B-10
Test the Platform Self-leveling

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Automatic platform self-leveling throughout the full cycle of boom raising and lowering is essential for safe machine operation. The platform is maintained at level by the platform leveling slave cylinder which is controlled by the 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 control and pull out the red Emergency Stop button to the on position.

2 Lower the boom to the stowed position.

3 Adjust the platform to a level position using the platform leveling 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-11
Test the Engine Idle Select

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

A properly operating engine idle select switch is essential to good engine performance and safe machine operation. There are three settings.

Low idle (turtle symbol): Low idle and slow battery charging.

High idle (rabbit symbol): High idle and quickest battery charging.

Foot switch activated high idle (rabbit and foot switch symbols): Activates high idle only when the foot switch is pressed down.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Start the engine from the ground controls. Then move the engine idle control switch to high idle (rabbit symbol) and hold in the on position.

⊙ Result: The engine should change to high idle.

3 Release the engine idle control switch.

⊙ Result: The engine should return to low idle.

4 Turn the key switch to platform controls.

5 At the platform controls, move the engine idle control switch to high idle (rabbit symbol).

⊙ Result: The engine should change to high idle.

6 Move the engine idle control switch to low idle (turtle symbol).

⊙ Result: The engine should change to low idle.

7 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).

⊙ Result: The engine should **not** change to high idle.

8 Press down the foot switch.

⊙ Result: The engine should change to high idle.

CHECKLIST B PROCEDURES REV A

B-12
Test the Drive Brakes



NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-5 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 into the stowed position.

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

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

5 Measure the distance between the test line and your machine reference point. Refer to section 2, *Specifications,*

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

B-13
Test the Drive Speed - Stowed Position



NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 Lower the boom into the stowed position.

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

4 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.

5 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

REV A CHECKLIST B PROCEDURES

B-14
Test the Drive Speed - Raised or Extended Position

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 Raise the platform more than 5 feet/1.5 m.

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

4 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.

5 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

B-15
Test the Alarm Package (if equipped)

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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.

NOTICE The alarms and beacon will operate with the engine running or not running.

1 At the ground controls, pull out the red Emergency Stop button to the on position and turn the key switch to ground control.

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

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

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

3 Turn the key switch to platform control.

4 At the platform controls, pull out the red Emergency Stop button to the on position.

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

5 Press down the foot switch. Move the primary boom toggle switch to the down position, hold for a moment and then release it. Move the secondary boom toggle switch to the down position, hold for a moment and then release it.

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

6 Press down the foot switch. Move the drive control handle off center, hold for a moment and then release it. Move the drive control handle off center in the opposite direction, hold for a moment and then release it.

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

B-16
Test the Turntable Rotation Stop

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

The turntable is capable of rotating the boom 355 degrees and is stopped midpoint between the steer 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 control and pull out the red Emergency Stop button to the on position at both the 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 mid-point between the steer tires.

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

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

REV A CHECKLIST B PROCEDURES

B-17
Check the Electrical Contactors

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 component mounting panel.

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

- Excessive burns
- Excessive arcs
- 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-18
Inspect the Fuel and Hydraulic Tank Cap Venting Systems

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

Free-breathing fuel and hydraulic tank caps are essential for good machine performance and service life. A dirty or clogged tank cap may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the caps be inspected more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

1 Remove the cap from the fuel tank.

2 Check for proper venting.

⊙ Result: Air passes through the fuel tank cap. Proceed to step 4.

⊗ Result: If air does not pass through the cap, clean or replace the cap. Proceed to step 3.

NOTICE When checking for positive tank cap venting, air should pass freely through the cap.

3 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air. Repeat this procedure beginning with step 2.

4 Install the fuel tank cap onto the fuel tank.

5 Remove the breather cap from the hydraulic tank.

6 Check for proper venting.

⊙ Result: Air passes through the fuel tank cap. Proceed to step 8.

⊠ Result: If air does not pass through the cap, clean or replace the cap. Proceed to step 7.

NOTICE When checking for positive tank cap venting, air should pass freely through the cap.

7 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air. Repeat this procedure beginning with step 6.

8 Install the breather cap onto the hydraulic tank.

B-19
Perform Hydraulic Oil Analysis



NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

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

REV A CHECKLIST B PROCEDURES

B-20
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 400 hours.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

Checklist C Procedures

REV A

C-1
Grease the Platform Overload Mechanism (if equipped)



NOTICE Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first. Perform this procedure more often if dusty conditions exist.

Application of lubrication to the platform overload mechanism is essential to safe machine operation. Continued use of an improperly greased platform overload mechanism could result in the system not sensing an overloaded platform condition and will result in component damage.

1 Locate the grease fittings on each pivot pin of the platform overload assembly.

2 Thoroughly pump grease into each grease fitting using a multi-purpose grease.

Grease Specification
Chevron Ultra-duty grease, EP NLGI 2 (lithium based) or equivalent

C-2
Test the Platform Overload System (if equipped)



NOTICE Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first.

Testing the platform overload system regularly is essential to safe machine operation. Continued use of an improperly operating platform overload system could result in the system not sensing an overloaded platform condition. Machine stablity could be compromised resulting in the machine tipping over.

The platform overload system is designed to detect an overloaded platform and prevent machine operation anytime the machine is turned on. When activated, the system halts all normal boom operation, giving visual and audible warning to the operator.

Models equipped with the platform overload option are provided with additional machine components: an adjustable spring-loaded platform support subassembly, a limit switch, an electronic module which receives the overload signal and interrupts power, and an audio/visual warning indication to alert the operator of the overload.

REV A CHECKLIST C PROCEDURES

The platform support subassembly utilizes two load support arms that are opposed in a full parallelogram link. This isolates platform loads into a shear or vertical state, which translates into a compressive load. A spring in the parallelogram link supports this purely compressive load regardless of where the load is placed in the platform.

As weight is added to the platform, the spring will compress until, when the platform is overloaded, the lower arm contacts a limit switch and thereby activating the overload signal. When adjusted correctly, the platform overload system will deactivate normal boom operation at platform capacity.

NOTICE Perform this procedure with the machine on a firm, level surface.

1 Turn the key switch to platform control. Start the engine and level the platform.

2 Determine the maximum platform capacity. Refer to the machine serial plate.

3 Remove all weight, tools and accessories from the platform.

NOTICE Failure to remove all weight, tools and accessories from the platform will result in an inaccurate test.

4 Using a suitable lifting device, place a test weight equal to that of the available capacity one of the locations shown. Refer to Illustration 1.

⊙ Result: The platform overload indicator lights should be off at both the ground and platform controls and the alarm should not sound.

⊠ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped).*

5 Carefully move the test weight to each remaining location. Refer to Illustration 1.

⊙ Result: The platform overload indicator lights should be off at both the ground and platform controls and the alarm should not sound.

⊠ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped).*

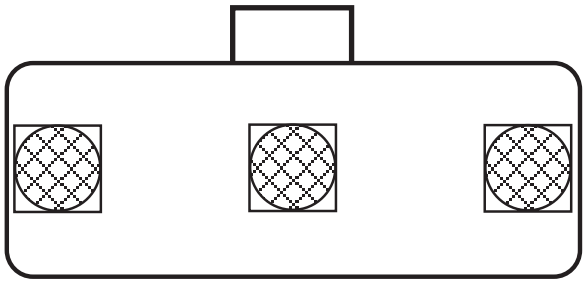


Illustration 1

6 Using a suitable lifting device, place an additional 10 lbs / 4.5 kg of weight onto the platform.

⊙ Result: The alarm should sound. The platform overload indicator lights should be flashing at both the ground and platform controls.

⊠ Result: The alarm does not sound and the platform overload indicator lights are not flashing. Calibrate the platform overload system. Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped).*

NOTICE There may be a 2 second delay before the overload indicator lights flash and the alarm sounds.

CHECKLIST C POCEDURES REV A

7 Carefully move the test weights to each remaining location on the platform. Refer to Illustration 1.

⊙ Result: The alarm should sound. The platform overload indicator lights should be flashing at both the ground and platform controls.

⊠ Result: The alarm does not sound and the platform overload indicator lights are not flashing. Calibrate the platform overload system. Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped).*

NOTICE There may be a 2 second delay before the overload indicator lights flash and the alarm sounds.

8 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

9 Turn the key switch to ground control.

10 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

11 Using auxiliary power, test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate.

12 Using a suitable lifting device, lift the additional test weight from the platform.

⊙ Result: The platform overload indicator lights should turn off at both the ground and platform controls and the alarm should not sound.

NOTICE There may be an 2 second delay before the overload indicator lights and alarm turn off.

13 Start the engine and test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

14 Turn the key switch to platform control.

15 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate.

NOTICE If the platform overload system is not operating properly, Refer to Repair Procedure 2-4, *How to Calibrate the Platform Overload System (if equipped).*

16 Using a suitable lifting device, remove the remaining test weights from the platform.

C-3
Clean the Fuel Tank



NOTICE Genie requires that this procedure be performed every 500 hours or six months, whichever comes first.

Removing sediment from the fuel tank is essential to good engine performance and service life. A dirty fuel tank may cause the fuel filter to clog prematurely resulting in poor engine performance and possible component damage.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Clean the fuel tank in an open, well-ventilated area away from heater, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Immediately clean up any fuel that may have spilled during this procedure.

1 **Models with fuel shutoff valve:** Turn the manual fuel shutoff valve, located next to the tank, to the closed position.

2 Using an approved hand-operated pump, drain the fuel tank into a suitable container. Refer to Section 2, *Specifications*, for tank capacity.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

NOTICE Be sure to only use a hand operated pump suitable for use with gasoline and/or diesel fuel.

3 Tag, disconnect and plug the fuel supply and return hoses at the tank. Clean up any fuel that may have spilled.

4 Remove the tank retainer plate fasteners at the bulkhead. Remove the tank from the machine.

NOTICE Component damage hazard. The fuel tank is plastic and may become damaged if allowed to fall.

5 Rinse out the inside of the tank using a mild solvent.

6 Install the tank onto the machine. Install the tank retainer plate fasteners at the bulkhead.

7 Install the fuel supply and return hoses to the tank. Tighten the clamps.

8 **Models with fuel shutoff valve:** Turn the manual fuel shutoff valve, located next to the tank, to the open position.

CHECKLIST C PROCEDURES REV A

C-4
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 500 hours.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

C-5
Perform Engine Maintenance



NOTICE Engine specifications require that this procedure be performed every 800 hours.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

Checklist D Procedures

REV A

D-1
Check the Primary Boom Wear Pads

NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first.

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 control and pull out the red Emergency Stop button to the on position.

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 inches / 1 cm thick. If the wear pad is more than 0.41 inches / 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.

D-2
Check the Turntable Rotation Bearing Bolts

NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first.

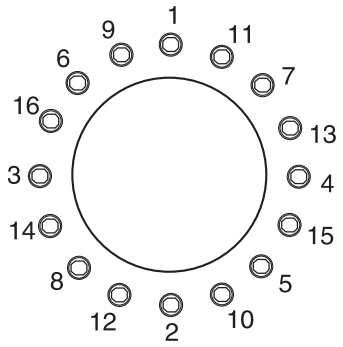
Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

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.

NOTICE The lift cylinder safety chock is available through Genie service parts. (Genie part number 36555).

2 Check to ensure that each turntable bearing bolt is torqued in specified order to 190 foot-pounds / 258 Nm.

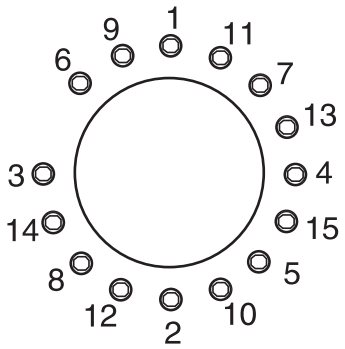


Bolt torque sequence

3 Remove the safety chock. Lower the boom to the stowed position.

4 Access the turntable bearing bolts through the access hole on the side of the chassis.

5 Check to ensure that each bearing mounting bolt under the drive chassis is torqued in specified order to 190 foot-pounds / 25 Nm.



Bolt torque sequence

D-3
Inspect for Turntable Bearing Wear

NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first.

Periodic inspection of turntable bearing wear is essential to safe machine operation, good machine performance and service life. Continued use of a worn turntable bearing could create an unsafe operating condition, resulting in death or serious injury and component damage.

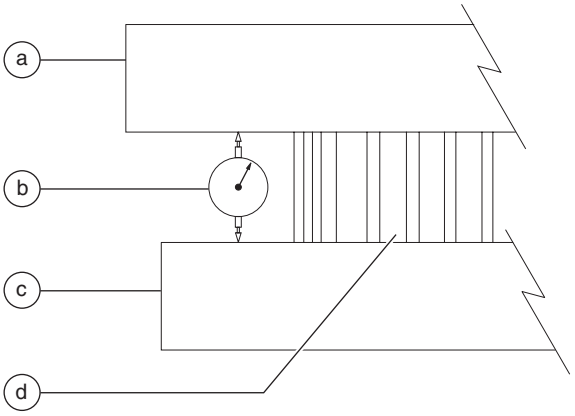
1 Grease the turntable bearing. See A-10, *Grease the Turntable Rotation Bearing and Worm Drive Gear.*

2 Torque the turntable bearing bolts to specification. See D-2, *Check the Turntable Rotation Bearing Bolts.*

3 Raise the primary and secondary booms to full height using the ground controls. Do not extend the primary boom.

4 Place a dial indicator between the drive chassis and the turntable at a point that is directly under, or in line with, the boom and no more than 1 inch / 2.5 cm from the bearing.

NOTICE To obtain an accurate measurement, place the dial indicator no more than 1 inch / 2.5 cm from the turntable rotation bearing.



a turntable
b dial indicator
c drive chassis
d turntable rotation bearing

5 Adjust the dial indicator to "0".

6 Lower the secondary boom to the stowed position and lower the primary boom to a horizontal position. Fully extend the primary boom.

7 Note the reading on the dial indicator.

⊙ Result: The measurement is less than 0.055 inch / 1.4 mm. The bearing is good.

⊠ Result: The measurement is more than 0.055 inch / 1.4 mm. The bearing is worn and needs to be replaced.

8 Fully retract the primary boom. Raise the primary and secondary booms to full height. Visually inspect the the dial indicator to be sure the needle returns to the "0" position.

9 Remove the dial indicator and rotate the turntable 90°.

10 Repeat steps 4 through 9 until the rotation bearing has been checked in at least four equally spaced areas 90° apart.

11 Lower the primary and secondary booms to the stowed position and turn the machine off.

12 Remove the dial indicator from the machine.

CHECKLIST D PROCEDURES REV A

D-4
Check the Free-wheel Configuration

NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first.

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.

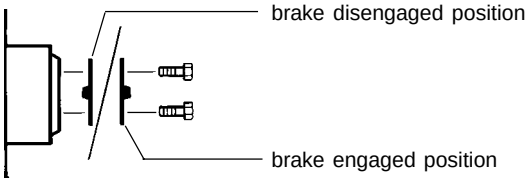
⚠WARNING Collision hazard. Select a work site that is firm and level.

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

2 Center a lifting jack of ample capacity (15000 lbs / 7000 kg) under the drive chassis between the non-steering wheels.

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

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



5 Manually rotate each non-steering wheel.

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

6 Engage the drive hubs by turning over the hub disconnect caps. Carefully remove the jack stands, lower the machine and remove the jack.

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

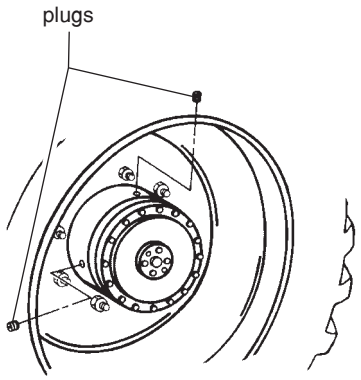
D-5
Replace the Drive Hub Oil

NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first.

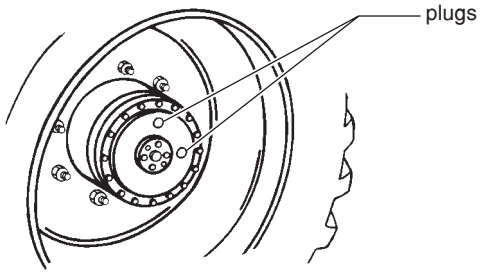
Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

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

2 Remove both plugs and drain the oil.



Models with pipe plugs



Models with O-ring plugs

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

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side plug hole. Refer to Section 2, *Specifications*.

5 **Models with pipe plugs:** Apply pipe thread sealant to the plugs. Install the plugs into the drive hub.

Models with O-ring plugs: Install the plugs into the drive hub.

6 Repeat this procedure for each drive hub.

CHECKLIST D PROCEDURES REV A

D-6
Replace the Hydraulic Tank Return Filter



NOTICE Genie requires that this procedure be performed every 1000 hours or annually, whichever comes first. Perform this procedure more often if dusty conditions exist.

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

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

NOTICE The return hydraulic filter is located inside of the filter housing on top of the hydraulic tank.

1 Clean the area around the oil filter housing, then remove the filter housing cover mounting fasteners.

2 Carefully remove the filter housing cover and the spring.

3 Remove the filter element from the filter housing.

4 Remove the filter cup from the housing and clean it using a mild solvent.

NOTICE Be sure that the O-ring is in place on the outlet tube inside of the filter cup.

5 Install the new filter element.

6 Install the spring and the filter housing cover, then install the filter housing mounting fasteners. Clean up any oil that may have spilled during the replacement procedure.

Checklist E Procedures

REV A

E-1
Test or Replace the Hydraulic Oil



NOTICE Genie requires that this procedure be performed every 2000 hours or two years, whichever comes first. Perform this procedure more often if dusty conditions exist.

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.**

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

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.

3 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.

7 Remove the hydraulic tank from the machine.

8 Remove the tank lid retaining fasteners then remove the lid from the tank.

9 Clean the suction strainer using a mild solvent.

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

11 Install the lid onto the hydraulic tank.

12 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.

13 Install the hydraulic hoses.

14 Fill the tank with hydraulic oil until the fluid until the fluid is within the full and add marks on the hydraulic tank. Do not overfill. Refer to Section 2, *Specifications.*

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

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

E-2
Perform Engine Maintenance

NOTICE Engine specifications requires that this procedure be performed every 2000 hours or every two years, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

REV A CHECKLIST E PROCEDURES

E-3
Grease the Steer Axle Wheel Bearings



NOTICE Genie requires that this procedure be performed every 2000 hours or every two years, whichever comes first.

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 and center a lifting jack of ample capacity under the steer axle.

3 Raise the machine 6 inches / 15 cm and place blocks under the drive chassis for support.

⚠CAUTION Crushing hazard. The machine may fall if not properly supported.

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 10 if there is no movement.

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

7 Tighten the castle nut to 158 ft-lbs / 214 Nm to seat the bearings.

NOTICE Rotate the hub by hand while torquing the castle nut to make sure the bearings seat properly.

8 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.

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

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

⊗ Result: If there is side to side or up and down movement, continue to step 10 and replace the 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.

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 bearing seal out of the hub. Remove the rear bearing.

13 Pack both bearings with clean, fresh grease.

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

CHECKLIST E PROCEDURES REV A

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.

16 Slide the hub onto the yoke spindle.

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

17 Fill the hub cavity with clean, fresh grease.

18 Place the outer bearing into the hub.

19 Install the washer and castle nut.

20 Tighten the castle nut to 158 ft-lbs / 214 Nm to seat the bearings.

NOTICE Rotate the hub by hand while torquing the castle nut to make sure the bearings seat properly.

21 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.

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

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

23 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications.*

E-4
Perform Engine Maintenance



NOTICE Engine specifications requires that this procedure be performed every 3000 hours.

Required maintenance procedures and additional engine information is available in the *Kubota Z482-E Operator's Manual* (Kubota part number 16676-8916-7).

Kubota Z482-E Operator's Manual	
Genie part number	52958

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 appropriate *Genie Z-34/22 Bi-Energy Operator's Manual* on your machine.
- ☑ 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.
- ☑ Use only Genie approved replacement parts.
- ☑ Unless otherwise specified, perform each repair 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
  - All external AC power supply disconnected from the machine

About This Section

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

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

Symbols Legend



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

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

⚠CAUTION Used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Used to indicate operation or maintenance information.

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

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

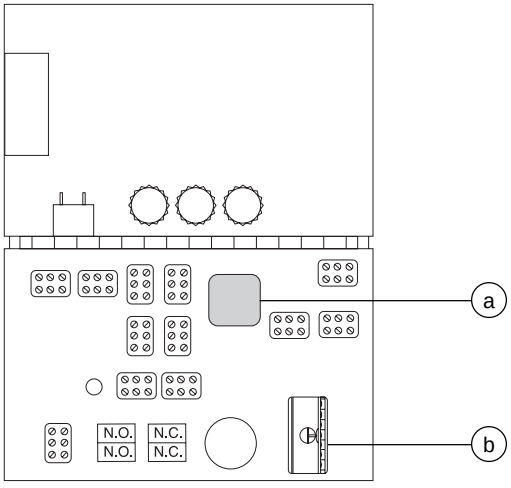
Platform Controls

REV A

1-1 Controllers

Platform Controls

The drive joystick is connected to the drive motor controller located under the non-steer end drive chassis cover. The drive motor controller can also recognize machine drive malfunctions and display controller fault codes by flashing a LED at the ground controls. 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 controller. For further information or assistance, consult the Genie Industries Service Department.



a boom function speed controller
b drive joystick

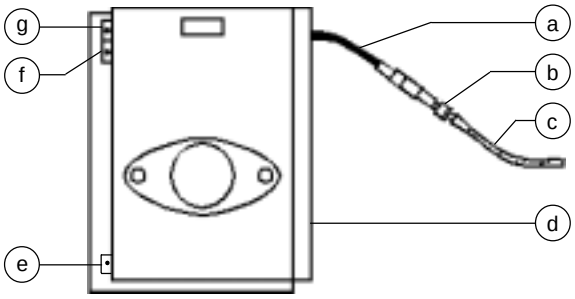
Boom Function Speed Controller Adjustments

⚠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 blk/red wire
b diode
c white/red wire
d boom function speed controller
e max-out adjustable trimpot
f threshold adjustable trimpot
g ramp rate trimpot (after serial number 1923)

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

2 Re-connect the leads from the ohmmeter to the opposite ends (from step 1) of the diode. The diode should have resistance in one direction and not the other.

1-3 Foot Switch

How to Test the Foot Switch

1 Turn the key switch to the off position. Remove the fasteners securing the foot switch to the platform and remove the bottom cover from the foot switch.

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

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

NOTICE 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
black to white	continuity (zero Ω)

1-4 Toggle Switches

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

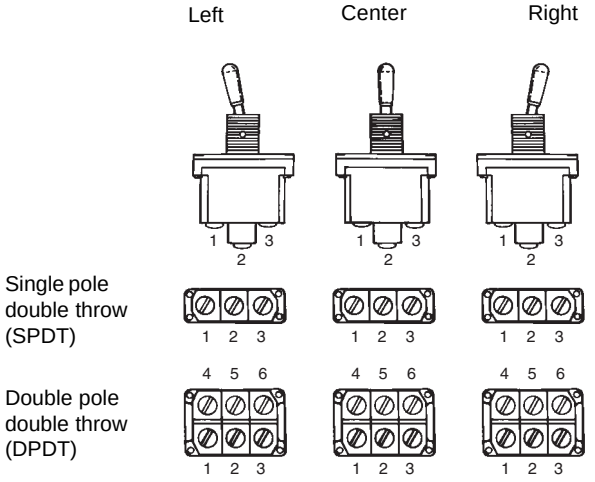
How to Test a Toggle Switch

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

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

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

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



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

Platform Components

REV A

2-1 Platform

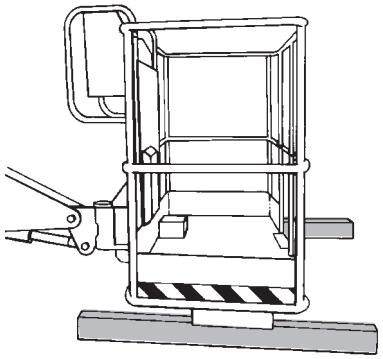
How to Remove the Platform

1 Open the platform control box. Disconnect the foot switch wiring from the terminal strip and remove cable from control box.

2 Remove the platform control box mounting fasteners, then lower the control box.

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

3 Place blocks under the platform railing for support. Then carefully lower the platform onto the blocks.



4 Remove the platform mounting fasteners and remove the platform.

NOTICE Do not overtighten the platform mounting fasteners during installation.

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-circuit hydraulic loop with the master cylinder. The slave cylinder is equipped with counterbalance valves to prevent 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.

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 2, *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. Then lower the boom until the platform is resting on the blocks.

3 Remove the pin retainer fastener from the rod-end pivot pin.

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

5 Use a soft metal drift and drive the rod-end pivot pin out.

6 Use a soft metal drift and drive the barrel-end pivot pin out.

7 Carefully pull the cylinder out of the boom.

8 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 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 160 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 2, *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 rotator 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, but do not apply any lifting pressure.

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

5 Support the platform rotator. Do not apply any lifting pressure.

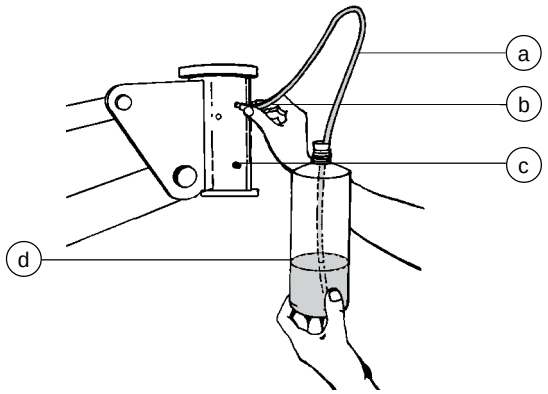
6 Remove the pin retainers from the jib boom and leveling links to platform rotator pivot pins. Do not remove the pins.

7 Support the jib boom and leveling links.

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

How to Bleed the Platform Rotator

1 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any discharge.



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

2 Open the top bleed valve, but do not remove it.

3 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

4 Hold the function enable switch to either side and activate and hold the platform rotate switch to the right for approximately 5 seconds, then release it. Repeat three times.

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

5 Hold the platform rotate switch to the left for approximately 5 seconds, then release it.

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

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

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

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

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

10 Close the bleed valve and remove the hose.

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

12 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position.

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

2-4
Platform Overload System

How to Calibrate the Platform Overload System (if equipped)

Calibration of the platform overload system is essential to safe machine operation. Continued use of an improperly calibrated platform overload system could result in the system failing to sense an overloaded platform. The stability of the machine is compromised and it could tip over.

NOTICE Perform this procedure with the machine on a firm, level surface.

1 Turn the key switch to platform control.

2 Determine the maximum platform capacity. Refer to the machine serial plate.

3 Remove all weight, tools and accessories from the platform.

NOTICE Failure to remove all weight, tools and accessories from the platform will result in an incorrect calibration.

4 Using a suitable lifting device, place a test weight equal to the maximum platform capacity at the center of the platform floor.

5 Move the platform up and down by hand, so it bounces approximately 1 to 2 inches / 2.5 to 5 cm. Allow the platform to settle.

⊙ Result: The overload indicator lights are off and the alarm does not sound. Proceed to step 6.

⊠ Result: The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Slowly tighten the load spring adjustment nut in a clockwise direction in 10° increments until the overload indicator light turns off, and the alarm does not sound. Proceed to step 8.

NOTICE The platform will need to be moved up and down and allowed to settle between each adjustment.

NOTICE There may be a 2 second delay before the platform overload indicator light and alarm responds.

6 Move the platform up and down by hand, so it bounces approximately 1 to 2 inches / 2.5 to 5 cm. Allow the platform to settle.

⊙ Result: The overload indicator lights are off at the platform and ground controls, and the alarm does not sound. Slowly loosen the load spring adjustment nut in a counterclockwise direction in 10° increments until the overload indicator light flashes at both the platform and ground controls, and the alarm sounds. Proceed to step 7.

⊠ Result: The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Repeat this procedure beginning with step 5.

NOTICE The platform will need to be moved up and down and allowed to settle between each adjustment.

NOTICE There may be a 2 second delay before the platform overload indicator lights and alarm responds.

7 Move the platform up and down by hand, so it bounces approximately 1 to 2 inches / 2.5 to 5 cm. Allow the platform to settle.

⊙ Result: The overload indicator lights are off and the alarm does not sound. Proceed to step 8.

⊠ Result: The overload indicator lights are flashing at the platform and ground controls, and the alarm is sounding. Repeat this procedure beginning with step 5.

NOTICE There may be a 2 second delay before the platform overload indicator light and alarm responds.

8 Add an additional 10 lb / 4.5 kg test weight to the platform.

⊙ Result: The overload indicator light is flashing at both the ground and platform controls, and the alarm is sounding. Proceed to step 9.

⊠ Result: The overload indicator light is off at both the ground and platform controls, and the alarm does not sound. Remove the additional 10 lb / 4.5 kg test weight. Repeat this procedure beginning with step 6.

NOTICE There may be a 2 second delay before the platform overload indicator light and alarm responds.

9 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should not operate.

10 Turn the key switch to ground control.

11 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should not operate.

12 Using a suitable lifting device, lift the test weight off the platform floor.

⊙ Result: The platform overload indicator light should be off at both the ground and platform controls and the alarm should not sound.

NOTICE There may be a 2 second delay before the overload indicator lights and alarm turn off.

13 Test all machine functions from the ground controls.

⊙ Result: All ground control functions should operate normally.

14 Turn the key switch to platform control.

15 Test all machine functions from the platform controls.

⊙ Result: All platform control functions should operate normally.

Jib Boom Components

REV A

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 2, *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 jib boom manifold cover.

5 Remove the mounting fasteners from the jib boom manifold.

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

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

8 Remove the pin retaining fastener from the jib boom pivot pin at the jib boom mounting weldment. Use a soft metal drift to remove the pin, then remove the jib boom from the jib boom mounting weldment.

⚠CAUTION Crushing hazard. The jib boom will fall when the pin is removed if it is not properly supported.

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

10 Remove both of the jib boom leveling links from the primary boom.

11 Attach a lifting strap from an overhead crane to the jib boom lift cylinder.

12 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin, then remove the jib boom lift cylinder from the primary boom.

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

13 Support and secure the jib boom mounting weldment to an appropriate lifting device.

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

15 Remove the pin retaining fasteners from the jib boom mounting weldment at the extension boom. Use a soft metal drift to remove the pin.

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

17 Remove the jib boom mounting weldment from the boom.

⚠CAUTION Crushing hazard. The jib boom mounting weldment may become unbalanced and fall when the pins are removed if it is not properly supported and secured to the lifting device.

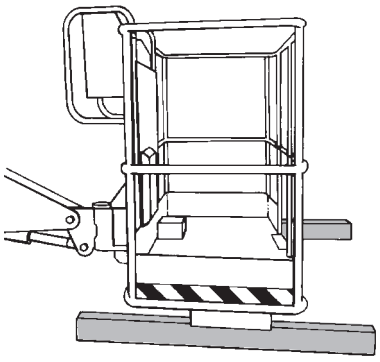
3-2
Jib Boom Lift Cylinder

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Then 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 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.

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. Then 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 jib boom lift cylinder.

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

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

⚠CAUTION Crushing hazard. The jib boom lift cylinder may fall when the pins are removed if it is not properly supported by the overhead crane.

Primary Boom Components

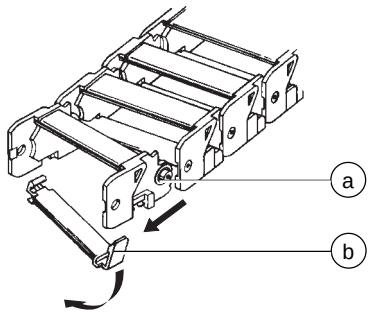
REV A

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 and then use a screw driver 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 2, *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 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.

5 Open the platform control box.

6 Label and disconnect each wire of 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.

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

8 Tag, disconnect and plug the hydraulic 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.

9 Tag, disconnect and plug the hydraulic hoses from the jib/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.

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

11 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.

12 Remove all of the hose and cable clamps from the underside of the primary boom.

13 Remove the turntable end cover.

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

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

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

17 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.

18 Attach an overhead 5 ton / 5000 kg crane to the center point of the boom.

19 Attach a similar lifting device to the lift cylinder.

20 Place support blocks under the cylinder, across the secondary boom.

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

⚠CAUTION Crushing hazard. The boom lift cylinder will fall unless it is properly supported.

22 Lower the rod end of the lift cylinder onto support blocks.

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

24 Remove the primary boom pivot pin with a soft metal drift, then carefully remove the boom from the machine.

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

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 Carefully rotate the base end of the extension cylinder until the pin mounting bore is in a vertical position.

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

⚠WARNING Crushing hazard. The boom tubes could fall when they are removed from the boom if they are not properly supported.

7 Support and slide the number 2 extension tube out of the number 1 primary boom tube. Place the number 2 boom tube on blocks for support.

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

8 Remove the retaining rings from the extension cylinder rod-end pivot pin at the platform end of the number 2 extension tube. Use a soft metal drift to remove the pin.

9 Support and slide the extension cylinder out of the base end of the number 2 boom 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.

10 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 lift cylinder raises and lowers the primary boom. The 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

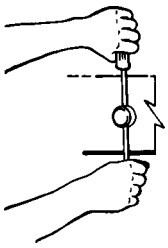
1 Raise the primary boom enough to access the primary boom lift cylinder rod-end pivot pin.

2 Attach an overhead crane to the primary boom for support. Do not lift it.

3 Remove the pin retaining fastener from the ground controls side upper compression arm pivot pin.

4 Place a block of wood across the upper secondary boom to support the cylinder when the rod-end pivot pin is removed.

5 Place a rod through the compression arm pivot pin and twist to remove the pin. Lower the compression arm down.



6 Support the primary boom lift cylinder with a lifting device.

7 Remove the pin retaining fastener from the primary boom lift cylinder rod-end pivot pin. Then 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 Tag, disconnect and plug the primary boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

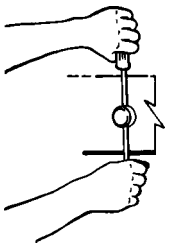
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

10 Support the primary boom lift cylinder with straps or ropes to restrict it from swinging freely.

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

12 Use the overhead crane to lift the primary boom 1 inch / 2.5 cm. This will relieve pressure on the barrel-end pivot pin.

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



⚠CAUTION Crushing hazard. The primary boom lift cylinder will swing down if it is not properly supported when the barrel-end pivot pin is removed.

14 Attach and secure the rod-end of the primary boom lift cylinder to a overhead crane or similar lifting device. Carefully loosen the straps and allow the primary boom lift cylinder to slowly swing down.

15 Carefully remove the cylinder from the machine.

⚠CAUTION Crushing hazard. The primary boom lift cylinder may become unbalanced and fall if it is not properly supported when the rod-end pivot pin is removed.

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Raise the primary boom to the horizontal position. Then 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. Then use a soft metal drift to remove the pins.

3 Remove the rear turntable cover.

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

5 Remove the 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, then 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 the 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 extension cylinder barrel-end pivot pin retaining fastener, then 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 could fall if it is 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.

4-5 Platform Leveling Master Cylinder

The master cylinder acts as a pump for the slave cylinder. It is part of the closed circuit hydraulic loop that keeps the platform level through the entire range of primary boom motion. The 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 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.*

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the rear turntable 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 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 Tie a strap around the lug on the rod end of the master cylinder, then secure the strap to the primary boom (use this strap to lower the cylinder out of the upper pivot).

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

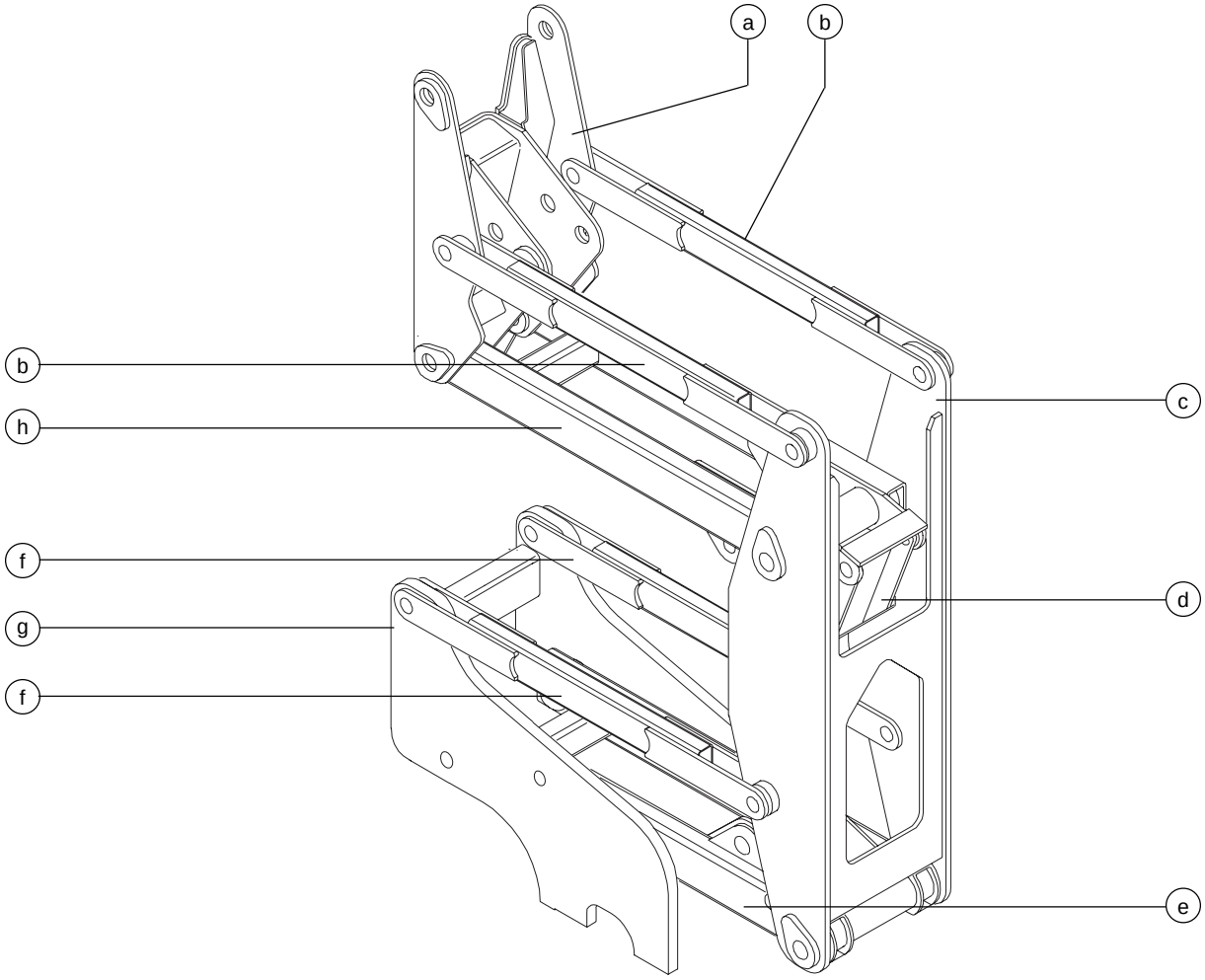
9 Remove the pin retaining fastener from the master cylinder barrel-end pivot pin. Then use a soft metal drift to remove the pin from the cylinder. Do not remove the pin from the upper pivot. Push the pin to one side, only far enough to remove the cylinder. The pin should remain in one side of the upper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

⚠WARNING Crushing hazard. The upper secondary boom and the upper 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.

Secondary Boom Components

REV A



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.

Follow the disassembly steps to the point required to complete the repair. Then re-assemble 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Lower the boom to the stowed position.

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

3 Remove the rear turntable cover.

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

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

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

7 Open the platform control box.

8 Label and disconnect each wire of the four 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.

9 Pull the cables out of the platform control box.

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

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

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

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

14 Remove the drive speed limit switch mounted on the side of the pivot end of the primary boom. Do not disconnect the wiring.

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

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

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

SECONDARY BOOM COMPONENTS REV A

18 Tag, disconnect and plug the primary boom lift cylinder and master cylinder hydraulic hoses.

⚠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.

19 Lower the booms to the stowed position.

20 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.

21 Position the strap from the overhead crane approximately two feet from the platform end of the primary boom. Measure from the end of the primary boom tube.

22 Remove the pin retaining fasteners from the upper pivot to upper compression arm pivot pins. Use a soft metal drift to remove the pins.

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

24 Remove the pin retainers from the upper pivot to upper secondary boom pivot pin. Use a soft metal drift to remove the pin.

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

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

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

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

28 Position the lifting strap from an overhead crane at the center of the control box side upper compression arm, then remove it from the machine. Repeat this step for the engine side upper compression arm.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the upper compression arm could become unbalanced and fall when it is removed from the machine.

29 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.

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

31 Attach the strap from an overhead crane to the upper secondary boom.

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

33 Remove the upper secondary boom with compression link from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the upper secondary boom with compression link may become unbalanced and fall when it is removed from the machine.

34 Remove the drive speed limit switch mounted on the inside of the mid-pivot. Do not disconnect the wiring.

35 Remove the cable covers from the top of the lower secondary boom. Pull all the cables and hoses to the back of the turntable.

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

37 Attach the strap from the crane to the lug on the rod end of the secondary boom lift cylinder.

38 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.

39 Use a slide hammer to remove the barrel-end pins (access the pins from the access holes in the bulkheads, one on each side). Then remove the cylinder from the machine.

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

40 Attach the strap from the crane to the mid-pivot.

41 Remove the pin retainers from the mid-pivot to lower compression arm pivot pins. Use a slide hammer and remove the pin.

42 Remove the pin retainers from the mid-pivot to lower secondary boom pivot pins. Use a soft metal drift to remove the pin.

43 Remove the mid-pivot from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the mid-pivot could become unbalanced and fall when it is removed from the machine.

44 Attach the strap from the crane to the control box side lower compression arm.

45 Remove the pin retainer from the lower compression arm to turntable pivot pin. Use a slide hammer and remove the pin. Remove the arm from the machine. Repeat for the engine side lower compression arm.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the lower compression arms could become unbalanced and fall when it is removed from the machine.

46 Attach the strap from the crane to the lower secondary boom.

47 Remove the pin retainer from the lower secondary boom to turntable pivot pin. Use a soft metal drift to remove the pin.

48 Remove the lower secondary boom from the machine.

⚠WARNING Crushing hazard. If the overhead crane is not properly attached, the lower secondary boom could become unbalanced and fall when it is removed from the machine.

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Rotate the turntable to the 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.

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

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

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

6 Remove the pin retaining fastener from the secondary boom lift cylinder rod-end pivot pin. Then use a soft metal drift to remove the pin.

7 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.

8 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.

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

Kubota Z482-E Engine

REV A

6-1 Timing Adjustment

Complete information to perform this procedure is available in the *Kubota Z482-E Workshop Manual* (Kubota code number: 97897-01165). Genie part number 52956.

6-2 Glow Plugs

How to Check the Glow Plugs

See the scheduled maintenance procedure B-7, *Check The Glow Plugs.*

6-3 Engine RPM

RPM Adjustment

See the scheduled maintenance procedure B-8, *Check and Adjust the Engine RPM.*

6-4 Engine Drive Pulley

How to Remove the Engine Drive Pulley

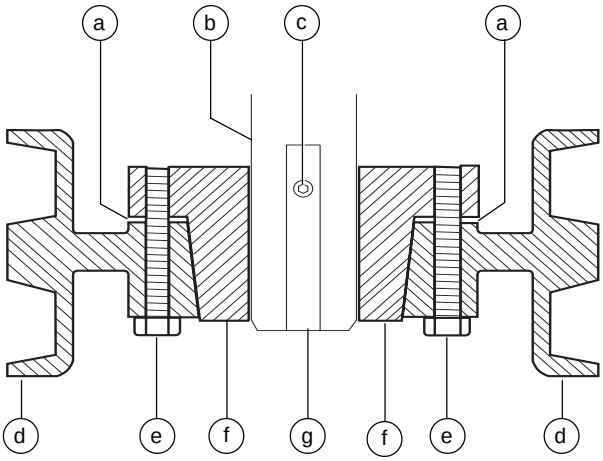
1 Remove the three bolts that attach the engine drive pulley to the shaft bushing.

2 Install the same three bolts that were removed in step 1 into the threaded holes of the engine drive pulley.

3 Carefully tighten each bolt evenly until the engine drive pulley slides off the shaft.

CAUTION Component damage hazard. The engine drive pulley and/or shaft can be damaged if the bolts are not tightened evenly.

4 Loosen the set screw on the pulley bushing, then slide the pulley bushing off of the engine shaft.



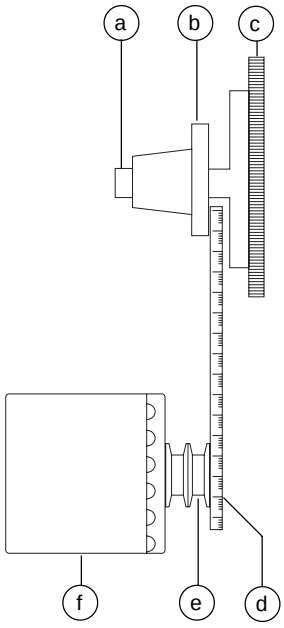
a gap
b shaft
c set screw
d engine drive pulley
e engine drive pulley bolt
f shaft bushing
g woodruff key

How to Install the Engine Drive Pulley

NOTICE The generator pulley must already be installed before performing this procedure. See 7-1, *How to Install the Generator Pulley*.

1 Align the woodruff key on the engine shaft with the slot in the pulley bushing and slide the pulley bushing onto the engine shaft. Do not tighten the set screw.

2 Loosen the set screw and align the flywheel side of the pulley bushing on the engine shaft with the outer face of the generator pulley using a straightedge.



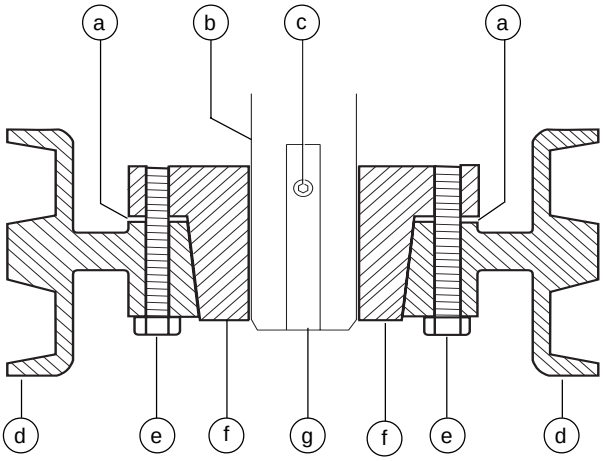
a pulley shaft
b pulley bushing
c engine flywheel
d straightedge
e generator pulley
f generator

3 Tighten the set screw on the pulley bushing hand tight.

4 Slide the engine pulley onto the pulley bushing.

5 Install the pulley mounting bolts and tighten them evenly to 108 in-lbs / 12.2 Nm.

CAUTION Component damage hazard. Do not overtighten the pulley mounting bolts. There must be a gap visible between the engine drive pulley and the pulley bushing.



a gap
b shaft
c set screw
d engine drive pulley
e pulley mounting bolt
f pulley bushing
g woodruff key

6 Check the alignment between the engine drive pulley and the generator pulley using a straightedge.

NOTICE If the pulley alignment is not within specification, remove the engine pulley and repeat steps 2 through 6. See 6-4, *How to Remove the Engine Drive Pulley.*

Pulley alignment, maximum offset	1/16 inch 1.58 mm

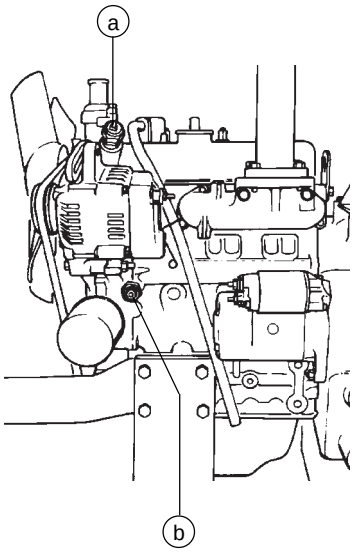
6-5
Water Temperature and Oil Pressure Switches

The water temperature switch is a normally open switch that closes at approximately 225˚ F / 107˚ C. When the switch closes, the engine will shut off to prevent damage and will not start until the temperature drops below the switch point. An over-temperature indicator light at the ground controls should turn on when the switch closes.

CAUTION Component damage hazard. Do not crank the engine with the over-temperature light on.

The oil pressure switch is a normally closed switch that opens at approximately 7 psi / 0.5 bar. If the oil pressure drops below the switch point, the switch closes and shuts off the engine to prevent damage. A low oil pressure indicator light at the ground controls should turn on when the switch opens.

CAUTION Component damage hazard. Do not crank the engine with the low oil pressure light on.



a water temperature switch
b oil pressure switch

How to Replace the Water Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Pull up on the pull pin on the engine pivot tray located next to the generator. Swing the engine pivot tray out from the machine to access both switches.

2 Disconnect the wiring from the desired switch.

3 Remove the switch from the engine block, and then install the new switch using pipe thread sealant. Do not over tighten.

⚠CAUTION Bodily injury hazard. Contact with hot engine fluids or components may cause severe burns.

Specifications

Water temperature switch		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		13/16 inch 21 mm
Temperature switch point		225°F ±2% 107°C ±2%
Oil pressure switch		
Torque	8-18 ft-lbs	11-24 Nm
Hex size		1 1/16 inch 27 mm
Oil pressure switch point	7.1 psi	0.5 bar

Generator

REV A

7-1
Generator

How to Remove the Generator Pulley (before serial number 1112)

1 Loosen the tension adjustment bolt on the generator.

2 Push the generator towards the machine and remove the belts from the generator pulley.

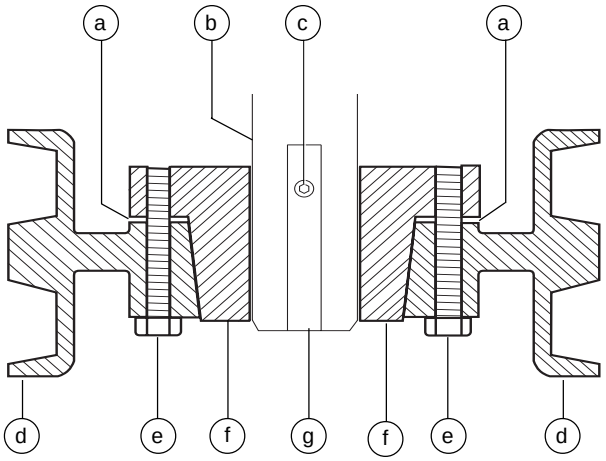
3 Remove the three bolts that attach the generator pulley to the shaft bushing.

4 Install the same three bolts that were removed in step 1 into the threaded holes of the generator pulley.

5 Carefully tighten each bolt evenly until the generator pulley slides off the shaft.

CAUTION Component damage hazard. The generator pulley and/or shaft can be damaged if the bolts are not tightened evenly.

6 Loosen the set screw on the pulley bushing, then slide the pulley bushing off of the generator shaft.



a gap
b shaft
c set screw
d generator pulley
e pulley mounting bolt
f pulley bushing
g woodruff key

How to Remove the Generator Pulley (after serial number 1111)

1 Loosen the tension adjustment bolt on the generator.

2 Push the generator towards the machine and remove the belts from the generator pulley.

3 Remove the generator pulley retaining nut from the generator shaft.

4 Slide the pulley off of the generator shaft.

How to Install the Generator Pulley (before serial number 1112)

NOTICE The pulley on the generator must be installed before installing the engine drive pulley.

1 Align the woodruff key on the generator shaft with the slot in the pulley bushing and slide the pulley bushing all the way onto the generator shaft.

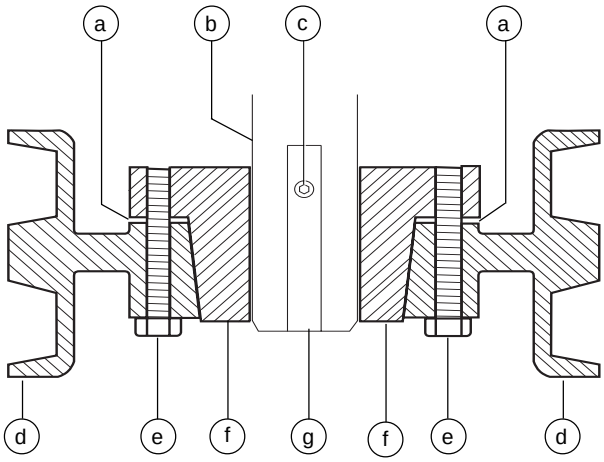
2 Tighten the set screw on the pulley bushing hand tight.

4 Slide the generator pulley onto the pulley bushing.

5 Install the pulley mounting bolts and tighten them evenly to 60 in-lbs / 6.8 Nm.

CAUTION Component damage hazard. Do not overtighten the pulley mounting bolts. There must be a gap visible between the generator pulley and the pulley bushing.

6 Adjust the tension of the generator belts. See 7-2, *How to Adjust the Generator Belts.*



a gap
b shaft
c set screw
d generator pulley
e pulley mounting bolt
f pulley bushing
g woodruff key

How to Install the Generator Pulley (after serial number 1111)

NOTICE The pulley on the generator must be installed before installing the engine drive pulley.

1 Align the woodruff key on the generator shaft with the slot in the pulley and slide the pulley all the way onto the generator shaft.

2 Install the flat washer and pulley retaining nut onto the generator shaft, then tighten the nut to 80-90 ft-lbs / 108-122 Nm.

3 Adjust the tension of the generator belts. See 7-2, *How to Adjust the Generator Belts.*

7-2 Generator Belts

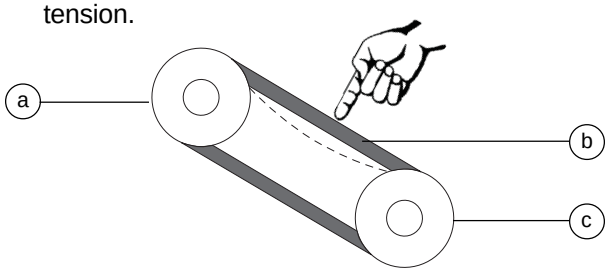
How to Adjust the Generator Belts

1 Disconnect the battery packs.

2 Loosen the tension adjustment bolt on the generator.

3 Pull the generator away from the machine and tighten the adjustment bolt.

4 Check the generator belts for proper tension. If the belt deflection is not within specification, perform steps 1 and 2 and re-check the belt tension.



a engine pulley
b generator belts
c generator pulley

Belt deflection, maximum allowable	1/4 inch 6.5 mm

7-3 Generator Voltage Regulator

How to Adjust the Generator Voltage Regulator

The voltage regulator regulates the output voltage of the generator. A properly adjusted voltage regulator is essential to good generator performance and service life. A defective or improperly adjusted voltage regulator could result in component damage.

NOTICE Be sure the batteries are fully charged before performing this procedure.

1 Connect the positive lead of a voltmeter to the POS terminal on the generator and the negative lead of the voltmeter to the neg terminal on the generator.

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

2 Start the engine from the ground controls and move the rpm select toggle switch to the maintained high idle position. Check the voltage on the generator.

⊙ Result: The voltage should be 54V DC.

3 If the voltage reading is not 54V DC, insert a small flat blade screwdriver into the potentiometer located inside of the generator. Use the access hole on the back of the generator labeled VOLT ADJ.

CAUTION Component damage hazard. Be sure that the screwdriver is properly inserted into the potentiometer or the generator and/or voltage regulator may become damaged.

4 Carefully adjust the potentiometer to obtain a 54V DC voltage reading. Turn the potentiometer clockwise to increase the voltage or counterclockwise to decrease the voltage. Do not rotate the potentiometer past the internal stops.

CAUTION Component damage hazard. The voltage regulator inside the generator will become damaged if the potentiometer is rotated past the internal stops.

How to Replace the Voltage Regulator

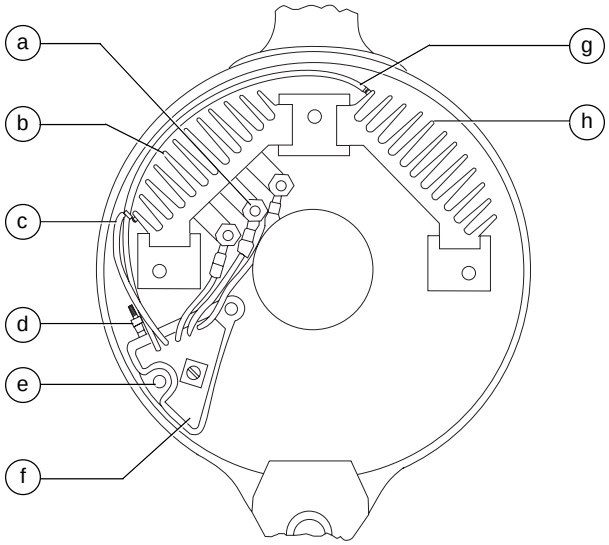
1 Disconnect the battery packs from the machine.

2 Tag and disconnect the positive and negative battery cables from the generator.

3 Remove the generator mounting fasteners then remove the generator from the machine.

4 Remove the three nuts that hold the plastic cover onto the generator. Carefully remove the cover.

5 Locate the three white wires that lead from the voltage regulator to the negative rectifier assembly.



a white wires (#10 nuts)
b negative rectifier assembly
c black wire (#10 screw)
d black wire (#4 nut)
e voltage regulator mounting fastener (#8 screw)
f voltage regulator
g red wire (#10 screw)
h positive rectifier assembly

6 Remove the nuts on those three wires from the negative rectifier assembly, then remove the wires.

NOTICE Do not remove the spacers from the underneath the wires on the negative rectifier assembly.

7 Locate the red wire that leads from the voltage regulator to the positive rectifier assembly.

8 Remove the screw that attaches the red wire to the positive recitfier assembly.

9 Remove the nut that attaches the black wire to the voltage regulator.

10 Remove the voltage regulator mounting screws.

11 Remove the voltage regulator while carefully guiding the red and black wires from behind the negative rectifier assembly.

12 Install the new voltage regulator (Genie part number 54446) by following the previous steps in reverse order.

13 Apply Loctite® removable thread sealant onto the voltage regulator mounting fasteners and torque to 25 in-lbs / 2.8 Nm.

14 Torque all fasteners to the following specifications:

Fastener torque specifications	
#10 screw	25 in-lbs 2.8 Nm
#10 nut	25 in-lbs 2.8 Nm
#4 nut	8-10 in-lbs 0.9-1.1 Nm
Voltage regulator mounting fasteners	25 in-lbs 2.8 Nm

15 Install the plastic cover onto the generator then install the generator onto the machine.

16 Adjust the generator belts. See 7-2, *How to Adjust the Generator Belts.*

17 Adjust the voltage regulator. See 7-3, *How to Adjust the Voltage Regulator.*

CAUTION Component damage hazard. The voltage regulator and/or generator may become damaged if the voltage regulator is not properly adjusted after replacement.

NOTICE When the voltage regulator is replaced, the voltage regulator must be adjusted. See 7-3, *How to Adjust the Voltage Regulator.*

Ground Controls

REV A

8-1 Control Relays

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

How to Test a Single Pole Double Throw Relay

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

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.

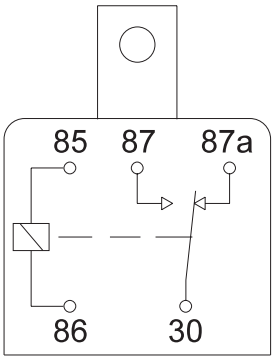
2 Label and then disconnect all the wiring from the relay to be tested.

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.

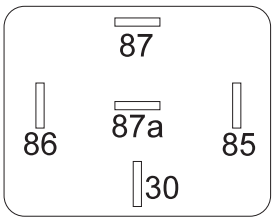
Test	Desired result
terminal 85 to 86	85 to 95Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

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

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



Relay Schematic



Terminal Numbers

8-2 Toggle Switches

See *Repair Procedure* 1-4, *Toggle Switches*.

8-3 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.

NOTICE A small screwdriver is provided and should be used when removing a Wago® component. This screwdriver is located in the operator's manual storage box in the platform.

1 Label the wiring from the component to be removed.

2 Use the provided screwdriver to push in and release the wire from the component.

3 Locate the removal tab on the bottom or top side of the component.

4 Use the provided screwdriver to gently pry up on the tab of the component and remove it.

Hydraulic Pumps

REV A

9-1 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

2 Connect a 0 to 5000 psi / 0 to 345 bar, pressure gauge to the high pressure port on the pump.

3 Turn the key switch to ground control and pull 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.

⚠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.

9-2 Function Pump

How to Test the Function Pump

NOTICE This procedure will require two people.

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 2, *Hydraulic Hose and Fitting Torque Specifications.*

2 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the high pressure port on the pump.

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

4 Hold the function enable switch to either side and activate any boom function from the ground controls.

⊙ Result: If the pressure gauge reads 3000 psi / 207 bar, immediately stop. The pump is good.

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

CAUTION Component damage hazard. Hydraulic pressure in excess of 3200 psi / 221 bar, will cause severe component damage.

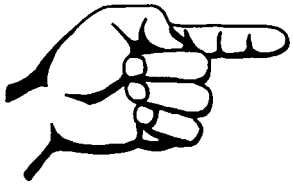
5 Remove the pressure gauge and reconnect the hydraulic hose.

How to Remove the Function Pump

1 Tag, disconnect and plug the hydraulic hoses from 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.



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Manifolds

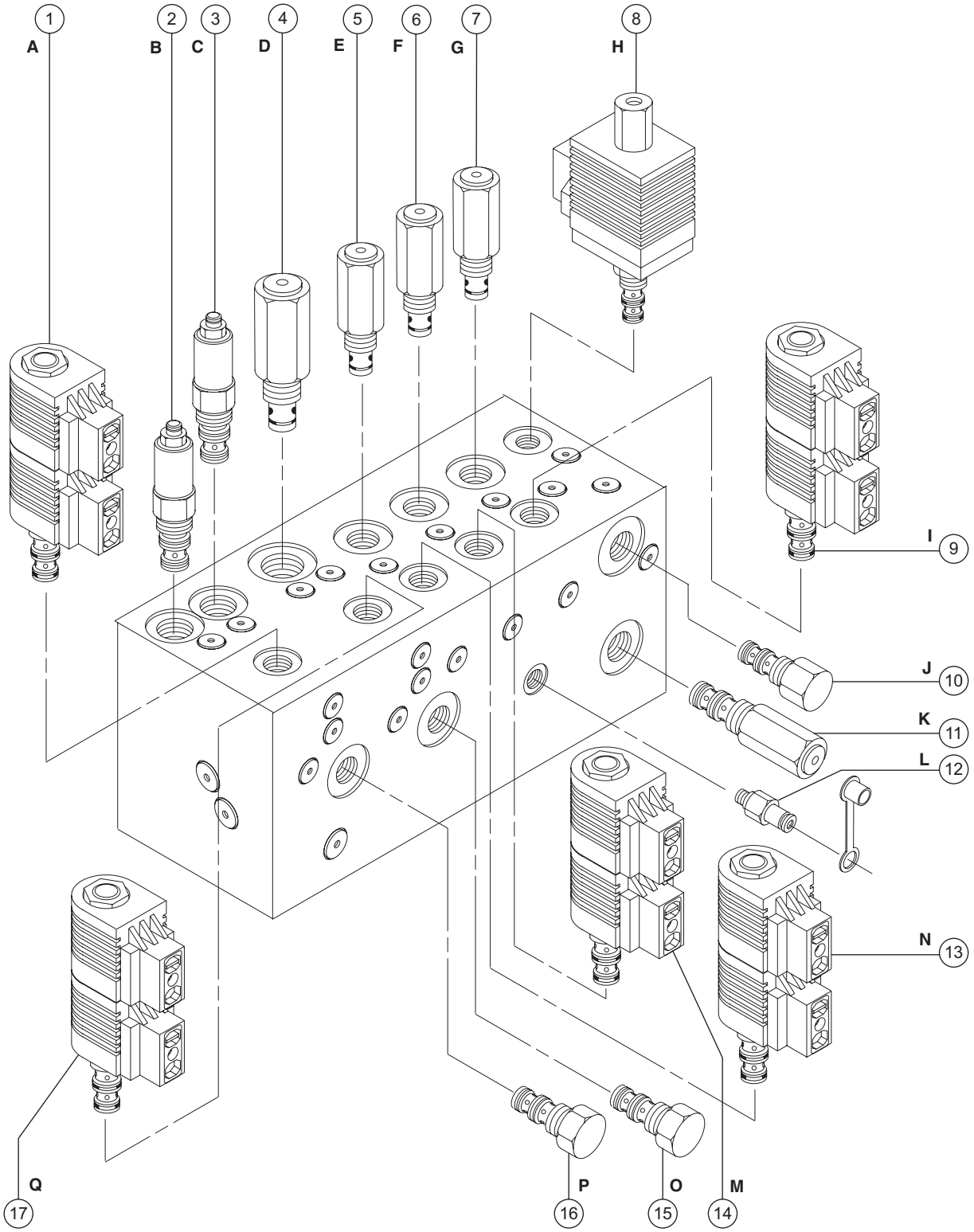
REV A

10-1
Function Manifold Components (before serial number 1112)

The function manifold is mounted to the turntable under the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	3 position 4 way spool valve	A	Platform level up/down	10-12 ft-lbs / 14-16 Nm
2	Counterbalance valve	B	Platform level down	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	C	Platform level up	35-40 ft-lbs / 47-54 Nm
4	Relief valve, 1100 psi / 75.8 bar	D	Turntable rotate left/right	25-30 ft-lbs / 34-41 Nm
5	Relief valve, 1600 psi / 110 bar	E	Secondary boom down	25-30 ft-lbs / 34-41 Nm
6	Relief valve, 1400 psi / 96.5 bar	F	Primary boom down	25-30 ft-lbs / 34-41 Nm
7	Relief valve, 1800 psi / 124 bar	G	Primary boom extend	25-30 ft-lbs / 34-41 Nm
8	Proportional solenoid valve	H	System flow regulating circuit	10-12 ft-lbs / 14-16 Nm
9	3 position 4 way spool valve	I	Primary boom extend/retract	10-12 ft-lbs / 14-16 Nm
10	Differential sensing valve	J	Differential sensing circuit	10-12 ft-lbs / 14-16 Nm
11	Relief valve, 3200 psi / 220.6 bar	K	System relief	25-30 ft-lbs / 34-41 Nm
12	Diagnostic fitting	L	Testing	
13	3 position 4 way spool valve	M	Primary boom up/down	10-12 ft-lbs / 14-16 Nm
14	3 position 4 way spool valve	N	Secondary boom up/down	10-12 ft-lbs / 14-16 Nm
15	Flow regulator valve, 1.5 gpm / 5.7 L/min	O	Turntable rotate circuit	10-12 ft-lbs / 14-16 Nm
16	Flow regulator valve, 0.8 gpm / 3 L/min	P	Jib boom/platform rotate circuit	10-12 ft-lbs / 14-16 Nm
17	3 position 4 way spool valve	Q	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm

REV A MANIFOLDS

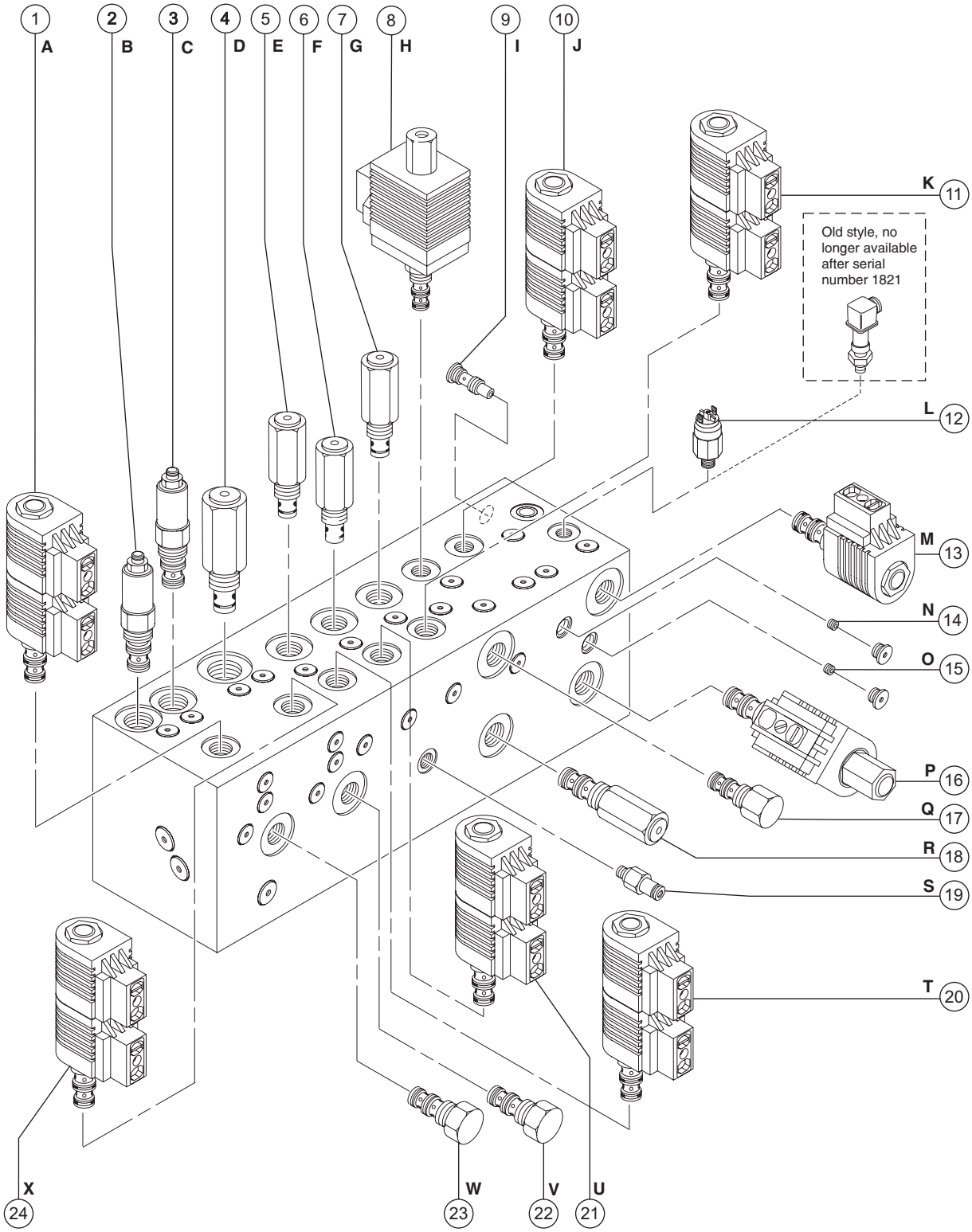


10-2
Function Manifold Components (after serial number 1111)

The function manifold is mounted to the turntable under the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	3 position 4 way spool valve	A	Platform level up/down	10-12 ft-lbs / 14-16 Nm
2	Counterbalance valve	B	Platform level down	35-40 ft-lbs / 47-54 Nm
3	Counterbalance valve	C	Platform level up	35-40 ft-lbs / 47-54 Nm
4	Relief valve, 1100 psi / 75.8 bar	D	Turntable rotate left/right	25-30 ft-lbs / 34-41 Nm
5	Relief valve, 1600 psi / 110 bar	E	Secondary boom down	25-30 ft-lbs / 34-41 Nm
6	Relief valve, 1400 psi / 96.5 bar	F	Primary boom down	25-30 ft-lbs / 34-41 Nm
7	Relief valve, 1800 psi / 124 bar (removed after serial number 3215)	G	Primary boom extend	25-30 ft-lbs / 34-41 Nm
8	Proportional solenoid valve	H	System flow regulating circuit	10-12 ft-lbs / 14-16 Nm
9	Check valve	I	Brake circuit	25-30 ft-lbs / 34-41 Nm
10	Solenoid valve, 3 position 4 way	J	Steer left/right	10-12 ft-lbs / 14-16 Nm
11	3 position 4 way spool valve	K	Primary boom extend/retract	10-12 ft-lbs / 14-16 Nm
12	Pressure switch	L	Brake circuit	
13	Solenoid valve, N.C. poppet	M	Brake circuit	25-30 ft-lbs / 34-41 Nm
14	Orifice, 0.045 in / 1.02 mm	N	Steer circuit	
15	Orifice, 0.045 in / 1.02 mm	O	Brake circuit	
16	Solenoid valve, N.O. poppet	P	Brake circuit	25-30 ft-lbs / 34-41 Nm
17	Differential sensing valve	Q	Differential sensing circuit	10-12 ft-lbs / 14-16 Nm
18	Relief valve, 3200 psi / 220.6 bar	R	System relief	25-30 ft-lbs / 34-41 Nm
19	Diagnostic fitting	S	Testing	
20	3 position 4 way spool valve	T	Secondary boom up/down	10-12 ft-lbs / 14-16 Nm
21	3 position 4 way spool valve	U	Primary boom up/down	10-12 ft-lbs / 14-16 Nm
22	Flow regulator valve, 1.5 gpm / 5.7 L/min	V	Turntable rotate circuit	10-12 ft-lbs / 14-16 Nm
23	Flow regulator valve, 0.8 gpm / 3 L/min	W	Jib boom/platform rotate circuit	10-12 ft-lbs / 14-16 Nm
24	3 position 4 way spool valve	X	Turntable rotate left/right	10-12 ft-lbs / 14-16 Nm

REV A MANIFOLDS



10-3 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

NOTICE Perform this procedure with the primary boom fully retracted.

