

Genie®



Service Manual

Part No. 62401

Rev A6

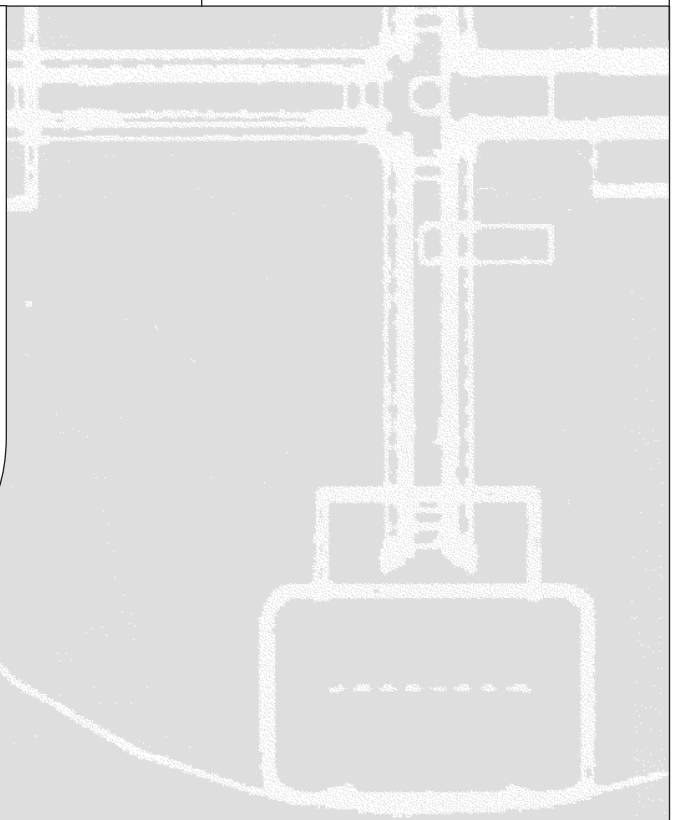
January 2013

STM-100 *from serial number 101 to 136*

STM-105 *from serial number 101 to 136*

STM-120 *from serial number 101 to 403*

STM-125 *from serial number 101 to 403*



Introduction

Important

Read, understand and obey the safety rules and operating instructions in the *Genie S-100 and Genie S-105 Operator's Manual* or the *Genie S-120 and Genie S-125 Operator's Manual* before attempting any maintenance or repair procedure.

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

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

Technical Publications

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

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

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Serial Number Legend




Genie[®]
A TEREX COMPANY

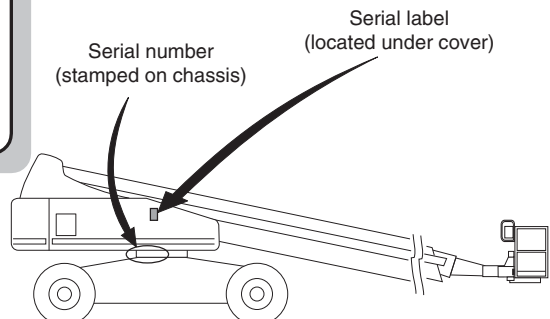
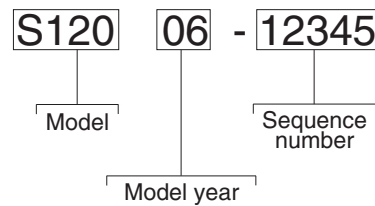
Model: S120
Serial number: S12006-12345
Model year: 2006 **Manufacture date:** 01/05/06
Electrical schematic number: ES0427
Machine unladen weight:

Rated work load (including occupants): 500 lb / 227 kg
Maximum number of platform occupants: 2
Maximum allowable side force : 150 lb / 670 N
Maximum allowable inclination of the chassis:
0 deg
Maximum wind speed : 28 mph/ 12.5 m/s
Maximum platform height : 126 ft/ 38.6 m
Maximum platform reach : 75ft/ 22.9 m
Gradeability: N/A
Country of manufacture: USA
This machine complies with:
ANSI A92.5
CAN B.354.4

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PN - 77055





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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual, and the *Genie S-100 & Genie S-105 Operator's Manual* or the *Genie S-120 & Genie S-125 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

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

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

NOTICE

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



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



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

Workplace Safety

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



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



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



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



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



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

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Specifications

Machine Specifications, S-120 and S-125 Models

Stowed dimensions	S-120	S-125
Length, transport position	39 ft 11 in 12.17 m	39 ft 11 in 12.17 m
Length, stowed	42 ft 8 in 13 m	46 ft 14 m
Width, axles retracted	8 ft 6 in 259 cm	8 ft 6 in 259 cm
Width, axles extended	11 ft 6 in 351 cm	11 ft 6 in 351 cm
Height, stowed maximum	10 ft 1 in 308 cm	10 ft 1 in 308 cm
Weight	44,340 lbs 20,112 kg	44,640 lbs 20,248 kg
Ground clearance	15 ³ / ₄ in 40 cm	15 ³ / ₄ in 40 cm
Operational dimensions		
Platform height, maximum	120 ft 36.6 m	125 ft 38.1 m
Working height, maximum	126 ft 38.4 m	131 ft 39.9 m
Horizontal reach maximum	75 ft 22.9 m	80 ft 24.4 m
Maximum load capacity	750 lb 340 kg	500 lb 227 kg
Turntable tailswing, axles retracted	66 in 168 cm	66 in 168 cm
Turntable tailswing, axles extended	48 in 122 cm	48 in 122 cm
Wheelbase	12 ft 366 cm	12 ft 366 cm
Turning radius, outside, axles retracted	24 ft 4 in 7.4 m	24 ft 4 in 7.4 m

Turning radius, inside, axles retracted	16 ft 4 in 4.9 m	16 ft 4 in 4.9 m
Turning radius, outside, axles extended	20 ft 8 in 6.3 m	20 ft 8 in 6.3 m
Turning radius, inside, axles extended	10 ft 1 in 3.1 m	10 ft 1 in 3.1 m
Turntable rotation (degrees)	360° continuous	
Platform rotation	160°	
Maximum allowable side force (ANSI and CSA)	150 lbs 667 N	
Maximum allowable side force (CE)	90 lbs 400 N	
Controls	12V DC proportional	

Platform dimensions

Length	96 in 244 cm
Width	36 in 91 cm

Tires and wheels

Tire size	18 x 22.5, 18 pr FF
Tire ply rating	18
Overall tire diameter	46.5 in 118 cm
Wheel diameter	22.5 in 57 cm
Wheel width	13 in 33 cm
Wheel lugs	10 @ ³ / ₄ -16
Lug nut torque, dry	420 ft-lbs 569.5 Nm
Lug nut torque, lubricated	320 ft-lbs 433.9 Nm

SPECIFICATIONS

Fluid capacities

Hydraulic tank capacity	55 gallons 208 liters
Hydraulic system capacity (including tank)	80 gallons 303 liters
Fuel tank capacity	40 gallons 151 liters
Airborne noise emissions Maximum sound level at normal operating workstations (A-weighted)	80 dB

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

**Performance Specifications,
S-120 and S-125 Models****Drive speeds, maximum**

Drive speed, stowed	3 mph 40 ft/9.1 sec	4.8 km/h 12.2 m/9.1 sec
Drive speed, raised or extended	0.7 mph 40 ft/40 sec	1.1 km/h 12.2 m/40 sec
Drive speed, fully extended	0.4 mph 40 ft/70 sec	0.6 km/h 12.2 m/70 sec

Gradeability (boom stowed) 40%

**Boom function speeds, maximum
from platform controls**

Jib boom up (S-125 models)	28 to 32 seconds
Jib boom down (S-125 models)	28 to 32 seconds

Boom up

Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft (>1.2 m) (time between fully lowered and a fully raised position)	100 to 110 seconds
Boom extended to >80 ft (>24.4 m) (time between 53° envelope limit and a fully raised position)	50 to 55 seconds
Boom extended to >100 ft (>30.5 m) (time between 68° envelope limit and a fully raised position)	24 to 28 seconds

Boom down

Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft (>1.2 m) (time between fully raised and a fully lowered position)	100 to 110 seconds
Boom extended to >80 ft (>24.4 m) (time between fully raised and the 50° envelope limit)	50 to 55 seconds
Boom extended to >100 ft (>30.5 m) (time between fully raised and the 65° envelope limit)	24 to 28 seconds

SPECIFICATIONS

Boom extend

horizontal, 0 to 80 ft (0 to 24.4 m) 75 to 83 seconds
 vertical, 0 to 120 ft (0 to 36.6 m) 170 to 190 seconds

Boom retract

horizontal, 80 ft to 0 (24.4 m to 0) 75 to 83 seconds
 vertical, 120 ft to 0 (36.6 m to 0) 170 to 190 seconds

Turntable rotate, 360°

boom horizontal and fully retracted 170 to 190 seconds

Turntable rotate, 360°

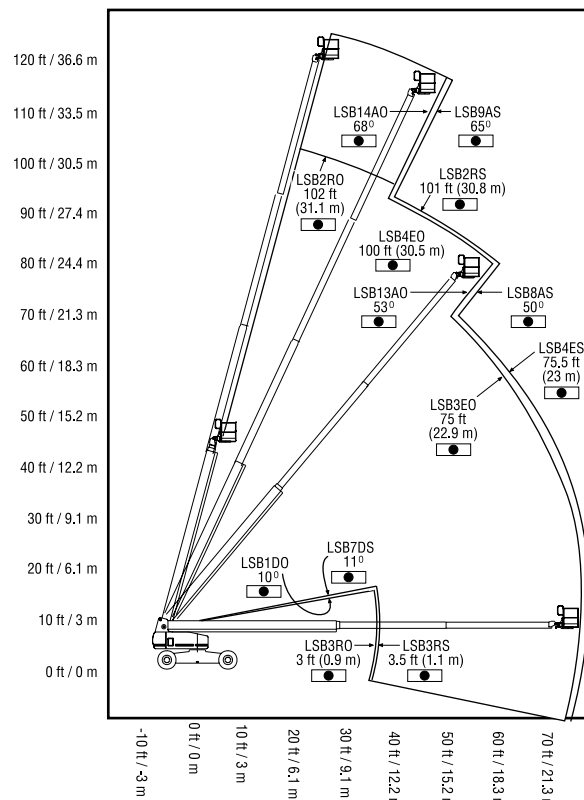
boom horizontal and extended >0 ft (>0 m) 285 to 315 seconds

Turntable rotate, 360°

boom horizontal and extended >80 ft (>24.4 m) 490 to 540 seconds

Platform rotate, 160°

18 to 22 seconds



Machine Specifications, S-100 and S-105 Models

Stowed dimensions	S-100	S-105
Length, transport position	39 ft 11 in 12.17 m	39 ft 11 in 12.17 m
Length, stowed	42 ft 8 in 13 m	46 ft 14 m
Width, axles retracted	8 ft 6 in 259 cm	8 ft 6 in 259 cm
Width, axles extended	11 ft 6 in 351 cm	11 ft 6 in 351 cm
Height, stowed maximum	10 ft 1 in 308 cm	10 ft 1 in 308 cm
Weight	39,700 lbs 18,007 kg	40,000 lbs 18,143 kg
Ground clearance	15 ¹ / ₂ in 39 cm	15 ¹ / ₂ in 39 cm

Operational dimensions

Platform height, maximum	100 ft 30.5 m	105 ft 32 m
Working height, maximum	106 ft 32.3 m	111 ft 33.8 m
Horizontal reach maximum	75 ft 22.9 m	80 ft 24.4 m
Maximum load capacity	750 lb 340 kg	500 lb 227 kg
Turntable tailswing, axles retracted	66 in 168 cm	66 in 168 cm
Turntable tailswing, axles extended	48 in 122 cm	48 in 122 cm
Wheelbase	12 ft 366 cm	12 ft 366 cm
Turning radius, outside, axles retracted	24 ft 4 in 7.4 m	24 ft 4 in 7.4 m
Turning radius, inside, axles retracted	16 ft 4 in 4.9 m	16 ft 4 in 4.9 m

SPECIFICATIONS

Turning radius, outside, axles extended	20 ft 8 in 6.3 m	20 ft 8 in 6.3 m
Turning radius, inside, axles extended	10 ft 1 in 3.1 m	10 ft 1 in 3.1 m
Turntable rotation (degrees)	360° continuous	
Platform rotation	160°	
Maximum allowable side force (ANSI and CSA)	150 lbs 667 N	
Maximum allowable side force (CE)	90 lbs 400 N	
Controls	12V DC proportional	

Platform dimensions

Length	96 in 244 cm
Width	36 in 91 cm

Tires and wheels

Tire size	15 x 22.5, 18 pr FF
Tire ply rating	18
Overall tire diameter	43.1 in 109.5 cm
Wheel diameter	22.5 in 57 cm
Wheel width	11.75 in 30 cm
Wheel lugs	10 @ 3/4 -16
Lug nut torque, dry	420 ft-lbs 569.5 Nm
Lug nut torque, lubricated	320 ft-lbs 433.9 Nm

Fluid capacities

Hydraulic tank capacity	55 gallons 208 liters
Hydraulic system capacity (including tank)	80 gallons 303 liters
Fuel tank capacity	40 gallons 151 liters
Airborne noise emissions	80 dB
Maximum sound level at normal operating workstations (A-weighted)	

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

SPECIFICATIONS

Performance Specifications, S-100 and S-105 Models

Drive speeds, maximum

Drive speed, stowed	3 mph	4.8 km/h
	40 ft/9.1 sec	12.2 m/9.1 sec
Drive speed, raised or extended	0.7 mph	1.1 km/h
	40 ft/40 sec	12.2 m/40 sec
Drive speed, fully extended	0.4 mph	0.6 km/h
	40 ft/70 sec	12.2 m/70 sec

Gradeability (boom stowed) 42%

Boom function speeds, maximum from platform controls

Jib boom up (S-105 models)	28 to 32 seconds
Jib boom down (S-105 models)	28 to 32 seconds

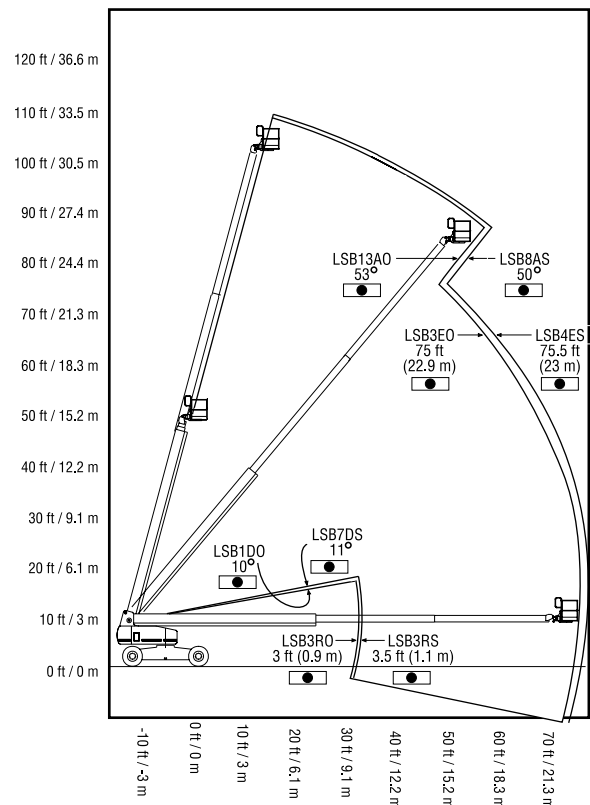
Boom up

Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft (>1.2 m) (time between fully lowered and a fully raised position)	100 to 110 seconds
Boom extended to >80 ft (>24.4 m) (time between 53° envelope limit and a fully raised position)	50 to 55 seconds

Boom down

Boom fully retracted	80 to 88 seconds
Boom extended to >4 ft (>1.2 m) (time between fully raised and a fully lowered position)	100 to 110 seconds
Boom extended to >80 ft (>24.4 m) (time between fully raised and the 50° envelope limit)	50 to 55 seconds

Boom extend, boom fully raised 0 to 100 ft (0 to 30.5 m)	120 to 140 seconds
Boom retract, boom fully raised 100 ft to 0 (30.5 m to 0)	120 to 140 seconds
Turntable rotate, 360° boom horizontal and fully retracted	170 to 190 seconds
Turntable rotate, 360° boom horizontal and extended >0 ft (>0 m)	285 to 315 seconds
Turntable rotate, 360° boom fully raised and extended >80 ft (>24.4 m)	490 to 540 seconds
Platform rotate, 160°	18 to 22 seconds



SPECIFICATIONS

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
------------------------	-------------------

Drive pump

Type: bi-directional, variable displacement piston pump

Displacement @ 2350 rpm	28 gpm 106 L/min
-------------------------	---------------------

Maximum drive pressure	4250 psi 293 bar
------------------------	---------------------

Charge pump

Type: gear

Displacement @ 2350 rpm	5.2 gpm 19.7 L/min
-------------------------	-----------------------

Charge pump pressure	290 psi 20 bar
----------------------	-------------------

Function manifold

Function relief valve pressure	2600 psi 179.3 bar
--------------------------------	-----------------------

Boom extend relief valve pressure	1800 psi 124.1 bar
-----------------------------------	-----------------------

Four wheel steer and axle extend/retract manifold

Steer/axle extend flow regulator	3 gpm 11.4 L/min
----------------------------------	---------------------

Drive manifold

Brake relief pressure	250 psi 17.2 bar
-----------------------	---------------------

Drive motors

Displacement per revolution, variable	0.73 to 2.75 cu in 12 cc to 45 cc
---------------------------------------	--------------------------------------

Function pump

Type: two-section gear pump

Displacement (Pump 1)	1.75 cu in 28.7 cc
-----------------------	-----------------------

Displacement @ 2350 rpm (Pump 1)	17.8 gpm 67.4 L/min
----------------------------------	------------------------

Displacement (Pump 2)	1 cu in 16.4 cc
-----------------------	--------------------

Displacement @ 2350 rpm (Pump 2)	10.2 gpm 38.5 L/min
----------------------------------	------------------------

Auxiliary pump

Type: two section gear pump

Displacement (Section 1)	0.159 cu in 2.61 cc
--------------------------	------------------------

Displacement @ 2687 rpm (Section 1)	1.85 gpm 7 L/min
-------------------------------------	---------------------

Displacement (Section 2)	0.051 cu in 0.84 cc
--------------------------	------------------------

Displacement @ 2687 rpm (Section 2)	0.59 gpm 2.2 L/min
-------------------------------------	-----------------------

Auxiliary pump relief pressure

Section 1	2500 psi	172.4 bar
Section 2	3000 psi	206.8 bar

Hydraulic filters

High pressure filter	B3-200
----------------------	--------

High pressure filter bypass pressure	100 psi 6.9 bar
--------------------------------------	--------------------

Medium pressure filter	B3-200
------------------------	--------

Medium pressure filter bypass pressure	87 psi 6 bar
--	-----------------

Hydraulic tank circuit return line filter	10 micron with 25 psi (1.7 bar) bypass
---	---

Drive motor case drain filter	10 micron
-------------------------------	-----------

SPECIFICATIONS

Perkins Engine 1004-42

Displacement	258 cu in 4.23 liters
Number of cylinders	4
Bore & stroke	4.06 x 5 inches 103.1 x 127 mm
Horsepower	81 @ 2200 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	18.5:1
Compression pressure	pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.
Low idle - no load	1300 rpm
High idle - no load	2350 rpm
Valve clearance, cold	
Intake	0.008 in 0.20 mm
Exhaust	0.018 in 0.45 mm
Lubrication system	
Oil pressure	51 psi 3.45 bar
Oil capacity (including filter)	8.9 quarts 8.4 liters
Oil viscosity requirements	
below 32°F / 0°C	0W
-13°F to 68°F / -25°C to 20°C	5W-20
10°F to 104°F / -12°C to 40°C	10W-30
14°F to 122°F / -10°C to 50°C	15W-40
above 23°F / -5°C	20W-50
Engine oil should have properties of API classification CF4 grade OR ACEA classification E3.	

Injection system

Injection pump make	Zexel
Injector opening pressure	2204 psi 152 bar

Fuel requirement

Summer grade	diesel number 2-D
Winter grade	At operating temperatures below 32°F (0°C), use a special winter fuel.

Alternator output	55A, 12V
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Battery - System

Type	12V, Group 27TM
Quantity	1
AH rating	109AH
Cold cranking ampere	630A
Reserve capacity @ 25A rate	160 minutes

Battery - Engine starting

Type	12V, Group 4D
Quantity	1
AH rating	190AH
Cold cranking ampere	1020A
Reserve capacity @ 25A rate	325 minutes

Cooling system

Engine capacity	9.5 quarts 9 liters
System capacity	20 quarts 18.9 liters

Fan belt deflection	$\frac{3}{8}$ to $\frac{1}{2}$ inch 9 to 12 mm
----------------------------	---

SPECIFICATIONS

Cummins Engine B3.9L

Displacement	238 cu in 3.9 liters
Number of cylinders	4
Bore and stroke	4.02 x 4.72 inches 102 x 120 mm
Horsepower	75 @ 2200 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	16.5:1
Compression pressure	pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.
Low idle - no load	1300 rpm
High idle - no load	2350 rpm
Valve clearance, cold	
Intake	0.010 in 0.254 mm
Exhaust	0.020 in 0.508 mm
Lubrication system	
Oil pressure	50 psi 3.45 bar
Oil capacity (including filter)	9.5 quarts 9 liters
Oil viscosity requirements	
below 68°F / 20°C	5W-30
-10° to 68°F / -23° to 20°C	10W-30
above 15°F / -9°C	15W-40
Use oils meeting API classification CE (labeled CE/SG).	

Injection system

Injection pump make	Bosch
Injection pump pressure	5500 psi 379.2 bar
Injector opening pressure	3480 psi 240 bar
Fuel requirement	diesel number 2-D

Alternator output

63A, 12V

Battery - System

Type	12V, Group 27TM
Quantity	1
AH rating	109AH
Cold cranking ampere	630A
Reserve capacity @ 25A rate	160 minutes

Battery - Engine starting

Type	12V, Group 4D
Quantity	1
AH rating	190AH
Cold cranking ampere	1020A
Reserve capacity @ 25A rate	325 minutes

Cooling system

Engine capacity	8.8 quarts 8.3 liters
System capacity	20 quarts 18.9 liters

SPECIFICATIONS

Deutz Engine F4L 913

Displacement	249.3 cu in 4.086 liters
Number of cylinders	4
Bore and stroke	4.02 x 4.92 inches 102 x 125 mm
Horsepower	77 @ 2200 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	18:1
Compression pressure	pressure (psi or bar) of the lowest cylinder must be at least 75% of the highest cylinder.
Low idle - no load	1300 rpm
High idle - no load	2350 rpm
Valve clearance, cold	
Intake	0.006 in 0.15 mm
Exhaust	0.006 in 0.15 mm
Lubrication system	
Oil pressure	40 to 60 psi 2.75 to 4.14 bar
Oil capacity (including filter)	14.3 quarts 13.5 liters
Oil viscosity requirements	
below 60°F / 15.5°C (synthetic)	5W-30
-10°F to 90°F / -23°C to 32°C	10W-40
above -4°F / -34°C	15W-40
Engine oil should have properties of API classification CC/SE or CC/SF grades OR ACEA classification E1-96.	

Injection system

Injection pump make	IMSA
Injection pump pressure	8702 psi 600 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D

Alternator output

55A, 12V

Battery - System

Type	12V, Group 27TM
Quantity	1
AH rating	109AH
Cold cranking ampere	630A
Reserve capacity @ 25A rate	160 minutes

Battery - Engine starting

Type	12V, Group 4D
Quantity	1
AH rating	190AH
Cold cranking ampere	1020A
Reserve capacity @ 25A rate	325 minutes

Fan belt deflection

³/₈ to ¹/₂ inch
9 to 12 mm

SPECIFICATIONS

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok® O-ring face seal fittings and hose ends. Machines that utilize Parker Seal-Lok® O-ring face seal hoses and fittings require that the fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

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

Torque Procedure

- 1 Replace the O-ring. The O-ring must be replaced anytime the seal has been broken. The O-ring cannot be re-used if the fitting or hose end has been tightened beyond finger tight.
- 2 Lubricate the O-ring before installation.
- 3 Be sure that the face seal O-ring is seated and retained properly.
- 4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.
- 5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table above.
- 6 Operate all machine functions and inspect the hoses and fittings and related components to be sure that there are no leaks.

NOTICE

The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are not standard SAE size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

Theory of Operation

Power Source

The Genie S-100, S-105, S-120 and S-125 are powered by one of three diesel engines: the Cummins B3.9L, the Deutz F4L 913 and the Perkins 1004-42.

Auxiliary power is supplied by a hydraulic pump powered by a 12V battery.

Hydraulic System

All machine functions are performed by the hydraulic system. The hydraulic system can be divided into two groups: Boom and Steer/Axle functions and Drive functions.

Boom and Steer/Axle functions are powered by two-section gear pumps, rated at 17 gpm (64.4 L/min) and 10 gpm (37.9 L/min). When the engine is running, these pumps supply hydraulic fluid under pressure to function manifolds, where the directional and flow control valves are located. To protect from over-pressurization of the systems, each manifold is provided with a pressure relief valve. The Steer and Axle extend/retract manifold relief valve is set at 3000 psi (206.8 bar); the Function manifold relief valve is set at 2600 psi (179.3 bar); the Platform manifold relief valve is located in the Distribution manifold and is set at 3000 psi (206.8 bar).

Drive functions are powered by a bi-directional, variable displacement piston pump rated at 28 gpm (106 L/min) @ 2350 rpm. Two internal 4250 psi (293 bar) relief valves are used to prevent over-pressurization of the closed loop drive system.

The boom lift cylinder, boom extend cylinders, platform leveling slave cylinder, platform rotator and jib boom cylinder (S-105 and S-125 models) incorporate counterbalance valves to prevent movement in the event of a hydraulic line failure.

A regeneration circuit is used to increase the performance of the primary boom extension function. This circuit transfers hydraulic fluid from one end of the primary cylinder into the other end when the cylinder is extending or retracting.

The auxiliary pump is a two-section gear pump. One section is rated at 1.85 gpm (7 L/min) and the other is rated at 0.59 gpm (2.2 L/min).

The 1.7 gpm (7 L/min) section is supplied with a 2500 psi (172.4 bar) relief valve and the 0.59 gpm (2.2 L/min) section is supplied with a 3000 psi (206.8 bar) relief valve.

Electrical System

Two separate 12V batteries are used for this system. The larger, Group 4D, battery is used to start the engine and power the auxiliary pump. The smaller, Group 31, battery is used to power the three Electronic Control Modules (ECM's) which manage boom functions and engine controls. The batteries are charged through a common engine driven alternator. A battery separator is used to charge the smaller battery before charging the larger battery. The control system is protected by two circuit breakers that may be manually reset.

THEORY OF OPERATION

Service Bypass/Recovery Key Switch

The Service Bypass/Recovery key switch is only to be used by properly trained service personnel.

When the Service Bypass/Recovery key switch is turned to the **service bypass** position, the boom can be raised while the axles are retracted. This feature of the machine is especially helpful for storage purposes or when loading the machine for transport. When the boom is raised with the axles retracted, the boom cannot be rotated past either circle-end wheel.

When the Service Bypass/Recovery key switch is turned and held to the **recovery** position, the auxiliary power unit will turn on and fully retract the boom, and then lower the boom to a stowed position. This feature of the machine is especially helpful if the operator in the platform cannot lower the boom, if the platform controls become inoperative or for returning the machine to a safe position when the safety switches have been tripped.

Machine Controls

Three ECMs manage the boom functions. They are located at the turntable (ground controls or TCON), the platform (platform controls or PCON) and the drive chassis (drive chassis controller or DCON). Communication between the controllers is maintained via a high speed data bus (CAN bus). For example, steering inputs from PCON are sent to DCON via the high speed data bus using multiplexed signals.

A series of proximity switches and mechanical limit switches provide information to the controllers. These proximity and mechanical switches maintain and define the safe operating parameters of the machine. In addition, there is a back-up safety system using mechanical limit switches which will cut power to selected portions of the controllers should the operational system fail to operate properly.

The ground controls (TCON) have membrane operated switches. They are non-tactile touch switches for greater durability. When one button is pressed there is an audible beep indicating operation. In addition, there is a display on the ground control box that is used to show fault codes, engine condition, machine status and setup, and the display language selected. Boom speeds, turntable rotation and ramp rates are adjustable. Also, various options and operating limitations can be programmed. For example, the boom extension can be limited to 80 ft (24.4 m) or 100 ft (30.5 m).

The platform controls (PCON) has three joystick controllers for operational control. Drive and steer functions are controlled through one dual-axis joystick, boom up/down and turntable rotate functions are controlled through another dual-axis joystick, and the boom extend/retract functions are controlled through a single axis joystick. Standard toggle switches are used to control the platform level up/down, platform rotate and jib boom up/down functions (S-105 and S-125 models). Membrane type switches are used to select the various steering and operating modes.

THEORY OF OPERATION

The drive chassis controller (DCON) has no operator accessible controls. The various steering controls, axle status, brake and motor speed is managed by this controller. There are status LED's on this module to indicate power, data link communications, system fault and sensor power.

Platform leveling is accomplished with electrohydraulic controls. An angle sensor is mounted on the platform rotator which senses the level of the platform. This signal is processed by PCON and sent to TCON using the data bus. The signal from the tilt sensor on the turntable is compared to the PCON signal and adjustments are made to level the platform.

For safety, machine drive speed is reduced relative to the steer angle of the wheels and boom length.

Steering is accomplished using hydraulic cylinders at each wheel. Correct steering geometry is maintained through the use of four steering sensors, one at each wheel. Steering angles are sent from the primary steering sensor to DCON and the appropriate adjustments are made to the other three wheels to correspond with the steer mode selected. If the machine is equipped with four wheel steering, there are four steering modes available: 2 wheel front steer, 2 wheel rear steer, 4 wheel coordinated steer and crab steer. Having independent control over each wheel allows the machine to determine the correct wheel geometry in each steering mode.

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



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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, six months, annually and every two years as specified on the *Maintenance Inspection Report*.

⚠ WARNING Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial machine damage.

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Keep records on all inspections for three years.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
 - Machine parked on a firm, level surface
 - Boom in the stowed position
 - Turntable rotated with the boom between the circle-end (yellow arrow) wheels
 - Turntable secured with the turntable rotation lock pin
 - Key switch in the off position with the key removed
 - Wheels chocked
 - All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

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

Symbols Legend



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



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



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



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



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



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

NOTICE

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



Indicates that tools will be required to perform this procedure.



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



Indicates that a cold 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, six months, annual, and two years. 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
Six months or every 500 hours	A + B + C
Annual 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)

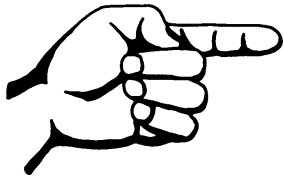
Inspector signature

Inspector title

Inspector company

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

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



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Maintenance Inspection Report

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

Instructions

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

<input type="checkbox"/>	Daily or 8 hour Inspection:	A
<input type="checkbox"/>	Quarterly or 250 hour Inspection:	A+B
<input type="checkbox"/>	Semi-annual or 500 hour Inspection:	A+B+C
<input type="checkbox"/>	Annual or 1000 hour Inspection:	A+B+C+D
<input type="checkbox"/>	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	Inspect the manuals and decals			
A-2	Pre-operation inspection			
A-3	Perform function tests			
A-4	Engine maintenance - Perkins models			
A-5	Engine maintenance - Cummins models			
A-6	Engine maintenance - Deutz models			
A-7	Hydraulic filter condition indicator			
A-8	Auxiliary Power			
A-9	Tilt Sensor			
A-10	Operating Envelope			
Perform after 40 hours:				
A-11	30 Day Service			
Perform every 50 hours:				
A-12	Engine Maintenance- Perkins models			
Perform after 50 hours:				
A-13	Engine Maintenance- Deutz models			
Perform every 100 hours:				
A-14	Grease rotation bearing			
A-15	Extendable axle lubrication system			
Perform after 150 hours:				
A-16	Replace drive hub oil			

Checklist B - Rev B		Y	N	R
B-1	Batteries			
B-2	Electrical wiring			
B-3	Oil cooler and fins - Deutz models			
B-4	Inspect air filter			
B-5	Alarm package			
B-6	Engine maintenance - Deutz models			
B-7	Engine maintenance - Cummins models			
B-8	Exhaust system			
B-9	Lug nut torque			
B-10	Drive hub oil level			
B-11	Drive brakes			
B-12	Engine RPM			
B-13	Key switches			
B-14	Ground control override			
B-15	Platform self-leveling			
B-16	Limit switches			
B-17	Fuel and hydraulic tank venting systems			
B-18	Engine idle select operation			
B-19	Test the drive brakes			
B-20	Drive speed - stowed position			
B-21	Drive speed - raised or extended position			
B-22	Hydraulic oil analysis			
B-23	Inspect the boom extend/retract cables			

Comments



MAINTENANCE INSPECTION REPORT

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

<input type="checkbox"/>	Daily or 8 hour Inspection:	A
<input type="checkbox"/>	Quarterly or 250 hour Inspection:	A+B
<input type="checkbox"/>	Semi-annual or 500 hour Inspection:	A+B+C
<input type="checkbox"/>	Annual or 1000 hour Inspection:	A+B+C+D
<input type="checkbox"/>	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 B	Y	N	R
C-1 Engine maintenance - Deutz models			
C-2 Engine maintenance - Cummins models			
C-3 Engine maintenance - Perkins models			
C-4 Replace air filter element			
C-5 Grease platform overload (if equipped)			
C-6 Test the platform overload (if equipped)			

Checklist D - Rev A	Y	N	R
D-1 Boom wear pads			
D-2 Extendable axle wear pads			
D-3 Free-wheel configuration			
D-4 Turntable rotation bearing bolts			
D-5 Rotation gear backlash			
D-6 Drive hub oil			
D-7 Grease the turntable rotation bearing and rotate gear			
D-8 Turntable bearing wear			
D-9 Engine maintenance - Deutz models			
D-10 Engine maintenance - Perkins models			
D-11 Engine maintenance - Cummins models			
D-12 Replace the hydraulic filter elements			

Checklist E - Rev C	Y	N	R
E-1 Replace hydraulic oil			
E-2 Engine maintenance - Cummins models			
E-3 Engine maintenance - Deutz models			

Perform every two years:

E-4 Engine maintenance - Perkins models			
E-5 Engine maintenance - Deutz models			

Perform every 3000 hours:

E-6 Engine maintenance - Perkins models			
E-7 Engine maintenance - Deutz models			

Perform every 4000 hours:

E-8 Engine maintenance - Perkins models			
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Perform every 6000 hours:

E-9 Engine maintenance - Perkins models			
E-10 Engine maintenance - Deutz models			

Perform every 12000 hours:

E-11 Engine maintenance - Perkins models			
E-12 Engine maintenance - Deutz models			

Perform every 10 years:

E-13 Replace the Boom Extend/Retract cables			
---	--	--	--

Comments



Checklist A Procedures

REV A

A-1 Inspect the Manuals and Decals

NOTICE Genie requires that this procedure be performed daily.

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 is 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 or decals are needed.

A-2 Perform Pre-operation Inspection

NOTICE Genie requires that this procedure be performed daily.

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 operator's manual. Refer to the Operator's Manual on your machine.

A-3 Perform Function Tests

NOTICE Genie requires that this procedure be performed daily.

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 operator's manual. Refer to the Operator's Manual on your machine.

REV A

CHECKLIST A PROCEDURES

A-4 Perform Engine Maintenance - Perkins Models



NOTICE

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

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook

Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

A-5 Perform Engine Maintenance - Cummins Models



NOTICE

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

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Cummins B4.5 Operation and Maintenance Manual* (Cummins part number 00900379).

Cummins B4.5 Operation and Maintenance Manual

Genie part number 107527

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

A-6 Perform Engine Maintenance - Deutz Models



NOTICE Engine specifications require that this procedure be performed daily or every 10 hours, whichever comes first.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 9690).

Deutz F4L913 Operation Manual
Genie part number 62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

A-7 Check the Hydraulic Filter Condition Indicators



NOTICE Genie requires that this procedure be performed daily.

Maintaining the hydraulic filters in good condition is essential to good system performance and safe machine operation. The filter condition indicators will show when the hydraulic flow is bypassing a clogged filter. If the filters are not frequently checked and replaced, impurities will remain in the hydraulic system and cause component damage.

NOTICE There are four hydraulic filters on the machine: one tank return filter, one medium pressure filter and two high pressure filters. All the filters have condition indicators on them, except the medium pressure filter.

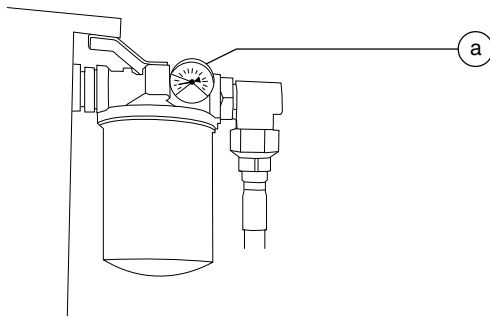
- 1 Start the engine from the ground controls.
- 2 Press and release the engine idle select button to change the engine rpm to high idle.

REV A

CHECKLIST A PROCEDURES

Tank return filter

- 3 Open the ground control side turntable cover and inspect the filter condition indicator gauge.



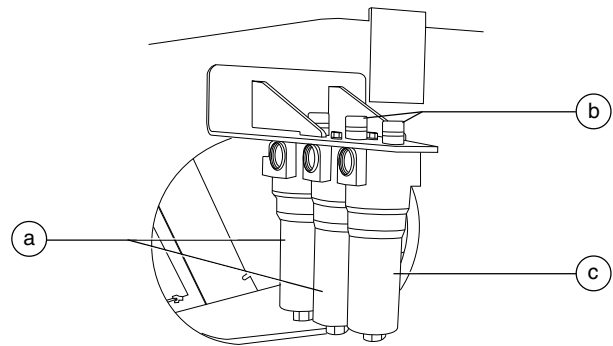
a filter condition indicator gauge

- ⦿ **Result:** The needle on the gauge should be operating in the green area. If the needle is in the red area, this indicates that the hydraulic filter is being bypassed and the filter needs to be replaced. See D-12, *Replace the Hydraulic Filter Elements*.

Medium and high pressure filters

NOTICE The medium and high pressure filters are mounted to the engine side bulkhead.

- 4 Inspect the filter condition indicators.



a high pressure filters
 b filter condition indicators
 c medium pressure filter

- ⦿ **Result:** The filter condition indicators should be operating with the plungers in the green area. If any of the indicators display the plunger in the red area, this indicates that a hydraulic filter is being bypassed and the filter needs to be replaced. See D-12, *Replace the Hydraulic Filter Elements*.

A-8 Test the Auxiliary Power Operation

NOTICE Genie specifications require that this procedure be performed daily.

Detection of auxiliary power system malfunctions is essential for safe machine operation. An unsafe working condition exists if the auxiliary powered functions do not operate in the event of a main power loss. When operating the machine on engine power, selecting auxiliary power will stop the engine immediately. Auxiliary power is designed for short term use only and excessive use will result in battery drain and component damage.

NOTICE Perform this procedure with the axles extended and the engine off.

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position at both the ground and platform controls.
- 2 Simultaneously push and hold the auxiliary power button and push each boom function button.

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

- ⦿ Result: All boom functions should operate.
- 3 Turn the key switch to platform controls.
 - 4 Press down the foot switch.
 - 5 Simultaneously press and hold the auxiliary power button and activate each function control handle, toggle switch or button.

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

- ⦿ Result: All boom functions should operate.

A-9 Test the Tilt Sensor and Alarm

NOTICE Genie requires that this procedure be performed daily.

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

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

NOTICE Be sure the engine is off.

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



- 2 Push one of the LCD screen buttons shown until TURNTABLE LEVEL X AXIS appears.

- ⦿ Result: The LCD screen should display the angle in degrees.



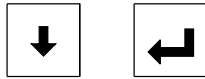
- 3 Push one of the LCD screen buttons shown until TURNTABLE LEVEL Y AXIS appears.

- ⦿ Result: The LCD screen should display the angle in degrees.

REV A

CHECKLIST A PROCEDURES

- 4 Push one of the LCD screen buttons shown until PLATFORM LEVEL appears.



- ⦿ Result: The LCD screen should display the angle in degrees.
- 5 Turn the key switch to platform controls.
- 6 Push a button, such as the engine RPM button or the fuel select button.
- ⦿ Result: The alarm should sound at the platform controls.

A-10 Test the Operating Envelope

NOTICE Genie requires that this procedure be performed daily.

Testing the machine operating envelope is critical to safe machine operation. If the boom is allowed to operate outside of the operating envelope, the machine stability is compromised and may tip over.

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



- 2 Simultaneously push the LCD screen buttons shown to activate status mode.
- 3 Push one of the LCD screen buttons shown until BOOM ANGLE is displayed.



- 4 Raise the boom and observe the LCD screen.

- ⦿ Result: The LCD screen should display:
 - <10
 - >10
 - >50
 - >65



- 5 Push one of the LCD screen buttons shown until BOOM LENGTH is displayed.
- 6 Extend the boom and observe the LCD screen.
- ⦿ Result: The LCD screen should display:
 - at 0
 - > 0
 - >80
 - = 100
 - >100
- 7 Retract the boom.
- 8 Lower the boom.

CHECKLIST A PROCEDURES

REV A

A-11 Perform 30 Day Service



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

1 Perform the following maintenance procedures:

- A-14 Grease the Turntable Rotation Bearing and Rotate Gear
- B-9 Check the Lug Nut Torque (including the tires and wheels)
- B-10 Check the Oil Level in the Drive Hubs
- D-4 Check the Turntable Rotation Bearing Bolts
- D-12 Replace the Hydraulic Filter Elements

A-12 Perform Engine Maintenance - Perkins Models



NOTICE

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

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook

Genie part number

61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

⚠ WARNING

Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

REV A

CHECKLIST A PROCEDURES

A-13 Perform Engine Maintenance - Deutz Models



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

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 9690).

Deutz F4L913 Operation Manual
Genie part number 62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

A-14 Grease the Turntable Rotation Bearing and Rotate Gear



NOTICE Genie specifications require that this procedure be performed every 100 hours of operation. Perform this procedure more often if dusty conditions exist.

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

- 1 Locate the grease fitting below the ground control box.
- 2 Pump grease into the turntable rotation bearing. Rotate the turntable in increments of 4 to 5 inches / 10 to 13 cm at a time and repeat this step until the entire bearing has been greased.
- 3 Apply grease to each tooth of the drive gear, located under the turntable.

CHECKLIST A PROCEDURES

REV A

A-15 Extendable Axle Lubrication System



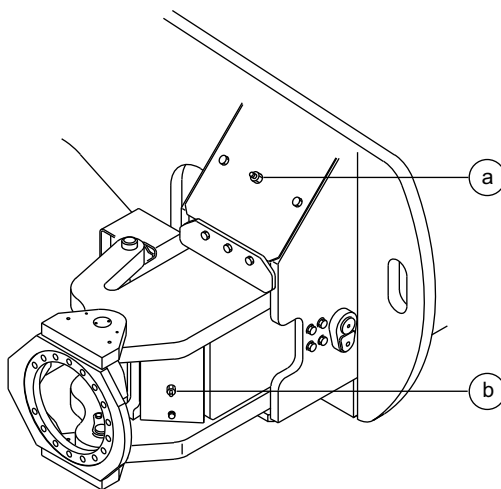
NOTICE Genie specifications require that this procedure be performed every 100 hours of operation. Perform this procedure more often if dusty conditions exist.

Frequent lubrication to the front and rear extendable axles helps to ensure the smooth operation of the axles over the lifetime of the product. Two grease fittings are added at each extending axle. One to direct grease to the top sliding wear pad and one to direct grease to the bottom sliding wear pad.

- 1 Locate the grease fittings on the extendable axles covers.
- 2 Thoroughly pump grease into each grease fitting. When grease is pumped into each fitting, a hose directs this lubrication to the top or bottom wear pad.
- 3 Cycle the extending axles in and out.

NOTICE Genie recommends that the extending axles be cycled in and out at least once a week.

NOTICE A retrofit kit is available that enables the owner to install this lubrication system on existing products that were produced without this lubrication system. It is available as Genie part number 102771 through our Service Parts department.



- a Top wear pad grease fitting
b Side wear pad grease fitting

REV A

CHECKLIST A PROCEDURES

A-16 Replace the Drive Hub Oil

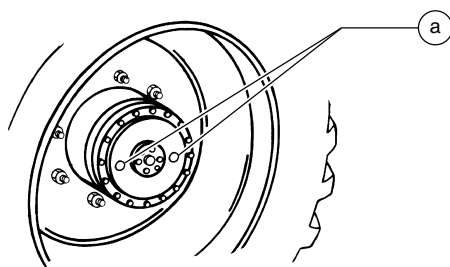


NOTICE Genie specifications require that this one-time procedure be performed after the first 150 hours of operation.

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.

Drive Hubs:

- 1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.
- 2 Remove both plugs and drain the oil into a suitable container. Refer to capacity specifications
- 3 Drive the machine to rotate the hub until the plugs are located one at the side and the other at the other side.



a drive hub plugs

- 4 Fill the hub with oil from either plug hole until the oil level is even with the bottom of both plug holes. Install the plugs.
- 5 Repeat steps 1 through 4 for all the other drive hubs.
- 6 Check the torque of the drive hub mounting bolts. Refer to Section 2, *Specifications*.

Turntable Rotate Drive Hub:

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, *Specifications*.

- 1 Secure the turntable from rotating with the turntable rotation lock pin.
- 2 Remove the ground control side fixed turntable cover. Refer to Repair Section 5-1, *How to Remove a Fixed Turntable Cover*.
- 3 Tag, disconnect and plug the turntable rotate drive motor and the turntable rotate drive brake hoses at the turntable rotate drive brake. Cap the fittings.

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

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

Checklist B Procedures

REV B

B-1

Inspect the Batteries



NOTICE

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

Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions. There are 2 batteries on the machine. One starts the engine and the other powers the control system. The batteries are charged by the alternator through a battery separator.

AWARNING

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

AWARNING

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

- 1 Put on protective clothing and eye wear.
- 2 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.

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

- 4 Be sure that the battery separator wire connections are tight.
- 5 Fully charge the batteries and allow the batteries to rest at least 6 hours.
- 6 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.
- 7 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 11.
- ⊗ Result: One or more battery cells display a specific gravity of 1.217 or below. Proceed to step 8.
- 8 Perform an equalizing charge, OR fully charge the batteries and allow the batteries to rest at least 6 hours.

REV B

CHECKLIST B PROCEDURES

- 9 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer. Note the results.
- 10 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 11.
- ⊗ 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 1.177. Replace the battery.
- 11 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.
- 12 Install the vent caps and neutralize any electrolyte that may have spilled.

B-2 Inspect the Electrical Wiring



NOTICE

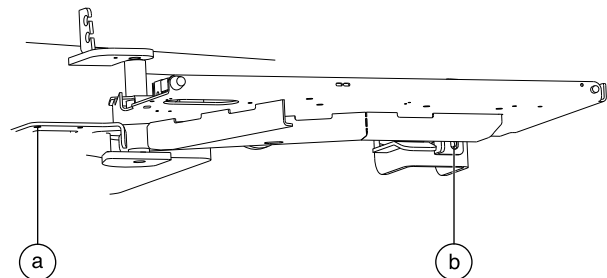
Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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 Open the engine side turntable cover.
- 2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



- a engine pivot plate anchor hole
b engine pivot plate retaining fastener

- 3 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.

CHECKLIST B PROCEDURES

REV B

- 4 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

- 5 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
- Engine wiring harness
 - Battery area wiring
- 6 Open the ground controls side turntable cover.
- 7 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
- Inside of the ground control box
 - Hydraulic manifold wiring
 - Battery area wiring
 - Hydraulic oil cooler wiring
- 8 Inspect for a liberal coating of dielectric grease in the following locations:
- All wire harness connectors to ground control box
 - Wire harness connectors to SCON module
- 9 Open the hydraulic manifold box covers at both sides of the drive chassis.
- 10 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
- Hydraulic manifold wiring
- 11 Inspect for a liberal coating of dielectric grease in the following location:
- Wire harness connectors to DCON module

- 12 Start the engine from the ground controls and raise the boom above the turntable covers.

CAUTION Component damage hazard. Be sure the hydraulic supply hoses to the function and drive pumps are not kinked before starting the engine.

- 13 Inspect the turntable area for burnt, chafed and pinched cables.
- 14 Lower the boom to the stowed position and turn the engine off.
- 15 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:
- Cable track on the boom
 - Cables on the boom, jib boom and jib boom pivot area
 - Jib boom/platform rotate manifold
 - Platform control box
 - Inside of the platform control box
- 16 Inspect for a liberal coating of dielectric grease in the following location:
- All wire harness connectors to platform control box
- 17 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 18 Swing the engine pivot plate in towards the machine.
- 19 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

REV B

CHECKLIST B PROCEDURES

B-3 Check the Engine Oil Cooler and Cooling Fins - Deutz Models



Maintaining the oil cooler in good condition is essential for good engine performance. Operating a machine with a damaged oil cooler may result in engine damage. Also, restricting air flow through the oil cooler will affect the performance of the cooling system.

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

CAUTION Burn hazard. Beware of hot engine components. Contact with hot engine components may result in severe burns.

- 1 Open the engine side turntable cover.

Oil cooler

- 2 Remove the retaining fasteners from the engine side cover. Remove the cover.
- 3 Inspect the oil cooler for leaks and physical damage.
- 4 Clean the oil cooler of debris and foreign material.

Cooling and blower fins

- 5 Inspect the fan blower fins for physical damage.
- 6 Clean the fan blower fins of debris and foreign material.
- 7 Using a flashlight, inspect the head cooling passages and fins for physical damage or foreign material.
- 8 If needed, clean the cylinder head cooling passages and fins of debris and foreign material.
- 9 Install the engine side cover and tighten the retaining fasteners.

B-4 Inspect the Engine Air Filter

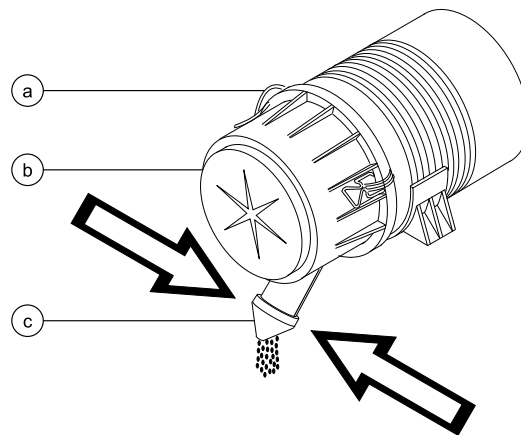


NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

- 1 Open the engine side cover. Empty the dust discharge valve by pressing together the sides of the discharge slot. Clean the discharge slot as needed.



a clamp
b cannister end cap

CHECKLIST B PROCEDURES

REV B

- 2 Release the latches on the air cleaner cap. Remove the end cap from the air cleaner canister.
- 3 Remove the filter element.
- 4 Clean the inside of the canister and the end cap with a damp cloth.
- 5 Inspect the air filter element. If needed, blow from the inside out using low pressure dry compressed air, or carefully tap out dust. Replace the filter if needed.
- 6 Install the filter element.
- 7 Install the air filter canister end cap and secure the end cap latches.

NOTICE Be sure the discharge slot is pointing down.

B-5 Test the Alarm Package (if equipped)

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

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

- 1 Turn the key switch to ground control and pull out the Emergency Stop button to the on position at both the ground and platform controls.
 - ⦿ Result: The flashing beacon should be on and flashing.
- 2 Push and hold a function enable/speed select button and the boom down button. Hold for a moment and then release them.
 - ⦿ Result: The descent alarm should sound when the boom down button is pressed.
- 3 Turn the key switch to platform control.
 - ⦿ Result: The flashing beacon should be on and flashing.
- 4 Press down the foot switch. Move the boom control handle to the down position, hold for a moment and then release it.
 - ⦿ Result: The descent alarm should sound when the control handle is held down.
- 5 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.

REV B

CHECKLIST B PROCEDURES

B-6 Perform Engine Maintenance - Deutz Models



NOTICE Engine specifications require that this procedure be performed every 250 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 9690).

Deutz F4L913 Operation Manual	
Genie part number	62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

B-7 Perform Engine Maintenance - Cummins Models



NOTICE Engine specifications require that this procedure be performed every 250 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Cummins B4.5 Operation and Maintenance Manual* (Cummins part number 00900379).

Cummins B4.5 Operation and Maintenance Manual	
Genie part number	107527

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

CHECKLIST B PROCEDURES

REV B

B-8 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.

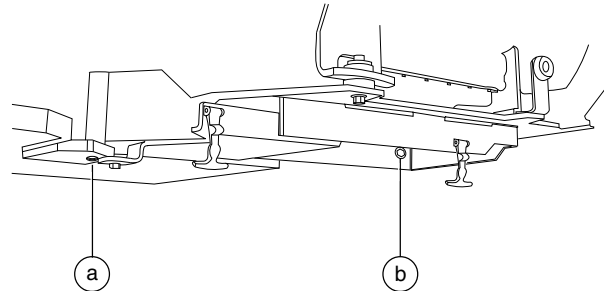
CAUTION Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

Cummins and Perkins models:

- 1 Be sure that all fasteners are tight.
- 2 Inspect all welds for cracks.
- 3 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.

Deutz models:

- 1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



- a engine pivot plate anchor hole
b engine pivot plate retaining fastener

- 2 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 3 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

- 4 Be sure that all fasteners are tight.
- 5 Inspect all welds for cracks.
- 6 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.
- 7 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 8 Swing the engine pivot plate in towards the machine.
- 9 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

REV B

CHECKLIST B PROCEDURES

B-9 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 in good condition, 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.

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

AWARNING 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*.

B-10 Check the Drive Hub Oil Level and Fastener Torque

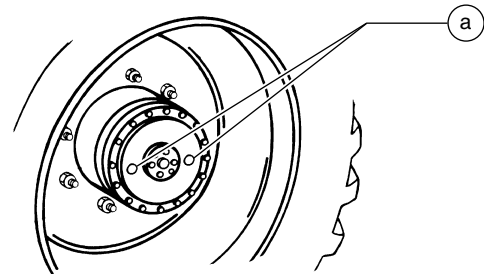


NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first.

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

Drive hubs

- 1 Drive the machine to rotate the hub until the plugs are located one at the side and the other at the other side.



a drive hub plugs

- 2 Remove both plugs and check the oil level.
 - ⊙ Result: The oil level should be even with the bottom of the plug holes.
- 3 If necessary, add oil until the oil level is even with the bottom of the plug holes.
- 4 Install the plugs in the drive hub.
- 5 Check the torque of the drive hub mounting fasteners. Refer to Section 2, *Specifications*.
- 6 Repeat this procedure for each drive hub.

CHECKLIST B PROCEDURES

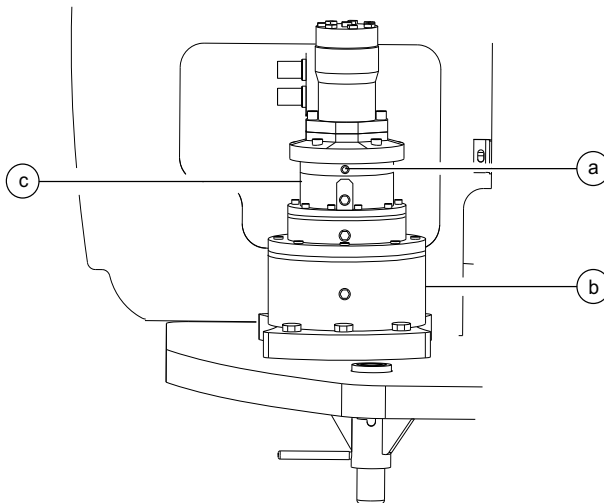
REV B

Turntable Rotate Drive Hub

- 1 Remove the fixed turntable cover at the ground controls side of the machine.
- 2 Remove the power to platform plug panel upper retaining fasteners and loosen the lower retaining fasteners. Do not disconnect the wiring.
- 3 Support the cover with a suitable lifting device. Protect the cover from damage.
- 4 Remove the cover retaining fasteners. Remove the cover from the machine.

AWARNING Crushing hazard. The turntable cover may become unbalanced and fall when it is removed from the machine if it is not properly supported.

- 5 Remove the plug located on the top of the drive brake and check the oil level.
- ⦿ **Result:** The oil level should be even with the bottom of the plug hole.



- a plug
- b turntable rotate drive hub
- c drive brake

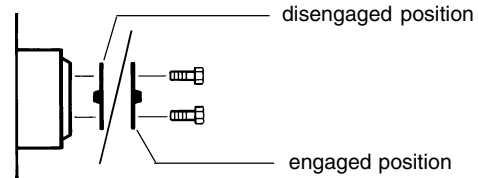
- 6 If necessary, add oil until the oil level is even with the bottom of the plug hole.
- 7 Install the plug into the drive hub.

B-11**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. Hydrostatic brakes and hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

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

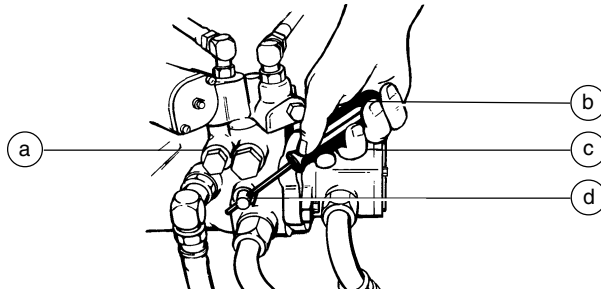


REV B

CHECKLIST B PROCEDURES

- 2 Be sure the free-wheel valve on the drive pump is closed (clockwise).

NOTICE The free-wheel valve is located on the drive pump.



- a drive pump
- b screwdriver
- c lift pump
- d free-wheel valve

NOTICE The free-wheel valve should always remain closed.

B-12 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.

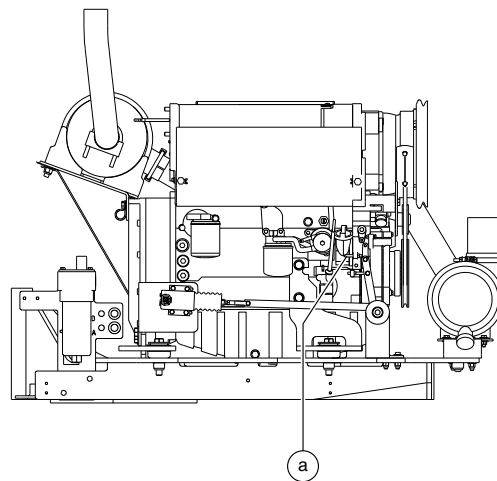
Deutz models:



- 1 Start the engine from the ground controls.
- 2 Push one of the LCD screen buttons shown until engine rpm is displayed.
- ☉ Result: Low idle should be 1500 rpm.

Skip to step 5 if the low idle rpm is correct.

- 3 Loosen the locknut on the low idle adjustment screw.



a low idle adjustment screw

CHECKLIST B PROCEDURES

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- 4 Adjust the low idle adjustment screw until low idle is 1500 rpm. Tighten the locknut.
- 5 Push and hold the function enable/high speed button. Note the engine rpm on the display.
- ⦿ Result: High idle should be 2350 rpm.

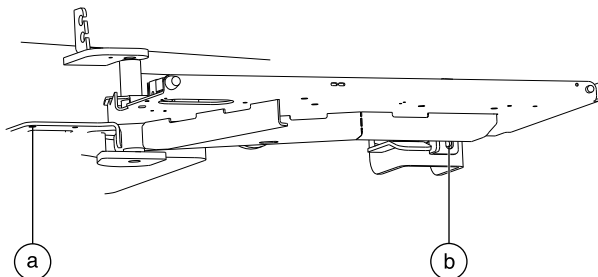
If the high idle is correct, disregard adjustment step 6.

- 6 Loosen the yoke lock nut. Turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.

NOTICE Be sure the solenoid fully retracts when activating high idle.

Cummins and Perkins models:

- 1 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



- a engine pivot plate anchor hole
b engine pivot plate retaining fastener

- 2 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 3 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

- 4 Start the engine from the ground controls.

CAUTION Component damage hazard. Be sure the hydraulic supply hoses to the function and drive pumps are not kinked before starting the engine.



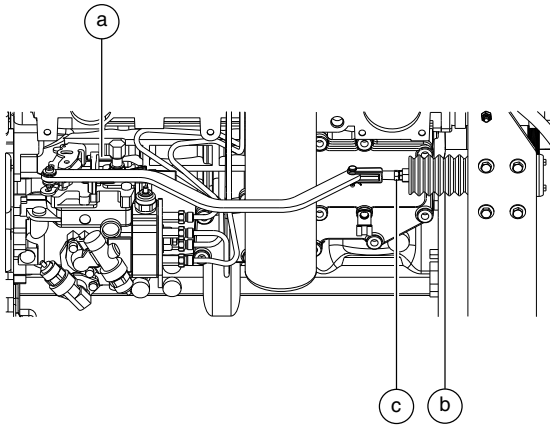
- 5 Push one of the LCD screen buttons shown until engine rpm is displayed.
- ⦿ Result: Low idle should be 1300 rpm.

Skip to step 7 if the low idle rpm is correct.

- 6 Loosen the low idle lock nut. Turn the low idle adjustment screw clockwise to increase the rpm or counterclockwise to decrease the rpm. Tighten the low idle lock nut and confirm the rpm.

REV B

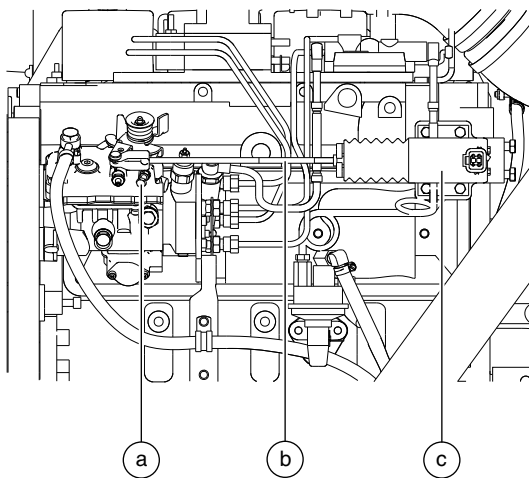
CHECKLIST B PROCEDURES



- Perkins models
 a low idle adjustment screw
 b solenoid boot
 c yoke lock nut

7 Push and hold the function enable/high speed button. Note the engine rpm on the display.

⦿ Result: High idle should be 2350 rpm.



- Cummins models
 a low idle adjustment screw
 b solenoid cable
 c rpm solenoid

If the high idle is correct, disregard adjustment step 8.

- 8 **Perkins models:** Loosen the yoke lock nut. Turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and recheck the rpm.
Cummins models: Turn the high idle solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Recheck the rpm.

NOTICE Be sure the solenoid fully retracts when activating high idle.

- 9 Remove the engine pivot plate retaining fastener from the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 10 Swing the engine pivot plate in towards the machine.
- 11 Install the bolt that was just removed into the original hole to secure the engine pivot plate.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate to secure it from moving could result in death or serious injury.

CHECKLIST B PROCEDURES

REV B

B-13 Test the Key Switches

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

Proper key switch action and response is essential to safe machine operation. Failure of either key switch to function properly could cause a hazardous operating situation.

There are two key switches on the machine - the Main key switch and the Service Bypass/Recovery key switch.

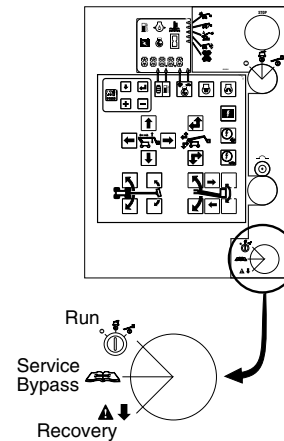
The Main key switch controls machine operation from the ground or platform controls.

When the Service Bypass/Recovery key switch is turned to the **service bypass** position, the primary boom can be raised while the axles are retracted. This feature of the machine is especially helpful for storage purposes or when loading the machine for transport.

NOTICE When the boom is raised with the axles retracted, the boom cannot be rotated past either circle-end wheel.

When the Service Bypass/Recovery key switch is turned and held to the **recovery** position, the auxiliary power units will turn on and fully retract the boom and then lower the boom. This feature of the machine is especially helpful if the operator in the platform cannot lower the boom, if the platform controls become inoperative or for returning the machine to a safe position when the safety switches have been tripped.

NOTICE Perform this procedure with the axles retracted and the boom in the stowed position.



- 1 Open the ground controls side turntable side cover.
- 2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 3 At the ground controls, turn the service bypass/recovery key switch to the run position.
- 4 Turn the main key switch to ground control, start the engine and then turn the key switch to **platform control**.
- 5 Check any machine function from the **ground controls**.
 - ⊙ Result: The machine functions should **not** operate.
- 6 Turn the main key switch to ground control.
- 7 Check any machine function from the **platform controls**.
 - ⊙ Result: The machine functions should **not** operate.
- 8 Turn the main key switch to the off position.
 - ⊙ Result: The engine should stop and no functions should operate.
- 9 Turn the main key switch to ground control and start the engine.

REV B

CHECKLIST B PROCEDURES

10 Attempt to raise the primary boom.

- ⦿ Result: The boom should not raise.

NOTICE The primary boom will not raise until the axles are fully extended.

11 Remove the key from the main key switch and insert the key into the service bypass/recovery key switch.

NOTICE The main key switch should remain in the ground control position.

12 Turn the service bypass/recovery key switch to the service bypass position.

13 Raise the boom.

- ⦿ Result: The boom should raise.

14 Remove the key from the service bypass/recovery key switch and insert the key into the main key switch.

15 Turn the main key switch to the off position.

16 Remove the key from the main key switch and insert the key into the service bypass/recovery key switch.

17 Turn and hold the service bypass/recovery key switch to the recovery position.

- ⦿ Result: The boom should return to the stowed position.

18 Turn the service bypass/recovery key switch to the run position.

19 Remove the key from the service bypass/recovery key switch and insert the key into the main key switch.

20 Turn the main key switch to the off position.

21 Close the turntable side cover.

B-14 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 at the platform controls is in the on or off position. This function is particularly useful if the operator at the platform controls cannot return the boom to the stowed position.

- 1 Push in the red Emergency Stop button at the platform controls to the off position.
- 2 Start the engine from the ground controls.
- 3 At the ground controls, operate each boom function through a partial cycle.

- ⦿ Result: All boom functions should operate.

NOTICE The boom will not raise past horizontal and the boom will not extend more than 12 inches / 30.5 cm unless both axles are fully extended.

B-15 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 level by the communication between the platform level sensor and the turntable level sensor. If the platform becomes out of level, the computer at the ground controls will open the appropriate solenoid valve(s) at the platform manifold to maintain a level platform. A platform self-leveling failure creates an unsafe working condition for platform and ground personnel.

- 1 Start the engine from the platform controls and extend the axles.
- 2 Turn the key switch to ground controls.
- 3 Push and hold a function enable/speed select button and fully retract the boom.
- 4 Push and hold a function enable/speed select button and adjust the platform to a level position using the platform level up/down buttons.

- 5 Push and hold a function enable/speed select button and fully raise the boom.
- ⑥ Result: The platform should remain level at all times to within ± 2 degrees.

NOTICE If the platform becomes out of level, the tilt alarm will sound and the Platform Not Level Indicator will flash at the ground controls. The platform level up/down buttons will only work in the direction that will level the platform. Level the platform until the indicator light turns off.

- 6 Push and hold a function enable/speed select button and fully lower the boom.
- ⑥ Result: The platform should remain level at all times to within ± 2 degrees.

NOTICE If the platform becomes out of level, the tilt alarm will sound and the Platform Not Level Indicator will flash at the ground controls. The platform level up/down buttons will only work in the direction that will level the platform. Level the platform until the indicator light turns off.

REV B

CHECKLIST B PROCEDURES

B-16 Test the Safety Envelope and Circuits

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

Testing the machine safety envelope is critical to safe machine operation. If the boom is allowed to operate when a safety switch is not functioning correctly, the machine stability is compromised and may tip over.

- 1 Raise the boom to approximately 60°.

NOTICE For S-100 or S-105 models, proceed to step 15.

101 feet / 30.8 m Length Safety Switch, LSB2RS

- 2 Extend the boom to more than 80 feet / 24.4 m.
 - 3 Disconnect the 68° proximity switch LSB14AO and install a wire jumper between pin 3 and pin 4 of the deutsch connector.
- ⦿ Result: ">65 DEG" should be present on the display screen at the ground controls.

- 4 Activate the function enable/high RPM button and extend the boom to 101 feet / 30.8 m.
- ⦿ Result: The engine should stop and the boom extend function should be disabled.
 - ✗ Result: If the engine does not stop and the boom continues to extend, the LSB2RS switch is out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

WARNING Bodily injury hazard. If the boom extends to more than 101 feet / 30.8 m without stopping the engine, stop immediately and retract the boom until the boom is extended to less than 100 feet / 30.5 m. Failure to retract the boom could result in death or serious injury.

- 5 Using auxiliary power, retract the boom until the boom is extended to approximately 95 feet / 29 m.
- 6 Remove the wire jumper installed in step 3 and connect the deutsch connector to LSB14AO.

65° Angle Safety Switch, LSB9AS

- 7 Raise the boom to the maximum angle.
- 8 Fully extend the boom.
- 9 Disconnect the 68° proximity switch LSB14AO and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

CHECKLIST B PROCEDURES

REV B

10 Start the engine and activate the function enable/high RPM button and lower the boom to 65°.

⊙ Result: The engine should stop and the boom down function should be disabled.

⊗ Result: If the engine does not stop and the boom continues to lower to less than 65°, the LSB9AS switch is out of adjustment or the wiring is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom lowers to less than 65° without stopping the engine, stop immediately and raise the boom until the boom is elevated to greater than 68°. Failure to raise the boom could result in death or serious injury.

11 Measure the angle of the boom.

⊙ Result: The angle of the boom should be greater than 65°.

12 Using auxiliary power, raise the boom until the boom angle is greater than 68°.

13 Remove the wire jumper installed in step 9 and connect the deutsch connector to LSB14AO.

50° Angle Safety Switch, LSB8AS

14 Raise the boom to approximately 60°.

15 Extend the boom to approximately 95 feet / 28.96 m.

16 Disconnect the 53° proximity switch LSB13AO and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

17 Activate the function enable/high RPM button and lower the boom to 50°.

⊙ Result: The engine should stop and the boom down function should be disabled.

⊗ Result: If the engine does not stop and the boom continues to lower to less than 50°, the LSB8AS switch is out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom lowers to less than 50° without stopping the engine, stop immediately and raise the boom until the boom is elevated to greater than 53°. Failure to raise the boom could result in death or serious injury.

18 Measure the angle of the boom.

⊙ Result: the angle of the boom should be greater than 50°.

19 Using auxiliary power, raise the boom until the boom angle is greater than 53°.

20 Remove the wire jumper installed in step 16 and connect the deutsch connector to LSB13AO.

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CHECKLIST B PROCEDURES

**76 feet / 23.2 m Length Safety Switch,
LSB4ES**

21 Disconnect the 75 feet / 22.9 m proximity switch LSB3EO and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

NOTICE LSB3EO is located on top of boom tube number 2 at the platform end of the machine.

22 Start the engine and activate the function enable/high RPM button and extend the boom to 76 feet / 23.2 m.

- ⦿ Result: The engine should stop and the boom extend function should be disabled.
- ✗ Result: If the engine does not stop and the boom continues to extend, the LSB4ES switch is out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

WARNING Bodily injury hazard. If the boom extends to more than 76 feet / 23.2 m without stopping the engine, stop immediately and retract the boom until the boom is extended to less than 75 feet / 22.9 m. Failure to retract the boom could result in death or serious injury.

23 Using auxiliary power, retract the boom until the boom is extended to less than 75 feet / 22.9 m.

24 Remove the wire jumper installed in step 21 and connect the harness plug to LSB3EO.

**Cable Break Safety Switch,
LSB6S**

25 Start the engine and activate the function enable/high RPM button and retract the boom until the boom is extended to less than 2 feet / 0.6 m.

26 Remove the boom end cover from the pivot end of the boom.

27 Remove the arm from the cable break limit switch LSB6S.

NOTICE LSB6S is located at the end of the boom tubes at the pivot end of the boom.

28 Using the arm just removed from LSB6S, rotate the head of the switch 45 degrees clockwise and activate the function enable/high RPM button and attempt to extend the boom.

- ⦿ Result: The boom extend function should be disabled.
- ✗ Result: If the boom extends, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

WARNING Bodily injury hazard. If the boom extends at all, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

CHECKLIST B PROCEDURES

REV B

29 Activate the function enable/high RPM button and attempt to retract the boom.

- ⦿ Result: The boom retract function should be enabled.
- ⦿ Result: If the boom does not retract, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

30 Using the arm just removed from LSB6S, rotate the head of the switch 90 degrees counter clockwise and activate the function enable/high RPM button and attempt to extend the boom.

- ⦿ Result: The boom extend function should be disabled.
- ⊗ Result: If the boom extends, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom extends at all, stop immediately and retract the boom until the boom is extended to less than 2 feet (0.6 m). Failure to retract the boom could result in death or serious injury.

31 Activate the function enable/high RPM button and attempt to retract the boom.

- ⦿ Result: The boom retract function should be disabled.
- ⊗ Result: If the boom retracts, the LSB6S switch or wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

32 Rotate the head of the switch 45 degrees clockwise and install the arm onto LSB6S.

Axle Extend Safety Switch, LSAX1ES and LSAX2ES and

3 feet / 0.9 m Safety Switch, LSB3RS and

11° Angle Safety Switch, LSB7DS

33 Fully retract and lower the boom to the stowed position.

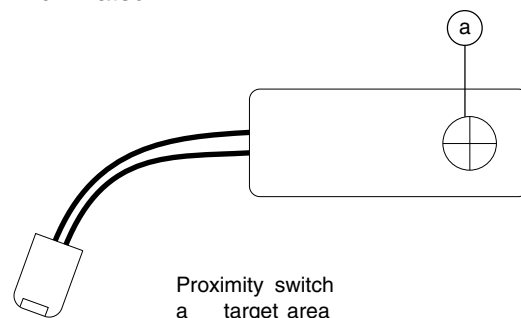
34 Retract both axles approximately 1 foot / 0.3 m.

35 Remove the access cover from each axle.

36 Disconnect the square-end axle extend safety switch LSAX1ES and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

37 Place a metal washer over the target area of the axle extend proximity switch LSAX1EO and place a metal washer over the target area of the axle extend proximity switch LSAX2EO to close the contacts.

- ⦿ Result: The axle extend indicator light at the ground and platform controls should be illuminated.



REV B

CHECKLIST B PROCEDURES

38 Activate the function enable/high RPM button and attempt to extend the boom.

☉ Result: The boom should not extend to more than 3 feet / 0.9 m.

☒ Result: If the boom extends to more than 3 feet / 0.9 m, the LSAX1ES or LSAX2ES switch are out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom extends to more than 3 feet / 0.9 m, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

39 Activate the function enable/high RPM button and attempt to raise the boom.

☉ Result: The boom should not raise to more than 11°.

☒ Result: If the boom continues to raise, the LSAX1ES or LSAX2ES switch are out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom raises to more than 11°, stop immediately and lower the boom until the boom is less than 11°. See Repair Section. Failure to retract the boom could result in death or serious injury.

40 Remove the wire jumper installed in step 36 and connect the deutsch connector to LSAX1ES.

41 Disconnect the circle-end axle extend safety switch LSAX2ES and install a wire jumper between pin 3 and pin 4 of the deutsch connector.

42 Activate the function enable/high RPM button and attempt to extend the boom.

☉ Result: The boom should not extend to more than 3 feet / 0.9 m.

☒ Result: If the boom extends to more than 3 feet / 0.9 m, the LSAX1ES or LSAX2ES switch are out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠ WARNING Bodily injury hazard. If the boom extends to more than 3 feet / 0.9 m, stop immediately and retract the boom until the boom is extended to less than 2 feet / 0.6 m. Failure to retract the boom could result in death or serious injury.

CHECKLIST B PROCEDURES

REV B

43 Activate the function enable/high RPM button and attempt to raise the boom.

☉ Result: The boom should not raise to more than 11°.

☒ Result: If the boom continues to raise, the LSAX1ES or LSAX2ES switch are out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the boom raises to more than 11°, stop immediately and lower the boom until the boom is less than 11°. Failure to lower the boom could result in death or serious injury.

44 Remove the wire jumper installed in step 41 and connect the deutsch connector to LSAX2ES.

Reverse Load Moment Switch, LSB20LO

45 Activate the function enable/high RPM button and fully retract the boom.

46 Activate the function enable/high RPM button and lower the boom onto the boom rest pad and continue to hold the boom lower function button for 5 seconds.

47 Activate the function enable/high RPM button and extend the boom until ">0" is present on the display screen at the ground controls.

☉ Result: The alarm should sound and "REVERSE LOAD MOMENT FAULT" should be present on the display screen at the ground controls.

☒ Result: If the alarm does not sound or if "REVERSE LOAD MOMENT FAULT" is not present on the display screen at the ground controls, the LSB20LO switch is out of adjustment or the wiring circuit is faulty and will need to be replaced or repaired. See Repair Section.

⚠WARNING Bodily injury hazard. If the alarm does not sound or if "REVERSE LOAD MOMENT FAULT" is not present on the display screen at the ground controls, stop immediately and fully retract the boom. Failure to retract the boom could result in death or serious injury.

48 Activate the function enable/high RPM button and raise the boom to clear the alarm.

49 Activate the function enable/high RPM button and lower the boom to the stowed position.

50 Turn the key switch to the OFF position.

REV B

CHECKLIST B PROCEDURES

B-17

Inspect the Fuel and Hydraulic Tank Cap Venting Systems



NOTICE

Genie specifications require 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.

NOTICE

Perform this procedure with the engine off.

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 hydraulic 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.

CHECKLIST B PROCEDURES

REV B

B-18 Test the Engine Idle Select Operation

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

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

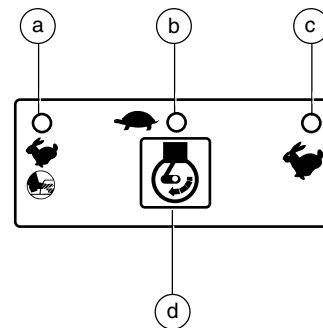
Low idle (turtle symbol) allows the operator to control multiple boom and/or drive functions simultaneously, though at reduced speed. This setting maintains a consistent low idle.

High idle (rabbit symbol) allows the operator to control multiple boom and/or drive functions simultaneously. This setting maintains a consistent high idle.

Foot switch activated high idle (rabbit and foot switch symbols) should be used for normal machine operation. This selection activates high idle only when the foot switch is pressed down.

- 1 Turn the key switch to ground controls.
- 2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 3 Start the engine from the ground controls.
- 4 Push and release the rpm select button until high rpm is selected (rabbit symbol).
- ⊙ Result: The engine should change to high idle.
- 5 Push and release the rpm select button until low rpm is selected (turtle symbol).
- ⊙ Result: The engine should return to low idle.

- 6 Turn the key switch to platform controls.
- 7 At the platform controls, press the engine idle select button until high idle (rabbit symbol) is selected.
- ⊙ Result: The engine should change to high idle.



- a foot switch activated high idle indicator light
- b low idle indicator light
- c high idle indicator light
- d engine rpm select button

- 8 Press the engine idle select button until low idle (turtle symbol) is selected.
- ⊙ Result: The engine should change to low idle.
- 9 Press the engine idle select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected.
- ⊙ Result: The engine should **not** change to high idle.
- 10 Press down the foot switch.
- ⊙ Result: The engine should change to high idle.

REV B

CHECKLIST B PROCEDURES

B-19 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. Hydraulically-released individual wheel brakes can appear to operate normally when they are actually not fully operational.

AWARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-7, *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 Start the engine from the platform controls.
- 3 Press the engine rpm select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected, then lower the boom into the stowed position.
- 4 Choose a point on the machine (i.e., contact patch of a tire) as a visual reference for use when crossing the test line.
- 5 Bring the machine to top drive speed before reaching the test line. Release the drive controller when your reference point on the machine crosses the test line.
- 6 Measure the distance between the test line and your machine reference point. Refer to Section 2, *Specifications*.

B-20 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.

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

- 1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.
- 2 Start the engine from the platform controls.
- 3 Press the engine rpm select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected. then lower the boom into the stowed position.
- 4 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.
- 5 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 6 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications*.

CHECKLIST B PROCEDURES

REV B

B-21

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 Start the engine from the platform controls.
- 3 Press the engine idle select button until the foot switch activated high idle (rabbit and foot switch symbol) is selected.
- 4 Raise the boom until the engine rpm switches to low speed.
- 5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.
- 6 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 7 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications*.
- 8 Lower the boom below horizontal.
- 9 Extend the boom approximately 4 feet (1.2 m).
- 10 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.
- 11 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 12 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications*.
- 13 Raise the boom to a horizontal position.
- 14 Extend the boom until the raise boom LED and envelope alarm are activated.
- 15 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.
- 16 Bring the machine to top drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.
- 17 Continue at full speed and note the time when the machine reference point crosses the finish line. Refer to Section 2, *Specifications*.

REV B

CHECKLIST B PROCEDURES

B-22 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 or hydraulic filters 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*.

B-23 Inspect the Boom Extend/ Retract Cables

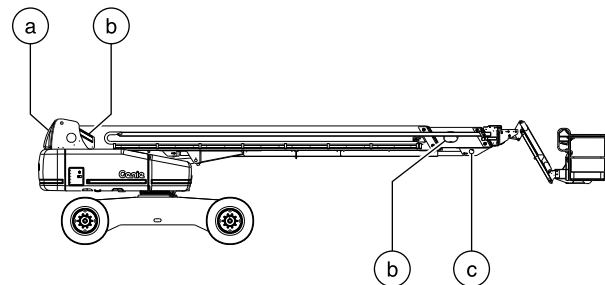


NOTICE Genie specifications require that this procedure be performed every 500 hours or 6 months, whichever comes first.

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube. Inspecting for foreign objects, damage and/or improper adjustment of the boom extend/retract cables on a regular basis is essential to good machine performance and safe machine operation. The boom extend and retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

NOTICE Perform this procedure with the boom in the stowed position and the engine off.

- 1 Remove the boom end cover from the pivot end of the boom.



- a boom end cover
- b side access covers
- c cable ends (located underneath the boom)

CHECKLIST B PROCEDURES

REV B

- 2 Remove the retaining fasteners from the access covers located on the side of the boom at the platform end of the machine. Remove the covers.
- 3 Visually inspect the cables and components through both inspection holes for the following:
 - Frayed or broken wire strands
 - Kinks or crushed cables
 - Corrosion
 - Paint or foreign materials on the cables
 - Split or cracked cable ends
 - Cables are on all pulleys
 - Cables have equal tension
 - Cables at end of adjustment range
 - No Broken or damaged pulleys
 - No Unusual or excessive pulley wear
 - All fasteners in place and secure
- 4 Replace the cables if any damage is found.
- 5 At the pivot end of the boom, visually inspect for the following:
 - The red locking bracket is securely installed over the cable adjustment bolts
- 6 Install the plastic cover at the pivot end of the boom and access panels on the sides of the boom.
- 7 Start the engine from the platform controls.
- 8 Extend the boom approximately 2 feet (0.6 m).
- 9 Retract the boom. While retracting the boom, visually inspect the number 2 and number 3 boom tubes.
 - ⊙ Result: The number 2 should not move more than $\frac{1}{2}$ inch (13 mm) before the number 3 boom tube begins to retract.

NOTICE

If the number 2 boom tube moves more than $\frac{1}{2}$ inch (13 mm) before the number 3 boom tube begins to retract, the boom extend/retract cables need to be adjusted. See Repair Procedure 4-5, *How to Adjust the Boom Extend/Retract Cables*.

NOTICE

A flashlight and inspection mirror may be necessary to thoroughly inspect the above items.

NOTICE

A pulley groove gauge should be used to check the condition of the pulleys.

Checklist C Procedures

REV B

C-1 Perform Engine Maintenance - Deutz Models



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

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual

Genie part number 62246

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

C-2 Perform Engine Maintenance - Cummins Models



NOTICE Engine specifications require that this procedure be performed every 500 hours or 6 months, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Cummins B4.5 Operation and Maintenance Manual* (Cummins part number 4021389-01).

Cummins B4.5 Operation and Maintenance Manual

Genie part number 107527

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

C-3 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 500 hours or 12 months, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook
Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

C-4 Replace the Engine Air Filter Element



NOTICE Engine specifications require that this procedure be performed every 500 hours or 6 months, whichever comes first.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

- 1 Release the latches on the air cleaner cap. Remove the end cap from the air cleaner canister.
- 2 Remove the filter element.
- 3 Use a damp cloth to wipe the filter sealing surface and the inside of the outlet tube. Make sure that all contaminant is removed before the filter is inserted.
- 4 Check new filter element gasket for damage before installing.
- 5 Install the new filter element.
- 6 Install the end cap on the canister and secure.

NOTICE Be sure the discharge slot is pointing down.

REV B

CHECKLIST C PROCEDURES

C-5 Grease the Platform Overload Mechanism (if equipped)



NOTICE

Genie specifications require that this procedure be performed every 500 hours or 6 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 multipurpose grease.

C-6 Test the Platform Overload System (if equipped)



NOTICE

Genie specifications require that this procedure be performed every 500 hours or 6 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 stability could be compromised resulting in the machine tipping over.

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.

CHECKLIST C PROCEDURES

REV B

- 4 Using a suitable lifting device, place an appropriate test weight equal to that of the maximum platform capacity in one of the locations shown. Refer to Illustration 1.

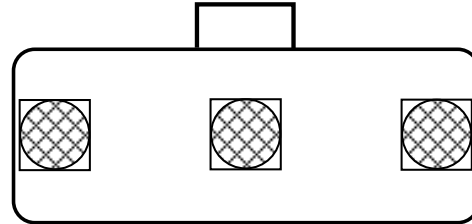


Illustration 1

- ⦿ Result: The platform overload indicator light should be off at both the ground and platform controls.

- ✗ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Section 4-5, *Calibrate the Platform Overload System (if equipped)*.

- 5 Carefully move the test weight to each remaining location.

- ⦿ Result: The platform overload indicator light should be off at both the ground and platform controls.

- ✗ Result: The platform overload indicator lights are on and the alarm is sounding. Calibrate the platform overload system. Refer to Repair Section 4-5, *Calibrate the Platform Overload System (if equipped)*.

- 6 Using a suitable lifting device, place an additional weight onto the platform:
S-100 and S-120- 75 lbs / 34 kg
S-105 and S-125- 50 lbs / 22.7 kg.

- ⦿ Result: The alarm should sound. The platform overload indicator light should be flashing at the platform controls and PLATFORM OVERLOAD should be displayed on the LCD screen at the ground controls.

- ✗ Result: The alarm is not sounding and the platform overload indicator light is not flashing and PLATFORM OVERLOAD is not displayed on the LCD screen at the ground controls. Calibrate the platform overload system. Refer to Repair Section 4-5, *Calibrate the Platform Overload System (if equipped)*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on and the alarm sounds.

- 7 Carefully move the test weights to each remaining location in the platform.

- ⦿ Result: The alarm should sound. The platform overload indicator light should be flashing at the platform controls and PLATFORM OVERLOAD should be displayed on the LCD screen at the ground controls.

- ✗ Result: The alarm is not sounding and the platform overload indicator light is not flashing and PLATFORM OVERLOAD is not displayed on the LCD screen at the ground controls. Calibrate the platform overload system. Refer to Repair Section 4-5, *Calibrate the Platform Overload System (if equipped)*.

NOTICE There may be an approximate 2 second delay before the overload indicator light turns on 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.

NOTICE Machine functions should still operate with auxiliary power at the ground controls.

REV B

CHECKLIST C PROCEDURES

11 Lift the test weights off the platform floor using a suitable lifting device.

- ⦿ Result: The platform overload indicator light and alarm should turn off at both the ground and platform controls.

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

12 Test all machine functions from the ground controls.

- ⦿ Result: All ground control functions should operate normally.

13 Turn the key switch to platform control.

14 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 Section 4-5, *Calibrate the Platform Overload System (if equipped)*.

Checklist D Procedures

REV A

D-1

Check the Boom Wear Pads

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

Maintaining the 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 Start the engine from the ground controls.
- 2 Raise the end of the boom to a comfortable working height (chest high). Stop the engine.
- 3 Remove the protective covers from the platform end of each boom tube.
- 4 Measure each wear pad.

Boom wear pad specifications	1/2 inch
Minimum thickness	12.7 mm

- 5 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain zero clearance.

NOTICE If the wear pads are still within specification, refer to Repair Section 4-2, *How to Shim the Boom*.

- 6 Remove the boom end cover retaining fasteners at the pivot end of the boom. Remove the boom end cover from the machine.

- 7 Remove the boom side inspection cover retaining fasteners from the boom at the pivot end of the boom. Remove the boom inspection cover from the machine.
- 8 Repeat step 7 until all boom inspection covers at the pivot end of the boom are removed.
- 9 Measure each wear pad at the pivot end of the boom.

Boom wear pad specifications	1/2 inch
Minimum thickness	12.7 mm

- 10 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain zero clearance.
- 11 Extend and retract the boom through the entire range of motion to check for tight spots that may cause binding of the boom tubes.

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

REV A

CHECKLIST D PROCEDURES

D-2 Check the Extendable Axle Wear Pads



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

Maintaining the axle wear pads in good condition is essential to safe machine operation. Wear pads are placed on axle 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.

NOTICE Be sure that the axles are fully extended before attempting this procedure.

- 1 Start the engine from the platform controls and extend the axles.
- 2 Measure each wear pad.

Extendable axle wear pad specifications	$\frac{7}{16}$ inch
Minimum thickness	11.1 mm

- 3 Replace any wear pad if it is less than specification. If a wear pad is not less than specification, shim as necessary to obtain zero clearance and zero drag.

NOTICE If the wear pads are still within specification. Refer to Repair Section 15-1, *How to Shim the Extendable Axles*.

NOTICE Keep axle lubricated. See A-15, *Lubricating the Extendable Axle Wear Pads*.

- 4 Extend and retract the axles through the entire range of motion to check for tight spots that may cause binding or scraping of the axle tubes.

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

CHECKLIST D PROCEDURES

REV A

D-3 Check the Free-wheel Configuration



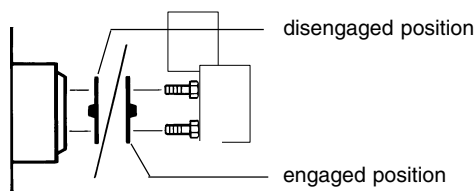
NOTICE Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

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.

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

- 1 Chock both of the wheels at the circle-end of the machine to prevent the machine from rolling.
- 2 Place a lifting jack of ample capacity (35,000 lbs / 16000 kg) under each of the steer yokes at the square-end of the machine.
- 3 Lift the wheels off the ground and place blocks under the drive chassis for support.
- 4 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the square-end of the machine.



- 5 Manually rotate each wheel at the square-end of the machine.
- ⦿ Result: Each wheel at the square-end of the machine should rotate with minimum effort.
- 6 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks. Lower the machine.

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

- 7 Chock both of the wheels at the square-end of the machine to prevent the machine from rolling.
- 8 Place a lifting jack of ample capacity (35,000 lbs / 16000 kg) under each of the steer yokes at the circle-end of the machine.
- 9 Lift the wheels off the ground and place blocks under the drive chassis for support.
- 10 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the circle-end of the machine.
- 11 Manually rotate each wheel at the circle-end of the machine.
- ⦿ Result: Each wheel at the circle-end of the machine should rotate with minimum effort.

REV A

CHECKLIST D PROCEDURES

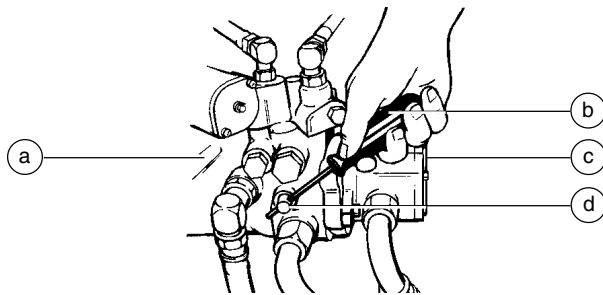
12 Re-engage the drive hubs by turning over the drive hub disconnect caps. Rotate each wheel to check for engagement. Lift the machine and remove the blocks. Lower the machine.

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

All models:

13 Be sure the free-wheel valve on the drive pump is closed (clockwise).

NOTICE The free-wheel valve is located on the drive pump, and should always remain closed.



- a drive pump
- b screwdriver
- c lift pump
- d free-wheel valve

D-4

Check the Turntable Rotation Bearing Bolts



NOTICE Genie specifications require 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 boom to a horizontal position.
- 2 Install a safety chock (Genie part number 75097) onto the hydraulic lift cylinder extension rod. Carefully lower the boom onto the lift cylinder safety chock.

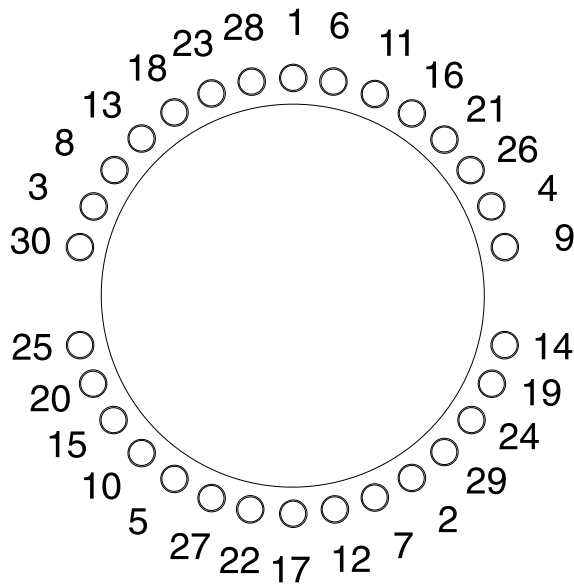
WARNING Crushing hazard. Keep hands away from the cylinder and all moving parts when lowering the boom.

NOTICE The lift cylinder safety chock is available through Genie (Genie part number 75097).

CHECKLIST D PROCEDURES

REV A

- 3 Be sure that each turntable rotation bearing mounting bolt above the turntable is torqued in sequence. Refer to Section 2, *Specifications*.



Bolt torque sequence

- 4 Raise the boom to a horizontal position.
- 5 Remove the safety chock and lower the boom to the stowed position.
- 6 Be sure that each turntable rotation bearing mounting bolt under the drive chassis is torqued in sequence. Refer to Section 2, *Specifications*.

NOTICE The turntable rotation bearing bolt torque sequence is the same from above the turntable and below the drive chassis.

D-5 Check the Turntable Rotation Gear Backlash



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

Properly adjusted turntable rotation gear backlash is essential for good machine performance and service life. Improperly adjusted turntable rotation gear backlash will cause the machine to perform poorly and continued use will cause component damage. The turntable rotation drive hub is mounted on the swing chassis behind the fixed side cover at the ground controls side.

NOTICE Be sure to check the backlash with the machine fully stowed and the counterweight at the square end of the machine.

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

- 1 Rotate the turntable until the boom is centered between the circle end wheels.
- 2 Apply approximately 20 lbs (89 N) of side force to the platform, moving the platform to one side as far as it will go.

REV A

CHECKLIST D PROCEDURES

- 3 Using a feeler gauge, measure the gap between the swing hub pinion gear and the turntable rotation bearing at the center tooth. The gap should be measured on one side of the pinion gear on the center tooth.

NOTICE The pinion gear can be accessed on the outside of the chassis under the pinion gear guard.

- ⦿ Result: The gap is between .010 inch / .254 mm and .022 inch / .559 mm. The backlash is within tolerance.
 - ✗ Result: The gap is less than .010 inch / .254 mm or more than .022 inch / .559 mm. The backlash needs to be adjusted. Refer to Repair Section 12-1, *How to Adjust the Turntable Rotation Gear Backlash*.
4. After the backlash has been set, place a tape measure approximately two feet long / 0.6 m, perpendicular to the boom, on the ground under the rotator.

NOTICE Fasten a straight edge on the side of the rotator using tape so one end is just above the tape measure.

5. Apply approximately 20 lbs / 89 N of side force to the platform, moving the rotator to the left as far as it will go. Move the tape measure so the straight edge on the rotator measures 0 inches / 0 m.
5. Apply approximately 20 lbs / 89 N of side force to the platform, moving the rotator to the right as far as it will go.
6. Note the distance on the tape measure the rotator has moved.
- ⦿ Result: The rotator movement does not exceed 2 inches / 51 mm. The backlash is in tolerance.
 - ✗ Result: The side-to-side rotator movement exceeds 2 inches / 51 mm. The turntable drive hub may need service. Contact Genie Industries Service Department.

D-6 Replace the Drive Hub Oil

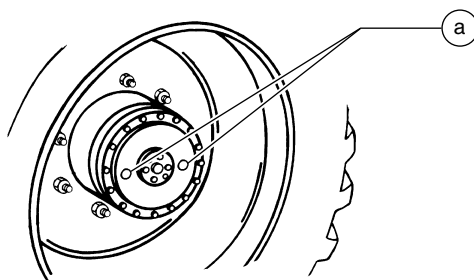


NOTICE Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

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.

Drive Hubs:

- 1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.
- 2 Remove both plugs and drain the oil into a suitable container. Refer to capacity specifications
- 3 Drive the machine to rotate the hub until the plugs are located one at the side and the other at the other side.



a drive hub plugs

- 4 Fill the hub with oil from either plug hole until the oil level is even with the bottom of both plug holes. Install the plugs.
- 5 Repeat steps 1 through 4 for all the other drive hubs.
- 6 Check the torque of the drive hub mounting bolts. Refer to Section 2, *Specifications*.

Turntable Rotate Drive Hub:

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, *Specifications*.

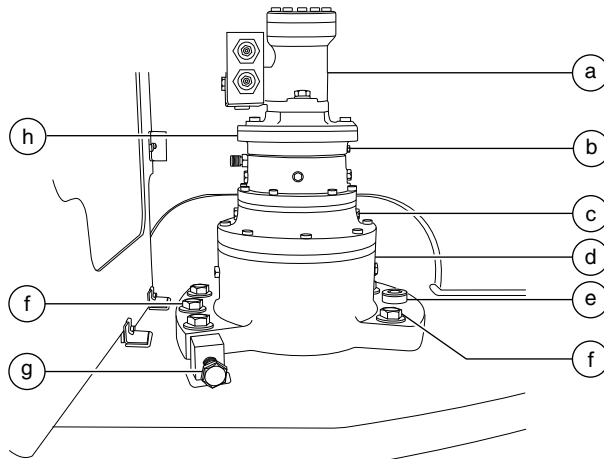
- 1 Secure the turntable from rotating with the turntable rotation lock pin.
- 2 Remove the ground control side fixed turntable cover. Refer to Repair Section 5-1, *How to Remove a Fixed Turntable Cover*.
- 3 Tag, disconnect and plug the turntable rotate drive motor hoses at the turntable rotate drive motor and the turntable rotate drive brake hoses at the turntable rotate drive brake. Cap the fittings.

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

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

REV A

CHECKLIST D PROCEDURES



- a drive motor
- b brake drain plug
- c drive hub drain plug
- d drive hub
- e pivot bolt
- f mounting bolt
- g adjustment bolt with lock nut
- h drive brake

- 4 Remove the turntable rotate drive hub mounting bolts and pivot bolt. Remove the turntable rotate drive hub with a suitable lifting device of ample capacity.

WARNING Crushing hazard. The turntable rotate drive hub may become unbalanced and fall when it is removed from the machine if it is not properly supported.

- 5 Remove the drive brake drain plug from the side of the drive brake and drain the oil from the drive brake into a suitable container.
- 6 Remove the drive hub drain plug from the side of the drive hub and drain the oil from the drive hub into a suitable container.

- 7 Fill the drive hub with oil until the oil is level with the bottom of the threads. Apply pipe thread sealant to the plug. Install the plug and tighten.
- 8 Fill the drive brake with oil until the oil is level with the bottom of the threads. Apply pipe thread sealant to the plug. Install the plug and tighten.
- 9 Install the drive hub onto the machine. Install the pivot bolt and the mounting bolts and tighten the bolts until they are finger tight.
- 10 Install the turntable rotate drive motor hoses into the turntable rotate drive motor and install the turntable rotate drive brake hose into the turntable rotate drive brake.

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

- 11 Adjust the turntable rotation gear backlash. See D-5, *Check the Turntable Rotation Gear Backlash*.
- 12 Install the ground control side fixed turntable cover onto the machine and tighten the retaining fasteners.

D-7 Grease the Turntable Rotation Bearing and Rotate Gear



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

Application of lubrication to the turntable bearing and rotate gear is essential to good machine performance and service life. Continued use of an improperly greased bearing and gear will result in component damage.

- 1 Remove the turntable rotation gear cover retaining fasteners and remove the gear cover from the machine.
- 2 Open the ground controls side turntable side cover.
- 3 Locate the grease fitting below the ground control box.
- 4 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.
- 5 Apply grease to each tooth of the drive gear, located under the turntable.
- 6 Install the turntable rotation gear cover and retaining fasteners onto the machine.

WARNING Bodily injury hazard. Contact with the turntable rotation gear could result in serious injury. Do not operate the machine if the turntable rotation gear cover is not installed.

D-8 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.

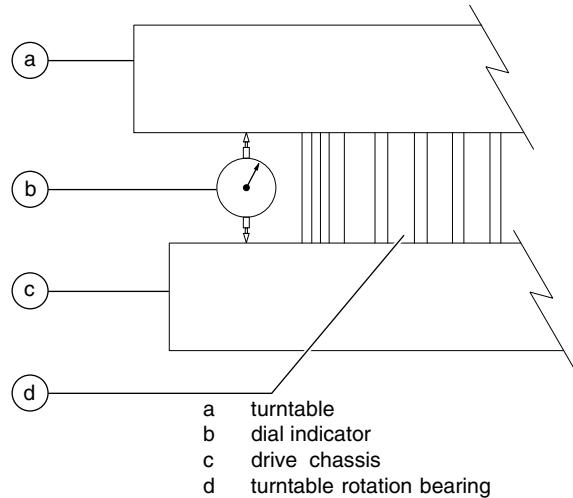
NOTICE Perform this procedure with the machine on a firm, level surface and the boom in the stowed position.

- 1 Grease the turntable bearing. See A-13, *Grease the Turntable Bearing and Rotate Gear*.
- 2 Torque the turntable bearing bolts to specification. See D-5, *Check the Turntable Rotation Bearing Bolts*.
- 3 Start the machine from the ground controls and raise the boom to full height. Do not extend the boom.
- 4 Place a dial indicator between the drive chassis and the turntable at a point that is directly under, or inline 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.

REV A

CHECKLIST D PROCEDURES



- 5 At the dial indicator, adjust it to "zero" the indicator.
- 6 Fully extend the boom and lower to a horizontal position.
- 7 Note the reading on the dial indicator.
- ⊙ Result: The measurement is less than 0.063 inch / 1.6 mm. The bearing is good.
- ✗ Result: The measurement is more than 0.063 inch / 1.6 mm. The bearing is worn and needs to be replaced.
- 8 Fully retract the boom and raise the boom to full height. Visually inspect the the dial indicator to be sure the needle returns to the "zero" 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 boom to the stowed position and turn the machine off.
- 12 Remove the dial indicator from the machine.

D-9 Perform Engine Maintenance - Deutz Models



NOTICE

Engine specifications require that this procedure be performed every 1000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual

Genie part number

62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

⚠ WARNING

Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

D-10 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 1000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook

Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

D-11 Perform Engine Maintenance - Cummins Models



NOTICE Engine specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Cummins B4.5 Operation and Maintenance Manual* (Cummins part number 4021389-01).

Cummins B4.5 Operation and Maintenance Manual

Genie part number 107527

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

REV A

CHECKLIST D PROCEDURES

D-12 Replace the Hydraulic Filter Elements



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

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.

Tank Return Filter

CAUTION Burn hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE Perform this procedure with the engine off.

- 1 Open the ground controls side turntable side cover and locate the tank return filters.
- 2 Place a suitable container under the hydraulic tank return filters.
- 3 Remove each filter with an oil filter wrench.

- 4 Apply a thin layer of clean oil to the new oil filter gaskets.
- 5 Install the new hydraulic return filter element and tighten it securely by hand. Clean up any oil that may have spilled during the installation procedure.
- 6 Use a permanent ink marker to write the date and number of hours from the hour meter on the filters.
- 7 Start the engine from the ground controls.
- 8 Inspect the filters and related components to be sure that there are no leaks.

Medium and High Pressure Hydraulic Filters

CAUTION Burn hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

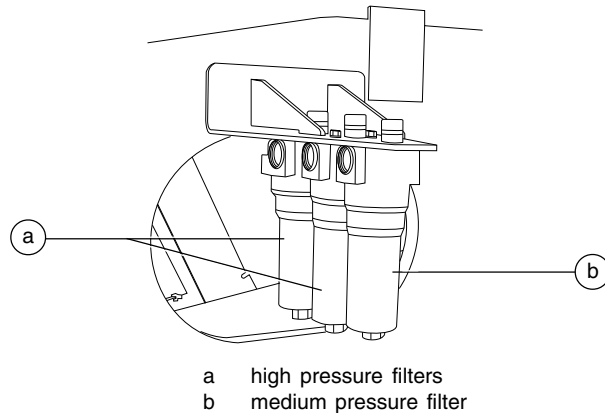
NOTICE The medium pressure filter is for the charge pump and the high pressure filters are for the drive circuit.

NOTICE Perform this procedure with the engine off.

CHECKLIST D PROCEDURES

REV A

- 1 Open the engine side turntable cover and locate the three filters mounted to the bulkhead.



- 9 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter housings.
- 10 Start the engine from the ground controls.
- 11 Inspect the filter housings and related components to be sure that there are no leaks.

- 2 Place a suitable container under the filters.
- 3 Remove the filter housing by using a wrench on the nut provided on the bottom of the housing.
- 4 Remove the filter element from the housing.
- 5 Inspect the housing seal and replace it if necessary.
- 6 Install the new medium pressure filter element into the housing and tighten it securely.
- 7 Install the new high pressure filter elements into the housings and tighten them securely.
- 8 Clean up any oil that may have spilled during the installation procedure.

Checklist E Procedures

REV C

E-1 Test or Replace the Hydraulic Oil



NOTICE Genie specifications require that this procedure be performed every 2000 hours or 2 years, whichever comes first.

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 frequently.

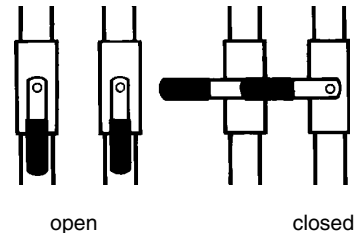
NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

NOTICE Perform this procedure with the boom in the stowed position and the axles extended.

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 ground controls side turntable side cover. Refer to Repair Section 5-1, *How to Remove a Hinged Turntable Cover*.

- 2 Close the two hydraulic shut-off valves located at the hydraulic tank.



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

- 3 Remove the drain plug from the hydraulic tank and allow all of the oil from the tank to drain into a suitable container. Refer to Section 2, *Specifications*.
- 4 Remove the ground controls support bracket retaining fasteners and remove the ground control box assembly from the machine.

CAUTION Component damage hazard. Be sure to properly support the ground control box. Do not allow the ground control box to hang by the wiring or cables.

- 5 Tag and disconnect the wires from the horn. Remove the horn retaining fasteners and remove the horn from the machine.
- 6 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shut-off valves. Cap the fittings.
- 7 Tag, disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.
- 8 Tag, disconnect and plug the case drain hose at the return filter. Cap the fitting on the return filter head.

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CHECKLIST E PROCEDURES

REV C

- 9 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter head.
- 10 Remove the hydraulic tank breather filter from the tank.
- 11 Remove the hydraulic tank strap retaining fasteners and remove the hydraulic tank straps from the machine.
- 12 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.
- 13 Remove the hydraulic tank from the machine.

WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if it is not properly supported and secured to the overhead crane when it is removed from the machine.

- 14 Remove the hydraulic tank return filter from the hydraulic tank return filter head.
- 15 Remove the case drain filter from the case drain filter head.
- 16 Remove the suction strainers from the tank and clean them using a mild solvent.
- 17 Rinse out the inside of the tank using a mild solvent.
- 18 Install the suction strainers using pipe thread sealant on the pipe threads.
- 19 Install the drain plug using pipe thread sealant on the pipe threads.

NOTICE Always use pipe thread sealant on all pipe threads.

- 20 Install the hydraulic tank onto the machine.
- 21 Install the hydraulic tank retaining straps and install the hydraulic tank retaining fasteners.
- 22 Install the horn and horn retaining fasteners onto the machine. Connect the wiring.
- 23 Install the ground control box assembly and assembly retaining fasteners onto the machine.

- 24 Install the two suction hoses and the supply hose for the auxiliary power unit onto the machine.
- 25 Install the case drain hose onto the return filter head.
- 26 Install the T-fitting and 2 hoses connected to it to the hydraulic tank return filter head.
- 27 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5 cm of the sight gauge. Do not overfill.
- 28 Apply teflon tape to the threads of the hydraulic tank filter mount.
- 29 Install a new tank breather filter onto the filter mount and tighten it securely by hand.
- 30 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.
- 31 Install a new tank case drain return filter onto the filter mount and tighten it securely by hand.
- 32 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.
- 33 Install a new tank return filter onto the filter mount and tighten it securely by hand.
- 34 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.
- 35 Clean up any oil that may have spilled during the procedure.
- 36 Open the hydraulic tank shut-off valves.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank. Refer to Repair Section 10-2, *How to Prime the Pump*.

- 37 Install the turntable side cover.

REV C

CHECKLIST E PROCEDURES

E-2 Perform Engine Maintenance - Cummins Models



NOTICE Engine specifications require that this procedure be performed every 2000 hours or 2 years, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Cummins B4.5 Operation and Maintenance Manual* (Cummins part number 4021389-01).

Cummins B4.5 Operation and Maintenance Manual	
Genie part number	107527

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-3 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 2000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook	
Genie part number	61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-4 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 2 years.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook	
Genie part number	61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-5 Perform Engine Maintenance - Deutz Models



NOTICE Engine specifications require that this procedure be performed every 2 years.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual	
Genie part number	62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

REV C

E-6 Perform Engine Maintenance - Perkins Models



Engine specifications require that this procedure be performed every 3000 hours.

NOTICE

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook

Genie part number _____ 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING

Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-7 Perform Engine Maintenance - Deutz Models



Engine specifications require that this procedure be performed every 3000 hours.

NOTICE

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual

Genie part number _____ 62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

WARNING

Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-8 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 4000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook
Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-9 Perform Engine Maintenance - Perkins Models



NOTICE Engine specifications require that this procedure be performed every 6000 hours or 3 years, whichever come first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook
Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

REV C

CHECKLIST E PROCEDURES

E-10 Perform Engine Maintenance - Deutz Models



NOTICE

Engine specifications require that this procedure be performed every 6000 hours or 5 years, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual

Genie part number 62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-11 Perform Engine Maintenance - Perkins Models



NOTICE

Engine specifications require that this procedure be performed every 12000 hours or 6 years, whichever comes first.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Perkins 1004 User's Handbook* (Perkins part number TPD 1349E).

Perkins 1004 User's Handbook

Genie part number 61376

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

▲WARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-12 Perform Engine Maintenance - Deutz Models



NOTICE Engine specifications require that this procedure be performed every 12000 hours.

Proper engine maintenance, following the engine manufacturer's maintenance schedule, is essential to good engine performance and service life. Failure to perform the maintenance procedures can lead to poor engine performance and component damage.

Required maintenance procedures and additional engine information are available in the *Deutz F4L913 Operation Manual* (Deutz part number 0297 7341).

Deutz F4L913 Operation Manual	
Genie part number	62446

To access the engine:

- 1 Remove the engine tray retaining fastener located under the engine tray. Swing the engine tray out and away from the machine.
- 2 Install the fastener that was just removed through the engine tray and into the engine tray anchor hole in the turntable.

AWARNING Crushing hazard. Failure to install the fastener into the engine tray anchor hole to secure the engine tray from moving could result in death or serious injury.

E-13 Replace the Boom Extend/Retract Cables



NOTICE Genie specifications require that this procedure be performed every 10 years.

The boom extend/retract cables are responsible for the extension and retraction of the number 3 boom tube on the S-100 and S-105, and the numbers 2 and 3 boom tubes on the S-120 and S-125. Replacement of the boom extend/retract cables on a regular basis is essential to good machine performance and safe machine operation. The boom extend/retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

- 1 Replace the boom extend/retract cables. Refer to Repair Procedure 4-5, *How to Replace the Boom Extend/Retract Cables*.

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 circle-end wheels
 - Turntable secured with the turntable rotation lock pin
 - Key switch in the OFF position with the key removed
 - Welder disconnected from the machine (if equipped with the weld cable to platform option)
 - Wheels chocked

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie S-100 and Genie S-105 Operator's Manual* or the *Genie S-120 and Genie S-125 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropriate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠ DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

TROUBLESHOOTING FLOW CHARTS

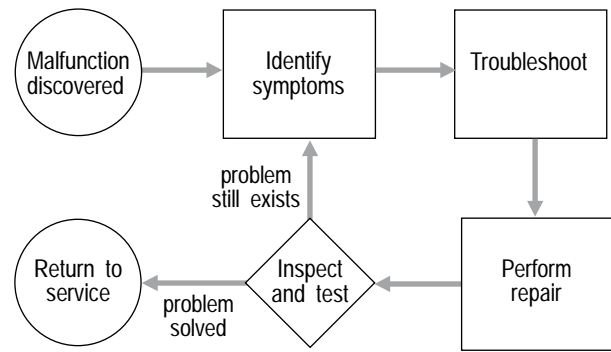
About This Section

When a malfunction is discovered, the flow charts in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required—voltmeter, ohmmeter, pressure gauges.

The location of terminals mentioned in this section can be found on the appropriate electrical or hydraulic schematics provided in Section 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

Diagnostic code displayed	Condition	Possible Causes	Solution
AXLE EXT/RET BUTTONS FAULT	Axles will not extend or retract.	Shorted axle extend or retract membrane on platform membrane panel.	Consult Genie Industries Service Department. The platform membrane panel may need to be replaced.
AXLE VALVE FAULT	Axle extend or axle retract inoperative.	Axle extend or axle retract valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 33 and 34 to troubleshoot.
UP/DOWN JOYSTICK NOT CALIBRATED	Up/down functions inoperative from platform.	Up/down joystick not calibrated.	Calibrate up/down joystick refer to repair section.
UP/DOWN JOYSTICK SHORTED TO 0V	Up/down functions inoperative from platform.	Open circuit between platform control card and up/down joystick.	Refer to charts 13 and 14 to troubleshoot.
UP/DOWN JOYSTICK SHORTED TO 5V	Up/down functions inoperative from platform.	Shorted circuit between platform control card and up/down joystick.	Refer to charts 13 and 14 to troubleshoot.
UP/DOWN JOYSTICK VALUE TOO HIGH	Up/down functions inoperative from platform.	Damaged circuit between platform control card and up/down joystick or Joystick may need to be replaced.	Refer to charts 13 and 14 to troubleshoot.
UP/DOWN JOYSTICK VALUE TOO LOW	Up/down functions inoperative from platform.	Damaged circuit between platform control card and up/down joystick or Joystick may need to be replaced.	Refer to charts 13 and 14 to troubleshoot.
UP/DOWN BUTTONS FAULT	Up/down functions inoperative from turntable.	Shorted boom up/down membrane on turntable membrane panel.	Consult Genie Industries Service Department. The turntable membrane panel may need to be replaced.
BOOM UP/DOWN SPEED NOT CALIBRATED	Up/down function speeds to fast or to slow.	Up/down speed calibration set from display or Reset Boom up/down flow valve defaults set from display. Refer to Display module section.	Calibrate Boom up/down speed refer to repair section.
BOOM UP/DOWN FLOW VALVE NOT CALIBRATED	No movement on up/down functions until joystick is moved past half stroke.	Reset Boom up/down flow valve defaults set from display. Refer to Display module section.	Calibrate Boom up/down Thresholds refer to repair section.
BOOM UP/DOWN FLOW VALVE FAULT	Up/down functions inoperative.	Boom up/down flow valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to charts 13 and 14 to troubleshoot.
BOOM UP VALVE FAULT	Up function inoperative.	Boom up valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 13 to troubleshoot.
BOOM DOWN VALVE FAULT	Down function inoperative.	Boom down valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 14 to troubleshoot.
BOOM ANGLE SWITCHES FAULT	Extend and up functions inoperative and boom down function operative only when boom is fully retracted.	Boom angle operational switches out of sequence.	Refer to chart 12 to troubleshoot.
EXTEND/RETRACT JOYSTICK NOT CALIBRATED	Extend/retract functions inoperative from platform.	Extend/retract joystick not calibrated.	Calibrate extend/retract joystick refer to repair section.
EXTEND/RETRACT JOYSTICK SHORTED TO 0V	Extend/retract functions inoperative from platform.	Open circuit between platform control card and extend/retract joystick.	Refer to charts 16 and 17 to troubleshoot.
EXTEND/RETRACT JOYSTICK SHORTED TO 5V	Extend/retract functions inoperative from platform.	Shorted circuit between platform control card and extend/retract joystick.	Refer to charts 16 and 17 to troubleshoot.
EXTEND/RETRACT JOYSTICK VALUE TOO HIGH	Extend/retract functions inoperative from platform.	Damaged circuit between platform control card and extend/retract joystick or Joystick may need to be replaced.	Refer to charts 16 and 17 to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
EXTEND/RETRACT JOYSTICK VALUE TOO LOW	Extend/retract functions inoperative from platform.	Damaged circuit between platform control card and extend/retract joystick or Joystick may need to be replaced.	Refer to charts 16 and 17 to troubleshoot.
EXTEND/RETRACT BUTTONS FAULT	Extend/retract functions inoperative from turntable.	Shorted boom extend/retract membrane on turntable membrane panel.	Consult Genie Industries Service Department. The turntable membrane panel may need to be replaced.
BOOM EXT/RET SPEED NOT CALIBRATED	Extend/retract function speeds to fast or to slow.	Extend/retract speed calibration set from display or Reset Boom ext/ret flow valve defaults set from display. Refer to Display module section.	Calibrate Boom extend/retract speed refer to repair section.
BOOM EXT/RET FLOW VALVE NOT CALIBRATED	No movement on extend/retract functions until joystick is moved past half stroke.	Reset Boom extend/retract flow valve defaults set from display. Refer to Display module section.	Calibrate Boom extend/retract Thresholds refer to repair section.
BOOM EXT/RET FLOW VALVE FAULT	Extend/retract functions inoperative.	Boom extend/retract flow valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to charts 16 and 17 to troubleshoot.
BOOM EXT VALVE FAULT	Extend function inoperative.	Boom extend valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 16 to troubleshoot.
BOOM RET VALVE FAULT	Retract function inoperative.	Boom retract valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 17 to troubleshoot.
LOCK OUT VALVE P1 FAULT	Retract function inoperative when boom length is <100'.	Boom retract lockout valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 16 to troubleshoot.
LOCK OUT VALVE P2 FAULT	Extend function inoperative when boom length = or >100'	Boom extend lockout valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 17 to troubleshoot.
BOOM LENGTH SWITCHES FAULT	Extend, up, and down functions inoperative.	Boom length operational switches out of sequence.	Refer to chart 15 to troubleshoot.
TURNTABLE ROTATE JOYSTICK NOT CALIBRATED	Turntable rotate functions inoperative from platform.	Turntable rotate joystick not calibrated.	Calibrate turntable rotate joystick refer to repair section.
TURNTABLE ROTATE JOYSTICK SHORTED TO 0V	Turntable rotate functions inoperative from platform.	Open circuit between platform control card and turntable rotate joystick.	Refer to charts 22 and 23 to troubleshoot.
TURNTABLE ROTATE JOYSTICK SHORTED TO 5V	Turntable rotate functions inoperative from platform.	Shorted circuit between platform control card and turntable rotate joystick.	Refer to charts 22 and 23 to troubleshoot.
TURNTABLE ROTATE JOYSTICK VALUE TOO HIGH	Turntable rotate functions inoperative from platform.	Damaged circuit between platform control card and turntable rotate joystick or Joystick may need to be replaced.	Refer to charts 22 and 23 to troubleshoot.
TURNTABLE ROTATE JOYSTICK VALUE TOO LOW	Turntable rotate functions inoperative from platform.	Damaged circuit between platform control card and turntable rotate joystick or Joystick may need to be replaced.	Refer to charts 22 and 23 to troubleshoot.
TURNTABLE ROTATE BUTTONS FAULT	Turntable rotate functions inoperative from turntable.	Shorted turntable rotate membrane on turntable membrane panel.	Consult Genie Industries Service Department. The turntable membrane panel may need to be replaced.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
TURNABLE ROTATE SPEED NOT CALIBRATED	Turntable rotate function speeds to fast or to slow.	Turntable rotate speed calibration set from display or Reset turntable rotate flow valve defaults set from display. Refer to Display module section.	Calibrate Turntable rotate speed refer to repair section.
TURNABLE ROTATE FLOW VALVE NOT CALIBRATED	No movement on Turntable rotate functions until joystick is moved past half stroke.	Reset turntable rotate flow valve defaults set from display. Refer to Display module section.	Calibrate turntable rotate Thresholds refer to repair section.
TURNABLE ROTATE FLOW VALVE FAULT	Turntable rotate functions inoperative.	Turntable rotate flow valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to charts 22 and 23 to troubleshoot.
TURNABLE ROTATE CW VALVE FAULT	Turntable rotate CW function inoperative.	Turntable rotate CW valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 22 to troubleshoot.
TURNABLE ROTATE CCW VALVE FAULT	Turntable rotate CCW function inoperative.	Turntable rotate CCW valve coil circuit open or shorted to ground or the coil itself is bad.	Refer to chart 23 to troubleshoot.
MULTI FUNCTION VALVE FAULT	Multiple functions inoperative. Boom up/dwn,ext/ret, and turntable rotate auxiliary functions inoperative.	Multi function valve coil circuit open or shorted to ground or coil may be bad	Refer to chart 32 to troubleshoot.
STEERING JOYSTICK NOT CALIBRATED	Steering functions inoperative.	Steering joystick not calibrated.	Calibrate steering joystick refer to repair section.
STEERING JOYSTICK SHORTED TO 0V	Steering functions inoperative from platform.	Open circuit between platform control card and steering joystick.	Refer to charts 35,36,37, and 38 to troubleshoot.
STEERING JOYSTICK SHORTED TO 5V	Steering functions inoperative from platform.	Shorted circuit between platform control card and steering joystick.	Refer to charts 35,36,37, and 38 to troubleshoot.
STEERING JOYSTICK VALUE TOO HIGH	steering functions inoperative from platform.	Damaged circuit between platform control card and steering joystick or Joystick may need to be replaced.	Refer to charts 35,36,37, and 38 to troubleshoot.
STEERING JOYSTICK VALUE TOO LOW	Steering functions inoperative from platform.	Damaged circuit between platform control card and steering joystick or Joystick may need to be replaced.	Refer to charts 35,36,37, and 38 to troubleshoot.
BLUE END BLUE SIDE STEER SENSOR SHORTED TO 0V	Blue end blue side steering functions inoperative.	Open circuit between blue end blue side steering sensor and DCON box.	Refer to chart 35 to troubleshoot.
BLUE END BLUE SIDE STEER SENSOR SHORTED TO 5V	Blue end blue side steering functions inoperative.	Shorted circuit between blue end blue side steering sensor and DCON box.	Refer to chart 35 to troubleshoot.
BLUE END BLUE SIDE STEER SENSOR VALUE TOO HIGH	Blue end blue side steering functions inoperative.	Damaged circuit between blue end blue side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 35 to troubleshoot.
BLUE END BLUE SIDE STEER SENSOR VALUE TOO LOW	Blue end blue side steering functions inoperative.	Damaged circuit between blue end blue side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 35 to troubleshoot.
BLUE END YELLOW SIDE STEER SENSOR SHORTED TO 0V	Blue end yellow side steering functions inoperative.	Open circuit between blue end yellow side steering sensor and DCON box.	Refer to chart 36 to troubleshoot.
BLUE END YELLOW SIDE STEER SENSOR SHORTED TO 5V	Blue end yellow side steering functions inoperative.	Shorted circuit between blue end yellow side steering sensor and DCON box.	Refer to chart 36 to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
BLUE END YELLOW SIDE STEER SENSOR VALUE TOO HIGH	Blue end yellow side steering functions inoperative.	Damaged circuit between blue end yellow side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 36 to troubleshoot.
BLUE END YELLOW SIDE STEER SENSOR VALUE TOO LOW	Blue end yellow side steering functions inoperative.	Damaged circuit between blue end yellow side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 36 to troubleshoot.
YELLOW END BLUE SIDE STEER SENSOR SHORTED TO 0V	Yellow end blue side steering functions inoperative.	Open circuit between yellow end blue side steering sensor and DCON box.	Refer to chart 37 to troubleshoot.
YELLOW END BLUE SIDE STEER SENSOR SHORTED TO 5V	Yellow end blue side steering functions inoperative.	Shorted circuit between yellow end blue side steering sensor and DCON box.	Refer to chart 37 to troubleshoot.
YELLOW END BLUE SIDE STEER SENSOR VALUE TOO HIGH	Yellow end blue side steering functions inoperative.	Damaged circuit between yellow end blue side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 37 to troubleshoot.
YELLOW END BLUE SIDE STEER SENSOR VALUE TOO LOW	Yellow end blue side steering functions inoperative.	Damaged circuit between yellow end blue side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 37 to troubleshoot.
YELLOW END YELLOW SIDE STEER SENSOR SHORTED TO 0V	Yellow end yellow side steering functions inoperative.	Open circuit between yellow end yellow side steering sensor and DCON box.	Refer to chart 38 to troubleshoot.
YELLOW END YELLOW SIDE STEER SENSOR SHORTED TO 5V	Yellow end yellow side steering functions inoperative.	Shorted circuit between yellow end yellow side steering sensor and DCON box.	Refer to chart 38 to troubleshoot.
YELLOW END YELLOW SIDE STEER SENSOR VALUE TOO HIGH	Yellow end yellow side steering functions inoperative.	Damaged circuit between yellow end yellow side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 38 to troubleshoot.
YELLOW END YELLOW SIDE STEER SENSOR VALUE TOO LOW	Yellow end yellow side steering functions inoperative.	Damaged circuit between yellow end yellow side steering sensor and DCON box or steering sensor may need to be replaced.	Refer to chart 38 to troubleshoot.
BLUE END BLUE SIDE STEER VALVE FAULT	Blue end blue side CW or blue end blue side CCW functions inoperative.	Blue end blue side CW or CCW valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 35 to troubleshoot.
BLUE END YELLOW SIDE STEER VALVE FAULT	Blue end yellow side CW or blue end yellow side CCW functions inoperative.	Blue end yellow side CW or CCW valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 36 to troubleshoot.
YELLOW END BLUE SIDE STEER VALVE FAULT	Yellow end blue side CW or yellow end blue side CCW functions inoperative.	Yellow end blue side CW or CCW valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 37 to troubleshoot.
YELLOW END YELLOW SIDE STEER VALVE FAULT	Yellow end yellow side CW or yellow end yellow side CCW functions inoperative.	Yellow end yellow side CW or CCW valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 38 to troubleshoot.
DRIVE JOYSTICK NOT CALIBRATED	Drive functions inoperative.	Drive joystick not calibrated.	Calibrate drive joystick refer to repair section.
DRIVE JOYSTICK SHORTED TO 0V	Drive functions inoperative.	Open circuit between platform control card and drive joystick.	Refer to charts 39 and 40 to troubleshoot.
DRIVE JOYSTICK SHORTED TO 5V	Drive functions inoperative.	Shorted circuit between platform control card and drive joystick.	Refer to charts 39 and 40 to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
DRIVE JOYSTICK VALUE TOO HIGH	Drive functions inoperative.	Damaged circuit between platform control card and drive joystick or Joystick may need to be replaced.	Refer to charts 39 and 40 to troubleshoot.
DRIVE JOYSTICK VALUE TOO LOW	Drive functions inoperative.	Damaged circuit between platform control card and drive joystick or Joystick may need to be replaced.	Refer to charts 39 and 40 to troubleshoot.
DRIVE VALVE NOT CALIBRATED	No movement on Drive forward or reverse functions until joystick is moved past half stroke.	Reset propel valve defaults set from display. Refer to Display module section.	Calibrate propel thresholds refer to repair section.
DRIVE VALVE FAULT	Drive forward and drive reverse functions inoperative.	Drive forward or drive reverse valve coils circuits open or shorted to ground or the coils are bad.	Refer to charts 39 and 40 to troubleshoot.
BRAKE VALVE FAULT	Drive forward or drive reverse functions inoperative.	Brake valve circuit open or shorted to ground or coil is bad.	Refer to charts 39 and 40 to troubleshoot.
MOTOR COIL FAULT	High drive inoperative.	Motor coil circuit open or shorted to ground or the coil is bad.	Refer to chart 42 to troubleshoot.
AUX PROPEL VALVE FAULT	Auxiliary drive forward or reverse inoperative (Only seen if Aux. Drive option is enabled from display. Refer to display module section.)	Auxiliary propel valve coils circuits open or shorted to ground or the coils are bad.	Refer to chart 44 To troubleshoot.
PLATFORM LEVEL TOGGLE SWITCHES FAULT	Manual platform level inoperative from platform or turntable controls.	Shorted platform level toggle switch on the platform control box or shorted platform level up or down membrane switch on the turntable membrane panel.	Refer to charts 25 and 26 to troubleshoot.
PLATFORM LEVEL SENSOR DEGREES SHORTED TO 0V	Platform level and boom up/down functions inoperative.	Open circuit between platform level sensor and platform control box.	Refer to chart 24 to troubleshoot.
PLATFORM LEVEL SENSOR DEGREES SHORTED TO 5V	Platform level and boom up/down functions inoperative.	Shorted circuit between platform level sensor and platform control box.	Refer to chart 24 to troubleshoot.
PLATFORM LEVEL SENSOR DEGREES VALUE TOO HIGH	Platform level and boom up/down functions inoperative.	Damaged circuit between platform level sensor and platform control box or platform level sensor may need to be replaced.	Refer to chart 24 to troubleshoot.
PLATFORM LEVEL SENSOR DEGREES VALUE TOO LOW	Platform level and boom up/down functions inoperative.	Damaged circuit between platform level sensor and platform control box or platform level sensor may need to be replaced.	Refer to chart 24 to troubleshoot.
PLATFORM LEVEL VALVE FAULT	Platform level up or platform level down function inoperative.	Platform level up or platform level down coils circuits open or shorted to ground or the coils are bad.	Refer to charts 25 and 26 to troubleshoot.
PLATFORM ROTATE TOGGLE SWITCHES FAULT	Platform rotate functions inoperative from platform or turntable controls.	Shorted platform rotate toggle switch on the platform control box or shorted platform rotate CW or CCW membrane switch on the turntable membrane panel.	Refer to charts 28 and 29 to troubleshoot.
PLATFORM ROTATE VALVE FAULT	Platform rotate CW or CCW inoperative.	Platform rotate cw or ccw coils circuits open or shorted to ground or the coils are bad.	Refer to charts 28 and 29 to troubleshoot.
JIB UP/DOWN TOGGLE SWITCHES FAULT	Jib functions inoperative.	Shorted jib toggle switch on the platform control box or shorted jib up or down membrane switch on the turntable membrane panel.	Refer to charts 30 and 31 to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
JIB VALVE FAULT	Jib up or jib down inoperative.	Jib up or jib down coils circuits open or shorted to ground or coils are bad.	Refer to charts 30 and 31 to troubleshoot.
ENGINE SPEED NO RESPONSE	Engine runs then dies.	Engine RPM signal from alternator below 100RPM.	Refer to chart 4 to troubleshoot.
ENGINE SPEED VALUE TOO HIGH	Engine runs then dies.	Engine RPM signal from alternator above 3500RPM.	Refer to chart 4 to troubleshoot.
ENGINE OIL PRESSURE VALUE TOO LOW	Engine runs then dies.	Engine oil pressure below 12psi.	Refer to chart 4 to troubleshoot.
ENGINE OIL PRESSURE SENSOR SHORTED TO 0V	Engine runs then dies.	Engine oil pressure sensor circuit shorted to ground.	Refer to chart 4 to troubleshoot.
ENGINE OIL PRESSURE SENSOR SHORTED TO 5V	Engine runs then dies.	Engine oil pressure sensor circuit open.	Refer to chart 4 to troubleshoot.
ENGINE OIL PRESSURE SENSOR VALUE TOO HIGH	Engine runs then dies.	Engine oil pressure sensor circuit damaged or sensor may need to be replaced.	Refer to chart 4 to troubleshoot.
ENGINE OIL PRESSURE SENSOR VALUE TOO LOW	Engine runs then dies.	Engine oil pressure sensor circuit damaged or sensor may need to be replaced.	Refer to chart 4 to troubleshoot.
ENGINE TEMPERATURE VALUE TOO HIGH	Engine runs then dies.	Engine temperature above maximum allowable temp for engine.	Refer to chart 4 to troubleshoot.
ENGINE TEMPERATURE SENSOR SHORTED TO 0V	Engine runs then dies.	Engine temperature sensor circuit shorted to ground.	Refer to chart 4 to troubleshoot.
ENGINE TEMPERATURE SENSOR SHORTED TO 5V	Engine runs then dies.	Engine temperature sensor circuit open.	Refer to chart 4 to troubleshoot.
ENGINE TEMPERATURE SENSOR VALUE TOO HIGH	Engine runs then dies.	Engine temperature sensor circuit damaged or sensor may need to be replaced.	Refer to chart 4 to troubleshoot.
ENGINE TEMPERATURE SENSOR VALUE TOO LOW	Engine runs then dies.	Engine temperature sensor circuit damaged or sensor may need to be replaced.	Refer to chart 4 to troubleshoot.
TURNABLE LEVEL SENSOR X-DIRECTION SHORTED TO 0V	Unit out of level LED, icon and alarm active.	Open circuit in turntable level sensor X-direction wiring.	Repair open in circuit. Refer to electrical schematic to troubleshoot.
TURNABLE LEVEL SENSOR X-DIRECTION SHORTED TO 5V	Unit out of level LED, icon and alarm active.	Short in turntable level sensor X-direction circuit wiring.	Repair short in circuit. Refer to electrical schematic to troubleshoot.
TURNABLE LEVEL SENSOR X-DIRECTION VALUE TOO HIGH	Unit out of level LED, icon and alarm active.	Damaged circuit in turntable level sensor X-direction wiring or turntable level sensor may need to be replaced.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department to determine if turntable level sensor needs to be replaced.
TURNABLE LEVEL SENSOR X-DIRECTION VALUE TOO LOW	Unit out of level LED, icon and alarm active.	Damaged circuit in turntable level sensor X-direction wiring or turntable level sensor may need to be replaced.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department to determine if turntable level sensor needs to be replaced.
TURNABLE LEVEL SENSOR Y-DIRECTION SHORTED TO 0V	Unit out of level LED, icon and alarm active.	Open circuit in turntable level sensor Y-direction wiring.	Repair open in circuit. Refer to electrical schematic to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
TURNTABLE LEVEL SENSOR Y-DIRECTION SHORTED TO 5V	Unit out of level LED, icon and alarm active.	Short in turntable level sensor Y-direction circuit wiring.	Repair short in circuit. Refer to electrical schematic to troubleshoot.
TURNTABLE LEVEL SENSOR Y-DIRECTION VALUE TOO HIGH	Unit out of level LED, icon and alarm active.	Damaged circuit in turntable level sensor Y-direction wiring or turntable level sensor may need to be replaced.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department to determine if turntable level sensor needs to be replaced.
TURNTABLE LEVEL SENSOR Y-DIRECTION VALUE TOO LOW	Unit out of level LED, icon and alarm active.	Damaged circuit in turntable level sensor Y-direction wiring or turntable level sensor may need to be replaced.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department to determine if turntable level sensor needs to be replaced.
DCON CAN NO RESPONSE	All drive chassis functions inoperative.	Open or shorted wires in CAN bus circuits between DCON and TCON control box's.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department.
CAN BUS NO RESPONSE	No functions from platform control box and all platform functions inoperative when using turntable controls.	Open or shorted wires in CAN bus circuits between PCON and TCON control box's.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department.
SAFETY SWITCH P3 FAULT	All functions inoperative.	Open circuit in tether Emergency stop wiring.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department.
SAFETY SWITCH P6R1 FAULT	Boom extend and boom down functions inoperative. This fault creates Safety switch P9A,P10,P11, and P18 fault.	Bad K4 relay inside turntable control box.	Replace K4 relay or consult Genie Industries Service Department.
SAFETY SWITCH P6R2 FAULT	Engine cranks but won't start.	Bad K3 relay inside turntable control box.	Replace K3 relay or consult Genie Industries Service Department.
SAFETY SWITCH P7 FAULT	No boom functions. Fault creates safety switch P7R,P22,P14,P12 and P22R faults.	Bad K5 relay inside turntable control box or bad K1 relay inside platform control box.	Replace K5 or K1 relays or consult Genie Industries Service Department.
SAFETY SWITCH P7R FAULT	No boom functions. Fault creates safety switch P22,P22R,P14, and P12 faults.	Bad K2 relay inside turntable control box or bad K2 relay inside platform control box.	Replace relays or consult Genie Industries Service Department.
SAFETY SWITCH P9A FAULT	Boom extend and boom down functions inoperative. This fault creates Safety switch P10 and P18 faults.	Open in Boom envelope safety circuits or operational limit switches LSB3EO,LSB13AO,LSB4EO, or LSB14AO have failed.	Refer to chart 18 or 19 to troubleshoot.
SAFETY SWITCH P9B FAULT	Engine cranks but won't start.	Open in Boom envelope safety circuits or operational limit switches LSB3EO,LSB13AO,LSB4EO, or LSB14AO have failed.	Refer to chart 18 or 19 to troubleshoot.
SAFETY SWITCH P10 FAULT	Boom extend inoperative.	Boom extension cables out of adjustment or LSB6S limit switch is bad or there is an open in the safety circuit wiring.	Refer to chart 20 or 21 to troubleshoot.
SAFETY SWITCH P11 FAULT	Boom up inoperative.	Open in axle safety switch circuit or limit switch LSB7DS,LSAX1ES, or LSAX2ES have failed or operational limit switch LSB1DO has failed.	Refer to chart 18 or 19 and chart 20 or 21 to troubleshoot.



Continued on next page

FAULT CODE CHART

Diagnostic code displayed	Condition	Possible Causes	Solution
SAFETY SWITCH P12 FAULT	Axle retract inoperative.	Open in stowed safety circuit or limit switch LSB7DS or LSB3RS have failed or operational limit switches LSB1DO or LSB3RO have failed.	Refer to chart 18 or 19 and chart 20 or 21 to troubleshoot.
SAFETY SWITCH P14 FAULT	Axle retract inoperative.	Open in stowed safety circuit or limit switch LSB7DS has failed or limit switch LSB1DO has failed.	Refer to chart 18 or 19 and chart 20 or 21 to troubleshoot.
SAFETY SWITCH P18 FAULT	Boom extend inoperative.	Open in axle safety switch circuit or limit switch LSB3RS,LSAX1ES, or LSAX2ES have failed or operational limit switch LSB3RO has failed.	Refer to chart 18 or 19 and chart 20 or 21 to troubleshoot.
SAFETY SWITCH P22 FAULT	Platform level inoperative. Fault creates a safety switch P22R fault.	Platform out of level >10degrees out of stowed position or platform level sensor is bad or there is an open in the platform level sensor circuit or limit switches LSB1DO or LSB3RO are bad.	Refer to chart 27 to troubleshoot.
SAFETY SWITCH P22R FAULT	Platform level and Boom up/down inoperative.	Platform out of level >10degrees out of stowed position or platform level sensor is bad or there is an open in the platform level sensor circuit or limit switches LSB1DO or LSB3RO are bad.	Refer to chart 27 to troubleshoot.
DCON SAFETY SWITCH P7R FAULT	Steering and axle functions inoperative.	Open in Red S56PRV wire circuit that runs from the turntable control box to the DCON control box.	Repair damage in circuit wiring. Refer to electrical schematic to troubleshoot or consult Genie Industries Service Department.
PROX. KILL SW. FAULT	All functions inoperative unless spare membrane on platform control box is activated.	Proximity Kill Bumper under platform has run into an obstruction or is out of adjustment.	Activate spare membrane and carefully move away from obstruction or readjust proximity kill limit switch.
PLTFRM OVERLOAD SEN. FAULT	All functions inoperative red LED above spare membrane flashing.	Load in platform is above rated load or load sensor is out of adjustment.	Unload excessive weight out of platform or readjust load sensor.
BOOM UP OVERLOAD FAULT	All functions except Boom retract inoperative.	Load in platform is above rated load or boom has run into an obstruction or boom up overload switch is out of adjustment.	Unload excessive weight out of platform or readjust limit switch or move away from obstruction.
BOOM DOWN OVERLOAD FAULT	All functions except Boom up and retract inoperative.	Boom has been lowered into an obstruction with boom extended or boom down overload switch is out of adjustment or there is an open in boom down overload circuit.	Refer to chart 14 to troubleshoot.
PRESS PLATFORM ESTOP	Code displayed whenever engine is running and controller is waiting for engine to be shut off to save calibrations or any parameter changes made with the display to memory.	Just finished a speed calibration for boom up/dwn, ext.ret, or turntable rotate or Joysticks were calibrated with engine running or a function parameter was changed with the display while the engine was running.	Turn key switch to platform control position and depress platform Emergency stop.

Chart 1

Display Not Active

Be sure the key switch is in the appropriate position.

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

Be sure the circuit breakers are not tripped.

Be sure the batteries are fully charged and properly connected.

Main key switch contacts

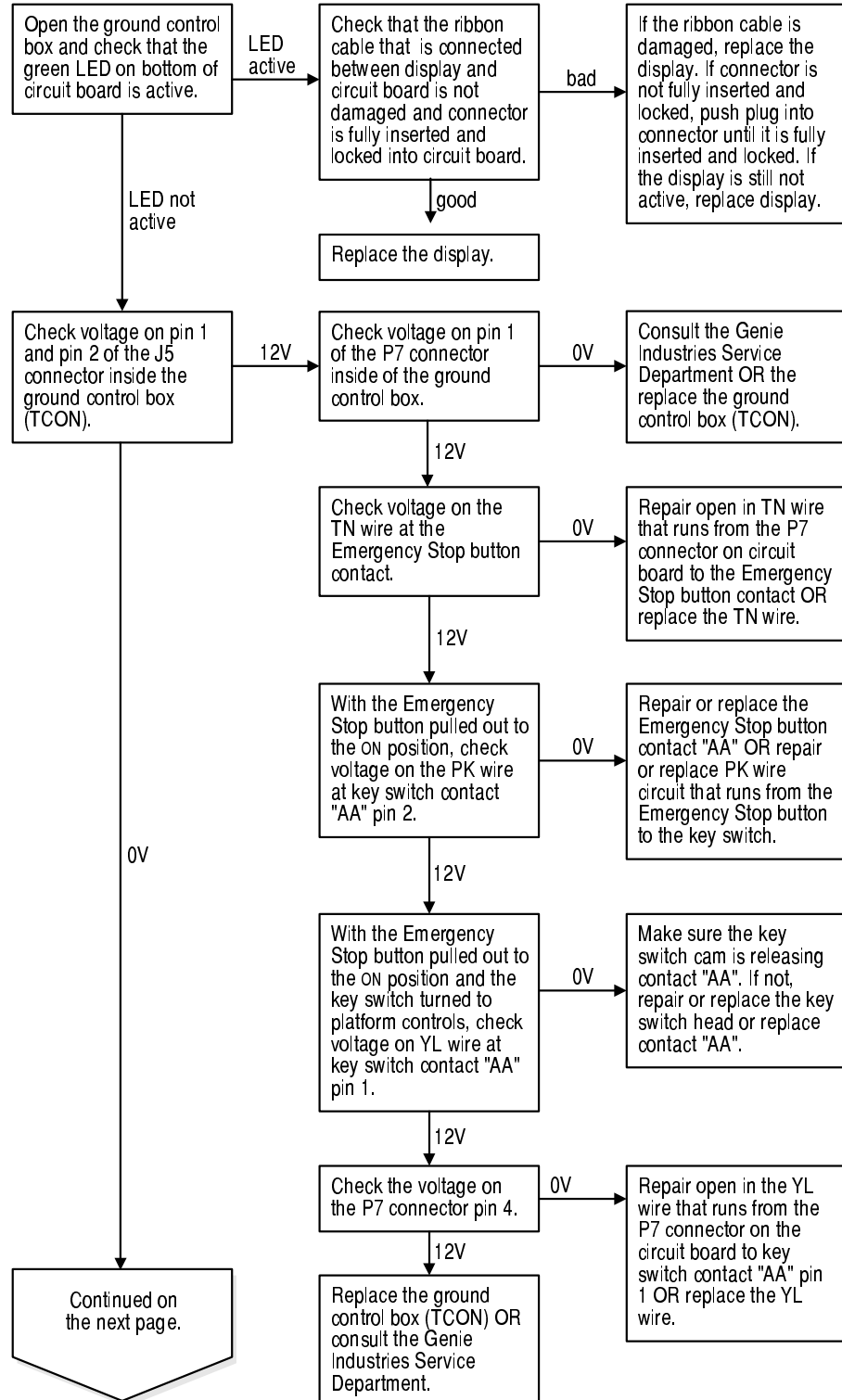
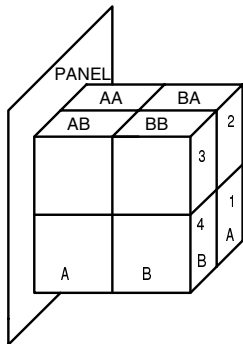


CHART 1

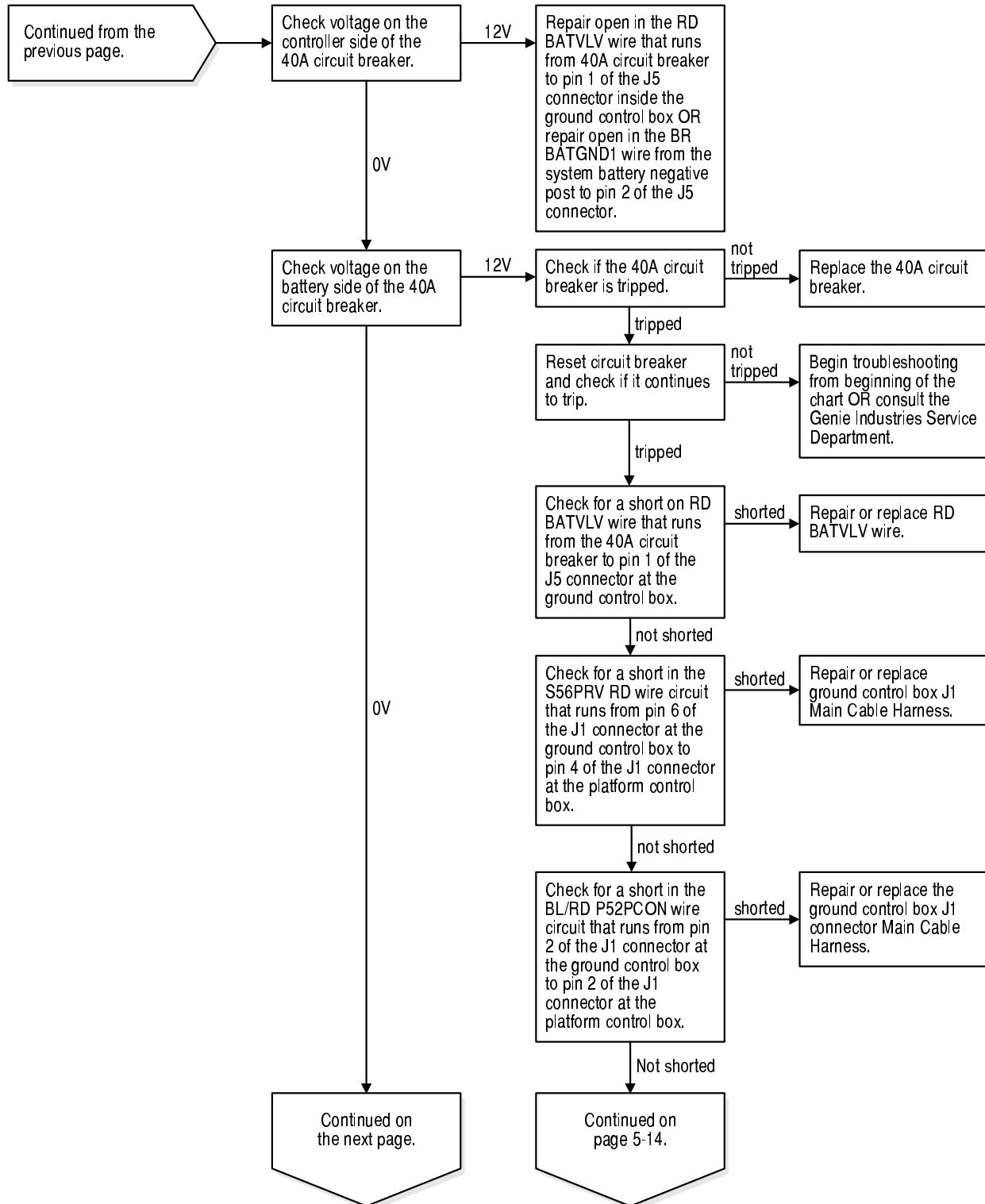


CHART 1

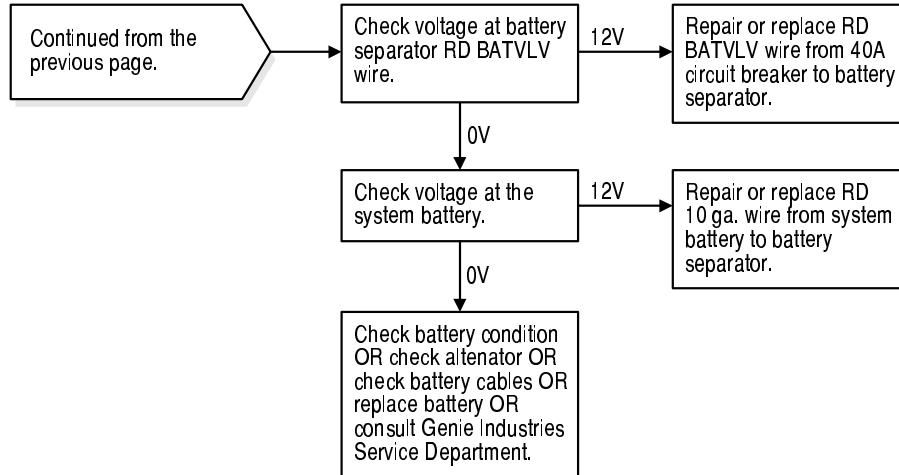


CHART 1

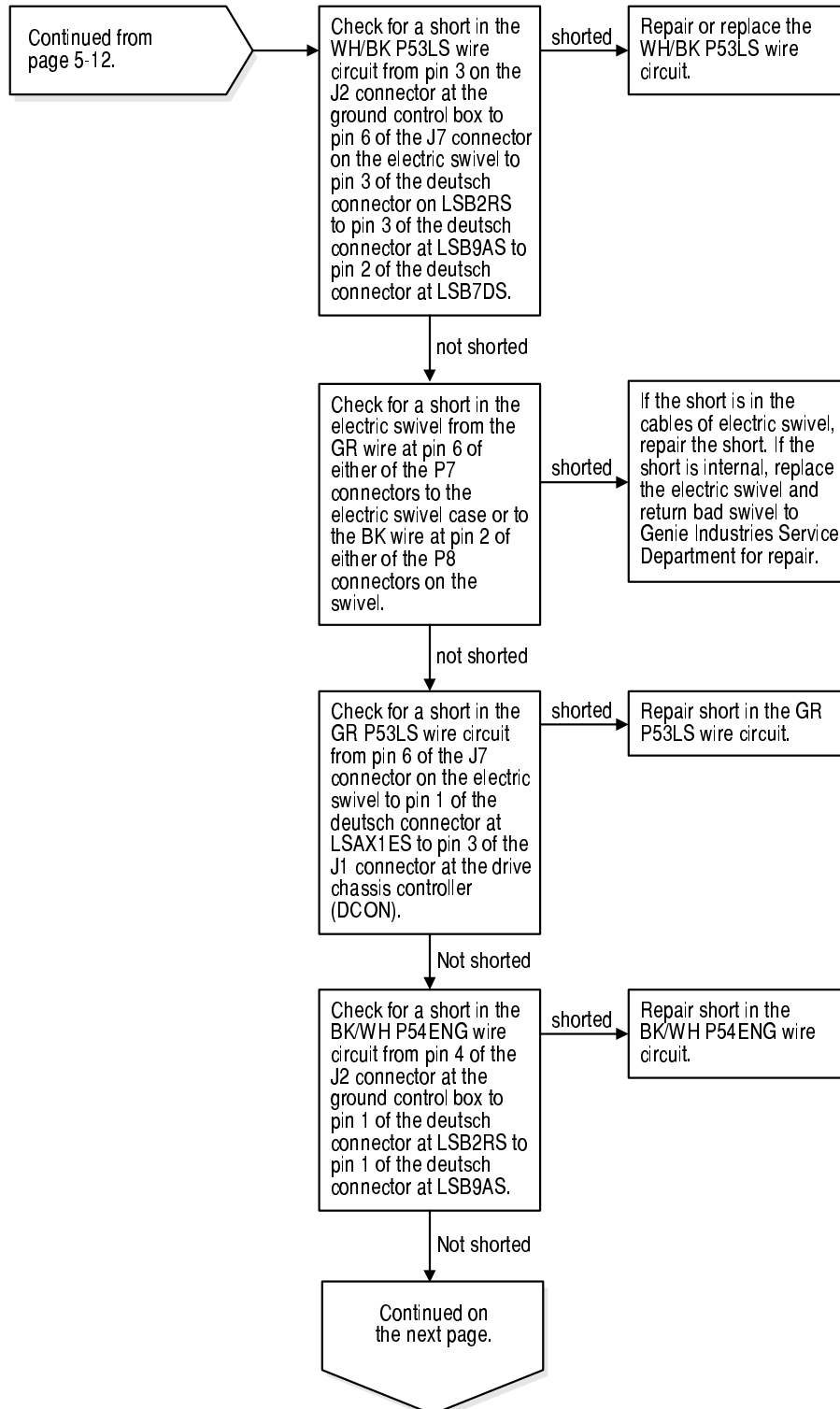


CHART 1

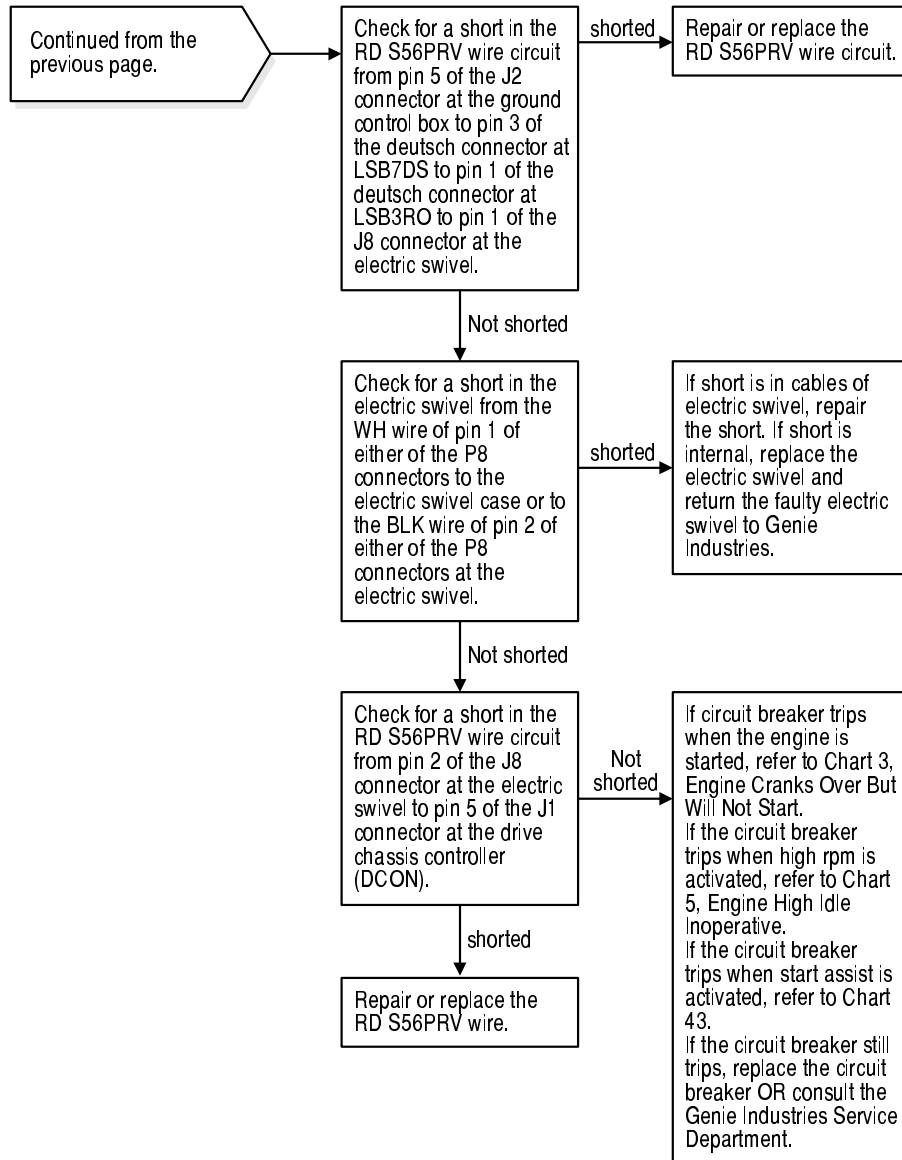


Chart 2

Engine Will Not Crank Over

Be sure to check fuel level.

