

Genie®

Service Manual

Part No. 43037
Rev B
January 2007

Z™-34/22 IC

(from serial number 100 to 1186)

Important

Read, understand and obey the safety rules and operating instructions in the appropriate *Genie Z-34/22 IC Operator's Manual* before attempting any maintenance or repair procedure.

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

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

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

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and other manuals. Please write to the technical publications team in care of Genie Industries, PO Box 97030, Redmond WA 98073-9730 USA.

If you have any questions, please call Genie Industries.

Genie North America

Telephone (206) 881-1800
Toll Free 800 536-1800 in U.S.A.
Toll Free 800 426-8089 in Canada
Fax (206) 883-3475
E-mail: techpub@genieind.com
http://www.genielift.com

Genie Europe

Telephone (44) 0636-813943
Fax (44) 0636-815270
http://www.genielift.com

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Safety Rules



Danger

Failure to obey the instructions and safety rules in this manual and the appropriate *Genie Z-34/22 IC 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:

⚠DANGER Indicates the presence of a hazard that **will** cause death or serious injury.

⚠WARNING Indicates the presence of a hazard that **may** cause death or serious injury.

⚠CAUTION Indicates the presence of a hazard that **will** or **may** cause serious injury or damage to the machine.

NOTICE Indicates special operation or maintenance information.



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



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

Workplace Safety



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



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



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



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



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



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

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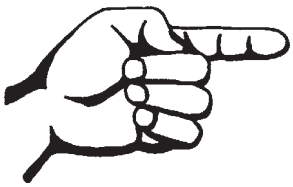
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Specifications

Machine Specifications

Stowed dimensions		
Length	18 ft 6 in	5.6 m
Width	5 ft 8 in	1.7 m
Height, maximum	6 ft 7 in	2 m
Machine Weight (Machine weights vary with option configurations)		See Serial Plate
Ground clearance		
2WD models	5.75 in	14.6 cm
4WD models	6.5 cm	16.5 cm
Operational dimensions		
Height, platform maximum	34 ft 8 in	10.6 m
Height, working maximum	40 ft 8 in	12.4 m
Horizontal reach, maximum	22 ft 4 in	6.8 m
Turntable tailswing		0
Wheelbase	6 ft 2 in	1.9 m
Minimum turning circle, outside	13 ft. 1 in	4 m
Minimum turning circle, inside	5 ft. 8 in	1.7 m
Turntable rotation	355°	355°
Platform rotation	180°	180°
Fluid capacities		
Fuel tank capacity		12 gallons 45.4 liters
Hydraulic tank capacity		18 gallons 68.1 liters
Hydraulic system capacity (including tank)		22 gallons 83.3 liters
Torque hubs		17 ounces 0.5 liters

Tires and wheels	Rough terrain	Industrial
Tire size	10-16.5 NHS	9-14.5 LT
Tire ply rating		Tread 6 Sidewall 6
Tire contact area	77.8 sq in. 502 cm.	43.5 sq in 280 sq cm
Overall tire diameter	30.5 in. 77.5 cm.	28 in 37 cm
Wheel diameter	16.5 in. 42 cm.	14.5 in 45 cm
Wheel width	10 in. 25.4 cm.	7 in 18 cm
Wheel lugs - 4WD	9 @ 5/8-18	
Wheel lugs - 2WD		
Front	8 @ 5/8-18	8 @ 5/8-18
Rear	9 @ 5/8-18	9 @ 5/8-18
Tire pressure		
2WD	45 psi 3.1 bar	100 psi 6.89 bar
4WD	45 psi 3.1 bar	
Lug nut torque	125 ft-lbs	169.5 Nm
Platform dimensions		
Length		56 in 142 cm
Width		30 in 76 cm
Maximum capacity		500 lbs 227 kg

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

SPECIFICATIONS

Performance Specifications

Drive speeds (maximum)	2WD	4WD
Boom stowed, high range	4.5 mph 7.2 km/h 40 ft/6.1 sec 12.2 m/6.1 sec	4.0 mph 6.4 km/h 40 ft/6.8 sec 12.2 m/6.8 sec
Boom raised or extended	0.6 mph 1km/h 40 ft/40 sec 12.2 m/40 sec	0.6 mph 1km/h 40 ft/40 sec 12.2 m/40 sec
Gradeability (stowed)	37 %	45 %

Boom function speeds, maximum from platform controls (with 500 lbs in platform)	
Jib boom up	24 to 30 seconds
Jib boom down	15 to 21 seconds
Primary boom up	16 to 22 seconds
Primary boom down	28 to 34 seconds
Primary boom extend	24 to 30 seconds
Primary boom retract	14 to 20 seconds
Secondary boom up	16 to 22 seconds
Secondary boom down	29 to 35 seconds
Turntable rotate - 355°	100 to 106 seconds
Platform rotate - 160°	4 to 7 seconds

Hydraulic Specifications

Hydraulic fluid	Dexron equivalent
Drive pump	
Type:	bi-directional variable displacement piston pump
Displacement per revolution	1.71 cu in 28 cc
Displacement @ 3000rpm (2500 psi/172 bar)	22 gpm 83.3 L/min
Hydraulic tank suction line filter	25 micron with 5 psi (.34 bar) bypass
Drive manifold	
Motor shift/brake relief pressure	210 psi 14.5 bar
4WD front motor flow regulators	7 gpm 26.5 L/min
4WD rear motor flow regulators	14 gpm 53 L/min
2WD rear motor flow regulators	22 gpm 83.3 L/min
Front drive motors - 4WD models	
Displacement per revolution	1.52 cu in 25 cc
Rear drive motors	
Displacement per revolution	2.8 cu in 46 cc
Function pump	
Type:	Fixed displacement gear pump
Displacement per revolution	0.24 cu in 4 cc
Hydraulic tank return line filter	10 micron with 25 psi (1.7 bar) bypass

SPECIFICATIONS

Function manifold	
Function relief valve pressure	3200 psi 220.7 bar
Boom down relief Function relief	1400 psi 96.6 bar
Secondary boom down relief valve pressure	1600 psi 110.3 bar
Primary boom extend relief valve pressure	1800 psi 124.1 bar
Turntable rotate relief pressure (before serial number 674) (replaced by counterbalance valves after serial number 673)	1750 psi 120.7 bar
Auxiliary pump	
Type	Fixed displacement gear pump
Displacement	0.5 gpm 1.9 L/min
Auxiliary pump relief pressure	3400 psi 234.5 bar

SPECIFICATIONS

Bolt Torque Specifications

Size	Threads per inch	SAE Grade 5 Bolts			SAE Grade 8 Bolts		
		Torque - Dry inch-pounds	Torque - Dry foot-pounds	Torque - Dry Newton meters	Torque - Dry inch-pounds	Torque - Dry foot-pounds	Torque - Dry Newton meters
No. 10	24	43		5	60		7
	32	49		6	68		8
1/4 inch	20	96		11	144		16
	28	120		14	168		19
5/16 inch	18		17	23		25	34
	24		19	28		25	34
3/8 inch	16		30	41		45	61
	24		35	48		50	68
7/16 inch	14		50	68		70	95
	20		55	75		80	109
1/2 inch	13		75	102		110	149
	20		90	122		120	163
9/16 inch	12		110	149		150	204
	18		120	163		170	231
5/8 inch	11		150	204		220	298
	18		170	231		240	326
3/4 inch	10		260	353		380	515
	16		300	407		420	570
7/8 inch	9		430	583		600	814
	14		470	637		660	895
1 inch	8		640	868		900	1221
	12		700	949		1000	1356

Torque specifications for lubricated bolts are 25% less than dry torque specifications for each bolt size.

These bolt torque specifications are for general use only. Specification may vary depending on application of bolt.

SPECIFICATIONS

Kubota WG-750 Engine

Displacement	42.21 cu in 0.74 liters
Number of cylinders	3
Bore & stroke	2.68 x 2.68 inches 68 x 68 mm
Horsepower Gross intermitent	24.5 @ 3600 rpm
Firing order	1 - 2 - 3
Low idle	1600 rpm
High idle	3000 rpm
Governor	centrifugal ball mechanical
Compression ratio	9:1
Compression pressure (approx.)	128 to 185 psi 8.8 to 12.7 bar
Pressure (psi) of lowest cylinder must be at least 90% of highest cylinder	
Valve clearances, cold	0.0057 to 0.0072 inches 0.145 to 0.085 mm
Lubrication system	
Oil pressure (operating temp. @ 3850 rpm)	28 to 64 psi 1.9 to 4.4 bar
Oil capacity (including filter)	3.9 quarts 3.25 liters
Oil viscosity requirements	10W-30
Use oils meeting API classification SF (labeled SF/CC or SF/CD) for improved wear protection.	

Starter motor	
Brush length, new	0.669 in 17 mm
Brush length wear limit	0.453 in 11.5 mm
Brush spring tension	50 to 91 ounces 13.7 to 25.5 Newtons
Battery	
Type	12V, Group 24
Quantity	1
Ampere hour	75AH
Cold cranking ampere	875A
Reserve capacity @ 25A rate	125 minutes
Fuel pump	
Static pressure	2.84 psi 0.19 bar
Minimum volume flow (per minute)	1 pint 500 cc

SPECIFICATIONS

Ignition System	
Ignition spark advance	20° BTDC
Ignition coil primary resistance	1.3 to 1.6Ω @ 75°F / 24°C
Ignition coil secondary resistance	10.7 to 14.5 kΩ @ 75°F / 24°C
Spark plug type	NGKBCP4ES-11
Spark plug gap	0.039 to 0.043 inches 1.0 to 1.1 mm
Engine coolant	
Capacity	3.1 quarts 2.9 liters
Alternator	
Output	30A
Fan belt deflection	1/4 to 3/8 inch 7 to 9 mm

Bolt torque specifications		
Bolt description (size)	torque ft-lbs	torque Nm
Head cover cap nuts (M6)	3 to 4	4 to 6
Head Bolts (M8)	29 to 33	37 to 42
Bearing case bolts 1 (M6)	9 to 12	13 to 16
Bearing case bolts 2 (M7)	19 to 22	26 to 30
Flywheel bolts (M10)	40 to 44	54 to 59
Connecting rod bolts (M6)	11 to 14	26 to 30
Rocker arm bracket nuts (M6)	7 to 8	10 to 11
Idle gear shaft nuts (M6)	7 to 8	10 to 11
Spark plug (M14)	14 to 18	20 to 24
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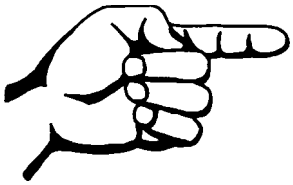
SPECIFICATIONS

Kubota D-905 Engine

Displacement	54.86 cu in 0.90 liters
Number of cylinders	3
Bore and stroke	2.83 x 2.90 inches 72 x 73.6 mm
Horsepower Gross intermitent	26 @ 3600 rpm
Firing order	1 - 2 - 3
Compression ratio	22:1
Compression pressure	412 to 469 psi 28.4 to 32.3 bar
Low idle	1300 rpm
High idle	3000 rpm
Governor	centrifugal mechanical
Valve clearance, cold	0.0057 to 0.0072 in 0.145 to 0.185 mm
Engine coolant	
Capacity	3.3 quarts 3.1 liters
Lubrication system	
Oil pressure	36 to 64 psi 2.48 to 4.41 bar
Oil capacity (including filter)	5.4 quarts 5.1 liters
Oil viscosity requirements	10W-30
Engine oil should have properties of API classification CC/SE, CD/SE, CC/SF or CD/SF grades.	
Injection system	
Injection pump make	Bosch MD
Injection timing	13° to 25° BTDC
Injection pump pressure	1991 psi 137 bar
Fuel requirement	diesel number 2-D
Alternator Output	30A
Starter motor	
Brush length, new	0.5188 in 13 mm
Brush length, minimum	0.3346 in 8.5 mm
Battery	
Type	12V, Group 24
Quantity	1
Ampere hour	75AH
Cold cranking ampere	875A
Reserve capacity @ 25A rate	125 minutes
Fan belt deflection	1/4 to 3/8 inch 7 to 9 mm

Bolt torque specifications

Bolt description (size, grade)	torque ft-lbs	torque Nm
Head cover cap nuts (M7)	5 to 6	7 to 9
Head Bolts (M10)	47 to 50	64 to 69
Bearing case bolts 1 (M8)	22 to 25	29 to 34
Bearing case bolts 2 (M9)	36 to 40	49 to 54
Flywheel bolts (M10)	40 to 44	54 to 59
Connecting rod bolts (M8)	30 to 35	41 to 46
Rocker arm bracket nuts (M7)	16 to 19	22 to 26
Idle gear shaft nuts (M6)	7 to 8	10 to 11
Glow plugs (M10)	14 to 18	20 to 24
Nozzle holder assembly (M20)	36 to 50	49 to 69
Injection pipe retaining nuts (M12)	18 to 25	25 to 34



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Scheduled Maintenance Inspections



Observe and Obey:

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

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

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Keep records on all inspections for three years.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.

About This Section

The Schedule

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

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

Maintenance Tables

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

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

Maintenance Inspection Report

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

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

Maintenance Tables

Table A		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
A-1	Inspect the Operator's and Safety Manuals					
A-2	Inspect the Decals and Placards					
A-3	Inspect for Damage, Loose or Missing Parts					
A-4	Check the Engine Oil Level					
A-5	Check the Engine Coolant Level					
A-6	Check for Fuel Leaks					
A-7	Check the Hydraulic Oil Level					
A-8	Check for Hydraulic Leaks					
A-9	Check the Tire Pressure					
A-10	Test the Platform and Ground Controls					
A-11	Test the Auxiliary Power Operation					
A-12	Test the Tilt Sensor					
A-13	Test the Limit Switches					
A-14	Perform 30 Day Service					
Every 50 hours, perform the following engine maintenance procedure.						
A-15	Clean the Air Filter Element					

MAINTENANCE TABLES

Table A, continued		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
Every 100 hours, perform the following two engine maintenance procedures.						
A-16	Drain the Fuel Filter/Water Separator - Kubota Diesel Models					
A-17	Check the Engine Belt					
Every 200 hours, perform the following engine maintenance procedure.						
A-18	Replace the Engine Oil and Filter					

Table B

B-1	Check the Radiator					
B-2	Check the Engine Choke - Kubota Gasoline/LPG Models					
B-3	Check the Exhaust System					
B-4	Check the Battery					
B-5	Inspect the Electrical Wiring					
B-6	Inspect the Tires and Wheels (including lug nut torque)					
B-7	Confirm the Proper Brake Configuration					
B-8	Check the Oil Level in the Torque Hubs					
B-9	Check the Glow Plugs - Kubota Diesel Models					
B-10	Check and adjust the Engine RPM					

MAINTENANCE TABLES

Table B, continued		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
B-11	Test the Key Switch					
B-12	Test the Emergency Stop Buttons					
B-13	Test the Ground Control Override					
B-14	Test the Platform Self-leveling					
B-15	Test the Service Horn					
B-16	Test the Foot Switch					
B-17	Test the Engine Idle Select					
B-18	Test the Fuel Select Operation - Kubota Gasoline/LPG Models					
B-19	Test the Drive Enable System					
B-20	Test the Drive Brakes					
B-21	Test the Drive Speed - Stowed Position					
B-22	Test the Drive Speed - Raised or Extended Position					
B-23	Test the Alarm Package - Optional Equipment					
B-24	Perform Hydraulic Oil Analysis See D-1 *Test or Replace the Hydraulic Oil*					
Every 400 hours, perform the following engine maintenance procedure.						
B-25	Replace the Diesel Fuel Filter/Water Separator Element - Kubota Diesel Models					

MAINTENANCE TABLES

Table C

		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
C-1	Check the Primary Boom Wear Pads					
C-2	Check the Turntable Rotation Bearing Bolts					
C-3	Check the Free-wheel Configuration					
C-4	Grease the Turntable Rotation Bearing and Worm Drive Gear					
C-5	Replace the Torque Hub Oil					
C-6	Replace the Hydraulic Filters					
C-7	Replace the Gasoline Fuel Filter - Kubota Gasoline/LPG Models					
C-8	Clean or Replace the Distributor Cap and Rotor - Kubota Gasoline/LPG Models					
C-9	Replace the Spark Plugs - Kubota Gasoline/LPG Models					
C-10	Check and Adjust the Air/LPG Mixture - Kubota Gasoline/LPG Models					
C-11	Replace the Engine Air Filter					
C-12	Check and Adjust the Ignition Timing - Kubota Gasoline/LPG Models					
C-13	Check the Engine Valve Clearances - Kubota Gasoline/LPG Models					
C-14	Bleed the Platform Rotator					

MAINTENANCE TABLES

Table D		Tools are required	New parts required	Warm engine required	Cold engine required	Dealer service suggested
D-1	Test or Replace the Hydraulic Oil					
D-2	Change or Recondition the Engine Coolant					
D-3	Change the Fuel Lines					

Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

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

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

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

Legend

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

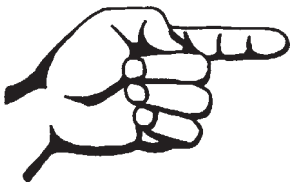
Comments

Checklist A	**Y**	**N**	**R**
Refer to Table A			
A-1 Operator's and Safety manuals			
A-2 Decals and placards			
A-3 Damage, loose or missing parts			
A-4 Check engine oil level			
A-5 Check engine coolant			
A-6 Check for fuel leaks			
A-7 Hydraulic oil level			
A-8 Hydraulic leaks			
A-9 Check the tire pressure			
A-10 Platform and ground controls			
A-11 Auxiliary power			
A-12 Tilt sensor			
A-13 Limit switches			
A-14 30 Day Service			
Perform every 50 hours:			
A-15 Clean the air filter			
Perform every 100 hours:			
A-16 Drain the fuel filter/ water separator - Diesel models			
A-17 Check the engine belt			
Perform every 200 hours:			
A-18 Engine oil and filter			

Checklist B	**Y**	**N**	**R**
Refer to Table B			
B-1 Check the radiator			
B-2 Check the engine choke - gas/LPG			
B-3 Check the exhaust			
B-4 Check the battery			
B-5 Electrical wiring			
B-6 Tires and wheels			
B-7 Brake configuration			
B-8 Torque hub oil level			
B-9 Glow plugs - diesel			
B-10 Check engine RPM			
B-11 Key Switch			
B-12 Emergency Stop			
B-13 Ground control override			
B-14 Platform leveling			
B-15 Service horn			
B-16 Foot switch			
B-17 Engine idle select			
B-18 Fuel select - gas/LPG			
B-19 Drive enable system			
B-20 Drive brakes			
B-21 Drive speed-stowed			
B-22 Drive speed-raised			
B-23 Alarm package			
B-24 Hydraulic oil analysis			
Perform every 400 hours:			
B-25 Replace diesel fuel filter			

Checklist C	**Y**	**N**	**R**
Refer to Table C			
C-1 Boom wear pads			
C-2 Turntable bearing bolts			
C-3 Free-wheel configuration			
C-4 Grease rotation bearing			
C-5 Torque hub oil			
C-6 Hydraulic filters			
C-7 Gasoline fuel filter			
C-8 Distributor cap - gas/LPG			
C-9 Spark plugs - gas/LPG			
C-10 Air/LPG mixture - gas/LPG			
C-11 Air filter			
C-12 Ignition timing - gas/LPG			
C-13 Valve clearance - gas/LPG			
C-14 Platform rotator			

Checklist D	**Y**	**N**	**R**
Refer to Table D			
D-1 Hydraulic oil			
D-2 Engine coolant			
D-3 Fuel lines			



Scheduled Maintenance Procedures



Observe and Obey:

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

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

- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating machine.
- ☑ Keep records on all inspections for three years.
- ☑ Unless otherwise specified, perform each procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Key switch in the OFF position with the key removed
  - Wheels chocked
  - All exernal AC power 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

⚠DANGER Indicates the presence of a hazard that **will** cause death or serious injury.

⚠WARNING Indicates the presence of a hazard that **may** cause death or serious injury.

⚠CAUTION Indicates the presence of a hazard that **will** or **may** cause serious injury or damage to the machine.

NOTICE Indicates special operation or maintenance information.

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

Table A Procedures

A-1
Inspect the Operator's and Safety Manuals

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

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

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

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

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

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

A-2
Inspect the Decals and Placards

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

1 Refer to the *Decals* section in the appropriate *Genie Z-34/22 IC Operator's Manual* and use the decal list and illustrations to determine that all decals and placards are in place.

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

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

A-3
Inspect for Damage, Loose or Missing Parts

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

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

- Electrical components, wiring and electrical cables
- Auxiliary power unit, hoses, fittings, cylinders and manifolds
- Fuel and hydraulic tanks
- Drive motors
- Turntable motors and torque hubs
- Boom components and wear pads
- Dents or damage to machine
- Tires and wheels
- Engine and related components
- Limit switches
- Alarms, service horn and beacon
- Nuts, bolts and other fasteners
- Platform entry mid-rail or gate
- Cracks in welds or structural components
- Compartment covers and latches

A-4
Check the Engine Oil Level

Maintaining the proper engine oil level is essential to good engine performance and service life. Operating the machine with an improper oil level can damage engine components.

NOTICE Check the oil level with the engine off.

1 Check the oil level dipstick.

⊙ Result: The oil should be at the full mark on the dipstick. Add oil as needed.

Kubota Engine WG-750	3.9 quarts
Oil capacity (including filter)	3.25 liters
Oil viscosity requirements	10W-40

Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator's Manual on your machine.
Units ship with 10W-40.

Kubota Engine D-905	5.4 quarts
Oil capacity (including filter)	5.1 liters
Oil viscosity requirements	10W-40

Extreme operating temperatures may require the use of alternative engine oils. For oil requirements, refer to the Engine Operator's Manual on your machine.
Units ship with 10W-40.

TABLE A PROCEDURES

A-5
Check the Engine Coolant Level

Maintaining the engine coolant at the proper level is essential to engine service life. Improper coolant level will affect the engine's cooling capability and damage engine components. Daily checks will allow the inspector to identify changes in coolant level that might indicate cooling system problems.

1 Check the fluid level in the coolant recovery tank. Add fluid as needed.

⊙ Result: The fluid level should be in the NORMAL range.

A-6
Check for Fuel Leaks

Failure to detect and repair fuel leaks will result in an unsafe condition. An explosion or fuel fire may cause death or serious injury.

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

1 Open the shutoff valve on the liquid petroleum gas (LPG) tank by turning it counterclockwise.

2 Perform a visual inspection around the areas listed below. An LPG detector may be necessary to locate LPG leaks.

Kubota Gas models:

· LPG tank, hoses and fittings, solenoid shutoff valve, LPG regulator and carburetor

· gasoline tank, shutoff valve, solenoid shutoff valve, hoses and fittings, fuel pump and carburetor

Kubota Diesel models:

· fuel tank, shutoff valve, hoses and fittings, fuel pump, fuel filter/water separator, fuel injection pump and fuel injectors

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

TABLE A PROCEDURES

A-7
Check the Hydraulic Oil Level

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

1 Be sure that the boom is in the stowed position, then visually inspect the sight gauge located on the side of the hydraulic tank.

⊙ Result: The hydraulic oil level should be within the top 2 inches (5 cm) of the sight gauge

Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
Hydraulic tank capacity	18 gallons 68.1 liters
Hydraulic system, 2WD Models (including tank)	21 gallons 79.5 liters
Hydraulic system, 4WD Models (including tank)	22 gallons 83.3 liters

A-8
Check for Hydraulic Leaks

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

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

- Hydraulic reservoir—filter, fittings, hoses and turntable surface
- Engine compartment—hydraulic power unit, pumps, suction filter, fittings, hoses, and turntable surface
- All hydraulic cylinders
- All hydraulic manifolds
- Primary, secondary and jib booms
- The underside of the turntable
- The underside of the drive chassis
- Ground area under the machine

TABLE A PROCEDURES

A-9
Check the Tire Pressure

⚠WARNING Bodily injury hazard. An over-inflated tire can explode and may cause death or serious injury.

NOTICE This procedure does not need to be performed on machines equipped with the foam-filled tire option.

To safeguard maximum stability, achieve optimum machine handling and minimize tire wear, it is essential to maintain proper pressure in all air-filled tires.

1 Check each tire with an air pressure gauge and add air as needed.

Tire Specifications	2WD Models	4WD Models
Industrial tire	9-14.5 LT 100 psi / 6.89 bar	
Rough terrain tire	10-16.5 NHS 45 psi / 3.1 bar	10-16.5 NHS 45 psi / 3.1 bar

A-10
Test the Platform and Ground Controls

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

1 Start the engine from the ground controls.

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

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

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

⊙ Result: All boom and platform functions should operate through a full cycle. Descent alarm (if equipped) should sound while boom is lowering.

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

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

⊙ Result: No function should operate, the machine should stop.

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

6 Start the engine from the platform controls.

7 Operate each machine function through a full cycle.

⊙ Result: All machine functions should operate smoothly.

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

⊙ Result: No function should operate, the machine should stop.

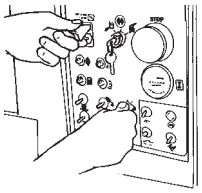
NOTICE Kubota Diesel models: All functions should stop immediately. The engine will shut off after 2 to 3 seconds.

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

A-11
Test the Auxiliary Power Operation

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

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

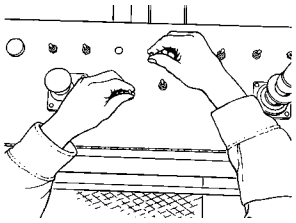


2 Simultaneously hold the auxiliary power switch ON while activating each function through a partial cycle.

⊙ Result: Each function should operate smoothly.

3 Turn the key switch to platform control.

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



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

⊙ Result: Each function should operate smoothly.

TABLE A PROCEDURES

A-12
Test the Tilt Sensor

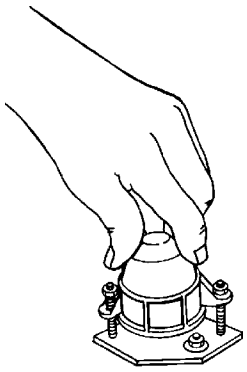
The tilt sensor sounds an alarm in the platform when the incline of the drive chassis exceeds 4.5 degrees.

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

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

2 Open the engine side cover and press down on one side of the tilt sensor.

⊙ Result: After a 1.5 second delay, the alarm in the platform should sound.



A-13
Test the Limit Switches

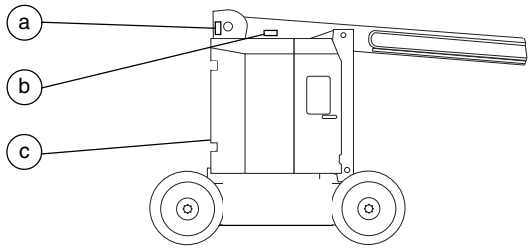
Detecting limit switch malfunctions is essential to safe machine operation. The drive limit switches are used to restrict drive speed when the boom is raised. The drive enable limit switch activates a signal light to inform the operator that the platform is over the steering wheels, and stops drive movement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

Drive Limit Switch

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

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

2 Manually activate the primary boom drive limit switch.



a primary boom drive limit switch
b boom extend drive limit switch
c secondary boom drive limit switch

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

TABLE A PROCEDURES

3 Manually activate the boom extend limit switch.

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

4 Start the engine from the ground controls.

5 Raise the secondary boom 5 feet (1.5 m).

6 Manually activate the secondary boom limit switch.

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

7 Lower the boom to the stowed position.

8 Turn the key switch to the platform controls.

9 Slowly move the drive control handle off center.

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

10 Raise the primary boom 5 feet (1.5 m).

11 Slowly move the drive control handle off center.

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

12 Lower the boom to the stowed position.

13 Raise the secondary boom 5 feet (1.5 m).

14 Slowly move the drive control handle off center.

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

15 Lower the boom to the stowed position.

16 Extend the primary boom 3 feet (0.9 m).

17 Slowly move the drive control handle off center.

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

Drive speed, maximum, raised	
40 feet/40 seconds	12.2 m/40 seconds

Drive Enable Limit Switch

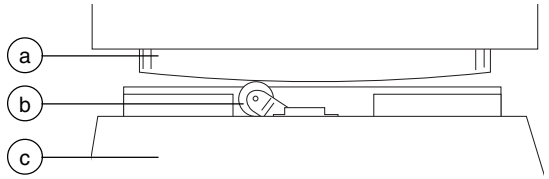
1 With the engine off and the boom in the stowed position, visually inspect the drive enable limit switch for the following:

· Broken or missing rollers or arms

· Missing fasteners

· Loose wiring

2 Manually activate the drive enable limit switch.



a turntable rotation bearing
b drive enable limit switch
c drive chassis

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

3 Start the engine from the platform controls.

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

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

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

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

TABLE A PROCEDURES

A-14
Perform 30 Day Service

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

1 Perform the following maintenance procedures:
- A-18 Replace the Engine Oil and Filter
- B-6 Inspect Tires and Wheels
- C-2 Check the Turnable Rotation Bearing Bolts
- C-6 Replace the Hydraulic Filters

A-15
Clean the Air Filter Element

NOTICE Kubota engine specifications require that this procedure be performed every 50 hours. Perform this procedure more often if dusty conditions exist.

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 **Diesel models:** Remove the retaining fastener from the air cleaner element end cap. Remove the end cap.

Gasoline/LPG models: Release the latches from the air cleaner canister end cap. Remove the end cap.

2 Remove the filter element.

3 Clean the inside of the canister and the end cap with a damp cloth.

4 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.

5 Install the filter element.

6 **Diesel models:** Install the air cleaner element end cap retaining fastener.

Gasoline/LPG models: Install the air cleaner end cap and secure the latches.

A-16
Drain the Fuel Filter/ Water Separator - Kubota Diesel Models

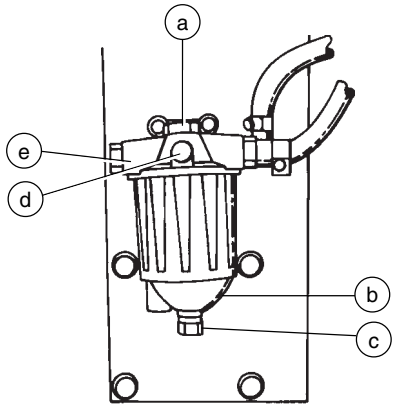
NOTICE Engine specifications require that this procedure be performed every 100 hours. Poor fuel quality or very wet conditions may necessitate performing this procedure more often.

Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and component damage.

⚠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 Loosen the vent plug located on the fuel filter/ water separator head.



Fuel filter/water separator
a head bolt
b filter bowl
c drain plug
d vent plug
e separator head

2 Loosen the drain plug located at the bottom of the bowl. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.

3 Tighten the vent plug and clean up any spills or wet surfaces.

NOTICE If the fuel bowl is completely drained, you must prime the fuel filter/water separator before starting the engine. Refer to B-25 in this section, *Replace The Diesel Fuel Filter/Water Separator,* for instructions on how to prime the fuel filter/water separator.

4 Start the engine from the ground controls and check the fuel filter/water separator for leaks.

TABLE A PROCEDURES

A-17
Check the Engine Belt

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

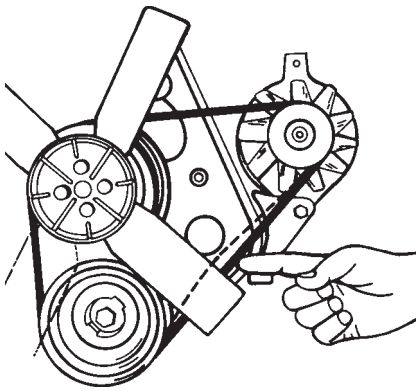
Maintaining the engine belt is essential to good engine performance and service life. The machine will not operate properly with a loose or defective belt and continued use may cause component damage.

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

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

1 Inspect the engine belt for:
- Cracking
- Glazing
- Separation
- Breaks

2 Check the engine belt for proper tension.



Belt deflection	1/4 to 3/8 inch 7 to 9 mm

A-18
Replace the Engine Oil and Filter

NOTICE Kubota engine specifications require that this procedure be performed every 200 hours. Perform this procedure more often if dusty conditions exist or the machine is subjected to extended low idle operation.

Periodic replacement of the engine oil and filter is essential to good engine performance. Operating the machine with an improper oil level or neglecting periodic oil and filter changes can damage engine components. A daily check of elapsed machine hours against the hours noted on the oil filter will allow the inspector to anticipate and perform oil and filter changes at the 200 hour interval.

⚠CAUTION Bodily injury hazard. Beware of hot engine parts and oil. Contact with hot engine oil and/or engine parts may cause severe burns.

NOTICE Perform this procedure after warming the engine to normal operating temperature.

1 Remove the oil filler cap located on the valve cover.

2 Pull the end of the oil drain hose out from under the engine.

3 Open the drain valve on the oil pan and allow all of the oil from the engine to drain into a suitable container. Dispose of the oil properly.

4 Close the drain valve.

TABLE A PROCEDURES

5 Pull up on the pull pin on the engine pivot plate located under the pump. Swing the engine pivot plate away from the machine to access the oil filter.

6 Clean the area around the oil filter, then use an oil filter wrench and remove the filter.

7 Apply a thin layer of oil to the new oil filter gasket. Then install the filter and tighten it securely by hand.

8 Use a permanent ink marker to write the date and number of hours from the hour meter on the oil filter.

9 Fill the engine with new oil per specifications and install the filler cap.

10 Start the engine from the ground controls. Allow the engine to run for 30 seconds, then turn the engine off.

11 Check the oil filter and the oil drain valve for leaks.

12 Swing the engine pivot plate back to its original position and make sure the pull pin locks into the hole.

13 Check the engine oil level dipstick. Add oil if needed.

Kubota Engine WG-750 **Oil capacity (including filter)**	3.9 quarts 3.25 liters
Oil viscosity requirements	10W-40
Use oils meeting API classification SF (labeled SF/CC or SF/CD) for improved wear protection. Units ship with 10W-40 SG/CC	
Oil filter - Genie Part Number	22106
Kubota Engine D-905 **Oil capacity (including filter)**	5.4 quarts 5.1 liters
Oil viscosity requirements	10W-40
Engine oil should have properties of API classification CC/SE, CD/SE, CC/SF or CD/SF grades. Units ship with 10W-40 SG/CC	
Oil filter - Genie Part Number	31744

Table B Procedures

B-1
Check the Radiator

Maintaining the radiator in good condition is essential for good engine performance. Operating a machine with a damaged or leaking radiator may result in engine damage. Also, restricting air flow through the radiator (i.e., dirt or debris) will affect the performance of the cooling system. A frequent check allows the inspector to identify changes in the condition of the radiator that might indicate cooling system problems.

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

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

1 Inspect the radiator for leaks and physical damage.

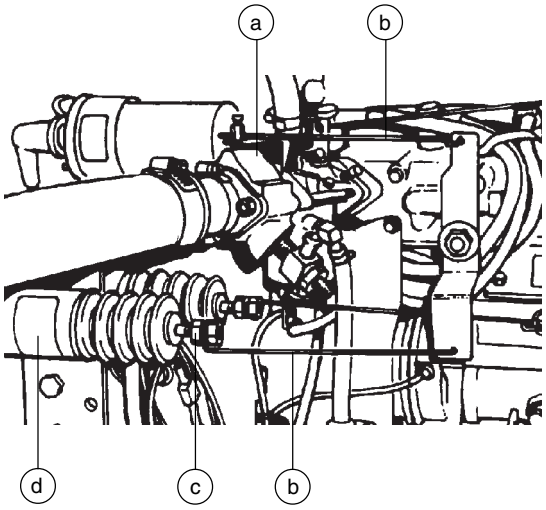
2 Clean the radiator fins of debris and foreign materials.

B-2
Check the Engine Choke - Kubota Gasoline/LPG Models

A properly functioning choke is essential to good engine performance. An improperly functioning choke will result in difficulty with engine starting.

NOTICE The manual choke is solenoid operated and is only operational in the gasoline mode. This choke will not operate in propane mode.

1 Check the choke linkage connections.



a carburetor
b linkage
c linkage lock nuts
d choke solenoid

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

3 While operating the choke switch, inspect the choke solenoid.

⊙ Result: The choke solenoid should be fully retracted when the choke switch is activated.

4 Turn the key switch to platform control.

5 Pull out the platform control Emergency Stop button to the ON position and then operate the choke switch and listen for choke solenoid operation.

TABLE B PROCEDURES

B-3
Check the Exhaust System

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

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

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

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

2 Be sure that all nuts and bolts are tight.

3 Inspect all welds for cracks.

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

B-4
Check the Battery

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

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

1 Put on protective clothing and eye wear.

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

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

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

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

6 Install the battery vent caps.

TABLE B PROCEDURES

B-5
Inspect the Electrical Wiring

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

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

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

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

2 Start the engine from the ground controls.

3 Raise the secondary boom until the lower mid-pivot is 10 feet (3 m) off the ground.

4 Inspect the turntable center area for burnt, chafed and pinched cables.

5 Lower the boom to the stowed position and turn the engine off.

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

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

B-6
Inspect the Tires and Wheels (including lug nut torque)

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

1 Check the tire surface and sidewalls for cuts, cracks, punctures and unusual wear.

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

3 Check each lug nut for proper torque.

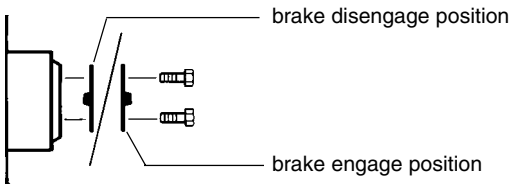
Tire Specifications	**2WD Models**	**4WD Models**
Industrial tire	9-14.5 LT 100 psi / 6.89 bar	
Rough terrain tire	10-16.5 NHS 45psi / 3.1 bar	10-16.5 NHS 45 psi / 3.1 bar
Lug nut torque	**Lubricated** 94 ft-lbs 127 Nm	**Dry** 125 ft-lbs 169 Nm

TABLE B PROCEDURES

B-7
Confirm the Proper Brake Configuration

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

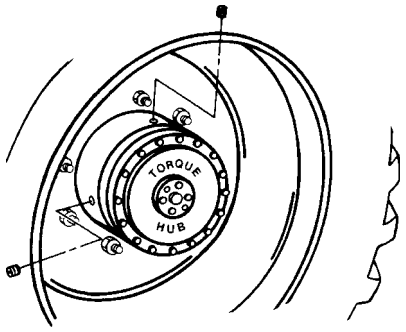
1 Check each torque hub disconnect cap to be sure it is in the engaged position.



B-8
Check the Oil Level in the Torque Hubs

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

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



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

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

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

4 Apply pipe thread sealant to the plugs, then install the plugs into the hub.

5 Repeat this procedure for each torque hub.

Drive Torque Hub Oil	
Capacity	17 fl oz 0.5 L
Type: SAE 90 multipurpose hypoid gear oil - API service classification GL5	

TABLE B PROCEDURES

B-9
Check the Glow Plugs - Kubota Diesel Models

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

NOTICE Perform this procedure with the engine turned off.

1 Connect the leads from an ohmmeter between the far left glow plug and machine ground.

⊙ Result: The resistance should be approximately 1.0Ω.

2 If the ohm reading is different than 1.0Ω, remove the wire and connector plate from the three individual glow plugs. Then, one glow plug at a time, check the resistance between the glow plug and machine ground.

⊙ Result: The resistance should be approximately 1.8Ω for each individual glow plug.

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

4 Connect the red (+) lead from a volt meter to the number three glow plug. Connect the black (-) lead to ground.

5 Hold the glow plug switch in the ON position.

⊙ Result: The volt meter should read 12 volts.

B-10
Check and Adjust the Engine RPM

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.

Kubota Gasoline/LPG Models

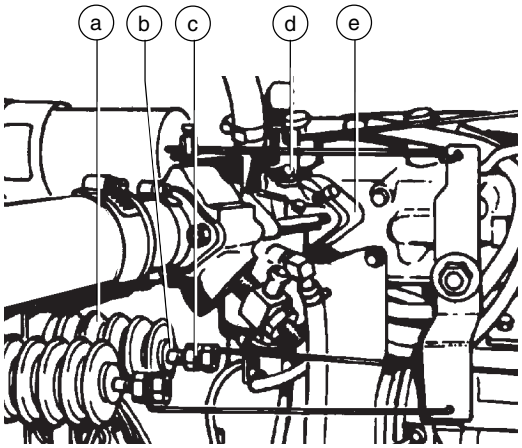
NOTICE Perform this procedure in gasoline mode with the engine at normal operating temperature.

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

⊙ Result: Low idle should be 1600 rpm.

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

2 Turn the low idle adjustment screw on the carburetor clockwise to increase rpm or counterclockwise to decrease rpm.



Kubota Gasoline/LPG idle adjustments
a solenoid boot
b high idle adjustment nut
c spring lock nut
d low idle adjustment
e carburetor

TABLE B PROCEDURES

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

⊙ Result: High idle should be 3000 rpm.

If high idle rpm is correct, disregard adjustment steps 4 through 6.

4 Loosen the spring lock nut.

5 Turn the high idle adjustment nut and spring lock nut clockwise to increase the rpm or counterclockwise to decrease the rpm.

6 Tighten the spring lock nut. Then recheck the rpm.

Kubota Gas/LPG Models	
Low idle	1600 rpm
High idle	3000 rpm

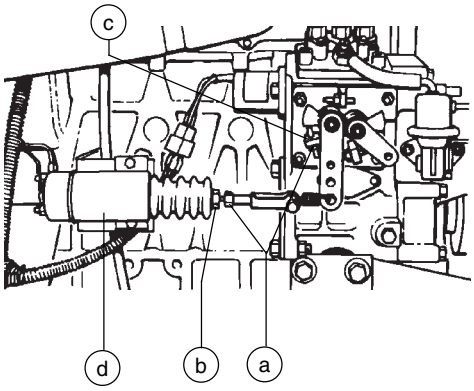
Kubota Diesel models

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

Result: Low idle should be 1300 rpm.

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

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



Kubota Diesel idle adjustments
a lock nut
b high idle adjustment nut
c low idle adjustment screw
d rpm solenoid

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

⊙ Result: High idle should be 3000 rpm.

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

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

Kubota Diesel models	
Low idle	1300 rpm
High idle	3000 rpm

TABLE B PROCEDURES

B-11
Test the Key Switch

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

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

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

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

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

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

5 Check the machine functions from the **platform controls**.

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

6 Turn the key switch to the OFF position.

⊙ Result: No function should operate, the machine should stop.

B-12
Test the Emergency Stop Buttons

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

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

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

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

⊙ Result: No functions should operate, the machine should stop.

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

4 Push down the Emergency Stop button to the OFF position.

⊙ Result: No machine functions should operate.

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

B-13
Test the Ground Control Override

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

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

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

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

⊙ Result: All boom functions should operate.

B-14
Test the Platform Self-leveling

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

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

2 Lower the boom to the stowed position.

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

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

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

TABLE B PROCEDURES

B-15
Test the Service Horn

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

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

2 Push down the service horn button at the platform controls.

⊙ Result: The service horn should sound.

B-16
Test the Foot Switch

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

NOTICE The engine should not start with the footswitch pressed down.

1 Start the engine from the platform controls.

2 Without pressing down the foot switch, check the machine functions.

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

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

⊙ Result: The machine functions should operate.

B-17
Test the Engine Idle Select

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

Low idle (turtle symbol) allows the operator to control individual boom functions and to drive the machine at a reduced speed.

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

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

⊙ Result: The engine should change to high idle.

3 Release the engine idle control switch.

⊙ Result: The engine should return to low idle.

4 Turn the key switch to platform controls.

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

⊙ Result: The engine should change to high idle.

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

⊙ Result: The engine should change to low idle.

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

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

8 Press down the foot switch.

⊙ Result: The engine should change to high idle.

TABLE B PROCEDURES

B-18
Test the Fuel Select Operation - Kubota Gasoline/LPG Models

The ability to select and switch between gasoline and LPG fuels as needed is essential to safe machine operation. A fuel selection can be made when the engine is running or not. Switching malfunctions and/or the failure of the engine to start and run properly in both fuel modes and through all idle speeds can indicate fuel system problems that could develop into a hazardous situation.

NOTICE Perform this test after checking the gasoline and LPG fuel levels, and warming the engine to normal operating temperature.

1 Move the fuel select switch to gasoline and then move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol).

2 Start the engine from the platform controls and allow it to run at low idle.

3 Press down the foot switch to allow the engine to run at high idle.

⊙ Result: The engine should start promptly and operate smoothly in low and high idle.

4 Release the foot switch and stop the engine.

5 Move the fuel select switch to LPG.

6 Restart the engine and allow it to run at low idle.

7 Press down the foot switch to allow the engine to run at high idle.

⊙ Result: The engine should start promptly and operate smoothly in low and high idle.

NOTICE The engine may hesitate momentarily and then continue to run on the selected fuel if the fuel source is switched while the engine is running.

B-19
Test the Drive Enable System

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

1 Start the engine from the platform controls.

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

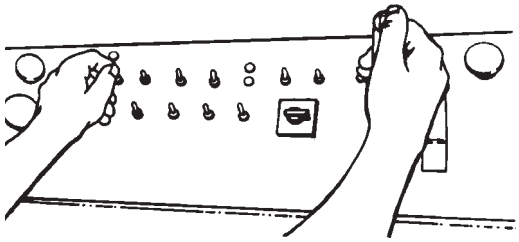
⊙ Result: The drive enable indicator light should turn on.

3 Slowly move the drive control handle off center.

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

4 Hold the drive enable toggle switch to either side and slowly move the drive control handle off center.

⊙ Result: The drive function should operate.



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

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

⊙ Result: The drive enable indicator light should come on.

6 Repeat steps 3 and 4.

B-20
Test the Drive Brakes

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

⚠WARNING Bodily injury hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-7 in this section, *Confirm the Proper Brake Configuration*.

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

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

3 Select high range drive (machine on level surface symbol).

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

5 Lower the boom into the stowed position.

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

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

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

Braking: high range, paved surface	
Stopping distance	3 to 4 ft 0.91 to 1.22 m

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

TABLE B PROCEDURES

B-21
Test the Drive Speed - Stowed Position

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

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

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 Select high range drive (machine on level surface symbol).

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

5 Lower the boom into the stowed position.

6 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.

7 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.

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

Drive speed: stowed position, maximum	
High range (2WD)	40 ft/6.1 sec 12.2m/6.1 sec
High range (4WD)	40 ft/6.8 sec 12.2m/6.8 sec

B-22
Test the Drive Speed - Raised or Extended Position

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

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

1 Create start and finish lines by marking two lines on the ground 40 feet (12.2 m) apart.

2 Start the engine from the platform controls.

3 Move the engine idle select switch to foot switch activated high idle (rabbit and foot switch symbol).

4 Press down the foot switch and raise the primary boom above horizontal.

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.

8 Lower the boom to the stowed position and extend the boom 1 foot / 30 cm.

9 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.

10 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.

11 Continue at top speed and note the time when the machine reference point crosses the finish line.

Drive speed: raised or extended position, maximum	
Raised or extended position	0.6 mph 0.98 km/h 40 ft / 40 sec 12.2 m / 40 sec

B-23
Test the Alarm Package - Optional Equipment

The alarm package includes:

- Travel alarm
- Descent alarm
- Flashing beacon

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

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

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

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

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

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

3 Turn the key switch to platform control.

TABLE B PROCEDURES

4 At the platform controls pull out the Emergency Stop button to the ON position.

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

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

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

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

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

B-24
Perform Hydraulic Oil Analysis

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

B-25
Replace the Diesel Fuel Filter/ Water Separator Element - Kubota Diesel Models

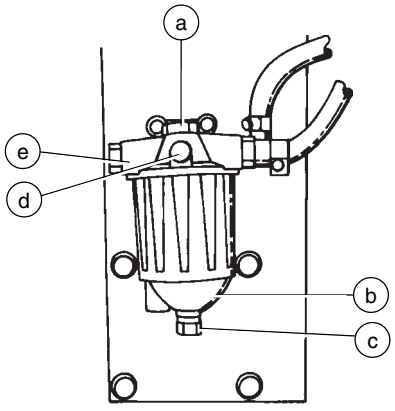
NOTICE Kubota engine specifications require that this procedure be performed every 400 hours.

Replacing the diesel fuel filter is essential to good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

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

NOTICE Perform this procedure with the engine off.

1 Loosen the vent plug located on the fuel filter/ water separator head.



Fuel filter/water separator
a head bolt
b filter bowl
c drain plug
d vent plug
e separator head

2 Place a container under the filter bowl. Then loosen the drain plug located at the bottom of the bowl. Completely drain the fuel.

3 Loosen the head bolt then rotate the filter bowl counterclockwise and remove it.

4 Remove the filter element from the bowl.

5 Apply a thin layer of oil onto the bowl gasket and then install the new filter element (Genie part no. 22942).

6 Tighten the drain plug and fill the bowl with clean diesel fuel.

7 Install the bowl onto the filter head, and then tighten the head bolt to 65 inch-pounds (7 Nm).

8 Tighten the vent plug.

9 Clean up any diesel fuel that may have spilled during the installation procedure.

Bleed the fuel system:

NOTICE Before bleeding the system, fill the fuel tank.

10 Loosen the vent plug located on the filter head.

11 Tighten the vent plug when air stops coming through the vent.

12 Loosen the air vent screw, located on top of the fuel injection pump.

13 Tighten the air vent screw when air stops coming through the air vent.

14 Clean up any fuel that may have spilled.

15 Start the engine from the ground controls and inspect the fuel filter/water separator for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

Table C Procedures

C-1
Check the Primary Boom Wear Pads

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

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

2 Extend the primary boom 10 inches (25 cm).

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

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

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

C-2
Check the Turntable Rotation Bearing Bolts

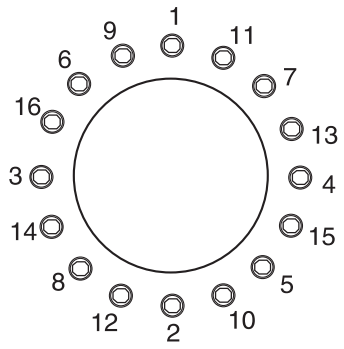
Maintaining proper torque on the turntable bearing bolts is essential to safe machine operation. Improper bolt torque could result in an unsafe operating condition and component damage.

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

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

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

2 Check to ensure that each turntable bearing bolt is torqued in specified order to 190 foot-pounds (258 Newton meters).



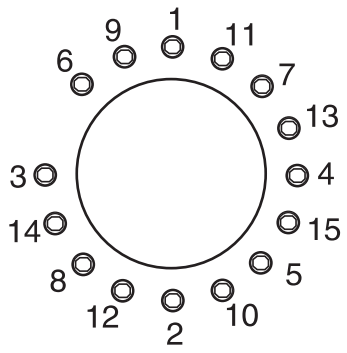
Bolt torque sequence

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

TABLE C PROCEDURES

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

5 Check to ensure that each bearing mounting bolt under the drive chassis is torqued in specified order to 190 foot-pounds (258 Newton meters).



Bolt torque sequence

C-3 Check the Free-wheel Configuration

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

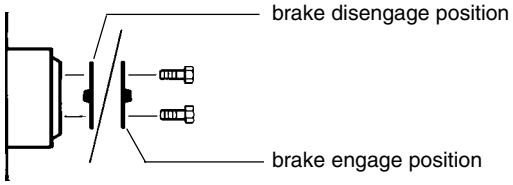
⚠WARNING Collision hazard. Select a work site that is firm and level.

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

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

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

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



5 Manually rotate each non-steering wheel.

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

6 Re-engage the torque hubs by turning over the hub disconnect caps. Carefully remove the jack stands, lower the machine and remove the jack.

⚠WARNING Collision hazard. Failure to re-engage the torque hubs may cause death or serious injury and property damage.

TABLE C PROCEDURES

C-4
Grease the Turntable Rotation Bearing and Worm Drive Gear

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

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

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

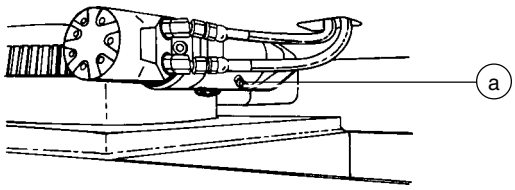
NOTICE The lift cylinder safety chock is available through Genie (part number 36555).

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

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

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

5 Locate the grease fitting on the worm drive housing.



a grease fitting

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

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

Lubricant Type	Multipurpose grease

TABLE C PROCEDURES

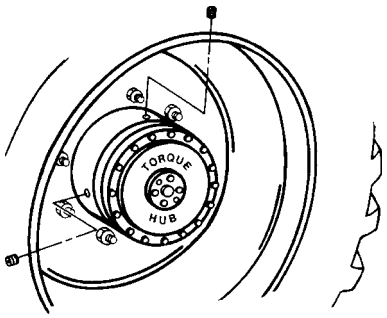
C-5
Replace the Torque Hub Oil

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

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

2 Remove both plugs and drain the oil.

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



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

5 Apply pipe thread sealant to the plugs, then install the plugs.

6 Repeat this procedure for each torque hub.

Oil capacity per hub	17 fluid ounces 0.5 liters

Type: SAE 90 multipurpose hypoid gear oil - API service classification GL5

C-6
Replace the Hydraulic Filters

Replacement of the hydraulic filters are 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.

Hydraulic Return Filter:

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

NOTICE The return hydraulic filter is mounted on the hydraulic tank.

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

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

3 Install the new filter and tighten it securely by hand. Clean up any oil that may have spilled during the replacement procedure.

Return oil filter - Genie part number	44207

TABLE C PROCEDURES

Hydraulic Suction Filter:

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

NOTICE The suction hydraulic filter is mounted in the engine compartment.

1 Close the shut off valve behind the filter.

2 Clean the area around the oil filter, then remove the filter with an oil filter wrench.

3 Apply a thin layer of oil to the new oil filter gasket.

4 Install the new filter and tighten it securely by hand. Clean up any oil that may have spilled during the replacement procedure.

Suction oil filter - Genie part number	43686

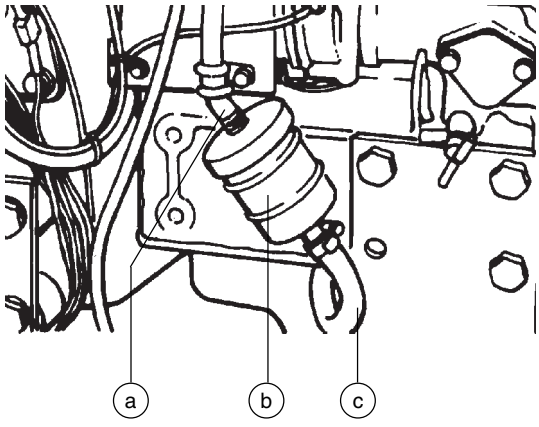
C-7
Replace the Gasoline Fuel Filter - Kubota Gasoline/LPG Models

Replacing the gasoline fuel filter is essential to good engine performance and service life. A dirty or clogged filter may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel filter 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 Disconnect the fuel hoses from the filter, then remove the filter.



Kubota Gasoline/LPG models
a hose from the fuel filter to the carburetor
b fuel filter
c hose from the fuel filter to the fuel pump

2 Install the new fuel filter (Genie part no. 23168) with the flow direction arrow on the filter, pointing toward the carburetor. Then connect the fuel hoses to the filter.

3 Clean up any fuel that may have spilled during the replacement procedure.

4 Start the machine from the ground controls, then inspect the fuel filter and hoses for leaks.

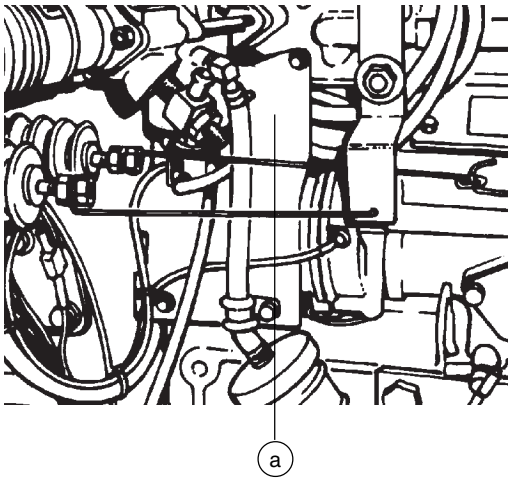
⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

C-8
Clean or Replace the Distributor Cap and Rotor - Kubota Gasoline/LPG Models

A distributor cap and rotor that are clean and free of damage, wear and corrosion are essential to good engine performance and service life. A dirty or worn cap and rotor may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the cap and rotor be cleaned or replaced more often.

NOTICE Perform this procedure with the engine off.

1 Remove the distributor access cover from the side of the engine to access the distributor.



a distributor access cover

2 Label and disconnect the coil and spark plug wires from the distributor cap.

3 Remove the cap and rotor from the distributor.

TABLE C PROCEDURES

4 Clean the cap and rotor using electrical contact cleaner or a damp cloth.

5 Completely dry the cap and rotor.

NOTICE Moisture in the distributor cap will cause the engine to run poorly.

6 Inspect the cap and rotor for corrosion, cracks and abrasion. Replace the cap and rotor if they are damaged.

7 Install the rotor and cap, then connect the coil and spark plug wires.

8 Start the engine and check for smooth operation.

C-9
Replace the Spark Plugs - Kubota Gasoline/LPG Models

Periodic replacement of the spark plugs is essential to good engine performance and service life. Worn, loose or corroded spark plugs will cause the engine to perform poorly and may result in component damage.

NOTICE Perform this procedure with the engine off.

1 Label, then disconnect the plug wires from the spark plugs by grasping the molded boot. Do not pull on the plug wire.

2 Blow out any debris around spark plugs.

3 Remove all the spark plugs from the engine.

4 Adjust the gap on each new spark plug.

5 Install the new spark plugs, then connect the wires. Be sure that each spark plug wire is attached to the correct spark plug.

Spark plug specifications	
Spark plug type	NGK BCP4ES-11
Spark plug gap	0.039 to 0.043 inch 1.0 to 1.1 mm
Spark plug torque	14 to 18 ft-lbs 20 to 24 Nm

C-10
Check and Adjust the Air/LPG Mixture - Kubota Gasoline/LPG Models

Maintaining the proper air-to-fuel mixture during liquid propane gas (LPG) operation is essential to good engine performance.

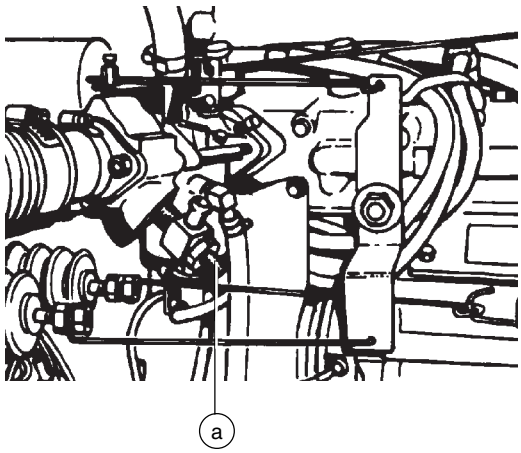
⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE The engine rpm needs to be preset for gasoline fuel operation before adjusting the LPG idle mixture. Refer to B-10, *Check and Adjust the Engine RPM.*

NOTICE The engine should be warmed to normal operating temperature before performing this procedure.

1 Move the fuel select switch to LPG fuel and start the engine from the ground controls.

2 Loosen the high idle mixture adjustment lock nut.



a high idle mixture adjustment screw

3 Load the system by pressing the primary boom retract switch with the primary boom fully retracted, then move the engine idle control switch to high idle (rabbit symbol).

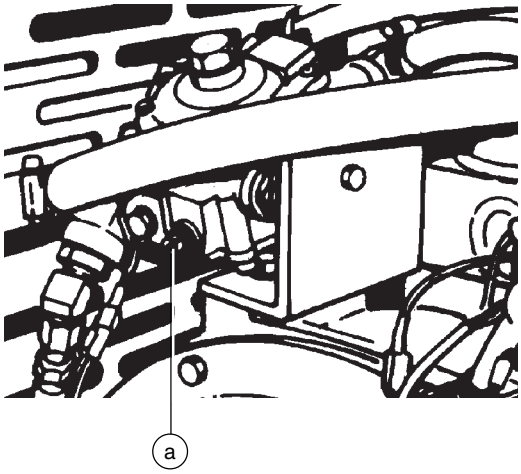
4 Adjust the high idle adjustment screw to obtain an air-to-fuel mixture ratio of 13.0:1 to 13.2:1, using an exhaust gas analyzer.

NOTICE If an exhaust gas analyzer is not available, adjust to obtain peak or optimum rpm.

5 Hold the adjustment screw and tighten the lock nut.

TABLE C PROCEDURES

6 Move the engine idle control switch to low idle (turtle symbol) and adjust the low idle mixture adjustment screw to obtain an air-to-fuel mixture ratio of 13.0:1 to 13.2:1.



a low idle mixture adjustment screw

C-11
Replace the Engine Air Filter

NOTICE Kubota specifications require that this procedure be performed every 1000 hours. Perform this procedure more often if dusty conditions exist.

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 **Diesel models:** Remove the retaining fastener from the air cleaner element end cap. Remove the end cap.

Gasoline/LPG models: Release the latches from the air cleaner canister end cap. Remove the end cap.

2 Remove the filter element.

3 Clean the inside of the canister and the end cap with a damp cloth.

4 Install the new filter element.

5 **Diesel models:** Install the air cleaner element end cap retaining fastener.

Gasoline/LPG models: Install the air cleaner end cap and secure the latches.

Air filters - Genie part numbers	
Kubota D-905 Engine	31745
Kubota WG-750 Engine	22107

C-12
Check and Adjust the Ignition Timing - Kubota Gasoline/LPG Models

Complete information to perform this procedure is available in the *Kubota WG-750 Workshop Manual* (Kubota number: 97897-00643). Genie part number 52492.

C-13
Check the Engine Valve Clearance - Kubota Gasoline/LPG Models

Complete information to perform this procedure is available in the *Kubota WG-750 Workshop Manual* (Kubota number: 97897-00643). Genie part number 52492.

C-14
Bleed the Platform Rotator

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

Table D Procedures

D-1
Test or Replace the Hydraulic Oil

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

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

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

1 Remove the plug from the drain hose on the hydraulic tank.

2 Completely drain the tank into a suitable container. See capacity specifications listed below.

3 Remove the fasteners from the hydraulic tank hold down straps. Remove the straps.

4 Attach a strap from an overhead crane to the hydraulic tank and remove it from the machine.

5 Remove the suction strainers and clean them using a mild solvent.

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

7 Install the suction strainers using a thread sealant on the threads.

8 Re-install the tank on the machine. Install the hydraulic tank hold down straps.

9 Install the plug on the drain hose.

10 Fill the tank with hydraulic oil until the fluid until the fluid is within the top 2 inches (5.1 cm) of the sight gauge. Do not overfill.

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

Hydraulic Oil Specifications

Hydraulic oil type	Dexron equivalent
Hydraulic tank capacity	18 gallons 68.1 liters
Hydraulic system, 2WD Models (including tank)	21 gallons 79.5 liters
Hydraulic system, 4WD Models (including tank)	22 gallons 83.3 liters

D-2
Change or Recondition the Engine Coolant

Replacing or reconditioning the engine coolant is essential to good engine performance and service life. Old or dirty coolant may cause the engine to perform poorly and continued use may cause engine damage. Extremely dirty conditions may require coolant to be changed more frequently.

⚠CAUTION Bodily injury hazard. Beware of hot engine parts and coolant. Contact with hot engine parts and/or coolant will cause severe burns.

NOTICE Perform this procedure with the engine off and cooled.

1 Put on protective clothing and eye wear.

2 Disconnect the coolant return hose at the radiator and drain the coolant return tank.

3 Remove the radiator cap from the radiator.

4 Open the petcock on the radiator and allow all the coolant to drain into a suitable container.

5 After all the coolant has drained, close the petcock. Connect the coolant return hose to the radiator.

6 Open the petcock on the engine block and allow the coolant to drain into a suitable container. After the fluid is drained, close the petcock.

7 Replace all coolant hoses and clamps.

8 Pour the proper coolant mixture (anti-freeze and water) for your climate into the radiator until it is full.

9 Clean up any coolant spilled during this procedure.

10 Start the engine from the ground controls, run it for 30 seconds, and then turn it off.

11 Inspect for leaks and then check the fluid level in the coolant recovery tank. Add water if needed.

Coolant capacity	
Kubota WG-750	3.1 quarts 2.9 liters
Kubota D-905	3.3 quarts 3.1 liters

12 Start the engine from the ground controls and run it until reaching normal operating temperature.

13 Allow engine to cool and check the fluid level in the coolant recovery tank. Add water if needed.

TABLE D PROCEDURES

D-3
Change the Fuel Lines

Maintaining the fuel lines in good condition is essential to safe operation and good engine performance. Failure to detect a worn, cracked or leaking fuel line may cause an unsafe operating condition.

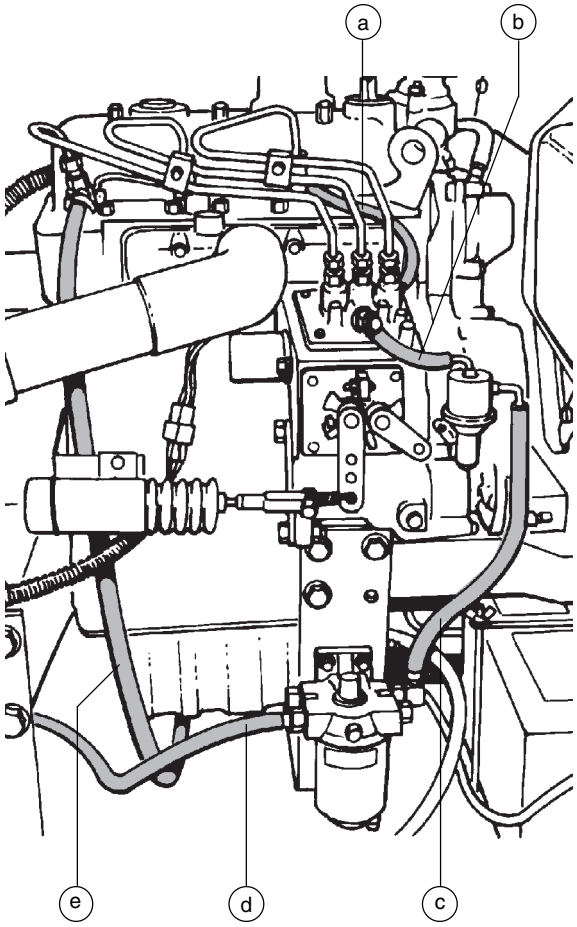
⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel lines in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

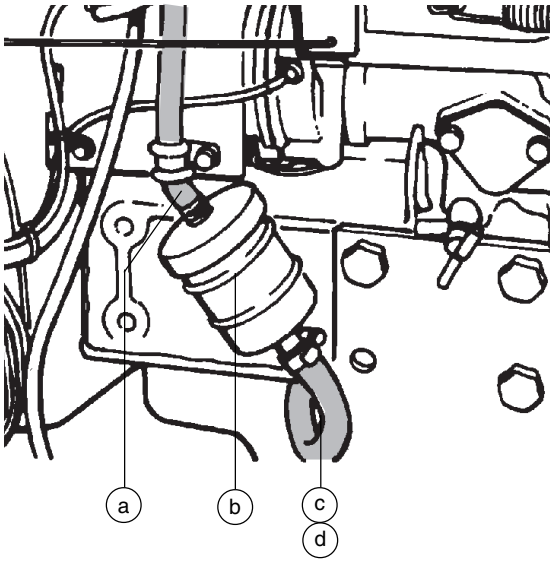
1 Close the manual fuel shutoff valve, located next to the fuel tank.

2 Remove and replace the fuel line hoses and clamps according to the following illustrations:

⚠DANGER Explosion and fire hazard. Fuel may be expelled under pressure. Wrap a cloth around fuel hoses to absorb leaking fuel before disconnecting them.



Kubota Diesel models
- a hose from the injection pump to the injectors
- b hose from the fuel pump to the injection pump
- c hose from the fuel filter to the fuel pump
- d hose from the fuel tank to the fuel filter
- e hose from the injector to the fuel tank



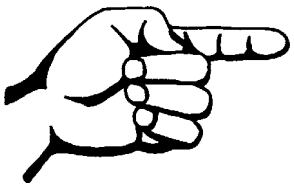
Kubota Gasoline/LPG Models
- a hose from the fuel filter to the carburetor
- b fuel filter
- c hose from the fuel filter to the fuel pump
- d hose from the fuel pump to the fuel shutoff valve (not shown)

3 Clean up any fuel that may have spilled during this procedure.

4 Start the engine from the ground controls, then inspect the fuel filter and hoses for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

NOTICE Once air has been introduced into the diesel fuel injection system, the injectors must be bled before the engine is restarted. See Maintenance procedure B-25, *Replace the Diesel Fuel Filter/ Water Separator Element - Kubota Diesel Models* for information on how to bleed the fuel system.



Troubleshooting Flow Charts



Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Key switch in the OFF position with the key removed
  - Wheels chocked
  - All exernal AC power disconnected from the machine

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-34/22 IC Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Read each appropiate flow chart thoroughly. Attempting shortcuts may produce hazardous conditions.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

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

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

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

NOTICE Perform all troubleshooting on a firm level surface.

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

TROUBLESHOOTING FLOW CHARTS

About This Section

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

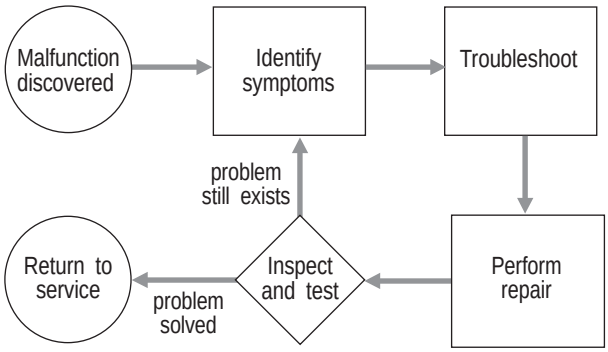


Chart 1

Engine Will Not Crank Over - Kubota Gas/ LPG Models

Be sure key switch is in the appropriate position.

Be sure the Emergency Stop buttons are pulled up to the ON position.

Be sure the circuit breaker and fuses are not tripped or blown.