1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the function manifold.

2 Hold the function enable toggle switch to either side and hold the primary boom extend/retract toggle switch in the retract direction with the primary boom fully retracted, and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

3 Turn the machine off. Hold the relief valve and remove the cap (item 11, function manifold - models before serial number 1112 OR item 18, function manifold - models after serial number 1111).

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

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

5 Repeat steps 2 through 4 and recheck the valve pressure.

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 Hold the function enable toggle switch to either side and hold down the primary boom down toggle switch with the primary boom fully lowered, and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

3 Turn the machine off. Hold the relief valve and remove the cap (item 6, function manifold).

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

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

5 Repeat steps 2 through 4 and recheck the valve pressure.

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 Hold the function enable toggle switch to either side and hold down the secondary boom down toggle switch with the secondary boom fully lowered, and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications.*

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

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

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

5 Repeat steps 2 through 4 and recheck the valve pressure.

How to Adjust the Primary Boom Extend Relief Valve (before serial number 3216)

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 Raise the primary boom to a horizontal position.

3 Hold the function enable toggle switch to either side and hold the primary boom extend toggle switch with the primary boom fully extended, and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

4 Turn the machine off. Hold the relief valve and remove the cap (item 7, function manifold).

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 valves higher than specified.

6 Repeat steps 3 through 5 and recheck the valve pressure.

How to Adjust the Turntable Rotate 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 Hold the function enable toggle switch to either side and hold the turntable rotate right toggle switch with the turntable rotated to the right (until it is against the rotation stop), and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

3 Turn the machine off. Hold the relief valve and remove the cap (item 4, function manifold).

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

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

5 Repeat steps 2 through 4 and recheck the valve pressure.

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. Zero resistance indicates the coil has failed.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance decreases below specification, amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

⚠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 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

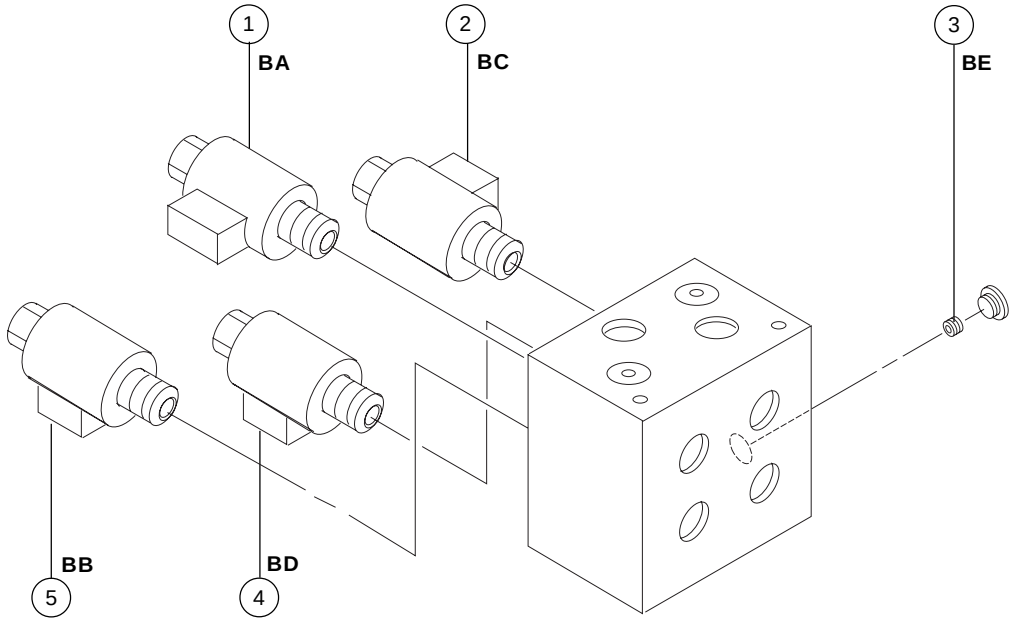
Note: The following coil resistance specifications are at an ambient temperature of 68°F / 20°C. As valve coil resistance is sensitive to changes in air temperature, the coil resistance will typically increase or decrease by 4% for each 18°F / 10°C that your air temperature increases or decreases from 68°F / 20°C.

Valve coil specifications	
3 position 4 way solenoid valve 20V DC (schematic items A, I, J, K, M, N, P, Q, R, S, T, U, W, X, BA, BB, BC, BD, CA and CB)	22 - 25Ω
Proportional solenoid valve 24V DC (schematic item H)	4 - 5.2Ω

10-4
Jib Boom / Platform Rotate Manifold Components (before serial number 2006)

The jib boom/platform rotate manifold is mounted to the jib boom.

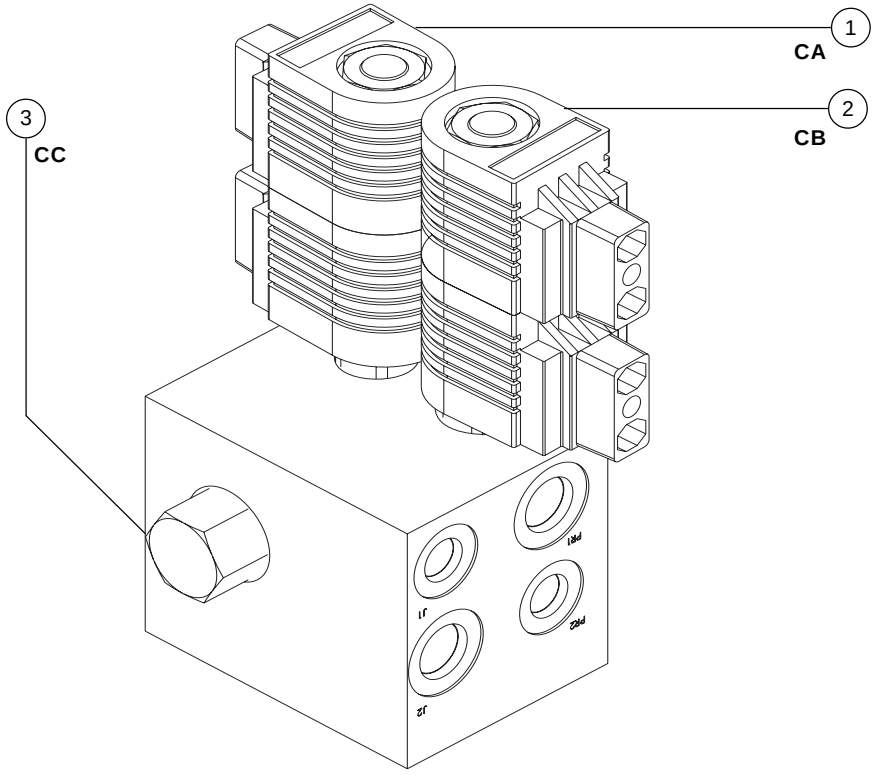
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	BA	Jib boom down	25-30 ft-lbs / 34-41 Nm
2	Solenoid valve, 2 position 3 way	BC	Jib boom up	25-30 ft-lbs / 34-41 Nm
3	Orifice plug, 0.025 inch / 0.64 mm	BE	Platform rotate circuit	
4	Solenoid valve, 2 position 3 way	BD	Platform rotate left	25-30 ft-lbs / 34-41 Nm
5	Solenoid valve, 2 position 3 way	BB	Platform rotate right	25-30 ft-lbs / 34-41 Nm



10-5
Jib Boom / Platform Rotate Manifold Components (after serial number 2005)

The jib boom/platform rotate manifold is mounted to the jib boom.

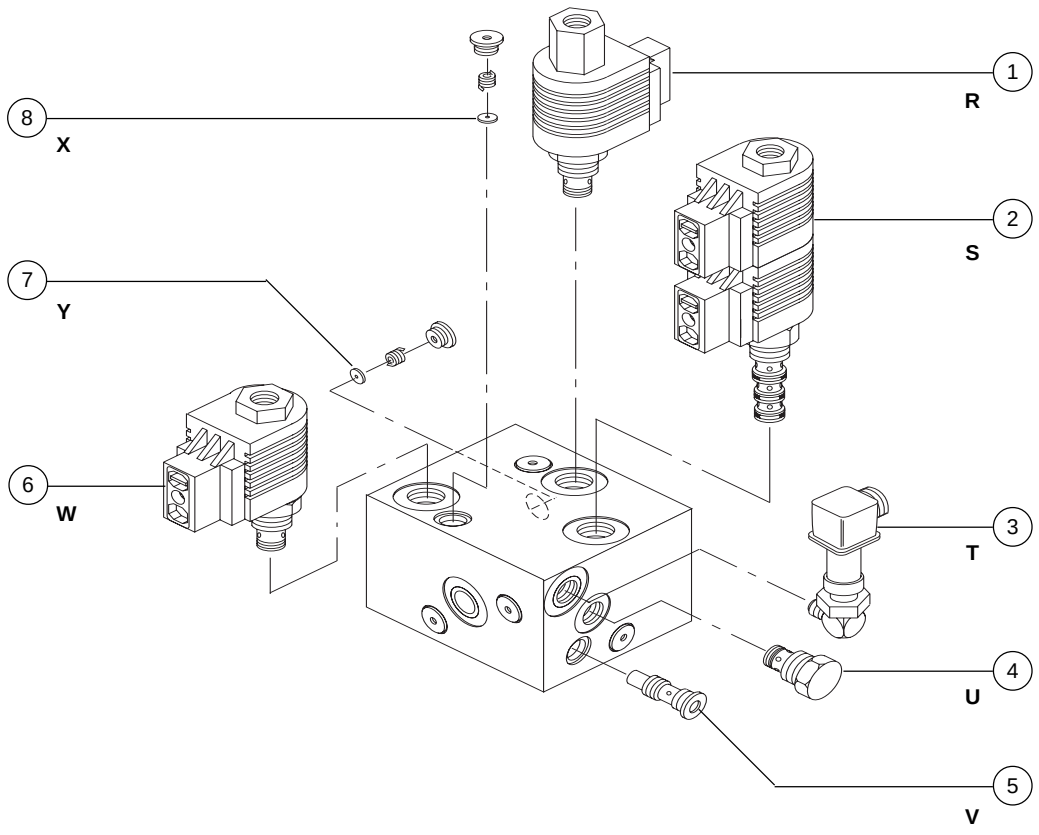
Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	CA	Jib boom circuit	25-30 ft-lbs / 34-41 Nm
2	Solenoid valve, 2 position 3 way	CB	Platform rotate circuit	25-30 ft-lbs / 34-41 Nm
3	Flow regulator, 0.3 gpm / 1.2 L/min	CC	Platform rotate circuit	25-30 ft-lbs / 34-41 Nm



10-6
Steer/Brake Manifold Components (before serial number 1112)

The steer/brake manifold is mounted under the steer-end drive chassis cover.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, N.O. poppet	R	Brake circuit	25-30 ft-lbs / 34-41 Nm
2	Solenoid valve, 3 position 4 way	S	Steer left/right	10-12 ft-lbs / 14-16 Nm
3	Pressure switch	T	Brake circuit	
4	Flow regulator valve, 0.6 gpm / 2.3 L/min	U	Brake circuit	25-30 ft-lbs / 34-41 Nm
5	Check valve	V	Brake circuit	25-30 ft-lbs / 34-41 Nm
6	Solenoid valve, N.C. poppet	W	Brake circuit	25-30 ft-lbs 34-41 Nm
7	Orifice, 0.045 in / 1.02 mm	X	Brake circuit	
8	Orifice, 0.040 in / 1.02 mm	Y	Brake circuit	



Fuel and Hydraulic Tanks

REV A

11-1
Fuel Tank

How to Remove the Fuel Tank

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Remove the fuel tank in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Immediately clean up any fuel that may have spilled during this procedure.

1 **Models with fuel shutoff valve:** Turn the manual fuel shutoff valve, located next to the tank, to the closed position.

2 Using an approved hand-operated pump, drain the fuel tank into a suitable container. Refer to Section 2, *Specifications*, for tank capacity.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

NOTICE Be sure to only use a hand operated pump suitable for use with diesel fuel.

3 Tag, disconnect and plug the fuel supply and return hoses at the tank. Clean up any fuel that may have spilled.

4 **Metal tank:** Remove the fasteners from the tank mounting straps underneath of the tank mounting tray.

Plastic tank: Remove the fuel tank retaining fastener located underneath the tank mounting tray at the bottom of the fuel tank .

Metal fuel tank:

NOTICE Clean the fuel tank and inspect for rust and corrosion before installing.

Plastic fuel tank:

CAUTION Component damage hazard. The fuel tank is plastic and may become damaged if allowed to fall. Be sure the fuel tank is properly supported.

CAUTION Component damage hazard. Do not overtighten the fuel tank mounting fasteners.

NOTICE Clean the fuel tank and inspect for cracks and other damage before installing.

Torque specification

1/4 -20 fasteners	4 ft-lbs	5.4 Nm
3/8 -16 fasteners	15 ft-lbs	20.3 Nm

11-2
Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply suction lines and has an external return line filter.

How to Remove the Hydraulic Tank

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

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.

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.

7 Remove the hydraulic tank from the machine.

Turntable Rotation Components

REV A

12-1
Rotation Hydraulic Motor

The rotation hydraulic motor is the only serviceable component of the turntable rotation assembly. The worm gear may 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 2, *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, then remove the motor.

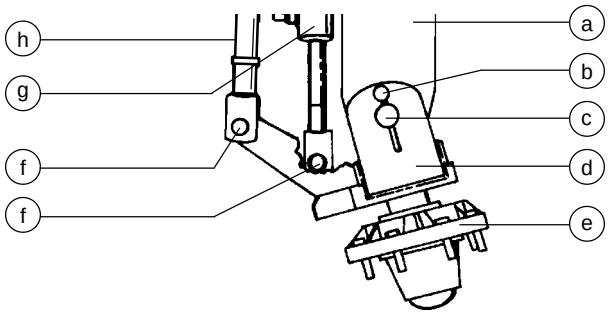
Steer Axle Components

REV A

13-1
Yoke and Hub

How to Remove the Yoke and Hub

1 Remove the cotter pin and the clevis pin from both the steering cylinder and the tie rod.



a axle
b pin retaining fastener
c king pin
d yoke
e hub
f clevis pin and cotter pin
g steering cylinder
h tie rod

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

3 Block the non-steering wheels, and then center a lifting jack under the steering axle.

4 Raise the machine 6 inches / 15 cm and place blocks under the drive chassis for support.

5 Remove the lug nuts, then the tire and wheel assembly.

6 Remove the pin retaining fasteners from the upper and lower yoke pivot pins.

7 Support the yoke/hub assembly with a lifting device.

8 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 it is not properly supported and secured to the lifting device.

NOTICE Always use a new cotter pin when installing a clevis pin.

How to Remove the Hub and Bearings

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

2 Block the non-steering wheels and place a lifting jack under the steering axle.

3 Raise the machine and place blocks under the drive chassis for support.

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

5 Remove the dust cap, cotter pin and slotted nut.

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

7 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.

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 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.

4 Slide the hub onto the yoke spindle.

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

5 Fill the hub cavity with clean, fresh grease.

6 Place the outer bearing into the hub.

7 Install the washer and castle nut.

8 Tighten the castle nut to 158 ft-lbs / 214 Nm to seat the bearings.

NOTICE Rotate the hub by hand while torquing the castle nut to make sure the bearings seat properly.

9 Loosen the castle nut one full turn and then torque to 35 ft-lbs / 47 Nm.

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

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

11 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to specification. Refer to Section 2, *Specifications.*

13-2 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings.

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

2 Remove the cotter pin. Then remove the clevis pin from each end of the steering cylinder.

3 Remove the steering cylinder.

NOTICE Always use a new cotter pin when installing a clevis pin.

13-3
Tie Rod

How to Remove the Tie Rod

1 Remove the cotter pin, then remove the clevis pin from each end of the tie rod.

2 Remove the tie rod.

NOTICE Always use a new cotter pin when installing a clevis pin.

Non-steer Axle Components

REV A

14-1 Drive Motor

How to Remove a Drive Motor

1 Disconnect the battery packs.

2 Tag and disconnect the power cables and relay wiring from the drive motor.

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

3 Remove the drive motor mounting fasteners.

4 Guide the drive motor shaft out of the brake and then remove the drive motor.

14-2 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 2, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the drive motor. See 14-1, *How to Remove a Drive Motor*.

2 Disconnect and plug the hydraulic hose from the brake. Remove the hydraulic fitting and the bleed valve.

⚠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. Do not remove them.

5 Center a lifting jack under the non-steer axle. Raise the machine and place blocks under the chassis for support.

6 Remove the wheel lug nuts, then 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 bolts that attach the drive hub to the chassis, then remove the drive hub.

⚠ CAUTION Crushing hazard. The drive hub may become unbalanced and fall when the mounting fasteners are removed if it is not properly supported and secured to the lifting jack.

Motor Controller

REV A

15-1 Motor Controller

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 controller fault codes by flashing a 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 controller. 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 and disconnect the battery packs from the machine.

2 Tag and disconnect all power cables from the motor controller.

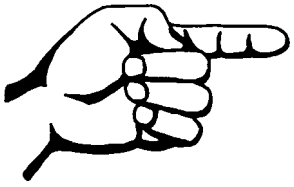
⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Press the release tab on the motor controller harness connector and remove the motor controller harness connector from the motor controller.

4 Connect the leads from an ohmmeter to test each motor controller terminal combination listed below and check for resistance.

⊙ Result: All desired results must be 500 kilohms or more. If any test has a result 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)



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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-34/22 Bi-Energy Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

⚠DANGER Electrocution hazard. Contact with electrically charged circuits will 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

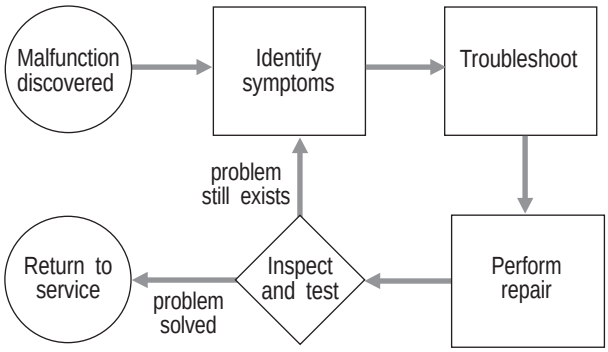
About This Section

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 6, *Schematics*.

Since various degrees of a particular function loss may occur, selecting the appropriate flow chart may be troublesome. When a function will not operate with the same speed or power as a machine in good working condition, refer to the flow chart which most closely describes the problem.

General Repair Process



Fault Code Chart

REV A

Fault codes are two digits. The Fault Indicator Light will blink the first digit of a two digit code then will 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 then 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 out 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 the 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 the 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.

Continued on next page

FAULT CODE CHART REV A

Fault Code	Code Scanner 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 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 a internal short to ground.	See Chart 29B
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.

Continued on next page

REV A FAULT CODE CHART

Fault Code	Code Scanner Display	Condition	Possible Causes	Solution
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.
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 OR 48V alternator voltage regulator improperly adjusted or is defective while the machine is being operated with the engine running.	Be sure the battery charger is disconnected OR check for loose battery cables or poor connections OR adjust 48V alternator voltage regulator OR replace the regulator.
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

REV A

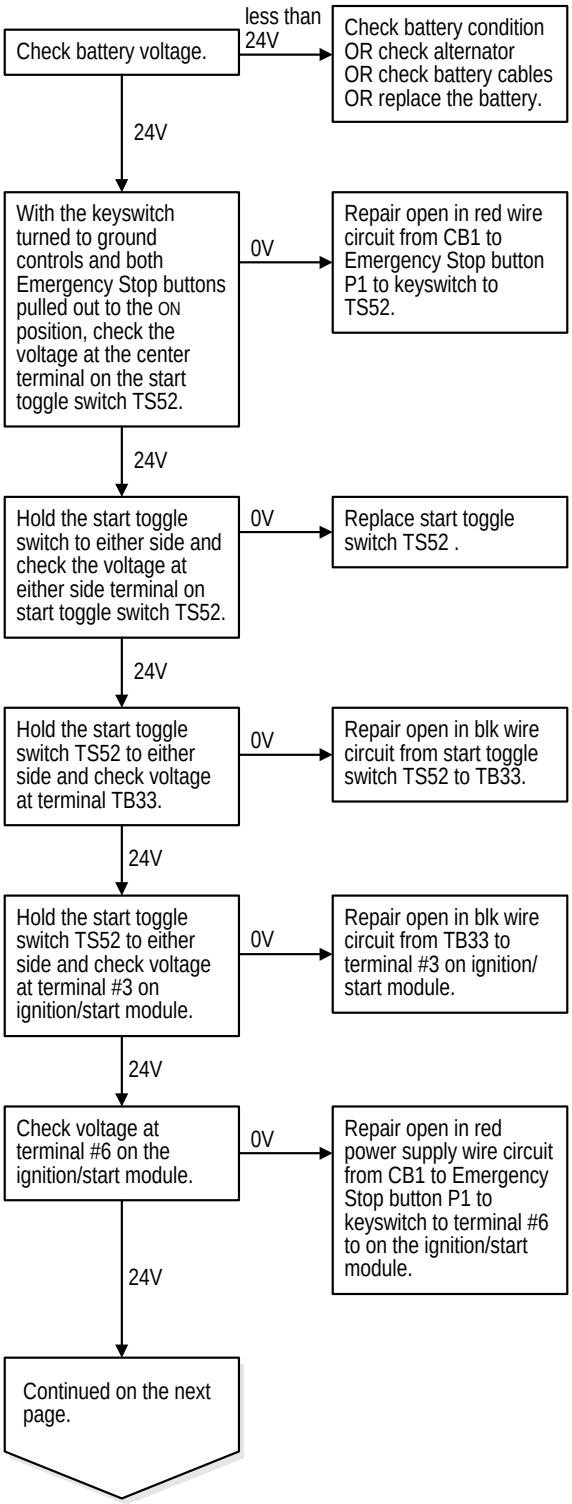
Engine Will Not Crank Over

Be sure key switch is in the appropriate position.

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

Be sure that the battery pack Anderson plugs are properly connected to the battery packs.

Be sure the circuit breaker and fuses are not tripped or blown.



REV A CHART 1

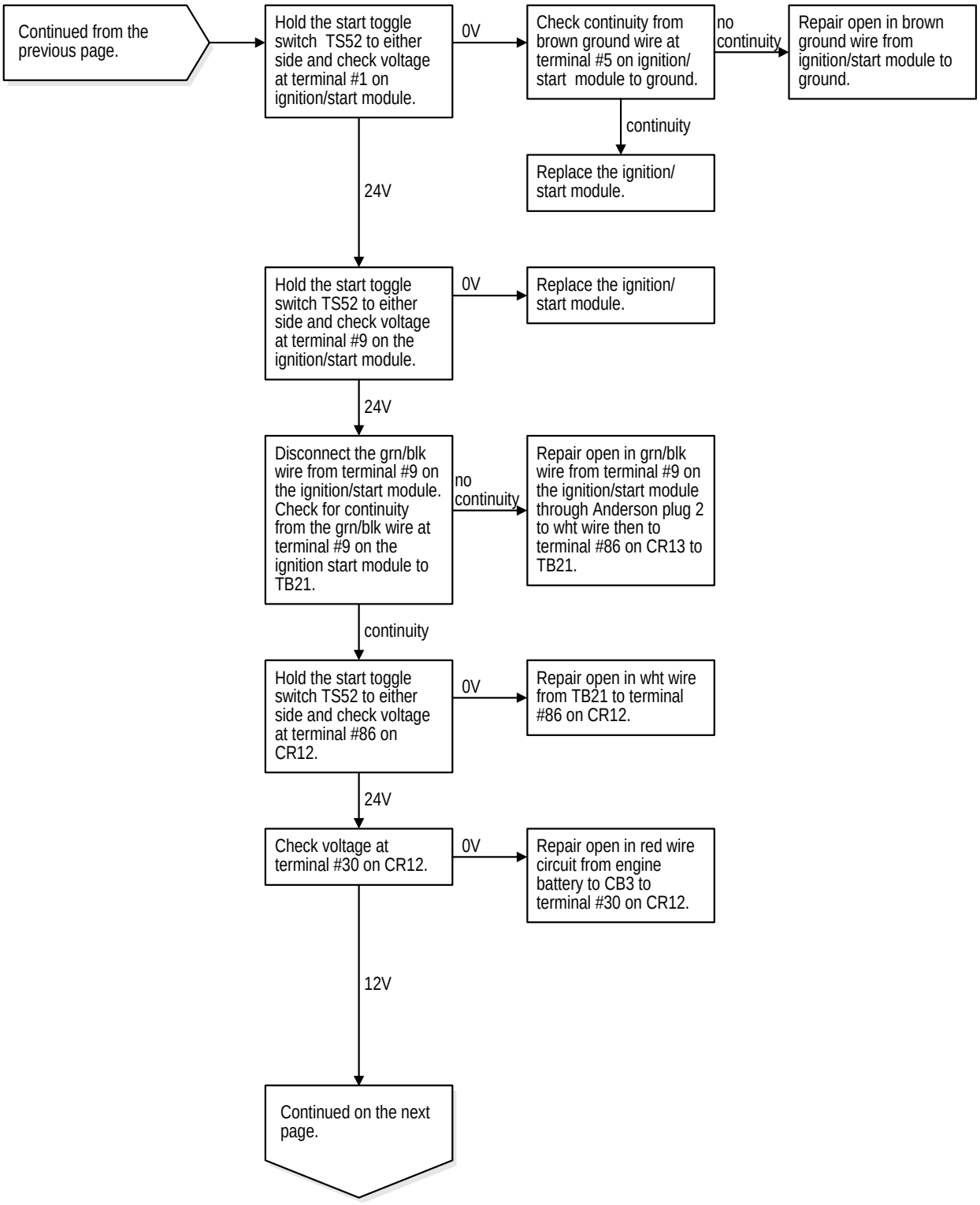

Continued from the previous page.
Hold the start toggle switch TS52 to either side and check voltage at terminal #1 on ignition/start module.
0V
Check continuity from brown ground wire at terminal #5 on ignition/ start module to ground.
no continuity
Repair open in brown ground wire from ignition/start module to ground.
continuity
Replace the ignition/ start module.
24V
Hold the start toggle switch TS52 to either side and check voltage at terminal #9 on the ignition/start module.
0V
Replace the ignition/ start module.
24V
Disconnect the grn/blk wire from terminal #9 on the ignition/start module. Check for continuity from the grn/blk wire at terminal #9 on the ignition start module to TB21.
no continuity
Repair open in grn/blk wire from terminal #9 on the ignition/start module through Anderson plug 2 to wht wire then to terminal #86 on CR13 to TB21.
continuity
Hold the start toggle switch TS52 to either side and check voltage at terminal #86 on CR12.
0V
Repair open in wht wire from TB21 to terminal #86 on CR12.
24V
Check voltage at terminal #30 on CR12.
0V
Repair open in red wire circuit from engine battery to CB3 to terminal #30 on CR12.
12V
Continued on the next page.

CHART 1 REV A

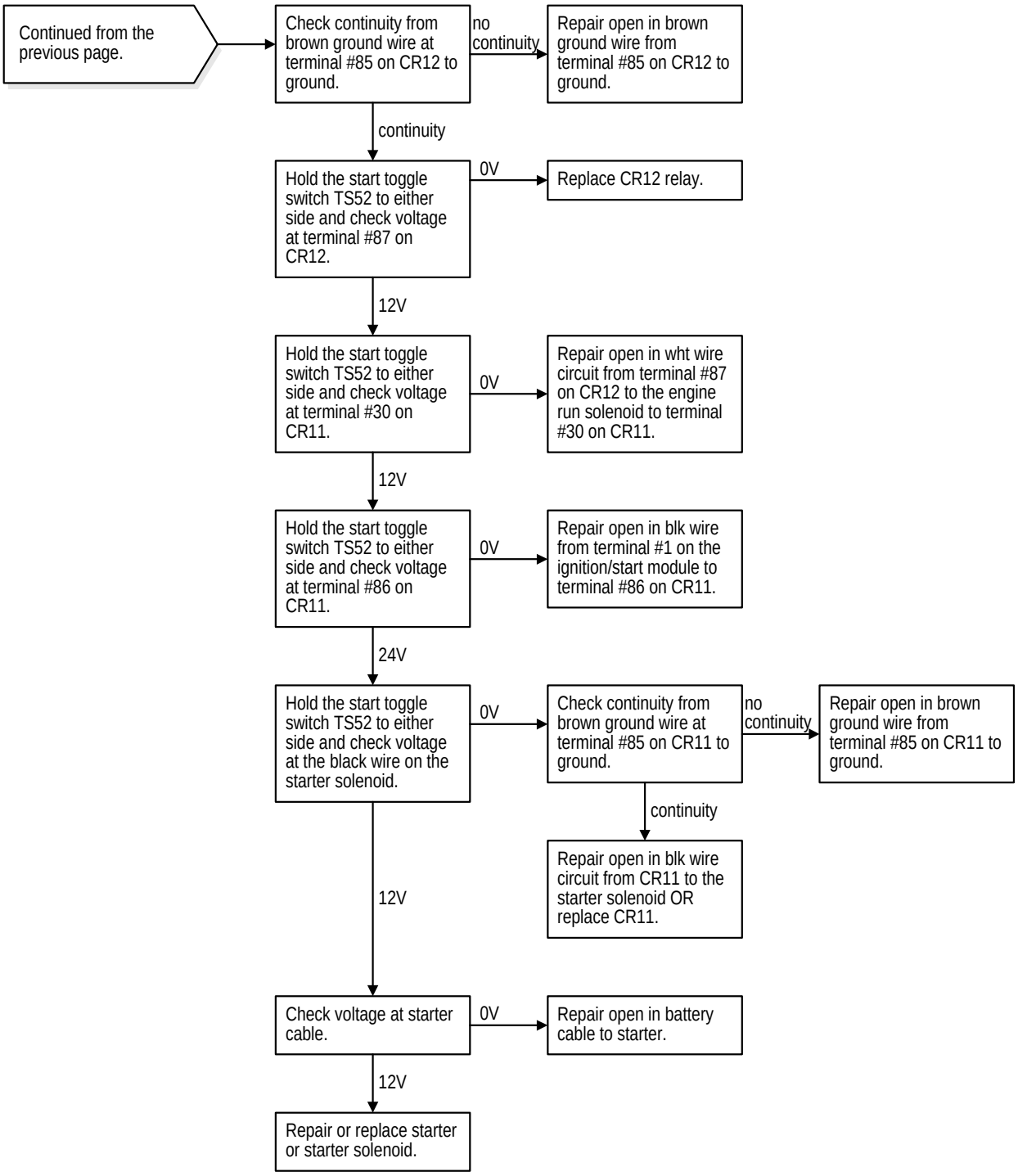

Continued from the previous page.
Check continuity from brown ground wire at terminal #85 on CR12 to ground.
no continuity
Repair open in brown ground wire from terminal #85 on CR12 to ground.
continuity
Hold the start toggle switch TS52 to either side and check voltage at terminal #87 on CR12.
0V
Replace CR12 relay.
12V
Hold the start toggle switch TS52 to either side and check voltage at terminal #30 on CR11.
0V
Repair open in wht wire circuit from terminal #87 on CR12 to the engine run solenoid to terminal #30 on CR11.
12V
Hold the start toggle switch TS52 to either side and check voltage at terminal #86 on CR11.
0V
Repair open in blk wire from terminal #1 on the ignition/start module to terminal #86 on CR11.
24V
Hold the start toggle switch TS52 to either side and check voltage at the black wire on the starter solenoid.
0V
Check continuity from brown ground wire at terminal #85 on CR11 to ground.
no continuity
Repair open in brown ground wire from terminal #85 on CR11 to ground.
continuity
Repair open in blk wire circuit from CR11 to the starter solenoid OR replace CR11.
12V
Check voltage at starter cable.
0V
Repair open in battery cable to starter.
12V
Repair or replace starter or starter solenoid.

Chart 2

REV A

Engine Cranks Over But Will Not Start

Be sure to check the fuel level.

Be sure to check engine oil level and engine coolant level and fill as needed.

Be sure the fuel shut-off valve is in the ON position.

Be sure the engine glow plugs operate normally. See the Maintenance Section.

Be sure that the battery pack Anderson plugs are properly connected to the battery packs.

Be sure the circuit breaker and fuses are not tripped or blown.

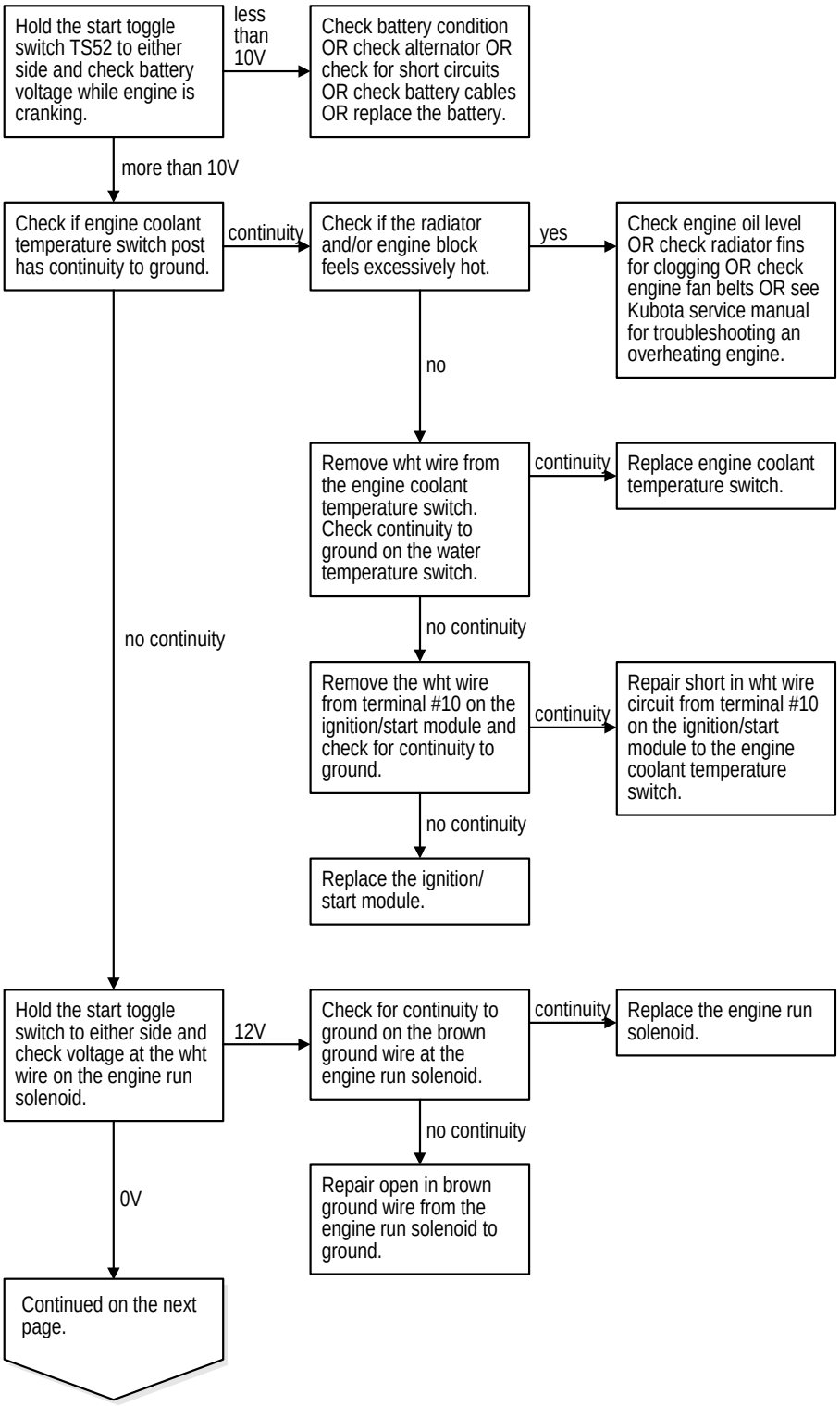
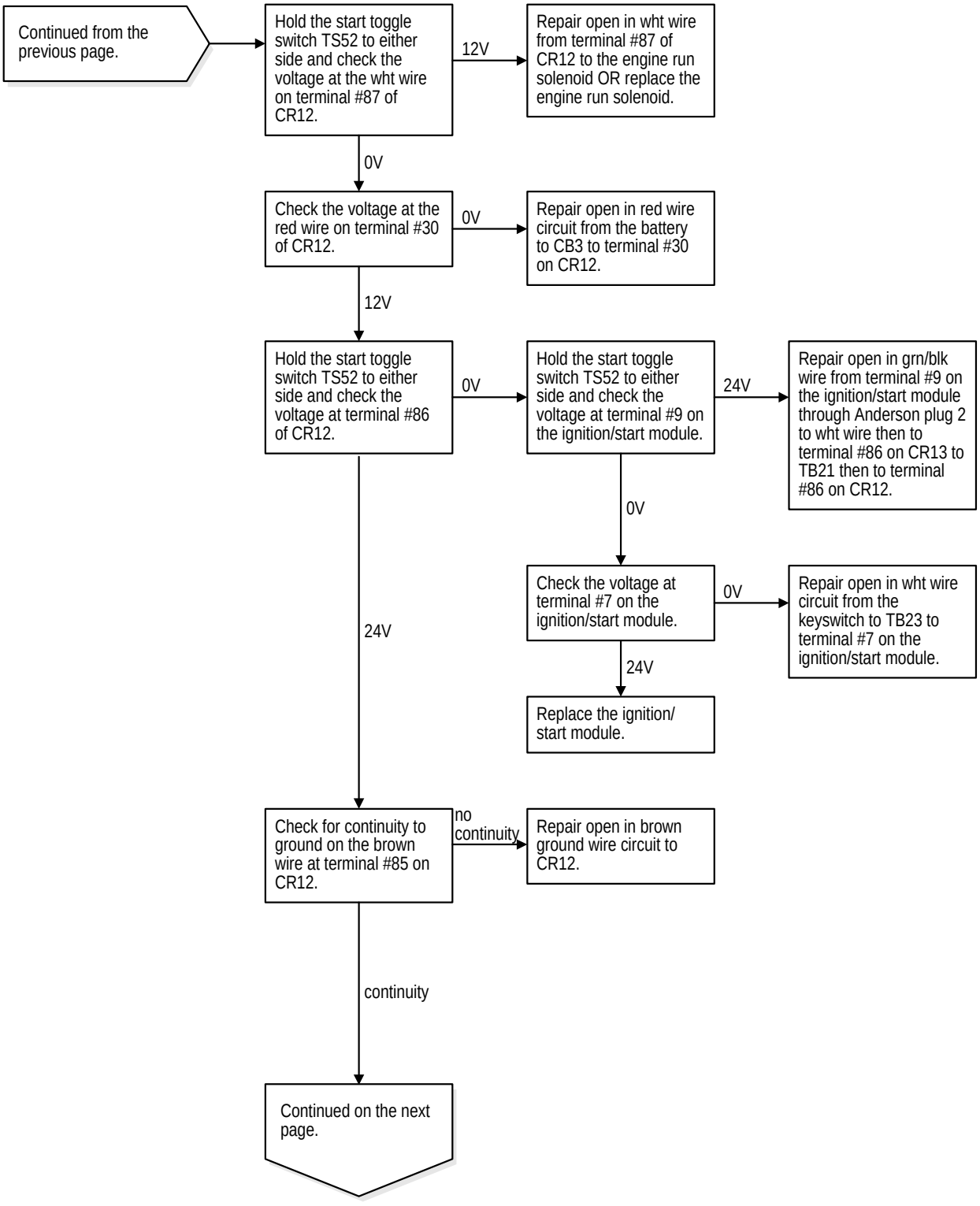


CHART 2 REV A


Continued from the previous page.
Hold the start toggle switch TS52 to either side and check the voltage at the wht wire on terminal #87 of CR12.
12V
Repair open in wht wire from terminal #87 of CR12 to the engine run solenoid OR replace the engine run solenoid.
0V
Check the voltage at the red wire on terminal #30 of CR12.
0V
Repair open in red wire circuit from the battery to CB3 to terminal #30 on CR12.
12V
Hold the start toggle switch TS52 to either side and check the voltage at terminal #86 of CR12.
0V
Hold the start toggle switch TS52 to either side and check the voltage at terminal #9 on the ignition/start module.
24V
Repair open in grn/blk wire from terminal #9 on the ignition/start module through Anderson plug 2 to wht wire then to terminal #86 on CR13 to TB21 then to terminal #86 on CR12.
0V
Check the voltage at terminal #7 on the ignition/start module.
0V
Repair open in wht wire circuit from the keyswitch to TB23 to terminal #7 on the ignition/start module.
24V
Replace the ignition/ start module.
24V
Check for continuity to ground on the brown wire at terminal #85 on CR12.
no continuity
Repair open in brown ground wire circuit to CR12.
continuity
Continued on the next page.

REV A CHART 2

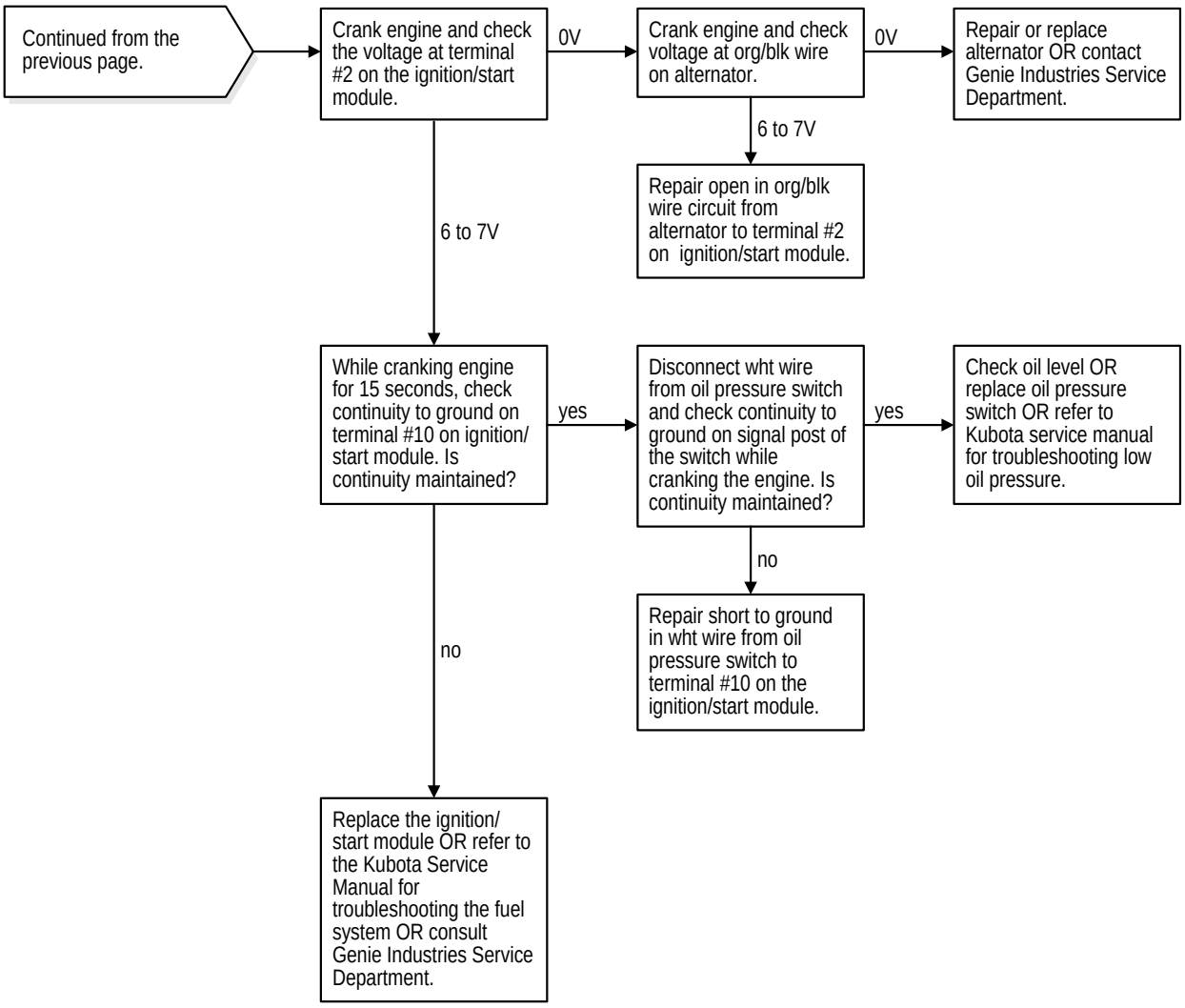

Continued from the previous page.
Crank engine and check the voltage at terminal #2 on the ignition/start module.
0V
Crank engine and check voltage at org/blk wire on alternator.
0V
Repair or replace alternator OR contact Genie Industries Service Department.
6 to 7V
Repair open in org/blk wire circuit from alternator to terminal #2 on ignition/start module.
6 to 7V
While cranking engine for 15 seconds, check continuity to ground on terminal #10 on ignition/ start module. Is continuity maintained?
yes
Disconnect wht wire from oil pressure switch and check continuity to ground on signal post of the switch while cranking the engine. Is continuity maintained?
yes
Check oil level OR replace oil pressure switch OR refer to Kubota service manual for troubleshooting low oil pressure.
no
Repair short to ground in wht wire from oil pressure switch to terminal #10 on the ignition/start module.
no
Replace the ignition/ start module OR refer to the Kubota Service Manual for troubleshooting the fuel system OR consult Genie Industries Service Department.

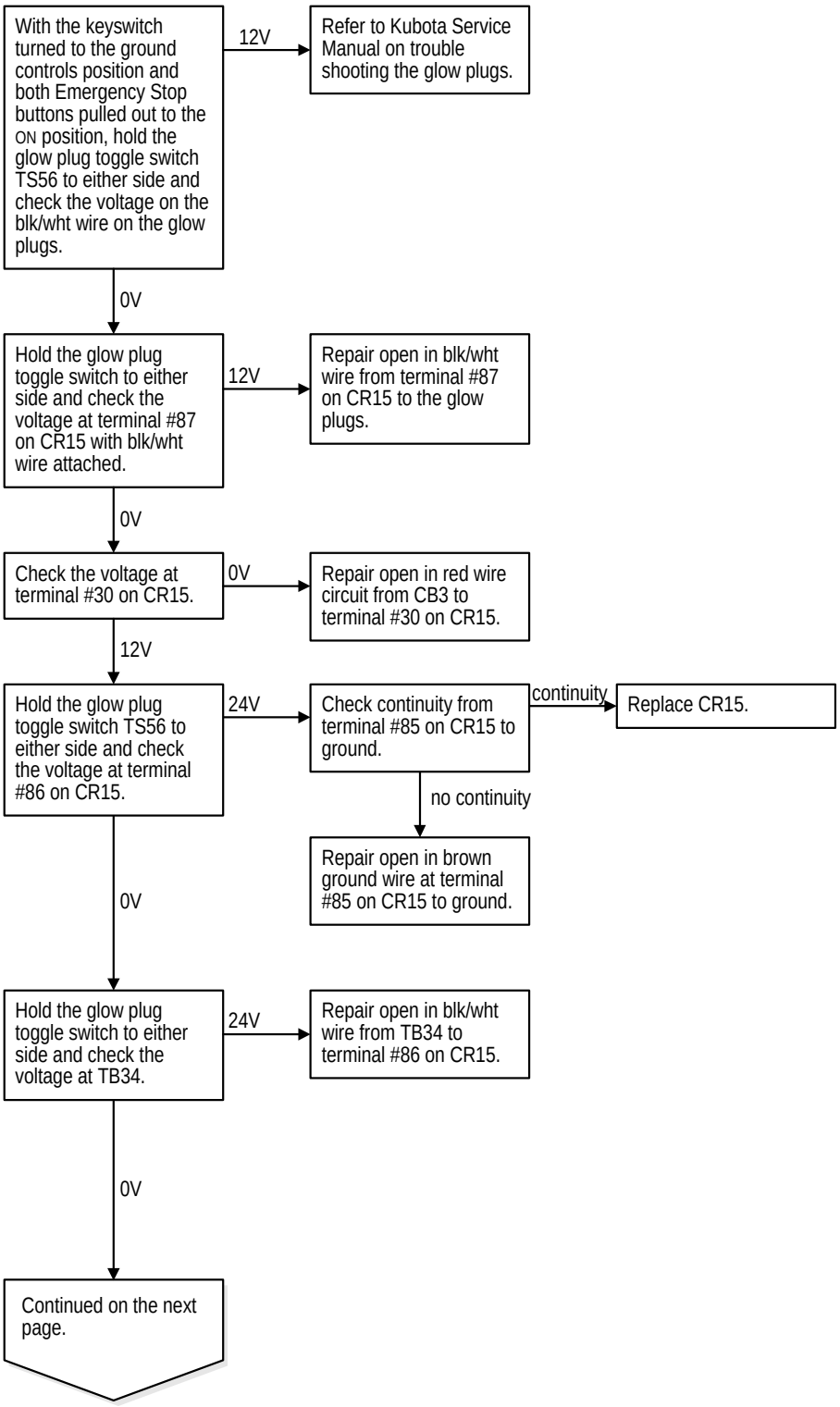
Chart 3

REV A

Engine Glow Plugs Inoperative

Be sure the engine starting battery is fully charged.

Be sure the circuit breaker and fuses are not tripped or blown.



REV A CHART 3

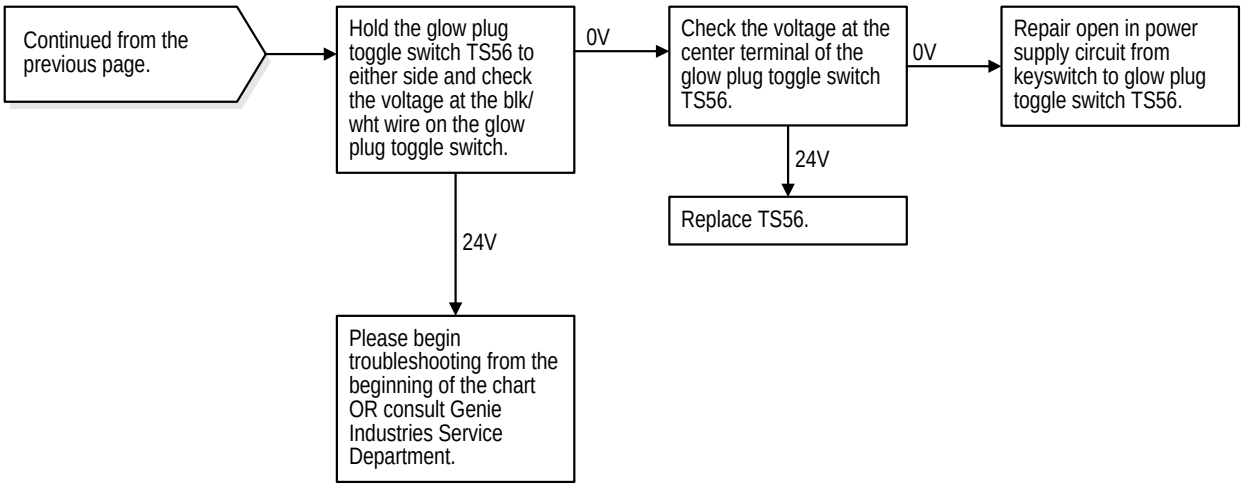

Continued from the previous page.
Hold the glow plug toggle switch TS56 to either side and check the voltage at the blk/wht wire on the glow plug toggle switch.
0V
Check the voltage at the center terminal of the glow plug toggle switch TS56.
0V
Repair open in power supply circuit from keyswitch to glow plug toggle switch TS56.
24V
Replace TS56.
24V
Please begin troubleshooting from the beginning of the chart OR consult Genie Industries Service Department.

Chart 4

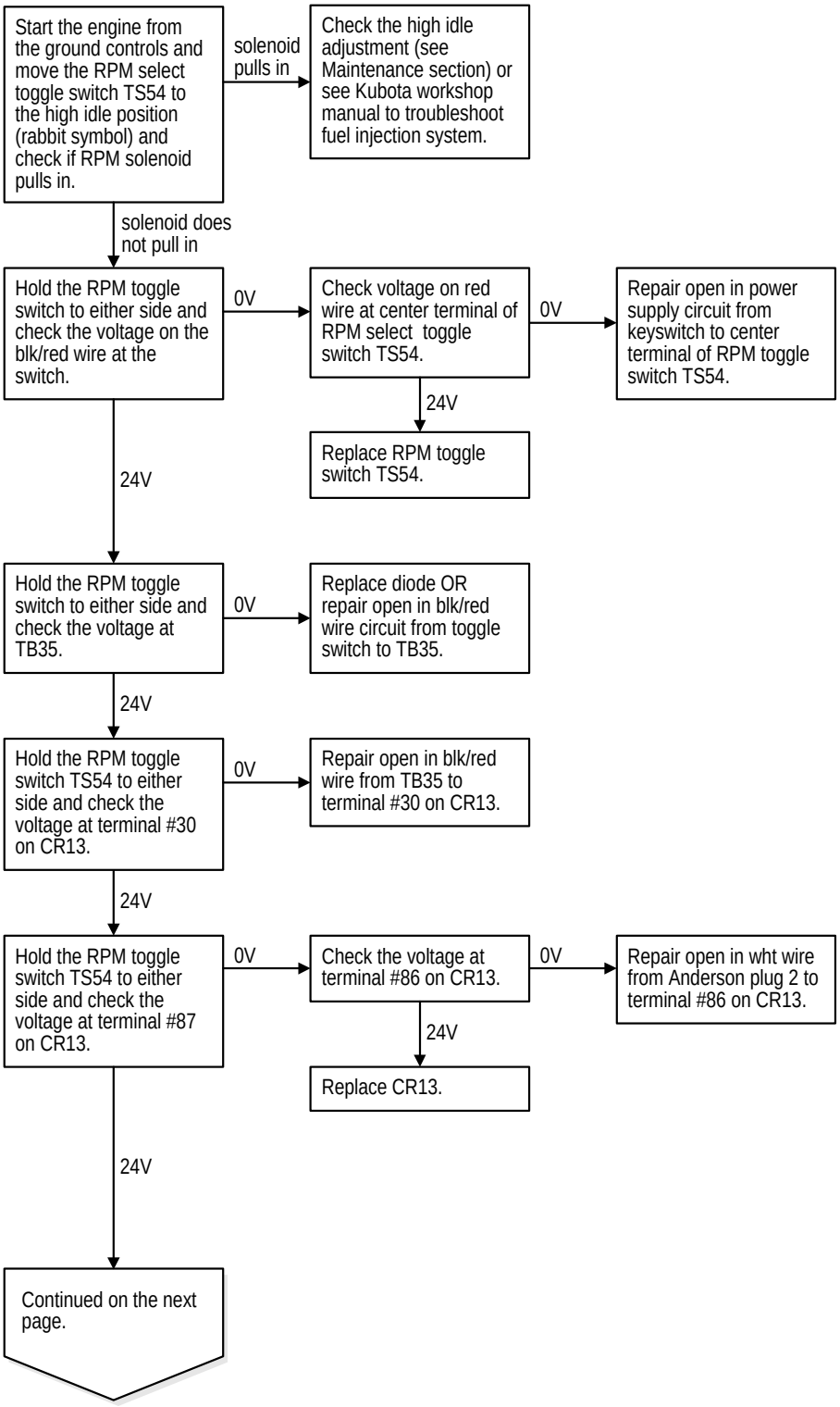
REV A

Engine High Idle Inoperative

Be sure all other functions operate normally.

Be sure mechanical linkage is not binding or defective.

Be sure 2-speed solenoid grounding wires are free of corrosion and have full continuity to ground.



REV A CHART 4

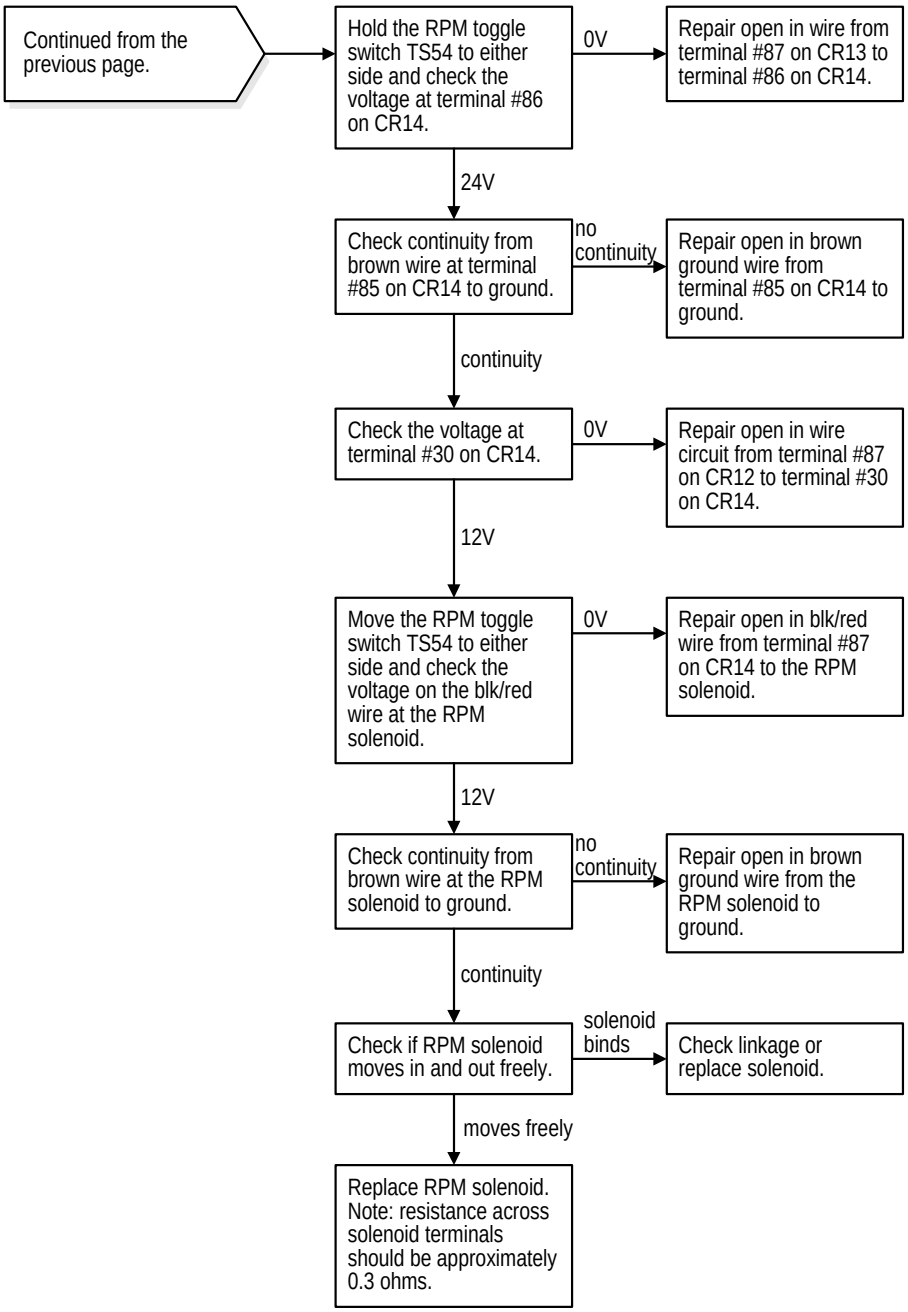

Continued from the previous page.
Hold the RPM toggle switch TS54 to either side and check the voltage at terminal #86 on CR14.
0V
Repair open in wire from terminal #87 on CR13 to terminal #86 on CR14.
24V
Check continuity from brown wire at terminal #85 on CR14 to ground.
no continuity
Repair open in brown ground wire from terminal #85 on CR14 to ground.
continuity
Check the voltage at terminal #30 on CR14.
0V
Repair open in wire circuit from terminal #87 on CR12 to terminal #30 on CR14.
12V
Move the RPM toggle switch TS54 to either side and check the voltage on the blk/red wire at the RPM solenoid.
0V
Repair open in blk/red wire from terminal #87 on CR14 to the RPM solenoid.
12V
Check continuity from brown wire at the RPM solenoid to ground.
no continuity
Repair open in brown ground wire from the RPM solenoid to ground.
continuity
Check if RPM solenoid moves in and out freely.
solenoid binds
Check linkage or replace solenoid.
moves freely
Replace RPM solenoid. Note: resistance across solenoid terminals should be approximately 0.3 ohms.

Chart 5

REV A

Engine Low Idle Inoperative

Be sure that the mechanical linkage from 2-speed solenoid to fuel injection system is not binding or defective.

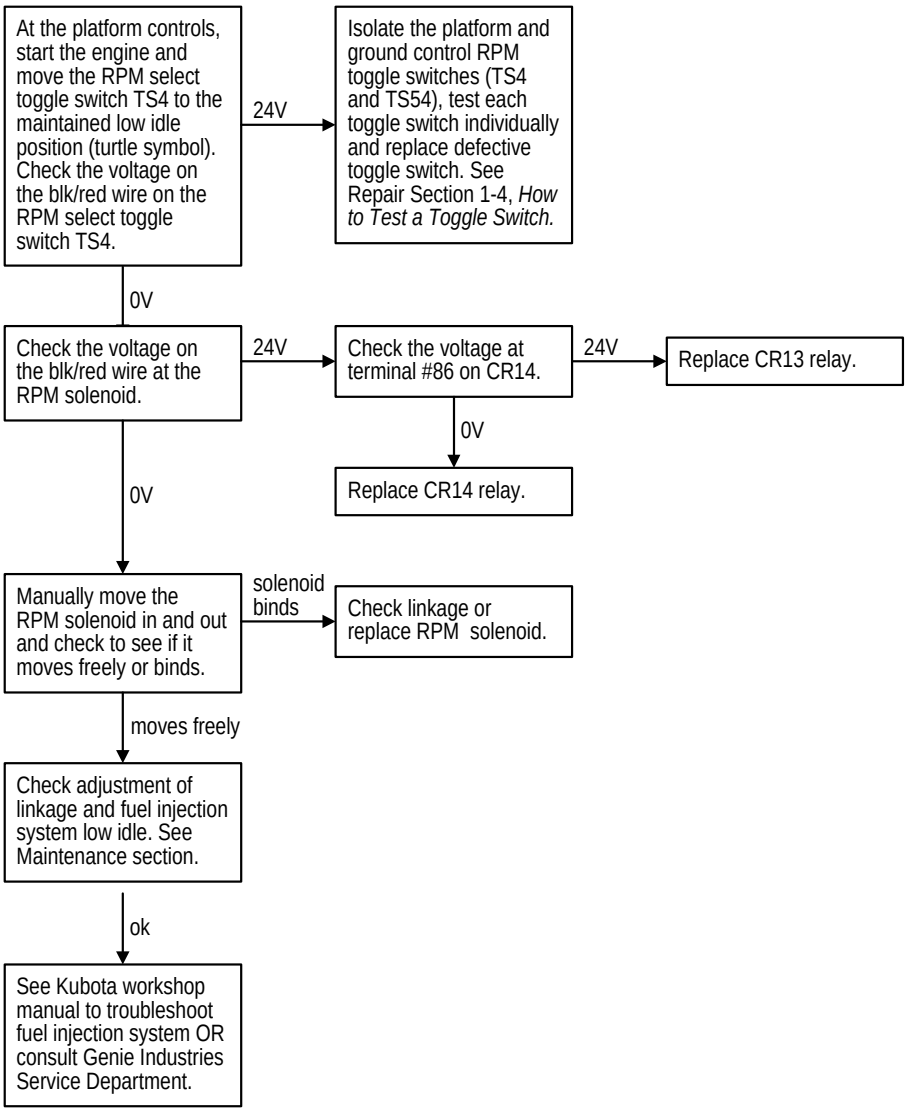


Chart 6

REV A

All Lift and Steer Functions Inoperative, Drive Function Operational (models before serial number 1112)

Be sure the hydraulic suction line shut-off valve for the lift steer pump is in the open position.

Be sure all grounding wires for the function manifold valves are free of corrosion and have full continuity to ground.

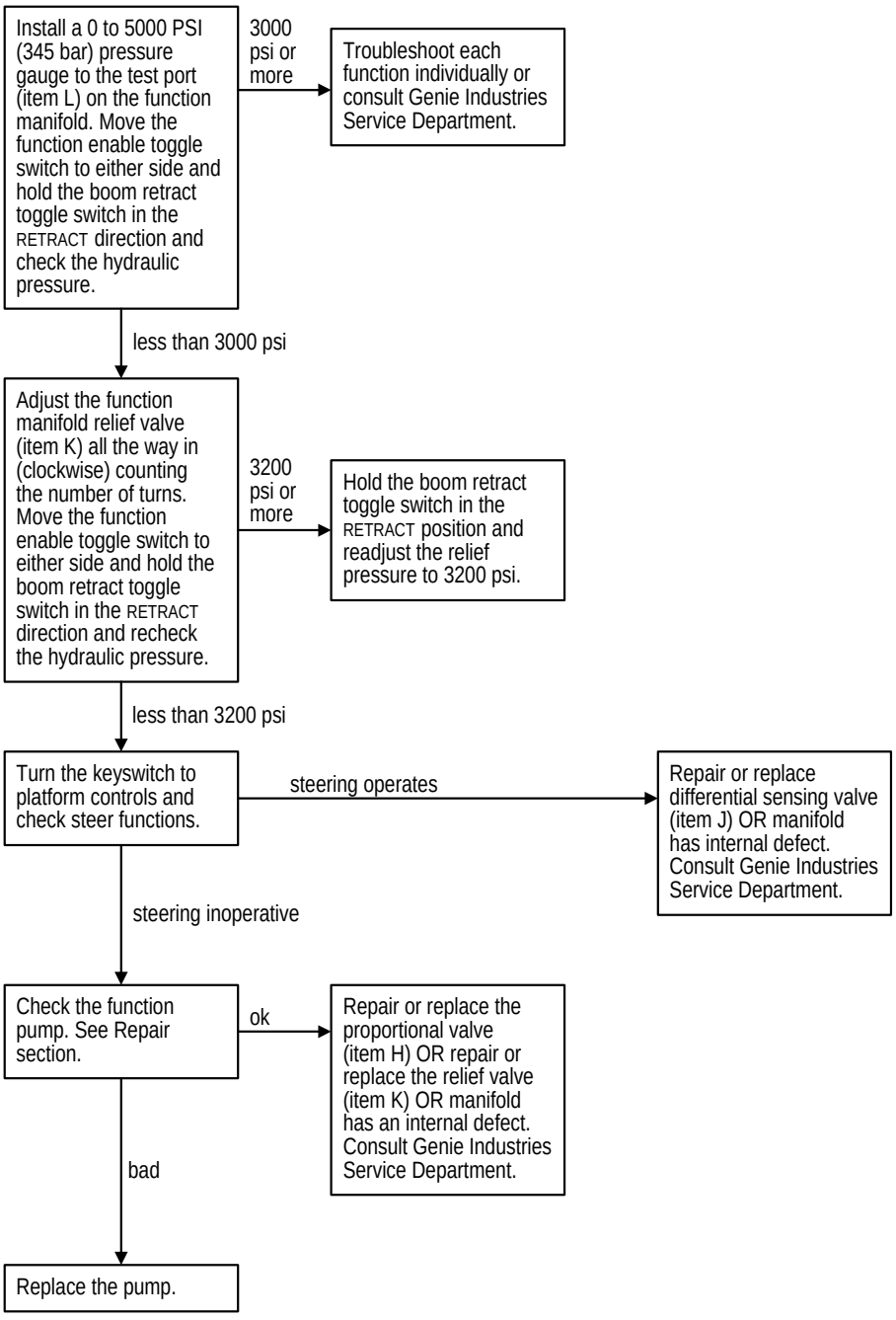


Chart 7

REV A

All Lift and Steer Functions Inoperative, Drive Function Operational (models after serial number 1111)

Be sure the hydraulic suction line shut-off valve for the lift/steer pump is in the OPEN position.