Be sure the key switch is in the appropriate position.

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

Be sure the circuit breakers are not tripped.

Be sure the batteries are fully charged and properly connected.

Key switch contact legend

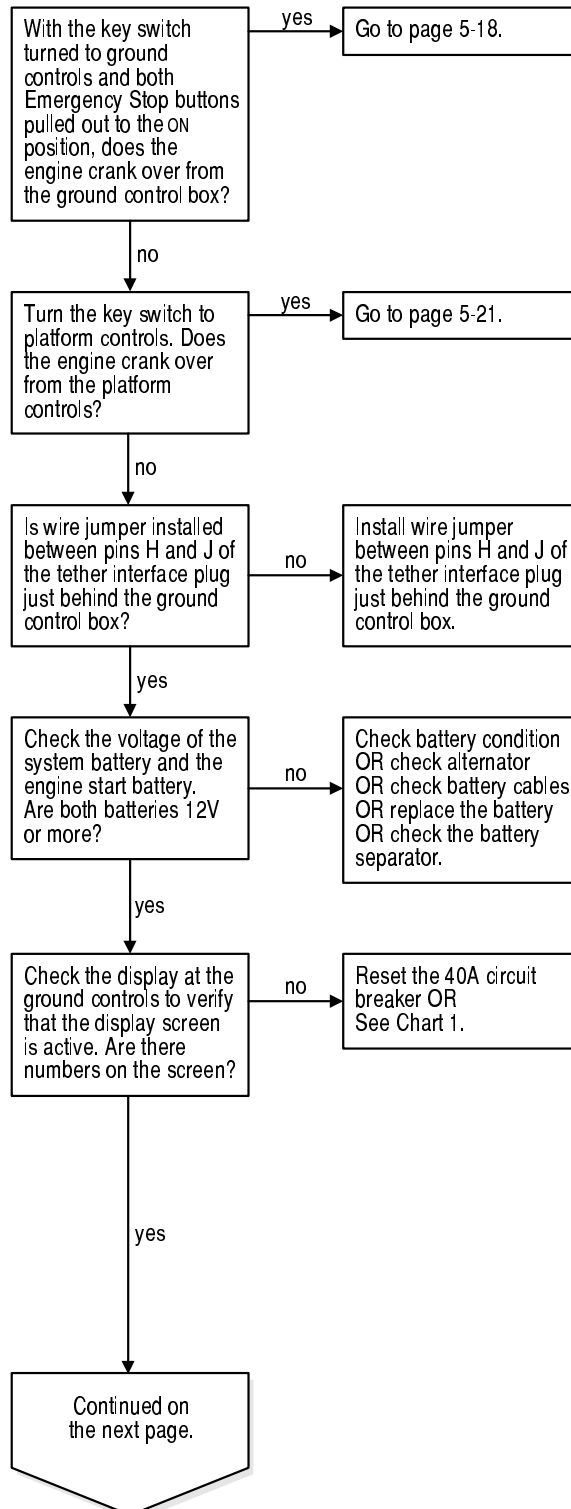
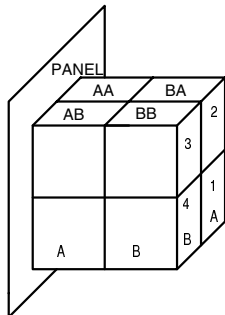


CHART 2

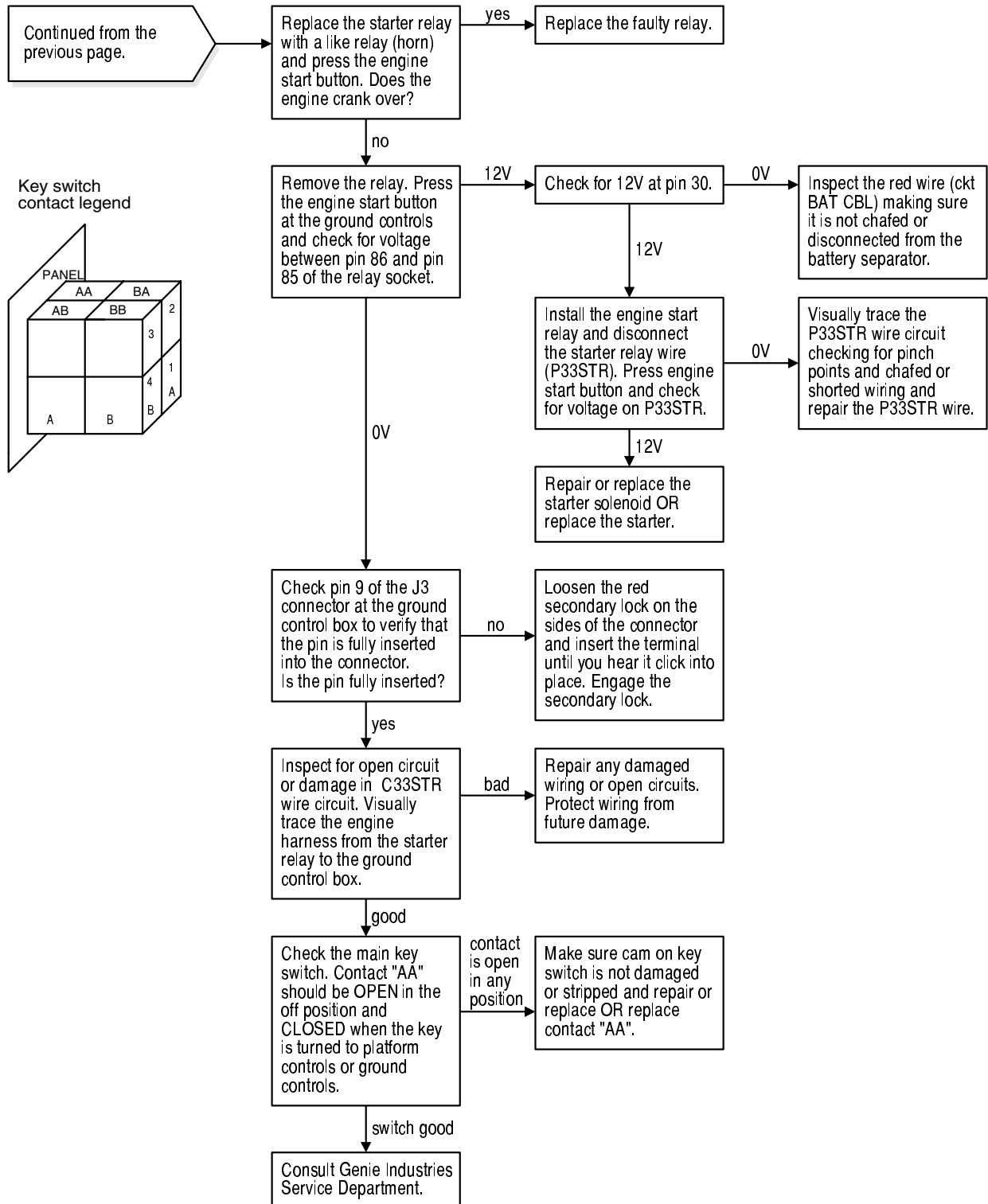


CHART 2

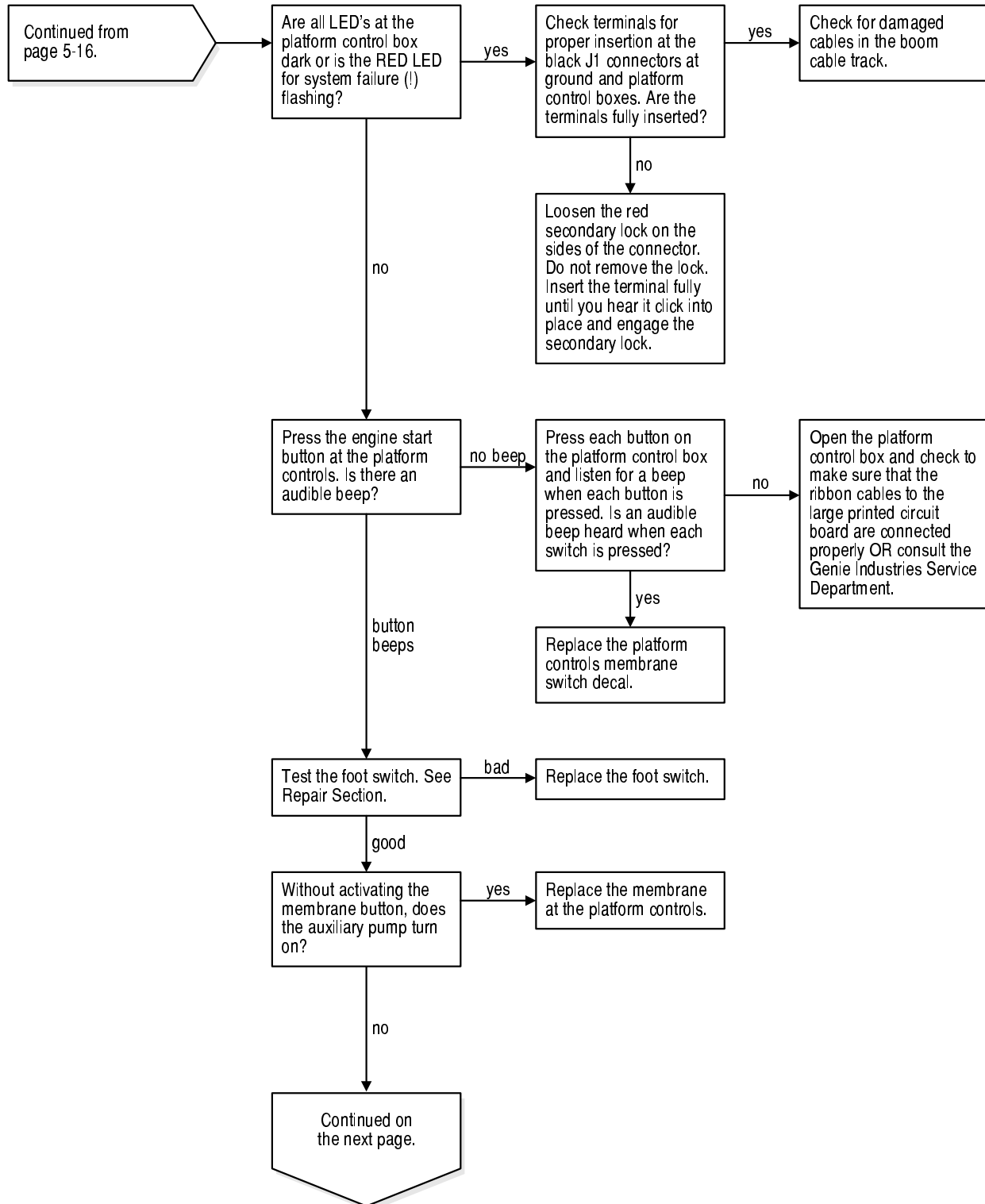


CHART 2

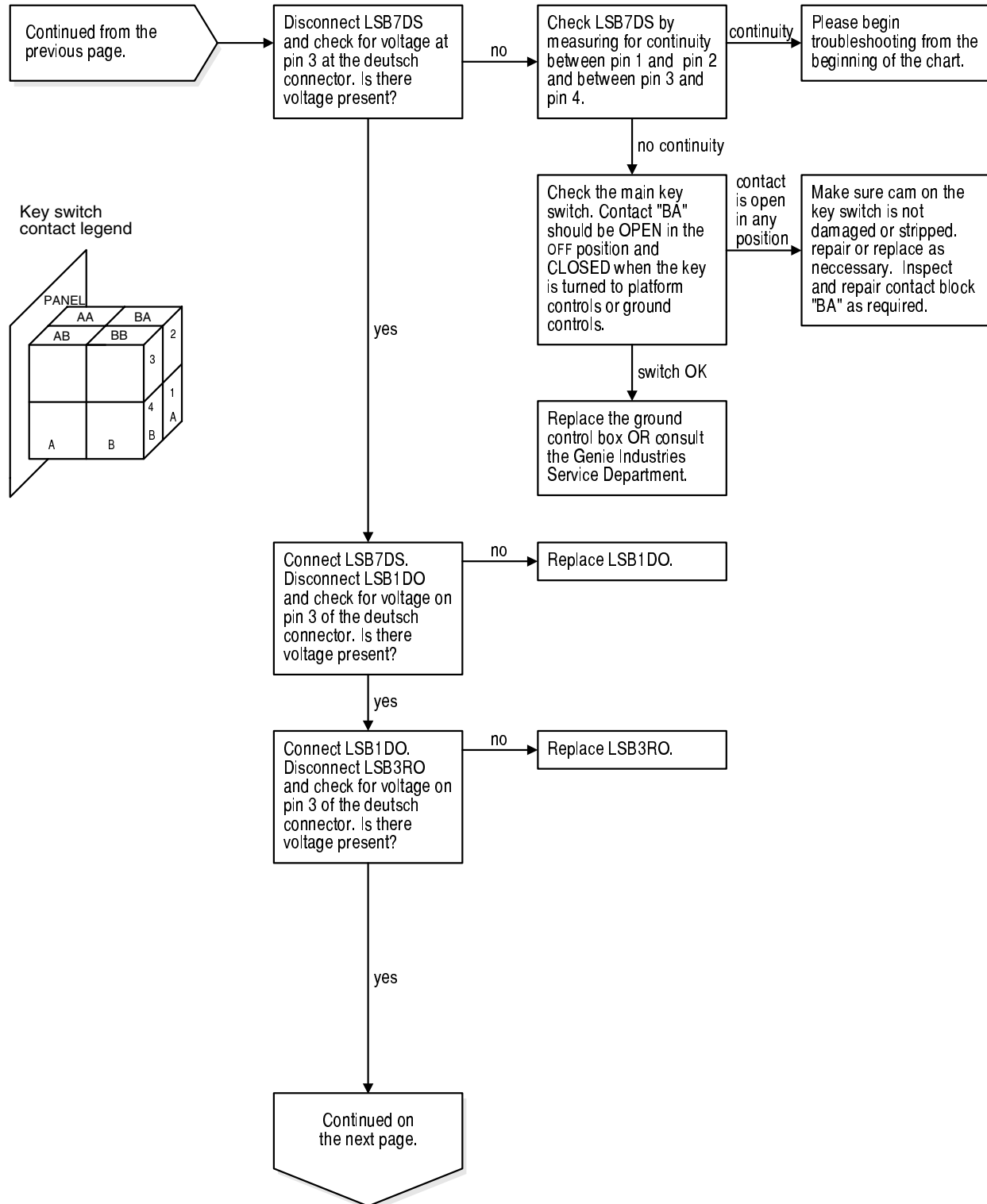


CHART 2

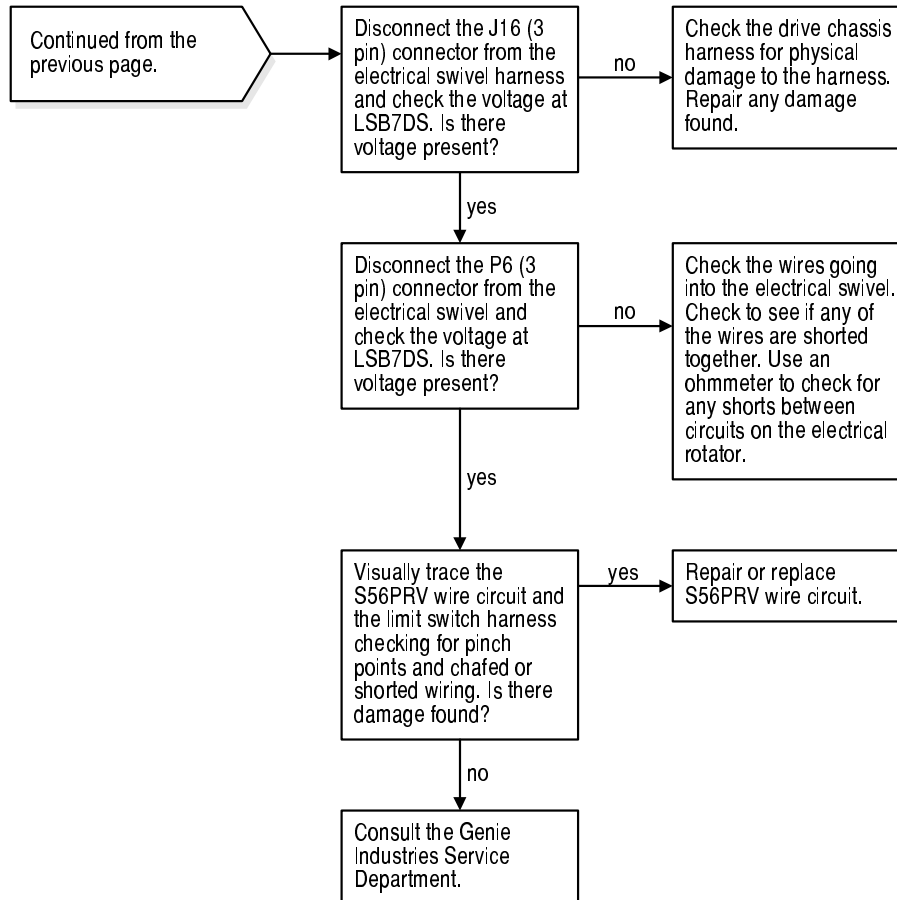


CHART 2

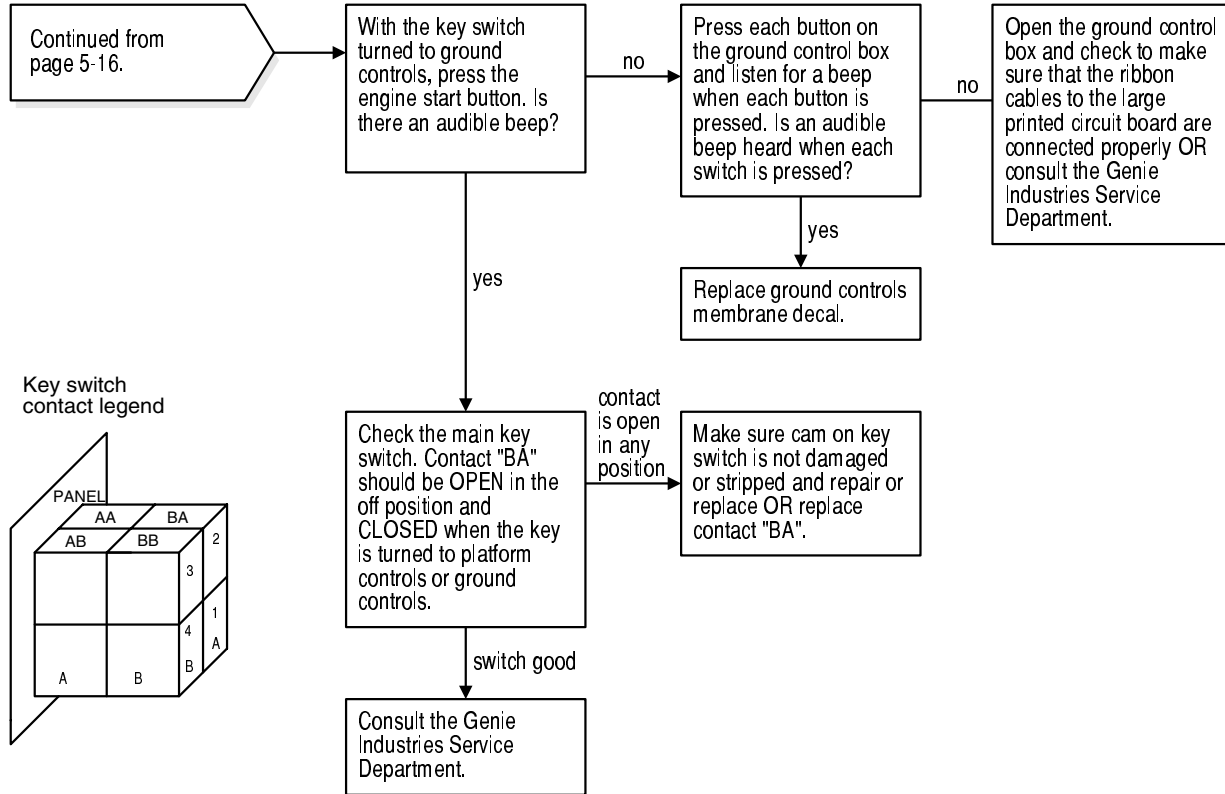


Chart 3

Engine Cranks Over But Will Not Start

Be sure to check the fuel level and fill as needed.

Be sure the fuel system is properly bled.

Be sure the batteries are fully charged and properly connected.

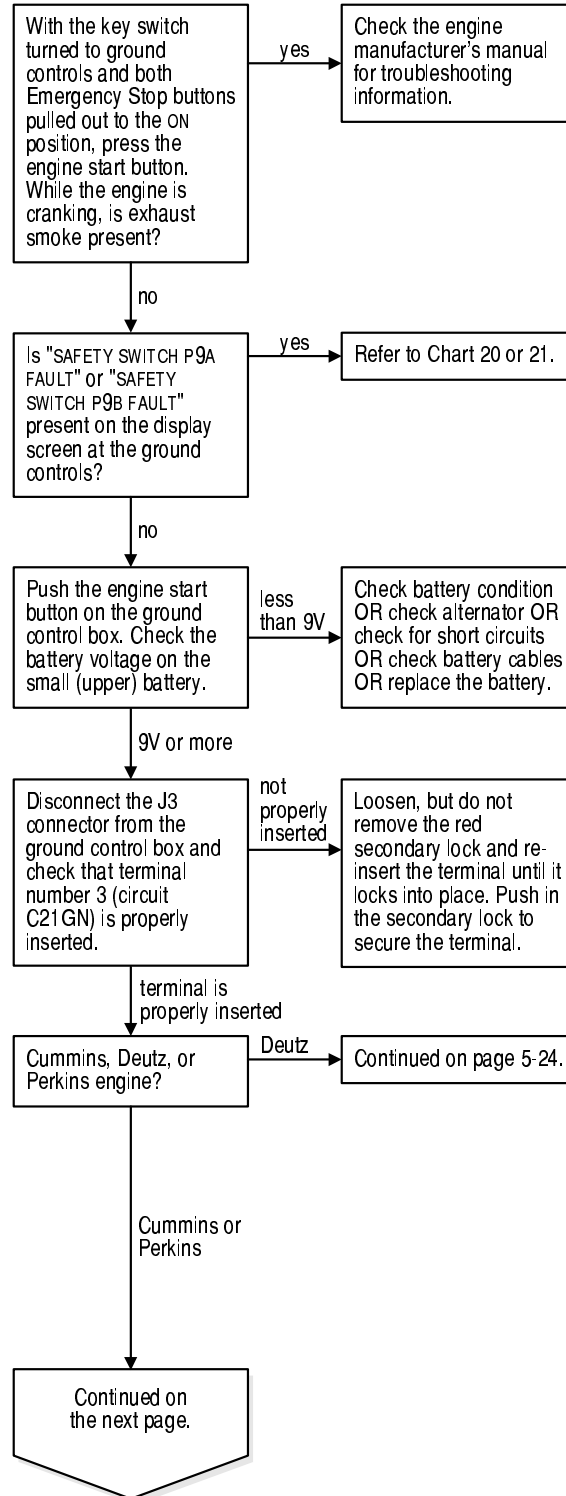


CHART 3

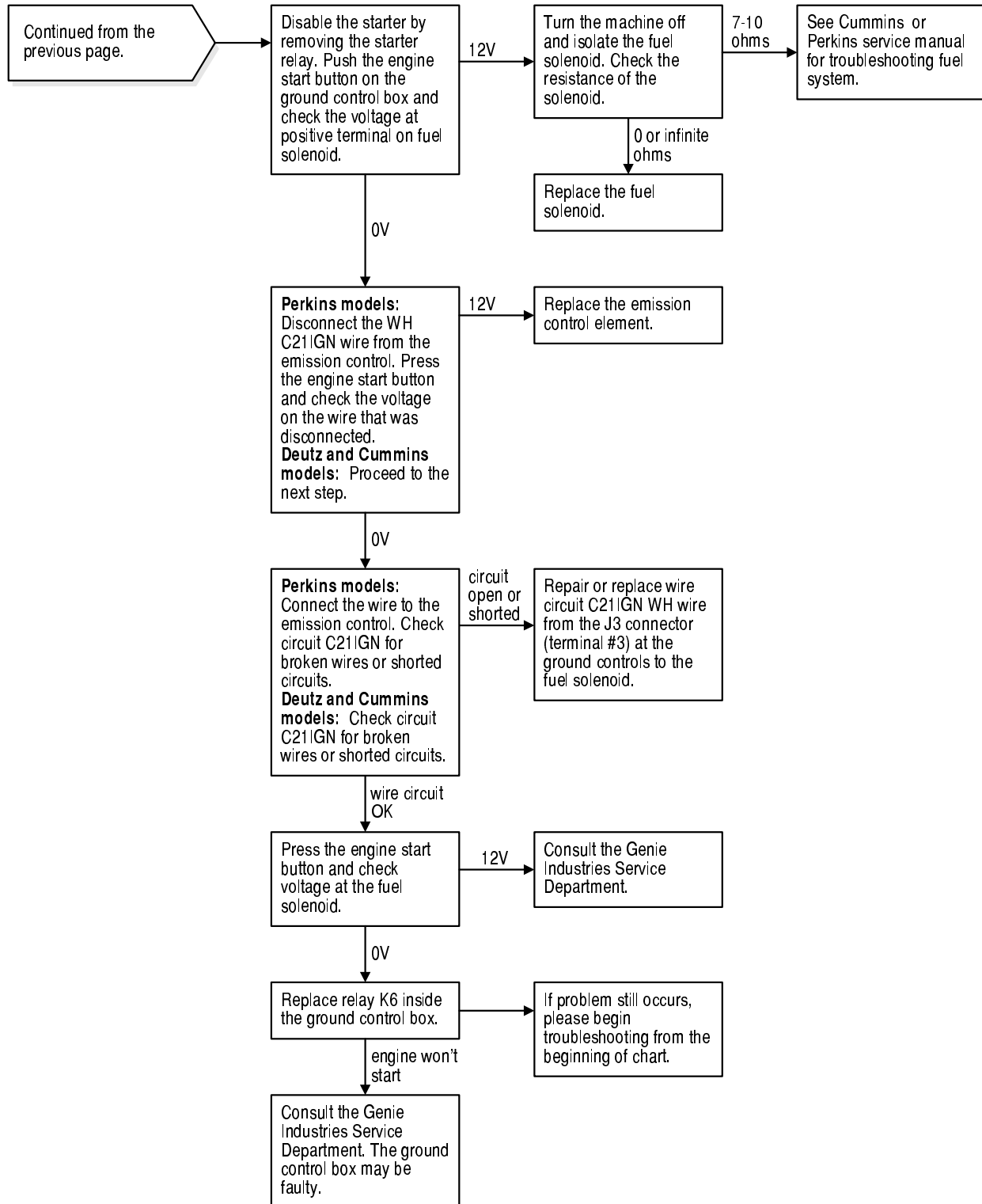


CHART 3

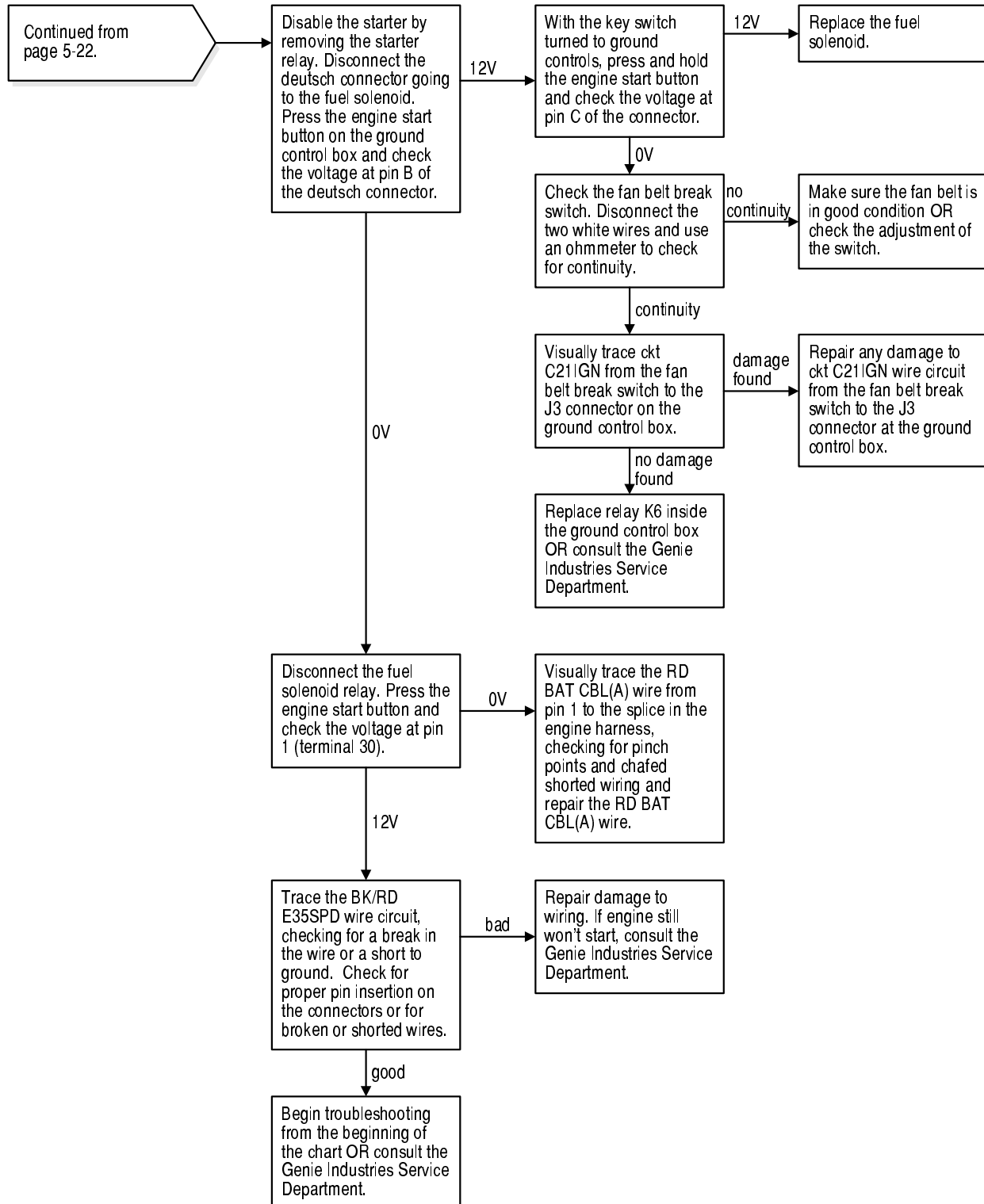


Chart 4

Engine Starts and Runs for 3 Seconds and Dies

Be sure to check the engine oil level and fill as needed.

Be sure to check fuel level and fill as needed.

Be sure to check coolant level and fill as needed.

Be sure fuel system is properly bled.

Be sure the batteries are fully charged and properly connected.

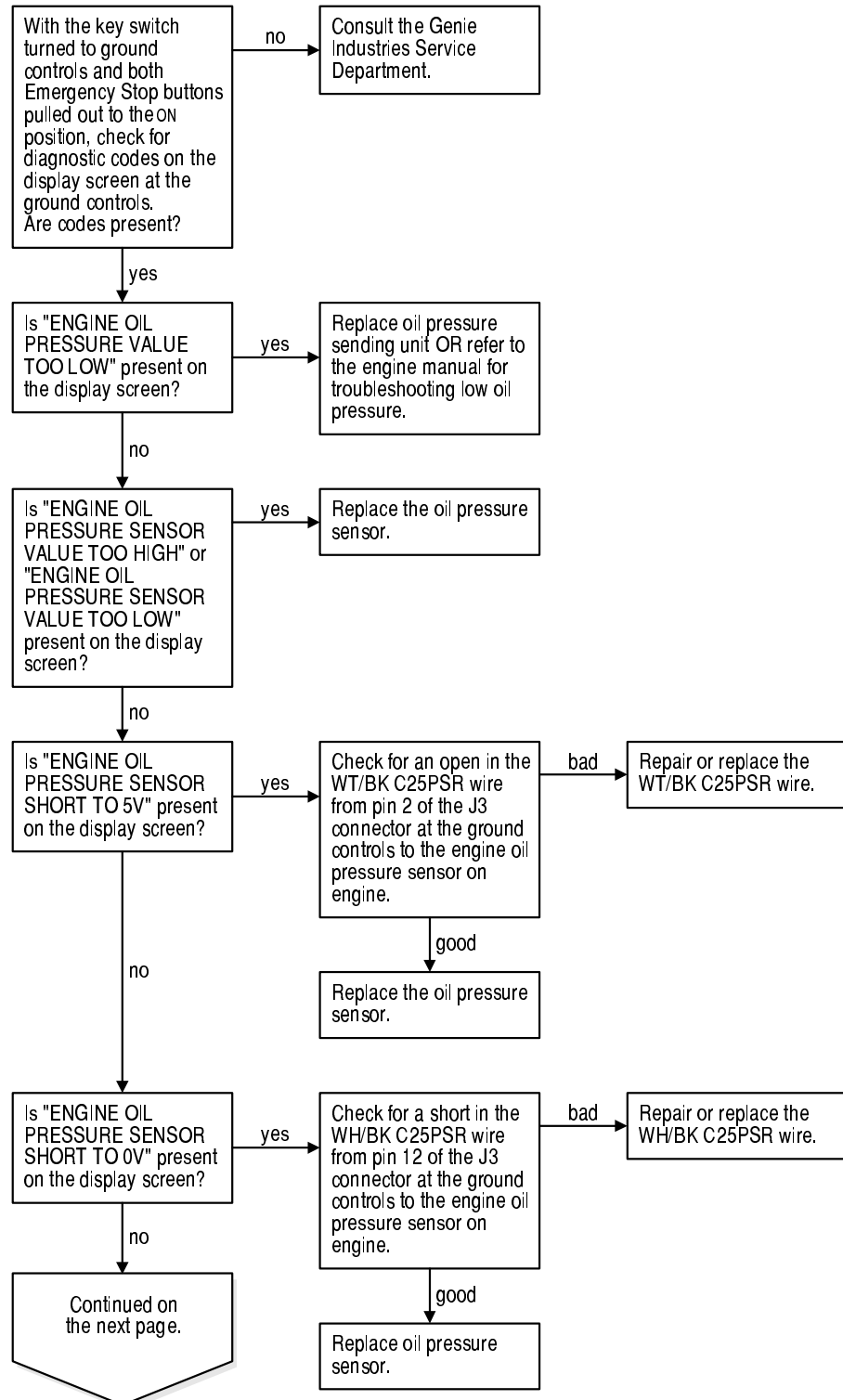


CHART 4

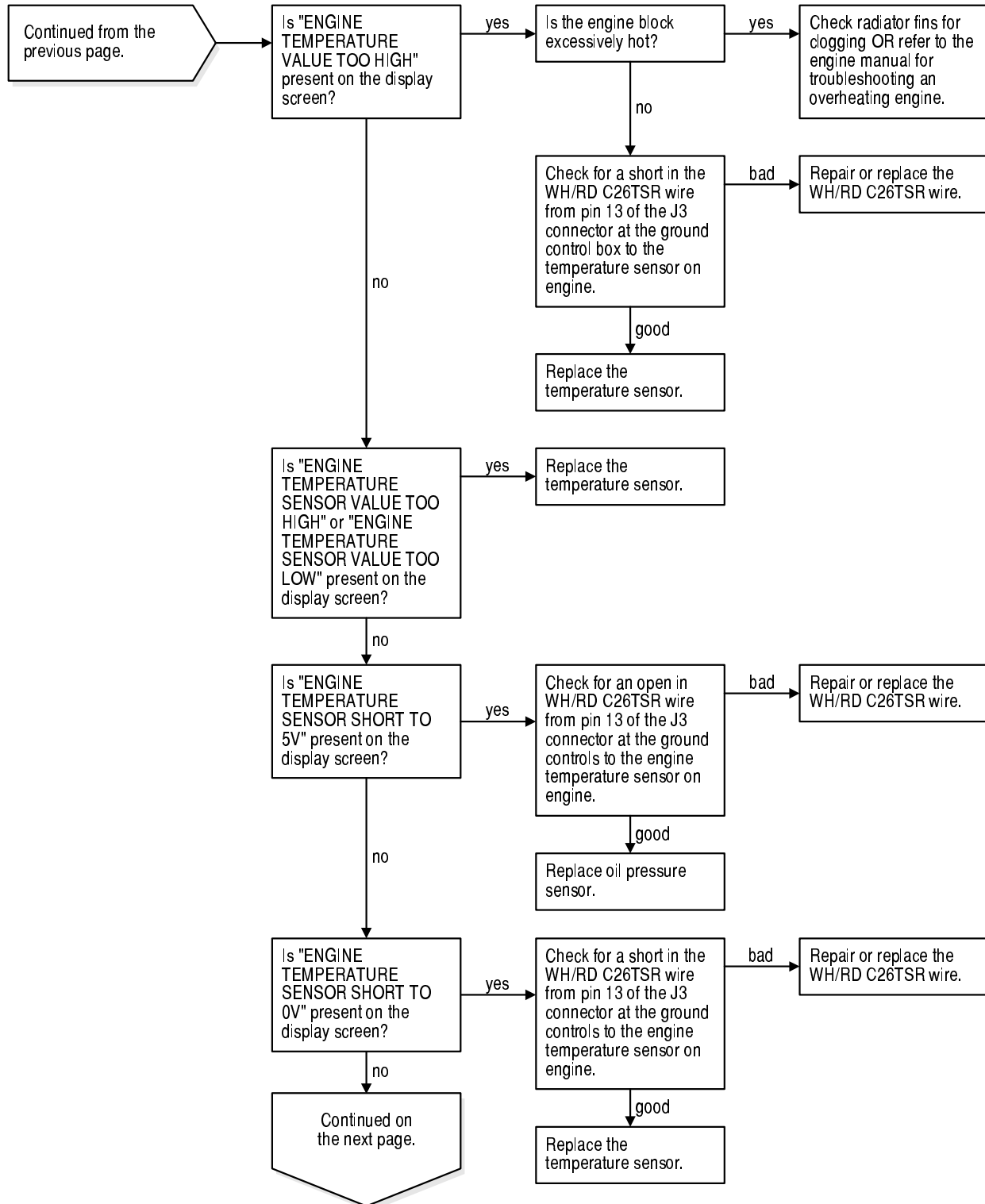


CHART 4

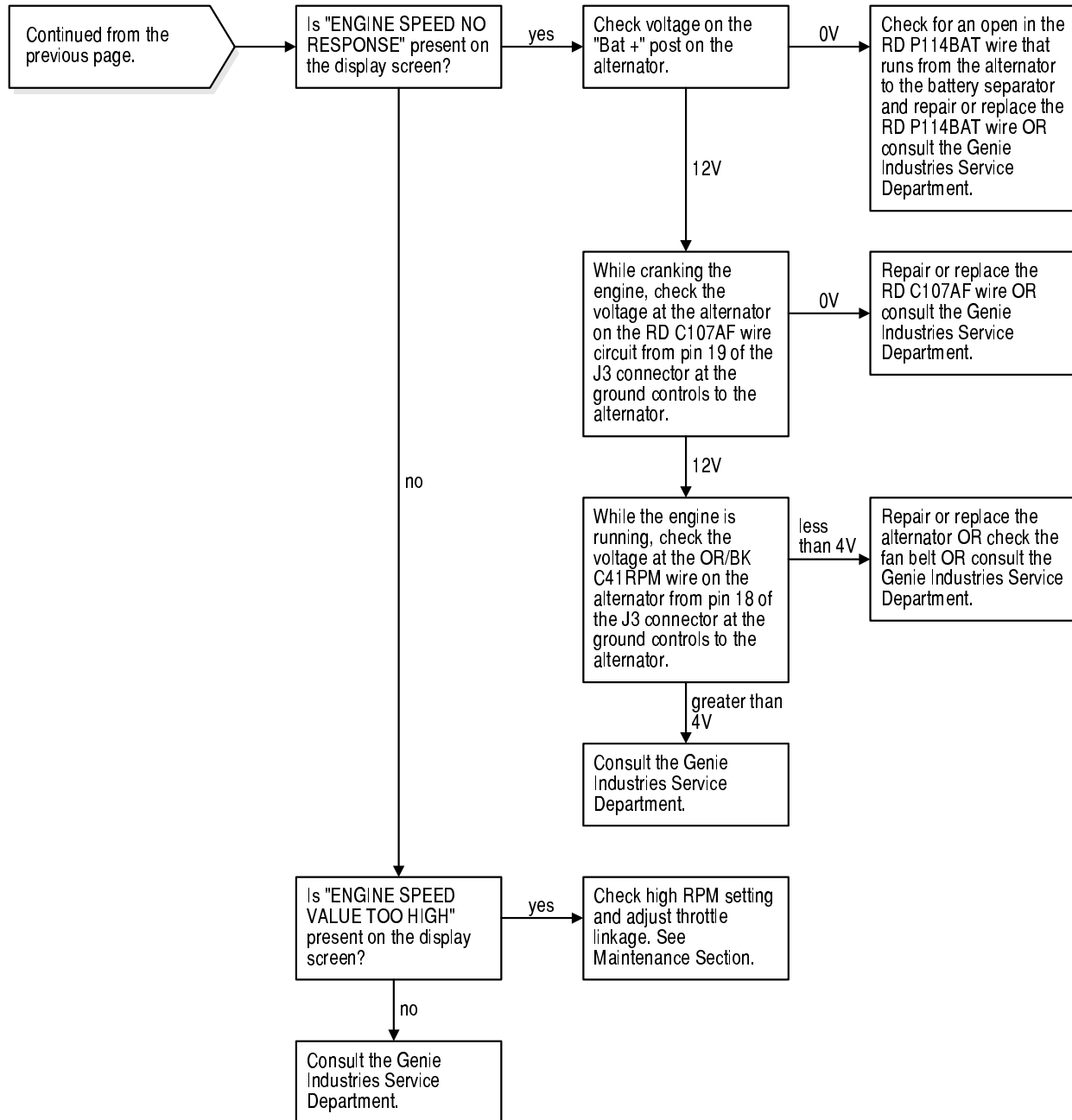


Chart 5

Engine High Idle Inoperative

Be sure mechanical linkage is not binding.

Be sure the batteries are fully charged and properly connected.

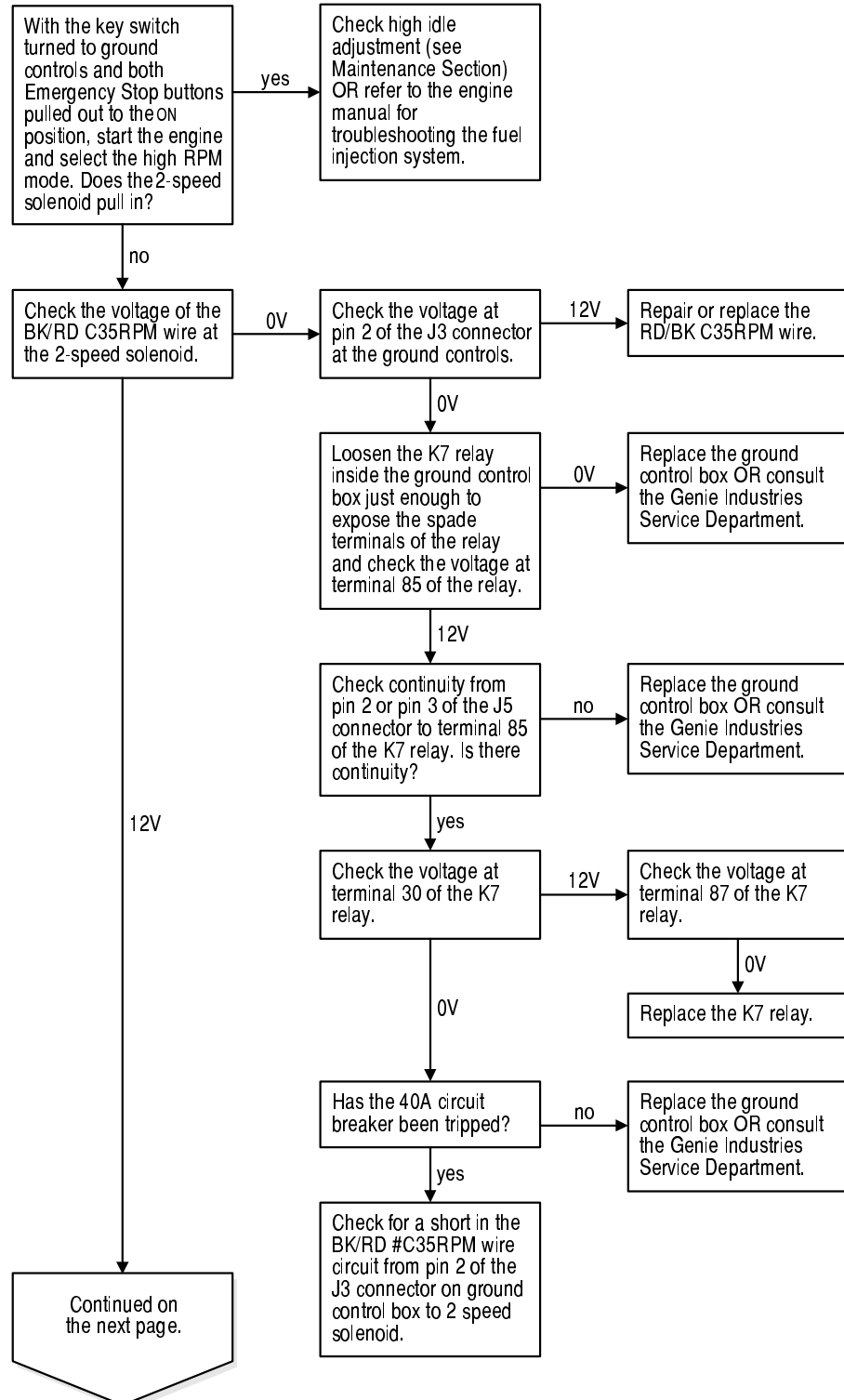


CHART 5

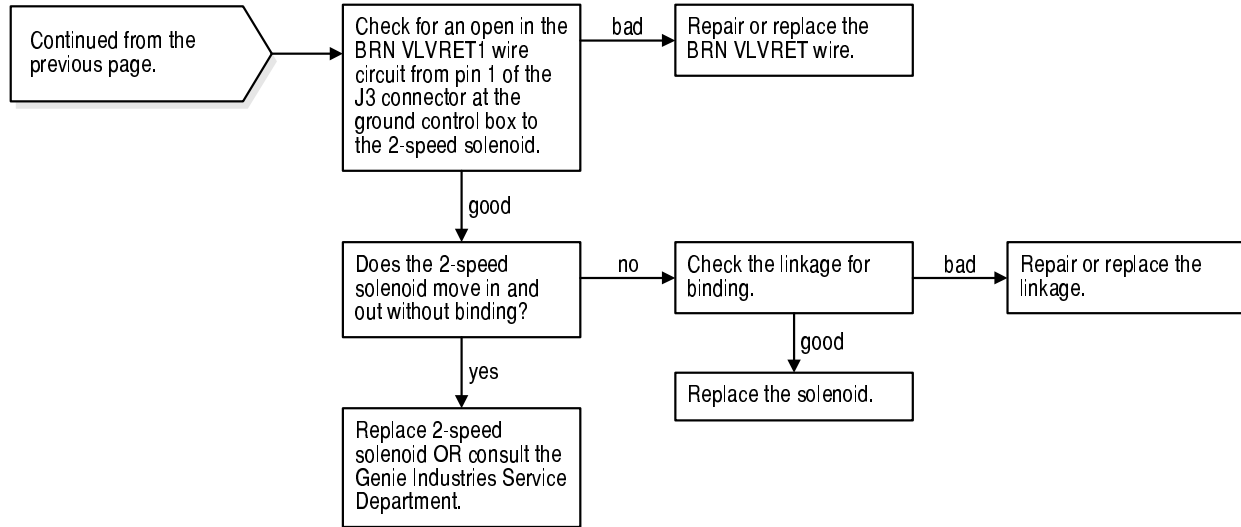


Chart 6

Engine Low Idle Inoperative

Be sure that mechanical linkage from 2-speed solenoid to fuel injection system is not binding or is defective.

Be sure the batteries are fully charged and properly connected.

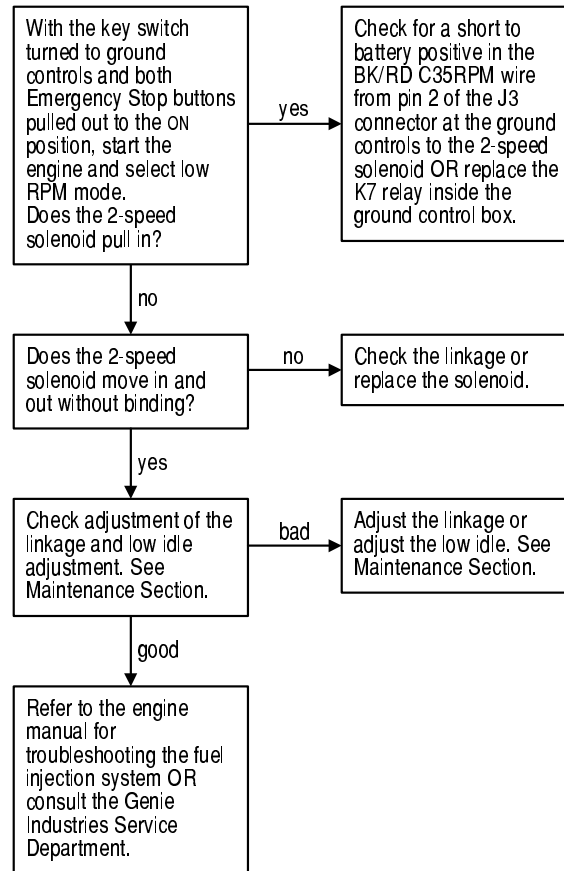


Chart 7

All Functions Inoperative, Engine Starts and Runs

Be sure the hydraulic suction line shutoff valves for the pumps are in the OPEN position.

Be sure the hydraulic tank is filled to the correct level.

Be sure the batteries are fully charged and properly connected.

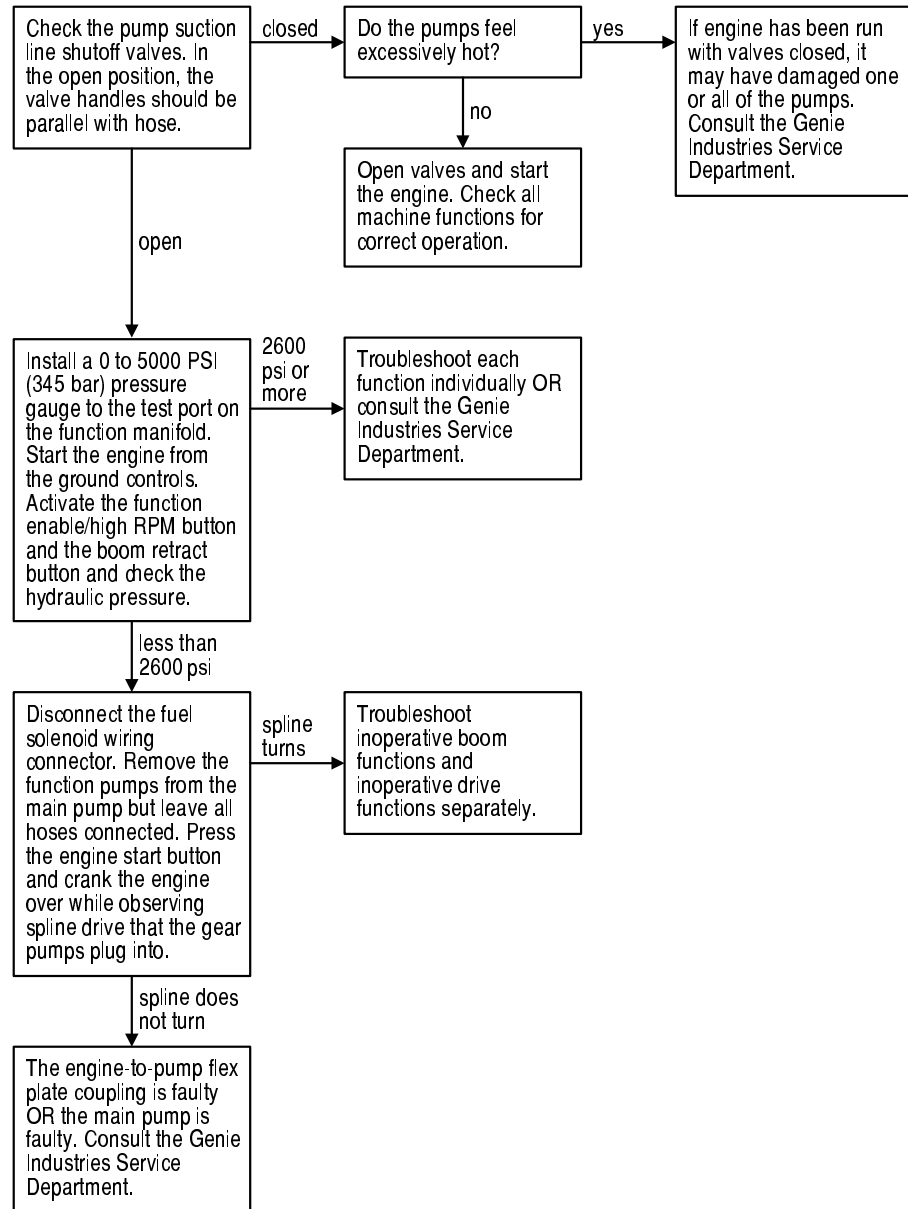


Chart 8

Boom Up/Down, Extend/Retract, Turntable Rotate and Platform Functions Inoperative, Drive, Steer and Axle Extend/Retract Functions Operational

Be sure the hydraulic suction line shutoff valve for the lift/steer pump is in the OPEN position.

Be sure the hydraulic tank is filled to the correct level.

Be sure the batteries are fully charged and properly connected.

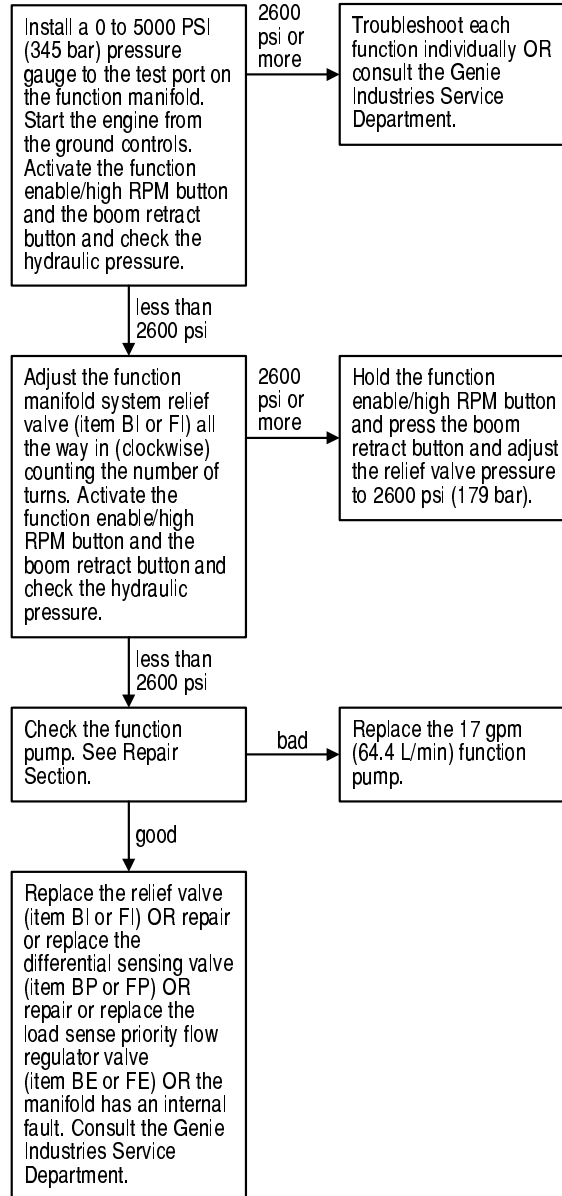


Chart 9

All Platform, Steering and Axle Functions Inoperative, All Other Functions Operational

Be sure the hydraulic suction line shutoff valve for the lift/steer pump is in the OPEN position.

Be sure the hydraulic tank is filled to the correct level.

Be sure the batteries are fully charged and properly connected.

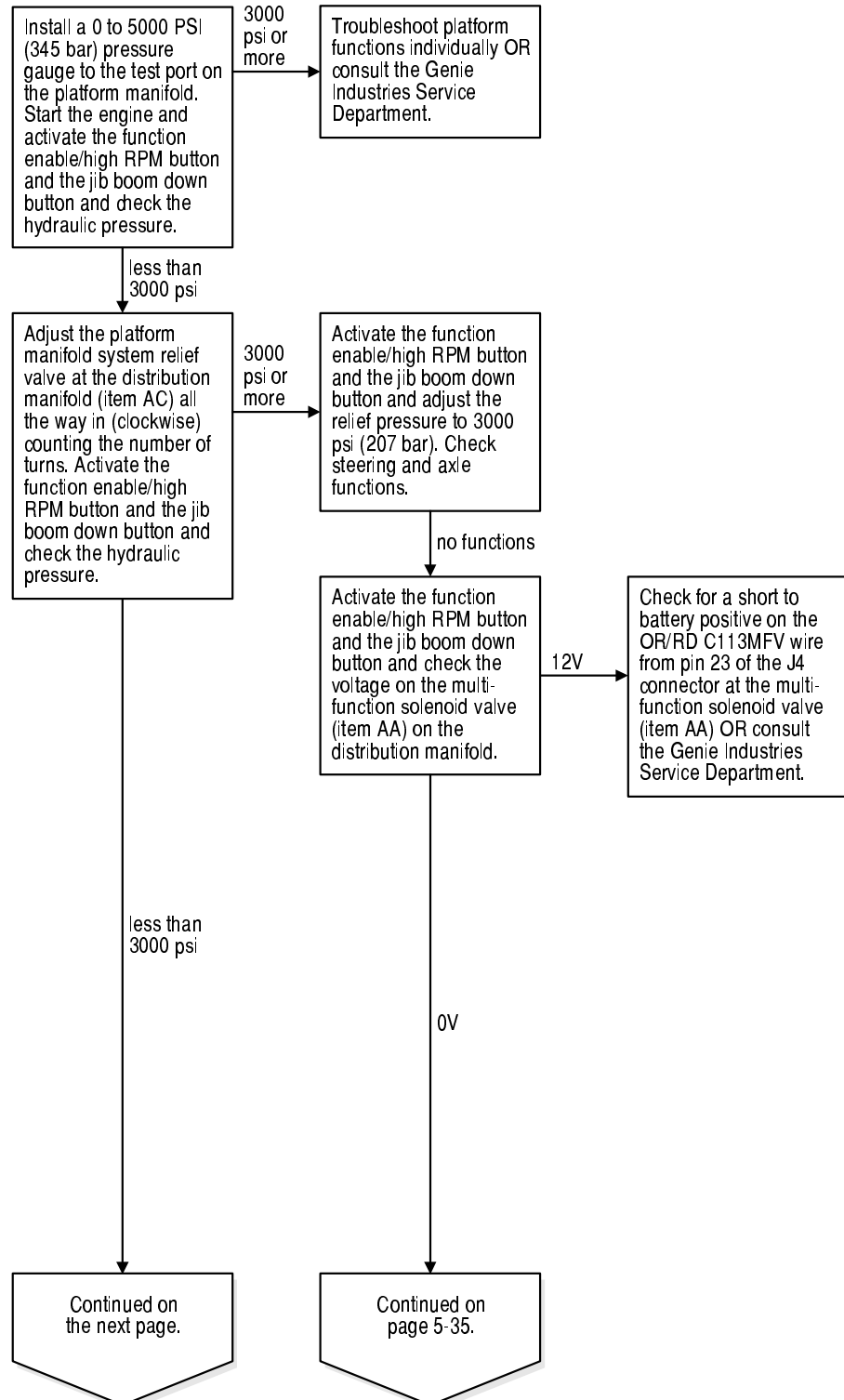


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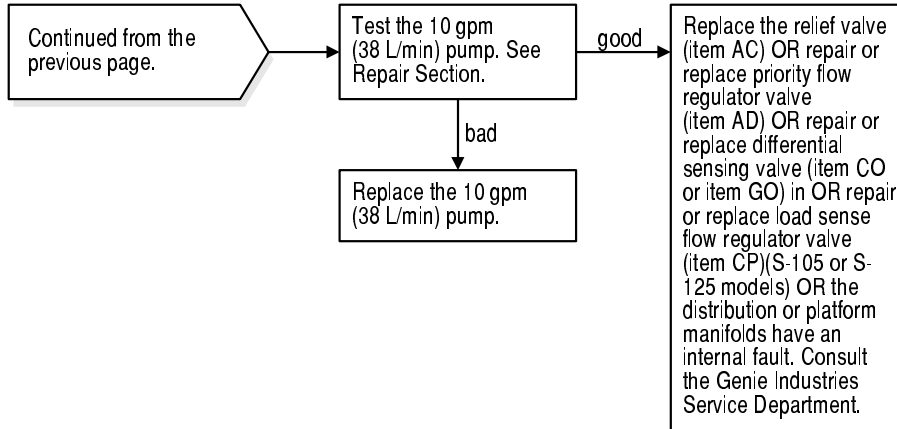


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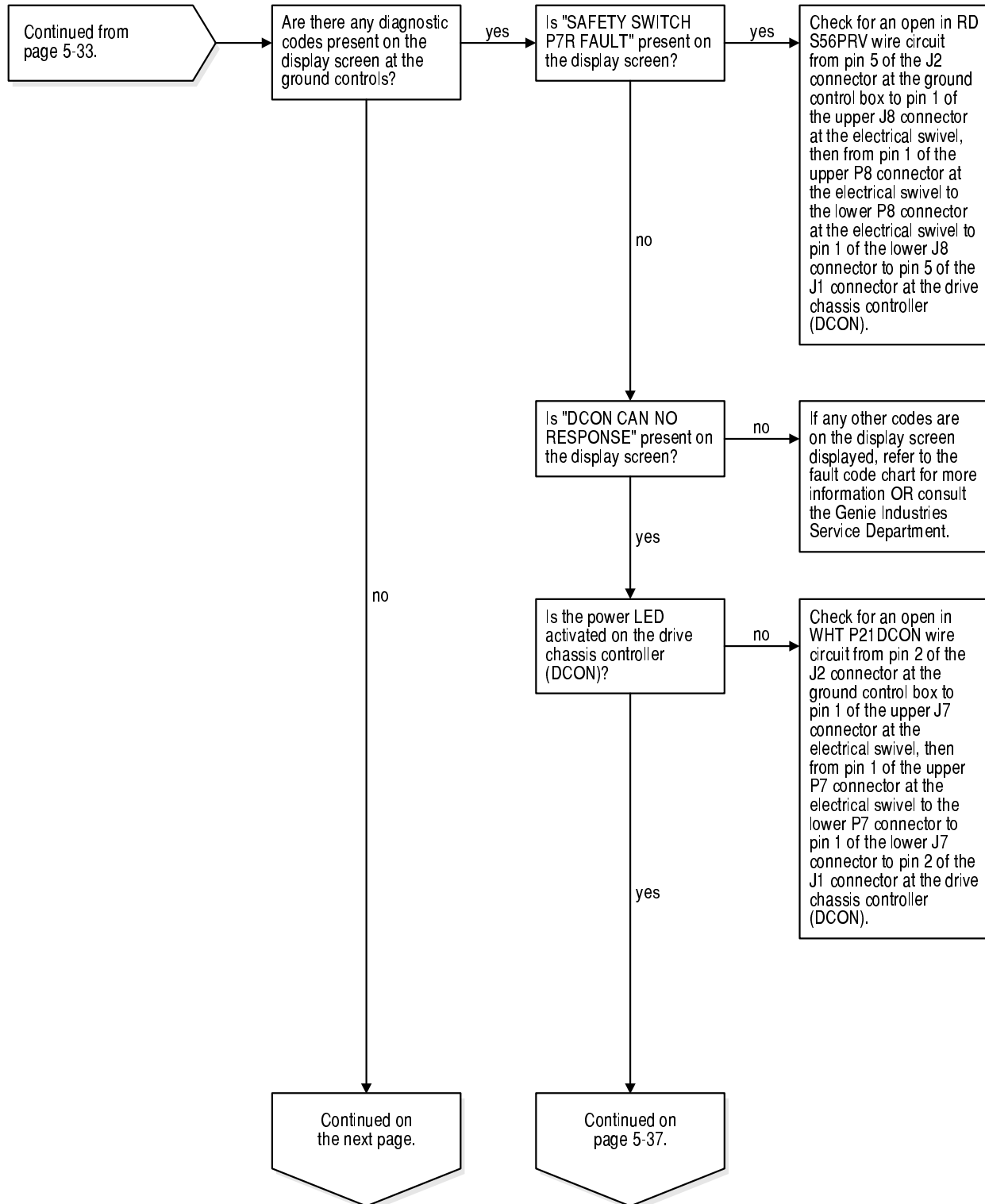


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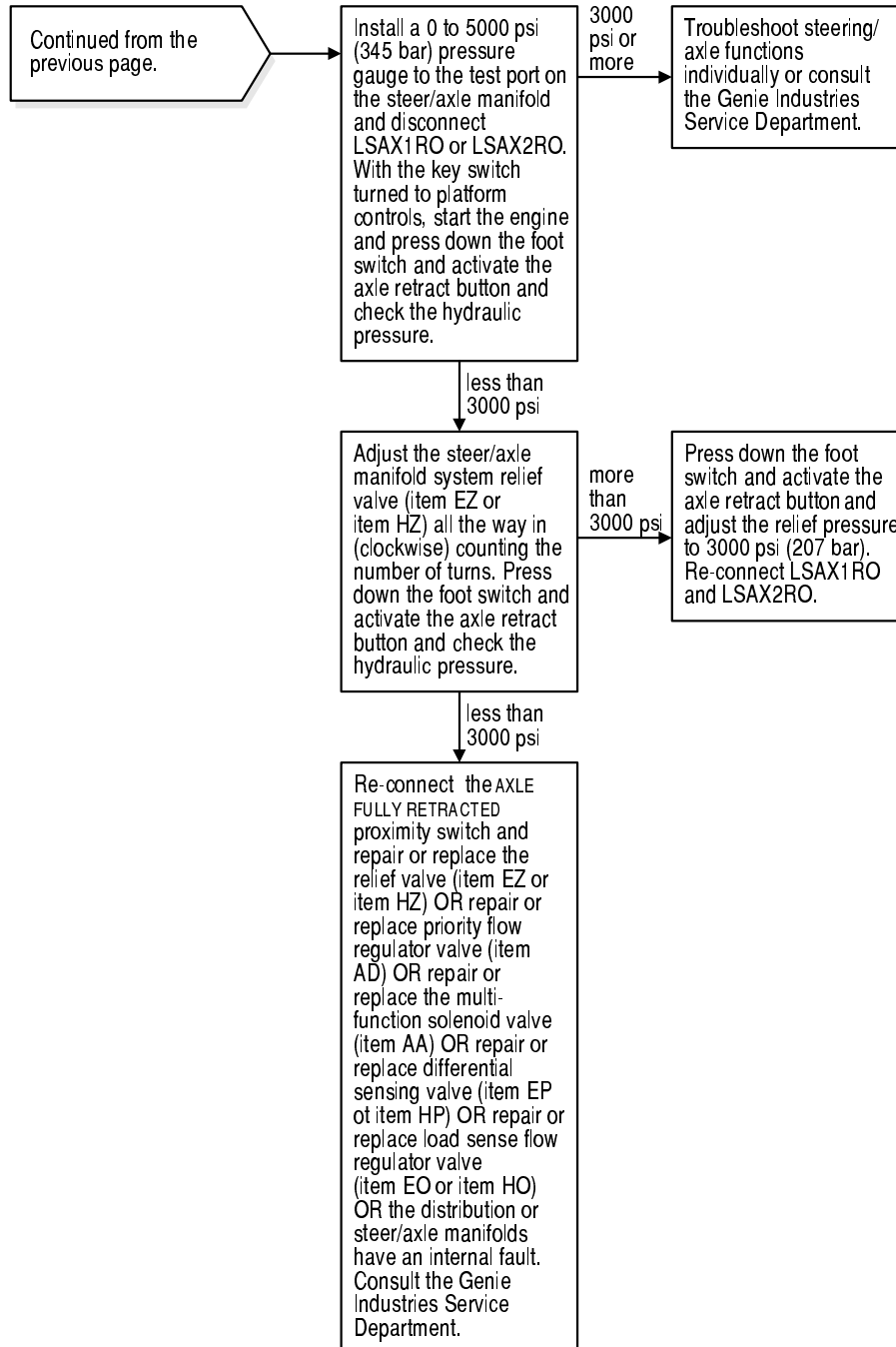


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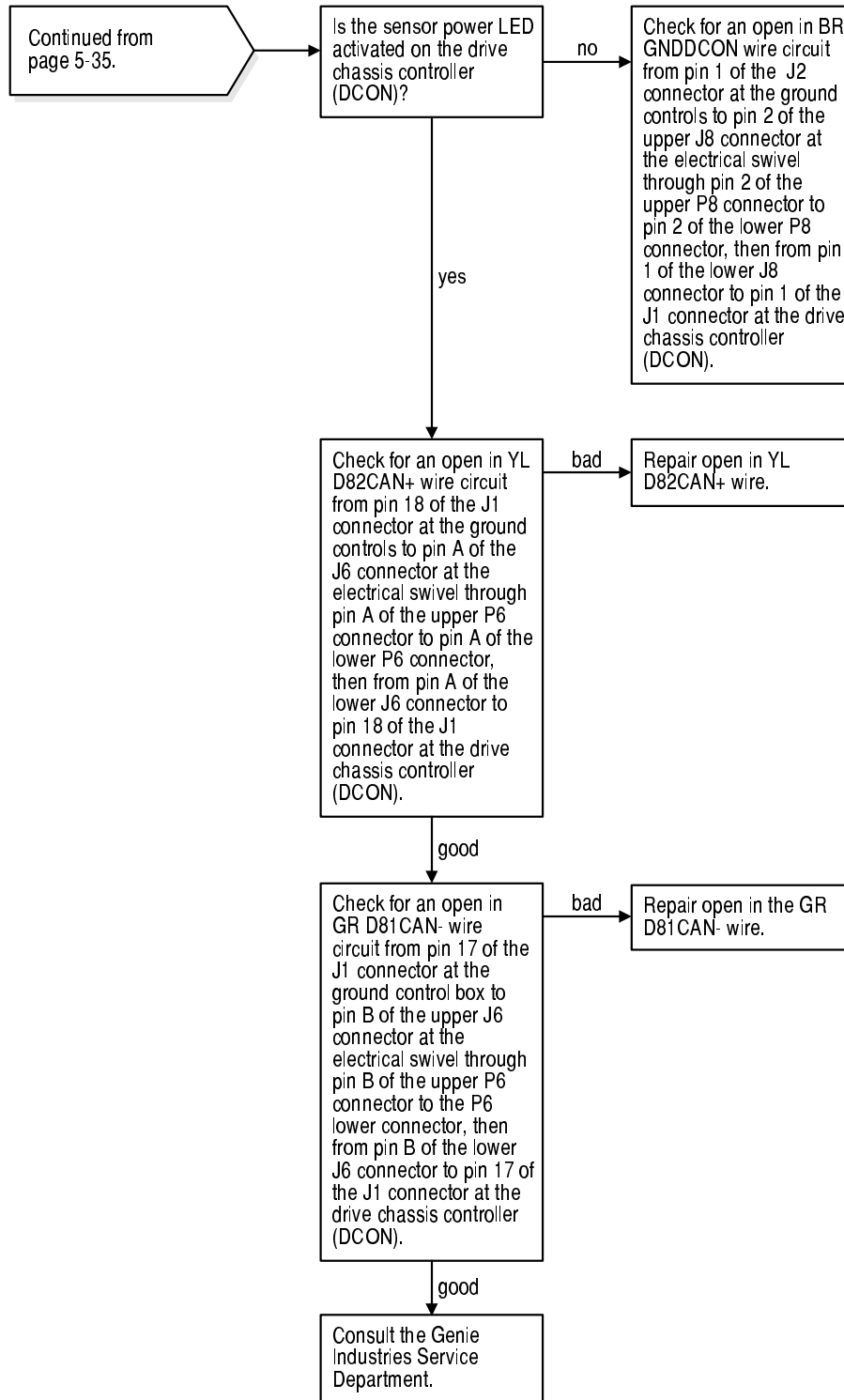


Chart 10

Ground Controls Inoperative, Platform Controls Operate Normally

Be sure all other functions operate normally, including the platform controls.

Be sure the batteries are fully charged and properly connected.

Key switch contact legend

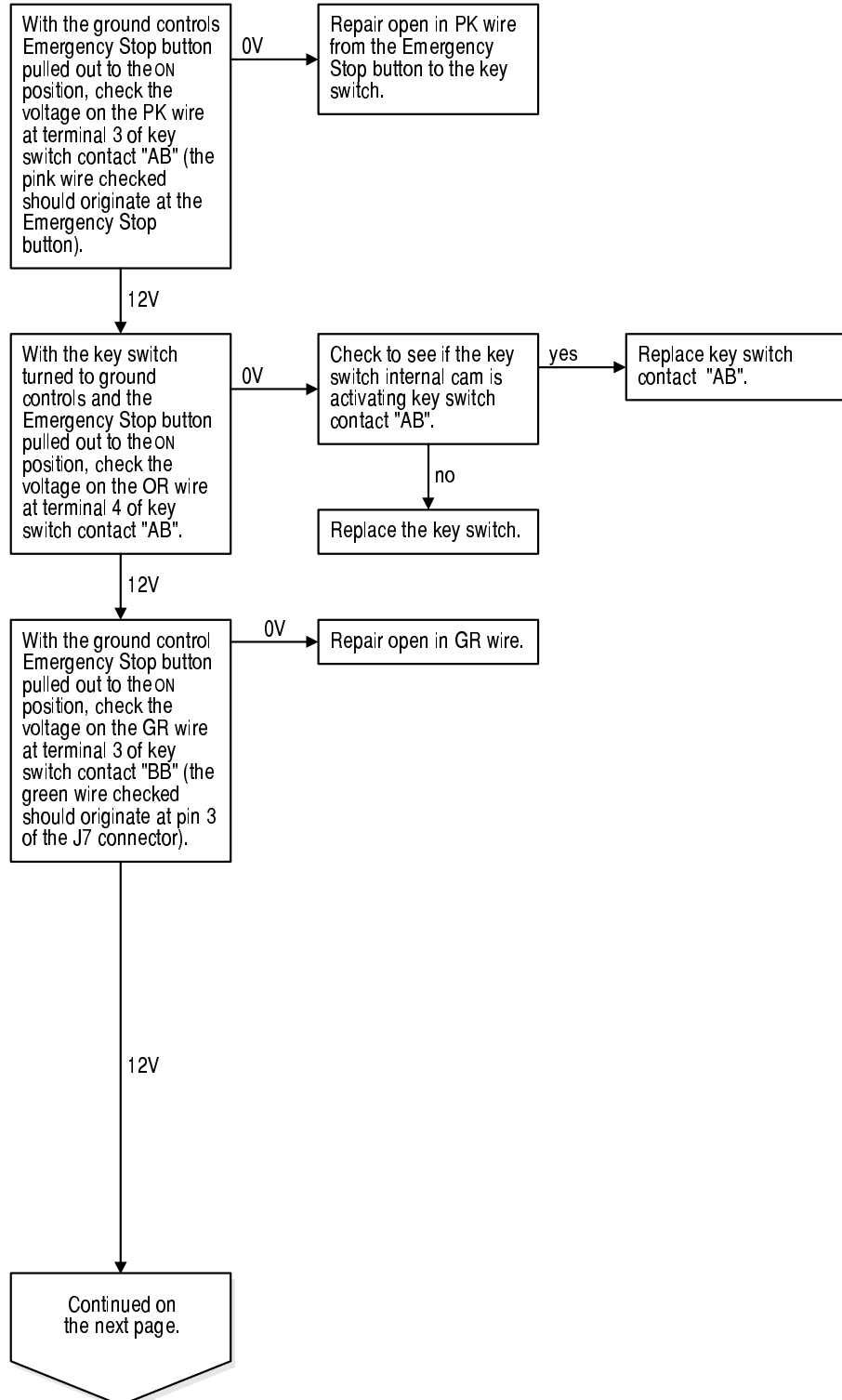
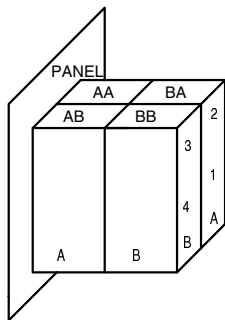


CHART 10

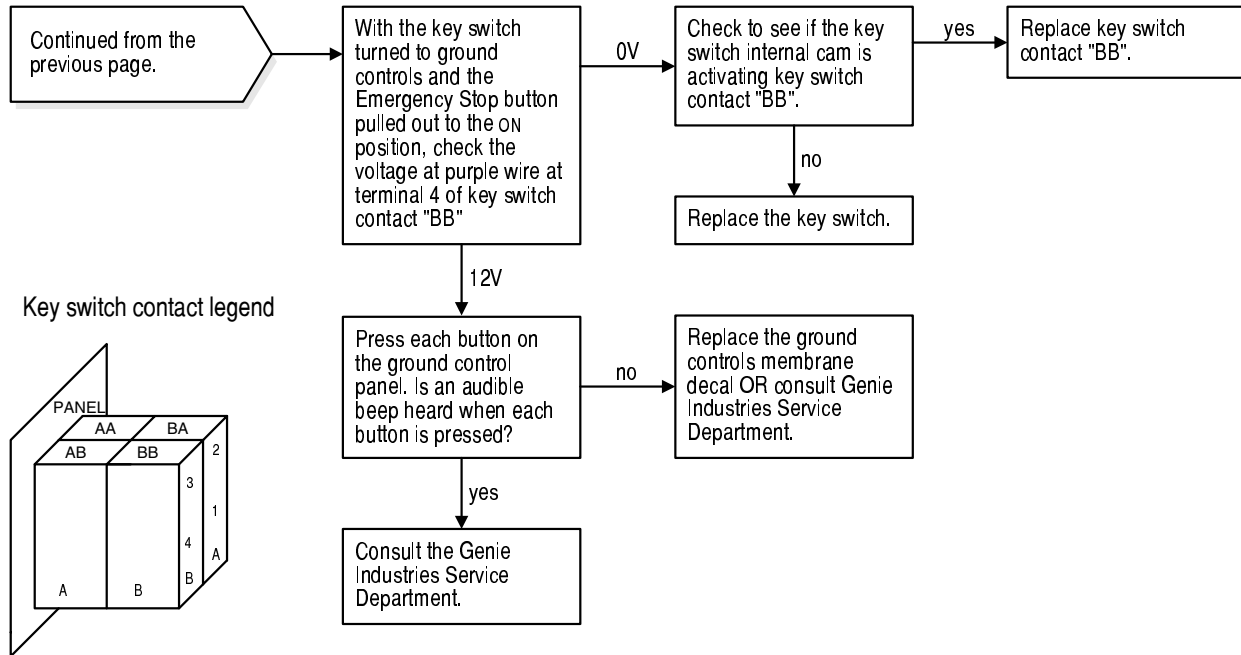


Chart 11

Platform Controls Inoperative, Ground Controls Operate Normally

Be sure all cables from chassis through the cable track are in good condition with no kinks or abrasions.

Be sure the batteries are fully charged and properly connected.

Key switch contact legend

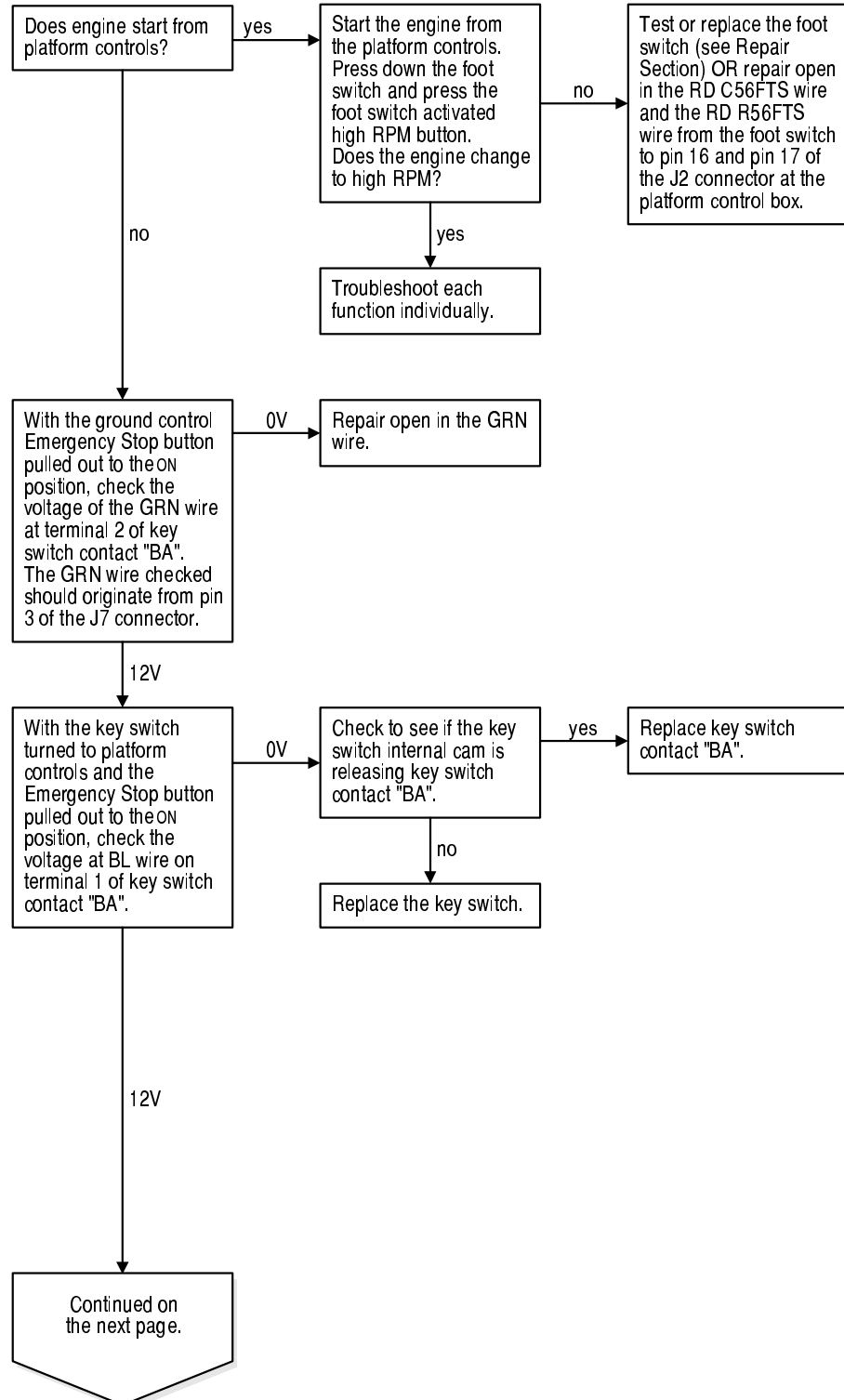
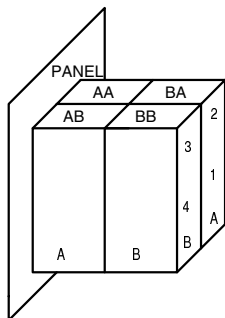


CHART 11

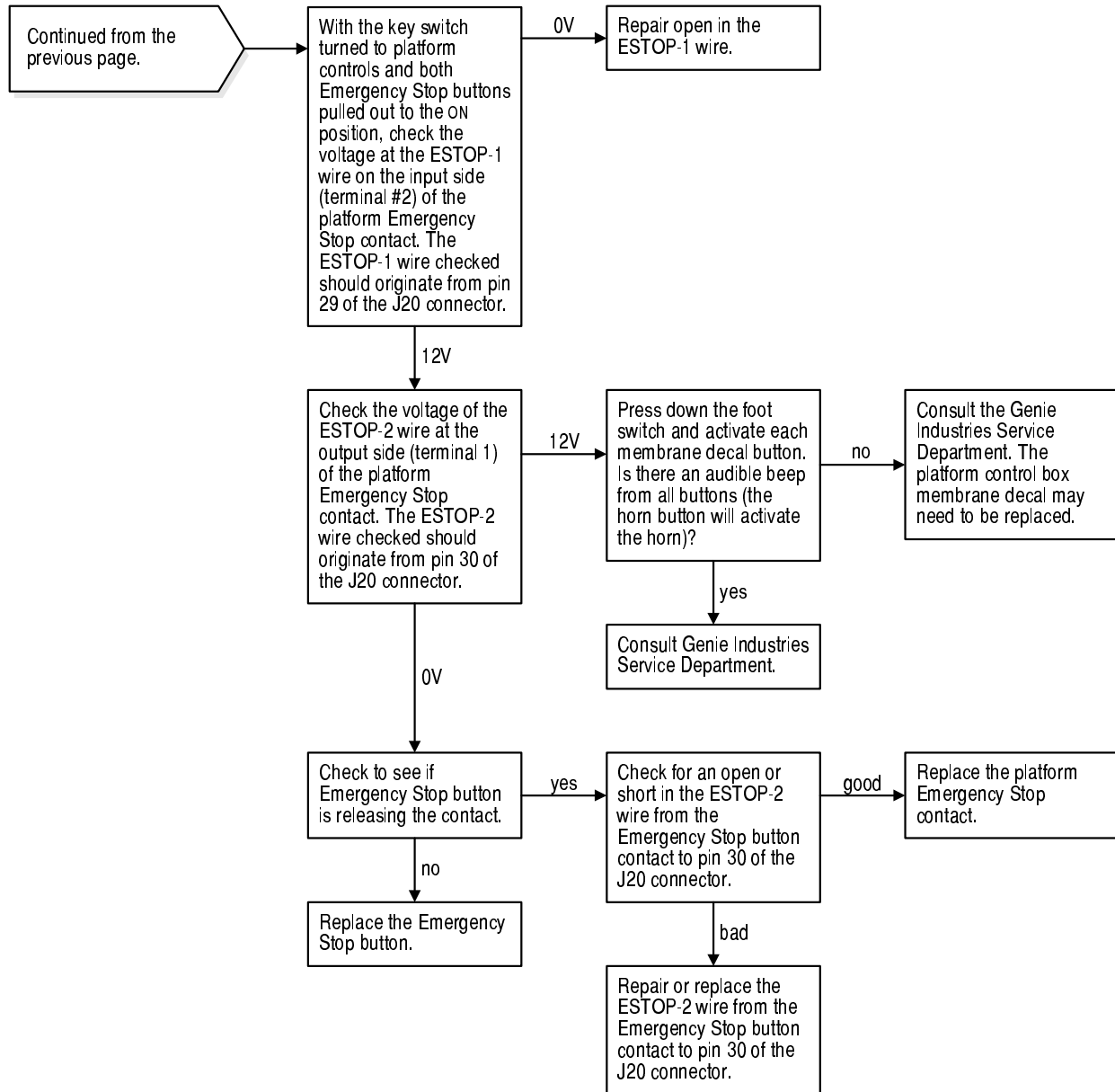


Chart 12

Boom Angle Switch Fault

Be sure the machine is on level ground.

Be sure the boom angle limit switches are properly connected to the correct wiring harness leads.

Be sure the batteries are fully charged and properly connected.

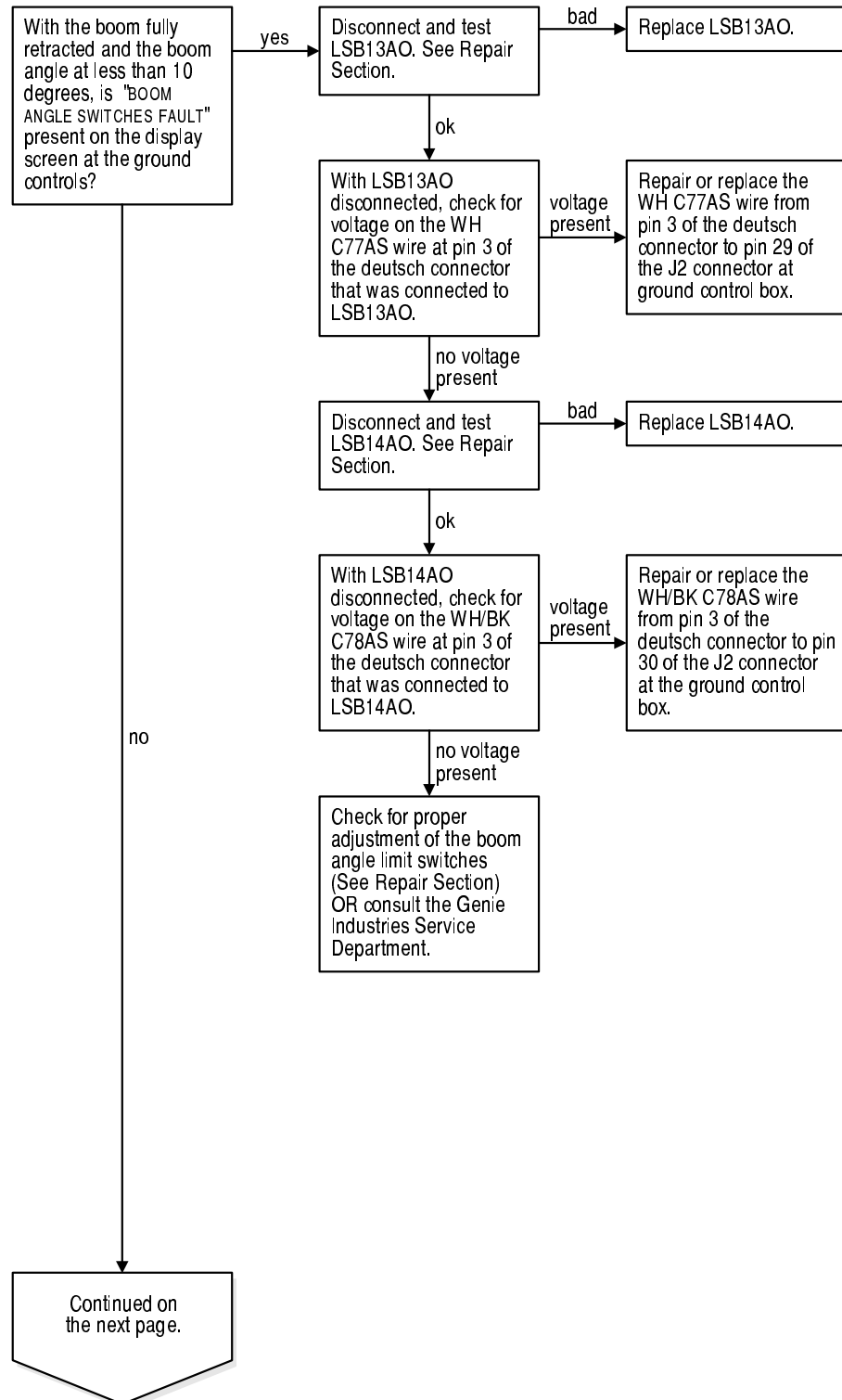


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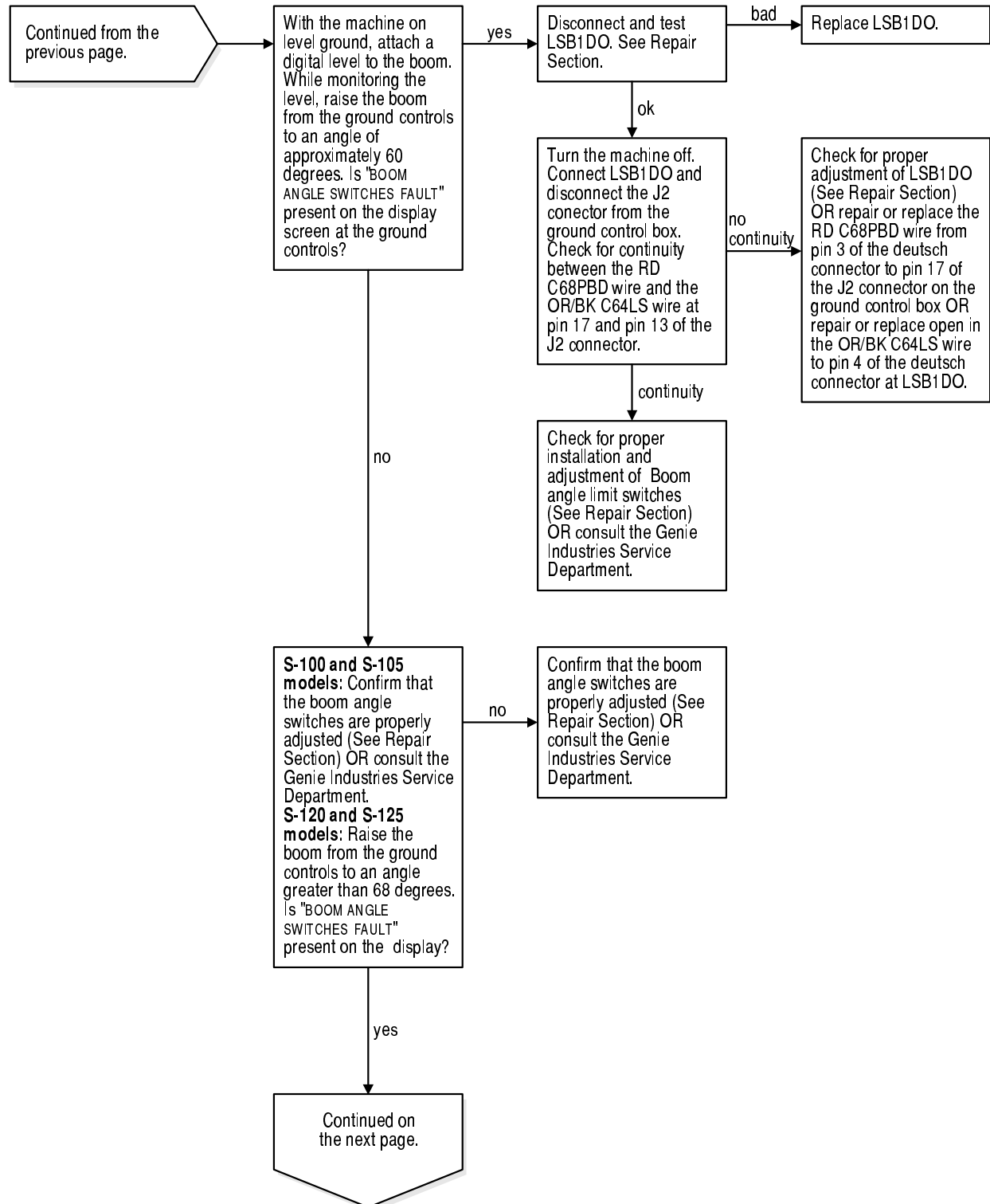


CHART 12

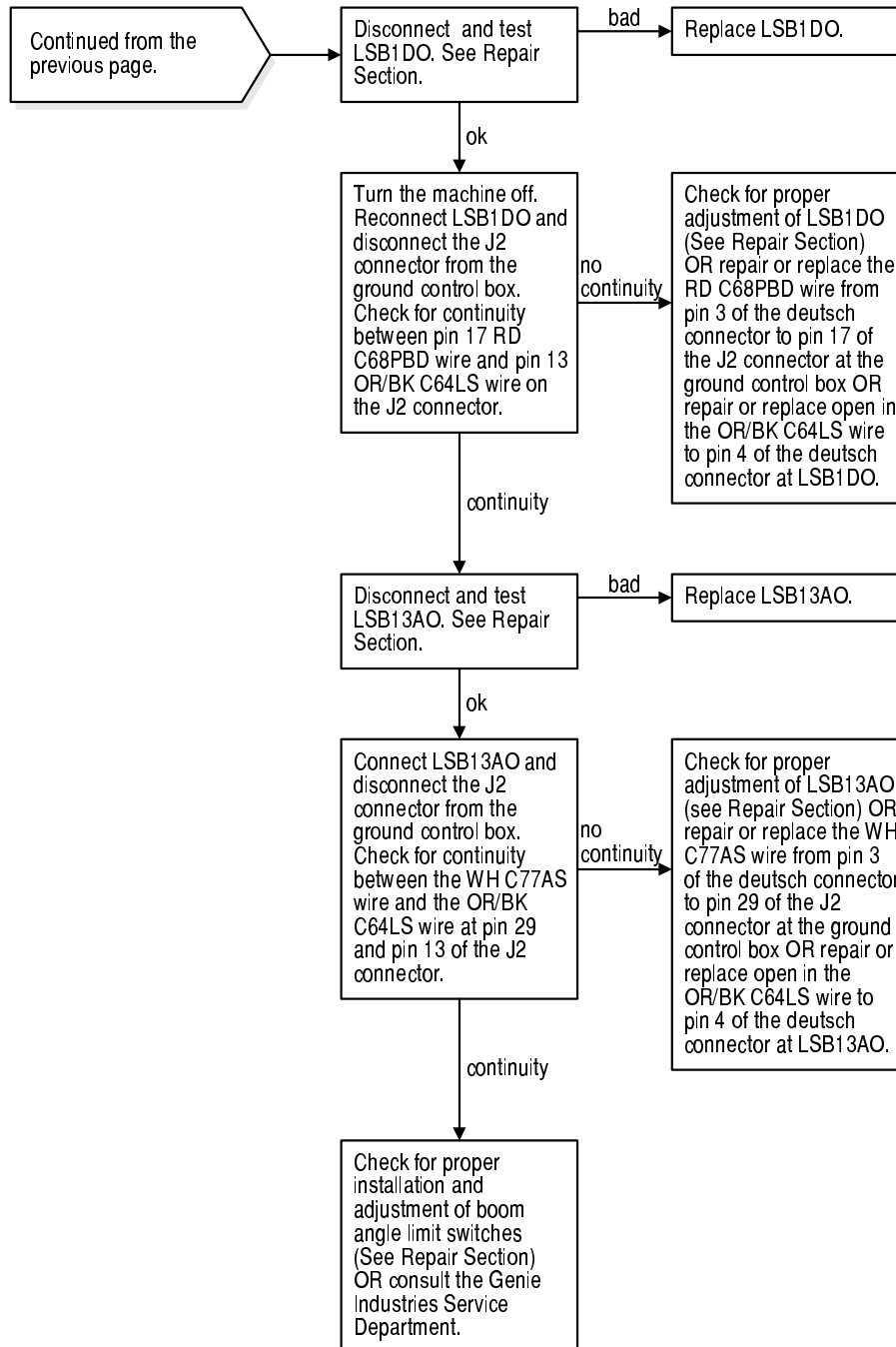


Chart 13

Boom Up Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the platform is level to gravity within 7 degrees.

Be sure the batteries are fully charged and properly connected.

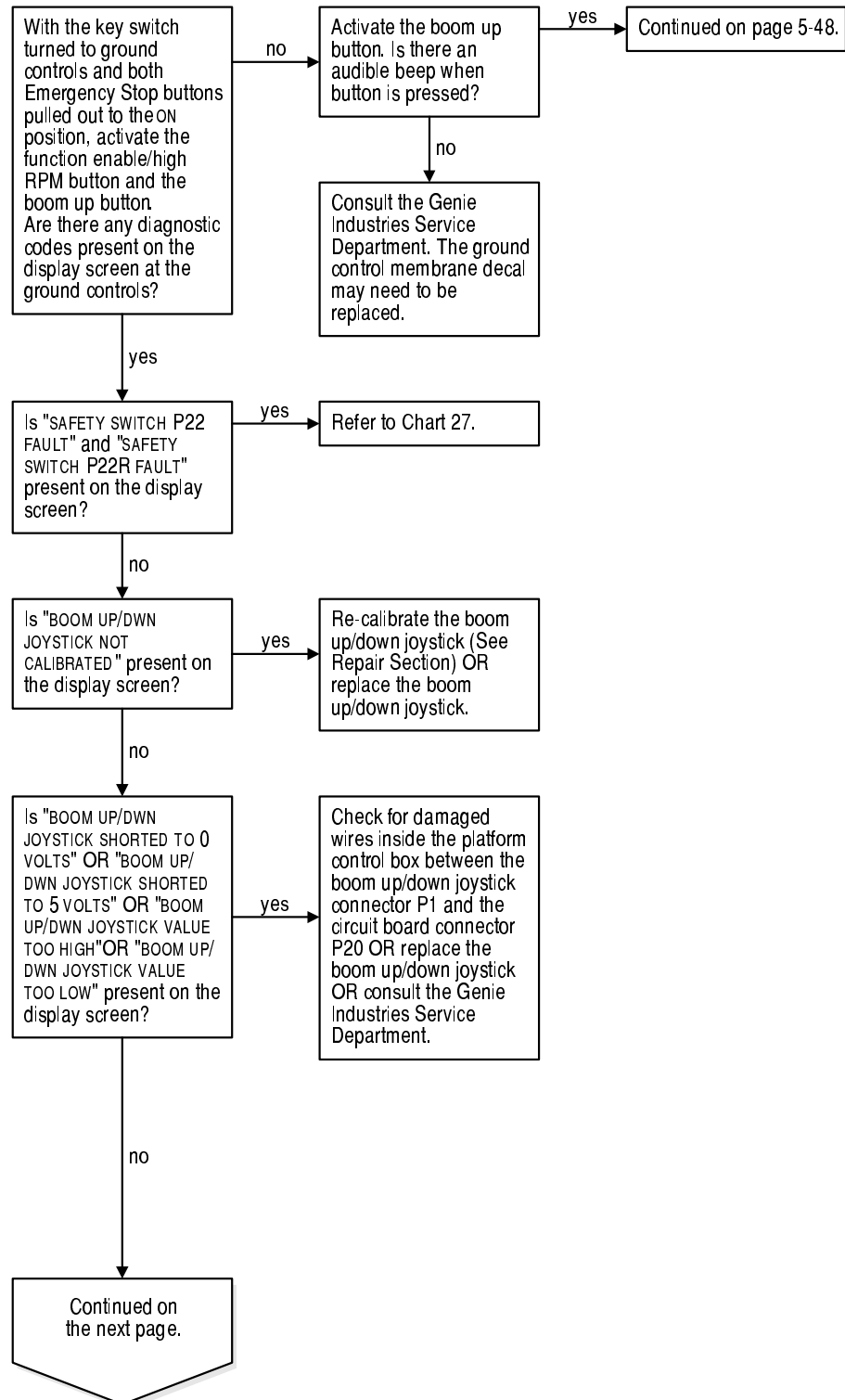


CHART 13

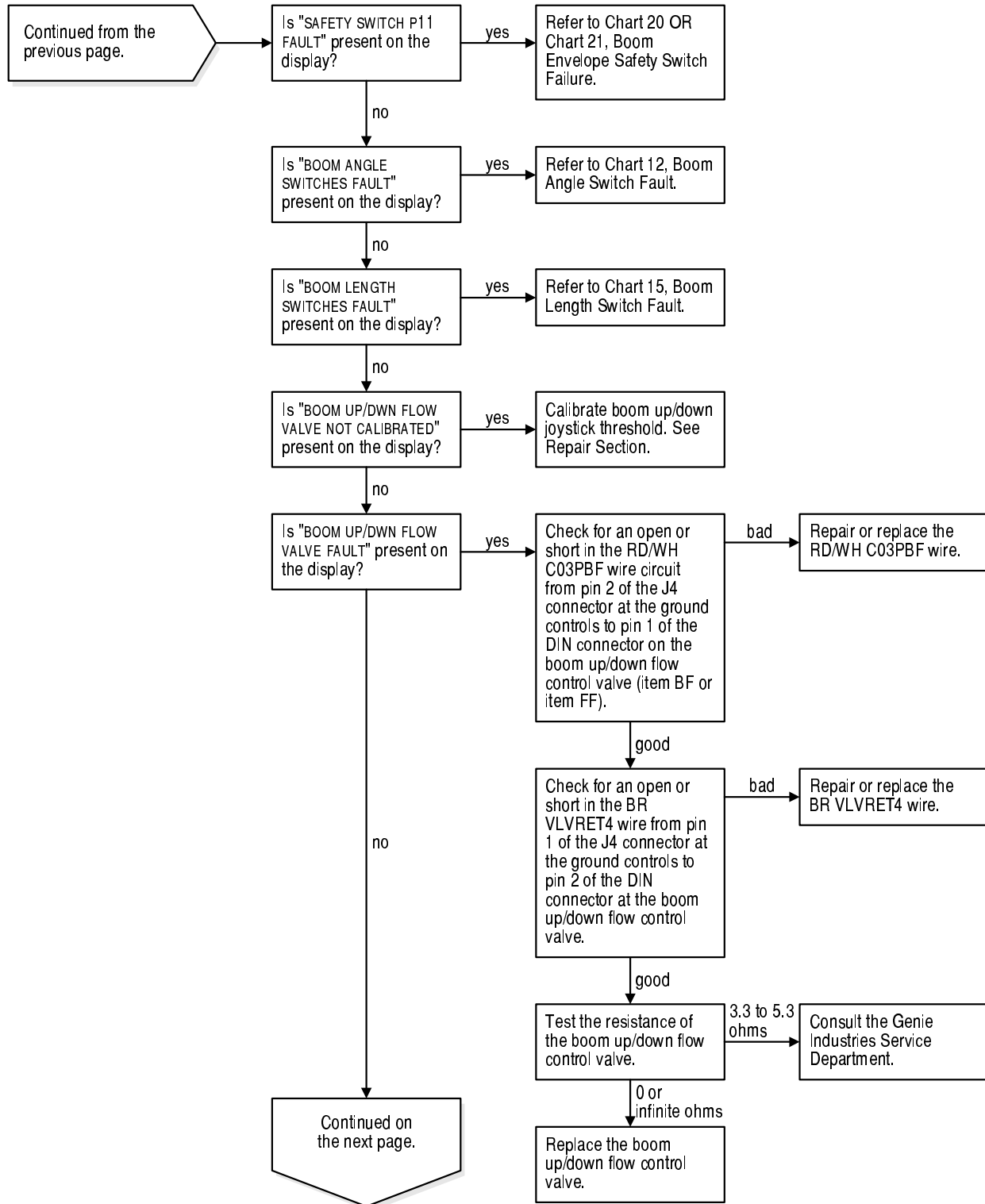


CHART 13

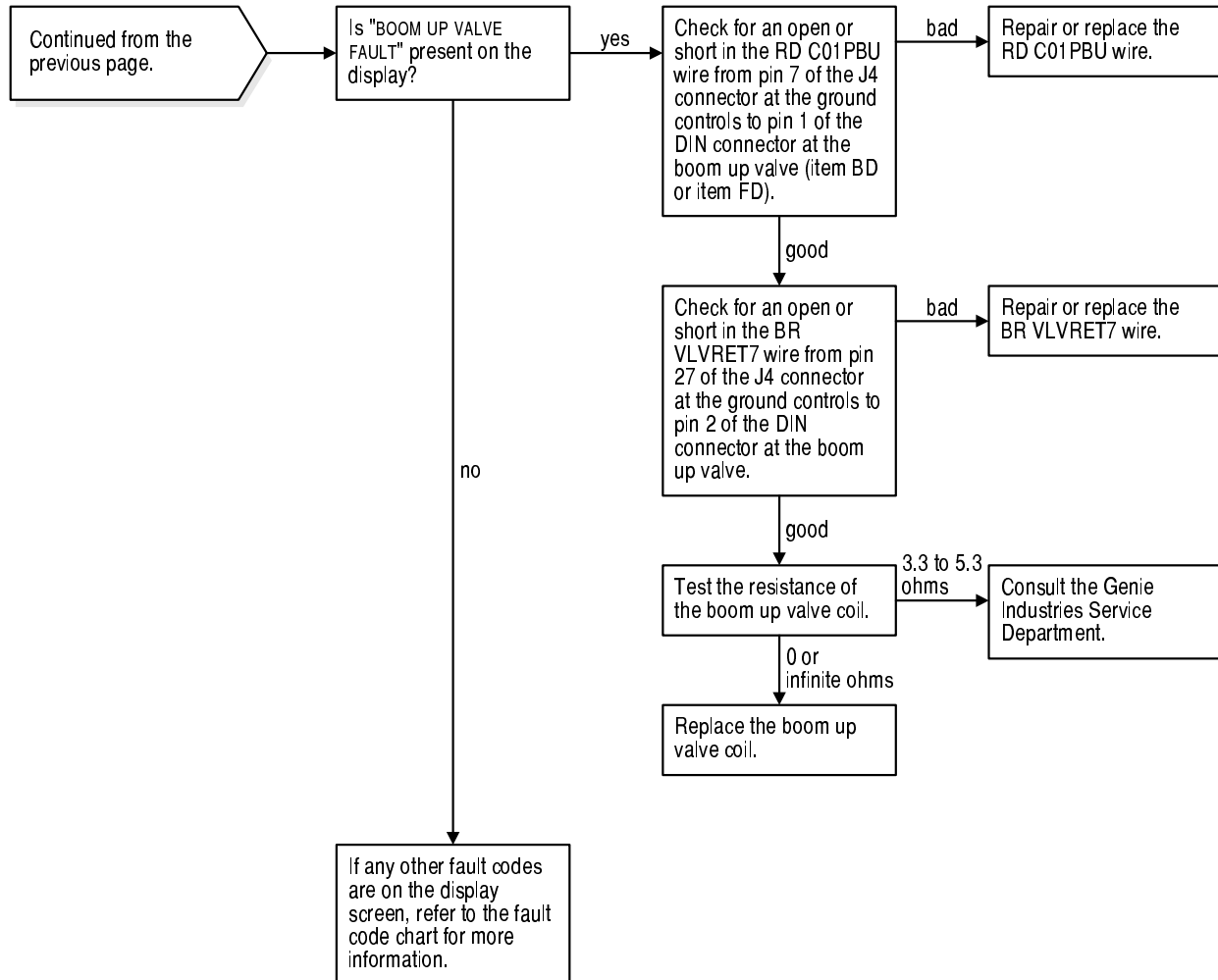


CHART 13

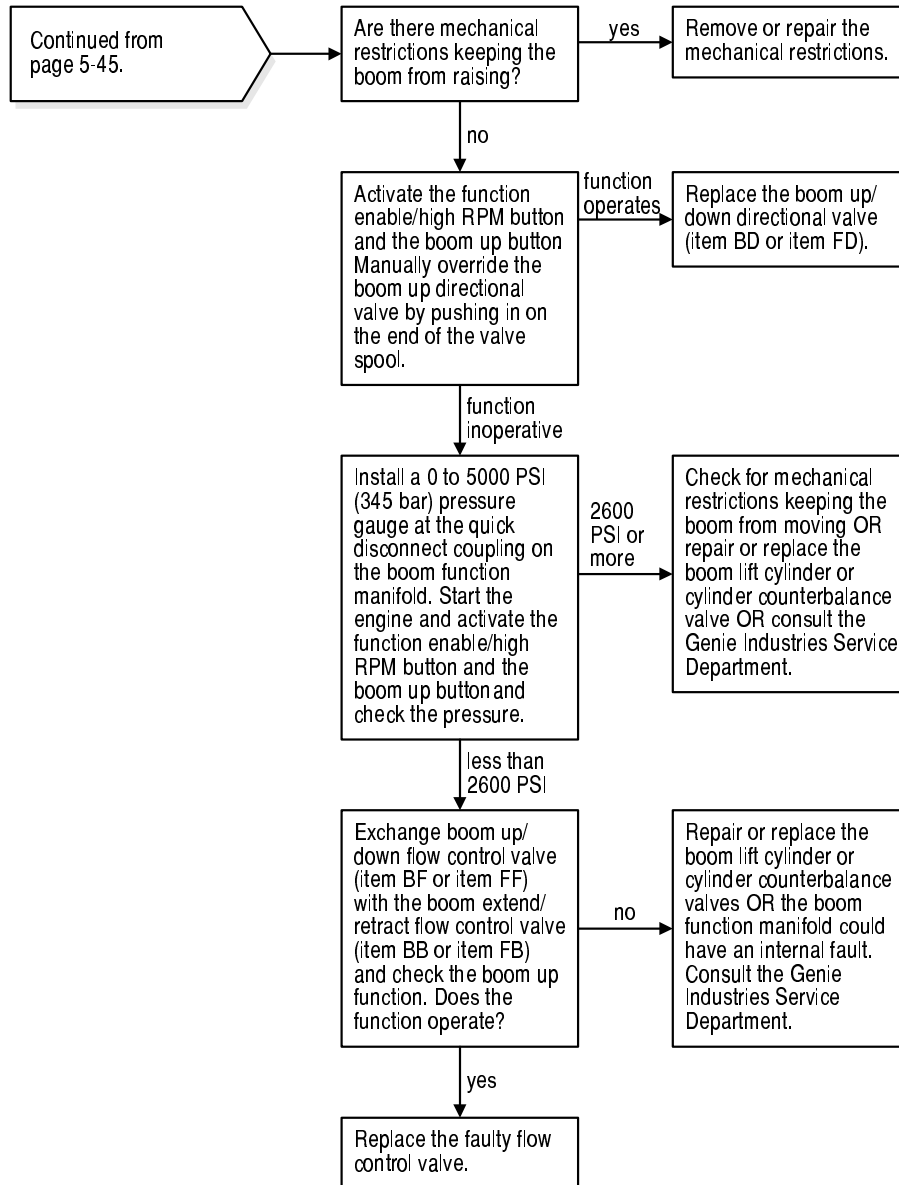


Chart 14

Boom Down Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the platform is level to gravity within 7 degrees.

Be sure the batteries are fully charged and properly connected.

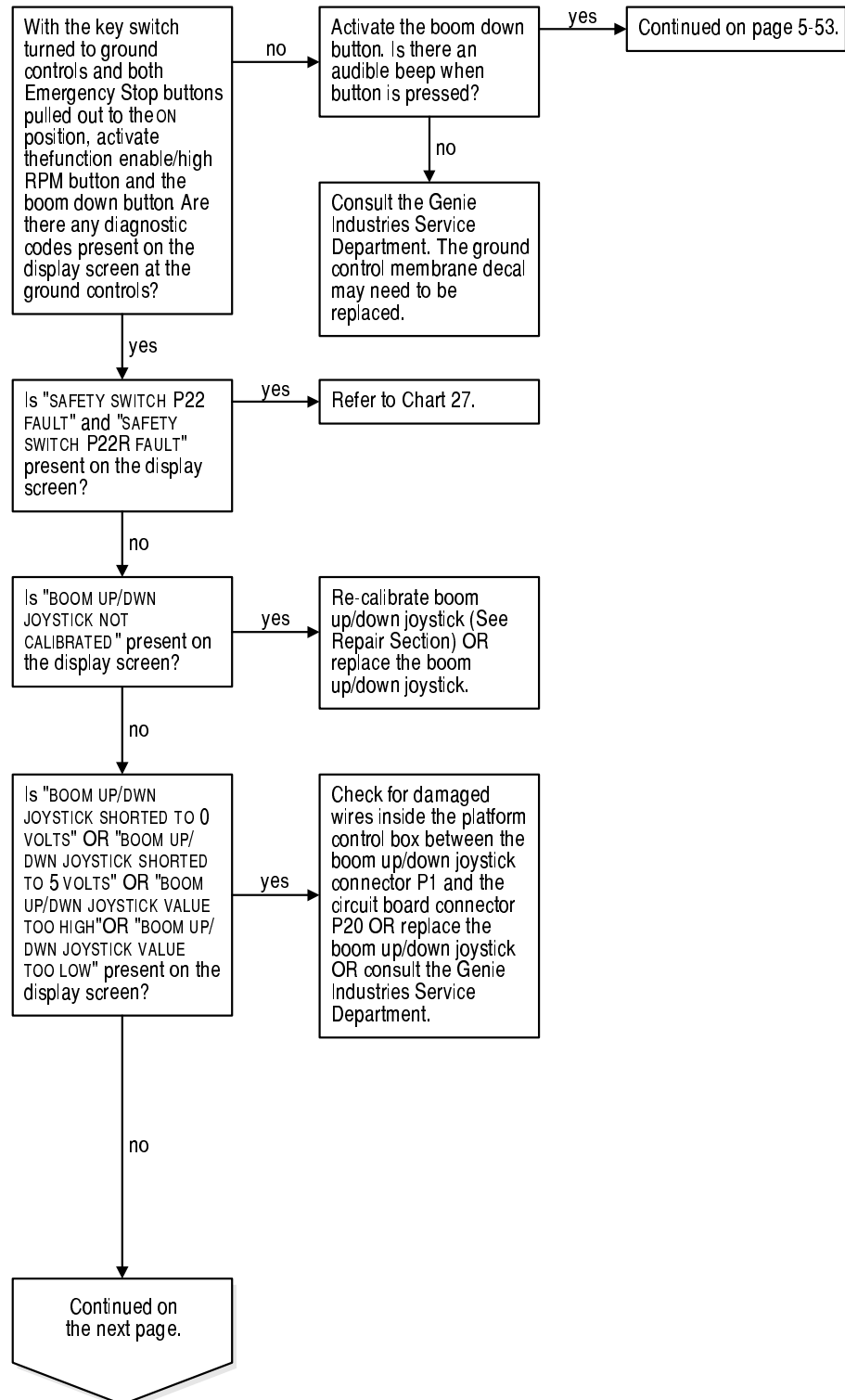


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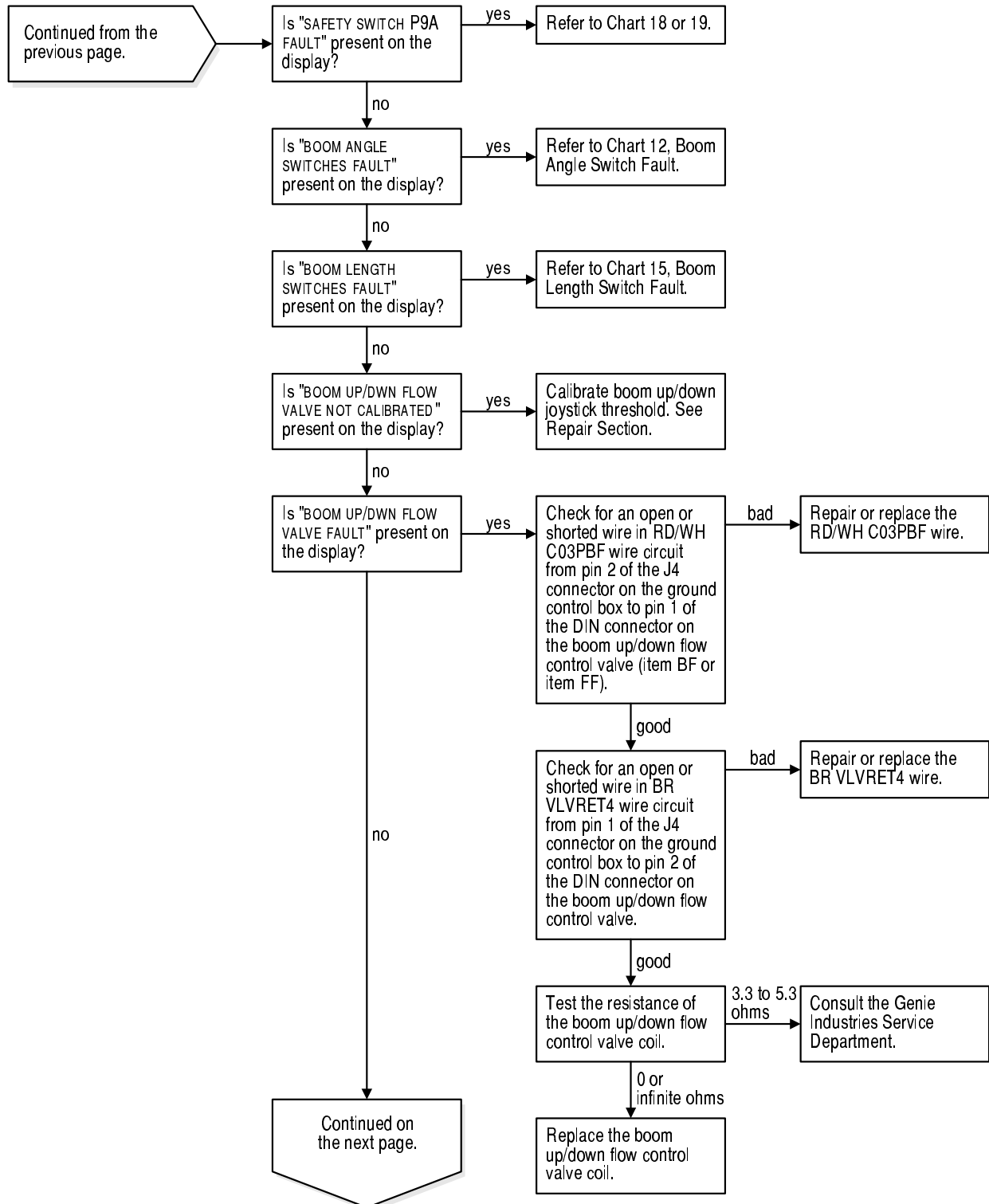


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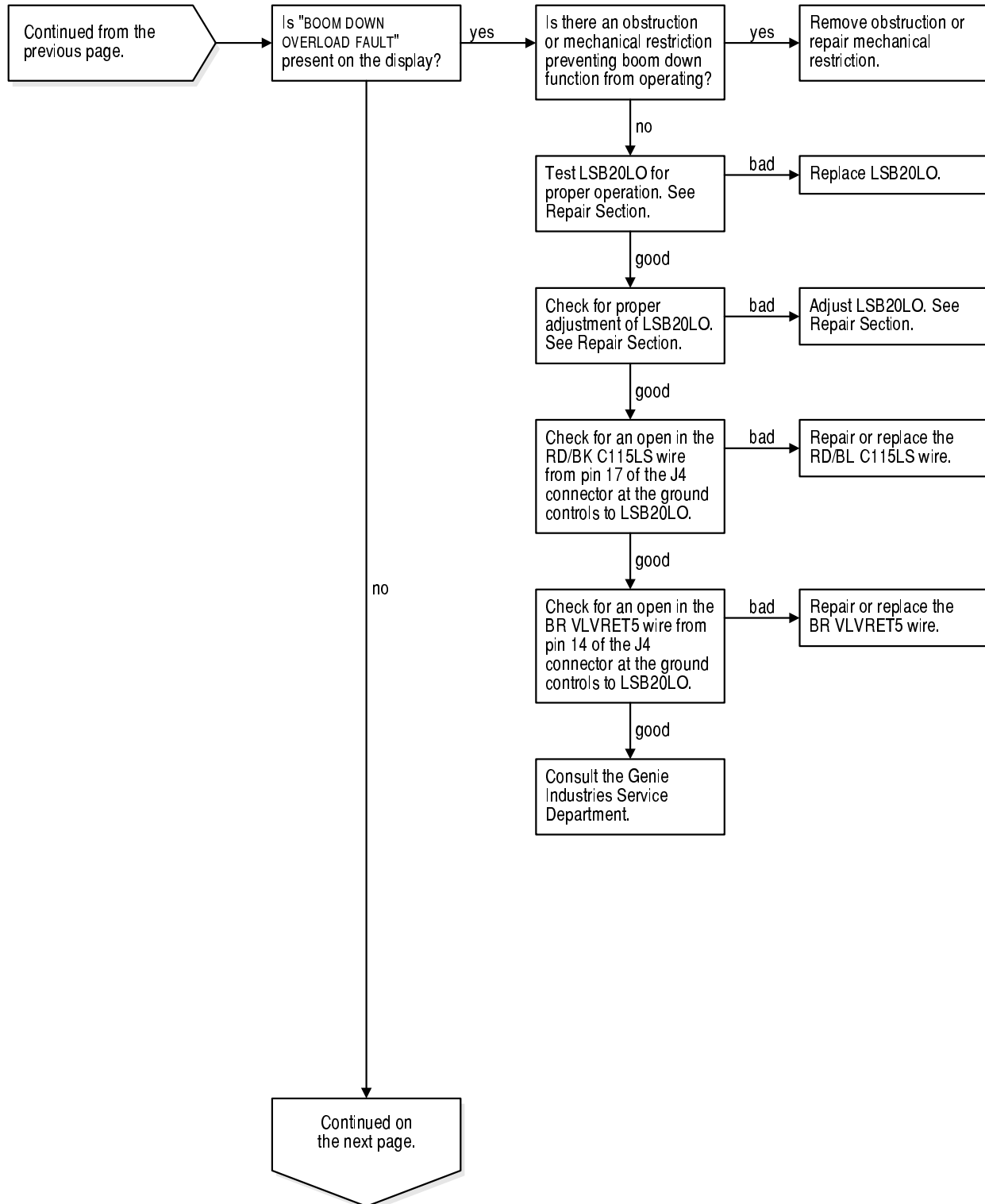


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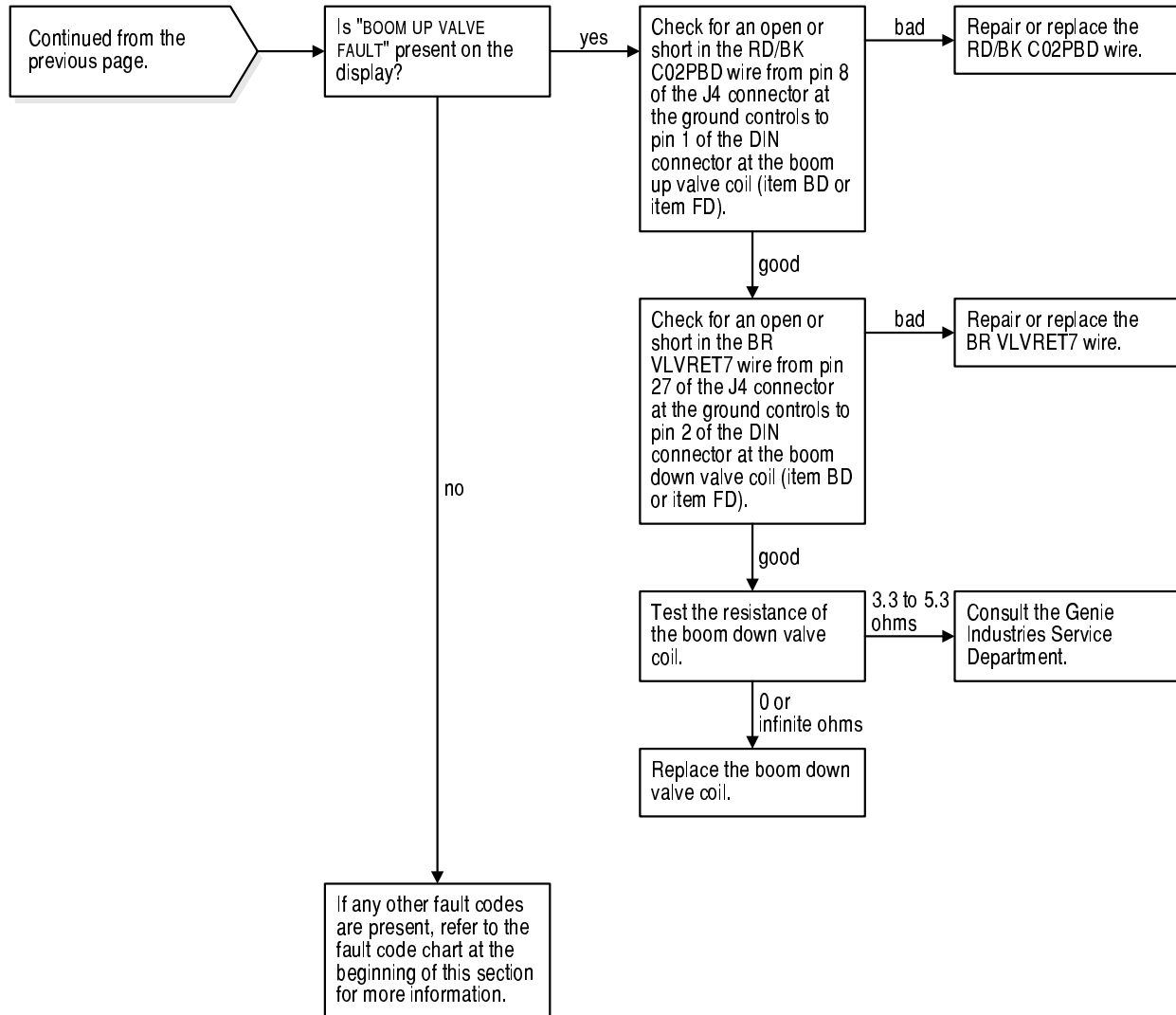


CHART 14

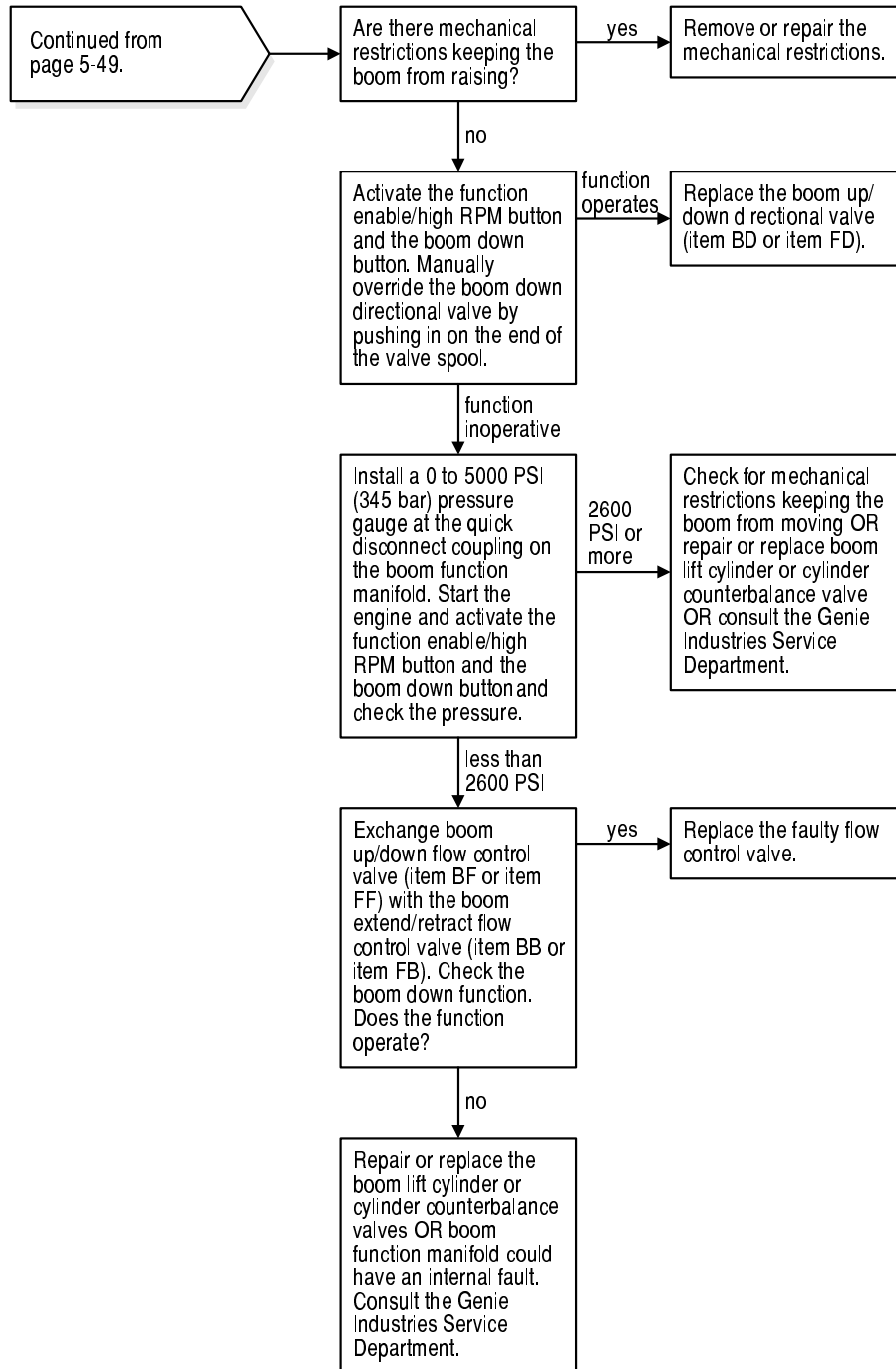


Chart 15

Boom Length Switch Fault

Be sure all other functions operate normally.

Be sure the boom length limit switches are properly connected to the correct wiring harness leads.

Be sure the batteries are fully charged and properly connected.

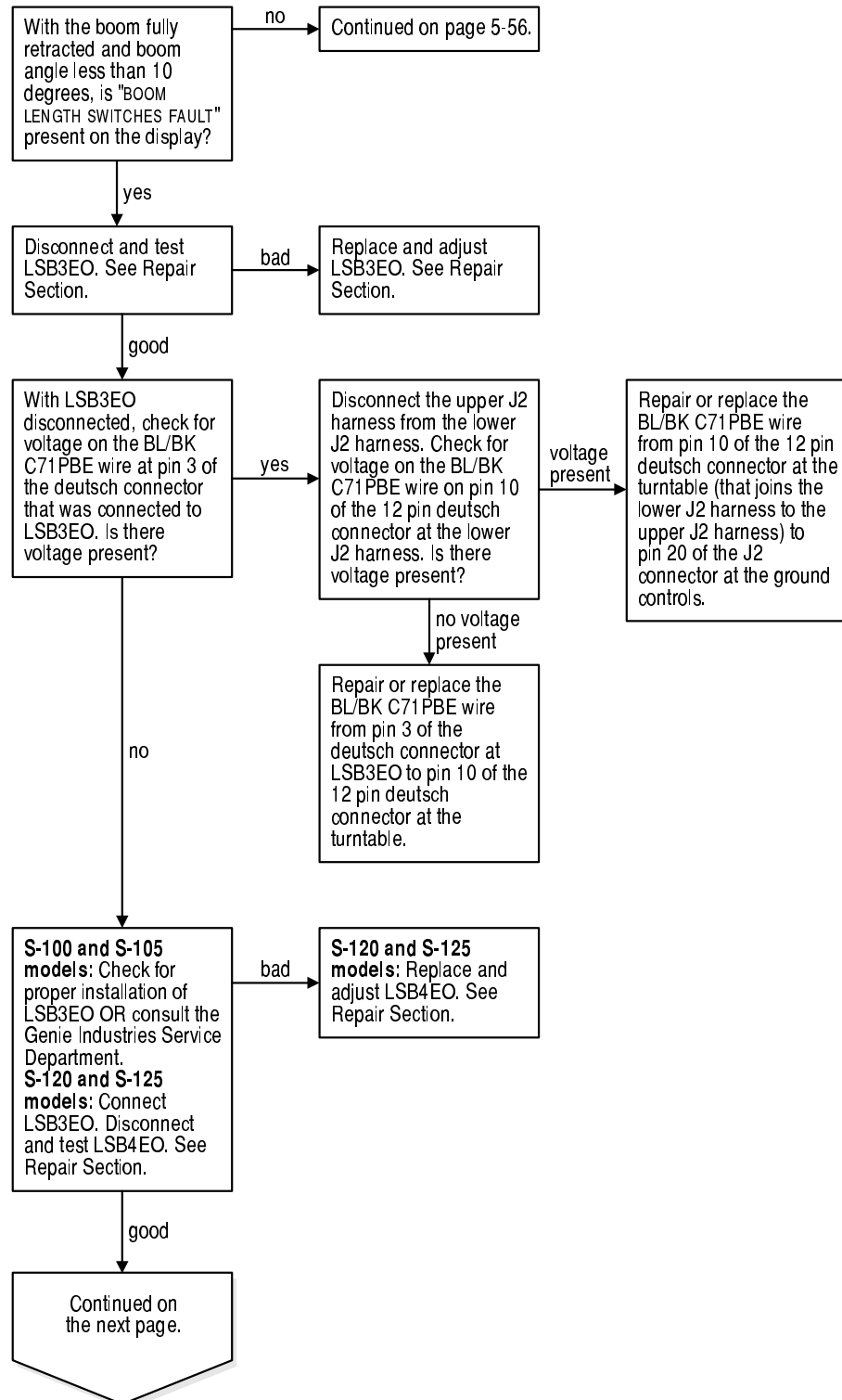


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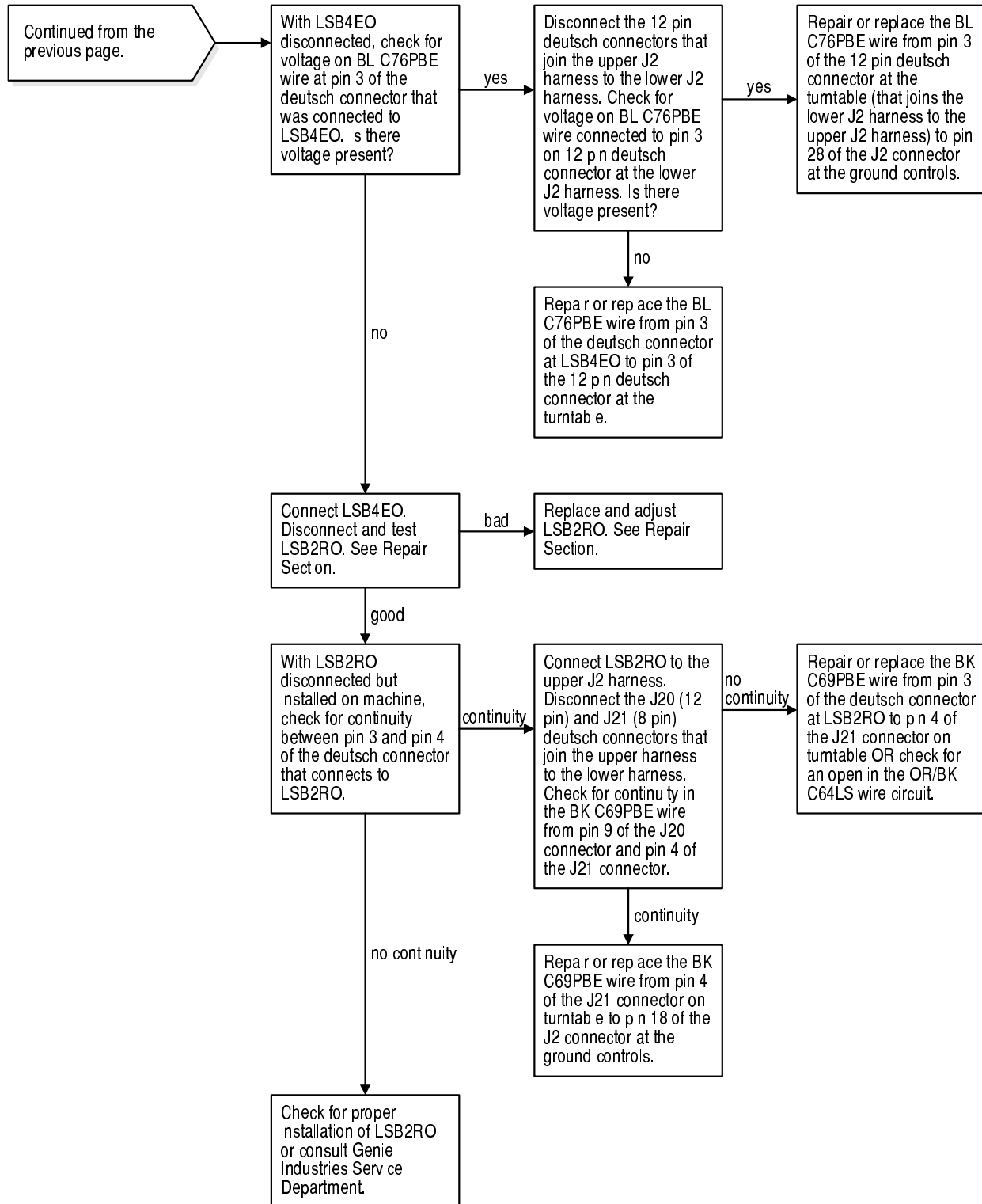


CHART 15

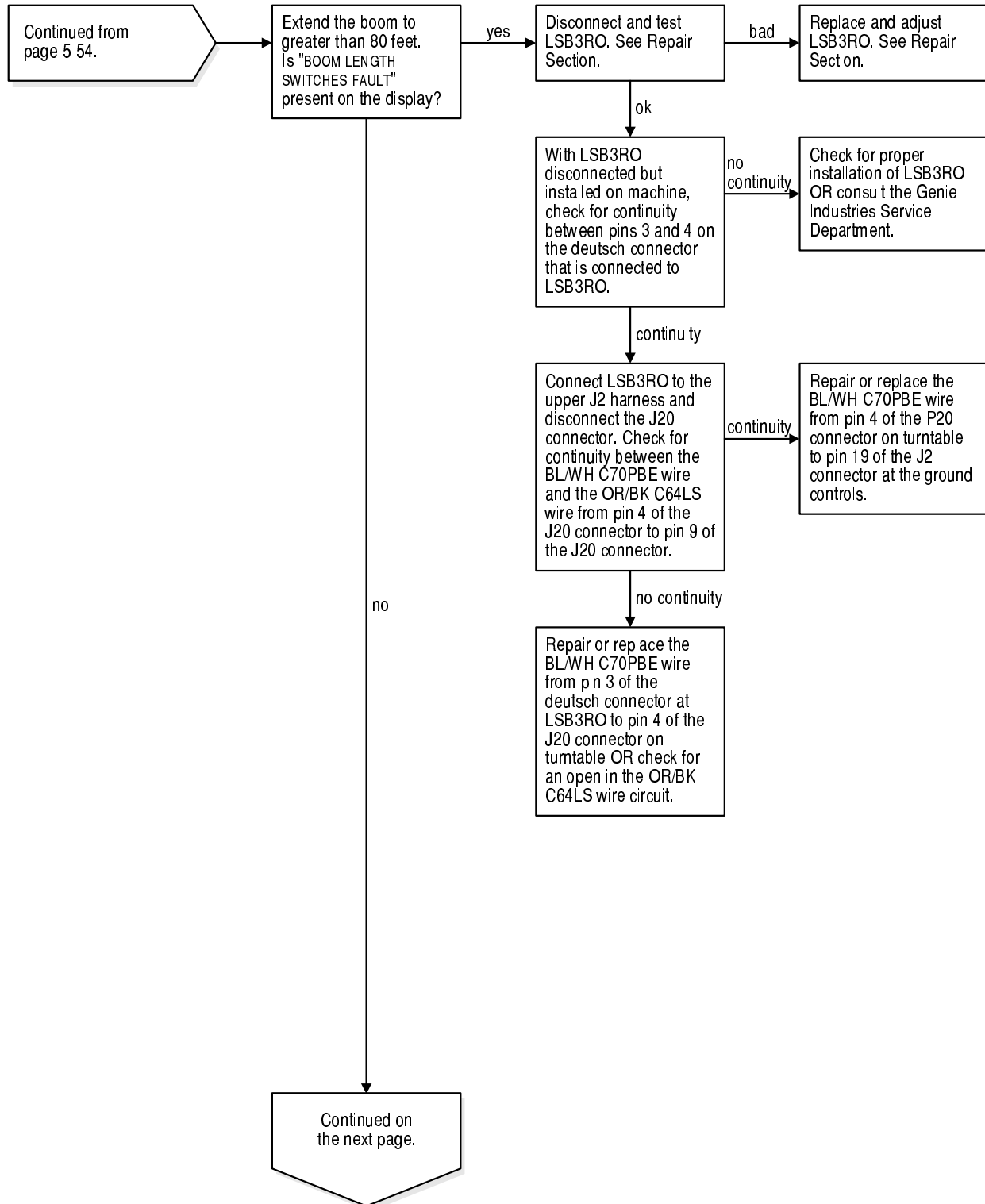


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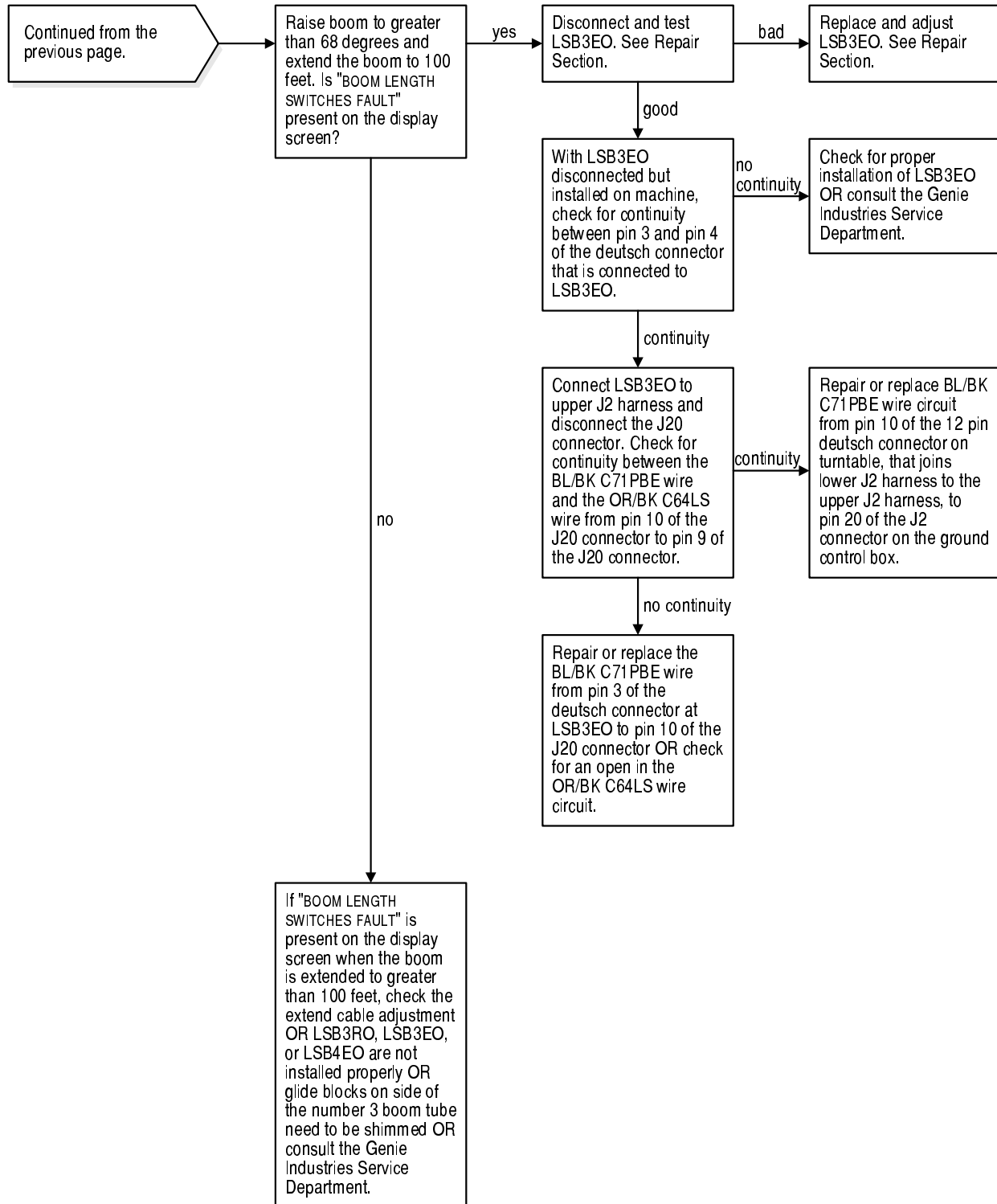


Chart 16

Boom Extend Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the boom is within the operation envelope zone.

Be sure the batteries are fully charged and properly connected.