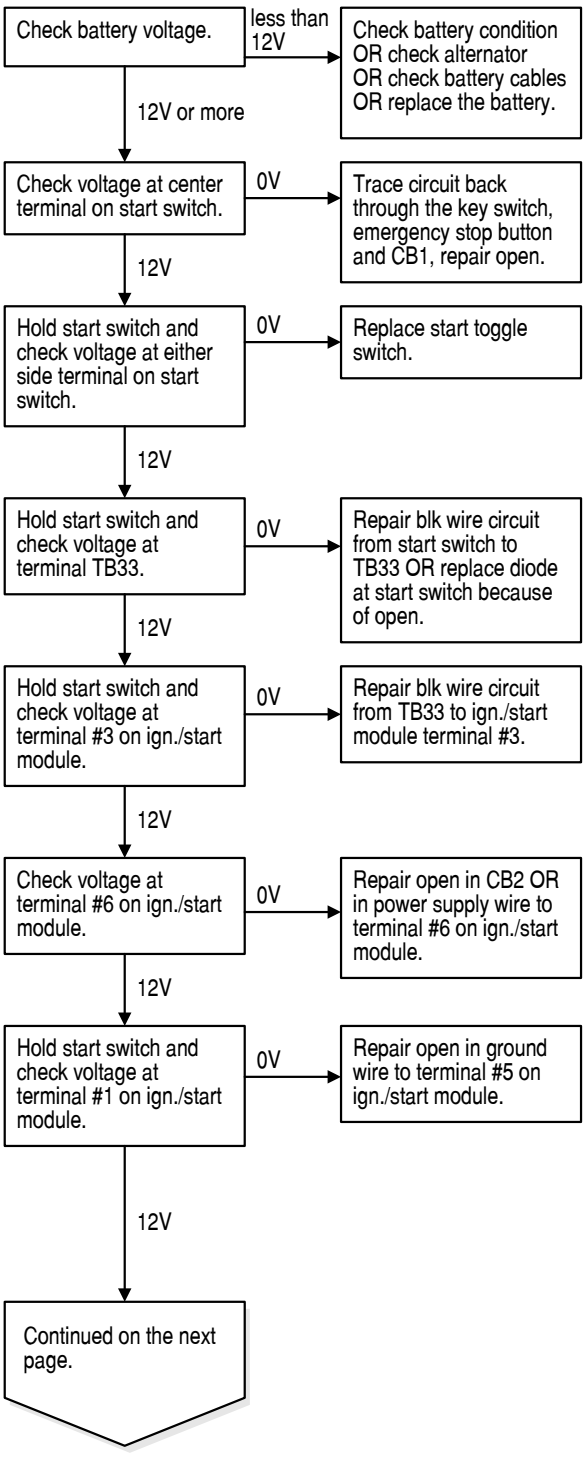


CHART 1

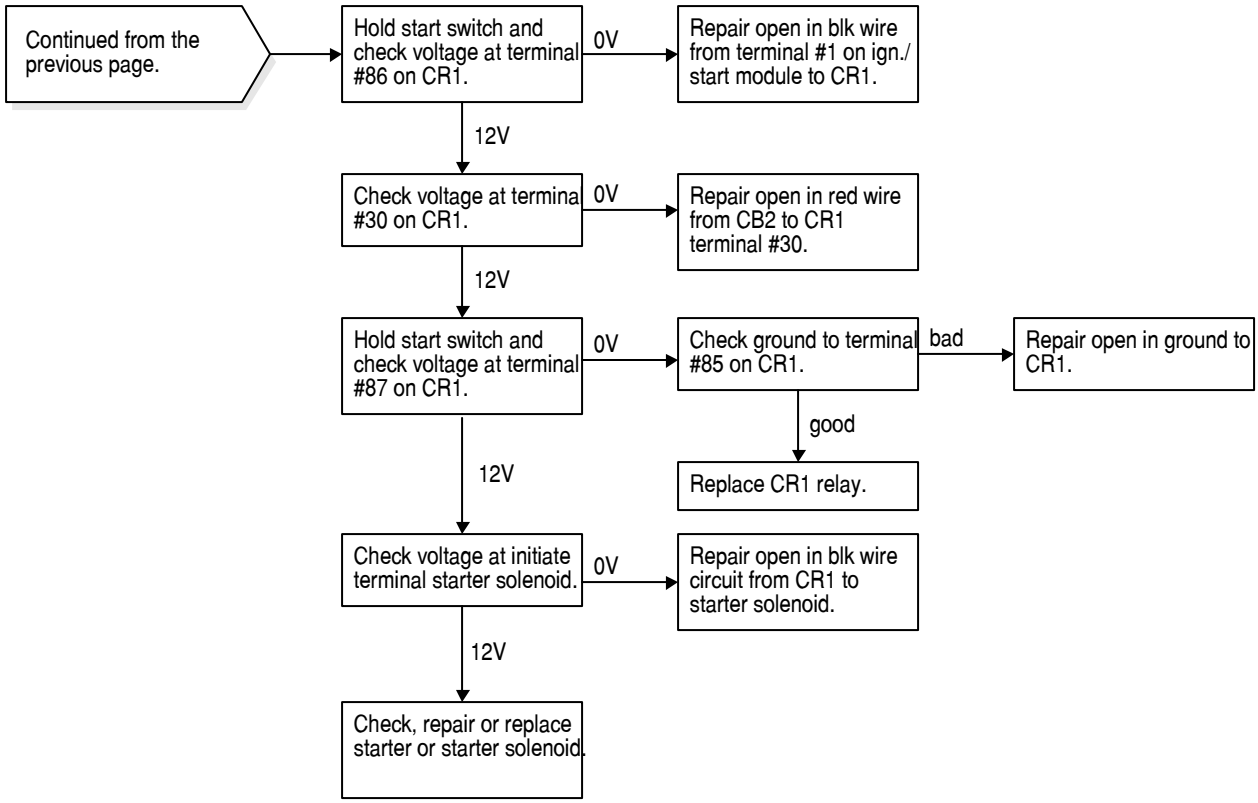

Continued from the previous page.
Hold start switch and check voltage at terminal #86 on CR1.
0V
Repair open in blk wire from terminal #1 on ign./ start module to CR1.
12V
Check voltage at termina #30 on CR1.
0V
Repair open in red wire from CB2 to CR1 terminal #30.
12V
Hold start switch and check voltage at terminal #87 on CR1.
0V
Check ground to terminal #85 on CR1.
bad
Repair open in ground to CR1.
good
Replace CR1 relay.
12V
Check voltage at initiate terminal starter solenoid.
0V
Repair open in blk wire circuit from CR1 to starter solenoid.
12V
Check, repair or replace starter or starter solenoid.

Chart 2

Engine Cranks Over But Will Not Start - Kubota Gas/ LPG Models

Be sure to check fuel levels (gasoline/LPG).

Be sure the fuel shut-off valves are turned on (gasoline/LPG).

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

Be sure the choke is not sticking closed.

Perform the following tests in the gasoline mode only.

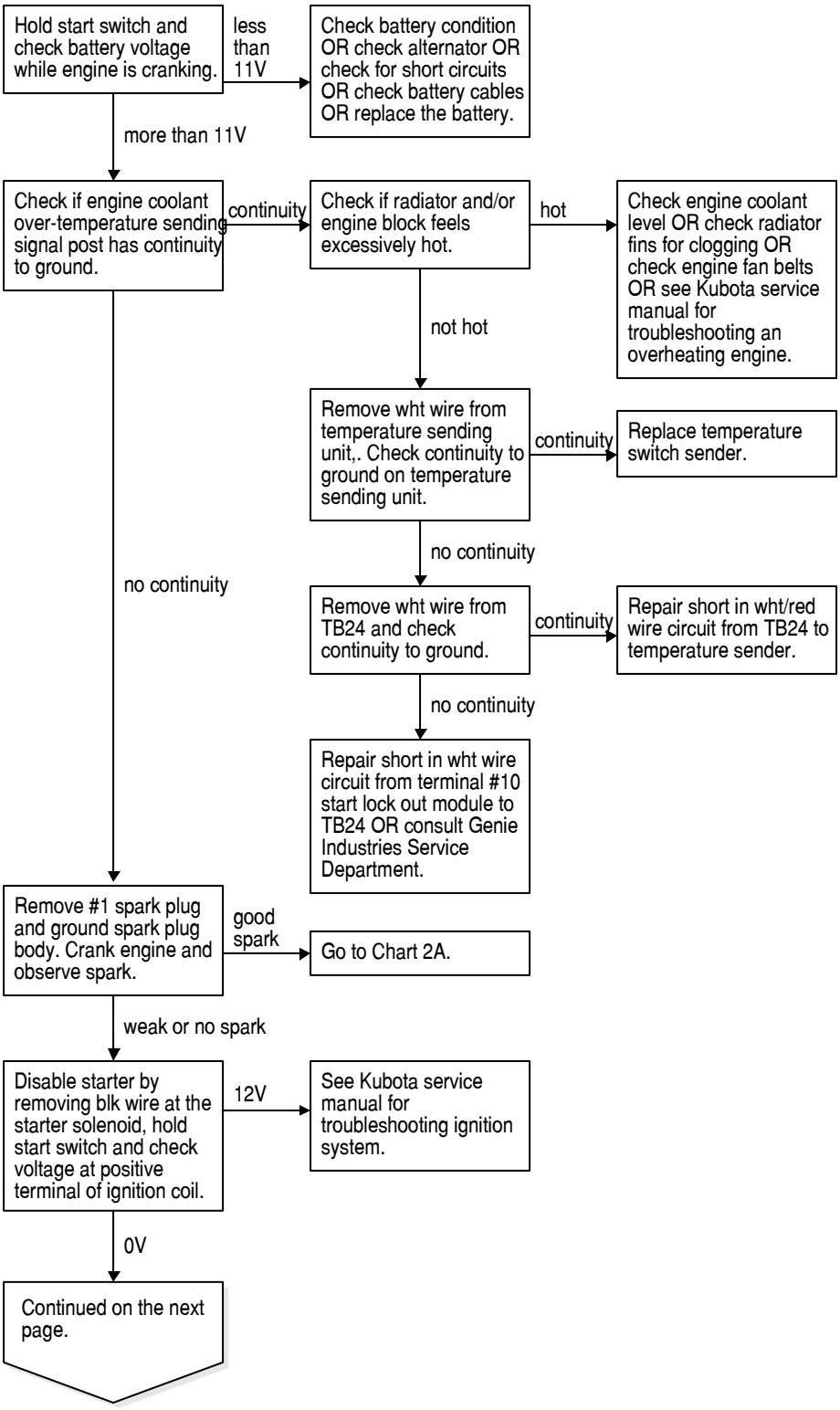


CHART 2

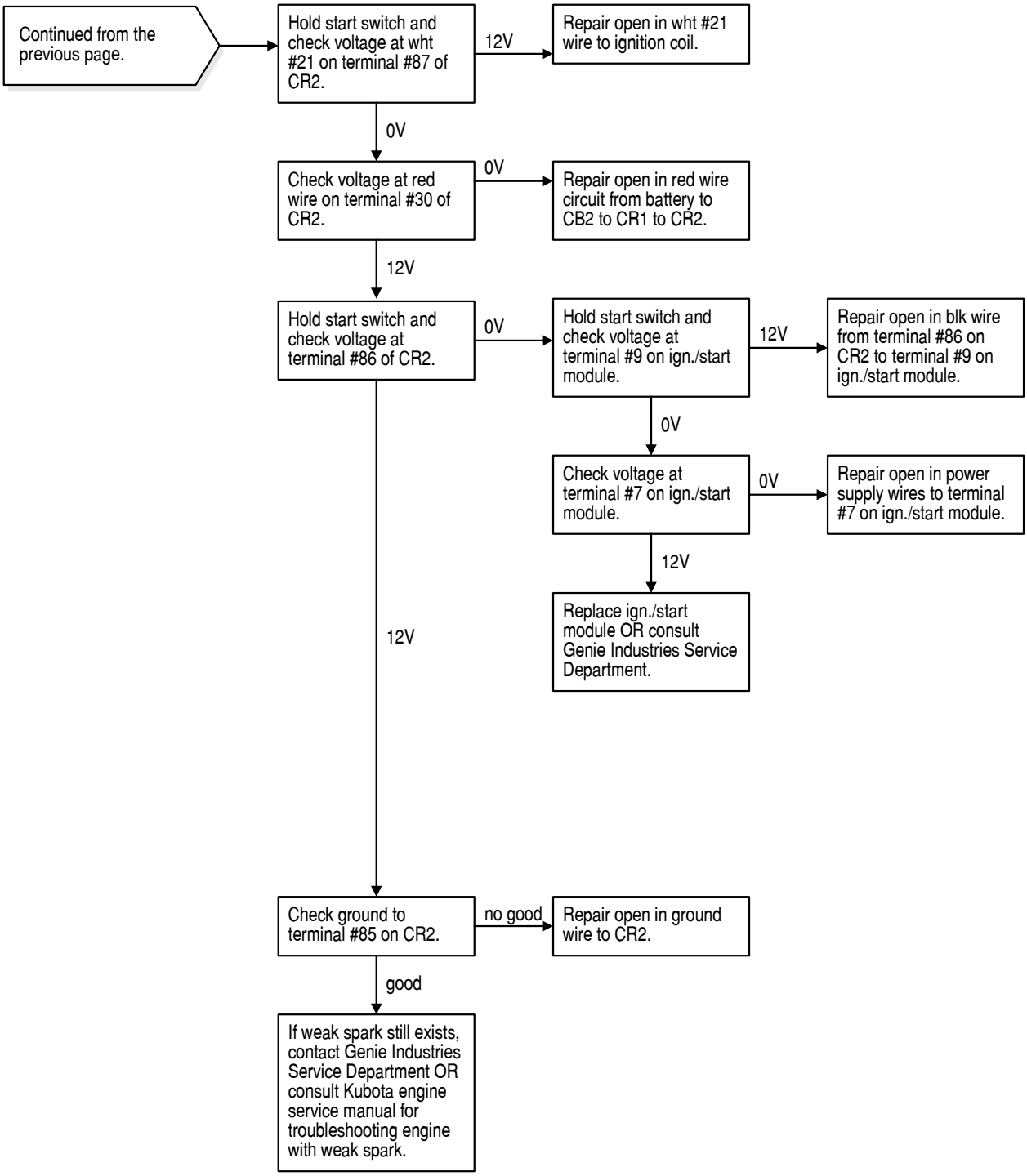

Continued from the previous page.
Hold start switch and check voltage at wht #21 on terminal #87 of CR2.
12V
Repair open in wht #21 wire to ignition coil.
0V
Check voltage at red wire on terminal #30 of CR2.
0V
Repair open in red wire circuit from battery to CB2 to CR1 to CR2.
12V
Hold start switch and check voltage at terminal #86 of CR2.
0V
Hold start switch and check voltage at terminal #9 on ign./start module.
12V
Repair open in blk wire from terminal #86 on CR2 to terminal #9 on ign./start module.
0V
Check voltage at terminal #7 on ign./start module.
0V
Repair open in power supply wires to terminal #7 on ign./start module.
12V
Replace ign./start module OR consult Genie Industries Service Department.
12V
Check ground to terminal #85 on CR2.
no good
Repair open in ground wire to CR2.
good
If weak spark still exists, contact Genie Industries Service Department OR consult Kubota engine service manual for troubleshooting engine with weak spark.

Chart 2A

Engine Cranks Over But Will Not Start OR Engine Runs While Cranking Then Dies - Kubota Gas/ LPG Models

Continuation of "good spark" fault path.

Perform the following tests in the gasoline mode only.

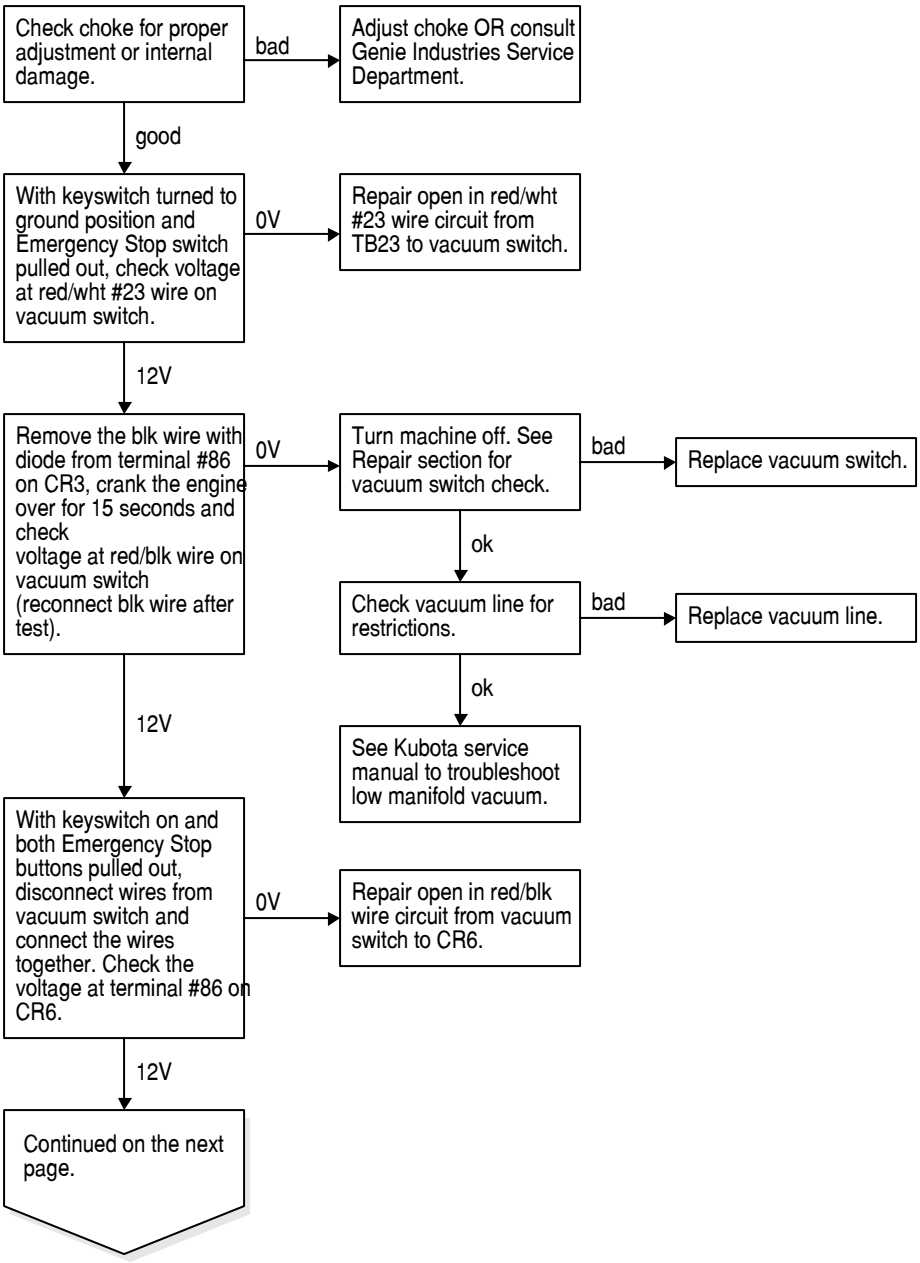


CHART 2A

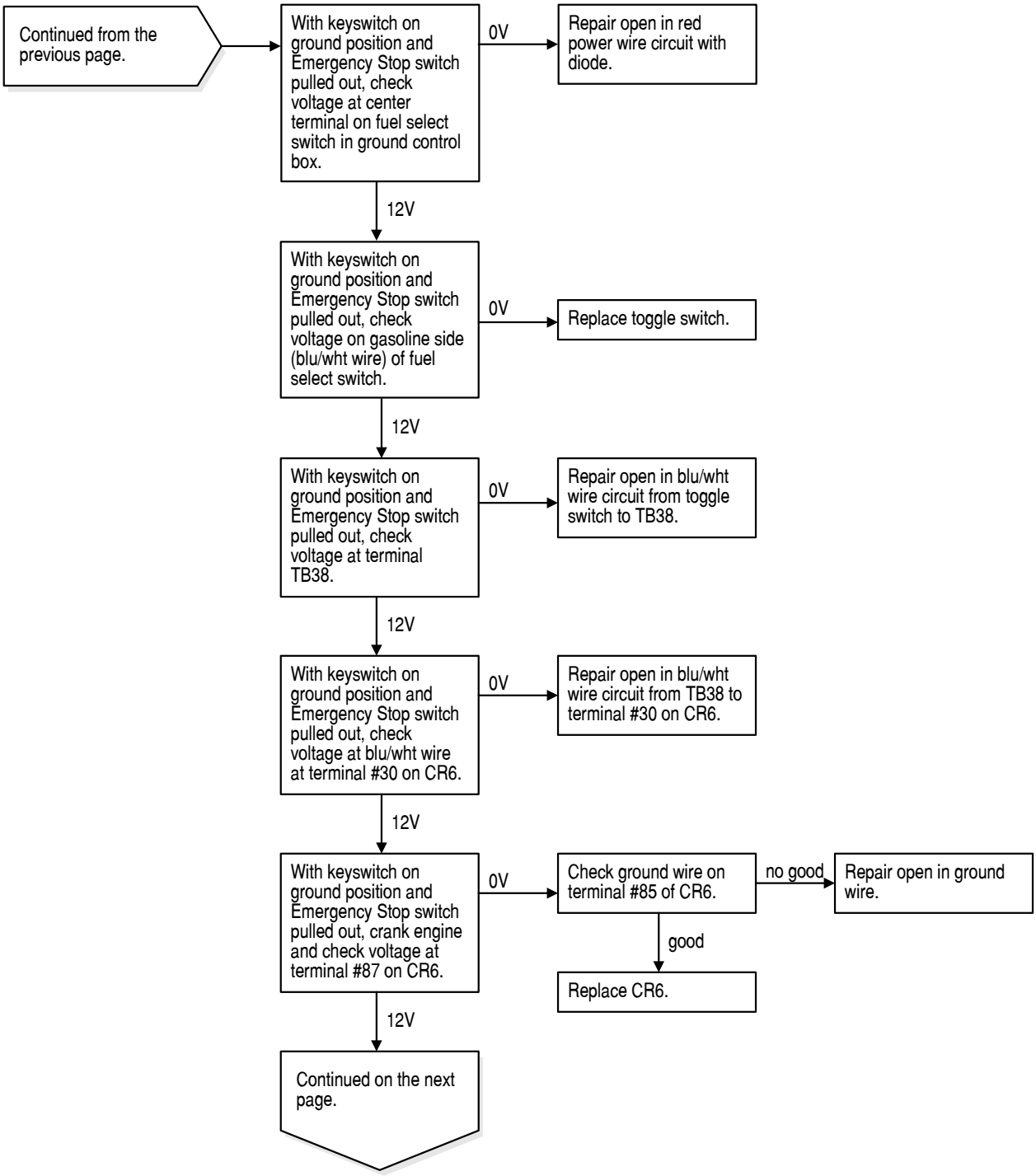

Continued from the previous page.
With keyswitch on ground position and Emergency Stop switch pulled out, check voltage at center terminal on fuel select switch in ground control box.
0V
Repair open in red power wire circuit with diode.
12V
With keyswitch on ground position and Emergency Stop switch pulled out, check voltage on gasoline side (blu/wht wire) of fuel select switch.
0V
Replace toggle switch.
12V
With keyswitch on ground position and Emergency Stop switch pulled out, check voltage at terminal TB38.
0V
Repair open in blu/wht wire circuit from toggle switch to TB38.
12V
With keyswitch on ground position and Emergency Stop switch pulled out, check voltage at blu/wht wire at terminal #30 on CR6.
0V
Repair open in blu/wht wire circuit from TB38 to terminal #30 on CR6.
12V
With keyswitch on ground position and Emergency Stop switch pulled out, crank engine and check voltage at terminal #87 on CR6.
0V
Check ground wire on terminal #85 of CR6.
no good
Repair open in ground wire.
good
Replace CR6.
12V
Continued on the next page.

CHART 2A

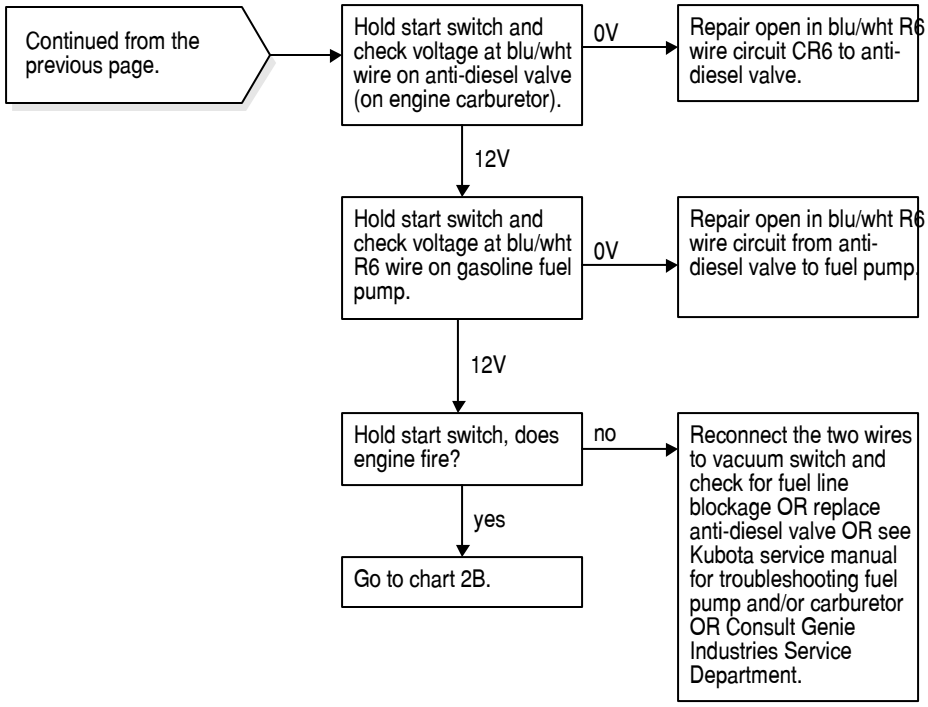

Continued from the previous page.
Hold start switch and check voltage at blu/wht wire on anti-diesel valve (on engine carburetor).
0V
Repair open in blu/wht R6 wire circuit CR6 to anti-diesel valve.
12V
Hold start switch and check voltage at blu/wht R6 wire on gasoline fuel pump.
0V
Repair open in blu/wht R6 wire circuit from anti-diesel valve to fuel pump.
12V
Hold start switch, does engine fire?
no
Reconnect the two wires to vacuum switch and check for fuel line blockage OR replace anti-diesel valve OR see Kubota service manual for troubleshooting fuel pump and/or carburetor OR Consult Genie Industries Service Department.
yes
Go to chart 2B.

Chart 2B

Engine Runs While Cranking Then Dies - Kubota Gas/ LPG Models

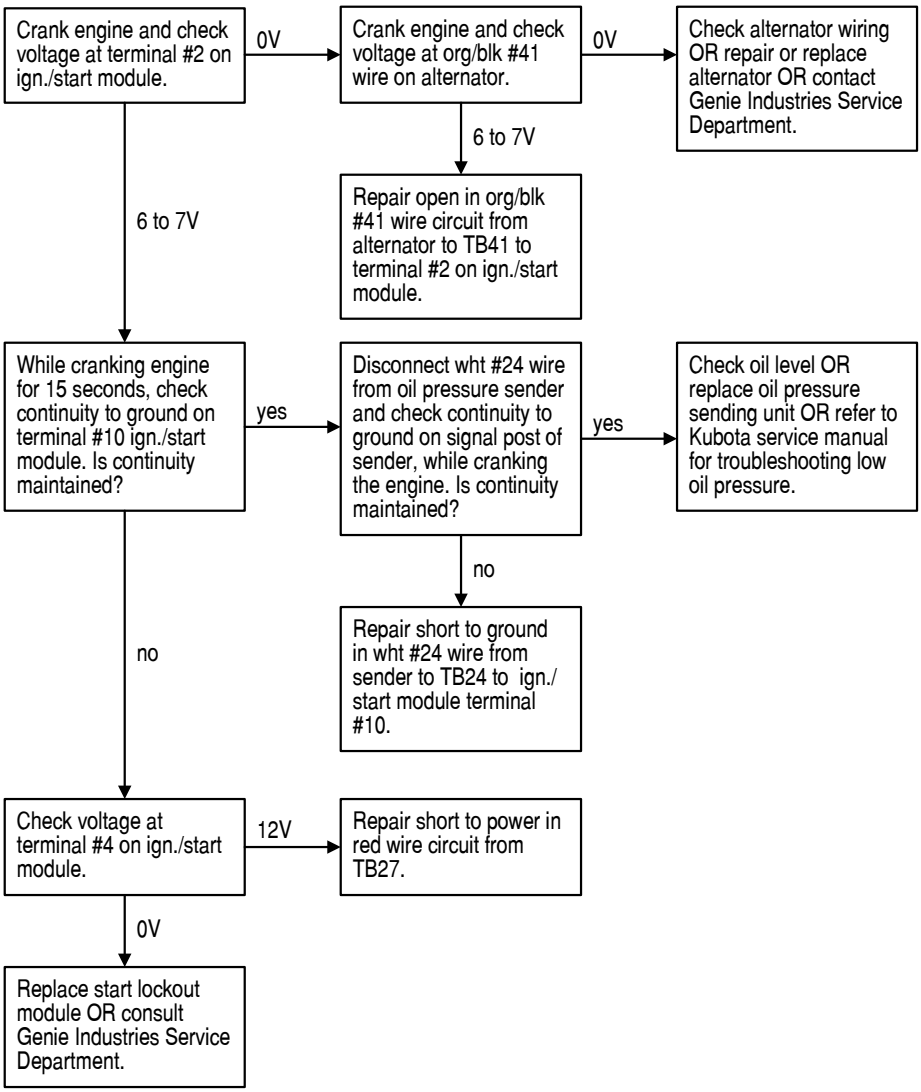


Chart 3

Engine Cranks Over But Will Not Start - Kubota Diesel Models

Be sure to check the fuel level.

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

Be sure the diesel shut-off valve is in the on position.

Be sure the engine glow plugs operate normally. See the Maintenance Section.

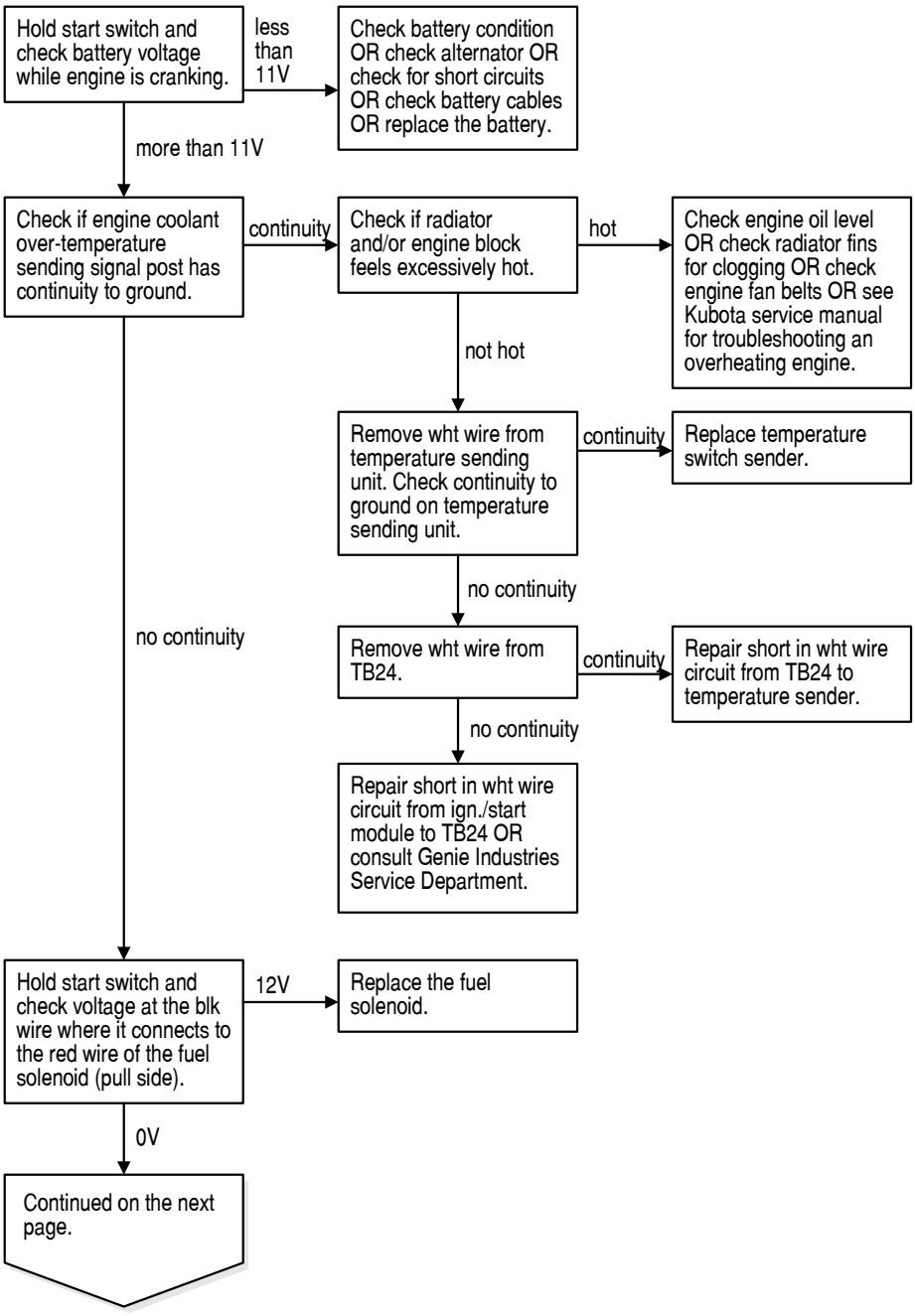


CHART 3

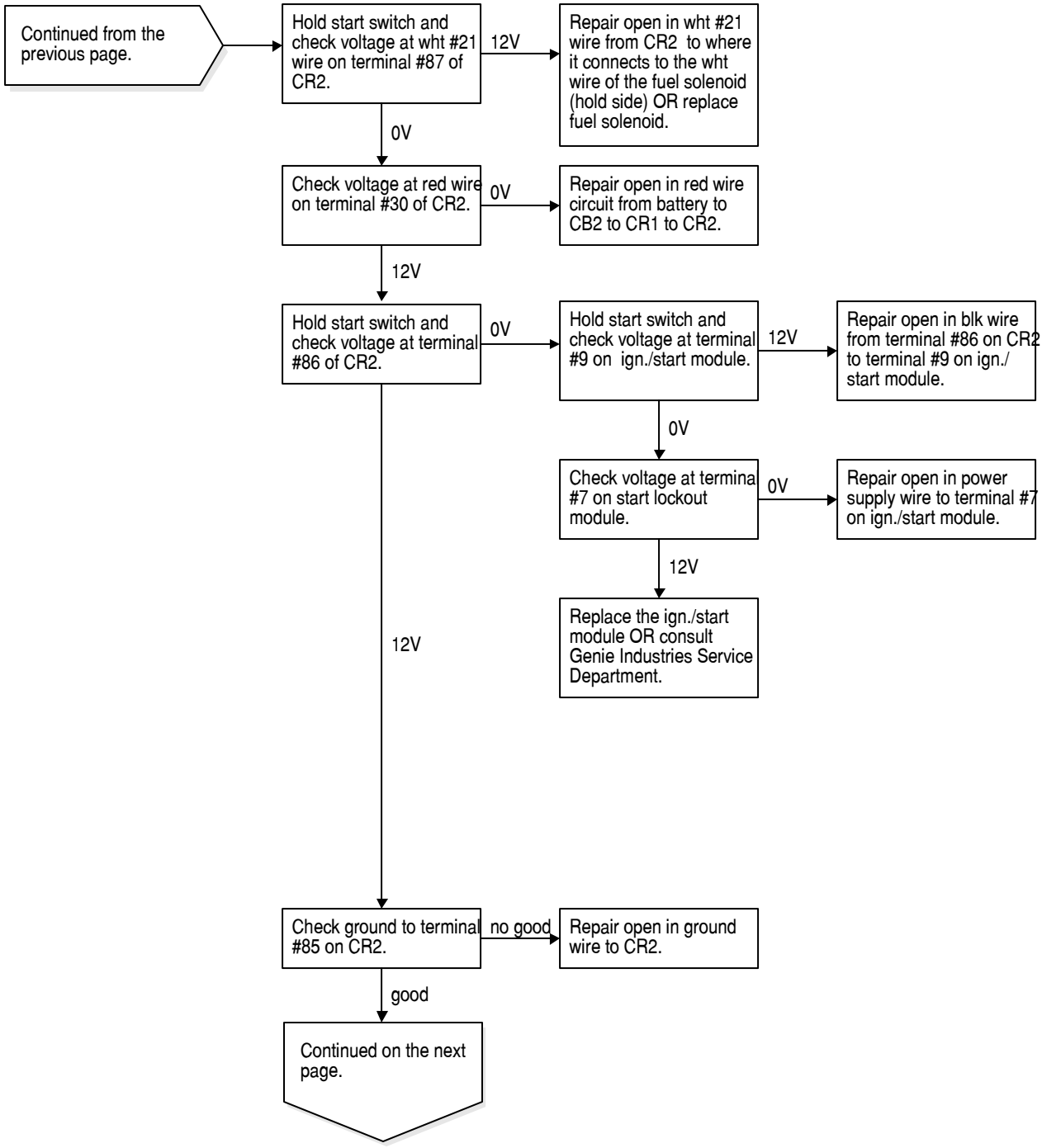

Continued from the previous page.
Hold start switch and check voltage at wht #21 wire on terminal #87 of CR2.
12V
Repair open in wht #21 wire from CR2 to where it connects to the wht wire of the fuel solenoid (hold side) OR replace fuel solenoid.
0V
Check voltage at red wire on terminal #30 of CR2.
0V
Repair open in red wire circuit from battery to CB2 to CR1 to CR2.
12V
Hold start switch and check voltage at terminal #86 of CR2.
0V
Hold start switch and check voltage at terminal #9 on ign./start module.
12V
Repair open in blk wire from terminal #86 on CR2 to terminal #9 on ign./ start module.
0V
Check voltage at termina #7 on start lockout module.
0V
Repair open in power supply wire to terminal #7 on ign./start module.
12V
Replace the ign./start module OR consult Genie Industries Service Department.
12V
Check ground to terminal #85 on CR2.
no good
Repair open in ground wire to CR2.
good
Continued on the next page.

CHART 3

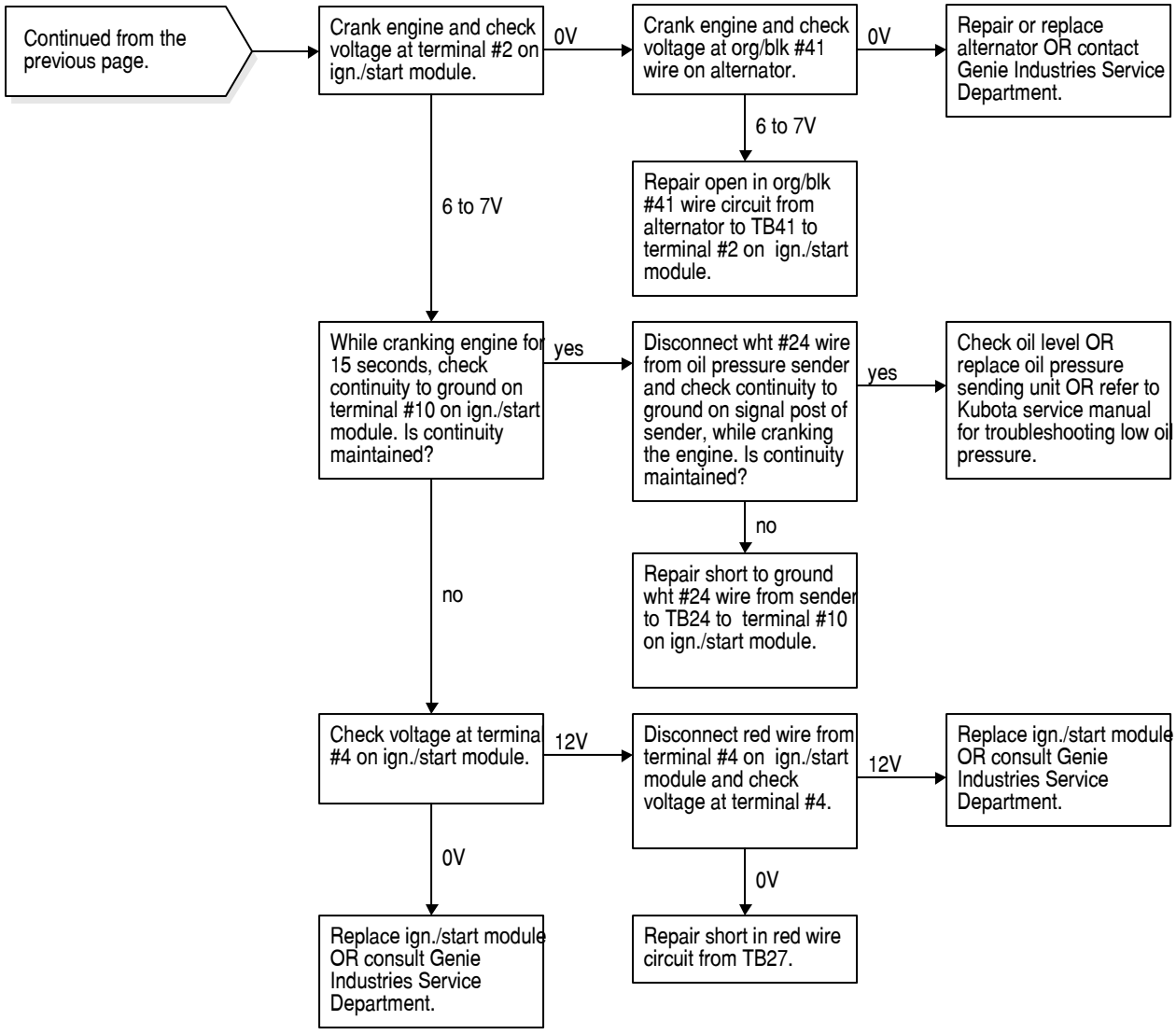

Continued from the previous page.
Crank engine and check voltage at terminal #2 on ign./start module.
0V
Crank engine and check voltage at org/blk #41 wire on alternator.
0V
Repair or replace alternator OR contact Genie Industries Service Department.
6 to 7V
Repair open in org/blk #41 wire circuit from alternator to TB41 to terminal #2 on ign./start module.
6 to 7V
While cranking engine for 15 seconds, check continuity to ground on terminal #10 on ign./start module. Is continuity maintained?
yes
Disconnect wht #24 wire from oil pressure sender and check continuity to ground on signal post of sender, while cranking the engine. Is continuity maintained?
yes
Check oil level OR replace oil pressure sending unit OR refer to Kubota service manual for troubleshooting low oil pressure.
no
Repair short to ground wht #24 wire from sender to TB24 to terminal #10 on ign./start module.
no
Check voltage at termina #4 on ign./start module.
12V
Disconnect red wire from terminal #4 on ign./start module and check voltage at terminal #4.
12V
Replace ign./start module OR consult Genie Industries Service Department.
0V
0V
Replace ign./start module OR consult Genie Industries Service Department.
Repair short in red wire circuit from TB27.

Chart 4

Engine Will Not Start On LPG, But Will Start On Gasoline - Kubota Gasoline/LPG Models

Be sure the fuel select switch is switched to LPG.

Be sure to check the LPG fuel level.

Perform these tests with the keyswitch in the ground position.

If engine starts on gasoline from the ground controls but not from the platform controls, troubleshoot the platform fuel select switch or the control cables.

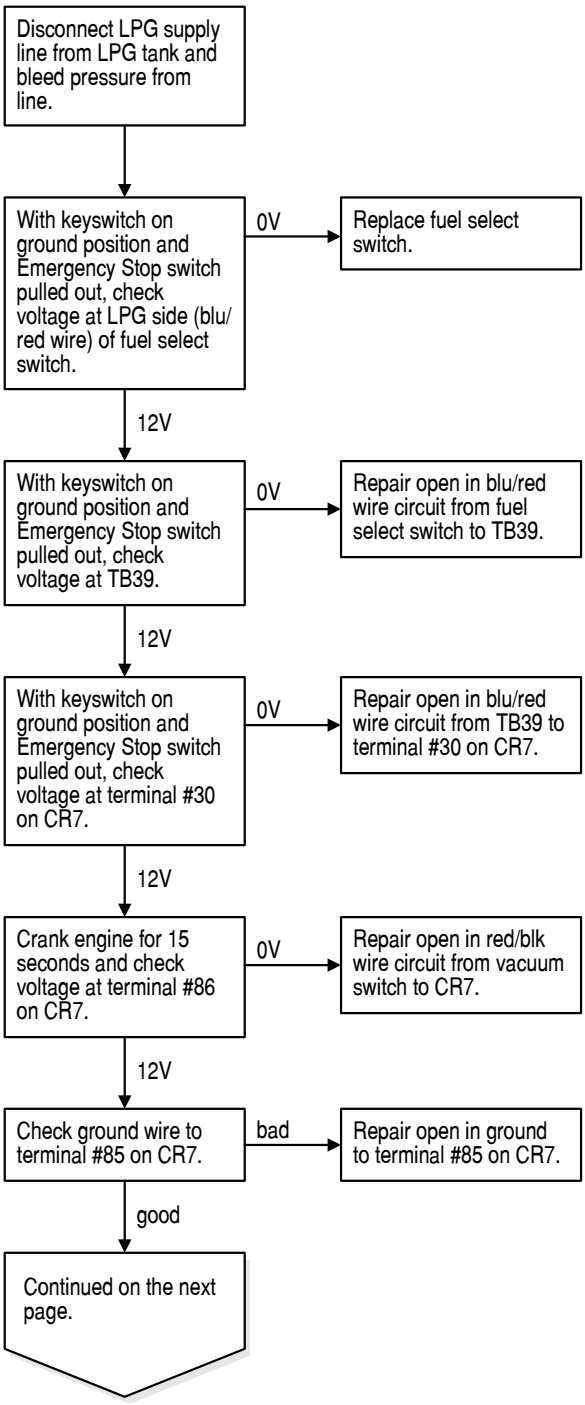


CHART 4

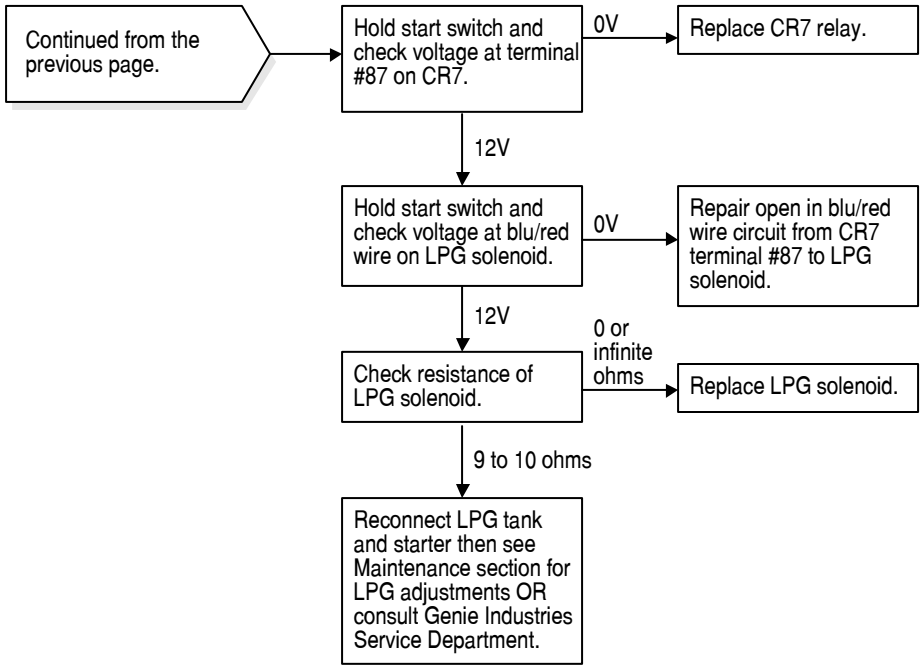

Continued from the previous page.
Hold start switch and check voltage at terminal #87 on CR7.
0V
Replace CR7 relay.
12V
Hold start switch and check voltage at blu/red wire on LPG solenoid.
0V
Repair open in blu/red wire circuit from CR7 terminal #87 to LPG solenoid.
12V
Check resistance of LPG solenoid.
0 or infinite ohms
Replace LPG solenoid.
9 to 10 ohms
Reconnect LPG tank and starter then see Maintenance section for LPG adjustments OR consult Genie Industries Service Department.

Chart 5

Engine Choke Inoperative - Kubota Gasoline/LPG Models

Be sure the fuel select switch is in the gasoline position.

Be sure the choke solenoid to carburetor linkage is in place and properly attached.

Be sure choke solenoid plunger can be manually pushed into the solenoid and the linkage in turn rotates the choke plate linkage.

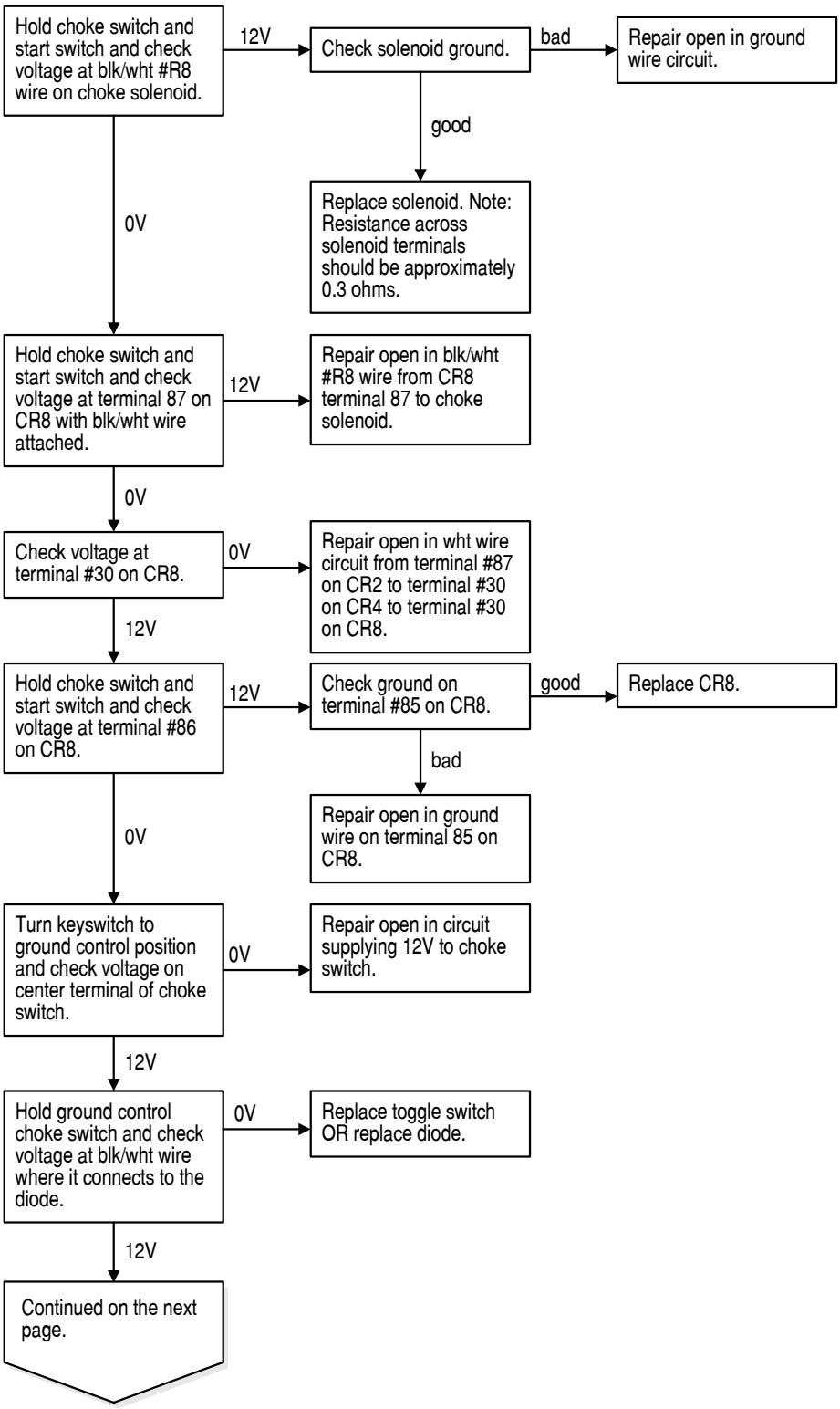


CHART 5

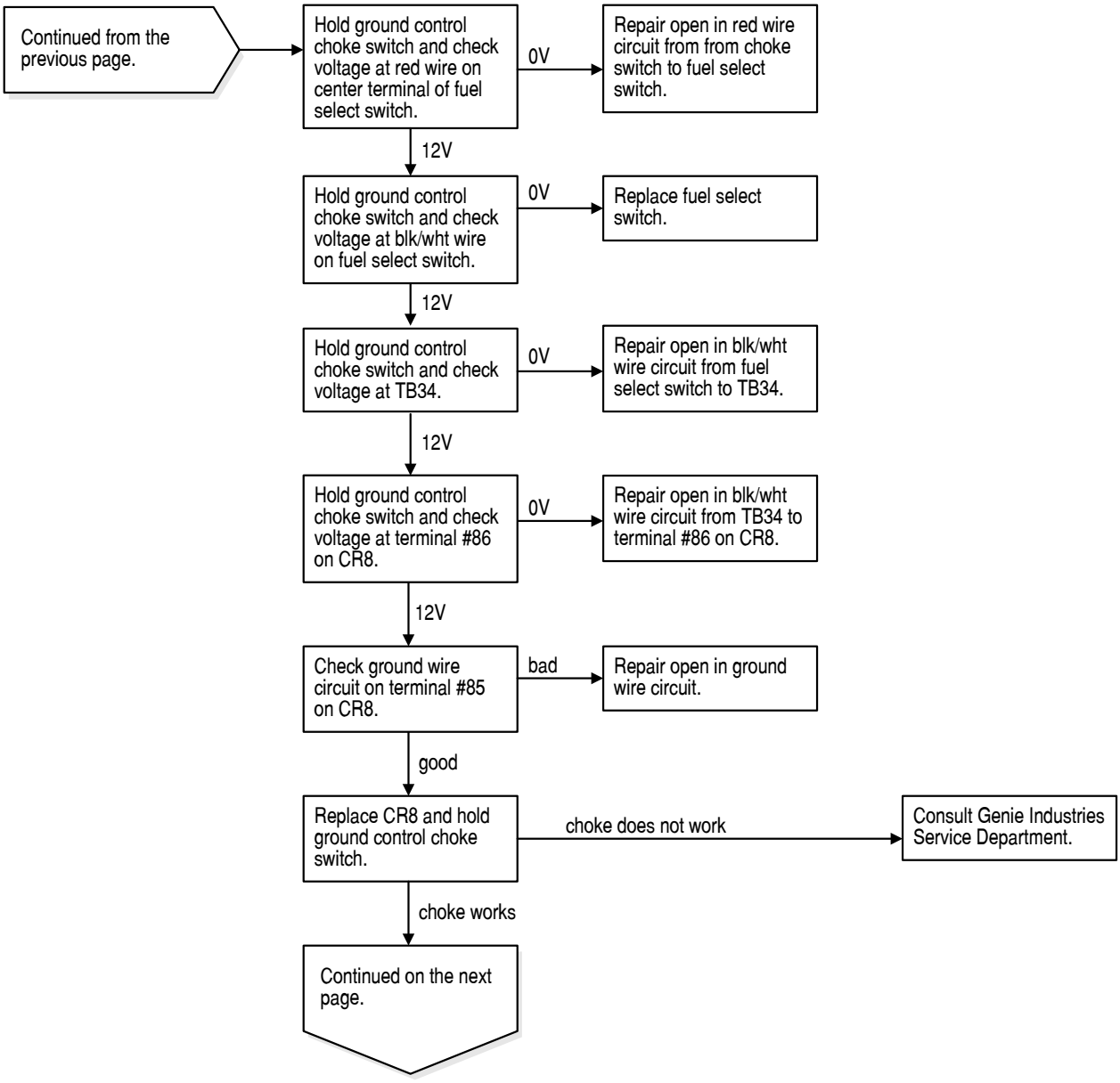

Continued from the previous page.
Hold ground control choke switch and check voltage at red wire on center terminal of fuel select switch.
0V
Repair open in red wire circuit from from choke switch to fuel select switch.
12V
Hold ground control choke switch and check voltage at blk/wht wire on fuel select switch.
0V
Replace fuel select switch.
12V
Hold ground control choke switch and check voltage at TB34.
0V
Repair open in blk/wht wire circuit from fuel select switch to TB34.
12V
Hold ground control choke switch and check voltage at terminal #86 on CR8.
0V
Repair open in blk/wht wire circuit from TB34 to terminal #86 on CR8.
12V
Check ground wire circuit on terminal #85 on CR8.
bad
Repair open in ground wire circuit.
good
Replace CR8 and hold ground control choke switch.
choke does not work
Consult Genie Industries Service Department.
choke works
Continued on the next page.

CHART 5

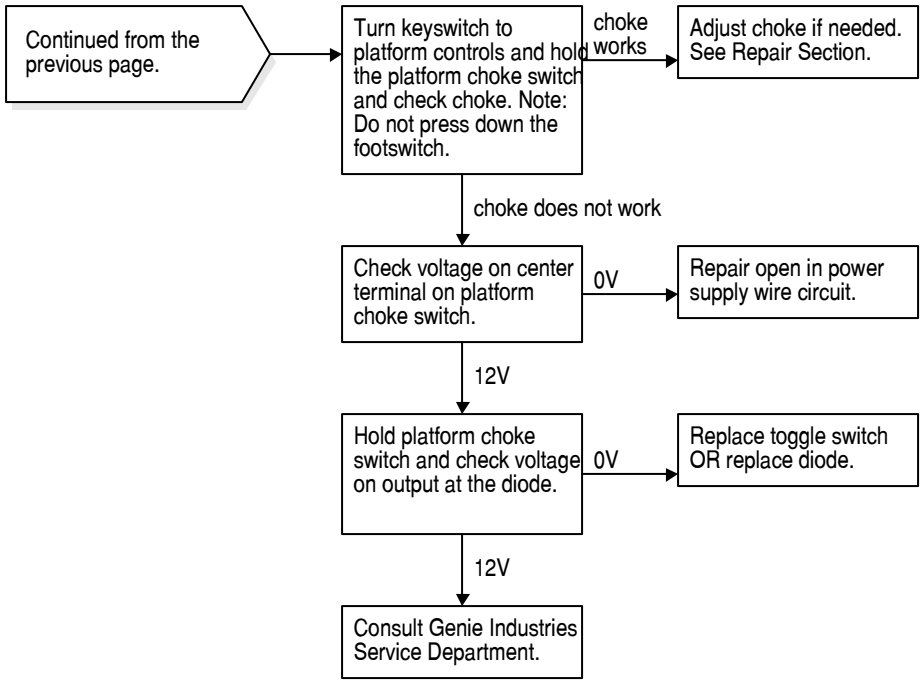

Continued from the previous page.
Turn keyswitch to platform controls and hold the platform choke switch and check choke. Note: Do not press down the footswitch.
choke works
Adjust choke if needed. See Repair Section.
choke does not work
Check voltage on center terminal on platform choke switch.
0V
Repair open in power supply wire circuit.
12V
Hold platform choke switch and check voltage on output at the diode.
0V
Replace toggle switch OR replace diode.
12V
Consult Genie Industries Service Department.

Chart 6

Engine Glow Plugs Inoperative - Kubota Diesel Models

Be sure the battery is fully charged.

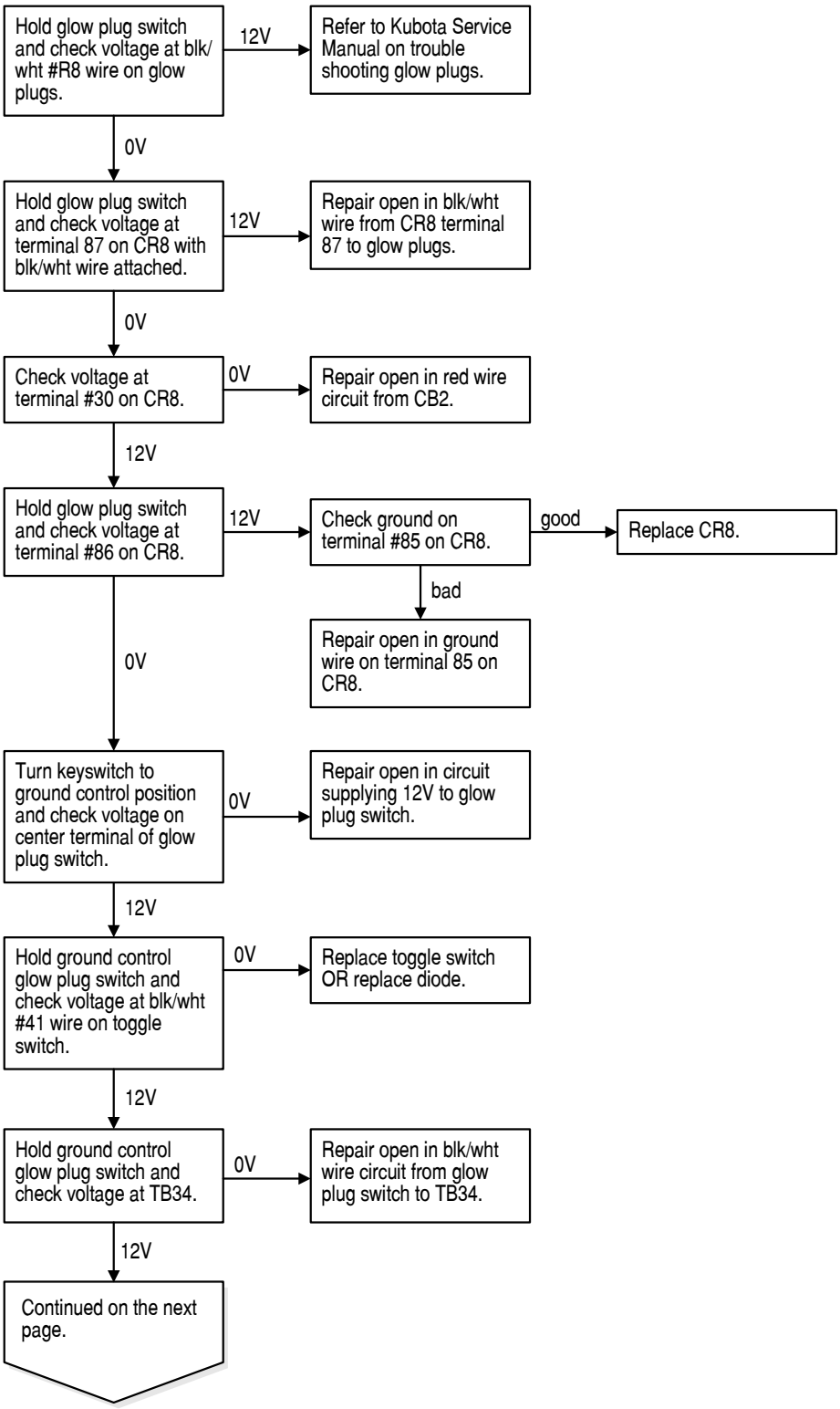


CHART 6

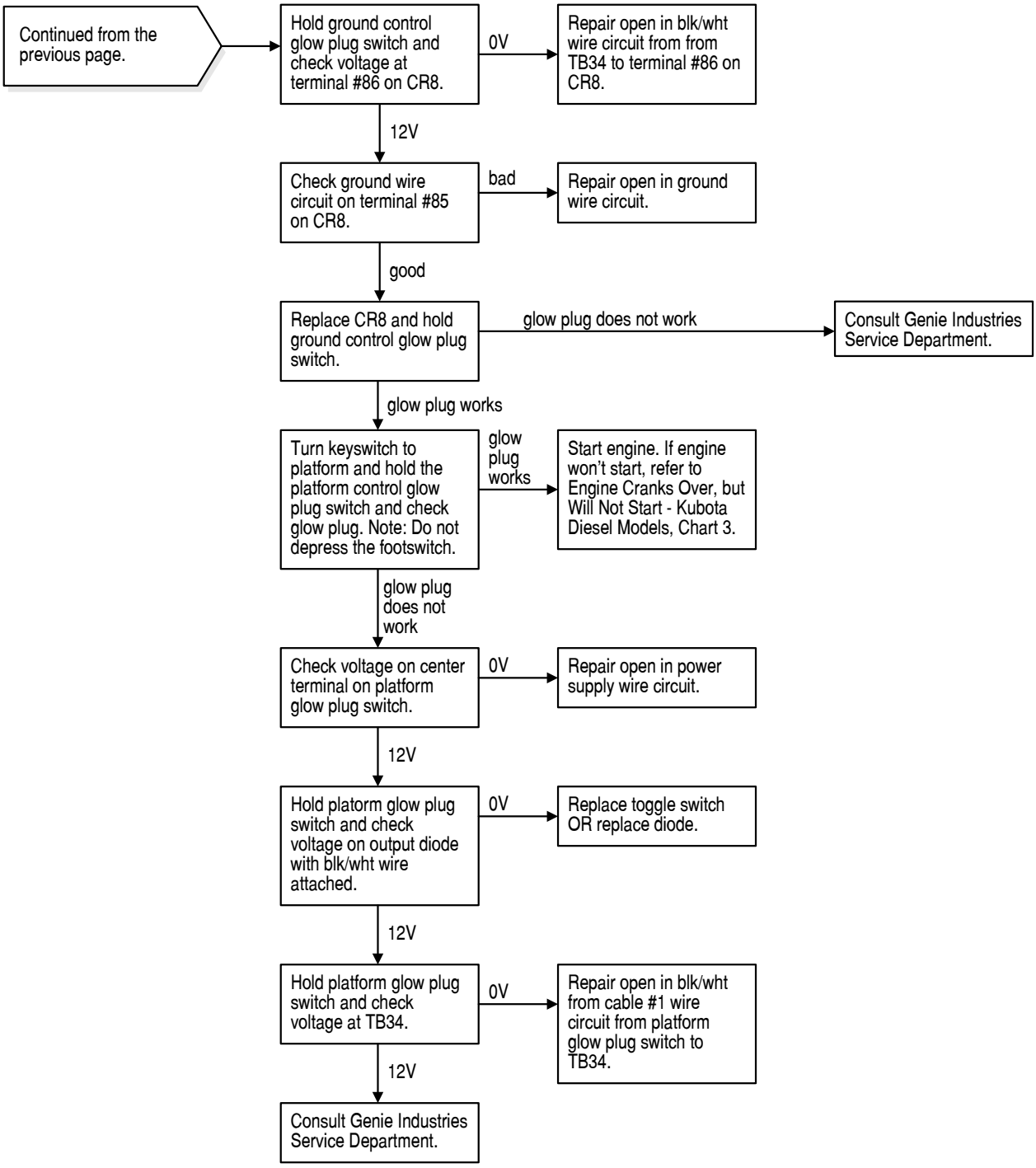

Continued from the previous page.
Hold ground control glow plug switch and check voltage at terminal #86 on CR8.
0V
Repair open in blk/wht wire circuit from from TB34 to terminal #86 on CR8.
12V
Check ground wire circuit on terminal #85 on CR8.
bad
Repair open in ground wire circuit.
good
Replace CR8 and hold ground control glow plug switch.
glow plug does not work
Consult Genie Industries Service Department.
glow plug works
Turn keyswitch to platform and hold the platform control glow plug switch and check glow plug. Note: Do not depress the footswitch.
glow plug works
Start engine. If engine won't start, refer to Engine Cranks Over, but Will Not Start - Kubota Diesel Models, Chart 3.
glow plug does not work
Check voltage on center terminal on platform glow plug switch.
0V
Repair open in power supply wire circuit.
12V
Hold platorm glow plug switch and check voltage on output diode with blk/wht wire attached.
0V
Replace toggle switch OR replace diode.
12V
Hold platform glow plug switch and check voltage at TB34.
0V
Repair open in blk/wht from cable #1 wire circuit from platform glow plug switch to TB34.
12V
Consult Genie Industries Service Department.

Chart 7

Engine Will Not Start On Gasoline, But Will Start On LPG - Kubota Gasoline/LPG Models

Be sure the fuel select switch is switched to gasoline.

Be sure to check gasoline fuel level.

Be sure that engine choke is operating properly.

Perform these tests with the keyswitch in the ground position.

If the engine starts on LPG from the ground controls but not from the platform controls, troubleshoot the platform fuel select switch or the control cables.

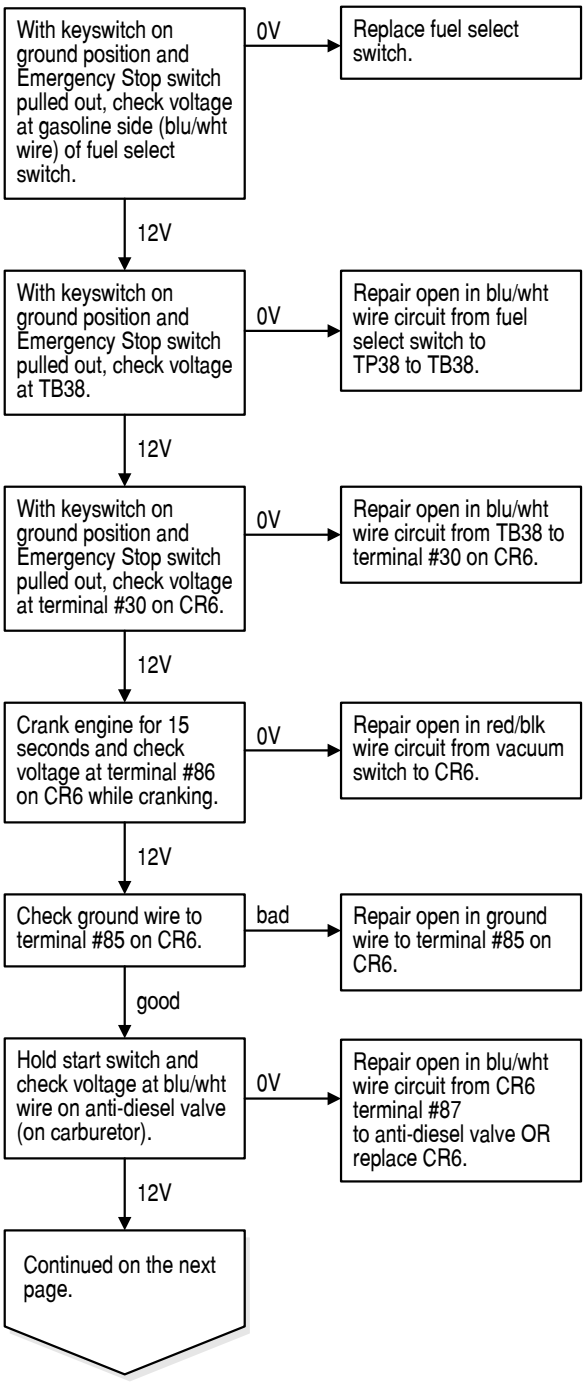


CHART 7

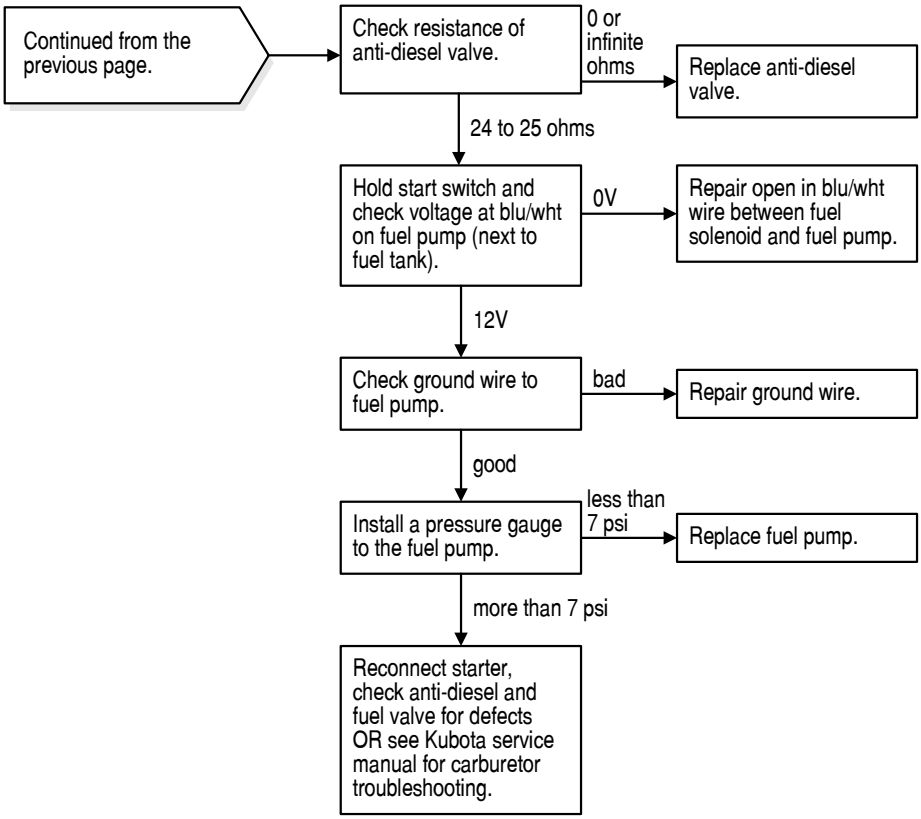

Continued from the previous page.
Check resistance of anti-diesel valve.
0 or infinite ohms
Replace anti-diesel valve.
24 to 25 ohms
Hold start switch and check voltage at blu/wht on fuel pump (next to fuel tank).
0V
Repair open in blu/wht wire between fuel solenoid and fuel pump.
12V
Check ground wire to fuel pump.
bad
Repair ground wire.
good
Install a pressure gauge to the fuel pump.
less than 7 psi
Replace fuel pump.
more than 7 psi
Reconnect starter, check anti-diesel and fuel valve for defects OR see Kubota service manual for carburetor troubleshooting.