Be sure all ground wires for the function manifold valve coils are free of corrosion and have full continuity to ground.

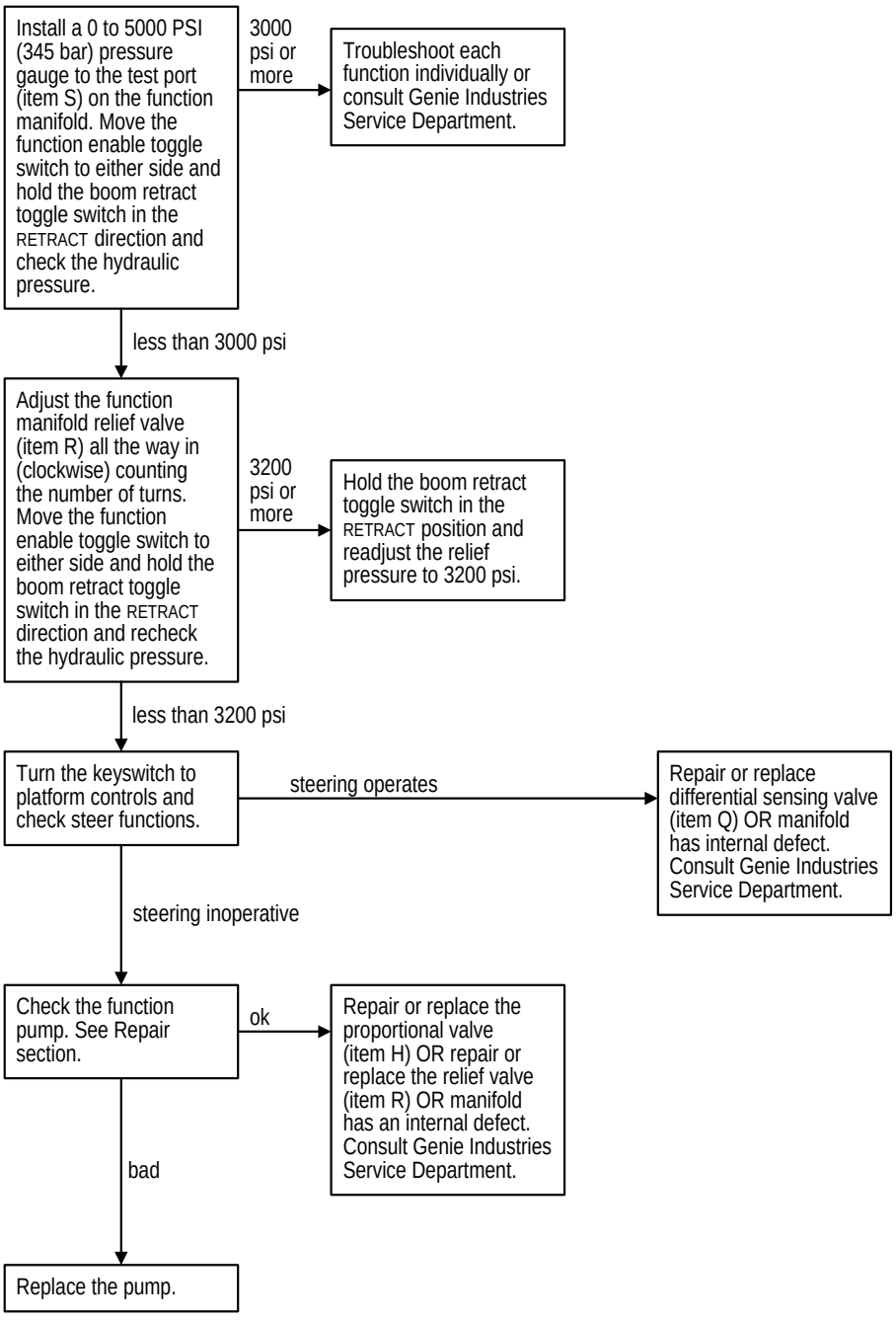


Chart 8

REV A

Ground Controls Inoperative, Platform Controls Operate Normally

Be sure all other functions operate normally, including platform controls.

Be sure that both the ground and platform Emergency Stop buttons are pulled out to the ON position.

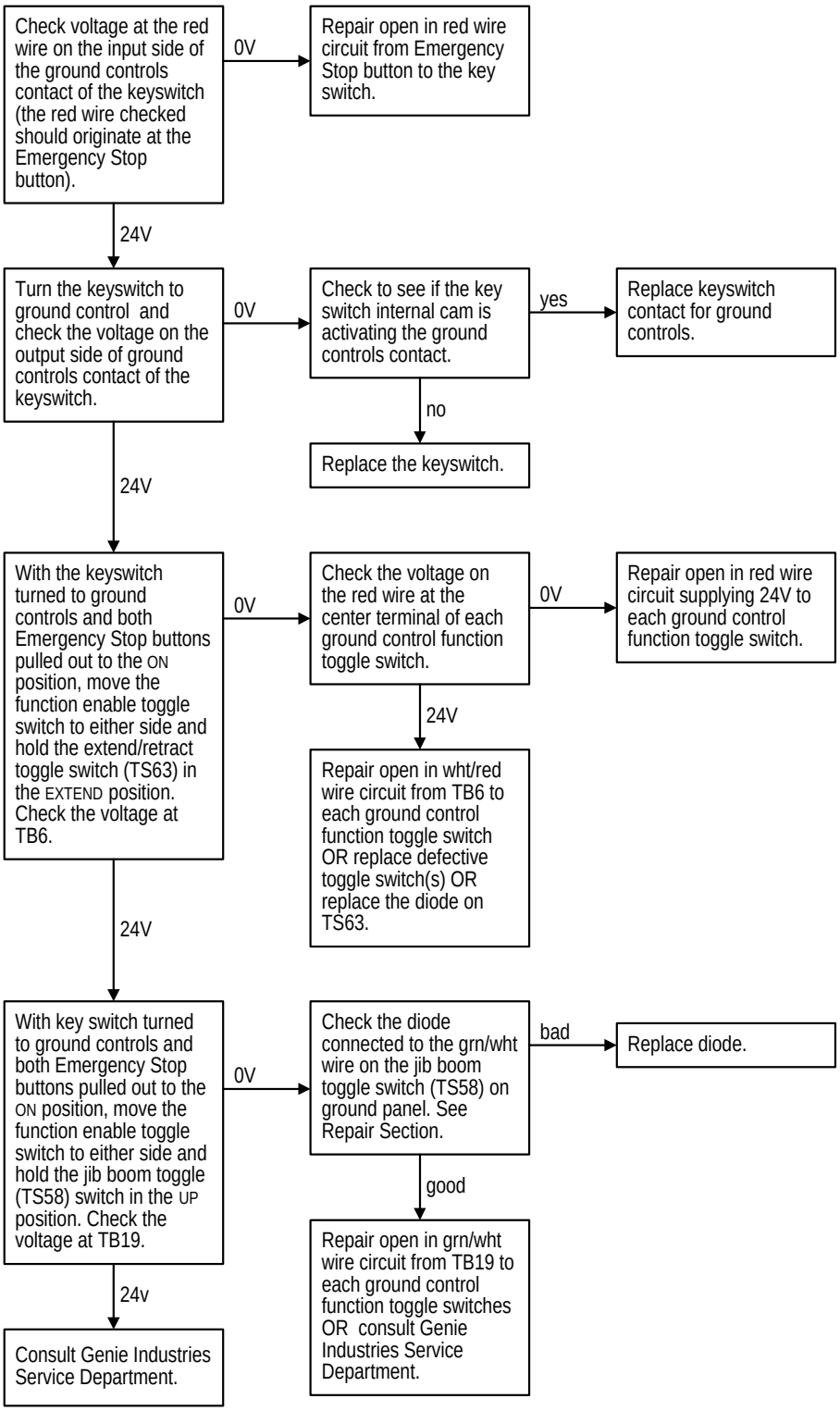


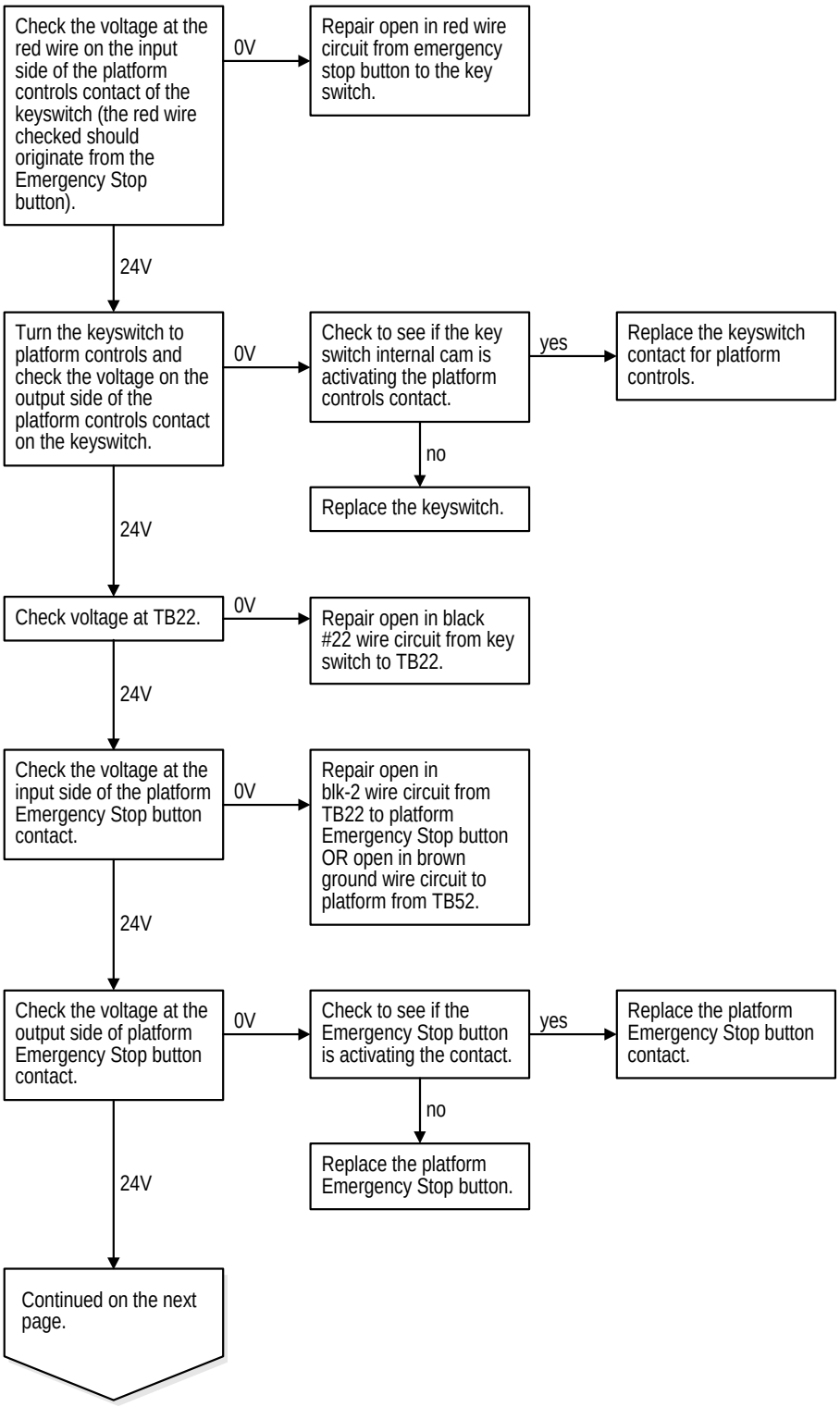
Chart 9

REV A

Platform Controls Inoperative, Ground Controls Operate Normally

Be sure all cables are in good condition with no kinks or abrasions.

Be sure the jumper is in place between terminals A and B on the joystick.



REV A CHART 9

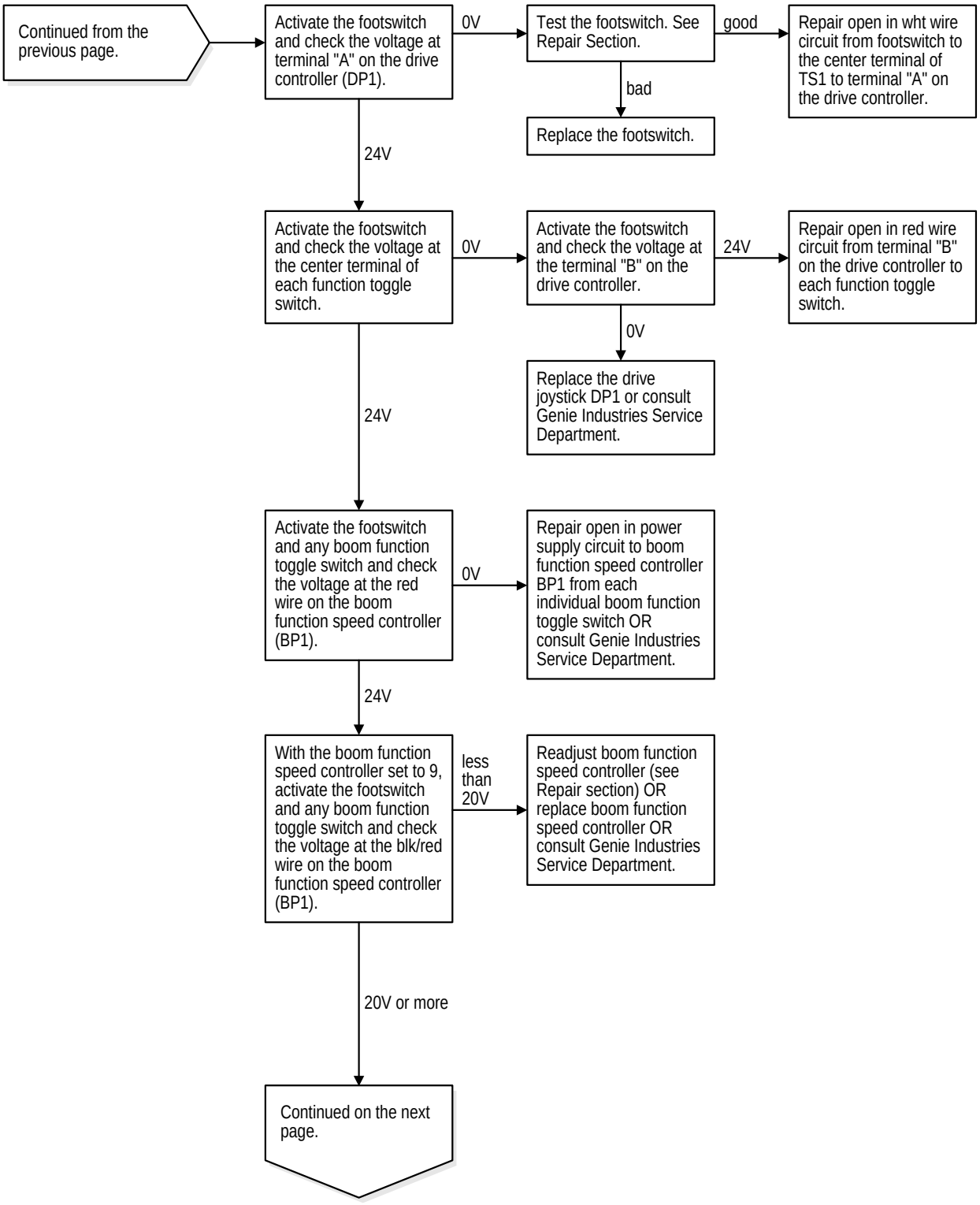

Continued from the previous page.
Activate the footswitch and check the voltage at terminal "A" on the drive controller (DP1).
0V
Test the footswitch. See Repair Section.
good
Repair open in wht wire circuit from footswitch to the center terminal of TS1 to terminal "A" on the drive controller.
bad
Replace the footswitch.
24V
Activate the footswitch and check the voltage at the center terminal of each function toggle switch.
0V
Activate the footswitch and check the voltage at the terminal "B" on the drive controller.
24V
Repair open in red wire circuit from terminal "B" on the drive controller to each function toggle switch.
0V
Replace the drive joystick DP1 or consult Genie Industries Service Department.
24V
Activate the footswitch and any boom function toggle switch and check the voltage at the red wire on the boom function speed controller (BP1).
0V
Repair open in power supply circuit to boom function speed controller BP1 from each individual boom function toggle switch OR consult Genie Industries Service Department.
24V
With the boom function speed controller set to 9, activate the footswitch and any boom function toggle switch and check the voltage at the blk/red wire on the boom function speed controller (BP1).
less than 20V
Readjust 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 9 REV A

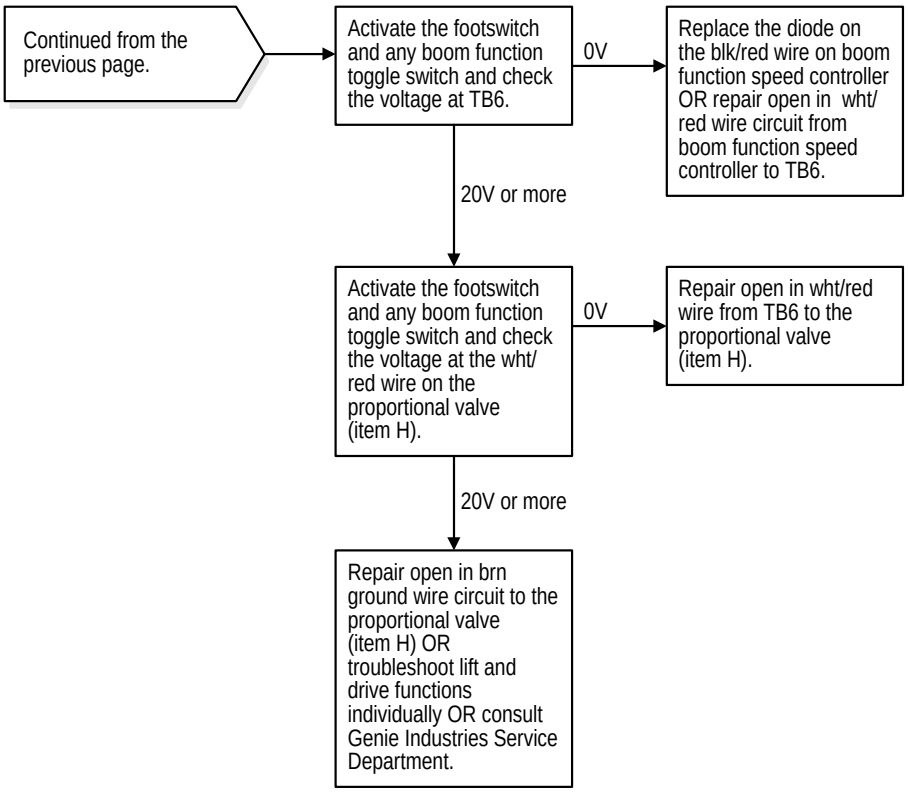

Continued from the previous page.
Activate the footswitch and any boom function toggle switch and check the voltage at TB6.
0V
Replace the diode on the blk/red wire on boom function speed controller OR repair open in wht/red wire circuit from boom function speed controller to TB6.
20V or more
Activate the footswitch and any boom function toggle switch and check the voltage at the wht/red wire on the proportional valve (item H).
0V
Repair open in wht/red wire from TB6 to the proportional valve (item H).
20V or more
Repair open in brn ground wire circuit to the proportional valve (item H) OR troubleshoot lift and drive functions individually OR consult Genie Industries Service Department.

Chart 10

REV A

Primary Boom Up Function Inoperative

Be sure all other functions operate normally.

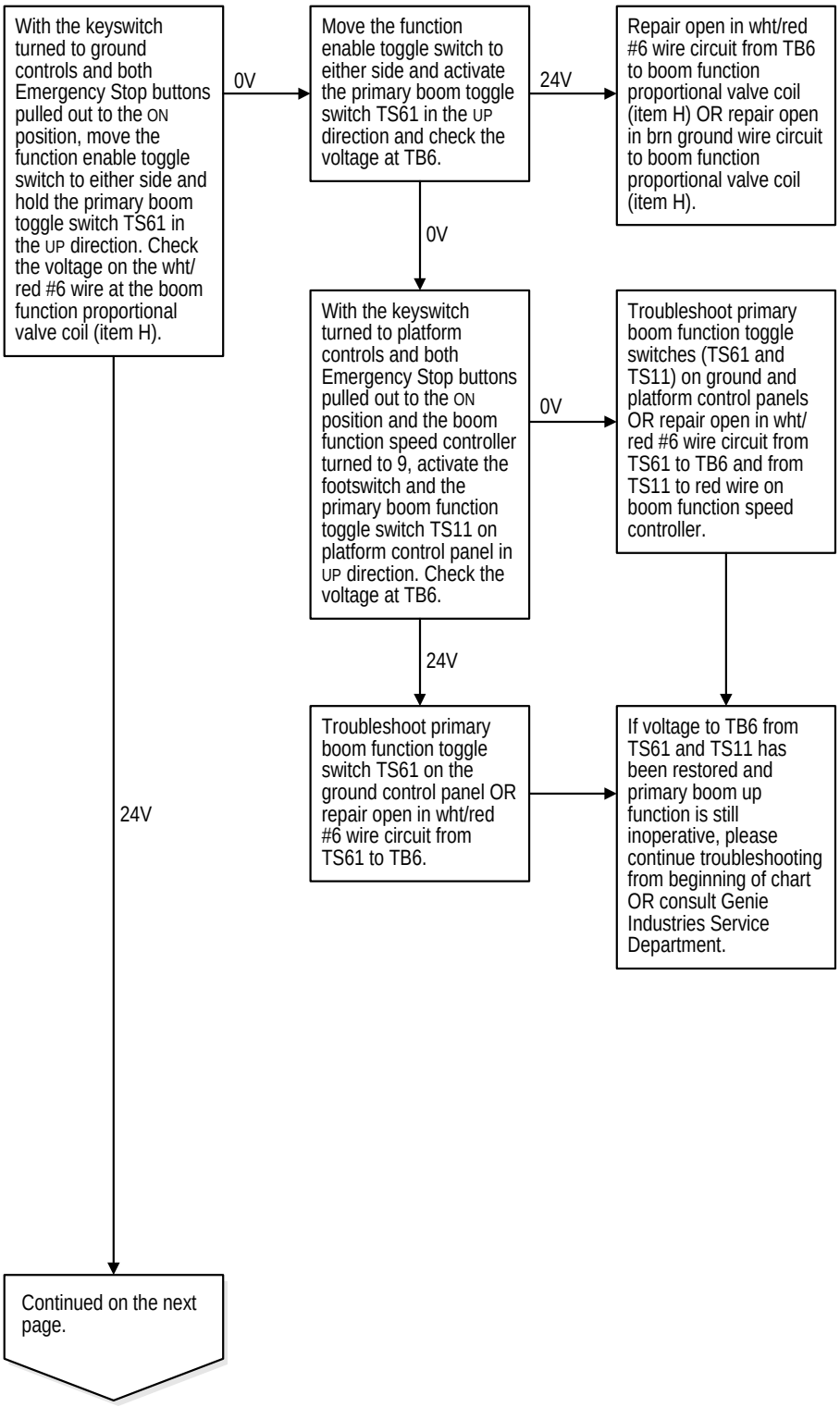
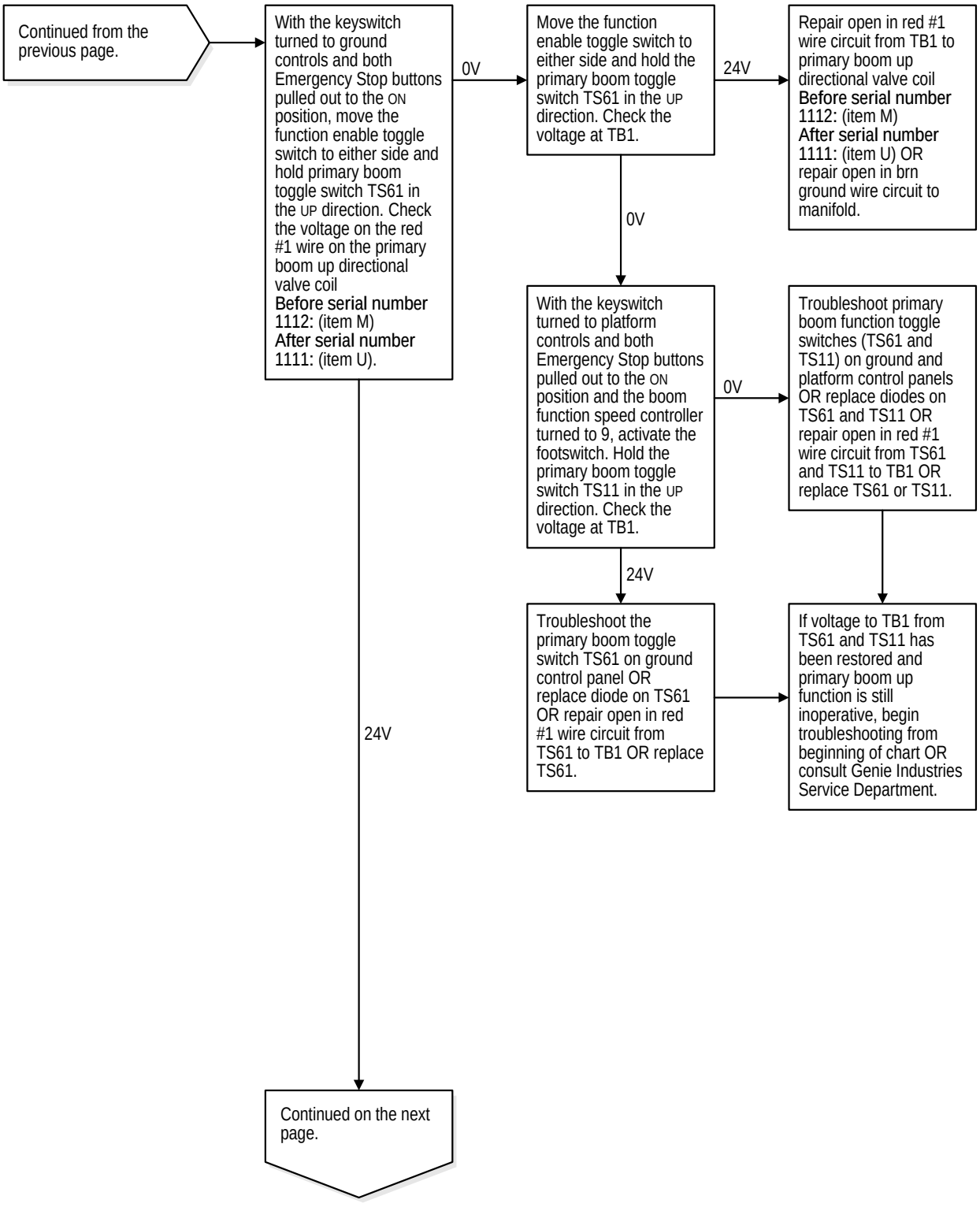


CHART 10 REV A



REV A CHART 10

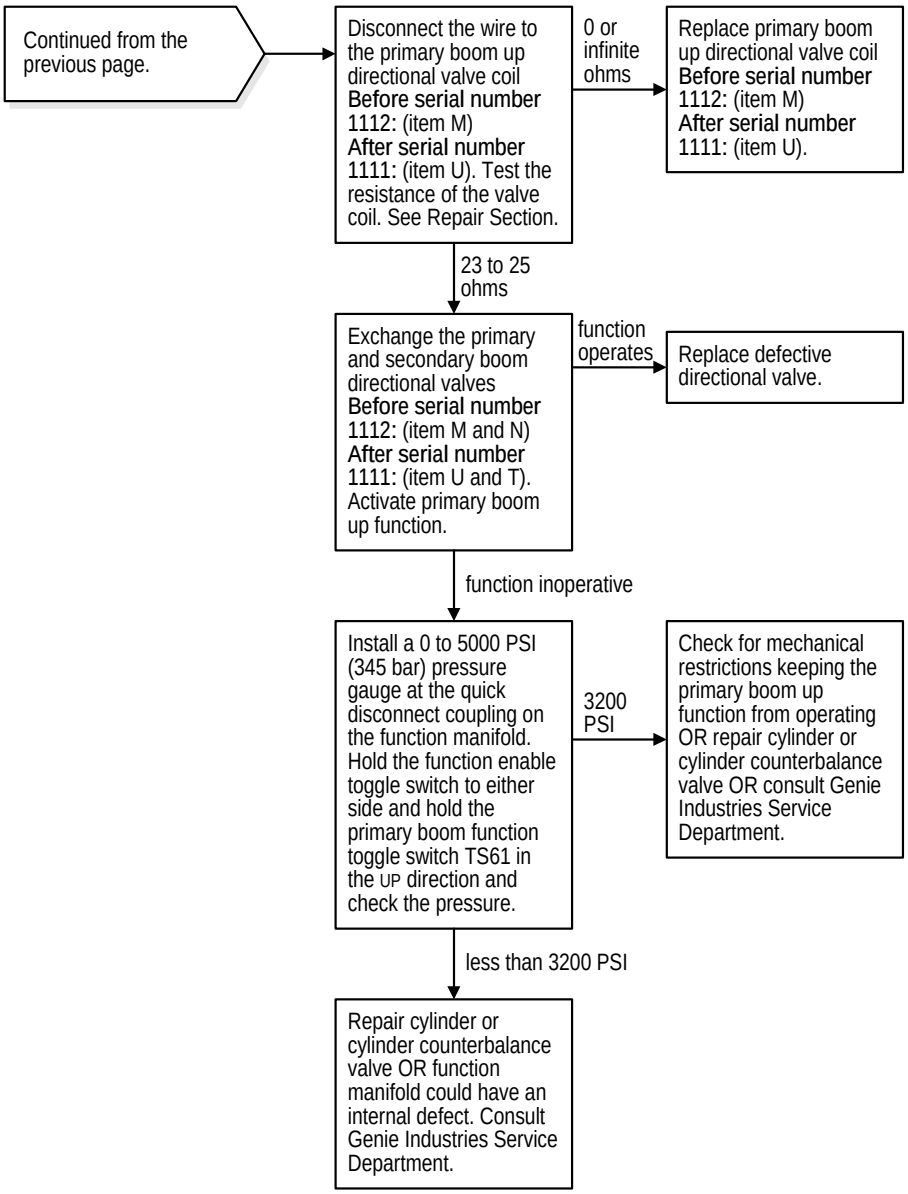
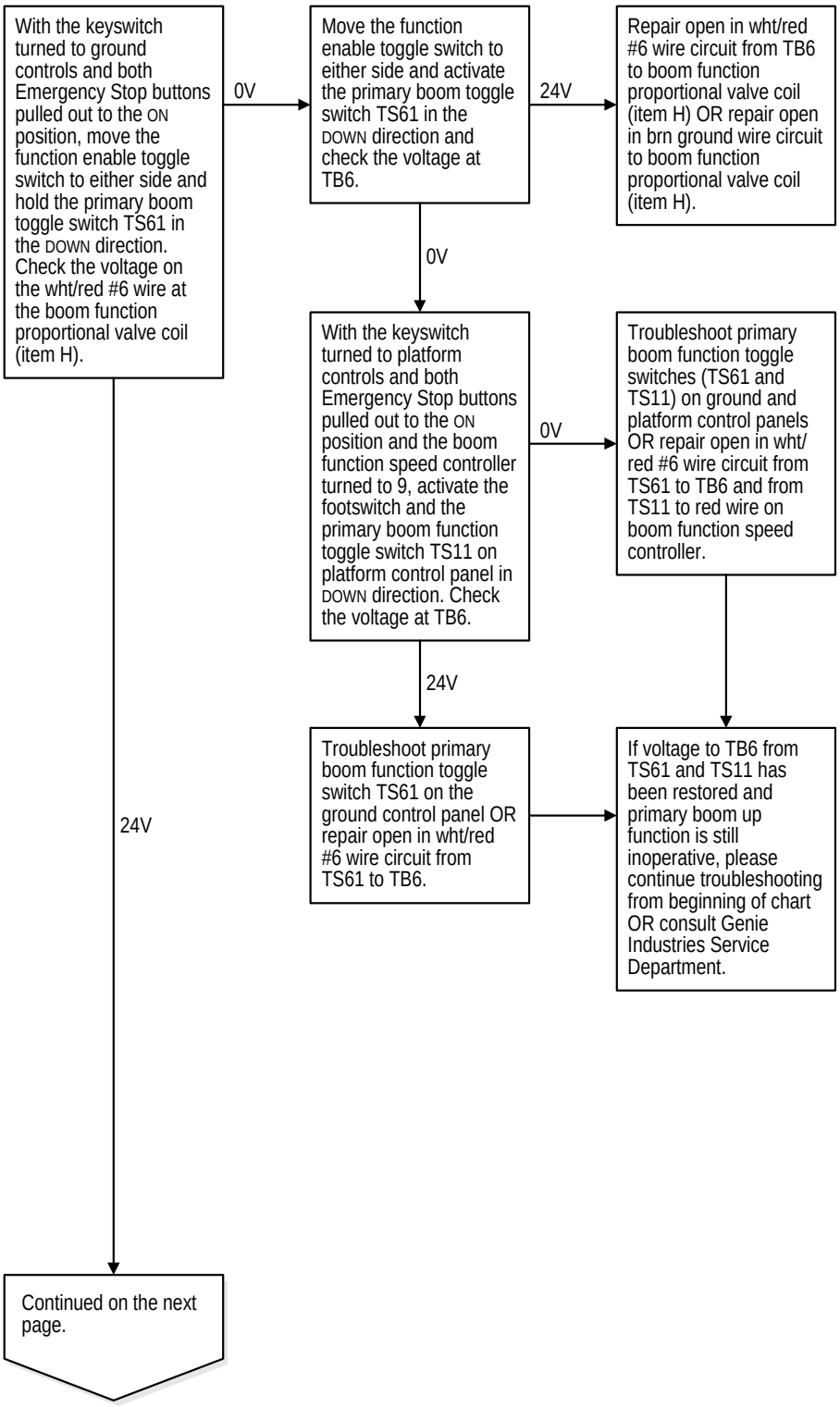


Chart 11

REV A

Primary Boom Down Function Inoperative

Be sure all other functions operate normally.



REV A CHART 11

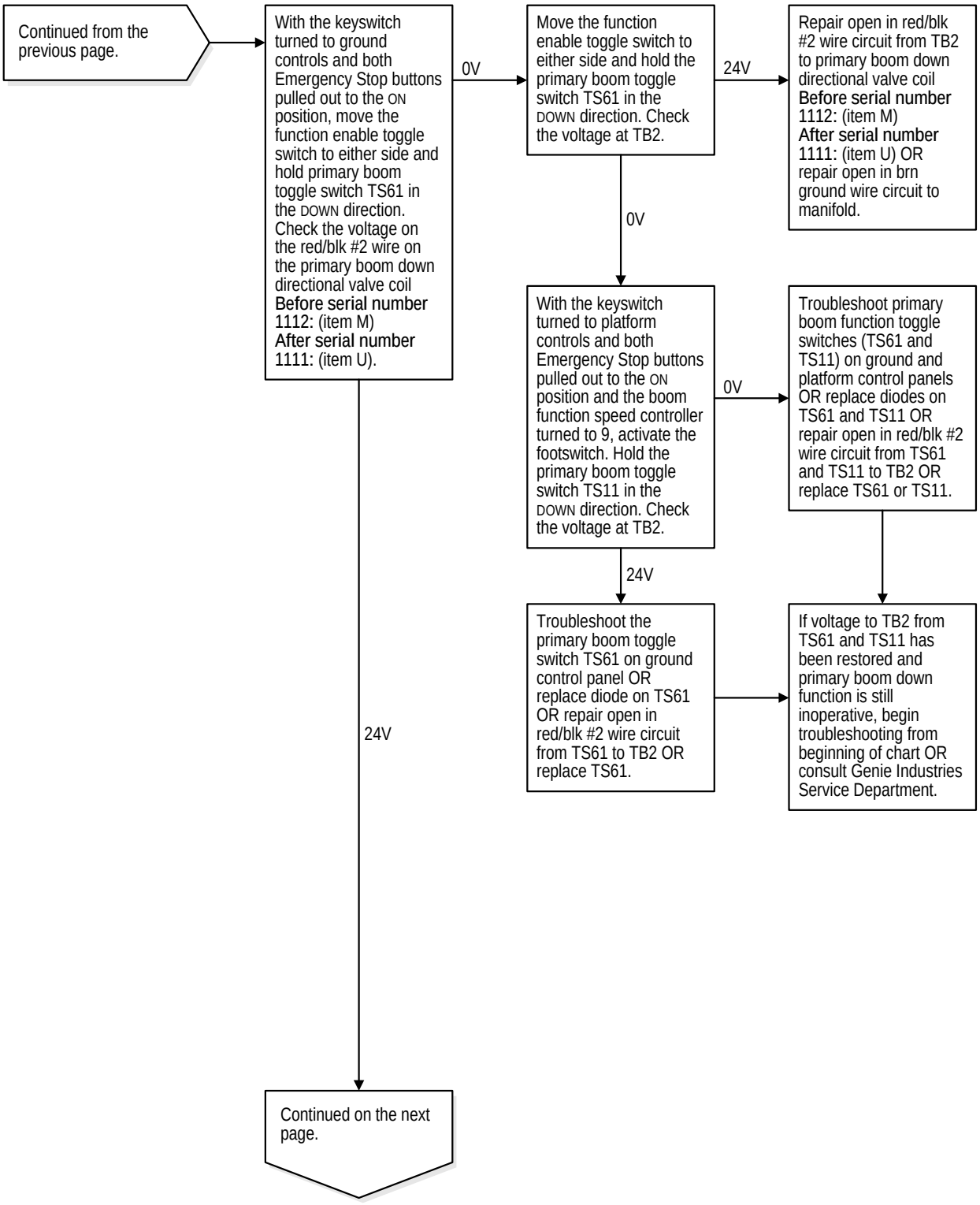


CHART 11 REV A

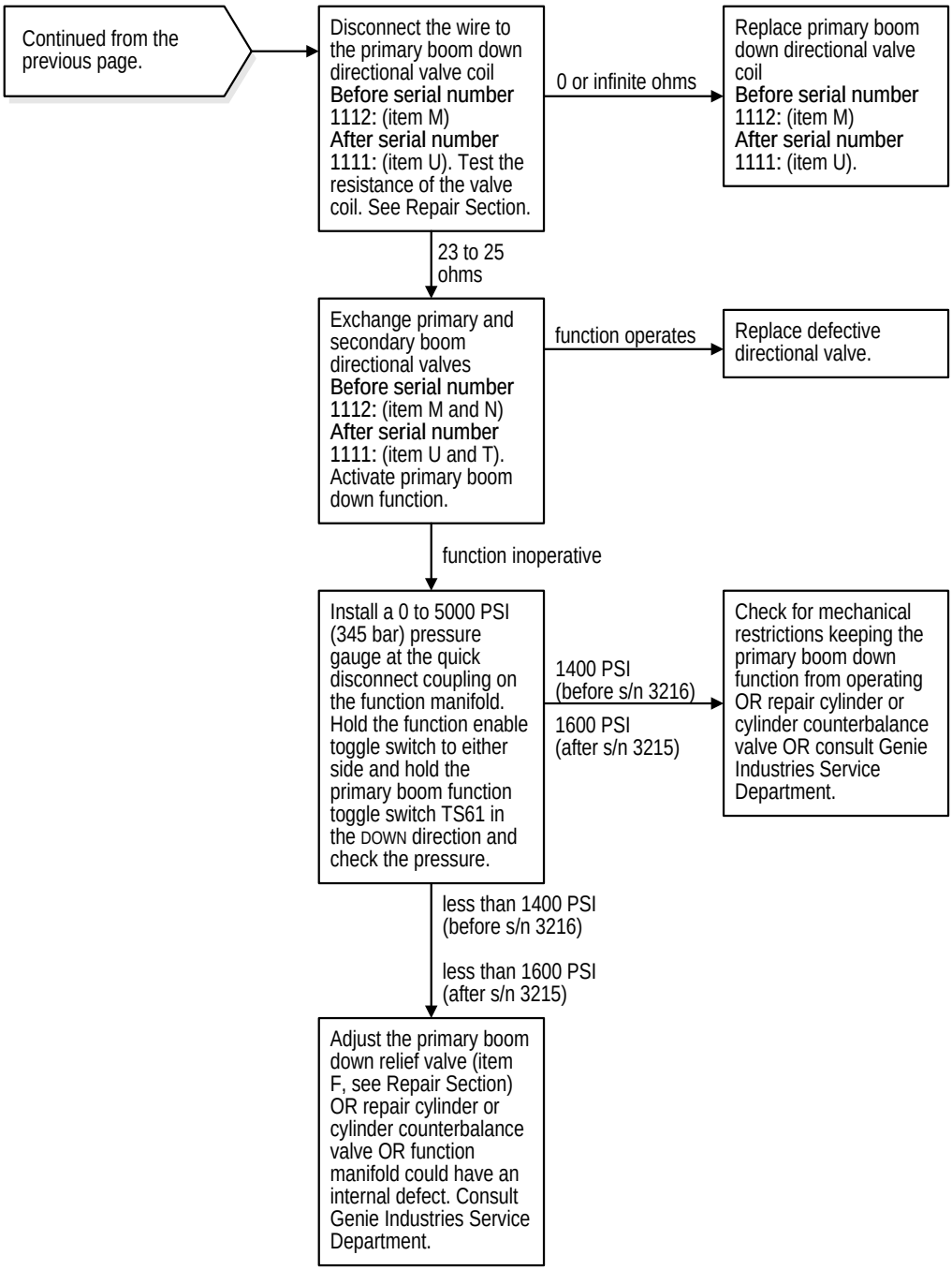


Chart 12

REV A

Secondary Boom Up Function Inoperative

Be sure all other functions operate normally.

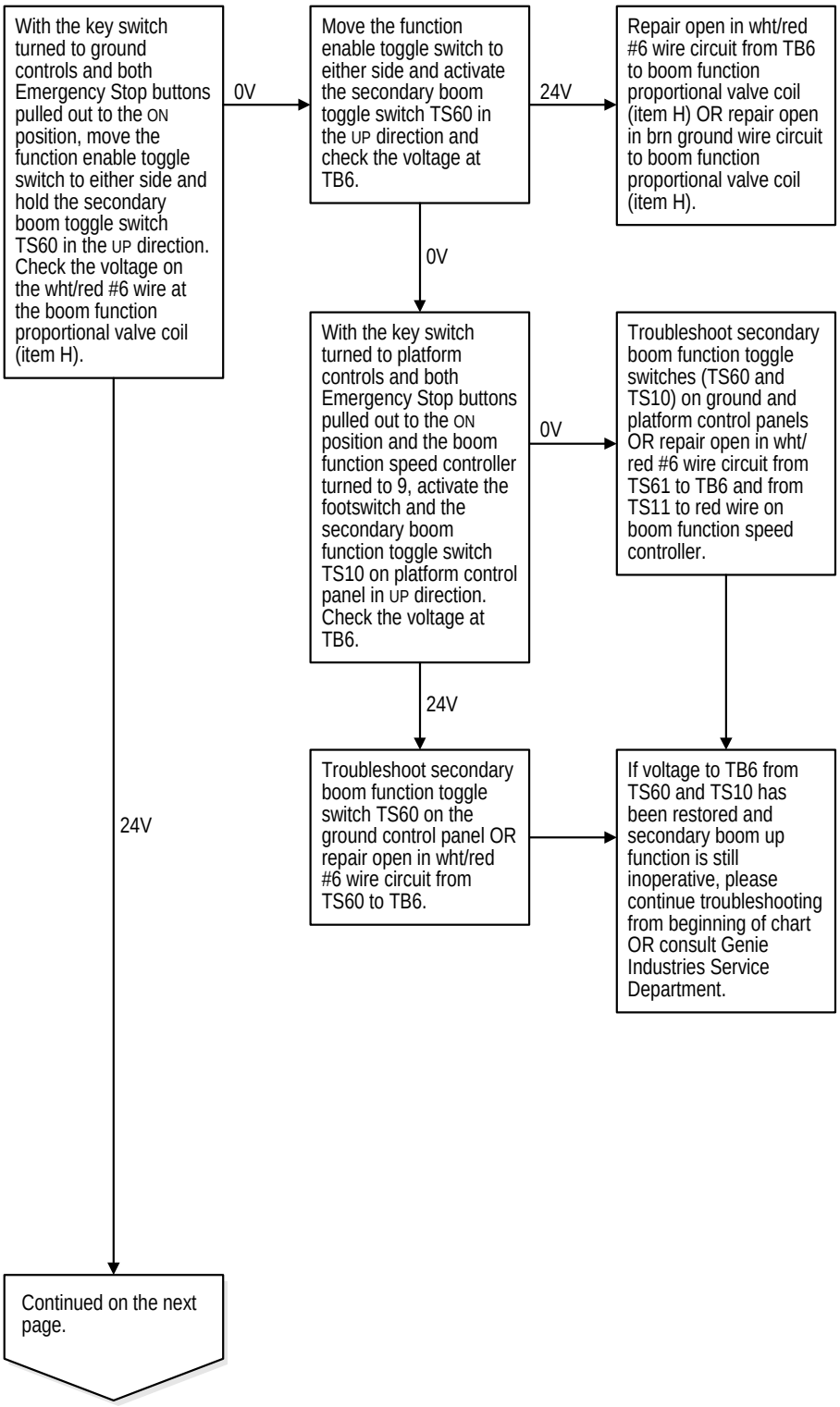
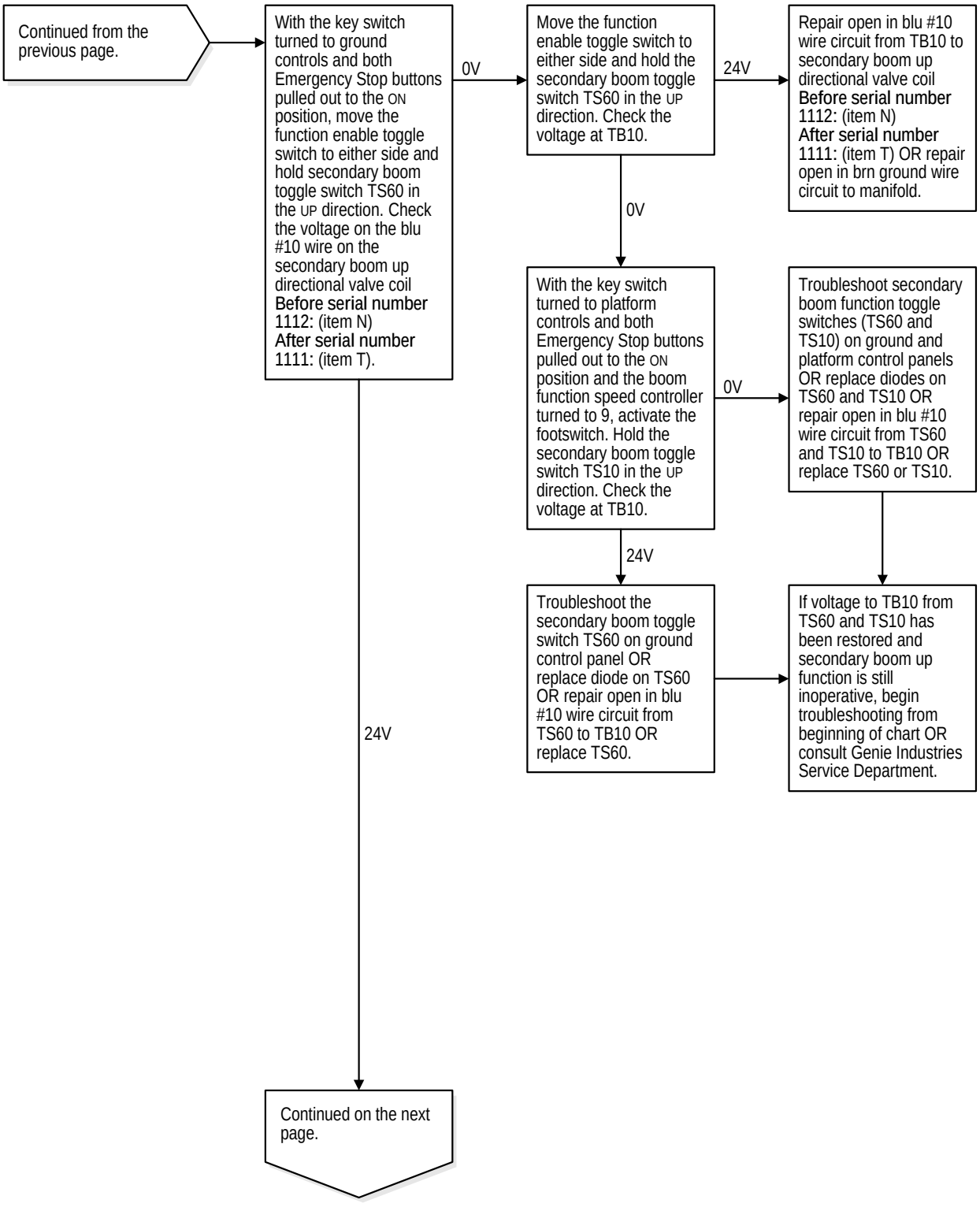


CHART 12 REV A



REV A CHART 12

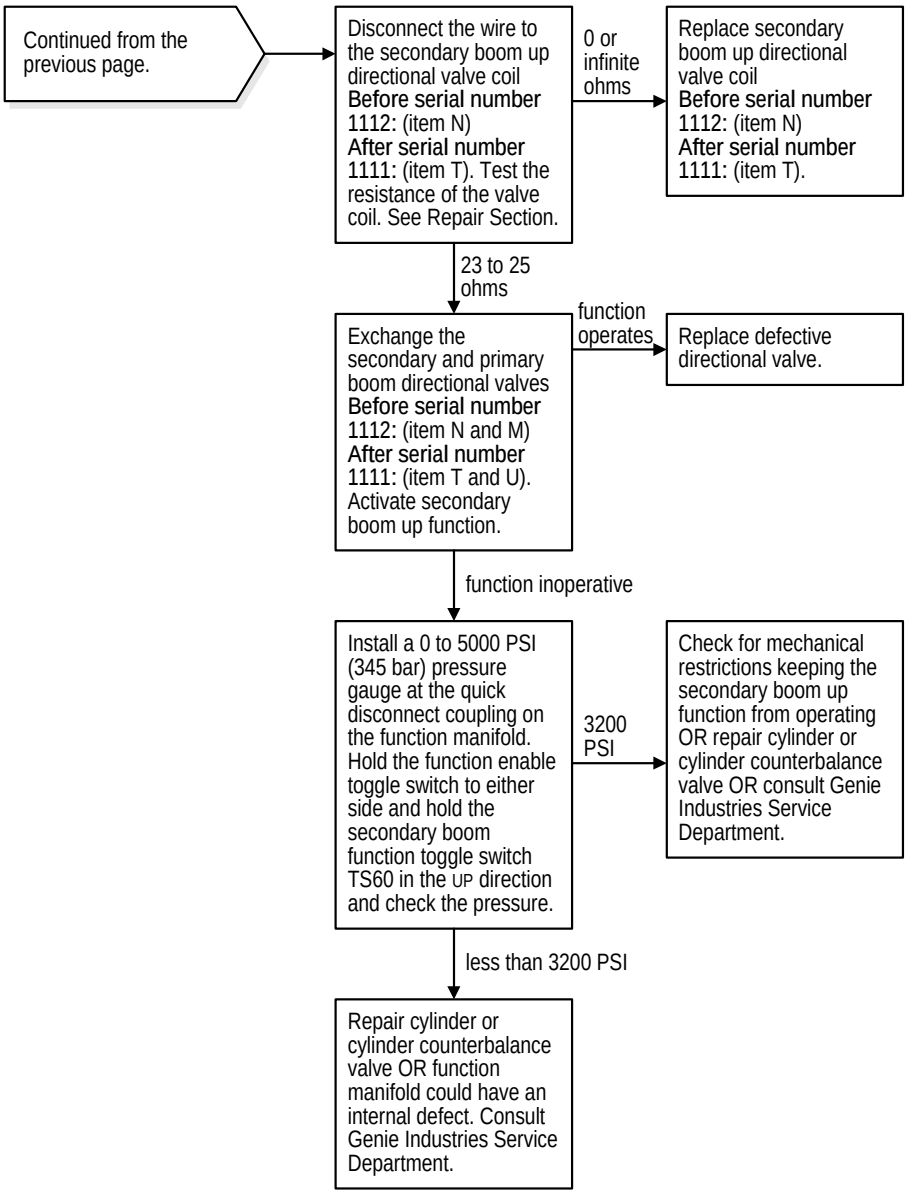
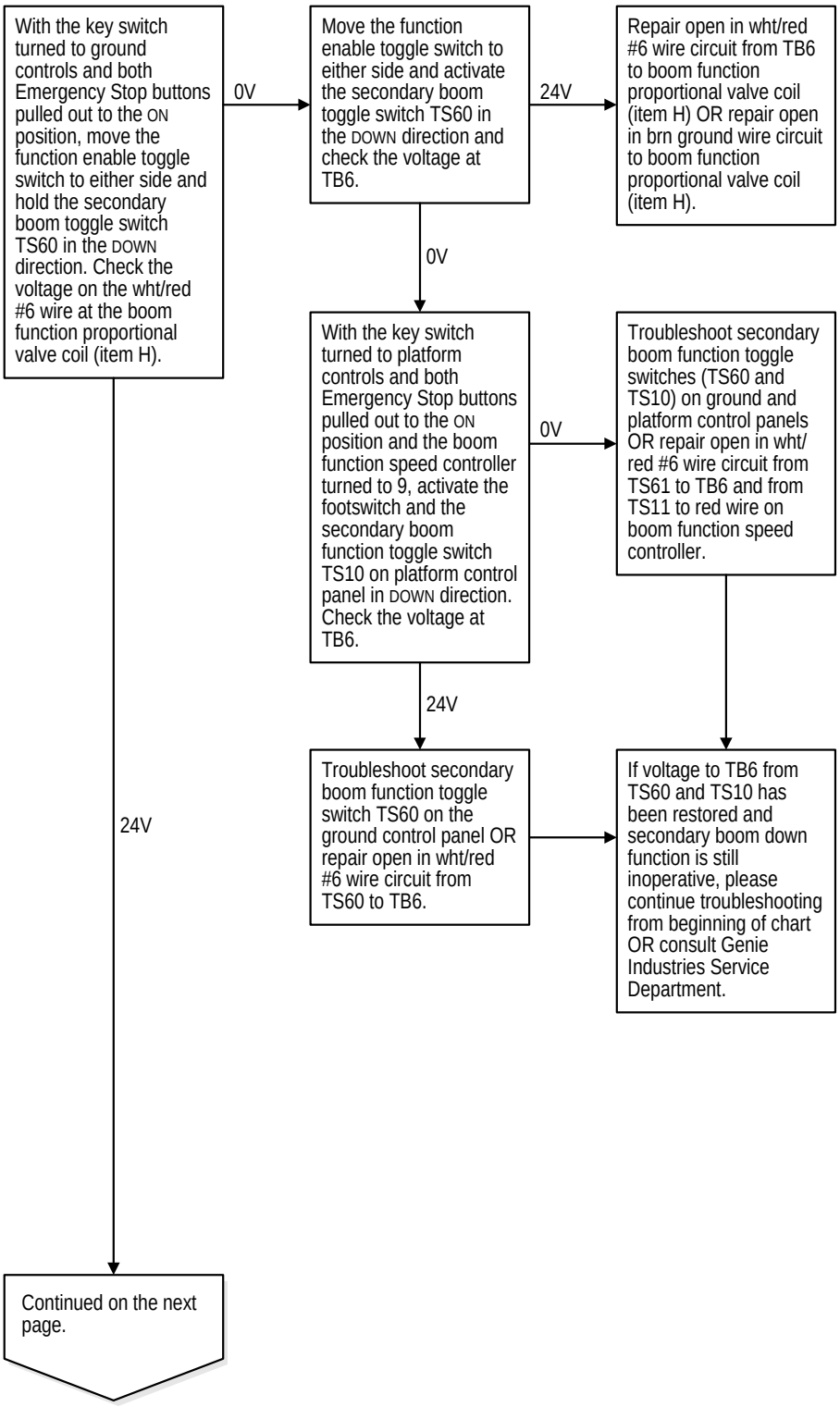


Chart 13

REV A

Secondary Boom Down Function Inoperative

Be sure all other functions operate normally.



REV A CHART 13

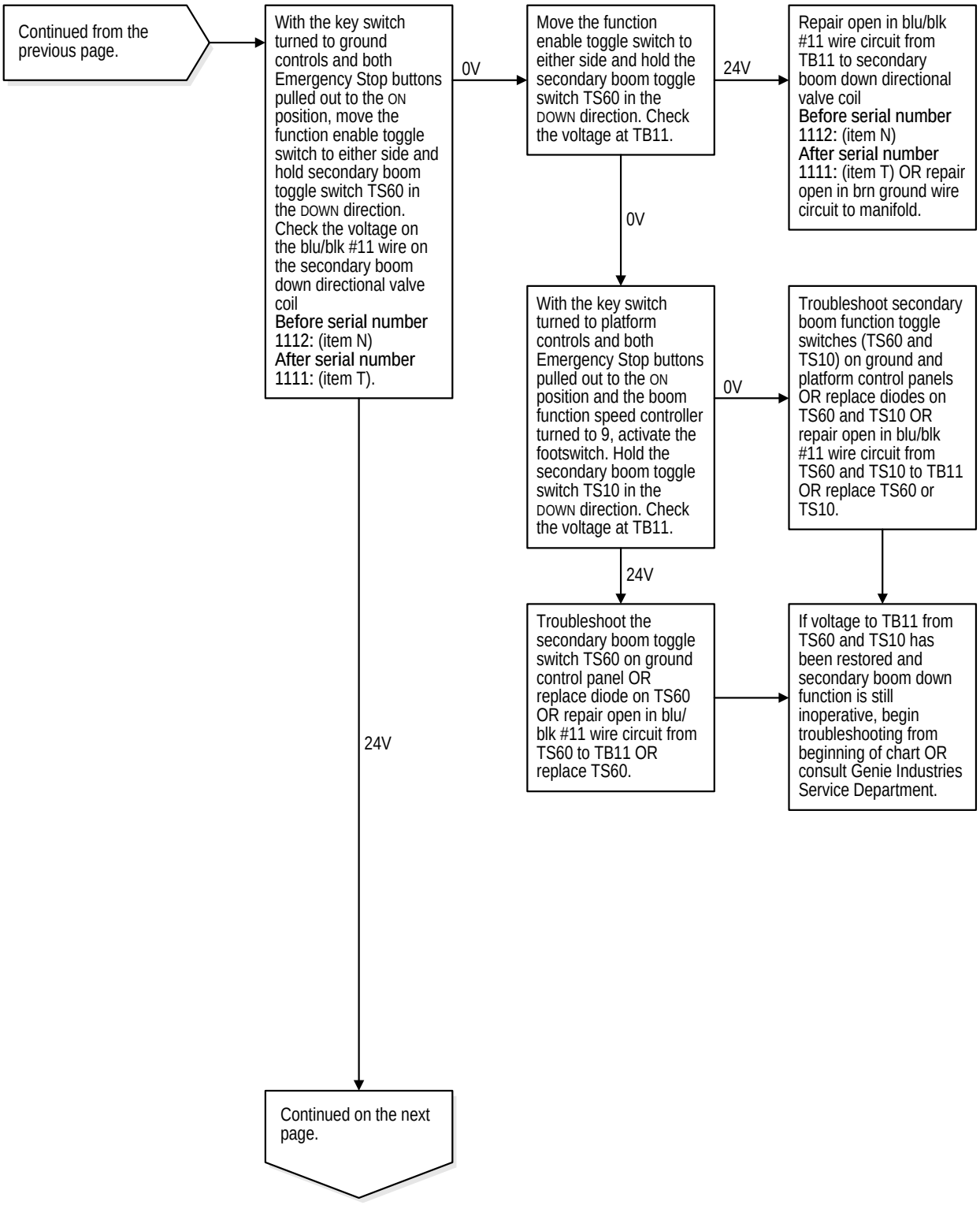


CHART 13 REV A

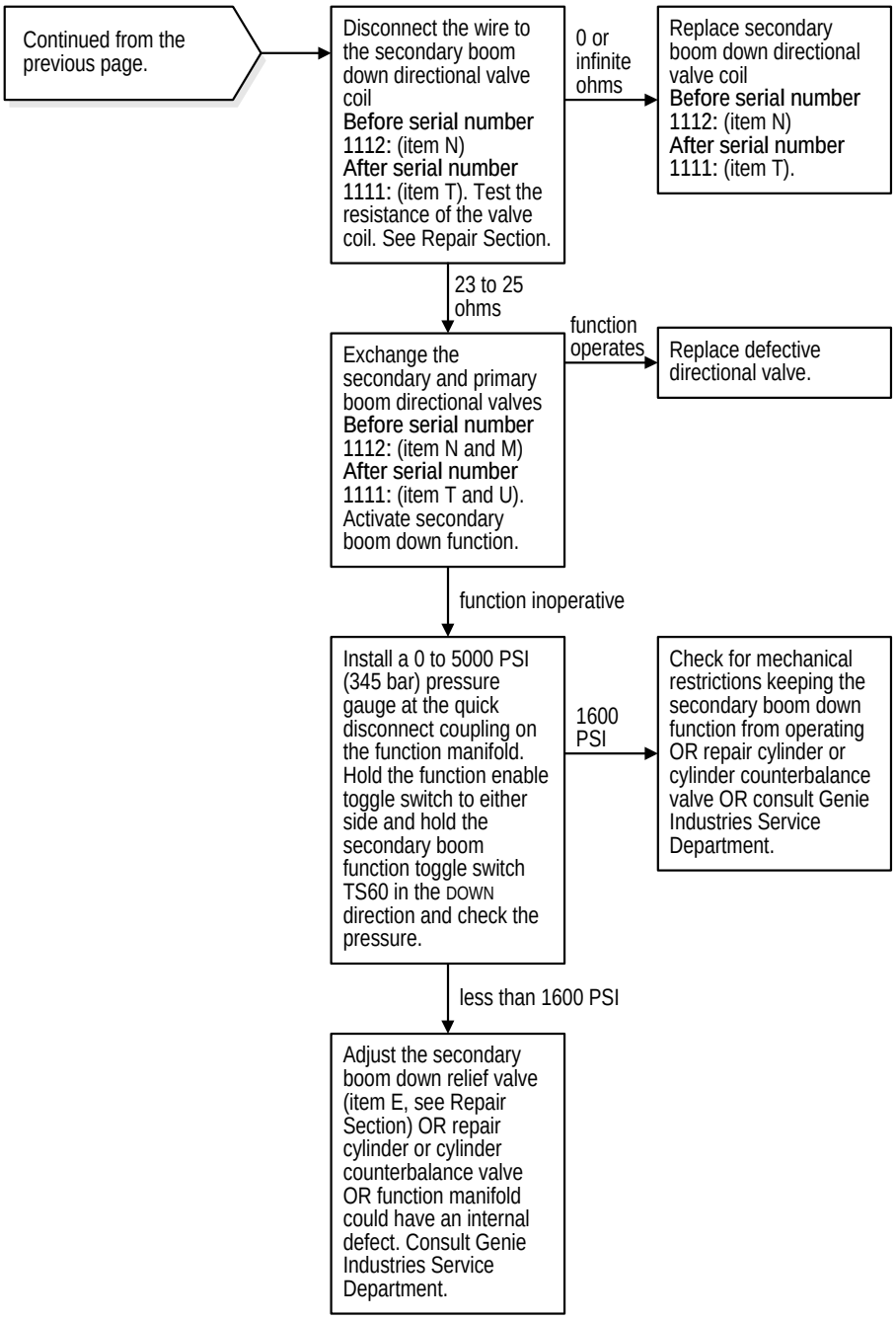


Chart 14

REV A

Primary Boom Extend Function Inoperative

Be sure all other functions operate normally.