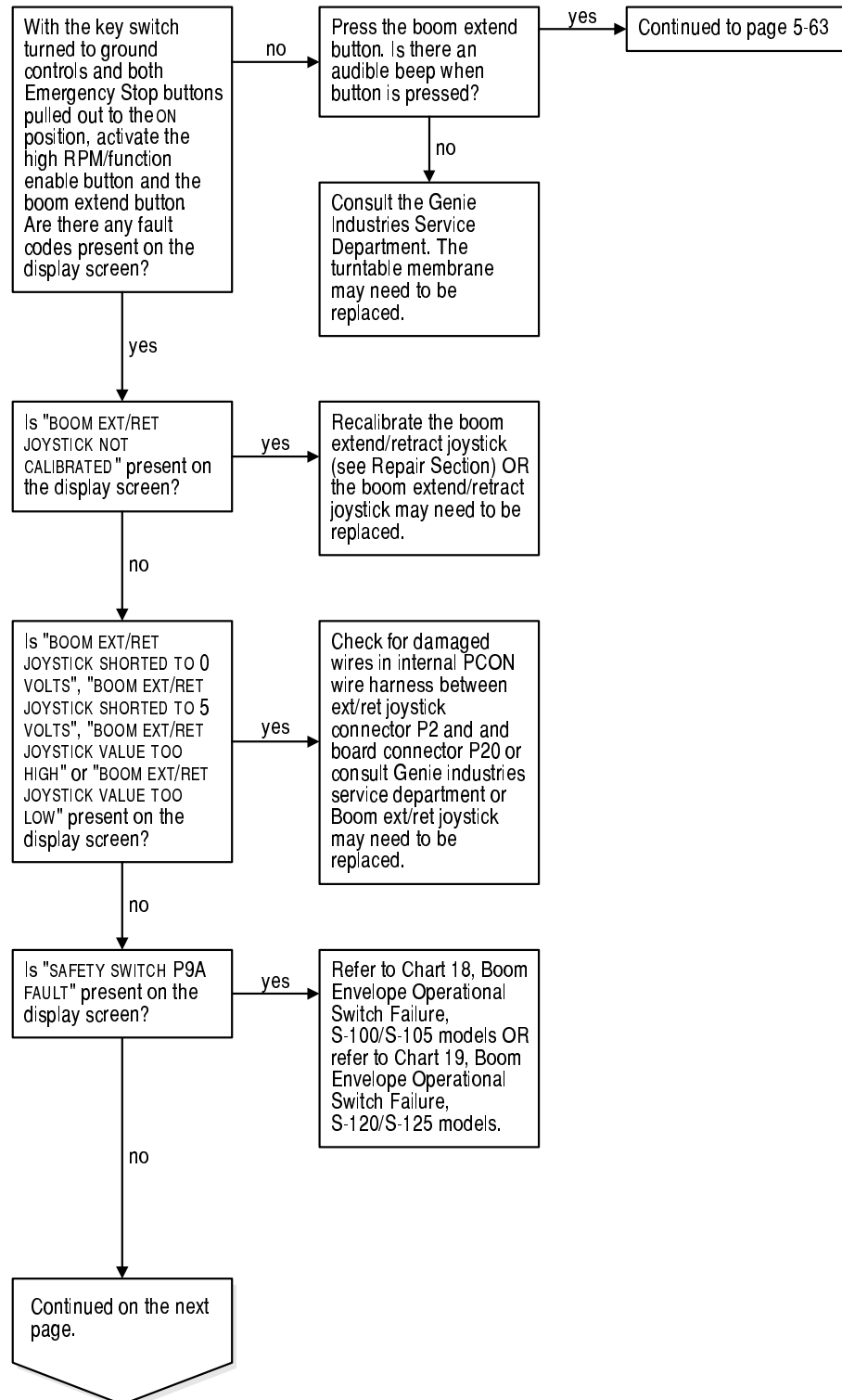


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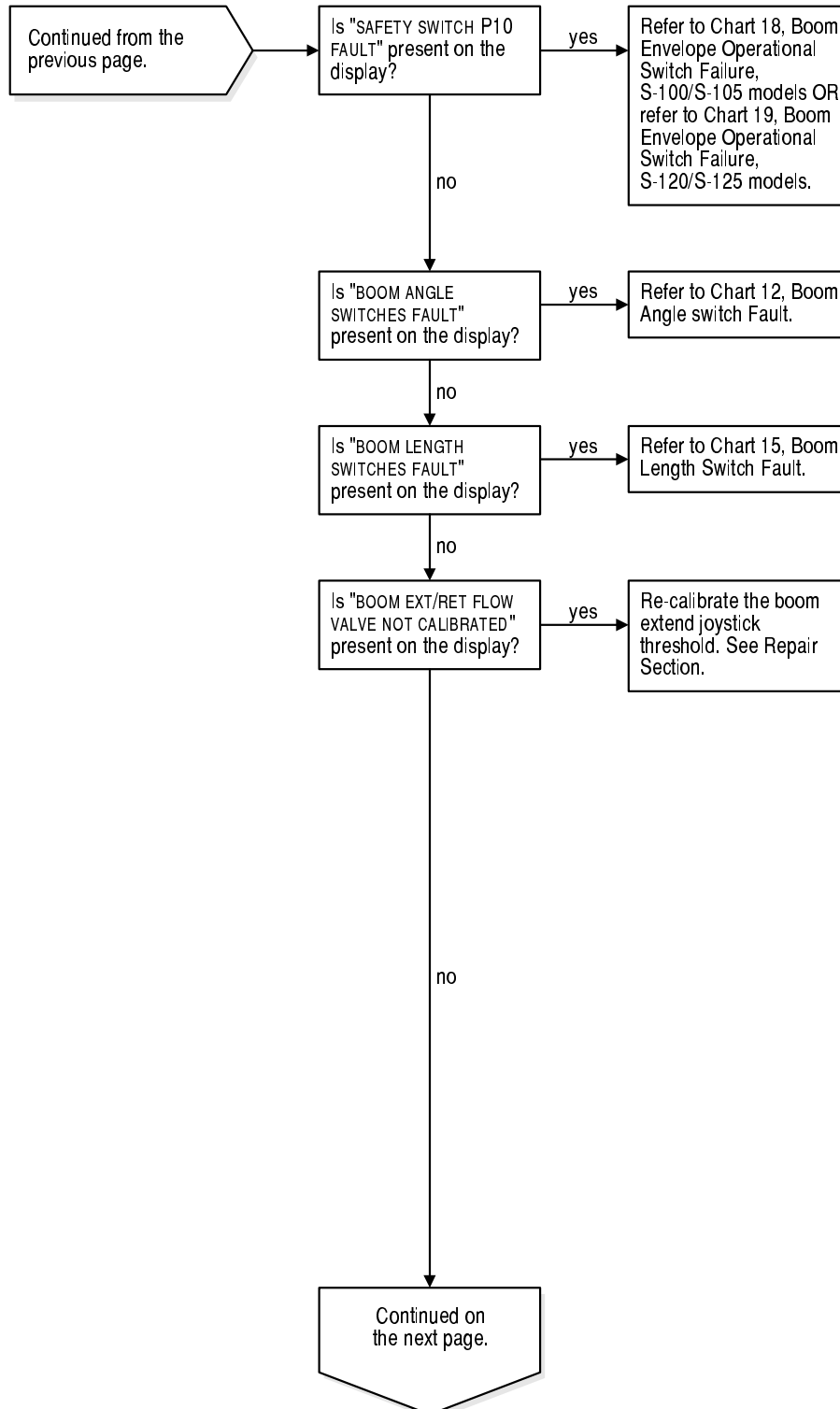


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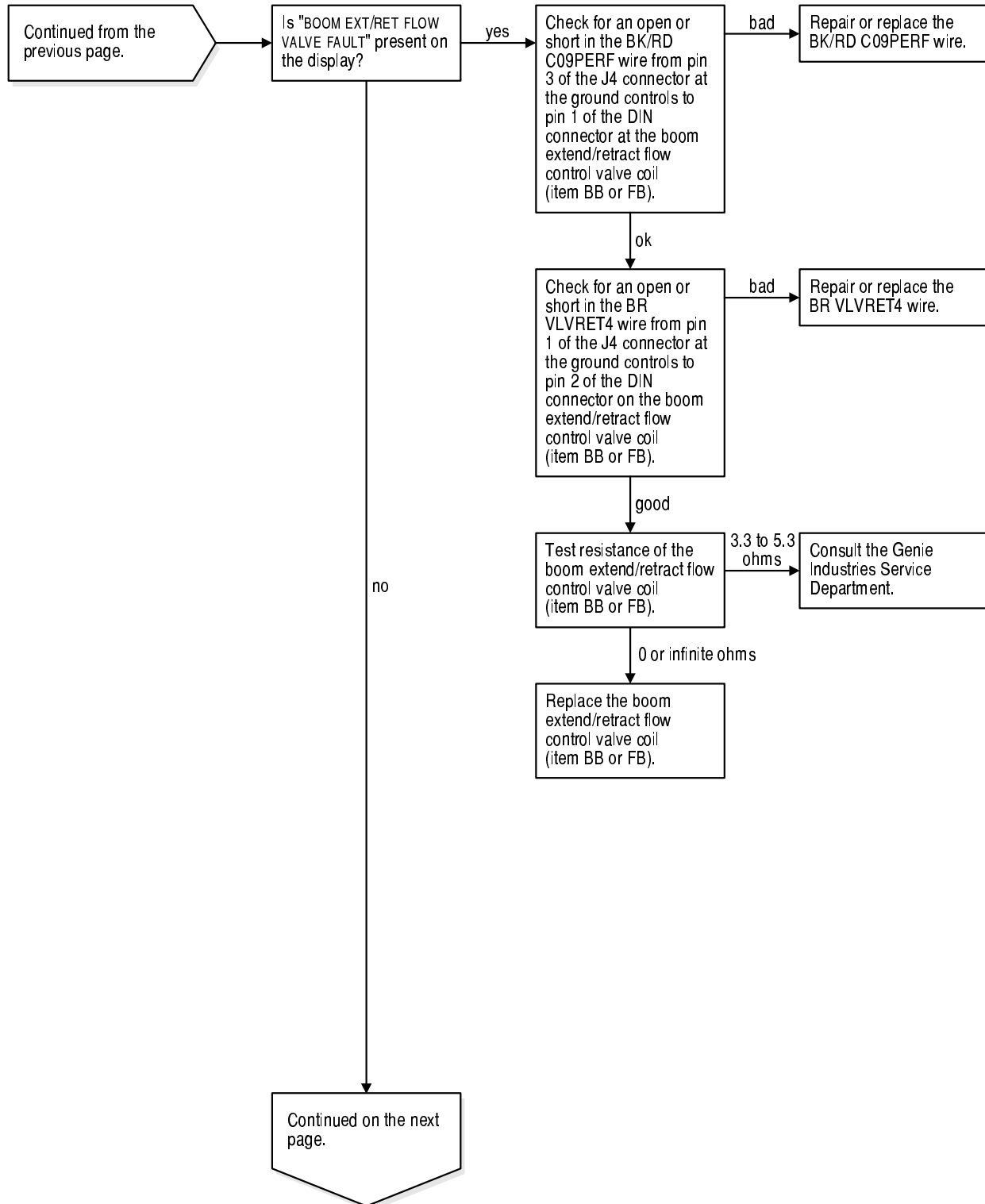


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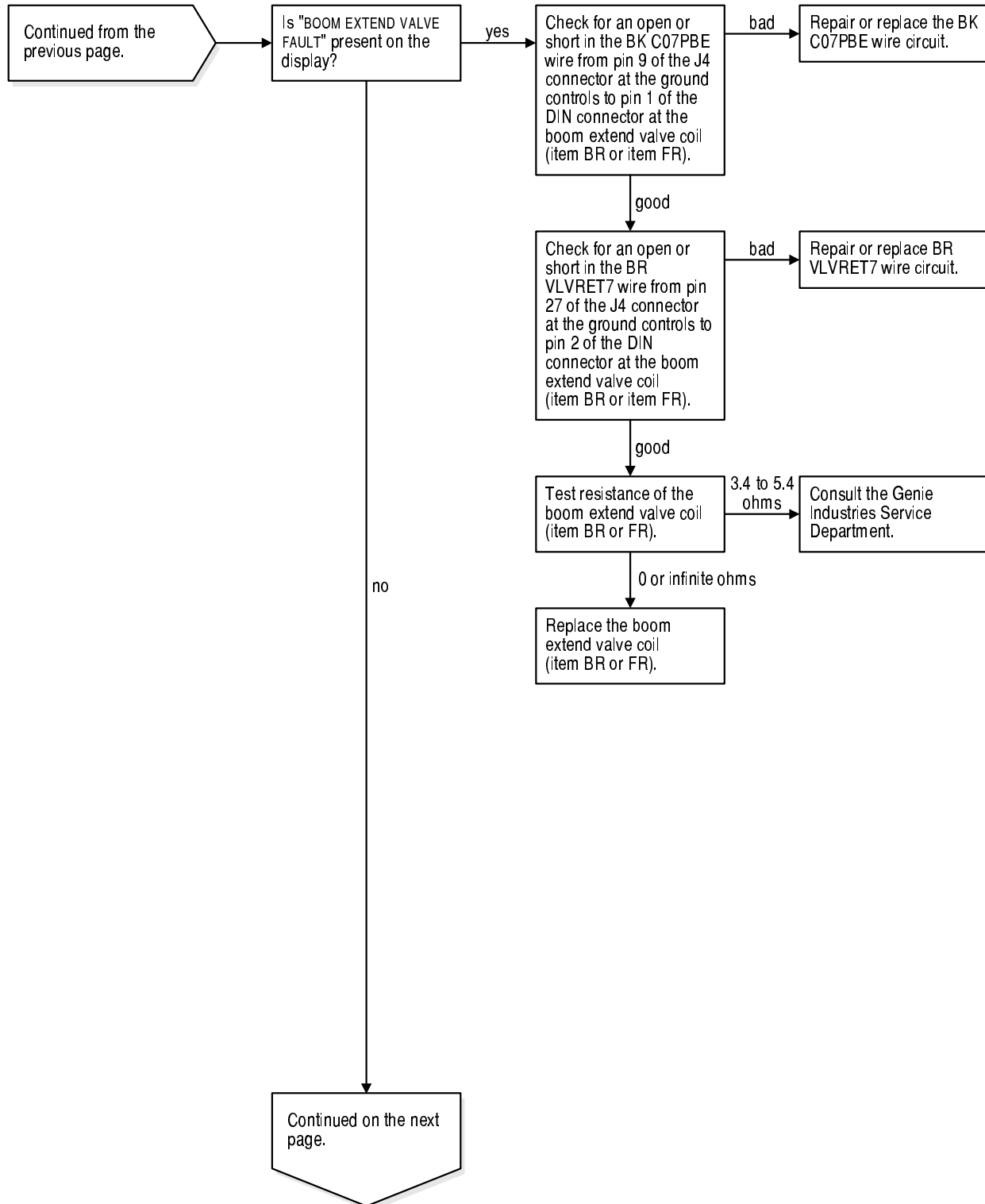


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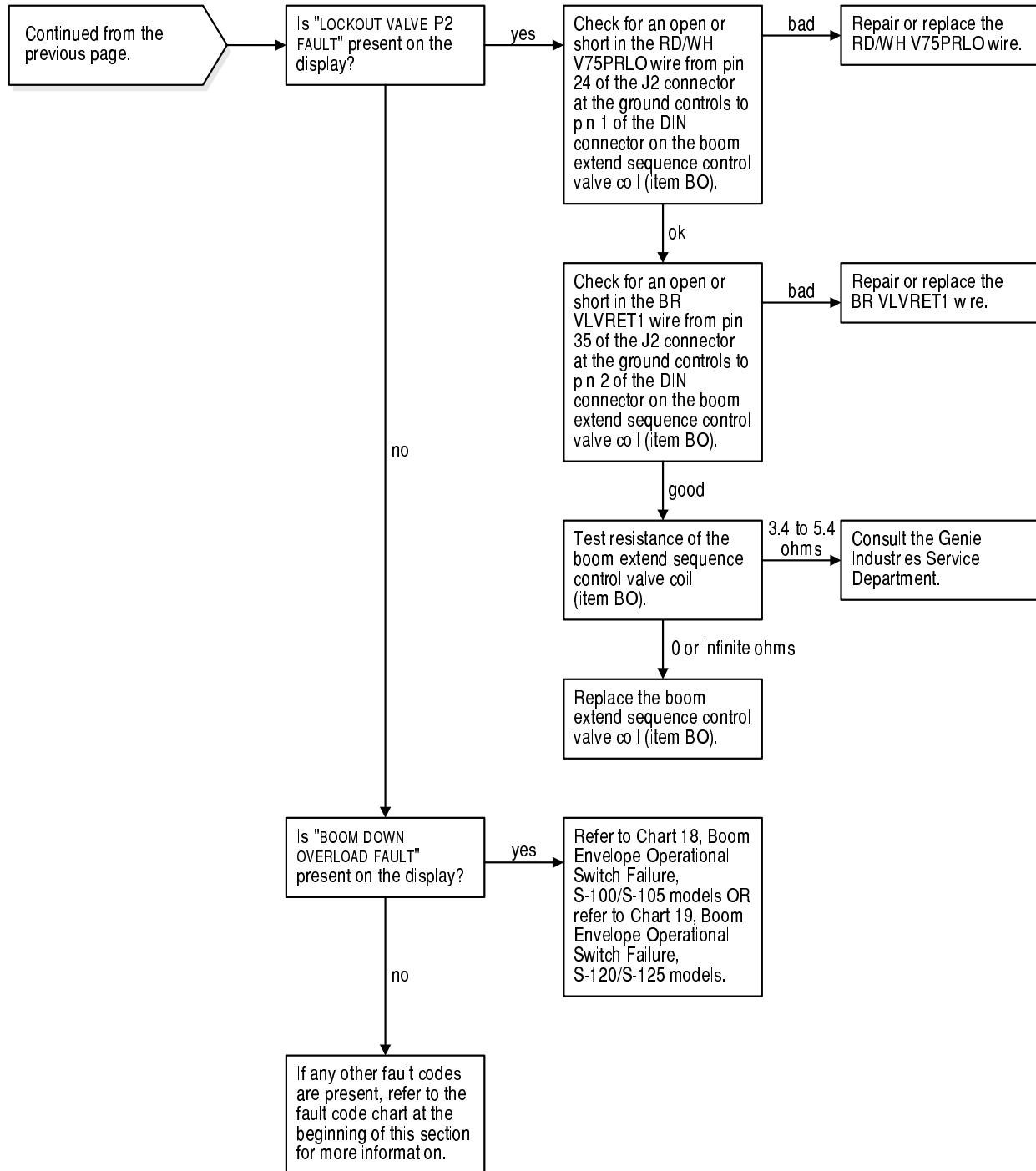


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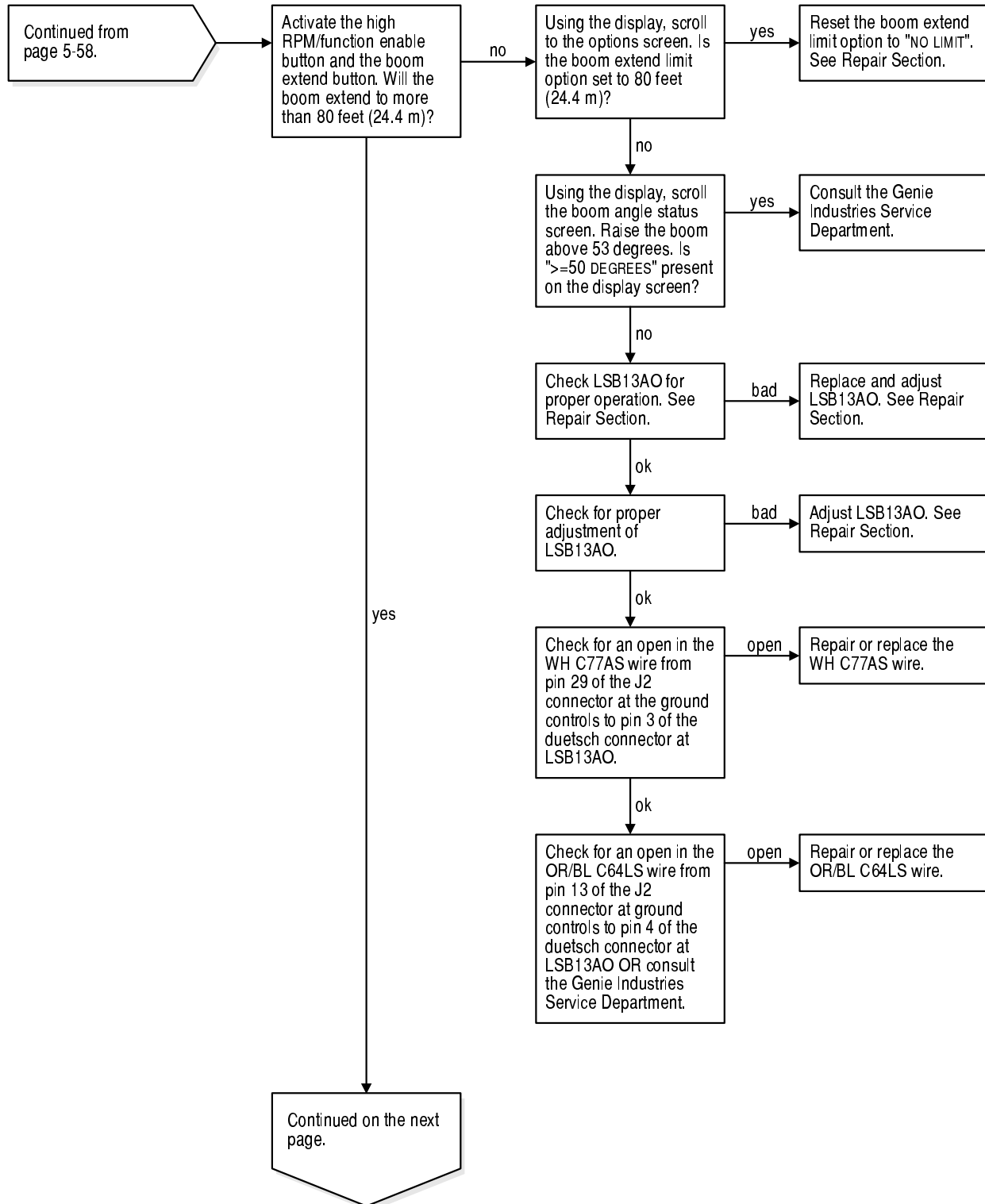


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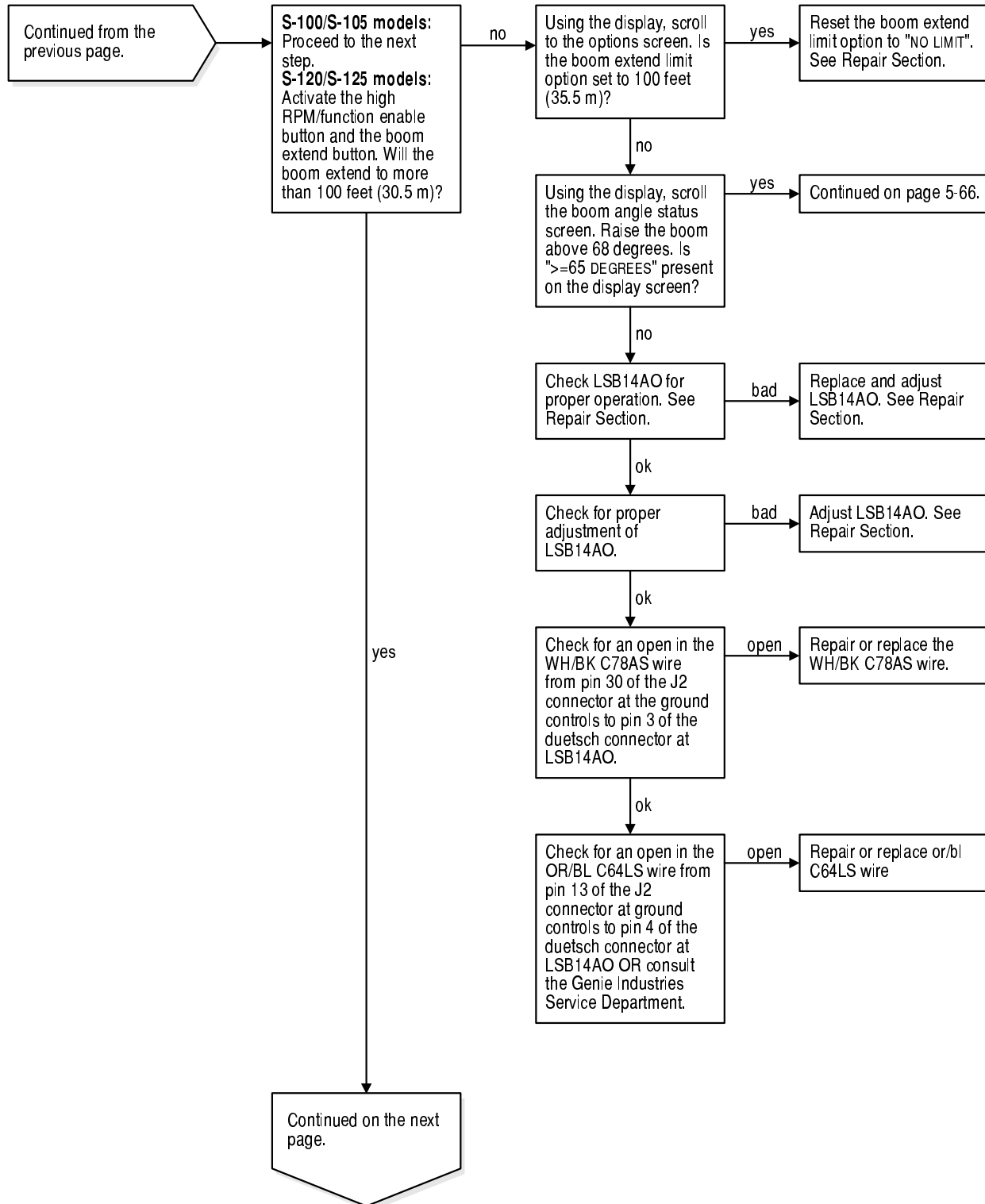


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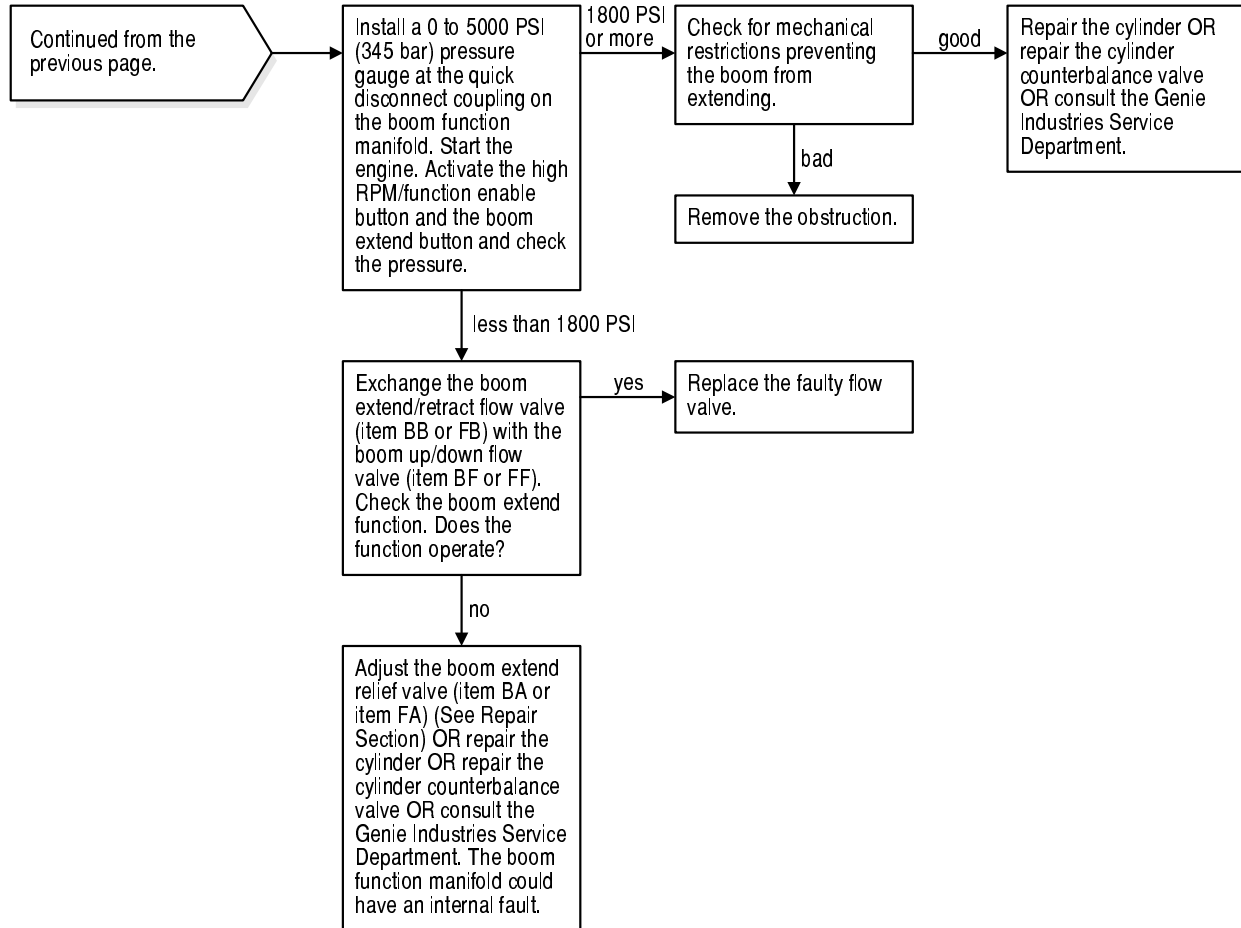


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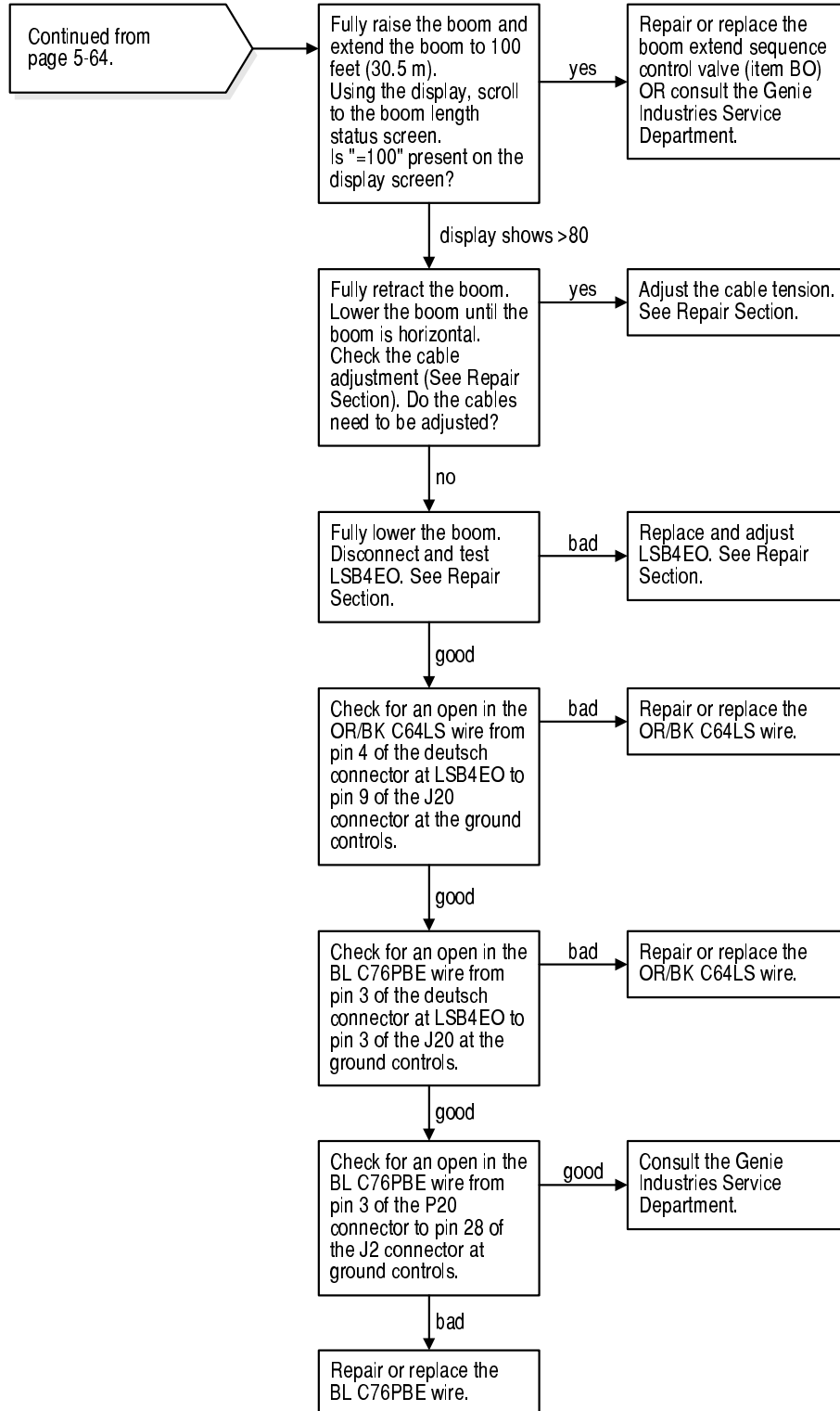


Chart 17

Boom Retract Function Inoperative

Make sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

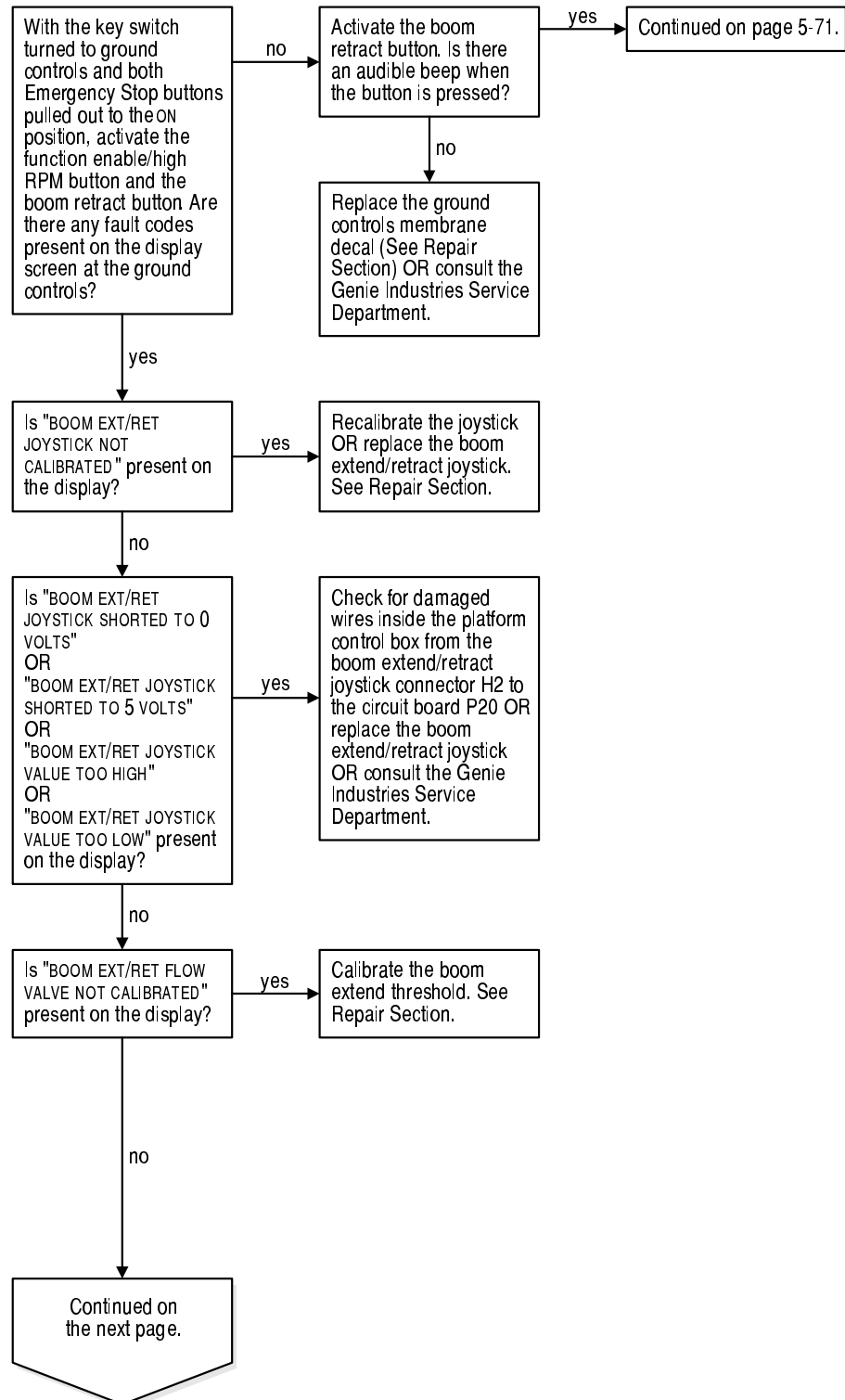


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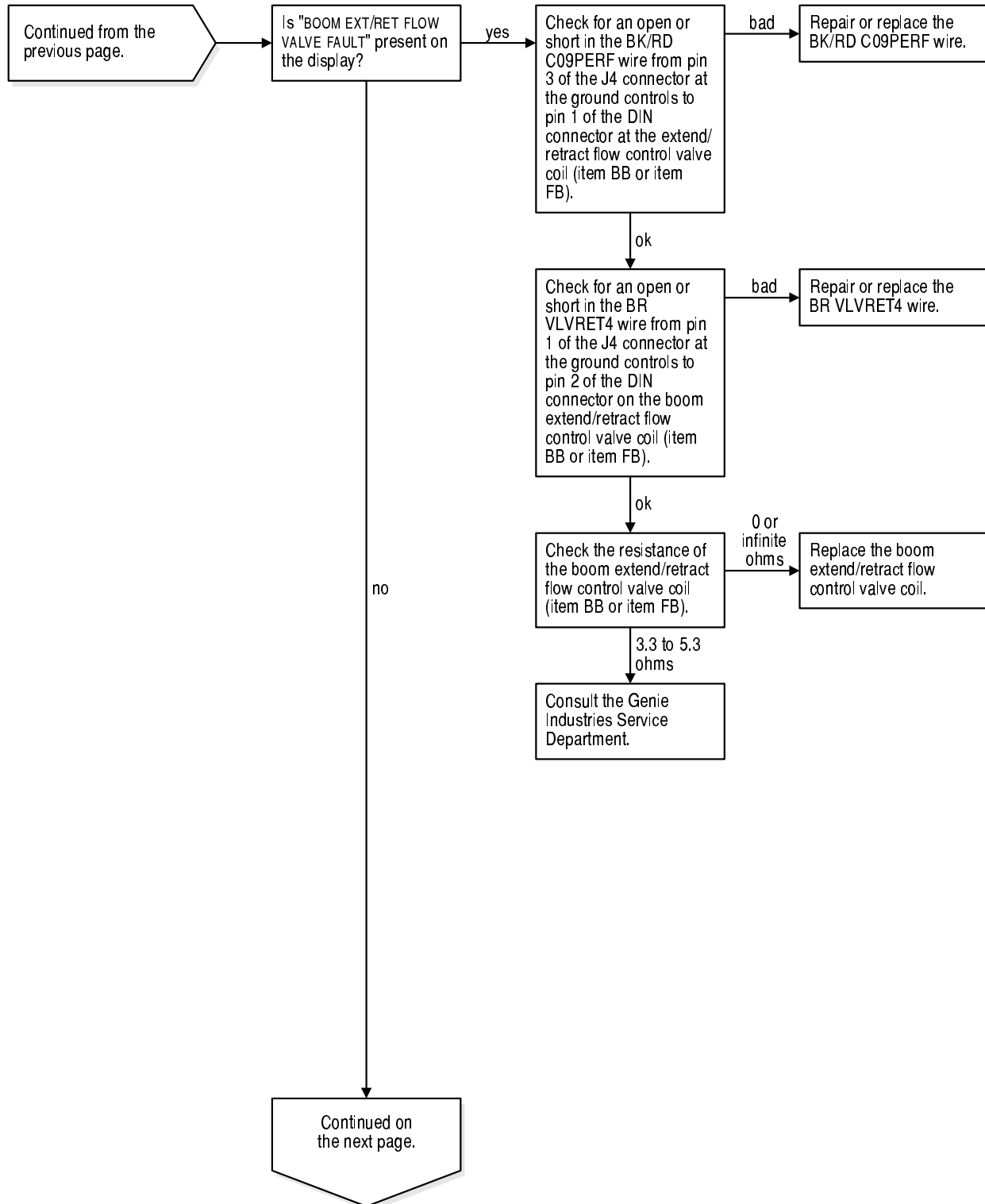


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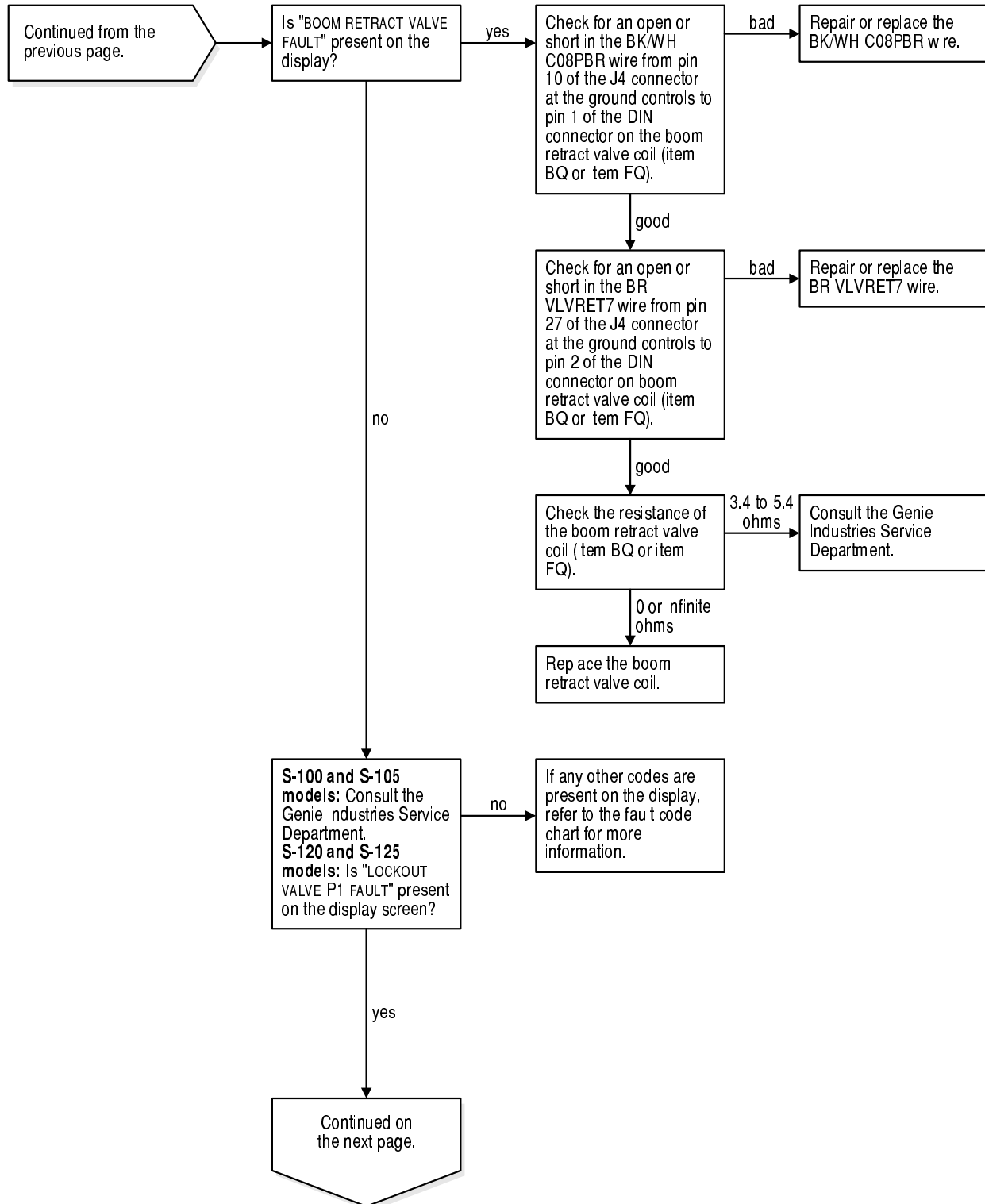


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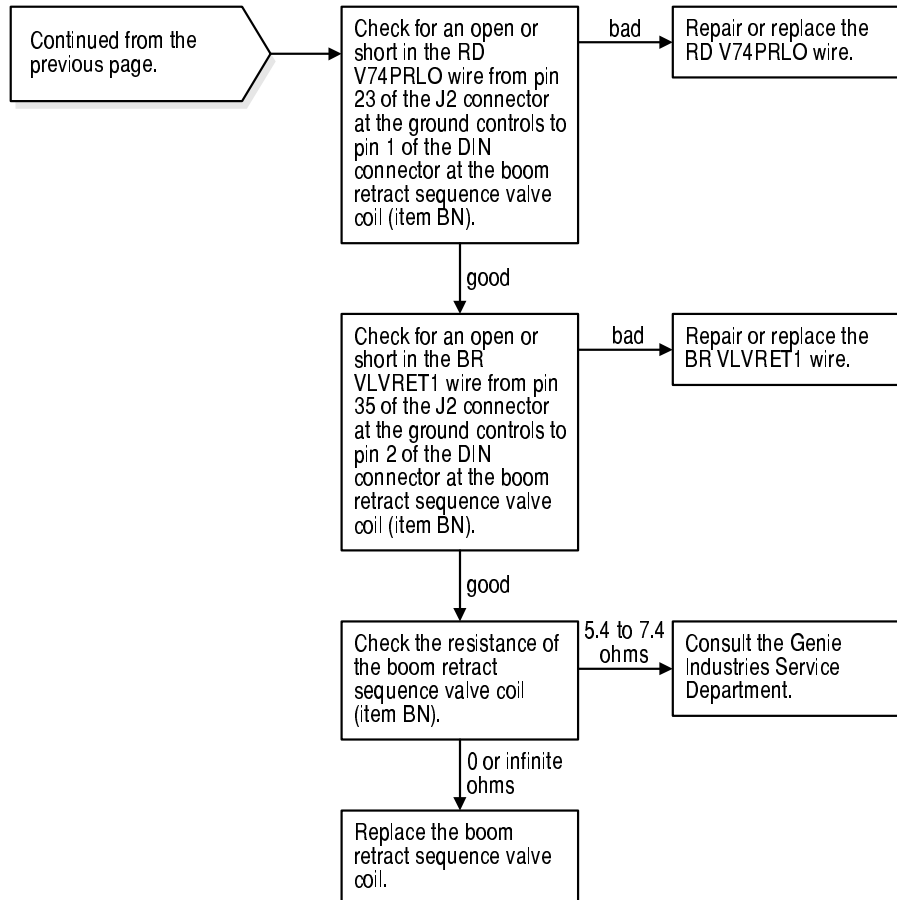


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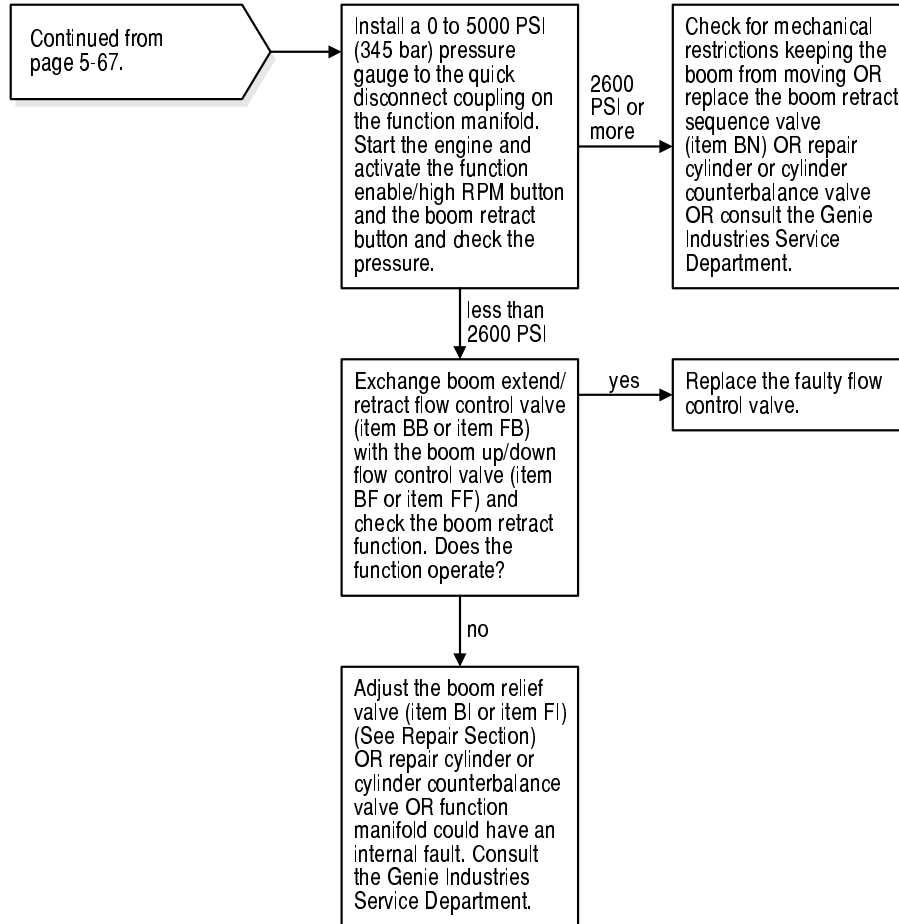


Chart 18

Boom Envelope Operational Switch Failure, S-100 and S-105 Models

A boom envelope safety fault is the result of the boom exceeding the operational limits and activating the safety switches OR when the safety switches are tripped within the operational range.

Press the (+) and (-) keys together to access the status screen. The status screen can display the following information:

- Hydraulic pressure
- Boom Length
- Boom Angle
- Axle status

Boom lengths are given in feet. The first number is the length for a S-100, the second number is for a S-105. For example, 75.5/80.5 feet.

Greater than or equal to is indicated by >= on the display.

A digital protractor will be needed to properly troubleshoot the machine.

Be sure the batteries are fully charged and properly connected.

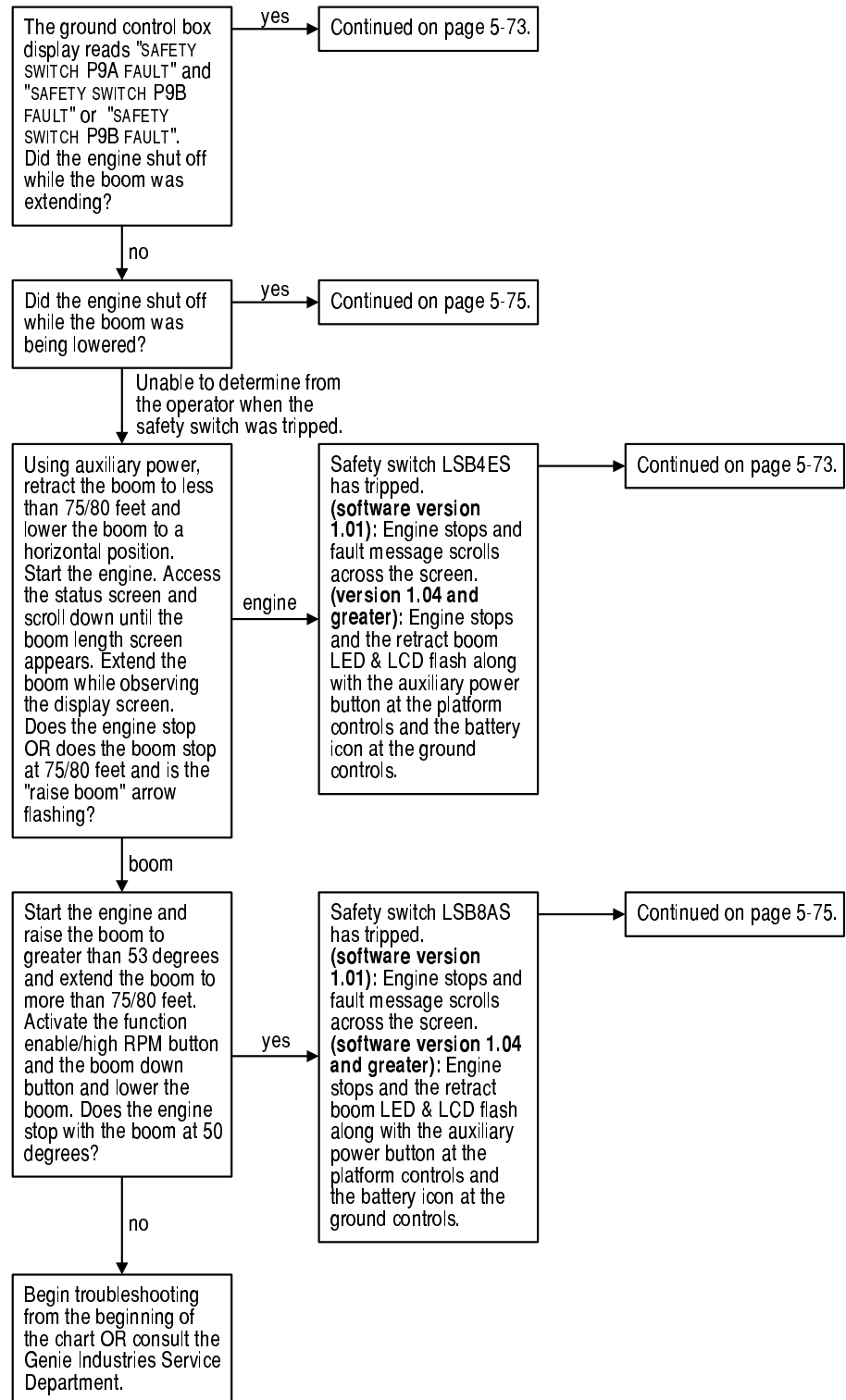


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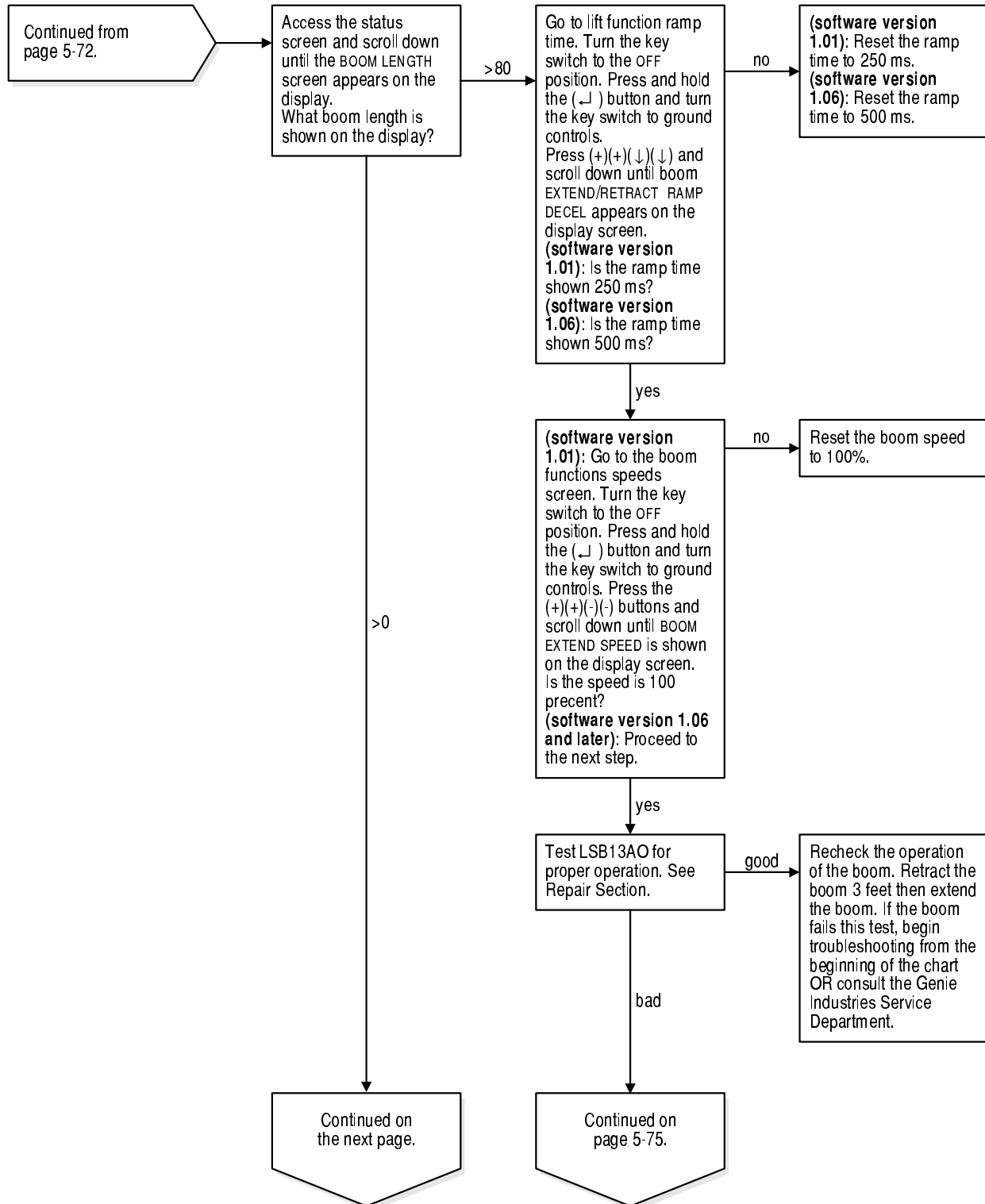


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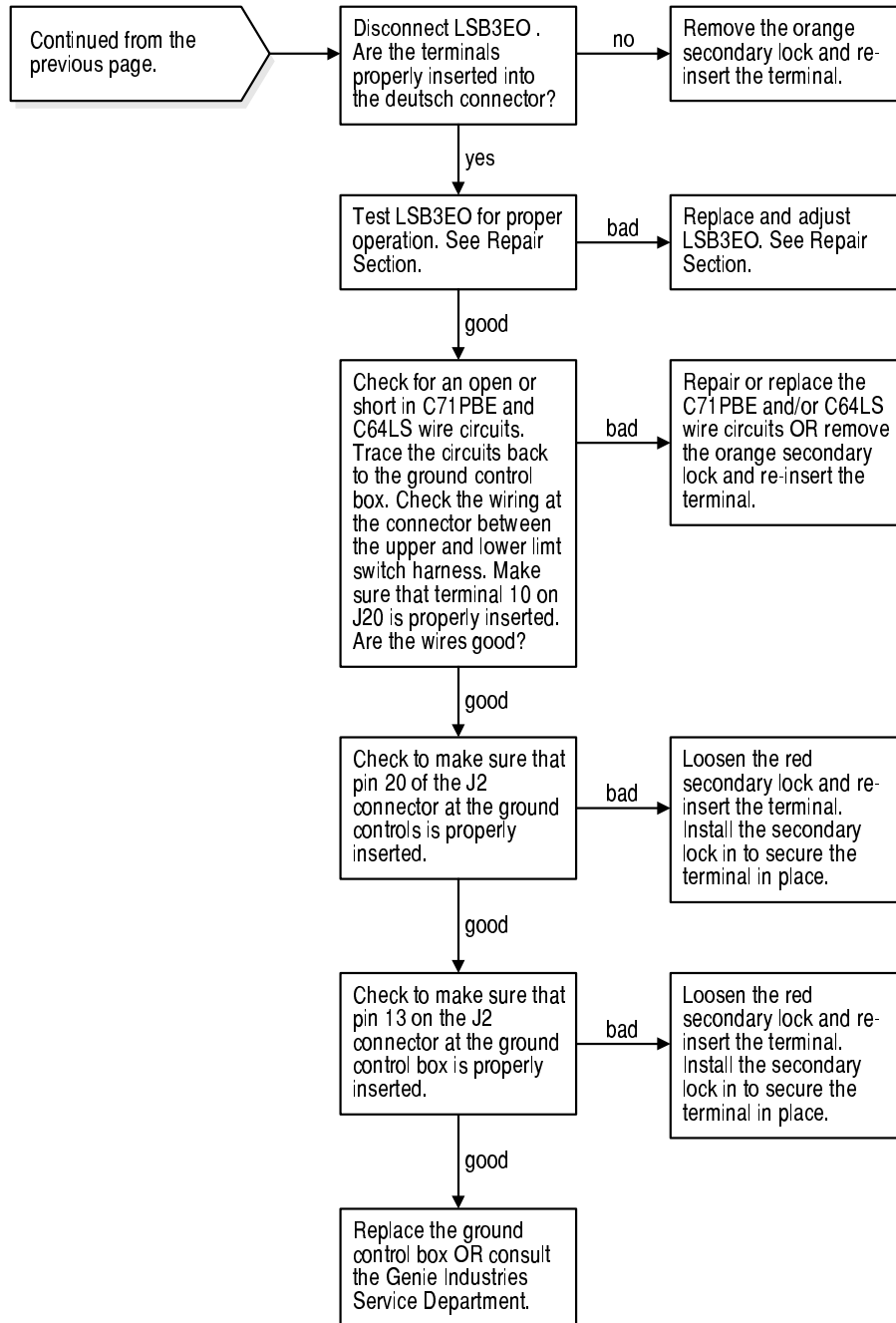


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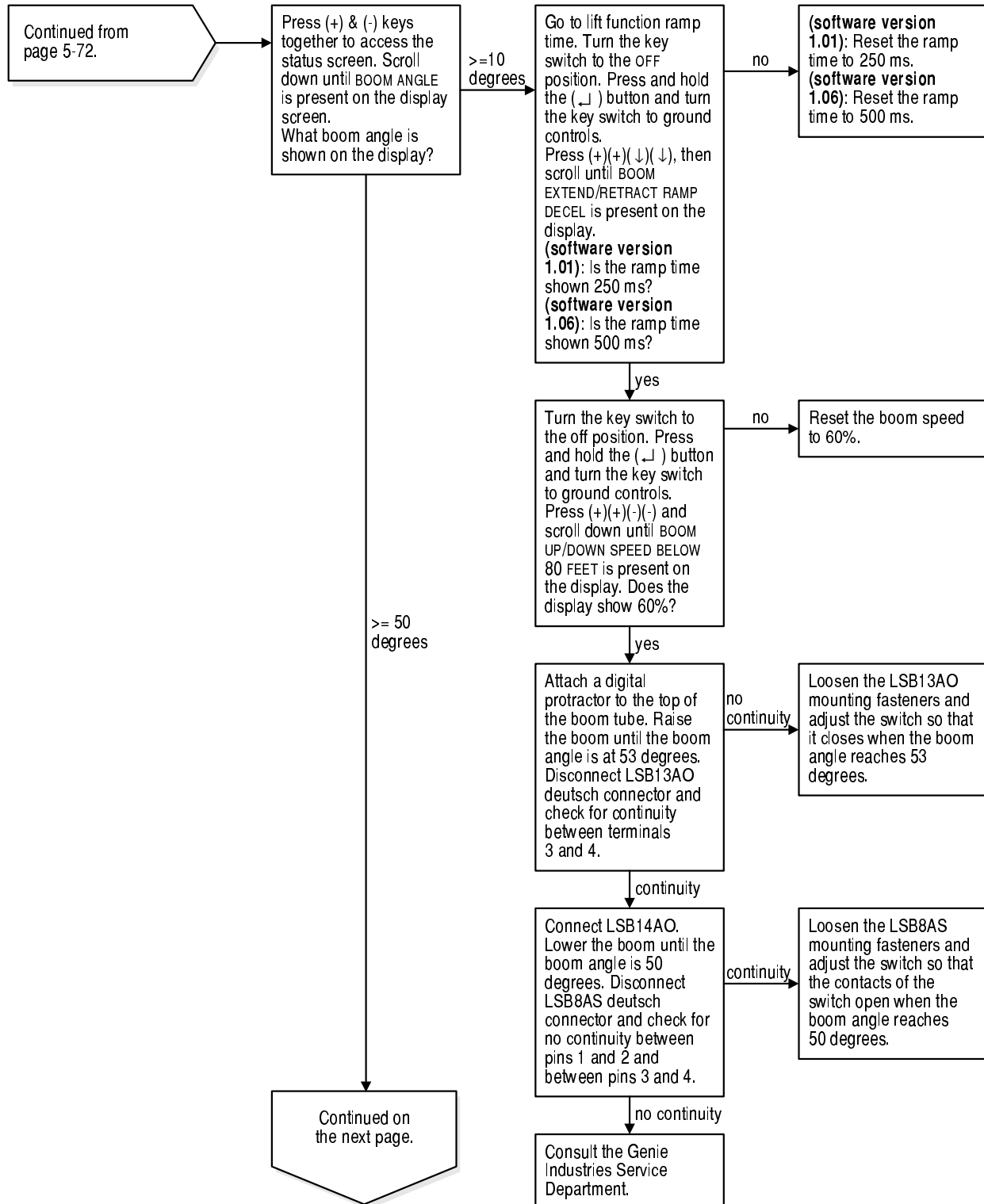


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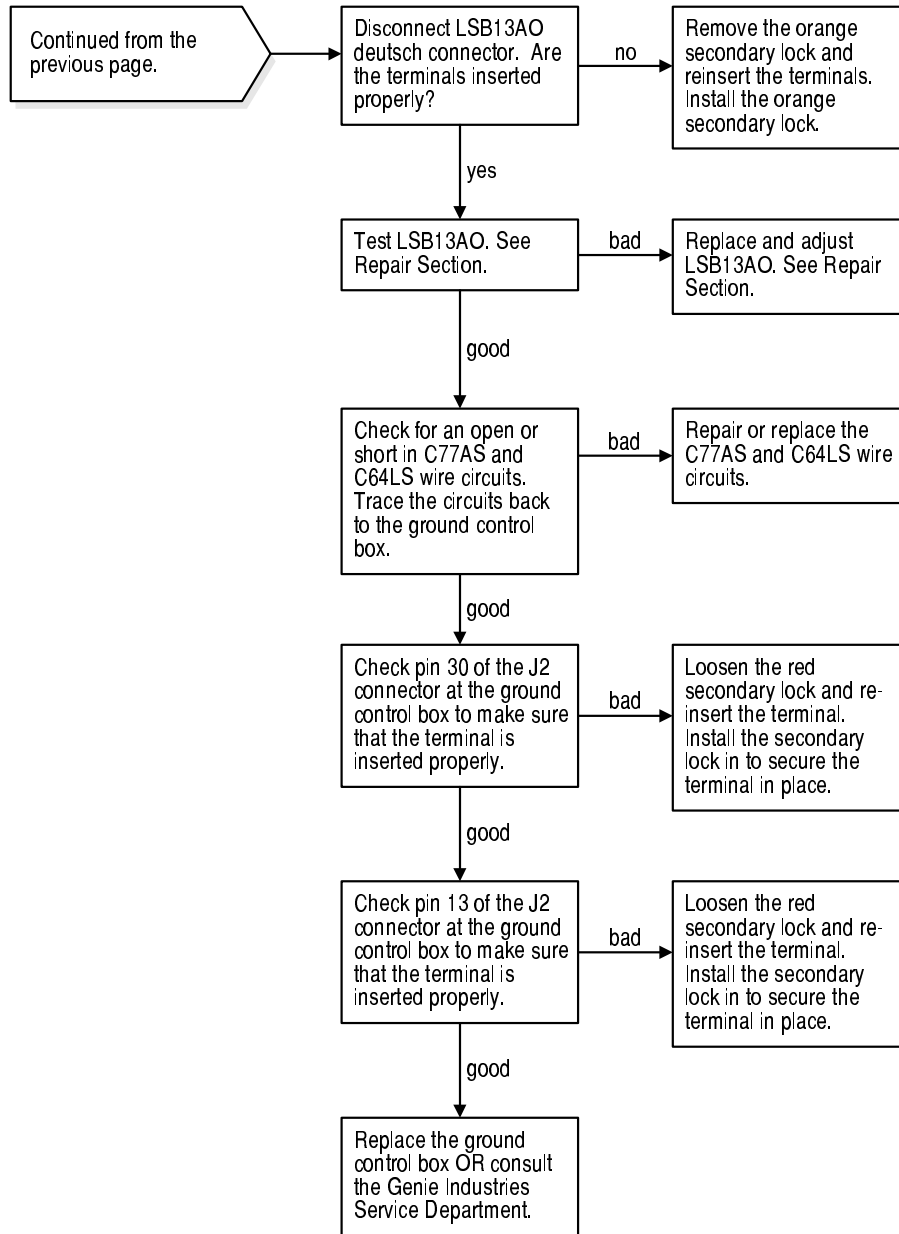


Chart 19

Boom Envelope Operational Switch Failure, S-120 and S-125 Models

A boom envelope safety fault is the result of the boom exceeding the operational limits and activating the safety switches OR when the safety switches are tripped within the operational range.

Press the (+) and (-) keys together to access the status screen. The status screen can display the following information:

- Hydraulic pressure
- Boom Length
- Boom Angle
- Axle status

Boom lengths are given in feet. The first number is the length for a S-120, the second number is for a S-125. For example, 75.5/80.5 feet.

Greater than or equal to is indicated by >= on the display.

A digital protractor will be needed to properly troubleshoot the machine.

Be sure the batteries are fully charged and properly connected.

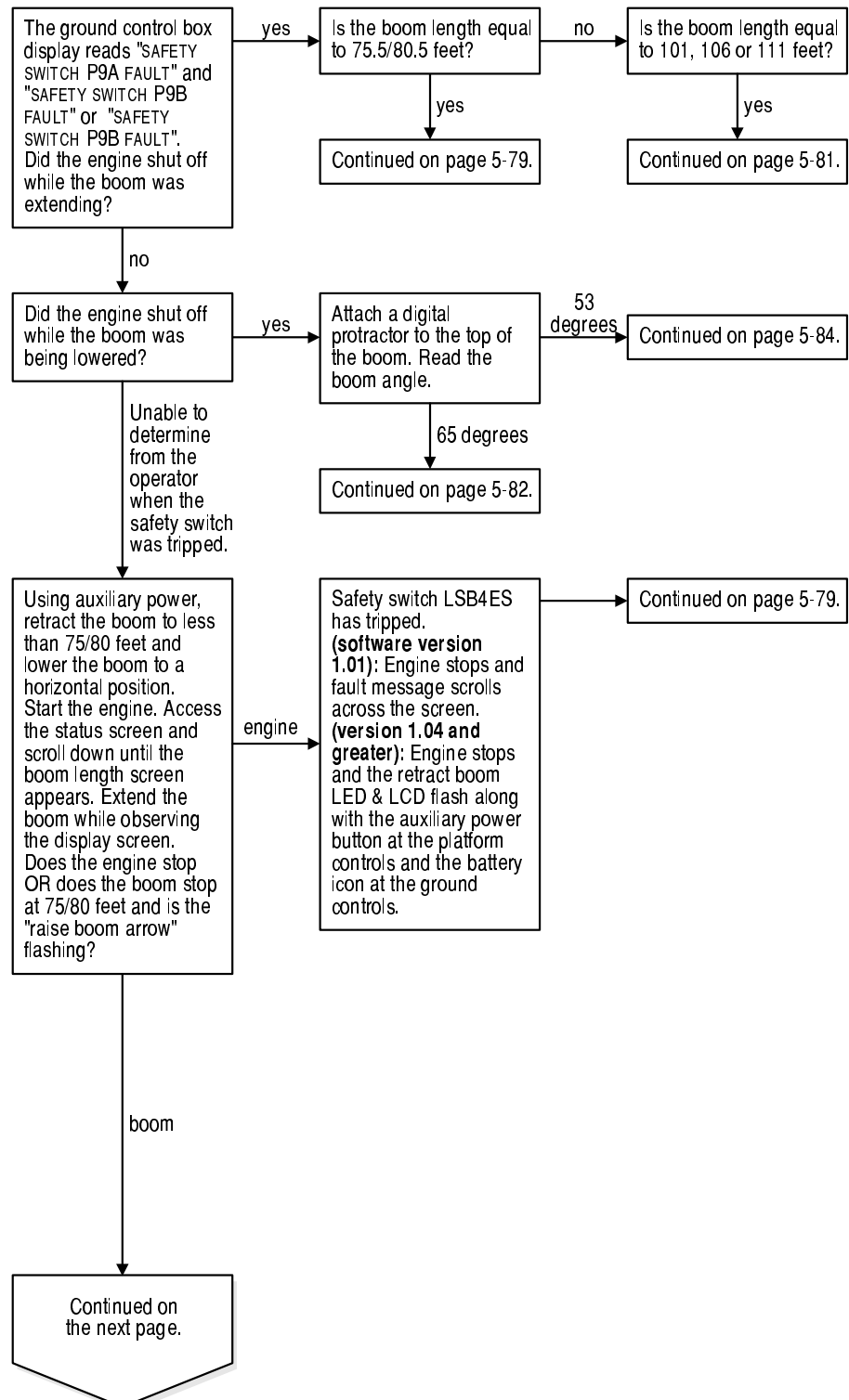


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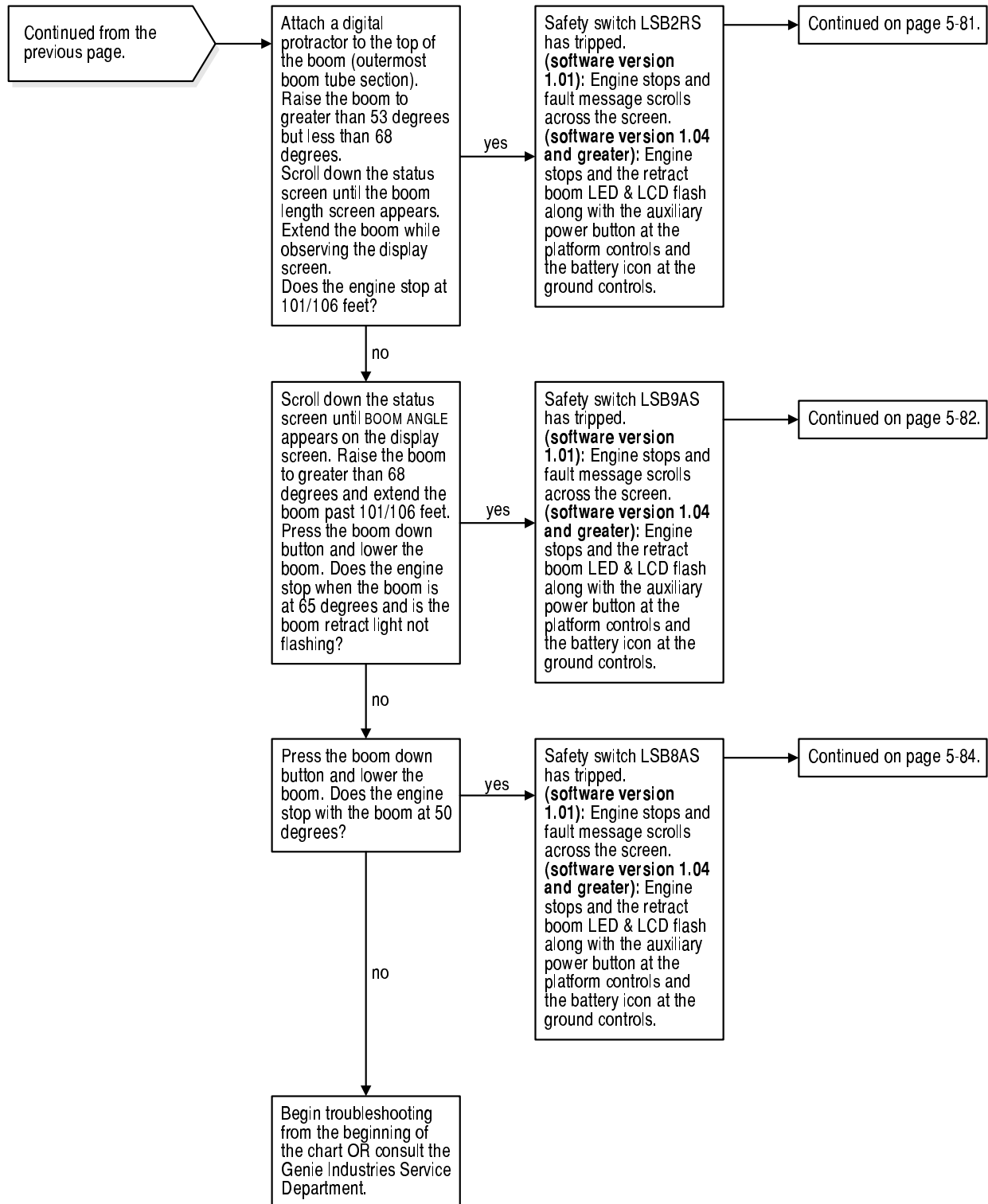


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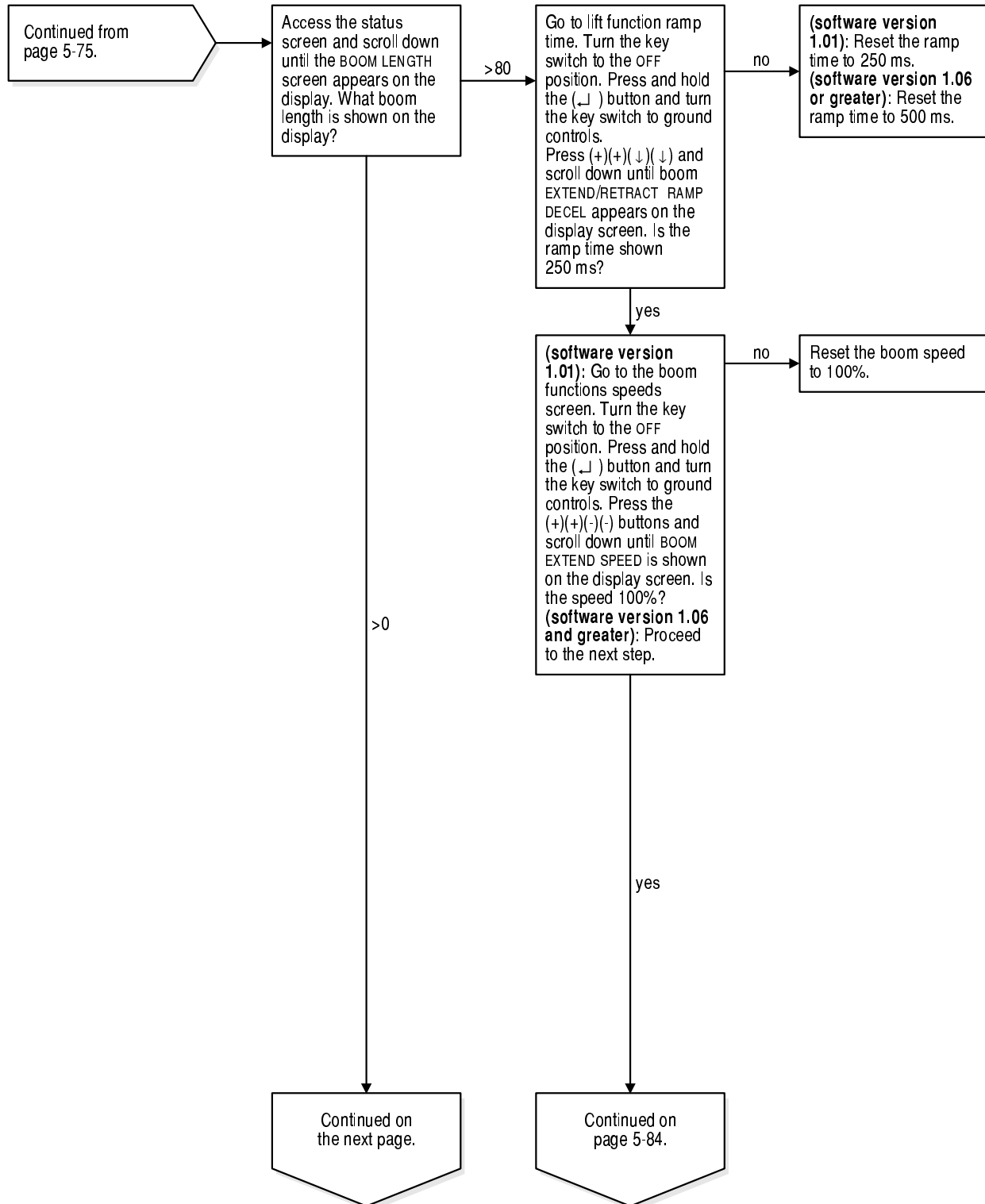


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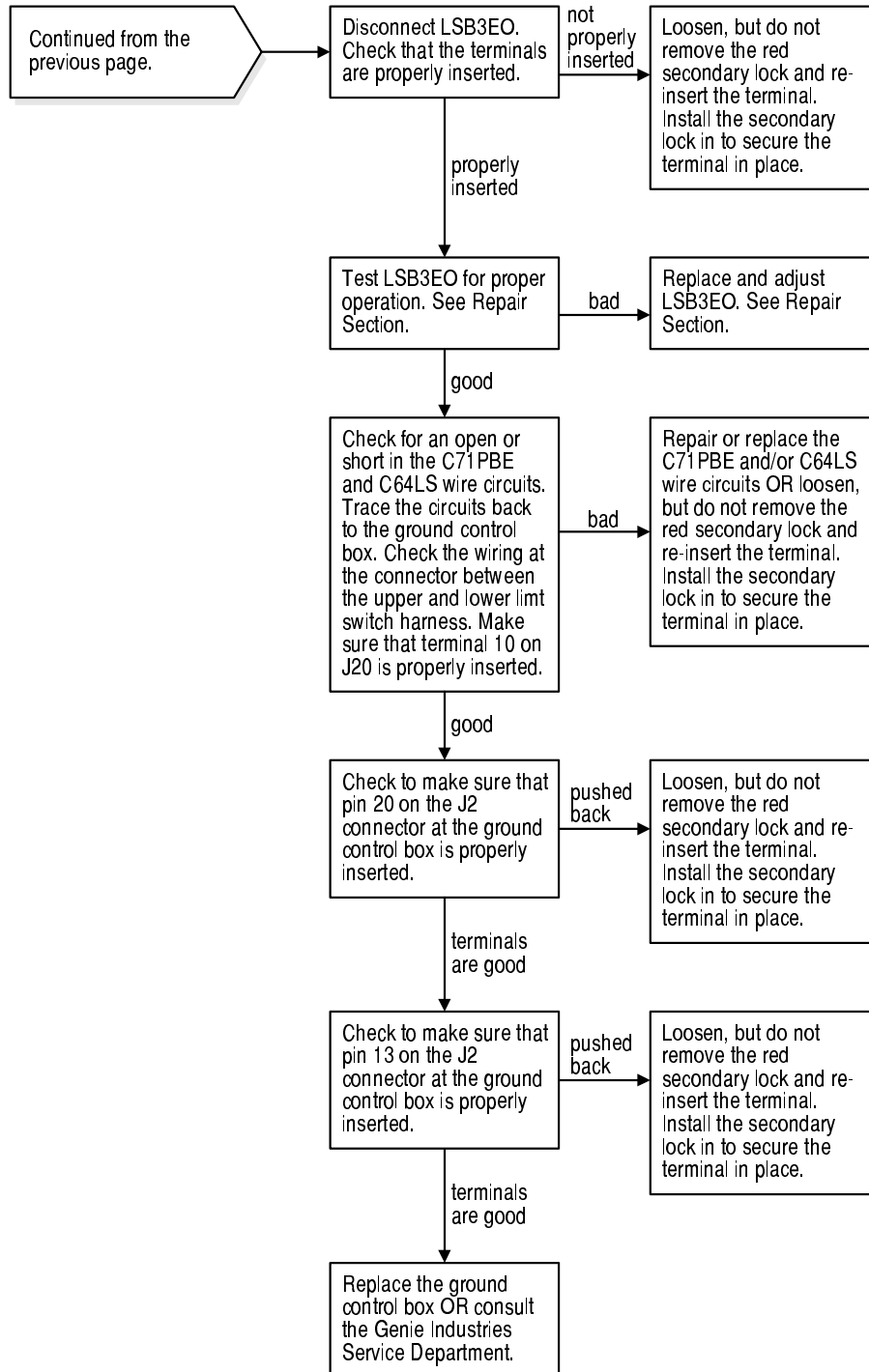


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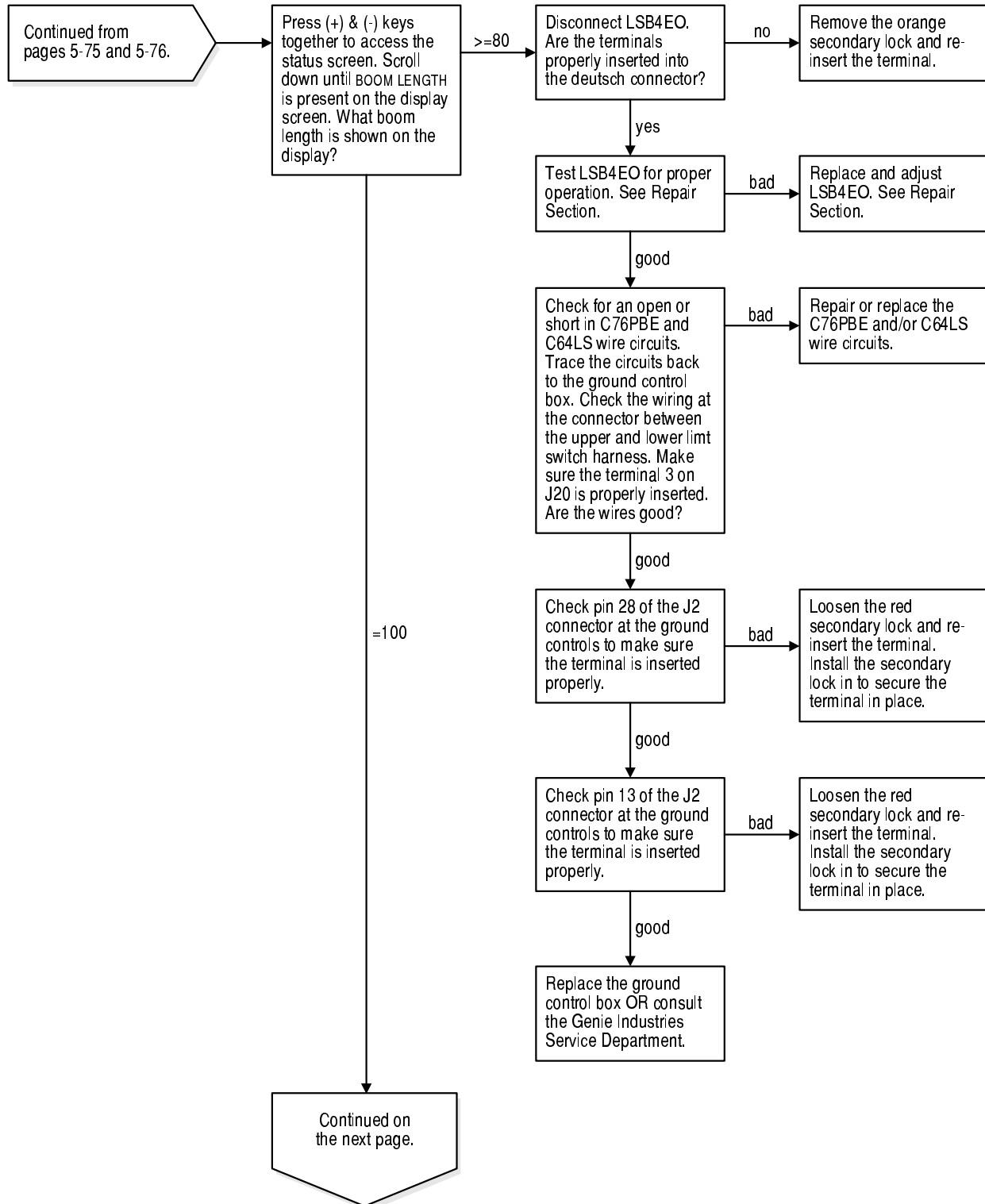


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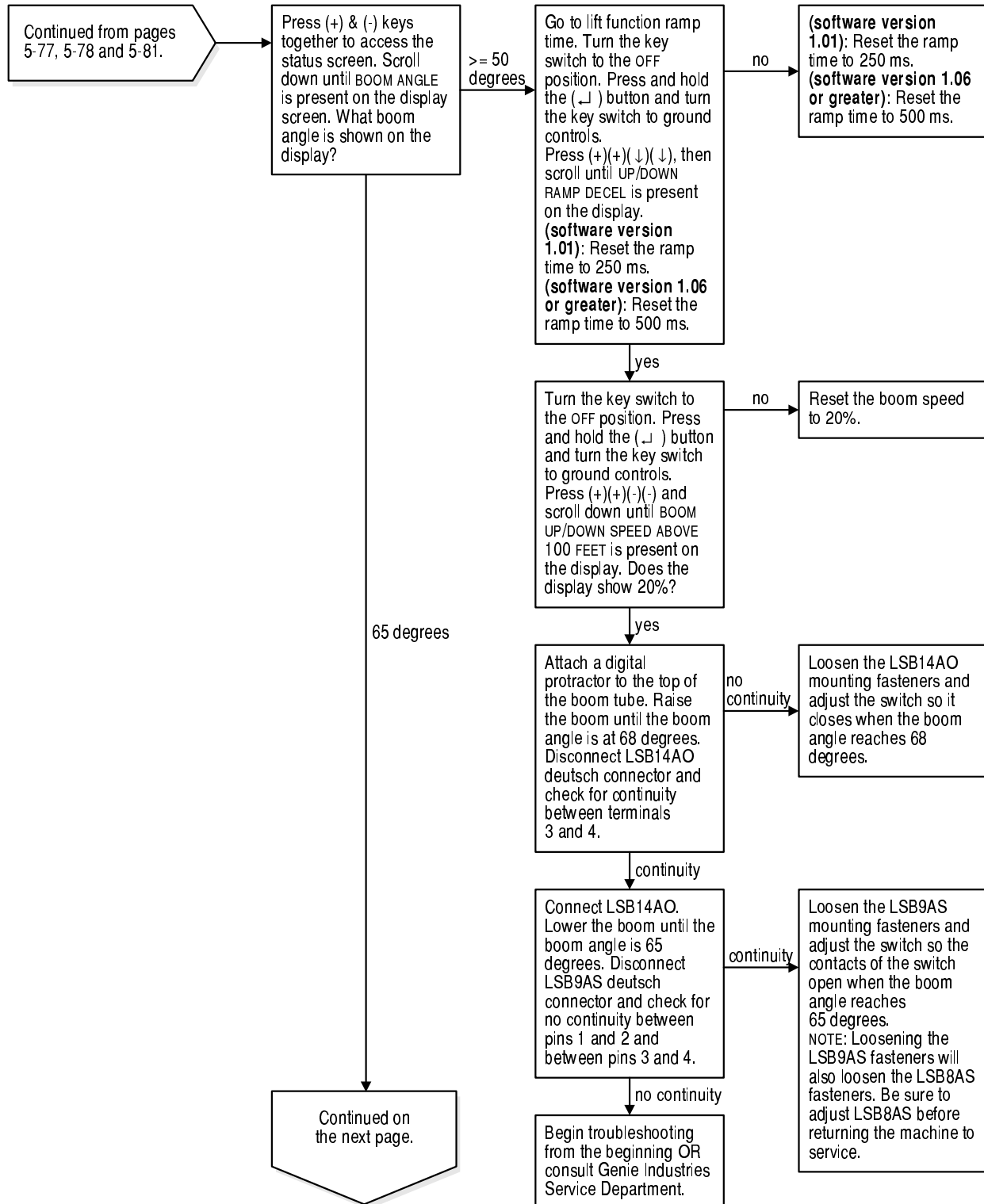


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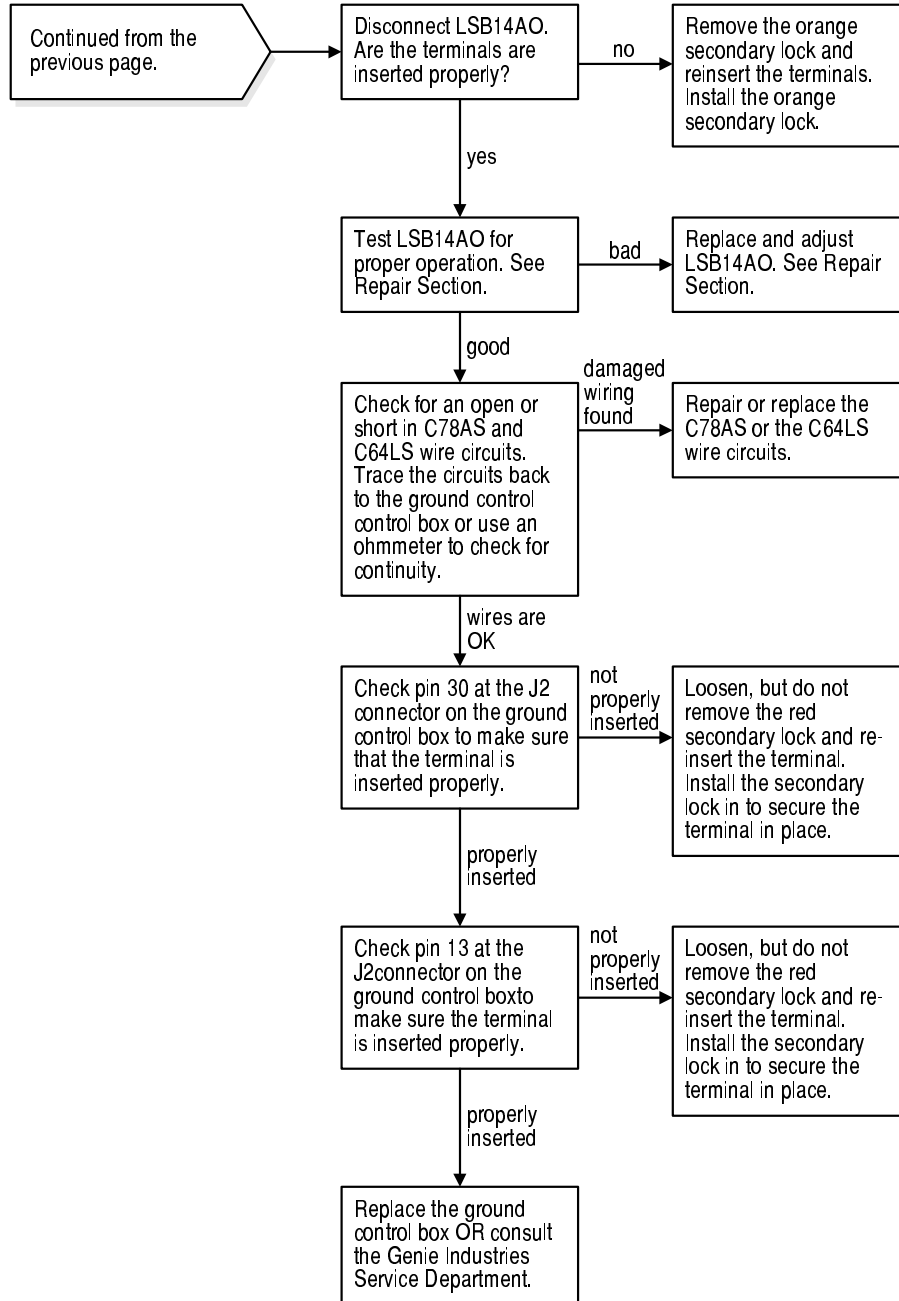


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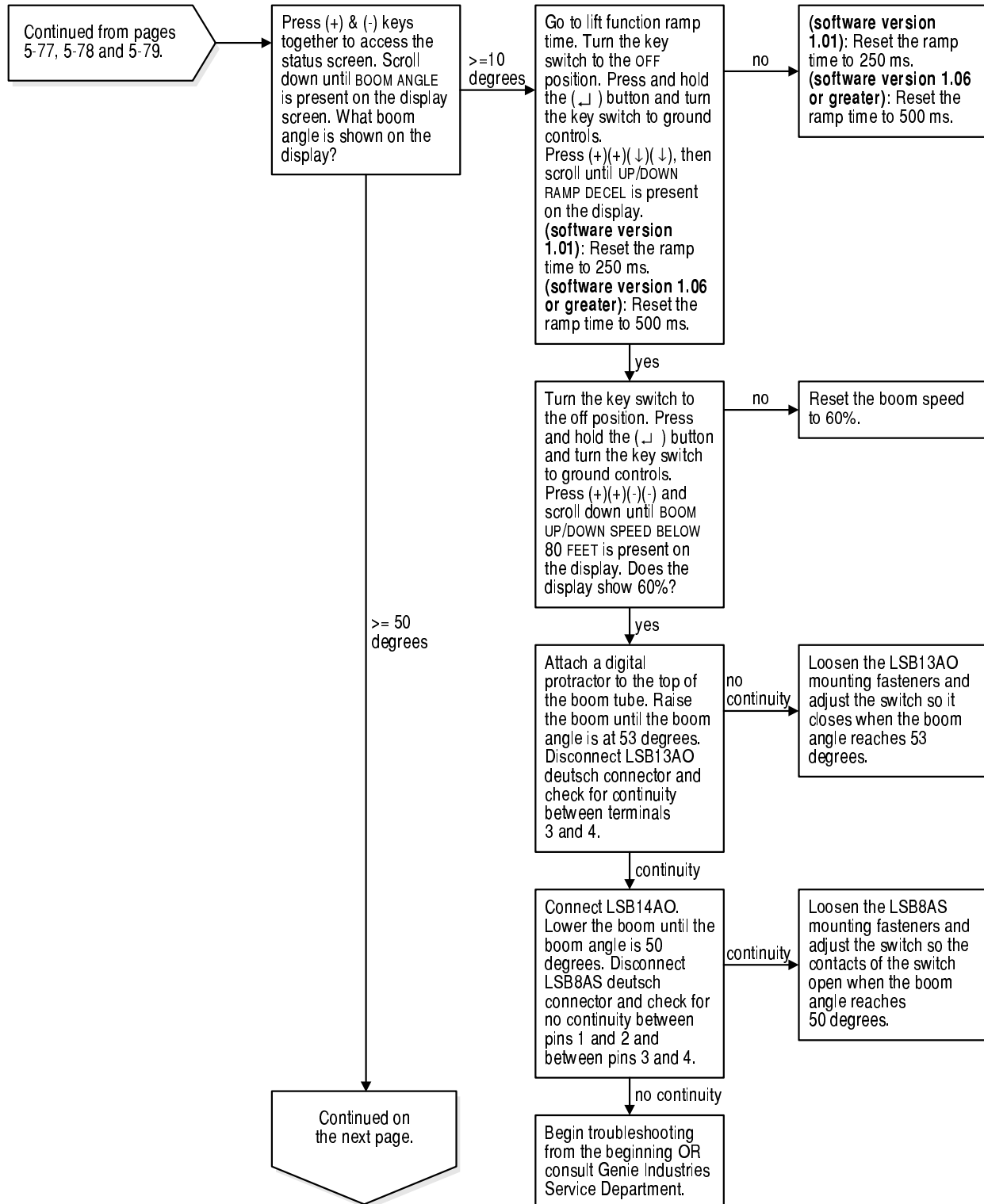


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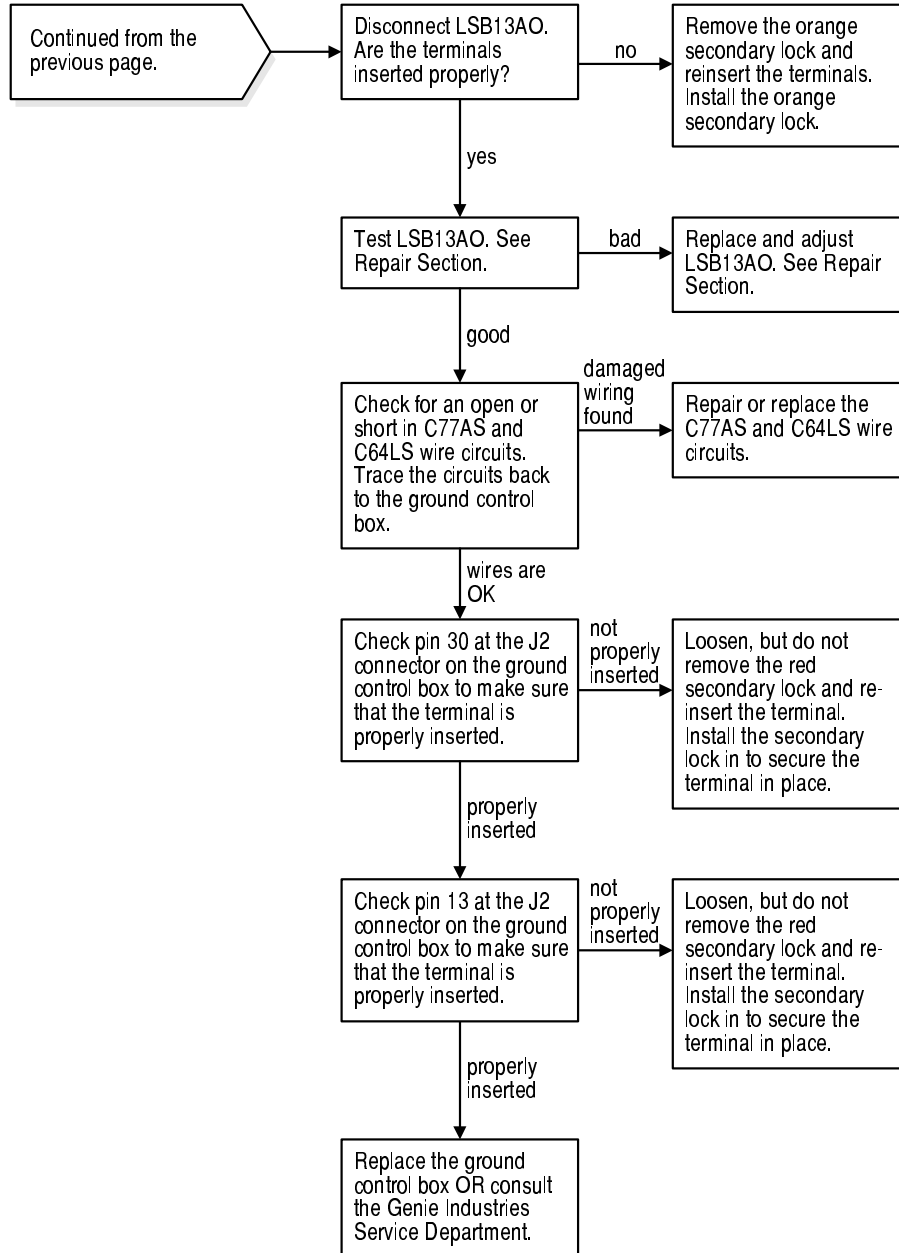


Chart 20

Boom Envelope Safety Switch Failure, S-100 and S-105 Models

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

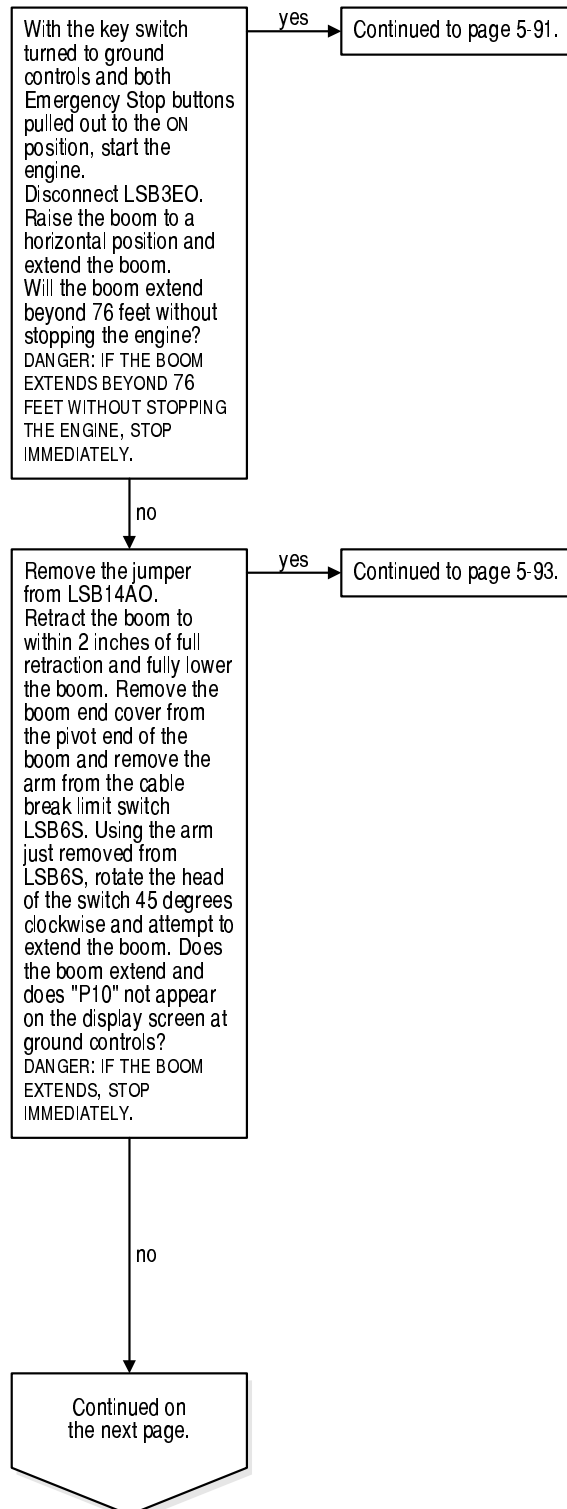


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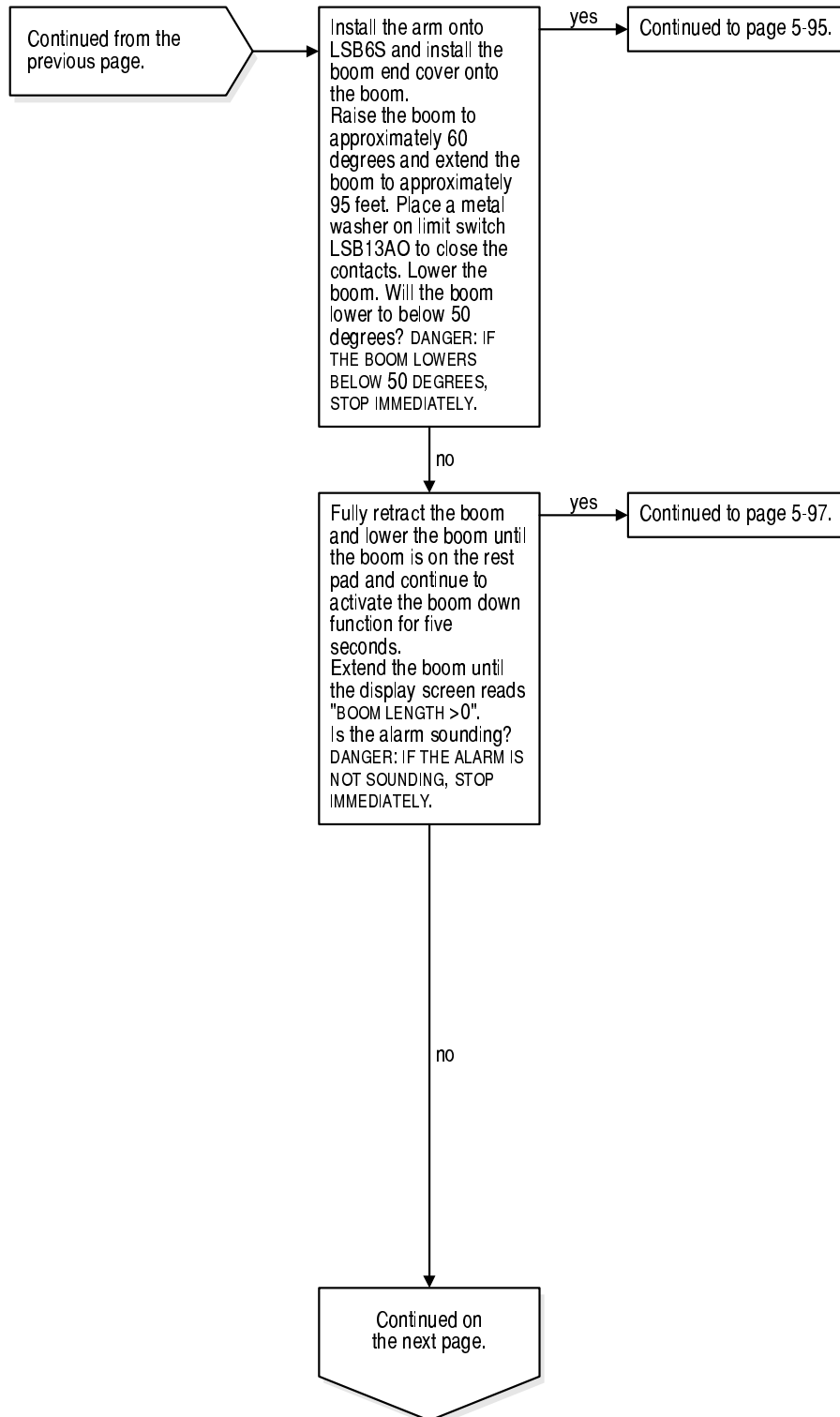


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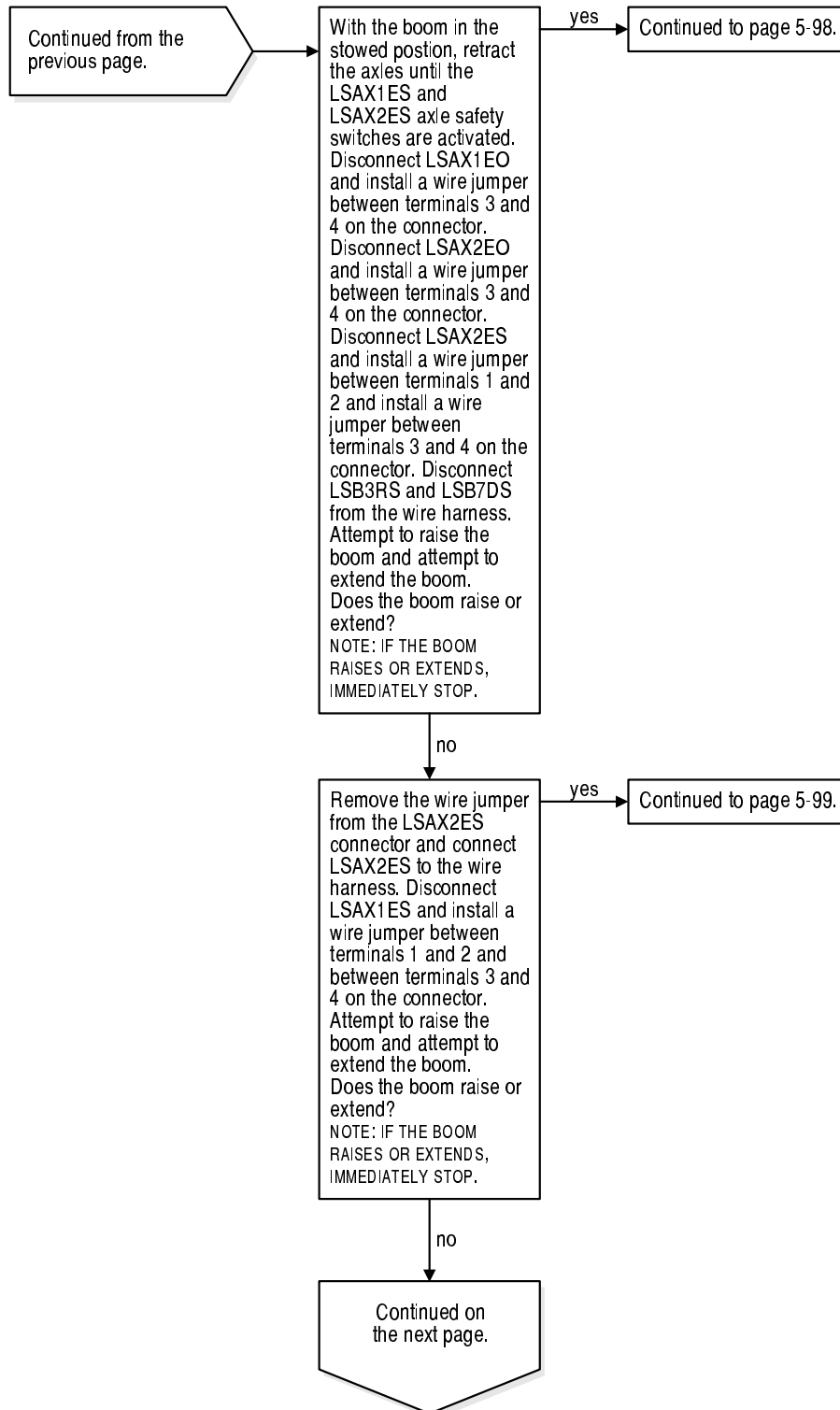


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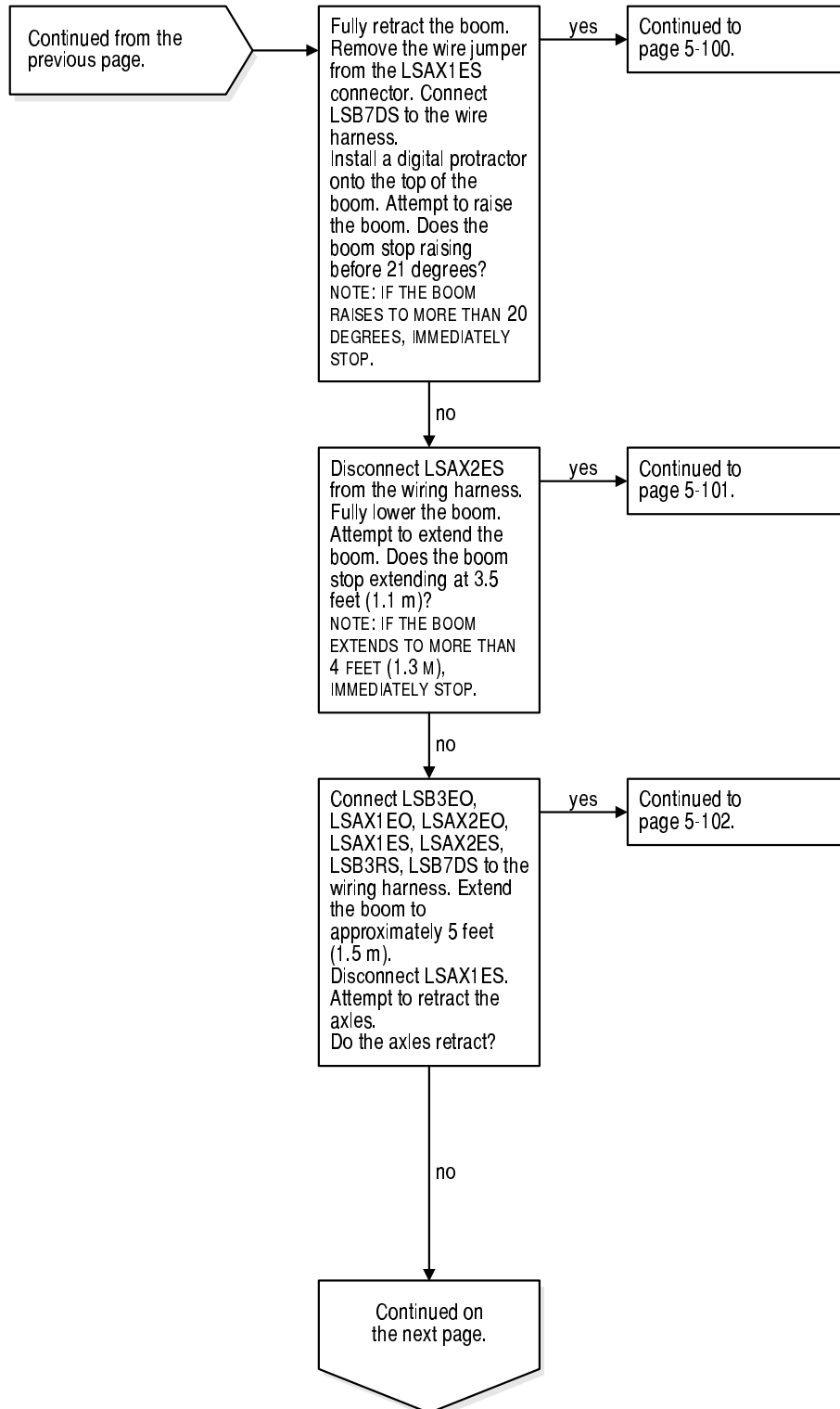


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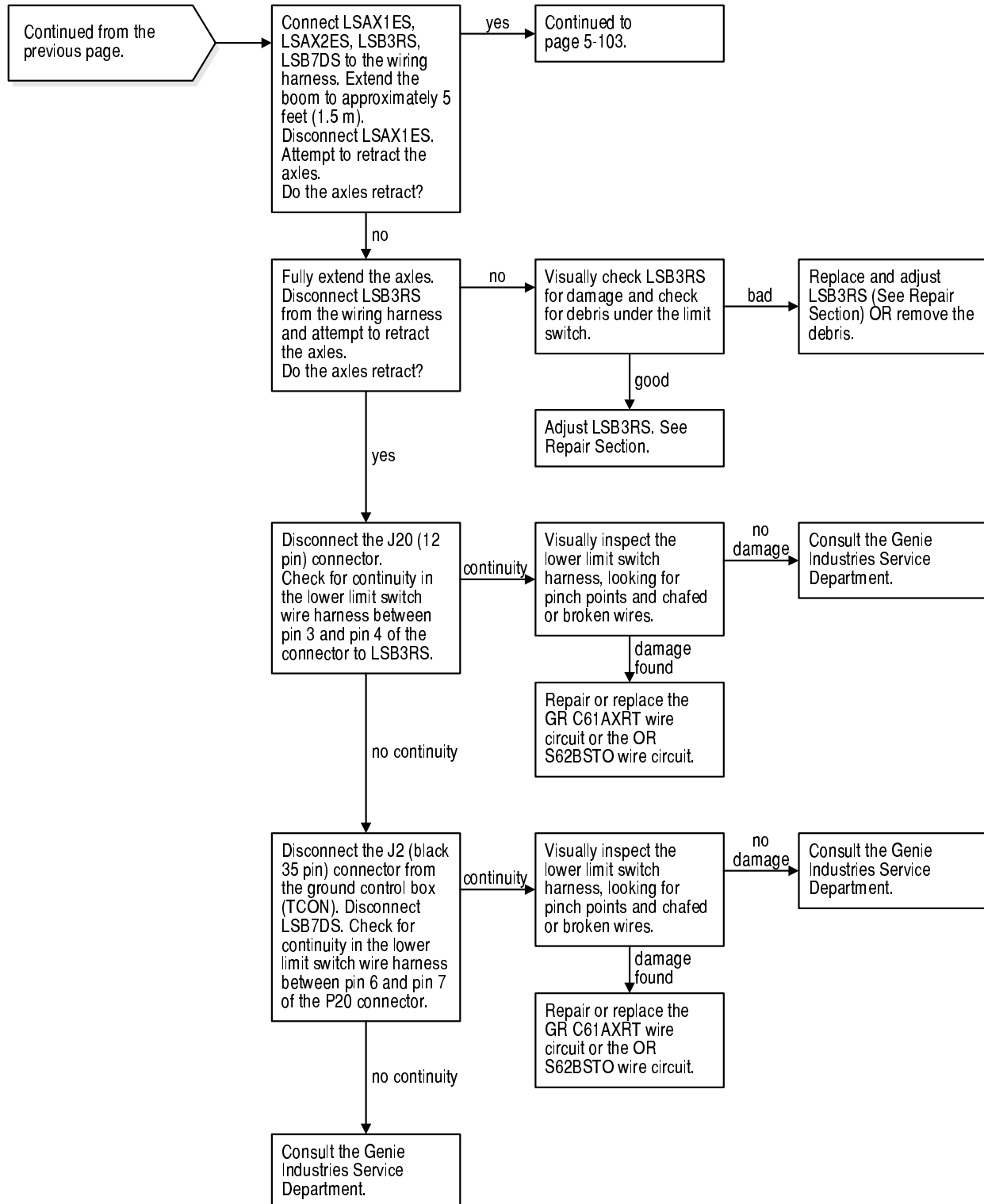


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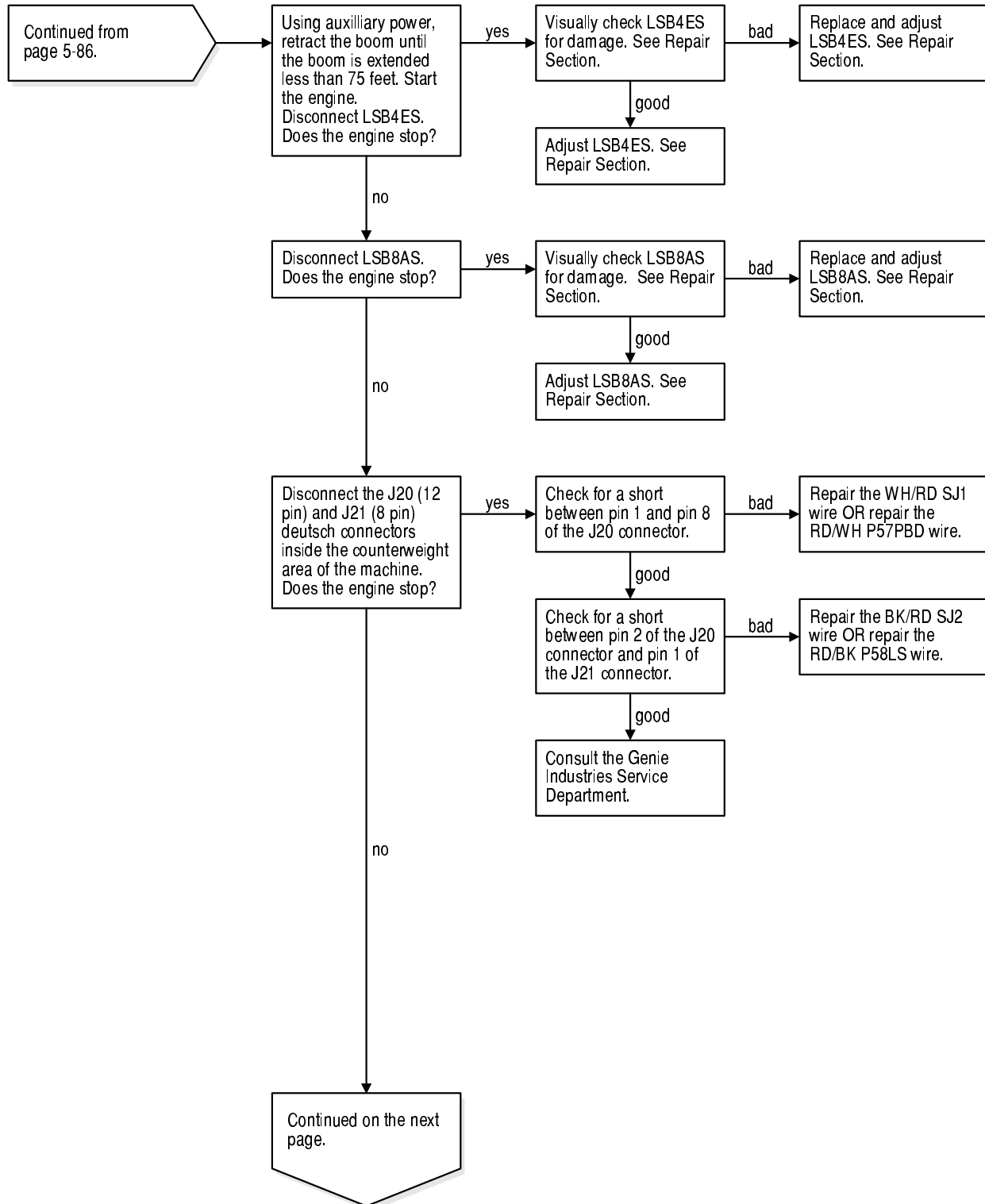


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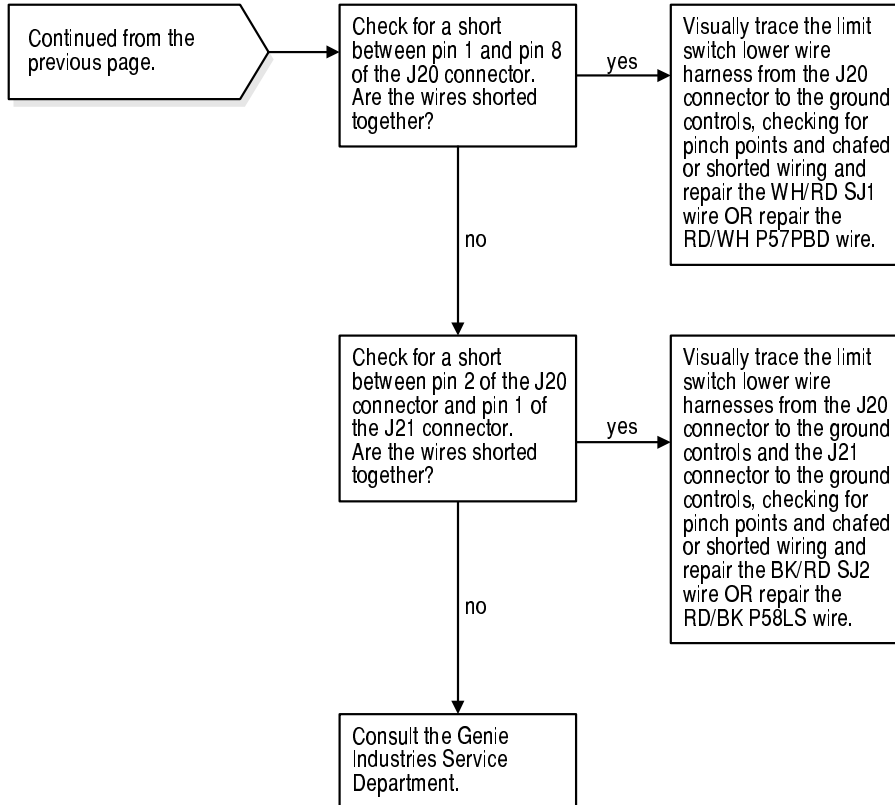


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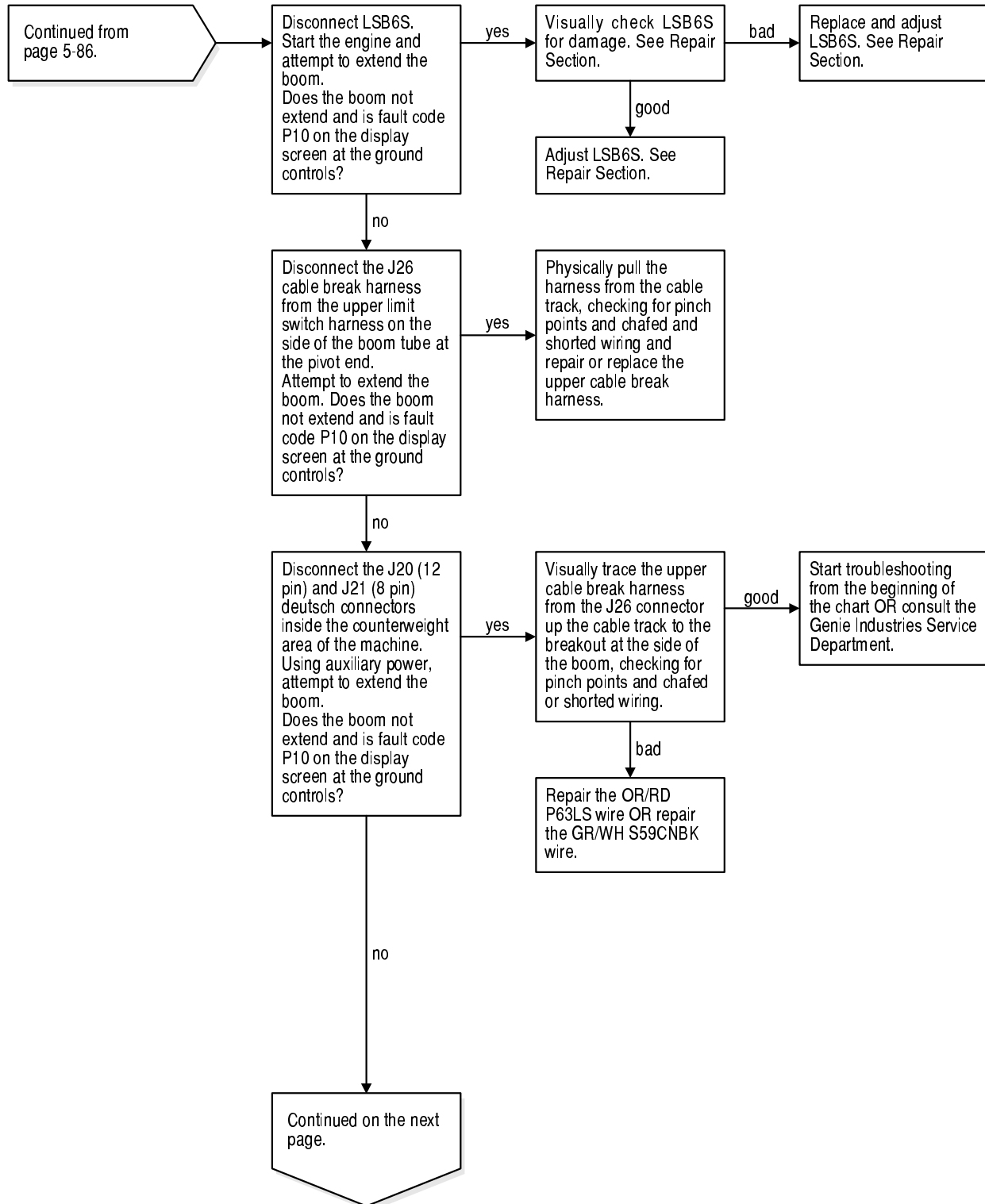


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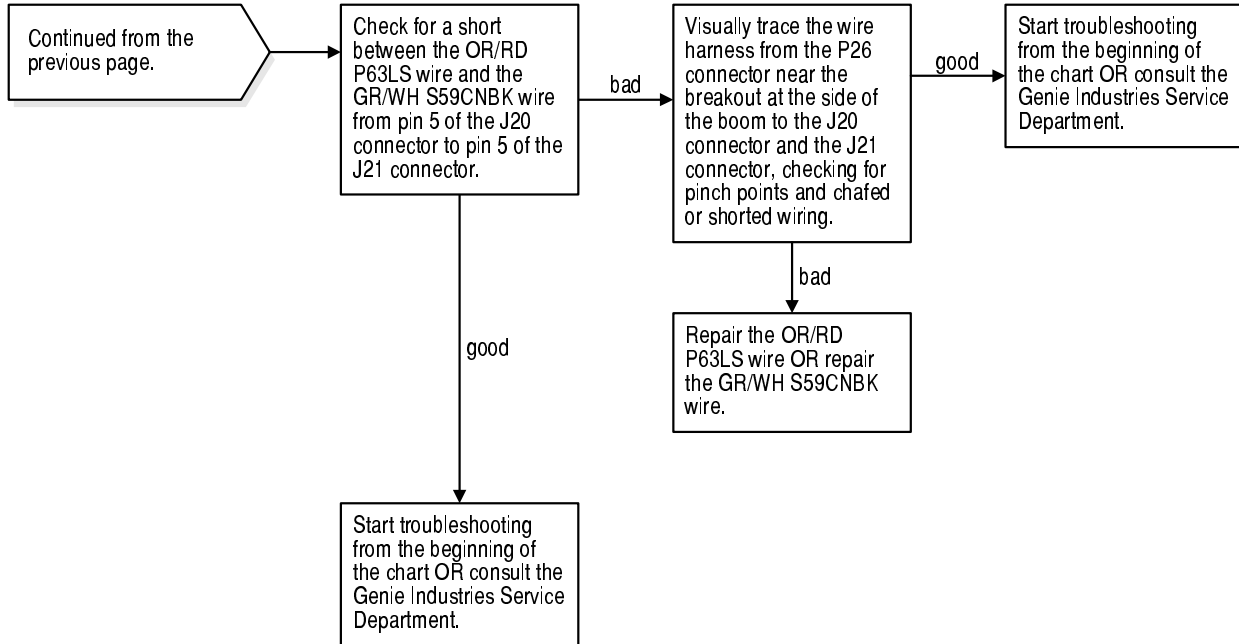


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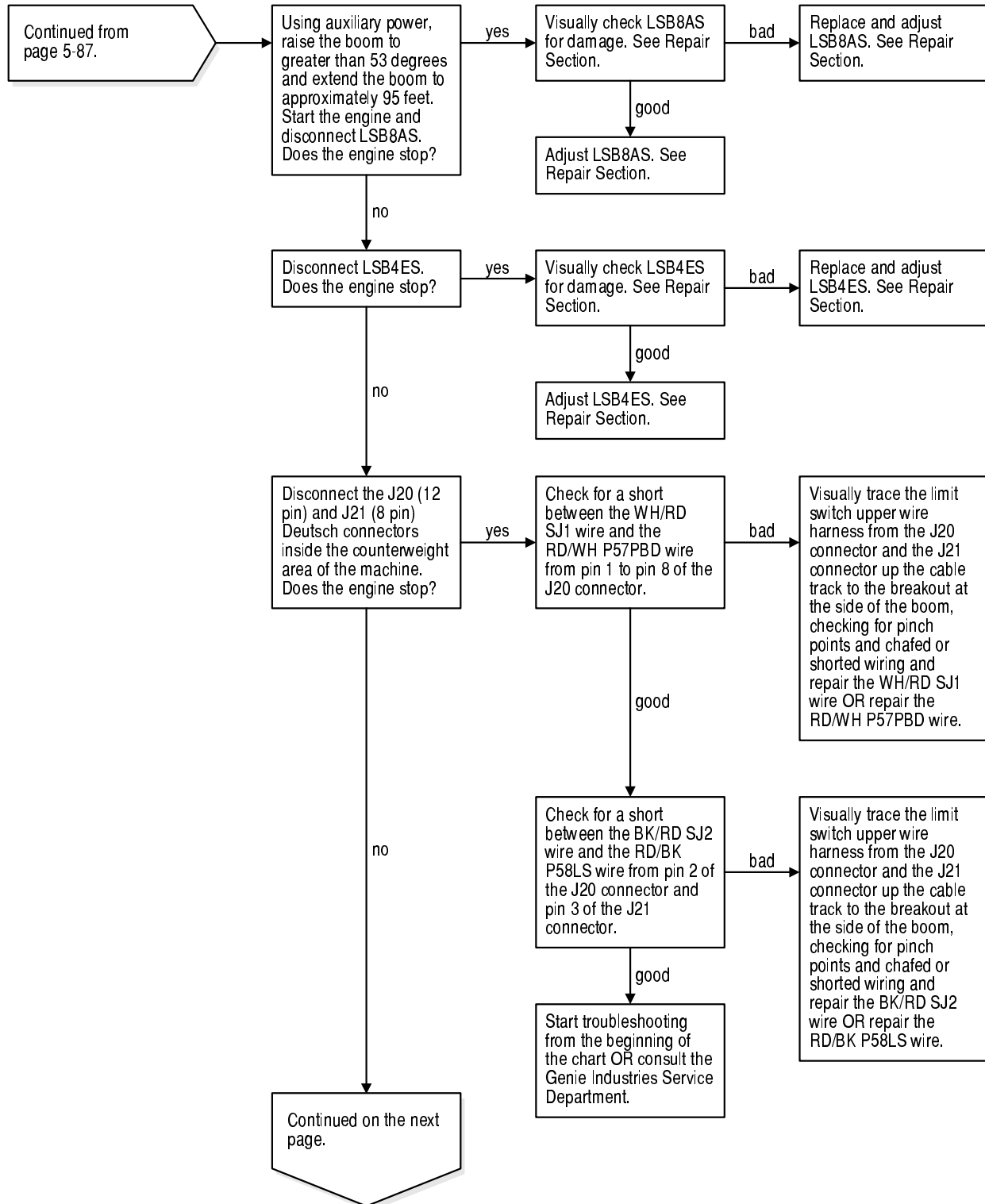


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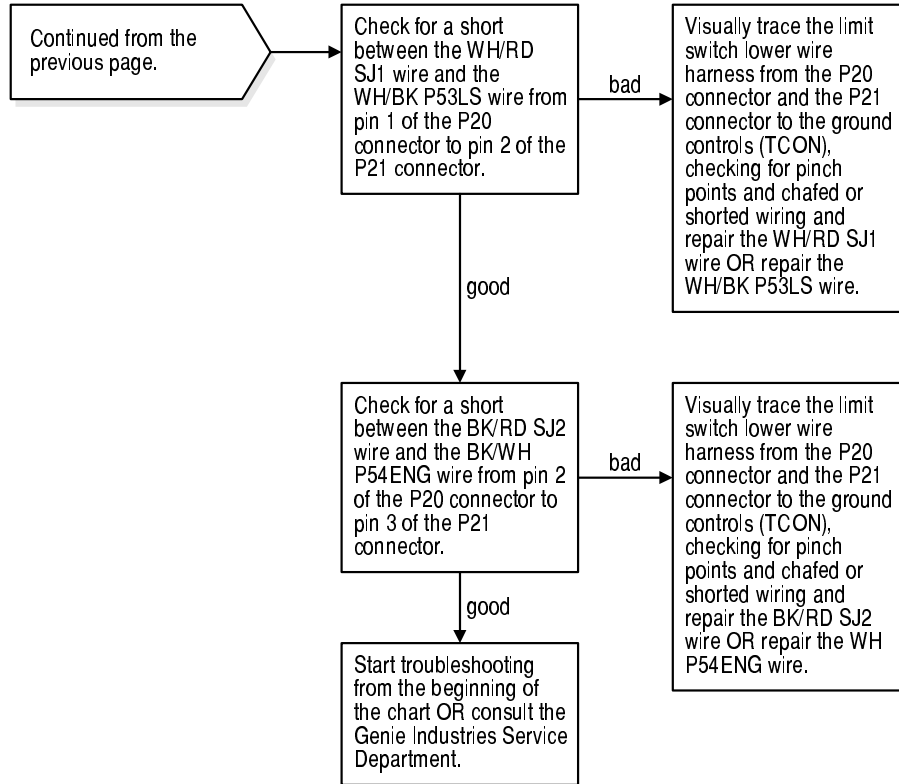