Chart 8

Engine High Idle Inoperative-Kubota Gasoline/LPG Models

Be sure mechanical linkage is not binding or defective.

Be sure 2-speed solenoid grounding wires are free of corrosion and have full continuity to ground.

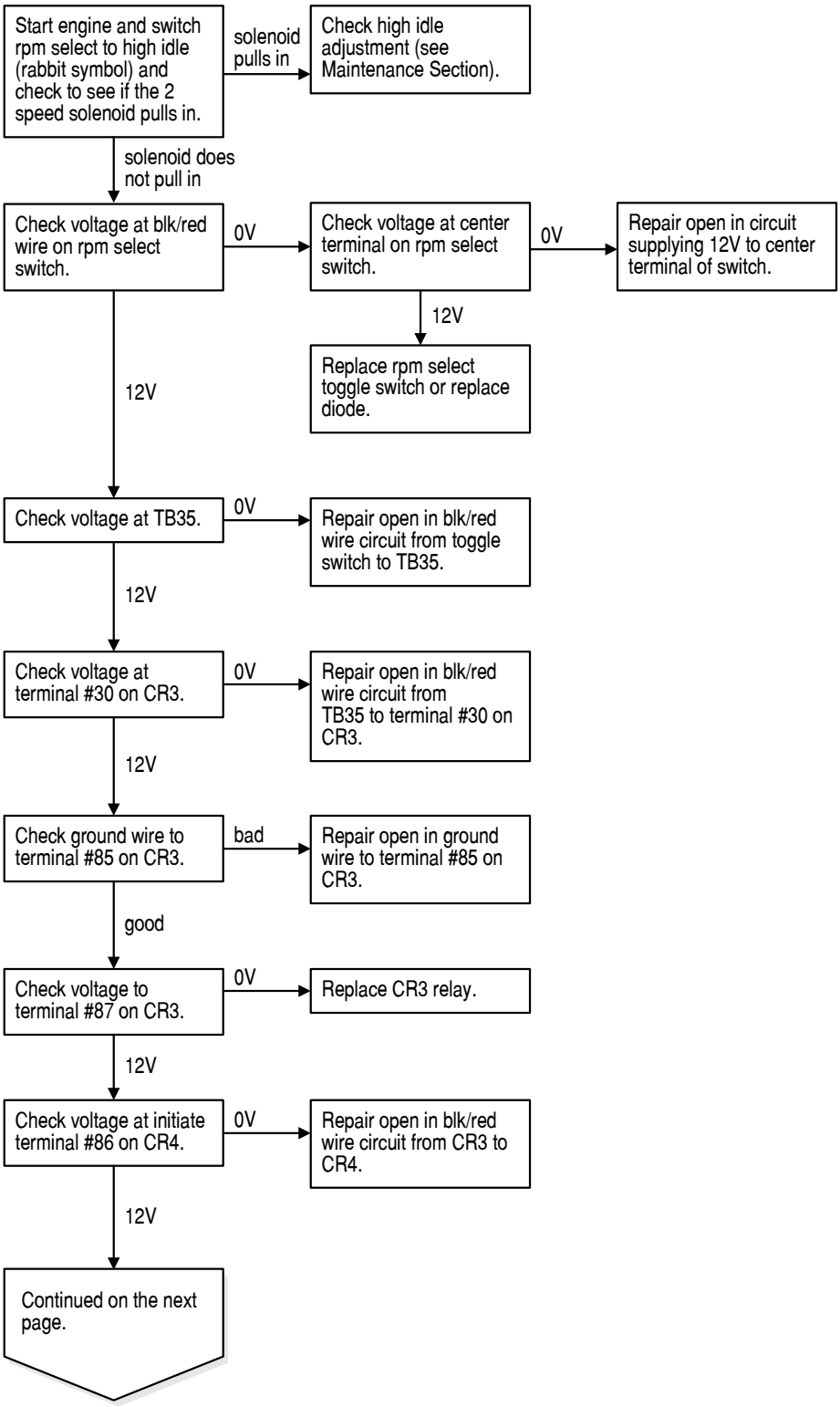


CHART 8

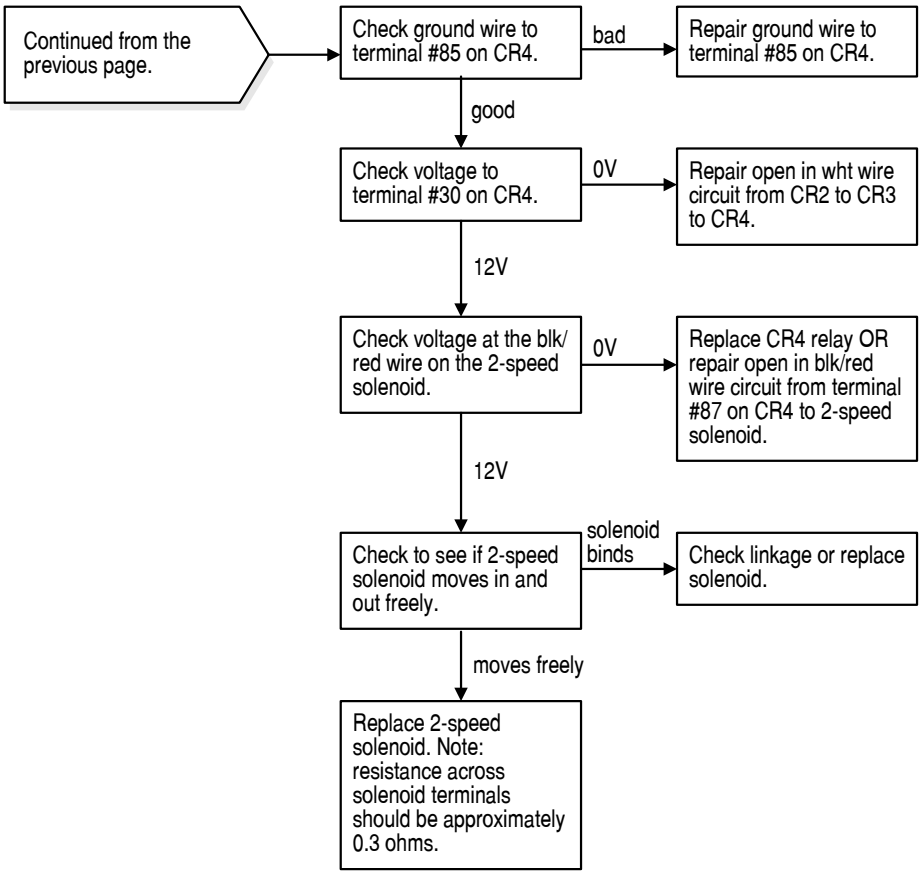

Continued from the previous page.
Check ground wire to terminal #85 on CR4.
bad
Repair ground wire to terminal #85 on CR4.
good
Check voltage to terminal #30 on CR4.
0V
Repair open in wht wire circuit from CR2 to CR3 to CR4.
12V
Check voltage at the blk/red wire on the 2-speed solenoid.
0V
Replace CR4 relay OR repair open in blk/red wire circuit from terminal #87 on CR4 to 2-speed solenoid.
12V
Check to see if 2-speed solenoid moves in and out freely.
solenoid binds
Check linkage or replace solenoid.
moves freely
Replace 2-speed solenoid. Note: resistance across solenoid terminals should be approximately 0.3 ohms.

Chart 9

Engine Low Idle Inoperative - Kubota Gasoline/LPG Models

Check mechanical linkage from 2-speed solenoid to carburetor is binding or defective.

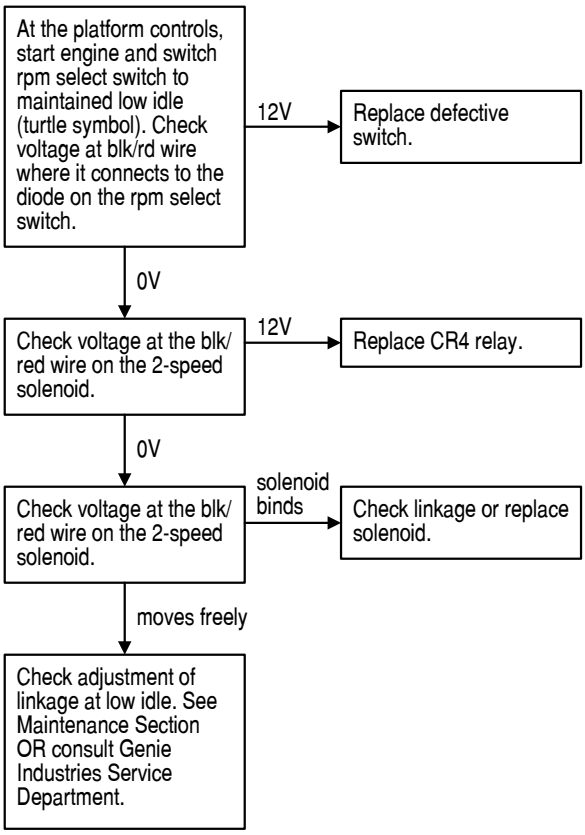


Chart 10

Engine High Idle Inoperative- Kubota Diesel Models

Be sure mechanical linkage is not binding or defective.

Be sure 2-speed solenoid grounding wires are free of corrosion and have full continuity to ground.

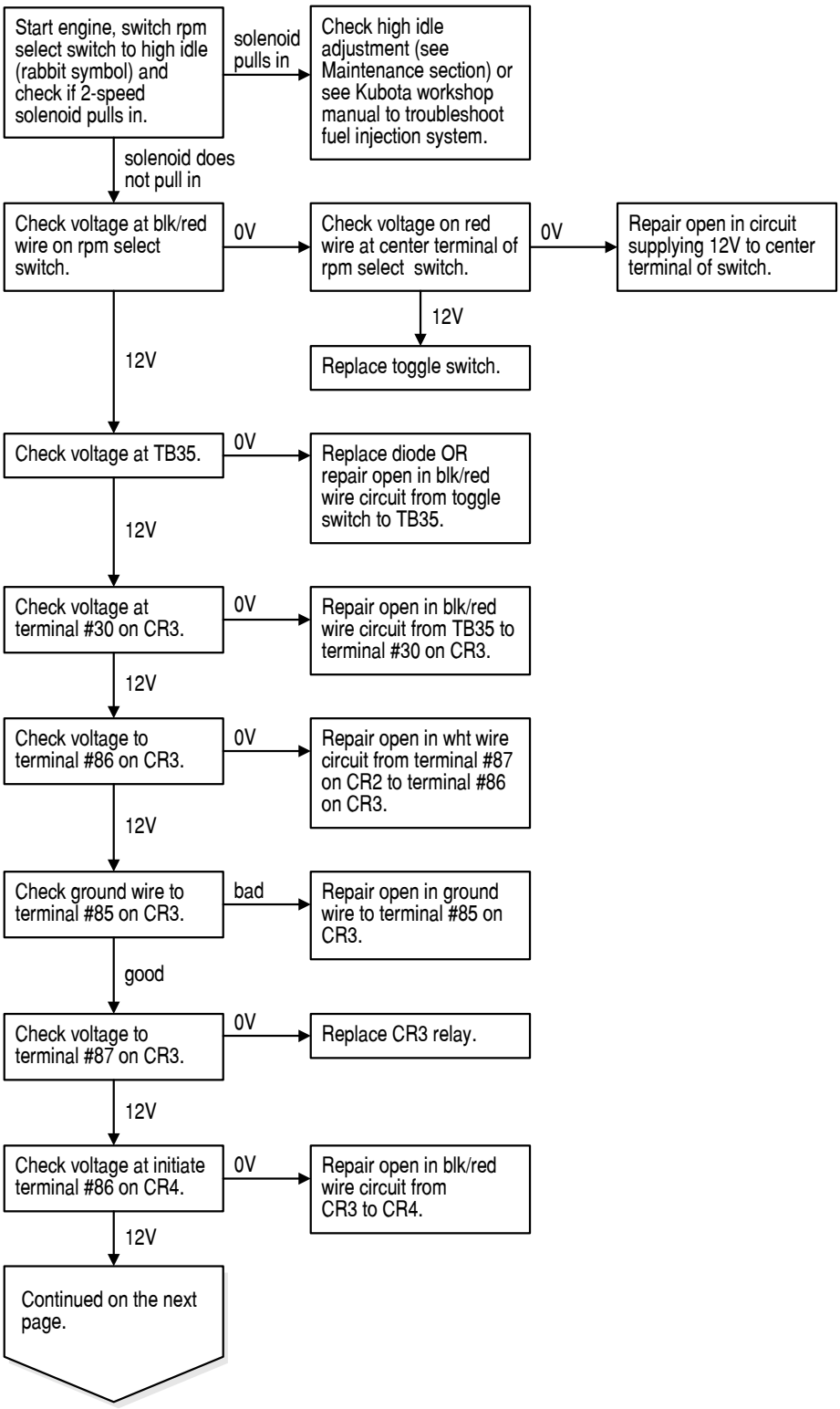


CHART 10

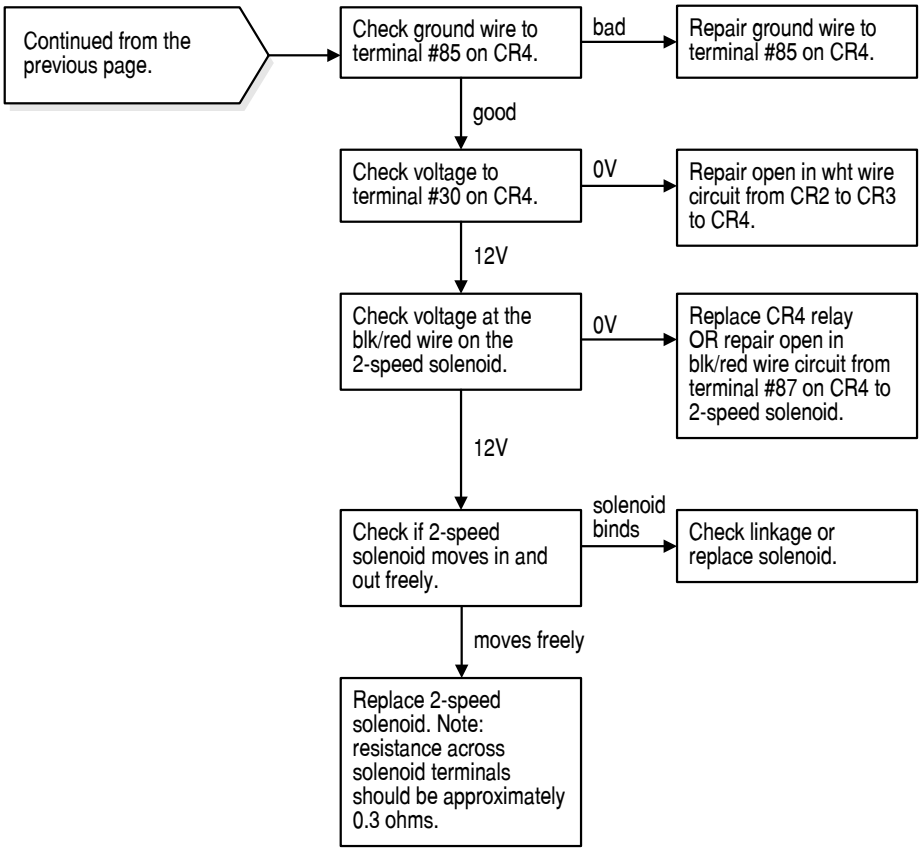

Continued from the previous page.
Check ground wire to terminal #85 on CR4.
bad
Repair ground wire to terminal #85 on CR4.
good
Check voltage to terminal #30 on CR4.
0V
Repair open in wht wire circuit from CR2 to CR3 to CR4.
12V
Check voltage at the blk/red wire on the 2-speed solenoid.
0V
Replace CR4 relay OR repair open in blk/red wire circuit from terminal #87 on CR4 to 2-speed solenoid.
12V
Check if 2-speed solenoid moves in and out freely.
solenoid binds
Check linkage or replace solenoid.
moves freely
Replace 2-speed solenoid. Note: resistance across solenoid terminals should be approximately 0.3 ohms.

Chart 11

Engine Low Idle Inoperative - Kubota Diesel Models

Check if mechanical linkage from 2-speed solenoid to fuel injection system is binding or defective.

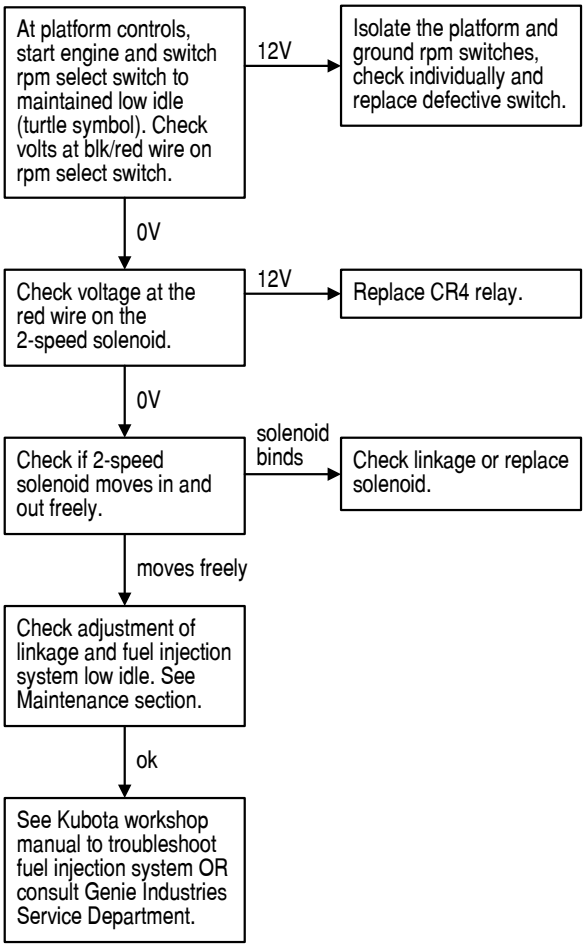


Chart 12

All Functions Inoperative, Engine Starts and Runs

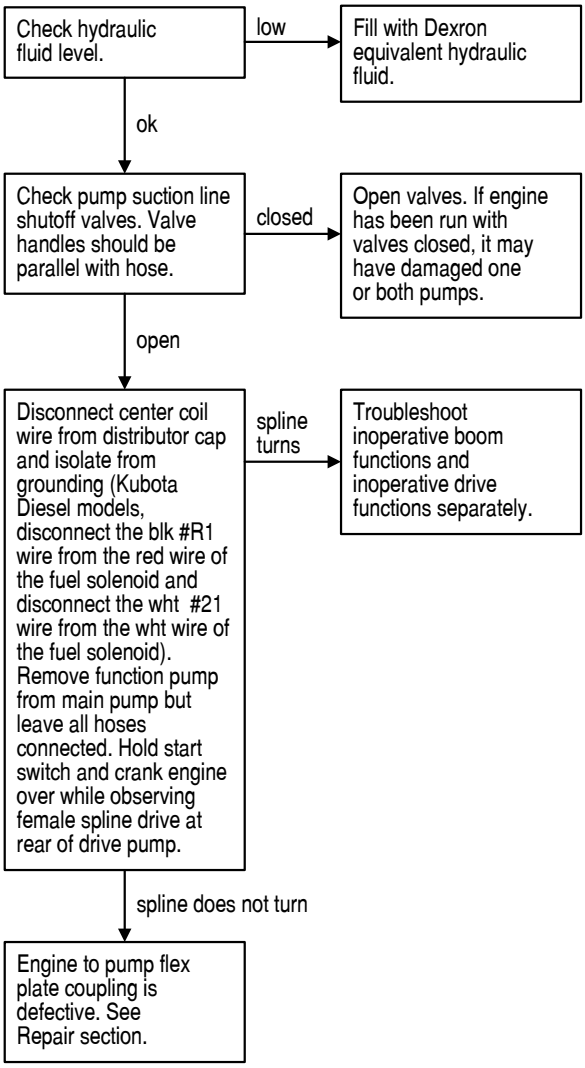


Chart 13

All Lift and Steer Functions Inoperative, Drive Functions Operational

Be sure the hydraulic suction line shut-off valve for the lift steer pump is in the open position.

Be sure all grounding wires for the function manifold valves are free of corrosion and have full continuity to ground.

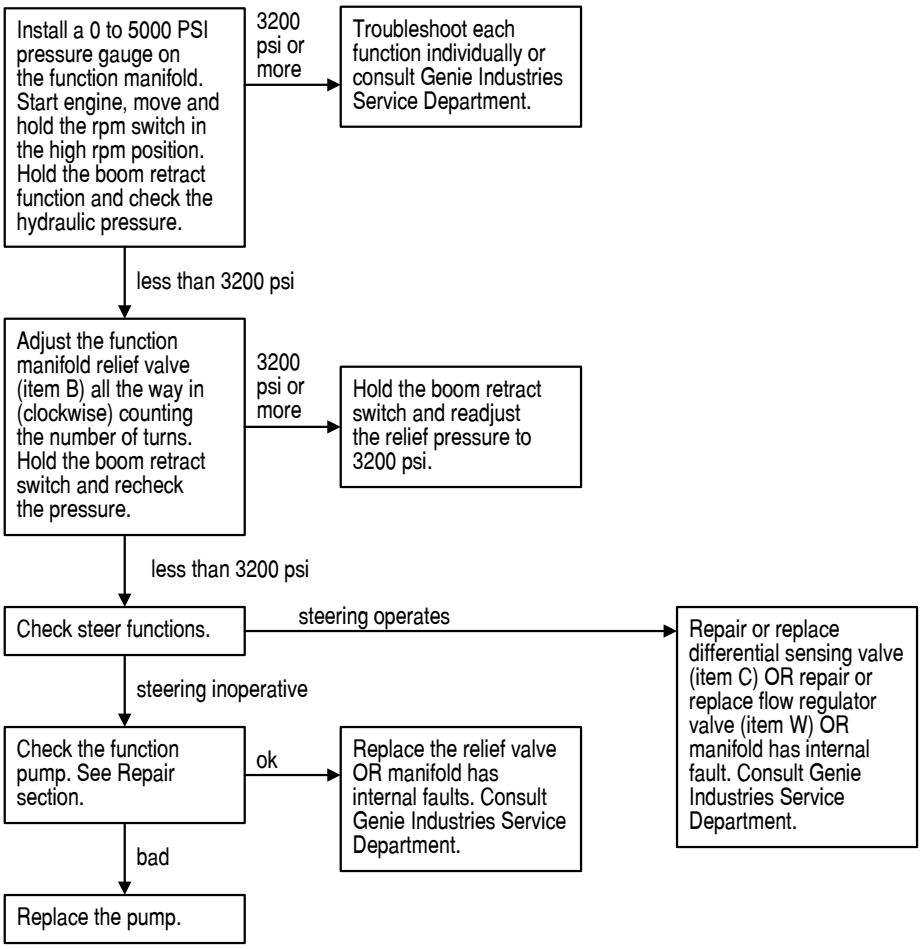


Chart 14

Ground Controls Inoperative, Platform Controls Operate Normally

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

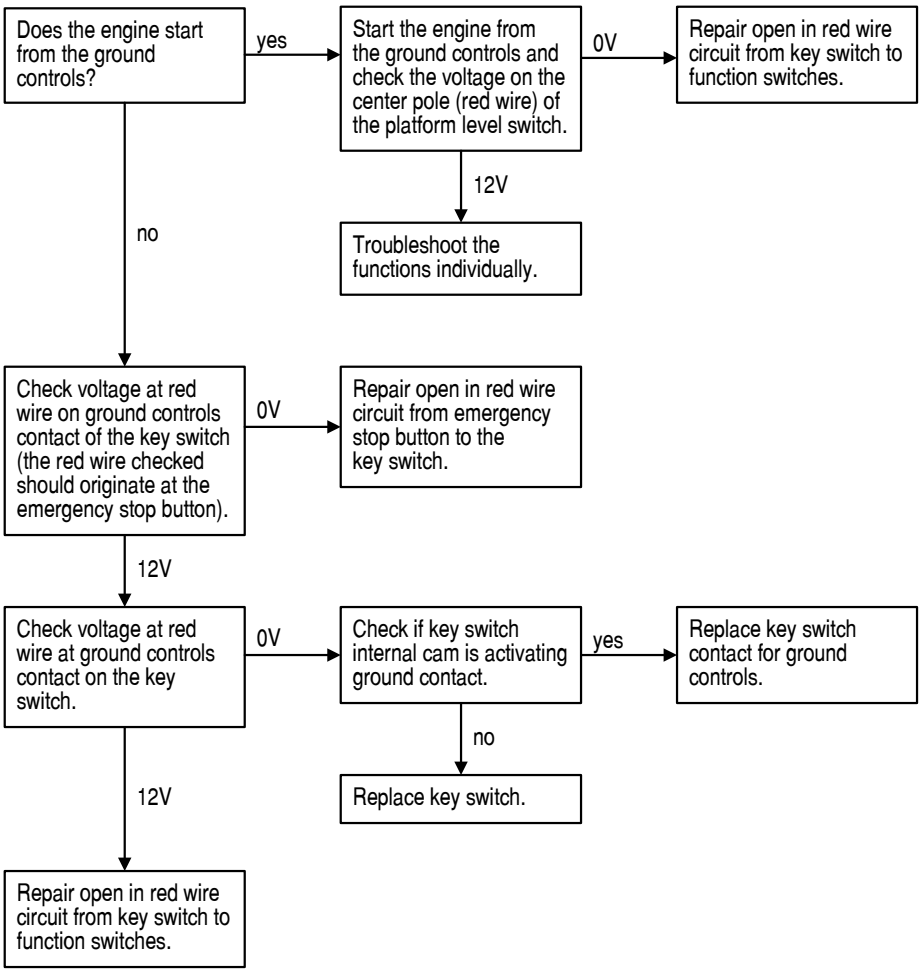


Chart 15

Platform Controls Inoperative, Ground Controls Operate Normally

Be sure all cables are in good condition with no kinks or abrasions.

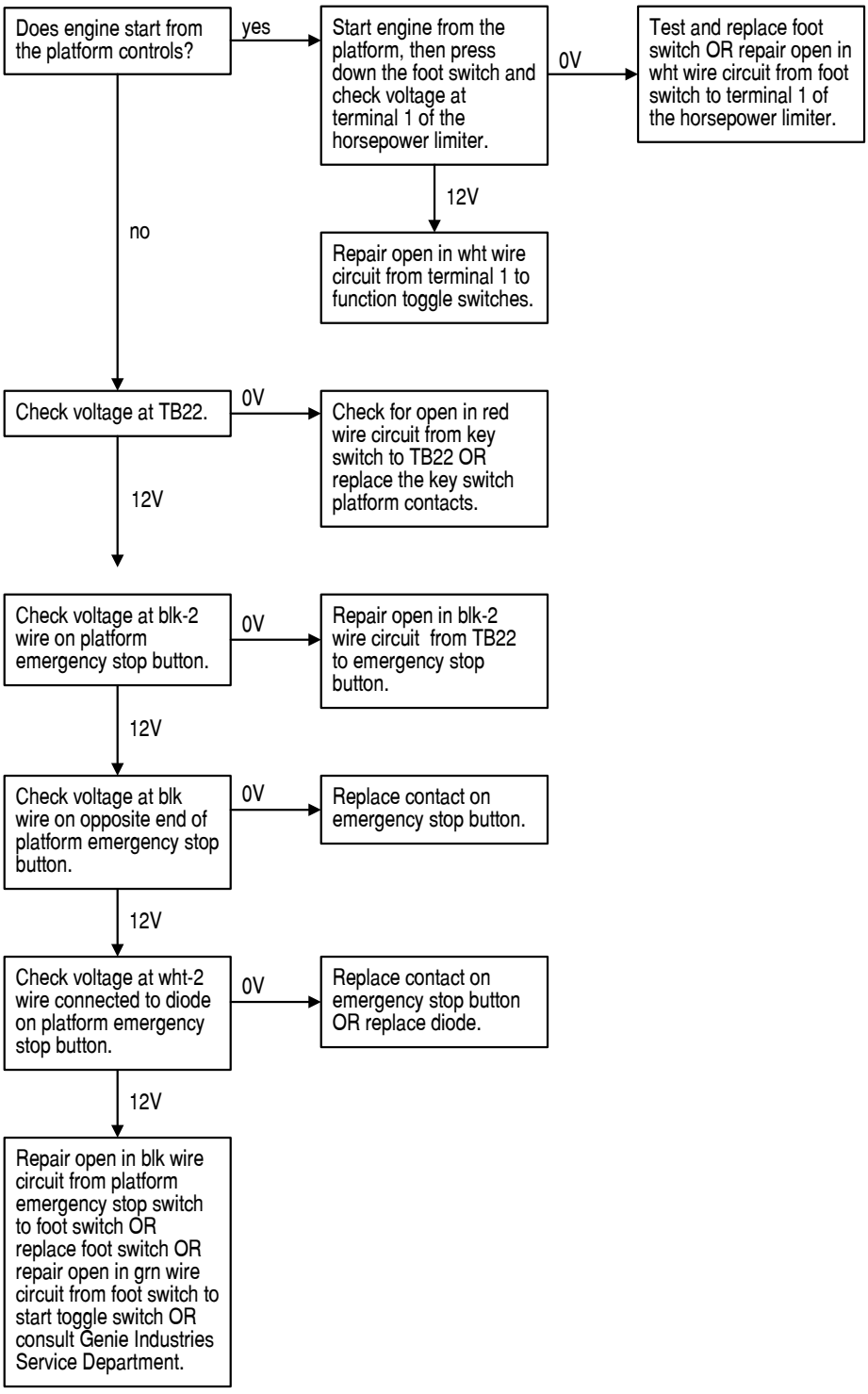


Chart 16

Primary Boom Up Function Inoperative

Be sure all other functions operate normally.

If boom up function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If boom up function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

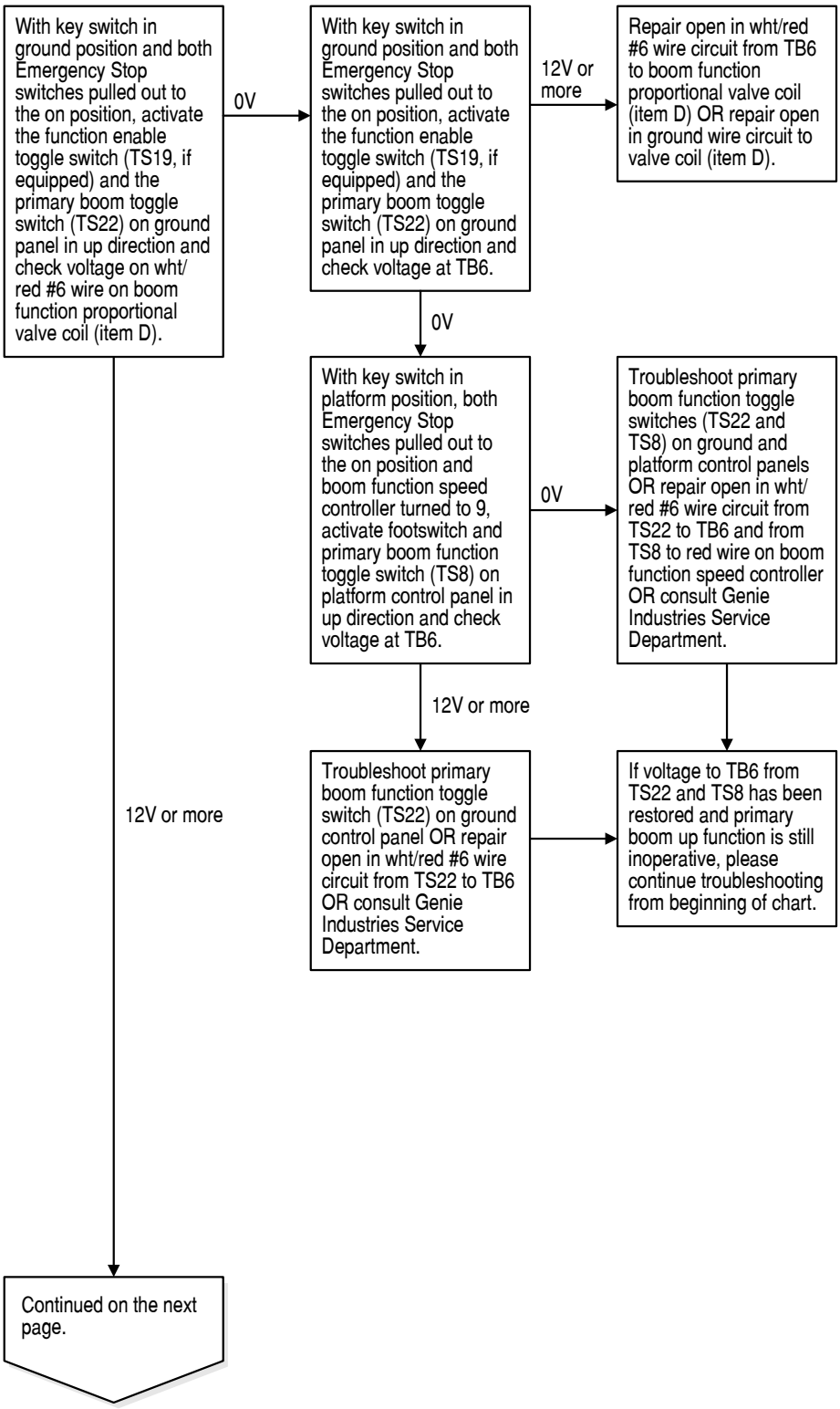


CHART 16

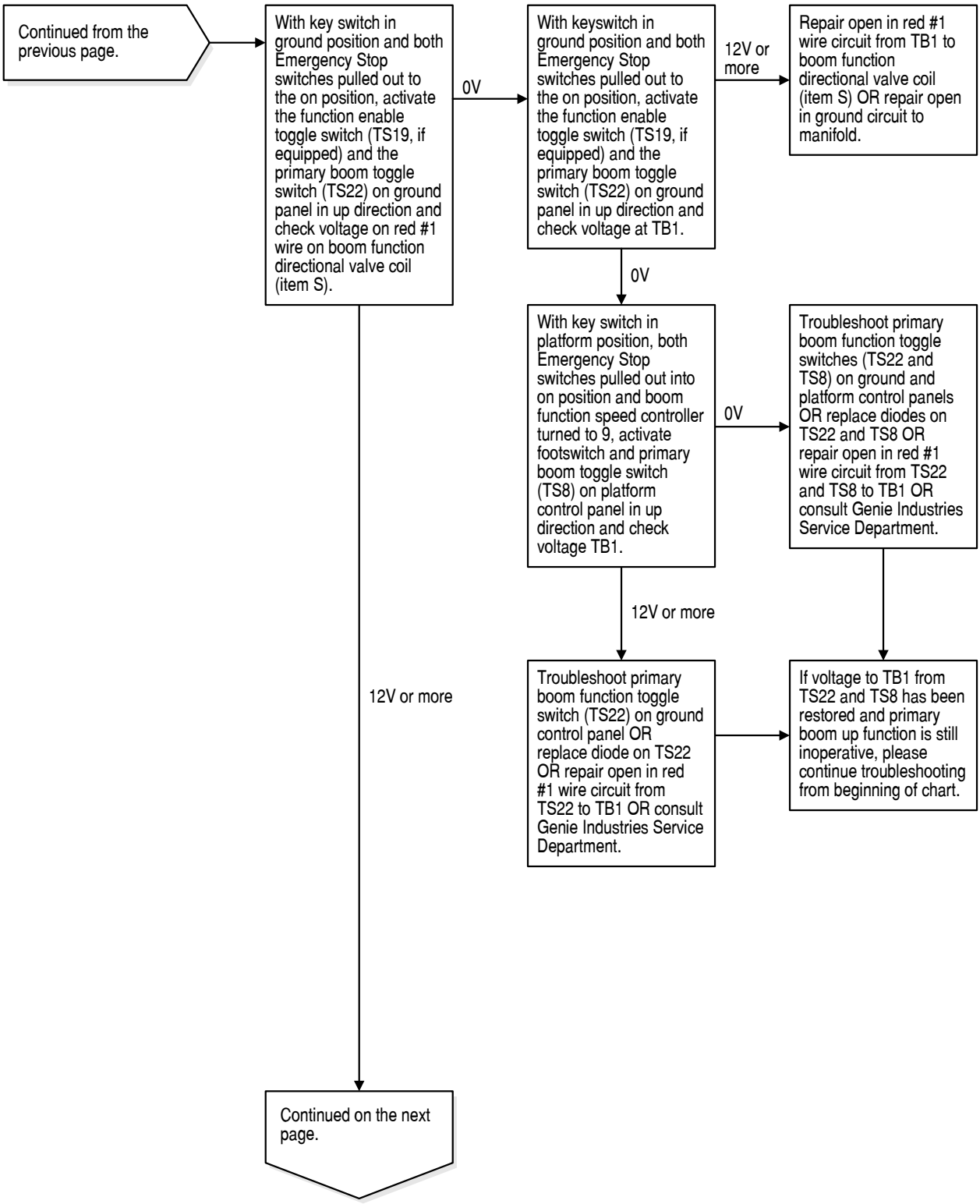

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the primary boom toggle switch (TS22) on ground panel in up direction and check voltage on red #1 wire on boom function directional valve coil (item S).
0V
With keyswitch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the primary boom toggle switch (TS22) on ground panel in up direction and check voltage at TB1.
12V or more
Repair open in red #1 wire circuit from TB1 to boom function directional valve coil (item S) OR repair open in ground circuit to manifold.
0V
With key switch in platform position, both Emergency Stop switches pulled out into on position and boom function speed controller turned to 9, activate footswitch and primary boom toggle switch (TS8) on platform control panel in up direction and check voltage TB1.
0V
Troubleshoot primary boom function toggle switches (TS22 and TS8) on ground and platform control panels OR replace diodes on TS22 and TS8 OR repair open in red #1 wire circuit from TS22 and TS8 to TB1 OR consult Genie Industries Service Department.
12V or more
Troubleshoot primary boom function toggle switch (TS22) on ground control panel OR replace diode on TS22 OR repair open in red #1 wire circuit from TS22 to TB1 OR consult Genie Industries Service Department.
If voltage to TB1 from TS22 and TS8 has been restored and primary boom up function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 16

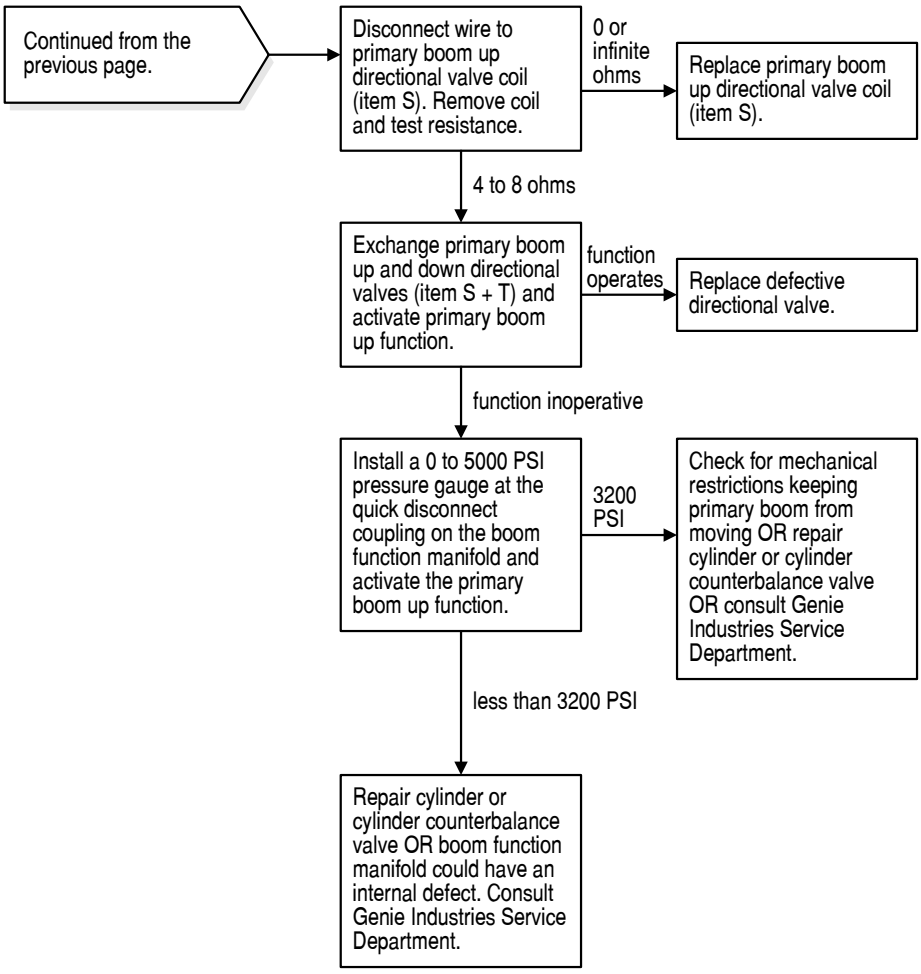

Continued from the previous page.
Disconnect wire to primary boom up directional valve coil (item S). Remove coil and test resistance.
0 or infinite ohms
Replace primary boom up directional valve coil (item S).
4 to 8 ohms
Exchange primary boom up and down directional valves (item S + T) and activate primary boom up function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the primary boom up function.
3200 PSI
Check for mechanical restrictions keeping primary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3200 PSI
Repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal defect. Consult Genie Industries Service Department.

Chart 17

Primary Boom Down Function Inoperative

Be sure all other functions operate normally.

If boom down function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If boom down function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

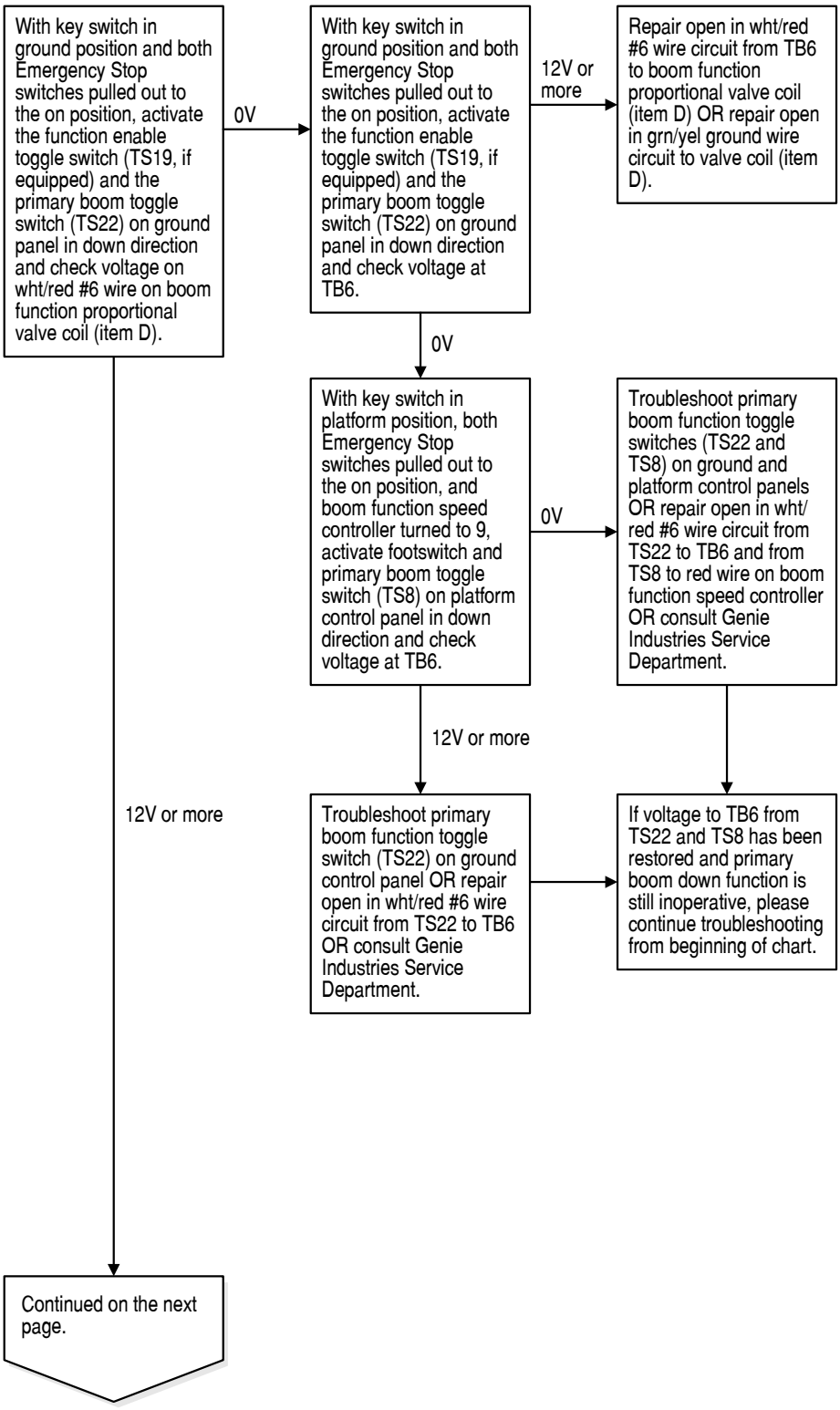


CHART 17

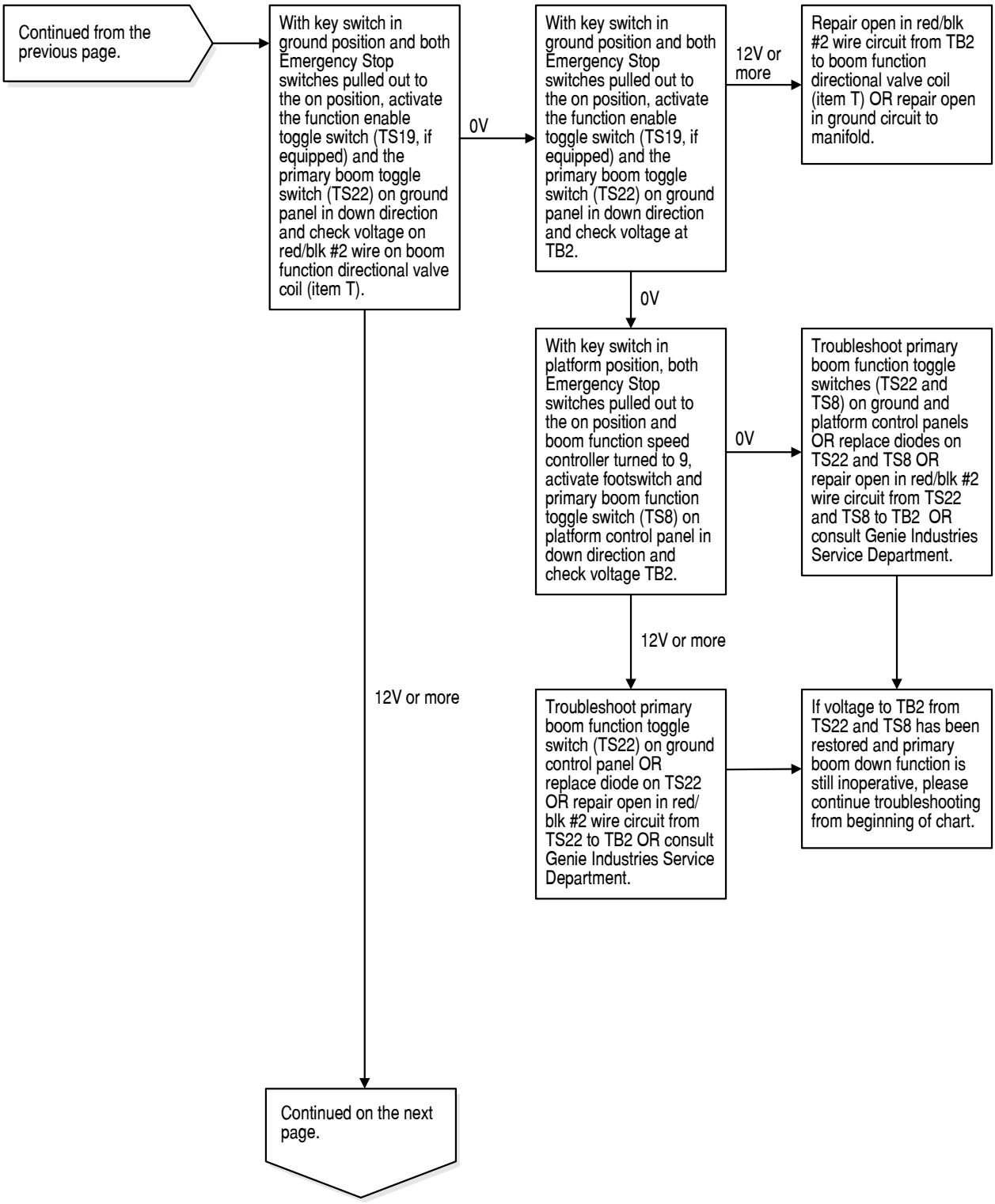

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the primary boom toggle switch (TS22) on ground panel in down direction and check voltage on red/blk #2 wire on boom function directional valve coil (item T).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the primary boom toggle switch (TS22) on ground panel in down direction and check voltage at TB2.
12V or more
Repair open in red/blk #2 wire circuit from TB2 to boom function directional valve coil (item T) OR repair open in ground circuit to manifold.
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and primary boom function toggle switch (TS8) on platform control panel in down direction and check voltage TB2.
0V
Troubleshoot primary boom function toggle switches (TS22 and TS8) on ground and platform control panels OR replace diodes on TS22 and TS8 OR repair open in red/blk #2 wire circuit from TS22 and TS8 to TB2 OR consult Genie Industries Service Department.
12V or more
12V or more
Troubleshoot primary boom function toggle switch (TS22) on ground control panel OR replace diode on TS22 OR repair open in red/blk #2 wire circuit from TS22 to TB2 OR consult Genie Industries Service Department.
If voltage to TB2 from TS22 and TS8 has been restored and primary boom down function is still inoperative, please continue troubleshooting from beginning of chart.
Continued on the next page.

CHART 17

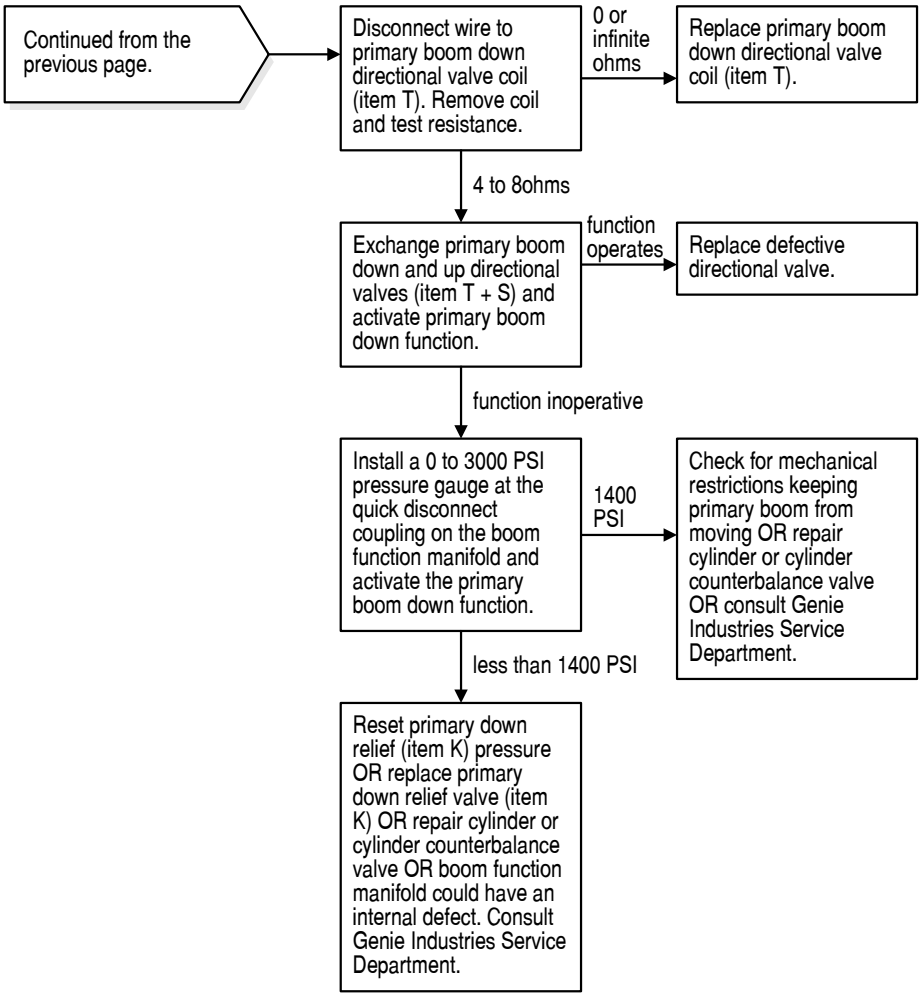

Continued from the previous page.
Disconnect wire to primary boom down directional valve coil (item T). Remove coil and test resistance.
0 or infinite ohms
Replace primary boom down directional valve coil (item T).
4 to 8ohms
Exchange primary boom down and up directional valves (item T + S) and activate primary boom down function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the primary boom down function.
1400 PSI
Check for mechanical restrictions keeping primary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 1400 PSI
Reset primary down relief (item K) pressure OR replace primary down relief valve (item K) OR repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal defect. Consult Genie Industries Service Department.

Chart 18

Secondary Boom Up Function Inoperative

Be sure all other functions operate normally.

If secondary boom up function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If secondary boom up function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

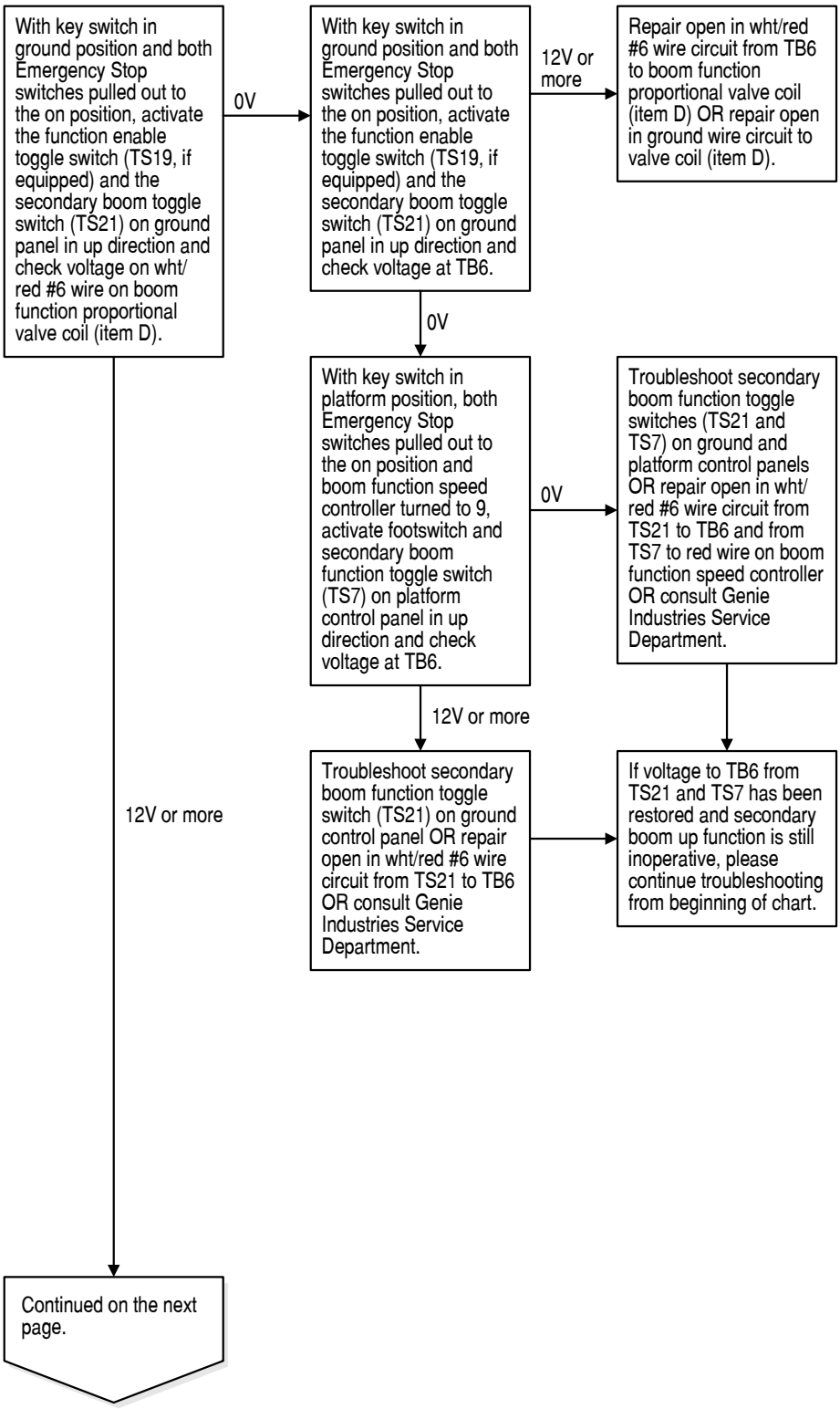


CHART 18

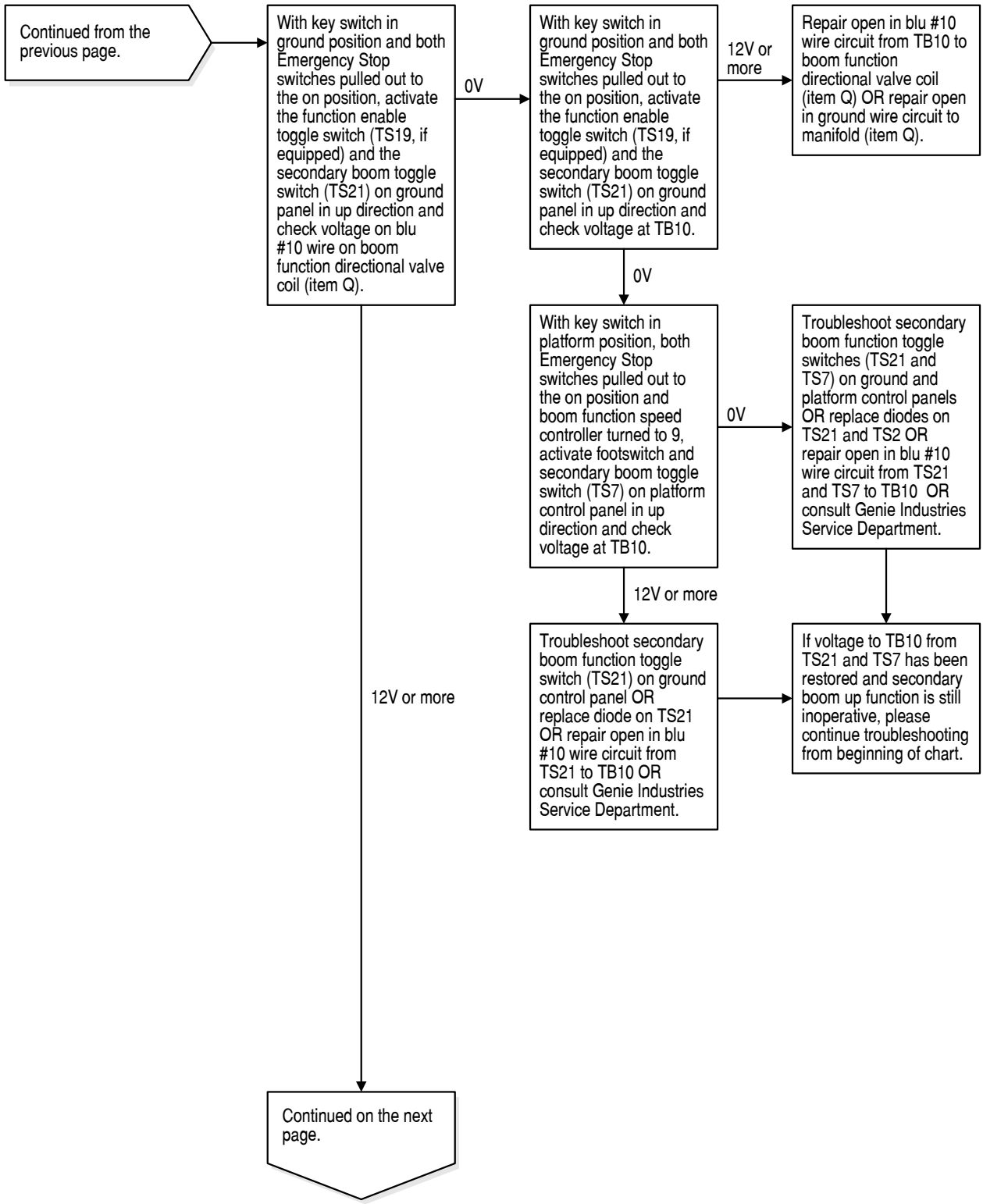

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the secondary boom toggle switch (TS21) on ground panel in up direction and check voltage on blu #10 wire on boom function directional valve coil (item Q).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the secondary boom toggle switch (TS21) on ground panel in up direction and check voltage at TB10.
12V or more
Repair open in blu #10 wire circuit from TB10 to boom function directional valve coil (item Q) OR repair open in ground wire circuit to manifold (item Q).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and secondary boom toggle switch (TS7) on platform control panel in up direction and check voltage at TB10.
0V
Troubleshoot secondary boom function toggle switches (TS21 and TS7) on ground and platform control panels OR replace diodes on TS21 and TS2 OR repair open in blu #10 wire circuit from TS21 and TS7 to TB10 OR consult Genie Industries Service Department.
12V or more
Troubleshoot secondary boom function toggle switch (TS21) on ground control panel OR replace diode on TS21 OR repair open in blu #10 wire circuit from TS21 to TB10 OR consult Genie Industries Service Department.
If voltage to TB10 from TS21 and TS7 has been restored and secondary boom up function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 18

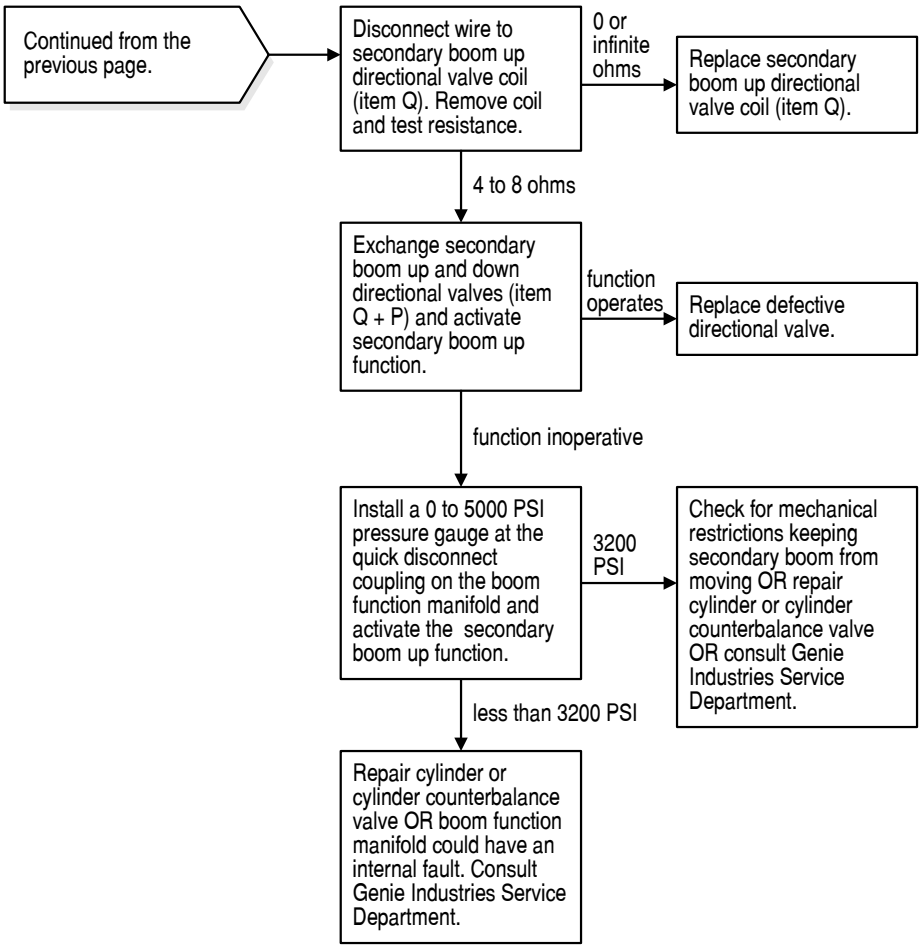

Continued from the previous page.
Disconnect wire to secondary boom up directional valve coil (item Q). Remove coil and test resistance.
0 or infinite ohms
Replace secondary boom up directional valve coil (item Q).
4 to 8 ohms
Exchange secondary boom up and down directional valves (item Q + P) and activate secondary boom up function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the secondary boom up function.
3200 PSI
Check for mechanical restrictions keeping secondary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3200 PSI
Repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 19

Secondary Boom Down Function Inoperative

Be sure all other functions operate normally.