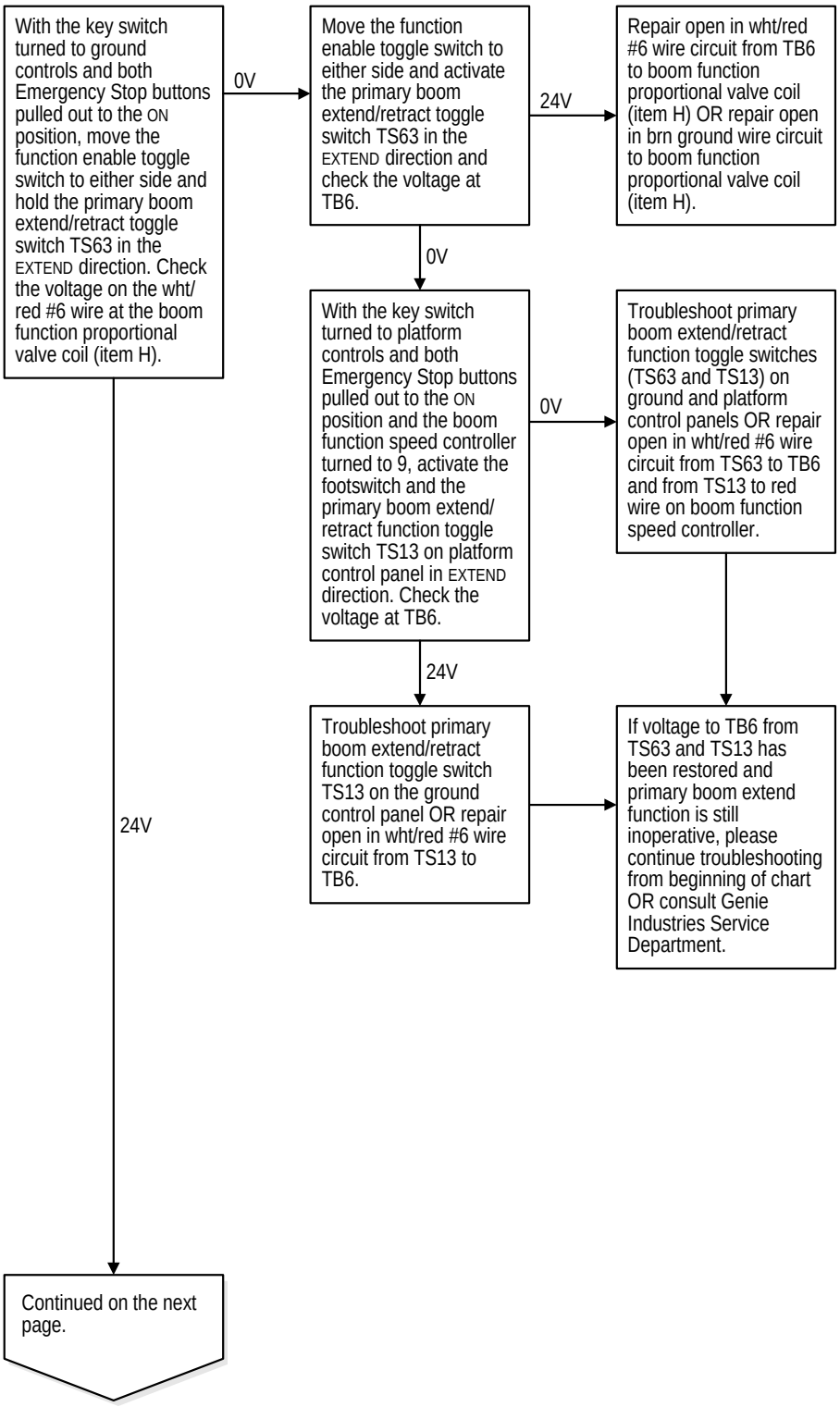
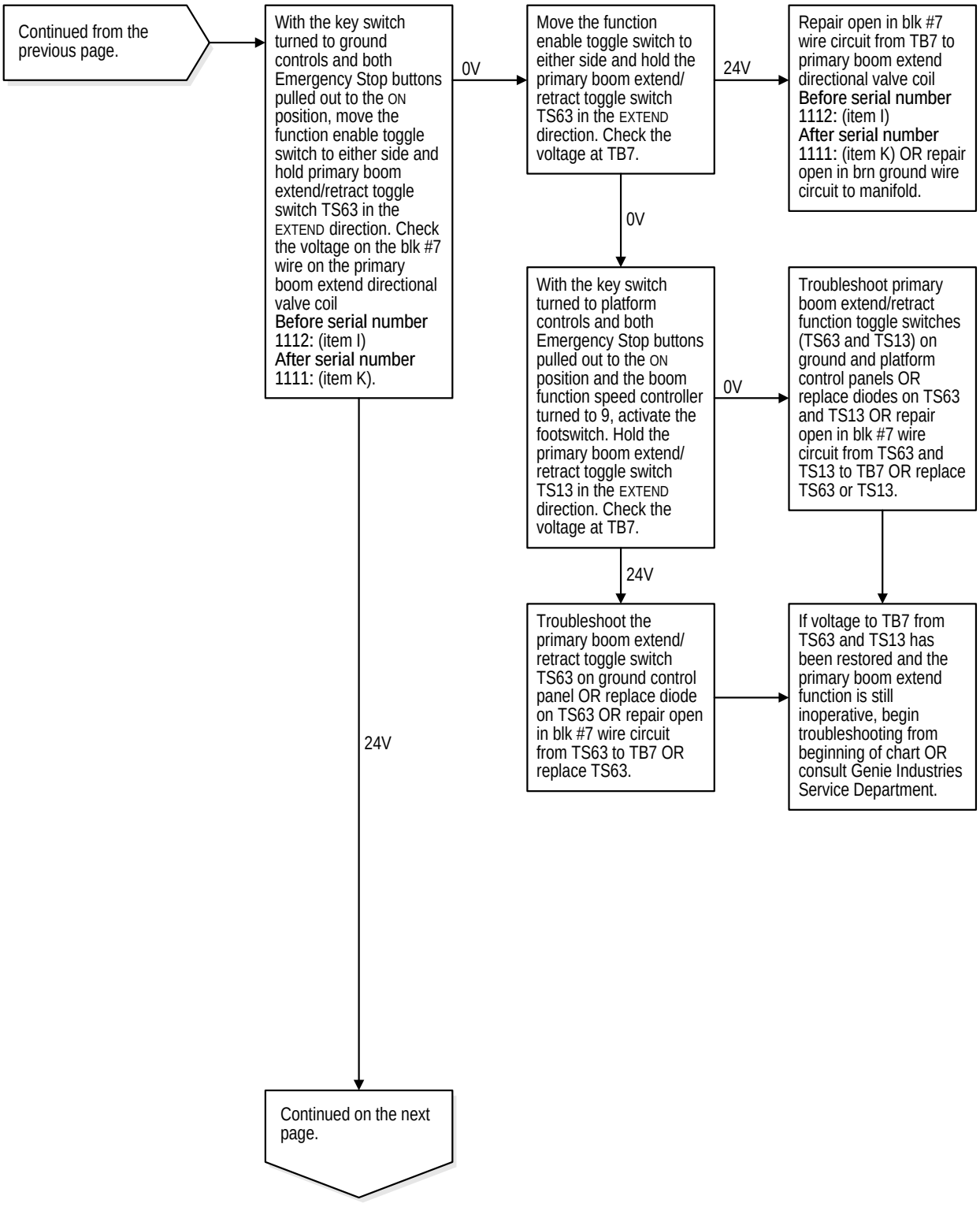


CHART 14 REV A



REV A CHART 14

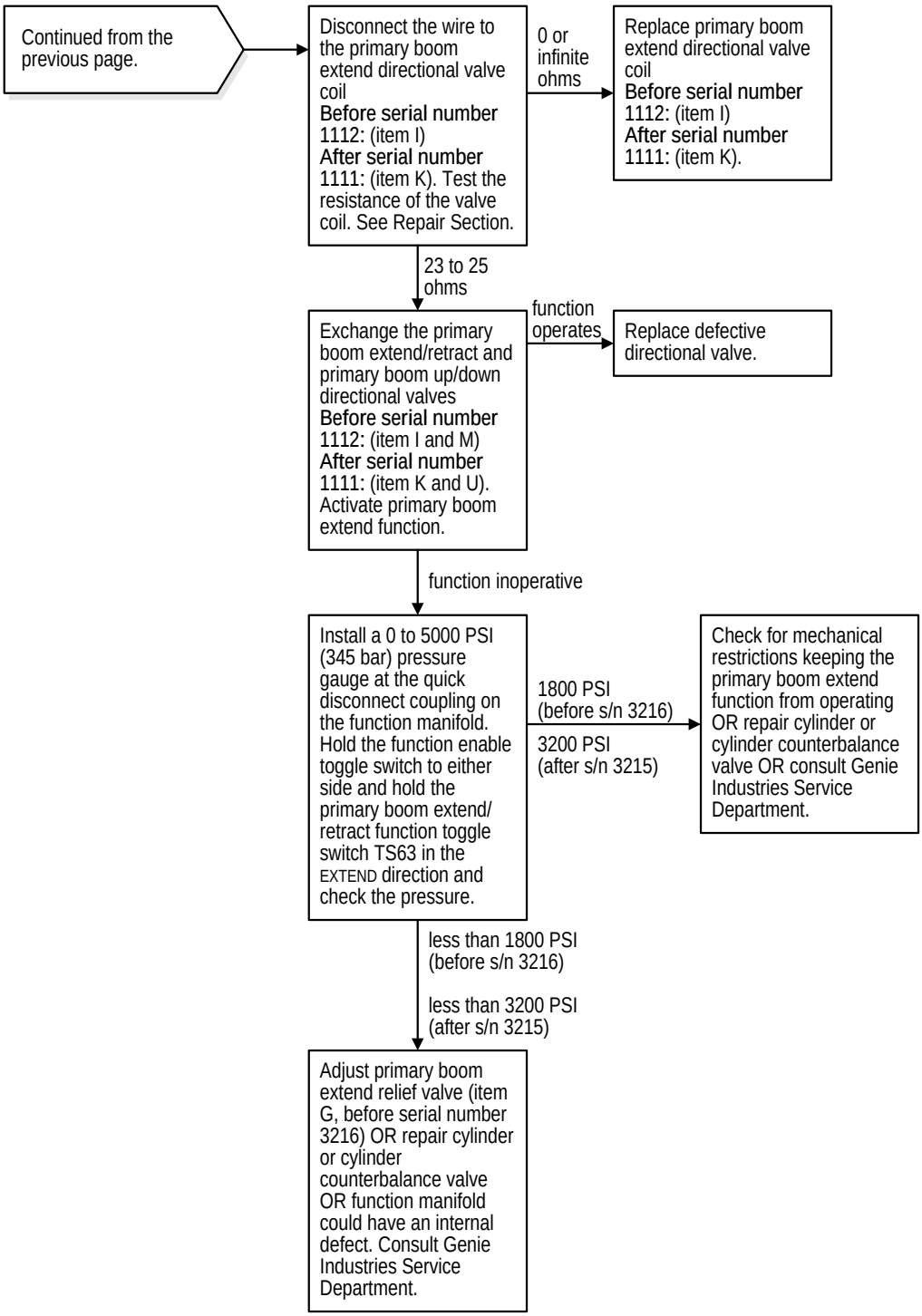
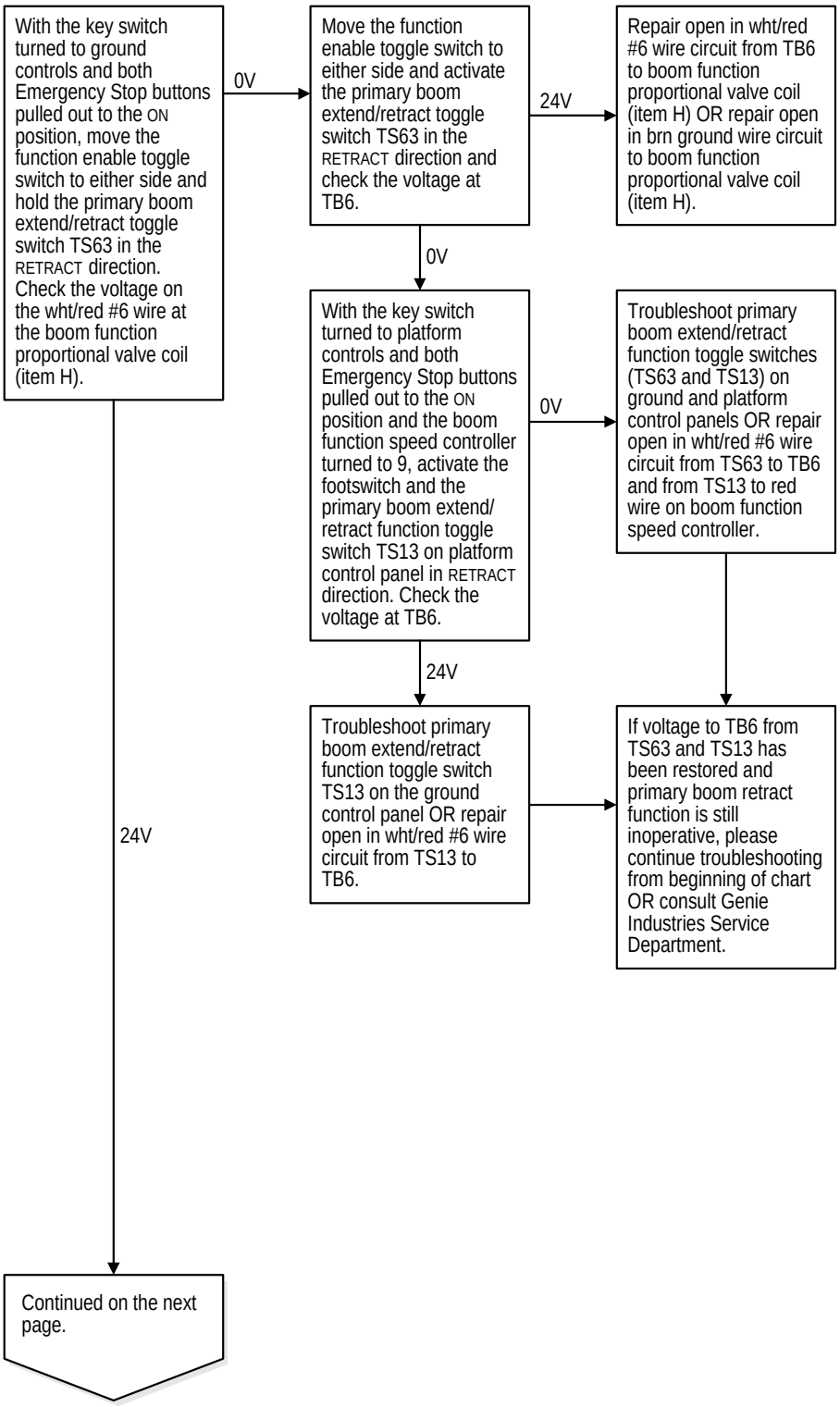


Chart 15

REV A

Primary Boom Retract Function Inoperative

Be sure all other functions operate normally.



REV A CHART 15

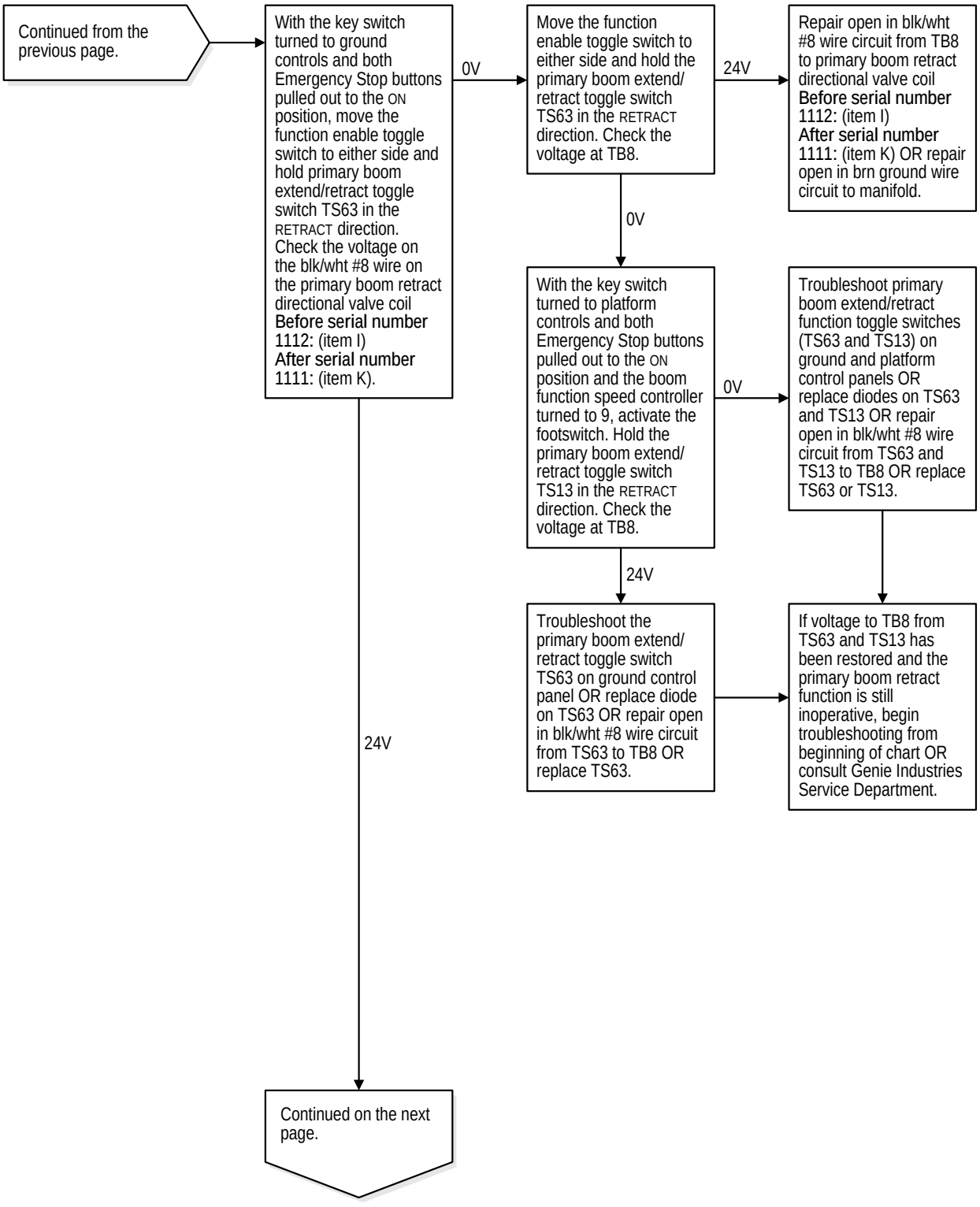


CHART 15 REV A

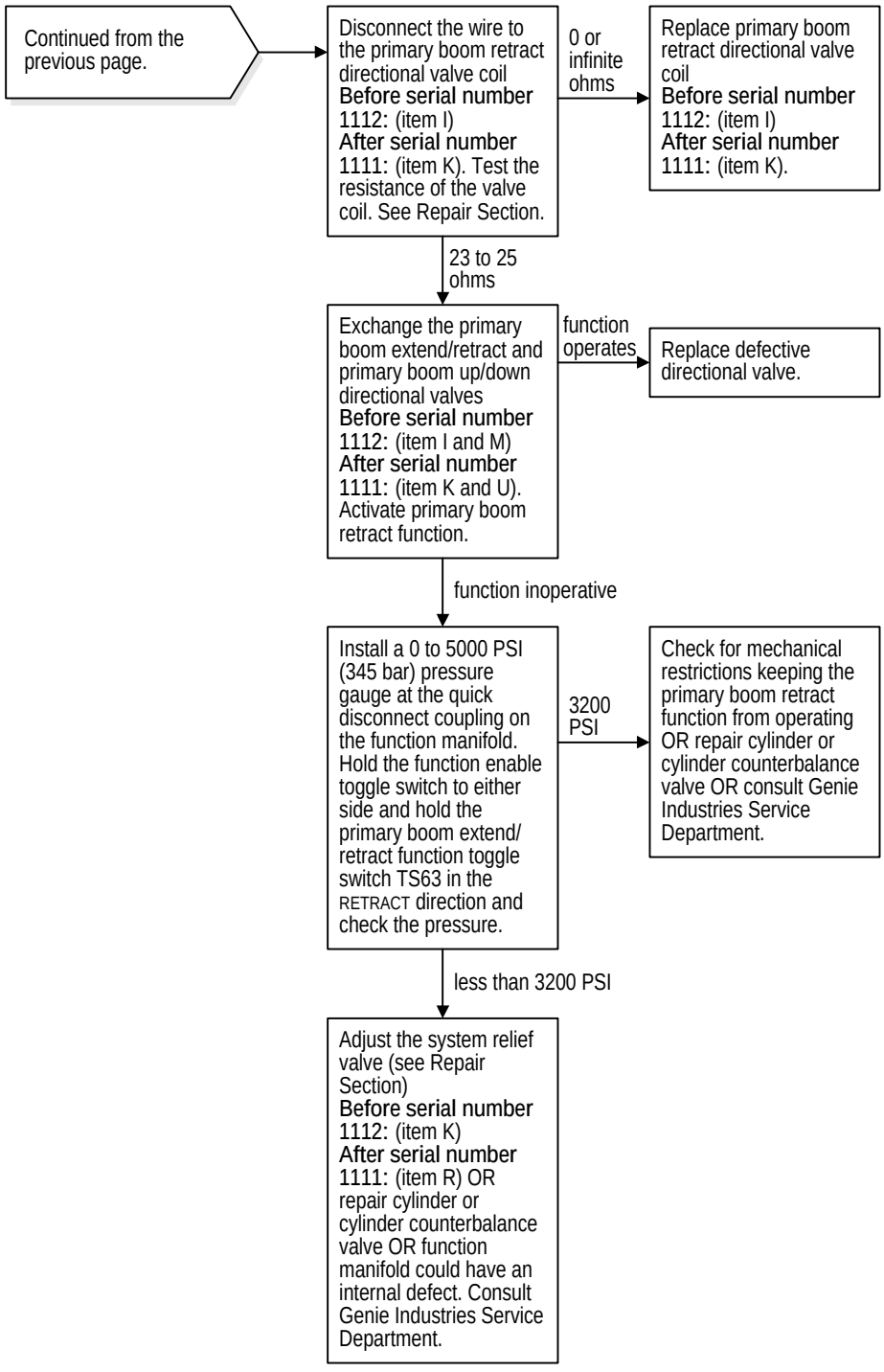


Chart 16

REV A

Turntable Rotate Left Function Inoperative

Be sure all other functions operate normally.

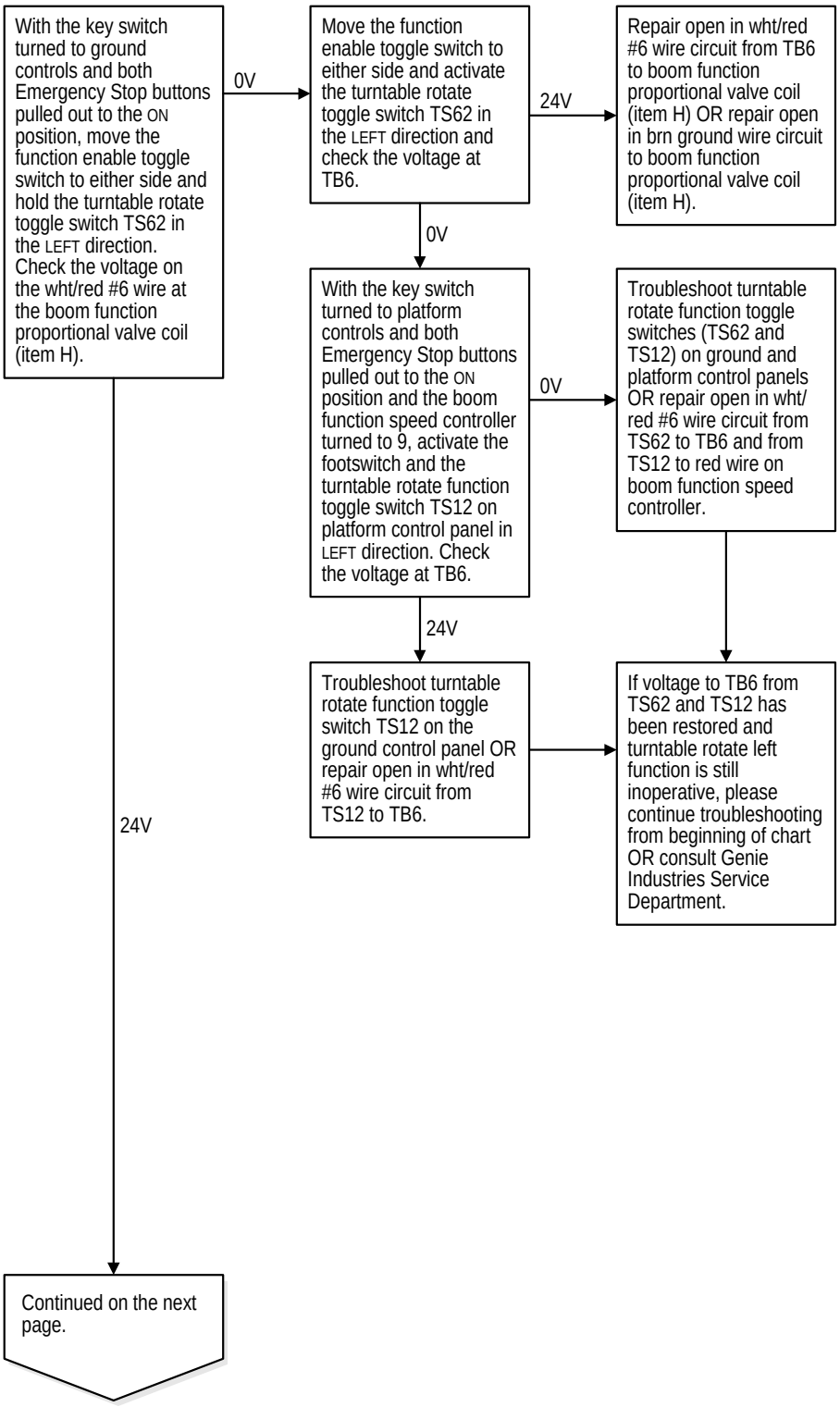
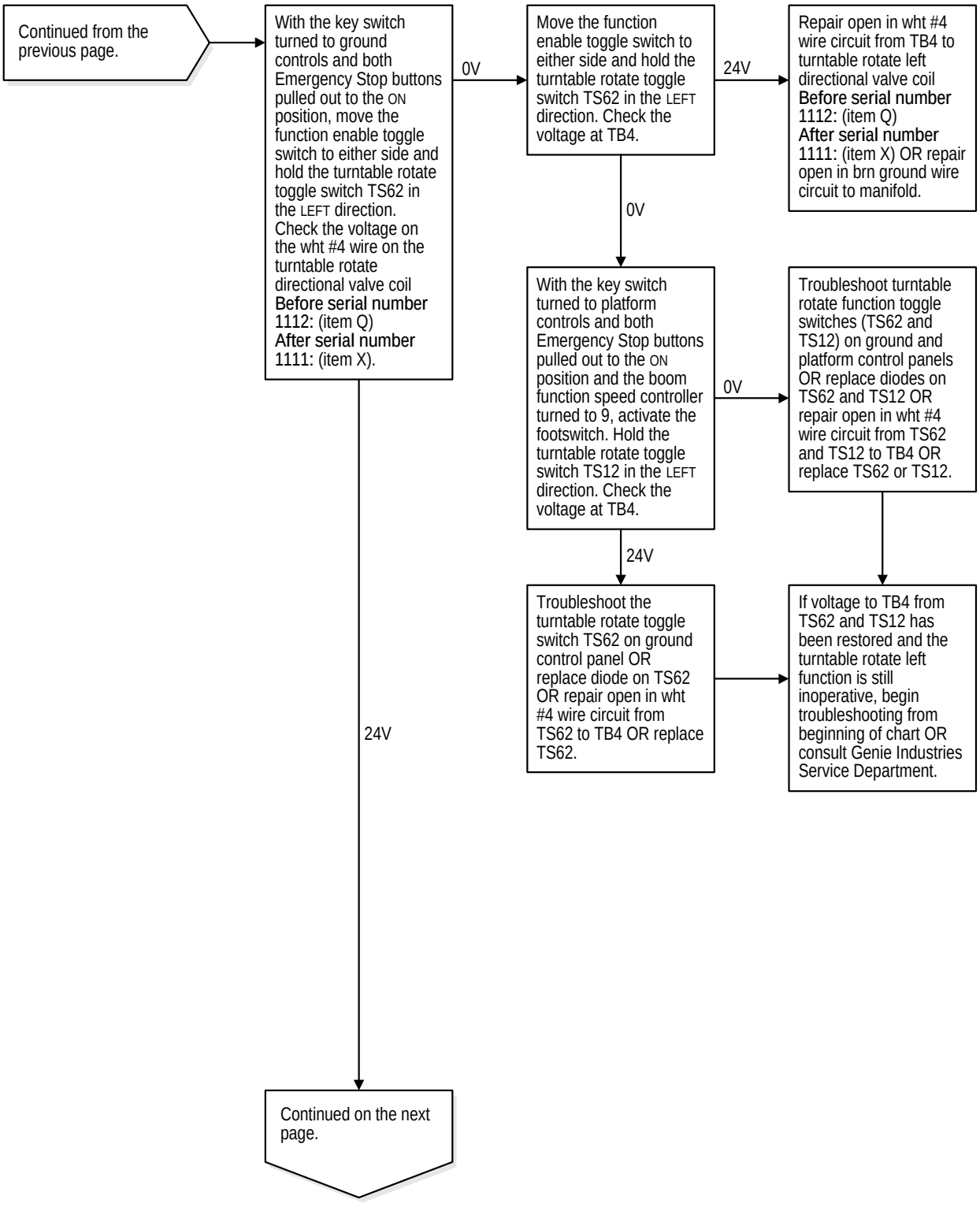


CHART 16 REV A



REV A CHART 16

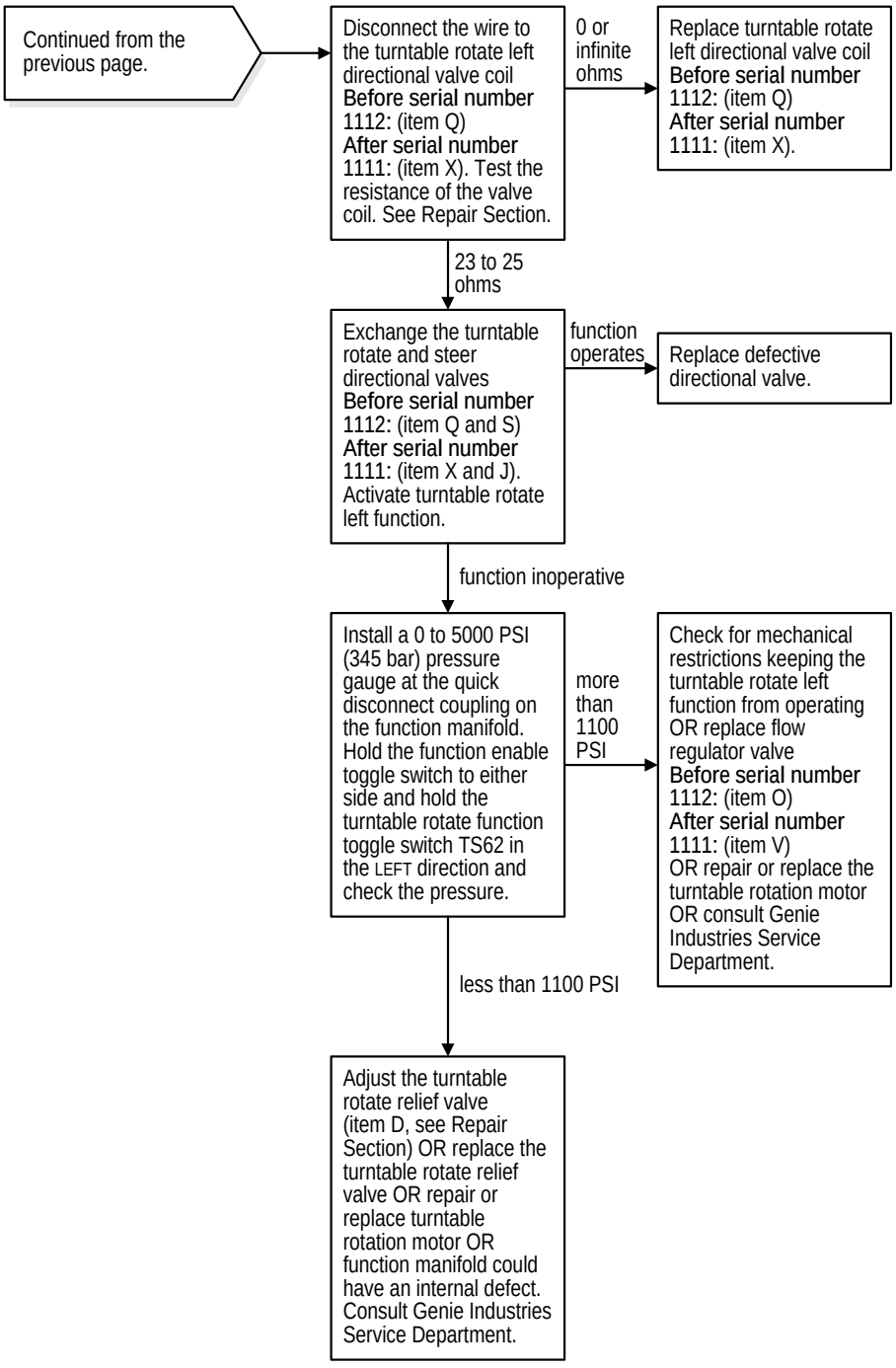
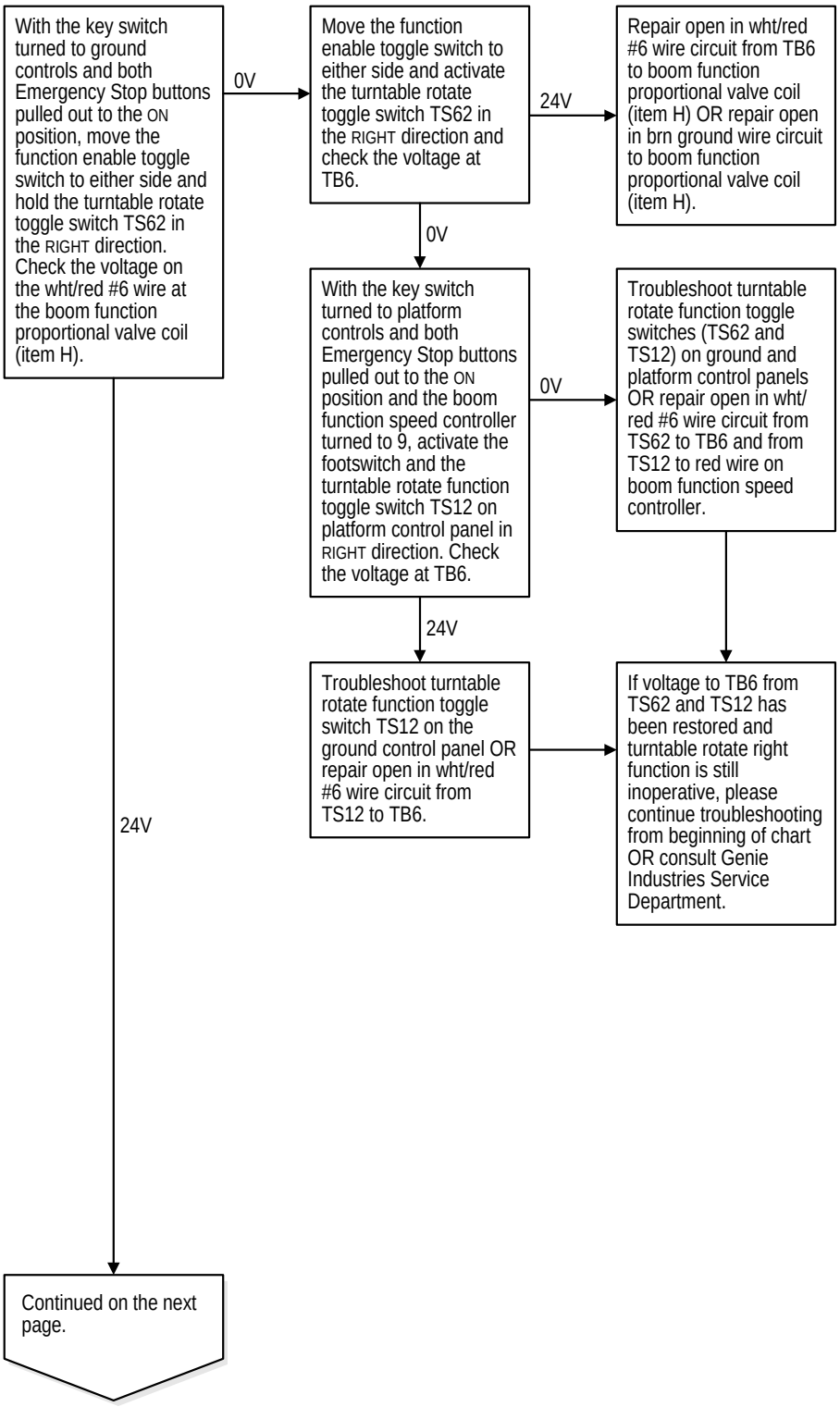


Chart 17

REV A

Turntable Rotate Right Function Inoperative

Be sure all other functions operate normally.



REV A CHART 17

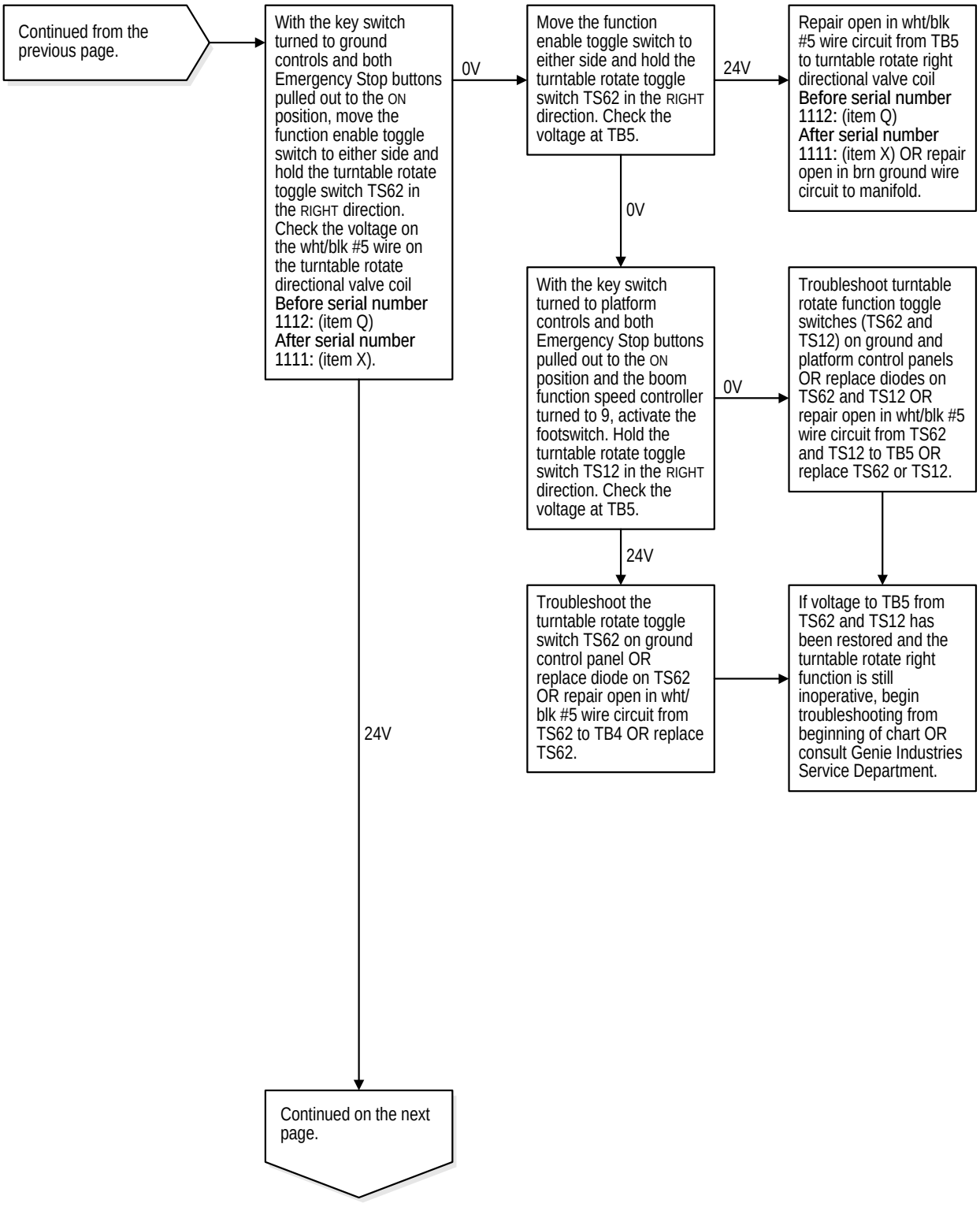


CHART 17 REV A

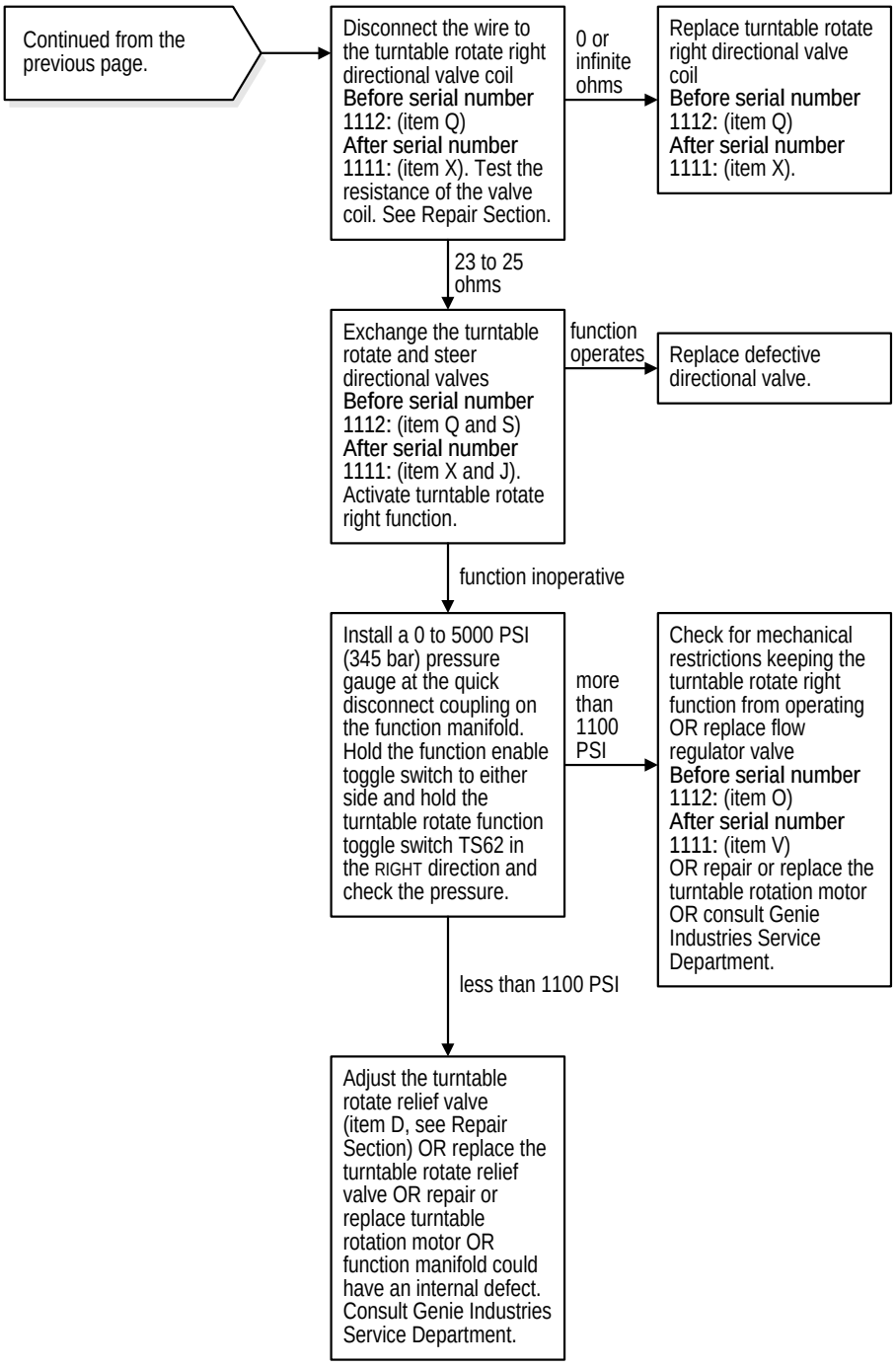


Chart 18

REV A

All Platform Leveling Functions Inoperative

Be sure all other functions operate normally.

Be sure both automatic and manual platform leveling do not operate.

If automatic leveling operates but manual leveling does not, troubleshoot platform leveling up function inoperative.

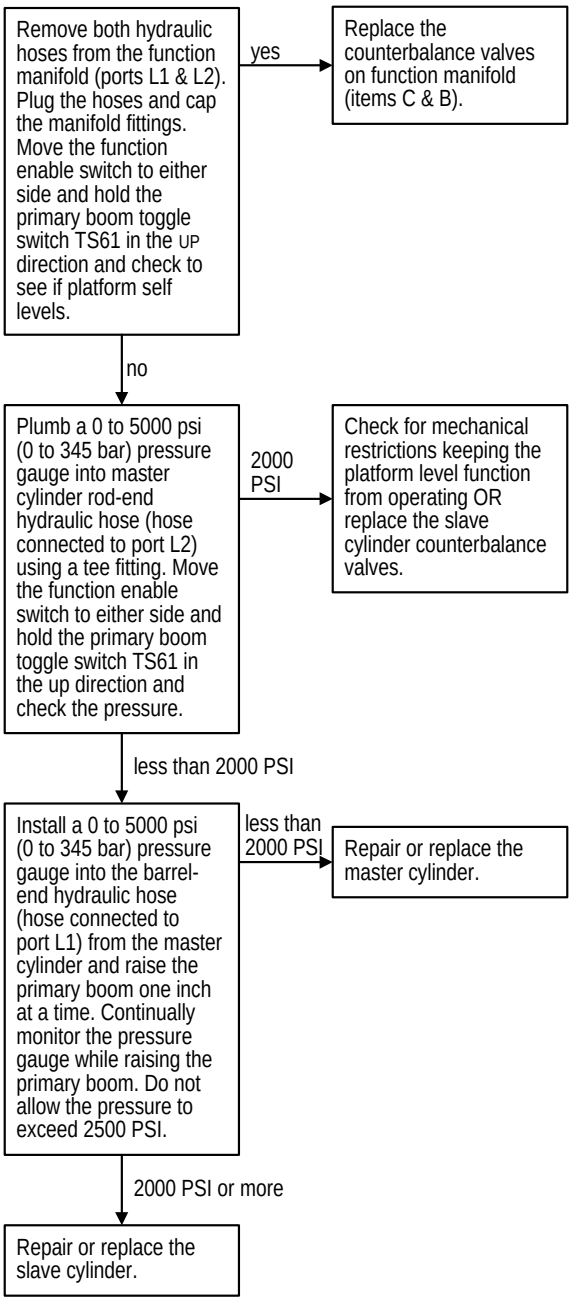
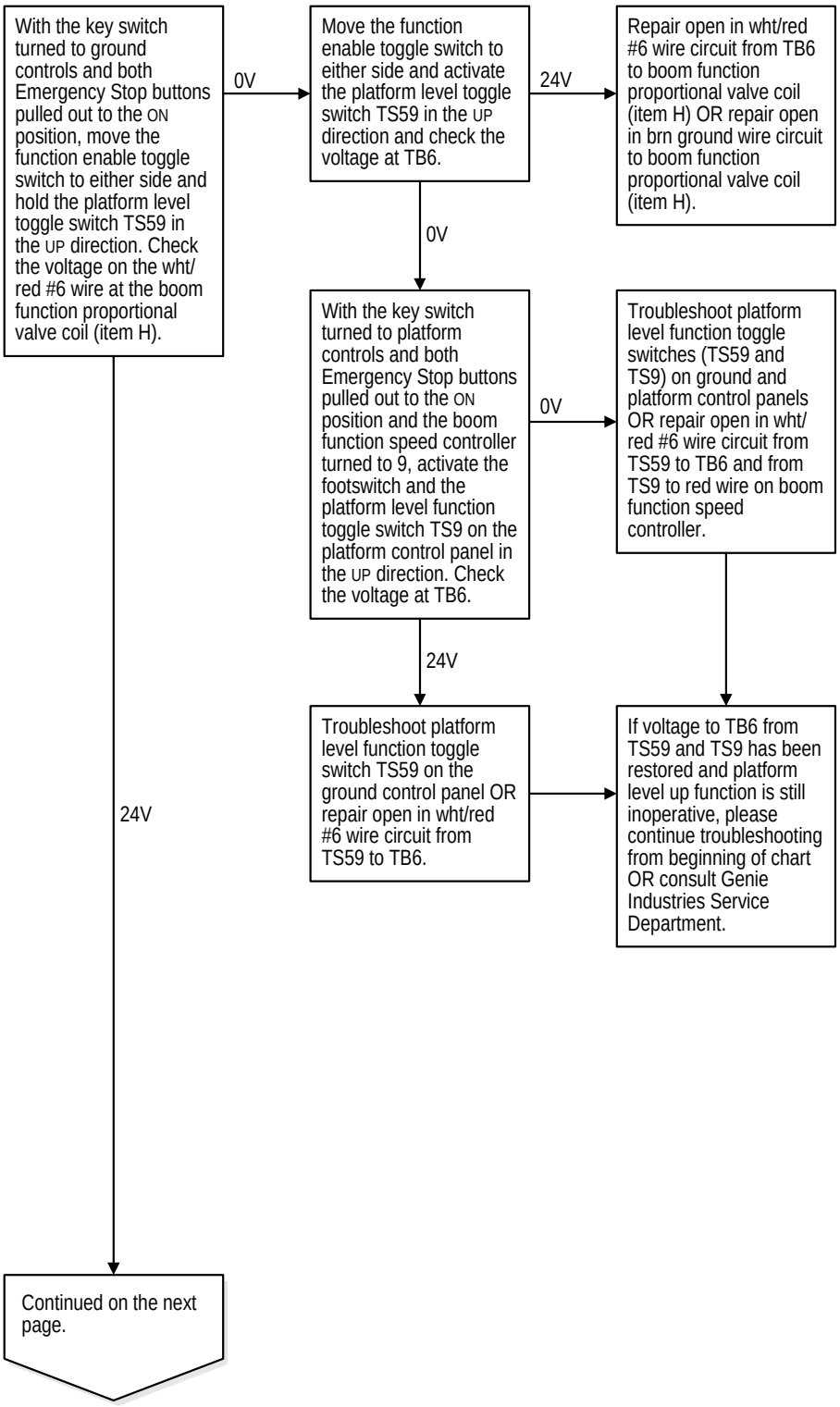


Chart 19

REV A

Platform Level Up Function Inoperative

Be sure all other functions operate normally.



REV A CHART 19

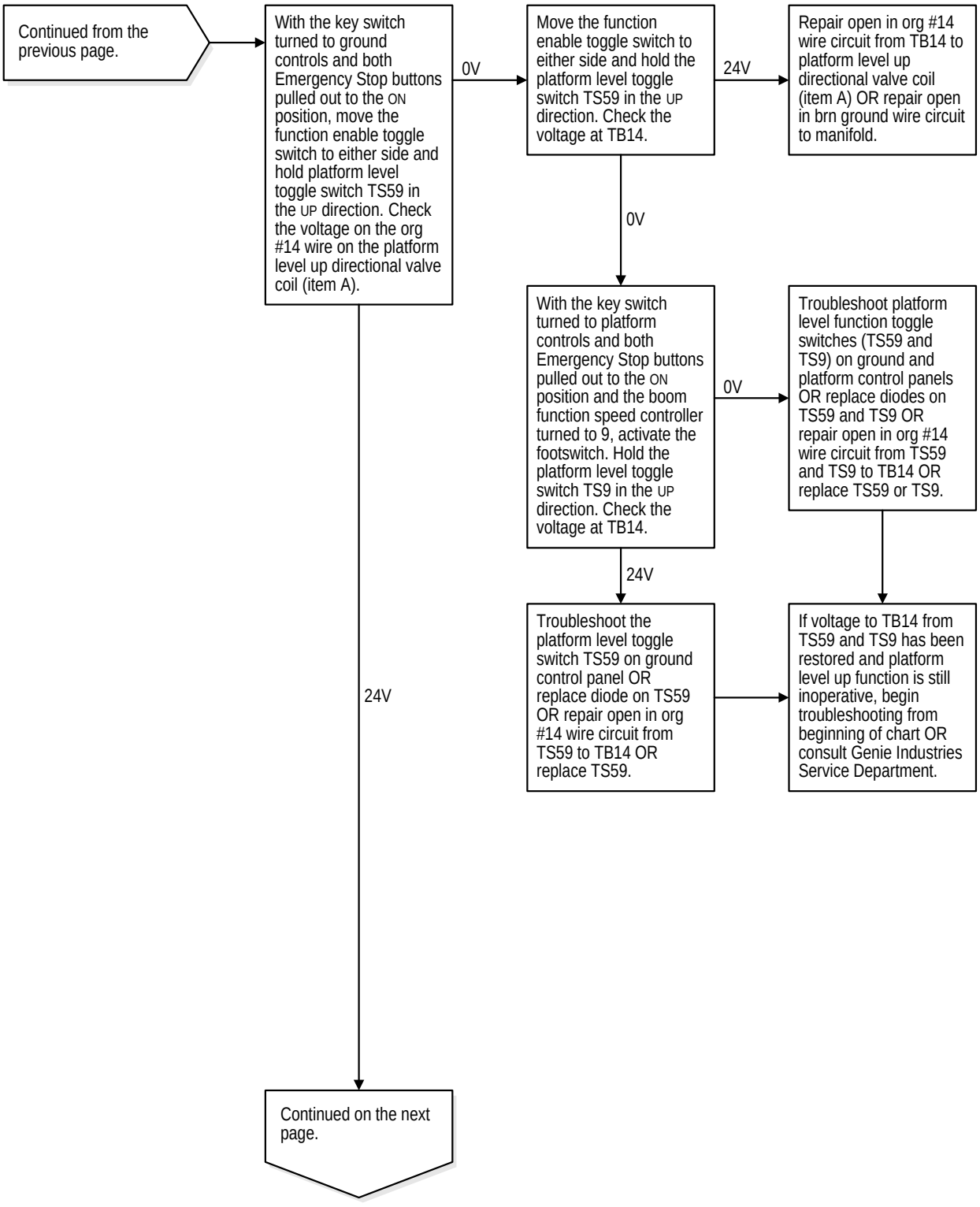


CHART 19 REV A

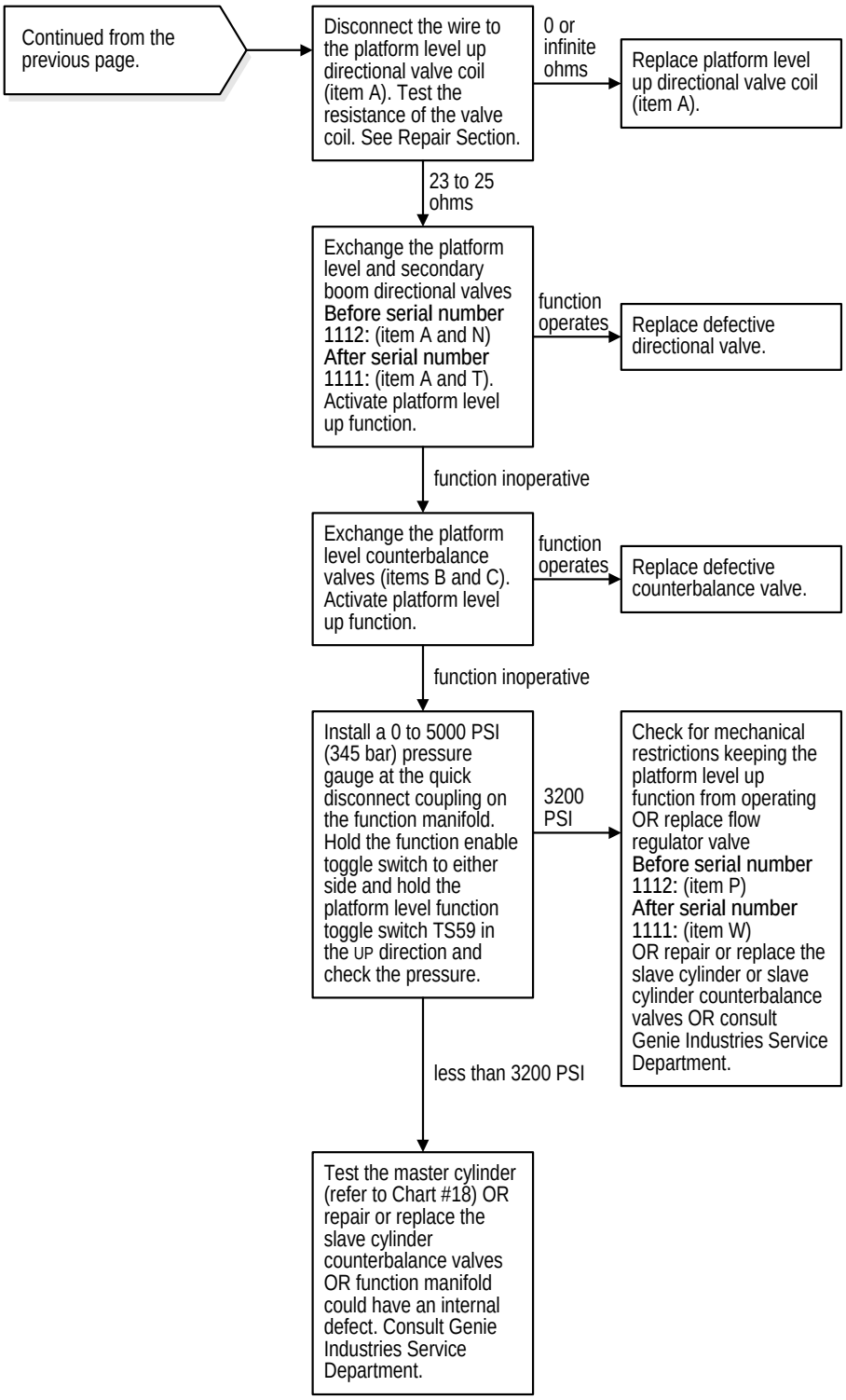


Chart 20

REV A

Platform Level Down Function Inoperative

Be sure all other functions operate normally.

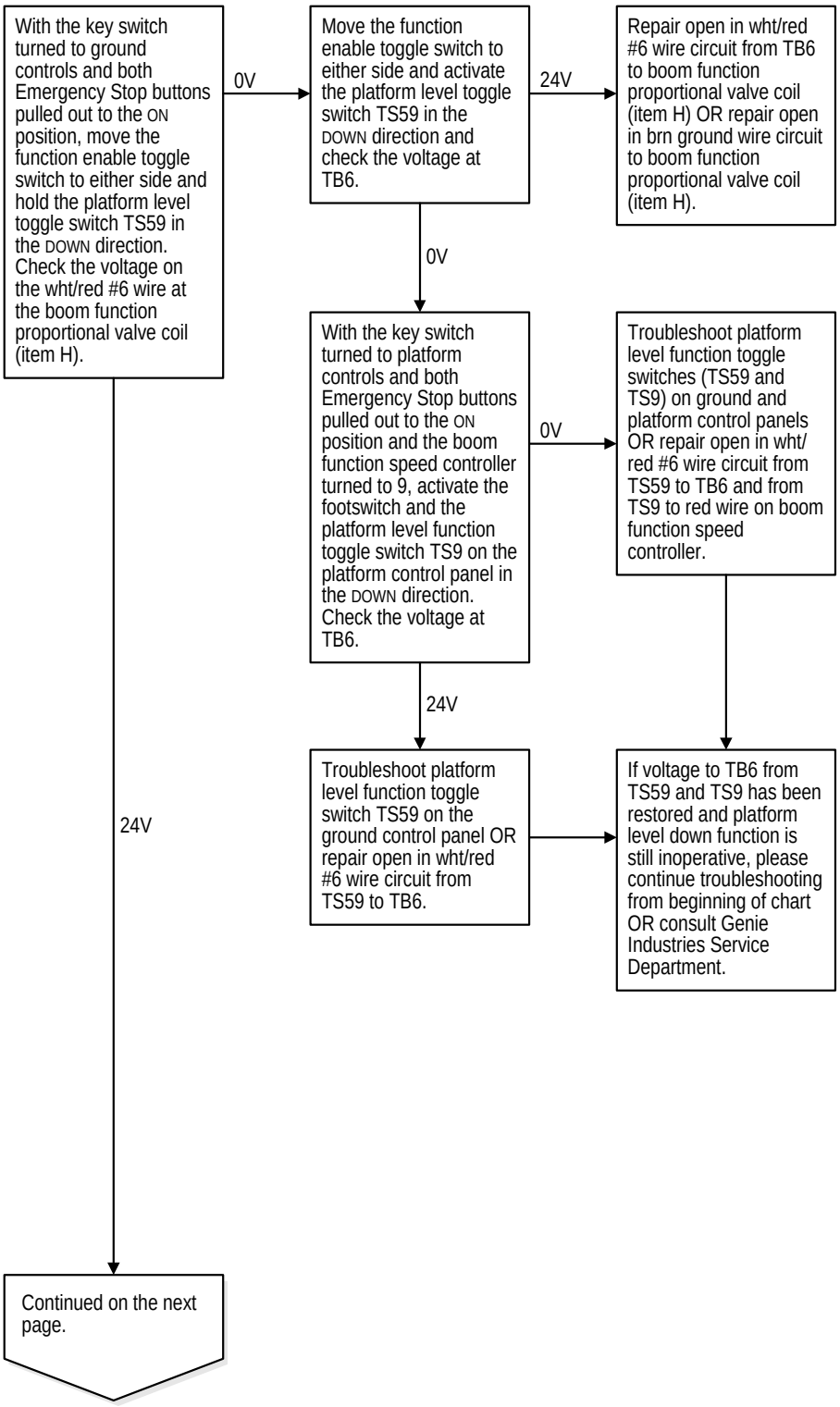
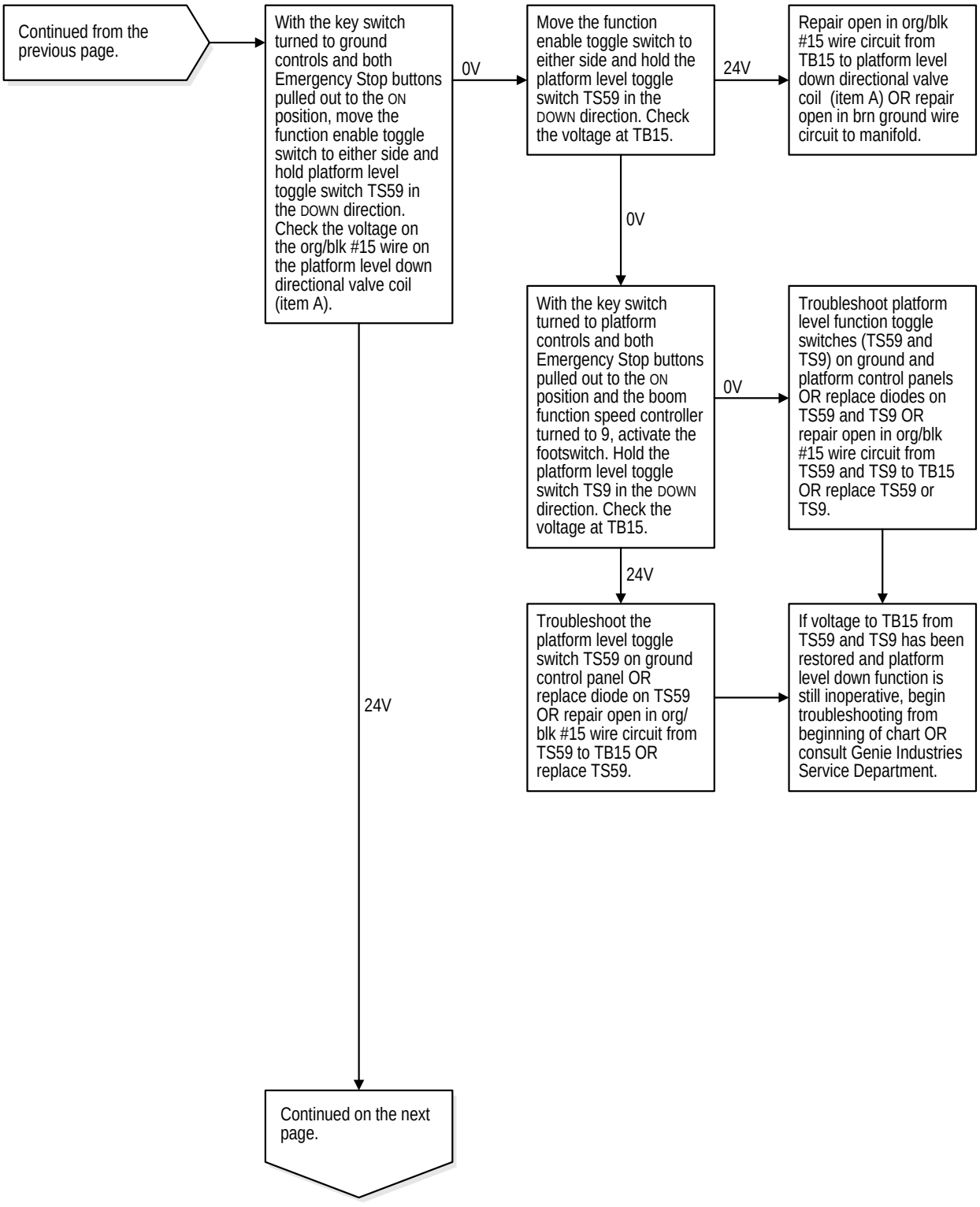


CHART 20 REV A



REV A CHART 20

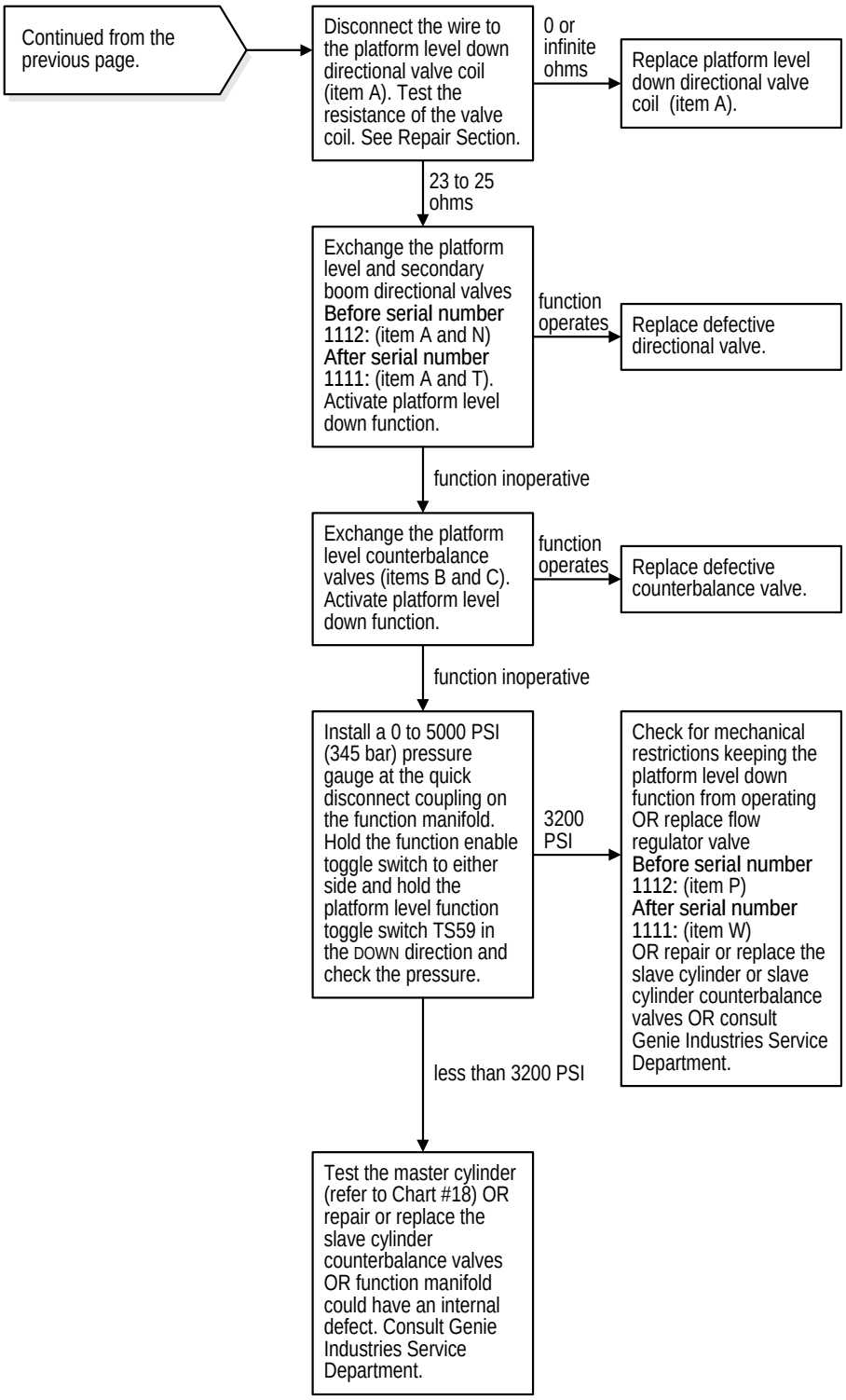
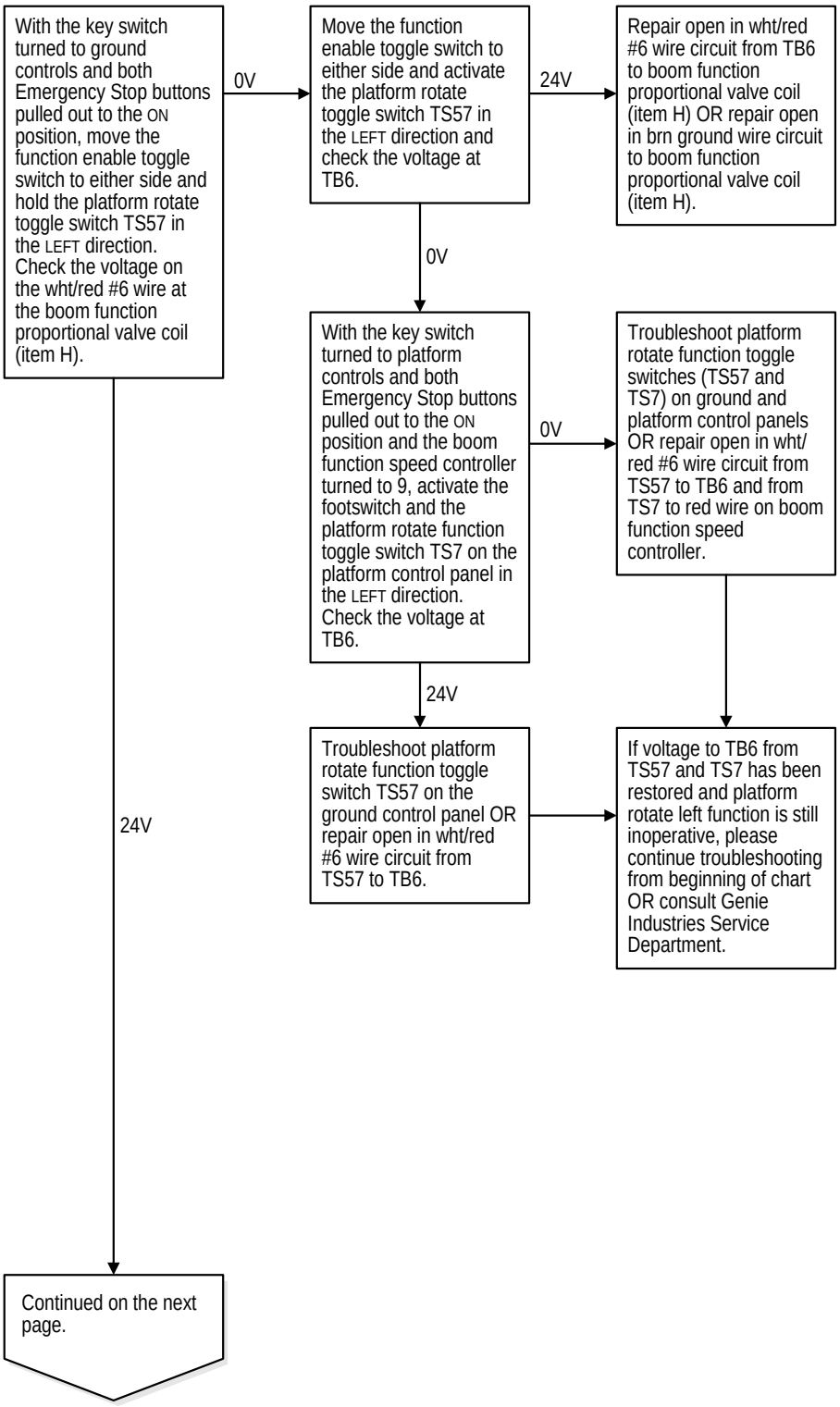


Chart 21

REV A

Platform Rotate Left Function Inoperative

Be sure all other functions operate normally.