CHART 20

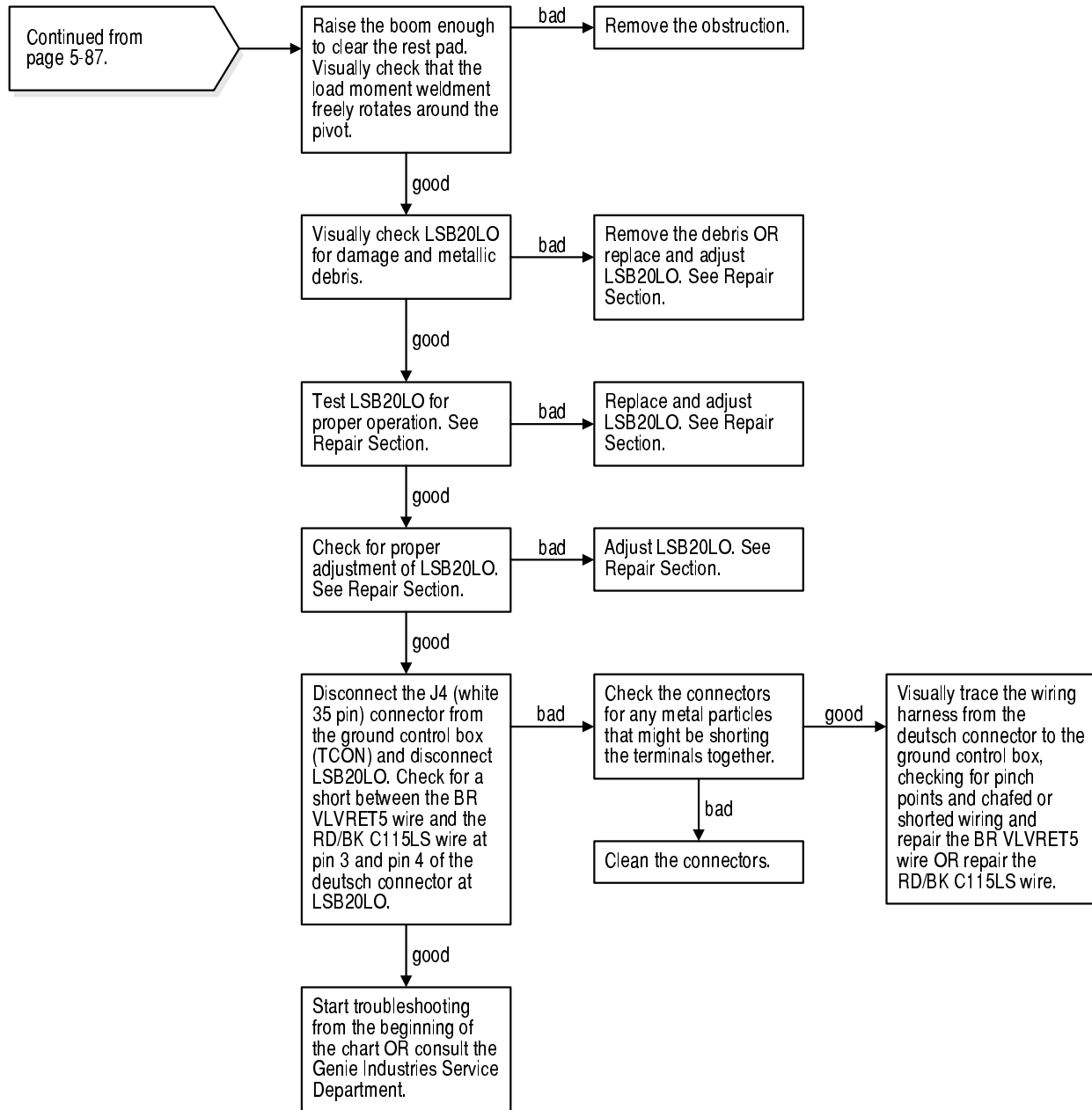


CHART 20

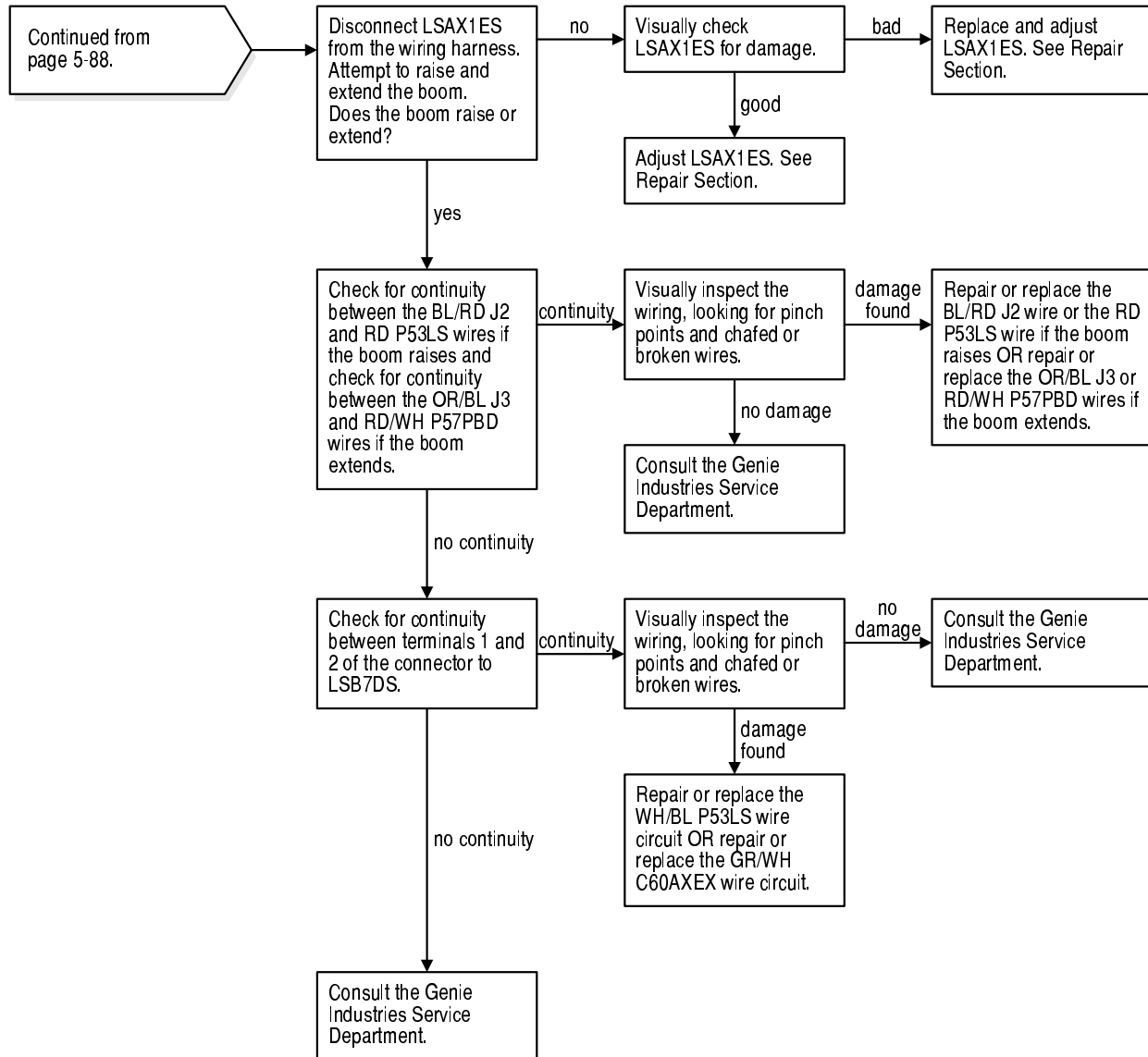


CHART 20

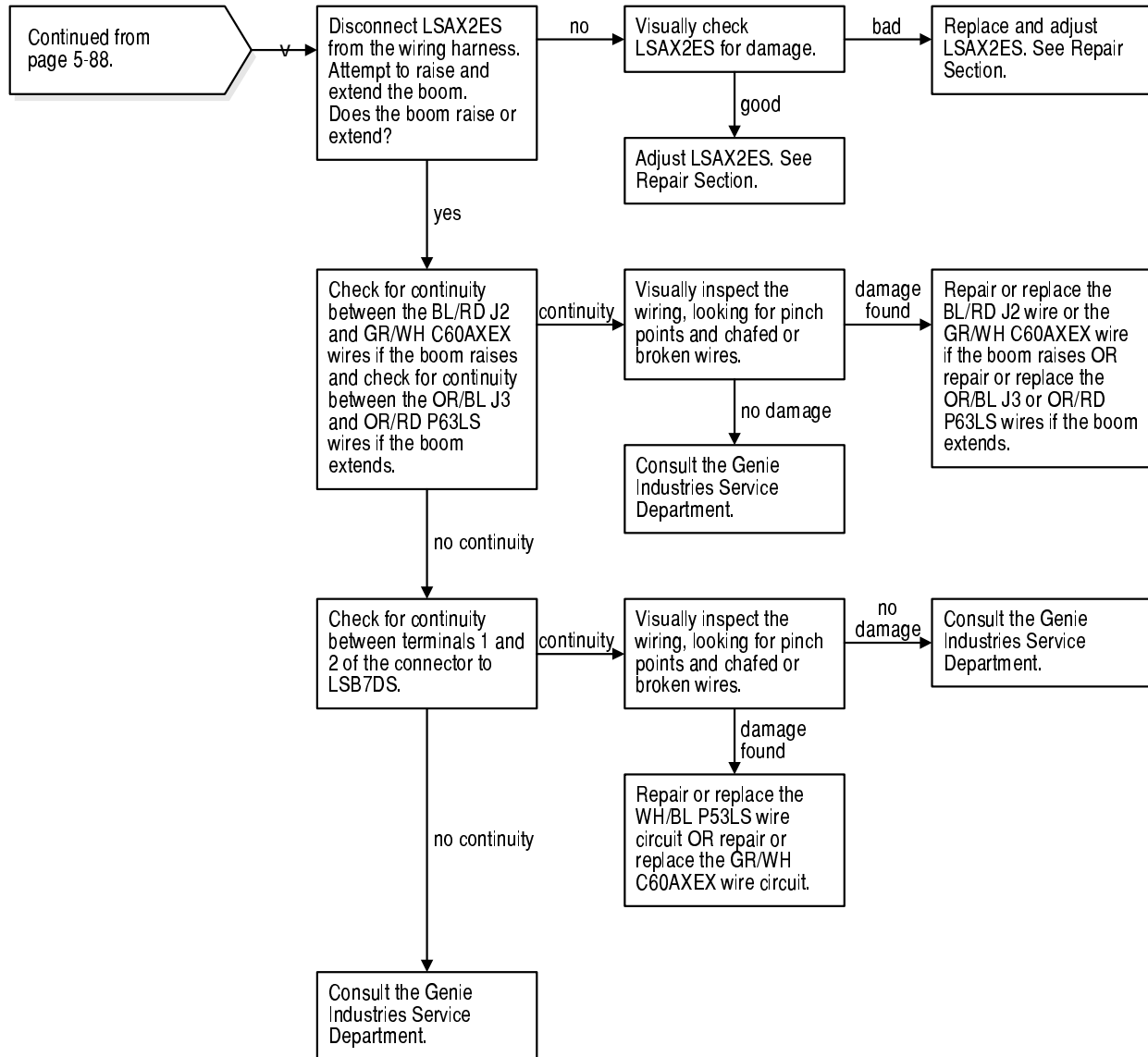


CHART 20

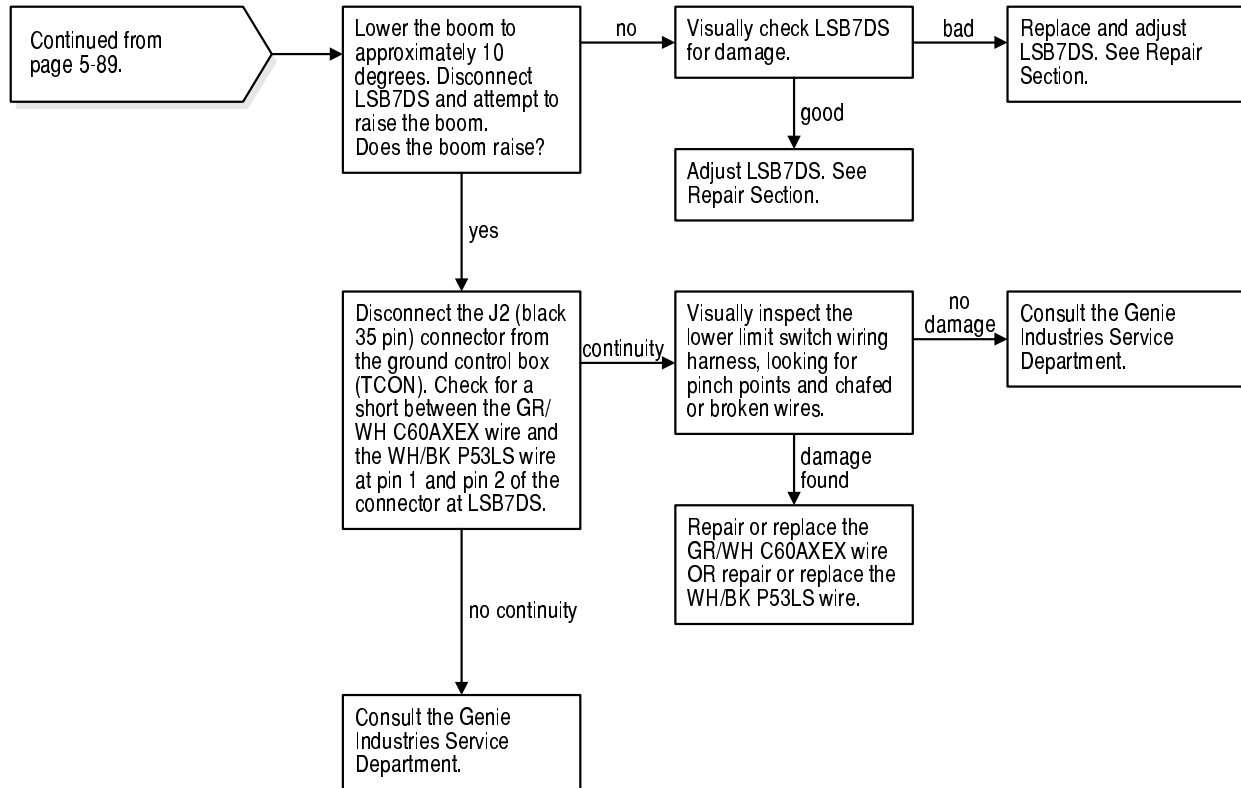


CHART 20

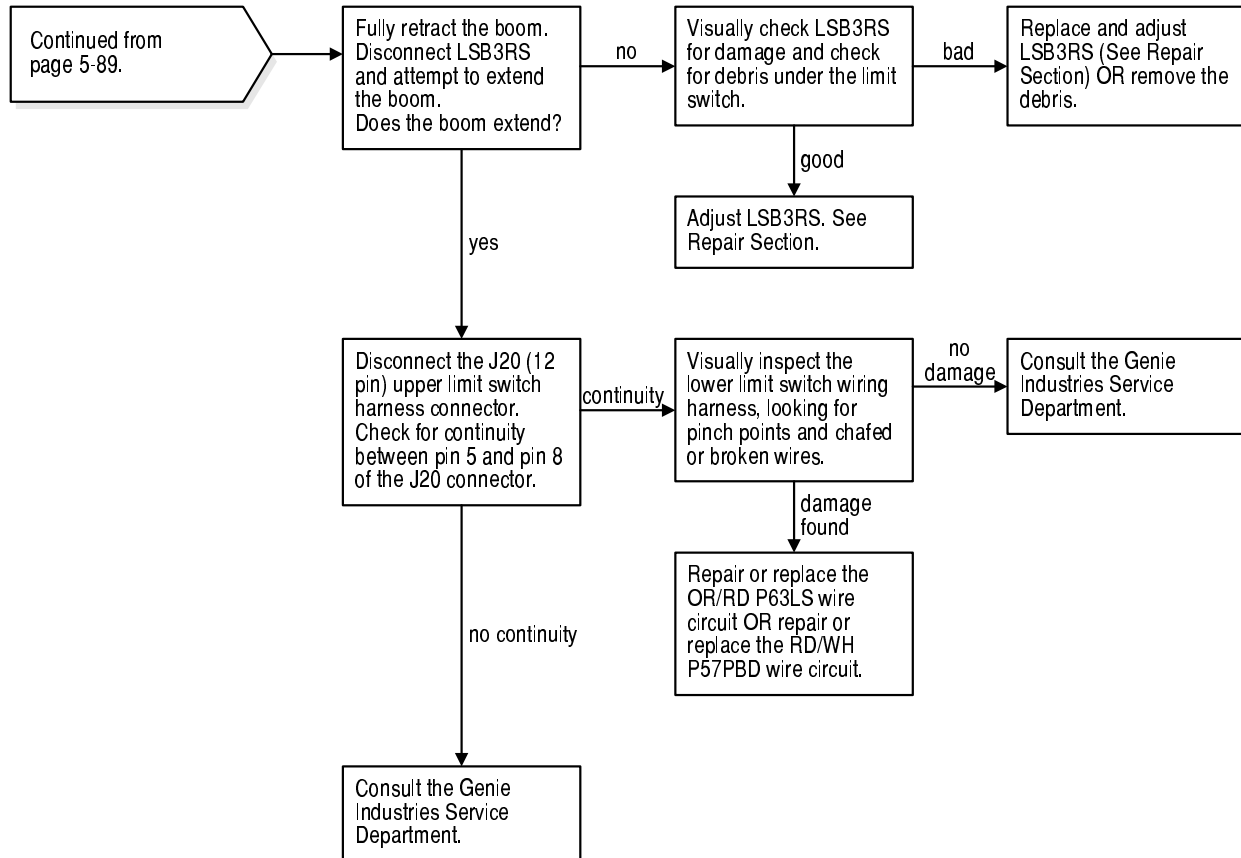


CHART 20

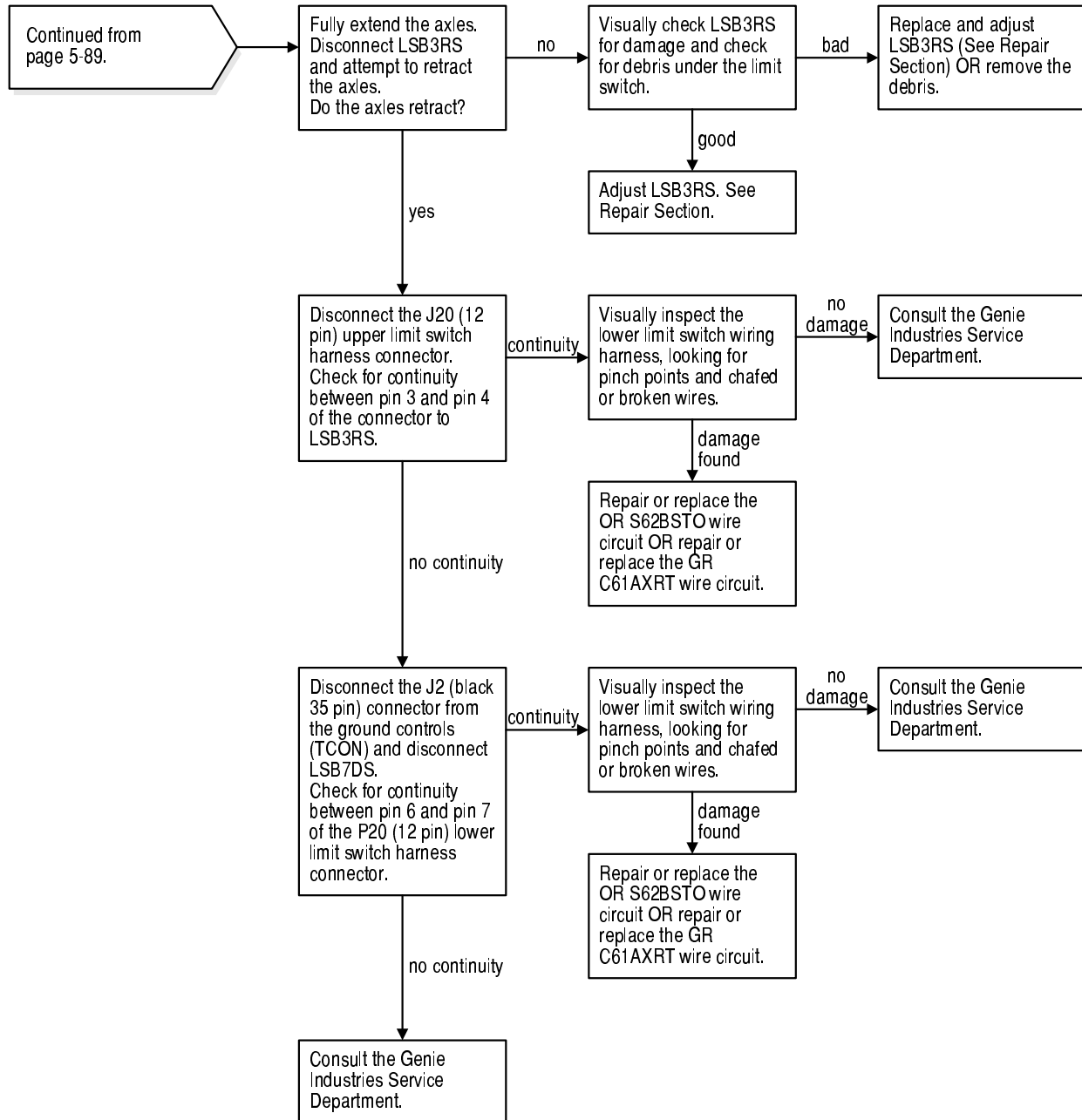


CHART 20

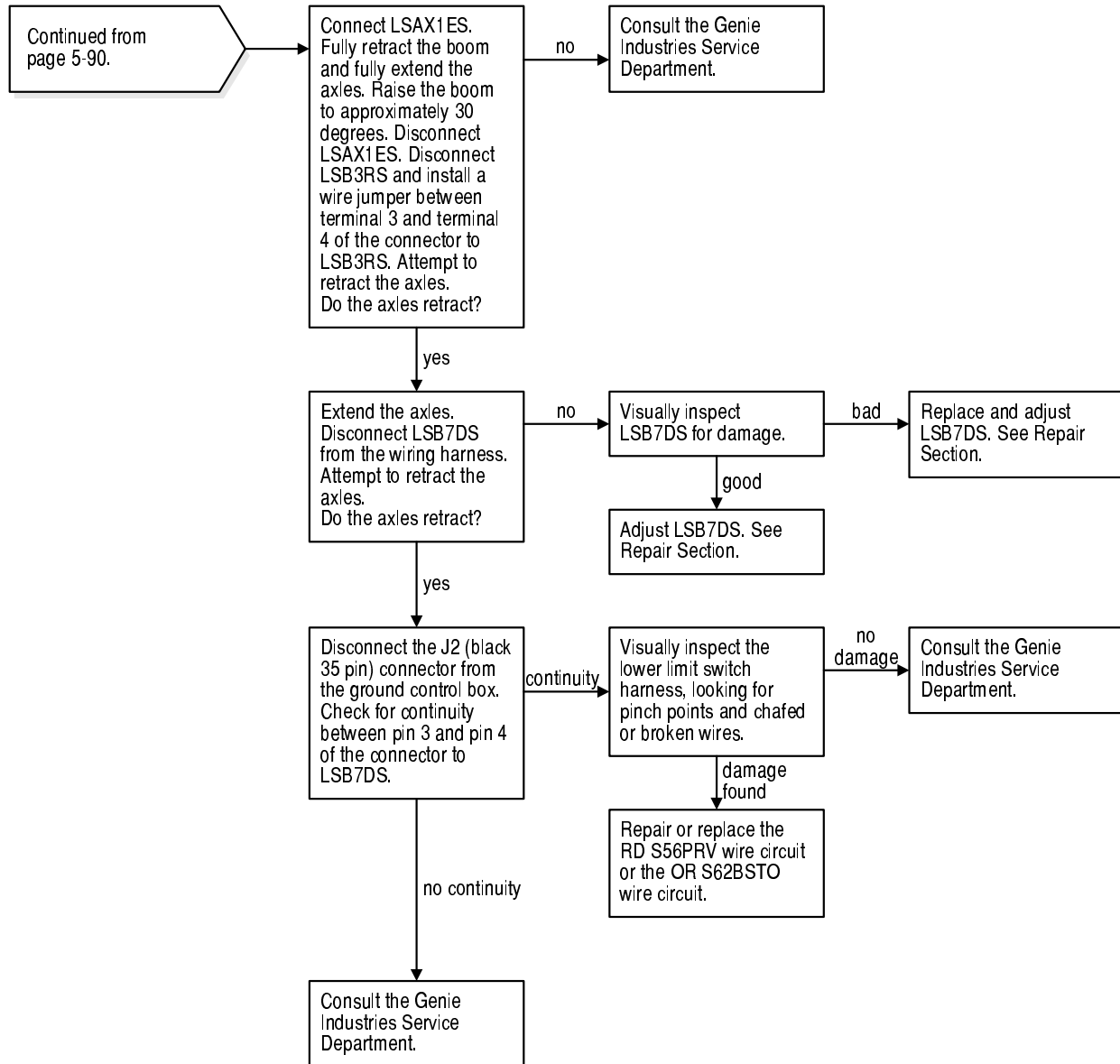


Chart 21

Boom Envelope Safety Switch Failure, S-120 and S-125 Models

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

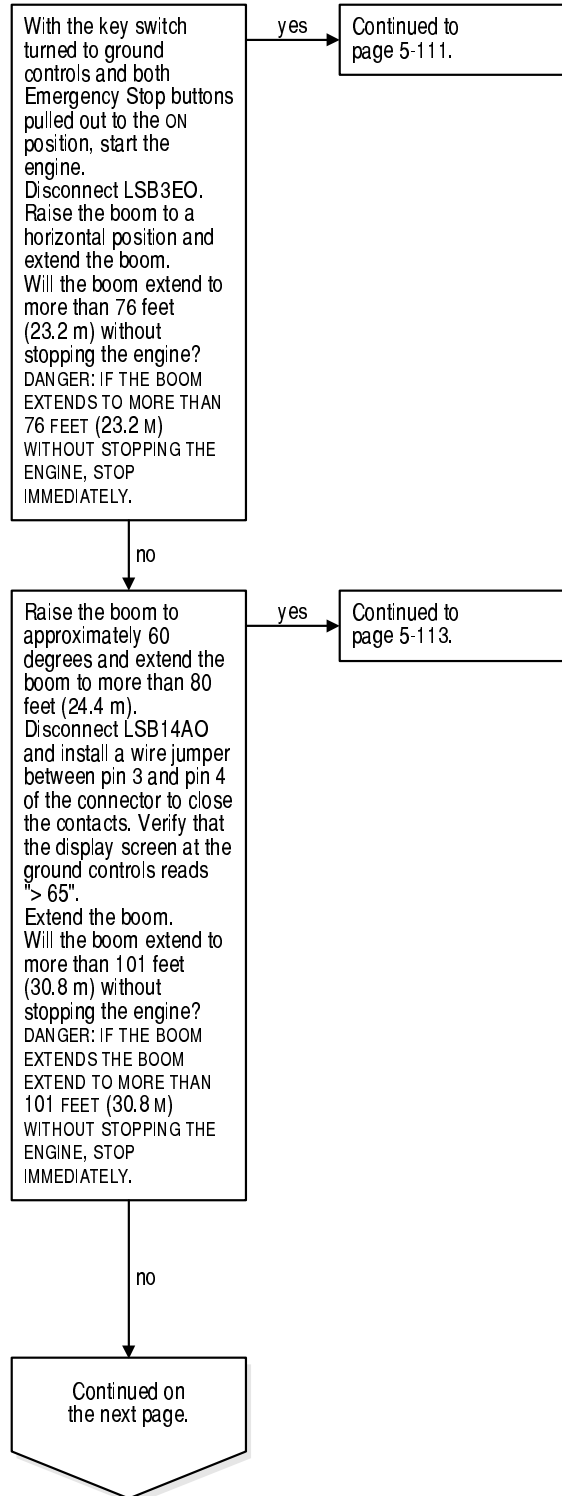


CHART 21

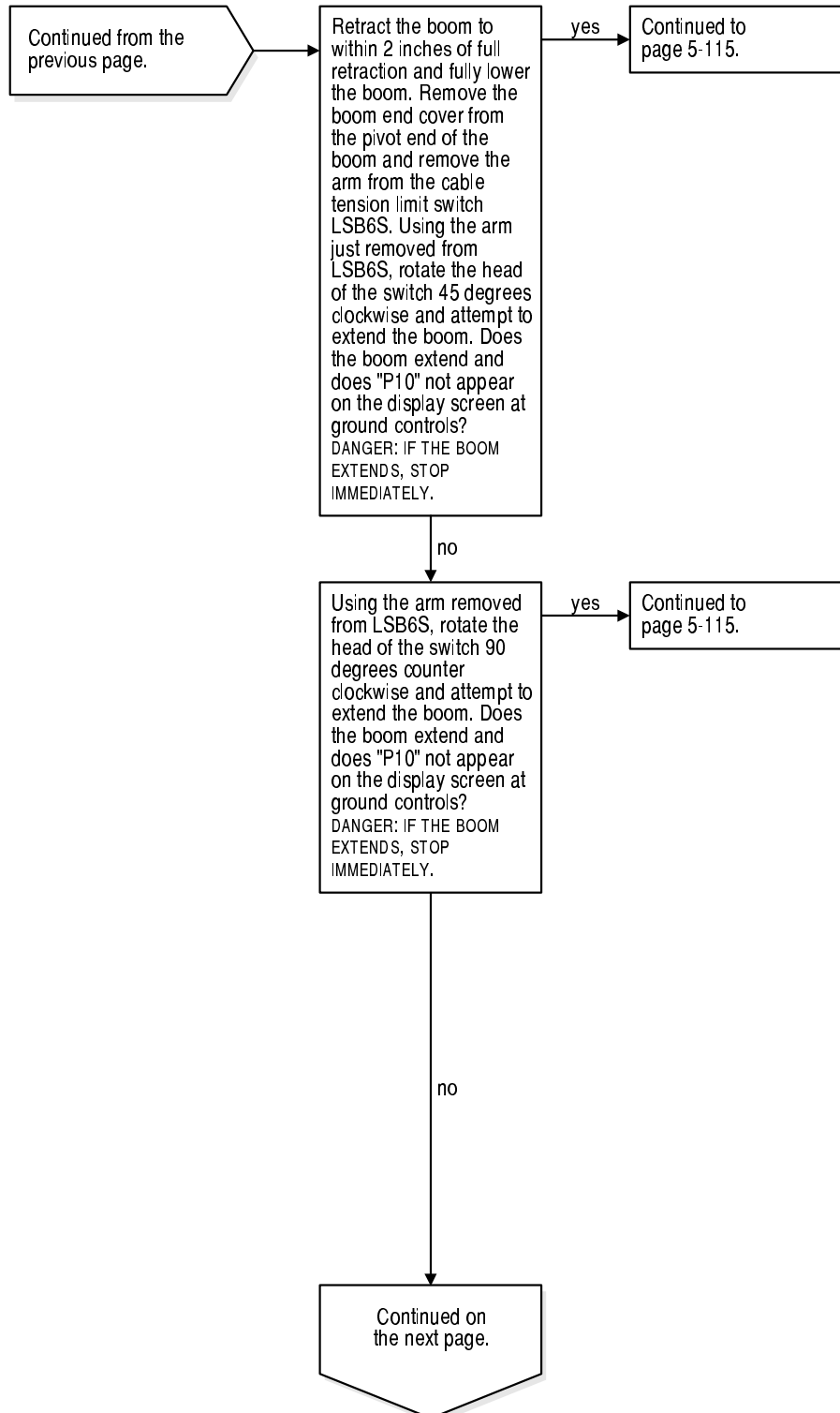


CHART 21

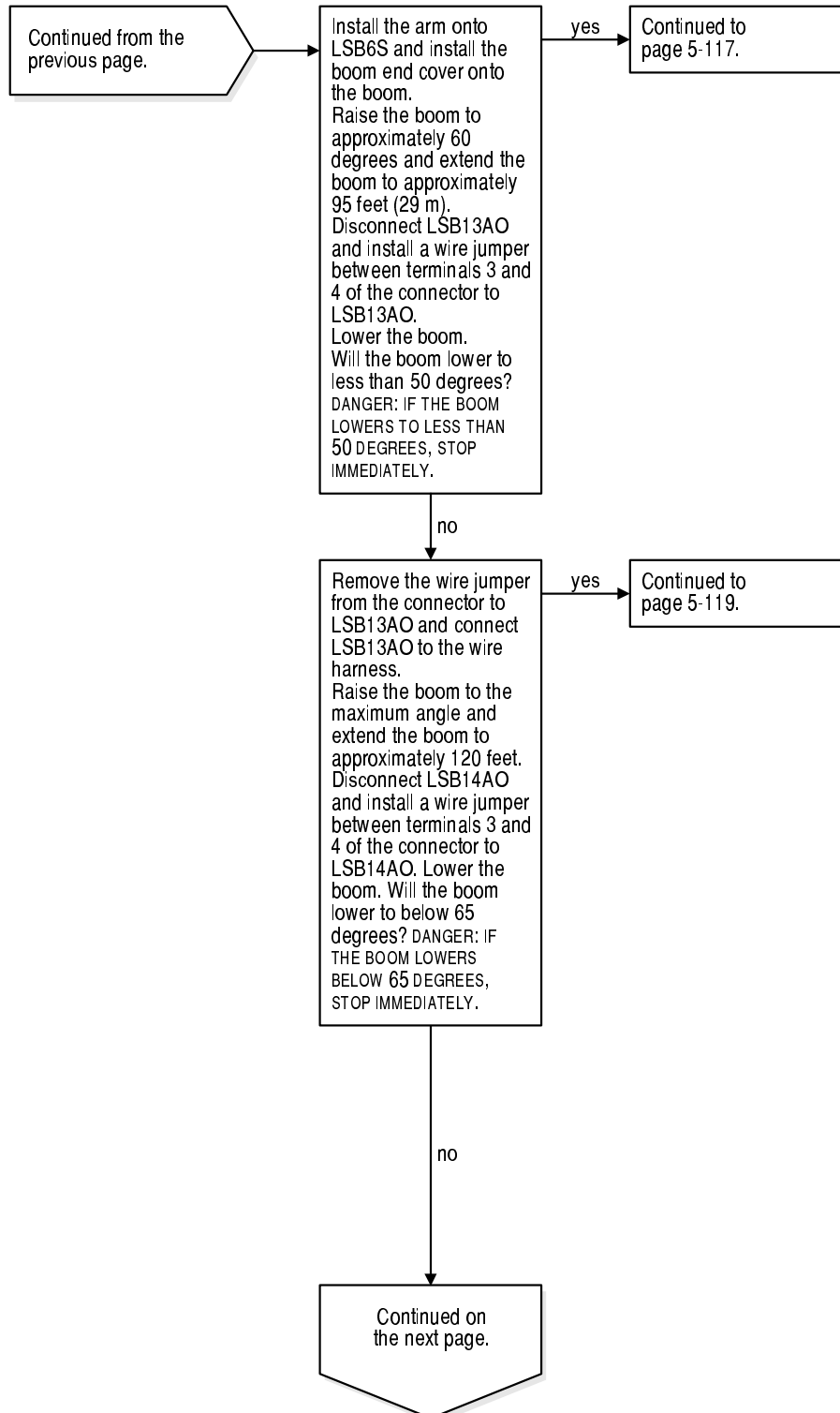


CHART 21

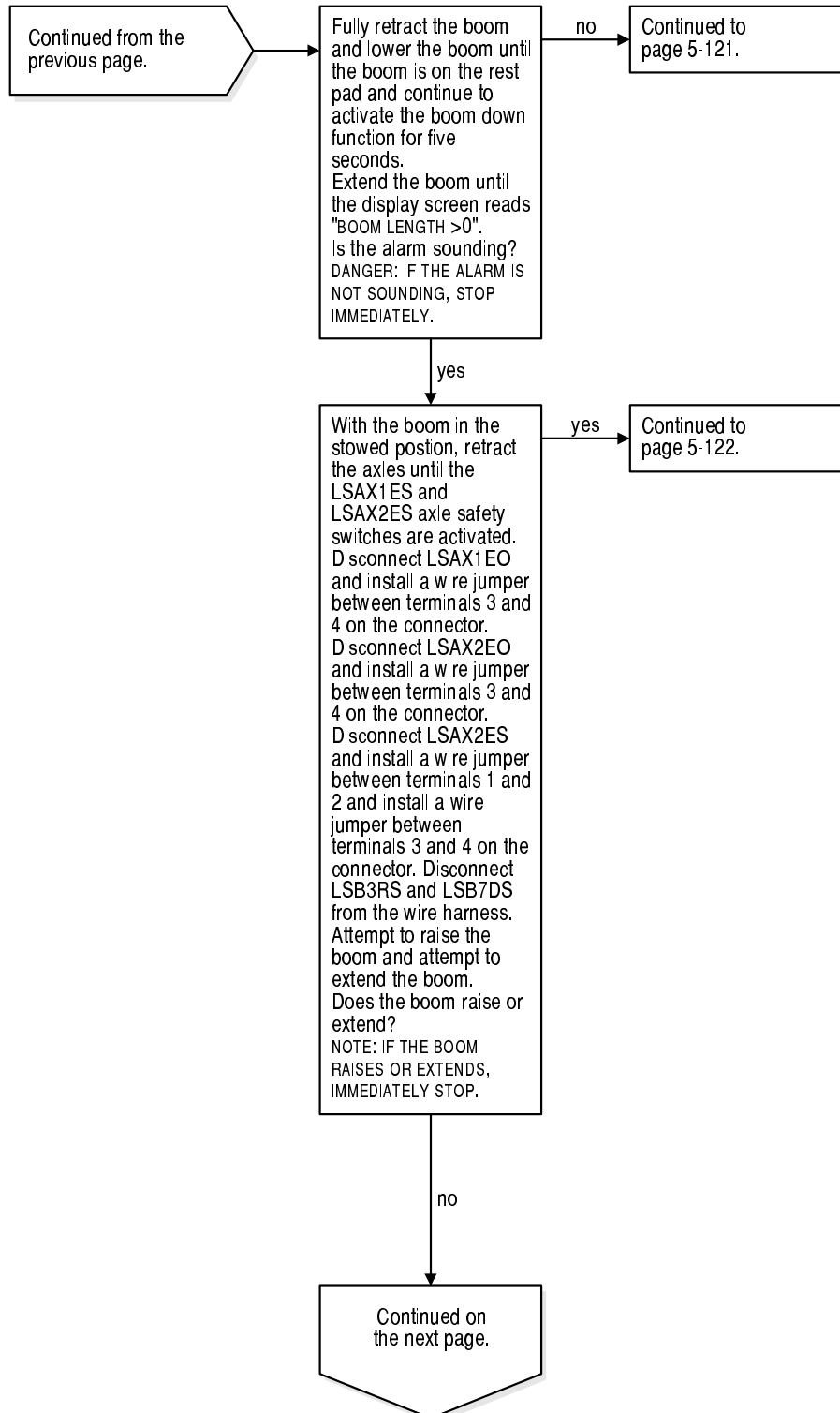


CHART 21

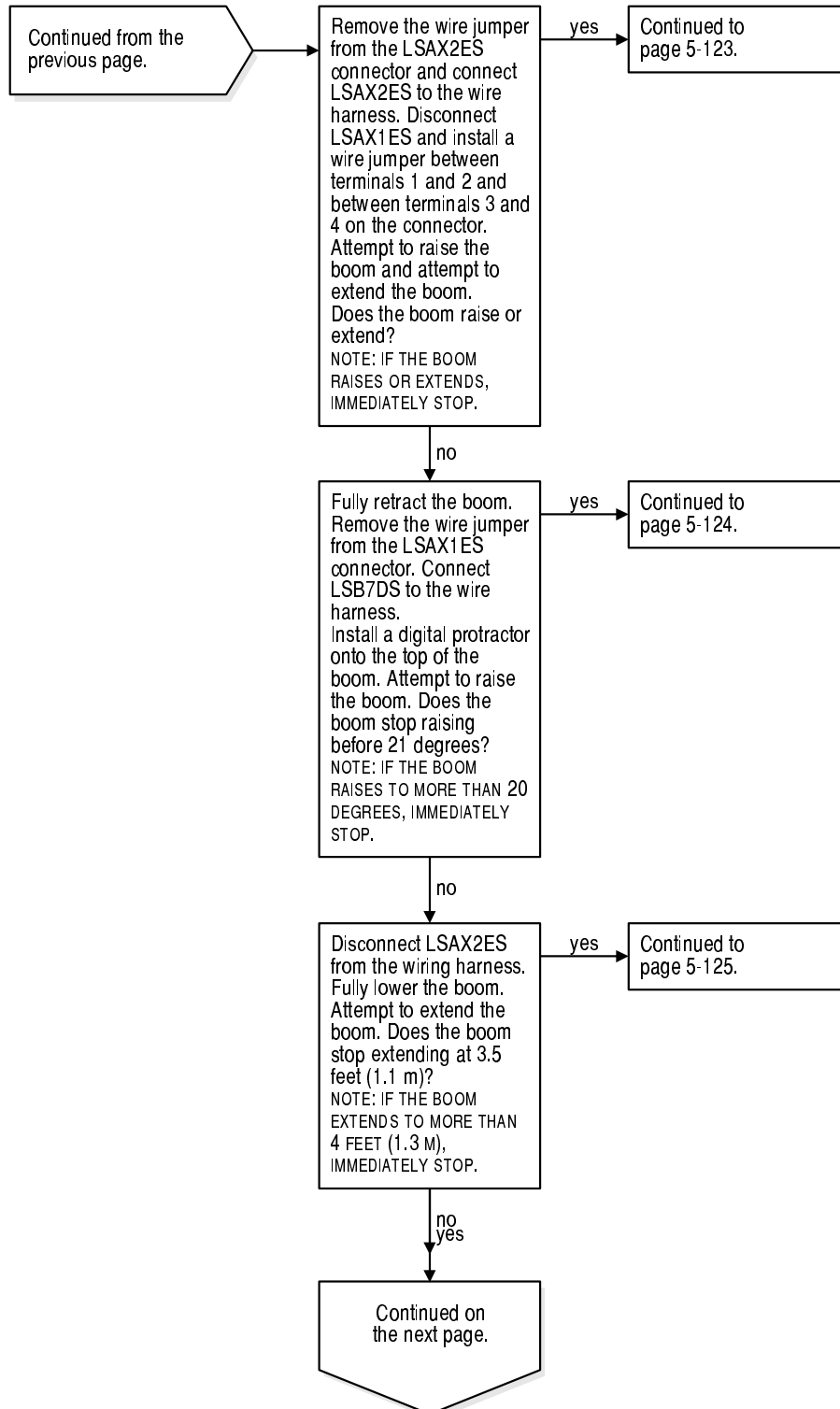


CHART 21

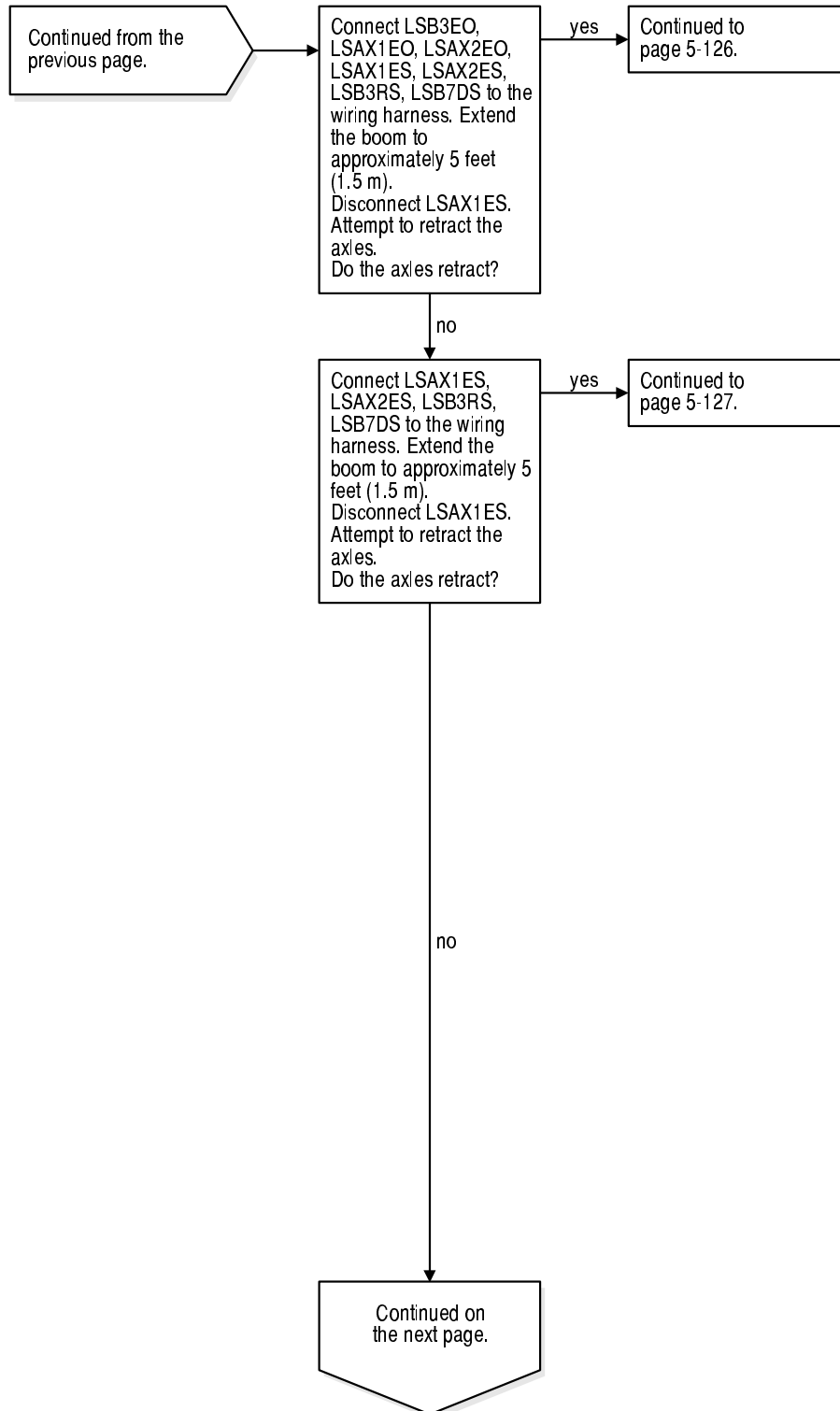


CHART 21

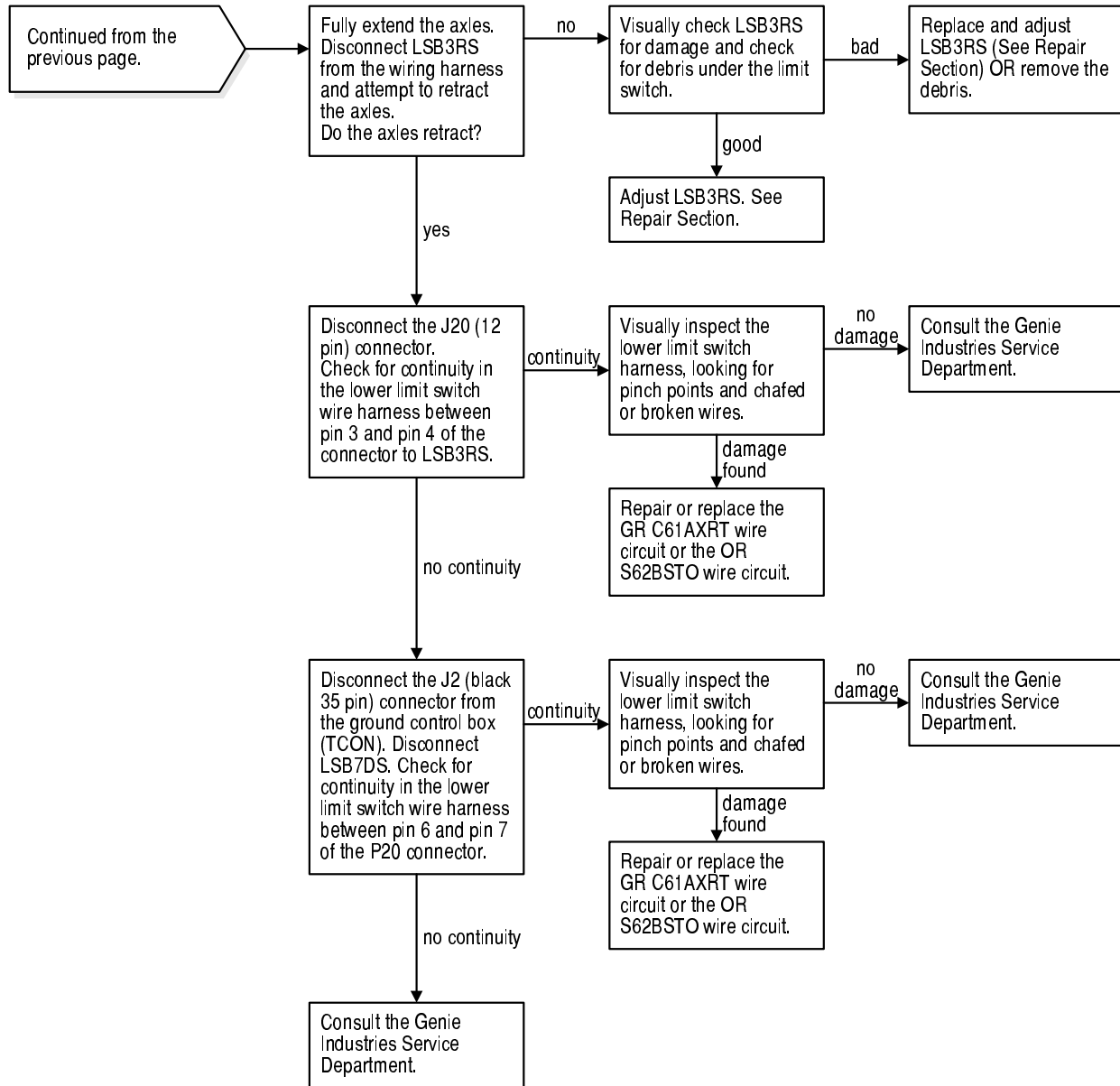


CHART 21

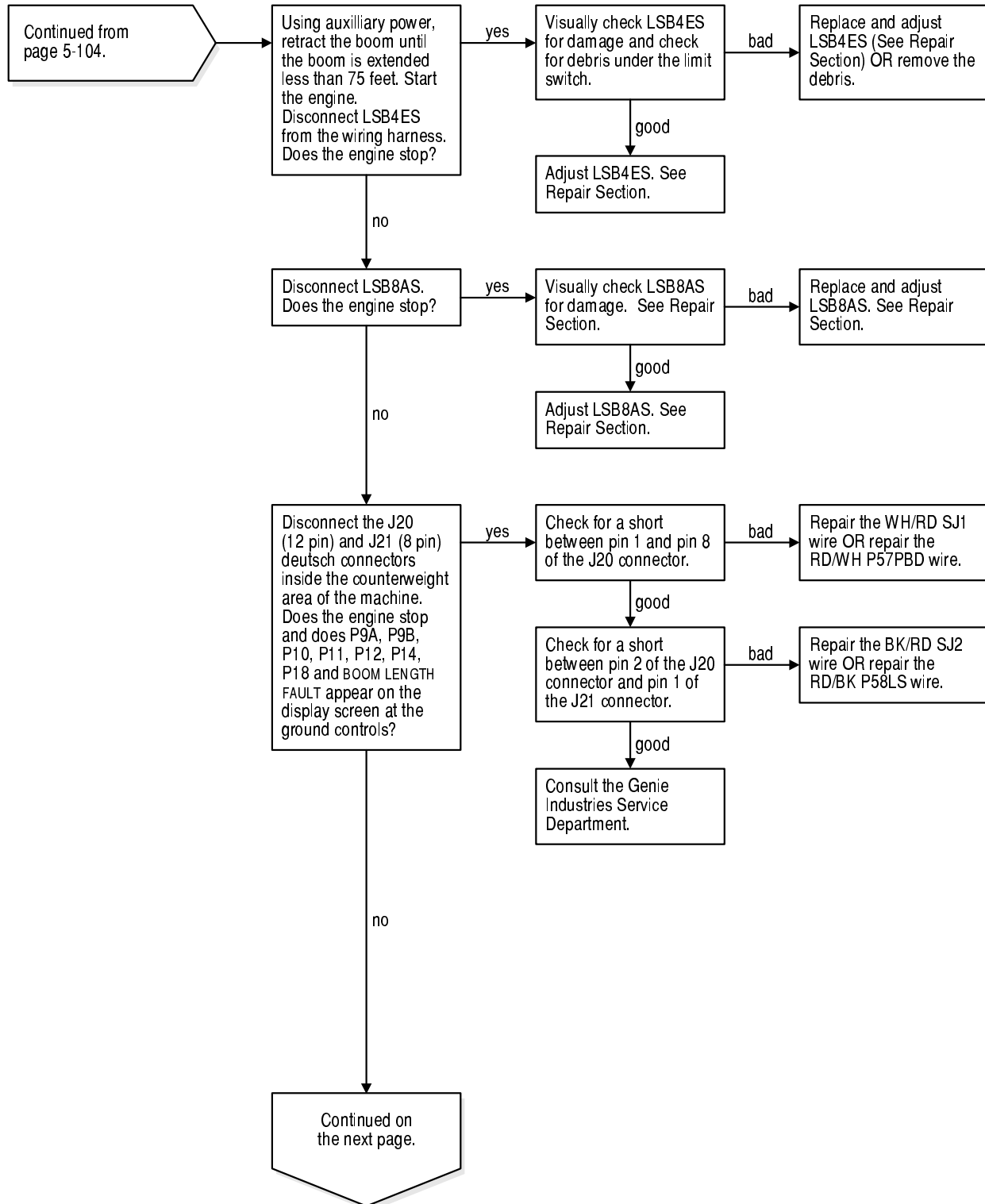


CHART 21

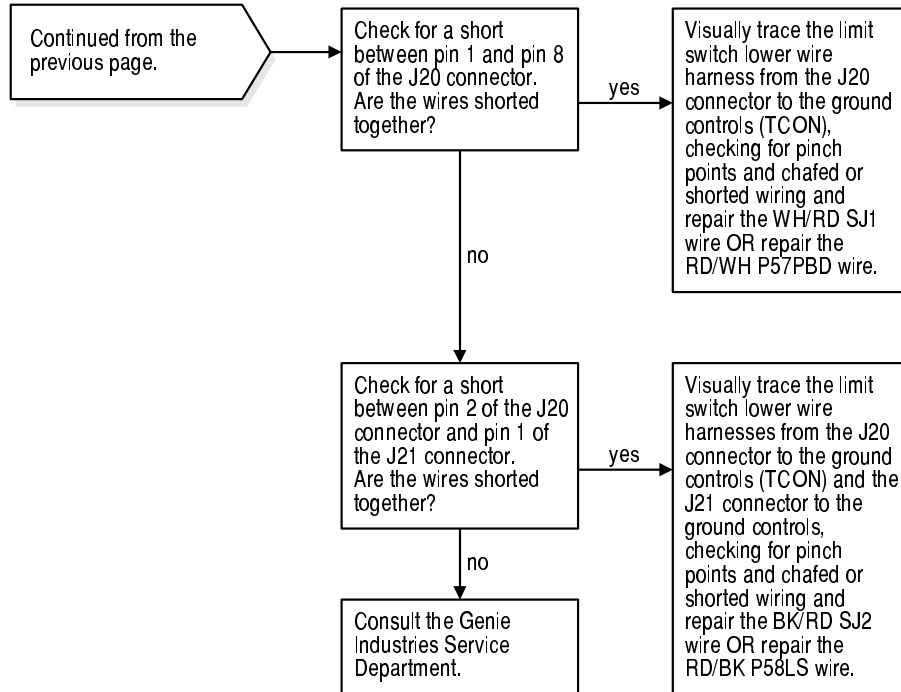


CHART 21

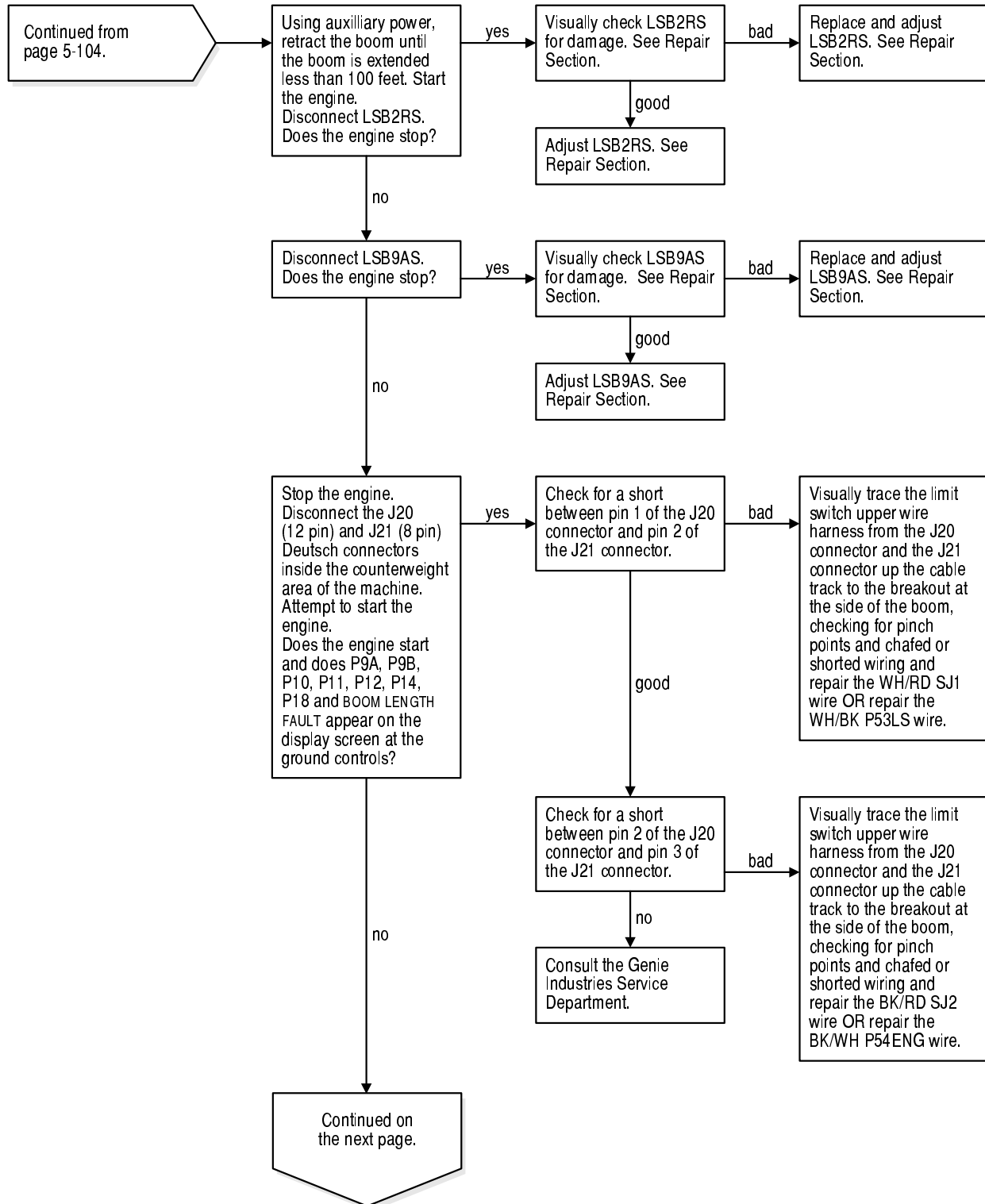


CHART 21

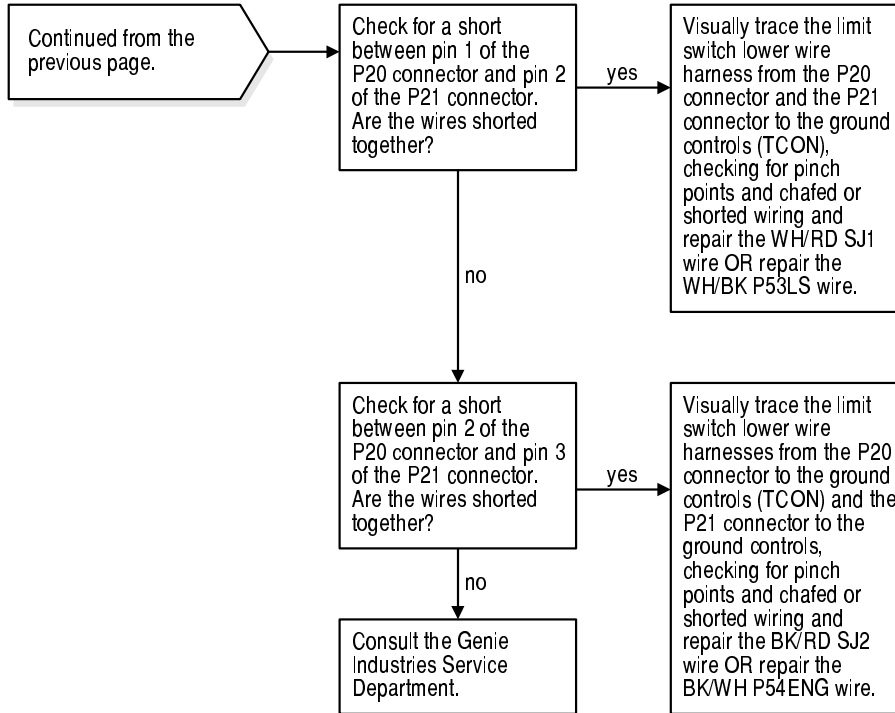


CHART 21

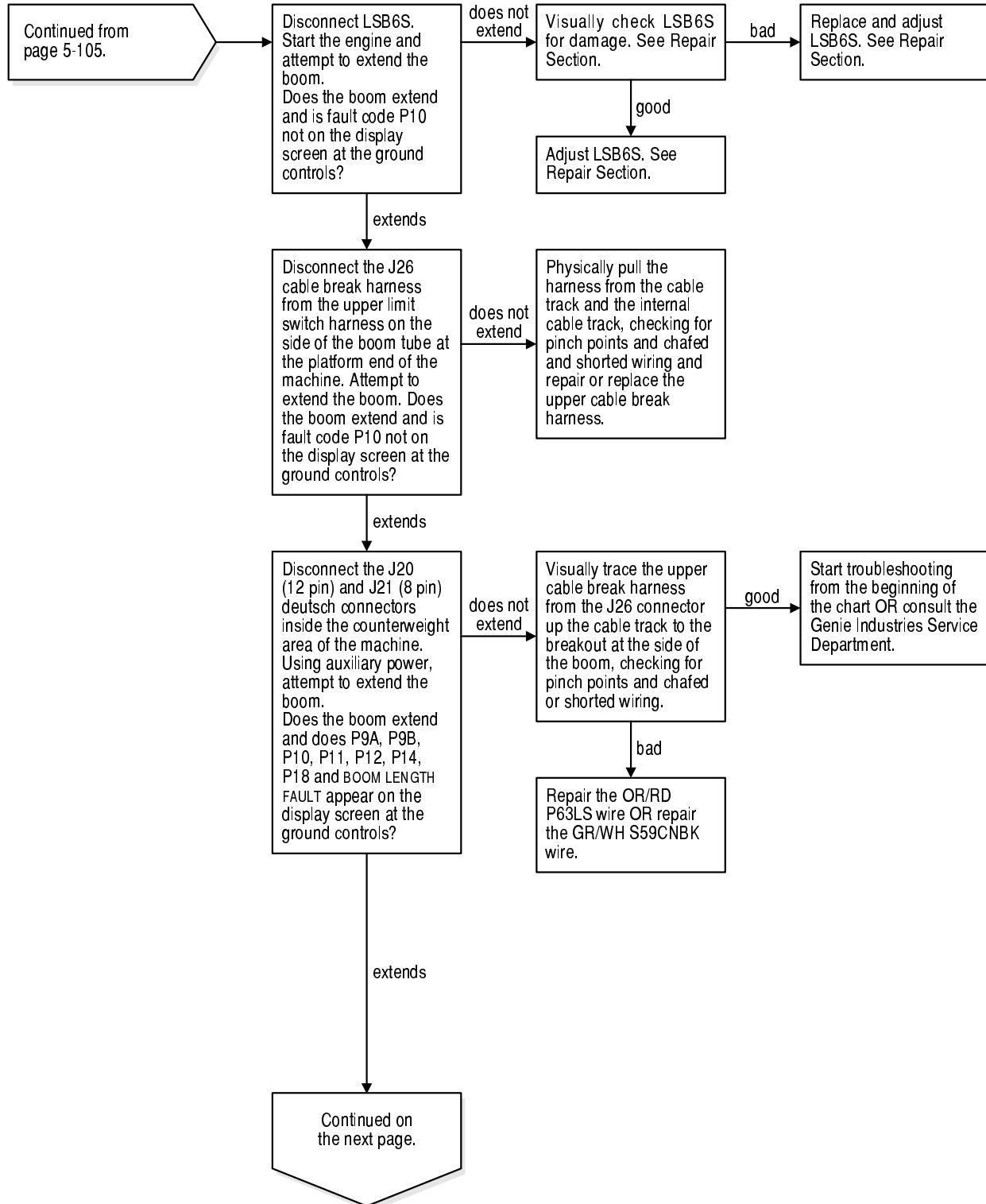


CHART 21

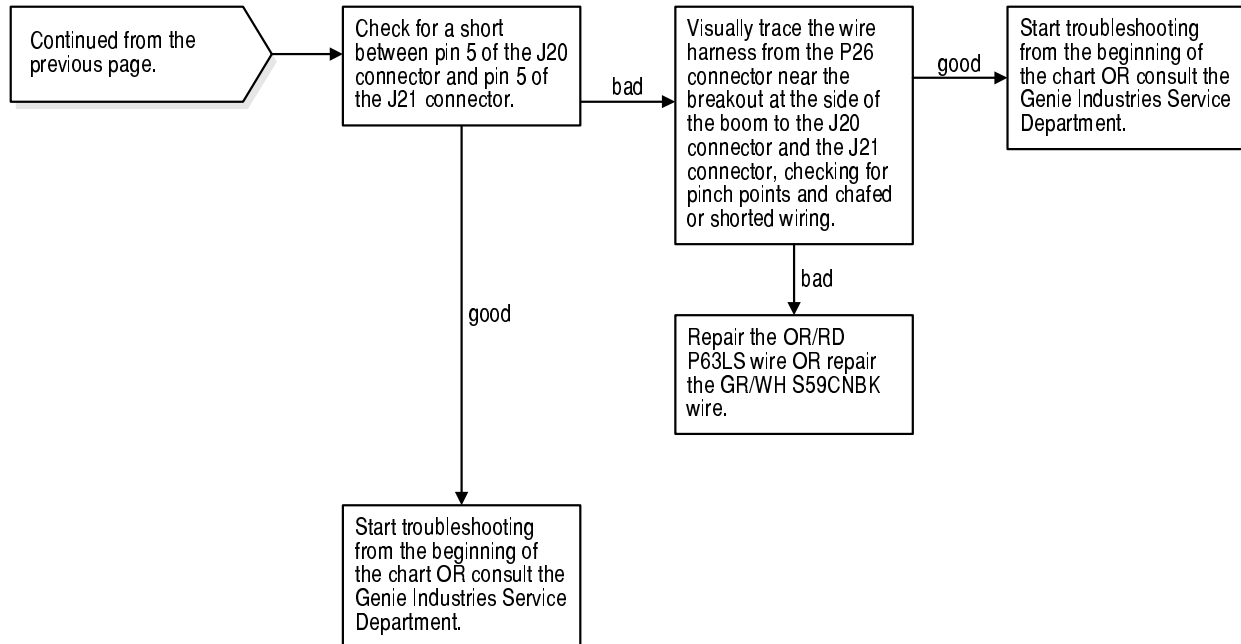


CHART 21

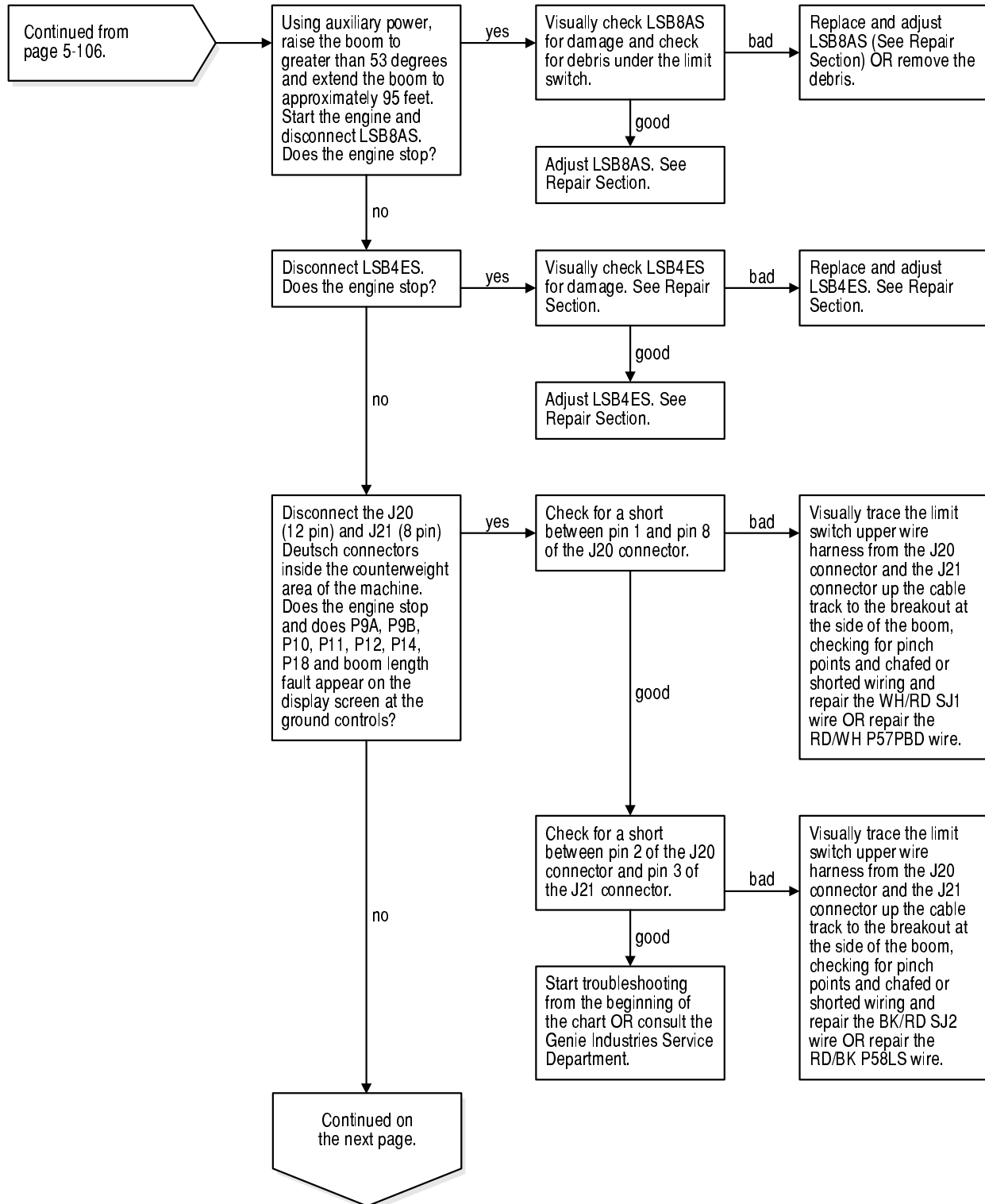


CHART 21

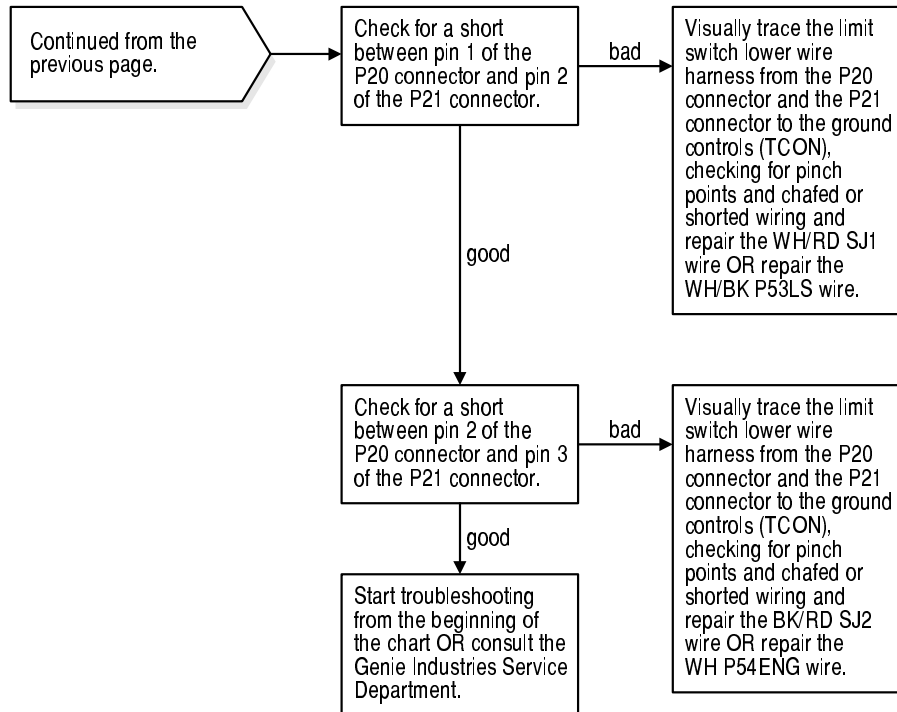


CHART 21

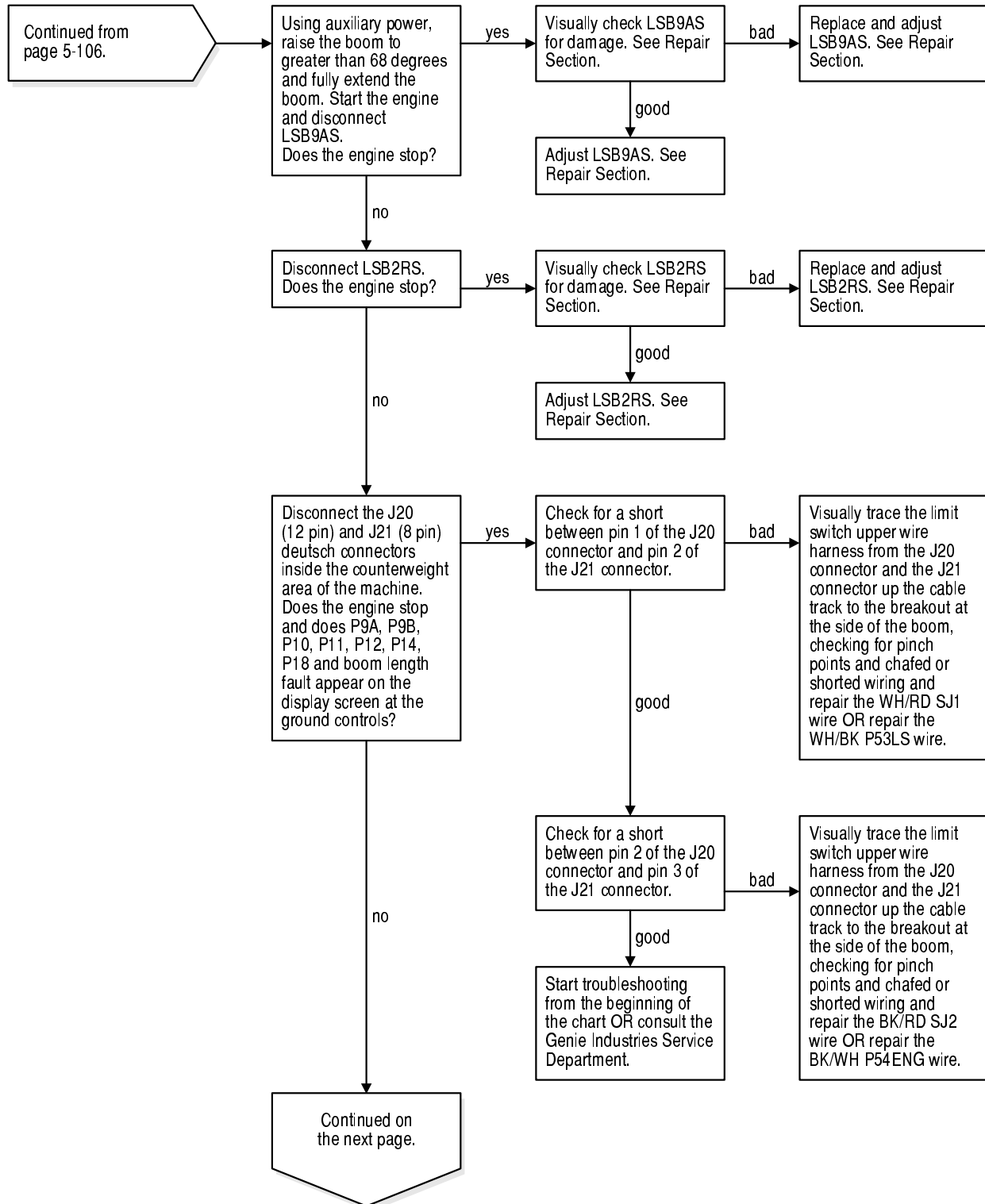


CHART 21

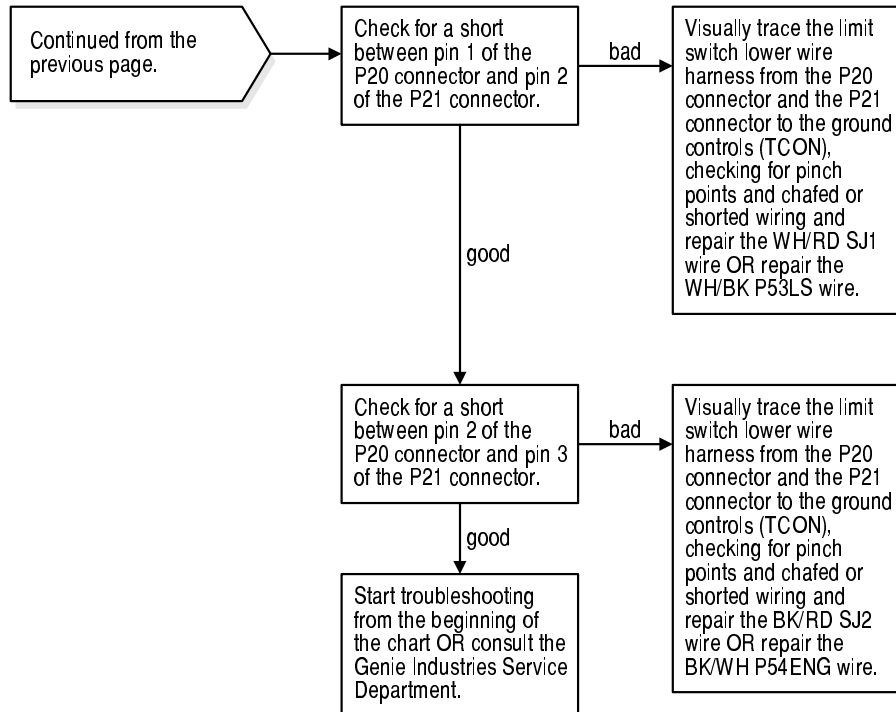


CHART 21

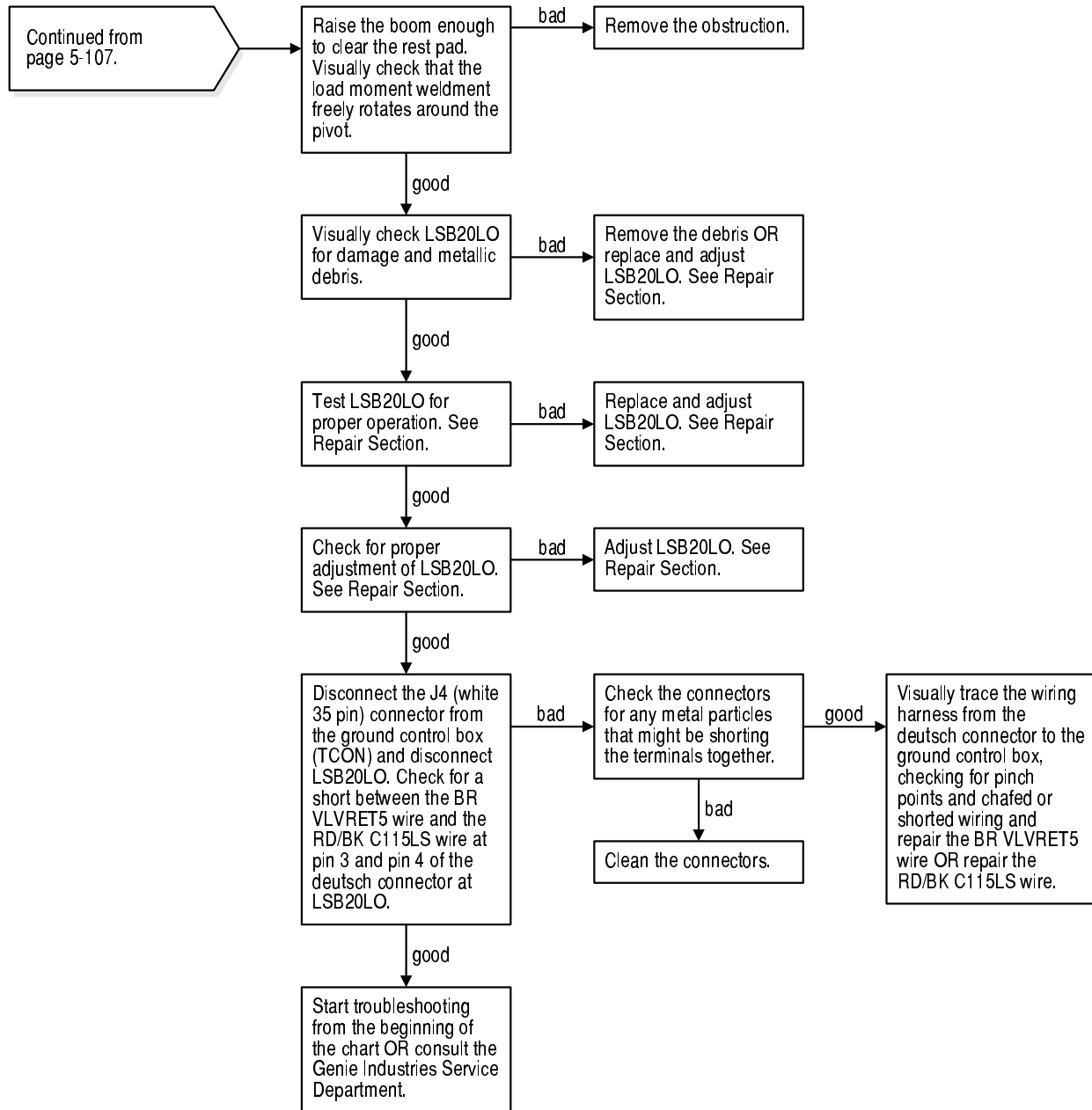


CHART 21

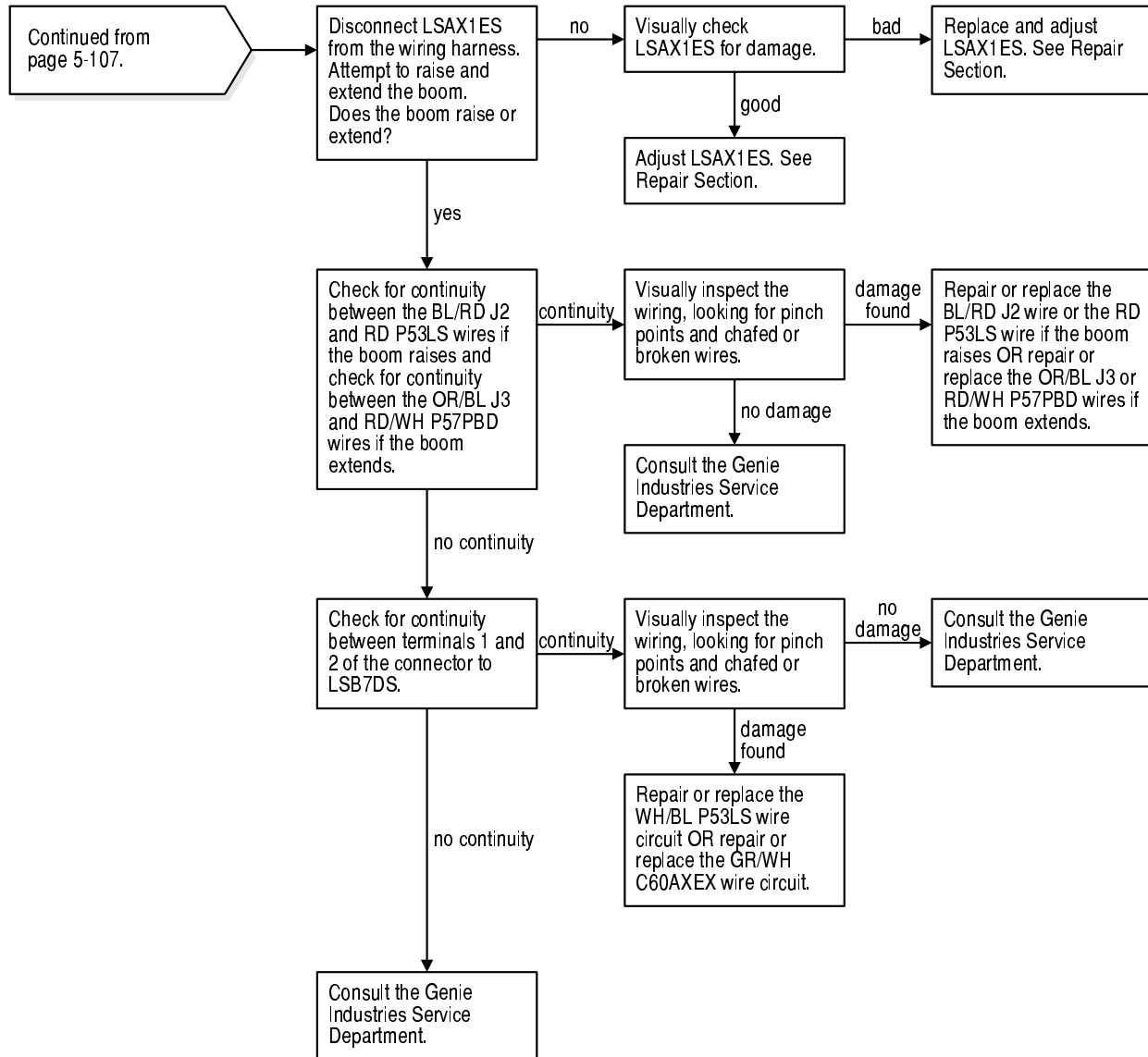


CHART 21

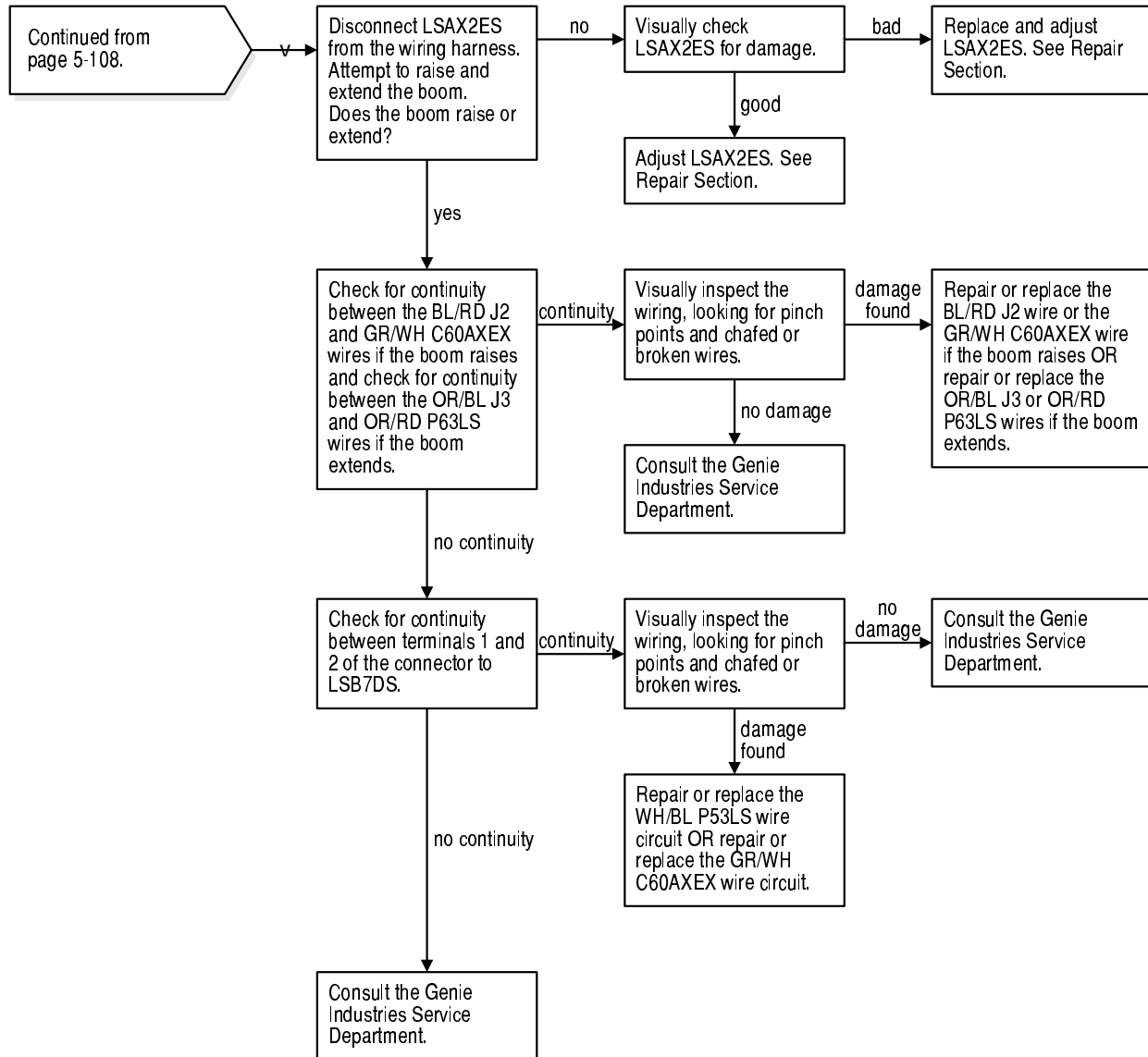


CHART 21

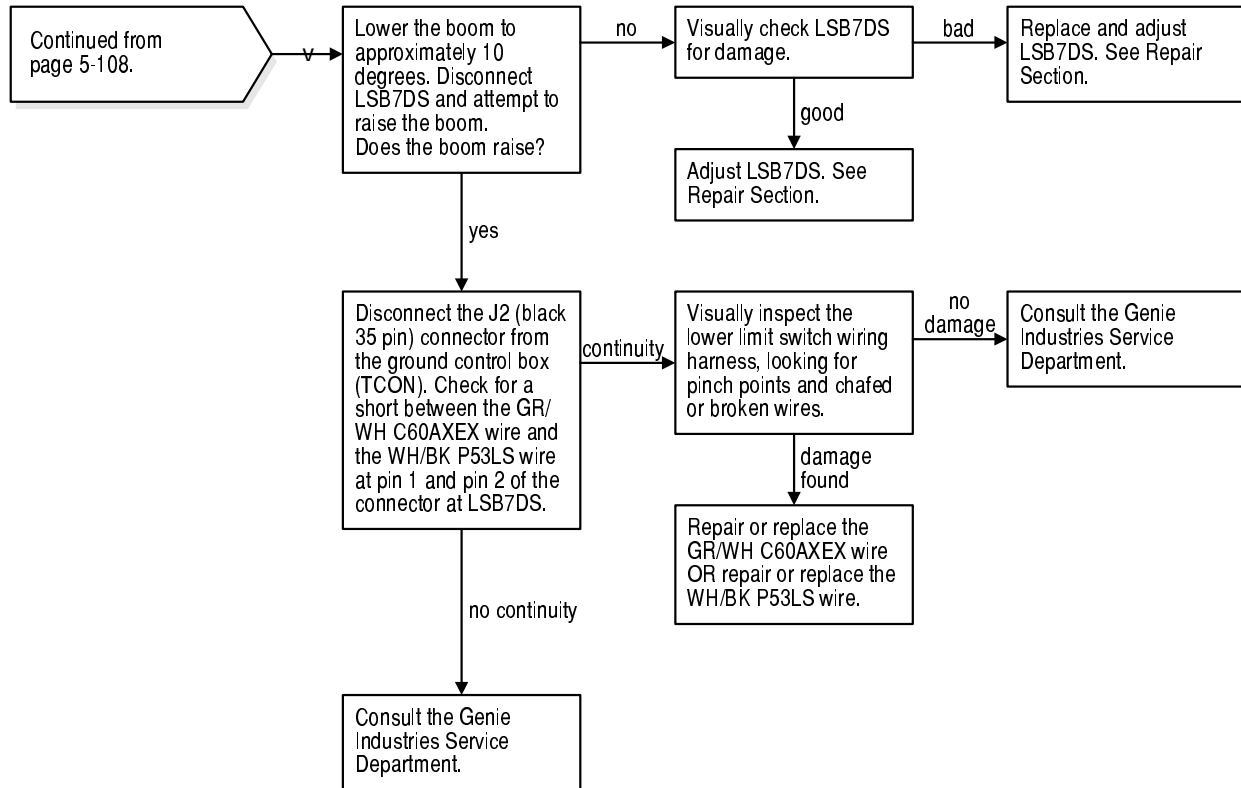


CHART 21

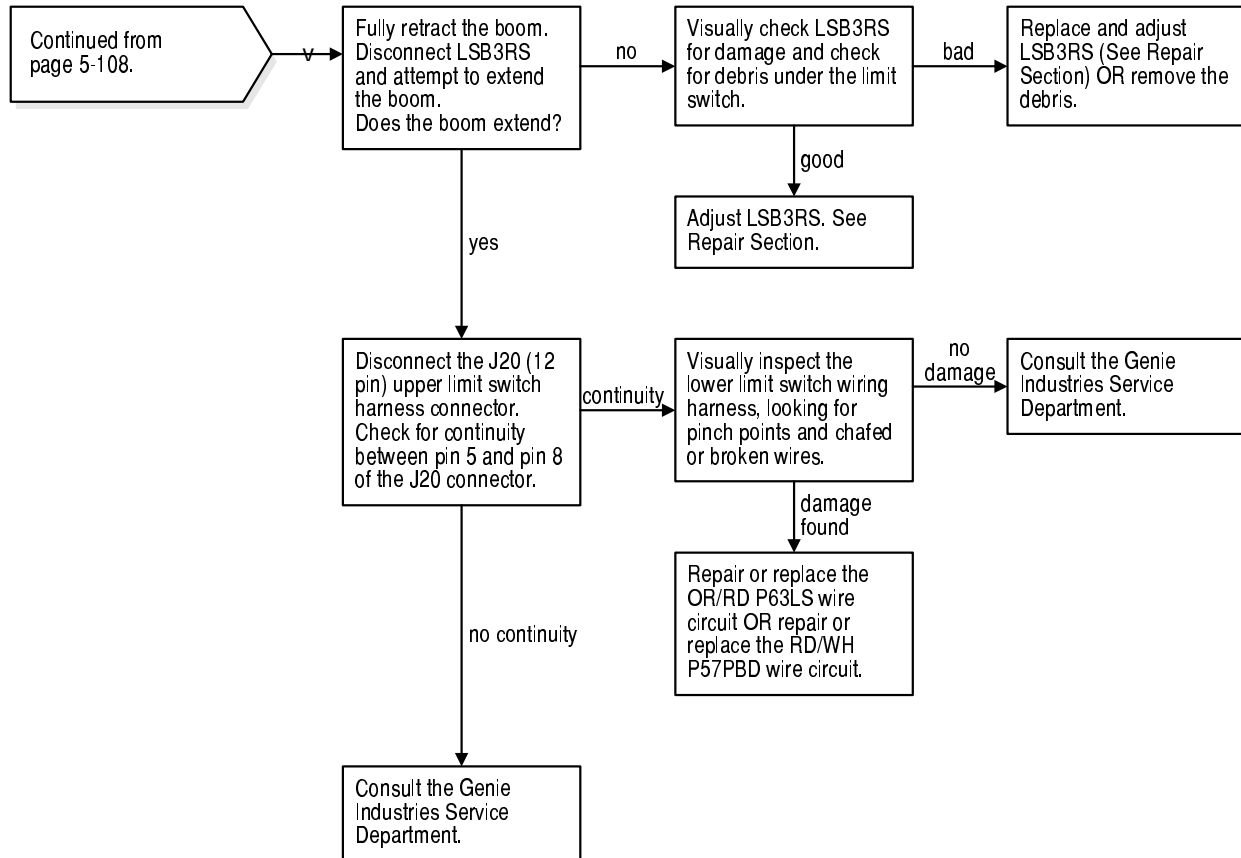


CHART 21

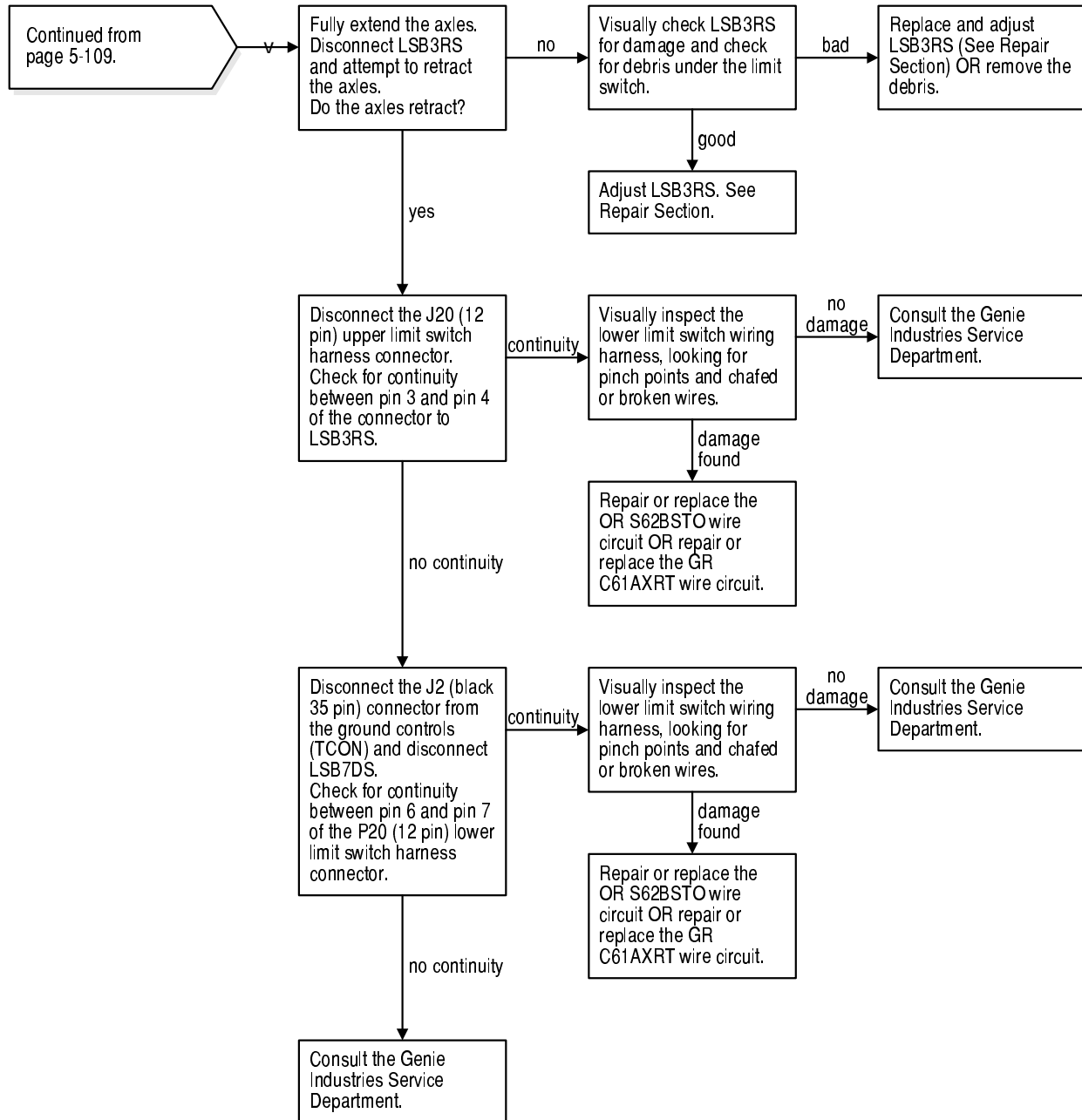


CHART 21

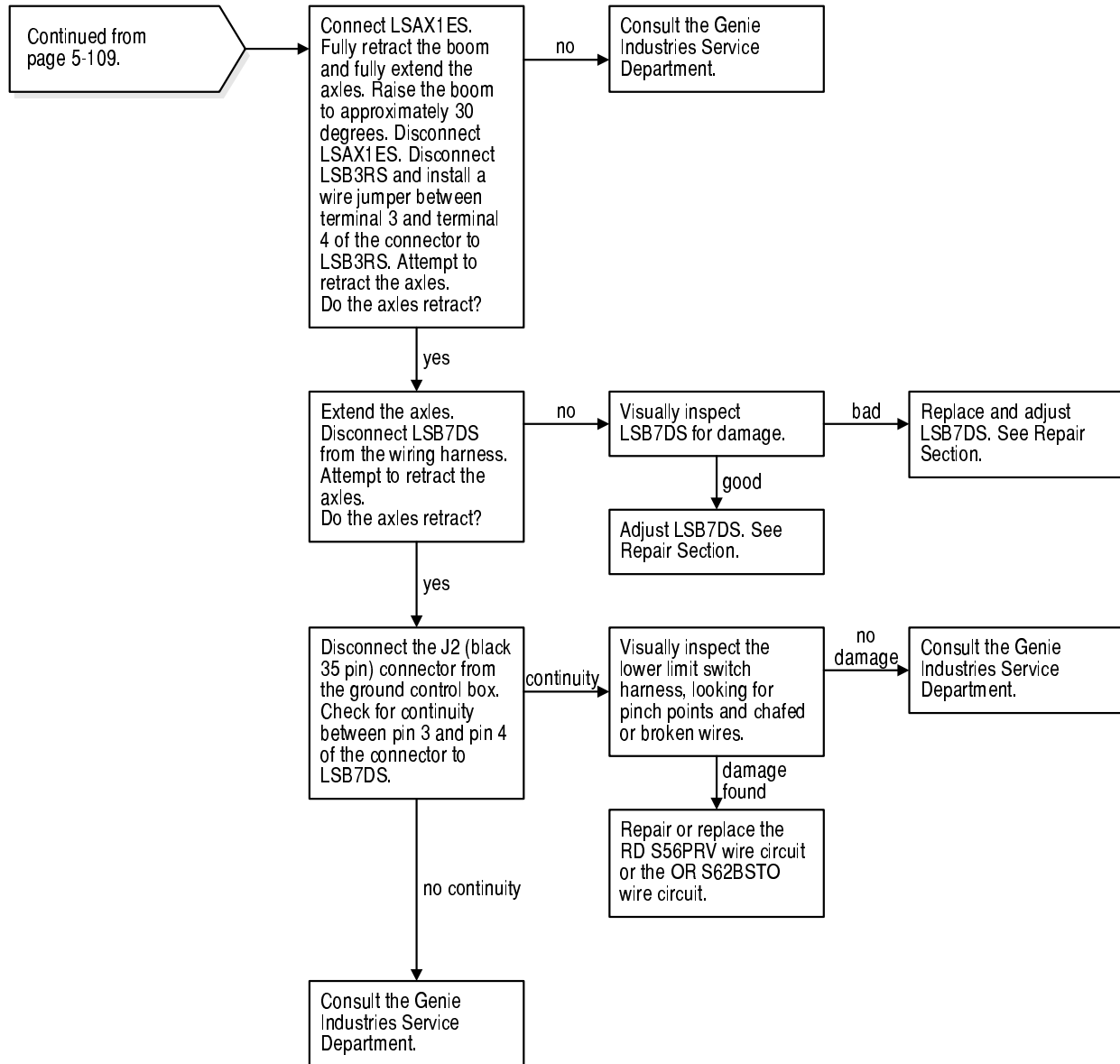


Chart 22

Turntable Rotate Clockwise Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

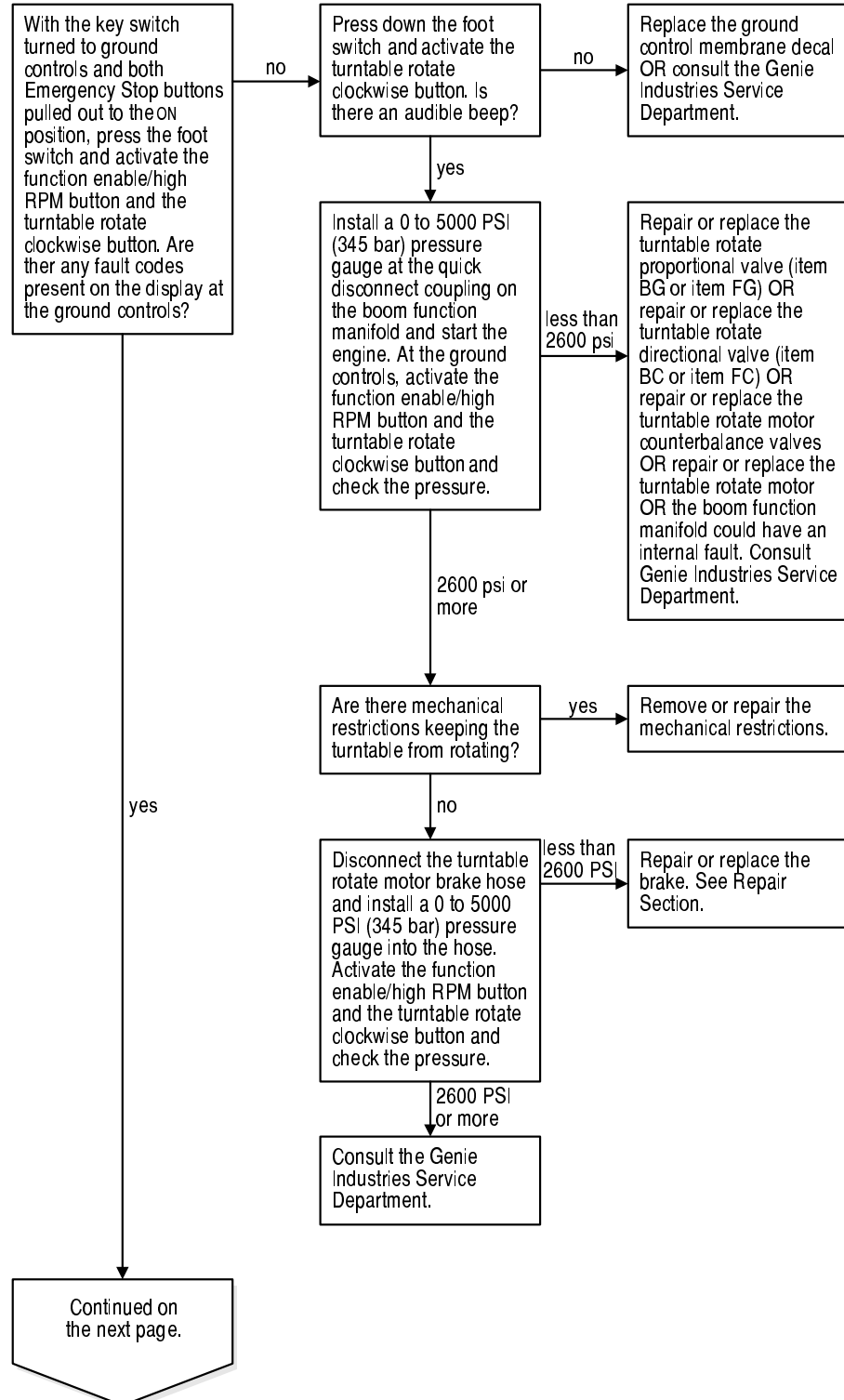


CHART 22

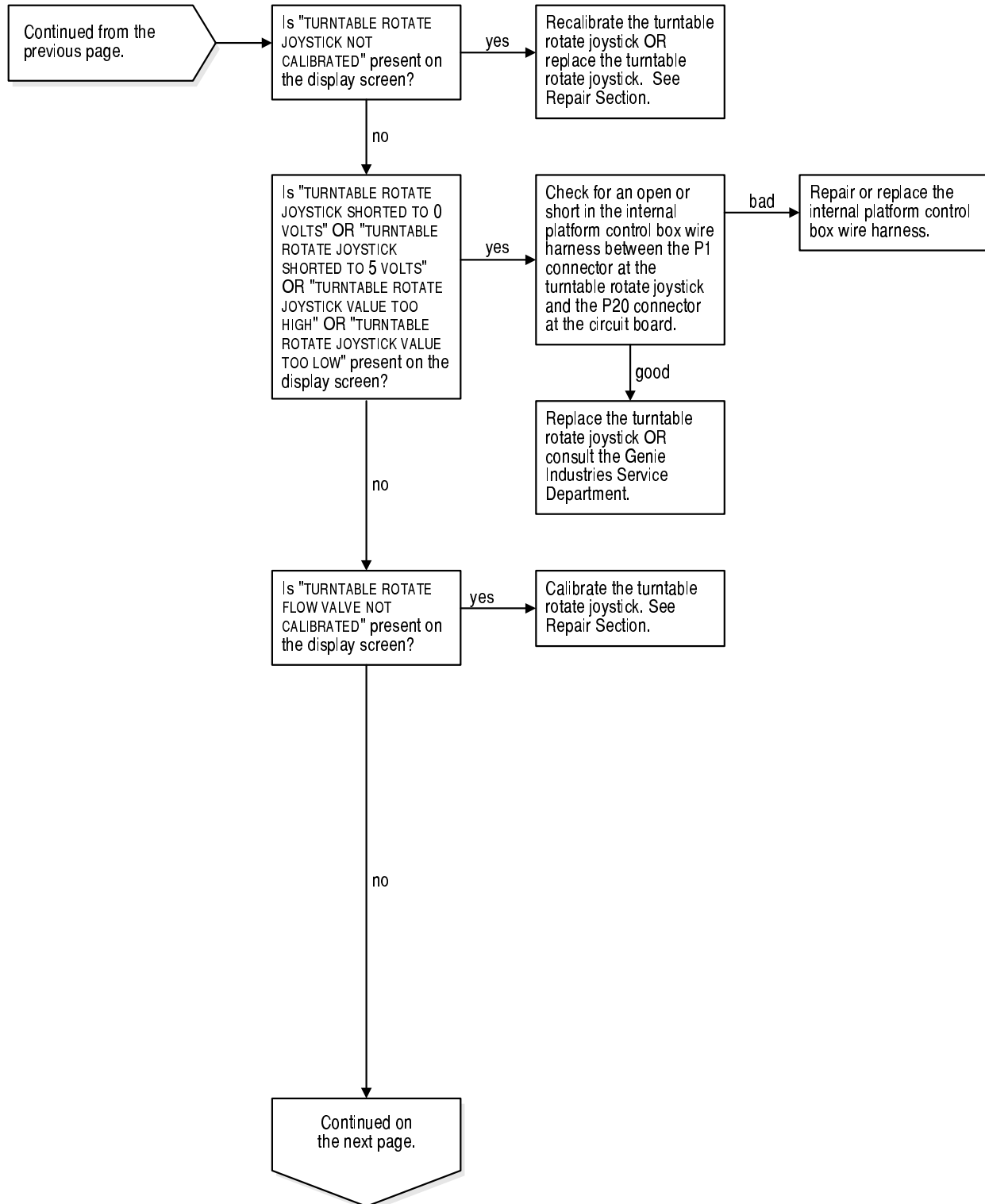


CHART 22

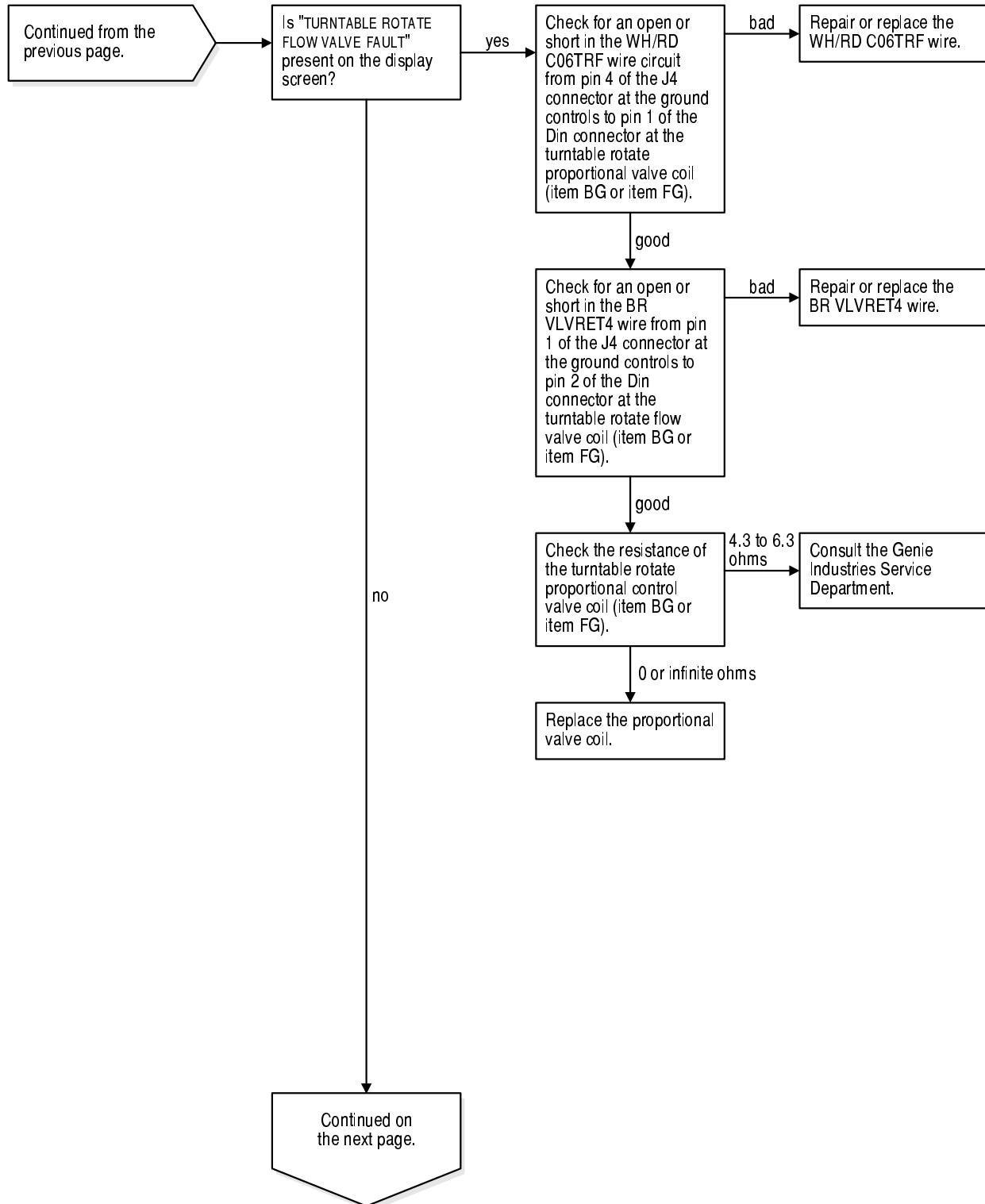


CHART 22

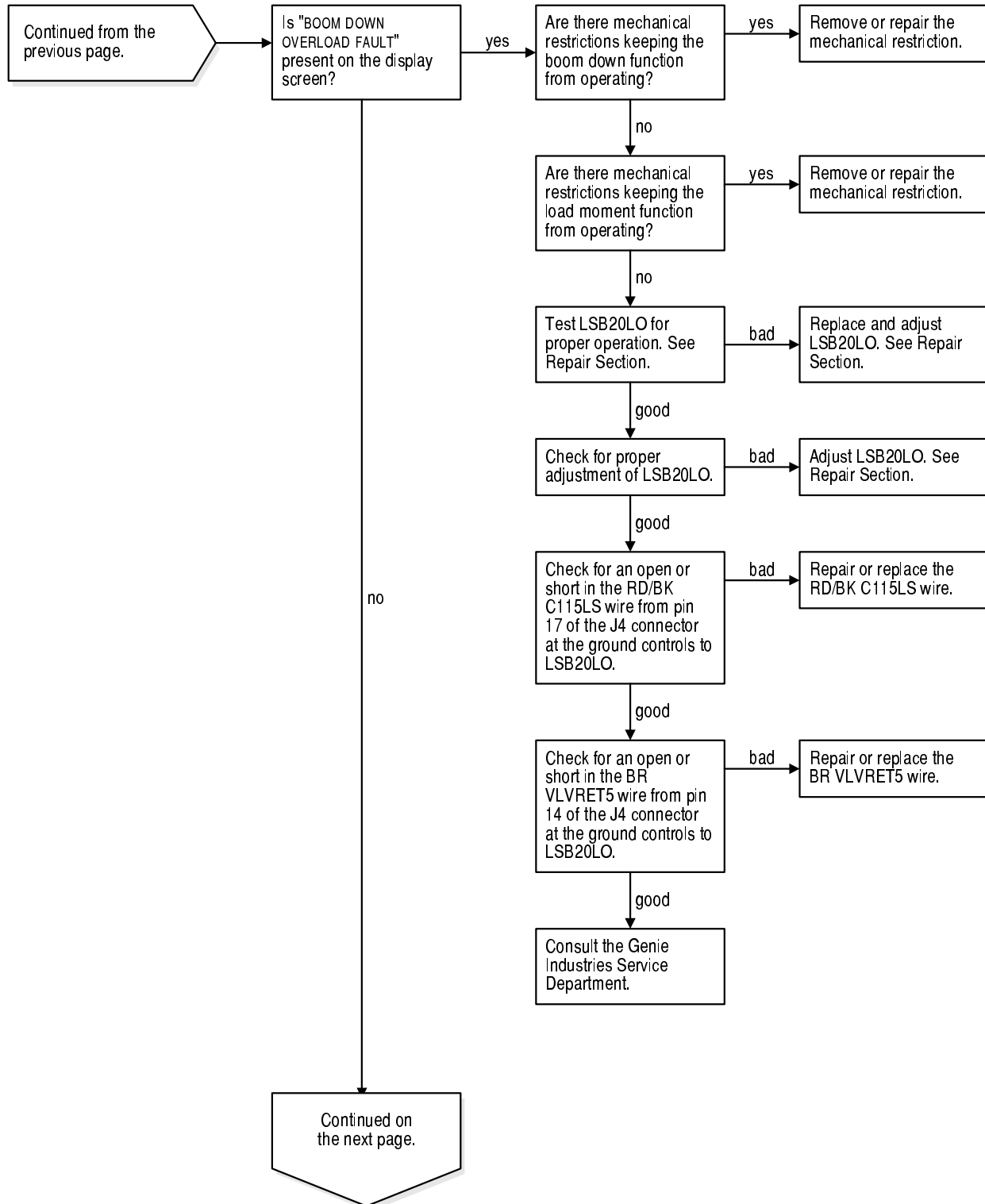


CHART 22

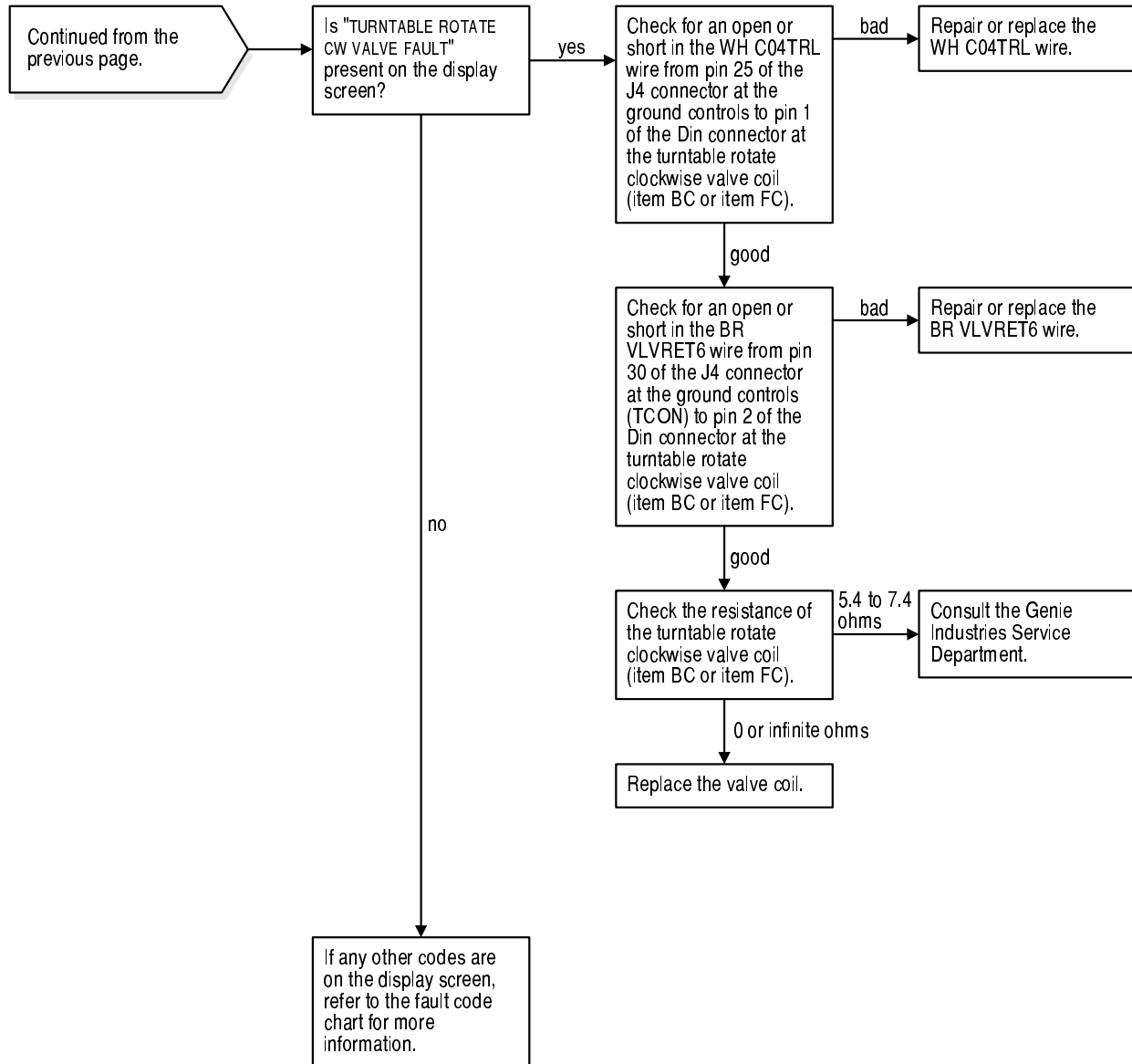


Chart 23

Turntable Rotate Counter Clockwise Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

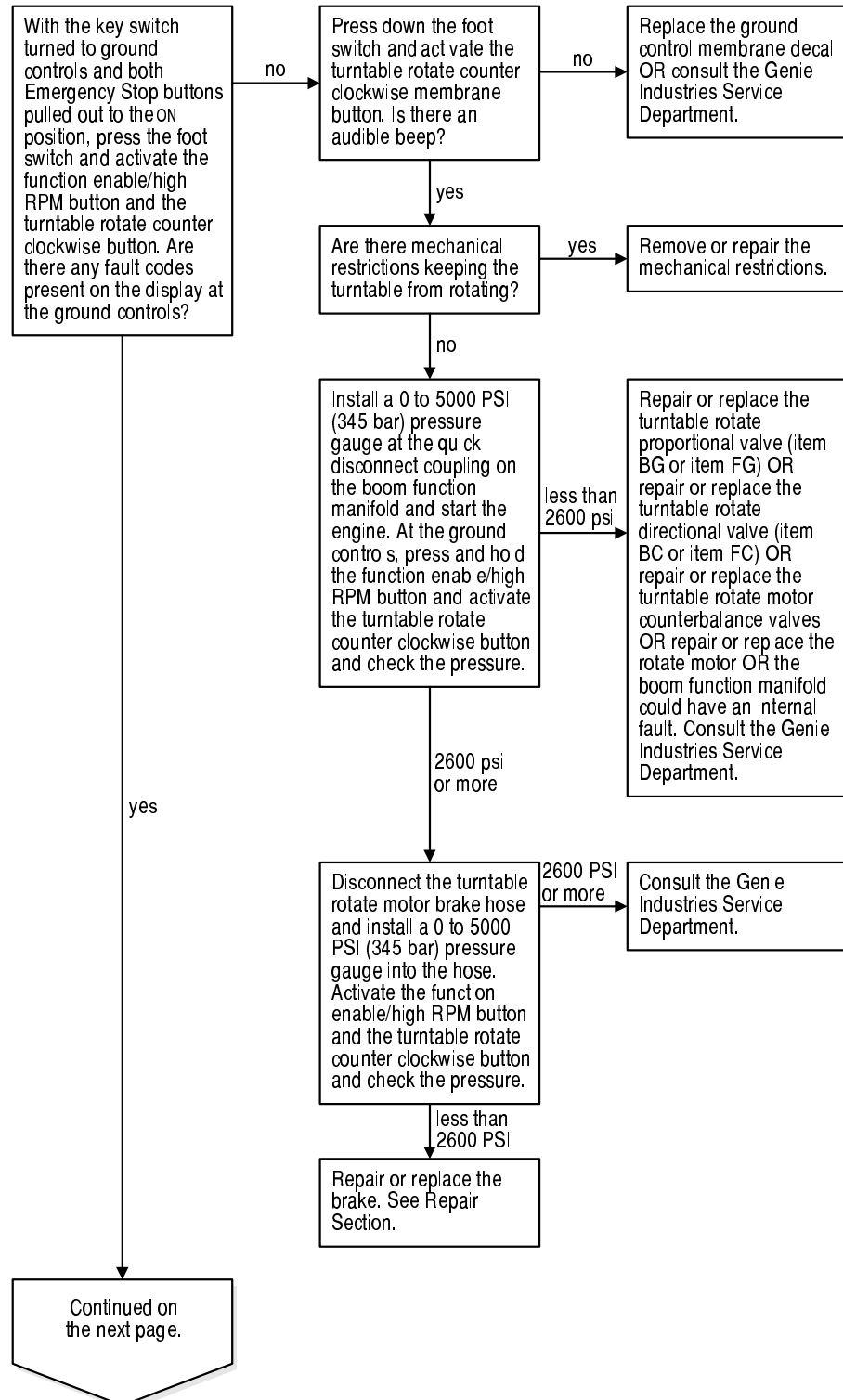


CHART 23

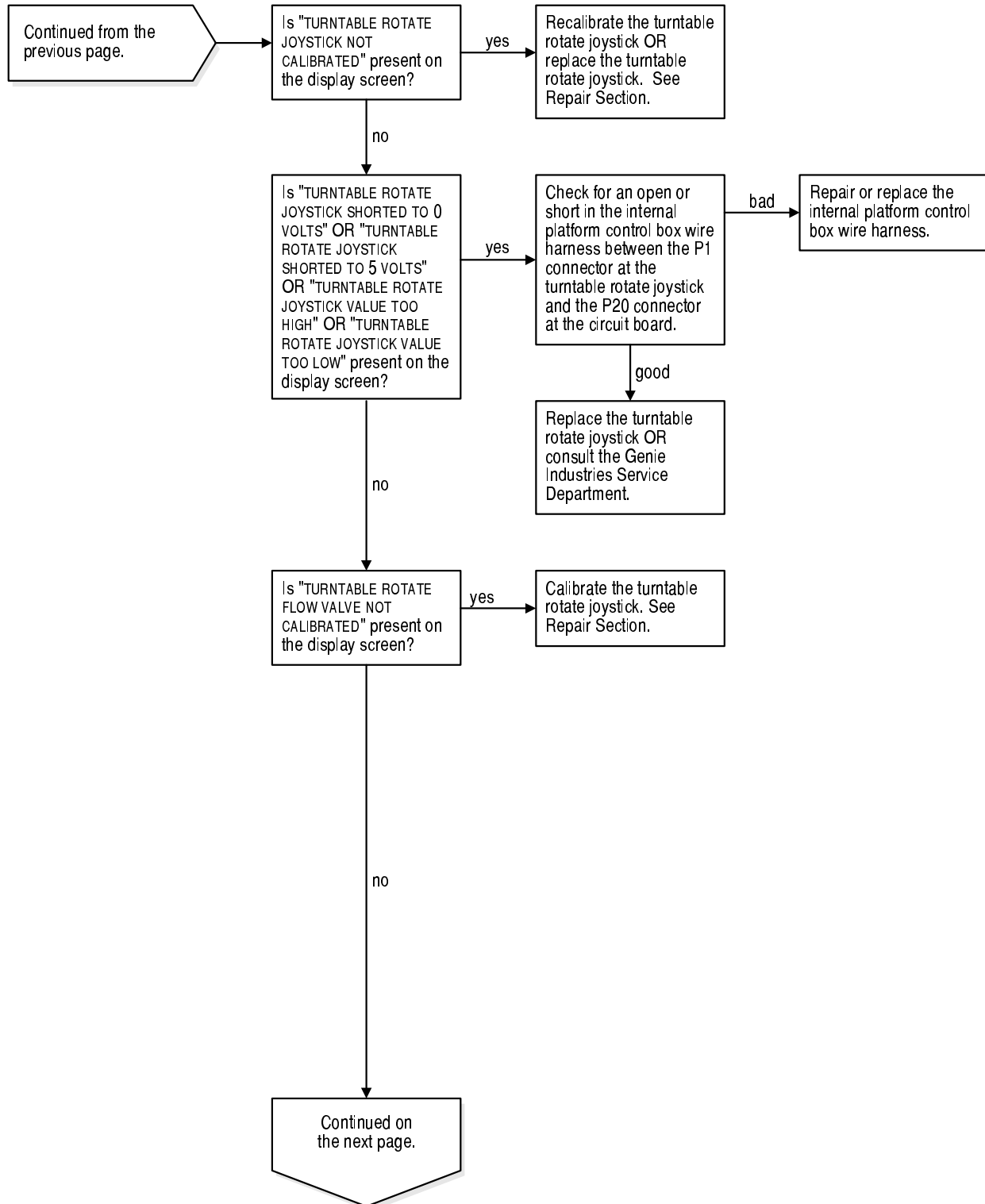


CHART 23

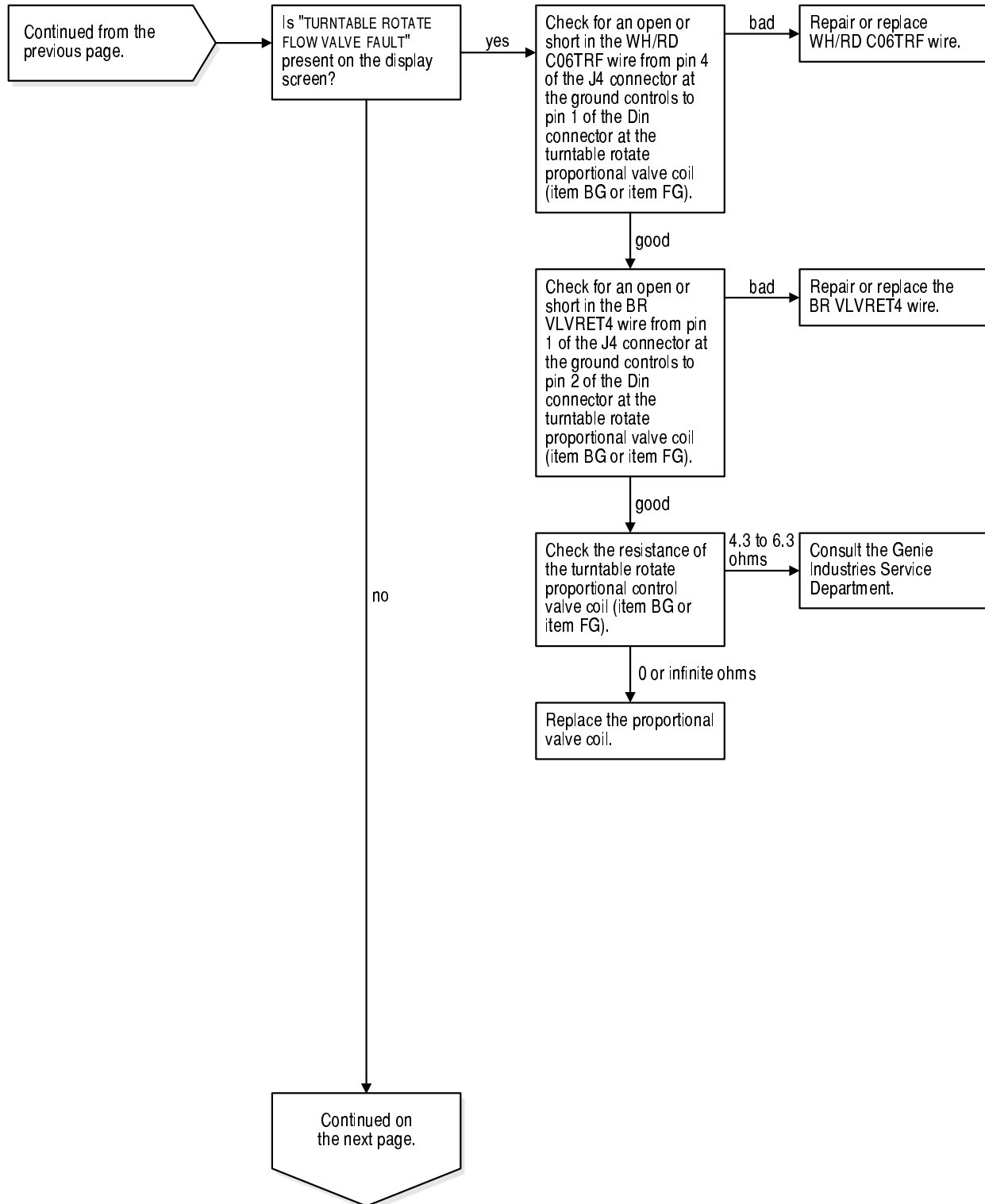


CHART 23

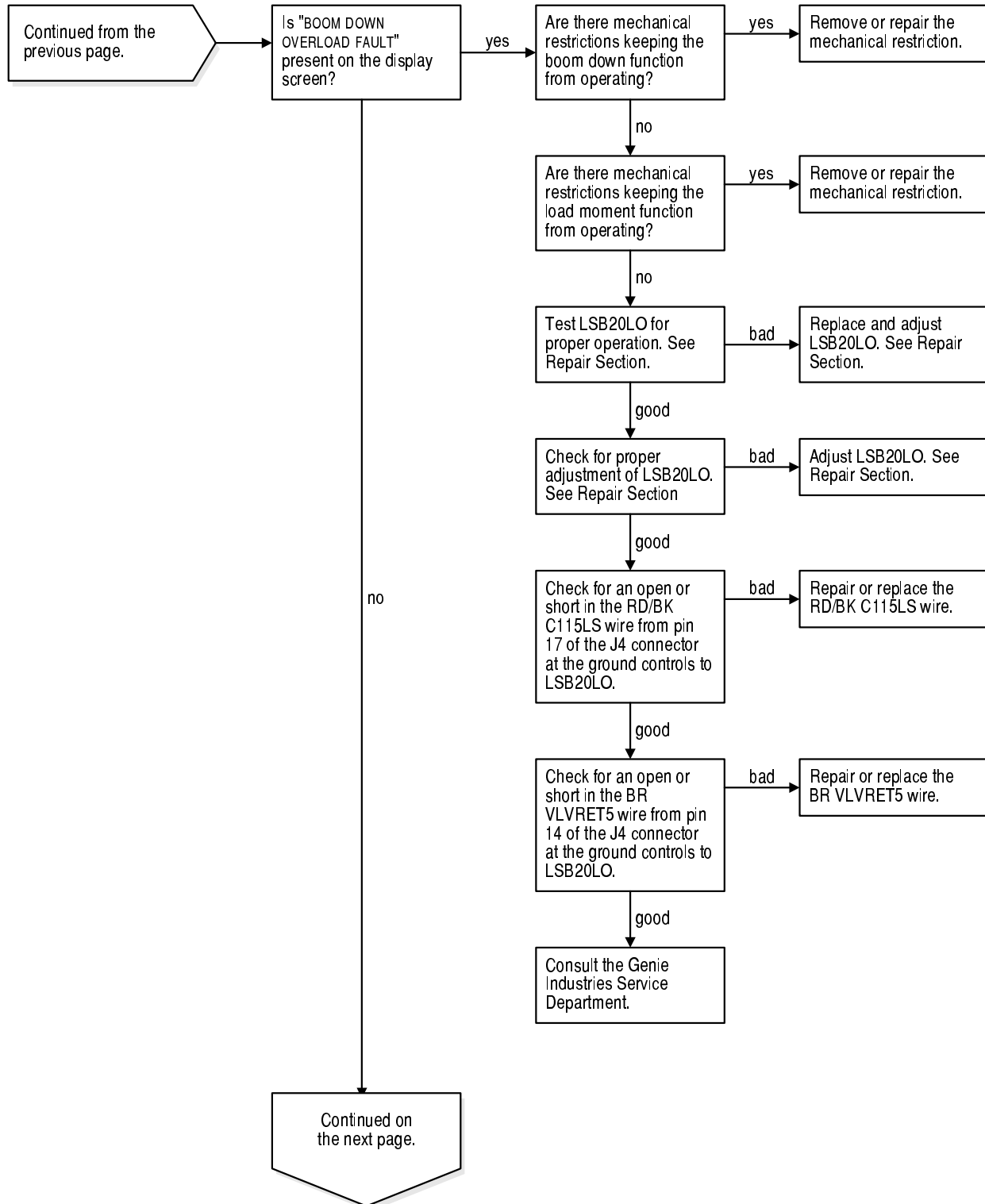


CHART 23

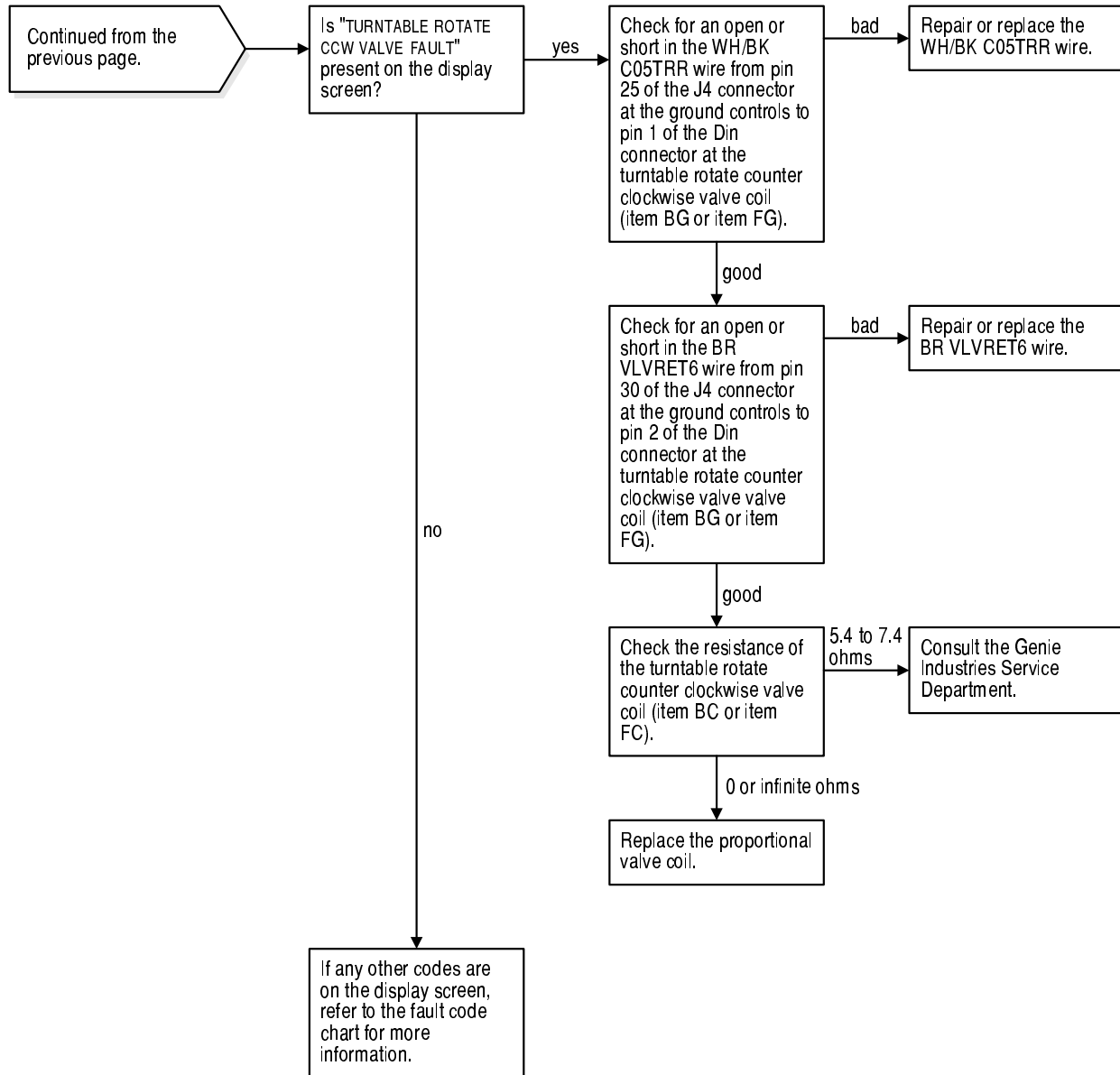


Chart 24

Platform Level Function Inoperative

Be sure all other functions operate normally.

Be sure the platform out of level LED and ICON are not flashing at the ground control box.

Be sure the batteries are fully charged and properly connected.

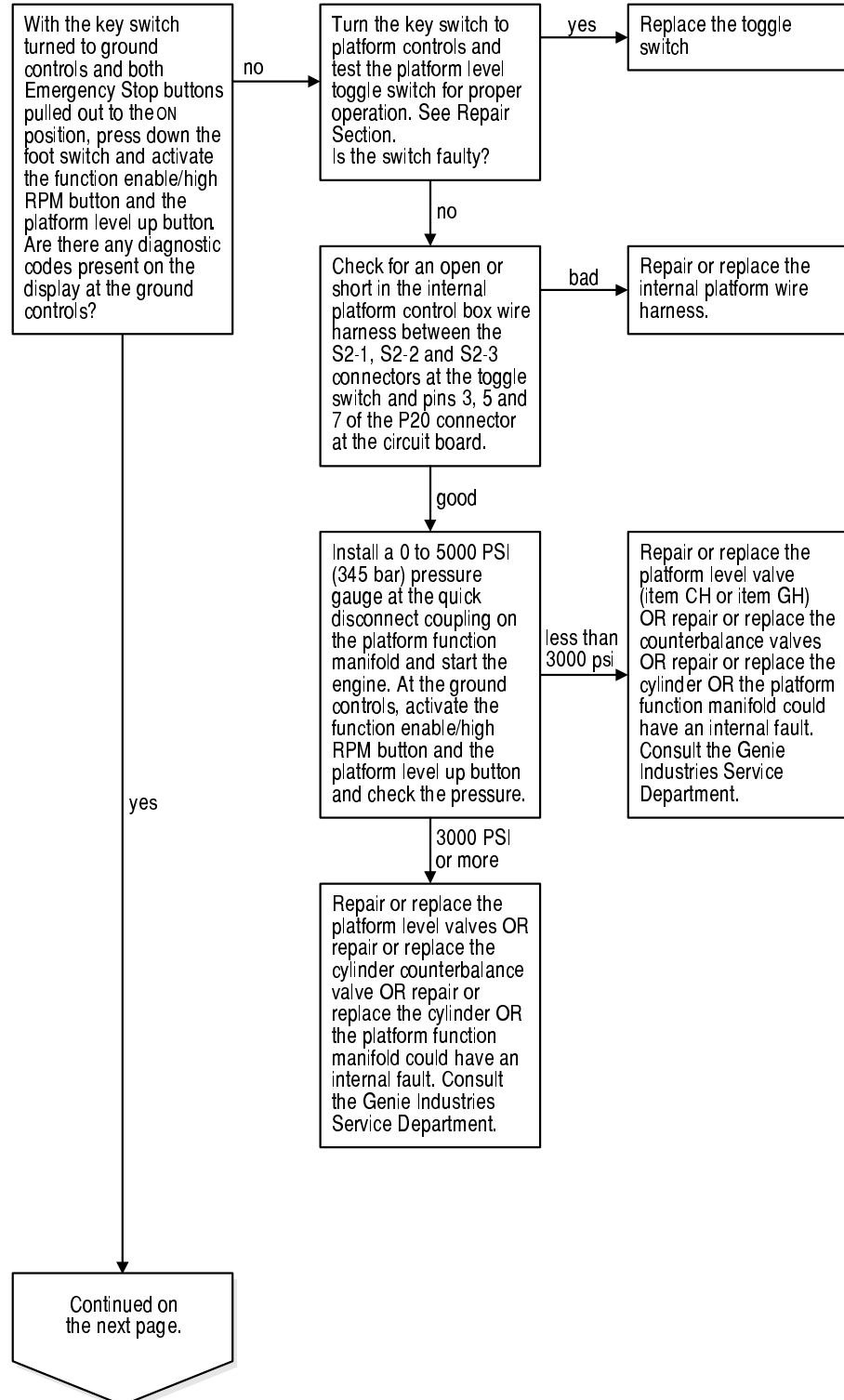


CHART 24

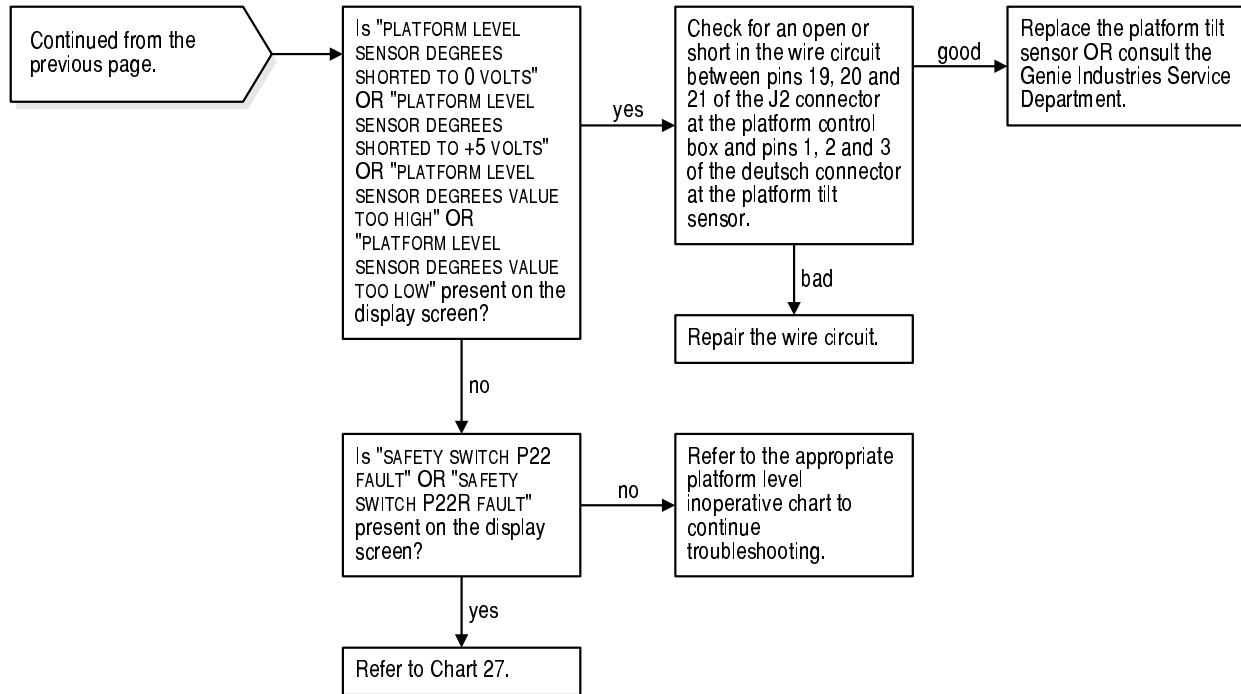


Chart 25

Platform Level Up Function Inoperative

Be sure all other functions operate normally.

Be sure the platform out of level LED and ICON are not flashing at the ground control box.

Be sure the batteries are fully charged and properly connected.

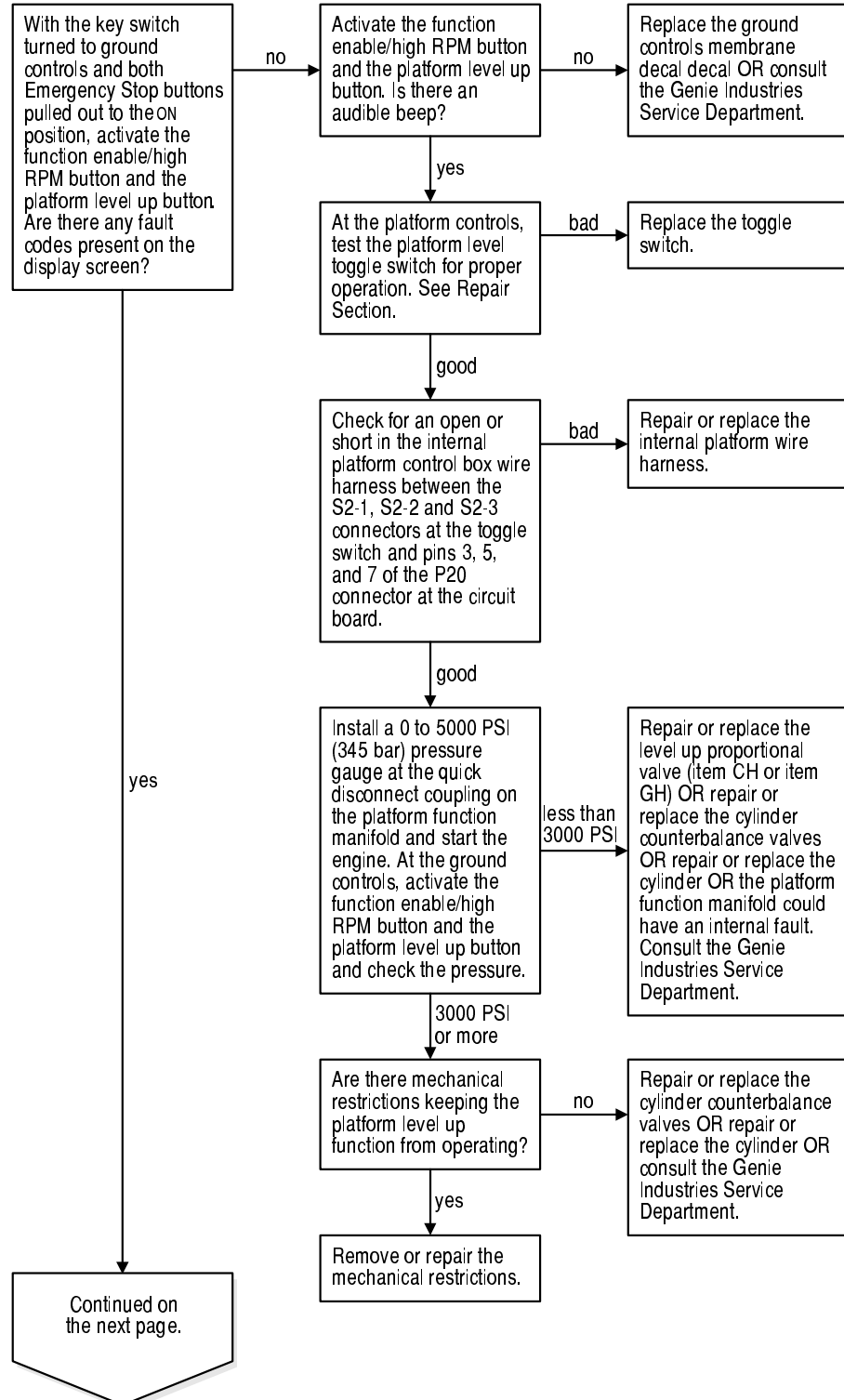


CHART 25

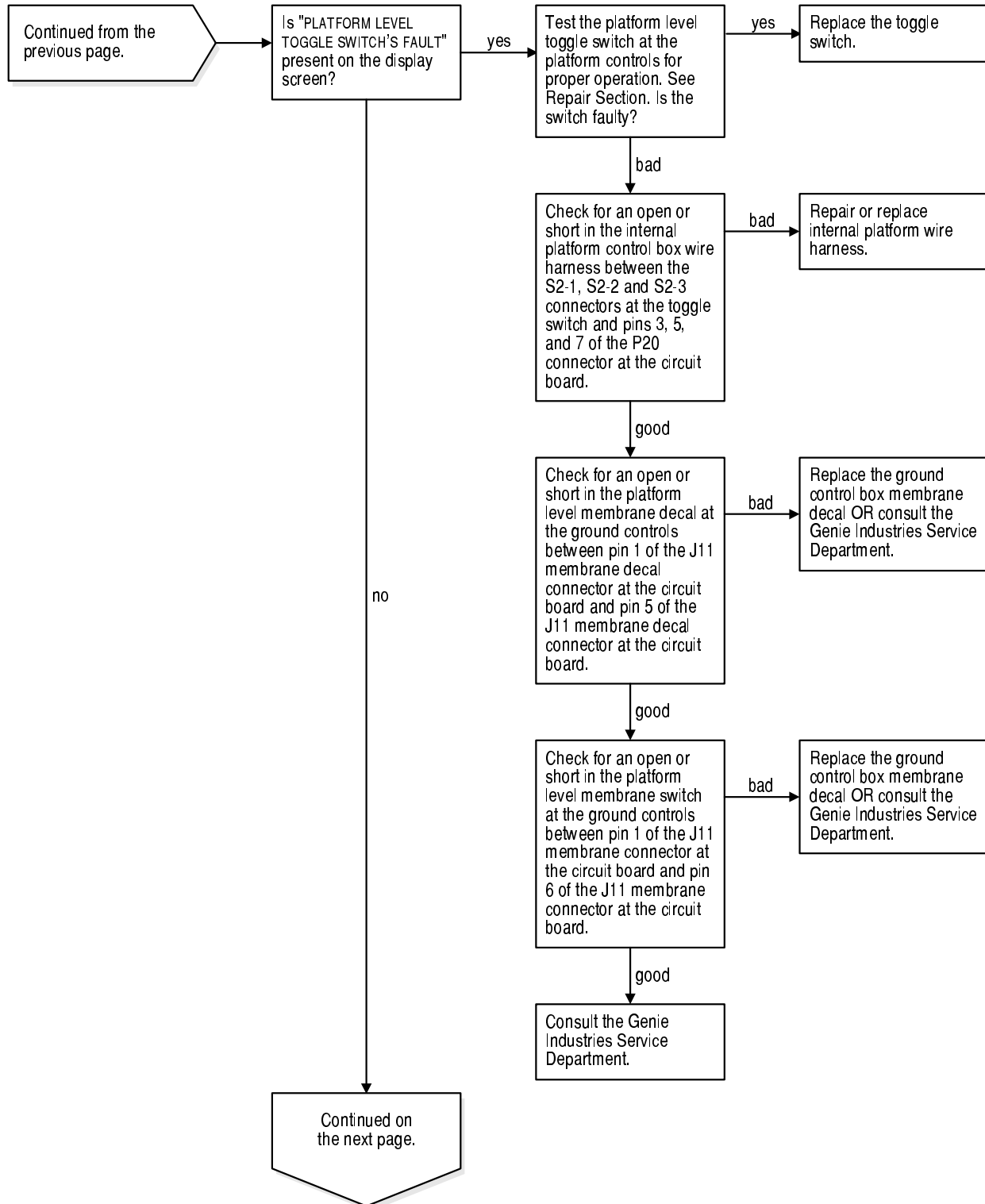


CHART 25

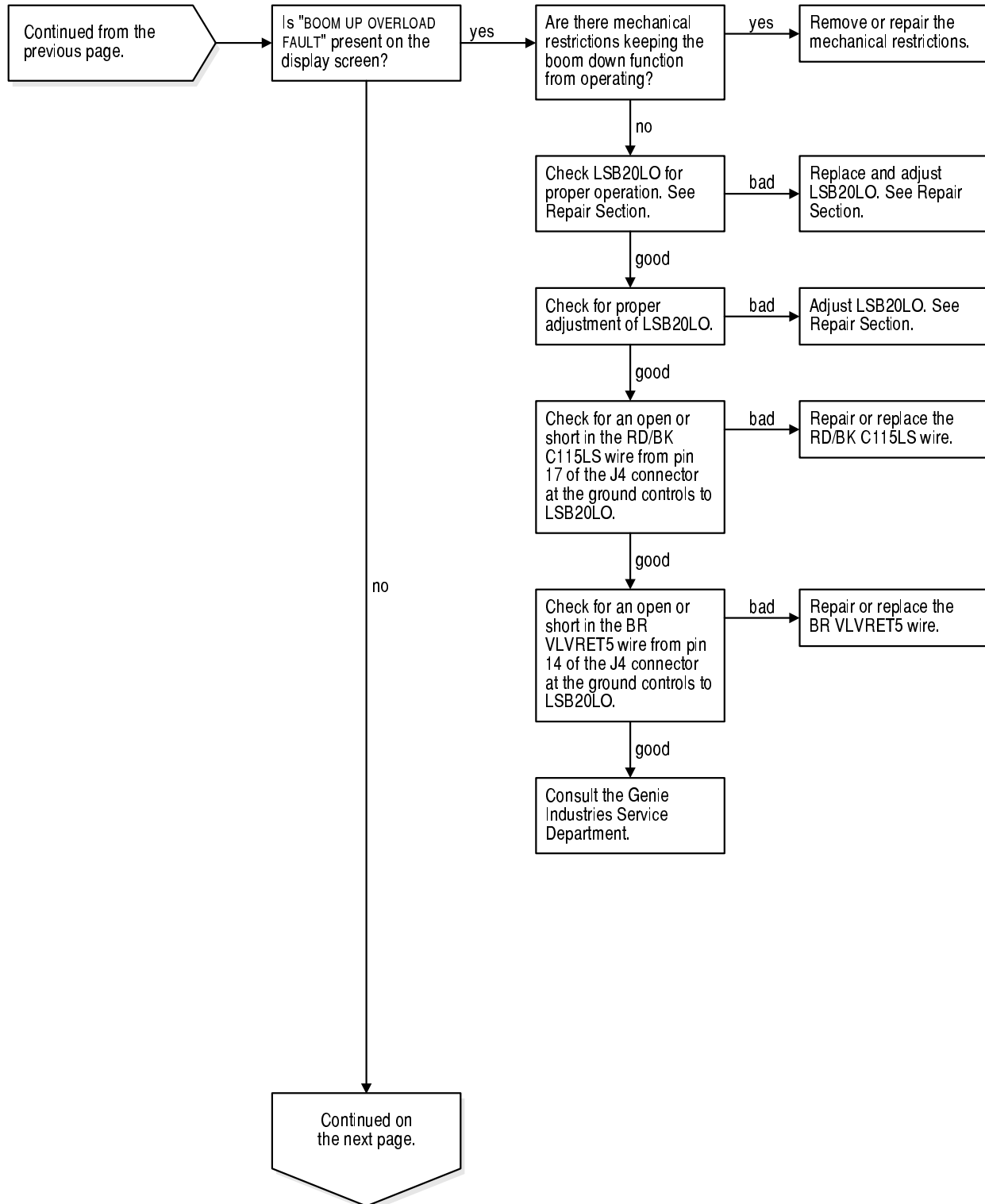


CHART 25

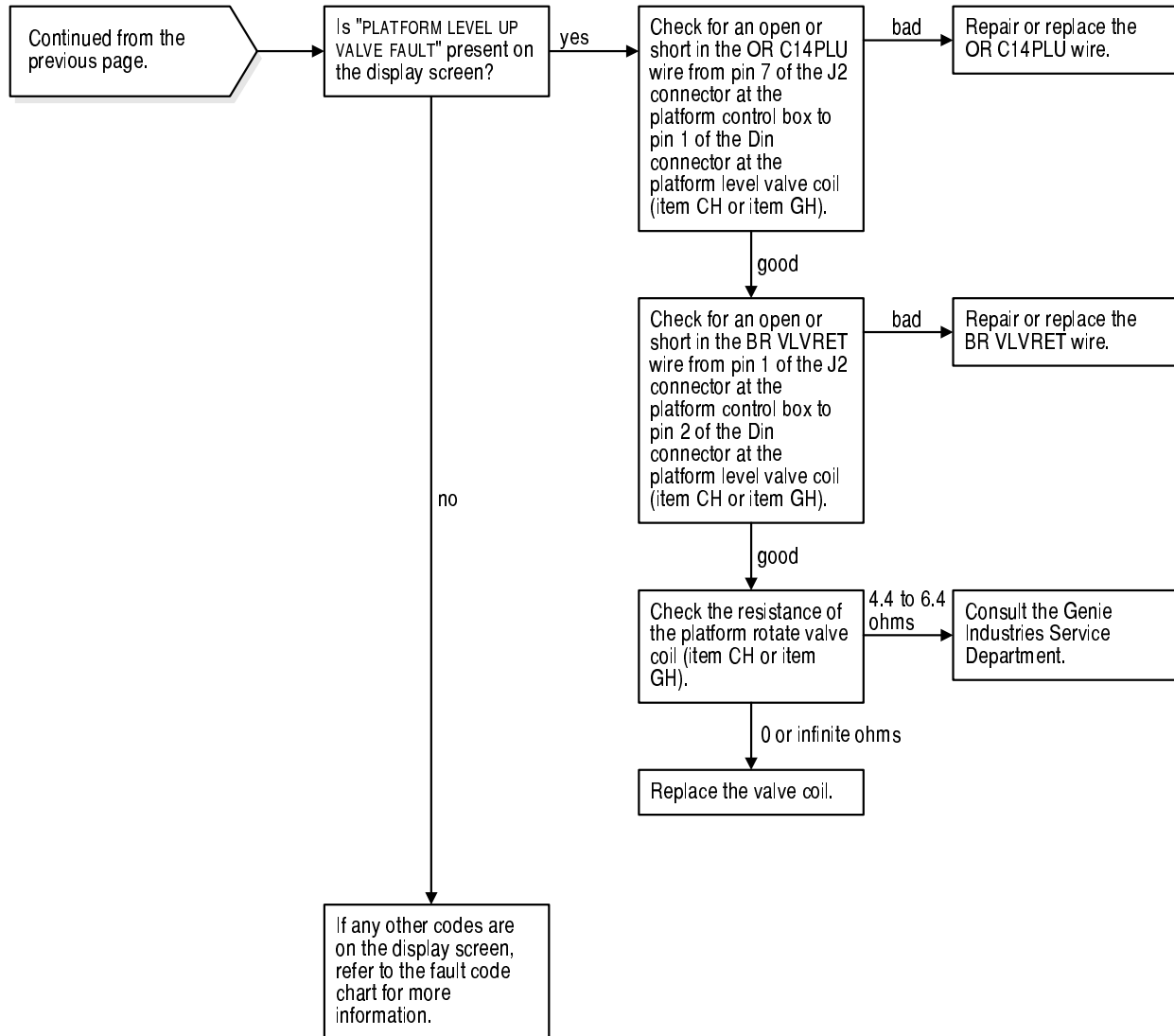


Chart 26

Platform Level Down Function Inoperative

Be sure all other functions operate normally.

Be sure the platform out of level LED and ICON are not flashing at the ground control box.

Be sure the batteries are fully charged and properly connected.