If secondary boom down function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If secondary boom down function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

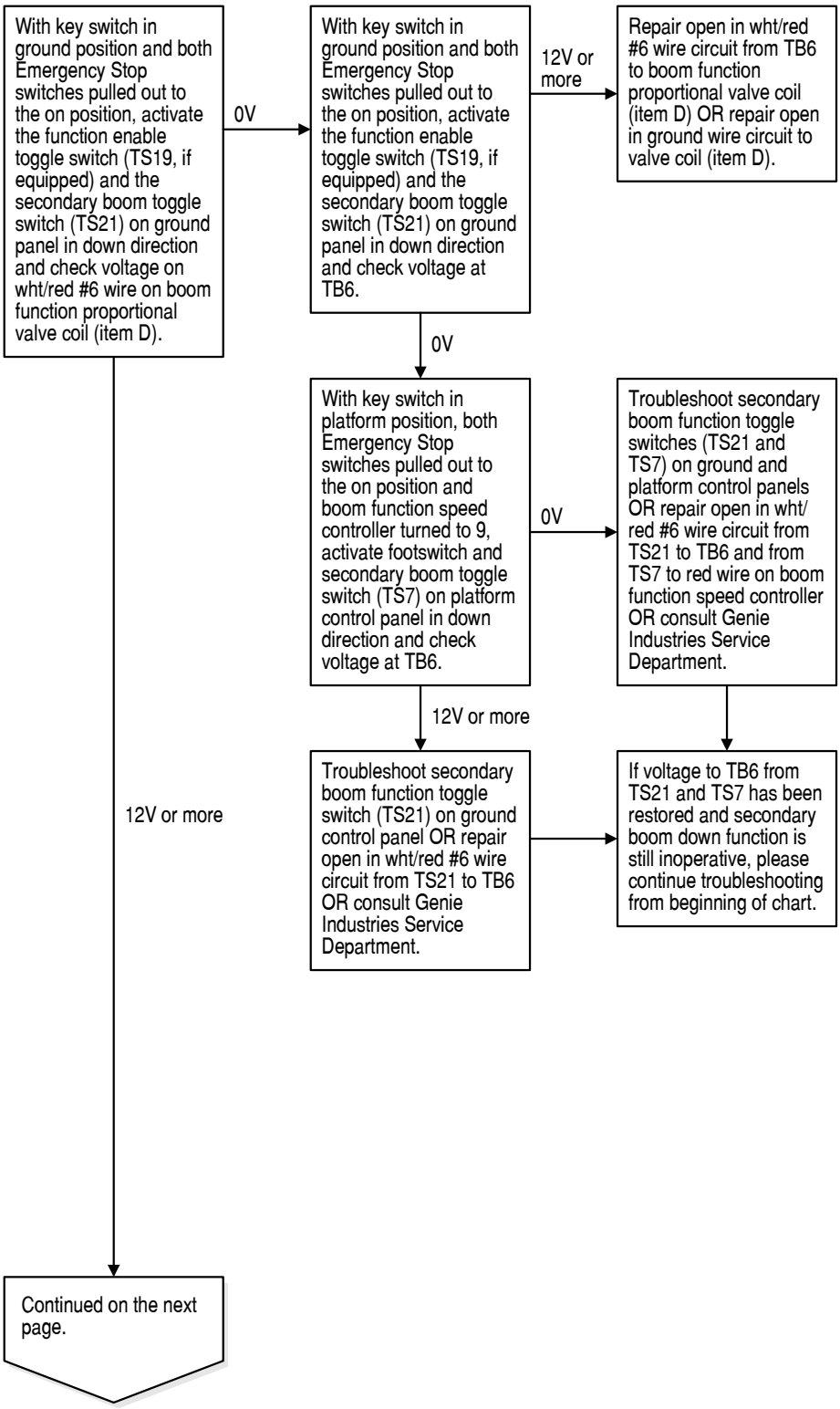


CHART 19

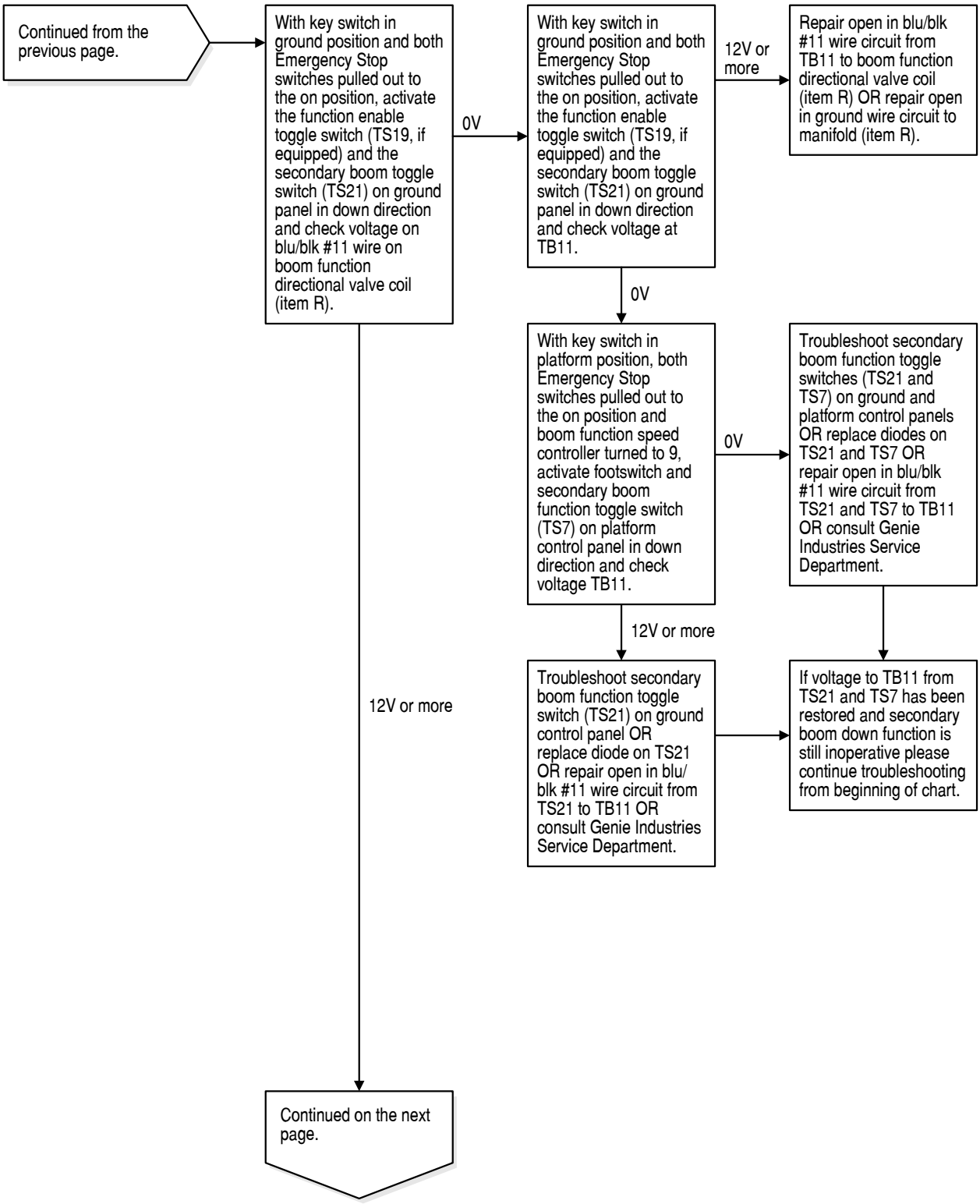

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the secondary boom toggle switch (TS21) on ground panel in down direction and check voltage on blu/blk #11 wire on boom function directional valve coil (item R).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the secondary boom toggle switch (TS21) on ground panel in down direction and check voltage at TB11.
12V or more
Repair open in blu/blk #11 wire circuit from TB11 to boom function directional valve coil (item R) OR repair open in ground wire circuit to manifold (item R).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and secondary boom function toggle switch (TS7) on platform control panel in down direction and check voltage TB11.
0V
Troubleshoot secondary boom function toggle switches (TS21 and TS7) on ground and platform control panels OR replace diodes on TS21 and TS7 OR repair open in blu/blk #11 wire circuit from TS21 and TS7 to TB11 OR consult Genie Industries Service Department.
12V or more
Troubleshoot secondary boom function toggle switch (TS21) on ground control panel OR replace diode on TS21 OR repair open in blu/blk #11 wire circuit from TS21 to TB11 OR consult Genie Industries Service Department.
If voltage to TB11 from TS21 and TS7 has been restored and secondary boom down function is still inoperative please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 19

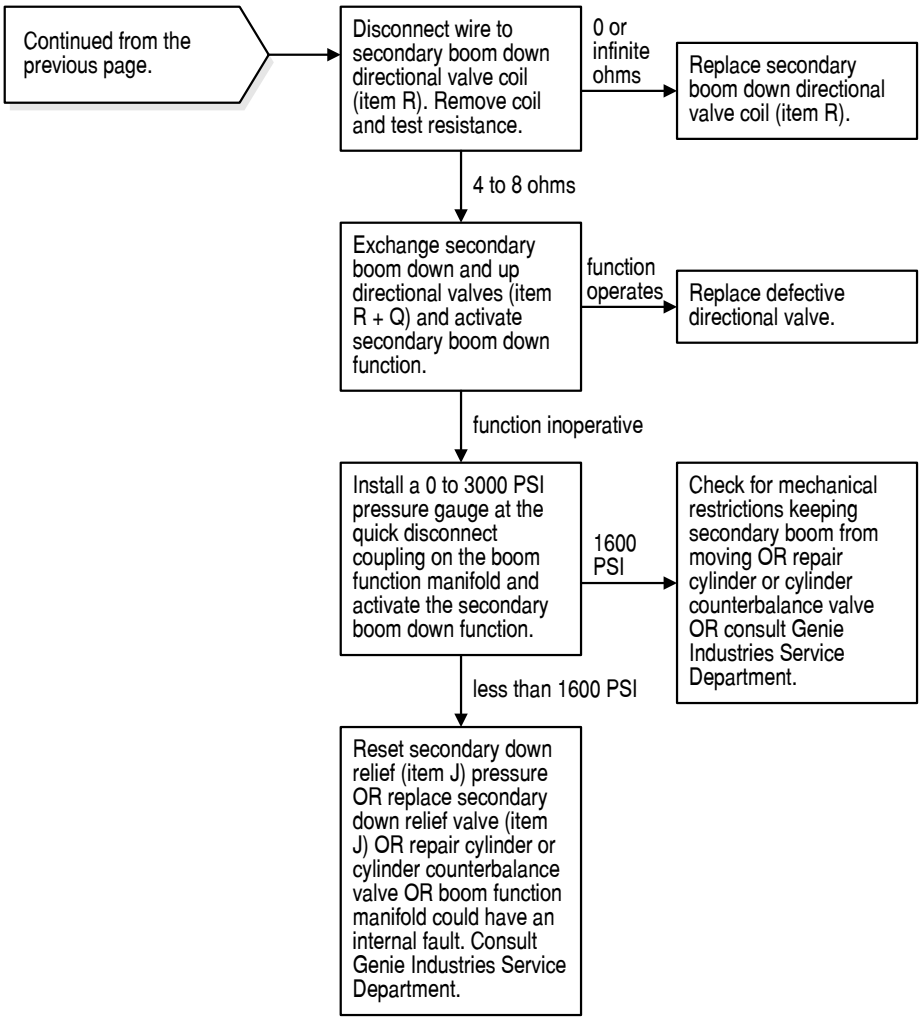

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Disconnect wire to secondary boom down directional valve coil (item R). Remove coil and test resistance.
0 or infinite ohms
Replace secondary boom down directional valve coil (item R).
4 to 8 ohms
Exchange secondary boom down and up directional valves (item R + Q) and activate secondary boom down function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the secondary boom down function.
1600 PSI
Check for mechanical restrictions keeping secondary boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 1600 PSI
Reset secondary down relief (item J) pressure OR replace secondary down relief valve (item J) OR repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 20

Primary Boom Extend Function Inoperative

Be sure all other functions operate normally.

If primary boom extend function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If primary boom extend function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

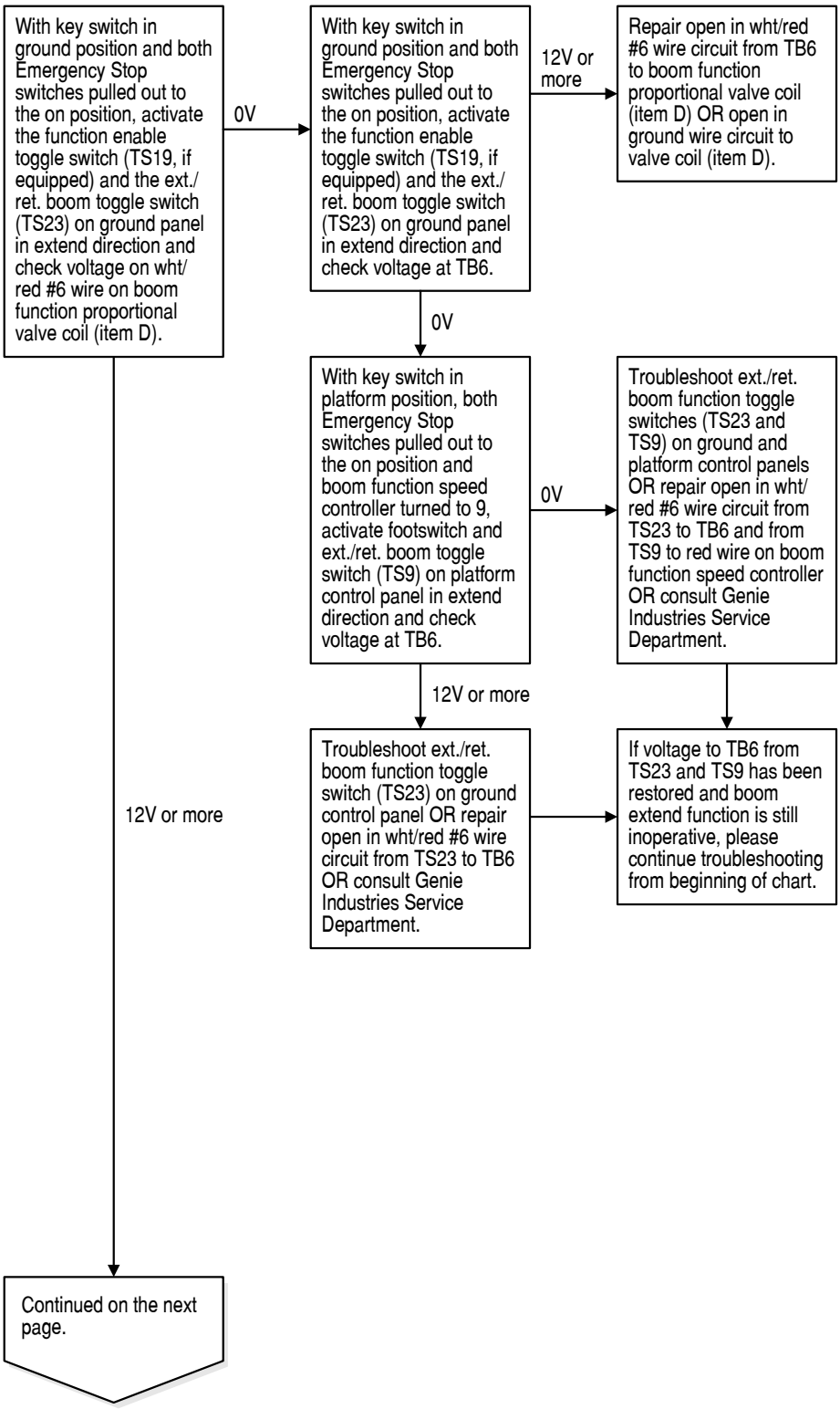


CHART 20

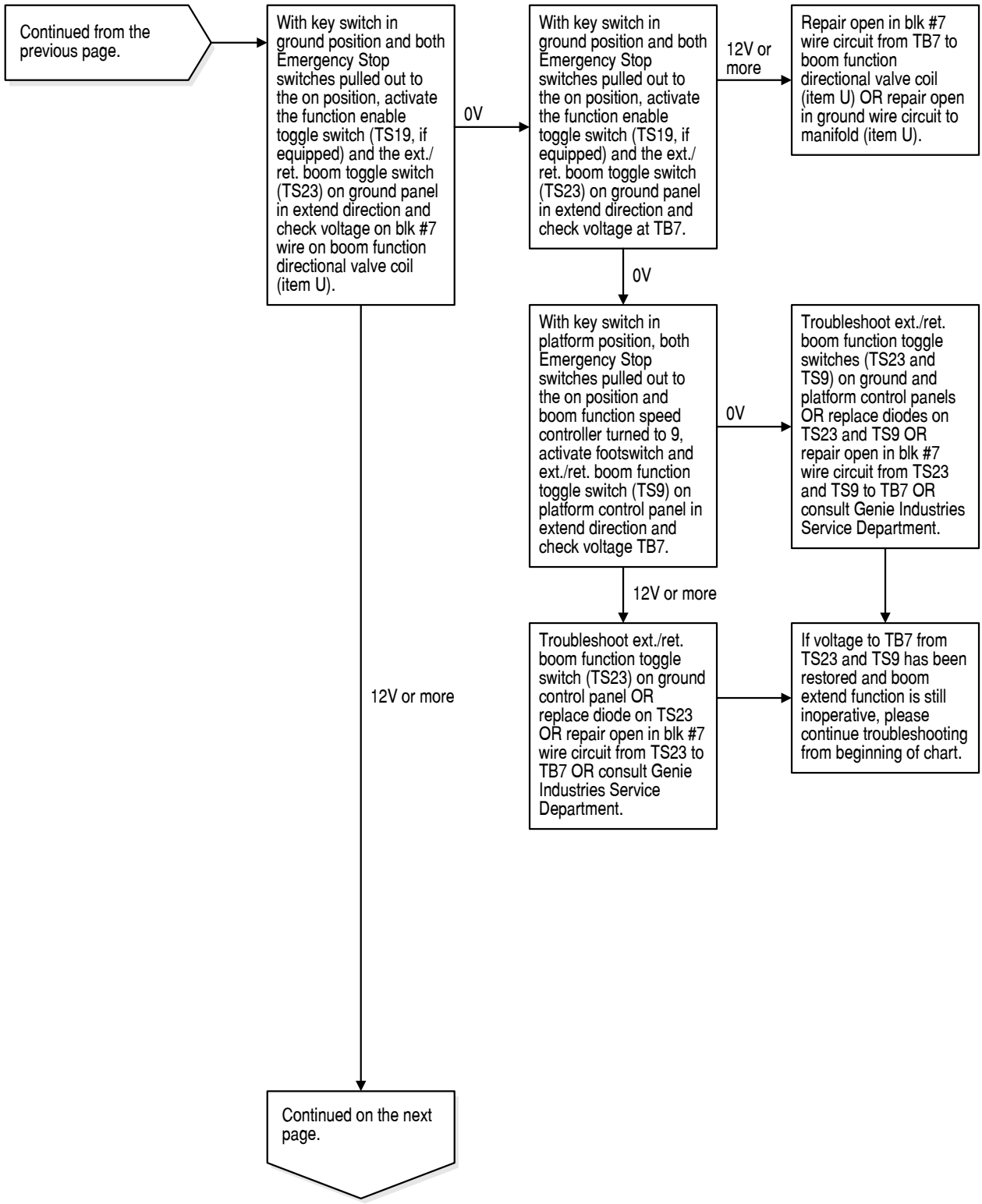

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the ext./ ret. boom toggle switch (TS23) on ground panel in extend direction and check voltage on blk #7 wire on boom function directional valve coil (item U).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the ext./ ret. boom toggle switch (TS23) on ground panel in extend direction and check voltage at TB7.
12V or more
Repair open in blk #7 wire circuit from TB7 to boom function directional valve coil (item U) OR repair open in ground wire circuit to manifold (item U).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and ext./ret. boom function toggle switch (TS9) on platform control panel in extend direction and check voltage TB7.
0V
Troubleshoot ext./ret. boom function toggle switches (TS23 and TS9) on ground and platform control panels OR replace diodes on TS23 and TS9 OR repair open in blk #7 wire circuit from TS23 and TS9 to TB7 OR consult Genie Industries Service Department.
12V or more
Troubleshoot ext./ret. boom function toggle switch (TS23) on ground control panel OR replace diode on TS23 OR repair open in blk #7 wire circuit from TS23 to TB7 OR consult Genie Industries Service Department.
If voltage to TB7 from TS23 and TS9 has been restored and boom extend function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 20

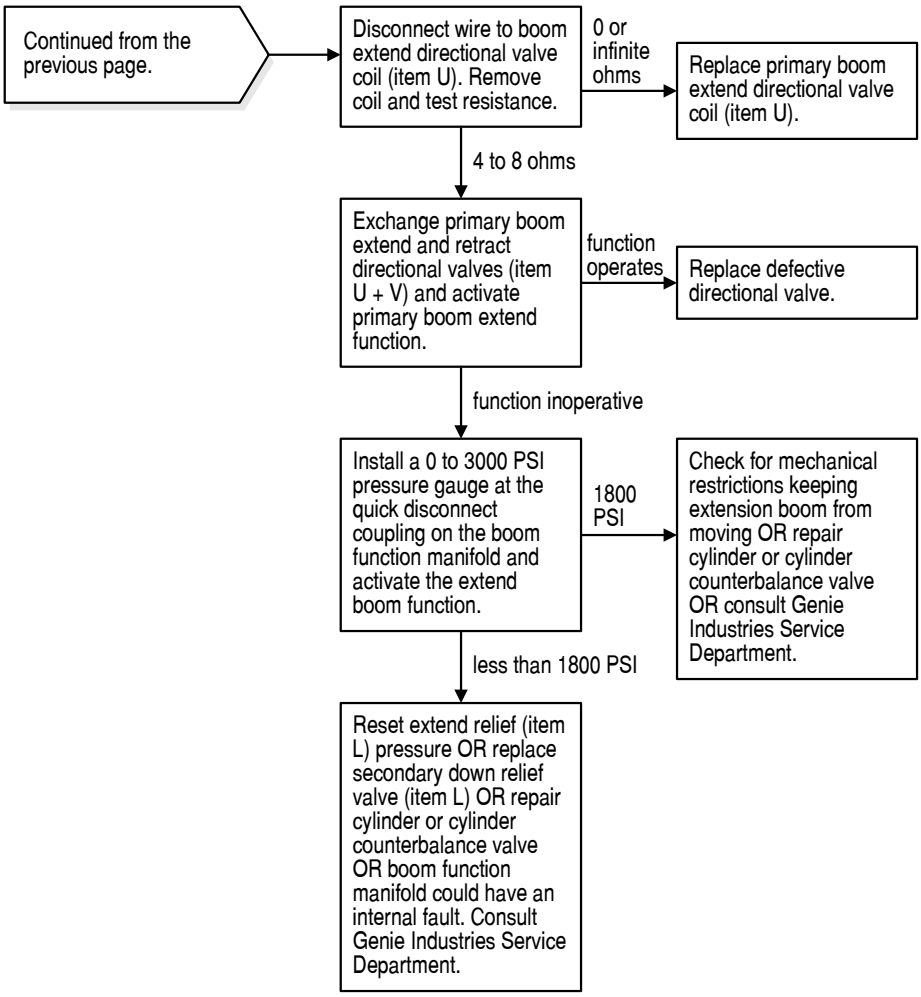

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Disconnect wire to boom extend directional valve coil (item U). Remove coil and test resistance.
0 or infinite ohms
Replace primary boom extend directional valve coil (item U).
4 to 8 ohms
Exchange primary boom extend and retract directional valves (item U + V) and activate primary boom extend function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the extend boom function.
1800 PSI
Check for mechanical restrictions keeping extension boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 1800 PSI
Reset extend relief (item L) pressure OR replace secondary down relief valve (item L) OR repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 21

Primary Boom Retract Function Inoperative

Be sure all other functions operate normally.

If primary boom retract function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If primary boom retract function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

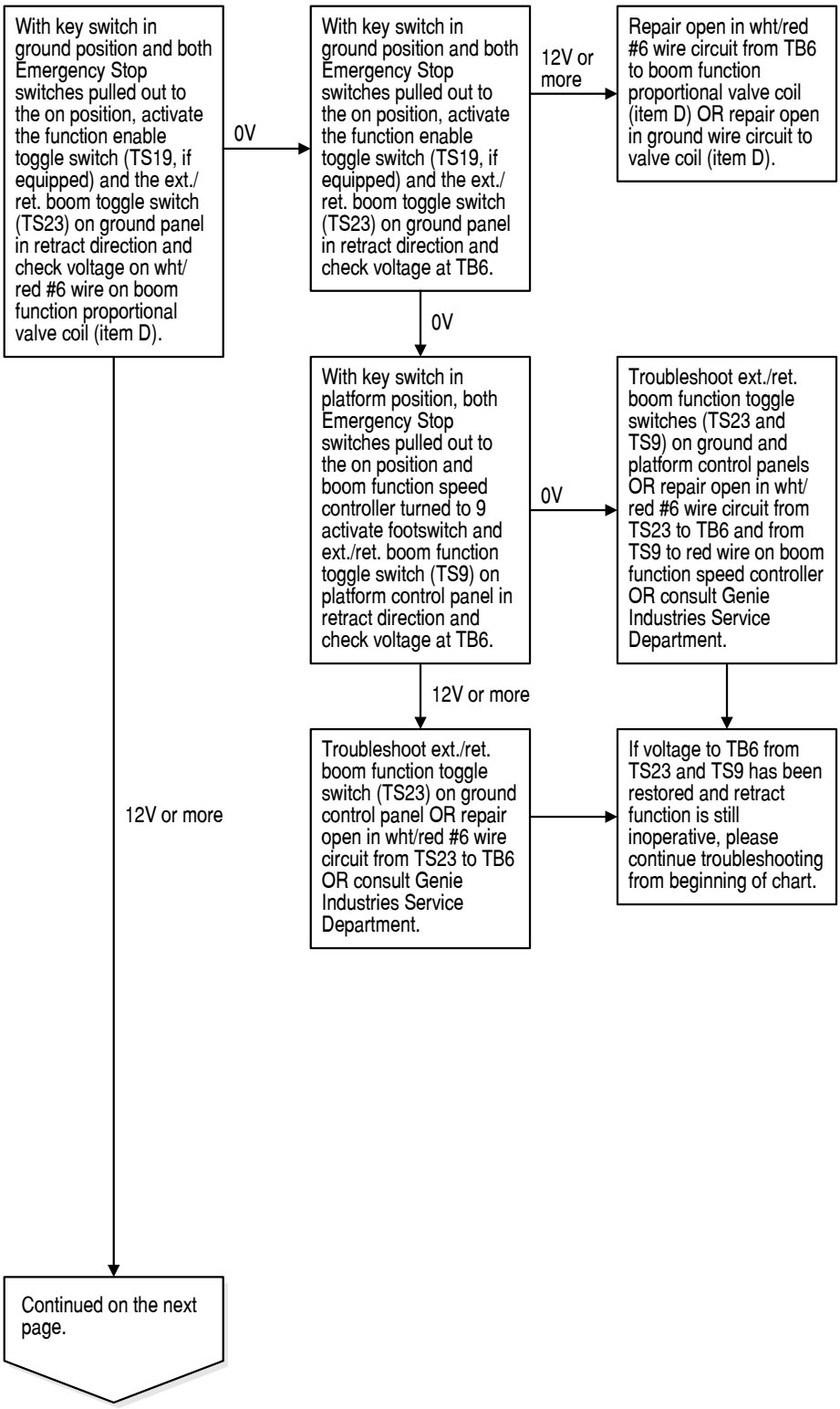


CHART 21

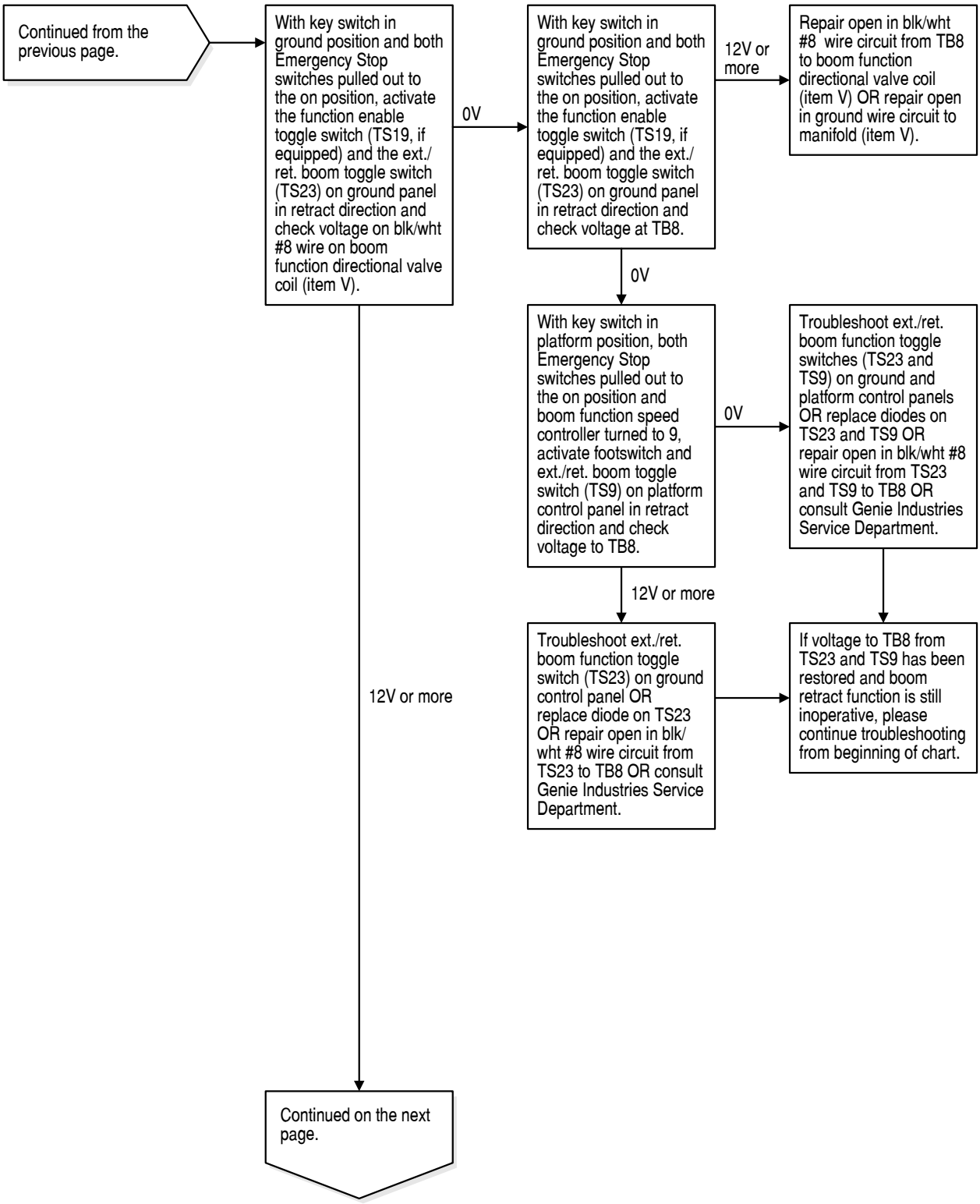

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the ext./ ret. boom toggle switch (TS23) on ground panel in retract direction and check voltage on blk/wht #8 wire on boom function directional valve coil (item V).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the ext./ ret. boom toggle switch (TS23) on ground panel in retract direction and check voltage at TB8.
12V or more
Repair open in blk/wht #8 wire circuit from TB8 to boom function directional valve coil (item V) OR repair open in ground wire circuit to manifold (item V).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and ext./ret. boom toggle switch (TS9) on platform control panel in retract direction and check voltage to TB8.
0V
Troubleshoot ext./ret. boom function toggle switches (TS23 and TS9) on ground and platform control panels OR replace diodes on TS23 and TS9 OR repair open in blk/wht #8 wire circuit from TS23 and TS9 to TB8 OR consult Genie Industries Service Department.
12V or more
Troubleshoot ext./ret. boom function toggle switch (TS23) on ground control panel OR replace diode on TS23 OR repair open in blk/ wht #8 wire circuit from TS23 to TB8 OR consult Genie Industries Service Department.
If voltage to TB8 from TS23 and TS9 has been restored and boom retract function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 21

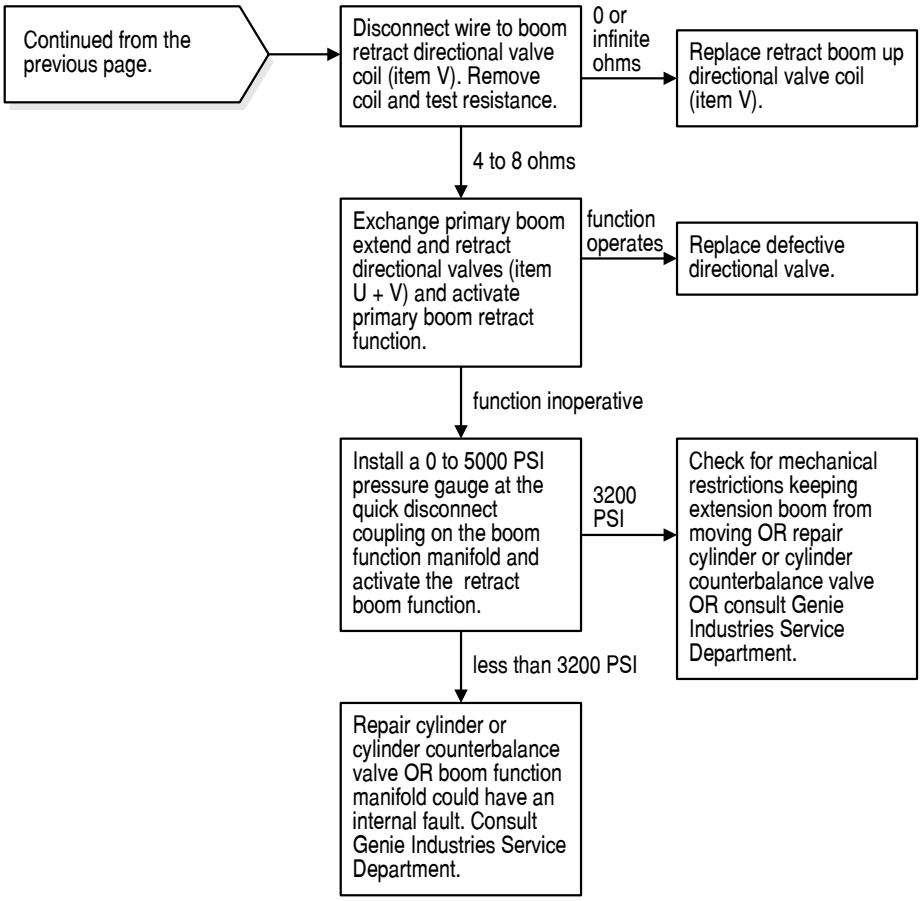

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Disconnect wire to boom retract directional valve coil (item V). Remove coil and test resistance.
0 or infinite ohms
Replace retract boom up directional valve coil (item V).
4 to 8 ohms
Exchange primary boom extend and retract directional valves (item U + V) and activate primary boom retract function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the retract boom function.
3200 PSI
Check for mechanical restrictions keeping extension boom from moving OR repair cylinder or cylinder counterbalance valve OR consult Genie Industries Service Department.
less than 3200 PSI
Repair cylinder or cylinder counterbalance valve OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 22

Turntable Rotate Left Function Inoperative

Be sure all other functions operate normally.

If turntable rotate left function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If turntable rotate left function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

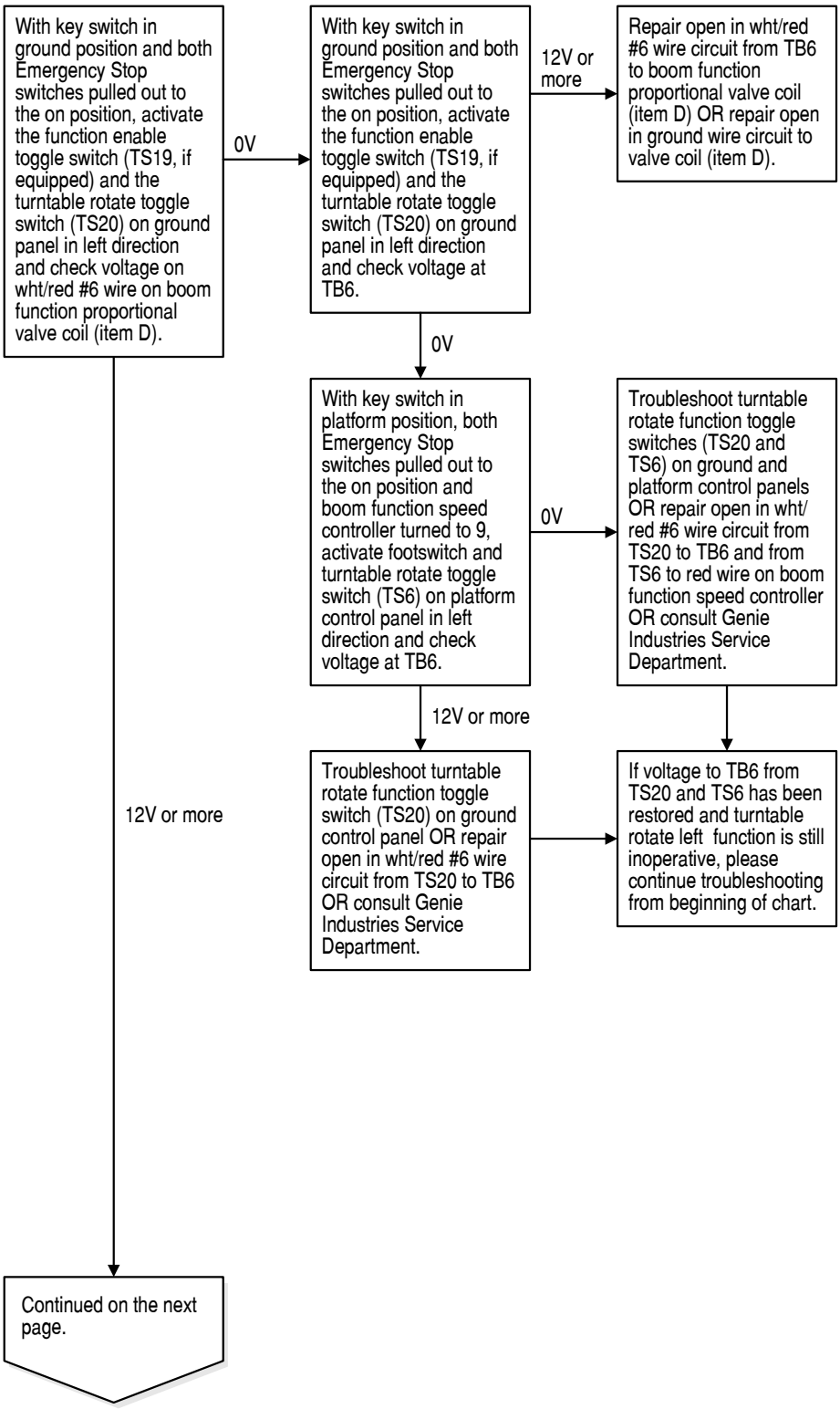


CHART 22

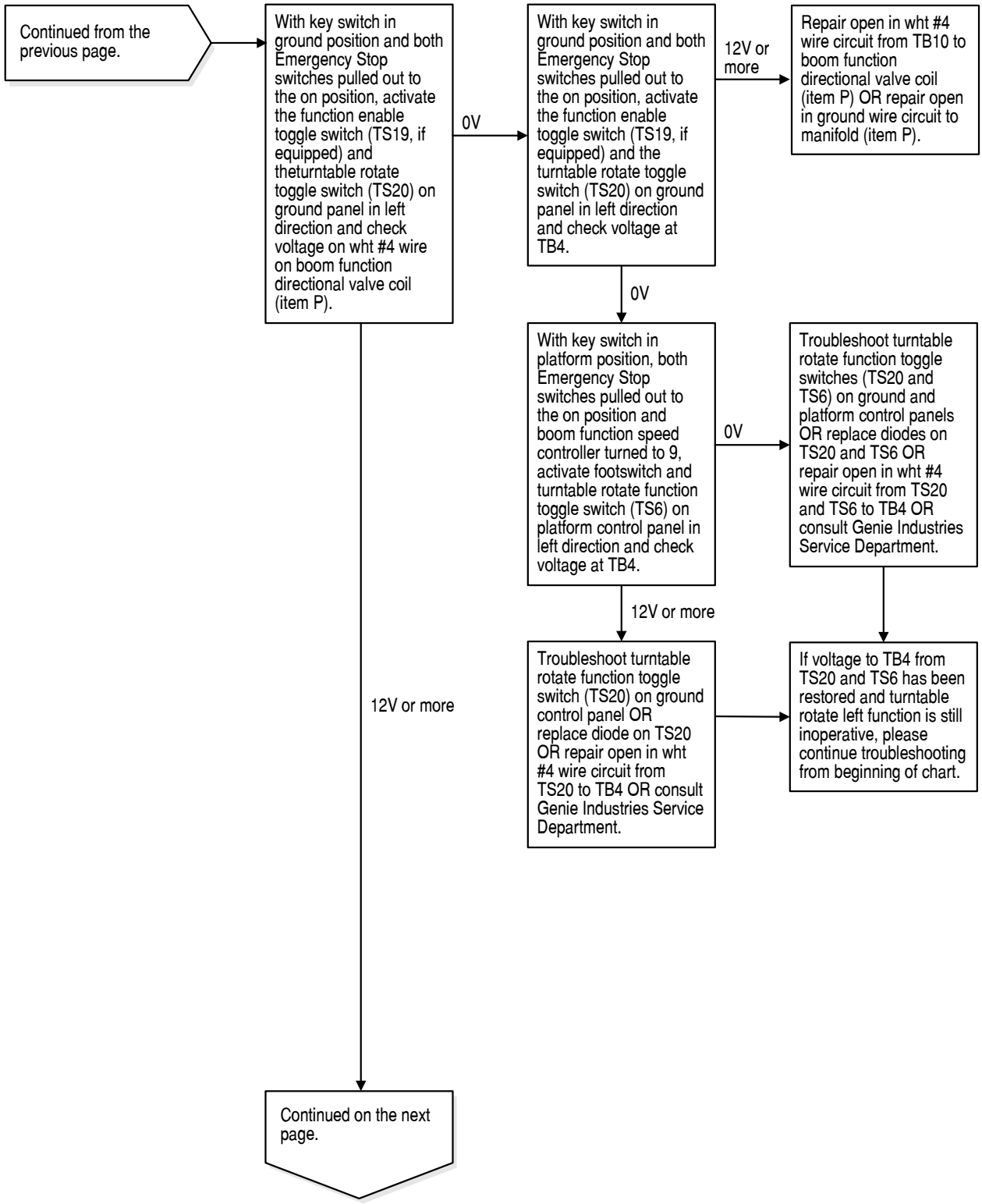

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theturntable rotate toggle switch (TS20) on ground panel in left direction and check voltage on wht #4 wire on boom function directional valve coil (item P).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the turntable rotate toggle switch (TS20) on ground panel in left direction and check voltage at TB4.
12V or more
Repair open in wht #4 wire circuit from TB10 to boom function directional valve coil (item P) OR repair open in ground wire circuit to manifold (item P).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and turntable rotate function toggle switch (TS6) on platform control panel in left direction and check voltage at TB4.
0V
Troubleshoot turntable rotate function toggle switches (TS20 and TS6) on ground and platform control panels OR replace diodes on TS20 and TS6 OR repair open in wht #4 wire circuit from TS20 and TS6 to TB4 OR consult Genie Industries Service Department.
12V or more
Troubleshoot turntable rotate function toggle switch (TS20) on ground control panel OR replace diode on TS20 OR repair open in wht #4 wire circuit from TS20 to TB4 OR consult Genie Industries Service Department.
If voltage to TB4 from TS20 and TS6 has been restored and turntable rotate left function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 22

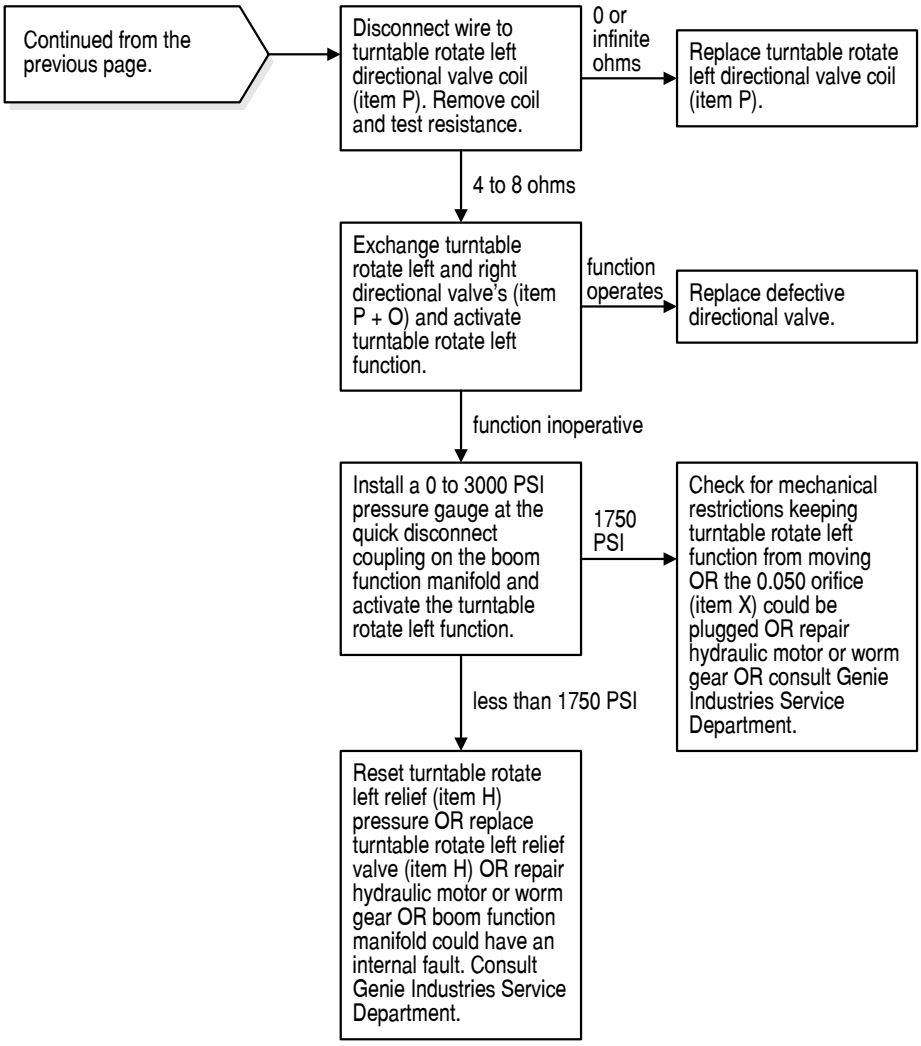

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Disconnect wire to turntable rotate left directional valve coil (item P). Remove coil and test resistance.
0 or infinite ohms
Replace turntable rotate left directional valve coil (item P).
4 to 8 ohms
Exchange turntable rotate left and right directional valve's (item P + O) and activate turntable rotate left function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the turntable rotate left function.
1750 PSI
Check for mechanical restrictions keeping turntable rotate left function from moving OR the 0.050 orifice (item X) could be plugged OR repair hydraulic motor or worm gear OR consult Genie Industries Service Department.
less than 1750 PSI
Reset turntable rotate left relief (item H) pressure OR replace turntable rotate left relief valve (item H) OR repair hydraulic motor or worm gear OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 23

Turntable Rotate Right Function Inoperative

Be sure all other functions operate normally.

If turntable rotate right function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If turntable rotate right function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

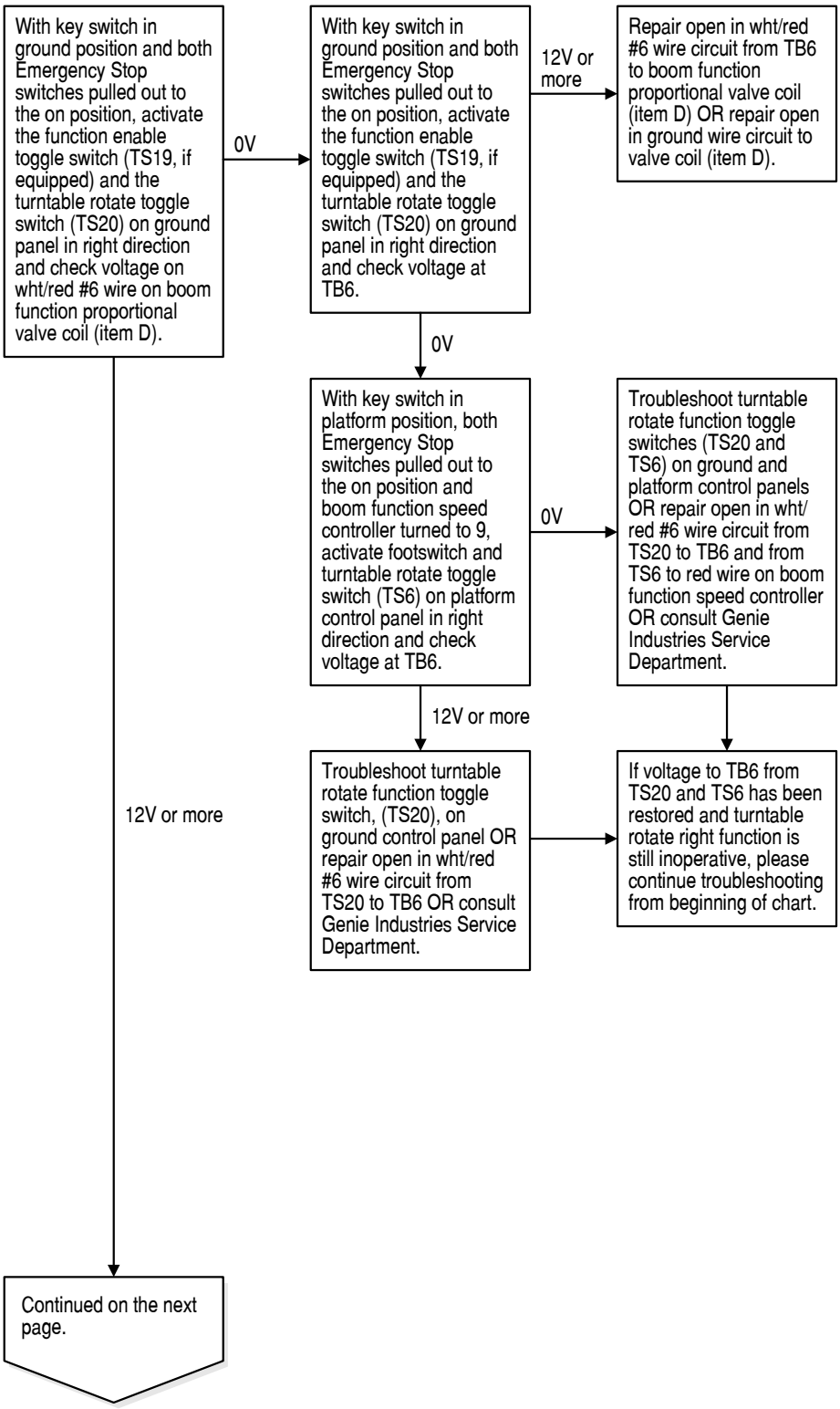


CHART 23

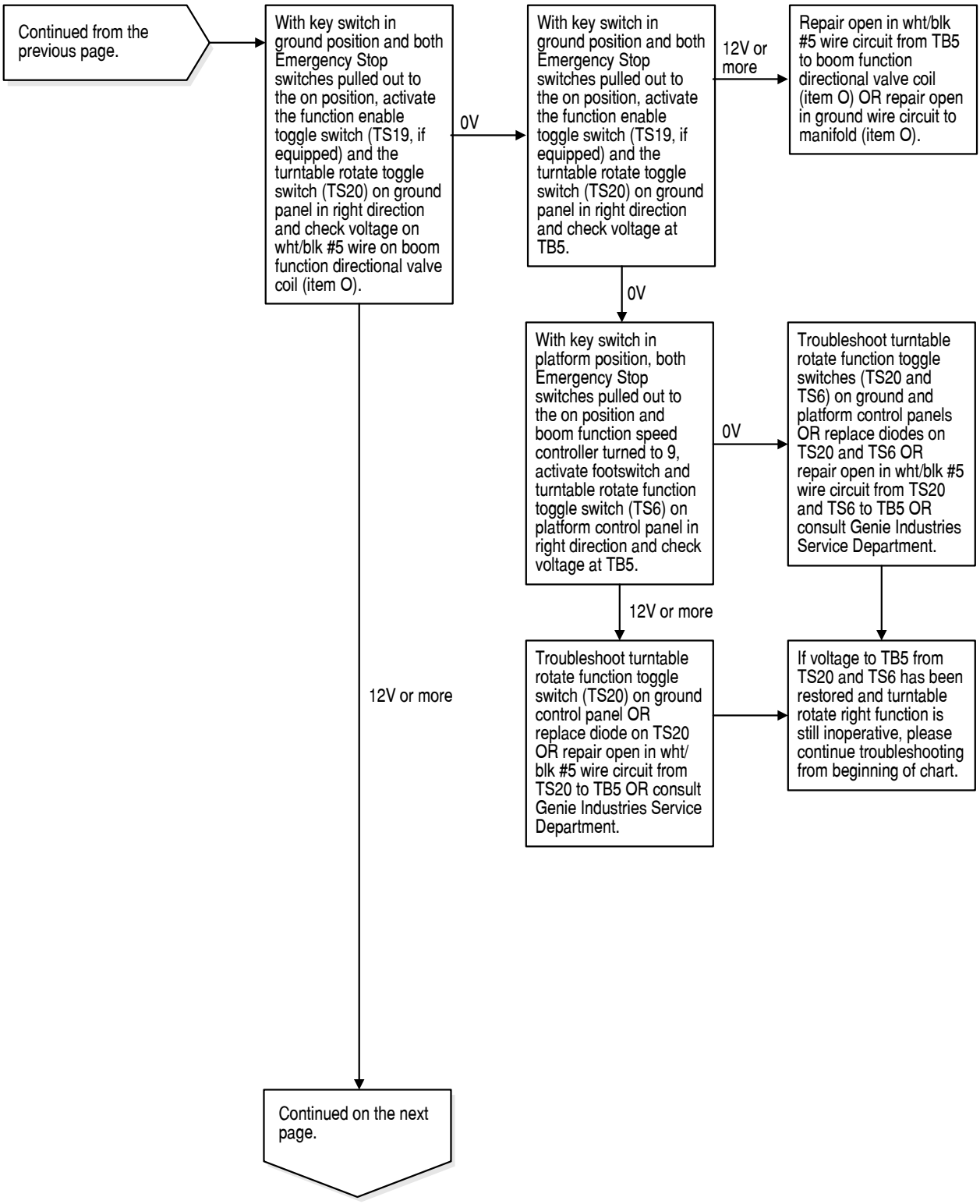

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the turntable rotate toggle switch (TS20) on ground panel in right direction and check voltage on wht/blk #5 wire on boom function directional valve coil (item O).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the turntable rotate toggle switch (TS20) on ground panel in right direction and check voltage at TB5.
12V or more
Repair open in wht/blk #5 wire circuit from TB5 to boom function directional valve coil (item O) OR repair open in ground wire circuit to manifold (item O).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and turntable rotate function toggle switch (TS6) on platform control panel in right direction and check voltage at TB5.
0V
Troubleshoot turntable rotate function toggle switches (TS20 and TS6) on ground and platform control panels OR replace diodes on TS20 and TS6 OR repair open in wht/blk #5 wire circuit from TS20 and TS6 to TB5 OR consult Genie Industries Service Department.
12V or more
Troubleshoot turntable rotate function toggle switch (TS20) on ground control panel OR replace diode on TS20 OR repair open in wht/blk #5 wire circuit from TS20 to TB5 OR consult Genie Industries Service Department.
If voltage to TB5 from TS20 and TS6 has been restored and turntable rotate right function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
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CHART 23

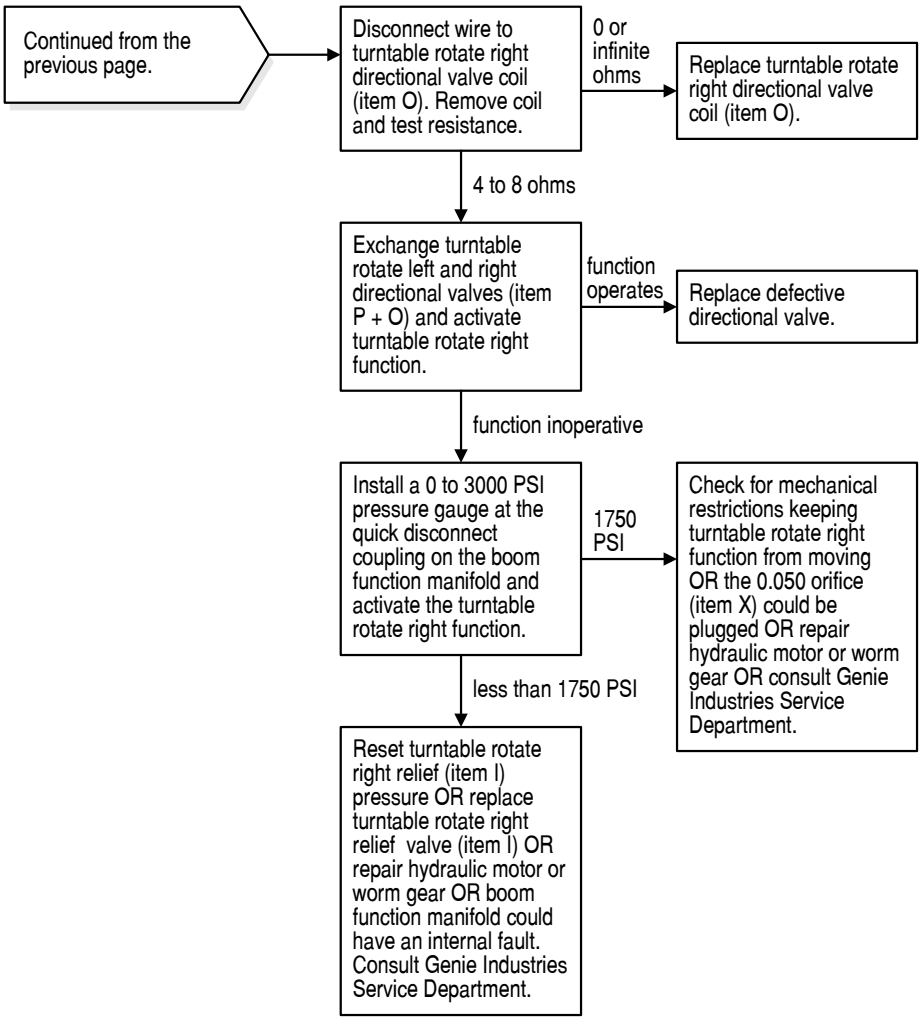

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Disconnect wire to turntable rotate right directional valve coil (item O). Remove coil and test resistance.
0 or infinite ohms
Replace turntable rotate right directional valve coil (item O).
4 to 8 ohms
Exchange turntable rotate left and right directional valves (item P + O) and activate turntable rotate right function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 3000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the turntable rotate right function.
1750 PSI
Check for mechanical restrictions keeping turntable rotate right function from moving OR the 0.050 orifice (item X) could be plugged OR repair hydraulic motor or worm gear OR consult Genie Industries Service Department.
less than 1750 PSI
Reset turntable rotate right relief (item I) pressure OR replace turntable rotate right relief valve (item I) OR repair hydraulic motor or worm gear OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 24

All Platform Leveling Functions Inoperative

Be sure all other functions operate normally.

Be sure both automatic and manual platform leveling do not operate.

If automatic leveling operates but manual leveling does not, troubleshoot platform leveling up function inoperative.

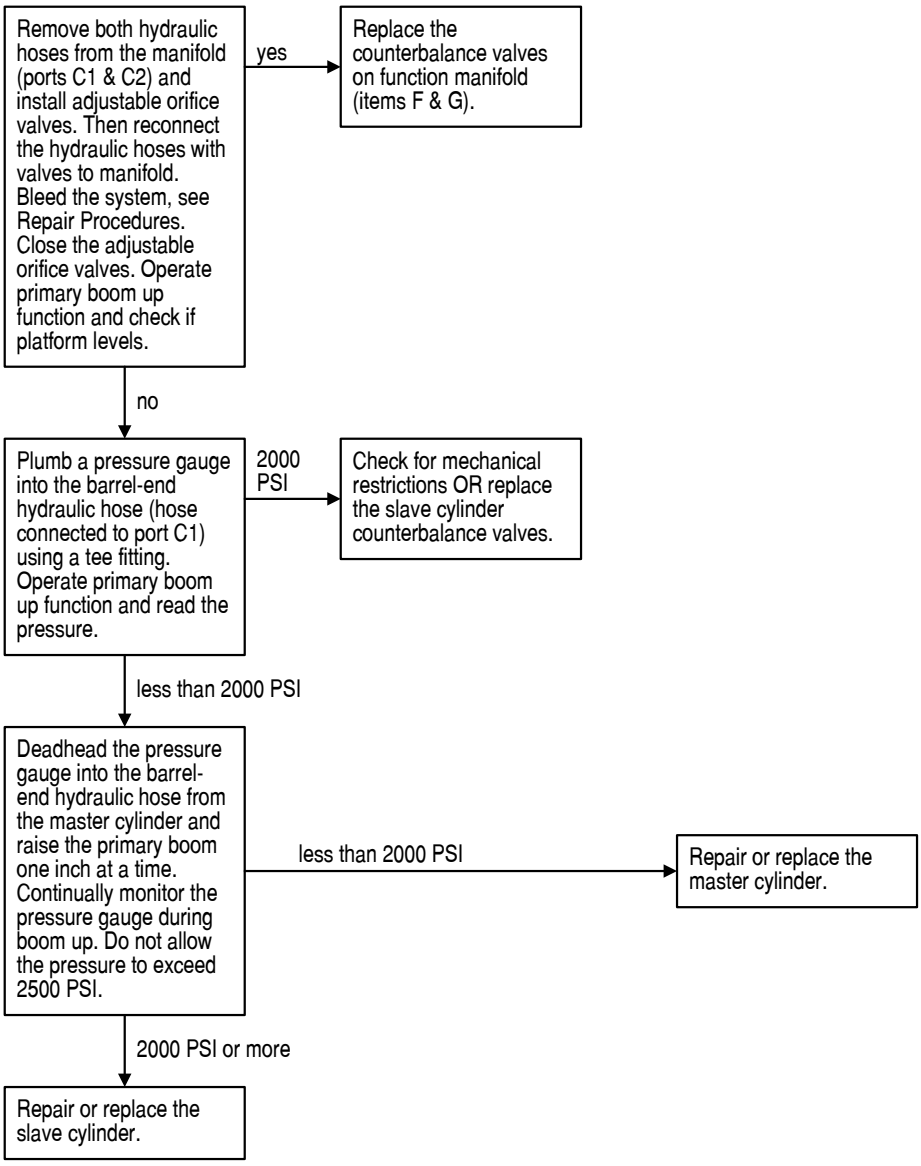


Chart 25

Platform Level Up Function Inoperative

Be sure all other functions operate normally.

If platform level up function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If platform level up function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

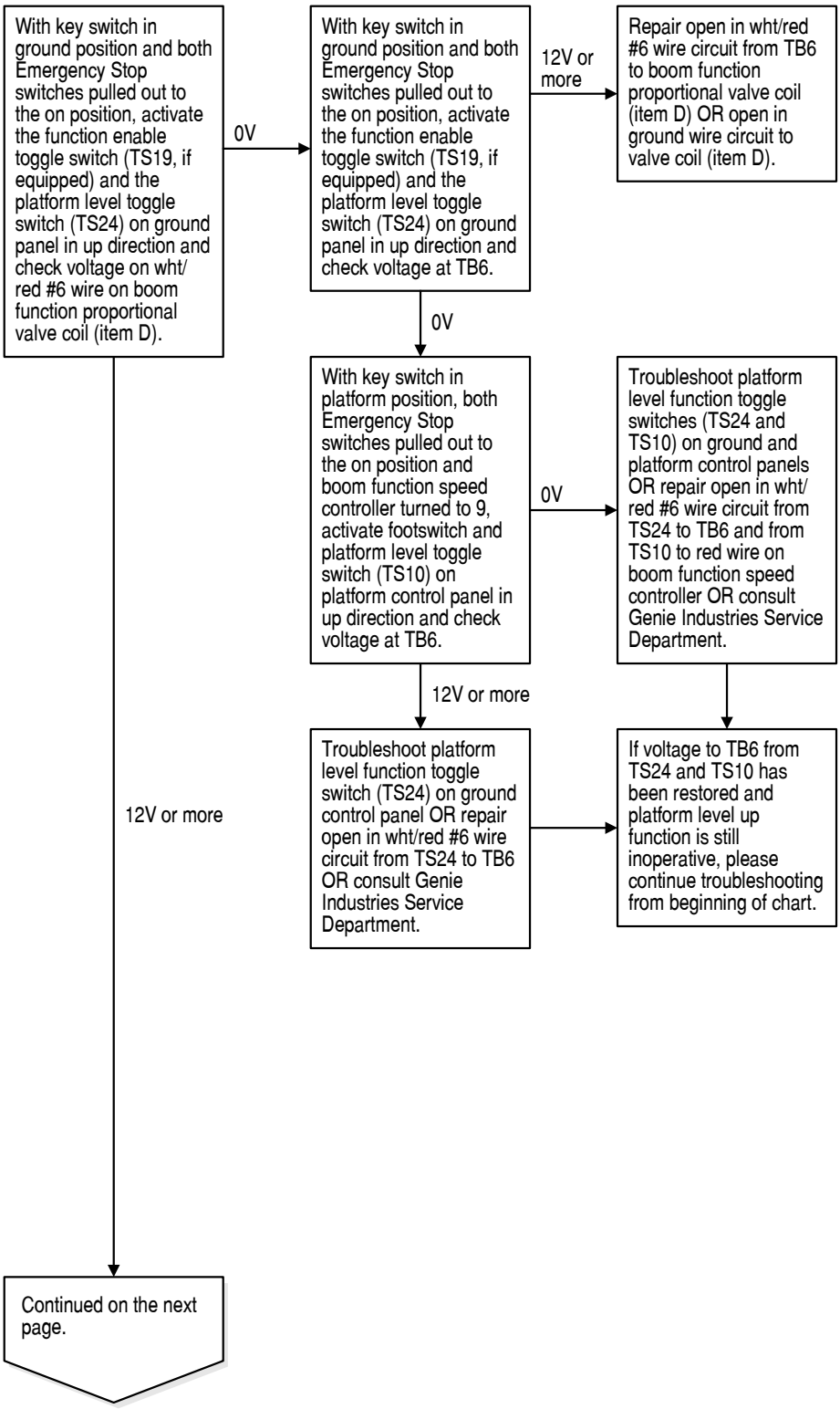


CHART 25

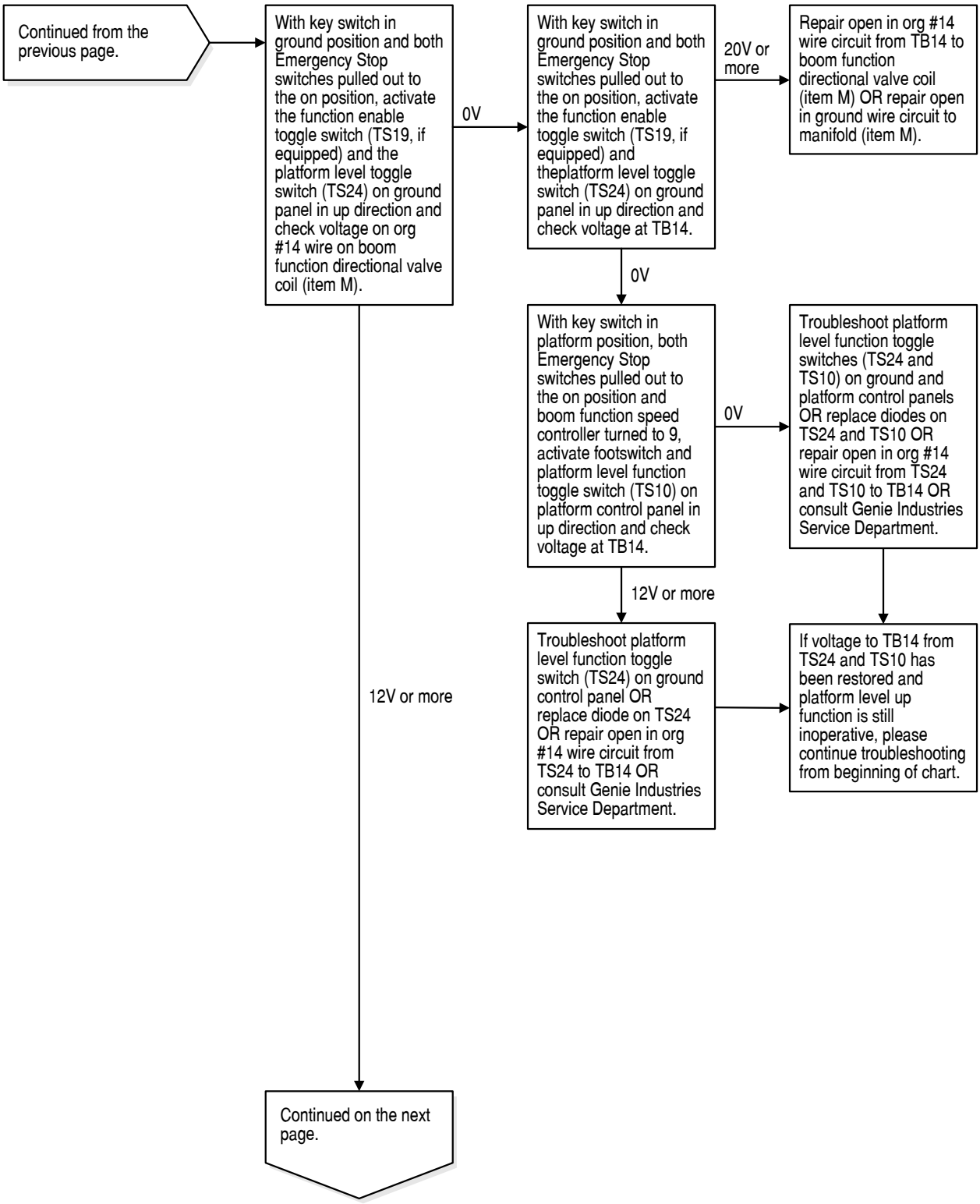

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and the platform level toggle switch (TS24) on ground panel in up direction and check voltage on org #14 wire on boom function directional valve coil (item M).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform level toggle switch (TS24) on ground panel in up direction and check voltage at TB14.
20V or more
Repair open in org #14 wire circuit from TB14 to boom function directional valve coil (item M) OR repair open in ground wire circuit to manifold (item M).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and platform level function toggle switch (TS10) on platform control panel in up direction and check voltage at TB14.
0V
Troubleshoot platform level function toggle switches (TS24 and TS10) on ground and platform control panels OR replace diodes on TS24 and TS10 OR repair open in org #14 wire circuit from TS24 and TS10 to TB14 OR consult Genie Industries Service Department.
12V or more
Troubleshoot platform level function toggle switch (TS24) on ground control panel OR replace diode on TS24 OR repair open in org #14 wire circuit from TS24 to TB14 OR consult Genie Industries Service Department.
If voltage to TB14 from TS24 and TS10 has been restored and platform level up function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 25

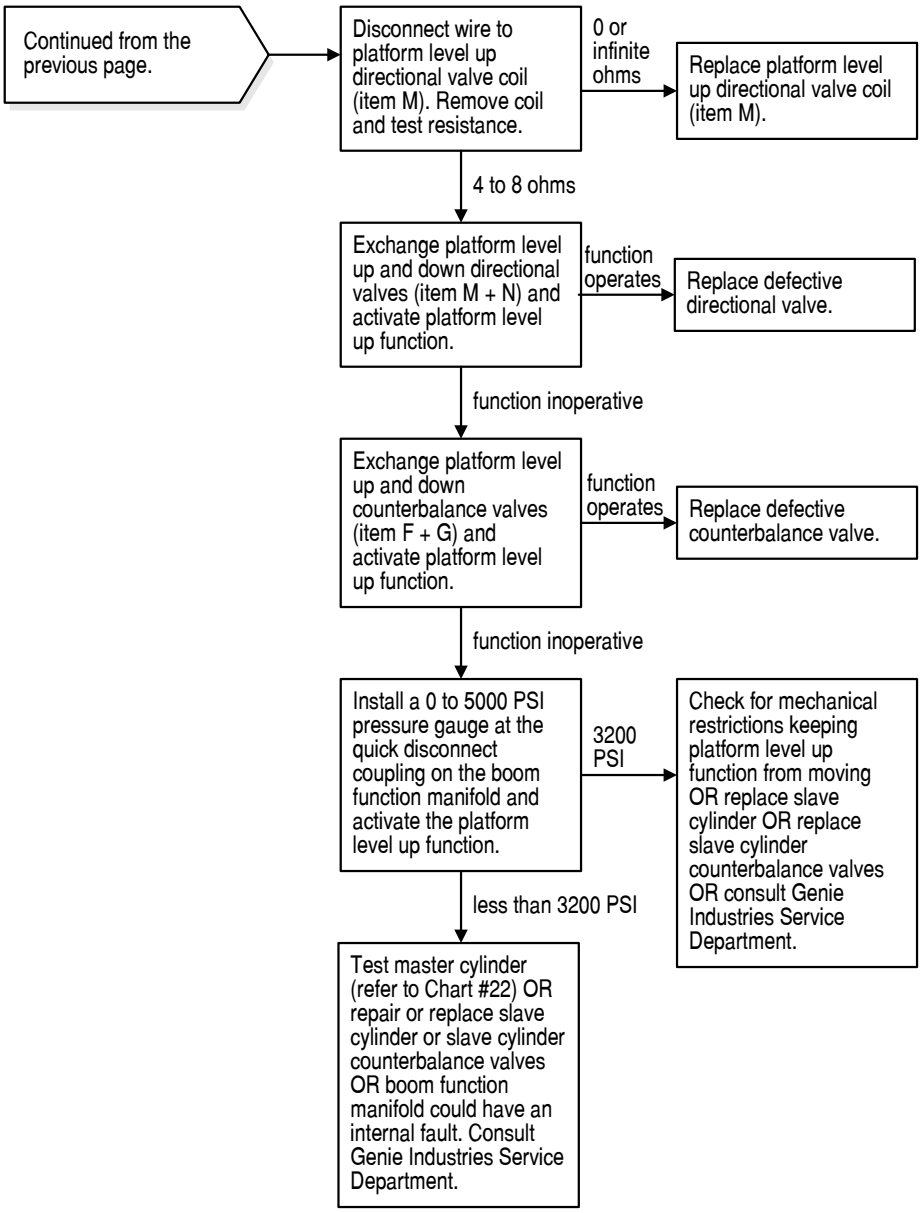

Continued from the previous page.
Disconnect wire to platform level up directional valve coil (item M). Remove coil and test resistance.
0 or infinite ohms
Replace platform level up directional valve coil (item M).
4 to 8 ohms
Exchange platform level up and down directional valves (item M + N) and activate platform level up function.
function operates
Replace defective directional valve.
function inoperative
Exchange platform level up and down counterbalance valves (item F + G) and activate platform level up function.
function operates
Replace defective counterbalance valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform level up function.
3200 PSI
Check for mechanical restrictions keeping platform level up function from moving OR replace slave cylinder OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Test master cylinder (refer to Chart #22) OR repair or replace slave cylinder or slave cylinder counterbalance valves OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 26

Platform Level Down Function Inoperative

Be sure all other functions operate normally.