REV A CHART 21

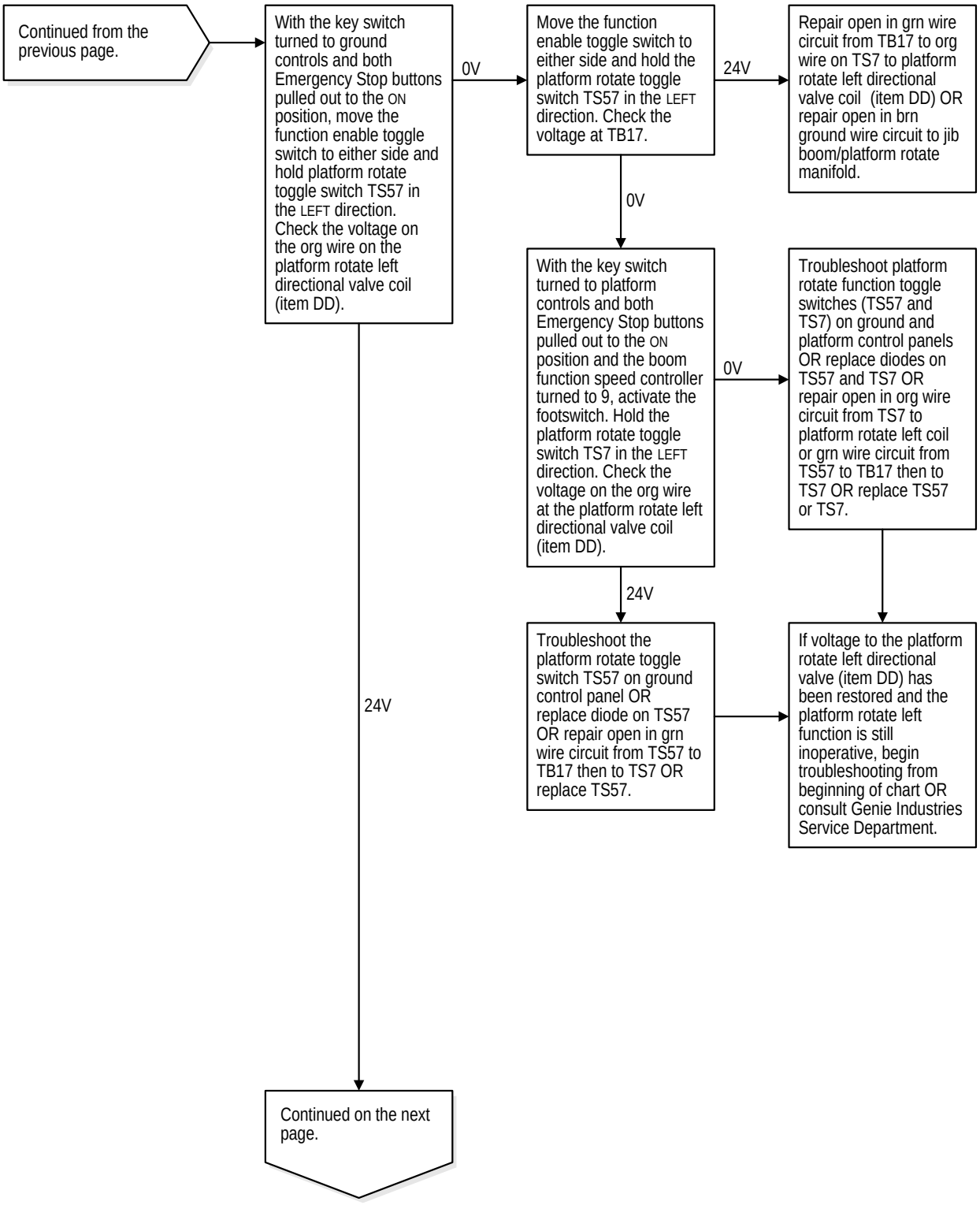


CHART 21 REV A

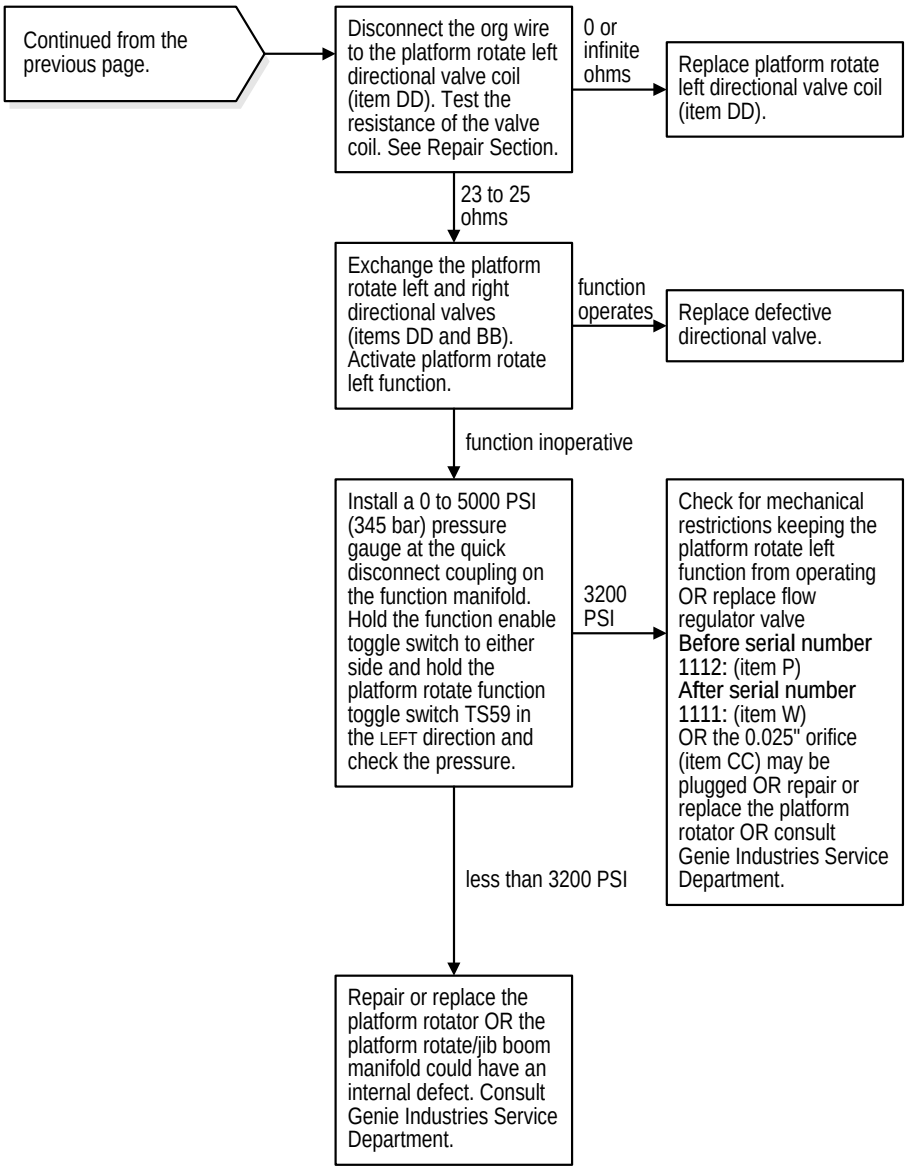


Chart 22

REV A

Platform Rotate Right Inoperative

Be sure all other functions operate normally.

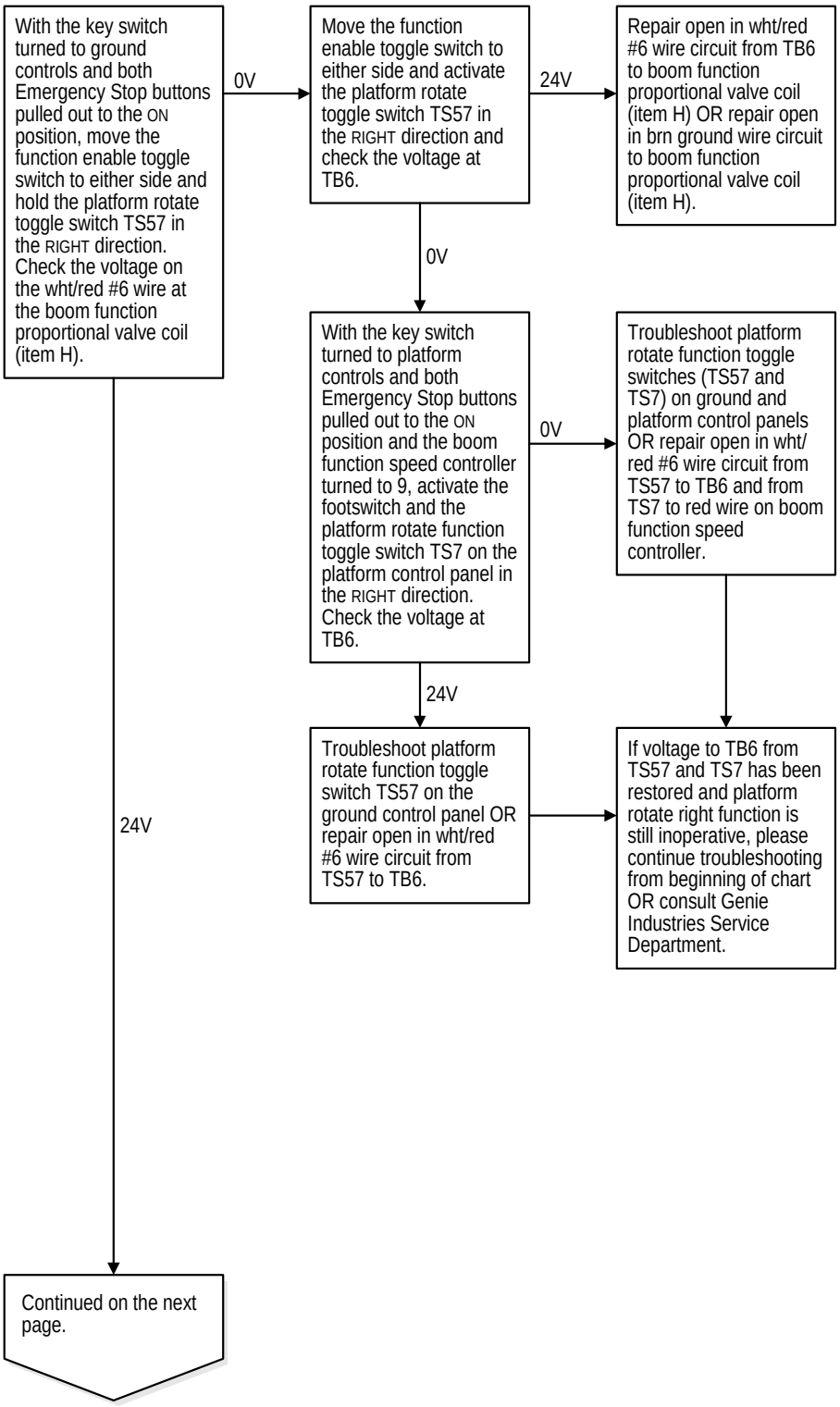
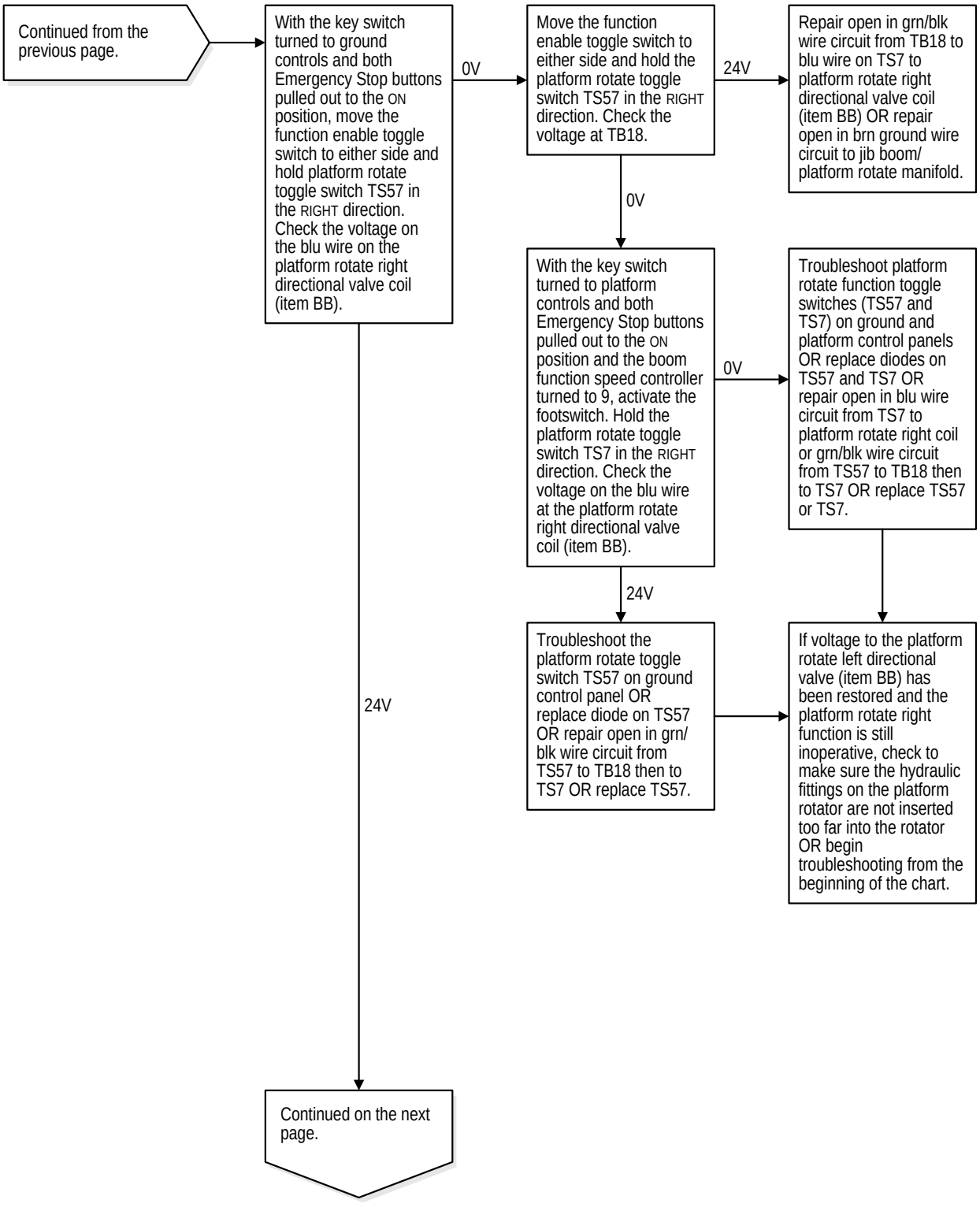


CHART 22 REV A



REV A CHART 22

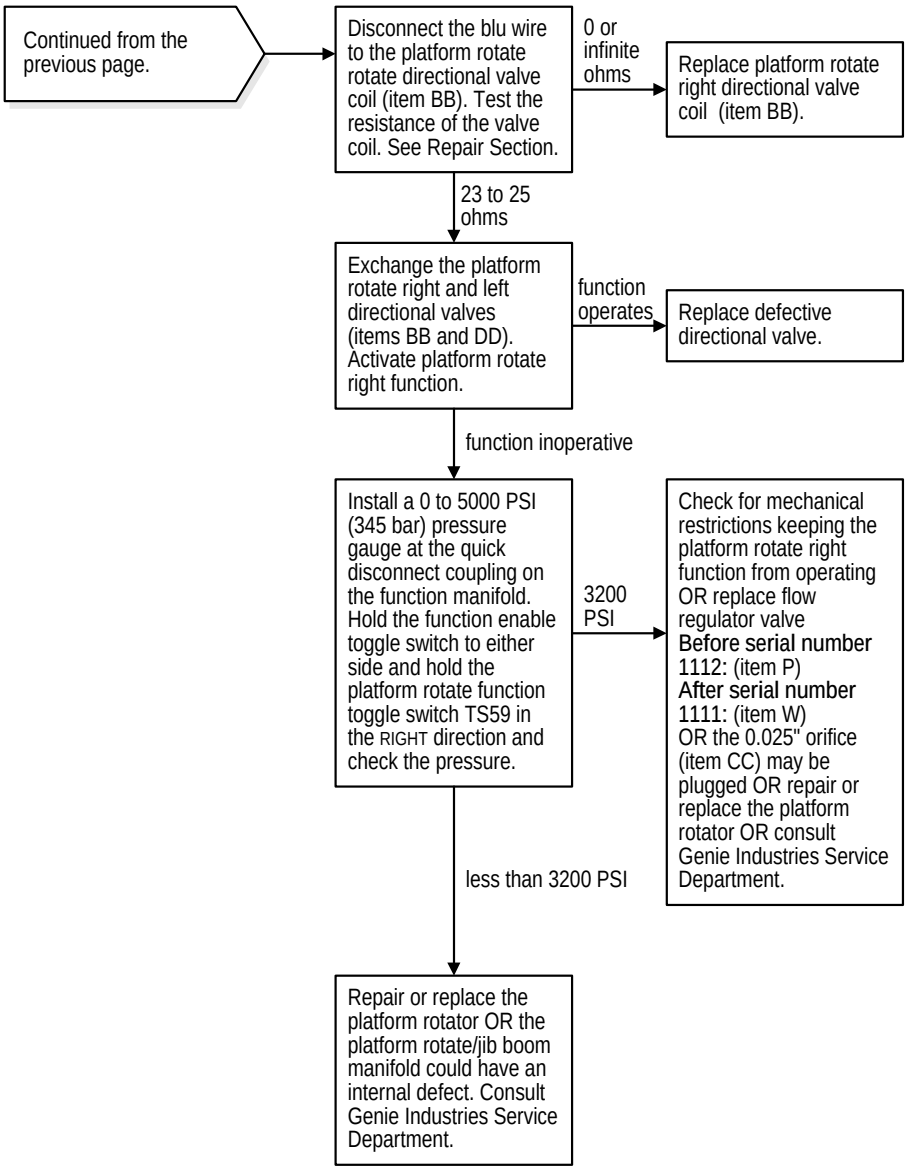
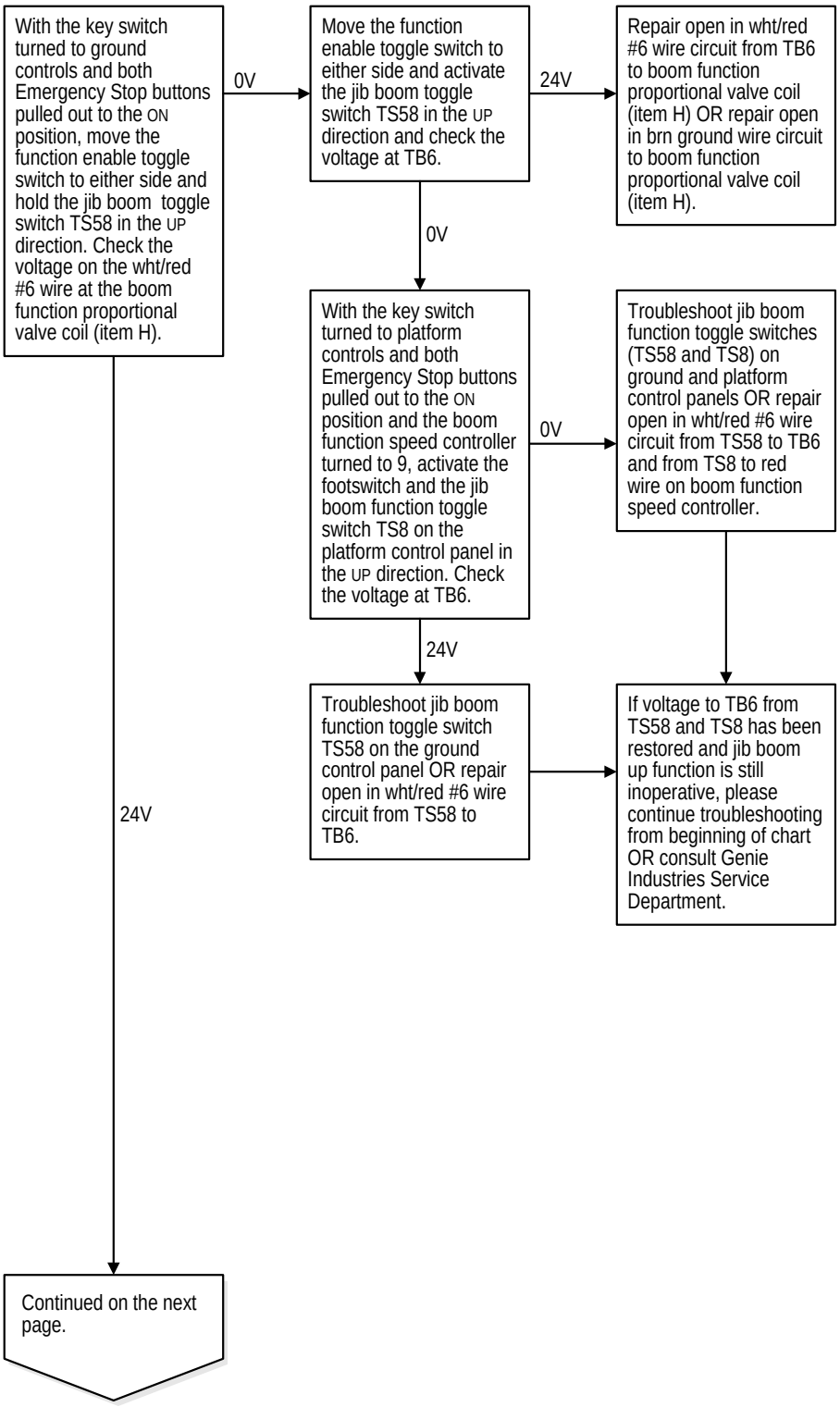


Chart 23

REV A

Jib Boom Up Function Inoperative

Be sure all other functions operate normally.



REV A CHART 23

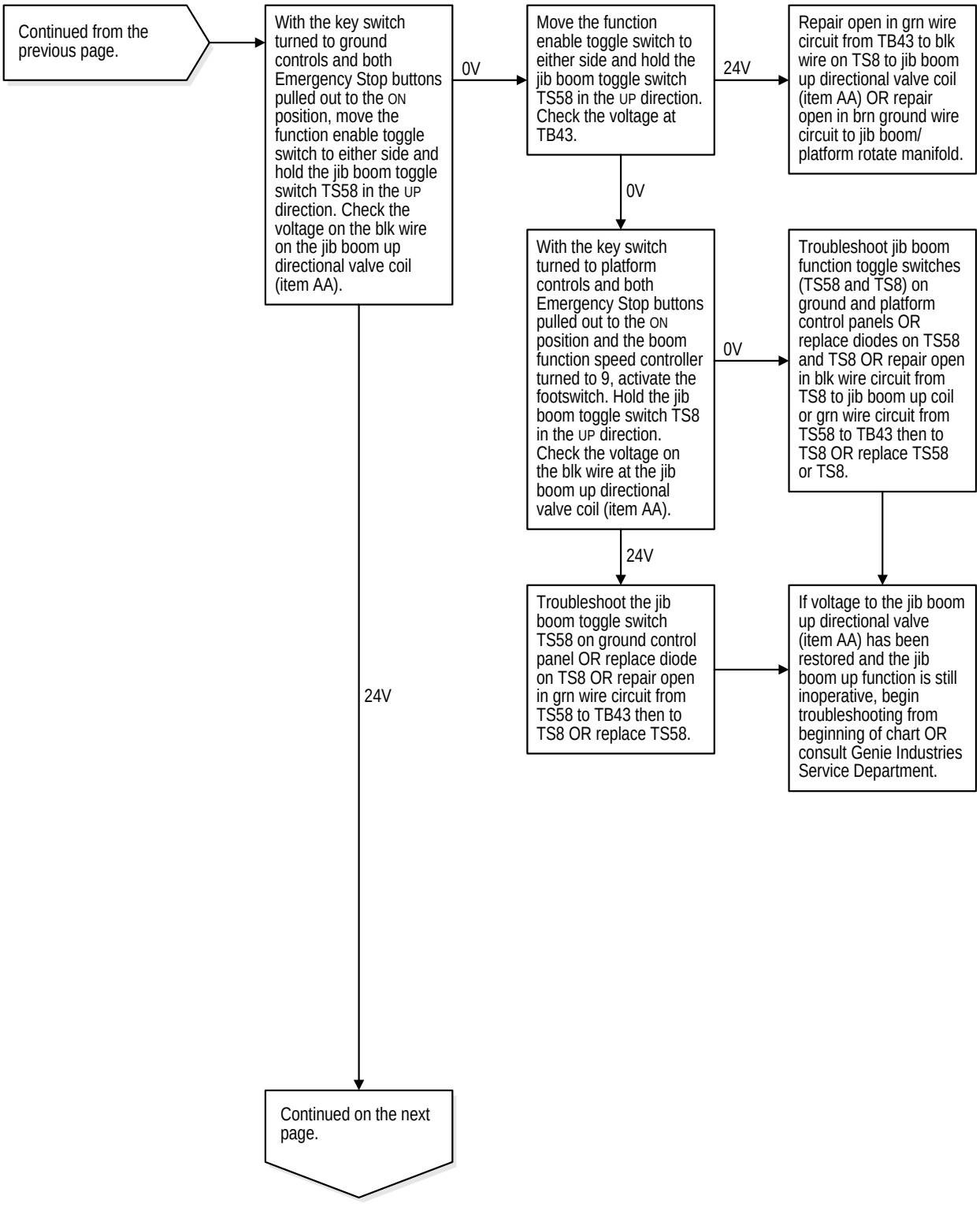


CHART 23 REV A

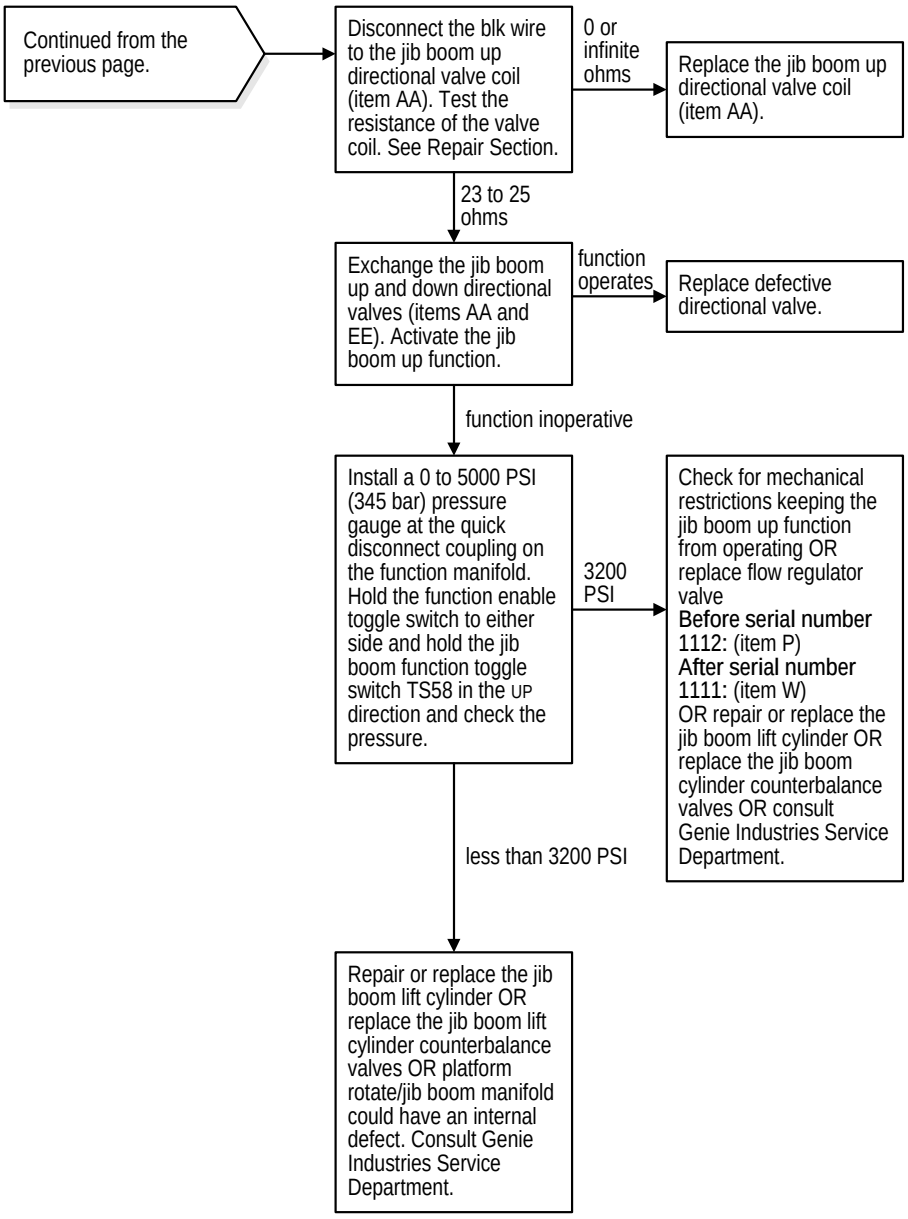


Chart 24

REV A

Jib Boom Down Function Inoperative

Be sure all other functions operate normally.

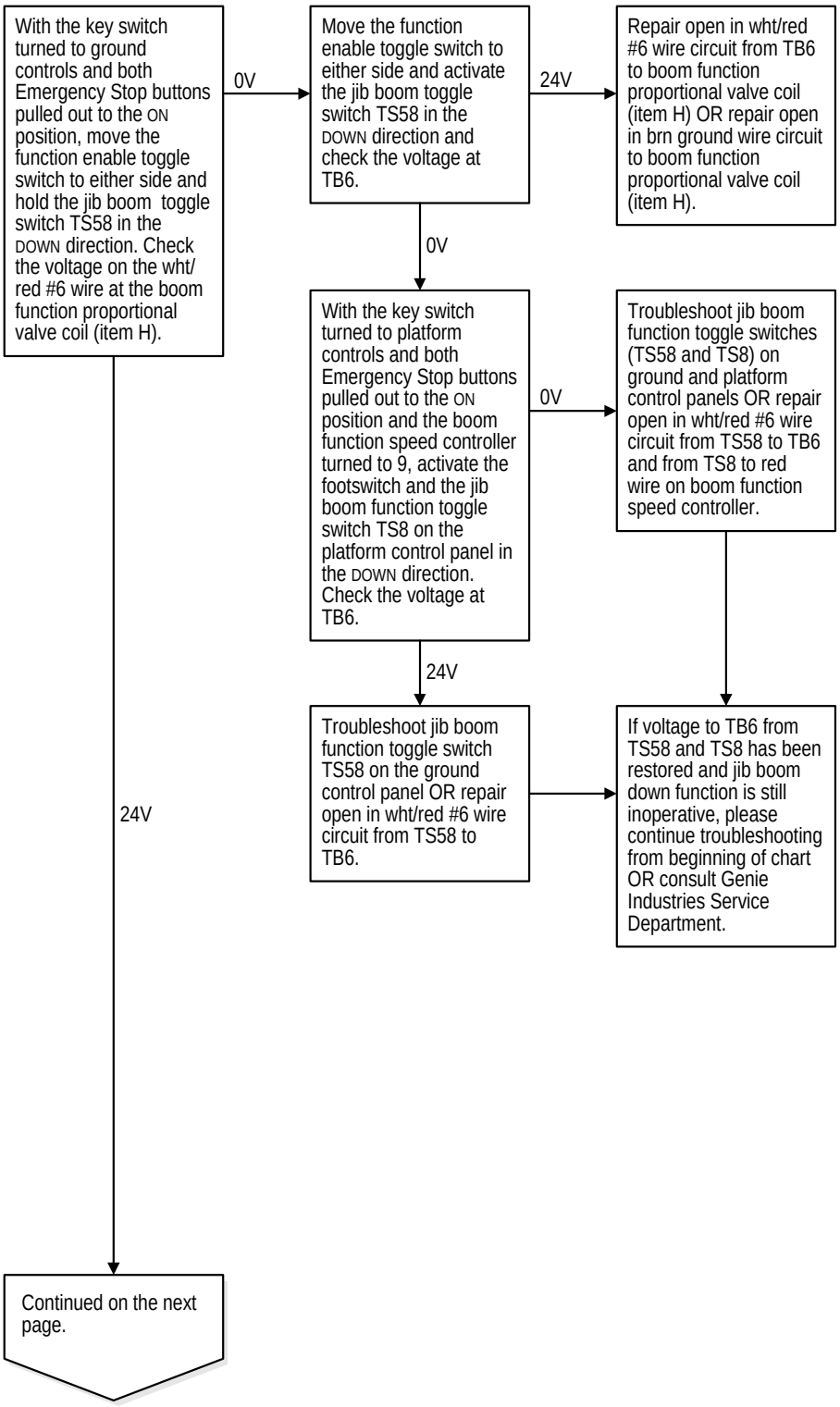
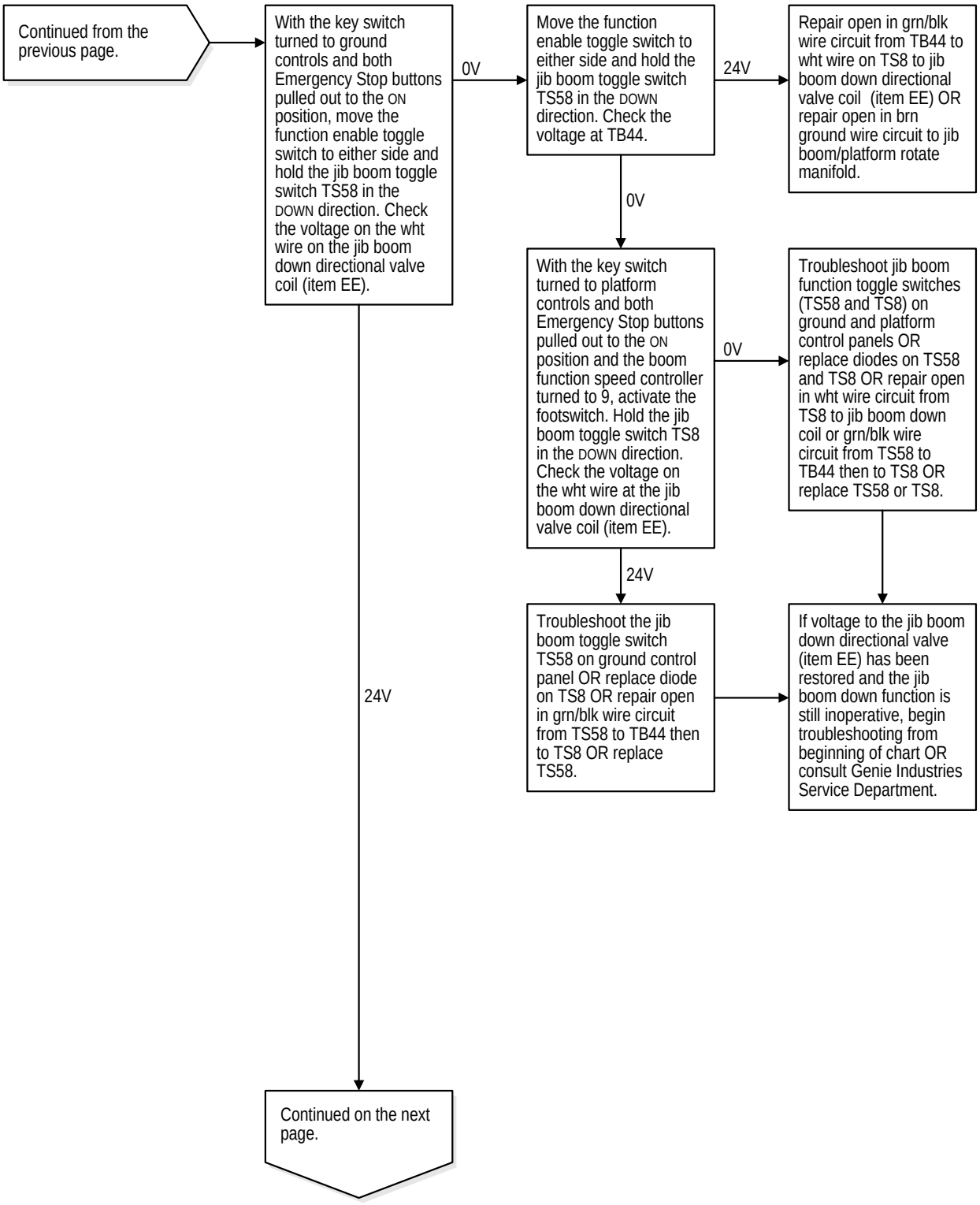


CHART 24 REV A



REV A CHART 24

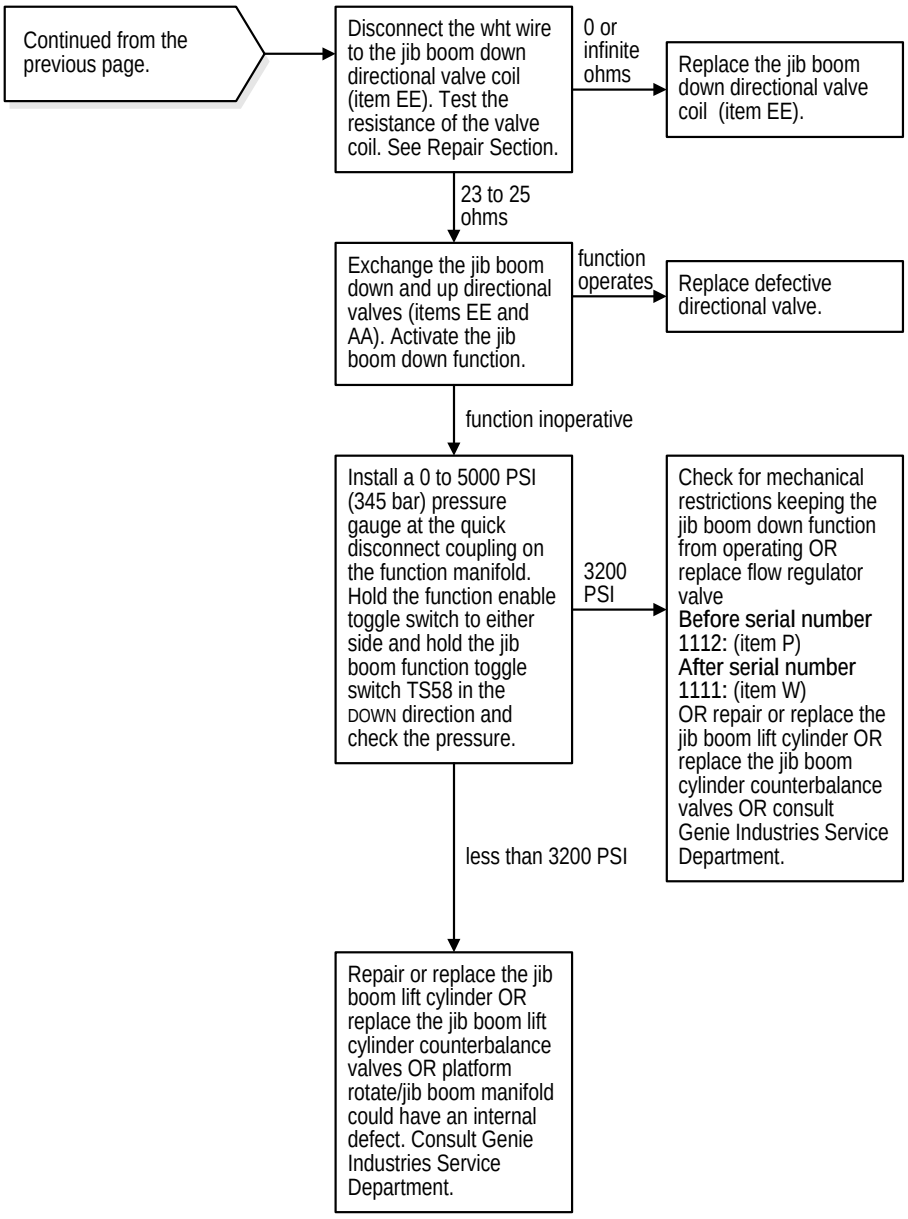
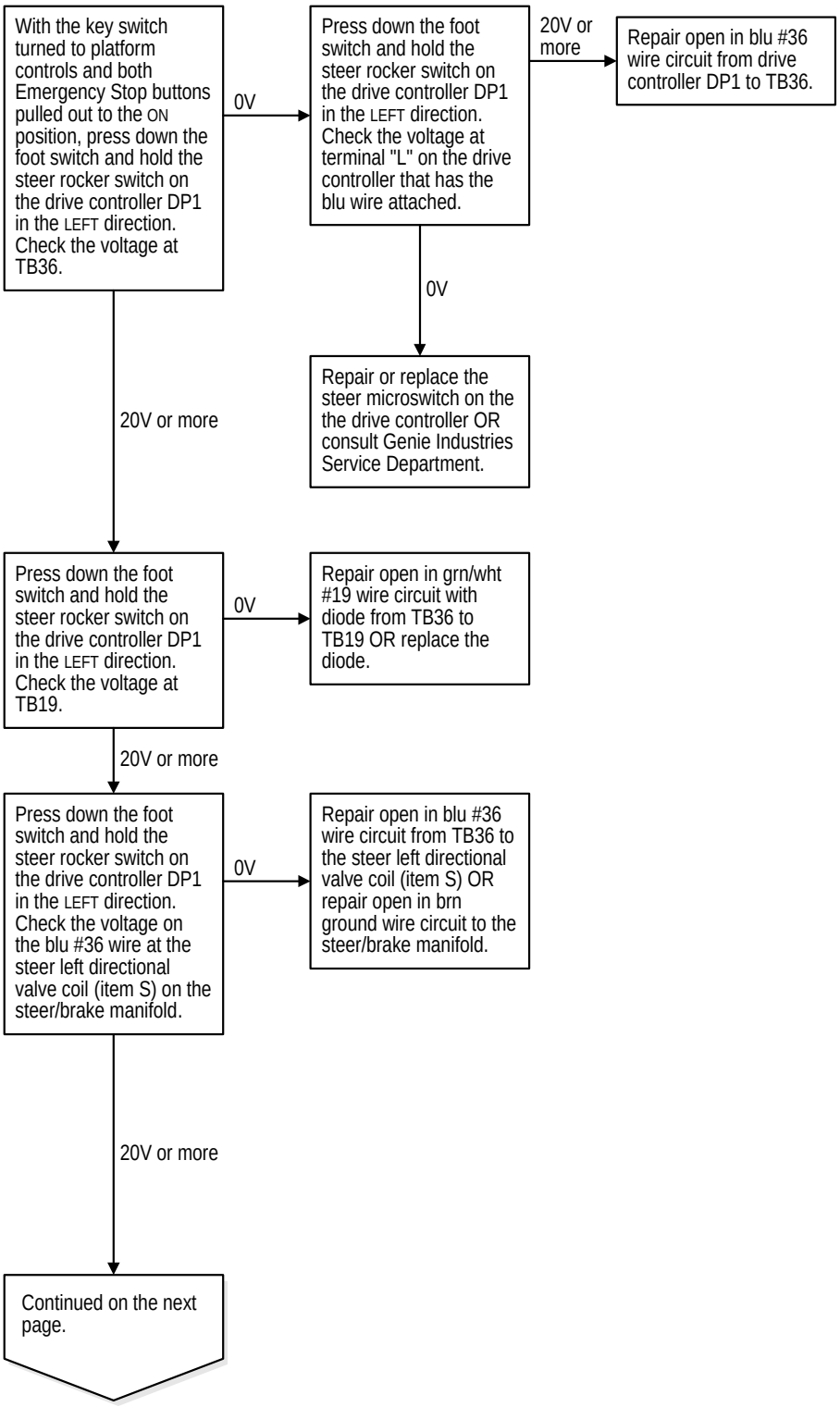


Chart 25

REV A

Steer Left Function Inoperative - Models before serial number 1112

Be sure all other functions operate normally.



REV A CHART 25

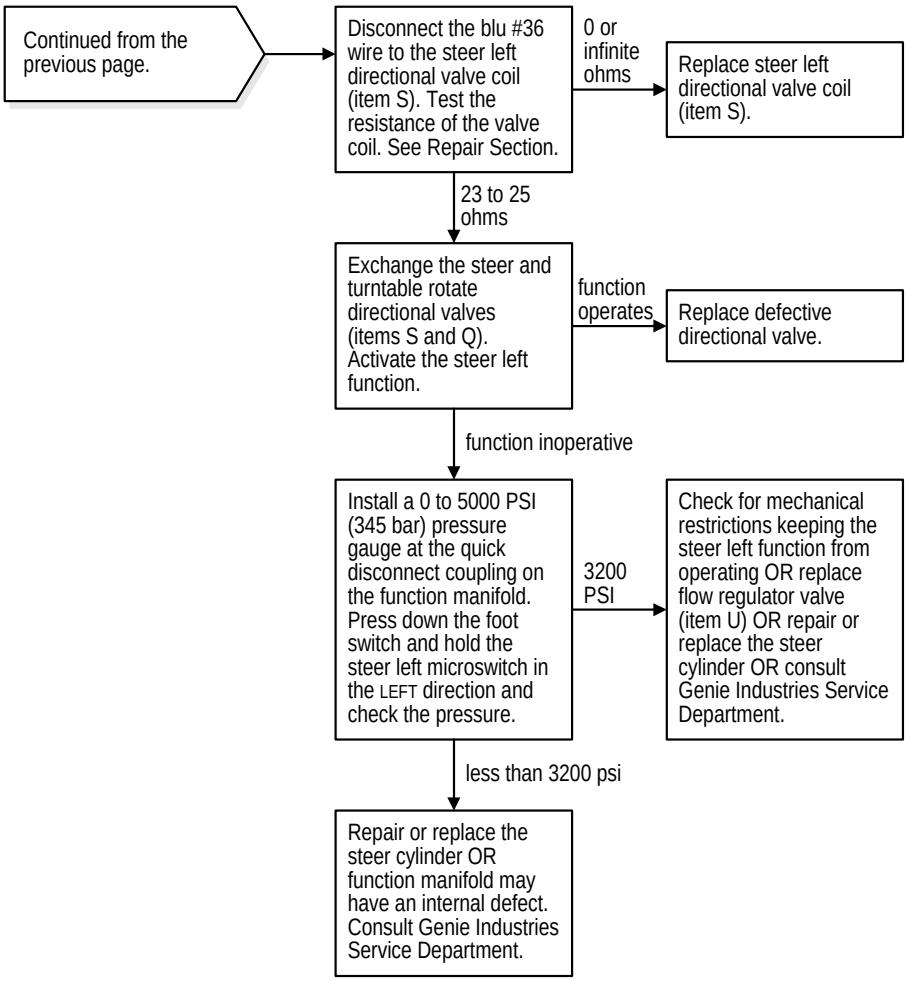
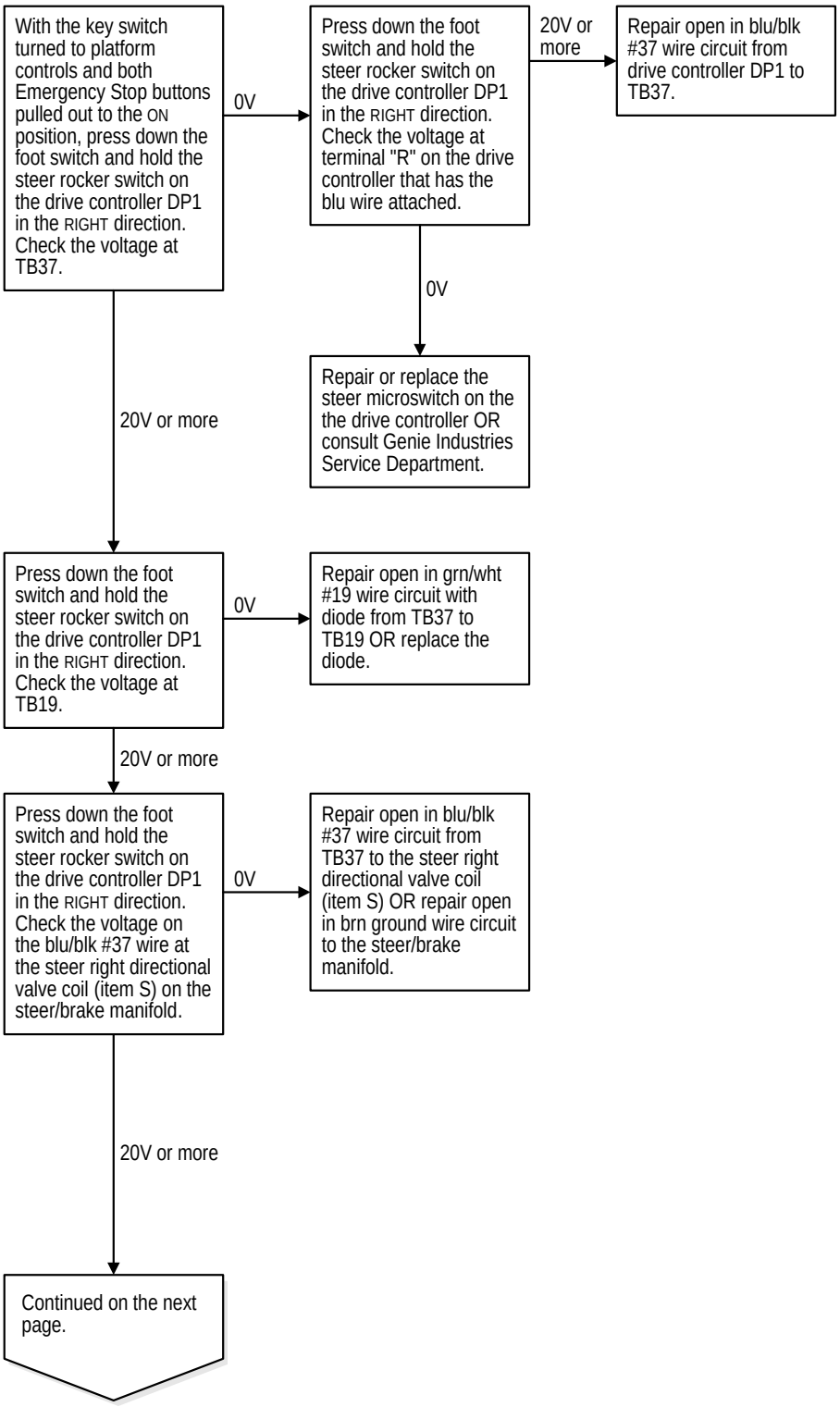


Chart 26

REV A

Steer Right Function Inoperative - Models before serial number 1112

Be sure all other functions operate normally.



REV A CHART 26

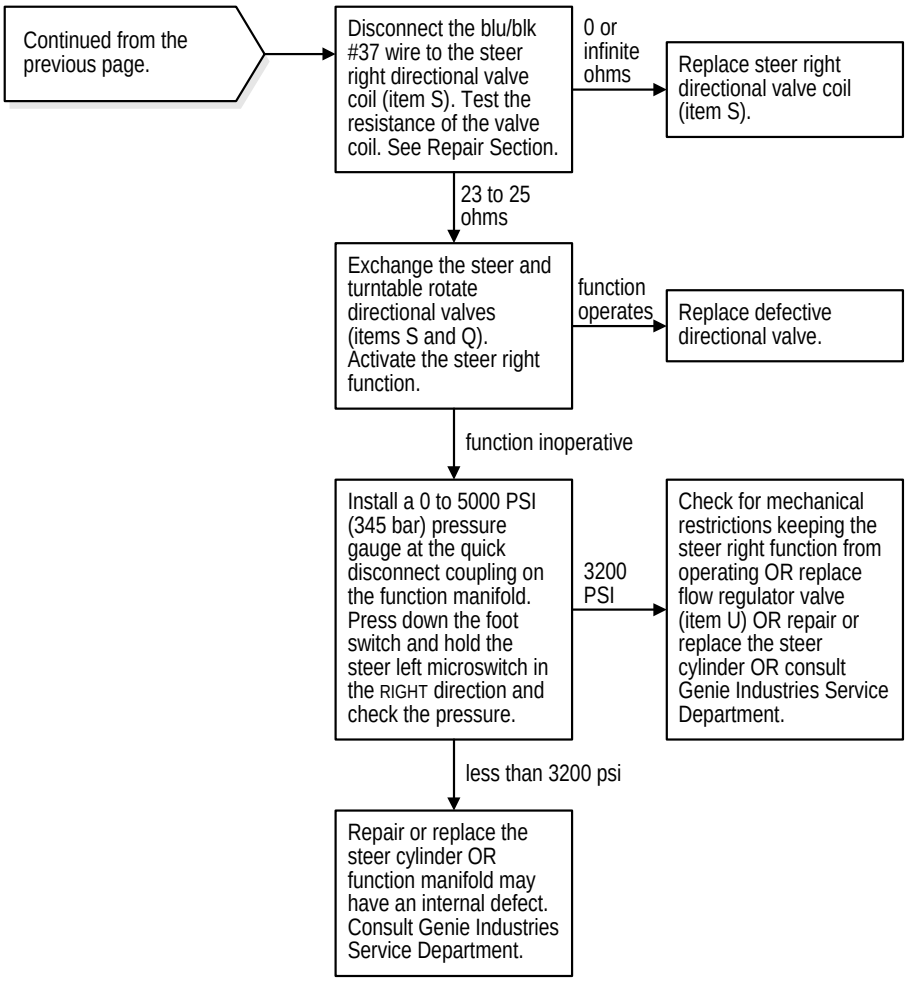
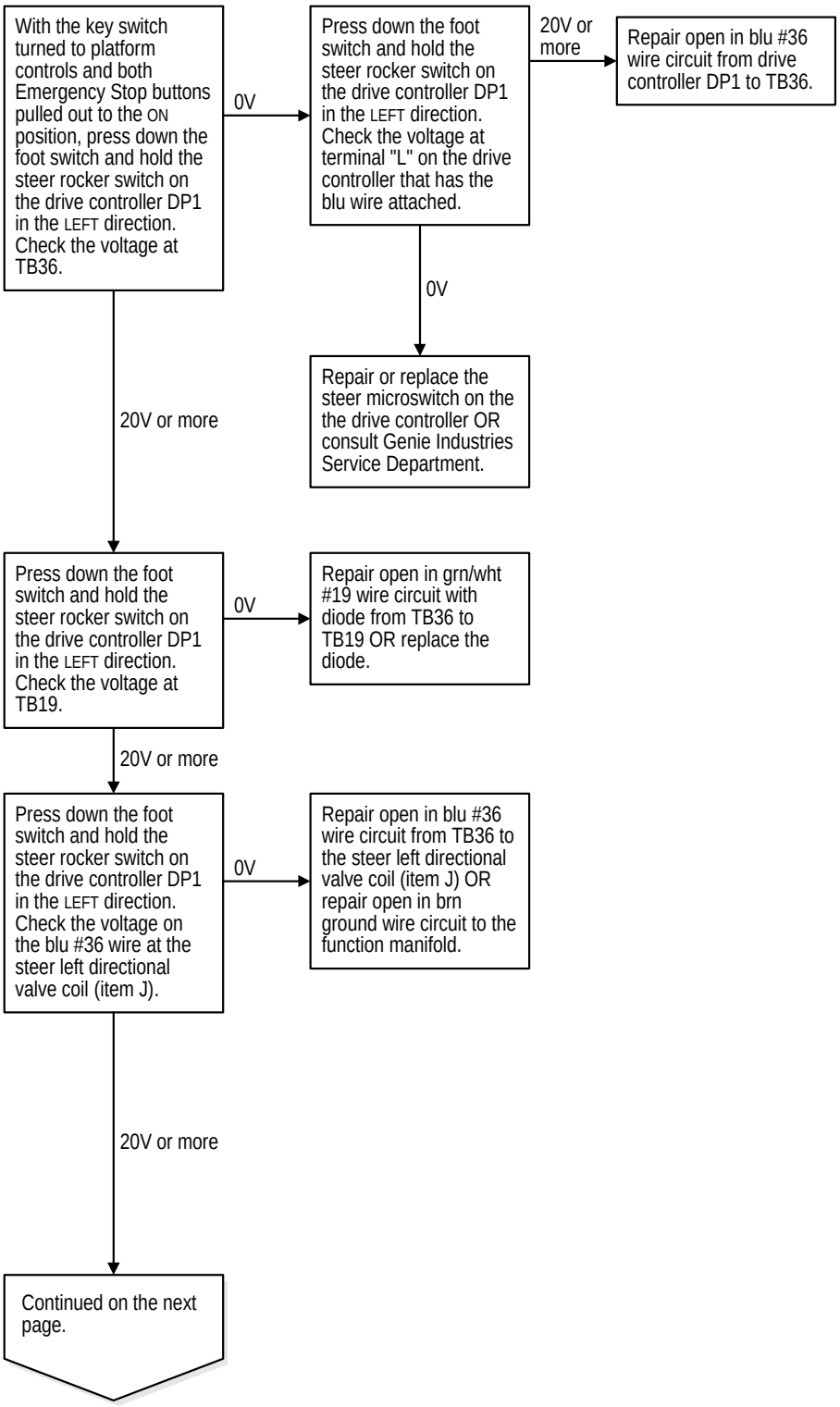


Chart 27

REV A

Steer Left Function Inoperative - Models after serial number 1111

Be sure all other functions operate normally.



REV A CHART 27

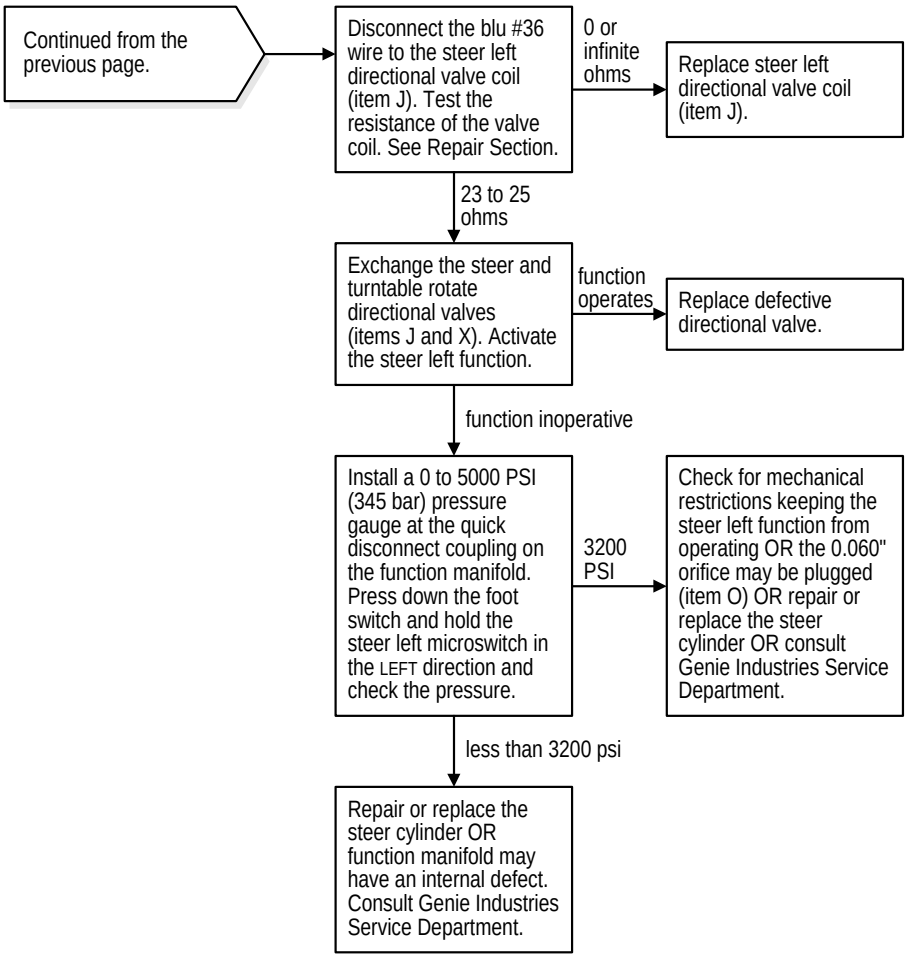
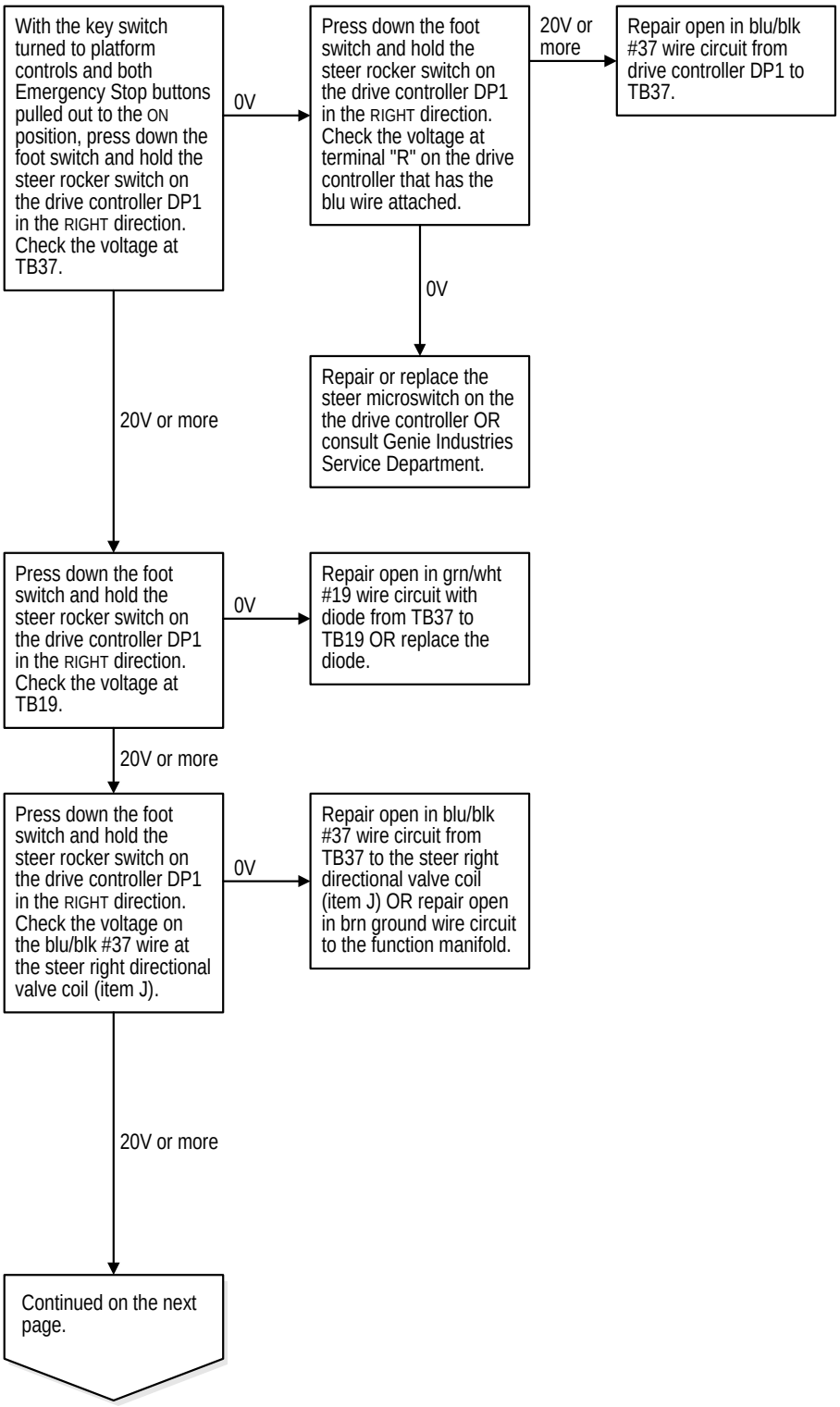


Chart 28

REV A

Steer Right Function Inoperative - Models after serial number 1111

Be sure all other functions operate normally.



REV A CHART 28

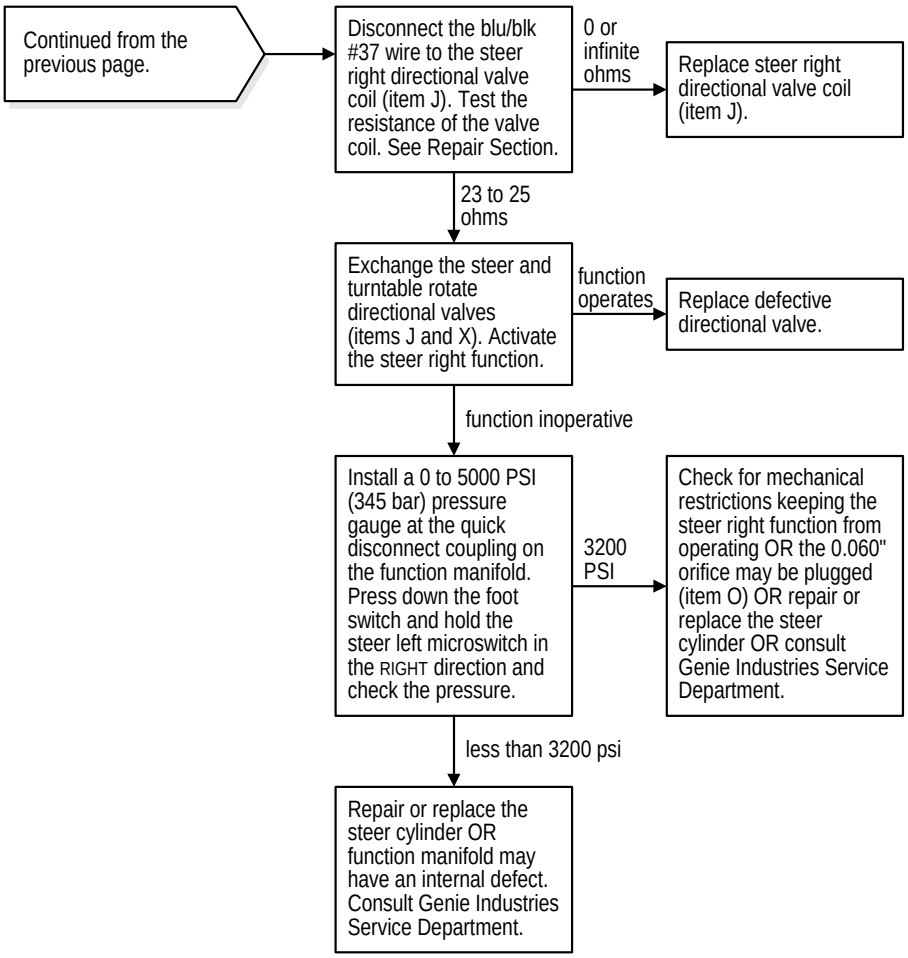


Chart 29

REV A

All Drive Functions Inoperative, All Other Functions Operate Normally

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.

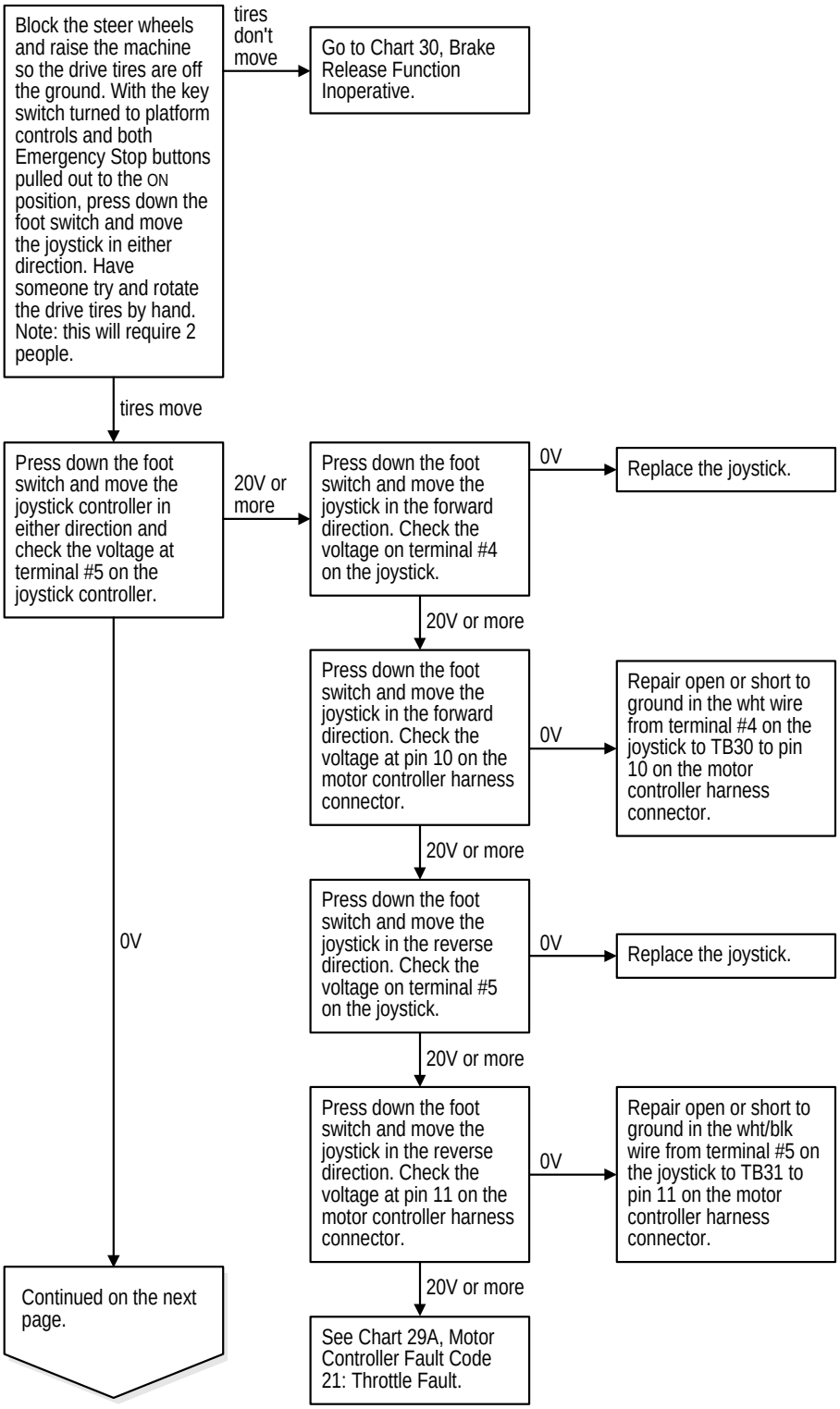
Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the batteries are properly connected.

Be sure the batteries are fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the machine is in the stowed position with the boom rotated in between the non-steer end tires.