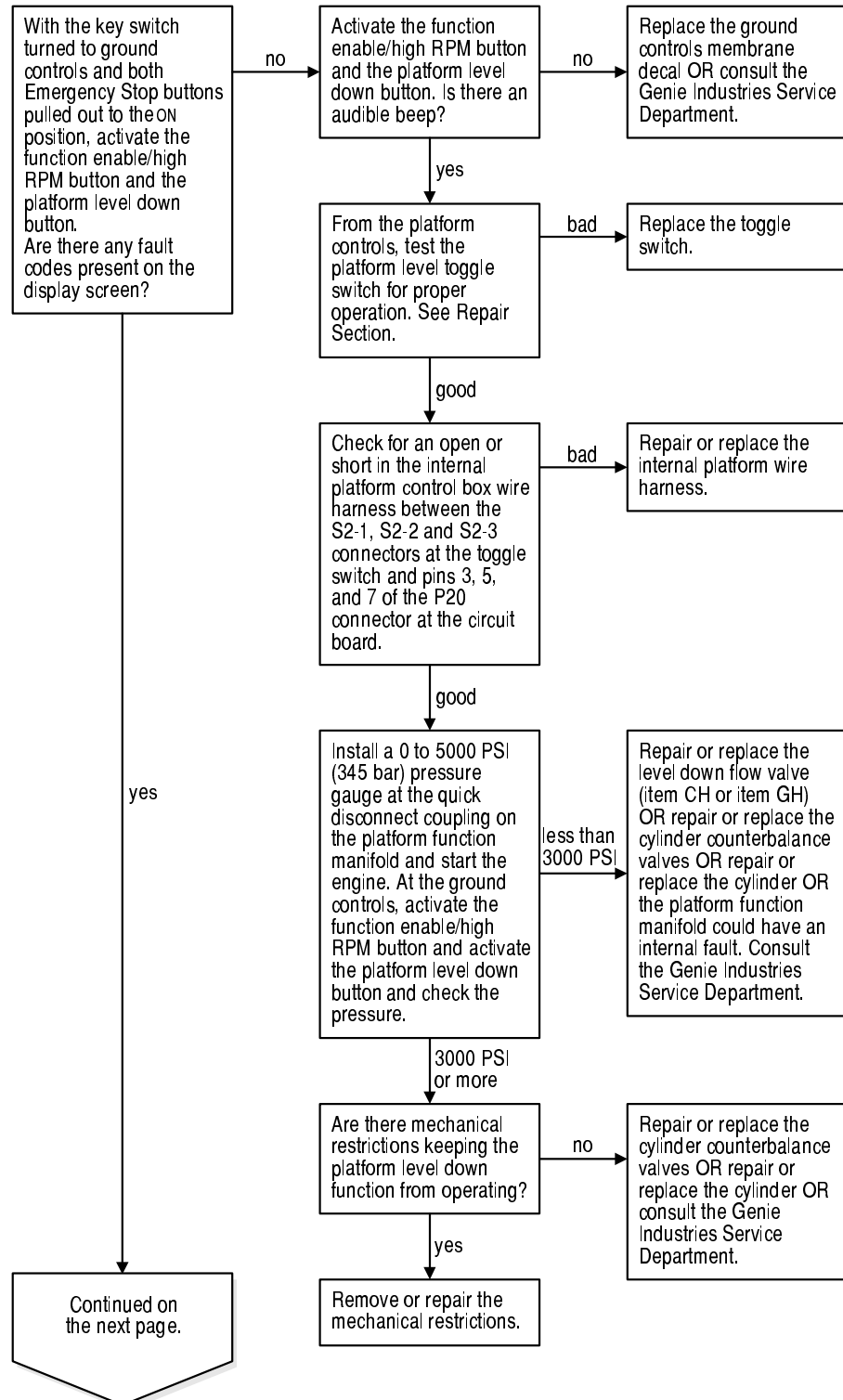


CHART 26

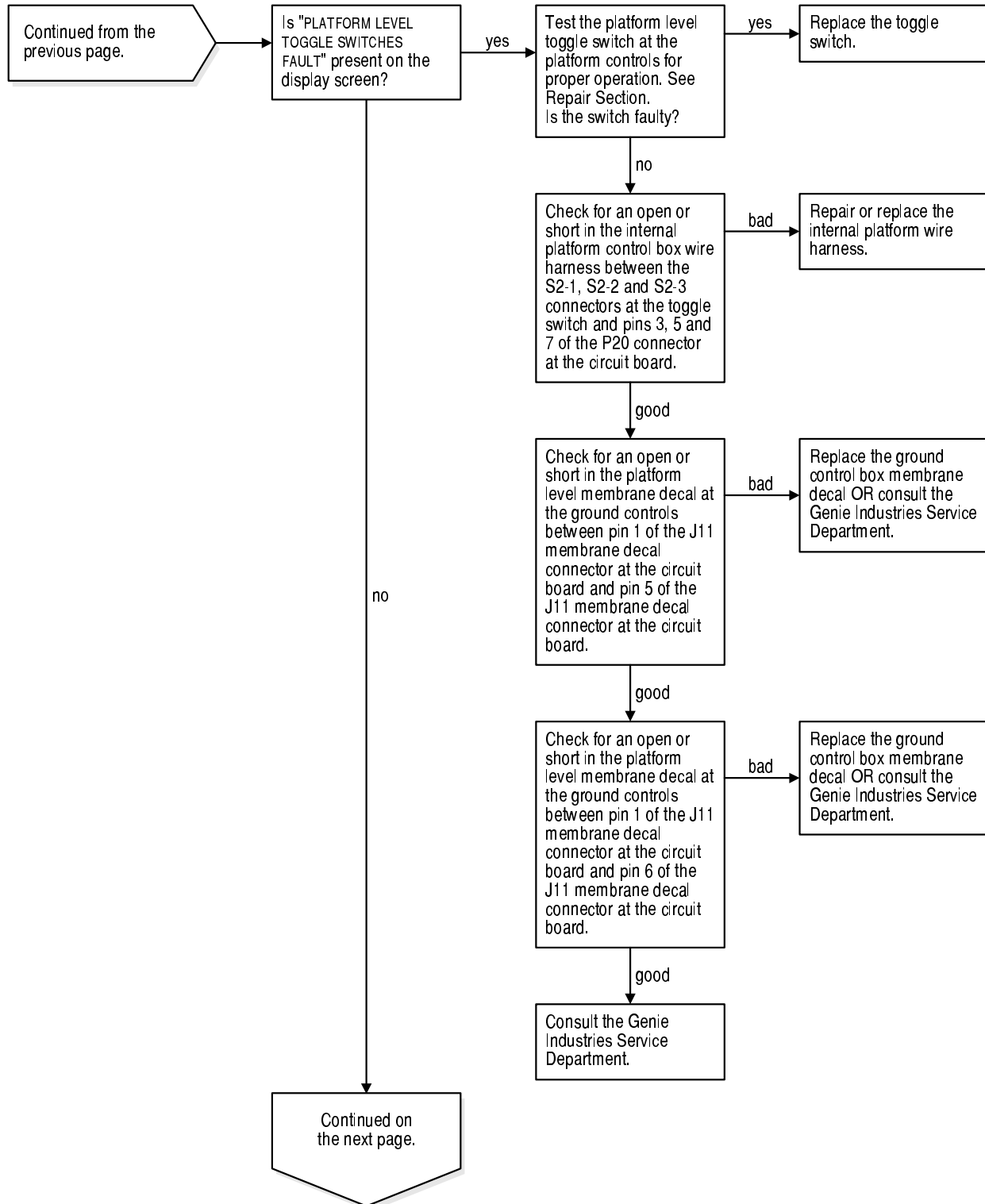


CHART 26

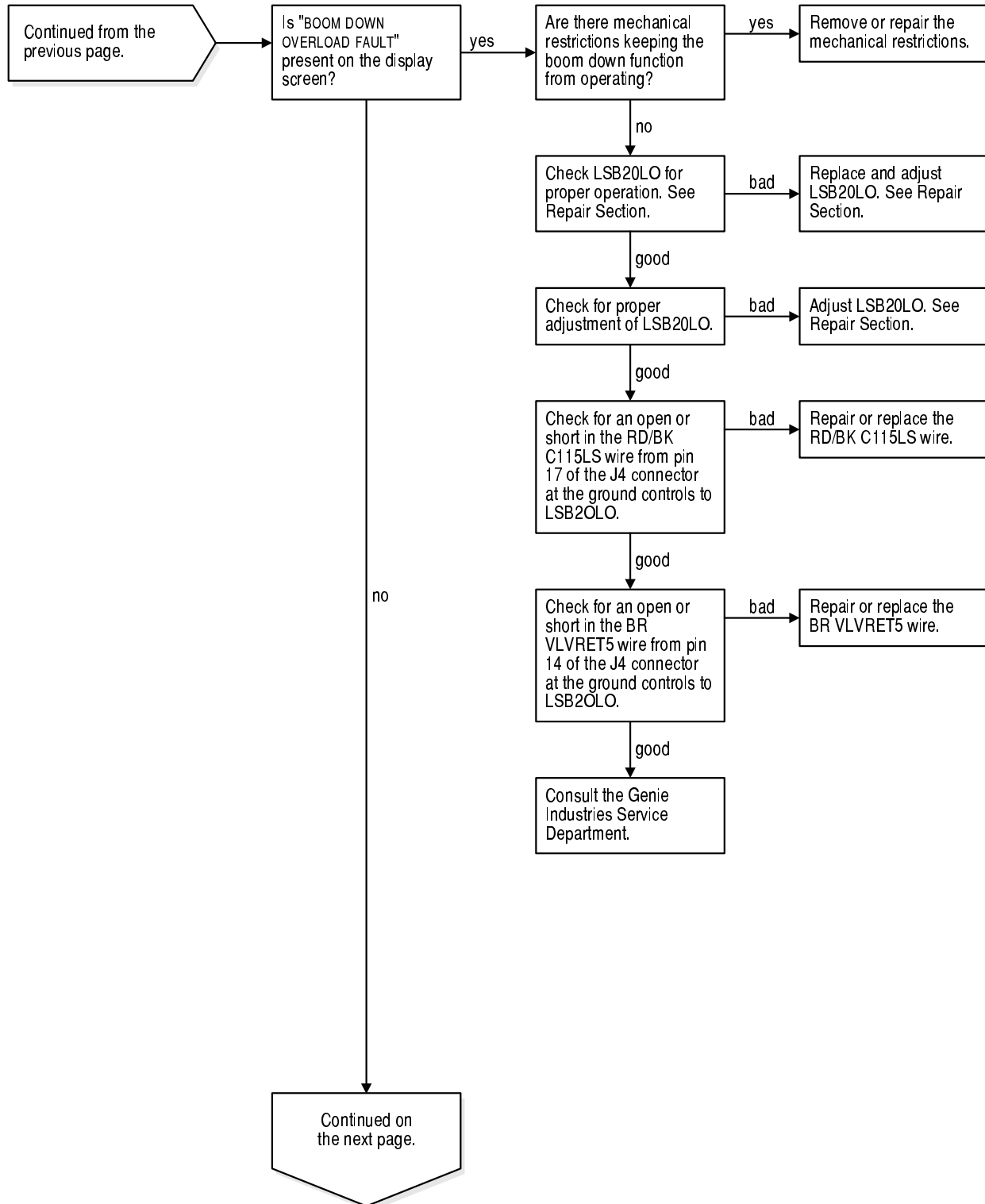


CHART 26

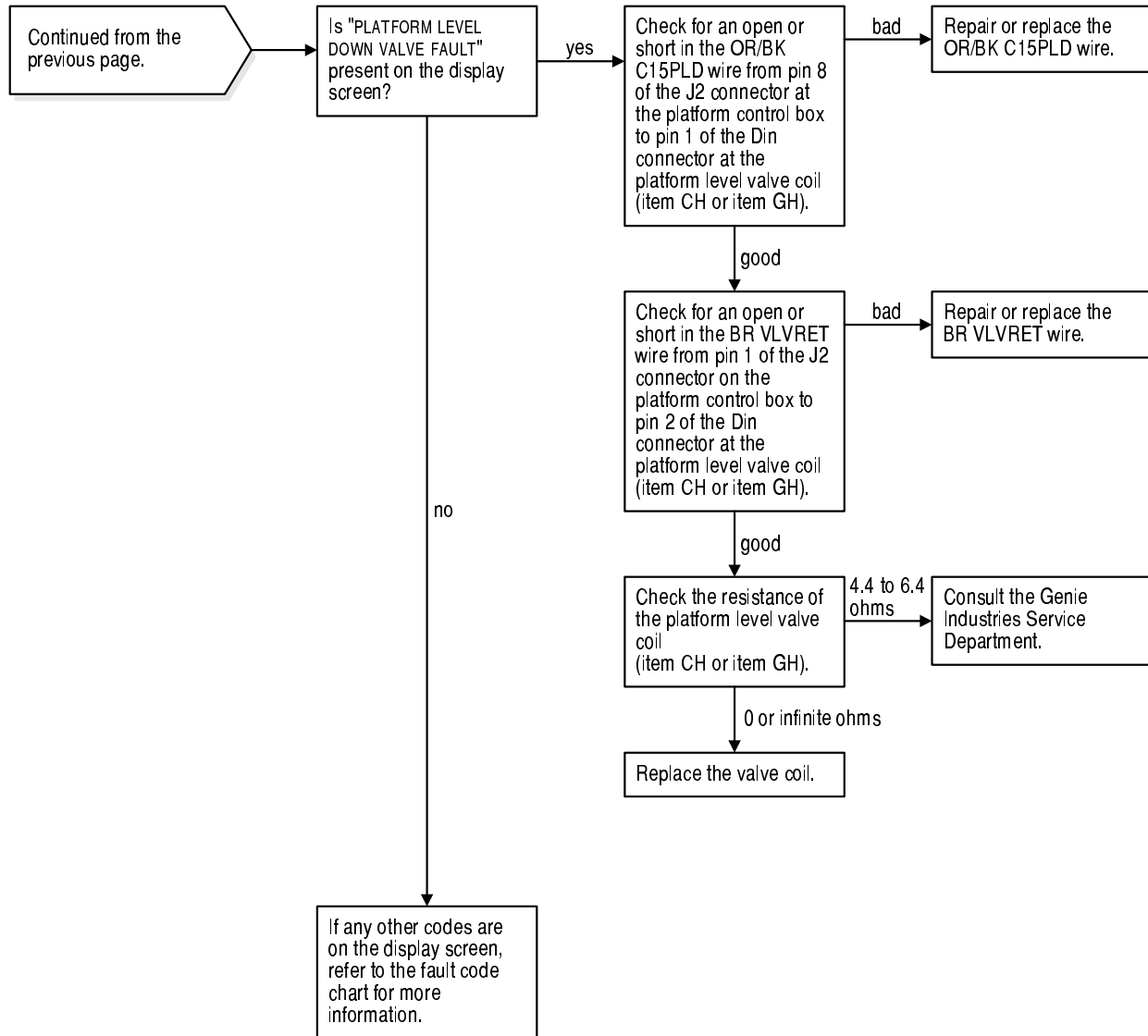


Chart 27

Platform Level Safety Fault

"SAFETY SWITCH P22 FAULT"

"SAFETY SWITCH P22R FAULT"

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

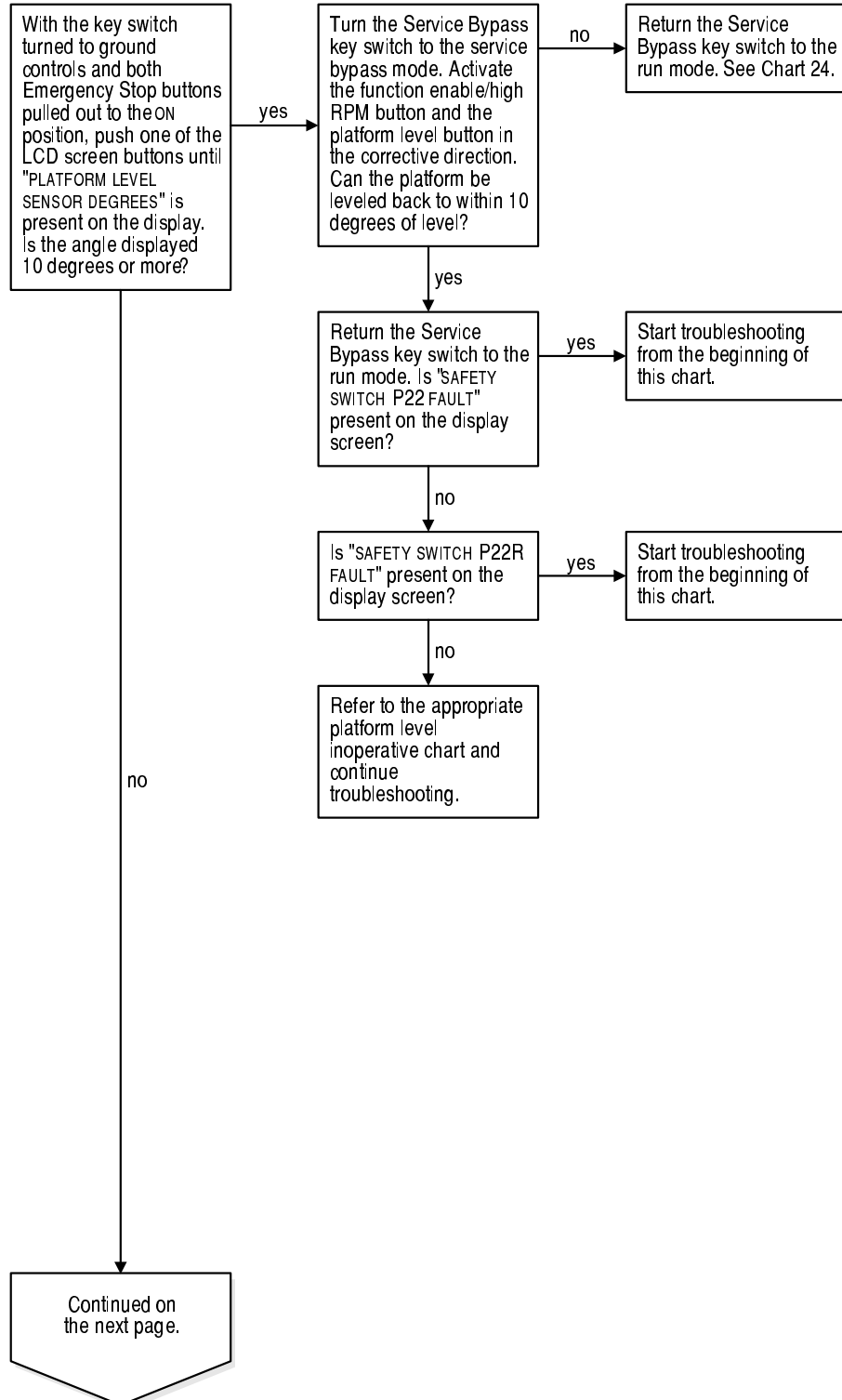


CHART 27

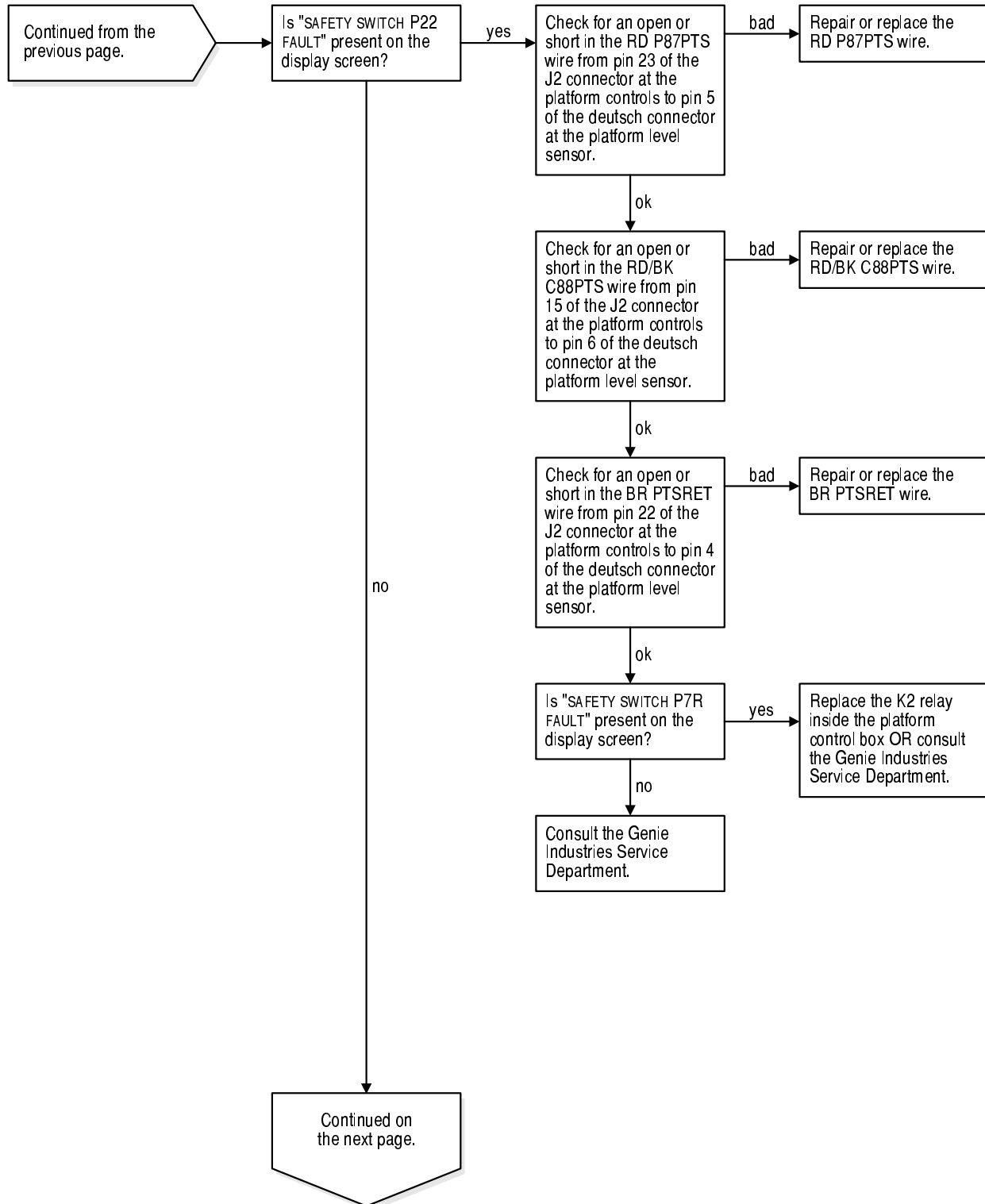


CHART 27

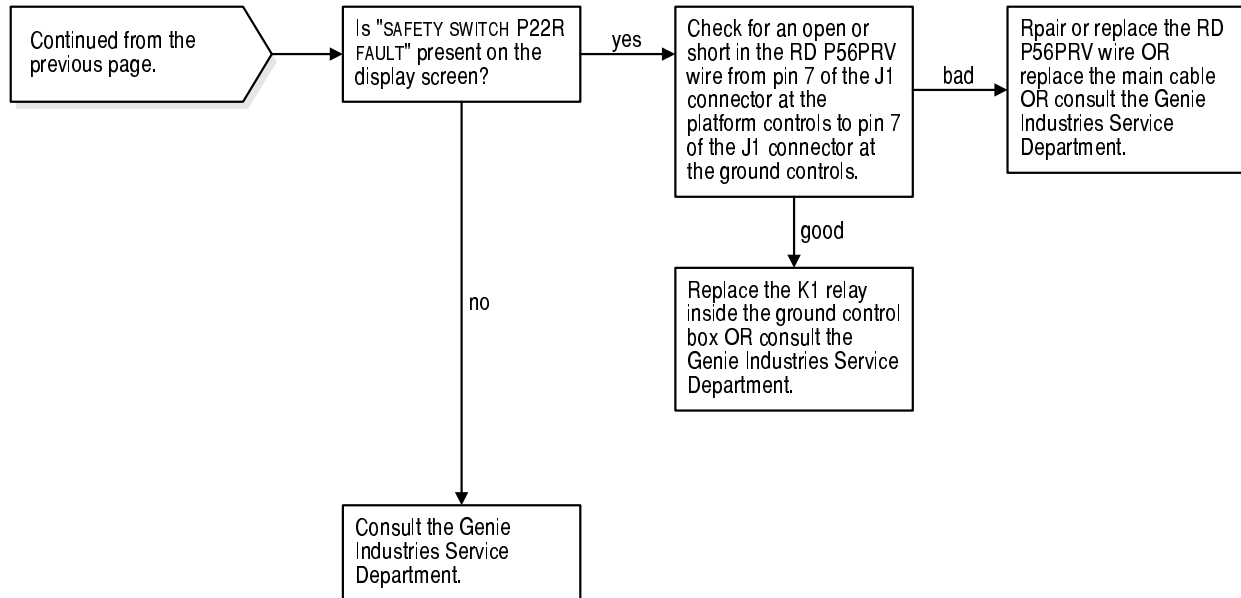


Chart 28

Platform Rotate Clockwise Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

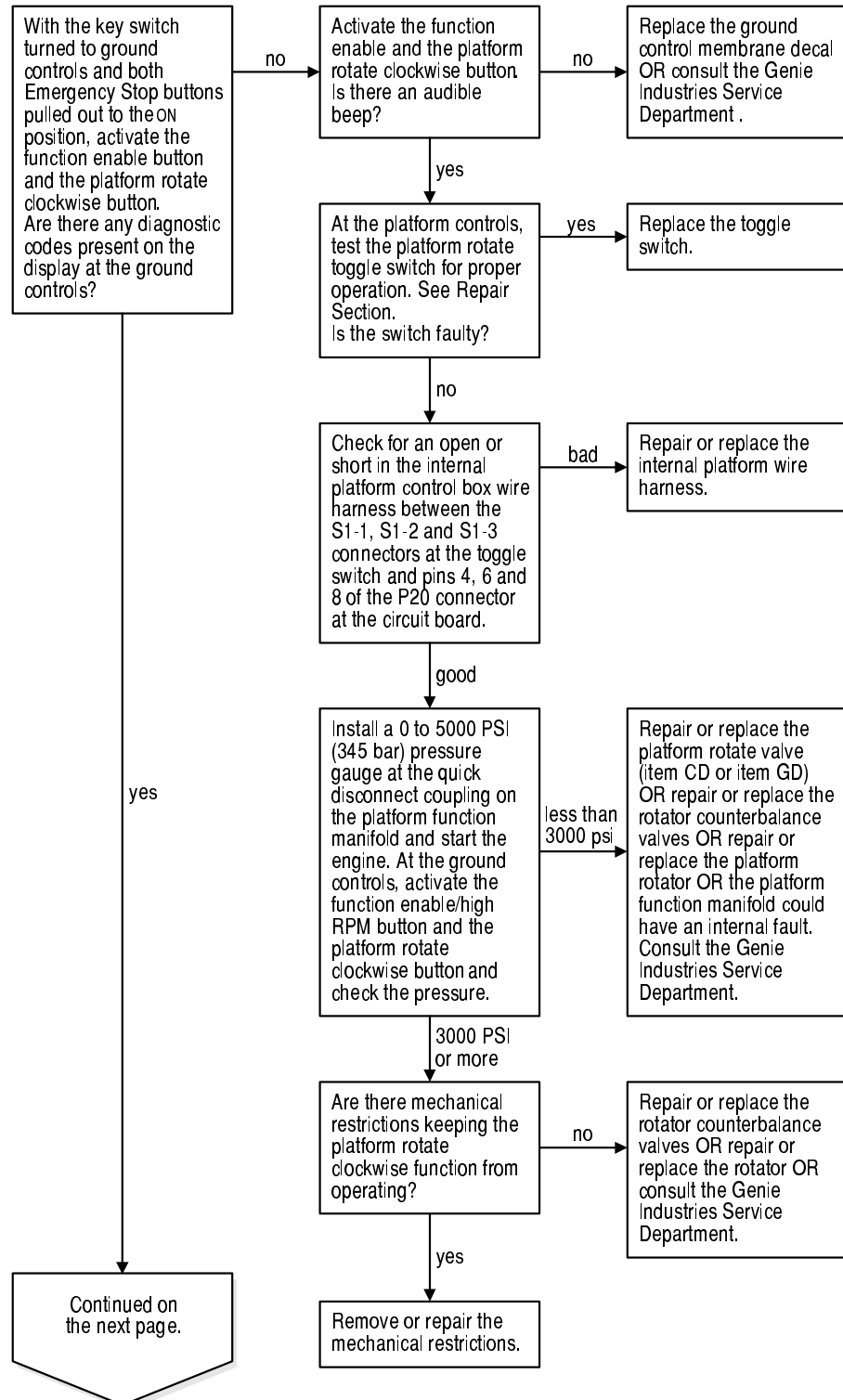


CHART 28

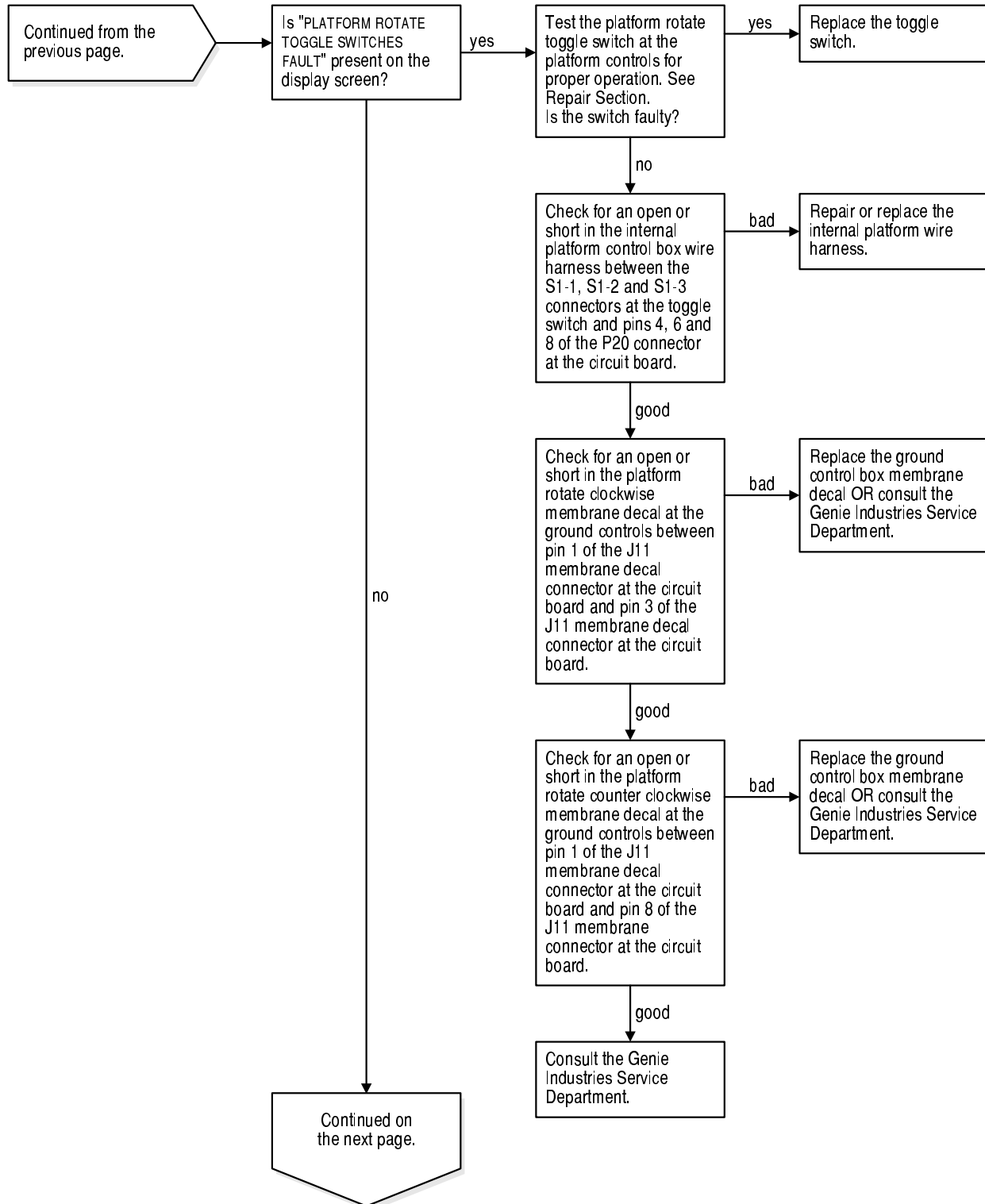


CHART 28

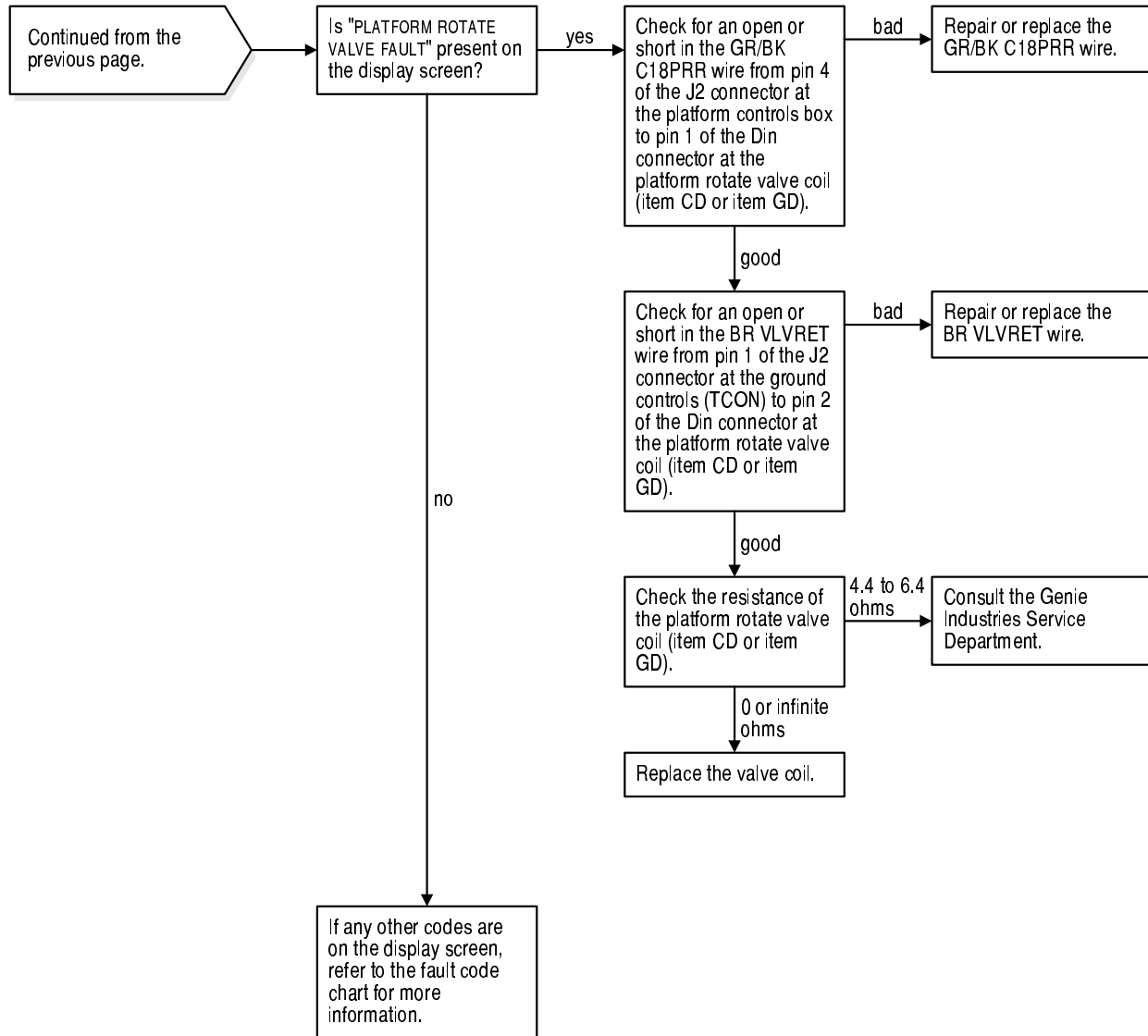


Chart 29

Platform Rotate Counter Clockwise Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

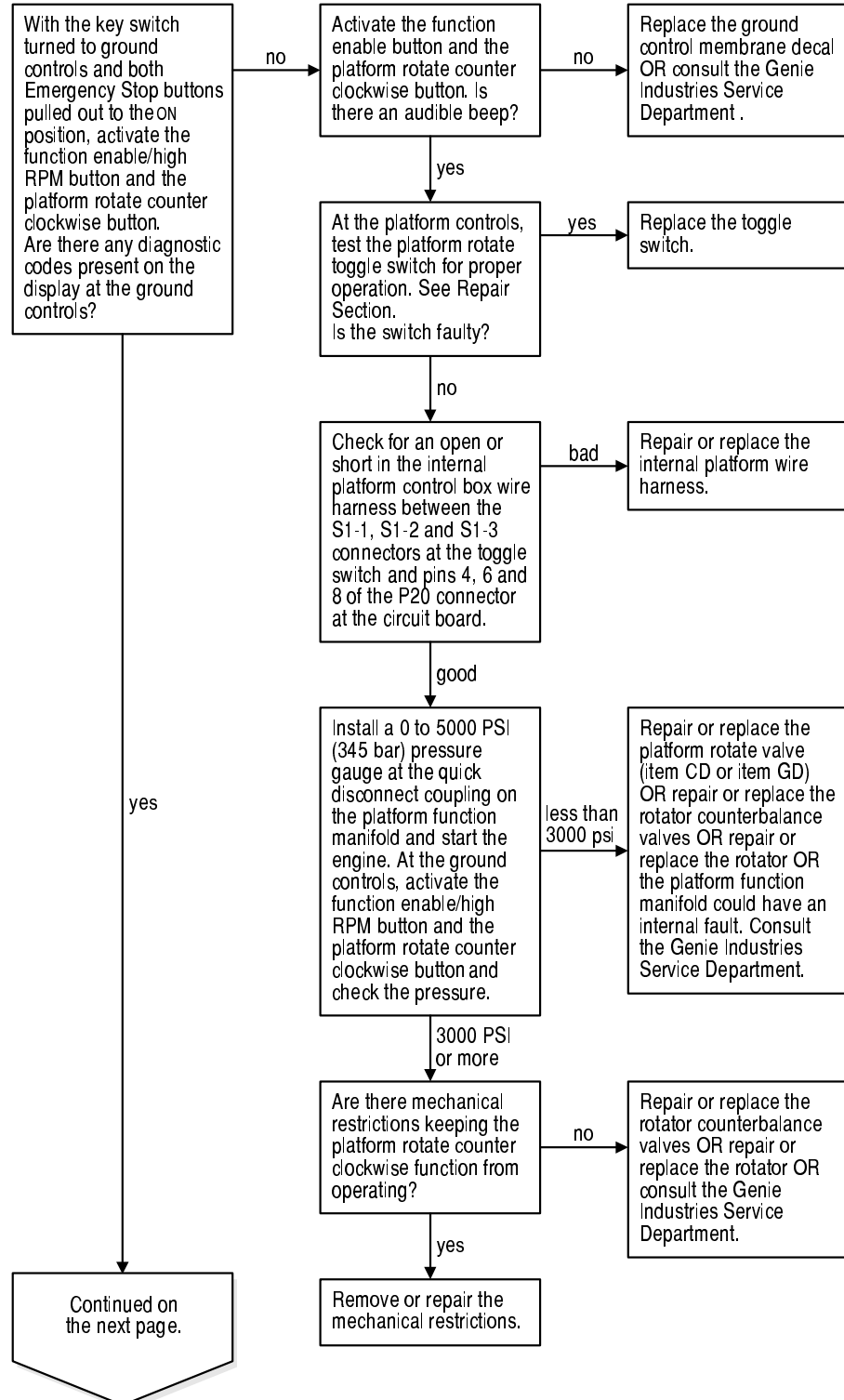


CHART 29

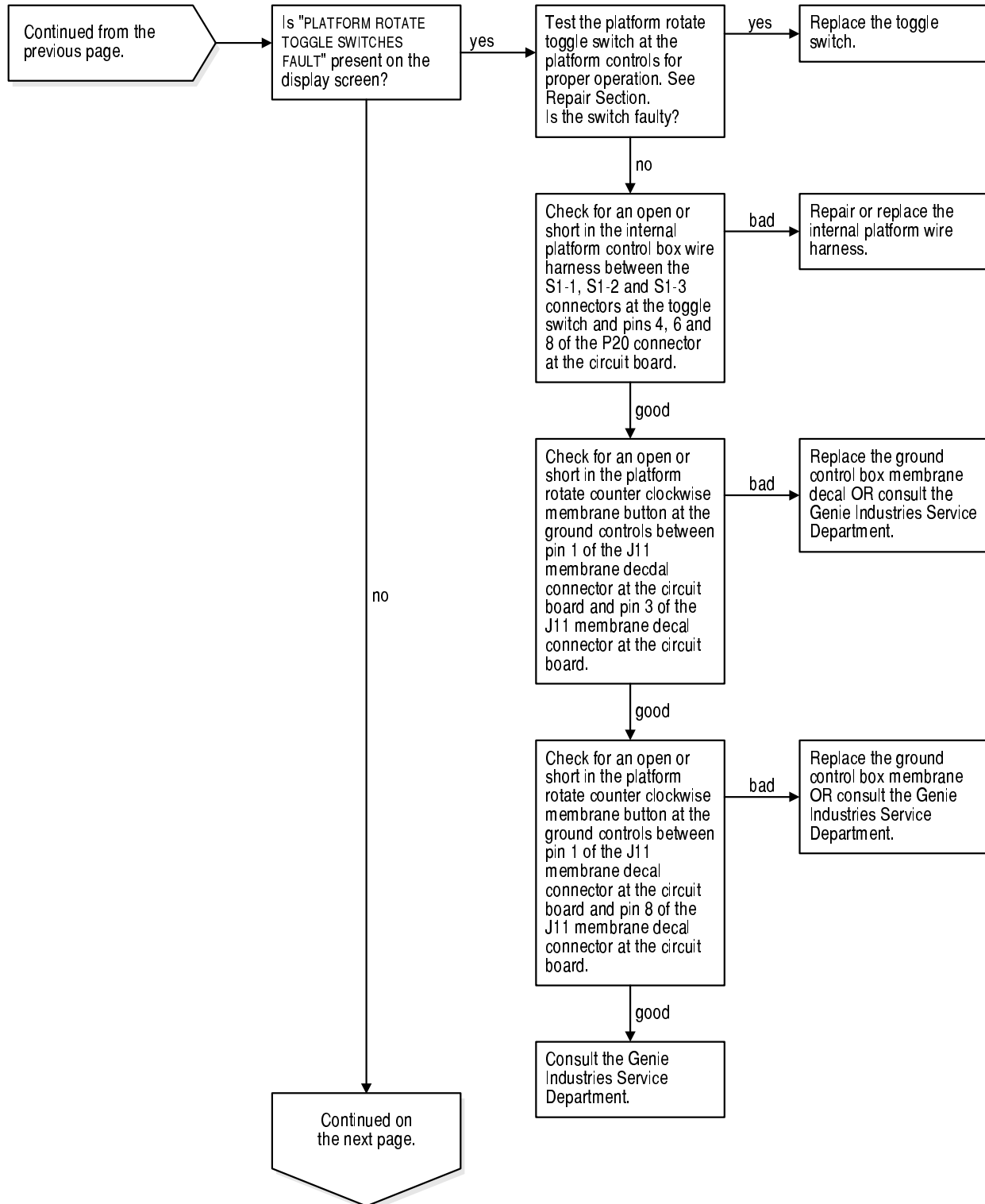


CHART 29

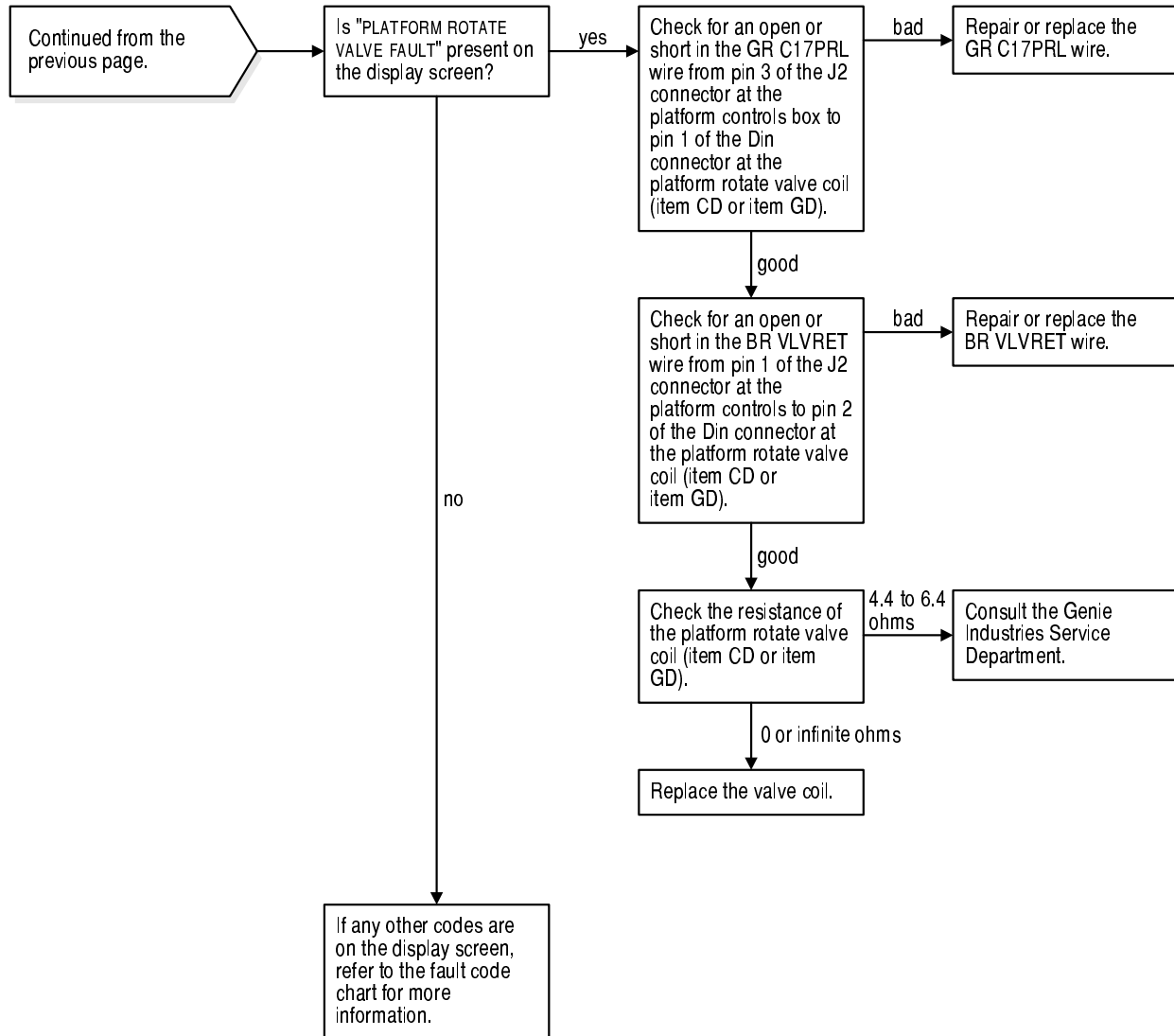


Chart 30

Jib Up Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

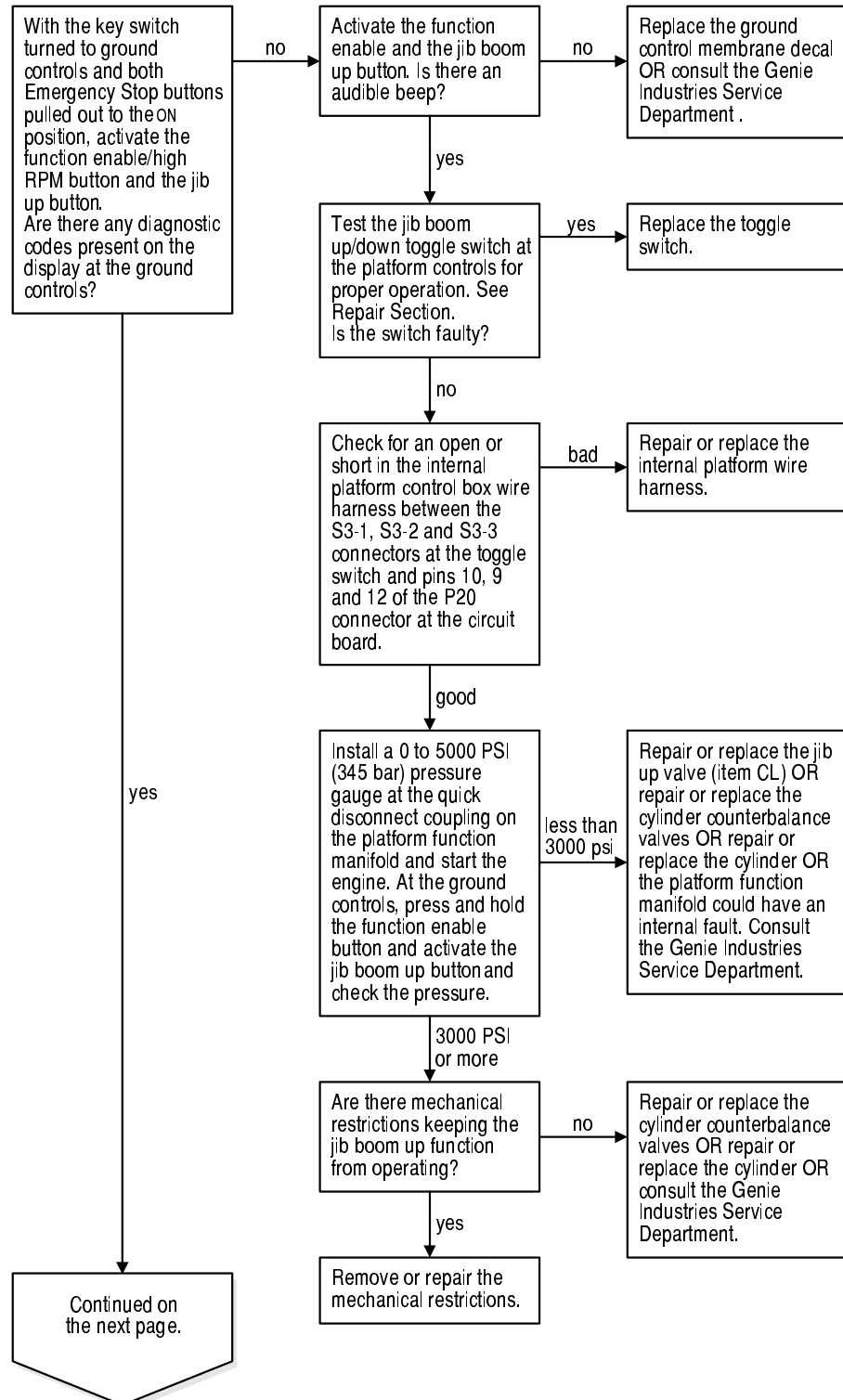


CHART 30

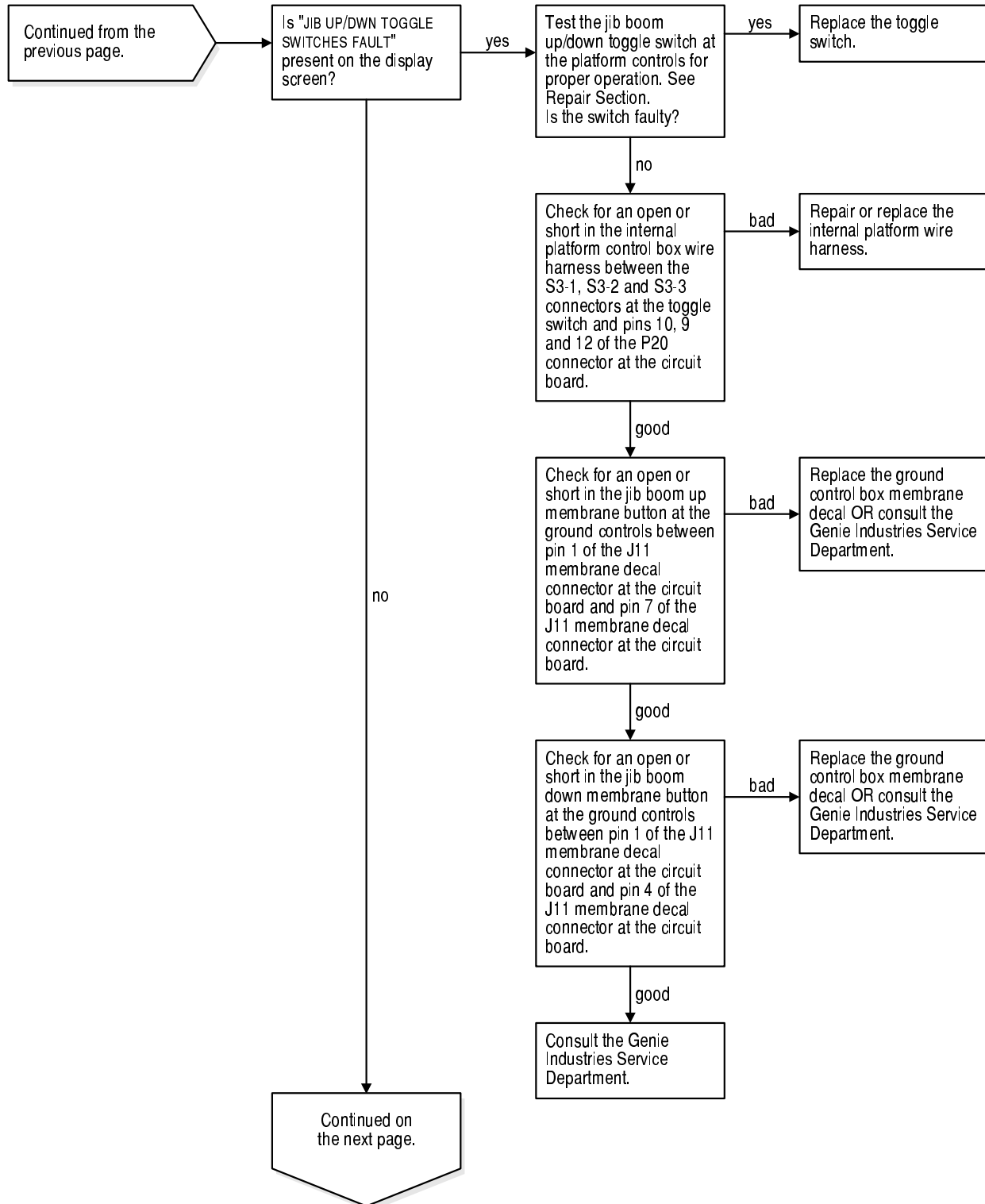


CHART 30

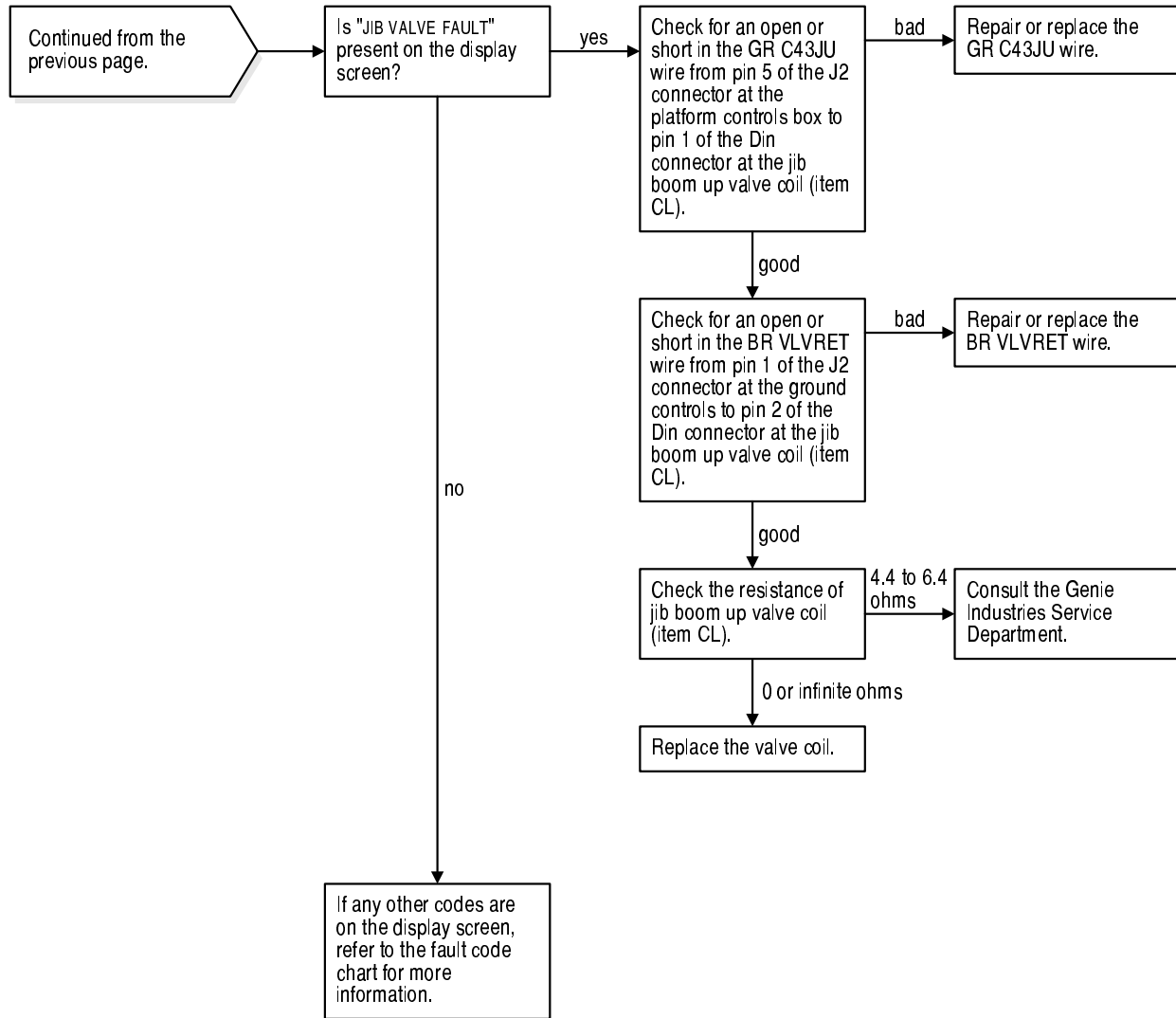


Chart 31

Jib Down Function Inoperative

Be sure all other functions operate normally.

Be sure the axles are fully extended.

Be sure the batteries are fully charged and properly connected.

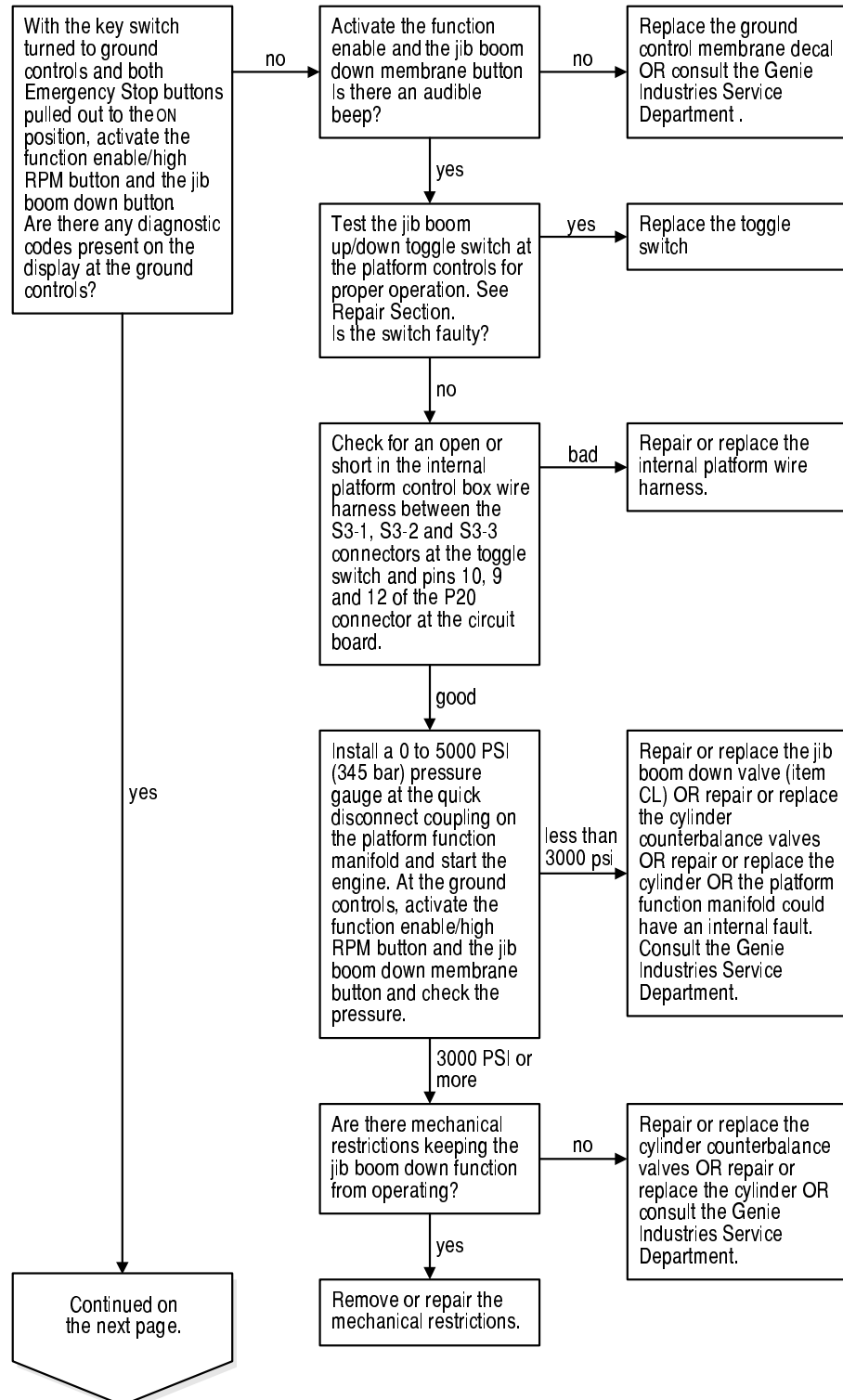


CHART 31

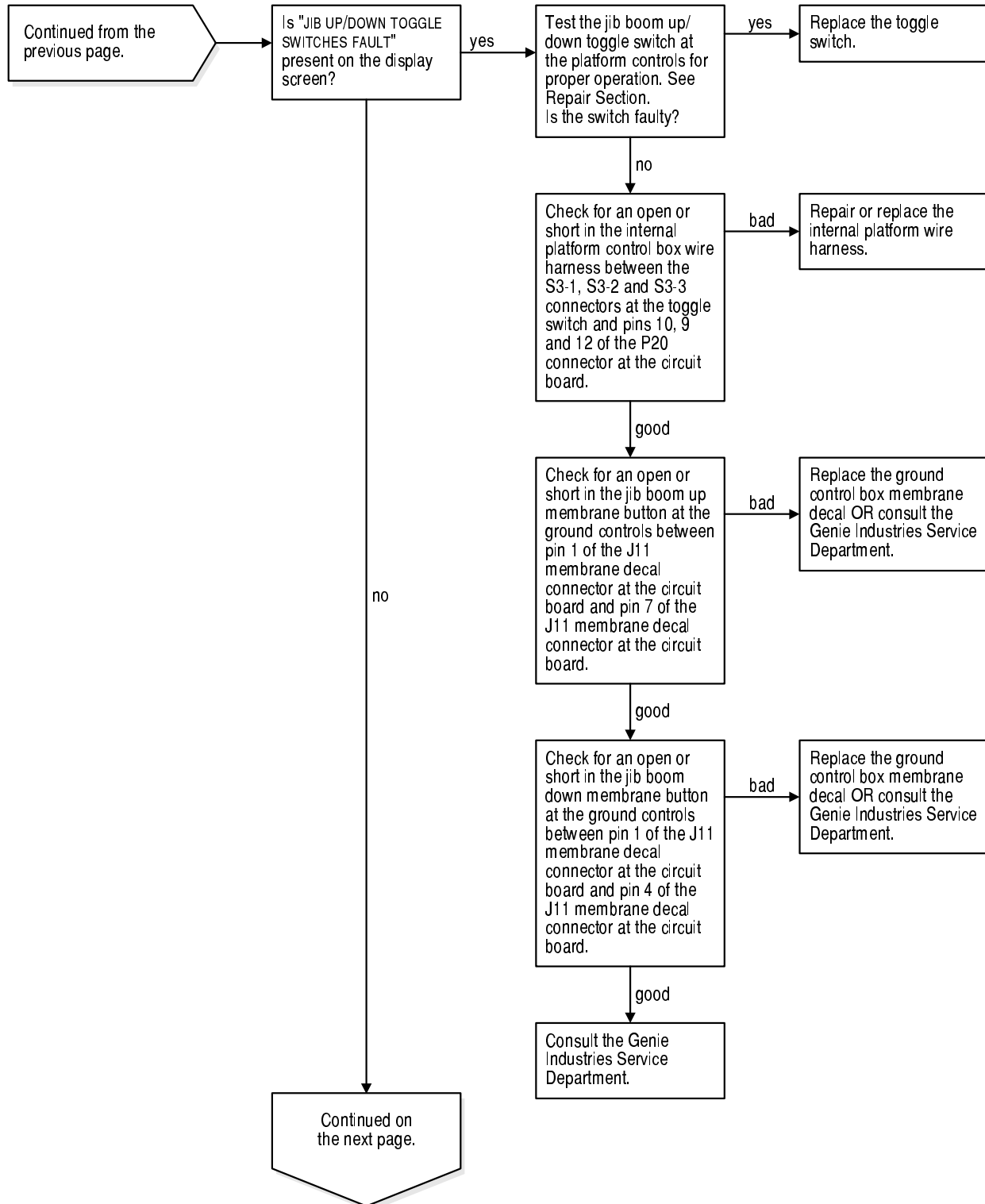


CHART 31

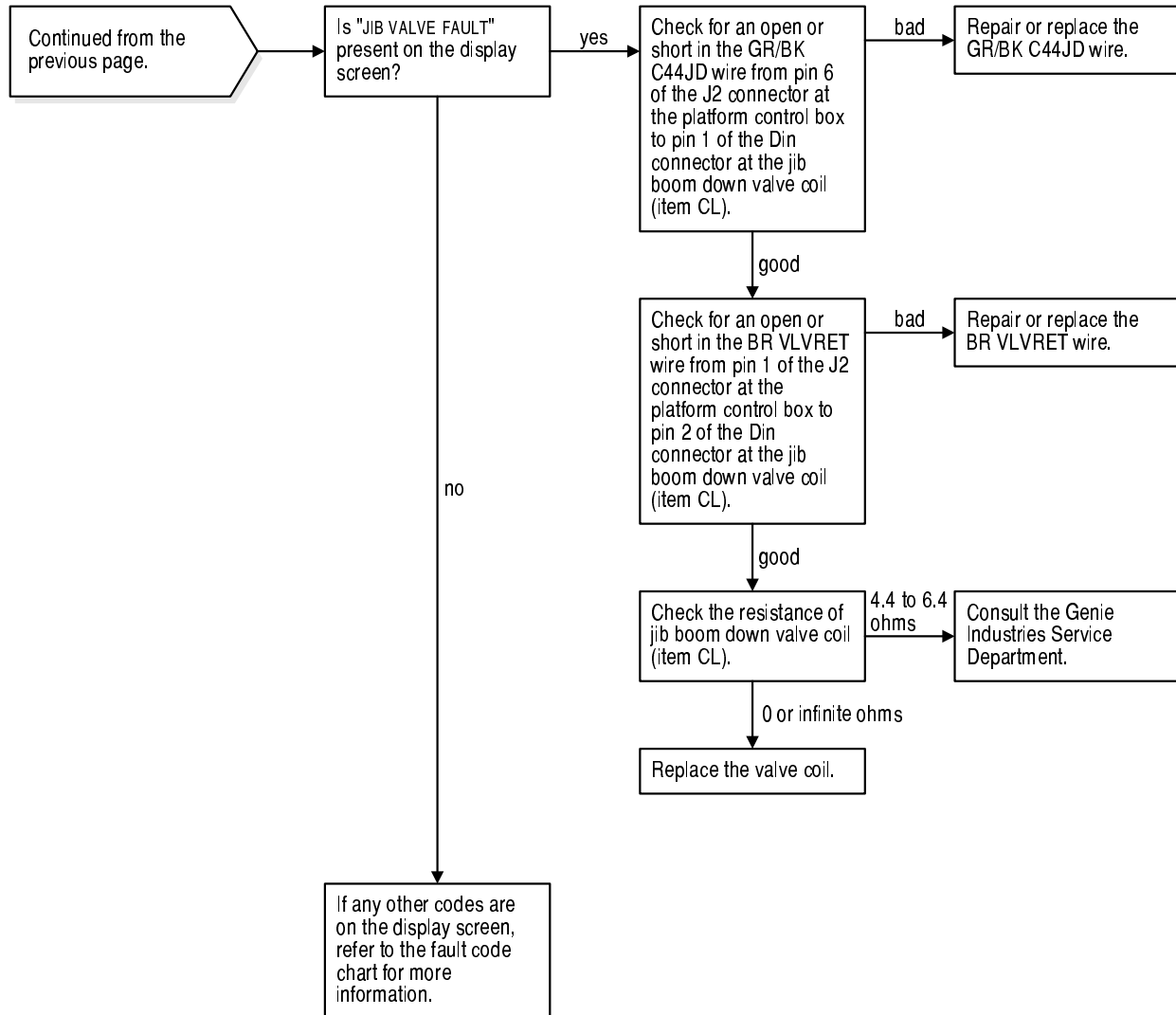


Chart 32

Auxiliary Functions Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

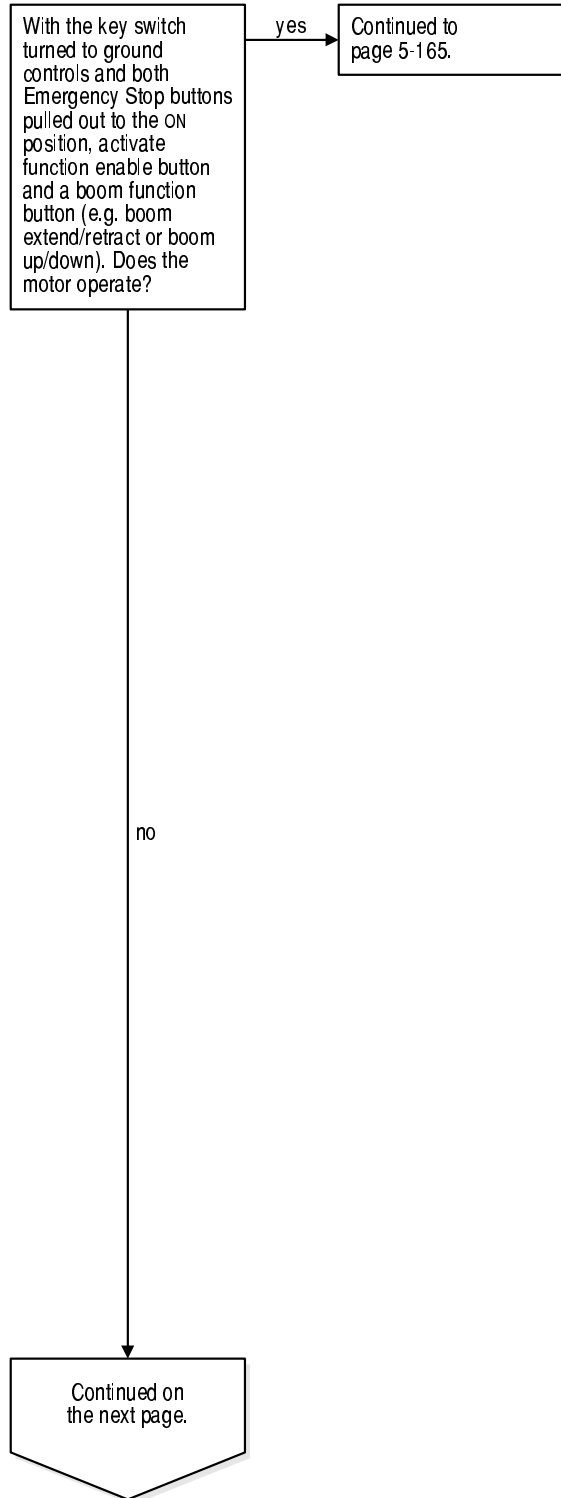


CHART 32

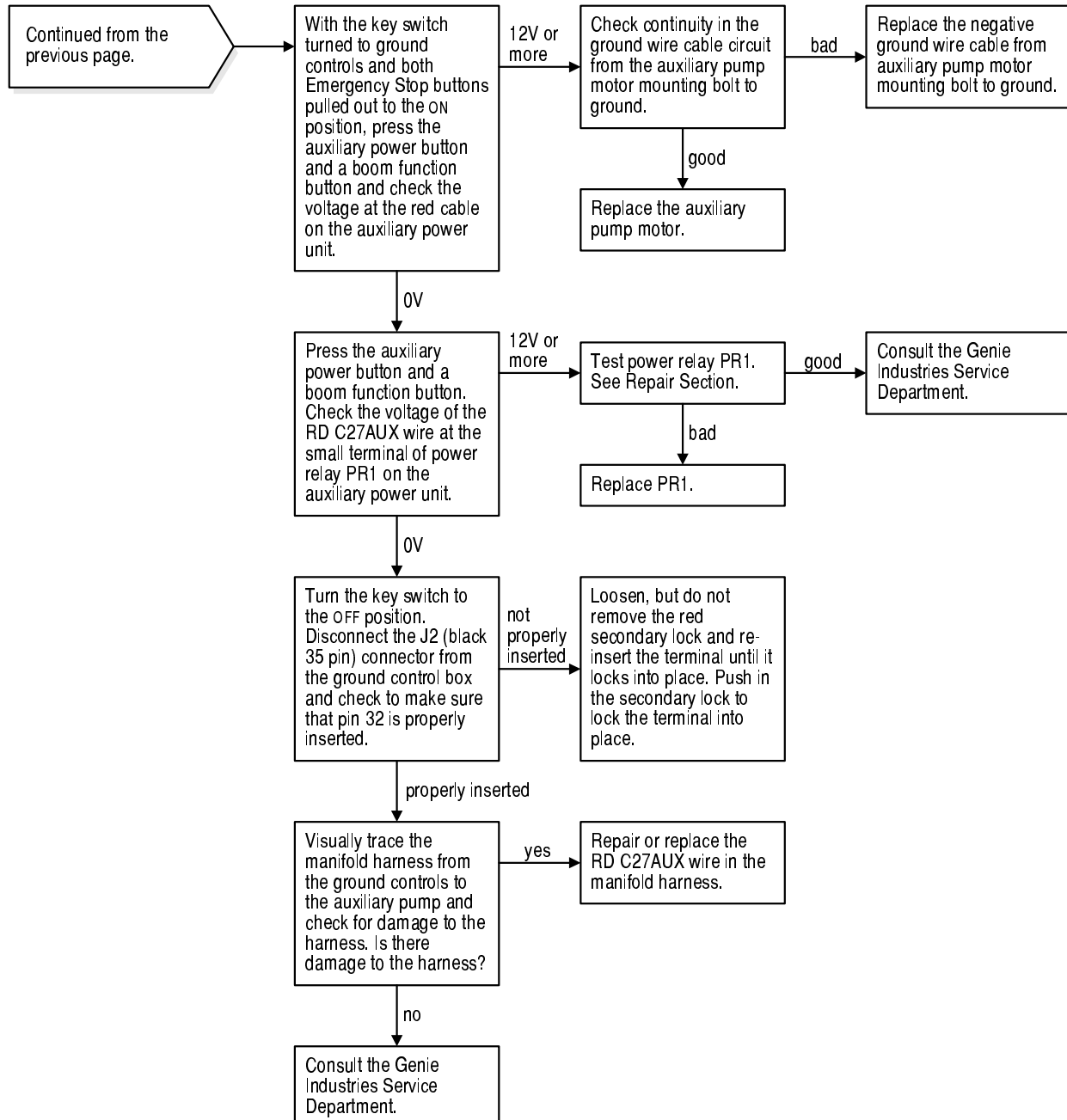


CHART 32

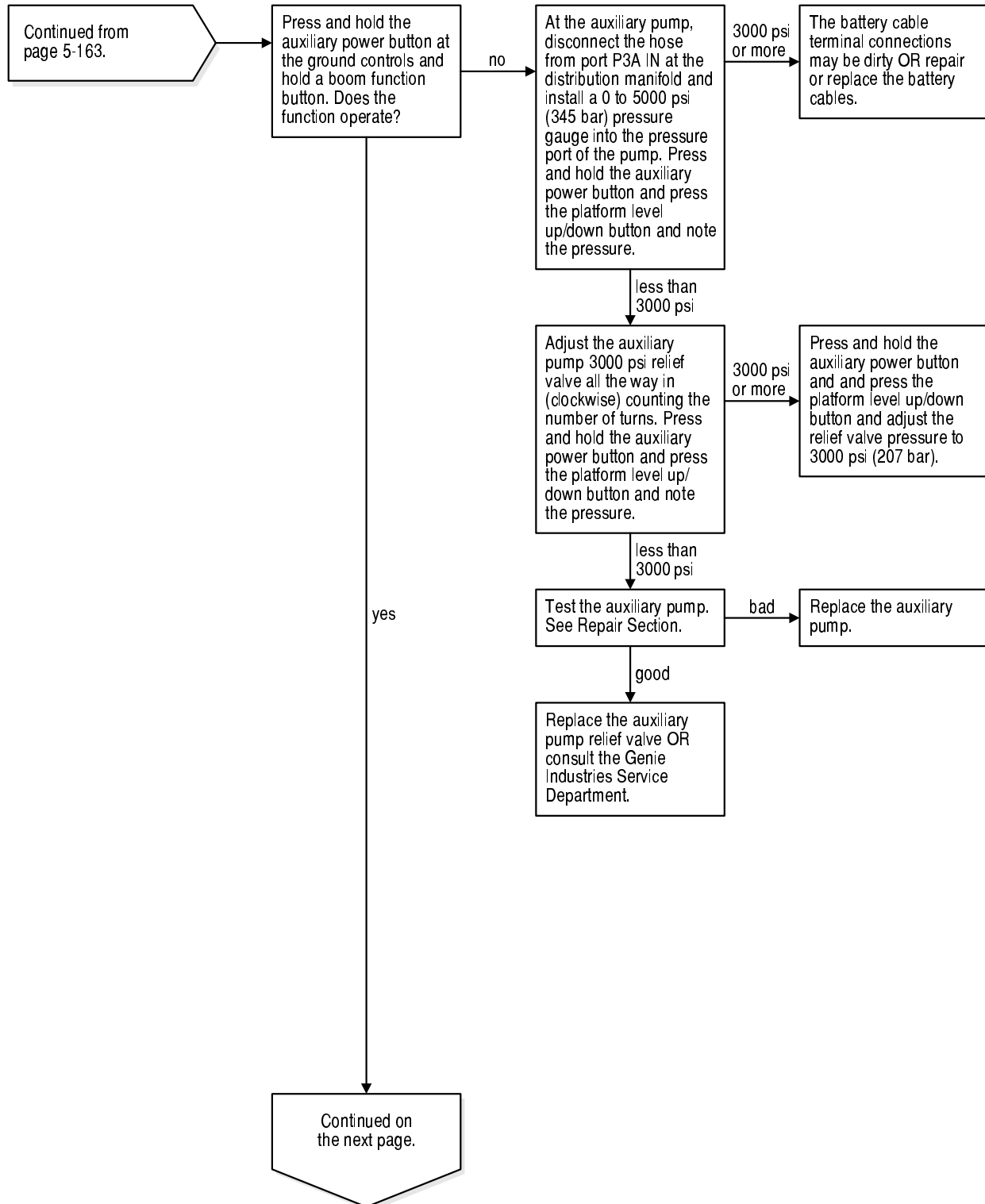


CHART 32

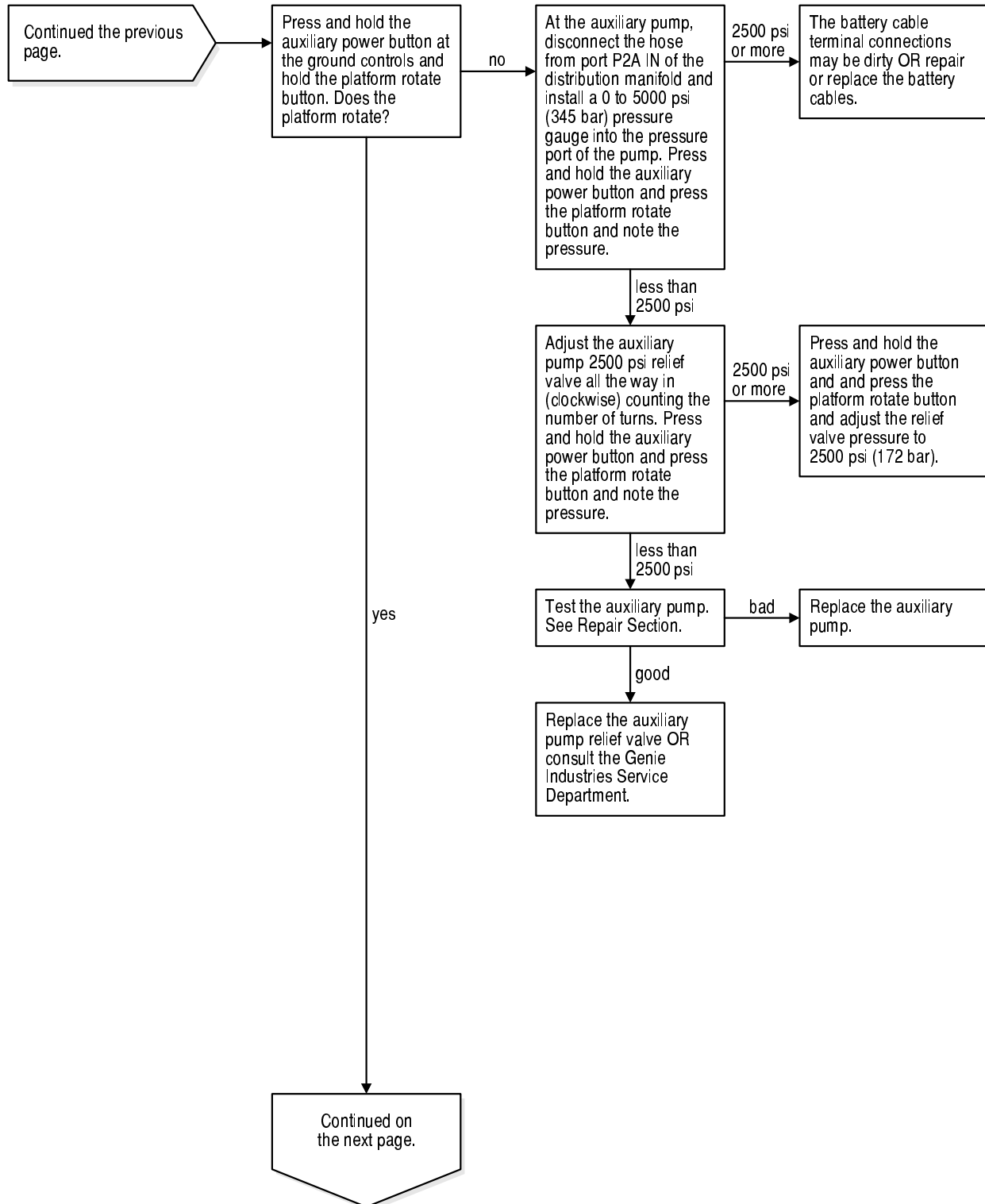


CHART 32

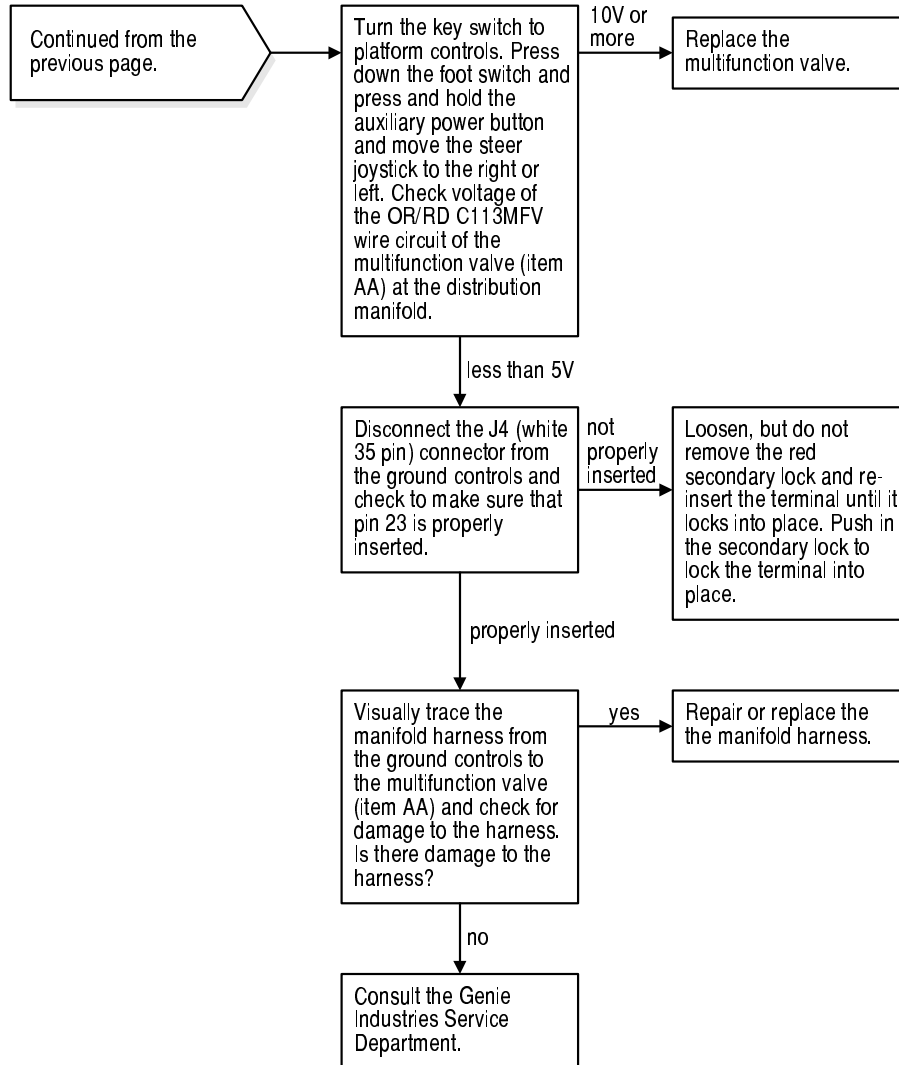


Chart 33

Axle Extend Function Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

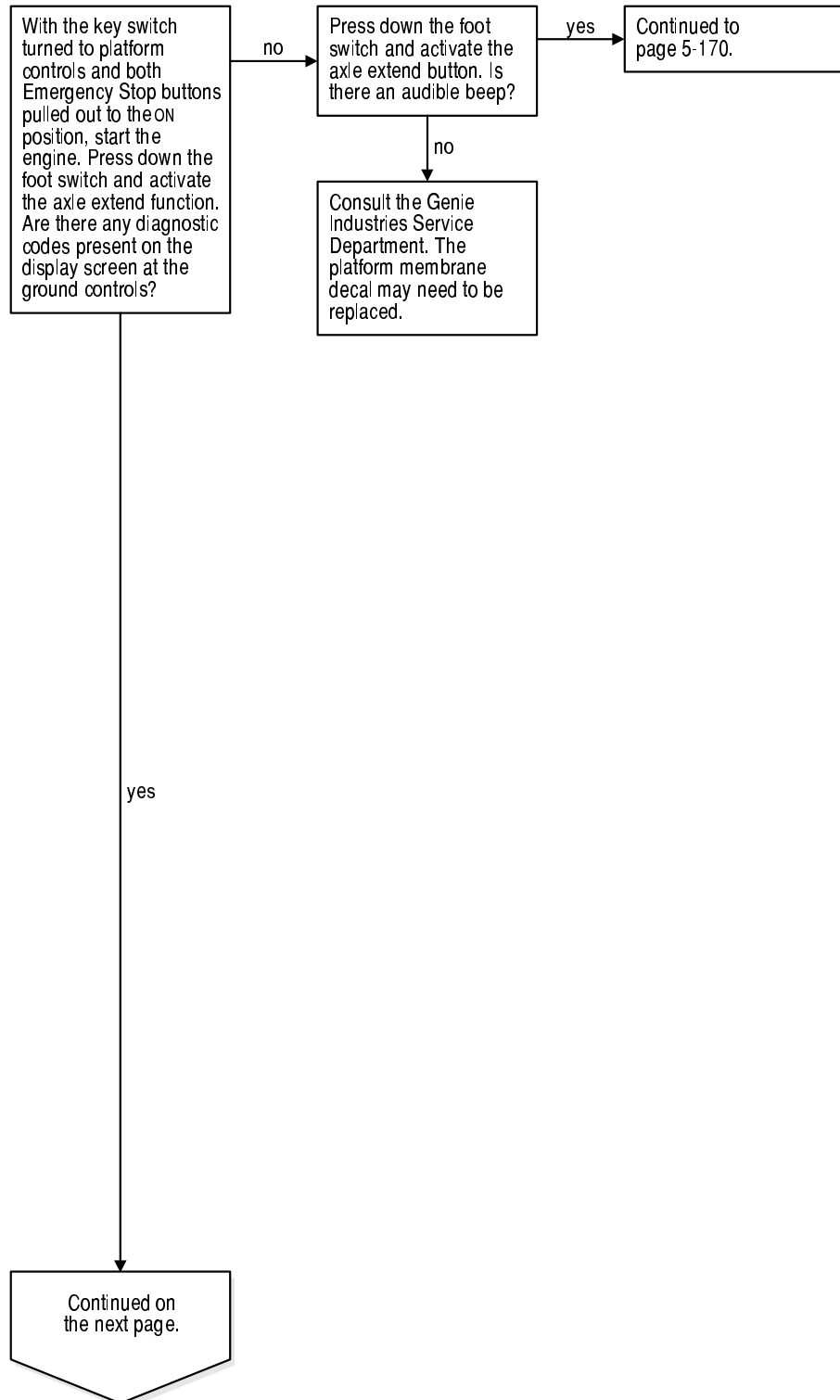


CHART 33

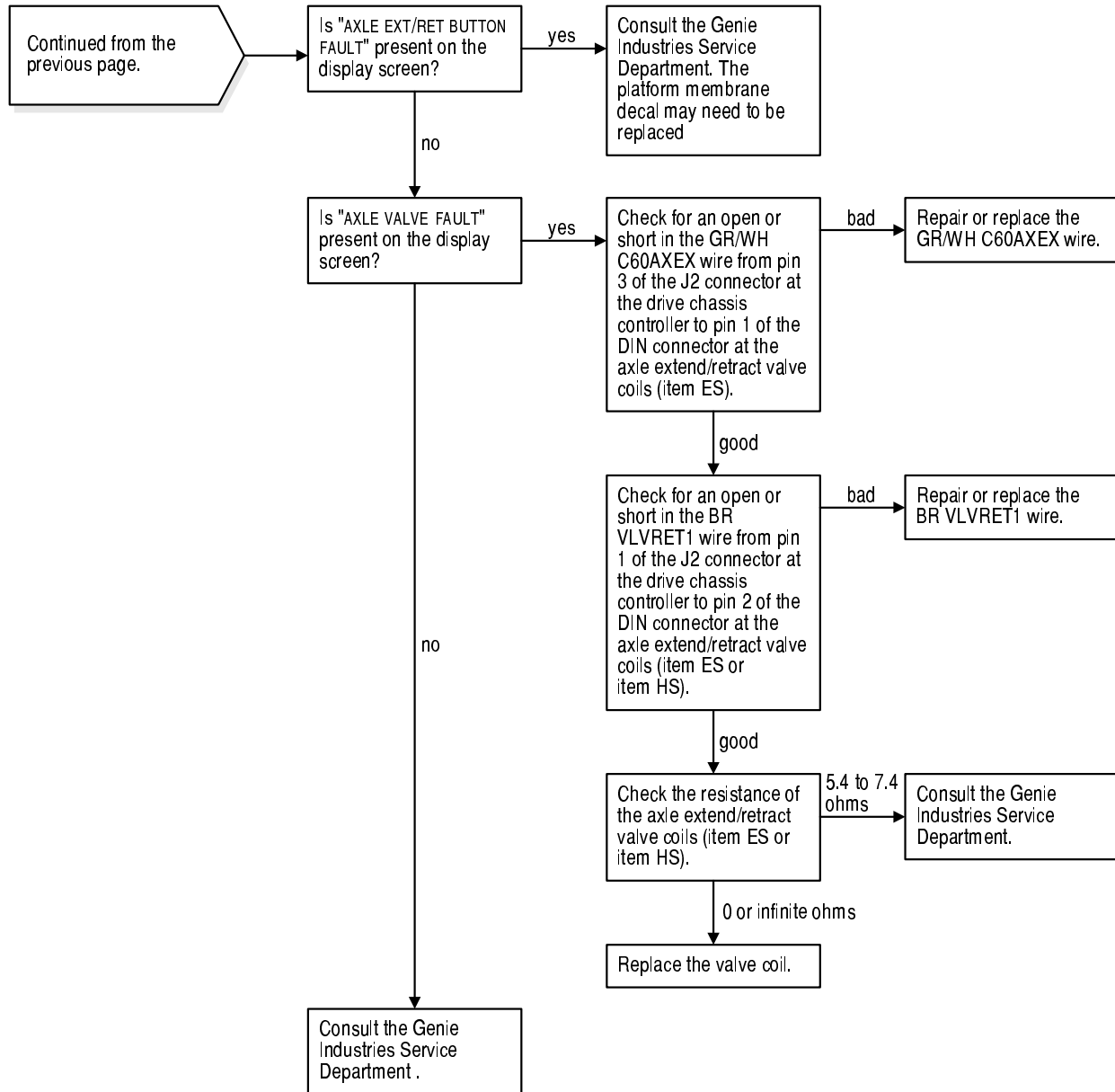


CHART 33

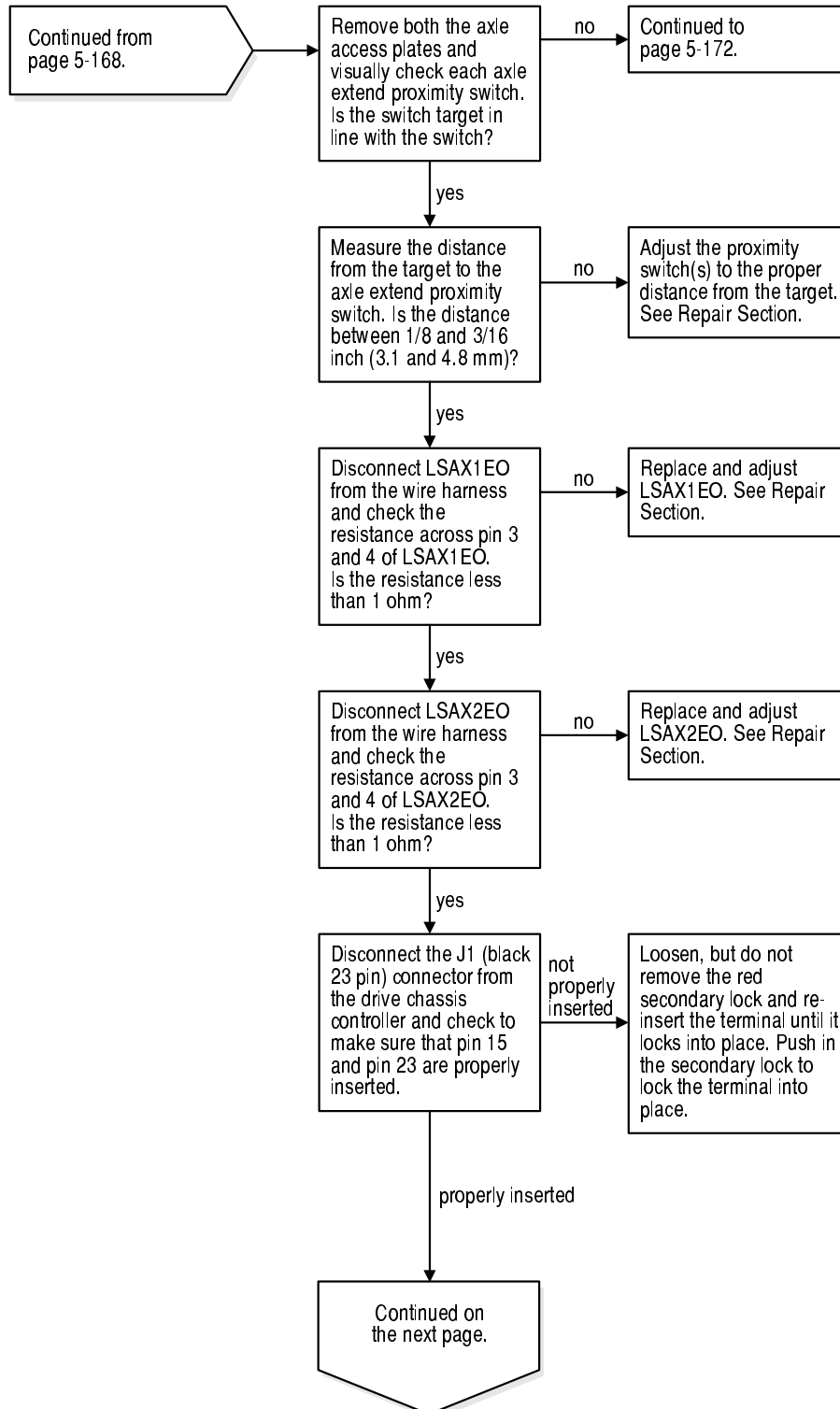


CHART 33

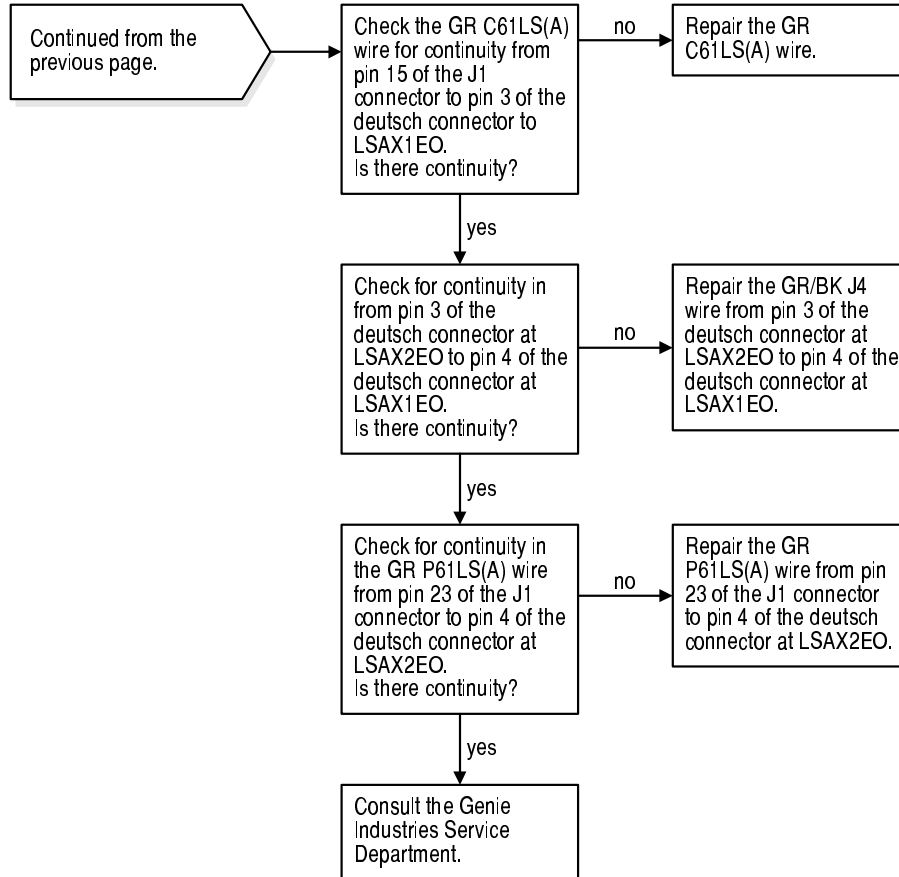


CHART 33

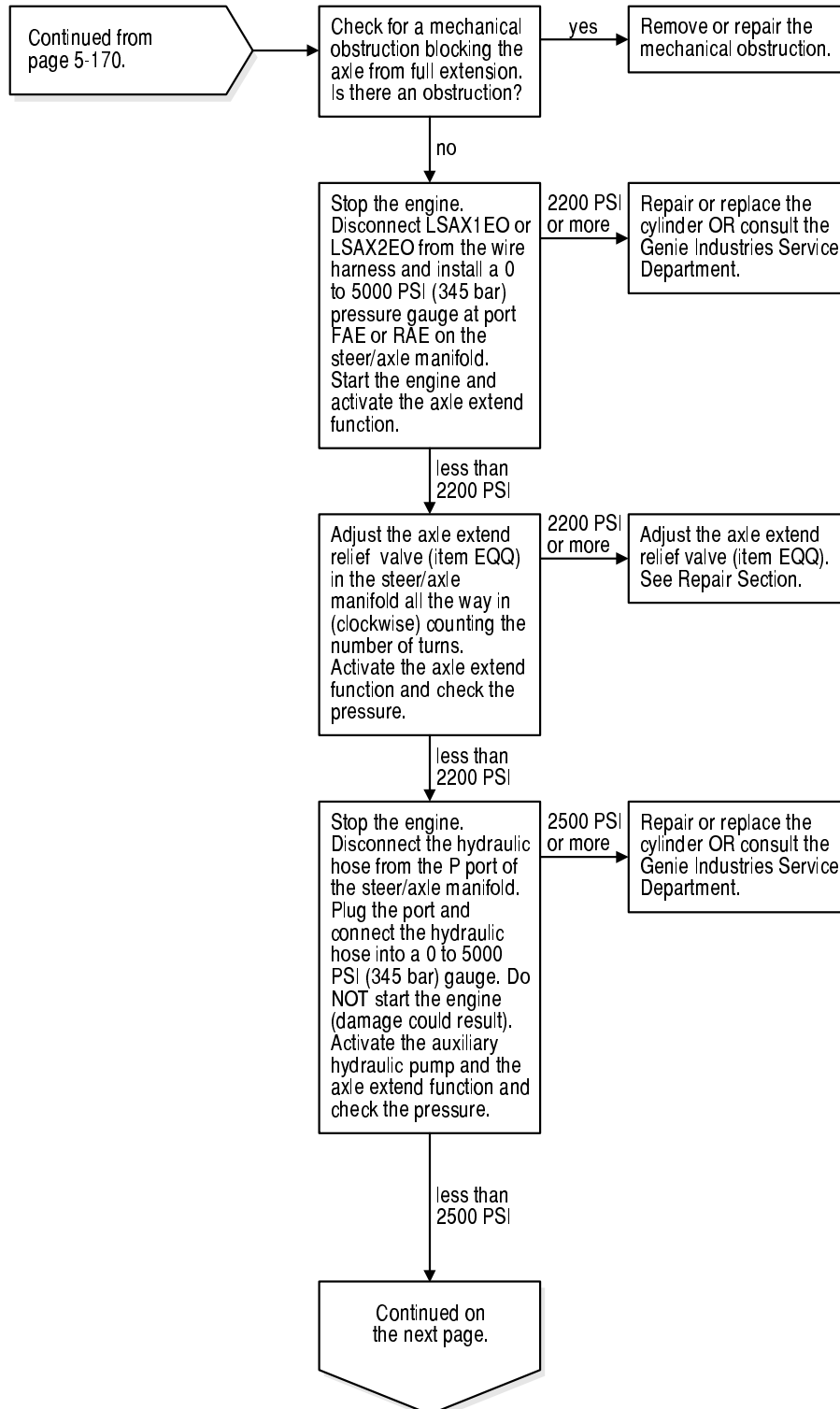


CHART 33

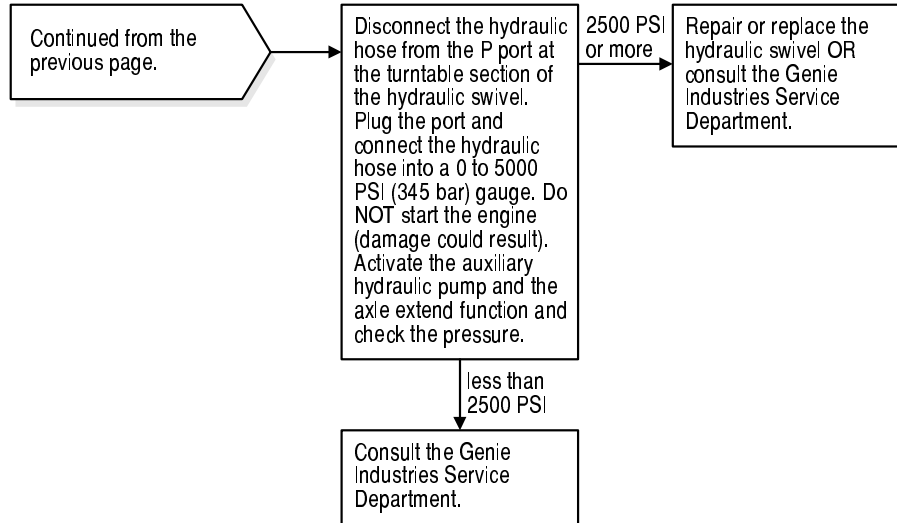


Chart 34

Axle Retract Function Inoperative

Be sure the boom is in the stowed position.

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

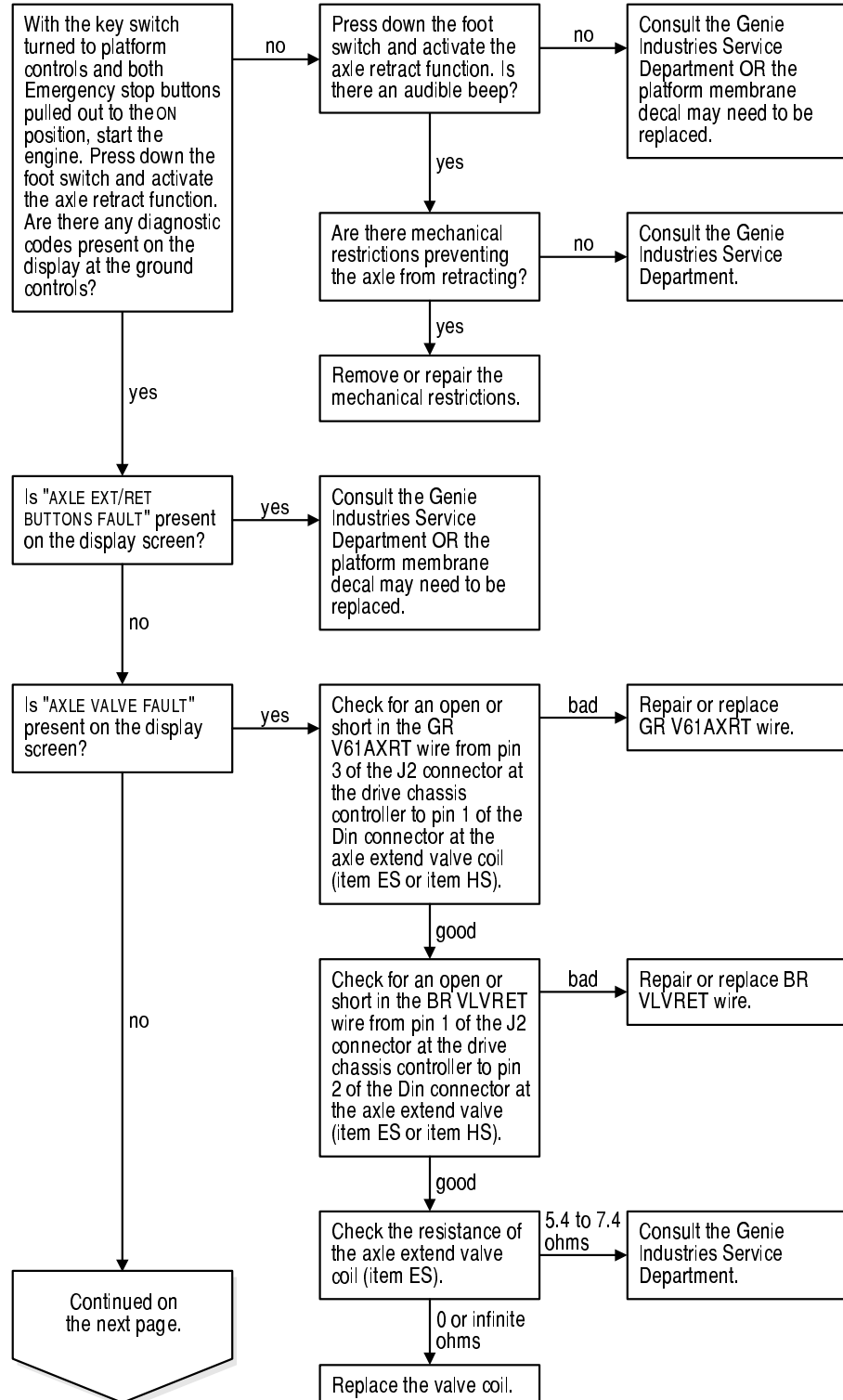


CHART 34

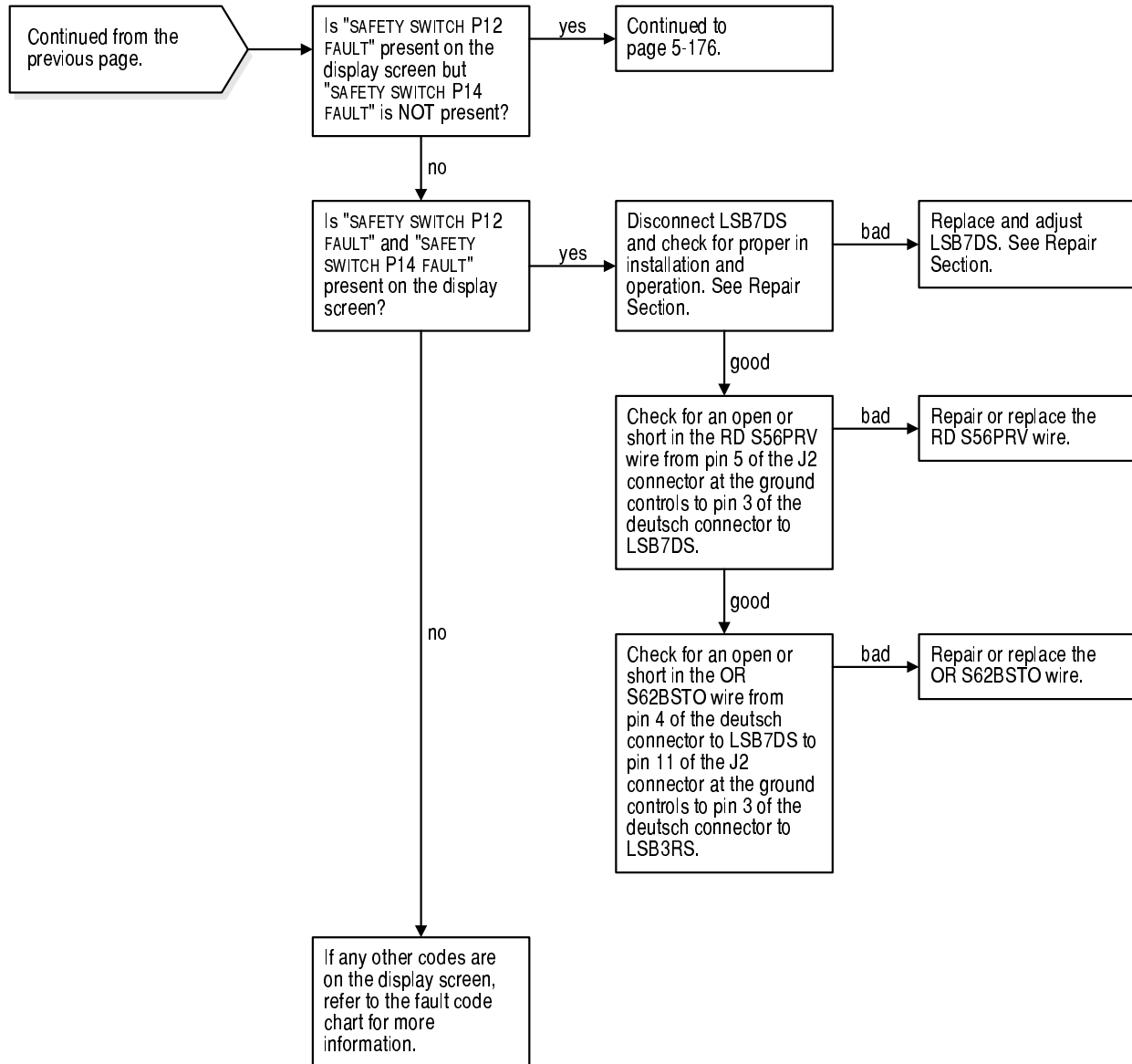


CHART 34

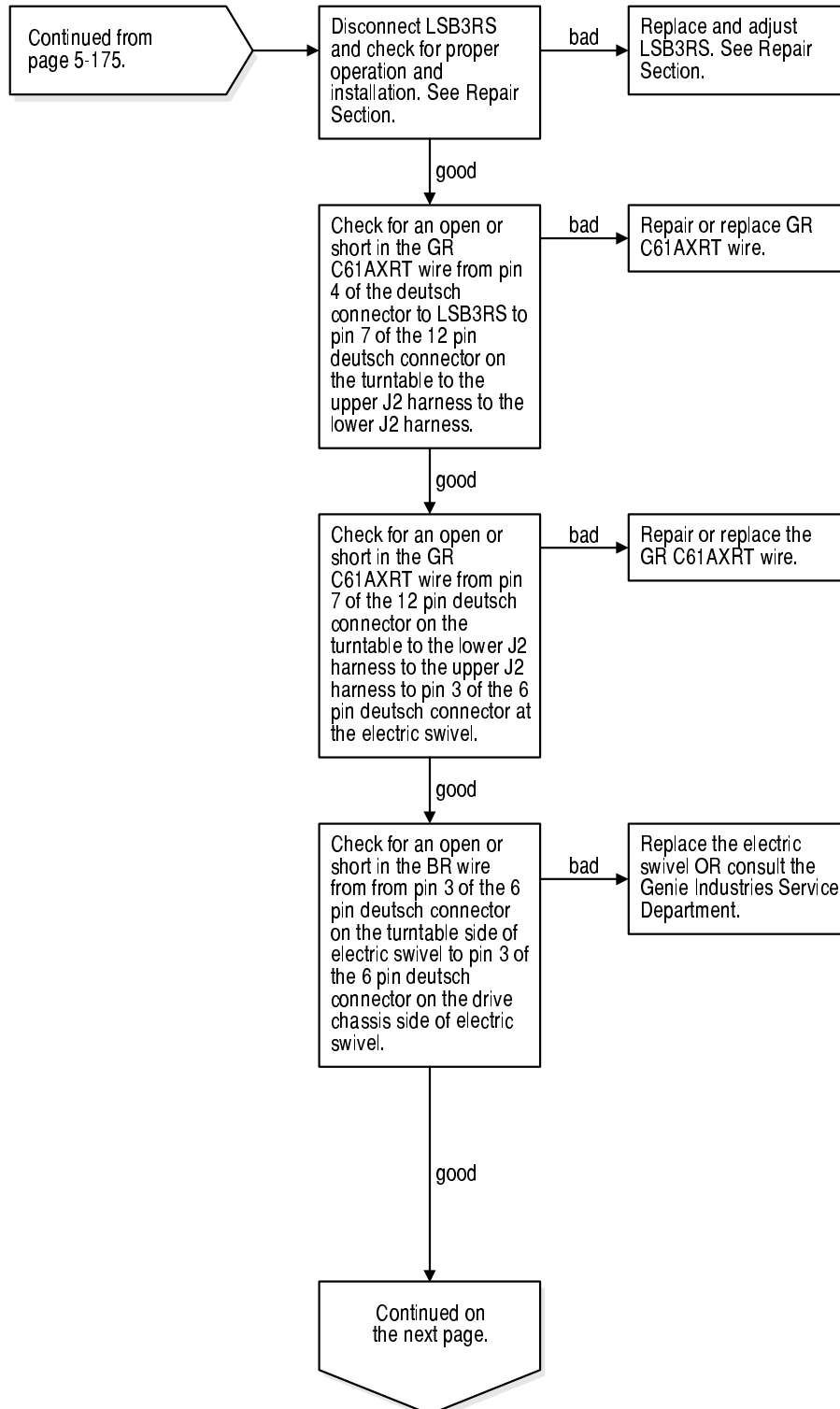


CHART 34

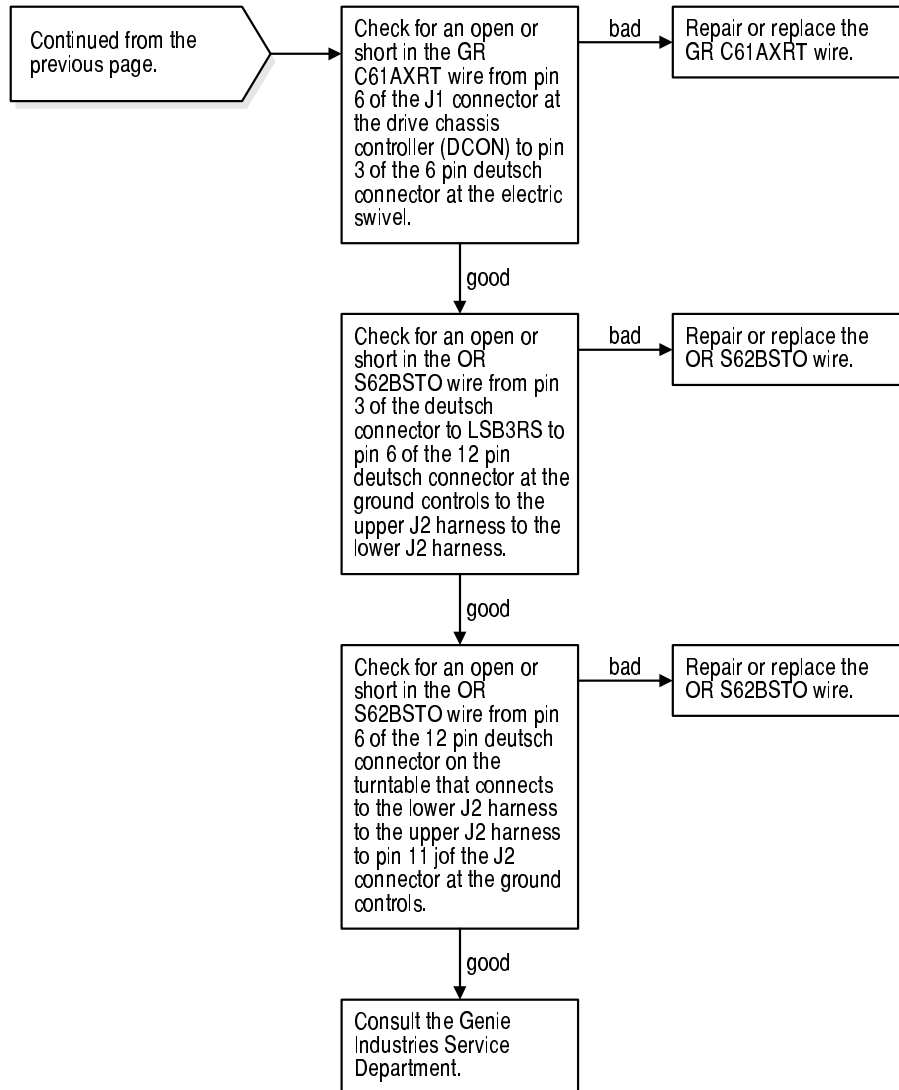


Chart 35

Blue End Blue Side Steering Function Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

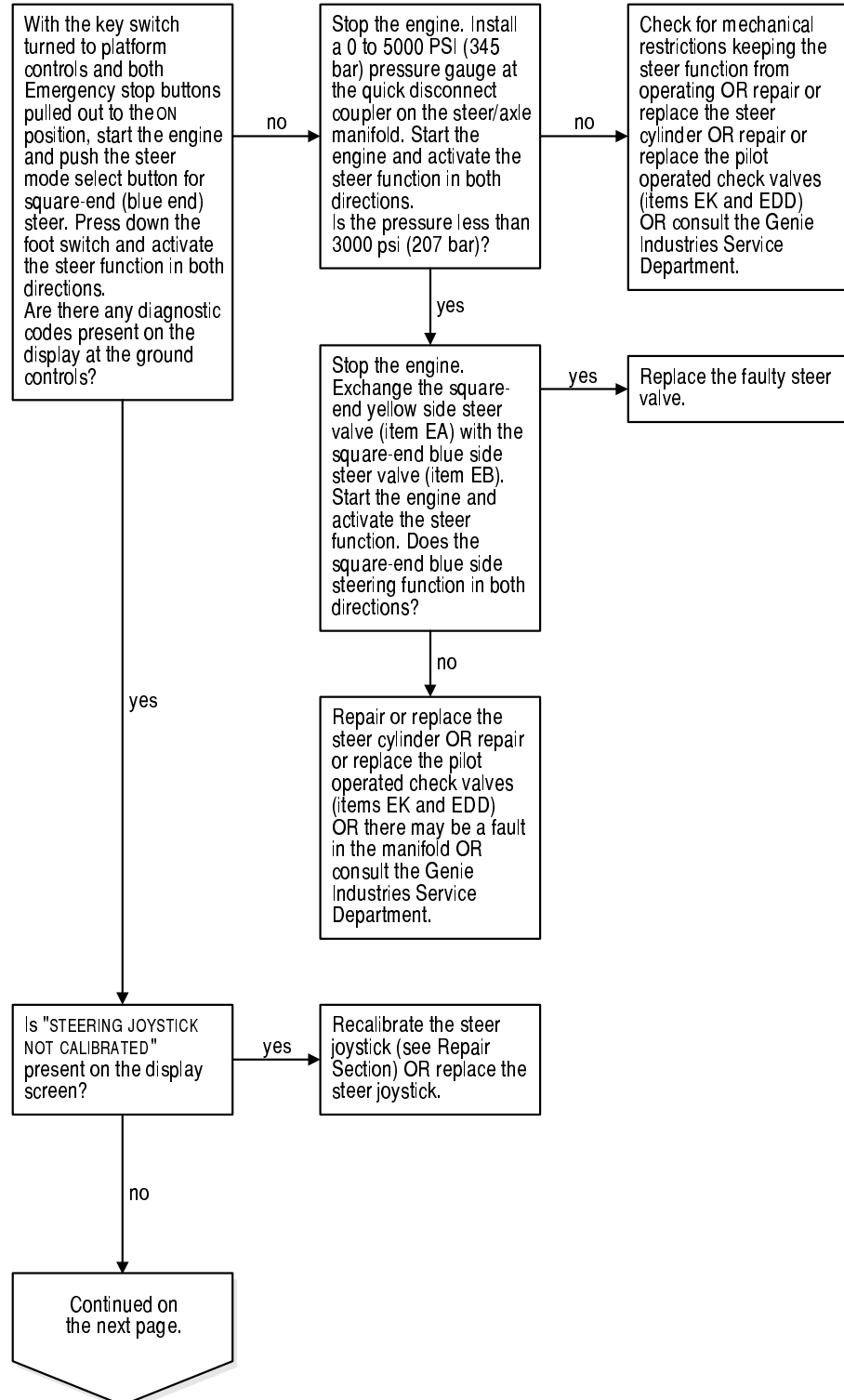


CHART 35

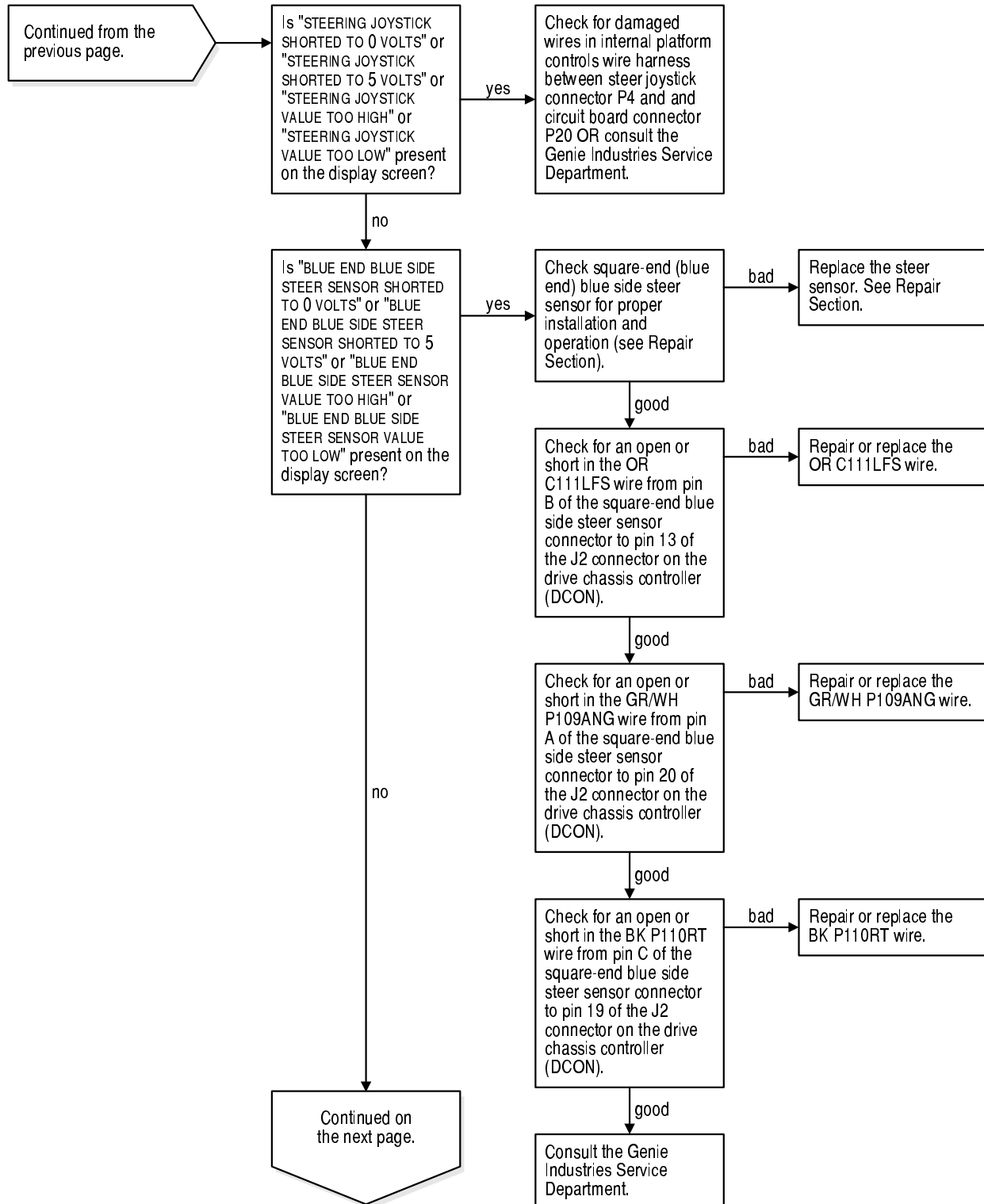


CHART 35

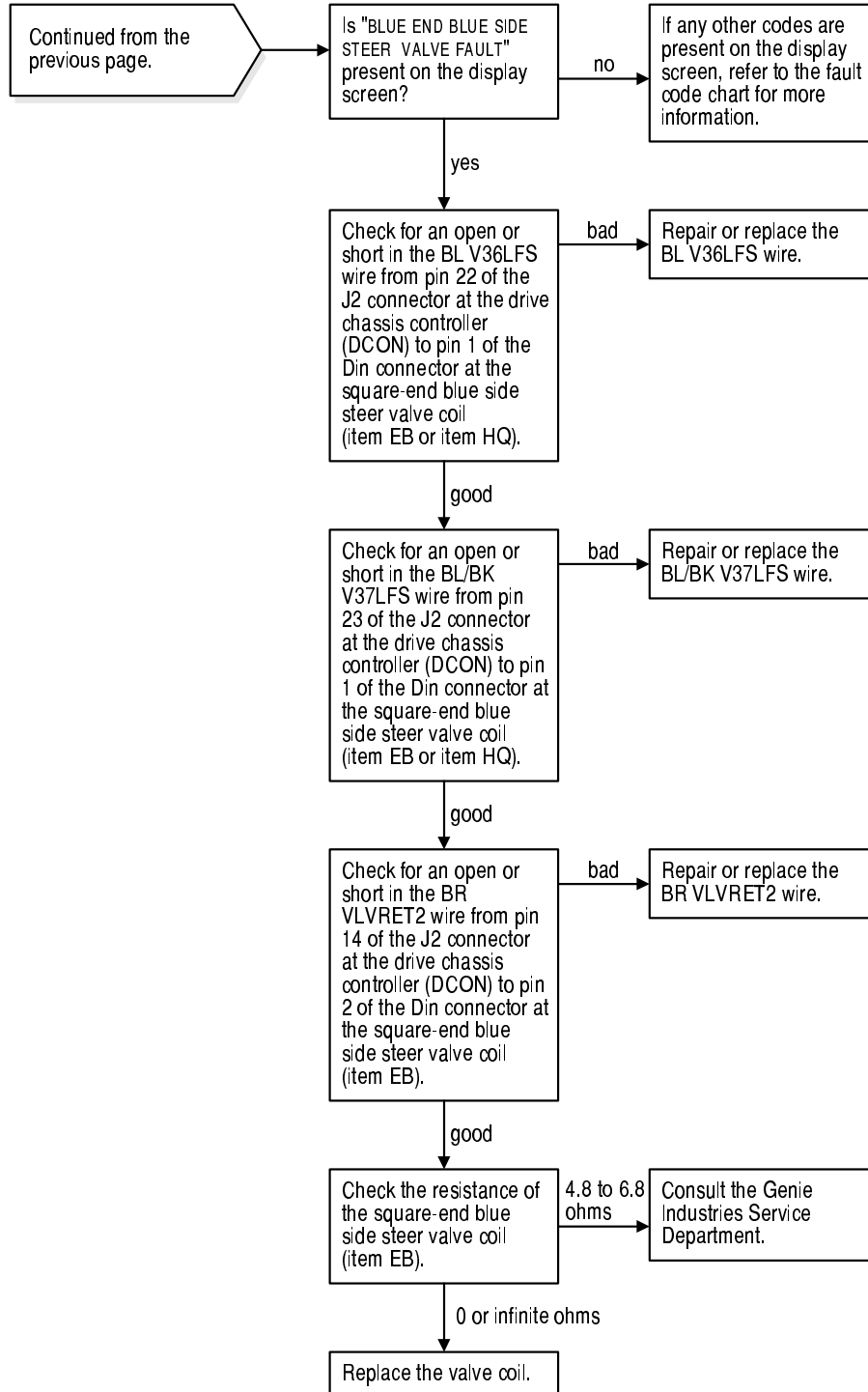


Chart 36

Blue End Yellow Side Steering Function Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

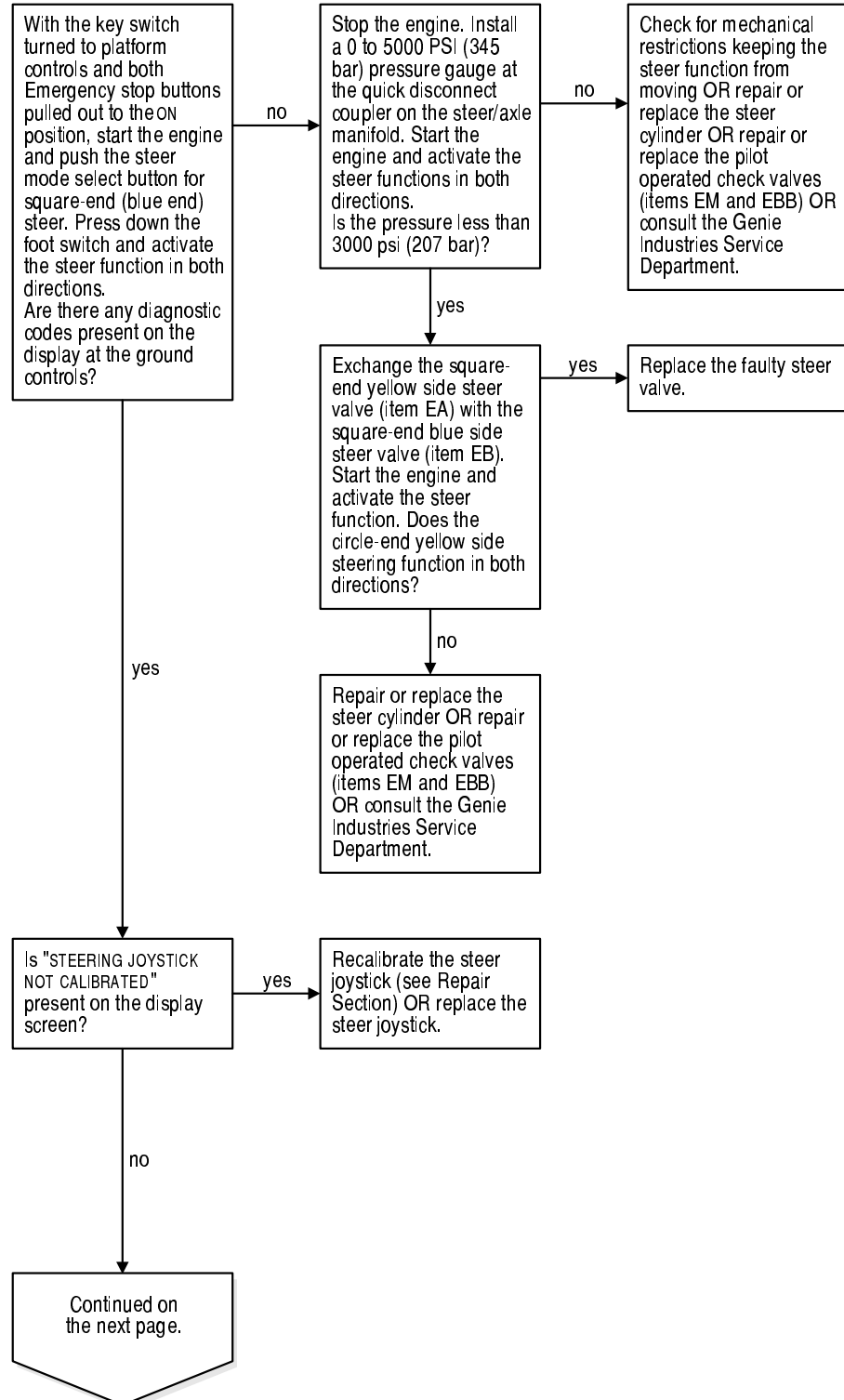


CHART 36

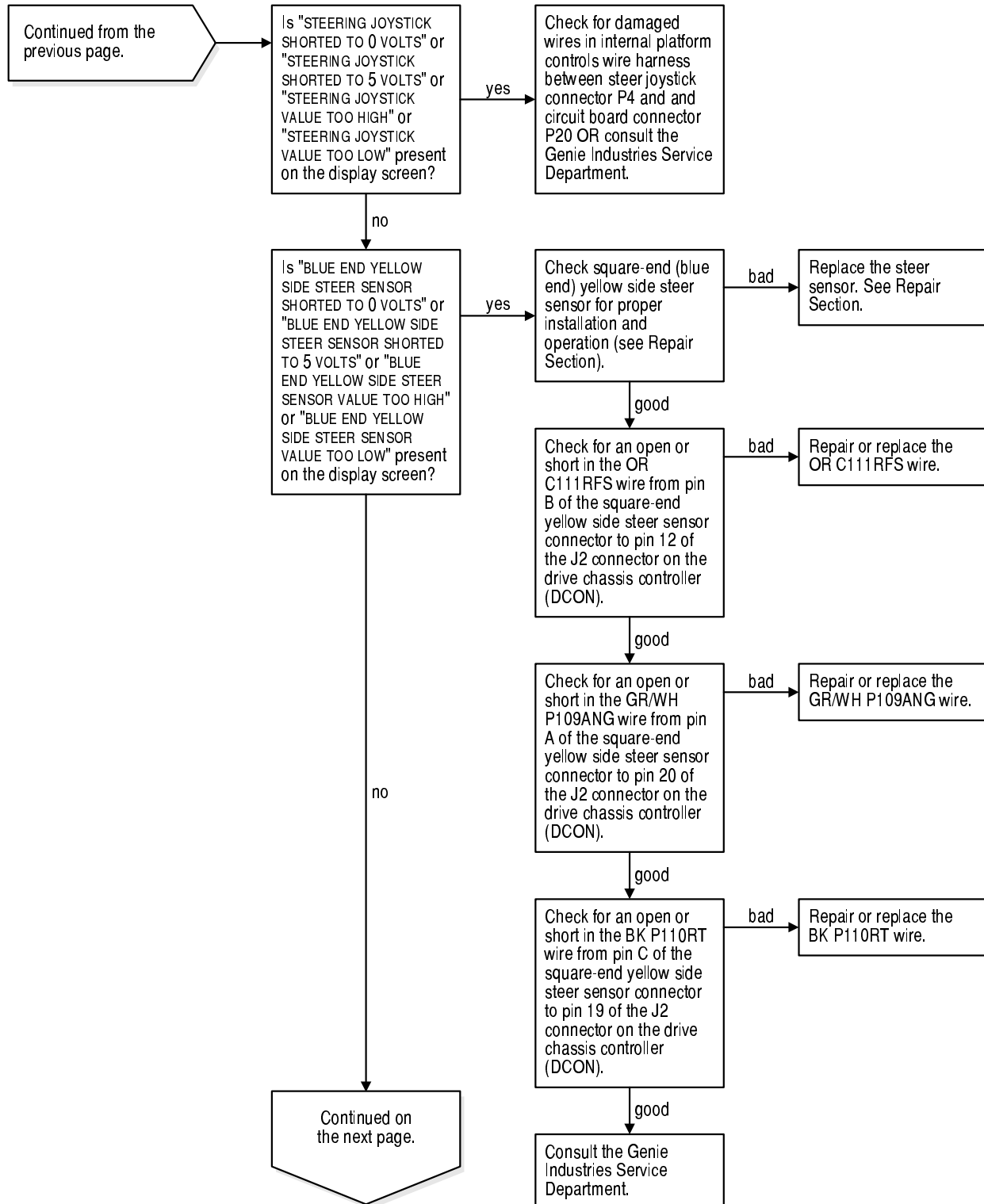


CHART 36

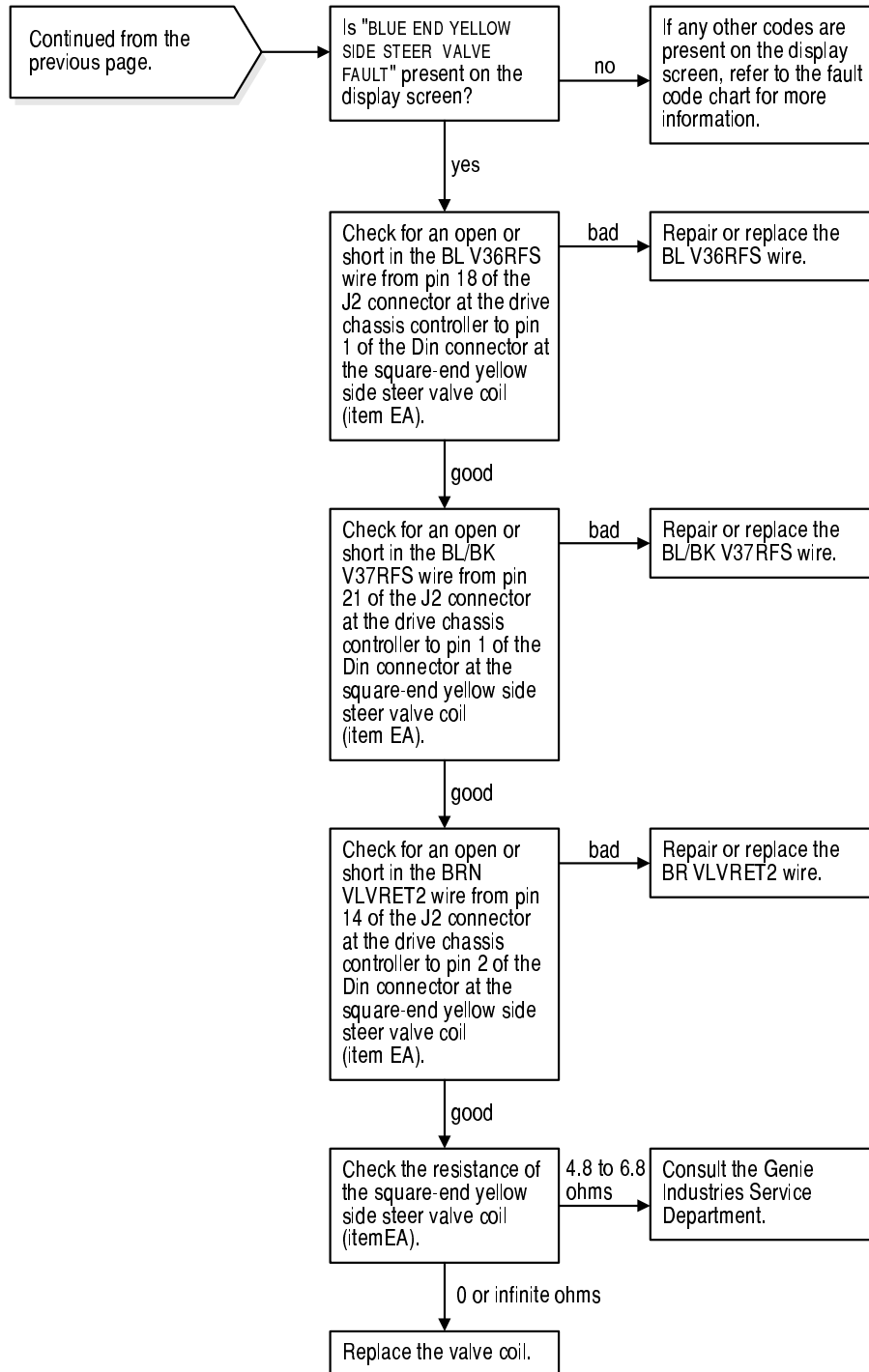


Chart 37

Yellow End Blue Side Steering Function Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

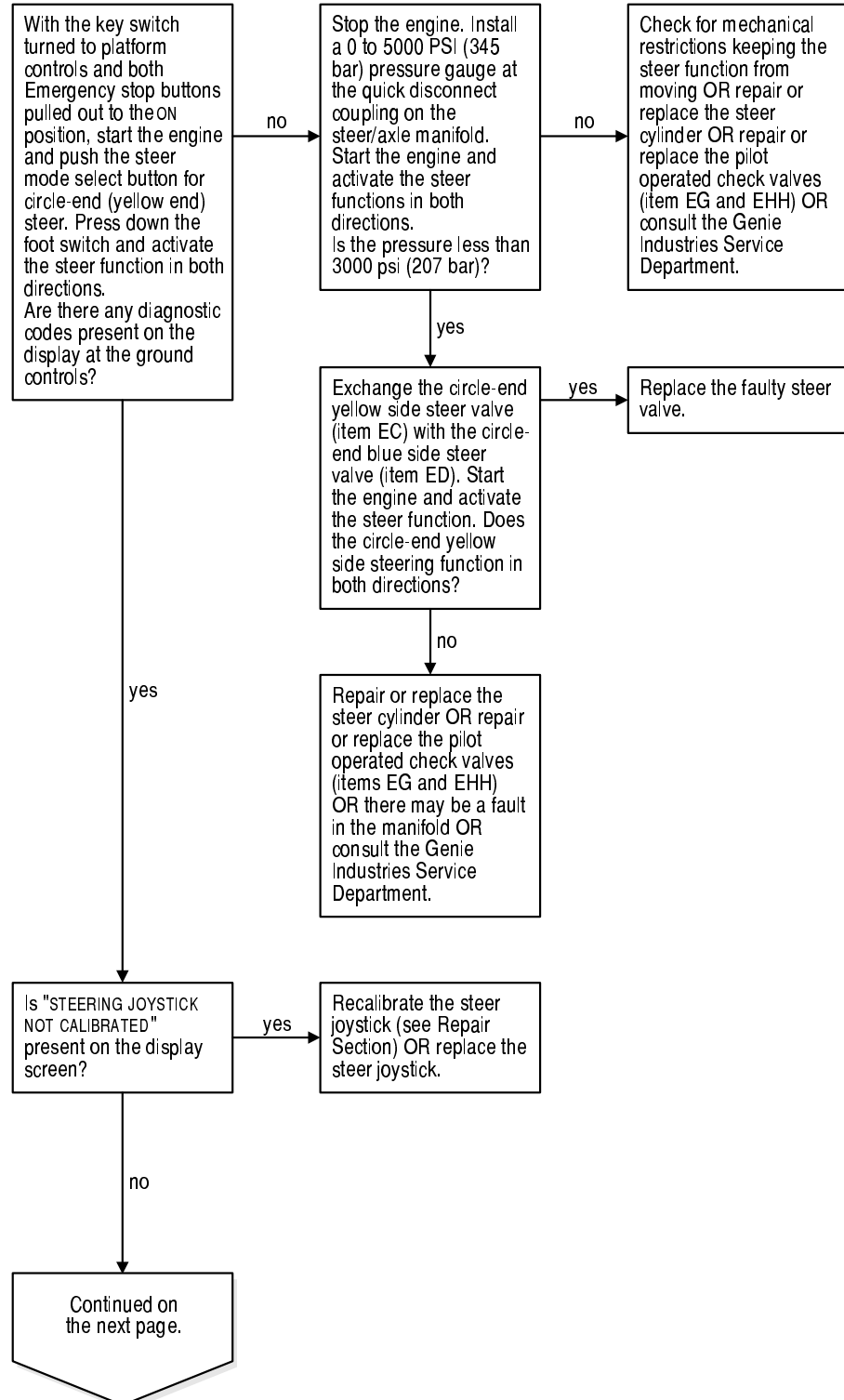


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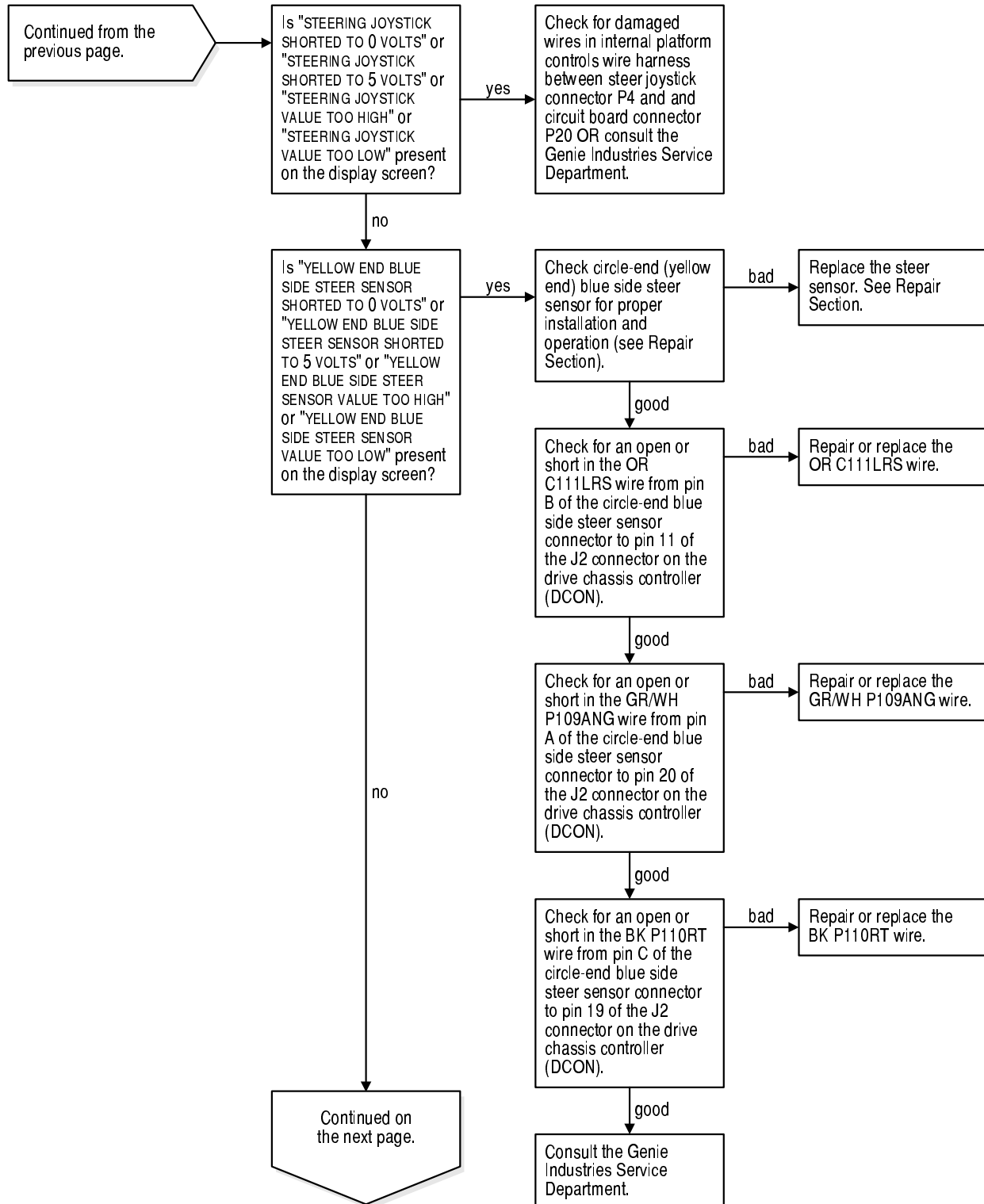


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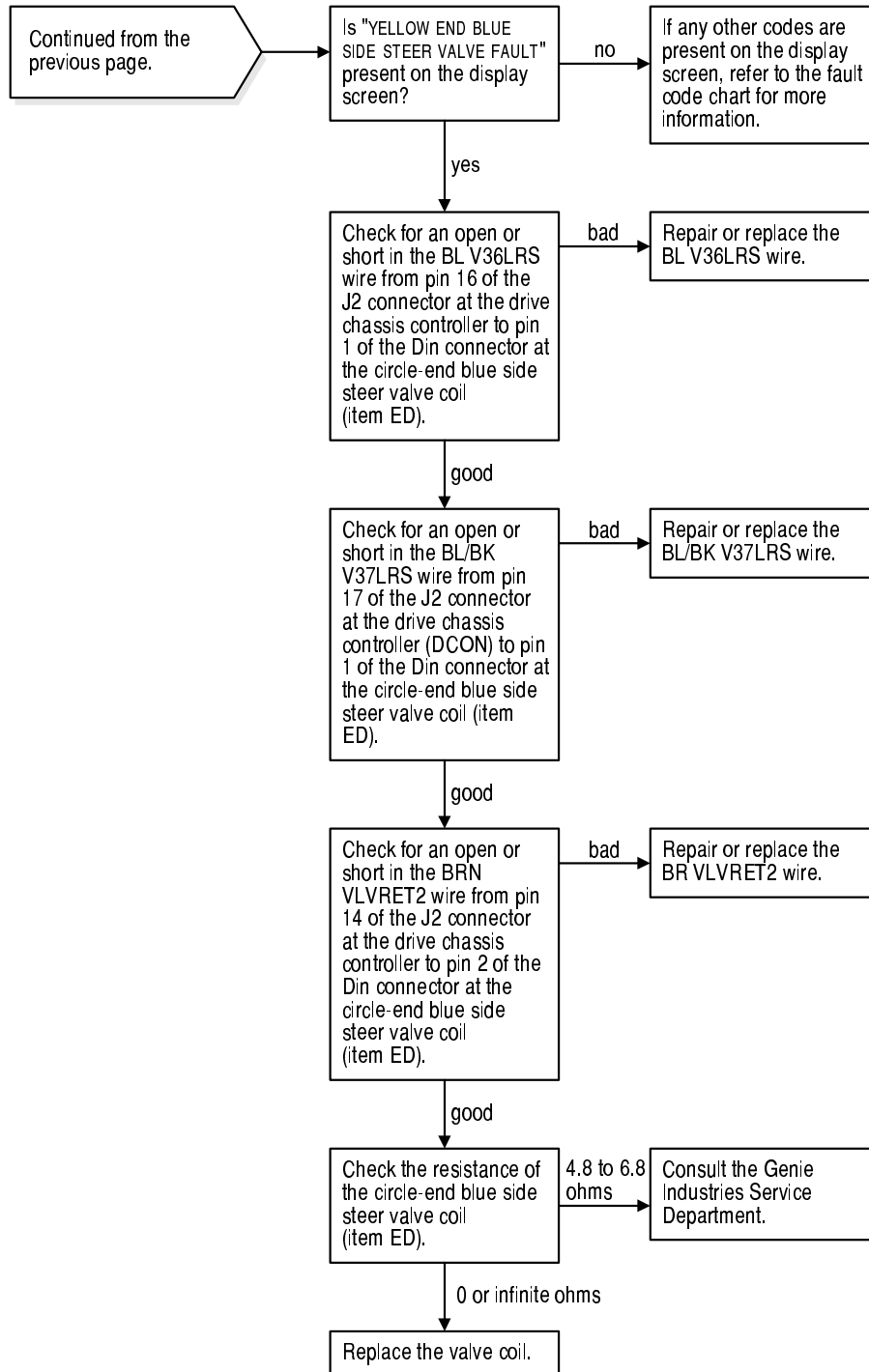


Chart 38

Yellow End Yellow Side Steering Function Inoperative

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

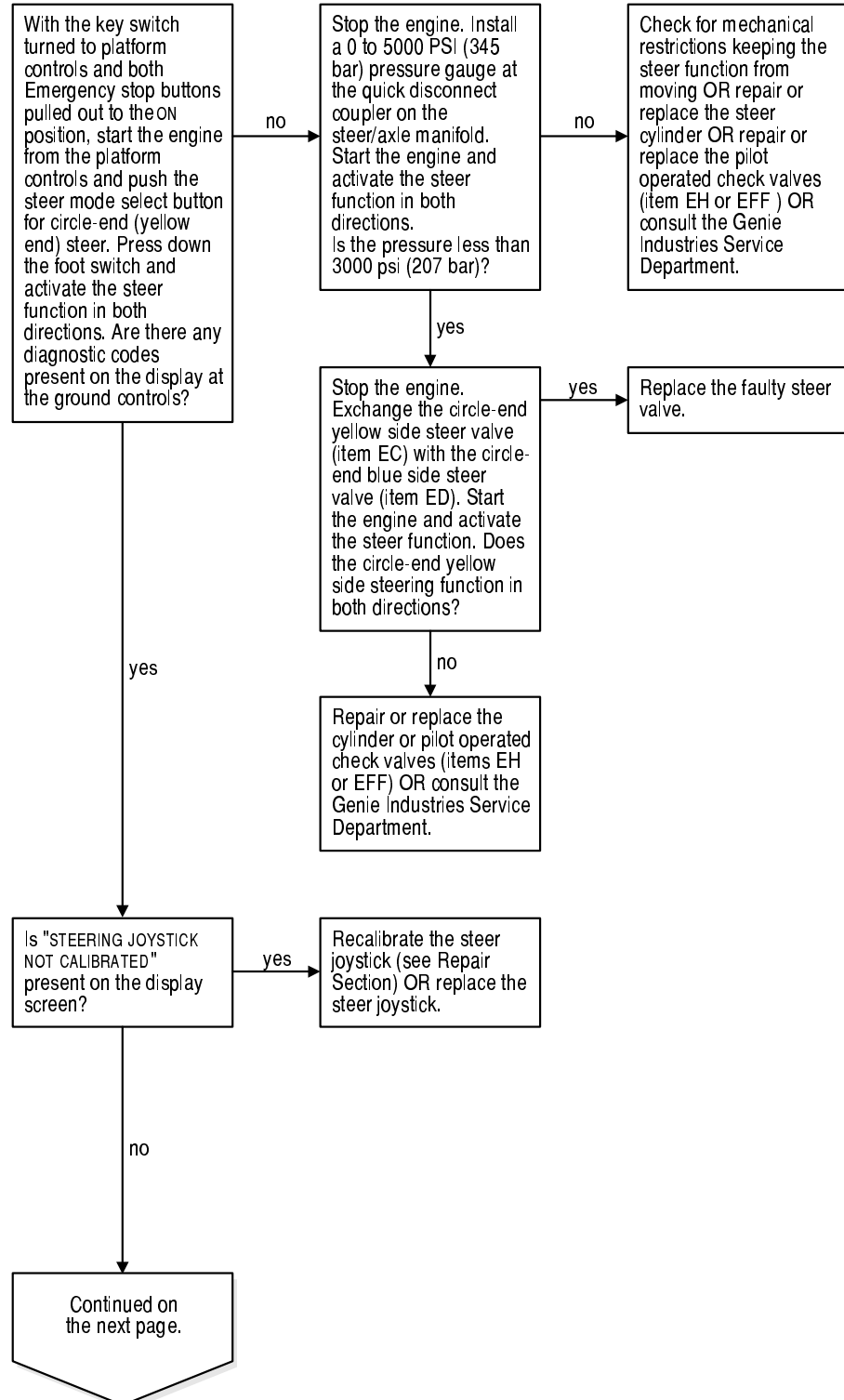


CHART 38

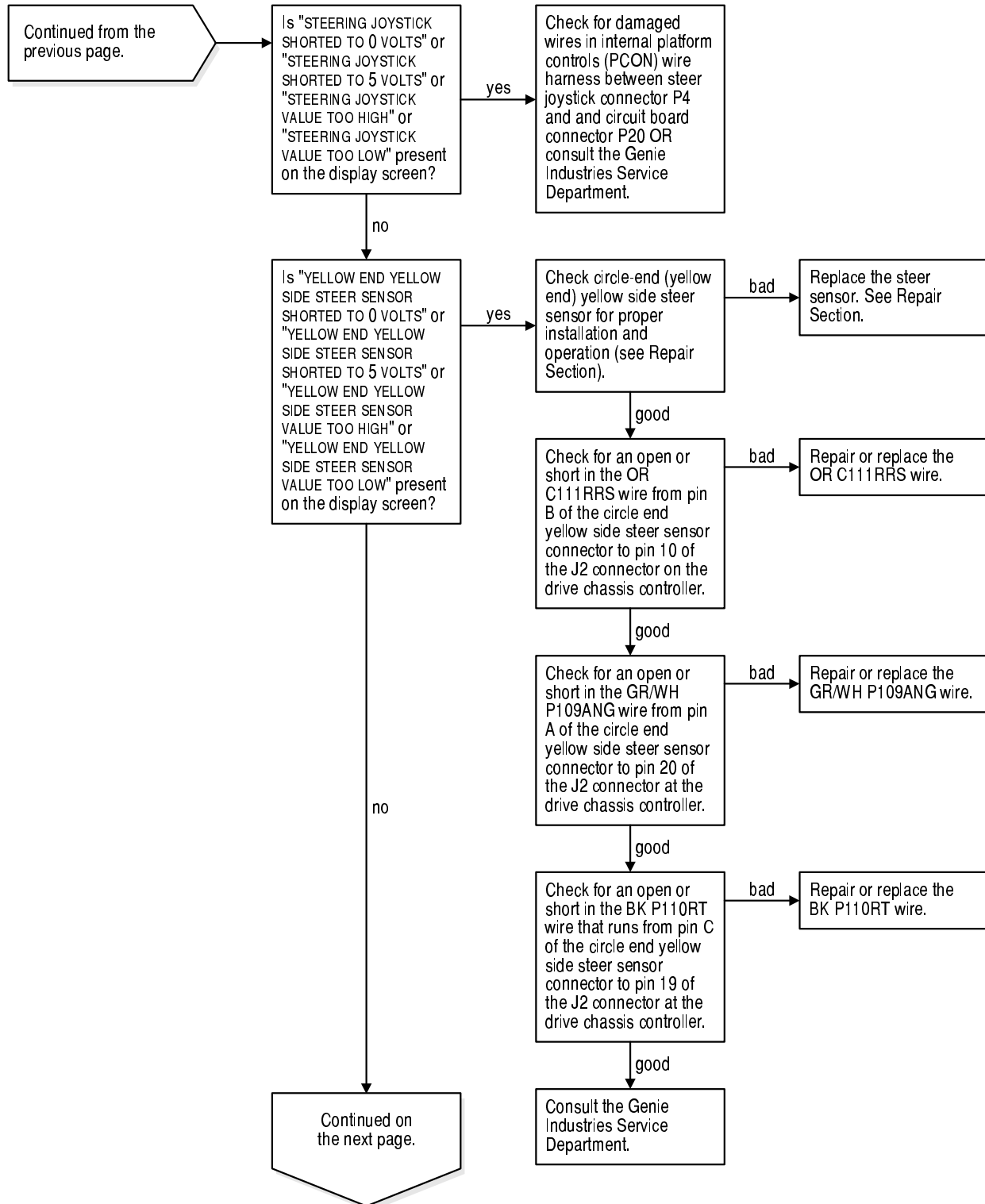


CHART 38

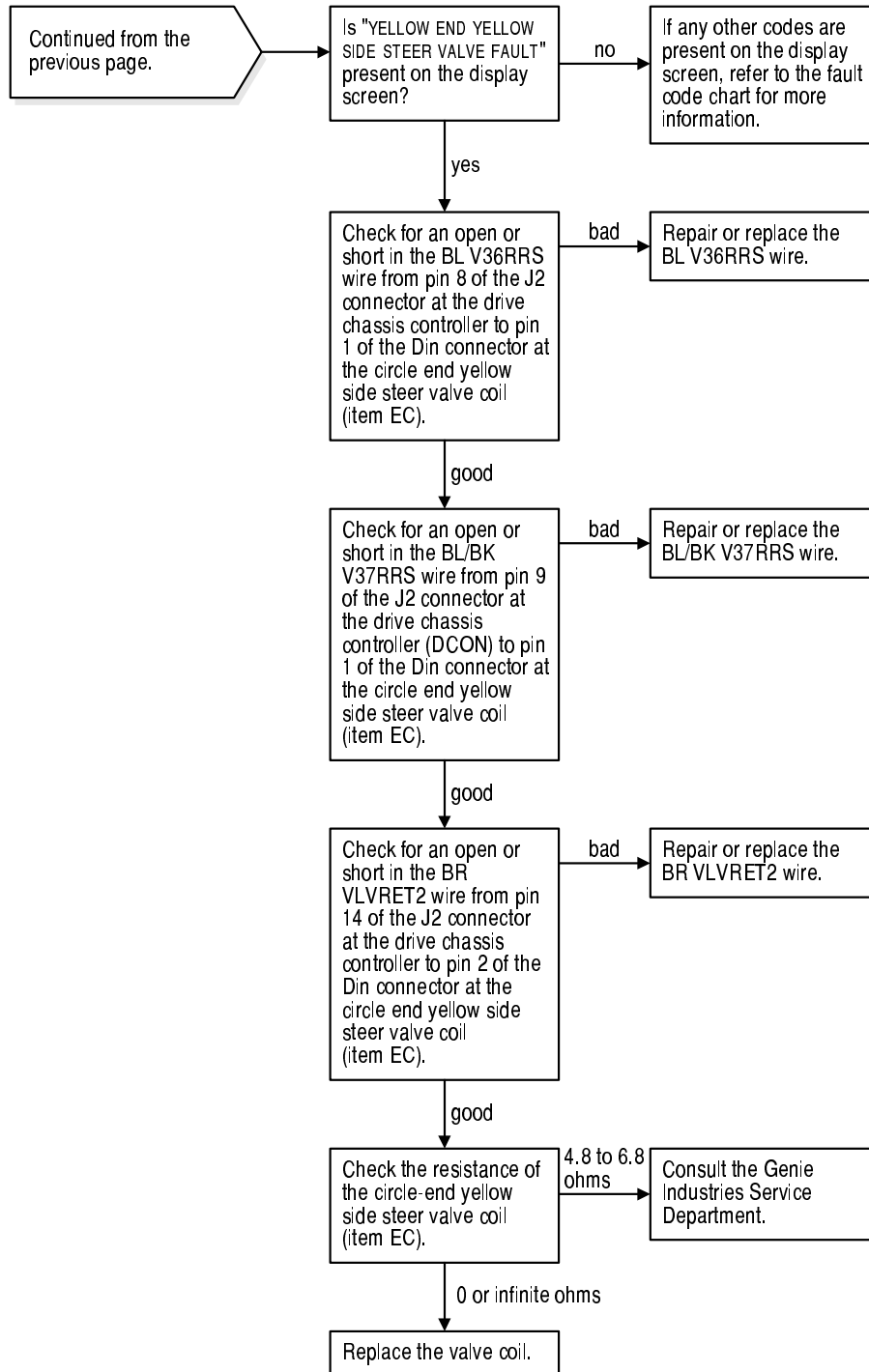


Chart 39

Drive Forward Function Inoperative

Be sure all other functions operate normally.