If platform level down function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If platform level down function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

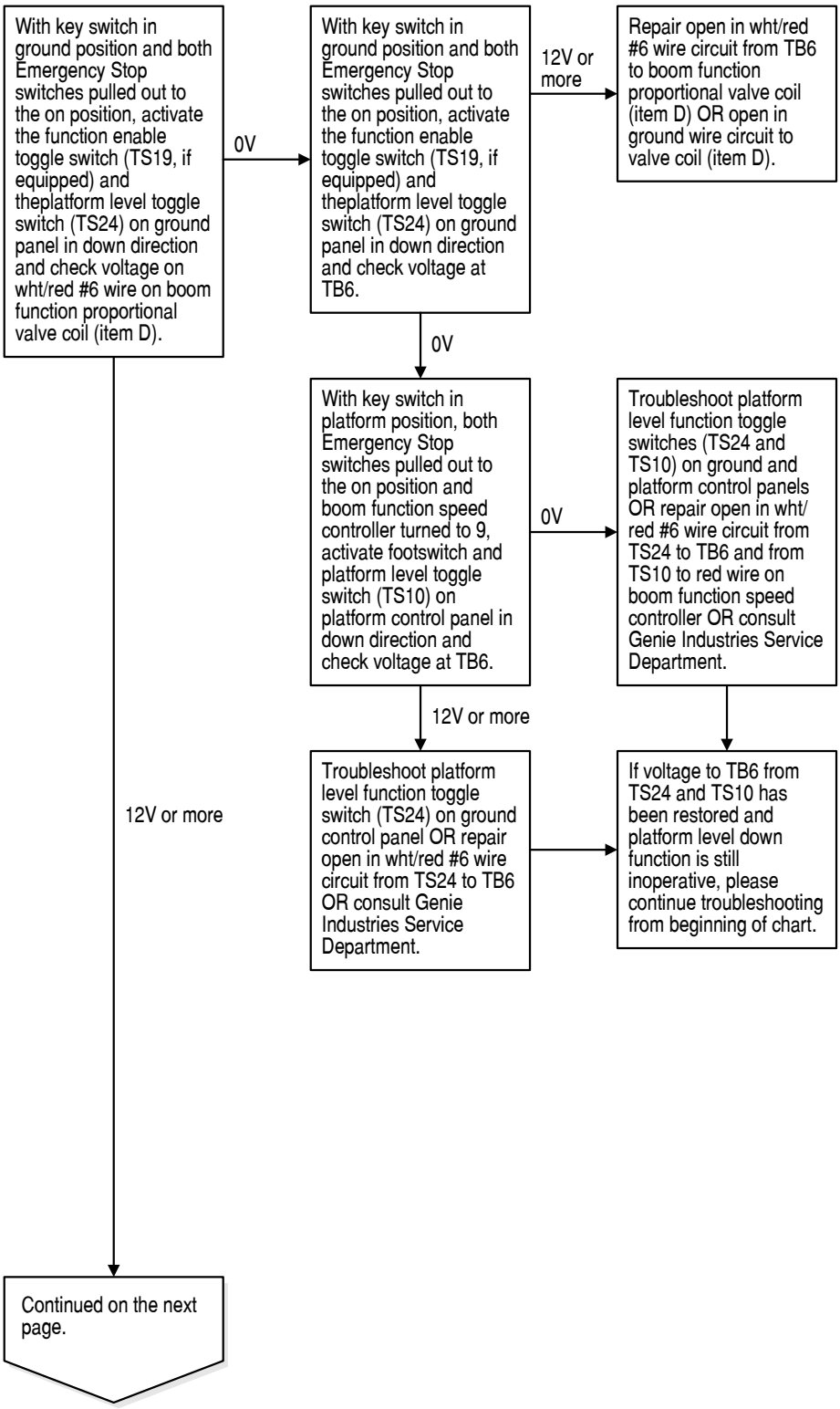


CHART 26

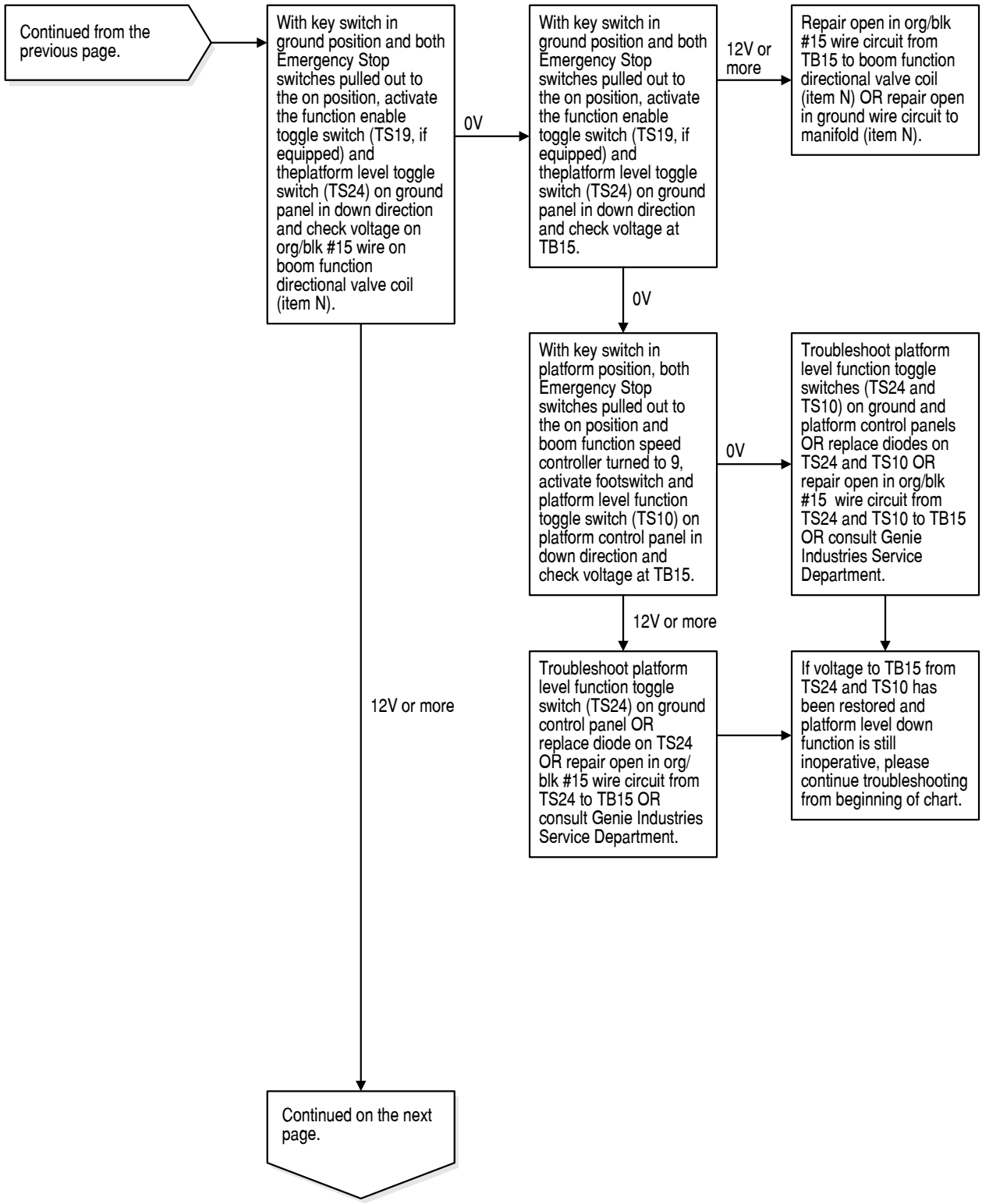

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform level toggle switch (TS24) on ground panel in down direction and check voltage on org/blk #15 wire on boom function directional valve coil (item N).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform level toggle switch (TS24) on ground panel in down direction and check voltage at TB15.
12V or more
Repair open in org/blk #15 wire circuit from TB15 to boom function directional valve coil (item N) OR repair open in ground wire circuit to manifold (item N).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and platform level function toggle switch (TS10) on platform control panel in down direction and check voltage at TB15.
0V
Troubleshoot platform level function toggle switches (TS24 and TS10) on ground and platform control panels OR replace diodes on TS24 and TS10 OR repair open in org/blk #15 wire circuit from TS24 and TS10 to TB15 OR consult Genie Industries Service Department.
12V or more
Troubleshoot platform level function toggle switch (TS24) on ground control panel OR replace diode on TS24 OR repair open in org/blk #15 wire circuit from TS24 to TB15 OR consult Genie Industries Service Department.
If voltage to TB15 from TS24 and TS10 has been restored and platform level down function is still inoperative, please continue troubleshooting from beginning of chart.
12V or more
Continued on the next page.

CHART 26

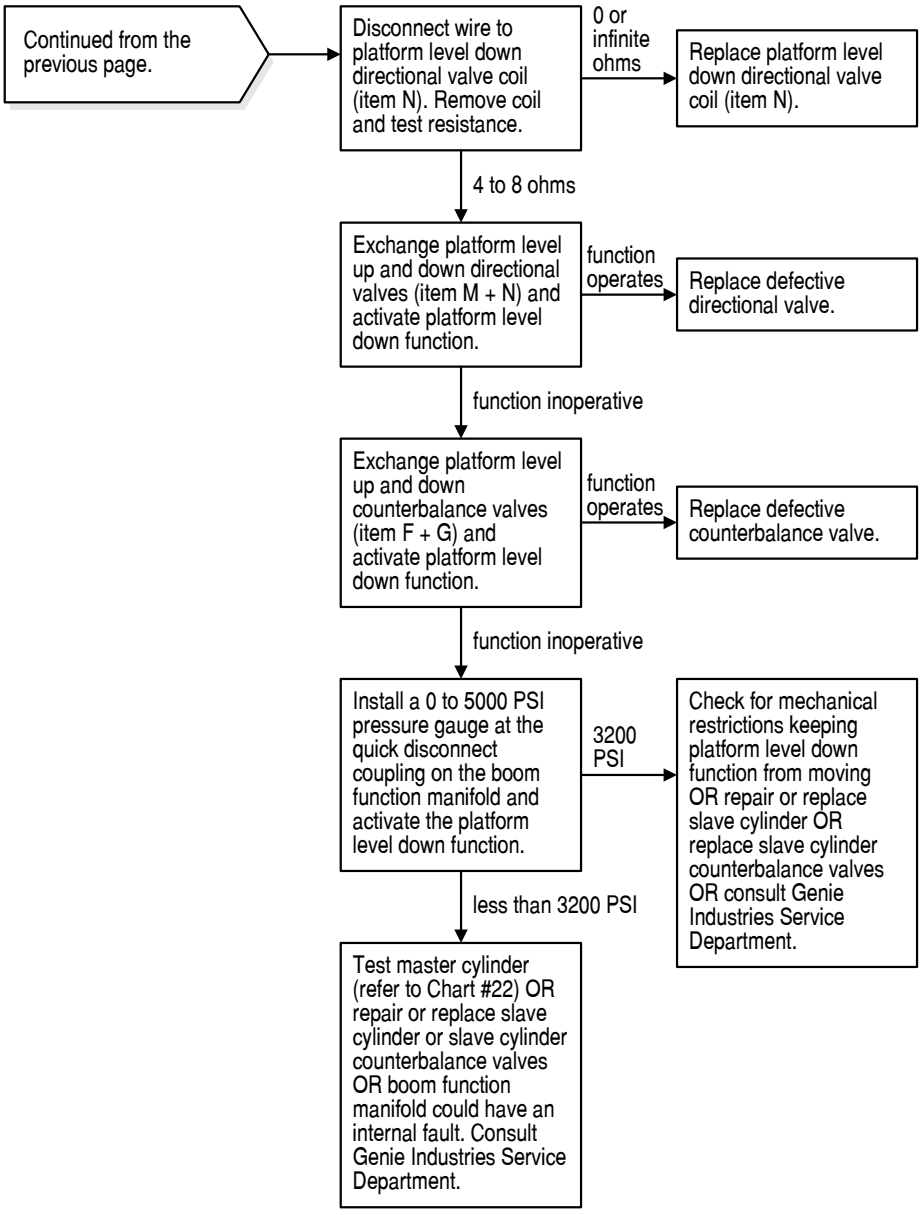

Continued from the previous page.
Disconnect wire to platform level down directional valve coil (item N). Remove coil and test resistance.
0 or infinite ohms
Replace platform level down directional valve coil (item N).
4 to 8 ohms
Exchange platform level up and down directional valves (item M + N) and activate platform level down function.
function operates
Replace defective directional valve.
function inoperative
Exchange platform level up and down counterbalance valves (item F + G) and activate platform level down function.
function operates
Replace defective counterbalance valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform level down function.
3200 PSI
Check for mechanical restrictions keeping platform level down function from moving OR repair or replace slave cylinder OR replace slave cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Test master cylinder (refer to Chart #22) OR repair or replace slave cylinder or slave cylinder counterbalance valves OR boom function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 27

Platform Rotate Left Function Inoperative

Be sure all other functions operate normally.

If platform rotate left function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If platform rotate left function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

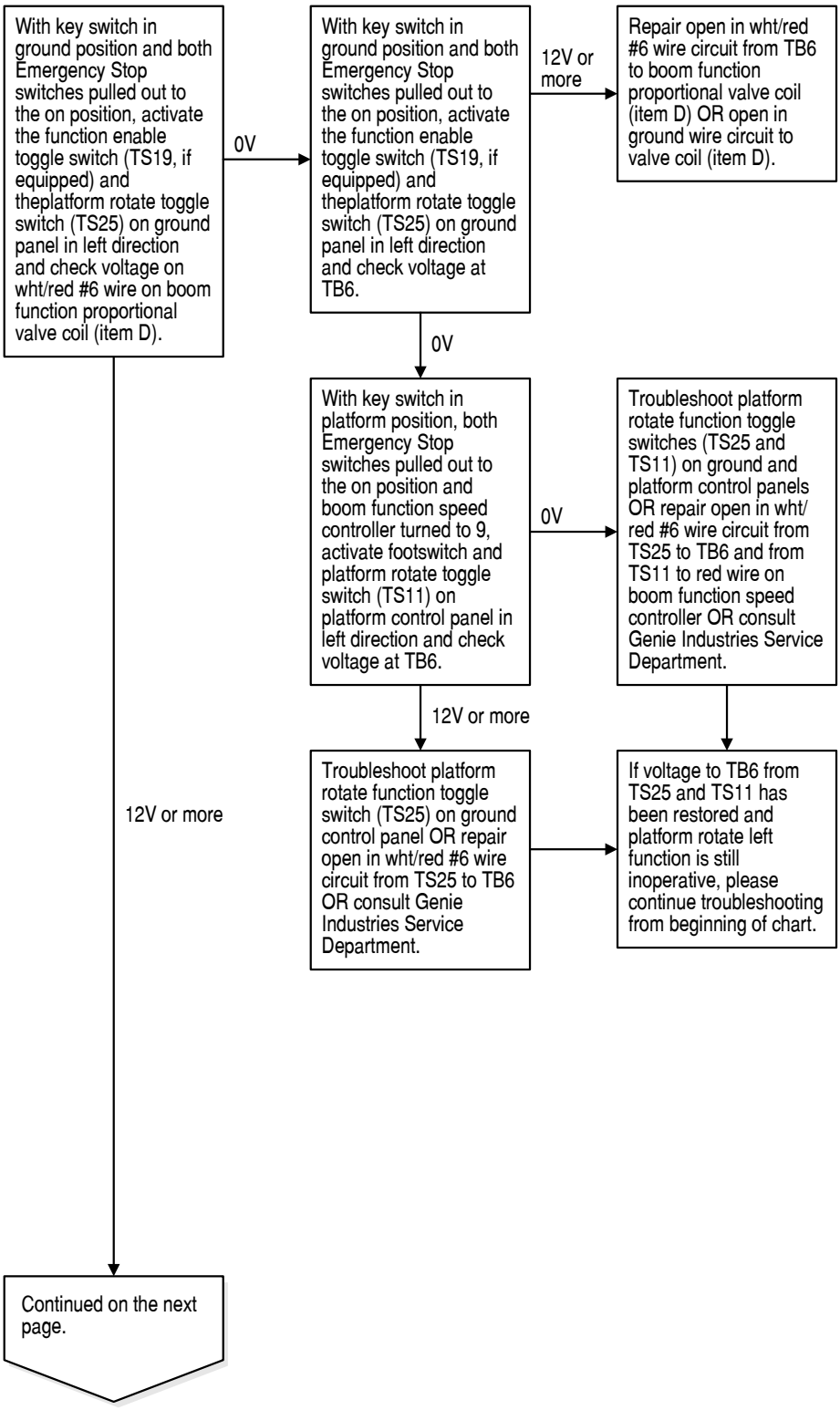


CHART 27

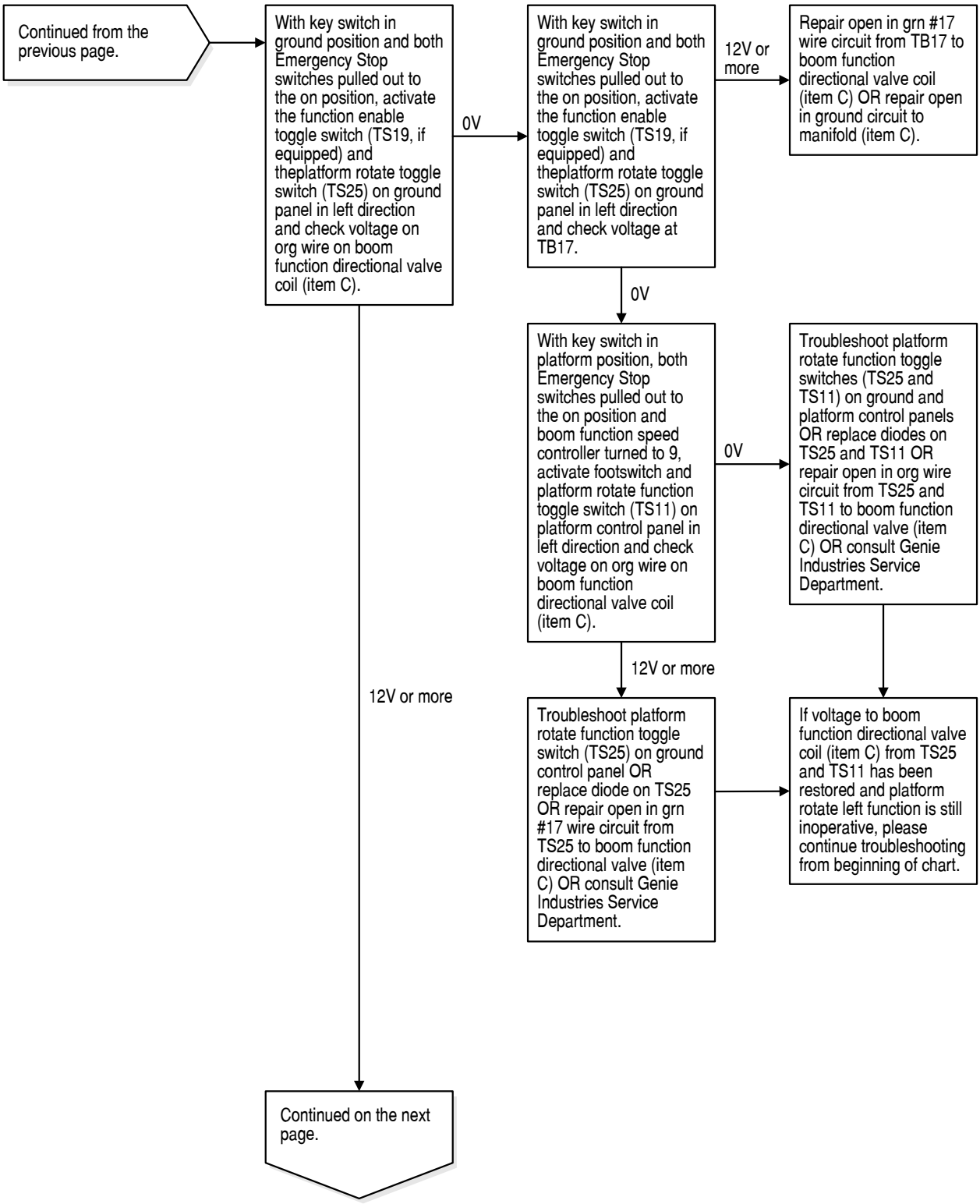

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform rotate toggle switch (TS25) on ground panel in left direction and check voltage on org wire on boom function directional valve coil (item C).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform rotate toggle switch (TS25) on ground panel in left direction and check voltage at TB17.
12V or more
Repair open in grn #17 wire circuit from TB17 to boom function directional valve coil (item C) OR repair open in ground circuit to manifold (item C).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and platform rotate function toggle switch (TS11) on platform control panel in left direction and check voltage on org wire on boom function directional valve coil (item C).
0V
Troubleshoot platform rotate function toggle switches (TS25 and TS11) on ground and platform control panels OR replace diodes on TS25 and TS11 OR repair open in org wire circuit from TS25 and TS11 to boom function directional valve (item C) OR consult Genie Industries Service Department.
12V or more
12V or more
Troubleshoot platform rotate function toggle switch (TS25) on ground control panel OR replace diode on TS25 OR repair open in grn #17 wire circuit from TS25 to boom function directional valve (item C) OR consult Genie Industries Service Department.
If voltage to boom function directional valve coil (item C) from TS25 and TS11 has been restored and platform rotate left function is still inoperative, please continue troubleshooting from beginning of chart.
Continued on the next page.

CHART 27

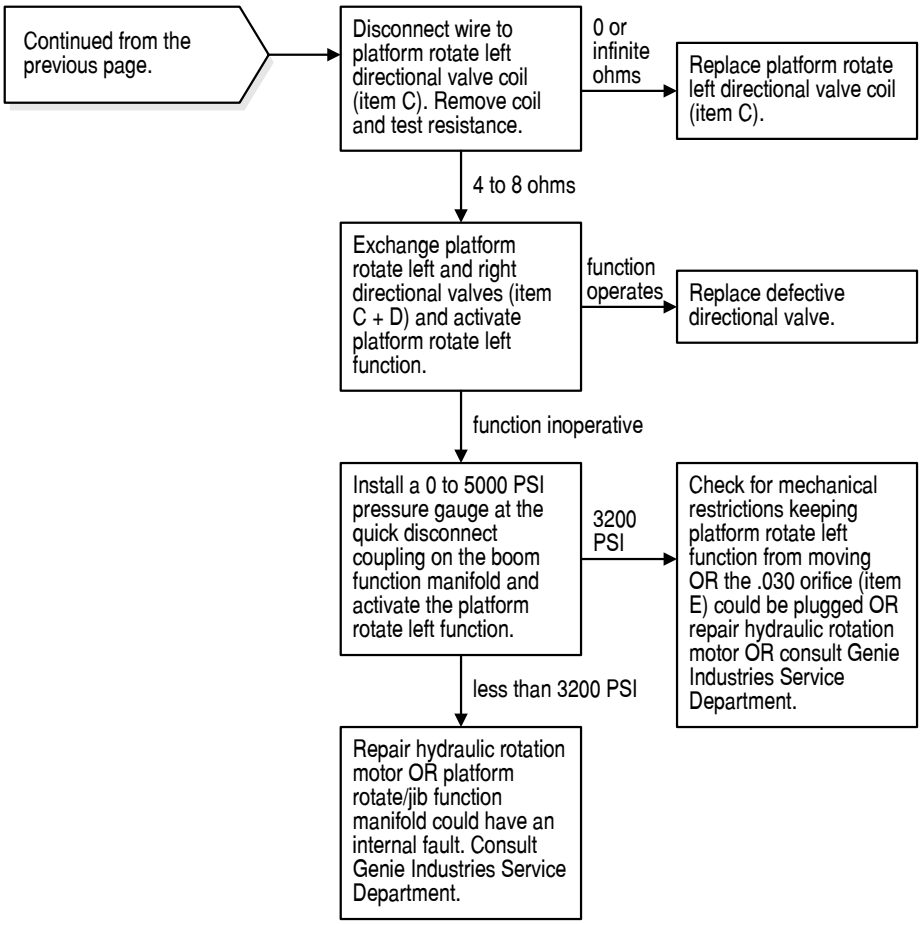

Continued from the previous page.
Disconnect wire to platform rotate left directional valve coil (item C). Remove coil and test resistance.
0 or infinite ohms
Replace platform rotate left directional valve coil (item C).
4 to 8 ohms
Exchange platform rotate left and right directional valves (item C + D) and activate platform rotate left function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate left function.
3200 PSI
Check for mechanical restrictions keeping platform rotate left function from moving OR the .030 orifice (item E) could be plugged OR repair hydraulic rotation motor OR consult Genie Industries Service Department.
less than 3200 PSI
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 28

Platform Rotate Right Inoperative

Be sure all other functions operate normally.

If platform rotate right function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If platform rotate right function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

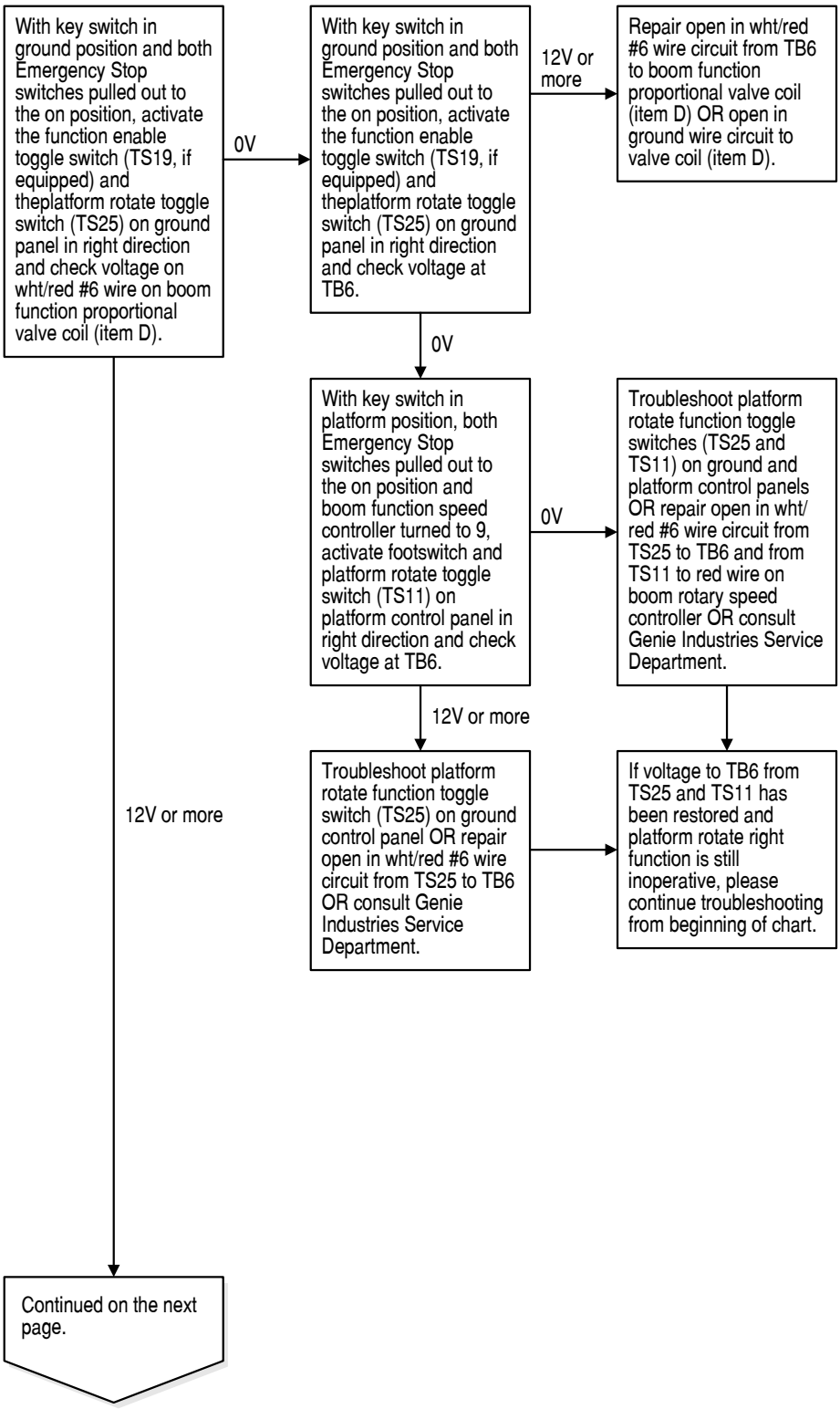


CHART 28

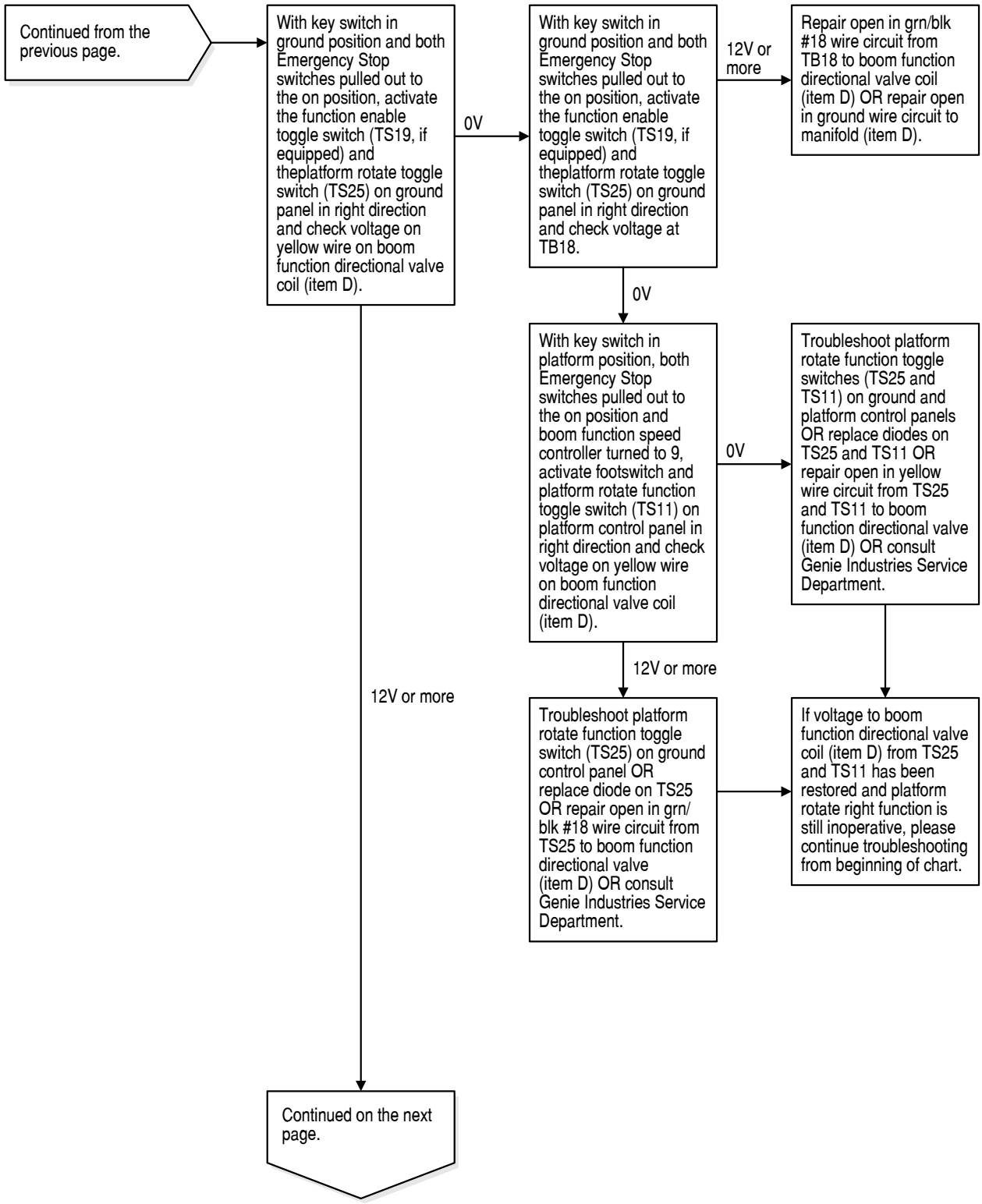

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform rotate toggle switch (TS25) on ground panel in right direction and check voltage on yellow wire on boom function directional valve coil (item D).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and theplatform rotate toggle switch (TS25) on ground panel in right direction and check voltage at TB18.
12V or more
Repair open in grn/blk #18 wire circuit from TB18 to boom function directional valve coil (item D) OR repair open in ground wire circuit to manifold (item D).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and platform rotate function toggle switch (TS11) on platform control panel in right direction and check voltage on yellow wire on boom function directional valve coil (item D).
0V
Troubleshoot platform rotate function toggle switches (TS25 and TS11) on ground and platform control panels OR replace diodes on TS25 and TS11 OR repair open in yellow wire circuit from TS25 and TS11 to boom function directional valve (item D) OR consult Genie Industries Service Department.
12V or more
12V or more
Troubleshoot platform rotate function toggle switch (TS25) on ground control panel OR replace diode on TS25 OR repair open in grn/ blk #18 wire circuit from TS25 to boom function directional valve (item D) OR consult Genie Industries Service Department.
If voltage to boom function directional valve coil (item D) from TS25 and TS11 has been restored and platform rotate right function is still inoperative, please continue troubleshooting from beginning of chart.
Continued on the next page.

CHART 28

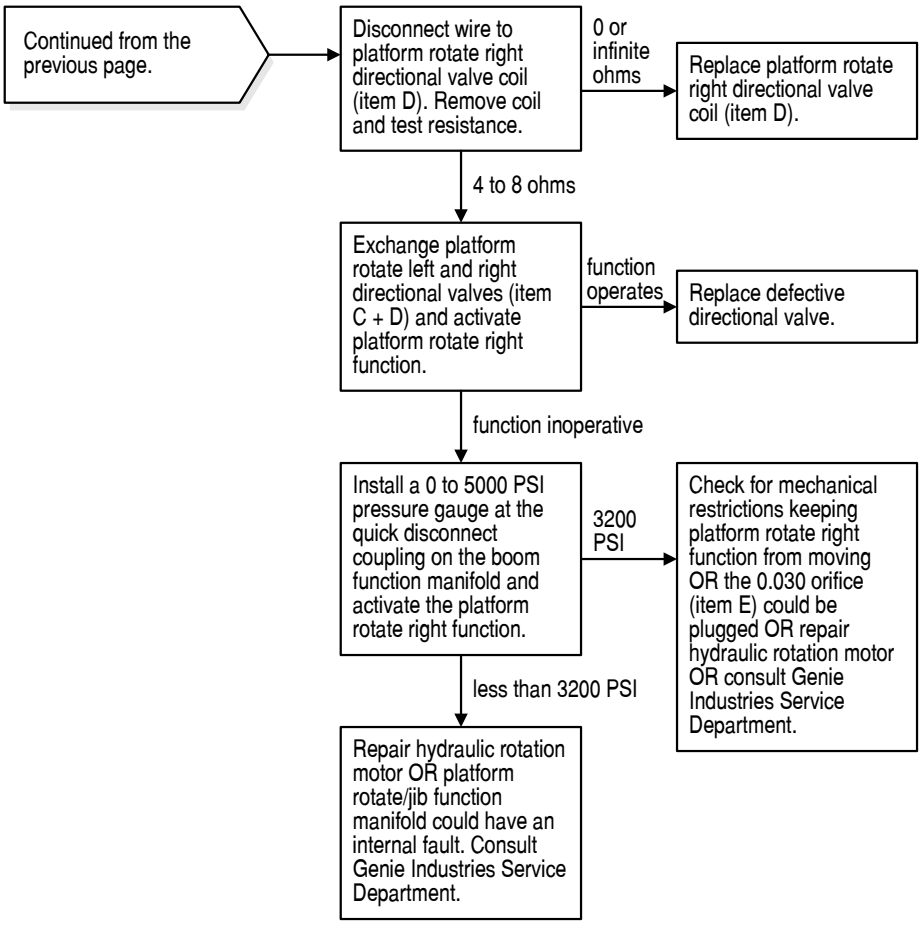

Continued from the previous page.
Disconnect wire to platform rotate right directional valve coil (item D). Remove coil and test resistance.
0 or infinite ohms
Replace platform rotate right directional valve coil (item D).
4 to 8 ohms
Exchange platform rotate left and right directional valves (item C + D) and activate platform rotate right function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the platform rotate right function.
3200 PSI
Check for mechanical restrictions keeping platform rotate right function from moving OR the 0.030 orifice (item E) could be plugged OR repair hydraulic rotation motor OR consult Genie Industries Service Department.
less than 3200 PSI
Repair hydraulic rotation motor OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 29

Jib Boom Up Function Inoperative

Be sure all other functions operate normally.

If jib boom up function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If jib boom up function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

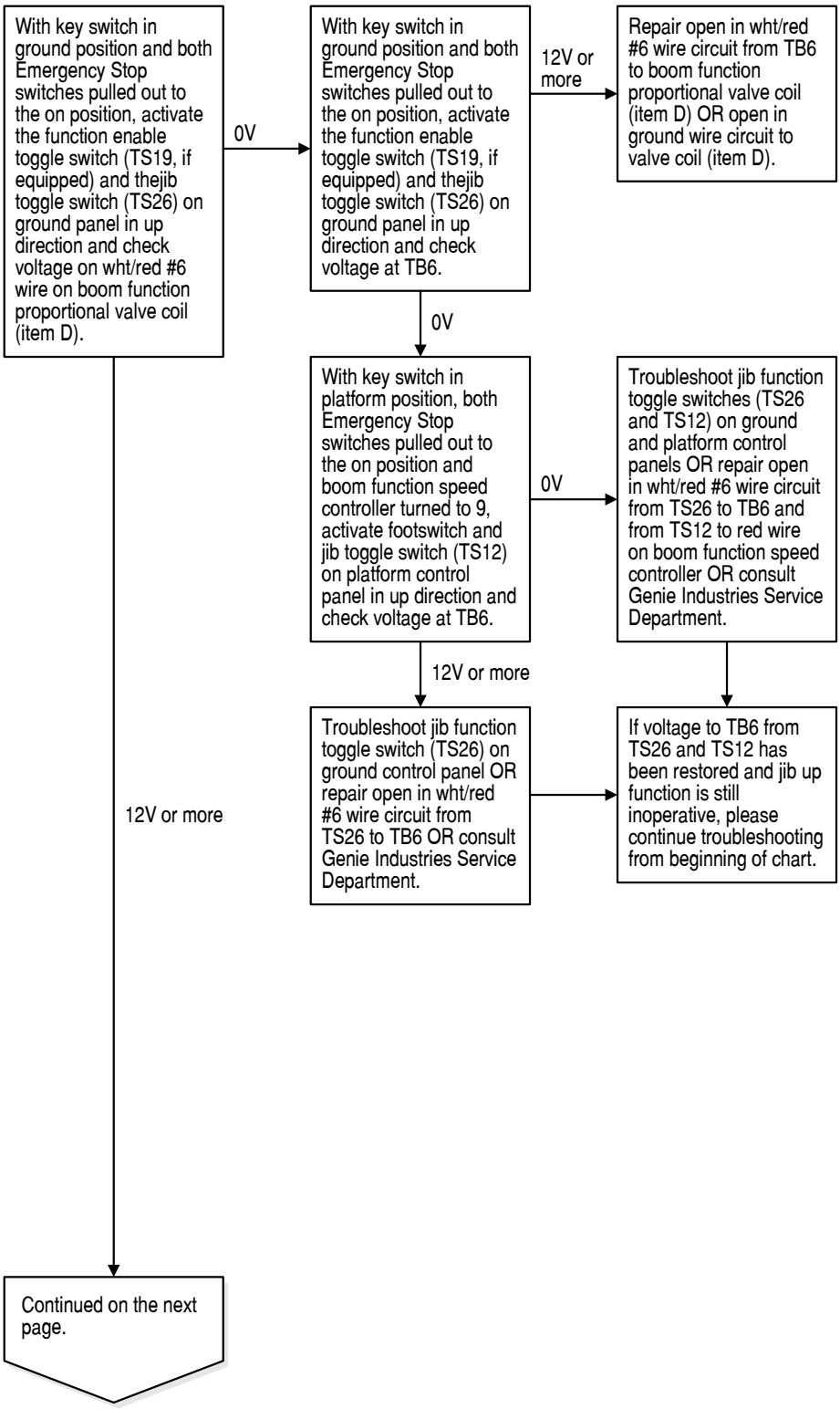


CHART 29

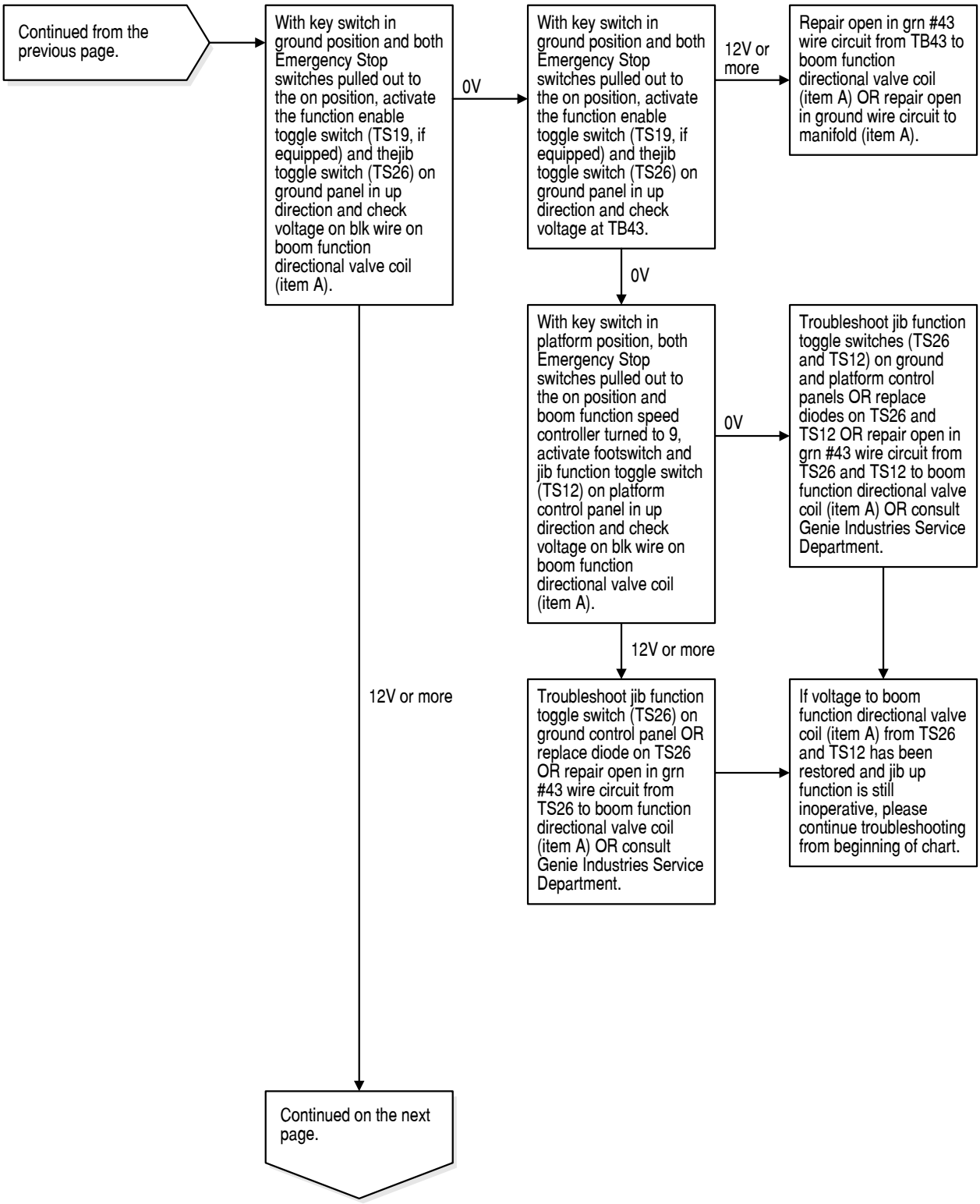

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With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and thejib toggle switch (TS26) on ground panel in up direction and check voltage on blk wire on boom function directional valve coil (item A).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and thejib toggle switch (TS26) on ground panel in up direction and check voltage at TB43.
12V or more
Repair open in grn #43 wire circuit from TB43 to boom function directional valve coil (item A) OR repair open in ground wire circuit to manifold (item A).
0V
With key switch in platform position, both Emergency Stop switches pulled out to the on position and boom function speed controller turned to 9, activate footswitch and jib function toggle switch (TS12) on platform control panel in up direction and check voltage on blk wire on boom function directional valve coil (item A).
0V
Troubleshoot jib function toggle switches (TS26 and TS12) on ground and platform control panels OR replace diodes on TS26 and TS12 OR repair open in grn #43 wire circuit from TS26 and TS12 to boom function directional valve coil (item A) OR consult Genie Industries Service Department.
12V or more
12V or more
Troubleshoot jib function toggle switch (TS26) on ground control panel OR replace diode on TS26 OR repair open in grn #43 wire circuit from TS26 to boom function directional valve coil (item A) OR consult Genie Industries Service Department.
If voltage to boom function directional valve coil (item A) from TS26 and TS12 has been restored and jib up function is still inoperative, please continue troubleshooting from beginning of chart.
Continued on the next page.

CHART 29

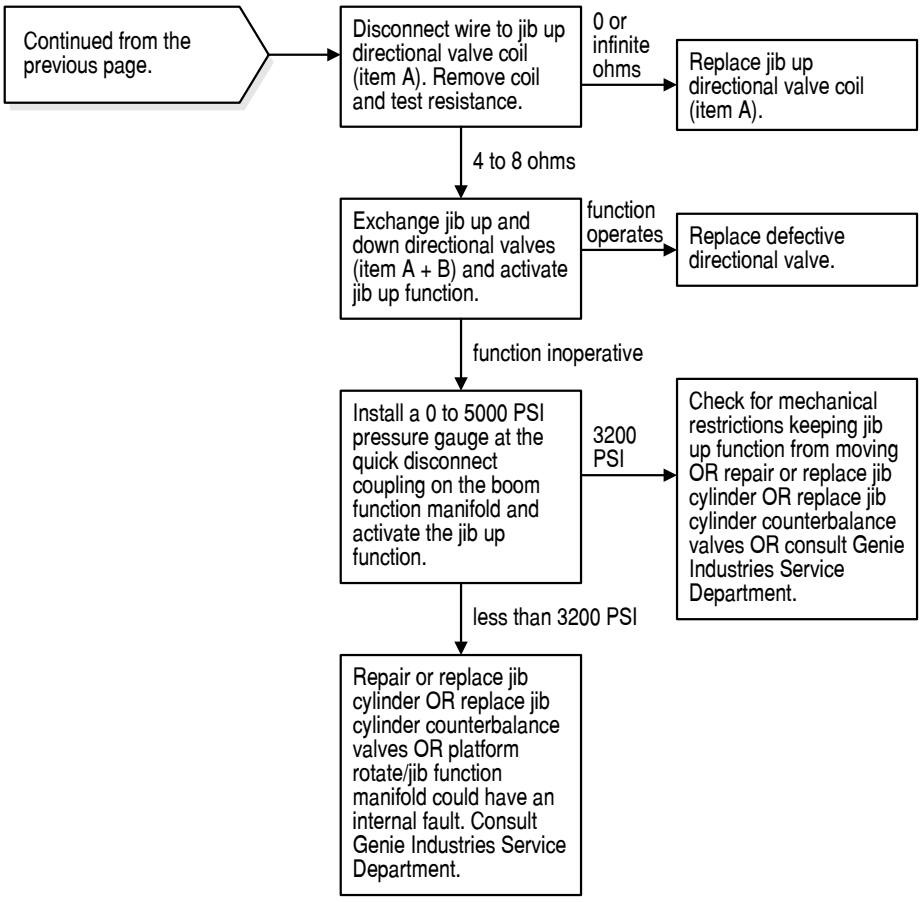

Continued from the previous page.
Disconnect wire to jib up directional valve coil (item A). Remove coil and test resistance.
0 or infinite ohms
Replace jib up directional valve coil (item A).
4 to 8 ohms
Exchange jib up and down directional valves (item A + B) and activate jib up function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib up function.
3200 PSI
Check for mechanical restrictions keeping jib up function from moving OR repair or replace jib cylinder OR replace jib cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Repair or replace jib cylinder OR replace jib cylinder counterbalance valves OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 30

Jib Boom Down Function Inoperative

Be sure all other functions operate normally.

If jib boom down function operates normally from the ground controls but not from the platform controls, troubleshoot the platform controller or diode. See Repair Section.

If jib boom down function operates normally from the platform controls but not from the ground controls, troubleshoot the ground control toggle switch OR diode OR (R1) resistor. See Repair Section.

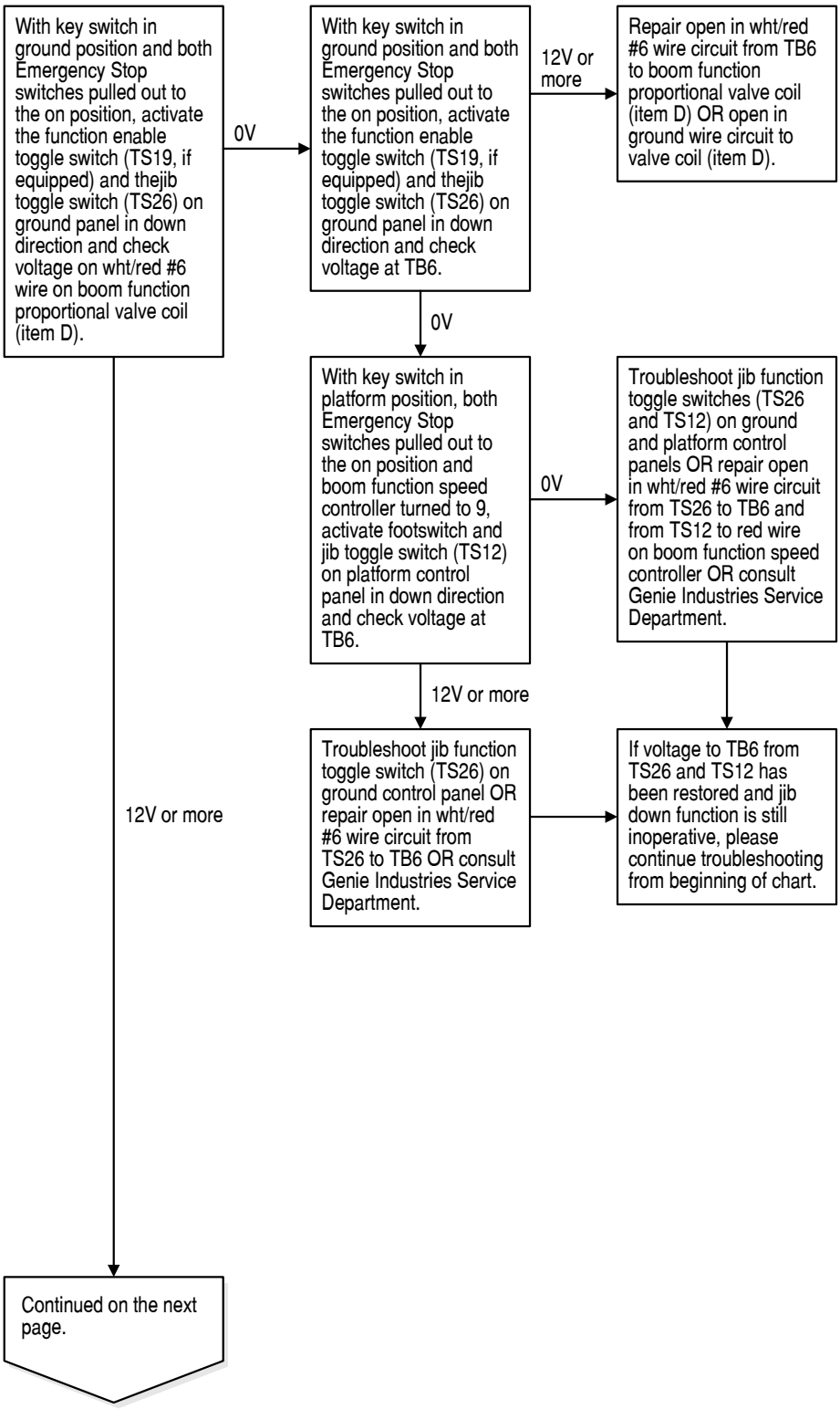


CHART 30

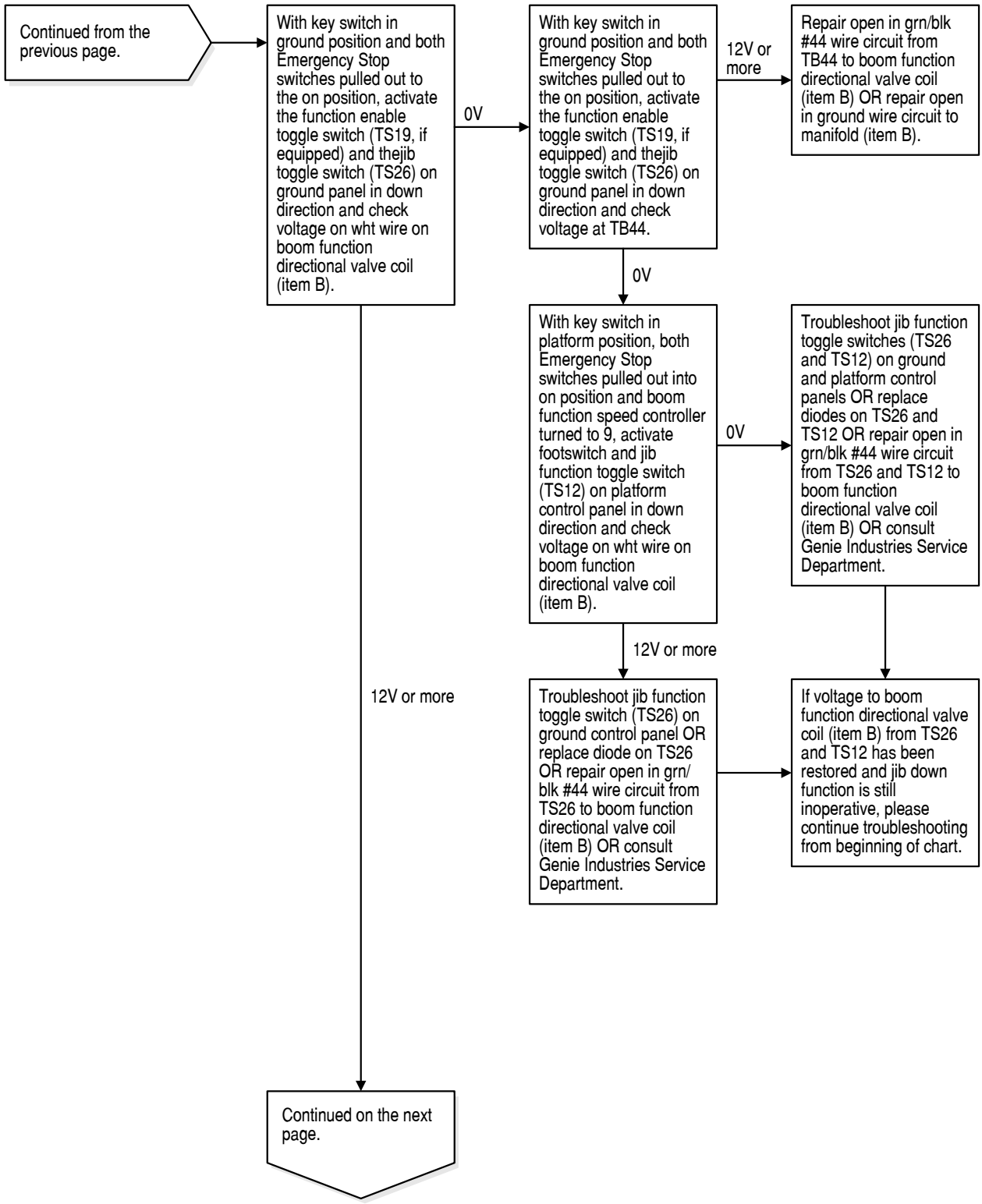

Continued from the previous page.
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and thejib toggle switch (TS26) on ground panel in down direction and check voltage on wht wire on boom function directional valve coil (item B).
0V
With key switch in ground position and both Emergency Stop switches pulled out to the on position, activate the function enable toggle switch (TS19, if equipped) and thejib toggle switch (TS26) on ground panel in down direction and check voltage at TB44.
12V or more
Repair open in grn/blk #44 wire circuit from TB44 to boom function directional valve coil (item B) OR repair open in ground wire circuit to manifold (item B).
0V
With key switch in platform position, both Emergency Stop switches pulled out into on position and boom function speed controller turned to 9, activate footswitch and jib function toggle switch (TS12) on platform control panel in down direction and check voltage on wht wire on boom function directional valve coil (item B).
0V
Troubleshoot jib function toggle switches (TS26 and TS12) on ground and platform control panels OR replace diodes on TS26 and TS12 OR repair open in grn/blk #44 wire circuit from TS26 and TS12 to boom function directional valve coil (item B) OR consult Genie Industries Service Department.
12V or more
12V or more
Troubleshoot jib function toggle switch (TS26) on ground control panel OR replace diode on TS26 OR repair open in grn/blk #44 wire circuit from TS26 to boom function directional valve coil (item B) OR consult Genie Industries Service Department.
If voltage to boom function directional valve coil (item B) from TS26 and TS12 has been restored and jib down function is still inoperative, please continue troubleshooting from beginning of chart.
Continued on the next page.

CHART 30

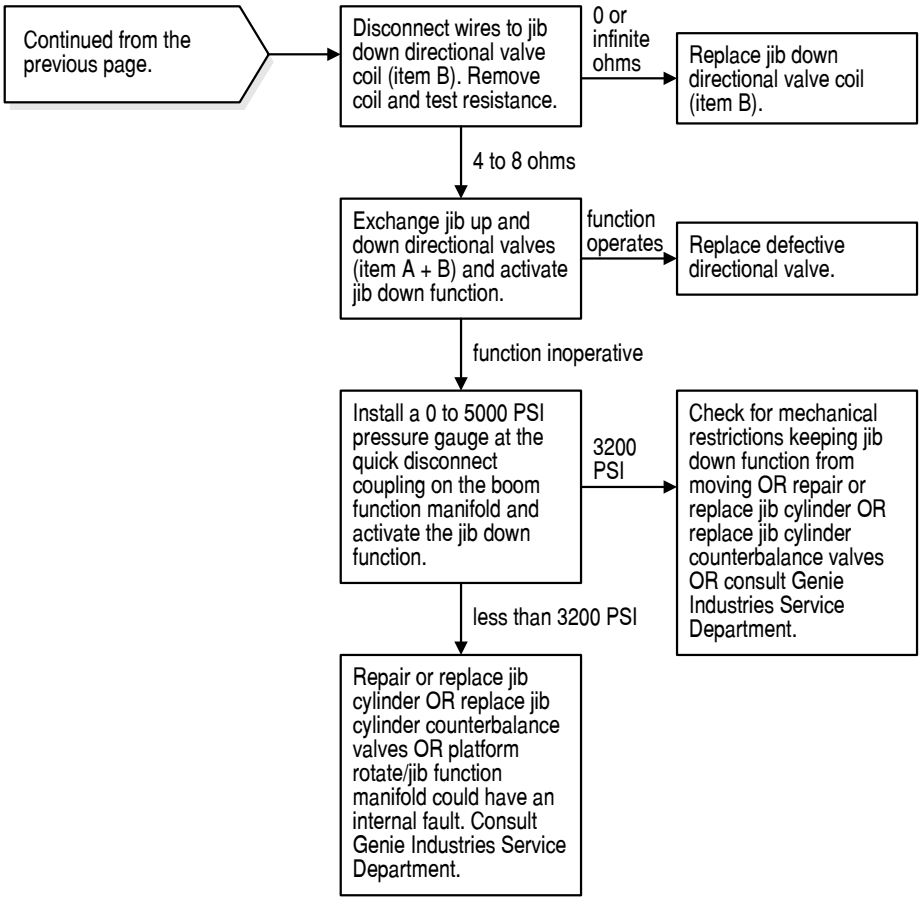

Continued from the previous page.
Disconnect wires to jib down directional valve coil (item B). Remove coil and test resistance.
0 or infinite ohms
Replace jib down directional valve coil (item B).
4 to 8 ohms
Exchange jib up and down directional valves (item A + B) and activate jib down function.
function operates
Replace defective directional valve.
function inoperative
Install a 0 to 5000 PSI pressure gauge at the quick disconnect coupling on the boom function manifold and activate the jib down function.
3200 PSI
Check for mechanical restrictions keeping jib down function from moving OR repair or replace jib cylinder OR replace jib cylinder counterbalance valves OR consult Genie Industries Service Department.
less than 3200 PSI
Repair or replace jib cylinder OR replace jib cylinder counterbalance valves OR platform rotate/jib function manifold could have an internal fault. Consult Genie Industries Service Department.

Chart 31

Steer Left Function Inoperative

Be sure all other functions operate normally.

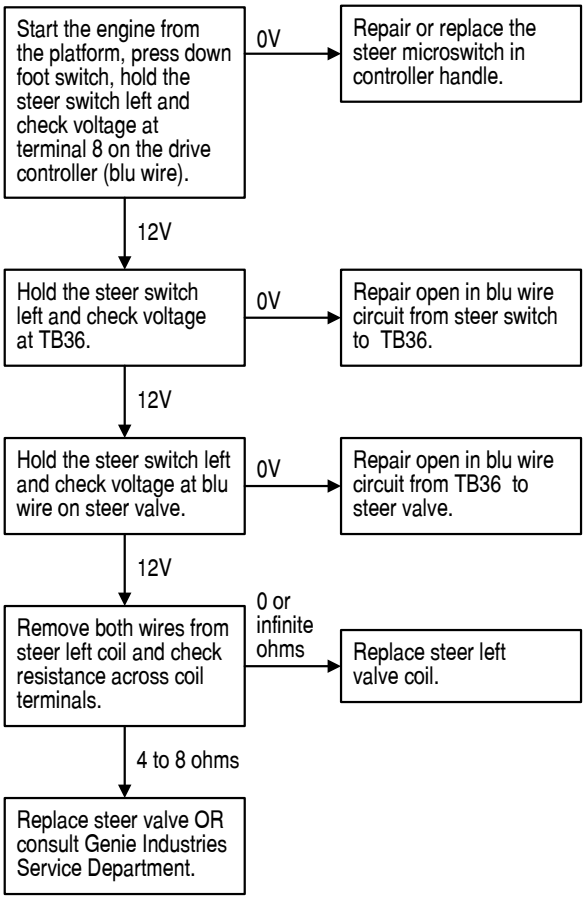


Chart 32

Steer Right Function Inoperative

Be sure all other functions operate normally.

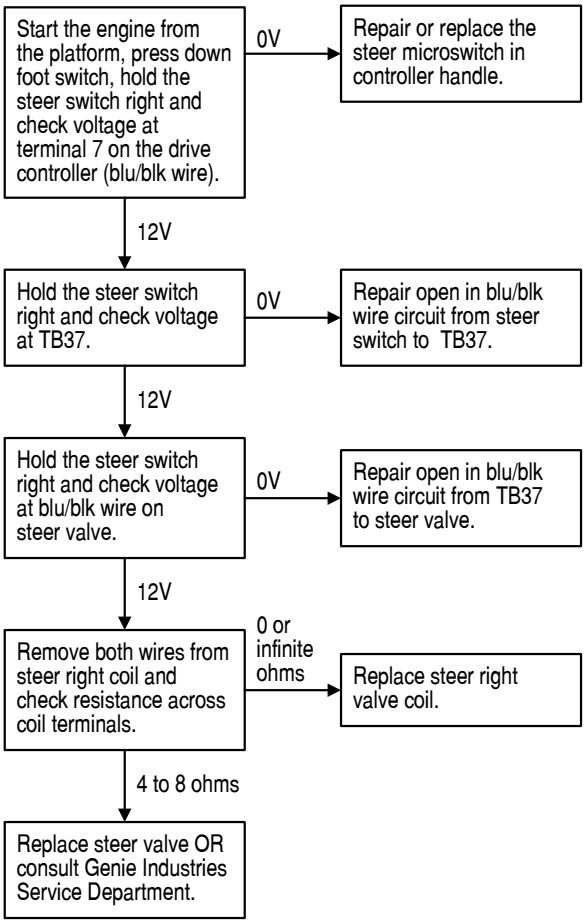


Chart 33

All Drive Functions Inoperative, All Other Functions Operate Normally

Be sure the hydraulic suction line valve is in the open position.

Be sure the machine is not in the free wheel configuration.

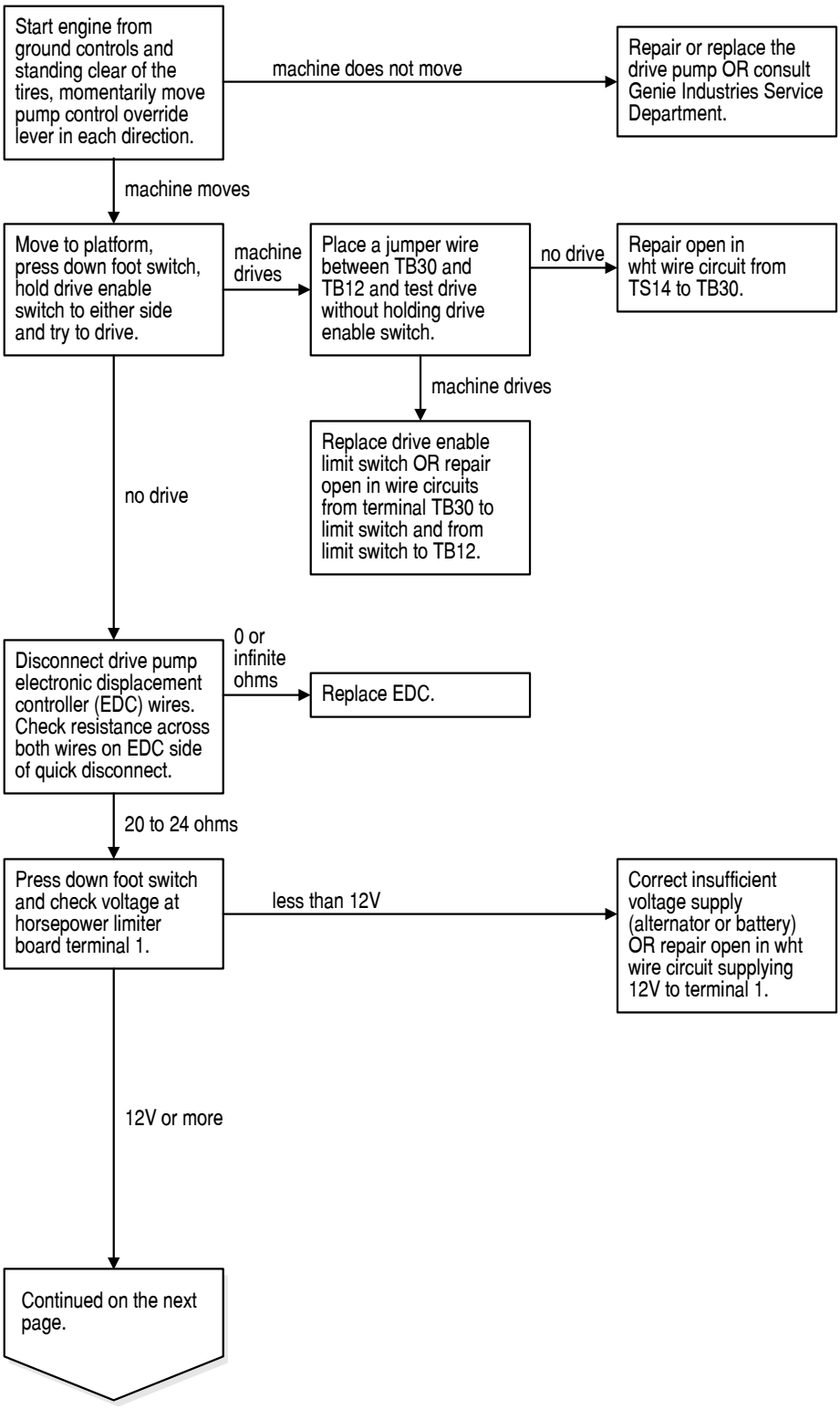


CHART 33

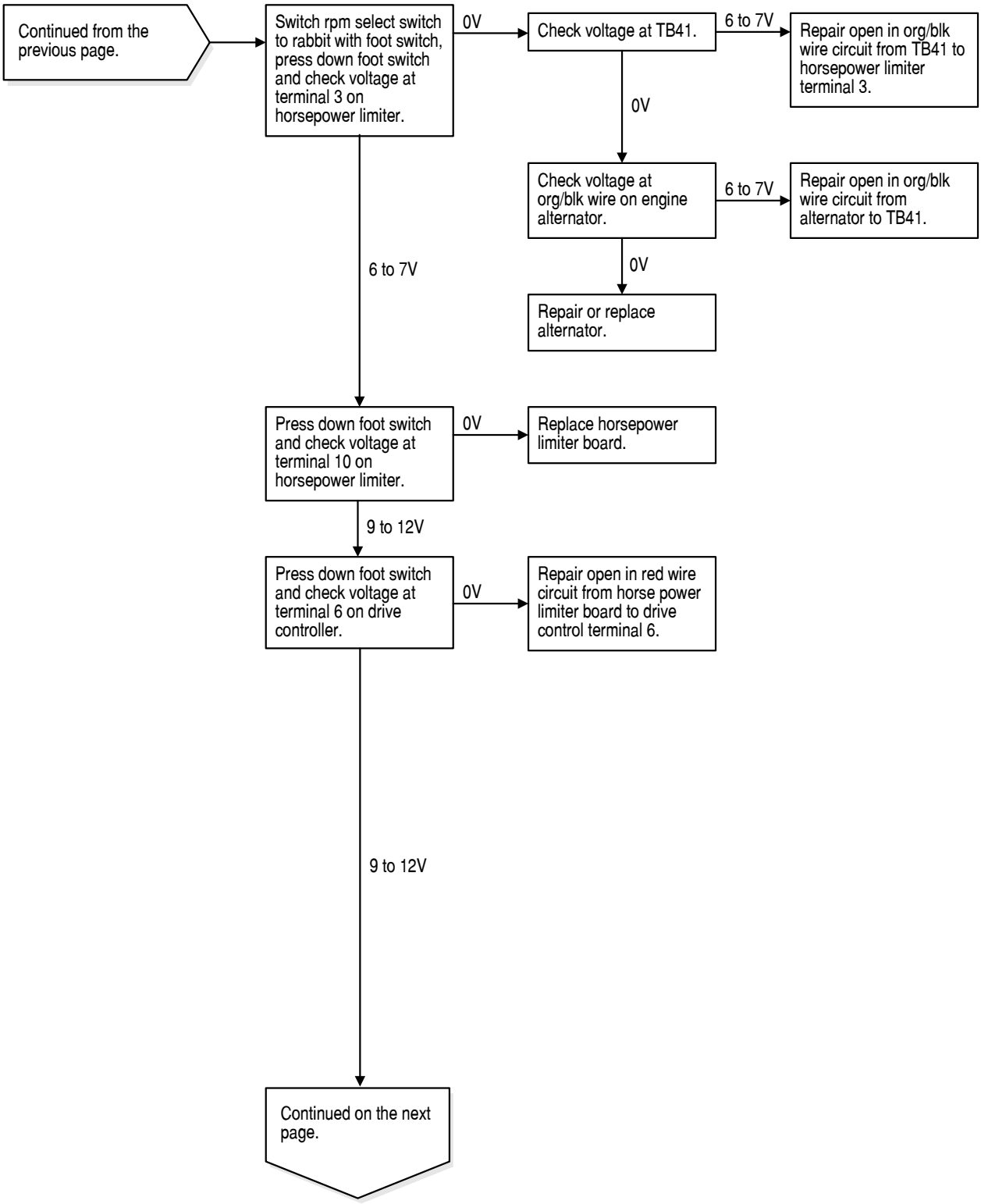

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Switch rpm select switch to rabbit with foot switch, press down foot switch and check voltage at terminal 3 on horsepower limiter.
0V
Check voltage at TB41.
6 to 7V
Repair open in org/blk wire circuit from TB41 to horsepower limiter terminal 3.
0V
Check voltage at org/blk wire on engine alternator.
6 to 7V
Repair open in org/blk wire circuit from alternator to TB41.
0V
Repair or replace alternator.
6 to 7V
Press down foot switch and check voltage at terminal 10 on horsepower limiter.
0V
Replace horsepower limiter board.
9 to 12V
Press down foot switch and check voltage at terminal 6 on drive controller.
0V
Repair open in red wire circuit from horse power limiter board to drive control terminal 6.
9 to 12V
Continued on the next page.