REV A CHART 29

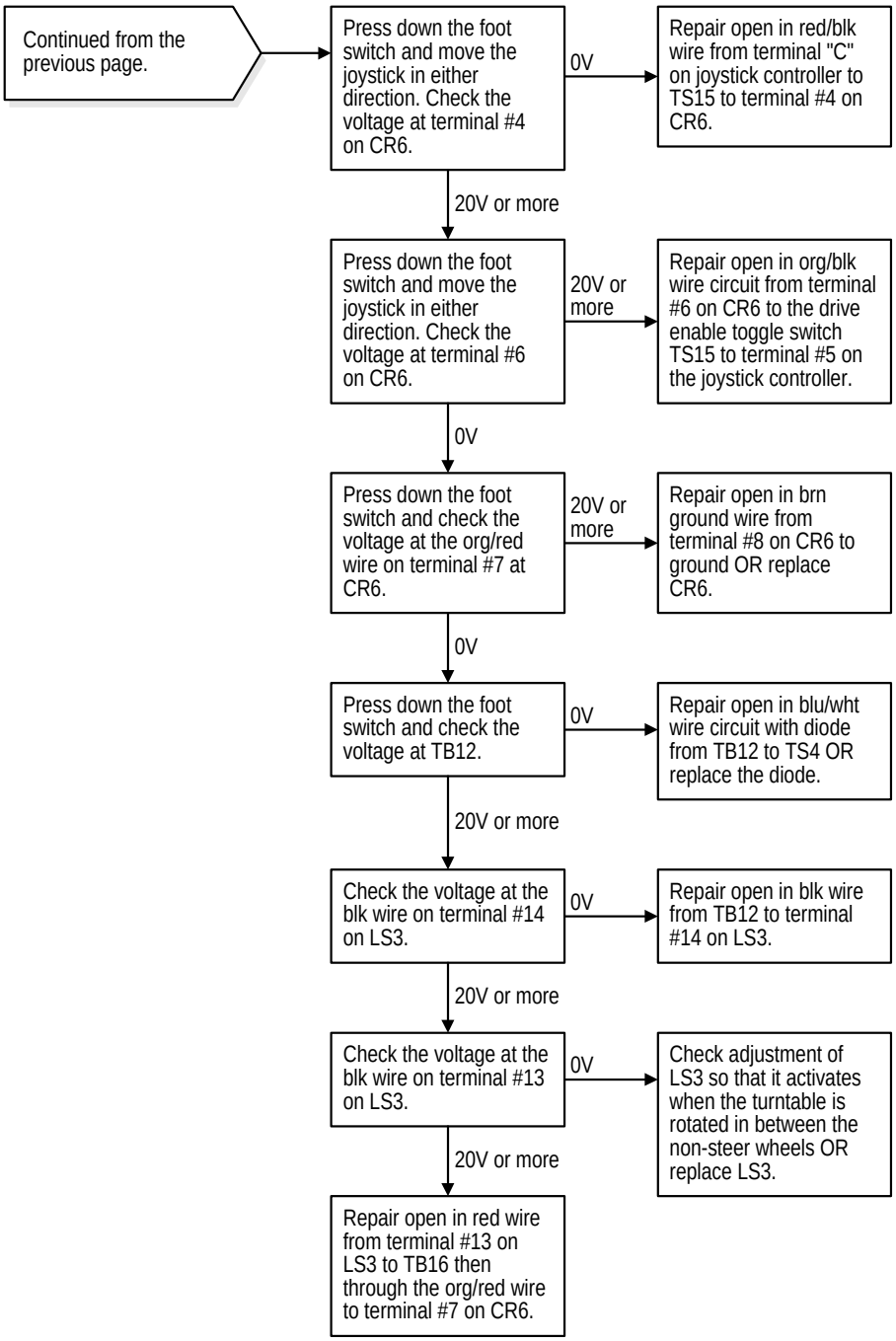


Chart 29A

REV A

Motor Controller Fault Code 21: Throttle Fault

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.

Be sure the batteries are fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer end tires.

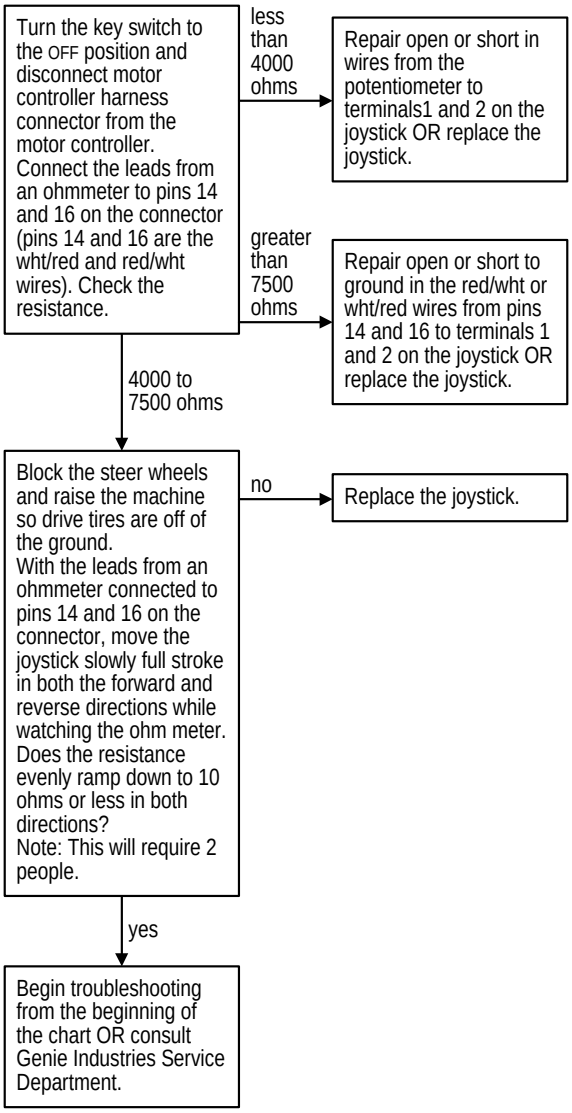


Chart 29B

REV A

Motor Controller Fault Code 32: Main Contactor Welded

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.

Be sure the batteries are fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer end tires.

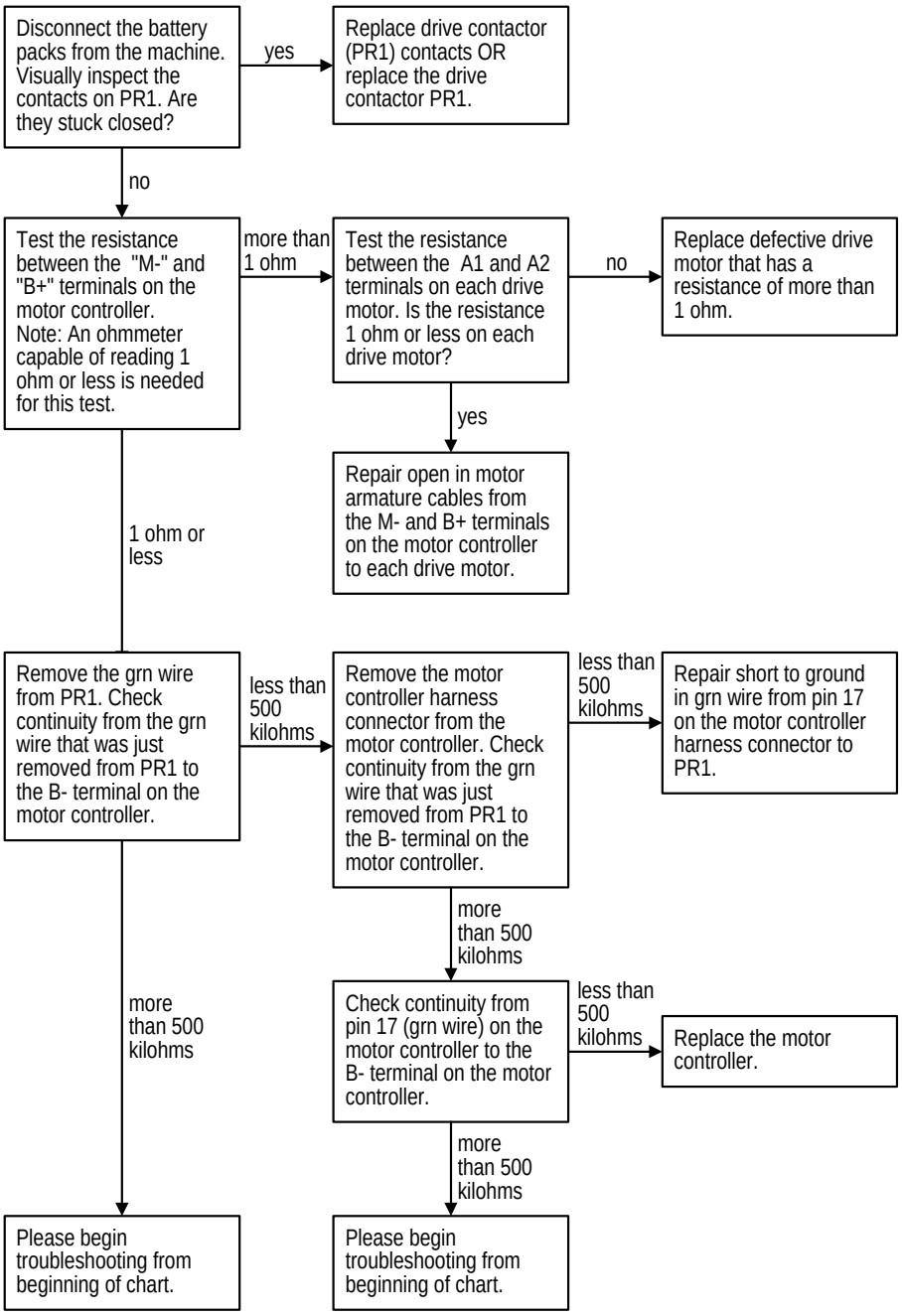


Chart 29C

REV A

Motor Controller Fault Code 34: Missing Main Contactor OR Main Contactor Did Not Close

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.

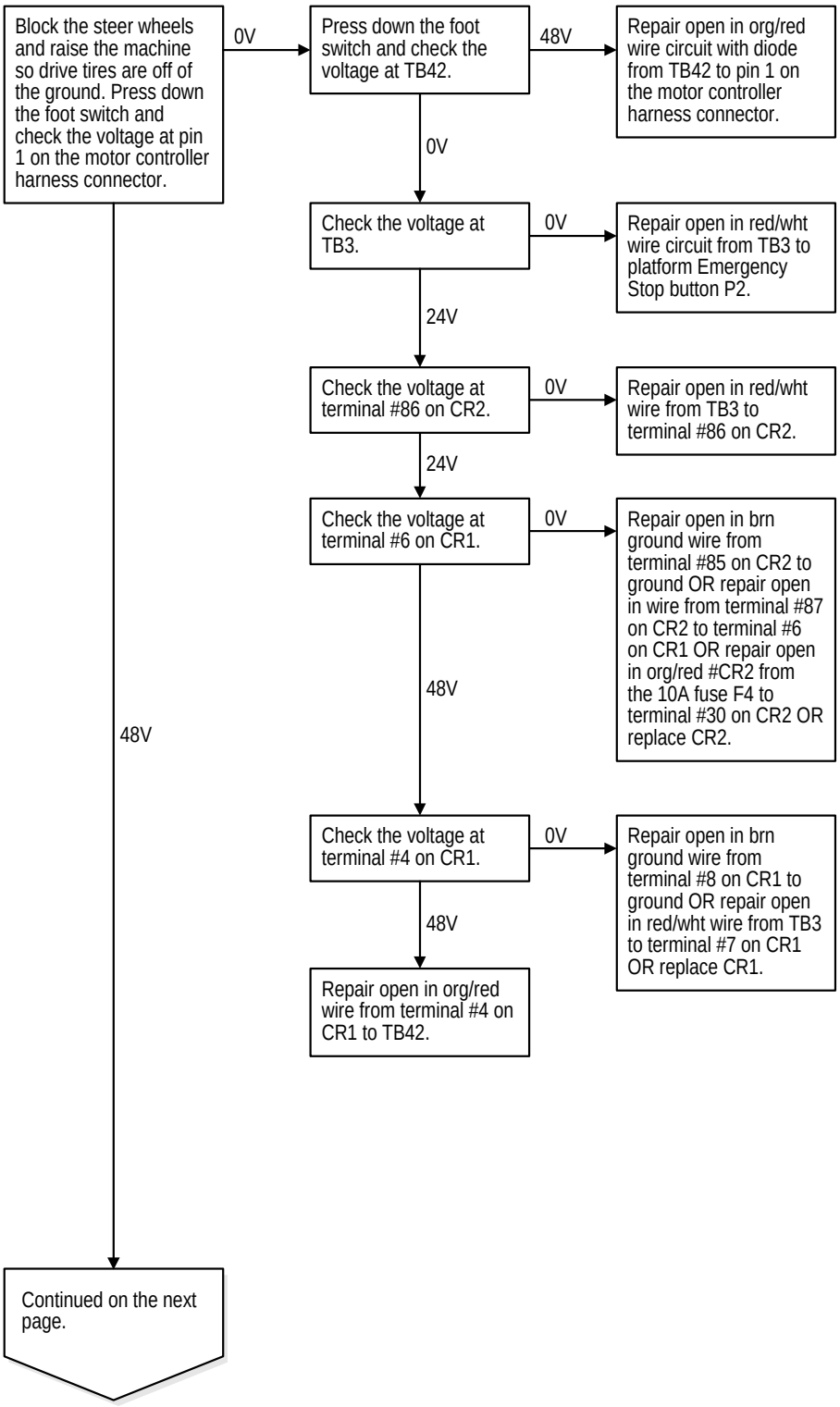
Be sure the circuit breakers and fuses are not tripped or blown.

Be sure the batteries are properly connected.

Be sure the batteries are fully charged.

Be sure the machine is not in the free wheel configuration.

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer end tires.



REV A CHART 29C

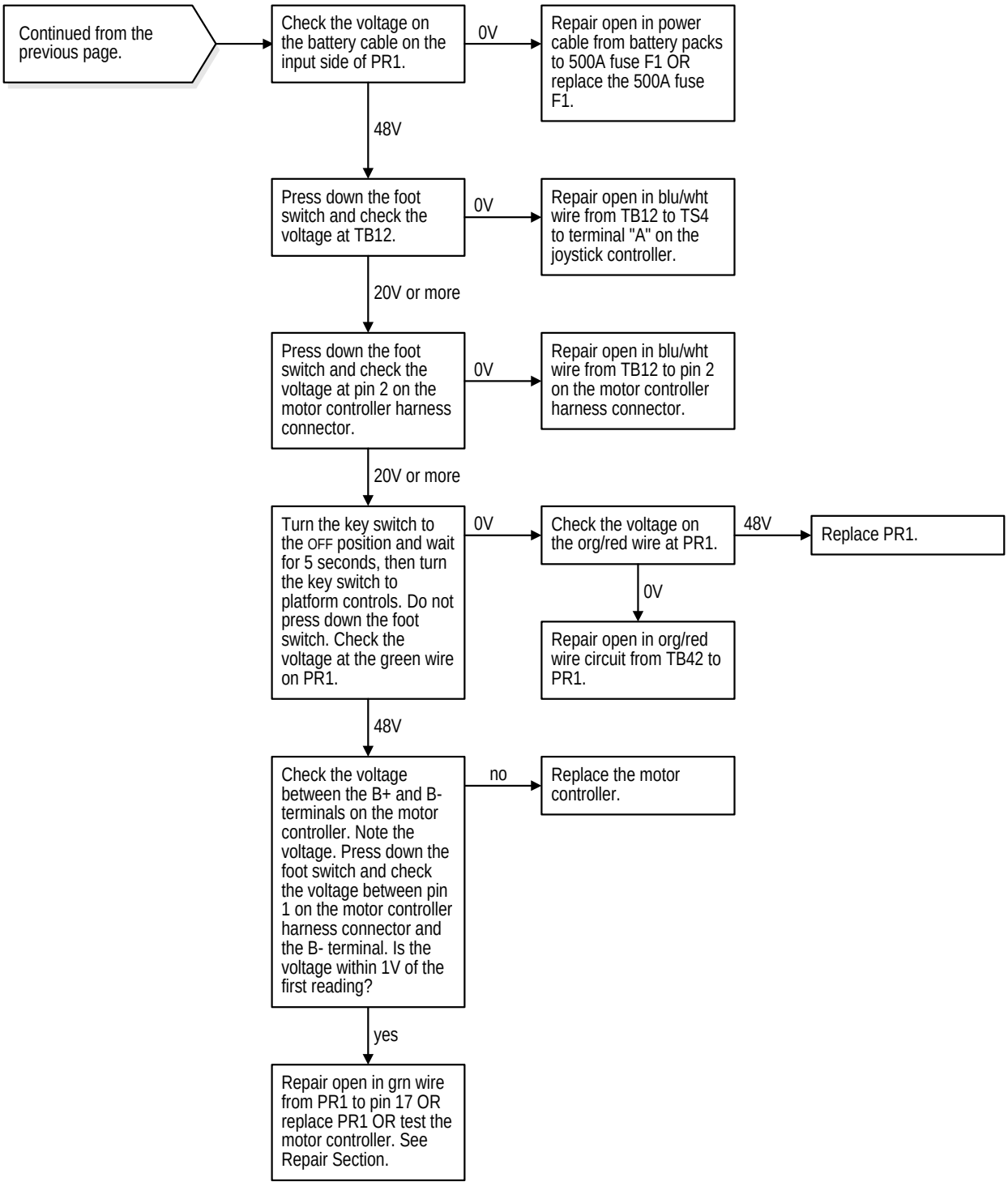


Chart 30

REV A

Brake Release Function Inoperative

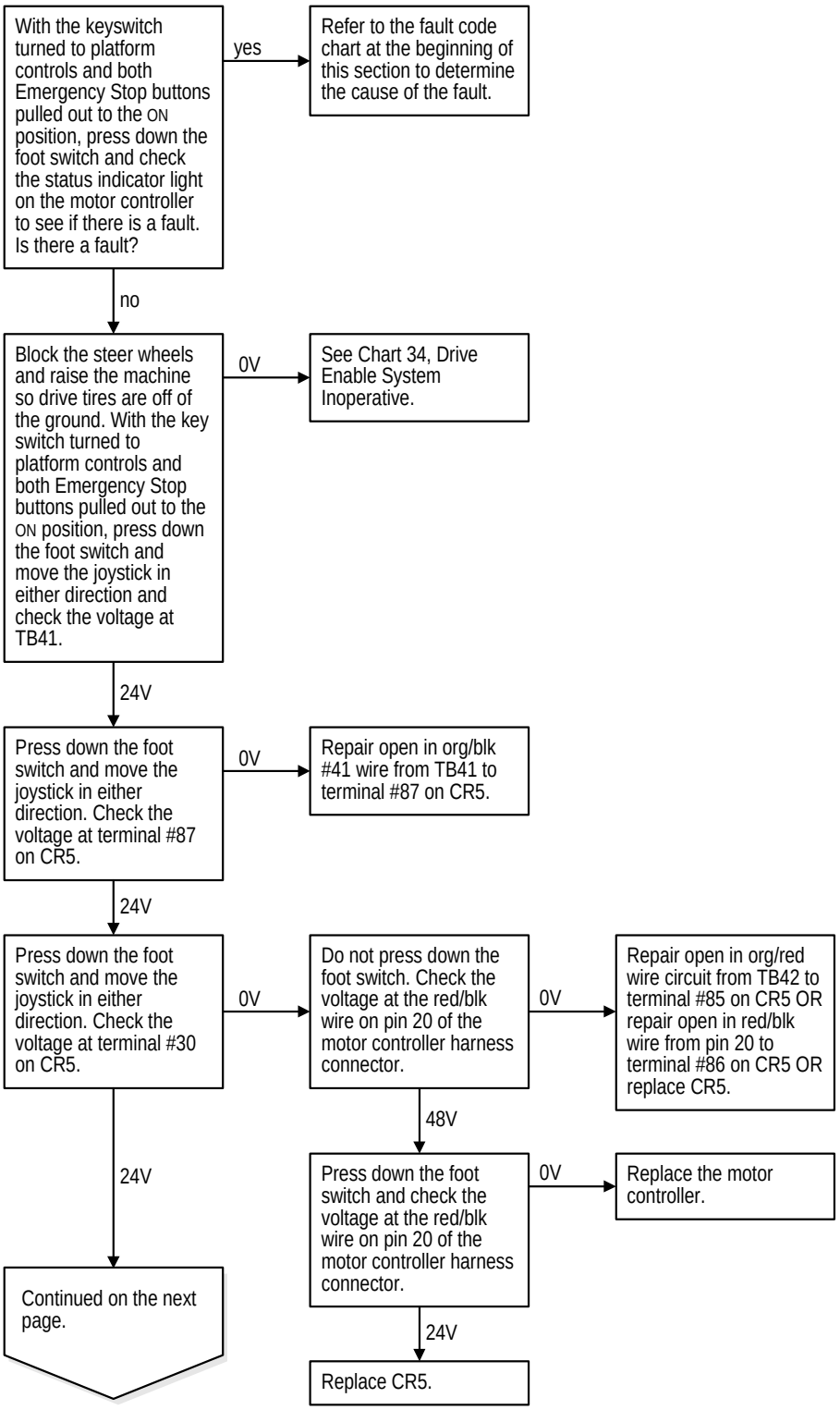
Be sure all other functions operate normally.

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 circuit breakers and fuses are not tripped or blown.

Be sure the machine is in the stowed position with the turntable rotated so the boom is in between the non-steer end tires.



REV A CHART 30

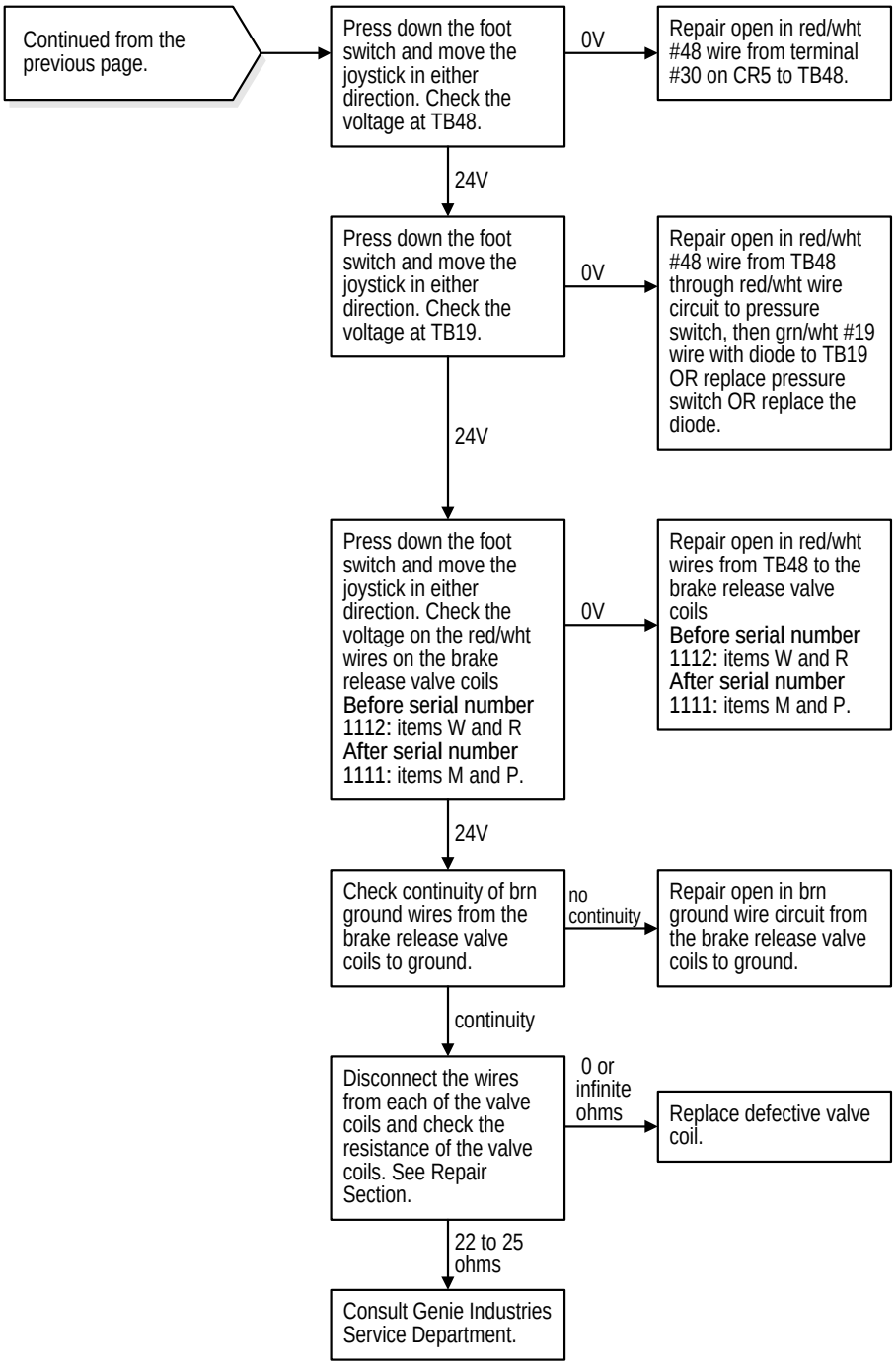


Chart 31

REV A

Traction Function Inoperative

Be sure all other functions operate normally.

Any type of traction problem, consult Genie Industries Service Department.

Chart 32

REV A

Machine Will Not Drive At Full Speed

Be sure all other functions operate normally.

Be sure the boom is in the stowed postion with the primary boom fully retracted.

Be sure that the primary boom extension limit swtich (LS1) is being activated when the primary boom is retracted.

Be sure that the primary boom secondary boom limit swtiches (LS2 and LS4) are not being activated when the primary and secondary booms are in the stowed position.

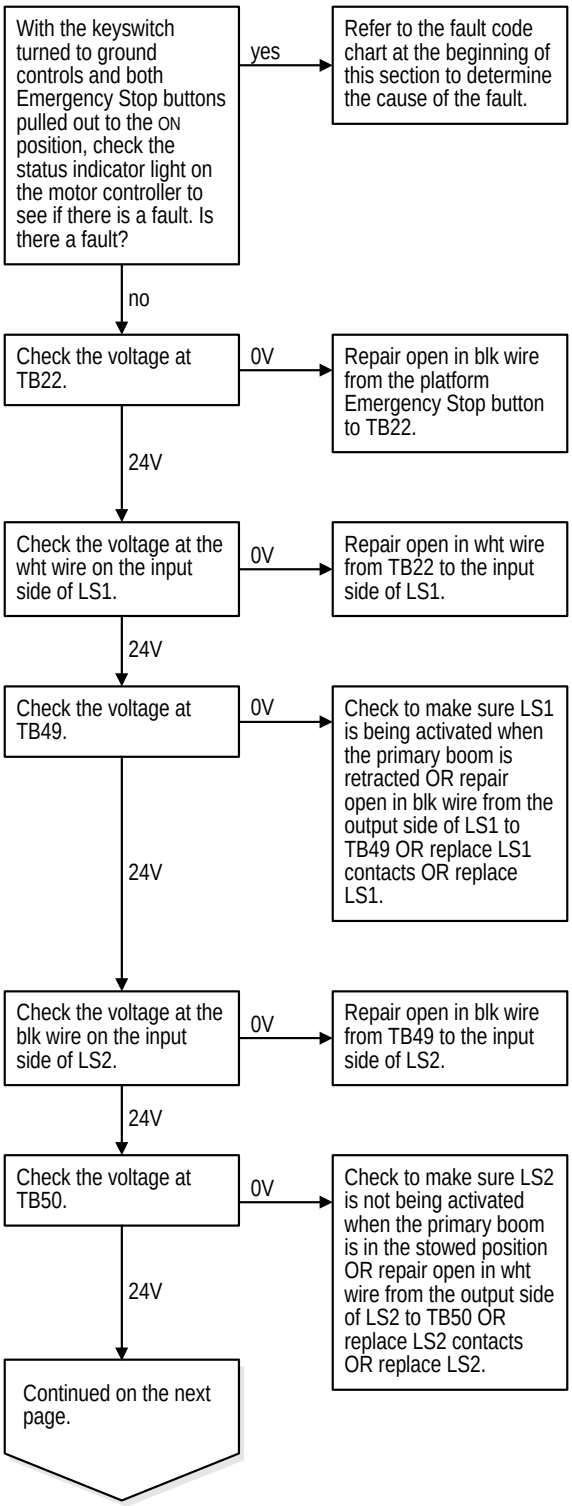


CHART 32 REV A

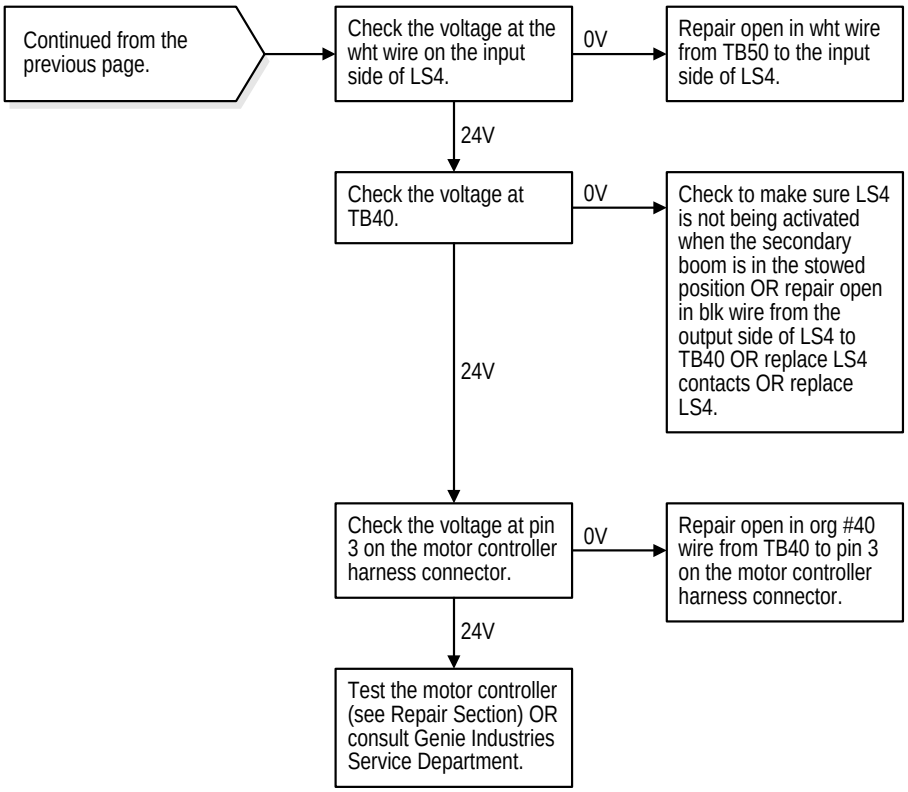


Chart 33

REV A

Machine Drives At Full Speed With Platform Raised Or Extended

Remove machine from service immediately.

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.

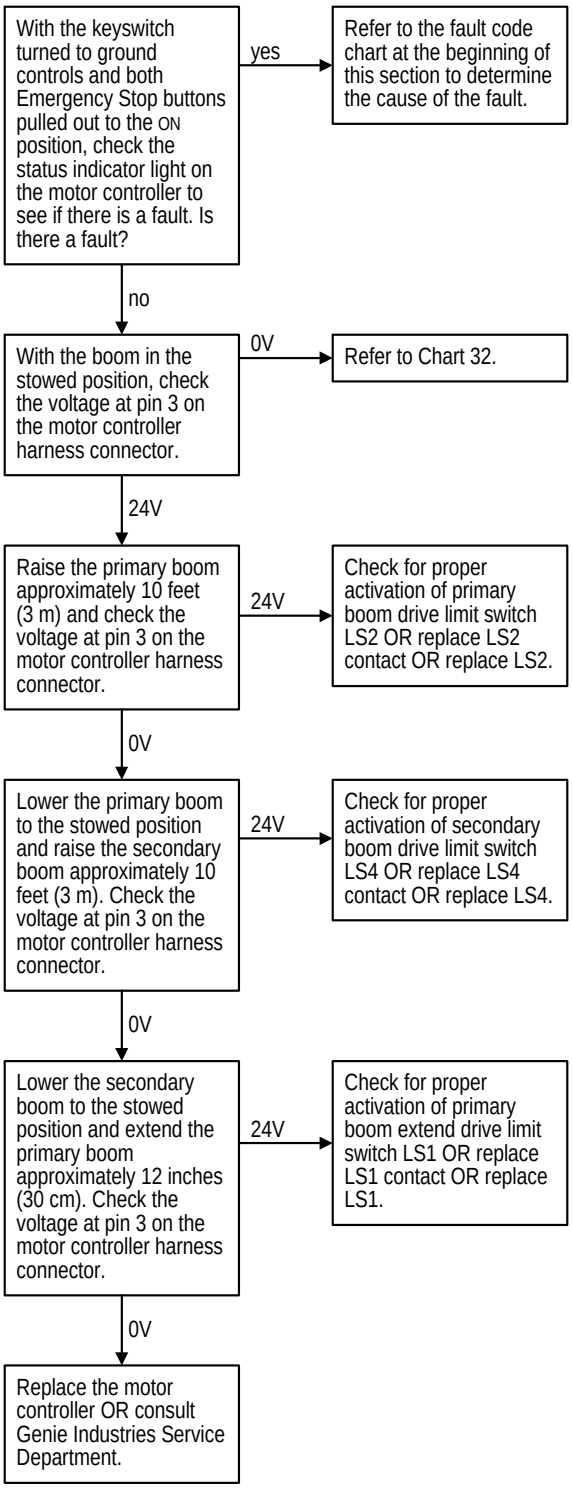


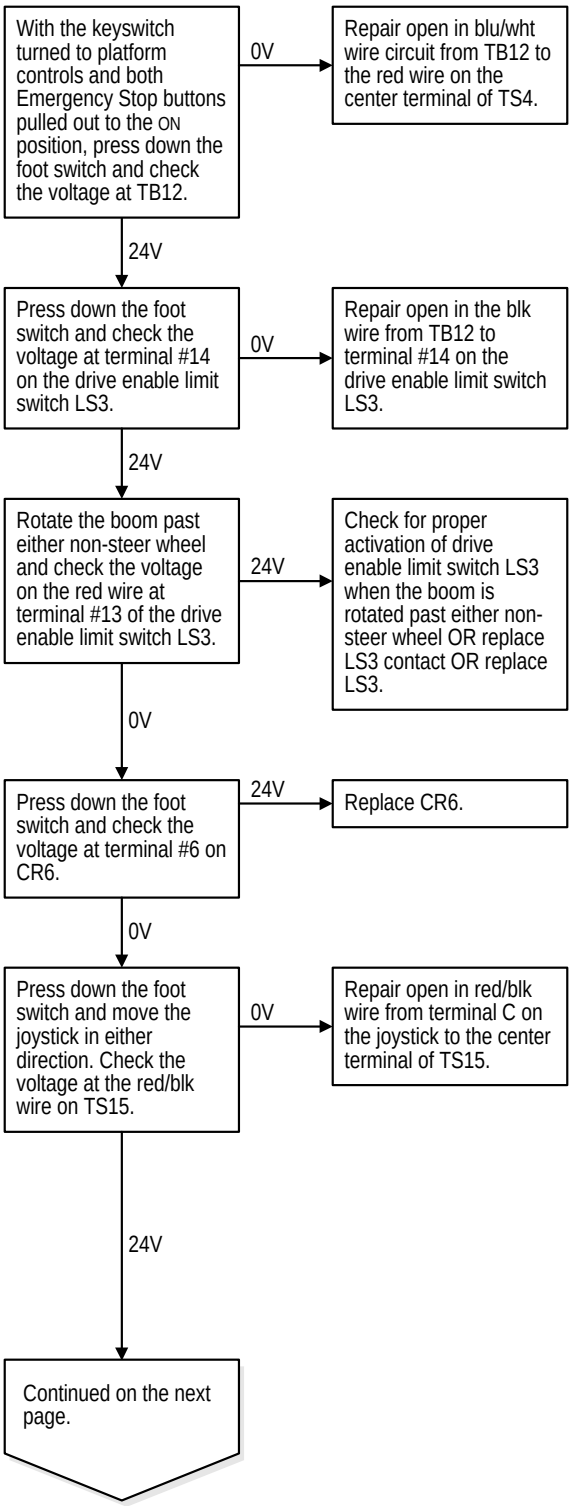
Chart 34

REV A

Drive Enable System Inoperative

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.



REV A CHART 34

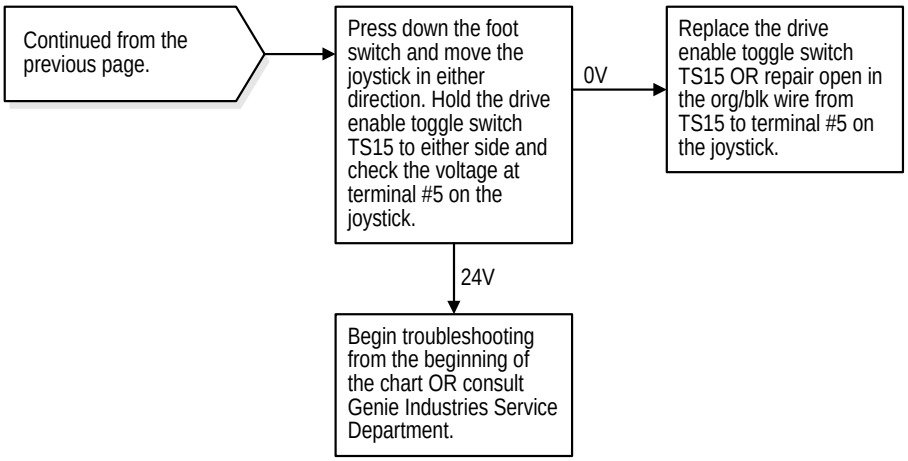


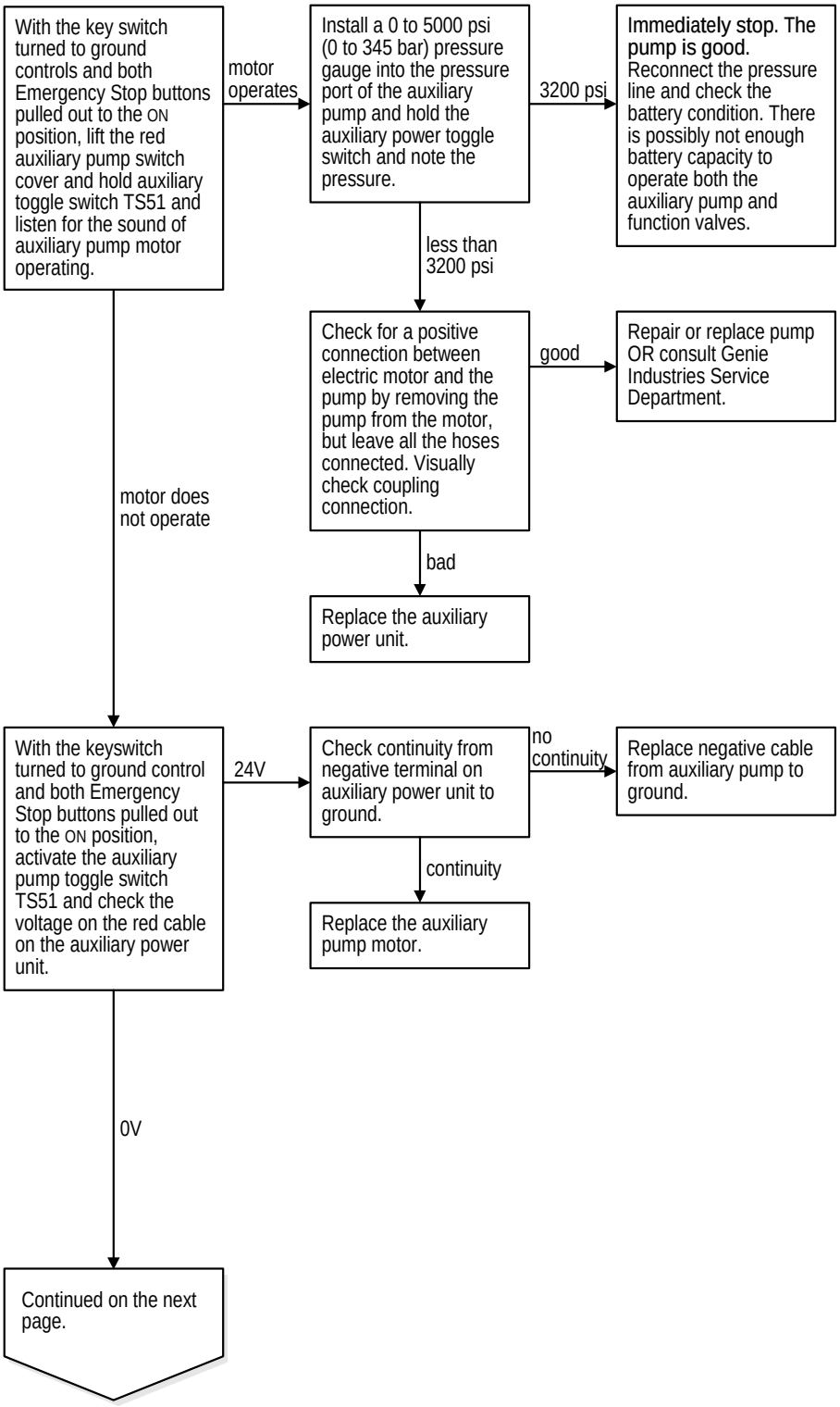
Chart 35

REV A

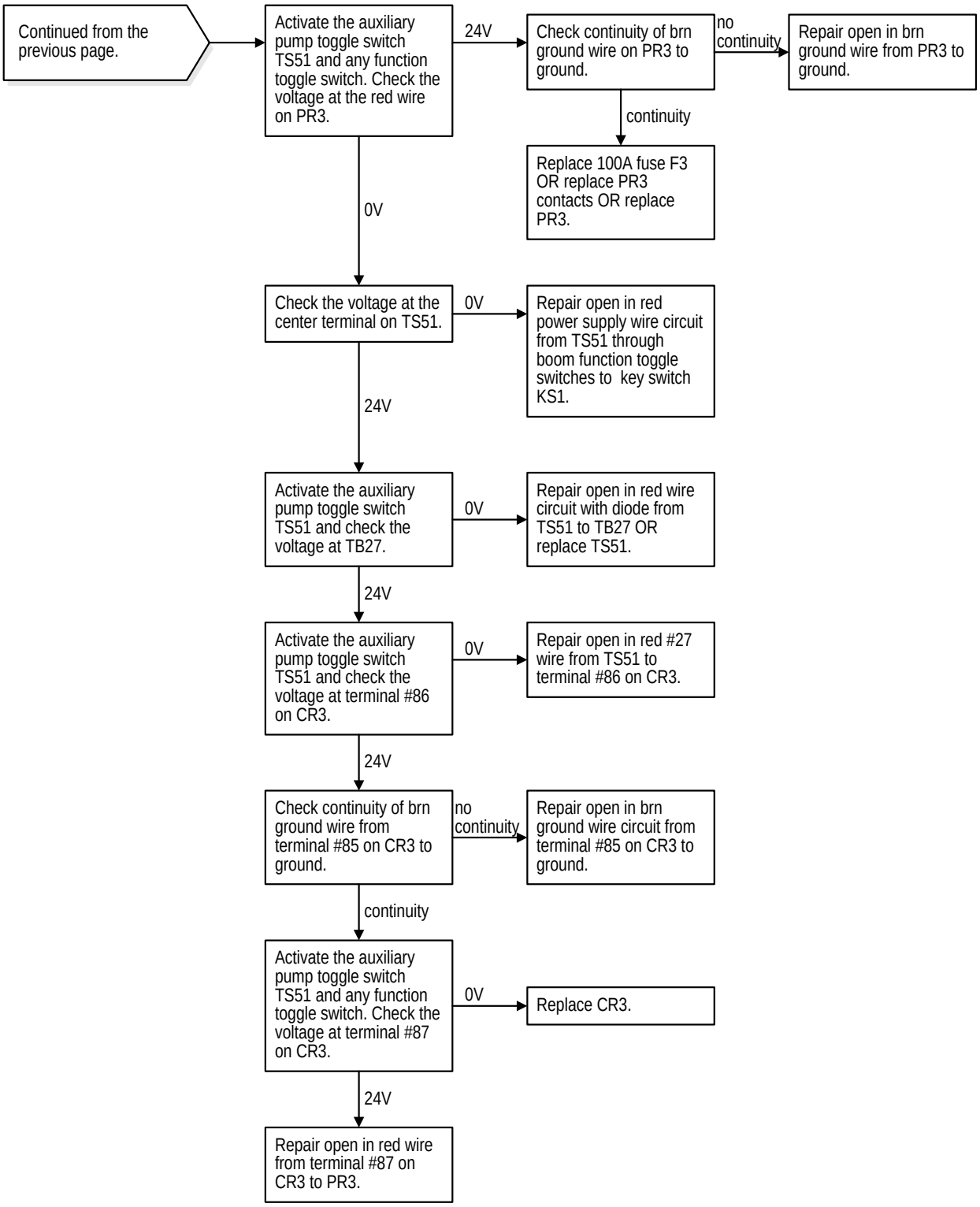
Auxiliary Functions Inoperative

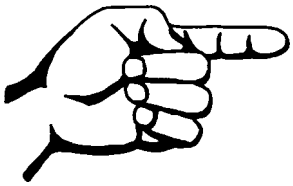
Be sure all other functions operate normally.

Be sure keyswitch is in the appropriate position and both of the Emergency Stop Buttons are pulled out to the ON position.



REV A CHART 35





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Schematics

Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-34/22 Bi-Energy Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

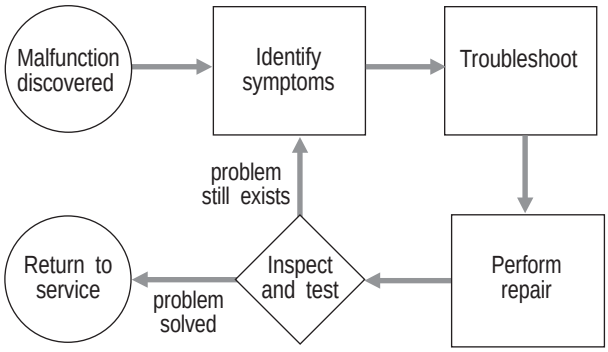
Electrical Schematics

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

Hydraulic Schematics

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

General Repair Process



Electrical Components

REV A

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
AP1, AP2	Anderson connector	19436	Anderson	63325-G1	2
BAT1	Battery, 12V DC	56050	Allied Battery Co.	Group 70	1
BAT2	Battery, 6V DC, 315 AH	44820	Dyno Battery Co.	S4H - Dry	8
BCI	Battery charge indicator	101423	Curtis Instruments	PT2848B1A	1
BP1	Rotational Controller (before serial number 1924)	36557	OEM Controls	RS10T4331	1
BP1	Rotational Controller (after serial numbeer 1923)	56886	OEM Controls	RS10T6585	1
CB1	Circuit breaker	375785	ETA	45-700-IG1-P10	1
CR1,6 and 10	Relay, DPDT, 24V DC	42616	Potter and Brumfield	K10P 11D15-24	3
CR2-5 and CR11-CR15	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 (before serial number 1787)	56274	OEM Controls	MS6M11498	1
DP1	Joystick controller (after serial number 1786)	56773	OEM Controls	MS4M11750	1
FB	Flashing beacon	20189	ECCO Electronic Controls	6400X	1
F1	Fuse, 500 amp	43179	Buss	ANN-500	1
F2 and F3	Fuse, 100 amp	36355	Buss	ANN-100	2
FS1	Footswitch	13482	Linemaster Switch Corp.	SP-522-398	1
H1	Alarm, Warble tone	45383	Floyd Bell Inc.	MW-09-530-Q	1
H2	Horn, 24V DC, 108 dB	81579	WESCO	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

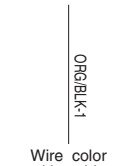
This list continues on the next page.

REV A ELECTRICAL COMPONENTS

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
HM	Hourmeter (before serial number 3218)	56100	Curtis Instruments	17305628	1
HM	Hourmeter (after serial number 3217	19506	ENM Corp	T4OA5808	1
KS1	Contact - Keyswitch, N.O.	45081	Telemecanique	ZB2-BE101	2
LS1-LS4	Contact - Limit switch	19491	Telemecanique	XESP2051	1
Level sensor	Level sensor, 4.5° (ANSI & CSA) (before serial number 3309)	44586	Parker Hannifin	LS60-00733	1
Level sensor	Level sensor, 4.5° (ANSI & CSA) (after serial number 3308)	94077	Parker Hannifin	LS60-03027	1
MC1	Motor controller, SEPEX, 48V, 500 amp	94474-01	Curtis Instruments	1244-5553	1
P1, P2	Contact, N.C.	29732	Telemecanique	ZB2-BE102	4
P3	Contact, N.O.	45081	Telemecanique	ZB2-BE101	1
PR1	Relay, 180 amp	74267	Curtis Instruments	SW180-695T	1
PR2	Relay, 180 amp	74266	Curtis Instruments	SW180-677L	1
PR3	Relay, 80 amp	74268	Curtis Instruments	SW80-1160	1
TS1, TS51	Toggle switch, DPST 2 position momentary	13480	Microswitch Control Inc.	2NT1-8	2
TS54	Toggle switch, DPST 2 position maintained	27378	Microswitch Control Inc.	2NT1-3	1
TS7-13 and TS57-63	Toggle switch, DPDT 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	14
TS2,6,15,52 55 and 56	Toggle switch, SPDT 3 position momentary	13037	Microswitch Control Inc.	1NT1-7	6
TS4	Toggle switch, DPDT 3 position maintained	13038	Microswitch Control Inc.	2NT1-1	1

Electrical Symbols Legend

REV A



Wire color with cable number



Terminal



Quick disconnect terminal



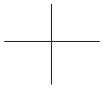
T-circuits connect at terminal



T-circuits connect



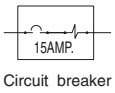
Connection no terminal



Circuits crossing no connection



Diode



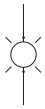
Circuit breaker



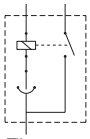
Solenoid or relay coil



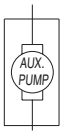
Horn or Alarm



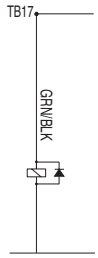
Light



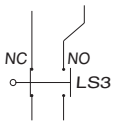
Tilt sensor



Auxiliary Pump



Ground supression circuit



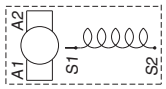
Limit switch



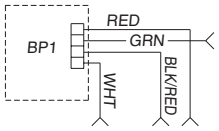
Limit switch normally closed held open



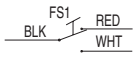
Limit switch normally open held closed



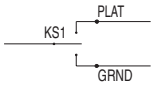
Drive motor



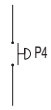
Rotary OEM flow control



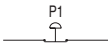
Foot switch



Key switch



Horn button normally open



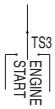
Red Emergency Stop button normally closed



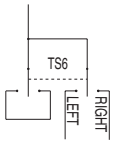
Relay contact normally open



Contactor



Toggle switch SPDT



Toggle switch DPDT



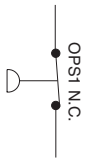
Brake release plug



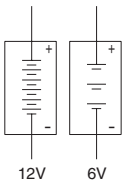
Pressure switch



Water temperature switch, normally open



Oil pressure switch, normally closed



Battery

Abbreviation Legend

REV A

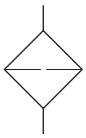
LABEL	DESCRIPTION
A	Alarm
ALT	Alternator
AP	Anderson plug
BAT	Battery
BP	Proportional controller
CB	Circuit breaker
CR	Control relay
DP	Drive proportional controller
FB	Flashing beacon
FS	Foot switch
H	Horn
HM	Hour meter
ISM	Ignition/start module
KS	Keyswitch
L	LED
LS	Limit switch
P	Power switch
PR	Power relay
PS	Pressure switch
R	Resistor
TB	Terminal base location
TP	Terminal platform location
TS	Toggle switch
VR	Voltage regulator

Hydraulic Symbols Legend

REV A



Pressure gauge



Filter



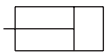
Fixed displacement pump



Bi-directional motor



Pump prime mover engine or motor



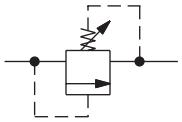
Double acting cylinder



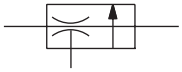
Orifice with size



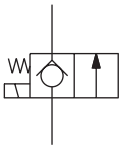
Check valve



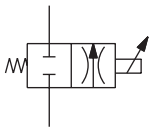
Relief valve



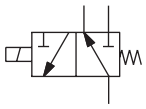
Priority flow divider



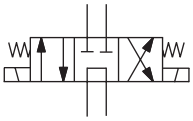
Solenoid operated dump valve



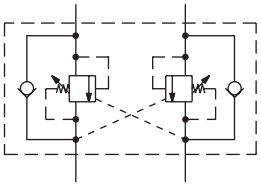
Solenoid operated proportional valve



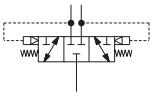
Solenoid operated 2 pos., 3 way, directional valve



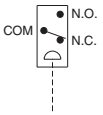
Solenoid operated 3 pos., 4 way, directional valve



Counterbalance valve



Shuttle valve



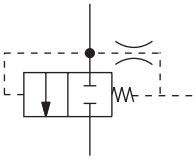
Pressure switch



Brake



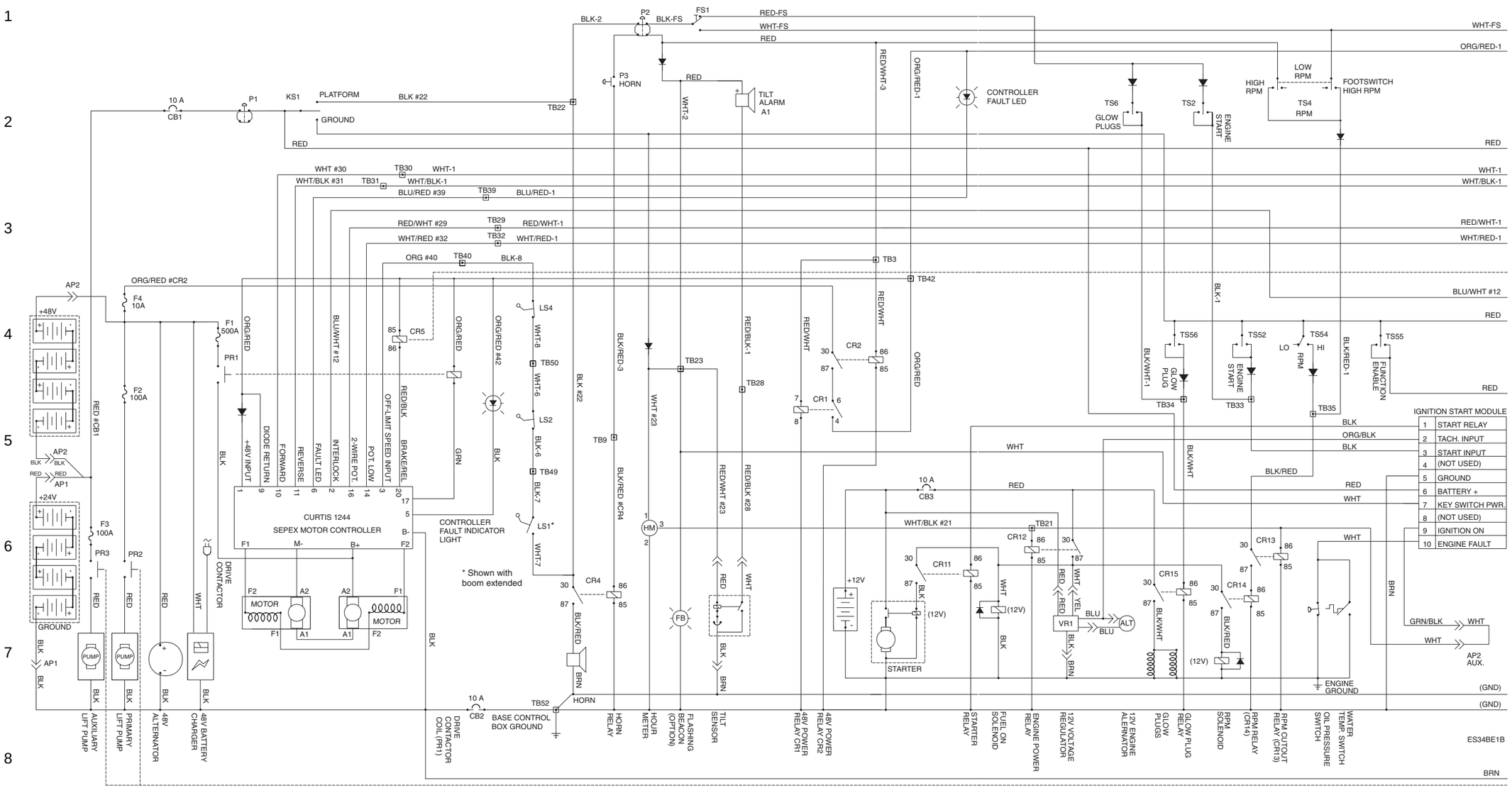
Variable orifice or shut off valve



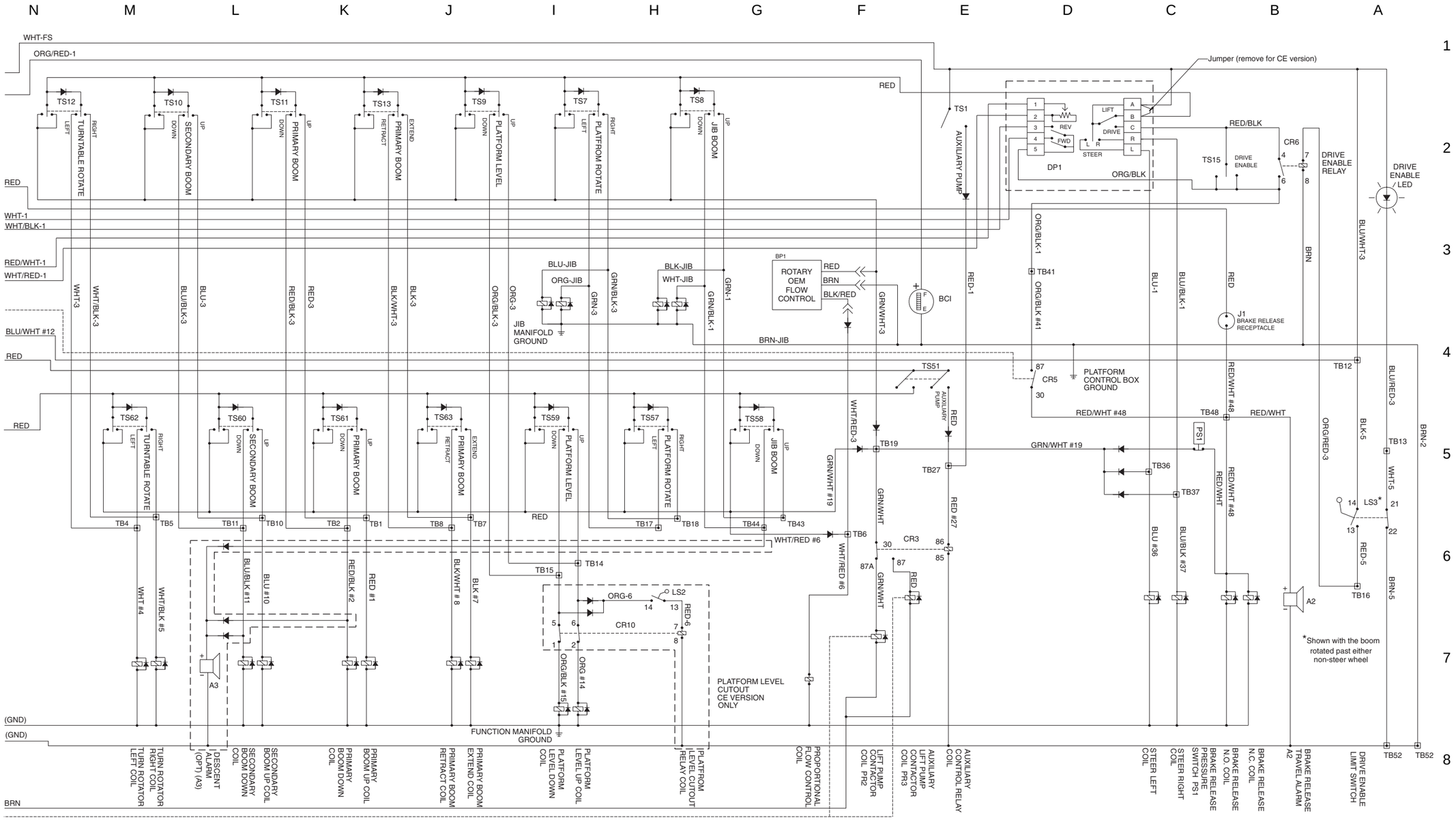
Differential sensing valve

Electrical Schematic (before serial number 1468)

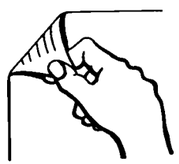
Electrical Schematic (before serial number 1468)



Electrical Schematic (before serail number 1468)

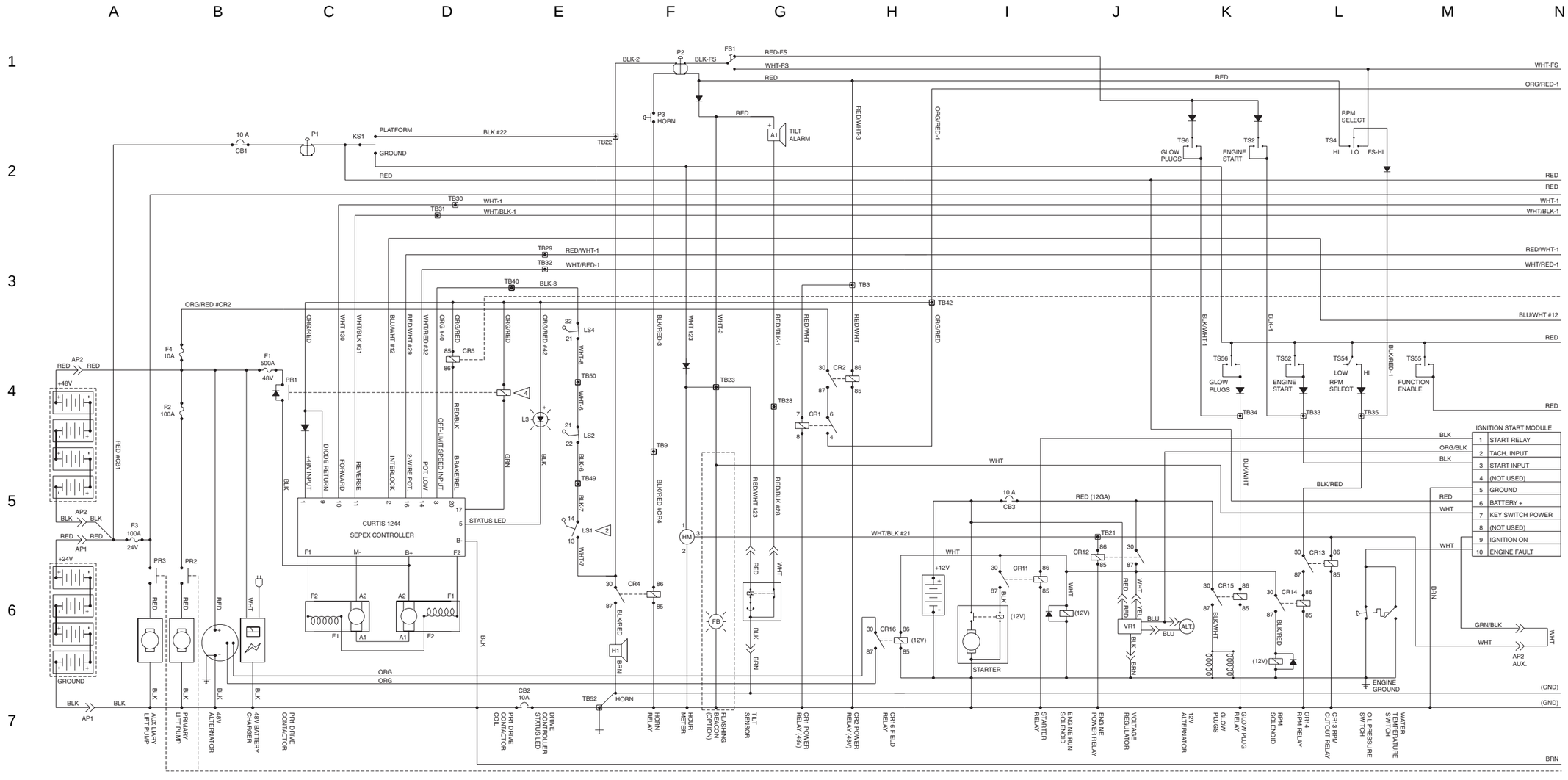


Electrical Schematic
(before serial number 1468)



Electrical Schematic
(from serial number 1468 to 3214)

Electrical Schematic
(from serial number 1468 to 3214)



NOTES:

1. ALL LIMIT SWITCHES WITH BOOM IN STOWED POSITION EXCEPT AS NOTED

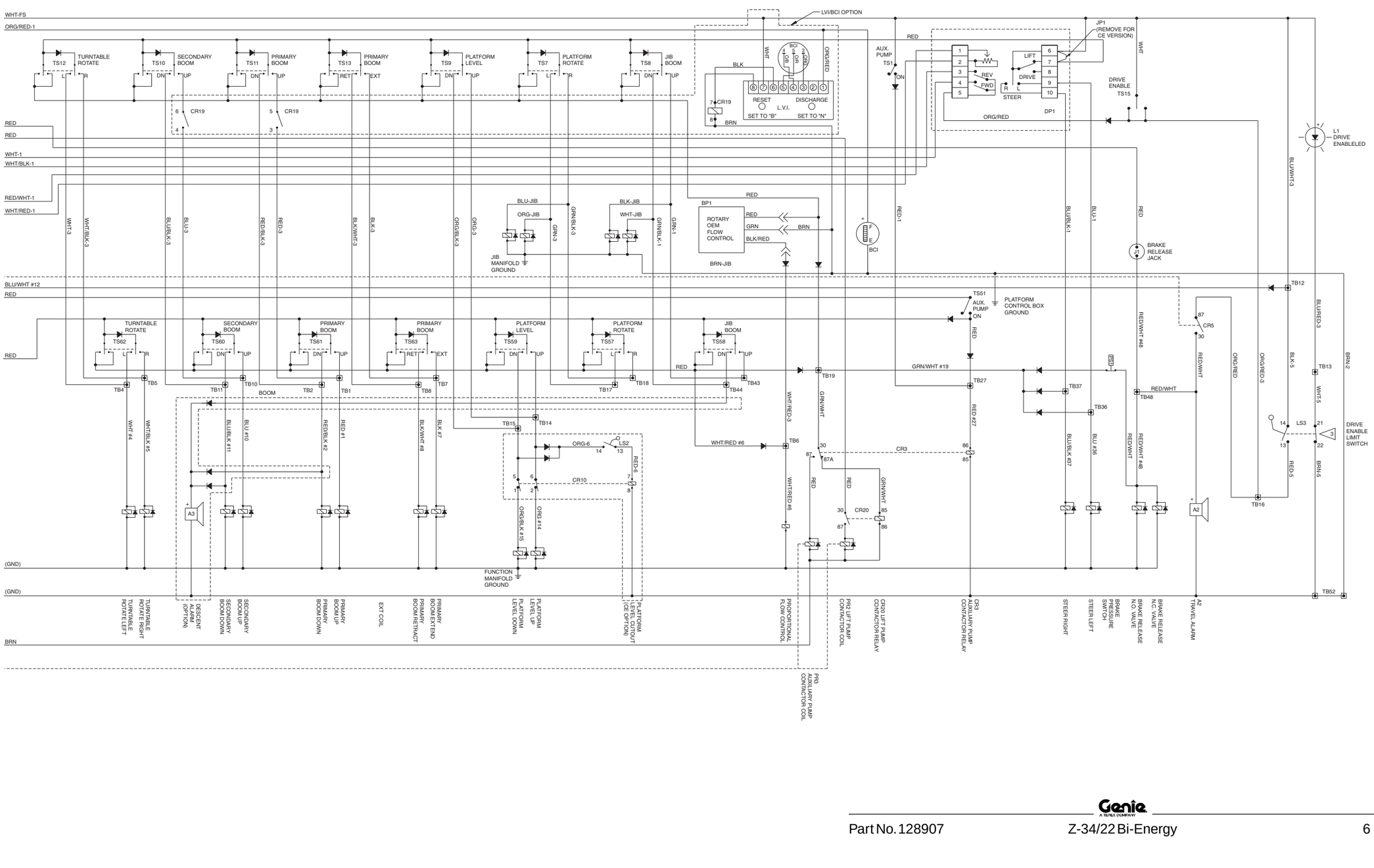
2 SWITCH SHOWN WITH BOOM EXTENDED

3 SWITCH SHOWN WITH BOOM ROATED PAST EITHER NON STEER WHEEL

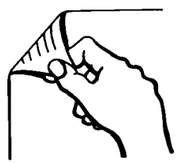
4 COIL SUPPRESION DIODE FOR PR1 IS INSIDE CONTROLLER BETWEEN J1-9 AND J1-17.