Be sure the engine is running.

Be sure the drive hubs are not in the free wheel configuration.

Be sure the batteries are fully charged and properly connected.

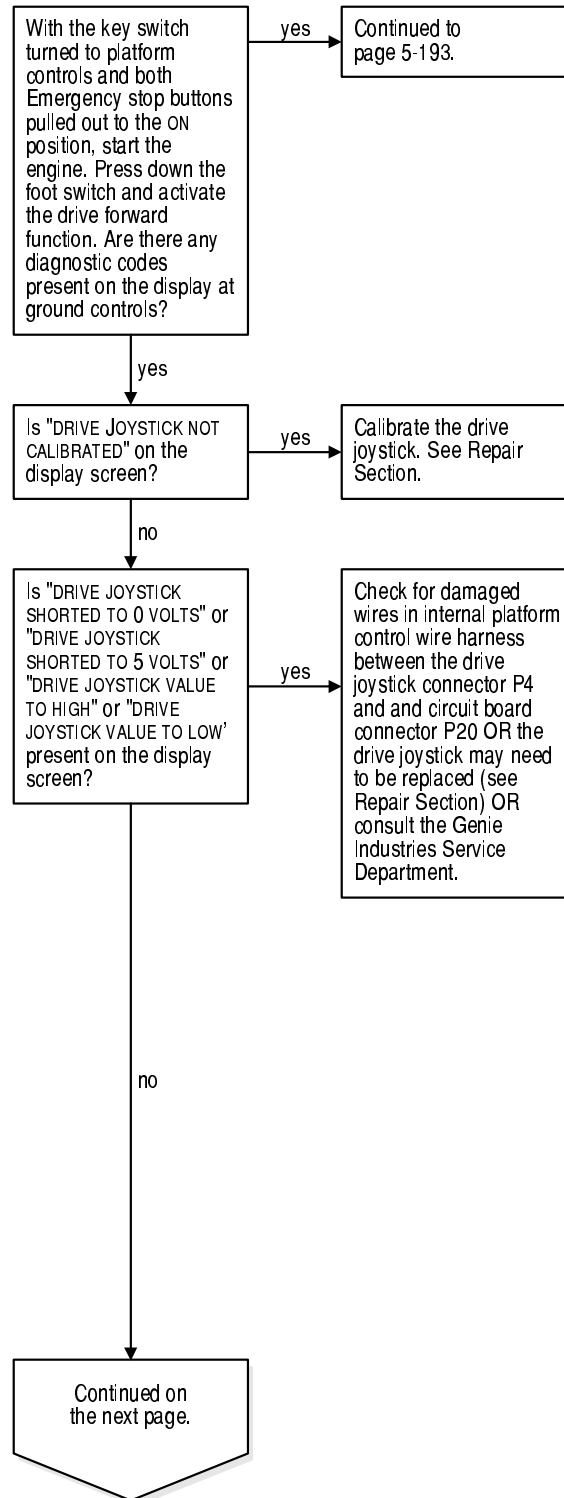


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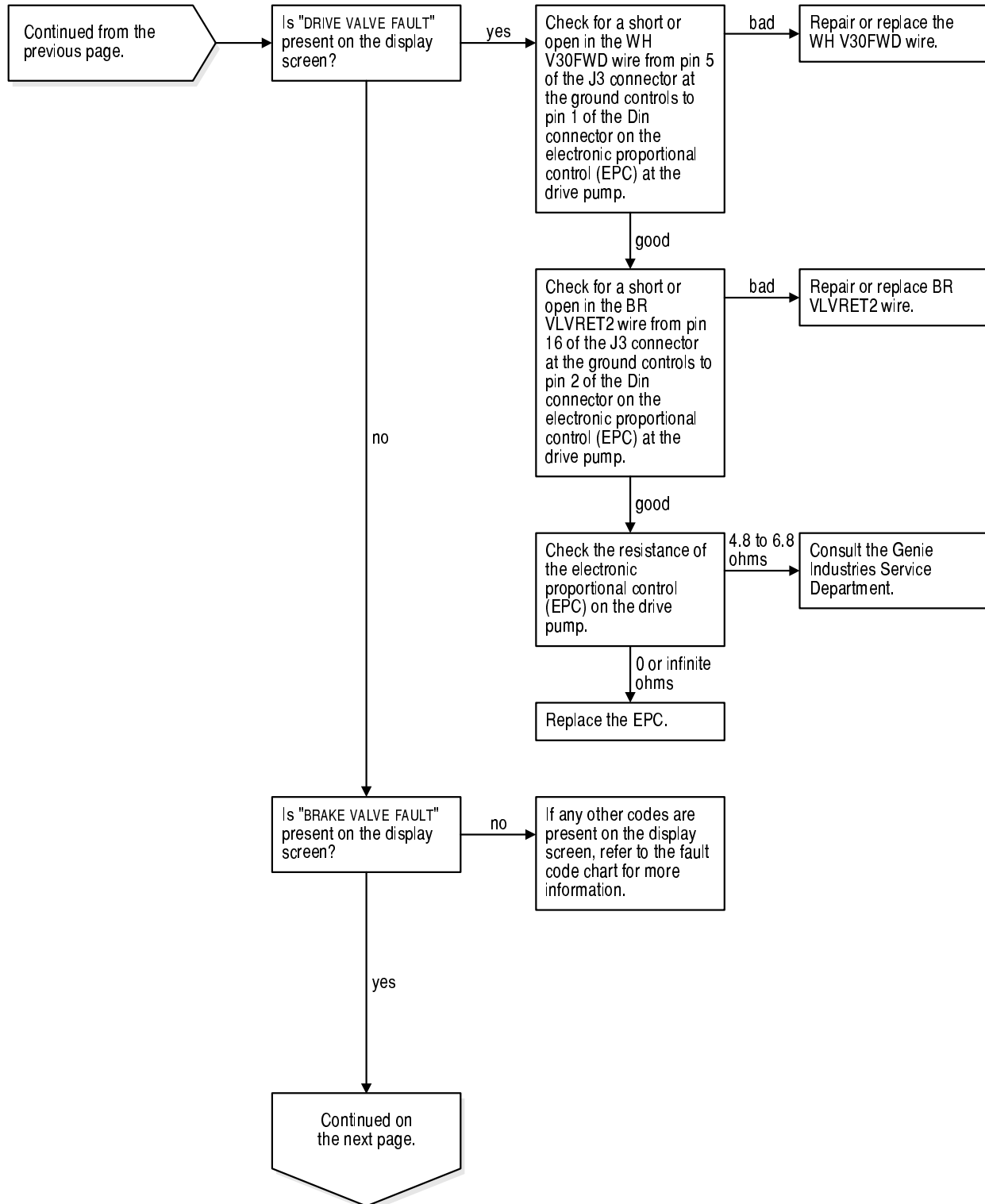


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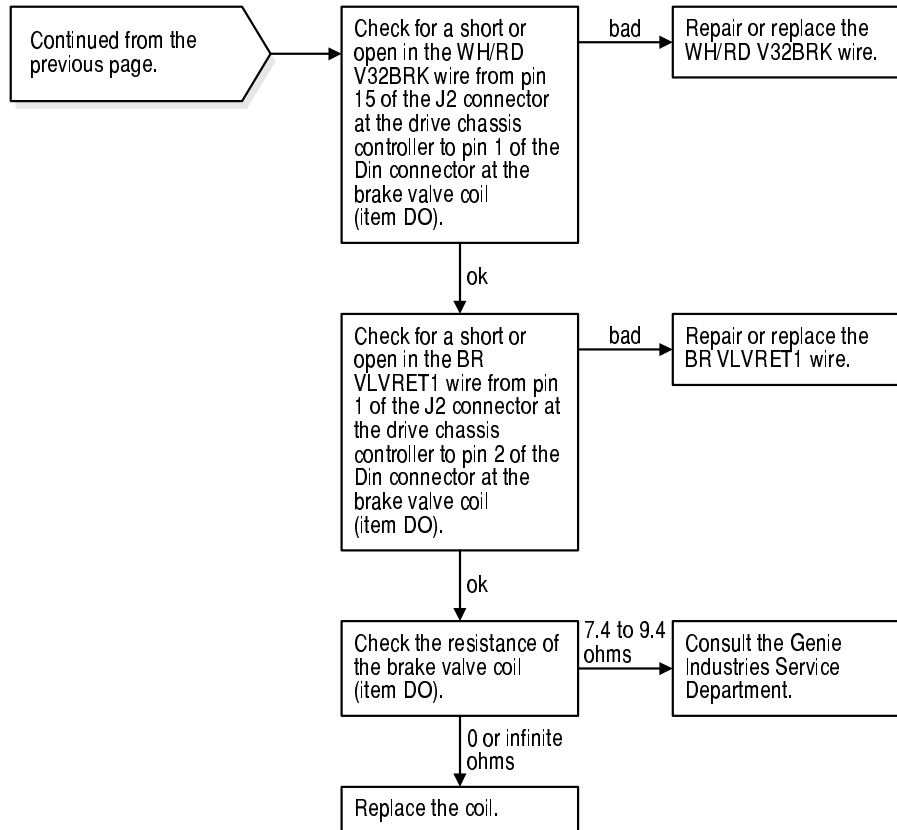


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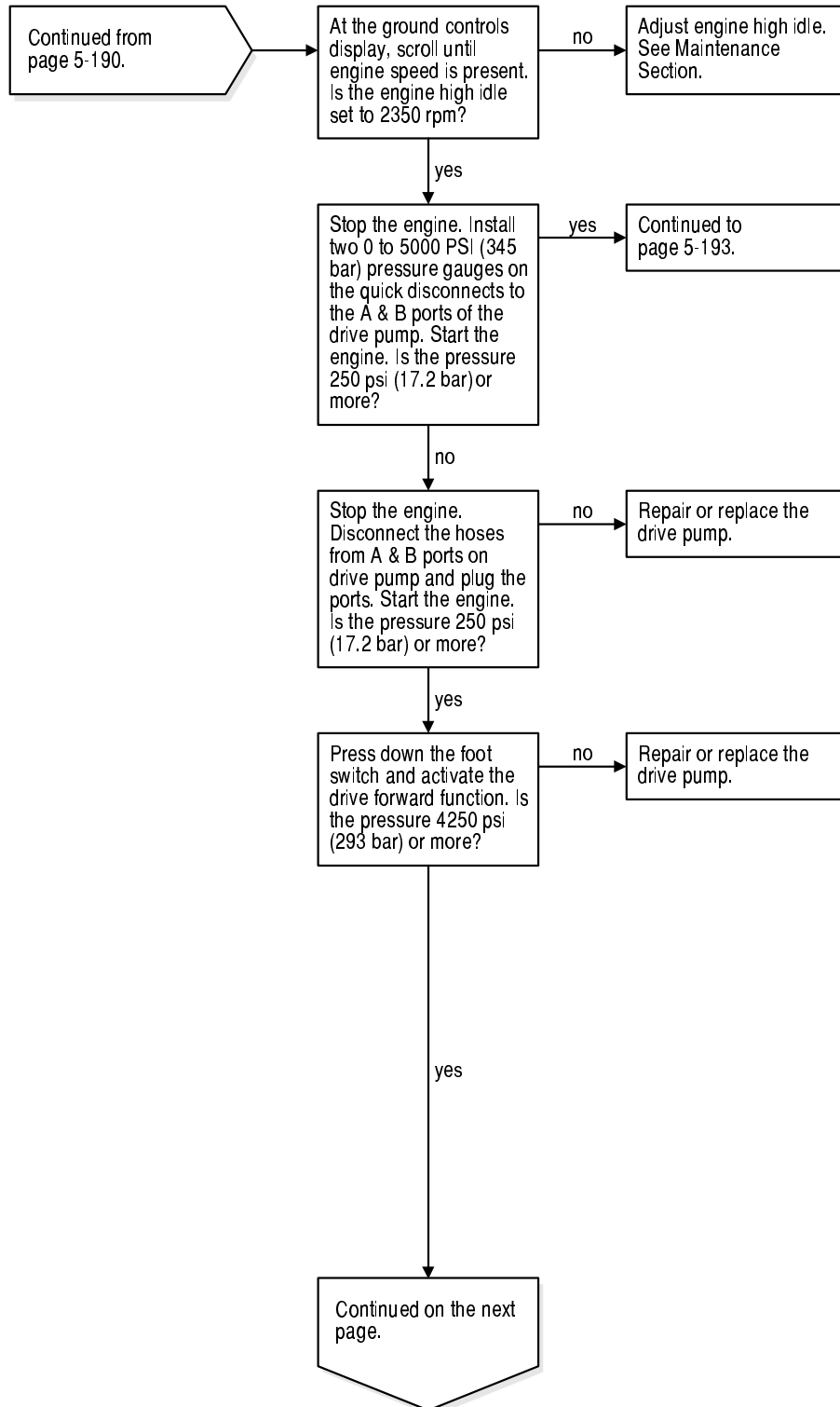


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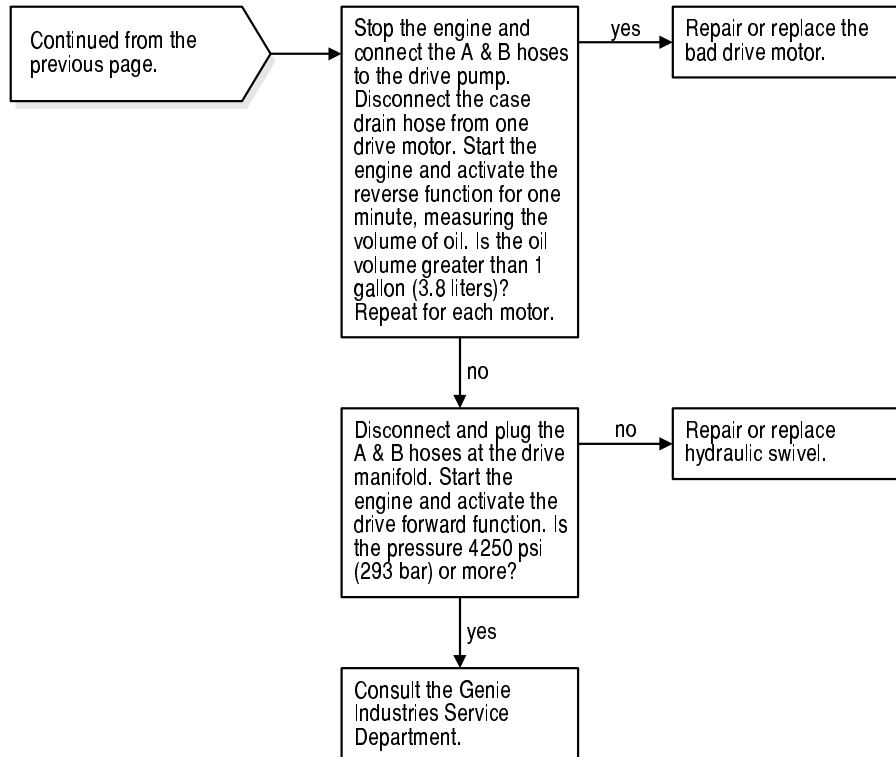


CHART 39

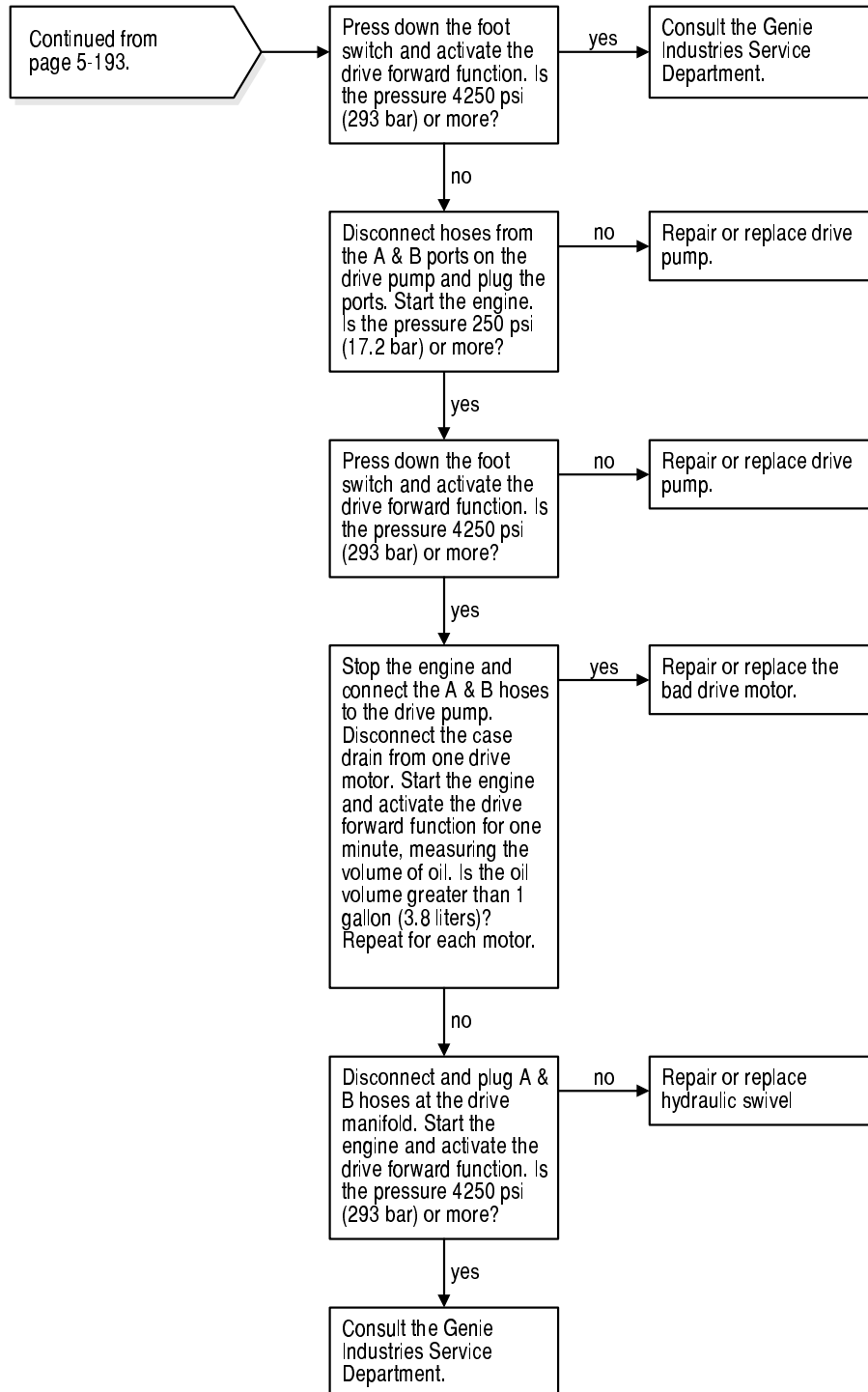


Chart 40

Drive Reverse Function Inoperative

Be sure all other functions operate normally.

Be sure the engine is running.

Be sure the drive hubs are not in the free wheel configuration.

Be sure the batteries are fully charged and properly connected.

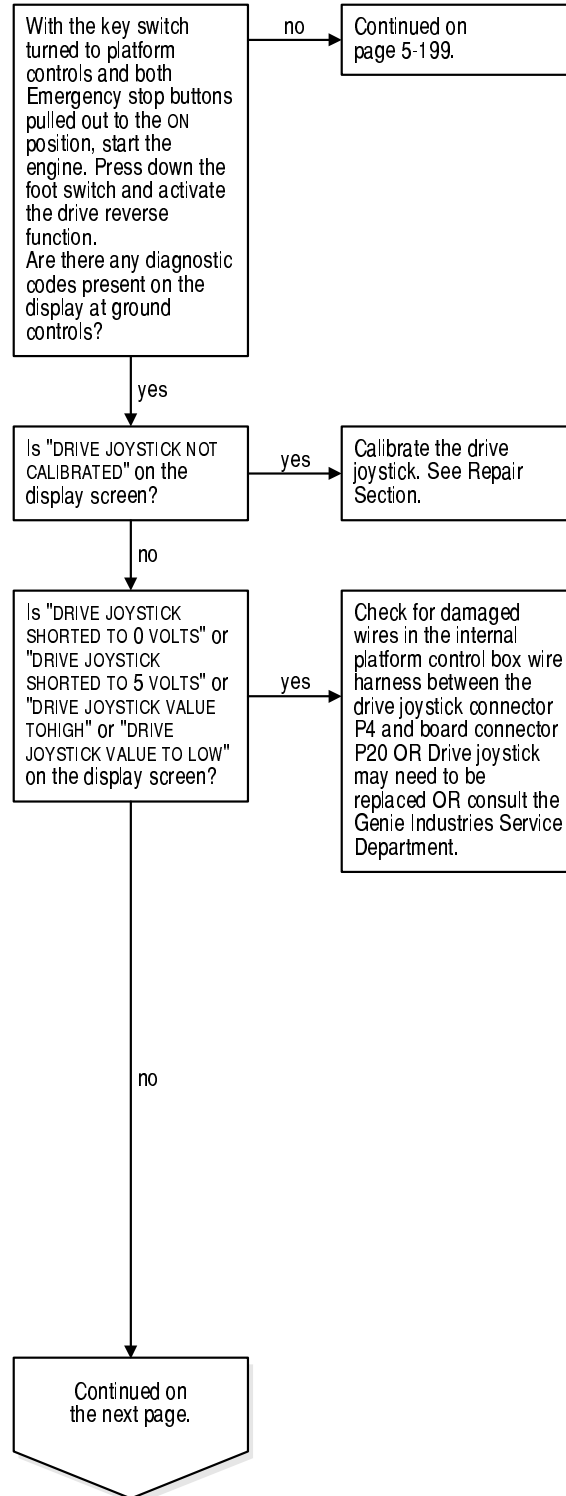


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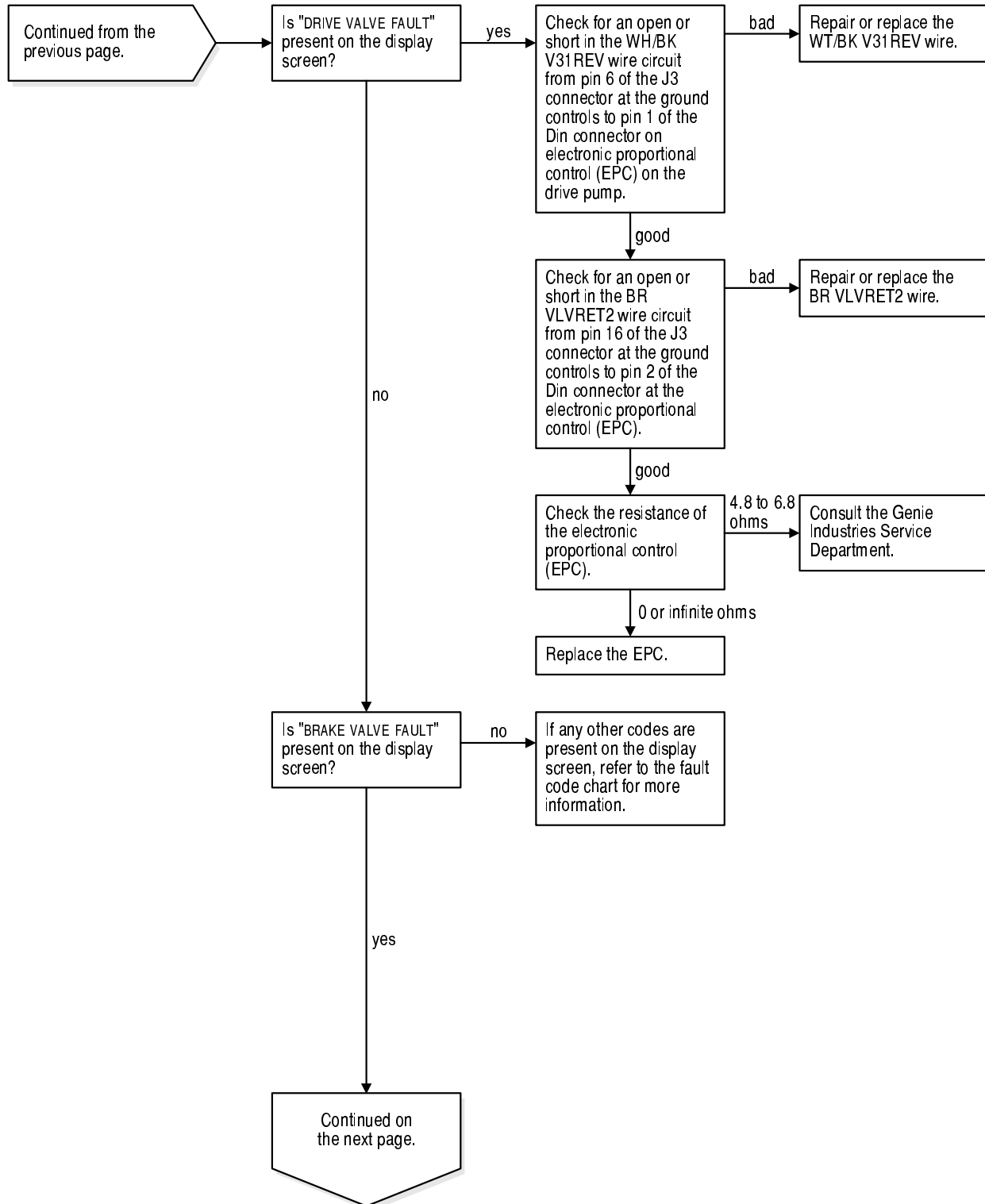


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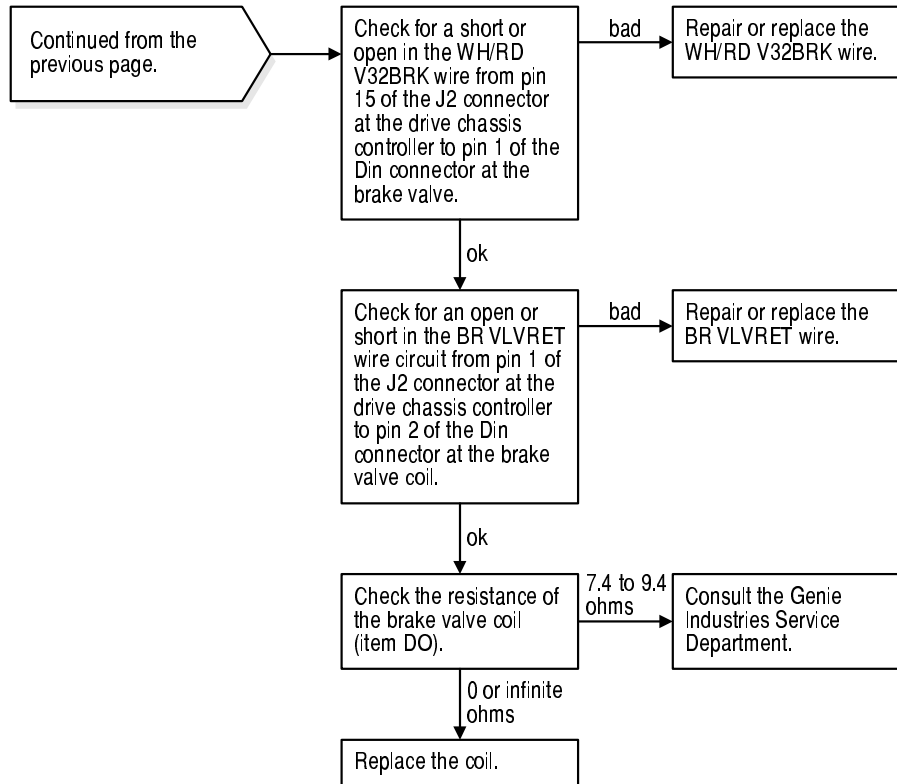


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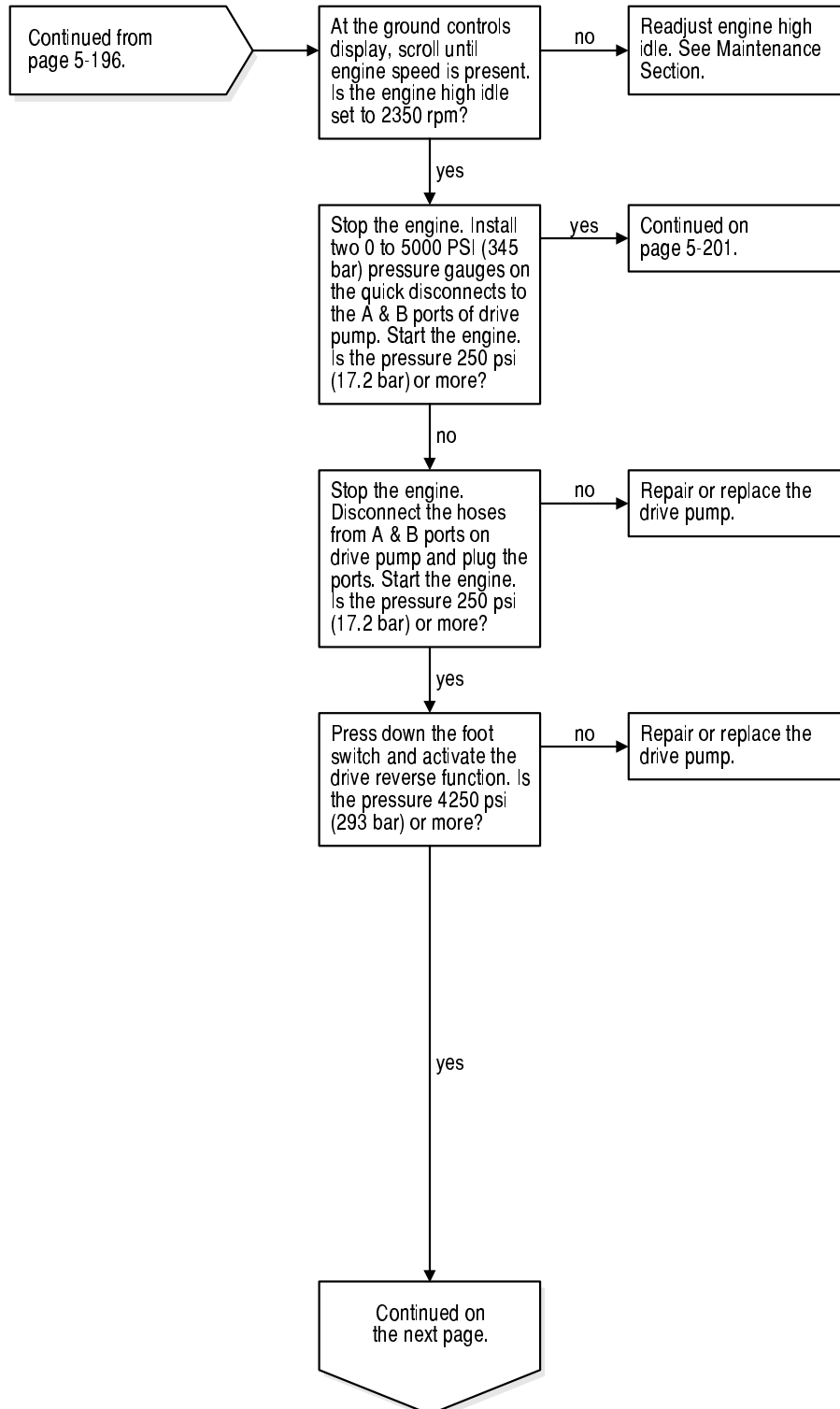


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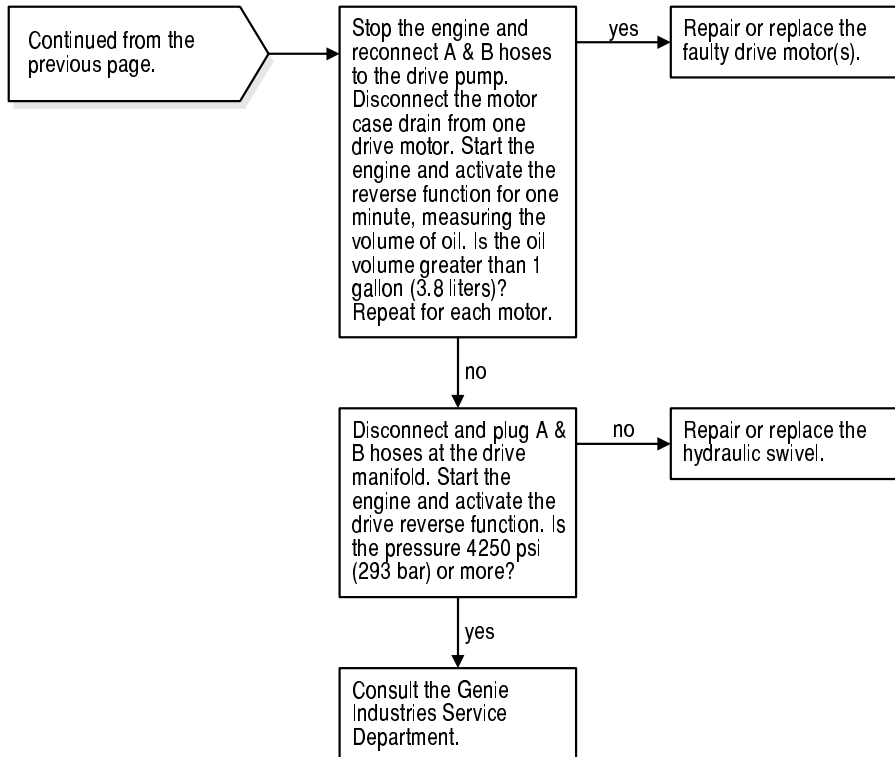


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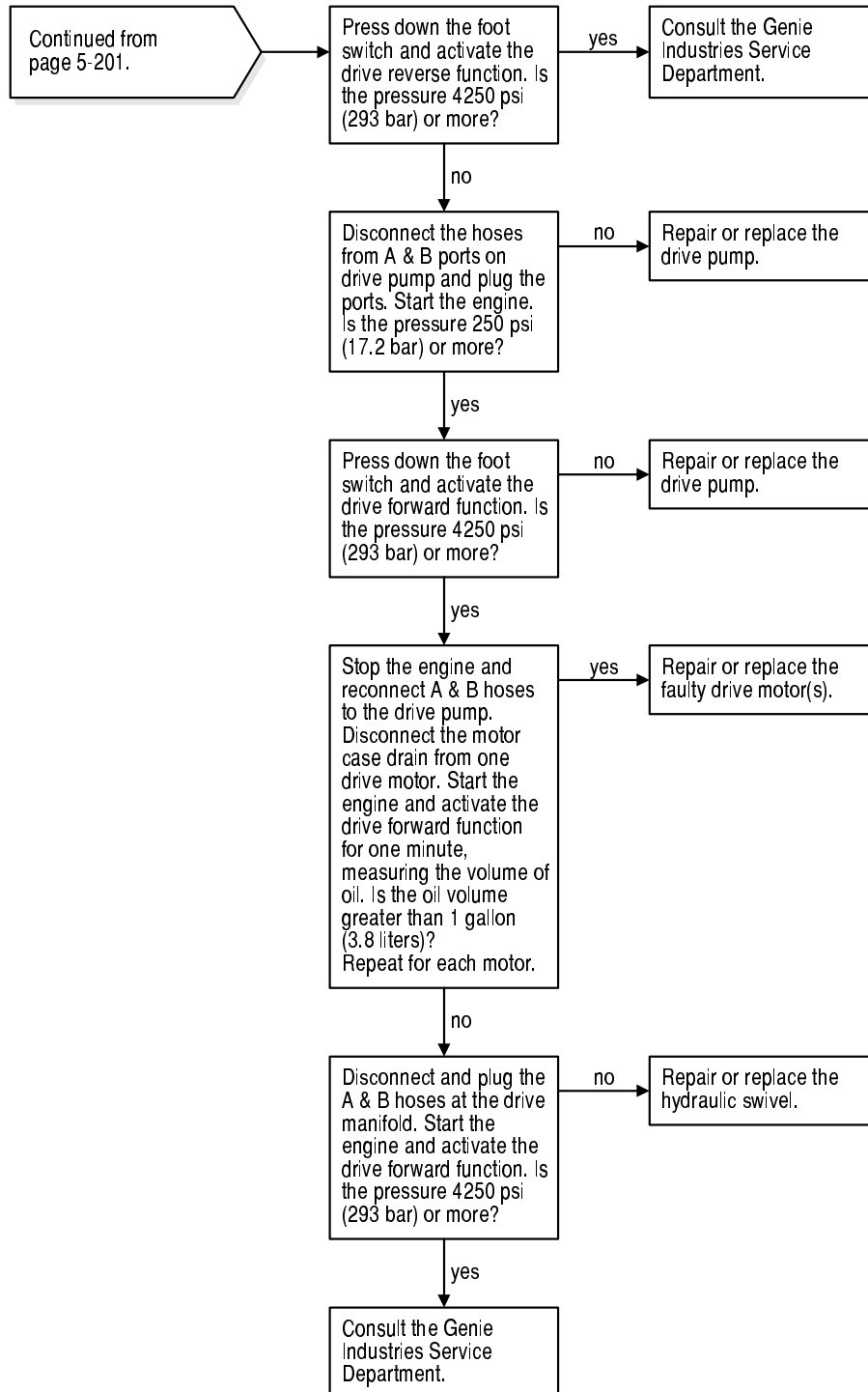


Chart 41

Drive Enable Fault

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

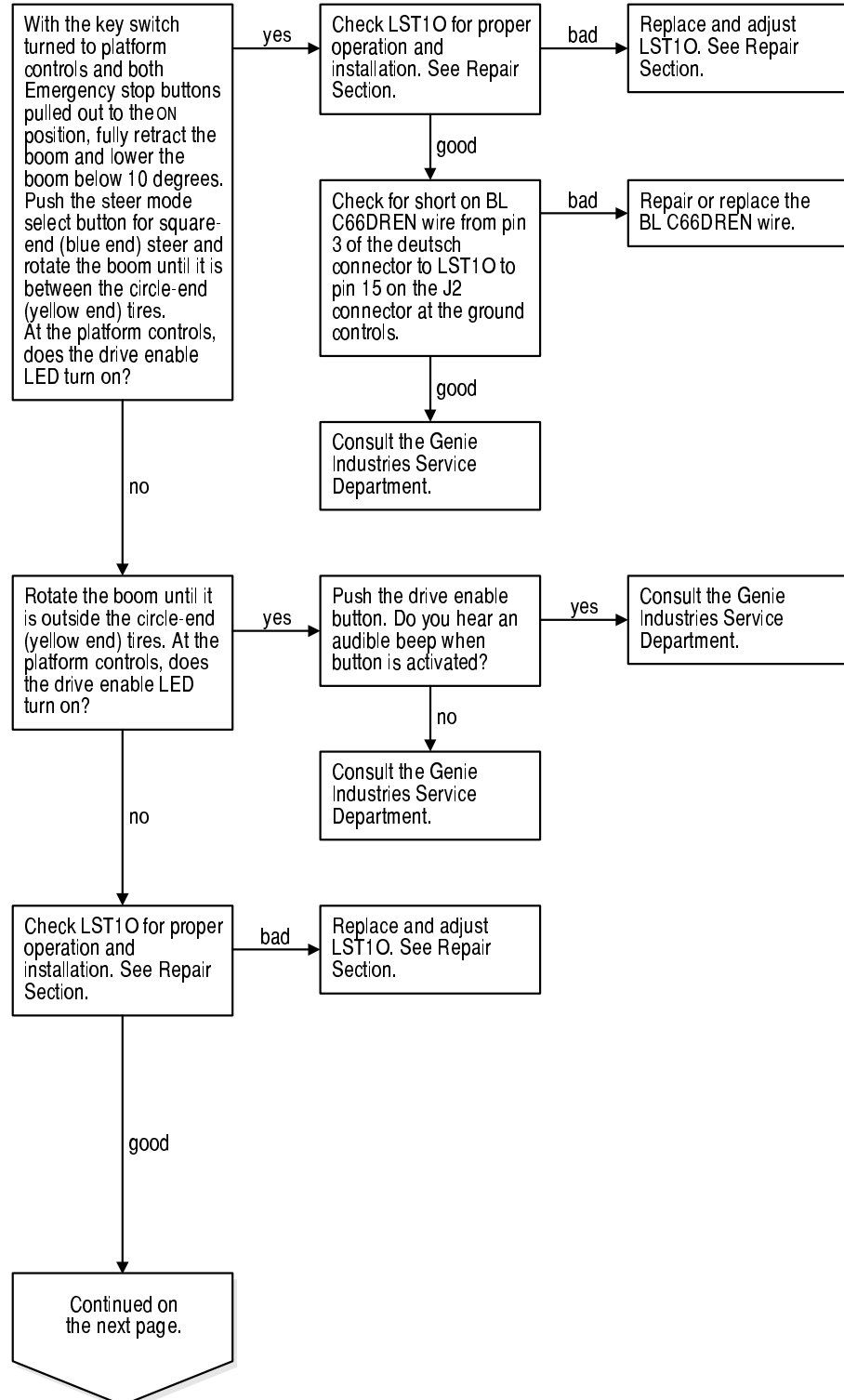


CHART 41

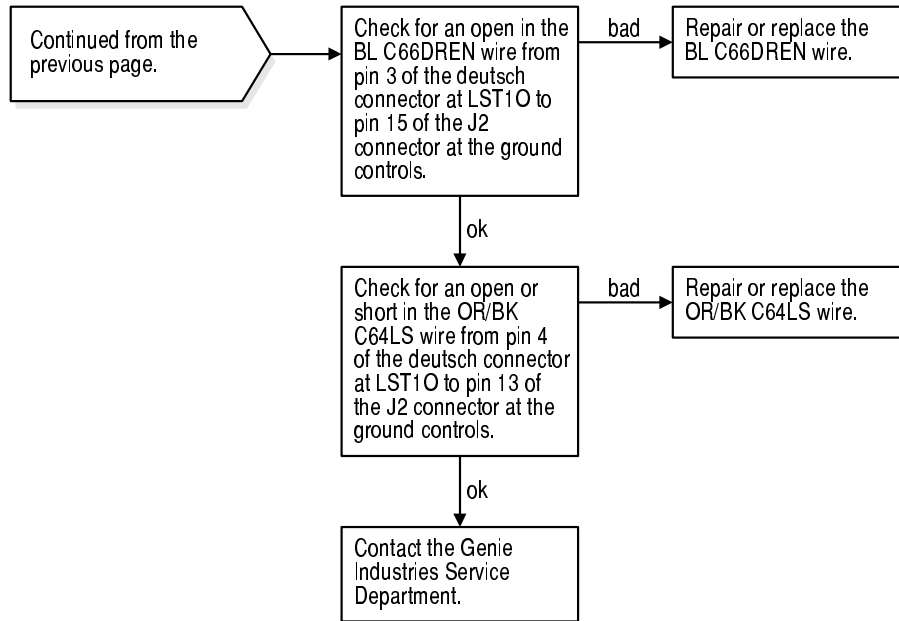


Chart 42

Drive Mode Select Inoperative

Be sure the boom is in the stowed position.

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

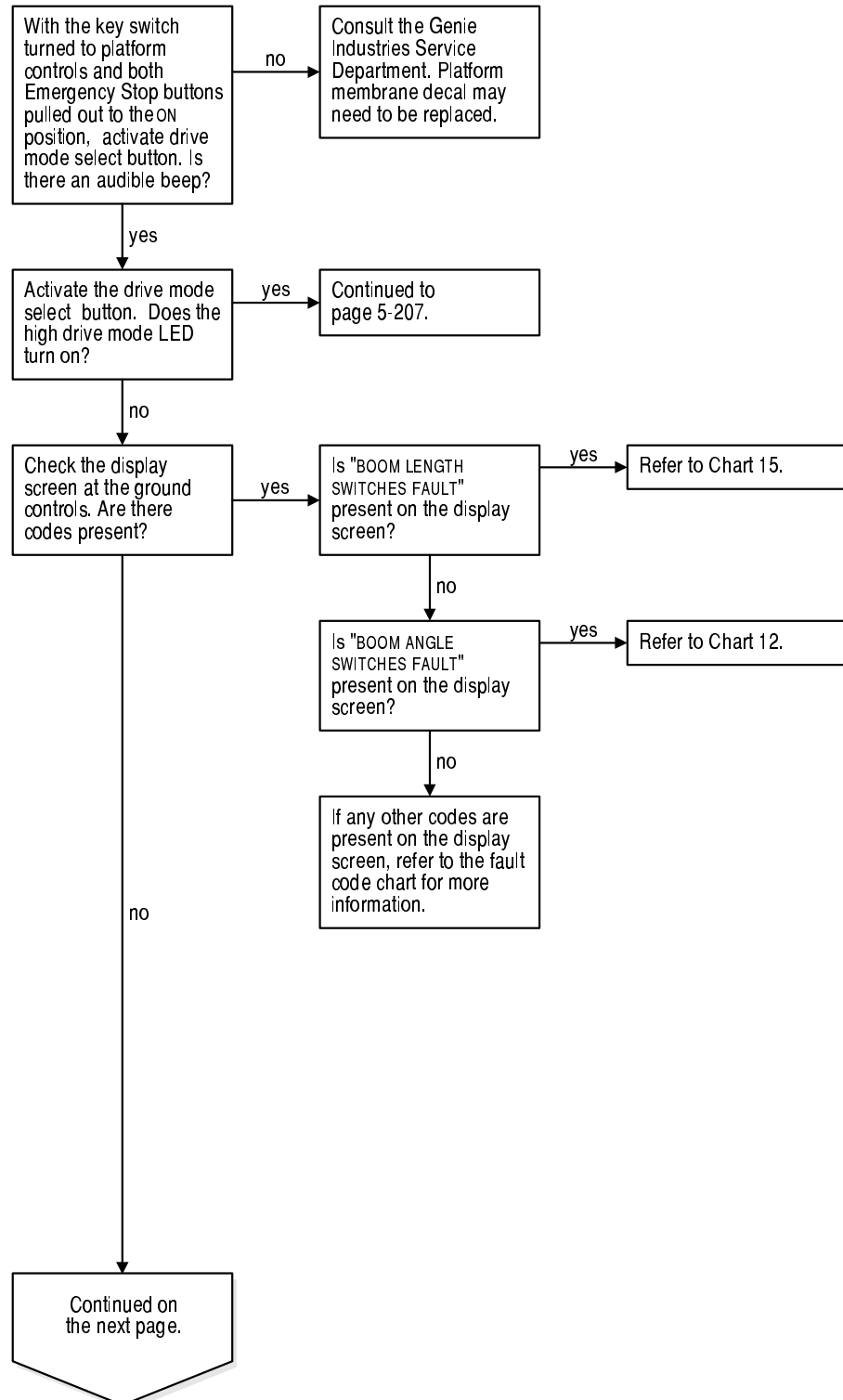


CHART 42

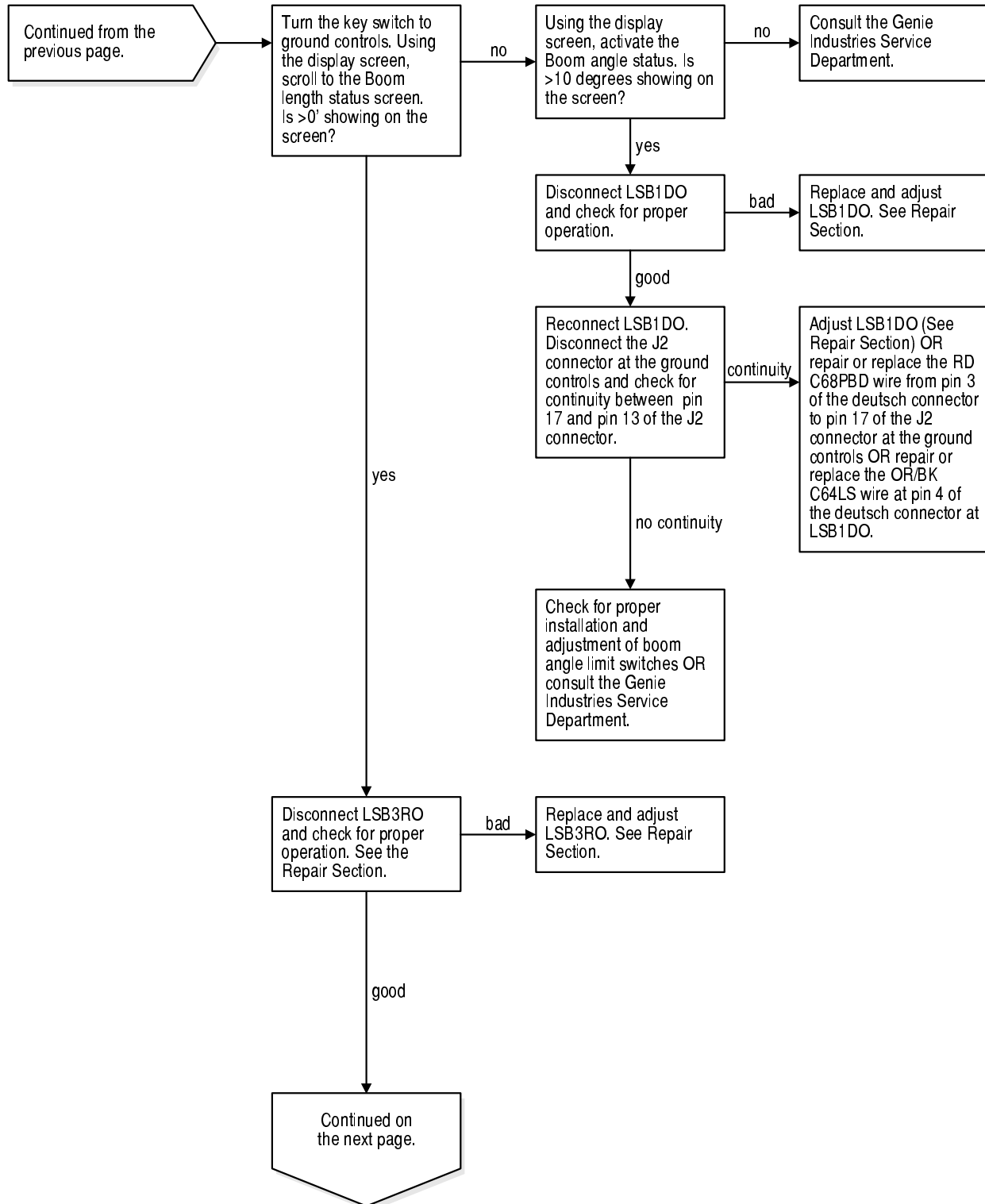


CHART 42

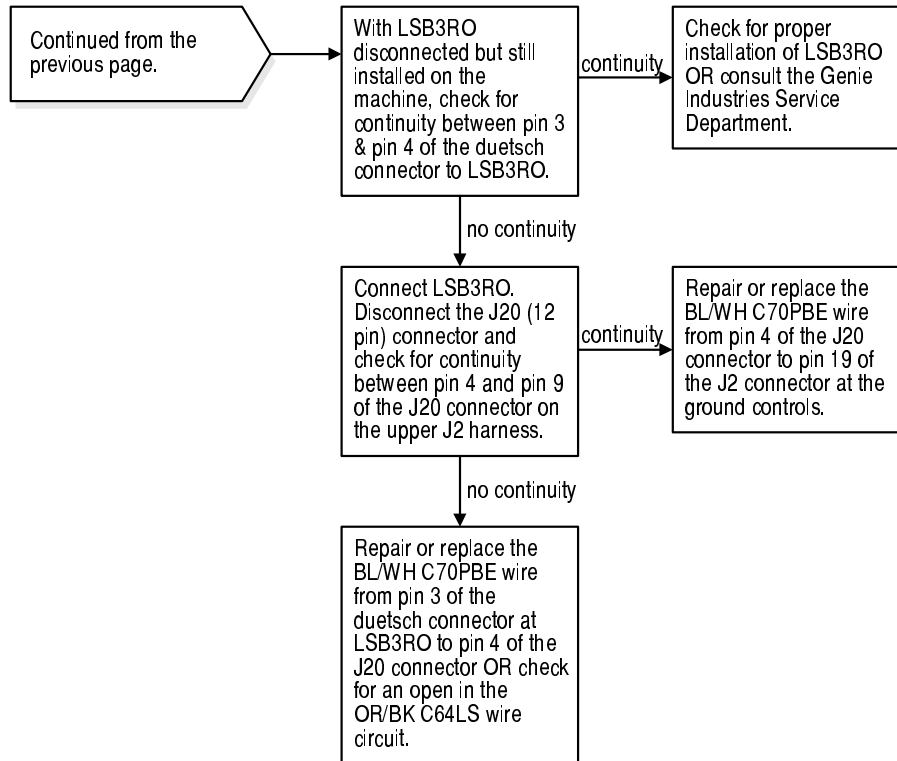


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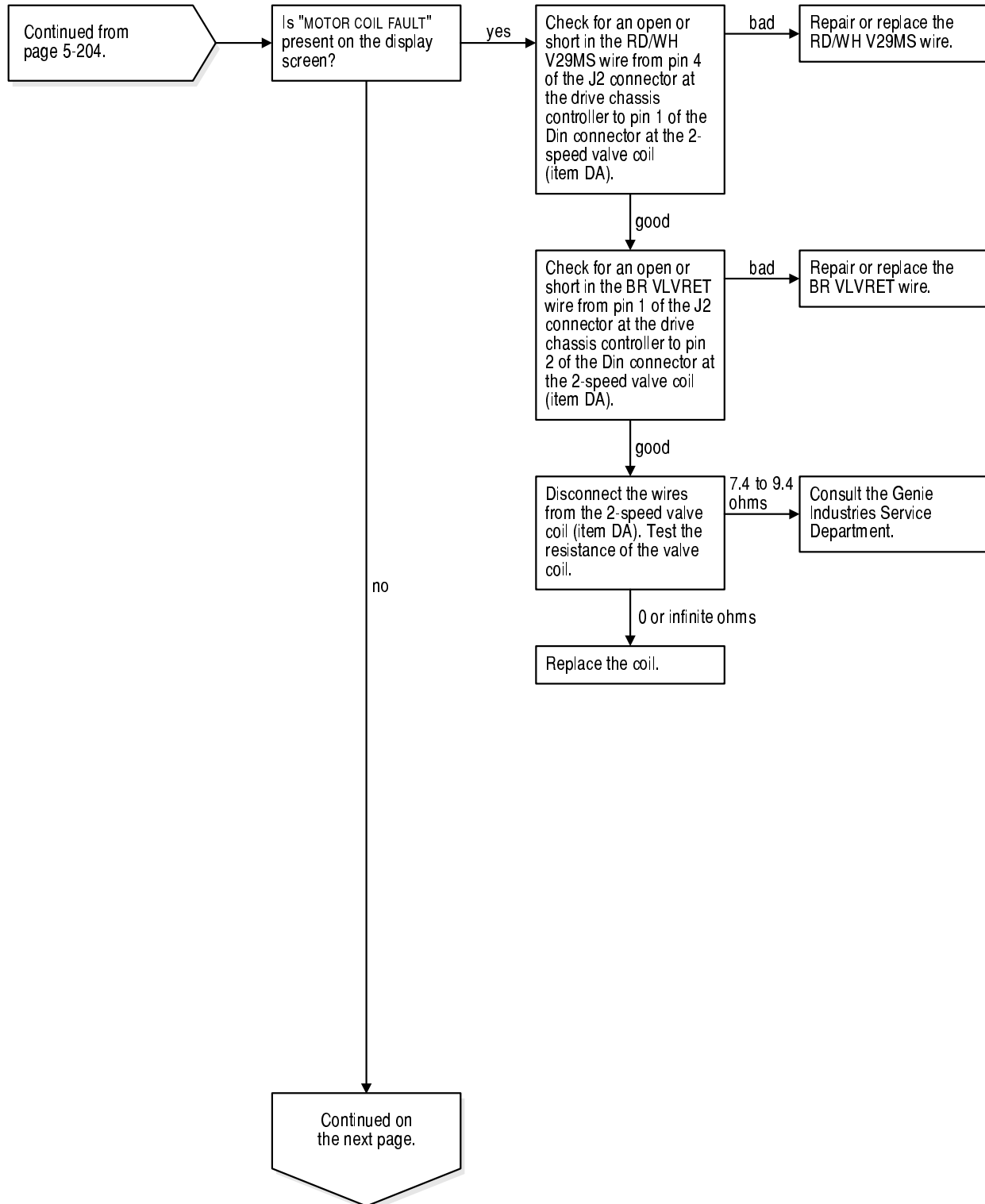


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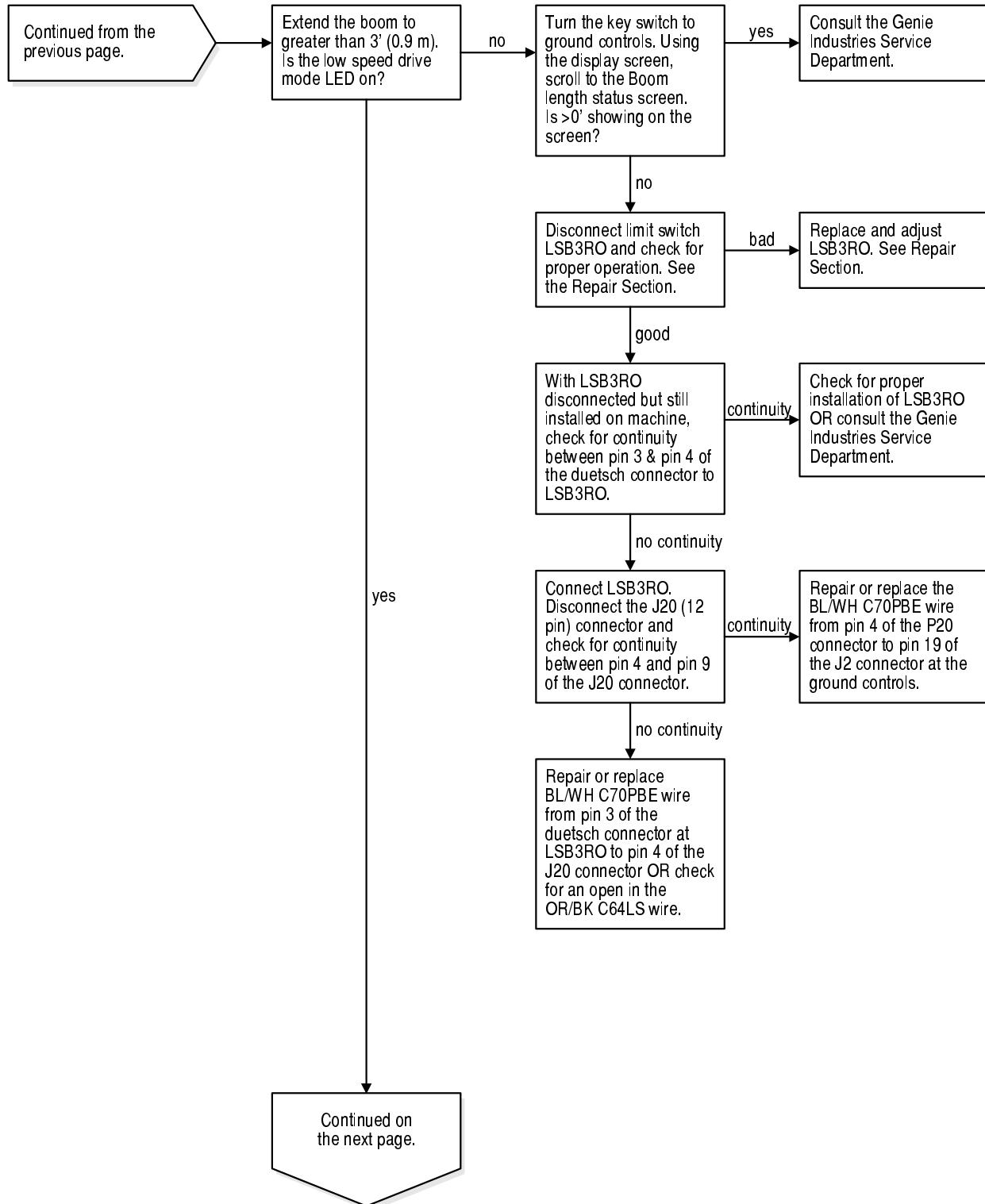


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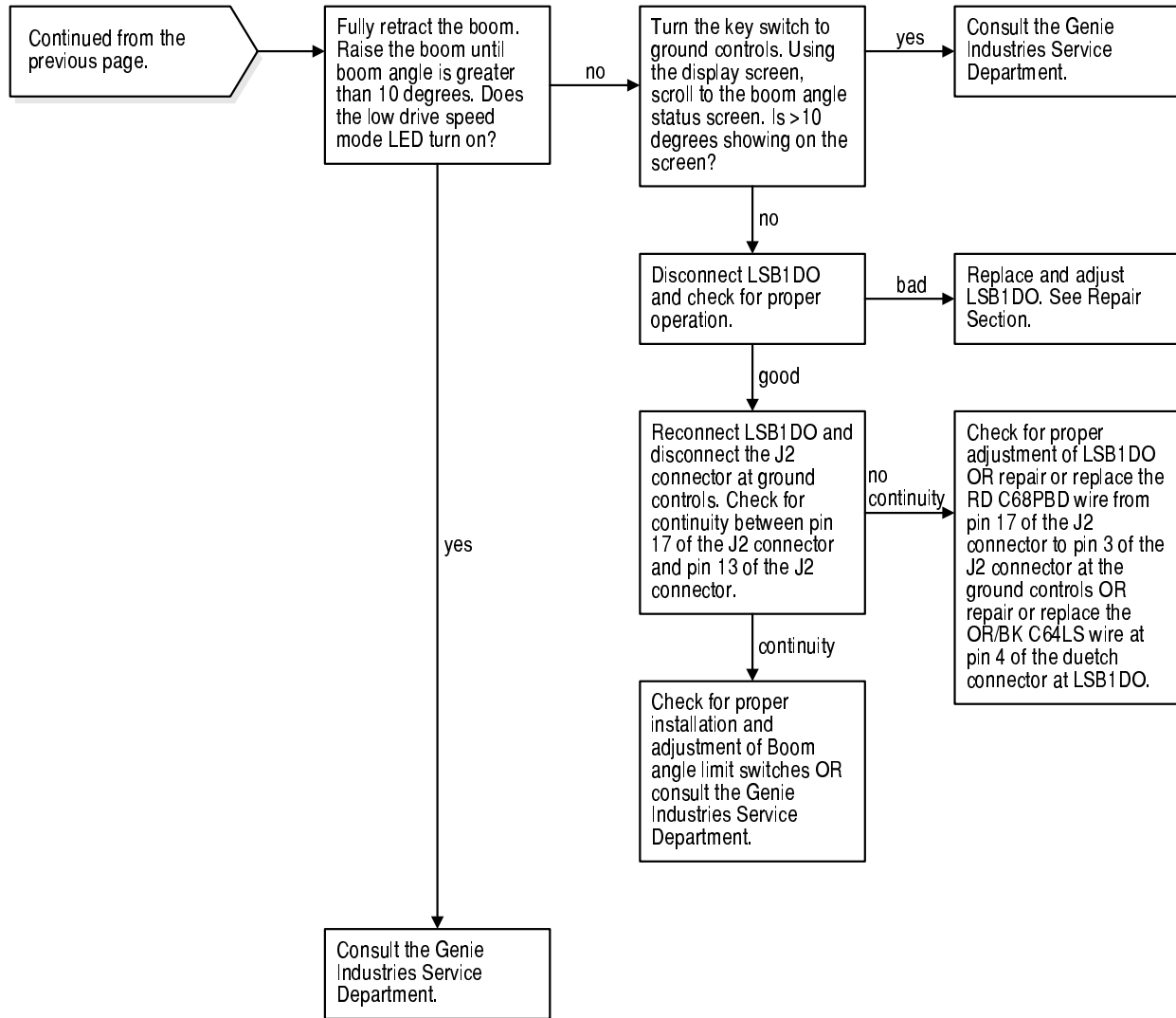


Chart 43

Engine Start Assist Inoperative

Be sure the boom is in the stowed position.

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

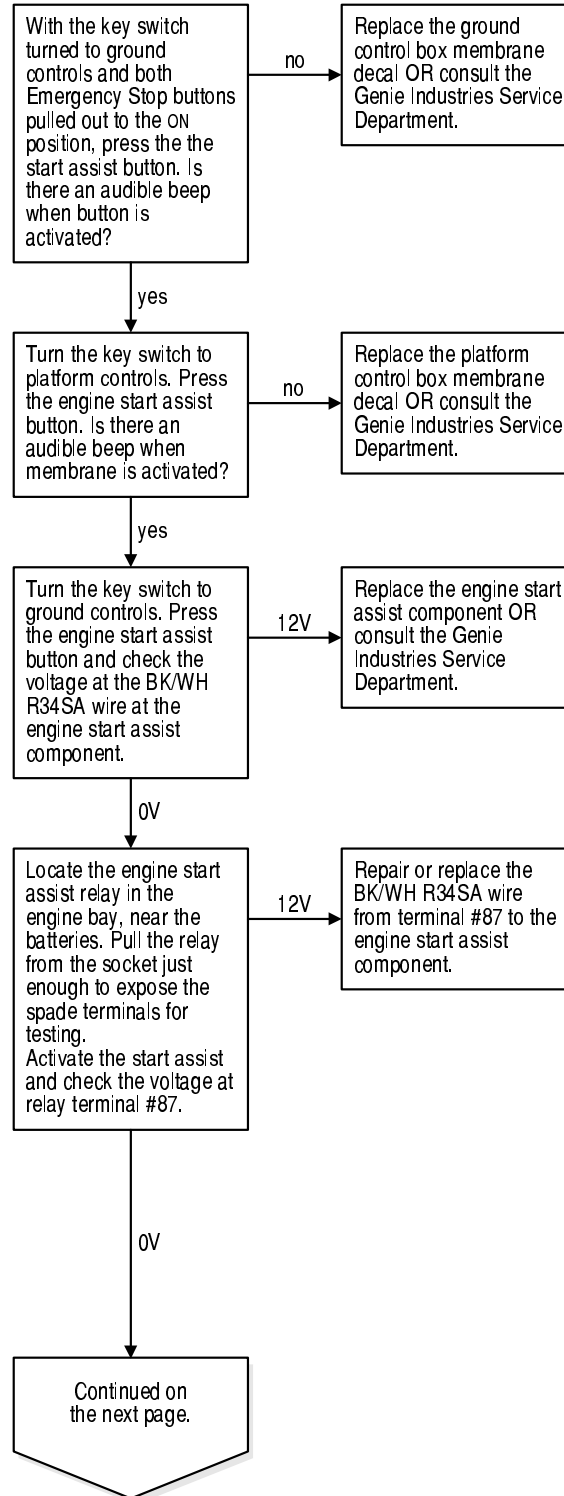


CHART 43

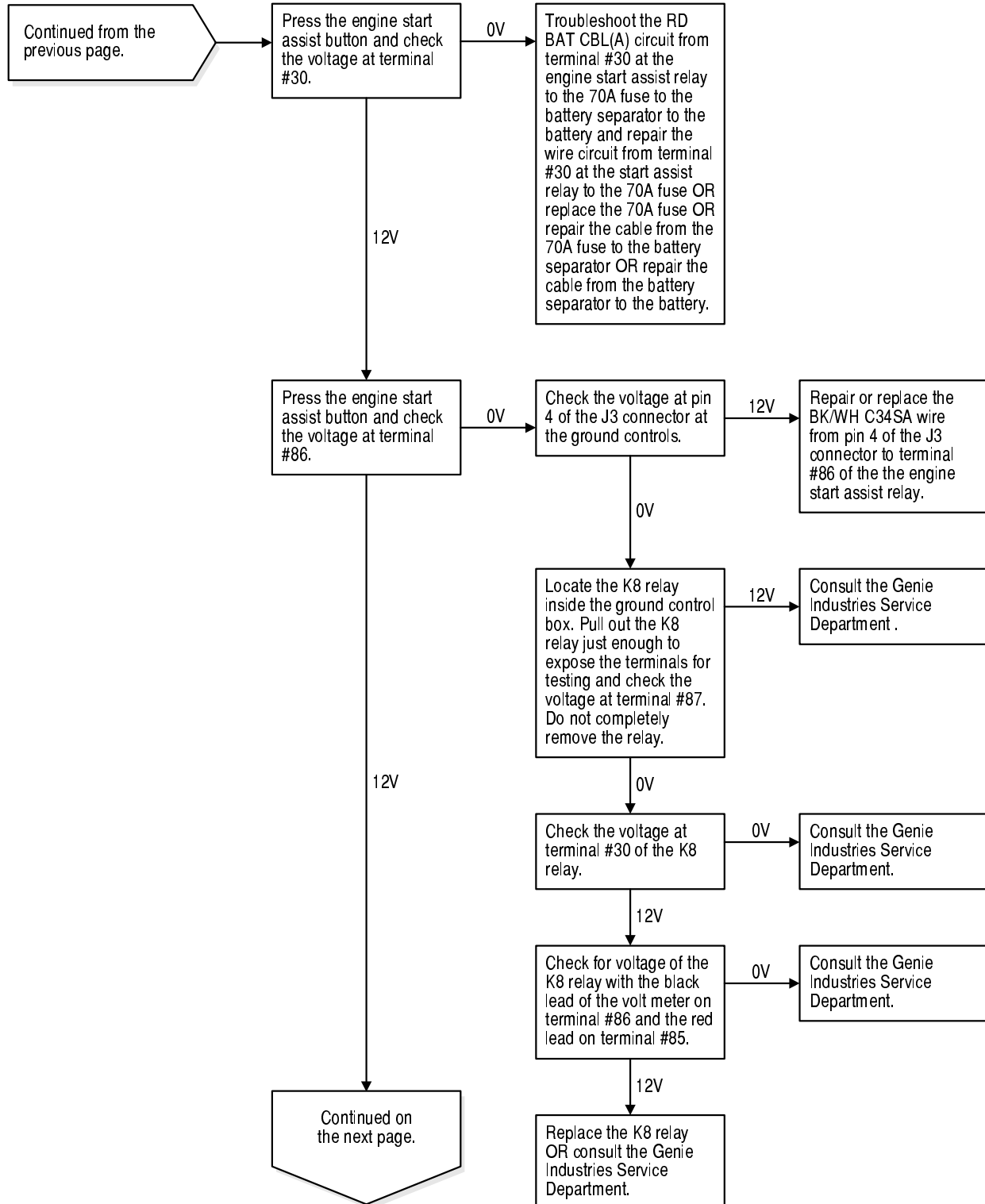


CHART 43

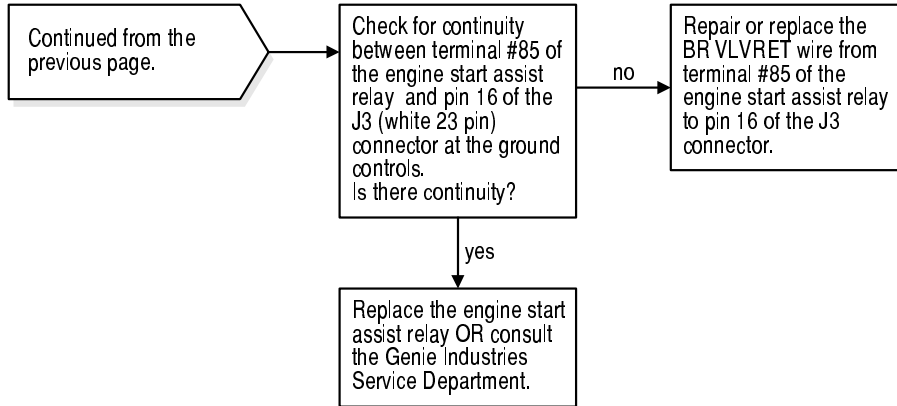


Chart 44

Auxiliary Drive Function Inoperative

Be sure the auxiliary drive option has been activated.

Be sure all other functions operate normally.

Be sure the batteries are fully charged and properly connected.

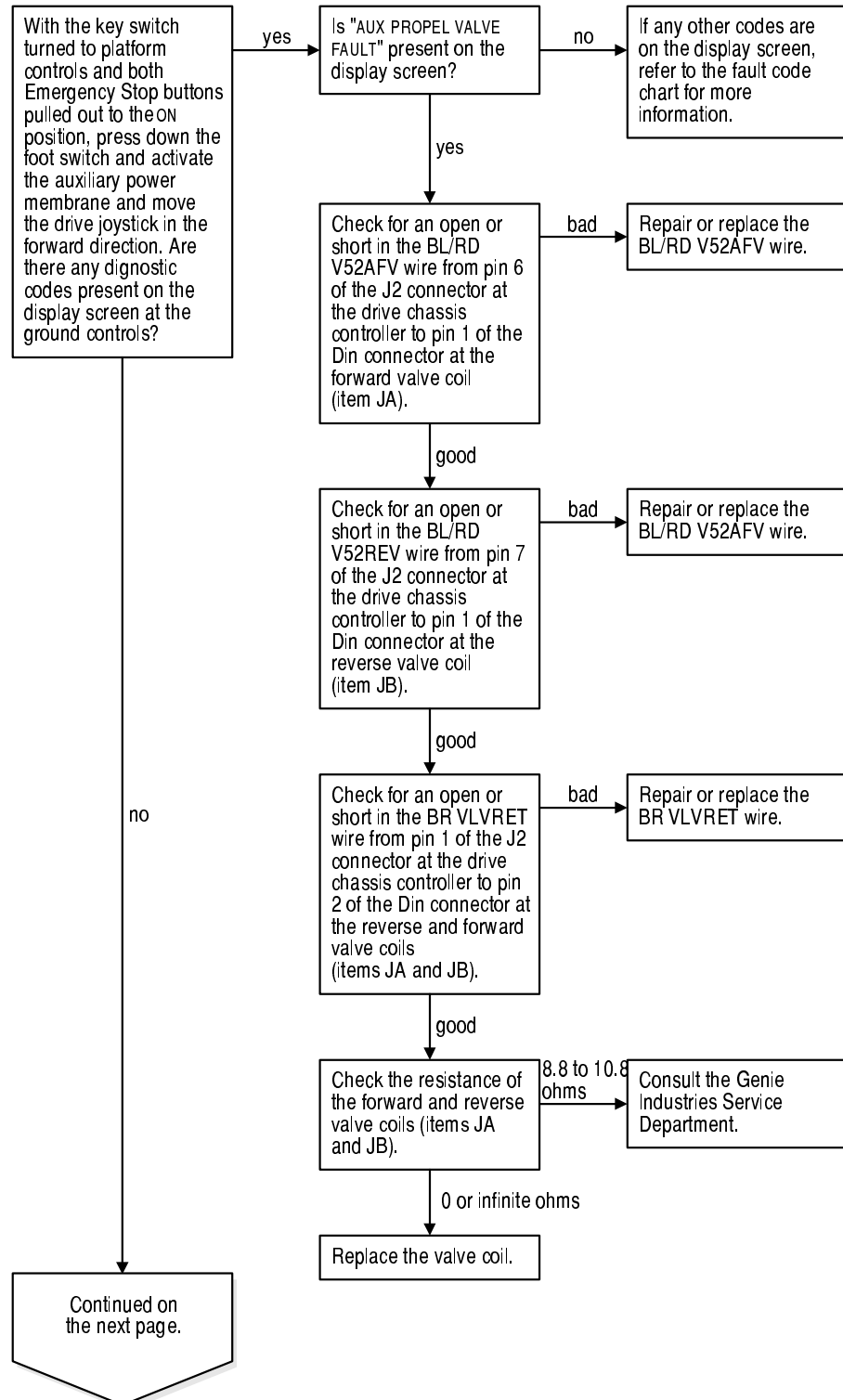
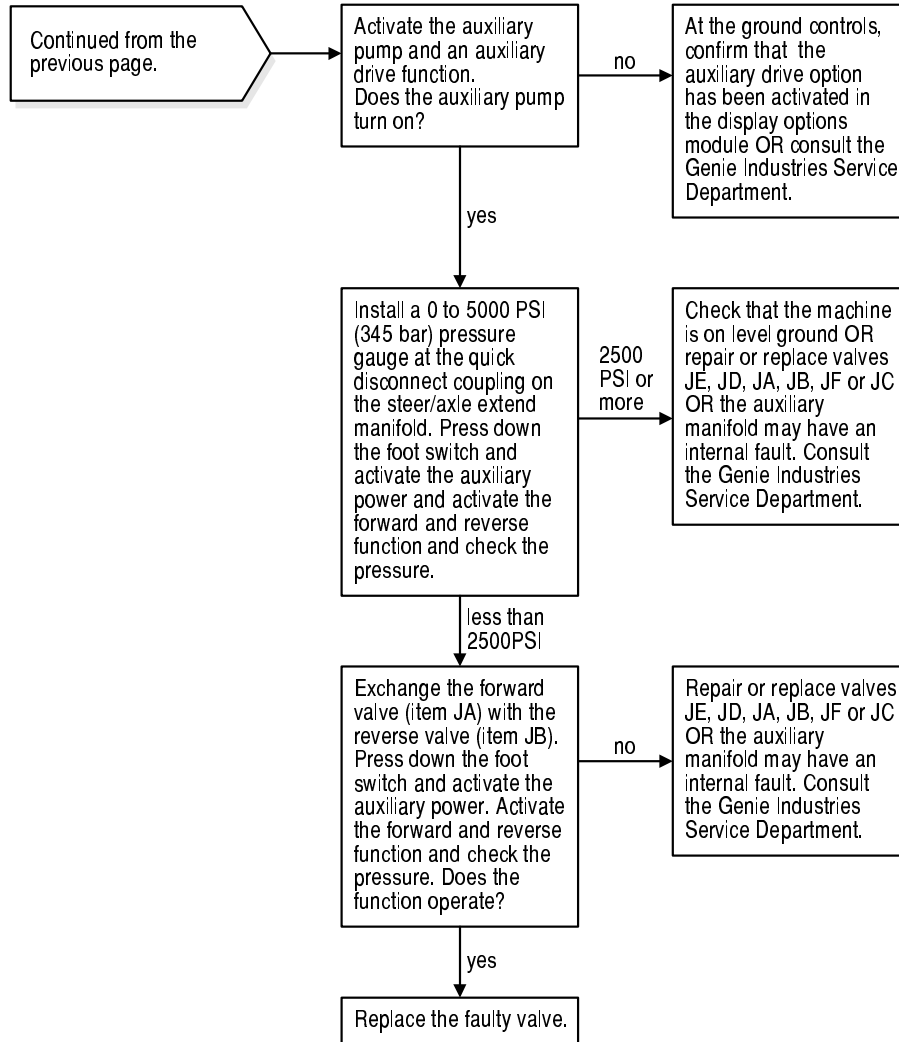


CHART 44



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 S-100 and Genie S-105 Operator's Manual* or *Genie S-120 and Genie S-125 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.

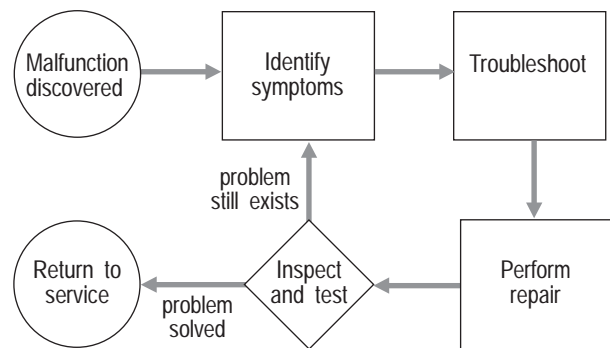
Electrical Schematics

⚠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

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
B1	Battery, 12V DC, 105AH	57159	Allied	Group 27TM	1
B2	Battery, 12V DC, 190AH	57160	Allied	Group 4D	1
B3	Battery separator	61343	Surepower Industries	1314	1
CB1	Circuit breaker, 40A	61188	Klixon	7851-37-40-I	1
CB2	Circuit breaker, 20A	61187	Klixon	7851-37-20-I	1
CR6, CR7, CR10 through CR17	Relay, SPDT, 12V DC	34052	Potter-Brumfield	VF4-15F11-CO5	10
F1	Fuse, 20A, Maxi (Deutz models)	75433	Bussman	MAX 20	1
F2	Fuse, 70A, Maxi	61116	Bussman	MAX 70	1
FB	Flashing beacon	20189	ECCO Electronic Controls	6400A-GEN	2
FS1	Foot switch	13482	Linemaster Switch Corp.	632-S	1
H1, H2	Alarm - Audio	62379	Sauer Danfoss	K27631	2
H3	Horn, 12V DC, 112 dB	54506	Wolo Industries	300LJ-12	1
JC1, JC3	Joystick controller, Dual axis	62390	Sauer Danfoss	K26519(1090332)	2
JC2	Joystick controller, Single axis	62391	Sauer Danfoss	K26520(1090333)	1
KS1, KS2	Contact, N.O.	45081	Telemecanique	ZB2-BE101	5
	Contact, N.C.	29732	Telemecanique	ZB2-BE102	6

ELECTRICAL COMPONENTS

Item	Description	Genie Part Number	Manufacturer	Manufacturer Part Number	Qty
Proximity switch	Proximity switch	60987	Power Components	FP-2000	10
Relay	Relay, SPDT, 12V DC (Deutz models)	60521	Potter-Brumfield	VF4-65F11-S01	4
	(Cummins and Perkins models)	60521	Potter-Brumfield	VF4-65F11-S01	3
Relay	Relay, SPDT, 12V DC (Deutz models)	61225	Potter-Brumfield	VF7-41F11-C05	2
	(Cummins and Perkins models)	61225	Potter-Brumfield	VF7-41F11-C05	1
SS1 through SS4	Steer sensor	50159	Power Components	HP-NRPS	4
TS1, TS2, TS3	Toggle switch, DPDT, 3 position momentary	16397	Microswitch Control Inc.	2NT1-7	3

Wire Circuit Legend

Circuit numbering

- 1 Circuit numbers consist of three parts: the circuit prefix, circuit number and circuit suffix. The circuit prefix indicates the type of circuit. The circuit number describes the function of the circuit. The circuit suffix provides an abbreviation for the number or may be used to further define the function of this portion of the circuit. It also may be used to indicate the final end of the circuit, i.e., LS or limit sw.
- 2 The circuit number may be used more than once in a circuit.

For Example:

C 74 PRLO – This is the circuit for the lockout valve #1. C stands for control, 74 is the number of the circuit for the primary #1 lock out valve. PRLO stands for Primary Lockout.

S 62 BSTO – This is the circuit that communicates to the onboard computers of the machine that the boom is fully stowed. S stands for safety, 62 is the number of the circuit for boom stowed and BSTO stands for Boom Stowed.

P 48 LP – P stands for power. 48 is the circuit number for work lamps and LP stands for Lamp.

R 48 LP – R stands for relay. In this case it is the wire that feeds the relay coil for the work lamp. All other numbers remain the same.

V 61 AXRT – V stands for valve power. 61 stands for axle retracted circuit and AXRT is the mnemonic for Axle Retracted.

Circuit suffix

Definition

AC Generator
 Angle
 Auxiliary Boom Valve
 Auxiliary Forward Valve
 Auxiliary Platform Valve
 Auxiliary Reverse Valve
 Auxiliary Reverse Valve
 Auxiliary Steer/Drive Valve
 Axle Extend Valve
 Axle Oscillate
 Axle Retract Valve
 Battery
 Boom Extended
 Boom Stowed
 Brake
 Bypass Valves
 CAN High Signal
 CAN Low Signal
 CAN Shield
 Chain Break
 Data High
 Data Low
 Drive Chassis Controller
 Drive Enable
 Electrical Displacement Control
 Engine Speed Select
 Engine Status Lamp
 Filter Restricted
 Filter Switch
 Float Switch
 Foot switch Signal
 Forward
 Fuel Select (gas/LP)

suffix

GEN
 ANG
 ABV
 AFV
 APV
 AREV
 AREV
 ASV
 AXEX
 AXOS
 AXRT
 BAT
 BEX
 BST
 BRK
 BV
 CAN+
 CAN-
 SHLD
 CNBK
 DTA+
 DTA-
 DCON
 DRE
 EDC
 ESPD
 ESL
 FLR
 FLTR
 FS
 FTS
 FWD
 FUEL

WIRE CIRCUIT LEGEND

Fuel Solenoid	FSOL	Primary Boom Up/Down Flow Control	PBF
Ground Control	TCON	Primary Lockout #1	P1L
Horn	HRN	Primary Lockout #2	P2L
Ignition	IGN	Proportional Valve	PRV
Jib Down	JD	Proximity Sensor	PXS
Jib Flow Control	JFC	Receptacle	REC
Jib Select Valve	JSV	Reverse	REV
Jib Up	JU	Right Front	RF
Lamps	LPS	Right Front Steer Sensor	RFS
Left Front	LF	Right Rear	RR
Left Front Steer Sensor	LFS	Right Rear Steer Sensor	RRS
Left Rear	LR	RPM	RPM
Left Rear Steer Sensor	LRS	Sec Boom Down	SBD
Limit Switch	LS	Sec Boom Extend	SBE
Load Sensor	LDS	Sec Boom Extend/Retract Flow Control	SERF
Low fuel	LOF	Sec Boom Retract	SBR
Motor Shift (Speed)	MS	Sec Boom Up	SBU
Multi Function Valve	MFV	Sec Boom Up/Down Flow Control	SBFC
Platform Control	PCON	Secondary Boom	SB
Platform Level Down	PLD	Secondary Boom Lockout Valve	SBLO
Platform Level Flow Control	PLF	Spare	SP
Platform Level Up	PLU	Start Aid (Glow Plug or choke)	SA
Platform Rotate Flow Control	PRF	Starter	STR
Platform Rotate Left (CCW)	PRL	Steering Valve (CW)	STC
Platform Rotate Right (CW)	PRR	Steering Valve (CCW)	STCC
Platform Tilt Alarm	PTA	Temp Sender	TSR
Platform Tilt Sensor	PTS	Temp Switches	TS
Pressure Sender	PSR	Tether	TET
Pressure Switches	PS	Tilt Alarm X axis	TAX
Pri Boom down	PBD	Tilt Alarm Y axis	TAY
Primary Boom Down	PBD	Ground Control Panel	TCON
Primary Boom Extend/Retract Lockout Valve	PBL	Turntable Rotate Flow Control	TRF
Primary Boom Extend	PBE	Turntable Rotate Right (CW)	TRR
Primary Boom Extend/Retract Flow Control	PERF	Turntable Tilt Alarm	TTA
Primary Boom Retract	PBR	Turntable Tilt Sensor	TTSR
Primary Boom Up	PBU	Test Switch	TSW

WIRE CIRCUIT LEGEND

Wire Coloring

- 1 All cylinder extension colors are solid and all retract functions are striped black. When using black wire, the stripe shall be white.
- 2 All rotations that are LEFT or CW are solid, RIGHT or CCW are striped and black. When the wire is black, the stripe is white.
- 3 All proportional valve wiring is striped.

Wire Color Legend

BL	Blue
BL/BK	Blue/Black
BL/RD	Blue/Red
BL/WH	Blue/White
BK	Black
BK/RD	Black/Red
BK/WH	Black/White
BR	Brown
GRN	Green
GR/BK	Green/Black
GR/WH	Green/White
RD	Red
RD/BK	Red/Black
RD/WH	Red/White
OR	Orange
OR/BL	Orange/Blue
OR/BK	Orange/Black
OR/RD	Orange/Red
WHT	White
WH/BK	White/Black
WH/RD	White/Red
YL	Yellow

Color, Circuit #, and Primary function

RD	1	Primary boom up drive
RD/BK	2	Primary boom down drive
RD/WH	3	Primary boom up/down FC proportional valve drive
WH	4	Turntable rotate left valve drive
WH/BK	5	Turntable rotate right valve drive
WH/RD	6	Turntable rotate FC proportional valve drive
BK	7	Primary boom extend
BK/WH	8	Primary boom retract
BK/RD	9	Primary boom Extend/Retract proportional valve drive
BL	10	Secondary boom up valve drive
BL/BK	11	Secondary boom down valve drive
BL/WH	12	Secondary boom up/down FC proportional valve drive
BL/RD	13	Drive enable
OR	14	Platform level up valve
OR/BK	15	Platform level down valve
OR/RD	16	Platform up/down FC proportional valve drive
GR/RD	17	Platform rotate left valve driver
GR/BK	18	Platform rotate right valve driver
GR/WH	19	Jib select valve driver circuit
RD	20	12 battery supply
WH	21	12 ignition supply
BK	22	Key switch power to platform Emergency Stop
WH	23	Power to platform
WH	24	Power to warning senders
WH/BK	25	Power to oil pressure sender
WH/RD	26	Power to temp sender
RD	27	Auxiliary Power
RD/BK	28	Platform level alarm
RD/WH	29	Drive Motor shift (speed)
WH	30	Forward
WH/BK	31	Reverse
WH/RD	32	Brake
BK	33	Start
BK/WH	34	Start Aid (glow plug or choke)
BK/RD	35	Engine speed select
BL	36	Steer clockwise

WIRE CIRCUIT LEGEND

BL/BK	37	Steer counterclockwise	WH	77	Lower Angle #1 operational
BL/WH	38	Gas	WH/BK	78	Upper Angle #2 operational
BL/RD	39	LP	BK	79	power from TCON ESTOP 80Can 2.0/J1939 Shield
OR	40	Limit switch signal stowed	GR	81	Can 2.0/J1939 Low
OR/BK	41	RPM signal	YL	82	Can 2.0/J1939 High
OR/RD	42	Boom retracted signal	GR/WH	83	Tilt signal x axis
GR	43	Jib Up	GR/BK	84	Tilt signal y axis
GR/BK	44	Jib Down	GR	85	Tilt sensor power
GR/WH	45	AC Generator	OR	86	Hydraulic Filter restricted
WH	46	Drive Horn	RD	87	Platform Level Safety Power
WH/BK	47	Output Power Enable	RD/BK	88	Platform Level Safety Output
WH/RD	48	Work Lamp	BR	89	Platform Level Safety Ground
WH/BK	49	Motion Lamp	RD/BK	90	Proximity Kill
BL	50	Auxiliary Boom	RD/WH	91	Gate Interlock
BL/WH	51	Auxiliary Steer	WH/BK	92	Motor Speed (LO/HI)
BL/RD	52	Auxiliary Platform	WH/RD	93	Motor Bypass
WH/BK	53	Boom envelope safety valve cutoff	WH	94	Load Sensor
BK/WH	54	Power to safety interlock switches (engine)	OR	95	Tether ESTOP return
GR/BK	55	Axle oscillation	RD	96	Tether Power
RD	56	Foot switch/TCON Emergency Stop power	BK	97	Tether ESTOP Power
RD/WH	57	Boom down safety interlock	WH	98	J1708 + (high)
RD/BK	58	Safety interlock to engine	BK	99	J1708- (low)
GR/WH	59	Chain break circuit	WH/RD	100	Outrigger lowered
GR/WH	60	Axle extend	WH/BK	101	Outrigger raised
GR	61	Axle retract	OR	102	Pothole protector up
OR	62	Boom stowed (safety)	OR/RD	103	Pothole protector down
OR/RD	63	Power to boom envelope safety switch	BK/WH	104	Proprietary Data buss -
OR/BL	64	Power for operational switches	BK/RD	105	Proprietary Data buss +
BL/WH	65	Low fuel indication	GR	106	Spare
BL	66	Drive Enable	RD	107	Alternator Field
BL	67	Secondary boom not stowed	BK/RD	108	Engine Status
RD	68	Pri Boom lowered (operational)	GR/WH	109	Sensor Pwr
BL	69	Pri boom #1 extended	BK	110	Sensor Return
BL/WH	70	Pri boom #2 retracted	OR	111	Steer Signal
BL/BK	71	Pri boom #2 extended	RD	112	Steer Signal to Solenoid Valve
BL/WH	72	Secondary boom extended	OR/RD	113	Multi Function Valve
BL/RD	73	Secondary boom retracted	BK/RD	114	Load Moment Overweight
RD	74	Pri #1 Lockout	RD/BK	115	Load Moment Underweight
RD/WH	75	Pri #2 Lockout	GRN	116	AC Power Ground
BL	76	Pri boom #3 extended	WHT	117	AC Power Neutral Wire (-)
			BK	118	AC Power Hot Wire (+)
			BL	119	Hydraulic Pressure Sensor Output

Limit Switches

Types of Limit Switches

There are two types of limit switches, which are found in various locations throughout the machine: mechanical-type **operational** or **safety** switches and magnetic **proximity** switches. As in aircraft, which features redundant safety systems, each mechanical safety switch is backed up with an independently functioning proximity switch.

The mechanical-type **operational** or **safety** switches are used to sense a positive displacement or movement of the limit switch actuator, or arm, as the machine moves through its range of operational functions. Included in this group are envelope limit switches, which sense the extended length and angle of the boom, position of the axles and rotational position of the turntable.

For example, when the 53° operational switch is activated by achieving a 53° boom angle, the boom may then be extended beyond 75 feet (22.9 m). Another example is the drive enable limit switch, which disables the drive function anytime the boom is rotated past the rear axles, indicated by the 'square' end of the drive chassis.

In some cases, the engine will be stopped if safety parameters are exceeded.

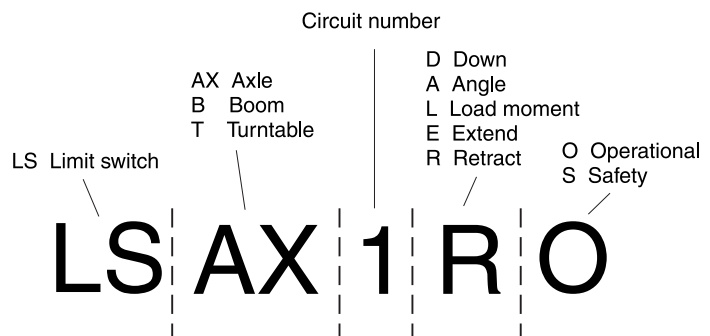
Magnetic **proximity** switches are used to sense very specific positions of a part of the machine in relation to the remainder of the machine. Proximity switches must be correctly aligned for the machine functions to operate. Proximity switches are found at the front and rear axle, the turntable and several locations on the boom.

Limit Switch Numbering

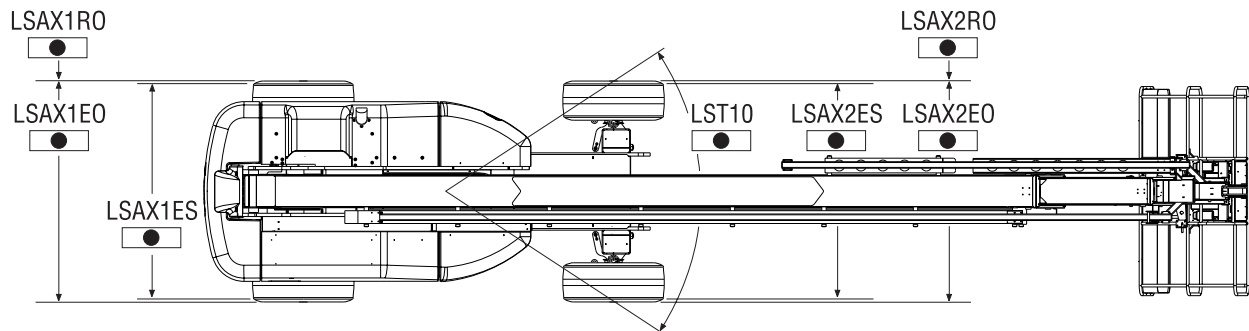
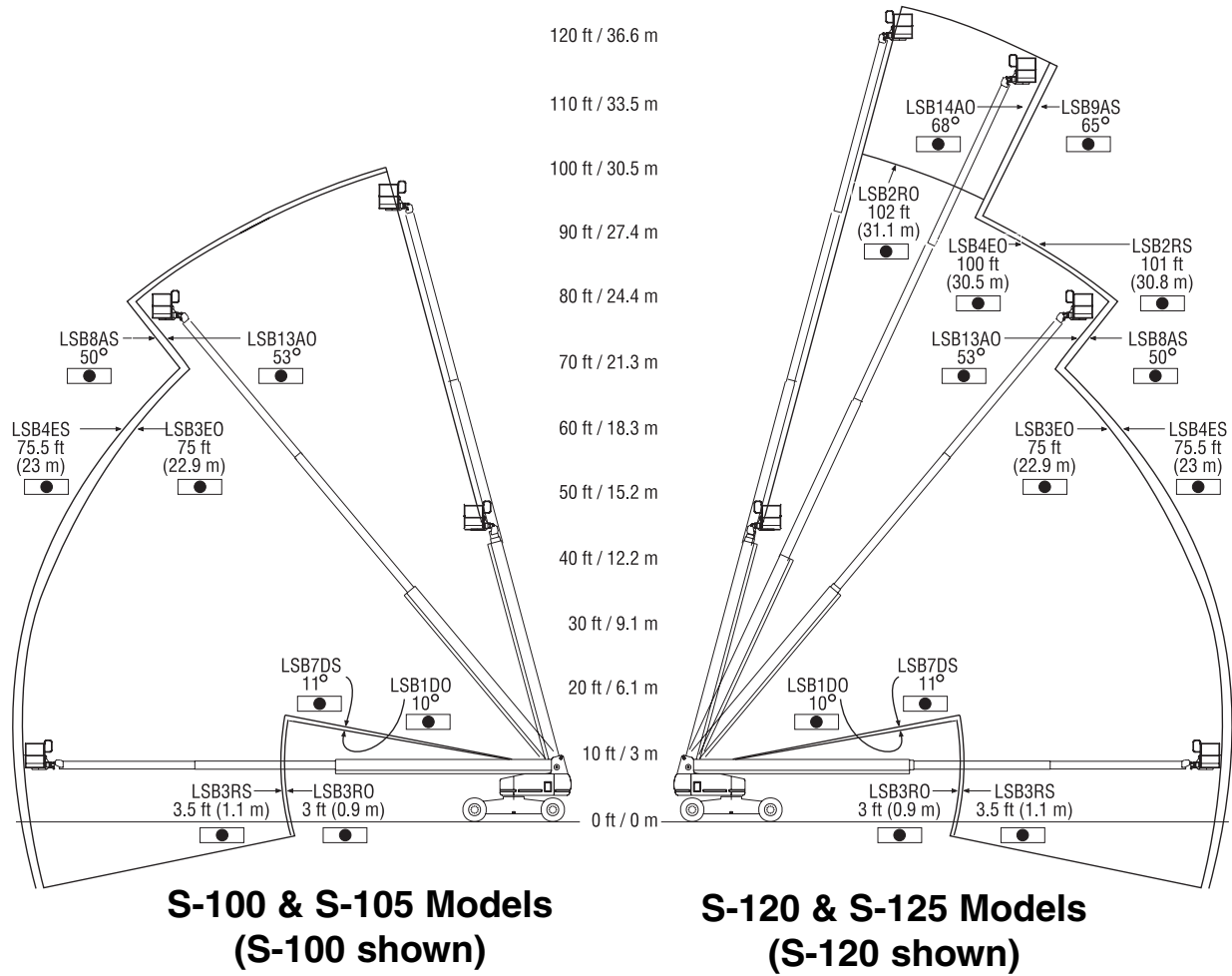
LSAX1RO	Front axle retract proximity
LSAX2RO	Rear axle retract proximity
LSAX1EO	Front axle extend proximity
LSAX2EO	Rear axle extend proximity
LSAX1ES	Front axle extend safety
LSAX2ES	Rear axle extend safety
LSB6S	Cable tension safety
LSB7DS	Boom 11° angle safety
LSB3RS	Boom 3 foot (0.9 m) extend safety
LSB2RS ••	Boom 101 feet (30.8 m) extend safety
LSB9AS ••	Boom 65° angle safety
LSB8AS	Boom 50° angle safety
LSB4ES	Boom 76 feet (23.2 m) extend safety
LST1O	Drive enable mechanical
LSB1DO	Boom 10° mechanical
LSB2RO ••	Boom >100 feet (30.5 m) retract proximity
LSB3RO	Boom >3 feet (0.9 m) stowed mechanical
LSB3EO	Boom 75 feet (22.9 m) extend proximity
LSB4EO ••	Boom 100 feet (30.5 m) extend proximity
LSB13AO	Boom 53° angle proximity
LSB14AO ••	Boom 68° angle proximity
LSB19LO	Load moment mechanical
LSB20LO	Reverse load moment proximity

(•• S-120 and S-125 models only)

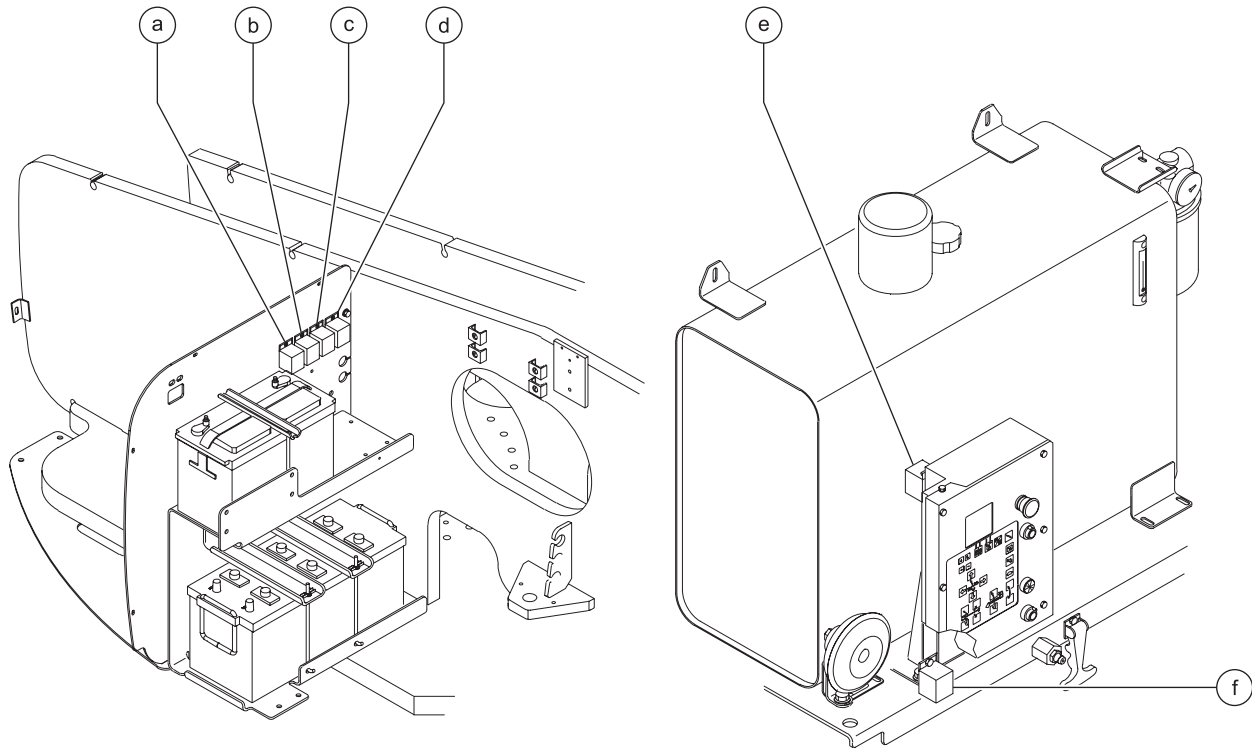
Numbering Legend



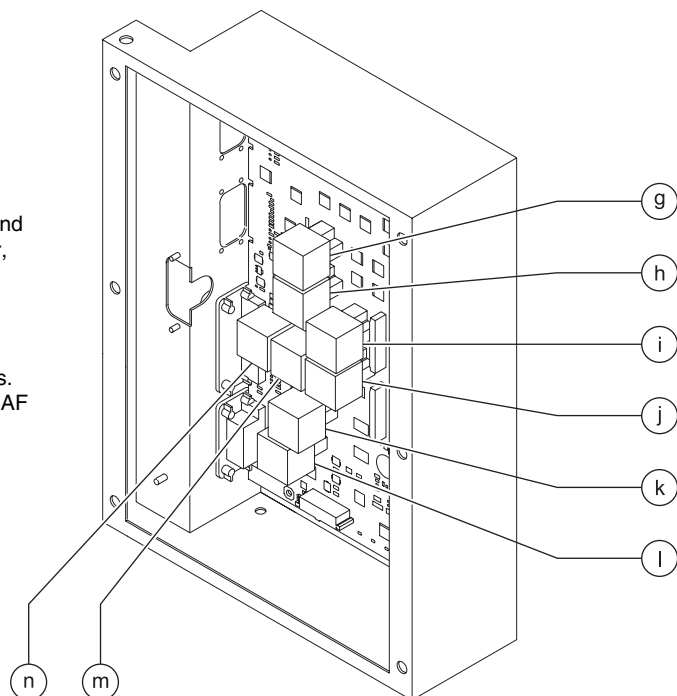
LIMIT SWITCHES



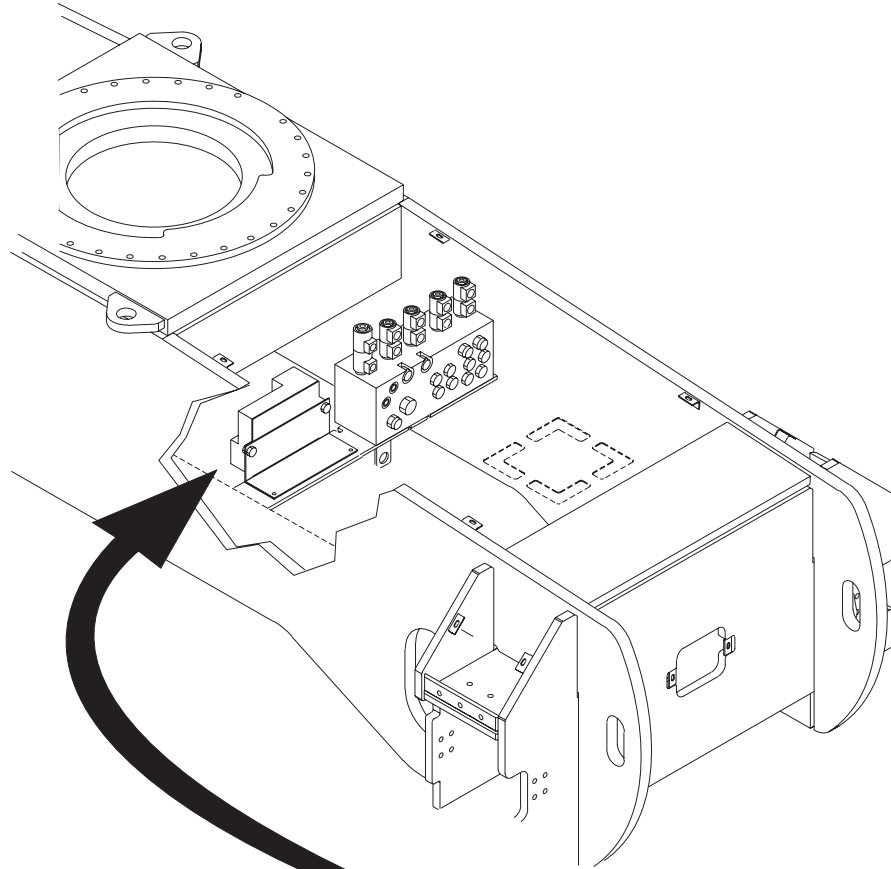
Relay Layout



- a Fuel solenoid relay (Deutz models only).
- b Oil cooler relay (Deutz models only).
- c Engine cold start relay.
- d Starter relay.
- e Horn relay.
- f Flashing beacon relay.
- g CR17 relay (K7) - powers C35RPM circuit (Hi/low solenoid).
- h CR16 relay (K8) - powers C34SA circuit (Engine cold start).
- i CR12 relay (K4) - powers primary valves 1 and 2, ignition, glow plug, starter relay, generator, and the boom retract, multifunction and platform rotate valve coils.
- j CR14 relay (K2) - powers P7R or S56PRV circuit including the auxiliary valve, boom extend/retract and turntable rotate valve coils.
- k CR10 relay (K6) - powers C21IGN and C107AF circuits (Fuel on/off solenoid and alternator field).
- l CR15 relay (K1) - powers P22R or C03PBF circuit (Boom up/down valve coil).
- m CR13 relay (K5) - powers P_7 and throttle relay.
- n CR11 relay (K3) - powers P-6R2 or P54ENG circuits.

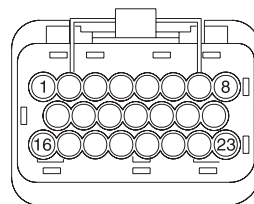


Drive Chassis Controller Pin Legend

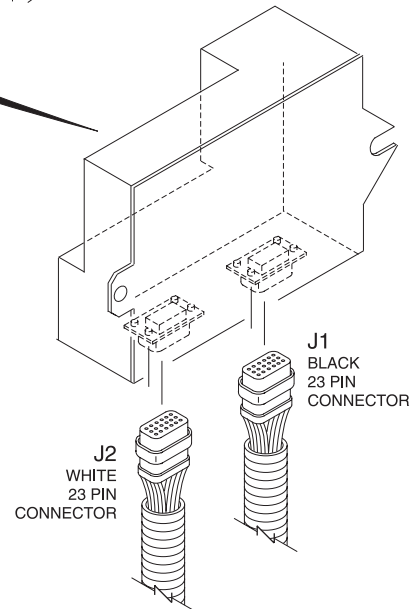


DCON DRIVE CHASSIS CONTROLLER	
J2	
1 = VLVRET - BR	
2 = V61AXRT - GR	
3 = V60AXEX - GR/WH	
4 = V29MS - RD/WH	
5 = (UNUSED)	
6 = V52AFV - BL/RD	
7 = V52REV - BL/RD	
8 = V36RRS - BL	
9 = V37RRS - BL/BK	
10 = C111RRS - OR	
11 = C111LRS - OR	
12 = C111RFS - OR	
13 = C111LFS - OR	
14 = VLVRET2 - BR	
15 = V32BRK - WH/RD	
16 = V36LRS - BL	
17 = V37LRS - BL/BK	
18 = V36RFS - BL	
19 = P110RT - BK	
20 = P109ANG - GR/WH	
21 = V37RFS - BL/BK	
22 = V36LFS - BL	
23 = V37LFS - BL/BK	

DCON DRIVE CHASSIS CONTROLLER	
J1	
1 = GND-DCON - BR	
2 = P21DCON - WH	
3 = P53LS - RD	
4 = (UNUSED)	
5 = S56PRV - RD	
6 = C61AXRT - GR	
7 = (UNUSED)	
8 = AXLE RET GND	
9 = C61LS - GR	
10 = D80SHLD	
11 = (UNUSED)	
12 = (UNUSED)	
13 = (UNUSED)	
14 = (UNUSED)	
15 = C61LS(A) - GR	
16 = (UNUSED)	
17 = D81CAN(-) - GR	
18 = D82CAN(+) - YL	
19 = (UNUSED)	
20 = (UNUSED)	
21 = (UNUSED)	
22 = (UNUSED)	
23 = P61LS(A) - GR	



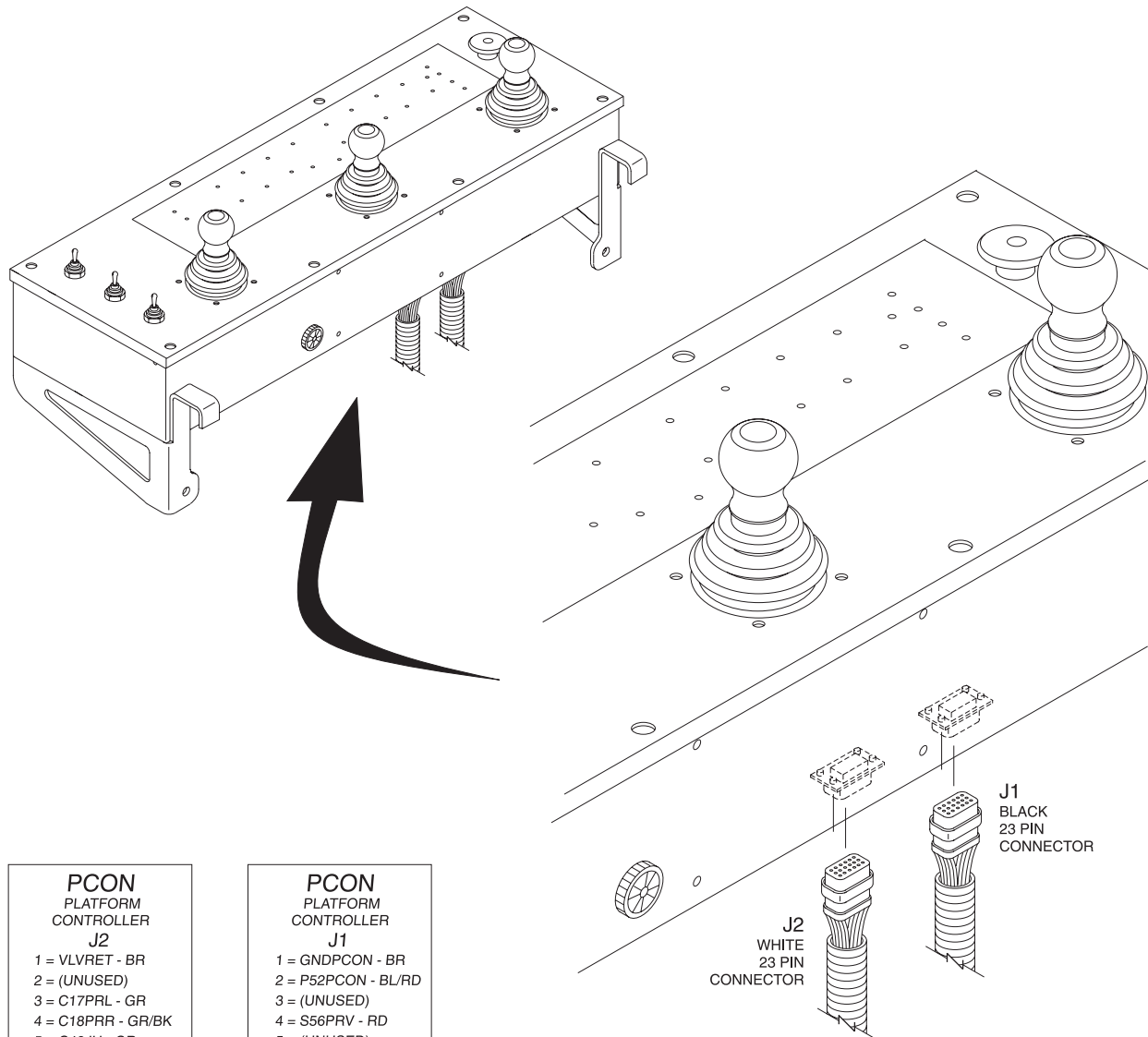
PIN NUMBERING FOR
23 PIN
CONNECTORS



J1
BLACK
23 PIN
CONNECTOR

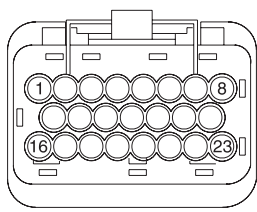
J2
WHITE
23 PIN
CONNECTOR

Platform Controller Pin Legend



PCON PLATFORM CONTROLLER	
J2	
1 = VLVRET - BR	
2 = (UNUSED)	
3 = C17PRL - GR	
4 = C18PRR - GR/BK	
5 = C43JU - GR	
6 = C44JD - GR/BK	
7 = C14PLU - OR	
8 = C15PLD - OR/BK	
9 = (UNUSED)	
10 = R90PXS - RD/BK	
11 = C90PXS - RD/BK	
12 = RET94LDS - WH	
13 = C94LDS - WH	
14 = R94LDS - WH	
15 = C88PTS - RD/BK	
16 = R56PTS - RD	
17 = C56PTS - RD	
18 = (UNUSED)	
19 = PLATRET - BR	
20 = C84TAY - GR/BK	
21 = P85PTS - GR	
22 = PTSRET - BR	
23 = P87PTS - RD	

PCON PLATFORM CONTROLLER	
J1	
1 = GNDPCON - BR	
2 = P52PCON - BL/RD	
3 = (UNUSED)	
4 = S56PRV - RD	
5 = (UNUSED)	
6 = (UNUSED)	
7 = P56PRV - RD	
8 = (UNUSED)	
9 = (UNUSED)	
10 = D80SHLD	
11 = (UNUSED)	
12 = (UNUSED)	
13 = (UNUSED)	
14 = (UNUSED)	
15 = C47OUT - WH/BK	
16 = C46HN - WH	
17 = D81CAN(-) - GR	
18 = D82CAN(+) - YL	
19 = (UNUSED)	
20 = (UNUSED)	
21 = (UNUSED)	
22 = (UNUSED)	
23 = P23PCON - BK	

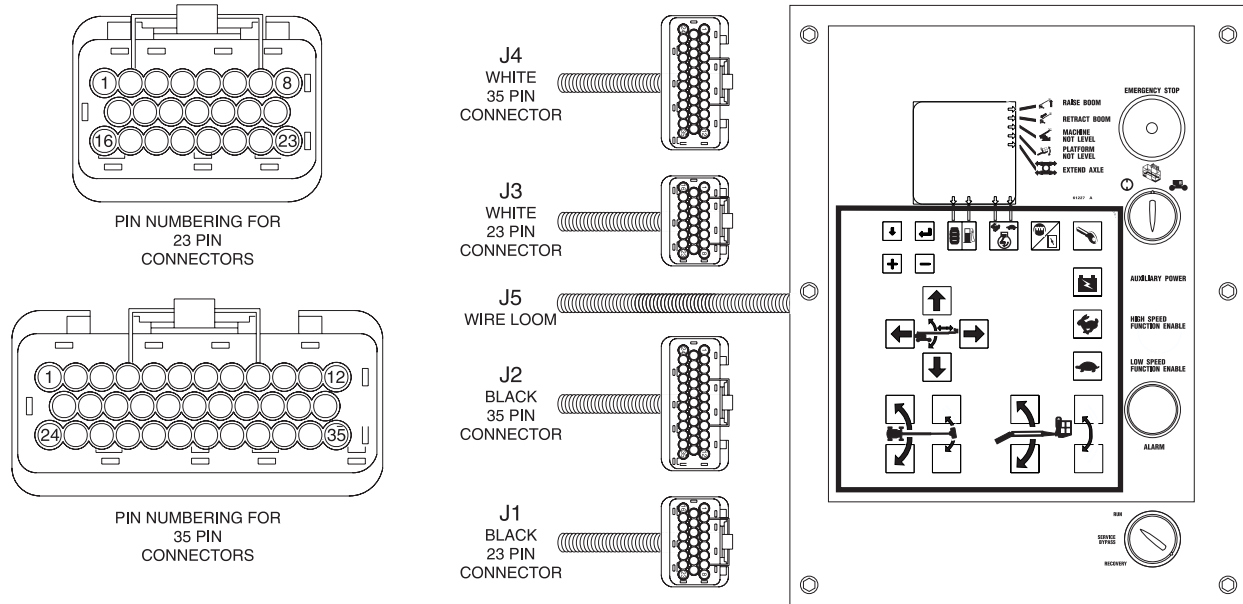


PIN NUMBERING FOR
23 PIN
CONNECTORS

J1
BLACK
23 PIN
CONNECTOR

J2
WHITE
23 PIN
CONNECTOR

Turntable Controller Pin Legend



- TCON**
TURNTABLE
CONTROLLER
J1
- 1 = GNDDPCON - BR
 - 2 = P52PCON - BL/RD
 - 3 = C46HN - WH
 - 4 = C47OUT - WH/BK
 - 5 = P23PCON - BK
 - 6 = S56PRV - RD
 - 7 = P56PRV - RD
 - 8 = R48LP - WH/RD
 - 9 = R49LP - WH/BK
 - 10 = D80SHLD
 - 11 = (UNUSED)
 - 12 = (UNUSED)
 - 13 = (UNUSED)
 - 14 = (UNUSED)
 - 15 = P97TET - BK
 - 16 = (UNUSED)
 - 17 = D81CAN(-) - GR
 - 18 = D82CAN(+) - YL
 - 19 = (UNUSED)
 - 20 = TETFUNC - WH
 - 21 = TETGND - BR
 - 22 = P96TET - RD
 - 23 = P95TET - OR

- TCON**
TURNTABLE
CONTROLLER
J2
(S-120 & S-125 MODELS)
- 1 = GNDDCON - BR
 - 2 = P21DCON - RD
 - 3 = P53LS - WH/BK
 - 4 = P54ENG - BK/WH
 - 5 = P56PRV - RD
 - 6 = P57PBD - RD/WH
 - 7 = P58LS - RD/BK
 - 8 = S59CNBK - GR/WH
 - 9 = C60AXEX - GR/WH
 - 10 = C61AXRT - GR
 - 11 = S62BSTO - OR
 - 12 = P63LS - OR/RD
 - 13 = C64LS - OR/BL
 - 14 = C65LOFL - BL/WH
 - 15 = C66DREN - BL
 - 16 = (UNUSED)
 - 17 = C68PBD - RD
 - 18 = C69PBE - BK
 - 19 = C70PBE - BL/WH
 - 20 = C71PBE - BL/BK
 - 21 = (UNUSED)
 - 22 = (UNUSED)
 - 23 = V74PRLO - RD
 - 24 = V75PRLO - RD/WH
 - 25 = SNSR GND - BR
 - 26 = (UNUSED)
 - 27 = G119SR - BL
 - 28 = C76PBE - BL
 - 29 = C77AS - WH
 - 30 = C78PS - WH/BK
 - 31 = (UNUSED)
 - 32 = (UNUSED)
 - 33 = (UNUSED)
 - 34 = (UNUSED)
 - 35 = VLVRET1 - BR

- TCON**
TURNTABLE
CONTROLLER
J2
(S-100 & S-105 MODELS)
- 1 = GNDDCON - BR
 - 2 = P21DCON - RD
 - 3 = P53LS - WH/BK
 - 4 = P54ENG - BK/WH
 - 5 = P56PRV - RD
 - 6 = P57PBD - RD/WH
 - 7 = P58LS - RD/BK
 - 8 = S59CNBK - GR/WH
 - 9 = C60AXEX - GR/WH
 - 10 = C61AXRT - GR
 - 11 = S62BSTO - OR
 - 12 = P63LS - OR/RD
 - 13 = C64LS - OR/BL
 - 14 = C65LOFL - BL/WH
 - 15 = C66DREN - BL
 - 16 = (UNUSED)
 - 17 = C68PBD - RD
 - 18 = C69PBE - BK
 - 19 = C70PBE - BL/WH
 - 20 = C71PBE - BL/BK
 - 21 = (UNUSED)
 - 22 = (UNUSED)
 - 23 = V74PRLO - RD
 - 24 = V75PRLO - RD/WH
 - 25 = SNSR GND - BR
 - 26 = (UNUSED)
 - 27 = G119SR - BL
 - 28 = (UNUSED)
 - 29 = C77AS - WH
 - 30 = (UNUSED)
 - 31 = (UNUSED)
 - 32 = (UNUSED)
 - 33 = (UNUSED)
 - 34 = (UNUSED)
 - 35 = VLVRET1 - BR

- TCON**
TURNTABLE
CONTROLLER
J3
- 1 = VLVRET1 - BR
 - 2 = C35RPM - BK/RD
 - 3 = C21IGN - WH
 - 4 = C34SA - BK/WH
 - 5 = V30FWD - WH
 - 6 = V31REV - WH/BK
 - 7 = C46HRN - WH
 - 8 = (UNUSED)
 - 9 = C33STR - BK
 - 10 = (UNUSED)
 - 11 = (UNUSED)
 - 12 = C25PSR - WH/BK
 - 13 = C26TSR - WH/RD
 - 14 = RET85TTSR - GR
 - 15 = P85TTSR - GR
 - 16 = VLVRET2 - BR
 - 17 = (UNUSED)
 - 18 = C41RPM - OR/BK
 - 19 = C107AF - RD
 - 20 = C83TAX - GR/WH
 - 21 = C84TAY - GR/BK
 - 22 = C45GEN - GR/WH
 - 23 = VLVRET3 - BR

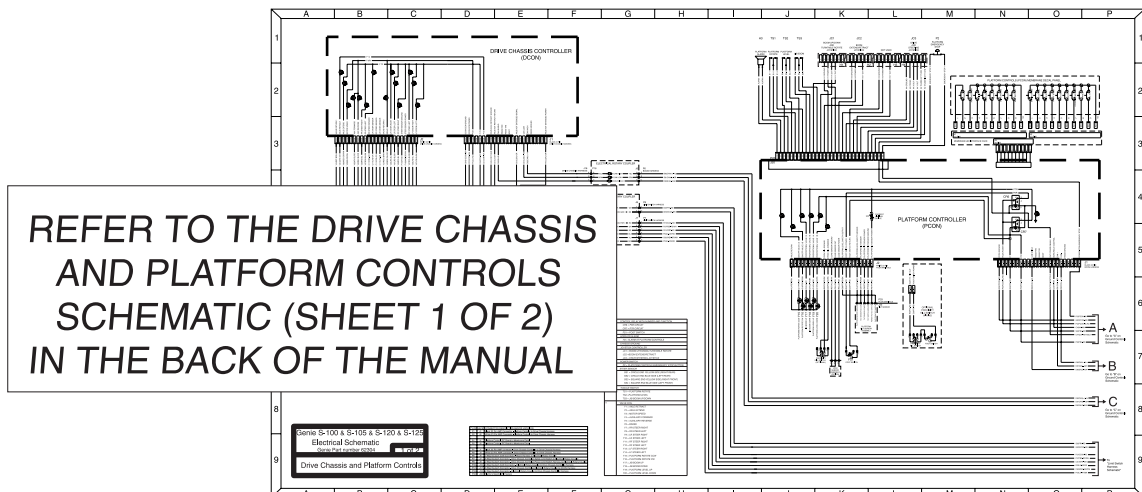
- TCON**
TURNTABLE
CONTROLLER
J5
- 1 = BATVLV - RD
 - 2 = BATGND - BR
 - 3 = BATGND - BR
 - 4 = BATECU - RD

- TCON**
TURNTABLE
CONTROLLER
J4
- 1 = VLVRET4 - BR
 - 2 = C03PBF - RD/WH
 - 3 = C09PERF - BK/RD
 - 4 = C06TRF - WH/RD
 - 5 = (UNUSED)
 - 6 = (UNUSED)
 - 7 = C01PBU - RD
 - 8 = C02PBD - RD/BK
 - 9 = C07PBE - BK
 - 10 = C08PBR - BK/WH
 - 11 = (UNUSED)
 - 12 = (UNUSED)
 - 13 = (UNUSED)
 - 14 = VLVRET5 - BR
 - 15 = (UNUSED)
 - 16 = (UNUSED)
 - 17 = C15LS - RD/BK
 - 18 = C14LS - BK/RD
 - 19 = (UNUSED)
 - 20 = (UNUSED)
 - 21 = (UNUSED)
 - 22 = (UNUSED)
 - 23 = C113MFV - OR/RD
 - 24 = (UNUSED)
 - 25 = C04TRL - WH
 - 26 = C05TRR - WH/BK
 - 27 = VLVRTN7 - BR
 - 28 = (UNUSED)
 - 29 = (UNUSED)
 - 30 = VLVRET6 - BR
 - 31 = (UNUSED)
 - 32 = C27AUX - RD
 - 33 = (UNUSED)
 - 34 = (UNUSED)
 - 35 = DRIVE LAMP

Electrical Schematic Legend - Drive Chassis (DCON) and Platform Controls (PCON)

CR	CONTROL RELAY WITH NUMBER AND FUNCTION
	CR6 = P6R CIRCUIT
	CR7 = P7R CIRCUIT
FS	FS1 = FOOT SWITCH
H	HORN OR ALARM
	H3 = ALARM AT PLATFORM CONTROLS
GND	CHASSIS GROUND
JC	JOYSTICK CONTROLLER
	JC1 = BOOM UP/DOWN& TURNABLE ROTATE
	JC2 =BOOM EXTEND/RETRACT
	JC3 = DRIVE/STEERING JOYSTICK
P	POWER SWITCH
	P2 = PLATFORM CONTROLS EMERGENCY STOP BUTTON
SS	STEER SENSOR
	SS1 = CIRCLE END YELLOW SIDE (RIGHT REAR)
	SS2 = CIRCLE END BLUE SIDE (LEFT REAR)
	SS3 = SQUARE END YELLOW SIDE (RIGHT FRONT)
	SS4 = SQUARE END BLUE SIDE (LEFT FRONT)
TS	TOGGLE SWITCH
	TS1 = PLATFORM ROTATE
	TS2 =PLATFORM LEVEL
	TS3 = JIB BOOM UP/DOWN
Y	VALVE COIL
	Y1 = AXLE RETRACT
	Y2 = AXLE EXTEND
	Y3 = MOTOR SPEED
	Y4 = AUXILIARY FORWARD
	Y5 = AUXILIARY REVERSE
	Y6 = BRAKE
	Y7 = RR STEER RIGHT
	Y8 = RR STEER LEFT
	Y9 = LR STEER RIGHT
	Y10 = LR STEER LEFT
	Y11 = RF STEER RIGHT
	Y12 = RF STEER LEFT
	Y13 = LF STEER RIGHT
	Y14 = LF STEER LEFT
	Y15 = PLATFORM ROTATE CCW
	Y16 = PLATFORM ROTATE CW
	Y17 = JIB BOOM UP
	Y18 = JIB BOOM DOWN
	Y19 = PLATFORM LEVEL UP
	Y20 = PLATFORM LEVEL DOWN

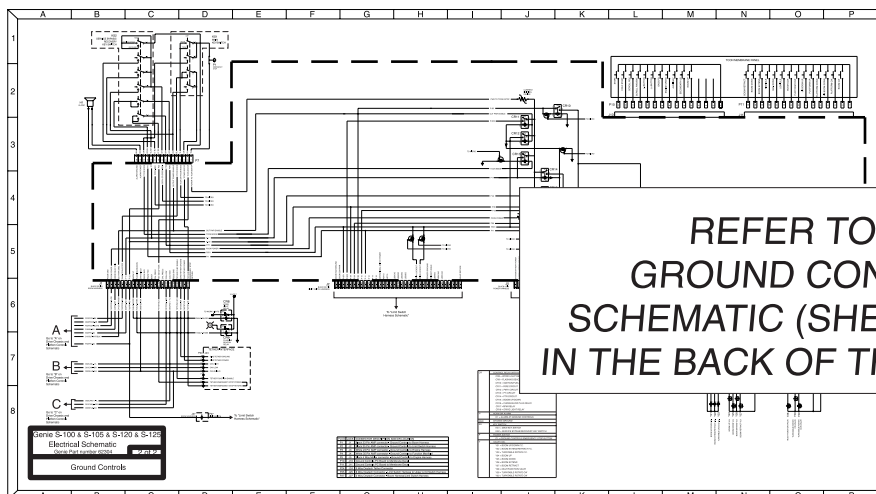
PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P1	J1	Black 23 Pin AMP Connector - Platform Controls to Drive Chassis Harness
P2	J2	White 23 Pin AMP Connector - Platform Controls to Drive Chassis Harness
P1	J1	Platform Controls PC Board to Membrane Decal
P2	J2	Platform Controls PC Board to Membrane Decal
P1	J1	Black 23 Pin AMP connector - Drive Chassis Controller to Drive Chassis Harness
P2	J2	White 23 Pin AMP connector - Drive Chassis Controller to Drive Chassis Harness
P6	J6	3 Way Deutsch CAN Connector - Boom Harness to Electrical Rotary Coupler
P7	J7	6 Way Deutsch Connector - Drive Chassis Controller Safety Limit Switch to Electrical Rotary Coupler
P8	J8	2 Way Deutsch Connector - Drive Chassis Controller Power Limit Switch Harness to Electrical Rotary Coupler
P16	J16	3 Way Deutsch CAN Connector - Electrical Rotary Coupler to Drive Chassis Controller Harness
P17	J17	6 Way Deutsch Connector - Drive Chassis Controller Electrical Rotary Coupler to DCON Harness
P17	J17	6 Way Deutsch Connector - Drive Chassis Controller Electrical Rotary Coupler to DCON Harness
P18	J18	2 Way Deutsch Connector - Electrical Rotary Coupler to Drive Chassis Controller Harness
P33	J33	Platform Manifold/Tilt Sensor





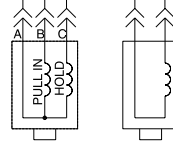
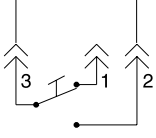
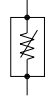


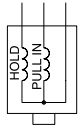
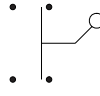
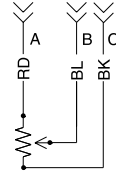
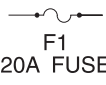
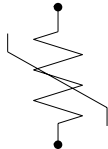

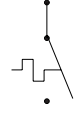
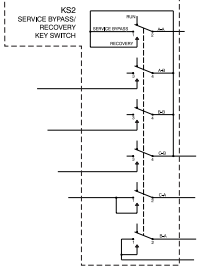

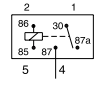
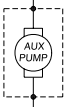
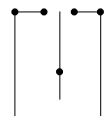
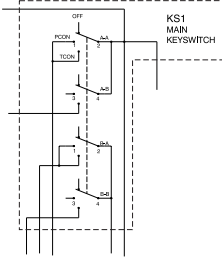
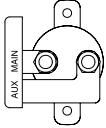
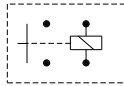
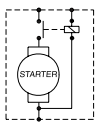

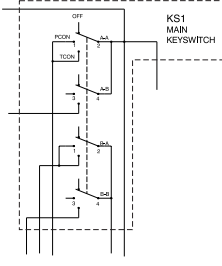
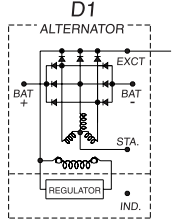

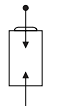
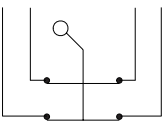
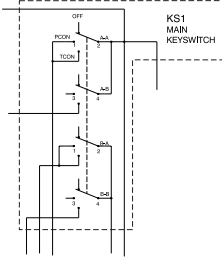
Electrical Schematic Legend - Ground Controls (TCON)

CR	<p>CONTROL RELAY WITH NUMBER AND FUNCTION</p> <p>CR8 = WORK LIGHT RELAY CR9 = FLASHING BEACON RELAY CR10 = IGNITION/FUEL/ALTERNATOR FIELD CR11 = P6R2 CIRCUIT CR12 = P6R1 CIRCUIT CR13 = P7 CIRCUIT CR14 = P7R CIRCUIT CR15 = BOOM UP/DOWN CR16 = CHOKE/GLOW PLUG RELAY CR17 =RPM RELAY CR18 = DRIVE LIGHT RELAY</p>
H	<p>HORN OR ALARM</p> <p>H1 = ALARM AT GROUND CONTROLS</p>
GND	CHASSIS GROUND
KS	<p>KEY SWITCH</p> <p>KS1 = MAIN KEY SWITCH KS2 = SERVICE BYPASS/RECOVERY KEY SWITCH</p>
P	<p>POWER SWITCH</p> <p>P1 = GROUND CONTROLS EMERGENCY STOP BUTTON</p>
Y	<p>VALVE COIL</p> <p>Y21 = BOOM UP/DOWN F.C. Y22 = BOOM EXTEND/RETRACT F.C. Y23 = TURNTABLE ROTATE F.C. Y24 = BOOM UP Y25 = BOOM DOWN Y26 = BOOM EXTEND Y27 = BOOM RETRACT Y28 = MULTIFUNCTION VALVE Y29 = TURNTABLE ROTATE CW Y30 = TURNTABLE ROTATE CW</p>

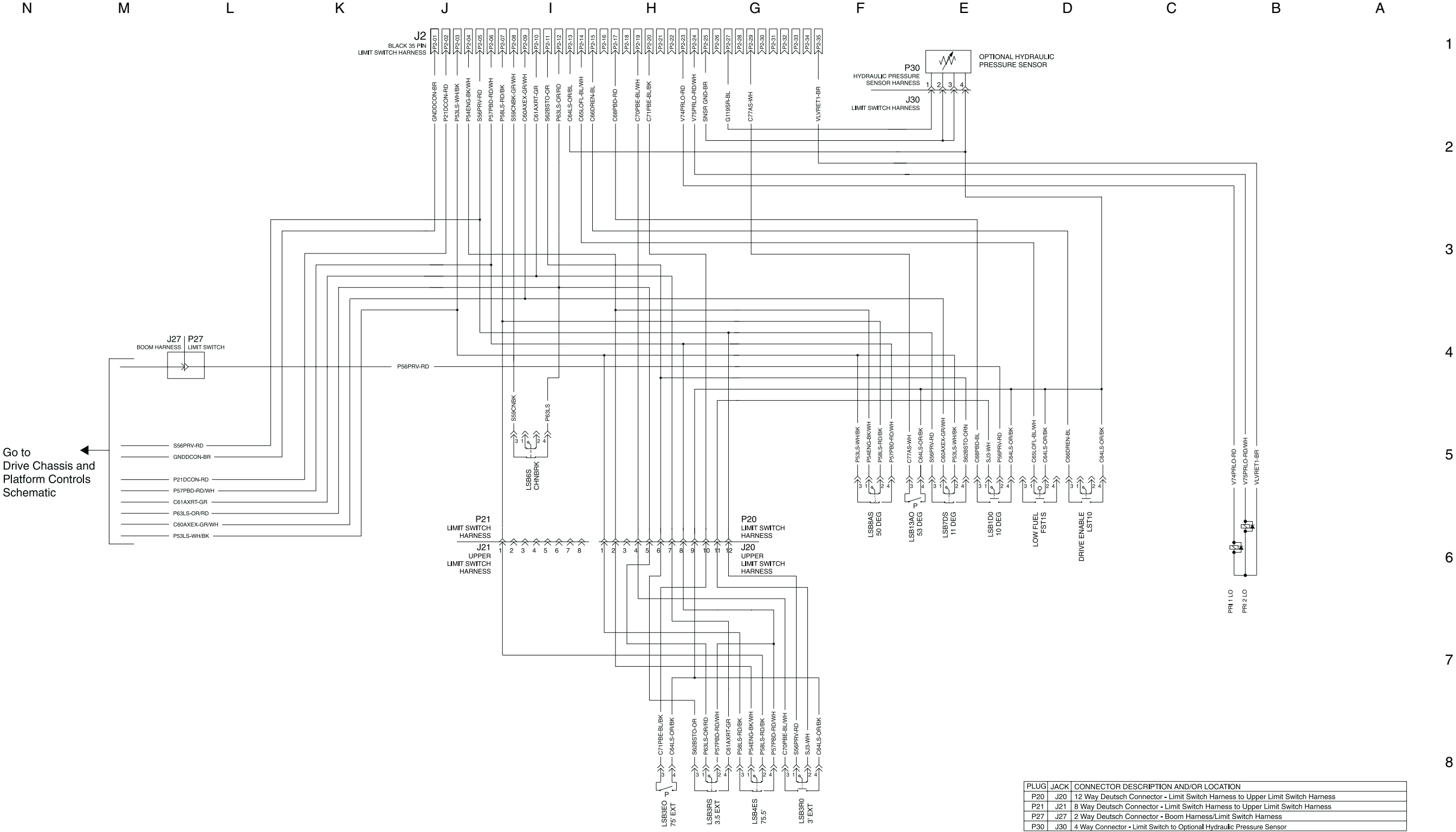
PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P1	J1	Black 23 Pin AMP Connector - Ground Controls to Boom Harness
P2	J2	Black 35 Pin AMP Connector - Ground Controls to Limit Switch Harness
P3	J3	White 23 Pin AMP connector - Ground Controls to Engine Harness
P4	J4	White 35 Pin AMP connector - Ground Controls to Function Manifold
P5	J5	Black 4 Way Molex connector - Ground Controls to Engine Harness
P10	J10	Ground Controls PC Board to Membrane Decal
P11	J11	Ground Controls PC Board to Membrane Decal
P24	J24	9 Way Deutsch Tether Connector
P25	J25	8 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P27	J27	2 Way Deutsch Connector - Boom Harness/Limit Switch Harness



Electrical Symbols Legend

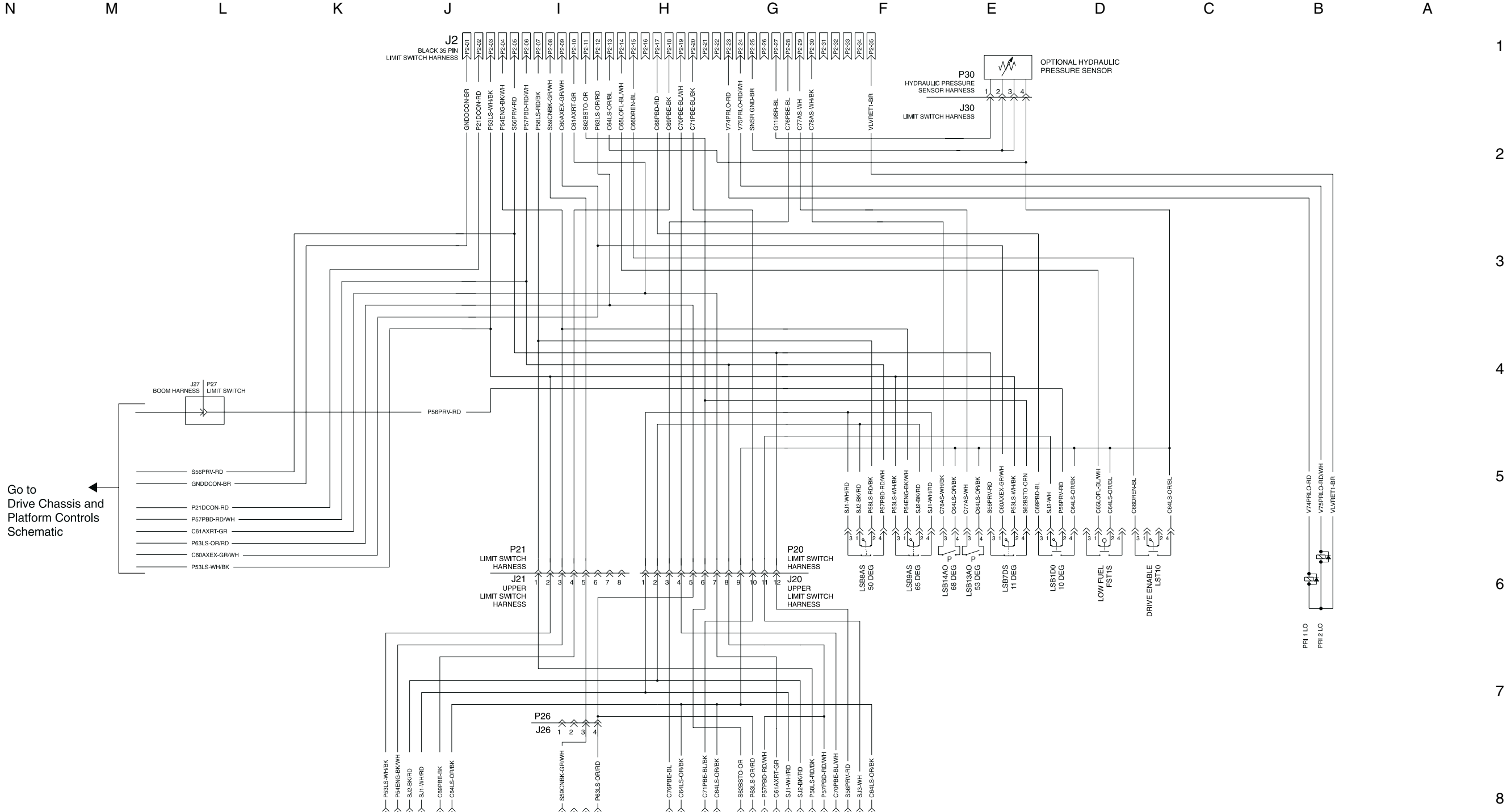
 <p>Battery</p>	 <p>Coil</p>	 <p>Fuel solenoid</p>	 <p>Foot switch</p>	 <p>Sending unit</p>
 <p>Chassis ground</p>	 <p>Diode</p>	 <p>HIGH/LOW SPEED SOLENOID</p>	 <p>Fan belt break switch</p>	 <p>Steer sensor</p>
 <p>F1 20A FUSE Fuse with amperage</p>	 <p>Current limiting device</p>	 <p>Auxiliary fan</p>	 <p>Temperature switch</p>	 <p>Service bypass/recovery key switch</p>
 <p>CB1 40A Circuit breaker with amperage</p>	 <p>Relay</p>	 <p>Auxiliary pump</p>	 <p>Toggle switch</p>	 <p>Main key switch</p>
 <p>Battery separator</p>	 <p>Power relay</p>	 <p>Starter motor</p>	 <p>Proximity switch</p>	 <p>Main key switch</p>
 <p>ALTERNATOR</p>	 <p>H1 Horn</p>	 <p>Engine cold start ignitor</p>	 <p>Proximity kill switch</p>	 <p>Main key switch</p>

Limit Switch Harness Schematic, S-100 & S-105 Models



PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P20	J20	12 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P21	J21	8 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P27	J27	2 Way Deutsch Connector - Boom Harness/Limit Switch Harness
P30	J30	4 Way Connector - Limit Switch to Optional Hydraulic Pressure Sensor

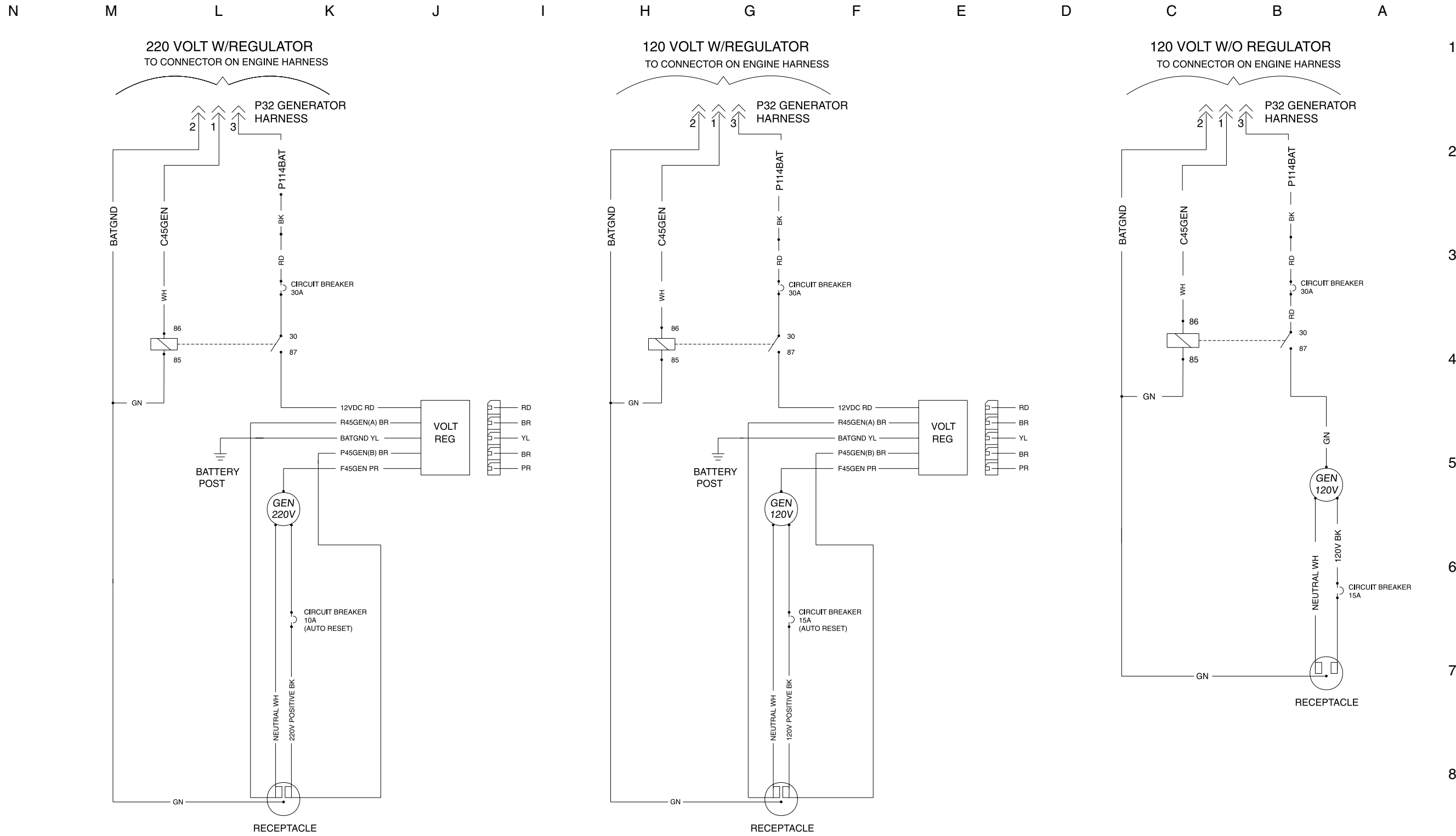
Limit Switch Harness Schematic, S-120 & S-125 Models