CHART 33

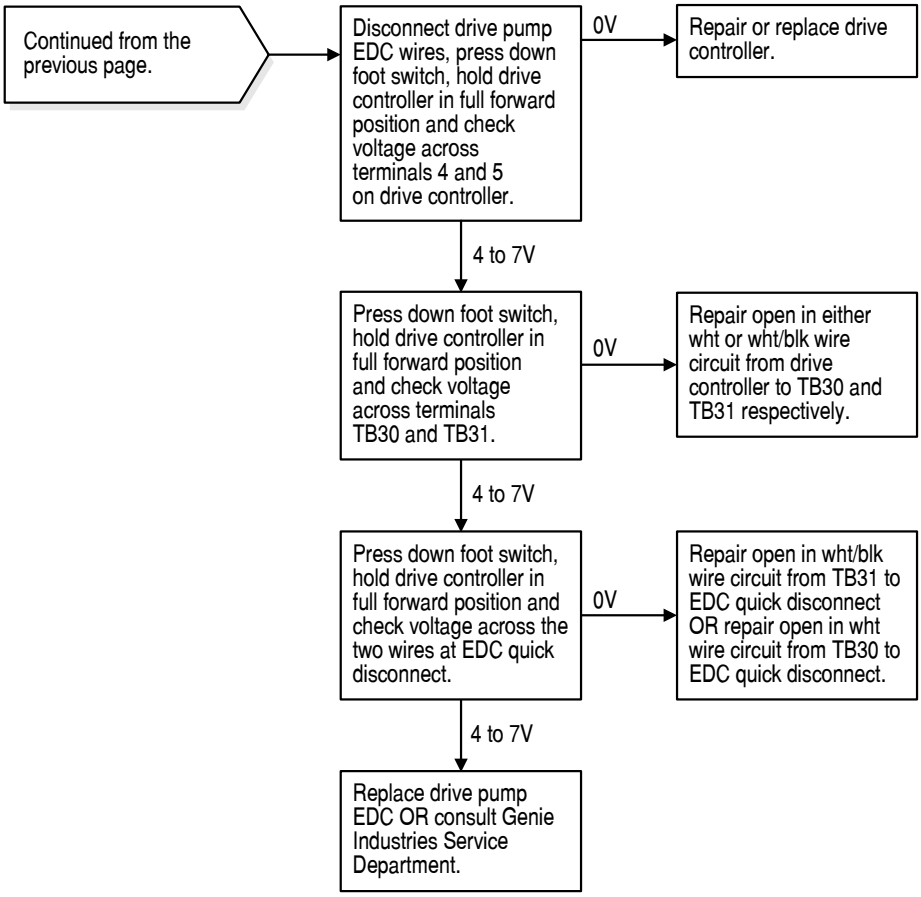

Continued from the previous page.
Disconnect drive pump EDC wires, press down foot switch, hold drive controller in full forward position and check voltage across terminals 4 and 5 on drive controller.
0V
Repair or replace drive controller.
4 to 7V
Press down foot switch, hold drive controller in full forward position and check voltage across terminals TB30 and TB31.
0V
Repair open in either wht or wht/blk wire circuit from drive controller to TB30 and TB31 respectively.
4 to 7V
Press down foot switch, hold drive controller in full forward position and check voltage across the two wires at EDC quick disconnect.
0V
Repair open in wht/blk wire circuit from TB31 to EDC quick disconnect OR repair open in wht wire circuit from TB30 to EDC quick disconnect.
4 to 7V
Replace drive pump EDC OR consult Genie Industries Service Department.

Chart 34

Drive Forward or Reverse Function Inoperative

Be sure all other functions operate normally including drive in opposite direction of malfunction.

Be sure engine is in high rpm (rabbit symbol).

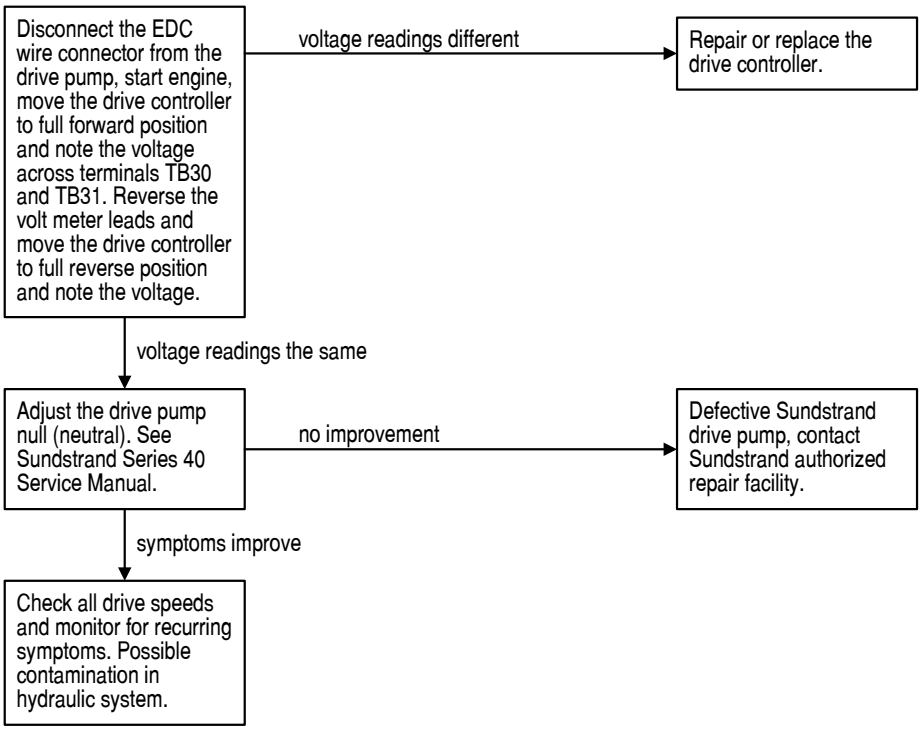


Chart 35

Traction Function Inoperative

Be sure all other functions operate normally.

Any type of traction problem, consult Genie Industries Service Department.

Chart 36

Machine Will Not Drive At Full Speed

Be sure all other functions operate normally.

Be sure the free wheel valve is closed on the drive pump.

Be sure the drive speed select switch is on high range (machine on level surface symbol).

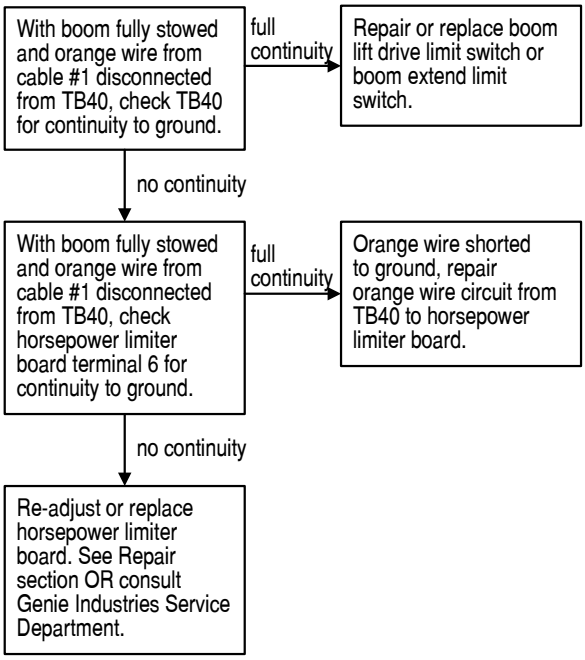


Chart 37

Machine Drives At Full Speed With Platform Raised Or Extended

Remove machine from service immediately.

Be sure boom lift/ drive limit switch or boom extend drive limit switch is not being held down or up.

Be sure wiring to limit switches is intact and shows no signs of tampering.

Be sure orange wire (cable #1) is properly attached to terminal #6 of the horsepower limiter board.

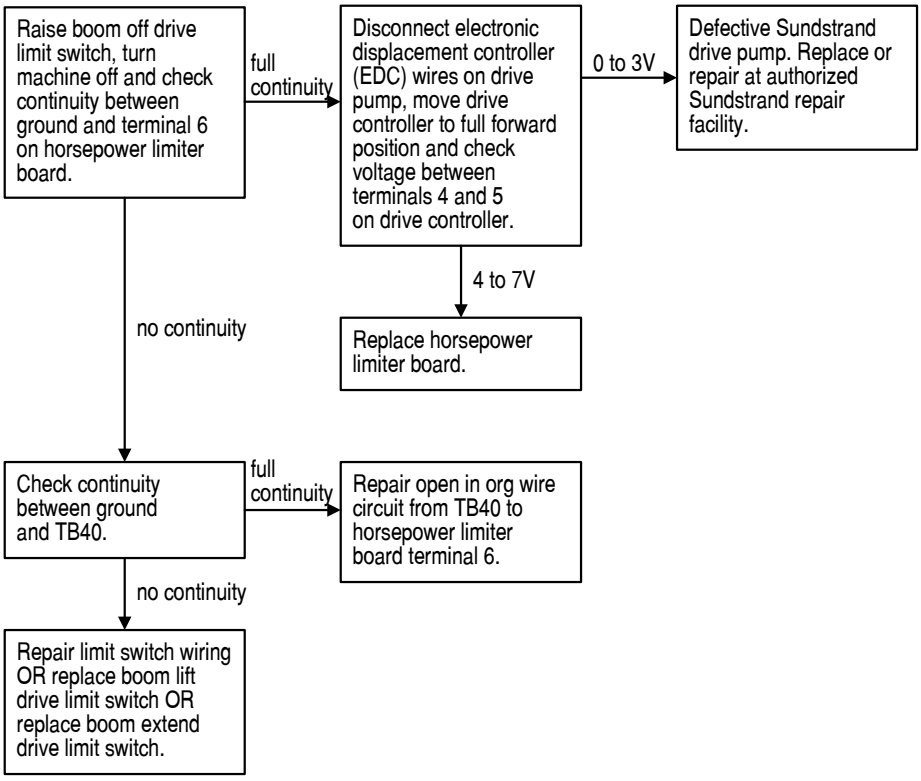


Chart 38

Drive Enable System Is Malfunctioning

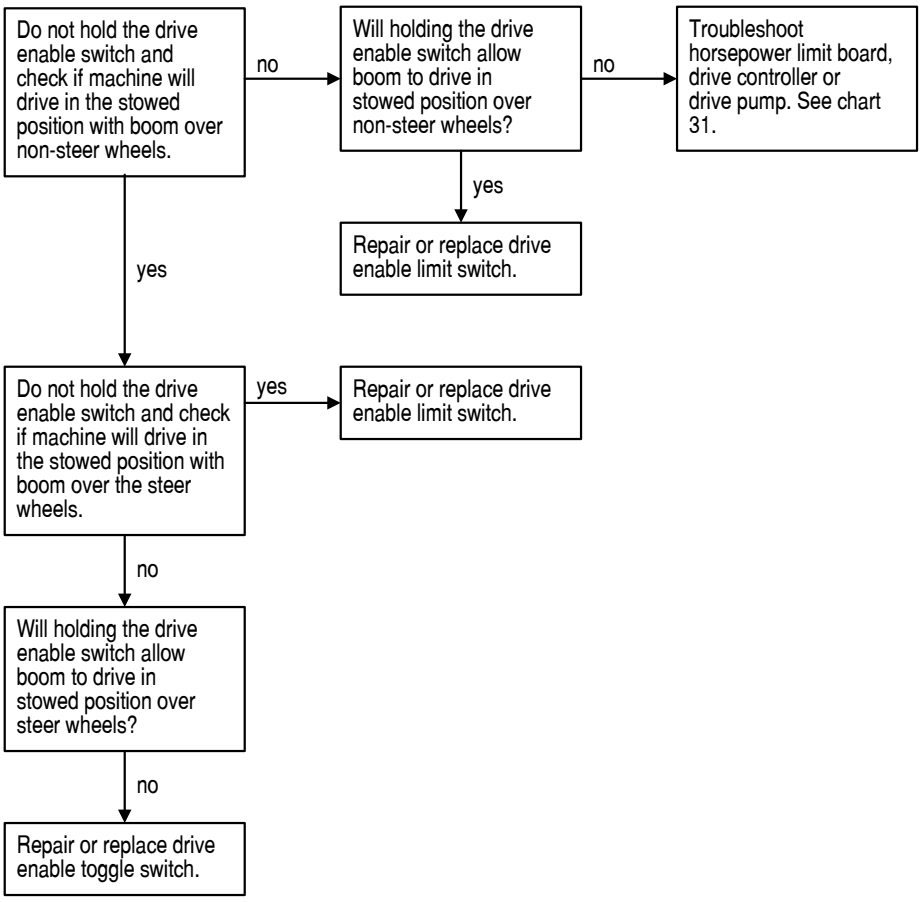


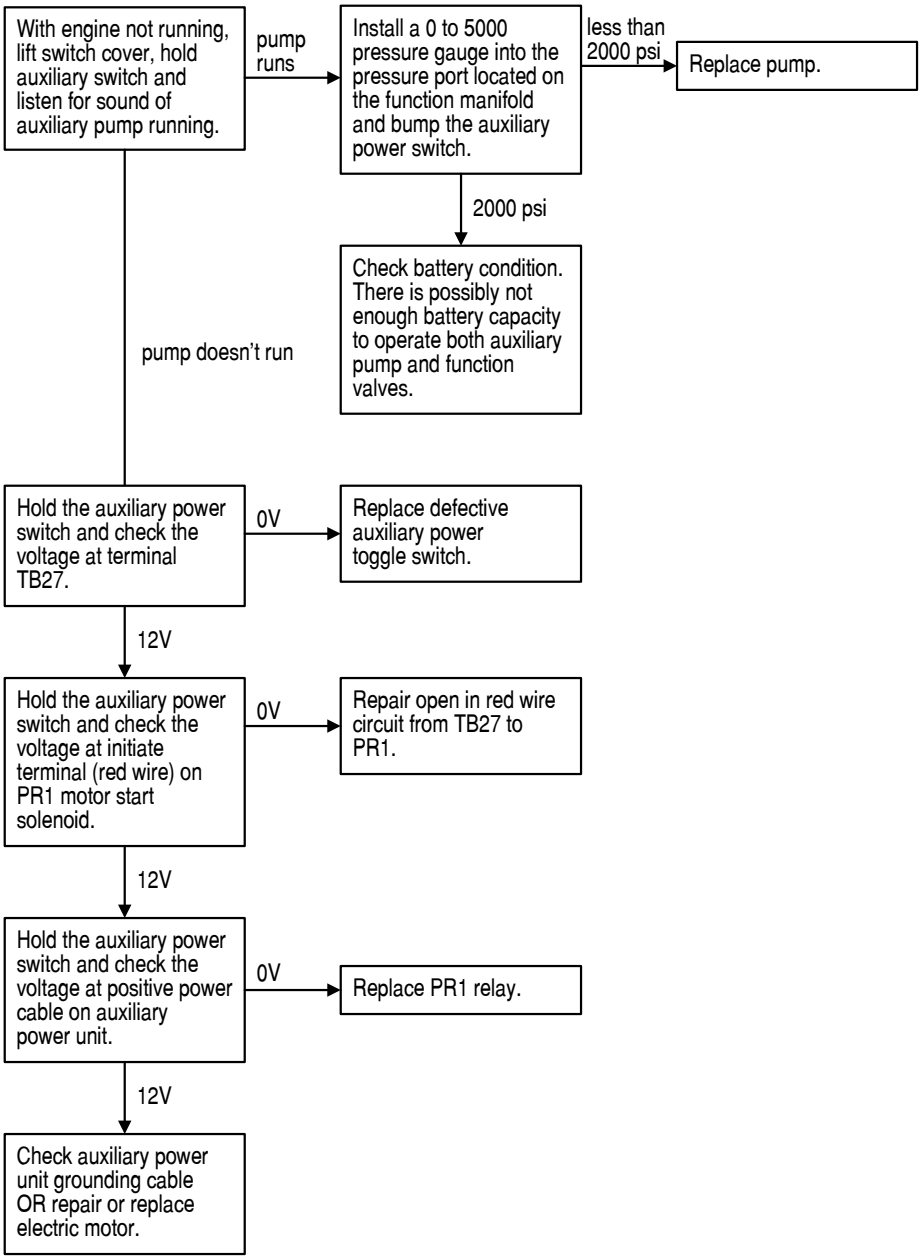
Chart 39

Auxiliary Functions Inoperative

Be sure all other functions operate normally.

Be sure keyswitch is in the appropriate position and the Emergency Stop Buttons are pulled out to the on position.

Note: Operating auxiliary power with the engine running should immediately kill the engine.



Schematics

Observe and Obey:

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

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions printed in the *Genie Z-34/22 IC Operator's Manual.*
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

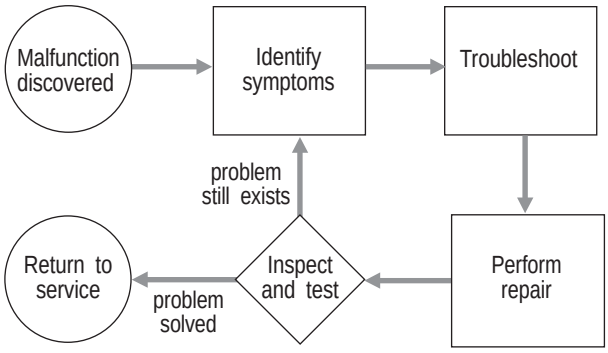
Electrical Schematics

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

Hydraulic Schematics

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

General Repair Process



Electrical Symbols Legend



Wire color with cable number



Terminal



Quick disconnect terminal



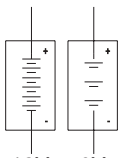
T-circuits connect at terminal


T-circuits connect

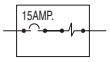

Connection no terminal


Circuits crossing no connection

Diode

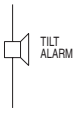


Battery



Circuit breaker

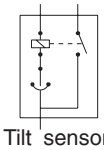

Solenoid or relay coil

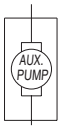


Horn

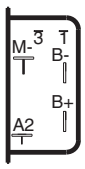


Light

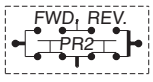

Tilt sensor



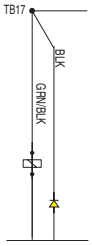
Auxiliary pump



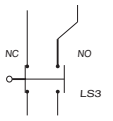
Curtis motor controller



Dual pole relay controller



Ground supression circuit



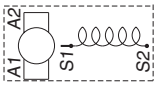
Limit switch



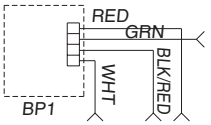
Limit switch normally closed held open



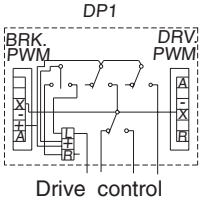
Limit switch normally open held closed



Drive motor



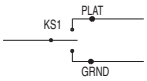
Rotary OEM flow control



Drive control



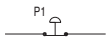
Foot switch



Key switch



Horn button normally open

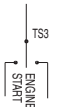


Emergency Stop button normally closed

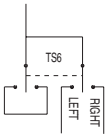
Relay contact normally open



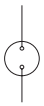
Relay panel contactor



Toggle switch SPDT

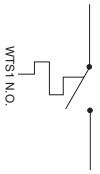


Toggle switch DPDT

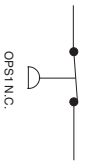

Brake release plug

Pressure switch

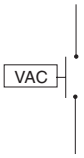

Spark plug



Water temperature switch, normally open



Oil pressure switch, normally closed



Vacuum switch normaly open

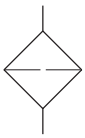


Resistor

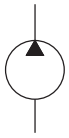
Hydraulic Symbols Legend



Pressure gauge



Filter



Fixed displacement pump



Bi-directional motor



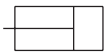
Bi-directional, variable displacement pump



2-speed, bi-directional motor



Pump prime mover engine or motor



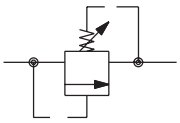
Double acting cylinder



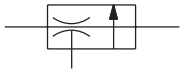
Orifice with size



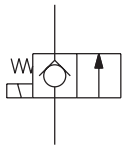
Check valve



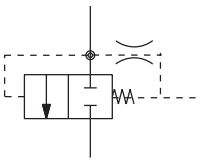
Relief valve



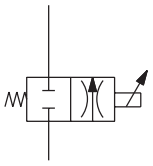
Priority flow divider



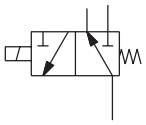
Solenoid operated dump valve



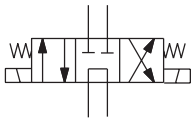
Differential sensing valve



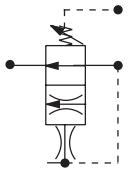
Solenoid operated proportional valve



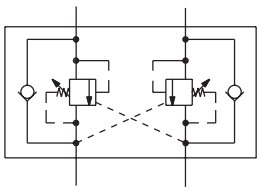
Solenoid operated 2 pos., 3 way, directional valve



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



Pilot operated flow control valve



Counterbalance valve



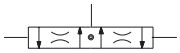
Pressure switch



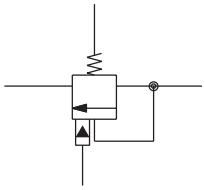
Brake



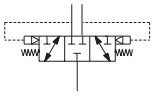
Variable orifice or shut off valve



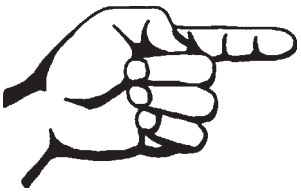
Flow divider combiner



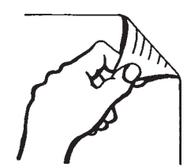
Sequencing valve



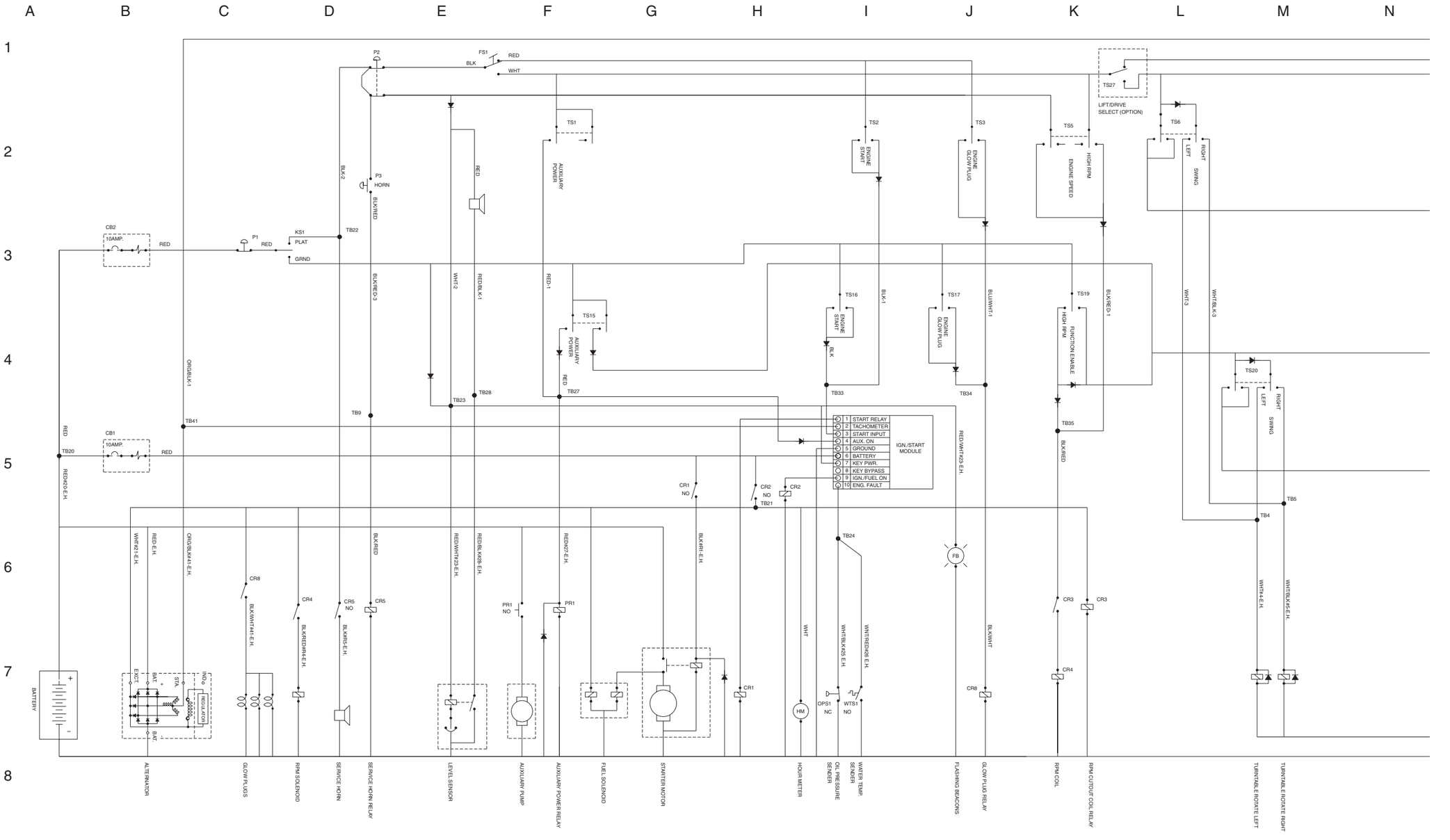
Shuttle valve



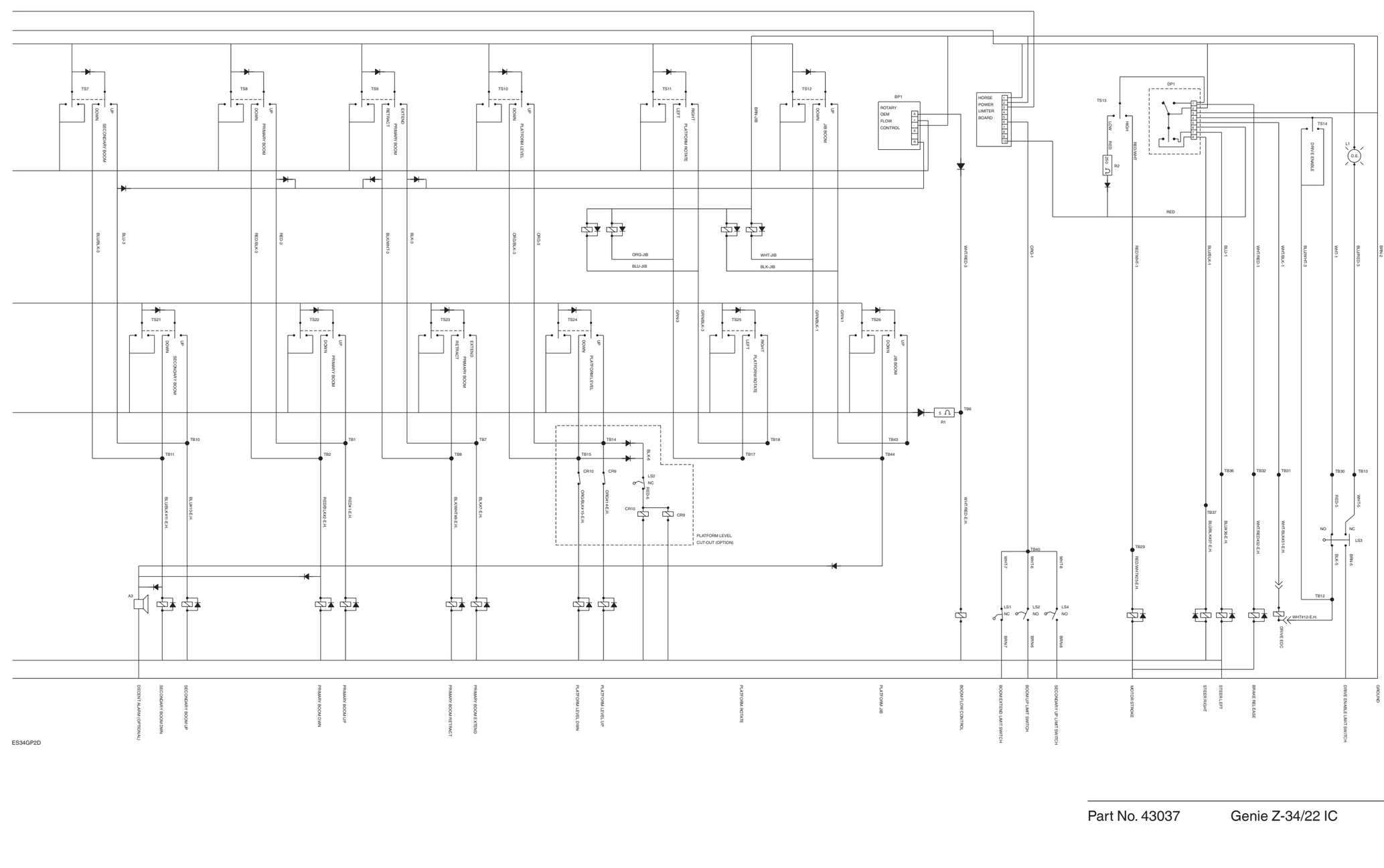




Electrical Schematic, Diesel Models (before serial number 869)

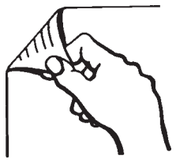


Electrical Schematic, Diesel Models (before serial number 869)



ES34GP2D

Electrical Schematic, Diesel Models (before serial number 869)





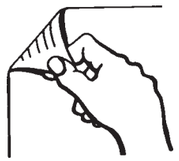
Electrical Schematic, Diesel Models (from serial number 869 to 1186)

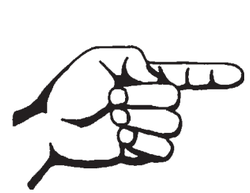
ES34D1E

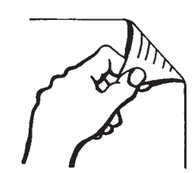
Electrical Schematic, Diesel Models (from serial number 869 to 1186)

ES34GP2E

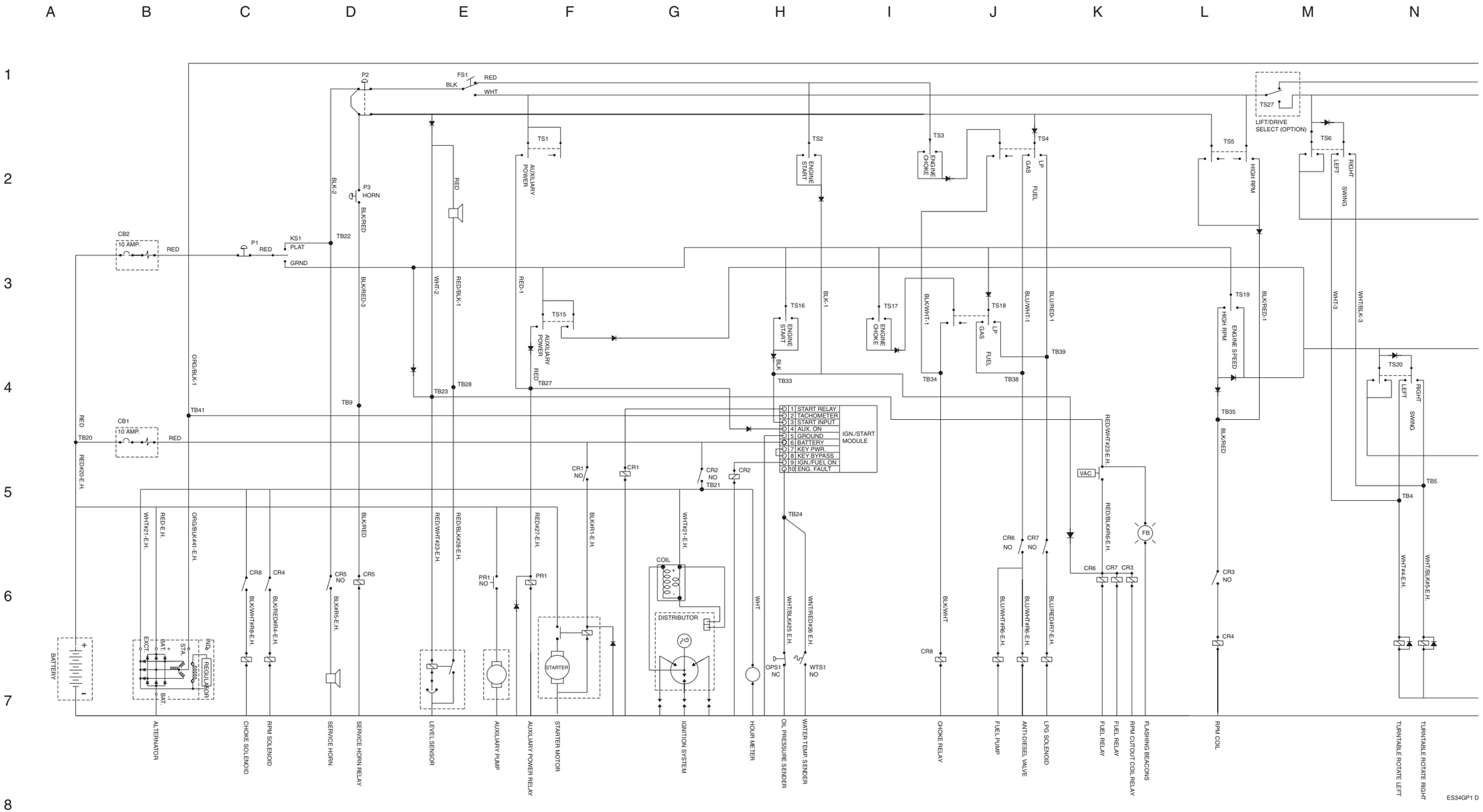
Electrical Schematic, Diesel Models (from serial number 869 to 1186)



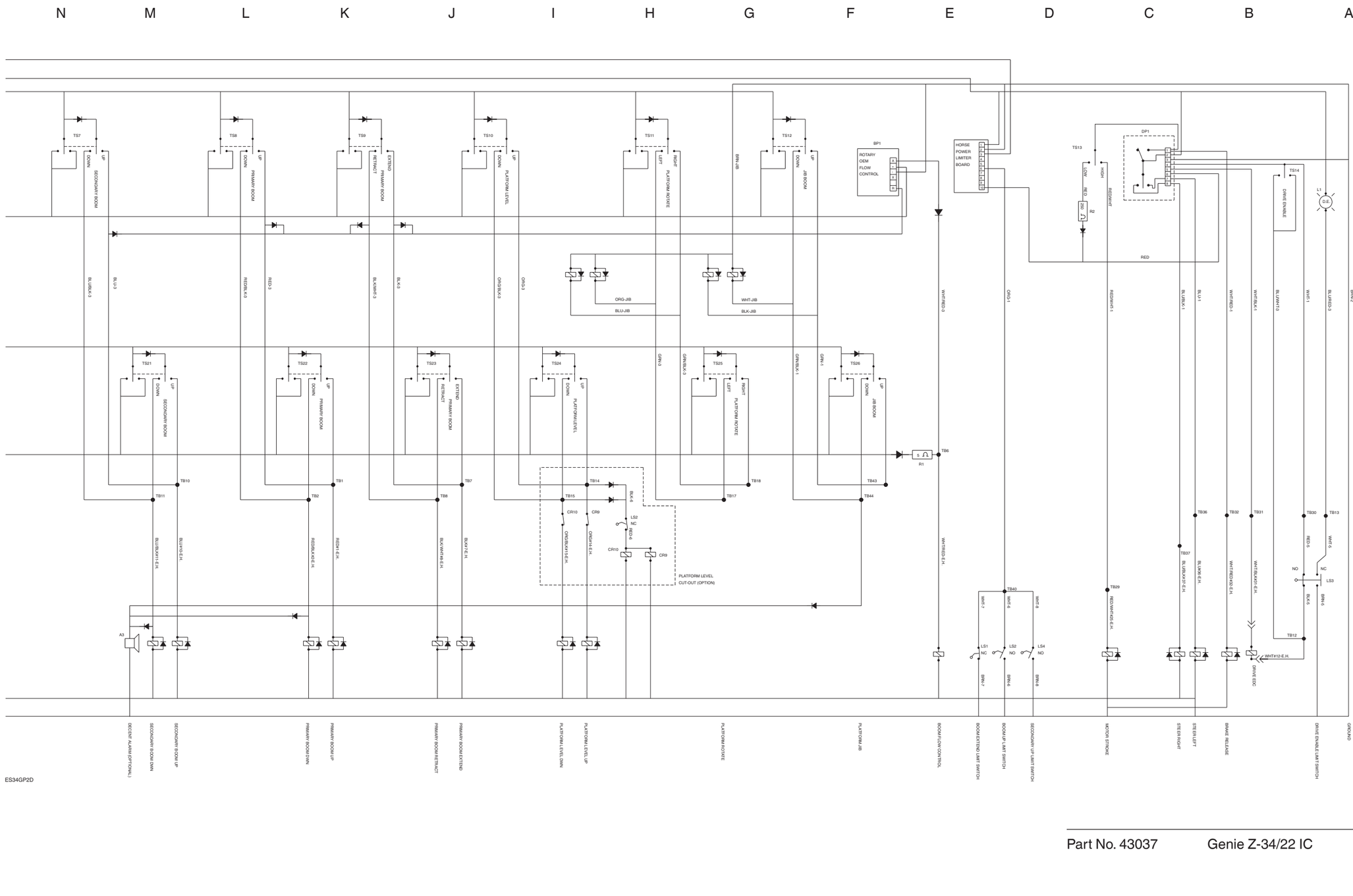




Electrical Schematic, Gasoline/LPG Models (before serial number 869)



Electrical Schematic, Gasoline/LPG Models (before serial number 869)



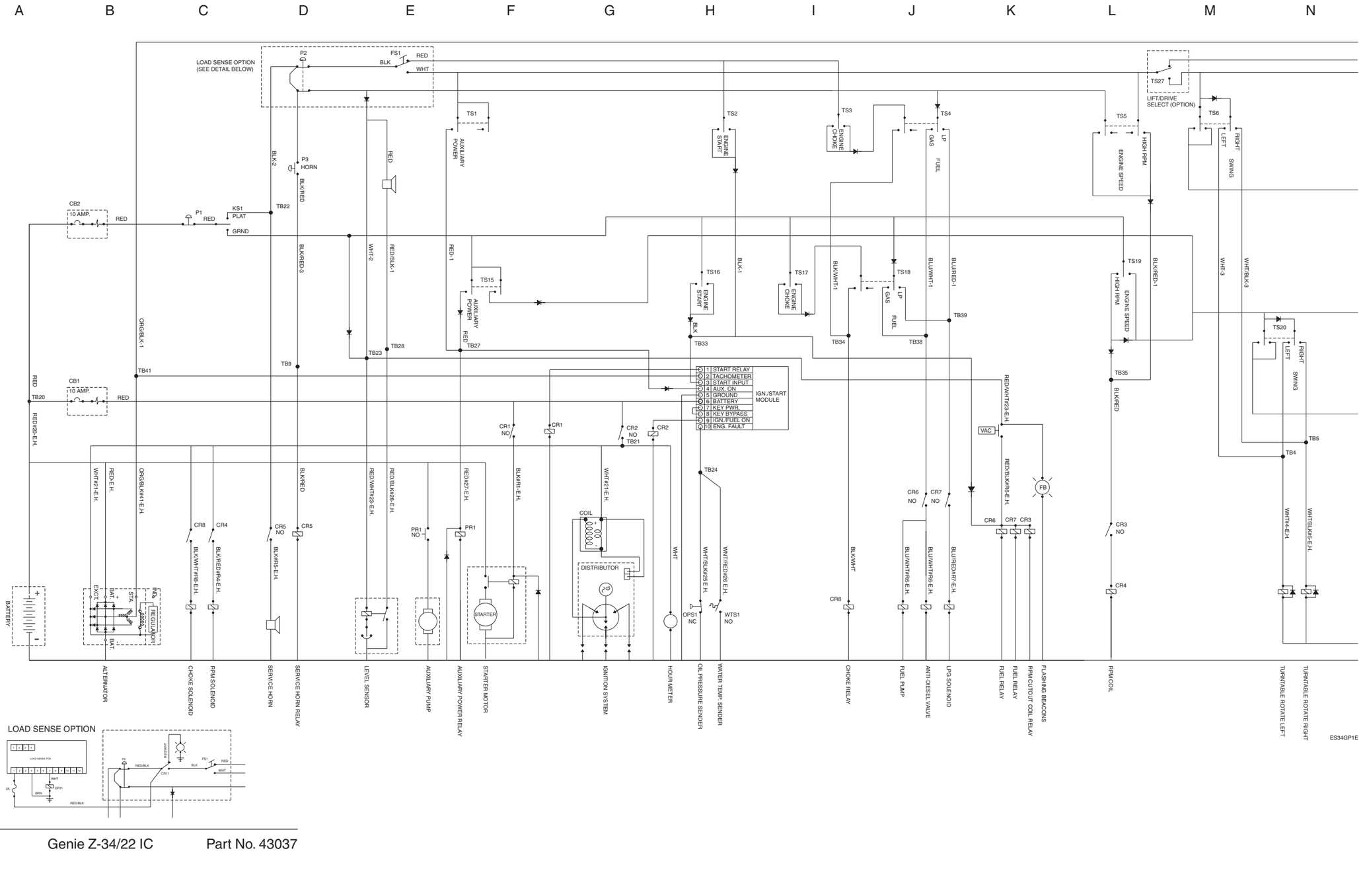
Electrical Schematic, Gasoline/LPG Models (before serial number 869)



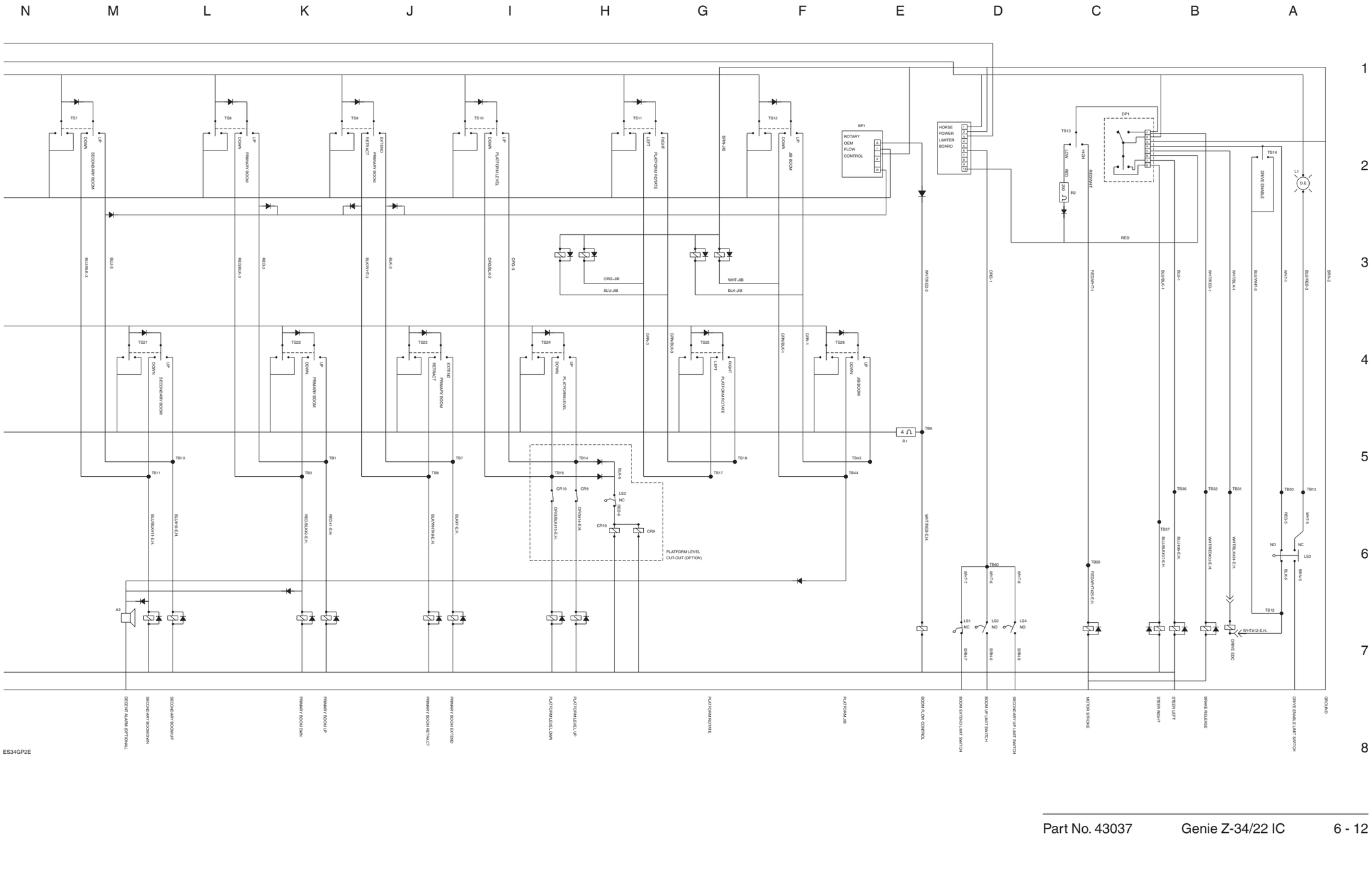




Electrical Schematic, Gasoline/LPG Models (from serial number 869 to 1186)



Electrical Schematic, Gasoline/LPG Models (from serial number 869 to 1186)



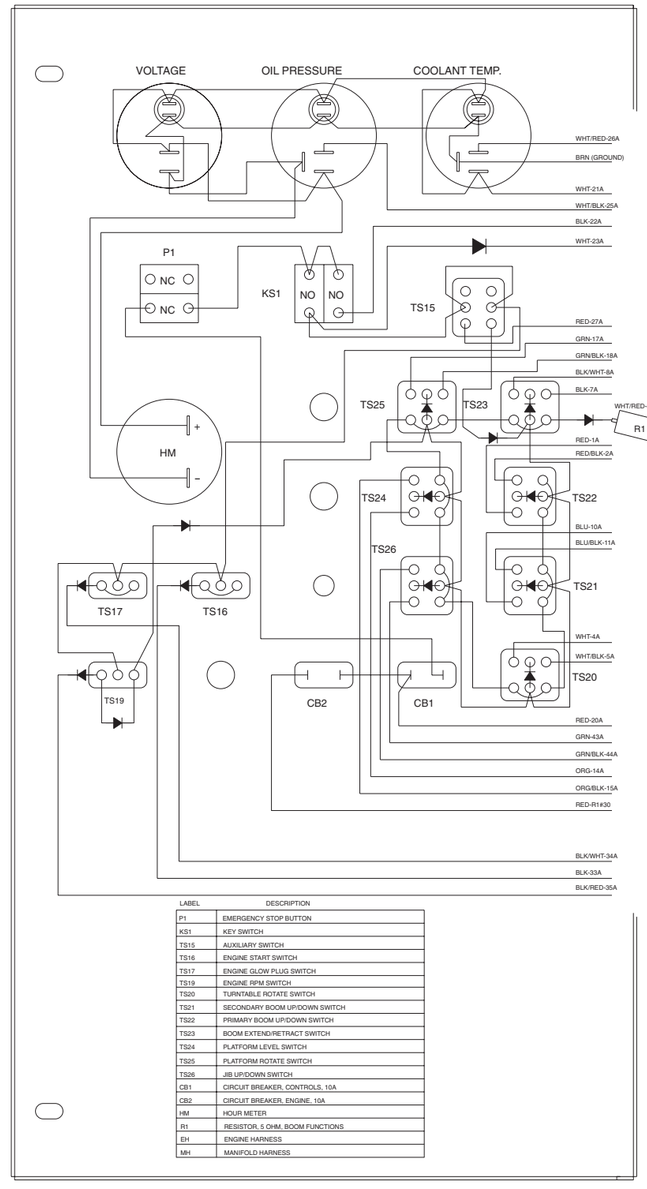
ES34GP2E

Electrical Schematic, Gasoline/LPG Models (from serial number 869 to 1186)

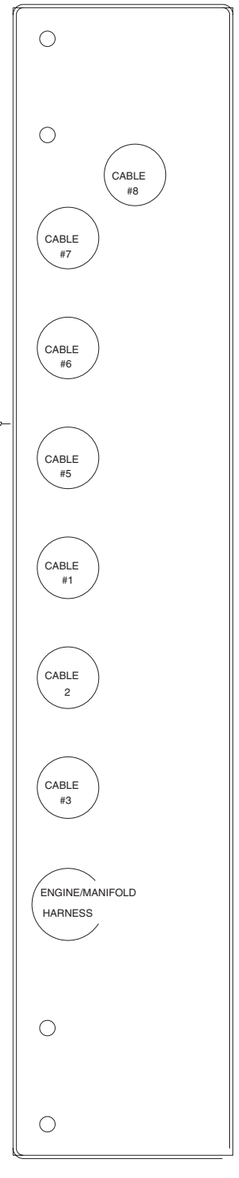


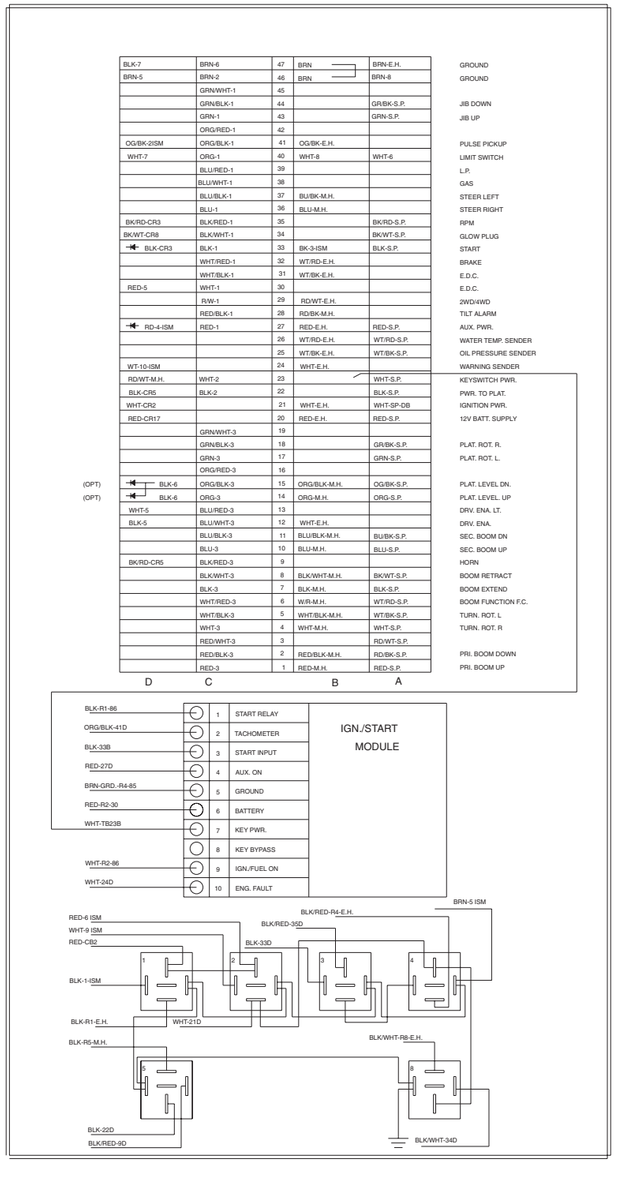
Ground Control Box Wiring Diagram, Diesel Models (before serial number 869)

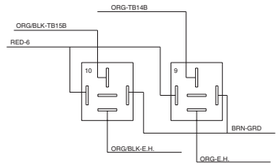
Ground Control Box Wiring Diagram, Diesel Models (before serial number 869)



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS15	AUXILIARY SWITCH
TS16	ENGINE START SWITCH
TS17	ENGINE GLOW PLUG SWITCH
TS19	ENGINE RPM SWITCH
TS20	TURNTABLE ROTATE SWITCH
TS21	SECONDARY BOOM UP/DOWN SWITCH
TS22	PRIMARY BOOM UP/DOWN SWITCH
TS23	BOOM EXTEND/RETRACT SWITCH
TS24	PLATFORM LEVEL SWITCH
TS25	PLATFORM ROTATE SWITCH
TS26	JIB UP/DOWN SWITCH
CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CIRCUIT BREAKER, ENGINE, 10A
HM	HOUR METER
R1	RESISTOR, 5 OHM, BOOM FUNCTIONS
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS





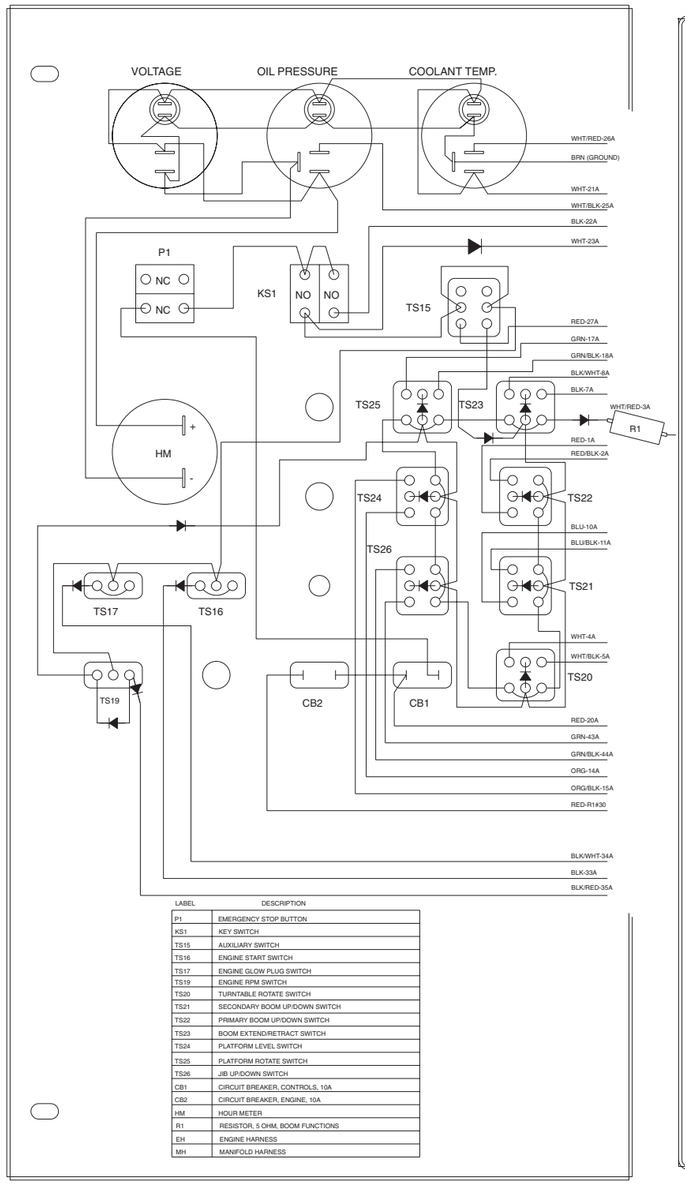


PLATFORM LEVEL CUT-OUT OPTION

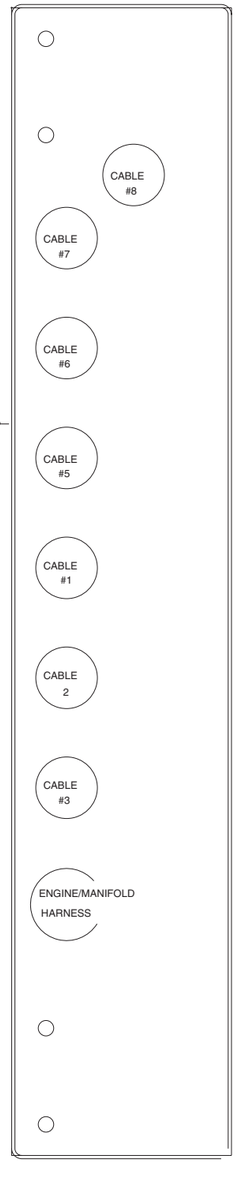
ES34D4C

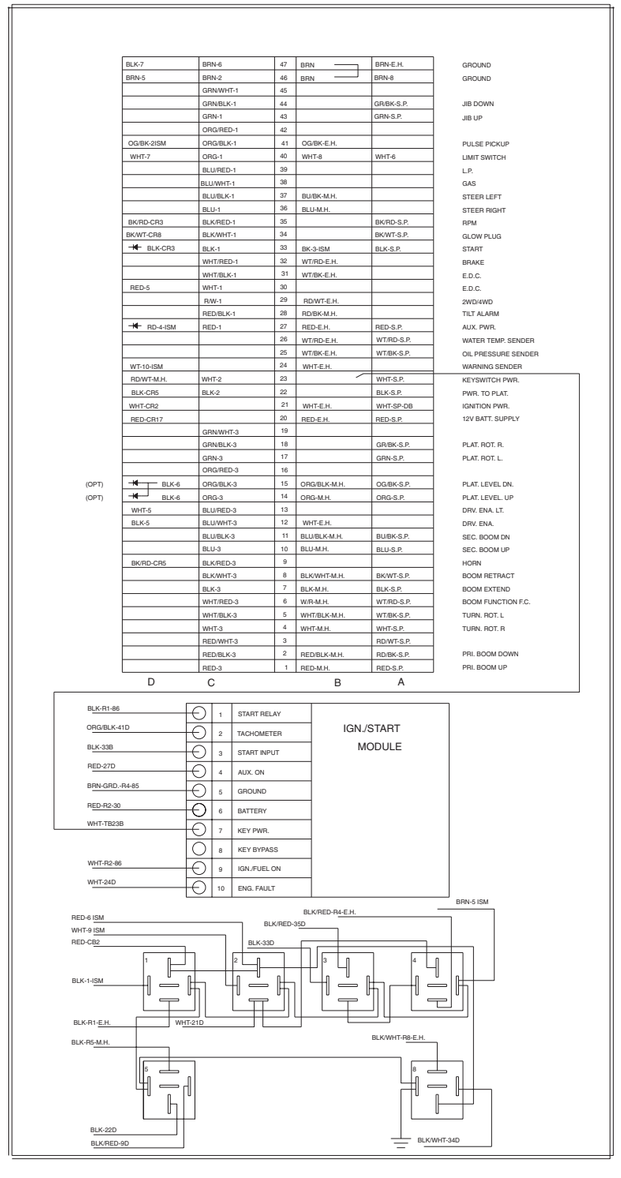
Ground Control Box Wiring Diagram, Diesel Models (from serial number 869 to 1186)

PLATFORM LEVEL CUT-OUT OPTION



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS15	AUXILIARY SWITCH
TS16	ENGINE START SWITCH
TS17	ENGINE GLOW PLUG SWITCH
TS19	ENGINE RPM SWITCH
TS20	TURNTABLE ROTATE SWITCH
TS21	SECONDARY BOOM UP/DOWN SWITCH
TS22	PRIMARY BOOM UP/DOWN SWITCH
TS23	BOOM EXTEND/RETRACT SWITCH
TS24	PLATFORM LEVEL SWITCH
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TS26	JIB UP/DOWN SWITCH
CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CIRCUIT BREAKER, ENGINE, 10A
HM	HOUR METER
R1	RESISTOR, 5 OHM, BOOM FUNCTIONS
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS





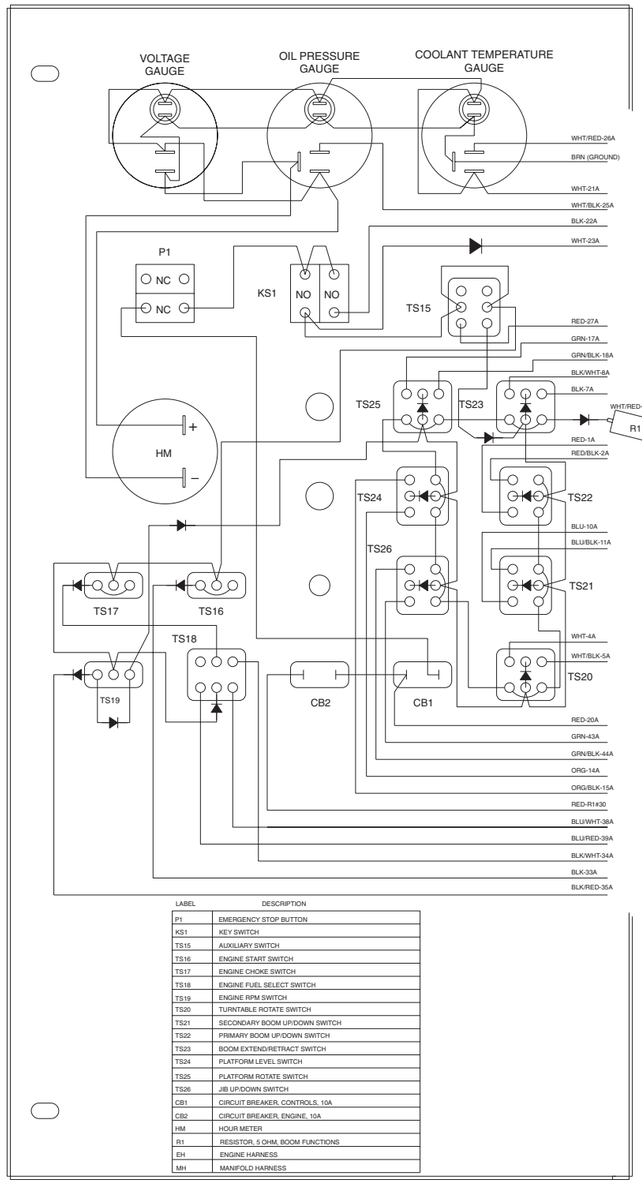
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Ground Control Box Wiring Diagram, Diesel Models (from serial number 869 to 1186)

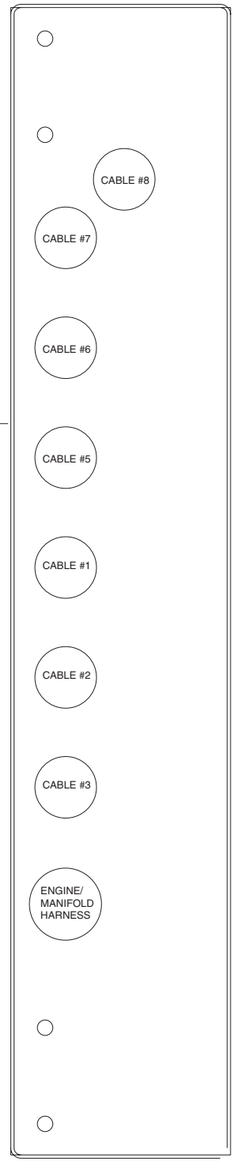


Ground Control Box Wiring Diagram, Gasoline/LPG Models (before serial number 869)

Ground Control Box Wiring Diagram, Gasoline/LPG Models (before serial number 869)

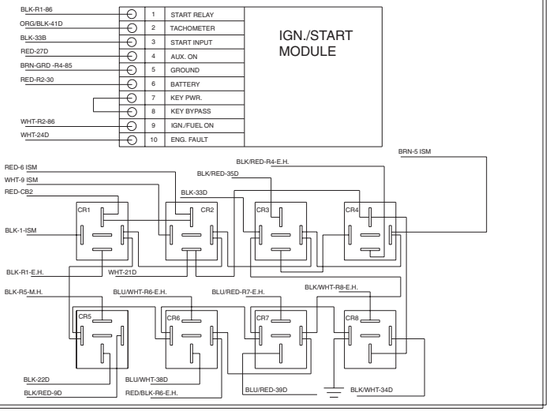


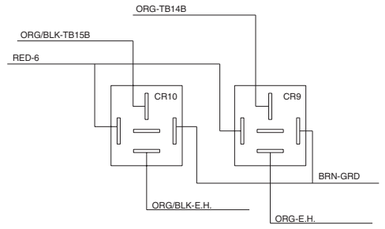
LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS15	AUXILIARY SWITCH
TS16	ENGINE START SWITCH
TS17	ENGINE CHOKE SWITCH
TS18	ENGINE FUEL SELECT SWITCH
TS19	ENGINE RPM SWITCH
TS20	TURNTABLE ROTATE SWITCH
TS21	SECONDARY BOOM UP/DOWN SWITCH
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CB1	CIRCUIT BREAKER, CONTROLS, 10A
CB2	CIRCUIT BREAKER, ENGINE, 10A
HM	HOUR METER
R1	RESISTOR, 5 OHM, BOOM FUNCTIONS
EH	ENGINE HARNESS
MH	MANIFOLD HARNESS



	BLK-7	BRN-6	47	BRN / BRN-E.H.	GROUND
	BRN-5	BRN-2	46	BRN / BRN-8	GROUND
		GRN/WHT-1	45		
		GRN/BLK-1	44	GR/BK-S.P.	JIB DOWN
		GRN-1	43	GRN-S.P.	JIB UP
		ORG/RED-1	42		
	OG/BK-2ISM	ORG/BLK-1	41	OG/BK-E.H.	
	WHT-7	ORG-1	40	WHT-8 / WHT-6	PULSE PICKUP / LIMIT SWITCH
	BLU/RED-CR7	BLU/RED-1	39	BU/RD-S.P.	L.P.
	BU/WT-CR6	BLU/WHT-1	38	BU/WT-S.P.	GAS
		BLU/BLK-1	37	BU/BK-M.H.	STEER LEFT
		BLU-1	36	BLU-M.H.	STEER RIGHT
	BK/RD-CR3	BLK/RED-1	35	BK/RD-S.P.	RPM
	BLK/WHT-CR8	BLK/WHT-1	34		GLOW PLUG
	BLK-CR3	BLK-1	33	BK-3-ISM / BLK-S.P.	ENGINE START
		WHT/RED-1	32	WT/RD-E.H.	BRAKE
		WHT/BLK-1	31	WT/BK-E.H.	E.D.C.
	RED-5	WHT-1	30		E.D.C.
		R/W-1	29	RD/WT-E.H.	2WD/4WD
		RED/BLK-1	28	RD/BK-M.H.	TILT ALARM
	RD-4-ISM	RED-1	27	RED-E.H. / RED-S.P.	AUILIARY POWER
			26	WT/RD-E.H. / WT/RD-S.P.	WATER TEMP. SENDER
			25	WT/BK-E.H. / WT/BK-S.P.	OIL PRESSURE SENDER
	WT-10-ISM		24	WHT-E.H.	WARNING SENDER
	RD/WT-M.H.	WHT-2	23	RD/WT-E.H. / WHT-S.P.	KEYSWITCH POWER
	BLK-CR5	BLK-2	22	BLK-S.P.	POWER TO PLATFORM
	WHT-CR2		21	WHT-E.H. / WHT-SP-DB	IGNITION POWER
	RED-CR17		20	RED-E.H. / RED-S.P.	12V BATTERY SUPPLY
		GRN/WHT-3	19		
		GRN/BLK-3	18	GR/BK-S.P.	PLATFORM ROTATE RIGHT
		GRN-3	17	GRN-S.P.	PLATFORM ROTATE LEFT
		ORG/RED-3	16		
(OPT)	BLK-6	ORG/BLK-3	15	ORG/BLK-M.H. / OG/BK-S.P.	PLATFORM LEVEL DOWN
(OPT)	BLK-6	ORG-3	14	ORG-M.H. / ORG-S.P.	PLATFORM LEVEL UP
	WHT-5	BLU/RED-3	13		DRIVE ENABLE LIGHT
	BLK-5	BLU/WHT-3	12	WHT-E.H.	DRIVE ENABLE
		BLU/BLK-3	11	BLU/BLK-M.H. / BU/BK-S.P.	SECONDARY BOOM DOWN
		BLU-3	10	BLU-M.H. / BLU-S.P.	SECONDARY BOOM UP
	BK/RD-CR5	BLK/RED-3	9		HORN
		BLK/WHT-3	8	BLK/WHT-M.H. / BK/WT-S.P.	BOOM RETRACT
		BLK-3	7	BLK-M.H. / BLK-S.P.	BOOM EXTEND
		WHT/RED-3	6	W/R-M.H. / WT/RD-S.P.	BOOM FUNCTION FLOW CONTROL
		WHT/BLK-3	5	WHT/BLK-M.H. / WT/BK-S.P.	TURNTABLE ROTATE LEFT
		WHT-3	4	WHT-M.H. / WHT-S.P.	TURNTABLE ROTATE RIGHT
		RED/WHT-3	3	RD/WT-S.P.	
		RED/BLK-3	2	RED/BLK-M.H. / RD/BK-S.P.	PRIMARY BOOM DOWN
		RED-3	1	RED-M.H. / RED-S.P.	PRIMARY BOOM UP