5. ALL SOLENOID AND RELAY COILS ARE 24VDC EXCEPT WHERE NOTED.

Electrical Schematic (from serial number 1468 to 3214)

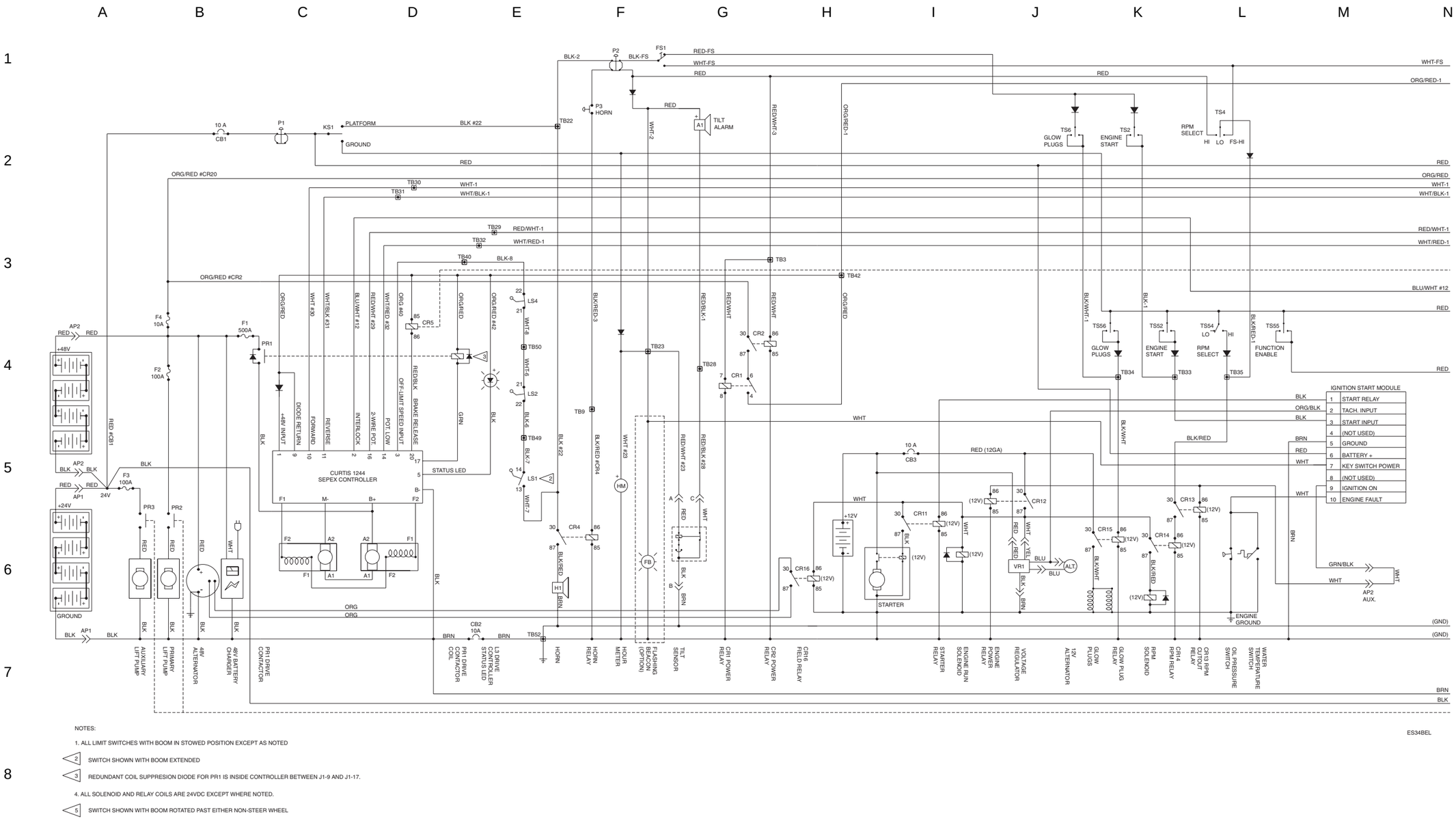


Electrical Schematic
(from serial number 1468 to 3214)



Electrical Schematic
(from serial number 3215 to 3577)

Electrical Schematic (from serial number 3215 to 3577)



NOTES:

1. ALL LIMIT SWITCHES WITH BOOM IN STOWED POSITION EXCEPT AS NOTED

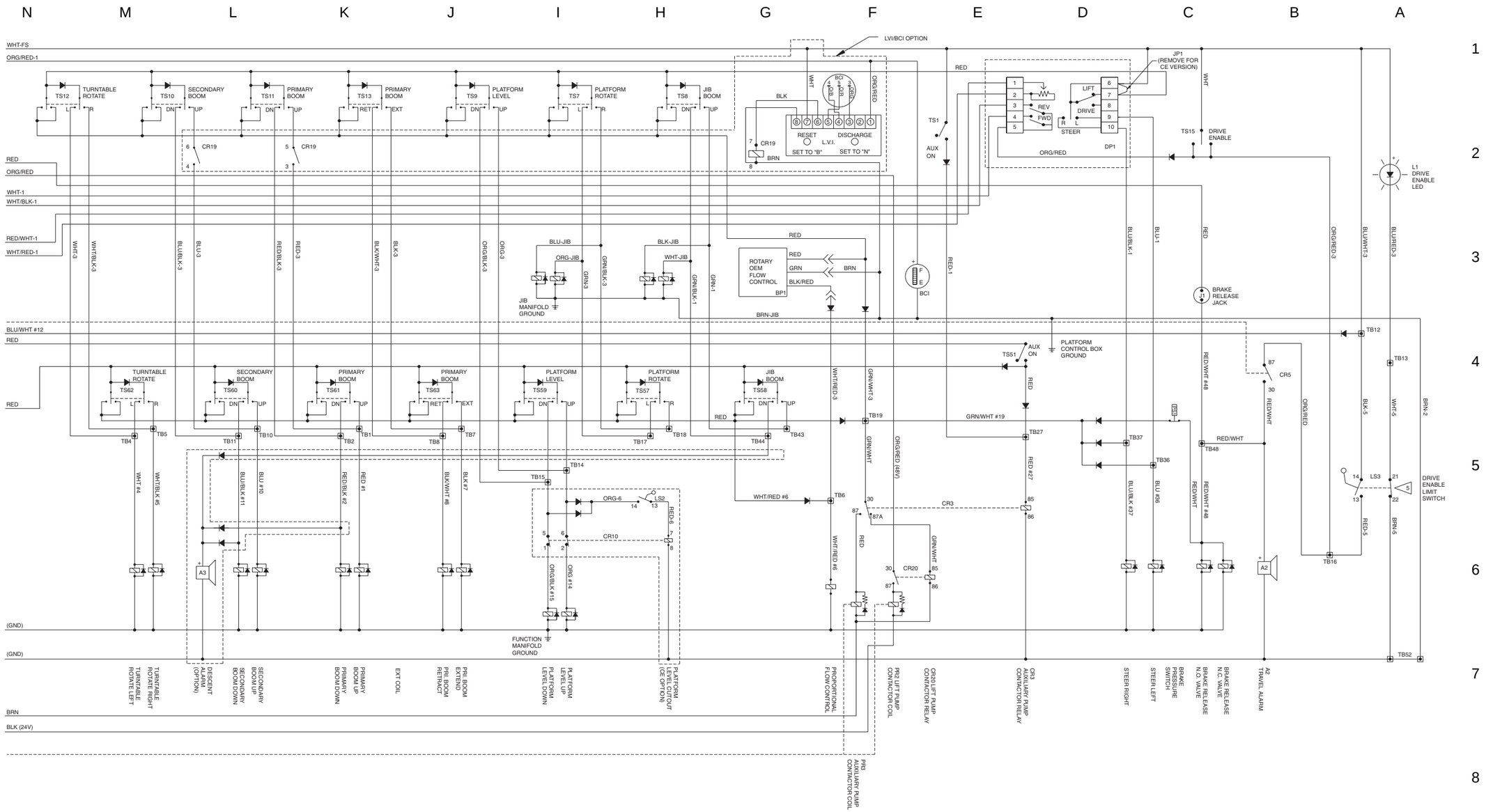
2 SWITCH SHOWN WITH BOOM EXTENDED

3 REDUNDANT COIL SUPPRESION DIODE FOR PR1 IS INSIDE CONTROLLER BETWEEN J1-9 AND J1-17.

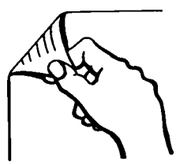
4. ALL SOLENOID AND RELAY COILS ARE 24VDC EXCEPT WHERE NOTED.

5 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL

Electrical Schematic (from serial number 3215 to 3577)

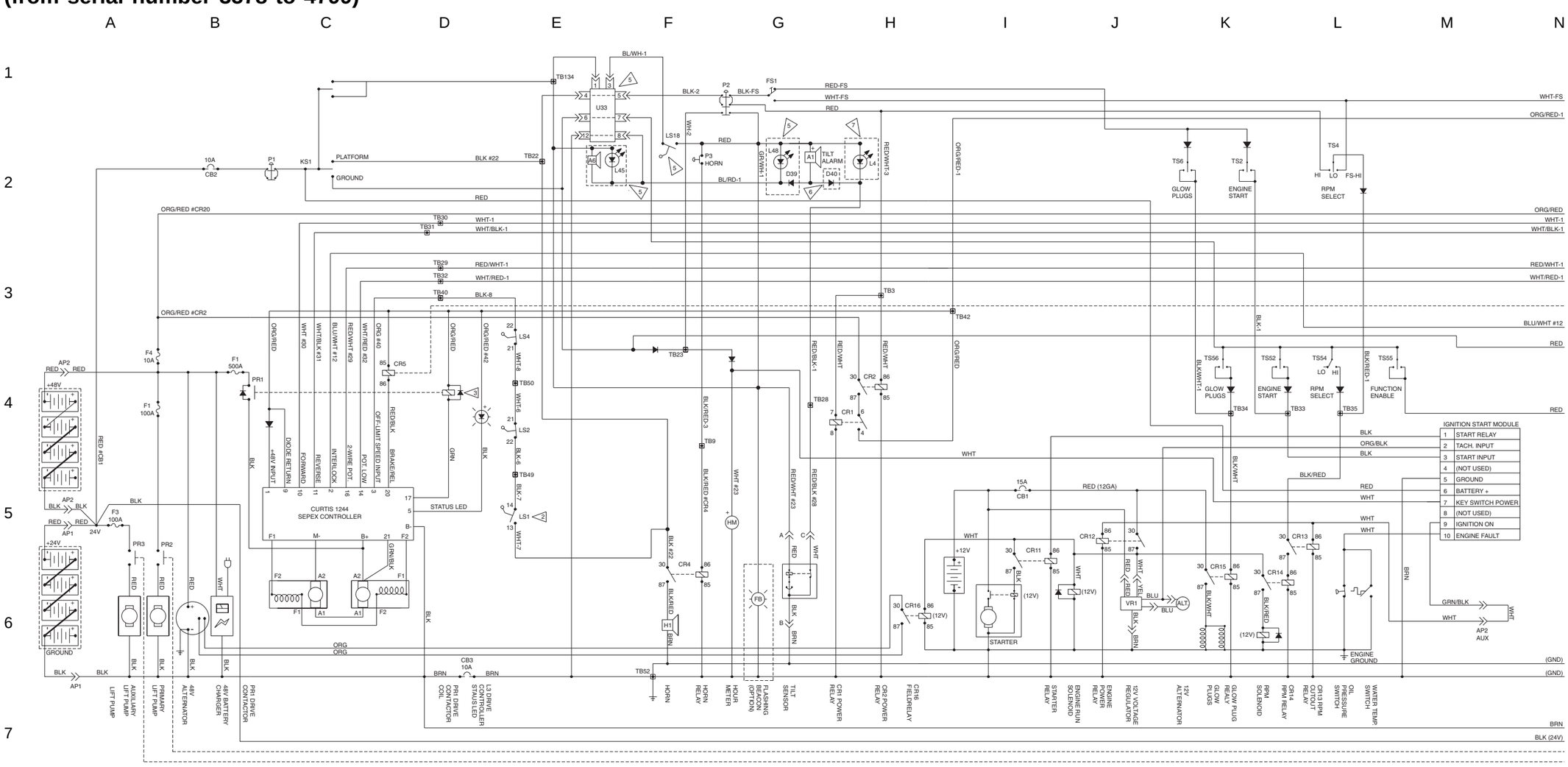


Electrical Schematic
(from serial number 3215 to 3577)



Electrical Schematic
(from serial number 3578 to 4799)

Electrical Schematic (from serial number 3578 to 4799)



NOTES:

1. ALL LIMIT SWITCHES WITH BOOM IN STOWED POSITION EXCEPT AS NOTED

2 SWITCH SHOWN WITH BOOM EXTENDED

3 REDUNDANT COIL SUPPRESION DIODE FOR PR1 IS INSIDE CONTROLLER BETWEEN J1-9 AND J1-17. DIODE ADDED AT SERIAL NUMBER Z3404-3819.

4. ALL SOLENOID AND RELAY COILS ARE 24VDC EXCEPT WHERE NOTED.

5 CE & PLATFORM LOAD SENSE OPTION.

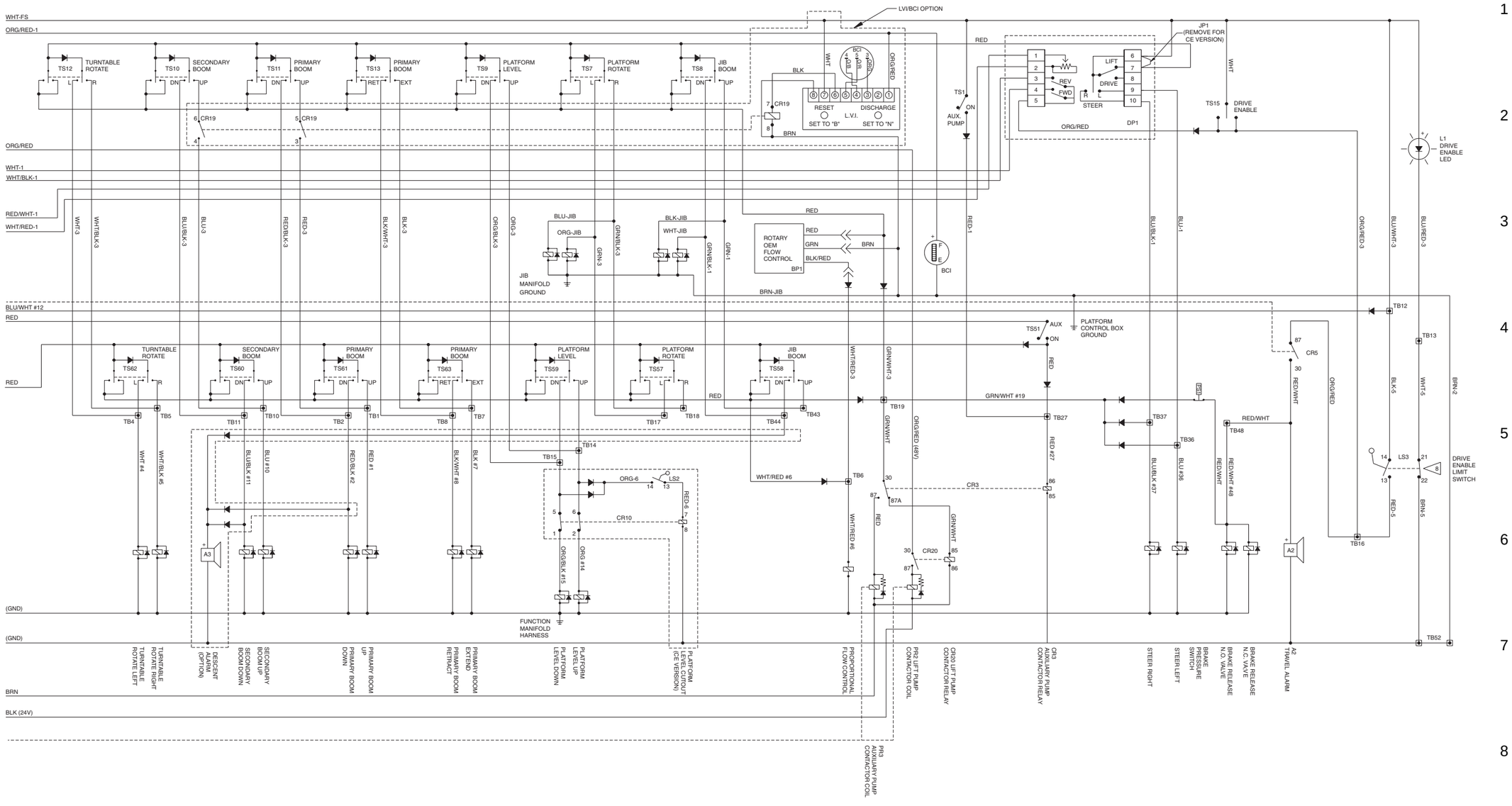
6 ADD D40 ONLY IF UNIT HAS L4 & L48.

7 ANSI/CSA

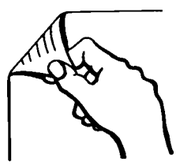
8 SWITCH SHOWN WITH BOOM ROTATED PAST EITHER NON-STEER WHEEL

ES34BES

Electrical Schematic (from serial number 3578 to 4799)

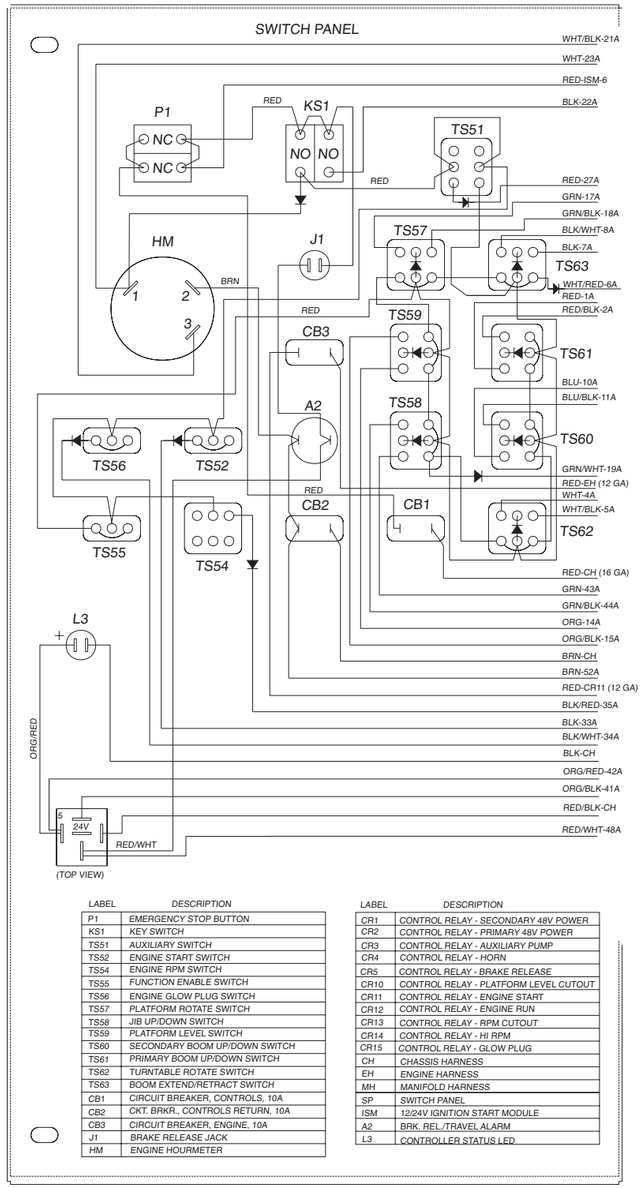


Electrical Schematic
(from serial number 3578 to 4799)



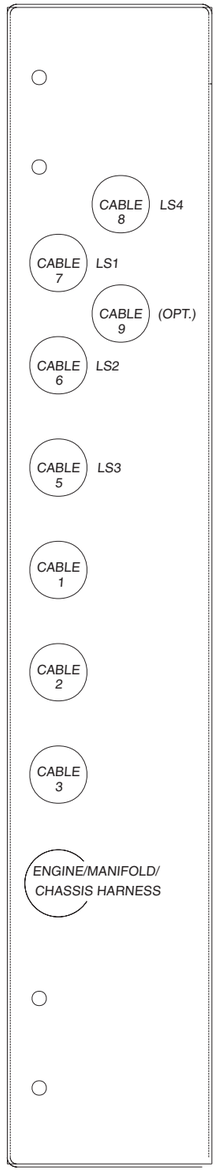
Ground Control Box Wiring Diagram (before serial number 1468)

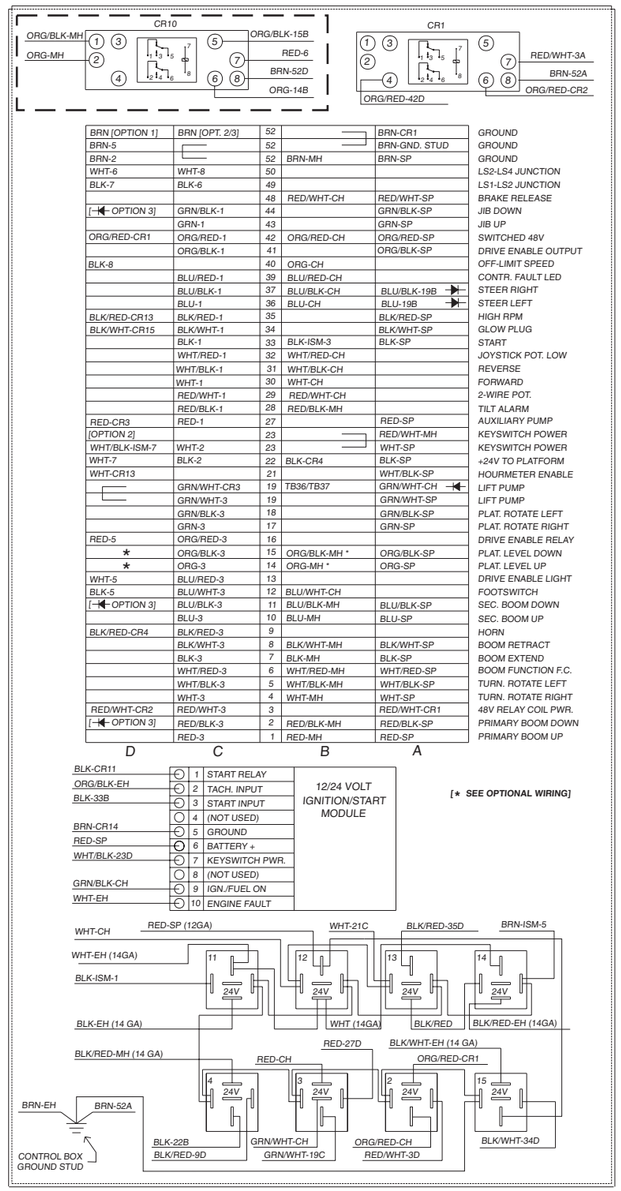
Ground Control Box Wiring Diagram (before serial number 1468)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY SWITCH
TS52	ENGINE START SWITCH
TS54	ENGINE RPM SWITCH
TS55	FUNCTION ENABLE SWITCH
TS56	ENGINE GLOW PLUG SWITCH
TS57	PLATFORM ROTATE SWITCH
TS58	JIB UP/DOWN SWITCH
TS59	PLATFORM LEVEL SWITCH
TS60	SECONDARY BOOM UP/DOWN SWITCH
TS61	PRIMARY BOOM UP/DOWN SWITCH
TS62	TURNTABLE ROTATE SWITCH
TS63	BOOM EXTEND/RETRACT SWITCH
CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CKT. BRKR., CONTROLS RETURN, 10A
CB3	CIRCUIT BREAKER, ENGINE, 10A
J1	BRAKE RELEASE JACK
HM	ENGINE HOURMETER

LABEL	DESCRIPTION
CR1	CONTROL RELAY - SECONDARY 48V POWER
CR2	CONTROL RELAY - PRIMARY 48V POWER
CR3	CONTROL RELAY - AUXILIARY PUMP
CR4	CONTROL RELAY - HORN
CR5	CONTROL RELAY - BRAKE RELEASE
CR10	CONTROL RELAY - PLATFORM LEVEL CUTOUT
CR11	CONTROL RELAY - ENGINE START
CR12	CONTROL RELAY - ENGINE RUN
CR13	CONTROL RELAY - RPM CUTOUT
CR14	CONTROL RELAY - HI RPM
CR15	CONTROL RELAY - GLOW PLUG
CH	CHASSIS HARNESS
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS
SP	SWITCH PANEL
ISM	12/24V IGNITION START MODULE
A2	BRK. REL./TRAVEL ALARM
L3	CONTROLLER STATUS LED





BRN [OPTION 1]	BRN [OPT. 2/3]	52	BRN-CR1	GROUND
BRN-5		52	BRN-GND. STUD	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
		48	RED/WHT-CH	RED/WHT-SP	BRAKE RELEASE
[–◄– OPTION 3]	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-SP	SWITCHED 48V
	ORG/BLK-1	41		ORG/BLK-SP	DRIVE ENABLE OUTPUT
BLK-8		40	ORG-CH		OFF-LIMIT SPEED
	BLU/RED-1	39	BLU/RED-CH		CONTR. FAULT LED
	BLU/BLK-1	37	BLU/BLK-CH	BLU/BLK-19B ►| STEER RIGHT
	BLU-1	36	BLU-CH	BLU-19B ►| STEER LEFT
BLK/RED-CR13	BLK/RED-1	35		BLK/RED-SP	HIGH RPM
BLK/WHT-CR15	BLK/WHT-1	34		BLK/WHT-SP	GLOW PLUG
	BLK-1	33	BLK-ISM-3	BLK-SP	START
	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.
	RED/BLK-1	28	RED/BLK-MH		TILT ALARM
RED-CR3	RED-1	27		RED-SP	AUXILIARY PUMP
[OPTION 2]		23		RED/WHT-MH	KEYSWITCH POWER
WHT/BLK-ISM-7	WHT-2	23		WHT-SP	KEYSWITCH POWER
WHT-7	BLK-2	22	BLK-CR4	BLK-SP	+24V TO PLATFORM
WHT-CR13		21		WHT/BLK-SP	HOURMETER ENABLE
	GRN/WHT-CR3	19	TB36/TB37	GRN/WHT-CH ►| LIFT PUMP
	GRN/WHT-3	19		GRN/WHT-SP	LIFT PUMP
	GRN/BLK-3	18		GRN/BLK-SP	PLAT. ROTATE LEFT
	GRN-3	17		GRN-SP	PLAT. ROTATE RIGHT
RED-5	ORG/RED-3	16			DRIVE ENABLE RELAY
*	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
[–◄– OPTION 3]	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 LEFT
	WHT-3	4	WHT-MH	WHT-SP	TURN. ROTATE RIGHT
RED/WHT-CR2	RED/WHT-3	3		RED/WHT-CR1	48V RELAY COIL PWR.
[–◄– OPTION 3]	RED/BLK-3	2	RED/BLK-MH	RED/BLK-SP	PRIMARY BOOM DOWN
	RED-3	1	RED-MH	RED-SP	PRIMARY BOOM UP

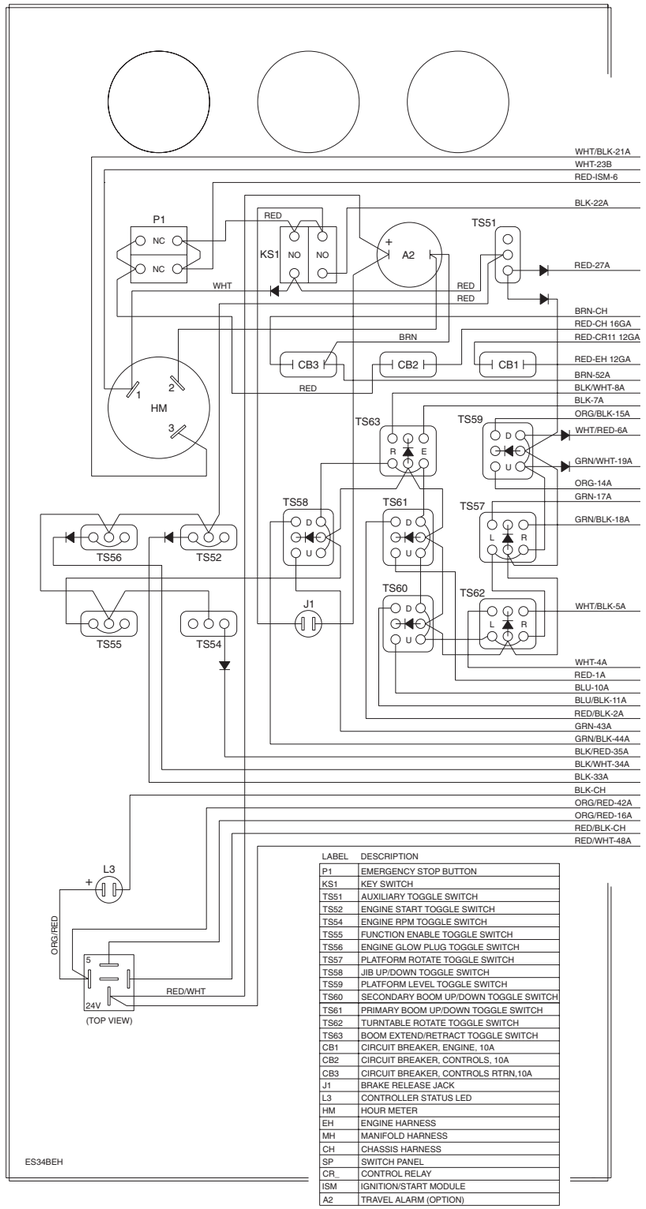
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OPTION NUMBERS

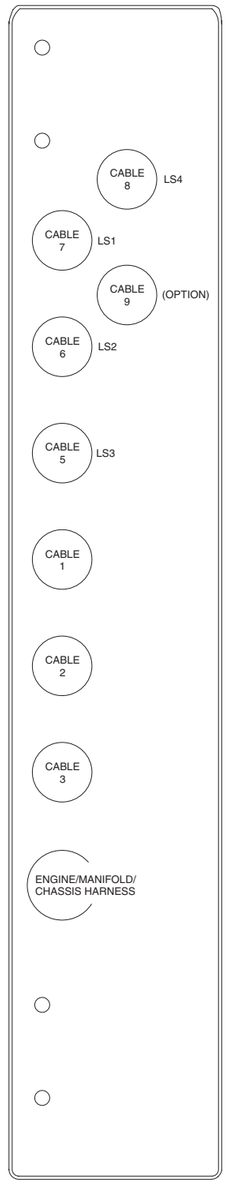
1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM

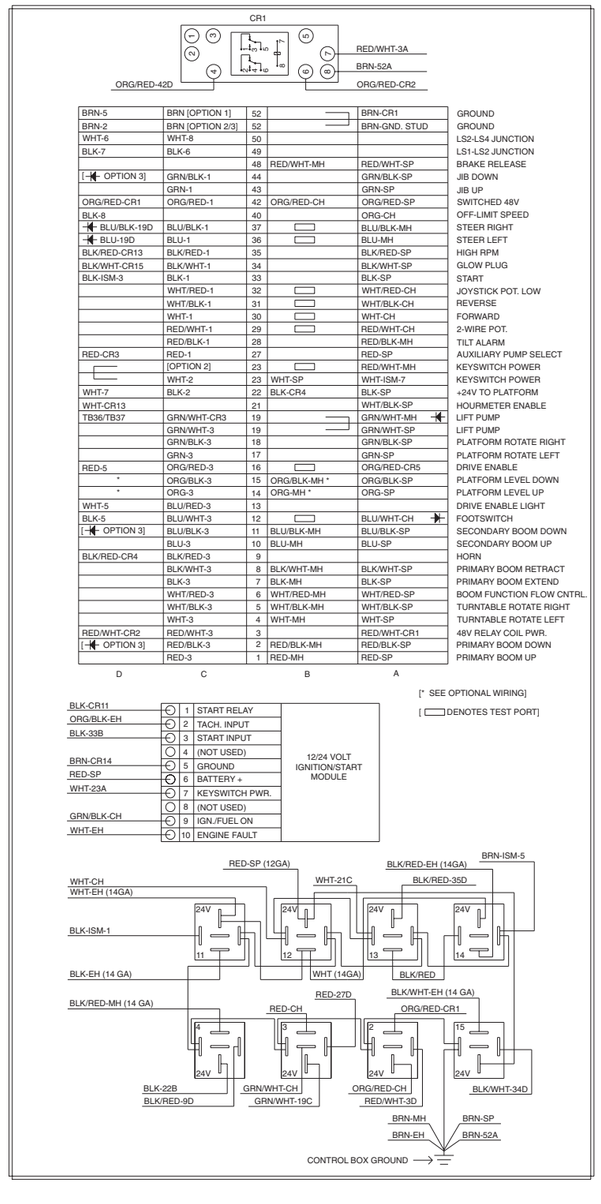
ES34BEA

Ground Control Box Wiring Diagram (from serial number 1468 to 3214)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	ENGINE GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB 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, ENGINE, 10A
CB2	CIRCUIT BREAKER, CONTROLS, 10A
CB3	CIRCUIT BREAKER, CONTROLS RTRN,10A
J1	BRAKE RELEASE JACK
L3	CONTROLLER STATUS LED
HM	HOUR METER
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS
CH	CHASSIS HARNESS
SP	SWITCH PANEL
CR	CONTROL RELAY
ISM	IGNITION/START MODULE
A2	TRAVEL ALARM (OPTION)





BRN-5	BRN [OPTION 1]	52		BRN-CR1
BRN-2	BRN [OPTION 2/3]	52		BRN-GND. STUD
WHT-6	WHT-8	50		
BLK-7	BLK-6	49		
		48	RED/WHT-MH	RED/WHT-SP
[OPTION 3]	GRN/BLK-1	44		GRN/BLK-SP
	GRN-1	43		GRN-SP
ORG/RED-CR1	ORG/RED-1	42	ORG/RED-CH	ORG/RED-SP
BLK-8		40		ORG-CH
BLU/BLK-19D	BLU/BLK-1	37		BLU/BLK-MH
BLU-19D	BLU-1	36		BLU-MH
BLK/RED-CR13	BLK/RED-1	35		BLK/RED-SP
BLK/WHT-CR15	BLK/WHT-1	34		BLK/WHT-SP
BLK-ISM-3	BLK-1	33		BLK-SP
	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
	RED/BLK-1	28		RED/BLK-MH
RED-CR3	RED-1	27		RED-SP
	[OPTION 2]	23		RED/WHT-MH
	WHT-2	23	WHT-SP	WHT-ISM-7
WHT-7	BLK-2	22	BLK-CR4	BLK-SP
WHT-CR13		21		WHT/BLK-SP
TB36/TB37	GRN/WHT-CR3	19		GRN/WHT-MH
	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
[OPTION 3]	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-CR2	RED/WHT-3	3		RED/WHT-CR1
[OPTION 3]	RED/BLK-3	2	RED/BLK-MH	RED/BLK-SP
	RED-3	1	RED-MH	RED-SP

D	C	B	A

	1	START RELAY	12/24 VOLT IGNITION/START MODULE
ORG/BLK-EH	2	TACH. INPUT	
BLK-33B	3	START INPUT	
	4	(NOT USED)	
BRN-CR14	5	GROUND	
RED-SP	6	BATTERY +	
WHT-23A	7	KEYSWITCH PWR.	
	8	(NOT USED)	
GRN/BLK-CH	9	IGN./FUEL ON	
WHT-EH	10	ENGINE FAULT	

[* SEE OPTIONAL WIRING]

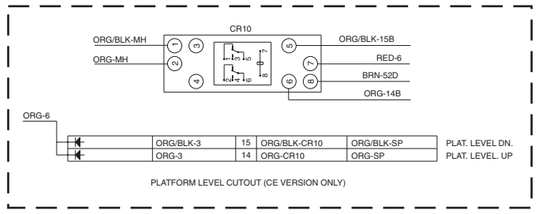
[DENOTES TEST PORT]

SPARE WIRE LIST

GRN/WHT-1
ORG-1
BLU/WHT-1
BLU/RED-1
ORG/BLK-1

OPTION NUMBERS

1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM



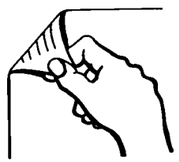
[	ORG/BLK-3	15	ORG/BLK-CR10	ORG/BLK-SP	PLAT. LEVEL DN.
[	ORG-3	14	ORG-CR10	ORG-SP	PLAT. LEVEL. UP

PLATFORM LEVEL CUTOUT (CE VERSION ONLY)

CONTROL RELAY I.D.

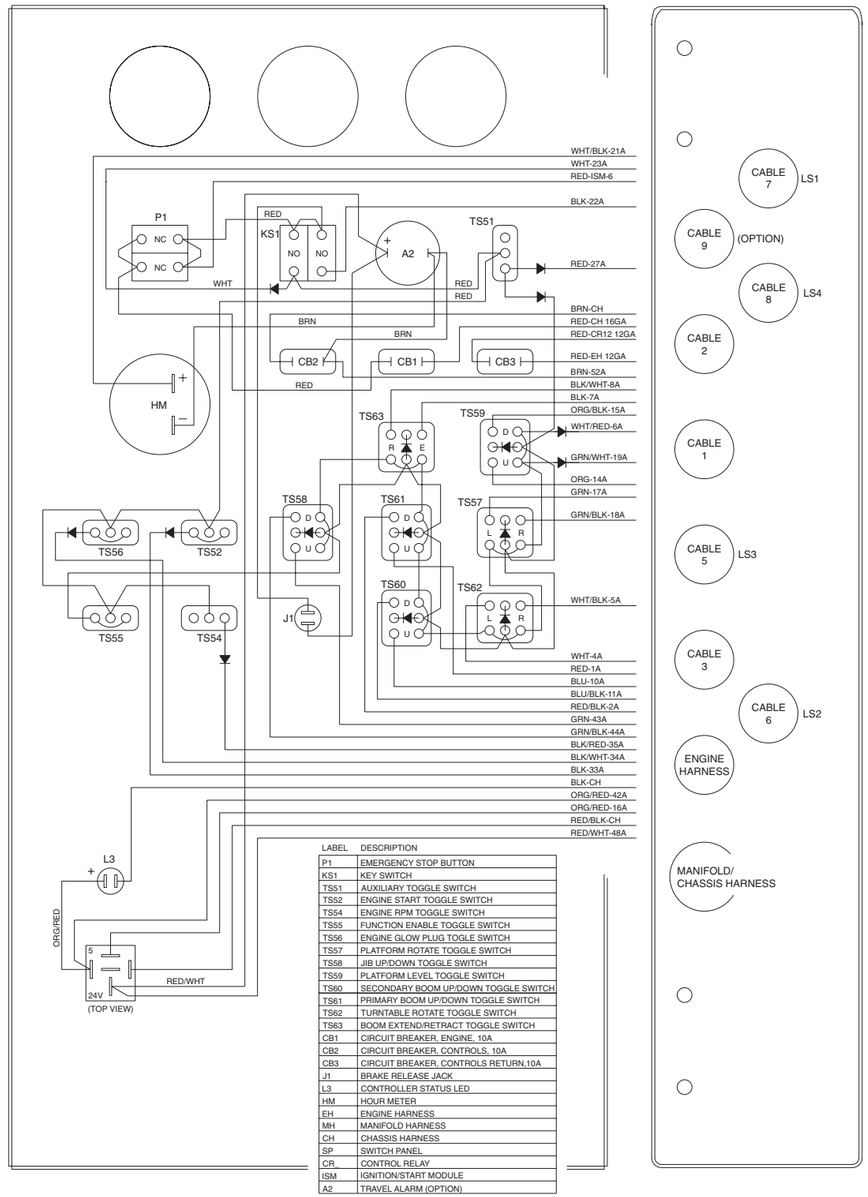
CR1 - SECONDARY 48V POWER
CR2 - PRIMARY 48V POWER
CR3 - AUXILIARY PUMP
CR4 - HORN
CR5 - BRAKE RELEASE
CR10 - PLATFORM LEVEL CUTOUT (CE VERSION ONLY)
CR11 - ENGINE START
CR12 - ENGINE RUN
CR13 - PRM CUTOUT
CR14 - HIGH RPM
CR15 - GLOW PLUGS

Ground Control Box Wiring Diagram (from serial number 1468 to 3214)

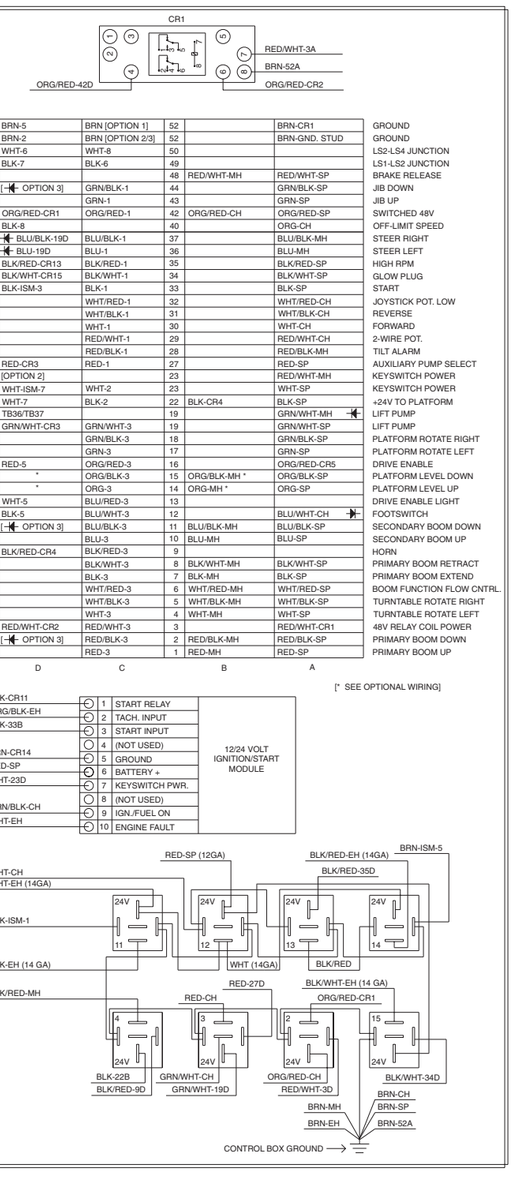


Ground Control Box Wiring Diagram (from serial number 3215 to 3577)

Ground Control Box Wiring Diagram (from serial number 3215 to 3577)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	ENGINE GLOW PLUG TOGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB 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, ENGINE, 10A
CB2	CIRCUIT BREAKER, CONTROLS, 10A
CB3	CIRCUIT BREAKER, CONTROLS RETURN,10A
J1	BRAKE RELEASE JACK
L3	CONTROLLER STATUS LED
HM	HOUR METER
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS
CH	CHASSIS HARNESS
SP	SWITCH PANEL
CR	CONTROL RELAY
ISM	IGNITION/START MODULE
A2	TRAVEL ALARM (OPTION)



BRN-5	BRN [OPTION 1]	52		BRN-CR1
BRN-2	BRN [OPTION 2/3]	52		BRN-GND. STUD
WHT-6	WHT-8	50		
BLK-7	BLK-6	49		
		48	RED/WHT-MH	RED/WHT-SP
[OPTION 3]	GRN/BLK-1	44		GRN/BLK-SP
	GRN-1	43		GRN-SP
ORG/RED-CR1	ORG/RED-1	42	ORG/RED-CH	ORG/RED-SP
BLK-8		40		ORG-CH
BLU/BLK-19D	BLU/BLK-1	37		BLU/BLK-MH
BLU-19D	BLU-1	36		BLU-MH
BLK/RED-CR13	BLK/RED-1	35		BLK/RED-SP
BLK/WHT-CR15	BLK/WHT-1	34		BLK/WHT-SP
BLK-ISM-3	BLK-1	33		BLK-SP
	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
	RED/BLK-1	28		RED/BLK-MH
RED-CR3	RED-1	27		RED-SP
[OPTION 2]		23		RED/WHT-MH
WHT-ISM-7	WHT-2	23		WHT-SP
WHT-7	BLK-2	22	BLK-CR4	BLK-SP
TB36/TB37		19		GRN/WHT-MH
GRN/WHT-CR3	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
[OPTION 3]	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-CR2	RED/WHT-3	3		RED/WHT-CR1
[OPTION 3]	RED/BLK-3	2	RED/BLK-MH	RED/BLK-SP
	RED-3	1	RED-MH	RED-SP

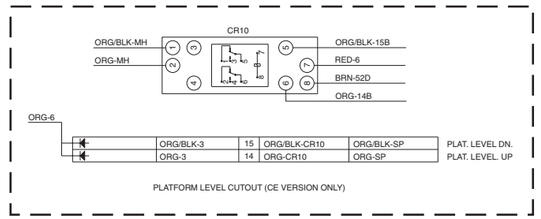
D C B A

GROUND	
GROUND	
LS2-LS4 JUNCTION	
LS1-LS2 JUNCTION	
BRAKE RELEASE	
JIB DOWN	
JIB UP	
SWITCHED 48V	
OFF-LIMIT SPEED	
STEER RIGHT	
STEER LEFT	
HIGH RPM	
GLOW PLUG	
START	
JOYSTICK POT. LOW	
REVERSE	
FORWARD	
2-WIRE POT.	
TILT ALARM	
AUXILIARY PUMP SELECT	
KEYSWITCH POWER	
KEYSWITCH POWER	
+24V 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	
PRIMARY BOOM RETRACT	
PRIMARY BOOM EXTEND	
BOOM FUNCTION FLOW CNTRL.	
TURNTABLE ROTATE RIGHT	
TURNTABLE ROTATE LEFT	
48V RELAY COIL POWER	
PRIMARY BOOM DOWN	
PRIMARY BOOM UP	

[* SEE OPTIONAL WIRING]

SPARE WIRE LIST
GRN/WHT-1
ORG-1
BLU/WHT-1
BLU/RED-1
ORG/BLK-1

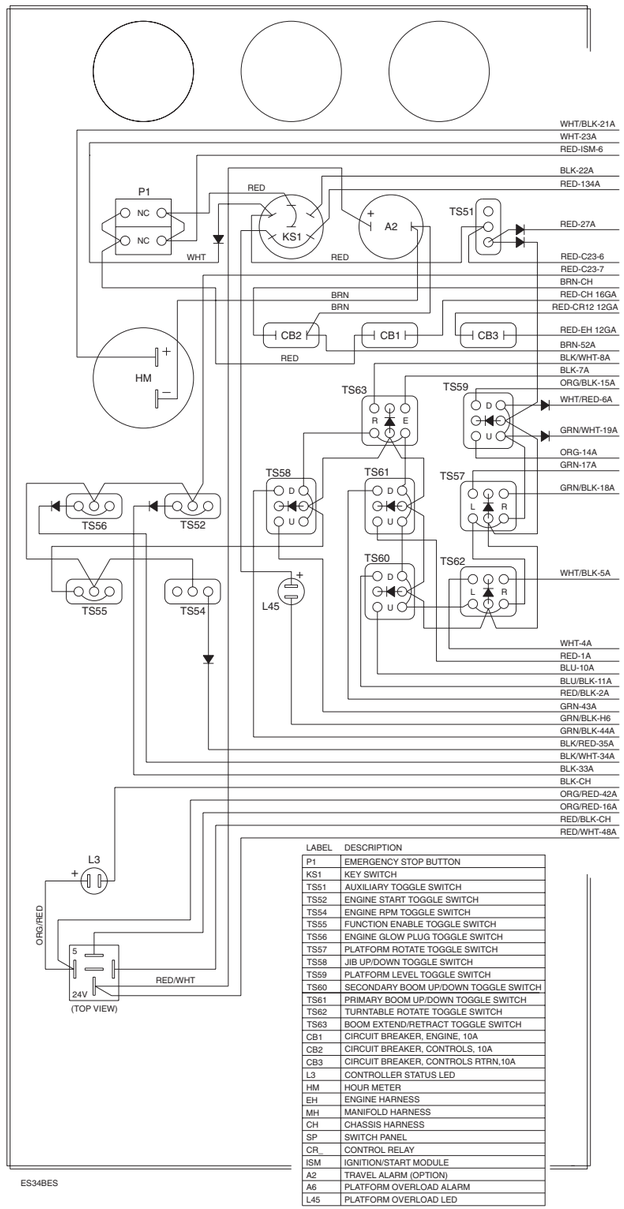
OPTION NUMBERS
1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM



CONTROL RELAY I.D.
CR1 - SECONDARY 48V POWER
CR2 - PRIMARY 48V POWER
CR3 - AUXILIARY PUMP
CR4 - HORN
CR5 - BRAKE RELEASE
CR10 - PLATFORM LEVEL CUTOUT (CE VERSION ONLY)
CR11 - ENGINE START
CR12 - ENGINE RUN
CR13 - RPM CUTOUT
CR14 - HIGH RPM
CR15 - GLOW PLUG

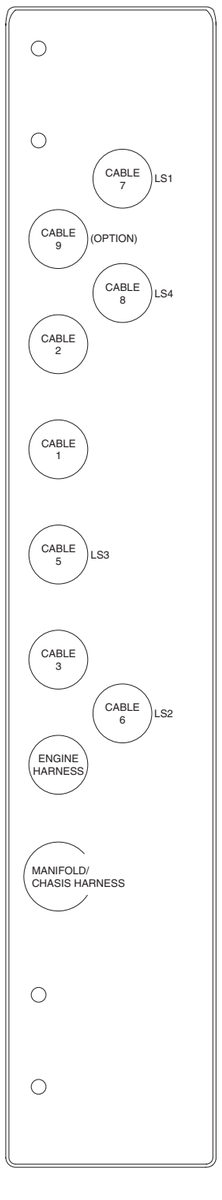
ES34BEL

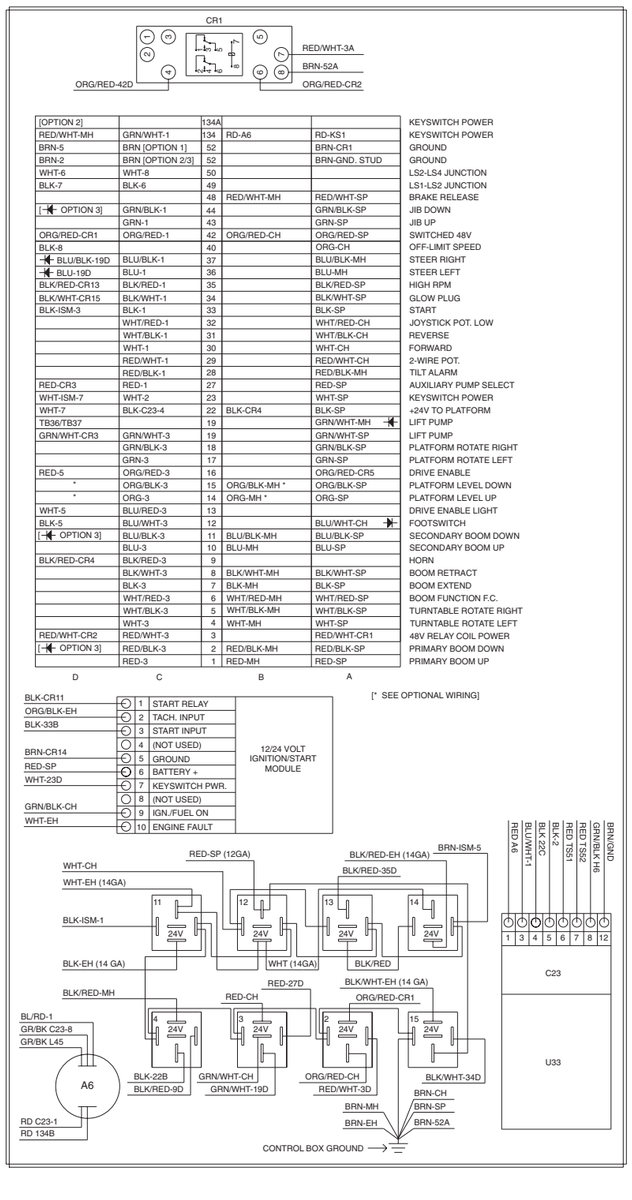
Ground Control Box Wiring Diagram (from serial number 3578 to 4799)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS51	AUXILIARY TOGGLE SWITCH
TS52	ENGINE START TOGGLE SWITCH
TS54	ENGINE RPM TOGGLE SWITCH
TS55	FUNCTION ENABLE TOGGLE SWITCH
TS56	ENGINE GLOW PLUG TOGGLE SWITCH
TS57	PLATFORM ROTATE TOGGLE SWITCH
TS58	JIB 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, ENGINE, 10A
CB2	CIRCUIT BREAKER, CONTROLS, 10A
CB3	CIRCUIT BREAKER, CONTROLS RTRN,10A
L3	CONTROLLER STATUS LED
HM	HOUR METER
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS
CH	CHASSIS HARNESS
SP	SWITCH PANEL
CR_	CONTROL RELAY
ISM	IGNITION/START MODULE
A2	TRAVEL ALARM (OPTION)
A6	PLATFORM OVERLOAD ALARM
L45	PLATFORM OVERLOAD LED

ES34BES



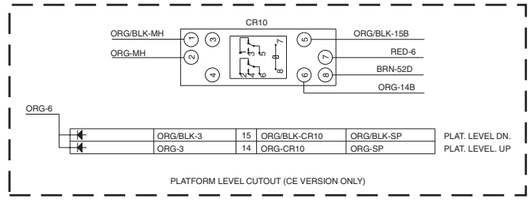


[OPTION 2]		134A			KEYSWITCH POWER
RED/WHT-MH	GRN/WHT-1	134	RD-A6	RD-KS1	KEYSWITCH POWER
BRN-5	BRN [OPTION 1]	52		BRN-CR1	GROUND
BRN-2	BRN [OPTION 2/3]	52		BRN-GND. STUD	GROUND
WHT-6	WHT-8	50			LS2-LS4 JUNCTION
BLK-7	BLK-6	49			LS1-LS2 JUNCTION
		48	RED/WHT-MH	RED/WHT-SP	BRAKE RELEASE
[OPTION 3]	GRN/BLK-1	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-SP	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
BLK/RED-CR13	BLK/RED-1	35		BLK/RED-SP	HIGH RPM
BLK/WHT-CR15	BLK/WHT-1	34		BLK/WHT-SP	GLOW PLUG
BLK-ISM-3	BLK-1	33		BLK-SP	START
	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.
	RED/BLK-1	28		RED/BLK-MH	TILT ALARM
RED-CR3	RED-1	27		RED-SP	AUXILIARY PUMP SELECT
WHT-ISM-7	WHT-2	23		WHT-SP	KEYSWITCH POWER
WHT-7	BLK-C23-4	22	BLK-CR4	BLK-SP	+24V TO PLATFORM
TB36/TB37		19		GRN/WHT-MH	LIFT PUMP
GRN/WHT-CR3	GRN/WHT-3	19		GRN/WHT-SP	LIFT PUMP
	GRN/BLK-3	18		GRN/BLK-SP	PLATFORM ROTATE RIGHT
	GRN-3	17		GRN-SP	PLATFORM ROTATE LEFT
RED-5	ORG/RED-3	16		ORG/RED-CR5	DRIVE ENABLE
*	ORG/BLK-3	15	ORG/BLK-MH *	ORG/BLK-SP	PLATFORM LEVEL DOWN
*	ORG-3	14	ORG-MH *	ORG-SP	PLATFORM LEVEL UP
WHT-5	BLU/RED-3	13			DRIVE ENABLE LIGHT
BLK-5	BLU/WHT-3	12		BLU/WHT-CH	FOOTSWITCH
[OPTION 3]	BLU/BLK-3	11	BLU/BLK-MH	BLU/BLK-SP	SECONDARY BOOM DOWN
	BLU-3	10	BLU-MH	BLU-SP	SECONDARY 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	TURNTABLE ROTATE RIGHT
	WHT-3	4	WHT-MH	WHT-SP	TURNTABLE ROTATE LEFT
RED/WHT-CR2	RED/WHT-3	3		RED/WHT-CR1	48V RELAY COIL POWER
[OPTION 3]	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]

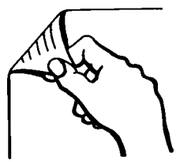
SPARE WIRE LIST
ORG-1
ORG/BLK-1

OPTION NUMBERS
1 - PLATFORM LEVEL CUTOUT
2 - FLASHING BEACON
3 - DESCENT ALARM



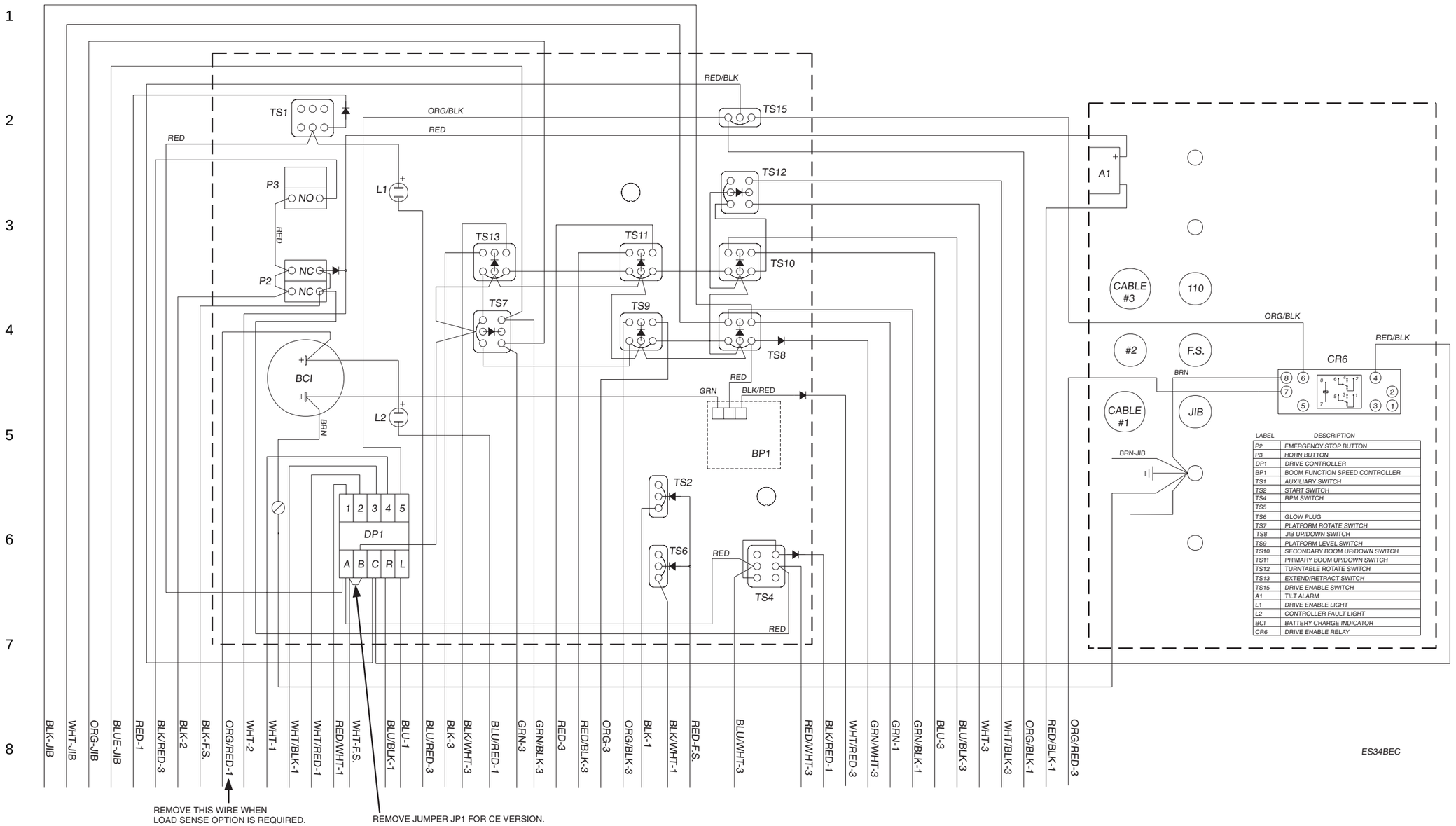
CONTROL RELAY I.D.
CR1 - SECONDARY 48V POWER
CR2 - PRIMARY 48V POWER
CR3 - AUXILIARY PUMP
CR4 - HORN
CR5 - BRAKE RELEASE
CR10 - PLATFORM LEVEL CUTOUT (CE VERSION ONLY)
CR11 - ENGINE START
CR12 - ENGINE RUN
CR13 - RPM CUTOUT
CR14 - HIGH RPM
CR15 - GLOW PLUGS

Ground Control Box Wiring Diagram (from serial number 3578 to 4799)

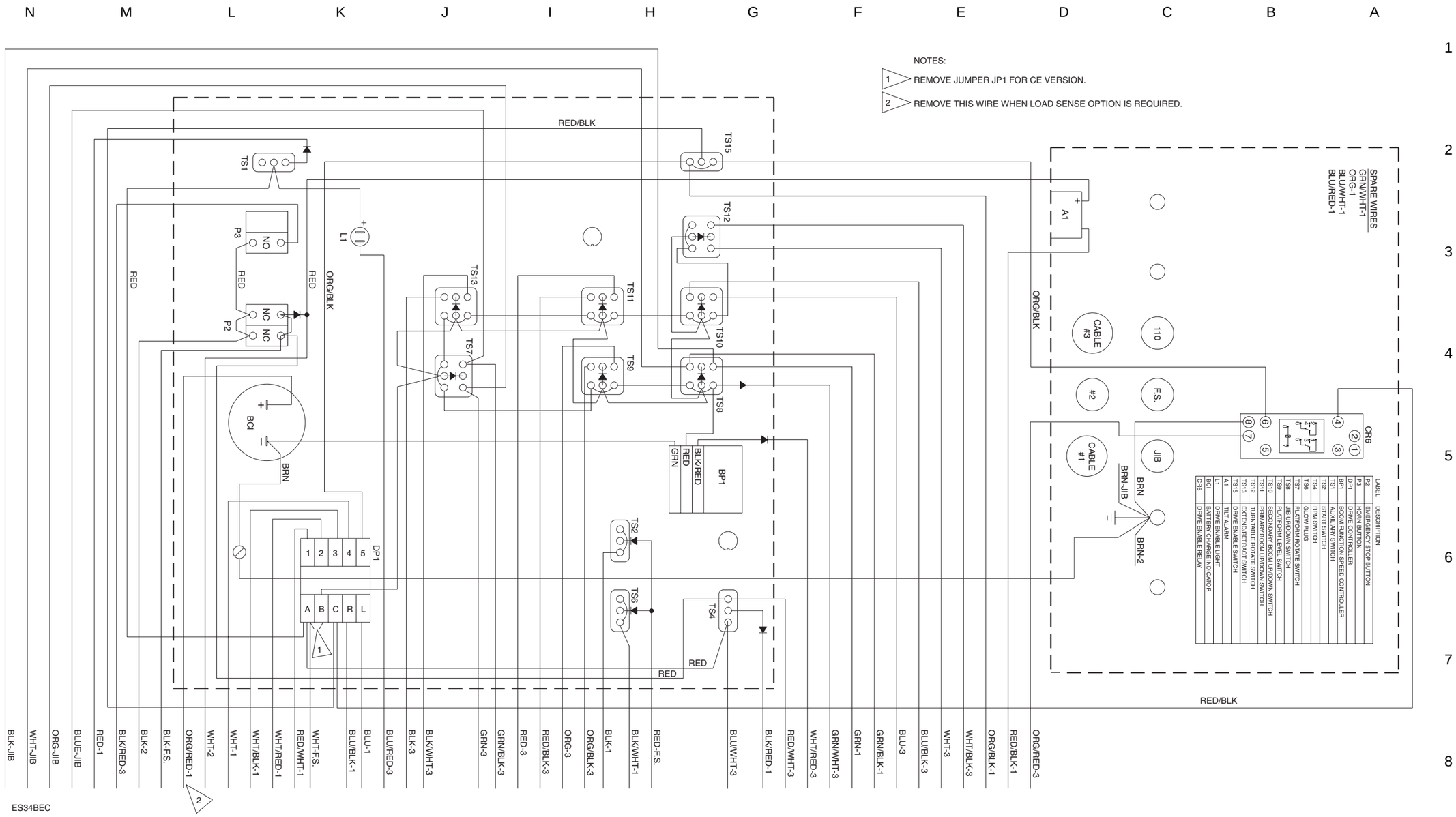


Platform Control Box Wiring Diagram (before serial number 1468)

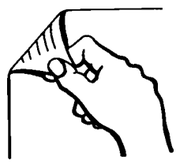
Platform Control Box Wiring Diagram (before serial number 1468)



Platform Control Box Wiring Diagram (from serial number 1468 to 1786)

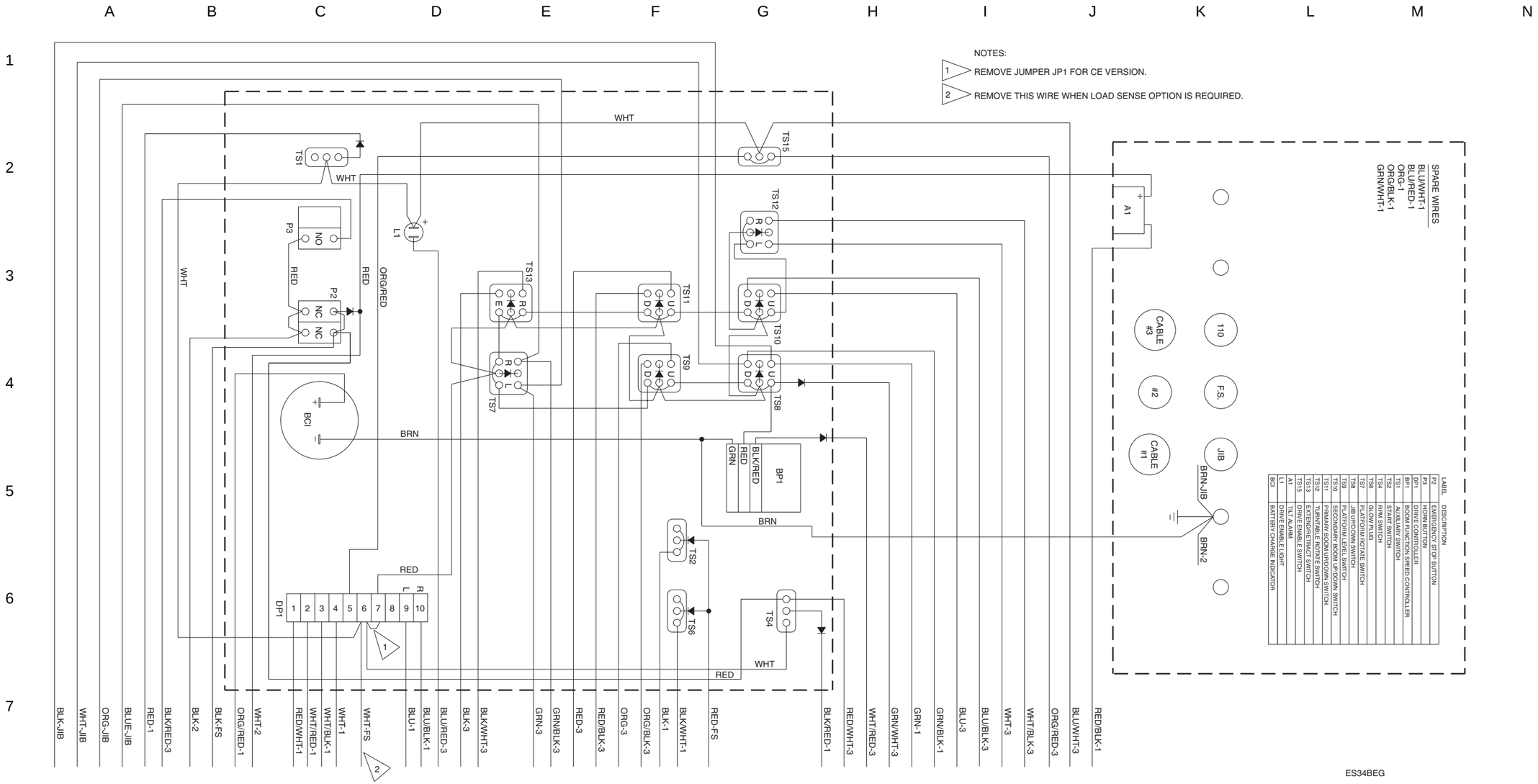


Platform Control Box Wiring Diagram (from serial number 1468 to 1786)

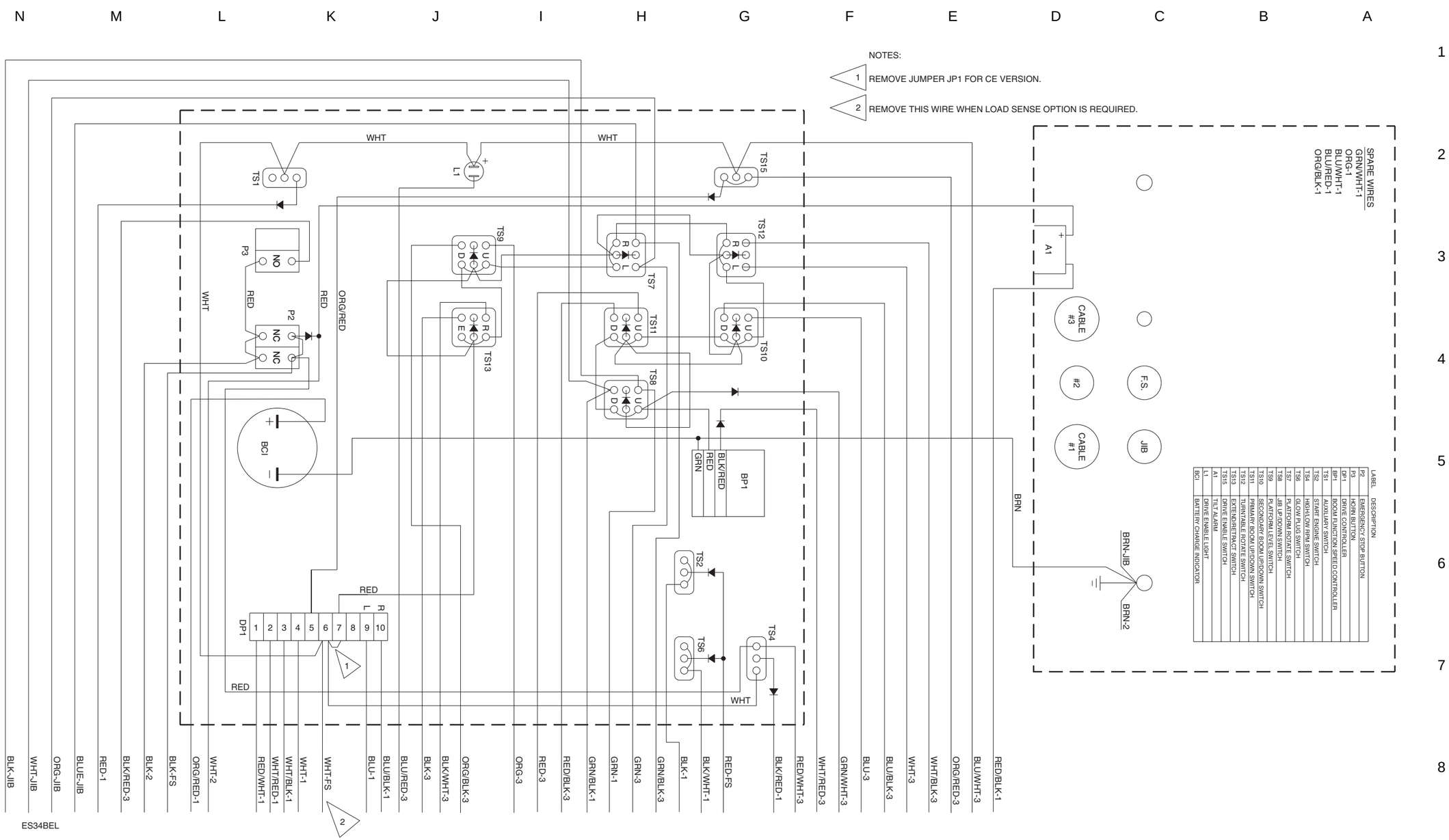


Platform Control Box Wiring Diagram (from serial number 1787 to 2097)