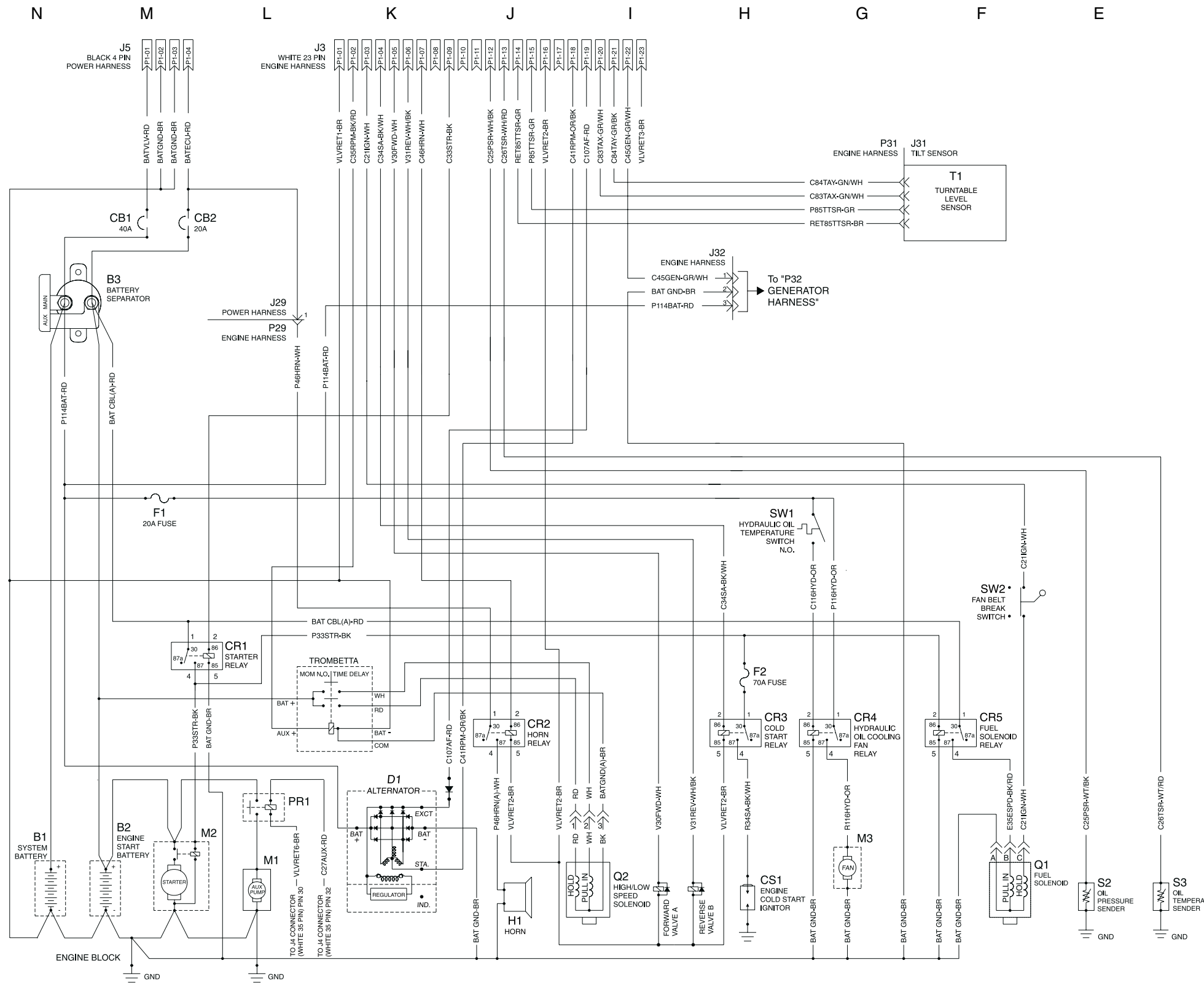
Go to Drive Chassis and Platform Controls Schematic

PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P20	J20	12 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P21	J21	8 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P26	J26	4 Way Deutsch Connector - Cable Tension to Upper Limit Switch Harness
P27	J27	2 Way Deutsch Connector - Boom Harness/Limit Switch Harness
P30	J30	4 Way Connector - Limit Switch to Optional Hydraulic Pressure Sensor

Electrical Schematic - Generators



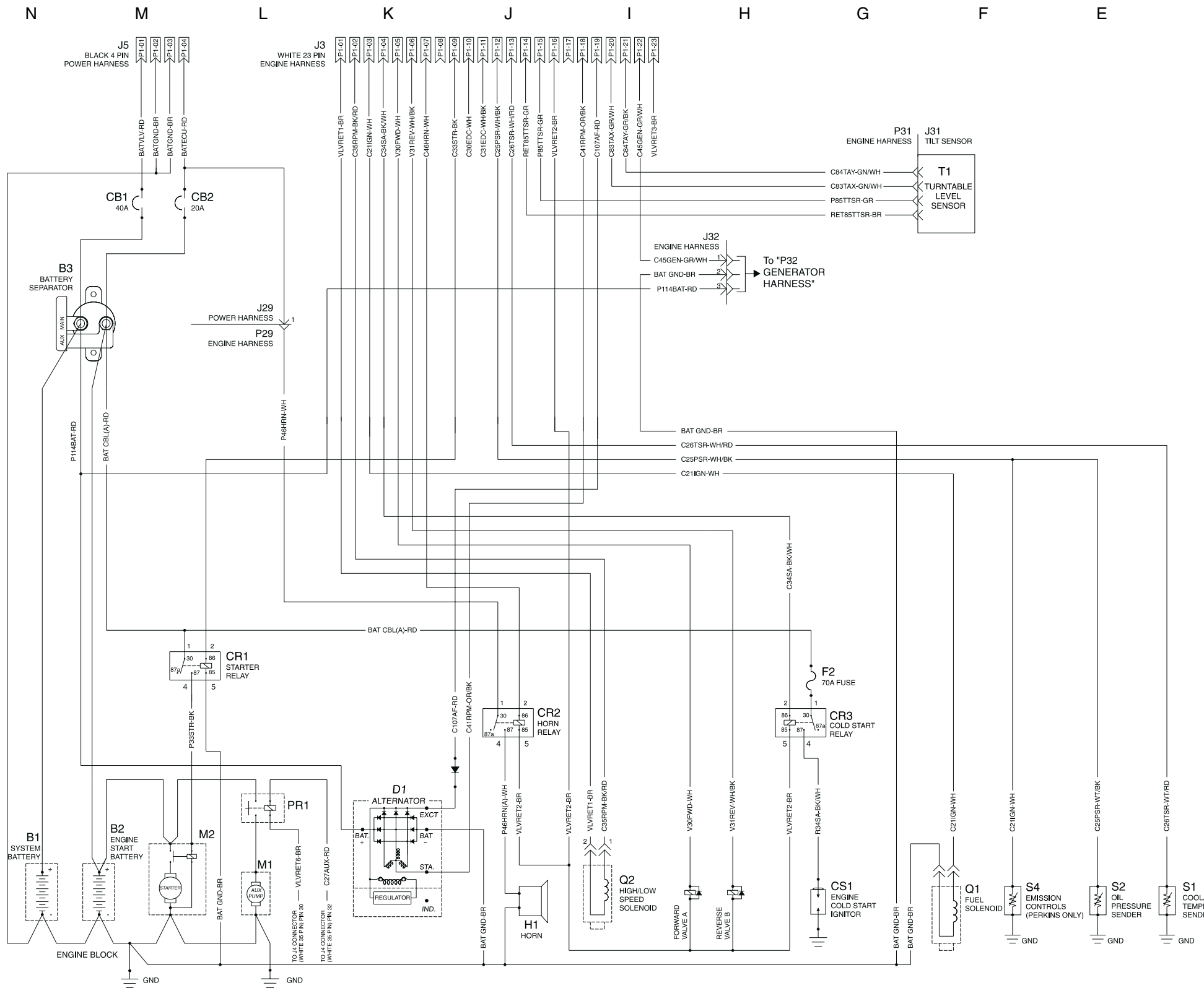
Electrical Schematic - Deutz Models



B	BATTERY B1 = BATTERY B2 = ENGINE BATTERY B3 = BATTERY SEPARATOR	1
CB	CIRCUIT BREAKER WITH AMP RATING AND FUNCTION CB1 = 40 AMP, POWER SUPPLY TO ECM CB2 = 20 AMP, POWER TO ENGINE	
CR	CONTROL RELAY WITH NUMBER AND FUNCTION CR1 = POWER SUPPLY TO ENGINE STARTER SOLENOID CR2 = HORN RELAY CR3 = COLD START RELAY CR4 = HYDRAULIC COOLING FAN RELAY CR5 = FUEL SOLENOID RELAY	2
CS	COLD START CS1 = ENGINE COLD START IGNITOR	3
D	POWER SUPPLY D1 = ALTERNATOR	
F	FUSE WITH AMP RATING AND FUNCTION F1 = 20 AMP, POWER SUPPLY TO HYDRAULIC OIL COOLER F2 = 70 AMP, POWER SUPPLY TO ENGINE COLD START	
GND	CHASSIS GROUND	
H	HORN	4
J	AMP PLUG WITH CIRCUIT, COLOR, PIN COUNT AND FUNCTION J3 = WHITE 23 PIN ENGINE HARNESS CONNECTOR J5 = BLACK 4 PIN POWER HARNESS CONNECTOR J29 = POWER HARNESS CONNECTOR TO HORN RELAY J31 = 4 PIN HARNESS CONNECTOR TO TILT SENSOR J32 = 3 PIN POWER HARNESS CONNECTOR TO GENERATOR	
M	MOTOR M1 = AUXILIARY PUMP M2 = STARTER MOTOR M3 = ENGINE OIL COOLING FAN (OPTION)	5
PR	POWER RELAY PR1 = POWER SUPPLY TO M1	
Q	SOLENOID Q1 = FUEL SOLENOID Q2 = HIGH/LOW SPEED SOLENOID	6
S	SENSOR S1 = COOLANT TEMPERATURE S2 = OIL PRESSURE S3 = OIL TEMPERATURE S4 = EMISSION CONTROLS	
SW	SWITCH SW1 = HYDRAULIC OIL TEMPERATURE SWITCH SW2 = FAN BELT BREAK SWITCH	7
T	LEVEL SENSOR T1 = TURNTABLE LEVEL SENSOR	

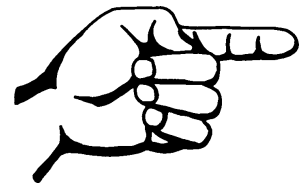
PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P29	J29	2 Way Deutsch Connector - Power Harness/Engine Harness
P31	J31	6 Way Connector - Engine Harness to Tilt Sensor
P32	J32	4 Way Connector - Engine Harness-AC Generator

Electrical Schematic - Cummins and Perkins Models



B	BATTERY B1 = BATTERY B2 = ENGINE BATTERY B3 = BATTERY SEPARATOR	1
CB	CIRCUIT BREAKER WITH AMP RATING AND FUNCTION CB1 = 40 AMP, POWER SUPPLY TO ECM CB2 = 20 AMP, POWER TO ENGINE	
CR	CONTROL RELAY WITH NUMBER AND FUNCTION CR1 = POWER SUPPLY TO ENGINE STARTER SOLENOID CR2 = HORN RELAY CR3 = COLD START RELAY	2
CS	COLD START CS1 = ENGINE COLD START IGNITOR	
D	POWER SUPPLY D1 = ALTERNATOR	3
F	FUSE WITH AMP RATING AND FUNCTION F2 = 70 AMP, POWER SUPPLY TO ENGINE COLD START	
GND	CHASSIS GROUND	
H	HORN	
J	AMP PLUG WITH CIRCUIT, COLOR, PIN COUNT AND FUNCTION J3 = WHITE 23 PIN ENGINE HARNESS CONNECTOR J5 = BLACK 4 PIN POWER HARNESS CONNECTOR J29 = POWER HARNESS CONNECTOR TO HORN RELAY J31 = 4 PIN HARNESS CONNECTOR TO TILT SENSOR J32 = 3 PIN POWER HARNESS CONNECTOR TO GENERATOR	4
M	MOTOR M1 = AUXILIARY PUMP M2 = STARTER MOTOR	
PR	POWER RELAY PR1 = POWER SUPPLY TO M1	5
Q	SOLENOID Q1 = FUEL SOLENOID Q2 = HIGH/LOW SPEED SOLENOID	
S	SENSOR S1 = COOLANT TEMPERATURE S2 = OIL PRESSURE S4 = EMISSION CONTROLS	6
T	LEVEL SENSOR T1 = TURNTABLE LEVEL SENSOR	

PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P29	J29	2 Way Deutsch Connector - Power Harness/Engine Harness
P31	J31	6 Way Connector - Engine Harness to Tilt Sensor
P32	J32	4 Way Connector - Engine Harness-AC Generator

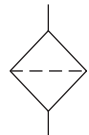


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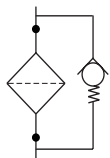
Hydraulic Symbols Legend



Oil cooler



Filter



Filter with bypass valve



Pump prime mover engine or motor



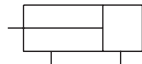
Fixed displacement pump with gpm and (L/min)



Bi-directional pump



Swash plate



Double acting cylinder



Brake



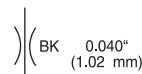
Check valve



Test port



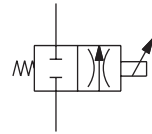
Shutoff valve



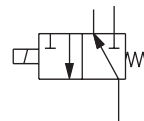
Orifice with size



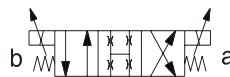
Bi-directional motor



Solenoid operated proportional valve



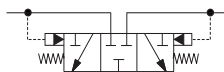
Solenoid operated 2 position, 3 way directional valve



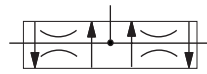
Electronic displacement controller (EDC)



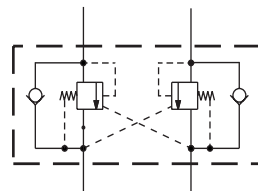
Solenoid operated 3 position, 4 way directional valve



Shuttle valve



Flow divider/combiner valve



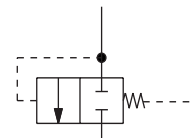
Counterbalance valve



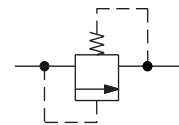
Priority flow regulator



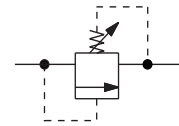
Flow regulator



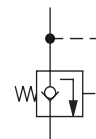
Differential sensing valve



Relief valve

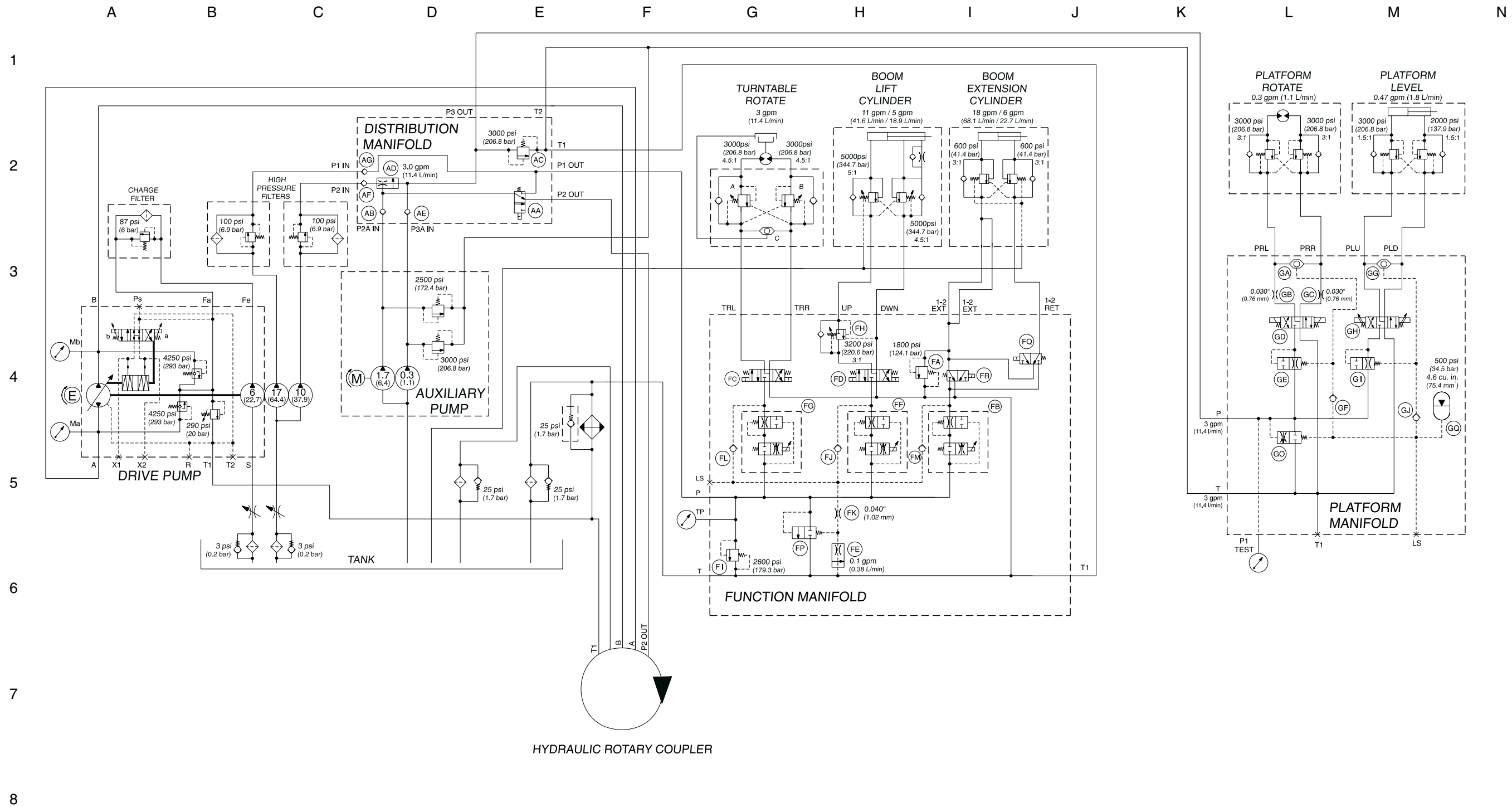


Adjustable relief valve



Relief valve with an incorporated check valve

Hydraulic Schematic, S-100 Models with 2 Wheel Steer



Hydraulic Schematic, S-100 Models with 2 Wheel Steer

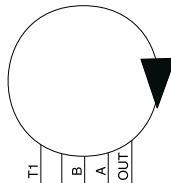
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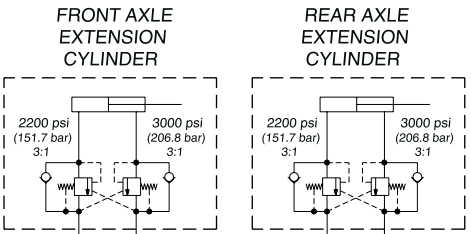
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HYDRAULIC ROTARY COUPLER

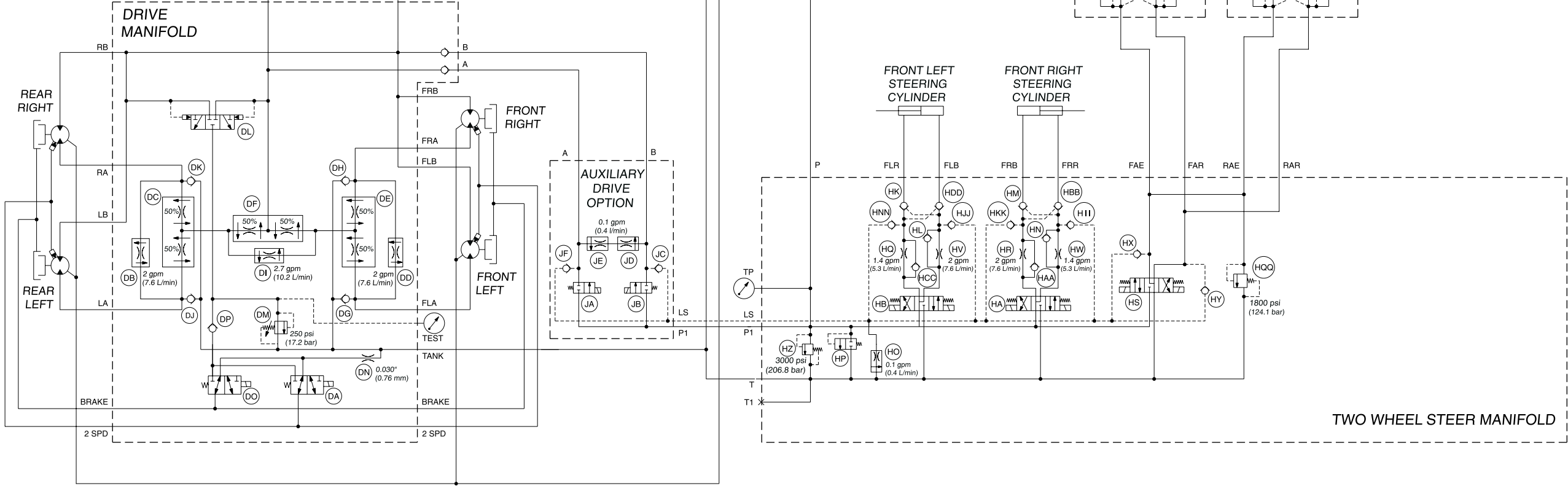
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4



5

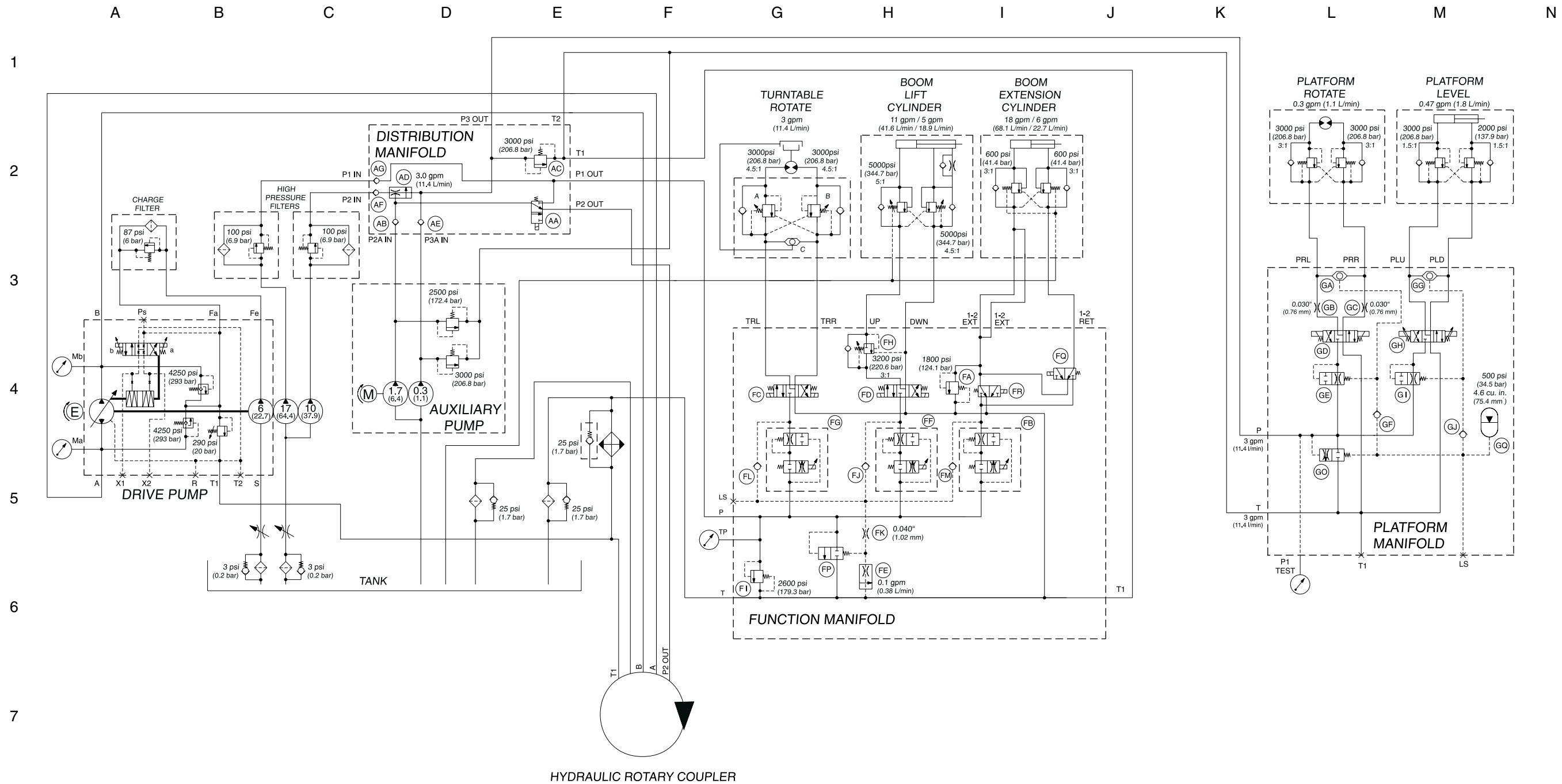


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8

Hydraulic Schematic, S-100 Models with 4 Wheel Steer



Hydraulic Schematic, S-100 Models with 4 Wheel Steer

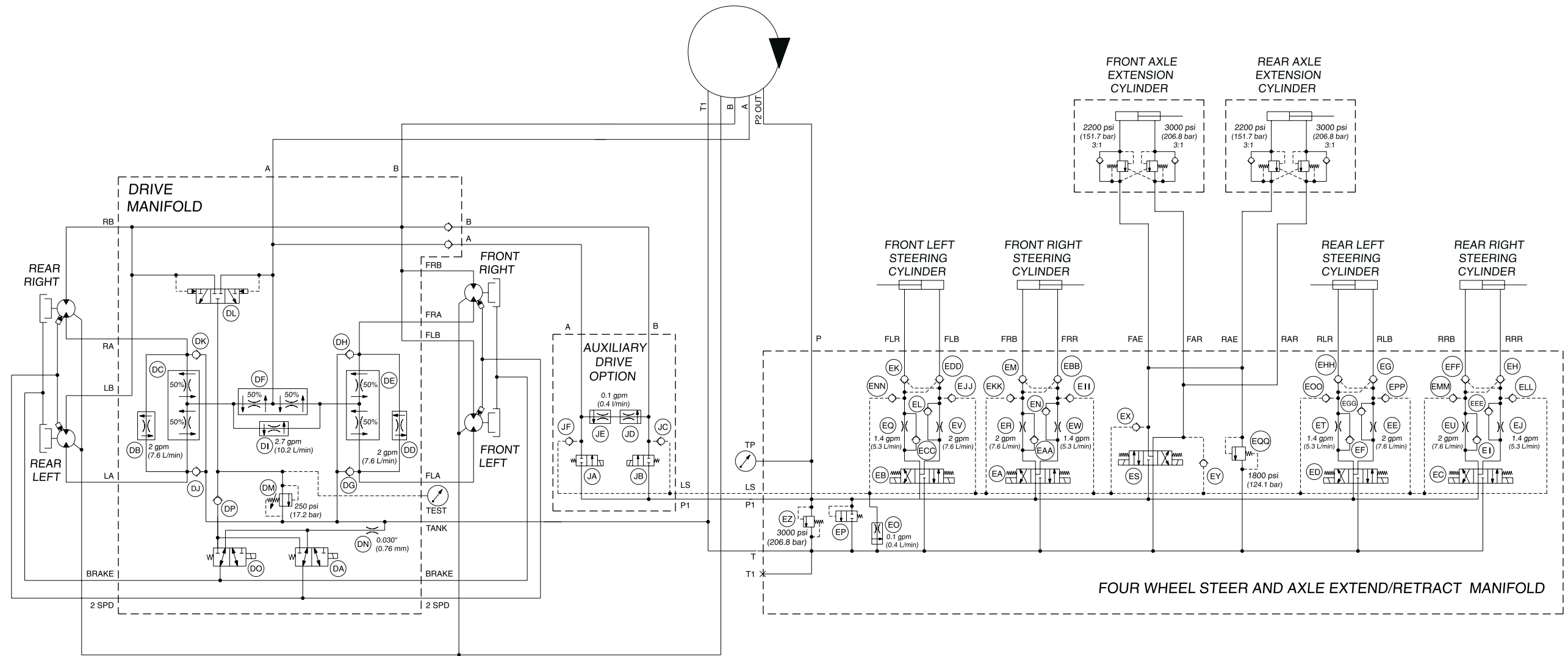
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HYDRAULIC ROTARY COUPLER

3



4

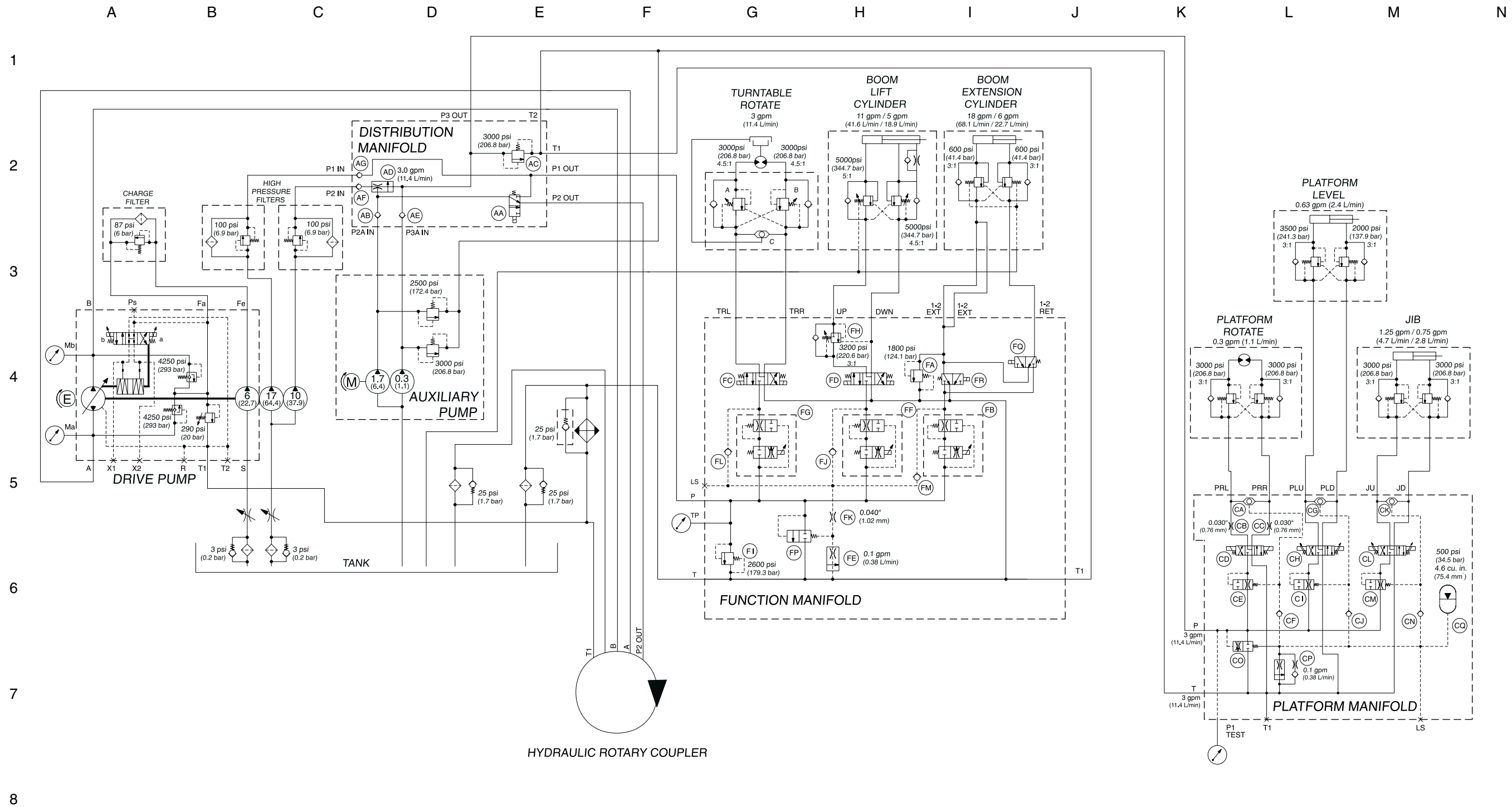
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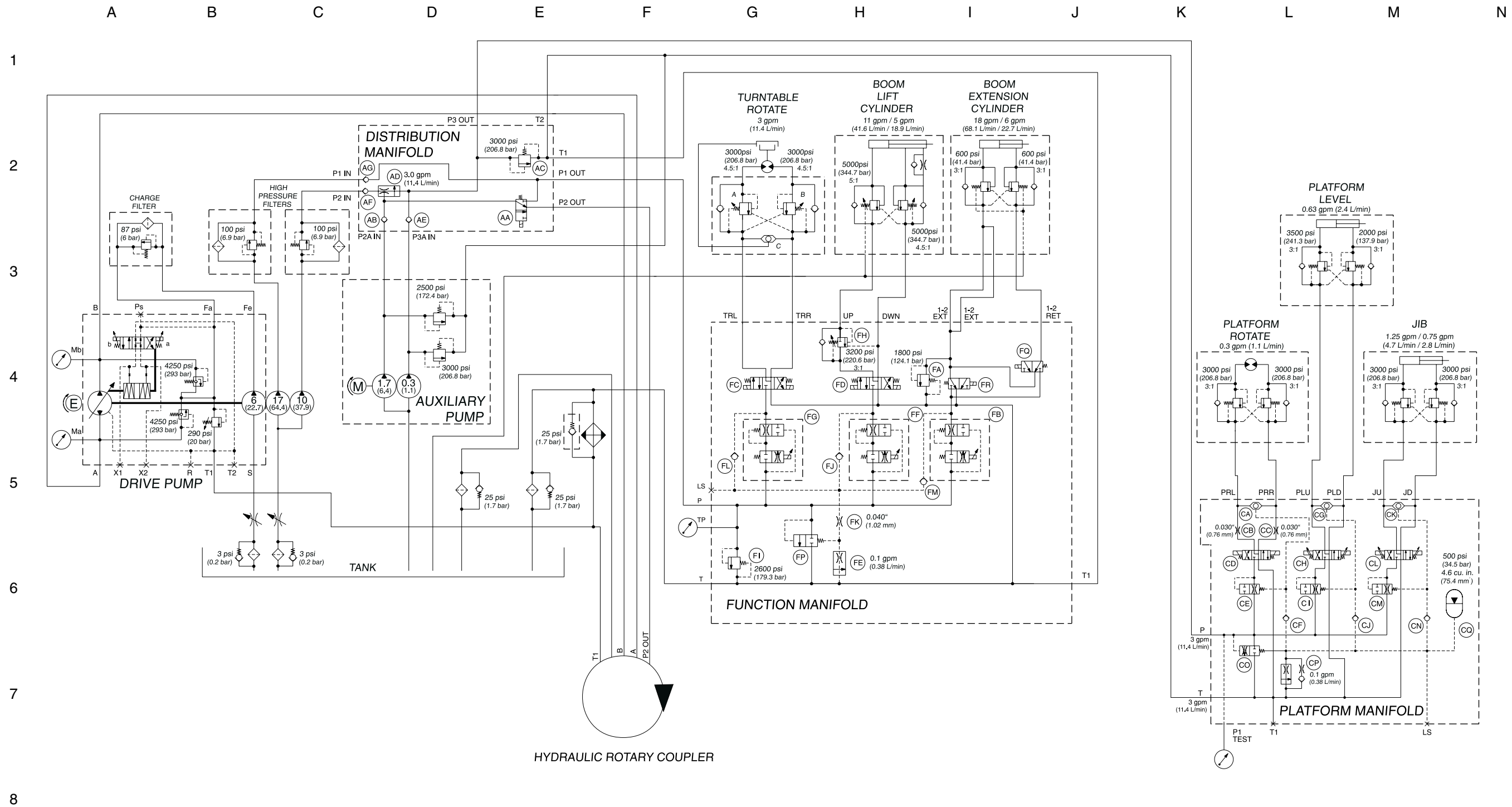
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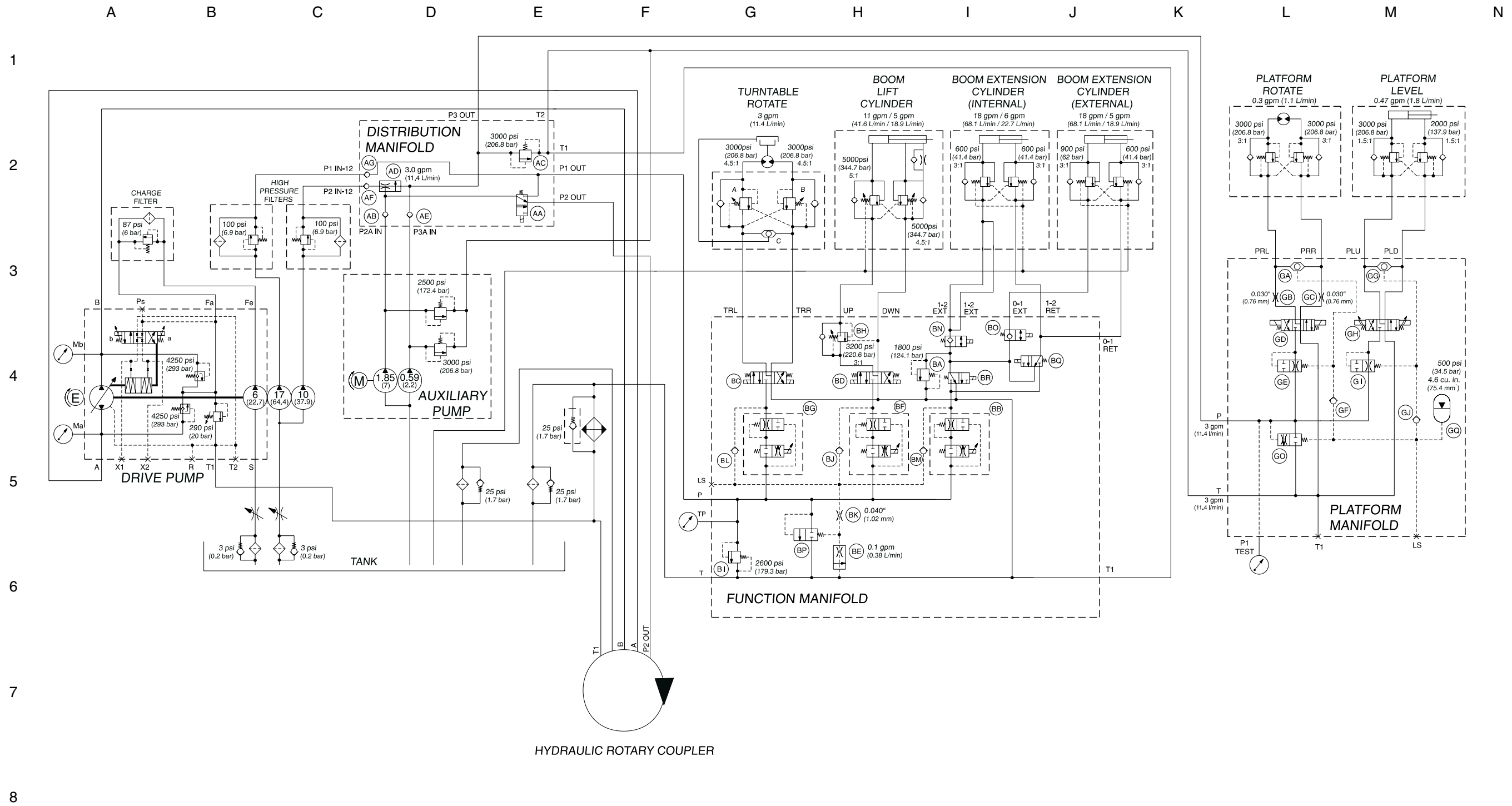
Hydraulic Schematic, S-105 Models with 2 Wheel Steer



Hydraulic Schematic, S-105 Models with 4 Wheel Steer



Hydraulic Schematic, S-120 Models



Hydraulic Schematic, S-120 Models

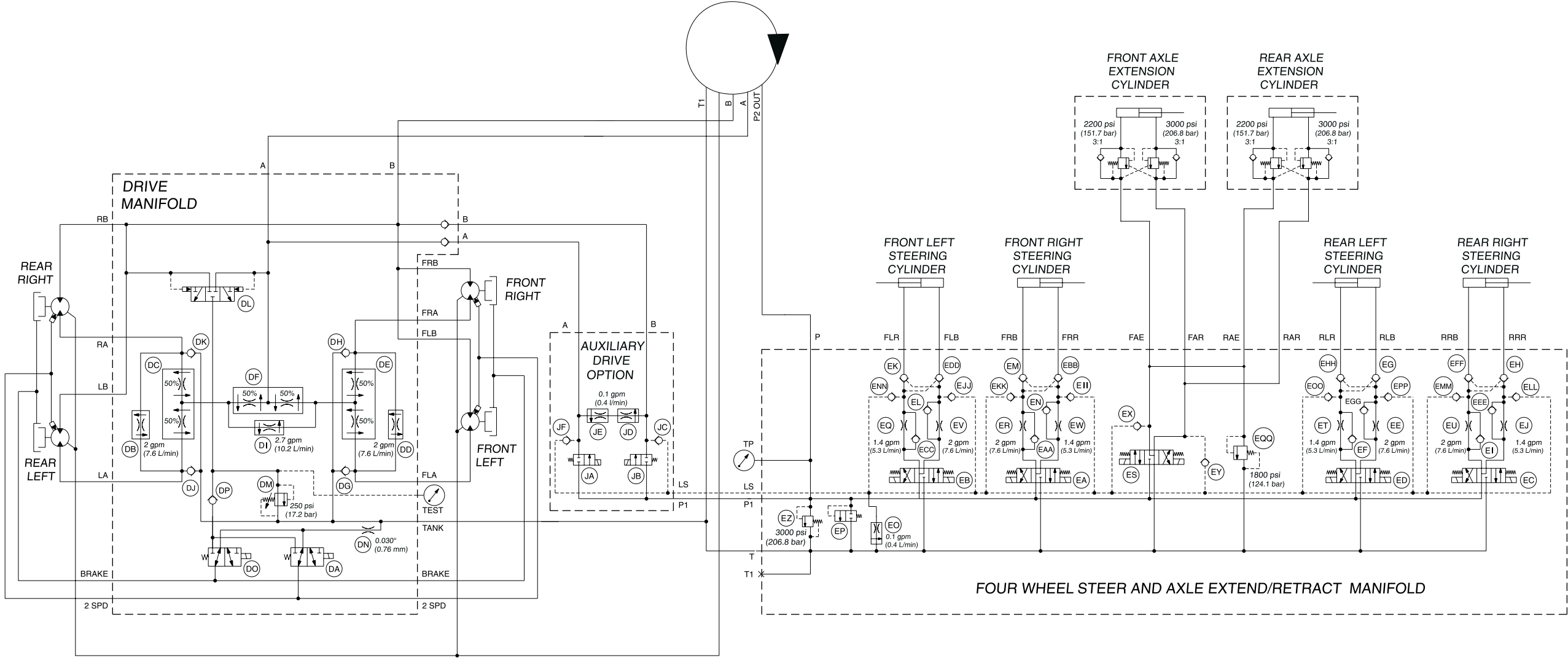
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2

HYDRAULIC ROTARY COUPLER

3



4

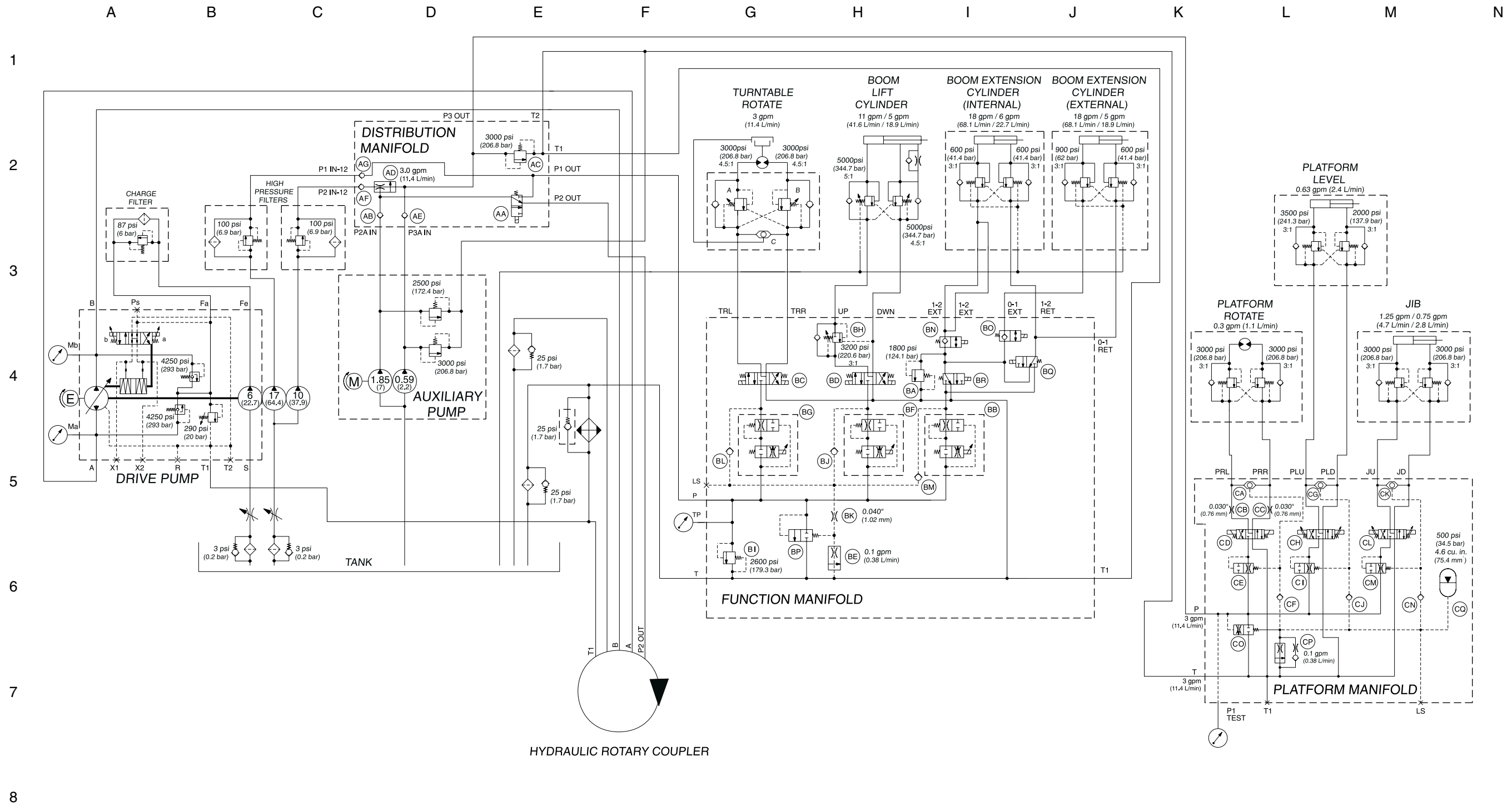
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Hydraulic Schematic, S-125 Models



Hydraulic Schematic, S-125 Models

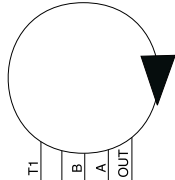
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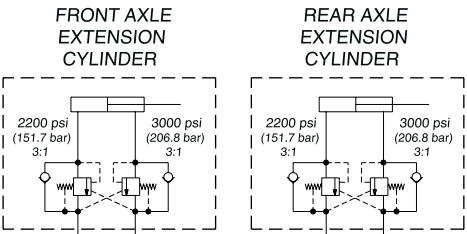
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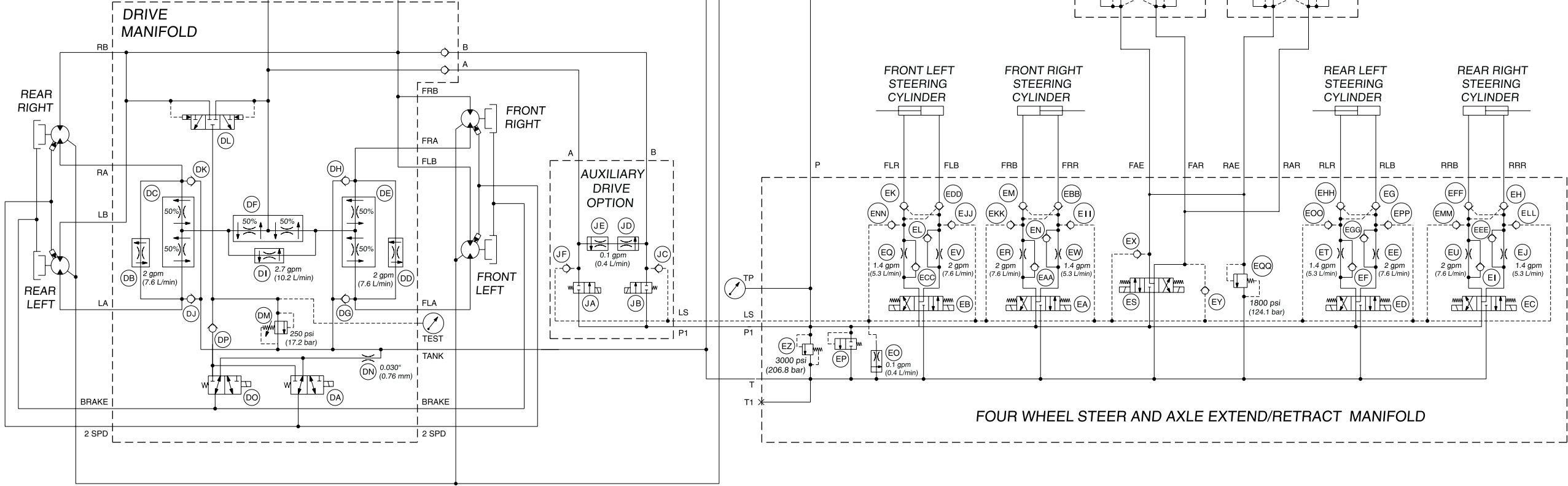
3



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8

Repair Procedures



Observe and Obey:

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

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie S-100 & Genie S-105 Operator's Manual* and the *Genie S-120 & Genie S-125 Operator's Manual*.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
 - Machine parked on a flat, level surface
 - Boom in the stowed position
 - Turntable rotated with the boom between the circle-end wheels
 - Turntable secured with the turntable rotation lock pin
 - 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

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

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

NOTICE

Green—used to indicate operation or maintenance information.

- ⦿ Indicates that a specific result is expected after performing a series of steps.
- ⊗ Indicates that an incorrect result has occurred after performing a series of steps.



















Display Module

This table lists the various screens and menu options of the operating software. Some display menus are for informational purpose only, while others can be changed to alter the machine operating parameters.

The key switch must be in the OFF position before entering the programming mode.

Screen or Menu	Procedure	Description
Operator	Default	Hour meter Engine speed Engine oil pressure PSI Engine oil pressure KPA Engine temperature °F Engine temperature °C Turntable level sensor X ° Turntable level sensor Y °
Machine Status	With key switch ON, press the + and - at the same time.	Hydraulic pressure Boom length Boom angle Axle status
Unit of Measure and Language	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press + - - + .	Metric/Imperial measurements Language selection
Drive Functions	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press + + ↵ ↵ .	Drive output max forward Drive output max reverse Elevated drive % (>80 ft, >24.4 m) Elevated drive % (<80 ft, <24.4 m) Stowed drive % Drive acceleration % Drive deceleration % Speed limit on steer angle
Boom Function Speeds	With the key switch OFF, press and hold the ↵ button and turn the key switch to the ON position. Release the ↵ button and press + + - - .	Boom up/down speed % (fully retracted) Boom up/down speed % (<80 ft, <24.4 m) Boom up/down speed % (>80 ft, >24.4 m) Boom up/down speed % (>100 ft, >30.5 m) Turntable rotate speed % (<80 ft, <24.4 m) Turntable rotate speed % (>80 ft, >24.4 m) Jib boom up/down ramp deceleration

DISPLAY MODULE

Screen or Menu	Procedure	Description
Lift Function Ramp Settings	With the key switch OFF, press and hold the  button and turn the key switch to the ON position. Release the  button and press     .	Boom up/down ramp acceleration Boom up/down ramp deceleration Boom extend/retract ramp deceleration Turntable rotate ramp acceleration Turntable rotate ramp deceleration Jib boom up/down ramp deceleration
Valve Calibration	With the key switch OFF, press and hold the  button and turn the key switch to the ON position. Release the  button and press     .	Reset drive valve defaults Reset boom up/down valve defaults Reset boom extend/retract valve defaults Reset turntable rotate valve defaults Reset platform level valve defaults Allow boom up/down speed calibration Allow boom extend/retract speed calibration Allow turntable rotate speed calibration Reset drive joystick defaults Reset boom up/down joystick defaults Reset boom extend/retract joystick defaults Reset turntable rotate joystick defaults Reset steer joystick defaults
Options	With the key switch OFF, press and hold the  button and turn the key switch to the ON position. Release the  button and press     .	Limit boom height to 100 ft (30.5 m): < 100', NO LT Limit boom height to 80 ft (24.4 m): < 80', NO LT AC generator: NO GN, W REG, W/O R Alarm: NO AL, MO AL, TR AL, DE AL, TD AL Lift/drive cut outs: NO CO, DCONS, LORDR Boom extend cut out if boom angle >5° Auxiliary drive enable: YES, NO Proximity kill switch OR platform overload sensing: NONE, PROX, PLTFS Worklight: YES, NO Flashing beacon: YES, NO Drive lights: YES, NO Steer mode change while driving: YES, NO



Platform Controls

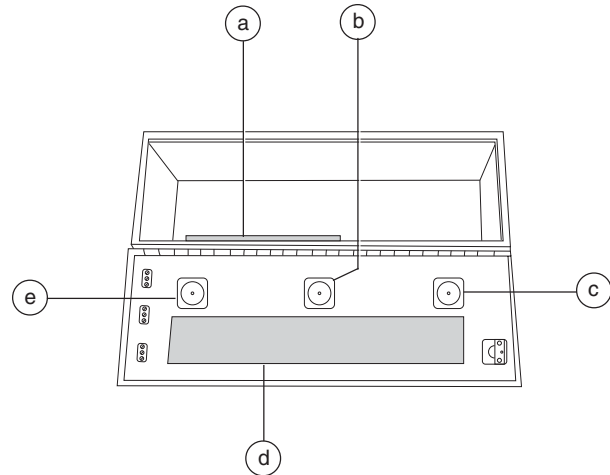
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The platform controls contains two printed circuit boards:

The **membrane circuit board** is mounted to the underside of the control box lid which contains the LEDs and touch-sensitive buttons for machine functions. The membrane circuit board sends the input from the operator to the platform controls ECM circuit board. The ECM circuit board sends the data to the turntable control box for processing.

The **platform controls ECM circuit board** communicates with the turntable controls. The joystick controllers at the platform controls utilize Hall Effect technology and require no adjustment. The operating parameters of the joysticks are stored in memory at the turntable controls. If a joystick controller error occurs or if a joystick is replaced, it will need to be calibrated before that particular machine function will operate. See 1-3, *How to Calibrate a Joystick Controller*.

Each joystick controller should operate smoothly and provide proportional speed control over its entire range of motion.



- a platform ECM circuit board
- b boom extend/retract joystick controller
- c drive/steer joystick controller
- d membrane circuit board
- e boom up/down and turntable rotate left/right joystick controller

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PLATFORM CONTROLS

1-1 Circuit Boards

NOTICE When an ECM circuit board is replaced, the joystick controllers will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller*.

How to Remove the ECM Circuit Board

- 1 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.
- 2 Remove the platform control box mounting fasteners. Remove the platform control box from the machine.

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

- 3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the control box.
- 4 Disconnect the cables from the bottom of the platform control box.
- 5 Remove the control cable plug retaining fasteners from the bottom of the platform control box.

- 6 Remove the platform control box lid retaining fasteners. Open the control box lid.
- 7 Locate the ECM circuit board mounted to the inside of 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.

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

- 8 Remove the ECM circuit board mounting fasteners.
- 9 Carefully remove the ECM circuit board from the platform control box.

How to Remove the Membrane Circuit Board

- 1 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.
- 2 Remove the platform control box lid retaining fasteners. Open the control box lid.

PLATFORM CONTROLS

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- 3 Locate the membrane circuit board mounted to the inside of the platform control box lid.

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

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

- 4 Carefully disconnect the two ribbon cables from the membrane circuit board.
- 5 Remove the membrane circuit board retaining fasteners.
- 6 Carefully remove the membrane circuit board from the platform control box lid.

1-2 Membrane Decal

How to Replace the Membrane Decal

The membrane decal is a special decal that consists of a decal with an electronic membrane on the backside. The membrane contains touch sensitive areas that, when pushed, activates the machine functions. The membrane buttons activate machine functions similar to toggle switches, but do not have any moving parts.

- 1 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.
- 2 Remove the platform control box lid retaining fasteners. Open the control box lid.
- 3 Carefully disconnect the two ribbon cables from the membrane circuit board.

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

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

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PLATFORM CONTROLS

- 4 Close the control box lid.
- 5 Remove the decal from the platform control box.
- 6 Carefully remove the membrane decal from the platform control box while guiding the ribbon cables out of the control box lid.
- 7 Remove any decal adhesive from the control box lid with a mild solvent.

NOTICE Do not allow any solvent to come in contact with the membrane circuit board.

- 8 Install the new membrane decal (Genie part number 50810) while guiding the ribbon cables through the control box lid.

NOTICE Be sure that all LED locations on the membrane decal align with the LED's on the membrane circuit board.

- 9 Install a new platform controls decal (Genie part number 65182) over the membrane decal.
- 10 Open the control box lid and carefully connect the ribbon cables from the membrane decal to the membrane circuit board.

1-3 Joysticks

How to Calibrate a Joystick

The joystick controllers on this machine utilize digital Hall Effect technology for proportional control. If a joystick controller is disconnected or replaced, it must be calibrated before that particular machine function will operate.

NOTICE The joystick must be calibrated before the threshold, max-out or ramping can be set.

NOTICE It is possible to reset multiple joystick defaults before exiting the programming mode.

NOTICE After each joystick is calibrated, check the display at the ground control box. There should be no calibration faults shown on the display. If calibration faults exist, repeat steps 1 through 8 for that joystick controlled function.

NOTICE Contact Genie Industries Service Department before using the reset all joystick default option.

NOTICE Perform this procedure with the engine off.







The calibration procedure for each joystick begins on the next page.




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Drive functions:

NOTICE If the calibration fault is already displayed at the ground box begin with step 6.







- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until RESET DRIVE JOYSTICK DEFAULTS is displayed. Press the  button to select YES, then press the  button.
- 5 Exit programming mode.




NOTICE To exit programming mode, use the scroll button  to scroll through the menu until the screen displays exit, then press the plus button  once, change the NO to YES, and press the enter button .

- 6 Do not start the engine.
 - 7 Locate the drive/steer joystick.
 - 8 Move the drive/steer joystick full stroke in the forward direction and hold for 5 seconds, then return to the center or neutral position.
 - 9 Move the drive/steer joystick full stroke in the reverse direction and hold for 5 seconds, then return to the center or neutral position.
- ⦿ Result: The alarm at the ground controls should sound for a successful calibration.
 - ⊗ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Steer functions:

NOTICE If the calibration fault is already displayed at the ground box begin with step 6.

- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until RESET STEER JOYSTICK DEFAULTS is displayed. Press the  button to select YES, then press the  button.
- 5 Exit programming mode.

NOTICE To exit programming mode, use the scroll button  to scroll through the menu until the screen displays exit, then press the plus button  once, change the NO to YES, and press the enter button .







- 6 Do not start the engine.
 - 7 Locate the drive/steer joystick.
 - 8 Move the drive/steer joystick full stroke in the left direction and hold for 5 seconds, then return to the center or neutral position.
 - 9 Move the drive/steer joystick full stroke in the right direction and hold for 5 seconds, then return to the center or neutral position.
- ⦿ Result: The alarm at the ground controls should sound for a successful calibration.
 - ⊗ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.




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PLATFORM CONTROLS

Boom extend/retract functions:

NOTICE If the calibration fault is already displayed at the ground box begin with step 6.







- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until RESET BOOM EXTEND/RETRACT JOYSTICK DEFAULTS is displayed. Press the  button to select YES, then press the  button.
- 5 Exit programming mode.




NOTICE To exit programming mode, use the scroll button  to scroll through the menu until the screen displays exit, then press the plus button  once, change the NO to YES, and press the enter button .

- 6 Do not start the engine.
- 7 Locate the boom/turntable rotate joystick.
- 8 Move the boom extend/retract joystick full stroke in the extend direction and hold for 5 seconds, then return to the center or neutral position.
- 9 Move the boom extend/retract joystick full stroke in the retract direction and hold for 5 seconds, then return to the center or neutral position.
- ⦿ Result: The alarm at the ground controls should sound for a successful calibration.
- ⊗ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

Boom up/down functions:

NOTICE If the calibration fault is already displayed at the ground box begin with step 6.

- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until RESET BOOM UP/DOWN JOYSTICK DEFAULTS is displayed. Press the  button to select YES, then press the  button.
- 5 Exit programming mode.

NOTICE To exit programming mode, use the scroll button  to scroll through the menu until the screen displays exit, then press the plus button  once, change the NO to YES, and press the enter button .







- 6 Do not start the engine.
- 7 Locate the boom/turntable rotate joystick.
- 8 Move the boom/turntable rotate joystick full stroke in the up direction and hold for 5 seconds, then return to the center or neutral position.
- 9 Move the boom/turntable rotate joystick full stroke in the down direction and hold for 5 seconds, then return to the center or neutral position.
- ⦿ Result: The alarm at the ground controls should sound for a successful calibration.
- ⊗ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.




PLATFORM CONTROLS

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Turntable rotate functions:

NOTICE If the calibration fault is already displayed at the ground box begin with step 6.

- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until RESET TURNTABLE ROTATE JOYSTICK DEFAULTS is displayed. Press the  button to select YES, then press the  button.
- 5 Exit programming mode.

NOTICE To exit programming mode, use the scroll button  to scroll through the menu until the screen displays exit, then press the plus button  once, change the NO to YES, and press the enter button .







- 6 Do not start the engine.
 - 7 Locate the boom/turntable rotate joystick.
 - 8 Move the boom/turntable joystick full stroke in the left direction and hold for 5 seconds, then return to the center or neutral position.
 - 9 Move the boom/turntable joystick full stroke in the right direction and hold for 5 seconds, then return to the center or neutral position.
- ⦿ Result: The alarm at the ground controls should sound for a successful calibration.
- ⊗ Result: If the alarm does not sound, repeat the calibration procedure, beginning with step 1.

How to Reset a Proportional Valve Coil Default




NOTICE Software version 2.0 requires the use of Web GPI to perform this procedure. Refer to 5-5, *Software*.

NOTICE This procedure only needs to be performed if a proportional valve has been replaced.

NOTICE After the valve coil defaults have been set, each machine function threshold and default function speed must be set. See *How to Set the Function Thresholds and Default Function Speeds*.

- 1 Turn the key switch to the off position.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to platform controls. Hold the enter button for approximately 5 seconds.
- 3 Press the minus button  twice, then press the enter button  twice.
- 4 Use the scroll button  to scroll through the menu until the function valve that needs to be reset is displayed. Press the  button to select YES, then press the  button to save the setting.

NOTICE Choices are: Propel (drive) valve reset; Boom up/down valve reset; Boom extend/retract valve reset; or TT rotate valve reset.

- 5 Push one of the LCD screen buttons shown until EXIT is displayed.
- 6 Press the plus  button or minus button  to select YES and then press the enter button .

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PLATFORM CONTROLS

How to Set the Function Thresholds and Function Speeds

NOTICE Software version 2.0 requires the use of Web GPI to perform this procedure. Refer to 5-5, *Software*.

NOTICE Before the threshold and default function speeds can be set, the boom function proportional valve coil defaults must be set first. See *How to Reset a Proportional Valve Coil Default*.



NOTICE If a boom function proportional valve coil has not been replaced and just want to reset the function speed to original factory settings, begin with step 10.

- 1 Start the engine from the platform controls.
- 2 Press down the foot switch.

Note: Be sure the engine rpm is set to foot switch activated high idle.

Function threshold:

- 3 Select a joystick controlled function that needs to have the threshold set.
- 4 Slowly move the joystick off center in either direction just until the machine function starts to move, then move the joystick very slowly towards the neutral or center position just before the machine function stops. Do not let go of the joystick.

- 5 While holding the joystick in position, press the engine start button  at the platform controls to set the joystick controller threshold.
- 6 Slowly move the joystick off center in the opposite direction just until the machine function starts to move, then move the joystick very slowly towards the neutral or center position just before the machine function stops. Do not let go of the joystick.
- 7 While holding the joystick in position, press the engine start button  at the platform controls to set the joystick controller threshold.
- 8 Repeat steps 3 through 7 for each joystick controlled machine function (boom up/down and turntable rotate left/right, boom extend/retract, and drive forward/reverse).
- 9 Once all the joystick controllers have been calibrated, push in the Emergency Stop button at the platform controls to save the settings in memory.

NOTICE The Emergency Stop button at the platform controls must be pushed in to the OFF position following calibration of the joystick controllers to save the settings in memory.

- 10 At the ground controls, turn the key switch to the off position, wait a moment and then turn the key switch to platform controls.
- 11 Check the display at the ground controls to be sure there are no calibration faults.

NOTICE There should be no calibration faults shown on the display. If calibration faults exist, repeat this procedure.

Function speeds:

NOTICE Be sure the machine is in the stowed position and the boom is rotated between the circle end tires.

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











- 12 Start the engine from the platform controls.
- 13 Select a boom function that needs the function speed set.
- 14 **Boom up/down functions:** Starting in the stowed position, move the joystick full stroke in the up direction. When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.
Boom extend/retract functions: Raise the boom until the low-speed drive function is enabled. Move the joystick full stroke in the extend direction. When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.
Turntable rotate functions: Raise the boom until the low-speed drive function is enabled. Move the joystick full stroke to the left (cw) until the drive enable light turns on. Then move the joystick full stroke to the right (ccw). When the alarm sounds, move the joystick in the opposite direction full stroke until the alarm sounds again. Return the joystick to center.
- 15 Once all the joystick controllers have been calibrated, push in the Emergency Stop button at the platform controls to save the settings in memory.

NOTICE The Emergency Stop button at the platform controls must be pushed in to the OFF position following calibration of the joystick controllers to save the settings in memory.

- 16 At the ground controls, turn the key switch to the off position, wait a moment and then turn the key switch to platform controls.
- 17 Check the display at the ground controls to be sure there are no calibration faults.

NOTICE There should be no calibration faults shown on the display. If calibration faults exist, repeat this procedure.

How to Adjust the Function Speeds










- 1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to ground controls. Hold the enter button for approximately 5 seconds.
- 3 Press the plus button  twice, then press the minus button  twice.
- 4 Press the scroll button  until the function to be adjusted is displayed.
- 5 Press the plus button  to increase the speed or press the minus button  to decrease the speed.
- 6 Press the enter button  to save the setting in memory.
- 7 Push one of the LCD screen buttons shown until EXIT is displayed.
- 8 Press the plus  button or minus button  to select YES and then press the enter button .
- 9 Continue to perform this procedure until the machine function speed meets specification. Refer to Section 2, *Specifications* for function speeds.

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How to Adjust the Function Ramp Rate Setting

The ramp rate setting of a joystick controls the time at which it takes for the joystick to reach maximum output, when moved out of the neutral position. The ramp rate settings of a joystick can be changed to compensate for hydraulic pump wear to maintain peak performance from the machine.

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

- 1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.
- 2 Press and hold the enter button  on the ground control panel while turning the key switch to ground controls. Hold the enter button for approximately 5 seconds.
- 3 Press the plus button  twice, then press the scroll button  twice.
- 4 Press the scroll button  until the function to be adjusted is displayed.
- 5 Press the plus button  to increase the ramp rate or press the minus button  to decrease the ramp rate.
- 6 Press the enter button  to save the setting in memory.
- 7 Push one of the LCD screen buttons shown until EXIT is displayed.
- 8 Press the plus  button to select YES and then press the enter button .

Specifications

Ramp rate (factory settings)

Turntable rotate	
accelerate	2 seconds
decelerate	0.25 second
Boom up/down	
accelerate	3 seconds
decelerate	0..25 second
Boom extend/retract	
accelerate	2 seconds
decelerate	0.25 second
Jib boom up/down	
accelerate	2 seconds
decelerate	0.25 second
Drive	
accelerate	2 seconds

PLATFORM CONTROLS

1-4 Foot Switch

How to Test the Foot Switch

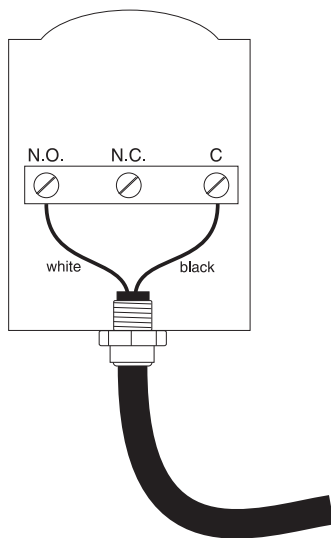
NOTICE Perform this procedure with the key switch in the OFF position.

- 1 Disconnect the wire connector from the foot switch cable at the back of the platform.
- 2 Remove the foot switch guard mounting fasteners from the platform.
- 3 Remove the foot switch mounting fasteners that attach the foot switch to the foot switch guard.
- 4 Remove the cover plate from the bottom of the foot switch to access the foot switch wire terminals.
- 5 Do not press down the foot switch. Connect the leads from an ohmmeter or continuity tester to the wire combination listed below and check for continuity.

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

Test	Desired result
black to white (C to N.O.)	continuity (zero Ω)

Test	Desired result
black to white (C to N.O.)	no continuity (infinite Ω)



PLATFORM CONTROLS

1-5 Toggle Switches

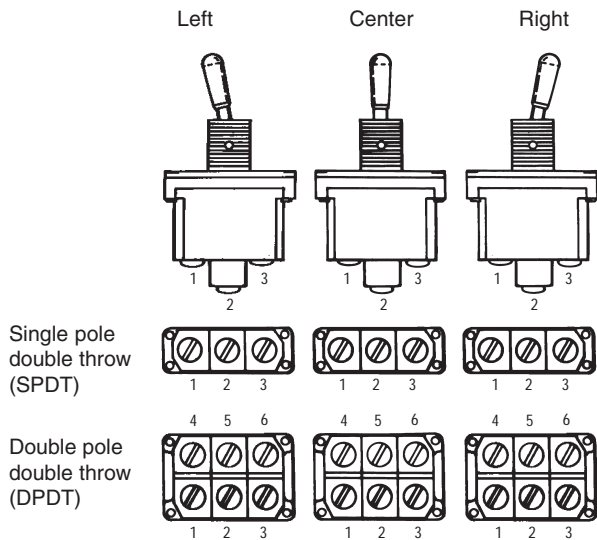
Toggle switches used for single function switching are single pole double throw (SPDT) switches. Dual function switching requires a double pole double throw (DPDT) switch.

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

Platform Components

2-1 Platform

How to Remove the Platform

- 1 Separate the foot switch quick disconnect plug.
- 2 Support the platform with an appropriate lifting device.
- 3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the platform control box.
- 4 Disconnect the cables from the bottom of the platform control box.
- 5 Remove the platform control box mounting fasteners. Remove the platform control box and set it aside.
- 6 Remove the air line to platform bracket retaining fasteners (if equipped).
- 7 Remove the weld cables from the platform (if equipped).

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

- 8 Remove the platform mounting fasteners and remove the platform from the machine.

▲WARNING Crushing hazard. The platform may become unbalanced and fall when it is removed from the machine if it is not properly supported.

2-2 Platform Leveling Cylinder

The platform leveling cylinder keeps the platform level through the entire range of boom motion. The platform is maintained level to the turntable. The ECM at the ground controls compares the difference in readings between the platform angle sensor and the turntable level sensor. The ECM at the ground controls sends a signal to the platform controls to open or close the appropriate platform level proportional valve on the platform manifold to maintain a level platform. The platform leveling cylinder is equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Platform Leveling Cylinder

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

- 1 Extend the boom until the platform leveling cylinder barrel-end pivot pin is accessible.
- 2 Raise the boom slightly and place blocks under the platform.

PLATFORM COMPONENTS

- 3 Lower the boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.

- 4 Tag, disconnect and plug the hydraulic hoses from the platform leveling cylinder at the bulkhead fittings located inside the boom tube at the platform end and connect them together using a connector. Cap the bulkhead fittings on the boom tube.

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.

- 5 Remove the pin retaining fastener from the platform leveling cylinder rod-end pivot pin. Do not remove the pin.
- 6 Remove the external snap ring from the barrel-end pivot pin. Do not remove the pin.
- 7 Support the platform leveling cylinder with a suitable lifting device. Protect the cylinder rod from damage.

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

WARNING Crushing hazard. The platform (S-100 and S-120 models) or jib boom (S-105 and S-125 models) will fall when the platform leveling cylinder rod-end pivot pin is removed if it is not properly supported.

CAUTION Crushing hazard. The platform leveling cylinder will fall if it is not properly supported when the rod-end pivot pin is removed.

CAUTION Component damage hazard. The platform leveling cylinder rod can become damaged if it is allowed to fall.

- 9 Use a soft metal drift to remove the barrel-end pivot pin.
- 10 Carefully pull the platform leveling cylinder out of the boom.

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

PLATFORM COMPONENTS

How to Bleed the Platform Leveling Cylinder

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

NOTICE The boom must remain below 10° to properly perform this procedure.

- 1 Raise the boom to a horizontal position.
- 2 Activate auxiliary power.
- 3 Push the platform level up and down buttons through two complete 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

CAUTION Component damage hazard. Mark the platform mounting weldment and the rotator flange before removing the platform mounting weldment. The platform mounting weldment must be replaced in the exact same position on the rotator flange as it was before removal. If a new rotator is installed or the rotator is disassembled, proper alignment can be achieved by rotating the rotator all the way to the left and then installing the platform mounting weldment all the way in the left position.

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

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

PLATFORM COMPONENTS

- 2 Disconnect the electrical connector from the platform angle sensor.
- 3 Tag, disconnect and plug the hydraulic hoses from the "V1" and "V2" ports on platform rotator manifold. Cap the fittings on the 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.

- 4 Remove the platform manifold mounting fasteners. Lay the platform manifold to the side.

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

- 5 Remove the power to platform cover plate from the electrical outlet box. Do not disconnect the wiring.

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

- 6 Remove the power to platform electrical outlet box from the platform and lay it to the side.

- 7 Remove the weld cable from the platform (if equipped).

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

- 8 Support the platform mounting weldment, but do not apply any lifting pressure.
- 9 Remove the eight mounting bolts from the platform mounting weldment.
- 10 Remove the center bolt and slide the platform mounting weldment off of the platform rotator.

▲WARNING Crushing hazard. The platform mounting weldment may become unbalanced and fall if it is not properly supported.

- 11 Support the platform rotator. Do not apply any lifting pressure.

S-100 and S-120 models:

- 12 Support the rod end of the platform leveling cylinder. Protect the cylinder rod from damage.
- 13 Remove the pin retaining fastener from the platform level cylinder rod-end connecting link pivot pin and the platform rotator pivot pin. Do not remove the pins.

PLATFORM COMPONENTS

14 Use a soft metal drift to remove both pins and remove the platform rotator from the machine.

WARNING Crushing hazard. The platform rotator may become unbalanced and fall if it is not properly supported.

CAUTION Component damage hazard. The platform angle sensor is a very sensitive instrument. It can be damaged internally if the platform rotator is dropped or sustains any physical shock, even if the damage is not visible.

S-105 and S-125 models:

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

13 Support the jib boom leveling arms with a suitable lifting device.

14 Use a soft metal drift to remove both pins and remove the platform rotator from the machine.

WARNING Crushing hazard. The jib boom leveling arms may fall if they are not properly supported when the jib boom leveling arm pivot pin is removed.

CAUTION Component damage hazard. The platform angle sensor is a very sensitive instrument. It can be damaged internally if the platform rotator is dropped or sustains any physical shock, even if the damage is not visible.

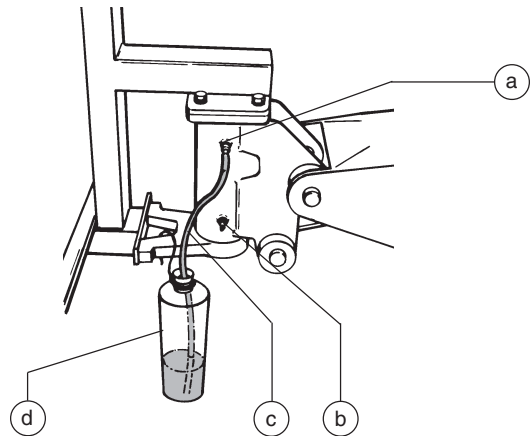
How to Bleed the Platform Rotator

NOTICE Do not start the engine. Use auxiliary power for all machine functions in this procedure.

S-105- Before serial number 251
S-125- Before serial number 999

- 1 At the ground controls, simultaneously hold the auxiliary power button and the platform rotate right button until the platform is fully rotated to the right.
- 2 Connect a clear hose to the top bleed valve. Place the other end of the hose in a container to collect any drainage. Secure the container to the boom.
- 3 Slowly open the top bleed valve on the rotator. Do not remove the bleed valve from the platform rotator.

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



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

REV B

PLATFORM COMPONENTS

- 4 Hold the platform rotate left button until the platform is fully rotated. Continue holding the button until air stops coming out of the bleed valve. Close the bleed valve.

AWARNING Crushing hazard. Keep clear of the platform during rotation.

- 5 Connect the clear hose to the bottom bleed valve and slowly open the valve. Do not remove the bleed valve.
- 6 Hold the platform rotate right button until the platform is fully rotated. Continue holding the button until air stops coming out of the bleed valve. Close the bleed valve.

AWARNING Crushing hazard. Keep clear of the platform during rotation.

- 7 Remove the hose from the bleed valve and clean up any hydraulic oil that may have spilled.
- 8 Rotate the platform full right then left and inspect the bleed valves for leaks.
- 9 Clean up any oil that may have spilled during this procedure.

S-100 and S-120

S-105- After serial number 250

S-125- After serial number 998

1. Rotate the platform full right, then full left until air is completely out of the rotator. Bleeding the valve is not necessary.

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. 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 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.

PLATFORM COMPONENTS

REV B

- 5 Move the platform up and down by hand, so it bounces approximately 2.5 to 5 cm / 1 to 2 inches. Allow the platform to settle.
- ⦿ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. Proceed to step 6.
 - ⊗ Result: The alarm is sounding. The platform overload indicator light is flashing at the platform controls and “PLATFORM OVERLOAD” should be displayed on the LCD screen at the ground controls. 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 2.5 to 5 cm / 1 to 2 inches. Allow the platform to settle.
- ⦿ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. 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 alarm should be sounding. The platform overload indicator light should be flashing at the platform controls and “PLATFORM OVERLOAD” should be displayed on the LCD screen at the ground controls. 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.

REV B

PLATFORM COMPONENTS

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

⦿ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. 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 test weight to the platform.
S-105 and S-125- 10 lb / 4.5 kg
S-100 and S-120- 12 lb / 5.4 kg.

⦿ Result: The alarm should be sounding. The platform overload indicator light should be flashing at the platform controls and “PLATFORM OVERLOAD” should be displayed on the LCD screen at the ground controls. Proceed to step 9.

✗ Result: The alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls. 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 alarm should be off. The platform overload indicator light should be off at the platform controls and there should be no error message on the LCD display at the ground controls.

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, S-105 and S-125 Models

3-1 Jib Boom, S-105 and S-125 Models

How to Remove the Jib Boom

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

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform mounting weldment and the platform rotator. See 2-3, *How to Remove the Platform Rotator*.
- 3 Remove the hose and cable cover retaining fasteners from the jib boom leveling arm. Remove the hose and cable cover from the machine.
- 4 Support the jib boom with a suitable lifting device.
- 5 Tag, disconnect and plug the jib boom lift cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 6 Support the barrel end of the cylinder with a suitable lifting device.
- 7 Remove the pin retaining fastener from the jib boom lift cylinder barrel-end pivot pin.
- 8 Use a soft metal drift to remove the pin and let the cylinder hang down.
- 9 Attach a lifting strap from an overhead crane to the jib boom.
- 10 Remove the pin retaining fastener from the jib boom pivot pin.
- 11 Use a soft metal drift to remove the pin and remove the jib boom from the primary boom.

WARNING Crushing hazard. The jib boom may become unbalanced and fall when it is removed from the machine if it is not properly supported.

JIB BOOM COMPONENTS, S-105 AND S-125 MODELS

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

13 Slide both of the jib boom leveling arms off of the jib boom pivot pin and lay them off to the side.

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

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

⚠WARNING Crushing hazard. The jib boom lift cylinder may become unbalanced and fall when it is removed from the machine if it is not properly supported.

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

17 Support the rod end of the platform leveling cylinder with a suitable lifting device. Protect the cylinder rod from damage.

18 Remove the pin retaining fastener from the platform leveling cylinder rod-end pivot pin.

19 Use a soft metal drift to remove the platform leveling cylinder rod-end pivot pin.

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

⚠CAUTION Crushing hazard. The jib boom bellcrank may fall if it is not properly supported when the platform leveling cylinder rod-end pivot pin is removed.

20 Remove the pin retaining fastener from the jib boom bellcrank pivot pin.

21 Use a soft metal drift to remove the jib boom bellcrank pivot pin. Remove the jib boom bellcrank from the machine.

⚠WARNING Crushing hazard. The jib boom bellcrank may become unbalanced and fall if it is not properly supported when it is removed from the machine.

JIB BOOM COMPONENTS, S-105 AND S-125 MODELS

3-2 Jib Boom Lift Cylinder, S-105 and S-125 Models

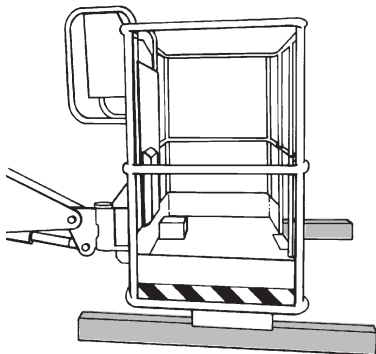
How to Remove the Jib Boom Lift Cylinder

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

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

- 1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Lower the jib boom until the platform is resting on the blocks just enough to support the platform.

NOTICE Do not rest the entire weight of the boom on the blocks.



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

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

- 3 Remove the hose and cable cover retaining fasteners from the jib boom leveling arm. Remove the hose and cable cover from the machine.
- 4 Remove the pin retaining fasteners from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.
- 5 Use a soft metal drift to tap the jib boom lift cylinder rod-end pivot pin half way out and lower one of the leveling arms to the ground. Tap the pin the other direction and lower the opposite leveling arm. Do not remove the pin.
- 6 Support the jib boom lift cylinder with a suitable lifting device.
- 7 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 pivot pin.
- 8 Use a soft metal drift to remove the jib boom lift cylinder rod-end pivot pin. Remove the jib boom lift cylinder from the machine.

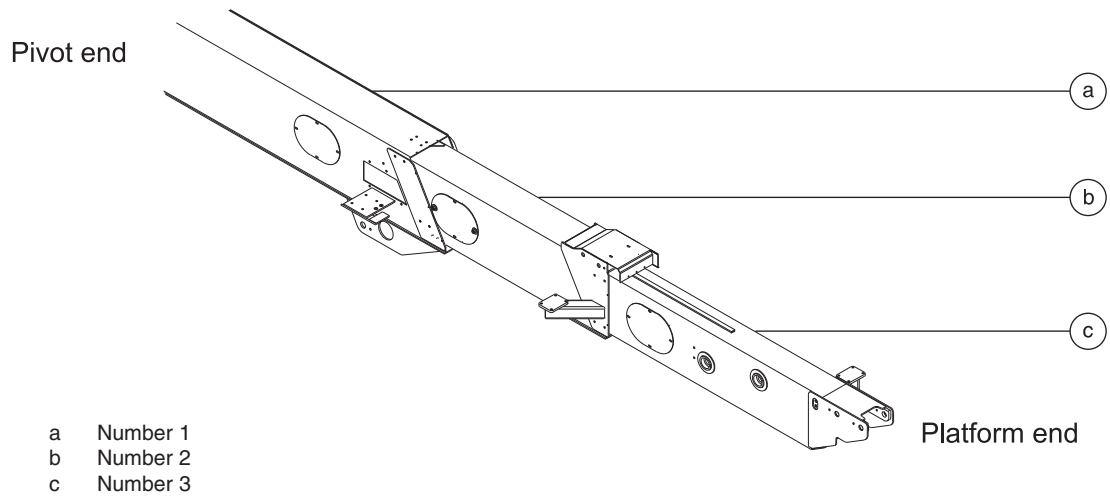
WARNING Crushing hazard. The jib boom lift cylinder may become unbalanced and fall when it is removed from the machine if it is not properly supported.



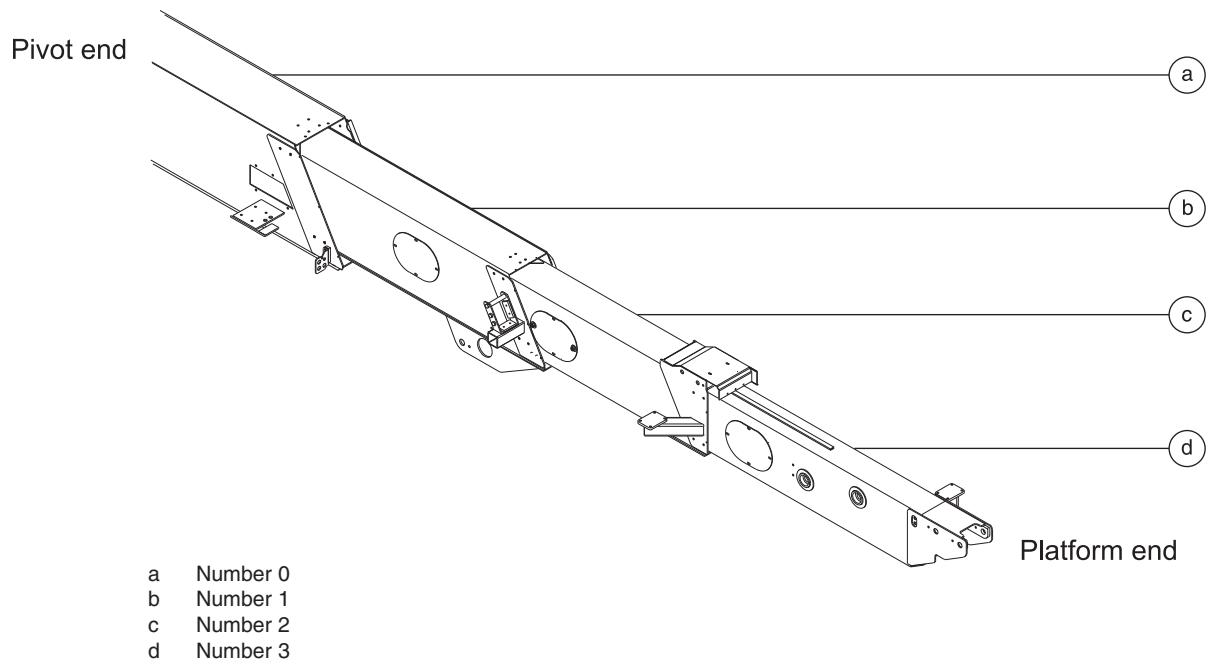
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Boom Components

S-100 and S-105 Models



S-120 and S-125 Models



BOOM COMPONENTS

4-1 Cable Track

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

How to Remove the Boom Cable Track

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

NOTICE Perform this procedure with the boom fully stowed.

- 1 Remove the hose and cable cover retaining fasteners from the jib boom leveling arm. Remove the hose and cable cover from the machine.
- 2 Remove the protective coil sleeve from the hose and cable bundle at the platform end of the boom cable tube.

- 3 Tag, disconnect and plug all hydraulic hoses from the boom cable tube to the platform manifold.

NOTICE If your machine is equipped with an airline to platform option and/or weld cable option, the airline and/or cable must be disconnected from the platform before the cable track is removed.

- 4 Tag and disconnect the black electrical connector from the bottom of the control box.
- 5 Remove the platform-end boom cable tube mounting fasteners at the engine side of the machine.
- 6 Remove the cable track mounting fasteners from the cable track support at the engine side of the machine.
- 7 Remove the wear pad mounting weldment from the cable track support bracket at the engine side of the machine.
- 8 Remove the hose and cable clamp from the cable track support bracket at the engine side of the machine.
- 9 Place blocks between the cable track and the boom cable tube for support.
- 10 Strap together the boom cable tube, blocks of wood, and the cable track at the engine side of the machine.

CAUTION Component damage hazard. Cables, hoses, boom cable tube and cable track can be damaged if they are kinked or pinched.

BOOM COMPONENTS

- 11 Remove the limit switch cover retaining fasteners from the top of the number 2 boom tube at the platform end of the machine. Remove the limit switch cover.
- 12 Tag and disconnect the wiring connectors from the proximity and limit switches on top of the number 2 boom tube at the platform end of the machine.
- 13 Remove the cable track roller guide mounting fasteners from the ground controls side of the machine at the platform end.
- 14 Remove the roller guide from the cable track guide bracket at the engine side of the machine.
- 15 Tag, disconnect and plug the hydraulic hoses from the bottom of the bulkhead fittings on the cable track support at the ground controls side of the machine.

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

- 16 Remove the bulkhead fitting locknuts from the bulkhead fittings on the cable track support at the ground controls side of the machine. Remove and cap the fittings.
- 17 Tag and disconnect the wiring connectors.

NOTICE The wiring connectors that need to be disconnected are located next to the hose fittings that were removed in step 16.

If not removing the boom from the machine, proceed to step 19.

- 18 Tag, disconnect and plug the primary extension cylinder hydraulic hoses on the side of the number 2 boom tube at the ground controls side of the machine. 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.

- 19 Remove the cable track mounting fasteners from the cable track support at the ground controls side of the machine.
- 20 Remove the side panels from the boom cable tube located under the cable track at the ground controls side of the machine.
- 21 Remove the hose and cable cover mounting fasteners from the pivot end of the boom at the ground controls side of the machine. Remove the cover.
- 22 Remove the hose and cable clamps from the hoses and cables located below the boom pivot on the inside of the turntable riser at the ground controls side of the machine.
- 23 Tag and disconnect the electrical cables from the cable track to the ground controls side of the machine.

If not removing the boom from the machine, proceed to step 25.

BOOM COMPONENTS

24 Pull the hydraulic hoses from the boom cable tube located under the cable track at the ground controls side of the machine.

25 Place blocks between the cable track and the cable track tube at the ground controls side of the machine. Secure the cable track and the cable track tube together.

CAUTION Component damage hazard. Cables, hoses, boom cable tube and cable track can be damaged if they are kinked or pinched.

26 Attach a lifting strap from an overhead crane to the cable track assembly at the engine side of the boom. Lift the cable track assembly over the boom and carefully set the assembly on top of the longer boom cable tube at the ground controls side of the machine.

WARNING Crushing hazard. If the cable track assemblies are not properly secured together, the cable track may become unbalanced and fall when it is removed from the machine.

27 Strap both cable track assemblies together.

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

CAUTION Component damage hazard. Cable tracks can be damaged if they are twisted.

28 Attach a lifting strap from an overhead crane to each end of the cable track assembly. Carefully lift the assembly from the boom and set it on a structure capable of supporting it.

WARNING Crushing hazard. If the cable track assemblies are not properly secured together, the cable track assemblies may become unbalanced and fall when it is removed from the machine.

CAUTION Component damage hazard. Cables, hoses, boom cable tube and cable track can be damaged if they are kinked or pinched.

CAUTION Component damage hazard. The boom cable tube and cable tracks can be damaged if they are twisted.

How to Repair the Boom Cable Track

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

NOTICE A cable track repair kit is available through the Genie Industries Service Parts Department, part number 62320. The kit includes a 3 link section of cable track.

- 1 Visually inspect the cable track and determine which 3-link section needs to be replaced.
- 2 Remove the snap-on cable track spacers.

BOOM COMPONENTS

REV A

- 3 Remove the external snap rings from the pivot pins at each end of the 3-link section to be removed.
- 4 Lift up the hoses and cables and carefully remove the damaged 3-link section of cable track.

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

- 5 Remove the snap-on spacers from the replacement section of cable track.
- 6 Lift up the hoses and cables and carefully insert the new 3-link section of cable track.

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

- 7 Connect the ends of the replacement cable track section to the existing cable track using the pivot pins and external snap rings.

NOTICE Be sure that the pivot pins are installed from the inside out so the external snap rings are on the outside of the cable track.

- 8 Install the cable track snap-on spacers.

4-2 Boom

How to Shim the Boom

- 1 Measure each upper, side and lower wear pad.

Boom wear pad specifications	
Minimum thickness	1/2 inch 12.7 mm

Note: If a wear pad is not less than specification, perform the following procedure.

- 2 Remove the retaining fasteners from the appropriate black plastic boom tube cover at the platform end of the boom. Remove the cover.
- 3 Extend the boom until the wear pads are accessible.
- 4 Loosen the wear pad mounting fasteners.
- 5 Fit as many shims as can be installed by hand.
- 6 Tighten the mounting fasteners.
- 7 Remove the boom end cover retaining fasteners at the pivot end of the boom. Remove the boom end cover from the machine.
- 8 Remove the boom side inspection cover retaining fasteners from the boom at the pivot end of the boom. Remove the boom inspection cover from the machine to access boom 3 wear pads.
- 9 Loosen the wear pad mounting fasteners.
- 10 Fit as many shims as can be installed by hand.
- 11 Tighten the mounting fasteners.
- 12 Replace the covers.
- 13 Extend and retract the boom through an entire cycle. Check for tight spots that may cause binding of the boom.

BOOM COMPONENTS

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

- 1 Remove the platform. See 2-1, *How to Remove the Platform*.
- 2 Remove the platform rotator. See 2-3, *How to Remove the Platform Rotator*.
- 3 **S-105 and S-125 models:** Remove the Jib Boom. See 3-1, *How to Remove the Jib Boom*.
- 4 Remove the cable track. See 4-1, *How to Remove the Boom Cable Track*.
- 5 Raise the boom approximately 4 feet (1.2 m).
- 6 Attach a lifting strap from an overhead crane to the rod end of the boom lift cylinder.
- 7 Attach an overhead 10 ton (10,000 kg) crane to the platform end of the boom for support. Do not lift the boom.
- 8 Remove the boom storage area cover retaining fasteners. Remove the cover from the machine.
- 9 Place support blocks under the boom lift cylinder.
- 10 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin.

▲WARNING Crushing hazard. The boom lift cylinder may fall when the rod-end pivot pin is removed if the boom lift cylinder is not properly supported by the overhead crane.

▲WARNING Crushing hazard. The boom may fall when the rod-end pivot pin is removed if the boom is not properly supported by the overhead crane.

- 11 Carefully raise the boom with the overhead crane until the rod end of the boom lift cylinder can be removed.
- 12 Carefully lower the rod end of the boom lift cylinder down onto the support blocks.
- 13 Lower the boom with the overhead crane to a horizontal position.
- 14 Remove the boom end cover retaining fasteners from the pivot end of the boom. Remove the cover.

BOOM COMPONENTS

- 15 Locate the cable break limit switch above the primary boom extension cylinder at the pivot end of the boom.
- 16 Tag and disconnect the wiring connector from the cable break limit switch.
- 17 Tag, disconnect and plug the hydraulic hoses from the primary boom extension 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.

- 18 Attach a second overhead 10 ton (10,000 kg) crane to the pivot end of the boom for support. Do not apply any lifting pressure.
- 19 Remove the pin retaining fastener from the boom pivot pin. Do not remove the pin.
- 20 Use a soft metal drift to remove the boom pivot pin.

CAUTION Component damage hazard. Be careful not to damage the boom envelope limit switch(s) located on the inside of the engine side turntable riser when removing the boom assembly. The boom envelope switch(s) can be damaged even if the damage is not visible.

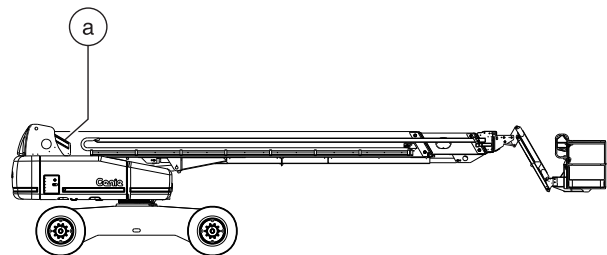
- 21 Carefully remove the boom assembly from the machine and place it on a structure capable of supporting it.

WARNING Crushing hazard. The boom may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead cranes.

How to Disassemble the Boom, S-120 and S-125 Models

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

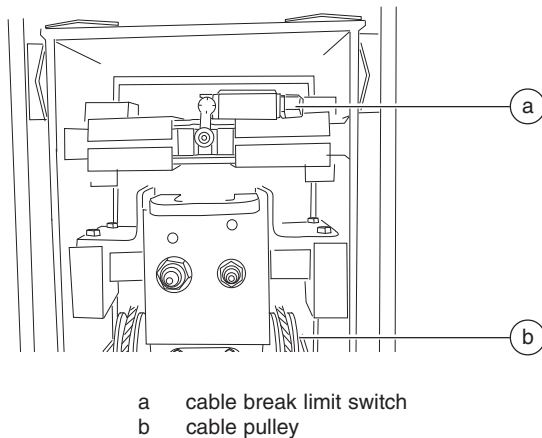
- 1 Remove the boom. See 4-2, *How to Remove the Boom*.
- 2 Remove the retaining fasteners from the access covers on both sides of the boom at the pivot end. Remove the access covers.



a side access covers

BOOM COMPONENTS

- 3 Secure the number 2 and number 3 boom tubes together with a strap or chain to prevent them from moving.
- 4 Remove the cable clamp from the cable break limit switch wiring.



- 5 Disconnect the wiring connector from the cable break limit switch.
 - 6 Tag, disconnect and plug the hydraulic hoses from the primary boom extension 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.
- 7 Remove the fasteners from the inner cable track mounting bracket at the primary boom extension cylinder.

- 8 Lay the inner cable track and hoses down and out of the way.
- 9 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.
- 10 Remove the pulley pivot pins, cable guards and pulleys.

NOTICE When installing the pulleys, be sure that the side of the pulley with the taller flange is facing the center of the boom tube.

- 11 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.
- 12 Remove the cotter pin and clevis pin from both cables.

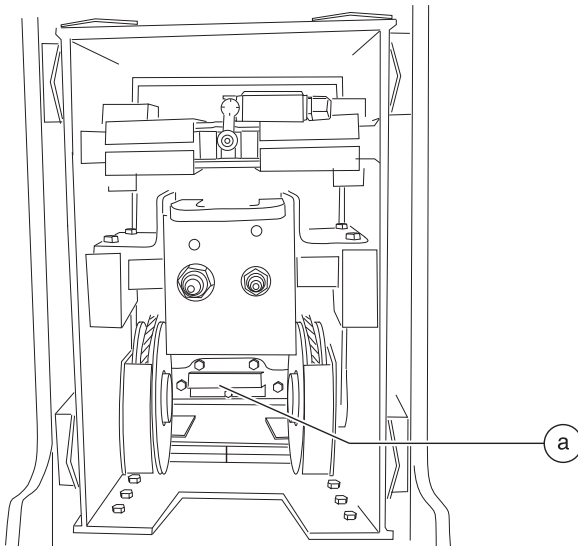
NOTICE When installing a clevis pin, always replace the cotter pin with a new one.

- 13 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.
- 14 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate from the machine.
- 15 Remove the upper plate and actuator pivot pin. Do not remove the cable break limit switch from the mounting plate.
- 16 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.

BOOM COMPONENTS

17 Remove the red cable adjustment locking bracket retaining fasteners. Remove the red locking bracket from the machine.

WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket will allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.



a red cable adjustment locking bracket

18 Remove the two cable adjustment bolts.

19 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate from the machine.

20 Remove the trunnion pin retaining fasteners.

21 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.

22 Remove the primary boom extension cylinder hold down brackets at the pivot end of the boom.

23 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.

24 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

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

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

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

25 Remove the retaining fasteners from the limit switch cover on top of the number 2 boom tube at the platform end of the machine.

BOOM COMPONENTS

- 26 Carefully remove the cover with proximity and limit switches from the top of the number 2 boom tube at the platform end of the boom.

⚠ DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

- 27 Tag and disconnect the wiring connectors from the proximity and limit switches at the top of the number 2 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

- 28 Remove the retaining fasteners from the limit switch cover on the side of the number 0 boom tube at the platform end of the boom.

- 29 Carefully remove the cover with proximity and limit switches from the number 0 boom tube at the platform end of the boom.

⚠ DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

- 30 Tag and disconnect the wiring connectors from the proximity and limit switches at the ground controls side of the number 0 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

- 31 Remove the retaining fasteners from each black plastic boom tube cover at the platform end of the machine. Remove the covers.

- 32 Remove and label the top and side wear pads of the number 3 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

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

- 33 Remove and label the top and side wear pads from the number 2 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

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

- 34 Attach a lifting strap from an overhead crane to the number 3 boom tube at the platform end of the boom.

- 35 Support and slide the number 3 boom tube out of the number 2 boom tube. When the number 3 boom tube is approximately halfway removed, remove the bottom wear pads from the number 2 boom tube at the platform end of the boom.

⚠ WARNING Crushing hazard. The number 3 boom tube may become unbalanced and fall when it is removed from the number 2 boom tube if it is not properly supported and attached to the overhead crane.

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

BOOM COMPONENTS

- 36 Remove and label the top and side wear pads from the number 2 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

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

- 37 Remove and label the top and side wear pads from the number 1 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

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

- 38 Attach a lifting strap from an overhead crane to the number 2 boom tube at the platform end of the boom.

- 39 Support and slide the number 2 boom tube out of the number 1 boom tube. When the number 2 boom tube is approximately halfway removed, remove the bottom wear pads from the number 1 boom tube at the platform end of the boom.

AWARNING Crushing hazard. The number 2 boom tube may become unbalanced and fall when it is removed from the number 1 boom tube if it is not properly supported and attached to the overhead crane.

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

- 40 Remove the secondary boom extend cylinder cover retaining fasteners. Remove the covers.

AWARNING Bodily injury hazard. Do not operate the machine unless the secondary extend cylinder covers are properly installed. Operating the machine with the covers removed could result in death or serious injury.

- 41 Tag, disconnect and plug the secondary boom extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

- 42 Support the secondary boom extension cylinder with an overhead crane or other suitable lifting device.

- 43 Remove the pin retaining fasteners from both the rod-end and barrel-end pivot pins. Do not remove the pins.

BOOM COMPONENTS

44 Use a soft metal drift to remove both pivot pins and remove the secondary boom extension cylinder from the machine while guiding the barrel end of the cylinder out of the boom.

WARNING Crushing hazard. The secondary boom extension cylinder may become unbalanced and fall if it is not properly supported when it is removed from the machine.

CAUTION Component damage hazard. The boom lift cylinder rod can become damaged if the barrel end of the secondary boom extension cylinder is allowed to come in contact with it.

45 Remove and label the top and side wear pads from the number 1 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

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

46 Remove and label the top and side wear pads from the number 0 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

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

47 Attach a lifting strap from an overhead crane to the number 1 boom tube at the platform end of the boom.

48 Support and slide the number 1 boom tube out of the number 0 boom tube. When the number 1 boom tube is approximately halfway removed, remove the bottom wear pads from the number 0 boom tube at the platform end of the boom.

WARNING Crushing hazard. The number 1 boom tube may become unbalanced and fall when it is removed from the number 0 boom tube if it is not properly supported and attached to the overhead crane.

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

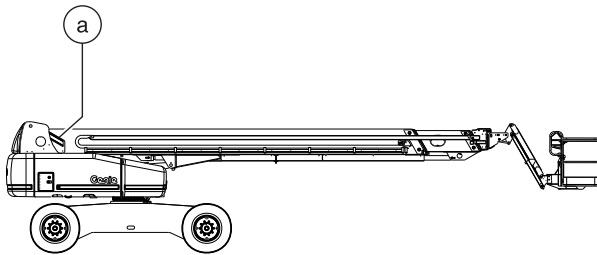
How to Disassemble the Boom, S-100 and S-105 Models

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

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

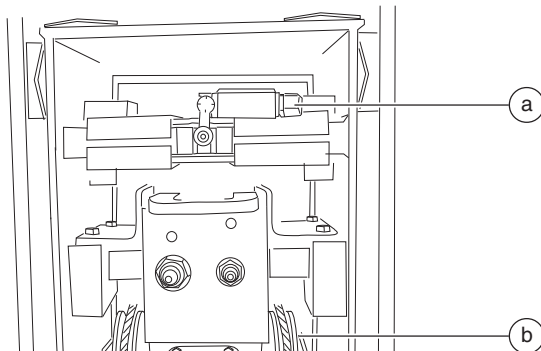
BOOM COMPONENTS

- 2 Remove the retaining fasteners from the access covers on both sides of the boom at the pivot end. Remove the access covers.



a side access covers

- 3 Secure the number 2 and number 3 boom tubes together with a strap or chain to prevent them from moving.
- 4 Remove the cable clamp from the cable break limit switch wiring.



a cable break limit switch
b cable pulley

- 5 Disconnect the wiring connector from the cable break limit switch.

- 6 Tag, disconnect and plug the hydraulic hoses from the primary boom extension 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.

- 7 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.
- 8 Remove the pulley pivot pins, cable guards and pulleys.

NOTICE

When installing the pulleys, be sure that the side of the pulley with the taller flange is facing the center of the boom tube.

- 9 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.
- 10 Remove the cotter pin and clevis pin from both cables.

NOTICE

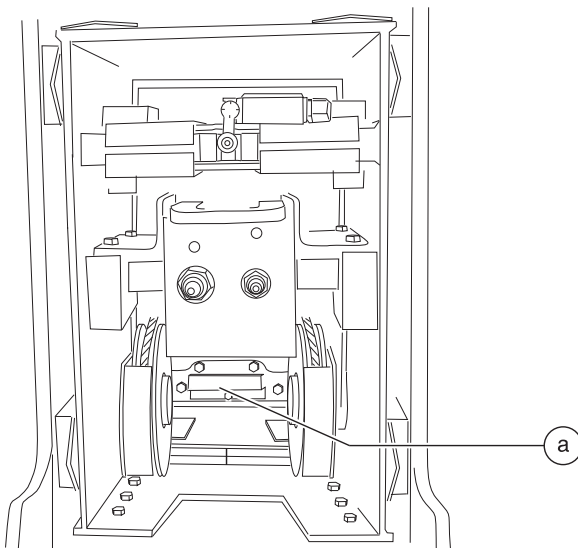
When installing a clevis pin, always replace the cotter pin with a new one.

- 11 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.
- 12 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate from the machine.

BOOM COMPONENTS

- 13 Remove the upper plate and actuator pivot pin.
Do not remove the cable break limit switch from the mounting plate.
- 14 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.
- 15 Remove the red cable adjustment locking bracket retaining fasteners. Remove the red locking bracket from the machine.

WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket will allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.



a red cable adjustment locking bracket

- 16 Remove the two cable adjustment bolts.
- 17 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate from the machine.
- 18 Remove the trunnion pin retaining fasteners.
- 19 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.
- 20 Remove the primary boom extension cylinder hold down brackets at the pivot end of the boom.
- 21 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.
- 22 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

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

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

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

- 23 Remove the retaining fasteners from the limit switch cover on top of the number 2 boom tube at the platform end of the machine.

BOOM COMPONENTS

- 24 Carefully remove the cover with proximity and limit switches from the top of the number 2 boom tube at the platform end of the boom.

▲ DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

- 25 Tag and disconnect the wiring connectors from the proximity and limit switches at the top of the number 2 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

- 26 Remove the retaining fasteners from the limit switch cover on the side of the number 1 boom tube at the platform end of the boom.

- 27 Carefully remove the cover with proximity and limit switches from the number 1 boom tube at the platform end of the boom.

▲ DANGER Tip-over hazard. Failure to install the correct proximity and/or limit switches in the correct location will result in the machine tipping over, resulting in death or serious injury.

- 28 Tag and disconnect the wiring connectors from the proximity and limit switches at the ground controls side of the number 1 boom tube at the platform end of the boom. Do not remove the proximity or limit switches.

- 29 Remove the retaining fasteners from each black plastic boom tube cover at the platform end of the machine. Remove the covers.

- 30 Remove and label the top and side wear pads of the number 3 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

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

- 31 Remove and label the top and side wear pads from the number 2 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

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

- 32 Attach a lifting strap from an overhead crane to the number 3 boom tube at the platform end of the boom.

- 33 Support and slide the number 3 boom tube out of the number 2 boom tube. When the number 3 boom tube is approximately halfway removed, remove the bottom wear pads from the number 2 boom tube at the platform end of the boom.

▲ WARNING Crushing hazard. The number 3 boom tube may become unbalanced and fall when it is removed from the number 2 boom tube if it is not properly supported and attached to the overhead crane.

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

BOOM COMPONENTS

- 34 Remove and label the top and side wear pads from the number 2 boom tube at the pivot end of the boom. Do not remove the bottom wear pads.

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

- 35 Remove and label the top and side wear pads from the number 1 boom tube at the platform end of the boom. Do not remove the bottom wear pads.

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

- 36 Attach a lifting strap from an overhead crane to the number 2 boom tube at the platform end of the boom.

- 37 Support and slide the number 2 boom tube out of the number 1 boom tube. When the number 2 boom tube is approximately halfway removed, remove the bottom wear pads from the number 1 boom tube at the platform end of the boom.

AWARNING Crushing hazard. The number 2 boom tube may become unbalanced and fall when it is removed from the number 1 boom tube if it is not properly supported and attached to the overhead crane.

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

4-3 Boom Lift Cylinder

How to Remove the Boom Lift Cylinder

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

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

- 1 Raise the boom until there is approximately 4 feet (1.2 m) between the turntable and boom rest pad.
- 2 Attach a lifting strap from an overhead crane or other suitable lifting device to the rod end of the the boom lift cylinder.
- 3 Attach an overhead 10 ton / 9071 kg crane to the platform end of the boom for support. Do not lift the boom.
- 4 Remove the boom storage area cover retaining fasteners. Remove the cover from the machine.

BOOM COMPONENTS

- 5 Place support blocks under the boom lift cylinder.
- 6 Remove the pin retaining fastener from the boom lift cylinder rod-end pivot pin. Use a soft metal drift to remove the pin. Protect the cylinder rod from damage.

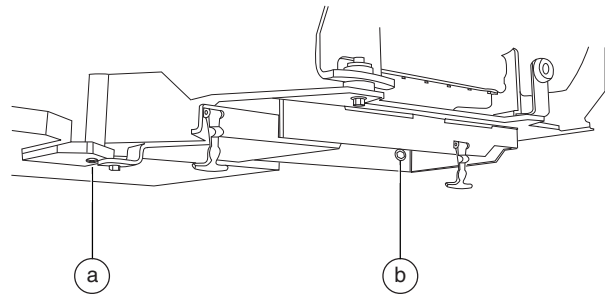
▲WARNING Crushing hazard. The boom lift cylinder may fall when the rod-end pivot pin is removed if the boom lift cylinder is not properly supported by the overhead crane.

▲WARNING Crushing hazard. The boom may fall when the rod-end pivot pin is removed if the boom is not properly supported by the overhead crane.

- 7 Carefully raise the boom with the overhead crane until the rod end of the boom lift cylinder can be removed.
- 8 Carefully lower the rod end of the boom lift cylinder down onto the support blocks.
- 9 Carefully raise the boom with the overhead crane until the barrel end of the boom lift cylinder is accessible.
- 10 Tag, disconnect and plug the 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.

- 11 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine.



a engine pivot plate anchor hole
b engine pivot plate retaining fastener

- 12 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 13 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

▲WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate anchor hole to secure it from moving could result in death or serious injury.

- 14 Remove the pin retaining fastener from the barrel-end pivot pin. Do not remove the pin.
- 15 Support the boom lift cylinder with an overhead crane.

BOOM COMPONENTS

16 Use a slide hammer to remove the boom lift cylinder barrel-end pivot pin through the access hole in the engine side turntable riser.

17 With the boom lift cylinder being supported by the overhead crane, pull the boom lift cylinder toward the platform until it is out.

AWARNING Crushing hazard. The boom lift cylinder may become unbalanced and fall if it is not properly supported when it is removed from the machine.

CAUTION Component damage hazard. Be careful not to damage the proximity and/or limit switches when removing the boom lift cylinder.

CAUTION Component damage hazard. The cables and hydraulic hoses can be damaged if the boom lift cylinder is pulled across them.

4-4 Extension Cylinders

The primary boom extension cylinder is located inside the boom assembly and incorporates cables and pulleys that are responsible for extending the number 2 and 3 boom tubes. The secondary boom extension cylinder (S-120 and S-125 models) is located underneath the number 0 boom tube and is responsible for extending the number 1 boom tube. The extension cylinders are equipped with counterbalance valves to prevent movement in the event of a hydraulic line failure.

How to Remove the Primary Boom Extension Cylinder

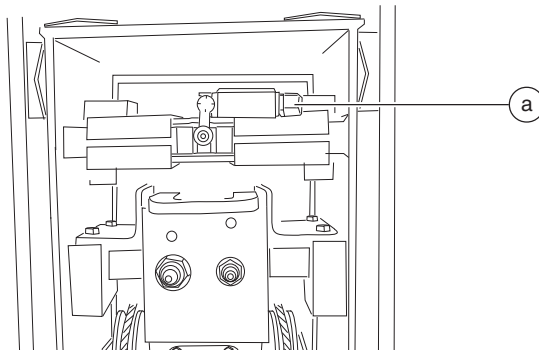
AWARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

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

1 Raise the boom to a horizontal position.

BOOM COMPONENTS

- 2 Remove the retaining fasteners from the boom end cover at the pivot end of the boom. Remove the cover from the machine.
- 3 Remove the access cover retaining fasteners from both sides of the boom. Remove the access covers.
- 4 Secure the number 2 and number 3 boom tubes together with a strap or chain to prevent them from moving.
- 5 Remove the cable clamp from the cable break limit switch wiring.



a cable break limit switch

- 6 Disconnect the wiring connector from the cable break limit switch.

- 7 Tag, disconnect and plug the hydraulic hoses from the primary boom extension 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.

- 8 **S-120 and S-125 models:** Remove the fasteners from the inner cable track mounting bracket at the primary boom extension cylinder.
- 9 **S-120 and S-125 models:** Lay the inner cable track and hoses down and out of the way.

- 10 Remove the pulley pivot pin retaining fasteners from the number 2 boom tube at the pivot end of the boom.
- 11 Remove the pulley pivot pins, cable guards and pulleys.

NOTICE When installing the pulleys, be sure that the side of the pulley with the shorter flange is facing the inside of the boom tube.

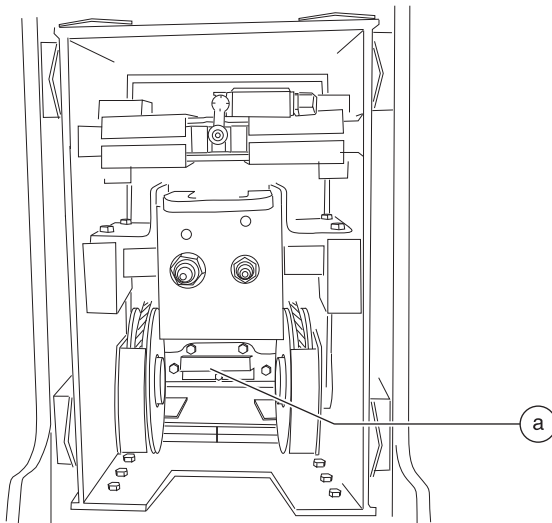
- 12 Locate the number 3 boom tube extension cable clevis pins on both sides of the number 2 boom tube at the pivot end of the boom.
- 13 Remove the cotter pin and clevis pin from both cables.

NOTICE When installing a clevis pin, always replace the cotter pin with a new one.

BOOM COMPONENTS

- 14 Remove the lower external snap ring and washer from the cable break limit switch actuator pivot pin.
- 15 Remove the cable break actuator mounting plate retaining fasteners. Remove the lower plate.
- 16 Remove the upper plate and actuator pivot pin. Do not remove the cable break limit switch from the mounting plate.
- 17 Push the cable break actuator and cables towards the platform end of the boom approximately 18 inches / 46 cm.
- 18 Remove the retaining fasteners from the red cable adjustment locking bracket. Remove the red locking bracket.

WARNING Bodily injury hazard. Failure to install the red cable adjustment locking bracket would allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.



a red cable adjustment locking bracket

- 19 Remove the two cable adjustment bolts.

- 20 Remove the cable-end block mounting plate fasteners. Remove the cable-end block mounting plate.
- 21 Remove the trunnion pin retaining fasteners.
- 22 Use a slide hammer to remove the trunnion pins from the primary boom extension cylinder.
- 23 Attach a lifting strap from an overhead crane to the lifting eye on the primary boom extension cylinder.
- 24 Support and slide the primary boom extension cylinder out of the boom assembly while guiding the cables out of the boom and place it on a structure capable of supporting it.

NOTICE Use a 1/2 -13 bolt thread on each end of the slide hammer.

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

CAUTION Component damage hazard. Cables can be damaged if they are kinked, pinched or snagged during removal.

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

BOOM COMPONENTS

How to Remove the Secondary Boom Extension Cylinder, S-120 and S-125 Models

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

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

- 1 Raise the boom until the secondary boom extension cylinder barrel-end pivot pin is above the turntable covers.
- 2 Remove the secondary boom extend cylinder cover retaining fasteners. Remove the covers.

▲WARNING Bodily injury hazard. Do not operate the machine unless the secondary extend cylinder covers are properly installed. Operating the machine with the covers removed could result in death or serious injury.

- 3 Tag, disconnect and plug the secondary boom 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.

- 4 Support the secondary boom extension cylinder with an overhead crane or other suitable lifting device.
- 5 Remove the pin retaining fasteners from both the rod-end and barrel-end pivot pins. Do not remove the pins.
- 6 Protect the boom lift cylinder rod from damage.
- 7 Use a soft metal drift to remove both pivot pins.
- 8 Remove the secondary boom extension cylinder from the machine while guiding the barrel end of the cylinder out of the boom.

▲WARNING Crushing hazard. The secondary boom extension cylinder may become unbalanced and fall if it is not properly supported when it is removed from the machine.

CAUTION Component damage hazard. The boom lift cylinder rod can become damaged if the barrel end of the secondary boom extension cylinder is allowed to come in contact with it.

REV B

BOOM COMPONENTS

4-5 Boom Extend/Retract Cables

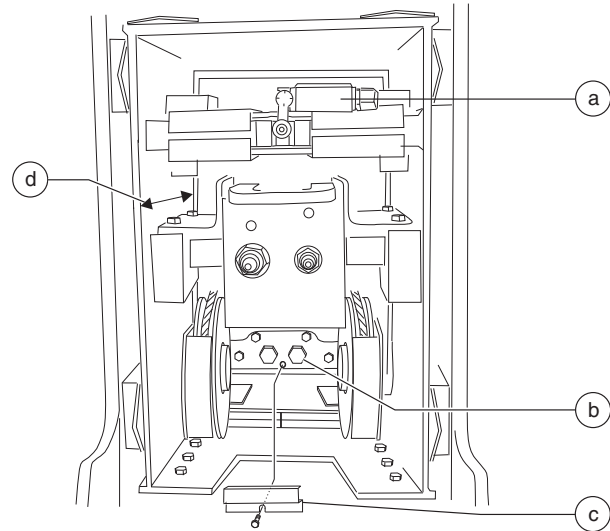
How to Adjust the Boom Extend/Retract Cables

Properly adjusted extend/retract cables are essential to safe machine operation. Failure to maintain proper adjustment of the cables could result in unsafe operating conditions and may cause component damage. The boom extend and retract functions should operate smoothly and be free of hesitation, jerking and unusual noise.

NOTICE A flashlight may be necessary to be able to see the extend/retract cables inside of the boom assembly.

NOTICE Perform this procedure with the boom fully retracted.

- 1 Start the engine from the ground controls.
- 2 Raise the boom to a horizontal position.
- 3 Stop the engine.
- 4 Remove the boom end cover from the pivot end of the machine.
- 5 Locate the red locking bracket (c) covering the cable adjustment bolts at the pivot end of the boom (illustration 1).
- 6 Remove the retaining fastener from the red locking bracket and remove the bracket from the machine.
- 7 Locate the retract cable equalizer bolt under the number 1 boom tube at the platform end of the boom assembly (illustration 3).
- 8 Loosen the nylock (g) and jam nut (h) on the cable tension equalizer bracket. Do not remove the nuts.



- a - limit switch
- b - extend cable adjustment bolts
- c - red cable adjustment locking bracket
- d - boom tube distance

Illustration 1

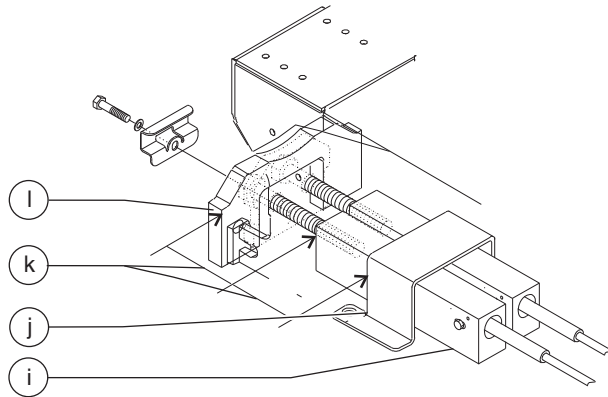
- 9 At the pivot end of the boom (illustration 1), turn the cable adjustment bolts (b) clockwise to obtain 6 3/4 inches / 17 cm between the end of the number 3 boom tube and the end of the number 2 boom tube (d). As a guide (Illustration 2), the end of the extension cable coupling (i) should be approximately mid-point (k) between the guide plate (l) and the cable retainer bracket (j). Illustration 2 is visible by removing the boom side covers.

NOTICE Adjust the cable adjustment bolts evenly so the cable break limit switch (a) stays centered in the limit switch actuator (Illustration 1).

NOTICE If the distance is greater than 6 3/4 inches / 17 cm, loosen the extend cable adjustment bolts and tighten the hex jam nut on the cable tension equalizer bolt until the distance is less than 6 3/4 inches / 17 cm. Loosen the jam nut and repeat step 9.

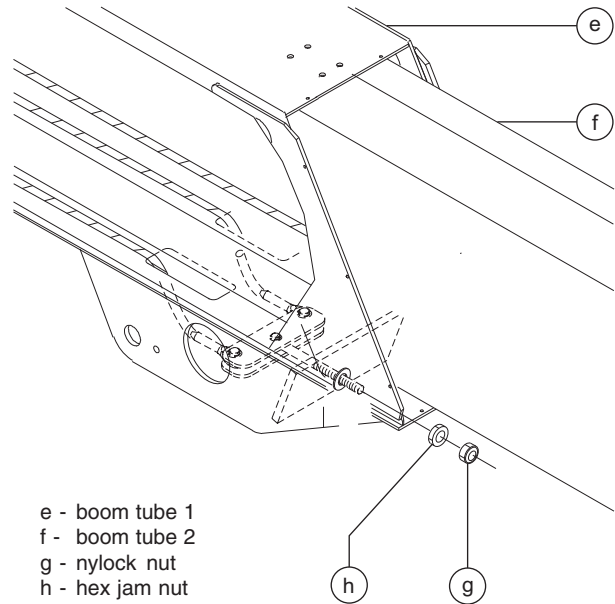
BOOM COMPONENTS

REV B



- i - extension cable coupling
- j - cable retainer bracket
- k - equal distance
- l - guide plate

Illustration 2



- e - boom tube 1
- f - boom tube 2
- g - nylock nut
- h - hex jam nut

Illustration 3

- 10 At the platform end of the boom, tighten the hex jam nut (h) on the cable tension equalizer bracket located underneath the number 1 boom tube (Illustration 3). Tighten the hex jam nut until it is snug. Do not overtighten.
- 11 Hold the hex jam nut with a wrench and tighten the nylock nut (g) against the hex jam nut.
- 12 Re-check that the cable break limit switch is centered in the limit switch actuator. Adjust the extension cable adjustment bolts to center it.
- 13 At the pivot end of the boom, measure the distance between the end of the number 3 boom tube and the end of the number 2 boom tube.
 - ⦿ Result: The measurement between the end of the number 3 boom tube and the end of the number 2 boom tube should be $6 \frac{3}{4}$ to $6 \frac{7}{8}$ inches / 17 to 17.5 cm (d).

- 14 Install the red locking bracket over the cable adjustment bolts. A flat edge of each bolt head (b) must be on top for the locking bracket to secure the bolts.

⚠ WARNING Bodily injury hazard. Failure to re-install the red cable adjustment locking bracket would allow the cable mounting bolts to loosen and fall out which could result in death or serious injury.

- 15 Lower the boom to the stowed position.
- 16 Start the engine from the platform controls.

BOOM COMPONENTS

- 17 Extend the boom approximately 2 feet / 0.6 m.
- 18 Retract the boom. While retracting the boom, visually inspect the number 2 and number 3 boom tubes.
- ⦿ Result: The number 2 should not move more than 1/2 inch (13 mm) before the number 3 boom tube begins to retract.

NOTICE If the number 2 boom tube moves more than 1/2 inch (13 mm) before the number 3 boom tube begins to retract, repeat the procedure until the number 2 boom moves less than 1/2 inch before the number 3 boom begins to retract.

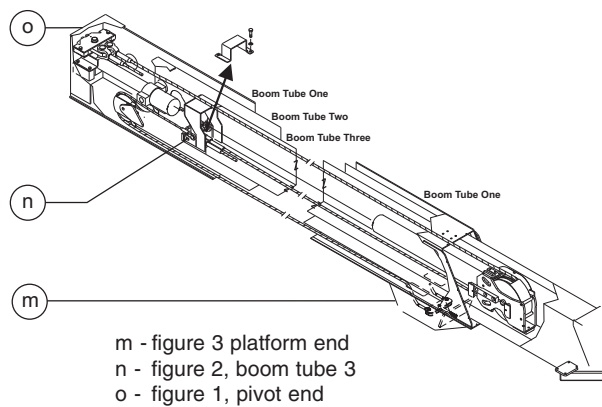


Illustration 4

How to Replace the Boom Extend/Retract Cables

NOTICE The cable pulleys must also be replaced when replacing the cables.

- 1 Remove the boom extension cylinder. See 4-4, *How to Remove the Boom Extension Cylinder*.

Boom extend cables:

- 2 Remove the retaining fasteners that secure the extension cable retainer to the pulley mount. Remove the retainer.
- 3 Remove the cables from the lower boom extend cable bracket that attaches to the number 3 boom tube.
- 4 Remove the front and rear fasteners from the anchor bracket that supports the cable anchors. Remove the bracket.
- 5 Remove the pulley and boom extend cables from the extension cylinder assembly. Discard the old cables and pulleys.
- 6 Route the new boom extend cables through the boom extend pulley bracket.

NOTICE Be sure before installing the extend cables through the boom adjustment coupling that the tall end of the cable anchors are facing down.

- 7 Install the new boom extend cable pulley, pivot pin and snap rings.

NOTICE Be sure the boom extend cables are routed through the grooves of the pulley and the upper wear pad on the extension cylinder.

- 8 Install the boom extend cables to the lower extend cable bracket that mounts to the number 3 boom tube.

BOOM COMPONENTS**Boom retract cables:**

- 9 Remove the fasteners from the boom retract cables at the platform end of the boom.
- 10 Attach a rope to one of the boom retract cables at the pivot end of the boom.
- 11 At the platform end of the boom, pull on the boom retract cable that has the rope attached to it.
- 12 Pull the old cable completely out of the boom tube. Discard the old boom retract cable.
- 13 Remove the rope from the old cable and securely attach the rope to the same end of the new boom retract cable.
- 14 At the pivot end of the boom, carefully pull the rope with the new retract cable attached.
- 15 Pull the new cable towards the pivot end of the boom until the end of the cable is at the end of the boom tube. Remove the rope.
- 16 Repeat steps 11 through 16 for the other boom retract cable.
- 17 At the platform end of the boom, install the retract cables and fasteners to the adjustment plate.
- 18 Remove and discard the old boom retract pulleys from the pivot end of the boom extension cylinder.
- 19 Install the new boom retract pulleys to the pivot end of the boom extension cylinder.
- 20 Secure the number 2 and number 3 booms together at the platform end with a chain or strap to prevent them from moving.
- 21 Install the boom extension cylinder assembly into the boom.

NOTICE

Before lowering the extension cylinder into the saddles of the number 1 boom tube, wrap the boom retract cables around the pulleys.

- 22 Remove the chain or strap from the platform end of the number 2 and number 3 boom tubes.
- 23 Adjust the boom extend/retract cables. See, *How to Adjust the Boom Extend/Retract Cables*.

Turntable Covers

5-1 Turntable Covers

In addition to the standard hinged turntable covers, there are two fixed turntable covers. One fixed cover protects the fuel tank on the engine side of the machine and the other protects the turntable rotator assembly on the ground controls side of the machine.

How to Remove a Hinged Turntable Cover

- 1 Raise the turntable cover. Support and secure the open cover to an overhead crane or forklift. Do not lift it.

▲WARNING Crushing hazard. Due to its heavy weight, do not attempt to support the cover by hand.

CAUTION Component damage hazard. Protect the cover from damage by using carpet or padding on the crane or forklift forks.

- 2 Remove the upper and lower retaining clips from the gas strut.
- 3 Gently pry the strut pivot sockets off of the ball studs and remove the strut. Protect the strut cylinder rod from damage.

▲WARNING Crushing hazard. The turntable cover will fall when the gas struts are removed if it is not properly supported.

- 4 Mark the location of the hinges on the bulkhead to ensure proper cover alignment during installation.
- 5 Remove the cover hinge to bulkhead retaining fasteners.
- 6 Carefully lift and remove the cover from the machine.

▲WARNING Crushing hazard. The turntable cover could become unbalanced and fall when it is removed from the machine if it is not properly supported and secured to a appropriate lifting device.

▲WARNING Bodily injury hazard. Safety decals are essential to safe machine operation. Failure to replace all safety and instructional decals could result in death or serious injury. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

NOTICE Alignment adjustments may be necessary when a new cover is installed.

TURNTABLE COMPONENTS

How to Remove a Fixed Turntable Cover

- 1 **Ground controls side:** Remove the top retaining fasteners from the power to platform plug panel and loosen the bottom retaining fasteners. Do not disconnect the wiring.
- 2 Support the cover with a suitable lifting device. Protect the cover from damage.
- 3 Remove the cover mounting fasteners.
- 4 Carefully remove the cover from the machine.

▲WARNING Crushing hazard. The turntable cover may become unbalanced and fall when it is removed from the machine if it is not properly supported.

▲WARNING Bodily injury hazard. Safety decals are essential to safe machine operation. Failure to replace all safety and instructional decals could result in death or serious injury. If a turntable cover must be replaced, be sure that all appropriate safety and instructional decals are applied to the new cover.

NOTICE Alignment adjustments may be necessary when a new cover is installed.

Engines

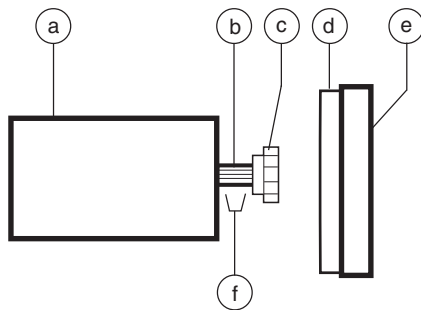
REV B

6-1 RPM Adjustment

Refer to Maintenance Procedure B-12,
Check and Adjust the Engine RPM.

6-2 Flex Plate

The flex plate couples the engine to the pump. The flex plate is bolted to the engine flywheel and has a cut-out in the center for the pump coupler.



- a pump
- b pump shaft
- c coupler
- d flex plate
- e flywheel
- f Deutz models- .245 inch / 6.2 mm gap
Cummins or Perkins models-
.255 inch / 6.5 mm gap

How to Remove the Flex Plate

- 1 Disconnect the wiring plug at the electronic proportional controller located on the drive pump.
- 2 Remove the hose clamp from the air cleaner hose at the air cleaner. Carefully disconnect the hose from the air cleaner.
- 3 Remove the air cleaner mounting fasteners. Remove the air cleaner from the machine.
- 4 Remove the fuel filter/water separator retaining fasteners from the pump mounting plate. Do not disconnect the fuel hoses.
- 5 Remove the fuel filter/water separator and lay it to the side.
- 6 Support the drive pump assembly with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.
- 7 Carefully pull the pump away from the engine and secure it from moving.

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

- 8 Remove the flex plate mounting fasteners, then remove the flex plate from the flywheel.

ENGINES

REV B

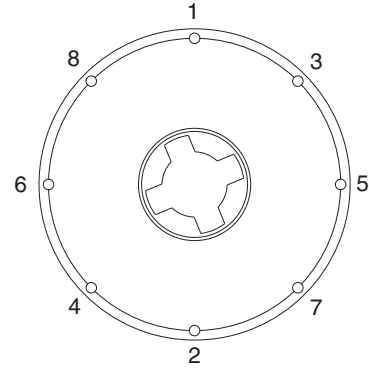
How to Install the Flex Plate

- 1 Install the flex plate onto the engine flywheel with the raised spline towards the pump.
- 2 Apply Loctite® removable thread sealant to the mounting fasteners. Then torque the flex plate mounting bolts in sequence to:
Cummins engines: 23 ft-lbs / 31.2 Nm.
Deutz and Perkins engines: 28 ft-lbs / 38 Nm.
- 3 Install the pump coupler onto the pump shaft with the set screw toward the pump. Leave the appropriate gap between coupler and pump end plate for your engine.
- 4 Apply Loctite® removable thread sealant to the pump coupler set screw. Torque the set screw to 70 ft-lbs / 95 Nm.
- 5 Install the bell housing/mounting plate assembly. Apply Loctite® removable thread sealant to the mounting fasteners. Then torque the pump retaining fasteners to:
Cummins, Perkins and Deutz 913 engines: 28 ft-lbs / 38 Nm.
Deutz 2011 engines: 47 ft-lbs / 63 Nm.

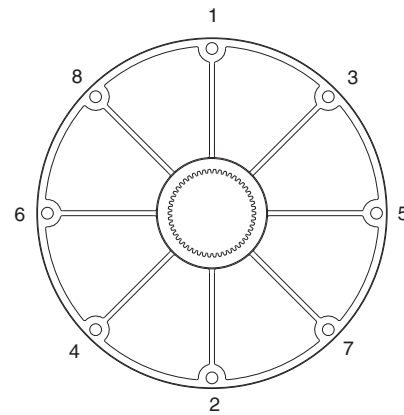
CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

CAUTION Component damage hazard. When installing the pump, do not force the pump coupler into the flexplate or damage to the pump shaft seal may occur.

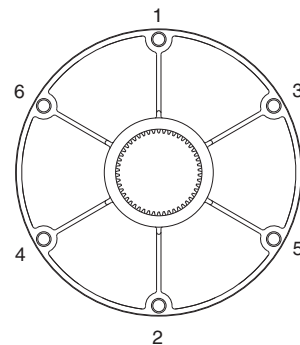
CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.



Before Serial Number 1029
Perkins Engines
Cummins Engines



After Serial Number 1028
Perkins Engines
Cummins Engines



Deutz Engines

6-3 Oil Pressure and Coolant Temperature Sending Units - Cummins and Perkins Models

The coolant temperature sending unit is an electrical device. If the coolant temperature reaches 210° F / 99° C, the ECM will shut the engine off to prevent damage and will not start until the coolant temperature drops below 210° F / 99° C. The engine temperature will be shown on the display screen at the ground controls when the key is ON and the Emergency Stop Button is pulled out to the ON position. Use the scroll buttons and scroll to the Engine Temperature screen.

CAUTION Component damage hazard. Do not crank the engine with a water temperature fault shown on the display at the ground controls.

The oil pressure sending unit is an electrical device. If the oil pressure drops below 12 psi / 0.8 bar, the ECM will shut the engine off to prevent damage. The engine oil pressure will be indicated on the display screen at the ground controls while the engine is running. Use the scroll buttons and scroll to the Engine Oil Pressure screen.

CAUTION Component damage hazard. Do not crank the engine with a low oil pressure fault shown on the display at the ground controls.

6-4 Oil Pressure and Temperature Sending Units - Deutz Models

The engine oil temperature sending unit is an electrical device. If the engine oil temperature reaches 275° F / 135° C, the ECM will shut the engine off to prevent damage and will not start until the engine oil temperature drops below 275° F / 135° C. The engine temperature will be shown on the display screen at the ground controls when the key is ON and the Emergency Stop Button is pulled out to the ON position. Use the scroll buttons and scroll to the Engine Temperature screen.

CAUTION Component damage hazard. Do not crank the engine with a oil temperature fault shown on the display at the ground controls.

The oil pressure sending unit is an electrical device. If the oil pressure drops below 12 psi / 0.8 bar, the ECM will shut the engine off to prevent damage. The engine oil pressure will be indicated on the display screen at the ground controls while the engine is running. Use the scroll buttons and scroll to the Engine Oil Pressure screen.

CAUTION Component damage hazard. Do not crank the engine with a low oil pressure fault shown on the display at the ground controls.

Ground Controls

The ground control box (TCON) is the communication and operations center for the machine. The ground control box contains two key switches. The key switch towards the top of the control box is for selection of ground or platform controls. The key switch at the bottom of the control box is the Service Bypass key switch. It is used to allow the boom to be raised above 10° with the axles retracted and to correct an out-of-level platform. If the machine trips an envelope safety switch, the operator at the ground controls can turn and hold the Service Bypass key switch in the RECOVER position and the machine will automatically lower the boom to the stowed position in sequence.

The ground control box contains a replaceable membrane decal with touch sensitive buttons for various machine functions. The ground control box also contains two printed circuit boards:

The **LCD (Liquid Crystal Display) circuit board** is mounted to the inside of the control box lid which controls the LCD display screen.

The **ECM circuit board** is the main circuit board for the machine. There are relays on the ECM circuit board that can be replaced. All operating parameters and configuration of options for the machine are stored in the ECM memory.

NOTICE The ECM circuit board inside the ground control box (TCON) cannot be replaced by itself. If the ECM circuit board is faulty and needs to be replaced, contact the Genie Industries Service Department.

NOTICE When an ECM circuit board is replaced, the proportional valves will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller*.

7-1 Circuit Boards

How to Remove the LCD Display Screen Circuit Board

- 1 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.
- 2 Remove the platform control box mounting fasteners. Remove the platform control box from the machine.

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

- 3 Locate the cables that connect to the bottom of the control box. Number each cable and its location at the control box.
- 4 Disconnect the cables from the bottom of the platform control box.
- 5 Remove the control cable plug retaining fasteners from the bottom of the platform control box.
- 6 Remove the platform control box lid fasteners. Open the control box lid.

GROUND CONTROLS

- 7 Locate the ECM circuit board mounted to the inside of the platform control box.

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

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

- 8 Remove the ECM circuit board mounting fasteners.
- 9 Carefully remove the ECM circuit board from the platform control box.

7-2 Membrane Decal

The membrane decal is a special decal that consists of a decal with an electronic membrane on the backside. The membrane contains touch sensitive areas that, when pushed, activates the machine functions. The membrane buttons activate machine functions similar to toggle switches, but do not have any moving parts.

How to Replace the Membrane Decal

- 1 Turn the key switch at the ground controls to the OFF position.
- 2 Push in the Emergency Stop button to the OFF position at both the ground and platform controls.
- 3 Remove the ground control box lid fasteners. Open the control box lid.
- 4 Carefully disconnect the two ribbon cables from the membrane decal at the ECM circuit board.

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

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

GROUND CONTROLS

- 5 Carefully remove the membrane decal from the control box lid while guiding the ribbon cables out of the control box lid.
 - 6 Remove any decal adhesive from the control box lid with a mild solvent.
- NOTICE** Do not allow any solvent to come in contact with the LCD display screen.
- 7 Install the new membrane decal (Genie part number 50811) while guiding the ribbon cables through the control box lid.
 - 8 Connect the ribbon cables to the ECM circuit board.
 - 9 Close the control box lid and install the retaining fasteners.

7-3 Control Relays

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

How to Test a Single Pole Double Throw Relay

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

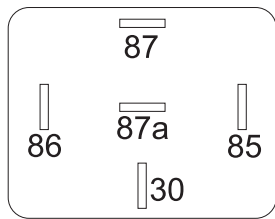
CAUTION Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

- 1 Turn the key switch to the OFF position.
- 2 Open the ground control box and remove the relay to be tested from the ECM circuit board.

GROUND CONTROLS

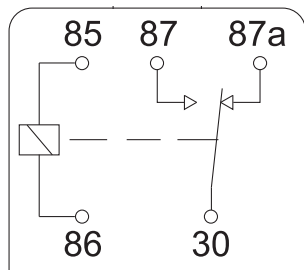
- 3 Connect the leads from an ohmmeter or continuity tester to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

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



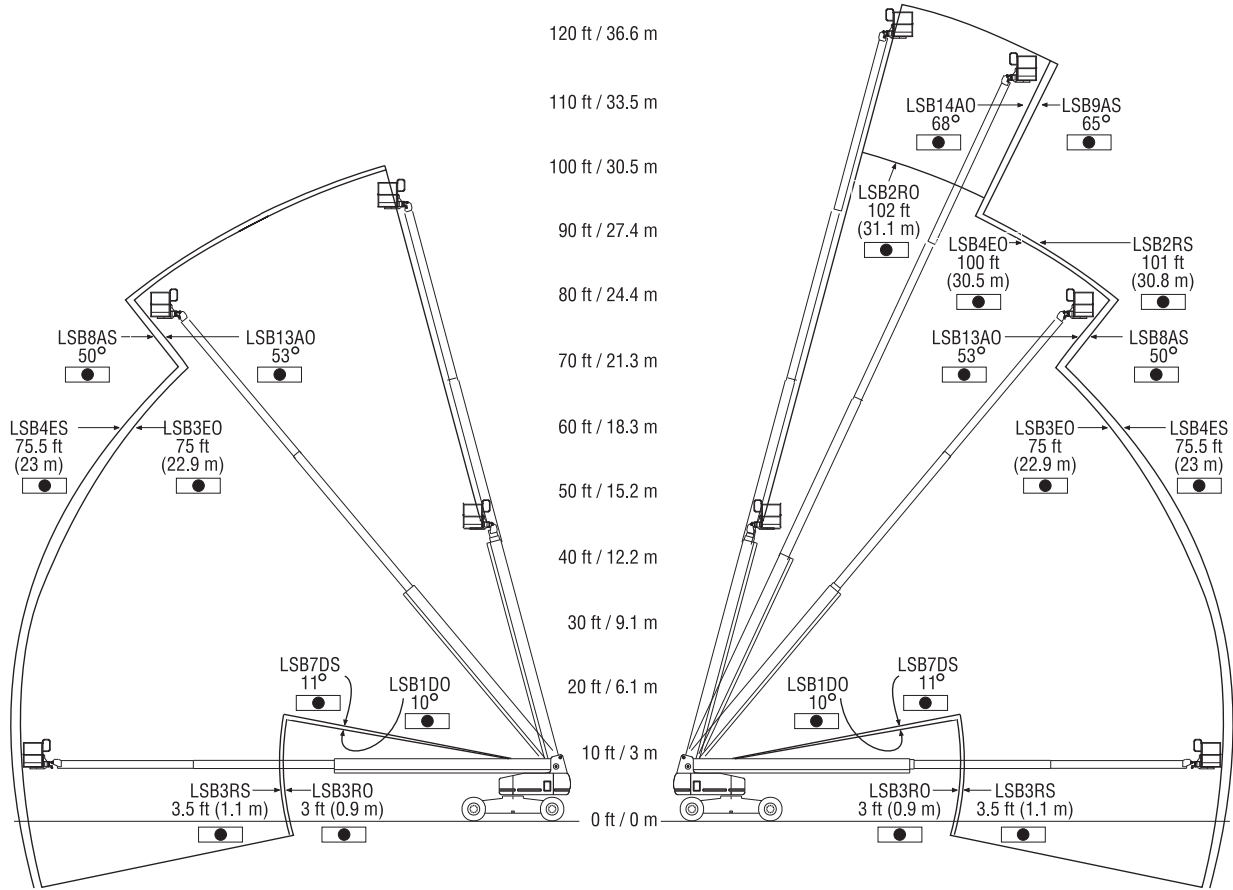
- 4 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

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



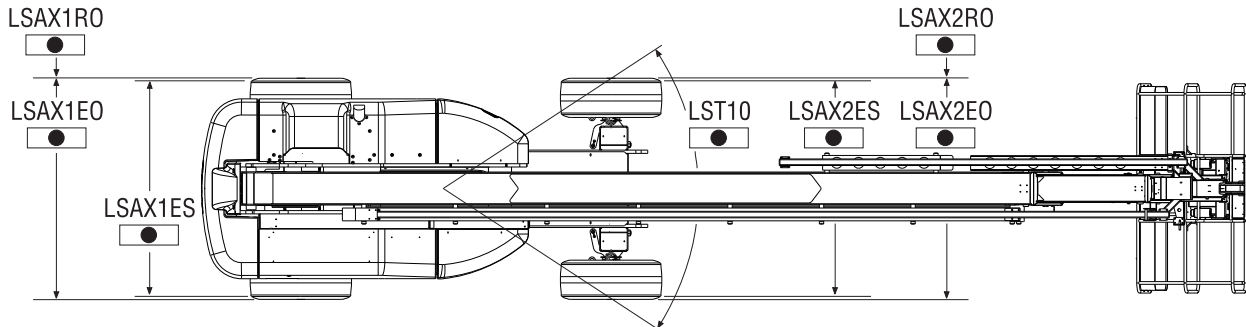
Control Relay Schematic

Limit Switches



S-100 and S-105 Models

S-120 and S-125 Models



LIMIT SWITCHES

8-1 Limit Switches

How to Test the Limit Switches

There are 2 types of limit switches: Mechanical (roller arm) and proximity. Mechanical limit switches are activated by a part of the machine physically moving the roller arm of the switch. Proximity switches are a magnetic type of switch and are activated by the close presence of a ferrous metal.

Mechanical Operational Limit Switch:

- 1 Manually activate the limit switch.
- ⦿ Result: The limit switch arm should move freely and spring return to center. A distinct click should be felt and heard.
- 2 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 1 to 2	continuity (zero Ω)
terminal 3 to 4	no continuity (infinite Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)

- 3 Activate the limit switch. Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

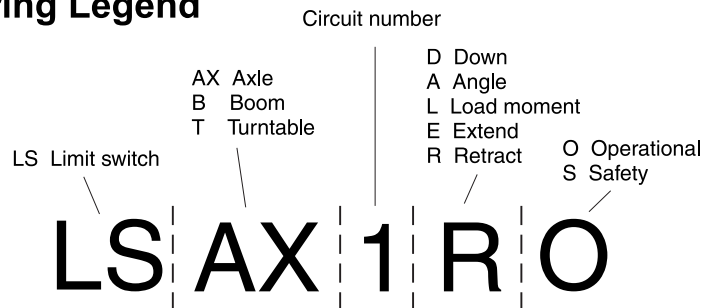
terminal 1 to 2	no continuity (infinite Ω)
terminal 3 to 4	continuity (zero Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)

Mechanical Safety Limit Switch:

- 1 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 1 to 2	continuity (zero Ω)
terminal 3 to 4	continuity (zero Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)

Numbering Legend



LIMIT SWITCHES

2 Activate the limit switch. Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

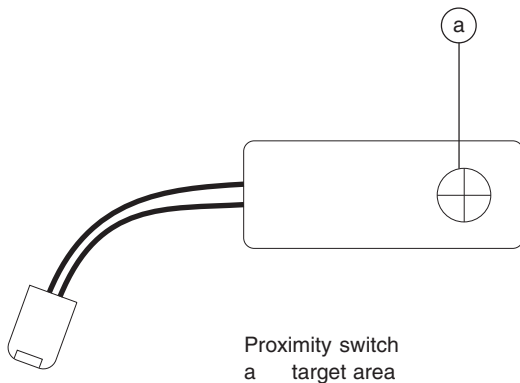
terminal 1 to 2	no continuity (infinite Ω)
terminal 3 to 4	no continuity (infinite Ω)
terminal 1 to 3 and 4	no continuity (infinite Ω)
terminal 2 to 3 and 4	no continuity (infinite Ω)

Proximity Switch:

1 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	no continuity (infinite Ω)
-----------------	-------------------------------

2 Locate the target area of the proximity switch.



3 Place a piece of ferrous metal (steel, iron, etc.) in front of the target area so it is no more than 1/2 inch / 12.7 mm) away from the target area of the proximity switch.

4 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	continuity (zero Ω)
-----------------	------------------------

5 Move the piece of ferrous metal (steel, iron, etc.) so it is more than 1/2 inch / 12.7 mm away from the target area of the proximity switch.

6 Connect the leads from an ohmmeter or continuity tester to the deutsch connector terminals in the combination listed below and check for continuity.

terminal 3 to 4	no continuity (infinite Ω)
-----------------	-------------------------------

How to Adjust the Limit Switches

NOTICE Perform this procedure on a flat and level area and free from obstructions.

- 1 Fully retract the boom.
- 2 Place a digital protractor or digital level on top of the boom tube.

LIMIT SWITCHES

S-120 and S-125 models:

- 3 Raise boom until the protractor reads 67.5 degrees.
- 4 Loosen the mounting fasteners from the 68 degree proximity switch (LSB14AO).
- 5 Disconnect the deutsch connector from the 68 degree proximity switch (LSB14AO) and connect an ohmmeter or continuity tester to terminals 3 and 4 of the deutsch connector.
- 6 Adjust LSB14AO until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 67.5 and 68 degrees.
- 7 Tighten the 68 degree proximity switch (LSB14AO) mounting fasteners.
- 8 Lower the boom to 65.3 degrees.
- 9 Loosen the mounting fasteners from the 65 degree safety switch (LSB9AS).
- 10 Disconnect the deutsch connector from the 65 degree safety switch (LSB9AS) and connect an ohmmeter or continuity tester to terminals 1 and 2, and to terminals 3 and 4 of the deutsch connector.
- 11 Adjust LSB9AS until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 65 and 65.5 degrees.
- 12 Tighten the 65 degree safety switch mounting fasteners.
- 13 Lower the boom to 52.5 degrees.

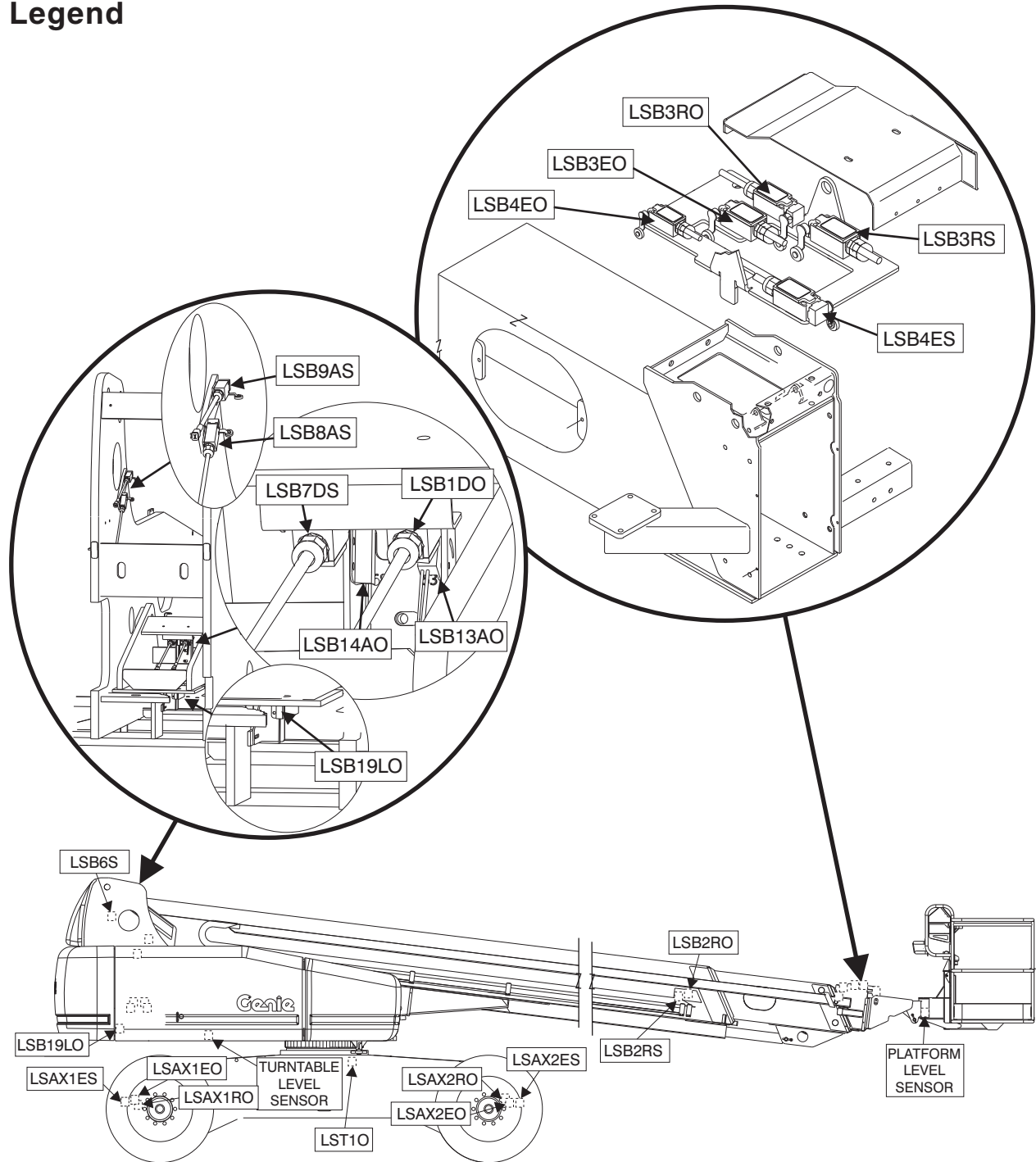
All models:

- 14 **S-100 and S-105 models:** Raise the boom to 52.5 degrees.
- 15 Loosen the mounting fasteners from the 53 degree proximity switch (LSB13AO).
- 16 Disconnect the deutsch connector from the 53 degree proximity switch (LSB13AO) and connect an ohmmeter or continuity tester to terminals 3 and 4 of the deutsch connector.
- 17 Adjust LSB13AO until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 52.5 and 53 degrees.
- 18 Tighten the 53 degree limit switch mounting fasteners.
- 19 Lower the boom to 50.3 degrees.
- 20 Loosen the mounting fasteners from the 50 degree safety switch (LSB8AS).
- 21 Disconnect the deutsch connector from the 50 degree safety switch (LSB8AS) and connect an ohmmeter or continuity tester to terminals 1 and 2, and to 3 and 4 of the deutsch connector.
- 22 Adjust LSB8AS until the switch contacts just open. While observing the digital protractor, raise the boom until the switch contacts close, then lower the boom until the switch contacts open. Repeat the process until the switch contacts open between 50 and 50.5 degrees.