D C B A

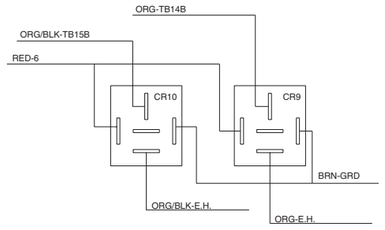




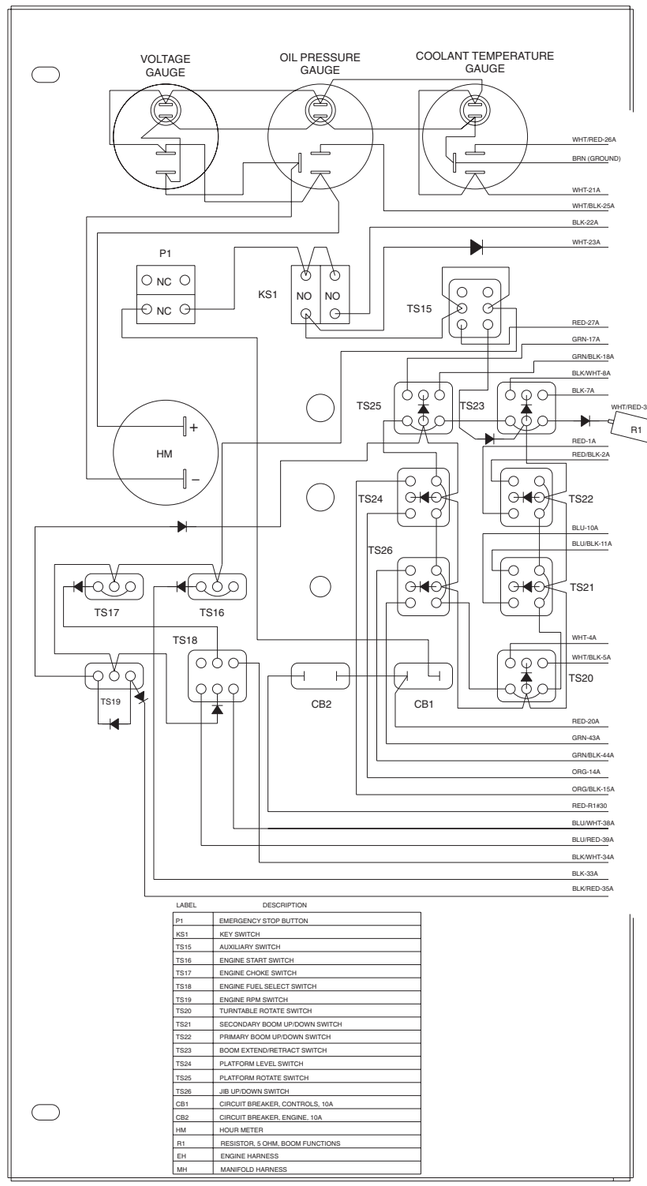
PLATFORM LEVEL CUT-OUT OPTION

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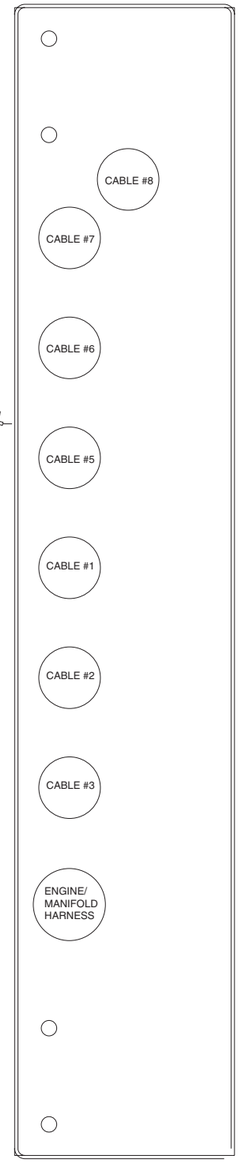
Ground Control Box Wiring Diagram, Gasoline/LPG Models (from serial number 869 to 1186)



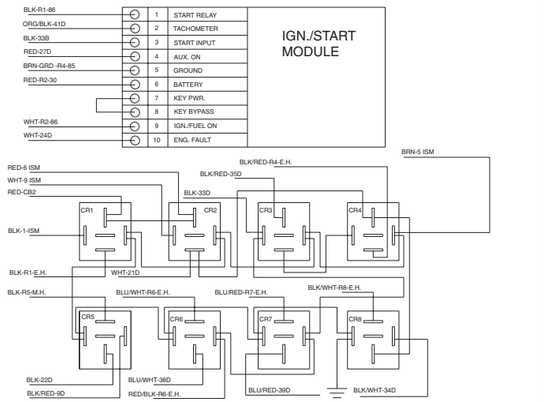
PLATFORM LEVEL CUT-OUT OPTION



LABEL	DESCRIPTION
P1	EMERGENCY STOP BUTTON
KS1	KEY SWITCH
TS15	AUXILIARY SWITCH
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BLK-7	BRN-6	47	BRN	BRN-E.H.	GROUND
BRN-5	BRN-2	46	BRN	BRN-8	GROUND
	GRN/WHT-1	45			
	GRN/BLK-1	44		GR/BK-S.P.	JIB DOWN
	GRN-1	43		GRN-S.P.	JIB UP
	ORG/RED-1	42			
OG/BK-2ISM	ORG/BLK-1	41	OG/BK-E.H.		PULSE PICKUP
WHT-7	ORG-1	40	WHT-8	WHT-6	LIMIT SWITCH
BLU/RED-CR7	BLU/RED-1	39		BU/RD-S.P.	L.P.
BU/WT-CR6	BLU/WHT-1	38		BU/WT-S.P.	GAS
	BLU/BLK-1	37	BU/BK-M.H.		STEER LEFT
	BLU-1	36	BLU-M.H.		STEER RIGHT
BK/RD-CR3	BLK/RED-1	35		BK/RD-S.P.	RPM
BLK/WHT-CR8	BLK/WHT-1	34			GLOW PLUG
BLK-CR3	BLK-1	33	BK-3-ISM	BLK-S.P.	ENGINE START
	WHT/RED-1	32	WT/RD-E.H.		BRAKE
	WHT/BLK-1	31	WT/BK-E.H.		E.D.C.
RED-5	WHT-1	30			E.D.C.
	R/W-1	29	RD/WT-E.H.		2WD/4WD
	RED/BLK-1	28	RD/BK-M.H.		TILT ALARM
RD-4-ISM	RED-1	27	RED-E.H.	RED-S.P.	AUILIARY POWER
		26	WT/RD-E.H.	WT/RD-S.P.	WATER TEMP. SENDER
		25	WT/BK-E.H.	WT/BK-S.P.	OIL PRESSURE SENDER
WT-10-ISM		24	WHT-E.H.		WARNING SENDER
RD/WT-M.H.	WHT-2	23	RD/WT-E.H.	WHT-S.P.	KEYSWITCH POWER
BLK-CR5	BLK-2	22		BLK-S.P.	POWER TO PLATFORM
WHT-CR2		21	WHT-E.H.	WHT-SP-DB	IGNITION POWER
RED-CR17		20	RED-E.H.	RED-S.P.	12V BATTERY SUPPLY
	GRN/WHT-3	19			
	GRN/BLK-3	18		GR/BK-S.P.	PLATFORM ROTATE RIGHT
	GRN-3	17		GRN-S.P.	PLATFORM ROTATE LEFT
	ORG/RED-3	16			
(OPT) BLK-6	ORG/BLK-3	15	ORG/BLK-M.H.	OG/BK-S.P.	PLATFORM LEVEL DOWN
(OPT) BLK-6	ORG-3	14	ORG-M.H.	ORG-S.P.	PLATFORM LEVEL UP
WHT-5	BLU/RED-3	13			DRIVE ENABLE LIGHT
BLK-5	BLU/WHT-3	12	WHT-E.H.		DRIVE ENABLE
	BLU/BLK-3	11	BLU/BLK-M.H.	BU/BK-S.P.	SECONDARY BOOM DOWN
	BLU-3	10	BLU-M.H.	BLU-S.P.	SECONDARY BOOM UP
BK/RD-CR5	BLK/RED-3	9			HORN
	BLK/WHT-3	8	BLK/WHT-M.H.	BK/WT-S.P.	BOOM RETRACT
	BLK-3	7	BLK-M.H.	BLK-S.P.	BOOM EXTEND
	WHT/RED-3	6	W/R-M.H.	WT/RD-S.P.	BOOM FUNCTION FLOW CONTROL
	WHT/BLK-3	5	WHT/BLK-M.H.	WT/BK-S.P.	TURNTABLE ROTATE LEFT
	WHT-3	4	WHT-M.H.	WHT-S.P.	TURNTABLE ROTATE RIGHT
	RED/WHT-3	3		RD/WT-S.P.	
	RED/BLK-3	2	RED/BLK-M.H.	RD/BK-S.P.	PRIMARY BOOM DOWN
	RED-3	1	RED-M.H.	RED-S.P.	PRIMARY BOOM UP
D	C		B	A	



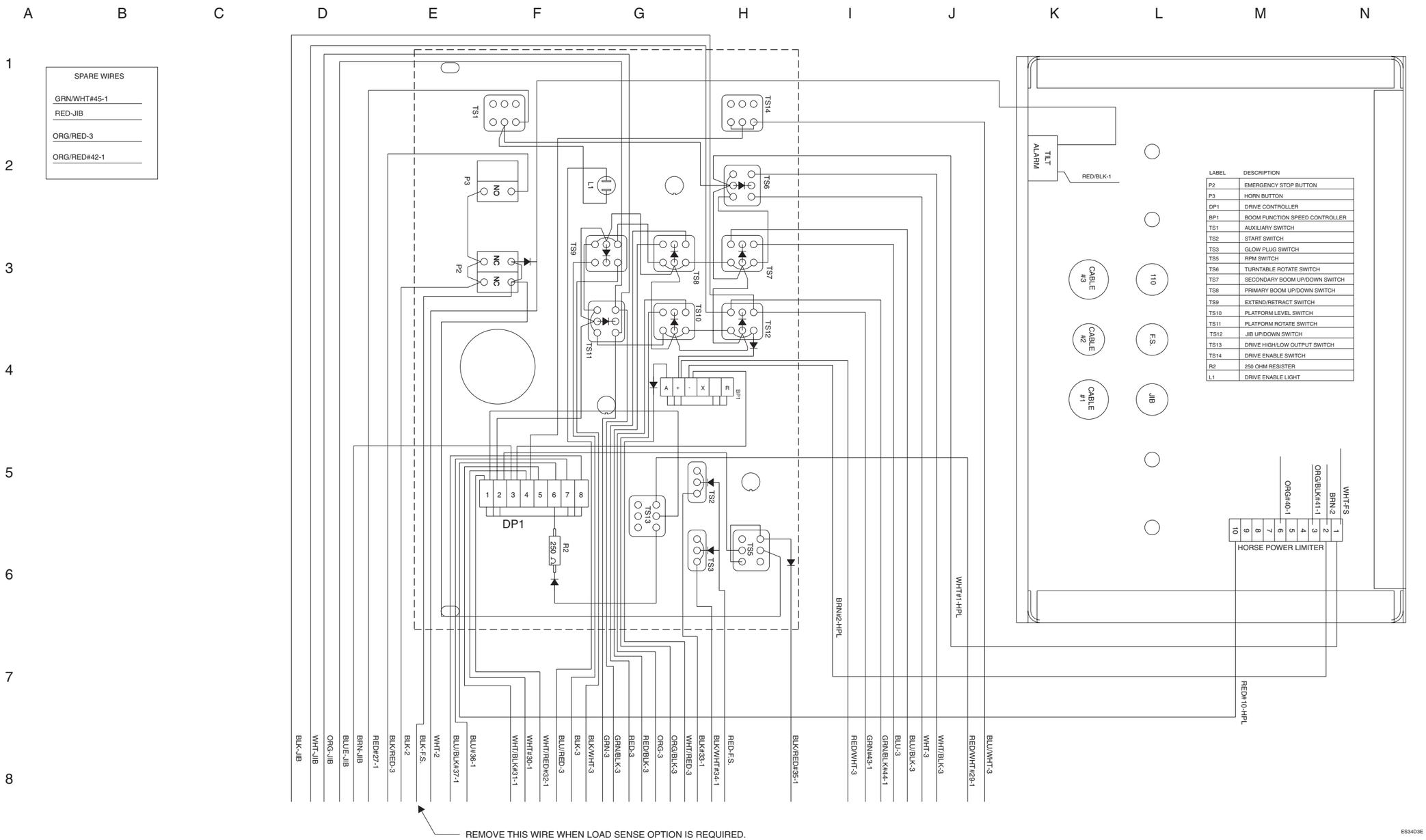
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Ground Control Box Wiring Diagram, Gasoline/LPG Models (from serial number 869 to 1186)



Platform Control Box Wiring Diagram, Diesel Models

Platform Control Box Wiring Diagram, Diesel Models



Platform Control Box Wiring Diagram, Gasoline/LPG Models

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

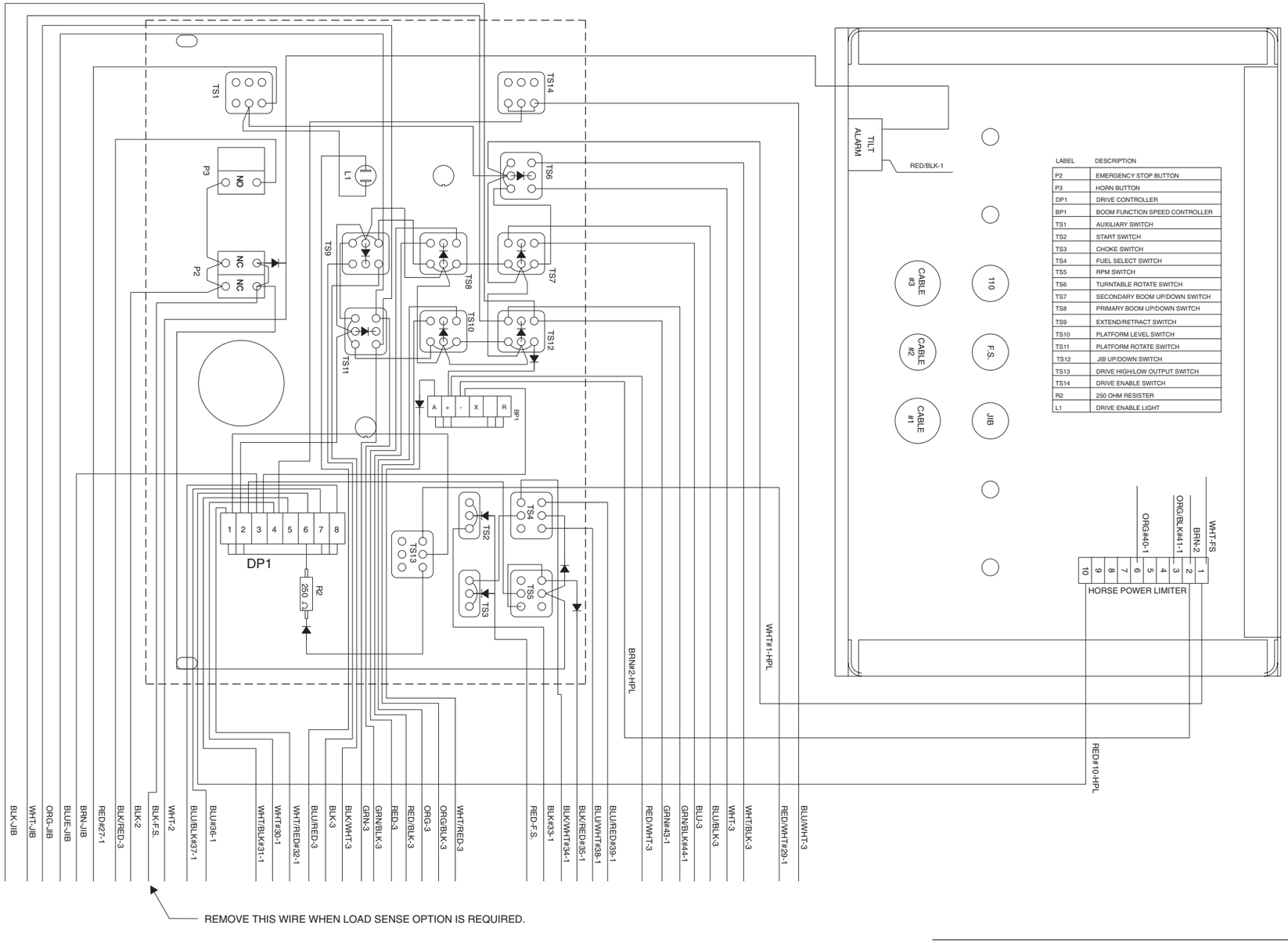
SPARE WIRES

GRN/WHT#45-1

RED-JIB

ORG/RED-3

ORG/RED#42-1



1 2 3 4 5 6 7 8

ES34GP3E

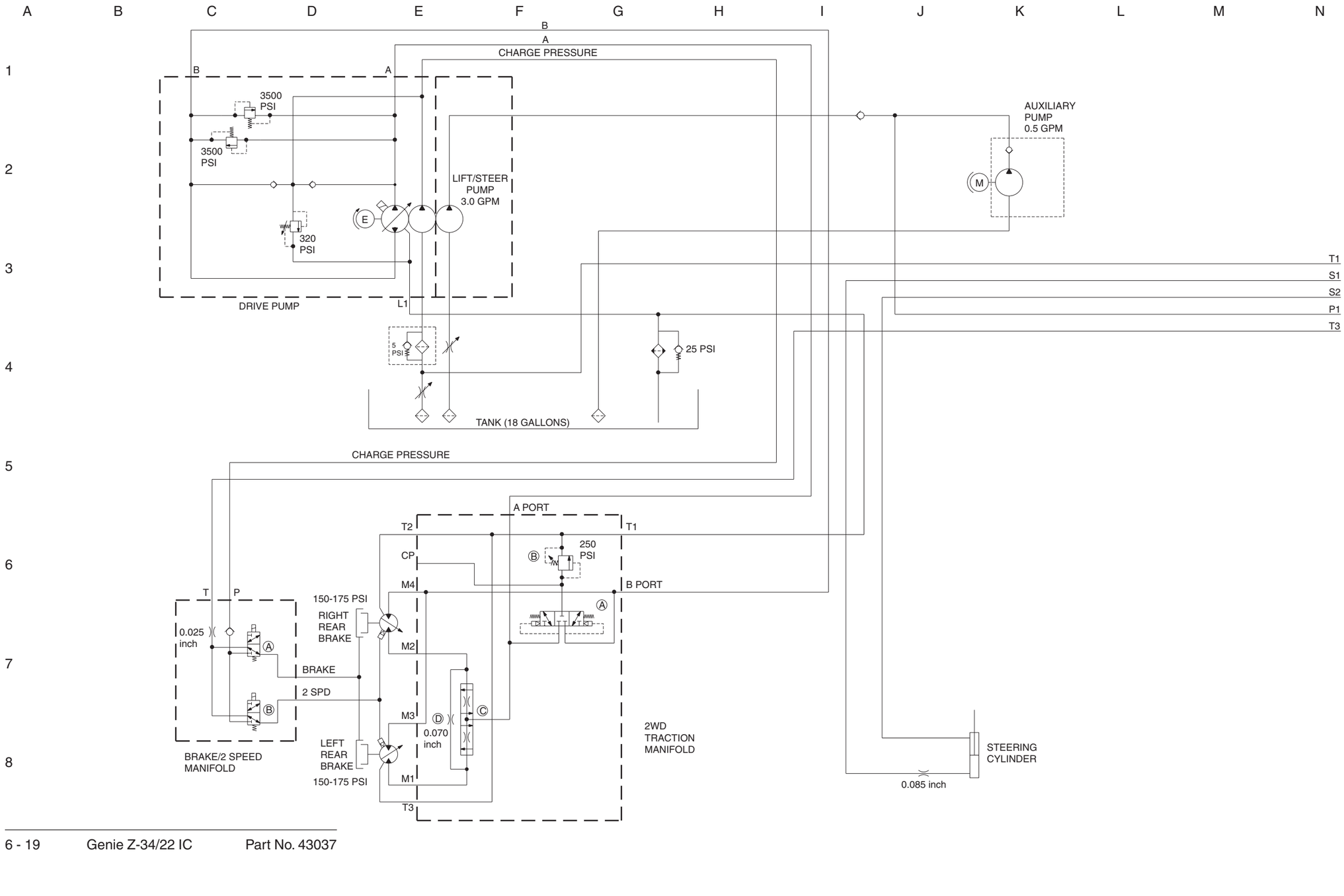
Ground Control Box Wiring Diagram, Gasoline/LPG Models (from serial number 869 to 1186)



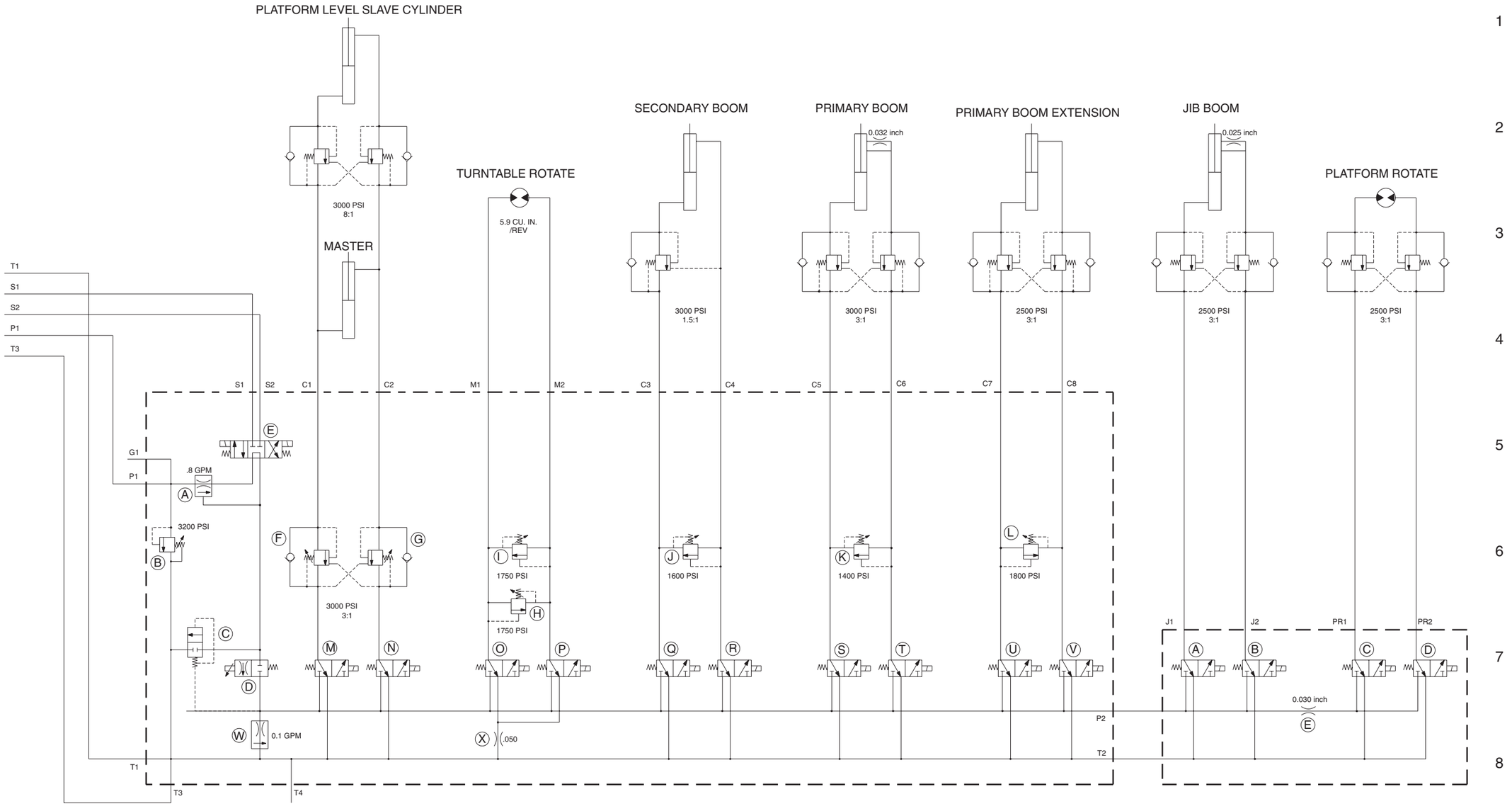




Hydraulic Schematic, 2WD Models (before serial number 674)

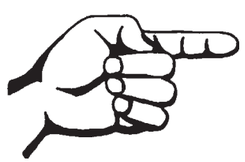


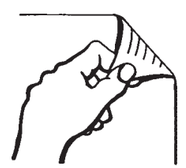
Hydraulic Schematic, 2WD Models (before serial number 674)



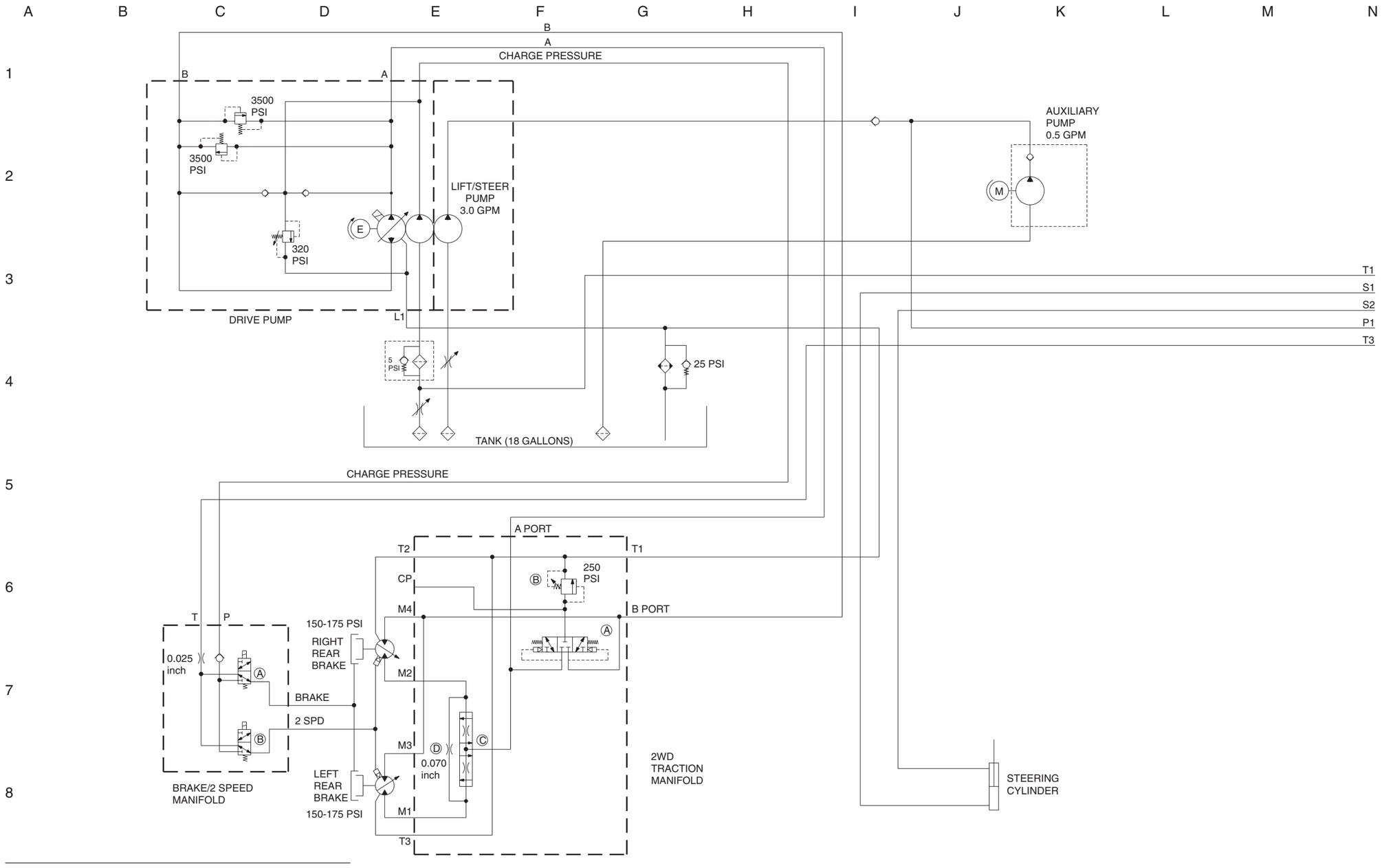
Hydraulic Schematic, 2WD Models (before serial number 674)



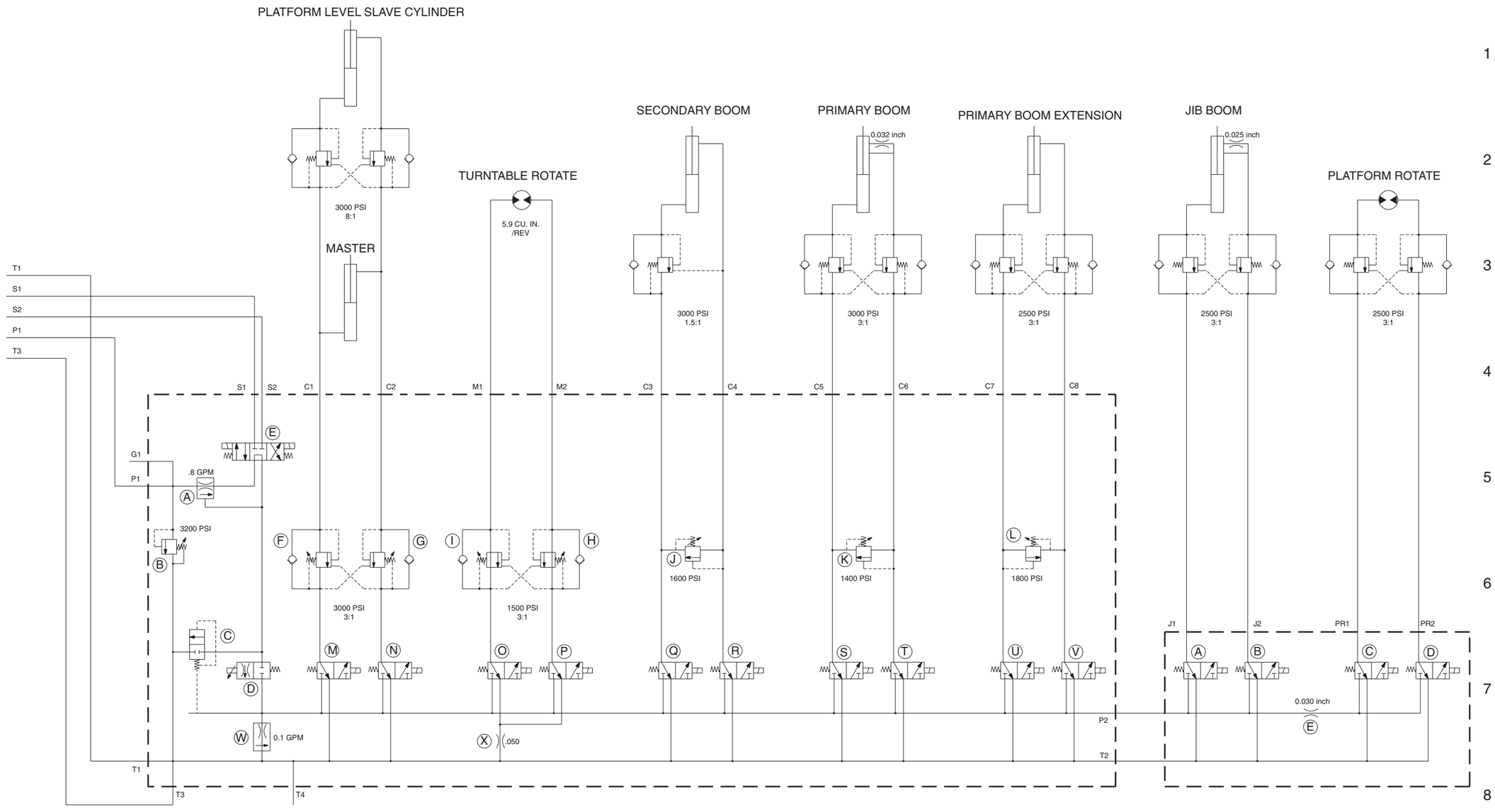




Hydraulic Schematic, 2WD Models (from serial number 674 to 1029)

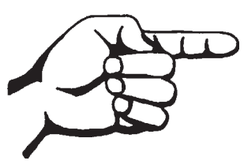


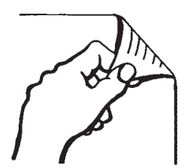
Hydraulic Schematic, 2WD Models (from serial number 674 to 1029)



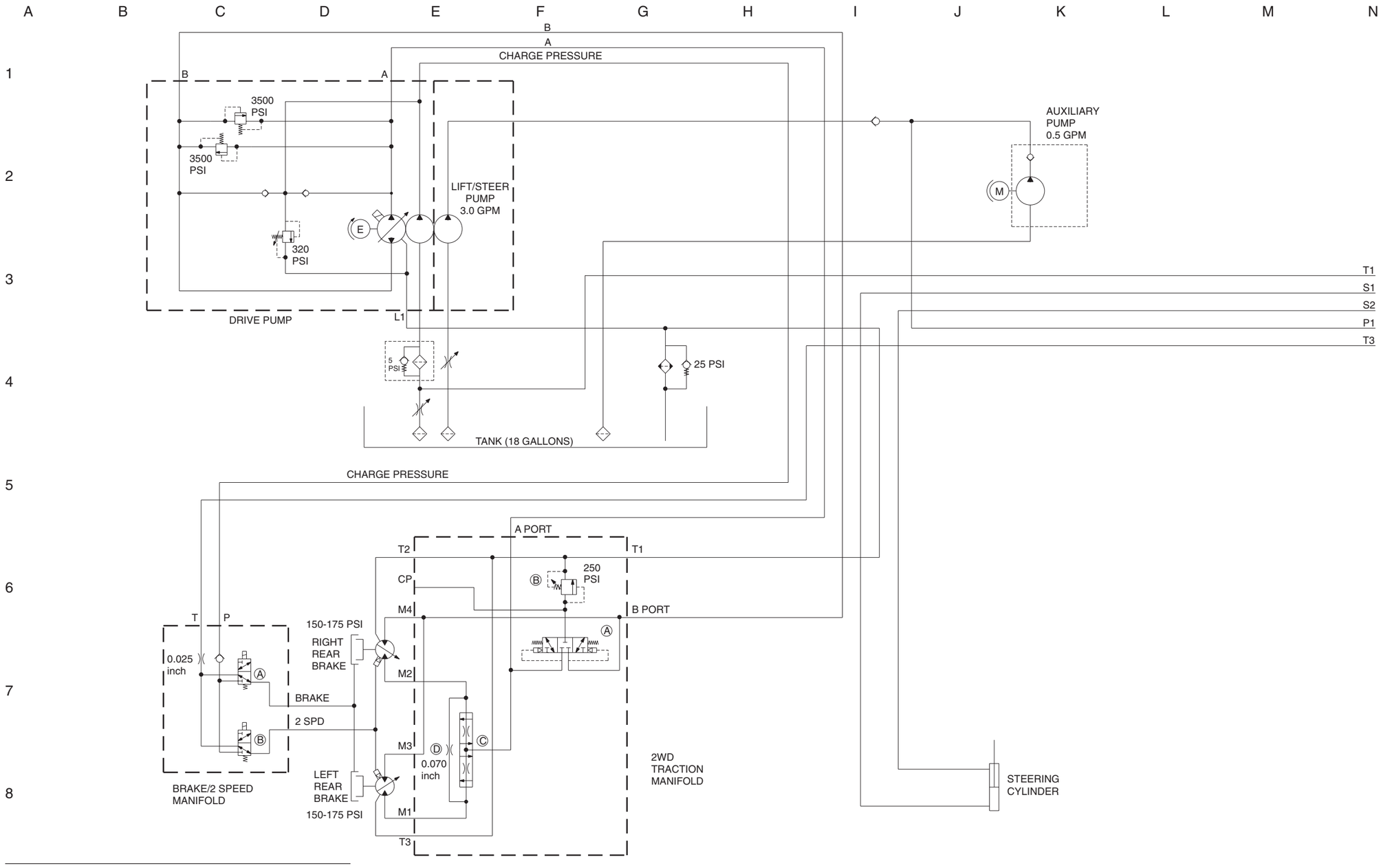
Hydraulic Schematic, 2WD Models (from serial number 674 to 1029)



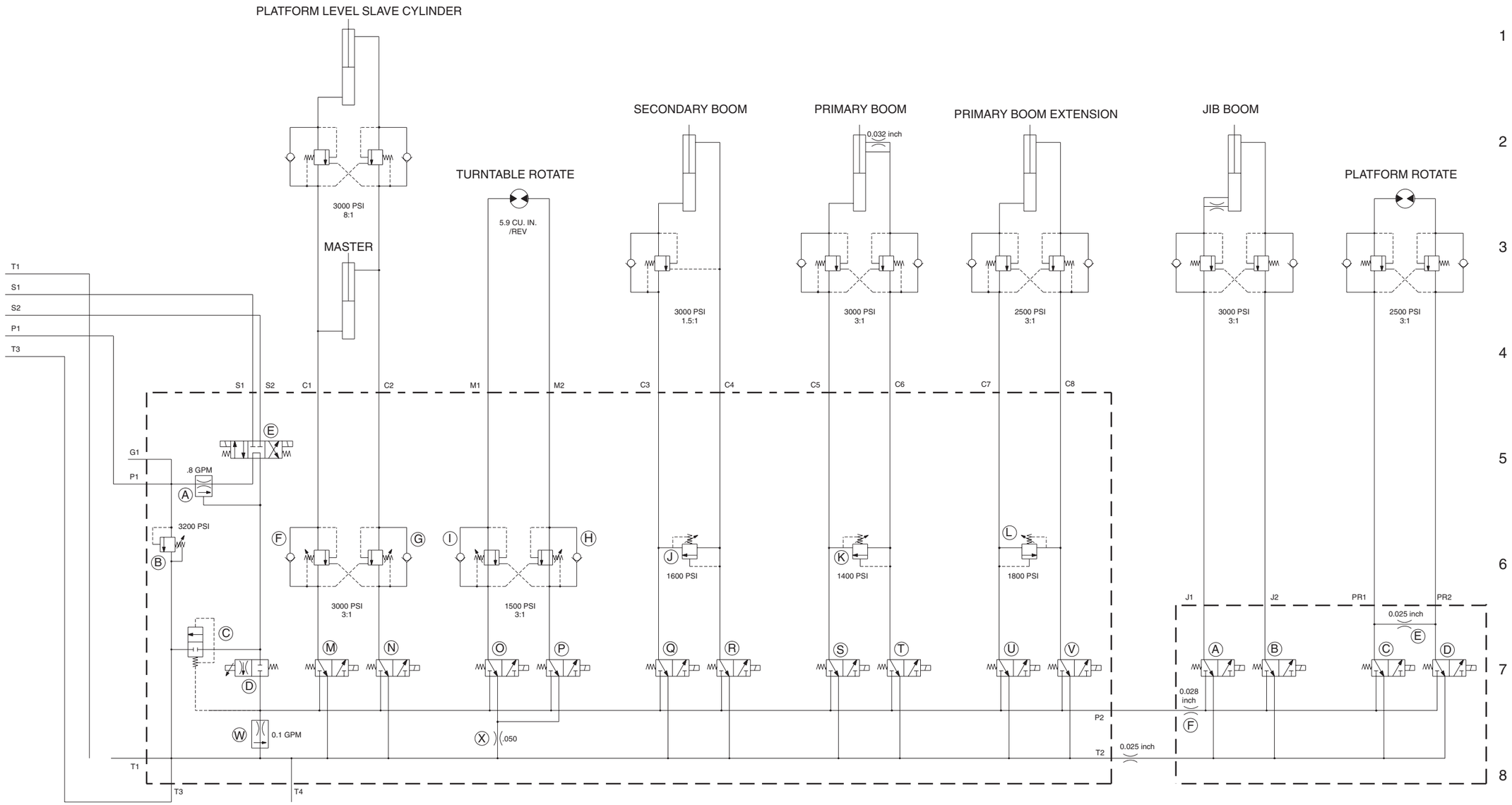




Hydraulic Schematic, 2WD Models (from serial number 1030 to 1186)

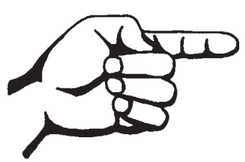


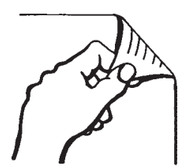
Hydraulic Schematic, 2WD Models (from serial number 1030 to 1186)



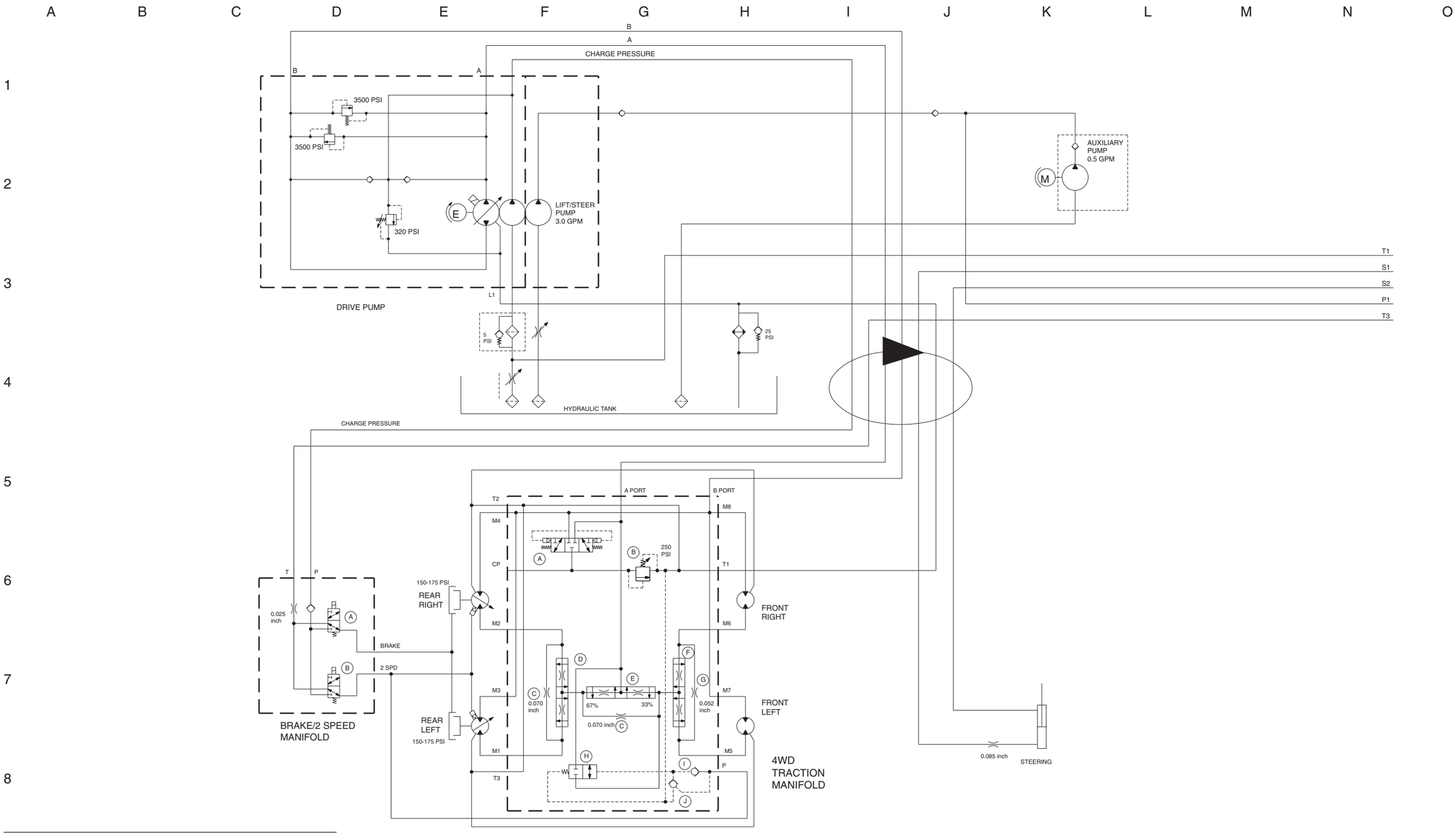
Hydraulic Schematic, 2WD Models (from serial number 1030 to 1186)



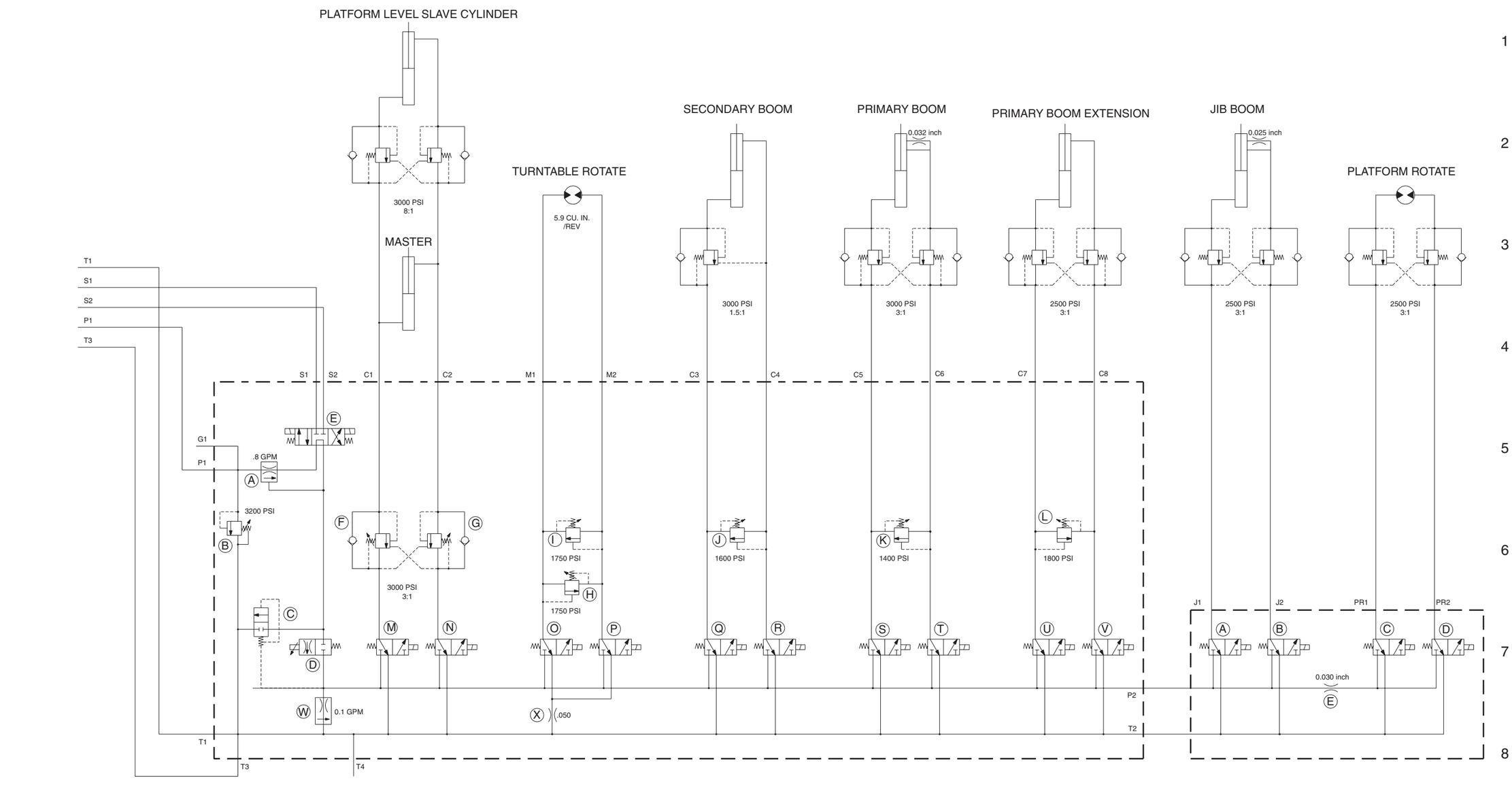




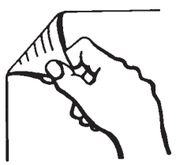
Hydraulic Schematic, 4WD Models (before serial number 674)



Hydraulic Schematic, 4WD Models (before serial number 674)



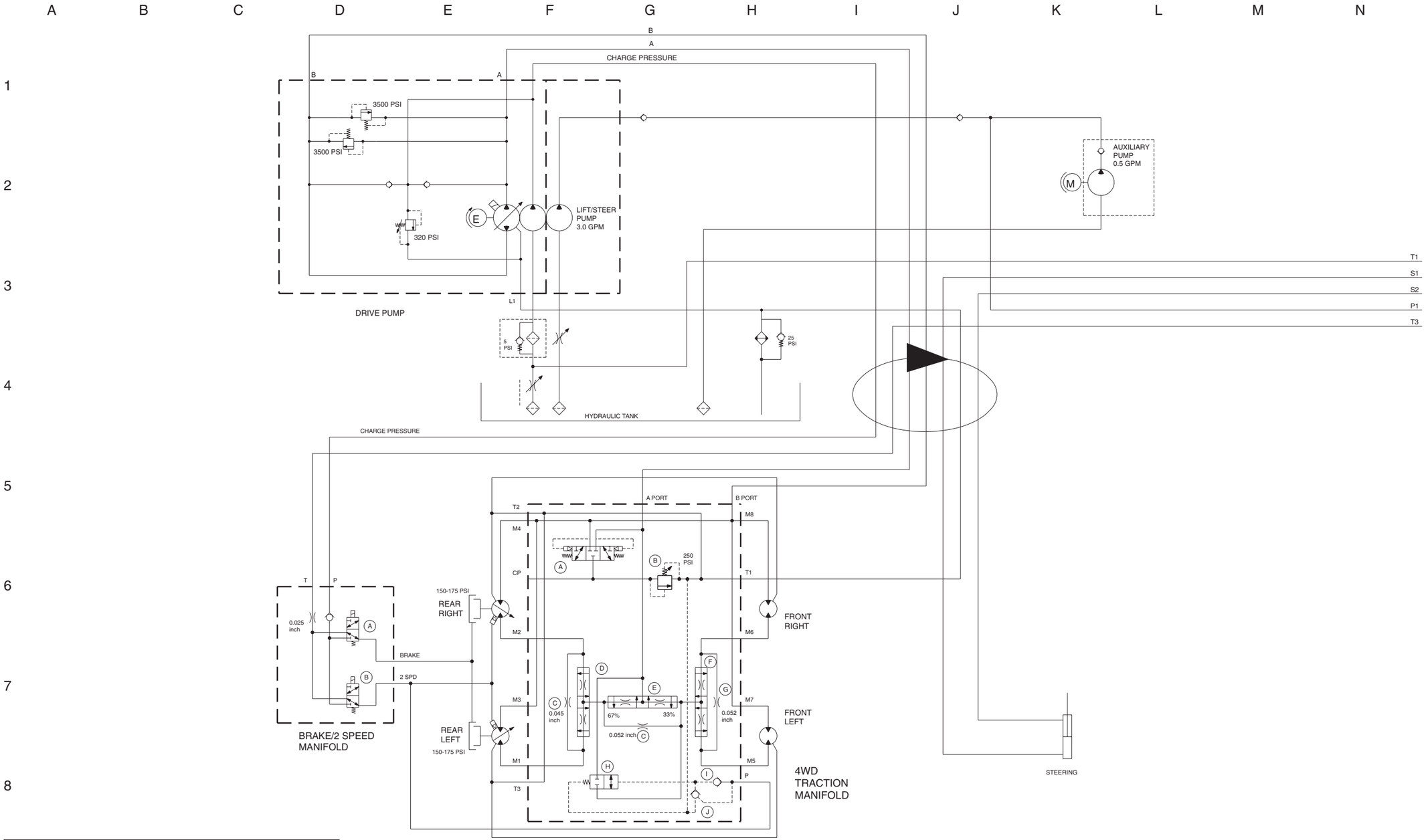
Hydraulic Schematic, 4WD Models (before serial number 674)



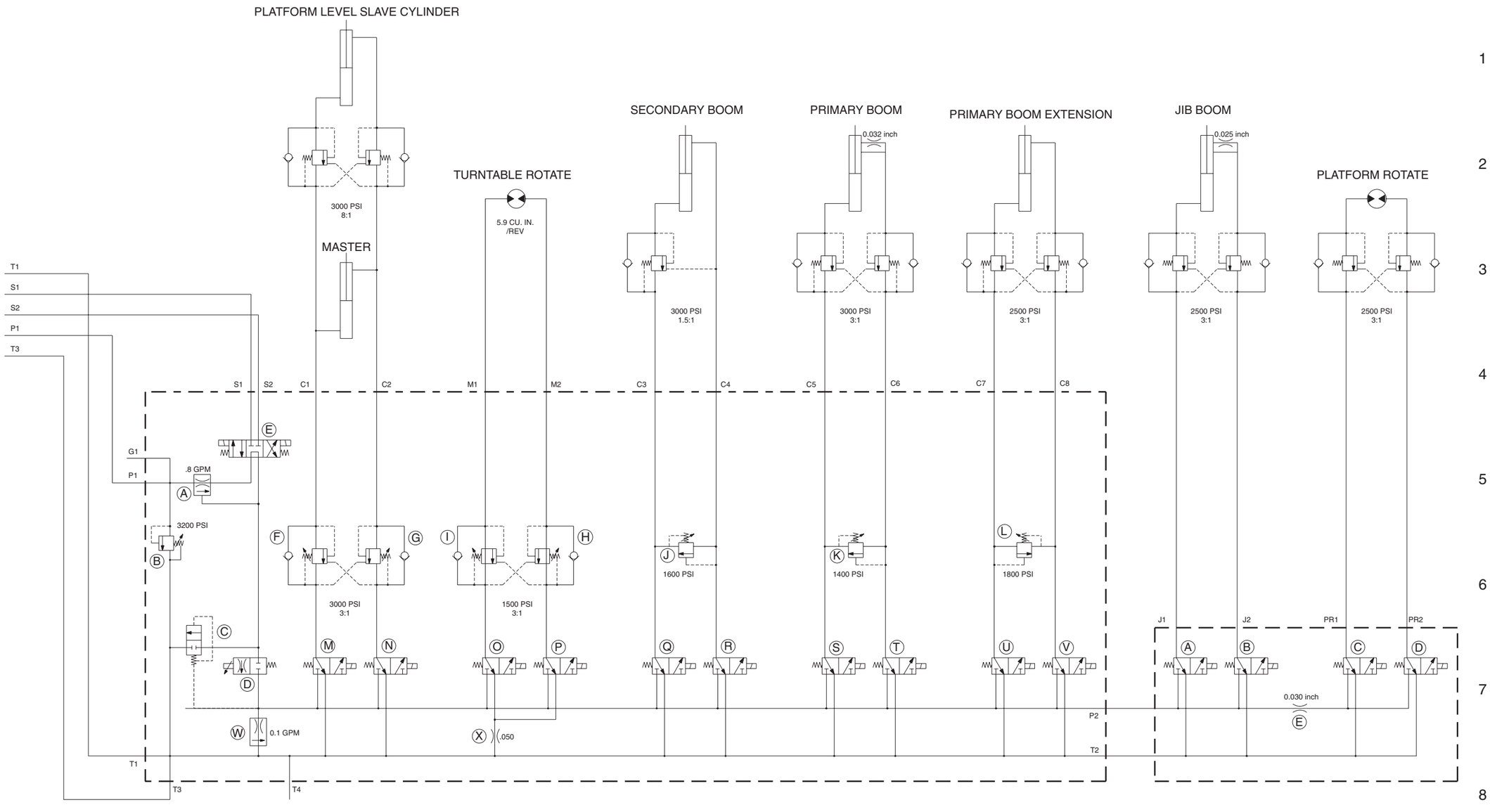




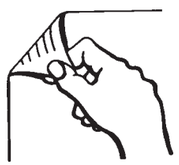
Hydraulic Schematic, 4WD Models (from serial number 674 to 1029)



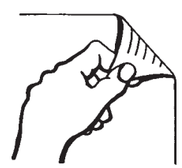
Hydraulic Schematic, 4WD Models (from serial number 674 to 1029)



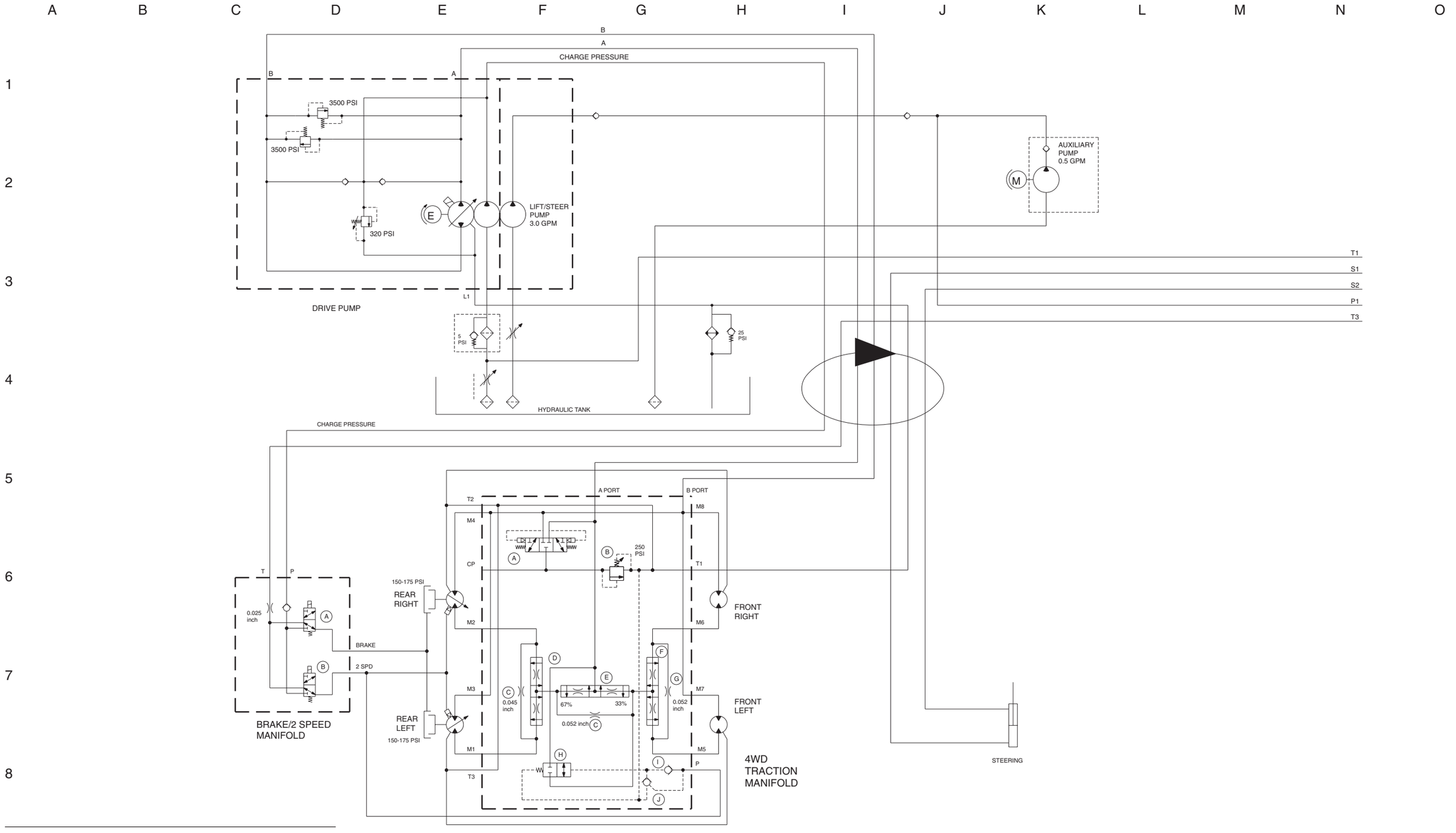
Hydraulic Schematic, 4WD Models (from serial number 674 to 1029)



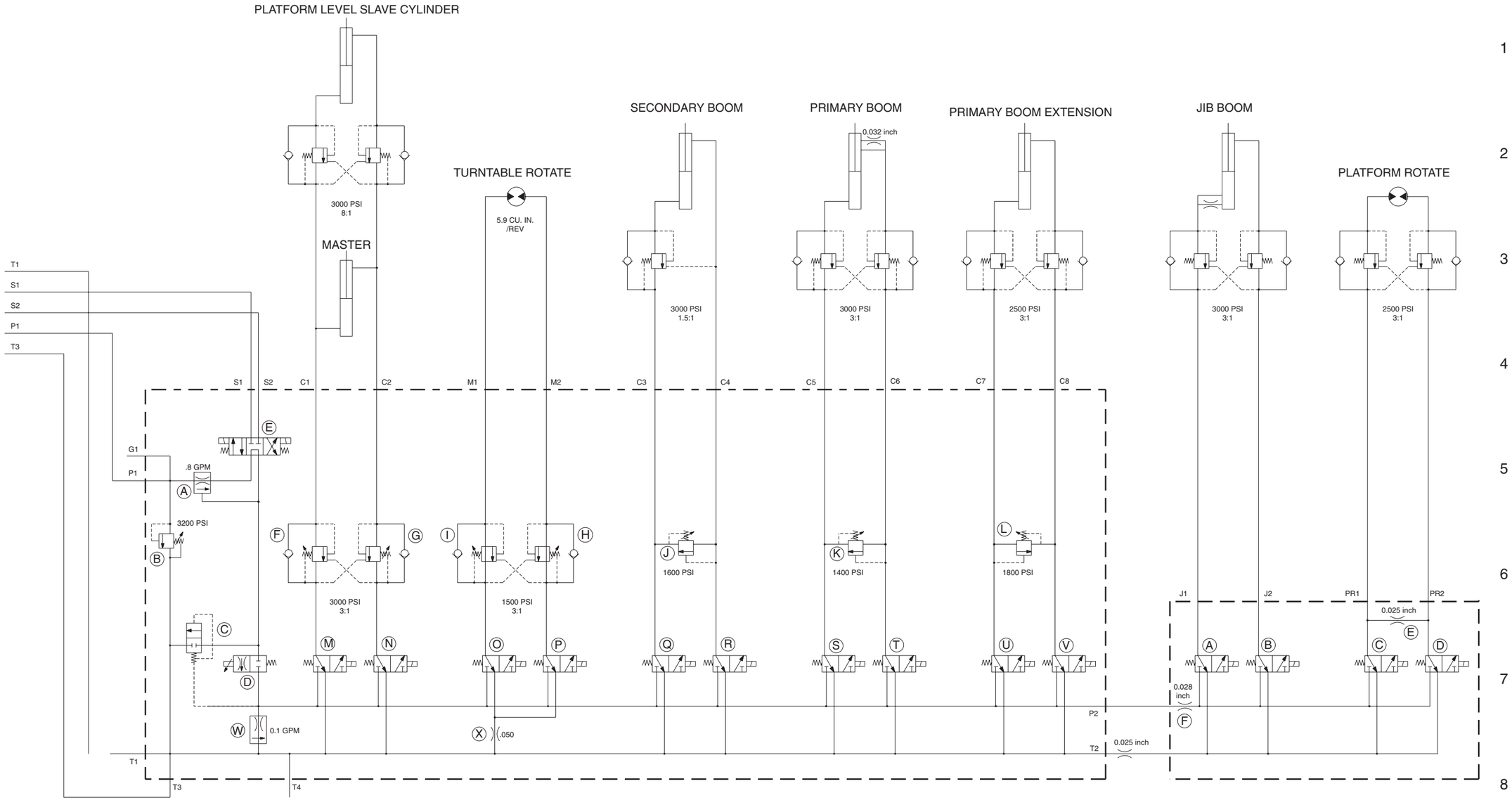




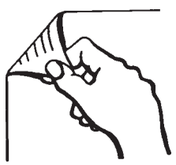
Hydraulic Schematic, 4WD Models (from serial number 1030 to 1186)



Hydraulic Schematic, 4WD Models (from serial number 1030 to 1186)



Hydraulic Schematic, 4WD Models (from serial number 1030 to 1186)



Repair Procedures

Observe and Obey:

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

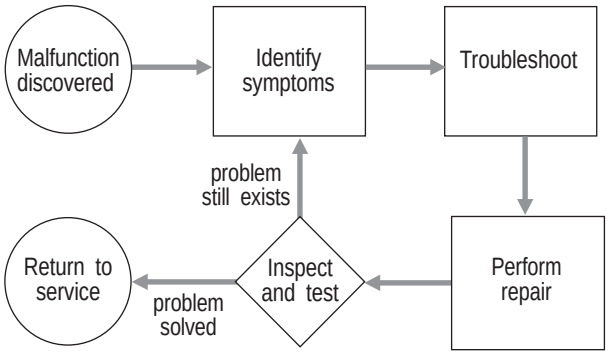
Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the *Genie Z-34/22 IC Operator's Manual*.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - Machine parked on a firm, level surface
  - Boom in the stowed position
  - Turntable rotated with the boom between the non-steer wheels
  - Key switch in the OFF position with the key removed
  - Wheels chocked
  - All exernal AC power 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.



General Repair Process

Symbols Legend

⚠DANGER Indicates the presence of a hazard that **will** cause death or serious injury.

⚠WARNING Indicates the presence of a hazard that **may** cause death or serious injury.

⚠CAUTION Indicates the presence of a hazard that **will** or **may** cause serious injury or damage to the machine.

NOTICE Indicates special operation or maintenance information.

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

Platform Controls

1-1
Horsepower Limiter Board

The horsepower limiter board is responsible for governing drive pump output. It senses engine rpm from the alternator. The horsepower limiter board senses drops in rpm normally due to increased drive resistance (rough terrain or incline) and decreases voltage to the drive controller which in turn decreases voltage to the drive pump thereby reducing pump output to maintain optimum engine rpm and horsepower. Three adjustments are required for optimum performance.

How to Adjust the Horsepower Limiter Board

NOTICE The engine rpm must be correct before performing this procedure. See Maintenance Procedure B-10, *Check and Adjust the Engine RPM.*

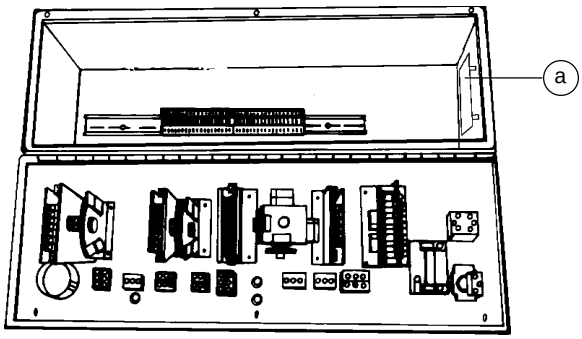
NOTICE Do not adjust the horsepower limiter board unless the static battery voltage is above 12V DC and the alternator is operating properly with 12.5 to 14.5V DC output.

NOTICE **Kubota Gasoline/LPG models:** Perform this procedure in gasoline mode.

1 Remove the fasteners from the platform control box lid.

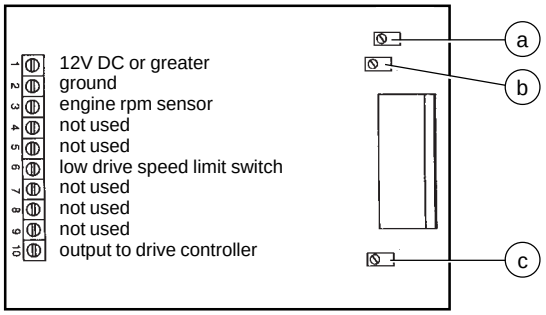
2 Open the control box lid and locate the horsepower limiter board.

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



a horsepower limiter board

3 Connect the black(-) lead from a DC volt meter to the no. 2 terminal, and the red(+) lead to the no. 10 terminal.



Horsepower limiter board
- a "A" potentiometer: maximum voltage output to the controller in the stowed position
- b "B" potentiometer: maximum voltage output to the drive controller in the boom raised position
- c "C" potentiometer: reaction rate or how fast the voltage output reacts to the change in engine rpm

4 Start the engine from the platform controls.

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

6 Press down the foot switch and adjust the "A" potentiometer counterclockwise to increase voltage or clockwise to decrease voltage.

"A" potentiometer specifications - all models	
Voltage setting	8.5 V DC

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

8 Press down the foot switch and then adjust the "C" potentiometer to obtain a 0V DC voltage reading.

9 Move the engine idle control switch to foot switch activated high idle (rabbit and foot switch symbol). Move the drive select switch to high range (machine on level ground symbol).

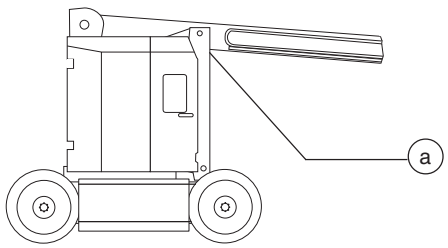
10 Press down the foot switch and re-adjust the "A" potentiometer to the previous voltage setting in step 6.

11 Be sure that the boom is in the stowed position, then drive the machine and observe how the engine rpm reacts to drive control handle movement. If the engine surges or hunts, adjust the "C" potentiometer counterclockwise until surging is minimized.

NOTICE Under an extreme load, an excessive counterclockwise adjustment to the "C" potentiometer will cause the engine to stall. The "C" potentiometer adjustment is a compromise between engine stability (surging) and engine rpm droop.