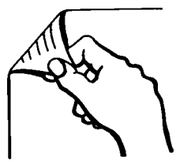
Platform Control Box Wiring Diagram (from serial number 1787 to 2097)



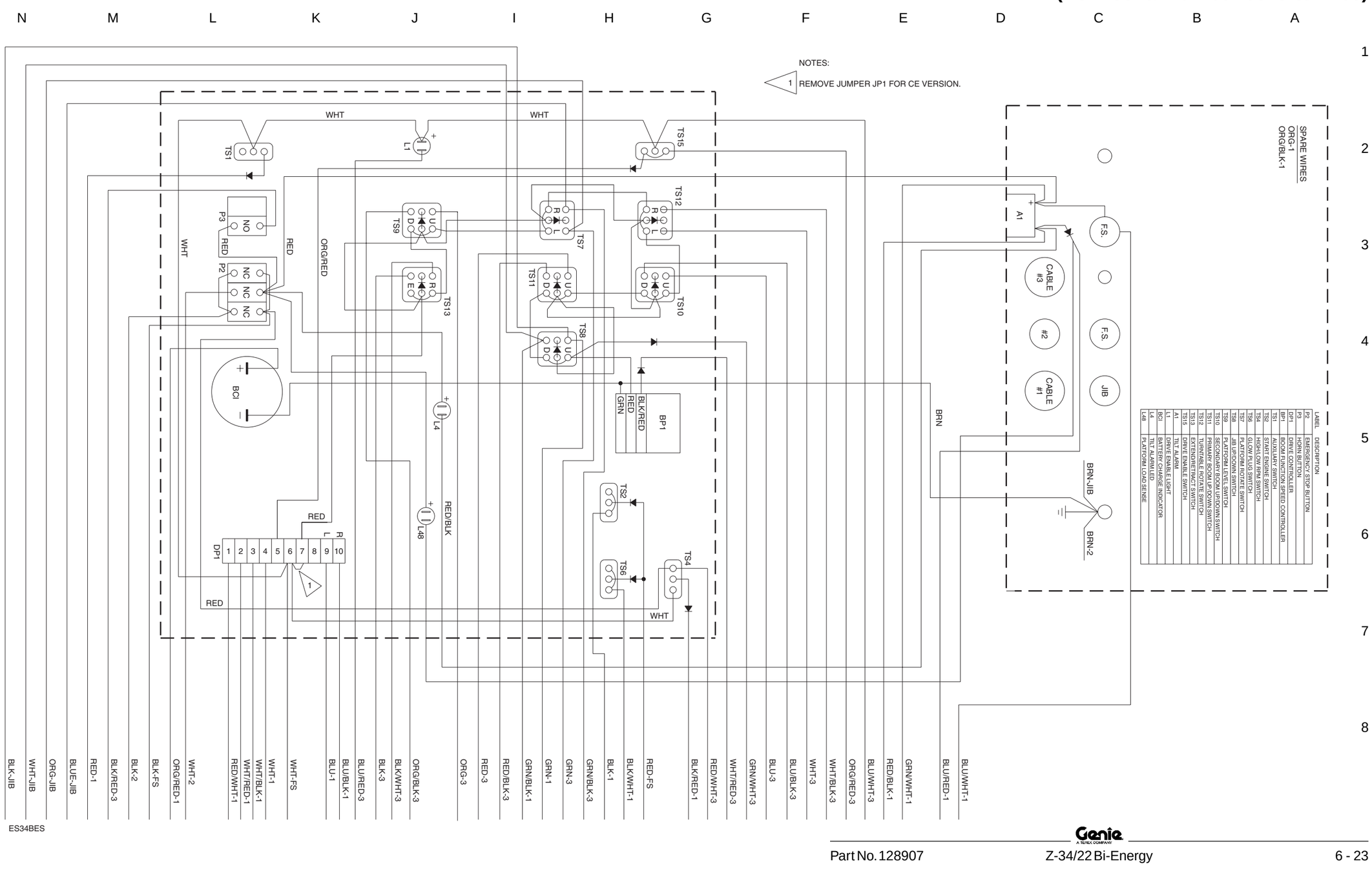
Platform Control Box Wiring Diagram (from serial number 2098 to 3577)



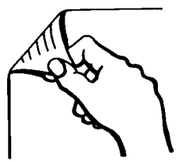
Platform Control Box Wiring Diagram (from serial number 2098 to 3577)



Platform Control Box Wiring Diagram (from serial number 3578 to 4799)

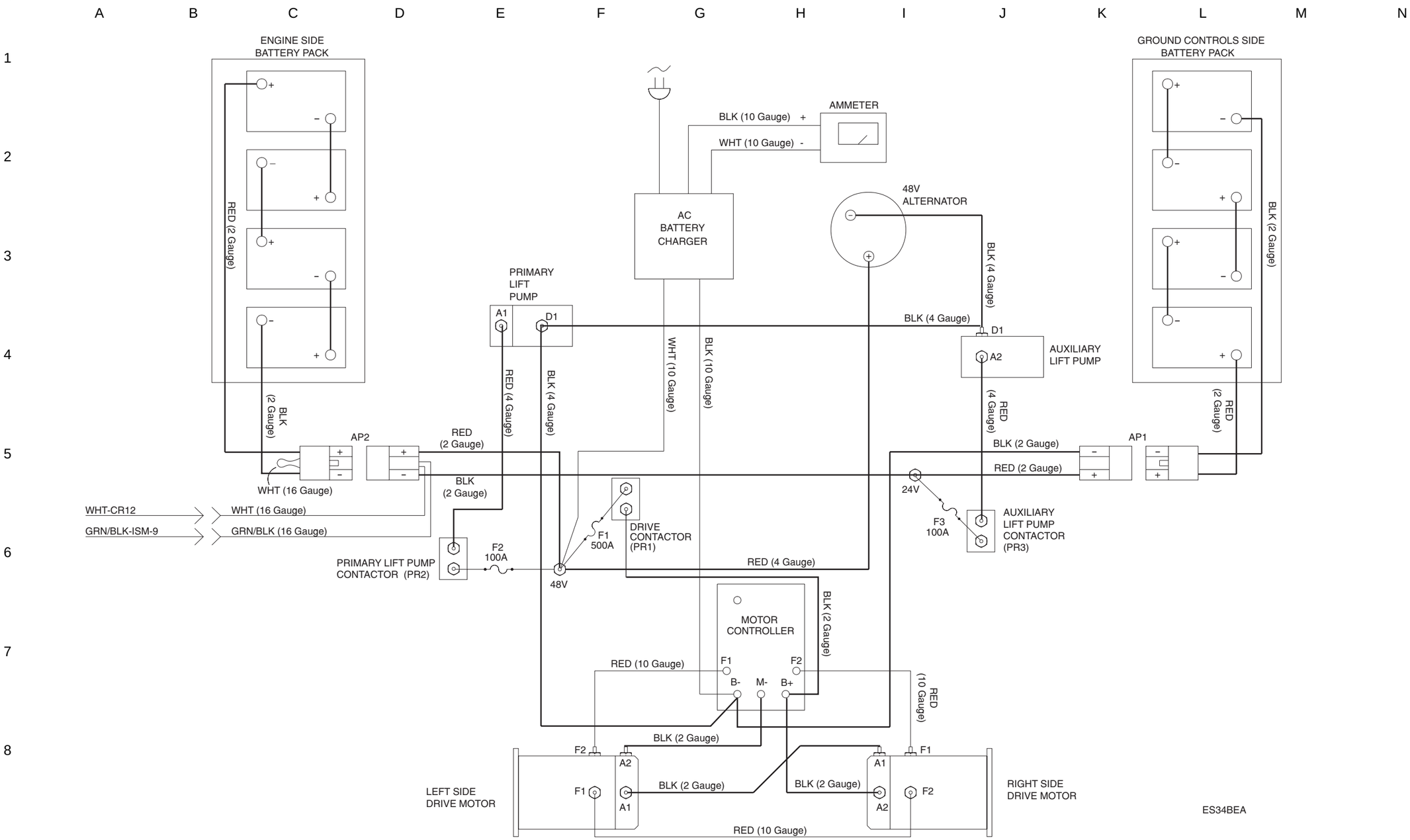


Platform Control Box Wiring Diagram (from serial number 3578 to 4799)

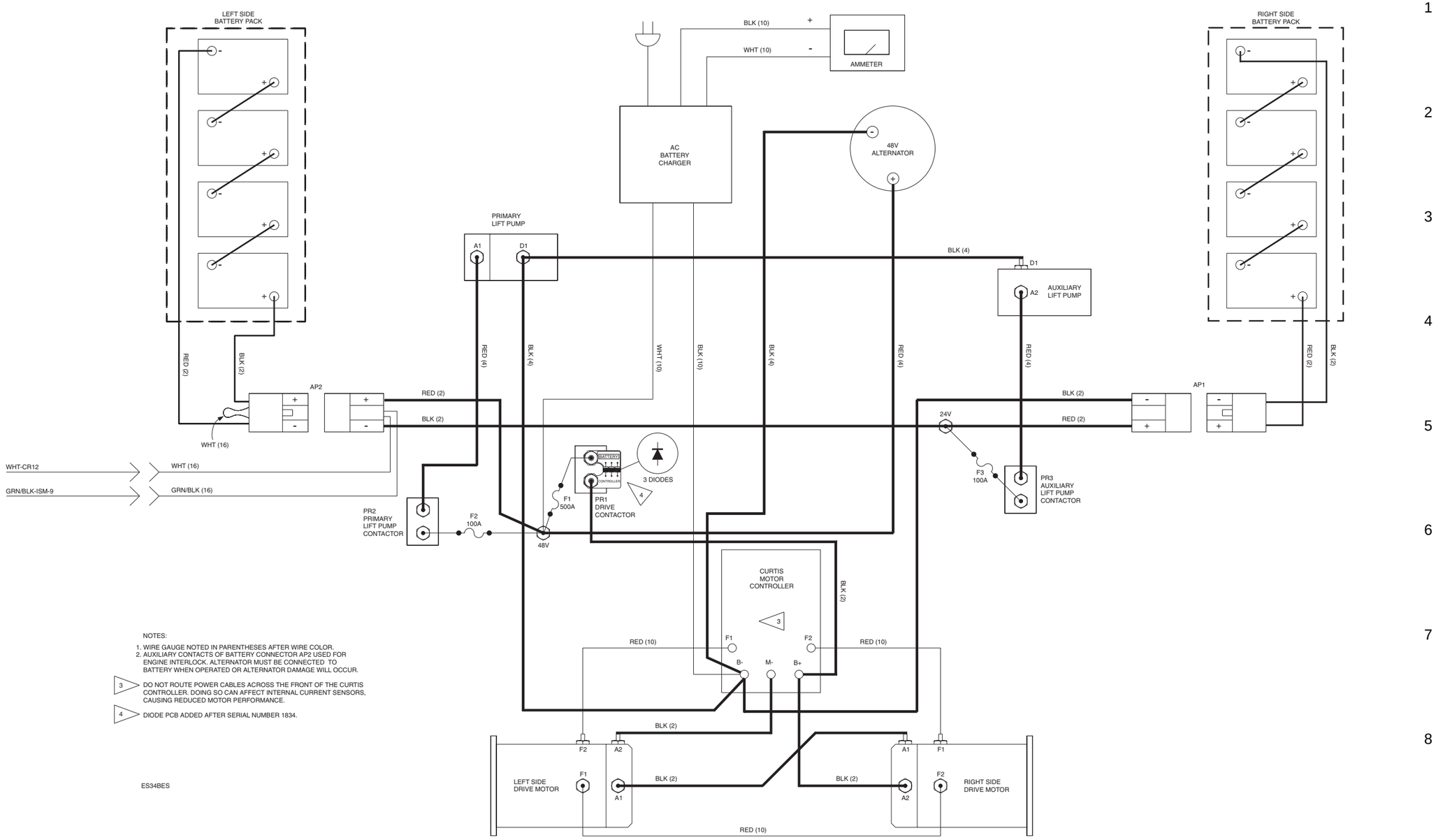


Power Cable Wiring Diagram (before serial number 1486)

Power Cable Wiring Diagram (before serial number 1486)



Power Cable Wiring Diagram (from serial number 1486 to 4799)



NOTES:

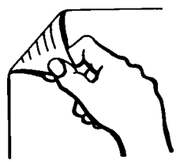
1. WIRE GAUGE NOTED IN PARENTHESES AFTER WIRE COLOR.
2. AUXILIARY CONTACTS OF BATTERY CONNECTOR AP2 USED FOR ENGINE INTERLOCK. ALTERNATOR MUST BE CONNECTED TO BATTERY WHEN OPERATED OR ALTERNATOR DAMAGE WILL OCCUR.

3 DO NOT ROUTE POWER CABLES ACROSS THE FRONT OF THE CURTIS CONTROLLER. DOING SO CAN AFFECT INTERNAL CURRENT SENSORS, CAUSING REDUCED MOTOR PERFORMANCE.

4 DIODE PCB ADDED AFTER SERIAL NUMBER 1834.

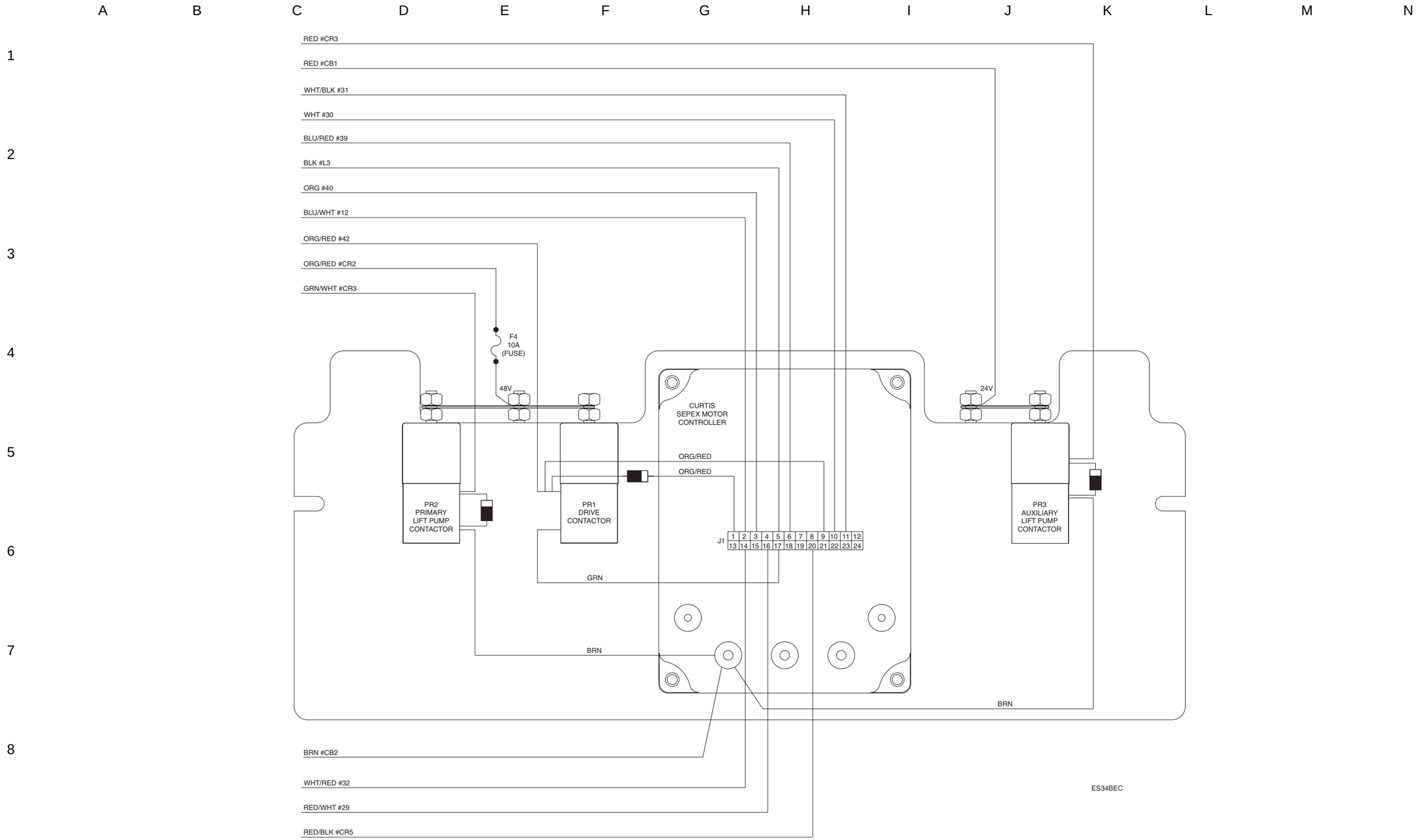
ES34BES

Power Cable Wiring Diagram
(from serial number 1486 to 4799)

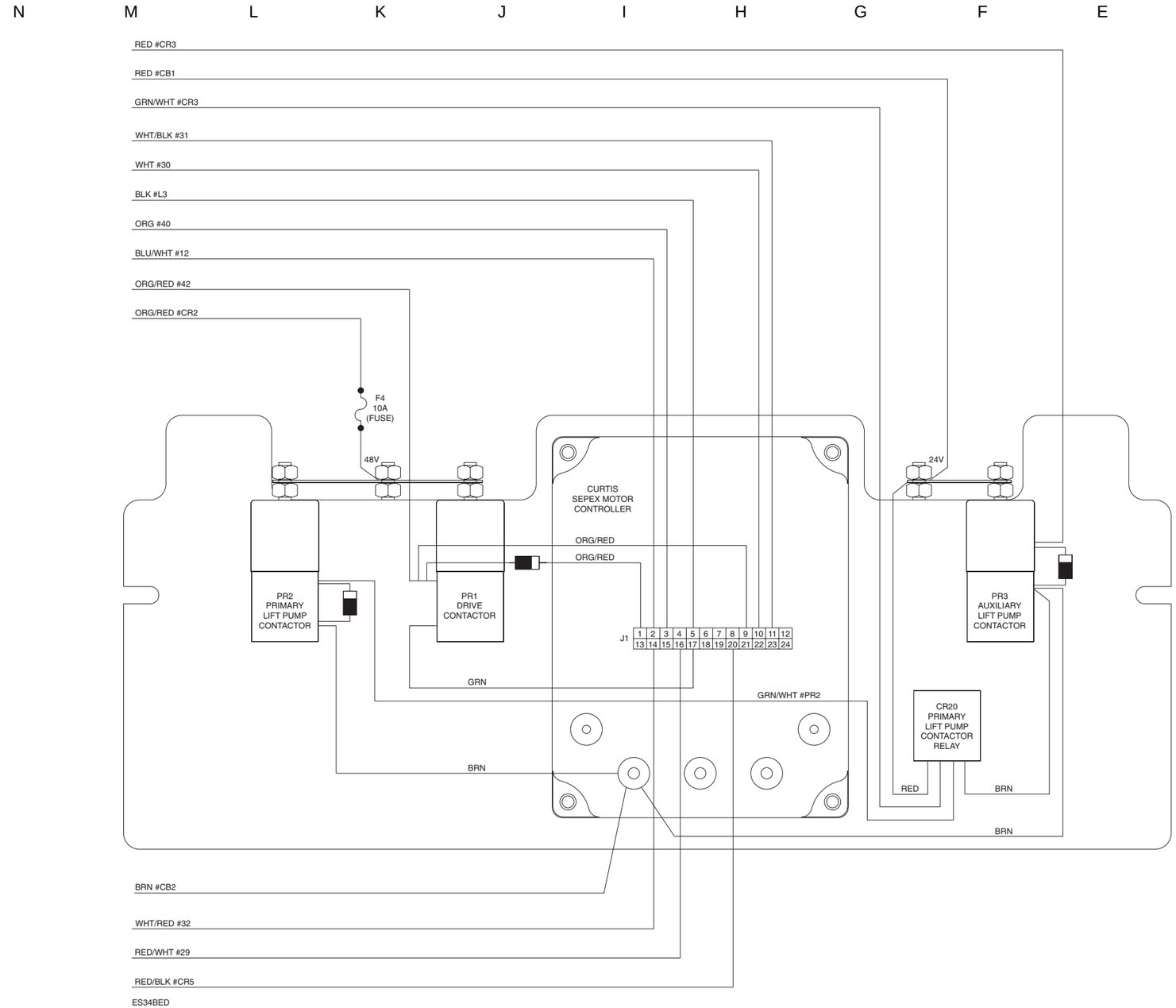


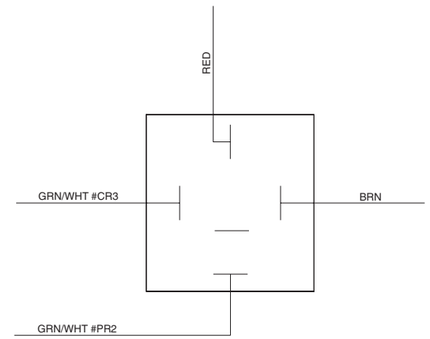
Drive Contactor Panel Wiring Diagram (before serial number 1787)

Drive Contactor Panel Wiring Diagram (before serial number 1787)



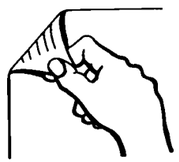
Drive Contactor Panel Wiring Diagram (from serial number 1787 to 2060)



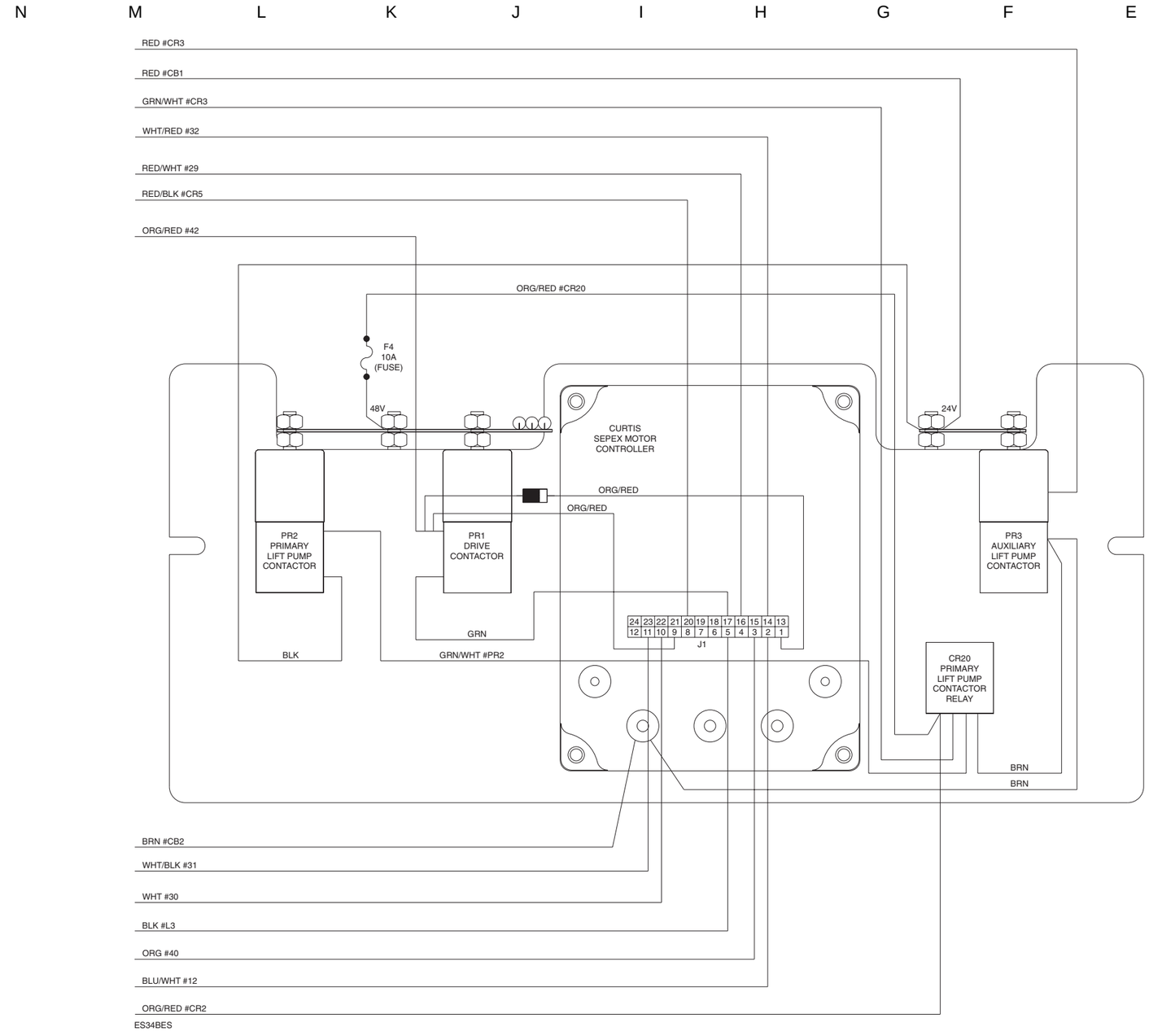


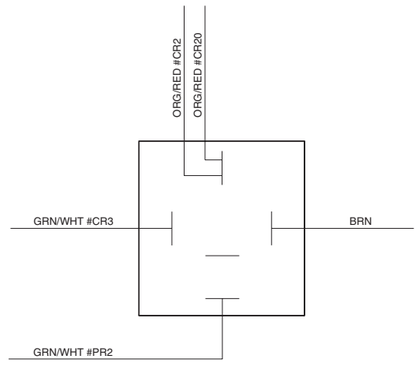
DETAIL A
LIFT PUMP CONTACTOR
RELAY SOCKET WIRING
(WIRE INSERTION SIDE SHOWN)

Drive Contactor Panel Wiring Diagram (from serial number 1787 to 2060)



Drive Contactor Panel Wiring Diagram (from serial number 2061 to 4799)

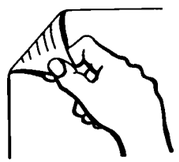




DETAIL A

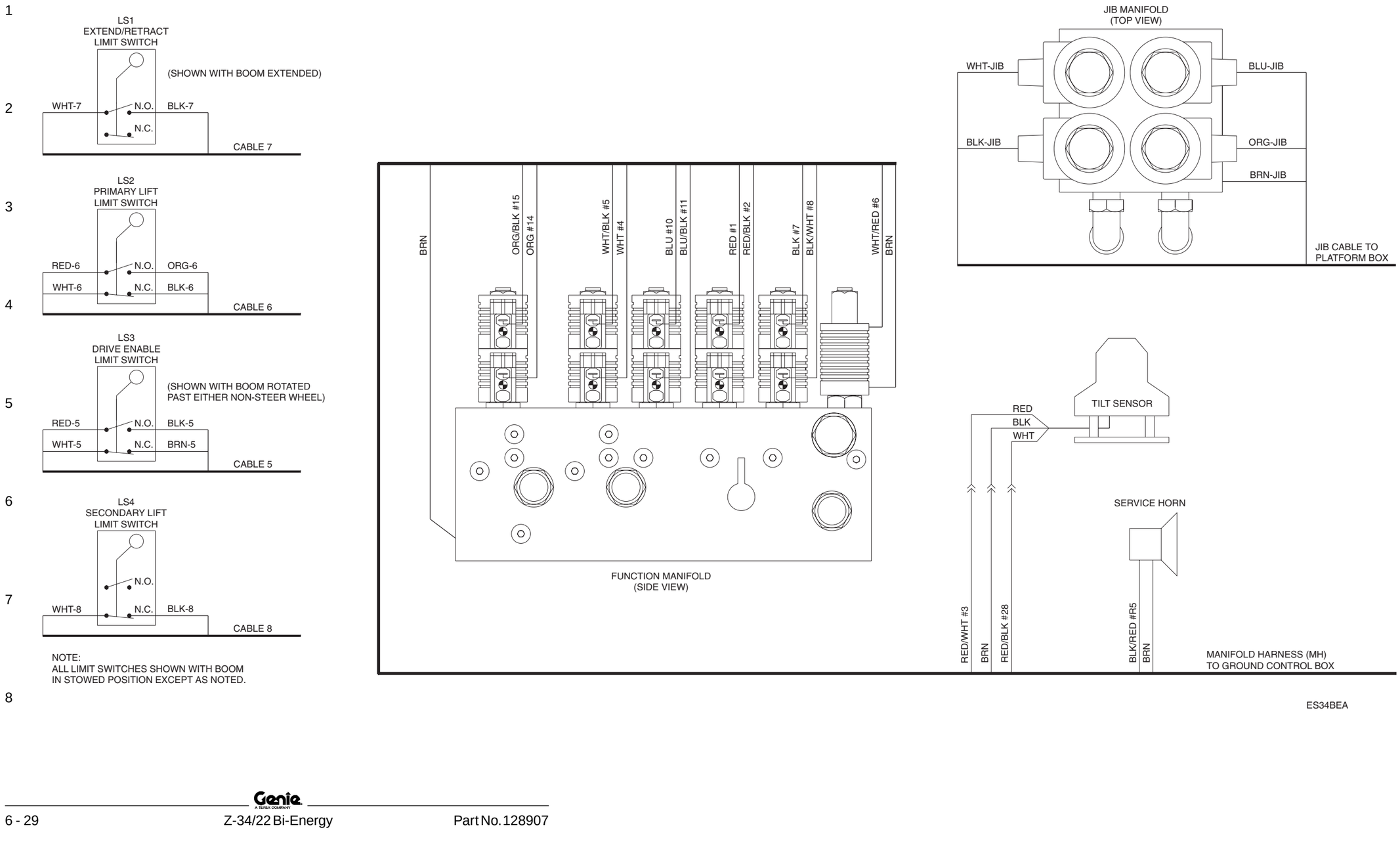
CR20
PRIMARY LIFT PUMP
CONTACTOR RELAY
SOCKET WIRING
(WIRE INSERTION SIDE SHOWN)

Drive Contactor Panel Wiring Diagram (from serial number 2061 to 4799)

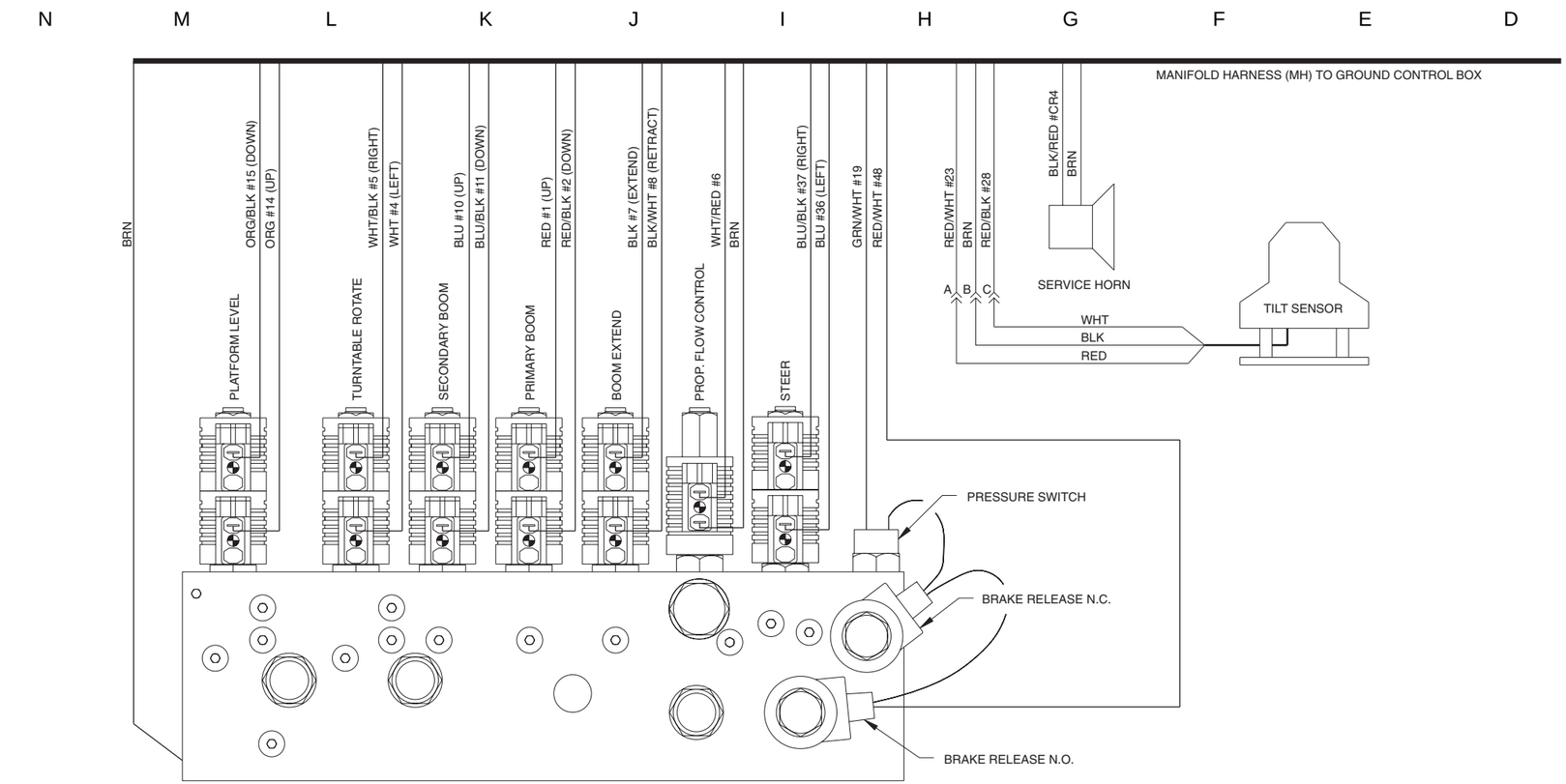


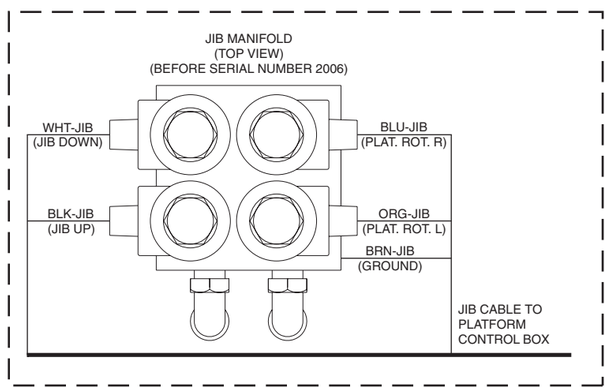
Manifold and Limit Switch Wiring Diagram (before serial number 1112)

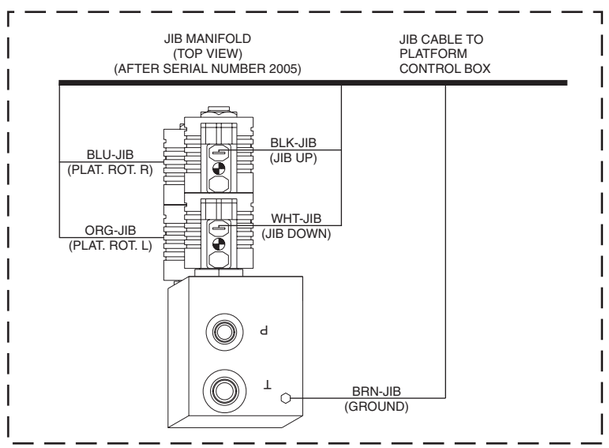
Manifold and Limit Switch Wiring Diagram (before serial number 1112)

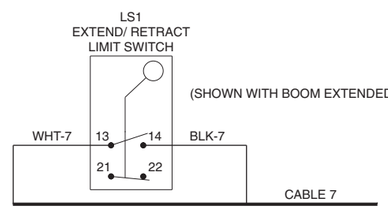


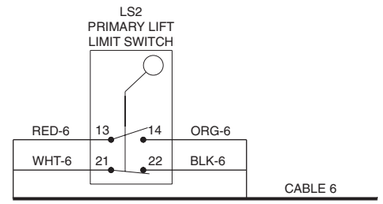
Manifold and Limit Switch Wiring Diagram (from serial number 1112 to 4799)

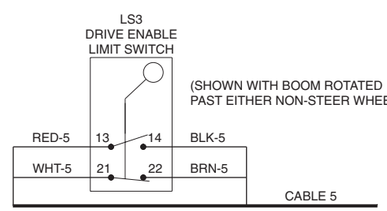


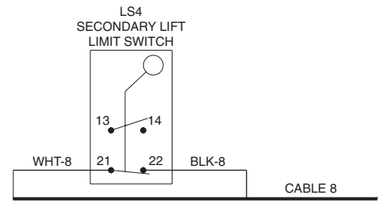








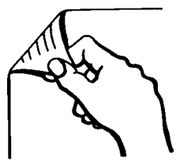




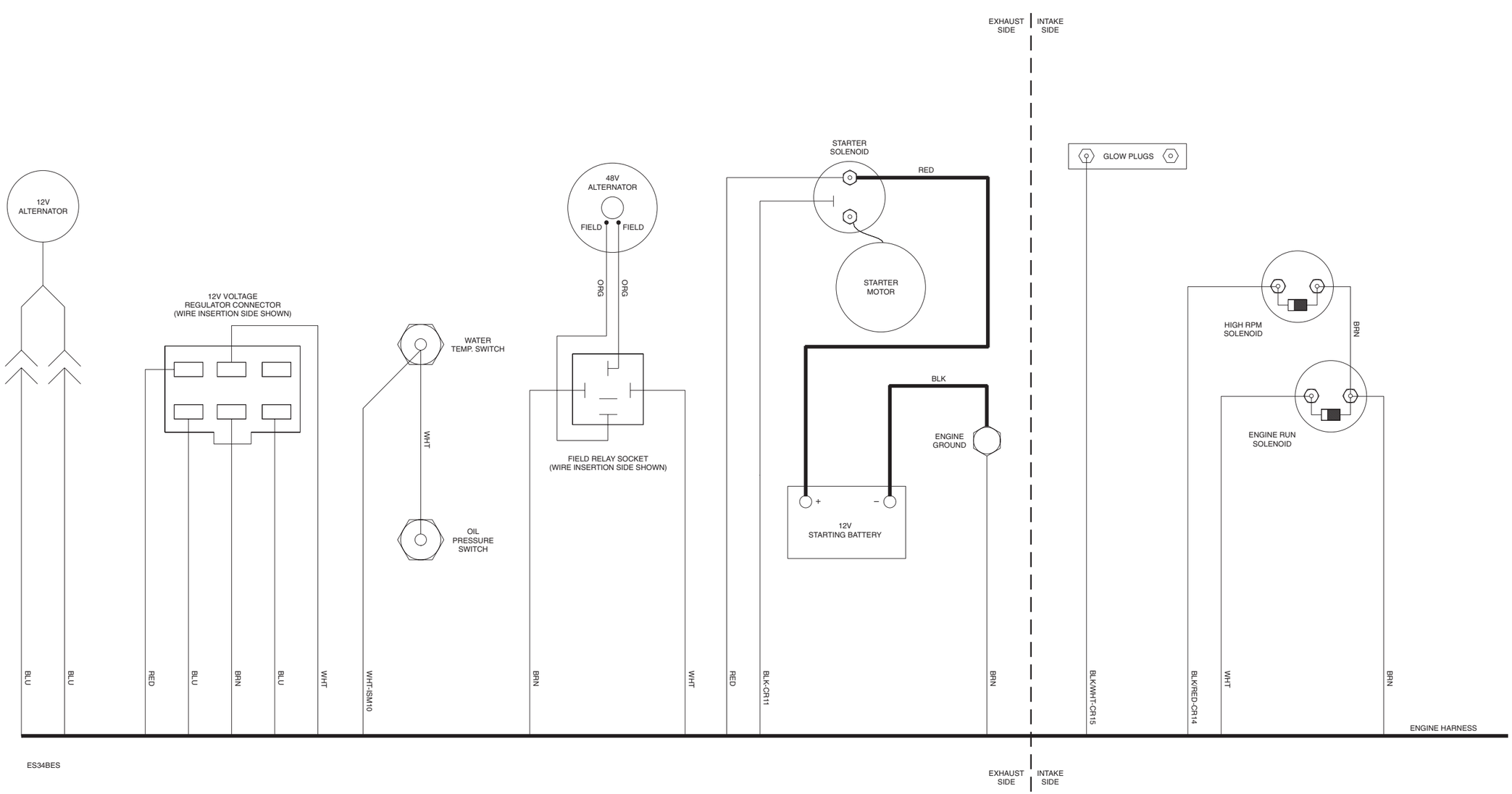
NOTE:
ALL LIMIT SWITCHES SHOWN WITH BOOM STOWED EXCEPT AS NOTED.

ES34BES

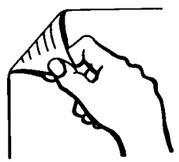
Manifold and Limit Switch Wiring Diagram (from serial number 1112 to 4799)



Engine Wiring Diagram

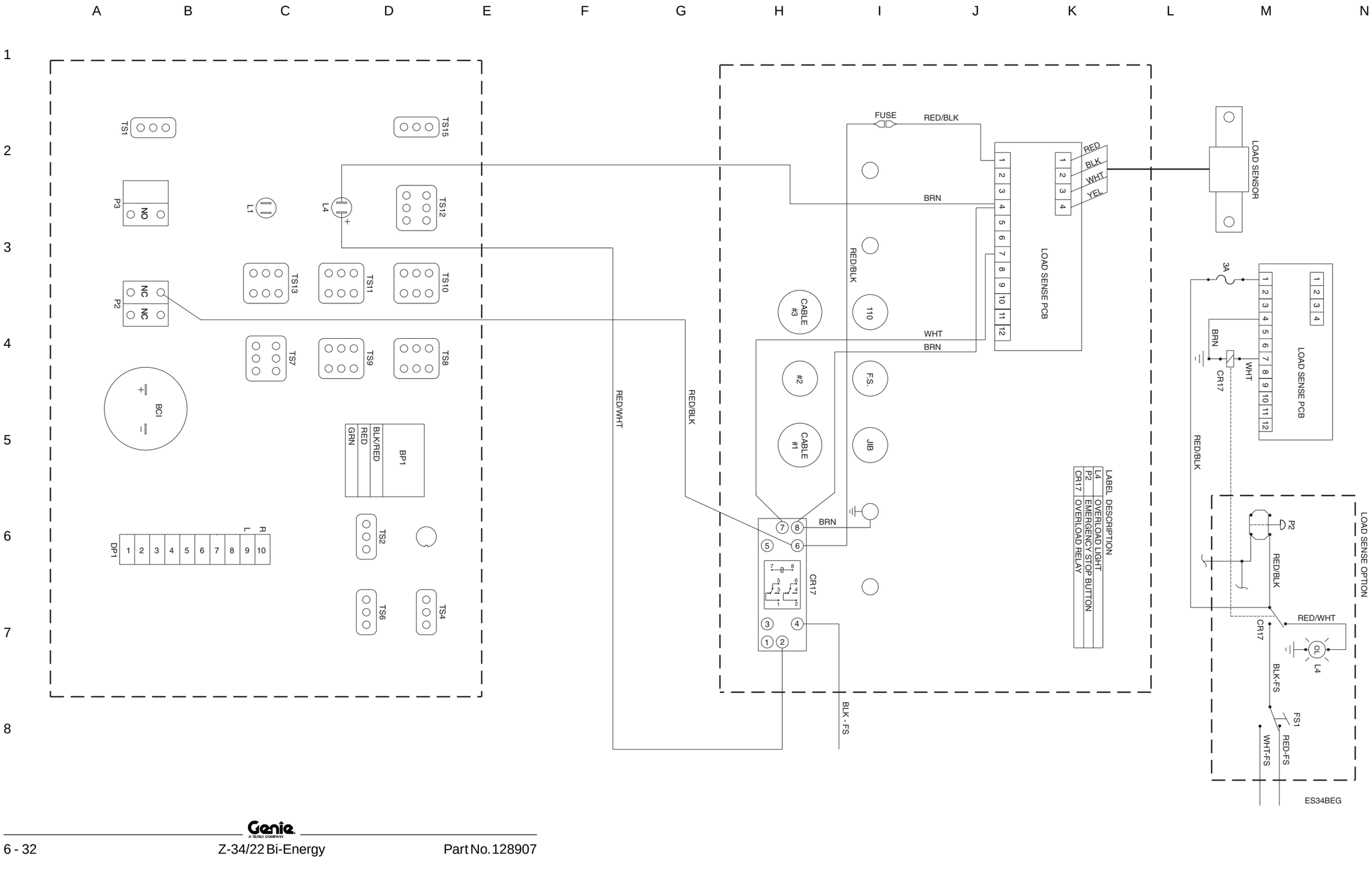


Engine Wiring Diagram

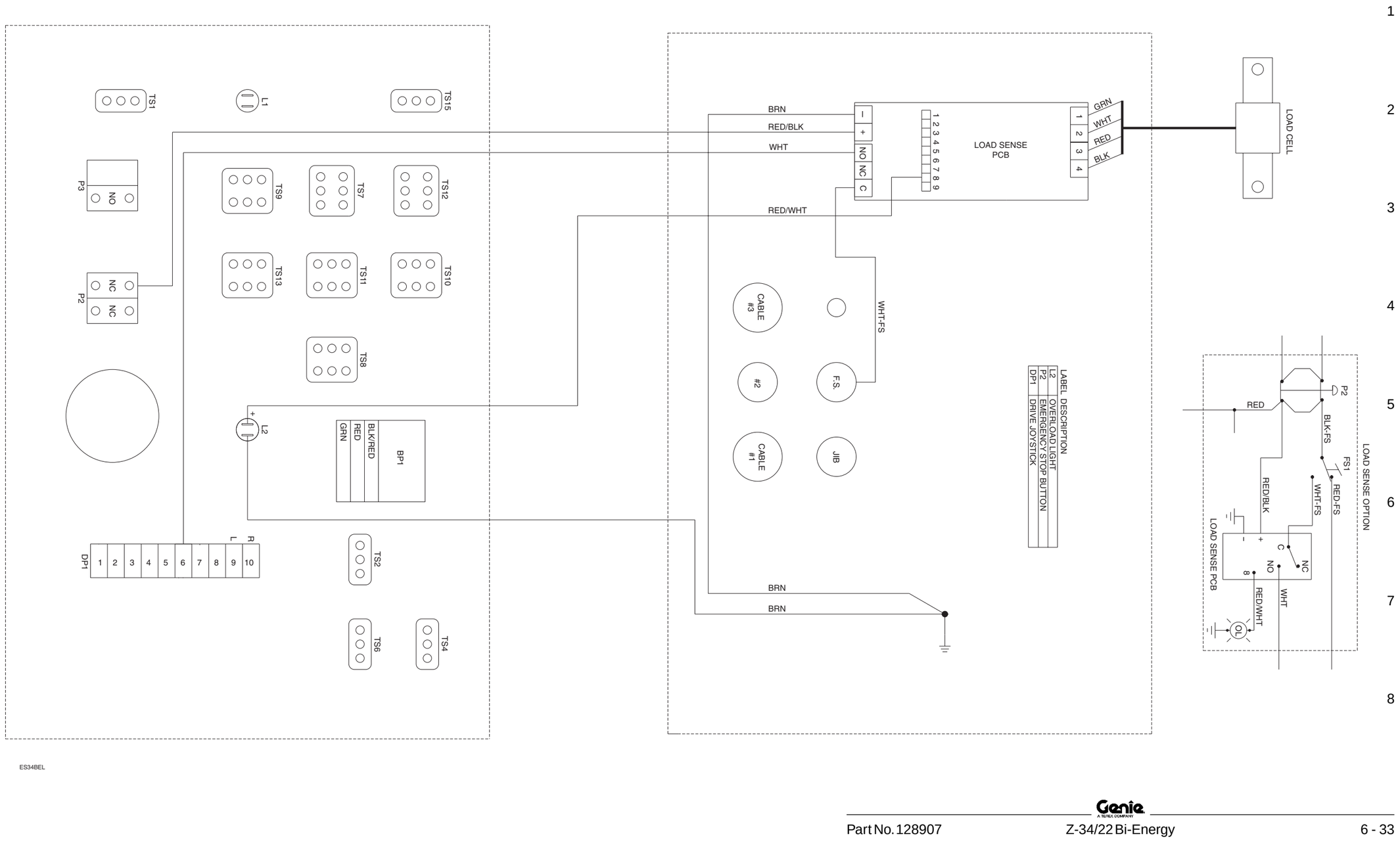


Load Sense Option Wiring Diagram (before serial number 2098)

Load Sense Option Wiring Diagram (before serial number 2098)

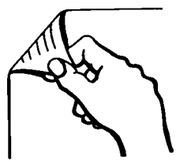


Load Sense Option Wiring Diagram (from serial number 2098 to 3577)

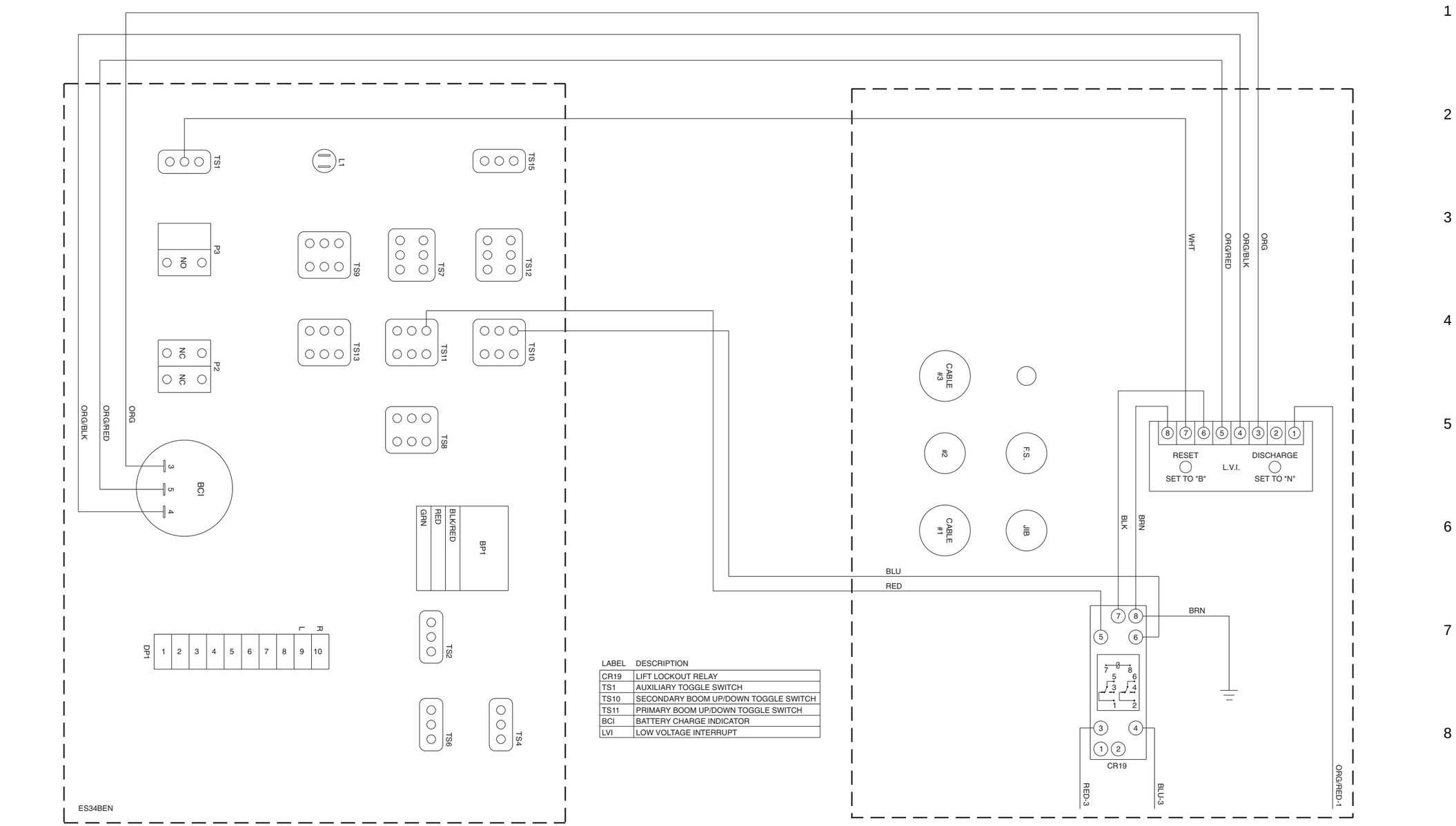


ES34BEL

Load Sense Option Wiring Diagram (from serial number 2098 to 3577)

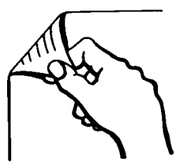


LVI / BCI Option Wiring Diagram



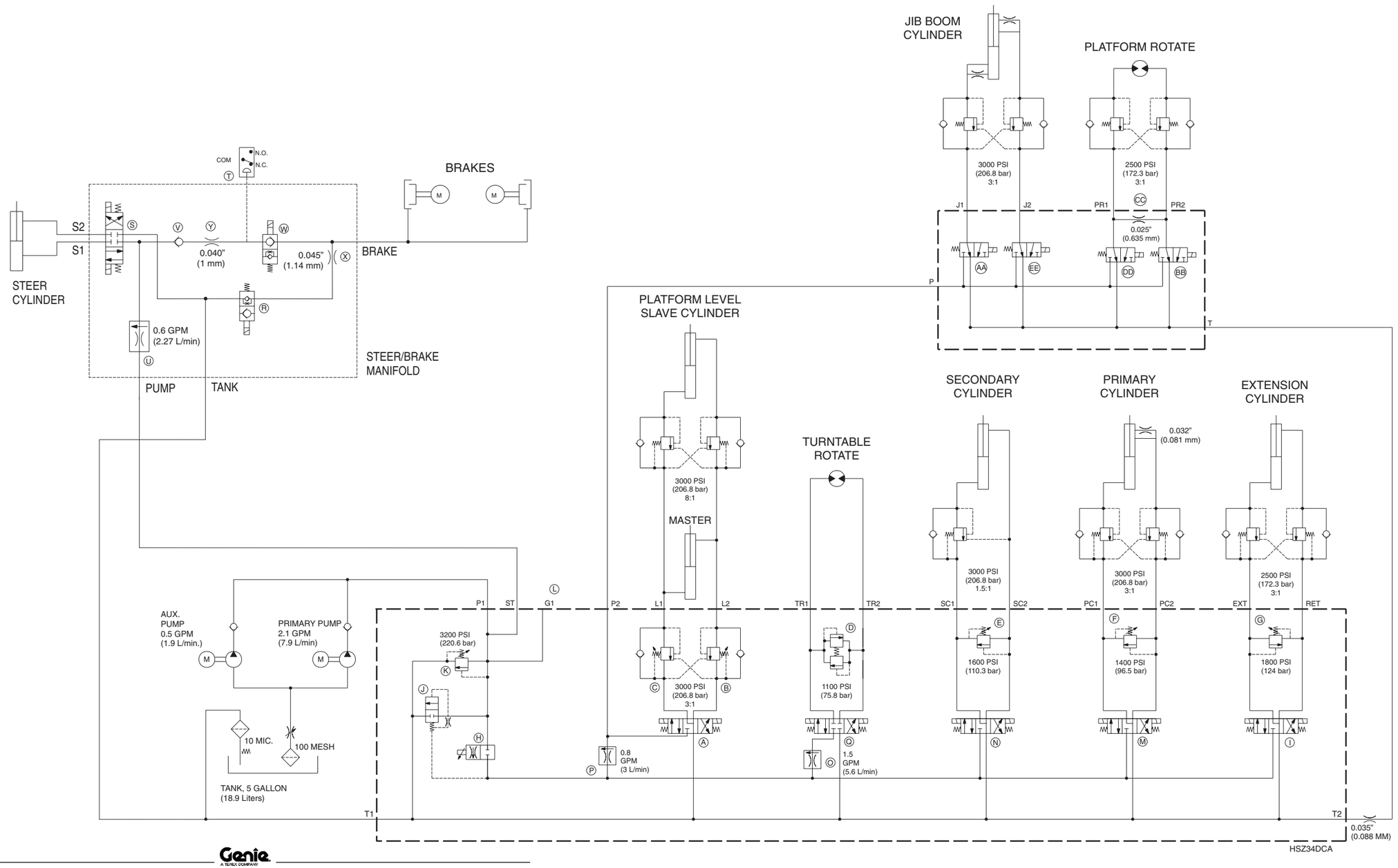
LABEL	DESCRIPTION
CR19	LIFT LOCKOUT RELAY
TS1	AUXILIARY TOGGLE SWITCH
TS10	SECONDARY BOOM UP/DOWN TOGGLE SWITCH
TS11	PRIMARY BOOM UP/DOWN TOGGLE SWITCH
BCI	BATTERY CHARGE INDICATOR
LVI	LOW VOLTAGE INTERRUPT

LVI / BCI Option Wiring Diagram

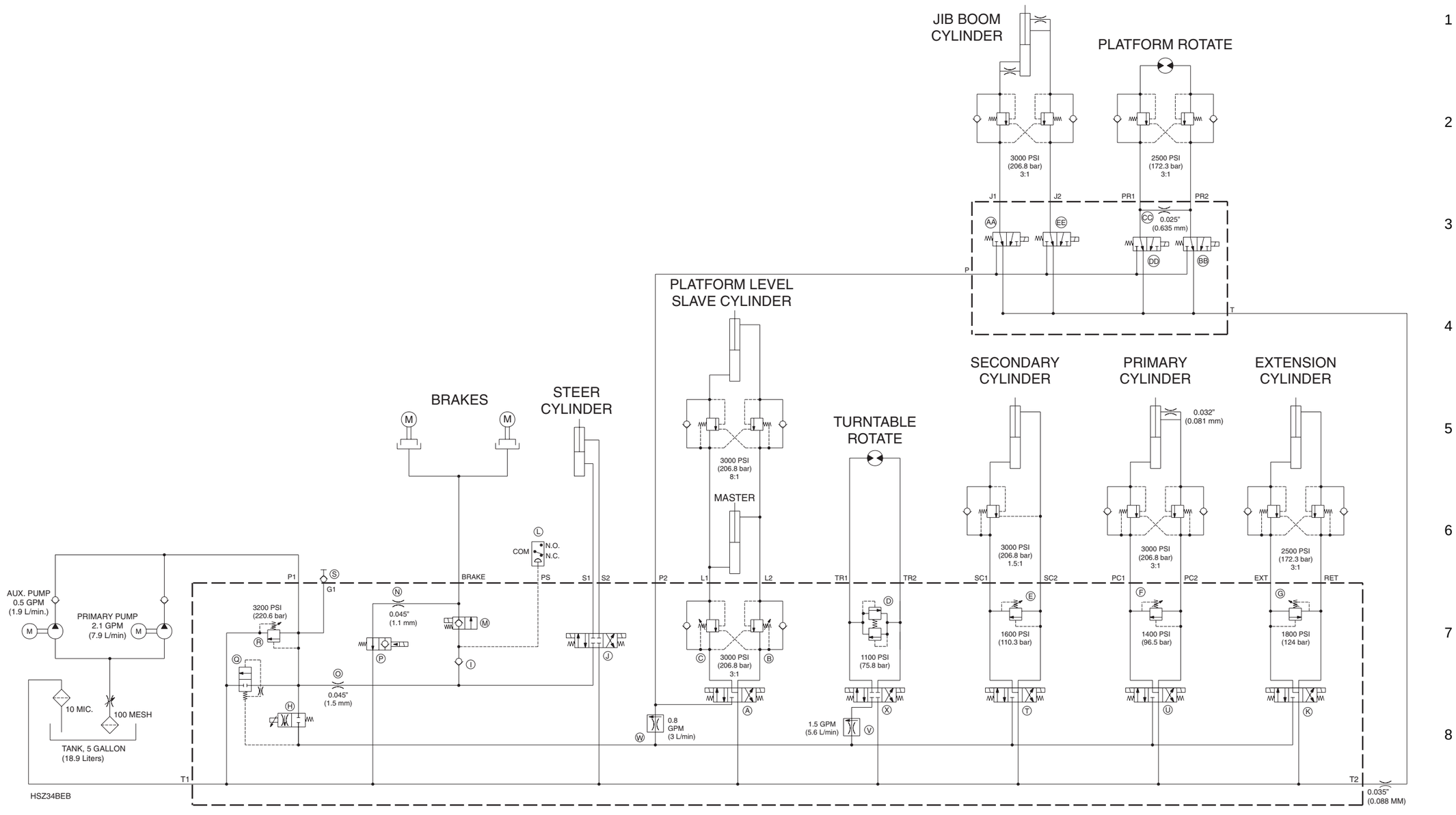


Hydraulic Schematic (before serial number 1112)

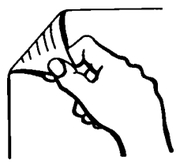
Hydraulic Schematic (before serial number 1112)



Hydraulic Schematic (from serial number 1112 to 2005)

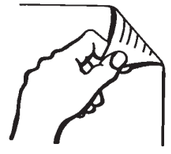


Hydraulic Schematic
(from serial number 1112 to 2005)

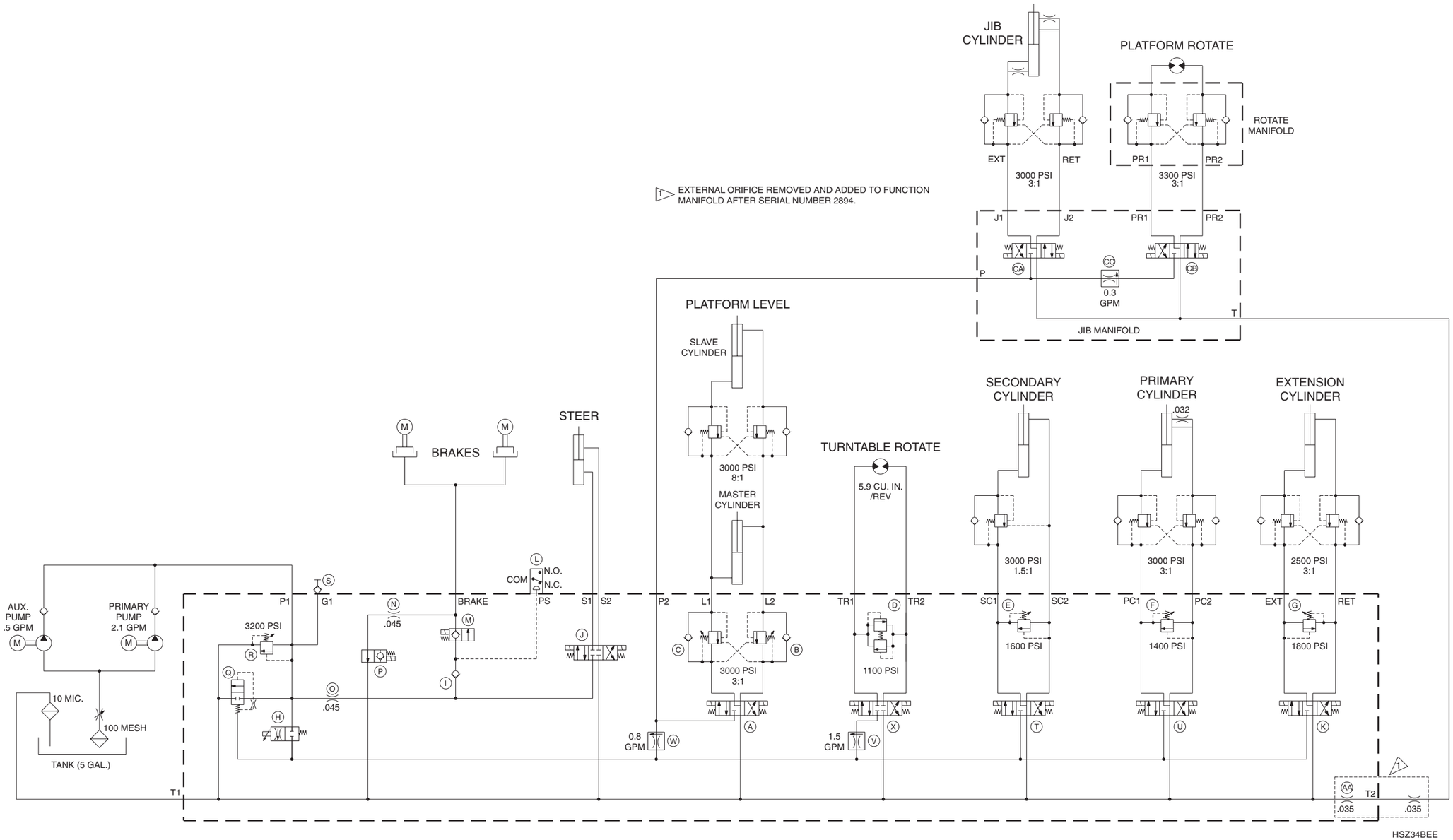


Hydraulic Schematic
(from serial number 2006 to 3215)





Hydraulic Schematic
(from serial number 2006 to 3215)



Hydraulic Schematic
(from serial number 3216 to 4799)

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

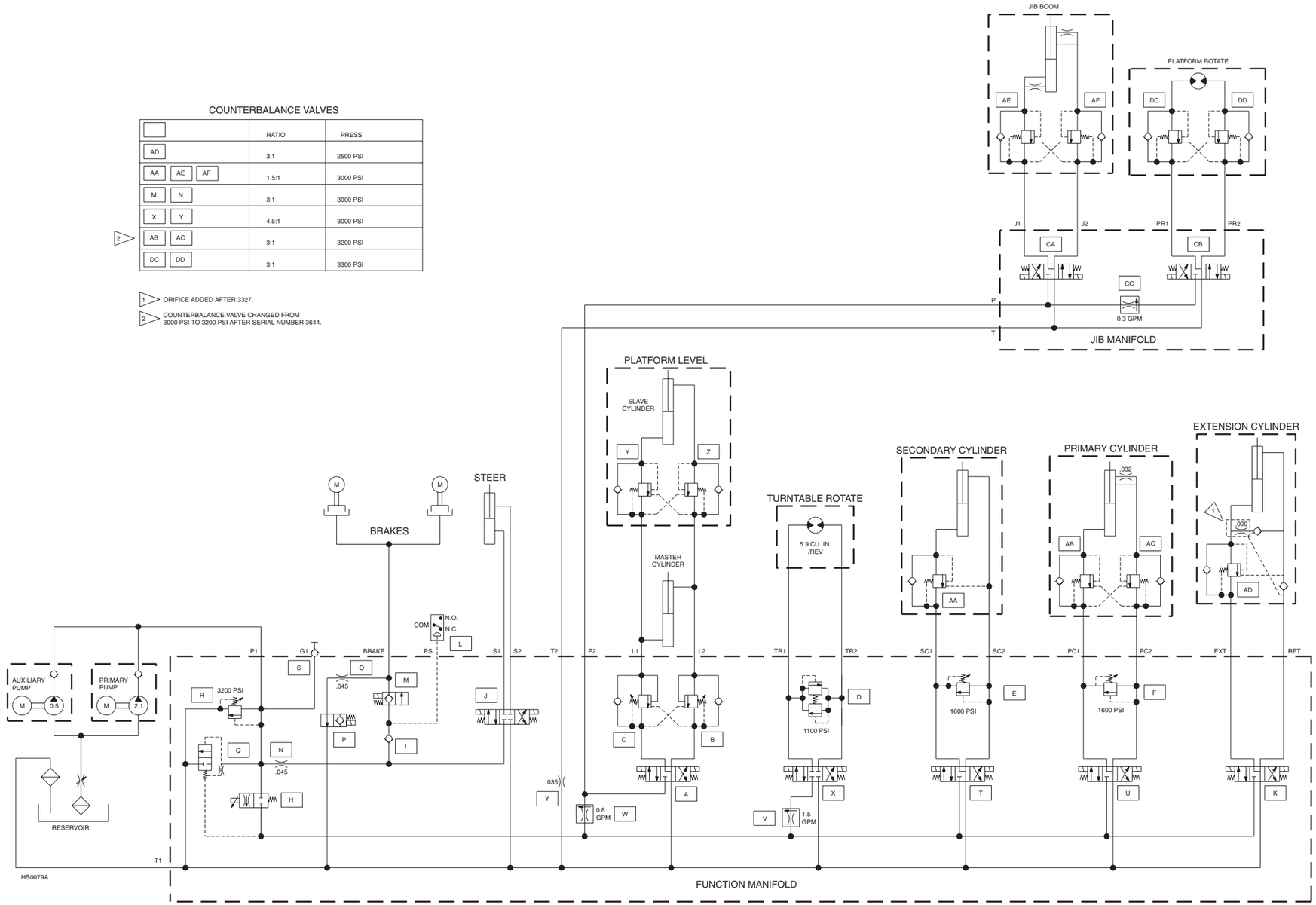
1 2 3 4 5 6 7 8

COUNTERBALANCE VALVES

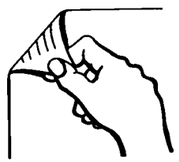
	RATIO	PRESS
AD	3:1	2500 PSI
AA AE AF	1.5:1	3000 PSI
M N	3:1	3000 PSI
X Y	4.5:1	3000 PSI
2 AB AC	3:1	3200 PSI
DC DD	3:1	3300 PSI

1 ORIFICE ADDED AFTER 3327.

2 COUNTERBALANCE VALVE CHANGED FROM 3000 PSI TO 3200 PSI AFTER SERIAL NUMBER 3644.



Hydraulic Schematic
(from serial number 3216 to 4799)



California Proposition 65

WARNING

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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