LIMIT SWITCHES

REV B

Limit Switch and Angle Sensor Legend



REV B

LIMIT SWITCHES

Switch Locations:

Located under the drive chassis end cover at the center of the square end (blue): **LSAX1RO, LSAX1EO, LSAX1ES**

Located under the drive chassis end cover at the center of the round end (yellow): **LSAX2RO, LSAX2EO, LSAX2ES**

Located in the center of the swing chassis: **LST1O**

Located on the hydraulic tank tray:

Turntable Level Sensor

Located on the inside of the swing chassis bulk-head at the counterweight end: **LSB9AS, LSB8AS**

Located at the base of the swing chassis near the counterweight: **LSB1LO**

Located at the counterweight end of Boom tube 0: **LSB6S**

Located on the counterweight side of the lift cylinder support assembly: **LSB1DO, LSB7DS, LSB13AO, LSB14AO**

Located on the outside of the platform end of Boom tube 0:

LSB2RO, LSB2RS

Located on the top of the platform end of Boom tube 2:

LSB3EO, LSB3RS, LSB3RO, LSB2RO, LSB4ES

Located on the platform rotator: **Platform Level Sensor**

Switch Functions:

LSAX1RO: Operational Limit Switch, Front Axle, Retract. This switch activates when the axle is fully retracted, activating axle retracted LED and shutting off power to axle retract coils after two seconds.

LSAX2RO: Operational Limit Switch, Rear Axle, Retract. This switch activates when the axle is fully retracted, activating axle retracted LED and shutting off power to axle retract coils after two seconds.

LSAX1EO: Operational Limit Switch, Front Axle, Extend. This switch is activated when the axle is fully extended. If this switch is not activated, boom functions are restricted to the stowed range. If unit is out of stowed, all boom functions are disabled. Axle can be extended while driving to recover.

LSAX2EO: Operational Limit Switch, Rear Axle, Extend. This switch is activated when the axle is fully extended. If this switch is not activated, boom functions are restricted to the stowed range. If unit is out of stowed, all boom functions are disabled. Axle can be extended while driving to recover.

LSAX1ES: Safety Limit Switch, Front Axle, Extend. If this switch is tripped, then the axle is not fully extended. In this condition, if unit is out of stowed, power is cut to boom up, boom extend and axle retract.

LSAX2ES: Safety Limit Switch, Rear Axle, Extend. If this switch is tripped, then the axle is not fully extended. In this condition, if unit is out of stowed, power is cut to boom up, boom extend and axle retract.

LIMIT SWITCHES

REV B

LSB6S: Safety Limit Switch, Cable Tension. Cuts power to the extend directional valve if extend cables are out of adjustment or one breaks.

LSB1DO: Operational Limit Switch, 10° Angle. This switch activates anytime the boom is raised above 10°. If axles are not extended, boom up is disabled and the extend axle LED and icon will flash as long as boom up is operated. At this point, if axles are extended, the motors are shifted to low and drive speed is limited to 0.7 mph.

LSB7DS: Safety Limit Switch, 11° Angle. If axles are not extended, this switch is activated when boom is raised to 11°, cutting power to boom up and axle retract.

LSB13AO: Operational Limit Switch, 53° Angle. This switch activates at 53° boom angle, allowing the boom to be extended beyond 75 feet. If the boom is lowered past this switch when the boom is beyond 75 feet, boom extend and boom down are disabled. The retract boom LED and icon and alarm will flash as long as boom down is operated.

LSB8AS: Safety Limit Switch, 50° Angle. This switch cuts power to boom extend, boom down and the engine fuel solenoid when it is mechanically activated at 50° if the boom length is more than 75.5 feet.

LSB14AO: Operational Limit Switch, 68° Angle. This switch is activated at 68° boom angle and allows the boom to be extended beyond 100 feet. If the boom is lowered past this switch when extended beyond 100 feet, boom extend and boom down are disabled. The boom retract LED and icon and alarm will flash as long as boom down is operated.

LSB9AS: Safety Limit Switch, 65° Angle. This switch cuts power to boom extend, boom down and the engine fuel solenoid when it is mechanically activated at 65° if the boom length is more than 101 feet.

LSB3RO: Operational Limit Switch, 3' Extend. This switch activates anytime the boom is extended beyond 3 feet. If axles are not extended, boom extend is disabled and the extend axle LED and icon will flash as long as boom extend is operated. If axles are extended at this point, the motors are shifted to low and drive speed is limited to 0.7 mph. The boom up/down speed and turntable rotate speed are limited to 60% of maximum.

LSB3RS: Safety Limit Switch, 3.5' Extend. If axles are not extended, this switch is activated when the boom is extended beyond 3.5 feet, cutting power to boom extend and axle retract.

LSB3EO: Operational Limit Switch, 75' Extend. This switch activates anytime the boom is extended to 75 feet or beyond. At this point drive speed is reduced to 0.4 mph, boom up/down is reduced to 29% of maximum and turntable rotate is reduced to 40% of maximum. If boom angle is less than 53°, then boom extend is disabled and the raise boom LED and icon and alarm will flash as long as boom extend is operated.

LSB4ES: Safety Limit Switch, 75.5' Extend. This switch cuts power to boom extend, boom down and engine fuel solenoid when it is mechanically activated at 75.5 feet, if boom angle is less than 50°.

REV B

LSB4EO: Operational Limit Switch, 100' Extend. This switch activates anytime the boom is extended to 100 feet or beyond. The boom up/down is reduced to 20% of maximum. If boom angle is less than 68°, then boom extend is disabled and the raise boom LED and icon and alarm will flash as long as boom extend is operated. If boom angle is greater than 65°, the BO lockout valve will activate allowing hydraulic flow to the external cylinder to continue to extend to 120 feet.

LSB2RS: Safety Limit Switch, 101' Extend. This switch cuts power to boom extend, boom down and engine fuel solenoid when it is mechanically activated at 101 feet, if boom angle is less than 65°.

LSB2RO: Operational Limit Switch, 100' Retract. This switch is activated anytime boom length is 100' or less. Anytime the boom is being retracted while this switch is activated, the BN lockout valve is activated allowing hydraulic flow out of the inner cylinder.

LSB19LO: Operational Limit Switch, Down Overload. This switch disables all functions except boom retract and boom up and activates a medium frequency alarm and the boom down overload diagnostic code.

LST10: Operational Limit Switch, Drive Enable. This switch is activated when the turntable is rotated in the standard drive zone.

Turntable Level Sensor: Measures the X axis and Y axis of the turntable. The alarm sounds at 4.5°.

Platform Level Sensor: Measures the angle of the platform. The range of measurement is +/- 20°. The safety cutout is set at +/- 10° from gravity and will disable the primary and secondary boom up/down functions and the platform level up/down functions.

Hydraulic Pumps

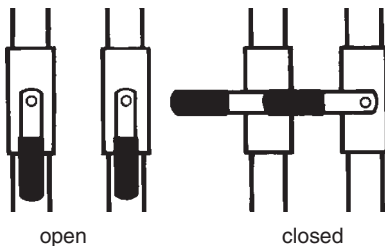
9-1 Function Pumps

There are three hydraulic pumps connected to the engine. There is one variable displacement pump that is used for drive functions and two fixed displacement pumps attached to the drive pump that are used for all other machine functions.

How to Remove the Function Pumps

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

- 1 Close the two hydraulic tank valves located at the hydraulic tank.



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

- 2 Tag, disconnect and plug the hydraulic hoses from the function pumps. Cap the fittings on the pumps.

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 function pumps with an overhead crane or other suitable lifting device.
- 4 Remove the pump mounting bolts. Carefully remove the pumps.

WARNING Crushing hazard. The function pumps may become unbalanced and fall when the mounting bolts are removed if they are not properly supported.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pumps after installing the pumps. See 9-2, *How to Prime the Pumps*.

HYDRAULIC PUMPS

9-2 Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Sundstrand-Sauer service center. Call the Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

CAUTION

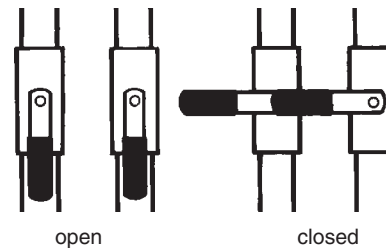
Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

NOTICE

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

- 1 Remove the function pumps. See *How to Remove the Function Pumps*.

- 2 Disconnect the electrical connection at the electronic displacement controller (EDC) located on the drive pump.
- 3 Close the two hydraulic tank valves located at the hydraulic tank.



CAUTION

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

- 4 Tag, disconnect and plug the hydraulic hoses from the drive pump. Cap the fittings on the pump.

CAUTION

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.

- 5 Support the drive pump with a suitable lifting device and remove the two drive pump mounting fasteners.

HYDRAULIC PUMPS

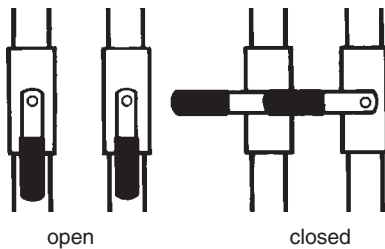
- 6 Carefully pull the drive pump out until the pump coupler separates from the flex plate.
- 7 Remove the drive pump from the machine.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

NOTICE Before installing the pump, verify proper pump coupler spacing. Refer to the appropriate flex plate installation instructions for your engine.

How to Prime the Pumps

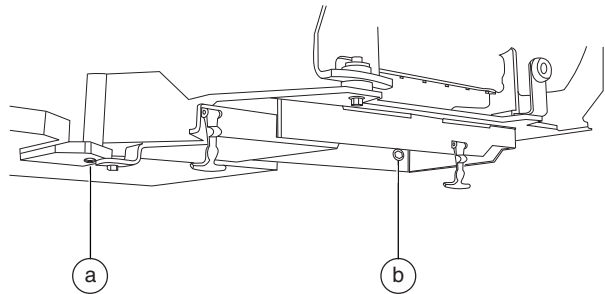
CAUTION Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the OPEN position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur.



- 1 Connect a 0 to 600 psi (0 to 41 bar) pressure gauge to one of the test ports located under the drive pump.

Cummins and Perkins models:

- 2 Remove the engine pivot plate retaining fastener. Swing the engine pivot plate out away from the machine to access the fuel injection pump.



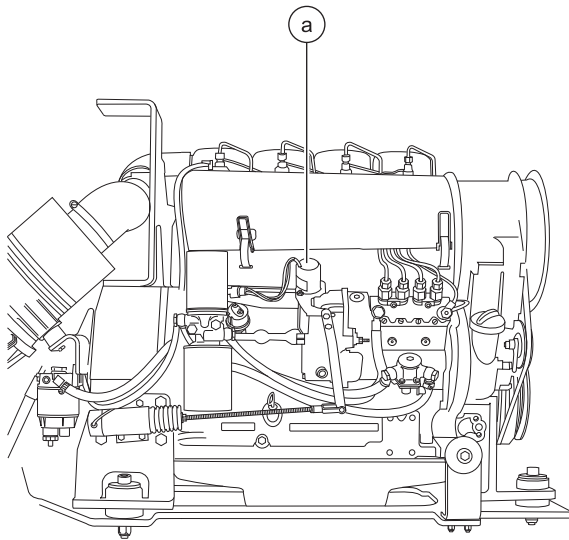
- a engine pivot plate anchor hole
- b engine pivot plate retaining fastener

- 3 Locate the engine pivot plate anchor hole at the pivot end of the engine pivot plate.
- 4 Install the bolt that was just removed into the anchor hole to secure the engine pivot plate from moving.

WARNING Crushing hazard. Failure to install the bolt into the engine pivot plate anchor hole to secure it from moving could result in death or serious injury.

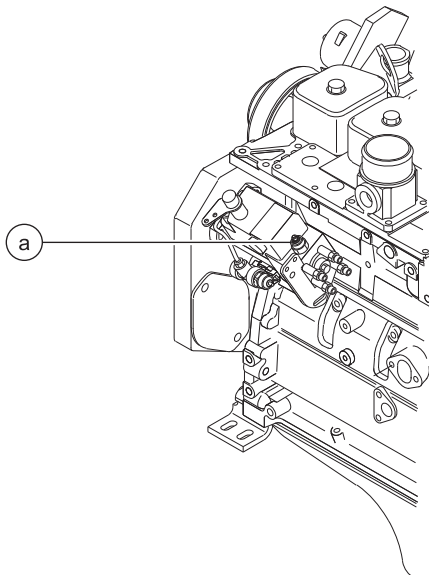
HYDRAULIC PUMPS

- 5 **Deutz models:** Disconnect the engine wiring harness from the fuel shutoff solenoid at the injector pump.

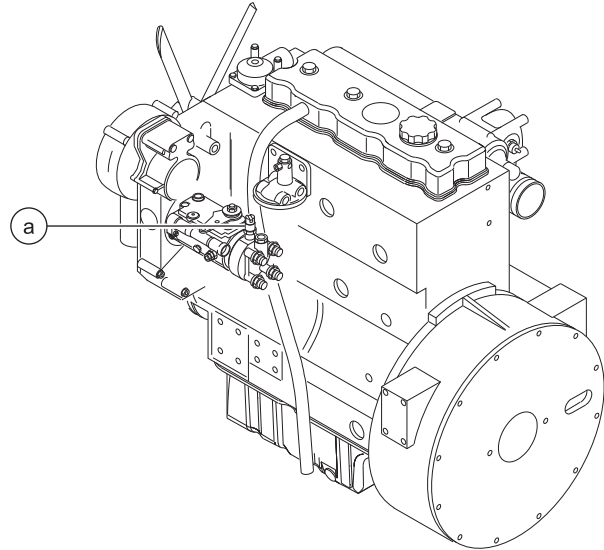


Deutz models
a fuel shutoff solenoid

Cummins and Perkins models: Disconnect the wire from the fuel shutoff solenoid at the injector pump.



Cummins models
a fuel shutoff solenoid



Perkins models
a fuel shutoff solenoid

- 6 Have another person crank the engine with the starter motor for 15 seconds, wait 15 seconds, then crank the engine an additional 15 seconds or until the pressure reaches 250 psi / 17.2 bar.

WARNING Bodily injury hazard. Keep hands, loose clothing and hair clear of all moving engine parts while the engine is cranking.

- 7 **Deutz models:** Connect the engine wiring harness to the fuel shutoff solenoid at the injector pump.

Cummins and Perkins models: Connect the wire to the fuel shutoff solenoid at the injector pump.

- 8 Start the engine and check for hydraulic leaks.

HYDRAULIC PUMPS

9-3 Auxiliary Pump

How to Test the Auxiliary Pump

The auxiliary pump is a 2-section, gear-type pump. Pump number 1 is the pump section closest to the pump motor and pump number 2 is the pump section that is farther from the pump motor. Each section of the pump has its own relief valve located within the pump body.

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

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

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

- 2 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the high pressure port on pump number 1.
- 3 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.

- 4 Activate any function using auxiliary power.
- ⊙ Result: If the pressure gauge reads 2500 psi / 172 bar, immediately stop. The pump is good.
- ⊗ Result: If pressure fails to reach 2500 psi / 172 bar, the internal relief valve setting is incorrect or the pump is bad and will need to be serviced or replaced.
- 5 Turn the key switch to the OFF position.
- 6 Remove the pressure gauge and reconnect the hydraulic hose.
- 7 Disconnect the hydraulic hose from the high pressure port from pump number 2.
- 8 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the high pressure port on pump number 2.
- 9 Turn the key switch to ground control and pull out the Emergency Stop button to the ON position.
- 10 Activate any function using auxiliary power.
- ⊙ 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 internal relief valve setting is incorrect or the pump is bad and will need to be serviced or replaced.
- 11 Remove the pressure gauge and reconnect the hydraulic hose.

HYDRAULIC PUMPS

How to Remove the Auxiliary Pump

- 1 Open the ground controls side turntable cover.
- 2 Tag, disconnect and plug the hydraulic hoses from the pumps.
- 3 Remove the pump mounting fasteners and remove the pump from the pump motor.

- 2 Connect 12V DC to the small post and a ground wire to the relay case, then test the following terminal combination.

Test	Desired result
2 large posts	continuity (zero Ω)

9-4 Power Relay

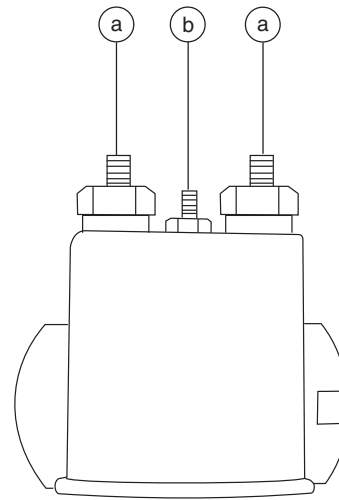
⚠WARNING Electrocutation hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

How to Test the Power Relay

⚠WARNING Electrocutation hazard. Disconnect the ground cable from the battery before performing this procedure.

- 1 Connect the leads from an ohmmeter to each terminal combination and check for continuity.

Test	Desired result
small post to relay case	12 to 18 Ω
2 large posts	no continuity (infinite Ω)
small post to any large post	no continuity (infinite Ω)



- a high amp power contact terminal (large post)
- b solenoid activate coil terminal (small post)

Manifolds

10-1

Function Manifold Components, S-100 and S-105 Models

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

Index		Schematic		
No.	Description	Item	Function	Torque
1	Relief valve, 1800 psi / 124.1 bar	FA	Boom extend pressure limit	18-20 ft-lbs / 24-27 Nm
2	Proportional solenoid valve	FB	Boom extend/retract proportional speed control	33-37 ft-lbs / 44.9-50.3 Nm
3	Solenoid valve, 3 position 4 way	FC	Turntable rotate left/right	25-27 ft-lbs / 34-36.7 Nm
4	DO3 valve, 3 position 4 way	FD	Boom up/down	30-35 in-lbs / 3-4 Nm
5	Priority flow regulator valve, 0.1 gpm / 0.38 L/min	FE	Bleeds off differential sensing valves to tank	18-20 ft-lbs / 24-27 Nm
6	Proportional solenoid valve	FF	Boom up/down proportional speed control	33-37 ft-lbs / 44.9-50.3 Nm
7	Proportional solenoid valve	FG	Turntable rotate proportional speed control	18-20 ft-lbs / 24-27 Nm
8	Counterbalance valve, 3200 psi / 220.6 bar	FH	Boom down circuit	30-35 ft-lbs / 38-41 Nm
9	Relief valve, 2600 psi / 179.3 bar	FI	Turntable rotate, boom lift and boom retract pressure limit	25-27 ft-lbs / 34-36.7 Nm
10	Check valve	FJ	Load sensing circuit, boom up/down	12-14 ft-lbs / 16-19 Nm

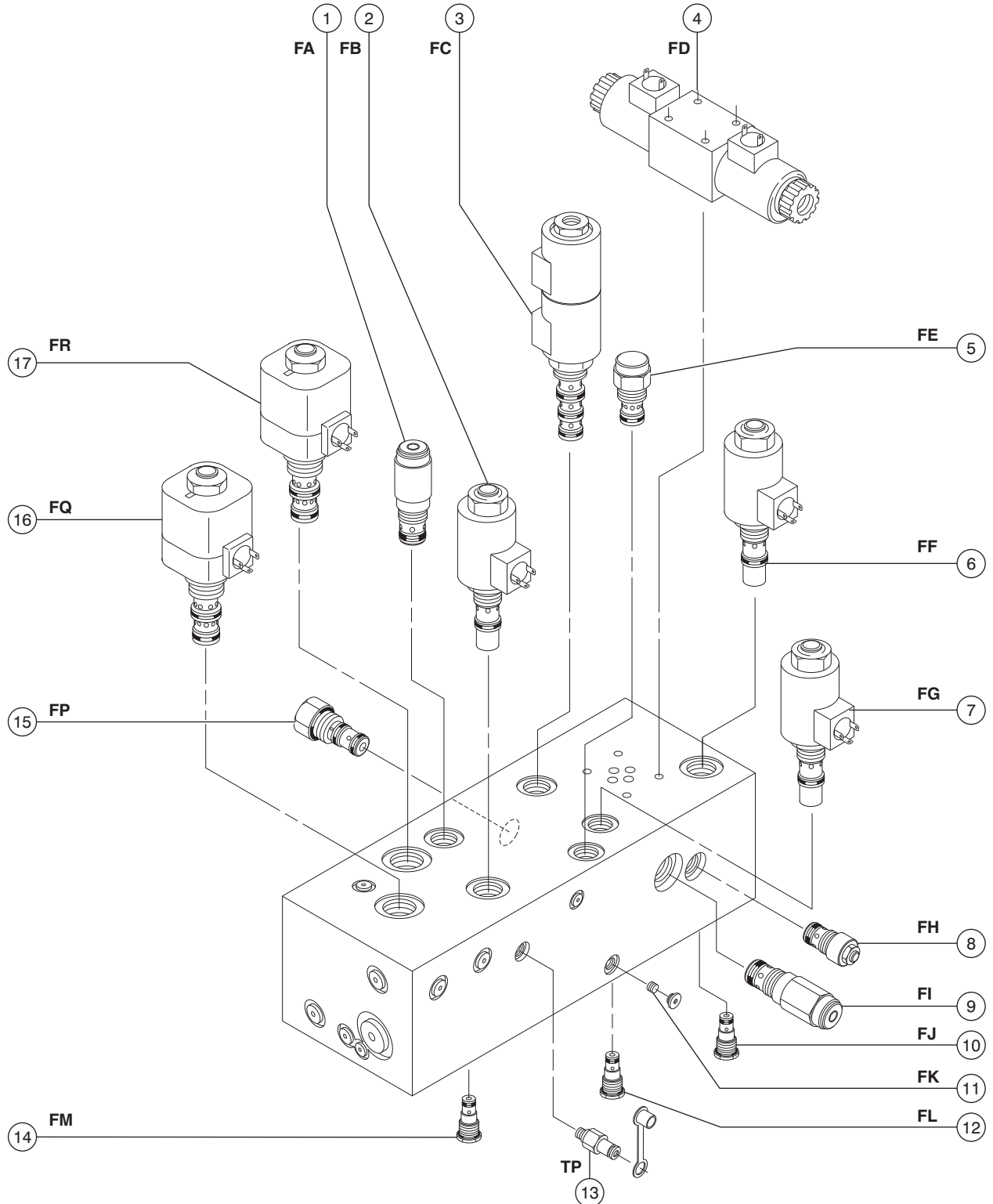
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Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 3 position 4 way, 12V DC (schematic item FB and FC)	9 Ω
Proportional solenoid valve, 12V DC (schematic item FF)	5 Ω
3 position 4 way D03 valve, 12V DC (schematic item FD)	4.6 Ω
Proportional solenoid valve, 12V DC (schematic item FG)	5.4 Ω



MANIFOLDS



MANIFOLDS

Function Manifold Components, S-100 and S-105 Models, continued

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

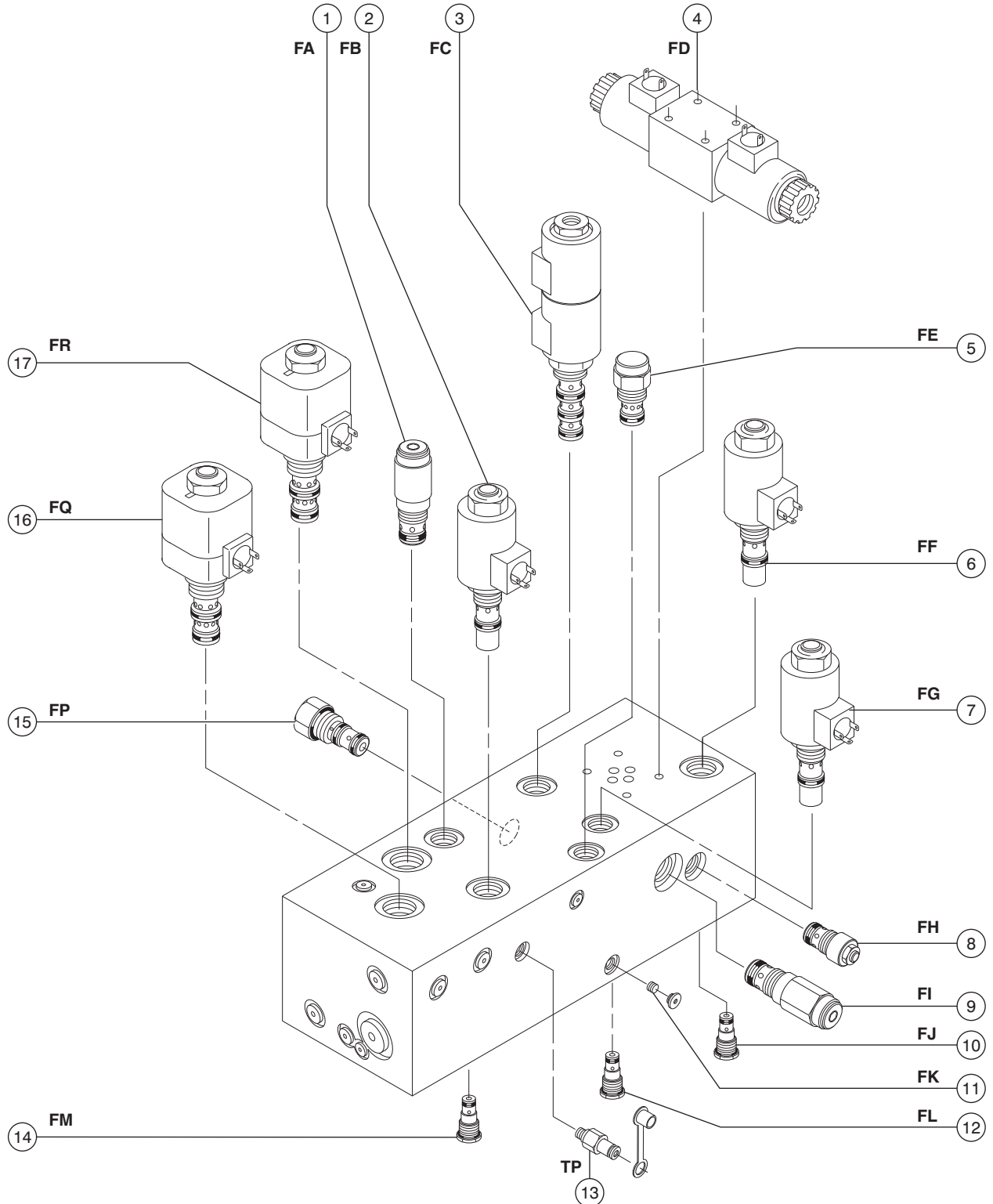
Index		Schematic		
No.	Description	Item	Function	Torque
11	Orifice - plug, 0.040 inch / 1.02 mm	FK	Differential sensing dampening	
12	Check valve	FL	Load sensing circuit, turntable rotate	12-14 ft-lbs / 16-19 Nm
13	Diagnostic Nipple		Testing	
14	Check valve	FM	Load sensing circuit, boom extend/retract	12-14 ft-lbs / 16-19 Nm
15	Differential sensing valve	FP	Directs flow to functions	25-27 ft-lbs / 34-37 Nm
16	Solenoid valve, 2 position 3 way	FQ	Boom retract control	25-27 ft-lbs / 34-37 Nm
17	Solenoid valve, 2 position 3 way	FR	Boom extend control	52-60 ft-lbs / 71-82 Nm

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 2 position 3 way, 12V DC (schematic item FQ and FR)	3.4 to 5.4 Ω



MANIFOLDS



MANIFOLDS

10-2 Valve Adjustments - Function Manifold, S-100 and S-105 Models

How to Adjust the Function Manifold Relief Valve

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

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Simultaneously push and hold the function enable/high speed button and the boom retract button with the boom fully retracted. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item FI).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 6 Repeat steps 2 through 5 to confirm the relief valve pressure.

How to Adjust the Boom Extend Relief Valve

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

- 1 Connect a 0 to 3000 psi / 0 to 207 bar pressure gauge to the test port on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Fully raise and extend the boom.
- 4 Simultaneously push and hold the function enable/high speed button and the boom extend button with the boom fully extended. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item FA).
- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 7 Repeat steps 2 through 6 to confirm the relief valve pressure.

MANIFOLDS

10-3 Proportional Valves - Function Manifold

NOTICE When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller*.

MANIFOLDS

10-4 Function Manifold Components, S-120 and S-125 Models

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

Index		Schematic		
No.	Description	Item	Function	Torque
1	Relief valve, 1800 psi / 124.1 bar	BA	Boom extend pressure limit	18-20 ft-lbs / 24-27 Nm
2	Proportional solenoid valve	BB	Boom extend/retract proportional speed control	33-37 ft-lbs / 45-50 Nm
3	Solenoid valve, 3 position 4 way	BC	Turntable rotate left/right	25-27 ft-lbs / 34-37 Nm
4	DO3 valve, 3 position 4 way	BD	Boom up/down	30-35 in-lbs / 3-4 Nm
5	Priority flow regulator valve, 0.1 gpm / 0.38 L/min	BE	Bleeds off differential sensing valves to tank	18-20 ft-lbs / 24-27 Nm
6	Proportional solenoid valve	BF	Boom up/down proportional speed control	33-37 ft-lbs / 45-50 Nm
7	Proportional solenoid valve	BG	Turntable rotate proportional speed control	18-20 ft-lbs / 24-27 Nm
8	Counterbalance valve, 3200 psi / 220.6 bar	BH	Boom down circuit	30-35 ft-lbs / 38-41 Nm
9	Relief valve, 2600 psi / 179.3 bar	BI	Turntable rotate, boom lift and boom retract pressure limit	25-27 ft-lbs / 34-37 Nm
10	Check valve	BJ	Load sensing circuit, boom up/down	12-14 ft-lbs / 16-19 Nm
11	Orifice - plug, 0.040 inch / 1.02 mm	BK	Differential sensing dampening	

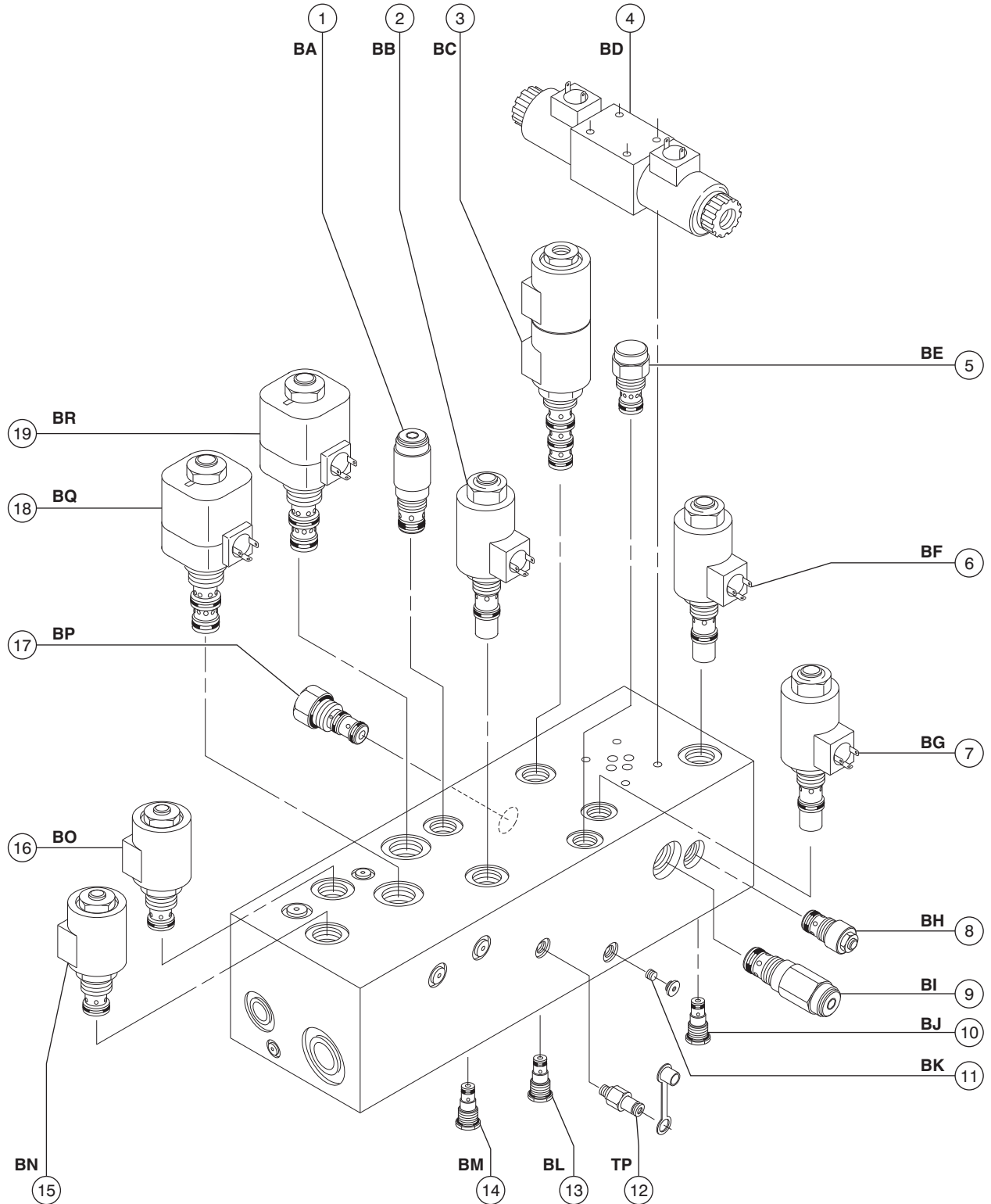
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Valve Coil Resistance Specification

Description	Specification
Proportional solenoid valve, 12V DC (schematic item BB and BF) (5 ohm)	3.3 to 5.3 Ω
Solenoid valve, 3 position 4 way, 12V DC (schematic item BC) (7.2 ohm)	5.4 to 7.4 Ω
3 position 4 way D03 valve, 12V DC (schematic item BD)	3.3 to 5.3 Ω
Proportional solenoid valve, 12V DC (schematic item BG) (9.8 ohm)	4.3 to 6.3 Ω



MANIFOLDS



MANIFOLDS

Function Manifold Components, S-120 and S-125 Models, continued

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

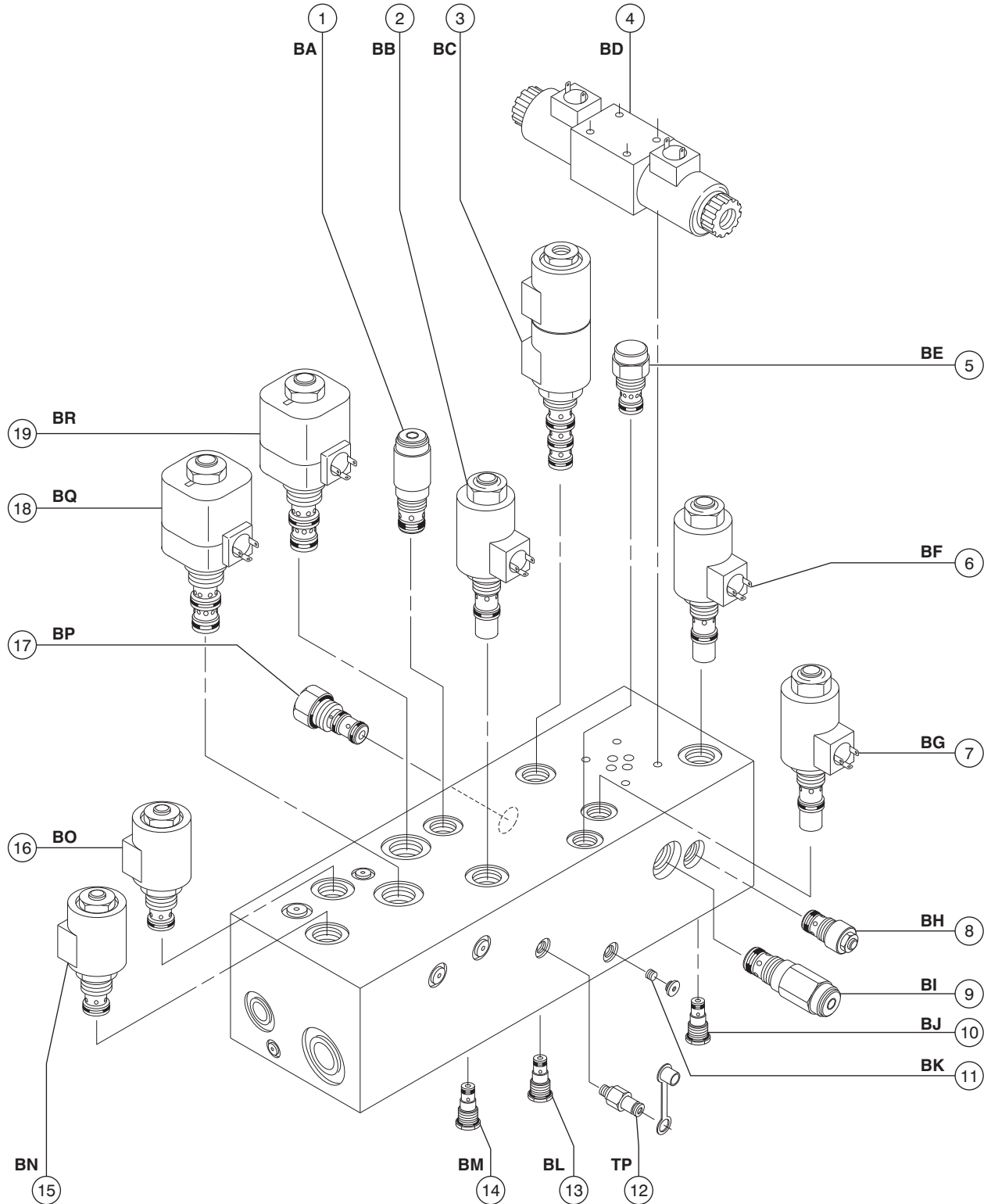
Index		Schematic		
No.	Description	Item	Function	Torque
12	Diagnostic nipple		Testing	
13	Check valve	BL	Load sensing circuit, turntable rotate	12-14 ft-lbs / 16-19 Nm
14	Check valve	BM	Load sensing circuit, boom extend/retract	12-14 ft-lbs / 16-19 Nm
15	Solenoid valve, N.C. Poppet	BN	Boom retract sequence control	33-37 ft-lbs / 45-50 Nm
16	Solenoid valve, N.C. Poppet	BO	Boom extend sequence control	33-37 ft-lbs / 45-50 Nm
17	Differential sensing valve	BP	Directs flow to functions	25-27 ft-lbs / 34-37 Nm
18	Solenoid valve, 2 position 3 way	BQ	Boom retract control	52-60 ft-lbs / 71-82 Nm
19	Solenoid valve, 2 position 3 way	BR	Boom extend control	52-60 ft-lbs / 71-82 Nm

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 3 position 4 way, 12V DC (schematic item BN and BO) (7.2 ohm)	5.4 to 7.4 Ω
Solenoid valve, 2 position 3 way, 12V DC (schematic item BQ and BR) (4.6 ohm)	3.4 to 5.4 Ω



MANIFOLDS



MANIFOLDS

10-5 Valve Adjustments - Function Manifold, S-120 and S-125 Models

How to Adjust the Function Manifold Relief Valve

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

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Simultaneously push and hold the function enable/high speed button and the boom retract button with the boom fully retracted. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item BI).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 6 Repeat steps 2 through 5 to confirm the relief valve pressure.

How to Adjust the Boom Extend Relief Valve

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

- 1 Connect a 0 to 3000 psi / 0 to 207 bar pressure gauge to the test port on the function manifold.
- 2 Start the engine from the ground controls.
- 3 Fully raise and extend the boom.
- 4 Simultaneously push and hold the function enable/high speed button and the boom extend button with the boom fully extended. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item BA).
- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 7 Repeat steps 2 through 6 to confirm the relief valve pressure.

MANIFOLDS

10-6 Proportional Valves - Function Manifold

NOTICE When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller*.

MANIFOLDS

10-7 Distribution Manifold Components

The distribution manifold is mounted above the function manifold on the turntable cover support plate at the ground controls side of the machine.

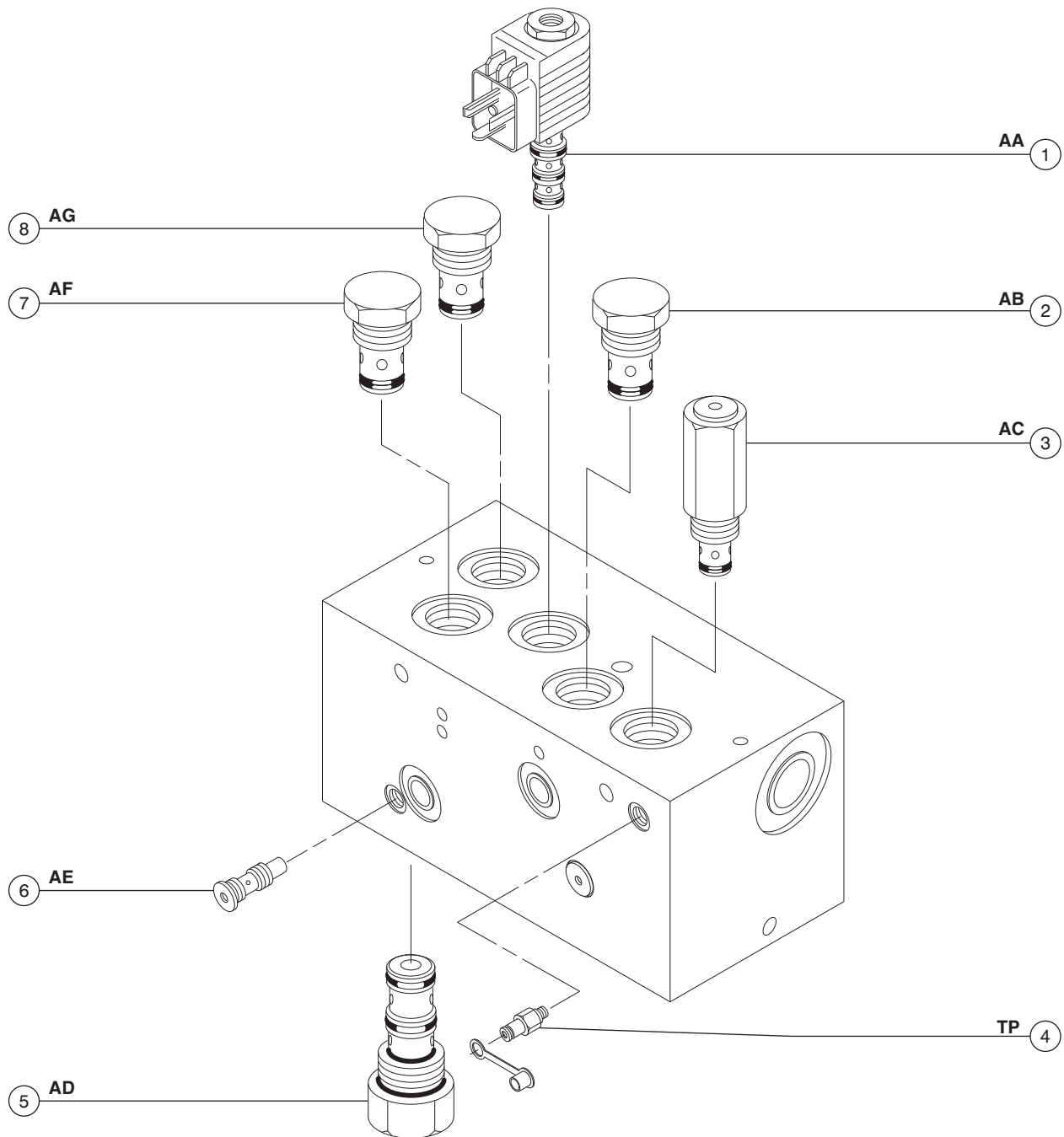
Index		Schematic		Torque
No.	Description	Item	Function	
1	Solenoid valve, 2 position 3 way N.O. Poppet.....	JA	Auxiliary drive/steer selector	30-35 ft-lbs / 41-47 Nm
2	Check valve, 50 psi / 3.45 bar	JB	Blocks flow from pump 1 and 2 to auxiliary pump	20-25 ft-lbs / 27-34 Nm
3	Relief valve, 3000 psi / 206.8 bar	JC	Platform manifold relief.....	20-25 ft-lbs / 27-34 Nm
4	Diagnostic Nipple	TP	Testing	
5	Flow regulator, 3 gpm / 11.34 L/Min .	JD	Priority flow to platform manifold	30-35 ft-lbs / 41-47 Nm
6	Check valve	JE	Blocks flow from pump 2 to auxiliary pump	8-10 ft-lbs / 11-14 Nm
7	Check valve, 50 psi / 3.45 bar	JF	Blocks flow from auxiliary pump, (port 2A and 3A) to pump 2 (port P2)	30-35 ft-lbs / 41-47 Nm
8	Check valve, 50 psi / 3.45 bar	JG	Blocks flow from auxiliary pump, (port 2A) to pump 1 (port P1)	30-35 ft-lbs / 41-47 Nm

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 2 position 3 way N.O. Poppet 12V DC (schematic item JA)	7.5 to 9.5 Ω



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10-8 Valve Adjustments - Distribution Manifold

How to Adjust the Distribution Manifold Relief Valve

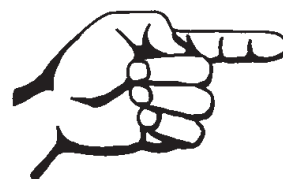
NOTICE Perform this procedure with the boom in the stowed position.

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the P1 test port at the platform manifold.
- 2 Start the engine from the ground controls.
- 3 Simultaneously push and hold the function enable/high speed button and the platform level up button with the platform fully leveled in the UP direction. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item AC).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 6 Repeat steps 2 through 5 to confirm the relief valve pressure.

MANIFOLDS



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MANIFOLDS

10-9

Platform Manifold Components, S-100 and S-120 Models

The platform manifold is mounted to the platform mounting weldment.

Index		Schematic		
No.	Description	Item	Function	Torque
1	Proportional solenoid valve, 3 position 4 way	GH	Platform level up/down	18-20 ft-lbs / 24-27 Nm
2	Check valve	GF	Platform rotate circuit	
3	Check valve	GJ	Platform level circuit	
4	Accumulator, 500 psi / 34.5 bar	GM	Hydraulic dampening	23 ft-lbs / 31 Nm
5	Differential sensing valve, N.O.	GI	Platform level differential sensing circuit	23-25 ft-lbs / 31-34 Nm
6	Differential sensing valve, N.O.	GE	Platform rotate differential sensing circuit	23-25 ft-lbs / 31-34 Nm
7	Orifice - plug, 0.030 inch / 0.762 mm	GB	Platform rotate left circuit	
8	Orifice - plug, 0.030 inch / 0.762 mm	GC	Platform rotate right circuit	
9	Shuttle valve	GG	Platform level load sense circuit	7.4-9 ft-lbs / 10-12 Nm
10	Shuttle valve	GA	Platform rotate load sense circuit	7.4-9 ft-lbs / 10-12 Nm
11	Differential sensing valve, N.C.	GC	Directs flow to functions	23-25 ft-lbs / 31-34 Nm
12	Proportional solenoid valve, 3 position 4 way	GD	Platform rotate left/right	18-20 ft-lbs / 24-27 Nm

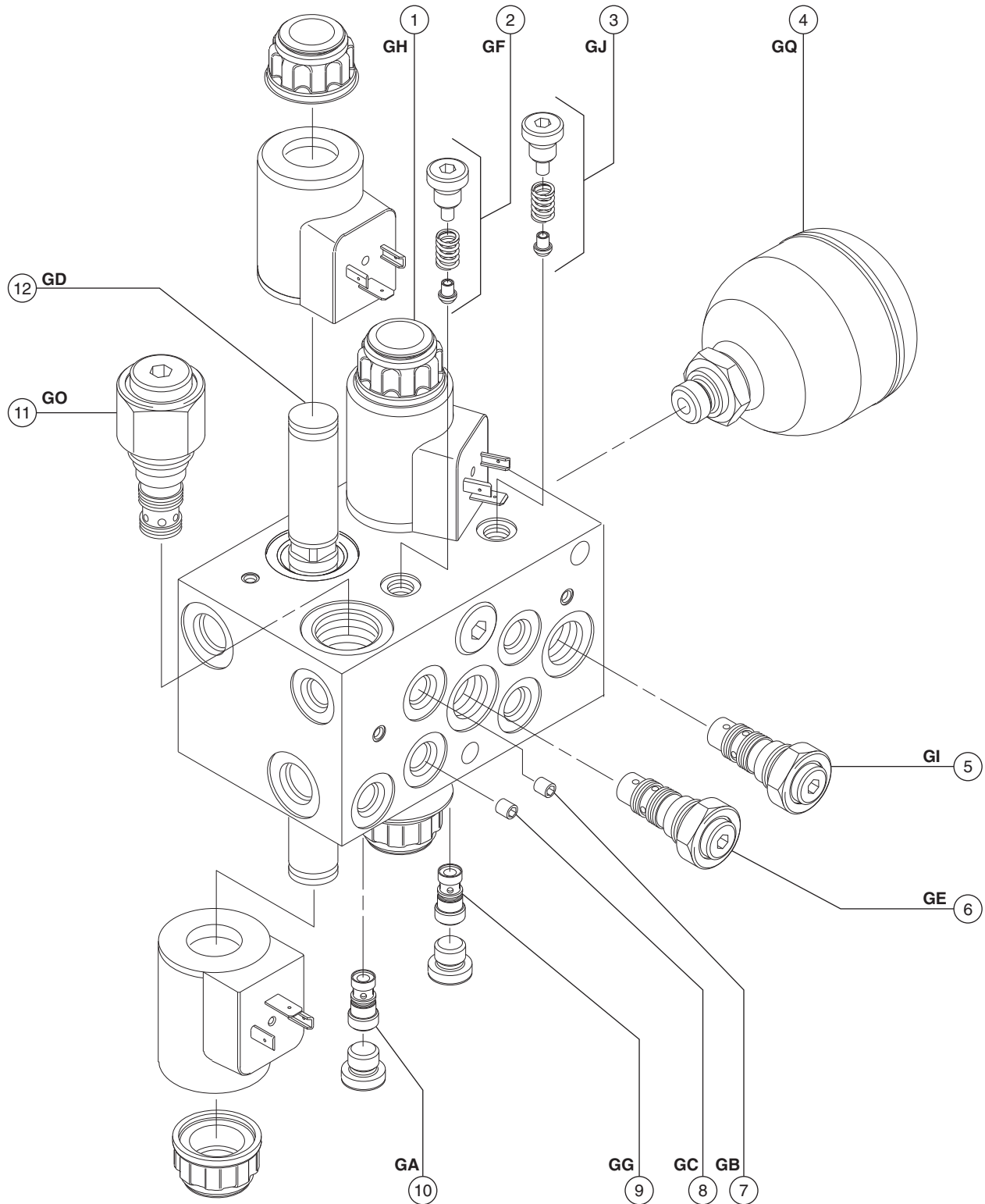
NOTICE When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated.
See 1-3, *How to Calibrate a Joystick Controller.*

Valve Coil Resistance Specification

Description	Specification
Proportional solenoid valve, 3 position 4 way 12V DC (schematic items GD and GH)	4.4 to 6.4 Ω



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10-10

Platform Manifold Components, S-105 and S-125 Models

The platform manifold is mounted to the platform mounting weldment.

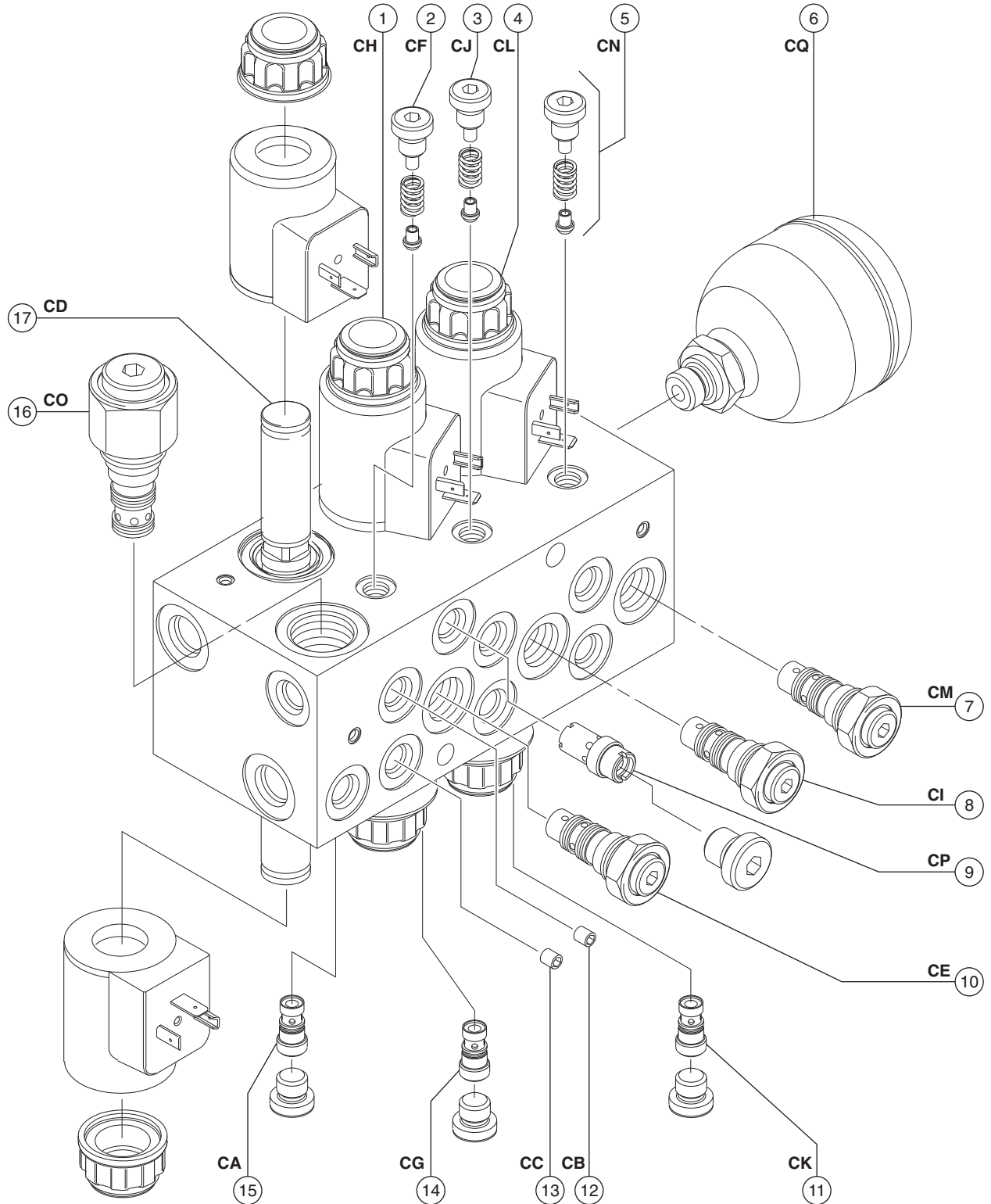
Index No.	Description	Schematic		Torque
		Item	Function	
1	Proportional solenoid valve, 3 position 4 way	CH	Platform level up/down	18-20 ft-lbs / 24-27 Nm
2	Check valve	CF	Platform rotate circuit	
3	Check valve	CJ	Platform level circuit	
4	Proportional solenoid valve, 3 position 4 way	CL	Jib boom up/down	18-20 ft-lbs / 24-27 Nm
5	Check valve	CN	Jib boom circuit	
6	Accumulator, 500 psi / 34.5 bar	CQ	Hydraulic dampening	23 ft-lbs / 31 Nm
7	Differential sensing valve, N.O.	CM	Jib boom differential sensing circuit	23-25 ft-lbs / 31-34 Nm
8	Differential sensing valve, N.O.	CI	Platform level differential sensing circuit	23-25 ft-lbs / 31-34 Nm
9	Flow control valve, 0.1 gpm / 0.38 L/min	CP	Bleeds off differential sensing valve to tank	
10	Differential sensing valve, N.O.	CE	Platform rotate differential sensing circuit	23-25 ft-lbs / 31-34 Nm
11	Shuttle valve	CK	Jib boom load sense circuit	
12	Orifice - plug, 0.030 inch / 0.762 mm	CB	Platform rotate left circuit	
13	Orifice - plug, 0.030 inch / 0.762 mm	CC	Platform rotate right circuit	
14	Shuttle valve	CG	Platform level load sense circuit	7.4-9 ft-lbs / 10-12 Nm
15	Shuttle valve	CA	Platform rotate load sense circuit	7.4-9 ft-lbs / 10-12 Nm
16	Differential sensing valve, N.C.	CO	Directs flow to functions	23-25 ft-lbs / 31-34 Nm
17	Proportional solenoid valve, 3 position 4 way	CD	Platform rotate left/right	18-20 ft-lbs / 24-27 Nm

**Valve Coil Resistance
Specification**

Description	Specification
Proportional solenoid valve, 3 position 4 way 12V DC (schematic items CD, CH and CL)	4.4 to 6.4 Ω



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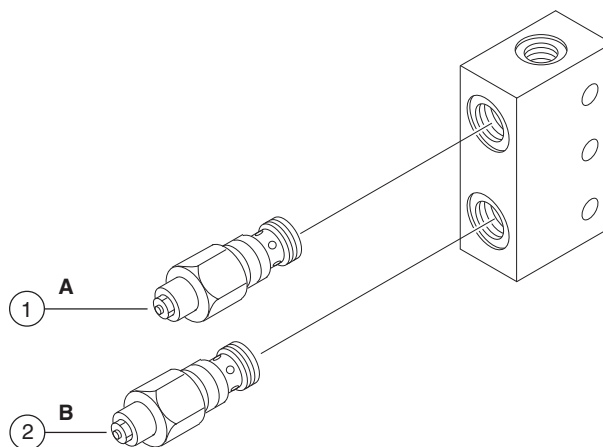
MANIFOLDS

10-11 Proportional Valves - Platform Manifolds

NOTICE When a proportional valve cartridge or coil is replaced or moved to a different valve cartridge or cavity, the proportional valve cartridge or coil will need to be calibrated. See 1-3, *How to Calibrate a Joystick Controller*.

10-12 Platform Rotate Counterbalance Valve Manifold Components

Index		Schematic		
No.	Description	Item	Function	Torque
1	Counterbalance valve	A	Platform rotate left	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve	B	Platform rotate right	37-44 ft-lbs / 50-60 Nm

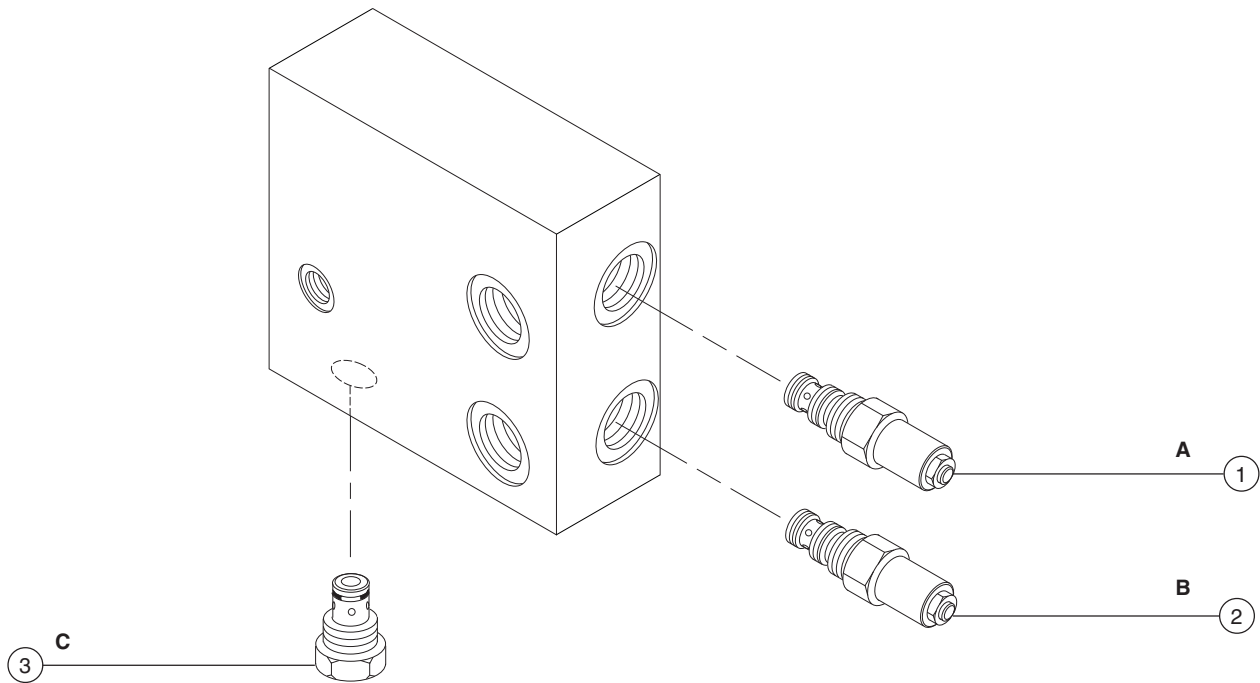


MANIFOLDS

10-13 Turntable Rotation Manifold Components

The turntable rotation manifold is mounted to the turntable rotation motor.

Index		Schematic		
No.	Description	Item	Function	Torque
1	Counterbalance valve	A	Turntable rotate left	37-44 ft-lbs / 50-60 Nm
2	Counterbalance valve	B	Turntable rotate right	37-44 ft-lbs / 50-60 Nm
3	Shuttle valve, 2 position 3 way	C	Turntable rotation brake release	10-12 ft-lbs / 14-16 Nm



MANIFOLDS

10-14

Steer and Axle Extend/Retract Manifold Components - View 1

The steer and axle extend/retract manifold is mounted inside the drive chassis at the square end of the machine.

Index		Schematic		
No.	Description	Item	Function	Torque
1	Solenoid valve, 3 position 4 way	EA	Right front steer circuit	18-20 ft-lbs / 24-27 Nm
2	Solenoid valve, 3 position 4 way	EB	Left front steer circuit	18-20 ft-lbs / 24-27 Nm
3	Solenoid valve, 3 position 4 way	EC	Right rear steer circuit	18-20 ft-lbs / 24-27 Nm
4	Solenoid valve, 3 position 4 way	ED	Left rear steer circuit	18-20 ft-lbs / 24-27 Nm
5	Flow regulator valve, 2 gpm / 7.6 L/min	EE	Controls the left rear steer cylinder extend speed	18-20 ft-lbs / 24-27 Nm
6	Check valve	EF	Left rear steer cylinder retract circuit.....	18-20 ft-lbs / 24-27 Nm
7	Check valve, pilot operated	EG	Left rear steer cylinder extend/retract circuit.....	18-20 ft-lbs / 24-27 Nm
8	Check valve, pilot operated	EH	Right rear steer cylinder extend/retract circuit.....	18-20 ft-lbs / 24-27 Nm
9	Check valve	EI	Right rear steer cylinder retract circuit.....	18-20 ft-lbs / 24-27 Nm
10	Flow regulator valve, 1.4 gpm / 5.3 L/min	EJ	Controls the right rear steer cylinder retract speed	18-20 ft-lbs / 24-27 Nm

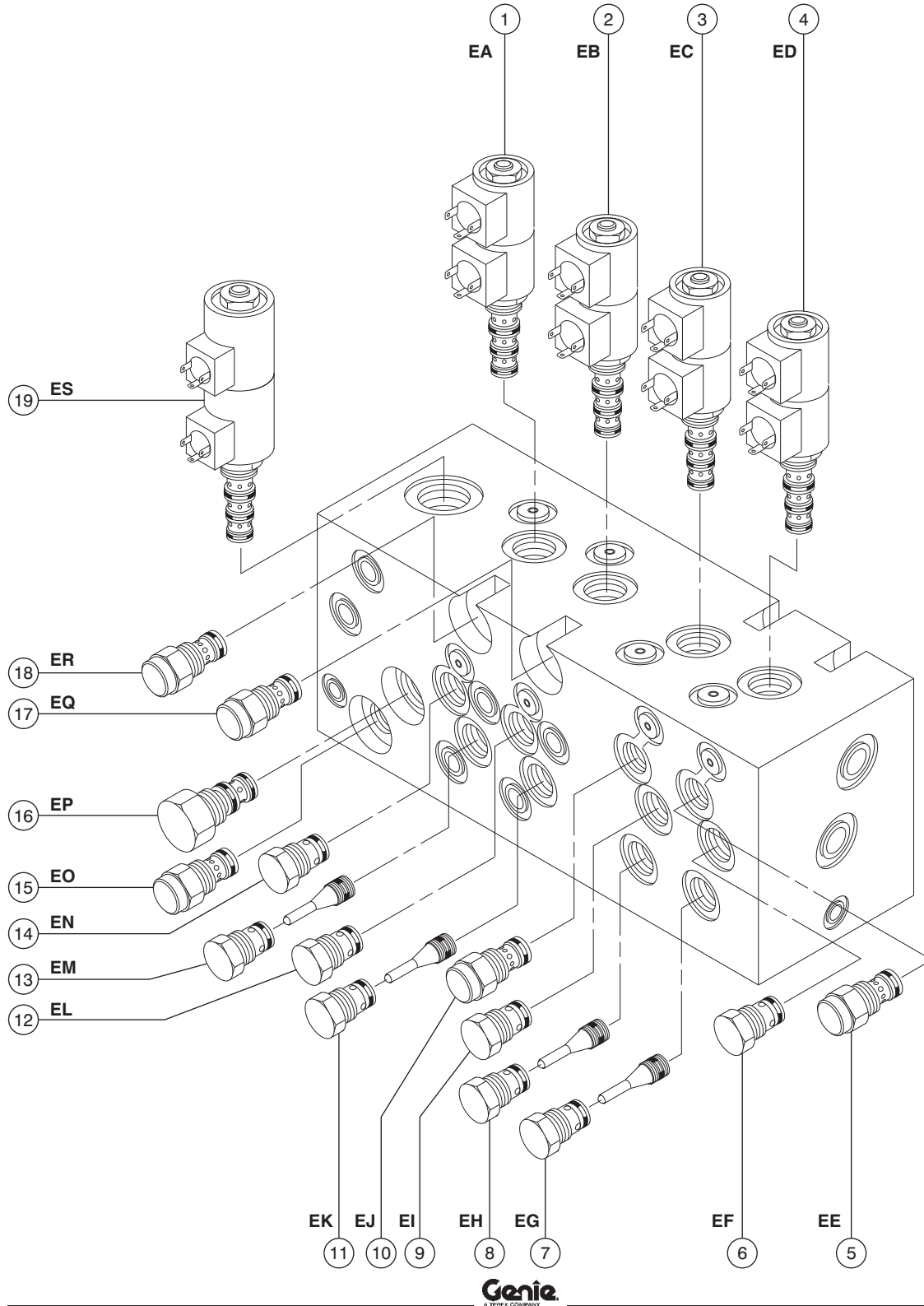
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**Valve Coil Resistance
Specification**

Description	Specification
Solenoid valve, 3 position 4 way 12V DC (schematic items EA, EB, EC and ED)	8.9 to 10.9 Ω



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Steer and Axle Extend/Retract Manifold Components - View 1,
continued

The steer and axle extend/retract manifold is mounted inside the drive chassis at the square end of the machine.

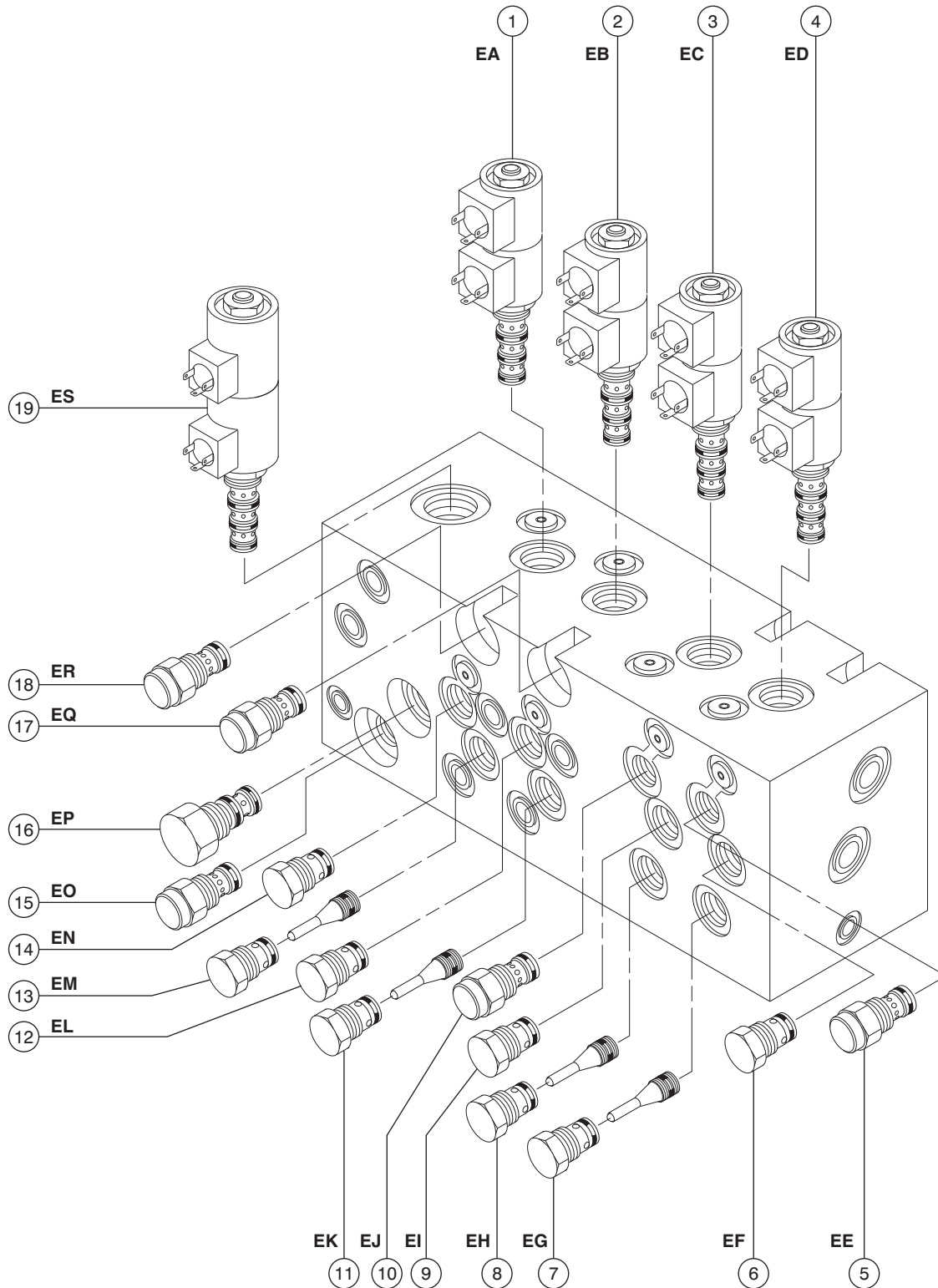
Index		Schematic		
No.	Description	Item	Function	Torque
11	Check valve, pilot operated	EK	Front left steer cylinder extend circuit	18-20 ft-lbs / 24-27 Nm
12	Check valve	EL	Front left steer cylinder retract circuit	18-20 ft-lbs / 24-27 Nm
13	Check valve, pilot operated	EM	Front right steer cylinder extend circuit	18-20 ft-lbs / 24-27 Nm
14	Check valve	EN	Front right steer cylinder retract circuit	18-20 ft-lbs / 24-27 Nm
15	Flow regulator valve, 0.1 gpm (0.38 L/min)	EO	Pressurizes pilot lines to check valves	18-20 ft-lbs / 24-27 Nm
16	Differential sensing valve	EP	Differential sensing circuit	25-27 ft-lbs / 34-37 Nm
17	Flow regulator valve, 1.4 gpm (5.3 L/min)	EQ	Controls the left front steer cylinder retract speed	18-20 ft-lbs / 24-27 Nm
18	Flow regulator valve, 2 gpm / 7.6 L/min	ER	Controls the right front steer cylinder extend speed	18-20 ft-lbs / 24-27 Nm
19	Solenoid valve, 3 position 4 way	ES	Axle extend/retract	25-27 ft-lbs / 34-37 Nm

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 3 position 4 way, 12V DC (schematic items ES)	5.4 to 7.4 Ω



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10-15

Steer and Axle Extend/Retract Manifold Components - View 2

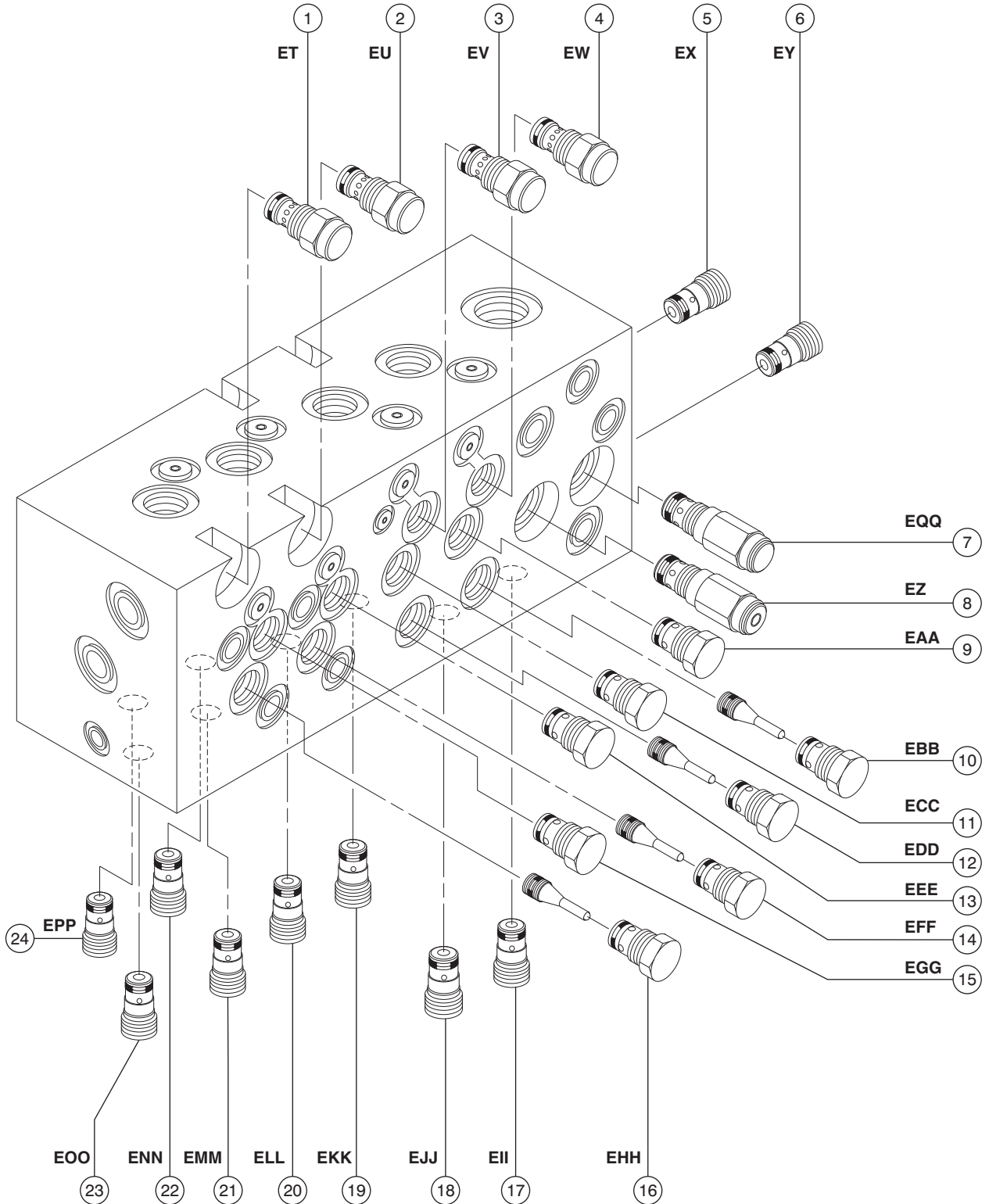
The steer and axle extend/retract manifold is mounted inside the drive chassis at the square end of the machine.

Index		Schematic		
No.	Description	Item	Function	Torque
1	Flow regulator valve, 1.4 gpm / 5.3 L/min	ET	Controls the left rear steer cylinder retract speed	18-20 ft-lbs / 24-27 Nm
2	Flow regulator valve, 2 gpm / 7.6 L/min	EU	Controls the right rear steer cylinder extend speed	18-20 ft-lbs / 24-27 Nm
3	Flow regulator valve, 2 gpm / 7.6 L/min	EV	Controls the left front steer cylinder extend speed	18-20 ft-lbs / 24-27 Nm
4	Flow regulator valve, 1.4 gpm / 5.3 L/min	EW	Controls the right front steer cylinder retract speed	18-20 ft-lbs / 24-27 Nm
5	Check valve	EX	Load sense circuit for front and rear axle extend	12-14 ft-lbs / 16-19 Nm
6	Check valve	EY	Load sense circuit for front and rear axle retract	12-14 ft-lbs / 16-19 Nm
7	Relief valve, 2200 psi / 152 bar	EQQ	Axle extend circuit	18-20 ft-lbs / 24-27 Nm
8	Relief valve, 3000 psi / 207 bar	EZ	Steer and axle retract relief	18-20 ft-lbs / 24-27 Nm
9	Check valve	EAA	Controls extend reverse flow to the right front steer cylinder	18-20 ft-lbs / 24-27 Nm
10	Check valve, pilot operated	EBB	Right front steer cylinder extend lock	18-20 ft-lbs / 24-27 Nm
11	Check valve	ECC	Controls retract reverse flow to the left front steer cylinder	18-20 ft-lbs / 24-27 Nm

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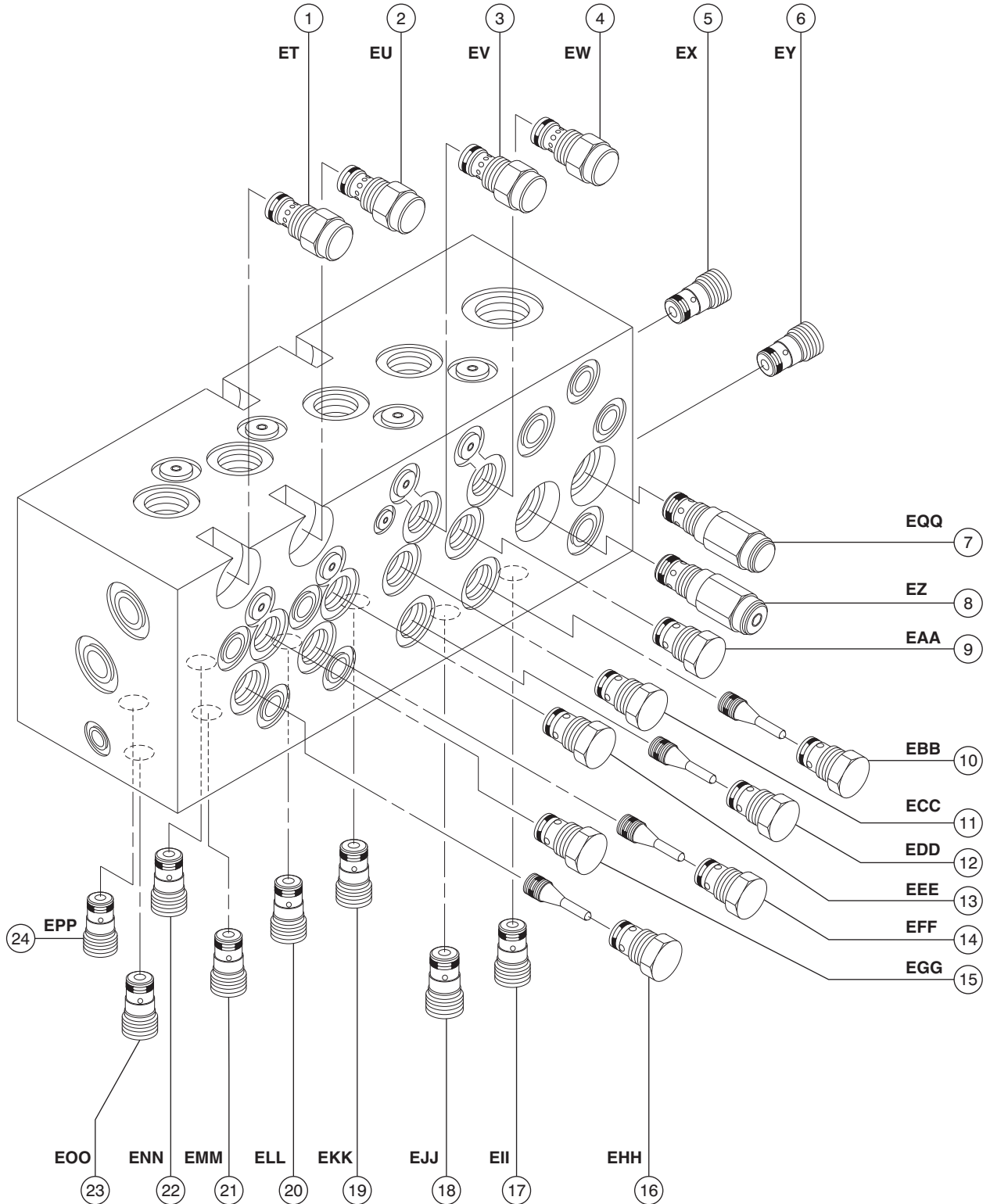
Steer and Axle Extend/Retract Manifold Components - View 2,
continued

The steer and axle extend/retract manifold is mounted inside the drive chassis at the square end of the machine.

Index		Schematic		Torque
No.	Description	Item	Function	
12	Check valve, pilot operated	EDD	Left front steer cylinder retract lock	18-20 ft-lbs / 24-27 Nm
13	Check valve	EEE	Controls retract reverse flow to the right rear steer cylinder	18-20 ft-lbs / 24-27 Nm
14	Check valve, pilot operated	EFF	Right rear steer cylinder retract lock	18-20 ft-lbs / 24-27 Nm
15	Check valve	EGG	Controls extend reverse flow to the left rear steer cylinder	18-20 ft-lbs / 24-27 Nm
16	Check valve, pilot operated	EHH	Left rear steer cylinder extend lock	18-20 ft-lbs / 24-27 Nm
17	Check valve	EII	Right front steer cylinder retract load sense circuit	12-14 ft-lbs / 16-19 Nm
18	Check valve	EJJ	Left front steer cylinder extend load sense circuit	12-14 ft-lbs / 16-19 Nm
19	Check valve	EKK	Right front steer cylinder extend load sense circuit	12-14 ft-lbs / 16-19 Nm
20	Check valve	ELL	Right rear steer cylinder retract load sense circuit	12-14 ft-lbs / 16-19 Nm
21	Check valve	EMM	Right rear steer cylinder extend load sense circuit	12-14 ft-lbs / 16-19 Nm
22	Check valve	ENN	Left front steer cylinder retract load sense circuit	12-14 ft-lbs / 16-19 Nm
23	Check valve	EOO	Left rear steer cylinder retract load sense circuit	12-14 ft-lbs / 16-19 Nm
24	Check valve	EPP	Left rear steer cylinder extend load sense circuit	12-14 ft-lbs / 16-19 Nm



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10-16 Valve Adjustments - Steer and Axle Extend/Retract Manifold

How to Adjust the Steer and Axle Retract Relief Valve

NOTICE Perform this procedure with the axles retracted and the boom in the stowed position.

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the steer and axle extend/retract manifold.
- 2 Start the engine from the platform controls.
- 3 Position the machine so that the left front wheel is against an immovable object such as a curb.
- 4 Press down the foot switch and activate the steer function. Steer the wheel into the curb and hold. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 5 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item EZ).
- 6 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 7 Repeat steps 2 through 6 to confirm relief valve pressure.

How to Adjust the Axle Extend Relief Valve

NOTICE Perform this procedure with the axles retracted, the boom in the stowed position and the machine on a paved surface.

- 1 Connect a 0 to 5000 psi / 0 to 345 bar pressure gauge to the test port on the steer and axle extend/retract manifold.
- 2 Start the engine from the platform controls.
- 3 Press down the foot switch and push the axle extend button. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item EQQ).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

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

- 6 Repeat steps 2 through 5 to confirm relief valve pressure.

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10-17 Traction Manifold Components

The drive manifold is mounted inside the drive chassis at the circle end of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	DA	2 speed control	25-30 ft-lbs / 38-41 Nm
2	Flow regulator valve, 2 gpm / 7.57 L/min	DB	Drive slip limit, rear	35-40 ft-lbs / 47-54 Nm
3	Flow divider/combiner valve	DC	Controls flow to rear drive motors in forward and reverse	130-140 ft-lbs / 176-190 Nm
4	Flow regulator valve, 2 gpm / 7.57 L/min	DD	Drive slip limit, front	35-40 ft-lbs / 47-54 Nm
5	Flow divider/combiner valve	DE	Controls flow to front drive motors in forward and reverse	130-140 ft-lbs / 176-190 Nm
6	Flow divider/combiner valve	DF	Controls flow to front and rear flow divider combiner valves (items DC and DE)	130-140 ft-lbs / 176-190 Nm
7	Check valve	DG	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
8	Check valve	DH	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
9	Flow regulator valve, 2.7 gpm / 10.22 L/min	DI	Drive slip limit, front and rear	35-40 ft-lbs / 47-54 Nm
10	Check valve	DJ	Anti-cavitation	35-40 ft-lbs / 47-54 Nm
11	Check valve	DK	Anti-cavitation	35-40 ft-lbs / 47-54 Nm

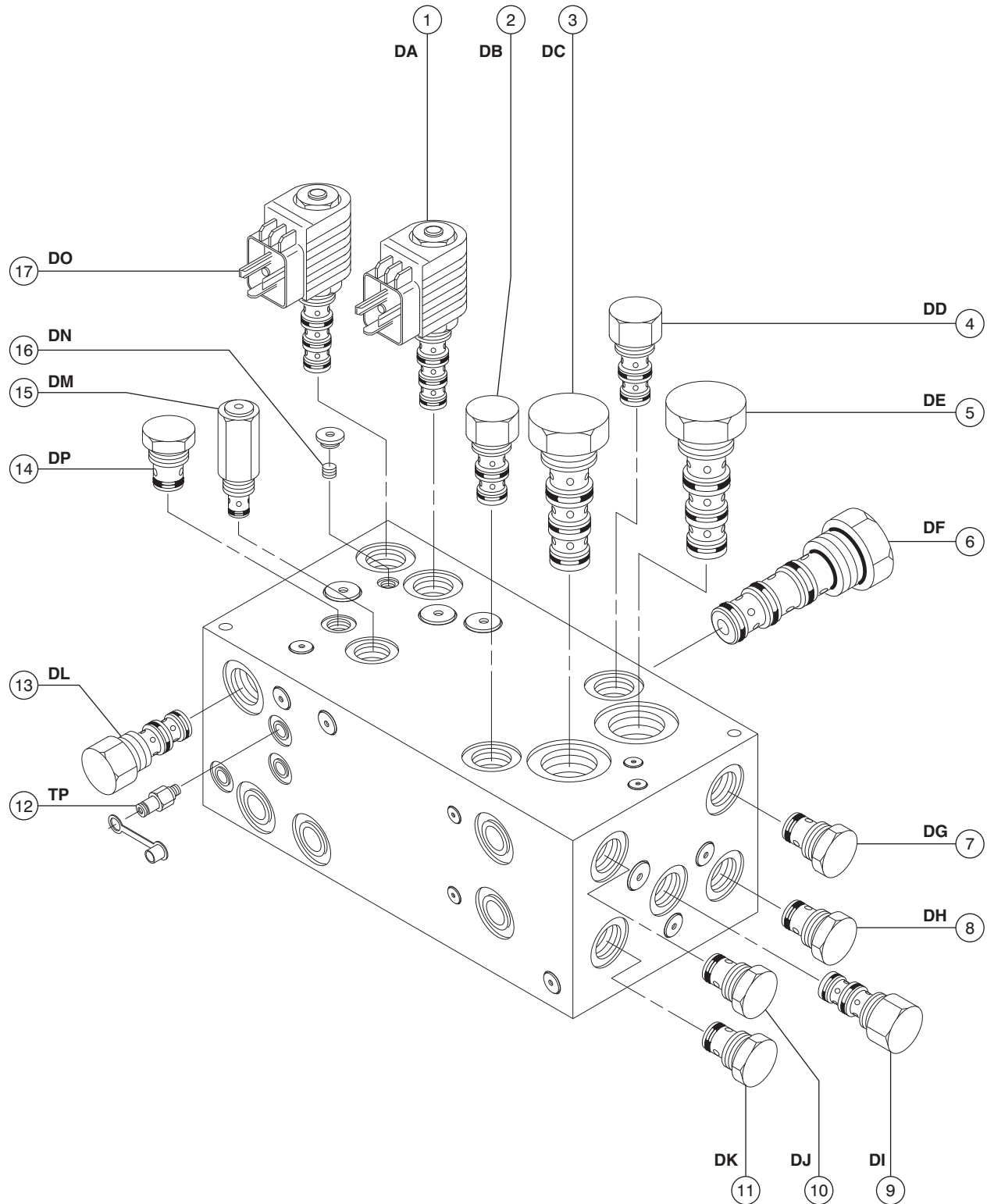
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Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 2 position 3 way 12V (schematic items DA)	7.4 to 9.4 Ω



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Traction Manifold Components, continued

The drive manifold is mounted inside the drive chassis at the circle end of the machine.

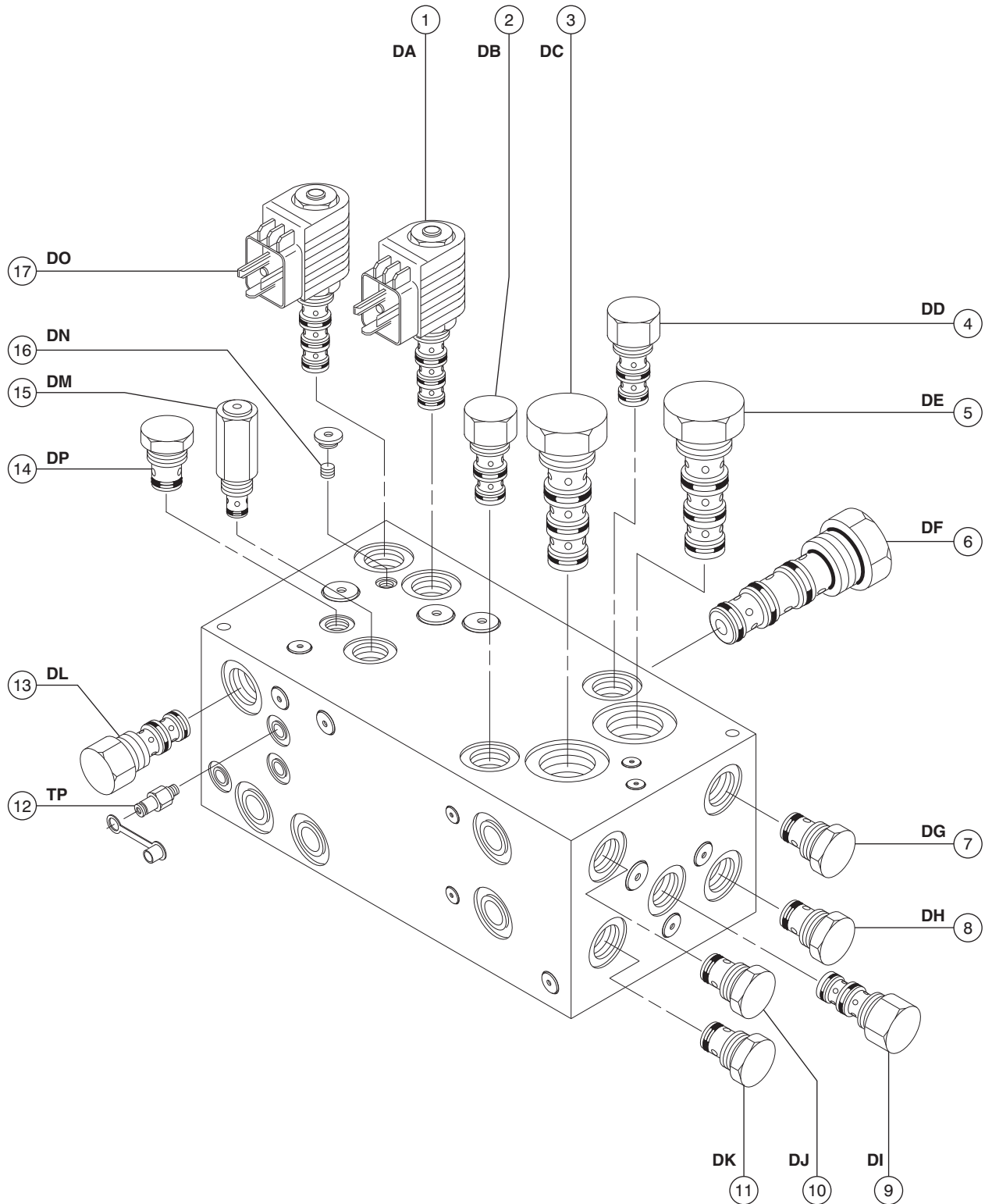
Index No.	Description	Schematic Item	Function	Torque
12	Diagnostic fitting	TP	Testing	
13	Shuttle valve, 3 position 3 way	DL	Charge pressure circuit that gets hot oil out of low pressure side of the drive pump	35-40 ft-lbs / 47-54 Nm
14	Check valve, 50 psi / 3.45 bar	DP	2 speed/brake charge pressure circuit	25-30 ft-lbs / 38-41 Nm
15	Relief valve, 250 psi / 17.2 bar	DM	Charge pressure circuit	35-40 ft-lbs / 47-54 Nm
16	Orifice - plug, 0.030 inch / 0.762 mm	DN	Brake release and 2 speed shift control	
17	Solenoid valve, 2 position 3 way	DO	Brake control	25-30 ft-lbs / 38-41 Nm

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 2 position 3 way 12V (schematic items DO)	7.4 to 9.4 Ω



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10-18 Valve Adjustments - Traction Manifold

How to Adjust the Charge Pressure Relief Valve

- 1 Connect a 0 to 600 psi / 0 to 41 bar pressure gauge to the test port located on the drive manifold.
- 2 Start the engine from the platform controls.
- 3 Drive the machine slowly in either direction and observe the pressure reading on the pressure gauge. Refer to Section 2, *Hydraulic Specifications*.
- 4 Turn the engine off. Use a wrench to hold the charge pressure relief valve and remove the cap (item DM or FF).
- 5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.
- 6 Repeat steps 2 through 5 to confirm the relief valve pressure.

10-19 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

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

- 1 Tag and disconnect the wiring from the coil to be tested.
- 2 Test the coil resistance.
- 3 Compare the value to the Resistance Specification chart, adjusted to your ambient air temperature.

NOTICE Coil resistance is sensitive to the ambient air temperature. Adjust the values in the chart to your air temperature. Adjust the resistance by 4% for each 18°F / 20°C that your air temperature varies from 68°F / 20°C.

- ⊗ Result: If the resistance is not within the adjusted specification, plus or minus 10%, replace the coil.

Valve Coil Resistance Specification

Description	Specification
Solenoid valve, 3 position 4 way, 12V DC (schematic item FB, FC, HB and HC)	9 Ω*
Proportional solenoid valve, 12V DC (schematic item FF)	5 Ω*
3 position 4 way D03 valve, 12V DC (schematic item FD)	4.6 Ω*
Proportional solenoid valve, 12V DC (schematic item FG)	5.4 Ω*

* Resistance at 68°F / 20° C.

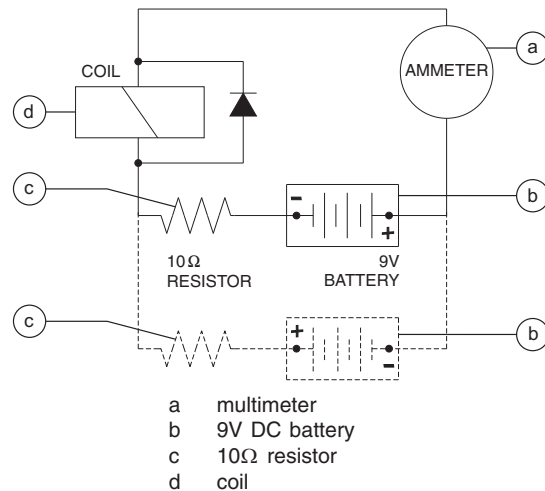
How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its directional valve coils except proportional valves and those coils with a metal case. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

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

- 1 Test the coil for resistance. Refer to, *How to Test a Coil*.
- 2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

NOTICE The battery should read 9V DC or more when measured across the terminals.



Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

- 3 Set a multimeter to read DC current.

NOTICE The multimeter, when set to read DC current, should be capable of reading up to 800 mA.

- 4 Connect the negative lead to the other terminal on the coil.

NOTICE If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.

- 5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V DC battery. Note and record the current reading.

- 6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

- ⦿ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.
- ✗ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Fuel and Hydraulic Tanks

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.

⚠ DANGER Explosion and fire hazard. Never drain or store fuel in an open container due to the possibility of fire.

- 1 Remove the fixed engine side turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover*.
- 2 Tag, disconnect and plug the fuel supply and return hoses. Cap the fittings on the fuel tank.
- 3 Remove the fuel filler cap from the tank.
- 4 Using an approved hand-operated pump, drain the fuel tank into a suitable container. See capacity specifications.

⚠ 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.

- 5 Remove the fuel tank hold down strap retaining fasteners. Remove the straps from the fuel tank.
- 6 Support and secure the fuel tank to an appropriate lifting device.
- 7 Remove the fuel tank from the machine.

⚠ WARNING Crushing hazard. The fuel tank may become unbalanced and fall if it is not properly supported and secured to the lifting device.

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

NOTICE Clean the fuel tank and inspect for cracks and other damage before installing.

FUEL AND HYDRAULIC TANKS

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 lines and has an external return line filter with a filter condition indicator.

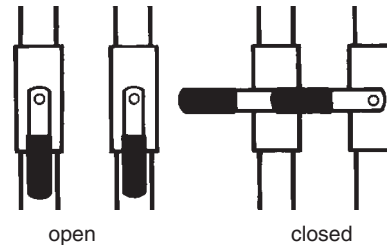
How to Remove the Hydraulic Tank

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

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

- 1 Remove the ground controls side turntable cover. See 5-1, *How to Remove a Hinged Turntable Cover*.

- 2 Close the two hydraulic shutoff valves located at the hydraulic tank.



CAUTION Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the OPEN position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur. If the hydraulic tank shutoff valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

- 3 Remove the drain plug from the hydraulic tank and allow all of the oil from the tank to drain into a suitable container. See capacity specifications.

FUEL AND HYDRAULIC TANKS

- 4 Remove the ground controls support bracket retaining fasteners. Remove the ground controls assembly from the machine.

CAUTION Component damage hazard. Be sure to properly support the ground control box. Do not allow the ground controls to hang by the wiring.

CAUTION Component damage hazard. The ground control box wiring can be damaged if it is kinked or pinched.

- 5 Tag and disconnect the wiring from the horn.
- 6 Remove the horn retaining fasteners. Remove the horn from the machine.
- 7 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.
- 8 Tag, disconnect and plug the supply hose for the auxiliary power unit. Cap the fitting on the hydraulic tank.
- 9 Disconnect and plug the T-fitting located at the return filter with the 2 hoses connected to it. Cap the fitting on the return filter housing.
- 10 Remove the hydraulic tank retaining fasteners.
- 11 Support the hydraulic tank with 2 lifting straps. Place one lifting strap at each end of the tank and attach the lifting straps to an overhead crane.
- 12 Remove the hydraulic tank from the machine.

WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if it is not properly supported and secured to the overhead crane.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the hydraulic tank. See 9-2, *How to Prime the Pumps*.

NOTICE Always use pipe thread sealant when installing the drain plug and strainers.

NOTICE Refer to Section 2, *Machine Specifications* for hydraulic oil requirements.

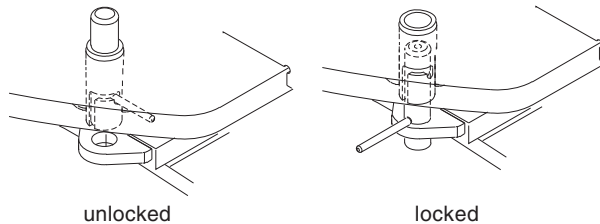
Turntable Rotation Components

12-1 Turntable Rotation Hydraulic Motor and Drive Hub

How to Remove the Turntable Rotation Hydraulic Motor

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

- 1 Secure the turntable from rotating with the turntable rotation lock pin.

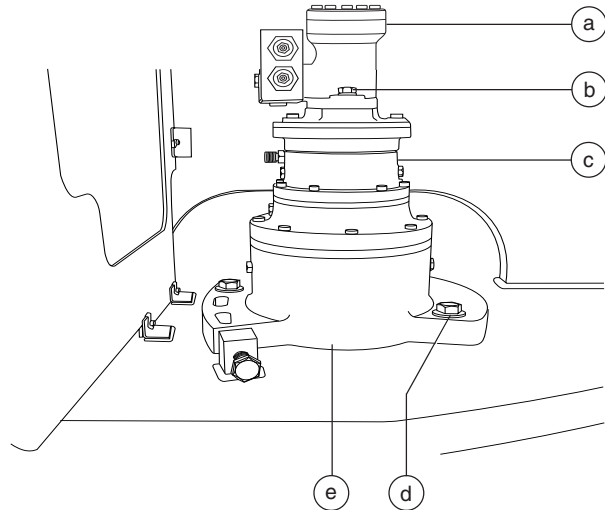


- 2 Remove the ground controls side fixed turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover*.

- 3 Tag, disconnect and plug the hydraulic hoses from the manifold that is mounted to 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.

- 4 Remove the motor/brake mounting fasteners. Remove the motor from the brake.

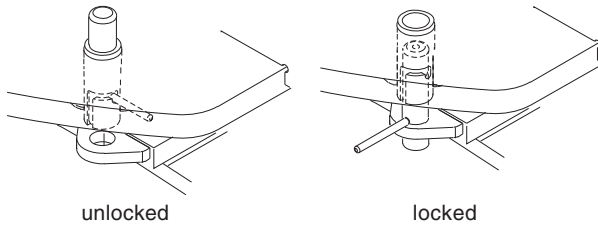


- a motor
- b motor/brake mounting bolts
- c brake
- d drive hub mounting bolts
- e drive hub

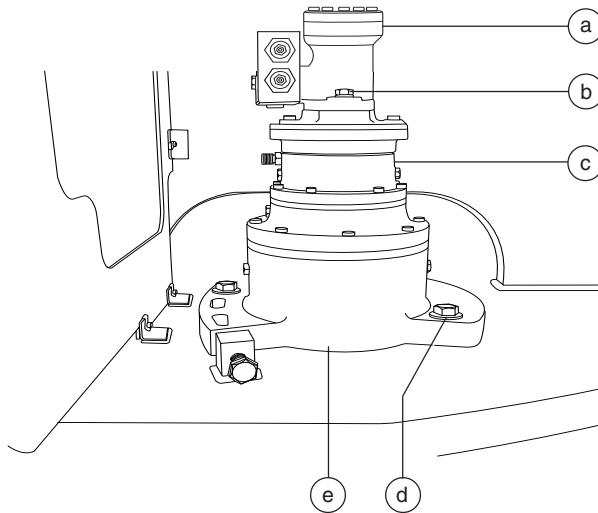
TURNTABLE ROTATION COMPONENTS

How to Remove the Turntable Rotation Drive Hub

- 1 Secure the turntable from rotating with the turntable rotation lock pin.



- 2 Remove the turntable rotation motor. See *How to Remove the Turntable Rotation Hydraulic Motor*.
- 3 Remove the brake from the drive hub and set it off to the side.



- a motor
- b motor/brake mounting bolts
- c brake
- d drive hub mounting bolts
- e drive hub

- 4 Attach a lifting strap from an overhead crane or other suitable lifting device to the drive hub.
- 5 Remove the drive hub mounting bolts and remove the drive hub from the machine.

⚠ DANGER Tip-over hazard. If the turntable rotation lock pin is not properly installed, machine stability is compromised and the machine could tip over when the drive hub is removed from the machine, which could result in death or serious injury.

⚠ WARNING Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported by the overhead crane or lifting device.

- 6 Remove the plug from the side of the drive hub. Drain the oil from the hub.

Installing the Drive Hub:

- 7 Install the drive hub. Use blue thread locking seal on all bolts. Torque the drive hub mounting bolts to 280 ft-lbs / 380 Nm.
- 8 Install the brake onto the drive hub and torque the mounting fasteners to 20 ft-lbs / 27 Nm.
- 9 Install the motor onto the brake and torque the mounting fasteners to 93 ft-lbs / 126 Nm.
- 9 Fill the drive hub with oil from the side hole until the oil level is even with the bottom of the hole. Apply pipe thread sealant to the plugs and install the plugs. Refer to Section 2, *Specifications*.
- 10 Adjust turntable rotation gear backlash.



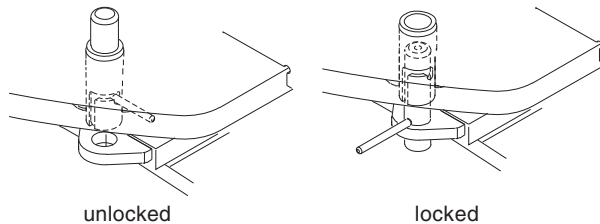
TURNTABLE ROTATION COMPONENTS

How to Adjust the Turntable Rotation Gear Backlash

The turntable rotation drive hub is adjustable to control the gap between the rotation motor gear and the turntable bearing.

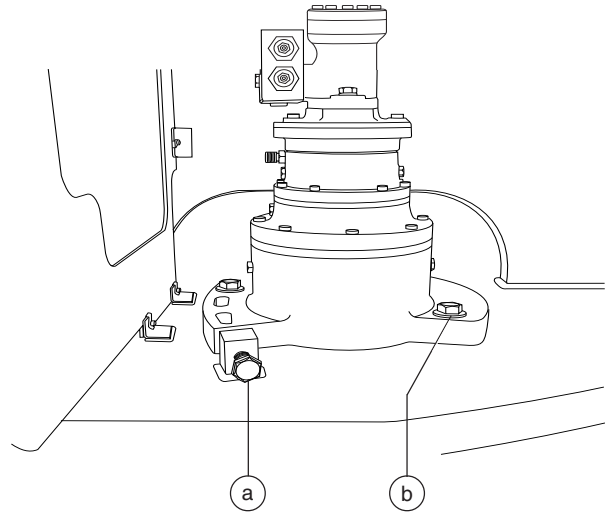
NOTICE Be sure to check the backlash with the machine on a flat level surface.

- 1 Secure the turntable from rotating with the turntable rotation lock pin.



- 2 Remove the ground controls side fixed turntable cover. See 5-1, *How to Remove a Fixed Turntable Cover*.
- 3 Loosen the turntable rotate drive hub mounting bolts. Do not remove them.

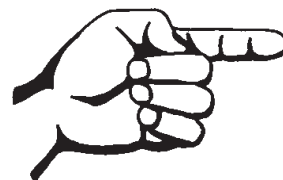
NOTICE It may be necessary to raise the boom slightly to access all the turntable rotate drive hub mounting bolts.



a adjustment bolt with lock nut
b pivot plate mounting bolts

- 4 Loosen the lock nut on the turntable drive hub adjustment bolt.
- 5 Tighten the turntable drive hub adjustment bolt until the turntable drive hub gear is fully engaged and tight into the turntable rotate gear.
- 6 Turn the adjustment bolt 3/4 turn counterclockwise. Tighten the lock nut on the adjustment bolt.
- 7 Rotate the drive hub away from the turntable rotate gear until it contacts the adjustment bolt. Torque the turntable rotate drive hub mounting bolts. Refer to Section 2, *Specifications*.
- 8 Rotate the turntable through an entire rotation. Check for tight spots that could cause binding. Readjust if necessary.

TURNTABLE ROTATION COMPONENTS



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Axle Components

13-1 Steer Sensors

The steer sensor measures steer angle and communicates that information to the ground controls ECM. The steer sensor on the ground controls side of the machine at the square end acts as the lead sensor. The other three sensors follow the position, or steer angle, of the lead sensor. There is a steer sensor mounted to the top of each upper yoke pivot pin.

NOTICE If the square-end steering function becomes inoperative, switch to circle-end steer mode and the ground controls side circle-end steer sensor will become the lead sensor.

NOTICE This procedure will require a minimum of two people.

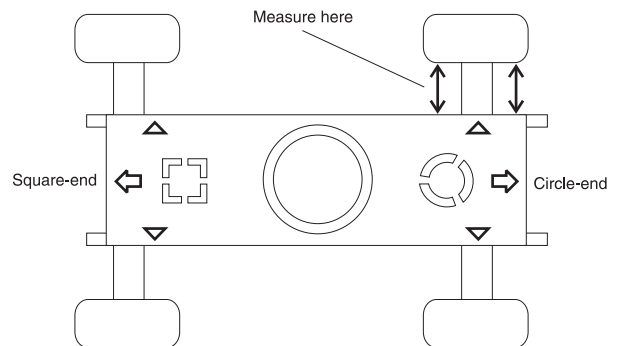
NOTICE Perform this procedure with the axles extended.

How to Measure the Tire Alignment

- 1 Start the engine from the platform controls.
- 2 Press down the foot switch and push the engine idle select button until the engine switches to high rpm.

Measure the circle-end tires:

- 3 Press the square-end steer mode button.
- 4 Measure the distance between the inside of one circle-end tire and the chassis side plate on both sides of the axle.



- ⦿ Result: Both measurements should be the same to indicate that the tires are parallel with the chassis.

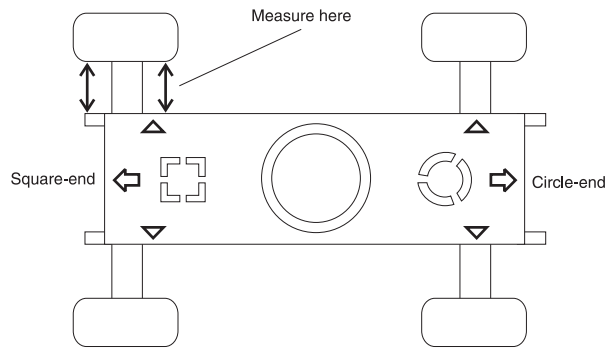
NOTICE If the measurements are different or if a tire is not parallel with the chassis, the steer sensor of that tire will need to be adjusted. See *How to Adjust a Steer Sensor*.

- 5 Repeat step 4 for the other circle-end tire.

AXLE COMPONENTS

Measure the square-end tires:

- 6 Press the circle-end steer mode button.
- 7 Measure the distance between the inside of one square-end tire and the chassis side plate on both sides of the axle.



- ⦿ **Result:** Both measurements should be the same to indicate that the tires are parallel with the chassis.

NOTICE

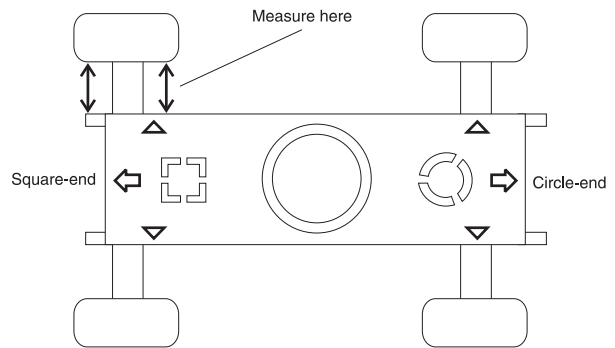
If the measurements are different or if a tire is not parallel with the chassis, the steer sensor of that tire will need to be adjusted. See *How to Adjust a Steer Sensor*.

- 8 Repeat step 4 for the other square-end tire.

How to Adjust a Steer Sensor

Square-end steer sensors:

- 1 At the platform controls, press the circle-end steer mode button.
- 2 Locate the steer sensor on top of the yoke pivot pin.
- 3 Loosen the steer sensor cover retaining fasteners. Do not remove them.
- 4 Rotate the steer sensor cover either clockwise or counterclockwise. Measure the distance between the inside of tire and the chassis side plate on both sides of the axle.

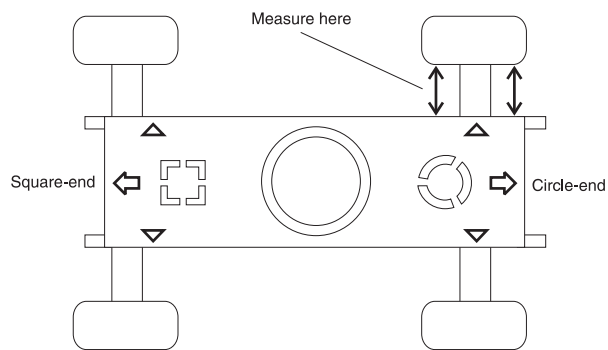


- 5 Repeat step 4 until the tire is parallel with the chassis.
- 6 Tighten the steer sensor cover fasteners.
- 7 Repeat steps 2 through 6 for the other square-end steer sensor.

AXLE COMPONENTS

Circle-end steer sensors:

- 8 At the platform controls, press the square-end steer mode button.
- 9 Locate the steer sensor on top of the yoke pivot pin.
- 10 Loosen the steer sensor cover retaining fasteners. Do not remove them.
- 11 Rotate the steer sensor cover either clockwise or counterclockwise. Measure the distance between the inside of tire and the chassis side plate on both sides of the axle.



- 12 Repeat step 4 until the tire is parallel with the chassis.
- 13 Tighten the steer sensor cover fasteners.
- 14 Repeat steps 9 through 13 for the other circle-end steer sensor.

13-2 Yoke and Hub

How to Remove the Yoke and Hub

The yoke installation utilizes bushings and a thrust washer that may require periodic replacement. There is a steer sensor mounted to the upper yoke pivot pin.

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

- 1 Remove the hose hanger bracket retaining fasteners mounted to the top of the yoke. Remove the hose hanger bracket from the machine.
- 2 Tag, disconnect and plug the hydraulic hoses from the drive motor and brake assembly. Cap the fittings on the drive motor and brake.

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

AXLE COMPONENTS

- 3 Mark the mounting position of the steer sensor cover on the yoke.

NOTICE It is very important that the steer sensor is installed in the exact position it was in prior to removal. If the steer sensor is not installed correctly, the steer function may operate improperly. If any steer functions operate improperly after removing and installing a steer sensor, see 13-1, *How to Adjust a Steer Sensor*.

- 4 Remove the steer sensor cover retaining fasteners. Carefully remove the steer sensor cover and lay it out of the way.

CAUTION Component damage hazard. The steer sensor is a very sensitive instrument. It can be damaged internally if it is dropped or sustains any physical shock, even if the damage is not visible.

- 5 Lay the hoses and steer sensor cable out of the way.

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

- 6 Mark the mounting position of the steer sensor activator pin mounted to the top of the yoke pivot pin.

- 7 Remove the steer sensor activator pin retaining fasteners. Remove the steer sensor activator pin from the machine.

NOTICE It is very important that the steer sensor activator pin is installed in the exact position it was in prior to removal. If the steer sensor activator pin is not installed correctly, the steer function may operate improperly. If any steer functions operate improperly after removing and installing a steer sensor activator pin, see 13-1, *How to Adjust a Steer Sensor*.

- 8 Loosen the wheel lug nuts. Do not remove them.
- 9 Center a lifting jack of ample capacity under the axle of the yoke and drive hub to be removed. Do not raise the machine.
- 10 Block the wheels at the opposite end of the machine.
- 11 Raise the machine approximately 6 inches (15 cm) and place blocks under the chassis for support.
- 12 Remove the lug nuts and remove the tire and wheel assembly.
- 13 Remove the drive motor mounting fasteners.
- 14 Slide the drive motor shaft out of the drive hub and remove the drive motor from the machine.
- 15 Remove the pin retaining fasteners from the steering cylinder rod-end pivot pins. Remove the pins.

AXLE COMPONENTS

- 16 Remove the pin retaining fasteners from the upper and lower yoke pivot pins.
- 17 Support the yoke/drive hub assembly with a lifting jack. Secure the yoke/drive hub assembly to the lifting jack.
- 18 Use a soft metal drift to remove both yoke pivot pins.
- 19 Remove the yoke/drive hub assembly from the machine.

⚠ WARNING 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 jack.

- 20 Place the yoke/drive hub assembly on a flat surface with the drive hub facing down.
- 21 Remove the drive hub mounting fasteners that attach the yoke to the drive hub. Remove the yoke weldment from the drive hub.

NOTICE Replace the thrust washer with a new one when installing the yoke/drive hub assembly onto the axle. Refer to Section 2, *Machine Torque Specifications*.

13-3 Drive Motor

How to Remove a Drive Motor

CAUTION Component damage hazard. Repairs to the motor should only be performed by an authorized Rexroth dealer.

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

- 1 Tag, disconnect and plug the hydraulic hoses from the drive motor. Cap the fittings on the drive motor.

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

- 2 Remove the drive motor mounting fasteners.
- 3 Slide the drive motor shaft out of the brake and drive hub. Remove the drive motor from the machine.

AXLE COMPONENTS

13-4 Drive Hub

How to Remove a Drive Hub

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

- 1 Remove the drive motor. See 13-3, *How to Remove a Drive Motor*.
- 2 Tag, disconnect and plug the hydraulic hose from the brake. Cap the fitting on the brake.

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

- 3 Loosen the wheel lug nuts. Do not remove them.
- 4 Center a lifting jack of ample capacity under the axle of the drive hub to be removed. Do not raise the machine.
- 5 Block the wheels at the opposite end of the machine.
- 6 Raise the machine approximately 6 inches (15 cm) and place blocks under the chassis for support.

- 7 Remove the wheel lug nuts. Remove the tire and wheel assembly.
- 8 Place a second lifting jack under the drive hub for support and secure the drive hub to the lifting jack.
- 9 Remove the drive hub mounting bolts that attach the drive hub to the yoke. Remove the drive hub from the machine.

WARNING Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported and secured to the lifting jack. Refer to Section 2, *Machine Torque Specifications*.

AXLE COMPONENTS

13-5 Steering Cylinders

How to Remove a Steering Cylinder

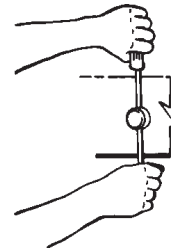
NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

- 1 Locate the hose bracket mounted to the steer cylinder.
- 2 Remove the hose bracket cover retaining fasteners. Remove the hose bracket cover.
- 3 Remove the hose bracket retaining fasteners from the steering cylinder.
- 4 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings on the cylinder.

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

- 5 Remove the pin retaining fasteners from the steer cylinder pivot pins.

- 6 Support the steer cylinder with a suitable lifting device.
- 7 Place a rod through each steer cylinder pivot pin and twist to remove the pins.



- 8 Remove the steering cylinder from the machine.

▲CAUTION Crushing hazard. The steer cylinder may become unbalanced and fall if it is not properly supported by the lifting device.

AXLE COMPONENTS

13-6 Extendable Axles

The extendable axles are used to widen the foot print of the drive chassis for stability.

How to Shim an Extendable Axle

NOTICE Measure each wear pad. Replace the wear pad if it is less than $\frac{7}{16}$ inch / 11 mm thick. If the wear pad is $\frac{7}{16}$ inch / 11 mm thick or more, perform the following procedure.

- 1 Fully extend the axle.
- 2 Remove the wear pad retaining fasteners.

Side wear pads:

- 3 Install the new shims under the wear pad to obtain zero clearance and zero drag.
- 4 Use a round punch through the wear pad mounting holes to align the shims with the wear pad. Install the wear pad retaining fasteners.
- 5 Extend and retract the axle through an entire cycle. Check for tight spots that could cause binding or scraping of the axle tubes.

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

Top and bottom wear pads:

- 3 Center a lifting jack of ample capacity under the axle that needs to be shimmed. Do not raise the machine.
- 4 Block the wheels at the opposite end of the machine.
- 5 Raise the machine just until the weight of the machine is relieved off of the axle. Do not raise the wheels off of the ground.
- 6 Install the new shims under the wear pad to obtain zero clearance and zero drag.
- 7 Use a round punch through the wear pad mounting holes to align the shims with the wear pad. Install the wear pad retaining fasteners.
- 8 Extend and retract the axle through an entire cycle. Check for tight spots that could cause binding or scraping of the axle tubes.

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

AXLE COMPONENTS

How to Remove an Inner Axle

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

NOTICE Perform this procedure with the tires parallel to the chassis and the axles fully extended.

- 1 Remove the top drive chassis cover.
- 2 Remove the yoke and hub assembly. See 13-2, *How to Remove the Yoke and Hub*.
- 3 Remove the steering cylinder. See 13-5, *How to Remove a Steering Cylinder*.
- 4 Remove the axle cover retaining fasteners located above the axle. Remove the chassis cover from the machine.
- 5 Remove the upper wear pad retainer plate retaining fasteners. Remove the plate from the machine.
- 6 Attach a lifting strap from an overhead crane of ample capacity to the inner axle for support. Do not lift it.
- 7 Remove the retaining fasteners from the upper and lower wear pads at the outer axle. Do not remove the side wear pads.

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

- 8 Remove the pin retaining fasteners from the axle stop pin. Use a slide hammer to remove the pin.
- 9 Remove the access cover fasteners from the end of the inner axle to access the axle extension cylinder clevis pin. Remove the cover.
- 10 Place support blocks under the end of the axle extension cylinder for support.
- 11 Remove the cotter pin from the axle extension cylinder clevis pin.

NOTICE Always use a new cotter pin when installing a clevis pin.

AXLE COMPONENTS

- 12 Use a soft metal drift to remove the axle extension cylinder clevis pin.
- 13 Carefully support and slide the inner axle out of the chassis. Remove the axle from the machine.

WARNING Crushing hazard. The inner axle may become unbalanced and fall when it is removed from the machine if it is not properly supported by the overhead crane.

CAUTION Component damage hazard. The aluminum limit switch track and the axle extension cylinder may become damaged if the axle is allowed to fall when it is removed from the machine.

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

NOTICE When installing an inner axle, there needs to be a minimum of 1/8 inch / 3.1 mm gap between the proximity switches and the aluminum limit switch track. Measure the gap with the axles in both the retracted and extended positions. Adjust the proximity switches as necessary to obtain a 1/8 inch / 3.1 mm gap.

How to Remove the Axle Extension Cylinder

- 1 Remove a yoke and hub assembly. See 13-2, *How to Remove the Yoke and Hub*.
- 2 Remove the axle. See *How to Remove an Inner Axle*.
- 3 Remove the access covers from the end of the remaining axle.
- 4 Tag, disconnect and plug the axle 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.

- 5 Tag and disconnect the wiring connectors from the proximity switches and limit switch. Do not remove the switches.

NOTICE The wiring connectors for the switches can be accessed through the access holes on either side of the chassis end plate.

- 6 Place blocks under the axle extension cylinder for support.

AXLE COMPONENTS

- 7 Attach a lifting strap from an overhead crane to the end of the axle extension cylinder.

NOTICE Attach the lifting strap to the end of the cylinder that has the inner axle removed.

- 8 Remove the cotter pin from the axle extension cylinder clevis pin on the remaining inner axle.

NOTICE Always use a new cotter pin when installing a clevis pin.

- 9 Use a soft metal drift to remove the pin.

CAUTION Crushing hazard. The axle extension cylinder may fall if it is not properly supported.

CAUTION Component damage hazard. The axle extension cylinder and limit switches can become damaged if the axle extension cylinder is allowed to fall.

- 10 Carefully support and slide the axle extension cylinder out of the axle.

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

Software



About This Section

This section explains various parts of the machine software operating system and how to access some of the adjustable parameters of the control system.

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 S-120 and Genie S-125 Operator's Manual*.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

Diagnostic Codes

Boom Module

Sensor or Location

Up/Down Joystick	Not calibrated and fault check
Extend/Retract Joystick	Not calibrated and fault check
Up/Down Buttons	Fault check (both buttons pressed)
Extend/Retract Buttons	Fault check (both buttons pressed)
Boom Length	Fault check (unknown length)
Boom Angle	Fault check (unknown length)
Boom Up/Down Speed	Not calibrated
Boom Extend/Retract Speed	Not calibrated
Boom Extend/Retract Flow Valve	Not calibrated and fault check
Boom Up/Down Flow Valve	Not calibrated and fault check
Boom Extend Valve	Fault check
Boom Retract Valve	Fault check
Boom Up Valve	Fault check
Boom Down Valve	Fault check
Lock Out Valve P1	Fault check
Lock Out Valve P2	Fault check

Diagnostic Codes

Engine Module

Engine Speed	Range check
Oil Pressure	Range check
Water/Oil Temperature	Range check
Oil Pressure Sensor	Range check
Water/Oil Temperature Sensor	Range check

Axle Module

Axle Extend/Retract Buttons	Fault check
Axle Valve	Fault check

Platform Level Module

Platform Level Sensor	Fault check
Platform Level Valve	Not calibrated and fault check

DIAGNOSTIC CODES

Jib Module

Jib Switches	Fault check
Jib Valve	Fault check

Turntable Rotate Module

Turntable Rotate Joystick	Not calibrated and fault check
Turntable Rotate Buttons	Fault check (both buttons depressed)
Turntable Rotate Speed	Not calibrated
Turntable Rotate Flow Valve	Not calibrated and fault check
Turntable Rotate Clockwise Valve	Fault check
Turntable Rotate CounterClockwise Valve	Fault check

Turntable Level Module

Turntable Level Sensor X- Direction	Fault check
Turntable Level Sensor Y- Direction	Fault check

Platform Rotate Module

Platform Rotate Switches	Fault check
Platform Rotate Valve	Fault check

Propel Module

Propel Joystick	Not calibrated and fault check
Propel Valves	Not calibrated and fault check
Motor Coil	Fault check
Brake Valve	Fault check
Auxiliary Propel Valve	Fault check

DIAGNOSTIC CODES

Common Module

Can BUS	Fault check
Safety Switch P3	Fault check
Safety Switch P6R1	Fault check
Safety Switch P6R2	Fault check
Safety Switch P7	
Safety Switch P7R	
Safety Switch 9A	
Safety Switch 9B	
Safety Switch P10	
Safety Switch P11	
Safety Switch P12	
Safety Switch P14	
Safety Switch P18	
Safety Switch P22	
Safety Switch P22R	
Platform Overload Sensor	IF active
Boom Up Overload	IF active
Boom Down Overload	IF active
Shut Down Mode	IF active
















Steering Module

Steering Joystick	Not calibrated and fault check
Left Front Steer Angle Sensor	Fault check
Right Front Steer Angle Sensor	Fault check
Left Rear Steer Angle Sensor	Fault check
Right Rear Steer Angle Sensor	Fault check
Left Front Steer Valve	Fault check
Right Front Steer Valve	Fault check
Left Rear Steer Valve	Fault check
Right Rear Steer Valve	Fault check

Display Module

Screen	To Enter	Information Displayed
Operator	Default	Hour meter Engine speed Engine oil pressure PSI Engine oil pressure KPA Engine temperature °F Engine temperature °C TT level sensor X° TT level sensor Y° Platform level sensor Battery voltage
Status	Press + and - at the same time	Hydraulic pressure Boom length Boom angle Axle status
Unit/Language	Press ↵ on power on, then press + - - +	Metric/English display language (measurement units)
Drive Functions	Press ↵ on power on, then press + + ↵ ↵	Drive output max forward Drive output max reverse Elevated drive % (>80 feet, >24.4 m) Elevated drive % (<80 feet, <24.4 m) Stowed drive % Drive acceleration % Drive deceleration % Speed limit on steer angle
Boom function speeds	Press ↵ on power on, then press + + - -	Boom up/down speed stowed % Boom up/down speed % (<80 feet, <24.4 m) Boom up/down speed % (>80 feet, >24.4 m) Boom up/down speed % (>100 feet, 30.5 m) Turntable rotate speed % (<80 feet, <24.4 m) Turntable rotate speed % (>80 feet, >24.4 m) Jib boom up/down ramp deceleration

DISPLAY MODULE

Screen	To Enter	Information Displayed
Lift function ramps	Press  on power on, then press    	Boom up/down ramp acceleration Boom up/down ramp deceleration Boom extend/retract ramp deceleration Turntable rotate ramp acceleration Turntable rotate ramp deceleration Jib boom up/down ramp deceleration
Valve calibration	Press  on power on, then press    	Reset drive valve defaults Reset boom up/down valve defaults Reset boom extend/retract defaults Reset turntable rotate valve defaults Reset platform level valve defaults Allow boom up/down speed calibration Allow boom extend/retract speed calibration Allow turntable rotate speed calibration Reset drive joystick defaults Reset boom up/down joystick defaults Reset boom extend/retract joystick defaults Reset turntable rotate joystick defaults Reset steer joystick defaults
Options	Press  on power on, then press    	Limit boom height to 100 feet (30.5 m) Limit boom height to 80 feet (24.4 m) AC generator: no, regulated, none (0,1,2) Alarm: no, motion, travel, decent, travel and decent (0,1,2,3,4,5) Lift/drive cut outs: no, drive cut out while not stowed, Lifting, driving Boom extend cut out if boom angle >5° Auxilliary drive enable: yes, no Proximity kill switch OR platform overload sensing: none, prox, plat overload Work light: yes, no Flashing beacon: yes, no Drive lights: yes, no Steer mode change while driving: yes, no

Electrical System Legend

Circuit numbering

- 1 Circuit numbers consist of three parts, the circuit prefix, circuit number, and circuit suffix. The prefix tells what type of circuit it is. The circuit number tells the function of the circuit. The circuit suffix provides an abbreviation for the number or may be used to further define the function of this portion of the circuit or it may be used to indicate the final end of the circuit i.e. LS or limit switch.
- 2 The circuit number may be used more than once in a circuit.

For Example:

C 74 PRLO – This is the circuit for the Lockout valve number 1. C stands for control, number 74 is the circuit for the primary number 1 lock out valve. PRLO stands for **P**rietary **L**ockout.

S 62 BSTO – This is the circuit that tells the computer on the machine that the boom is fully stowed. S stands for safety, number 62 is the circuit for boom stowed. BSTO stands for **B**oom **S**towed.

P 48 LP – P stands for power. Number 48 is the circuit number for work lamps and LP stands for **L**amp.

R 48 LP – R stands for relay. In this case it is the wire that feeds the relay coil for the work lamp. All other numbers remain the same.

V 61 AXRT – V stands for valve power. Number 61 stands for axle retracted circuit, AXRT stands for **A**xle **R**etracted.

Wire Coloring

- 1 All cylinder extension colors are solid and all cylinder retract functions striped black, except when the wire is black the stripe is white.
- 2 All rotations that are LEFT or CW are solid and all RIGHT or CCW are striped black, except when the wire is black the stripe is white.
- 3 All proportional valve wiring is striped.

Wire Circuit Legend

Wire Color	Circuit Number	Function	Wire Color	Circuit Number	Function
RD	1	Primary boom up	BK	22	Key switch power to platform Emergency Stop button
RD/BK	2	Primary boom down	WH	23	Power to platform
RD/WH	3	Primary boom up/down proportional valve	WH	24	Power to warning senders
WH	4	Turntable rotate left valve	WH/BK	25	Power to oil pressure sender
WH/BK	5	Turntable rotate right valve	WH/RD	26	Power to temperature sender
WH/RD	6	Turntable rotate proportional valve	RD	27	Auxiliary Power
BK	7	Primary boom extend	RD/BK	28	Platform level alarm
BK/WH	8	Primary boom retract	RD/WH	29	Drive Motor shift (2-speed)
BK/RD	9	Primary boom extend/retract proportional valve	WH	30	Drive forward
BL	10	Secondary boom up valve	WH/BK	31	Drive reverse
BL/BK	11	Secondary boom down valve	WH/RD	32	Brake
BL/WH	12	Secondary boom up/down proportional valve	BK	33	Engine start
BL/RD	13	Drive enable	BK/WH	34	Engine starting aid (glow plug)
OR	14	Platform level up valve	BK/RD	35	Engine speed select
OR/BK	15	Platform level down valve	BL	36	Steer right
OR/RD	16	Platform level up/down proportional valve	BL/BK	37	Steer left
GR/RD	17	Platform rotate left valve	BL/WH	38	Gas
GR/BK	18	Platform rotate right valve	BL/RD	39	LPG
GR/WH	19	Jib boom select valve circuit	OR	40	Limit switch signal boom stowed position
RD	20	12V DC battery supply	OR/BK	41	RPM signal
WH	21	12V DC ignition supply	OR/RD	42	Boom retracted signal

WIRE CIRCUIT LEGEND

Wire Color	Circuit Number	Function	Wire Color	Circuit Number	Function
GR	43	Jib Up	BL/WH	65	Low fuel indicator
GR/BK	44	Jib Down	BL	66	Drive Enable
GR/WH	45	AC Generator	BL	67	Secondary boom not stowed
WH	46	Horn	RD	68	Primary Boom lowered (operational)
WH/BK	47	Output Power Enable			
WH/RD	48	Work Lamp			
WH/BK	49	Motion Lamp			
BL	50	Auxiliary Boom			
BL/WH	51	Auxiliary Steer			
BL/RD	52	Auxiliary Platform			
WH/BK	53	Boom envelope safety valve cut off			
BK/WH	54	Power to safety interlock switches (engine)			
GR/BK	55	Axle oscillation			
RD	56	Foot switch/Ground controls Emergency Stop power			
RD/WH	57	Boom down safety interlock			
RD/BK	58	Safety interlock to engine			
GR/WH	59	Cable break circuit			
GR/WH	60	Axle extend			
GR	61	Axle retract			
OR	62	Boom stowed (safety)			
OR/RD	63	Power to boom envelope safety switch			
OR/BL	64	Power to operational switches			

Web GPI

The software system used on the machine is called Web GPI. It is a software application that is typically used with a laptop computer. The laptop can be connected to the ground controls via a tee harness connector (Genie part number 75094).

The Web GPI software can access all adjustable parameters for the machine. It can also be used to aid in troubleshooting and viewing fault code history.

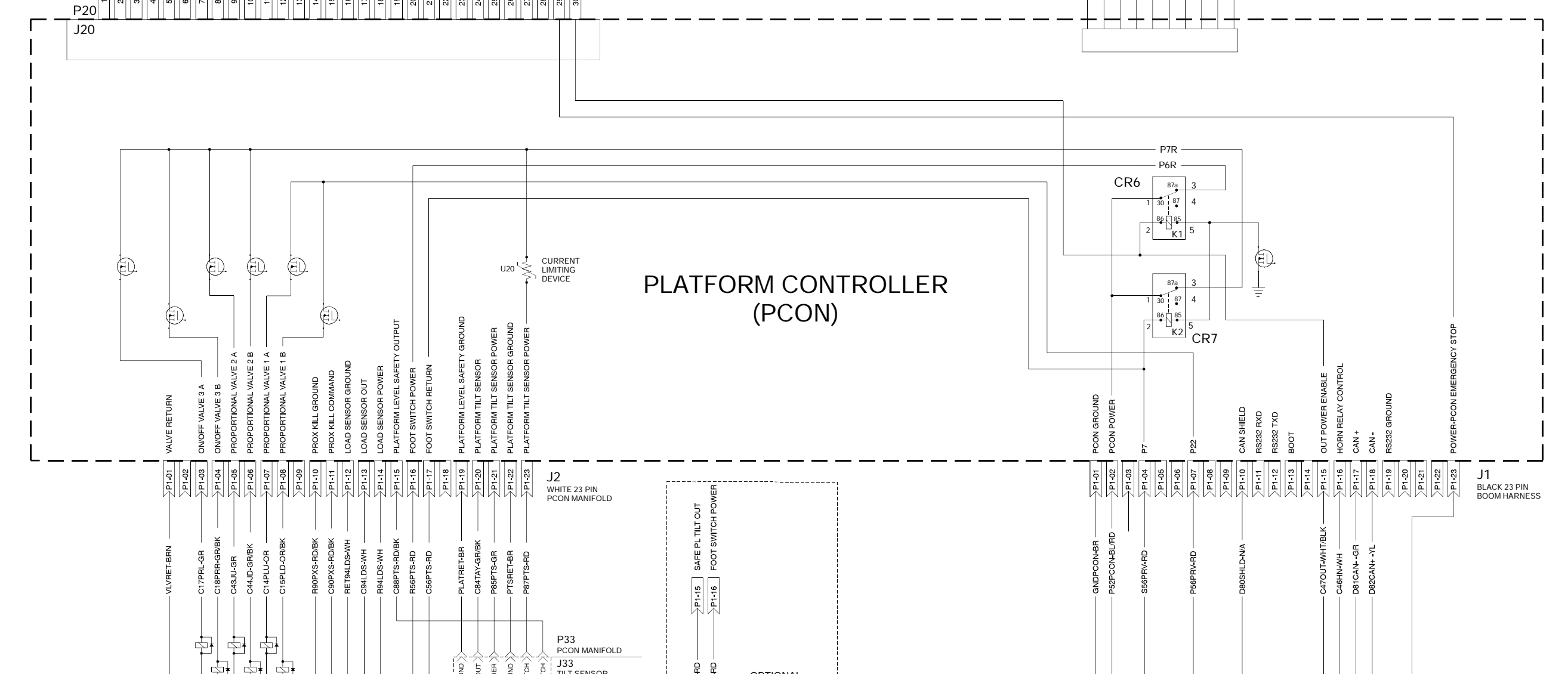
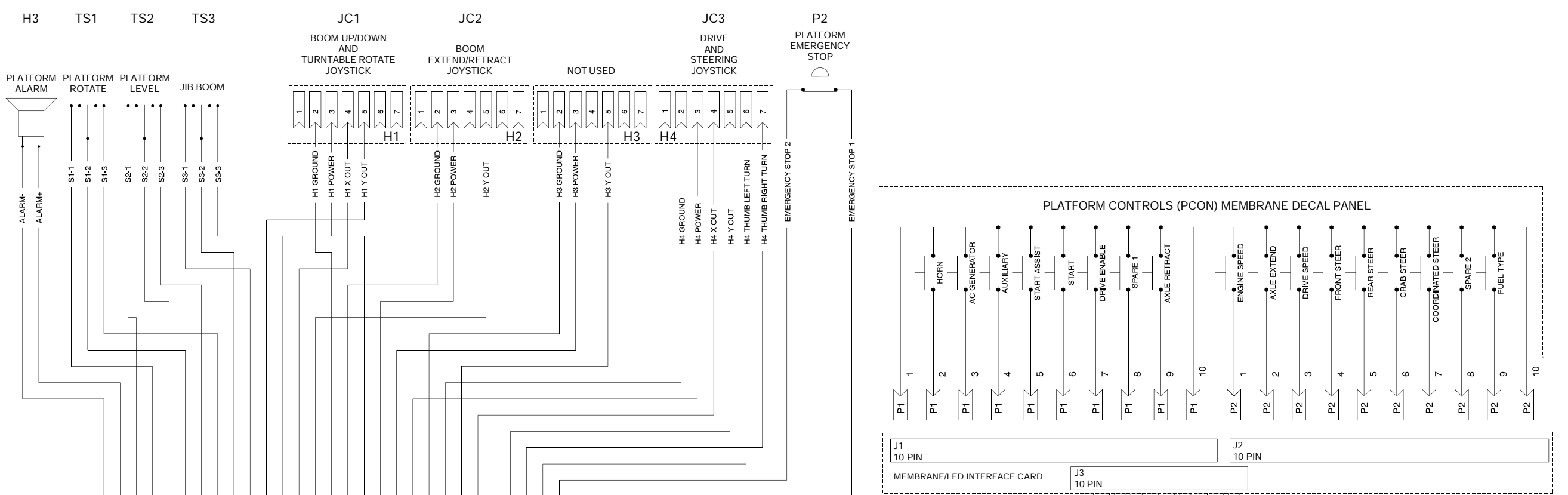
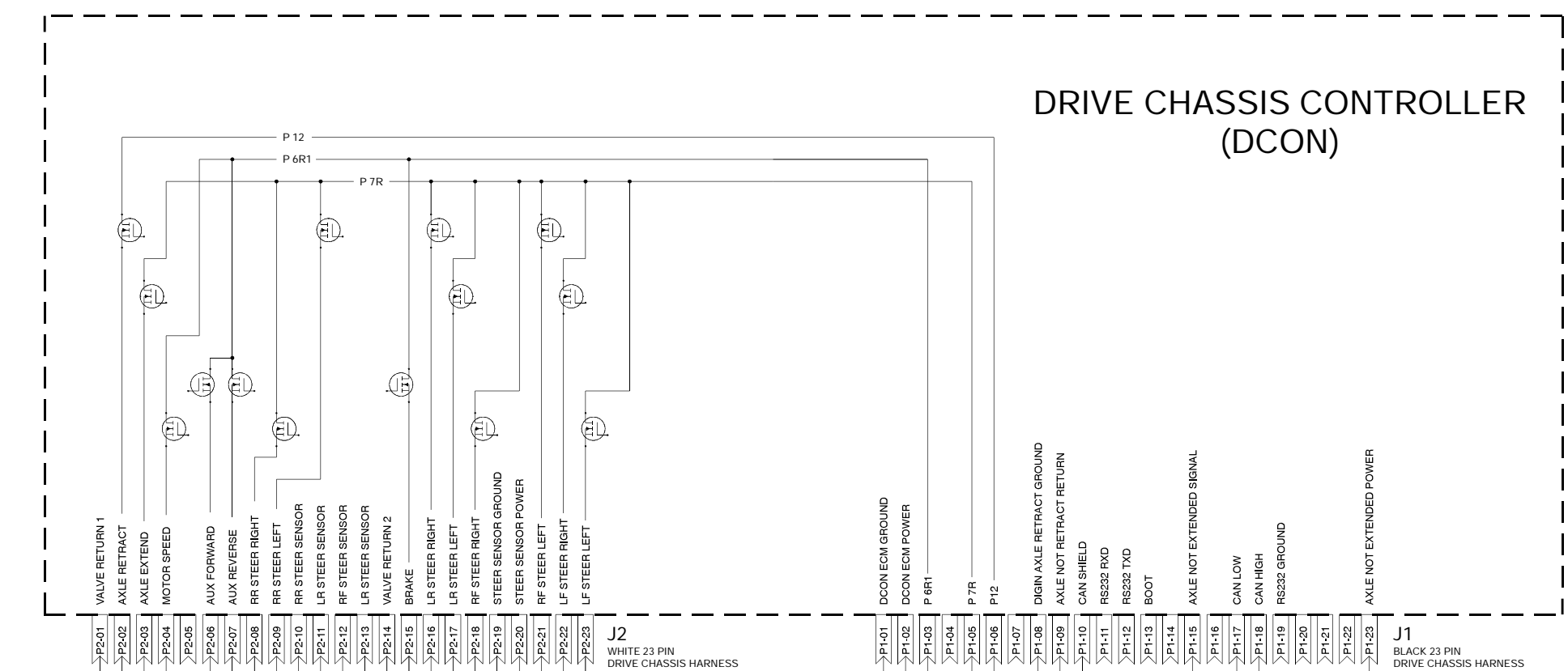
Genie S-100 & S-105 & S-120 & S-125
Electrical Schematic
Genie Part number 62304

1 of 2

Drive Chassis and Platform Controls

PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P1	J1	Black 23 Pin AMP Connector - Platform Controls to Drive Chassis Harness
P2	J2	White 23 Pin AMP Connector - Platform Controls to Drive Chassis Harness
P1	J1	Platform Controls PC Board to Membrane Decal
P2	J2	Platform Controls PC Board to Membrane Decal
P1	J1	Black 23 Pin AMP connector - Drive Chassis Controller to Drive Chassis Harness
P2	J2	White 23 Pin AMP connector - Drive Chassis Controller to Drive Chassis Harness
D6	J6	3 Way Deutsch CAN Connector - Boom Harness to Electrical Rotary Coupler
P7	J7	4 Way Deutsch Connector - Drive Chassis Controller Safety Limit Switch to Electrical Rotary Coupler
P8	J8	2 Way Deutsch Connector - Drive Chassis Controller Power Limit Switch Harness to Electrical Rotary Coupler
P16	J16	3 Way Deutsch CAN Connector - Electrical Rotary Coupler to Drive Chassis Controller Harness
P17	J17	4 Way Deutsch Connector - Drive Chassis Controller Electrical Rotary Coupler to DCON Harness
P18	J18	2 Way Deutsch Connector - Electrical Rotary Coupler to Drive Chassis Controller Harness
P33	J33	Platform Manifold/Tilt Sensor

CR	CONTROL RELAY WITH NUMBER AND FUNCTION CR6 = PFR CIRCUIT CR7 = PFR CIRCUIT
FS	FS1 = FOOT SWITCH
H	H3 = ALARM AT PLATFORM CONTROLS
GND	CHASSIS GROUND
JC	JOYSTICK CONTROLLER JC1 = BOOM UP/DOWN/TURNABLE ROTATE JC2 = BOOM EXTEND/RETRACT JC3 = DRIVE/STEERING JOYSTICK
P	POWER SWITCH P2 = PLATFORM CONTROLS EMERGENCY STOP BUTTON
SS	STEER SENSOR SS1 = CIRCLE END YELLOW SIDE (RIGHT REAR) SS2 = CIRCLE END BLUE SIDE (LEFT REAR) SS3 = SQUARE END YELLOW SIDE (RIGHT FRONT) SS4 = SQUARE END BLUE SIDE (LEFT FRONT)
TS	TOGGLE SWITCH TS1 = PLATFORM ROTATE TS2 = PLATFORM LEVEL TS3 = JIB BOOM UP/DOWN
Y	VALVE COIL Y1 = AXLE RETRACT Y2 = AXLE EXTEND Y3 = MOTOR SPEED Y4 = AUXILIARY FORWARD Y5 = AUXILIARY REVERSE Y6 = BRAKE Y7 = RR STEER RIGHT Y8 = RR STEER LEFT Y9 = LR STEER RIGHT Y10 = LR STEER LEFT Y11 = RF STEER RIGHT Y12 = RF STEER LEFT Y13 = LF STEER RIGHT Y14 = LF STEER LEFT Y15 = PLATFORM ROTATE CW Y16 = PLATFORM ROTATE CCW Y17 = JIB BOOM UP Y18 = JIB BOOM DOWN Y19 = PLATFORM LEVEL UP Y20 = PLATFORM LEVEL DOWN

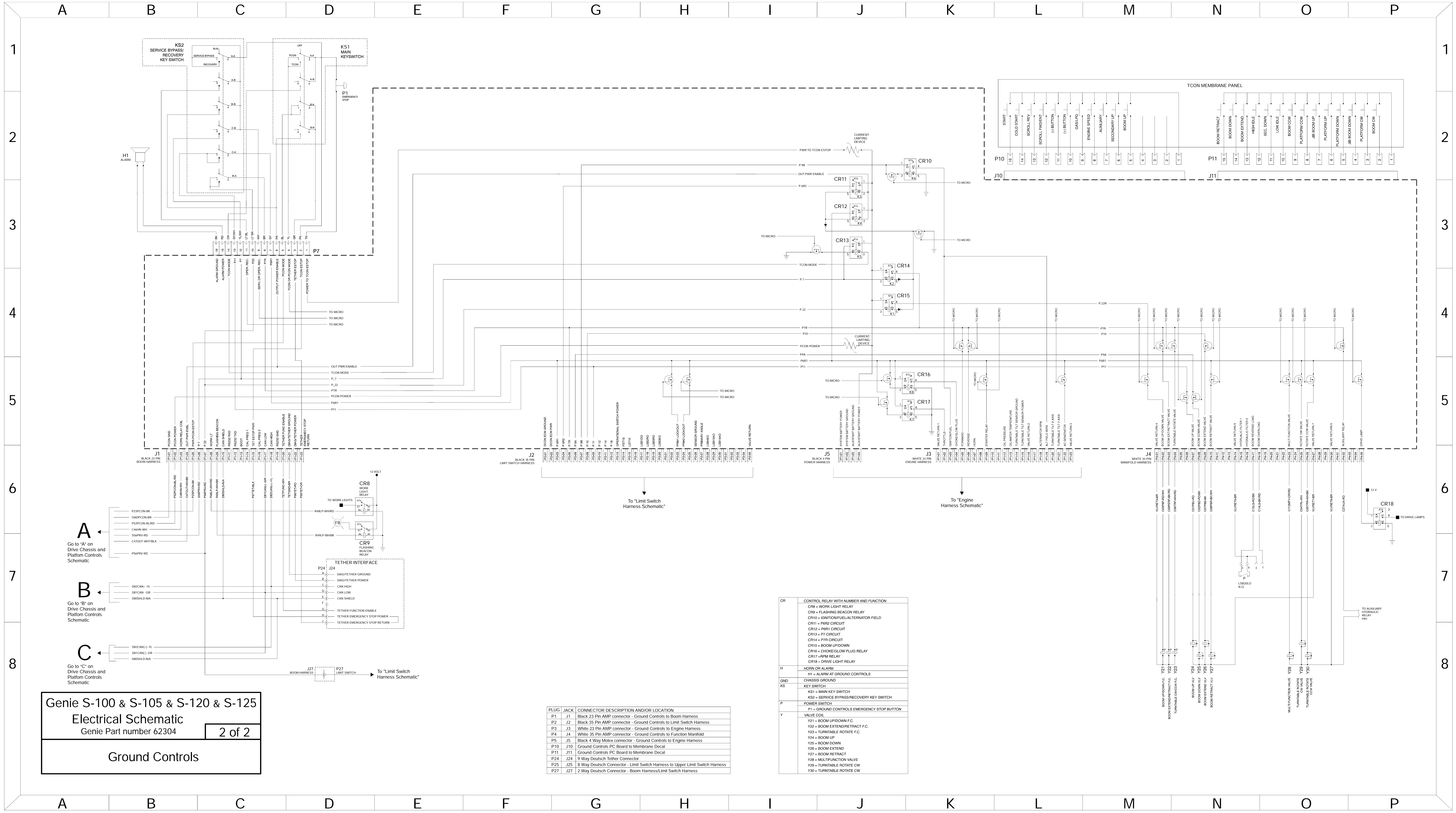


A
Go to "A" on Ground Controls Schematic

B
Go to "B" on Ground Controls Schematic

C
Go to "C" on Ground Controls Schematic

To "Limit Switch Harness Schematic"



Genie S-100 & S-105 & S-120 & S-125
 Electrical Schematic
 Genie Part number 62304

2 of 2

Ground Controls

PLUG	JACK	CONNECTOR DESCRIPTION AND/OR LOCATION
P1	J1	Black 23 Pin AMP connector - Ground Controls to Boom Harness
P2	J2	Black 35 Pin AMP connector - Ground Controls to Limit Switch Harness
P3	J3	White 23 Pin AMP connector - Ground Controls to Engine Harness
P4	J4	White 35 Pin AMP connector - Ground Controls to Function Manifold
P5	J5	Black 4 Way Molex connector - Ground Controls to Engine Harness
P10	J10	Ground Controls PC Board to Membrane Decal
P11	J11	Ground Controls PC Board to Membrane Decal
P24	J24	9 Way Deutsch Tether Connector
P25	J25	8 Way Deutsch Connector - Limit Switch Harness to Upper Limit Switch Harness
P27	J27	2 Way Deutsch Connector - Boom Harness/Limit Switch Harness

CR	CONTROL RELAY WITH NUMBER AND FUNCTION
CR8	WORK LIGHT RELAY
CR9	FLASHING BEACON RELAY
CR10	IGNITION/FUEL/ALTERNATOR FIELD
CR11	PWR2 CIRCUIT
CR12	PWR1 CIRCUIT
CR13	P7 CIRCUIT
CR14	P7R CIRCUIT
CR15	BOOM UP/DOWN
CR16	CHOKE/GLOW PLUG RELAY
CR17	RPM RELAY
CR18	DRIVE LIGHT RELAY

H	HORN OR ALARM
H1	ALARM AT GROUND CONTROLS
GND	CHASSIS GROUND
KS	KEY SWITCH
KS1	MAIN KEY SWITCH
KS2	SERVICE BYPASS/RECOVERY KEY SWITCH
P	POWER SWITCH
P1	GROUND CONTROLS EMERGENCY STOP BUTTON
Y	VALVE COIL

Y21	BOOM UP/DOWN F.C.
Y22	BOOM EXTEND/RETRACT F.C.
Y23	TURNABLE ROTATE F.C.
Y24	BOOM UP
Y25	BOOM DOWN
Y26	BOOM EXTEND
Y27	BOOM RETRACT
Y28	MULTIFUNCTION VALVE
Y29	TURNABLE ROTATE CW
Y30	TURNABLE ROTATE CCW

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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