12 Disconnect the volt meter.

13 Raise the primary boom above the drive limit switch.



a drive limit switch

14 Drive the machine for 40 feet (12 m) and record the elapsed time. Repeat this step in the opposite drive direction.

15 Adjust the "B" potentiometer to obtain the correct raised drive speed of 1 foot per second (30.5 cm per second).

16 Close the platform control box lid and install the fasteners.

Drive speed specifications
Stowed position, high range

	2WD	**4WD**
Kubota Gas/LPG Models	40 ft6.1 sec 12.2 m/6.1 sec	40 ft/6.8 sec 12.2 m/6.8 sec
Kubota Diesel Models	40 ft/6.1 sec 12.2 m/6.1 sec	40 ft/6.8 sec 12.2 m/6.8 sec

Booms raised or extended, high range All models	40 feet/40 seconds 12 meters/40 seconds

PLATFORM CONTROLS

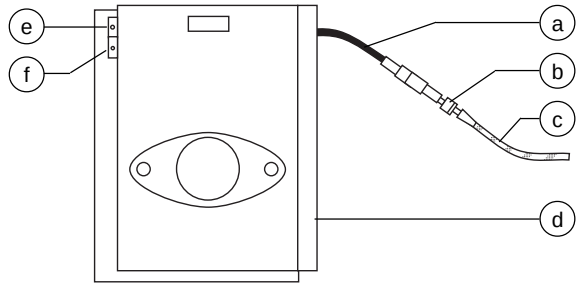
Boom Function Speed Controller Adjustments

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

NOTICE Do not adjust the controllers unless the static battery supply voltage is above 12V DC.

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

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



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

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

4 Connect the red (+) lead from a volt meter to the wire connector of the white/red wire next to the diode. Connect the black (-) lead to ground.

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

6 Set the threshold: Press down the foot switch, then move the primary boom switch to the UP position until the voltage reading appears. Adjust the voltage to 5.00 to 6.00V DC. Turn the threshold trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

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

8 Set the max-out: Press down the foot switch, then move the primary boom switch to the UP position. Adjust the voltage to 8.5 to 9.0V DC. Turn the max-out trimpot adjustment screw clockwise to increase the voltage or counterclockwise to decrease the voltage.

Boom function speed controller specifications	
Threshold	5.00 to 6.00V DC
Max-out	8.5 to 9.0V DC

1-2 Diodes

How to Test a Diode

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

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

1-3
Foot Switch

How to Test the Foot Switch

1 Turn the key switch to the OFF position and separate the wiring quick disconnect plug from the platform toe board.

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

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

NOTICE Do not use the color of the connector as a guide for these tests. Use the actual wire color to identify which connector to use for testing.

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

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

PLATFORM CONTROLS

1-4 Toggle Switches

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

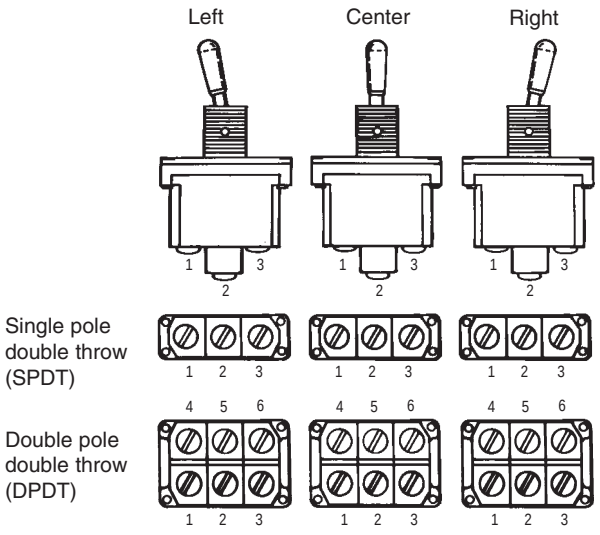
How to Test a Toggle Switch

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

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

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

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



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

Platform Components

2-1 Platform

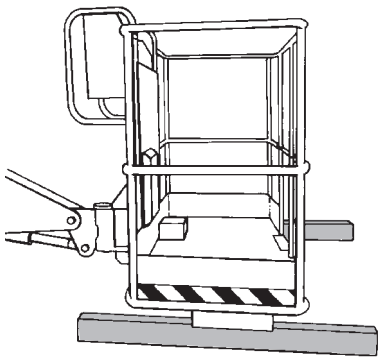
How to Remove the Platform

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

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

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

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



4 Remove the platform mounting fasteners and remove the platform.

NOTICE Do not overtighten the platform mounting fasteners during installation.

2-2 Platform Leveling Slave Cylinder

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

How to Remove the Slave Cylinder

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

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

2 Raise the boom slightly and place blocks under the platform. Then lower the boom until the platform is resting on the blocks.

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

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

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

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

7 Carefully pull the cylinder out of the boom.

8 Disconnect and tag the hydraulic hoses from the slave cylinder and connect them together with a connector. Cap the fittings on the cylinder.

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

PLATFORM COMPONENTS

How to Bleed the Slave Cylinder

1 Raise the jib boom to a horizontal position.

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

2-3 Platform Rotator

The platform rotator is a hydraulically-activated helical gear assembly used to rotate the platform 160 degrees.

How to Remove the Platform Rotator

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

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

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

3 Support the platform mounting weldment, but do not apply any lifting pressure.

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

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

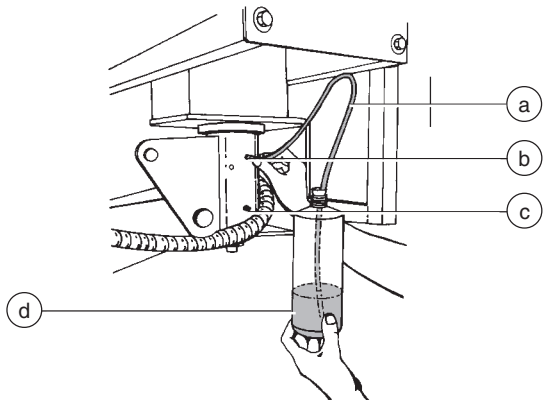
6 Remove the pin retainers from the jib boom and leveling links to platform rotator pivot pins. Do not remove the pins.

7 Support the jib boom and leveling links.

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

How to Bleed the Platform Rotator

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



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

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

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

4 Hold the platform rotate switch to the right for approximately 5 seconds, then release it. Repeat three times.

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

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

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

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

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

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

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

10 Close the bleed valve and remove the hose.

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

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

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

Jib Boom Components

3-1
Jib Boom

How to Remove the Jib Boom

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

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

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

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

⚠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 job boom manifold cover.

5 Remove the mounting fasteners from the jib boom manifold.

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

7 Support the jib boom with an overhead crane.

8 Remove the pin retainer from the jib boom pivot pin. Use a soft metal drift to remove the pin, then remove the jib boom from the primary boom.

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

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

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

11 Support the jib boom lift cylinder with an overhead crane.

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

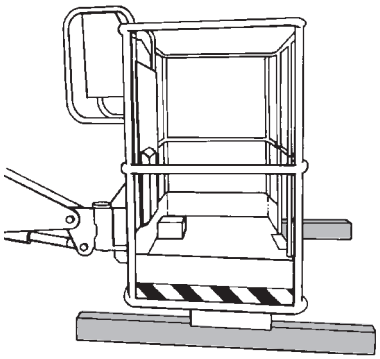
⚠WARNING Crushing hazard. The jib boom lift cylinder will fall when the pin is removed if it is not properly supported.

3-2
Jib Boom Lift Cylinder

How to Remove the Jib Boom Lift Cylinder

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

1 Raise the jib boom slightly and place blocks under the platform mounting weldment. Then lower the jib boom until the platform is resting on the blocks.



2 Disconnect and plug the jib boom lift cylinder hydraulic hoses.

⚠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.

3 Remove the pin retainers from the jib boom lift cylinder rod-end pivot pin. Do not remove the pin.

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

5 Support the jib boom lift cylinder with an overhead crane.

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

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

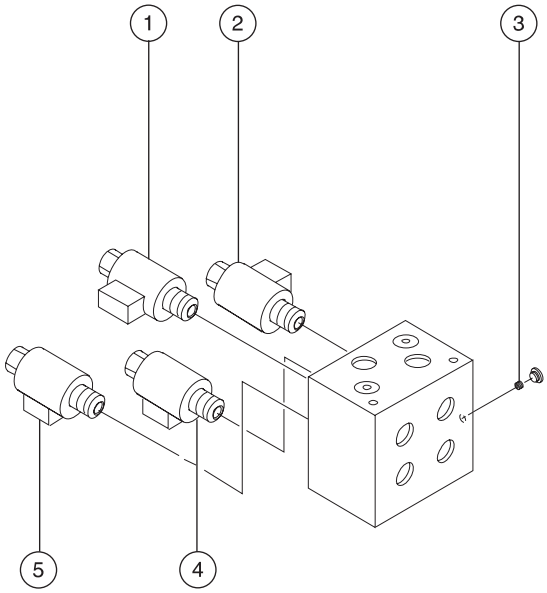
⚠WARNING Crushing hazard. The jib boom lift cylinder will fall when it is removed if it is not properly supported.

JIB BOOM COMPONENTS

3-3
Jib Boom / Platform Rotate Manifold Components (before serial number 1030)

The jib boom/platform rotate manifold is mounted to the jib boom.

Index No.	Description	Schematic Item	Function	Torque
1	2 position 3 way spool valve	A	Jib up	8-10 ft-lbs / 11-14 Nm
2	2 position 3 way spool valve	D	Platform rotate right	8-10 ft-lbs / 11-14 Nm
3	Orifice, 0.030 in (0.76 mm)	E	Platform rotate circuit	
4	2 position 3 way spool valve	C	Platform rotate left	8-10 ft-lbs / 11-14 Nm
5	2 position 3 way spool valve	B	Jib down	8-10 ft-lbs / 11-14 Nm



Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

How to Check the Resistance of a Valve Coil

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

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

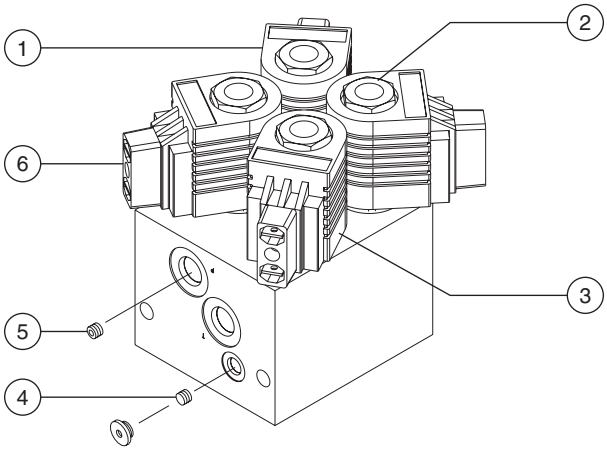
Coils with 1 terminal: Connect the positive lead from the ohmmeter to the valve coil terminal, then connect the negative lead from the ohmmeter to the internal ring of the valve coil.

Valve coil specification	
2 position 3 way valve, 10V	5.5 to 6.5Ω

3-4
Jib Boom / Platform Rotate Manifold Components (after serial number 1029)

The jib boom/platform rotate manifold is mounted to the jib boom.

Index No.	Description	Schematic Item	Function	Torque
1	2 position 3 way spool valve	A	Jib up	8-10 ft-lbs / 11-14 Nm
2	2 position 3 way spool valve	D	Platform rotate right	8-10 ft-lbs / 11-14 Nm
3	2 position 3 way spool valve	C	Platform rotate left	8-10 ft-lbs / 11-14 Nm
4	Orifice, 0.025 in (0.64 mm)	E	Platform rotate circuit	
5	Orifice, 0.028 in (0.71 mm)	F	Platform rotate and jib boom circuit	
6	2 position 3 way spool valve	B	Jib down	8-10 ft-lbs / 11-14 Nm



Plug Torque Specifications

Description	Hex Size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

How to Check the Resistance of a Valve Coil

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

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

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

Valve coil specification	
2 position 3 way valve, 10V	5.5 to 6.5Ω

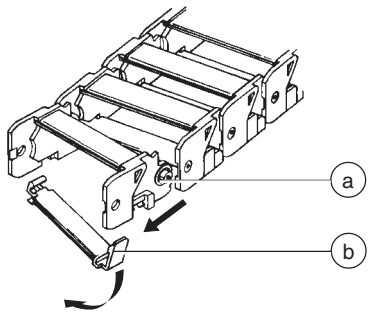
Primary Boom Components

4-1
Plastic Cable Track

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

How to Repair the Plastic Cable Track

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



a link separation point
b lower clip

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

2 Repeat step 1 for each link.

3 To remove a single link, open the lower clip and then use a screw driver to pry the link to the side.

4-2
Primary Boom

How to Shim the Primary Boom

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

1 Extend the boom until the wear pads are accessible.

2 Loosen the wear pad mounting fasteners.

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

4 Tighten the mounting fasteners.

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

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

How to Remove the Primary Boom

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

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

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

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

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

4 Support the slave cylinder.

5 Remove the external retaining ring from the slave cylinder barrel-end pivot pin.

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

7 Remove the slave cylinder from the primary boom.

8 Support the cable track with an overhead crane.

9 Remove the hose/cable cover from the pivot end of the boom.

10 Remove the cable track mounting fasteners, then remove the cable track from the boom and lay it off to the side.

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

11 Remove the turntable end cover.

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

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

14 Tag, disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

15 Attach an overhead 5 ton crane to the center point of the boom.

16 Attach a similar lifting device to the lift cylinder.

17 Use the crane to lift the primary boom to a horizontal position.

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

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

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

20 Lower the rod-end of the lift cylinder onto support blocks. Protect the cylinder rod from damage.

21 Remove the hose clamp brackets from the underside of the primary boom.

22 Remove the hose clamp from the side of the primary boom.

23 Remove the limit switch cam mounting fastener.

NOTICE Note the position of the cam before removing it.

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

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

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

PRIMARY BOOM COMPONENTS

How to Disassemble the Primary Boom

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

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

2 Place blocks under the extension cylinder for support.

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

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

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

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

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

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

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

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

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

9 Support and slide the extension cylinder out of the base end of the number 2 boom tube. Place the extension cylinder on blocks for support.

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

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

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

4-3
Primary Boom Lift Cylinder

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

How to Remove the Primary Boom Lift Cylinder

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

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

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

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

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

5 Remove the rear turntable cover.

6 Place a 4x4 inch block between the lower compression arms and the cross member of the upper secondary boom. Carefully lower the secondary boom onto the block.

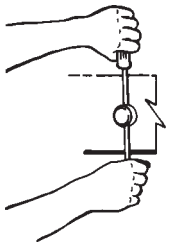
⚠WARNING Crushing hazard. Keep hands away from the block and all moving parts when lowering the secondary boom.

7 Remove the pin retainer from the primary boom lift cylinder rod-end pin. Then use a soft metal drift to remove the pin.

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

9 Remove the pin retainer from the upper compression arm pivot pin (same side of machine as the primary boom lift cylinder barrel-end pivot pin retainer).

10 Place a rod through the compression arm pivot pin and twist to remove.



11 Swing the compression arm up out of the way. Secure it from moving.

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

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

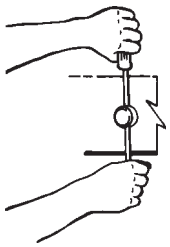
13 Support the primary boom lift cylinder with straps or ropes to restrict it from swinging freely.

14 Remove the pin retainer from the pivot pin at the barrel-end of the primary boom lift cylinder. Do not remove the pivot pin.

PRIMARY BOOM COMPONENTS

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

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



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

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

18 Carefully remove the cylinder from the machine.

4-4 Extension Cylinder

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

How to Remove the Extension Cylinder

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

1 Raise the primary boom to the horizontal position. Then extend the boom 3 to 4 feet (7.6 to 10 m) until the extension cylinder rod-end pivot pins are accessible.

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

3 Remove the rear turntable cover.

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

5 Remove the drive limit switch from the base of the primary boom. Do not disconnect the wiring.

6 Remove the retaining bolt from the master cylinder rod end pivot pin, then use a soft metal drift to remove the pin.

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

8 Disconnect and plug the extension cylinder hydraulic hoses. Cap the fittings on the cylinder.

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

9 Remove the retaining bolt from the extension cylinder pivot pin, then use a soft metal drift to remove the pin.

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

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

NOTICE To make installation of the extension cylinder easier, be sure that the cylinder rod is extended 3 to 4 feet (1 m).

4-5 Platform Leveling Master Cylinder

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

How to Remove the Platform Leveling Master Cylinder

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

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

1 Remove the rear turntable cover.

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

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

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

PRIMARY BOOM COMPONENTS

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

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

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

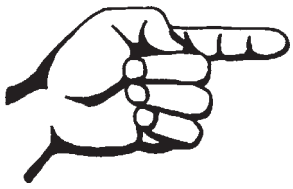
7 Tie a strap around the lug on the rod end of the master cylinder, then secure the strap to the primary boom (use this strap to lower the cylinder out of the upper mid-pivot).

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

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

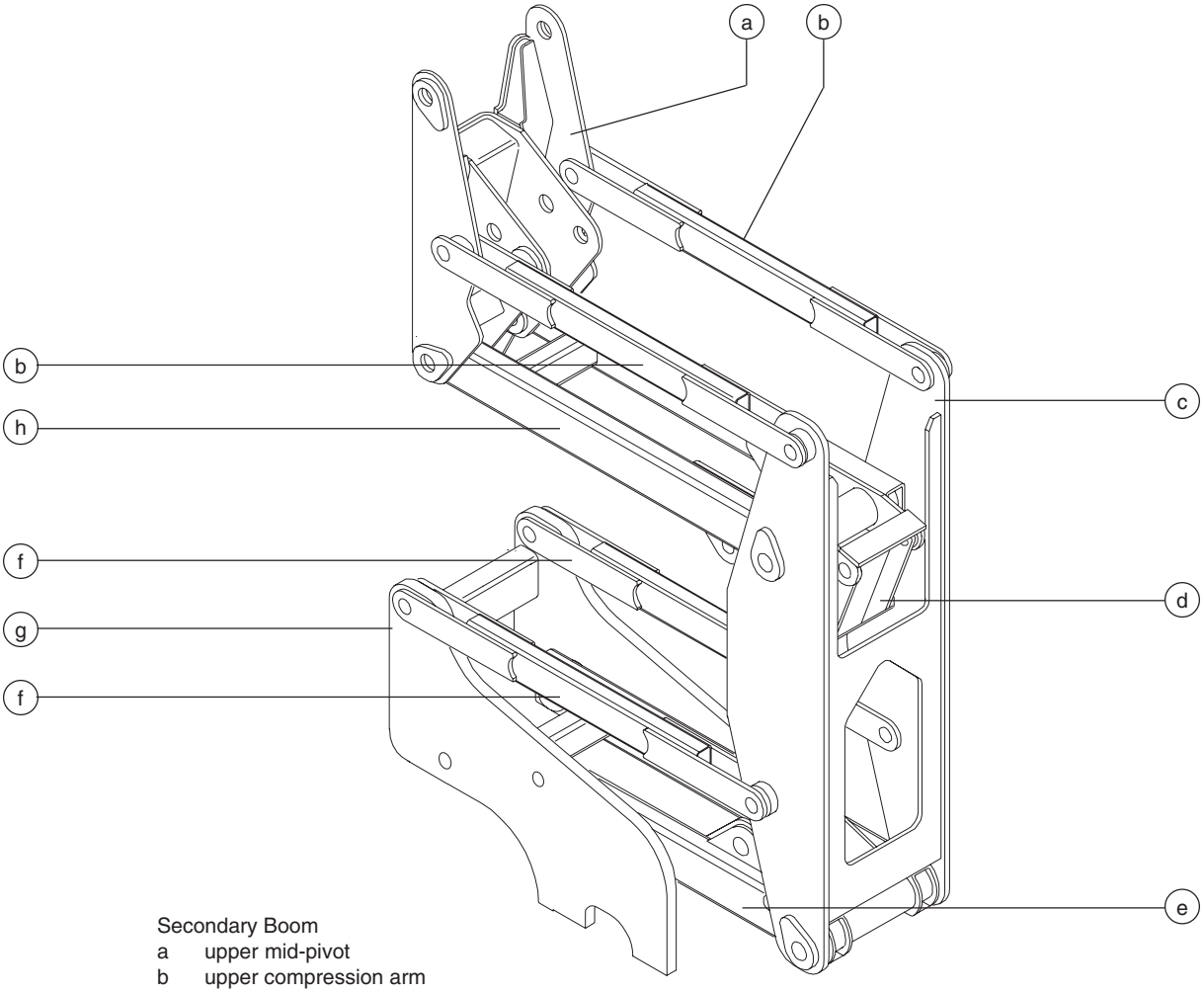
⚠CAUTION Crushing hazard. The upper secondary boom and the upper mid-pivot will fall if the pivot pin is completely removed.

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



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Secondary Boom Components



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

5-1
Secondary Boom

How to Disassemble the Secondary Boom

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

Follow the disassembly steps to the point required to complete the repair. Then re-assemble the secondary boom by following the disassembly steps in reverse order.

1 Lower the boom to the stowed position.

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

3 Remove the rear turntable cover.

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

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

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

7 Open the platform control box.

8 Label and disconnect each wire of the 4 cables in the platform control box.

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

9 Pull the cables out of the platform control box.

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

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

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

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

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

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

15 Remove the limit switch cam mounting fastener from the primary boom pivot pin then remove the limit switch. Do not disconnect the wiring.

NOTICE Note the position of the cam before removing it.

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

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

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

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

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

SECONDARY BOOM COMPONENTS

20 Lower the booms to the stowed position.

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

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

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

23 Remove the pin retainers from the upper mid-pivot to upper compression arm pivot pins. Use a soft metal drift to remove the pins.

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

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

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

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

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

28 Remove the pin retainers from the upper compression arm pivot pins. Do not remove the pins.

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

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

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

31 Remove the pin retainer from the lower pivot pin on the compression link. Use a soft metal drift to remove the pin.

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

33 Remove the pin retainer from the upper secondary boom to lower mid-pivot pivot pin. Use a soft metal drift to remove the pin.

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

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

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

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

37 Remove the LPG hose from the tank and then remove the LPG tank. (this is to access the barrel-end mounting pin).

SECONDARY BOOM COMPONENTS

38 Disconnect the battery cables from the battery then remove the battery hold down and battery. (this is to access the barrel-end mounting pin).

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

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

41 Tag, disconnect and plug the hydraulic hoses from the secondary boom lift cylinder. Cap the fittings on the cylinder.

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

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

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

43 Attach the strap from the crane to the lower mid-pivot.

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

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

46 Remove the lower mid-pivot from the machine.

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

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

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

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

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

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

51 Remove the lower secondary boom from the machine.

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

SECONDARY BOOM COMPONENTS

5-2
Secondary Boom Lift Cylinder

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

How to Remove the Secondary Boom Lift Cylinder

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

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

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

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

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

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

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

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

8 Disconnect and plug the hydraulic hoses from the secondary boom lift cylinder. Cap the cylinder 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.

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

Kubota D-905 Engine

6-1 Timing Adjustment

Complete information to perform this procedure is available in the *Kubota D-905 Workshop Manual* (Kubota code number: 97897-02432). Genie part number 31742.

6-2 Glow Plugs

How to Check the Glow Plugs

See the scheduled maintenance procedure B-9, *Check The Glow Plugs - Kubota Diesel Models.*

6-3 Engine RPM

RPM Adjustment

See the scheduled maintenance procedure B-10, *Check and Adjust the Engine RPM.*

6-4 Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.

How to Remove the Flex Plate

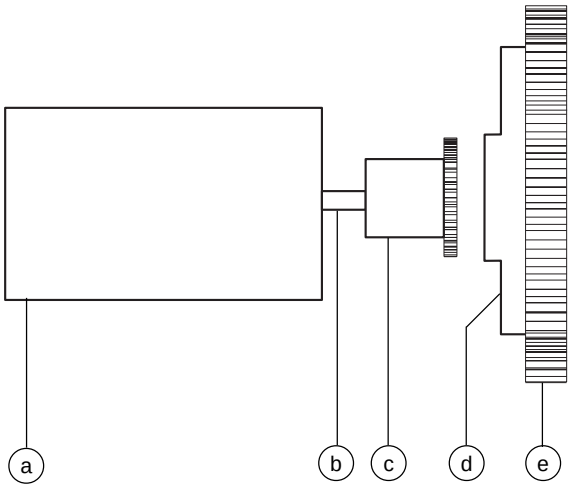
1 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.

2 Carefully pull the pump away from the engine and secure it from moving.

3 Remove the flex plate mounting fasteners, then remove the flex plate from the engine.

How to Install the Flex Plate

1 Install the flex plate onto the flywheel with the raised spline away from the flywheel.



a pump
b pump shaft
c pump coupler
d flex plate
e flywheel

2 Install the coupler onto the pump shaft with the set screw towards the pump. Leave a 1/32 inch (0.8 mm) gap between the coupler and pump end plate.

3 Apply Loctite® removable thread sealant to the coupler set screw. Torque the set screw to 36 ft-lbs (49 Nm).

⚠CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

KUBOTA D-905 ENGINE

6-5
Water Temperature and Oil Pressure Gauges

The water temperature gauge is an electrical gauge. The sending unit has limit contacts that are factory set. The contacts will close at 230° F (109° C). When the contacts close, the engine will shut off to prevent damage and will not start until the temperature drops below the contact point. Temperature will be indicated when the key is on and the Emergency Stop Button is pulled out to the ON position.

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

The oil pressure gauge is an electrical gauge. The sending unit has limit contacts that are factory set. The contacts will close at 8 psi (0.55 bar). When the contacts close, the engine will shut off to prevent damage. Oil pressure will be indicated when the engine is running.

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

Kubota WG-750 Engine

7-1 Choke Adjustments

The manual choke is solenoid operated and is only operational in the gasoline mode. This choke will not operate in propane mode.

NOTICE Choke adjustments are affected by climate. Richer adjustment will be necessary in colder climates, leaner adjustment in warmer climates.

7-2 Timing Adjustment

Complete information to perform this procedure is available in the *Kubota WG-750 Workshop Manual* (Kubota number: 97897-00643). Genie part number 52492.

7-3 Carburetor Adjustment

Complete information to perform this procedure is available in the *Kubota WG-750 Workshop Manual* (Kubota number: 97897-00643). Genie part number 52492.

7-4 RPM Adjustment

See the scheduled maintenance procedure B-10, *Check and Adjust the Engine RPM*.

7-5 Flex Plate

The flex plate acts as a coupler between the engine and the pump. It is bolted to the engine flywheel and has a splined center to drive the pump.

Flex Plate Removal

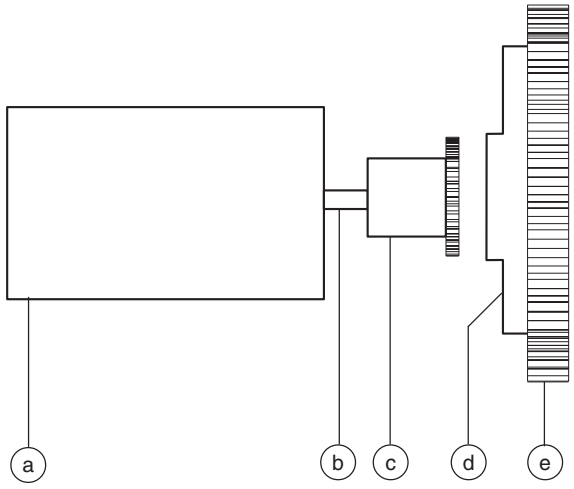
1 Support the drive pump with an appropriate lifting device. Then remove all of the pump mounting plate to engine bell housing bolts.

2 Carefully pull the pump away from the engine and secure it from moving.

3 Remove the flex plate mounting fasteners, then remove the flex plate from the engine.

How to Install the Flex Plate

1 Install the flex plate onto the flywheel with the raised spline against the flywheel.



a pump
b pump shaft
c pump coupler
d flex plate
e flywheel

KUBOTA WG-750 ENGINE

2 Install the coupler onto the pump shaft with the set screw towards the pump. Leave a 1/32 inch (0.8 cm) gap between the coupler and pump end plate.

3 Apply removable Loctite® thread sealant to the coupler set screw. Torque the set screw to 36 ft-lbs (49 Nm).

⚠CAUTION Component damage hazard. Do not force the drive pump during installation or the flex plate teeth may become damaged.

7-6 Water Temperature and Oil Pressure Gauges

The water temperature gauge is an electrical gauge. The sending unit has limit contacts that are factory set. The contacts will close at 230° F (109° C). When the contacts close, the engine will shut off to prevent damage and will not start until the temperature drops below the contact point. Temperature will be indicated when the key is on and the Emergency Stop Button is pulled out to the ON position.

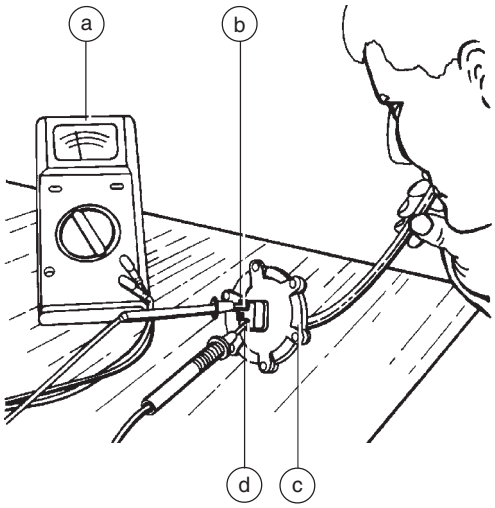
⚠CAUTION Component damage hazard. Do not crank the engine with the over-temperature light on.

The oil pressure gauge is an electrical gauge. The sending unit has limit contacts that are factory set. The contacts will close at 8 psi (0.55 bar). When the contacts close, the engine will shut off to prevent damage. Oil pressure will be indicated when the engine is running.

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

7-7
Vacuum Switch

How to Test the Vacuum Switch



a ohmmeter
b common terminal (SOL.)
c vacuum switch
d normally open terminal (ING.)

1 Connect the leads from an ohmmeter or continuity tester to the common and normally open terminals.

⊙ Result: There should be no continuity (infinite Ω).

2 Apply mild suction to the vacuum port.

⊙ Result: The switch should close and show full continuity (zero Ω).

⚠CAUTION Component damage hazard. Do not short vacuum switch terminals to ground.

Ground Controls

8-1 Control Relays

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

How to Test a Single Pole Double Throw Relay

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

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

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

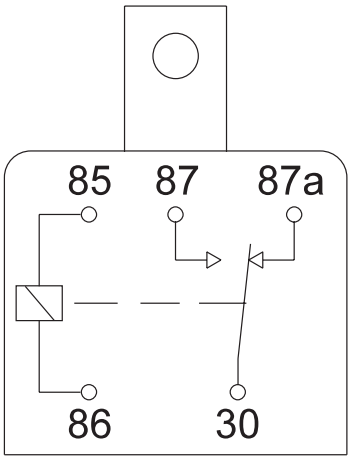
2 Label and then disconnect all the wiring from the relay to be tested.

3 Connect the leads from an ohmmeter to each terminal combination and check for continuity. Terminals 85 and 86 represent the coil and should not be tested in any other combination.

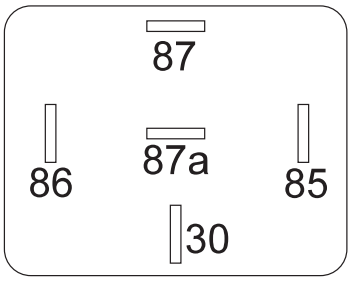
Test	Desired result
terminal 85 to 86	85 to 95Ω
terminal 87 to 87a & 30	no continuity (infinite Ω)
terminal 87a to 30	continuity (zero Ω)

4 Connect 12V DC to terminal 85 and a ground wire to terminal 86, then test the following terminal combinations.

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



Relay Schematic



Terminal Numbers

8-2
Toggle Switches

See 1-4, *Toggle Switches*.

8-3
Wago® Components

How to Remove a Wago® Component

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

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

1 Label the wiring from the component to be removed.

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

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

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

Hydraulic Pumps

9-1 Auxiliary Pump

How to Test the Auxiliary Pump

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

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

2 Connect a 0 to 5000 psi (0 to 350 bar) pressure gauge to the high pressure port on the pump.

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

4 Activate any function using auxiliary power.

⊙ Result: If the pressure gauge reads 2800 psi (193 bar), immediately stop. The pump is good.

⊙ Result: If pressure fails to reach 2800 psi (193 bar), the pump is bad and will need to be serviced or replaced.

5 Remove the pressure gauge and reconnect the hydraulic hose.

How to Remove the Auxiliary Pump

1 Tag, disconnect and cap the hydraulic hoses from the pump.

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

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

9-2 Lift/Steer Pump

How to Test the Lift/Steer Pump

1 Disconnect and plug the high pressure hydraulic hose from the lift/steer pump.

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

2 Connect a 0 to 5000 psi (0 to 350 bar) pressure gauge to the high pressure port on the pump.

3 **Kubota Gasoline/LPG models:** Remove the high tension lead from the center of the ignition coil.

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

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

5 **Kubota Diesel models:** Hold the manual fuel shutoff valve clockwise to the CLOSED position.

Both models: Observe the pressure gauge while cranking the engine. Immediately stop cranking if the pressure reaches or exceeds 3000 psi (206 bar).

⚠CAUTION Component damage hazard. Hydraulic pressure in excess of 3000 psi (206 bar) will cause severe component damage.

⊙ Result: If the pressure gauge reads 3000 psi (206 bar), immediately stop cranking the engine. The pump is good.

⊙ Result: If pressure fails to reach 3000 psi (206 bar), the pump is bad and will need to be serviced or replaced.

6 Remove the pressure gauge and reconnect the hydraulic hose.

7 **Kubota Gasoline/LPG models:** Reconnect the high tension lead to the ignition coil.

How to Remove the Lift/Steer Pump

1 Disconnect and cap the hydraulic hoses from the pump.

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

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

9-3 Drive Hydraulic Pump

The drive hydraulic 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.

How to Remove the Drive Hydraulic 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.

1 Disconnect the electrical connection at the electronic displacement controller (EDC) located on the drive pump.

2 Tag,disconnect and plug the hydraulic hoses on the pump.

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

3 Support the pump and remove the two drive pump mounting bolts. Carefully remove the pump.

HYDRAULIC PUMPS

How to Prime the Pump

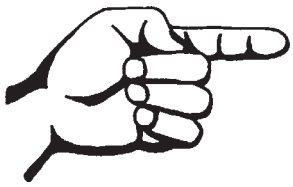
1 Connect a 0 to 6000 psi (0 to 414 bar) pressure gauge to the test port on the drive pump.

2 **Kubota Gasoline/LPG models:** Remove the high tension lead from the center of the ignition coil.

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

Kubota Diesel models: Hold the manual fuel shutoff valve clockwise to the CLOSED position.

3 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 320 psi (22 bar).



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Function Manifold

10-1
Function Manifold Components

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

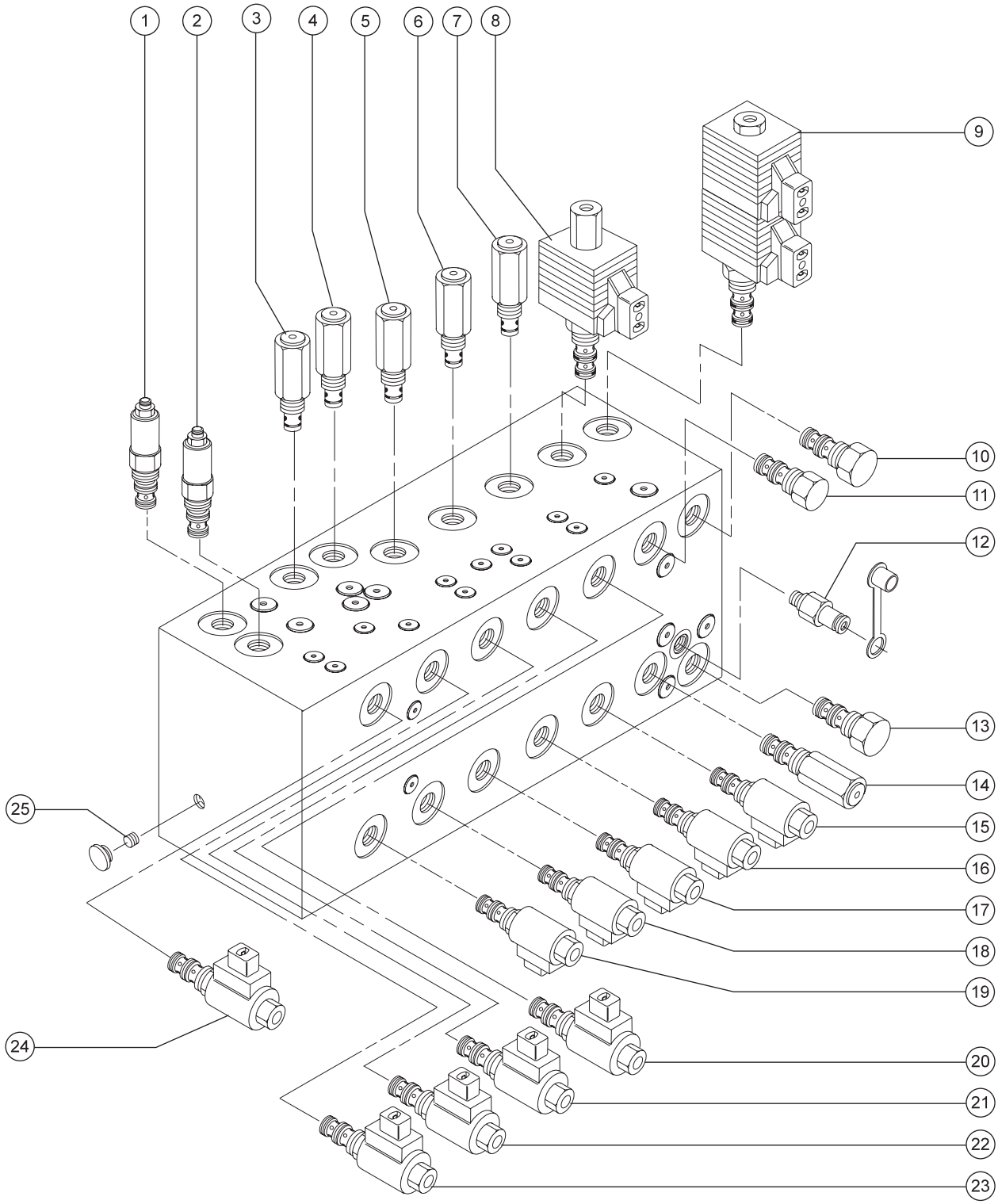
Index No.	Description	Schematic Item	Function	Torque
1	Counterbalance valve	F	Platform level up	35-40 ft-lbs (47-54 Nm)
2	Counterbalance valve	G	Platform level down	35-40 ft-lbs (47-54 Nm)
3	Relief valve, 1750 psi (121 bar) (before serial number 674)	H	Turntable rotate left	25-30 ft-lbs (34-41 Nm)
	Counterbalance valve, 1500 psi (103 bar) (after serial number 673)	H	Turntable rotate left	35-40 ft-lbs (47-54 Nm)
4	Relief valve, 1750 psi (121 bar) (before serial number 674)	I	Turntable rotate right	25-30 ft-lbs (34-41 Nm)
	Counterbalance valve, 1500 psi (103 bar) (after serial number 673)	I	Turntable rotate right	35-40 ft-lbs (47-54 Nm)
5	Relief valve, 1600 psi (110 bar)	J	Secondary boom down	25-30 ft-lbs (34-41 Nm)
6	Relief valve, 1400 psi (97 bar)	K	Primary boom down	25-30 ft-lbs (34-41 Nm)
7	Relief valve, 1800 psi (124 bar)	L	Primary Boom extend	25-30 ft-lbs (34-41 Nm)
8	Proportional solenoid valve	D	System flow regulating circuit	10-12 ft-lbs (14-16 Nm)
9	3 position 4 way spool valve	E	Steer left/right	10-12 ft-lbs (14-16 Nm)
10	Flow regulator valve 0.1 gpm	W	Differential sensing circuit	10-12 ft-lbs (14-16 Nm)
11	Differential sensing valve	C	All functions	10-12 ft-lbs (14-16 Nm)
12	Diagnostic fitting		Testing	
13	Priority flow regulator valve 1.0 gpm	A	Steering	10-12 ft-lbs (14-16 Nm)
14	Relief valve, 3200 psi (221 bar)	B	System relief	25-30 ft-lbs (34-41 Nm)
15	2 position 3 way solenoid valve	V	Primary boom retract	8-10 ft-lbs (11-14 Nm)
16	2 position 3 way solenoid valve	S	Primary boom up	8-10 ft-lbs (11-14 Nm)

Plug Torque Specifications

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

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

FUNCTION MANIFOLD



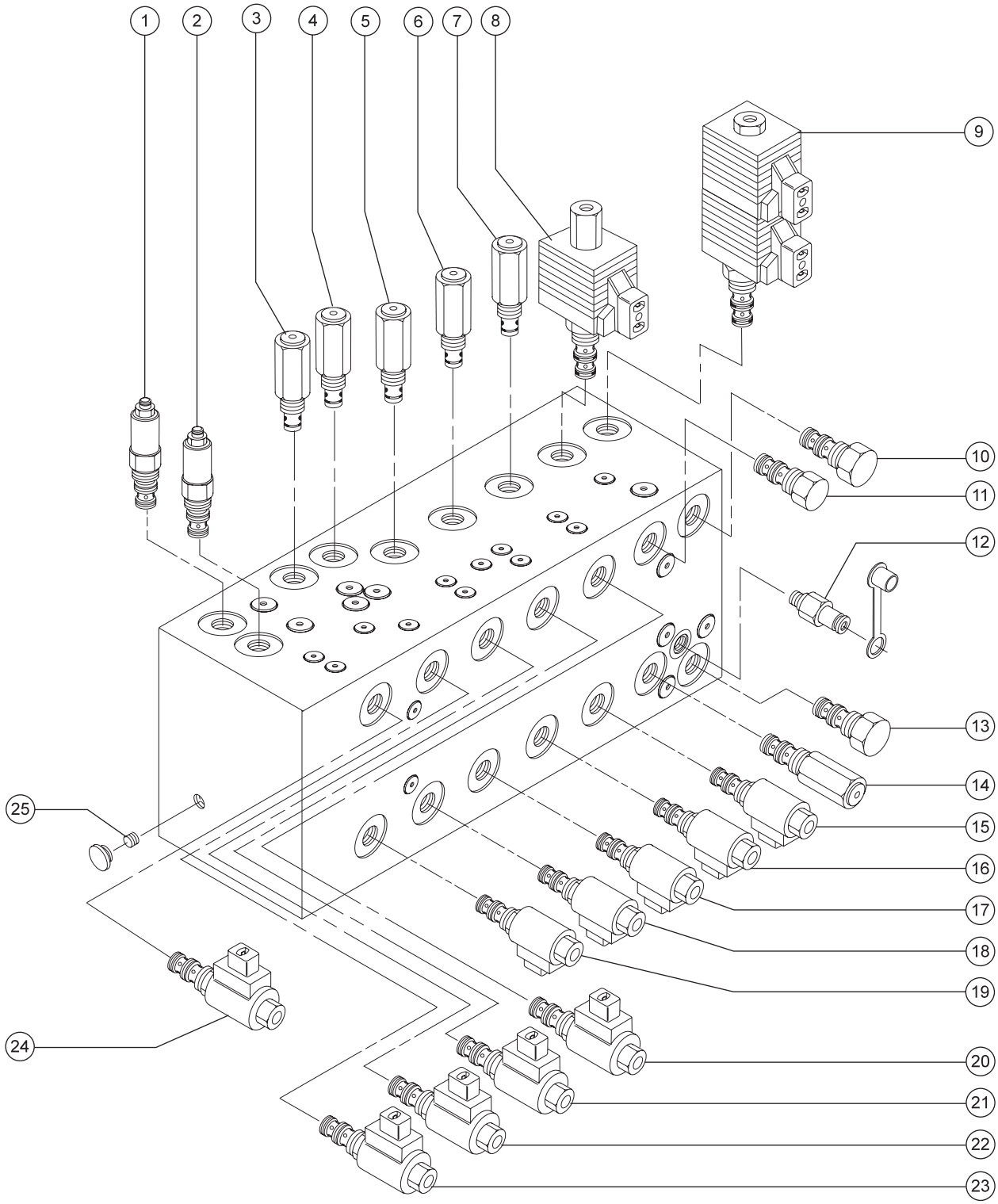
FUNCTION MANIFOLD

Function Manifold Components, continued

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

Index No.	Description	Schematic Item	Function	Torque
17	2 position 3 way solenoid valve	Q	Secondary boom up	8-10 ft-lbs (11-14 Nm)
18	2 position 3 way solenoid valve	P	Turntable rotate left	8-10 ft-lbs (11-14 Nm)
19	2 position 3 way solenoid valve	M	Platform level up	8-10 ft-lbs (11-14 Nm)
20	2 position 3 way solenoid valve	U	Primary boom extend	8-10 ft-lbs (11-14 Nm)
21	2 position 3 way solenoid valve	T	Primary boom down	8-10 ft-lbs (11-14 Nm)
22	2 position 3 way solenoid valve	R	Secondary boom down	8-10 ft-lbs (11-14 Nm)
23	2 position 3 way solenoid valve	O	Turntable rotate right	8-10 ft-lbs (11-14 Nm)
24	2 position 3 way solenoid valve	N	Platform level down	8-10 ft-lbs (11-14 Nm)
25	Orifice, 0.050 in (1.27 mm)	X	Turntable rotate circuit	

FUNCTION MANIFOLD



FUNCTION MANIFOLD

10-2 Valve Adjustments - Function Manifold

How to Adjust the Primary Boom Down Relief Valve

1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 With the engine in high rpm, hold down the primary boom down switch with the primary boom fully lowered, and observe the pressure reading on the pressure gauge.

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

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

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

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

Primary boom down relief valve specifications

Pressure	1400 psi 97 bar

How to Adjust the Turntable Rotate Relief Valves (before serial number 674)

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

1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 With the engine in high rpm, hold the turntable rotate right switch with the turntable rotated to the right (until it is against the rotation stop), and observe the pressure reading on the pressure gauge.

4 Turn the machine off. Hold the relief valve and remove the cap (item 4, function manifold).

NOTICE If adjusting the turntable rotate left, hold switch to the left and adjust the left relief valve (item 3, function manifold).

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

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

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

Turntable rotate relief valve specifications

Pressure	1750 psi 121 bar

How to Adjust the Primary Boom Extend Relief Valve

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

1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 With the engine in high rpm, hold the primary boom extend switch with the primary boom fully extended, and observe the pressure reading on the pressure gauge.

4 Turn the machine off. Hold the relief valve and remove the cap (item 7, function manifold).

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

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

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

Primary boom extend relief valve specifications	
Pressure	1800 psi 124 bar

How to Adjust the Secondary Boom Down Relief Valve

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

1 Connect a 0 to 3000 psi (0 to 206 bar) pressure gauge to the test port on the function manifold.

2 Start the engine from the ground controls.

3 With the engine in high rpm, hold down the secondary boom down switch with the secondary boom fully lowered, and observe the pressure reading on the pressure gauge.

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

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

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

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

Secondary boom down relief valve specifications	
Pressure	1600 psi 110 bar

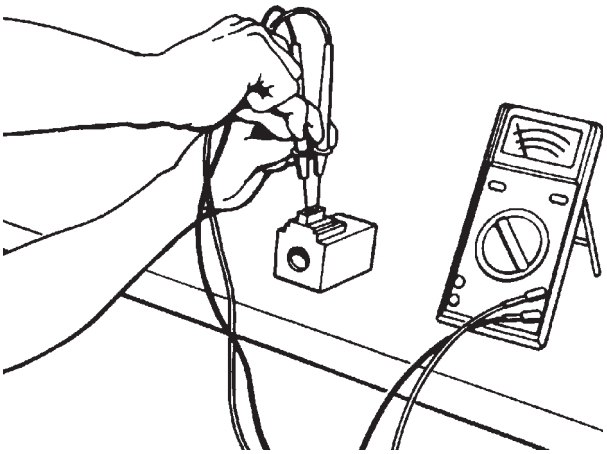
FUNCTION MANIFOLD

How to Check the Resistance of a Valve Coil

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

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

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



Valve coil specifications	
2 position 3 way solenoid valve, 10V	5.5 - 6.5Ω
Proportional solenoid valve, 12V	4 - 5.2Ω

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. When transferring fuel, connect a grounding wire between the machine and pump or container.

1 Raise the secondary boom so the upper mid-pivot is approximately 12 feet (3.7 m) off the ground.

2 Turn the LPG shutoff valve to the CLOSED position on the LPG tank.

3 Remove the LPG hose from the tank and then remove the tank from the machine.

4 Remove the mounting fasteners from the LPG bottle bracket then remove the bracket from the machine.

5 Turn the manual fuel shutoff valve to the CLOSED position on the fuel tank.

6 **Kubota Gasoline/LPG models:** Disconnect, drain and plug the fuel hose.

Kubota Diesel models: Disconnect, drain and plug the supply and return fuel hoses. Cap the fuel return fitting on the fuel tank.

7 Remove the mounting fasteners from the tank strap on the underside of the tank mounting tray.

8 Use an appropriate lifting device to remove the tank from the machine.

NOTICE Clean the fuel tank and inspect for rust and corrosion before installing.

11-2 Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and deaereate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply suction lines and has an external return line filter.

How to Remove the Hydraulic Tank

⚠CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

1 Remove the fuel tank. See 11-1, *How to Remove the Fuel Tank.*

2 Locate the drain hose on the bottom of the hydraulic tank and drain the oil into a suitable container.

⚠WARNING Burn hazard. Contact with hot oil may cause severe burns.

⚠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 hoses from the return filter.

4 Remove the suction hoses from the bottom of the tank.

5 Remove the mounting fasteners from the tank straps.

6 Use an appropriate lifting device to remove the tank from the machine.

NOTICE Clean the hydraulic tank and inspect for rust and corrosion before installing.

Turntable Rotation Components

12-1
Rotation Hydraulic Motor

The rotation hydraulic motor is the only serviceable component of the turntable rotation assembly. The worm gear may not be removed from the housing. In order to remove the housing, the turntable has to be removed.

How to Remove the Turntable Rotation Motor

NOTICE Do not allow the turntable to rotate until the hydraulic motor is installed.

1 Tag, disconnect and plug the hydraulic hoses from the turntable rotation motor. Cap the fittings on the motor.

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

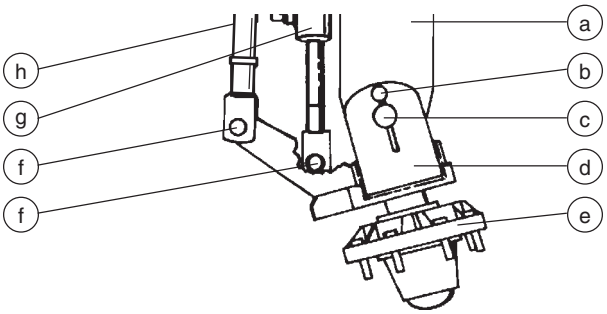
2 Remove the turntable rotation motor mounting bolts, then remove the motor.

2WD Steer Axle Components

13-1
Yoke and Hub

How to Remove the Yoke and Hub

1 Remove the cotter pin and the clevis pin from both the steering cylinder and the tie rod.



a axle
b pin retaining fastener
c king pin
d yoke
e hub
f clevis pin and cotter pin
g steering cylinder
h tie rod

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

3 Block the non-steer wheels, and then center a lifting jack under the steering axle.

4 Raise the machine 6 inches (15 cm) and place blocks under the drive chassis for support.

5 Remove the lug nuts, then the tire and wheel assembly.

6 Remove the pin retaining fasteners from the upper and lower king pins.

7 Attach a strap from a lifting device to the yoke/hub assembly for support.

8 Place a rod through the king pin and twist to remove the pins.

⚠WARNING Crushing hazard. The yoke/hub assembly will fall when the king pins are removed if it is not properly supported.

NOTICE Always use a new cotter pin when installing a clevis pin.

Specifications	Lubricated	Dry
Lug nut torque	94 ft-lbs 127 Nm	125 ft-lbs 169 Nm

How to Remove the Hub and Bearings

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

2 Block the non-steer wheels and place a lifting jack under the steer axle.

3 Raise the machine and place blocks under the drive chassis for support.

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

5 Remove the dust cap, cotter pin and slotted nut.

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

7 Place the hub on a flat surface and gently pry the bearing seal out of the hub. Remove the rear bearing.

2WD STEER AXLE COMPONENTS

How to Install the Hub and Bearings

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

1 Be sure that both bearings are packed with grease.

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

3 Press the bearing seal evenly into the hub until it is flush.

4 Apply a small amount of grease onto the yoke spindle.

5 Slide the hub onto the yoke spindle.

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

6 Place the outer bearing into the hub.

7 Install the washer and slotted nut.

8 Tighten the slotted nut to 35 foot-pounds (47 Nm).

9 Loosen the slotted nut, then re-tighten to 8 foot-pounds (11 Nm).

10 Install a new cotter pin. Bend the cotter pin to lock it.

11 Install the dust cap, then the tire and wheel assembly. Torque the wheel lug nuts to 125 foot-pounds (169.5 Nm).

13-2 Steer Cylinder

How to Remove a Steer Cylinder

1 Tag, disconnect and plug the hydraulic hoses from the steering cylinder. Cap the fittings.

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

2 Remove the cotter pin. Then remove the clevis pin from each end of the steer cylinder.

3 Remove the steer cylinder.

NOTICE Always use a new cotter pin when installing a clevis pin.

13-3 Tie Rod

How to Remove the Tie Rod

1 Remove the cotter pin, then remove the clevis pin from each end of the tie rod.

2 Remove the tie rod.

NOTICE Always use a new cotter pin when installing a clevis pin.

4WD Steer Axle Components

14-1
Yoke and Hub

How to Remove the Yoke and Hub

The yoke installation utilizes bushings and a thrust washer that require periodic replacement depending upon the application. The drive motor must be removed before the torque hub and yoke can be removed.

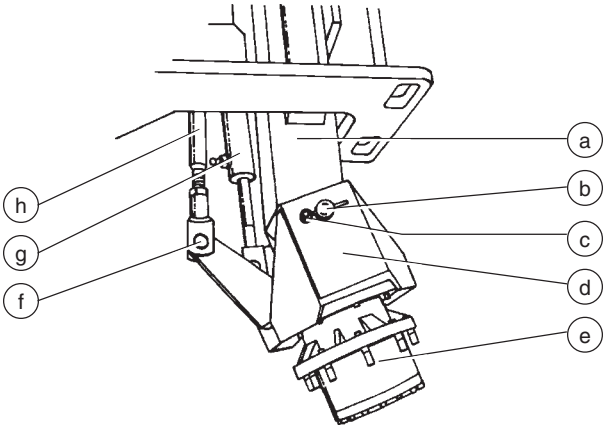
1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer wheels, and then center a lifting jack under the steer axle.

3 Raise the machine 6 inches (15 cm) and place blocks under the chassis.

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

5 Remove the cotter pin, then the clevis pin from both the steering cylinder and the tie rod weldment.



a axle
b king pin
c pin retainer
d yoke
e torque hub
f cotter and clevis pin
g steering cylinder
h tie rod

6 Tag, disconnect and cap the hydraulic hoses from the drive motor and plug them. Cap the drive motor hydraulic 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.

7 Remove the drive motor mounting fasteners. Slide the drive motor shaft out of the torque hub and then remove it.

8 Remove the retaining fasteners from the king pins. Do not remove the pins.

9 Attach a strap from a lifting device to the yoke/torque hub assembly and support it.

10 Use a soft metal drift to drive the king pins down and out.

⚠WARNING Crushing hazard. The yoke/torque hub assembly will fall when the king pins are removed if it is not properly supported.

11 Place the yoke/torque hub assembly on a flat surface with the torque hub down. Remove the bolts that secure the yoke to the torque hub.

Specifications	Lubricated	Dry
Lug nut torque	94 ft-lbs 127 Nm	125 ft-lbs 169 Nm

4WD STEER AXLE COMPONENTS

14-2 Steer Cylinder

How to Remove a Steer Cylinder

1 Tag, disconnect and plug the hydraulic hoses from the steer cylinder. Cap the fittings.

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

2 Remove the cotter pin. Then remove the clevis pin from each end of the steer cylinder.

3 Remove the steer cylinder.

NOTICE Always use a new cotter pin when installing a clevis pin.

14-3 Tie Rod

How to Remove the Tie Rod

1 Remove the cotter pin, then remove the clevis pin from each end of the tie rod.

2 Remove the tie rod.

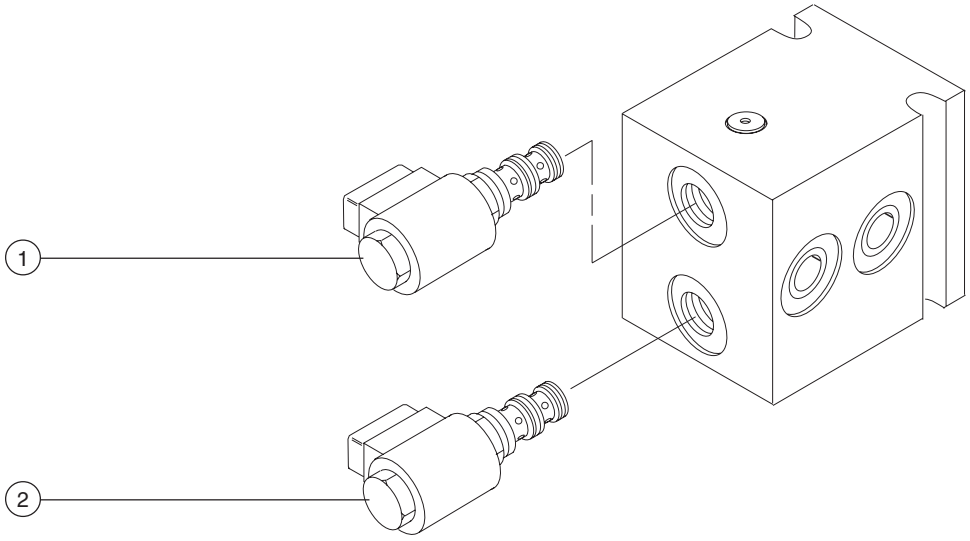
NOTICE Always use a new cotter pin when installing a clevis pin.

Brake and Two Speed Manifold

15-1
Brake and Two Speed Manifold Components

The Brake and Two Speed Manifold is located under the drive chassis cover at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	2 position 3 way solenoid valve	A	Brake	8-10 ft-lbs / 11-14 Nm
2	2 position 3 way solenoid valve	B	2 Speed	8-10 ft-lbs / 11-14 Nm



Non-steer Axle Components

16-1 Drive Motor

⚠CAUTION Component damage hazard. Repairs to the drive motor should only be performed by an authorized Sundstrand-Sauer dealer.

How to Remove a Drive Motor

A drive motor can only be removed from the inside of the chassis.

⚠WARNING 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.

1 Tag, disconnect and cap the hydraulic hoses from the drive motor and plug them.

⚠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 bolts.

3 Guide the drive motor shaft out of the brake and then remove the drive motor.

16-2 Torque Hub

How to Remove a Drive Torque Hub

The drive motor must be removed in order to access the torque hub mounting bolts.

1 Remove the drive motor. See 16-1, *How to Remove a Drive Motor*.

2 Disconnect the hydraulic hose from the brake and plug it. Then remove the hydraulic fitting and the bleed valve.

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

3 Chock the steer wheels.

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

5 Center a lifting jack under the non-steer axle. Raise the machine and place blocks under the chassis for support.

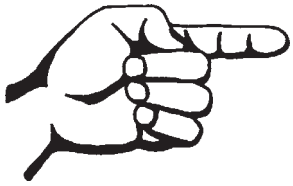
6 Remove the wheel lug nuts, then the tire and wheel assembly.

7 Place a second lifting jack under the torque hub for support.

8 Remove the bolts that attach the torque hub to the chassis, then remove the torque hub.

⚠CAUTION Crushing hazard. The torque hub will fall if it is not properly supported when the mounting bolts are removed.

Torque specifications	
Lug nuts	125 ft-lbs 169.5 Nm
Drive torque hub mounting bolts	210 ft-lbs 285 Nm



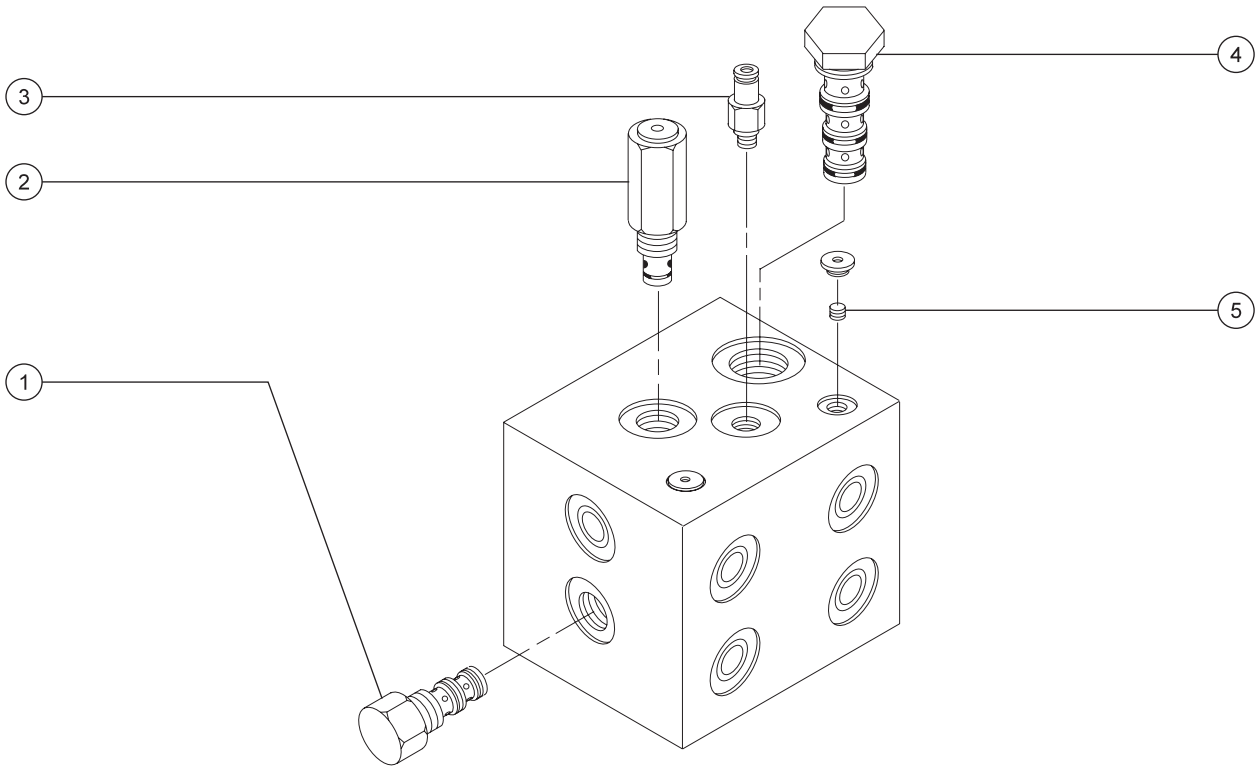
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2WD Drive Manifold

17-1
2WD Drive Manifold Components

The drive manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Shuttle valve 3 position 4 way	A	Charge pressure circuit that gets hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	15-18 ft-lbs / 20-24 Nm
2	Relief valve, 210 psi (14.5 bar)	B	Charge pressure circuit	15-18 ft-lbs / 20-24 Nm
3	Diagnostic fitting		Testing	
4	Flow divider/combiner valve	C	Controls flow to drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
5	Orifice 0.070 in (1.78 mm)	D	Drive circuit	



Plug Torque Specifications

Description	Hex size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

17-2 Valve Adjustments

How to Adjust the Charge Pressure Relief Valve

1 Connect a 0 to 600 psi (0 to 414 bar) pressure gauge to the test port located on the drive 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.

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.

4 Turn the engine off. Hold the relief valve and remove the cap (index 2).

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

6 Restart the engine. Drive the machine in either direction and recheck the valve pressure.

7 Turn the engine off, then remove the pressure gauge.

Relief valve specifications		
Pressure	210 psi	14.5 bar

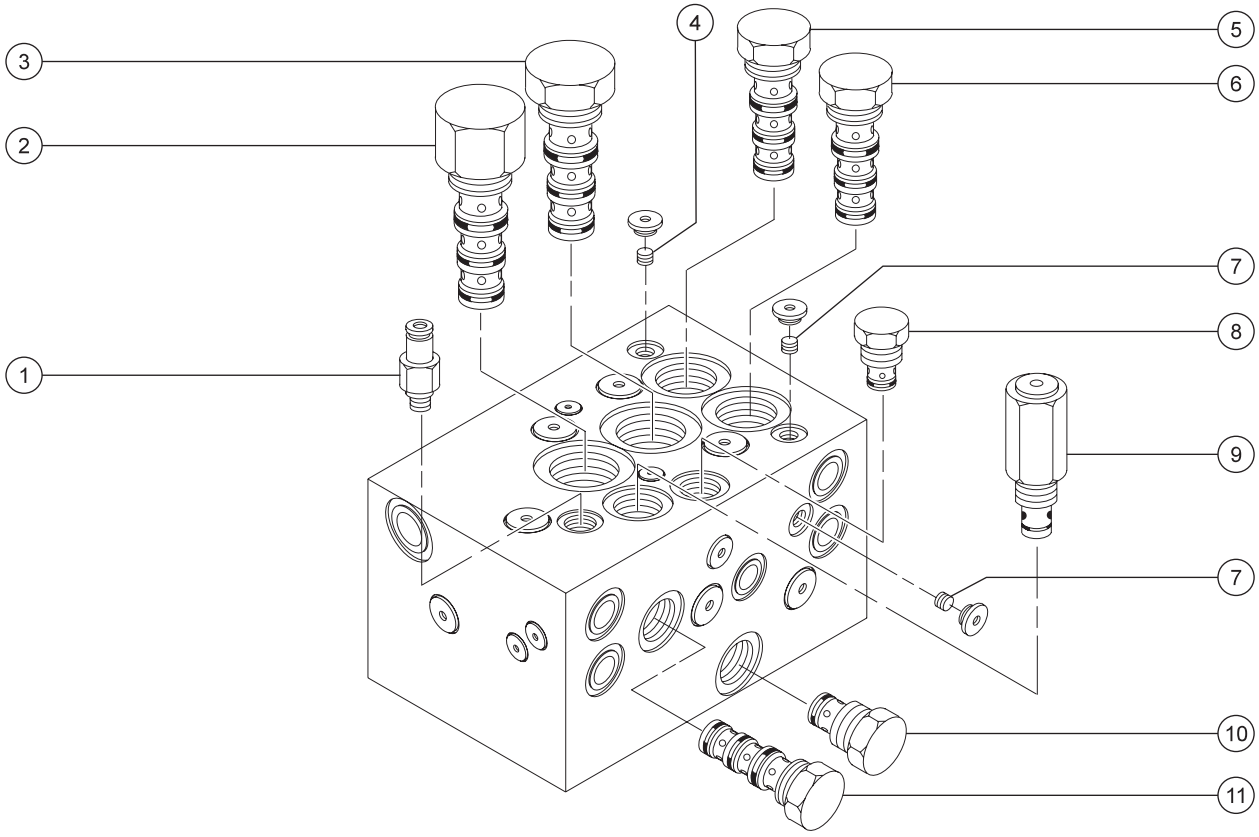
4WD Drive Manifold

18-1
4WD Drive Manifold Components

The drive manifold is mounted inside the drive chassis at the non-steer end.

Index No.	Description	Schematic Item	Function	Torque
1	Diagnostic fitting		Testing	
2	Directional control valve	H	Diverts all flow to steer end drive motors when in high range	25-30 ft-lbs / 34-41 Nm
3	Flow divider/combiner valve	E	Controls flow to flow divider/combiner valves 5 and 6	25-30 ft-lbs / 34-41 Nm
4	Orifice, plug 0.052 in (1.32 mm)	G	Drive circuit, steer end	
5	Flow divider/combiner valve	F	Controls flow to steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
6	Flow divider/combiner valve	D	Controls flow to non-steer end drive motors in forward and reverse	25-30 ft-lbs / 34-41 Nm
7	Orifice, plug 0.070 in (1.78 mm)	C	Drive circuit, steer end	
8	Check valve	I	Direction control circuit	15-18 ft-lbs / 20-24 Nm
9	Relief valve, 210 psi (14.5 bar)	B	Charge pressure circuit	15-18 ft-lbs / 20-24 Nm
10	Pilot operated check valve	J	Smoothes the shift from low to high range	15-18 ft-lbs / 20-24 Nm
11	Shuttle valve 3 position 3 way	A	Charge pressure circuit that gets hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	15-18 ft-lbs / 20-24 Nm

4WD DRIVE MANIFOLD



4WD DRIVE MANIFOLD

Plug Torque Specifications

Description	Hex size	Torque
SAE No. 2	1/8	50 in-lbs / 6 Nm
SAE No. 4	3/16	13 ft-lbs / 18 Nm
SAE No. 6	1/4	18 ft-lbs / 24 Nm
SAE No. 8	5/16	50 ft-lbs / 68 Nm
SAE No. 10	9/16	55 ft-lbs / 75 Nm
SAE No. 12	5/8	75 ft-lbs / 102 Nm

18-2 Valve Adjustments

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.

⚠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 Start the engine from the platform controls.

3 Drive the machine slowly in either direction and observe the pressure reading on the pressure gauge.

4 Turn the engine off. Hold the relief valve and remove the cap (index 2).

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

6 Restart the engine. Drive the machine in either direction and recheck the valve pressure.

7 Turn the engine off, then remove the pressure gauge.

Relief valve specifications		
Pressure	210 psi	14.5 bar

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.

Distributed By:

Genie North America
Phone 425.881.1800
Toll Free USA and Canada 800.536.1800
Fax 425.883.3475

Genie Australia Pty Ltd.
Phone +61 7 3375 1660
Fax +61 7 3375 1002

Genie China
Phone +86 21 53852570
Fax +86 21 53852569

Genie Malaysia
Phone +65 98 480 775
Fax +65 67 533 544

Genie Japan
Phone +81 3 3453 6082
Fax +81 3 3453 6083

Genie Korea
Phone +82 25 587 267
Fax +82 25 583 910

Genie Brasil
Phone +55 11 41 665 755
Fax +55 11 41 665 754

Genie Holland
Phone +31 183 581 102
Fax +31 183 581 566

Genie Scandinavia
Phone +46 31 575100
Fax +46 31 579020

Genie France
Phone +33 (0)2 37 26 09 99
Fax +33 (0)2 37 26 09 98

Genie Iberica
Phone +34 93 579 5042
Fax +34 93 579 5059

Genie Germany
Phone 0800 180 9017
Phone +49 422 149 1818
Fax +49 422 149 1820

Genie U.K.
Phone +44 (0)1476 584333
Fax +44 (0)1476 584334

Genie Mexico City
Phone +52 55 5666 5242
Fax +52 55 5666 3241